Coffee Gold Mine

YESAB Project Proposal

Appendix 31-A Access Route Construction Management Plan

VOLUME V

Prepared for:
Kaminak Gold Corp. a subsidiary of
Goldcorp Inc.
Suite 3400-666 Burrard Street
Vancouver, BC Canada V6C 2X8

Prepared by:
Onsite Engineering Ltd.
1040 Cedar Street
Campbell River, BC V9W 7ES

EDI Environmental Dynamics Inc.
2195 – 2nd Ave
Whitehorse, YT Y1A 3T8

Tetra Tech EBA Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7

Hemmera Envirochem Inc.
Suite 230, 2237 2nd Avenue
Whitehorse, YT Y1A 0K7

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TABLE OF CONTENTS

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE IV

INFORMATION REQUIREMENTS FOR QUARTZ MINE LICENCE AND WATER LICENCE VI

1.0 INTRODUCTION 1.1

1.1 PROJECT SUMMARY 1.1

1.2 SCOPE AND OBJECTIVES 1.3

1.3 SYNERGIES WITH OTHER PROJECT DOCUMENTS 1.3

2.0 SITE PREPARATION 2.1

3.0 ROAD DESIGN AND CONSTRUCTION 3.1

3.1 CONVENTIONAL CUT AND FILL CONSTRUCTION 3.2

3.2 OVERLAND CONSTRUCTION IN ICE-RICH PERMAFROST 3.2

3.3 FULL BENCH END HAUL CONSTRUCTION 3.3

3.4 CONSTRUCTION ALONG THE NORTH STEWART BACK CHANNEL 3.3

3.5 WINTER ROAD CONSTRUCTION 3.6

3.6 BRIDGES AND CULVERTS 3.8

3.6.1 Standard Non-fish Stream Culverts 3.11

3.6.2 Embedded Culverts in Fish Streams 3.11

3.6.3 All-steel Portable Bridges 3.11

4.0 BARGE LANDING DESIGN AND CONSTRUCTION 4.1

4.1 STEWART RIVER NORTH LANDING 4.4

4.2 STEWART RIVER SOUTH LANDING 4.4

4.3 YUKON RIVER NORTH LANDING 4.5

4.4 YUKON RIVER SOUTH LANDING 4.5

5.0 ACCESS TIE-IN AND STAGING AREAS 5.1

6.0 BORROW SOURCES 6.1

7.0 BEST MANAGEMENT PRACTICES 7.1

7.1 CROSSING STRUCTURES 7.1

7.2 LARGE RIVERS AND SIDE CHANNELS 7.2

7.2.1 Use of Concrete and Grout 7.3

7.2.2 Blasting Near Fish-bearing Waters 7.3

7.2.3 Erosion and Sediment Control 7.3

7.2.4 Placement of Riprap 7.4
7.2.5 Site Isolation and Fish Salvage (If Required) 7.5
7.3 Fish Bearing Streams – Bridges 7.5
7.3.1 Erosion and Sediment Controls 7.5
7.3.2 Placement of Riprap 7.6
7.3.3 Site Isolation and Fish Salvage 7.6
7.4 Fish Bearing Streams – Culverts 7.7
7.4.1 Site Isolation and Fish Salvage 7.7
7.4.2 Erosion and Sediment Control 7.9
7.5 Non-fish Bearing Streams – Culverts 7.10
7.6 Fording Equipment 7.10
7.7 Cut and Fill Slopes 7.11
7.8 Petroleum Hydrocarbons 7.11
7.9 Vegetation Management 7.12
7.10 Wildlife Management 7.13
7.11 Dust Management 7.15
8.0 MONITORING 8.1
9.0 ACCESS ROUTE CONSTRUCTION QUALITY ASSURANCE, AND QUALITY CONTROLS 9.1
10.0 METAL LEACHING AND ACID ROCK DRAINAGE MANAGEMENT PLAN FOR ACCESS ROUTE DISTURBANCES 10.1
10.1 Geochemical Evaluation 10.1
10.2 Metal Leaching / Acid Rock Drainage Monitoring Plan for Access Route Disturbances 10.2
11.0 GEOTECHNICAL TESTING 11.1
12.0 REFERENCES 12.1

List of Tables

Table 3-1 Design Specifications 3.1
Table 3-2 Permanent Cut Slope and Fill Slope Angles by Ground Type 3.1
Table 10-1 Acid Rock Drainage Classification of Road Alignment Acid-base Accounting Samples 10.2
Table 10-2 Summary of Sampling Frequency and Analytical Parameters Monitored for Characterization of Mine Rock 10.3

List of Figures

Figure 1-1 Coffee Gold Mine Northern Access Route and Barge Crossing Locations 1.2
Figure 3-1 Encroachment Area within the High-water Mark of the Stewart River Back Channel 3.5
Figure 3-2 Winter Road Route 3.7
Figure 3-3 Stream Crossing Locations for the Northern Access Route 3.10
Figure 4-1 Barge Landing Plan 4.2
Figure 4-2 Profile View at Barge Ramp 4.3
Figure 4-3 Typical Section through Barge Landing 4.3
Figure 4-4 Typical Section through Barge Ramp 4.3
Figure 5-1 Existing Camp Locations for Possible Use During Northern Access Route Construction Activities 5.2
Figure 6-1 Coffee Gold Mine Borrow Sites for Northern Access Route Road Construction Activities 6.2
Figure 7-1 Site Isolation Using the Pump-around Method 7.8
Figure 7-2 Site Isolation Using the Diversion Method 7.8

List of Appendices

Appendix I Northern Access Route Upgrades and Establishment Report
Appendix II Road Permafrost Geohazard Evaluation Mapping
Appendix III Typical Road Cross Sections
Appendix IV Access Road Embankment Thickness in Permafrost Terrain
Appendix V Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-rich Permafrost
Appendix VI Watercourse Crossing Locations and Specifications
Appendix VII Typical Non-fish Bearing Stream Culvert
Appendix VIII Example Embedded Culvert General Arrangement Drawing
Appendix IX Example All-steel Portable Bridge General Arrangement Drawing
Appendix X Example Barge Landing General Arrangement Drawing
Appendix XI Borrow Site Locations and Specifications
Appendix XII Seeding Requirements
Appendix XIII Standard Operating Procedure Confirmatory ML/ARD Sampling for Coffee Creek Access Road Development
Appendix XIV Geotechnical Assessment
Appendix XV Recommendations for the Existing Road From The South Yukon Barge Road to Coffee Gold Mine Site
Appendix XVI Detailed Design Road Drawings

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

Acronym / Abbreviation	Definition
ABA	acid-based accounting
ADR	adsorption, desorption, recovery
AP	acid potential
ARD	acid rock drainage
ASP	all-steel portable bridge
BMP	best management practice
BCL-625	British Columbia Lane Load – 625 Kilonewtons
CPK	klondike schist assemblage
CDC	Conservation Data Centre
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
DMPW	Pelly gneiss suite
GRS	geo-synthetically reinforced soil
HDPE	high-density polyethylene
Lorax	Lorax Environmental Services Ltd.
ML	metal leaching
NCD	non-classified drainage
NP	neutralization potential
NPAG	non-potentially acid generating
NPR	neutralization potential ratio
NRC	Natural Resources Canada
OEL	Onsite Engineering Ltd.
PAG	potentially acid generating
PECG	Palmer Environmental Consulting Group Inc.
Project	proposed Coffee Gold Mine
QA/QC	quality assurance / quality control
ROM	run of mine
ROW	right-of-way
SARA	Species at Risk Act
SFE	shake flask extractions
YT	Yukon Territory
YWCHSB	Yukon Workers Compensation Health and Safety Board

SYMBOLS AND UNITS OF MEASURE

Symbol, Unit of Measure	Definition
DMN	nasina unit
ha	hectare
kg	kilogram
km	kilometre
km2	square kilometres
km/hr	kilometres per hour
kPa	kilopascal
m	metre
m3	cubic metre
Moz	million Troy ounces
mg/L	milligrams per litre
mm	millimeter
mm/s	millimetres per second
Mt/a	million tonnes per annum
oz.	Troy ounce
psi	pounds per square inch
t/d	tonnes per day
uKC	Carmacks unit
wt.%	weight percent

INFORMATION REQUIREMENTS FOR QUARTZ MINE LICENCE AND WATER LICENCE

Information Requirement	Location in this Plan
Table of Concordance	Will be included once YESAB process is complete.
Revision Log	Will be included once YESAB process is complete.
Include road, barge landings and ice road construction management	Section 3.0 Road Design and Construction Section 4.0 Barge Landing Design and Construction
Include description of sample locations and frequency, proposed numeric objectives, standards and/or thresholds where applicable, adaptive management, data analysis and reporting. Append methods and QA/QC programs.	Section 8.0 Monitoring Section 9.0 Access Route Quality Assurance and Quality Control Section 10.0 Metal Leaching and Acid Rock Drainage Management Plan for Access Route Disturbances Section 11.0 Geotechnical Testing

1.0 INTRODUCTION

1.1 PROJECT SUMMARY

The proposed Coffee Gold Mine (Project) site will be accessible by a combination of road, barge crossings, and a seasonal winter road (i.e., the Northern Access Route (NAR)). The 214-kilometre (km), all-weather access NAR will provide access between the City of Dawson and the Mine Site. The NAR will be used to transport equipment, fuel, and other supplies. The beginning of the NAR will be 16 km outside of Dawson, at the junction of Hunker Road and Highway #2 (North Klondike Highway). The NAR will initially follow existing government-maintained Hunker Road to Sulphur Creek. From the end of the publicly maintained road, the NAR will mostly travel along an existing placer mine road network. Approximately 100 km of the placer mine road network will require upgrades to improve road user safety, increase the travel speed, and provide all-season access. In addition to these upgrades, roughly 37 km of new construction will be required, together with the construction or upgrade of barge landings at the Stewart River and Yukon River crossings.

The work proposed for the upgrade portion of the NAR includes:

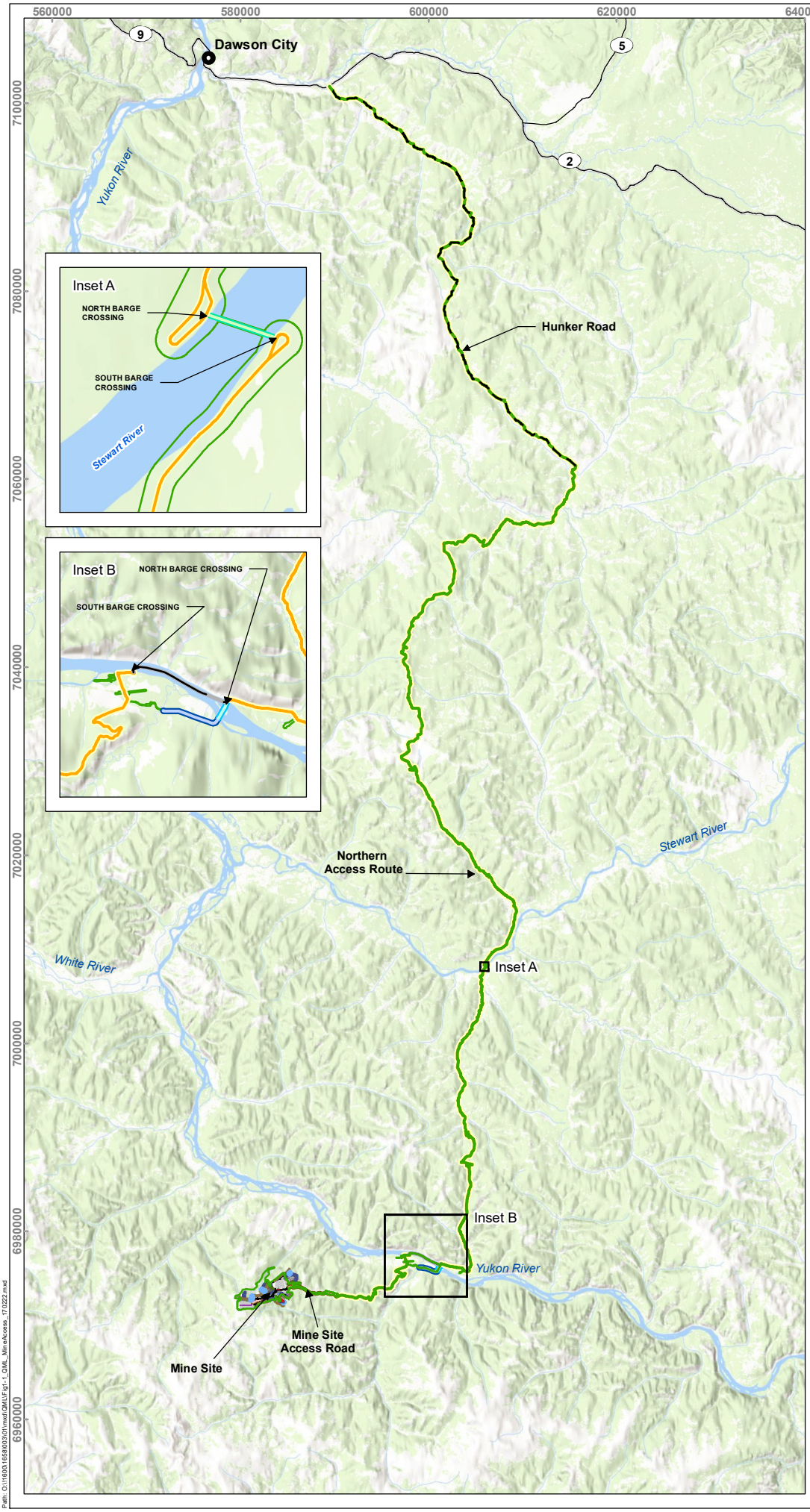
- Improving horizontal and vertical alignment
- Addition of pullouts and turnouts
- Drainage improvements
- Watercourse crossing upgrades
- All weather surfacing.

The new construction portion of the NAR will include the establishment of approximately 37 km of road and 11 watercourse crossings.

Both upgraded and new road sections will be designed to the same standards. The completed road will be a single-lane road with pullouts and will support two-way traffic travelling at design speeds of 30 kilometres per hour (km/hr) to 50 km/hr.

In addition to road work, two barge crossings on the Stewart and Yukon Rivers are required to access the Project site. One new barge landing will be constructed on the north bank of the Stewart River. The other three existing barge landings will be replaced by repositioned landings with enhanced safety, long-term integrity, and increased navigability. The barge landings are an integral part of the NAR, with different design constraints and construction techniques than for road construction. Details on the barge-related components are presented in **Section 4.0 Barge Landing Design and Construction**.

A map showing the proposed alignment and barge crossing sites can be seen below in **Figure 1-1**.



COFFEE GOLD MINE

Coffee Gold Mine Access Route and Barge Crossing Locations



Legend

- Project Footprint
- Hunker Road
- Stewart River Ice and Barge Crossings
- Yukon River Barge Route
- Yukon River Ice Road
- Winter Road
- Mine Site Access Route
- Northern Access Route
- Highway

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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1.2 SCOPE AND OBJECTIVES

This document serves to describe the procedures and protocols for construction of the access road, barge crossings, and seasonal ice roads (i.e., the NAR) between Dawson, Yukon, and the Project site. The NAR will be used during the Construction, Operation, and Closure Phases to transport fuel, equipment, and other supplies. This plan describes activities for the NAR during construction; activities associated with operations are detailed in the Access Route Operational Management Plan (**Appendix 31-B**). The Northern Access Route Upgrades and Establishment Report is included in **Appendix I** and **Appendix XV**.

1.3 SYNERGIES WITH OTHER PROJECT DOCUMENTS

This plan should be viewed in concert with the additional management plans:

- Conceptual Reclamation and Closure Plan (**Appendix 31-C**)
- Wildlife Protection Plan (**Appendix 31-F**).

2.0 SITE PREPARATION

A 30-metre (m)-wide corridor of trees will be cleared ahead of road construction. In areas where cut and fill slopes extend outside of the 30 m cleared corridor, the clearing width will be increased to 3 m beyond the extent of the cut or fill slope. Clearing widths through riparian areas will be reduced to 10 m, or 3 m beyond cut and fill slopes, whichever is greater. Besides opening the area for road construction, this clearing will increase sight lines for traffic, provide sunlight access for drying/melting, and provide storage area for snow removal. Cleared material will be stored in windrows or at pullout locations along the side of the road to be used later for reclamation purposes. In areas of undisturbed, shallow, ice-rich permafrost (see **Appendix II Road Permafrost Geohazard Evaluation Mapping**; this pertains to areas noted to be very ice-rich frozen soil), hand falling in the right-of-way (ROW) will be used instead of machinery to limit ground disturbance.

With the exception of roads built over undisturbed, shallow, ice-rich permafrost and winter roads, all roads to be constructed are to be built on exposed mineral soil. To accomplish this, stripping of the organic soil layer is required. Organic soil depths vary by site from none in areas such as built road and in active placer mine sites to a maximum of 0.4 m along sections of new road construction. Average stripping depths are 0.1 m for road upgrade sections and 0.2 m for new construction sections.

In areas underlain with undisturbed, shallow, ice-rich permafrost, the existing surface material will be left intact, with the road constructed by filling over a geotextile separation layer. Care will be taken to minimize the amount of vegetative clearing to occur, limiting the amount of subgrade materials exposed to potential degradation and thaw along the roadway; this will also reduce the potential for soil erosion.

Winter road site preparation will consist of hand falling the ROW. All stumps will be cut as low as possible. Hand falling the ROW may be completed at any time of the year; however, additional site preparation on the winter road section should occur following freeze-up. After the ground is frozen, woody debris and other felled ground cover will be placed across the prism to help support the road and lift the road prism prior to building up with snow and ice. This will be done in a way to prevent barriers to flow and associated increased erosion related to the melting of the road in the spring months.

3.0 ROAD DESIGN AND CONSTRUCTION

The proposed road is designed for single lane, two-way traffic with pullouts. The design standards are meant to match the terrain. In the valley bottoms, where higher standards are more easily attained, the road is designed for 50 km/hr traffic. In mountainous terrain the road is designed for 30 km/hr traffic. The specifications to meet these design speeds are summarized in **Table 3-1**.

Table 3-1 Design Specifications

Components	Valley Bottom	Mountainous Terrain
Maximum Road Grade	8% (up to 10% on short pitches). Restricted to 5% on switchbacks	8% (up to 10% on short pitches). Restricted to 5% on switchbacks
Tightest Vertical Curve	1% grade change over 12 m (11 m for crest curves)	1% grade change over 4 m (3 m for crest curves)
Minimum Curve Length	50 m	30 m
Minimum Stopping Sight Distance	135 m	65 m
Minimum Horizontal Curve Radius	80 m (18 m for switchbacks)	35 m (18 m for switchbacks)
Minimum Cross Drain Culvert Diameter	450 mm	450 mm
Ditch Size	0.5 m deep with a 1-m-wide base	0.5 m deep with a 1-m-wide base
Road Width	5 m	5 m
Pullout Size	Additional 4 m width, 15 m long with a 7.5-m-long taper at each end	Additional 4 m width, 15 m long with a 7.5-m-long taper at each end

Construction of the road prism will require surficial material earthworks and ripping and blasting of rock where the road passes through near surface bedrock. All sections of road will have a surfacing depth of 0.3 m; the subgrade will be compacted with a drum roller, and cut slope and fill slope angles will vary by material type (**Table 3-2**).

Table 3-2 Permanent Cut Slope and Fill Slope Angles by Ground Type

Material Type	Cut Slope Angle	Fill Slope Angle	Cut Expansion Factor	Fill Expansion Factor	Additional Details
OB –Organic soil	400%	N/A	1	1	Organic-rich layer not to be used for construction of the road prism.
C1 – Silty sand colluvium	70%	66.7%	0.9	1	Clast-supported angular rubble colluvium in a silty sand matrix.
C2 – Silty sand some gravel colluvium	70%	66.7%	1	1	Matrix-supported silty sand with some gravel colluvium material.
C3 – Silty sand colluvium	100%	66.7%	0.9	1	Clast-supported angular rubble colluvium in a silty sand matrix.
C4 – Silty sand some gravel colluvium	100%	66.7%	1	1	Matrix-supported silty sand with some gravel colluvium material.

Material Type	Cut Slope Angle	Fill Slope Angle	Cut Expansion Factor	Fill Expansion Factor	Additional Details
TA – Talus	70%	66.7%	0.9	1	Angular rock clasts with little to no fine grained matrix. Typically found in high-elevation alpine locations.
SG – Sand and gravel	70%	66.7%	1	1	Sand and gravel fluvial deposits.
TL – Tailings (washed sand and gravel)	70%	66.7%	1	1	Tailings (washed sands and gravels) remaining from placer mining operations.
Si – Silt	50%	50%	0.9	1	Silt-leading lacustrine or fluvial deposits.
F1 – Weak Rock	120%	66.7%	1.11	1	Weak, heavily fractured bedrock. Typically mica schist or gneiss.
F2 – Strong rock	200%	66.7%	1.2	1	Medium strong to very strong bedrock. Typically Andesite/ Dacite or quartzite.
PF – Permafrost	N/A	N/A	N/A	N/A	Ice-rich permafrost soils. Avoid any disturbance using fill only embankment.
RF – Rock Fill	N/A	85%	1	1	Fill composed of keyed in angular rock clasts founded on a 2 m wide excavated or natural bench.

Wherever possible, conventional cut and fill construction will be utilized to minimize material movement (**Section 3.1**). In some locations, alternative construction techniques will be required such as in sections overlanding undisturbed, shallow, ice-rich permafrost (**Section 3.2**); sections requiring full bench end haul construction (**Section 3.3**); and construction along the North Stewart back channel (**Section 3.4**). For typical cross sections showing all proposed construction techniques, refer to the drawings in **Appendix III Typical Road Cross Sections** and **Appendix XVI Detailed Road Design Drawings**.

3.1 Conventional Cut and Fill Construction

Following site preparation, the road prism will be constructed with a portion of the road in a cut, generating material to use as fill to build the remaining portion of road. The fill portion of the road will be placed on stripped ground and compacted with the bucket of an excavator or tracked in lifts with a bulldozer until brought up to the top of subgrade.

3.2 Overland Construction in Ice-rich Permafrost

Disturbance to the existing vegetative cover in areas of undisturbed, shallow, ice-rich permafrost may cause a change to the areas thermal regime, leading to an increased depth of active layer (the layer that freezes and thaws annually). If disturbance occurs, the increased depth of the active layer, combined with the large ice component in these areas may result in saturation or unfavorable settlement of the road prism during

construction and throughout the life of the road. Unless otherwise specified in **Appendix XIV Geotechnical Assessment**, overland construction (fill only embankment) will be used to minimize disturbance to the existing vegetative cover. Once site preparation activities have occurred, a high-strength, woven geotextile will be laid over the existing vegetative cover. Once the geotextile is in position, fill will be placed, compacted in lifts, and brought up to a minimum depth of 1.5 m (**Appendix IV Access Road Embankment Thickness in Permafrost Terrain**, **Appendix V Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-rich Permafrost**). Unless existing roads or machine trails are present that provide equipment a means to bypass sections of undisturbed, shallow, ice-rich permafrost, no equipment will proceed beyond where the above has occurred.

3.3 Full Bench End Haul Construction

Full bench end haul construction is necessary in portions of the NAR that will traverse areas with steep side slopes. In these sections, the entire road prism will be built on a full bench cut and generated material will be end hauled to a designated spoil site or to another portion of the road to be used in its construction. In full bench end haul sections, no excavated material will be placed on the slope below the road.

3.4 Construction Along the North Stewart Back Channel

The proposed road alignment along the back channel on the north bank of the Stewart River follows an abandoned, existing road at the toe of heavily fractured bedrock bluffs. These bluffs have been identified as having a high rock-fall hazard. To reduce the risk of a rock-fall event endangering the safety of road construction workers or vehicle traffic, or temporarily severing access, an intercept ditch 1 m deep and 4 m wide will be constructed between the bluffs and the NAR to intercept rock fall.

No blasting will occur to construct this section. The talus and colluvium apron at the base of these bluffs will be excavated and the material will be used for the construction of the road prism. The fill will be placed on stripped ground, compacted with the bucket of an excavator or tracked in lifts with a bulldozer. The downslope side of the fill will be armoured with riprap.

Due to the large intercept ditch and proximity to the back channel, portions of the road will encroach on the adjacent back channel. This section is approximately 300 m long and encroaches on approximately 0.17 ha within the high-water mark of the back channel (**Figure 3-1**). Road fill construction and riprap placement below the high-water mark will ideally occur during periods of low water levels in the Stewart River (typically July through September) when works can be completed in the dry (See **Section 7.0 Best Management Practices** for further details). In the event water levels or construction timing prevent works from being completed in the dry, work procedures will be altered to comply with the regulations outlined in the Federal *Fisheries Act*, 2012. This may require consultation between the Proponent and Fisheries and Oceans Canada (DFO).

This back channel was sampled for fish and assessed for habitat during the summer of 2015 (PECG 2016) and fall of 2016 (EDI 2016). During the summer assessment, no fish were captured and the dissolved oxygen concentration was low. In the fall, the channel was dry/frozen. This back channel does not provide any critical habitat such as spawning or overwintering habitat for fish; rather it likely provides refuge habitat during high-water events in the Stewart River. To mitigate the loss of the vegetated bank, the design includes incorporation of woody debris into the riprap armouring, to allow for increased fish habitat complexity.



COFFEE GOLD MINE

Encroachment Area Within the High-water Mark of the Stewart River Backchannel



Legend

- Northern Access Route
- Fillslope Encroachment Area
- Stewart River Backchannel

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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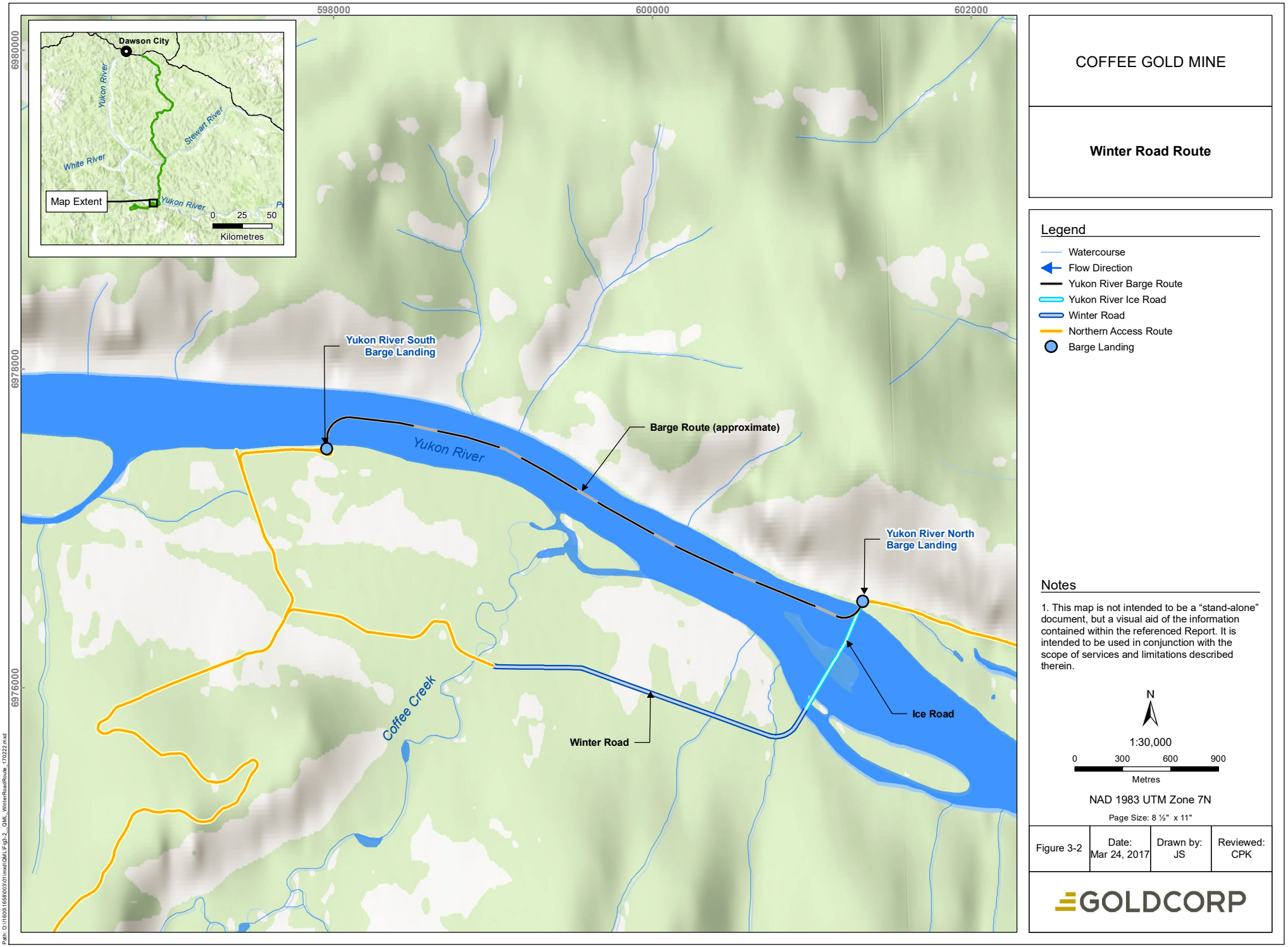
3.5 WINTER ROAD CONSTRUCTION

At the Yukon River crossing, the road will diverge into two seasonal routes. During summer operations, traffic will be barged from the Yukon River north barge landing to the Yukon River south barge landing, approximately 1,500 m downstream of the confluence with Coffee Creek. During winter operations, traffic will cross the Yukon River and continue onto a winter road directly across the river from the Yukon River north barge crossing. The winter road that climbs up from the bank of Yukon River extends approximately 1600 m before connecting to an all-season road approximately 660 m east of the Coffee Creek crossing (**Figure 3-2**). The road will minimize the distance travelled on ice roads over the Yukon River, minimizing the exposure of road users to safety concerns as well as reliability and maintenance issues associated with ice roads. Outside of riparian areas, the winter road prism will primarily consist of snow and ice with a maximum content of soils and organic matter of 20 percent (%). All cuts will be minimized outside of riparian areas; in riparian areas there will be no cuts and only clean snow and ice will be used to construct the prism. One watercourse crossing is proposed on the winter road (**Figure 3-2**), which will not require a structure. The crossing is likely to freeze solid, and will be infilled with clean snow and ice to meet road grade. For detailed engineering design for the winter road construction, refer to the drawings **Appendix XVI Detailed Road Design Drawings**.



COFFEE GOLD MINE

Winter Road Route

Legend

- Watercourse
- Flow Direction
- Yukon River Barge Route
- Yukon River Ice Road
- Winter Road
- Northern Access Route
- Barge Landing

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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3.6 BRIDGES AND CULVERTS

The NAR from the Sulphur-Dominion Junction to the Project site has 43 significant watercourse crossings (**Figure 3-2**). Of the 43 crossings, 19 are existing fords and 13 have existing structures in place. All existing structures will be upgraded. During road construction activities, the existing infrastructure will be utilized. The use of fords will be in accordance with the best management practices (BMPs) described in **Section 7.6**. For detailed engineering design for the water course crossings along the NAR, refer to the drawings **Appendix XVI Detailed Road Design Drawings**.

All proposed structures are designed to meet a British Columbia Lane Load – 625 Kilonewtons (BCL 625) load rating; accommodate B-Train truck-trailer configurations and expected aufeis flows; minimize disturbance to fish habitat and passage; and safely accommodate creek flows estimated for a 100-year flood event. A summary of all watercourse crossings can be found in **Appendix VI Watercourse Crossing Locations and Specifications.**

Fish and fish habitat assessments of drainages along the majority of the road were completed in 2015 (PECG 2016) and in 2016 (EDI 2016). Based on fish habitat characteristics and the presence of barriers, streams were designated as fish-bearing, potentially fish-bearing and non-fish bearing. Drainages that did not have stream like characteristics (a defined channel with alluvial materials) were designated as Non-Classified Drainages (NCD). Crossings along the proposed alignment include:

Standard non-fish stream culverts (including NCDs; see **Appendix VII Typical Non-fish Bearing Stream Culvert** for a typical non-fish stream culvert design)

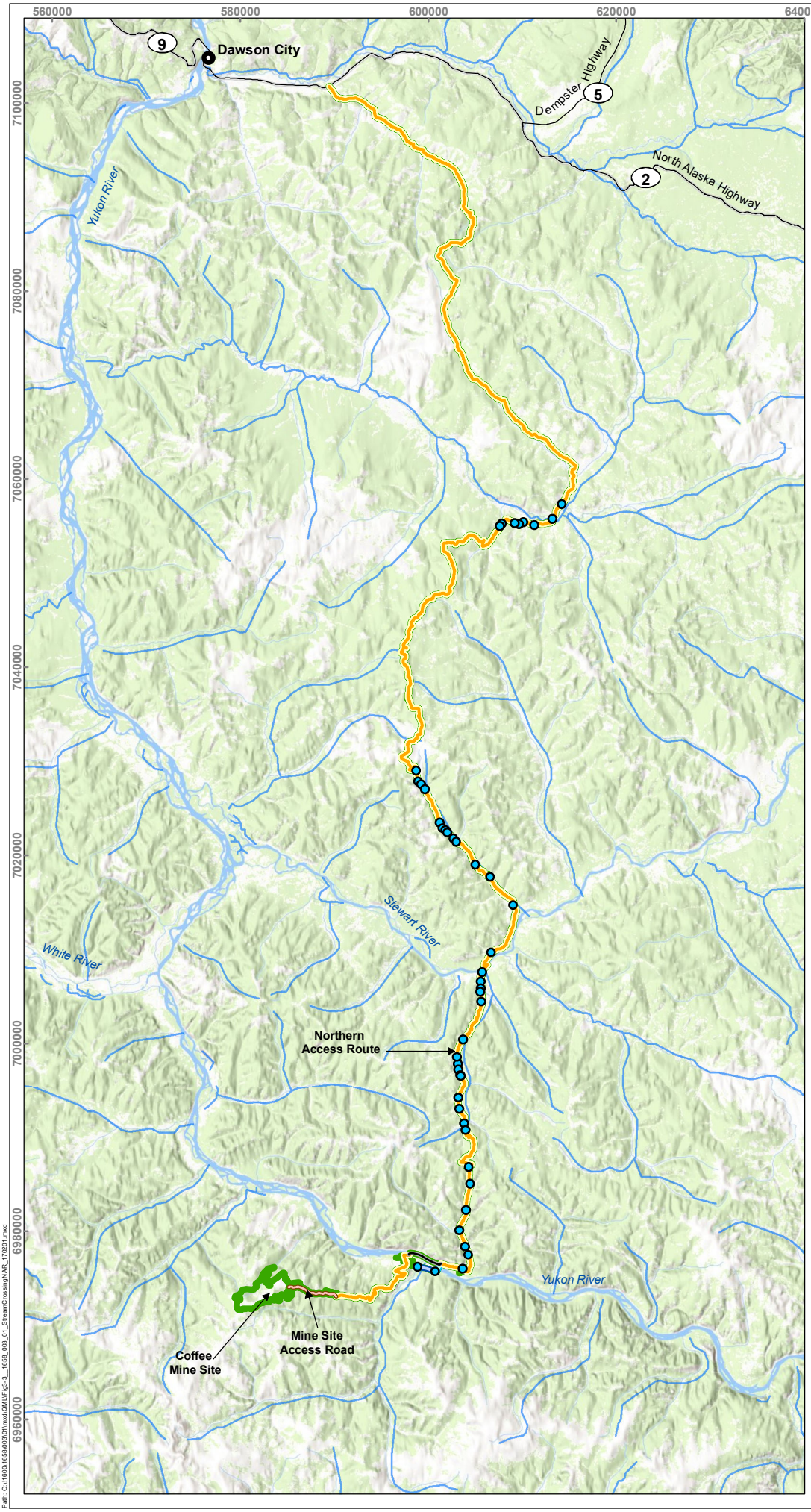
Embedded culverts in small, lower value, potentially fish-bearing streams (see **Appendix VIII Example Embedded Culvert General Arrangement Drawing** for an example of an embedded culvert general arrangement drawing)

All-steel portable bridges on geosynthetic reinforced soil (GRS) abutments (see **Appendix IX** for an example typical all-steel portable bridge general arrangement drawing) over larger watercourses or higher value fish habitat.

The 100-year flood event was estimated for each crossing site using the rationale (Thompson 2006) and regional methods (Riggs 1982), cross-sectional manning equation (Arcement and Schneider 1989), and USGS peak flow estimation tool for the Yukon River watershed (Curran et al. 2003). Estimates were adjusted for changes in localized watershed characteristics, such as infiltration rates and localized rainfall intensity. Site observations, existing structures, and historic high-water evidence were also used to estimate peak flow. It should be noted that the majority of the sites have significantly larger flow capacities than their expected peak flows. These sites are instead controlled by design characteristics such as minimizing

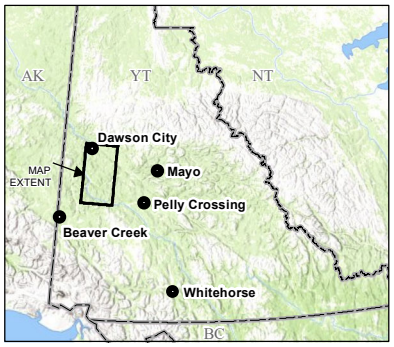
stream bank disturbance on fish-bearing streams and aufeis, applying embedment techniques on fish-bearing streams, and alignment limitations.

At all crossing locations, clearing widths will be reduced from the normal 30 m to 10 m. Where cut and fill slopes extend beyond the 10 m clearing width, clearing widths will extend 3 m past the cut or fill slope. Approaching the crossing site, ditch water will be redirected away from the stream by use of cross-drain culverts and off-take ditches. Instream work on all streams is to be minimized and completed during times of low flow. In addition, instream work on streams designated by aquatic biologists as having potential fish habitat (**Appendix VI Watercourse Crossing Locations and Specifications**) will occur within the freshwater work timing windows identified for Yukon (DFO 2014). As there is no identified salmon spawning in the vicinity of the road (culverts and bridges), the instream work timing window for Arctic Grayling will be used as a guideline for instream activities (i.e., ideally work will take place between July 1 and April 15). In the event timing windows cannot be observed due to operational constraints, work procedures will be altered to comply with the regulations outlined in the Federal *Fisheries Act*, 2012. This may require consultation between the Proponent and DFO. An environmental monitor will be on site for any work in or near a fish-bearing stream. The BMPs that will be followed for instream work are listed in **Section 7.0.**



COFFEE GOLD MINE

Stream Crossing Locations for Northern Access Route Overview



Legend

- Stream Crossing Locations
- Watercourse
- Highway
- Stewart River Ice and Barge Crossings
- Yukon River Barge Route
- Yukon River Ice Road
- Winter Road
- Mine Site Access Route
- Northern Access Route
- Project Footprint

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Figure 3-3	Date: Mar 27, 2017	Drawn by: JS	Reviewed: CPK

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3.6.1 STANDARD NON-FISH STREAM CULVERTS

Culverts at non-fish bearing watercourse crossings will be skewed to match the horizontal alignment of the creek. Installed culvert grades will match the slope of the ground at the crossing to ensure pipes are not perched at the outlet, reducing the likelihood of erosion and sediment deposition. Inlets and outlets will be armoured with 25-kg class riprap (BC MOTI 2011), as specified in the riprap gradation charts included in **Appendix VII Typical Non-fish Stream Culvert**. Riprap at the inlet of the culvert will be arranged to train flow through the culverts. Minimum fill depths over culverts will vary by culvert diameter and will be specified by the culvert manufacturer.

3.6.2 EMBEDDED CULVERTS IN FISH STREAMS

Culverts at fish-bearing watercourse crossings will be skewed to match the horizontal alignment of the creek. Culverts will be embedded a minimum of 40% their diameter and their grades will match the average slope of the creek's thalweg. A simulated stream bed will be constructed in the culvert to closely match the surrounding stream bed. Inlets and outlets will be armoured with riprap, and the culvert will be nested on a thin levelling course that meets the manufacturer's specifications (**Appendix VIII Example Embedded Culvert General Arrangement Drawing**). Minimum fill depths over culverts will vary by culvert size and will be specified by the culvert manufacturer. In addition to the road design, all embedded culverts include general arrangement drawings specific to each site.

3.6.3 ALL-STEEL PORTABLE BRIDGES

All-steel portable bridges will be pre-fabricated, single-span structures that provide clear-span access over undisturbed watercourses (**Appendix IX Example All-steel Portable Bridge General Arrangement Drawing**). The superstructure foundation will consist of pre-cast concrete pad with integrated ballast wall and GRS abutments. Construction methods will typically involve the following steps:

- Excavation of the abutments
- Layout of the abutments
- Construction of the abutments, including back-filling and compaction techniques behind the face of the GRS forms
- Placement of the concrete pad with integrated ballast wall
- Placement of the bridge
- Backfill.

In addition to the road design, all proposed bridges include general arrangement drawings specific to each site.

4.0 BARGE LANDING DESIGN AND CONSTRUCTION

The NAR requires barge crossings on both the Stewart and Yukon rivers. Barge landing sites are proposed on the north and south banks of each of the rivers. The barge landings have been individually designed to best accommodate the site characteristics unique to each site (refer to **Appendix X Example Barge Landing General Arrangement Drawing** and **Appendix XVI Detailed Road Design Drawings**).

Each barge landing will consist of a concrete ramp on which the barge docks. The approach angle of the ramp will be 15° from the orientation of the river bank, designed so that the barge is facing upstream during docking. The ramp will be on a 12% grade to help minimize stream bottom interaction. Foundations for the concrete ramp will be constructed with compacted, free-draining angular fill, and will be armoured with either riprap or cast-in-place concrete. Ideally, construction of the ramps will be completed at low water, with no excavation occurring within the water. In the event water levels or construction timing prevent works from being completed in the dry, work procedures will be altered to comply with the regulations outlined in the Federal *Fisheries Act, 2012*. This may require consultation between the Proponent DFO. *Best Management Practices for Work Affecting Water in Yukon* (Government of Yukon 2011) were consulted when developing the BMPs for the construction of the barge landings. See **Section 7.0 Best Management Practices** for more information. **Figure 4-1** through **Figure 4-4** provide typical plan, profile, and section drawings for the barge landing design.

Each barge landing will have an associated staging area that will enable traffic to easily embark and disembark from the barge. Each staging area will be sized appropriately for the location and designed to allow for a B-Train tractor-trailer configuration to back onto and drive off of the barge and then proceed onto the proposed road. Staging areas will allow for storage, maintenance supplies, and emergency response materials at all landing sites. Design constraints and topography have resulted in considerable earthwork requirements to establish barge landings on the north bank of the Stewart and Yukon rivers. To minimize earthworks and blasting required during construction, the staging area on the north banks have been minimized, making it necessary to locate fuel storage facilities and provide room for winter barge storage at the staging sites on the southern banks. Fuel for the barge will be stored in a single 20,000-litre double-walled tank, which will be placed a minimum of 30 m from the water line. The double-walled tanks will in turn be stored inside of high-density polyethylene-lined berms with a minimum capacity of 110% of the tank volume. The fuel tank will be periodically filled by fuel trucks travelling to site or road construction operations. A spill containment tray will be present underneath the fueling nozzles and during fueling, all petroleum hydrocarbon BMPs will be followed (see **Section 7.8**).

The fuel storage area will be sloped away from the river and will direct surface runoff to a 10-m by 5-m-wide settling pond. The inlet of the setting pond will include spill booms if any diesel contamination is suspected (as observed through surface sheen) to collect any hydrocarbons. At the outlet of the settling pond, a

600-millimetre (mm), will drain into an armoured channel. The reverse-slope culvert will help trap larger volumes of hydrocarbons in the event of a spill.

Equipment required for construction of the barge landings will typically include excavators, bulldozers, gravel trucks, drum compactors, blasting equipment, and graders. The riprap will be delivered to a storage location on-site or delivered as needed during construction of the ramp and staging area. Site access will be from the land side for all ramp construction purposes, to avoid excavating toward the river.

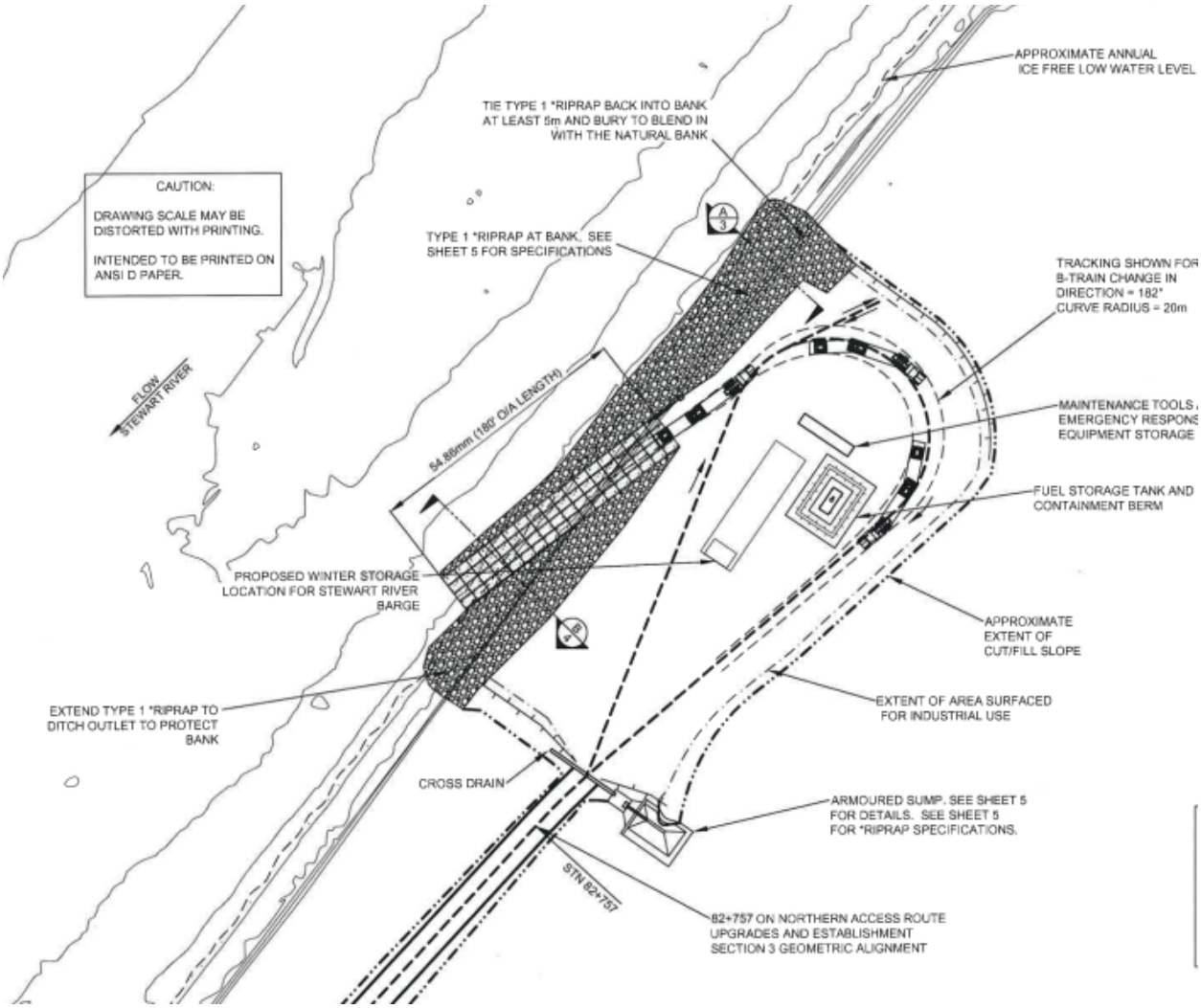


Figure 4-1 Barge Landing Plan

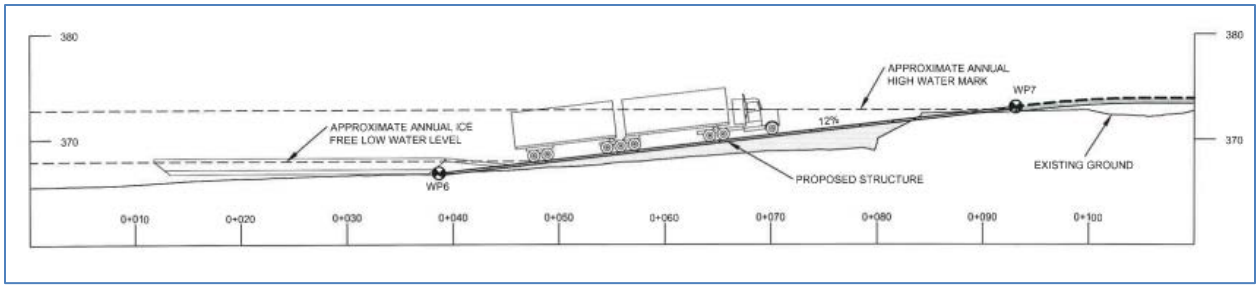


Figure 4-2 Profile View at Barge Ramp

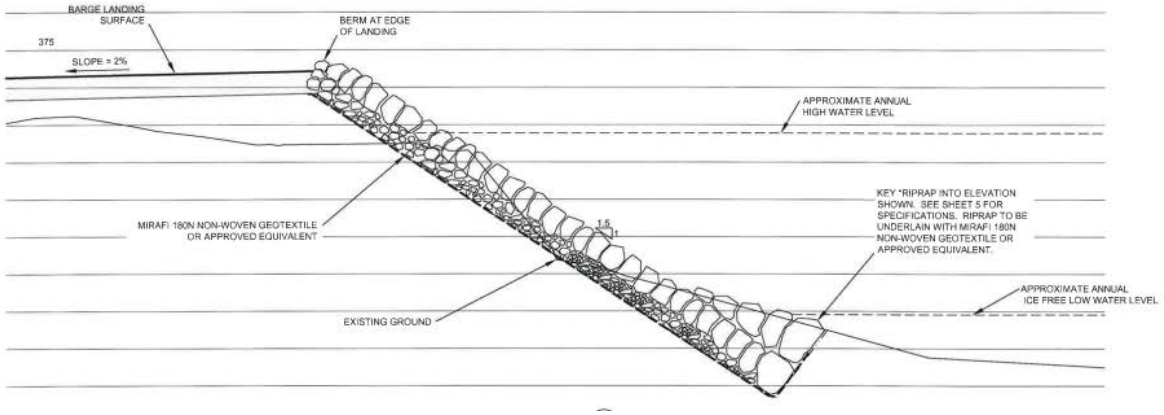


Figure 4-3 Typical Section through Barge Landing

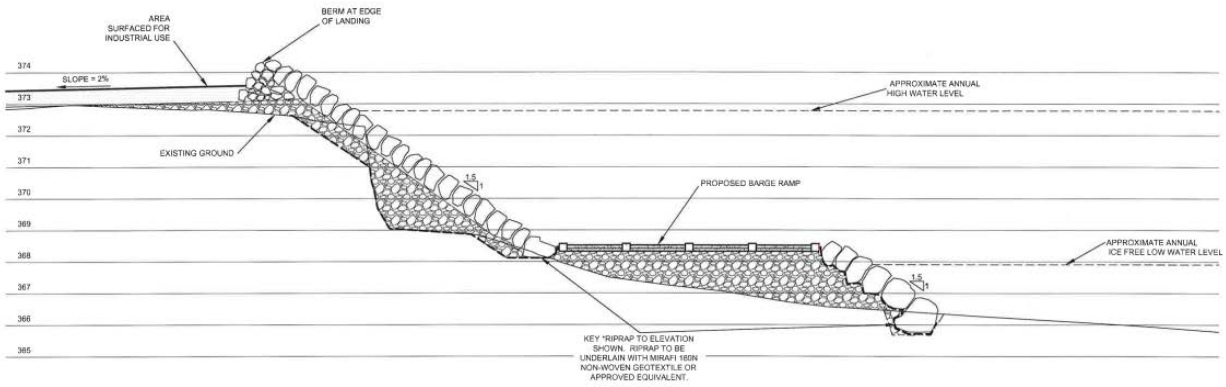


Figure 4-4 Typical Section through Barge Ramp

The Yukon and Stewart rivers are major fish-bearing rivers that are migratory corridors for both Chinook and Chum Salmon, and provide overwintering habitat for many fish species. Where possible, instream work will occur during the work timing window. On the Yukon and Stewart rivers, the instream work timing window is between June 1 and August 15 in recognition of Chum Salmon spawning in side channels downstream of barge landings (please note that Arctic Grayling spawning is not expected in the Yukon or Stewart rivers). There is potential that this work could be extended into the fall if water levels are low; the spawning areas are groundwater-fed and isolated from the flow of the main rivers during typical fall flow levels (confirmation of these conditions will be required before and during instream activities on these rivers). If instream work must occur outside of the work timing window, the Proponent will consult with DFO prior to initiation of the work. An environmental monitor will be on-site for the instream work. The BMPs that will be followed for instream work completed within the reduced risk timing windows are listed in **Section 7.0 Best Management Practices**.

4.1 STEWART RIVER NORTH LANDING

The barge landing will consist of new construction through a section of the river bank with shallow bedrock, deep near-shore water, and minimal stream bottom interference. The ramp will consist of precast concrete panels and a cast-in-place footing on the stream-side edge of the landing ramp, in order to retain and protect compacted granular fill and support the concrete panels.

The Stewart River north staging area will be constructed using conventional cut and fill techniques. All topsoil and organics will be stripped from the site and stored for later use in reclamation on the downstream side of the staging area, well back from the bank of the river. It is expected that an excess of granular material will be generated during the construction of the staging area. This material may be used in the construction of the road approach. This site is relatively small because it will not be used to store the barge in the winter.

4.2 STEWART RIVER SOUTH LANDING

The barge landing will require relocation of the existing barge landing, by moving the landing location approximately 650 m upstream along an existing road and away from a known historic site. The ramp will consist of precast concrete panels supported by riprap and free-draining granular fill. Continuous riprap stabilization of the bank 30 m upstream of the landing ramp and 50 m downstream of the landing ramp will be required.

Construction for the Stewart River south staging area will involve stripping the organic soil layer, importing any required subgrade material, compacting with a drum roller, and surfacing the site with 0.3 m of surfacing material. All topsoil and organics will be stored for later use in reclamation on the inland side of the staging area, well back from the bank of the river.

4.3 YUKON RIVER NORTH LANDING

The barge landing will require relocation of the existing barge landing downstream approximately 2.1 km to a location with deeper water and less river bottom interference. Although the area of the proposed new landing has historic lateral channel migration, it is at the extreme downstream reach of this migration and has over-riding attributes which drove the placement of the landing including water depth, private land, barge crossing length, and ice road length. To account for possible future channel migration, riprap is proposed outside the current channel that will continue to protect the landing over time.

The ramp will consist of precast concrete panels supported by riprap and free-draining granular fill. A GRS wall will be constructed through the landing site in a section with a large, steep, talus slope. Riprap stabilization of the wetland bank immediately upstream of the landing site will be required. Continuous riprap stabilization of the bank 50 m downstream of the barge landing ramp will also be required.

Construction for the Yukon River north staging area will involve stripping the organic soil layer, importing any required subgrade material, compacting with a drum roller, and surfacing the site with 0.3 m of surfacing material. All topsoil and organics will be stored for later use in reclamation on the inland side of the staging area or back along the approach road, well back from the bank of the river.

4.4 YUKON RIVER SOUTH LANDING

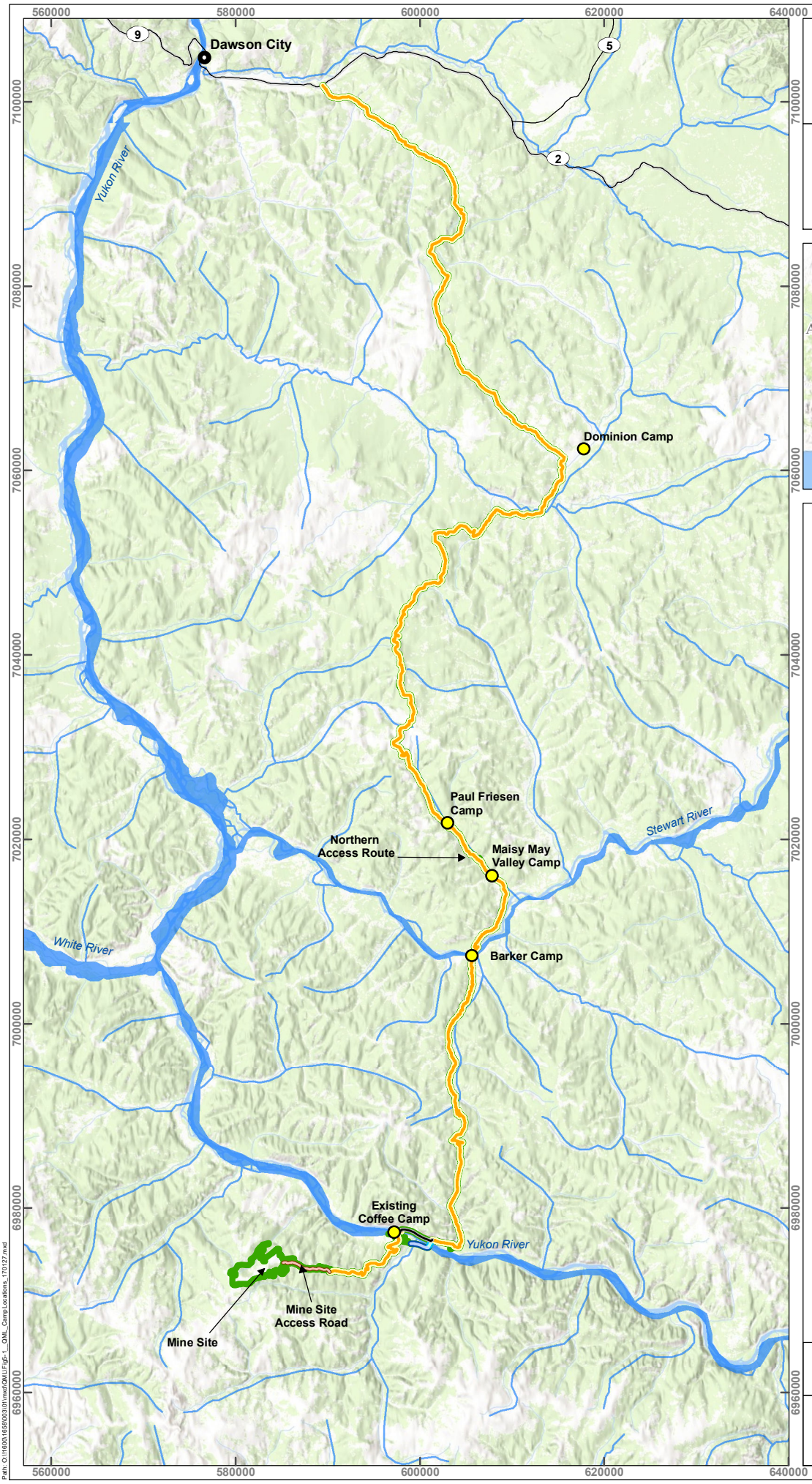
The barge landing will require relocation of the existing barge landing approximately 600 m upstream and away from the current Coffee Creek Camp structures. The ramp will consist of precast concrete panels supported by riprap and free-draining granular fill. Continuous riprap stabilization of the bank 30 m upstream of the barge landing ramp and 50 m downstream of the barge landing ramp will be required.

Construction for the South Yukon staging area will involve stripping the organic soil layer, importing any required subgrade material, compacting with a drum roller, and surfacing the site with 0.3 m of surfacing material. All topsoil and organics will be stored in the temporary organics stockpile at the Mine Site for later use in reclamation.

5.0 ACCESS TIE-IN AND STAGING AREAS

North of the Stewart River, road construction activities will be accessed by using the existing road network from Dawson. South of the Stewart River, access will rely on use of existing barge landings on the Stewart and Yukon rivers and the existing road networks. During construction, multiple small staging areas will be used. Staging areas will advance with road headings using pullouts, depleted borrow sites, spoil sites, barge landing sites, and suitable previously cleared areas within the road ROW. No additional clearing or road construction activities are proposed to create specific staging areas, which will be used to store heavy equipment, materials, and tools. The materials stored at these sites will include culverts and bridge components. Equipment will include excavators, bulldozers, gravel and rock trucks, blasting equipment, hiab trucks, water trucks, drum compactors, and graders. Where possible, accommodation for road construction workers will be at existing camps such as the Bedrock Mining Camp, the Maisy May Creek Camp, and the Barker Mining Camp. Existing camp locations can be seen in **Figure 5-1**. Where existing camps are unavailable, small temporary camps may be developed locally at borrow source locations to provide short-term accommodations for road crews.

The only year-round access control is expected to be at the Stewart and Yukon River crossings. Both of these crossings will be barge crossing locations during summer. During the winter, the Stewart River north, Stewart River south, and Yukon River north barge landing ramps will provide access to ice roads on the rivers. Access to the winter road from the Yukon River will be via its own approach ramp and is specified in the geometric road design.



COFFEE GOLD MINE

Camp Locations for Northern Access Route Construction Activities



Legend

- Licensed Camps
- Watercourse
- Highway
- Stewart River Ice and Barge Crossings
- Yukon River Barge Route
- Yukon River Ice Road
- Winter Road
- Mine Site Access Route
- Northern Access Route
- Project Footprint

Notes

1. This is a sample note.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Figure 5-1	Date: Mar 24, 2017	Drawn by: JS	Reviewed: LG

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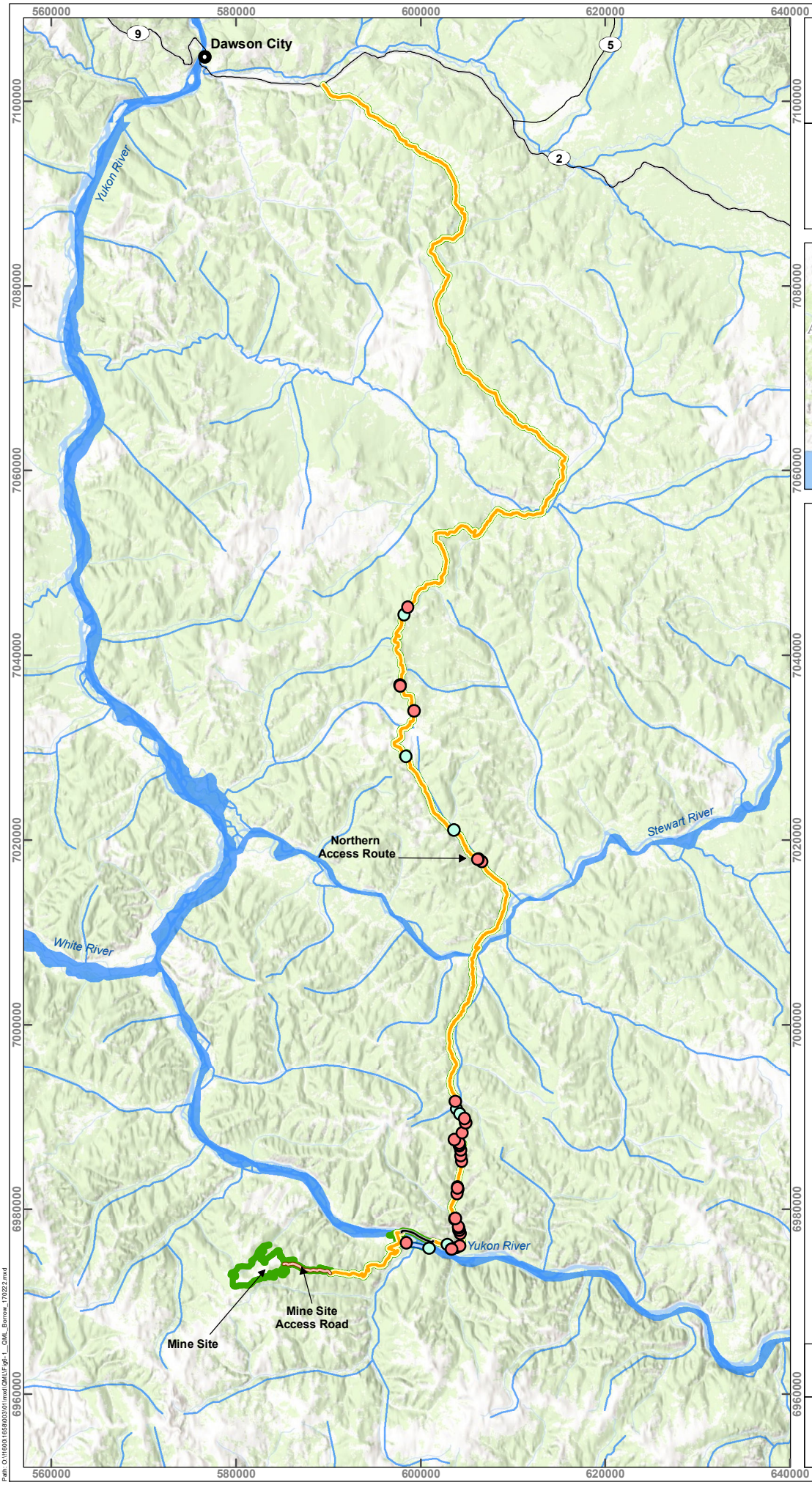
6.0 BORROW SOURCES

Borrow sources have been identified for subgrade material, surfacing material, and riprap (**Figure 6-1**). Subgrade sources are to be used to address a mass haul deficit for subgrade construction. Deficits are expected in areas where volume generated by conventional cut and fill construction is limited due to horizontal or vertical alignment constraints, or cut and fill construction is undesirable and overlanding (fill only embankment) is required. Multiple borrow sources were identified and sampled in the field (refer to **Figure 6-1** and **Appendix XI Borrow Site Locations and Specifications**. Geochemical and geotechnical testing determined the suitability of borrow sites). Please refer to **Section 10.0** for geochemical testing methodology, results, and monitoring plan, and **Section 11.0** for geotechnical testing methodology. All of the potential borrow sources outside of existing placer tailings are identified on the plans; however, only some of them will be required for construction. All sources are identified to give the construction contractor options to optimize productivity during construction depending on equipment and construction methodology. The identified sources for subgrade borrow materials are suitable for subgrade construction and will not require any sorting beyond stripping of organics before developing the site.

Surfacing material must meet assigned surfacing material gradation bands to be used on the NAR. Materials to be used as surfacing are resistant to weathering and include fluvial sand and gravel deposits and bedrock. Material at borrow sites identified as being suitable for surfacing may require alteration to ensure final material gradation bands are met; therefore, crushing or screening may be required at these sites.

Riprap sources include areas that contain shallow bedrock, talus, or rubble colluvium that is weather resistant and can produce coarse clasts. These sources will require sorting to meet assigned riprap specifications and may be sorted mechanically or by screening.



COFFEE GOLD MINE

Borrow Sources for Northern Access Route Construction Activities



Legend

- Watercourse
- Highway
- Potential Borrow Sources
- Potential Spoil Sites
- Stewart River Ice and Barge Crossings
- Yukon River Barge Route
- Yukon River Ice Road
- Winter Road
- Mine Site Access Route
- Northern Access Route
- Project Footprint

Notes

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The identified borrow sites are classified as quarries, pits, or tailings sources. Quarries are primarily composed of bedrock, and will be established by working into the back wall of the borrow site (the excavation will start at the road edge and work into the slope as material is required, ensuring minimal disturbed area). Quarry construction will require the site to be cleared and stripped of organic and surficial materials (stripped organics are to be stored for later use in reclamation at the edge of the borrow site). Once the bedrock is exposed it will be blasted or ripped, then sorted (if required), loaded, and hauled to the necessary location.

Borrow pits primarily target organic-free, surficial materials that are to be excavated with an excavator, loader, or bulldozer. Like quarries, they will be stripped of the organic soil layer (stripped topsoil and organics are to be stored for later use in reclamation at the edge of the borrow site) before use and are to be established by working into the cut slope. Once the site has been stripped, the targeted material will be excavated, sorted (if required), and hauled to the required location.

Once use of the borrow pit has concluded, the cut slopes will be reduced to match the cut slope specifications applicable to the ground type at the site to provide long-term stability of the site (see **Table 3-2**).

Borrow pits identified as tailing sources exclusively refer to tailings remaining from placer mining operations. All tailings sources consist of washed sands and gravels. Material sourced from these sites will not require stripping, only excavation, sorting (which may not be required), loading, and hauling. As a result of active placer mining taking place in many of the potential source areas, the volume and location of suitable borrow material is continually changing; consequently, no spatial component has been assigned for these sources.

All identified borrow sources have been considered as the largest possible required size. Volumes to be extracted from each source are not specified to allow the contractor a degree of flexibility (staying inside the designated sites) in managing how they meet final material gradation bands, and maximizing their productivity based on the equipment available.

The following volumes are expected to be sourced from borrow sites:

- Subgrade Material – 135,000 cubic metres (m^3)
- Surfacing Material – 223,000 m^3
- Riprap Material – 13,000 m^3.

7.0 BEST MANAGEMENT PRACTICES

Construction activities will be carried out in accordance with *Best Management Practices for Works Affecting Water in Yukon* (Government of Yukon 2011). In addition, the Proponent will implement DFO advice and direction that apply to the protection of water quality, including *Project Planning, Erosion and Sediment Control, Shoreline Re-vegetation and Stabilization, Fish Protection, and Operation of Machinery* (DFO 2013). The Proponent will implement BMPs to protect vegetation and water quality, minimize effects to fish and fish habitat, reduce erosion and sediment, and minimize interactions and disturbances to wildlife. Environmental BMPs will be discussed in relation to the watercourse type and associated environmental sensitivities:

- Large rivers and the side channels of large rivers
- Fish-bearing streams
- Non-fish bearing streams.

Work on the banks to construct the approach ramps for the barge landings, place the fill along the North Stewart back channel, and install bridges and culverts will ideally occur during periods of low water. This will reduce the introduction of sediment and eliminate the need for using equipment in the water, which will minimize the potential for effects on fish habitat and water quality. Where possible, instream work will be scheduled for the appropriate work timing windows.

In addition to selecting the appropriate stream crossing structures, the Proponent will also discuss and select erosion and sediment control BMPs for earthworks. Areas that are cleared of vegetation and cut and fill slopes can be significant sources of sediment. Appropriate controls during the Construction Phase will reduce or eliminate sediment that enters watercourses by increasing the stability of the slopes and preventing or reducing erosion, which will maintain water quality. With the proper controls during construction of the road, unintended effects to the surrounding air, water, and vegetation will be effectively minimized or eliminated. It should be that noted that if work must be completed outside of the timing windows and/or periods of low water, work procedures may need to be adjusted to ensure that work complies with the regulations outlined in the Yukon *Waters Act*, SY 2003, c.19, and Federal *Fisheries Act* 2012.

7.1 CROSSING STRUCTURES

The implementation of the BMPs begins with the selection of crossing structures (refer to **Section 3.6** for more information on construction methods). The goal is to select crossing structures that minimize effects to the aquatic environment, thus reducing risks to fish and fish habitat and influencing the permitting process and the need for developing and implementing habitat off-setting.

The construction of the NAR will intersect with the aquatic environment at numerous locations. Permits and approvals will be required for fish-bearing streams and streams where water use or alteration trigger a water licence. Depending on the crossing structure and stream, permits or authorization may be required under the Yukon *Waters Act*, SY 2003, c.19, or possibly under Federal *Fisheries Act* 2012. Work associated with fish-bearing waters that requires activities or placement of new materials within the high-water mark may require a fisheries offset plan. All necessary permits will be obtained prior to commencement of work on stream crossings. In the absence of Yukon-specific guidance for stream crossing structures for resource roads, the BC *Fish Stream Crossing Guidebook* (BC FLNRO 2012) was used to guide the selection of appropriate crossing structures. The document indicates that open-bottom structures (e.g., bridges or arched culverts) are preferred on high-gradient streams with marginal to critical fish habitat and closed-bottom structures (i.e., culverts) can be used on lower-gradient streams with marginal habitat. The gradient cut-off for closed-bottom structures in fish-bearing streams is 6%; if fish habitat is present and the stream gradient is greater than 6%, open-bottom structures must be used. When closed-bottom structures are used, they must be embedded by 40% of the culvert diameter or 0.6 m, whichever is greater, to incorporate stream bed material in the culvert (BC FLNRO 2012).

For the NAR, a number of different stream crossing methods will be utilized, including (refer to **Appendix VI Watercourse Crossing Locations and Specifications**):

- Barge crossings – for large rivers, used in place of permanent bridges
- Bridges – open-bottom structures on larger fish-bearing streams
- Embedded culverts – used on smaller fish-bearing streams
- Closed-bottom structures – used only on non-fish bearing streams.

7.2 LARGE RIVERS AND SIDE CHANNELS

The preferred crossing method for the larger rivers (i.e., Yukon River and Stewart River) is barge crossings. This watercourse crossing method limits the potential effects to the aquatic environment from shoreline and riparian modifications, and minimizes the potential for sediment runoff. Construction methods for the barge landing sites are described in **Section 4.0**.

The Yukon and Stewart rivers are major fish-bearing rivers that are migratory corridors for both Chinook and Chum Salmon, and provide overwintering habitat for many fish species. The North Stewart back channel likely provides refuge habitat during high-water events in the Stewart River. On the Yukon and Stewart rivers, the reduced risk instream work timing window is between June 1 and Aug 15 in recognition of Chum Salmon spawning in side channels downstream of barge landings (please note that Arctic Grayling spawning is not expected in the Yukon or Stewart rivers). This reduced risk window may be extended into the fall if water levels are low; the spawning areas are groundwater-fed and isolated from the flow of the

main rivers during typical fall flow levels (confirmation of these conditions will be required before and during instream activities on these rivers).

Construction methods are described in Section 4.0 for the barge landing sites and described in Section 3.4 for the North Stewart back channel. The following BMPs are required during the construction of the barge landings and work on the North Stewart back channel. Note that if work must be completed outside of the reduced risk window highlighted above, alterations to the BMPs below may be required.

7.2.1 USE OF CONCRETE AND GROUT

The approach ramps for each of the barge landings will be constructed using pre-cast concrete panels, which eliminates the need to use cast-in-place construction methods and avoids the potential introduction of wet concrete into the aquatic environment. To avoid the use of grout, or any wet concrete in or near the river, the pre-cast concrete panels will be mechanically connected.

7.2.2 BLASTING NEAR FISH-BEARING WATERS

Some blasting will occur near fish-bearing waters, particularly for the Stewart River north barge ramp, and a portion of the NAR from km 77+656 to km 77+872. Potential effects on fish as a result of blasting include mortality or behaviour change due to noise and vibrations, or blasting residue entering the water and affecting habitat. To minimize effects to the aquatic environment, blast planning and charge loadings will follow the requirements outlined in the DFO *Guidelines for Use of Explosives In or Near Canadian Fisheries Waters* (Wright and Hopky 1998), which has the following requirements:

- No explosive is to be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change (i.e., overpressure) greater than 100 kilopascals (kPa) (14.5 pounds per square inch (psi)) in the swimbladder of a fish.
- No explosive is to be detonated that produces, or is likely to produce, a peak particle velocity greater than 13 millimetres per second (mm•s-1) in a spawning bed during the period of egg incubation. Note that there are no known spawning areas near the proposed barge crossing locations (refer to the Coffee Gold Project Fish and Aquatic Resource Baseline Update 2016 (EDI 2016)).
- Blast mattresses must be used to prevent fly-rock from entering the river channel.

With the implementation of these BMPs no detectable effect to fish and fish habitat is expected.

7.2.3 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls will be required during construction of the ramps, adjacent staging areas, and the placement of fill along the North Stewart back channel to prevent sediment from entering the rivers. It is recommended that the following BMPs be used:

- Limit vegetation clearing to the footprint of the barge landing facilities, and clearly mark clearing limits prior to the commencement of clearing activities.
- Clearly mark clearing limits of ROW.
- Do not remove vegetation from outside the ROW, except to remove danger trees.
- When removing trees, direct trees into the ROW.
- When clearing, pull back material away from the river banks, not toward it.
- Retain and stockpile topsoil and organics for use in revegetation of the barge areas.
- After the ramp cut to final grade, install a sediment fence along the edge of the water to provide perimeter control.
- Cut back side slopes of the ramp to a stable angle. Spread topsoil and seed where exposed soil has not been armoured with riprap.
- Do not allow drainage from the road to enter the ramp area unless water first runs through a settling pond to capture suspended particles. Where possible; direct road drainage into vegetated areas or settling ponds via the use of offtake drains (i.e., the only water in the ramp area will be rainfall water that hits the concrete pads, the only exception to this will be at the barge landing on the North bank of the Stewart river where runoff water will travel through a settling pond, a reverse slope culvert and a wire basket with spill pads before emptying into a shallow ditch that parallels the concrete ramp).
- Following construction of the ramp and staging areas associated with each barge area, cover all disturbed areas with stockpiled topsoil and organics, and seed to promote establishment of vegetation and provide permanent erosion control.
- Once vegetation has been established and the site has been stabilized, remove the sediment fence.

With the implementation of these erosion and sediment control BMPs, no detectable effects to the surrounding environment are anticipated.

7.2.4 PLACEMENT OF RIPRAP

Plans for the barge landing areas call for riprap placement on the banks of the river to protect the barge ramps, vehicle turn areas, fuel storage, and other support facilities. To minimize the effects to fish habitat, the following BMPs are recommended:

- Limit vegetation clearing to the footprint of the barge landing facilities, and clearly mark clearing limits to the commencement of clearing activities.
- Pull back cleared vegetation away from the water.
- Time works to ideally occur at low water to minimize in-water works. Note that these works may occur outside low water, but may also require a change in the work procedures based on the site conditions and water levels.

- Re-contour banks prior to placing riprap; pull back all material above the top of bank and haul to a disposal area (i.e., do not push material into the channel).
- Ensure that riprap placed below the high-water mark is free of fines (sands, silts and clays).
- Ensure riprap is a mixture of size classes, rather than a uniform size class; this creates interstitial spaces that can provide habitat to small-bodied and juvenile fish.
- Incorporate woody debris into riprap placed in the North Stewart back channel to provide cover for fish. The woody debris features incorporated into the riprap design will provide more cover for fish than currently exists.

7.2.5 Site Isolation and Fish Salvage (If Required)

To reduce the risk of fish mortality as much as possible during construction works, site isolation and fish salvage measures will be employed if work cannot be completed in the dry. Site isolation and fish salvage are effective in preventing direct and indirect fish mortality as a result of construction activities; carefully removing fish from a work area and preventing water from contacting construction works will maintain water quality. Best management practices include:

- Isolate areas where riprap will be located in the wetted area with barrier nets, and remove any fish present from within the containment areas.
- If clean riprap is not available or bank modifications are likely to mobilize sediments, isolate the area within the fish barrier nets by using a silt curtain to prevent sediment from entering the river. Pump sediment-laden water out of the containment area and into flat vegetated areas, where sediment and water cannot reach the watercourse.

7.3 Fish Bearing Streams – Bridges

Bridges are sized so that the abutments do not impinge on the stream channel or flood plain (i.e., the bridges will not constrict the bankfull channel width). The bridge crossings are designed using all-steel portable bridges on pre-cast concrete cap beams, which avoids the use of any uncured concrete or grout near water bodies. Bridge elevation will be set to accommodate high-water flows (Government of Yukon 2011).

If the road approaches require fill on the floodplain, relief culverts will be placed to minimize damming effect during over-bankfull flood flows. Bridge construction methods are described in **Section 3.6.3**.

7.3.1 Erosion and Sediment Controls

Erosion and sediment controls will be required during construction of the bridges to prevent sediment from entering the streams. The following BMPs will be used:

- Minimize riparian disturbance
  - Clearly mark clearing limits of ROW
  - Do not remove vegetation from outside the ROW, except to remove danger trees
  - When removing trees, direct them into the ROW.

- When clearing, pull back material away from the river banks; do not push material toward riverbanks.
- Retain and stockpile topsoil and organics for use in erosion control and rehabilitation.
- Do not allow excavated materials and fill materials to enter the high-water channel when working adjacent to the stream banks.
- Where road ditches connect with the top of the bank, armour road ditches with rock to prevent erosion of the ditch bottoms.
- Cover and seed all disturbed areas with topsoil and organic material (where available; refer to **Appendix XII Seeding Recommendations**).
- Depending on slope gradients, additional erosion and sediment controls may be required to reduce slope length and gradient. Develop site-specific plans as needed as construction progresses .

With the implementation of these erosion and sediment control BMPs, no detectable effects to the surrounding environment are anticipated.

7.3.2 PLACEMENT OF RIPRAP

At the majority of bridge sites, riprap will be keyed in away from the wetted channel, avoiding effects to water quality and fisheries concerns. To minimize the effects to fish habitat while installing the riprap, the following BMPs will be followed:

- Recontour banks prior to riprap placement; pull back all material above the top of bank and haul to a disposal area (i.e., do not push material into the channel).
- Place clean riprap on the bank (noting that placement of the riprap precludes any potential for end-dumping into the river).
- Ensure that riprap placed below the high-water mark is free of fines (sands, silts, and clays).
- Ensure riprap is a mixture of size classes, rather than a uniform size class. This creates interstitial spaces that can provide habitat to small-bodied and juvenile fish.

7.3.3 SITE ISOLATION AND FISH SALVAGE

To reduce the risk of fish mortality as much as possible during construction works, site isolation and fish salvage measures will be employed at bridge sites where there is a risk to water quality or mortality. The following BMPs may be employed:

- Isolate areas where riprap will be located in the wetted area using barrier nets, and remove any fish present from within the containment areas.
- If clean riprap is not available or bank modifications are likely to mobilize sediments, isolate the area within the fish barrier nets by using a silt curtain to prevent sediment from entering the river. Pump sediment-laden water out of the containment area into flat vegetated areas where sediment and water cannot reach the watercourse.

7.4 FISH BEARING STREAMS – CULVERTS

Installation of culverts requires placement of the culvert pipe, bedding material and fill below the high-water mark. No fill will be placed in the water during culvert installations. General culvert construction methods are outlined in **Section 3.6.2**.

Culverts are sized to fit the characteristics of the stream. Properly sized and installed culverts will facilitate fish passage and prevent down-cutting of the stream channel on the downstream side of the culvert, which can result in perched culverts and barriers to fish movements developing over time. To reduce the risk of causing barriers to fish passage, the following BMPs will be followed:

- Do not install culverts on fish-bearing streams with gradients greater than 6% (BC FLNRO 2012).
- Size culverts so that the culvert spans the stream channel and does not constrict the channel (i.e., if the culvert diameter is less than the bankfull width it is likely too small).
- Embed culverts as per the recommendations identified by British Columbia Ministry of Forests, Land and Natural Resource Operations (2012) of 40% or 0.6 m, whichever is greater.
- Maintain stream bed profile (slope) through the culvert.

7.4.1 SITE ISOLATION AND FISH SALVAGE

All culvert installation sites will be isolated from flowing water before construction may commence. Methods for isolating the sites will depend on site configuration and flows at the time of construction. To reduce the risk of fish mortality as much as possible during construction works, site isolation and fish salvage measures will be employed. Direct and indirect fish mortality as a result of construction activities can be prevented by carefully removing fish from a work area as well as preventing water from contacting construction works, thus maintaining water quality. Ideally construction will occur in summer and fall when stream flows are low and easier to manage. Effective methods for isolating sites are identified as follows:

- Dam and pump or dam and fluming:
  - Maintain downstream flows and do not completely block stream flows.
  - If pumps are used to transfer water from one side of the crossing to the other (**Figure 7-1**), position pump inlets within the area where fish have been removed or they will be screened, according to the DFO Freshwater Intake End-of- Pipe Fish Screen Guideline (DFO 1995).
  - Use sand bag dams or portable structures such as Water-Gate™ or Aquadam™ when damming. Water-Gate has the added advantage of enabling integration of a flume into the dam.
- Create a temporary diversion channel, lined with high-density polyethylene (**Figure 7-2)**.

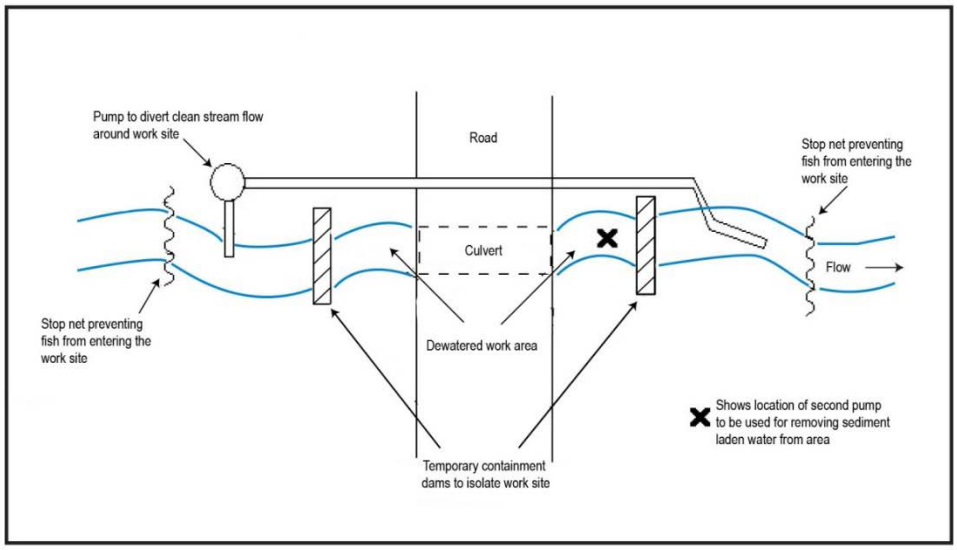


Figure 7-1 Site Isolation Using the Pump-around Method

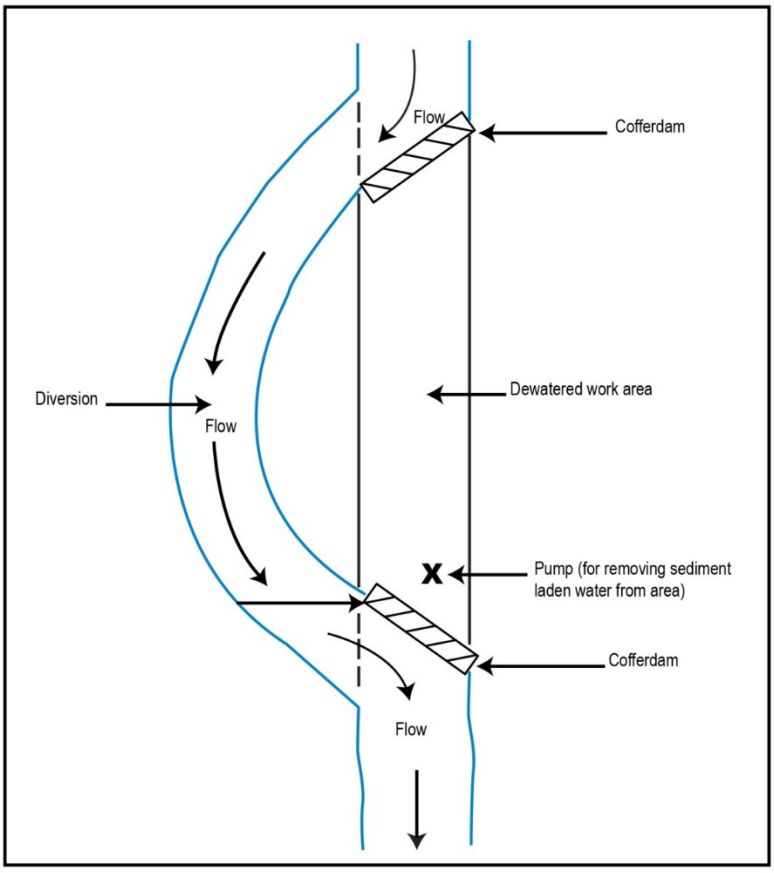


Figure 7-2 Site Isolation Using the Diversion Method

- Conduct a fish salvage to relocate fish out of the immediate work area prior to site isolation (assess the exact timing based on site conditions).
- Pump clean water from inside the isolation area out to downstream areas.
- Once construction is started, construct a sump on the downstream side of the work area to collect seepage water.
- Pump seepage water to flat, vegetated areas.
- If there is not sufficient space to pump sediment-laden water into vegetated areas (i.e., water could travel overland and enter the stream), pump water into temporary settling ponds.
- After placing the simulated streambed materials in the culvert and before removing the outlet sump, use a portion of the stream flow to wash the new streambed to minimize introduction of sediment into the stream.

7.4.2 EROSION AND SEDIMENT CONTROL

General erosion and sediment control will be required during installation or removal of culverts to prevent sediment from entering the streams. The following BMPs will be used:

- Minimize riparian disturbance:
  - Clearly mark clearing limits of ROW
  - Do not remove vegetation from outside the ROW, except to remove danger trees
  - When removing trees, direct trees into the ROW.
- When clearing, pull back material away from the stream banks; do not push material toward stream banks.
- Retain and stockpile topsoil for use in revegetation.
- Do not allow excavated materials and fill materials enter the high-water channel when working adjacent to stream banks.
- Where topography allows, use offtake drains to direct ditch flows to flat, vegetated areas before flows reach the stream.
- Where road ditches connect with the top of the bank, armour road ditches with rock to prevent erosion of the ditch bottoms.
- Cover and seed all disturbed areas with topsoil and organics (where available); refer to **Appendix XII** for seeding requirements.
- Depending on slope gradients, additional erosion and sediment controls may be required to reduce slope length and gradient. Develop site-specific plans as construction progresses.

With the implementation of these erosion and sediment control BMPs, no detectable effects to the surrounding environment are anticipated.

7.5 NON-FISH BEARING STREAMS – CULVERTS

Installing culverts on non-fish bearing crossings tends to result in fewer potential environmental effects that will need to be managed during construction. The principal objectives are to maintain water flow and water quality, as fish-bearing waters may occur a short distance downstream of most of the non-fish bearing crossings. General culvert construction methods are outlined in **Section 3.6.1**.

The type and amount of erosion control will be commensurate with the site conditions and the risk of sediment entering the stream. Upon completion of the crossing installation, all disturbed areas will be covered with topsoil and organics (where available) and seeded (refer to **Appendix XII** for seeding requirements).

7.6 FORDING EQUIPMENT

During construction, it will be necessary to ford equipment across some stream channels. This may be required when the stream is too wide for equipment to work safely from one side of the channel or when bridge abutments need to be constructed on the high-chain side (the side closest to the mine) of the crossing. When fording is required, the following BMPs will be followed to reduce the risk to the aquatic environment (Government of Yukon 2011):

- If ramps need to be cut to facilitate equipment movement, pull back material from the water; do not push material into the stream.
- If there is a risk of rutting, protect the stream bank and bed with matting (e.g., swamp mats, rubber tire mats) or logs:
  - Remove matting immediately after crossing
  - Do not allow matting or other protective materials to excessively constrict flow, or block fish passage.
- Inspect equipment to ensure that it is clean and free of hydrocarbon residue before allowing it to cross the stream channel.
- Conduct crossings at slow speed, with a steady pace to prevent bogging.
- Keep equipment moving, and do not stop in the channel.
- Do not allow equipment to work from within the wetted channel.
- If the ford is not within the NAR crossing footprint (i.e., adjacent to the final crossing, but within the ROW), stabilize the ford before equipment leaves the site:
  - Stabilize and restore banks to original shape, adequately protect them from erosion, and revegetate with native shrub or tree species
  - If spoil piles were created, re-spread them and seed the area.

7.7 CUT AND FILL SLOPES

Cut and fill slopes along road corridors can be a significant source of sediment to road ditches and streams. The following general guidelines are intended to reduce the risk of erosion:

- If sediment has the potential for reaching a watercourse, install silt or sediment fencing close to the base of the cut or fill slope.
- Reduce slope lengths by benching or installing straw wattles along slopes.
- Track walk slopes before seeding, so that track marks are horizontal across the slope (slows water velocities and promotes infiltration).
- Hydroseed steep cut slopes (refer to **Appendix XII** for seeding requirements).
- Alternatively, steep slopes may require biodegradable erosion control blanket, especially if seeding does not occur until late summer or fall period.
- Seed fill slopes if run-off has the potential of reaching stream channels.

7.8 PETROLEUM HYDROCARBONS

To reduce the risk of petroleum hydrocarbons entering the aquatic environment, the following BMPs are required:

- Do not store petroleum hydrocarbons within 30 m of top of bank (Government of Yukon 2011).
- Use double-walled fuel storage tanks.
- Place storage tanks with aggregate volume of greater than 4,000 litres (L) in an area with an impermeable liner and bermed to contain 110% of the stored volume (see Government of Yukon 2011 for berm construction specification).
- Ensure that petroleum hydrocarbons stored in drums have secondary containment and are covered to prevent rainfall and snow from filling the containment area.
- Fuel and maintain mobile equipment at least 30 m from watercourses.
- In some cases, it is not feasible to move large cranes back from the streams or rivers to refuel. If crane fuelling is required to occur within 30 m of a watercourse, ensure that a spill kit is present, place a drip tray under the equipment, and ensure two people are involved in the fuelling operation, one to monitor the tank level on the equipment and the other at the fuel truck to switch off the pump. At no time are fuel trucks to fuel equipment on temporary work bridges.
- Ensure spill kits are present in all mobile equipment, and locate large kits at fuel and lubricant storage areas.
- If a spill occurs, contain, clean up, and report spill according to spill reporting protocols. Under the Yukon *Spills Regulations*, the release into the environment of a hazardous material above the reportable quantities or any release into a watercourse requires immediate notification of the 24-hour Yukon Spill Report Center[1] line (envprot@gov.yk.ca) at (864) 667-7244.

[1] The Spills Regulations state in section 4, “For the purposes of section 133 of the Act, a report to the Yukon Spills Report Centre will be considered a report to an environmental protection officer”.

It may be necessary to operate small gas engine power equipment near water, principally water pumps used in site isolation during culvert installation and for dust control practices. The following BMPs will be used to minimize risk of petroleum hydrocarbons from entering watercourses:

- Locate pumps above the high-water mark whenever possible.
- Place pumps in drip trays.
- Fuel equipment using hand-held fuel containers (jerrycans).
- Store pumps at a minimum of 30 m away from a watercourse when not in use.
- Store fuel containers at a minimum of 30 m away from a watercourse (i.e., do not leave jerrycans next to the pumps).
- Inspect pumps that are in daily use.

7.9 VEGETATION MANAGEMENT

The NAR has been designed to maximize the use of existing roads and minimize the amount of disturbance associated with the road ROW. Some clearing and grubbing will be required to increase the width of existing roads to accommodate the design specifications of the NAR and build new sections of road. Where vegetation clearing is required, the following measures will be taken:

- Clearly mark clearing limits with paint and/or flagging ribbon prior to the commencement of works.
- Mark known locations of rare plants and sensitive habitats (e.g., wetlands) on all construction drawings and buffers established around these areas.
- Do not permit machines or personnel outside the clearing limits or in buffer areas.
- In riparian areas, reduce clearing widths to 10 m, or 3 m beyond extent of the cut or fill slopes, whichever is greater (compared to a 30-m-wide corridor in other areas).
- Fall trees into the ROW. Do not fall trees outside the road ROW, except to remove or top danger trees to prevent hazards to workers and equipment.
- Windrow or pile large trees and woody shrubs for chipping and mulching, so that wood mulch will be available for erosion control and future reclamation activities (do not burn woody debris).
- In areas where site preparation requires the stripping of organic and/or mineral soil layers, retain these materials for future reclamation activities. Construct any soil stockpiles to limit erosion by wind or rainfall, and prevent the establishment of invasive species by
- Managing stockpile size and configuration
- Covering and/or seeding stockpiles as soon as practical.
- Baseline surveys did not locate any rare plant species (listed under the Canadian *Species at Risk Act* (SARA), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or the Yukon Conservation Data Centre (CDC) Track List) along the NAR; however, given the potential for rare pants, conduct pre-clearing surveys in ecosystems that have a high potential for supporting plant species listed under SARA, COSEWIC, or the CDC Track List. If a rare plant species is

discovered, clearing and construction in the immediate vicinity will stop and the Environment Department will develop and implement a mitigation plan to minimize effects on a case-by-case basis. Any rare plant observations will be reported to the Yukon CDC.

- Baseline surveys documented invasive plant populations along some existing sections of the NAR. To limit the further spread of invasive plant species along the NAR:
  - Minimize the disturbance of native vegetation along roadsides to the extent possible
  - Where appropriate, revegetate exposed soils as soon as practical to limit potential for invasive plant establishment
  - Inspect quarry and borrow sites to ensure they are free of invasive species prior to transport of materials to other areas
  - Ensure that straw matting or similar materials used for erosion control purposes are limited to materials that are free of invasive species.
  - Whenever practical, construction activities will avoid disturbing areas that are within or adjacent to existing invasive plants populations; if work must occur in these areas, activities will be conducted in advance of seed development to minimize the potential for spreading seeds, and movement of equipment between infested and non-infested areas will be restricted to the extent possible.
- Use locally collected seed for revegetation. If sufficient volumes of locally-collected seed are not available, augment the local supply with non-agronomic seed mixes based on native species observed in the area or based on the seeding guidance outlined in **Appendix XII**. If using seed mixes, ensure they are certified invasive-free.
- When clearing vegetation, consider the potential fire hazard, and engage in measures to reduce fire hazards. Ensure crews have fire suppression equipment available when wildlife danger ratings are moderate or higher; curtail activities such as clearing when danger rates are extreme.
- When required, implement dust control measures in and around quarry and borrow sites (refer to **Section 7.11**).

7.10 WILDLIFE MANAGEMENT

To reduce effects to wildlife during construction, the following measures will be implemented:

- Where practical and not a risk to human safety, implement a stop-work policy when wildlife in the area may be endangered (i.e., risk of physical injury or death) by the work being conducted.
- Strictly enforce Proponent policies regarding human-wildlife interactions, including:
  - Prohibit hunting of wildlife at all times by all employees and contractors while present in the Project area on behalf of the Proponent
  - Prohibit feeding, harassing, or approaching wildlife
  - Immediately report any wildlife acting defensively, showing signs of human habituation, or acting aggressively to the Project Manager
  - Report and document all wildlife sightings, wildlife mortalities and near-misses.

- Follow road operational guidelines (e.g., speed limits, wildlife right-of-way policies etc.) during construction (refer to **Appendix 31-B Access Route Operational Management Plan**).
- Enforce proper waste management at all camp and work sites including field offices, crew eating areas, and fueling areas.
- Store fuel and other wildlife attractants to minimize wildlife access.
- Time vegetation clearing and grubbing to occur outside the migratory birds nesting period. If clearing and grubbing must occur during the nest period (May 1 to August 15), conduct a breeding bird nest survey prior to clearing. If nests are discovered with eggs and/or chicks, avoid these areas and establish a no-disturbance buffer around the nest until the young birds have left the nest. Refer to **Appendix 31-F Wildlife Protection Plan** for details on use of no disturbance buffers.
- Mark wildlife habitat features and sensitive habitats as sensitive on all construction drawings, and establish appropriate buffers.
- Time construction activities to avoid sensitive habitats during sensitive times. If construction activities must occur during a sensitive period, implement additional monitoring and mitigation. Sensitive habitats and time periods include:
    - Fortymile Caribou movement areas during migration (October to November, February to April) when Fortymile Caribou are present
    - Moose congregation areas during post-rut (late-October to December)
    - Late winter Caribou (if Caribou are present) and Moose habitat (February to April)
    - Thinhorn Sheep habitats along the Yukon River cliffs during lambing (mid-May to mid-June)
    - Specific wildlife habitat features including raptor nest sites, Sharp-tailed Grouse lek sites, Bank Swallow nesting colonies, bear, wolf and Wolverine den sites, mineral licks and bat roosts. Wildlife habitat features will be dealt with on a case-by-case basis.
- Conduct pre-clearing surveys for bat roosts in in areas with a high potential to support bat roosts (i.e., habitats below 1,000 m in elevation with suitable rock faces/cliffs or old forest with large trees (average dbh >25 cm)).
- Several cliff-nesting raptor nests (including nests of Golden Eagle and Peregrine Falcon) have been identified along the proposed road alignment. Ensure known nests remain intact and are not damaged by construction activities. If construction activities overlap the nesting period for these species, check raptor nests within 1 km of the road for occupancy, and develop a construction management plan for working near occupied nests.
- Where road embankments may pose a barrier to wildlife movement (e.g., steep banks >2 m high and extends for >500 m or is located in an area of known wildlife movement), construct wildlife crossings, including trails that traverse the cuts and fills to reduce the grade that animals must climb or descend. The exact design of wildlife crossings will be site-specific, but will incorporate the following guidelines where feasible:
    - Wildlife crossings will be designed to have a gradual grade (e.g., a 5:1 slope).
    - Crossing surface will be smooth and compacted to allow for solid footing, and constructed of finer fill materials (e.g., crushed rock 100 mm or less in diameter).

7.11 DUST MANAGEMENT

The amount of dust generated along a road is dependent on the dryness of the road surface; the number, weight, and speed of vehicles; and maintenance of the driving surface. Regular grading of the road combined with the addition of granular material to the driving surface will be needed, and will improve road safety while reducing the amount of dust being generated during access road construction and operation.

The Proponent will periodically drive the road to identify and address dust emission sources or issues. In areas or times identified by the Proponent as being prone to high dust levels, where safe road visibility is impaired, or in areas where dust deposition is affecting vegetation (including browse for ungulates) wildlife habitat, fish habitat, or water quality, the Proponent will arrange mitigation measures as appropriate. This could involve actions such as reducing vehicle speeds, grading of the road surface, placement of new coarser topping, or watering of the road surface. The use of chemical dust suppressants is not expected for the NAR; however, if there are safety concerns, chemical dust suppressants may be used. If watering of the road surface is required, then water will be pumped from local rivers and creeks. The maximum estimated amount will be 100 m^3 per day, and pump intakes will be screened to prevent the entrainment of fish.

The primary dust control measures to be taken are identified as follows:

- Implement maximum speed limits of 50 km/hr for all mobile equipment to minimize the entrainment of fugitive road dust in the turbulent plume created by vehicle passage.
- Roads and other unpaved, exposed areas are to be well maintained by the site support equipment (e.g., graders, dump trucks, loaders and a compactor) and watered as necessary using a watering truck equipped with spray bars (the water truck) to suppress dust generation.
- Record and respond to any nearby land users' complaints of dust effects in a timely manner.
- Maintain complete and accurate records of all dust suppression activities and inspections.

Should inspections by the Proponent or complaints from nearby land users indicate that the primary dust control measures are ineffective, the relevant contingency control measures below may be implemented to further reduce the dust emissions from the Project.

- Increase the frequency and intensity of water application to roadways or other unpaved areas that have the potential to generate excessing levels of fugitive dust.
- If watering activities prove ineffective in reducing the fugitive dust emissions from a roadway or other unpaved area, add or employ chemical dust suppressants to improve dust suppression where necessary.
- Where access roads adjoin public highways, add a layer of gravel to the surface to minimize the available fine material available to be tracked on the highway.
- Stop work that generates excessive dust until it can be controlled or until weather conditions permit.

8.0 MONITORING

With the implementation of BMPs during construction of the NAR, unintended effects to the water, vegetation, soil, and air will be effectively minimized or reduced. Monitoring activities that will be undertaken during the construction of the NAR includes the following:

- Water quality monitoring of turbidity to assess performance of site isolation and erosion and sediment control measures. Turbidity will be measured upstream and downstream of construction works in streams and rivers. Additional erosion and sediment control measures will be employed if turbidity levels are above the applicable guidelines:
- Turbidity – maximum increase of 8 NTUs from background levels for short-term (24-hour) period.
- Fuel and hazardous materials storage inspections to verify effectiveness of containment measures.
- Visual assessment of cut and fills for signs of erosion, particularly after heavy rain fall events. Additional erosion and sediment control measures will be installed if visual assessment shows that they are required.
- Where blasting is required near sensitive areas (i.e., adjacent to the Stewart River or near documented cliff-nesting raptors), monitoring pressure and noise will be completed during blasting operations to verify that blasting noise and pressure is below recommended thresholds.
- Monitoring wildlife occurrence along the road corridor during construction.
- Inspections of field offices, crew eating areas, and refueling locations for housekeeping purposes and presence of wildlife attractants.
- Post-construction assessment of vegetation establishment and erosion and sediment control prescriptions. The performance standards for vegetation establishment and site stabilization are included in **Appendix 31-C Conceptual Reclamation and Closure Plan**.

In the event that performance standards are not met, the triggers and thresholds for additional monitoring or mitigation measures during operations will be included in an Erosion and Sediment Control Plan (summarized in **Section 31.0 Environmental and Socio-economic Management Program**), Wildlife Protection Plan (**Appendix 31-F**), and the Conceptual Reclamation and Closure Plan **(Appendix 31-C)**.

9.0 ACCESS ROUTE CONSTRUCTION QUALITY ASSURANCE, AND QUALITY CONTROLS

Quality assurance and quality control (QA/QC) protocols will be implemented to ensure all roadwork and barge landing construction activities minimize any adverse environmental effects; construction activities are performed safely; and the final roadway is safe to travel at the specified design speeds. To make certain these objectives are met, the following actions will be taken:

- Ahead of all construction activities, survey crews will field mark the designed road.
- During road construction, two to three full-time engineers or engineering designates will perform inspections of road construction techniques, monitor borrow and spoil sites, refresh survey markers, and ensure adherence to the design. Road construction inspections will be completed by the engineer or engineering designate at intervals determined to be appropriate by the engineer or engineering designate, depending on the complexity of road sections and the needs of on-going crew oversight.
- During crossing, barge landing, and work along the Stewart River back channel construction, an engineer or engineering designate will be on site at all times. They will ensure the designs are followed; appropriate construction techniques are utilized, and will ensure all components are in an acceptable condition and meet specified standards when installed.
- During road, crossing, and barge landing construction, the engineer or engineering designate will be responsible for coordinating site inspections and site visits with all necessary additional experts (e.g., biologists, environmental monitors, geochemists, geocryologists, geotechs).

10.0 METAL LEACHING AND ACID ROCK DRAINAGE MANAGEMENT PLAN FOR ACCESS ROUTE DISTURBANCES

10.1 GEOCHEMICAL EVALUATION

The Proponent undertook a preliminary assessment of the risk of metal leaching and acid rock drainage (ML/ARD) associated with construction of the NAR. Details of the methods, sample location, and analytical results are summarized.

A total of 60 samples were collected in September 2015 along potential alignments being evaluated for the NAR. Of the 60 samples, 38 samples are located along the finalized NAR alignment. Samples were generally collected at 2-km to 4-km intervals in areas that were accessible by truck or utility terrain vehicle, with lower sampling frequency in difficult-to-access areas (i.e., no road and limited helicopter landing sites). This sample set includes 31 samples from bedrock units, four samples from alluvium, and three samples from placer mine material. Analytical testing of these samples consisted of acid-base accounting (ABA), solid-phase element determination by aqua regia digestion, and shake flask extractions (SFE).

Bedrock along the road is predominantly composed of schists and gneisses of the Nasina Unit (DMN) and Pelly Gneiss Suite (DMPW). Short sections of the northern portion of the NAR also traverse the metamorphosed pelitic and volcanic rocks of the Klondike Schist Assemblage (CPK) and the volcanic rocks of the Carmacks Unit (uKC). The entire area is blanketed by surficial material, including weathered bedrock and colluvium. Alongside sections of major watercourses (i.e., Indian River, Eureka Creek, Maisy May Creek, and Barker Creek) are deposits of disturbed alluvium or placer mine tailings. Where possible, in-place bedrock samples with fresh surfaces were collected because relatively unweathered rock is likely to pose a higher risk of ML/ARD compared to highly weathered alluvium or colluvium material.

The NAR ML/ARD assessment found that geologic material sampled from along the road alignment generally lacked sulphur (S) mineralization (total sulphur range <0.01 to 0.41 wt.%; median <0.01 wt.%). Samples contained variable neutralization potential (NP) (sobek NP of 3.7 to 38 kg$CaCO_3$/tonne) and circumneutral to alkaline paste pH values (6.4 to 10; median 9.0).

The potential for ARD is assessed using the following criteria:

- Where the total S content is <0.02 wt.%, the sample is classified as non-reactive.
- Where the total S content is ≥0.02 wt.% and the sobek-NP/acid potential (AP) ratio is greater than 3, the sample is classified as non-potentially acid generating (non-PAG).
- Where the total S content is ≥0.02 wt.% and the sobek-NP/AP ratio is less than 1, the sample is classified as PAG.

The ABA results classified by these criteria are summarized in **Table 10-1**. A total S cutoff of <0.02 wt.% is used to define non-reactive samples. This is considered highly conservative given that much of the rock is in a highly weathered state. Due to the lack of sulphur mineralization and the presence of NP, rock samples collected from along the road alignment are classified as either non-reactive or non-PAG, with only two samples classified as having an uncertain acid generating potential.

Table 10-1 Acid Rock Drainage Classification of Road Alignment Acid-base Accounting Samples

Group	Total Number of Samples	ARD Classification (N Samples)			
		Non-Reactive	Non-PAG	Uncertain	PAG
uKC	4	4	0	0	0
CPK	1	0	1	0	0
DMN	17	11	5	2	0
DMPW	9	7	2	0	0
alluvium/placer	7	4	3	0	0

Metal leaching potential was assessed by solid metals analysis and water-soluble metals measured by SFE. Solids analysis shows consistent enrichment of arsenic (As), bismuth (Bi), and selenium (Se) across the road alignment. In general, metal enrichment was not associated with any single rock unit or road section, with the exception of along the Stuart River where three consecutive samples had more than 10 times the average continental abundance (Price 1997). Shake flask extractions conducted on these samples produced As concentrations below Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (0.005 mg/L) (CCME 2007), indicating that As is not present in a readily water soluble form. Overall, results indicated that samples collected along the road alignment have a low metal leaching potential.

Geochemical analysis shows that material encountered along the proposed road alignment presents a low ML/ARD risk, and will be acceptable for road construction. Additional samples will be collected from large cuts and borrow sources that have not been previously sampled as they are identified to verify this result.

10.2 METAL LEACHING / ACID ROCK DRAINAGE MONITORING PLAN FOR ACCESS ROUTE DISTURBANCES

Geochemical monitoring will take place before and during road construction to confirm that geologic material excavated from large cuts (i.e., greater than 4,000 m^3) and subgrade borrow sources (quarries) does not pose an ML/ARD risk. Ensuring that geologic material disturbed during construction does not pose an ARD risk will also address metal leaching potential, since metal leaching potential is most pronounced in acid-generating rock.

One composite sample comprising 2 kg to 3 kg of rock or 4 kg to 6 kg of surficial material (alluvium / colluvium and placer tailings) is to be obtained from each large cut, amounting to greater than 4,000 m^3 and subgrade borrow site along the proposed access road alignment. The composite sample is to be collected from the primary material. Analytical test work to be conducted as part of this monitoring program is shown in **Table 10-2**. Standard operating procedures for sample collection and analysis are provided in **Appendix XIII Standard Operating Procedure Confirmatory Metal Leaching / Acid Rock Drainage Sampling for Coffee Creek Access Road Development**.

Table 10-2 Summary of Sampling Frequency and Analytical Parameters Monitored for Characterization of Mine Rock

Group	*Regular Sampling*			*QAQC*	
	Sample Type	Frequency	Parameters	Frequency	Parameters2
Access Route Borrow	composite	1/large cut or borrow[1]	Total S, Sobek NP, aqua regia metals, SFE	1/10 samples	ABA, aqua regia metals, SFE

Notes:

1. Excavation of bedrock or alluvial material >4,000 m^3 (Onsite, 2016).
2. Full suite of ABA includes paste and rinse pH, total S, sulphate-S, sulphide-S, total and inorganic C, and Sobek NP.

In order to maintain QA/QC of monitoring data, duplicate samples will be periodically collected and submitted to an analytical laboratory. One QA/QC sample will be taken for every 10 samples collected, with sample splits taken from the ground-homogenized samples. In addition to parameters monitored as part of the regular testing program, QA/QC samples will be analyzed for additional ABA parameters as outlined in **Table 10-2**.

Acid-base accounting results will be evaluated against the criteria described in the previous section. If PAG material or material with an uncertain acid-generating potential is identified, excavation will be suspended within 50 m of the location of the sample of concern while a geochemical assessment of rock in the general vicinity is undertaken. A minimum of two additional composite samples will be obtained from the same area for analysis. If analyses of additional samples indicate that the surrounding rock is non-PAG and the PAG/uncertain sample is an anomaly, operations will be resumed. If additional samples are deemed to be PAG or to have an uncertain acid generating potential, the suspension will remain while additional geochemical characterization is undertaken to define the extent of PAG material or alternate sources of borrow material will be identified.

In the event that further testing determines that certain areas are potentially acid producing, several possible mitigation measures may be employed to minimize the development of ML/ARD along the proposed road alignment. Ideally, material with high acid-generating potential will be avoided during road construction, in favour of selecting an alignment and construction materials that have a low acid-generating potential.

In cases where this is not possible, the two main options are (1) mixing potentially acid-generating material with acid-consuming material and (2) placing the material away from important aquatic ecosystems. The first option allows for neutral pH to be maintained in runoff, which will result in a lower concentration of metals and other geochemical parameters. The second option requires placing any potentially acid-producing material in a location where the pathway rating is low (i.e., in an area where there is little or no connection between the stressor and the receptor), reducing the concentrations of ML/ARD products in the aquatic environment. Both of these options will minimize effects on the aquatic ecosystem.

11.0 GEOTECHNICAL TESTING

The proposed road alignment was assessed via walking and driving traverses of the length of the proposed road alignment. Observations of surface expression, ground morphology, vegetation types, surficial materials, and bedrock lithology were recorded. Subsurface sampling consisted of excavation of shallow (<0.8 m) hand-dug test pits as well as observations of existing road cuts in the area. No machine-dug test pitting or deep subsurface investigation was completed.

Geotechnical data was also collected by Tetra Tech EBA (EBA) and Palmer Environmental Consulting Group Inc. (PECG) personnel along the road corridor. This data was also synthesized into the road design.

The generalized soil profile identified along the majority of the proposed alignment consists of <2-m deposits of silty sand with some gravel colluvium to angular rubble colluvium in a silty sand matrix overlying fractured mica schist bedrock. Deeper fluvial deposits were noted in valley bottom locations and along the lower portions of the valley sidewall. Shallow ice-rich permafrost was also found in valley bottom locations and on north aspect slopes where not degraded by placer miner activities. For greater detail concerning geotechnical conditions along the proposed alignment, refer to **Appendix XIV Geotechnical Assessment**.

12.0 REFERENCES

Arcement, G. J., & Schneider, V. R. 1989. Guide for Selecting Manning's Roughness Coefficients For Natural Channels and Flood Plains. Alexandria: United States Geological Survey (USGS). Water-Supply Paper 2339. Prepared in cooperation with the United States Department of Transportation, Federal Highway Administration. Available at: http://pubs.usgs.gov/wsp/2339/report.pdf. Accessed August 2016.

BC Ministry of Forests, Lands and Natural Resources (BC FLNRO). 2012. Fish-Stream Crossing Guidebook. Prepared by Ministry of Forests, Lands and Natural Resources, Ministry of Forests, and Fisheries and Oceans Canada. A revision to the former Forest Practices Code of British Columbia Fish-stream Crossing Guidebook, March 2002. Available at: https://www.for.gov.bc.ca/hfp/fish/fish-stream%20crossing%20print.pdf. Accessed August 2016.

BC Ministry of Transportation. 2007. BC Supplement to TAC Geometric Design Guide 2007 Edition, June 2007. Available at: http://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/engineering-standards-and-guidelines/highway-design-and-survey/tac/tac-2007-supplement/ch600-2007.pdf. Accessed August 2016.

Canadian Council of Ministers of the Environment (CCME). 2007. Canadian Water Quality Guidelines for the Protection of Aquatic Life. September 2007. Available at: http://ceqg-rcqe.ccme.ca/en/index.html. Accessed March 2016

Curran, J. H., D. F. Meyer, and G. D. Tasker. . 2003. Estimating the Magnitude and Frequency of Peak Streamflows for Ungaged Sites on Streams in Alaska and Conterminous Basins in Canada. Anchorage, Alaska: U.S. Geological Survey. Available at: http://pubs.usgs.gov/wri/wri034188/. Accessed August 2016.

Environmental Dynamics Inc. (EDI). 2016. Coffee Gold Project: Fisheries & Aquatic Resource Baseline Update – 2016 – Draft. Prepared for Goldcorp Inc. Prepared by EDI Environmental Dynamics Inc.

Fisheries and Oceans Canada (DFO). 2016. Measures to Avoid Causing Harm to Fish and Fish Habitat. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html, Accessed July 2016.

Fisheries And Oceans Canada (DFO). 2014. Freshwater Timing Windows Identified for the Yukon. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/yk-eng.html. Accessed July 2016.

Fisheries and Oceans Canada (DFO). 2013. Measures to Avoid Causing Harm to Fish and Fish Habitat. Available at: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html Accessed September 2016.

Fisheries and Oceans Canada. (DFO). 1995. Freshwater Intake End-of-Pipe Fish Screen Guideline. Fisheries and Oceans Canada, Ottawa, ON. Available at: http://www.dfo-mpo.gc.ca/Library/223669.pdf. Accessed July 2016.

Government of Yukon. 2011. Best Management Practices for Works Affecting Water in Yukon. Yukon Environment, Government of the Yukon. Whitehorse, YK. ISBN 978-1-55362-525-4. Available at: http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf. Accessed August 2016.

Matheus, P., and T. Omtzigt. 2013. Yukon Revegetation Manual Practical Approaches and Methods. Available at: https://www.yukoncollege.yk.ca/downloads/front_Chapter_1-17.pdf. Accessed March 2016.

Palmer Environmental Consulting Group Inc. (PECG). 2016. Fish and Aquatic Resources Baseline Report: Mine Access Route. Prepared for Kaminak Gold Corporation. March 11, 2016.

Price, W.A. 1997. Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. Reclamation Section, Energy and Minerals Division, British Columbia Ministry of Employment and Investment. Smithers, British Columbia. April,1997. Available at: http://mend-nedem.org/wp-content/uploads/2013/01/1.20.1-Ref.pdf. Accessed August 2016.

Riggs, H. C. 1982. Regional Analyses of Streamflow Characteristics. Alexandria: United States Geological Survey (USGS). Available at: https://pubs.usgs.gov/twri/twri4b3/pdf/twri_4-B3_a.pdf . Accessed August 2017.

Thompson, D. B. 2006. The Rational Method. Texas Tech University - Civil Engineering Department. Available at: http://drdbthompson.net/writings/rational.pdf. Accessed August 2016.

Yukon Government, Environment Yukon (YG). 2012. Invasive Plants by Invasiveness. Available at: http://www.env.gov.yk.ca/animals-habitat/invasiveplants.php. Accessed August 2015.

Yukon Workers Compenstaion Health and Safety Board (YWCHSB). (2010). Occupational Health And Safety Act and Regulations. Available at: https://wcb.yk.ca/Regulations/LIB0136.aspx. Accessed June 2016.

Wright, D.G. and G.E. Hopky. 1998. Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters. Canadian Technical Report of Fisheries and Aquatic Sciences No. 2107. Available at: http://www.dfo-mpo.gc.ca/Library/232046.pdf. Accessed June 2016.

APPENDIX 31-A-I

Northern Access Route Upgrades and Establishment Report

ONSITE Engineering Ltd.

Coastal Operations

#1 1170 Shoppers Row
Campbell River, BC
V9W 2C8

GOLDCORP

COFFEE GOLD MINE

Northern Access Route
Upgrades and Establishment
Report

Issued For Permit Approval

Prepared for:

James Scott, Engineering Manager,
Coffee Project, Goldcorp Inc.
3400 - 666 Burrard St.
Vancouver, BC
V6C 2X8
Tel: 604-695-7130

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1. Available Information 4

1.2. Limitations of the Design 5

1.3. Synergies with Other Documents 6

2. ROAD CONSTRUCTION 8

2.1. Site Preparation 8

2.2. Road Design and Construction 8

2.2.1. Conventional Cut and Fill Construction 11

2.2.2. Overland Construction In Shallow Ice-Rich Permafrost 11

2.2.3. Full Bench End Haul Construction 11

2.2.4. Construction Along the North Stewart Backchannel 11

2.2.5. Winter Road Construction 14

2.3. Construction Access and Staging Areas 16

2.4. Access Control 18

3. MATERIAL SURPLUS AND DEFICIT 19

3.1. Borrow Sources 19

3.2. Spoil Sites 22

4. DRAINAGE SYSTEM 24

5. ROAD SIGNS 25

6. BRIDGES AND CULVERTS 27

6.1. Standard Non-Fish Stream Culverts 30

6.2. Simulated Streambed Embedded Culverts In Fish Streams 30

6.3. All Steel Portable Bridges 30

7. BARGE LANDING CONSTRUCTION 31

7.1. DESIGN AND CONSTRUCTION 31

7.1.1. North Bank Stewart River Barge Landing 32

7.1.2. South Bank Stewart River Barge Landing 32

7.1.3. North Bank Yukon River Barge Landing 32

7.1.4. South Bank Yukon River Barge Landing 33

8. EQUIPMENT AND SCHEDULING 34

8.1. Equipment 34

8.2. SCHEDULING 35
9. BEST MANAGEMENT PRACTICES 36
10. GEOCHEMICAL EVALUATION 37
11. ROAD AND CROSSING CONSTRUCTION QAQC 38
12. GEOTECHNICAL TESTING 39
13. ROAD MAINTENANCE 40
14. CLOSURE 41
15. REFERENCES 42
APPENDIX 2.1-1: ROAD PERMAFROST GEOHAZARD EVALUATION MAPPING 44
APPENDIX 2.2-1: TYPICAL ROAD CROSS SECTIONS 59
APPENDIX 2.2.2-1: ACCESS ROAD EMBANKMENT THICKNESS IN PERMAFROST TERRAIN 69
APPENDIX 2.2.2-2 GEOTECHNICAL CONSIDERATIONS FOR ROAD DESIGN AND CONSTRUCTION IN AREAS UNDERLAIN BY ICE-RICH PERMAFROST 71
APPENDIX 3.1-1: BORROW SITE LOCATIONS AND SPECIFICATIONS 77
APPENDIX 6.0-1: TYPICAL NON-FISH BEARING STREAM CULVERT 80
APPENDIX 6.0-2: WATERCOURSE CROSSING LOCATIONS AND SPECIFICATIONS 82

LIST OF TABLES

Table 2.2-1: Design Specifications 9
Table 2.2-2 Permanent Cut Slope And Fill Slope Angles By Ground Type. 10

LIST OF FIGURES

Figure 1-1: Northern Access Route with Barge Crossing Locations. 3
Figure 2.2.4-1: Encroachment Area Within the High-water Mark of the Stewart River Backchannel. 13
Figure 2.2.5-1. Coffee Gold Mine Winter Road Route. 15
Figure 2.3-1. Coffee Gold Mine Camp Locations for Northern Access Route Construction Activities. 17
Figure 3.1-1. Coffee Gold Mine Borrow Sites for Northern Access Route Road Construction Activities. . 20
Figure 3.2-1. Coffee Gold Mine Spoil Sites for Northern Access Route Construction Activities 23
Figure 6-1. Coffee Gold Mine Stream Crossing Locations on the Northern Access Route. 29

UNITS OF MEASURE, ABBREVIATIONS, AND ACRONYMS

acid rock drainage ..... ARD

all steel portable bridge ..... ASP

Association of Professional Engineers and Geoscientists of British Columbia ..... APEGBC

Association of British Columbia Forest Professionals ..... ABCFP

British Columbia lane load – 625 Kilonewtons BCL-625

best management practices ..... BMP

Canadian Council of Ministers of the Environment ..... CCME

Coffee Gold Mine ..... Project

cubic meters ..... m^3

emergency transportation vehicle ..... ETV

Environmental Dynamics Inc. ..... EDI

Fisheries and Oceans Canada ..... DFO

geo-synthetically reinforced soil ..... GRS

Goldcorp Inc. ..... Goldcorp

hectare ..... ha

high density polyethylene ..... HDPE

Kaminak Gold Corp. ..... Kaminak

kilograms ..... kg

kilometers ..... km

kilometers per hour ..... km/hr

Lorax Environmental Services Ltd. ..... Lorax

metal leaching ..... ML

meter ..... m

millimeter ..... mm

Northern Access Route ..... NAR

non-classified drainage ..... NCD

Onsite Engineering Ltd. ..... OEL

Palmer Environmental Consulting Group Inc. ..... Palmer

personal protective equipment ..... PPE

potentially acid generating ..... PAG

quality assurance and quality control ..... QAQC

real time kinematic ..... RTK

right-of-way ..... RoW

Tetra Tech EBA ..... EDA

Unified soil classification system ..... USCS

United States Geological Survey ..... USGS

Utility Terrain Vehicle ..... UTV

Yukon Territory ..... YT

Yukon Workers Compensation Health And Safety Board ..... YWCHSB

1. INTRODUCTION

At the request of Mr. James Scott of Goldcorp Inc. (Goldcorp), Onsite Engineering Ltd. (OEL) was retained to locate and complete a full geometric road design, stream crossing designs, and barge landing designs for the non-government maintained portion of the Northern Access Route (NAR) to the Coffee Gold Mine (the Project). This document serves to describe the design, procedures and protocols for construction of the access route between the Sulphur-Dominion Junction, Yukon (YT) and the Project. The NAR will be used during both construction and operations to transport fuel, equipment, and other supplies.

OEL has designed the non-government maintained portion of the NAR, a portion approximately 130 km long that begins approximately 58 km South-East of Dawson City at the Sulphur-Dominion Junction. The road from this junction north to Highway 2 is maintained by the Yukon Territory Department of Highways and Public Works. South of the Sulphur-Dominion junction, the NAR follows a series of roads currently maintained by various placer mine operations. Approximately 100 km of the proposed alignment utilizes the existing placer mine road network with upgrades proposed to improve road user safety, increase the travel speed, and provide all-season access. The remaining 30km will be completed as new build by Goldcorp.

The work proposed for the upgrade portions of the NAR includes;

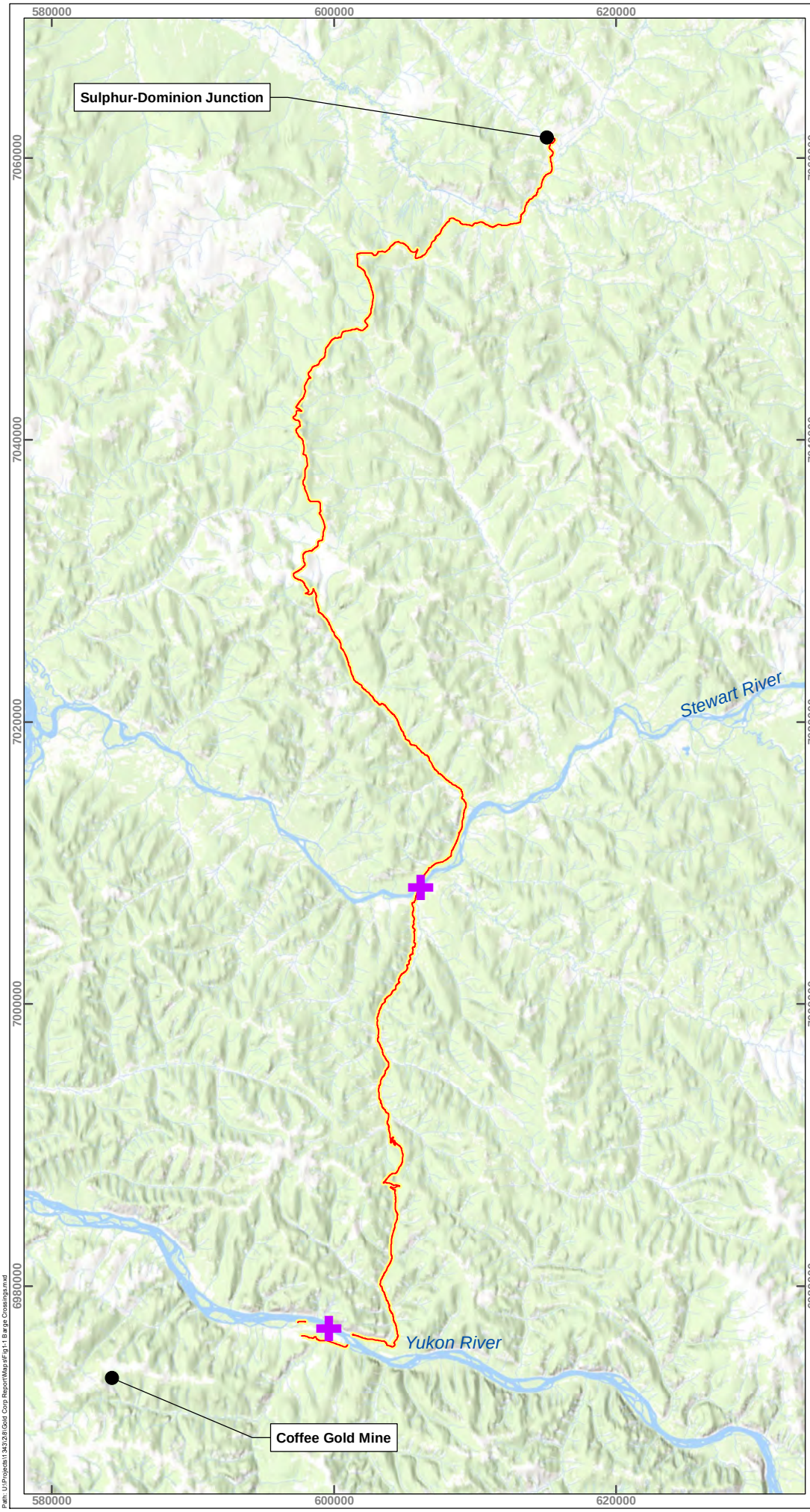
- Improving horizontal and vertical alignment
- The addition of pullouts/turnouts
- Drainage improvements
- Watercourse crossing upgrades
- All weather surfacing

The new construction portion of the NAR will include the establishment of;

- Approximately 30km of road.
- 11 major watercourse crossings.

Both upgrade and new road sections will be designed to the same standards. The road will be single lane with pullouts, support two-way traffic, and have a design speed of 30-50 kilometers per hour (km/hr). In addition to road work, barge crossings on the Stewart and Yukon River are required to access the Project site. A new barge landing is proposed on the north bank of the Stewart River. The three other

existing barge landings require relocation to increase safety and long-term integrity. The barge landings are an integral part of the NAR, with different design constraints and construction techniques than the road. Details on the barge related components are presented in section 7. A map displaying the NAR is shown in Figure 1-1.



COFFEE GOLD MINE

Northern Access Route and Barge Crossing Locations



Legend

- Northern Access Route
- Barge Crossing Locations

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Figure 1-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki P.Eng.

GOLDCORP

Path: U:\Projects\1343\26\Gold Corp Report\Maps\Fig1-1 Barge Crossings.mxd

1.1. AVAILABLE INFORMATION

The following is a list of the information used by OEL to complete the geometric road design:

- Full LiDAR survey of the route flown by McElhanney Consulting Services Ltd on June 28, 29 and August 4 and 5 2015;
- Isolated surface geometry surveys collected via total station and real time kinematic (RTK) survey methods for areas where finer detail is required by OEL in 2016;
- 30 cm aerial photography of the route flown by McElhanney Consulting Services Ltd on June 28, 29 and August 4 and 5 2015;
- Fisheries assessments completed by Palmer Environmental Consulting Group (Palmer) during the 2015 field season;
- Fisheries assessments completed by Environmental Dynamics Inc. (EDI) during the 2016 field season;
- ARD/ML assessment completed by Lorax Environmental Services Ltd (Lorax) in 2015;
- Terrain stability and hazard mapping for the Coffee Gold Project by Palmer in 2016;
- Geotechnical assessment by OEL in 2016;
- Bathymetry survey information collected by OEL in 2016;
- The reader is referred to Section 14 for a list of referenced legislation, design standards, design guides, and best management practices.

Following initial high level field reconnaissance to locate the Northern Access Route corridor, LiDAR data was collected and a preliminary design was completed that incorporated expected conditions and the design specifications. OEL personnel then completed detailed site investigations to compare the preliminary proposed alignment to actual conditions and solidify the route location. Any feature/condition that varied from that expected was recorded. While on-site, OEL collected detailed survey data for all major stream and river crossings using both RTK and total station surveying techniques. Geotechnical staff collected ground type information by analysing hand dug test pits and classifying the soil horizons encountered. Soil horizons were classified using the unified soil classification system (USCS) and further categorized for the road design into the ground types shown in Table 2.2.2.

Following this field work the design was revised to reflect the detailed site data recorded by OEL and other specialists.

1.2. LIMITATIONS OF THE DESIGN

The following are limitations of the design which are meant to identify possible sources of error. OEL does not assume responsibility for omissions in the design that are a result of the limitations summarized below.

- This report and road design has been prepared in accordance with generally accepted engineering practises. No other warranty, expressed or implied, is made. Information on the subsurface soil, groundwater and bedrock conditions was gathered from existing bedrock exposures on the site and hand dug test pits. No drilling or machine dug test pits were completed.
- The field review of the route was performed by OEL personnel. The accuracy of the ground topography data, road alignments, and ultimately the design, is controlled by the inherent inaccuracies of the survey equipment used (Refer to Section 1.1).
- Earthwork volume estimates were based on LiDAR and detailed ground survey information, and estimates of surface and subsurface soil types and depths. The classification and identification of the type and condition of the geological units present are judgemental in nature. Variations (even over short distances) are inherent and are a function of natural processes. OEL does not represent or warrant that the conditions listed in the report are exact and the user should recognise that variations may exist. Sub-surface conditions other than those identified may be encountered, requiring a review of the recommendations contained in this report, with amendments made as needed. It is the responsibility of the contractor or owner to contact OEL when conditions differ. Actual subsurface conditions revealed during the road construction phase of the project may vary from those reported in the geometric road design. Variations in subsurface conditions may affect the attainable cut and fill slope angle and therefore influence the actual volumes excavated during road construction.
- The design reflects conditions encountered during the survey. The existing road network is actively maintained and modified by current users. Placer mining operations are continually changing the landscape where they operate. For that reason one should expect differences between current conditions at time of construction and the conditions reflected in the designs.
- The successful completion of the road construction phase of the project depends on the skill of both the road construction crew and the construction supervisors. Adherence to design specifications, and the geometric road design are key factors influencing the outcome of the project. Further, proper culvert installation, adherence to culvert designs, and proper ditch line construction are also important factors. It is imperative that culverts and cross-drains (as shown in the designs) be of sufficient size and spacing and properly installed to allow unimpeded movement of water through the road prism. Drainage disruption or concentration could adversely

affect the road prism and adjacent slope stability. If conditions other than those assumed in the designs are encountered during construction, changes to the drainage design may be required.

1.3. SYNERGIES WITH OTHER DOCUMENTS

This report should be viewed in concert with the following documents, which together form the NAR design:

Geometric Road Designs (both plan/profile and cross sections) for the Coffee Creek Access Upgrade and Route Establishment:

- Section 1 (km 0-41.1)
- Section 2 (km 41.1-82.7)
- Section 3 (km 82.7-126.2)
- South Yukon Barge Section (km 126.2 to 126.7)
- South Yukon Winter Road (km 126.2 – 129.8)

Crossing General Arrangement Drawings:

- Sulphur Creek (approximate location at 5km)
- Indian River (approximate location at 7km)
- Indian River Tributary 1 (approximate location at 9.5km)
- Indian River Tributary 2 (approximate location at 10.5km)
- Indian River Tributary 3 (approximate location at 11km)
- Eureka Creek (approximate location at 13.5km)
- Maisy May Tributary 1 (approximate location at 57.5km)
- Maisy May Tributary 2 (approximate location at 58km)
- Maisy May Tributary 3 (approximate location at 58.5km)
- Maisy May Tailings Tributary 2 (approximate location at 63km)
- Maisy May Tributary 4 (approximate location at 65.5km)
- Maisy May Proper (approximate location at 75km)
- Lower Barker (approximate location at 83.6km)
- Middle Barker Placer Camp (approximate location 94.5km)
- Middle Barker Tailings 2 (approximate location at 95.5km)
- Upper Barker Tributary 1(approximate location at 99.1km)
- Upper Barker Tributary 3 (approximate location 100.5km)
- Upper Barker (approximate location 102km)
- Upper Ballarat (approximate location 113km)
- Middle Ballarat (approximate location 118.5km)
- Lower Ballarat Tributary 1 (approximate location at 120km)
- Ballarat Proper (approximate location at 124km)
- Coffee Creek (approximate location at 128.5km)

Barge Landing General Arrangement Drawings:

- North Bank Stewart River (approximate location at 82.7km)
- South Bank Stewart River (approximate location at 82.7km)
- North Bank Yukon River (approximate location at 126.2km)
- South Bank Yukon River (approximate location at 126.2km)

Geotechnical Assessment – Proposed Northern Access Route, Coffee Gold Mine.

2. ROAD CONSTRUCTION

2.1. SITE PREPARATION

A 30 m wide corridor of trees will be cleared before road construction commences. In areas where cut and fill slopes extend outside of the 30m cleared corridor, the clearing width will be increased to 3m beyond the extent of the cut/fill slope. Clearing widths through riparian areas will be reduced to 10m or 3m beyond cut and fill slopes, whichever is greater. Clearing of the right-of-way (RoW) provides allowance for sight lines for traffic and wildlife, sunlight access for drying/melting, and storage area for snow removal. Cleared material will be stored in windrows along the low side of the road and may be used later for reclamation purposes. In areas of undisturbed, shallow, ice-rich permafrost (see Appendix 2.1.1), this pertains to areas noted to be very ice-rich frozen soil), hand falling will be used instead of machinery to limit ground disturbance.

With the exception of roads built over undisturbed, shallow, ice-rich permafrost and winter roads, all roads are to be built on exposed mineral soil or bedrock. To accomplish this, stripping of the organic soil layer is required. Organic soil depths vary by site from zero in areas such as existing roads and in active placer mine sites to an estimated maximum of 0.4m along sections of new road construction. Average stripping depths for road upgrade sections is 0.1m, and 0.2m for new construction.

In areas underlain with undisturbed, shallow, ice-rich permafrost, the existing surface material will be left intact, with the road constructed by adding granular fill over a geotextile separation layer. Care will be taken to minimize the amount of vegetative clearing to occur, limiting the amount of subgrade materials exposed to potential degradation and thaw along the roadway. This will also reduce the potential for soil erosion and sediment deposition in riparian and wetland ecosystems.

Winter road site preparation will consist of hand falling the RoW. All stumps will be cut as low as possible. Woody debris and other felled ground cover will be placed across the prism to help support the road and lift the road prism prior to building up with snow and ice.

2.2. ROAD DESIGN AND CONSTRUCTION

The proposed road is designed for single lane, two-way traffic with pullouts. The design standards are meant to match the terrain. In the valley bottoms, where higher standards are more easily attained, the road design speed is 50 km/hr. In mountainous terrain the road design speed is 30 km/hr. The specifications to meet these design speeds are summarized in Table 2.2-1 (Transportation Association of Canada, 2011), (British Columbia Ministry of Transportation, 2007), (Yukon Chamber of Mines, 2010):

Table 2.2-1: Design Specifications

Components	Valley Bottom	Mountainous Terrain
Maximum Road Grade	8% (up to 10% on short pitches). Restricted to 5% on switchbacks	8% (up to 10% on short pitches). Restricted to 5% on switchbacks
Tightest Vertical Curve	1% grade change over 12m (11m for crest curves)	1% grade change over 4m (3m for crest curves)
Minimum Curve Length	50m	30m
Minimum Stopping Sight Distance	135m	65m
Minimum Horizontal Curve Radius	80m (18m for switchbacks)	35m (18m for switchbacks)
Minimum Cross Drain Culvert Diameter	450mm	450mm
Ditch Size	0.5m deep with a 1m wide base	0.5m deep with a 1m wide base
Road Width	5m	5m
Pullout Size	Additional 4m width, 15m long with a 7.5m long taper at each end	Additional 4m width, 15m long with a 7.5m long taper at each end

Construction of the road prism will require surficial material earthworks and ripping and blasting of rock where the road passes through near surface bedrock. All sections of road will have a surfacing depth of 0.3m; the subgrade will be compacted with a drum roller and cut slope and fill slope angles will vary by material type and can be seen below in table 2.2-2.

Table 2.2-2 Permanent Cut Slope And Fill Slope Angles By Ground Type.

Material Type	Cut slope Angle	Fill slope Angle	Cut Expansion Factor	Fill Expansion Factor	Additional Details
OB –Organic soil	400%	N/A	1	1	Organic rich layer not to be used for construction of the road prism.
C1 – Silty sand colluvium	70%	66.7%	0.9	1	Clast supported angular rubble colluvium in a silty sand matrix.
C2 – Silty sand some gravel colluvium	70%	66.7%	1	1	Matrix supported silty sand with some gravel colluvium material.
C3 – Silty sand colluvium	100%	66.7%	0.9	1	Clast supported angular rubble colluvium in a silty sand matrix.
C4 – Silty sand some gravel colluvium	100%	66.7%	1	1	Matrix supported silty sand with some gravel colluvium material.
TA – Talus	70%	66.7%	0.9	1	Angular rock clasts with little to no fine grained matrix. Typically found in high elevation alpine locations.
SG – Sand and gravel	70%	66.7%	1	1	Sand and gravel fluvial deposits.
TL – Tailings (washed sand and gravel)	70%	66.7%	1	1	Tailings remaining from placer mining operations. Consists of washed sands and gravels.
Si – Silt	50%	50%	0.9	1	Silt leading lacustrine or fluvial deposits.
F1 – Weak Rock	120%	66.7%	1.11	1	Weak, heavily fractured bedrock. Typically mica schist or gneiss.
F2 – Strong rock	200%	66.7%	1.2	1	Medium strong to very strong bedrock. Typically Andesite/ Dacite or quartzite.
PF – Permafrost	N/A	N/A	N/A	N/A	Shallow ice-rich permafrost soils. Avoid any disturbance. Use Overland construction techniques with granular fills.
RF – Rock Fill	N/A	85%	1	1	Fill composed of keyed in angular rock clasts founded on a 2m wide excavated or natural bench.

Wherever possible, conventional cut and fill construction will be utilized to minimize material movement. In some locations alternative construction techniques will be required such as sections overlanding undisturbed, shallow, ice-rich permafrost, sections requiring full bench end haul construction, and construction along the North Stewart backchannel. For typical cross sections showing all proposed

construction techniques, refer to the drawings in Appendix 2.2: Typical Road Cross Sections. The proposed construction techniques are described in sections 2.2.1 to 2.2.5.

2.2.1. Conventional Cut and Fill Construction

Following site preparation, the road prism will be constructed with a portion of the road in a cut, generating material to use as fill to build the remaining portion of road. The fill portion of the road will be placed on stripped ground and compacted with the bucket of an excavator or tracked in lifts with a bulldozer until brought up to top of sub grade. For larger fills, a roller drum compactor may be used.

2.2.2. Overland Construction In Shallow Ice-Rich Permafrost

Overland construction (fill only embankment) in undisturbed, shallow, ice-rich permafrost sections will minimize disturbance to the existing vegetative cover. Once site preparation activities have occurred, high strength, woven geotextile is to be laid over the existing vegetative cover. Once the geotextile is in position, fill is to be placed, compacted in lifts and brought up to a minimum depth of 1.5m (Appendix 2.2.2-1, Appendix 2.2.2.-2). Unless existing roads or machine trails are present that provide equipment a means to bypass sections of undisturbed, shallow, ice-rich permafrost, no equipment will proceed beyond where the above has occurred.

2.2.3. Full Bench End Haul Construction

Due to portions of the NAR traversing areas with steep side slopes, full bench end haul construction is necessary. In these sections the entire road prism will be built on a full bench cut and generated material will be end hauled to a designated spoil site or to another portion of the road to be used in its construction. In full bench end haul sections no excavated material is to be placed on the slope below the road.

2.2.4. Construction Along the North Stewart Backchannel

The proposed road alignment along the backchannel on the north bank of the Stewart River follows an abandoned, existing road at the toe of heavily fractured bedrock bluffs. These bluffs have been identified as having a high rock fall hazard. To reduce the risk of a rock fall event endangering the safety of road workers/users or temporarily severing access, a 1m deep ditch with a 4m wide base will be constructed to intercept rock fall. Refer to the typical cross section drawings for details.

Due to the wide ditch, the NAR alignment will extend further away from the bluffs than the existing road. The fill slope will infringe on the high-water level of a backchannel on the north side of the Stewart River (Figure 2.2.4-1). The total length of the section where the fill slope is within this high-water mark of the backchannel is approximately 300m with an estimated total interference area of 0.17 ha. During the summer of 2015 Palmer assessed the backchannel for fish habitat, were unable to capture any fish and

found that dissolved oxygen levels were low (Palmer, 2016). It is unlikely that the backchannel supports any spawning habitat; however, it may be used for refuge during high water events in the Stewart River.

To mitigate the potential loss of fish habitat in the Stewart River backchannel and to avoid sediment delivery, the fill slope is to be constructed with clean riprap and overlain with woody material to provide some fish habitat complexity/features. Ideally armoring within the high-water mark will be completed during a period of low water levels in the Stewart River (typically July through September) when works can be completed in the dry. In the event water levels or construction timing prevent works from being completed in the dry, work procedures will be altered to comply with the regulations outlined in the Federal *Fisheries Act*, 2012. This may require consultation between the Proponent and Fisheries and Oceans Canada (DFO).

No blasting is to occur while constructing this section as excavated material will only consist of removal of material from the colluvium/talus apron to establish the wide ditch. When constructing the road prism along the Stewart River backchannel, fill is to be placed on stripped ground, compacted with the bucket of an excavator or tracked in lifts with a bulldozer. During construction of this section of the road crews will follow the BMPs outlined in section 9.



COFFEE GOLD MINE

Encroachment Area Within the High-water Mark of the Stewart River Backchannel



Legend

- Northern Access Route
- Fillslope Encroachment Area
- Stewart River Backchannel

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Figure 2.2.4-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki P.Eng.

GOLDCORP

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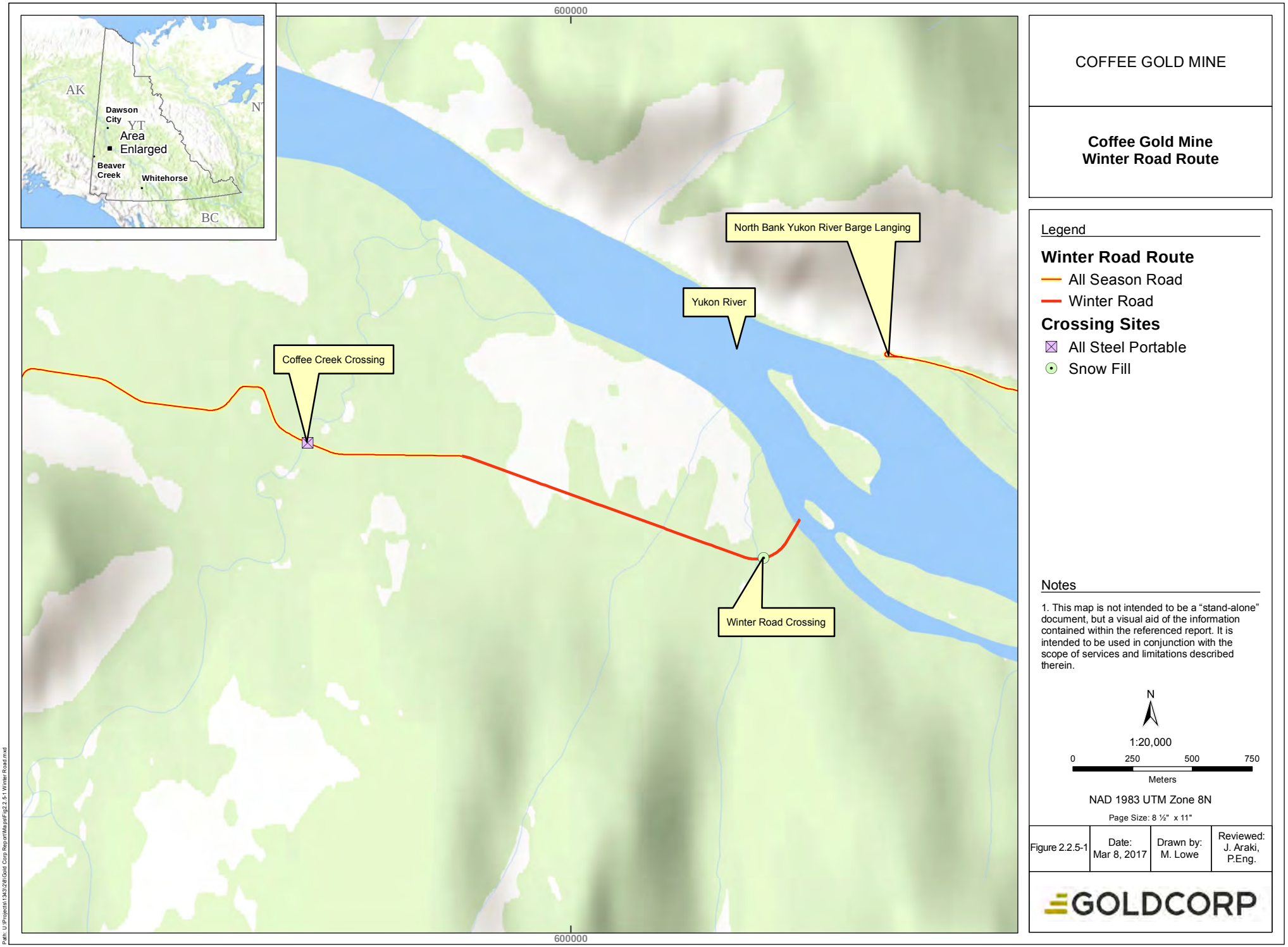
2.2.5. WINTER ROAD CONSTRUCTION

At the Yukon River crossing the road diverges into two routes. During summer operations traffic will be barged to a barge landing on the Yukon River approximately 1500m downstream of the confluence with Coffee Creek. During winter operations traffic will cross the Yukon River and continue onto a winter road, directly across the river from the North Yukon barge crossing. The winter road that climbs up from the bank of Yukon River extends approximately 1600m before changing to an all season road approximately 660m east of the coffee creek bridge crossing (Figure 2.2.5-1). The road will minimize the distance traveled on ice roads over the Yukon River, minimizing the exposure of road users to safety concerns and reliability/maintenance issues associated with ice roads. Outside of riparian areas, the winter road prism will consist primarily of snow and ice with a maximum content of other material (soils/organic matter) of 20%. All cuts will be minimized outside of riparian areas; in riparian areas there will be no cuts and only clean snow and ice will be used to construct the prism. There is one minor watercourse crossing proposed on the winter road (Figure 2.2.5-1) and it will not require a structure, the crossing offers no overwintering habitat for fish, and will be infilled with clean snow and ice to meet road grade.



COFFEE GOLD MINE

Coffee Gold Mine
Winter Road Route

Legend

Winter Road Route
- All Season Road
- Winter Road

Crossing Sites
- All Steel Portable
- Snow Fill

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced report. It is intended to be used in conjunction with the scope of services and limitations described therein.

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Figure 2.2.5-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki, P.Eng.

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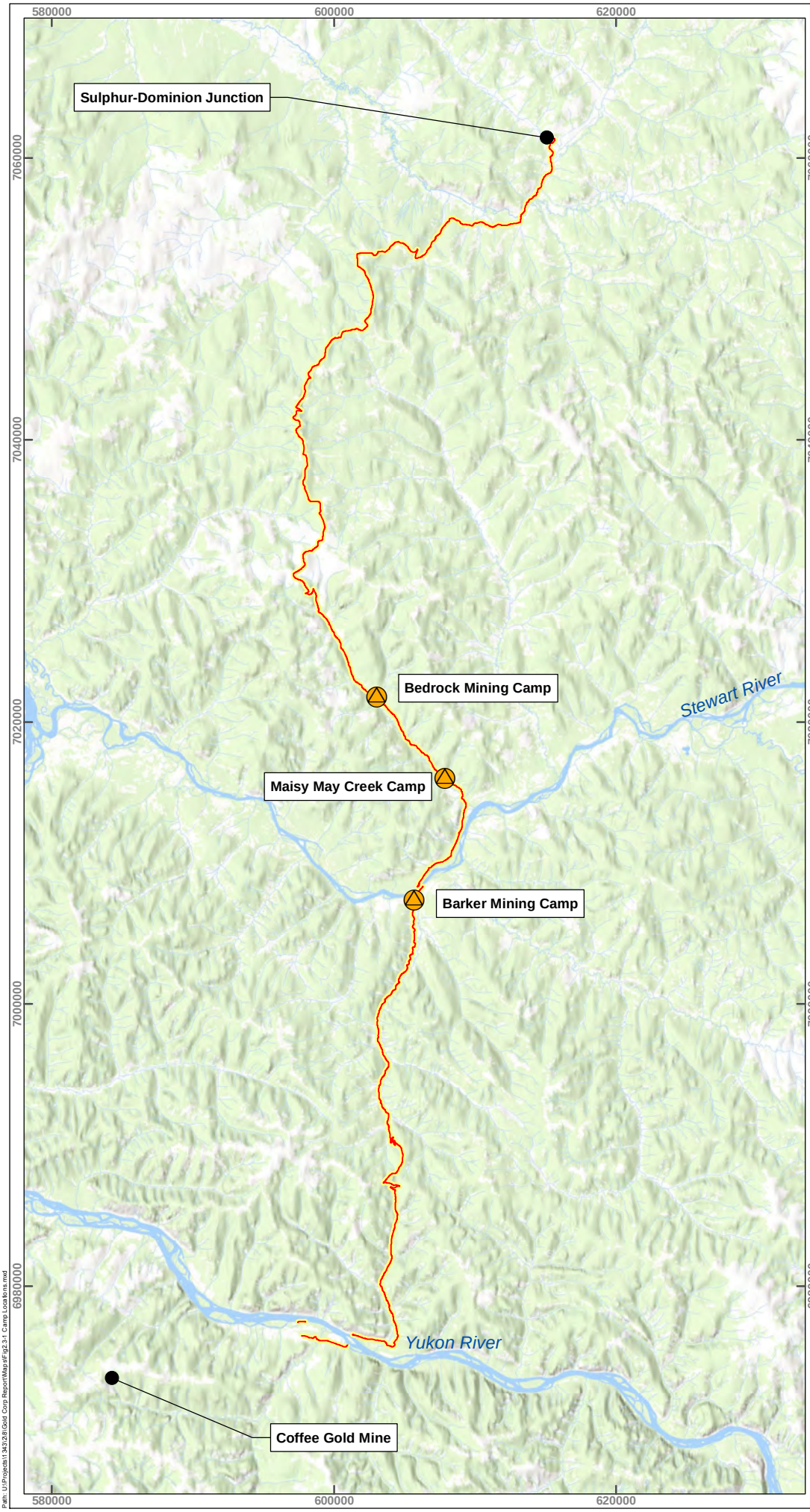
2.3. CONSTRUCTION ACCESS AND STAGING AREAS

North of the Stewart River, road construction activities will be accessed by using the existing road network from Dawson City. South of the Stewart River, access will rely on use of existing barge landings on the Stewart and Yukon rivers and the existing road networks. During construction, multiple, small staging areas will be used. Staging areas will advance with road headings using pullouts, depleted borrow sites, spoil sites, barge landing sites, and suitable previously cleared areas within the road RoW. No additional clearing or road construction activities are proposed to create specific staging areas. Staging areas will be used to store heavy equipment, materials, and tools. The materials stored at these sites will include culverts and bridge components. Equipment will include excavators, bulldozers, scrapers, gravel and rock trucks, blasting equipment, crane trucks, water trucks, drum compactors, and graders. Accommodation for road workers will be at the Bedrock Mining Camp, the Maisy May Creek Camp and the Barker Mining Camp. Camp locations can be seen in figure 2.3-1.



COFFEE GOLD MINE

Coffee Gold Mine Camp Locations for Northern Access Route Construction Activities



Legend

- Northern Access Route
- Construction Camp

Notes

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Figure 2.3-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki P.Eng.

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2.4. ACCESS CONTROL

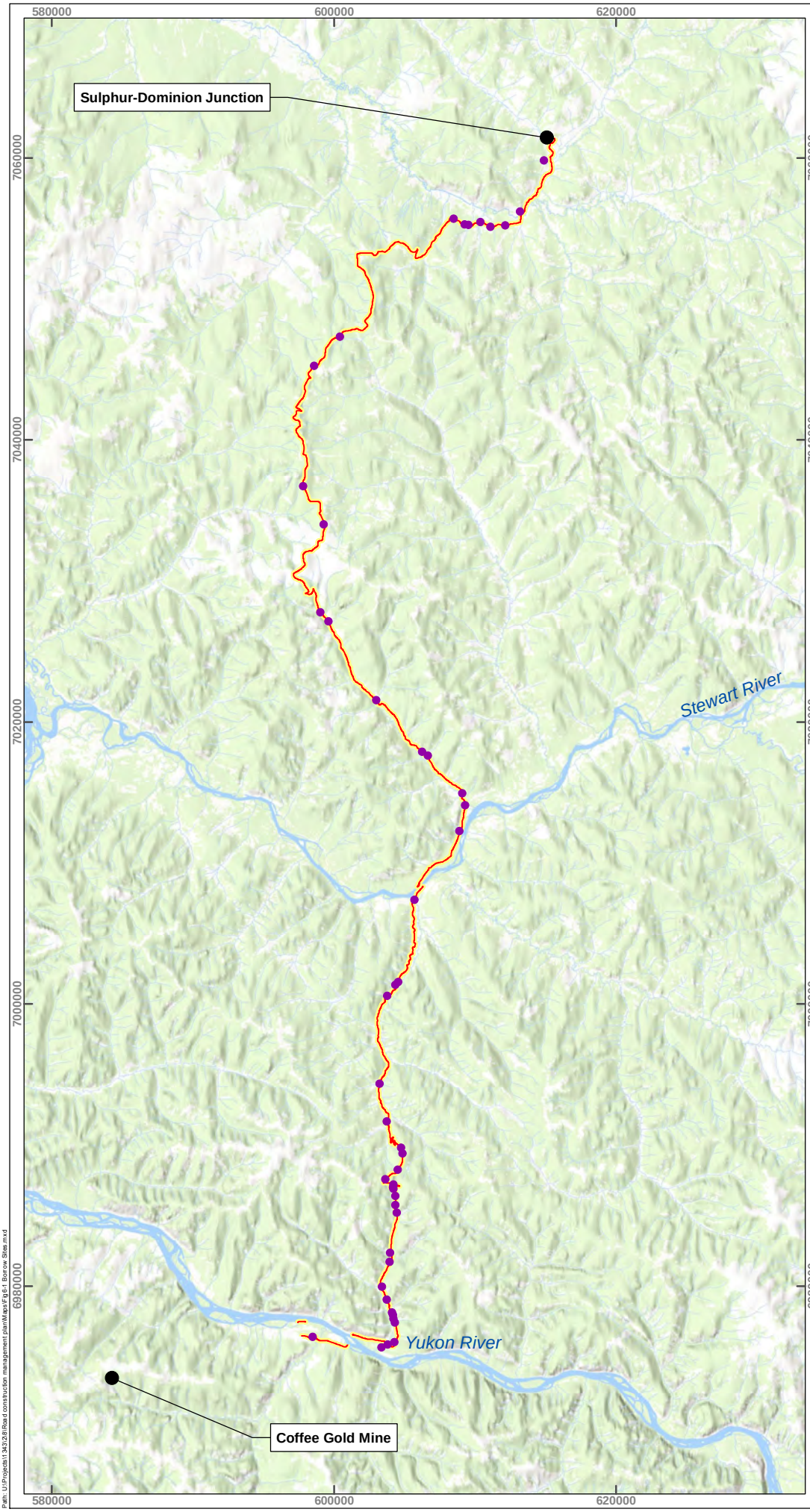
The only year-round access control is expected to be at the Stewart and Yukon River crossings. Both of these crossings will be barge crossing locations during summer. During the winter, the Stewart River north, Stewart River south, and Yukon River north barge landing ramps will provide access to ice roads on the rivers. Access to the winter road from the Yukon River will be via its own approach ramp and is specified in the geometric road design.

3. MATERIAL SURPLUS AND DEFICIT

Road construction costs are reduced by building a road with balanced mass haul. That is, excavated materials are used locally and not transported along the road for use or storage elsewhere. This is not always practicable or desirable and depends on factors including ground types, slope stability, and geometric constraints. To address the need for additional desirable material beyond that produced by construction of the road prism, borrow sites are proposed. To provide space to store surplus material, spoil sites have been proposed.

3.1. BORROW SOURCES

Borrow sources have been identified for subgrade material, surfacing material, and riprap. Subgrade sources are to be used to address a mass haul deficit for subgrade construction. Deficits are expected in areas where volume generated by conventional cut and fill construction is limited due to horizontal/vertical alignment constraints or cut and fill construction is undesirable and overlanding (fill only embankment) is required. Multiple borrow sources were identified and sampled in the field (Figure 3.1-1, Appendix 3.1-1). Geochemical and geotechnical testing determined the suitability of borrow sites. The reader is referred to section 10 for information regarding geochemical analysis and section 12 for geotechnical testing methodology. All of the potential borrow sources outside of existing placer tailings are identified on the plans; however, only some of them will be required for construction. All sources are identified to give the construction contractor options to optimize productivity during construction depending on their equipment and construction methodology. The identified sources for subgrade borrow materials are suitable for subgrade construction and will not require any sorting beyond stripping of organic soils before developing the site.



COFFEE GOLD MINE

Coffee Gold Mine Borrow Sites for Northern Access Route Road Construction Activities



Legend

- Northern Access
- Material Borrow Sites

Notes

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Figure 3.1-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki P.Eng.

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Path: U:\Projects\1343\26\Road construction management plan\Mxds\Fig 6-1 Borrow Sites.mxd

Surfacing material must meet assigned surfacing material gradation bands. Materials to be used as surfacing are resistant to weathering and include fluvial sand and gravel deposits and bedrock. Material at borrow sites identified as being suitable for surfacing may require alteration to ensure final material gradation bands are met; therefore, crushing, screening, and/or blending may be required at these sites.

Riprap sources include areas that contain shallow bedrock, talus, and/or rubble colluvium that is weather resistant and can produce coarse clasts. These sources will require sorting to meet assigned riprap specifications and may be sorted mechanically or by screening.

The identified borrow sites are classified as quarries, pits or tailings sources. Quarries are primarily composed of bedrock and will be established by working into the back wall of the borrow site (the excavation will start at the road edge and work into the slope as material is required, ensuring minimal disturbed area). Quarry construction will require the site to be cleared and stripped of organic and mineral soils (stripped organics are to be stored for later use in reclamation at the edge of the borrow site). Once the bedrock is exposed it will be blasted or ripped, then sorted (if required), loaded and hauled to the necessary location.

Borrow pits primarily target organic-free, surficial materials that are to be excavated with an excavator, loader, or bulldozer. Like quarries, they will be stripped of the organic soil layer before use (stripped organic soils are to be stored for later use in reclamation at the edge of the borrow site) and are to be established by working into the cut slope. Once the site has been stripped the material will be excavated, reworked as necessary and hauled to the required location.

As per Yukon Workers Compensation Health and Safety Board (YWCHSB) regulations, material removal from a working face that exceeds 3m in height must be done by utilizing constructed terraces or benches. All vertical faces shall not exceed the reach of loading equipment and sloped faces must not exceed 1.5m above the reach of the equipment being used unless the slope is at a stable angle ((YWCHSB), 2010).

Once use of the borrow pit has concluded, the cut slopes will be reduced to match the cut slopes specifications applicable to the ground type at the site to provide long-term stability of the site (See table 2.2-1).

Borrow pits identified as tailing sources refer exclusively to tailings remaining from placer mining operations. All tailings sources consist of washed sands and gravels (with some sources containing cobbles and boulders). Material sourced from these sites will not require stripping, only excavation, sorting (may not be required), loading and hauling. As a result of active placer mining taking place in many of the potential source areas, the volume and location of suitable borrow material is continually changing. Consequently, no spatial component has been assigned for these sources.

All potential borrow sources have been identified as the largest possible size. This provides construction contractors flexibility in choosing borrow sources. Some potential borrow sources may be fully exploited while other may not be used.

The following volumes are expected to be sourced from borrow sites.

Subgrade Material – 135,000 m^3

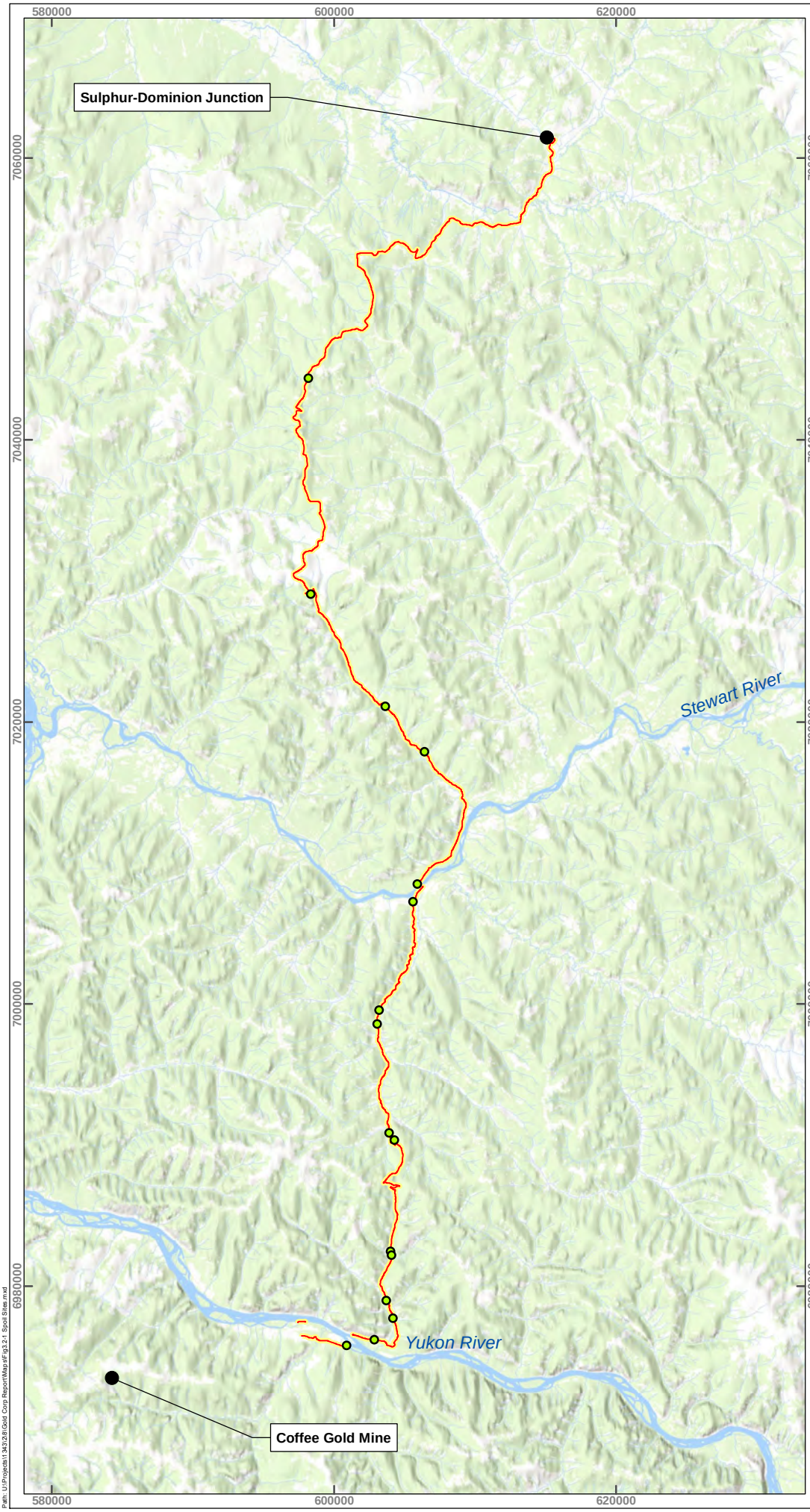
Surfacing Material – 223,000 m^3

Riprap Material – 13,000 m^3

3.2. SPOIL SITES

Throughout the majority of the NAR the designed clearing width (section 2.1) will provide room to spoil excess material. In locations where considerable excess volume is expected, spoil sites have been identified (Figure 3.2-1).

The spoil sites have been identified at their maximum size but the extent the spoil sites will utilize is dependent on contractor preference. Depending on the production system, equipment on hand, and proficiency of operators, the design leaves the contractor freedom to use the spoil sites or haul excess material for use in large fills where they would otherwise have to borrow. Spoil sites will be cleared of vegetative cover and grading of the site will occur as required (staying within the designated area). Spoil material will be placed a minimum of 10m from the road prism and trimmed to meet the specified fill slope angles by soil type (Table 2.0-2). When completed, the site will be revegetated as per the sediment and erosion control best management practices (BMP) specified in section 9.



COFFEE GOLD MINE

Coffee Gold Mine Spoil Sites for Northern Access Route Road Construction Activities



Legend

- Northern Access
- Material Borrow Sites

Notes

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4. DRAINAGE SYSTEM

The NAR has been designed to minimize sediment deposition and erosion. To accomplish this, many road components and construction techniques have been prescribed. The most influential component of the design is the drainage system. All road fills will be placed in lifts and the subgrade and surfacing material will be compacted with a drum roller to create a durable surface that limits rutting and pooling on the road. To ensure surface water is directed off of the compacted road surface (reducing the likelihood of prism saturation and rutting), the road will be built with a 2% crown.

Once water is directed off the road surface, ditches will move surface water from the cut slope and road surface towards offtake ditches and/or cross drain culverts. Once at a cross drain culvert or offtake ditch the water will be directed away from the road prism and watercourses onto undisturbed, vegetated ground. Where it is impractical to redirect ditch water away before entering a watercourse, settling ponds will be installed to reduce sediment delivery to the stream.

In addition to the 43 significant watercourse crossings, there are 374 cross drain culverts proposed to ensure natural drainage patterns are preserved, minimizing any unfavorable flow concentration which can lead to erosion and slope stability concerns. During construction additional cross drain culvert locations may be specified by the site engineer or construction supervisor.

5. ROAD SIGNS

Road signs will be required following construction to aid users in achieving safe and orderly movement of traffic. Signs must follow standards to minimize motorist confusion as outlined by the Yukon Government Highway and Public Works Department (Yukon Highways and Public Works, 2009).

The following road signs will be installed following construction:

- RA-1 STOP signs shall be installed on feeder roads where a feeder road intersects the proposed alignment.
- WB-9 MAXIMUM SPEED XXkm/h AHEAD signs shall be installed prior to all changes in speed limit indicating the upcoming speed limit.
- RB-1 MAXIMUM SPEED XXkm/h signs shall be installed at all changes in speed limit and indicating the new speed limit.
- WA-2L. WA-2R, WA-3L or WA-3R CURVE signs are to be placed on either side of any curve on the road that's design speed is less than the posted speed limit.
- WA-4L, WA-4R, WA-5L, or WA-5R REVERSE CURVE signs shall be installed anywhere two consecutive curves in opposite direction have a tangent between them of less than 120m.
- WA-6L or WA-6R WINDING ROAD signs will be installed where there is a series of five or more curves separated by tangent lengths less than 120m.
- WA-11L, WA-11R, WA-12L, WA-12R, WA-13L or WA-13R CONSEALED ROAD sign will be installed where there is inadequate view for a motorist to react to a sudden entry onto the proposed road from a feeder road or lane.
- WA-28S ADVISORY DISTANCE signs with the indicated kilometers are to be used with any warning sign that covers an area greater than 1km.
- WA-21A HILL WITH % GRADE signs are to be posted at the top approach of hills with grades exceeding 6% to allow trucks time to gear down.
- WA-21S USE LOWER GEAR signs must be posted with the steep hill signs.
- WC-6 FALLEN ROCK signs will be installed where there is a rockfall hazard near the road.
- WA-24 NARROW STRUCTURE signs are to be posted before and after each bridge.
- WA-24S ONE LANE signs are to be posted with all WA-24 signs.
- WA-36L and WA-36R HAZARD MARKER must be posted on each bridge. These signs are frequently damaged by truck traffic and should be inspected and replaced regularly.
- WC-14 WILDLIFE WARNING signs should be posted in areas of high animal concentration. The WC-14 signs specific to additional species are required. In areas with high caribou concentrations a WC-14C sign shall be posted, with high moose concentrations WC-14M signs shall be installed.

- WC-8L and WC-8R TRUCK CROSSING/TURNING AHEAD signs warn motorists that trucks or heavy equipment may be entering and/or crossing the proposed road. Signs will be installed wherever such activities are expected such as active placer mining operations.

The Yukon Government Highway and Public Works Department does not specify signs appropriate for all conditions anticipated along the NAR. In order to address these conditions additional signs shall be implemented and reflect the standards specified in the British Columbia Manual of Traffic Signs and Pavement Markings (British Columbia Ministry of Transportation and Highways, 2000). The following signs should be adopted from the British Columbia standards for use on the NAR:

- W-125 LIMITED VISION signs are to be posted prior to areas with crest curves less than the minimum for the design speed in that section.

- W-32 and W-33 SLIDE AREA/ENDS signs will be installed where there is a slide hazard near the road.

- W-4 SWITCHBACK signs shall be installed at all switchbacks.

6. BRIDGES AND CULVERTS

The NAR from the Sulphur-Dominion junction to the Project site has 43 significant watercourse crossings (Figure 6-1). Of these, 19 are existing fords, and 13 have existing structures in place. All existing structures will be upgraded. During construction activities the existing infrastructure will be utilized. All crossing construction activities will be in accordance with the BMPs described in section 9.

Fish habitat assessments of drainages along the NAR were completed in 2015 (Palmer, 2016) and 2016 (EDI, 2016). Based on fish habitat characteristics and the presence of barriers, streams were designated as 'fish-bearing', 'potentially fish-bearing', 'non-fish bearing' and 'non-classified drainage' (NCDs). Crossings along the proposed alignment include standard non-fish stream culverts (see Appendix 6.0-1 for a typical non-fish stream culvert design), simulated streambed embedded culverts in small, lower value/potentially fish bearing streams, and clear span, all steel portable (ASP) bridges on Geosynthetic Reinforced Soil (GRS) abutments over larger water courses or higher value fish habitat. The reader is referred to Appendix 6.0-2 for a summary of all significant watercourse crossings. For additional site specific information regarding all major crossings the reader is referred to section 1.3.

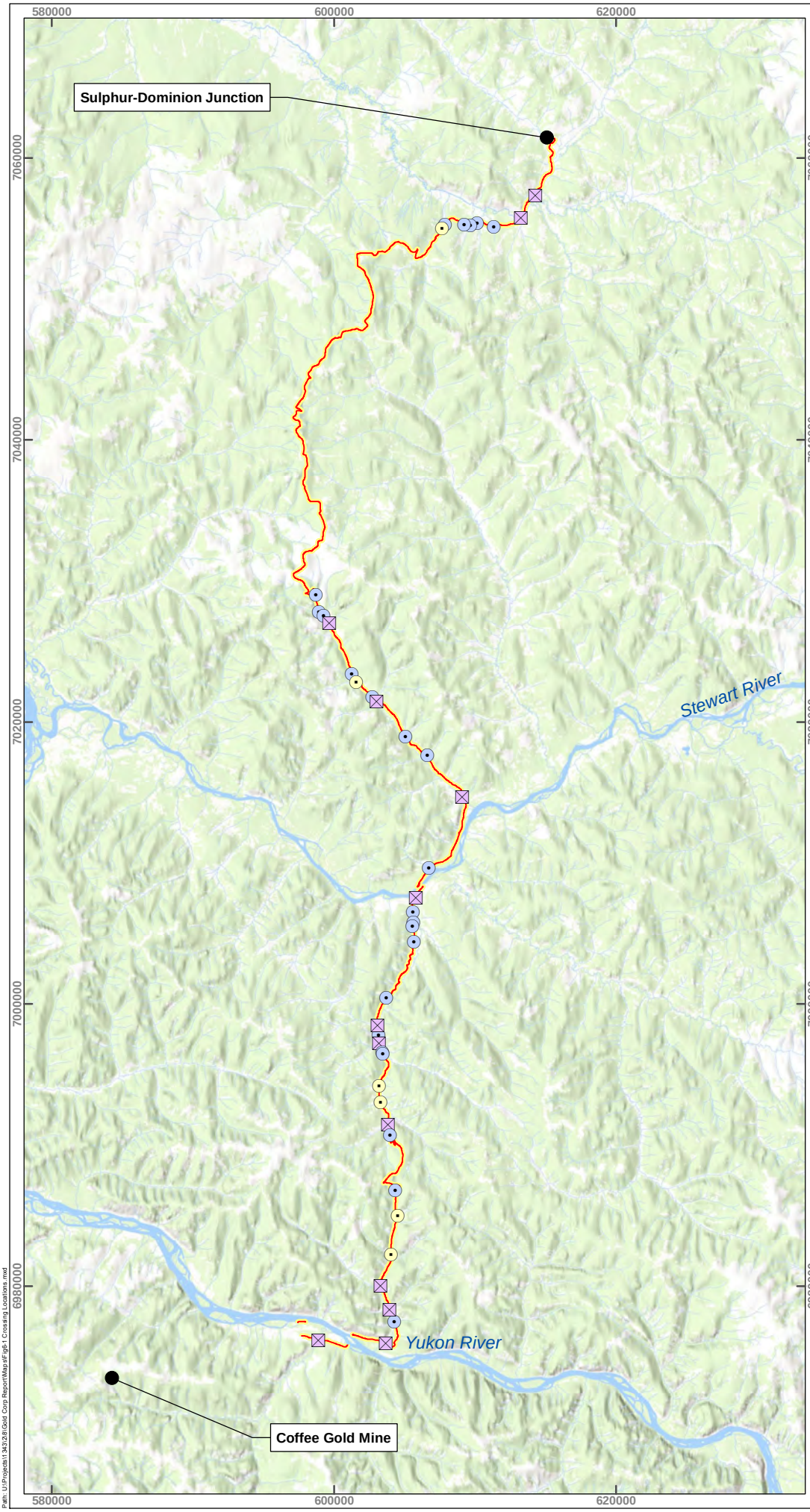
All proposed structures are designed to:

- meet a British Columbia Lane Load – 625 Kilonewtons (BCL 625) (Henley, 2010) vehicle design load;
- accommodate B-Train truck-trailer configurations;
- accommodate expected aufeis flows;
- minimize disturbance to fish habitat and passage; and
- safely accommodate creek flows estimated for a 100 year return period flood event.

100 year return period flood events were estimated at each crossing site using the rational (Thompson, 2006) and regional methods (Riggs, 1982), cross-sectional manning equation (Arcement & Schneider, 1989), and United States Geological Survey (USGS) peak flow estimation tool for the Yukon River watershed (Curran, F, & D., 2003). Estimates were adjusted for changes in localized watershed characteristics, such as infiltration rates and localized rainfall intensity. Site observations, existing structures, and historic high water evidence were also used to estimate peak flow. It should be noted that the majority of the sites have significantly larger capacities than required for the estimated peak flows. The clearances at these sites are controlled by design characteristics such as minimizing stream bank disturbance on fish streams, aufeis, embedment techniques on fish streams, and alignment limitations.

At all crossing locations the RoW clearing widths will be reduced from 30m to 10m. Where cut and fill slopes extend beyond the normal clearing width, clearing widths will extend 3m past the cut or fill slope.

Approaching the crossing site, ditch water will be directed away from the stream by use of cross drain culverts and off take ditches. Instream work on all streams is to be minimized and completed during times of low flow. In addition, instream work on streams designated by aquatic biologists as having potential fish habitat (Appendix 6.0-2) will occur within the freshwater work timing windows identified for Yukon (DFO 2014). As there is no identified salmon spawning in the vicinity of the road (culverts and bridges), the instream work timing window for Arctic Grayling will be used as a guideline for instream activities (i.e., ideally work will take place between July 1 and April 15). In the event timing windows cannot be observed due to operational constraints, work procedures will be altered to comply with the regulations outlined in the Federal *Fisheries Act*, 2012. This may require consultation between the Proponent and DFO. An environmental monitor will be on site for any work in or near a fish-bearing stream.



COFFEE GOLD MINE

Coffee Gold Mine
Stream Crossing Locations
on the Northern Access Rout



Legend

Northern Access Route

Crossing Type

- All Steel Portable
- Standard Non-fish Stream Culvert
- Embedded Culvert

Notes

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Figure 6-1	Date: Mar 8, 2017	Drawn by: M. Lowe	Reviewed: J. Araki P.Eng.

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6.1. STANDARD NON-FISH STREAM CULVERTS

Culverts at non-fish bearing watercourse crossings will be skewed to match the horizontal alignment of the creek. Where practical, culvert grades will match the slope of the ground at the crossing to ensure pipes are not perched at the outlet, reducing the likelihood of erosion and sediment deposition. Inlets and outlets will be armoured with 25kg class riprap (British Columbia Ministry of Transportation and Infrastructure, 2011), as specified in the riprap gradation charts included in appendix 6.0-1: typical non-fish stream culvert. Riprap at the inlet of the culvert will be arranged to train flow through the culverts. Minimum fill depths over culverts will vary by culvert diameter and will be specified by the culvert manufacturer.

6.2. SIMULATED STREAMBED EMBEDDED CULVERTS IN FISH STREAMS

Culverts at fish bearing watercourse crossings will be skewed to match the horizontal alignment of the creek. Culverts will be embedded a minimum of 40% their diameter and their grades will match the grade of the creek's long profile. A simulated stream bed will be constructed in the culvert to closely match the surrounding stream bed. Inlets and outlets will be armoured with 100kg class riprap and the culvert will be nested on a thin leveling course that meets the manufacturer's specifications. Minimum fill depths over culverts will vary by culvert size and wall thickness and will be specified by the culvert manufacturer. Further details are included in the crossing general arrangement drawings for these crossing sites.

6.3. ALL STEEL PORTABLE BRIDGES

All steel portable bridges are to be pre-fabricated, single-span structures that clear-span watercourses. The abutments consist of:

Pre-cast concrete pad with integrated ballast wall.

Three sided retaining structures constructed with GRS.

Construction methods will typically involve:

Excavation of material at abutment locations to a suitable elevation and substrate.

Abutment construction. This will involve back-filling and compaction techniques behind the face of the GRS forms.

Placement of the concrete pad with integrated ballast wall.

Launching the bridge.

Backfill to final road surface elevation including slope trimming and treatment.

Specific details are found in the General Arrangement Drawings for each crossing as listed in Section 1.3.

7. BARGE LANDING CONSTRUCTION

The NAR requires barge landings on both the Stewart and Yukon rivers. Barge landing sites are proposed on the North and South banks on each of the rivers. Barge landings have been individually designed to best accommodate individual site characteristics. The reader is referred to section 1.3 for a list of drawings for the barge landings.

7.1. DESIGN AND CONSTRUCTION

Each barge landing has a concrete docking ramp. The approach angle of the ramp is 15° from the orientation of the river bank, designed so that the barge is facing upstream during docking. The ramp will be on a 12% grade to help minimize stream bottom interference. Foundations for the concrete ramp will be constructed with compacted free draining angular fill and will be armoured with riprap. Ideally construction of the ramps will be completed at low water, with no work occurring in the water. In the event water levels or construction timing prevent works from being completed in the dry, work procedures will be altered to comply with the regulations outlined in the Federal Fisheries Act, 2012. This may require consultation between the Proponent and Fisheries and Oceans Canada (DFO).

Each barge landing will have an associated industrial site which will enable traffic to easily embark and disembark from the barge. Each industrial site will be sized appropriately for the location and will be designed to allow for a B-Train tractor-trailer configuration to back onto and drive off of the barge and then to proceed onto the road. Industrial sites will allow for storage of the barge, maintenance supplies, and emergency response materials. Design constraints and topography have resulted in considerable earthwork requirements to establish barge landings on the north bank of the Stewart and Yukon rivers. To minimize earthworks and blasting required during construction, the industrial sites on the north banks have been minimized, making it necessary to locate fuel storage facilities and provide room for winter barge storage at the industrial sites on the southern banks. Fuel for the barge will be stored in a single 20,000-litre double-walled tank, which will be placed a minimum of 30 m from the water line. The double-walled tanks will in turn be stored inside of high-density polyethylene-lined berms with a minimum capacity of 110% of the tank volume. The fuel tank will be periodically filled by fuel trucks travelling to site or road construction operations. A spill containment tray will be present underneath the fueling nozzles and during fueling all petroleum hydrocarbon BMPs will be followed (Section 9.0).

The industrial sites will be graded away from the river and direct surface runoff to settling ponds. The inlet of the setting pond will include spill booms to collect any hydrocarbons. At the outlet of the settling pond a reverse slope culvert discharging onto a spill basket filled with spill pillows will drain into an armoured channel. The reverse slope culvert will trap larger volumes of hydrocarbons in the event of a spill.

Equipment required for construction will typically include excavators, bulldozers, gravel trucks, drum compactors, blasting equipment, and graders. The riprap and free draining fill will be delivered to a storage location on site or delivered as needed during construction of the ramp and industrial site. Site excavation will be from the land side for all ramp construction purposes to avoid excavating toward the river.

7.1.1. NORTH BANK STEWART RIVER BARGE LANDING

The barge landing will consist of new construction through a section of the river bank with shallow bedrock, deep near-shore water, and minimal stream bottom interference. The ramp will consist of precast concrete panels supported by riprap and free draining fill.

Where possible, the North Stewart industrial site will be constructed using conventional cut and fill techniques. It is anticipated that cut and fill techniques will not be suitable for the entire site and that necessary excavations will generate a surplus of excavated material. This surplus material may be used in the construction of the road approach or stored in the nearby spoil site. Before any earthworks occurs, organics will be stripped from the site and will be stored (either off site or well back from the bank of the river) for later use in reclamation. This site is relatively small because it will not be used to store the barge in the winter.

This site is the only barge landing site expected to require blasting during construction. All blasting activities will adhere to the applicable BMPs outlined in section 9.

7.1.2. SOUTH BANK STEWART RIVER BARGE LANDING

The barge landing will require relocation of the existing barge landing, approximately 650m upstream along an existing road and away from a known historic site. The ramp will consist of precast concrete panels supported by riprap and free draining granular fill. The entire river bank along the constructed industrial site will be stabilized with riprap.

Construction for the industrial site will involve stripping the organic soil layer, importing required subgrade material, compacting with a drum roller and surfacing the site with 0.3m of surfacing material. All topsoil and organics will be stored for later use in reclamation on the inland side of the industrial site, well back from the bank of the river.

7.1.3. NORTH BANK YUKON RIVER BARGE LANDING

The barge landing will require relocation of the existing barge landing downstream approximately 2.1km to a location with deeper water and less river bottom interference. Although the area of the proposed new landing has historic lateral channel migration, it is at the extreme downstream reach of this migration and has over-riding attributes which drove the placement of the landing including water depth, private land,

barge crossing length, and ice road length. To account for possible future channel migration, riprap is proposed outside the current channel that will continue to protect the landing over time.

The ramp will consist of precast concrete panels supported by riprap and free draining granular fill. A GRS wall will be constructed through the landing site in a section with a steep talus slope. Riprap stabilization of the wetland bank immediately upstream of the landing site will be required. Continuous riprap stabilization of the bank 50m downstream of the barge landing ramp will also be required.

Construction of the industrial site on the North bank of the Yukon River will involve stripping the organic soil layer, importing any required subgrade material, compacting with a drum roller and surfacing the site with 0.3m of surfacing material. All topsoil and organics will be stored for later use in reclamation on the inland side of the staging area or back along the approach road, well back from the bank of the river.

7.1.4. SOUTH BANK YUKON RIVER BARGE LANDING

The barge landing will require relocation of the existing barge landing approximately 600m upstream and away from the historic Coffee Creek Camp structures. The ramp will consist of precast concrete panels supported by riprap and free draining granular fill. The entire river bank along the constructed industrial site will be stabilized with riprap.

Construction for the South Yukon industrial site will involve stripping the organic soil layer, importing any required subgrade material, compacting with a drum roller and surfacing the site with 0.3m of surfacing material. All organics will be stored in the temporary organics stockpile at the mine site for later use in reclamation.

8. EQUIPMENT AND SCHEDULING

8.1. EQUIPMENT

The exact timeframe and equipment requirements for the construction of the NAR will depend largely on the equipment available, condition of equipment, and the skill level of the operators. For planning purposes, it is assumed the contractor, or contractors, will have a major equipment complement similar to the following (standard support equipment such as; chainsaws, linesaws, mechanic equipment, fire suppression equipment, emergency transportation vehicle (ETV) and personal protective equipment (PPE) have been excluded from the list).

- ~240hp dozer with articulating 6-way blade: Used for stripping organic soils, clearing RoW, shaping road prism and ditches
- ~450hp dozer with U-blade: For stripping borrow sites, moving large volumes of local material (including spreading trucked overland material) and moving material for long pushes.
- 300 series excavator: For installing culverts, cleaning ditches, shaping prism, and preparing rock armour quarries for blasting and loading/placing rock armour.
- 400 series excavator: For large volume movement and primary excavation.
- Scraper: For use excavating and hauling material along upgrade portions of the road.
- 8bm^3 gravel truck: For hauling riprap, surfacing, importing subgrade fill and hauling waste material to spoil sites.
- 3bm^3 front end loader: For loading material in pits.
- Grader: For shaping prism.
- Drum roller compactor: For compacting subgrade and surfacing materials
- Water truck: For reaching optimum water content for compaction of prism.
- Tractor Trailer: With various trailers for moving equipment and supplies.
- Crane truck (Hiab): For transporting culverts and supplies from temporary laydowns (section 3.2) to individual culvert sites.
- Drilling and blasting equipment: For drilling quarries. A permitted explosive storage area will need to be established that meets the requirements of the explosives act (Government of Canada, 2015) with an appropriate storage magazine on site. The exact equipment complement will depend on the borrow sources utilized and contractors plan to maximize productivity.

- Surfacing production equipment: Screening, crushing and/or mixing equipment will be required. The exact equipment complement will depend on the borrow sources utilized and contractors plan to maximize productivity.

8.2. SCHEDULING

Ideally seasonal and weather restrictions should be implemented for many of the road construction phases.

- Placement and compaction of embankment fills should be completed with unfrozen materials. Special construction techniques and more restrictive material gradation specifications are required for work completed while materials and excavated areas are frozen.
- Summer restrictions should include reduced operations during elevated forest fire risk and should follow forest fire prevention and suppression guidelines (such as the regulations outlined in the BC wildfires act (Government Of British Columbia, 2016)).
- Construction activities requiring in-stream work at stream crossing and barge landing locations should be limited to times of low flows and applicable fish windows on fish bearing streams (Fisheries And Oceans Canada (DFO), 2014).
- Non fish stream crossings should be installed during periods of low flow.
- Overlanding, construction through silty portions of the road, and use of silty unfinished portions of the road should only occur during periods of dry weather.

In the event unexpected weather conditions or construction timing prevents the above restrictions from being adhered to work procedures will be modified to minimize negative environmental impacts and, to comply with applicable legislation.

9. BEST MANAGEMENT PRACTICES

EDI collaborated with OEL, Tetra Tech EBA (EBA), Lorax and Hemmera to develop the Coffee Gold Mine, Access Route Construction Management Plan (OEL; EDI; Hemmera; Lorax; EBA;, 2016). In this plan EDI developed a comprehensive set of BMPs to be followed during construction and upgrade of the NAR, barge landings, and crossings. The plan includes BMPs specific to:

Operating around large rivers and side channels;

Constructing bridges around fish bearing streams;

Installing culverts on fish bearing streams;

Installing culverts on non-fish bearing streams;

Fording equipment during construction;

Managing erosion and sedimentation from cut and fill slopes;

The storage and handling of petroleum hydrocarbons during construction;

A vegetation management section specifying measures to be taken to minimize the disturbance to surroundings vegetation and limit the spread of invasive species; and

A wildlife management section specifying measures that shall be taken to be reduce negative effects of the road on wildlife present in the area.

For specific BMPs the reader is referred to the BMP section of the Access Route Construction Management Plan (OEL; EDI; Hemmera; Lorax; EBA;, 2016).

10. GEOCHEMICAL EVALUATION

Lorax Environmental Services Ltd. (Lorax) assessed the risk of metal leaching (ML) and acid rock drainage (ARD). 38 samples were collected along the NAR. None of these samples were classified as potentially acid generating (PAG) or as having metal leaching concentrations above Canadian Council of Ministers of the Environment (CCME) guidelines. Lorax has summarized their results and specified measures to be taken to monitor ML and ARD potential during construction in the Geochemical Evaluation section of the Access Route Construction Management Plan (OEL; EDI; Hemmera; Lorax; EBA;, 2016).

11. ROAD AND CROSSING CONSTRUCTION QAQC

Quality assurance and quality control (QAQC) protocols will be put in place to ensure; all roadwork and barge landing construction activities minimize any negative environmental impacts, construction activities are performed safely, and the final roadway is safe to travel at the specified design speeds. To make certain these objectives are met the following actions will be taken:

- Ahead of all construction activities survey crews will field mark the designed road.
- During road construction 2-3 full time engineers/engineering designates will perform inspections of road construction techniques, monitor borrow and spoil sites, refresh survey markers, and ensure adherence to the design. Road construction inspections will be completed by the engineer/engineering designate at intervals determined to be acceptable by the engineer/engineering designate depending on the complexity of road sections and the competency of the road crews.
- During the construction of stream crossing structures, barge landings, and work along the Stewart River back channel, an engineer/engineering designate will be on site at all times. They will ensure the designs are followed; appropriate construction techniques are utilized, and ensure all components are in an acceptable condition and meet specified standards when installed.
- During the construction of stream crossing structures, barge landings, and work along the Stewart River back channel the engineer/engineering designate will be responsible for coordinating site inspections/visits with all necessary additional experts (biologists, environmental monitors, geochemists, geocryologists, geotechs, etc.).

12. GEOTECHNICAL TESTING

The proposed road alignment was assessed by OEL personnel via walking and driving traverses of the length of the proposed road alignment. Observations of surface expression, ground morphology, vegetation types, surficial materials, and bedrock lithology were recorded. Subsurface sampling consisted of excavation of shallow (<0.8m) hand dug test pits as well as observations of existing road cuts and placer excavations in the area. No machine dug test pitting or deep subsurface investigation was completed.

Geotechnical data were also collected by EBA and Palmer personnel along the road corridor (McKillop, 2016). This data was also synthesized into the OEL road design.

The generalized soil profile identified along the majority of the proposed alignment consists of <2m deposits of silty sand with some gravel colluvium to angular rubble colluvium in a silty sand matrix overlying fractured micaschist bedrock. Deeper fluvial deposits were noted in valley bottom locations and along the lower portions of the valley sidewall. Shallow ice-rich permafrost was also found in valley bottom locations and on north aspect slopes where not degraded by placer miner activities. For greater detail concerning geotechnical conditions along the proposed alignment the reader is referred to the Geotechnical Assessment referred to in section 1.3.

13. ROAD MAINTENANCE

Regular road inspections by a road monitor will help schedule normal maintenance activities such as grading, brushing, ditch and culvert sump cleaning. Inspections will be carried out on a continual basis to help ensure road user and wildlife safety as well as maximum productivity. Other maintenance issues that may arise following construction will be largely dependent on the adherence to material and construction specifications during construction. Road inspections should include the following:

Road surface quality – Checking for potholes, wash boards, and appropriate crown and curve super-elevation.

Road settlement - Any settlement of the roadway may require excessive grading to smooth the road. Sections of excessive grading may require additional watering and compaction to ensure the resulting road surface meets the original design speed requirements for the continued safety of road users.

Damage/deterioration of bridges - Bridges and major culverts must adhere to a regular inspection schedule by qualified professionals. These inspections are due diligence against future bridge failure and to ensure regular maintenance of the bridges safety features occurs.

Damage to signs - Snow removal commonly leads to sign damage. Following installation of all road signs a sign inventory should be completed. Every spring that inventory should be checked to ensure all signs are present and in an acceptable condition.

Presence of brush within the cleared RoW - The presence of regenerating vegetation along the cleared right of way should be assessed annually by a qualified professional. If it is determined vegetation impedes driver sight lines or inhibits snowmelt brushing should be prescribed.

14. CLOSURE

We trust you will find this information helpful. Please do not hesitate to call if you have any questions.

Regards,

Onsite Engineering Ltd.

Prepared by:

Reviewed by:

[signatures redacted]

[signatures redacted]

Matthew Dickie, EIT
Project Engineer

Jeremy Araki, P.Eng.
Supervising Engineer, Principal

15. REFERENCES

(YWCHSB), Y. W. (2010). *Occupational Health And Safety Act.* Retrieved June 23, 2016, from Yukon Workers Compensation Health and Safety Board: https://wcb.yk.ca/Regulations/LIB0136.aspx

APEGBC, ABCFP. (2014, July 20). *Guidelines for Professional Services In The Forest Sector - Crossings.* Retrieved November 10, 2016, from APEGBC: https://www.apeg.bc.ca/getmedia/97dcbad3-5482-416a-9bc0-55b3c662e71a/APEGBC-Guidelines-for-Forest-Sector-Crossings.pdf.aspx

Arcement, G. J., & Schneider, V. R. (1989). *Guide for Selecting Manning Roughness Coefficients For Natural Channels and Flood Plains.* Alexandria: USGS.

British Columbia Ministry of Transportation and Highways. (2000, September). *Manual of Standard Traffic Signs & Pavement Markings.* Retrieved November 9, 2016, from British Columbia Ministry of Transportation and Infrastructure: http://www.th.gov.bc.ca/publications/eng_publications/electrical/most_pm.pdf

British Columbia Ministry of Transportation and Infrastructure. (2011). *2012 Standard Specifications for Highway Construction.* Victoria: British Columbia Ministry of Transportation and Infrastructure.

Curran, J. H., F, M. D., & D., T. G. (2003). *Estimating the Magnitudeand Frequency of Peak Streamflows for Ungaged Sites on Streams in Alaska and Conterminous Basins in Canada.* Anchorage, Alaska: U.S. Geological Survey.

EDI. (2016). *Coffee Gold Project: Fisheries & Aquatic Resources Baseline Update - 2016.* Whitehorse: EDI.

Fisheries And Oceans Canada (DFO). (2014, 01 24). *Freshwater Timing Windows Identified for the Yukon*. Retrieved 06 23, 2016, from Fisheries And Oceans Canada (DFO): http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/yk-eng.html

Henley, J. (2010, March). *Standard Bridge Design Vehicles.* Retrieved October 21, 2016, from British Columbia Ministry of Forests & Range: https://www.for.gov.bc.ca/hth/engineering/documents/publications_guidebooks/manuals_standards/Std_Bridge_Drawings/bridge-drawings-2010/STD-EC-000-01.pdf

McKillop, R. (2016). *Terrain Stability and Hazard Mapping for the Coffee Gold Project.* Vancouver: Palmer.

OEL; EDI; Hemmera; Lorax; EBA;. (2016). *Access Route Construction Management Plan Coffee Gold Mine YESAB Project Proposal.*

Palmer. (2016). *Fish and Aquatic Resources Baseline Report: Mine Access Route. Prepared For Kaminak Gold Corporation.*

Riggs, H. C. (1982). *Regional Analyses of Streamflow Characteristics.* Alexandria: USGS.

Thompson, D. B. (2006). *The Rational Method.* Texas Tech University - Civil Engineering Department.

Water Resources Branch Environment Yukon. (2011, May). *Best Management Practices for Works Affecting Water in Yukon.* Retrieved October 20, 2016, from Environment Yukon: http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf

Yukon Chamber of Mines. (2010, August). *BMP_RG_October28_REVISED_WebFile_Apr15.pdf.* Retrieved October 15, 2016, from Yukon Miners: http://www.yukonminers.ca/images/BMP_RG_October28_REVISED_WebFile_Apr15.pdf

Yukon Highways and Public Works. (2009). *Yukon Government Highway Sign Manual.* Whitehorse: Yukon Highways and Public Works.

APPENDIX 2.1-1: ROAD PERMAFROST GEOHAZARD EVALUATION MAPPING

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7105000 7104000 7103000 7102000 7101000 7100000 7099000 7098000 7097000 7096000 7095000 7094000

N W E S

Hunker Creek
Hunker Creek
Hunker Creek
Hunker Creek
Hunker Creek
4-Above-Pup
8-Above-Pup
Eighty-Pup
Hester Creek
Independence Creek
Colorado Creek
6el Pup
TT-1
TT-2

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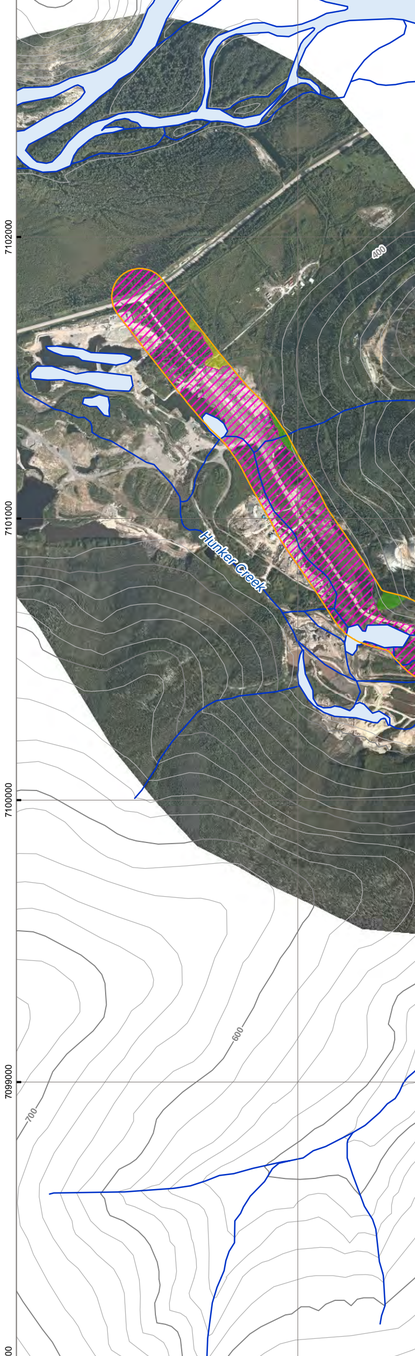

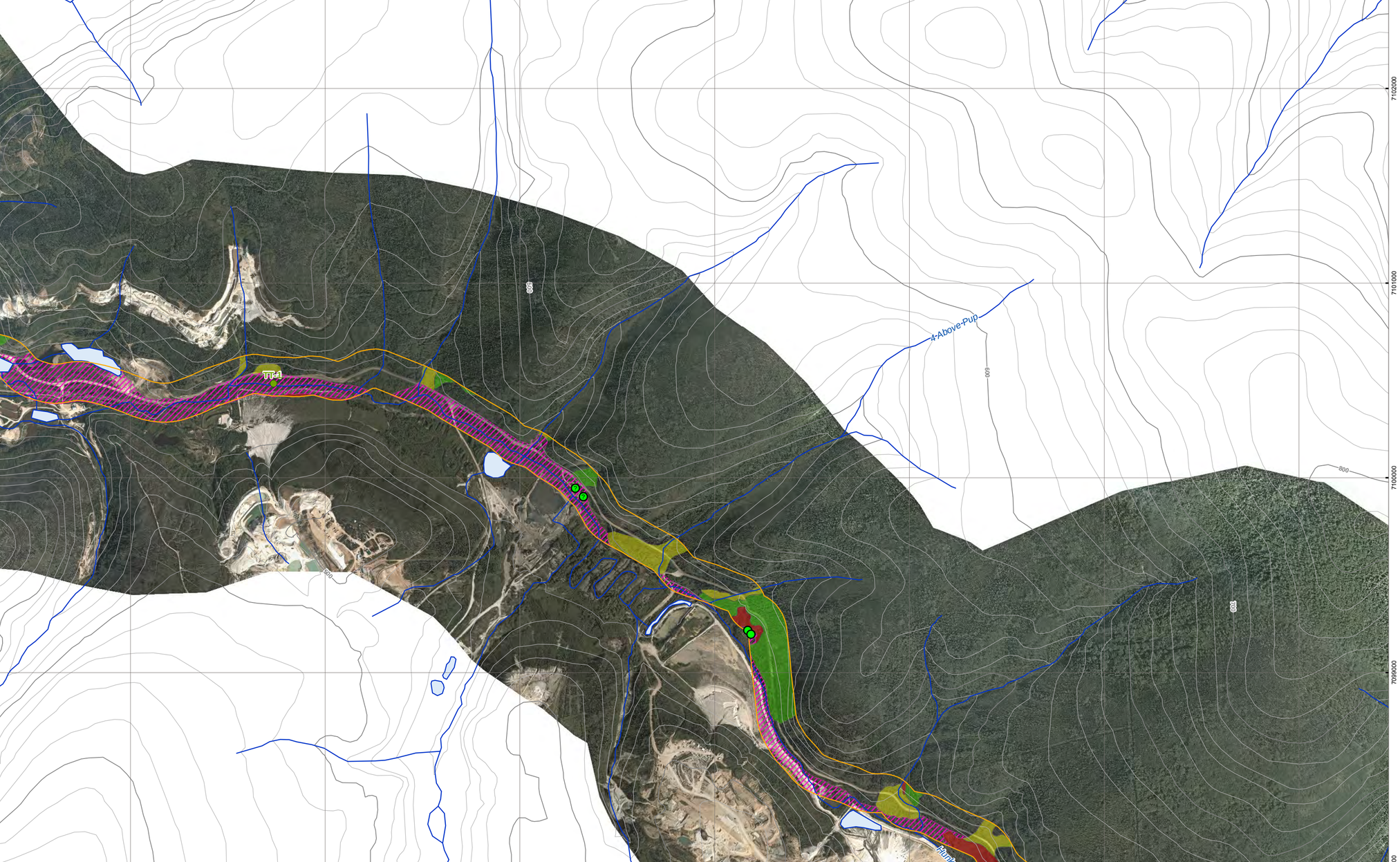

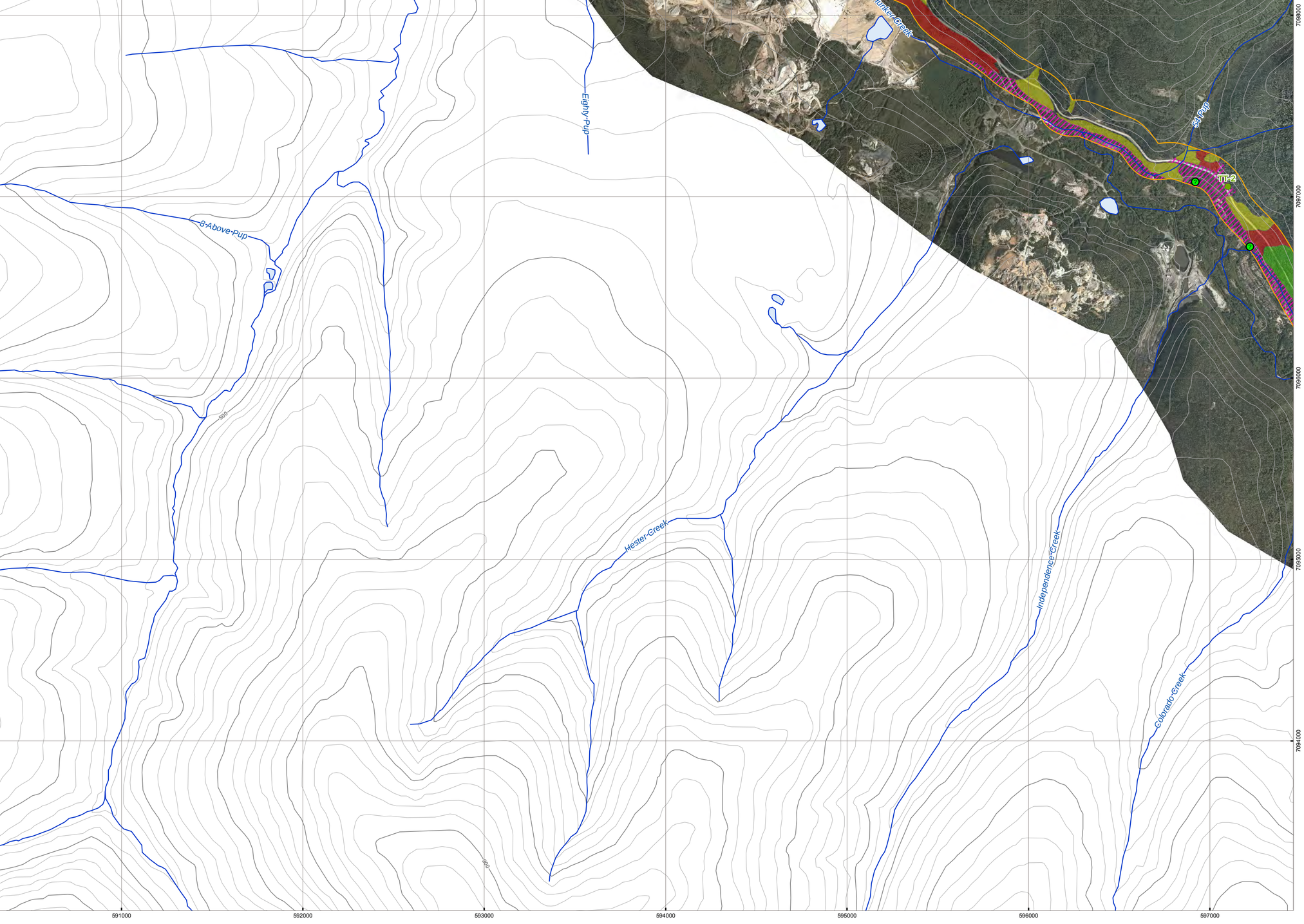

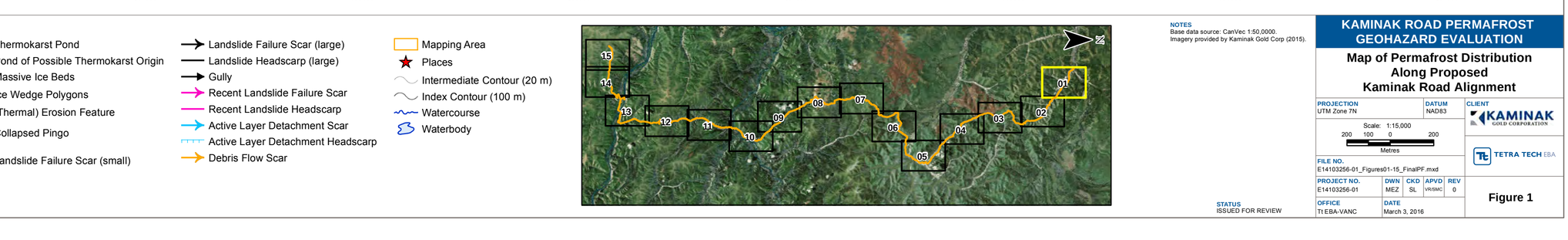

LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
- Perennially Frozen Ground - visible excess ice (Fv)
- Perennially Frozen Ground - ice not visible (Fn)
- Unfrozen
- Placer Tailings Disposal Disturbed Area
- Kaminak Route Chainage
- Kaminak Route
- TT EBA Ground Observation Site
- Thermokarst Pond
- Pond of Possible Thermokarst Origin
- Massive Ice Beds
- Ice Wedge Polygons
- (Thermal) Erosion Feature
- Collapsed Pingo
- Landslide Failure Scar (small)
- Landslide Failure Scar (large)
- Landslide Headscarp (large)
- Gully
- Recent Landslide Failure Scar
- Recent Landslide Headscarp
- Active Layer Detachment Scar
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

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PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0
OFFICE: Tt EBA-VANC	DATE: March 3, 2016			

CLIENT: KAMINAK GOLD CORPORATION

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Figure 1

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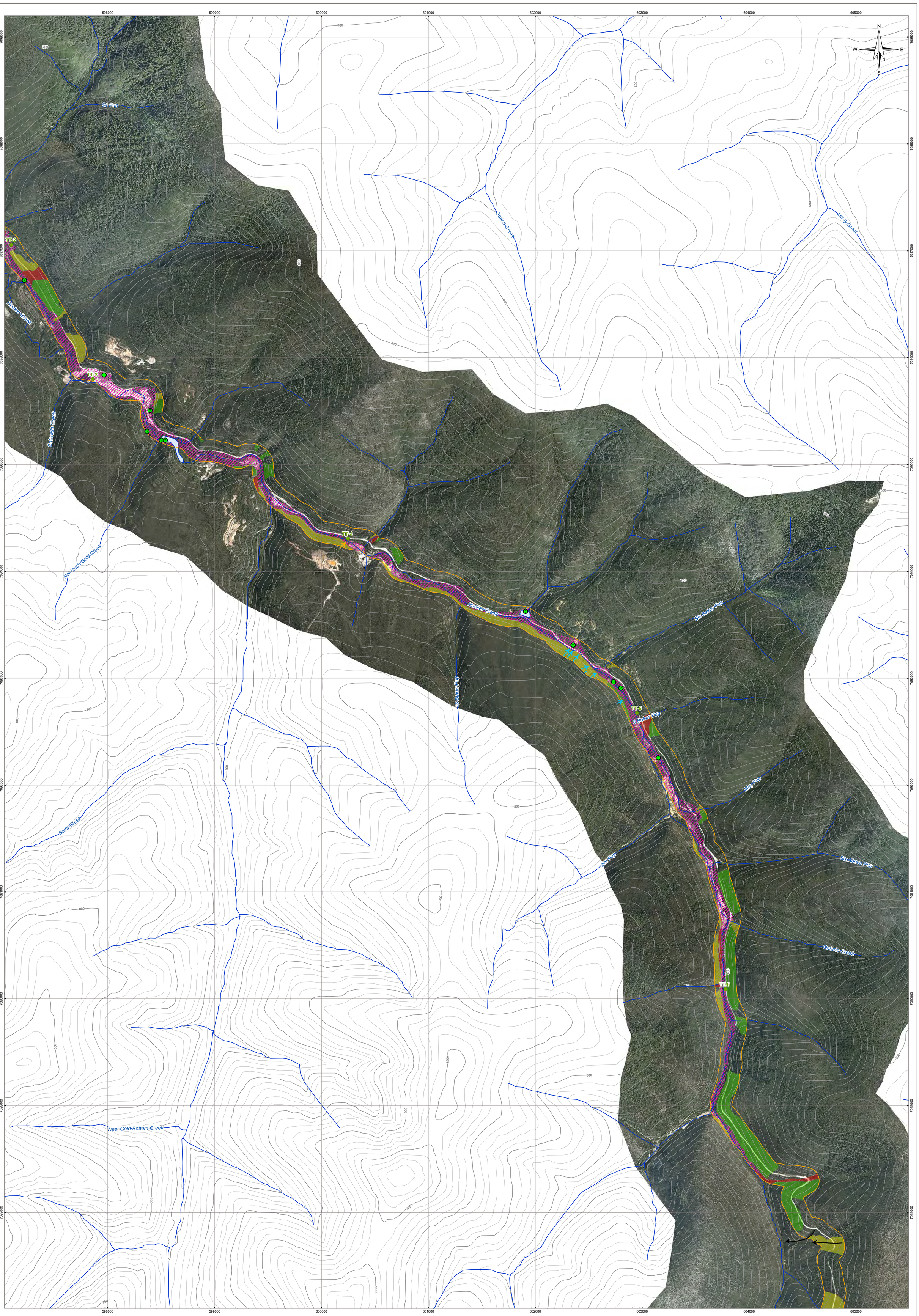

LEGEND

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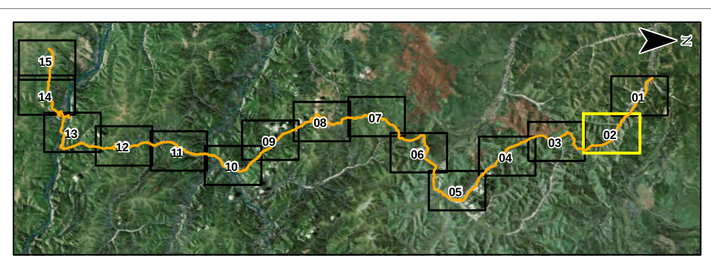

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Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N				DATUM: NAD83	CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
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OFFICE: TI EBA-VANC	DATE: March 3, 2016				

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LEGEND

Permafrost Characterization by Ground Ice Content

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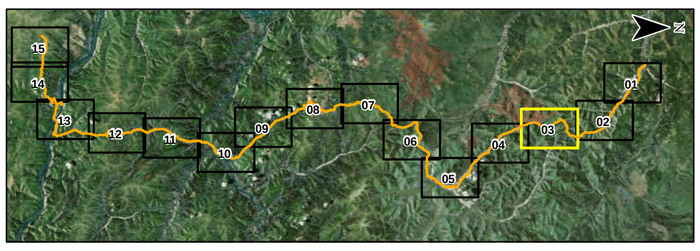

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Imagery provided by Kaminak Gold Corp (2015).

STATUS
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Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

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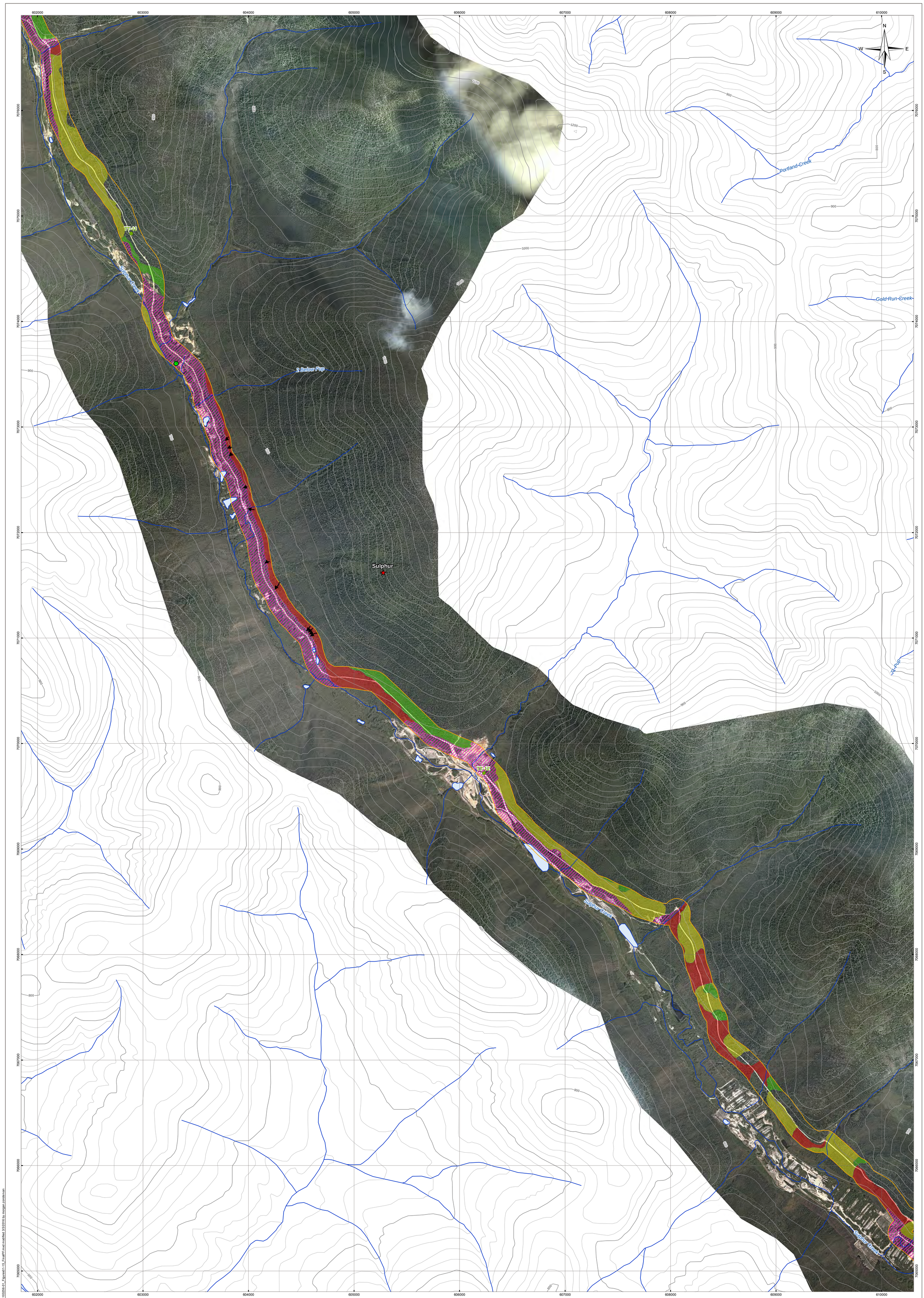

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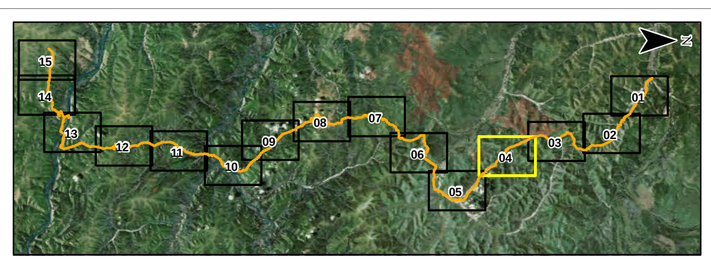
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N				DATUM: NAD83	CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	Figure 4
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				

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610000 611000 612000 613000 614000 615000 616000 617000

7066000 7065000 7064000 7063000 7062000 7061000 7060000 7059000 7058000 7057000 7056000 7055000

N W E S

Sulphur Creek
TT-13
TT-14
Sulphur Creek
37-Pup
24-Pup
Dominion
0+000-0
1+000-0
Sulphur Creek
2+000-0
Dominion Creek
TT-15
3+000-0
Scribner Creek
4+000-0
5+000-0
TT-16
6+000-0
7+000-0
TT-17
Australia Creek
8+000-0
9+000-0
10+000-0
11+000-0

LEGEND

Permafrost Characterization by Ground Ice Content
- Perennially Frozen Ground - very ice-rich (Fi)
- Perennially Frozen Ground - visible excess ice (Fv)
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- Kaminak Route
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- Pond of Possible Thermokarst Origin
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- Ice Wedge Polygons
- (Thermal) Erosion Feature
- Collapsed Pingo
- Landslide Failure Scar (small)
- Landslide Failure Scar (large)
- Landslide Headscarp (large)
- Gully
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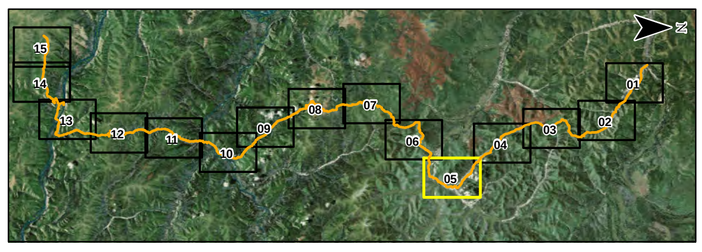
- Recent Landslide Headscarp
- Active Layer Detachment Scar
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83			
Scale: 1:15,000 (200 100 0 200 Metres)				
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VRSMC	REV: 0
OFFICE: TI EBA-VANC	DATE: March 3, 2016			

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 5

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LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
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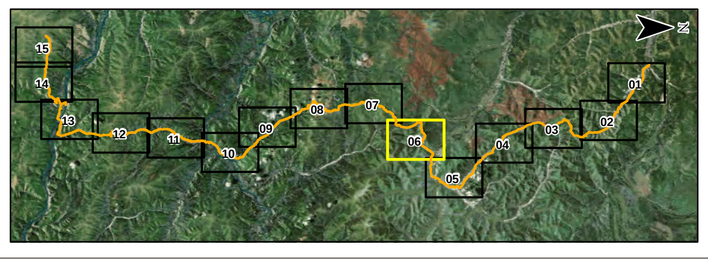
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	Figure 6
OFFICE: TI EBA-VANC	DATE: March 3, 2016				

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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

LEGEND

Permafrost Characterization by Ground Ice Content
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- Active Layer Detachment Headscarp
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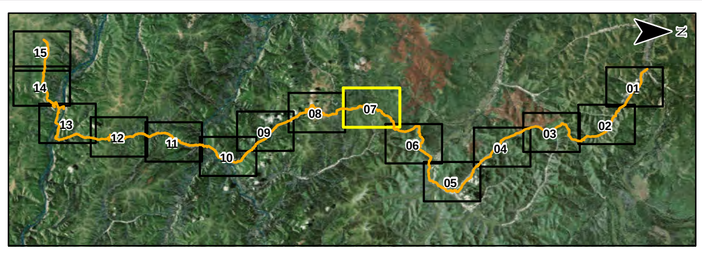
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

PROJECTION: UTM Zone 7N		DATUM: NAD83		CLIENT: KAMINAK GOLD CORPORATION	
Scale: 1:15,000 (200 100 0 200 Metres)				TETRA TECH EBA	
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	Figure 7
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				

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595000 596000 597000 598000 599000 600000 601000 602000

7037000 7036000 7035000 7034000 7033000 7032000 7031000 7030000 7029000 7028000 7027000 7026000

N W E S

Dome Creek

Dome Creek

Henderson Creek

Maisy May Creek

44+000-0
45+000-0
46+000-0
47+000-0
48+000-0
49+000-0
50+000-0
51+000-0
52+000-0
Henderson to Maisy May 52+704
53+000-0
54+000-0
55+000-0
56+000-0
57+000-0
58+000-0
59+000-0
60+000-0

TT-24
TT-25

5500 5000 4500 4000 3500 3000 2500

LEGEND

Permafrost Characterization by Ground Ice Content

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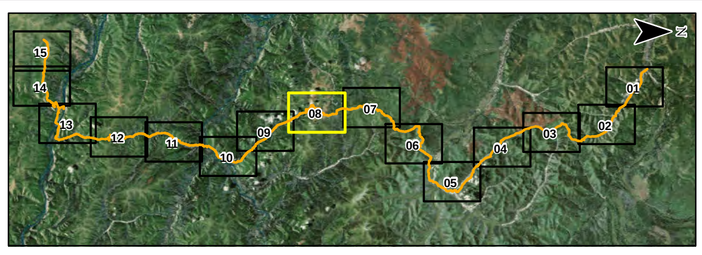
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION	UTM Zone 7N
DATUM	NAD83
Scale:	1:15,000
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	Metres
FILE NO.	E14103256-01_Figures01-15_FinalPF.mxd
PROJECT NO.	E14103256-01
DWN	MEZ
CKD	SL
APVD	VRSMC
REV	0
OFFICE	Tt EBA-VANC
DATE	March 3, 2016

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 8

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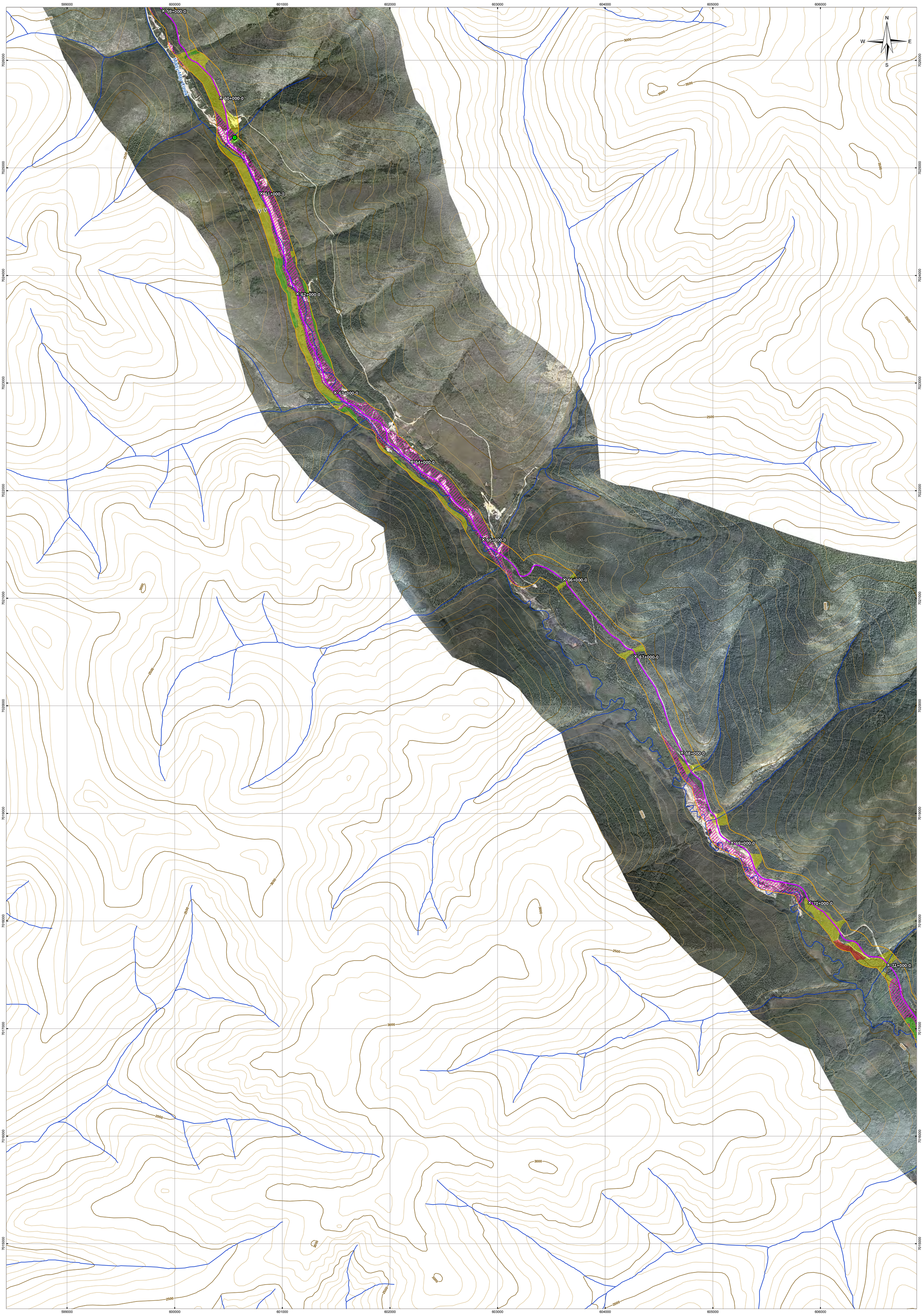

LEGEND

Permafrost Characterization by Ground Ice Content

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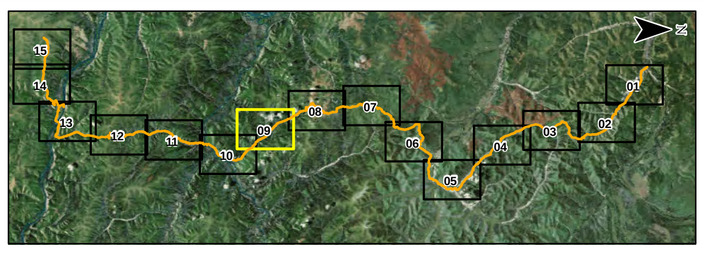

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N		DATUM: NAD83			CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				Figure 9

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604000 605000 606000 607000 608000 609000 610000 611000 612000

7018000 7017000 7016000 7015000 7014000 7013000 7012000 7011000 7010000 7009000 7008000 7007000

N W E S

70+000-0
71+000-0
72+000-0
73+000-0
74+000-0
75+000-0
Maisy May to Nth Bank Stewart 75+102
76+000-0
77+000-0
78+000-0
79+000-0
80+000-0
81+000-0
82+000-0
83+000-0
Nth Bank Stewart to Barker 83+131
84+000-0
85+000-0

TT-26
TT-38
TT-37
TT-36

Maisy May Creek
Scroggie Creek

3000 2000 2500 1500

LEGEND

Permafrost Characterization by Ground Ice Content
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- Debris Flow Scar

- Mapping Area
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- Intermediate Contour (100 ft)
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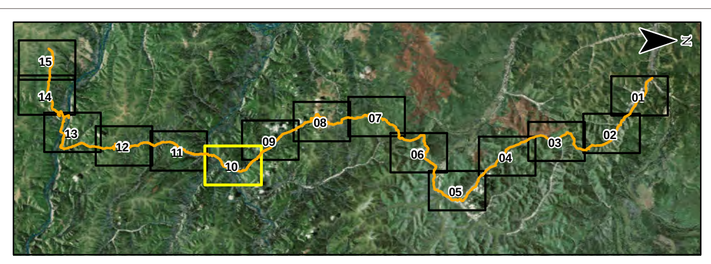
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N				DATUM: NAD83	
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				

CLIENT: KAMINAK GOLD CORPORATION
TETRA TECH EBA

Figure 10

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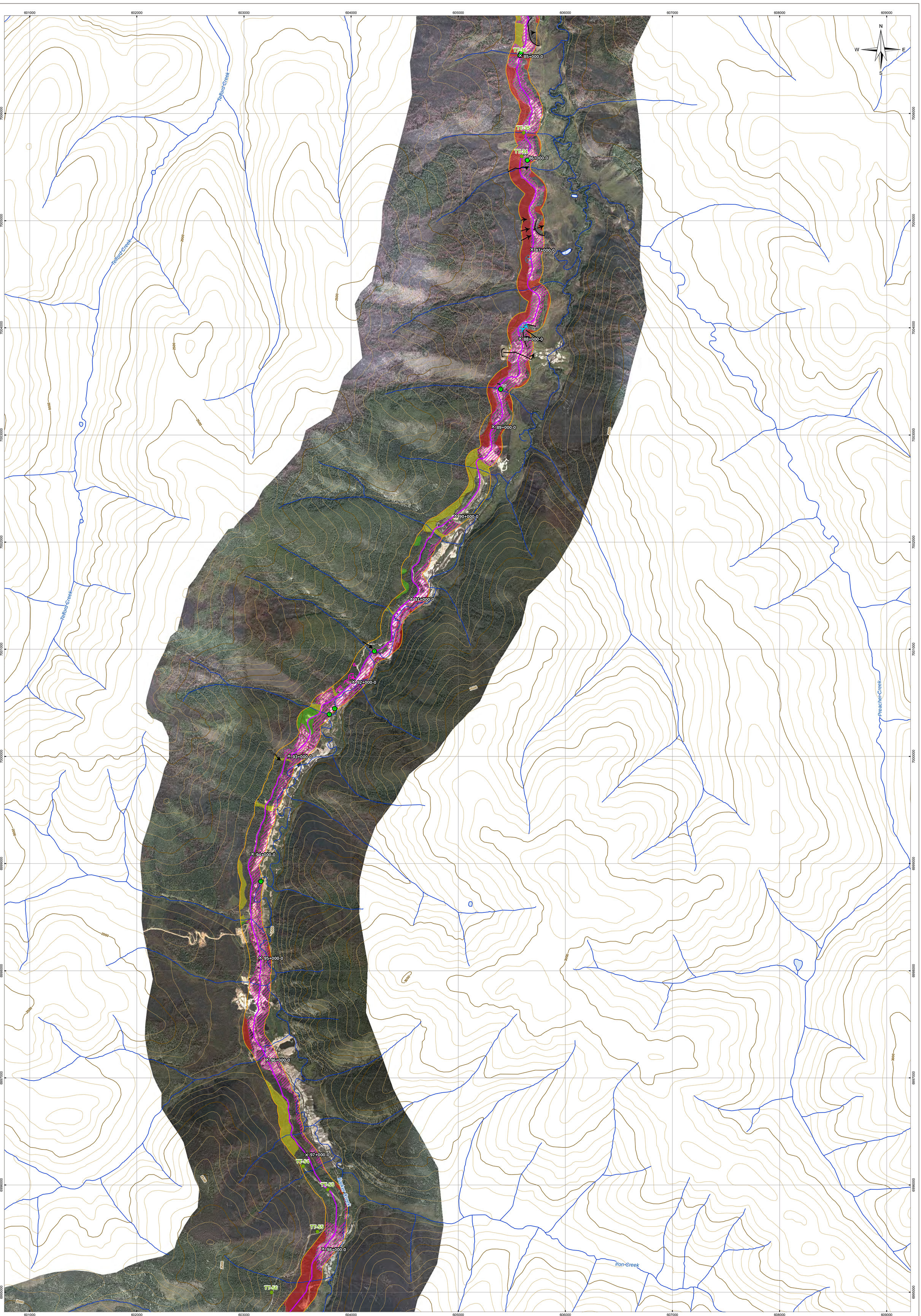

LEGEND

Permafrost Characterization by Ground Ice Content

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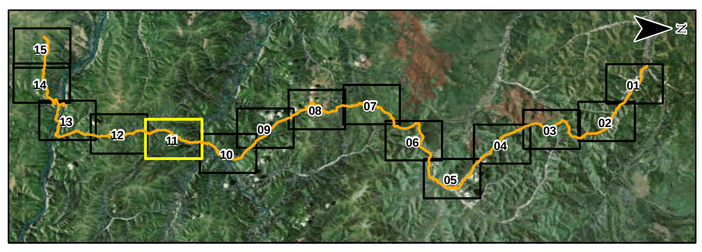

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N			DATUM: NAD83		
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	
OFFICE: TI EBA-VANC	DATE: March 3, 2016				

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 11

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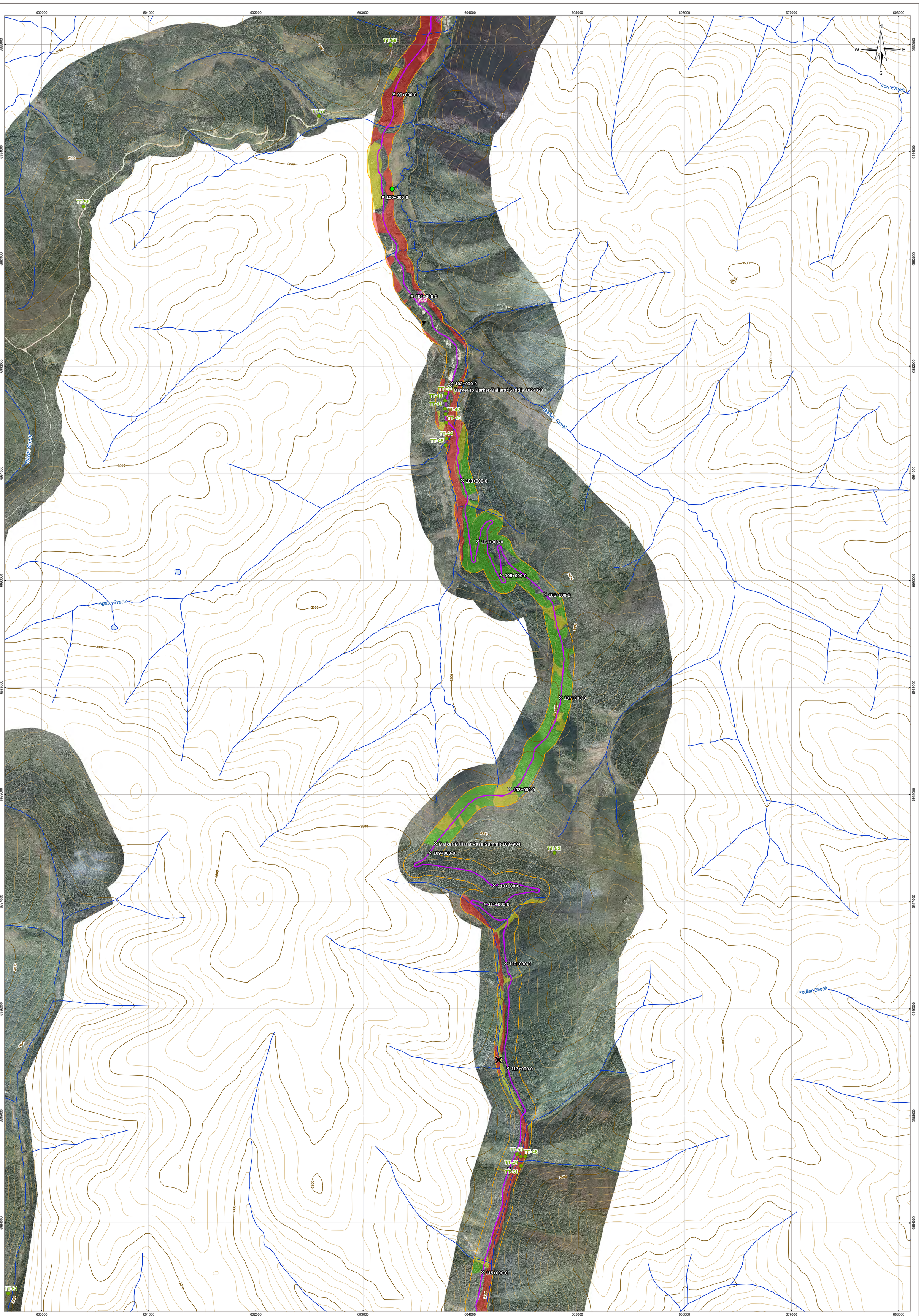

LEGEND

Permafrost Characterization by Ground Ice Content

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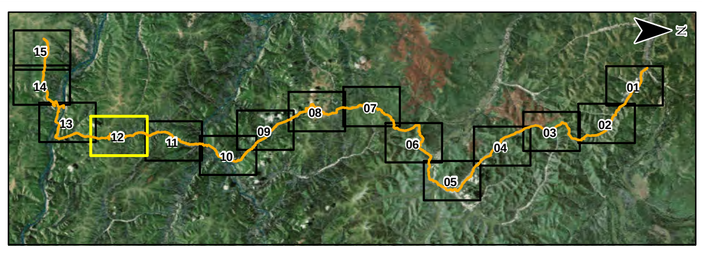

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N		DATUM: NAD83		CLIENT: KAMINAK GOLD CORPORATION	
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				TETRA TECH EBA	
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 0	Figure 12
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				

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597000 598000 599000 600000 601000 602000 603000 604000 605000

6984000 6983000 6982000 6981000 6980000 6979000 6978000 6977000 6976000 6975000 6974000 6973000

N W E S

TT-61 TT-60 TT-46 TT-47 TT-64 TT-63 TT-62 TT-27 TT-74 TT-73 TT-72

115+000-0 116+000-0 117+000-0 118+000-0 119+000-0 120+000-0 121+000-0 122+000-0 123+000-0 124+000-0 125+000-0 126+000-0

Barker-Ballarat Saddle to Ballarat 118+816

Road Leaves Ballarat Airstrip 124+060

Ballarat Creek

Coffee Creek

Coffee Creek

Excelsior Creek

3500 3000 2500 2000 1500

LEGEND

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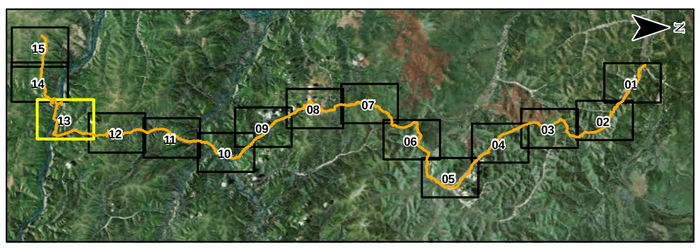

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N			DATUM: NAD83	CLIENT: KAMINAK GOLD CORPORATION	
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				TETRA TECH EBA	
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/MC	REV: 0	Figure 13
OFFICE: Tt EBA-VANC	DATE: March 3, 2016				

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589000 590000 591000 592000 593000 594000 595000 596000 597000

6978000 6977000 6976000 6975000 6974000 6973000 6972000 6971000 6970000 6969000 6968000 6967000

N W E S

Coffee Creek

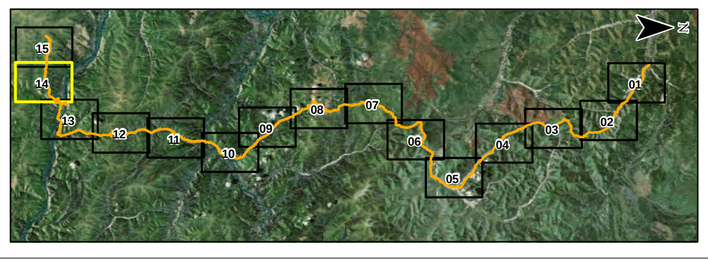
TT-75 TT-74 TT-73

Coffee Creek

LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
- Perennially Frozen Ground - visible excess ice (Fv)
- Perennially Frozen Ground - ice not visible (Fn)
- Unfrozen
- Placer Tailings Disposal Disturbed Area
- Kaminak Route Chainage
- Kaminak Route
- TT EBA Ground Observation Site
- Thermokarst Pond
- Pond of Possible Thermokarst Origin
- Massive Ice Beds
- Ice Wedge Polygons
- V (Thermal) Erosion Feature
- Collapsed Pingo
- Landslide Failure Scar (small)
- Landslide Failure Scar (large)
- Landslide Headscarp (large)
- Gully
- Recent Landslide Failure Scar
- Recent Landslide Headscarp
- Active Layer Detachment Scar
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N		DATUM: NAD83		CLIENT: KAMINAK GOLD CORPORATION	
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				TETRA TECH EBA	
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VRISMC	REV: 0	Figure 14
OFFICE: TT EBA-VANC	DATE: March 3, 2016				

O:\Vancouver\GIS\ENGINEERING\E14\E14103256-01_Kaminak\Maps\E14103256-01_Figures01-15_FinalPF.mxd modified 3/3/2016 by morgan zondervan

582000 583000 584000 585000 586000 587000 588000 589000

6978000 6977000 6976000 6975000 6974000 6973000 6972000 6971000 6970000 6969000 6968000 6967000

Dan-Man-Creek

Halfway Creek

TT-28 TT-29 TT-30 TT-31 TT-32 TT-63 TT-67 TT-69 TT-70

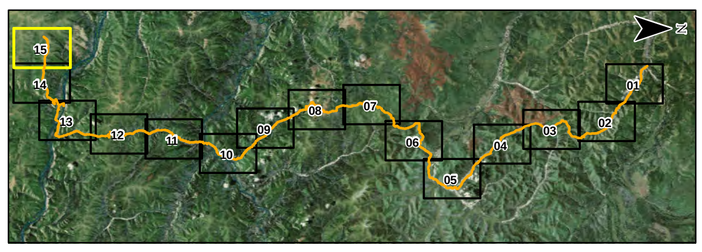
2500 3000 4000

N W E S

LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
- Perennially Frozen Ground - visible excess ice (Fv)
- Perennially Frozen Ground - ice not visible (Fn)
- Unfrozen
- Placer Tailings Disposal Disturbed Area
- Kaminak Route Chainage
- Kaminak Route
- TT EBA Ground Observation Site
- Thermokarst Pond
- Pond of Possible Thermokarst Origin
- Massive Ice Beds
- Ice Wedge Polygons
- (Thermal) Erosion Feature
- Collapsed Pingo
- Landslide Failure Scar (small)
- Landslide Failure Scar (large)
- Landslide Headscarp (large)
- Gully
- Recent Landslide Failure Scar
- Recent Landslide Headscarp
- Active Layer Detachment Scar
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR REVIEW

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83	CLIENT: KAMINAK GOLD CORPORATION	
Scale: 1:15,000 (200 100 0 200 Metres)		TETRA TECH EBA	
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd			
PROJECT NO.: E14103256-01	DWN: MEZ / CKD: SL / APVD: VR/MC / REV: 0		Figure 15
OFFICE: Tt EBA-VANC	DATE: March 3, 2016		

Q:\Vancouver\GIS\ENGINEERING\E141\E14103256-01_KaminakMaps\E14103256-01_Figures01-15_FinalPF.mxd modified 3/3/2016 by morgan.zondervan

APPENDIX 2.2-1: TYPICAL ROAD CROSS SECTIONS

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

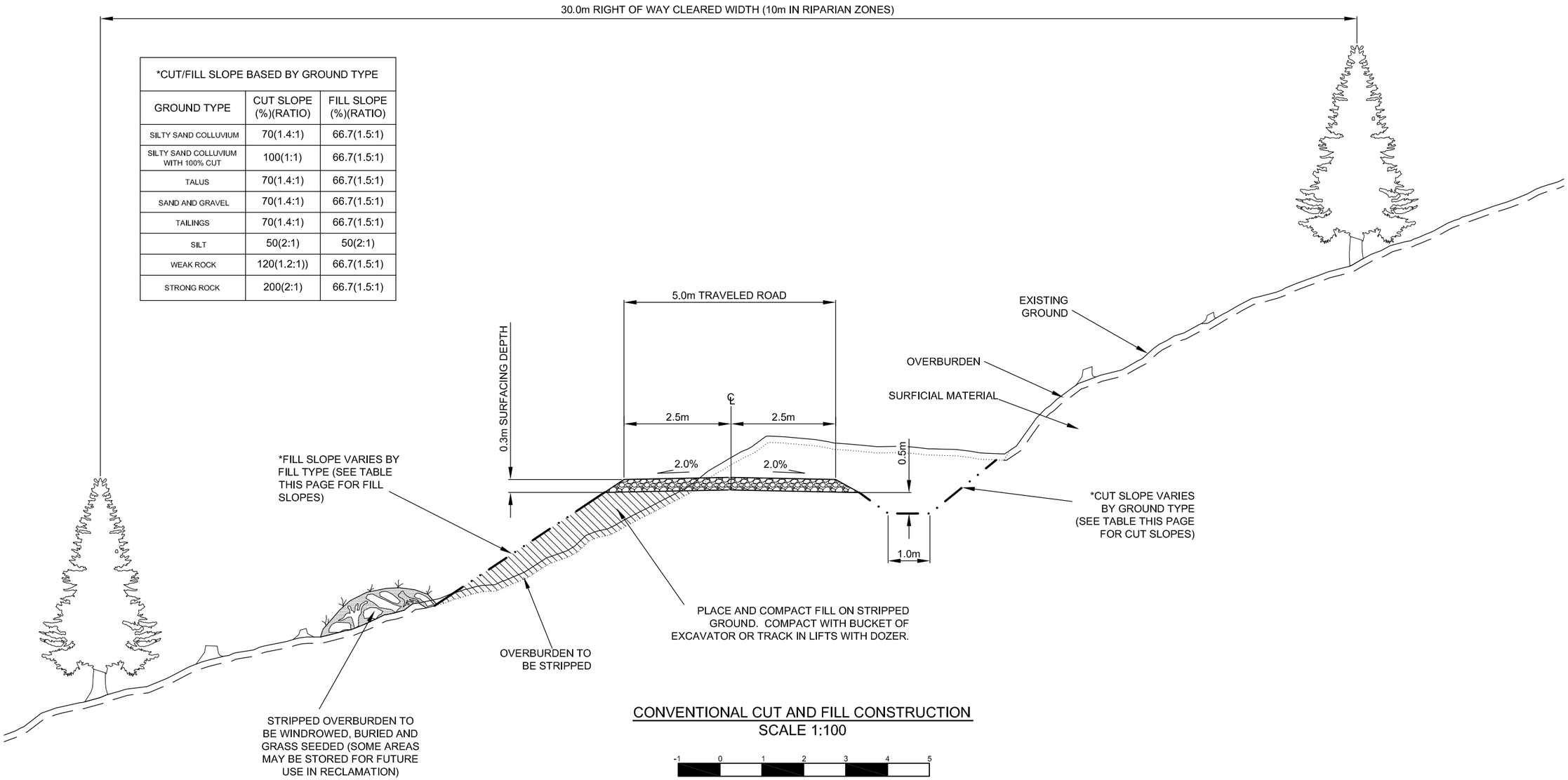
NOT TO SCALE



TYPICAL CROSS SECTIONS FOR NORTHERN ACCESS ROUTE

DWG No:1343-1-TYPROADXSECTIONS-001	SHEET: 1 OF 8	DESIGN BY: JEREMY ARAKI, P. ENG. DESIGN DATE: MAY 4, 2015 REVIEWED BY: MICHAEL FOSTER, P.ENG. DRAWN BY: MATT DICKIE, EIT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: TYPICALROADXSECTIONS.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 13, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 8 - CONVENTIONAL CUT AND FILL CONSTRUCTION SHEET 3 OF 8 - CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK SHEET 4 OF 8 - OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST SHEET 5 OF 8 - WINTER ROAD CONSTRUCTION SHEET 6 OF 8 - FULL BENCH END HAUL CONSTRUCTION SHEET 7 OF 8 - CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL SHEET 8 OF 8 - CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-002

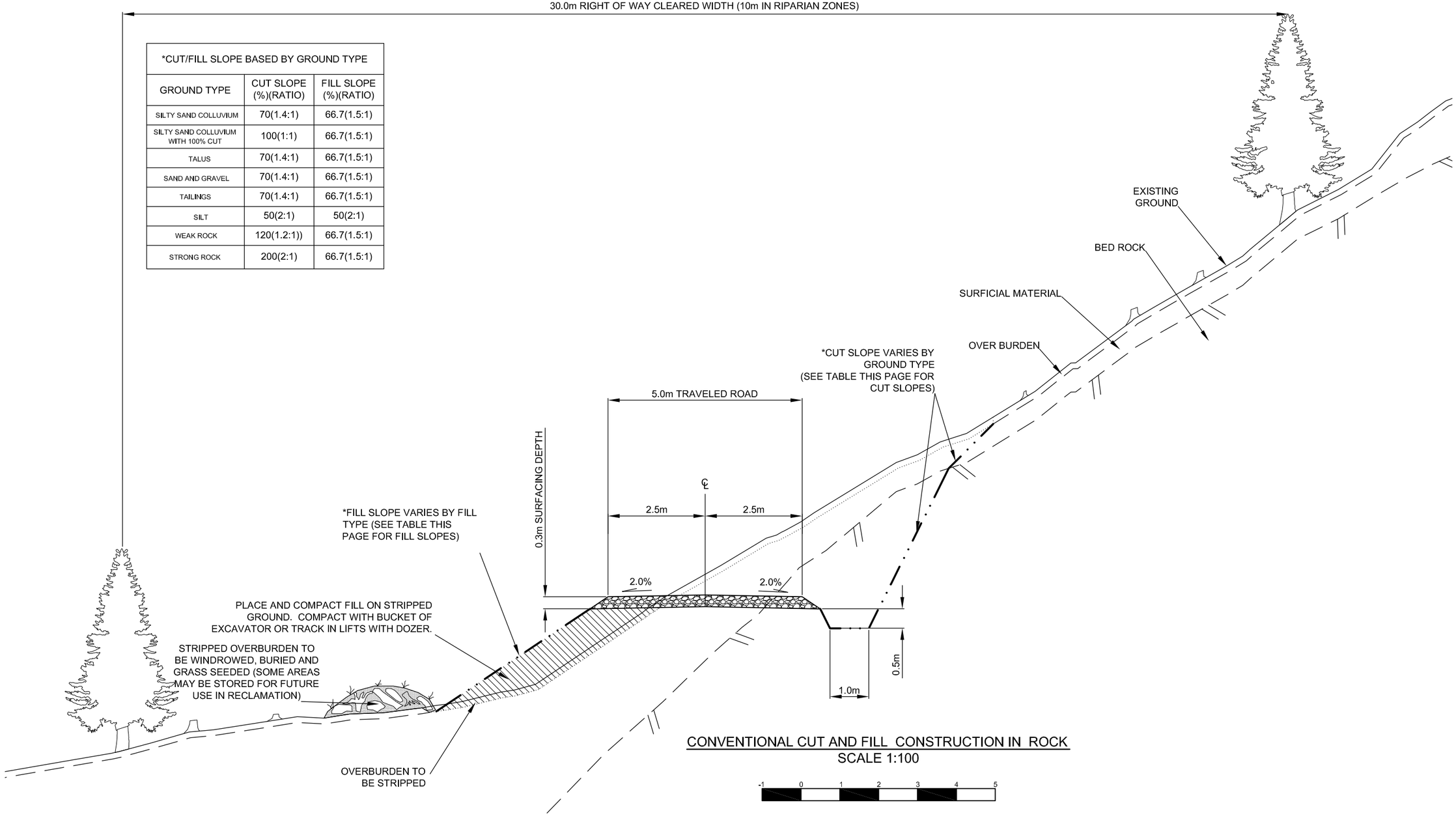
SHEET: 2 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK

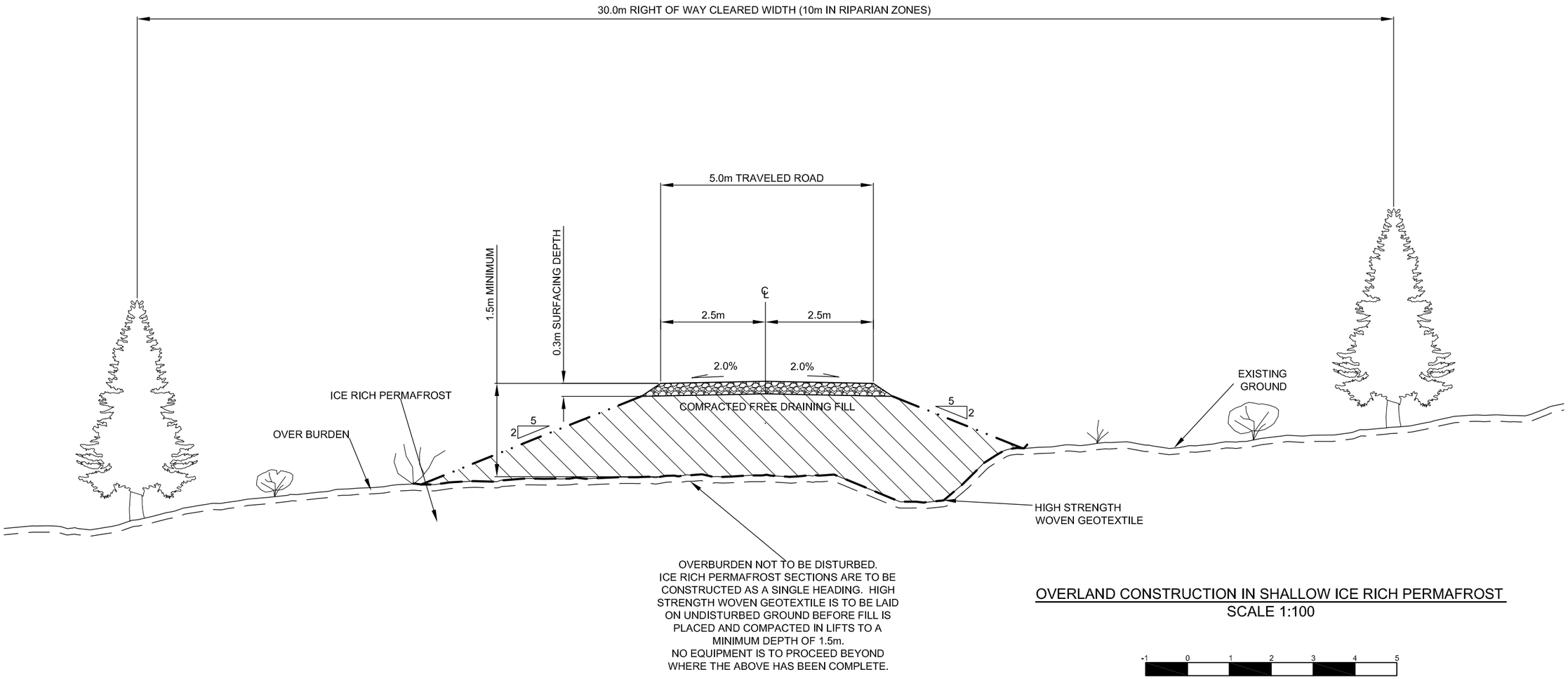
DWG No:1343-1-TYPROADXSECTIONS-003

SHEET: 3 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL



OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST

DWG No:1343-1-TYPROADXSECTIONS-004

SHEET: 4 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

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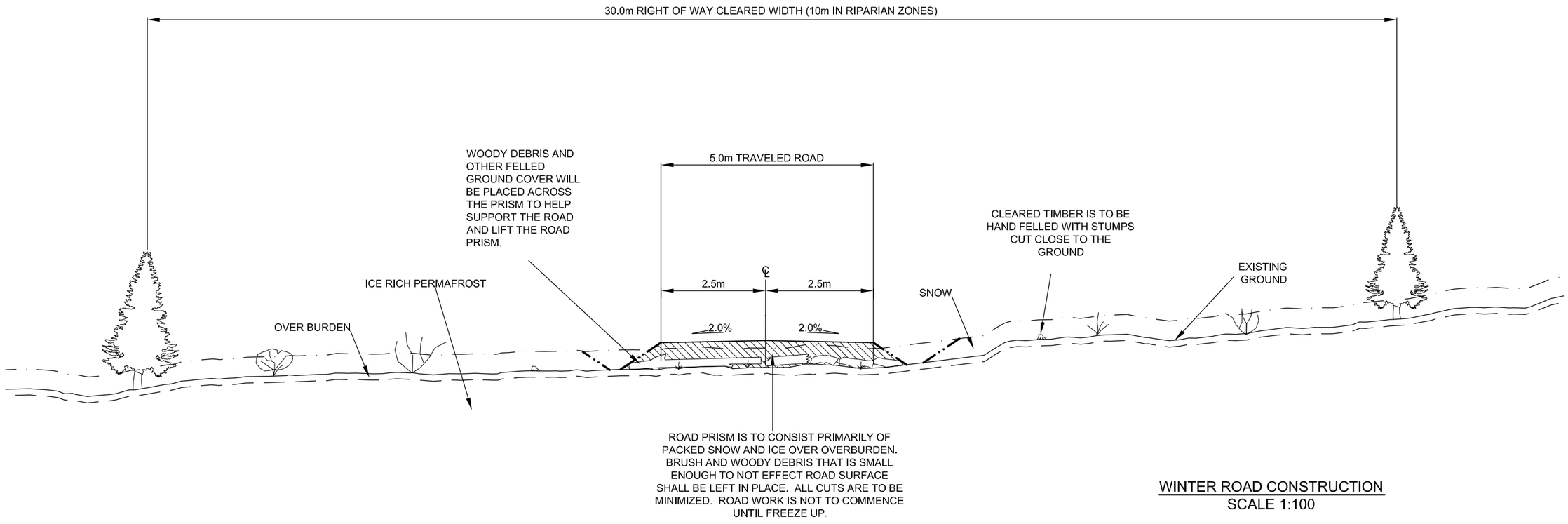


WINTER ROAD CONSTRUCTION
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
WINTER ROAD CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-005

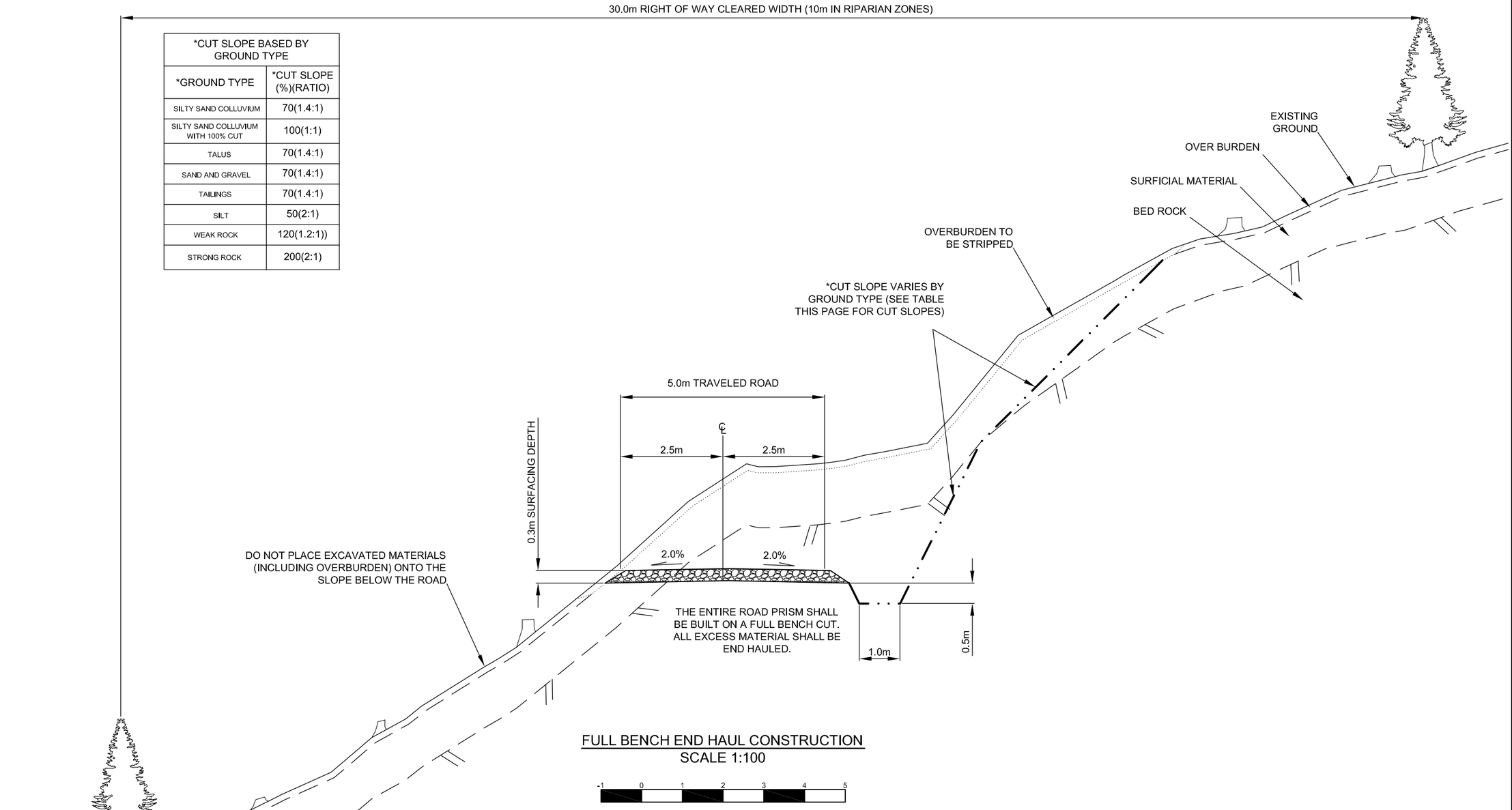
SHEET: 5 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

*CUT SLOPE BASED BY GROUND TYPE	
*GROUND TYPE	*CUT SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)
TALUS	70(1.4:1)
SAND AND GRAVEL	70(1.4:1)
TAILINGS	70(1.4:1)
SILT	50(2:1)
WEAK ROCK	120(1.2:1))
STRONG ROCK	200(2:1)



FULL BENCH END HAUL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
FULL BENCH END HAUL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-006

SHEET: 6 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

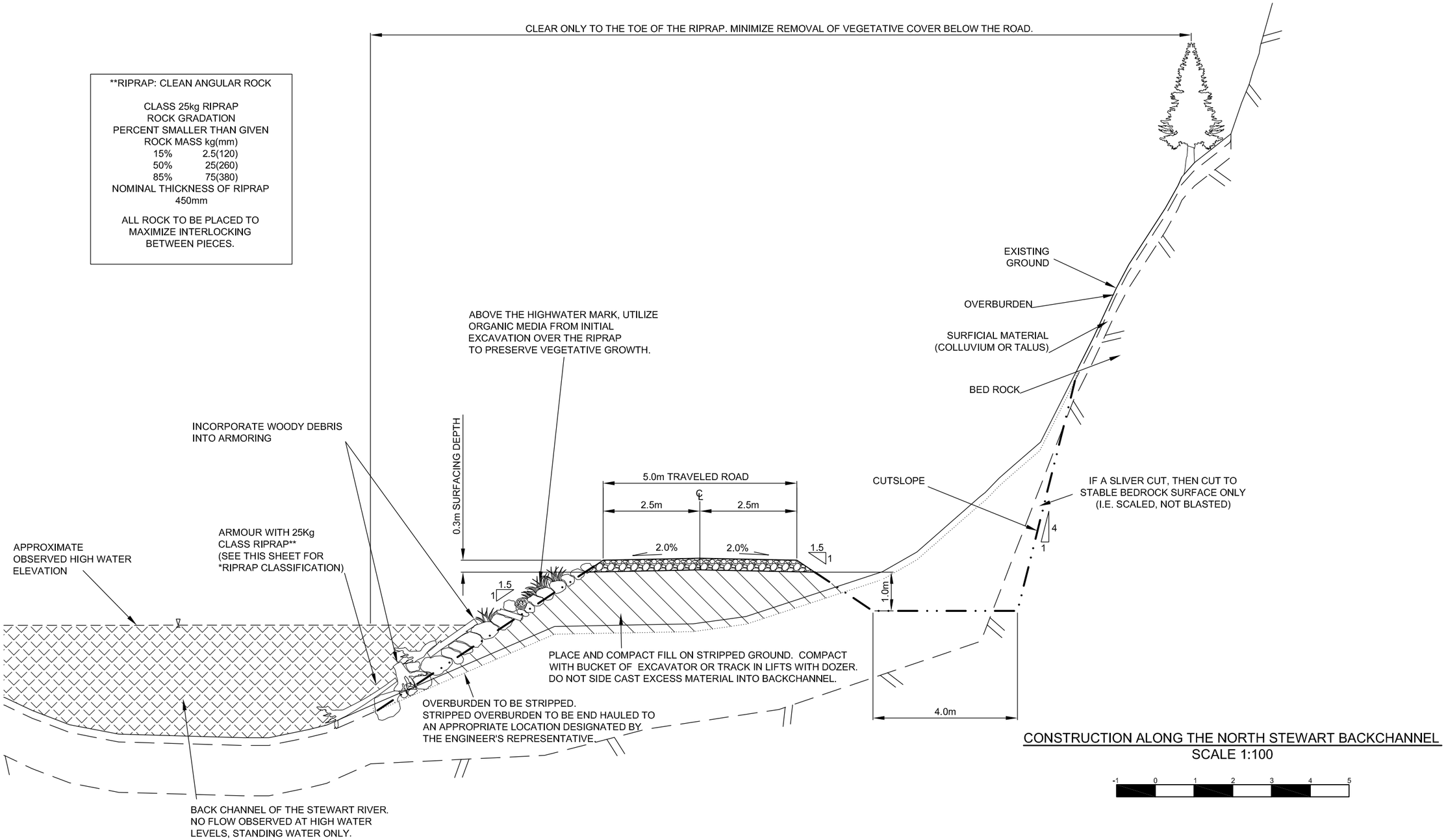
SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 2.5(120)
50% 25(260)
85% 75(380)
NOMINAL THICKNESS OF RIPRAP
450mm

ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES.



CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL

DWG No:1343-1-TYPROADXSECTIONS-007

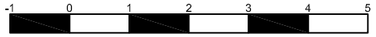
SHEET: 7 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

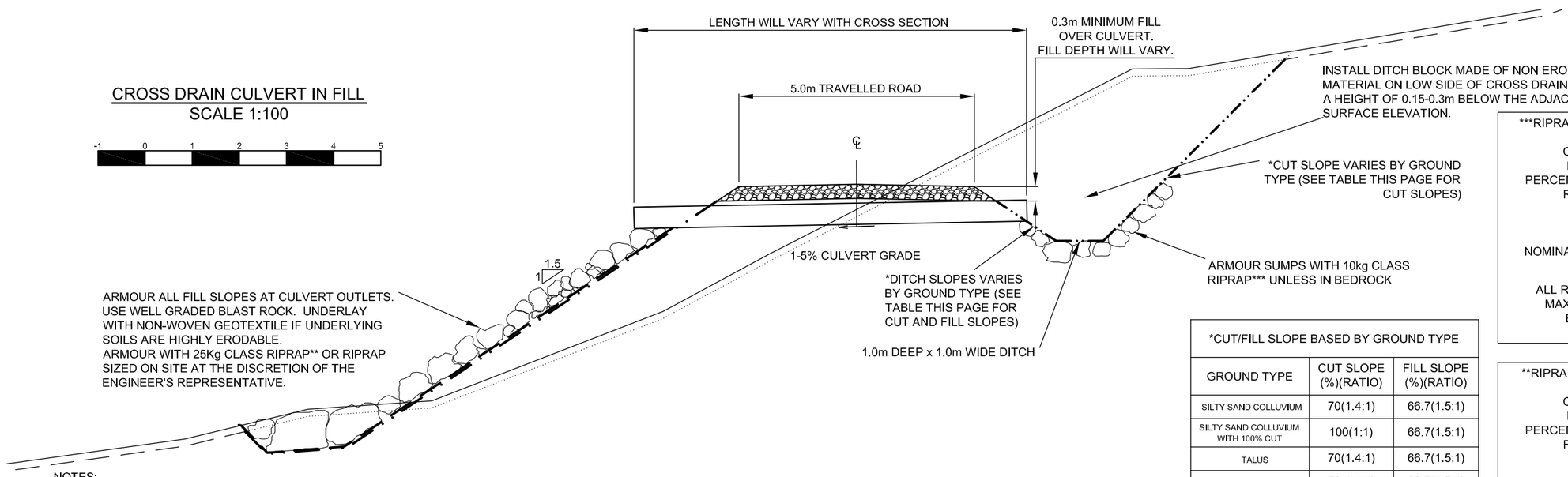
SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

CROSS DRAIN CULVERT ON GENTLE SLOPES
SCALE 1:100



CROSS DRAIN CULVERT IN FILL
SCALE 1:100



***RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	1(90)
50%	10(195)
85%	30(280)

NOMINAL THICKNESS OF RIPRAP 350mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP 450mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

*CUT/FILL SLOPE BASED BY GROUND TYPE

GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

NOTES:
1. MINIMUM CLEARANCE BETWEEN WALLS OF CULVERTS IN MULTIPLE INSTALLATIONS SHALL BE D/2 OF THE SMALLEST PIPE OR 1.0m, WHICHEVER IS GREATER
2. GEOTEXTILE FABRIC SHALL BE NON-WOVEN CONSTRUCTED, SUPPLIED IN ROLLS AND APPROVED BY ENGINEER PRIOR TO INSTALLATION.
3. MINIMUM THICKNESS OF RIPRAP SHALL BE AS FOLLOWS:
   - 300mm FOR 10KG CLASS RIPRAP
   - 450MM FOR 25KG CLASS RIPRAP
4. SKEW CULVERT 3° FOR EACH 1% ROAD GRADIENT OVER 3%. MAXIMUM SKEW OF 45°.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES

DWG No:1343-1-TYPROADXSECTIONS-008

SHEET: 8 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

APPENDIX 2.2.2-1: ACCESS ROAD EMBANKMENT THICKNESS IN PERMAFROST TERRAIN

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR USE

To:	James Scott, P. Geo.	**Date:**	March 17, 2016
c:	Matthew Dickie, E.I.T., (Onsite Engineering)	**Memo No.:**	5
From:	Kevin Jones	**File:**	704-ENG.EARC03004-01
Subject:	Access Road Embankment Thickness for Permafrost Terrain		

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) has been retained by Kaminak Gold Corporation (Kaminak) to provide permafrost-related engineering assistance for the Coffee Mine.

The purpose of this memo is to provide Tetra Tech EBA's comments regarding the embankment thickness required to lessen the impact of permafrost and its potential degradation on the performance of the access road in areas with sensitive permafrost conditions. A previous memo titled, "Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-Rich Permafrost", Memo 3, dated June 21, 2016 provided a summary of permafrost distribution and characteristics and considerations for road design and construction. The evaluation of the terrain along the route identified that approximately 14 km of the 214 km-long road is founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. A key recommendation provided in that memo for these terrain types (ice-rich permafrost) was as follows:

- *For conceptual design purposes, embankment thickness should be a minimum of 1.5 m (ideally 2.0 m), with material placed on woven geotextile to protect the subgrade from thawing; 1 m of fill should be enough within sections of the road embankment underlain by ice-poor permafrost.*

2.0 EMBANKMENT THICKNESS REQUIREMENT

Normally the minimum access road embankment thickness required to protect underlying permafrost from thawing that could lead to excessive settlement or instability is determined by carrying out detailed thermal analysis of the road embankment using representative natural ground conditions and appropriate properties for the embankment fill materials. At this time, those properties and parameters are not well defined and as such, professional judgement based on previous thermal analyses in similar terrain, combined with a knowledge of how the existing roads in the area are behaving have been used to develop the above noted minimum embankment thickness recommendation.

The access road is located in a discontinuous permafrost region and in situ ground temperatures in the permafrost are quite warm (typically just slightly below to -2°C). This is what would be called "sensitive permafrost terrain" and as such it would be desirable to utilize an embankment thickness that would cause the permafrost table to aggrade upwards to near the original ground surface (i.e. thin the active layer). However, given the limited traffic on the road combined with a regular maintenance program it is suggested that a design embankment thickness that allows seasonal thaw below the embankment being limited to no more than the depth of the current active layer will be adequate. The 1.5 m minimum (ideally 2.0 m) embankment thickness should be adequate to accomplish this.

Coupled with the minimum embankment thickness it is also recommended that side slopes on the fill embankments in these "overlanding" sections be no steeper than 2.5H:1V. This will help to push water away from the travelling surface of the road and reduce the impact of the increased depth of thaw below the side slopes where the fill is

Tetra Tech EBA Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

considerable thinner. Instability of the toes of the slope can be expected due to thaw depths being greater than the natural depth of the active layer below the embankment slope in the ice-rich permafrost areas. The flat side slopes therefore limit the impact of the instability on the travelling surface.

The minimum embankment thickness required to thermally protect the underlying subgrade is; however, highly dependent on the material used to construct the embankment. For example, if the embankment is constructed using clean coarse rockfill, the required embankment might be as much as twice as thick compared to an embankment constructed with a well-graded sand and gravel fill. This is due to the moisture content differences in these two types of materials. The above noted minimum embankment thickness assumes a high quality well-graded sand and gravel fill material. The recommended minimum embankment thickness for a road constructed using clean crushed rockfill would be 2.5 m.

Note that these minimum embankment thicknesses are predicated on the other recommendations provided in Memo 3 noted above being followed. Most important of these being the need to absolutely minimize disturbance to the natural ground surface during construction and to eliminate any potential of water ponding along the embankment. Surface water drainage control should not involve ditching in ice-rich permafrost terrain as thaw will render ditches ineffective.

APPENDIX 2.2.2-2 GEOTECHNICAL CONSIDERATIONS FOR ROAD DESIGN AND CONSTRUCTION IN AREAS UNDERLAIN BY ICE-RICH PERMAFROST

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR USE

To:	James Scott, P.Geo., Advanced PM	**Date:**	June 21, 2016
c:	K. Jones, P. Eng., VP Arctic Development; J. Araki, P.Eng.; M. Dickie, EIT	**Memo No.:**	3
From:	V. Roujanski, P. Geol.	**File:**	704-ENG.EARC03004-01
Subject:	Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-Rich Permafrost		

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) is pleased to submit this Technical Memorandum to Kaminak Gold Corporation (Kaminak) regarding geotechnical considerations for road design and construction in areas underlain by ice-rich permafrost.

The proposed Kaminak access road route runs approximately 214 km from the Klondike Highway junction (Bear Creek) near Dawson City southward to the Coffee Property mine area.

2.0 PERMAFROST ALONG THE PROPOSED KAMINAK ROAD ALIGNMENT AND IN THE MINE AREA

2.1 Permafrost Distribution, Temperatures, Ice Content, and Related Geohazards

According to the Permafrost Map of Canada (Heginbottom et al., 1995) the proposed Kaminak road alignment is located within the zone of extensive discontinuous permafrost, in which 50% to 90% of the area is expected to be underlain by permafrost. Our calculations of permafrost distribution within the 200 m-wide proposed road corridor using ArcGIS technology show that approximately 55% of **the corridor area** is underlain by permafrost (10% - by very ice-rich permafrost, 11% - by permafrost with visible excess ice, and 17% - by predominantly ice-poor permafrost). Approximately 17% of **the corridor area** is covered by placer tailings deposits and may include pockets of ice-rich material buried by the tailings and where the ground thermal regime was affected by mining. Approximately 45% of **the corridor area** is therefore estimated to be permafrost-free.

Permafrost thicknesses were measured with thermistor cables at the south end of the proposed access road, within the Coffee Mine area. The results are highly variable, ranging from approximately 30 m to 165 m thick.

Active layer thickness varies spatially and temporally. In areas with thicker insulating organic cover, it is usually thin (approximately 0.3 m to 0.6 m), whereas it can be several metres thick within partially exposed bedrock or within coarse surficial material with a high clast content.

At the south end of the proposed Kaminak road alignment, within the Coffee Mine site area, permafrost temperatures were measured with thermistor cables, as well as with temperature sensors on vibrating wire piezometers. At the depth of zero seasonal temperature variation, ground temperatures range from temperatures near the freezing point to approximately -2°C. The permafrost classification for the road within the Coffee Mine area is thus “warm”.

Tetra Tech EBA Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

The areas within the proposed road corridor were found to be underlain by perennially frozen ground with ground ice that is predominantly:

- not visible (Nf, Nbn, Nbe): This consist of perennially frozen ground that is well-bonded to friable and typically does not contain visible excess ice, i.e. generally ice-poor permafrost. However, these areas (map polygons) may include patches of permafrost with visible excess ice, as well as patches of unfrozen ground;
- visible excess ice (Vx, Vc, Vr, Vs): This moderately to ice-rich permafrost is well-bonded but rarely includes large ground ice bodies. However, these areas (map polygons) may include patches of ice-poor permafrost with ground ice that is not visible to the unaided eye (Nbn, Nbe) and patches of permafrost-free ground; or
- forming significant accumulations, such as ice wedges and other massive ground ice bodies: These areas were mapped as very ice-rich permafrost.

Warm permafrost temperatures along the proposed road alignment mean that areas underlain by ice-rich perennially frozen ground are sensitive to any kind of natural or manmade disturbance. As a consequence, one of the permafrost-related geohazards within the project area is thermokarst, which could be triggered by construction activities or by natural processes, such as forest fires. Development of thermokarst can be accompanied by thermal erosion, subsidence, and mass wasting of thawing ice-rich organic and fine-grained mineral soils.

2.2 Permafrost and Geotechnical Considerations for Road Design and Construction

Every effort was made to avoid areas of thaw-sensitive perennially frozen soils when selecting the proposed road route. However, in some cases this was not possible and some sections of the selected road alignment cross areas underlain by warm ice-rich permafrost (Tetra Tech EBA, 2016a and 2016b). Approximately 14 km of the 214 km-long road is founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. Road construction in such areas can cause a change in heat exchange at the ground surface and a change in the existing thermal regime of the ground. This may lead to thaw degradation of ice-rich permafrost in the subgrade, i.e. gradual melting of ground ice beneath the road. The resulting differential settlement may cause sharp dips in the road surface, progressively widening cracks, and, less commonly, sinkholes where massive ice bodies previously existed. Thawing and settlement may continue for years until the ice has melted, thawing has stopped, or road fill bridges the resulting voids (Andersland and Ladanyi, 2004).

Within the areas of active or recent placer mining in the valley bottoms, the proposed alignment often follows existing mining access roads or crosses extensive areas covered by placer mining tailings. The ice-rich material within these disturbed sections has been mostly removed and the road maintenance costs are expected to be low. However, pockets of the ice-rich material may exist and will require special consideration for design.

In general, there are two approaches for the design of roads in permafrost areas (Johnston, 1981; Crory, 1991; McGregor et al., 2010):

1. **Passive Approach**: Provide full thermal protection to maintain permafrost in its frozen condition; or
2. **Active Approach**: Provide for limited thaw penetration into the underlying subgrade where preservation of permafrost is not possible or practicable and the consequences of thaw are allowed for in the design.

Both approaches may be employed for any appreciable length of the proposed road alignment.

A **passive approach** should be employed along those sections of the proposed road alignment that cross areas underlain by ice-rich permafrost. Geotechnical considerations for the road design within such sections are as follows:

- Cuts and ditches are avoided wherever possible;
- Movement of equipment used for clearing the Right-of-Way (ROW) should be controlled or prohibited to keep the terrain disturbance to a minimum and to preserve the organic mat;
- During winter operations, the snow cover should be carefully removed before construction of the embankment to reduce settlement of the fill during the thaw period;
- The embankment should be constructed by the end dumping method so that the vegetation cover will not be damaged by hauling equipment;
- High fills and sideslope alignments are avoided wherever possible;
- For conceptual design purposes, embankment thickness should be a minimum of 1.5 m (ideally 2.0 m), with material placed on woven geotextile to protect the subgrade from thawing; 1 m of fill should be enough within sections of the road embankment underlain by ice-poor permafrost;
- Flat horizontal and vertical curves and gradients not exceeding 8% are highly desirable;
- Drainage should be controlled to prevent water ponding along the toe of the embankment. This will allow the thermal regime of the frozen subgrade to be maintained. If runoff water must be collected and channelized, it should be done at a reasonable distance from the embankment (>10 m); and
- Snow accumulation should be prevented on the lee side of higher sections of the road embankment to maintain thermal regime of the frozen subgrade.

Basic principles for thermal design of embankments to preserve the permafrost include the following (McGregor et al., 2010):

- Favourable thermal conditions should be imposed and maintained beneath the structural core of the embankment; and
- Thermal design is required to ensure raised or at least maintained permafrost levels beneath the core of the embankment.

3.0 CONCLUSIONS

The proposed Kaminak access road route runs approximately 214 km across the zone of extensive discontinuous permafrost, in which approximately 21% of **the corridor area** is underlain by ice-rich to very ice-rich permafrost. Approximately 14 km of the 214 km-long road founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. Sections of the proposed alignment crossing thaw-sensitive permafrost terrain will require special geotechnical considerations.

These considerations include adequate thermal protection of ice-rich permafrost in the subgrade through avoidance of cuts and ditching, minimization of terrain disturbance during clearing of the ROW, preservation of the insulating organic mat, special road construction methods (e.g. end dumping), ongoing snow removal over the life of the road, and drainage control along the embankment.

4.0 REFERENCES

Andersland, O.B. and Ladanyi, B. 2004. Frozen Ground Engineering, 2nd ed., John Wiley & Sons, Hoboken.

Crory, F.E., 1991. Construction Guidelines for Oil and Gas Exploration in Northern Alaska. U.S. Army Cold Regions Research and Engineering Laboratory CRREL Report 91-21, Hanover.

Heginbottom, J.A., Dubreuil, M.A., and Harker, P.T. 1995. Canada Permafrost. In: The National Atlas of Canada, 5th Edition, Sheet MCR 4177, Plate 2.1, Scale: 1:7,500,000. National Atlas Information Service, Canada Centre for Mapping, Geomatics Canada, Terrain Sciences Division, Geological Survey of Canada, Natural Resources Canada, Ottawa.

Johnston, G.H., ed. 1981. *Permafrost Engineering Design and Construction.* Toronto: John Wiley & Sons, Toronto.

McGregor, R., Doré, G., Hayley, D.W., Wilkins, G., Hoeve, E., Grozic, E., Roujanski, V., and Jansen, A. 2010. Guidelines for Development and Management of Transportation Infrastructure in Permafrost Regions. Transportation Association of Canada, Ottawa.

Tetra Tech EBA. 2016a. Map of Permafrost Distribution Along Proposed Kaminak Road Alignment (15 sheets), Scale 1:15,000. Map sheets prepared for Kaminak Gold Corporation, dated April 27, 2016.

Tetra Tech EBA, 2016b. Map of Permafrost Distribution along Proposed Kaminak Road Alignment. Technical Memorandum prepared for Kaminak Gold Corporation, dated April 28, 2016.

APPENDIX 3.1-1: BORROW SITE LOCATIONS AND SPECIFICATIONS

Borrow ID	Northing (m)	Easting (m)	Total Area (ha)	Undisturbed Area (ha)	Expected Depth of Source (m)*	Maximum Volume Expected From Site (m^3)	Material Source	Borrow Type
A1	7059787	614900	1.24	1.08	3	22,000	Riprap	Quarry
2	7056174	613226	0.25	0.25	3	24,000	Riprap	Pit
7	7055664	608509	0.28	0.28	3	11,000	Surfacing	Pit
4	7055440	610411	0.43	0.21	3	25,000	Surfacing	Pit
6	7055268	609295	0.58	0.57	3	30,000	Surfacing	Pit
5	7055220	609549	0.85	0.85	3	76,000	Surfacing	Pit
3	7055194	612168	1.29	1.20	3	55,000	Surfacing	Pit
A2	7055100	611130	0.62	0.43	3	25,000	Surfacing	Pit
A3	7045215	598623	0.99	0.19	3	46,000	Subgrade	Pit
9	7036679	597843	3.49	3.49	3	360,000	Surfacing/Riprap	Quarry
10	7033973	599290	0.99	0.96	3	74,000	Subgrade	Pit
11	7027748	599054	0.54	0.44	3	44,000	Riprap / Surfacing	Quarry
12	7027097	599619	0.56	0.27	3	86,000	Riprap / Surfacing	Quarry
13	7021486	602999	0.50	0.39	3	61,000	Riprap / Surfacing	Quarry
14	7017848	606259	0.46	0.46	3	61,000	Surfacing	Pit
15	7017584	606672	0.41	0.41	3	31,000	Surfacing/Riprap	Quarry
16	7014927	609122	0.78	0.78	3	50,000	Subgrade/Riprap/ Surfacing	Quarry
17	7014067	609331	0.29	0.16	3	20,000	Subgrade/Riprap/ Surfacing	Quarry
19	7007098	605623	0.51	0.51	3	26,000	Riprap/ Surfacing/ Subgrade	Quarry
22	7001529	604595	0.36	0.36	3	36,000	Riprap/ Surfacing	Quarry
23	7001324	604389	1.08	0.73	3	122,000	Riprap/ Surfacing	Quarry
24	7000536	603787	0.61	0.61	3	54,000	Surfacing	Quarry
A4	6994315	603248	0.45	0.45	3	33,000	Subgrade	Pit
25	6991649	603760	1.76	1.76	3	75,000	Subgrade/ Surfacing	Pit

Borrow ID	Northing (m)	Easting (m)	Total Area (ha)	Undisturbed Area (ha)	Expected Depth of Source (m)*	Maximum Volume Expected From Site (m^3)	Material Source	Borrow Type
26	6989795	604788	0.57	0.57	3	32,000	Subgrade	Pit/Quarry
27	6989382	604888	0.52	0.52	3	33,000	Subgrade	Pit/Quarry
28	6988240	604556	0.61	0.61	3	13,000	Subgrade	Pit/Quarry
29	6987539	603678	1.76	1.76	3	50,000	Surfacing/Riprap/ Subgrade	Pit
30	6987173	604222	0.34	0.34	3	14,000	Subgrade/Riprap/ Surfacing	Quarry
31	6986982	604216	0.42	0.42	3	21,000	Subgrade/Riprap/ Surfacing	Quarry
32	6986865	604234	0.47	0.47	3	20,000	Subgrade/Riprap/ Surfacing	Quarry
33	6986370	604373	0.49	0.49	3	44,000	Subgrade/Riprap/ Surfacing	Quarry
34	6985732	604363	0.99	0.99	3	82,000	Subgrade/Riprap/ Surfacing	Quarry
35	6985183	604481	1.14	1.14	3	115,000	Subgrade/Riprap/ Surfacing	Quarry
36	6982323	604020	0.24	0.24	3	19,000	Subgrade/Riprap/ Surfacing	Quarry
38	6981703	603977	0.28	0.22	3	35,000	Subgrade/Riprap/ Surfacing	Quarry
A5	6979929	603424	0.63	0.63	3	38,000	Subgrade/Riprap/	Quarry
39	6979016	603759	0.94	0.94	3	138,000	Subgrade/Riprap/ Surfacing	Quarry
A6	6978088	604124	0.32	0.32	3	42,000	Subgrade/Riprap/ Surfacing	Quarry
A7	6977945	604183	0.31	0.31	3	22,000	Subgrade/Riprap/ Surfacing	Quarry
A8	6977654	604222	0.25	0.25	3	16,000	Subgrade/Riprap/ Surfacing	Quarry
A9	6977385	604332	0.45	0.45	3	3,500	Subgrade/Riprap/ Surfacing	Quarry
A10	6975991	604293	0.85	0.85	3	88,000	Subgrade/Surfacing	Pit
A11	6975822	603821	0.53	0.53	3	4,000	Subgrade	Pit
A12	6975625	603383	2.18	2.10	3	65,000	Surfacing	Pit
A13	6976362	598509	1.11	1.11	3	31,000	Surfacing/Subgrade	Pit

***Depth refers to the depth from the road surface to the bottom of the maximum excavation expected at the borrow site.**

APPENDIX 6.0-1: TYPICAL NON-FISH BEARING STREAM CULVERT

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



NON-FISH STREAM CULVERT
TYPICAL INSTALLATION

DWG No:1343-2-COFFEETYPNFCSP- 001	SHEET: 1 OF 2	DESIGN BY: MATTHEW DICKIE, EIT DESIGN DATE: MAY 31, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: COFFEETYPNFCSP.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 25, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 2 - PLAN AND CULVERT PROFILE VIEWS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		

CULVERT PROFILE VIEW
SCALE 1:100

-1 0 1 2 3 4 5

AT THE DISCRETION OF THE ENGINEER'S REPRESENTATIVE, CULVERT PLACEMENT MAY REQUIRE SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL AND MARAFI 180N NON-WOVEN GEOTEXTILE OR APPROVED EQUIVALENT.

**FILL SLOPE VARIES BY FILL TYPE (SEE TABLE THIS PAGE FOR FILL SLOPES)

MINIMUM FILL OVER CULVERT VARIES WITH CULVERT SIZE. FILL DEPTH MAY INCREASE TO MATCH ROAD GRADE.

5.0m TRAVELLED ROAD

℄

1.5 1 1.5 1

THALWEG

STREAM FLOW

CULVERT SLOPE AND ELEVATION TO MATCH EXISTING STREAM BOTTOM

CULVERT GRADE TO MATCH STREAM THALWEG AT INLET AND OUTLET

ARMOUR ALL CULVERT INLET AND OUTLETS. ARMOUR WITH 25Kg CLASS RIPRAP* OR RIPRAP SIZED ON SITE AT THE DISCRETION OF THE ENGINEER'S REPRESENTATIVE. UNDERLAY WITH NON-WOVEN GEOTEXTILE.

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 2.5(120)
50% 25(260)
85% 75(380)
NOMINAL THICKNESS OF RIPRAP 450mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

DESIGNED ROAD C/L

DESIGNED ROAD EDGES

TO DAWSON CITY

LENGTH WILL VARY DEPENDING ON SITE REQUIREMENTS

ARMOUR INLET TO PROTECT FILL AND TO TRAIN FLOW THROUGH CULVERT

STREAM FLOW

STREAM THALWEL

CULVERT DIAMETER WILL VARY DEPENDING ON SITE REQUIREMENTS

HIGH WATER MARK

ALIGN CULVERT TO BEST FIT CREEK ALIGNMENT

APPROXIMATE EXTENT OF CUT/FILL SLOPE

TO COFFEE GOLD MINE

N

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

NON-FISH STREAM CULVERT TYPICAL INSTALLATION

DWG No:1343-2-COFFEETYPNFCSP- 002

SHEET: 2 OF 2

DESIGN BY: MATTHEW DICKIE, EIT
DESIGN DATE: MAY 31, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: COFFEETYPNFCSP.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 25, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG
NON-WOVEN GEOTEXTILE

APPENDIX 6.0-2: WATERCOURSE CROSSING LOCATIONS AND SPECIFICATIONS

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
Sulphur Creek	47	FB	7057321	614249	Undersized CSP	31	ASP	12 m	Fish Crossing in Placer Tailings
Indian River	50	FB	7055757	613237	Baily Bridge	162	ASP	27 m	Fish Crossing in Placer Tailings
Indian River Trib 1	51	NCD	7055111	611310	Undersized CSP	0.25	CSP	800 mm	Minor Crossing
Indian River Trib 2	52	NFB	7055376	610126	Undersized CSP	1.8	CSP	1500 mm	Aufeis Issues Present
Indian River Trib 3	53	NCD	7055220	609648	Undersized CSP	0.9	CSP	1000 mm	Aufeis Issues Present
Indian River Trib 4	54	NCD	7055292	609205	Undersized CSP	0.3	CSP	600 mm	Minor Crossing
Eureka Trib	54.5	NFB	7055240	607864	Ford	0.15	CSP	800 mm	Minor Crossing
Eureka	55	PFB	7054974	607646	Undersized CSP	9.9	EMBEDDED	3600 mm	Fish Crossing in Placer Tailings, with Aufeis Issues Present
Upper Maisy May Trib	74	NCD	7029006	598729	Ford	0.75	CSP	800 mm	Minor Crossing
Maisy May Trib 1	75	NFB	7027792	598935	Undersized CSP	3.1	CSP	1800 mm	Potential Aufeis Issues
Maisy May Trib 2	76	NFB	7027499	599268	Undersized CSP	2.7	CSP	1500 mm	Potential Aufeis Issues
Maisy May Trib 3	77	NFB	7027017	599651	Ford	2.3	ASP	15 m	Aufeis Issues Present
Maisy May Tailings Trib 1	MMTT-1	NCD	7023423	601241	Ford	N/A*	CSP	800 mm	Minor Crossing
Maisy May Tailings Trib 2	MMTT-2	PFB	7022841	601563	Undersized CSP	2.5	EMBEDDED	2800 mm	Minor Crossing
Maisy May Tailings Trib 3	MMTT-3	NCD	7022658	601862	Ford	N/A*	Berm	800 mm	Minor Crossing
Maisy May Tailings Trib 4	MMTT-4	NCD	7022397	602069	Ford	N/A*	Berm	800 mm	Minor Crossing
Maisy May Tailings Trib 5	MMTT-5	NFB	7021787	602723	Ford	0.3	CSP	800 mm	Minor Crossing
Maisy May Trib 4	81	FB	7021437	603023	Ford	12.8	ASP	12 m	Fish Crossing Partially in

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
									Tailings
Lower Maisy May Trib 1	83	NFB	7018956	605034	Undersized CSP	0.3	CSP	800 mm	Minor Crossing
Lower Maisy May Trib 2	84	NCD	7017632	606597	Undersized CSP	0.3	CSP	800 mm	Minor Crossing
Maisy May Proper	91	FB	7014662	609072	N/A	34.2	ASP	15 m	Fish Crossing Undisturbed Site
North Stewart Trib	97	NFB	7009639	606721	N/A	3.1	CSP	1600 mm	Minor Crossing
Lower Barker	100	FB	7007538	605779	Ford	34.1	ASP	21 m	Fish Crossing at Existing Ford
Lower Barker Trib 1	101	NCD	7006548	605584	Ford	0.6	CSP	800 mm	Minor Crossing
Lower Barker Trib 2	102	NCD	7005817	605627	Ford	0.3	CSP	800 mm	Minor Crossing
Lower Barker Trib 3	103	NFB	7005488	605574	Ford	1	CSP	1000 mm	Minor Crossing
Lower Barker Trib 4	104	NFB	7004404	605649	Ford	0.3	CSP	800 mm	Minor Crossing
Unnamed Tributary of Barker Creek	110	NFB	7000408	603706	Ford	0.3	CSP	800 mm	Minor Crossing
Mid Barker Camp	111	PFB	6998484	603069	Ford	5.2	ASP	9 m	Aufeis Issues Present
Mid Barker Tailings 1	112	NFB	6997812	603146	Ford	0.25	CSP	1000 mm	Minor Crossing
Mid Barker Tailings 2	113	PFB	6997198	603204	Ford	15.8	ASP	12 m	Fish Crossing in Tailings
Unnamed Tributary of Barker Creek	114	NFB	6996582	603435	Ford	0.3	CSP	800 mm	Minor Crossing
Unnamed Tributary of Barker Creek	115	NFB	6996459	603450	Ford	0.3	CSP	800 mm	Minor Crossing
Upper Barker Trib 1	210	PFB	6994186	603198	Log Bridge	2.3	EMBEDDED	2400 mm	Fish Crossing
Upper Barker Trib 3	209	PFB	6993023	603303	Undersized Metal Pipe	2.7	EMBEDDED	2400 mm	Fish Crossing
Upper Barker	208	FB	6991445	603830	N/A	6.1	ASP	9 m	Fish Crossing Undisturbed Site
Upper Barker Trib 4	207	NFB	6990714	603966	N/A	0.3	CSP	800 mm	Minor Crossing

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
Ballarat Headwaters	206	NCD	6986820	604352	N/A	1.2	CSP	1000 mm	Minor Crossing
Upper Ballarat	205	NFB	6985024	604494	N/A	2.5	EMBEDDED	2400 mm	Fish Crossing Undisturbed Site
Upper Ballarat Trib	203	NFB	6982262	604037	N/A	1.6	EMBEDDED	2000 mm	Fish Crossing Undisturbed Site
Mid Ballarat	201	PFB	6980047	603298	N/A	12.5	ASP	9 m	Fish Crossing Undisturbed Site
Lower Ballarat Trib 1	118	PFB	6978334	603934	Ford	7	ASP	9 m	Aufeis Issues Present
Lower Ballarat Trib 2	119	NFB	6977476	604273	Ford	0.6	CSP	800 mm	Minor Crossing
Ballarat Proper	200	FB	6975984	603667	N/A	19.5	ASP	15m	Fish Crossing Undistrubed Site
Winter Road Creek	WRC-1	PFB	6975697	600805	N/A	N/A**	Snow Fill		No structure req., on winter road
Coffee Creek	125	FB	6976181	598899	N/A	161	ASP	36.6m	Fish Crossing Undistrubed Site
*Q100 not applicable as there is no definable drainage area and channel only consists of surface flow traveling both ways in placer tailings.									
**Q100 not calculated as there is no structure proposed for this creek									

Note: FB – Fish Bearing; PFB – Potentially Fish Bearing; NFB – Non-fish Bearing; NCD – Non-classified Drainage; ASP – all-steel pipe; CSP – corrugated steel culvert pipe

APPENDIX 31-A-II

Road Permafrost Geohazard Evaluation Mapping

590000 591000 592000 593000 594000 595000 596000 597000

7105000 7104000 7103000 7102000 7101000 7100000 7099000 7098000 7097000 7096000 7095000 7094000

N W E S

Hunker Creek

TT-1

4-Above-Pup

Eighty-Pup

8-Above-Pup

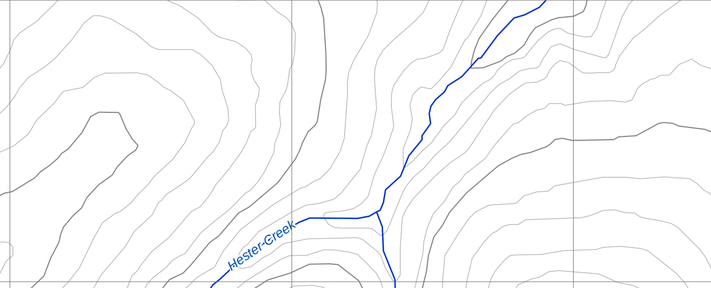
Hester Creek

Independence Creek

Colorado Creek

5el Pup

TT-2



LEGEND

Permafrost Characterization by Ground Ice Content

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- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83			
Scale: 1:15,000 (200 100 0 200 Metres)				
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1
OFFICE: Tt EBA-VANC	DATE: April 27, 2016			

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 1

Q:\Vancouver\GIS\ENGINEERING\E1\E14103256-01_KaminakMaps\E14103256-01_Figures01-15_FinalPF.mxd modified 4/27/2016 by morgan.zondervan

598000 599000 600000 601000 602000 603000 604000 605000

7096000 7095000 7094000 7093000 7092000 7091000 7090000 7089000

N W E S

54 Pup

TT-2

Hunker Creek

TT-3

Colorado Creek

TT-4

NoMuch Gold Creek

Hunker Creek

16 Below Pup

Six Below Pup

TT-5

3 Below Pup

May Pup

Soda Creek

Mint Pup

Six Above Pup

Ontario Creek

TT-6

West Gold Bottom Creek

Goring Creek

Leroy Creek

700 800 900 1000 500 600

LEGEND

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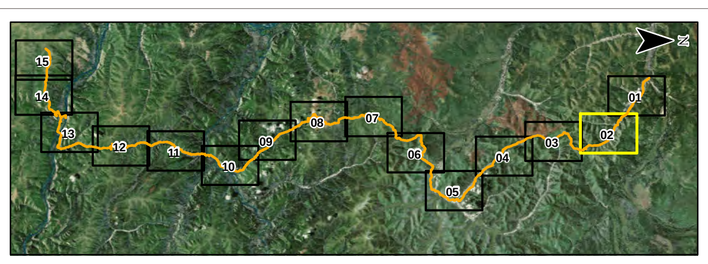

NOTES
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Imagery provided by Kaminak Gold Corp (2015).

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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

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FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	
OFFICE: TI EBA-VANC	DATE: April 27, 2016				

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 2

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LEGEND

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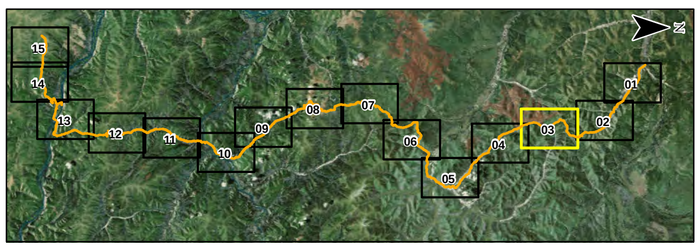

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

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PROJECTION: UTM Zone 7N	DATUM: NAD83			
Scale: 1:15,000 (200 100 0 200 Metres)				
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1
OFFICE: Tt EBA-VANC	DATE: April 27, 2016			

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 3

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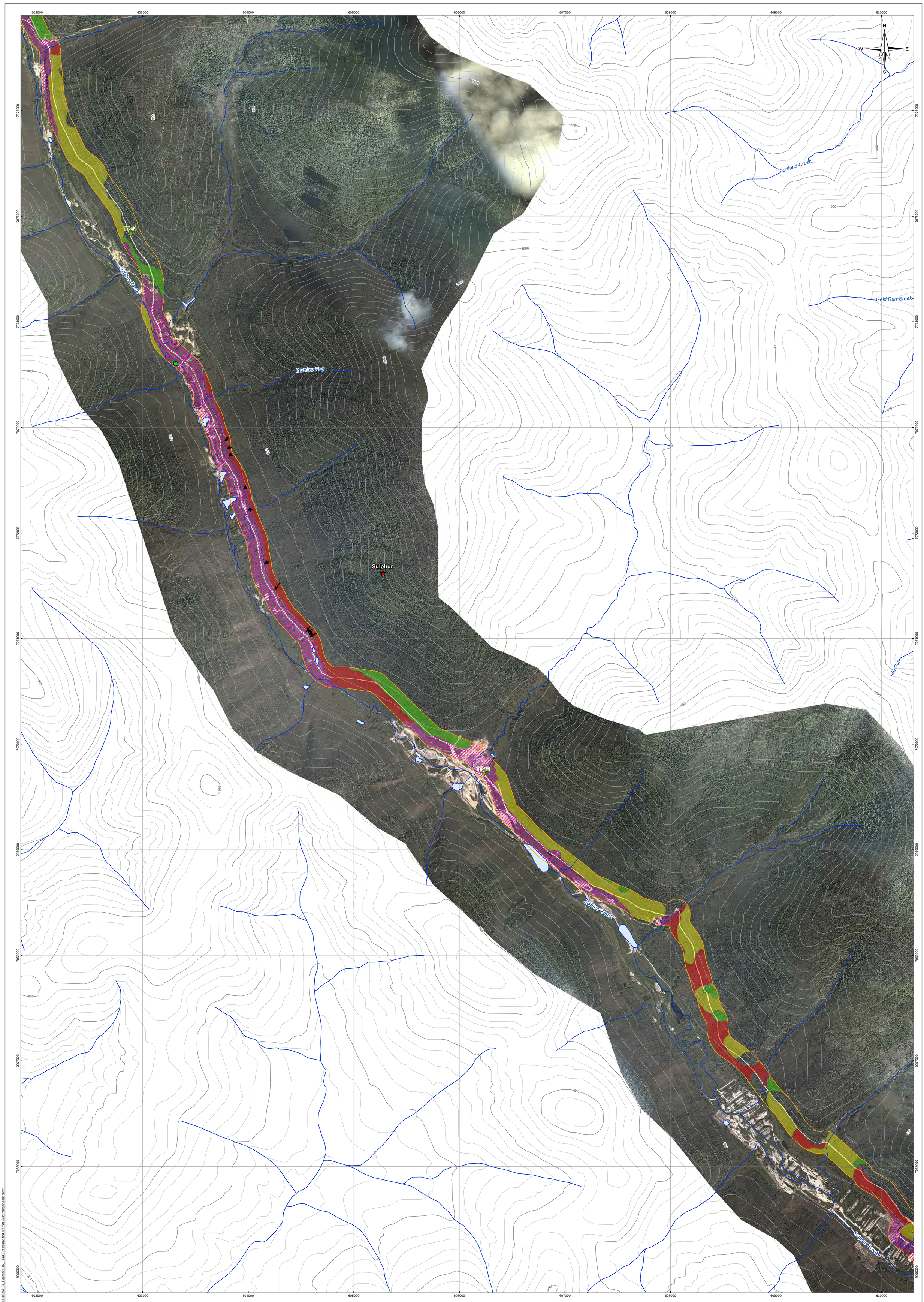

LEGEND

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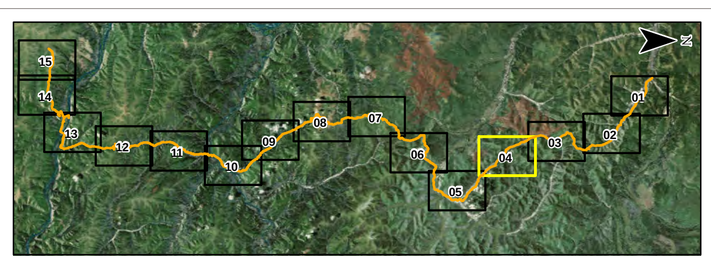

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION	UTM Zone 7N
DATUM	NAD83
Scale:	1:15,000
	200 100 0 200
	Metres
FILE NO.	E14103256-01_Figures01-15_FinalPF.mxd
PROJECT NO.	E14103256-01
DWN	MEZ
CKD	SL
APVD	VR/SMC
REV	1
OFFICE	TT EBA-VANC
DATE	April 27, 2016

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 4

Q:\Vancouver\GIS\ENGINEERING\E14\E14103256-01_KaminakMaps\E14103256-01_Figures01-15_FinalPF.mxd modified 4/27/2016 by morgan.zondervan

610000 611000 612000 613000 614000 615000 616000 617000

7066000 7065000 7064000 7063000 7062000 7061000 7060000 7059000 7058000 7057000 7056000 7055000

N W E S

Sulphur Creek
TT-13
TT-14
Sulphur Creek
37-Pup
24-Pup
Dominion
Sulphur Creek
Dominion Creek
TT-15
Scribner Creek
TT-16
TT-17
Australia Creek

× 1000 × 2000 × 3000 × 4000 × 5000 × 6000 × 7000 × 8000 × 9000 × 10000 × 11000

LEGEND

Permafrost Characterization by Ground Ice Content
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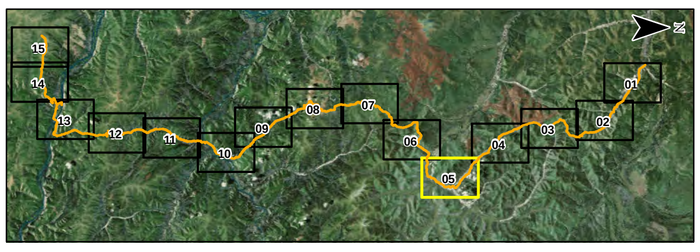

NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N		DATUM: NAD83		CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)				TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1
OFFICE: TI EBA-VANC	DATE: April 27, 2016			Figure 5

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602000 603000 604000 605000 606000 607000 608000 609000

7058000 7057000 7056000 7055000 7054000 7053000 7052000 7051000 7050000 7049000 7048000 7047000

N W E S

Eureka Creek

TT-18

TT-19

12000 13000 14000 15000 16000 17000 18000 19000 20000 21000 22000 23000 24000 25000 26000 27000 28000 29000

700 800 900 1000 1100 1200 1300

LEGEND

Permafrost Characterization by Ground Ice Content

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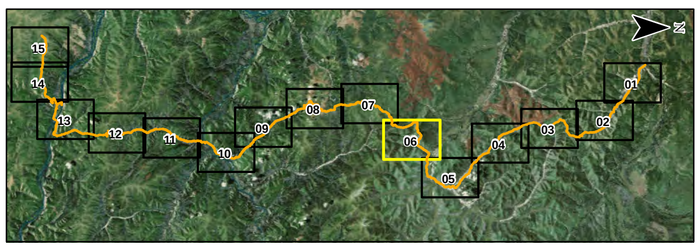

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83
Scale: 1:15,000 (200 100 0 200 Metres)	CLIENT: KAMINAK GOLD CORPORATION
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd	TETRA TECH EBA
PROJECT NO.: E14103256-01	DWN: MEZ; CKD: SL; APVD: VR/SMC; REV: 1
OFFICE: Tt EBA-VANC	DATE: April 27, 2016

Figure 6

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LEGEND

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- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Intermediate Contour (20 m)
- Index Contour (100 m)
- Watercourse
- Waterbody

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83			CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)				TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd				
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VRSMC	REV: 1
OFFICE: TT-EBA-VANC	DATE: April 27, 2016			Figure 7

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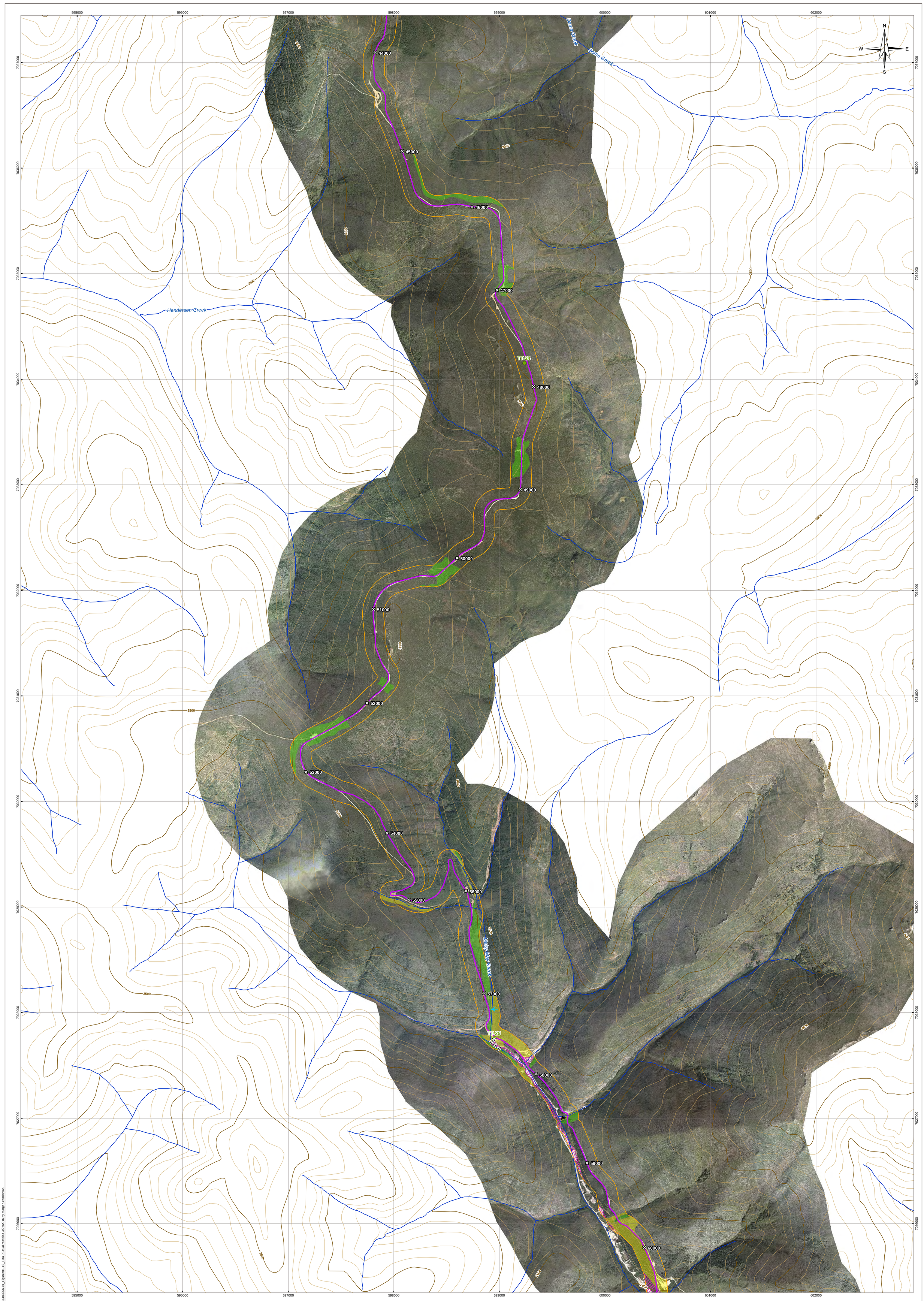

LEGEND

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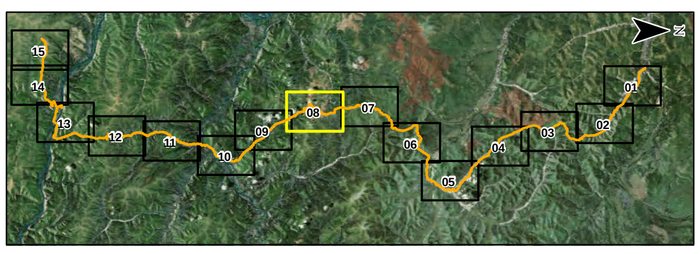

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	Figure 8
OFFICE: Tt EBA-VANC	DATE: April 27, 2016				

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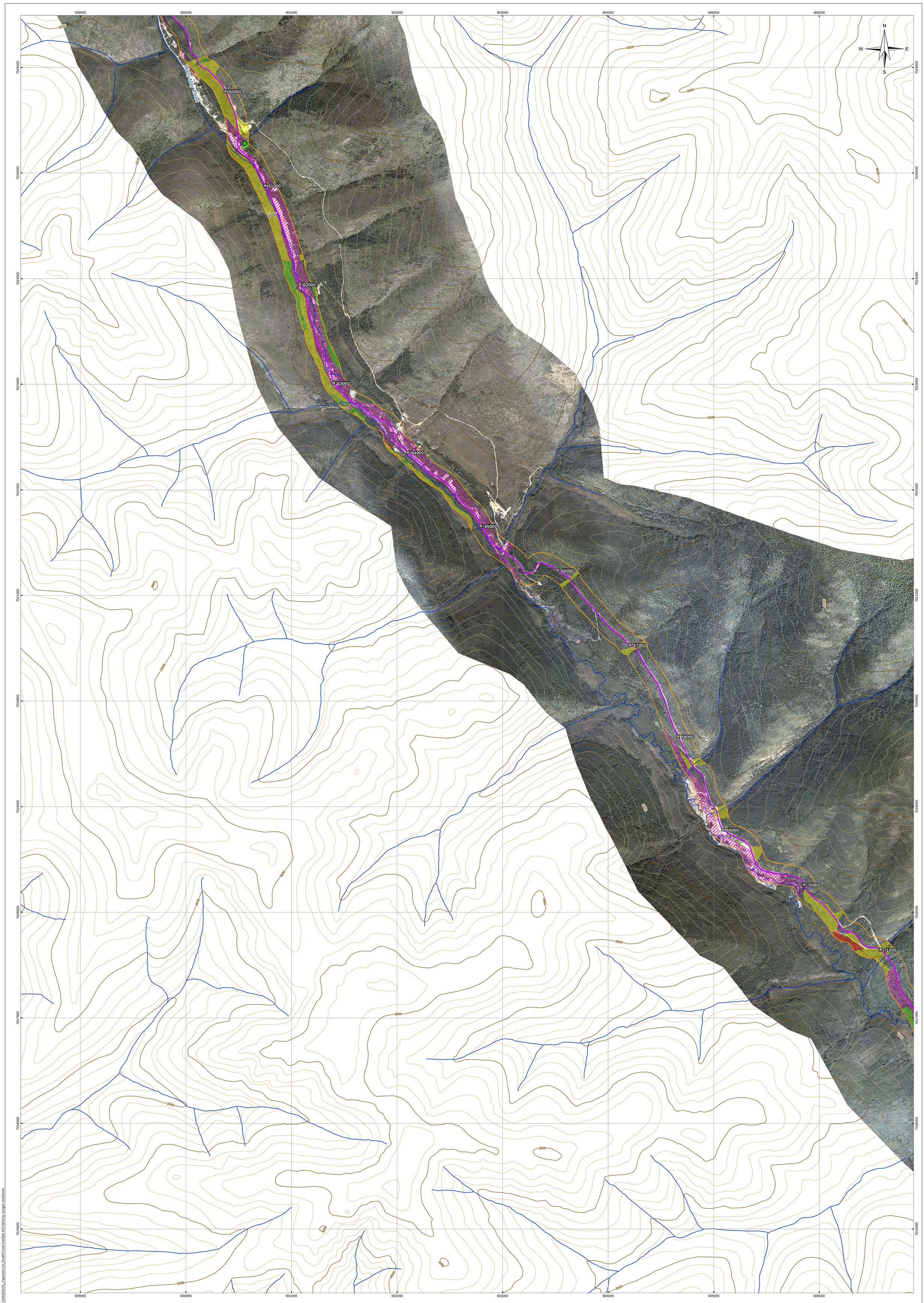

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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N				DATUM: NAD83	
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	
OFFICE: Tt EBA-VANC			DATE: April 27, 2016		

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 9

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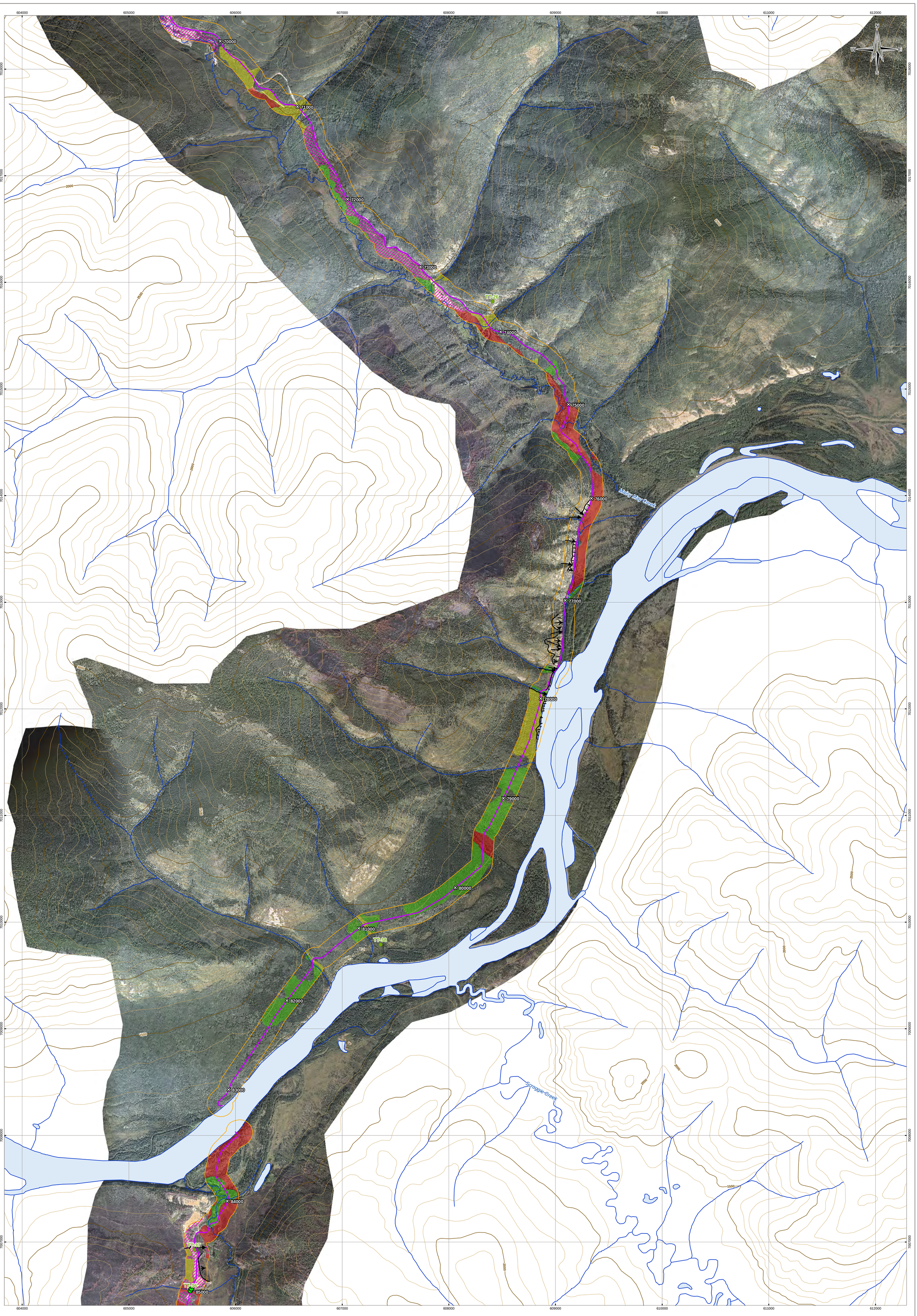

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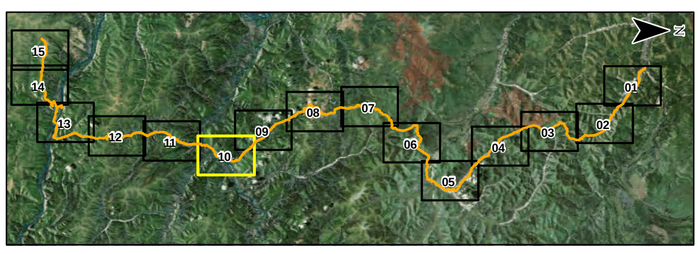

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				
Scale: 1:15,000 (200 100 0 200 Metres)					
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	
OFFICE: Tt EBA-VANC	DATE: April 27, 2016				

CLIENT: KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 10

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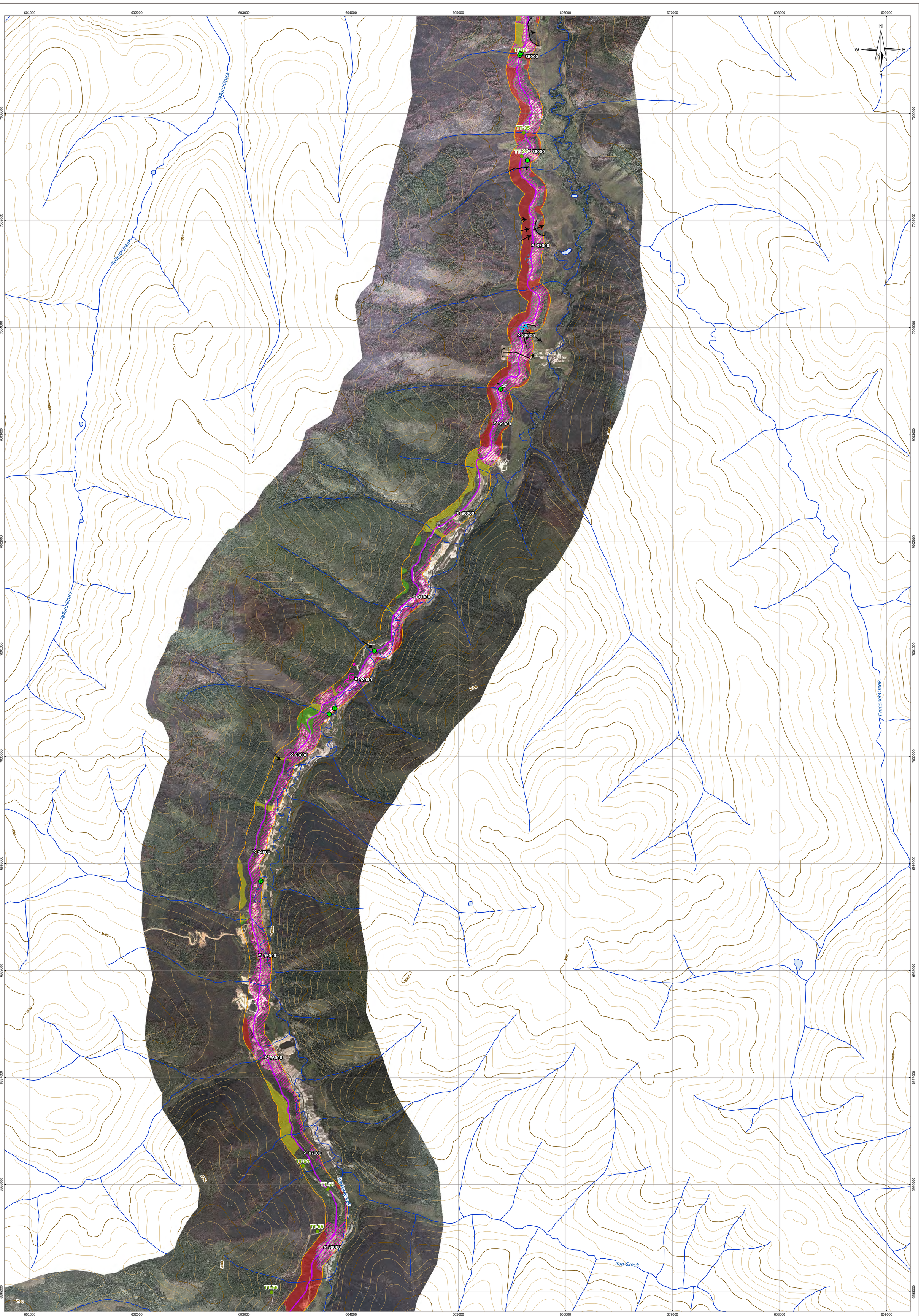
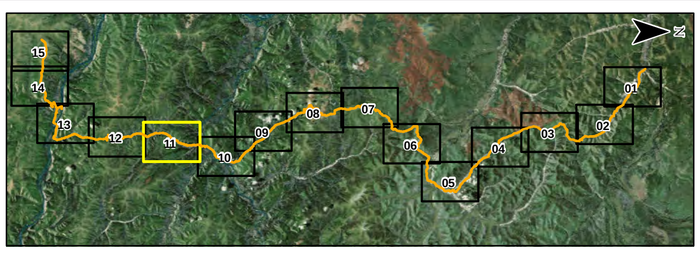


LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
- Perennially Frozen Ground - visible excess ice (Fv)
- Perennially Frozen Ground - ice not visible (Fn)
- Unfrozen
- Placer Tailings Disposal Disturbed Area
- Kaminak Route Chainage
- Kaminak Route
- TT EBA Ground Observation Site
- Thermokarst Pond
- Pond of Possible Thermokarst Origin
- Massive Ice Beds
- Ice Wedge Polygons
- V (Thermal) Erosion Feature
- Collapsed Pingo
- Landslide Failure Scar (small)
- Landslide Failure Scar (large)
- Landslide Headscarp (large)
- Gully
- Recent Landslide Failure Scar
- Recent Landslide Headscarp
- Active Layer Detachment Scar
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMc	REV: 1	Figure 11
OFFICE: Tt EBA-VANC	DATE: April 27, 2016				

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LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
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- Perennially Frozen Ground - ice not visible (Fn)
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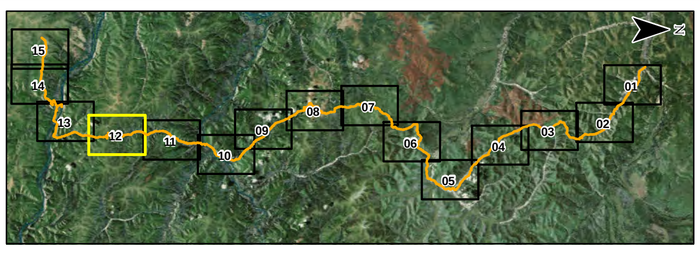
- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	Figure 12
OFFICE: Tt EBA-VANC	DATE: April 27, 2016				

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KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
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- Active Layer Detachment Headscarp
- Debris Flow Scar
- Mapping Area
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- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

PROJECTION UTM Zone 7N		**DATUM** NAD83	
Scale: 1:15,000 (200 100 0 200 Metres)			
FILE NO. E14103256-01_Figures01-15_FinalPF.mxd			
PROJECT NO. E14103256-01	**DWN** MEZ	**CKD** SL	**APVD** VR/SMC / **REV** 1
OFFICE Tt EBA-VANC	**DATE** April 27, 2016		

CLIENT KAMINAK GOLD CORPORATION

TETRA TECH EBA

Figure 13

Q:\Vancouver\GIS\ENGINEERING\E14\E14103256-01_Kaminak\Maps\E14103256-01_Figures01-15_FinalPF.mxd modified 4/27/2016 by morgan.zonderyan

589000 590000 591000 592000 593000 594000 595000 596000 597000

6978000 6977000 6976000 6975000 6974000 6973000 6972000 6971000 6970000 6969000 6968000 6967000

N W E S

Coffee Creek

TT-75 TT-74 TT-73

Coffee Creek

LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
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- Active Layer Detachment Headscarp
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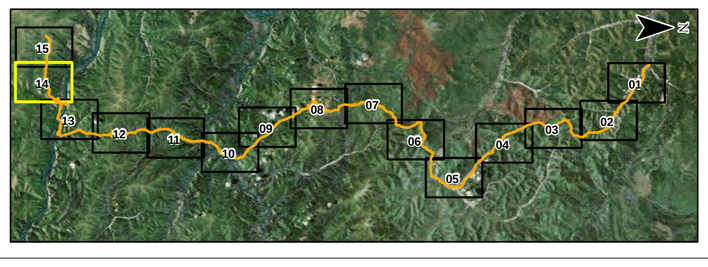
- Index Contour (500 ft)
- Watercourse
- Waterbody



NOTES
Base data source: CanVec 1:50,0000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VRISMC	REV: 1	Figure 14
OFFICE: TI EBA-VANC	DATE: April 27, 2016				

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582000 583000 584000 585000 586000 587000 588000 589000

6978000 6977000 6976000 6975000 6974000 6973000 6972000 6971000 6970000 6969000 6968000 6967000

Dan-Man-Creek

Halfway Creek

TT-28 TT-29 TT-30 TT-31 TT-32 TT-63 TT-67 TT-69 TT-70

2500 3000 4000

N W E S



LEGEND

Permafrost Characterization by Ground Ice Content

- Perennially Frozen Ground - very ice-rich (Fi)
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- Mapping Area
- Places
- Intermediate Contour (100 ft)
- Index Contour (500 ft)
- Watercourse
- Waterbody

NOTES
Base data source: CanVec 1:50,000.
Imagery provided by Kaminak Gold Corp (2015).

STATUS
ISSUED FOR USE

KAMINAK ROAD PERMAFROST GEOHAZARD EVALUATION

Map of Permafrost Distribution Along Proposed Kaminak Road Alignment

PROJECTION: UTM Zone 7N	DATUM: NAD83				CLIENT: KAMINAK GOLD CORPORATION
Scale: 1:15,000 (200 100 0 200 Metres)					TETRA TECH EBA
FILE NO.: E14103256-01_Figures01-15_FinalPF.mxd					
PROJECT NO.: E14103256-01	DWN: MEZ	CKD: SL	APVD: VR/SMC	REV: 1	Figure 15
OFFICE: Tt EBA-VANC	DATE: April 27, 2016				

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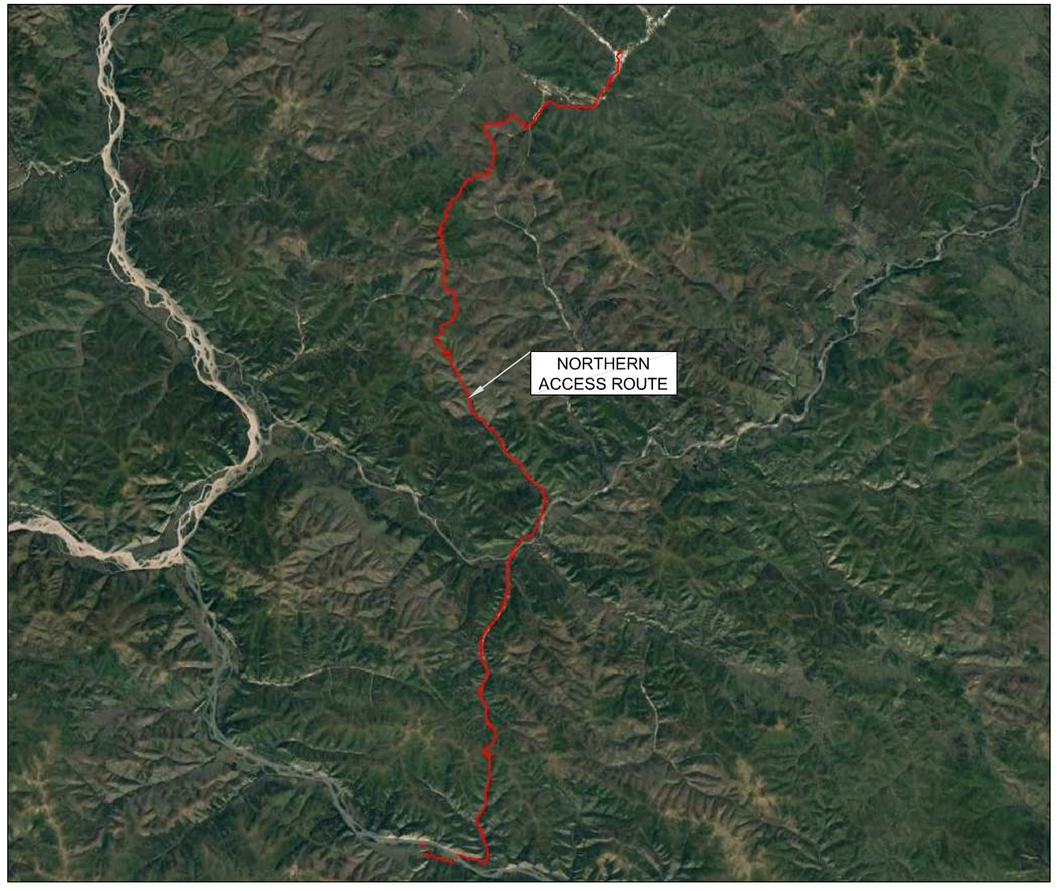
APPENDIX 31-A-III

Typical Road Cross Sections

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE

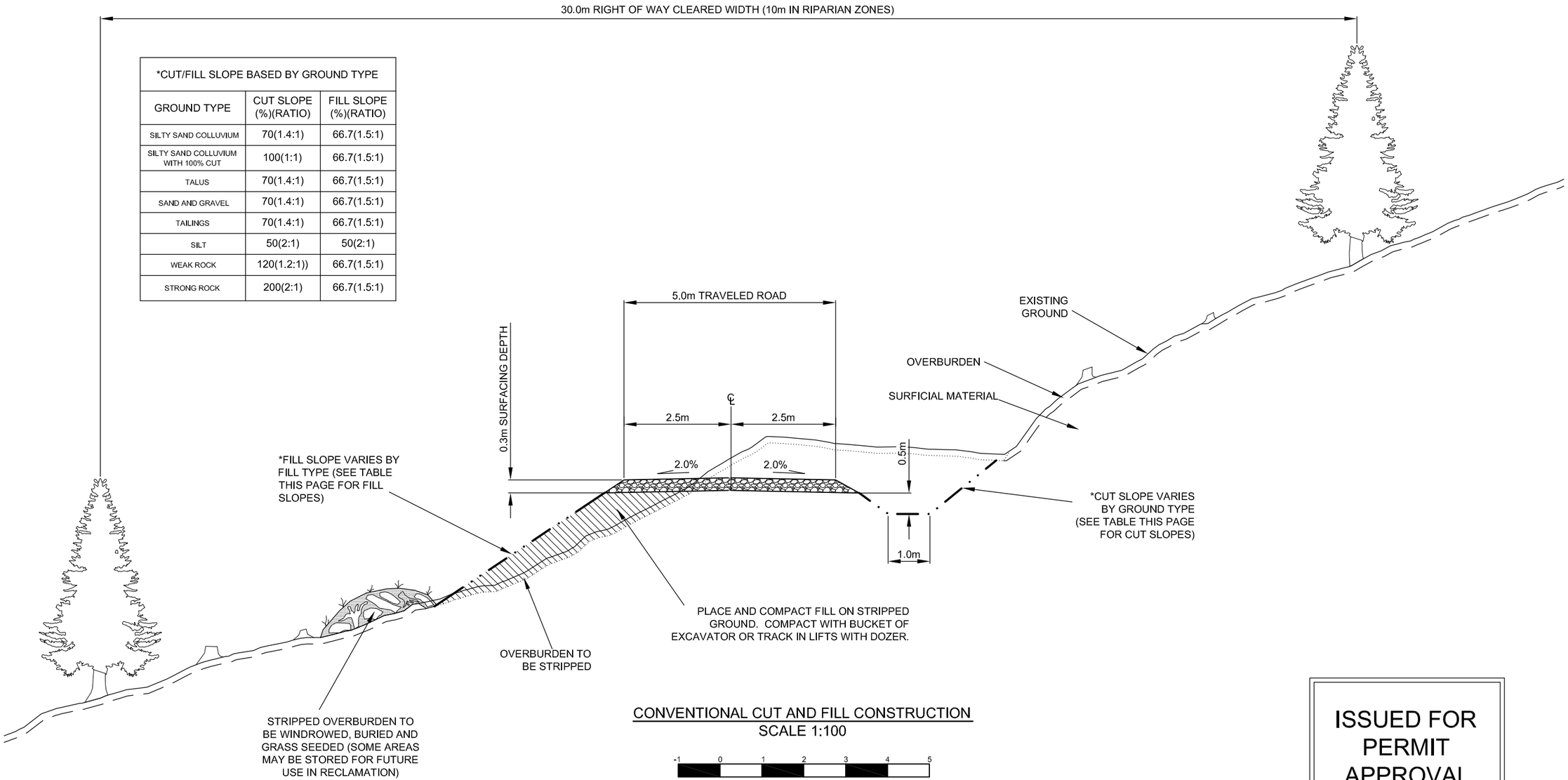


TYPICAL CROSS SECTIONS FOR NORTHERN ACCESS ROUTE

ISSUED FOR PERMIT APPROVAL

DWG No:1343-1-TYPROADXSECTIONS-001	SHEET: 1 OF 8	DESIGN BY: JEREMY ARAKI, P. ENG. DESIGN DATE: MAY 4, 2015 REVIEWED BY: MICHAEL FOSTER, P.ENG. DRAWN BY: MATT DICKIE, EIT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: TYPICALROADXSECTIONS.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 13, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 8 - CONVENTIONAL CUT AND FILL CONSTRUCTION SHEET 3 OF 8 - CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK SHEET 4 OF 8 - OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST SHEET 5 OF 8 - WINTER ROAD CONSTRUCTION SHEET 6 OF 8 - FULL BENCH END HAUL CONSTRUCTION SHEET 7 OF 8 - CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL SHEET 8 OF 8 - CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-002

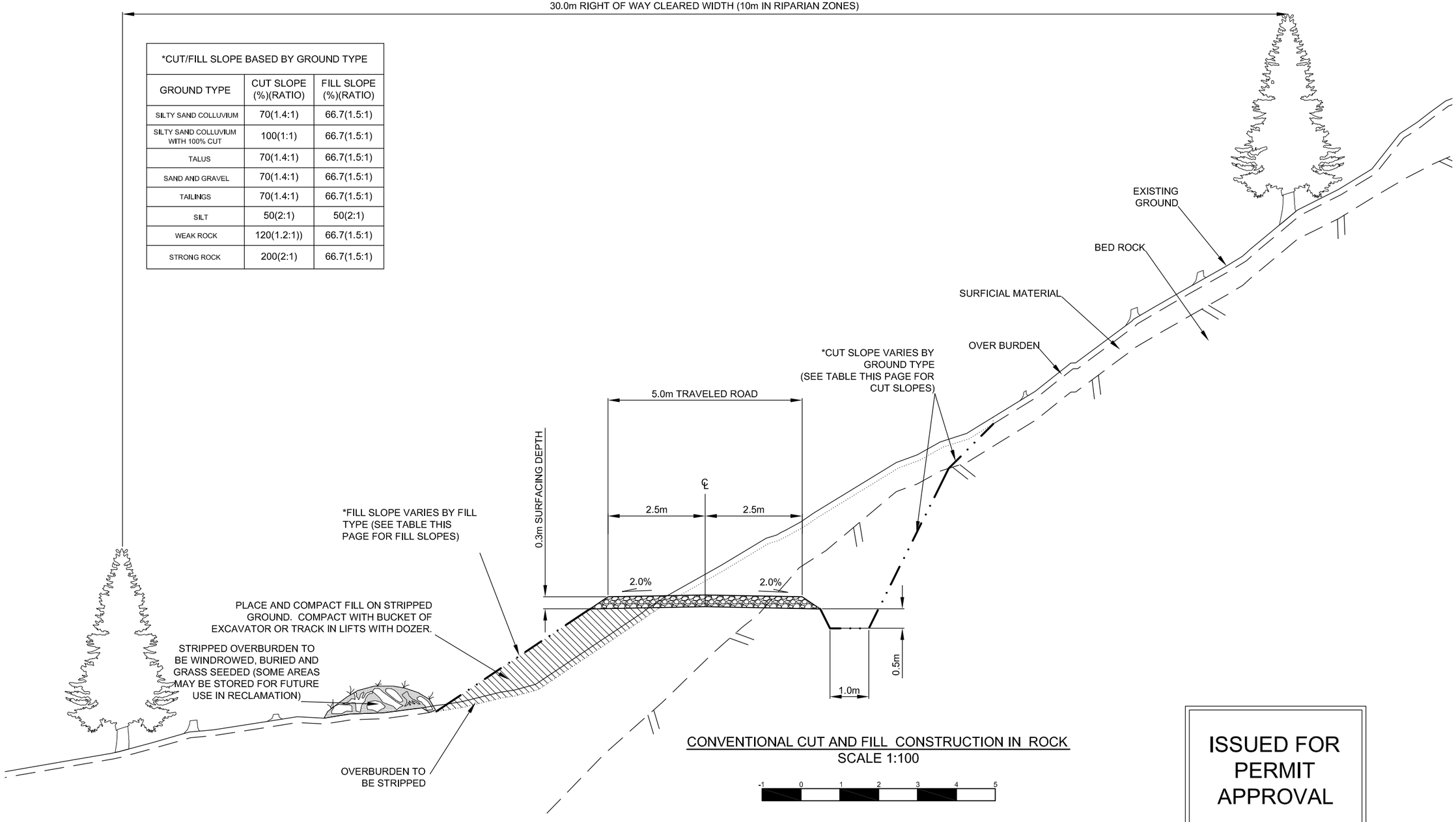
SHEET: 2 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK

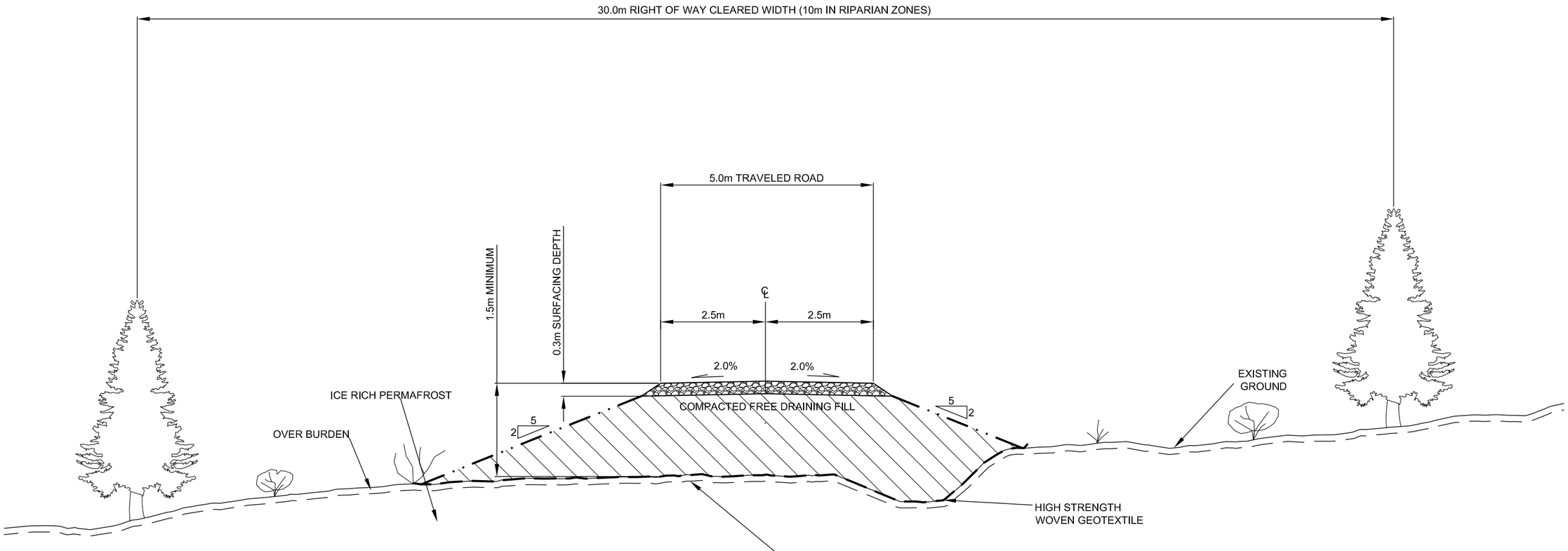
DWG No:1343-1-TYPROADXSECTIONS-003

SHEET: 3 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW



OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST
SCALE 1:100

ISSUED FOR PERMIT APPROVAL

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST

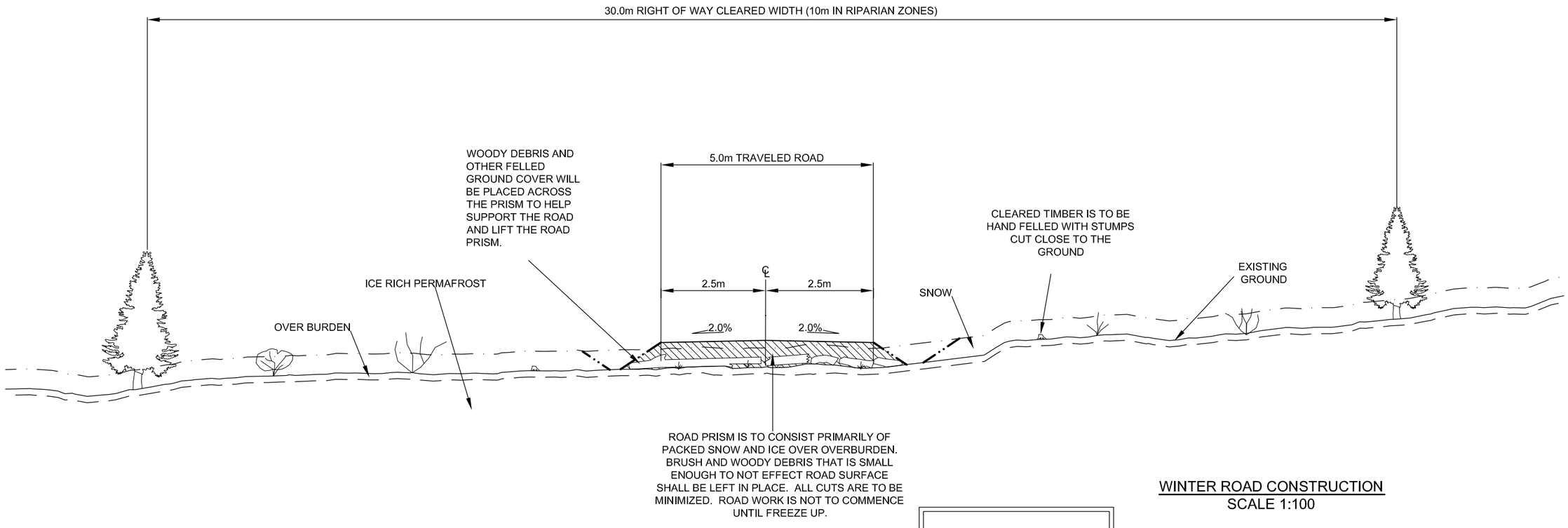
DWG No:1343-1-TYPROADXSECTIONS-004

SHEET: 4 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW



WINTER ROAD CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
WINTER ROAD CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-005

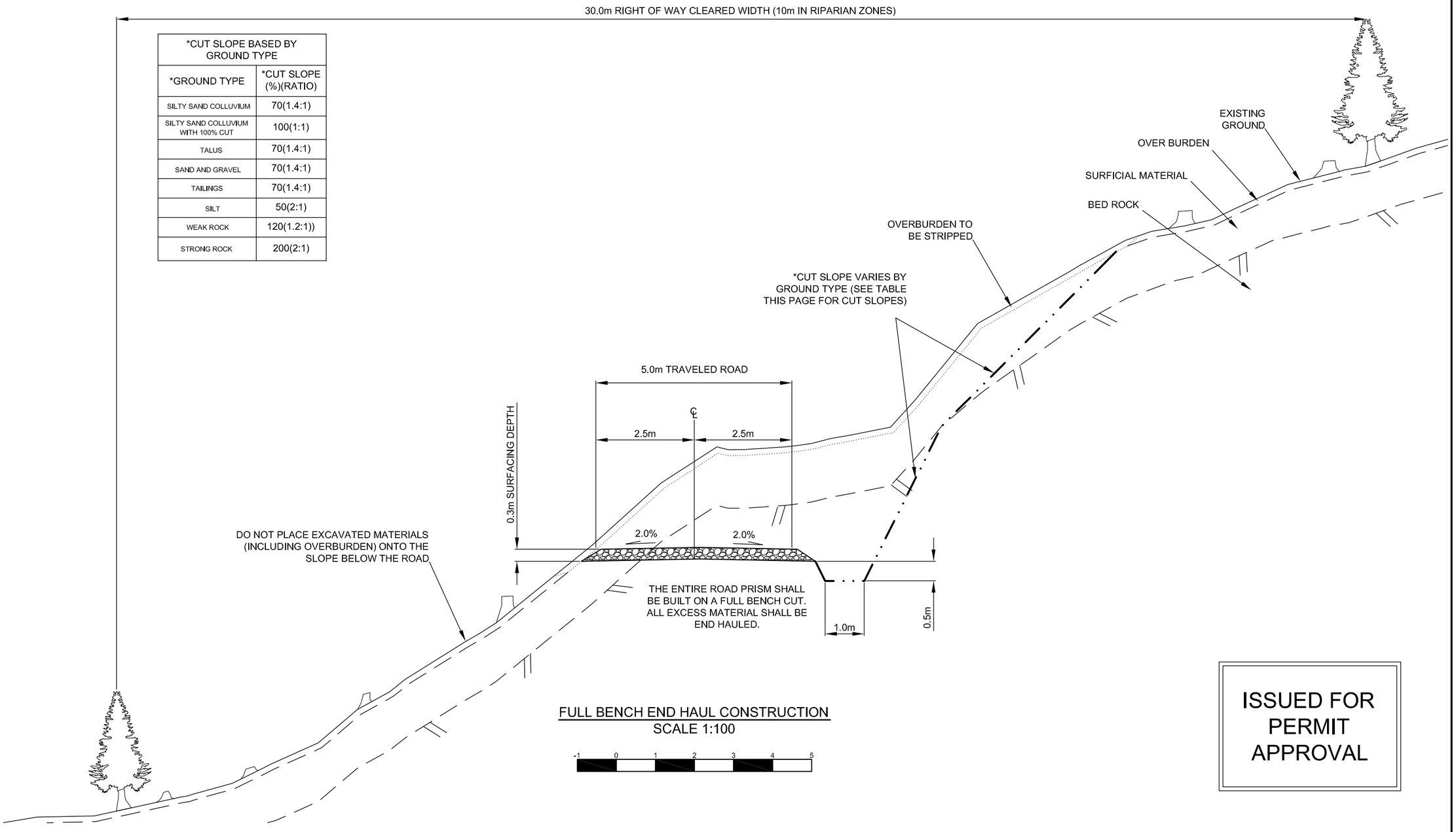
SHEET: 5 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW

*CUT SLOPE BASED BY GROUND TYPE	
*GROUND TYPE	*CUT SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)
TALUS	70(1.4:1)
SAND AND GRAVEL	70(1.4:1)
TAILINGS	70(1.4:1)
SILT	50(2:1)
WEAK ROCK	120(1.2:1))
STRONG ROCK	200(2:1)



FULL BENCH END HAUL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
FULL BENCH END HAUL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-006

SHEET: 6 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW

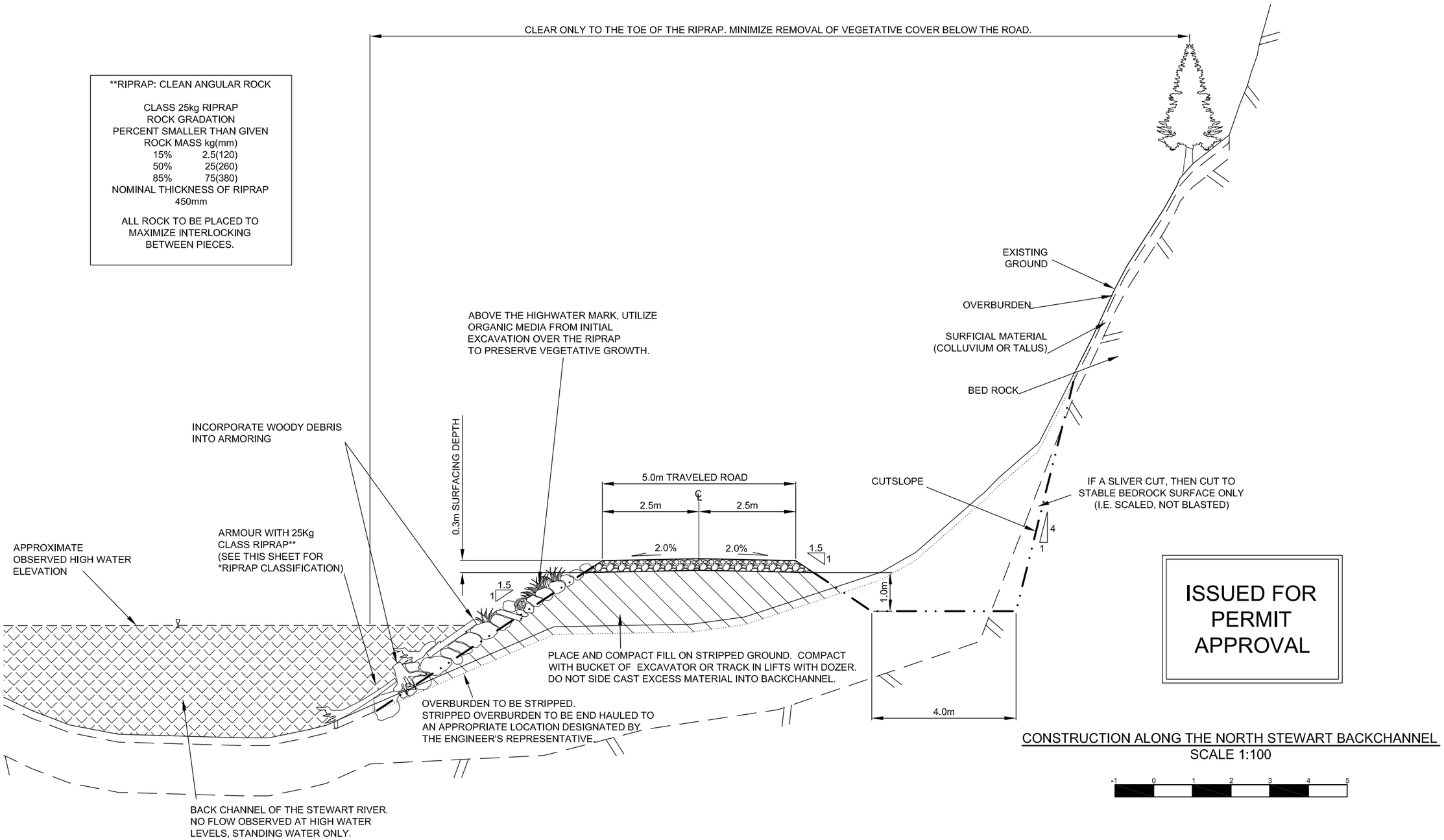
**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP
450mm

ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES.



ISSUED FOR PERMIT APPROVAL

CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL

DWG No:1343-1-TYPROADXSECTIONS-007

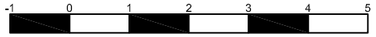
SHEET: 7 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW

CROSS DRAIN CULVERT ON GENTLE SLOPES
SCALE 1:100



CROSS DRAIN CULVERT IN FILL
SCALE 1:100



***RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	1(90)
50%	10(195)
85%	30(280)

NOMINAL THICKNESS OF RIPRAP 350mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP 450mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

*CUT/FILL SLOPE BASED BY GROUND TYPE

GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

NOTES:
1. MINIMUM CLEARANCE BETWEEN WALLS OF CULVERTS IN MULTIPLE INSTALLATIONS SHALL BE D/2 OF THE SMALLEST PIPE OR 1.0m, WHICHEVER IS GREATER
2. GEOTEXTILE FABRIC SHALL BE NON-WOVEN CONSTRUCTED, SUPPLIED IN ROLLS AND APPROVED BY ENGINEER PRIOR TO INSTALLATION.
3. MINIMUM THICKNESS OF RIPRAP SHALL BE AS FOLLOWS:
   - 300mm FOR 10KG CLASS RIPRAP
   - 450MM FOR 25KG CLASS RIPRAP
4. SKEW CULVERT 3° FOR EACH 1% ROAD GRADIENT OVER 3%. MAXIMUM SKEW OF 45°.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES

DWG No:1343-1-TYPROADXSECTIONS-008

SHEET: 8 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW

APPENDIX 31-A-IV

Access Road Embankment Thickness in Permafrost Terrain

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR USE

To:	James Scott, P. Geo.	**Date:**	March 17, 2016
c:	Matthew Dickie, E.I.T., (Onsite Engineering)	**Memo No.:**	5
From:	Kevin Jones	**File:**	704-ENG.EARC03004-01
Subject:	Access Road Embankment Thickness for Permafrost Terrain		

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) has been retained by Kaminak Gold Corporation (Kaminak) to provide permafrost-related engineering assistance for the Coffee Mine.

The purpose of this memo is to provide Tetra Tech EBA's comments regarding the embankment thickness required to lessen the impact of permafrost and its potential degradation on the performance of the access road in areas with sensitive permafrost conditions. A previous memo titled, "Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-Rich Permafrost", Memo 3, dated June 21, 2016 provided a summary of permafrost distribution and characteristics and considerations for road design and construction. The evaluation of the terrain along the route identified that approximately 14 km of the 214 km-long road is founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. A key recommendation provided in that memo for these terrain types (ice-rich permafrost) was as follows:

- *For conceptual design purposes, embankment thickness should be a minimum of 1.5 m (ideally 2.0 m), with material placed on woven geotextile to protect the subgrade from thawing; 1 m of fill should be enough within sections of the road embankment underlain by ice-poor permafrost.*

2.0 EMBANKMENT THICKNESS REQUIREMENT

Normally the minimum access road embankment thickness required to protect underlying permafrost from thawing that could lead to excessive settlement or instability is determined by carrying out detailed thermal analysis of the road embankment using representative natural ground conditions and appropriate properties for the embankment fill materials. At this time, those properties and parameters are not well defined and as such, professional judgement based on previous thermal analyses in similar terrain, combined with a knowledge of how the existing roads in the area are behaving have been used to develop the above noted minimum embankment thickness recommendation.

The access road is located in a discontinuous permafrost region and in situ ground temperatures in the permafrost are quite warm (typically just slightly below to -2°C). This is what would be called "sensitive permafrost terrain" and as such it would be desirable to utilize an embankment thickness that would cause the permafrost table to aggrade upwards to near the original ground surface (i.e. thin the active layer). However, given the limited traffic on the road combined with a regular maintenance program it is suggested that a design embankment thickness that allows seasonal thaw below the embankment being limited to no more than the depth of the current active layer will be adequate. The 1.5 m minimum (ideally 2.0 m) embankment thickness should be adequate to accomplish this.

Coupled with the minimum embankment thickness it is also recommended that side slopes on the fill embankments in these "overlanding" sections be no steeper than 2.5H:1V. This will help to push water away from the travelling surface of the road and reduce the impact of the increased depth of thaw below the side slopes where the fill is

Tetra Tech EBA Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

considerable thinner. Instability of the toes of the slope can be expected due to thaw depths being greater than the natural depth of the active layer below the embankment slope in the ice-rich permafrost areas. The flat side slopes therefore limit the impact of the instability on the travelling surface.

The minimum embankment thickness required to thermally protect the underlying subgrade is; however, highly dependent on the material used to construct the embankment. For example, if the embankment is constructed using clean coarse rockfill, the required embankment might be as much as twice as thick compared to an embankment constructed with a well-graded sand and gravel fill. This is due to the moisture content differences in these two types of materials. The above noted minimum embankment thickness assumes a high quality well-graded sand and gravel fill material. The recommended minimum embankment thickness for a road constructed using clean crushed rockfill would be 2.5 m.

Note that these minimum embankment thicknesses are predicated on the other recommendations provided in Memo 3 noted above being followed. Most important of these being the need to absolutely minimize disturbance to the natural ground surface during construction and to eliminate any potential of water ponding along the embankment. Surface water drainage control should not involve ditching in ice-rich permafrost terrain as thaw will render ditches ineffective.

APPENDIX 31-A-V

Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-rich Permafrost

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR USE

To:	James Scott, P.Geo., Advanced PM	**Date:**	June 21, 2016
c:	K. Jones, P. Eng., VP Arctic Development; J. Araki, P.Eng.; M. Dickie, EIT	**Memo No.:**	3
From:	V. Roujanski, P. Geol.	**File:**	704-ENG.EARC03004-01
Subject:	Geotechnical Considerations for Road Design and Construction in Areas Underlain by Ice-Rich Permafrost		

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) is pleased to submit this Technical Memorandum to Kaminak Gold Corporation (Kaminak) regarding geotechnical considerations for road design and construction in areas underlain by ice-rich permafrost.

The proposed Kaminak access road route runs approximately 214 km from the Klondike Highway junction (Bear Creek) near Dawson City southward to the Coffee Property mine area.

2.0 PERMAFROST ALONG THE PROPOSED KAMINAK ROAD ALIGNMENT AND IN THE MINE AREA

2.1 Permafrost Distribution, Temperatures, Ice Content, and Related Geohazards

According to the Permafrost Map of Canada (Heginbottom et al., 1995) the proposed Kaminak road alignment is located within the zone of extensive discontinuous permafrost, in which 50% to 90% of the area is expected to be underlain by permafrost. Our calculations of permafrost distribution within the 200 m-wide proposed road corridor using ArcGIS technology show that approximately 55% of **the corridor area** is underlain by permafrost (10% - by very ice-rich permafrost, 11% - by permafrost with visible excess ice, and 17% - by predominantly ice-poor permafrost). Approximately 17% of **the corridor area** is covered by placer tailings deposits and may include pockets of ice-rich material buried by the tailings and where the ground thermal regime was affected by mining. Approximately 45% of **the corridor area** is therefore estimated to be permafrost-free.

Permafrost thicknesses were measured with thermistor cables at the south end of the proposed access road, within the Coffee Mine area. The results are highly variable, ranging from approximately 30 m to 165 m thick.

Active layer thickness varies spatially and temporally. In areas with thicker insulating organic cover, it is usually thin (approximately 0.3 m to 0.6 m), whereas it can be several metres thick within partially exposed bedrock or within coarse surficial material with a high clast content.

At the south end of the proposed Kaminak road alignment, within the Coffee Mine site area, permafrost temperatures were measured with thermistor cables, as well as with temperature sensors on vibrating wire piezometers. At the depth of zero seasonal temperature variation, ground temperatures range from temperatures near the freezing point to approximately -2°C. The permafrost classification for the road within the Coffee Mine area is thus “warm”.

Tetra Tech EBA Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

The areas within the proposed road corridor were found to be underlain by perennially frozen ground with ground ice that is predominantly:

- not visible (Nf, Nbn, Nbe): This consist of perennially frozen ground that is well-bonded to friable and typically does not contain visible excess ice, i.e. generally ice-poor permafrost. However, these areas (map polygons) may include patches of permafrost with visible excess ice, as well as patches of unfrozen ground;
- visible excess ice (Vx, Vc, Vr, Vs): This moderately to ice-rich permafrost is well-bonded but rarely includes large ground ice bodies. However, these areas (map polygons) may include patches of ice-poor permafrost with ground ice that is not visible to the unaided eye (Nbn, Nbe) and patches of permafrost-free ground; or
- forming significant accumulations, such as ice wedges and other massive ground ice bodies: These areas were mapped as very ice-rich permafrost.

Warm permafrost temperatures along the proposed road alignment mean that areas underlain by ice-rich perennially frozen ground are sensitive to any kind of natural or manmade disturbance. As a consequence, one of the permafrost-related geohazards within the project area is thermokarst, which could be triggered by construction activities or by natural processes, such as forest fires. Development of thermokarst can be accompanied by thermal erosion, subsidence, and mass wasting of thawing ice-rich organic and fine-grained mineral soils.

2.2 Permafrost and Geotechnical Considerations for Road Design and Construction

Every effort was made to avoid areas of thaw-sensitive perennially frozen soils when selecting the proposed road route. However, in some cases this was not possible and some sections of the selected road alignment cross areas underlain by warm ice-rich permafrost (Tetra Tech EBA, 2016a and 2016b). Approximately 14 km of the 214 km-long road is founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. Road construction in such areas can cause a change in heat exchange at the ground surface and a change in the existing thermal regime of the ground. This may lead to thaw degradation of ice-rich permafrost in the subgrade, i.e. gradual melting of ground ice beneath the road. The resulting differential settlement may cause sharp dips in the road surface, progressively widening cracks, and, less commonly, sinkholes where massive ice bodies previously existed. Thawing and settlement may continue for years until the ice has melted, thawing has stopped, or road fill bridges the resulting voids (Andersland and Ladanyi, 2004).

Within the areas of active or recent placer mining in the valley bottoms, the proposed alignment often follows existing mining access roads or crosses extensive areas covered by placer mining tailings. The ice-rich material within these disturbed sections has been mostly removed and the road maintenance costs are expected to be low. However, pockets of the ice-rich material may exist and will require special consideration for design.

In general, there are two approaches for the design of roads in permafrost areas (Johnston, 1981; Crory, 1991; McGregor et al., 2010):

1. **Passive Approach**: Provide full thermal protection to maintain permafrost in its frozen condition; or
2. **Active Approach**: Provide for limited thaw penetration into the underlying subgrade where preservation of permafrost is not possible or practicable and the consequences of thaw are allowed for in the design.

Both approaches may be employed for any appreciable length of the proposed road alignment.

A **passive approach** should be employed along those sections of the proposed road alignment that cross areas underlain by ice-rich permafrost. Geotechnical considerations for the road design within such sections are as follows:

- Cuts and ditches are avoided wherever possible;
- Movement of equipment used for clearing the Right-of-Way (ROW) should be controlled or prohibited to keep the terrain disturbance to a minimum and to preserve the organic mat;
- During winter operations, the snow cover should be carefully removed before construction of the embankment to reduce settlement of the fill during the thaw period;
- The embankment should be constructed by the end dumping method so that the vegetation cover will not be damaged by hauling equipment;
- High fills and sideslope alignments are avoided wherever possible;
- For conceptual design purposes, embankment thickness should be a minimum of 1.5 m (ideally 2.0 m), with material placed on woven geotextile to protect the subgrade from thawing; 1 m of fill should be enough within sections of the road embankment underlain by ice-poor permafrost;
- Flat horizontal and vertical curves and gradients not exceeding 8% are highly desirable;
- Drainage should be controlled to prevent water ponding along the toe of the embankment. This will allow the thermal regime of the frozen subgrade to be maintained. If runoff water must be collected and channelized, it should be done at a reasonable distance from the embankment (>10 m); and
- Snow accumulation should be prevented on the lee side of higher sections of the road embankment to maintain thermal regime of the frozen subgrade.

Basic principles for thermal design of embankments to preserve the permafrost include the following (McGregor et al., 2010):

- Favourable thermal conditions should be imposed and maintained beneath the structural core of the embankment; and
- Thermal design is required to ensure raised or at least maintained permafrost levels beneath the core of the embankment.

3.0 CONCLUSIONS

The proposed Kaminak access road route runs approximately 214 km across the zone of extensive discontinuous permafrost, in which approximately 21% of **the corridor area** is underlain by ice-rich to very ice-rich permafrost. Approximately 14 km of the 214 km-long road founded on very ice-rich permafrost and approximately 22 km – on ice-rich permafrost. Sections of the proposed alignment crossing thaw-sensitive permafrost terrain will require special geotechnical considerations.

These considerations include adequate thermal protection of ice-rich permafrost in the subgrade through avoidance of cuts and ditching, minimization of terrain disturbance during clearing of the ROW, preservation of the insulating organic mat, special road construction methods (e.g. end dumping), ongoing snow removal over the life of the road, and drainage control along the embankment.

4.0 REFERENCES

Andersland, O.B. and Ladanyi, B. 2004. Frozen Ground Engineering, 2nd ed., John Wiley & Sons, Hoboken.

Crory, F.E., 1991. Construction Guidelines for Oil and Gas Exploration in Northern Alaska. U.S. Army Cold Regions Research and Engineering Laboratory CRREL Report 91-21, Hanover.

Heginbottom, J.A., Dubreuil, M.A., and Harker, P.T. 1995. Canada Permafrost. In: The National Atlas of Canada, 5th Edition, Sheet MCR 4177, Plate 2.1, Scale: 1:7,500,000. National Atlas Information Service, Canada Centre for Mapping, Geomatics Canada, Terrain Sciences Division, Geological Survey of Canada, Natural Resources Canada, Ottawa.

Johnston, G.H., ed. 1981. *Permafrost Engineering Design and Construction.* Toronto: John Wiley & Sons, Toronto.

McGregor, R., Doré, G., Hayley, D.W., Wilkins, G., Hoeve, E., Grozic, E., Roujanski, V., and Jansen, A. 2010. Guidelines for Development and Management of Transportation Infrastructure in Permafrost Regions. Transportation Association of Canada, Ottawa.

Tetra Tech EBA. 2016a. Map of Permafrost Distribution Along Proposed Kaminak Road Alignment (15 sheets), Scale 1:15,000. Map sheets prepared for Kaminak Gold Corporation, dated April 27, 2016.

Tetra Tech EBA, 2016b. Map of Permafrost Distribution along Proposed Kaminak Road Alignment. Technical Memorandum prepared for Kaminak Gold Corporation, dated April 28, 2016.

APPENDIX 31-A-VI

Watercourse Crossing Locations and Specifications

APPENDIX VI – WATERCOURSE CROSSING LOCATIONS AND SPECIFICATIONS

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
Sulphur Creek	47	FB	7057321	614249	Undersized CSP	31	ASP	12 m	Fish Crossing in Placer Tailings
Indian River	50	FB	7055757	613237	Baily Bridge	162	ASP	27 m	Fish Crossing in Placer Tailings
Indian River Trib 1	51	NCD	7055111	611310	Undersized CSP	0.25	CSP	800 mm	Minor Crossing
Indian River Trib 2	52	NFB	7055376	610126	Undersized CSP	1.8	CSP	1500 mm	Aufeis Issues Present
Indian River Trib 3	53	NCD	7055220	609648	Undersized CSP	0.9	CSP	1000 mm	Aufeis Issues Present
Indian River Trib 4	54	NCD	7055292	609205	Undersized CSP	0.3	CSP	600 mm	Minor Crossing
Eureka Trib	54.5	NFB	7055240	607864	Ford	0.15	CSP	800 mm	Minor Crossing
Eureka	55	PFB	7054974	607646	Undersized CSP	9.9	EMBEDDED	3600 mm	Fish Crossing in Placer Tailings, with Aufeis Issues Present
Upper Maisy May Trib	74	NCD	7029006	598729	Ford	0.75	CSP	800 mm	Minor Crossing
Maisy May Trib 1	75	NFB	7027792	598935	Undersized CSP	3.1	CSP	1800 mm	Potential Aufeis Issues
Maisy May Trib 2	76	NFB	7027499	599268	Undersized CSP	2.7	CSP	1500 mm	Potential Aufeis Issues
Maisy May Trib 3	77	NFB	7027017	599651	Ford	2.3	ASP	15 m	Aufeis Issues Present
Maisy May Tailings Trib 1	MMTT-1	NCD	7023423	601241	Ford	N/A*	CSP	800 mm	Minor Crossing
Maisy May Tailings Trib 2	MMTT-2	PFB	7022841	601563	Undersized CSP	2.5	EMBEDDED	2800 mm	Minor Crossing
Maisy May Tailings Trib 3	MMTT-3	NCD	7022658	601862	Ford	N/A*	Berm	800 mm	Minor Crossing

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
Maisy May Tailings Trib 4	MMTT-4	NCD	7022397	602069	Ford	N/A*	Berm	800 mm	Minor Crossing
Maisy May Tailings Trib 5	MMTT-5	NFB	7021787	602723	Ford	0.3	CSP	800 mm	Minor Crossing
Maisy May Trib 4	81	FB	7021437	603023	Ford	12.8	ASP	12 m	Fish Crossing Partially in Tailings
Lower Maisy May Trib 1	83	NFB	7018956	605034	Undersized CSP	0.3	CSP	800 mm	Minor Crossing
Lower Maisy May Trib 2	84	NCD	7017632	606597	Undersized CSP	0.3	CSP	800 mm	Minor Crossing
Maisy May Proper	91	FB	7014662	609072	N/A	34.2	ASP	15 m	Fish Crossing Undisturbed Site
North Stewart Trib	97	NFB	7009639	606721	N/A	3.1	CSP	1600 mm	Minor Crossing
Lower Barker	100	FB	7007538	605779	Ford	34.1	ASP	21 m	Fish Crossing at Existing Ford
Lower Barker Trib 1	101	NCD	7006548	605584	Ford	0.6	CSP	800 mm	Minor Crossing
Lower Barker Trib 2	102	NCD	7005817	605627	Ford	0.3	CSP	800 mm	Minor Crossing
Lower Barker Trib 3	103	NFB	7005488	605574	Ford	1	CSP	1000 mm	Minor Crossing
Lower Barker Trib 4	104	NFB	7004404	605649	Ford	0.3	CSP	800 mm	Minor Crossing
Unnamed Tributary of Barker Creek	110	NFB	7000408	603706	Ford	0.3	CSP	800 mm	Minor Crossing
Mid Barker Camp	111	PFB	6998484	603069	Ford	5.2	ASP	9 m	Aufeis Issues Present
Mid Barker Tailings 1	112	NFB	6997812	603146	Ford	0.25	CSP	1000 mm	Minor Crossing
Mid Barker Tailings 2	113	PFB	6997198	603204	Ford	15.8	ASP	12 m	Fish Crossing in Tailings
Unnamed Tributary of Barker Creek	114	NFB	6996582	603435	Ford	0.3	CSP	800 mm	Minor Crossing
Unnamed Tributary of Barker Creek	115	NFB	6996459	603450	Ford	0.3	CSP	800 mm	Minor Crossing
Upper Barker Trib 1	210	PFB	6994186	603198	Log Bridge	2.3	EMBEDDED	2400 mm	Fish Crossing

Crossing ID	EDI (2016) Crossing ID	EDI Fish Class	Northing (m)	Easting (m)	Existing Structure	Q100 (m^3/s)	Proposed Structure	Proposed Structure Size	Comments
Upper Barker Trib 3	209	PFB	6993023	603303	Undersized Metal Pipe	2.7	EMBEDDED	2400 mm	Fish Crossing
Upper Barker	208	FB	6991445	603830	N/A	6.1	ASP	9 m	Fish Crossing Undisturbed Site
Upper Barker Trib 4	207	NFB	6990714	603966	N/A	0.3	CSP	800 mm	Minor Crossing
Ballarat Headwaters	206	NCD	6986820	604352	N/A	1.2	CSP	1000 mm	Minor Crossing
Upper Ballarat	205	NFB	6985024	604494	N/A	2.5	EMBEDDED	2400 mm	Fish Crossing Undisturbed Site
Upper Ballarat Trib	203	NFB	6982262	604037	N/A	1.6	EMBEDDED	2000 mm	Fish Crossing Undisturbed Site
Mid Ballarat	201	PFB	6980047	603298	N/A	12.5	ASP	9 m	Fish Crossing Undisturbed Site
Lower Ballarat Trib 1	118	PFB	6978334	603934	Ford	7	ASP	9 m	Aufeis Issues Present
Lower Ballarat Trib 2	119	NFB	6977476	604273	Ford	0.6	CSP	800 mm	Minor Crossing
Ballarat Proper	200	FB	6975984	603667	N/A	19.5	ASP	15m	Fish Crossing Undistrubed Site
Winter Road Creek	WRC-1	PFB	6975697	600805	N/A	N/A**	Snow Fill		No structure req., on winter road
Coffee Creek	125	FB	6976181	598899	N/A	161	ASP	36.6m	Fish Crossing Undistrubed Site
*Q100 not applicable as there is no definable drainage area and channel only consists of surface flow traveling both ways in placer tailings.									
**Q100 not calculated as there is no structure proposed for this creek									

Note: FB – Fish Bearing; PFB – Potentially Fish Bearing; NFB – Non-fish Bearing; NCD – Non-classified Drainage; ASP – all-steel pipe; CSP – corrugated steel culvert pipe

APPENDIX 31-A-VII

Typical Non-fish Bearing Stream Culvert

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



NON-FISH STREAM CULVERT
TYPICAL INSTALLATION

ISSUED FOR
PERMIT
APPROVAL

DWG No:1343-2-COFFEETYPNFCSP- 001	SHEET: 1 OF 2	DESIGN BY: MATTHEW DICKIE, EIT DESIGN DATE: MAY 31, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: COFFEETYPNFCSP.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 25, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943	DRAWING INDEX: SHEET 2 OF 2 - PLAN AND CULVERT PROFILE VIEWS

CULVERT PROFILE VIEW
SCALE 1:100

-1 0 1 2 3 4 5

AT THE DISCRETION OF THE ENGINEER'S REPRESENTATIVE, CULVERT PLACEMENT MAY REQUIRE SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL AND MARAFI 180N NON-WOVEN GEOTEXTILE OR APPROVED EQUIVALENT.

**FILL SLOPE VARIES BY FILL TYPE (SEE TABLE THIS PAGE FOR FILL SLOPES)

MINIMUM FILL OVER CULVERT VARIES WITH CULVERT SIZE. FILL DEPTH MAY INCREASE TO MATCH ROAD GRADE.

5.0m TRAVELLED ROAD

℄

1.5 1 1.5 1

THALWEG

STREAM FLOW

CULVERT GRADE TO MATCH STREAM THALWEG AT INLET AND OUTLET

CULVERT SLOPE AND ELEVATION TO MATCH EXISTING STREAM BOTTOM

ARMOUR ALL CULVERT INLET AND OUTLETS. ARMOUR WITH 25Kg CLASS RIPRAP* OR RIPRAP SIZED ON SITE AT THE DISCRETION OF THE ENGINEER'S REPRESENTATIVE. UNDERLAY WITH NON-WOVEN GEOTEXTILE.

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 2.5(120)
50% 25(260)
85% 75(380)
NOMINAL THICKNESS OF RIPRAP 450mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

N

DESIGNED ROAD C/L

DESIGNED ROAD EDGES

TO DAWSON CITY

LENGTH WILL VARY DEPENDING ON SITE REQUIREMENTS

STREAM FLOW

ARMOUR INLET TO PROTECT FILL AND TO TRAIN FLOW THROUGH CULVERT

STREAM THALWEL

CULVERT DIAMETER WILL VARY DEPENDING ON SITE REQUIREMENTS

HIGH WATER MARK

ALIGN CULVERT TO BEST FIT CREEK ALIGNMENT

APPROXIMATE EXTENT OF CUT/FILL SLOPE

TO COFFEE GOLD MINE

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

NON-FISH STREAM CULVERT TYPICAL INSTALLATION

DWG No:1343-2-COFFEETYPNFCSP- 002

SHEET: 2 OF 2

DESIGN BY: MATTHEW DICKIE, EIT
DESIGN DATE: MAY 31, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: COFFEETYPNFCSP.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 25, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

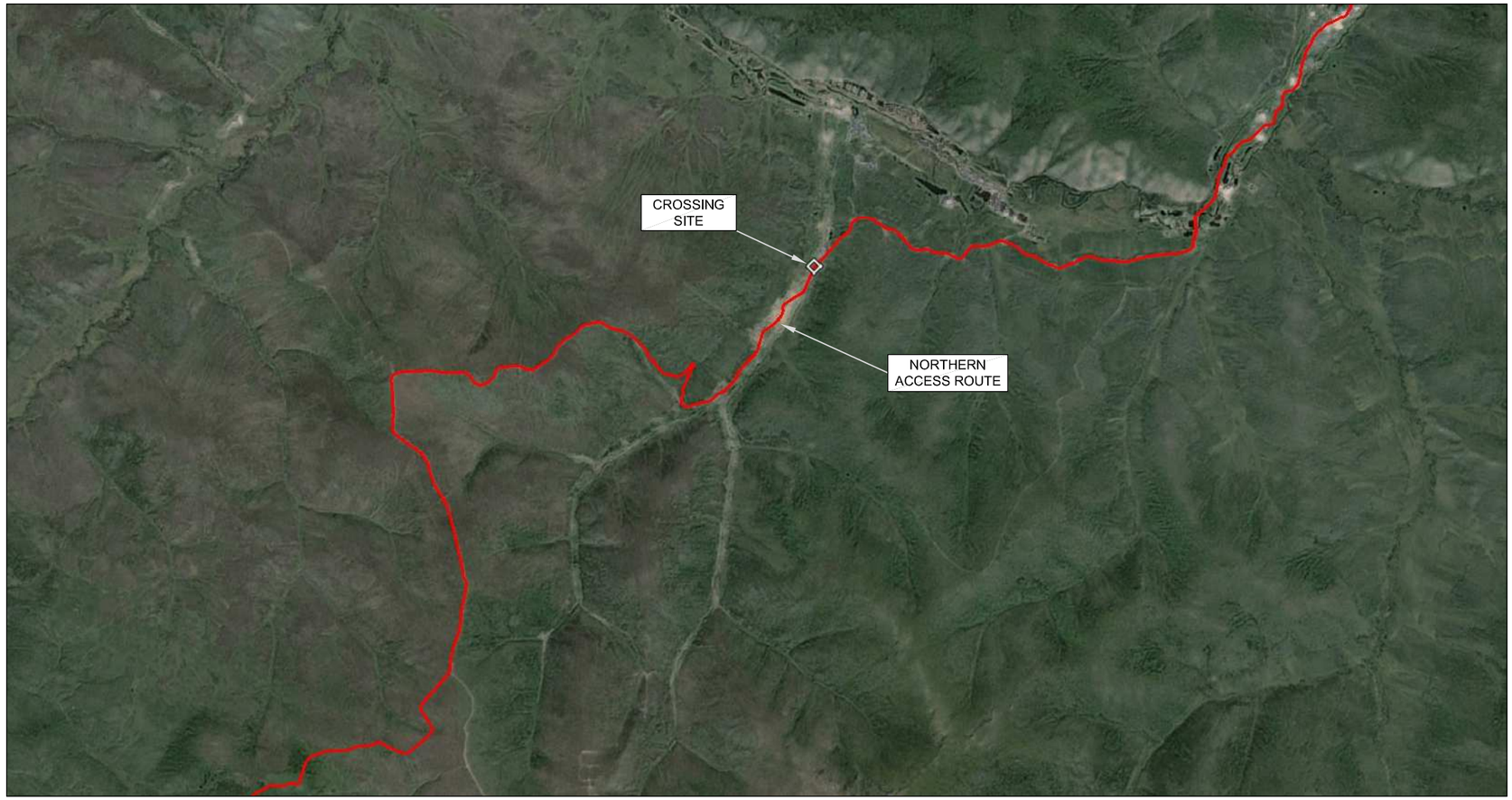
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG
NON-WOVEN GEOTEXTILE

APPENDIX 31-A-VIII

Example Embedded Culvert

General Arrangement Drawing

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



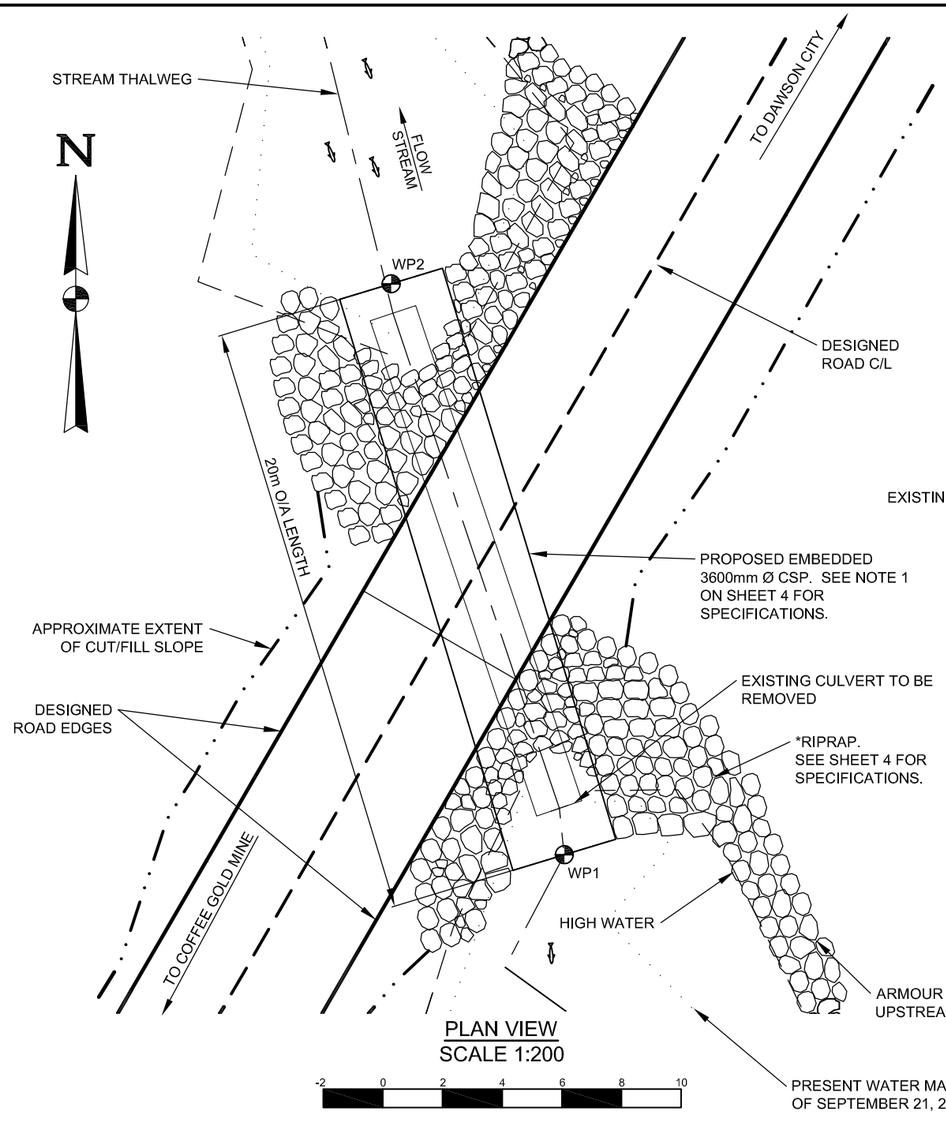
N

NOT TO SCALE

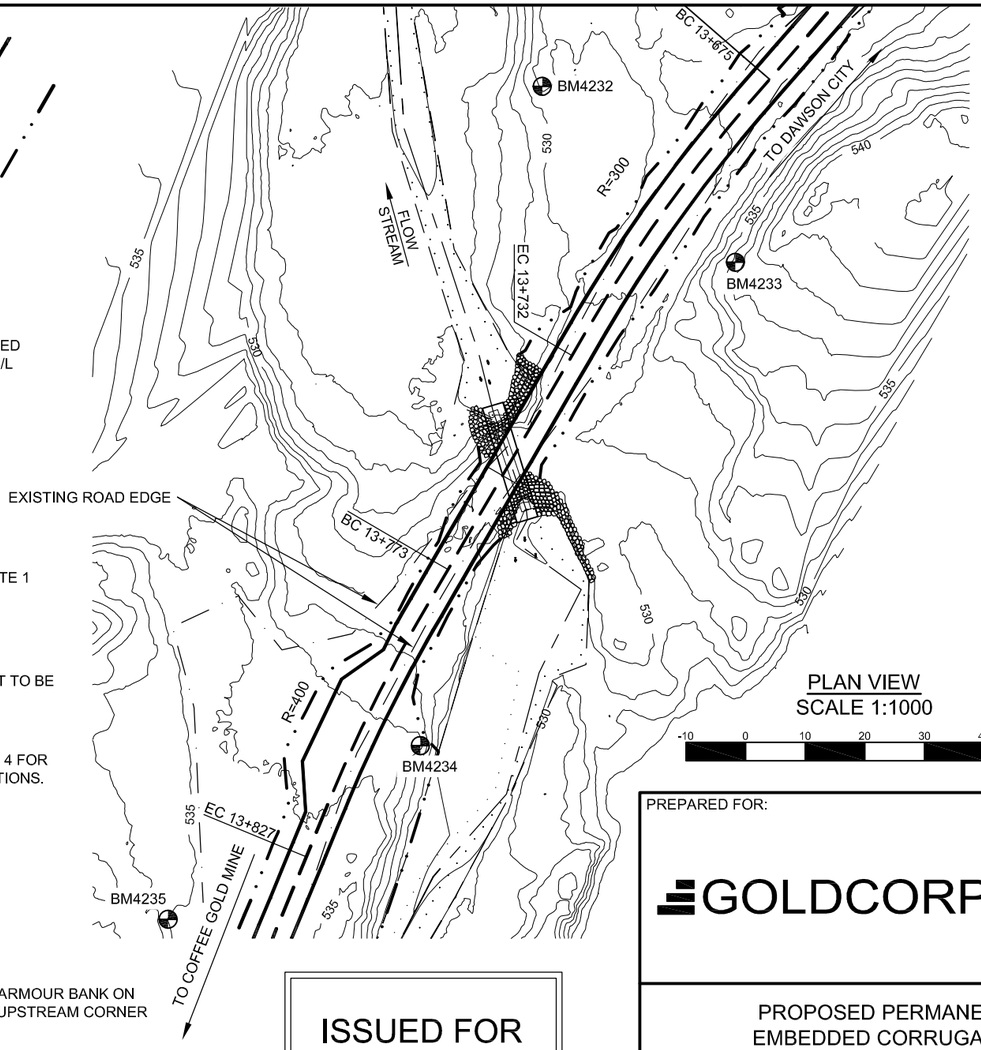
PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-MD24-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: MAY 16, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: UPPERBALTRIB.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:200



PLAN VIEW
SCALE 1:1000

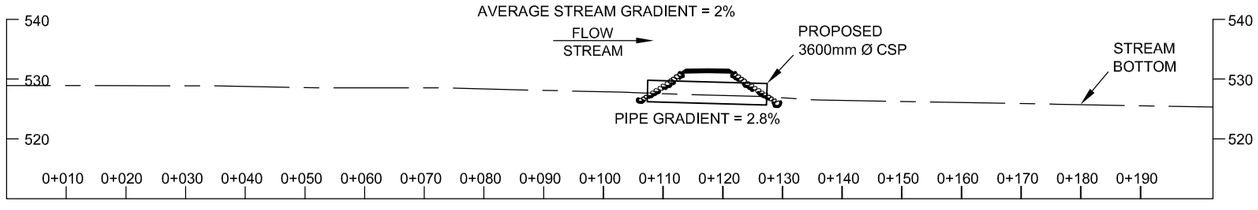
-10 0 10 20 30 40 50

WORKPOINTS ARE LOCATED AT CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4232	BM4233	49°38'28"	72.67
	BM4233	BM4234	5°51'6"	55.47
	BM4234	BM4235	149°52'37"	41.91
	BM4235	BM4232	17°46'5"	90.09
2	BM4232	BM4233	56°29'37"	54.13
	BM4233	BM4234	26°21'35"	47.23
	BM4234	BM4235	136°32'57"	58.30
	BM4235	BM4232	8°5'53"	101.89

WP	N	E	ELEV
WP1	7054970.50	607652.82	526.20
WP2	7054989.64	607647.01	525.65
BM4232	7055043.12	607655.31	531.46
BM4233	7055013.64	607687.69	537.02
BM4234	7054932.62	607634.88	533.84
BM4235	7054903.51	607592.58	535.19



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

DWG No: 1343-2-MD24-002

SHEET: 2 OF 5

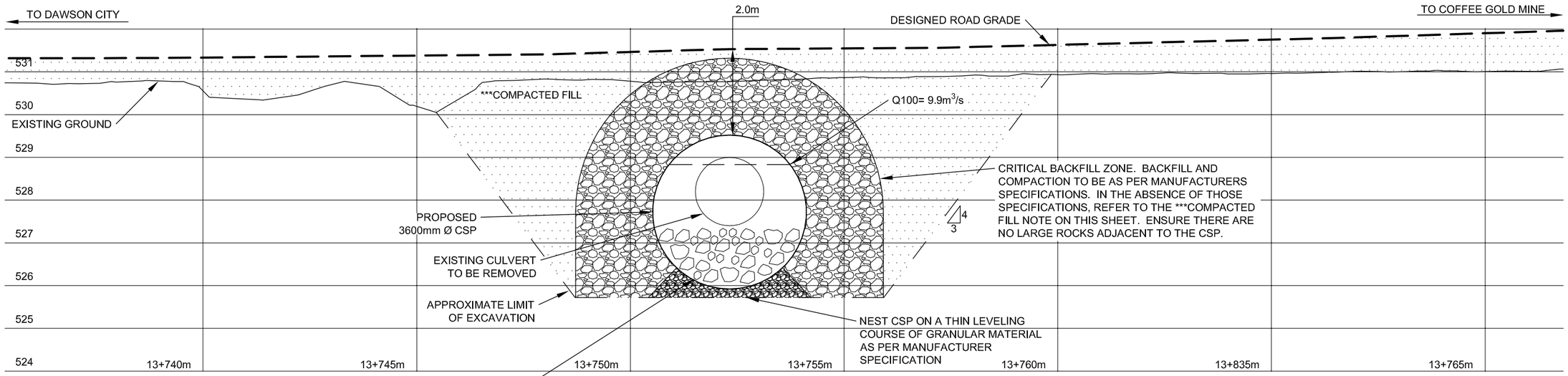
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: UPPERBALTRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER
EXISTING ROAD EDGES
WORKPOINT WP1



FILL CSP WITH SUBSTRATE OF INTERMIXED 0.2mØ TO 0.3mØ ROCK, SAND, AND GRAVEL. FILL CSP TO 40% OF OVERALL DIAMETER (APPROXIMATELY 1.44m DEEP). RECONSTRUCTED STREAM BOTTOM TO CLOSELY RESEMBLE THE SURROUNDING STREAM BOTTOM. THE CHANNEL SHOULD BE FLUSHED WITH WATER THAT IS PUMPED AWAY FROM THE CHANNEL TO HELP "SEAT AND SEAL" THE STREAM BOTTOM MATERIAL WHICH WILL HELP REDUCE POST CONSTRUCTION SEDIMENT DELIVERY AND CHANNEL DEWATERING.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

SURFACE SOILS ARE ANTICIPATED TO BE ***LOOSE* TAILINGS. A GEOTECHNICAL INVESTIGATION TO DETERMINE CONDITIONS AT DEPTH HAS NOT BEEN COMPLETED. SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL MAY BE REQUIRED.

CAUTION:

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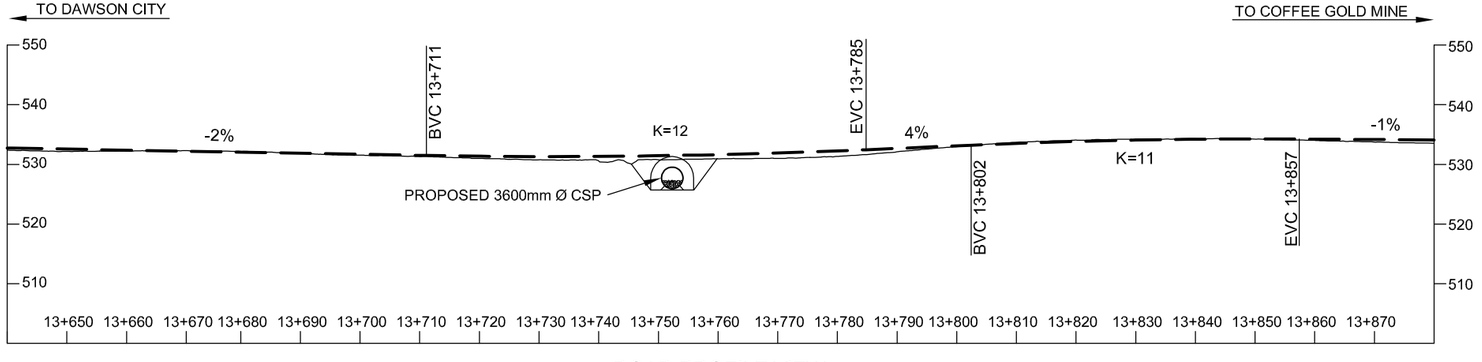
***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

DWG No: 1343-2-MD24-003

SHEET: 3 OF 5

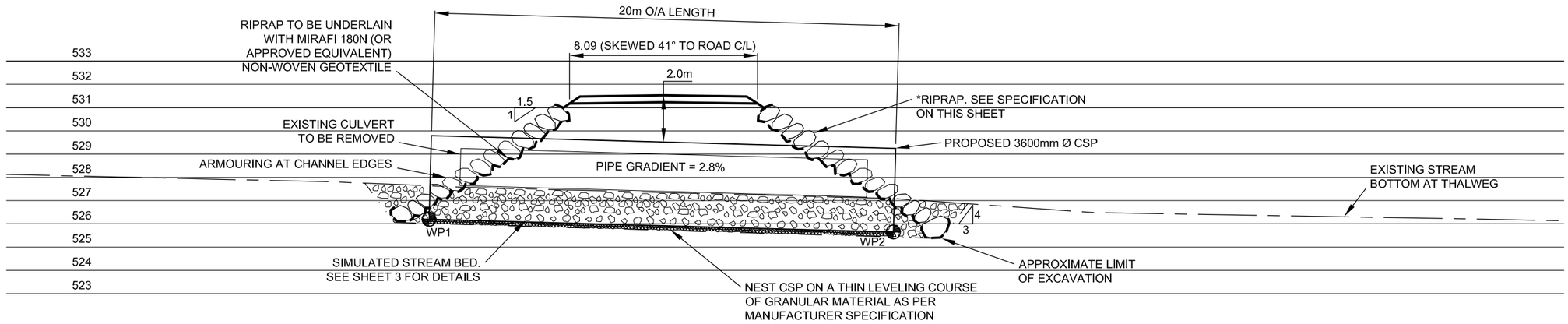
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: UPPERBALTRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

MATERIALS LIST	
1	3600mm Ø X 20m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

CAUTION:

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ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm) TO BE DETERMINED BY FABRICATOR. SUPPLY 3600mm DIAMETER X 20m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 160m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

DWG No: 1343-2-MD24-004

SHEET: 4 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: UPPERBALTRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

APPROXIMATE LIMIT OF EXCAVATION

STREAM THALWEG

MIRAFI 180N OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE

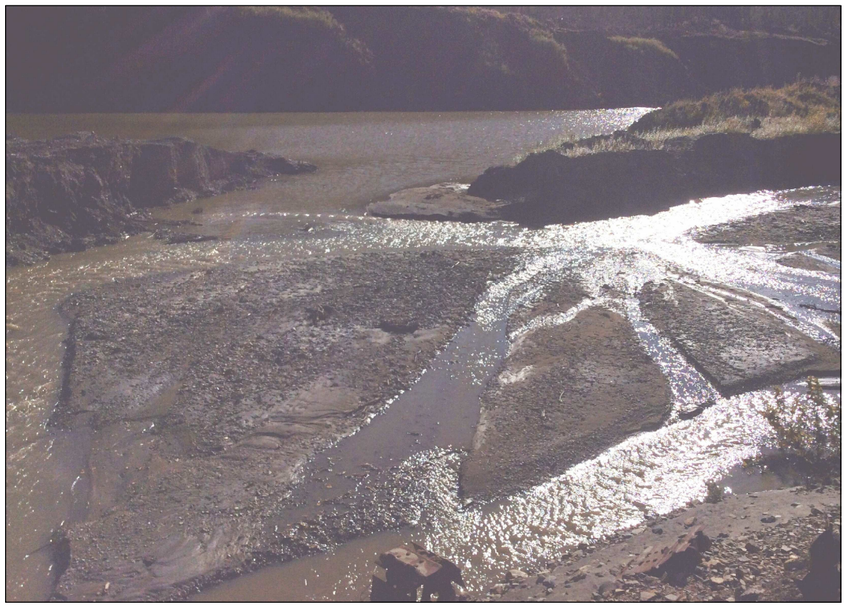

PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

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ENGINEERING LTD.

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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 3600mm Ø X 20m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

DWG No: 1343-2-MD24-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: UPPERBALTRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPENDIX 31-A-IX

Example All-steel Portable Bridge General Arrangement Drawing

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER

(63° 14' 39.52" N, 138° 49' 41.67" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-MD26-001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

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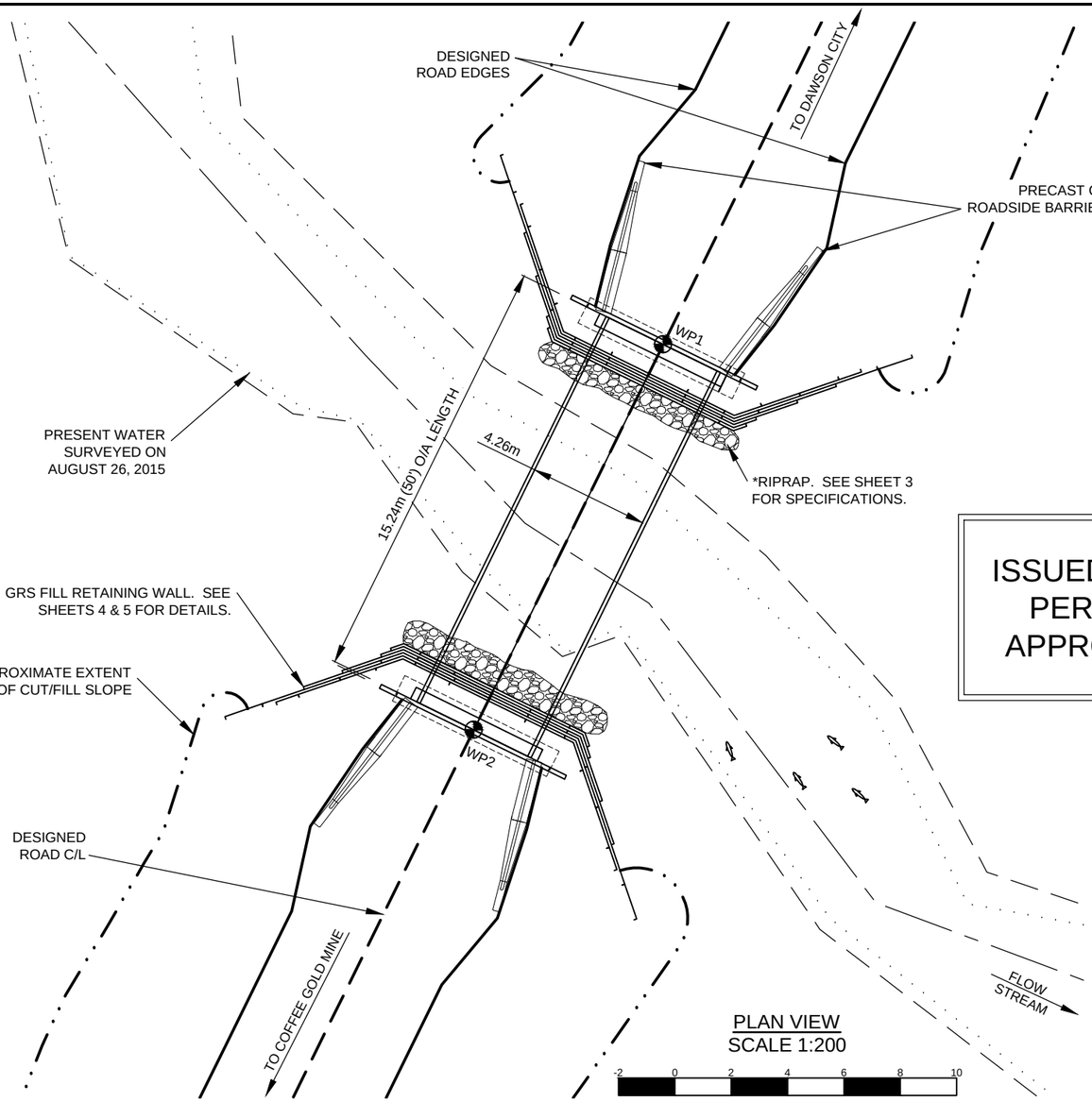
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

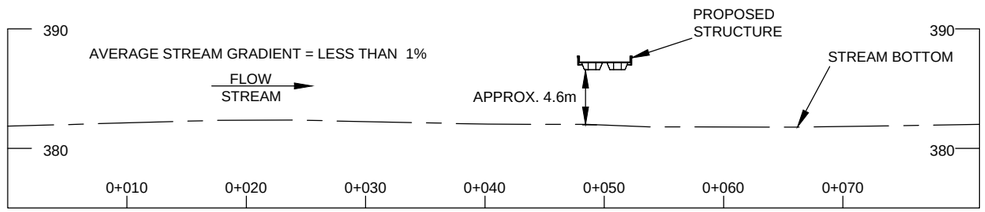
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

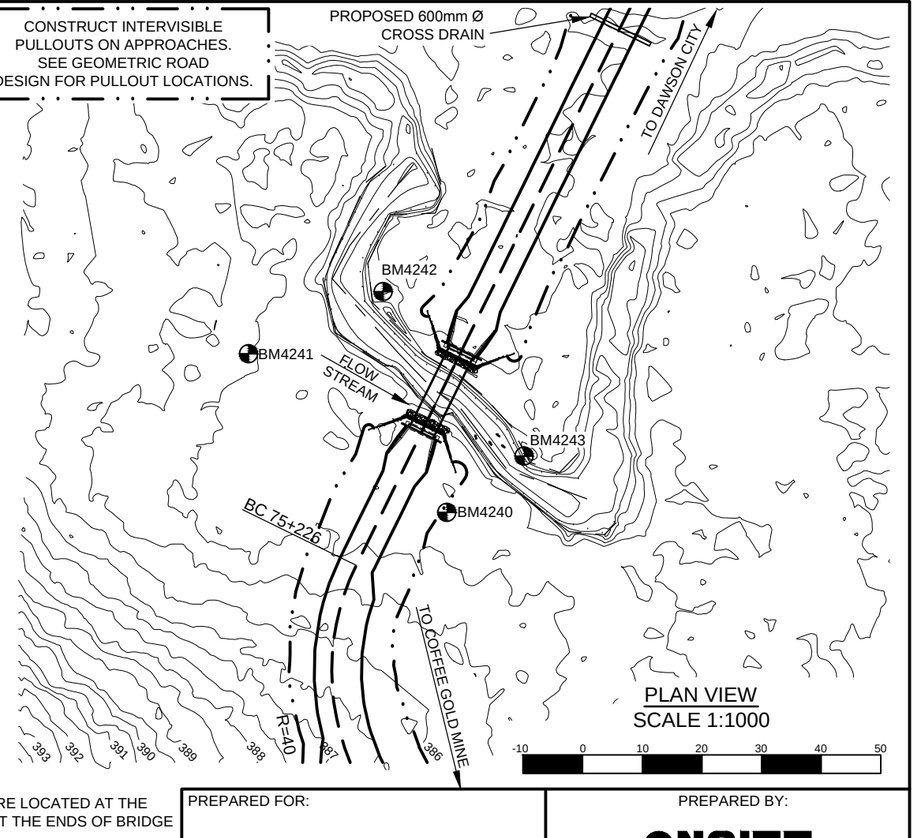


STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

CONSTRUCT INTERVISIBLE PULLOUTS ON APPROACHES. SEE GEOMETRIC ROAD DESIGN FOR PULLOUT LOCATIONS.

N



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4240	BM4241	56°29'21"	27.19
	BM4241	BM4242	24°03'32"	35.68
	BM4242	BM4243	347°40'58"	16.48
	BM4243	BM4240	95°21'31"	20.53
2	BM4240	BM4241	33°38'02"	14.07
	BM4241	BM4242	49°20'10"	31.81
	BM4242	BM4243	25°22'12"	24.48
	BM4243	BM4240	49°04'52"	17.67

WP	N	E	ELEV
WP1	7014666.65	609074.23	387.15
WP2	7014652.97	609067.51	387.26
BM4240	7014639.57	609071.79	384.88
BM4241	7014666.16	609038.56	385.30
BM4242	7014676.59	609061.08	384.77
BM4243	7014649.00	609084.73	384.04

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-002

SHEET: 2 OF 6

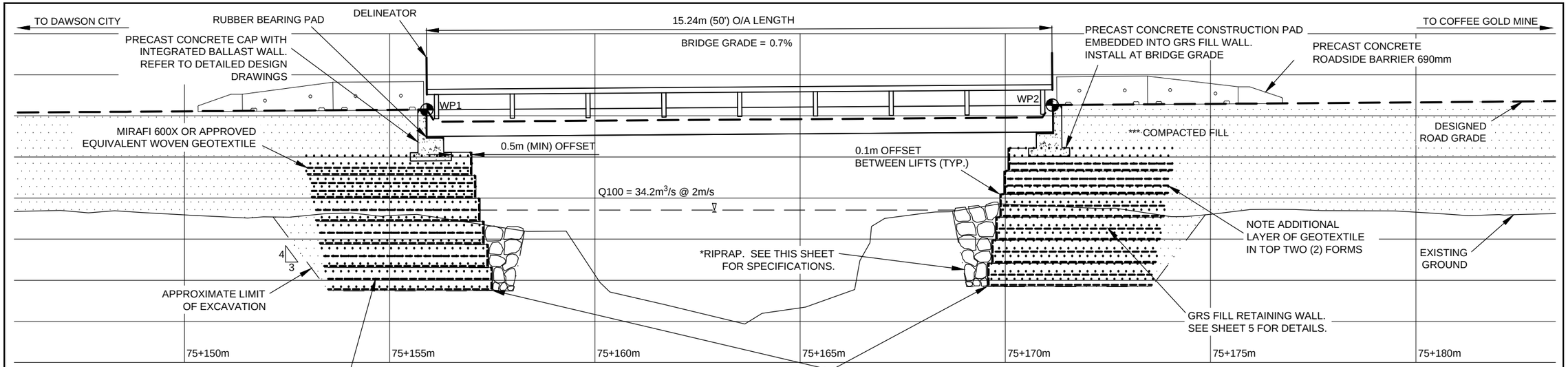
DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



3m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	5(155)
50%	50(330)
85%	150(475)

NOMINAL THICKNESS OF RIPRAP 550mm

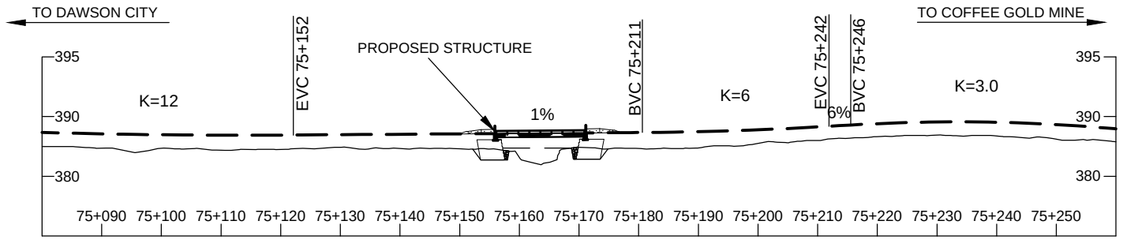


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 25m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
57	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
400	GALVANIZED WIRE STRUTS - 4 GAUGE
114	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
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PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-003

SHEET: 3 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
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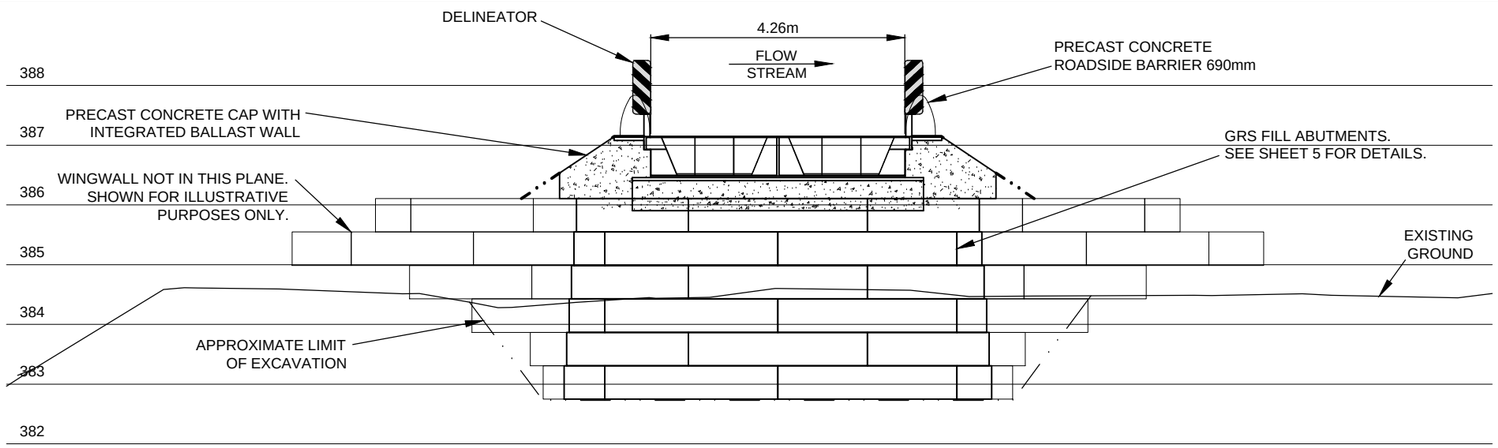
SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD GRADE
HIGH WATER LEVEL
EXISTING GROUND
MIRAFI 600x OR EQUIVALENT
LIMIT OF EXCAVATION



DAWSON CITY ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

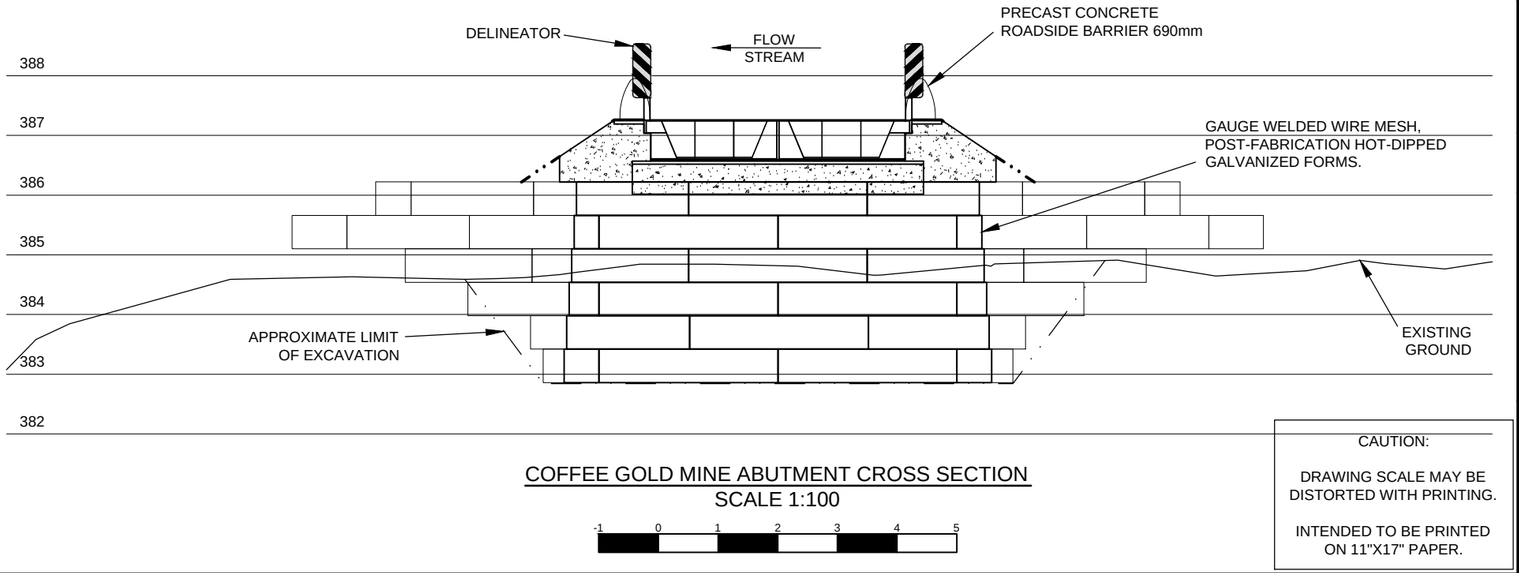
1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

ISSUED FOR PERMIT APPROVAL



COFFEE GOLD MINE ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 75+186 SITE: MAISY MAY PROPER

(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-004

SHEET: 4 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

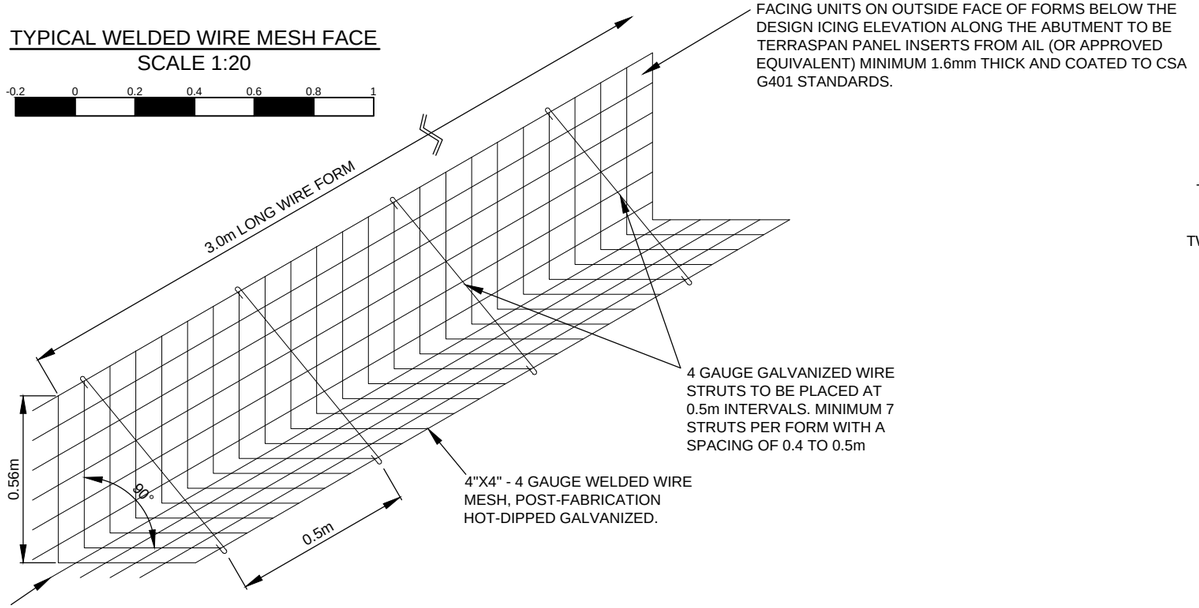
SEAL OF Y.T. P.ENG.

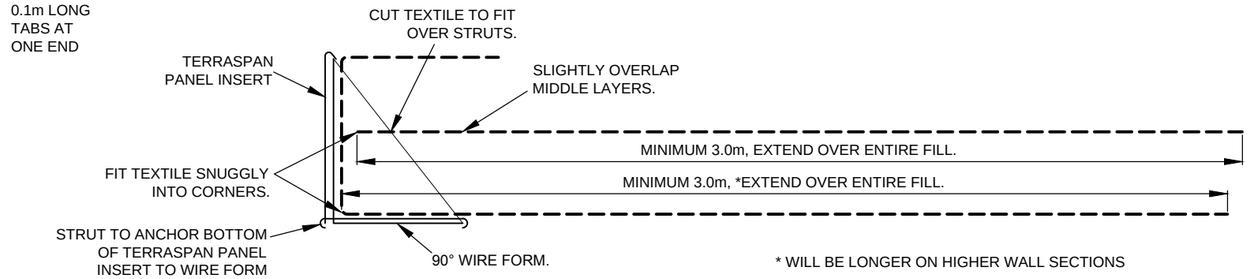
DRAFT

FOR REVIEW

EXISTING GROUND ——————— LIMIT OF EXCAVATION ——— · · ———

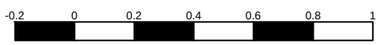
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20

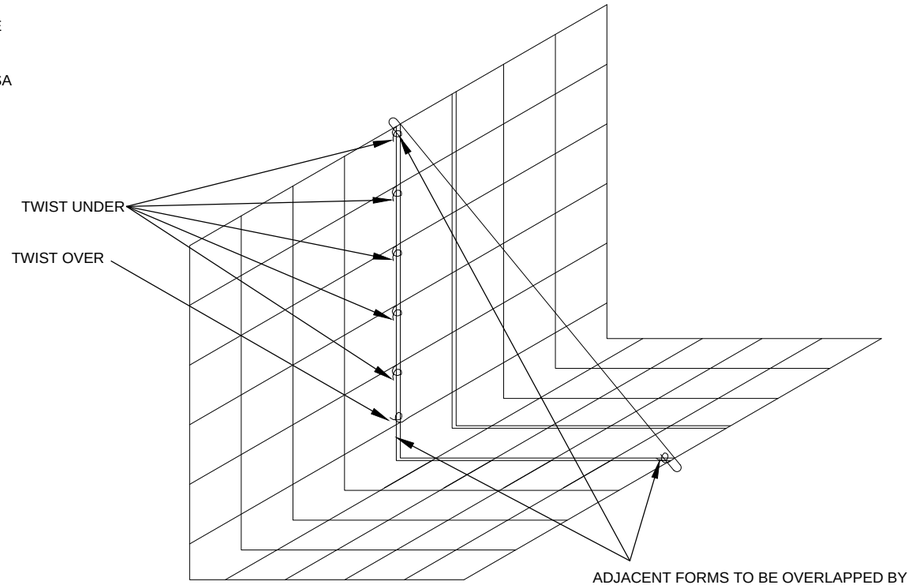




* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-005

SHEET: 5 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY FROM COFFEE GOLD MINE SIDE



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE APPROACH FROM CROSSING



PHOTO #3 - VIEW TOWARDS DOWNSTREAM FROM CROSSING



PHOTO #4 - VIEW TOWARDS UPSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
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ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
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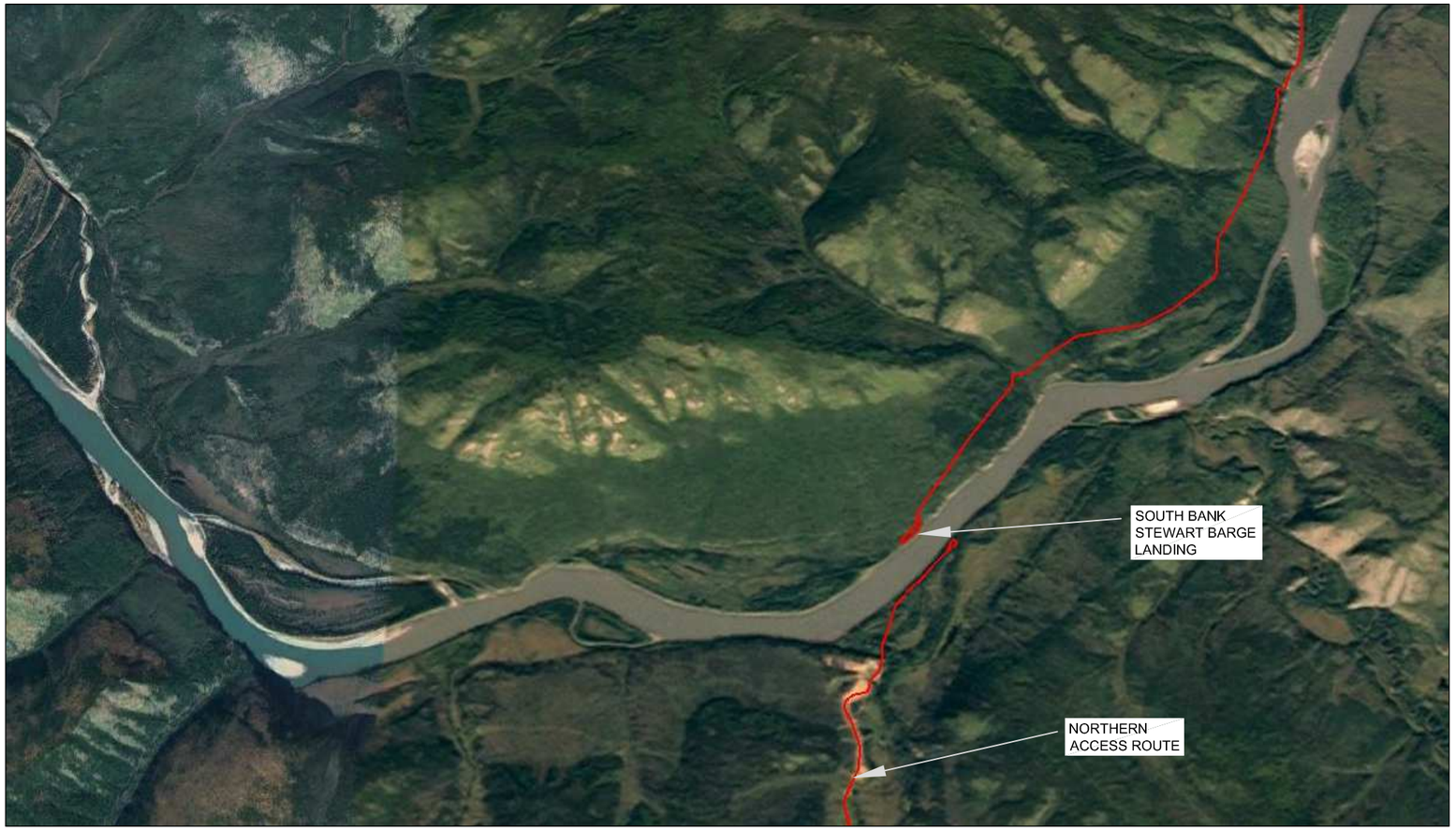
APPENDIX 31-A-X

Example Barge Landing

General Arrangement Drawing

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-1-SOUTHSTEWART-001

SHEET: 1 OF 9

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

SHEET 2 OF 9 - PLAN VIEWS
SHEET 3 OF 9 - RIPRAP CROSS SECTION A AND ROAD PROFILE VIEWS
SHEET 4 OF 9 - RIPRAP CROSS SECTION B VIEW
SHEET 5 OF 9 - DRAINAGE PLAN VIEW AND RIPRAP DETAIL
SHEET 6 OF 9 - SUMP AND DITCH CROSS SECTION VIEWS
SHEET 7 OF 9 - BARGE PANEL PLAN AND CROSS SECTION VIEWS
SHEET 8 OF 9 - BARGE PANEL DETAIL VIEWS
SHEET 9 OF 9 - SITE PHOTOS

CAUTION:

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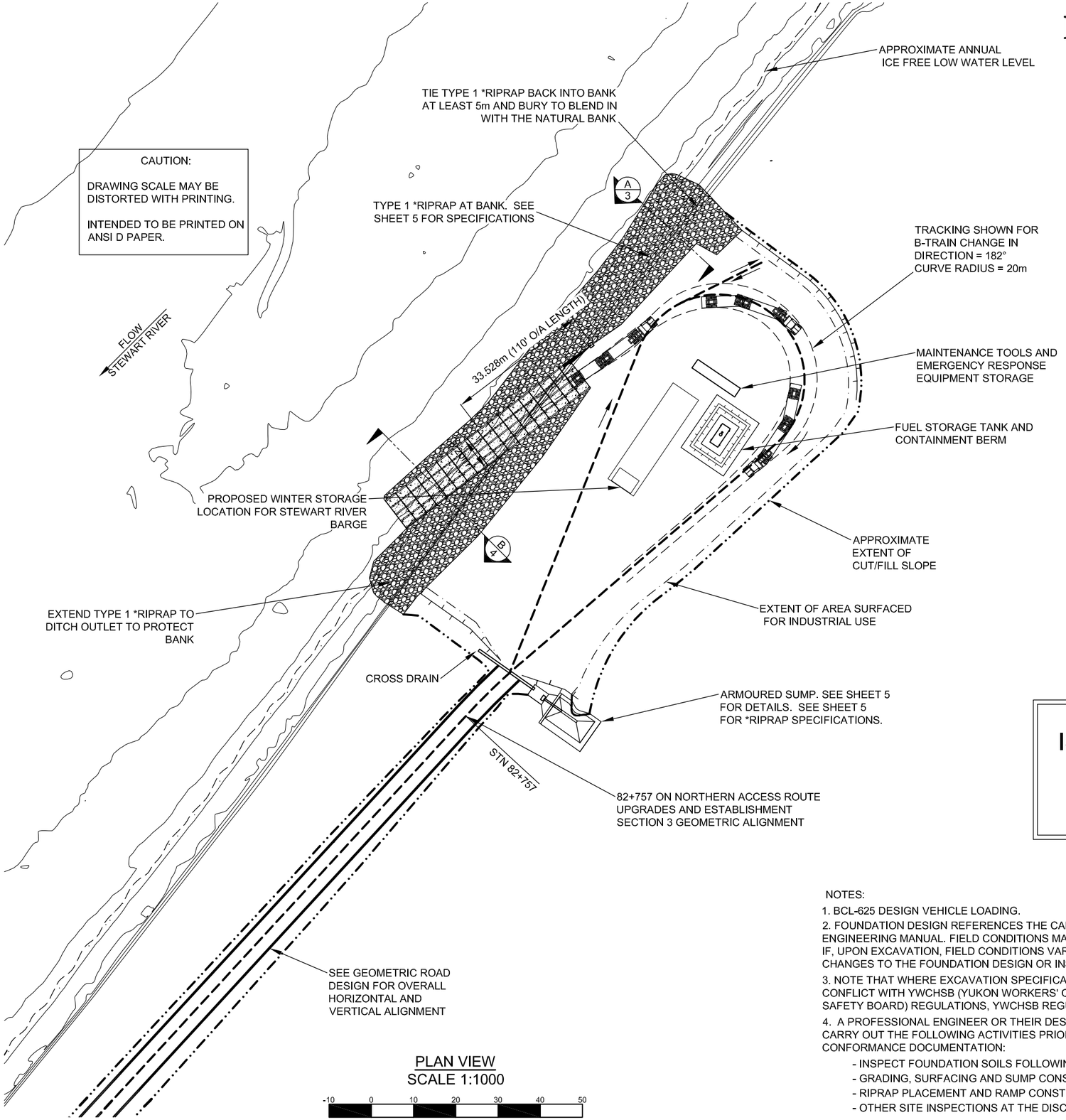

PLAN VIEW
SCALE 1:1000

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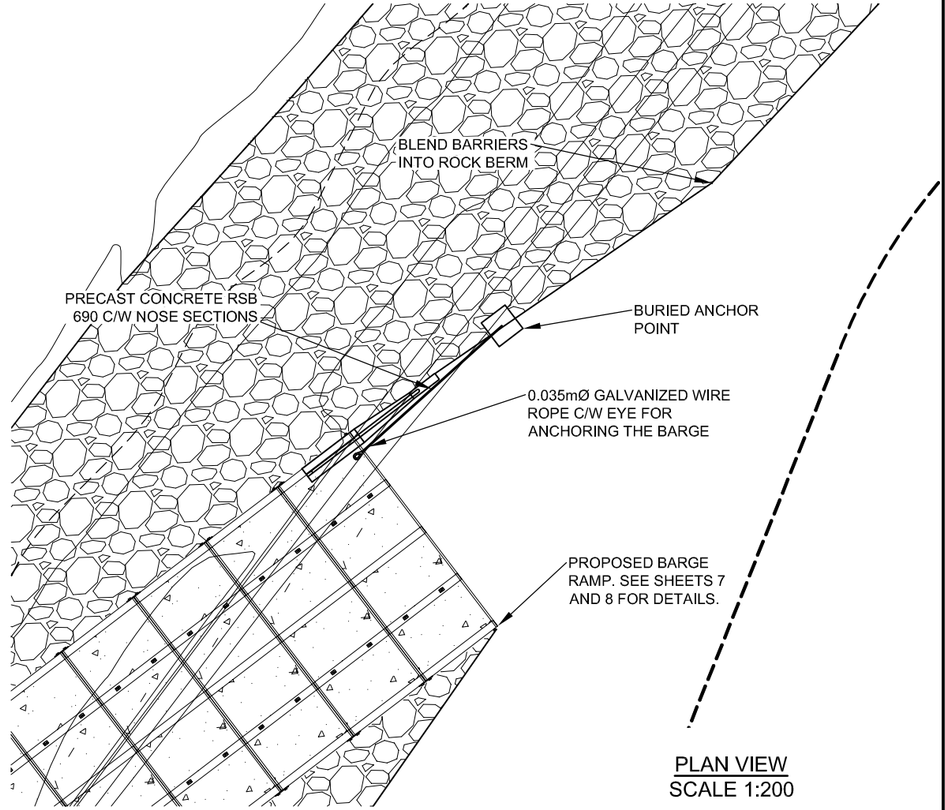

PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

ISSUED FOR PERMIT APPROVAL

NOTES:

1. BCL-625 DESIGN VEHICLE LOADING.
2. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
3. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
4. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - GRADING, SURFACING AND SUMP CONSTRUCTION.
   - RIPRAP PLACEMENT AND RAMP CONSTRUCTION.
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-002

SHEET: 2 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
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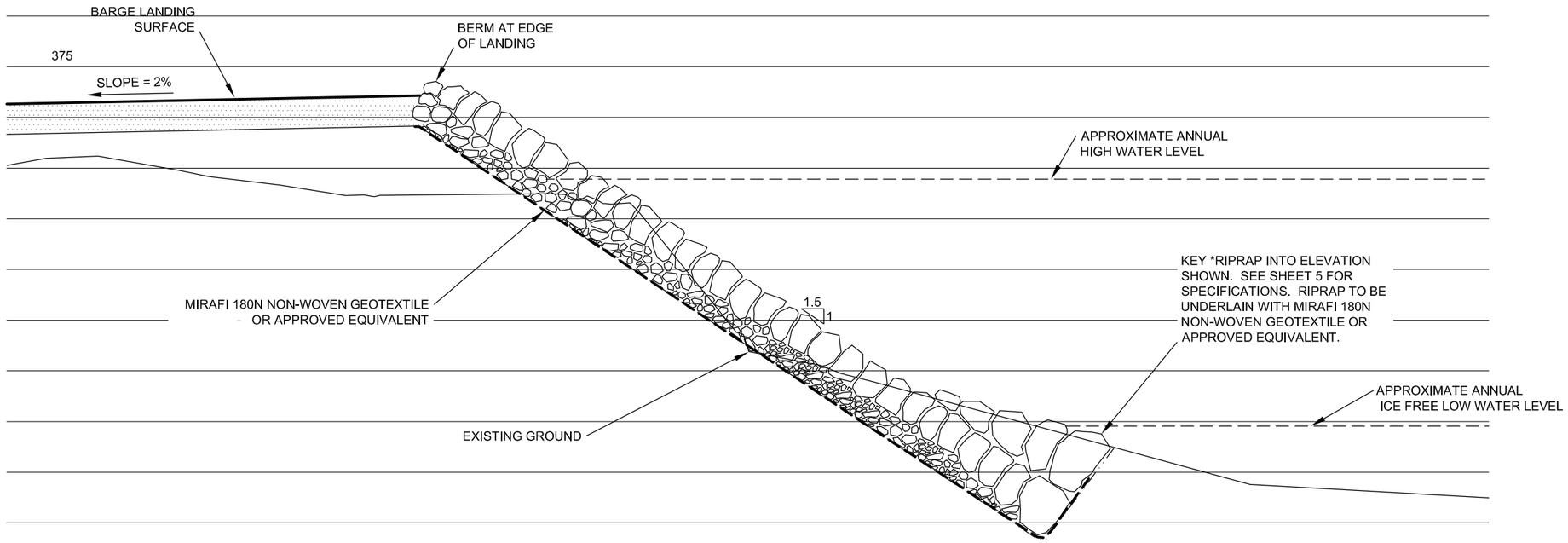
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
PRESENT WATER LEVEL
STORAGE BOUNDARY



SECTION A/2
SCALE 1:100

-1 0 1 2 3 4 5

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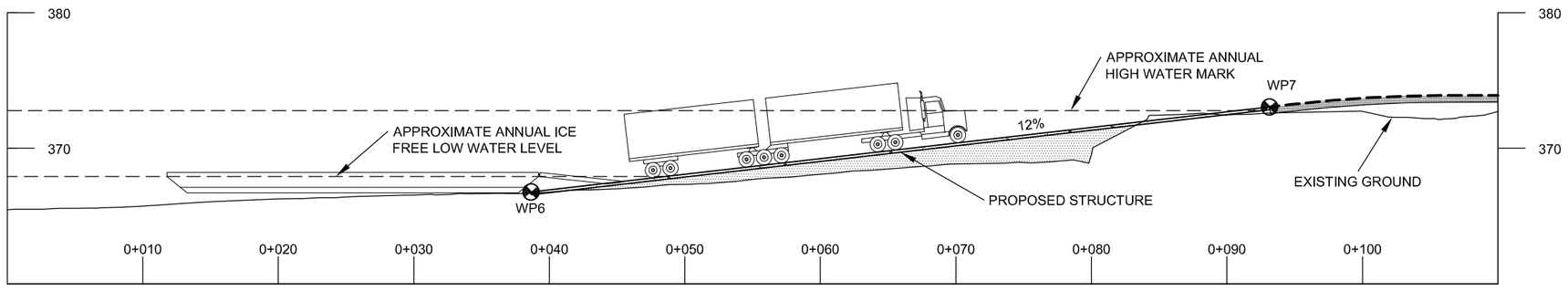

ROAD PROFILE VIEW AT BARGE RAMP
SCALE 1:400

-4 0 4 8 12 16 20

CAUTION:

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ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-003

SHEET: 3 OF 9

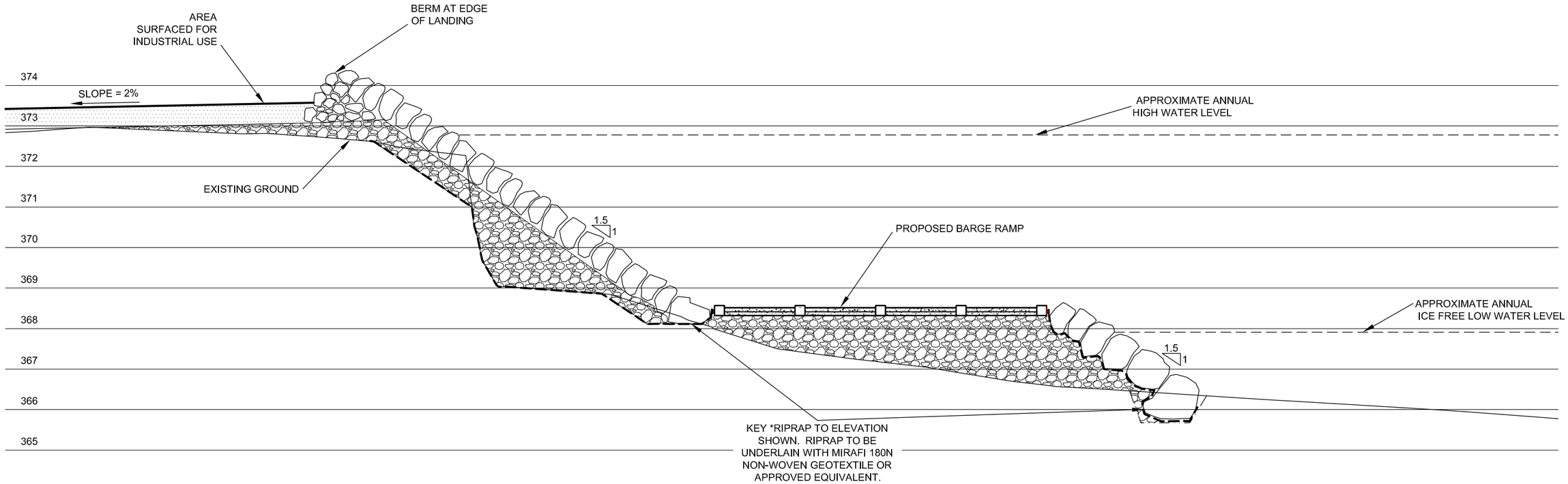
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
PRESENT WATER LEVEL
STORAGE BOUNDARY



SECTION B
SCALE 1:100 2

-1 0 1 2 3 4 5

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PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-004

SHEET: 4 OF 9

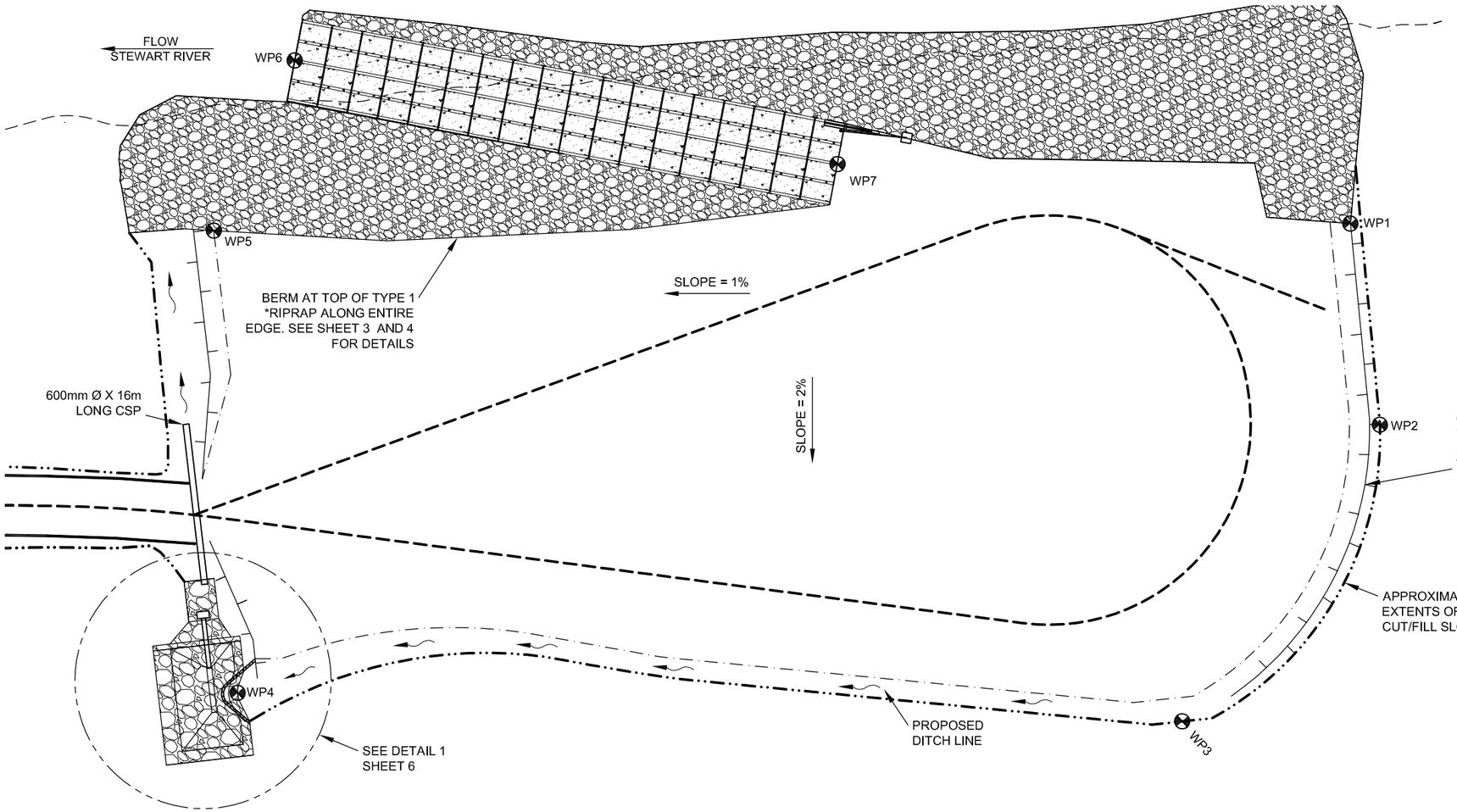
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES ——————
DESIGNED ROAD C/L — — — — —
PRESENT WATER LEVEL — — — — —
STORAGE BOUNDARY — · — · — · —



UTM ZONE 7			
WP	N	E	ELEV
WP1	7008367.60	606293.93	374.20
WP2	7008356.46	606310.76	373.83
WP3	7008322.20	606319.59	373.05
WP4	7008254.26	606254.89	371.62
WP5	7008283.13	606219.15	373.06
WP6	7008300.38	606211.93	366.78
WP7	7008333.64	606255.56	373.05

DRAINAGE PLAN
SCALE 1:500

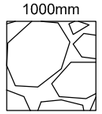
-5 0 5 10 15 20 25

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

RIPRAP
AT BANK

TYPE 1 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 25(260)
50% 250(565)
85% 750(815)
NOMINAL THICKNESS OF RIPRAP
1000mm

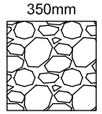


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 2500m³ OF RIPRAP REQUIRED.

RIPRAP
AT SUMP

TYPE 2 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 1(90)
50% 10(195)
85% 30(280)
NOMINAL THICKNESS OF RIPRAP
350mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-005

SHEET: 5 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

FOR REVIEW

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
DITCH FLOW
PRESENT WATER LEVEL
STORAGE BOUNDARY

PARTIAL MATERIALS LIST	
6	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
1	600mm Ø X 5m LONG CORRUGATED STEEL PIPE
1	SPILL BOOM
1	SPILL BASKET C/W SPILL PADS
1	136m² PVC LINER
#	RIPRAP: SEE SPECIFICATIONS ON SHEET 5

CAUTION:

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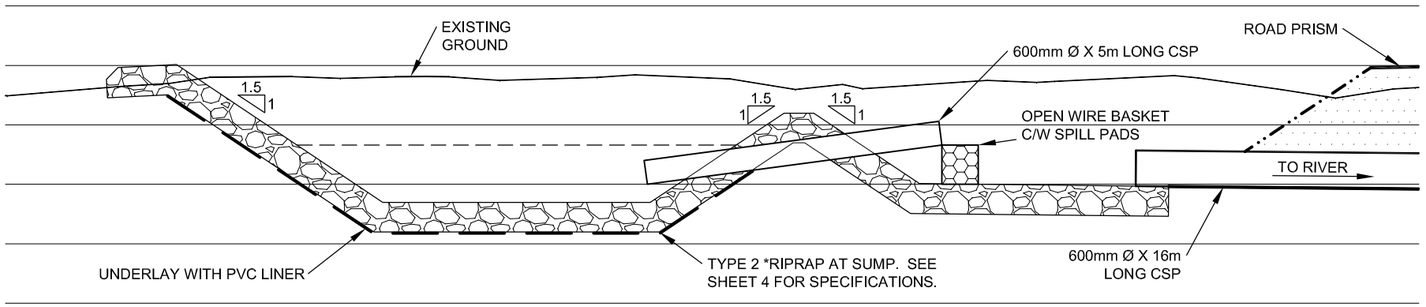
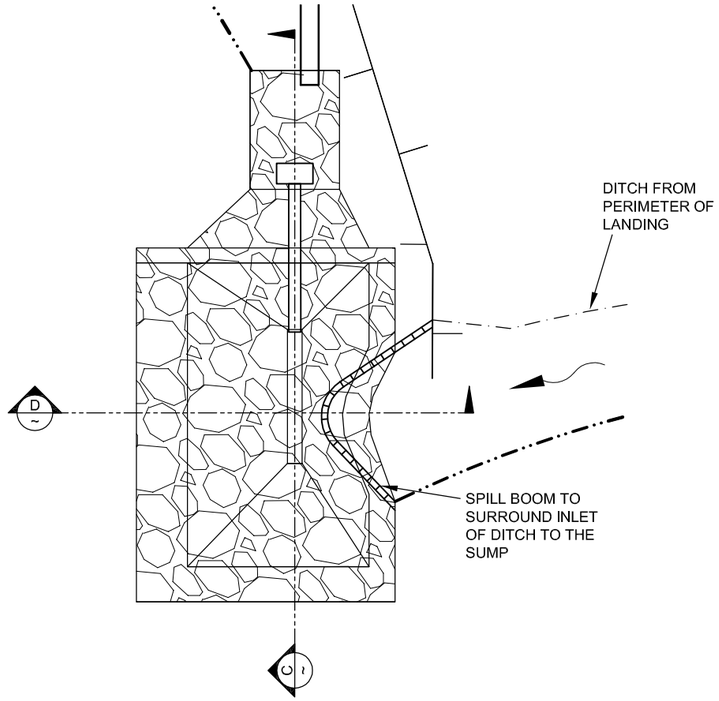


SECTION C ~
SCALE 1:100

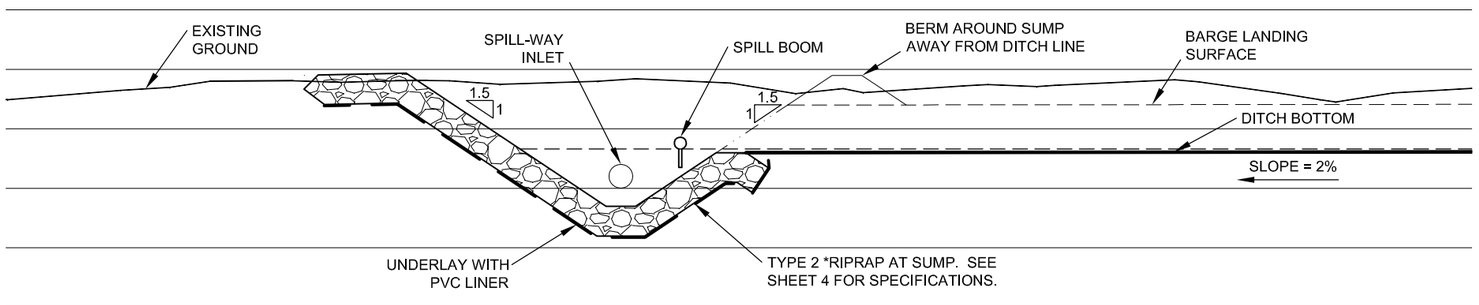
-1 0 1 2 3 4 5



DETAIL 1/5
SCALE 1:200

-2 0 2 4 6 8 10

ISSUED FOR PERMIT APPROVAL



SECTION D ~
SCALE 1:100

-1 0 1 2 3 4 5

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-006

SHEET: 6 OF 9

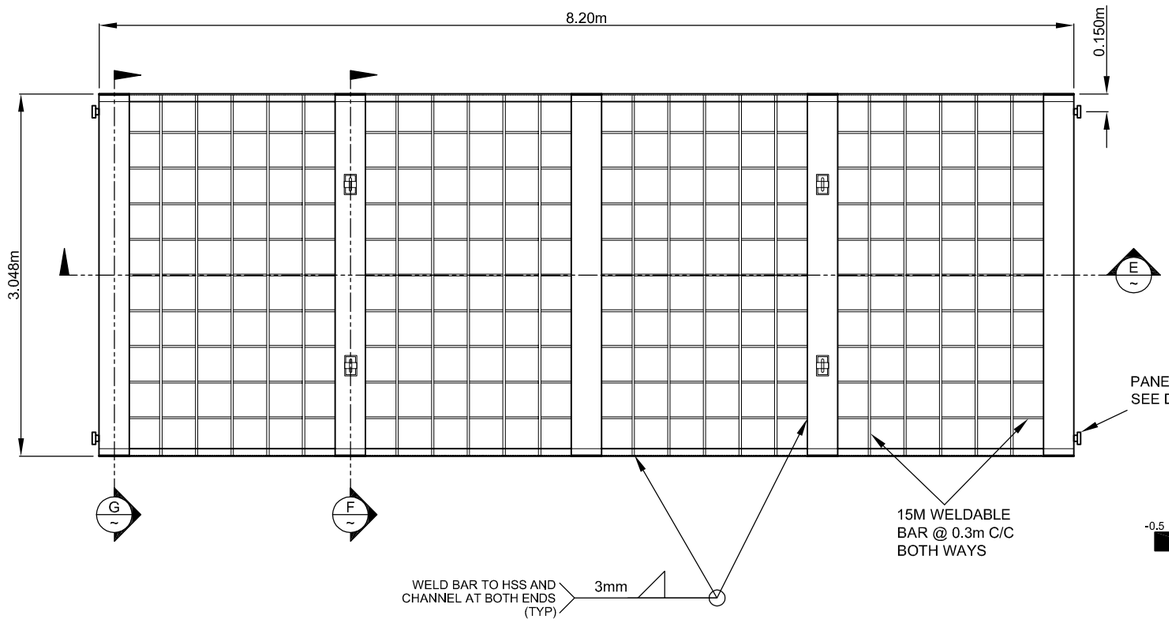
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

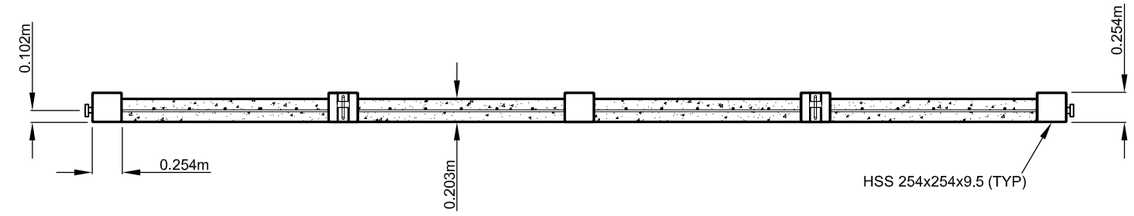
FOR REVIEW

BARGE LANDING SURFACE
DITCH BOTTOM
PVC LINER



PLAN VIEW
SCALE 1:50

-0.5 0 0.5 1 1.5 2 2.5



SECTION E
SCALE 1:50

-0.5 0 0.5 1 1.5 2 2.5

PARTIAL MATERIALS LIST PER PANEL	
5	HSS 254 X 254 X 9.5 X 3.048m LONG
2	C200 X 28 X 7.94m LONG
125m	WELDABLE 15M REBAR
10	254mm X 508mm X 9.5mm PLATES FOR END OF HSS
8	254mm X 171mm X 9.5mm PLATES FOR LIFTING ANCHORS
8	254mm X 83mm X 9.5mm PLATES FOR LIFTING ANCHORS
4	0.102m X 0.0508Øm STEEL PINS (LIFTING ANCHORS)
4	0.203m X 0.1142m X 19Ømm STEEL RINGS (LIFTING RINGS)
2	0.567m X 0.203m X 0.0254m PLATES (PANEL CONNECTION PLATES)
4	CONNECTION PINS (SEE SHEET 8 FOR DETAILS)
4m³	35MPa CONCRETE, MAX 0.025mm AGGREGATE, MIN 5% AIR ENTRAINMENT

CAUTION:

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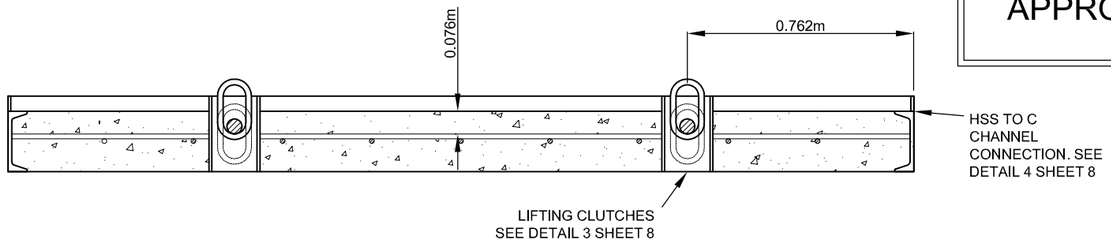
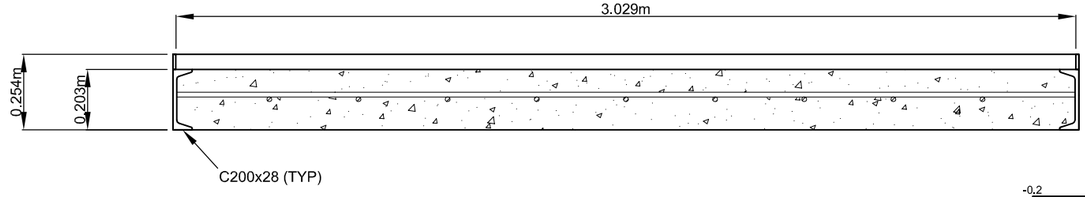
SECTION F
SCALE 1:10

-0.2 0 0.2 0.4 0.6 0.8 1





SECTION G
SCALE 1:20

-0.2 0 0.2 0.4 0.6 0.8 1

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-007

SHEET: 7 OF 9

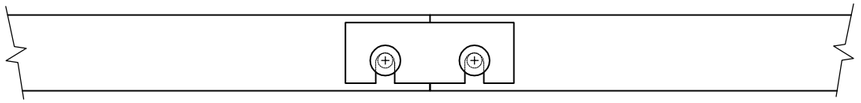
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT

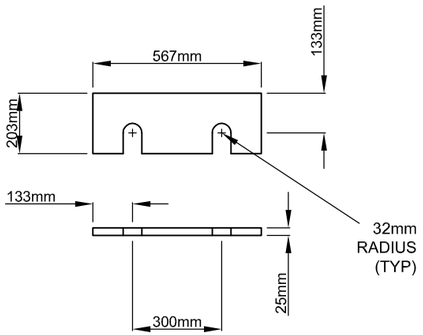
FOR REVIEW

SIDE VIEW OF PANEL CONNECTION

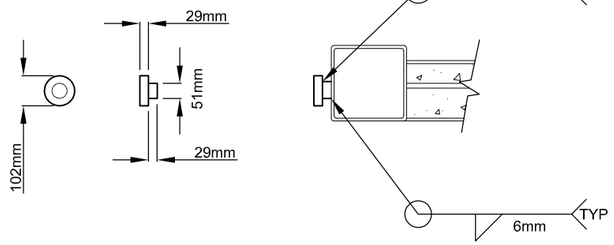


DETAIL 2/7
PANEL CONNECTION
SCALE 1:20

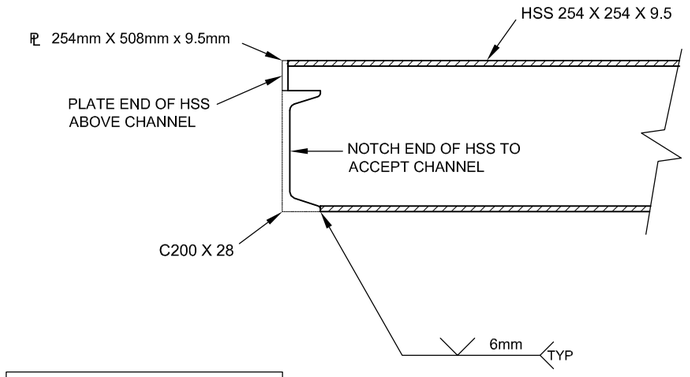
CONNECTION TAB



CONNECTION PIN



HSS TO C CHANNEL



DETAIL 4/7
HSS BEAM END
SCALE 1:10

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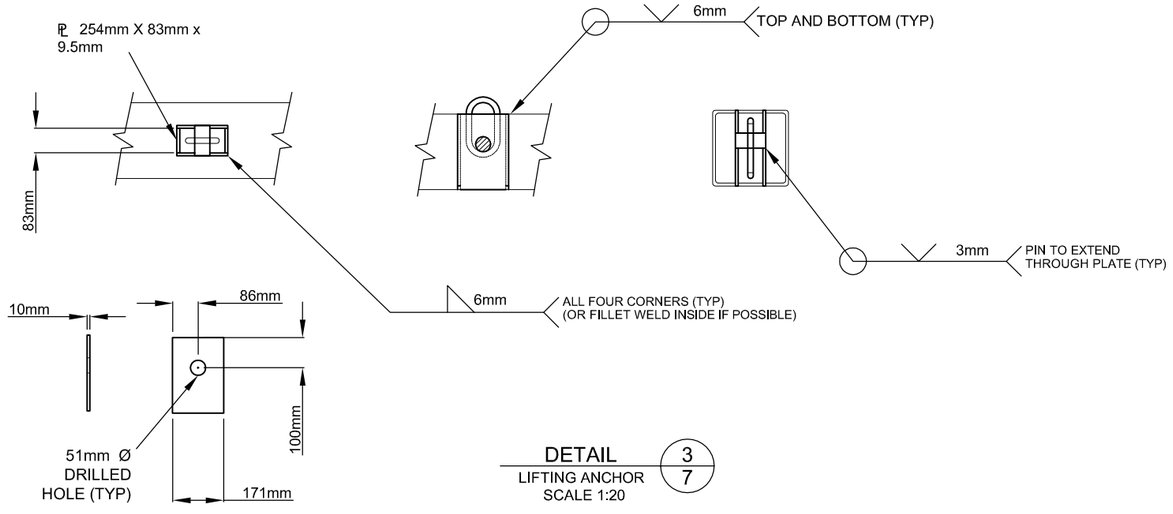
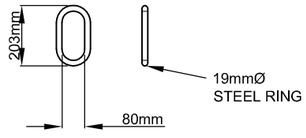
LIFTING POINT DETAIL



DETAIL 3/7
LIFTING ANCHOR
SCALE 1:20

LIFTING RING



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PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-008

SHEET: 8 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

DRAFT
FOR REVIEW



PHOTO #1 - VIEW OF COFFEE GOLD MINE APPROACH TO SITE



PHOTO #2 - VIEW UPSTREAM ALONG EXISTING ROAD



PHOTO #3 - VIEW OF STEWART RIVER BANK, UPSTREAM



PHOTO #4 - VIEW FROM UPSTREAM OF SITE LOOKING DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-009

SHEET: 9 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPENDIX 31-A-XI

Borrow Site Locations and Specifications

APPENDIX XI – BORROW SITE LOCATIONS AND SPECIFICATIONS

Borrow ID	Northing (m)	Easting (m)	Total Area (ha)	Undisturbed Area (ha)	Expected Depth of Source (m)*	Maximum Volume Expected From Site (m^3)	Material Source	Borrow Type
A1	7059787	614900	1.24	1.08	3	22,000	Riprap	Quarry
2	7056174	613226	0.25	0.25	3	24,000	Riprap	Pit
7	7055664	608509	0.28	0.28	3	11,000	Surfacing	Pit
4	7055440	610411	0.43	0.21	3	25,000	Surfacing	Pit
6	7055268	609295	0.58	0.57	3	30,000	Surfacing	Pit
5	7055220	609549	0.85	0.85	3	76,000	Surfacing	Pit
3	7055194	612168	1.29	1.20	3	55,000	Surfacing	Pit
A2	7055100	611130	0.62	0.43	3	25,000	Surfacing	Pit
A3	7045215	598623	0.99	0.19	3	46,000	Subgrade	Pit
9	7036679	597843	3.49	3.49	3	360,000	Surfacing/Riprap	Quarry
10	7033973	599290	0.99	0.96	3	74,000	Subgrade	Pit
11	7027748	599054	0.54	0.44	3	44,000	Riprap / Surfacing	Quarry
12	7027097	599619	0.56	0.27	3	86,000	Riprap / Surfacing	Quarry
13	7021486	602999	0.50	0.39	3	61,000	Riprap / Surfacing	Quarry
14	7017848	606259	0.46	0.46	3	61,000	Surfacing	Pit
15	7017584	606672	0.41	0.41	3	31,000	Surfacing/Riprap	Quarry
16	7014927	609122	0.78	0.78	3	50,000	Subgrade/Riprap/ Surfacing	Quarry
17	7014067	609331	0.29	0.16	3	20,000	Subgrade/Riprap/ Surfacing	Quarry
19	7007098	605623	0.51	0.51	3	26,000	Riprap/ Surfacing/ Subgrade	Quarry
22	7001529	604595	0.36	0.36	3	36,000	Riprap/ Surfacing	Quarry
23	7001324	604389	1.08	0.73	3	122,000	Riprap/ Surfacing	Quarry
24	7000536	603787	0.61	0.61	3	54,000	Surfacing	Quarry
A4	6994315	603248	0.45	0.45	3	33,000	Subgrade	Pit

Borrow ID	Northing (m)	Easting (m)	Total Area (ha)	Undisturbed Area (ha)	Expected Depth of Source (m)*	Maximum Volume Expected From Site (m^3)	Material Source	Borrow Type
25	6991649	603760	1.76	1.76	3	75,000	Subgrade/ Surfacing	Pit
26	6989795	604788	0.57	0.57	3	32,000	Subgrade	Pit/Quarry
27	6989382	604888	0.52	0.52	3	33,000	Subgrade	Pit/Quarry
28	6988240	604556	0.61	0.61	3	13,000	Subgrade	Pit/Quarry
29	6987539	603678	1.76	1.76	3	50,000	Surfacing/Riprap/ Subgrade	Pit
30	6987173	604222	0.34	0.34	3	14,000	Subgrade/Riprap/ Surfacing	Quarry
31	6986982	604216	0.42	0.42	3	21,000	Subgrade/Riprap/ Surfacing	Quarry
32	6986865	604234	0.47	0.47	3	20,000	Subgrade/Riprap/ Surfacing	Quarry
33	6986370	604373	0.49	0.49	3	44,000	Subgrade/Riprap/ Surfacing	Quarry
34	6985732	604363	0.99	0.99	3	82,000	Subgrade/Riprap/ Surfacing	Quarry
35	6985183	604481	1.14	1.14	3	115,000	Subgrade/Riprap/ Surfacing	Quarry
36	6982323	604020	0.24	0.24	3	19,000	Subgrade/Riprap/ Surfacing	Quarry
38	6981703	603977	0.28	0.22	3	35,000	Subgrade/Riprap/ Surfacing	Quarry
A5	6979929	603424	0.63	0.63	3	38,000	Subgrade/Riprap/	Quarry
39	6979016	603759	0.94	0.94	3	138,000	Subgrade/Riprap/ Surfacing	Quarry
A6	6978088	604124	0.32	0.32	3	42,000	Subgrade/Riprap/ Surfacing	Quarry
A7	6977945	604183	0.31	0.31	3	22,000	Subgrade/Riprap/ Surfacing	Quarry
A8	6977654	604222	0.25	0.25	3	16,000	Subgrade/Riprap/ Surfacing	Quarry
A9	6977385	604332	0.45	0.45	3	3,500	Subgrade/Riprap/ Surfacing	Quarry
A10	6975991	604293	0.85	0.85	3	88,000	Subgrade/Surfacing	Pit
A11	6975822	603821	0.53	0.53	3	4,000	Subgrade	Pit
A12	6975625	603383	2.18	2.10	3	65,000	Surfacing	Pit
A13	6976362	598509	1.11	1.11	3	31,000	Surfacing/Subgrade	Pit

***Depth refers to the depth from the road surface to the bottom of the maximum excavation expected at the borrow site.**

APPENDIX 31-A-XII

Seeding Requirements

Scenario 1 **Low Slope, Low to Mid Elevation Sites**

This scenario addresses relatively uncomplicated sites that are essentially flat, or have few slope issues, and are at low to mid elevation. They include sites such as gravel pits, abandoned roadways, and mine exploration sites.

Often, these sites will revegetate naturally and erosion will not be a major concern. However, management objectives often dictate that vegetation be re-established quickly or managed for a certain preferred vegetation type. When these sites occur near highways and settled areas, management to prevent the spread of invasive species should be a high priority. The visual appeal of the revegetation species selected for planting can be important if the site is in the public eye.

It is often feasible to stockpile organic materials on these sites during development. Thus, with proper planning, good organics can be reapplied to these sites, which will reduce the amount of seed and fertilizer required and improve the end results.

These uncomplicated sites are also conducive to using simple, low-cost methods for site preparation and seed application (*i.e.*, fewer requirements for specialized equipment). For example, tractors, ATVs and basic farm implements will often suffice.

Thorough soil preparation, application of organics and fertilizing will be key to successfully revegetating these sites. High seeding densities and thorough ground coverage will be important if invasive species are a concern; otherwise, seeding densities can be light because erosion will not be much of a concern and planners can often rely on a large amount of natural revegetation to occur. In fact, in some cases the main revegetation objective will be to simply increase the organic content of the soil and sow a minimum amount of seed in order to stabilize the site and facilitate natural revegetation.



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FIG 5.1
Flat, low-elevation sites are not without their challenges. This decommissioned gravel pit has almost no organics and will require an application of fertilizer to establish significant plant growth. On small sites, it can be worth the effort to transport organic fill to the site. These sites often have had heavy equipment traffic as well, which will necessitate thorough decompaction.

Site Preparation

- There should be minimal need for contouring or track-walking these sites.
- Inspect the site for areas where water will pool due to depressions or lack of percolation. Create ditches or other drainage structures as necessary, and fill-in low spots, but avoid compaction of the surface during these activities.
- In many cases, these sites will have experienced significant equipment traffic and it will be necessary to decompact the upper 30 – 40 cm of ground using toothed rippers (subsoilers) or other techniques (*e.g.*, ploughs or disk harrows) described in Chapter 3. Decompaction can be extremely important on these sites.
- If necessary, use disk harrows, tine harrows or hand tools to break up dirt clumps and even-out surface undulations that remain after decompaction.

Fertilizer and Organics

- Frequently these are development sites, and with prior planning it will be possible to stockpile and re-apply organic materials. If organic materials are only available in limited supply, then erosion-prone areas, clay-rich areas (*e.g.*, those easily crusted over), and slopes have the highest priority for application of organics. A second pass with a harrow may be necessary to spread and incorporate the organic materials into the mineral soil.
- Use the results of soil testing and guidelines in Chapter 3 to determine nutrient deficiencies and fertilizer needs for the soil. Fertilization will be critical on sites with bare mineral soil and no organics.
- On these sites, it should be relatively easy to operate equipment, so use a disk or tine harrow to work fertilizer into the top 5 - 15 cm of the surface.

Planting and Seed Mixes

- Low slope, low to mid elevation sites will be relatively forgiving in regards to seeding. Erosion protection and seed loss due to runoff should not be a major concern.
- Use an application rate of 1,500 seeds/m^2 on bare mineral soil or 750 seeds/m^2 when significant soil organics were applied or soils are still in place. If seeding with the intent to deter invasive species, ensure that seeding is even and no bare patches are left.
- Species diversity should be gauged to meet site objectives (see Chapters 2 and 4). These sites offer a good opportunity to plant a high diversity of species and to experiment with species, unless there are other limiting factors such as high salinity or permafrost.
- On larger sites, consider using a seed drill and the largest tractor/harrow available to increase work efficiency and minimize soil compaction. Seed quantities can be reduced to 750 seeds/m^2 when using a drill. On these sites, it may also be feasible to pull a seeder and harrow simultaneously. Seeding with a broadcast (cyclone) seeder is acceptable as well.
- For small areas, it may be most cost-effective to prepare the site and apply seed/fertilizer using hand tools or small implements drawn by an ATV.

Low Slope, Low to Mid Elevation Sites

Table 5.1

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m^2 on bare mineral soil **OR** 750 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	Tolerant to dry alkaline soils, low nutrients and permafrost. Bunchgrass with rapid emergence in early spring. Do not use on wet or acidic sites.
Violet wheatgrass *Elymus alaskanus* (common)	**330,000**	Tolerant to alkaline soils, drought and low nutrients; also has considerable tolerance to permafrost and moderate tolerance to saline soils. Bunch forming with strong competitive ability.
Glaucous bluegrass *Poa glauca* (Tundra or common)	**2,904,000**	Tolerant to broad range of pH, drought, low nutrients and permafrost. Forms low growing bunches with a high root-shoot ratio, spreads aggressively through rhizomes, rapid emergence in early spring.
Slender wheatgrass *Elymus trachycaulus* (Revenue, Adanac, Highlander or common)	**349,800**	Tolerant to broad range of pH, dry ground and low nutrients. High tolerance to saline soil. Performs poorly on permafrost. Forms loose bunches and is short-lived, but exhibits rapid emergence.
Ticklegrass *Agrostis scabra* (common)	**11,000,000**	Tolerant to acidic soils, drought and low nutrients, and permafrost. Short-lived bunchgrass with early emergence. A common pioneering plant on dry flat ground.
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	Tolerant to extremely acidic soils, heavy metals, low nutrients, permafrost and wetness. Bunch forming, strong competitive ability and can form extensive cover. Not drought tolerant.
Fowl bluegrass *Poa palustris* (common)	**4,840,000**	Tolerant to acidic soils, low nutrients and wetness. Loosely tufted bunchgrass, rapid emergence, early spring growth, but shallow-rooted, generally short-lived and not aggressive. Not drought tolerant.
Bluejoint reedgrass *Calamagrostis Canadensis* (Sourdough or common)	**8,442,438**	Tolerant to slightly acidic soils, low nutrients, permafrost and wetness. Tall bunch grass with aggressive rhizomatous growth and extensive cover production. Early spring and late summer growth. Not drought tolerant. Limit to no more than 20% of seed mix.

Low Slope, Low to Mid Elevation Sites — Table 5.2

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m² on bare mineral soil **OR** 750 seeds/m² if organics in place

SPECIES (cultivar)	# OF DS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	Tolerant to acidic soils, low nutrients, limited drought. Tall sod-forming rhizomatous grass, strongly competitive, forms extensive cover. Despite its name, does not tolerate long periods of inundations.
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	Tolerant to strongly acidic soils, low nutrients, wetness. Tall rhizomatous bunchgrass, strong competitor on moist/wet soils.
Creeping red fescue *Festuca rubra* (Arctared in northern Yukon) (Boreal in southern Yukon)	**539,407**	Tolerant to wide range of pH and permafrost. Short loosely tufted bunchgrass, rapid emergence, aggressive rhizomes, strong competitor, forms extensive cover quickly.
Red top *Agrostis gigantea* (common)	**10,672,640**	Tolerant to acidic soils and wet or dry conditions. Medium stature rhizomatous bunchgrass, mildly aggressive. Forms good cover but only on low slopes/low elevation.
Canada bluegrass *Poa compressa* (Reubens, common)	**5,264,204**	Tolerant to alkaline soils, low nutrients, moderate drought. Medium height bunchgrass, rhizomatous, can form extensive cover but is slow growing.
Sheep fescue *Festuca ovina* (common)	**1,100,000**	Tolerant to neutral or slightly acidic soils, drought, and low nutrients. Needs well-drained granular soil. Forms short bunches, slow growing, aggressive rhizomes.

Low Slope, Low to Mid Elevation Sites — Table 5.3

LOCALLY-COLLECTED WOODY SPECIES

SPECIES	REASONS TO USE AND RELEVANT CHARACTERISTICS
Willow *Salix alaxensis*, *S. pulchra*, *S. planifolia*, *S. richardsonii*, *S. hastate*, *S. arbusuloides*, *S. lucida*, *S. pseudomyrsinites* (the two best species are *S. alaxensis* and *S. pulchra*)	Use only in wet locations and use only the species listed. Willow is the main plant used for staking of live/dormant cuttings and for bioengineered structures.
Poplar *Populus balsamifera*	Use only in wet/moist locations; easily established through staking of live/dormant cuttings.
Shrub birch *Betula glandulosa*	Use only plant seedlings grown in a nursery from locally-collected seed. Tolerant to acid soils. Use on moist sites with good organic content.
Alder *Alnus crispa* *Alnus tenuifolia*	Plant only seedlings grown in a nursery from locally-collected seed. Tolerant to slightly acidic soils and low nutrients. Use on moist/wet sites that are not alkaline.

Low Slope, Low to Mid Elevation Sites

Table 5.4

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m^2 on bare mineral soil **OR** 750 seeds/m^2 if organics are in place

SPECIES	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
any of the species listed in Table 5.1 can be collected and seeded, plus the following		
Northern rough fescue *Festuca altaica*	**451,854**	Tolerant to low nutrients, drought, high elevation and permafrost. Medium size bunchgrass with low seed yield, but spreads rhizomatously to form extensive cover as plants mature. Widespread, grows in open woods, alpine grasslands, tundra, at all elevations.
Yukon wheatgrass *Elymus calderi*	**—**	Tolerant to alkaline soils, drought and low nutrients. Medium size rhizomatous grass, strong competitive ability, but low seed yield. Grows in granular soils and sand dunes at low elevations.
Macrourum's wheatgrass *Elymus macrourus*	**374,782**	Tolerant to drought, periodic wetness, low nutrients. Medium size bunchgrass, weakly rhizomatous, low seed yield. Most common in gravely/sandy areas along lakeshores, riverbanks and open slopes.
Northern brome *Bromus pumpellianus*	**202,400**	Tolerant to low nutrients, drought. Medium to tall grass, weakly tufted, stoloniferous. Grows in meadows, dry slopes at all elevations.
Sweetgrass *Hierochloë hirta* (formerly *H. odorata*)	**242,000**	Tolerant to drought and low nutrients. Short, fine grass with creeping rhizomes and strong competitive ability but poor seed yield. Grows in sandy meadows, streambanks, open forests at low elevation.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2 – 4 years). Mostly restricted to dry alkaline and saline areas.
Yellow locoweed *Oxytropis campestris*	**521,400**	Tolerant to drought and low nutrients. Low growing bunches. A nitrogen-fixing forb that provides a colourful flowering bloom. Found in dry, granular disturbed areas.
Showy locoweed *Oxytropis splendens*	**1,548,800**	Tolerant to drought and low nutrients. Low growing bunches. A nitrogen-fixing forb that provides a colourful flowering bloom. Found in dry, sandy disturbed areas.
Bear root *Hedysarum alpinum*	**154,000**	Tolerant to alkaline soils, drought and low nutrients. A nitrogen-fixing forb that provides a colourful flowering bloom. Grows in a variety of alkaline sediments in disturbed areas at low to high elevation, ranging from roadsides and riverbanks to open forest.
Mackenzie's hedysarum *Hedysarum Mackenzii*	**101,889**	Tolerant to alkaline soils, drought and low nutrients. A nitrogen-fixing forb that provides a colourful flowering bloom. Grows in a variety of alkaline sediments in disturbed areas at low to mid elevation, ranging from roadsides and riverbanks to open forest.
Arctic lupine *Lupinus arcticus*	**22,733**	Tolerant to low nutrients, permafrost, limited drought. A low-growing, nitrogen-fixing forb that provides a colourful flowering bloom. Grows mostly on moist soils in disturbed areas ranging from lowland riverbanks to alpine and tundra.
Yarrow *Achillea millefolium* and *Achillea sibirica*	**6,274,426**	Tolerant to alkaline soils, drought, low nutrients. A slender, colonizing forb with white flower heads that bloom late in summer. Mostly found in areas with well-drained but poorly developed soil. Produces tiny seeds in abundance.
Mountain avens *Dryas* spp.	**—**	Tolerant to alkaline soils, drought, low nutrients. Matt-forming, low stature forb that grows in very poor soils and calciferous disturbed areas at all elevations, including scree slopes and gravel.
Wormwood/sage *Artemisia* spp.	**—**	Tolerant to drought, low nutrients. Medium stature forb or short shrub. Wormwood species grow in a diversity of open/disturbed areas from riverbanks and grasslands to steep slopes and alpine/Arctic tundra. Mostly adapted to dry soils.

Scenario 2 **Steep Slopes**

Steep slopes are routinely encountered in Yukon projects, and can be quite challenging to revegetate. The main goal will usually be to stabilize the slope and inhibit erosion, yet erosion is the main reason these sites are so difficult to revegetate. Moreover, soils tend to be poorly developed on steep slopes, and they are usually very dry. All of these factors work against seed germination and plant growth. In southern Yukon, north-facing slopes are slightly less dry, and thus easier to revegetate. In central and northern Yukon, the coolness of north-facing slopes can impede germination and the warmth of south-facing sites can be an asset.

Mulching will help to stabilize slopes and retain seed, but mulch can actually deprive seeds of moisture on very dry slopes (it causes moisture to sheet off the slope, rather than get absorbed). Hydroseeding is often the only option because the mulch and seed are applied as one treatment, but hydroseeding must be used with caution on extremely dry slope where the slurry tends to crust-over. On large sites, where mulching and hydroseeding may be cost-prohibitive or unavailable, track-walking is an effective way to provide microsites for vegetation to grow, though there are grade limitations (see Chapter 3).

On slopes over 40% grade, establishing vegetation from seed will be difficult unless additional erosion control measures are implemented. These are discussed in Chapter 3 and include techniques such as stairstepping (terracing), bioengineering and the application of rolled erosion control products (RECPs).

Including one or two species of annual grasses in the seed mix is often effective at providing quick surface stabilization and organic material for subsequent plant growth. In cases where other species are not expected to take hold, alfalfa can be seeded as a last resort. Because steep slopes will frequently be water-limited, it is generally necessary to choose species that are adapted to dry conditions.



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FIG 5.2
Steep slopes in Yukon are often dry and lack significant organic material. Usually, erosion control is the primary objective, making it important to establish good plant cover quickly.



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FIG 5.3
Hydroseeding can be an effective option on steep slopes.

Site Preparation

- Site preparation and contouring strategies are very important on these sites to minimize erosion potential. Contour the surface in a way that avoids sharp cut banks, or terrace the slope. When terracing, minimize the area of each step rise by constructing as many terrace steps as possible.
- Tracked equipment should operate up and down the slope, not parallel to the slope contour. This way, the imprints from cleats left by the tracks create micro benches across slope (prevents erosion), rather than rills up and down the slope (promotes erosion).
- Soil decompaction often is less critical on slopes because they usually have not been exposed to traffic. Use a dozer with ripper teeth (subsoiler) if necessary, but track-walk the ground afterwards to reduce furrow size. If no decompaction is required (most cases), the slope should still be track-walked or roughened with an excavator bucket to create microsites for germination.
- Agricultural tractors are top-heavy and can be unsafe to operate on slopes. ATVs are safer, but even they can only be operated safely on moderate slopes. Consequently, ground work (tillage and harrowing) can be difficult, and even dangerous. Harrows can be pulled by tracked vehicles but track-walking alone may have to suffice as the only surface preparation.
- When the slope is too steep to harrow even with tracked vehicles, the surface should be scarified with an excavator bucket. But do not compact or glaze the surface with the bucket.
- Steep, erosion-prone slopes may require the installation of RECPs. Loose mulches should be used with caution on steep slopes because they often wash off and cause problems where they accumulate. The advantage of the RECPs is that they can be staked in position. Seed and fertilizer must be applied prior to the installation of RECPs.

Fertilizer and Organics

- Applying organic materials to slopes can greatly improve resistance to water erosion and it promotes plant germination. However, if organics are simply spread over the surface and not incorporated into the soil, they tend to wash downslope. Therefore, if the slope cannot be harrowed, apply organic materials prior to track-walking or bucket-scarifying.
- Use the results of soil testing and guidelines in Chapter 3 to determine nutrient deficiencies and fertilizer needs. Steep slopes in Yukon tend to have poor soil development and few organics. Consequently, a dose of fertilizer can be important to establish an effective ground cover in the first year.
- Fertilizer pellets will quickly erode off the slope if they are not incorporated into the soil. Therefore, as with the application of organic material, consider spreading fertilizer before track-walking if harrowing is not possible.
- If hydroseeding, the fertilizer will be applied as part of the seed-mulch slurry.

Planting and Seed Mixes

- Steep slopes suffer from significant seed loss due to runoff and from low germination rates. Therefore, the recommended seeding rate is 2,250 – 3,000 seeds/m^2; as with other sites, that rate can be cut in half if substantial organic materials in place.
- Maximizing species diversity is often less important than choosing 2 – 3 tenacious species that will take-hold on steep slopes.
- The grasses recommended in the seeding tables are mostly rhizomatous species because they tend to provide more extensive ground cover. The bunchgrasses in the tables are recommended for their drought-tolerance because slopes tend to be dry. A few species that grow well on wet sites are listed for application on steep banks along waterbodies and ditches.
- To establish rapid site cover, it can be very effective to add a fast growing annual grass to the seed mix. Annuals also function as nurse plants for perennials in the mix (perennials will confer long-term stabilization). However, annual grasses should not constitute more than 10% of the seed mix, to avoid choking-out perennials and native colonizers.
- If locally-collected seeds are sowed, an annual grass should still be considered for inclusion in the mix (up to 10%). It will confer the same benefits as when added to a commercial seed mix.
- In most cases, it is not practical to plant woody species on steep slopes because they are too dry. The exception is wet banks along watercourses and ditches. See Scenario 3 for additional guidance in these situations.
- Applying and covering seeds on steep slopes can be a challenge because it is often too dangerous to operate equipment. Hydroseeding can be the only practical option on large sites, but sometimes hand seeding and raking will be just as cost-effective.
- When hydroseeding, the recommended seeding rate is still 2,250 – 3,000 seeds/m^2 to account for seed damage and reduced germination rates that are the norm with hydroseeding.

Steep Slopes — Table 5.5

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 2,250 to 3,000 seeds/m^2 on bare mineral soil and/or hydroseeded slopes
OR 1500 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	Tolerant to dry alkaline soils, low nutrients, permafrost and high elevations. Bunch grass with rapid emergence in early spring. Do not use on wet or acidic sites.
Violet wheatgrass *Elymus alaskanus* (common)	**330,000**	Tolerant to alkaline soils, drought and low nutrients; also has considerable tolerance to permafrost and moderate tolerance to saline soils and high elevations. Bunch forming with strong competitive ability.
Glaucous bluegrass *Poa glauca* (Tundra or common)	**2,904,000**	Tolerant to broad range of pH, drought, low nutrients, permafrost and high elevations. Forms low growing bunches with a high root-shoot ratio, spreads aggressively through rhizomes, rapid emergence in early spring.
Slender wheatgrass *Elymus trachycaulus* (Revenue, Adanac, Highlander or common)	**349,800**	Tolerant to broad range of pH, dry ground and low nutrients. High tolerance to saline soil. Performs poorly on permafrost and high elevations sites. Forms loose bunches and is short-lived, but exhibits rapid emergence.

Steep Slopes — Table 5.6

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 2,250 to 3,000 seeds/m^2 on bare mineral soil and/or hydroseeded slopes
OR 1500 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	Tolerant to acidic soils, low nutrients, limited drought. Tall sod-forming rhizomatous grass, strongly competitive, forms extensive cover. Despite its name, does not tolerate long periods of inundations.
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	Tolerant to strongly acidic soils, low nutrients, wetness. Tall rhizomatous bunchgrass, strong competitor on moist/wet soils.
Canada bluegrass *Poa compressa* (Reubens, common)	**5,264,204**	Tolerant to alkaline soils, low nutrients, moderate drought. Medium height bunchgrass, rhizomatous, can form extensive cover but is slow growing.
Creeping red fescue *Festuca rubra* (Arctared in northern Yukon) (Boreal in southern Yukon)	**539,407**	Tolerant to wide range of pH, permafrost and high elevations. Short loosely tufted bunchgrass, rapid emergence, aggressive rhizomes, strong competitor, forms extensive cover quickly.
Alfalfa *Medicago sativa* (Rangelander, Rambler, Peace)	**498,960**	Tolerant to alkaline soils, low nutrients, drought. Forms extensive cover but is a wildlife attractant. Only recommended for difficult to vegetate slopes.
FAST GROWING ANNUALS FOR RAPID SITE COVER AND NURSE PLANTS (Select one species, but not more than 10% of mix)		
Annual rye *Lolium multiflorum*	**477,400**	Tolerant to a range of pH. Fast growing, extremely competitive. Wildlife attractant. Will not tolerate extreme heat, cold or drought.
Barley *Hordeum vulgare*	**29,920**	Moderately tolerant to alkaline and saline soils, drought. Wildlife attractant. Fast growing, extremely competitive.

Steep Slopes

Table 5.7

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF: 2,250 to 3,000 seeds/m^2 on bare mineral **OR** 1500 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
any of the species listed in Table 5.5		
Northern rough fescue *Festuca altaica*	**451,854**	Tolerant to low nutrients, drought, high elevation and permafrost. Medium size bunchgrass with low seed yield, but spreads rhizomatously to form extensive cover as plants mature. Widespread, grows in open woods, alpine grasslands, tundra, at all elevations.
Northern brome *Bromus pumpellianus*	**202,400**	Tolerant to low nutrients, drought. Medium to tall grass, weakly tufted, stoloniferous. Grows in meadows, dry slopes at all elevations.
Macrourum's wheatgrass *Elymus macrourus*	**374,782**	Tolerant to drought, periodic wetness, low nutrients. Medium size bunchgrass, weakly rhizomatous, low seed yield. Most common in gravely/ sandy areas along lakeshores, riverbanks and open slopes.
Sweetgrass *Hierochloë hirta* (formerly *H. odorata*)	**242,000**	Tolerant to drought and low nutrients. Short, fine grass with creeping rhizomes and strong competitive ability but poor seed yield. Grows in sandy meadows, streambanks, open forests at low elevation.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2 – 4 years). Mostly restricted to dry alkaline and saline areas.
Wormwood/sage *Artemisia* spp.	**—**	Tolerant to drought, low nutrients. Medium stature forb or short shrub. Wormwood species grow in a diversity of open/disturbed areas from riverbanks and grasslands to steep slopes and alpine/Arctic tundra. Mostly adapted to dry soils.

Steep Slopes

LOCALLY-COLLECTED WOODY SPECIES

Locally Sourced Woody Species

Woody species are not recommended for planting on steep, dry slopes.
However, they are strongly recommended for steep, wet slopes such as ditches and riverbanks.
For those applications, see *Scenario 3: Wet Sites*.

Scenario 3 **Wet Sites**

Most revegetation sites in Yukon will suffer from a lack of moisture. Yet in the rare case that work occurs on a wet site, it is often too wet. Most commonly, wet sites are encountered when development occurs immediately adjacent to a watercourse, in ditches or other depressions, at the base of slopes, and in permafrost areas. In these cases, the soils often are cold, poorly drained, poorly aerated, have a high swollen clay content, and in many cases experience seasonal flooding, which often kills new vegetation because most plants cannot tolerate prolonged periods (more than two weeks) of submergence.

There are essentially two types of wet sites that will be encountered in revegetation projects: those that are seasonally wet because they occur in an impermeable depression, ditch, or flood zone, and those that are near or part of a natural water body. This distinction determines the type of ground preparation that is appropriate and the species selected for planting. For clay-rich depressions and overly compacted ground where water pools seasonally, the drainage can be improved by deep tilling and the addition of coarser sediments and organic materials. In these cases, the species chosen for planting simply need to be adapted to seasonally moist conditions, and short-term submergence.

In contrast, ground adjacent to true wetlands generally should not be deep-tilled, and species chosen for planting should tolerate periods of submergence. These sites respond well to staking of willow and poplar. In fact, if the site occurs along a watercourse, planners should always consider staking as a primary component of the revegetation plan, unless there are reasons not to promote the growth of woody species.



YG HIGHWAYS & PUBLIC WORKS

FIG 5.4
Most species recommended for revegetation work in Yukon are adapted to dry conditions, but wet sites require a totally different species mix. In addition to seeding wet-adapted grasses, willows can be staked on sites that will be wet or moist all summer. On this creek bank, jute and straw underlayment was installed, covered with soil and seeded. Willows were staked only on the lower slope. Note how the grasses are only growing above the high water mark. Most grasses cannot survive long periods of submersion, but poor establishment of grasses on this bank is probably due to seed loss from river scouring. Staked willow is more resistant to erosion and can survive long periods of submersion. On this site, willow could have been staked more thickly and higher up the bank.

Site Preparation

- Be cognizant of regulations applying to any work that occurs in wetlands, especially the use of vehicles and motorized equipment, and the season when work is performed (note that not all wet sites will necessarily be classified as wetlands).
- Often, equipment cannot or should not be operated on wet sites because it leads to compaction and/or clod formation. The exception is contouring of banks and ditches or the emplacement of riprap. That work is best done with an excavator to avoid driving equipment in the wet area.
- Grading should be given careful attention on wet sites. If the site's wetness is being treated as problematic, then grade the site to create even runoff. Level-out depressions and contours to eliminate low (wet) and high (dry) areas. Consider creating drainage structures (*e.g.*, ditches) if it: a) is practical, b) helps regulate saturation levels for improved plant growth and c) does not cause harm to watercourses downstream.
- Some wet sites should be decompacted, while other should not (see scenario introduction). On seasonally-wet sites, wait for them to dry-out as much as possible before decompacting. This may mean postponing the work until the next summer. When adequately dry, toothed rippers (subsoilers), plows, disk harrows, or excavator buckets can be used to decompact. Do not till to a depth greater than it can be expected to dry. This recommendation assumes that the site's wetness should be remediated; that will not be the case if it is a functional wetland. Do not try to decompact wetlands and perennially-wet ground.
- If it is not a perennial wetland, add coarser sediments and organic material when possible to increase drainage properties, dilute the clay content and raise the grade. Be aware, however, that deep tilling can be counterproductive on sites that have thick clay layers, as tilling can sometimes just bring more clay to the surface. Thus, the decision to till, or not to till, and to what depth, depends largely on the clay content and the availability of coarse sediments and organics that can be added to the site.
- After decompaction, use equipment or hand tools to break up clods and even-out surface undulations. This step is very important on wet sites.
- If the site is near a watercourse or experiences seasonal runoff, it may be necessary to install erosion protection materials on slopes and banks adjacent to the site. This will prevent seasonal flooding and erosion from damaging prepared seedbeds.

Fertilizer and Organics

- While most Yukon sites will have depauperate soil organics, wet lowland sites can be the exception to this rule. But wet, organic-rich sites will rarely need revegetation work. The wet sites needing revegetation work will mostly be development sites where the organic material has been removed, or sterile fill material has been brought in. Applying organic materials to these sites functions just as much to increase tilth and drainage, as to increase fertility. This is especially true for clay-rich soils. In Yukon, a wet site with good organic content and/or fertilizing will revegetate rapidly. Fertilizer rates can be cut in half when organic content is high.
- Use the results of soil testing and guidelines in Chapter 3 to determine nutrient deficiencies and fertilizer needs. Use caution when applying fertilizer to wet sites to avoid contamination of watercourses. Fertilizer should not be applied within 30 m of a water body.
- Pay special attention to indicators of high salinity, as saline sites in Yukon occur in low-lying areas around former lakebeds.

Planting and Seed Mixes

- Germination and growth rates should be high on properly prepared wet sites, so there is no need to seed heavily. Consider 1,500 seeds/m^2 to be a maximum target density.
- Germination success will be highly dependent on site preparation, especially on clay-rich sites. Clods and hard clay surfaces must be broken-up. If necessary, run a roller/cultipacker or a chain/tine harrow over the surface before seeding.
- The species listed in the seeding tables will grow well on sites with high soil moisture, but they vary in their ability to grow on saturated or seasonally submerged soils, so choose species mixes to match the level of site moisture.
- High species diversity can be achieved on sites that are moist, but do not stay inundated for long periods. On these sites, consider planting four or more species, each with different adaptive traits, to account for fluctuation between wet and dry periods. On the other hand, only a few species, such as sloughgrass (*Beckmannia syzigachne*), will grow well on sites with frequent flooding and long periods of standing water. On these sites, there is no point planting species that are not tolerant to prolonged inundation.
- Annual grasses are seldom sown on wet/moist sites because they generally confer no advantages and may inhibit the growth of perennials. The only exception would be banks along waterbodies and ditches. Planting annual grasses on banks can provide an organic layer to bind the soil (erosion control) and provide germination sites for later successional species. But a better solution for steep wet banks is to apply RECPs in conjunction with willow staking and/or seeding (see Chapter 4 for bioengineering solutions).
- It is highly recommended to stake willow and poplar cuttings on very wet sites, unless woody plants are considered undesirable. They are especially helpful for stabilizing banks along watercourses and lessening the impact of flooding. Shrub birch seedlings will do well on sites that are moist, but not on sites that are saturated for long periods. Birch also requires higher soil organic content than willow or poplar, does not grow well in alkaline conditions, and should not be planted on steep slopes. Alder has requirements similar to birch but is less tolerant to very acidic sites.

Wet Sites — Table 5.8

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m² on bare mineral soil **OR** 750 seeds/m² if organics are in place

SPECIES (cultivar)	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
Polargrass *Arctagrostis latifolia* (Alyeska or common)	**3,960,000**	Tolerant to low-nutrient, wet, and acidic soil, as well as permafrost. Do not use on alkaline soils. Spreads through rhizomes and often develops late in summer.
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	Tolerant to extremely acidic soils, heavy metals, low nutrients, permafrost, wetness and high elevations. Bunch forming, strong competitive ability and can form extensive cover.
Fowl bluegrass *Poa palustris* (common)	**4,840,000**	Tolerant to acidic soils, low nutrients and wetness. Loosely tufted bunchgrass, rapid emergence, early spring growth, but shallow-rooted, generally short-lived and not aggressive.
Bluejoint reedgrass *Calamagrostis Canadensis* (Sourdough or common)	**8,442,438**	Tolerant to slightly acidic soils, low nutrients, permafrost and wetness. Tall bunch grass with aggressive rhizomatous growth and extensive cover production. Early spring and late summer growth.
American sloughgrass *Beckmannia syzigachne* (Egan or common)	**2,723,600**	Tolerant to a range of pH, low nutrients and wetness. Tall bunchgrass, grows mostly as an annual with high seed production. Commonly used in wetland restoration and will grow in almost any wet soil.

Wet Sites — Table 5.9

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m² on bare mineral soil **OR** 750 seeds/m² if organics are in place

SPECIES (*cultivar*)	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	Tolerant to acidic soils, low nutrients, limited drought. Tall sod-forming rhizomatous grass, strongly competitive, forms extensive cover. Despite its name, does not tolerate long periods of inundations.
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	Tolerant to strongly acidic soils, low nutrients, wetness. Tall rhizomatous bunchgrass, strong competitor on moist/wet soils.
Timothy *Phleum pratense* (Climax, Engmo)	**2,559,400**	Tolerant to acidic and alkaline soils. Grows best in cool, moist organic soils. Tall bunchgrass, rapid emergence, yields extensive cover. Wildlife attractant.
Canada bluegrass *Poa compressa* (Reubens, common)	**5,264,204**	Tolerant to alkaline soils, low nutrients, moderate drought. Medium height bunchgrass, rhizomatous, can form extensive cover but is slow growing.
Kentucky bluegrass *Poa pratensis* (Nugget)	**3,057,648**	Tolerant to moderate acidity, cold temperatures and wet soils. Long-lived species. Sod-forming turf grass, can be grown as far north as the Arctic coast.
Red top *Agrostis gigantea* (common)	**10,672,640**	Tolerant to acidic soils and wet or dry conditions. Medium stature rhizomatous bunchgrass, mildly aggressive. Forms good cover but only on low slopes/low elevation.

Wet Sites — Table 5.10

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF: 1,500 seeds/m² on bare mineral soil **OR** 750 seeds/m² if organics are in place

SPECIES	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
any of the species listed in Table 5.8		
Northern rough fescue *Festuca altaica*	**451,854**	Tolerant to low nutrients, drought, high elevation and permafrost. Medium size bunchgrass with low seed yield, but spreads rhizomatously to form extensive cover as plants mature. Widespread, grows in open woods, alpine grasslands, tundra, at all elevations.
Northern bluegrass *Poa alpigena/Poa pratensis*	**3,057,648**	Tolerant to mildly acidic soils, low nutrients and permafrost. Low to medium stature grass, turf-forming, strongly rhizomatous and competitive. Grows in sandy areas along lakeshores and moist meadows; also moist sandy tundra.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2-4 years). Mostly restricted to dry alkaline and saline areas.
Arctic lupine *Lupinus arcticus*	**22,733**	Tolerant to low nutrients, permafrost, limited drought. A low-growing, nitrogen-fixing forb that provides a colourful flowering bloom. Grows mostly on moist soils in disturbed areas ranging from lowland riverbanks to alpine and tundra.

Wet Sites — Table 5.11

LOCALLY-COLLECTED WOODY SPECIES

SPECIES	REASONS TO USE AND RELEVANT CHARACTERISTICS
Willow *Salix alaxensis*, *S. pulchra*, *S. planifolia*, *S. richardsonii*, *S. hastate*, *S. arbusuloides*, *S. lucida*, *S. pseudomyrsinites* (the two best species are *S. alaxensis* and *S. pulchra*)	Only use in wet locations and only use the species listed. Willow is the main plant used for staking of live/dormant cuttings and for bioengineered structures.
Poplar *Populus balsamifera*	Only use in wet/moist locations; easily established through staking of live/dormant cuttings.
Shrub birch *Betula glandulosa* *Betula nana*	Only plant seedlings grown in a nursery from locally-collected seed. Tolerant to acid soils. Use on moist sites with good organic content.
Alder *Alnus crispa* *Alnus tenuifolia*	Only plant seedlings grown in a nursery from locally-collected seed. Tolerant to slightly acidic soils and low nutrients. Use on moist/wet sites that are not alkaline.

Scenario 4 **Highway Rights-of-Way**

Highways in Yukon are usually reconstructed on a 25 – 50 year cycle, and in any given year many kilometres of roadway will be under reconstruction or realignment. The 20 – 30 m wide right-of-way (ROW) along these roadways is often bladed or grubbed during reconstruction, in part to keep woody species from encroaching. Thus, the frequency and extent of annual road work makes ROWs one of the most common revegetation projects encountered in Yukon.

Highway ROWs warrant special consideration because the revegetation goals are numerous and specific: 1) prevent erosion along cut slopes, shoulders and ditches, 2) maintain roadbed stability, 3) provide drivers with adequate visibility and lines-of-sight, 4) create a visually-pleasing viewscape, 5) reduce wildlife hazards, and 6) prevent the spread of invasive plants.

One of the main challenges of revegetating ROWs is that ground conditions along a single ROW can be highly variable, ranging from steep dry slopes to wet lowlands. The key will be to write a prescription for each distinct area of the site and instruct crews how and where to implement them. Avoid one-size-fits-all prescriptions for the entire ROW. Nonetheless, in many cases much of the ROW will be gently sloping ground typical of the surrounding environment, and the recommended species and procedures in this scenario apply to those areas.

Trees and woody shrubs in the ROW impair driver visibility, which necessitates periodic mowing or grubbing. If mowing/grubbing needs to be done frequently, that equates to higher maintenance costs. Consequently, ROWs should be planted with dense stands of herbaceous species (grasses) to compete with woody species and slow their return. Active planting or promotion of woody species in ROWs is strictly limited to wet slopes and banks along wetlands, ditches and streams.

Roadways are a principle vector by which invasive plants spread in Yukon, and revegetation plans should be developed to discourage their growth. Ensure that seed suppliers will certify that their seed is free from seeds of plants known to be invasive in Yukon. Consult the Yukon Invasive Species Council for the current list. Invasive plants outcompete native plants in sterile gravels, so consider seeding aggressive, drought-resistant perennial grasses all the way up to the edge of the road surface, including the shoulder. Spreading fine materials and organics (even a thin layer) will help give native and commercial seeds a competitive edge over invasive species, as does the use of fertilizer.

Planners should also avoid planting species that are attractants to wildlife, particularly grazing ungulates, since they can be a traffic hazard. Choose less palatable grass species and avoid the use of legumes such as alfalfa.

The species recommended in the tables below have been selected in light of these special needs along roadways. They are hardy, competitive, drought-resistant, and not particularly palatable to grazers. Seeding at higher densities (> 2,500 seeds/m^2) will help retard the spread of woody species in the ROW. Perhaps the biggest variable among the species listed in the tables is their differing tolerances to soil pH, so be sure to choose species in accordance with the site's pH.

In almost all cases, it will not be practical to collect seeds of local plants for sowing in the main ROW, simply because the area will be too large. The recommendations for locally-collected seeds should only be used for small sites. Woody species are not recommended for staking or planting in the main ROW, and should only be used for bank protection along waterways/ditches and in bioengineering applications on slopes.



YG HIGHWAYS & PUBLIC WORKS

Fig 5.6
All types of site conditions can be encountered when revegetating highway right-of-ways, calling for the application of many different tools in the planners toolbox. Revegetating right-of-ways also requires advanced planning and logistics, because the work must be coordinated with road designers and contractors. The main objectives are to protect the roadbed, reduce road hazards, enhance visual aesthetics, reduce future maintenance costs, and exclude woody and invasive species.

Site Preparation

- Work with project managers and engineers early in the planning process so that the construction contract specifies the need for proper site grading and preparation to facilitate subsequent revegetation work. For instance, contractors should be made aware that they might be required to contour or track-walk the ROW at the end of construction in preparation for seeding.
- The contract/prescription should also specify how slash, debris and organic materials will be handled. With proper planning, it should be possible on most ROW projects to specify that organic materials be stockpiled and re-applied after construction. This will confer immeasurable advantage to revegetation success.
- The site should be graded to eliminate dips and rises that will lead to pooled water or alternating wet and dry spots. But leave the surface slightly roughened, to retain seed and water (avoid the creation of glazed, bladed surfaces).
- In many cases, it will be necessary to decompact surface soils, at least in some areas of the site (*e.g.*, areas where construction equipment was staged). Use toothed rippers (subsoilers) or other techniques described in Chapter 3.

Site Preparation *continued*

- Cut slopes, fill slopes and ditches may require track-walking to provide texture. On slopes that are too steep to operate equipment, use a toothed excavator bucket to scarify the surface. Be sure not to compact or glaze the surface with the bucket.
- If necessary, prepare a seedbed using a harrow pulled by a crawler, tractor, or ATV (do not operate wheeled tractors or ATVs on steep slopes or in ditches). As much as possible, use equipment already on-site for road construction to prepare the ROW surface before they are demobilized (*e.g.*, to grade, track-walk or harrow the ROW).
- Install erosion control materials on steep slopes (see Chapter 3).
- On large sites with low slope and few impediments, the most efficient method of decompaction and surface preparation (tilling) can be to use a large tandem disk harrow pulled by a crawler or large wheeled tractor. The main impediment to using large disk harrows will be rocks and debris in the ROW, which can damage or clog-up harrows.
- Even though it is not ideal, it is not uncommon for revegetation work in the ROW to occur more than two years after construction is completed. If this is the case, the site might need to be decompacted again before seeding. Heavy equipment may no longer be on-site, so decompact the site with the largest tractor and disk harrow or plough available. Do not simply fertilize and seed the surface and follow-up with a light harrowing.

Fertilizer and Organics

- With good planning, it should be feasible to stockpile and re-apply organic materials in ROWs. If organic materials are only available in limited supply, then erosion-prone areas, clay-rich area (*e.g.*, areas prone to cementation), and slopes have highest priority. Try to work the organic materials into the soil as much as possible.
- Use the results of soil testing and guidelines in Chapter 3 to determine nutrient deficiencies and fertilizer needs. Fertilizer will be critical on sites with bare mineral soil and no organics.
- Spread fertilizer and organics up to the edge of the road surface in order to give applied seeds a competitive advantage over invasive plants.
- If the ROW surface is rough and littered with organic debris, it may not be necessary to harrow after applying fertilizer; driving over the surface with tracked equipment often will suffice. If the surface is comprised mostly of organic-poor, bare mineral soil, then harrow the surface to incorporate the fertilizer into the top 5 – 10 cm of the surface.
- Avoid spreading fertilizer in a manner where it can wash off slopes and accumulate in ditches. This can be accomplished by harrowing or cultipacking the site immediately after fertilizing and seeding.
- Do not over-fertilize, as this will make the new plant growth more attractive to wildlife.
- If hydroseeding, the fertilizer will be applied as part of the seed-mulch slurry.

Planting and Seed Mixes

- Apply seed at a rate of 1,500 – 2,000 seeds/m^2 when few organics are present, and 1,000 – 1,500 seeds/m^2 when organic materials were re-spread. Seed densities may be increased in both cases to ensure a thorough cover of grasses that will slow the spread of woody and invasive species.
- Species diversity should be gauged to meet site objectives (see Chapters 2 and 4). In most cases, planting 4 – 5 species should be adequate to hedge against a bad growing season and will provide enough diversity to achieve aesthetic goals. Factors such as high salinity or permafrost may be reasons to reduce diversity (because only a few species are adapted to grow on these sites). On the other hand, ROWs offer good opportunities to experiment with revegetation species in the seed mix.
- Consider a seeding plan where only one or two species of low-growing, aggressive, rhizominous grasses are planted immediately adjacent to the road edge. These will serve to compete with invasive plants and will be the most likely to survive snow plowing and grading.
- In most cases, seeding will be done with a broadcast spreader. Usually, ROWs are too uneven and have too much surface debris to use a seed drill. However, on large sites with even, debris-free surfaces, it may be cost-effective to use a drill (seed quantities can be reduced by 500 seeds/m^2 when using a drill).
- Many ROWs will have obstacles such as large rocks or copses of trees remaining on the surface. When equipment must be operated around them, follow up with hand seeding.
- Hydroseeding is often used to seed steep slopes in a ROW because equipment can be operated from the roadway and because it takes a large project area to make hydroseeding cost-effective. See *Scenario 2 Wet Sites* for more information and limitations of hydroseeding.
- It is important to monitor revegetation progress in ROWs. Frequently, the planted vegetation will not take hold along problematic stretches of road and a second seeding is required. In these cases, a different seed mix may be indicated. In other cases, the surface will turn out not to be as stable as was thought, and erosion will have destroyed the seedbed. These surfaces will need to be stabilized and reseeded.

Highway Rights-Of-Way

Table 5.12

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 or more seeds/m^2 on bare mineral soil
OR 1,000 – 1,500 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	Tolerant to dry alkaline soils, low nutrients, permafrost and high elevations. Bunch grass with rapid emergence in early spring. Do not use on wet or acidic sites.
Violet wheatgrass *Elymus alaskanus* (common)	**330,000**	Tolerant to alkaline soils, drought and low nutrients; also has considerable tolerance to permafrost and moderate tolerance to saline soils and high elevations. Bunch forming with strong competitive ability.
Glaucous bluegrass *Poa glauca* (Tundra or common)	**2,904,000**	Tolerant to broad range of pH, drought, low nutrients, permafrost and high elevations. Forms low growing bunches with a high root-shoot ratio, spreads aggressively through rhizomes, rapid emergence in early spring.
Fowl bluegrass *Poa palustris* (common)	**4,840,000**	Tolerant to acidic soils, low nutrients and wetness. Loosely tufted bunchgrass, rapid emergence, early spring growth, but shallow-rooted, generally short-lived and not aggressive. Not drought tolerant.
Slender wheatgrass *Elymus trachycaulus* (Revenue, Adanac, Highlander or common)	**349,800**	Tolerant to broad range of pH, dry ground and low nutrients. High tolerance to saline soil. Performs poorly on permafrost and high elevations sites. Forms loose bunches and is short-lived, but exhibits rapid emergence.
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	Tolerant to extremely acidic soils, heavy metals, low nutrients, permafrost, wetness and high elevations. Bunch forming, strong competitive ability and can form extensive cover. Not drought tolerant.

Highway Rights-Of-Way

Table 5.13

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 1,500 or more seeds/m^2 on bare mineral soil
OR 1,000 - 1,500 seeds/m^2 if organics are in place

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Creeping red fescue *Festuca rubra* (Arctared in northern Yukon) (Boreal in southern Yukon)	**539,407**	Tolerant to wide range of pH, permafrost and high elevations. Short loosely tufted bunchgrass, rapid emergence, aggressive rhizomes, strong competitor, forms extensive cover quickly.
Canada bluegrass *Poa compressa* (Reubens, common)	**5,264,204**	Tolerant to alkaline soils, low nutrients, moderate drought. Medium height bunchgrass, rhizomatous, can form extensive cover but is slow growing.
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	Tolerant to acidic soils, low nutrients, limited drought. Tall sod-forming rhizomatous grass, strongly competitive, forms extensive cover. Despite its name, does not tolerate long periods of inundations.
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	Tolerant to strongly acidic soils, low nutrients, wetness. Tall rhizomatous bunchgrass, strong competitor on moist/wet soils.
Sheep fescue *Festuca ovina/F. brachyphylla* (common)	**1,100,000**	Tolerant to neutral or slightly acidic soils, drought, low nutrients and high elevations. Needs well-drained granular soil. Forms short bunches, slow growing, aggressive rhizomes.

Highway Rights-Of-Way

Table 5.14

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF: 1,500 or more seeds/m² on bare mineral soil
OR 1,000 – 1,500 seeds/m² if organics in place

SPECIES	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
any of the species listed in Table 5.12		
Northern rough fescue *Festuca altaica*	**451,854**	Tolerant to low nutrients, drought, high elevation and permafrost. Medium size bunchgrass with low seed yield, but spreads rhizomatously to form extensive cover as plants mature. Widespread, grows in open woods, alpine grasslands, tundra, at all elevations.
Northern brome *Bromus pumpellianus*	**202,400**	Tolerant to low nutrients, drought. Medium to tall grass, weakly tufted, stoloniferous. Grows in meadows, dry slopes at all elevations.
Sweetgrass *Hierochloë hirta* (formerly *H. odorata*)	**242,000**	Tolerant to drought and low nutrients. Short, fine grass with creeping rhizomes and strong competitive ability but poor seed yield. Grows in sandy meadows, streambanks, open forests at low elevation.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2-4 years). Mostly restricted to dry alkaline and saline areas.
Yellow locoweed *Oxytropis campestris*	**521,400**	Tolerant to drought and low nutrients. Low growing bunches. A nitrogen-fixing forb that provides a colourful flowering bloom. Found in dry, granular disturbed areas.
Showy locoweed *Oxytropis splendens*	**1,548,800**	Tolerant to drought and low nutrients. Low growing bunches. A nitrogen-fixing forb that provides a colourful flowering bloom. Found in dry, sandy disturbed areas.
Arctic lupine *Lupinus arcticus*	**22,733**	Tolerant to low nutrients, permafrost, limited drought. A low-growing, nitrogen-fixing forb that provides a colourful flowering bloom. Grows mostly on moist soils in disturbed areas ranging from lowland riverbanks to alpine and tundra.
Mountain avens *Dryas* spp.	**—**	Tolerant to alkaline soils, drought, low nutrients. Matt-forming, low stature forb that grows in very poor soils and calciferous disturbed areas at all elevations, including scree slopes and gravel.
Yarrow *Achillea millefolium* and *Achillea sibirica*	**6,274,426**	Tolerant to alkaline soils, drought, low nutrients. A slender, colonizing forb with white flower heads that bloom late in summer. Mostly found in areas with well-drained but poorly developed soil. Produces tiny seeds in abundance.
Wormwood/sage *Artemisia* spp.	**—**	Tolerant to drought, low nutrients. Medium stature forb or short shrub. Wormwood species grow in a diversity of open/disturbed areas from riverbanks and grasslands to steep slopes and alpine/Arctic tundra. Mostly adapted to dry soils.

Highway Rights-Of-Way

LOCALLY-COLLECTED WOODY SPECIES

Locally Sourced Woody Species

Woody species are not recommended for planting in highway right-of-ways, except in wet areas and along banks for erosion control. In those cases, see *Scenario 3: Wet Sites*.

Scenario 5 **Disturbed Lowland Permafrost Sites**

Permafrost presents a special challenge in Yukon revegetation projects. Consider this: on non-permafrost sites, the ground can be disturbed, graded, built-up, excavated, and shaped in various ways, but afterwards the ground material remains essentially the same static entity. However, when a permafrost site is disturbed, ground ice can begin to melt, setting in motion a cascade of events that can remain dynamic and uncontrollable for years. This scenario discusses actions that should be taken when a permafrost site with ground ice is disturbed. It begins with a short primer on permafrost, ground ice and the results of thermal destabilization.

The term permafrost simply refers to any ground that remains frozen below the surface year-round (mean annual ground temperature below 0˚C). In northern Yukon, essentially all the ground is underlain by permafrost. In central Yukon, perennially frozen ground has an extensive, but discontinuous, distribution. In southern Yukon, permafrost is sporadic, occurring mostly in alpine areas and a few cold lowland pockets (see Fig. 2.4).

It terms of revegetation and land development, the key issue when working on permafrost sites is not whether the ground is perennially frozen, but rather whether the ground contains significant quantities of ice ("ground ice") and whether it has been disturbed to the point of melting ("thermokarsting"). These two topics warrant further elaboration:

Ground ice forms in a number of different ways. Frozen water between the interstices of ground particles is referred to as "pore ice." In ground with only pore ice, the ground/water volume is essentially the same as if the ground was not frozen. But in most permafrost systems, unbound water molecules in the ground are mobile and migrate towards any freezing front or existing ice bodies. Through this processes, water segregate from soil particles and grows into relatively pure ice lenses. This type of ground ice is called "segregation ice." Ice lenses can remain small, but numerous, or can grow into large ice bodies many cubic meters in size. In peatlands, especially in areas of discontinuous permafrost, ice lenses heave from seasonal frost action towards the surface causing the formation of ice-rich peat mounds called palsas. Pingos are large hills with cores of ice that form when unfrozen ground water in permafrost is forced upward by hydraulic pressure and freezes. Ice wedges are a common form of ground ice that form as surface snow and water fill ground cracks caused by thermal contraction. Ice wedges grow each year and can become quite large, but they only tend to form where mean annual ground temperatures are below -6°C. They are expressed on the surface as polygonal ground and are a prominent feature of lowland permafrost in northern Yukon.

The formation of ground ice is dependent on ground temperature and moisture content, but its manifestation is almost equally dependent on the host sediments and terrain features (*e.g.*, slope, aspect). Large ice bodies form more readily in fine-grained sediments such as silts, than in coarse-grained sediments such as gravels. In permafrost zones, flat lowlands with thick deposits of fine sediments will have more ground ice than slopes because the slopes are better-drained and receive more solar insolation (*i.e.*, they are warmer),



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FIG 5.7
Permafrost is problematic for development projects and revegetation when it contains significant volumes of ground ice. Disturbing ice-rich ground, especially the insulating layer of surface organics, can lead to uncontrolled melting and thermokarsting.



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FIG 5.8
Polygonal ground forms when ice wedges develop below the surface. Ice wedges grow as the ground thermally contracts each year and the cracks fill with snow and water, which then re-freeze. Ice wedges can grow to a very large size, and develop in areas of central and northern Yukon where annual ground temperatures are below -6°C. In Southern Yukon, Polygonal ground is rare and ice wedges encountered are relics from the Pleistocene epoch.

especially south-facing slopes. However, many north-facing slopes covered with thick mantles of fine sediments in central and northern Yukon contain large quantities of ground ice.

In permafrost ground with coarse sediments, ice formation is mostly limited to the granular interstices (pore ice) and formation of large ice bodies is inhibited. On these sites, ice will constitute a very small percentage of the ground volume. Most alpine areas in Yukon have a mean annual ground temperature below 0˚C but ice bodies are uncommon because alpine ground tends to have a thin mantle of coarse-grained sediment (*i.e.*, it is not far down to solid rock) and because they are well-drained (revegetation strategies for alpine and subalpine sites are discussed in Scenario 7). Even in cold lowland areas with extensive ground ice, the course gravels of old river channels will generally be free of large ice bodies.

Ground ice formation is actively occurring in the present climate of central and northern Yukon but very little in southern Yukon. However, a significant number of large ice bodies in Yukon are relics from the last Ice Age; even in areas where the modern climate is not cold enough to form ground ice, it is still cold enough to preserve ice bodies that formed during the Pleistocene. The location and occurrence of these relictual ice bodies can be nearly impossible to predict and they may be encountered nearly anywhere in the territory, including southern Yukon. Ice bodies, whether old or new, tend to remain stable as long as the annual ground temperature stays below freezing and the ice is insulated from summer heat by overlying organic matter.

While it is important that the revegetation planner in Yukon has a general understanding of permafrost dynamics, the complexities of ground ice formation and nomenclature are less important than the decisions that must be made when ground ice is encountered or known to be present in an area. A key factor is that annual ground temperatures are only slightly below 0°C in many areas of central and southern Yukon, with a trend towards warming. This means much of the permafrost in these areas is nearing thermal instability. Any disturbance to the ground, especially the removal of insulating organic matter and vegetation, usually is enough to upset the thermal balance and initiate melting. As the ground ice melts, the ground looses volume and slumps, often resulting in the formation of shallow ponds. This process is called thermokarting. It can begin almost immediately after

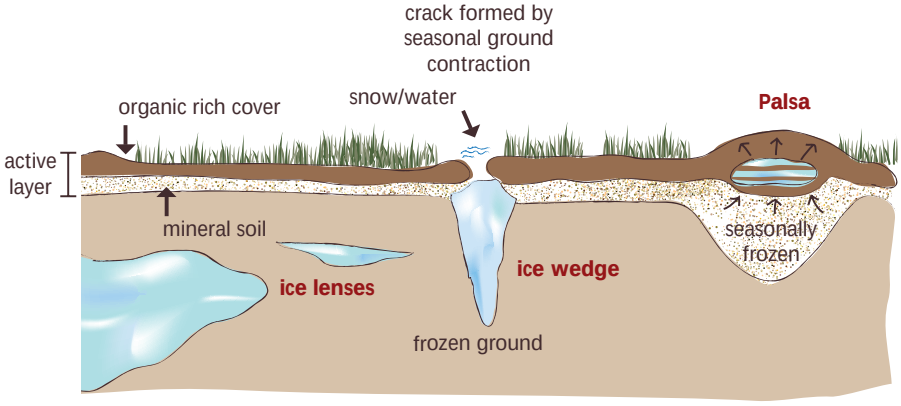

FIG 5.9
Ground ice in permafrost forms in different ways – here are three examples. Ice lenses are a type of segregation ice that form as unbound water molecules in the ground migrate towards a freezing front or existing ice bodies. Ice lenses can take on a variety of shapes and sizes. Ice wedges form when snow and ice fill-in ground cracks caused by thermal contraction. They also can grow to be quite large. Palsas are ice-rich peat mounds pushed upwards by frost heaving. They form as winter frost penetrates the ground and creates frozen zones that serve as nuclei for the formation of segregation ice; unfrozen water from below is drawn to the ice, pushing the mound upward.

ice-rich ground is disturbed, and it can continue for years until the site stabilizes again.

The general rule of development is to avoid disturbing the ground on permafrost sites, especially the removal of insulating ground cover (soils and organics). When they are disturbed, intentionally or not, they should be reclaimed and revegetated as soon as possible to minimize thawing and thermokarsting. Mostly, this means placing insulative materials over the disturbance, usually in the form of thick layers of soil and organic matter. If the disturbance occurs in early to mid-summer, it is important to reapply as much insulative material as possible, and as soon as possible. If the disturbance occurs in late summer or fall, then the site should be left exposed for the winter to promote deep frost penetration, with a thick layer of soil and organics applied as soon as possible the following spring.

Once soil and organics are in place, seed the site as soon as possible. These sites should respond well to frost seeding, and a second seeding can be important to ensure a good vegetative cover is established. Seed density should be at least 1,500 seeds/m^2. Including 10% annual grasses in the seed mix will help to quickly establish an insulative cover. The remaining species should be ones that germinate and grow well on cold sites with short growing seasons; generally, they do not need to be drought-resistant, as these lowland permafrost sites tend to be moist or wet.

If a site has undergone thermokarsting in the past, but currently is stable, then it can be treated like any other non-permafrost site. However, new ice lenses may have formed or buried pond ice may be present, so care should be taken when re-disturbing the ground or operating equipment.

Site Preparation

- Contouring, decompacting and other activities involving equipment operation on these sites may be counter-productive because they can increase the level of disturbance and rate of melting. Standing water and saturated ground will compound the problem.
- An exception would be if equipment has been recently operated on the site to the point of severely compacting the surface. Then, shallow harrowing will be beneficial for water drainage and seed germination.
- If standing water is beginning to accumulate from melted ice, consider creating drainage structures to help divert the water and dry out the site.
- The main preparation activity on disturbed permafrost sites will be to apply large amounts of soil and organic material to re-establish an insulative covering.

Fertilizer and Organics

- The most important action to take on these sites will be to spread as much soil and organic material as possible on the surface. This will act as insulation to help stop further melting. No amount will be too much, but it should be at least 20 cm thick. Timing is critical, so use one the following two approaches:
  - a) If the disturbance occurred early in the summer, then begin remediation and spread organic material immediately. This will help prevent further thawing in the warm season.
  - b) If the disturbance occurred late in the summer or fall, then do nothing until the following spring. This way, frost will penetrate deep into the ground over the course of the winter and help to reverse the thawing process (organic material insulates against winter cooling as well as summer warming). Spread soil and organic materials as thick as possible early in the following spring to retain the frost (before the ground thaws).
- Since organic material is applied principally to provide insulation, not tilth or fertility, any material will suffice: stumps, slash, rotting logs. Do not till the organic material into the soil, as this may actually reduce its insulation value.
- Fertilizer (especially nitrogen) can be used sparingly, and often omitted. It can be applied at the normal rate (calculated using guidelines in Chapter 3) on sites that are nutrient-deficient and fairly dry. On cold, saturated sites, apply fertilizer at half the calculated rate, since plants will grow slowly on cold, saturated ground. Do not apply fertilizer if there is significant standing water present for extended periods. When it is possible to apply thick layers of organic material for insulation, then it is usually unnecessary to fertilize.

Planting and Seed Mixes

- Thick stands of new vegetation will help insulate the ground and prevent further thawing. Consequently, seeding rates should be at least 1,500 seeds/m^2 (doubling the rate is not unreasonable) and it is important to ensure even coverage, with no bare patches.
- For the same reason, consider adding 10% annual grasses to the seed mix. It will help establish cover more quickly.
- Significant hand seeding may be required, since it may not be possible to operate equipment on the site. If it is possible to use equipment and a broadcast spreader, take care to spread seed evenly and follow up with hand seeding in areas that were missed (*e.g.*, where equipment was driven around obstacles like stumps).
- Consider spreading seed in fall just as the ground is beginning to freeze ("frost or fall seeding" – see Section 4.3.1). Frozen or semi-frozen ground means that equipment can be driven on the site, and the subsequent freeze-thaw cycle in spring will mechanically incorporate seed into the ground.
- If heavy, course organic materials were applied it may not be necessary or practical to harrow the seedbed after broadcasting. However, some action should be taken to increase seed-soil contact, such as rolling with a cultipacker or even driving equipment over the seeded ground.
- Do not spread seeds in areas of standing water. It is unlikely they will germinate.
- As with all sites, locally-collected seeds should be considered for addition to seed mixes whenever possible. However, on permafrost sites, it is critical that thick cover be established quickly, and it may not be practical to collect enough seeds to achieve that goal.
- Staking of woody species is not recommended as a primary tool for stabilizing disturbed permafrost sites. If the site will remain moist, then willow stakes as well as shrub birch or alder seedlings can be planted intermittently if they help to meet secondary project objectives.

Disturbed Lowland Permafrost Sites — Table 5.15

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF AT LEAST: 1,500 seeds/m^2 on all soils

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Polargrass *Arctagrostis latifolia* (Alyeska or common)	**3,960,000**	Tolerant to low-nutrient, wet, and acidic soil, as well as permafrost. Do not use on alkaline soils. Spreads through rhizomes and often develops late in summer.
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	Tolerant to extremely acidic soils, heavy metals, low nutrients, permafrost, wetness and high elevations. Bunch forming, strong competitive ability and can form extensive cover. Not drought tolerant.
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	Tolerant to dry alkaline soils, low nutrients, permafrost and high elevations. Bunch grass with rapid emergence in early spring. Do not use on wet or acidic sites.
Fowl bluegrass *Poa palustris* (common)	**4,840,000**	Tolerant to acidic soils, low nutrients and wetness. Loosely tufted bunchgrass, rapid emergence, early spring growth, but shallow-rooted, generally short-lived and not aggressive. Not drought tolerant.
Bluejoint reedgrass *Calamagrostis canadensis* (Sourdough or common)	**8,442,438**	Tolerant to slightly acidic soils, low nutrients, permafrost and wetness. Tall bunch grass with aggressive rhizomatous growth and extensive cover production. Early spring and late summer growth. Not drought tolerant.
Ticklegrass Agrostis scabra (common)	**11,000,000**	Tolerant to acidic soils, drought, low nutrients, and permafrost. Short-lived bunchgrass with early emergence. A common pioneering plant on dry flat ground.
American sloughgrass *Beckmannia syzigachne* (Egan or common)	**2,723,600**	Tolerant to a range of pH, low nutrients and wetness. Tall bunchgrass, grows mostly as an annual with high seed production. Commonly used in wetland restoration and will grow in almost any wet soil.

Disturbed Lowland Permafrost Sites

Table 5.16

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF AT LEAST: 1,500 seeds/m^2 on all soils

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	Tolerant to acidic soils, low nutrients, limited drought. Tall sod-forming rhizomatous grass, strongly competitive, forms extensive cover. Despite its name, does not tolerate long periods of inundations.
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	Tolerant to strongly acidic soils, low nutrients, wetness. Tall rhizomatous bunchgrass, strong competitor on moist/wet soils.
Timothy *Phleum pratense* (Climax, Engmo)	**2,559,400**	Tolerant to acidic and alkaline soils. Grows best in cool, moist organic soils. Tall bunchgrass, rapid emergence, yields extensive cover. Wildlife attractant.
Canada bluegrass *Poa compressa* (Reubens, common)	**5,264,204**	Tolerant to alkaline soils, low nutrients, moderate drought. Medium height bunchgrass, rhizomatous, can form extensive cover but is slow growing.
Creeping red fescue *Festuca rubra* (Arctared in northern Yukon) (Boreal in southern Yukon)	**539,407**	Tolerant to wide range of pH, permafrost and high elevations. Short loosely tufted bunchgrass, rapid emergence, aggressive rhizomes, strong competitor, forms extensive cover quickly.
Sheep fescue *Festuca ovina* (common)	**1,100,000**	Tolerant to neutral or slightly acidic soils, drought, low nutrients and high elevations. Needs well-drained granular soil. Forms short bunches, slow growing, aggressive rhizomes.
FAST GROWING ANNUALS FOR RAPID SITE COVER AND NURSE PLANTS (Select one species, but not more than 10% of mix)		
Annual rye *Lolium multiflorum*	**477,400**	Tolerant to a range of pH. Fast growing, extremely competitive. Wildlife attractant. Will not tolerate extreme heat, cold or drought.
Barley *Hordeum vulgare*	**29,920**	Moderately tolerant to alkaline and saline soils, drought. Wildlife attractant. Fast growing, extremely competitive.

Disturbed Lowland Permafrost Sites

Table 5.17

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF AT LEAST: 1,500 seeds/m² on all soils

LOCAL SEED	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
any of the species listed in Table 5.15		
Northern rough fescue *Festuca altaica*	**451,854**	Tolerant to low nutrients, drought, high elevation and permafrost. Medium size bunchgrass with low seed yield, but spreads rhizomatously to form extensive cover as plants mature. Widespread, grows in open woods, alpine grasslands, tundra, at all elevations.
Mountain timothy *Phleum alpinum* (formerly *P. commutatum*)	**—**	Tolerant to wetness, permafrost and high elevations. Medium stature bunchgrass with creeping rhizomes. Grows in moist alpine areas.
Northern bluegrass *Poa alpigena/Poa pratensis*	**3,057,648**	Tolerant to low nutrients and permafrost. Rhizomatous and high root-shoot ratio, strong competitive ability.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2-4 years). Mostly restricted to dry alkaline and saline areas.
Arctic lupine *Lupinus arcticus*	**22,733**	Tolerant to low nutrients, permafrost, limited drought. A low-growing, nitrogen-fixing forb that provides a colourful flowering bloom. Grows mostly on moist soils in disturbed areas ranging from lowland riverbanks to alpine and tundra.
Mountain avens *Dryas* spp.	**—**	Tolerant to alkaline soils, drought, low nutrients. Matt-forming, low stature forb that grows in very poor soils and calciferous disturbed areas at all elevations, including scree slopes and gravel.

Disturbed Lowland Permafrost Sites

Table 5.18

LOCALLY-COLLECTED WOODY SPECIES

SPECIES	REASONS TO USE AND RELEVANT CHARACTERISTICS
Willow *Salix alaxensis*, *S. pulchra*, *S. planifolia*, *S. richardsonii*, *S. hastate*, *S. arbusuloides*, *S. lucida*, *S. pseudomyrsinites* (the two best species are *S. alaxensis* and *S. pulchra*)	Only use in wet locations and only use the species listed. Willow is the main plant used for staking of live/dormant cuttings and for bioengineered structures.
Note: Birch and alder will grow on these sites, but because it takes over 6 months to a year to propagate seedlings it will not be practical to use them to remediate immediate threats of thermokarsting.	

Scenario 7 **Alpine and Subalpine Sites**

Most high elevation sites in Yukon share a suite of characteristics that will affect plant growth and revegetation strategies: 1) very short growing season, 2) dry, well-drained substrates, 3) poorly developed or non-existent organic soils, 4) extreme nitrogen deficiency, and 5) coarse, granular substrates that often are rocky. Except near tree line, the natural vegetation usually is sparse, though plant diversity can be surprisingly high.

Permafrost may be present in any alpine or subalpine site in Yukon, though it seldom presents a problem because large bodies of ground ice generally do not form in coarse, granular (rocky), well-drained sediments (see discussion of permafrost and associated ice structures in Scenario 5). Even though portions of the ground can be perennially frozen and the active layer quite shallow, ice is mostly limited to small ice lenses and interstitial ice. Because ice forms a small percentage of the ground mass, and because the sediments have high competency, thermokarsting is seldom a problem in alpine and subalpine areas, even after a disturbance. Two possible exceptions to be aware of are relictual ice bodies in colluvium at the toe of slopes and mass wasting through solifluction.

Typical alpine/subalpine revegetation sites might include temporary drill pads, backfilled exploration trenches, decommissioned roads and trails, and areas damaged by off-road vehicle traffic. In these cases, runoff and erosion are the main site challenges.

Despite climatic and environmental hurdles, revegetation of alpine/subalpine sites can be quite successful. However, the higher the elevation, the more difficult it will be to establish new growth. The key is to choose the appropriate species for seeding and to apply fertilizer, though in modest amounts. Accordingly, species in the tables below have been selected for their a) ability to germinate in cold soils, b) rapid maturation in a short-growing season, c) tolerance to summer frost, and d) tolerance to nutrient-poor soils. Planners should choose from among species in the tables based mostly on the site's moisture level and pH (many of these sites will be very dry and alkaline, but not all).

Individual plants on alpine/subalpine sites should not be densely crowded because of competition for limited nutrients and water (even though fertilizer is applied as a boost in the first year, nutrients will become limiting in subsequent seasons). Therefore, it is important not to over-seed (maximum of 1,500 seeds/m^2) or over-fertilize alpine/subalpine sites (maximum of 50 kg/ha of N). Likewise, only sow annual grasses (maximum 10% of mix) where there is an erosion problem. Otherwise, they may impede the emergence of perennials.

These sites are prime candidates for collecting and sowing seeds of local forbs to recover the site's natural integrity. This is a realistic goal because the sites usually are small. In addition, local seeds in alpine/subalpine areas can be abundant and easy to collect. The genotypes of local plants also will have the greatest chance of survival, especially at higher elevations. Wetter subalpine sites can respond well to staked or transplanted shrubby species, but this strategy should only be used if the surrounding vegetation is shrubby.

Because of logistic limitations and ground sensitivity, much revegetation work on alpine/subalpine sites may have to be accomplished with hand tools, rather than motorized equipment. On large, road/trail-accessible sites, ATVs with small harrows and broadcast spreaders can be used quite effectively.



P. MATHEUS

FIG 5.11
Many alpine and subalpine sites are naturally dry and sparsely vegetated, though native plant diversity can be high. Tilling and decompacting are counterproductive on these sites because they bring rocks to the surface and dilute the already thin soils. It is important to test pH on alpine/subalpine sites. Many, but not all, will have alkaline soils. Use the descriptions in Chapter 6 to carefully choose species for these sites.

Site Preparation

- Generally, grading and decompacting granular surfaces on alpine/subalpine sites is not recommended. It is often impractical and counterproductive in terms of drainage, erosion and plant growth, because it can cause the thin layer of organics and soil to become buried deeper in the profile and bring rocky material to the surface.
- Access to the site may be limited, so much of the work may need to be done with hand tools rather than motorized equipment.
- If the project involves reclamation of exploration trenches or other diggings, they should be backfilled, either by hand or with available equipment. Likewise, materials in spoil piles should be spread.
- On the rare alpine/subalpine site with fine-textured sediments and road or trail access, mechanized equipment can be used to perform ground work and prepare seed beds.

Fertilizer and Organics

- Many alpine/subalpine sites will have surface coverings of coarse granular material, or even rock rubble. Seeds will have very low germination rates on course rock surfaces, so it is important to ensure that some fine materials, preferably high in organic content, are present on the surface, even if it is just a thin layer. If fine sediments and organics are absent, consider transporting them to the site.
- Backfill trenches and other diggings with the coarsest spoil materials first. Save fine sediments and organics for the surface of the backfill — they likely will be in short supply on the site and should not be buried in trenches.
- Fertilizer should be spread at a modest rate on alpine/subalpine sites. Aim for 50% of the calculated rates in Chapter 3. The reason for this is that plant growth in alpine/subalpine areas is often limited by cold soils, a short growing season, and low moisture just as much as by nutrient deficiencies. Plants limited by these other environmental factors may not be able to utilize higher amounts of fertilizer. In other cases, the boost of fertilizer may lead to a stand density that is not sustainable by the site once the fertilizer is exhausted.
- Work the fertilizer lightly into the ground with rakes (small sites) or with a tine/chain harrow pulled by an ATV where practical. Unlike lowland sites, it is usually better to work the ground as little as possible on alpine/subalpine sites.

Planting and Seed Mixes

- Do not attempt to sow seeds on sites covered only with coarse rock and no fine sediments. They will not germinate.
- Achieving good seed to soil contact and seed burial can be a challenge on these sites. After spreading seed, rake the site either by hand or, if practical, with a harrow pulled by an ATV. Even just driving over the seeds will help.
- Gauging the proper target density of seeds to sow will require careful judgement because germination and survival rates can be quite variable on alpine/subalpine sites. Germination and survival rates in general are low on cold, dry sites. Germination rates will be lowest on sites without good seed-to-soil contact. There may also be significant seed loss due to high winds or runoff. When conditions are optimal, seed at a rate of only 1,000 seeds/m^2 so growing plants are not crowded. If significant seed loss and mortality are likely, then seed at a rate of 1,500 seeds/m^2.
- Include 10% annual seeds in the mix only on sites that are prone to erosion. Otherwise, they will have a negative effect by competing with emerging perennials and native colonizers.
- It is critical to select species that are adapted to alpine/subalpine conditions, including the ability to germinate and mature in cold, nutrient-poor soils, and tolerate summer frosts and a short growing season. Drought-tolerance will be important on some sites, but not others. It is very important to test for pH and choose species accordingly.
- Collect and sow as many local seeds as possible because the genotypes growing near the site will have the highest chance of success, especially at higher elevations and in extreme environments. Consider also that forbs are as important as grasses in alpine communities, and the only way to sow seeds of forbs is to collect them locally.
- Shrubs will dominate the natural vegetation in some subalpine zones. Consider staking cuttings of locally-collected willow or seedlings of locally-collected shrub birch or alder, but only on subalpine sites that are very moist and have soils with at least 20% fine fractions.

Alpine and Subalpine Sites — Table 5.23

NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 750 - 1,500 seeds/m^2 (see text)

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	Tolerant to dry alkaline soils, low nutrients, permafrost and high elevations. Bunch grass with rapid emergence in early spring. Do not use on wet or acidic sites.
Violet wheatgrass *Elymus alaskanus* (common)	**330,000**	Tolerant to alkaline soils, drought and low nutrients; also has considerable tolerance to permafrost and moderate tolerance to saline soils and high elevations. Bunch forming with strong competitive ability.
Glaucous bluegrass *Poa glauca* (Tundra or common)	**2,904,000**	Tolerant to broad range of pH, drought, low nutrients, permafrost and high elevations. Forms low growing bunches with a high root-shoot ratio, spreads aggressively through rhizomes, rapid emergence in early spring.
Ticklegrass *Agrostis scabra* (common)	**11,000,000**	Tolerant to acidic soils, drought, low nutrients, and permafrost. Short-lived bunchgrass with early emergence. A common pioneering plant on dry flat ground.
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	Tolerant to extremely acidic soils, heavy metals, low nutrients, permafrost, wetness and high elevations. Bunch forming, strong competitive ability and can form extensive cover. Not drought tolerant.
Alpine bluegrass *Poa alpina* (Gruening or common)	**2,353,826**	Tolerant to mildly acidic conditions, low nutrients, permafrost and high elevations. Bunch forming, germinates quickly but not a strong competitor. Does not perform well when planted with annual ryegrass.
Spike trisetum *Trisetum spicatum* (common)	**5,500,000**	Tolerant to mildly acidic to mildly alkaline soils, drought, low nutrients, permafrost and high elevations. Short bunchgrass, good colonizer with vigorous seedlings that provide good initial cover.

Alpine and Subalpine Sites — Table 5.24

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS)

SEED AT A COMBINED RATE OF: 750 - 1,500 seeds/m^2 (see text)

SPECIES (cultivar)	**# OF SEEDS/KG**	**REASONS TO USE AND RELEVANT CHARACTERISTICS**
Creeping red fescue *Festuca rubra* (Arctared in northern Yukon) (Boreal in southern Yukon)	**539,407**	Tolerant to wide range of pH, permafrost and high elevations. Short loosely tufted bunchgrass, rapid emergence, aggressive rhizomes, strong competitor, forms extensive cover quickly.
Sheep fescue *Festuca ovina* (common)	**1,100,000**	Tolerant to neutral or slightly acidic soils, drought, low nutrients and high elevations. Needs well-drained granular soil. Forms short bunches, slow growing, aggressive rhizomes.
FAST GROWING ANNUAL FOR RAPID SITE COVER AND NURSE PLANTS (not more than 10% of mix; only use if erosion is a threat)		
Barley *Hordeum vulgare*	**29,920**	Moderately tolerant to alkaline and saline soils, drought. Wildlife attractant. Fast growing, extremely competitive.

Alpine and Subalpine Sites — Table 5.25

LOCALLY-COLLECTED, NATIVE HERBACEOUS SPECIES (SEEDS)

SEED AT A COMBINED RATE OF: 750 - 1,500 seeds/m^2 (see text)

SPECIES	# OF SEEDS/KG	REASONS TO USE AND RELEVANT CHARACTERISTICS
any of the species listed in Table 5.23		
Alpine sweetgrass *Hierochloë alpina*	—	Tolerant to low nutrients, permafrost, wet soil and high elevations. Bunch forming, low growing.
Mountain timothy *Phleum alpinum* (formerly *P. commutatum*)	—	Tolerant to wetness, permafrost and high elevations. Medium stature bunchgrass with creeping rhizomes. Grows in moist alpine areas.
Northern bluegrass *Poa alpigena/Poa pratensis*	**3,057,648**	Tolerant to low nutrients and permafrost. Rhizomatous and high root-shoot ratio, strong competitive ability.
Nuttall's alkaligrass *Puccinellia nuttalliana*	**4,648,140**	Tolerant to alkalinity up to pH 8.5, high salinity, drought, low nutrients. Short to medium height bunchgrass with rapid emergence, but is relatively short-lived (2-4 years). Mostly restricted to dry alkaline and saline areas.
Wormwood/sage *Artemisia* spp.	—	Tolerant to drought, low nutrients. Medium stature forb or short shrub. Wormwood species grow in a diversity of open/disturbed areas from riverbanks and grasslands to steep slopes and alpine/Arctic tundra. Mostly adapted to dry soils.
Arctic lupine *Lupinus arcticus*	**22,733**	Tolerant to low nutrients, permafrost, limited drought. A low-growing, nitrogen-fixing forb that provides a colourful flowering bloom. Grows mostly on moist soils in disturbed areas ranging from lowland riverbanks to alpine and tundra.
Mountain avens *Dryas* spp.	—	Tolerant to alkaline soils, drought, low nutrients. Matt-forming, low stature forb that grows in very poor soils and calciferous disturbed areas at all elevations, including scree slopes and gravel.

Alpine and Subalpine Sites — Table 5.26

LOCALLY-COLLECTED WOODY SPECIES

SPECIES	REASONS TO USE AND RELEVANT CHARACTERISTICS
Willow *Salix alaxensis*, *S. pulchra*, *S. planifolia*, *S. richardsonii*, *S. hastate*, *S. arbusuloides*, *S. lucida*, *S. pseudomyrsinites* (the two best species are *S. alaxensis* and *S. pulchra*)	Only use in wet locations and only use the species listed. Willow is the main plant used for staking of live/dormant cuttings and for bioengineered structures.
Shrub birch *Betula glandulosa*	Only plant seedlings grown in a nursery from locally-collected seed. Tolerant to acid soils. Use on moist sites with good organic content.
Alder *Alnus crispa*	Only plant seedlings grown in a nursery from locally-collected seed. Tolerant to slightly acidic soils and low nutrients. Use on moist/wet sites that are not alkaline.

Summary of Recommended Species

Table 5.27

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS) AND APPLICABLE SCENARIOS

SCENARIO		1	2	3	4	5	6	7
SPECIES (cultivar)	**# OF SEEDS/KG**	LOW SLOPE, LOW-MID ELEVATION SITES	STEEP SLOPES	WET SITES	HIGHWAY RIGHT-OF-WAYS	DISTURBED PERMAFROST SITES	ARCTIC TUNDRA AND STABLE PERMAFROST SITES	ALPINE AND SUBALPINE SITES
Rocky Mountain fescue *Festuca saximontana* (common)	**1,430,000**	x	x		x	x		x
Violet wheatgrass *Elymus alaskanus* (common)	**330,000**	x	x		x		x	x
Glaucous bluegrass *Poa glauca* (Tundra or common)	**2,904,000**	x	x		x		x	x
Slender wheatgrass *Elymus trachycaulus* (Revenue, Adanac, Highlander or common)	**349,800**	x	x		x			
Ticklegrass *Agrostis scabra* (common)	**11,000,000**	x				x		x
Tufted hairgrass *Deschampsia caespitosa* (Nortran or common)	**3,300,000**	x		x	x	x	x	x
Fowl bluegrass *Poa palustris* (common)	**4,840,000**	x		x	x	x		
Spike trisetum *Trisetum spicatum* (common)	**5,500,000**						x	x
Bluejoint reedgrass *Calamagrostis Canadensis* (Sourdough or common)	**8,442,438**	x		x		x		
Polargrass *Arctagrostis latifolia* (Alyeska or common)	**3,960,000**			x		x	x	
American sloughgrass *Beckmannia syzigachne* (Egan or common)	**2,723,600**			x		x		
Alpine bluegrass *Poa alpina* (Gruening or common)	**2,353,826**						x	x

Summary of Recommended Species

Table 5.28

NON-NATIVE HERBACEOUS SPECIES (COMMERCIAL SEEDS) AND APPLICABLE SCENARIOS

SCENARIO		1	2	3	4	5	6	7
SPECIES (cultivar)	**# OF SEEDS/KG**	LOW SLOPE, LOW-MID ELEVATION SITES	STEEP SLOPES	WET SITES	HIGHWAY RIGHT-OF-WAYS	DISTURBED LOWLAND PERMAFROST SITES	ARCTIC TUNDRA AND STABLE PERMAFROST SITES	ALPINE AND SUBALPINE SITES
Kentucky bluegrass *Poa pratensis* (Nugget)	**3,057,648**			x			x	
Creeping red fescue *Festuca rubra* (Arctared for northern Yukon, Boreal for southern Yukon)	**539,407**	x	x		x	x	x	x
Canada bluegrass *Poa compressa* (Reubens or common)	**5,264,204**	x	x	x	x	x		
Streambank wheatgrass *Elymus lanceolatus* (Sodar)	**336,600**	x	x	x	x	x	x	
Meadow foxtail *Alopecurus pratensis* (common)	**895,136**	x	x	x	x	x	x	
Red top *Agrostis gigantea* (common)	**10,672,640**	x		x				
Timothy *Phleum pratense* (Climax, Engmo)	**2,559,400**			x		x	x	
Alfalfa *Medicago sativa* (Rangelander, Rambler or Peace)	**498,960**		x					
Sheep fescue *Festuca ovina* (common)	**1,100,000**	x			x	x	x	x
Annual rye *Lolium multiflorum*	**477,400**		x			x		
Barley *Hordeum vulgare*	**29,920**		x			x	x	x

Summary of Recommended Species

Table 5.29

LOCALLY-COLLECTED NATIVE HERBACEOUS SPECIES (SEEDS) AND APPLICABLE SCENARIO

SCENARIO		1	2	3	4	5	6	7
SPECIES	# OF SEEDS/KG	LOW SLOPE, LOW-MID ELEVATION SITES	STEEP SLOPES	WET SITES	HIGHWAY RIGHT-OF-WAYS	DISTURBED LOWLAND PERMAFROST SITES	ARCTIC TUNDRA AND STABLE PERMAFROST SITES	ALPINE AND SUBALPINE SITES
Northern rough fescue *Festuca altaica*	451,854	x	x	x	x	x	x	
Yukon wheatgrass *Elymus calderi*	—	x						
Macrourum's wheatgrass *Elymus macrourus*	374,782	x	x					
Northern brome *Bromus pumpellianus*	202,400	x	x		x			
Sweetgrass *Hierochloë hirta* (formerly *H. odorata*)	242,000	x	x		x			
Alpine sweetgrass *Hierochloë alpina*	—						x	x
Mountain timothy *Phleum alpinum* (formerly *P. commutatum*)	—					x		x
Northern bluegrass *Poa alpigena/Poa pratensis*	3,057,648			x		x	x	x
Arctic bluegrass *Poa arctica*	3,250,553						x	
Nuttall's alkaligrass *Puccinellia nuttalliana*	4,648,140	x	x	x	x	x	x	x
Yellow locoweed *Oxytropis campestris*	521,400	x			x			
Showy locoweed *Oxytropis splendens*	1,548,800	x			x			
Bear root *Hedysarum alpinum*	154,000	x						
Mackenzie's hedysarum *Hedysarum Mackenzii*	101,889	x						
Yarrow *Achillea millefolium* and *Achillea sibirica*	6,274,426	x			x			
Mountain avens *Dryas* spp.	—	x			x	x	x	x
Arctic lupine *Lupinus arcticus*	22,733	x		x	x	x	x	x
Wormwood/sage *Artemesia* spp.	—	x	x		x		x	x

APPENDIX 31-A-XIII

Standard Operating Procedure
Confirmatory ML/ARD Sampling
for Coffee Creek

APPENDIX XIII – STANDARD OPERATING PROCEDURE CONFIRMATORY METAL LEACHING / ACID ROCK DRAINAGE SAMPLING FOR COFFEE CREEK ACCESS ROAD DEVELOPMENT

1. INTRODUCTION

The sampling protocols provided herein are for confirmatory surface sample collection of geologic material associated with the development of the NAR. The sampling protocols described in this standard operating procedure (SOP) are intended to ensure that sampling of major disturbances follows general requirements for confirmatory sampling as outlined in **Appendix 31-M Metal Leaching / Acid Rock Drainage Management Plan**.

2. SAMPLE TYPE, FREQUENCY AND SITES

One composite sample comprising 2 kg to 3 kg of rock or 4 kg to 6 kg of surficial material (alluvium / colluvium and placer tailings) will be obtained from each large cut amounting to greater than 4,000 m^3 and subgrade borrow site along the proposed NAR alignment. The composite sample is to be collected from the primary material identified by Onsite Engineering Ltd. in Table 1, as well as from any additional major disturbances amounting to >4,000 m^3 not identified in Table 1.

Table 1 Summary of Large Cuts and Subgrade Borrow Sites

Station	Type	Volume (m^3)	Primary Material	Secondary Material
30+800	Large Cut	13,000	Bedrock	Colluvium
34+800	Large Cut	4,000	Bedrock	Colluvium
37+900	Large Cut	4,500	Bedrock	Colluvium
38+600	Large Cut	8,500	Colluvium	Bedrock
42+035	Large Cut	4,000	Bedrock	Colluvium
48+000	Subgrade Borrow Site	5,000	Bedrock	Colluvium
57+200	Large Cut	10,000	Bedrock	Colluvium
60+300	Large Cut	8,500	Bedrock	Colluvium
60+500	Subgrade Borrow Site	12,000	Tailings	
65+525	Large Cut	7,000	Bedrock	Colluvium
68+185	Large Cut	6,000	Colluvium	Bedrock
69+551	Large Cut	5,000	Bedrock	Colluvium
73+500	Large Cut	4,000	Bedrock	Colluvium
75+200	Large Cut	6,000	Bedrock	Colluvium
75+900	Subgrade Borrow Site	9,000	Bedrock	Colluvium
77+900	Large Cut	15,000	Bedrock	Colluvium
86+100	Subgrade Borrow Site	4,000	Tailings	
87+300	Subgrade Borrow Site	4,000	Tailings	
87+600	Subgrade Borrow Site	3,500	Tailings	

Station	Type	Volume (m^3)	Primary Material	Secondary Material
87+900	Subgrade Borrow Site	3,500	Tailings	
93+595	Large Cut	4,000	Colluvium	Bedrock
94+650	Large Cut	4,000	Colluvium	Bedrock
99+400	Large Cut	4,000	Sand and Gravel	Bedrock
99+400	Subgrade Borrow Site	7,000	Sand and Gravel	Bedrock
101+275	Subgrade Borrow Site	2,000	Tailings	
102+500	Subgrade Borrow Site	4,000	Sand and Gravel	Bedrock
103+900	Large Cut	7,000	Colluvium	Bedrock
105+000	Large Cut	4,000	Colluvium	Bedrock
105+400	Large Cut	4,000	Bedrock	Colluvium
106+500	Subgrade Borrow Site	4,000	Bedrock	Colluvium
108+000	Subgrade Borrow Site	6,500	Bedrock	Colluvium
108+900	Subgrade Borrow Site	1,500	Bedrock	Colluvium
110+500	Large Cut	5,500	Bedrock	Colluvium
111+100	Large Cut	5,500	Bedrock	Colluvium
111+300	Subgrade Borrow Site	7,000	Colluvium	Bedrock
113+400	Large Cut	4,000	Colluvium	Bedrock
116+200	Subgrade Borrow Site	3,000	Bedrock	Colluvium
116+600	Large Cut	7,750	Bedrock	Colluvium
118+200	Subgrade Borrow Site	3,500	Colluvium	Bedrock
118+900	Subgrade Borrow Site	TBD	Colluvium	Bedrock
122+000	Large Cut	16,500	Bedrock	Colluvium
123+300	Large Cut	4,000	Colluvium	Bedrock
124+100	Subgrade Borrow Site	1,500	Colluvium	
125+600	Large Cut	7,000	Colluvium	Bedrock
126+100	Large Cut	4,500	Colluvium	Bedrock

3. FIELD PREPARATION

This program was developed for a trained and qualified technician with the capacity to identify lithological units.

Recommended field equipment for confirmatory sampling include:

- Personal Protective Equipment
- Rock hammer and hand shovel
- Field notebook, pen and markers
- Sample bags and sample ID tags
- Hand lens for mineral identification
- GPS and camera.

4. SAMPLING OF BEDROCK

Rock samples will be collected directly from the outcrop using a rock hammer. Fresh surfaces will be targeted during sampling to avoid underestimating the potentially acid generating (PAG) and metal leaching potential that can result from analyzing samples with deeply weathered surfaces. Composite samples amounting to a minimum of 2 kg will be collected over a 1-m area within one lithology to ensure a representative sample. If more than one lithology is present, then a separate sample will be collected from each lithology, and a detailed description of the geology provided (lithologies and structure), at the specific location. If a lithology is present but cannot be isolated for collection (e.g., thin bed of mudstone or siltstone), then a mixed lithology sample can be collected and described in detail in the notes.

A sample ID tag will be placed in each sample bag with the rock sample and the sample ID tag number (e.g., KAM####) noted in the field book.

5. SAMPLING OF SURFICIAL MATERIAL

To maintain consistency with the previous sampling program, all surficial materials samples will be collected with a shovel from below the exposed surface (~20 cm depth) from trenches measuring 1 m in length by 30 cm in depth. Where there are existing pits, samples can be collected from within the pit if accessible. A similar approach will be used when sampling alluvial gravel piles, with samples collected from below the exposed surface. A 4-6 kg sample will be collected to ensure a representative sample. Larger rocks that are intentionally avoided or removed from the sample will be noted (number, size, roundness, lithology if possible).

A sample ID tag will be placed in each sample bag with the sample and the sample ID tag number (e.g., KAM####) noted in the field book.

6. QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

A laboratory duplicate sample should be analyzed for every 10 samples for quality assurance and quality control (QA/QC) purposes. A laboratory duplicate is obtained by the laboratory technician after the sample has been pulverized. The duplicate will be submitted for confirmatory static test work, including the full suite of acid-base-accounting (ABA) tests, solid phase element determination by aqua regia digestion, and shake flask extraction (SFE), and used to ascertain the method precision.

7. SAMPLE DOCUMENTATION

The coordinates, elevation and lithology of each sample will be recorded, along with a description of the sample and the local geology.

The description of a rock sample will include the lithology, grain size, structures, presence of oxidation, discolouration, and any other observable features. Specific lithological boundaries will be marked with a

global positioning system (GPS) location in the notes, along with a detailed description. This information will help guide follow-up surface sampling if required or for future excavation.

Prior to collection of surficial material samples, the profile in the pit or trench will be documented with photographs (with scale) and a detailed description. All changes in colour, texture, grain size, organic debris and other observations including the depth of the change/observation will be noted, along with the depth from which the sample is collected.

8. SHIPPING AND ANALYSES

All samples will be delivered to an external analytical laboratory, for total sulphur, sobek NP, and solid-phase element determination by aqua regia digestion. The recommended analytical parameters are outlined on the sample submittal form at the end of this standard operating procedure (SOP).

Laboratory duplicate QA/QC samples (collected for every 10 samples) will be submitted for the full suite of ABA analyses, solid-phase element determination by aqua regia digestion, and SFE. The full list of parameters to be measured for the laboratory duplicates are listed below and will be indicated on the sample submittal form.

ABA Analyses	Metals by Aqua Regia					SFE			
paste pH	Ag	Ce	In	P	Te	T-Alkalinity	Cd	Hg	Tl
S(T)	Al	Co	K	Pb	Th	pH	Ca	Mo	Sn
S(S-2)	As	Cr	La	Rb	Ti	Sulfate	Cr	Ni	Ti
S(SO4)	Au	Cs	Li	Re	Tl	Al	Co	P	U
Insoluble-S	B	Cu	Mg	Sb	U	Sb	Cu	K	V
C(T)	Ba	Fe	Mn	Sc	V	As	Fe	Se	Zn
TIC	Be	Ga	Mo	Se	W	Ba	Pb	Si	
NNP	Bi	Ge	Na	Sn	Y	Be	Li	Ag	
MPA	Ca	Hf	Nb	Sr	Zn	Bi	Mg	Na	
Fizz Rating	Cd	Hg	Ni	Ta	Zr	B	Mn	Sr	

A completed sample submittal form (provided by analytical lab) will be filled out and delivered with the samples, and an electronic version will be sent via e-mail to the laboratories account manager. An example sample submittal form is provided.

APPENDIX 31-A-XIV

Geotechnical Assessment

Onsite
Engineering Ltd.

Geotechnical Assessment

Proposed Northern Access Route
Coffee Gold Mine Project

Prepared for:

Goldcorp Inc.
Suite 3400-666 Burrard Street
Vancouver, BC
V6C 2X8

March 29, 2017

Issued for Permit Approval

Salmon Arm Office

#330 42nd Street SW
PO Box 2012
Salmon Arm BC V1E 4R1
Tel: 250-832-3366
Fax: 1-888-273-0209

Table of Contents

1.0 Introduction 4

1.1 Objectives and Scope of Assessment 4
1.2 Partial Risk Assessment Limitations and Methodology 5
1.3 Conventions Followed 5

2.0 Office and Field Review 6

3.0 General Information 6

3.1 Physiographic Description 6
3.2 Climate 7
3.3 Road Alignments 7

4.0 Geotechnical Site Assessment / Site Specific Observations 8

4.1 Access Road Section 1 9
4.2 Access Road Section 2 10
4.3 Access Road Section 3 11
4.4 Access Road Section 4 12

5.0 Construction and Drainage Recommendations 12

5.1 General New Road Construction Requirements 13
5.2 Overland Construction in Shallow Ice-Rich Permafrost 15
5.3 Upgrade of Existing Road 16
5.4 Aggregate Sourcing 16

6.0 Summary of Existing Conditions, Partial Risk Assessment and Construction Recommendations 16

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations 18
Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations 36
Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations 68
Table 6.4: Coffee Gold Mine Northern Access Route Section 4 (Winter Access Road) – Summary of Observations, Risk Analysis, and Construction Recommendations 114
Table 6.5: Coffee Gold Mine Northern Access Route Section 5 (South Yukon Barge Road) – Summary of Observations, Risk Analysis, and Construction Recommendations 117

7.0 Closure 118

List of Appendices

Appendix 1 …….Partial Risk Assessment Methodology

Appendix 2 ……..Typical Cross Sections

Appendix 3 …… Tetra Tech EBA Memo re. Road Construction through Permafrost Terrain

Appendix 4 ……... Table of Aggregate Borrow Sources

1.0 Introduction

Onsite Engineering Ltd. (OEL) was retained by Kaminak Gold Corporation (Kaminak) to carry out a Geotechnical Assessment for the proposed Northern Access Route to the Coffee Gold Mine Project (the proposed access road). Kaminak was purchased by Goldcorp Inc. (Goldcorp) in May 2016 and as a result all further work was completed for Goldcorp. The geotechnical assessment was completed in conjunction with the road survey and design component of the project and the stream crossing and barge landing survey and design work also being completed by OEL.

The Coffee Gold Mine is intended as a 12 year lifespan open pit cyanide heap leach project. Major facilities constructed at the mine site will consist of a camp, plant site, tailings pond, and water collection pond. The proposed access road is intended to be used by supply vehicles during the initial construction and operation of the mine. The proposed access road is approximately 128km in length with an additional 3km length of Winter Access Road.

The proposed access road is to be constructed as a one-lane, two-way all-weather road capable of allowing safe passenger and haulage vehicle access to the Coffee Gold Mine.

1.1 Objectives and Scope of Assessment

This report provides descriptions of the topographical character of the road alignment, including slopes, landforms and inferred geological history, and local soil and groundwater conditions present at the time of the fieldwork. The report is based principally on direct field observations and supported by reviewed background materials and knowledge of local and regional geology derived from the Terrain Stability and Hazard Mapping for the Coffee Gold Project (PECG 2016)[1] and other sources.

This report is intended to be complimentary to the previously completed Terrain Stability and Hazard Mapping for the Coffee Gold Project (PECG 2016). The objectives of that report and associated maps were to: 1) delineate and characterize distinct terrain units and geomorphological processes within the study area; 2) identify potential hazards posed by the environment on the project, and by the project on the environment; and 3) provide a basis for project engineers to evaluate and mitigate risks to project infrastructure.

The mapping and report prepared by PECG provided overview level terrain stability and permafrost related hazard identification for the route corridor. Our assessment focused primarily on the road alignment as well as immediate upslope and downslope areas where geohazards may impact or be impacted by the proposed access road. Foot traverses, supported by helicopter overview flights and vehicle traverses on built roads were completed along the majority of the alignment to accomplish this.

This report provides recommendations to reduce or mitigate the hazards posed by the environment to the road and by the road to the environment and identified in the PECG report and through the course of this assessment. A partial risk assessment was completed for the identified geohazards and elements at risk. The methodology of the partial risk assessment is described in the following section.

In addition to the geohazard component of this assessment the objectives of the geotechnical assessment component are to identify geotechnical conditions along the proposed road alignment with respect to the construction and maintenance of a stable road prism and drainage structures, and to provide recommendations for road and drainage structure construction considering the local materials.

[1] Palmer Environmental Consulting Group Inc. (2016). “Terrain Stability and hazard Mapping for the Coffee Gold Project”.

1.2 Partial Risk Assessment Limitations and Methodology

The geohazard assessment has been prepared in accordance with generally accepted geotechnical practises in the resource industry. General observations are made on the existing slope gradients, shape, morphology and the general stability. Information on the subsurface soil, groundwater and bedrock conditions were gathered from hand-dug test holes, bedrock outcrops, root balls of fallen trees and the cutslopes on the existing roads in the surrounding area. A comparative-observational approach has been used to provide rationale for conclusions and recommendations. This approach relies on the field review of past road construction practices in the project area, examination of air photographs, review of background information and previous assessments and mapping and professional judgement and experience to assess the likely response of the terrain to the proposed development, based on past response of similar terrain to previous development.

This report does not imply that a particular geohazard will not occur following the proposed development. An estimate on the likelihood (or probability) of occurrence of a specific hazardous event (*i.e.* the P(H)[2]) is given in relation to the proposed development. The partial risk (*i.e.* the P(HA)) to the adjacent resources from the specific geohazard has been assessed using methods described in the document "Landslide Hazard and Risk Case Studies in the Forest Sector" [3]. Partial risk is the product of the probability of occurrence of a specific hazardous event (*i.e.* the P(H)) and the probability of that event reaching or otherwise affecting the site occupied by a specific element (*i.e.* the P(S:H[4])). Further explanation of the partial risk assessment, a matrix and a sample partial risk calculation are included in Appendix 1.

Elements included in the partial risk analysis are those indicated on the mapping and materials provided by the client for the proposed development and are listed in Section 6. Additional elements may exist. It is the responsibility of the client to review our assessment of geohazard likelihood, extent and magnitude and determine if any additional elements may be impacted. Where recommendations are given to reduce the likelihood of geohazard occurrence and/or mitigate the risk, the residual rating (where given) applies only if the recommendations contained in this report are followed.

1.3 Conventions Followed

Soil classifications and landform descriptions use terminology defined in the Unified Soil Classification System (USCS) and the Terrain Classification System for British Columbia, B.C. Ministry of Environment 1997. Slope gradient classification also follows the convention defined in the publication Terrain Classification System for British Columbia B.C. Ministry of Environment 1997. Slope gradient descriptors are as follows:

Gentle:	<27%
Moderate:	28-49%
Moderately Steep:	50-70%
Steep:	>70%

[2] Probability of occurrence of a specific hazardous landslide or other geohazard event.

[3] Province of British Columbia, Ministry of Forests, 2004.

[4] Spatial probability relates to the potential of a landslide or other geohazard event to reach or otherwise affect the site occupied by an element.

2.0 Office and Field Review

Prior to and following the field assessment the following materials were reviewed:

- Black and white stereo pair aerial photographs for the entire alignment. The date of the majority of the photos was 1961 with a portion of the area covered by 1995 flight lines. The scale of the air photos is approximately 1:30 000.
- LiDAR terrain model of the alignment provided by McElhanney Consulting Services Ltd.
- Colour high resolution Orthoimagery of the alignment provided by McElhanney Consulting Services Ltd.
- Terrain stability and hazard mapping for the Coffee Gold Project prepared by Palmer Environmental Consulting Group Inc. (PECG 2016).
- Bedrock geology for the proposed road corridor retrieved from http://www.geology.gov.yk.ca/update_yukon_bedrock_geology_map.html.
- Map of permafrost distribution along the Proposed Kaminak Road Alignment prepared by TetraTech EBA 2016.
- Coffee Gold Mine Northern Access Route Geometric Road Design prepared by OEL and dated January 2017.
- Technical Memo titled “Access Road Embankment Thickness in Permafrost Terrain” prepared by TetraTech EBA and dated July 13, 2016.

Field reviews concerning the geotechnical aspects of the proposed access road and the Winter Access Road were completed by Rod Williams, P.Geo, .Jeremy Araki, P.Eng., Ryan Williams, GIT, and Chris Wickman, all of OEL. The initial field review occurred from May 19th to May 26th, 2015 and consisted primarily of an overview of the proposed alignment options and detailed observations of key areas of concern. Detailed assessment of the entire alignment occurred from August 25th to September 2nd, 2015 and from September 9th to September 14th, 2015. Fieldwork consisted dominantly of walking and driving traverses of the proposed alignment along with intermittent helicopter overview flights. Field conditions in May were sunny and warm while conditions in August and September were variable with instances of light snow.

3.0 General Information

3.1 Physiographic Description

The study area is located in the Klondike Plateau physiographic region, an area characterised by moderate relief with rolling hills dissected by numerous small tributary streams and several large river systems. The Klondike Plateau has been heavily eroded in the Tertiary period which has resulted in the plateau being dissected by a number of incised valley features.

The Yukon and Stewart Rivers are the main drainage features in the study area. The Stewart River flows northwest through the study area to the confluence with the Yukon River. The proposed road alignment crosses over the Stewart River at 83km and the Yukon River at 126.5km. Both of these rivers have carved deep, broad valleys through the Klondike Plateau.

Due to the length of the proposed road alignment a number of different bedrock lithologies are crossed. The majority of the alignment is underlain by Devonian to Mississippian quartz-micaschist rock although several small pockets of Late Devonian to Mississippian orthogneiss are present. These materials are intruded by isolated sections of Upper Cretaceous andesite to dacite volcanic rocks. The quartz-micaschist lithology was found to be heavily fractured, weathered, and relatively weak. The volcanic and orthogneiss lithologies were much stronger. Very strong quartzite was also identified in isolated locations in the quartz-micaschist rock group.

The area remained unglaciated during the last glacial maximum and as a result till deposits are not prevalent in the study area. The majority of the study area is underlain by silty sand with some

gravel colluvium to rubble colluvium material in a silty sand matrix. These materials are interpreted as weathering insitu out of local bedrock. Valley bottoms are dominated by fluvial deposits although many of these areas have been targeted by placer mining operations leading to significant disturbance to native surficial materials. The valley bottoms and north facing slopes are typically heavily affected by permafrost processes. Capping loess deposits are also found in many locations and generally constitute a thin layer of silt to fine sand material overlying local colluvium deposits. These loess deposits tend to be deepest in areas of shallow permafrost and can contain a significant organic component. Further details on the surficial materials encountered along the alignment can be found in PECG 2016.

The study area falls within a portion of the Yukon Territory which is mapped as containing widespread discontinuous permafrost[5]. Observations made in the field confirmed this mapping with extensive areas of shallow, ice rich permafrost found in valley bottoms and on north aspect slopes. The presence of elevated soil moisture appeared to be a significant control on the formation of ice rich permafrost in the area. Poorly drained and low lying sites typically showing signs of shallow ice-rich permafrost. Better drained areas in the study area are also classified as hosting permafrost but are typically ice-poor and do not generally contain visible ice masses segregated in the soil profile. The reader is referred to the reports formulated by PECG and Tetra Tech EBA[6] for further detail concerning permafrost conditions along the proposed road corridor.

3.2 Climate

The closest climate station to the study area is located at Dawson, YT approximately 58km northwest of the start of the road and 132km north of the end of the road. The climate station records an average annual precipitation of 324mm with 201mm falling as rain. The months with highest precipitation are from June to August when intense convective storms can deliver high precipitation amounts over short time periods. The historical maximum daily precipitation occurred in August 1980 when 28.8mm of precipitation fell in one day. The average annual daily temperature is recorded as -4°C with a historical extreme high of 35°C recorded in May 1983 and extreme low of -56°C recorded in February 1979.

3.3 Road Alignments

The proposed Northern Access Route generally extends south from the point of commencement (POC) at the junction with the Sulphur-Dominion Loop Road through the base of the Indian River valley. Beyond 13km the road crosses into the Eureka Creek valley and through an area of active placer mining and then climbs up to follow rolling ridge top terrain to approximately 53km. Beyond 53km the proposed road descends into the Maisy May Creek valley. Near the mouth of the Maisy May Creek valley the proposed road swings to the southwest and parallels the Stewart River to a crossing point at 83km. The proposed road heads south beyond the Stewart River climbing up the Barker Creek valley to a high point at approximately 109km. Beyond this point the road drops into the Ballarat Creek valley and follows the valley south to the Yukon River. At the Yukon River the summer route will consist of a barge crossing down to the area of the present Coffee Creek camp where the existing access road up to the mine site will be followed. A winter crossing option consists of an ice crossing over the Yukon River to a winter road alignment that will join into the existing access road up to the mine site.

The proposed access road mainly follows an existing alignment currently in use by placer miners in the area from the POC at the Sulfur-Dominion junction to the lower portion of the Maisy May stream valley. Several minor reroutes off of the existing road are required along this section consisting primarily of the Eureka Hill bypass, the Henderson Dome bypass, and through the Indian River Valley.

[5] Karunaratne, K.C. and Burn, C.R. (2004). “Relations between air and surface temperature in discontinuous permafrost terrain near Mayo, Yukon Territory”. Canadian Journal of Earth Science. 41: 1437-1451.
[6] TetraTech EBA. (2016). “Kaminak Road Permafrost Geohazard Evaluation”.

Beyond the lower portion of the Maisy May Creek valley new construction and upgrading of old trails is required up until the barge landing on the north side of the Stewart River. Beyond the Stewart River crossing the proposed road alignment generally tracks a network of existing placer miner roads up to 102km. A long section of new construction is required from 102km to 119km over the Barker-Ballarat summit. The proposed alignment follows the existing placer mine road up to the lower crossing over Ballarat Creek at 124km. A final section of new construction is required from 124km to the north barge landing on the Yukon River.

4.0 Geotechnical Site Assessment / Site Specific Observations

This report covers the 3 design sections of the proposed Northern Access Road, a single section of the Winter Access Road, and a single section of the South Yukon Barge Road. The sections are located as follows:

1. Section 1 – Station 0+000 to Station 41+100 (Sulfur-Dominion Junction to Henderson Dome)
2. Section 2 – Station 41+100 to Station 82+757 (Henderson Dome to Stewart River)
3. Section 3 – Station 82+757to Station 126+211 (Stewart River to Yukon River)
4. Section 4 – Station 126+211 to Station 129+845 (Winter Access Road)
5. Section 5 – Station 126+211 to Station 126+740 (South Yukon Barge Road)

The geotechnical site assessment of the proposed Northern Access Route, the Winter Access Road, and the South Yukon Barge Road consisted of a walking and driving traverse of the alignment while recording observations of surface expression, ground morphology, and surficial materials. Hand-dug test pits were excavated in numerous locations along the road alignment. No machine dug test pitting was completed; however, the existing road cut slopes and exposures in the area of placer mining provided excellent exposures of surficial materials along the alignment.

Ground types along the proposed road alignment for the purpose of geometric road designs were identified in the field. The generalized soil profile found along the majority of the proposed alignment generally consists of <2m deposits of silty sand with some gravel colluvium to rubble colluvium in a silty sand matrix overlying heavily fractured mica schist bedrock. Deeper fluvial deposits typically associated with shallow ice-rich permafrost were noted in valley bottoms where these materials had not been disturbed by placer mining activities. North aspect valley sidewalls also tended to be associated with shallow permafrost although the ice content of the permafrost was variable depending on the local surficial materials and moisture regime.

Observations made along sections of existing placer mine road which the proposed access road follows indicates that the existing roads were constructed using cut and fill or cat push methods. While it is likely that some degree of stripping occurred during construction works, it is doubtful that all organic material was removed from underneath the road prism or separated out of the fill material.

In areas of moderate to rich ice content shallow permafrost efforts appear to have been made to enlarge the ditchline of the existing roads and lay back cuts; however, overland construction in these permafrost areas was not extensive. It is presumed that permafrost has been degraded in many of these areas. Typical construction method in locations where it was possible to traverse the toe of the valley sidewall slope was to cut into the moderate to moderately steep gradient slopes making up the base of the sidewall slope which appears to be free of shallow ice-rich permafrost and fill down onto the underlying flat to gentle gradient shallow ice-rich permafrost slopes making up the valley bottom. This construction method has generally been successful and appears to have limited significant permafrost degradation underneath the road prism. Signs of major road prism settlement or instability due to permafrost degradation in road segment constructed in this manner are rare.

4.1 Access Road Section 1

Section 1 of the proposed Northern Access Route runs from a start point at the junction with the Sulfur-Dominion Loop to an end point at approximately 41km near the Henderson Dome area. General observations concerning the alignment are discussed below and a section by section analysis of the road segment is contained in Table 6.1 below.

The road section traverses the bottom of the Indian River valley from 0+000 to approximately 7+400 and is situated within areas previously disturbed by placer mining before climbing up onto an elevated fluvial terrace on the south side of the Indian River. Much of the alignment along the south side of the Indian River is within terrain mapped as unstable with the potential for thermokarst processes. However, during our field assessment it was found that the existing road is in good condition and situated on well drained terrace features and has not been negatively impacted by thermokarst processes apart from several short draw crossings where fine grain soils and permafrost were evident. Within these draws the proposed construction will require overland methods and suitable drainage structures to reduce the potential for thermokarst processes. The proposed road alignment generally tracks the existing placer mine road along this elevated terrace feature and construction works will be mainly restricted to upgrade of the existing road alignment. As a result significant disturbance to the terrace feature is not expected.

The road enters the Eureka Creek valley at approximately 13+000 and crosses the valley within an area of active placer mining from 13+300 to 16+775. The road transitions off of well drained fluvial terrace landforms and down into the area of active placer mining. The road begins to climb out of the Eureka Creek valley at 16+775 and a section of new construction is proposed from this point to 18+680 to reduce the grade of the existing Eureka Hill ascent. Terrain mapping of the area indicates that shallow ice rich permafrost is present from 16+775 to 17+085; however, field observations of the site did not see signs of shallow ice rich permafrost. As a result if shallow ice rich permafrost is encountered during construction then the construction method will need to be shifted to overland for the area.

The proposed road alignment roughly follows the existing road alignment from 18+680 to 27+180 along a rolling, low gradient ridgetop. Upgrading the road from 27+180 to 41+000 (the Henderson Dome Bypass) is required. Construction has started on the Henderson Dome bypass road by local placer miners since the initial field assessment in 2015.

The majority of the existing portion of the proposed access road appears to have been constructed using native materials, particularly when the road is above the valley bottom. Roads in the valley bottom have been mainly constructed using washed tailings materials (essentially sand and gravel) generated from placer mine operations in the area. These tailings are generally quartz based from 0+000 to 13+000 and then are schist based beyond this point. The quartz based tailings are very durable and are considered suitable for both subgrade and surfacing. The schist based tailings are suitable for subgrade construction but appear to break down to silty material when used to surface the road. This indicates that surfacing will have to be imported beyond 13+000 or developed from areas of competent bedrock.

Existing roads outside of the valley bottom areas typically follow low gradient, rolling ridge-tops. These areas are typically well drained and road cuts reveal rubble colluvium in a silty sand matrix overlying fractured mica schist to gneiss bedrock. The depth of surficial materials in these areas is generally <1-2m; however, the underlying bedrock is heavily fractured and rippable. The road prism and cutslopes in these ridgetop locations generally appear stable. The primary concern with the existing roads in these locations is the lack of adequate drainage structures. Culverts are typically not present except on major drainage paths and ditchlines are non-existent on much of the alignment. This has led to saturation and degradation of the running surface of the road in numerous locations. Additional issues include a silty running surface which leads to poor driving conditions while the road prism is wet.

Terrain stability concerns along this segment of the alignment are primarily related to identified areas of permafrost and the potential for thermokarst processes. However, less instances of this process were noted than what the initial terrain mapping indicates to be expected and the areas of concern are primarily related to draws and low lying areas. Minor debris slides were noted on the slopes below the existing road alignment south of the Eureka Creek placer mining area and were attributed to concentration of runoff by the existing road. The new alignment with adequately space cross drain structures and functional ditchlines and crowning should significantly reduce the potential for similar drainage concentration to occur.

4.2 Access Road Section 2

Section 2 of the proposed Northern Access Route runs from a start point on the south side of Henderson Dome to a termination point on the north bank of the Stewart River. General observations concerning the alignment are discussed below and a section by section analysis of the road segment is contained in Table 6.2 below.

The road section traverses a rolling ridgetop feature up to 53+275 where the proposed alignment leaves the steeper gradient existing road and begins to descend into the Maisy May Creek valley. The road reaches the base of the Maisy May Creek valley by 57+360 and then generally tracks existing road alignments and disturbed placer mine areas up to approximately 73+730. Beyond 73+730 new construction is required up to 76+860 where the alignment follows an old trail up to the crossing over the Stewart River.

A challenging section of construction is found in the vicinity of the Maisy May tributary 1 stream crossing located at 57+400. Permafrost in the area downslope of the existing placer mine road at the stream crossing site is degraded by placer miner activities with significant thermokarst formation apparent. Construction at the site will require pullback of eroded material downslope of the existing road, shifting of the proposed road upslope, and buttressing of the road cut on the south side of the road crossing.

The portion of this road segment which is of greatest concern from a geotechnical standpoint is that from the Maisy May Creek crossing to approximately 75+900 where the road is adjacent to the Stewart River. This portion of the road traverses a section of terrain with shallow ice-rich permafrost and a number of active layer failures on the west side of the Maisy May Creek crossing. An extensive section of overland construction is required for this section of the alignment.

The road alignment turns into the Stewart River valley at 75+900 and heads to the southwest. For much of this road section up to 77+890 the alignment is situated at the base of a series of large bedrock bluffs. The bluffs are composed of heavily fractured and weathered gneissic bedrock and shows signs of recent rockfall activity. Rockfall has the potential to impact this section of the alignment in a number of locations and as a result mitigation measures are prescribed in Table 6.2.

Detailed road construction prescriptions are contained in Table 6.2 to mitigate hazards associated with ice-rich permafrost degradation or rock fall events as described above. The preferred solution to crossing shallow ice-rich permafrost slopes with flat to gentle slope gradients (0-27%) is to overland the road through full fill construction methods. When crossing moderate gradient slopes (28-49%) underlain by shallow ice-rich permafrost a ¼ to ½ bench cut construction method is suggested with a large ditchline and the expectation that minor permafrost degradation will occur. These sections of road will require increased seasonal maintenance.

Mitigation methods to reduce the likelihood of rockfall events impacting the alignment include scaling of the overlying rock face, installation of a large ditchline to intercept rockfall events, installation of rockfall hazard signage, and avoiding blasting into the base of the rock bluffs.

The final portion of the proposed road up to the North Stewart Barge Landing (77+890 to 82+757) tracks an old trail alignment. The trail is situated on mainly gentle gradient slopes (<27%) and trail upgrade to allow for industrial traffic can proceed through cut and fill or cat push methods.

4.3 Access Road Section 3

Section 3 of the proposed Northern Access Route runs from a start point on the south side of the Stewart River to a termination point on the north side of the Yukon River. General observations concerning the alignment are discussed below and a section by section analysis of the road segment is contained in Table 6.3 below.

The road section traverses a broad floodplain terrace near the confluence of Barker Creek with the Stewart River up to 83+700. Beyond this point the proposed alignment climbs up onto an elevated terrace and ties into an existing placer mine road. The proposed alignment follows the placer mine road up the Barker Creek valley to approximately 101+775 where the road ends. Beyond 101+775 new road construction is required between the Barker and Ballarat Creek valleys. The summit of the pass is located at 108+540 and the descent to the base of the Ballarat Creek valley is complete at approximately 111+350. The proposed alignment follows an existing placer mining road from 118+470 to 123+670. Beyond 123+670 new construction is required as the proposed road alignment crosses over Ballarat Creek and traverses the north bank of the Yukon River. The section ends at 126+211 at the north barge landing on the Yukon River.

Several challenging sections of road construction are required on this section of the alignment, primarily consisting of the Barker-Ballarat summit, the upper portion of the Ballarat Creek valley, and the upper portion of the Barker Creek valley.

The upper portion of the Barker Creek valley is underlain by shallow, ice-rich permafrost throughout the valley bottom and extending in narrow fingers up the east sidewall of the valley. Significant sections of overland construction are required throughout this area and over the small tributary stream crossing immediately prior to starting the ascent to the Barker-Ballarat summit.

The Barker-Ballarat summit section generally consists of traversing a rolling ridgetop feature; however, several shallow permafrost basins were noted in topographic lows along the ridge. Construction through these areas requires a mixture of overland and ¼ to ½ bench cut construction with rock fill and rock buttressing recommended.

The upper portion of the Ballarat Creek valley requires traversing a section of sidewall slope with signs of past sloughing and soil creep. Rock buttressing of cuts is expected to be required. Overland construction is also required when crossing the valley bottom as extensive shallow ice-rich permafrost is present. From the upper crossing over Ballarat Creek through to the middle crossing the road alignment is situated on a southeast aspect sidewall where free draining granular soils and minimal permafrost is expected. Similarly the section from the middle crossing to the lower, final crossing follows an existing road constructed at the toe to mid slope position of a well-drained southwest aspect hillslope.

The proposed road alignment crosses over Ballarat Creek for the final time at 123+820 and then climbs up onto a large colluvium terrace running west along the Yukon River. Upslope of the terrace feature steep to very steep gradient terrain leads up to a series of large, heavily weathered gneissic bedrock bluffs. The road alignment generally tracks along the toe of this steep to very steep gradient terrain from 124+550 to 125+050 prior to dropping down a short moderately steep gradient escarpment to reach a lower terrace feature. The road descends down a final escarpment at 125+690 to reach the Yukon River floodplain and continues along the floodplain for another 600m to reach the North Yukon barge landing. The road segment from the lower Ballarat Creek crossing to the North Yukon barge landing has the potential to be impacted by rock detachment events from the bluffs in the upslope area. As a result rockfall hazard signage is considered to be warrented. Small scale detachments may also occur from the colluvium

material expected to make up road cuts along the segment; however, this magnitude is expected to present a maintenance issue rather than a hazard to vehicle traffic and has had measures prescribed to mitigate the hazard.

4.4 Access Road Section 4

Section 4 of the proposed Northern Access Route (the Winter Access Road) runs from a start point on the south side of the Yukon River to a termination point where the proposed access road ties into the existing Coffee Mine Road. Barging will be utilized across the Yukon River from the north side barge landing to the south bank Yukon River barge landing after breakup occurs of the Yukon River ice. In winter months an ice road will be utilized to connect these road sections. General observations concerning the alignment are discussed below and a section by section analysis of the road segment is contained in Table 6.4 below.

Aside from a short section of terrain immediately adjacent to the Yukon River, the initial portion of the Winter Access Road traverses a wetland area underlain by shallow ice-rich permafrost. This ice-rich permafrost section runs from approximately 126+500 to 127+555 and will require overland construction methods with the road prism constructed out of snow/ice.

From 127+905 to 128+590 the alignment traverses the floodplain of Coffee Creek. The crossing point over Coffee Creek is located at 128+195. The floodplain area is generally poorly to imperfectly drained and construction through much of this section will require overland construction methods.

Beyond 128+590 the alignment climbs up onto an elevated fluvial terrace. The terrace appears to be well drained and is composed of sand and gravel fluvial deposits. The terrace feature is a possible aggregate source for the proposed road construction.

The road ends at 129+620 where it ties into the existing Coffee Mine Road.

4.5 Access Road Section 5

Section 5 of the proposed Northern Access Route (the South Yukon Barge Road) is a short road segment that extends for approximately 800m along the south bank of the Yukon River to the existing Coffee Creek camp. The alignment is situated on flat gradient terrain and tracks a legacy trail. The road can be constructed using cut and fill methods.

5.0 Construction and Drainage Recommendations

The proposed Northern Access Route was selected to minimize the development of new alignments through undisturbed land and decrease the cost of construction by connecting existing placer mining roads. Three major construction techniques will be utilized in the construction of the proposed access road: new construction over conventional ground, new construction over areas underlain by shallow, ice-rich permafrost, and an upgrade of existing placer mining roads. Appendix 2 depicts standards and specifications for typical cross-sections for the following types of construction:

- Conventional cut and fill construction
- Conventional cut and fill construction in rock
- Cross drain culverts in fill and on gentle slopes
- Full bench end haul construction
- Construction along the North Stewart River backchannel
- Overland construction in shallow ice-rich permafrost
- Winter road construction

5.1 General New Road Construction Requirements

The following recommendations apply to areas of new, conventional cut and fill construction on a variety of ground types. More specific recommendations for particular portions of the road are described in the tables of Section 6 of this report.

5.1.1 Subgrade Construction

Prior to subgrade construction clearing of the right-of-way and grubbing and stripping of the ground beneath the structural road prism will be required. All loose, organic, or otherwise unsuitable materials currently existing beneath the road prism area are to be removed. Stripping and sub-excavated materials are to be disposed of outside of the road prism, either on cleared ground within the right-of-way, at a spoil site, or as a capping layer to final structural embankment slopes. Where soft and/or saturated soils are encountered the decision may be made to allow the area to be overlanded instead of sub excavated. The geometric road design is to be consulted to ensure that raising the elevation of the road does not conflict with controlling features of the vertical alignment, such as steep road gradients, sections of steep sideslopes where ¾ to full bench cut may be required, drainage structures, or bridges.

Where an area is to be overlanded, the road prism (other than the surfacing) is to be constructed of a suitable base course material composed of sand and gravel material and preferably meeting or closely approximating the specification for SGSB[7] to ensure that adequate strength and drainage is achieved. The project engineer or their representative will give direction to the extent of the depth of SGSB in overland sections (minimum 600mm deep), and may require the SGSB to be underlain with high-strength non-woven geotextile. This geotextile acts as a material separator that prevents fine-grained or organic soils from intruding into the SGSB. In isolated sections of extremely low strength soils the engineer or their representative may require an additional layer of bi-axial geo-grid over the non-woven geotextile.

Construction of proposed access road subgrade fills, following stripping (and sub-excavation if necessary) as above, is to consist of careful placement of local native and/or end-hauled native or imported soils in lifts not exceeding 300mm loose thickness. When the stripped ground surface is flat or gently sloping at the base of the fill slope, the fill slope material may be placed directly on the stripped ground. If the gradient of the stripped ground surface at the toe of the proposed fill slope is sloping more than 20% in any direction, then a bench of no less than the width of the steel drum roller used to compact the fill is to be excavated into the stripped ground and the fill is then to be built up from that bench.

The fill is to be compacted with a vibratory steel drum roller to the satisfaction of the engineer or their representative. When the fill material is predominately fine-grained a sheep's foot roller is to be used to compact the fill. Water may need to be added to the fill to achieve adequate compaction. It is recommended that water be mixed into the soil during excavation from the source or dumping from the truck used to move it to help achieve uniform moisture content in the soil. When the fill soils are fine-grained this mixing effort is imperative as fine-grained soils will not allow moisture to spread and even out within the soil matrix as coarse-grained soils will.

Where requested by the project engineer or their representative, the final subgrade surface is to be proof rolled with a loaded tandem gravel truck or similar. Any soft or spongy soils noted during the proof roll are to be removed and replaced with suitable fill to the satisfaction of the project engineer or their representative.

[7] Select Granular Sub-base is defined in Section 202 of MoTI's 2012 Standard Specifications for Highway Construction. See Clause 202.02.03i for an introduction. Its gradation can be found in Tables 202-B and 202-C of Section 202.

5.1.2 Surfacing

Along much of the alignment it is expected that the subgrade will be shaped and crowned and in combination with adequate ditching to promote drainage, will provide an adequate running surface. Where required the surfacing aggregate for the proposed access road is to be placed on the finished subgrade surface. The surfacing gravel is to consist of layers, placed and compacted in lifts no thicker than 150mm (see below for more detail). Additional surfacing is prescribed in the road design in areas of steep grades and sustained hill climbs.

The surfacing aggregate is expected to be sourced from aggregate pits along the proposed alignment and screened or crushed to an acceptable standard. Surfacing is expected to consist of material from several sources; crushed and screened placer mine tailings material, screened placer tailings material, or crushed and screened blast rock. In some cases native colluvial materials or sand and gravel materials may be used. The end product should consist of 2-3" minus material with adequate fines that will permit compaction and bind the material. A fines content of 8-12% should be targeted. Most of the material sources identified along the alignment (See Appendix 4 for borrow source locations) should be capable of producing material of this specification with appropriate crushing and/or screening equipment.

Where imported surfacing materials are prescribed, they are to be placed in such a manner that the aggregate does not segregate during placement, preferably with a belly-dump truck. Following placement the surfacing gravels are to be spread in lifts no thicker than 150mm measured loose and compacted to the satisfaction of the project engineer or their representative. Water may need to be added to the surfacing to achieve adequate compaction.

Where requested by the project engineer or their representative, the final surface is to be proof rolled with a loaded tandem gravel truck or similar. Any soft or spongy soils noted during the proof roll are to be removed and replaced with suitable surfacing materials to the satisfaction of the project engineer or their representative.

5.1.3 Drainage

Drainage of the road prism is an integral part of prism construction, all-weather use, and long-term maintenance. Drainage ditches for the proposed access road are to be no less than 0.5m deep (below subgrade surface) with a bottom width of 1.0m and inside slope of 1.5H:1V. Where the road prism is constructed using overlanding techniques the base of the ditch is to be 0.5m below the base of the extra base course installed in the road prism. The ditches are to be vegetated following construction to mitigate erosion of the ditch. The road prism is to be cross-drained at all low points in the ditch (or intersection of fill slopes and natural ground surface on the uphill side of full fill sections) to ensure that drainage of the road prism is fully maintained. The geometric road design will have included most required cross-drains; but, it should be noted that it is typical for more cross-drain locations to be identified during construction.

Where the geometric road design or field judgement calls for culverts for natural drainage courses that cross the road prism or cross-drains at points on the vertical alignment that are not low points (typically at intervals along long vertical tangents), the down-hill side of the culvert inlet is to be provided with a ditch block. Ditch blocks are intended to direct flow into the culvert and not allow it to enter into or continue running down the ditch. Ditch blocks are to be constructed of silty soils armoured on their uphill face with large gravels, cobbles, or rock. Blocks are to be 2-5m in length and take up the entire cross-section of the ditch.

A critical aspect of water management indicative of this area is excessive seepage and flow of water over the road prism, and with consecutive freezing events large ice masses built up on the road prism. The local colloquial term for this effect is "glaciering." This can be detrimental to traffic by physically blocking the road, and creating a safety hazard. Where this issue is anticipated

consult the project engineer or their representative, where specific sections are not already addressed in the road design or this report.

In addition to proper ditching and to allow for the use of less imported surfacing material the road prism is to be shaped or crowned during construction to promote shedding of surface water into the ditchlines and drainage structures and avoid runoff along the road surface or areas of standing water that will erode or soften the running surface.

Where cross-drains or culverts drain into the riparian management zones of fish bearing streams, a sump is to be excavated at the inlet of the culvert. The sump is to be approximately the diameter of the culvert in length and the full ditch bottom in width. The sump is to be at least 0.3 metres in depth below the culvert invert and filled with cobbles or rock. This configuration allows sediment in the water to be trapped prior to entering the culvert. It also helps direct water into the culvert.

Where culverts cross the road prism it is imperative that sufficient cover be provided above the top of the culverts. The geometric road design and culvert crossings are to be checked in the field prior to installation of the culvert to ensure that the total cover above the culvert is no less than 0.6m or half of the culvert diameter, whichever is greater. Manufacturer's specification may require more cover the specified herein. If the culvert manufacturer requires more fill than specified herein, then the manufacturer's specifications are to govern.

5.2 Overland Construction in Shallow Ice-Rich Permafrost

As detailed in the mapping and reports prepared by PECG and Tetra Tech EBA the proposed access road traverses a region of extensive discontinuous permafrost. To reduce costs and alteration to the shallow ice-rich permafrost layers the proposed access road was routed around these areas wherever possible. However, it was inevitable that some road sections were going to have to cross the shallow permafrost on flat to gentle slopes due to alignment constraints. Design considerations for overland construction were formulated in conjunction with input from the Tetra Tech EBA technical memo titled "Road Design Considerations in Areas of Permafrost" March 2016.

The overland construction method consists of a passive approach to permafrost management where sufficient thermal buffer is provided by the road prism to prevent degradation of the underlying permafrost. This can be accomplished by avoiding any disturbance to the organic mat during construction works. The organic mat, or overburden, aids in the protection of the permafrost, and any man-made disturbance can influence the temperature regime. The organic mat is typically made of various mosses and lichens, and has negligible strength with high compressibility. As a result it is imperative that disturbance to the over-burden be minimized - limit equipment to essential movements until the full thickness of the sub-grade is completed. The road prism in these sections is to be constructed through end dumping methods and no equipment is to be permitted beyond where the road prism is completed.

In addition, water management while constructing through shallow ice-rich permafrost areas is critical for the integrity of the road prism and prevention of thermokarst formation in the local permafrost. As overland construction generally occurs on flat to gentle gradient slopes water ponding around the road prism can be problematic and can lead to thermokarst formation due to permafrost degradation under the ponding area. Ponding and associated thermokarst formation can be minimized by utilizing a subgrade that is graded such that water can easily pass. The road prism will still intercept the shallow groundwater and runoff present in the overburden through the compression of the thin organic mat. Cross drains will still be necessary at low points and places of obvious surficial flow in order to ensure that drainage of the road prism is fully maintained. The geometric road design will have included most required cross-drains; but, it should be noted that it is typical for additional cross-drain locations to be identified during construction.

The reader is referred to Appendix 2 for design specifications and construction standards as well as the Tetra Tech EBA technical memo attached as Appendix 3 for further information.

5.3 Upgrade of Existing Road

For the majority of its length the proposed access road is an upgrade of the existing placer mining roads, where the current alignment lacks consistent design standards. Upgrading the proposed access road will allow a 50km/hr design standard and 5m running surface. With the upgrade of these sections additional cuts and fills will be required to establish the road along a safe horizontal and vertical alignment. Additionally, along the access road, inter-visible turnouts will be constructed to allow vehicles to pass each other safely.

In general, the road construction for the upgrade sections will follow the techniques described above in sections 5.1 and 5.2 for new construction as they apply to widening or realignment of the existing road and excavation into new ground. Where the proposed alignment generally follows the existing road and significant widening is not required reconstruction efforts are to be focused on shaping the road prism and improving drainage structures (ditching and adding cross drains) to ensure the road will be passable in most weather conditions.

5.4 Aggregate Sourcing

Significant volumes of aggregate will be required to complete construction of the proposed access road. It is anticipated that much of the aggregate can be sourced from tailings from existing placer miner operations at discrete locations along the proposed alignment. Additional aggregate can also be sourced from processing of outcrops of competent bedrock. Approval for removing aggregate from these mining operations must be coordinated prior to the construction phase of the project. It is expected that most areas of undisturbed sand and gravel deposits will be under claim to placer miners and the use of washed tailings is the most desirable source of aggregate where the use of this material can be approved.

A portion of the geotechnical investigation performed in August to September 2015 was dedicated to identifying aggregate sources along the road alignments. This involved the hand excavation of shallow test pits and examining samples from placer mining tailings. Due to logistics and lack of equipment resources, machine dug test pits were not conducted. Further geotechnical investigation of potential borrow sites with associated machine dug test pitting may be desirable during the final selection of aggregate sources prior to the construction phase of the project. A list of possible aggregate sources is contained in Appendix 4.

6.0 Summary of Existing Conditions, Partial Risk Assessment and Construction Recommendations

The terrain conditions noted during the geotechnical assessment and all construction recommendations may be found in the following tables. The tables also reference terrain stability hazard mapping and permafrost mapping provided by PECG 2016 and Tetra Tech EBA 2016. The terrain description contained in these tables can be broken down as follows:

xszC1a	Surficial material composition and thickness
i-m	Drainage
s,r	Permafrost depth, permafrost ice content
2,II,V,M,s	Slope class, terrain stability existing, terrain stability disturbed, soil erosion, applicable hazard[8]
(0+000 to 0+060)	Road chainage

[8] The “applicable hazard” portion of the terrain description refers to whether slope failure potential, thermokarst potential, or both slope failure and thermokarst potential are the dominant harards in the terrain polygon.

The reader is referred to the PECG 2016 terrain stability hazard mapping package for further details on the mapping process, surficial material types, permafrost classification, etc.

As introduced in section 1.2 the tables also contain a partial risk assessment completed using the methodology presented in LMH 56[9]a document referenced in YESAB 2015[10]. The partial risk assessment provides a qualitative assessment of specific geohazard likelihood, magnitude, runout and expected impacts to identified elements at risk. Further explanation of the risk assessment process is contained in Appendix 1.

[9] Landslide Risk Case Studies in Forest Development Planning and Operations

[10] DRAFT Geohazards and Risk: A proponents guide to linear infrastructure. Yukon Environmental and Socio-economic Assessment Board 2015

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
0+000 Start of Section 1 615627 7061412	**0+425** 615489 7061059	0-15%	Start the road assessment at the beginning of the proposed access road at the junction point with the Sulfur-Dominion Loop. The majority of the valley bottom has been previously mined; however, a small section of undisturbed area appears to be present near the start of the alignment. Terrain mapping and the vegetation profile at the site indicates that shallow ice-rich permafrost is present outside of the existing placer miner road. Surficial materials outside of the existing road prism consist of imperfectly drained sand and gravel fluvial deposits. Ice-rich permafrost may be present at depths of 0.5-1.0m.	xszC1a i-m s,r 2,II,V,M,t (0+000 to 0+060) A (0+060 to 0+230) zsgFp/eOv\zsgFp v s,r 1,III,V,M,t (0+230 to 0+425)	>3m	Imperfect	**High:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to the Indian River. **Low**	**V. High** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay on the existing road alignment to avoid degrading permafrost outside of the existing road prism. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**
0+425 615489 7061059	**7+315** 613208 7055509	0-25%	The proposed alignment traverses the base of the Indian River valley through extensive placer miner operations. The majority of the valley bottom was likely underlain by ice-rich permafrost; however, mining operations appear to have degraded the majority of the permafrost originally in the area. Cross over a manmade water way at 2+410 conducting water for placer miner operations. Cross over Sulphur Creek at 5+050. Cross over the Indian River at 7+060. Meander migration hazards are indicated on both the Sulphur and Indian crossings. Terrain is highly irregular due to the above mentioned placer miner operations and little original vegetation remains. The overall slope gradient of the area is flat to gentle; however, isolated steeper pitches are present associated with tailings piles. Surficial materials consist of tailings which are composed of washed sands and gravels. This material is quartz derived and is resistant to physical and chemical weathering.	A	>3m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill or cat push construction. • Utilize washed tailings piles as a material source along the proposed alignment. • Install an 800mm diameter culvert at 2+410 to address flow in the manmade waterway. • Install a 12.2m bridge over Sulphur Creek at 5+050 as per OEL Sulphur Creek General Arrangement Drawing. • Install a 27.4m bridge over Indian River at 7+060 as per OEL Indian River General Arrangement Drawing. Cut: 70% in tailings deposits Fill: 70% for fill of local material Aggregate Sources: • 0+850 to 0+910: quartz based tailings • Borrow A1 (West of 2+030): fractured/rippable mica schist bedrock • Borrow 2 (6+900): fractured/rippable mica schist to gneiss bedrock	**Low**

[11] P(H) Probability of occurrence of a specific hazardous event following conventional sidecast road construction in this section.
[12] P(S:H) The probability that there will be a spatial effect, given that a specific hazardous event occurs, i.e. the probability that the event will impact the specific element at risk.
[13] P(HA) = P(S:H) x P(H) = The probability of occurrence of a specific hazardous event and the probability of it reaching or otherwise affecting the site occupied by a specific element.
[14] Residual P(H) The residual probability of occurance of a specific hazardous event following the implementation of the Road Upgrade or Road Construction Recommendations.

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
7+315 613208 7055509	**9+220** 611263 7055068	10-25%	The road alignment climbs up off of the Indian River valley bottom and traverses a gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Terrain mapping indicates that the upslope terrace area is underlain by shallow ice-rich permafrost. The road appears to parallel a short escarpment feature where shallow ice poor permafrost is present. Cutslopes along the existing road do not show signs of shallow ice-rich permafrost. The road crosses a small swale at 8+475. Terrain mapping indicates that the swale is underlain by shallow ice-rich permafrost. No signs of permafrost were noted adjacent to the existing road crossing the swale. The swale is timbered with immature aspen, a timber type which is not typically associated with shallow ice-rich permafrost. No surface flows were apparent. As the proposed road alignment generally tracks the existing road prism and existing cuts show well drained fluvial deposits, significant degradation of permafrost is not expected. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFa-V i-w s,p 3,II,III,M,s Along the road alignment dszC1a p-i s,r 2,II,V,H,t Upslope of the road alignment XszC1a p n,r 2,II,V,H,t (8+465 to 8+485)	>3m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Track the existing road alignment to as great a degree as is feasible to avoid disturbing possible shallow ice-rich permafrost in the upslope area. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material. Aggregate Source: • Borrow 3 (8+305 to 8+555): quartz based fluvial sands and gravels	**Low**
							Moderate: Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to the Indian River. **Low**	**High** **Moderate**		**Low**
9+220 611415 7055159	**9+450** 611201 7055099	10-20%	The road alignment drops through a very broad stream draw. The base of the draw appears to contain ice rich permafrost. The permafrost appears to have been degraded within the existing road prism footprint. The stream is small with minor flow and no defined channel. The base of the draw is located at 9+335. Slope gradients are flat to gentle in the stream draw so icing may be a concern. Surficial materials consist of ice-rich permafrost in local fluvial deposits.	dszC1a p-i s,r 2,II,V,H,t	>3m	Poor	**Moderate:** Icing leads to culvert blockage and road washout during the spring freshet.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Minor sediment delivery to the Indian River. **Moderate**	**Moderate** **Moderate**	• Overland construction through the stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert to address minor stream flow at 9+335. Install six additional 450mm cross drain culverts to mitigate potential icing. Refer to the OEL Indian River tributary 1 General Arrangement Drawing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
							Moderate: Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation. Possible increase in sediment to the Indian River.	Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to the Indian River. **Moderate**	**High** **High**		**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
9+450 611201 7055099	**9+920** 610768 7055272	10-25%	The proposed alignment tracks the existing placer mine road along a flat to gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Terrain mapping indicates that the upslope terrace area is underlain by shallow ice-rich permafrost. The road appears to parallel a short escarpment feature where shallow permafrost is not present. As the proposed road alignment generally tracks the existing road prism, significant degradation of permafrost is not expected. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFa-V i-w s,p 3,II,III,M,s Along the road alignment dszC1a p-i s,r 2,II,V,H,t Upslope of the road alignment	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material. Aggregate Sources: • Borrow A2 (9+455 to 9+580): quartz based fluvial sand and gravel	**Low**
9+920 610768 7055272	**10+410** 610336 7055456	10-25%	The road traverses a flat to gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Terrain mapping indicates that the upslope terrace area is underlain by shallow ice-rich permafrost. The road appears to parallel a short escarpment feature where shallow permafrost is not present. As the proposed road alignment generally tracks the existing road prism, significant degradation of permafrost is not expected. A small gravel pit is present from 10+335 to 10+400 and is mapped as anthropogenic. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFa-V i-w s,p 3,II,III,M Along the road alignment zsgFj i-m s,p 2,II,III,L,s Above the road A (10+335 to 10+400)	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material. Aggregate Sources: • 10+280 to 10+380: quartz based fluvial sand and gravel	**Low**
10+410 610336 7055456	**10+720** 610046 7055382	10-20%	The road alignment drops through a very broad stream draw. The base of the draw appears to contain ice rich permafrost. The permafrost appears to have been degraded within the existing road prism footprint. The stream at the base of the draw is located at 10+635. The stream channel is 1-2m wide with a meandering morphology. Slope gradients are flat to gentle in the stream draw so icing may be a concern. Shallow ice-rich permafrost is present outside of the existing road prism.	dszC1a-b p-i n,r 2,II-III,V,H (10+410 to 10+620) sdFAv/sxzCb i d,m 2,II,IV,M (10+620 to 10+670)	>3m	Poor	**Moderate:** Icing leads to culvert blockage and road washout during the spring freshet.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Minor sediment delivery to the Indian River. **Moderate**	**Moderate** **Moderate**	• Overland construction over stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 1500mm diameter culvert to address stream flow at 10+635. Install six additional 450mm diameter cross drain culverts to mitigate icing concerns. Refer to OEL Indian River Trib 2 general arrangement drawing for site details. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			Surficial materials consist of ice-rich permafrost in local fluvial deposits.	szdCv p-i s,p 3,II,III,M (10+670 to 10+720)			**Moderate:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to the Indian River.	Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to the Indian River. **Moderate**	**High** **High**		**Low**
10+720 610046 7055382	**11+035** 609814 7055200	10-25%	The proposed road alignment wraps around a broad ridge feature superimposed on a flat to gentle gradient fluvial terrace. Shallow ice-rich permafrost is present outside of the existing road prism downslope of the proposed road alignment. The upslope ridge feature does not appear to contain ice rich permafrost. The existing road is in good condition but lacks a ditchline and drainage structures. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFt m d,p 2,I,II,L,s Above the road dszC1a p n,r 2,II,V,H,t Below the road	>3m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material.	**Low**
11+035 609814 7055200	**11+220** 609640 7055225	10-25%	The road alignment drops through a very broad stream draw. The base of the draw appears to contain ice rich permafrost. The permafrost appears to have been degraded within the existing road prism footprint. The stream at the base of the draw is located at 11+205. The stream channel is <1m wide with a meandering morphology. Slope gradients are flat to gentle in the stream draw so icing may be a concern. Shallow ice-rich permafrost is present outside of the existing road prism. Surficial materials consist of ice-rich permafrost in local fluvial deposits.	dszC1a p n,r 2,II,V,H,t (11+035 to 11+190) dzsFAp i s,m 2,II,IV,L,t (11+190 to 11+220)	>3m	Poor	**Moderate:** Icing leads to culvert blockage and road washout during the spring freshet. **Moderate:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Minor sediment delivery to the Indian River. **Moderate** Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to the Indian River. **Moderate**	**Moderate** **Moderate** **High** **High**	• Overland construction over stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 1000mm diameter culvert to address stream flow at 11+205. Install six additional 450mm diameter cross drain culverts to address icing concerns. Refer to the OEL Indian River Trib 3 general arrangement drawing for site details. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low** **Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
11+220 609640 7055225	**11+640** 609234 7055295	10-25%	The road traverses a flat to gentle gradient fluvial terrace. Several large gravel pits are present along the alignment. The existing road is in relatively good condition but lacks a ditchline and drainage structures. A gravel pit is present upslope of the road alignment from 11+220 to 11+265. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	A (11+220 to 11+265) zsgFa-V i-w s,p 3,II,III,M,s Along the road sgFt i-p s,p 1,I,I,L,s Above the road	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material. Aggregate sources: • 11+245 to 11+380: quartz based fluvial sand and gravel. • 11+510 to 11+640: quartz based fluvial sand and gravel.	**Low**
11+640 609234 7055295	**11+700** 609174 7055292	10-25%	The road crosses over a broad swale feature. No surface flows were noted at the base of the swale. Shallow ice-rich permafrost appears to be present at the base of the stream draw. Surficial materials consist of ice-rich permafrost in local fluvial deposits.	zsgFj-V i-w d,p 2,II,II,L,s	>3m	Imperfect	**Moderate:** Icing leads to culvert blockage and road washout during the spring freshet.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Minor sediment delivery to the Indian River. **Moderate**	**Moderate** **Moderate**	• Overland construction over stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert to address freshet flow and potential icing at 11+670. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
							Moderate: Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**		**Low**
11+700 609174 7055292	**11+910** 608989 7055368	5-15%	The road traverses a flat to gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFj-V i-w d,p 2,II,II,L,s (11+700 to 11+790) zsgFt m d,p 2,II,III,L,s (11+790 to 11+910)	>3m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in moderately well drained fluvial deposits Fill: 70% for fill of local material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
11+910 608989 7055368	**12+160** 608820 7055543	5-15%	The road traverses a flat to gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Terrain mapping indicates that shallow ice-rich permafrost is present outside of the existing road prism. No signs of shallow ice-rich permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation. Furthermore, the proposed road alignment generally tracks the existing road prism. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	xszC1a p-i n,r 2,II,V,H,t	>3m	Imperfect	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay on the existing road alignment to avoid degrading permafrost outside of the existing road prism. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material.	**Low**
12+160 608820 7055543	**13+040** 608124 7055501	5-25%	The road traverses a flat to gentle gradient fluvial terrace. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Terrain mapping indicates that shallow moderate ice content permafrost is present outside of the existing road prism. No signs of shallow ice-rich permafrost were noted in existing road cuts so upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. A pocket of ice poor surficial materials is mapped from 12+440 to 12+510. Surficial materials consist of interbedded sandy silt and sand and gravel fluvial deposits. These materials appear to be derived from a quartz based bedrock lithology.	zsgFb i-w s,m 2,II,III,L,t	>3m	Mod. Well	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay on the existing road alignment to avoid degrading permafrost outside of the existing road prism. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material. Aggregate source: • 12+470 to 12+520 (Borrow 7): quartz based fluvial sand and gravel.	**Low**
13+040 608124 7055501	**13+310** 607927 7055324	10-25%	The alignment drops off the fluvial terrace and begins to descend into the Eureka Creek valley. The existing road prism appears to have been constructed through slopes with shallow ice-rich permafrost. The permafrost appears to have been thawed at the road location but is likely still present in the overlying slopes. This area appears to be slated for placer mining and as a result the overall topography of the site may change if placer mine operations take place. Surficial materials consist of ice-rich permafrost in local fluvial deposits.	xszC1b p n,r 2,III,V,H	>3m	Imperfect	**High:** Permafrost degradation in the proposed road is shifted off of the existing road location. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**	• Track the existing road alignment as closely as is possible. • Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in existing road prism Fill: 70% for fill of local material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
13+310 607927 7055324	**15+395** 606794 7053664	10-35%	The alignment drops off of the fluvial terrace and descends into the Eureka Creek valley. The valley is the site of an active placer miner operation. It is possible that the road location and surrounding topography will change prior to construction works. A small NCD is present at 13+415. Cross over Eureka Creek at 13+750. The stream is heavily altered by placer miner operations and as a result no natural channel is present. Meander migration hazards are indicated adjacent to the Eureka Creek crossing. Surficial materials consist of tailings which are composed of washed sands and gravels. This material is schist derived and may be susceptible to physical and chemical weathering.	A	>3m	Mod. Well to Well	**Moderate:** Washout of the road prism during a period of elevated flows on Eureka Creek. The stream may be subjected to elevated and sporadic peak flows due to placer miner operations.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Utilize washed tailings piles as a material source along the proposed alignment. Quartz based surfacing material may need to be imported to site. • Install an 800mm diameter culvert at 13+415 to address NCD flow. • Install a 3600mm diameter culvert at 13+750 as per OEL Eureka Creek General Arrangement Drawing. Cut: 70% in tailings deposits Fill: 70% for fill of local material.	**Low**
15+395 606794 7053664	**15+975** 606460 7053197	10-25%	The alignment leaves the area of active placer mining and crosses into what appears to be an undisturbed area above the proposed road alignment. Upslope of the road ice-rich permafrost appears to be present. The downslope area consists of tailings. It is likely that this section of terrain is slated for mining and as a result the topography of the area is expected to change. Road cuts along the existing road reveal native silty sand with some gravel material. The upslope area appears wet with sparse vegetation and likely contains ice-rich permafrost.	A Below the road sxzCb p-i s,m 3,III,IV,H Above the road	>3m	Imperfect	**Moderate:** Permafrost degradation in the proposed road is shifted upslope of the existing road location. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Track the existing road alignment and avoid large scale cuts into the upslope terrain. • Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in existing road prism Fill: 70% for fill of local material.	**Low**
15+975 606460 7053197	**16+775** 605776 7052930	20-35%	The proposed alignment tracks the existing road and climbs through an active placer mining area. Surficial materials consist of tailings which are composed of washed sands and gravels. This material is schist derived and may be susceptible to physical and chemical weathering.	A	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill or cat push construction. • Utilize washed tailings piles as a material source along the proposed alignment. Quartz based surfacing material may need to be imported to site. Cut: 70% in tailings deposits Fill: 70% for fill of local material.	**Low**
16+775 605776 7052930	**17+085** 605829 7053232	5-25%	The proposed alignment leaves the existing placer mine road and climbs to the northeast. Terrain mapping indicates that shallow ice-rich permafrost is present however indicators of shallow permafrost were not noted during the field review. Slopes are southern aspect, are timbered with immature aspen, and appeared well drained. Shallow ice-rich permafrost is not typically present under these conditions. Surficial materials consist of angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material.	xszC1a p-i n,r 2,II,V,H,t	>3m	Imperfect	**Moderate:** Permafrost degradation due to proposed road construction. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Cut and fill construction, overland if indicators of shallow ice-rich permafrost are encountered during initial excavation. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 if overland construction methods are utilized. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of imported granular material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
17+085 605829 7053232	**18+680** 604972 7053905	20-35%	The proposed alignment turns a switchback on the east flank of Eureka Hill and climbs to a tie in point with the existing placer mine road at 18+680. Timber at the switchback site and for much of the section of new road construction consists of Aspen, an indicator of well drained soils without permafrost. Terrain consists of planar slopes with gentle to moderate slope gradients. Cross a small swale at 18+665 with no signs of flow. Surficial materials consist of angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material.	zsxCv m to w n/a,n/a 2 to 3,II,II,L,s	0.5-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at topographic lows where required. • Bedrock will be encountered during construction works but will likely be rippable. Significant blasting is not anticipated. • Install a 600mm diameter culvert at 18+665 to address potential freshet flow in the dry swale. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
18+680 604972 7053905	**18+955** 604708 7053983	15-25%	The proposed alignment tracks the existing placer mine road along rolling ridgetop terrain. In general the existing road alignment is in good condition aside from the lack of drainage structures. This has caused runoff to collect along the surface of the road to strip the fines off of the elevated portions of the alignment and deposit this fine material in topographic low points along the alignment. As a result these topographic low points are slippery during wet weather. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	zsxCv m n/a,n/a 2,II,II,L,s	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
18+955 604708 7053983	**19+245** 604437 7054030	0-15%	The proposed alignment continues to track the existing placer mine road along a rolling ridgetop feature. The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. A topographic low point is present on the alignment at 19+220. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szxCv\szxDv i-p s,m 2,II,IV,H,t	1-2m	Imperfect to Mod. Well	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
19+245 604437 7054030	**19+630** 604130 7053823	0-15%	The existing alignment is in good condition aside from a lack of drainage structures. Shallow ice poor permafrost is indicated on the terrain mapping of the area. No signs of permafrost were noted in existing road cuts in the area. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szxCv i-p s,p 2,II,III,M,s Above the road zsxDv/zsxCv w n/a,n/a 2,II,II,L,s Below the road	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
19+630 604130 7053823	**20+260** 603695 7053377	0-15%	Continue along the existing placer miner road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow ice poor permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. Surficial materials consist of angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of <1.0m.	szxCv i-p s,p 2,II,III,M,s Above the road zsxDv/szxCv i-m d,p 2,II,II,M,s Below the road	<1m	Imperfect to Mod. Well	**Low to Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). • Bedrock will be encountered during upgrade works but will likely be rippable. Significant blasting is not anticipated. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
20+260 603695 7053377	**21+170** 602942 7053091	10-25%	Continue along the existing placer mine road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. A topographic low point is present on the alignment at 20+550. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	zsxDv/szxCv i-m d,p 2,II,II,M,s	1-2m	Imperfect to Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
21+170 602942 7053091	**22+080** 602105 7053255	5-20%	The alignment wraps around a broad ridge feature tracking the existing placer miner road. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	zsxDv/zsxCv m to w n/a,n/a 2,II,II,L,s (21+170 to 21+850) zsxDv/szxCv i-m d,p 2,II,II,M,s (21+850 to 22+080)	1-2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
22+080 602105 7053255	**22+455** 601730 7053215	0-10%	The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. A topographic low point is present on the alignment at 22+435. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szCv\szxDv p s,m 1,II,IV,M,t	1-2m	Imperfect	**Low to Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
22+455 601730 7053215	**22+880** 601649 7052853	0-15%	Continue along the existing placer mine road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. Surficial materials consist of angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of <1.0m.	zsxDv/szxCv i d,p 2,II,II,M,s	1m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). • Bedrock will be encountered during upgrade works but will likely be rippable. Significant blasting is not anticipated. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
22+880 601649 7052853	**23+275** 601659 7052458	0-10%	The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. Topographic low points are present on the alignment at 23+020, 23+130 and 23+220. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szCv\szxDv p s,m 2,II,IV,H,t	1-2m	Poor	**Low to Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
23+275 601659 7052458	**24+425** 602313 7051571	0-10%	Continue along the existing placer mine road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. A topographic low point is present on the alignment at 23+825. Surficial materials consist of angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of <1.0m.	zsxDv/szxCv i d,p 2,II,II,M,s	1m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). • Bedrock will be encountered during upgrade works but will likely be rippable. Significant blasting is not anticipated. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
24+425 602313 7051571	**24+790** 602480 7051249	0-15%	The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts so upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. A topographic low point is present on the alignment at 24+590. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szxCv\szxDv p s,m 2,II,IV,H,t	1-2m	Poor	**Low to Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
24+790 602480 7051249	**26+115** 602760 7049981	0-15%	Continue along the existing placer mine road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	zsxDv/szxCv m d,p 2,II,II,M,s (24+790 to 25+665) zsxDv//Rh m d,p 2,II,II,M,s (25+665 to 26+115)	1-2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
26+115 602760 7049981	**26+310** 602724 7049790	0-15%	The existing alignment is in good condition aside from a lack of drainage structures. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. No signs of shallow permafrost were noted in existing road cuts and as a result upgrade of the existing road prism is not expected to lead to significant permafrost degradation provided that the proposed road stays within the existing road corridor. A topographic low point is present on the alignment at 26+285. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	szxCv\szxDv p s,m 2,II,IV,H,t	1-2m	Poor	**Low to Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
26+310 602724 7049790	**27+185** 602591 7053466	0-15%	Continue along the existing placer mine road in a ridgetop position. The existing alignment is in good condition aside from a lack of drainage structures. A topographic low point is present on the alignment at 27+040. Surficial materials consist of silty sand with some gravel colluvium likely grading into angular rubble colluvium in a silty sand matrix at depth. Fractured mica schist bedrock underlies this material at depths of 1.0-2.0m.	zsxDv/szxCv m d,p 2,II,II,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment via excavation of a large ditchline and use the resulting material to build up the road prism to promote positive drainage. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
27+185 602591 7053466	**27+280** 602524 7048856	15-30%	The proposed road alignment leaves the existing placer miner roads and begins to head to the west. The alignment generally traverses rolling, ridgetop terrain with gentle to moderate slope gradients. Surficial materials consist of silty sand with some gravel material to angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of 0.5-2.0m.	zsxDv/szxCv m d,p 2,II,II,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
27+280 602524 7048856	**27+680** 602270 7048547	15-30%	The proposed alignment traverses rolling ridgetop terrain with gentle to moderate slope gradients. Surficial materials consist of silty sand with some gravel material to angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of 0.5-2.0m.	szxCv i-p s,p 3,II,III,M,s	1-2m	Imperfect	**Low to moderate:** Small scale cutslope sloughing due to construction through imperfectly drained soils. Loss of access on the proposed road alignment is not expected.	Temporary loss of access on the proposed road alignment. **Low**	**Low**	• Cut and fill construction • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
27+680 602270 7048547	**28+195** 602378 7048122	20-30%	The proposed road alignment traverses the west side of a broad ridge on approach to a small draw crossing. Surficial materials consist of silty sand with some gravel material to angular rubble colluvium in a silty sand matrix. Fractured mica schist bedrock underlies this material at depths of 0.5-2.0m.	zsxDv/szxCv m d,p 2,II,II,M,s (27+680 to 27+840) zsxDv/zsxCv w n/a,n/a 2,II,II,L,s (27+840 to 27+955) zsxCv w n/a,n/a 3,II,II,L,s (27+955 to 28+195)	0.5-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
28+195 602378 7048122	**28+270** 602350 7048053	20-30%	The alignment crosses a small draw feature. The base of the draw is located at 28+230. Minor NCD flow was present no scoured or defined channel was observed. Terrain mapping indicates that shallow, moderate ice content permafrost is present across the base of the draw. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv p s,m 3,III,IV,M,s	2m	Poor	**Moderate:** Permafrost degradation due to proposed road construction through the base of the draw feature. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Overland construction through the base of the stream draw transitioning into ¼ to ½ bench cut on the draw sidewalls. • Buttress the road cut on approach and exit of the draw crossing if cutslope sloughing is problematic. • Install an 800mm diameter culvert at 28+230 to address NCD flow at the base of the draw. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
28+270 602350 7048053	**28+625** 602085 7047815	10-20%	The alignment climbs out of the draw crossing through planar slopes with gentle slope gradients. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv i-p s,p 3,II,III,M,s	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at all low points along the proposed alignment. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
28+625 602085 7047815	**29+155** 601602 7047900	10-20%	The alignment traverses a rolling ridgetop feature. Bedrock is apparent outcropping in isolated locations. A topographic low is present at 28+730. Surficial materials consist of angular rubble colluvium in a silty sand matrix	zsxDv/szxCv m d,p 2,II,II,M,s & Rh/zsxDv w-r n/a,n/a 2,II,II,L,s	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at all low points along the proposed alignment. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
29+155 601602 7047900	**29+205** 601559 7047892	0-10%	The alignment begins to wrap around to the south side of the ridge feature. Terrain is rolling with flat slope gradients. Terrain mapping indicates that shallow, moderate ice content permafrost is present in a low point in this area. Field observations showed no signs of shallow, moderate ice content permafrost. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szCv\szxDv p s,m 2,II,IV,H,t	1-2m	Poor	**Moderate:** Permafrost degradation due to proposed road construction. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Overland construction if shallow permafrost is encountered in the area. • Cut and fill construction if permafrost is not encountered. Cut: N/A – Overland construction Fill: 70% for fill of nearby colluvium deposits	**Low**
29+205 601559 7047892	**30+090** 600709 7047687	10-30%	The alignment traverses the south side of the ridge to a saddle point starting at 29+985. A swale is present at 30+060. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxDv/zsxCv m-w n/a,n/a 2,II,II,L,s & zsxCv m n/a,n/a 2,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at all low points along the proposed alignment. • Install an 800mm diameter culvert at 30+060 to address potential flow in the swale. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
30+090 600709 7047687	**30+290** 600567 7047572	5-15%	The proposed road alignment crosses a poorly drained bowl area. Signs of shallow ice-rich permafrost were noted in the field in the bowl area. Terrain mapping of the site indicates that shallow ice poor permafrost is present. Minor flow is present at the base of the bowl area at 30+200. Bedrock mapping indicates that the road enters an area underlain by dacite bedrock. This is a relatively competent igneous rock which is expected to hold up relatively well to industrial road traffic if used as surfacing. Surficial materials consist of ice-rich permafrost in local colluvium deposits.	szxCv i-p s,p 3,II,III,M,s	>3m	Imperfect	**Moderate:** Permafrost degradation due to the proposed road construction. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**	• Overland construction over stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert to address stream flow at 30+200. Cut: N/A – Overland construction Fill: 70% for fill of nearby colluvium material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
30+290 600567 7047572	**31+030** 600065 7047238	30-50%	The alignment climbs out of the poorly drained bowl area and traverses the southeast side of a prominent ridge feature. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv/zsxDv i d,p 3,II,II,M,s (30+290 to 30+420) Rh/zsxDv w n/a,n/a 3,II,II,L,s (30+420 to 30+475) zsxCx r n/a,n/a 4,III,III,M,s (30+475 to 30+685) (30+790 to 31+030) zsxCv m-w n/a,n/a 3,II,II,L,s (30+685 to 30+790)	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Shift to ¾ to Full Bench cut construction as required due to vertical alignment. • Install cross drain culverts at all low points along the proposed alignment. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
31+030 600065 7047238	**32+625** 599336 7045905	0-30%	The alignment climbs onto a broad ridge feature and follows it to the south. Surficial materials consist of angular rubble colluvium in a silty sand matrix	zsxDv/szxCv m-i d,p 2,II,II,M,s	1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at all low points along the proposed alignment. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
32+625 599336 7045905	**34+420** 598174 7044653	0-30%	The alignment continues to head to the south along the top of a ridge feature. The alignment begins to drop off the ridge at 33+735. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv/zsxDv p s,p 2,II,III,M,s (32+625 to 32+780) zsxDv/szxCv-Fg m-w d,p 2,II,III,M,s (32+780 to 33+270) (33+520 to 33+670) szxCv i-p s,p 2,II,III,M,s (33+270 to 33+520) (33+800 to 34+420) zsxDv/szxCv m-i d,p 2,II,II,M,s (33+670 to 33+800)	1-2m	Imperfect to Well	**Low to Moderate:** Small scale cutslope sloughing due to construction through imperfectly drained soils. Loss of access on the proposed road alignment is possible.	Temporary loss of access on the proposed road alignment. **Moderate**	**Low to Moderate**	• Cut and fill construction • Install cross drain culverts at all low points along the proposed alignment. • Lay back cuts to 70% at imperfectly drained sites and buttress with keyed in angular rock if sloughing is problematic. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material Aggregate Source: • A3 (33+545 to 33+750) – Rubble colluvium over andesite to dacite bedrock	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
34+420 598174 7044653	**34+885** 598233 7044397	15-30%	The alignment drops down through planar face unit slopes to a switchback location on 20-25% slopes. Surficial materials consist of angular rubble colluvium in a silty sand matrix	zsxCv w-r n/a,n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at all low points along the proposed alignment. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
34+885 598233 7044397	**34+985** 598163 7044326	0-20%	The alignment traverses flat gradient slopes at the apex of a broad ridge. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv i-p s,p 2,II,III,M,s	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at all low points along the proposed alignment. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
34+985 598163 7044326	**35+400** 597973 7043958	0-10%	The alignment traverses flat gradient slopes at the apex of a broad ridge. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxDv/szxCv i-p s,p 2,II,IV,M,s	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at all low points along the proposed alignment. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
35+400 597973 7043958	**36+030** 597940 7043362	10-15%	The alignment drops onto the east side of the ridge feature. Terrain is planar with gentle slope gradients. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxDv/szxCv m-i s,p 2,II,II,M,s & szxCv i-p s,p 2,II,III,M,s	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at all low points along the proposed alignment. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
36+030 597940 7043362	**36+150** 597905 7043245	15-25%	The alignment crosses into a terrain mapping polygon that indicates that shallow, moderate ice content permafrost is present. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	sxzCb p s,m 2,II,IV,M,t	1-2m	Poor	**Moderate:** Permafrost degradation due to proposed road construction. Formation of thermokarst features and road prism degradation. Possible small scale cutslope sloughing.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• ¼ to ½ bench cut construction. • Buttress cuts with keyed in angular rock if sloughing is problematic. Cut: 70% in poorly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of imported granular material	**Low**
36+150 597905 7043245	**36+280** 597868 7043123	15-25%	The alignment traverse planar, gentle gradient slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv i-p s,p 2,II,III,M,s	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at all low points along the proposed alignment. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
36+280 597868 7043123	**36+390** 597821 7043021	15-20%	The alignment crosses into a terrain mapping polygon that indicates that shallow, moderate ice content permafrost is present. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	sxzCb i-p s,m 2,II,IV,M,t	1-2m	Poor	**Moderate:** Permafrost degradation due to proposed road construction. Formation of thermokarst features and road prism degradation. Possible small scale cutslope sloughing.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• ¼ to ½ bench cut construction. • Buttress cuts with keyed in angular rock if sloughing is problematic. Cut: 70% in poorly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of imported granular material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
36+390 597821 7043021	**37+175** 597349 7042406	20-25%	The alignment drops through southeast aspect slopes with gentle slope gradients. Small swale features are present at the following locations: • 36+595 • 36+725 • 36+915 Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxDv/szxCv m-i s,p 2,II,II,M,s (36+395 to 36+545) zsxCv m-w n/a,n/a 3,II,II,L,s (36+545 to 36+605) (36+735 to 37+175) szxCv i-p s,p 2,II,III,M,s (36+605 to 36+735)	1-2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at the following swale locations: ○ 36+595 ○ 36+725 ○ 36+915 Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
37+175 597349 7042406	**38+105** 597362 7042073	15-35%	The alignment crosses through a broad saddle and heads east to a switchback location on moderate gradient terrain. Terrain mapping indicates that shallow, moderate ice content permafrost is present. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv\szxDv p s,m 2,II,IV,M,s & szxCv i-p s,p 3,III,IV,M,s	1-2m	Poor	**Moderate:** Permafrost degradation due to proposed road construction. Formation of thermokarst features and road prism degradation. Possible small scale cutslope sloughing	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Cut and fill construction • Buttress cuts with keyed in angular rock if sloughing is problematic. • Expect minor permafrost degradation to occur in moderate ice content area. Cut: 70% in poorly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
38+105 597362 7042073	**38+685** 597108 7041614	50-70%	The alignment crosses through a large northwest aspect bowl feature directly below the summit of an unnamed dome. Slope gradients up to 70% are apparent on LiDAR data of the area and an existing placer mine road is present from 38+240 onwards. Surficial materials consist of a veneer of unconsolidated colluvium verging on talus overlying local dacite to andesite bedrock.	szxCv i-m d,p 3,II,III,M,s & zsxDv/szxCv-Fg m-w d,p 4,II,III,M,s & zsxDv/zsxCv m n/a,n/a 3,II,II,L,s	1m	Well	**Moderate:** Mid-sized (<1000m^3) fill slope failure due to fill placement on moderately steep gradient slopes. Runout is expected to terminate on moderate gradient terrain approximately 150m downslope.	Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate**	• Cut and fill construction with fill placement on slopes <55%. Shift to full bench cut with endhaul of all excess material where downhill sideslopes exceed 55%. • Expect minor cutslope ravelling and retrogression to occur. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
							Moderate: Small scale (<500m^3) cutslope failure due to cuts in unconsolidated colluvium material in moderately steep gradient terrain.	Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate**		**Mod. –** Small scale cutslope ravelling and retrogression
38+685 597108 7041614	**39+130** 597437 7041388	15-30%	The alignment wraps around to the south side of the dome feature into gentle to moderate gradient terrain. The proposed road continues to track the existing place miner road with several minor deviations for grade and alignment purposes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxCv m-w n/a,n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.1: Coffee Gold Mine Northern Access Route Section 1 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H)[11] and Description Following Conventional Road Construction	Elements at Risk and P(S:H)[12]	Partial Risk P(HA)[13]	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)[14]
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
39+130 597437 7041388	**39+425** 597559 7041152	15-30%	The alignment continues to track the existing placer mine road through dominantly gentle gradient terrain. Terrain mapping of the area indicates that shallow, moderate ice content permafrost is present. Shallow permafrost was not observed in existing road cuts at the site and is presumed to be degraded within the existing road right-of-way. Proposed road upgrade works are not expected to lead to significant permafrost degradation. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv\szxDv p s-m 2,II,IV,H,t	1-2m	Poor	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
39+425 597559 7041152	**40+805** 597732 7040043	25-55%	The proposed alignment leaves the existing placer mine road and wraps around the west side of Henderson Dome. The area appears to be bedrock controlled and no signs of shallow permafrost with moderate to high ice contents were apparent. Surficial materials consist of a veneer of unconsolidated colluvium verging on talus overlying local dacite to andesite bedrock directly downslope of the dome. Moving away from the dome material shift into silty sand with some gravel colluvium.	zsxDv/Rk w n/a,n/a 3,II,II,L,s & szxCv-Fg i-p s,p 3,II,III,M,s & zsxDv/szxCv w d,p 3,II,II,M,s & zsxCv w n/a,n/a 2,II,II,L,s	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
40+805 597732 7040043	**41+100** 597802 7039766 **End of Section 1**	10-20%	The alignment ties back into the existing placer miner road. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxDv/zsxCv w n/a,n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
41+100 597804 7039767 **Start of Section 2**	**41+895** 597824 7038989	25-40%	The proposed road alignment leaves the existing placer mine road and descends through moderate gradient face unit slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxDv/zsxCv w n/a,n/a 3,II,II,L,s (41+074 to 41+245) zsxCv w-m n/a,n/a 3,II,II,L,s (41+245 to 41+895)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
41+895 597824 7038989	**42+045** 597960 7038930	30-60%	The proposed alignment crosses through a broad draw feature. The base of the draw is located at 41+925. Slope gradients range from 30% at the base of the draw to 60% on the south sidewall slope. The NCD at the base of the draw has channel dimensions on the order of 1m by 0.2m. Terrain mapping indicates that the base of the draw contains shallow, moderate ice content permafrost while the sidewall slope contains shallow ice poor permafrost. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	sxzCb p s,m 2,II,IV,M,t (41+895 to 41+930) szxCv i s,p 4,III,IV,H,s (41+930 to 42+020)	1-2m	Poor to Imperfect	**Moderate:** Permafrost degradation due to road construction through the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Overland construction through the base of the draw transitioning into full bench cut on the south sidewall of the draw. Excess material must be endhauled to a suitable waste site. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 600mm diameter culvert on the NCD draw at 41+925 to address flow. • The fill slope gradient remains at 70% as ice-rich permafrost is not present. • Buttress the cutslope of the woods side of the crossing if permafrost is encountered and cutslope sloughing is problematic. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
							Moderate: Mid-sized (<1000m^3) fill slope failure due to fill placement on moderately steep gradient slopes on the south sidewall of the stream draw. Runout is expected to terminate in the base of the stream draw. A secondary hydrogeomorphic event is not expected.	Temporary loss of access on the proposed alignment. **Moderate**	**Moderate**		**Low**
42+045 597960 7038930	**42+310** 598053 7038697	30-40%	The alignment breaks out of the draw onto planar face unit slopes with moderate slope gradients. Terrain mapping indicates that shallow, moderate ice content permafrost is present in the area. No signs of shallow, moderate ice content permafrost were noted in the field. Slope gradients are too steep for overland construction. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	szxCv p s,m 3,III,IV,M,s	1-2m	Poor	**Moderate:** Permafrost degradation due to road construction. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Cut and fill construction • Lay back cuts to 70% and buttress with keyed in angular rock if ice is encountered and sloughing is problematic. • Expect minor permafrost degradation to occur if moderate ice content permafrost is encountered. Cut: 70% in poorly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
42+310 598053 7038697	**43+235** 597930 7037819	25-40%	The alignment traverses planar face unit slopes with moderate slope gradients. Small swale features with the potential to host freshet flow are present at the following locations: • 42+350 • 42+635 • 42+735 • 43+185 Surficial materials consist of angular rubble colluvium in a silty sand matrix.	**Primarily** zsxCv m to w n/a,n/a 3,II,II,L,s szxCv i s,p 3,II,III,M,s (42+620 to 42+805)	1-2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install cross drain culverts at the following locations: ○ 42+350 ○ 42+635 ○ 42+735 ○ 43+185 • The culvert at 42+325 drains onto a placer mine road downslope of the proposed alignment. A cross ditch must be constructed through the placer mine road to accommodate cross drain flow. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
43+235 597930 7037819	**44+015** 597815 7037067	20-40%	The road alignment ties back into the existing placer miner road. The existing road is in relatively good condition but lacks a ditchline and drainage structures. Cross a small NCD which forms out of minor cutslope seepage at 43+260. The NCD is currently running down the existing alignment for approximately 50m with no signs of road prism instability. The stream channel is approximately 0.5m wide by 0.1m deep. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv i s,p 3,II,III,M (43+235 to 43+375) zsxCv w n/a, n/a 4,III,III,M (43+375 to 43+925) zsxCv w-m n/a, n/a 3,II,II,L (43+925 to 44+015)	1-2m	Mod. Well to Well	**Low to Moderate:** Continued stream diversion down road alignment leads to fill slope failure and initiation of a small (<500m^3) fill slope failure. Runout is expected to terminate on gentle to moderate gradient terrain immediately downslope of the proposed alignment.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate**	**Low to Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install an 800mm diameter culvert at 43+260 to address stream flow and potential icing. Cut: 70-100% in local colluvium deposits 200% in fractured andesite to dacite bedrock. Fill: 70% for fill of local material.	**Low**
44+015 597937 7037839	**44+735** 597990 7036391	25-40%	The proposed alignment leaves the existing placer mine road and swings around the east side of a prominent bedrock knob. Bedrock visible in the knob consists of competent igneous rock (Andesite to Dacite). The rock fractures into angular clasts generally <0.2m in diameter at surface although the rock mass is likely less fractured at depth. The type of igneous rock is considered suitable for road surfacing if crushed. This rock knob feature will likely make an ideal quarry site to generate material for adjacent sections of the alignment. Surficial materials consist of angular rubble colluvium verging on talus.	zsxCv w-m n/a, n/a 3,II,II,L (44+015 to 44+460) zsxDv m-w d,p 2,II,II,L (44+460 to 44+735)	0.5-1.0m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Construct the section of new road using cut and fill methods. • Construct a quarry in the rock knob to the west of the proposed road alignment if additional surfacing or subgrade material is needed. Cut: 70-100% in local colluvium deposits 200% in fractured andesite to dacite bedrock. Fill: 70% for fill of local material. Aggregate Source: • 44+235 to 44+585 (Borrow 9): andesite to dacite bedrock.	**Low**
44+735 597990 7036391	**46+705** 599033 7035107	10-30%	The proposed alignment ties back into the existing placer mine road and follows and rolling ridge top terrain feature. The existing road is in relatively good condition; however, drainage structures are not present along the alignment and topographic lows have accumulated fine grained silty material which is very slippery when wet. Topographic low points are as follows: • 45+065 • 45+890 Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxDv m-w d,p 2,II,II,L (44+735 to 45+430) zsxDv m-w n/a,n/a 2,II,II,L (45+430 to 46+705)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). • Surface the road at low points with local coarse grained colluvium material to eliminate slippery sections. Cut: 70-100% in local colluvium deposits 200% in fractured andesite to dacite bedrock. Fill: 70% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
46+705 599033 7035107	**46+995** 598971 7034836	0-10%	The alignment crosses through a saddle point on the ridge while tracking the existing placer miner road. Terrain mapping indicates that shallow, moderate ice content permafrost is present outside of the existing road prism. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szCv\szxDv p s,m 2,II,IV,H,t	1-2m	Poor	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70-100% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
46+995 598971 7034836	**47+635** 599232 7034268	15-30%	The proposed alignment leaves the existing placer mine road at the site of a sharp corner and steep grade. Terrain in the area is planar to somewhat rolling with gentle to moderate slope gradients. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv i s,p 2,II,III,M (46+970 to 47+495) zsxDv/szxCv m-i d,p 2,II,II,M (47+495 to 47+635	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Construct the section of new road using cut and fill methods. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock. Fill: 70% for fill of local material.	**Low**
47+635 599232 7034268	**48+520** 599218 7033418	0-25%	The proposed road section ties back into the existing placer mine road and follows rolling ridge top terrain. The existing road is in relatively good condition; however, drainage structures are not present along the alignment and topographic lows along the alignment have accumulated fine grained silty material which is slippery when wet. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxDv/szxCv m-i d,p 2,II,II,M,s (47+635 to 47+900) zsxDv w-m n/a,n/a 2,II,II,L,s (47+900 to 48+310) zsxDv/zsxCv w n/a,n/a 2,II,II,L,s (48+310 to 48+520)	1m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). • Surface the road at low points with local coarse grained colluvium material to eliminate slippery sections. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material. Aggregate source: • 47+835 to 48+035 (Borrow 10): schist based rubble colluvium over mica schist bedrock.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
48+520 599218 7033418	**48+855** 599206 7033085	0-10%	The road alignment tracks the existing placer mine road through a broad saddle feature. A topographic low point on the alignment is present at 48+610. Terrain mapping indicates that shallow, moderate ice content permafrost is present in the area. The permafrost appears to be degraded in the existing road right of way. Road upgrade works are not expected to lead to further permafrost degradation. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szCv\szxDv p s,m 2,II,IV,H,t	2m	Poor	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
48+855 599206 7033085	**50+050** 598543 7032256	10-30%	The road alignment continues to track the existing placer mine road along a rolling ridgetop feature. The existing road is in relatively good condition; however, drainage structures are not present along the alignment and topographic lows along the alignment have accumulated fine grained silty material which is slippery when wet. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxDv/zsxCv w n/a,n/a 2,II,II,L,s	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
50+050 598543 7032256	**50+245** 598390 7032136	0-10%	The road alignment tracks the existing placer mine road through a broad saddle feature. A topographic low point on the alignment is present at 50+150. Terrain mapping indicates that shallow, moderate ice content permafrost is present in the area. The permafrost appears to be degraded in the existing road right of way. Road upgrade works are not expected to lead to further permafrost degradation. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szCv\szxDv p s,m 2,II,IV,H,t	2m	Poor	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
50+245 598390 7032136	**51+685** 597945 7031141	10-30%	The road alignment continues to track the existing placer mine road along a rolling ridgetop feature. The existing road is in relatively good condition; however, drainage structures are not present along the alignment and topographic lows along the alignment have accumulated fine grained silty material which is slippery when wet. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv m-w n/a,n/a 3,II,II,L,s (50+245 to 50+420) szxCv/zsxDv m-i d,p 2,II,III,M,s (50+420 to 50+625) (51+190 to 51+300) zsxDv/zsxCv w n/a,n/a 2,II,II,L,s (50+625 to 51+190) (51+300 to 51+685)	1m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
51+685 597945 7031141	**51+765** 597897 7031075	0-10%	The road alignment tracks the existing placer mine road through a broad saddle feature. A topographic low point on the alignment is present at 51+740. Terrain mapping indicates that shallow, moderate ice content permafrost is present in the area. The permafrost appears to be degraded in the existing road right of way. Road upgrade works are not expected to lead to further permafrost degradation. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szCv\szxDv p s,m 2,II,IV,H,t	2m	Poor	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
51+765 597897 7031075	**52+240** 597541 7030770	10-20%	The road alignment continues to track the existing placer mine road along a rolling ridgetop feature. The existing road is in relatively good condition; however, drainage structures are not present along the alignment and topographic lows along the alignment have accumulated fine grained silty material which is slippery when wet. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxDv/zsxCv w n/a,n/a 2,II,II,L,s	1m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install cross drain culverts at topographic lows where required. Perpendicular ditches extending away from the road prism at these low points may be adequate if ground falls away to either side of the alignment (i.e. the alignment is at the apex of a ridge feature). Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
52+240 597541 7030770	**53+275** 597430 7030125	0-30%	The road alignment tracks the existing placer mine road through a broad saddle feature and then begins to descend into the Maisy May Creek valley Terrain mapping indicates that shallow, moderate ice content permafrost is present in the area. The permafrost appears to be degraded in the existing road right of way. Road upgrade works are not expected to lead to further permafrost degradation. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szCv\szxDv p s,m 2,II,IV,H,t (52+240 to 52+675) szCv\szxDv m-i d,m 2,II,IV,H,t (52+675 to 53+275)	2m	Poor to Mod. Well	**Moderate:** Permafrost degradation due to road construction outside of the existing placer miner road. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay within the existing road right-of-way to avoid degrading permafrost outside of the existing road prism. • Install cross drain culverts at topographic lows where required. Cut: 70% in local colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
53+275 597430 7030125	**54+460** 598192 7029291	20-30%	The proposed alignment leaves the existing placer mine road and drops onto planar, gentle to moderate gradient face unit slopes. The area as a whole has been previously affected by a large forest fire event, and as a result no mature timber is present. The downslope area was also traversed in the field and shows signs of shallow ice-rich permafrost. The upper portion of the slope where the proposed road alignment is situated appeared to be well drained and did not show signs of shallow ice-rich permafrost. A small swale is present approximately 80m downslope of the proposed alignment at 53+860. No signs of flow were noted at the proposed alignment. A second small swale is present downslope of the proposed alignment at 54+040. Surficial materials consist of moderately well to well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv m-i d,p 2,II,III,M (53+275 to 53+810) szxCv m-i d,p 3,II,III,M (53+810 to 54+435) zsxDv/zsxCv m n/a, n/a 3,II,II,L (54+435 to 54+460)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Construct the section of new road using cut and fill methods. • Install 450mm diameter cross drain culverts at 53+860 and 54+040. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
54+460 598192 7029291	**54+850** 598031 7029110	15-30%	The proposed alignment ties back into the existing placer mine road and wraps around a broad ridge feature. An existing switchback is present on the south side of the ridge feature directly adjacent to the Maisy May stream draw. The draw immediately to the south of the switchback site shows signs of shallow, ice-rich permafrost. While the switchback itself appears to be located in an area without ice-rich permafrost, construction extending to the south of the proposed switchback location is not recommended. Bedrock is visible in the road cuts of the existing alignment and consists of weak, heavily fractured mica schist. The rock appears to fracture into platey clasts on the order of 2-5cm thick by 15-30cm wide along pre-existing foliation planes within the rock mass. The dip angle of the foliation planes is close to flat, eliminating a slope dipping bedrock configuration. Surficial materials consist of well drained angular rubble colluvium overlying fractured micaschist bedrock.	zsxDv/zsxCv m n/a,n/a 3,II,II,L (54+460 to 54+525) zsxCv//zsxDv w-m n/a, n/a 3,II,II,L (54+525 to 54+740) szxCv m-w n/a,n/a 3,II,II,L (54+740 to 54+850)	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
54+850 598031 7029110	**55+520** 598467 7029332	20-35%	The road alignment leaves the existing placer mine road and traverses planar, gentle to moderate gradient slopes. Timber in the area consists of a mixed stand of immature spruce, aspen, and birch trees. This vegetation profile is not consistent with the presence of shallow, ice-rich permafrost and signs of degraded ice-rich permafrost are not present on the underlying existing road alignment. No surface flows or signs of shallow subsurface flow were noted along the proposed alignment. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	**Primarily** szxCv m-i d,p 3,II,III,M	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Construct the section of new road using cut and fill methods. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
55+520 598467 7029332	**55+950** 598674 7029167	15-25%	The proposed alignment turns a switchback on planar to somewhat benched slopes with gentle slope gradients. Timber in the area consists of a mixed stand of immature spruce, aspen, and birch trees. This vegetation profile is not consistent with the presence of shallow, ice-rich permafrost and signs of degraded ice-rich permafrost are not present on the underlying existing road alignment. The Maisy May stream draw is situated approximately 40-50m downslope of the proposed alignment. Signs of shallow ice-rich permafrost were present in the stream draw downslope of the proposed alignment. The proposed road skirts above what appears to be the upper extent of shallow ice-rich permafrost. Moving north approximately 50m off of the end of the proposed switchback site, a thick blanket of moss, deep organic soils, and stunted black spruce timber indicates that shallow, ice-rich permafrost is present. Surficial materials consist of moderately well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv m-i d,p 3,II,III,M,s Above the road sxzCb p-i s,m 3,III,IV,H,b Below the road	1-2m	Mod. Well	**Moderate:** Site disturbance extending north off of the end of the proposed switchback. Degradation of ice-rich permafrost to the north. Potential to initiate a small (<500m^3) active layer failure running out to the base of the Maisy May stream draw.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Maisy May Creek. **Moderate**	**Moderate** **Moderate**	• Construct the section of new road using cut and fill methods. • Ensure that road construction does not extend onto ice-rich permafrost slopes to the north or downslope in the Maisy May stream draw. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
55+950 598674 7029167	**56+070** 598716 7029058	20-30%	The proposed road alignment crosses over the existing placer mine road and wraps around a small bedrock controlled ridge feature prior to a stream crossing. A small rock quarry is present in the ridge feature. The bedrock lithology noted in the quarry appears somewhat more competent than is typical of the mica schist in the area and tends to break into 0.3m diameter blocky clasts. Signs of shallow ice-rich permafrost are not apparent in the existing placer mine road cut or the quarry location. Surficial materials consist of angular rubble colluvium overlying medium strong micaschist bedrock.	sxzCb p-i s,m 3,III,IV,H,b	<1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Construct the section of new road using cut and fill methods. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
56+070 598716 7029058	**56+145** 598735 7028981	15-30%	The proposed road alignment crosses over a broad stream draw. The stream draw has not yet been the site of placer mining and as a result appears to contain shallow, ice-rich permafrost. The stream at the base of the draw (56+125) is 0.5m wide by 0.2m deep with a sand substrate. The channel gradient is approximately 15%. No signs of elevated flows were noted on the stream and a water intake serving a nearby placer miner camp is present. Surficial materials consist of poorly drained fluvial sands and gravels. Ice-rich permafrost is expected at depths of approximately 1m.	sdFAv\sxzCb m-i d,m 2,II,IV,M,t (56+070 to 56+120) sxzCb p-i s,m 3,III,IV,H,b (56+120 to 56+135) szxCv p-i d,p 3,II,III,M,s (56+135 to 56+145)	>2m	Poor	**High:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction over stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • If permafrost is encountered in road cuts transitioning out of the stream draw armour the cuts with coarse angular rock to prevent slumping. • Install an 800mm diameter culvert to address stream flow at 56+125. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
56+145 598735 7028981	**57+040** 598874 7028116	25-40%	The proposed road alignment ties back into the existing placer miner road. The existing road is in relatively good condition; however, drainage structures are not present along the alignment. A permafrost area is present approximately 30m downslope of the proposed alignment at 56+375 eliminating the potential to shift the alignment downslope significantly to reduce the road grade. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv p-i d,p 3,II,III,M,s (56+145 to 56+820) (56+850 to 57+040) sxzCb p-i s,m 3,III,IV,H,b (56+820 to 56+850)	1-2m	Well	**Low:** Mid-sized (<1000m^3) fill slope failure due to improper fill placement. Runout is expected to terminate at the base of the Maisy May stream valley approximately 120m downslope.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 100% in local colluvium deposits 200% in fractured micaschist bedrock. Fill: 70% for fill of local material.	**Low**
57+040 598874 7028116	**57+245** 598893 7027920	55-60% Above 40-50% Below	The existing road alignment passes through a section of moderately steep gradient, bedrock controlled terrain. The existing road alignment appears to have been constructed using cut and fill construction methods and as a result the fill slope of the road is relatively large, ranging up to approximately 10m in length. The fill shows no signs of significant movement such as tension cracking and appears to be composed of rubble colluvium material. However, the fill slope angle is 75-80% which is in excess of what is typically recommended for construction. Enlargement of the fillslope through further sidecast of material could be problematic. Bedrock makes up the majority of the road cutslope and consists of relatively strong, although somewhat fractured gneissic material. This lithology appears to hold up to cut angles on the order of 200%; however, some minor rock	szxCv p-i s,p 3,II,III,M,s (57+040 to 57+150) zsxCv w n/a,n/a 3,III,III,H,s (57+150 to 57+245)	<1m	Well	**Moderate:** Mid-sized (<1000m^3) fill slope failure due to enlargement of the existing fill slope. Runout is expected to terminate at the base of the Maisy May stream valley approximately 40m downslope. A subsequent hydrogeomorphic event is not expected due to the low underlying channel gradient.	Short term loss of access on the proposed road alignment – Practically repairable in 1-2 days. **Moderate** Sediment delivery to Maisy May Creek. **High**	**Moderate** **High**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Any required road widening must be performed through excavation into cut rather than fillslope enlargement. • Implement rockfall hazard signage and a no stopping zone. • Do not expand the existing fillslope significantly. Material generated during road upgrade works should be endhauled to a suitable waste site. Suitable waste sites are present on the northwest side of the road at 57+315. Cut: 100% in local colluvium deposits 200% in fractured gneissic bedrock. Fill: 70% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			detachment activity is expected to occur. Terrain mapping of the area indicates that a debris slide is present at 57+150. Field review of the site did not show signs of cutslope displacement on the existing road alignment or a slide deposit below the road. It is possible that the lineation present on LIDAR and orthoimagery of the site is a relic bedrock slump or deformation area. Road construction through the area is not expected to substantially increase the likelihood of slope movement at the site. Surficial materials consist of a thin veneer of angular rubble colluvium overlying fractured gneissic bedrock.				**Moderate:** Small scale (<5m^3) rock detachment events with runout onto road alignment.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate**	**Moderate**	*Note that although the P(H) for small scale rock detachment events remains at Moderate, the P(S:H) of impact to the road users is reduced to low.	**Moderate*** – Small scale rock detachment events
57+245 598893 7027920	**57+360** 598905 7027821	20-35%	The road alignment breaks out of moderately steep gradient terrain and crosses through gentle to moderate gradient slopes tracking the existing placer miner road. A potential waste site is present on the high side of the road at 57+315. Shallow ice rich permafrost appears to be present downslope of the road alignment at the base of the stream draw. Proposed road construction is not expected to impact this permafrost area. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv w n/a,n/a 3,III,III,H,s (57+245 to 57+300) zsxCb m-w n/a, n/a 2,II,II,L (57+300 to 57+360)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 100% in local colluvium deposits 200% in fractured gneissic bedrock. Fill: 70% for fill of local material.	**Low**
57+360 598905 7027821	**57+450** 598971 7027759	15-25%	The proposed road alignment continues to track the existing placer mine road through a broad stream draw. The stream at the base of the draw is one of the upper tributaries to Maisy May Creek. The channel is 2-3m wide by 0.2m deep with a sand substrate. The stream is located at 57+400. The confluence with Maisy May Creek is immediately downslope of the existing road alignment. Signs of elevated peak flows on the stream, likely associated with placer miner activities upstream are present. The existing drainage structure on the tributary stream is partially infilled but is estimated as an 800mm diameter culvert. This drainage structure appears undersized with respect to peak flows on the drainage path. The stream draw and area downslope of the proposed road has been heavily altered by placer miner operations. The downslope stream draw likely used to contain shallow ice-	sxzCb p-i s,m 3,III,IV,H (57+360 to 57+395) SdFAv\sxzCb m-i d,m 1,II,IV,M,t (57+395 to 57+420) sxzCb p-i s,m 3,III,IV,H,b (57+420 to 57+430) sxzCb m-i	>2m	Poor	**High:** Midsized (<1000m^3) fill slope failure at the eroded fill location. Runout into Maisy May Creek immediately downslope.	Short term loss of access on the proposed road alignment – Practically repairable in 2-3 days. **Moderate** Sediment delivery to Maisy May Creek. **High**	**High** **V. High**	• Overland construction over the stream draw with the proposed road fill toeing out of the existing road alignment where the permafrost in the stream draw has been degraded. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Shift off the existing alignment approximately 10m upstream at the eroded fillslope location. • Remove the existing drainage structure at the site and pullback the oversteepened, vertical fillslope at the culvert location. This pulled back material can be utilized in the proposed road prism if consisting of clean, granular material or if not the material should be endhauled to a suitable waste site. A suitable waste site is present at 57+315. • Install an 1800mm diameter culvert at 57+400 to address the Maisy May tributary stream flow. Refer to the OEL Maisy May Tributary 1 General	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			rich permafrost; however, the permafrost has been degraded and extensive thermokarst gullying is ongoing. The placer miner operations downslope of the proposed road have pushed Maisy May Creek directly adjacent to the fillslope of existing placer miner road. Significant fill slope erosion has occurred resulting in the fill slope of the existing road at the tributary crossing site being 6-8m tall and sitting close to vertical. Surficial materials consist of poorly drained organic rich soils overlying ice-rich permafrost in local fluvial deposits.	d,m 2,II,,IV,M,t (57+430 to 57+450)			**High:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	Arrangement drawing for the site details. • The inlet and outlet of the proposed culvert should be armoured with a blanket of keyed in coarse angular rock. • Permafrost may be encountered on the woods side cutslope of the stream draw. The cutslope should be buttressed with coarse angular rock if permafrost is encountered. • Due to the embankment size, the fill must be constructed out of angular rock. If this is not considered feasible reduce the fillslope gradient to 40%. Cut: N/A – Overland construction Fill: 70% for fill of angular rock. 40% for fill of imported granular material	**Low**
57+450 598971 7027759	**57+545** 599057 7027716	20-30%	The proposed road alignment swings out of the Maisy May tributary stream draw and tracks the existing placer miner road. A small existing rock quarry is present on the high side of the existing alignment. The quarry reveals interbedded gneissic and metalimestone bedrock which is relatively competent. The rock appears to fracture into blocky 0.3-0.5m clasts. This quarry will likely be the rock source for riprap for the nearby stream crossings. Moderate ice content permafrost was not apparent in road cuts once the road alignment passed out of the Maisy May tributary stream draw. Surficial materials consist of a thin veneer of angular rubble colluvium overlying fractured gneissic and metalimestone bedrock.	sxzCb m-i d,m 2,II,IV,M,t	0.5m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment but may extend as far as Maisy May Creek.	Sediment delivery to Maisy May Creek. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic and metalimestone bedrock. Fill: 70% for fill of local material. Aggregate source: • 57+480 to 57+580 (Borrow 11): fractured gneissic bedrock.	**Low**
57+545 599057 7027716	**57+770** 599217 7027566	15-30%	The proposed alignment tracks the existing placer mine road through planar gentle to moderate gradient slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb m-i d,m 2,II,III,M,t	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment but may extend as far as Maisy May Creek.	Sediment delivery to Maisy May Creek. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic and metalimestone bedrock. Fill: 70% for fill of local material. Aggregate source: • 57+480 to 57+580 (Borrow 11): fractured gneissic bedrock.	**Low**
57+770 599217 7027566	**57+890** 599288 7027469	10-20%	The alignment crosses over the Maisy May Tributary 2 stream. The stream is situated at 57+850and has channel dimensions of 2-3m by 0.2m. The upstream channel gradient is 7% and the substrate is composed of gravel to cobble sized material. The stream draw likely contained ice-rich permafrost prior to placer miner activity but has	A (57+770 to 57+855) szxCv-X""f p-i s,p 3,V,V,M,s (57+855 to 57+890)	>2m	Poor	**Moderate:** Encounter a pocket of ice-rich permafrost during road construction. Degradation of the remaining permafrost and formation of thermokarst features. Potential road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**	• Overland construction over the stream draw with the proposed road fill toeing out of the existing road alignment where the permafrost in the stream draw has been degraded. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Remove the existing drainage structures at the	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			now been degraded in the area of the road alignment and much of the upstream area. An 800mm diameter culvert is currently in place conducting stream flows. The culvert appears to be somewhat undersized with respect to peak flows on the stream, particularly if icing occurs during the winter/spring season. Surficial materials consist of poorly drained fluvial sands and gravels. Pockets of ice-rich permafrost may still be present in isolated locations in the stream channel.				**Moderate:** Peak flows on stream in excess of existing culvert capacity. Washout of the road prism.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Sediment delivery to Maisy May Creek. **High**	**Moderate** **High**	site. Replace with a 1500mm diameter culvert to address Maisy May Tributary 2 stream flows. Refer to the OEL Maisy May Tributary 2 General Arrangement drawing for the site details. • The inlet and outlet of the proposed culvert should be armoured with a blanket of keyed in coarse angular rock. Cut: N/A – Overland construction Fill: 70% for fill of nearby colluvium material.	**Low**
57+890 599288 7027469	**58+340** 599570 7027125	20-30%	The proposed road alignment tracks the existing placer mine road through planar gentle to moderate gradient slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCb m-w n/a, n/a 2,II,II,L Above the road sxzCb i s,m 2,II,IV,M Below the road	1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gradient slopes immediately downslope of the proposed alignment. The road is separated from Maisy May Creek by at least 20m of flat gradient terrain making direct impact unlikely.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
58+340 599570 7027125	**58+440** 599628 7027051	20-35%	An existing quarry site is present on the approach to the Maisy May Tributary 3 stream crossing. Heavily fractured gneissic bedrock with pockets of very strong metalimestone is apparent outcropping in the quarry cutslope. The rock mass appears to fracture into blocky 0.3-0.5m clasts. Shallow ice rich permafrost is mapped downslope of the proposed road location. Surficial materials consist of a veneer of well drained angular rubble colluvium overlying bedrock.	zsxCw-V w n/a,n/a 4,III,III,M,s Above the road sdFAv\sxzCb p-i s,m 2,II,IV,M,t Below the road	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment. The road is separated from Maisy May Creek by approximately 60m of gentle gradient terrain making direct impact unlikely.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • This area is a potential rock source for adjacent stream crossings. Cut: 70-100% in well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 58+340 to 58+445 (Borrow 12): fractured gneissic bedrock.	**V. Low**
58+440 599628 7027051	**58+520** 599645 7026979	10-20%	The alignment crosses over the Maisy May Tributary 3 stream. The stream is situated at 58+470 and has channel dimensions of 2m by 0.4m. The upstream channel gradient is 5% and appears to be relatively undisturbed by placer miner development. The channel substrate is composed of sand. The stream draw outside of the existing road prism	sdFAv\sxzCb p-i s,m 2,II,IV,M,t (58+440 to 58+485) A (58+485 to 58+520)	>3m	Imperfect	**High:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction through the stream draw with the proposed road fill toeing out of the existing road alignment where the permafrost in the stream draw has been degraded. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 15.2m All Steel Portable Bridge as per	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			likely contains shallow ice-rich permafrost. The permafrost appears to have been degraded at the existing road location. No drainage structure is currently in place at the crossing and stream flows currently pass over the road prism. The low channel gradient at the site indicates that icing may be a concern. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying ice-rich permafrost.				**Moderate:** Cutslope ravelling and sloughing on the woods side of the crossing if shallow ice-rich permafrost is encountered. Runout is expected to terminate at the base of the tributary stream draw where a small amount of the material may be transported downstream to Maisy May Creek.	Sediment delivery to Maisy May Creek. **Moderate**	**Moderate**	OEL Maisy May Tributary 3 General Arrangement Drawing. • Install a rock buttress along the woods cutslope of the road if permafrost is encountered during construction (approximately 60m long by 3m tall). The buttress is intended to mitigate cutslope ravelling and sloughing. Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**
							Moderate: Major icing on the stream during the winter season. Impact to the road and crossing structure.	Chronic maintenance and access concern. **Moderate**	**Moderate**		**Low**
58+520 599645 7026979	**59+520** 600085 7026108	20-30%	The proposed road tracks the existing placer mine road through planar, gentle to moderate gradient slopes. The road is located near the toe of a broad, well drained face unit slope. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth. A pocket of sandy silt material is present on the south side of the stream crossing.	A (58+520 to 58+580) zsxCv-V m-w n/a,n/a 3,III,III,L,s (58+580 to 58+830) szxCv i-m d,p 2,III,IV,M,s (58+830 to 59+520)	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment. Direct impact to Maisy May Creek is not expected but minor sediment delivery could occur.	Sediment delivery to Maisy May Creek. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**Low**
59+520 600085 7026108	**59+620** 600134 7026021	15-20%	The proposed road descends into a broad stream draw tracking the existing placer miner road. Road grades on the existing road are in excess of 15% indicating that vertical realignment is required. The base of the stream draw is located at 59+560. The draw hosts minor flow and is imperfectly drained. The vegetation profile at the site indicates that shallow ice-rich permafrost is present at the base of the draw. No drainage structure is currently in place on the existing road alignment and minor flows present at the base of the stream draw appear to infiltrate through the road prism. Icing may be a concern at the base of the stream draw due to the low gradient at the location. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying ice-rich permafrost.	szxCv i-m d,p 3,III,IV,M,s (59+520 to 59+555) sdFAv\sxzCb i-m d,m 2,II,IV,M,t (59+555 to 59+580) szxCv p-i s,p 4,III,IV,H,s (59+580 to 59+605) sxzCb p-i s,m 2,II,IV,M,t (59+605 to 59+620)	>3m	Imperfect	**High:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction over the stream draw. The uphill side of the fill toes out on undisturbed slopes which are likely underlain by shallow ice-rich permafrost. As a result the uphill fill slope angle has been reduced to 40%. The downhill fill slope toes out on the existing road prism where permafrost appears to have been degraded. The downhill fillslope angle has been designed at 70%. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 59+560 to address stream flow and potential icing on the stream. • The inlet and outlet of the proposed culvert should be armoured with a blanket of keyed in coarse angular rock. Cut: N/A – Overland construction Fill: 40-70% for fill of imported granular material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
59+620 600134 7026021	**60+255** 600475 7025516	20-25%	The proposed road alignment climbs out of the stream draw tracking the existing placer miner road. The proposed alignment leaves the existing alignment in isolated locations to reduce the road grade. Road cuts display a sediment profile consistent with the terrain mapping polygon above the proposed road alignment. No signs of permafrost were noted in the existing road cuts in the area. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv w-m n/a,n/a 3,II,II,L,s Above the road sxzCb p-i s,m 2,II,IV,M Below the road	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment. Runout is not expected to extend to Maisy May Creek.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
60+255 600475 7025516	**60+425** 600492 7025348	20-35%	The proposed road alignment drops off of the existing placer mine road and adverses down to the Maisy May Creek valley bottom. The road crosses a short escarpment prior to reaching the valley bottom. Terrain mapping indicates that the short escarpment bordering the valley bottom contains shallow moderate ice content permafrost. Permafrost was not noted in cuts on the existing road alignment upslope of the proposed road location. The road design indicates that the road will be constructed via a large fill toeing out on washed tailing at the valley bottom. This construction method is not expected to impact the shallow moderate ice content permafrost mapped as being present on the escarpment slope. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb p-i s,m 2,II,IV,M,s	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes immediately downslope of the proposed alignment. Maisy May Creek is situated on the southwest side of the valley and is not expected to be impacted.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Construct the section of new road using a large fill toeing out on the tailings at valley bottom. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of imported granular material.	**V. Low**
60+425 600492 7025348	**65+255** 602981 7021464	0-25%	The proposed alignment traverses a series of existing placer miner roads in the base of the Maisy May Creek valley. The area as a whole has been previously mined. It is probable that the valley bottom area previously contained shallow ice-rich permafrost but this has now been degraded. The area was not reviewed in detail in the field as the proposed road location at the time of fieldwork was situated on the east valley sidewall. Cross over Maisy May Tailings Tributary 2 stream at 63+200. Surficial materials consist of well drained tailings which are composed of washed sands and gravels.	A	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Maisy May Creek. **Moderate**	**Low**	• Cut and fill construction or road upgrade in previously mined area. • Install cross drain culverts on all drainage paths. • Install a 2800mm diameter culvert at 63+200. Refer to the OEL Maisy May Tailings Tributary 2 General Arrangement Drawing for the crossing details. Cut: 70% in tailing deposits Fill: 70% for fill of local material. Aggregate source: • 65+235 to 65+285 (Borrow 13): mica schist bedrock.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
65+255 602981 7021464	**65+355** 603054 7021399	10-20%	The alignment crosses over the Maisy May Tributary 4 stream. The stream is situated at 65+305 and has channel dimensions of 3-4m by 0.4m. The upstream channel gradient is 5% and appears to be undisturbed by placer miner development. The channel substrate is composed of sand and gravel. The stream draw outside of the existing road prism likely contains shallow ice-rich permafrost. No drainage structure is currently in place at the crossing and stream flows currently pass over the road prism. The low channel gradient at the site indicates that icing may be a concern. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying ice-rich permafrost.	A	>3m	Imperfect	**High:** Permafrost degradation across the base of the stream draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction through the stream draw. The current road location has fill toeing out on the existing road prism or downslope area where permafrost has been degraded. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 12.2m All Steel Portable Bridge as per the OEL Maisy May Tributary 4 General Arrangement Drawing. Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**
65+355 603054 7021399	**65+530** 603176 7021271	20-30% above 30-50% below with isolated pitches to 65%	The alignment climbs hard out of the Maisy May Tributary 4 stream crossing. Terrain breaks over above the existing alignment into gentle gradient slopes. Moderate gradient terrain with isolated moderately steep to steep gradient bedrock controlled pitches are present downslope of the existing road alignment. No permafrost is apparent in existing road cuts in the area. The site is also timbered with Aspen which is typically indicative of permafrost free slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv i-m d,p 3,II,III,M,s	1-2m	Well	**Moderate:** Small (<500m^3) fill slope failure due to fill placement on moderately steep gradient terrain. Runout is expected to terminate on flat to gentle gradient terrain approximately 60m downslope.	Short term loss of access on the proposed road alignment – Practically repairable in <1 day. **Moderate** Sediment delivery to Maisy May Creek. **Moderate**	**Moderate** **Moderate**	• Keep proposed road alignment on the existing placer miner road. • Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**Low**
65+530 603176 7021271	**65+815** 603369 7021306	10-25%	The alignment hooks uphill and follows a small bedrock controlled ridge feature. Terrain features gentle slope gradients. No signs of shallow moderate ice content permafrost were noted in existing road cuts in the area. Surficial materials consist of well drained gravelly sand with some silt fluvial deposits.	szdCv i-m d,p 3,II,III,M,s (65+530 to 65+675) szxCv\sgFt i-p s,m 2,II,III,M,t (65+675 to 65+790) zsxCx w-r n/a, n/a 4,III,III,M,s (65+790 to 65+815)	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment. Maisy May Creek pulls away from the road location to the southwest and as a result impact to the stream is not expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in local fluvial deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
65+815 603369 7021306	**66+095** 603619 7021178	20-40%	The alignment traverses planar, gentle to moderate gradient slopes tracking the existing road alignment. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCx w-r n/a, n/a 4,III,III,M,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment. The base of the Maisy May Creek valley is approximately 300m downslope so no impact to Maisy May Creek is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
66+095 603619 7021178	**66+170** 603655 7021115	20-30%	The alignment crosses over a broad dry swale. No signs of flow were present at the base of the swale at 66+120. Surficial materials consist of moderately well drained silt some fine sand deposits. The material appears to have been deposited by relic flow events on the stream channel.	zsxCv m-w n/a, n/a 4,III,III,M,s	>2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment. The base of the Maisy May Creek valley is approximately 300m downslope so no impact to Maisy May Creek is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter cross drain culvert at 66+120 in the base of the dry swale. Cut: 70% in local fluvial deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
66+170 603655 7021115	**66+995** 604220 7020528	25-40%	The alignment traverses planar, moderate gradient face unit slopes. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv m-w n/a,n/a 4,III,III,M,s (66+170 to 66+680) zsxCx w-r n/a, n/a 4,III,III,M,s (66+680 to 66+995)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment. The base of the Maisy May Creek valley is approximately 300m downslope so no impact to Maisy May Creek is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
66+995 604220 7020528	**67+085** 604279 702473	20-30% Isolated pitch of 45-65% on town side of crossing	The alignment crosses over a broad draw with signs of shallow subsurface flow at the base of the swale. Shallow moderate ice content permafrost may be present in the base of the draw as indicated by terrain mapping and hydrophilic vegetation at the base of the draw. The base of the draw is located at 67+045. The permafrost present at the base of the draw appears to have been degraded at the existing road location. A short pitch of moderate to moderately steep gradient terrain is present on the town side of the crossing. Fractured micaschist bedrock is present in the road cutslope in this location. Surficial materials consist of imperfect to well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCx w-r n/a, n/a 4,III,III,M,s (66+995 to 67+025) sxzCb/sdFAv\sxzCb i-p s,m 3,III,IV,H (67+025 to 67+065) sxzCb p-i s,m 2,II,IV,M,t (67+065 to 67+085)	1-2m	Imperfect to Well	**Moderate:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Overland construction over the stream draw. The proposed road fill toes out on the existing road prism where the permafrost appears to have been degraded. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 600mm diameter culvert to address potential freshet flow. Cut: N/A – Overland construction Fill: 70% for fill of nearby colluvium material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
67+085 604279 702473	**67+745** 604574 7019886	25-50%	The proposed road tracks the existing placer mine road alignment. The existing road prism is in good condition but lacks a ditchline and crowned road surface. Terrain is planar with moderate slope gradients. No signs of shallow moderate ice content permafrost were noted in the existing road cut. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb p-i s,m 2,II,IV,M,t (67+085 to 67+110) zsxCv m-w n/a, n/a 3,II,II,L,s (67+110 to 67+745)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient terrain approximately 50m downslope of the road location. The base of the Maisy May Creek valley is approximately 150m downslope so no impact to Maisy May Creek is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
67+745 604574 7019886	**68+070** 604704 7019586	40-50%	The proposed alignment leaves the existing placer mine road to bypass a segment of 20% road grades on the existing road. Terrain is planar with moderate slope gradients. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient terrain approximately 50m downslope of the road location. The base of the Maisy May Creek valley is approximately 100m downslope so no impact to Maisy May Creek is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
68+070 604704 7019586	**68+200** 604758 7019465	30-40%	The proposed alignment ties back into the placer miner road. Terrain is planar with moderate slope gradients. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv m-w n/a,n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient terrain approximately 20-40m downslope of the road location. Maisy May Creek is an additional 60m downslope so no impact is expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
68+200 604758 7019465	**68+315** 604816 7019368	20-30%	The proposed road leaves the existing alignment and crosses over a broad, imperfectly drained draw. The base of the draw is located at 68+260. Minor seepage flow is present at the base of the draw and shallow moderate ice content permafrost may be present. Icing may be a concern as the base of the draw features flat to gentle slope gradients. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying moderate ice content permafrost.	szxCv m-w n/a,n/a 3,II,II,L,s (68+200 to 68+220) sdFf//sdFAf i-p s,m 2,II,IV,L,t (68+220 to 68+315)	>2m	Imperfect	**Moderate:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Overland construction over the stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 600mm diameter culvert at 68+260 to address seepage flow. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**
							Moderate: Minor icing on the stream during the winter season. Impact to the road and crossing structure.	Chronic maintenance and access concern. **Moderate**	**Moderate**		**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
68+315 604816 7019368	**68+745** 604998 7018998	10-20% Below 30-40% Above	The proposed road alignment tracks the existing placer mine road in a toe of valley sidewall slope position. The existing road appears to have been capped with tailings from the general area and as a result is in relatively good condition although drainage structures are not present. The flat valley bottom terrain downslope of the proposed road alignment likely contained shallow ice-rich permafrost prior to placer miner activities; however, following placer miner activity it appears that the majority of the permafrost in the vicinity of the road alignment has been degraded. Upslope of the proposed road alignment well drained, bedrock controlled slopes are present. The majority of road cut is expected to occur in these slopes. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sdFf//sdFAf i-p s,m 2,II,IV,L,t Below the road zsxCv m-w n/a, n/a 4,III,III,M,s Above the road A (68+610 to 68+745)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment. Maisy May Creek is separated from the road alignment by approximately 100m of flat to gentle gradient terrain so no impact os expected.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Cut and fill construction may be required in isolated locations where the alignment leaves the existing road. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**
68+745 604998 7018998	**68+830** 605035 7018928	10-20%	The proposed alignment tracks the existing placer mine road and crosses over a small stream in a broad swale. The stream is <1m wide and features a 7% channel gradient. The base of the swale has not been mined upslope of the road alignment and appears to contain shallow ice rich permafrost. The stream is located at 68+810. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying ice-rich permafrost outside of the existing road prism.	A at the road location sdFAv\sxzCb i-p d,m 2,II,IV,M,t Immediately upslope of the road location	>2m	Imperfect	**High:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction over the stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 68+810 to address stream flow and icing concerns. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**
68+830 605035 7018928	**70+430** 606152 7017942	0-10% Below 50-70% Above	The proposed road alignment tracks the existing placer mine road in a toe of valley sidewall slope position. The existing road appears to have been capped with tailings from the general area and as a result is in relatively good condition although drainage structures are still lacking. The flat valley bottom terrain downslope of the proposed road alignment likely contained shallow ice-rich permafrost prior to anthropogenic activities; however, following placer miner activity it appears that the majority of the permafrost in the vicinity of the road alignment has been degraded. Upslope of the proposed road alignment well drained, bedrock controlled slopes are present. The majority of road cut is expected to occur in these slopes. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	A Below the road zsxCv m-w n/a,n/a 3,II,III,L,s Above the road sxzCb p-i s,m 2,II,IV,M,t (70+040 to 70+400) sxzCb-Xe i s,m 2,II,IV,M,t (70+400 to 70+430)	0.5-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient terrain immediately downslope of the proposed alignment. Maisy May Creek is situated near the centre of the valley and is not expected to be impacted.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Cut and fill construction may be required in isolated locations where the alignment leaves the existing road. Cut: 100% in well drained colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material.	**V. Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
70+430 606152 7017942	**70+970** 606565 7017657	20-40%	The proposed road alignment leaves the existing placer mine road and crosses a moderate gradient slope timbered with mature aspen trees. The shallow ice rich permafrost mapped downslope of the alignment was not present in the field. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb-Xe i s,m 2,II,IV,M,t (70+430 to 70+470) zsxCv/sgFb m-w d,p 2,II,II,L,s (70+470 to 70+925) zsgFf//sdFAv i-m s,m 2,II,IV,L,t (70+925 to 71+970)	>2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient terrain at the base of the sidewall slope. The slide is not expected to extend as far as Maisy May Creek.	Sediment delivery to Maisy May Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material. Aggregate source: • 70+535 to 70+635 (Borrow 14): schist colluvium over mica schist bedrock.	**V. Low**
70+970 606565 7017657	**71+020** 606604 7017625	10-20%	The proposed road alignment ties back into the existing placer mine road and crosses over a small stream swale. The stream at the base of the swale is <1m wide and has a channel gradient of 7%. The stream is located at 71+015. The base of the swale appears to contain shallow ice-rich permafrost which has been degraded at the existing road location. Surficial materials consist of imperfectly drained fluvial sands and gravels overlying ice-rich permafrost.	zsgFf//sdFAv i-m s,m 2,II,IV,L,t	>2m	Imperfect	**Moderate:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**	• Overland construction over the stream draw. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 71+015 to address stream flow and icing concerns. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**
							Moderate: Minor icing on the stream during the winter season. Impact to the road and crossing structure.	Chronic maintenance and access concern. **Moderate**	**Moderate**		**Low**
71+020 606604 7017625	**72+165** 607150 7016633	10-30%	The proposed road alignment tracks the existing placer mine road in a toe of slope position. The road is located on flat to gentle gradient slopes while moderate gradient slopes are present above the alignment. The existing road prism is constructed out of silt leading materials and is heavily rutted. The running surface is likely slippery when wet. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of imperfect to well drained sandy silt with some gravel colluvium.	szxCv i-p s,p 2,II,III,M,s Above the road Or zsxCv w-r n/a,n/a 4,II,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	>2m	Imperfect to Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Cap the running surface of the road with imported rubble colluvium or tailings. The native silt leading material is not suitable for surfacing. • Cut and fill construction may be required in isolated locations where the alignment leaves the existing road. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured micaschist bedrock Fill: 70% for fill of local material. Aggregate source: • 71+055 to 71+135 (Borrow 15): schist colluvium over mica schist bedrock.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
72+165 607150 7016633	**72+220** 607196 7016609	10-30%	The proposed alignment crosses over what appears to be a small fan feature. No signs of a surface flow channel were apparent but the sediment profile at the site is that of past small scale hydrogeomorphic events. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of moderately well drained sandy silt with some gravel deposits. Organic layers are present in the soil profile indicating past hydrogeomorphic events.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	>2m	Mod. Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Cap the running surface of the road with imported rubble colluvium or tailings. The native silt leading material is not suitable for surfacing. • Cut and fill construction may be required in isolated locations where the alignment leaves the existing road. • Install a 600mm diameter cross drain culvert on the fan at 72+175 to address potential surface flow. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**
72+220 607196 7016609	**72+265** 607235 7016581	40-50% Above 0-10% Below	Terrain is planar with moderate slope gradients above the proposed road alignment. Flat slope gradients are present below the proposed alignment. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	1-2m	Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**
72+265 607235 7016581	**72+350** 607288 7016518	30-40% Above 0-10% Below	The proposed alignment crosses over what appears to be a small fan feature. No signs of a surface flow channel were apparent but the sediment profile at the site is that of small scale hydrogeomorphic events. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of moderately well drained sandy silt with some gravel deposits. Organic layers are present in the soil profile indicating past hydrogeomorphic events.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	>2m	Mod. Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Cap the running surface of the road with imported rubble colluvium or tailings. The native silt leading material is not suitable for surfacing. • Install a 500mm diameter cross drain culvert on the fan to address potential surface flow. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
72+350 607288 7016518	**72+430** 607341 7016457	45-65% Above 0-10% Below	The proposed road alignment swings around a broad bedrock controlled ridge. Heavily fractured metabasalt rock is present outcropping on the ridge. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of a veneer of angular rubble colluvium over fractured metabasalt bedrock.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	0.5m	Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**
72+430 607341 7016457	**72+515** 607399 7016408	45-65% Above 0-10% Below	Terrain is planar with moderately steep slope gradients above the proposed road alignment. Flat slope gradients are present below the proposed alignment. The area downslope of the existing road alignment appears to contain shallow ice-rich permafrost. The existing road appears to have been constructed by cutting into the overlying permafrost free hillside and filling down onto the ice-rich permafrost below. No signs of significant permafrost degradation or thermokarst formation as the result of road construction were apparent. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	1-2m	Well	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**
72+515 607399 7016408	**73+120** 607822 7016048	60-70% Above 0-10% Below	The proposed road alignment hooks around a sharp bedrock controlled ridge feature. Terrain upslope of the road is moderately steep while terrain below the road is flat. The downslope terrain is poorly drained and shows signs of shallow ice-rich permafrost. Terrain upslope of the road is well drained. Road construction is expected to require cutting into the overlying bedrock controlled slope with minor filling down onto the flat gradient terrain below. While the underlying flat gradient terrain appears to contain shallow ice-rich permafrost, the proposed road construction method is not expected to result in permafrost degradation. A section of small (<4m tall) bedrock bluffs are present immediately upslope of the road alignment near 73+025. The bluffs appear to be unstable and could lead to small scale rock detachments (<1m^3) during or following road construction works. Surficial materials consist of a veneer of angular rubble colluvium over fractured metabasalt bedrock.	zsxCv-V w-r n/a, n/a 4,III,III,M,s Above the road eOp-Xt v-p n,r 1,V,V,M,t Below the road	0.5-1m	Well at and above the road. Poor below the road.	**Low:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Scale the bedrock bluffs near 73+025 prior to the start of construction works. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured metabasalt bedrock Fill: 70% for fill of local material.	**Low**
							Moderate: Small scale (<1m^3) rock detachments from the bluffs at 73+025. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate**	**Moderate**		**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
73+120 607822 7016048	**73+200** 607875 7015991	20-30%	The alignment crosses over a stream in a broad draw which appears to be associated with a small fan deposit. The stream is crossed at 73+195. The channel is <1m wide and has a silt and sand substrate. No signs of elevated flows were noted on the stream; however, the base of the stream draw appears to contain shallow ice-rich permafrost upslope of the existing road location. The channel gradient is approximately 10% indicating that icing may be a concern. Surficial materials consist of imperfectly drained silty fine sand fluvial deposits underlain by ice-rich permafrost.	sdFAv\sxzCb i-p d,m 2,III,IV,M,t (73+120 to 73+155) A (73+155 to 73+200)	>2m	Imperfect	**High:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction over the stream draw. The uphill side of the fill toes out on undisturbed slopes which are likely underlain by shallow ice-rich permafrost. As a result the uphill fill slope angle has been reduced to 40%. The downhill fill slope toes out on the existing road prism where permafrost appears to have been degraded. The downhill fillslope angle has been designed at 70%. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 73+195 to address stream flow and icing concerns. Cut: N/A – Overland construction Fill: 40-70% for fill of imported granular material.	**Low**
73+200 607875 7015991	**73+660** 608231 7015714	30-50%	The proposed road alignment tracks the existing placer mine road and drops down to the base of the Maisy May Creek valley. Surficial materials consist of a veneer of angular rubble colluvium over fractured gneissic bedrock.	A	0.5-1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
73+660 608231 7015714	**73+730** 608298 7015696	20-40%	The proposed road alignment tracks an existing placer mine road along the toe of the Maisy May Creek valley. Shallow moderate ice content permafrost appears to be present downslope of the road alignment. The upslope area appears to be permafrost free. Surficial materials consist of a blanket of silty sand with some gravel colluvium. This material grades into rubble colluvium at depth.	zsxCb m-w n/a,n/a 3,II,II,L,s Above the road sdFAf i-p s,m 2,III,IV,L,t Below the road	2m	Well	**Moderate:** Permafrost degradation on the flat to gentle gradient valley bottom terrain immediately downslope of the road location. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As the proposed road fill is going to be mainly placed on the existing road prism (where permafrost is not present), a reduction in fill slope gradient to 40% is not considered necessary. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
73+730 608298 7015696	**73+855** 608373 7015597	10-15%	The proposed road alignment leaves the existing placer mine road and traverses the base of a broad, damp swale. The base of the swale is located at 73+785. No surface flows were noted but the base of the swale is imperfectly drained and shallow ice-rich permafrost appears to be present. Surficial materials consist of imperfectly drained silty fine sand fluvial deposits underlain by ice-rich permafrost.	sdFAf i-p s,m 2,III,IV,L,t	>2m	Imperfect	**Moderate:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**High**	• Overland construction over the swale. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 600mm diameter cross drain culvert at the base of the swale. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
73+855 608373 7015597	**74+660** 609012 7015157	20-35%	The proposed road alignment crosses through gentle to moderate gradient benched terrain. The area is timbered with an open Aspen stand, indicating well drained soils and a lack of shallow ice-rich permafrost. Cross over broad swales with the potential to host minor freshet flow at the following locations: • 74+240 • 74+435 • 74+600 Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv or Cx r-w n/a,n/a 3,II,II,L,s (73+855 to 74+035) (74+300 to 74+415) (74+445 to 74+560) zsxCb m n/a,n/a 2,II,II,L,s (74+035 to 74+300) sdFAv/zsxCb m-w n/a,n/a 2,II,II,VL,s (74+415 to 74+445) sxzCb i-m d,m 3,III,IV,H,b (74+560 to 74+660)	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install 450mm diameter cross drain culverts at the following locations to address potential freshet flow: ○ 74+240 ○ 74+435 ○ 74+600 Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
74+660 609012 7015157	**74+945** 609106 7014894	40-50% at road location 60-70% downslope	The proposed road alignment passes through a sharp bedrock controlled ridge and then traverses the apex of a convex slope break with moderately steep slope gradients below. The moderately steep gradient slopes terminate directly into Maisy May Creek. The general area is bedrock controlled and fractured gneissic bedrock is visible outcropping in numerous locations along the alignment. A dry bedrock controlled swale is present at 74+800. The swale may conduct minor flows during the spring freshet period. Surficial materials consist of a veneer of well drained rubble colluvium overlying fractured gneissic bedrock.	sxzCb i-m d,m 3,III,IV,H,b (74+660 to 74+685) zsxCx r n/a, n/a 4,III,III,M,s (74+685 to 74+800) zsdCv w-r n/a,n/a 3,II,II,L,s (74+800 to 74+945)	0.5-1m	Well	**High:** Mid-sized (<1000m^3) fillslope failure due to fill placement on moderately steep gradient slopes. Runout is expected to terminate in Maisy May Creek approximately 80m downslope.	Water quality and fisheries resource in Maisy May Creek. **High**	**V. High**	• Full bench cut construction with endhaul of all excess material to a suitable waste site. Suitable waste sites are present in the following locations: ○ 73+945 to 74+205 ○ 74+275 to 74+385 ○ 74+475 to 74+565 • Install a 450mm diameter cross drained culvert at 74+800 to address potential freshet flows. Cut: 100% in well drained colluvium deposits 200% in fractured gneissic bedrock Fill: N/A – Endhaul all excess material Aggregate source: • 74+835 to 74+995 (Borrow 16): schist based colluvium over mica schist.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
74+945 609106 7014894	**75+250** 609053 7014609	0-10%	The proposed road alignment drops off the front of the bedrock controlled ridge feature and descends down a short moderately steep gradient escarpment to the base of the Maisy May Creek valley. The alignment traverses the base of the valley to southwest side of the Maisy May Creek valley. The base of the Maisy May Creek valley consists of a poorly drained wetland area with shallow ice-rich permafrost present at depths of 0.5m. Cross over Maisy May Creek at 75+195. The creek has a meandering form with channel gradients <5%. The creek is incised 2-3m into the valley bottom sediments and signs of permafrost degradation along with bank slumping are apparent. Permafrost mapping of the area indicates that perennially frozen ground – very ice rich is present. Terrain mapping indicates the presence of TSC IV and V (disturbed) slopes with thermokarst formation being the dominant hazard. Surficial materials consist of poorly drained organic material underlain by ice-rich permafrost.	zsdCv w-r n/a,n/a 3,II,II,L,s (74+945 to 74+995) eOv\zsgFp p s,r 1,IV,V,M,t (74+995 to 75+140) (75+200 to 75+250) zsgFAp-M m-i d,m 1,II,IV,L,t (75+140 to 75+200)	>3m	Poor	**High:** Permafrost degradation across the valley bottom. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• **Transition from full bench cut to overland construction through the valley bottom slopes in the Maisy May Creek valley.** • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 15.2m All Steel Portable Bridge as per OEL Maisy May Proper General Arrangement Drawing. • The embankment fill size is up to 8m high from 74+980 to 75+100. • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate in Maisy May Creek.	Sediment delivery to Barker Creek. **High**	**High**		**Low**
75+250 609053 7014609	**75+550** 609242 7014386	10-20%	The proposed road alignment skirts along the base of the southwest sidewall of the Maisy May Creek valley. Slopes at the proposed road alignment location are gentle; however, slope gradients increase to moderate to moderately steep moving up the sidewall slope. Fingers of shallow ice-rich permafrost extend up the sidewall slope and numerous active layer detachments were noted running out to the base of the valley sidewall. Permafrost was noted at depths of 0.3m to 0.5m along the proposed road alignment. Surficial materials consist of poorly drained organic material underlain by ice-rich permafrost.	xszC1a p n,r 3,III,V,VH,b	>3m	Poor	**High:** Permafrost degradation across the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**	• **Ensure the road stays at the base of the valley sidewall and is constructed using overland methods with <u>no cut</u> into the toe of the sidewall slope.** • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material.	**Low**
							High: Cut and fill construction results in loss of toe support at the site of active layer failures. Increased frequency of active layer failures with runout on proposed road alignment.	Water quality and fisheries resource in Maisy May Creek. **Low** Blockage of road alignment due to active layer failure deposition. **High**	**Moderate** **Very High**		**Moderate** – Active layer detachments running out on road alignment due to natural processes.

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
75+550 609287 7014328	**75+680** 609318 7014278	70-80% Above 0-10% Below	The alignment skirts the base of a bedrock controlled slope. Steep slope gradients are present above the alignment while flat slope gradients are present below the alignment. Fractured gneissic bedrock is visible outcropping in numerous locations in the upslope area. Shallow ice-rich permafrost is present on the flat gradient slope below the proposed alignment. The current road layout configuration will result in fill placement onto the permafrost area but is not expected to result in cutting into the permafrost area. Surficial materials consist of a veneer of rubble colluvium over fractured gneissic bedrock. Poorly drained organic material underlain by ice-rich permafrost is present on the flat gradient slopes below the proposed alignment.	zsxCv m to w n/a,n/a 4,III,III,M,s	1-2m	Well above the alignment Poor below the alignment	**Moderate:** Small scale rock detachments from the bedrock cutslope along the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate**	**Moderate**	• **Cut into the bedrock controlled slope above the proposed road alignment and fill down onto flat gradient permafrost slopes below the alignment.** • Install a 2m wide ditch to act as a rockfall catchment structure. • Scale the bedrock bluffs upslope of the road alignment prior to the start of construction works. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material.	**Low**
							High: Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**		**Low**
75+680 609318 7014278	**75+985** 609338 7013976	45-55% Above 0-20% Below	The alignment skirts the base of a bedrock controlled slope. Moderately steep slope gradients are present above the alignment while flat slope gradients are present below the alignment. Shallow ice-rich permafrost is present on the flat gradient slope below the proposed alignment. The current road layout configuration will result in fill placement onto the permafrost area but is not expected to result in cutting into the permafrost area. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv w n/a,n/a 4,III,III,M,s	1-2m	Well above the alignment Poor below the alignment	**High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**	• **Cut into the well drained slope above the proposed road alignment and fill down onto flat gradient permafrost slopes below the alignment**. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material. Aggregate source: • 75+815 to 75+915 (Borrow 17): fractured mica schist bedrock.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
75+985 609338 7013976	**76+060** 609319 7013902	>100% Above 0-10% Below	The alignment crosses the toe of a series of large gneissic bedrock bluffs. The bluffs range in size up to approximately 6-8m in height and are heavily fractured. Detachments up to 5m^3 in size appear to occur on a relatively frequent basis (<100 year frequency). Several partially detached blocks up to 5m^3 in size were noted on the bluffs immediately upslope of the proposed alignment. The fractured nature of the bluffs indicates that significant bedrock instability could result if major blasting into the bluffs occurs during road construction. Bedrock instability could pose a hazard to road construction workers and road users. Shallow ice-rich permafrost is present on the flat gradient slope below the proposed alignment. The current road layout configuration will result in fill placement onto the permafrost area but is not expected to result in cutting into the permafrost area. Surficial materials consist of a veneer of rubble colluvium over fractured gneissic bedrock. Poorly drained organic material underlain by ice-rich permafrost is present on the flat gradient slopes below the proposed alignment.	Rs-R''b X n/a,n/a 5,V,V,VL,s Above the road eOv\dszFf v s,r 1,IV,V,M,t Below the road	<0.5m	Well above the alignment Poor below the alignment	**High:** Rock detachment (<5m^3) during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **High** Temporary loss of access on the proposed road alignment. **High**	**V. High** **V. High**	• **Cut into the small lobe of colluvium along the base of the bedrock controlled slope and use this material to construct the majority of the road prism in fill on the flat gradient terrain below the slope.** • Ensure that the permafrost slopes below the proposed alignment are not disturbed aside from fill placement. • Install a large (1m deep by 4m wide) ditch line along the toe of the bluffs to intercept rockfall events. • Inspect and clean the ditch structure seasonally. • Scale the bedrock bluffs prior to the start of road construction works to remove any loose or hazardous blocks present. • Do not blast into the toe of the bedrock bluffs. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material. *Note that although the P(H) for rock detachment events remains at Moderate, the P(S:H) of impact to the road alignment is reduced to low following the implementation of the construction recommendations above.	**Moderate*** – Natural rockfall event unrelated to road construction running out on the proposed alignment.
							High: Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**		**Low**
76+060 609319 7013902	**76+460** 609195 7013530	45-60% Above 0-10% Below	The bedrock bluffs upslope of the alignment fade out and planar moderately steep bedrock controlled slopes are present. The road crosses over what appear to be a series of small fan features composed of sandy colluvium type material at the following locations: • 76+195 to 76+215 • 76+305 to 76+360 • 76+415 to 76+445 The fans appear to correspond with very slight swales in the upslope area. While the fans may have been deposited during a previous wetter period, no signs of contemporary	zsxCx/Rs-R''b r n/a,n/a 5,V,V,H,s Above the road Or zsxCv w-r n/a,n/a 4,III,III,M,s Above the road	1-2m >2m at fan locations	Well above the alignment Poor below the alignment	**Low:** Rock detachment (<5m^3) during or following road construction works. Runout is expected to terminate on the proposed road alignment.	**N/A**	**N/A**	• **Cut into the well drained slope above the proposed road alignment and fill down onto flat gradient permafrost slopes below the alignment.** • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
			flow were noted. Shallow ice-rich permafrost is present on the flat gradient slope below the proposed alignment. The current road layout configuration will result in fill placement onto the permafrost area but is not expected to result in cutting into the permafrost area. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth. Deeper colluvium deposits are present at fan locations.	Or Rs-R''b X n/a,n/a 5,V,V,VL,s Above the road eOw\zsgFp-Xt v-p s,r 1,V,V,H,t Below the road			**High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**High**		**Low**
76+460 609195 7013530	**76+800** 609159 7013190	>100% Above 0-10% Below	Large gneissic bedrock bluffs are present upslope of the alignment. The bluffs reach up to 15m in height and are heavily fractured. A very recent (<1year old) rockfall event was noted at 76+535. The rockfall event occurred on a segment of bluff approximately 15m tall and involved a sheet of rock approximately 10m tall by 10m wide and 1-2m deep into the rock mass. The estimated volume of the rockfall event is 100-200m^3. The rockfall event ranout to the proposed road location. The clasts making up the rockfall event fractured significantly upon impact with the ground and the majority of the resulting clasts appear to be <0.5m^3 in size. It is doubtful that a rock scaling program could remove sections of unstable rock of this size. Furthermore, it is probable that further areas of unstable rock capable of generating rockfall events of this magnitude are present along this segment of the alignment. A second large rockfall event estimated at 50m^3 in size was noted at 76+735. The rockfall event appears to be 10-20years old and involved somewhat more competent dark calcareous gneiss when compared to the proceeding rockfall event. The rockfall event ranout to the proposed road alignment location. The road crosses over what appears to be a small fan feature composed of sandy colluvium type material from 76+625 to 76+655. While the fan may have been deposited during a previous wetter period, no signs of contemporary flow were noted. Shallow ice-rich permafrost is present on the flat gradient slope below the proposed alignment. The current road layout configuration will result in fill placement onto the permafrost area but is not expected to result in cutting into the permafrost area. Surficial materials consist of a veneer of rubble colluvium over fractured gneissic bedrock. Poorly drained organic material underlain by ice-rich permafrost is present on the flat gradient slopes below the proposed alignment.	Rs/zsxCv-R''bsV r n/a,n/a 5,V,V,L,s Above the road or zsxCb m-w n/a,n/a 4,III,III,M,s Above the road eOw\zsgFp-Xt v-p s,r 1,V,V,H Below the road	<0.5m	Well above the alignment Poor below the alignment	**High:** Large (>50m^3) rock detachment during or following road construction works. Runout is expected to terminate on the proposed road alignment. **High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Safety hazard to road construction workers or road users. **High** Temporary loss of access on the proposed road alignment. **High** Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**V. High** **V. High** **High**	• **Cut into the small lobe of colluvium along the base of the bedrock controlled slope and use this material to construct the majority of the road prism in fill on the flat gradient terrain below the slope.** • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. • Install a large (1m deep by 4m wide) ditch line along the toe of the bluffs to intercept rockfall events. • Inspect and clean the ditch structure seasonally. • Scale the bedrock bluffs prior to the start of road construction works to remove any loose or hazardous blocks present. • **Do not blast into the toe of the bedrock bluffs.** This may require shifting the road into fill in isolated locations if competent rock is encountered. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material. *Note that although the P(H) for rock detachment events remains at Moderate, the P(S:H) of impact to the road alignment is reduced to low following the implementation of the construction recommendations above.	**Moderate*** – Natural rockfall event unrelated to road construction running out on the proposed alignment. **Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
76+800 609159 7013190	**76+945** 609108 7013056	0-20% at road location 60-70% Upslope	The proposed road alignment passes onto what appears to be a more recent, well drained fluvial terrace which does not appear to contain shallow ice-rich permafrost. The bedrock bluffs upslope of the road alignment fade out and a moderately steep to steep gradient bedrock controlled slope remains. Surficial materials consist of a blanket of rubble colluvium over fractured gneissic bedrock.	zsxCv-R''b m-w n/a,n/a 5,V,V,H,s Above the road eOw\zsgFp-Xt v-p s,r 1,V,V,H Below the road	1-2m	Mod. Well to Well	**Low:** Rock detachment (<5m^3) during or following road construction works. Runout is expected to terminate on the proposed road alignment.	**N/A**	**N/A**	• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material.	**Low**
							Low: Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
76+945 609108 7013056	**77+020** 609081 7012987	0-20% at road location >100% Upslope	A series of 8-10m tall gneissic bedrock bluffs are present along the toe of the slope approximately 10m upslope of the proposed road location. The bluffs are heavily fractured and appear to host frequent small scale rockfall events. A recent (<5year old) rockfall event was noted at 76+945. The rockfall event involved approximately 10m^3 of material which fractured into relatively small <0.3m^3 clasts. The rockfall event ranout on flat gradient terrain just prior to the proposed road location. An incipient rockfall event consisting of an ongoing bedrock topple event was noted 76+975. A series of vertical spreading fractures are present along the face of the bedrock bluff in this location. When the failure does occur, an estimated 30m^3 of material will be involved. Surficial materials consist of a blanket of rubble colluvium over fractured gneissic bedrock.	zsxCv-R''b m-w n/a,n/a 5,V,V,H,s Above the road zsgFp i d,m 1,II,III,L,t Below the road	1-2m	Well	**High:** Rock detachment event on the order of 30m^3 rock detachment during or following road construction works. Runout is expected to terminate prior to or adjacent to the proposed road alignment.	Safety hazard to road construction workers or road users. **High** Temporary loss of access on the proposed road alignment. **High**	**V. High** **V. High**	• Cut and fill construction. • Install a large (1m deep by 4m wide) ditch line along the toe of the bluffs to intercept rockfall events. • Inspect and clean the ditch structure seasonally. • Scale the bedrock bluffs prior to the start of road construction works to remove any loose or hazardous blocks present. • **Do not blast into the toe of the bedrock bluffs.** Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. *Note that although the P(H) for rock detachment events remains at Moderate, the P(S:H) of impact to the road alignment is reduced to low following the implementation of the construction recommendations above.	**Moderate*** – Natural rockfall event unrelated to road construction running out on the proposed alignment.
77+020 609081 7012987	**77+120** 609082 7012888	0-20% at road location 60-70% Upslope	Bedrock bluffs upslope of the proposed road alignment fade out and planer, colluvium slopes remain. The fluvial terrace on which the road is situated widens to approximately 20m and the road alignment is located well back from the toe of the slope. Surficial materials consist of a blanket of silty sand with some gravel colluvium.	Rs/zsxCv-R"bsV r n/a, n/a 5,V,V,L,s Above the road Or zsxCv-R''b m-w n/a,n/a 5,V,V,H,s Above the road zsgFAp-M i-w n/a,n/a 1,I,I,VL,s Below the road	2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction • Install a large (1m deep by 4m wide) ditch line along the toe of the slope to intercept rolling rocks. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. *Note that although the P(H) for rock detachment events remains at Moderate, the P(S:H) of impact to the road alignment is reduced to low following the implementation of the construction recommendations above.	**Low**
							Moderate: Small (<1m^3) rolling rocks from moderately steep colluvium slope above the proposed alignment. Runout is expected to terminate on the porposed road alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**		**Moderate*** – Natural rockfall event unrelated to road construction running out on the proposed alignment.

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
77+120 609082 7012888	**77+420** 609069 7012586	0-20% at road location >100% Upslope	Large bedrock bluffs are present upslope of the majority of this section of the alignment. The bluffs vary in size but reach up to approximately 40m near 77+350. Numerous instances of vertical spreading joints with sheets of rock up to 2m thick in the process of topple failure were noted along this segment of the alignment. The proposed road alignment is generally located 5-10m back from the toe of the slope and it is probable than most rockfall events will halt prior to the road alignment. However, a large detachment event in excess of 50m^3 has the potential to directly impact the road alignment. A recent rockfall event on the order of 30m^3 was noted at 77+240. The rockfall event propagated up to 10m out from the toe of the slope to the proposed road location. The material making up the rockfall event consisted of competent dark calcareous gneiss which held together in clasts up to 2m^3. It appears that the 4m wide by 1m deep ditch structure proposed on the road alignment in this location would have intercepted the majority of the rockfall event but a larger event on the order of 50-100m^3 may overtop/infill the ditch structure and impact the road prism. Surficial materials consist of a blanket of well drained rubble colluvium.	Rs/zsxCv-R"bsV r n/a, n/a 5,V,V,L,s Above the road Or zsxCb m-w n/a, n/a 4,III,III,M,s Above the road zsgFAp-M i-w n/a,n/a 1,I,I,VL,s Below the road	2m	Well	**High:** Large (>50m^3) rock detachment during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **High** Temporary loss of access on the proposed road alignment. **High**	**V. High** **V. High**	• Cut and fill construction. • Install a large (1m deep by 4m wide) ditch line along the toe of the bluffs to intercept rockfall events. • Inspect and clean the ditch structure seasonally. • Scale the bedrock bluffs prior to the start of road construction works to remove any loose or hazardous blocks present. • **Do not blast into the toe of the bedrock bluffs.** Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. *Note that although the P(H) for rock detachment events remains at Moderate, the P(S:H) of impact to the road alignment is reduced to low following the implementation of the construction recommendations above.	**Moderate*** – Natural rockfall event unrelated to road construction running out on the proposed alignment.
77+420 609069 7012586	**77+635** 609017 7012381	0-20% at road location 80-100% Upslope	The bedrock bluffs upslope of the proposed road alignment reduce in size to small, broken rock outcrops and the road alignment is situated 5-10m out from the toe of the slope. The proposed road tracks a broad bench feature adjacent to an abandoned backchannel of the Stewart River. Fill is placed adjacent to the backchannel. Small scale rock detachments are considered probable but it is unlikely that these detachments would travel far enough to impact the proposed road alignment. The base of the slope and bluffs is separated from the proposed road alignment by 5-10m of flat to gentle gradient terrain. Rolling rocks are expected to halt in this area prior to the alignment. Surficial materials consist of a blanket of rubble colluvium.	Rs/zsxCv-R"bsV r n/a, n/a 5,V,V,L,s Above the road zsgFAp-M i-w n/a,n/a 1,I,I,VL,s Below the road	2m	Well	**Moderate:** Small scale natural (<5m^3) rock detachment event. Runout is expected to terminate prior to the proposed road alignment.	Safety hazard to road construction workers or road users. **Low** Temporary loss of access on the proposed road alignment. **Low**	**Low** **Low**	• **Cut and fill construction transitioning into a large embankment fill towards the end of the road section.** • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local or imported material.	**Low**
							Moderate: Mid sized (<1000m^3) fill slope failure due to improper placement of the large embankment fill. Runout is expected to terminate in the Stewart River.	Temporary loss of access on the proposed road alignment. **High** Water quality and fisheries resource in the Stewart River. **High**	**High** **High**		**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
77+635 609017 7012381	**77+890** 608889 7012175	50-80%	The proposed road section climbs up through a series of small bedrock bluffs adjacent to the Stewart River. The rock bluffs are 10-15m in height and are comprised of weathered gneissic bedrock. The road alignment is located 10-20m from the edge of the river with early sections placing fill onto an old existing trail. An existing trail is located adjacent to the Stewart River, and can be utilized as a bench to build up the fill for the road prism. Surficial materials consist of a thin veneer of rubble colluvium over bedrock.	**Primarily** zsxCb-R''bs w n/a,n/a 5,V,V,H,s	<0.5m	Well	**High:** Large (>50m^3) rock detachment during or following road construction works. Runout is expected to terminate in the Stewart River backchannel.	Safety hazard to road construction workers or road users. **High** Temporary loss of access on the proposed road alignment. **High** Water quality and fisheries resource in the Stewart River. **High**	**V. High** **V. High** **V. High**	• **Large embankment fill at the start of the section transitioning into full bench cut construction at 77+690.** • Endhaul all generated material in the section of full bench cut construction. • Scale the resulting bedrock cutslope during and following the completion of construction activities. • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local or imported material.	**Moderate*** – Small scale rockfall event unrelated to road construction running out on the proposed alignment.
							Moderate: Mid sized (<1000m^3) fill slope failure due to improper placement of the large embankment fill. Runout is expected to terminate in the Stewart River.	Temporary loss of access on the proposed road alignment. **High** Water quality and fisheries resource in the Stewart River. **High**	**High** **High**		**Low**
77+890 608889 7012175	**77+990** 608862 7012101	20-30%	The proposed road enters a draw with gentle to moderate slopes, where conventional cut and fill construction is to be utilized. The road is still located on the old 3-4m wide trail. Moderate gradient planar slopes lead down to the Stewart River 80-100m below. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sdFAv\sxzCb i d,m 2,II,IV,M,t (77+890 to 77+940) sxzCb i-p s,m 2,II,IV,M,t (77+940 to 77+990)	1-2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment prior to the Stewart River.	Water quality and fisheries resource in the Stewart River. **Low**	**V. Low**	• Cut and fill construction transitioning into full fill across the base of the stream draw. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
77+990 608862 7012101	**78+540** 608698 7011572	20-30%	The proposed road alignment continues to track an old trail along the north bank of the Stewart River. The trail is 3-4m wide. Terrain is planar with gentle to moderate slope gradients. Terrain mapping indicates the presence of shallow, moderate ice content permafrost. Signs of permafrost were not apparent in trail cuts in the area. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb i-p s,m 2,II,IV,m,t	1-2m	Imperfect	**Low to Moderate:** Small scale cutslope sloughing due to road construction through imperfectly drained soils. Runout is expected to terminate on moderate terrain immediately downslope of the proposed road alignment.	Water quality and fisheries resource in the Stewart River. **Low**	**V. Low to Low**	• Cut and fill construction • Lay back cuts to 70% and buttress with keyed in angular rock if sloughing is problematic. • Expect minor permafrost degradation to occur in moderate ice content area. • As ice-rich permafrost is not present the fill slope gradient remains at 70%. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
78+540 608698 7011572	**79+255** 608391 7010928	5-20%	The proposed alignment breaks over onto flat to gentle gradient, planar terrain. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCb m-w n/a,n/a 2,II,II,L,s (78+515 to 78+565) zsxCw w n/a,n/a 3,II,II,L,s (78+565 to 78+645) zsdFf w n/a,n/a 2,II,II,VL,s (78+645 to 79+230)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat to gentle gradient slopes immediately downslope of the proposed alignment prior to the Stewart River.	Water quality and fisheries resource in the Stewart River. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
79+255 608391 7010928	**79+535** 608317 7010666	0-10%	Terrain is planar with flat to gentle slope gradients. Terrain mapping indicates the presence of shallow, moderate ice content permafrost. Signs of permafrost were not apparent in trail cuts in the area. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsdFAf/eOv\zsdFAf p-i s,m 2,II,IV,M,t	1-2m	Imperfect	**Low to Moderate:** Small scale cutslope sloughing due to road construction through imperfectly drained soils. Runout is expected to terminate on moderate terrain immediately downslope of the proposed road alignment.	Temporary loss of access on the proposed road alignment. **Moderate**	**Low to Moderate**	• Cut and fill construction • Lay back cuts to 70% and buttress with keyed in angular rock if sloughing is problematic. • Expect minor permafrost degradation to occur in moderate ice content area. • As ice-rich permafrost is not present the fill slope gradient remains at 70%. Cut: 70% in imperfectly drained colluvium material 200% in fractured bedrock Fill: 70% for fill of local material	**Low**
79+535 608317 7010666	**79+655** 608309 7010551	0-10%	The proposed alignment traverses flat to gentle gradient, planar terrain. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCb m n/a, n/a 2,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
79+655 608309 7010551	**80+050** 608016 7010284	5-15%	The proposed alignment leaves the existing trail and traverses gentle terrain above the Stewart River. Surficial materials consist of a blanket of angular rubble colluvium.							• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	
80+050 608016 7010284	**80+390** 607731 7010100	5-10%	The proposed alignment ties back into an existing trail. The trail is 3-4m wide. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.							• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	
80+390 607731 7010100	**80+900**	10-20%	The proposed alignment leaves the existing trail and traverses gentle terrain. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.							• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
80+900	**80+960**	10-20%	The proposed alignment crosses through a small draw feature. No signs of significant flow volumes were present at the base of the draw. Moderate ice content permafrost may be present at depth. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sdFAv\sxzCb i-p d,m 2,III,IV,M,t	>2m	Imperfect	**Low:** Permafrost degradation due to site disturbance on the moderate ice content slopes at the base of the draw. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Cut and fill construction • Install a 600mm diameter culvert at the base of the swale to address potential freshet flow at the site. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
80+960	**81+450**	10-20%	The road traverses gentle gradient face unit slopes. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv i-p s,p 2,II,III,M,s (80+960 to 81+085) zsxCb w n/a,n/a 2,II,II,L,s (81+085 to 81+340) zsxCv m-w n/a,n/a 2,II,II,L,s (81+340 to 81+450)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
81+450	**81+605** 606719 7009575	10-25%	The proposed road crosses a small draw feature. The stream at the base of the draw is 0.5m wide by 0.3m deep and connects to the Stewart River approximately 300m downstream. The stream is located at 81+510. Signs of elevated flows during extreme precipitation events and the spring freshet period are apparent. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	zsxCv to Dv m-w n/a, n/a 2-3,II,II,L,s (81+450 to 81+495) sdFAv\sxzCb m-i d,m 2,II,IV,M,t (81+495 to 81+515) zsxCb m-w n/a,n/a 2,II,II,L,s (81+515 to 81+535) szxCv m-i s,p 2,II,III,M,s (81+535 to 81+580)	>1m	Well	**Moderate:** High flow event on stream exceeds culvert capacity leading to washout of road prism. Sediment transport to the Stewart River is expected.	Water quality and fisheries resource in the Stewart River. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction • Install a 1600mm diameter culvert. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.2: Coffee Gold Mine Northern Access Route Section 2 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
81+605 606719 7009575	**82+757** 605857 7008330	5-15%	The road alignment traverses gentle gradient face unit slopes on approach to the North Stewart barge landing. Gneissic bedrock is visible outcropping on the bank of the Stewart River. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	szxCv m-i s,p 2,II,III,M,s (81+580 to 81+705) zsxCb to Cv m-w n/a, n/a 2,II,II,L,s (81+705 to 82+990)	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
Barge Landing 605857 7008330	**Barge Landing** 605876 7008279 **End of Section 2**	0-10%	The proposed barge landing is located adjacent to the Stewart River in an area of bedrock control. Competent gneissic bedrock is exposed in this area and can be utilized as a riprap source for construction of the barge landing. Surficial materials consist of a veneer of angular rubble colluvium overlying gneissic bedrock.	zsxCv m-w n/a, n/a 2,II,II,L,s	0.5-1.0m	Well	**Moderate:** Erosion of the road prism and barge landing structure where adjacent to the Stewart River.	Temporary loss of access on the proposed road alignment. **Moderate** Water quality and fisheries resource in the Stewart River. **Moderate**	**Moderate** **Moderate**	• Adhere to the OEL North Stewart Barge Design. • Armour the banks adjacent to the barge landing where bedrock is not present with coarse angular rock of sufficient size to mitigate possible road prism and barge landing erosion. • Bedrock is present at the crossing site, and blasting is anticipated due to the presence of competent gneissic bedrock. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
82+757 Start of Section 3 602239 7008264	**83+120** 605985 7007986	0-10%	Start the Section 3 assessment at the South Stewart Barge Landing. The proposed road alignment climbs out of the Stewart River at the south barge landing location and turns to the southwest adjacent to the banks of the Stewart River. Shallow ice-rich permafrost was not noted immediately adjacent to the Stewart River. This is likely due to the warming effect that a large body of water has on adjacent soils. Extensive bank erosion is present along the Stewart River and continued erosion and retrogression is expected. Surficial materials consist of imperfectly drained compact interbedded fine to medium sand and silt fluvial deposits.	zsgFp/eOb\zsgFp i-v s,m 1,II,IV,M,t	>3m	Imperfect	**Moderate:** Continued bank erosion and retrogression. Degradation of the road prism and barge landing.	Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate**	• Adhere to the OEL South Stewart Barge Design. • Armour the banks adjacent to the barge landing with coarse angular of sufficient size to mitigate further bank erosion. Cut: 50% in imperfectly drained fluvial deposits Fill: 40% for fill of local material	**Low**
83+120 605985 7007986	**83+460** 605823 7007694	0-10%	The proposed road alignment traverses a flat gradient fluvial terrace approximately 30m southeast of the Stewart River. A heritage cabin is present 35m to the west of the alignment at 83+345. Surficial materials consist of poorly drained interbedded sand and silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	zsgFp/eOb\zsgFp i-v s,m 1,II,IV,M,t	>3m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
83+460 605823 7007694	**83+555** 605794 7007604	0-10%	The proposed road alignment leaves the road alignment that was reviewed during the 2015 site visits by OEL and tracks a recently constructed placer mine road. OEL personnel were at the site intermittently in 2016 when the placer mine road was constructed and the terrain data was collected by field observations made at this time. Terrain consists of a flat gradient fluvial terrace. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	zsgFp/eOb\zsgFp i-v s,m 1,II,IV,M,t	>3m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
83+555 605794 7007604	**83+690** 605775 7007462	0-10%	The alignment crosses over Barker Creek at 83+620. The stream appears to have been heavily affected by placer miner activities upstream with a heavy sediment load and what appears to be a substantially increased peak flow. As a result bank erosion along the stream is significant. This crossing is downstream from the site surveyed by OEL. As a result no structure has been installed over Barker Creek. Surficial materials consist of imperfectly drained sand and gravel fluvial deposits. Permafrost may be present in the area at depth >1m.	zsgFAp/eOv\zsgFAp-M p-w d,m 1,II,IV,M,t	>3m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 21.3m All Steel Portable Bridge at 83+620 as per OEL Lower Barker General Arrangement Drawing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
							Moderate: Continued bank erosion on Barker Creek with impact to potential crossing structure.	Temporary loss of access on proposed road alignment. **Moderate**	**Moderate**		**Low**
83+690 605775 7007462	**83+920** 605694 7007265	50-70% on escarpment 0-20% above and below escarpment	The alignment climbs up a sharp escarpment out of the Barker Creek floodplain to gain an elevated terrace feature. Moderately steep gradient slopes are present on the escarpment but flat to gentle gradient slopes are present above and below. The escarpment is 30-40m long. Surficial materials consist of moderately well to well drained well drained rubble colluvium in a silty sand matrix underlain by fractured gneissic bedrock.	szxCv/Rs-X''fV i s,p 5,V,V,VH,s (83+525 to 83+545) zsdCv m n/a,n/a 4,III,III,M,s (83+545 to 83+745)	1-2m	Mod. Well to Well	**Moderate:** Small (<500m^3) fill slope failure due to fill placement on moderately steep gradient slopes. Runout is expected to terminate on flat gradient terrain at the base of the escarpment.	Minor sediment delivery to Barker Creek. **Low**	**Low**	• Cut and fill construction shifting to full bench cut construction where sustained downhill sideslopes exceed 60%. • Excess material can be incorporated into the preceding overland sections. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock. Fill: 70% for fill of local material.	**Low**
83+920 605694 7007265	**84+730** 605597 7006581	10-20%	The proposed alignment crests up onto an elevated terrace which has been previously mined. The terrace likely contained ice-rich permafrost prior to mining activities but the permafrost is now degraded. Surficial materials consist of loose to compact gravelly sand with trace silt fluvial deposits. These materials appear to have been previously mined.	A	2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Minor sediment delivery to Barker Creek. **Low**	**V Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material.	**Low**
84+730 605597 7006581	**84+800** 605572 7006515	10-20%	The proposed road alignment follows the existing placer mine road through a broad stream draw. Shallow ice-rich permafrost is present in the stream draw but appears to have been degraded at the existing road location. The stream at the base of the draw is situated at 84+765 and currently flows over the existing road prism. The stream channel is approximately 1m wide and appears to carry significant fine sediment load as indicated by infilling on the high side of the road prism. The sediment load may be linked to recent forest fire activity in the upslope area. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	A (84+730 to 84+735) sdFAv\sxzCb-Xe p-i s,m 2,V,V,M (84+735 to 84+785) A (84+785 to 84+800)	2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction methods. • Install an 800mm diameter culvert at 84+765 to address stream flow and sediment load. • Armour the culvert inlet and outlet with keyed in angular rock. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
84+800 605572 7006515	**85+240** 605666 7006109	10-20%	The alignment climbs out of the stream draw and traverses what appears to be an area which was reclaimed following the completion of placer mining operations. An unmined area is present between 10-50m upslope of the alignment. Shallow ice-rich permafrost appears to be present in this upslope area but is beginning to degrade due to a recent forest fire event. Cross a small seepage site at 84+905 which is forming out of degrading permafrost in the upslope area. Surficial materials consist of moderately well drained gravelly sand with trace silt fluvial deposits capped by 0.2m of organic rich silt tailings.	A	2m	Mod. Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 500mm diameter cross drain culvert at 84+905 to address seepage flow. Cut: 70% in moderately well drained fluvial deposits Fill: 70% for fill of local material.	**Low**
85+240 605666 7006109	**85+520** 605636 7005852	10-20%	The alignment passes into an unreclaimed area with a number of prominent borrow pits apparent. Fractured gneissic bedrock is visible in the base of the excavated pits. Surficial materials consist of well drained gravelly sand with trace to no silt fluvial deposits.	A	1m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**
85+520 605636 7005852	**85+595** 605630 7005778	10-20%	The proposed road alignment follows the existing placer mine road through a broad stream draw. Shallow ice-rich permafrost is present in the stream draw but appears to have been degraded at the existing road location. The stream at the base of the draw is situated at 85+560 and currently flows over the existing road prism. The stream channel is approximately 1m wide and collects in a large pool on the high side of the existing road prism. The stream channel has a gradient of 12% which indicates that icing may occur. Upslope of the crossing site the stream draw is undisturbed and appears to contain shallow ice-rich permafrost. The permafrost appears to have been degraded at the road location. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	A	2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• Overland construction methods. • Install an 800mm diameter culvert at 85+560 to address stream flow and sediment load. • Armour the culvert inlet and outlet with keyed in angular rock. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
85+595 605630 7005778	**85+795** 605616 7005618	10-20%	The alignment traverses a large fluvial terrace. Trenching from previous placer miner activity indicates that surficial materials are at least 2m deep. Several placer miner structures (a cabin and trailer) are proximal to the proposed road alignment. Surficial materials consist of well drained gravelly sand with trace to no silt fluvial deposits.	A	>2m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Cut and fill construction. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
85+795 605616 7005618	**86+010** 605592 7005418	10-20%	The alignment traverses a broad, wet bowl area. The existing placer mine road is located 10-20m downslope of the proposed alignment and shows signs of permafrost degradation and significant thermokarst formation. Hand dug test pits inside the existing road prism and in the upslope area reveal shallow ice-rich permafrost. The permafrost appears to have begun to degrade due to recent forest fire activity. A small stream is present at 85+840. The stream channel is approximately 0.5m wide and appears to carry significant fine sediment load, likely as the result of recent forest fire activity. A second larger stream is present at 85+940. The stream channel is 1m wide by 0.4m deep and shows signs of recent down cutting and minor thermokarst gullying. The stream also appears to carry significant fine sediment load. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	szxCv i-p d,p 4,III,IV,H,s (85+795 to 85+825) xszC1a-Xe p n,r 2,V,V,H,t (85+825 to 85+985) A (85+985 to 86+010)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible sediment entrainment in the streams and transport to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• **¼ Bench cut to overland construction methods.** • Install a 600mm diameter culvert at 85+840 to address stream flow and sediment load. • Install a 1000mm diameter culvert at 85+940 to address stream flow and sediment load. • Armour the inlets and outlets of the culverts with keyed in angular rock. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
86+010 605592 7005418	**86+150** 605696 7005322	10-20%	The proposed alignment climbs out of the broad bowl feature and ties back into the existing placer miner road. The road location and downslope area appears to have been previously mined; however, undisturbed terrain with shallow ice-rich permafrost appears to be present immediately upslope of the proposed alignment. The permafrost in the upslope area appears to be degrading due to recent forest fire activity. As a result significant cutslope seepage is apparent on the existing placer miner road. A small stream is present at 86+070. The stream channel is 0.5m wide and appears to carry minor fine sediment load. Surficial materials consist of poorly to imperfectly drained gravelly sand with trace silt fluvial deposits.	A	2m	Poor to Imperfect	**Moderate:** Road prism saturation due to poorly drained surficial materials. Degradation of road prism during wet periods.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter culvert at 86+070 to address stream flow. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**
							Low: Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
86+150 605696 7005322	**86+335** 605684 7005161	10-20%	The proposed alignment wraps around a broad ridge tracking the existing placer miner road. The existing road prism has been constructed out of sand and gravel materials and is in relatively good condition. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	2m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
86+335 605684 7005161	**86+470** 605693 7005033	10-20%	The alignment crosses a broad bowl feature with several small drainage paths. The existing placer mine road prism is intact but significant water inputs to the site appear to be occurring due to degrading shallow ice-rich permafrost in the upslope area. Small streams are present at 86+370 and 86+435. The streams have channels <1m in size and carry minor fine sediment volumes. Surficial materials consist of moderately well drained gravelly sand with trace silt fluvial deposits.	A	2m	Imperfect	**Moderate:** Road prism saturation due to poorly drained surficial materials. Degradation of road prism during wet periods.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install 600mm diameter culverts at 86+370 and 86+435 to address stream flow. Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**
							Low: Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
86+470 605693 7005033	**86+815** 605682 7004697	10-20%	The alignment continues across what appears to be a relatively wet area. The area may have been reclaimed following placer mining and appears to be capped with a thin (<0.5m) layer of organic rich silt material. Small streams are present in the following locations: • 86+480 • 86+585 • 86+730 Surficial materials consist of imperfectly drained firm sandy silt fluvial deposits. Gravelly sand fluvial deposits may be present at depth.	A	2m	Imperfect	**Moderate:** Road prism saturation due to poorly drained surficial materials. Degradation of road prism during wet periods.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install 600mm diameter culverts at the following locations to address stream flow: ○ 86+480 ○ 86+585 ○ 86+730 Cut: 70% in local fluvial deposits Fill: 70% for fill of local material	**Low**
							Low: Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
86+815 605682 7004697	**87+045** 605665 7004471	10-20%	The alignment crests up onto an elevated, somewhat drier area. Small streams are present in the following locations: • 86+910 • 87+010 Surficial materials consist of moderately well drained gravelly sand with trace silt fluvial deposits.	A	2m	Mod. Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install 600mm diameter culverts at the following locations to address stream flow: ○ 86+910 ○ 87+010 Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
87+045 605665 7004471	**87+215** 605711 7004332	10-20%	The alignment traverses a broad, wet bowl area. The existing placer mine road is located 10m downslope of the proposed alignment and shows signs of permafrost degradation and significant thermokarst formation. Hand dug test pits in the upslope area reveal shallow ice-rich permafrost. The permafrost appears to have begun to degrade due to recent forest fire activity. A stream is present at 87+115. The stream channel is approximately 0.5-1.0m wide by 0.2m deep. A second smaller stream is present at 87+165. The stream channel is <0.5m wide. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	A (87+045 to 87+095) dszFAf-Xe p s,r 2,V,V,M,t (87+095 to 87+200) A (87+200 to 87+215)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible sediment entrainment in the streams and transport to Barker Creek	Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Install an 800mm diameter culvert at 87+115 to address stream flow. • Install a 600mm diameter culvert at 87+165 to address stream flow. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
87+215 605711 7004332	**87+585** 605629 7004048	10-20%	The alignment tracks the existing placer mine road across a broad terrace. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	2m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**
87+585 605629 7004048	**87+730** 605564 7003940	10-20%	The alignment traverses a small bowl feature. The area appears to be wetter than the surrounding terraces. Surficial materials consist of moderately well drained gravelly sand with trace silt fluvial deposits.	A	2m	Mod. Well				• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter cross drain culvert at the base of the bowl feature to address possible freshet flow. Cut: 70% in moderately well drained fluvial deposits Fill: 70% for fill of local material	**Low**
87+730 605564 7003940	**88+240** 605460 7003528	10-20%	The alignment tracks the existing placer mine road across a broad terrace. A small stream is present flowing over the road prism at 87+885. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	2m	Well				• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter culvert at 87+885 to address stream flow. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
88+240 605460 7003528	**88+415** 605372 7003389	10-20%	The alignment follows the placer mine road through a broad draw feature. A small stream is present at 88+335. The stream channel is 1m wide by 0.5m deep and currently passes through the road prism via a 200mm diameter steel culvert. The current drainage structure appears undersized. A topographic low is present at 88+360 which may host minor shallow subsurface flows. Surficial materials consist of imperfect to moderately well drained gravelly sand with trace silt fluvial deposits. Shallow ice-rich permafrost may be present outside of the existing road prism.	A	2m	Imperfect to Mod. Well	**Moderate:** Blockage of the existing drainage structure, saturation of the road prism and initiation of a small (<500m^3) fill slope failure. Runout is expected to terminate on gentle gradient terrain immediately downslope of the proposed road alignment.	Temporary loss of access on the proposed road alignment. Damage is practically repairable in 1-2 days. **Moderate** Minor sediment delivery to Barker Creek. **Moderate**	**Moderate** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter culvert at 88+335 to address potential shallow subsurface flow. • Install an 800mm diameter culvert at 88+360 to address stream flow. Cut: 70% in imperfectly to moderately well drained fluvial deposits Fill: 70% for fill of local material	**Low**
88+415 605372 7003389	**89+130** 605206 7002777	10-20%	The alignment climbs out of the draw feature and traverses a large terrace with extensive placer miner activity. In general large pits have been excavated down to bedrock along the terrace and the processed tailings have been pushed out over the edge of the terrace. The existing road is in good condition aside from the lack of drainage structures and the alignment stays well back from the eastern edge of the terrace where the processed tailings material has been spoiled. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	1-2m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**
89+130 605206 7002777	**89+300** 605197 7002631	10-20%	The alignment crosses through a broad swale feature which does not appear to be affected by placer miner operations. Mature spruce timber is present at the site and road cuts do not show signs of degraded shallow ice-rich permafrost. The centre of the swale feature is located at approximately 89+230. Shallow subsurface flows may be present. Surficial materials consist of imperfect to moderately well drained silty sand with some gravel colluvium.	A (89+130 to 89+160) xszC1b\zsgFt p s,r 2,II,V,H (89+160 to 89+195) A (89+195 to 89+300)	2m	Imperfect to Mod. Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Minor sediment delivery to Barker Creek. **Low**	**Low** **Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter cross drain culvert at 89+230 to address potential shallow subsurface flow. Cut: 70% in local colluvium deposits Fill: 70% for fill of local material	**Low**
89+300 605197 7002631	**89+815** 604936 7002221	10-20%	The alignment crests out of the swale feature and tracks what appears to be a large airstrip utilized by previous placer miner operations. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	2m	Well	**Low:** Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
89+815 604936 7002221	**89+935** 604840 7002148	10-20% At road location 60% Downslope	The airstrip ends and the proposed road alignment continues to track the existing placer miner road. Slopes roll off to 60% below the proposed alignment where material associated with placer miner operations has been pushed over the edge of the terrace. The composition of the pushed out material is unknown but may contain a significant organic component. Loading of the outer edge of the slope (the outer 5m) is not recommended. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	2m	Well	**Moderate:** Loading of the outer edge of the terrace through fill placement leads to initiation of a mid-sized (<1000m^3)fill slope failure. Runout is expected to terminate on flat gradient terrain approximately 30m downslope.	Temporary loss of access on the proposed road alignment. Damage is practically repairable in 1-2 days. **Moderate** Minor sediment delivery to Barker Creek. **Moderate**	**Moderate** **Moderate**	• Shift the alignment upslope to ensure that the proposed alignment and outer road edge is located at least 5m back from the edge of the terrace feature. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**
89+935 604840 7002148	**90+060** 604757 7002073	10-20%	The alignment drops through a broad draw tracking the existing placer miner road. The vegetation profile at the base of the draw suggests that shallow ice-rich permafrost may be present. No surface flows were present at the base of the draw at 90+000 but shallow subsurface flows may be present. Surficial materials consist of poorly to imperfectly drained silty sand with some gravel colluvium. This material may be underlain by ice rich permafrost at depths of 0.5-1.0m.	A (89+935 to 89+985) sxzCb//sdFAv i-m s,m 2,II,IV,M,t (89+985 to 90+020) A (90+020 to 90+060)	2m	Poor to Imperfect	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. **Moderate:** Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate in Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **High** Minor sediment delivery to Barker Creek. **Low** Sediment delivery to Barker Creek. **High**	**V. High** **High** **High**	• **Overland construction methods. The majority of the fill is placed on the existing road prism where the permafrost appears to have been degraded. As a result a 70% fill slope angle is acceptable.** • Install a 600mm diameter culvert at 90+000 to address stream flow. • Due to the embankment size, the fill must be constructed out of angular rock. If this is not considered feasible reduce the fillslope gradient to 40%. • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: N/A – Overland construction Fill: 70% for fill of angular rock material 40% for fill of imported granular material	**Low**
90+060 604757 7002073	**90+740** 604584 7001486	10-45%	The alignment leaves the placer mined area and traverses the west sidewall of the Barker Creek valley. The alignment continues to follow the existing placer miner road. Dry swales are present at 90+170 and 90+415. These swales may carry minor flow during the spring freshet. Surficial materials consist of moderately well to well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsdCv m-w n/a, n/a 4,III,III,M (90+060 to 90-+670) A (90+670 to 90+740)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment prior to Barker Creek.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install 500mm diameter cross drain culverts at 90+170 and 90+415 to address potential freshet flow. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material Aggregate source: • 90+640 to 90+740 (Borrow 22): fractured gneissic bedrock.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
90+740 604584 7001486	**90+980** 604413 7001326	60-70% Above 20-40% Below	The alignment passes through a section of bedrock controlled terrain. Small bedrock outcrops and bluffs are present upslope of the proposed alignment. Bedrock consists of heavily fractured gneissic material. The proposed alignment tracks the existing placer miner road. The existing road is in excellent condition aside from a lack of drainage structures. Surficial materials consist of a veneer of angular rubble colluvium in a silty sand matrix. Weathered gneissic bedrock underlies this material.	A	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement on the escarpment slope below the road. Runout is expected to terminate in or immediately adjacent to Barker Creek.	Sediment delivery to Barker Creek. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material Aggregate source: • 90+895 to 91+095 (Borrow 23): fractured gneissic bedrock.	**Low**
90+980 604413 7001326	**91+250** 604358 7001067	20-40%	The alignment passes out of the area of bedrock controlled terrain into moderate gradient planar slopes. The slopes above the alignment are dominantly timbered with Aspen and appear to be well drained. Surficial materials consist of a veneer of angular rubble colluvium in a silty sand matrix. Weathered gneissic bedrock underlies this material.	A	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement on the escarpment slope below the road. Runout is expected to terminate in or immediately adjacent to Barker Creek.	Sediment delivery to Barker Creek. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material Aggregate source: • 90+895 to 91+095 (Borrow 23): fractured gneissic bedrock.	**Low**
91+250 604358 7001067	**91+660** 604085 7000785	20-30%	The alignment leaves the existing placer mine road and traverses a large area of washed sand/gravel/cobble/small boulder tailings material. The base of a broad swale is present at 91+445. It is possible that minor surface flows could be present at this location during the spring freshet period. Due to the lack of deep test pit information at the site, it is unknown whether the tailings material is underlain by organic rich strippings. The presence of strippings underlying the tails could require subexcavation at the time of construction. Surficial materials consist of washed sand/gravel/cobble/small boulder tailings material. The clasts are composed of a mixture of schist, gneiss, quartzite, and marble.	A	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement on the escarpment slope below the road. Runout is expected to terminate in or immediately adjacent to Barker Creek.	Sediment delivery to Barker Creek. **Moderate**	**Low**	• **Cut and fill construction transitioning into a large embankment fill from 91+370 to 91+470.** • **Test pit at the proposed road location at the time of construction to determine material composition at depth. Sub excavate down to competent native foundation materials if poor materials are encountered.** • Install a 600mm diameter culvert at 91+445 to address potential freshet flow. • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 70% in well drained washed tailings Fill: 70% for fill of local or imported material	**Low**
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate in Barker Creek.	Sediment delivery to Barker Creek. **High**	**High**		**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
91+660 604085 7000785	**92+105** 603758 7000492	30-50%	The alignment ties back into the existing placer miner road. The existing road is in good condition aside from a lack of drainage structures and a silty running surface. Surficial materials consist of a veneer of angular rubble colluvium in a silty sand matrix. Weathered gneissic bedrock underlies this material.	A	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement on the escarpment slope below the road. Runout is expected to terminate in or immediately adjacent to Barker Creek.	Sediment delivery to Barker Creek. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • . Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material Aggregate source: • 91+990 to 92+115 (Borrow 24): weak gneissic bedrock.	**Low**
92+105 603758 7000492	**92+260** 603664 7000376	10-20%	The alignment crosses through a broad, wet bowl feature tracking the existing placer miner road. The bowl feature appears to be associated with shallow ice-rich permafrost. A small stream is present at 92+205. The stream channel is 1m wide by 0.2m deep. Surficial materials consist of poorly to imperfectly drained gravelly sand with trace silt fluvial deposits. This material may be underlain by ice rich permafrost at depths of 0.5-1.0m.	A	2m	Poor to Imperfect	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible sediment entrainment in the stream and transport to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Moderate**	**High** **Moderate**	• Overland construction methods. • Install a 600mm diameter culvert at 92+205 to address stream flow. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
92+260 603664 7000376	**92+690** 603482 7000038	10-30%	The alignment crosses into a large terrace feature which has been extensively mined. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	szxCv\zsgFt i-m d,p 3,II,III,L (92+260 to 92+440) A (92+440 to 92+690)	2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in local fluvial deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
92+690 603482 7000038	**92+880** 603368 6999901	20-50%	The alignment crosses back into terrain unaffected by placer miner operations. The alignment continues to track the existing placer miner road. Cross of a dry swale at 92+810. No signs of surface flow were noted at the time of field work but minor flows could be present during the spring freshet. Surficial materials consist of moderately well to well drained silty sand with some gravel colluvium grading to angular rubble colluvium at depth.	zsxCv\zsgFt m n/a,n/a 3,II,II,L,s (92+690 to 92+800) (92+825 to 92+880) zsxCb m-w n/a,n/a 3,II,II,L,s (92+800 to 92+825) zsxCv m-w n/a,n/a 5,IV,V,H,s (92+955 to 93+020)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter cross drain culvert at 92+810 to address potential freshet flows. Cut: 70-100% in moderately well to well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
92+880 603368 6999901	**93+185** 603258 6999622	20-30% Above 60-70% Below	The alignment tracks the existing placer miner road. Slope gradients increase to 60-70% below the proposed alignment. Surficial materials consist of a veneer of angular rubble colluvium in a silty sand matrix	zsxCv m-w n/a, n/a 5,IV,V,H,s (92+955 to 93+060) zsxCv\zsgFt m n/a, n/a 3,II,III,L,s (92+880 to 92+955) (93+060 to 93+185)	<1m	Well	**High:** Small (<500m^3) fill slope failure due to fill placement on moderately steep gradient slope below the proposed alignment. Runout is expected to terminate on gentle gradient terrain approximately 40m downslope.	Temporary loss of access on the proposed road alignment. Damage is practically repairable in 1-2 days. **Moderate** Minor sediment delivery to Barker Creek. **Moderate**	**High** **High**	• **Upgrade the road through full bench cut** construction involving widening, ditching, crowning, and installation of drainage structures. • **All generated material should be endhauled to a suitable waste site. Suitable waste sites are present from 92+260 to 92+690.** • **Ensure the proposed road is kept at least 3m back from the present road shoulder and widening must occur via moving the road into cut.** Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: N/A – Endhaul all generated material	**Low**
93+185 603258 6999622	**94+015** 603075 6998841	30-45%	The alignment breaks out of moderately steep gradient terrain into planar slopes with moderate gradients. Surficial materials consist of moderately well to well drained gravelly sand with some silt colluvium.	zsxCv\zsgFt m n/a, n/a 3,II,III,L,s (93+185 to 93+215) sxzCb i s,m 2,II,IV,M,t (93+215 to 93+310) sxzCb\zsgFt m-w d,m 2,II,IV,M,t (93+310 to 93+795) A (93+795 to 94+015)	2-3m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in moderately well to well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
94+015 603075 6998841	**94+260** 603056 6998602	30-45%	The alignment continues to track the existing placer miner road. Surficial materials consist of well drained angular rubble colluvium. This material is underlain by fractured gneissic bedrock interbedded with bands of competent marble.	A	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
94+260 603056 6998602	**94+400** 603075 6998464	20-30%	The alignment descends into an active placer mine over a mid-sized stream crossing. The stream is located at 94+375. The channel has been heavily affected by placer miner operations. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	>2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. • Install a 9.1m All Steel Portable Bridge at 94+375 as per OEL Middle Barker Placer Camp General Arrangement Drawing. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
94+400 603075 6998464	**95+940** 603300 6996995	0-40%	The proposed road alignment drops down to the base of the Barker Creek valley and crosses through an active placer mine. This area was not assessed in detail in the field due to ongoing mining activities. Due to active mining operations the topography of this section will have changed considerable since LiDAR acquisition. Topographical data of the design may be obsolete and as a result changes to the proposed road design may be required at the time of construction. A stream crossing is proposed at 95+065. The crossing has been surveyed by OEL and a crossing design has been formulated. An additional large stream crossing is present at 95+720. The crossing has been surveyed by OEL and a crossing design has been formulated. Surficial materials consist of well drained tailings deposits composed of washed sand and gravel.	A	>2m	Well	**N/A**	**N/A**	**N/A**	• Cut and fill construction • Install a 1.85m by 1.4m Corrugated Steel Pipe Arch at 95+065. Refer to the OEL Middle Barker Tailings 1 General Arrangement Drawing for details. • Install a 12.2 All Steel Portable Bridge at 95+720. Refer to the OEL Middle Barker Tailings 2 General Arrangement Drawing for details. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material	**Low**
95+940 603299 6996998	**96+130** 603375 6996825	40-50%	The proposed alignment climbs up a short bedrock controlled escarpment from the valley bottom area. The escarpment has not been altered by placer miner activity. Shallow moderate ice-content permafrost was not apparent in existing road cuts in the area. Surficial materials consist of a veneer of angular rubble colluvium in a silty sand matrix. This material is underlain by fractured gneissic bedrock.	A (95+940 to 96+030) sdzCb i s,m 4,IV,V,H,s (96+030 to 96+100) A (96+100 to 96+130)	<1m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
96+130 603375 6996825	**96+645** 603524 6996354	10-20%	The alignment follows an old road alignment along a broad terrace feature which is the site of previous placer miner operations. The upslope area is undisturbed and appears to contain shallow ice-rich permafrost. A recent forest fire event may be leading to permafrost degradation. Small streams are crossed at the following locations: • 96+245 • 96+390 • 96+515 • 96+645 Surficial materials consist of imperfect to well drained gravelly sand with trace silt fluvial deposits.	A	2m	Imperfect to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install 600mm diameter cross drain culverts at the following locations: ○ 96+245 ○ 96+390 ○ 96+515 ○ 96+645 Cut: 70% in imperfect to well drained fluvial deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
96+645 603524 6996354	**97+810** 603695 6995344	10-30%	The proposed alignment continues through a placer mine area but the mined area expands upslope. This appears to correlate with a reduction of water at the road location. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits. Fractured gneissic bedrock is visible at the base of pits excavated by placer miners into the terrace.	A	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
97+810 603695 6995344	**98+455** 603412 6994793	20-35%	The alignment leaves the mined area and crosses into a recently burned area. A number of old trails traverse the area with signs of significant cutslope seepage. It appears that ice-rich permafrost may be present in the area outside of trail alignments and may be degrading as the result of the recent fire event. Seepage sites were noted in the following locations: • 97+850 • 97+935 • 98+000 • 98+050 • 98+275 Surficial materials consist of imperfectly drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth. Ice-rich permafrost may be present at depth outside of trail locations.	A (98+810 to 97+865) xszC1b\sgFt p-i s,r 2,II,V,H,t (97+865 to 97+980) szdCv i-m s,p 4,IV,IV,H,s (97+980 to 98+080) xszC1b\zsgFt p s,r 2,II,V,VH,t (98+080 to 98+455)	1-2m	Poor to Imperfect	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**High** **Low**	• ¼ to ½ bench cut construction with installation of a large ditchline and frequent cross drains. • Slope back the cut to 70% and buttress with keyed in angular rock where sloughing is particularly problematic. • As the permafrost at the site appears to be somewhat degraded, fill slope gradients remain at 70%. • Install 600mm diameter cross drain culverts at the following locations: ○ 97+850 ○ 97+935 ○ 98+000 ○ 98+050 ○ 98+275 Cut: 70% in imperfectly drained colluvium deposits Fill: 70% for fill of local material	**Moderate** – Minor permafrost degradation
							Moderate: Small scale cutslope slouging and instability. Runout is expected to terminate on the proposed road alignment.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**High** **Low**		**Moderate** – Chronic small scale cutslope instability
98+455 603412 6994793	**98+830** 603276 6994451	10-25%	The alignment crosses out of the recently burned area and tracks a faint trail. Mature spruce forest is present in the area. Ice rich permafrost may be present at depth but was not noted in hand dug test pits excavated to 0.7m depth. Shallow hand dug test pits reveal moist organic rich clayey silt materials. Gravelly sand with trace silt fluvial deposits are expected to underlie this layer.	xszC1b\zsgFt p s,r 2,II,V,VH,t	2m	Imperfect	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**High** **Low**	• Cut and fill construction with installation of a large ditchline and frequent cross drains. • Slope back the cut to 70% and buttress with keyed in angular rock where sloughing is particularly problematic. Cut: 70% in imperfectly drained fluvial deposits Fill: 70% for fill of local material	**Moderate** – Minor permafrost degradation
							Moderate: Small scale cutslope slouging and instability. Runout is expected to terminate on the proposed road alignment.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**High** **Low**		**Moderate** – Chronic small scale cutslope instability

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
98+830 603276 6994451	**98+930** 603285 6994352	20-30%	The alignment begins to descend towards the edge of the fluvial terrace. Surficial materials consist of moderately well drained gravelly sand with trace silt fluvial deposits. Signs of shallow ice-rich permafrost were not apparent in this area.	xszC1b\zsgFt p s,r 2,II,V,VH,t	2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70% in moderately well drained fluvial deposits Fill: 70% for fill of local material	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low** **V. Low**		**Low**
98+930 603285 6994352	**99+060** 603229 6994234	50-60%	The alignment drops over the edge of the escarpment onto moderately steep gradient slopes. The escarpment appears to be bedrock controlled with gneissic bedrock outcropping in isolated locations. No signs of shallow ice-rich permafrost were noted in hand-dug test pits in the field or on the escarpment slope. The vegetation present at the site and the aspect of the slope is indicative of permafrost free, well drained soils. Surficial materials consist of well drained silty sand with some gravel colluvium grading into rubble colluvium near bedrock outcrops.	szdCv i-m s,p 4,IV,IV,H,s (98+930 to 98+955) (98+955 to 99+025) A (98+955 to 98+955) zsxCx//Rs w-r n/a, n/a 5,IV,IV,M,s (99+025 to 99+060)	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes within 30m of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material Aggregate source: • A4 (98+925 to 99+025): silty sand with some gravel colluvium overlying fractured gneissic bedrock.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low** **V. Low**		**Low**
99+060 603229 6994234	**99+150** 603189 6994159	10-20%	The alignment reaches the base of the terrace escarpment and crosses over Upper Barker Tributary 1 stream. Shallow ice-rich permafrost is apparent in the area. The stream channel is 1-2m wide by 0.4m deep and displays a meandering morphology. The channel is located at 99+110. Downstream of the crossing site the stream has downcut through ice-rich permafrost soils resulting in minor bank instability and sloughing. Surficial materials consist of poorly gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	zsxCx//Rs w-r n/a, n/a 5,IV,IV,M,s (99+060 to 99+080) zsgFAp m-w d,m 2,II,III,L,t (99+080 to 99+130) xszC1a p n,r 2,II,V,H,t (99+130 to 99+150)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Entrainment of sediment in the Upper Barker Tributray 1 stream and transport to Barker Creek	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 2400mm diameter culvert at 99+110 to address stream flow. Refer to the OEL Upper Barker Trib 1 General Arrangement Drawing for additional site details. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
99+150 603189 6994159	**99+555** 603170 6993769	10-20%	The alignment tracks an indistinct trail constructed through shallow ice-rich permafrost. The permafrost has been degraded at the trail location leading to significant cutslope seepage emergence and sloughing. Seepage emergence sites were noted at the following locations: • 99+215 • 99+280 • 99+420 • 99+580 Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	xszC1a p n,r 2,II,V,H,t (99+150 to 99+235) szdCv p-i s,p 3,II,III,M,s (99+235 to 99+260) sxzCb\zsgFt p-i s,m 2,II,IV,M,t (99+260 to 99+555)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**V. High** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install 600mm diameter cross drain culverts at the following locations: ○ 99+655 ○ 99+720 ○ 99+860 ○ 99+580 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
99+555 603170 6993769	**99+795** 603190 6993534	10-20%	The alignment continues along the existing trail into what appears to be somewhat better drained slopes than the prior section. The area outside of the trail still appears to contain permafrost but the ice content may be moderate rather than rich. Trail cuts appears to be holding up relatively well with only minor sloughing so cut and fill construction may be feasible. Seepage sites are present at the following locations: • 99+670 • 99+790 Surficial materials consist of imperfectly drained gravelly sand with trace silt fluvial deposits. Ice-rich to moderate ice content permafrost is present at depths of 0.5-1.0m.	sxzCb\zsgFt p-i s,m 2,II,IV,M,t Above the road szdCv p-i s,p 3,II,III,M,s Below the road	>2m	Imperfect	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. **Moderate:** Small scale cutslope slouging and instability. Runout is expected to terminate on the proposed road alignment.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Barker Creek. **Low** Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Barker Creek. **Low**	**Moderate** **Low** **High** **Low**	• ¼ to ½ bench cut construction with installation of a large ditchline and frequent cross drains. • Slope back the cut to 70% and buttress with keyed in angular rock where sloughing is particularly problematic. • Install 600mm diameter cross drain culverts at the following locations: ○ 99+670 ○ 99+790 Cut: 70% in imperfectly drained fluvial deposits Fill: 70% for fill of imported granular material	**Moderate** – Minor permafrost degradation **Moderate** – Chronic small scale cutslope instability
99+795 603190 6993534	**99+900** 603186 6993425	15-30%	The alignment leaves the existing trail and traverses a short escarpment in-between two large flat areas. The escarpment appears to be relatively well drained, likely as the result of deeper permafrost. The flat areas above and below the escarpment appear to contain shallow ice-rich permafrost. Minor active layer creep is apparent in the upslope area. Surficial materials consist of moderately well to well drained silty sand with some gravel colluvium overlying fractured gneissic bedrock.	szdCv p-i s,p 3,II,III,M,s (99+795 to 99+895) xszC1a p n,r 2,II,V,H,t (99+895 to 90+900)	<1m	Imperfect	**Moderate:** Road construction undermines permafrost area on flats above leading to permafrost degradation and increased water inputs to the road location. Small scale (<500m^3) cutslope instability may result.	Temporary loss of access on the proposed road alignment. Damage is practically repairable in <1day. **Moderate**	**Moderate**	• Cut and fill construction. • Buttress cuts with keyed in angular rock if cutslope sloughing is problematic. Cut: 70% in imperfectly drained colluvium deposits Fill: 70% for fill of local material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
99+900 603186 6993425	**99+960** 603190 6993369	0-10%	The alignment crosses over a broad swale with a small stream at the base. The stream is located at 100+375. The stream channel is <1m wide and has a channel gradient of approximately 5%. The low channel gradient indicates that icing may occur. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	xszC1a p n,r 2,II,V,H,t	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible entrainment of sediment in the stream and transport to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 99+935 to address stream flow and potential icing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
99+960 603190 6993369	**100+115** 603249 6993225	0-10%	The alignment tracks a faint trail through a low gradient area with shallow ice-rich permafrost. The trail appears to have locally degraded permafrost leading to subsidence at the trail location and water ponding. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	xszC1a p n,r 2,II,V,H,t (99+960 to 100+095) zsdCv w n/a, n/a 3,II,II,L,s (100+095 to 100+115)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Low**	**V. High** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install frequent cross drain culverts to address prolific seepage flow. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
100+115 603249 6993225	**100+290** 603306 6993069	40-55%	The alignment climbs hard out of the wet permafrost area around a broad bedrock controlled ridge. A large terrace and abandoned placer miner camp is present 20m upslope of the proposed road location. Gneissic bedrock is visible outcropping in isolated locations on the ridge feature. Surficial materials consist of well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsdCv w n/a, n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes within 30m of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in well drained colluvium deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**Low**
100+290 603306 6993069	**100+415** 603344 6992954	20-30%	The alignment crosses over a draw with a mid-sized stream at the base. The stream is located at 100+770. An existing placer mine road is present at the crossing location but ice-rich permafrost is present outside of the road prism. The stream channel is 1-2m wide by 0.5m deep. The stream has downcut through ice-rich permafrost soils resulting in minor bank instability and sloughing. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	zsdCv w n/a, n/a 3,II,II,L (100+290 to 100+320) A (100+320 to 100+415)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible entrainment of sediment in the stream and transport to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 2400mm diameter culvert at 100+330 to address stream flow as per the OEL design for the site. • Fill placement occurs onto the existing placer mine road upchain of 100+190 where permafrost has been degraded. The fill slope gradient increases to 70% at this point. • **The embankment fill size is relatively large from 100+280 to 100+360.** • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: N/A – Overland construction Fill: 40-70% for fill of imported granular material	**Low**
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on flat to gentle gradient terrain adjacent to Barker Creek.	Sediment delivery to Barker Creek. **High**	**High**		**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
100+415 603344 6992954	**101+555** 603879 6992023	10-20%	The alignment tracks an existing placer mine road along a previously mined terrace. The existing road is in relatively good condition aside from a lack of drainage structures. Large material stockpiles including washed sand and gravel tailings and gneissic rock clasts are present along the alignment. Surficial materials consist of well drained gravelly sand with trace silt fluvial deposits.	A	1-2m	Well	**Very Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes within 30m of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**V. Low**
							Low: Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
101+555 603879 6992023	**101+770** 603820 6991814	10-20%	The alignment passes through a large pit which appears to have been excavated down to bedrock. Surficial materials consist of a veneer of well drained gravelly sand with trace silt fluvial deposits over gneissic bedrock.	A	<1m	Well	**Very Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to gradient slopes within 30m of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in well drained fluvial deposits 200% in gneissic bedrock Fill: 70% for fill of local material	**V. Low**
							Low: Encounter isolated ice wedges or pockets of unmelted permafrost within the previously mined area. Degredation of the remaining permafrost. Isolated formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**		**Low**
101+770 603820 6991814	**102+080** 603782 6991513	20-30%	The proposed road alignment leaves the existing placer mine road and traverses a gentle to moderate gradient terrace slope. Mature timber is present on the terrace slope and previous excavations in the area reveal moderately well drained gravelly sand fluvial deposits. The upslope and downslope area moving off of the terrace slope appears to contain shallow ice-rich permafrost. Surficial materials at the site consist of imperfectly to moderately well drained sand and gravel fluvial deposits. Ice-rich permafrost may be present at depths >1m.	A (101+770 to 101+795) sxzCb\sgFt p-m s,m 3,III,IV,H,b (101+795 to 102+045) xszC1a p n,r 2,III,IV,H,t (102+045 to 102+080)	2m	Imperfect to Mod. Well	**Moderate:** Road construction through the terrace slope leads to permafrost degradation in the upslope area. Increased water inputs to the road location and resulting cutslope instability.	Small scale (<500m^3) cutslope failure due to increased water inputs from the upslope area. **Moderate**	**Moderate**	• Cut and fill construction. • Install a large (1m deep) ditchline and maintain the ditchline seasonally to prevent infilling. • If cutslope sloughing is particularly problematic, buttress the slope with keyed in rock. Cut: 70% in imperfectly to moderately well drained fluvial deposits Fill: 70% for fill of local material Aggregate source: • 101+770 to 102+100 (Borrow 25): fluvial sand and gravel	**Moderate** – Small scale cutslope sloughing and ditchline infilling

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
102+080 603782 6991513	**102+245** 603871 6991376	0-10%	The proposed alignment crosses over Barker Creek. Shallow ice-rich permafrost is present throughout the base of the Barker Creek valley in this location. Barker Creek features a meandering channel incised approximately 2m into the valley bottom slopes. Small scale sloughing on the banks of the stream channel is prolific and is likely associated with ice-rich permafrost degradation due to Barker Creek. Surficial materials at the site consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	xszC1a p n,r 2,III,IV,H,t (102+080 to 102+140) eOp/zsgFAp p-i s,r 1,II,V,M,t (102+140 to 102+205) xszC1a-Xe p-i n,r 2,V,V,H,t (102+205 to 102+245)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Barker Creek. **High**	**V. High** **V. High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2. • Install a 9.1m All Steel Portable Bridge over Barker Creek. Refer to the OEL Upper Barker General Arrangement Drawing for further details. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
102+245 603871 6991376	**102+375** 603885 6991250	10-20%	The proposed road alignment skirts along the base of the east sidewall of the Barker Creek valley. Shallow ice-rich permafrost is present at the road location and extends up the sidewall slope in a series of elongate fingers through moderately steep gradient slopes. A number of active layer failures are visible on the sidewall slope but appear to terminate on gentle gradient terrain prior to the proposed road location. Surficial materials at the site consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	xszC1a-Xe p-i n,r 2,V,V,H,t (102+245 to 102+355) sxzCb p-i s,m 2,II,IV,M,t (102+355 to 102+375)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
							High: Cut and fill construction results in loss of toe support at the site of active layer failures. Increased frequency of active layer failures with runout on proposed road alignment.	Minor sediment delivery to Barker Creek. **Moderate** Blockage of road alignment due to active layer failure deposition. **High**	**High** **V. High**		**Moderate** – Natural active layer failure leading to short term blockage of the road
102+375 603885 6991250	**102+445** 603876 6991180	30-45% Above 10-20% Below	The alignment tucks in tight to the base of the sidewall slope in this location. The sidewall slope above the road location appears to be well drained and no indicators of shallow ice-rich permafrost were noted. The flat to gentle gradient slopes below the proposed alignment appear to contain shallow ice-rich permafrost. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb p-i s,m 2,II,IV,M,t	1-2m	Well above the proposed road Poor below the proposed road	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Barker Creek. **Moderate**	**Low** **Low**	• **Cut into the well drained slope above the proposed road alignment and fill down onto flat to gentle gradient slopes below the alignment.** Cut: 70-100% in well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
102+445 603876 6991180	**102+515** 603880 6991112	10-20%	The alignment continues along the base of the sidewall slope through an area where fingers of shallow ice-rich permafrost extend up the slope. Surficial materials consist of imperfectly to poorly drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth. Ice-rich permafrost is present at depths of 0.5-1.0m.	sxzCb p-i s,m 2,II,IV,M,t	1-2m	Poor to Imperfect	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
							High: Cut and fill construction results in loss of toe support at the site of active layer failures. Increased frequency of active layer failures with runout on proposed road alignment.	Minor sediment delivery to Barker Creek. **Moderate** Blockage of road alignment due to active layer failure deposition. **High**	**High** **V. High**		**Moderate** – Natural active layer failure leading to short term blockage of the road
102+515 603880 6991112	**102+870** 603978 6990769	30-50% Above 10-20% Below	The alignment traverses the lower portion of the east sidewall slope of the Barker Creek valley. The sidewall slope is planar with moderate slope gradients. Mature timber is present on the sidewall slope and the area appears to be well drained. Shallow ice-rich permafrost appears to be confined to flat to gentle gradient terrain below the proposed road alignment. A waste site is currently shown from 102+715 to 102+870 extending onto the permafrost area downslope of the alignment. Wasting material in this are could impact the permafrost in the downslope area. Surficial materials consist of well drained silty sand with some gravel colluvium grading into angular rubble colluvium at depth.	sxzCb p-i s,m 2,II,IV,M,t (102+515 to 102+585) szxCv m-i s,p 3,II,III,M,s (102+585 to 102+855) zsxCv w-r n/a, n/a 3,II,II,L,s (102+855 to 102+870)	1-2m	Well above the proposed road Poor on flat to gentle gradient terrain below the proposed road	**High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Barker Creek. **Moderate**	**High** **High**	• **Cut into the well drained slope above the proposed road alignment and fill down onto flat to gentle gradient slopes below the alignment.** • The road design indicates that the road is situated far enoughup the slope that the road fill will toe out on well drained gentle to moderate gradient terrain prior to the permafrost valley bottom. • The waste area from 102+715 to 102+870 must not be used and excess material should be used to fill in the borrow pit at 102+000 Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
102+870 603978 6990769	**102+960** 603957 6990697	15-25% in stream draw 40% on sidewall	Cross over a broad draw with a small stream at the base. Shallow ice-rich permafrost is prevalent across the base of the draw and on the south sidewall slope. Ongoing active layer creep also appears to be prevalent where permafrost occurs, particularly on the sidewall slope of the stream draw. The stream at the base of the draw is approximately 1m wide and has a silt and sand substrate. The stream is located at 102+940.	sdFAv\sxzCb p d,m 3,II,IV,M,b	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm diameter culvert at 102+940 to address steam flow and icing concerns. • **The embankment fill size is relatively large through the road section.** • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			Surficial materials consist of poorly drained silty sand fluvial deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.				**Moderate:** Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on flat to gentle gradient terrain adjacent to Barker Creek.	Sediment delivery to Barker Creek. **High**	**High**	project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
102+960 603957 6990697	**103+005** 603953 6990647	25-40%	The proposed alignment climbs up the sidewall slope of the stream draw through what appears to be an unstable ice-rich permafrost slope. Active layer creep is apparent and minor thermokarst formation is present along a small wildlife trail in the area. Overland construction is not feasible in the area due to the site geometry and the gradient of the sidewall slope. This indicates that some degree of cut is required and associated permafrost degradation will occur. Surficial materials consist of poorly drained silty sand with some gravel colluvium deposits. Ice-rich permafrost is present at depths of 0.5-1.0m.	szxCv m-i s,p 3,II,III,M,s	1-2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increased sediment inputs to Barker Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**	• **¼ to ½ bench cut construction with the majority of the road prism constructed out of imported fill.** • **Excavated material <u>must not</u> be used in the embankment fill. Construct the embankment fill prior to cutting into the slope to help minimize disturbance to the ground surface.** • Buttress the cutslope of the road with a 2m tall by 35m long buttress of keyed in angular rock. • Seasonal maintenance of the road ditchline will be required. • **The embankment fill size is relatively large at the start of the road section.** • Construct the embankment fill in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 70% in poorly drained ice-rich colluvium deposits Fill: 70% for fill of imported granular material.	**Low to Moderate** – Minor permafrost degradation. **Moderate** – Small scale cutslope instability. Chronic maintenance issue. **Low**
							High: Deepening of the active layer in road cutslope with associated soil saturation from ice-rich permafrost melt. Mid-size retrogressing failure up to 1000m^3 in size.	Blockage of the proposed road alignment. **High** Sediment delivery to Barker Creek. **Moderate**	**V. High** **High**		
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on flat to gentle gradient terrain adjacent to Barker Creek.	Sediment delivery to Barker Creek. **High**	**High**		**Low**
103+005 603953 6990647	**103+450** 604013 6990207	40-65%	The proposed alignment traverses moderate to moderately steep planar to somewhat benched face unit slopes. The area is generally moderately well to well drained and no surface flows were noted. Surficial materials consist of a veneer of rubble colluvium in a silty sand matrix underlain by fractured gneissic bedrock.	szxCv m s,p 3,II,III,M,s (103+005 to 103+145) szxCv m-i s,p 3,II,III,M,s (103+145 to 103+450)	<1m	Mod. Well to Well	**Moderate:** Mid-sized (<1000m^3) fill slope failure due to fill placement on moderately steep gradient slopes. Runout is expected to terminate on flat gradient terrain at the base of the sidewall slope approximately 60-80m downslope.	Sediment delivery to Barker Creek. **Moderate**	**Moderate**	• **Cut and fill construction.** • **Shift to ¾ to full bench cut construction where sideslopes exceed 60%.** • Excess material generated by sections of ¾ to full bench cut construction can be incorporated into the road prism immediately downchain. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
103+450 604013 6990207	**103+560** 604052 6990218	20-30%	The alignment turns a switchback on moderate gradient planar slopes. Shallow ice-rich permafrost is not present at the switchback location but was encountered in hand dug test pits approximately 60m to the south. Surficial materials consist of a veneer to thin blanket of well drained rubble colluvium in a silty sand matrix.	szxCv m-i s,p 3,II,III,M,s (103+450 to 103+485) szxCv/zsxDv i-w d,p 2,II,II,M,s (103+485 to 103+560)	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
103+560 604052 6990218	**103+825** 604109 6990481	25-40%	The alignment traverses moderate gradient planar to somewhat irregular face unit slopes. Surficial materials consist of a veneer to thin blanket of imperfect to moderately well drained rubble colluvium in a silty sand matrix.	szxCv m-i s,p 3,II,III,M,s	1-2m	Imperfect to Mod. Well	**Low to Moderate:** Small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on gentle to moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low to Moderate** **Very Low to Low**	• Cut and fill construction. • Buttress road cuts with angular rock if cutslope ravelling is problematic. • Drainage management is important along this section of the road. Install cross drain culverts at all wet areas and seepage sites. Ensure that ditchlines and driange structures remain functional. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low to Moderate: Drainage pattern disruption along the proposed road leading to drainage concentration onto unconditioned, moderately steep gradient terrain on the lower portion of the valley sidewall. Initiation of a mid-sized open slope failure running out on flat to gentle gradient terrain at the base of the valley sidewall slope.	Sediment delivery to Barker Creek. **Moderate**	**Low to Moderate**		**Low**
103+825 604109 6990481	**104+080** 604159 6990455	15-30%	The alignment wraps around a broad ridge feature with gentle to moderate slope gradients. The alignment turns a switchback in this location. Surficial materials consist imperfectly to moderately well drained silty sand with some gravel colluvium deposits.	szxCv m-i s,p 3,II,III,M,s	1-2m	Imperfect to Mod. Well	**Low to Moderate:** Small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on gentle to moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low to Moderate**	• Cut and fill construction. • Buttress the upper leg of the switchback road cut with angular rock if cutslope ravelling is problematic. • Lay back cuts to 70% to account for imperfectly drained soils. • Drainage management is important along this section of the road. Install cross drain culverts at all wet areas and seepage sites. Ensure that ditchlines and driange structures remain functional. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material	**Low**
							Low to Moderate: Drainage pattern disruption along the proposed road leading to drainage concentration onto unconditioned, moderately steep gradient terrain on the lower portion of the valley sidewall. Initiation of a mid-sized open slope failure running out on flat to gentle gradient terrain at the base of the valley sidewall slope.	Sediment delivery to Barker Creek. **Moderate**	**Low to Moderate**		**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
104+080 604159 6990455	**104+530** 604271 6990029	20-45%	The alignment traverses gentle to moderate gradient planar to somewhat irregular face unit slopes. Surficial materials consist of a veneer to thin blanket of imperfect to moderately well drained rubble colluvium in a silty sand matrix.	szxCv m-i s-d,p 3,II,III,M,s	1-2m	Imperfect to Mod. Well	**Low to Moderate:** Small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on gentle to moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low to Moderate**	• Cut and fill construction. • Buttress road cuts with angular rock if cutslope ravelling is problematic. • Lay back cuts to 70% to account for imperfectly drained soils. • Drainage management is important along this section of the road. Install cross drain culverts at all wet areas and seepage sites. Ensure that ditchlines and driange structures remain functional. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low to Moderate: Drainage pattern disruption along the proposed road leading to drainage concentration onto unconditioned, moderately steep gradient terrain on the lower portion of the valley sidewall. Initiation of a mid-sized open slope failure running out on flat to gentle gradient terrain at the base of the valley sidewall slope.	Sediment delivery to Barker Creek. **Moderate**	**Low to Moderate**		**Low**
104+530 604271 6990029	**104+710** 604294 6990067	15-25%	The alignment turns a switchback on gentle to moderate gradient planar slopes and heads to the north. Surficial materials consist of a veneer to thin blanket of imperfect to moderately well to well drained rubble colluvium in a silty sand matrix.	szxCv i-m d,p 3,II,III,M,s	1-2m	Imperfect to Mod. Well	**Low to Moderate:** Small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on gentle to moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Barker Creek. **Low**	**Low to Moderate**	• Cut and fill construction. • Buttress road cuts with angular rock if cutslope ravelling is problematic. • Lay back cuts to 70% to account for imperfectly drained soils. • Drainage management is important along this section of the road. Install cross drain culverts at all wet areas and seepage sites. Ensure that ditchlines and driange structures remain functional. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low to Moderate: Drainage pattern disruption along the proposed road leading to drainage concentration onto unconditioned, moderately steep gradient terrain on the lower portion of the valley sidewall. Initiation of a mid-sized open slope failure running out on flat to gentle gradient terrain at the base of the valley sidewall slope.	Sediment delivery to Barker Creek. **Moderate**	**Low to Moderate**		**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
104+710 604294 6990067	**105+040** 604296 6990275	15-35%	The alignment turns a switchback on gentle to moderate gradient planar slopes. Aspen timber is present at the site suggesting that soils are well drained and shallow subsurface flows are minimal. Surficial materials consist of a veneer to thin blanket of well drained rubble colluvium in a silty sand matrix.	szxCv i-m d,p 3,II,III,M,s (104+710 to 104+780) zsxCv w-r n/a, n/a 3,II,II,L,s (104+780 to 105+040)	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Barker Creek. **Low**	**V. Low**	• Cut and fill construction. • Drainage management is important along this section of the road. Install cross drain culverts at all wet areas and seepage sites. Ensure that ditchlines and driange structures remain functional. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low to Moderate: Drainage pattern disruption along the proposed road leading to drainage concentration onto unconditioned, moderately steep gradient terrain on the lower portion of the valley sidewall. Initiation of a mid-sized open slope failure running out on flat to gentle gradient terrain at the base of the valley sidewall slope.	Sediment delivery to Barker Creek. **Moderate**	**Low to Moderate**		**Low**
105+040 604296 6990275	**105+815** 604786 6989702	15-45%	The alignment traverses planar to somewhat benched slopes with gentle to moderate slope gradients. A low point with scattered wet site indicators was noted at 105+535. The shallow permafrost area noted in terrain mapping near the end of the road section was noted to start at 105+810 in the field. The road alignment stays in mature timber upslope of the shallow permafrost area prior to this point. Surficial materials consist of a veneer to thin blanket of well drained rubble colluvium in a silty sand matrix.	zsxCv w-r n/a, n/a 3,II,II,L,s (105+040 to 105+185) (105+445 to 105+705) szxCv i-m d,p 3,II,III,M,s (105+185 to 105+445) sxzCb p s,m 3,III,IV,H,b (105+705 to 105+815)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. • Install a 500mm diameter cross drain culvert at 105+535 to address potential minor subsurface flow. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 105+680 to 105+780 (Borrow 26): angular rubble colluvium over fractured gnessic bedrock - rippable	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
105+815 604786 6989702	**105+930** 604807 6989589	15-25%	The alignment crosses through a small, poorly drained opening with a poorly confined NCD at 105+925. The stream is 0.4m wide by 0.2m deep with a silt to sand substrate. The low channel gradient indicates that icing may occur. A hand dug test pit at the site excavated to 0.7m did not reveal ice-rich permafrost but the site drainage and vegetation profile suggests that permafrost may be present at depths of 1m or greater. Terrain mapping of the area indicates that shallow permafrost with medium ice content is present. Surficial materials consist of poorly drained silty sand with some gravel colluvium. Ice-rich permafrost appears to be present at depths >1m.	sxzCb p s,m 3,III,IV,H,b	2m	Poor	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High**	**High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 600mm diameter culvert at 105+925 to address steam flow and icing concerns. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
105+930 604807 6989589	**106+310** 604873 6989218	25-45%	Terrain is planar to somewhat benched with moderate slope gradients. Surficial materials consist of a veneer to thin blanket of silty sand with some gravel colluvium grading into rubble colluvium at depth.	sxzCb p s,m 3,III,IV,H,b (105+930 to 105+995) szxCv i-p d,p 3,II,III,M,s (105+995 to 106+310)	1-2m	Imperfect to Mod. Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 106+100 to 106+200 (Borrow 27): angular rubble colluvium over fractured gnessic bedrock – rippable	**Low**
							Low: Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**		**Low**
106+310 604873 6989218	**106+455** 604860 6989071	0-20%	The alignment crosses through a broad saddle feature. Slope gradients are flat to gentle in the area. Terrain mapping indicates that shallow, moderate ice content permafrost is present in the saddle feature. Shallow, moderate ice content permafrost was not observed in the field at the site and vegetation at the site consisted on mature spruce and aspen. Surficial materials consist of a blanket of silty sand with some gravel colluvium grading into rubble colluvium at depth.	sxzCb p s,m 2,III,IV,M,t	2m	Imperfect	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**	• Cut and fill construction. • Lay back cuts to 70% to account for imperfectly drained soils. • Ensure that ditchline water drains away from the road location at the saddle point. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**		**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
106+455 604860 6989071	**107+260** 604589 6988344	15-35%	The alignment follows a gentle to moderate gradient, rolling ridgetop. Surficial materials consist of a veneer to thin blanket of silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxDv/szxCv i-p d,p 2,II,II,M,s	1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
107+260 604589 6988344	**107+720** 604318 6987991	20-35%	The alignment traverses the northwest side of a broad ridge leading up to the Barker-Ballarat Pass Summit. Terrain is planar with gentle to moderate slope gradients. Surficial materials consist of a veneer of angular rubble colluvium derived from a quartzite bedrock protolith.	zsxDv/szxCv i-p d,p 2,II,II,M,s (107+260 to 107+560) szxCv p-i s,p 2,II,III,M,s (107+560 to 107+720)	<1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured quartzite bedrock Fill: 70% for fill of local material. Aggregate source: • 107+270 to 107+470 (Borrow 28): talus derived from quartzite bedrock.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
107+720 604318 6987991	**107+895** 604143 6987989	10-35%	The proposed alignment traverses a broad imperfectly drained bowl. Shallow ice-rich permafrost was encountered at 0.5m depth in a hand dug test pit in the area. Terrain mapping in the area indicates that shallow permafrost with moderate ice content may be present. Terrain in the area is somewhat benched to allow for fill placement but the overall grade is on the order of 25% which is relatively steep for overland construction. Surficial materials consist of imperfectly drained silty sand with some gravel colluvium. Ice-rich permafrost is present at depths of 0.5m	sxzCb p-i s,m 3,III,IV,H,b (107+720 to 107+810) szxCv//zsxDv p-i s,p 3,II,III,M,s (107+810 to 107+895)	1-2m	Poor to Imperfect	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High**	**V. High**	• **Low profile road prism with ¼ to ½ bench cut. Ensure the road prism is constructed out of imported free draining granular material.** • **Buttress the cutslope of the road with keyed in angular rock 1-2m tall extending for the length of the section.** • **The design fillslope angle is varied through this section to ensure the fill toes out on a small bench downslope of the road location.** Cut: 200% in imperfectly drained colluvium and permafrost materials buttressed with keyed in rock 200% in fractured quartzite bedrock Fill: 50-70% for fill of imported free draining granular material or rock	**Low**
							High: Large fill leads to loading of the active layer. Initiation of a large (>1000m^3) fill slope failure.	Loss of access on the proposed road alignment. Practically repairable in less than 1 week. **High** Sediment delivery to Barker Creek **Low**	**V. High** **Moderate**		**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
107+895 604143 6987989	**108+150** 603932 6987848	20-25%	The alignment leaves the imperfectly drained bowl area and traverses the northwest flank of a broad ridge feature. Terrain is planar with gentle slope gradients. Surficial materials consist of gravelly sand with some silt colluvium grading into rubble colluvium at depth.	szxCv//zsxDv p-i s,p 3,II,III,M,s (107+895 to 108+020) szxCv-Xs p-i s,m 2,II,III,M,s (108+020 to 108+150)	1-2m	Imperfect	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	**N/A**	**N/A**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured quartzite bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
108+150 603932 6987848	**108+735** 603564 6987391	0-30%	The alignment crests over the top of the Barker-Ballarat Pass Summit and starts to descend down into the headwaters of the Ballarat Creek drainage. Terrain is planar to rolling with flat to gentle slope gradients. The upper saddle area is proposed as a rock quarry to generate material for use in the descent into the Ballarat Creek valley. Surficial materials consist of well to rapidly drained quartzite talus.	szxCv-Xs p-i s,m 2,II,III,M,s (108+150 to 108+370) szxCv/zsxDv i d,p 2,II,III,M,s (108+370 to 108+560) zsxDv//Rh m-i n/a,n/a 2,II,II,L,s (108+560 to 108+630) szxCv m-w d,p 3,II,III,M,s (108+630 to 108+735)	1m	Well to Rapid	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in well drained talus deposits 200% in fractured quartzite bedrock Fill: 70% for fill of local material. Aggregate source: • 108+460 to 108+640 (Borrow 29): talus derived from quartzite bedrock.	**Low**
108+735 603564 6987391	**108+940** 603565 6987348	20-30%	The alignment turns a switchback on gentle to moderate gradient planar to somewhat benched terrain. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	szxCv m-w d,p 3,II,III,M,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Low**	**V Low**	• Cut and fill construction. Cut: 100% in well drained colluvium deposits 200% in fractured quartzite bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
108+940 603565 6987348	**109+475** 604093 6987241	20-35%	The alignment traverses planar to somewhat benched face unit slopes with gentle to moderate slope gradients. The area is generally well drained; however, isolated areas of imperfect to moderately well drained soils were noted at 109+045 and 109+325. Surficial materials consist of a veneer to thin blanket of imperfect to well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	szxCv m-w d,p 3,II,III,M,s (108+940 to 108+980) zsxCv m-w n/a, n/a 3,II,III,L,s (108+980 to 109+475)	1-2m	Imperfect to Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate**	**Low to Moderate**	• Cut and fill construction. • **Buttress cutslopes at imperfectly drained sites with angular rock if cutslope sloughing is problematic.** • Install 500mm diameter cross drain culverts at 109+045 and 109+325 to address potential subsurface flow. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
109+475 604093 6987241	**109+755** 604337 6987179	20-35%	The alignment wraps around a broad, bedrock controlled ridge feature. Quartz rich gneissic bedrock is visible outcropping on the ridge in the downslope area. Surficial materials consist of a veneer well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxCv or zsxCv/zsxDv m-w n/a, n/a 3,II,III,L,s	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Low**	**V Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 109+560 to 109+710 (Borrow 30): angular rubble colluvium over fractured gneissic bedrock.	**Low**
109+755 604337 6987179	**109+985** 604558 6987132	30-35%	The alignment passes off of the ridge feature and traverses planar to somewhat irregular terrain with moderate slope gradients. The area is generally well drained; however, isolated areas of imperfect to moderately well drainage were noted. Surficial materials consist of a veneer to thin blanket of imperfect to well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	szxCv m-w d,p 3,II,III,M,s	1-2m	Imperfect to Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate**	**Low to Moderate**	• Cut and fill construction. • **Buttress cutslopes at imperfectly drained sites with angular rock if cutslope sloughing is problematic.** • Install 500mm diameter cross drain culverts at 109+975 to address potential subsurface flow. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
109+985 604558 6987132	**110+190** 604556 6987089	30-45%	The alignment turns a switchback on a small ridge feature and traverses a small swale through the lower leg of the switchback. Terrain is somewhat irregular with moderate slope gradients. A number of small surficial landslides are present in the area to the east of the proposed switchback location. The slides are generally <500m^3 in size and appear to involve the upper 1m of the soil profile. The landslides appear to	szxCv i-m s,p 3,II,III,M,s	1-2m	Mod. Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate**	**Low to Moderate**	• Cut and fill construction. • Install 500mm diameter cross drain culverts at 110+060 and 110+135 to address flow intercepted by the proposed road alignment. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			be the result of subsurface flow concentration in fine grained soils. This area has been avoided by the proposed road alignment. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.				**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
110+190 604556 6987089	**110+475** 604306 6986976	20-35%	The alignment traverses irregular, somewhat broken terrain with gentle to moderate slope gradients. Cross over small, dry swale features at 110+205 and 110+345. While surface flows were not apparent in these locations it is possible that shallow subsurface flows are present. Localized shallow sloughing was apparent downslope of the proposed alignment at 110+205. The sloughing appears to have occurred in the upper 0.5-1.0m of the soil profile in an area of shallow subsurface flow. Surficial materials consist of a blanket of imperfectly to moderately well drained silty sand with some gravel and trace clay colluvium.	szxCv i-m s,p 3,II,III,M,s (110+190 to 110+350) zsxCv m-w n/a, n/a 3,II,III,L,s (110+350 to 110+475)	2m	Imperfect to Mod. Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate**	**Low to Moderate**	• Cut and fill construction. • **Buttress cutslopes at imperfectly drained sites with angular rock if cutslope sloughing is problematic.** • Install 500mm diameter cross drain culverts at 110+205 and 110+345 to address potential subsurface flow. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
110+475 604306 6986976	**110+655** 604130 6986982	35-55%	The alignment wraps around a broad, bedrock controlled ridge feature. Quartz rich gneissic bedrock is visible outcropping on the ridge feature. Terrain is somewhat irregular with moderate to moderately steep slope gradients. Surficial materials consist of a veneer of well drained rubble colluvium in a silty sand matrix.	zsxCv/zsxDv w n/a, n/a 3,II,II,L,s (110+475 to 110+605) zsxCv m-w n/a, n/a 3,II,III,L,s (110+605 to 110+655)	0.5-1.0m	Well	**Low to moderate:** Small (<500m^3) fill slope failure due to improper fill placement on moderately steep gradient terrain. Runout is expected to terminate on gentle gradient terrain at the base of the valley.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Moderate**	**Low to Moderate** **Low to Moderate**	• Cut and fill construction. • Ensure fill placement occurs on slopes less than 55%. If this is not feasible shift to ¾ bench cut construction to reduce fill size. Cut: 70-100% in well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 110+475 to 110+660 (Borrow 31): fractured gneissic bedrock.	**Low**
110+655 604130 6986982	**110+885** 604082 6986957	0-40%	The alignment descents down a short escarpment onto gentle gradient slopes adjacent to one of the upper tributary streams to Ballarat Creek. Shallow ice-rich permafrost was noted at the base of the stream draw to the west of the proposed switchback location. It appears that ice-rich permafrost may underlie a small section of the lower leg of the switchback; however, the road alignment is expected to be in fill in this location. Terrain mapping supplied to OEL supports this assessment with near surface ice-rich permafrost mapped across the base of the stream draw.	zsxCv m-w n/a, n/a 3,II,III,L,s (110+655 to 110+795) (110+820 to 110+885) xszC1a-X"f p-i n,r 3,V,V,VH,b (110+795 to 110+820)	1-2m	Well for most of the alignment Poor at the lower leg of the switchback	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Increased sediment delivery to the stream downslope.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Moderate**	**V. High** **High**	• **Thru cut along the upper leg of the switchback transitioning into a large embankment fill along the lower leg of the switchback.** • Shallow ice-rich permafrost appears to be present along the lower leg of the switchback. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • The fill slope angle through the permafrost section of the cutblock has been increased to 45% to keep the fill out of the underlying creek channel. • Armour the toe of the fill adjacent to the creek	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			Surficial materials consist of a veneer to thin blanket of silty sand with some gravel colluvium grading to rubble colluvium at depth. Ice-rich permafrost is present at the lower leg of the proposed switchback.				**Moderate:** Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate in the tributary stream to the headwaters of Ballarat Creek.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **High**	**High**	channel with keyed in angular rock. • Construct the embankment fill along the lower leg of the switchback in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 45% for fill of local material.	**Low**
110+885 604082 6986957	**111+115** 604270 6986828	35-45%	Traverse planar to somewhat benched slopes with moderate slope gradients. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,III,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Low**	**V Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 110+975 to 111+175 (Borrow 32): silty sand with some gravel over fractured gneissic bedrock.	**Low**
111+115 604270 6986828	**111+185** 604339 6986833	50-60%	The alignment descends down a short escarpment into a side tributary to Ballarat Creek. The escarpment is moderately steep but flat gradient slopes are present at the base of the stream draw. Fill placement extending to the base of the stream draw is considered feasible. Surficial materials consist of a veneer of well drained rubble colluvium in a silty sand matrix.	zsxCv m-w n/a, n/a 3,II,III,L,s	<1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Low**	**V Low**	• Cut and fill construction with a larger fill extending down to the base of the stream draw. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+185 604339 6986833	**111+220** 604350 6986805	15-20%	Traverse the base of a broad stream draw. Mature birch and spruce timber is present at the base of the stream draw indicating that that shallow ice-rich permafrost may not be present. Cross the stream at the base of the draw at 111+205. The stream channel is 0.5-1.0m wide by 0.3m deep with a sand and gravel substrate. The channel gradient is 18% at the crossing location. Surficial materials consist of a blanket of imperfectly drained sand and gravel fluvial deposits. Ice-rich	xszC1a/sdFAv p-i n,r 2,III,V,H,t	>2m	Imperfect	**Moderate:** Culvert blockage due to icing, subsequent road prism washout.	Temporary loss of access on the proposed road alignment. Practically repairable in <4 days. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• **Overland construction due to imperfectly drained soils and the geometry of the site.** • Install a 1000mm diameter culvert at 111+205 to address stream flow and potential icing concerns. • Armour the culvert inlet and outlet with keyed in angular rock. Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**

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Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
			permafrost may be present at depth >1m but was not apparent near surface.				**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Increased sediment delivery to the stream downslope.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **Moderate**	**High** **Moderate**		**Low**
111+220 604350 6986805	**111+285** 604326 6986749	20-25%	The alignment climbs through gentle gradient slopes making up the southeast sidewall of the stream draw. Shallow ice-rich permafrost is apparent on the sidewall slope in hand dug test pits at approximately 0.5m depth. Surficial materials consist of a veneer to blanket of poorly drained silty sand with some gravel colluvium. Ice-rich permafrost is present at depths of 0.5m.	xszC1a/sdFAv p-i n,r 2,III,V,H,t	1-2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High**	**V. High**	• **¼ to ½ bench cut construction with the majority of the road prism constructed out of imported fill.** • **Excavated material <u>must not</u> be incorporated into the road fill.** • Buttress the cutslope of the road with keyed in angular rock 1-2m tall extending for the length of the section. • The fill slope angle through the permafrost section of the crossing has been increased to 45% to keep the fill out of the underlying creek channel. Cut: 200% in imperfectly drained colluvium and permafrost materials buttressed with keyed in rock Fill: 45% for fill of imported free draining granular material or rock	**Low**
							High: Cut and fill construction results in loss of toe support. Initiation of an active layer failure retrogressing upslope with runout onto proposed road alignment.	Chronic maintenance concern with seasonal blockage of road alignment due to active layer failure deposition. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High**		**Low**
							Moderate: Mid-sized (<1000m^3) fill slope failure due to large fill placement on moderate gradient slopes. Runout is expected to terminate in the tributary stream to the headwaters of Ballarat Creek.	Sediment delivery to Ballarat Creek. **High**	**High**		**Low**
111+285 604326 6986749	**111+385** 604316 6986648	20-30%	The alignment wraps out of the Ballarat tributary valley into the main Ballarat Creek valley. The ridge separating the two draws is well drained and timbered with Aspen. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	1-2m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
111+385 604316 6986648	**111+415** 604318 6986618	30-40%	The alignment traverses gentle to moderate gradient slopes on the east sidewall of Ballarat Creek. Signs of small scale shallow sloughing are present in this location. The sloughing appears to involve the upper 0.5-1.0m of the soil profile. Surficial materials consist of a veneer to thin blanket of imperfect to moderately well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	1-2m	Imperfect to Mod. Well	**Moderate:** Small (<500m^3) cutslope sloughing due to loss of toe support of slope from road construction. Runout is expected to terminate on the proposed road alignment.	Temporary loss of access on the proposed road alignment. Practically repairable in 1 day. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction. • Buttress the cutslope of the road with angular rock 2m tall by 30m long. Cut: 100% in imperfect to moderately well drained colluvium deposits buttressed with angular rock. 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+415 604318 6986618	**111+505** 604324 6986528	30-40%	Terrain is planar to somewhat benched with moderate slope gradients. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+505 604324 6986528	**111+535** 604328 6986498	30-40%	The alignment traverses gentle to moderate gradient slopes on the east sidewall of Ballarat Creek. Signs of small scale shallow sloughing are present in this location. The sloughing appears to involve the upper 0.5-1.0m of the soil profile. The observed sloughing may be a relic feature associated with past permafrost degradation. Surficial materials consist of a veneer to thin blanket of imperfect to moderately well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	1-2m	Imperfect to Mod. Well	**Moderate:** Small (<500m^3) cutslope sloughing due to loss of toe support of slope from road construction. Runout is expected to terminate on the proposed road alignment.	Temporary loss of access on the proposed road alignment. Practically repairable in 1 day. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction. • Buttress the cutslope of the road with angular rock 2m tall by 30m long. Cut: 100% in imperfect to moderately well drained colluvium deposits buttressed with angular rock. 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+535 604328 6986498	**111+735** 604374 6986310	30-40%	Traverse a broad ridge feature on moderate gradient slopes. A large lobe of rubble colluvium presumably underlain by gneissic bedrock is present upslope of the alignment from 111+625 to 111+735. Surficial materials consist of a veneer to thin blanket of moderately well to well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv m-w n/a, n/a 3,II,II,L,s	<1m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 111+625 to 111+735 (Borrow 33): angular rubble colluvium over fractured gneissic bedrock.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
111+735 604374 6986310	**111+800** 604381 6986251	15-25%	The alignment crosses through a broad swale with no signs of recent surface flow. Slope gradients are gentle. Shallow ice rich permafrost was not observed in the base of the swale. Surficial materials consist of a blanket of imperfectly to moderately well drained silty sand with some gravel colluvium.	zsxCv m-w n/a, n/a 3,II,II,L,s (111+735 to 111+760) sdFAv\sxzCb m-i d,m 3,II,IV,M,b (111+760 to 111+785) szxCv p-i s,p 3,II,III,M,s (111+785 to 111+800)	2m	Imperfect to Mod. Well	**Moderate:** Permafrost degradation due to road construction works through the base of the swale. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction transitioning into overland construction through the base of the swale. • As shallow ice-rich permafrost does not appear to be present, the fill slope angle can remain at 70%. • Install a 600mm diameter culvert at the base of the swale at 111+590 to address potential freshet flows. Cut: 70% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+800 604381 6986251	**111+955** 604361 6986101	25-40%	Traverse planar to somewhat irregular face unit slopes with moderate slope gradients. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	szxCv p-i s,p 3,II,III,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70% local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
111+955 604361 6986101	**112+075** 604358 6985979	40-55%	The alignment traverses irregular, benched terrain with signs of past small scale sloughing. Sloughs were noted at 111+965 and 112+010. The sloughs were generally <10m across and involved the upper 0.5-1.0m of the soil profile. The estimated volume of the sloughs is <50m^3. Small scale soil creep is also present in the area as indicated by pistol butte forms and minor jackstrawing noted on timber in the area. The observed sloughing and soil creep may be the result of shallow subsurface flows or possibly a relic feature associated with past permafrost degradation. Surficial materials consist of imperfect to moderately well drained silty sand with some gravel colluvium.	zsxCv m-w n/a, n/a 3,II,II,L,s	2m	Imperfect to Mod. Well	**Moderate:** Small (<500m^3) cutslope sloughing due to loss of toe support of slope from road construction. Runout is expected to terminate on the proposed road alignment.	Temporary loss of access on the proposed road alignment. Practically repairable in 1 day. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction. • Buttress the cutslope of the road with angular rock. The rock should be placed 1-2m up the cutslope. Cut: 100% in imperfect to moderately well drained colluvium deposits buttressed with angular rock. 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
112+075 604358 6985979	**112+290** 604345 6985764	45-55% at road location 20-30% downslope	The alignment traverses a planar, moderate to moderately steep slopes approximately 10-15m upslope of a broad bench feature. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	zsxCv m-w n/a, n/a 3,II,II,L,s (112+075 to 112+240) szxCv m-i d,p 3,II,III,M,s (112+240 to 112+290)	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• **Cut and fill construction with larger fill extending down to the underlying bench feature.** Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 112+225 to 112+425 (Borrow 34): silty sand with some gravel over fractured gneissic bedrock.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
112+290 604345 6985764	**112+525** 604333 6985531	40-50% Upslope 25-35% Downslope	The alignment traverses moderate gradient terrain directly upslope of a broad bench feature. Gneissic bedrock is visible outcropping at the toe of the slope in isolated locations. Surficial materials consist of a veneer of moderately well drained silty sand with some gravel colluvium.	szxCv m-i d,p 3,II,III,M,s	1m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 112+225 to 112+425 (Borrow 34): silty sand with some gravel over fractured gneissic bedrock.	**Low**
112+525 604333 6985531	**112+565** 604341 6985491	50-60%	The alignment drops down a short moderately steep gradient escarpment to hook up with bench downslope. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	szxCv m-i d,p 3,II,III,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material	**Low**
112+565 604341 6985491	**112+835** 604428 6985238	35-45%	Terrain is somewhat irregular and benched with moderate slope gradients. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	szxCv m-i d,p 3,II,III,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 112+795 to 113+020 (Borrow 35): silty sand with some gravel over fractured gneissic bedrock.	**Low**
112+835 604428 6985238	**112+930** 604470 6985155	50-60%	The alignment traverses planar to somewhat irregular moderately steep gradient slopes. A bench is present immediately downslope prior to Ballarat Creek. Gneissic bedrock is visible outcropping at the toe of the slope near 112+890. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	szxCv m-i d,p 3,II,III,M,s	1-2m	Mod. Well	**Moderate:** Small (<500m^3) fill slope failure due to fill placement on moderately steep gradient terrain. Runout is expected to terminate on the gentle to moderate gradient bench adjacent to Ballarat Creek immediately downslope.	Temporary loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Minor sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• **Full bench cut construction until it is possible to place fill on the underlying bench.** Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 112+795 to 113+020 (Borrow 35): silty sand with some gravel over fractured gneissic bedrock.	**Low**
112+930 604470 6985155	**113+025** 604505 6985062	40-50%	The alignment descends towards the Ballarat Creek crossing. Shallow ice-rich permafrost is present at the base of the stream valley. The current road construction configuration may result in fill placement extending down to areas underlain by ice-rich permafrost. Surficial materials at the road location consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium.	szxCv m-i d,p 3,II,III,M,s	1-2m	Mod. Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction with the fill extending down to the toe of the slope. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 112+795 to 113+020 (Borrow 35): silty sand with some gravel over fractured gneissic bedrock.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
113+025 604505 6985062	**113+110** 604474 6984985	10-20%	The alignment crosses over Ballarat Creek. The stream channel is crossed at 113+065. Ballarat Creek at the crossing location is 1-2m wide by 0.3m deep with a sand and gravel substrate. Significant down cutting and ice-rich permafrost degradation does not appear to be present adjacent to the stream channel. The vegetation profile at the site is consistent with shallow, ice-rich permafrost. Surficial materials at the site consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	szxCv m-i d,p 3,II,III,M,s (113+025 to 113+060) zsgFAp/eOp p-i s,m 1,II,IV,M,t (113+060 to 113+080) xszC1a p n,r 2,II,V,H,t (113+080 to 113+110)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 2400mm Embedded Culvert structure over Ballarat Creek as per OEL Upper Ballarat General Arrangement Drawing. • **A large embankment fill is required through this section of the road.** • Construct the embankment in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low** **Low**
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate in Ballarat Creek.	Sediment delivery to the tributary stream to the headwaters of Ballarat Creek. **High**	**High**		
113+110 604474 6984985	**113+595** 604368 6984517	20-40%	The alignment traverses the base of moderate gradient, planar face unit slopes directly above the base of the Ballarat Creek valley. Mature timber composed of aspen and spruce are present at the site. While the valley sidewall slope appears to be well drained, the valley bottom immediately downslope of the proposed road alignment appears to contain shallow ice-rich permafrost. Road construction works are not expected to degrade this downslope permafrost area. The moderate ice content permafrost mapped near the end of the road section appears to commence upchain at 113+595. Surficial materials consist of a veneer to thin blanket of moderately well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	xszC1a p n,r 2,II,V,H,t (113+110 to 113+135) zsxCv to Cb m-w n/a,n/a 3,II,III,L,s (113+135 to 113+400) zsxCw//Rk-V w-r n/a,n/a 4,III,IV,M,s (113+400 to 113+550) sdFAv\sxzCb m-i d,m 2,II,IV,M,t (113+550 to 113+595)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle to moderate gradient slopes immediately downslope of the proposed alignment adjacent to Ballarat Creek.	Sediment delivery to Ballarat Creek. **Moderate**	**Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Low** **Low**		**Low**
113+595 604368 6984517	**113+660** 604347 6984459	15-25%	Cross over a broad swale with no signs of surface flow. The base of the swale is located at 113+630. Shallow, ice-rich permafrost was not noted in the field but it is possible that deep (>1m) permafrost may be present. Surficial materials consist of a blanket of imperfect to moderately well drained silty sand with some gravel colluvium. Ice rich permafrost may be present at depth.	sdFAv\sxzCb m-i d,m 2,II,IV,M,t	2m	Imperfect to Mod. Well	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2. • As shallow ice-rich permafrost does not appear to be present, the fill slope angle can remain at 70%. • Install a 600mm cross drain culvert to address potential freshet or shallow subsurface flow at 113+630. Cut: N/A – Overland construction Fill: 70% for fill of imported granular material	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
113+660 604347 6984459	**114+485** 604139 6983662	40-65% Above 10-25% Below	The alignment traverses the base of the face unit slopes making up the west sidewall of the Ballarat Creek valley. The sidewall slope is well drained and timbered with mature aspen trees. Bedrock is visible outcropping in isolated locations. The downslope valley bottom area contains shallow ice-rich permafrost. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	sdFAv\sxzCb m-i d,m 2,II,IV,M,t (113+660 to 113+665) zsxCv w n/a, n/a 3,II,II,L,s (113+665 to 114+050) zsxCv-VR"s w-r n/a, n/a 4,V,V,M,s (114+050 to 114+485)	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment. The runout area is separated from Ballarat Creek by approximately 60m of flat to gentle gradient terrain.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
114+485 604139 6983662	**114+545** 604128 6983603	10-20%	The alignment crosses over a broad swale with minor surface flow. The base of the swale is located at 114+530. Shallow ice-rich permafrost may be present at the base of the swale. Surficial materials consist of a blanket of imperfectly drained silty sand with some gravel colluvium. Shallow ice-rich permafrost may be present.	sdFAf i-m s,m 2,II,IV,L,t	2m	Imperfect	**Moderate:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Ballarat Creek. **Low**	**Moderate** **Low**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install an 800mm culvert at 114+530 to address minor surface flow and potential icing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
114+545 604128 6983603	**115+790** 604042 6982365	30-50% Above 10-20% Below	The alignment traverses the base of the face unit slopes making up the west sidewall of the Ballarat Creek valley. The sidewall slope is well drained and timbered with mature aspen trees. Bedrock is visible outcropping in isolated locations. The downslope valley bottom area contains shallow ice-rich permafrost. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	xsxCv//Rh w-r n/a, n/a 3,II,II,L,s Above the road xszC1a p n,r 2,II,V,H,t Below the road	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
115+790 604042 6982365	**115+855** 604039 6982302	50-60% Above 0-10% Below	The alignment wraps around a broad, bedrock controlled ridge prior to crossing a tributary stream to Ballarat Creek. Bedrock is visible at surface on the ridge and consists of fractured gneissic bedrock. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	zsxCv r-w n/a, n/a 4,III,III,M,s	0.5m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 115+600 to 115+850 (Borrow 36): angular rubble colluvium over fractured gneissic bedrock.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
115+855 604039 6982302	**115+940** 604059 6982223	5-10%	Cross over a very broad swale with a large stream at the base. The stream is located at 116+330. The stream channel has a meandering morphology and features a 1.5-2.5m wide by 0.4m deep channel. The area is poorly drained and shallow ice-rich permafrost is present. Surficial materials at the site consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	sdFAv\sxzCb m-i d,m 2,II,IV,M,t (115+855 to 115+905) xszC1b p-i n,r 3,III,IV,VH,t (115+905 to 115+940)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 1400mm diameter culvert at 115+900 to address steam flow and potential icing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
115+940 604059 6982223	**116+145** 604105 6982025	40-50% Above 5-15% Below	The alignment climbs out of the tributary swale and traverses the toe of the west sidewall of the Ballarat Creek valley. The transition out of the poorly drained tributary draw bottom to the well-drained sidewall slope occurs at 115+940. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	xszC1b p-i n,r 3,III,IV,VH,t (115+940 to 115+975) szxCv p-i s,p 3,II,III,M,s (115+975 to 116+010) zsxCv w-r n/a, n/a 4,II,III,M,s (116+010 to 116+145)	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70 -100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
116+145 604105 6982025	**116+175** 604099 6981998	60-65% Above 0-10% Below	Ballarat Creek is situated at the toe of the valley sidewall slope. Any fill placement in this location will extend down into Ballarat Creek. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxCv w-r n/a, n/a 4,II,III,M,s	1-2m	Mod. Well to Well	**High:** Small (<500m^3) fill slope failure due to toe of fill erosion/ saturation from Ballarat Creek. Runout is expected to terminate in Ballarat Creek.	Direct sediment delivery to Ballarat Creek. **High** Temporary loss of access on the proposed road alignment. Practically repairable in 3-4 days. **High**	**V. High** **V. High**	• **Full bench cut construction with endhaul of all generated material.** • Excess material can be incorporated into the section of overland construction from 115+855 to 115+940. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: N/A – Endhaul all generated material	**Low**
116+175 604099 6981998	**116+215** 604083 6981958	50-60% Above 0-10% Below	Ballarat Creek pulls away from the toe of the valley sidewall slope. Fill placement is now possible. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxCv w-r n/a, n/a 4,II,III,M,s	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
116+215 604083 6981958	**116+255** 604074 6981919	60-65% Above 0-10% Below	Ballarat Creek is situated at the toe of the valley sidewall slope. Any fill placement in this location will extend down into Ballarat Creek. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxCv w-r n/a, n/a 4,II,III,M,s	1-2m	Mod. Well to Well	**High:** Small (<500m^3) fill slope failure due to toe of fill erosion/ saturation from Ballarat Creek. Runout is expected to terminate in Ballarat Creek.	Direct sediment delivery to Ballarat Creek. **High** Temporary loss of access on the proposed road alignment. Practically repairable in 3-4 days. **High**	**V. High** **V. High**	• **Full bench cut construction with endhaul of all generated material.** • Excess material can be incorporated into the section of overland construction from 115+855 to 115+940. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: N/A – Endhaul all generated material	**Low**
116+255 604074 6981919	**116+465** 604008 6981724	40-55% Above 10-20% Below	Ballarat Creek pulls away from the toe of the valley sidewall slope. Fill placement is now possible. Surficial materials consist of a veneer to thin blanket of well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	zsxCv w-r n/a, n/a 4,II,III,M,s	1-2m	Mod. Well to Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
116+465 604008 6981724	**116+540** 603984 6981652	70-90% Above 0-10% Below	The alignment traverses the toe of the valley sidewall slope. Bedrock control is apparent at the toe of the slope and is associated with steep slope gradients. Terrain breaks over approximately 30m upslope. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	zsxCv w-r n/a, n/a 4,II,III,M,s Above the road sxzCb p-i s,m 2,II,IV,M,t Below the road	0.5m	Well	**Moderate:** Small scale (<1m^3) rock detachment event from road cutslope. Runout is expected to terminate on the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction. • Scale the road cut for loose rock during and following the completion of construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 116+470 to 116+530 (Borrow 38): quartzite bedrock.	**Low**
116+540 603984 6981652	**116+600** 603947 6981608	45-55% Above 0-10% Below	The alignment continues along the toe of the valley sidewall slope. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	zsxCv w-r n/a, n/a 4,II,III,M,s Above the road sxzCb p-i s,m 2,II,IV,M,t Below the road	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
116+600 603947 6981608	**116+885** 603807 6981359	15-25%	The valley opens abruptly and the sharp break along the toe of the valley sidewall slope which the road alignment has been following fades out. Vegetation changes abruptly from mature aspen timber to mature spruce timber, likely as the result of increased soil moisture content. Shallow ice-rich permafrost was not noted in the field but moderate ice content permafrost is noted on terrain mapping of the area. Surficial materials consist of a veneer to thin blanket of imperfectly drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	sxzCb p-i s,m 2,II,IV,M,t	1-2m	Imperfect	**Low to Moderate:** Encounter isolated ice lens of moderate ice content permafrost at depth. Small scale thermokarst formation.	Maintenance concern with seasonal degradation of road prism and ditchline. **Moderate** Sediment delivery to Ballarat Creek. **Low**	**Low to Moderate** **V. Low to Low**	• Cut and fill construction. Avoid cuts in excess of 1m and install frequent drainage structures. • Buttress cuts with keyed in angular rock if cutslope ravelling is problematic. Cut: 70% in imperfect to moderately well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
116+885 603807 6981359	**117+015** 603750 6981246	50-60% Above 0-10% Below	The valley tightens again and the road is situated at the toe of the valley sidewall slope. Vegetation changes back to mature aspen indicating a return to a well drained soil moisture regime. Surficial materials consist of a veneer of well rubble colluvium in a silty sand matrix.	zsxCv w n/a, n/a 3,II,II,L,s Above the road sxzCb p-i s,m 2,II,IV,M,t Below the road	1m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on gentle gradient slopes immediately downslope of the proposed alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	• Cut and fill construction. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
117+015 603750 6981246	**117+220** 603665 6981058	10-20%	The alignment crosses a broad swale containing shallow ice-rich permafrost. A collapsed pingo feature is present downslope of the proposed alignment location. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	sxzCb p-i s,m 2,II,IV,M,t	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
117+220 603665 6981058	**117+505** 603525 6980812	50-65% Above 10-20% Below	The alignment traverses the toe of the valley sidewall slope. Planar, moderately steep gradient slopes are present above the proposed road location while gentle gradient slopes are below the proposed alignment. The slopes above the alignment are well drained and timbered with mature aspen. The slopes below the alignment are poorly drained and appear to contain shallow ice-rich permafrost. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.	zsxCx-VR"s w-r n/a, n/a 4,V,V,M,s Above the road xszC1a p n,r 2,III,V,H,t Below the road	1m	Well Above the road location Poor below the road location.	**High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**High** **High**	• Cut into the well drained slope above the proposed road alignment and fill down onto flat gradient permafrost slopes below the alignment. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40% for fill of local material.	**Low**
117+505 603525 6980812	**118+185** 603279 6980194	30-50% Above 10-20% Below	The alignment continues across the toe of the valley sidewall slope. Moderate slope gradients are present above the alignment while gentle gradient slopes are below the proposed alignment. Timber on the sidewall slope consists of a mature mixed stand of spruce and aspen. The slopes below the alignment are poorly drained and appear to contain shallow ice-rich permafrost. Surficial materials consist of moderately well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	zsxCv to zsxCb m-w n/a,n/a 3,II,II,L,s Above the road xszC1a p n,r 2,III,V,H,t Below the road	1-2m	Well Above the road location Poor below the road location.	**High:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**High** **High**	• Cut into the well drained slope above the proposed road alignment and fill down onto flat gradient permafrost slopes below the alignment. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 for fill placement on the permafrost controlled terrain below the proposed alignment. • The road remains far enough up the slope from 117+780 to 118+185 that fill placement will not occur on shallow ice-rich permafrost and 70% fill slope gradients are feasible. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 40-70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
118+185 603279 6980194	**118+490** 603392 6979947	10-20%	The alignment drops off of the valley sidewall slope and crosses over the base of the Ballarat Creek valley. The stream crossing is located at 118+345. Shallow ice-rich permafrost is present throughout the base of the valley. Ballarat Creek has downcut through this permafrost material resulting minor bank instability and sloughing. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	zsxC1a p n,r 2,III,V,H,t (118+620 to 118+315) (118+380 to 118+490) zsgFA/eOp p-i s,m 1,II,IV,M,t (118+315 to 118+380)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High**	• Cut and fill construction on the valley sidewall transitioning into overland construction through the base of the valley. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 9.1m GRS bridge at 118+770 as per OEL design. Cut: N/A – Overland construction Fill: 70% for fill of local material	**Low**
118+490 603392 6979947	**118+870** 603511 6979597	40-50% Above 10-20% Below	The alignment tracks an existing placer mine road along the eastern sidewall of the Ballarat Creek valley. The existing road is in good condition aside from a general lack of drainage structures. The sidewall slope above the alignment is well drained and bedrock controlled while the gentle gradient terrain below the alignment is poorly drained with shallow ice-rich permafrost. The permafrost appears to have been degraded within the existing road prism footprint. Surficial materials consist of well drained rubble colluvium in a silty sand matrix. Fractured gneissic bedrock underlies this material.	zsxCv w n/a,n/a 3,II,II,L,s Above the road Or zsxCx//Rk w-r n/a,n/a 4,III,III,M,s Above the road xszC1a p-i n,r 2,III,V,H,t Below the road	1m	Well Above the road location Poor below the road location.	**Moderate:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As fill placement is expected to occur on the existing road surface where permafrost is not present, the proposed fill slope angle can remain at 70%. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • A5 (118+475 to 119+575): angular rubble colluvium over fractured gneissic bedrock.	**Low**
118+870 603511 6979597	**119+040** 603579 6979444	20-30%	The alignment crosses a small fan feature tracking the existing placer miner road. The sidewall slope above the alignment is well drained and bedrock controlled while the gentle gradient terrain below the alignment is poorly drained with shallow ice-rich permafrost. Surficial materials consist of well drained silty sand with some gravel colluvium.	zsdFAf i-p s,m 2,III,IV,L,t	2m	Imperfect	**Moderate:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As fill placement is expected to occur on the existing road surface where permafrost is not present, the proposed fill slope angle can remain at 70%. Cut: 70% in imperfectly drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
119+040 603579 6979444	**120+150** 603925 6978423	50-70% Above 10-20% Below	The alignment tracks an existing placer mine road along the eastern sidewall of the Ballarat Creek valley. The sidewall slope is strongly bedrock controlled with numerous gneissic outcrops visible in the existing road cutslope. The gentle gradient terrain below the proposed alignment appears to contain shallow ice-rich permafrost. A waste site is proposed on the ice rich permafrost area immediately downslope of the road from 119+460 to 119+660. Use of the waste site could lead to permafrost degredation in this area. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.	zsxCx/Rs-R''s w-r n/a,n/a 5,V,V,H,s Above the road zsdFAf i-p s,m 2,III,IV,L,t Below the road Or eOp-Xte v n,r 1,V,V,M,t Below the road	1m	Well Above the road location Poor below the road location	**Moderate:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • As fill placement is expected to occur on the existing road surface where permafrost is not present, the proposed fill slope angle can remain at 70%. • Do not use the waste site proposed from 119+460 to 119+660. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • 119+410 to 119+610 (Borrow 39): fractured gneissic bedrock.	**Low**
120+150 603925 6978423	**120+255** 603939 6978321	10-20%	The alignment crosses a broad draw hosting a tributary stream to Ballarat Creek. The stream crossing is located at 120+240. The base of the draw appears to contain shallow ice-rich permafrost outside of the existing placer mine road prism. The crossing is known to have problematic icing during the spring season. This has been incorporated into the OEL crossing design. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	eOp-Xte v n,r 1,V,V,M,t (120+150 to 120+190) xszC1a//sdFAv\sxzCb p-i n,r 2,II,V,H,t (120+190 to 120+255)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek. **Moderate:** Icing leads to road prism erosion and damage to the crossing structure.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 9.1m All Steel Portable Bridge at 120+240 as per OEL Lower Ballarat Tributary 1 General Arrangement Drawing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low** **Low**
120+255 603939 6978321	**121+165** 604255 6977501	50-70% Above 10-20% Below	The alignment tracks an existing placer mine road along the eastern sidewall of the Ballarat Creek valley. The sidewall slope is strongly bedrock controlled with numerous gneissic outcrops visible in the existing road cutbank. The gentle gradient terrain below the proposed alignment appears to contain shallow ice-rich permafrost. Cuts on the existing placer mine road show no signs of signficiant retrogression or instability. As a result further cutslope instability during road construction is not	zsxDv/zsxCv or zsxCv m-i d,p 3,II,III,M,s Above the road xszC1a p n,r 2,III,V,H,t Below the road	1-2m	Well Above the road location Poor below the road location	**Moderate:** Permafrost degradation due to site disturbance on shallow ice-rich permafrost slopes below the proposed road alignment. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Maintenance concern with seasonal degradation of road prism. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Install a 600mm diameter cross drain culvert at 120+750 to address potential freshet flow. • As fill placement is expected to occur on the existing road surface where permafrost is not present, the proposed fill slope angle can remain at 70%.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			expected. Cross a dry swale at 120+750 with potential to host minor freshet flow. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.				**Low:** Small scale cutslope ravelling and sloughing. Runout is expected to terminate on the proposed road alignment.	Sediment delivery to Ballarat Creek. **Low**	**V. Low**	Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate sources: • A6 (120+510 to 120+610): angular rubble over fractured gneissic bedrock. • A7 (120+655 to 120+760): angular rubble over fractured gneissic bedrock. • A8 (120+960 to 121+050): silty sand with some gravel colluvium over fractured gneissic bedrock.	**Low**
121+165 604255 6977501	**121+215** 604280 6977458	10-20%	The alignment crosses a small stream draw. The steam crossing is located at 121+195. The stream channel is 2m wide by 0.3m deep. The base of the draw appears to contain shallow ice-rich permafrost outside of the existing placer mine road prism. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is present at depths 0.5-1m.	sdFAv\sxzCb m-i d,m 2,II,IV,M,t (121+590 to 121+195) zsxCx w-r n/a, n/a 4,III,III,M,s (121+195 to 121+215)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek. **Moderate:** Icing on the stream during the spring season. Impact to the road and crossing structure.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate** Maintenance and access concern. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **High** **Moderate** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 1000mm diameter culvert at 121+195 to address stream flow and potential icing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
121+215 604280 6977458	**121+675** 604411 6977025	50-65%	The alignment climbs up the valley sidewall through moderately steep gradient slopes. The alignment generally tracks the existing placer miner road; however, significant expansion of the road prism is required. Gneissic bedrock is visible outcropping in the existing road cut in numerous locations. Surficial materials consist of silty sand with some gravel colluvium grading into angular rubble colluvium in a silty sand matrix at depth.	zsxCx w-r n/a, n/a 4,III,III,M,s (121+215 to 121+550) szxCv i-p s,p 4,III,IV,H,s (121+550 to 121+675)	1m	Imperfect to Well	**Moderate:** Mid-sized (<1000m^3) fill slope failure due to fill placement on moderately steep gradient terrain. Runout is expected to terminate at the base of the valley approximately 100m downslope.	Temporary loss of access on the proposed road alignment. Damage is practically repairable in 1-2 days. **Moderate** Sediment delivery to Ballarat Creek. **Moderate**	**Moderate** **Moderate**	• Expand the road prism by cutting into the existing road cutslope and placing fill on the existing road surface. • **Ensure that fill placement does not occur on slopes in excess of 60%. This may require partial endhaul of excavated material.** Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • A9 (121+225 to 121+375): gneissic bedrock.	**Low**
121+675 604411 6977025	**122+245** 604539 6976473	30-45%	The alignment tracks the existing placer mine road through moderate gradient slopes. Expansion of the existing road prism is required. Pockets of imperfect drainage may be encountered in isolated locations along the proposed alignment. Minor cutslope sloughing may occur in these areas. Surficial materials consist of moderately well drained silty sand with some gravel colluvium grading into rubble colluvium at depth.	szxCv m-w n/a,n/a 3,II,II,L,s (121+680 to 121+730) szxCv i-p s,p 3,II,III,M,s (121+730 to 121+925)	1-2m	Mod. Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Ballarat Creek. **Low**	**Low to Moderate** **V. Low to Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Buttress cuts with keyed in angular rock if cutslope sloughing is problematic. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
				szxCv m-i d,p 4,III,III,H,s (121+925 to 122+090) zsxCx//Rh w-r n/a,n/a 4,III,III,M,s (122+090 to 122+245)			**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
122+245 604539 6976473	**122+325** 604505 6976406	25-40%	The alignment crosses a broad dry swale. No signs of surface flow were noted; however, soils at the site appear to be somewhat wetter than the surrounding face unit slopes. The base of the swale is located at 122+295 and may contain shallow subsurface flows. Surficial materials consist of imperfect to moderately well drained silty sand with some gravel colluvium.	szxCb m-w s,m 3,II,IV,H,b (122+670 to 122+290) szxCv p-i s,p 3,II,III,M,s (122+290 to 122+325)	2m	Imperfect to Mod. Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate** Sediment delivery to Ballarat Creek. **Low**	**Low to Moderate** **V. Low to Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Transition into overland construction through the base of the draw feature. • Install a 450mm diameter cross drain culvert at 122+295 to address potential shallow subsurface flow**.** • Buttress cuts with keyed in angular rock if cutslope sloughing is problematic. Cut: 70% in imperfect to moderately well drained colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**
122+325 604505 6976406	**123+025** 604309 6975818	20-40%	The alignment begins to descend down into the Yukon River valley through moderate gradient face unit slopes. Surficial materials consist of moderately well drained silty sand with some gravel colluvium grading to rubble colluvium at depth.	sxzCb\zsgFt i-m s,p 2,II,IV,M,t (122+325 to 122+665) sdzCb i s,m 2,II,IV,M,t (122+665 to 122+735) zsdCv-R""s w n/a, n/a 4,V,V,L,s (122+735 to 122+985) sxzCb\zsgFt m-w n/a,n/a 2,II,II,L,s (122+985 to 123+025)	2m	Mod. Well	**Low to Moderate:** Isolated small scale (<500m^3) cutslope sloughing at imperfectly drained sites. Runout is expected to terminate on or immediately downslope of the proposed road alignment on moderate gradient slopes.	Loss of access on the proposed road alignment. Practically repairable in 1-2 days. **Moderate**	**Low to Moderate**	• Cut and fill construction. • Buttress cuts with keyed in angular rock if cutslope sloughing is problematic. Cut: 70-100% in local colluvium deposits 200% in fractured gneissic bedrock Fill: 70% for fill of local material. Aggregate source: • A10 (123+725 to 123+925): silty sand with some gravel colluvium over fractured gneissic bedrock.	**Low**
							Low: Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**		**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
123+025 604309 6975818	**123+230** 604147 6975694	10-20%	The alignment traverses a large gentle gradient terrace along an existing placer miner road. Shallow moderate ice-content permafrost may be present outside of the existing road prism. Surficial materials consist of imperfectly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is expected at depths of 0.5-1.0m.	zsdCv\zsgFt m-w n/a, n/a 2,II,II,L,s (123+025 to 123+110) zsgFt//eOb\zsgFt p-i s,m 1,II,IV,M,t (123+110 to 123+230)	>2m	Imperfect to Mod. Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism and ditchline. **Moderate**	**Low**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. • Stay on the existing road alignment to avoid degrading permafrost outside of the existing road prism. Cut: N/A – Overland construction Fill: 70% for fill of local material	**Low**
123+230 604147 6975694	**123+670** 603744 6975851	0-10%	The alignment tracks an existing airstrip through flat gradient terrain. Surficial materials consist of moderately well drained gravelly sand with some silt fluvial deposits.	A	>2m	Mod. Well	**Very Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on flat slopes immediately downslope of the proposed road location.	**N/A**	**N/A**	• Upgrade the road alignment through conventional cut and fill construction involving widening, ditching, crowning, and installation of drainage structures. Cut: 70% in moderately well drained fluvial deposits Fill: 70% for fill of local material.	**Low**
123+670 603744 6975851	**123+940** 603595 6976070	0-20%	The alignment drops off of the airstrip and traverses the Ballarat Creek floodplain. Shallow ice-rich permafrost is apparent in this area. Cross over Ballarat Creek at 123+825. The stream channel is down cutting through ice rich permafrost resulting in minor bank instability and sloughing. Surficial materials consist of poorly drained gravelly sand with trace silt fluvial deposits. Ice-rich permafrost is expected at depths of 0.5-1.0m.	zsgFt//eOb\zsgFt p-i s,m 1,II,IV,M,t (123+670 to 123+715) zsgFAp-M m-i s,m 1,II,IV,L,t (123+715 to 123+940)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation. Possible increase in sediment delivery to Ballarat Creek.	Chronic maintenance concern with seasonal degradation of road prism and ditchline. **High** Sediment delivery to Ballarat Creek. **Moderate**	**V. High** **Moderate**	• Overland construction methods. • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 • Install a 15.2m All Steel Portable Bridge over Ballarat Creek as per OEL Ballarat Proper General Arrangement Drawing. Cut: N/A – Overland construction Fill: 40% for fill of imported granular material	**Low**
123+940 603595 6976070	**124+525** 603023 6976172	20-40%	The alignment climbs off of the Ballarat flood plain and traverses a broad terrace paralleling the Yukon River. The terrace is timbered by mature aspen and the site as a whole appears to be well drained. Large bedrock bluffs are present approximately 200-300m upslope of the proposed alignment. The bluffs were not reviewed directly in the field but were observed during helicopter overflight of the area. The bluffs appear to be composed of heavily fractured gneissic bedrock.	zsgFt m-i s,p 1,I,II,L,s (124+365 to 123+950) zsxCb m-w n/a, n/a 2,II,II,L,s (123+950 to 124+950)	>3m	Well	**Low:** Small (<500m^3) fill slope failure due to improper fill placement. Runout is expected to terminate on moderate slopes immediately downslope of the proposed road location.	**N/A**	**N/A**	• Cut and fill construction. • Install rockfall hazard signage/ no stopping zone. Cut: 70-100% in local colluvium deposits Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			Rock detachments from the overlying bluffs appear to occur periodically. The road is situated approximately 40m back from the toe of the slope leading down from the bluffs and as a result a portion of rock clasts are expected to terminate prior to the road locations; however, large scale rockfall events have the potential to propagate over the alignment location. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.				**Moderate:** Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**		**Moderate*** – Rockfall events impacting the road alignment from the upslope bluffs
124+525 603023 6976172	**125+035** 602517 6976233	60-70% Above 20-30% Below	The alignment continues along the terrace feature but is now situated directly at the toe of moderately steep gradient slopes leading up to the bedrock bluffs in the upslope area. Scattered rock clasts generally <0.5m^3 in size are present in isolated locations along the road alignment. The clasts appear to have originated from the bluffs in the upslope area recently. This indicates that rockfall events have the potential to impact the proposed alignment. Scaling is unlikely to be effective due to the large extent of the bluffs, difficult access to the bluffs, and the heavily weathered nature of the rock mass. The bluffs are approximately 300m upslope and clasts which do detach will have significant energy by the time they reach the proposed road alignment. A ditch structure to halt rockfall eventsfrom the bluffs upslope is unlikely to be effective. However, a ditch would halt smaller detachments and cut sloughing from the road cut. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.	zsxCb m-w n/a, n/a 2,II,II,L,s (124+950 to 124+805) zsxCa-Rbs m-w n/a, n/a 3,II,II,L,s (124+805 to 125+035)	>3m	Well	**Moderate:** Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• Full bench cut construction shifting into cut and fill construction upchain of 125+100. • Rockfall hazard signage/ no stopping zone continues. • Install a 2m wide rockfall catchment ditch to capture small scale detchments from the road cut. Cut: 100% in local colluvium deposits Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Moderate*** – Rockfall events impacting the road alignment from the upslope bluffs
							Moderate: Small scale (<1m^3) rock detachment from road cuts during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**		**Low**
125+035 602517 6976233	**125+235** 602319 6976257	60-70%	The alignment drops down a short moderately steep gradient escarpment to connect with a secondary bench feature in the downslope area. A large road cut is proposed in this location in what is expected to be relatively deep colluvium deposits. The cutslope is expected to ravel and host small boulder detachment events during and following road construction. Bedrock bluffs with the potential to host rockfall events are also still present approximately 300m upslope. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.	zsxCx//Rs-Rb''sV w-r n/a,n/a 4 to 5,V,V,M to H,s Above the Road zsxCa-Rbs m-w n/a, n/a 3,II,II,L,s Below the Road	>3m	Well	**Moderate:** Small scale (<1m^3) rock detachment from road cuts during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• **Full bench cut construction shifting into a large embankment fill at 125+220** • Rockfall hazard signage/ no stopping zone continues. • Clean and maintain the ditchline seasonally. • Install a 2m wide rockfall catchment ditch to capture small scale detchments. • A large embankment fill is required through this section of the road from 125+220 to 125+270. • Construct the embankment in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 100% in local colluvium deposits	**Low**
							Moderate: Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**		**Moderate** – Rockfall events impacting the road alignment from the upslope bluffs

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on gentle gradient benched terrain prior to the Yukon River.	Sediment delivery to the Yukon River. **Moderate**	**Moderate**	Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Low**
125+235 602319 6976257	**125+645** 601926 6976373	20-40% at road location 60-70% Above	The alignment traverses the lower bench feature. Moderately steep gradient slopes leading up to bedrock bluffs are present upslope of the road alignment. Scattered rock clasts generally <0.5m^3 in size are present in isolated locations along the road alignment. The clasts appear to have originated from the bluffs in the upslope area relatively recently. This indicates that rockfall events have the potential to impact the proposed alignment. Surficial materials consist of well drained rubble colluvium in a silty sand matrix.	zsxCa-Rbs m-w n/a, n/a 3,II,II,L,s	>3m	Well	**Moderate:** Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• **Large embankment fill shifting into cut and fill construction upchain of 125+270.** • Shift back into full bench cut at 125+620. • Rockfall hazard signage/ no stopping zone continues. • Install a 2m wide rockfall catchment ditch to capture small scale detchments. • **A large embankment fill is required through this section of the road from 125+220 to 125+270.** • Construct the embankment in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 100% in local colluvium deposits Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Moderate** – Rockfall events impacting the road alignment from the upslope bluffs **Low** **Low**
							Moderate: Small scale (<1m^3) rock detachment from road cuts during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**		
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on gentle gradient benched terrain prior to the Yukon River.	Sediment delivery to the Yukon River. **Moderate**	**Moderate**		
125+645 601926 6976373	**125+820** 601830 6976406	65-80%	The alignment drops down a final escarpment slope to the Yukon River floodplain. A large road cut is proposed in this location in what is expected to be relatively deep colluvium deposits. The cutslope is expected to ravel and host small boulder detachment events during and following road construction. Bedrock bluffs with the potential to host rockfall events are also still present approximately 300m upslope.	zsxCa-Rbs m-w n/a, n/a 3,II,II,L,s (125+645 to 125+660) Rs/zsxCv-VR""s W n/a, n/a 5,V,V,H,s (125+660 to 125+745)	>3m	Well	**Moderate:** Small scale (<1m^3) rock detachment from road cuts during or following road construction works. Runout is expected to terminate on the proposed road alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• Full bench cut construction shifting into a large embankment fill at 125+730. • Rockfall hazard signage/ no stopping zone continues. • Install a 2m wide rockfall catchment ditch to capture small scale detchments. • Clean and maintain the ditchline seasonally. • **A large embankment fill is required through this section of the road from 125+730 to**	**Low**

Table 6.3: Coffee Gold Mine Northern Access Route Section 3 – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
			Surficial materials consist of well drained rubble colluvium in a silty sand matrix.				**Moderate:** Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	**125+820.** • Construct the embankment in stages with a maximum stage height of 2m. • The embankment must be inspected by the project engineer or their designated representative during placement of each stage during construction. • If excessive settlement in the fill or movement in the ground below the fill is noted, stop work immediately and contact the project engineer. Cut: 100% in local colluvium deposits Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Moderate** – Rockfall events impacting the road alignment from the upslope bluffs
							Moderate: Large (>1000m^3) fill slope failure due to embankment construction without use of staged construction methods. Runout is expected to terminate on gentle gradient benched terrain adjacent to the Yukon River.	Sediment delivery to the Yukon River. **Moderate**	**Moderate**		**Low**
125+820 601830 6976406	**126+211** 601339 6976522 **End of Section 3**	0-10% at the road location 65-80% Above	The alignment traverses that base of the escarpment slope in the Yukon River floodplain to the proposed north barge landing location. The escarpment directly upslope of the proposed road location is composed of rubble colluvium. Surficial materials consist of moderately well drained sand and gravel fluvial deposits at the road location and of well drained rubble colluvium in a silty sand matrix upslope of the road location.	zsgFp//eOp-Xt m-p d,r 1,I,II,M,t At the road location Rs/zsxCv-VR''S W n/a,n/a 5,V,V,H,s Above the road location	>3m	Mod. Well	**Moderate:** Rock detachment (>50m^3) from bluffs upslope of road alignment unrelated to construction works. Runout is expected to terminate on or pass over the proposed alignment.	Safety hazard to road construction workers or road users. **Moderate** Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate** **Moderate**	• Cut and fill construction. • End the rockfall hazard signage/no stopping zone at the start of the proposed barge landing. Cut: 100% in local colluvium deposits Fill: 70% for fill of local material. *The P(S:H) to road users will be reduced to low by implementing the rockfall hazard signage and no stopping zone.	**Moderate** – Rockfall events impacting the road alignment from the upslope bluffs

Table 6.4: Coffee Gold Mine Northern Access Route Section 4 (Winter Access Road) – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
126+211 600958 6975862 **Start Winter Road**	**126+385** 600859 6975721	0-10%	Start the Winter Access Road assessment at the South Yukon Barge Landing. Timber at the site consists of mature Aspen indicating that the area is relatively well drained. Surficial materials consist of moderately well drained silt trace sand fluvial deposits.	szxCv/Rs-VX''f i-w d,p 5,V,V,VH,s (126+801 to 126+815) zsgFGt m-w d,p 1,I,I,VL,s (126+815 to 126+975)	>3m	Mod. Well to Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Large through cut at barge landing location grading into cut and fill construction.** • Adhere to the South Yukon Barge Landing design created by OEL. Cut: 50% in moderately well to well drained fluvial deposits Fill: 50% for fill of local material.	**Low**
126+385 600859 6975721	**127+745** 599577 6976117	0-10%	The alignment traverses a large, flat gradient wetland area. Shallow ice-rich permafrost is present. This area is slated as a winter ice road and as a result the actual location of the alignment could vary year by year. Surficial materials consist of poorly drained fluvial deposits. Ice rich permafrost is present at depths of 0.5-1.0m	zsgFGt m-w d,p 1,I,I,VL,s (126+975 to 126+990) xszC1a p s,r 2,II,V,H,t (126+990 to 127+020) (127+065 to 127+235) (127+610 to 128+025) (128+145 to 128+335) zsgFAf i-m d,m 2,II,II,L,t (127+020 to 127+065) dszFAf p-i s,m 2,II,IV,L,t (127+235 to 127+610) eOb\xszC1a v-p n,r 1,II,V,M,t (128+025 to 128+145)	>2m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• **Winter road construction with no cut or fill.** • Construct road alignment out of ice seasonally. • Timber along the proposed alignment must be fallen by hand and care should be taken to avoid disturbing the organic mat in the area during seasonal ice road construction. • Refer to the Winter Road Construction typical cross section attached in Appendix 2 for further details. Cut: N/A – Construct road out of ice Fill: N/A – Construct road out of ice	**Low**
127+745 599577 6976117	**128+125** 599195 6976131	0-20%	The alignment climbs out of the wetland area into an elevated area timbered with mature Aspen. The area is now slated for conventional road construction. Surficial materials consist of well drained gravelly sand with trace to some silt fluvial deposits.	zsgFGt w d,p 1,I,II,VL,s	>2m	Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Cut and fill construction.** Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material.	**Low**

Table 6.4: Coffee Gold Mine Northern Access Route Section 4 (Winter Access Road) – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
128+125 599195 6976131	**128+145** 599176 6976131	40-50% at road location 0-10% above and below	The alignment drops down a sharp fluvial escarpment to the Coffee Creek floodplain. The toe of the escarpment shows signs of significant seepage emergence, particularly to the southwest of the proposed alignment. The seepage is likely the result of summer melt of ice-rich permafrost in the upslope area. This indicates that significant seepage emergence could be encountered during road construction. Surficial materials consist of imperfectly to moderately well drained gravelly sand with trace to some silt fluvial deposits.	zsgFAp-M i-w n/a,n/a 1,I,I,VL,s	>3m	Imperfect to Mod. Well	**Moderate:** Small (<500m^3) cutslope failure due to significant seepage emergence during road construction. Runout is expected to terminate at the base of the escarpment.	Temporary loss of access on proposed road alignment. Damage is practically repairable in 1-2days. **Moderate** Sediment delivery to Coffee Creek **Low**	**Moderate** **Low**	• **Thru cut transitioning into a large fill at the base of the escarpment.** • Buttress cuts with keyed in angular rock if significant seepage emergence is encountered. Cut: 70% in imperfectly to moderately well drained fluvial deposits Fill: 70% for fill of local material.	**Low**
128+145 599176 6976131	**128+505** 598835 6976211	0-20%	The alignment traverses flat to gentle gradient terrain making up the floodplain of Coffee Creek. Cross over Coffee Creek at 129+010. Surficial materials consist of imperfectly drained sand and gravel fluvial deposits.	zsgFAp-M i-w n/a,n/a 1,I,I,VL,s	>3m	Imperfect	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Overland construction with fill composed of free draining granular material.** • Adhere to the OEL bridge design for the Coffee Creek crossing. Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**
128+505 598835 6976211	**128+725** 598720 6976390	0-20%	The alignment climbs out of the Coffee Creek crossing and traverses flat to gentle gradient terrain making up the floodplain of Coffee Creek. Surficial materials consist of imperfectly drained sand and gravel fluvial deposits.	zsgFAp-M i-w n/a,n/a 1,I,I,VL,s (129+095 to 129+165) zsgFt i-m s,m 1,II,IV,L,t (129+165 to 129+335)	>3m	Imperfect	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Overland construction with fill composed of free draining granular material.** Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**
128+725 598720 6976390	**128+810** 598648 6976416	0-10%	The alignment crosses a wetland area in a slight depression. Shallow-ice rich permafrost may be present in this area. Surficial materials consist of poorly drained sand and gravel fluvial deposits. Ice-rich permafrost is expected at depths of 0.5-1.0m.	zsgFt i-m s,m 1,II,IV,L,t (129+335 to 129+385) eOp v-p n,r 1,II,V,M,t (129+385 to 129+400)	>3m	Poor	**High:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **High**	**V. High**	• **Overland construction methods.** • Refer to description of Overland Construction in Shallow Ice-Rich Permafrost in section 5.2 Cut: N/A – Overland construction Fill: 70% for fill of imported granular material.	**Low**

Table 6.4: Coffee Gold Mine Northern Access Route Section 4 (Winter Access Road) – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	End Δ	Slope Gradient (%)	Road Prism and Terrain Characteristics	Terrain Mapping	Est. BR depth (m)	Drainage					
128+810 598648 6976416	**128+850** 598612 6976404	40-50%	The alignment climbs up a short escarpment out of the wetland to gain a broad terrace feature. Bedrock appears to be outcropping on the lower portion of the escarpment and consists of gneissic material. Surficial materials consist of well drained gravelly sand with trace to no silt fluvial deposits. This material is capped by a thin (0.5m) layer of silt trace sand material.	eOp v-p n,r 1,II,V,M,t (129+400 to 129+405) kgsFGa w d,p 3,II,II,L,s (129+405 to 129+415) kgsFGt m-w d,p 1,I,II,VL,s (129+415 to 129+440)	>2m	Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Cut and fill construction.** Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material.	**Low**
128+850 598612 6976404	**129+845** 597702 6976450 **End Winter Road**	0-10%	The alignment traverses a broad terrace to tie into the existing Coffee Mine Road. Surficial materials consist of well drained gravelly sand with trace to no silt fluvial deposits. This material is capped by a thin (0.5m) layer of silt trace sand material.	kgsFGt m-w d,p 1,I,II,VL,s	>2m	Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Cut and fill construction**. Cut: 70% in well drained fluvial deposits Fill: 70% for fill of local material. Aggregate source: A13 (129+275 to 129+520): A large terrace made of fluvial gravelly sand	**Low**

Table 6.5: Coffee Gold Mine Northern Access Route Section 5 (South Yukon Barge Road) – Summary of Observations, Risk Analysis, and Construction Recommendations

Road Section		Terrain Characteristics					Geohazard Likelihood P(H) and Description Following Conventional Road Construction	Elements at Risk and P(S:H)	Partial Risk P(HA)	Road Upgrade Prescription, Construction Recommendations, Design Cut and Fill Angles	Residual Geohazard Likelihood P(H)
Start Δ	**End Δ**	**Slope Gradient (%)**	**Road Prism and Terrain Characteristics**	**Terrain Mapping**	**Est. BR depth (m)**	**Drainage**					
Barge Landing 597874 6977492 **Start South Yukon Barge Road**	**Barge Landing** 597868 6977492 **Start South Yukon Barge Road**	0-10%	Start the South Yukon Barge Road assessment at the South Yukon Barge Landing. Timber at the site consists of a thin strip of mature Aspen and Birch directly adjacent to the Yukon River. Moving to the south away from the river timber transitions to stunted dwarf spruce after approximately 100m. The change in vegetation type indicates a shift from ice free soils adjacent to the river to shallow ice rich permafrost to the south. Two hand dug test pits were excavated at the barge landing location. The first test pit was excavated 15m from the edge of the Yukon River and had the following sediment profile: • 0.0-0.1m: Organic material • 0.1-0.7m: Firm silt trace to some fine sand. Damp with minor mottling and organic inclusions. The second test pit was excavated 45m from the edge of the Yukon River and had the following sediment profile: • 0.0-0.1m: Organic material • 0.1-0.8m: Firm silt trace fine sand. Organic inclusions. • >0.8m: Stiff to very stiff silt Surficial materials consist of firm silt with trace to some fine sand for the first metre of the sediment profile. Layered silts and sands are likely present at greater depths.	zsgFp i-m s,p 1,II,III,L,t	>3m	Imperfect to Mod. Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Large thru cut at barge landing location grading into cut and fill construction.** • Adhere to the South Yukon Barge Landing design created by OEL. • Armour the banks adjacent to the barge landing with coarse angular of sufficient size to mitigate potential bank erosion. Cut: 50% in imperfectly to moderately well drained fluvial deposits Fill: 50% for fill of local material.	**Low**
							Moderate: Bank erosion and retrogression. Degradation of the road prism and barge landing.	Temporary loss of access on the proposed road alignment. **Moderate**	**Moderate**		**Low**
126+211 597868 6977492	**126+740** 597427 6977385 **POT**	0-10%	The proposed alignment parallels the Yukon River to a tie in point at the existing Coffee Creek Camp barge landing. The road is situated on a slightly elevated hump adjacent to the river which appears to be the site of a legacy road alignment. Surficial materials consist of layered silt and sand fluvial deposits.	zsgFp i-m s,p 1,II,III,L,t zsgFp m-w n/a,n/a 1,I,I,VL,s	>3m	Imperfect to Mod. Well	**Low:** Permafrost degradation due to road construction works. Formation of thermokarst features and road prism degradation.	Chronic maintenance concern with seasonal degradation of road prism. **Moderate**	**Low**	• **Reconstruct the legacy alignment using cut and fill methods.** Cut: 50% in imperfectly to moderately well drained fluvial deposits Fill: 50% for fill of local material.	**Low**

7.0 Closure

This assessment has been carried out in accordance with generally accepted geotechnical practice for the area. Conclusions and recommendations presented herein are based on visual site inspections. Assessments of soils, slope stability, and vegetative influence are based on interpretation of surface features and limited sub-surface investigation; actual ground conditions may vary from those inferred. Should the proposed access plans change and/or the soil/bedrock conditions encountered differ from those outlined in this report; OEL is to be contacted immediately so that the recommendations contained in this report can be reviewed.

Factual data and interpretation contained within this report were prepared specifically for Goldcorp Inc, with whom Onsite Engineering Ltd. has entered a contract. The local government or approving agency may rely on the findings of this report; no other party may rely upon this report without the express written permission of OEL.

We trust that this report satisfies your present requirements. Should you have any questions or comments, please contact our office at your convenience.

Sincerely,

Onsite Engineering Ltd.

[signatures redacted]

Prepared by:

[signatures redacted]

Ryan Williams, GIT
Project Geoscientist

Rod Williams, P. Geo., Eng. L.
Project Geoscientist

[signatures redacted]

Jeremy Araki, P.Eng.
Project Engineer

Appendix 1 – Partial Risk Assessment Methodology

APPENDIX 1
RISK ASSESSMENT METHODOLOGY

Risk analysis is a process by which the possibility of an injury or loss is quantified through the determination of the likelihood or probability of an adverse event occurring and the estimation of the likelihood or probability of a given element being impacted by the said event. The expected damage to the element at risk is also quantified depending on the extent of the risk assessment. The general formula for this statement is as follows:

Risk = Probability of Occurrence (P) x Consequence (C)

In practice in the resource sector, the Probability of Occurrence refers to the likelihood of a specific geohazard event[1] occurring or the incremental increase in the likelihood of the geohazard event occurring as the result of the proposed development (i.e. the proposed Coffee Gold Mine Northern Access Road). The Consequence refers to the likelihood of an element at risk being impacted by the geohazard event and the extent of the impact (i.e. the damage to the element).

The geotechnical assessment of the Coffee Gold Mine Northern Access Road involved an estimation of the likelihood of a given road segment increasing the probability of a given geohazard event or being impacted by a naturally occurring geohazard event. The magnitude and extent of the geohazard event was also estimated allowing for a qualitative assessment of the likelihood of what is termed a hazardous affecting geohazard event (P(HA)) impacting the elements at risk. The likelihood of a specific geohazard event initiating and impacting a given element is also referred to as the Partial Risk. The vulnerability or potential damage to the element is not assessed in the partial risk assessment process.

The partial risk assessment process is utilized for this assessment due to the widespread use of the process in the resource sector, the qualitative nature of the assessment process, and uncertainty with the monetary value of elements at risk.

Partial Risk P(HA) = P(H) x P(S:H) x P(T:S)

Where,

P(H) =	the probability of occurrence of a specific geohazard event.
P(S:H) =	the probability that a specific geohazard event will impact an element at a given location. This is the spatial impact of the geohazard event.
P(T:S) =	the probability that the element at risk will occupy the hazardous location given that a spatial impact occurs. This is the temporal impact of the geohazard event.

Note that the temporal impact of the geohazard event is only relevant for mobile elements and is equal to 1 for all stationary elements.

[1] Note that a geohazard event is a broad term including, but not limited to, rock falls, rock slumps, rock slides, rock avalanches, rock creep, debris falls, debris slides, debris flows, earth falls, earth slumps, earth slides, earth flows, flow slides, earth creek, active layer detachments, thermokarst formation, permafrost degradation, icing, glaciering, and flooding.

APPENDIX 1
RISK ASSESSMENT METHODOLOGY

Table 1: Qualitative Descriptors for the Likelihood of a Geohazard Event (P(H))

Likelihood of a Geohazard Event P(H)	Description	Probability Range	
		Annual Probability $P(H)_a$	10 Year Probability $P(H)_{10}$
Very High	The event is expected to occur	> 1/10	**> 0.65**
High	The event will probably occur under adverse conditions, i.e. the event is probable over a 10 year period	1/20 to 1/10	**0.40 to 0.65**
Moderate	The event could occur under adverse conditions, i.e. the event is not probable but possible over a 10 year period	1/100 to 1/20	**0.10 to 0.40**
Low	The event could occur under very adverse conditions	1/500 to 1/100	**0.02 to 0.10**
Very Low	The event is conceivable but only under exceptional circumstances	< 1/500	**< 0.02**

*Note that the exact lifespan of the proposed development is uncertain at this time as the lifespan of the proposed Coffee Mine and associated access road could vary depending on market conditions. However, for the purpose of this assessment the lifespan of the proposed access road is estimated at 10 years.

Table 2: Qualitative Descriptors for Spatial Probability (P(S:H))

Likelihood of a Spatial Impact P(S:H)	Description	Probability Range
High	It is **probable** that a geohazard event will impact an element at risk	> 0.5
Moderate	It is **possible** that a geohazard event will impact an element at risk	0.5 to 0.1
Low	It is **unlikely** that a geohazard event will impact an element at risk	< 0.1

Table 3: Qualitative Risk Matrix for Partial Risk (adapted from LMH 56[2])

P(HA), probability (likelihood) of occurrence of a specific geohazard event and it reaching or otherwise affecting the site occupied by a specific element; i.e. P(HA) = P(H) x P(S:H)		P(S:H), probability (likelihood) that the geohazard event will reach or otherwise affect the site occupied by a specific element, given that the geohazard event occurs		
		High	**Moderate**	**Low**
P(H), annual probability (likelihood) of occurrence of a specific geohazard event.	**Very High**	*Very High*	*Very High*	*High*
	High	*Very High*	*High*	*Moderate*
	Moderate	*High*	*Moderate*	*Low*
	Low	*Moderate*	*Low*	*Very Low*
	Very Low	*Low*	*Very Low*	*Very Low*

Example 1: The following is an example of a partial risk analysis in order to illustrate the relationship between P(H), P(S:H), P(T:S), and P(HA).

[2] BC Ministry of Forests Forest Science Program, 2004; Landslide Risk Case Studies in Forest Development Planning and Operations, Landslide Management Handbook 56.

1. The terrain stability professional determines that a section of the proposed Coffee Gold Mine Northern Access Road traversing the toe of a series of large bedrock bluffs has a **Moderate** likelihood of a rockfall event on the order of 50m^3 due to the proposed road construction (i.e. the P(H) = Moderate).

2. Runout from the rockfall event is expected to terminate on flat gradient terrain at the proposed road location. The terrain stability professional estimates that there is a **High** likelihood that the rockfall event will reach the proposed road location if the rockfall event occurs (i.e. the P(S:H) = High).

3. Since the road is stationary it will always occupy the runout path of the rockfall event and the P(T:S) = 1.

4. Using the Qualitative Risk Matrix a P(H) = Moderate and P(S:H) x P(T:S) = High, the P(HA) = High.

This indicates that there is a High partial risk to the proposed road alignment as a result of construction activities. However, the degree of damage that the rockfall event could do to the proposed road (i.e. the vulnerability) is not evaluated. It is the responsibility of the proponent of the proposed development, as well as government regulators, to determine whether the risk is acceptable and decide whether to proceed with development or to implement mitigative measures based on the risk assessment.

Example 2: The following is an example of a partial risk analysis in order to illustrate the relationship between P(H), P(S:H), P(T:S), and P(HA).

1. The terrain stability professional determines that a section of the proposed Coffee Gold Mine Northern Access Road traverses shallow ice-rich permafrost. There is an estimated **High** likelihood of permafrost degradation and thermokarst formation with conventional road construction through the area (i.e. the P(H) = High). The area impacted by thermokarst formation is confined to the proposed road right-of-way.

2. The terrain stability professional estimates that there is a **High** likelihood that permafrost degradation and thermokarst formation will impact the proposed road alignment (i.e. the P(S:H) = High).

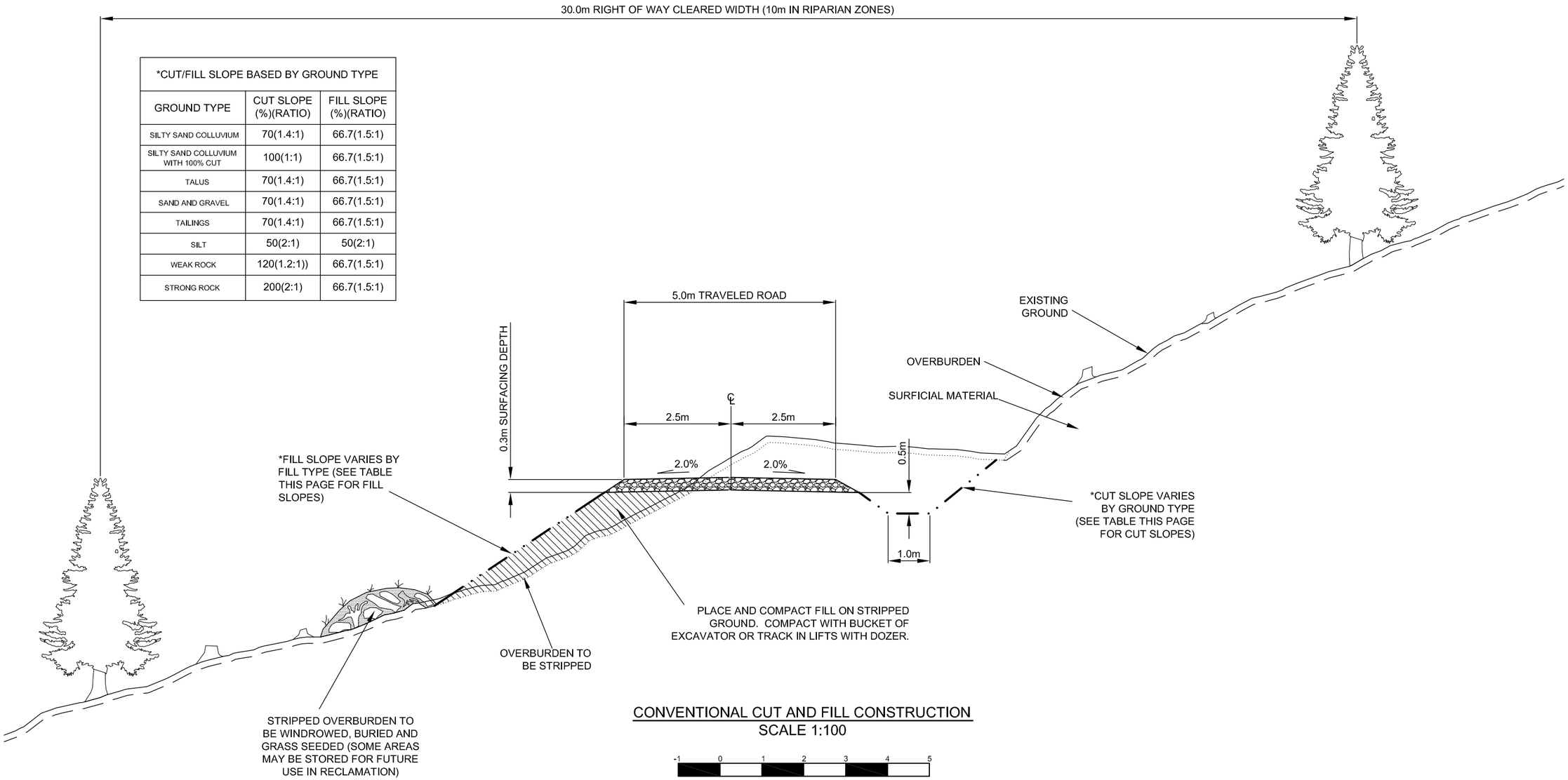
3. Since the road is stationary it will always occupy the runout path of the rockfall event and the P(T:S) = 1.

4. Using the Qualitative Risk Matrix a P(H) = High and P(S:H) x P(T:S) = High, the P(HA) = Very High.

This indicates that there is a Very High partial risk to the proposed road alignment as a result of construction activities through shallow ice-rich permafrost. Similar to Example 1 above, the degree of damage that thermokarst formation could do to the proposed road (i.e. the vulnerability) is not evaluated. The proponent of the development and government regulators should determine the acceptability of the risk in order to decide how to proceed with the development.

Appendix 2 – Typical Cross Sections

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-002

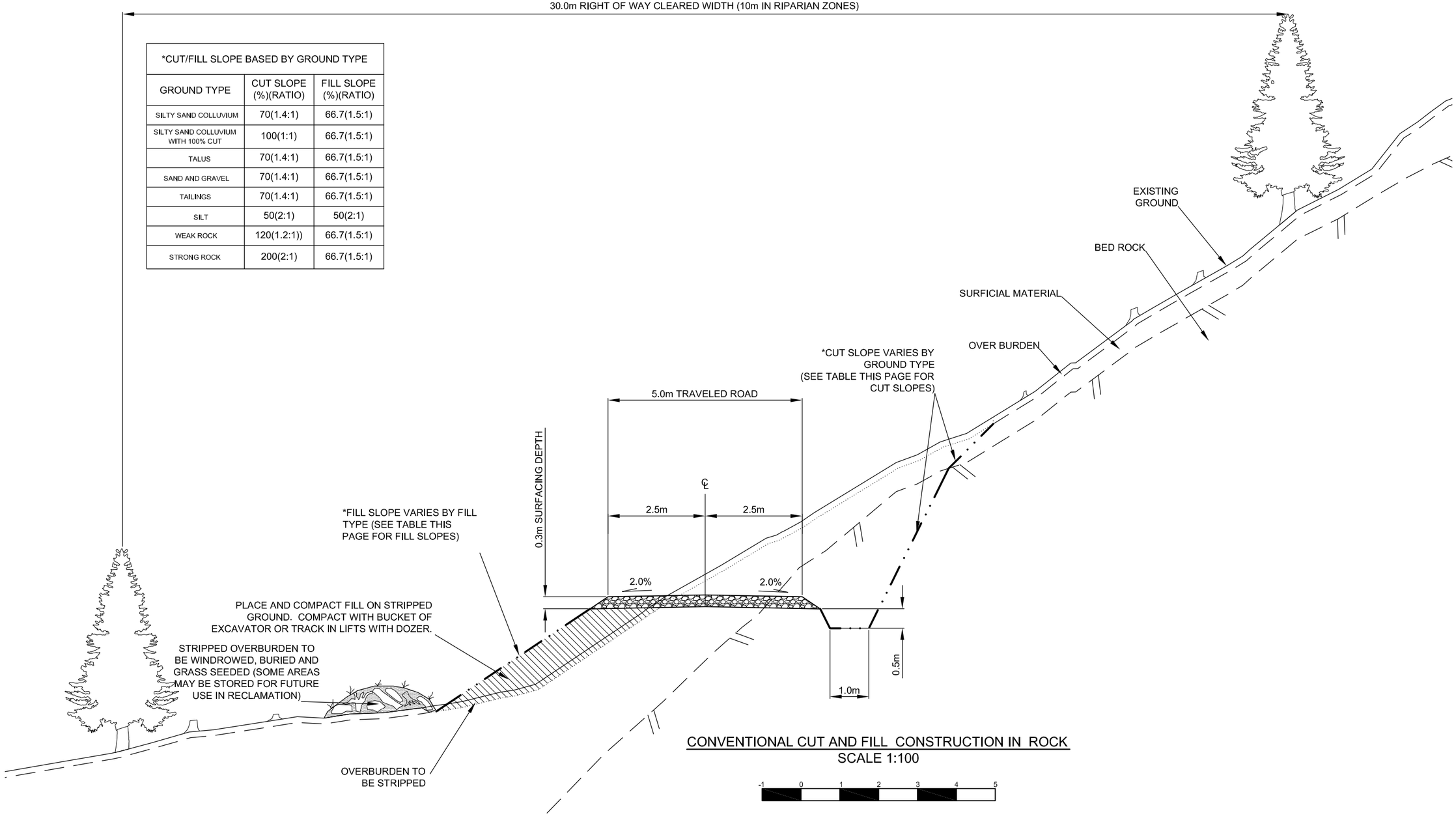
SHEET: 2 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

*CUT/FILL SLOPE BASED BY GROUND TYPE		
GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION IN ROCK

DWG No:1343-1-TYPROADXSECTIONS-003

SHEET: 3 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
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SEAL OF Y.T. P.ENG.

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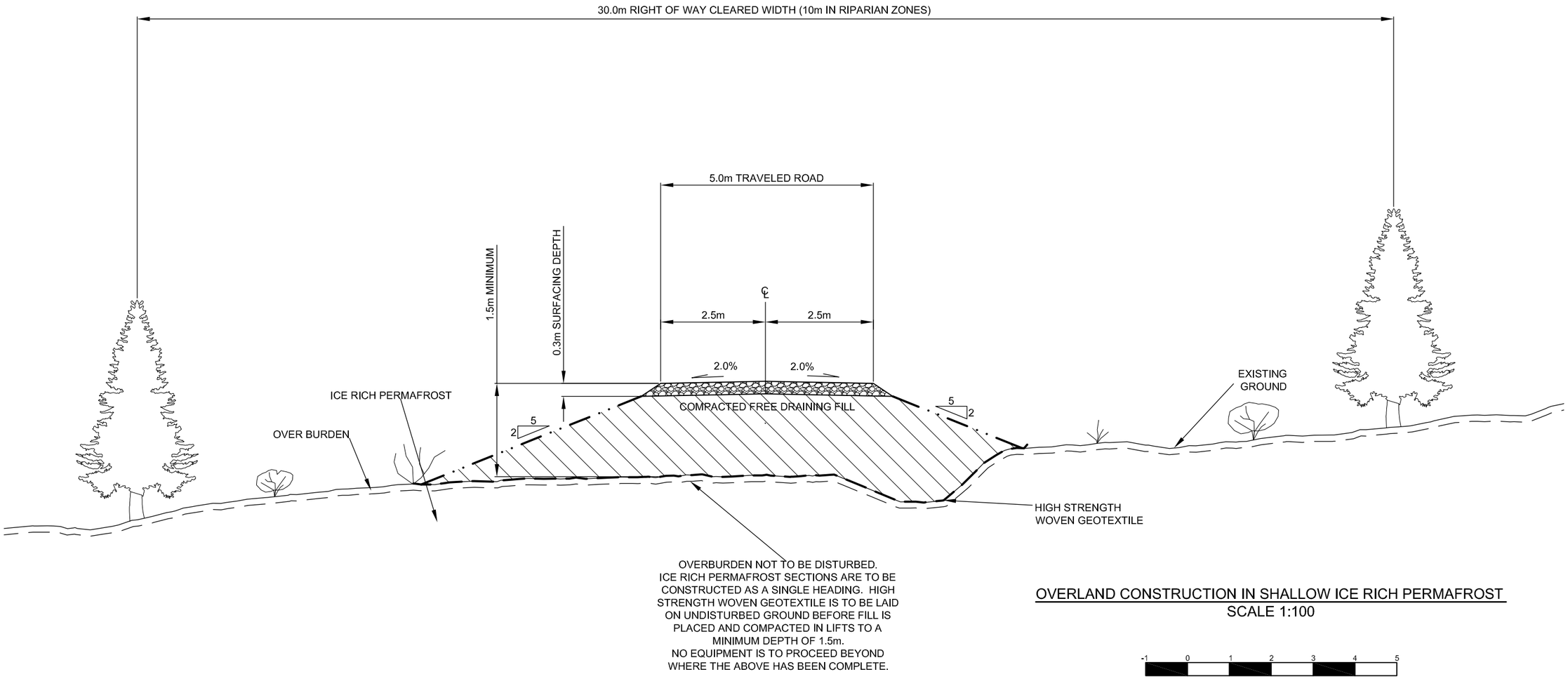

OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
OVERLAND CONSTRUCTION IN SHALLOW ICE RICH PERMAFROST

DWG No:1343-1-TYPROADXSECTIONS-004

SHEET: 4 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
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SEAL OF Y.T. P.ENG.

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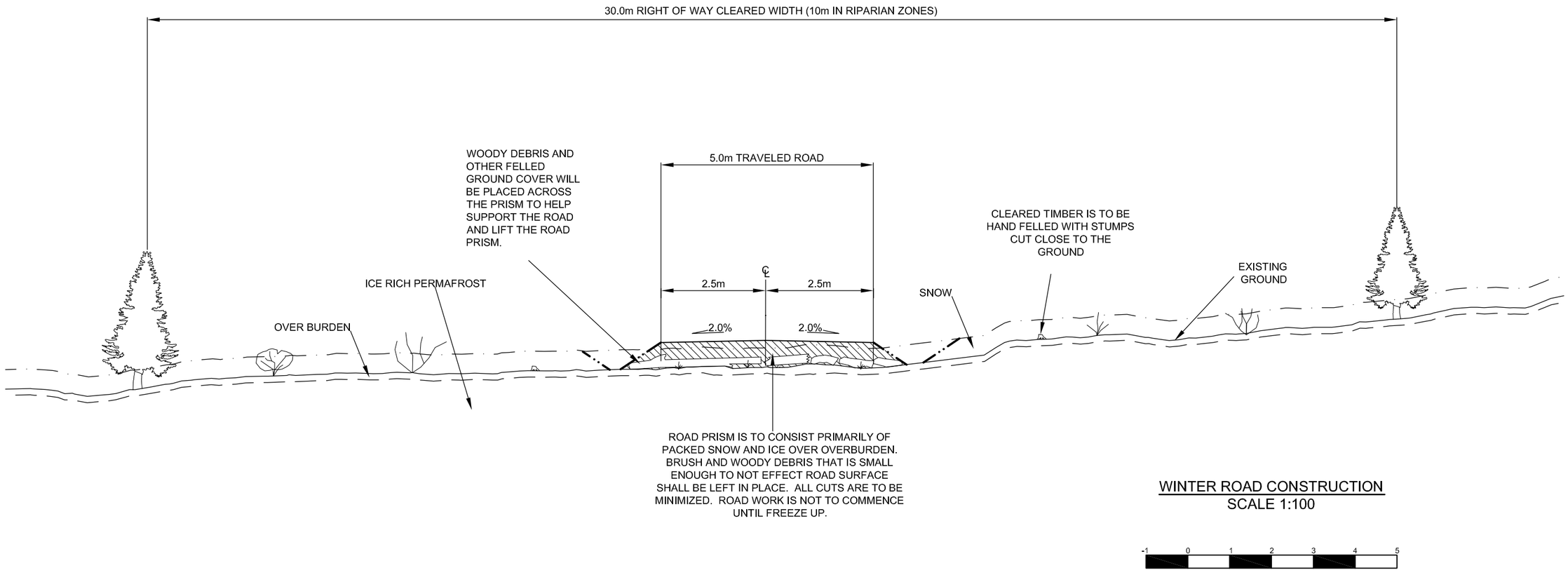

WINTER ROAD CONSTRUCTION
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTIONS:
WINTER ROAD CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-005

SHEET: 5 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

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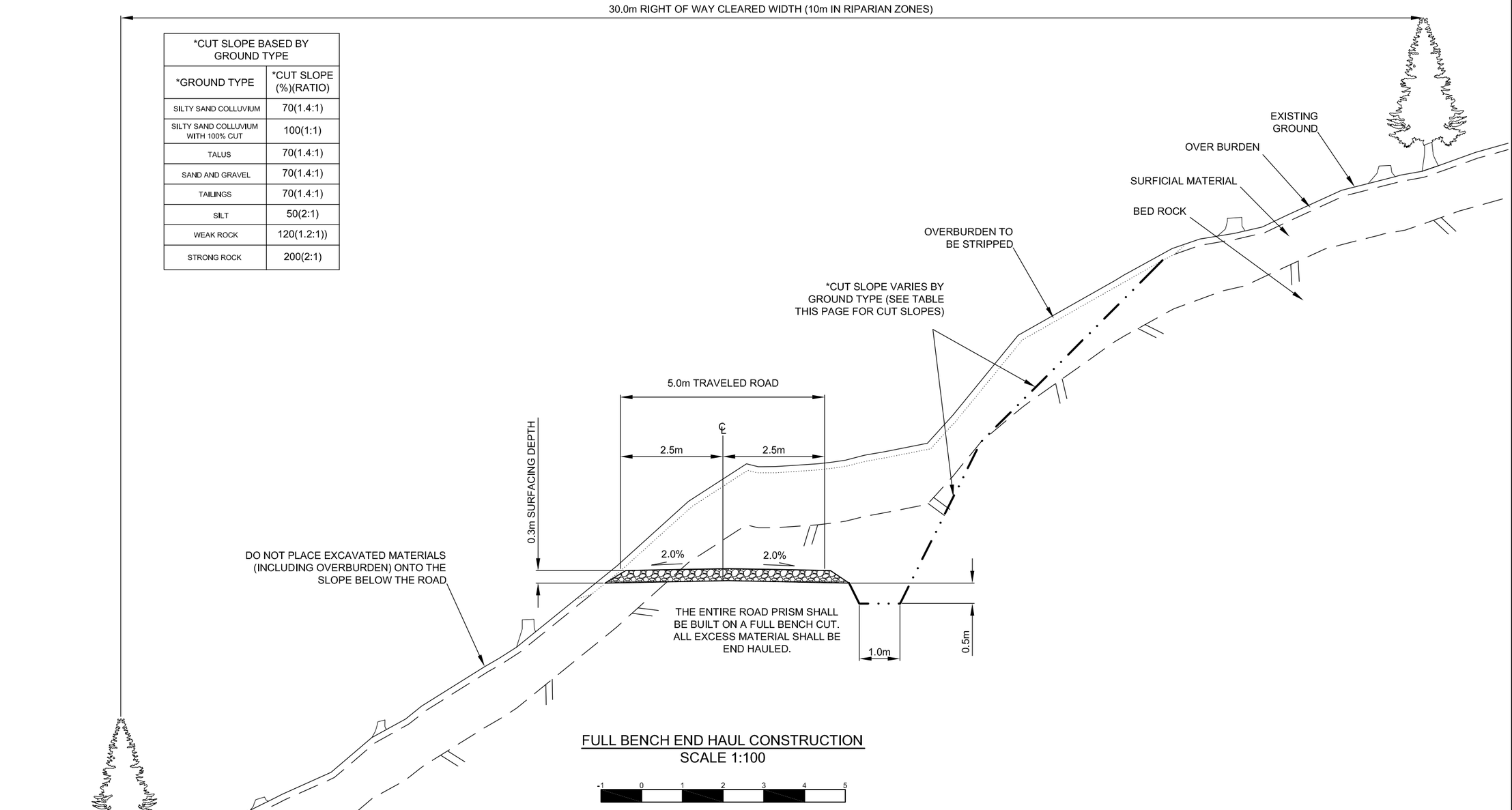
*CUT SLOPE BASED BY GROUND TYPE	
*GROUND TYPE	*CUT SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)
TALUS	70(1.4:1)
SAND AND GRAVEL	70(1.4:1)
TAILINGS	70(1.4:1)
SILT	50(2:1)
WEAK ROCK	120(1.2:1))
STRONG ROCK	200(2:1)



FULL BENCH END HAUL CONSTRUCTION
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
FULL BENCH END HAUL CONSTRUCTION

DWG No:1343-1-TYPROADXSECTIONS-006

SHEET: 6 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 13, 2017
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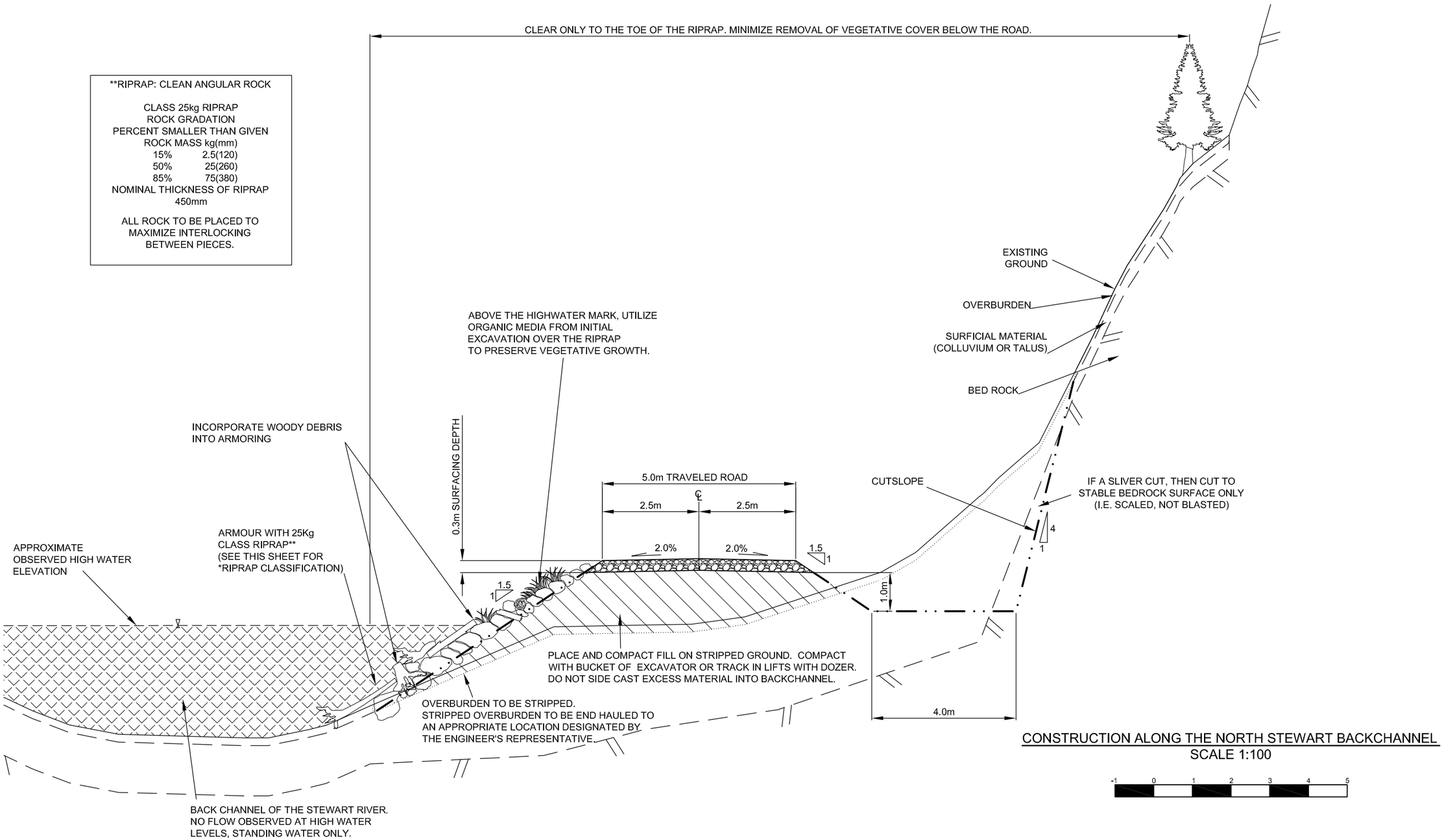
**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP
450mm

ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES.

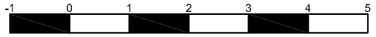


CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL
SCALE 1:100

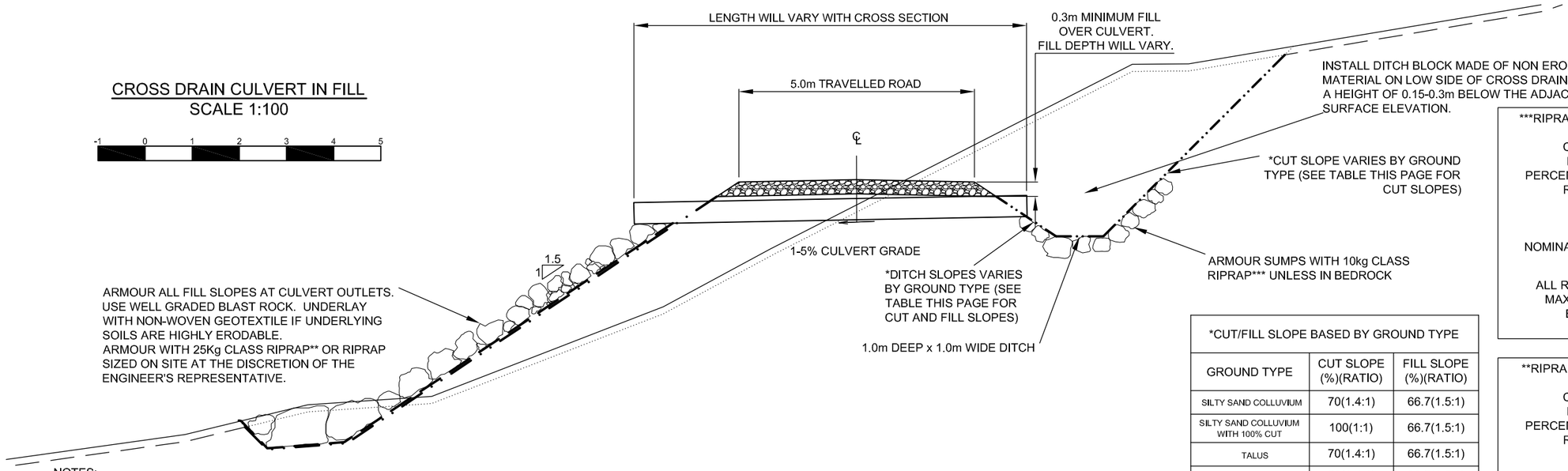
-1 0 1 2 3 4 5

PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943	TYPICAL CROSS SECTION: CONSTRUCTION ALONG THE NORTH STEWART BACKCHANNEL DWG No:1343-1-TYPROADXSECTIONS-007 | SHEET: 7 OF 8	DESIGN BY: JEREMY ARAKI, P. ENG. DESIGN DATE: MAY 4, 2015 REVIEWED BY: MICHAEL FOSTER, P.ENG. DRAWN BY: MATT DICKIE, EIT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: TYPICALROADXSECTIONS.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 13, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	SEAL OF Y.T. P.ENG. ISSUED FOR PERMIT APPROVAL

CROSS DRAIN CULVERT ON GENTLE SLOPES
SCALE 1:100



CROSS DRAIN CULVERT IN FILL
SCALE 1:100



***RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	1(90)
50%	10(195)
85%	30(280)

NOMINAL THICKNESS OF RIPRAP 350mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

**RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP 450mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.

*CUT/FILL SLOPE BASED BY GROUND TYPE

GROUND TYPE	CUT SLOPE (%)(RATIO)	FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

NOTES:
1. MINIMUM CLEARANCE BETWEEN WALLS OF CULVERTS IN MULTIPLE INSTALLATIONS SHALL BE D/2 OF THE SMALLEST PIPE OR 1.0m, WHICHEVER IS GREATER
2. GEOTEXTILE FABRIC SHALL BE NON-WOVEN CONSTRUCTED, SUPPLIED IN ROLLS AND APPROVED BY ENGINEER PRIOR TO INSTALLATION.
3. MINIMUM THICKNESS OF RIPRAP SHALL BE AS FOLLOWS:
   - 300mm FOR 10KG CLASS RIPRAP
   - 450MM FOR 25KG CLASS RIPRAP
4. SKEW CULVERT 3° FOR EACH 1% ROAD GRADIENT OVER 3%. MAXIMUM SKEW OF 45°.

PREPARED FOR:

GOLDCORP

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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

TYPICAL CROSS SECTION:
CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES

DWG No:1343-1-TYPROADXSECTIONS-008

SHEET: 8 OF 8

DESIGN BY: JEREMY ARAKI, P. ENG.
DESIGN DATE: MAY 4, 2015
REVIEWED BY: MICHAEL FOSTER, P.ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPICALROADXSECTIONS.DWG
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SEAL OF Y.T. P.ENG.

ISSUED FOR PERMIT APPROVAL

Appendix 3 – Tetra Tech EBA Memo re. Road Construction through Permafrost Terrain

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR REVIEW

To:	Robin McKillop, P. Geo.	**Date:**	March 3, 2016
c:	K. Jones, P. Eng., VP Arctic Development	**Memo No.:**	3
From:	V. Roujanski, P. Geol.	**File:**	704-ENG.EARC03004-01
Subject:	Geotechnical Considerations for Road Design in Areas Underlain by Permafrost		

This 'Issued for Review' document is provided solely for the purpose of client review and presents our interim findings and recommendations to date. Our usable findings and recommendations are provided only through an 'Issued for Use' document, which will be issued subsequent to this review. Final design should not be undertaken based on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech EBA or destroyed.

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) is pleased to submit this Memo to Palmer Environmental Consulting Group (PECG) regarding geotechnical considerations for the proposed all-season access road design in areas underlain by permafrost.

The proposed Kaminak access road route runs approximately 214 km from the Klondike Highway junction (Bear Creek) near Dawson City southward to the Coffee Property mine area.

2.0 PERMAFROST ALONG THE PROPOSED KAMINAK ROAD ALIGNMENT AND IN THE MINE AREA

2.1 Permafrost Distribution, Temperatures, Ice Content, and Related Geohazards

According to the Permafrost Map of Canada (Heginbottom, 1995) the proposed Kaminak road alignment is located within the zone of extensive discontinuous permafrost, in which 50 to 90% of the area is expected to be underlain by permafrost. Our calculations of permafrost distribution within the 200 m-wide proposed road corridor using ArcGIS technology show that approximately 56% of **the corridor area** is underlain by permafrost (9% - by very ice-rich permafrost, 12% - by permafrost with visible excess ice, and 17% - by predominantly ice-poor permafrost). Approximately 18% of **the corridor area** is covered by placer tailings deposits and may include pockets of ice-rich material buried by the tailings and where the ground thermal regime was affected by mining. Approximately 44% of **the corridor area** is therefore estimated to be permafrost-free.

Permafrost thicknesses were measured with thermistor cables at the south end of the proposed access road, within the Coffee Mine area. The results are highly variable, ranging from approximately 30 m to 165 m thick.

Active layer thickness varies spatially and temporally. In areas with thicker insulating organic cover, it is usually thin (approximately 0.3 m to 0.6 m), whereas it can be several metres thick within partially exposed bedrock or within coarse surficial material with a high clast content.

At the south end of the proposed Kaminak road alignment, within the Coffee Mine area, permafrost temperatures were measured with thermistor cables, as well as with temperature sensors on vibrating wire piezometers. At the

Tetra Tech EBA Inc.
14940 - 123 Avenue
Edmonton, AB T5V 1B4 CANADA
Tel 780.451.2121 Fax 780.454.5688

depth of zero seasonal temperature variation, ground temperatures range from -0.6ºC to -2ºC. The permafrost classification for the road within the Coffee Mine area is thus "warm".

Ground ice content (percent by volume) of the perennially frozen surficial materials along the proposed road alignment is highly variable, i.e. ground ice that is predominantly:

- not visible (Nf, Nbn, Nbe): This is generally ice-poor permafrost;
- visible excess ice (Vx, Vc, Vr, Vs): This moderately to ice-rich permafrost is well-bonded but rarely includes large ground ice bodies; or
- forming significant accumulations, such as ice wedges and other massive ice bodies: This is very ice-rich permafrost.

Warm permafrost temperatures along the proposed road alignment mean that areas underlain by ice-rich perennially frozen ground are sensitive to any kind of natural or manmade disturbance. As a consequence, one of the permafrost-related geohazards within the project area is thermokarst, which could be triggered by construction activities or by natural processes, such as forest fires. Development of thermokarst can be accompanied by thermal erosion, subsidence, and mass wasting of thawing ice-rich organic and fine-grained mineral soils.

2.2 Permafrost and Geotechnical Considerations for Road Design and Construction

Although every effort was made to avoid areas of thaw-sensitive perennially frozen soils when selecting the proposed road route, in some cases this was not possible and some sections of the selected road alignment cross areas underlain by warm ice-rich permafrost as shown on the Map of Permafrost Distribution Along Proposed Kaminak Road Alignment (Roujanski and McCuaig, 2016). Approximately 14 km of the 214 km-long road is founded on very ice-rich permafrost and approximately 24 km – on ice-rich permafrost. Road construction in such areas can cause a change in heat exchange at the ground surface and a change in the existing thermal regime of the ground. This may lead to thaw degradation of ice-rich permafrost in the subgrade, i.e. gradual melting of ground ice beneath the road. The resulting differential settlement may cause sharp dips in the road surface, progressively widening cracks and, less commonly, sinkholes where massive ice bodies previously existed. Thawing and settlement may continue for years until the ice has melted, thawing has stopped, or road fill bridges the resulting voids (Andersland and Ladanyi, 2004).

Within the areas of active or recent placer mining in the valley bottoms, the proposed alignment often follows existing mining access roads or crosses extensive areas covered by placer mining tailings. The ice-rich material within these disturbed sections has been mostly removed and the road maintenance costs are expected to be low. However, pockets of the ice-rich material may exist and will require special consideration for design.

In general, there are two approaches for the design of roads in permafrost areas (Johnston, 1981; Crory, 1991, McGregor et al., 2010):

1. **Passive Approach**: Provide full thermal protection to maintain permafrost in its frozen condition; or
2. **Active Approach**: Provide for limited thaw penetration into the underlying subgrade where preservation of permafrost is not possible or practicable and the consequences of thaw are allowed for in the design.

Both approaches may be employed on any appreciable length of the proposed road alignment.

A passive approach should be employed along those sections of the proposed road alignment that cross areas underlain by ice-rich permafrost, such as bottoms of creek valleys infilled with perennially frozen very ice-rich silt

(loess), interbedded with, and/or overlain by, organic material, known as "black muck". Geotechnical considerations for the road design within such sections are as follows:

- Cuts and ditches are avoided wherever possible;
- Movement of equipment used for clearing the Right-of-Way (ROW) should be controlled or prohibited to keep the terrain disturbance to a minimum and to preserve the organic mat;
- The snow cover is carefully removed before construction of the embankment in a winter operation to reduce settlement of the fill during the thaw period;
- The embankment should be constructed by the end dumping method so that the vegetation cover will not be damaged by hauling equipment;
- High fills and sideslope alignments are avoided wherever possible;
- For conceptual design purposes, embankment thickness should be at least 2.0 m, placed on heavy weight, non-woven geotextile, to protect the subgrade from thawing;
- Flat horizontal and vertical curves and gradients not exceeding 8% are highly desirable;
- Drainage should be controlled to prevent water ponding along the toe of the embankment. This will allow the thermal regime of the frozen subgrade to be maintained. If runoff water must be collected and channelized, it should be done at a reasonable distance from the embankment (>10 m); and
- Snow accumulation should be prevented on the lee side of higher sections of the road embankment to maintain thermal regime of the frozen subgrade.

Basic principles for thermal design of embankments to preserve the permafrost include the following (McGregor et al., 2010):

- Favourable thermal conditions should be imposed and maintained underneath the structural core of the embankment; and
- Thermal design is required to ensure raised or at least maintained permafrost levels beneath the core of the embankment.

3.0 CONCLUSIONS

The proposed Kaminak access road route runs approximately 214 km across the zone of extensive discontinuous permafrost, in which approximately 21% of **the corridor area** is underlain by ice-rich to very ice-rich permafrost. Approximately 14 km of the 214 km-long road founded on very ice-rich permafrost and approximately 24 km – on ice-rich permafrost. Sections of the proposed alignment crossing thaw sensitive permafrost terrain will require special geotechnical considerations.

These include adequate thermal protection of ice-rich permafrost in the subgrade by avoiding cuts and ditching, minimizing terrain disturbance during clearing ROW, preserving the insulating organic mat, using special road construction methods (the end dumping), removing snow, and drainage control along the embankment.

4.0 REFERENCES

Andersland, O.B. and Ladanyi, B. 2004. *Frozen Ground Engineering, 2nd ed.*, John Wiley & Sons, Hoboken, New Jersey.

Crory, F.E., 1991. Construction Guidelines for Oil and Gas Exploration in Northern Alaska. U.S. Army Cold Regions Research and Engineering Laboratory CRREL Report 91-21.

Heginbottom, J.A. (compiler). 1995. *Canada Permafrost.* Canada Centre for Mapping, Geomatics Canada and Geological Survey of Canada, Map MCR 4177, scale 1:7,500,000.

Johnston, G.H., ed. 1981. *Permafrost Engineering Design and Construction.* Toronto: John Wiley & Sons.

McGregor, R., Hayley, D.W., Wilkins, G., Hoeve, E., Grozic, E., Roujanski, V., and Jansen, A. 2010. *Guidelines for Development and Management of Transportation Infrastructure in Permafrost Regions.* Transportation Association of Canada.

Roujanski, V.E. and McCuaig, S. 2016. Map of Permafrost Distribution Along Proposed Kaminak Road Alignment (15 sheets), Scale 1:15 000, Tetra Tech EBA, Submitted to Kaminak Gold Corporation.

Appendix 4 – Table of Aggregate Borrow Sources

Appendix 4 Coffee Access Road Borrow Pits			
Borrow Pit Location	**Material Type**	**Description**	**Estimated Maximum Volume (m^3)**
0+850 to 0+910	Quartz based sand and gravel tailings	The borrow location is situated at the base of the Indian River valley in an area of extensive placer miner development. A large windrow of quartz based tailings is present in this location. Numerous borrow sites are also possible from 0+850 to 1+400.	100 000
A1 (West of 2+030)	Rubble colluvium overlying fractured micaschist bedrock	The borrow location is situated approximately 400m west of 2+030 on the proposed road alignment. An existing small borrow pit is present in the cutslope of the existing placer miner road in the area. The proposed borrow area is situated on well drained gentle gradient slopes and consists of 1-2m of rubble colluvium overlying fractured micaschist bedrock.	22 000
6+900 (Borrow 2)	Fractured micaschist to gneiss bedrock	The borrow location is situated approximately 200m northwest of 6+900 at the toe of a moderately steep gradient, bedrock controlled escarpment. The bedrock appears to be somewhat more competent than is typical of the area and fractures into blocky 0.3-0.5m clasts.	24 000
8+305 to 8+555 (Borrow 3)	Quartz based fluvial sand and gravel	The borrow location is situated on the uphill (south) side of the road alignment and consists of a fluvial terrace elevated above the main Indian River valley. The material is quartz derived and appears suitable for use as surfacing. Slope gradients in the area are gentle.	55 000
A2 (9+455 to 9+580)	Quartz based fluvial sand and gravel	The borrow location is situated on the uphill (south) side of the road alignment and consists of a fluvial terrace elevated above the main Indian River valley. The material is quartz derived and appears suitable for use as surfacing. Slope gradients in the area are gentle.	25 000
10+280 to 10+380 (Borrow 4)	Quartz based fluvial sand and gravel	The borrow location is situated on a small ridge prior to dropping into a broad stream swale. A small pit has already been developed at the site. The material is quartz derived and appears suitable for use as surfacing. Slope gradients in the area are gentle.	25 000
11+245 to 11+380 (Borrow 5)	Quartz based fluvial sand and gravel	The borrow location is situated on a large ridge feature climbing out of a stream crossing. The ridge is the site of an existing pit which appears to have been used to surface the road locally. Pit cuts reveal deep fluvial deposits. The material is quartz derived and appears suitable for use as surfacing. Slope gradients in the area are gentle to moderate.	76 000
11+510 to 11+640 (Borrow 6)	Quartz based fluvial sand and gravel	The borrow location is situated on a flat to gentle gradient fluvial terrace feature. The material is quartz derived and appears suitable for use as surfacing.	30 000
12+470 to 12+520 (Borrow 7)	Quartz based fluvial sand and gravel	The borrow location is situated on a slight ridge with gentle slope gradients. The material is quartz derived and appears suitable for use as surfacing.	11 000
A3 (33+545 to 33+750)	Rubble colluvium over andesite to dacite bedrock	The borrow location consists of a topographic high with andesite to dacite bedrock exposed at surface. This material is considered suitable for road surfacing if crushed. The upper layers of the rock mass are likely rippable but drill and blast excavation will likely be required at depth.	46 000
44+235 to 44+585 (Borrow 9)	Andesite to Dacite bedrock	The borrow location encompasses a large bedrock knob situated on the west side of the proposed alignment and is proposed for quarry construction. The knob is composed of competent crystalline igneous rock (Andesite to Dacite) that is considered suitable for surfacing if crushed. The upper layers of the knob is likely rippable but drill and blast excavation will likely be required at depth.	360 000

47+835 to 48+035 (Borrow 10)	Schist based rubble colluvium over fractured micaschist bedrock	The borrow location is situated on the high (west) side of the road alignment in a rolling, gentle gradient ridge feature. The soil profile at the site consists of 1m of angular rubble colluvium overlying fractured micaschist bedrock. The underling bedrock material is likely rippable. This material is schist based and as a result is suitable for subgrade construction but likely not for surfacing.	74 000
57+480 to 57+580 (Borrow 11)	Fractured gneissic bedrock with interbedded metalimestone layers	The borrow location is situated on the woods side of the Maisy May Tributary 1 stream crossing. An existing borrow pit with a minor amount of stockpiled rock is present at the location. The bedrock lithology is dominantly gneissic with a minor amount of interbedded metalimestone material. The rock appears to fracture into 0.3-0.5m blocky clasts.	44 000
58+340 to 58+445 (Borrow 12)	Fractured gneissic bedrock with interbedded metalimestone layers	The borrow location is situated on the town side of the Maisy May Tributary 2 stream crossing. An existing borrow pit is present on the high (northeast) side of the alignment. The bedrock lithology is dominantly gneissic with a minor amount of interbedded metalimestone material. The rock appears to fracture into 0.3-0.5m blocky clasts.	86 000
65+235 to 65+285 (Borrow 13)	Weak micaschist bedrock	The borrow location is situated on the town side of the Maisy May Tributary 4 stream crossing. The rock at this location is weak and heavily fractured. The majority of rock clasts produced at the site will be <0.3m in diameter and as a result much of the material produced will be unsuitable for use as rip-rap.	61 000
70+535 to 70+635 (Borrow 14)	Schist based rubble colluvium over fractured micaschist bedrock	The borrow location is situated on a small, well drained ridge feature in-between two existing road alignments. The soil profile at the site consists of >2.5m of angular rubble colluvium overlying fractured micaschist bedrock. The underlying bedrock material is likely rippable.	61 000
71+055 to 71+135 (Borrow 15)	Schist based rubble colluvium over fractured micaschist bedrock	The borrow location is situated on the woods side of a small stream crossing on a small ridge feature. The soil profile at the site consists of <1m of angular rubble colluvium overlying fractured micaschist bedrock. The underlying bedrock material is likely rippable	31 000
74+835 to 74+995 (Borrow 16)	Fractured micaschist bedrock	The borrow location is situated at the apex of a bedrock controlled slope with gentle to moderate gradient slopes above and moderately steep to steep gradient slopes below. The borrow pit extends into the gentle to moderate gradient slopes above the alignment. The rock consists of medium strong fractured micaschist material and is expected to break into blocky 0.3-0.5m diameter clasts.	50 000
75+815 to 75+915 (Borrow 17)	Schist based rubble colluvium over fractured micaschist bedrock	The borrow location is situated on the high (west) side of the alignment pushing into the toe of a moderate gradient slope. Permafrost is present on the flat to gentle gradient terrain downslope of the alignment. The soil profile at the site is expected to consist of angular rubble colluvium 1-2m in depth. The underlying bedrock material is likely rippable	20 000
84+615 to 84+685 (Borrow 19)	Weak micaschist bedrock	The borrow location is situated on a small embankment climbing out of the base of the Barker Creek valley. The rock at this location is weak and heavily fractured. The majority of rock clasts produced at the site will be <0.3m in diameter and as a result much of the material produced will be unsuitable for use as rip-rap or surfacing.	26 000
90+640 to 90+740 (Borrow 22)	Fractured gneissic bedrock	The borrow location consists of a small widening on the high (northwest) side of the road. The rock at this location is relatively competent and is expected to fracture into 0.3-0.5m blocky clasts. Terrain upslope of the road features moderate slopes gradients and bedrock is visible in the existing road cut at <1m.	36 000
90+895 to 91+095	Fractured gneissic bedrock	The borrow location consists of a small widening on the high (northwest) side of the	122 000

(Borrow 23)		road. The rock at this location is relatively competent and is expected to fracture into 0.3-0.5m blocky clasts. Terrain upslope of the road features moderate slopes gradients and bedrock is visible in the existing road cut at <1m.	
91+990 to 92+115 (Borrow 24)	Weak fractured gneissic bedrock	The borrow location consists of a small widening on the high (northwest) side of the road. The rock at this location is weak and is expected to dominantly fracture into clasts <0.3m in diameter. Terrain upslope of the road features gentle moderate slopes gradients and bedrock is visible in the existing road cut at <1m.	54 000
A4 (98+925 to 99+025)	Silty sand with some gravel colluvium overlying fractured gneissic bedrock	The borrow locations consists of a large ridge/escarpment feature with the road drops through. The escarpment features moderately steep gradient slopes but crest over into gentle gradient slopes after approximately 50m. Gneissic bedrock is expected to underlie the colluvium material at depths of approximately 2m.	33 000
101+770 to 102+100 (Borrow 25)	Fluvial sand and gravel	The borrow location consists of a fluvial terrace somewhat elevated above the bottom of the Barker Creek valley. The terrace is composed of fluvial sand and gravel; however, the area is unmined and as a result may be under a placer miner claim.	75 000
105+680 to 105+780 (Borrow 26)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on the high side (east) side of the alignment into gentle to moderate gradient slopes. The soil profile at the site is expected to consist of angular rubble colluvium 1-2m in depth. The underlying bedrock material is likely rippable.	32 000
106+100 to 106+200 (Borrow 27)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on the high side (east) side of the alignment into gentle to moderate gradient slopes. The soil profile at the site is expected to consist of angular rubble colluvium 1-2m in depth. The underlying bedrock material is likely rippable.	33 000
107+270 to 107+470 (Borrow 28)	Talus derived from quartzite bedrock	The borrow location is situated on the high side (east) of the alignment on gentle to moderate slopes. The soil profile is expected to consist of quartzite talus in a sandy matrix over competent bedrock at 1-2m.	13 000
108+460 to 108+640 (Borrow 29)	Talus derived from quartzite bedrock	The borrow location is situated at the apex of the Barker-Ballarat Summit in a flat to gentle gradient saddle area. Angular quartzite talus is present at surface. Bedrock is presumed to be present at 1-2m depth.	50 000
109+560 to 109+710 (Borrow 30)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on a broad ridge feature in an area of moderate slope gradients. The borrow site is limited to a 10m widening on the high side (north) of the alignment. Bedrock is estimated at 1m depth.	14 000
110+475 to 110+660 (Borrow 31)	Fractured gneissic bedrock.	The borrow location is situated on a subtle ridge feature where gneissic bedrock is visible at surface. The rock is relatively competent and is expected to fracture into 0.3-0.5m blocky clasts when excavated. The borrow site is limited to a 10m widening on the high side (north) of the alignment.	21 000
110+975 to 111+175 (Borrow 32)	Silty sand with some gravel colluvium over fractured gneissic bedrock.	The borrow location is situated on the lower leg of the descent into the Ballarat Creek valley. Surficial materials in this location consist of silty sand with some gravel colluvium overlying bedrock at depths >1.5m. The borrow site is limited to a 10m widening on the high side (north) of the alignment.	20 000
111+625 to 111+735 (Borrow 33)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated across a bedrock controlled ridge feature on the high side of the proposed road alignment. Gneissic bedrock is expected at depths of <1m and will predominantly fracture into blocky 0.3-0.5m clasts. Slope gradients are moderate in the area.	44 000
112+225 to 112+425 (Borrow 34)	Silty sand with some gravel colluvium over fractured gneissic	The borrow location is situated on the high side (east) of the proposed alignment on planar, moderate gradient slopes. Surficial materials in this location consist of silty	82 000

	bedrock.	sand with some gravel colluvium overlying bedrock at depths 1-2m. The borrow site is limited to a 10m widening on the high side (north) of the alignment.	
112+795 to 113+020 (Borrow 35)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on the high side (east) of the proposed alignment at the toe of bedrock controlled slopes. Gneissic bedrock is expected at depths of <1m and will predominantly fracture into blocky 0.3-0.5m clasts. Slope gradients are moderate in the area.	115 000
115+600 to 115+850 (Borrow 36)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated at the toe of planar, face unit slopes rolling into a small stream draw. Gneissic bedrock is visible on the ridge rolling into the stream draw. Permafrost is present at the base of the Ballarat Creek draw downslope of the alignment. Bedrock is expected at depths of <1m and will likely fracture into blocky 0.3-0.5m clasts. Slope gradients are moderate to moderately steep above the alignment.	19 000
116+470 to 116+530 (Borrow 38)	Quartzite bedrock	The borrow location is situated at the toe of a moderately steep slope. Quartzite bedrock is visible at surface across the toe of the slope.	35 000
A5 (118+900 to 119+000)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on a broad ridge feature on the east side of the Ballarat Creek valley. Moderate slope gradients are present on the ridge feature. Fractured gneissic bedrock is visible in the existing road cut in the area. The bedrock is overlain by approximately 1m of angular rubble colluvium in a silty sand matrix.	38 000
119+840 to 120+040 (Borrow 39)	Gneissic bedrock	The borrow location is situated at the toe of a moderate gradient ridge feature. Fractured gneissic bedrock is visible in the existing road cut in the area. The rock is medium strong but relatively fractured and is expected to dominantly fracture into blocky 0.3-0.5m clasts.	138 000
A6 (120+935 to 121+035)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on the toe of the east sidewall of the Ballarat Creek valley. Moderately steep slope gradients are present upslope of the existing alignment. Fractured gneissic bedrock is visible in the existing road cut in the area. The bedrock is overlain by approximately 1-2m of angular rubble colluvium in a silty sand matrix.	42 000
A7 (121+085 to 121+185)	Angular rubble colluvium over fractured gneissic bedrock.	The borrow location is situated on the toe of the east sidewall of the Ballarat Creek valley. Moderate slope gradients are present upslope of the existing alignment. Fractured gneissic bedrock is visible in the existing road cut in the area. The bedrock is overlain by approximately 2m of angular rubble colluvium in a silty sand matrix.	22 000
A8 (121+385 to 121+475)	Silty sand with some gravel colluvium over fractured gneissic bedrock.	The borrow location is situated on the toe of the east sidewall of the Ballarat Creek valley. Moderately steep slope gradients are present upslope of the existing alignment. Surficial materials consist of silty sand with some gravel colluvium estimated at 2m in depth.	16 000
A9 (121+650 to 121+805)	Gneissic bedrock.	The borrow location is situated at the toe of the east sidewall of the Ballarat Creek valley. Fractured gneissic bedrock is visible in the existing road cut in the area. The rock is medium strong but relatively fractured and is expected to dominantly fracture into blocky 0.3-0.5m clasts.	35 000
A10 (123+155 to 123+355)	Silty sand with some gravel colluvium over fractured gneissic bedrock.	The borrow location is situated on a terrace feature near the mouth of the Ballarat Creek valley. Surficial materials consist of silty sand with some gravel colluvium estimated at 2m in depth.	88 000
A11 (123+950 to 124+070)	Fluvial sand and gravel	The borrow location is the edge of an airstrip. The material making up the airstrip is composed of sand and gravel fluvial deposits	Potential high silt content – May not be a significant

			source 4 000
A12	Fluvial sand and gravel	The borrow location is situated in the floodplain of Ballarat Creek and the Yukon river. Fluvial sand and gravel deposits are present.	Potential high silt content – May not be a significant source 65 000
A13 (129+275 to 129+520)	Gravelly sand trace silt	The borrow location is situated on a large flat to gentle gradient terrace feature. Gravelly sand with trace silt was noted in hand dug test pits on the area. The depth of this material is known in the absence of deep machine dug test pits. The presence of deeper deposits was confirmed at the end of the winter road where an existing road cut was present.	31 000

APPENDIX 31-A-XV

Recommendations for the Existing Road from the South Yukon Barge Road to Coffee Gold Mine Site

ONSITE Engineering Ltd.

Southern Operations
330 42nd Street SW
PO Box 2012 Salmon Arm BC V1E 4R1
Tel: 250-832-3366
Fax: 1-866-235-6943

Coastal Operations
1040 Cedar Street
Campbell River, BC
V9W 7E2
Tel: 250-287-9174
Fax: 1-866-235-6943

North Vancouver Office
Unite 2 – 252 East 1st Street
North Vancouver, BC
V7L 1B3
Tel: 778-802-1263
Fax: 1-866-235-6943

Northern Operations
#1A – 1750 Quinn St.
Prince George, BC
V2N 1X3
Tel: 250-562-2252
Fax: 1-866-235-6943

March 27, 2017

James Scott, M.Sc., P.Geo.
Engineering Manager
Goldcorp Inc.
666 Burrard Street
Suite 3400
Vancouver, BC V6C 2X8

RE: RECOMMENDATIONS FOR THE EXISTING ROAD FROM THE SOUTH YUKON BARGE ROAD TO THE COFFEE GOLD MINE SITE

Dear Mr. Scott,

Onsite Engineering Ltd. (OEL) was retained by Goldcorp Inc. (Goldcorp) to assess the alignment and condition of the existing mine access road from the point of termination (POT) of the proposed South Yukon Barge Road (a portion of the Northern Access Route (NAR)) to the Coffee Gold Mine site. The reader is referred to Appendix 1 for an overview map showing the assessed route.

A desktop assessment of existing road alignment was completed by Matthew Dickie, EIT using LIDAR survey information flown by McElhanney Consulting Services Ltd on June 28, 29 and August 4 and 5, 2015 (McElhanney Consulting Services Ltd., 2015). The road condition was assessed by OEL personnel Jeremy Araki, P.Eng., and Rod Williams, P.Geo., during their site visit in May, 2015.

The existing on-site mine access road was found to be in an overall good condition, but will require upgrades in order to meet the design criteria used for the NAR (OEL, 2017). Most of the upgrades will consist of re-alignment and re-grading of sections of the road to enable the safe all-season use of the road; the reader is referred to Table 1 for site specific recommendations and Appendix 2 for a map showing the location of proposed upgrades. More general upgrades will consist of the following:

> Widening the cleared right of way (RoW) to 30m where mature timber is within 15m of the road centerline.

Installing additional 450mm diameter cross drain culverts as required.[1]

The installation of inter visible pullouts (pullouts shall add an additional 4m width, be 15m long with and have a 7.5m long taper at each end).

Reduce cut slope angles to match the cutslope angles specified in the NAR Upgrade and Establishment Report (OEL, 2017).

Increase ditch bottom width to 1m and ditch depth to 0.5m.

Applying surfacing material where required.[2]

[1] Further assessment of cross drain requirements shall be complete by a qualified professional prior to construction.
[2] Further assessment of surfacing requirements shall be completed by a qualified professional prior to construction.

Table 1. Road chainage and description of site-specific recommendations.

Chainage	Description
0+000 to 0+585	Lift road prism 1m.
1+685 to 1+975	Earthworks required to reduce road grades.
2+225 to 2+560	Realign horizontal and vertical alignment of switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.
3+333 to 3+706	Realign vertical alignment for switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.
4+904 to 5+120	Realign vertical curve and pitch. K values shall be no less than 4 (sag) and grades shall not exceed 10%.
5+830 to 6+183	Realign vertical curve and pitch. K values shall be no less than 4 (sag) and grades shall not exceed 10%.
6+640 to 7+020	Earthworks required to reduce grade of pitch. Grades shall not exceed 10%.
8+385 to 8+560	Realign vertical alignment for switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.
8+640 to 8+846	Realign vertical alignment for switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.
9+575 to 9+884	Realign vertical alignment for switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.
9+981 to 10+187	Realign vertical alignment for switchback and switchback approaches. Switchback grades shall not exceed 5% and approach grades shall not exceed 10%.

CLOSURE

Overall, the current alignment is appropriate and only minor regrading work is required to meet the overall Project specifications. Widening the RoW and cleaning the ditches will improve visibility, safety, and drainage. We trust you will find this information helpful. Please do not hesitate to call if you have any questions.

Regards,

Onsite Engineering Ltd.

Prepared by:

Signature REDACTED

Matthew Dickie, EIT
Project Engineer

Reviewed by:

Signature REDACTED

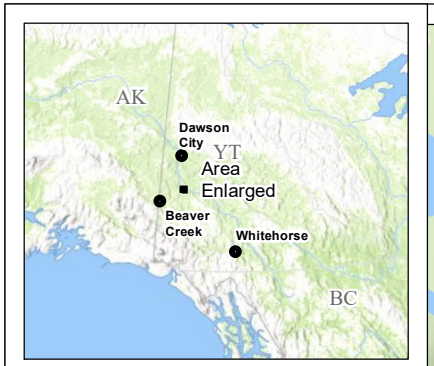
Jeremy Araki, P.Eng.
Supervising Engineer, Principal

BIBLIOGRAPHY

McElhanney Consulting Services Ltd. (2015). *LiDAR and Orthophoto Data Capture and Processing - Lidar Report.* Vancouver: McElhanney Consulting Services Ltd.

OEL. (2017). *Northern Access Route Upgrade and Establishment Report.* Campbell River.

APPENDIX 1: OVERVIEW MAP OF THE ASSESSED ROUTE FROM THE SOUTH YUKON BARGE ROAD TO THE COFFEE CREEK MINE SITE.



POC of Assessed Route = POT of South Yukon Barge Road

POT Of NAR = POC Site Roads

COFFEE GOLD MINE

Overview Map Of The Assessed Route From The South Yukon Barge Road To the Coffee Creek Mine Site

Legend

- South Yukon Barge Road
- South Yukon Winter Road Route
- Assessed Route

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced report.

N

1:50,000

0 250 500 750

Meters

NAD 1983 UTM Zone 7N

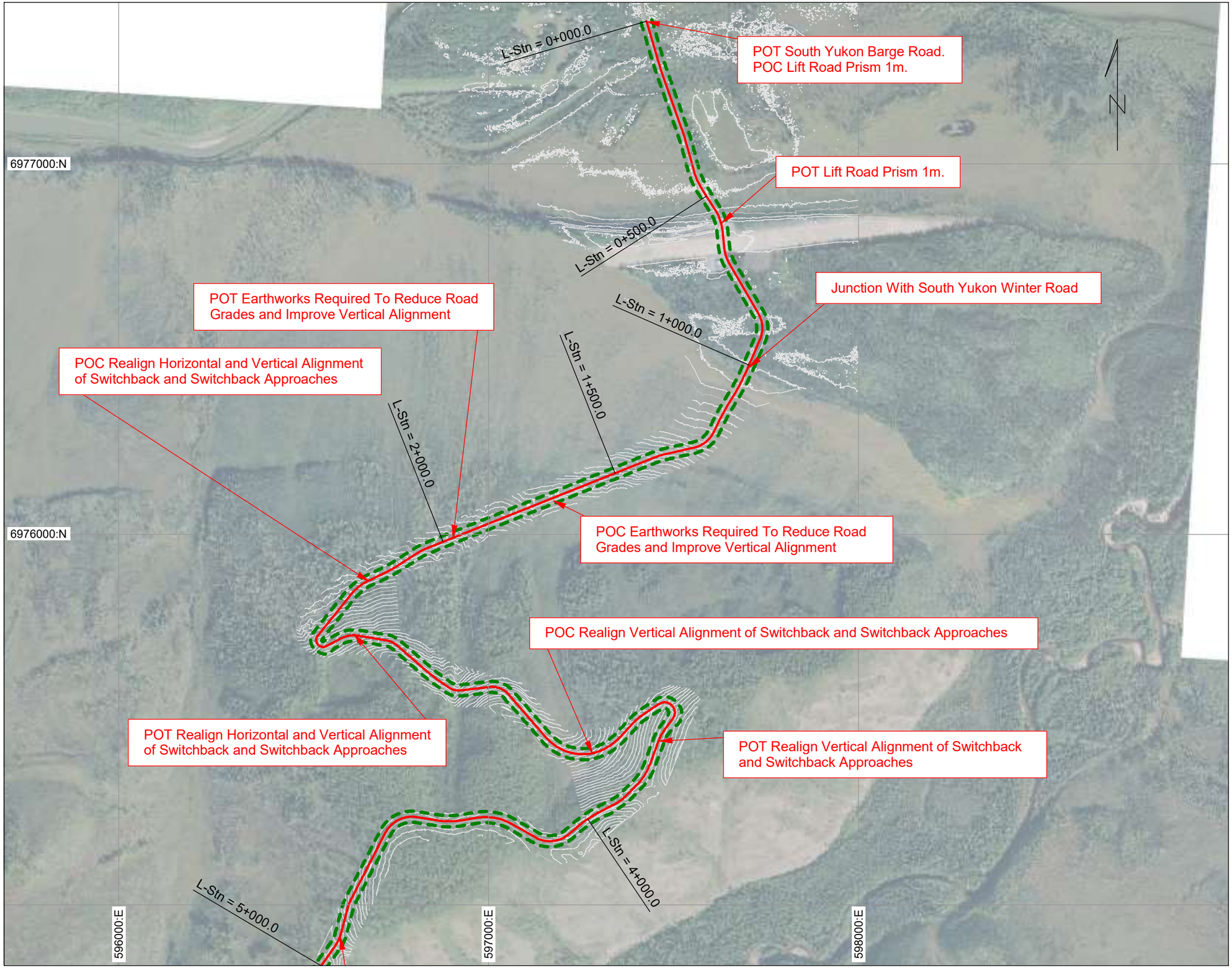
Page Size: 8 ½" x 11"

Appendix 1	Date: Mar 27, 2017	Drawn by: M. Dickie, EIT	Reviewed: J. Araki, P.Eng.

ONSITE Engineering Ltd.

Path: U:\Projects\1343\29\Road From Camp to Mine Site\Maps\Appendix 1.mxd

APPENDIX 2: LOCATION OF PROPOSED SITE SPECIFIC CHANGES TO THE EXISTING ACCESS ROAD



COFFEE GOLD MINE

Location Of Proposed Site Specific Changes To The Existing Access Road

Legend

- Centerline Location
- Clearing Limits
- 2m Contour
- 10m Contour

Notes:
This set of maps is not intended to be a "stand-alone" document, but as a visual aid of the information contained within the referenced report

Plan Scale 1:10000

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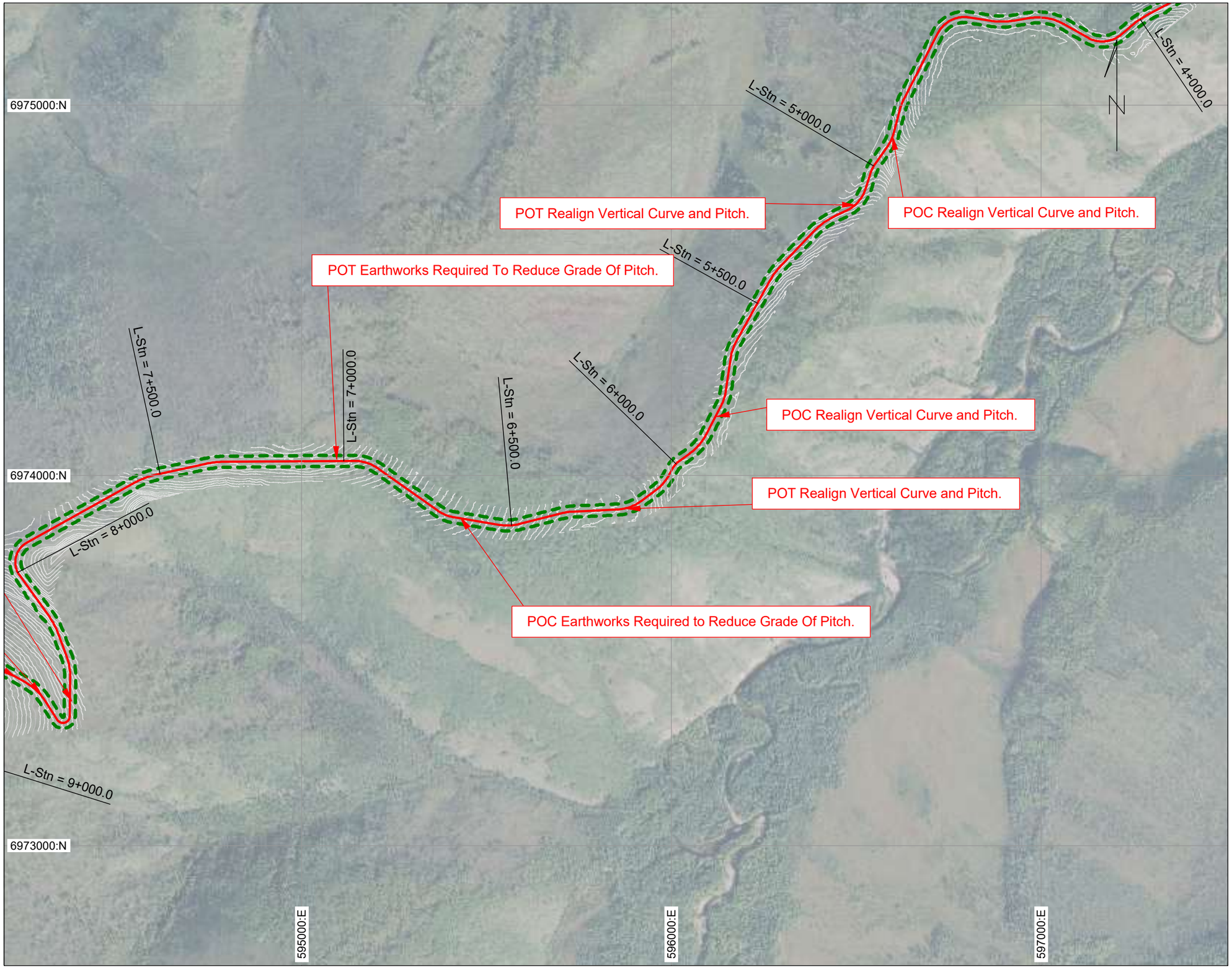
NAD 1983 UTM Zone 7N
Formated to Plot on 11"x17" Paper

Appendix 2	Date: March 2017	Drawn By: M. Dickie, EIT	Reviewed By: J.Araki, P.Eng.

ONSITE Engineering Ltd.



COFFEE GOLD MINE

Location Of Proposed Site Specific Changes To The Existing Access Road

Legend

- Centerline Location
- Clearing Limits
- 2m Contour
- 10m Contour

Notes:
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Plan Scale 1:10000

0 500

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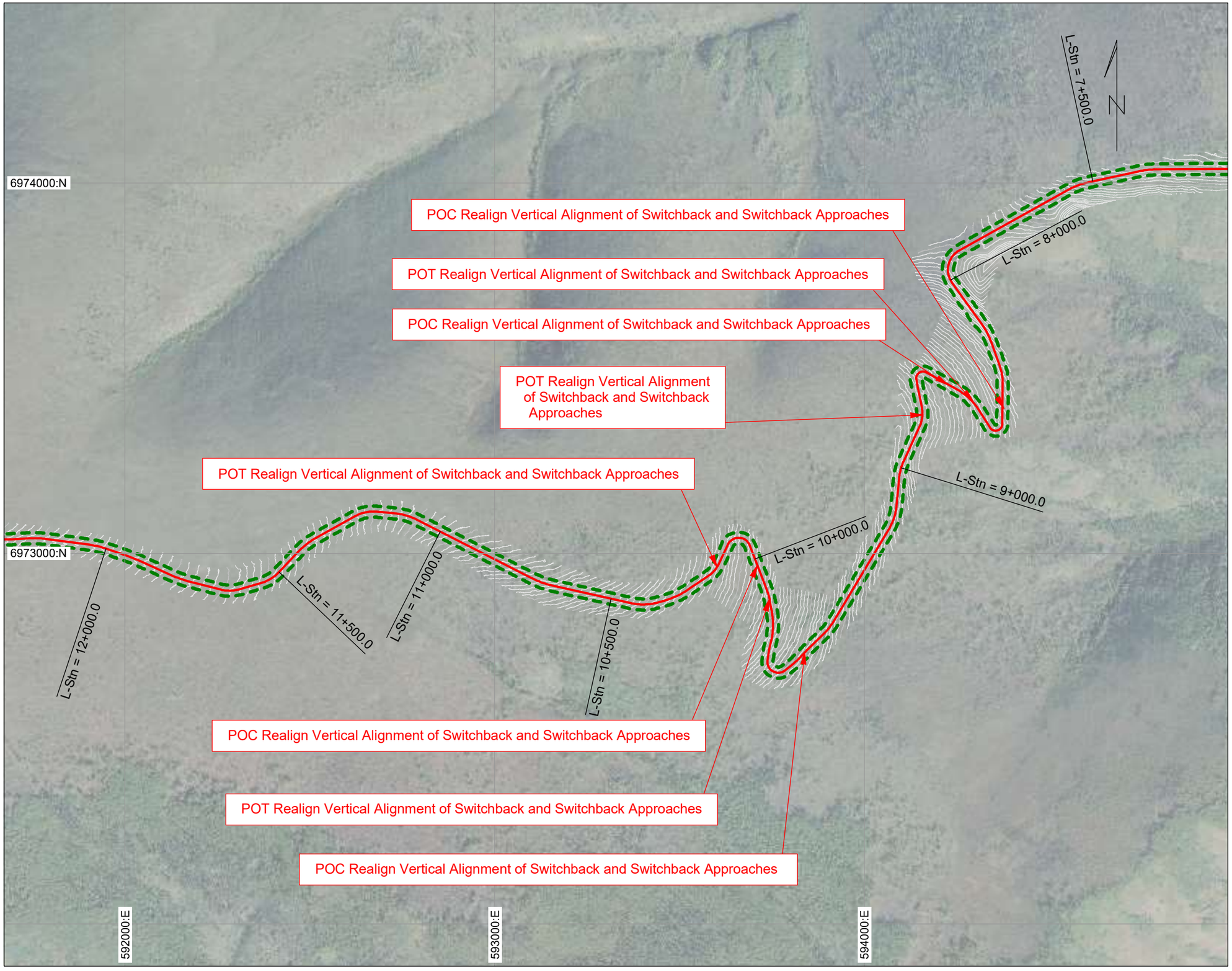
ONSITE Engineering Ltd.



COFFEE GOLD MINE

Location Of Proposed Site Specific Changes To The Existing Access Road

Legend

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- 2m Contour
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Notes:
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Plan Scale 1:10000

0 500

NAD 1983 UTM Zone 7N
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Appendix 2	Date: March 2017	Drawn By: M. Dickie, EIT	Reviewed By: J.Araki, P.Eng.

ONSITE Engineering Ltd.



COFFEE GOLD MINE

Location Of Proposed Site Specific Changes To The Existing Access Road

Legend

- Centerline Location
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- 2m Contour
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Notes:
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Plan Scale 1:10000

0 500

NAD 1983 UTM Zone 7N
Formated to Plot on 11"x17" Paper

Appendix 2	Date: March 2017	Drawn By: M. Dickie, EIT	Reviewed By: J.Araki, P.Eng.

ONSITE Engineering Ltd.

APPENDIX 31-A-XVI

Detailed Design Road Drawings

Part 1 of 5

Coffee Gold Mine

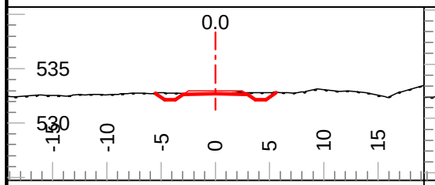
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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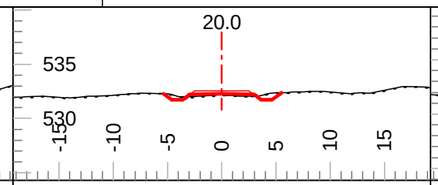

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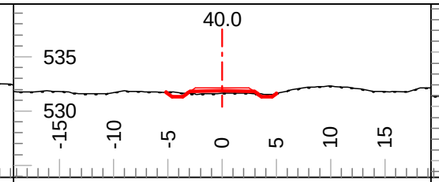

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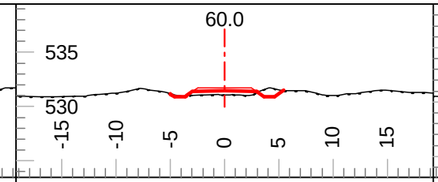

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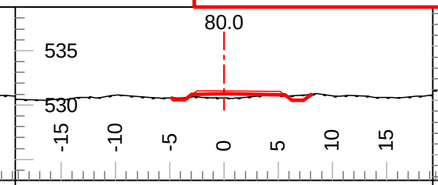

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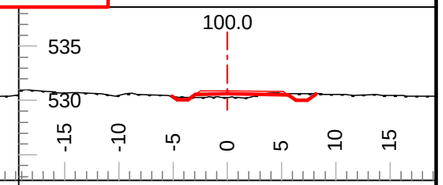

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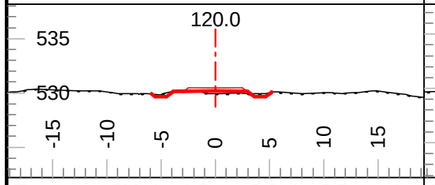

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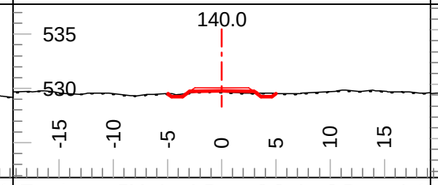

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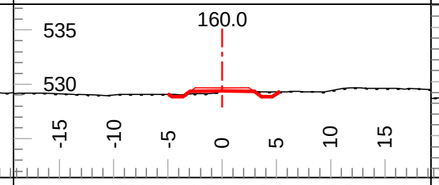

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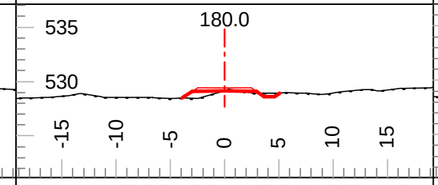

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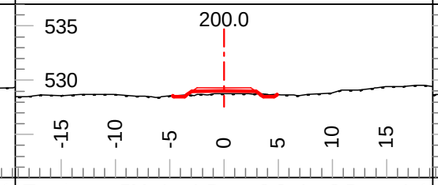

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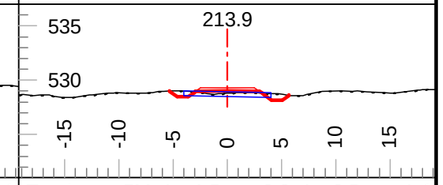

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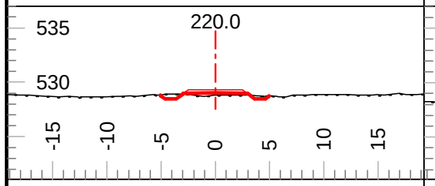

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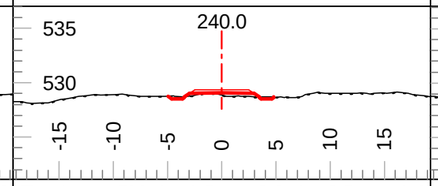

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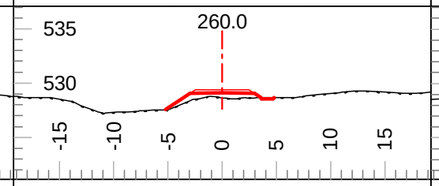

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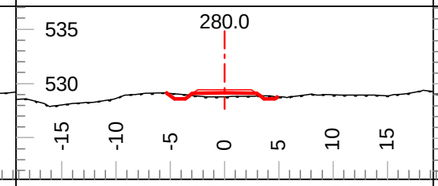

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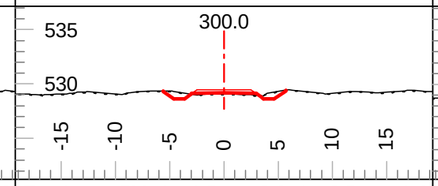

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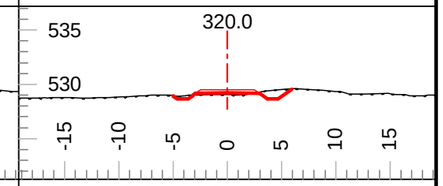

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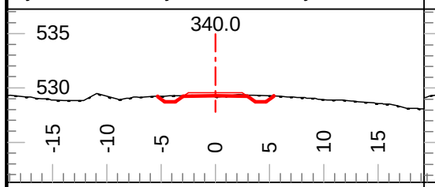

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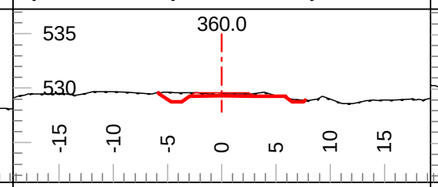

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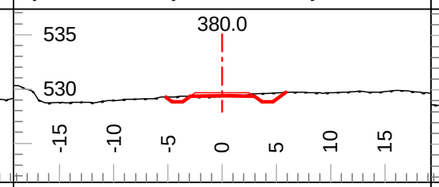

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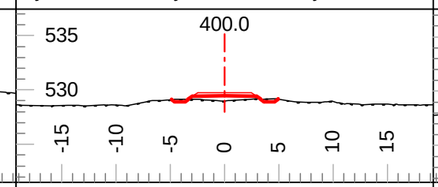

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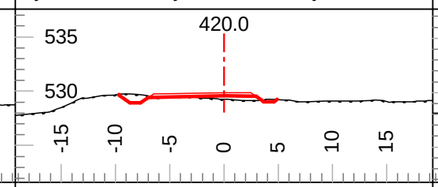

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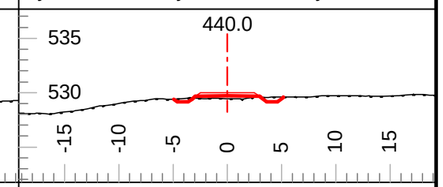

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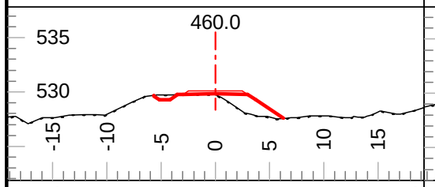

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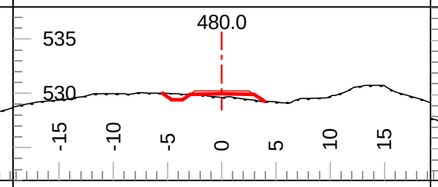

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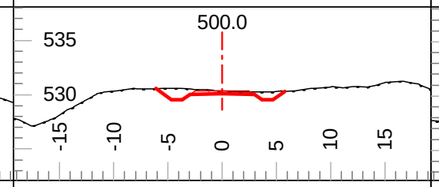

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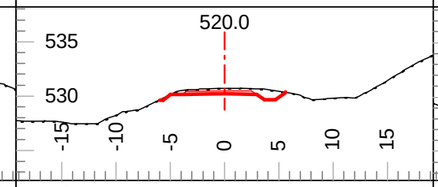

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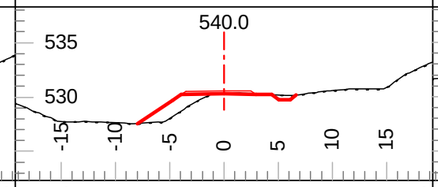

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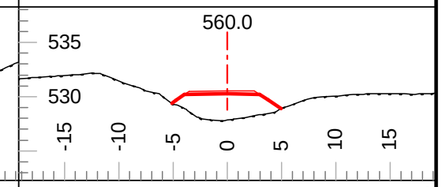

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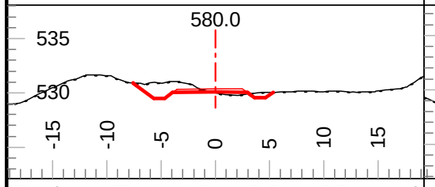

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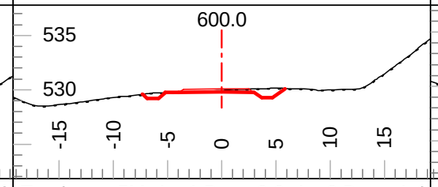

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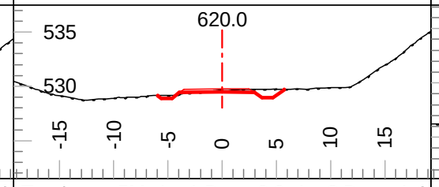

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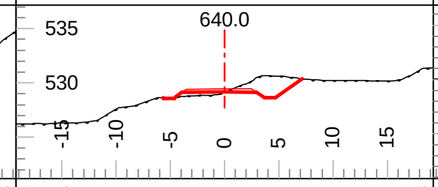

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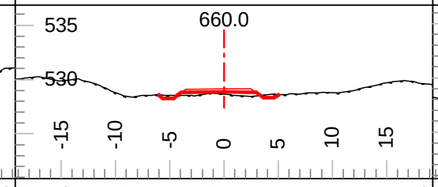

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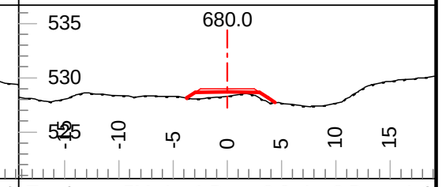

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Coffee Gold Mine

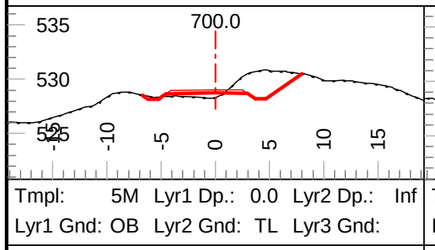
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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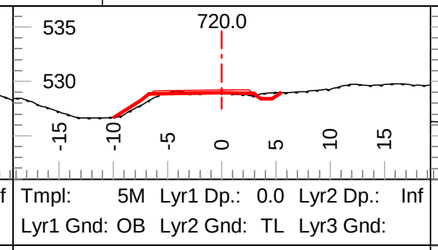

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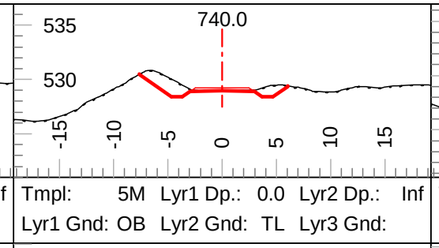

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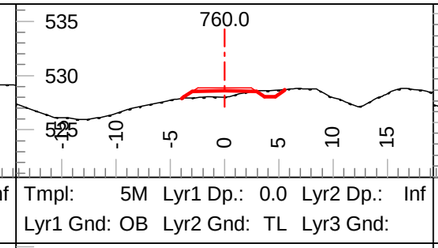

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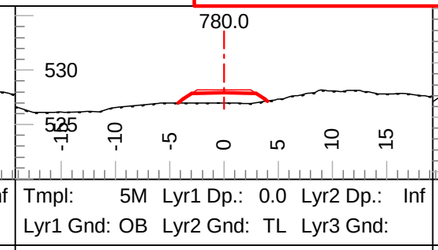

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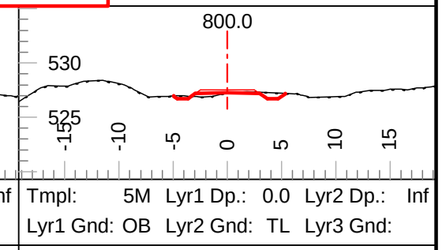

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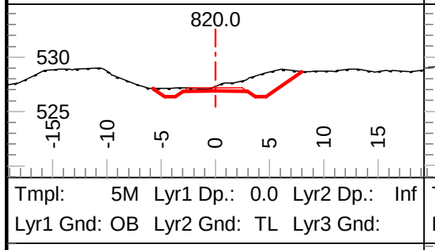

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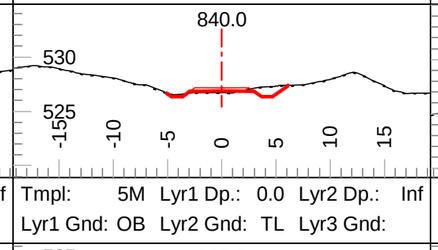

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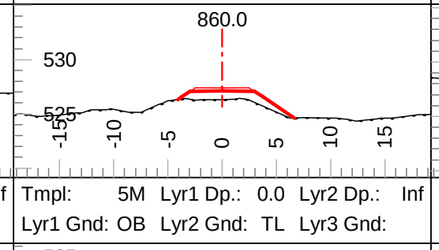

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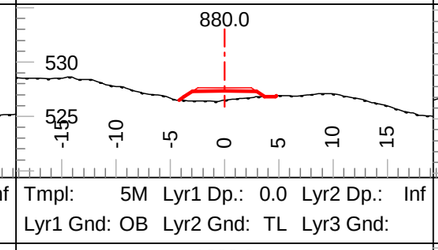

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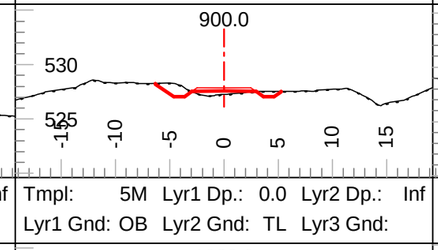

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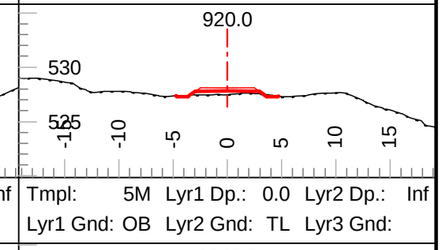

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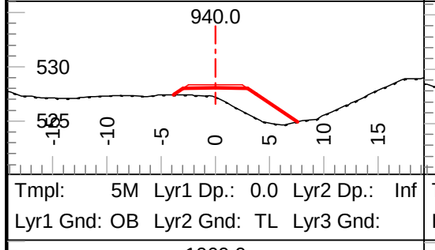

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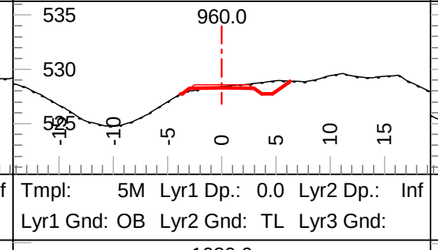

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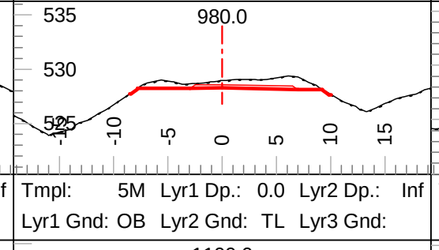

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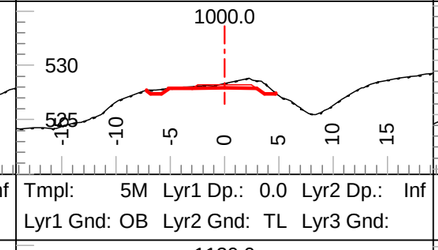

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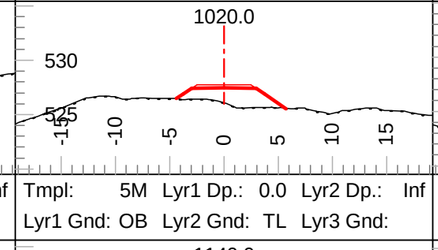

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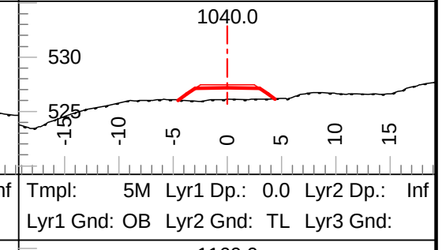

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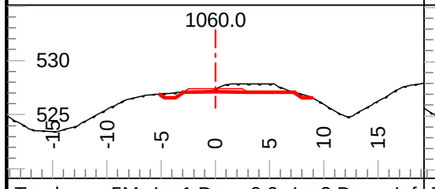

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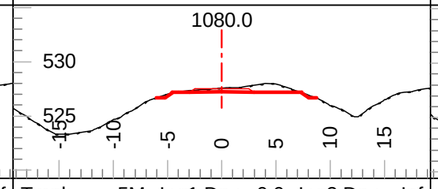

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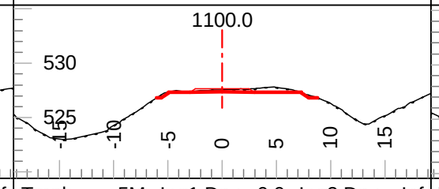

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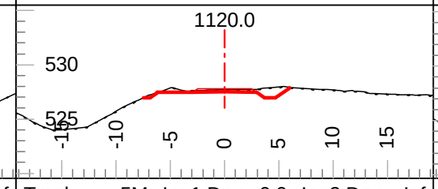

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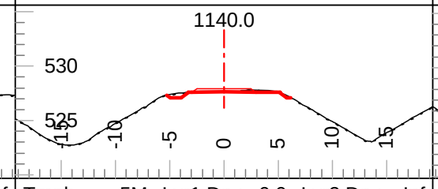

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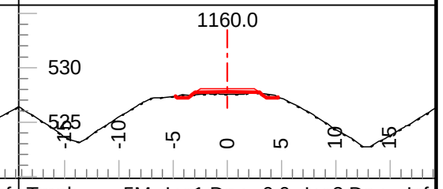

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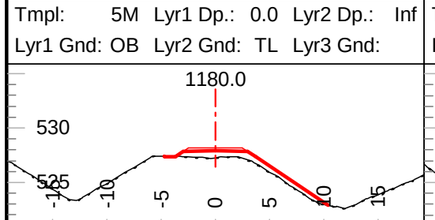

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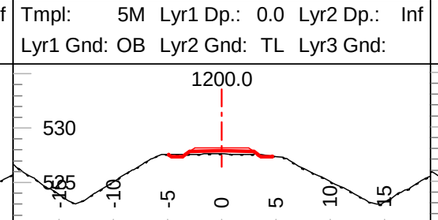

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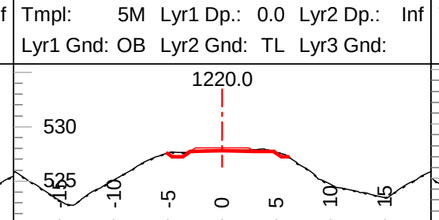

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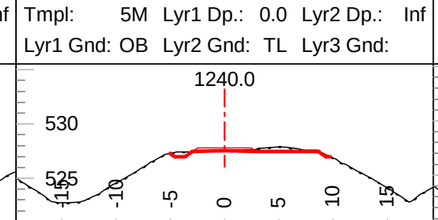

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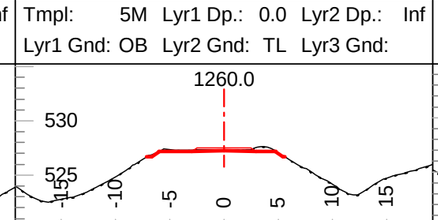

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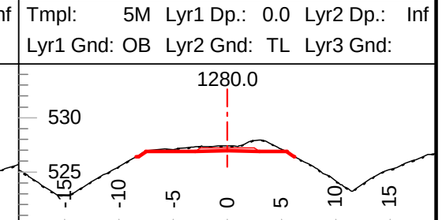

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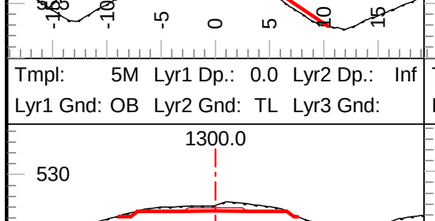

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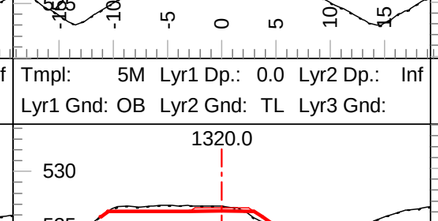

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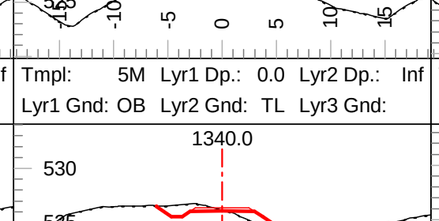

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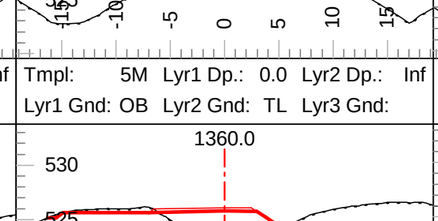

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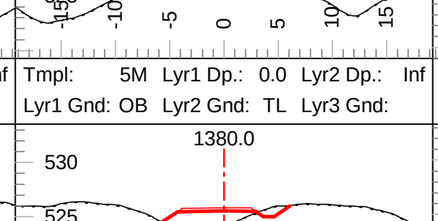

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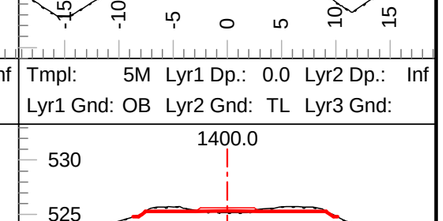

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Coffee Gold Mine

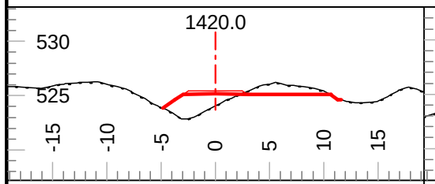
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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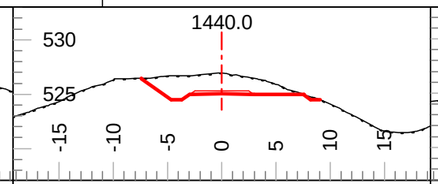

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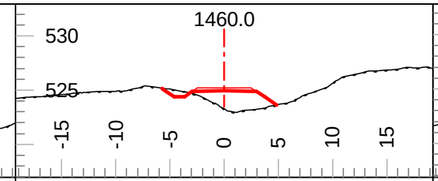

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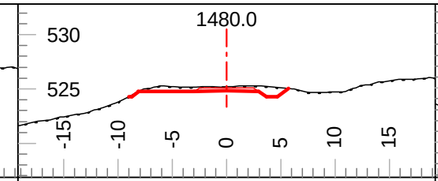

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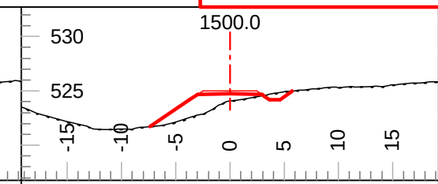

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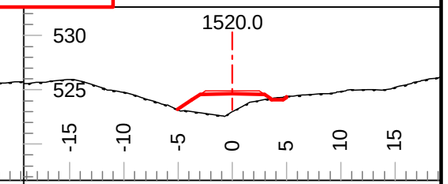

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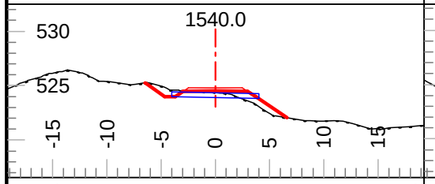

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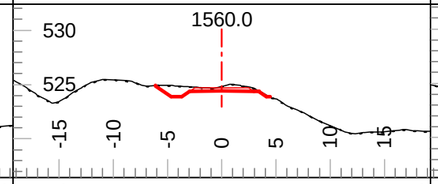

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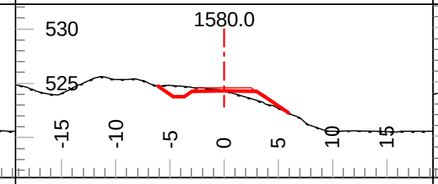

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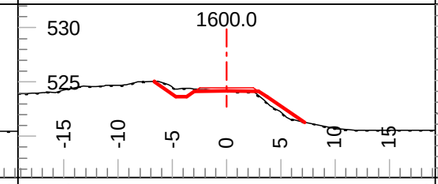

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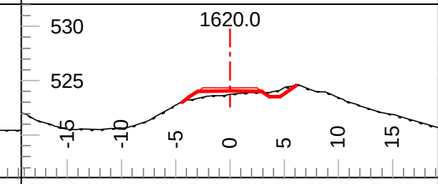

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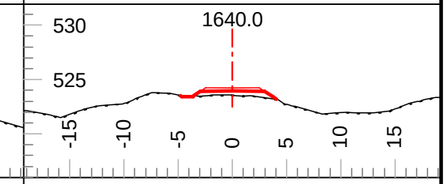

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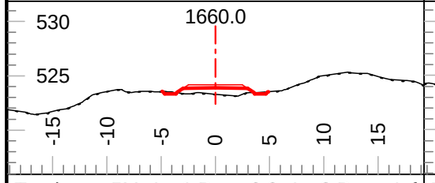

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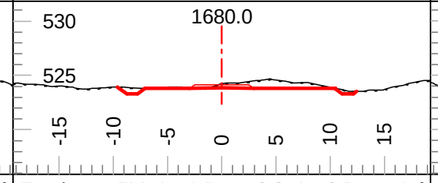

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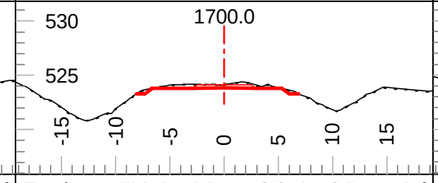

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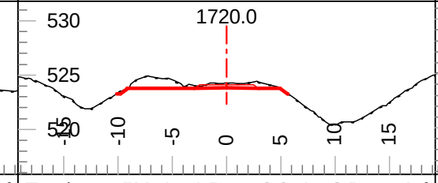

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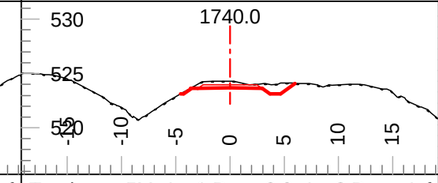

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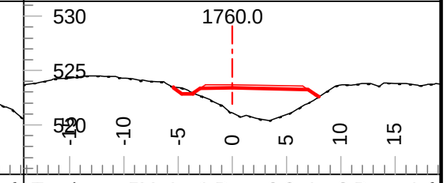

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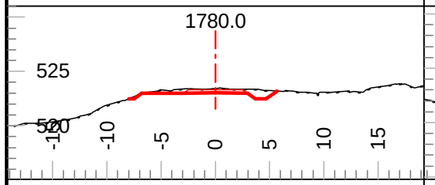

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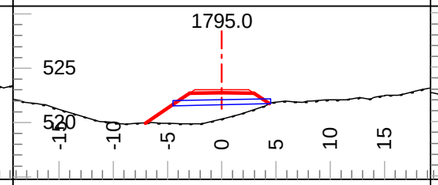

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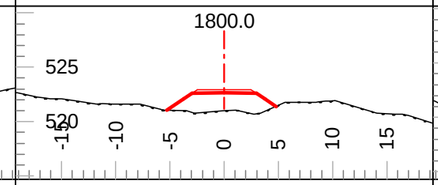

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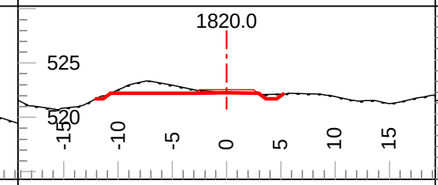

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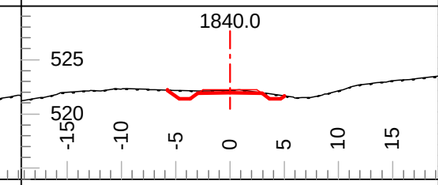

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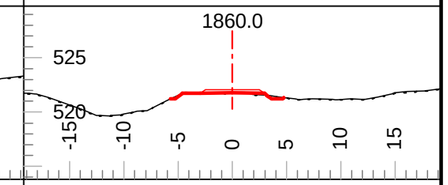

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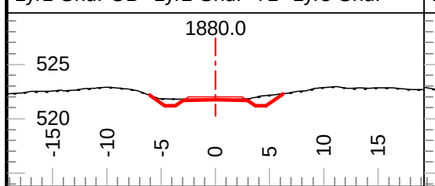

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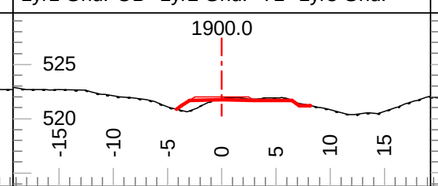

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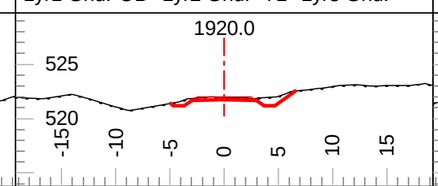

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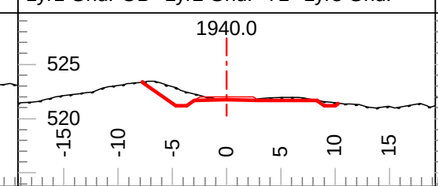

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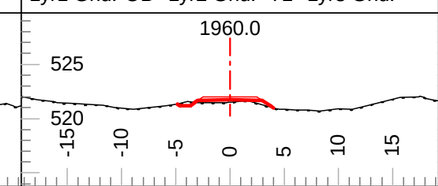

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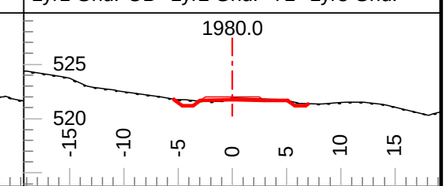

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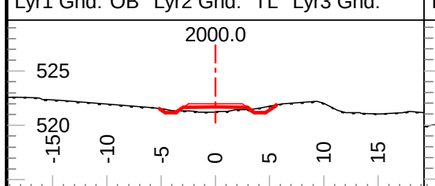

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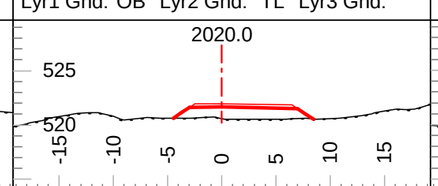

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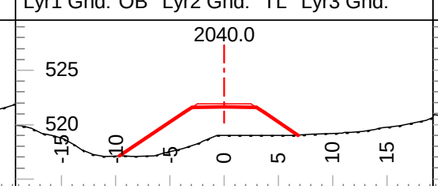

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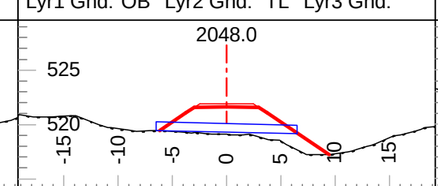

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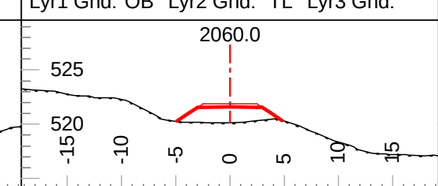

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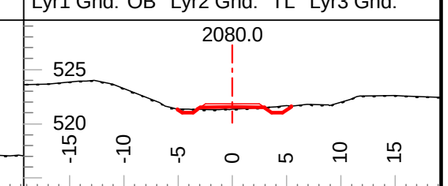

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
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km 0-41.1

GOLDCORP

Section Scale 1:550

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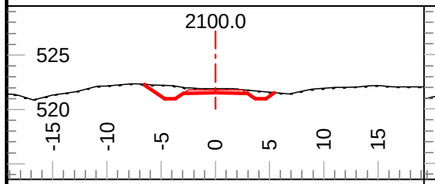
ONSITE Engineering Ltd.



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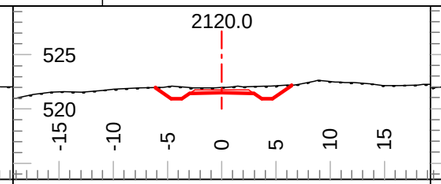

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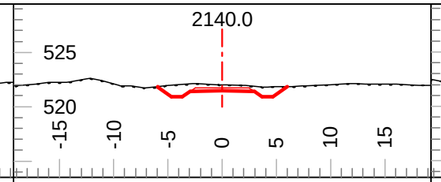

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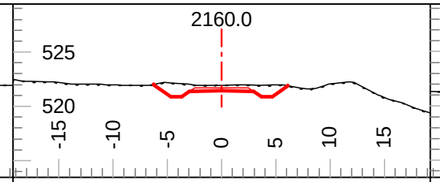

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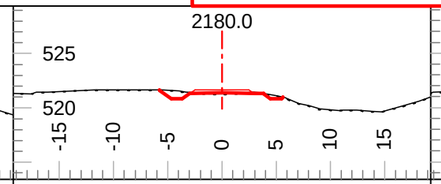

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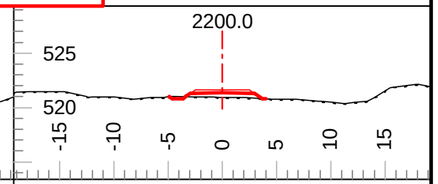

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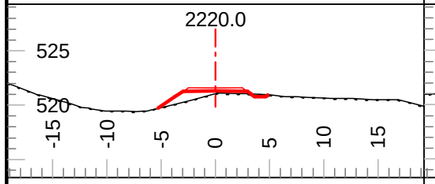

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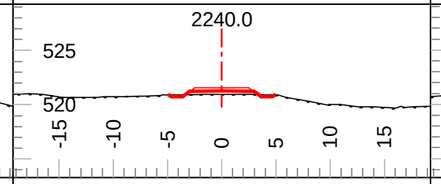

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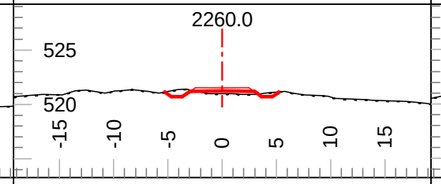

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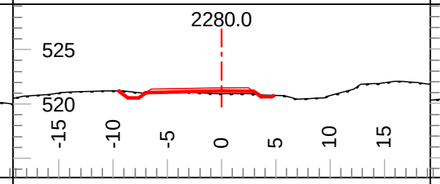

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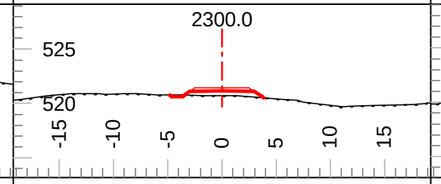

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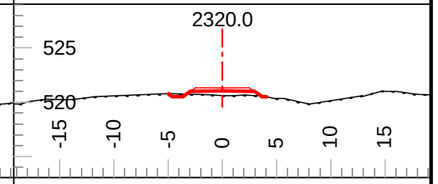

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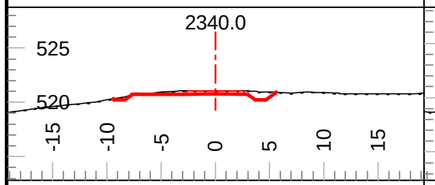

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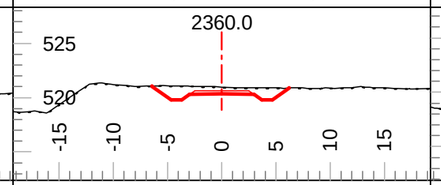

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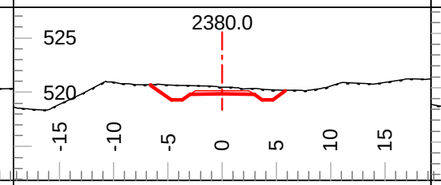

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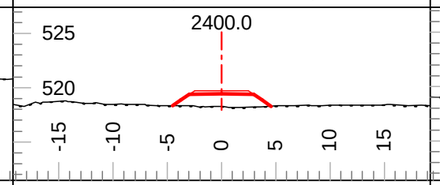

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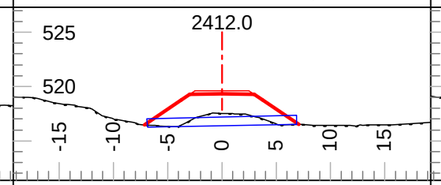

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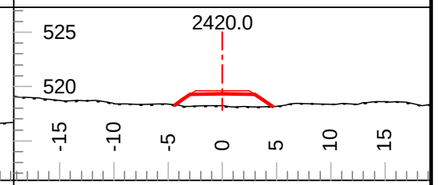

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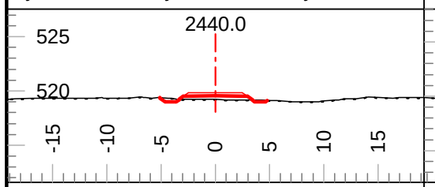

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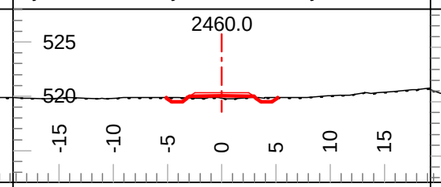

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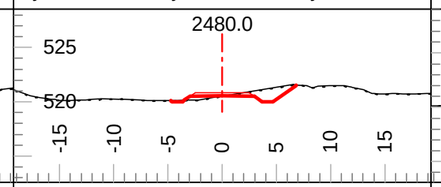

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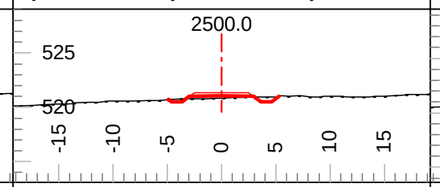

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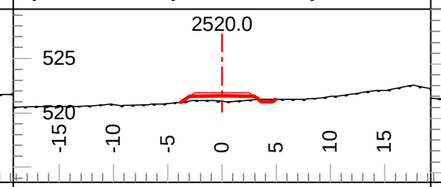

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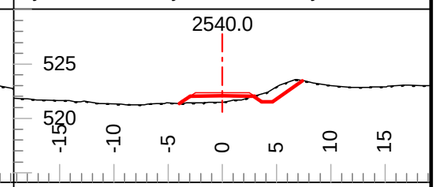

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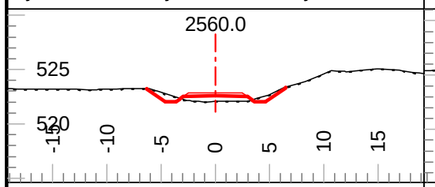

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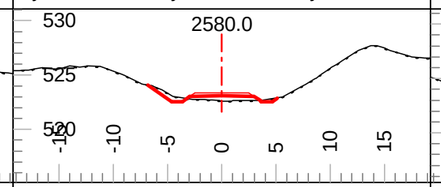

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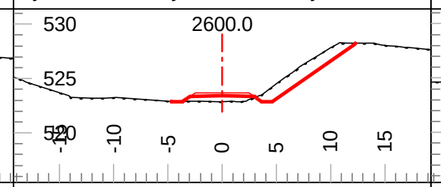

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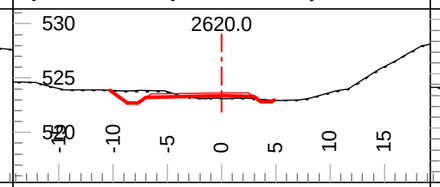

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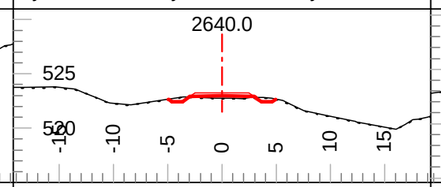

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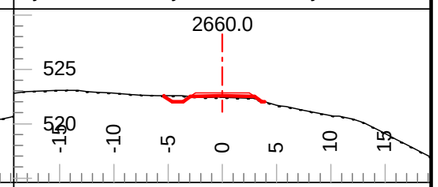

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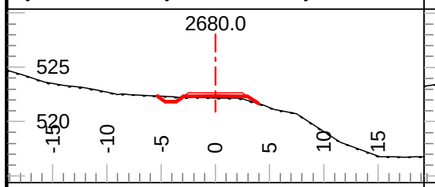

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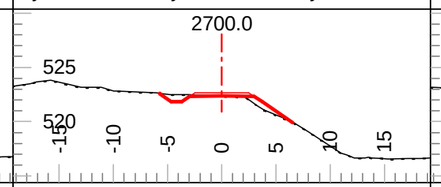

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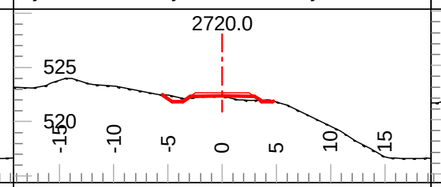

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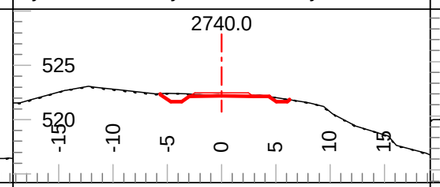

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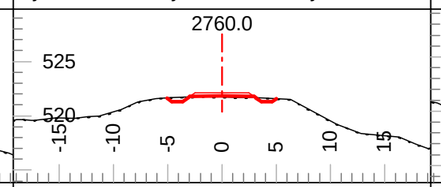

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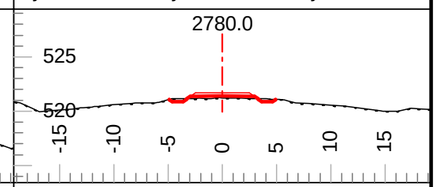

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Coffee Gold Mine

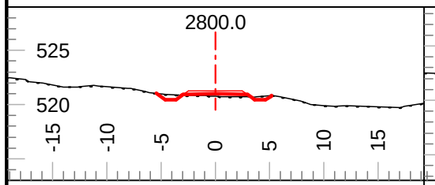
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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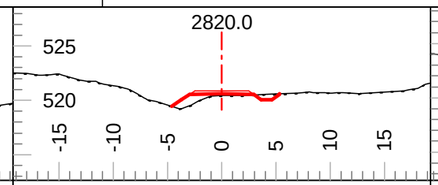

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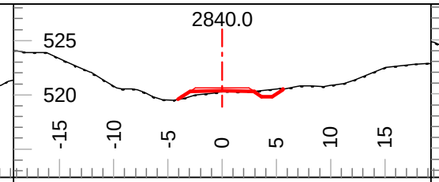

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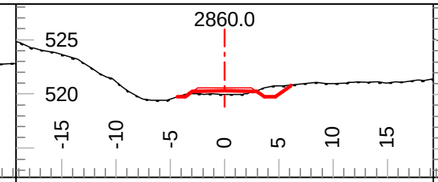

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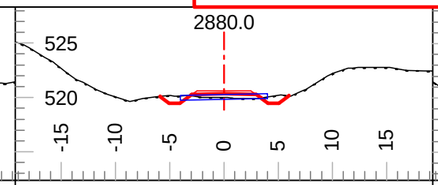

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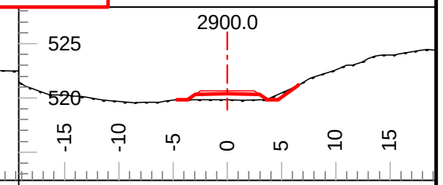

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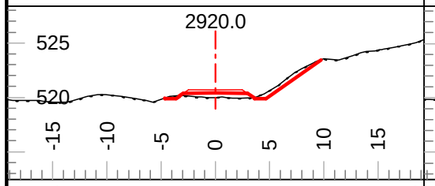

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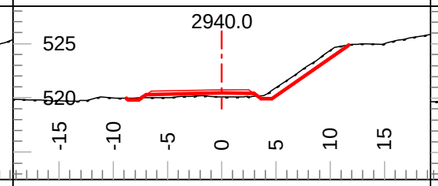

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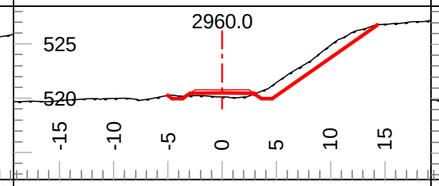

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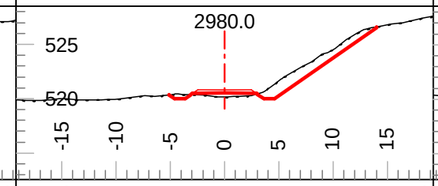

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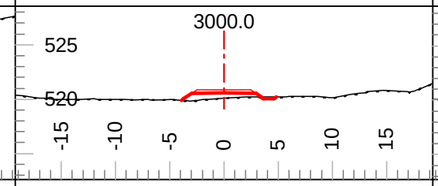

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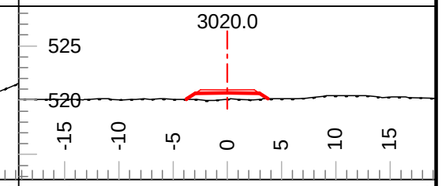

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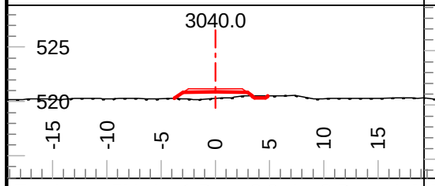

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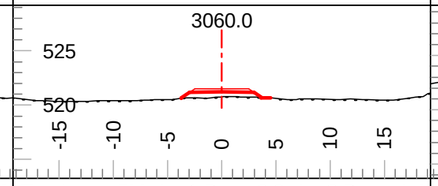

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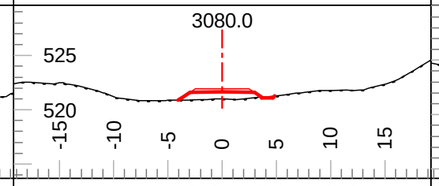

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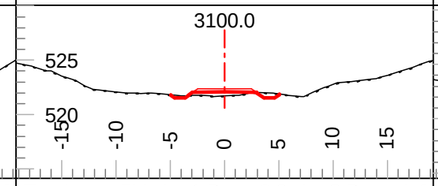

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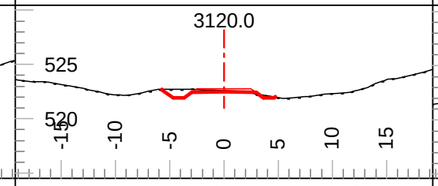

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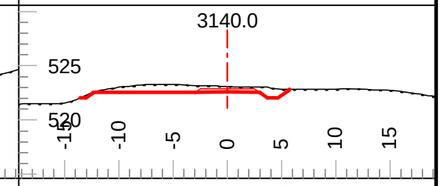

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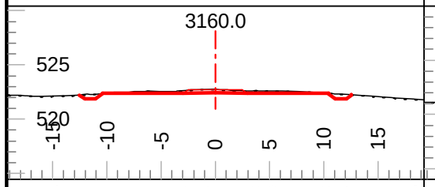

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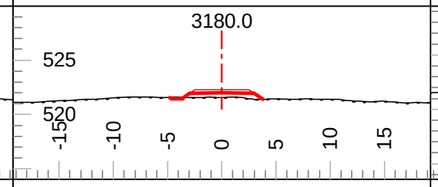

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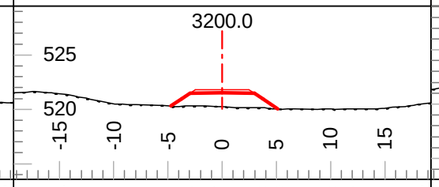

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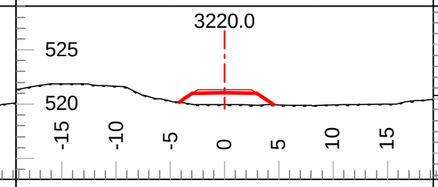

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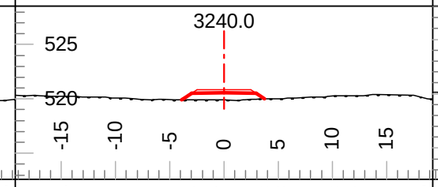

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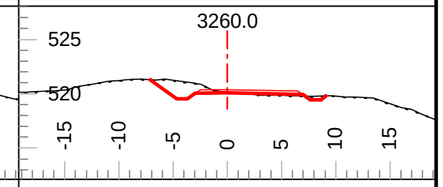

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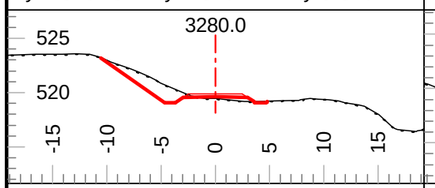

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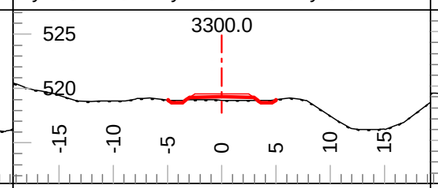

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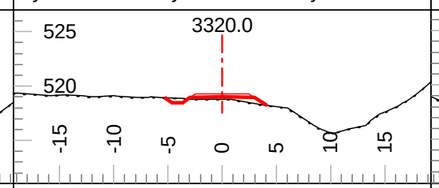

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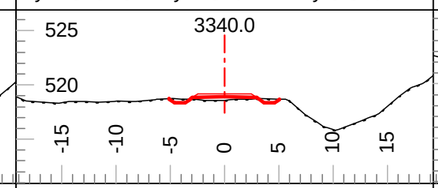

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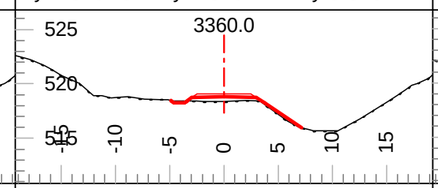

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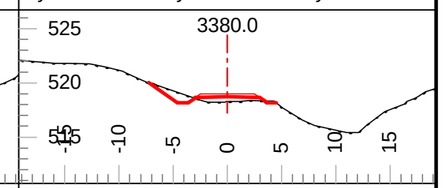

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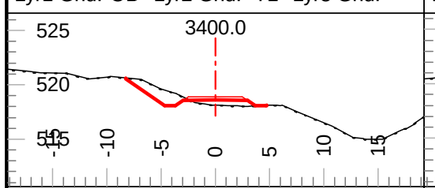

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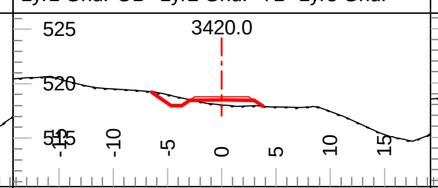

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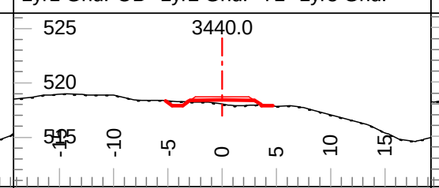

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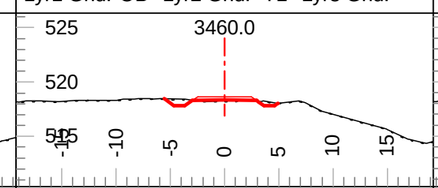

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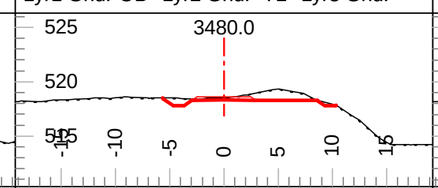

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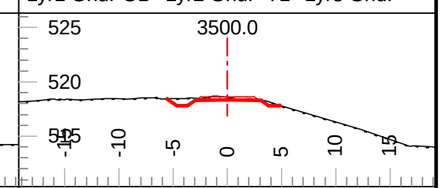

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Coffee Gold Mine

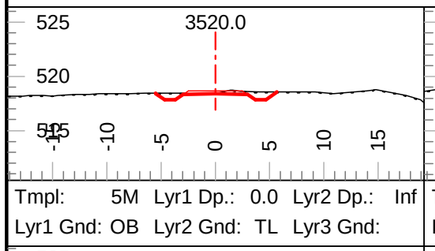
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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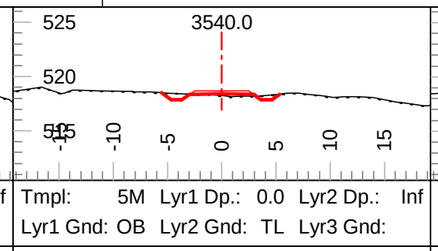

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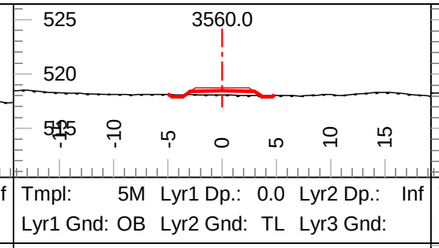

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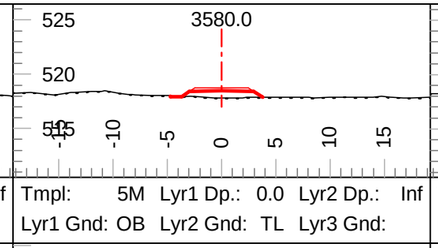

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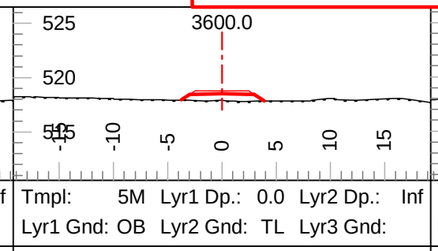

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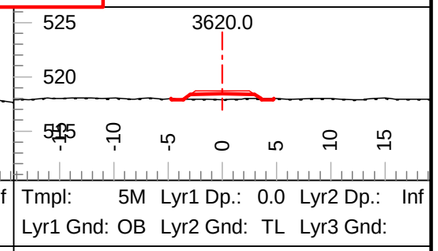

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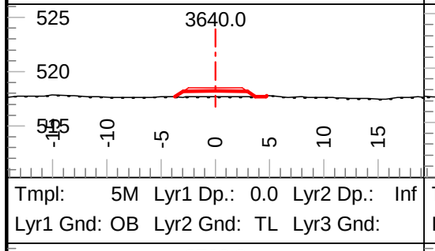

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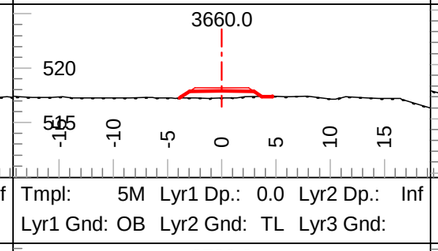

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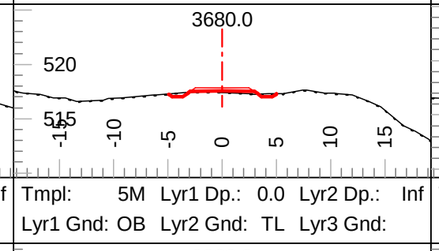

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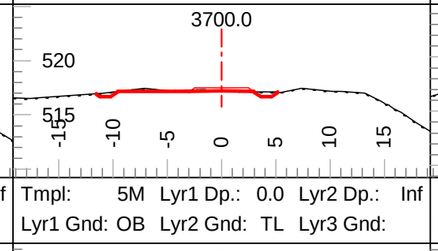

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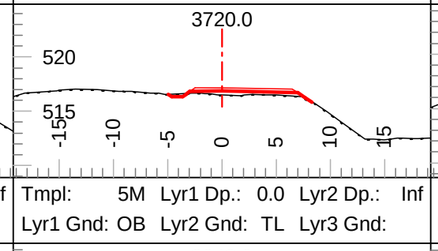

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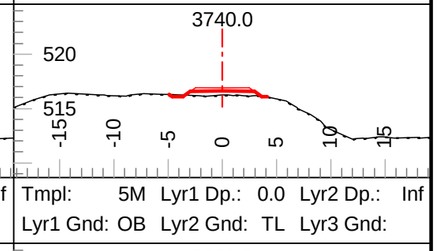

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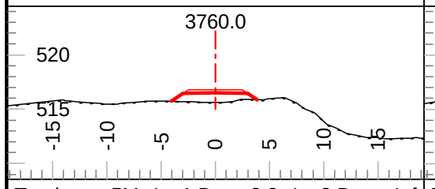

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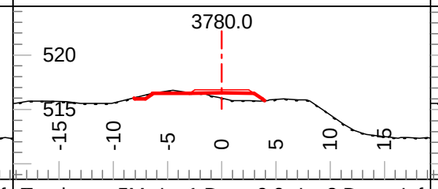

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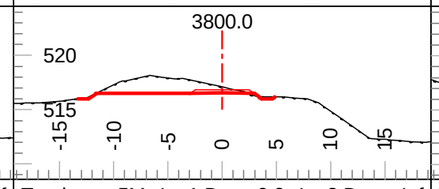

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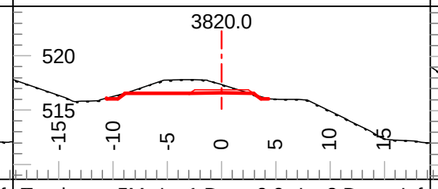

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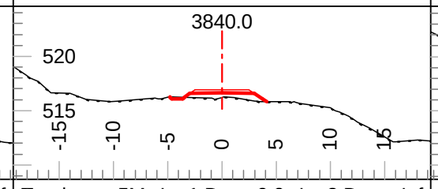

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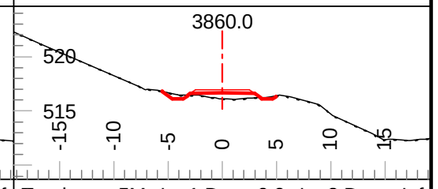

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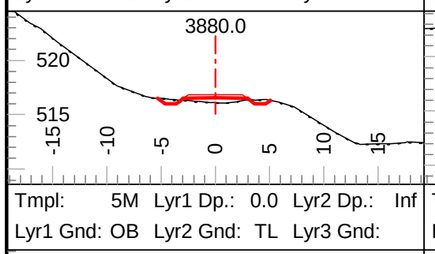

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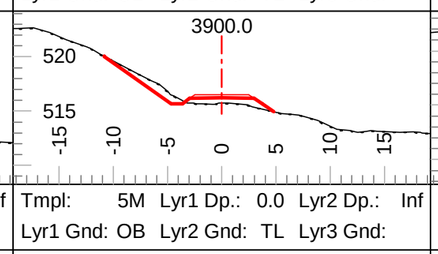

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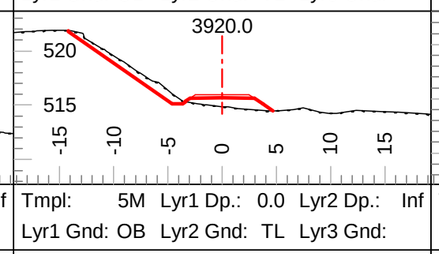

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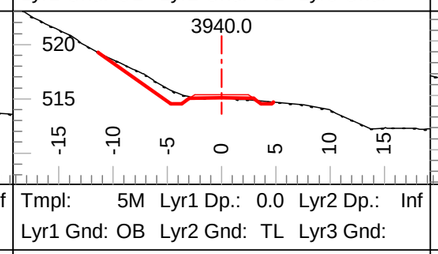

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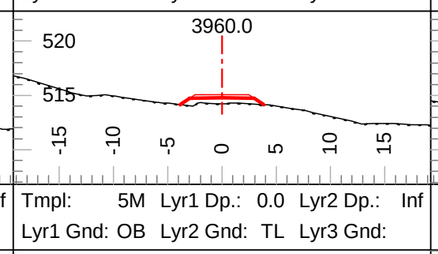

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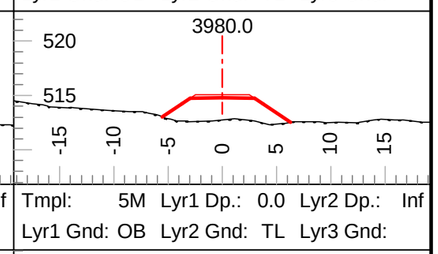

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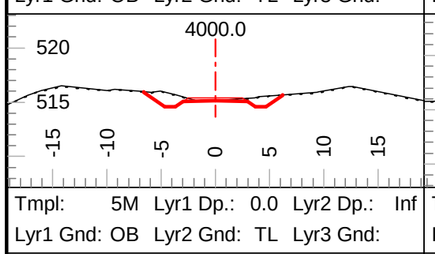

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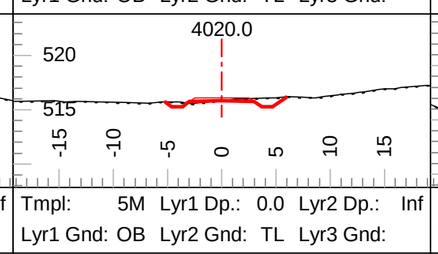

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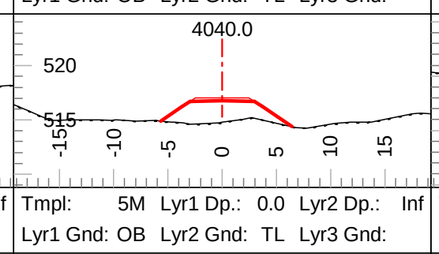

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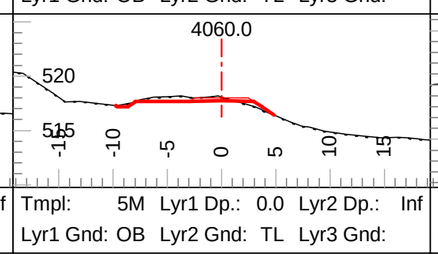

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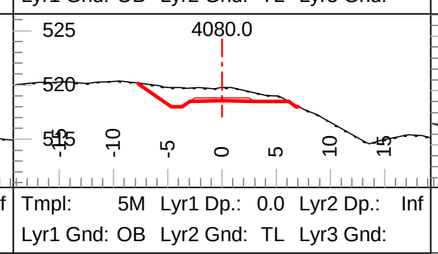

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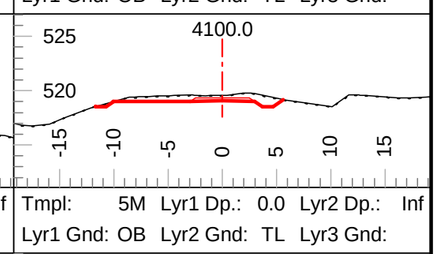

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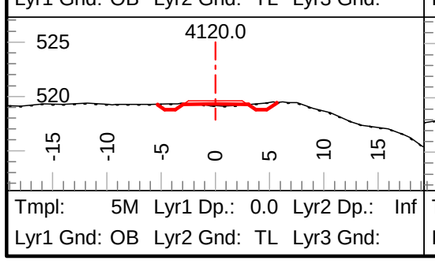

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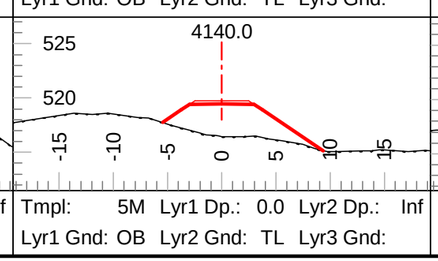

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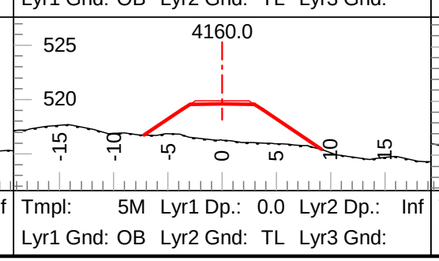

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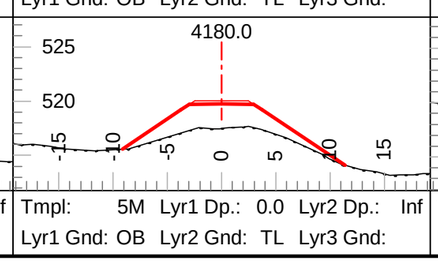

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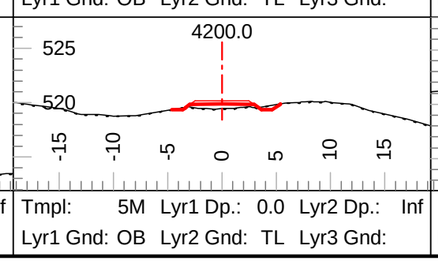

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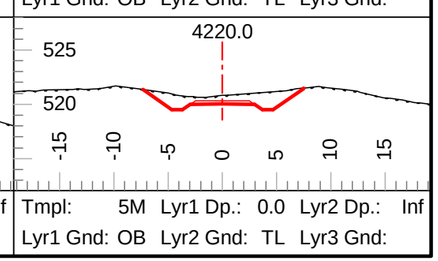

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Coffee Gold Mine

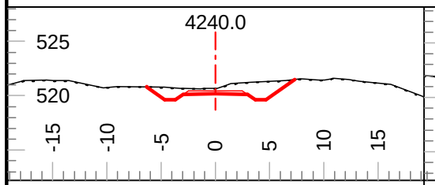
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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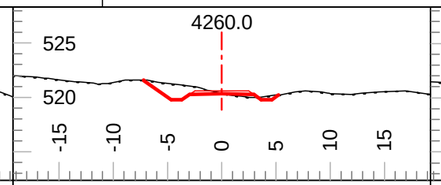

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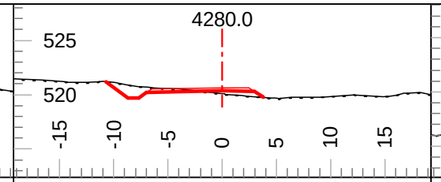

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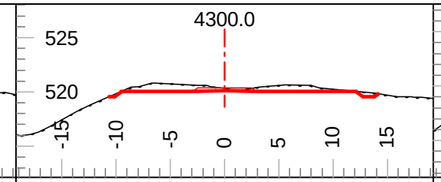

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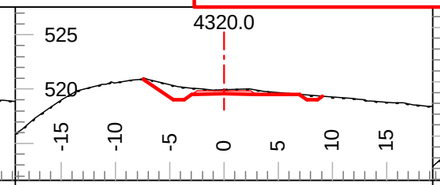

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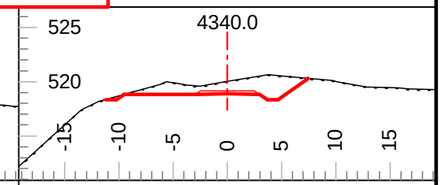

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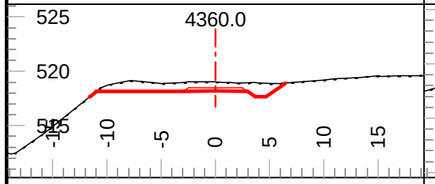

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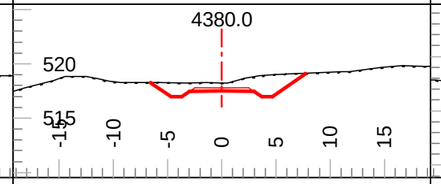

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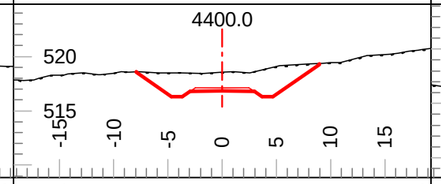

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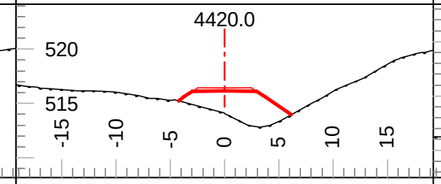

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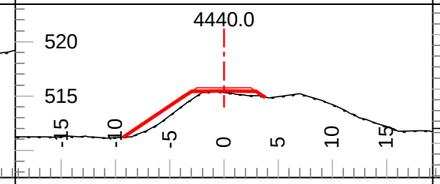

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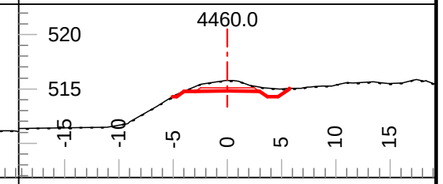

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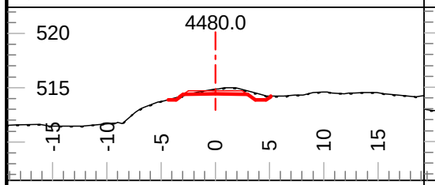

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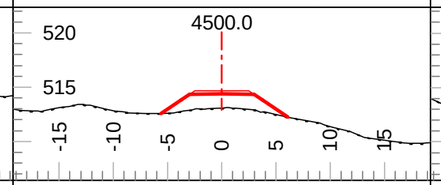

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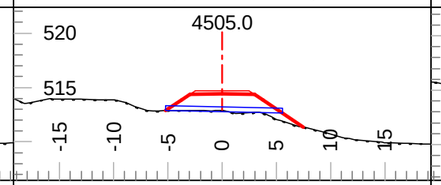

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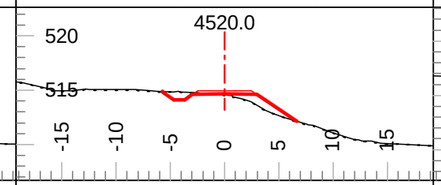

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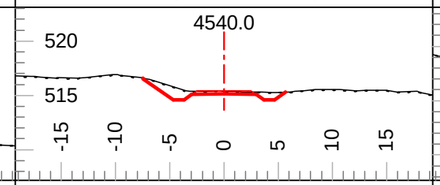

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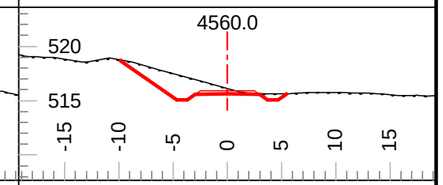

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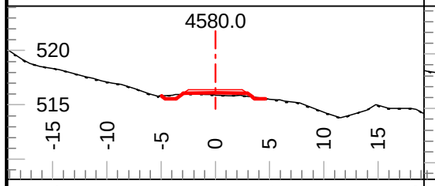

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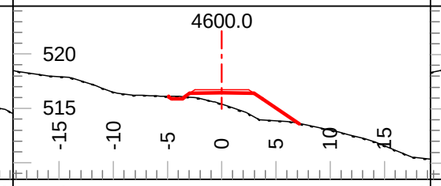

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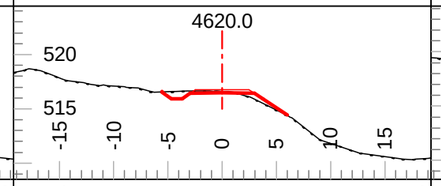

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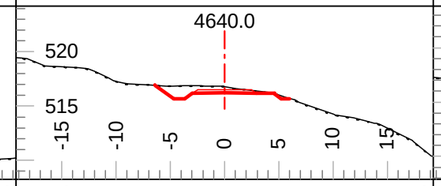

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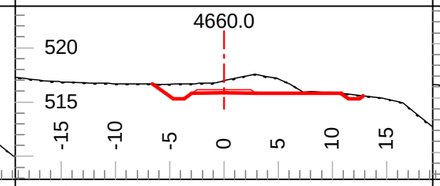

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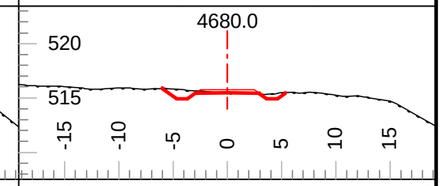

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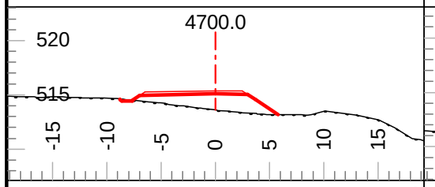

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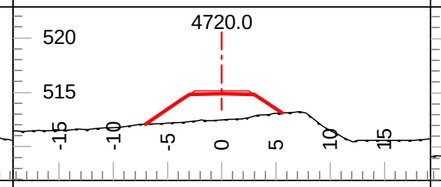

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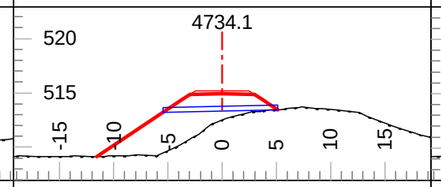

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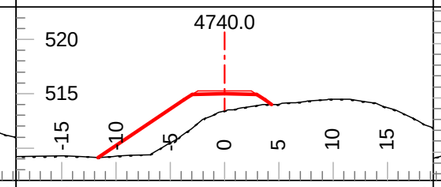

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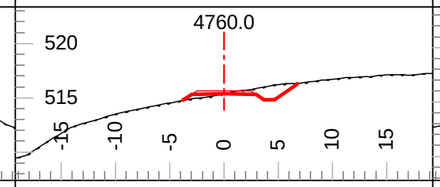

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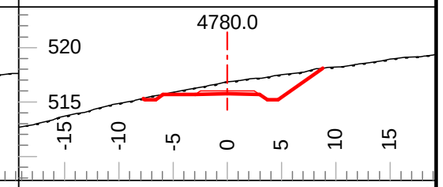

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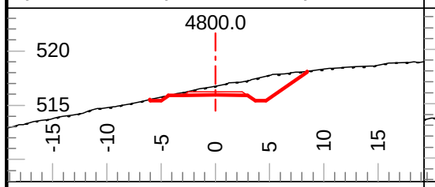

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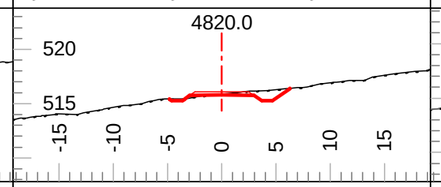

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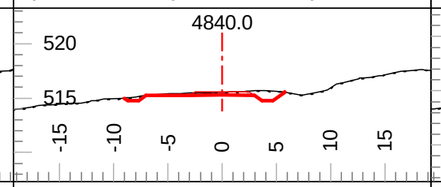

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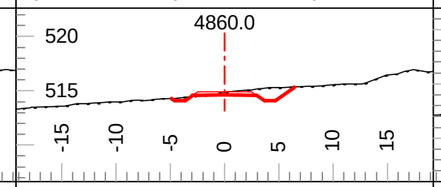

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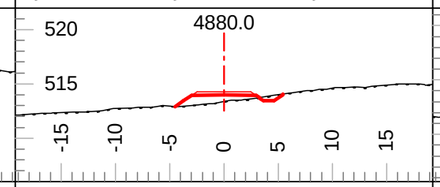

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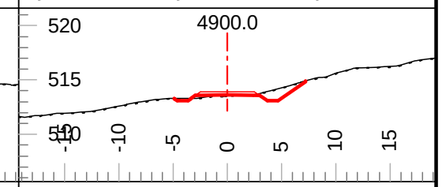

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Coffee Gold Mine

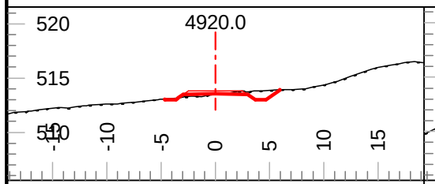
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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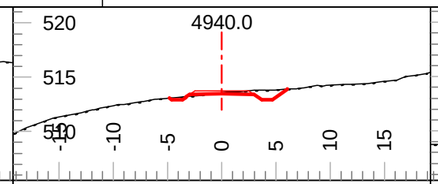

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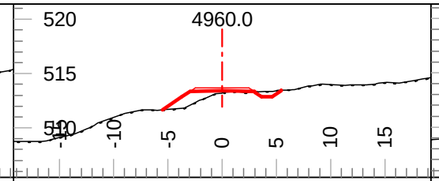

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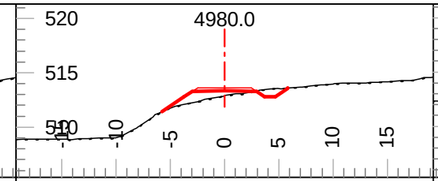

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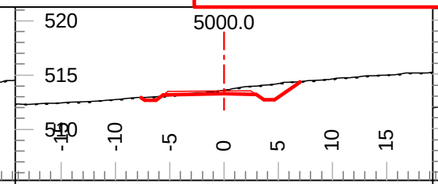

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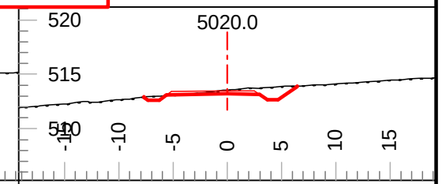

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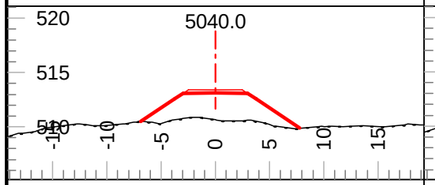

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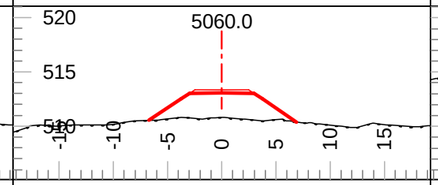

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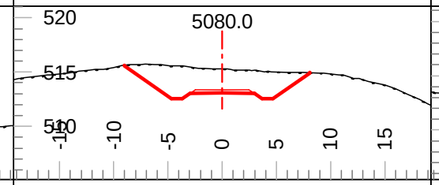

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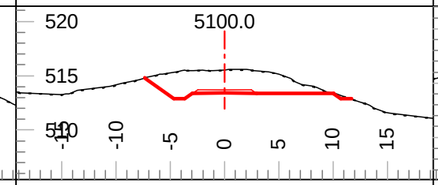

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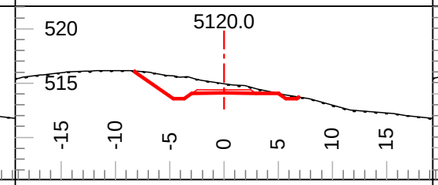

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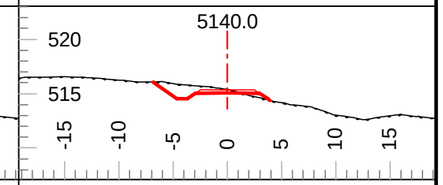

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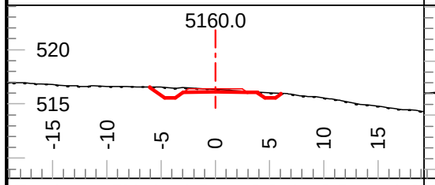

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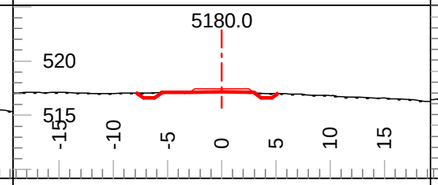

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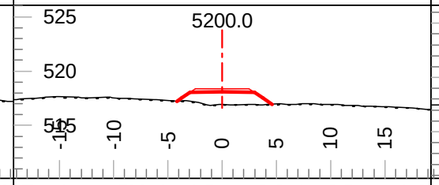

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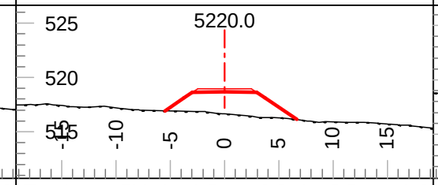

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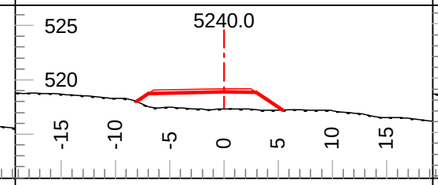

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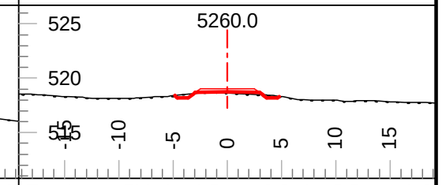

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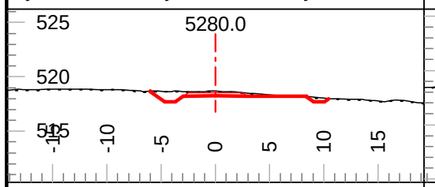

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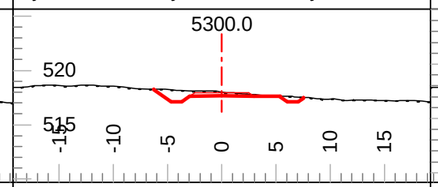

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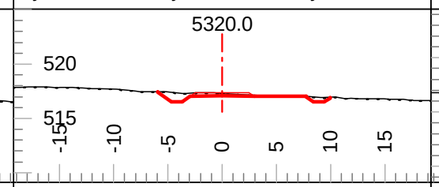

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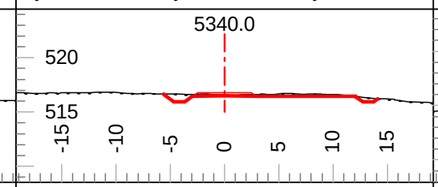

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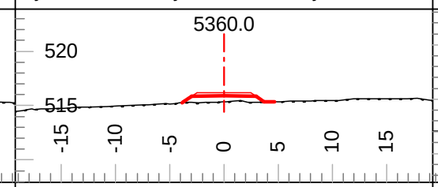

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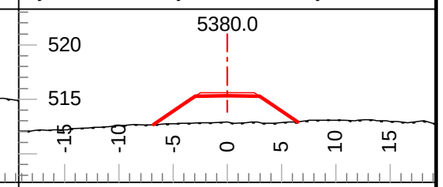

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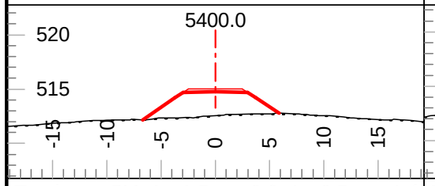

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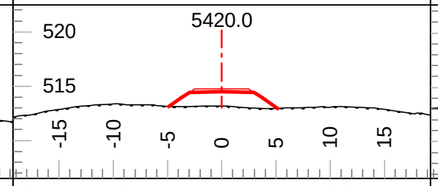

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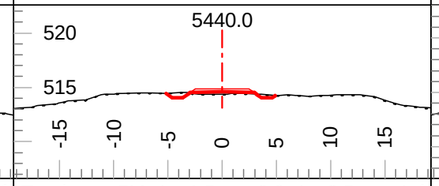

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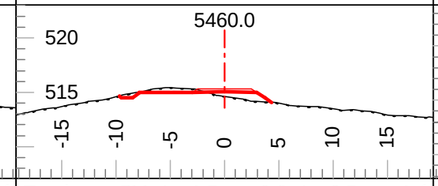

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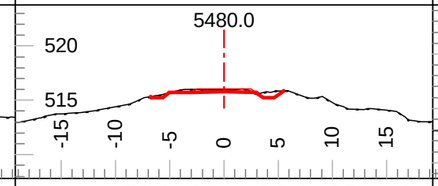

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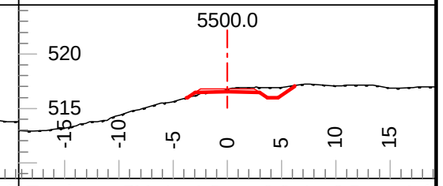

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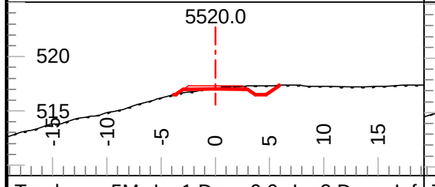

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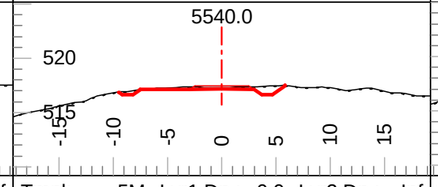

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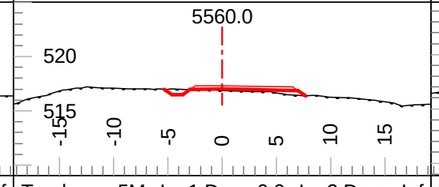

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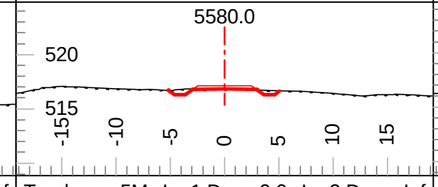

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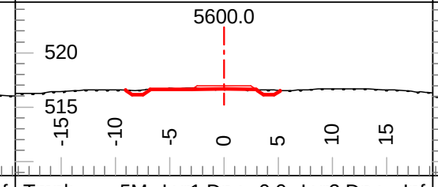

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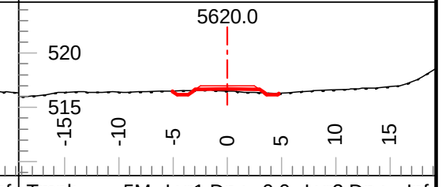

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Coffee Gold Mine

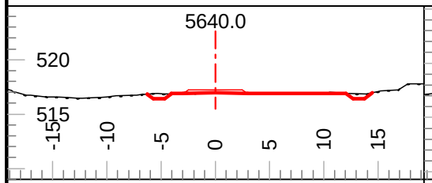
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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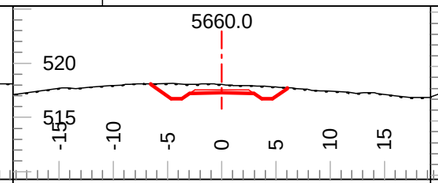

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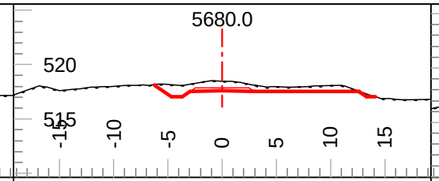

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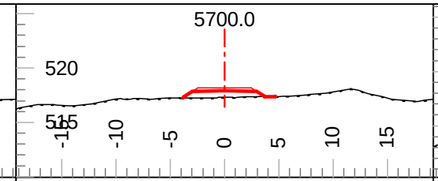

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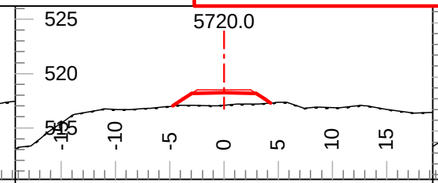

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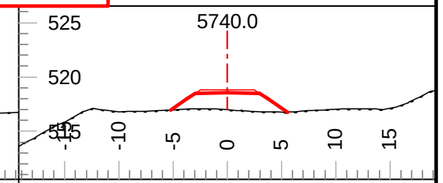

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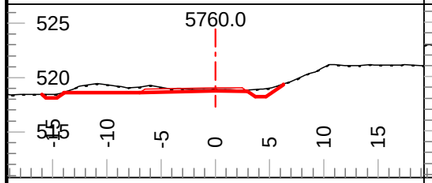

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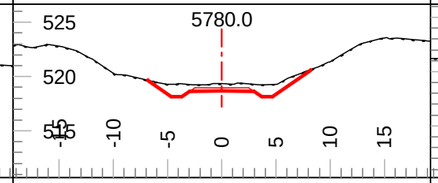

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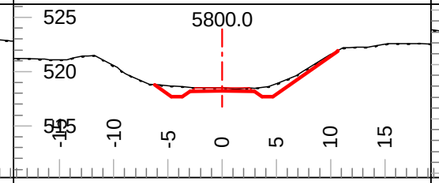

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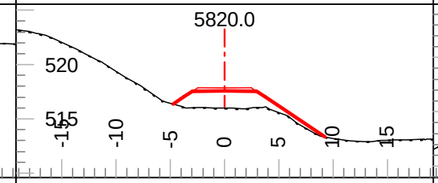

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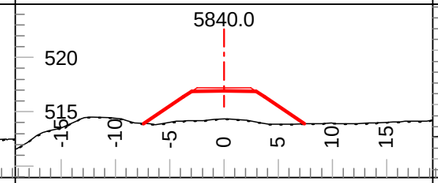

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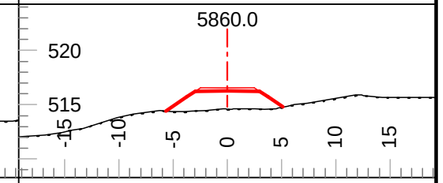

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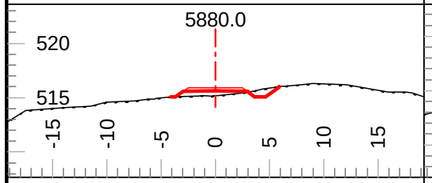

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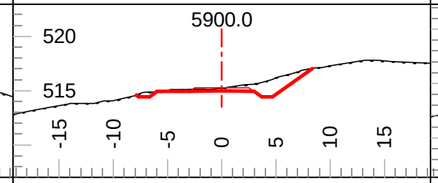

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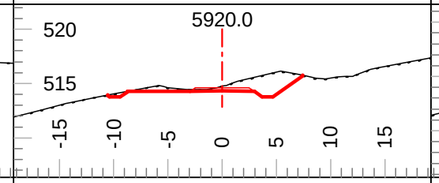

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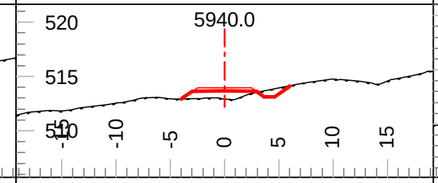

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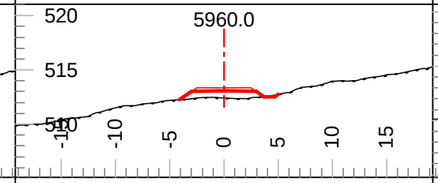

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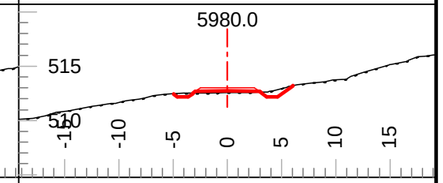

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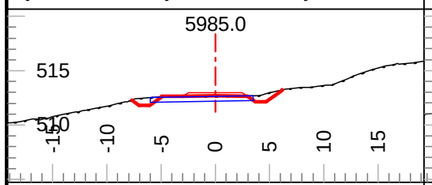

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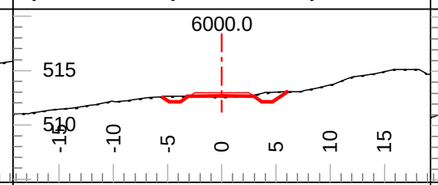

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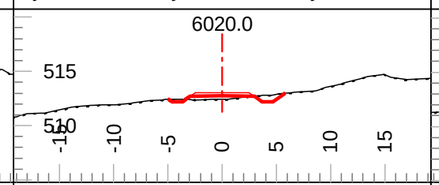

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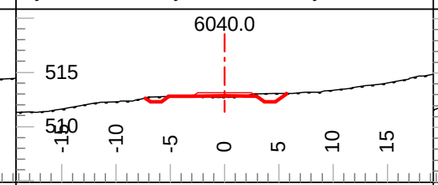

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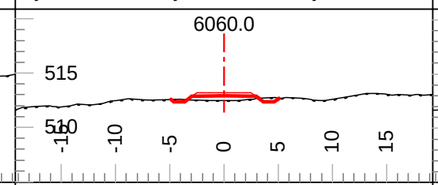

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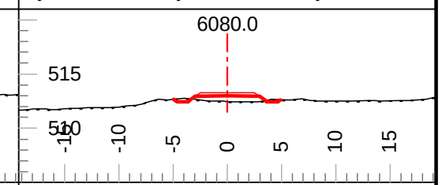

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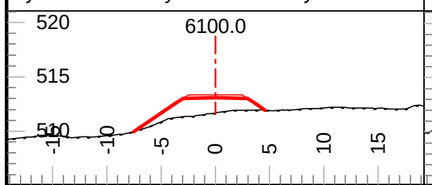

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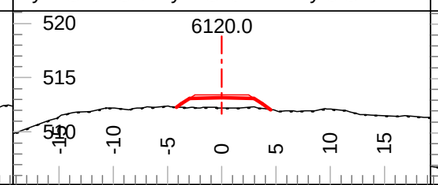

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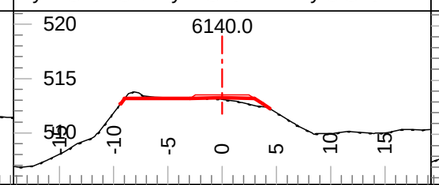

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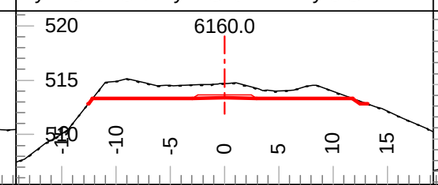

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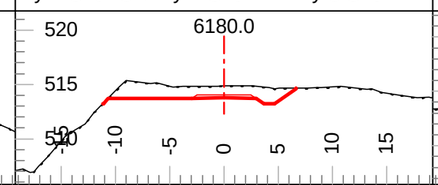

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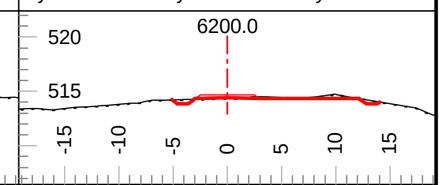

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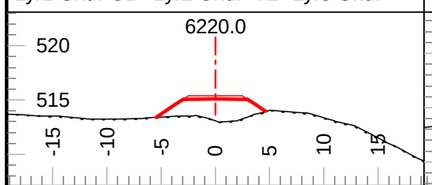

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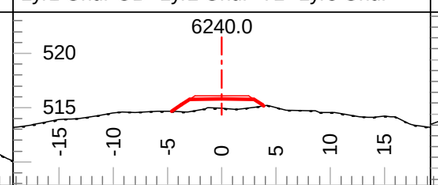

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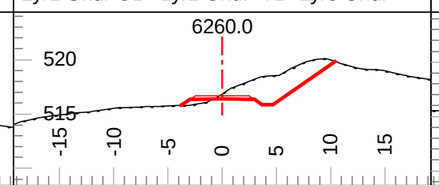

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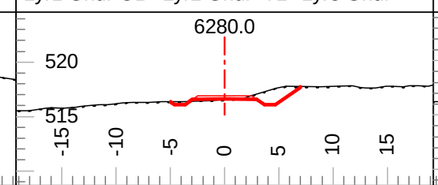

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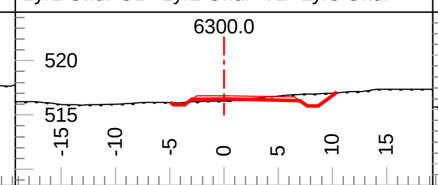

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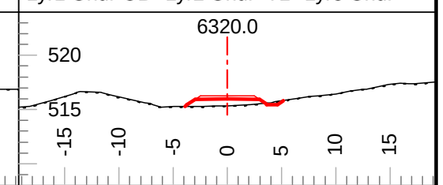

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Coffee Gold Mine

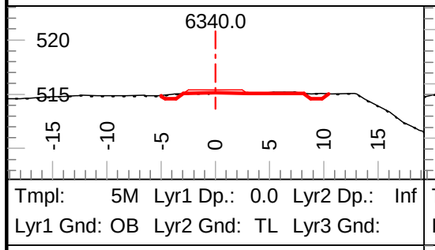
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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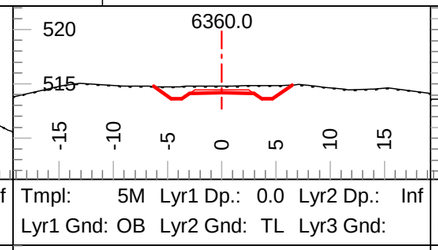

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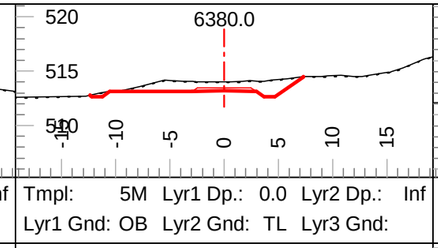

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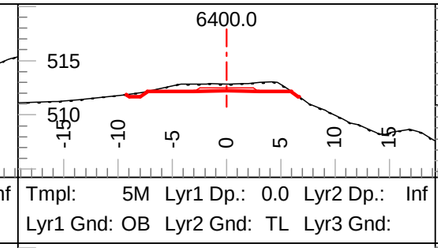

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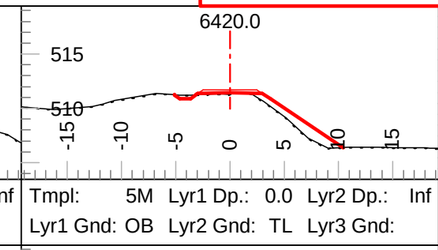

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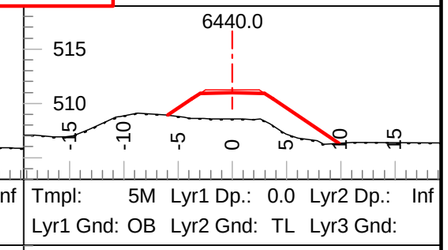

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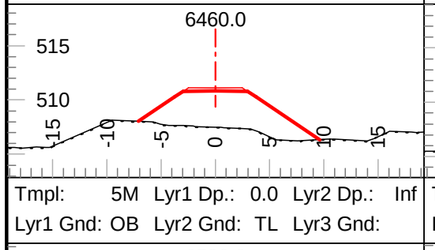

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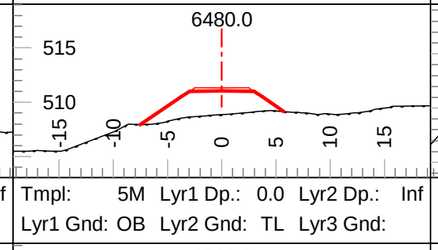

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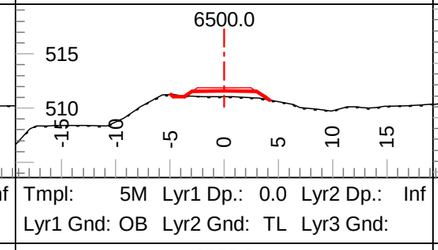

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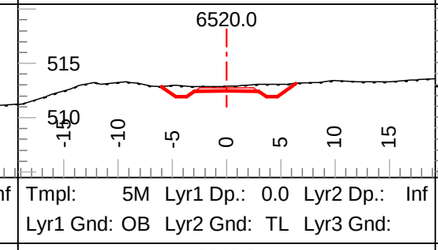

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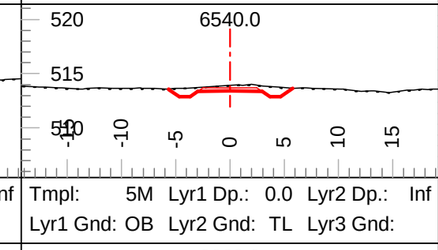

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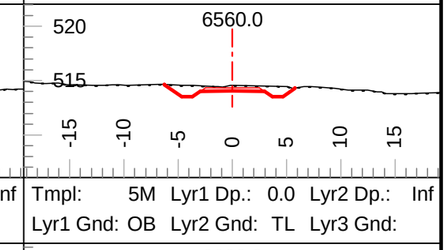

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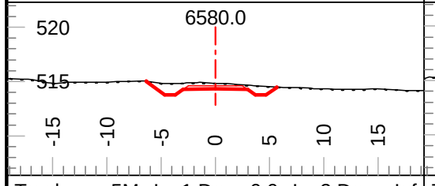

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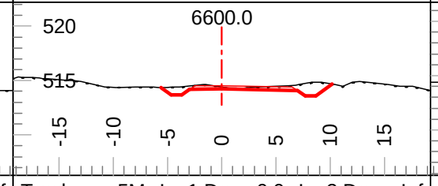

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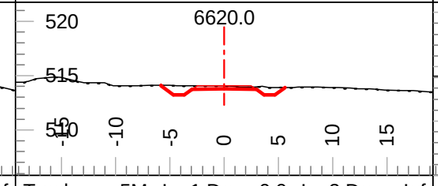

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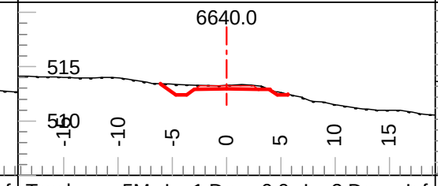

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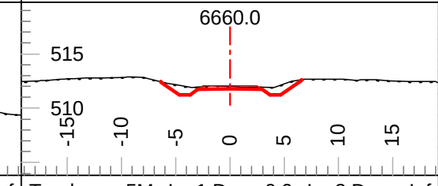

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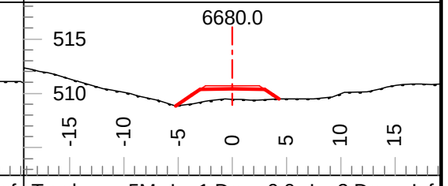

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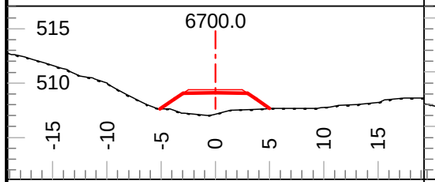

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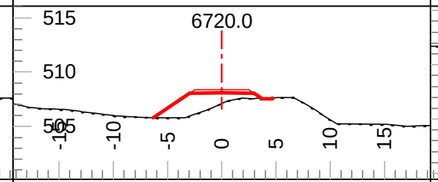

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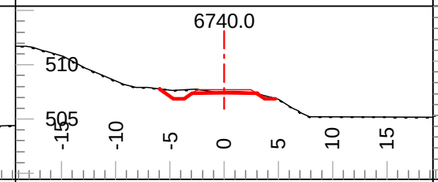

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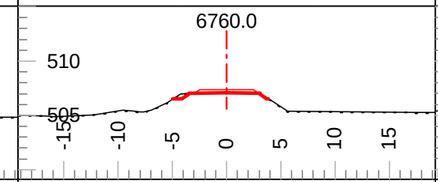

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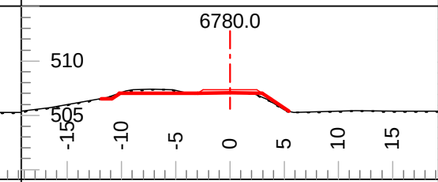

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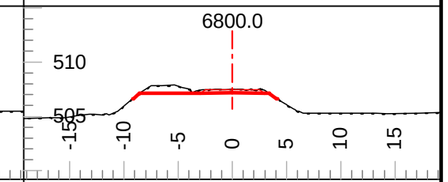

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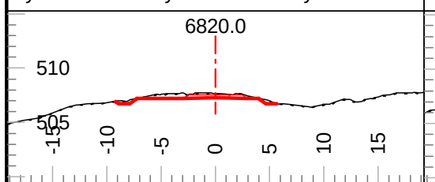

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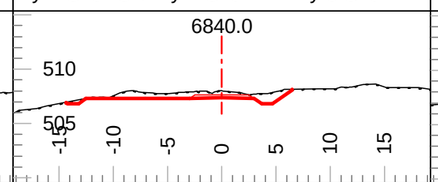

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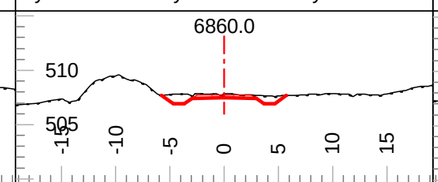

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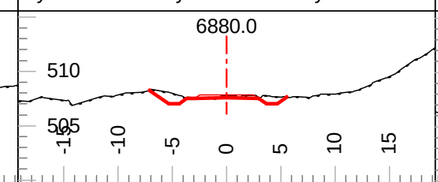

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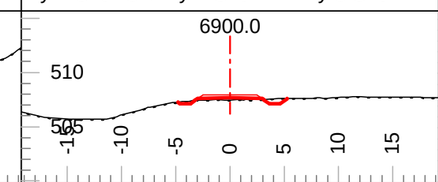

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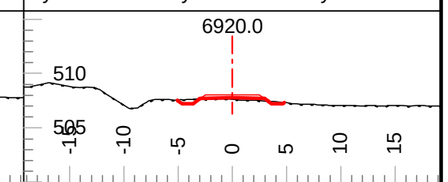

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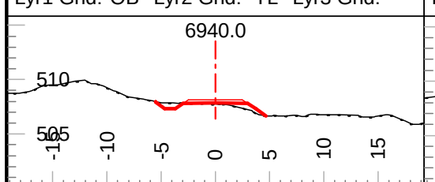

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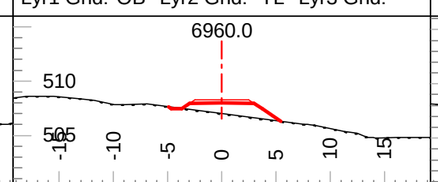

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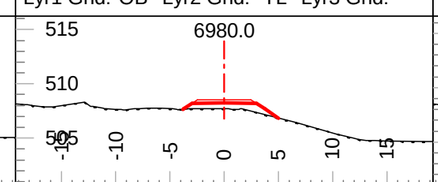

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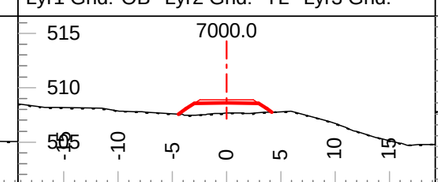

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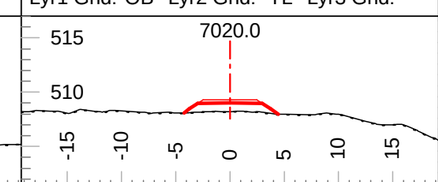

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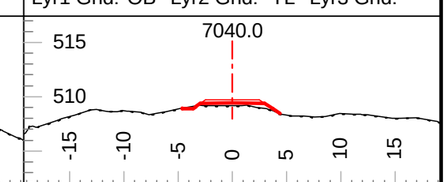


Tmpl: 5M Lyr1 Dp.: 0.0 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:

Coffee Gold Mine

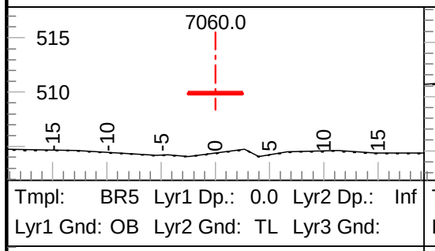
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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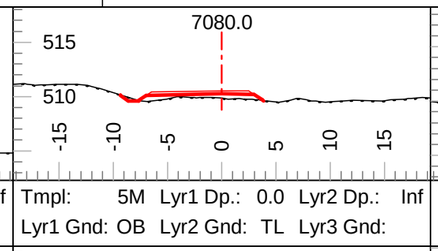

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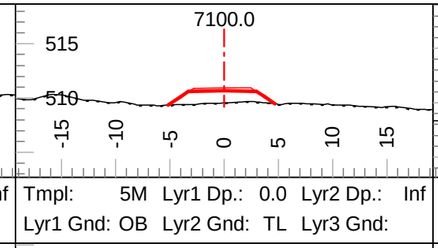

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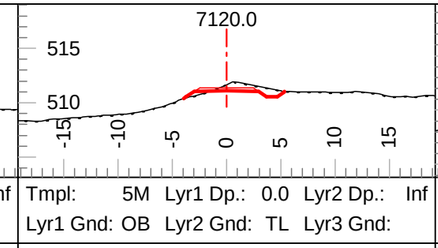

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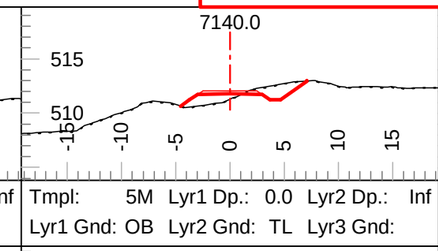

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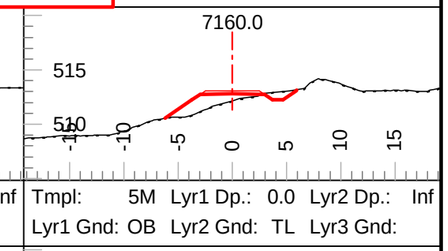

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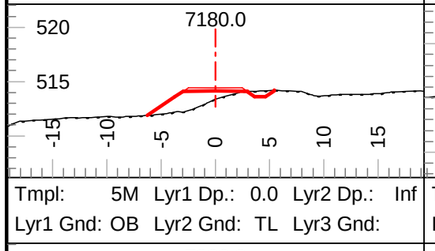

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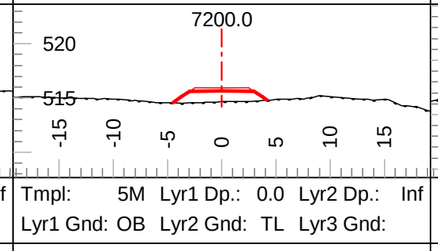
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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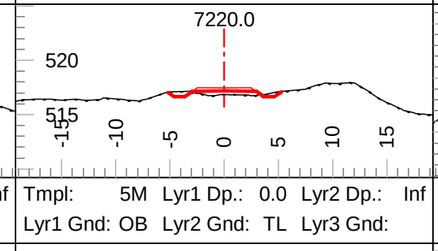

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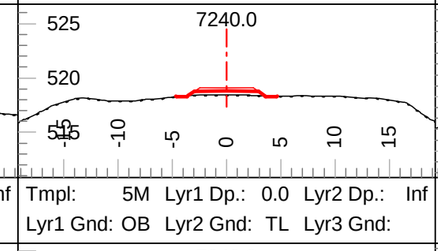

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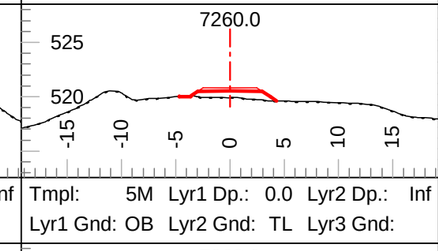

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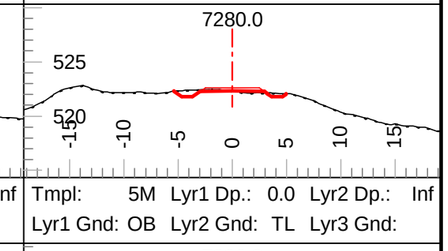

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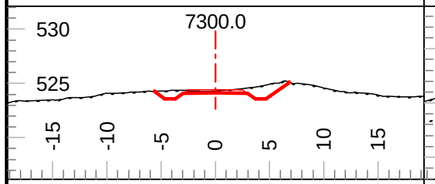

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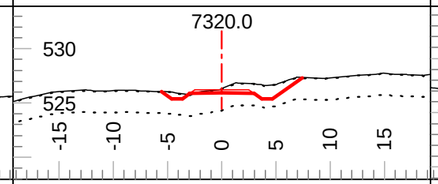

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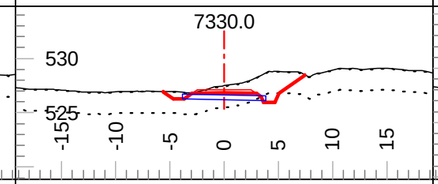

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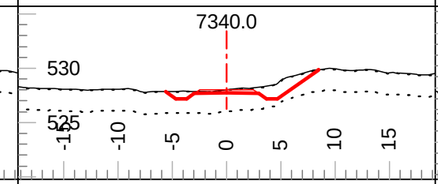

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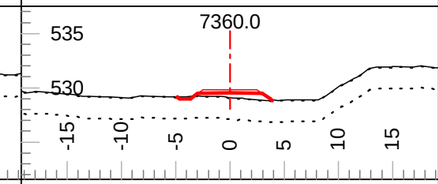

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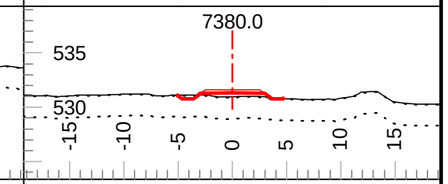

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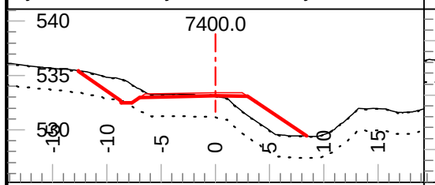

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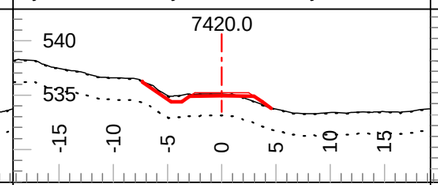

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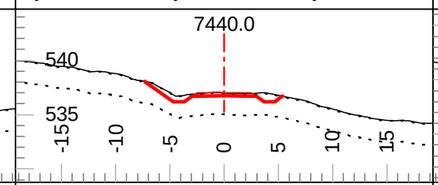

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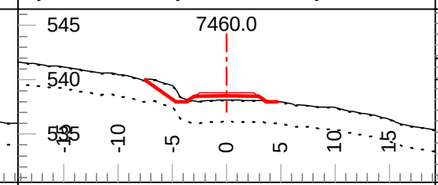

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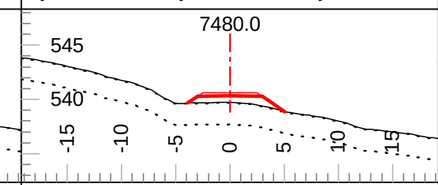

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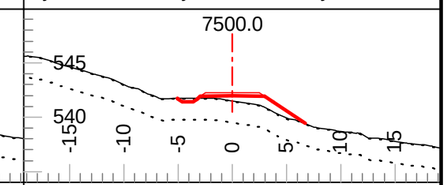

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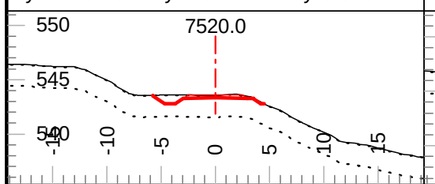

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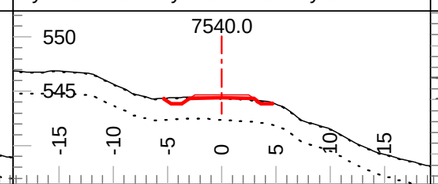

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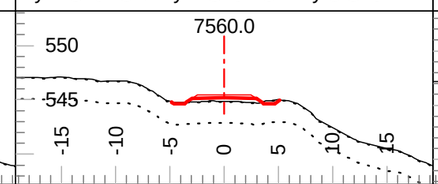

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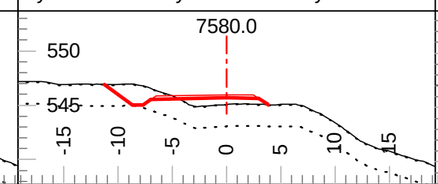

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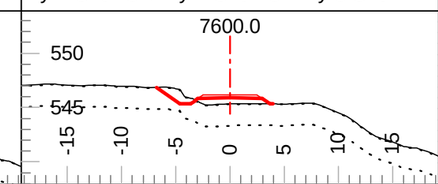

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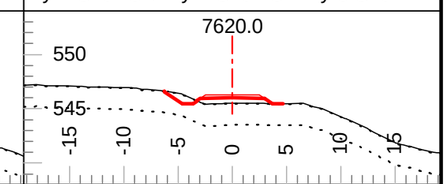

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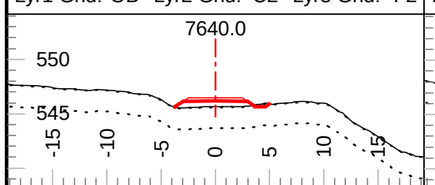

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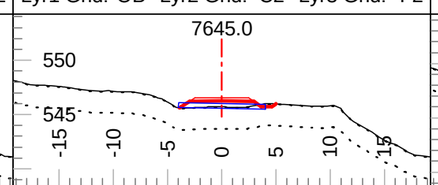

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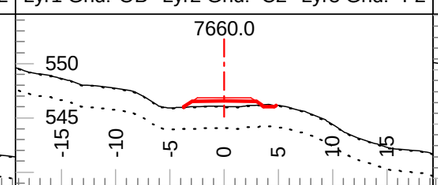

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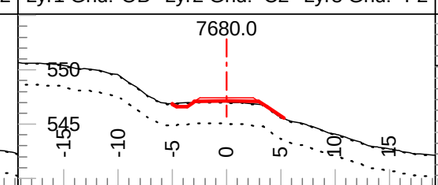

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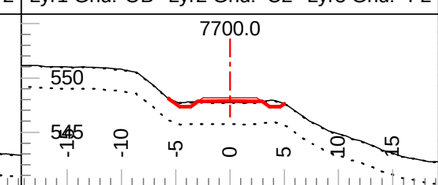

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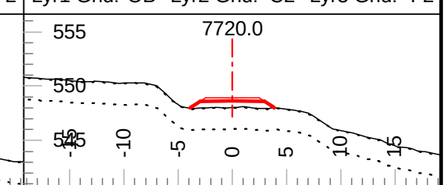

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

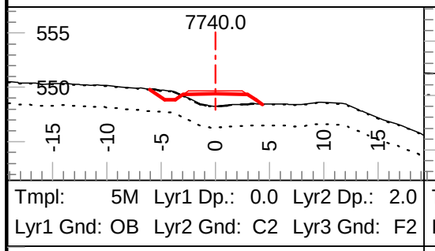
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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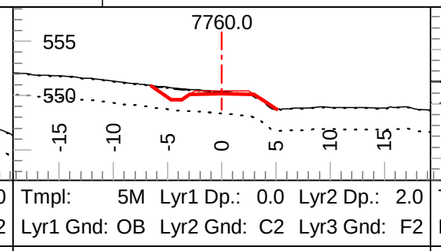
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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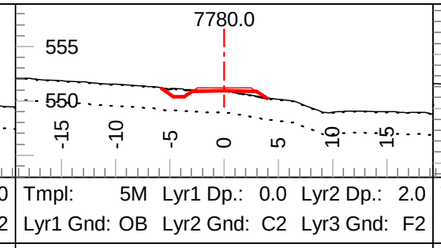

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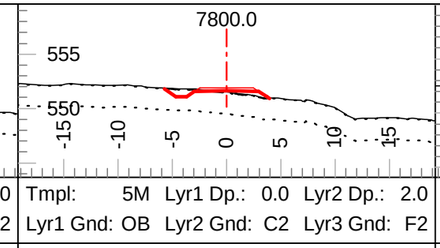

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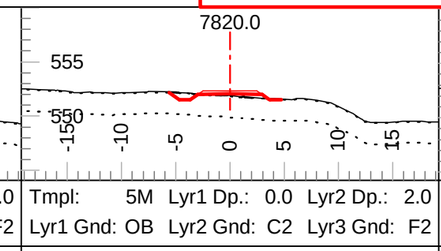

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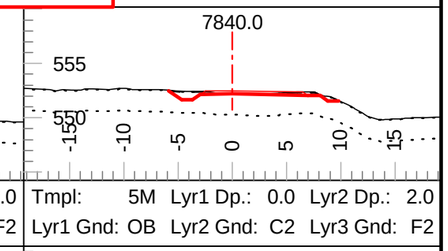

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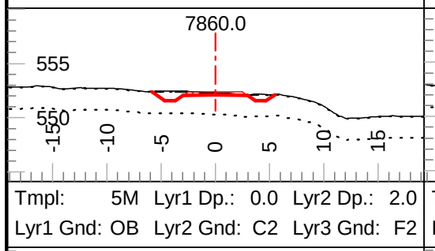

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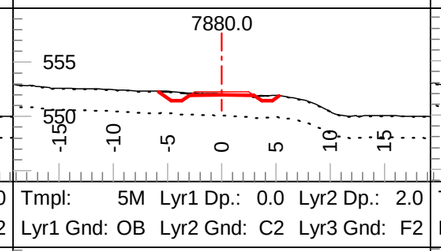

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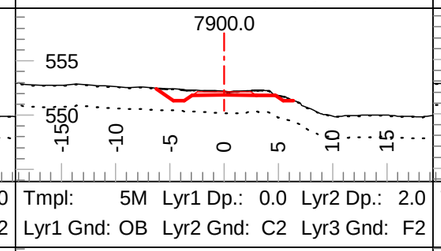

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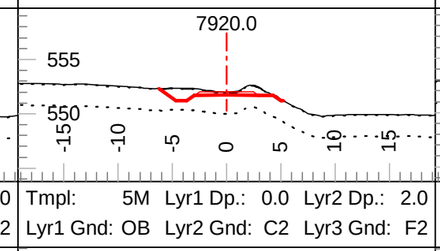

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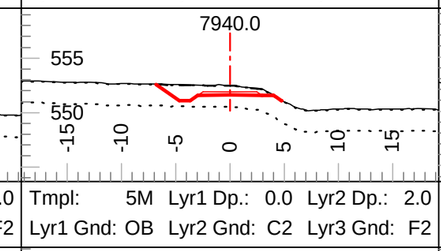

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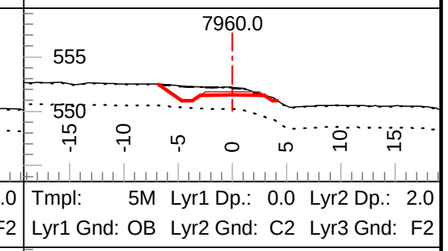

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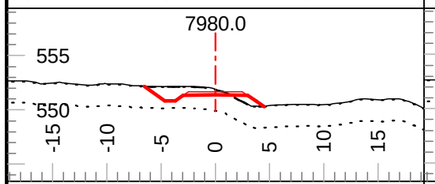

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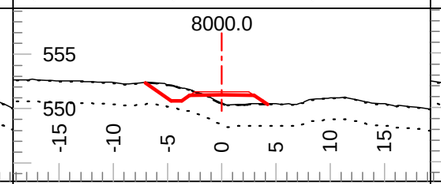
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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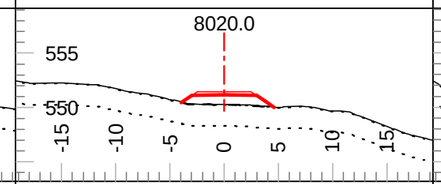

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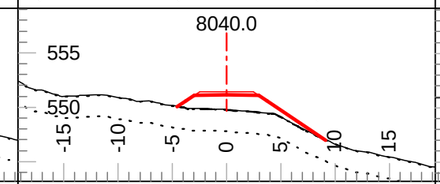

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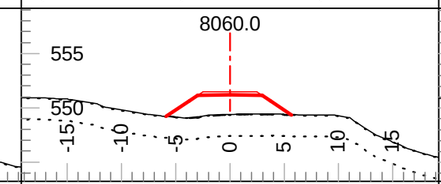

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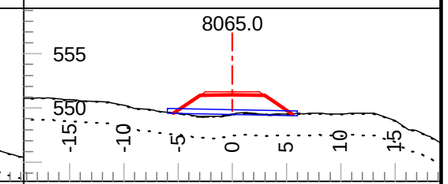

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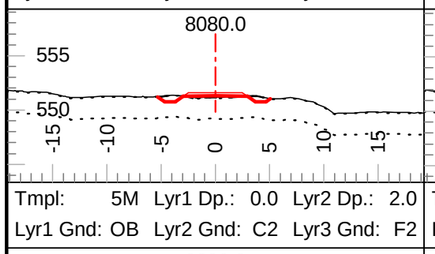

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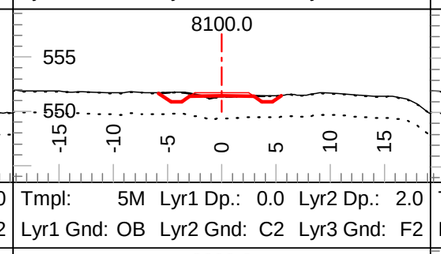

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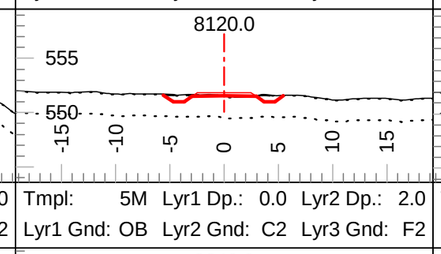

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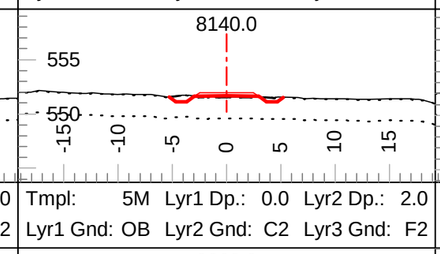

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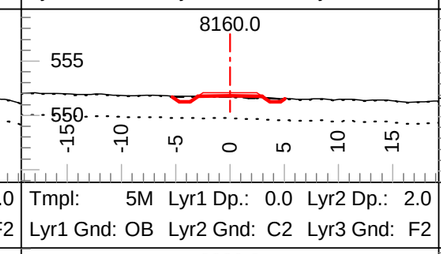

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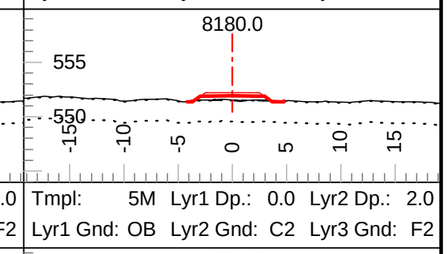

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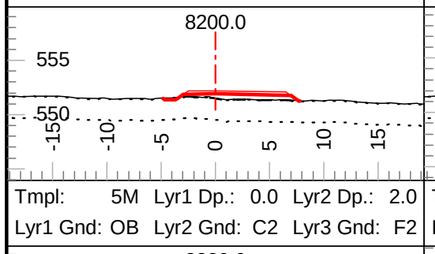

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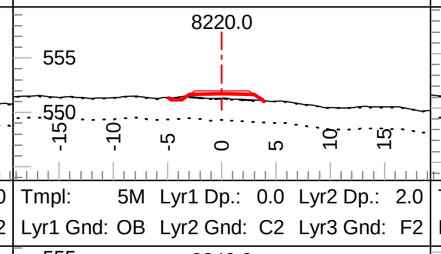

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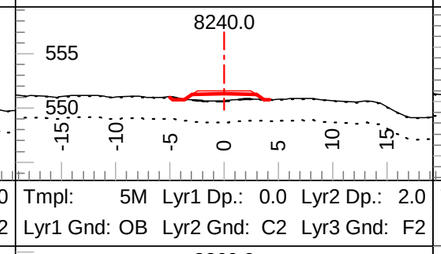

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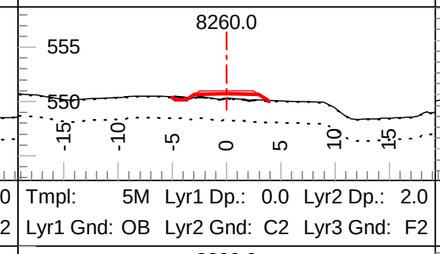

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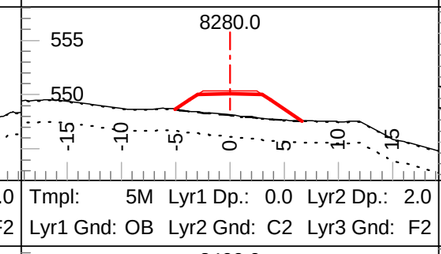

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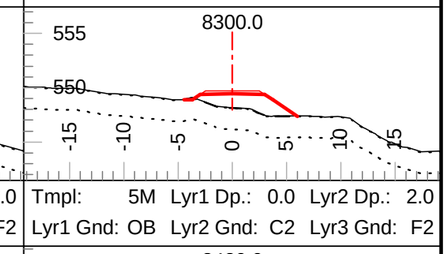

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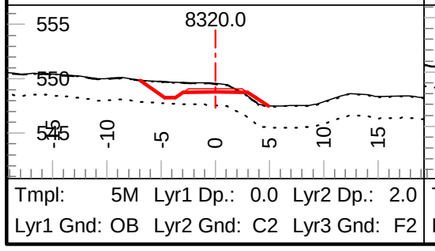

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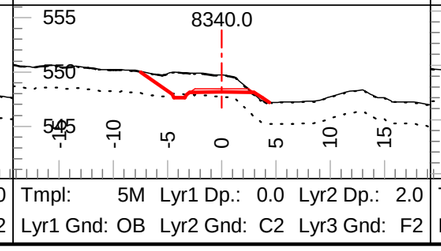

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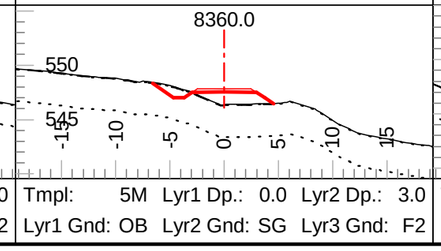

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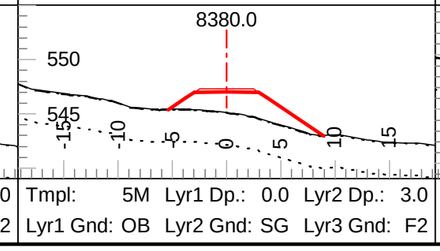

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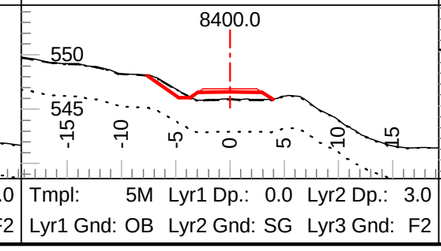

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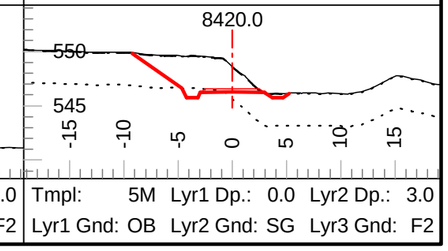

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Coffee Gold Mine

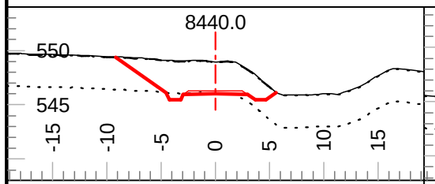
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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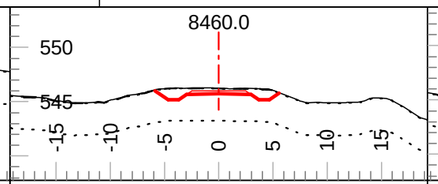

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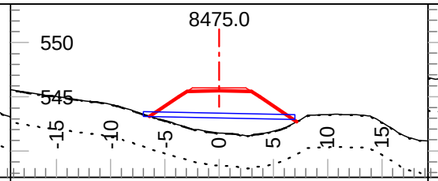

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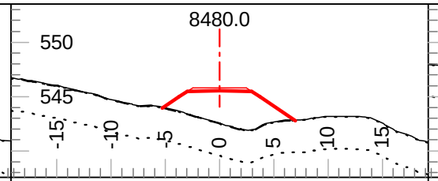

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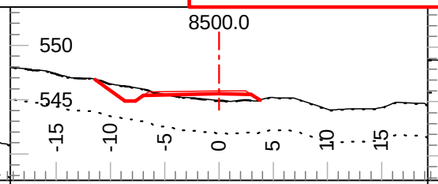

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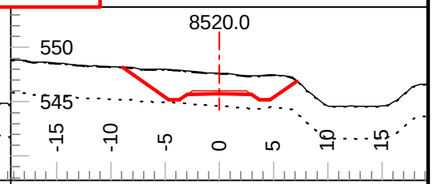

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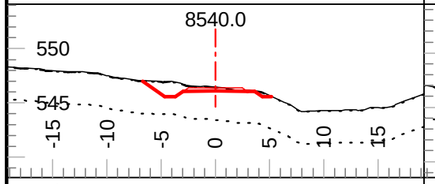

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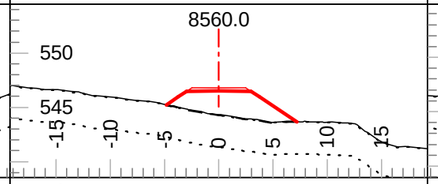

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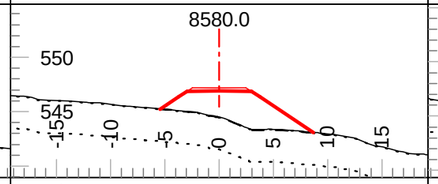

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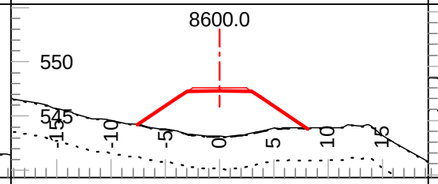

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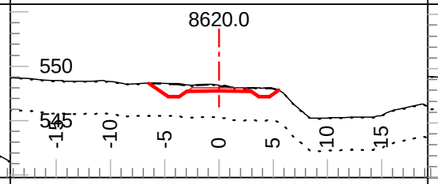

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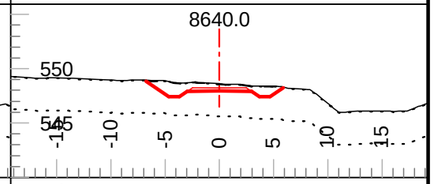

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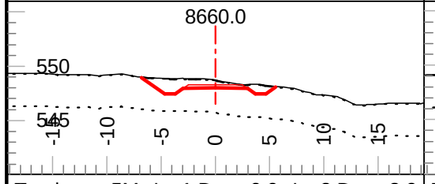

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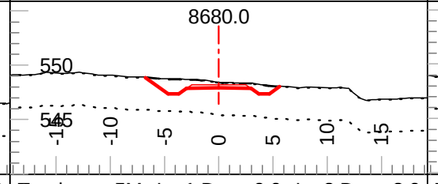

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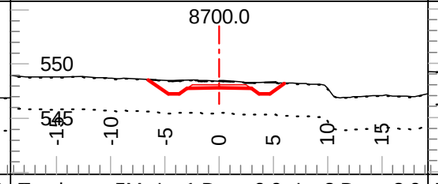

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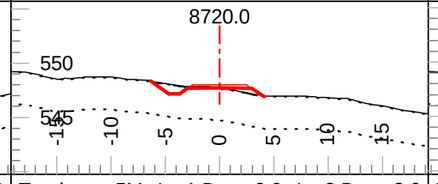

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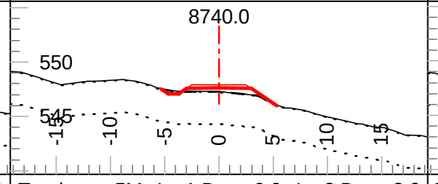

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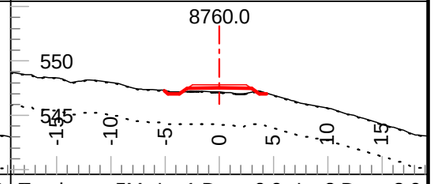

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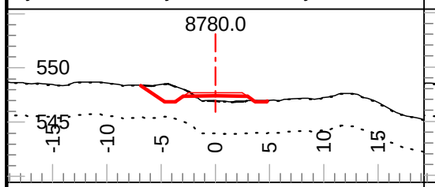

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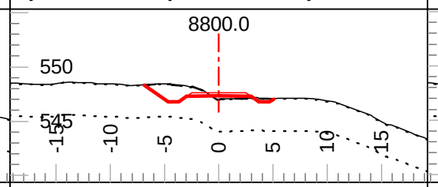

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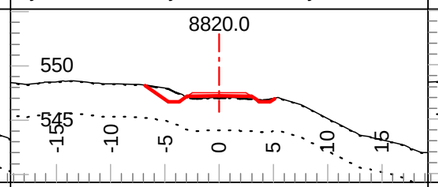

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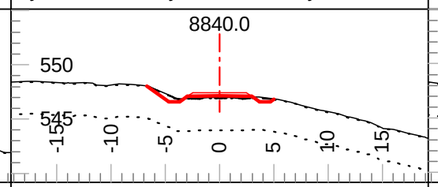

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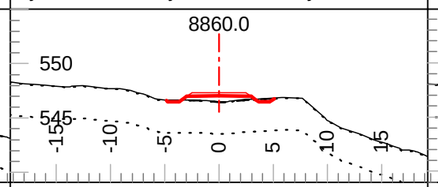

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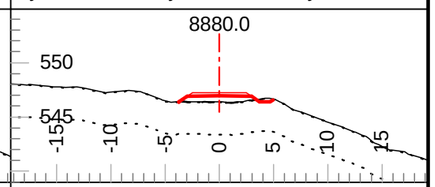

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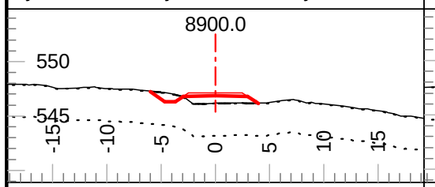

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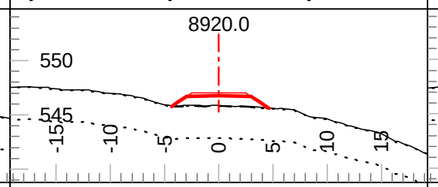

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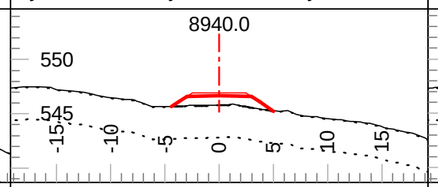

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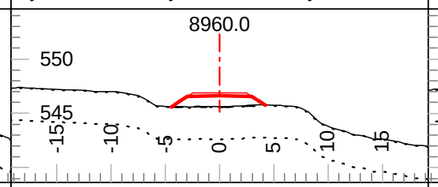

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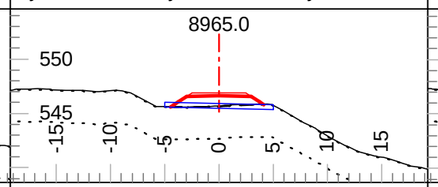

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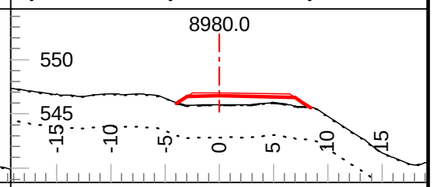

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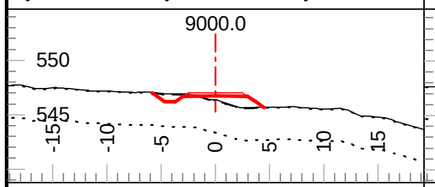

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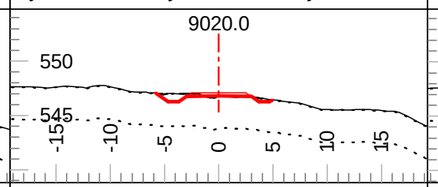

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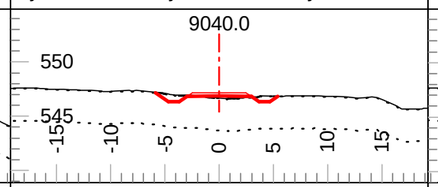

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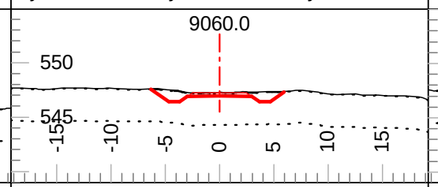

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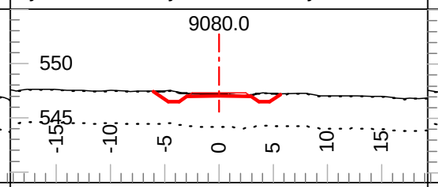

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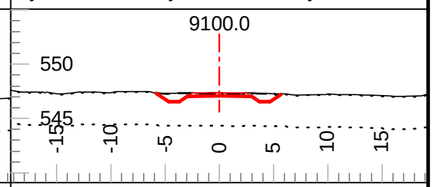

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Coffee Gold Mine

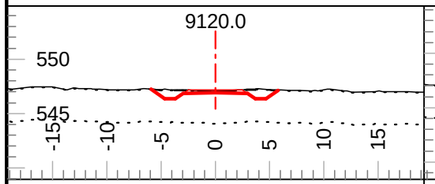
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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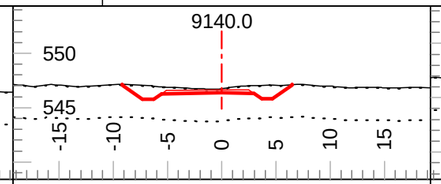

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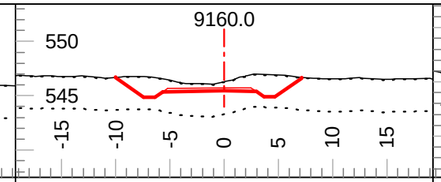

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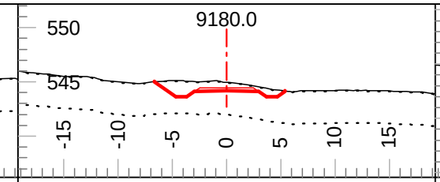

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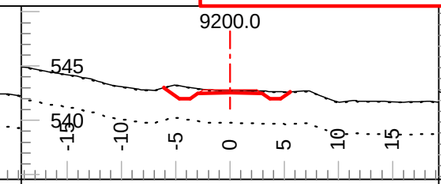

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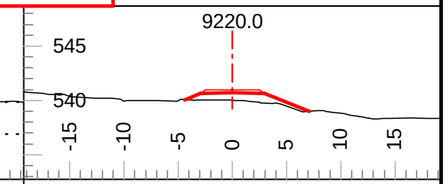

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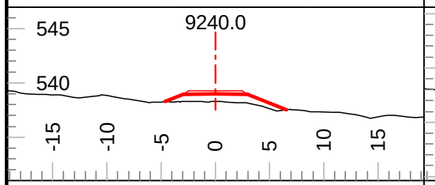

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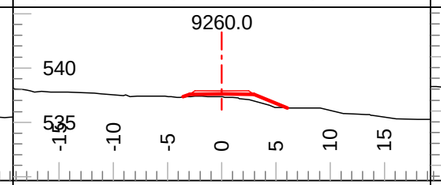

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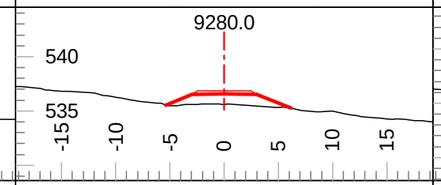

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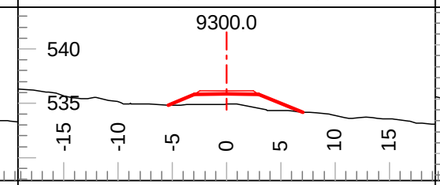

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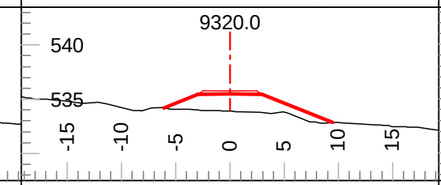

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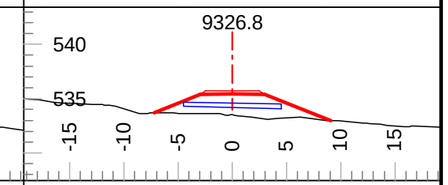

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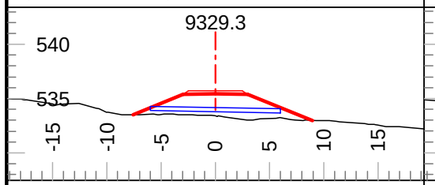

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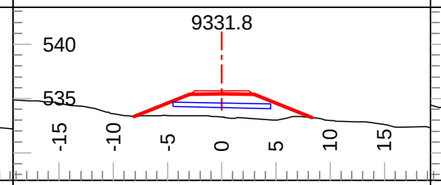

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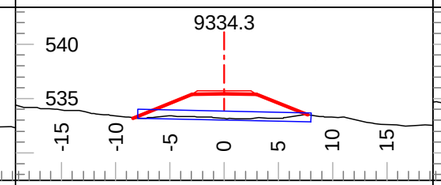

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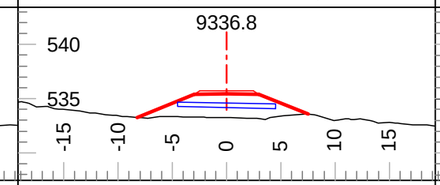

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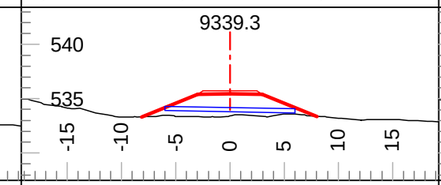

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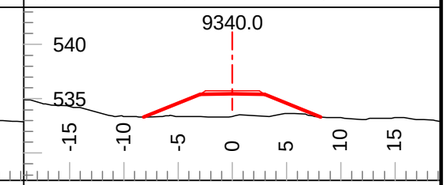

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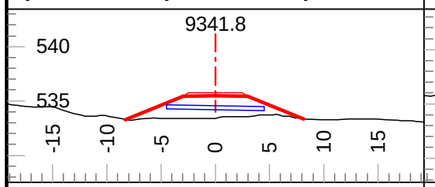

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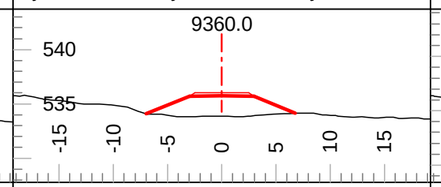

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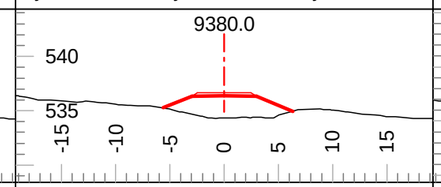

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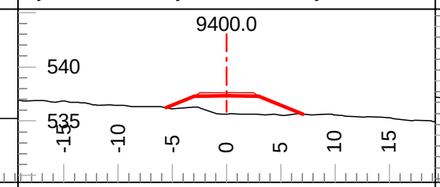

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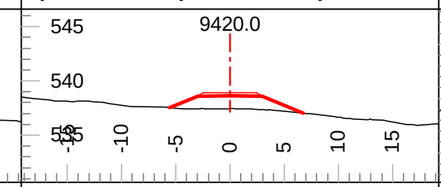

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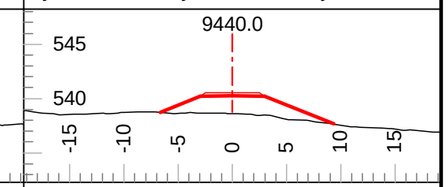

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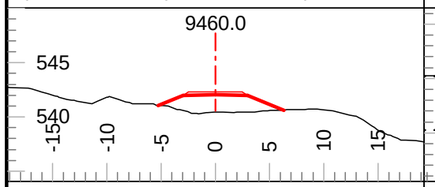

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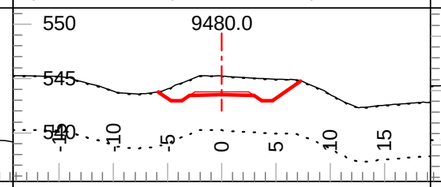

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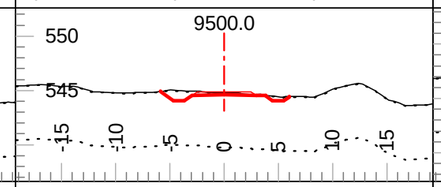

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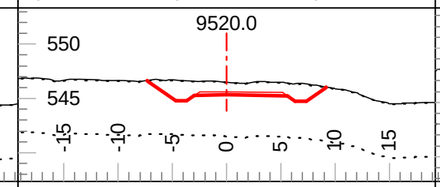

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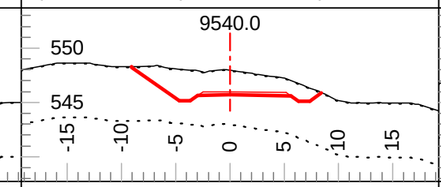

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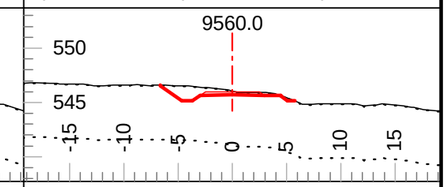

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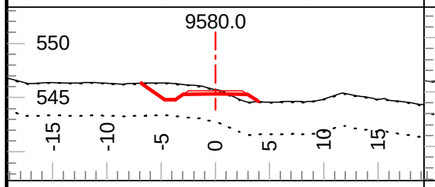

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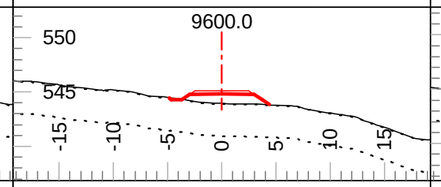

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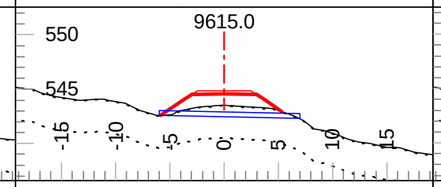

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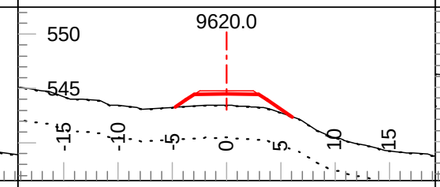

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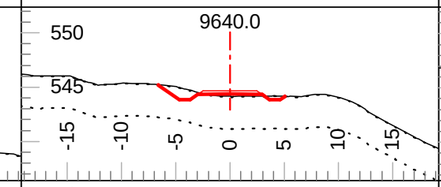

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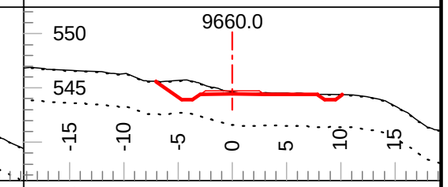

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

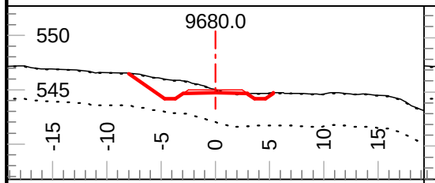
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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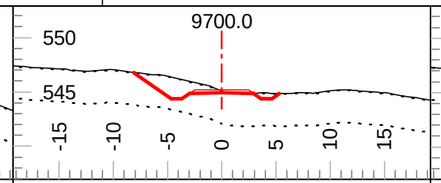

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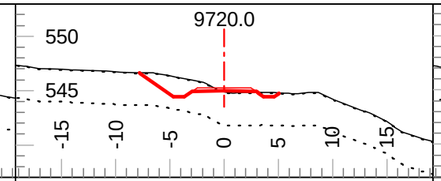

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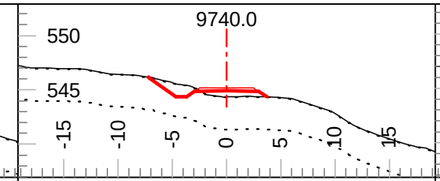

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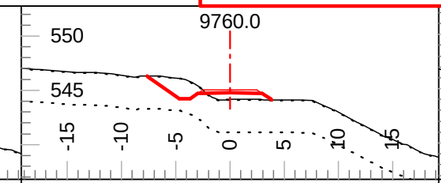

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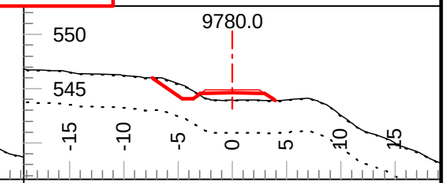

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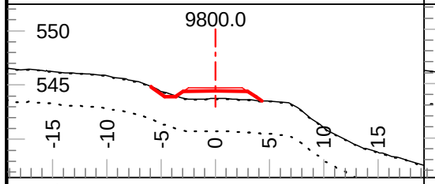

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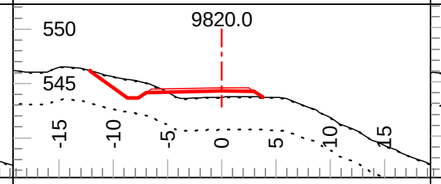

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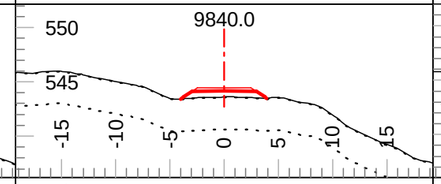

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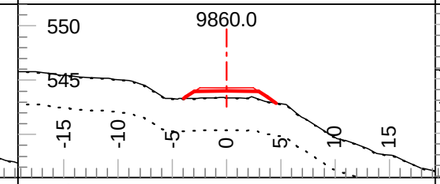

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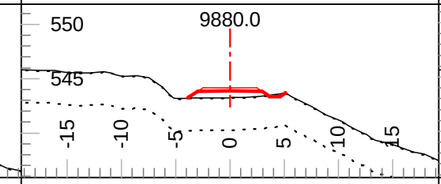

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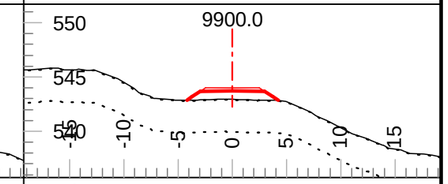

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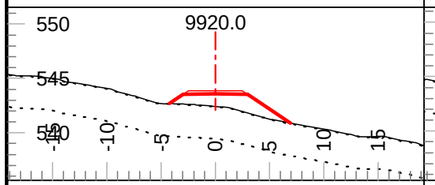

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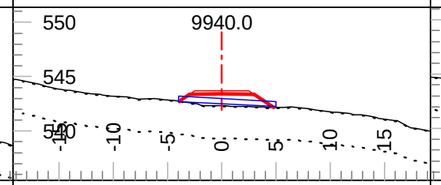

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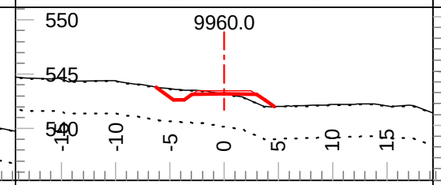

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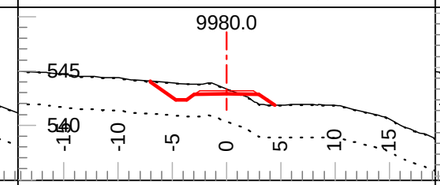

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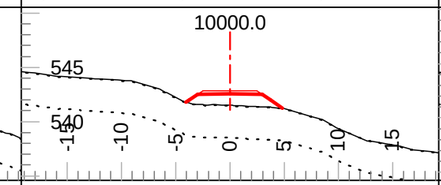

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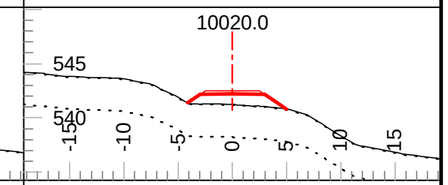

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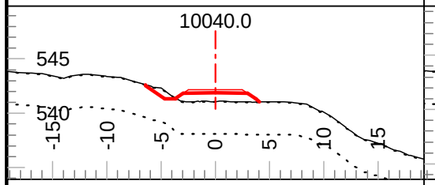

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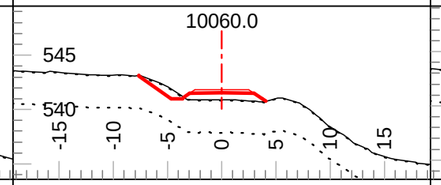

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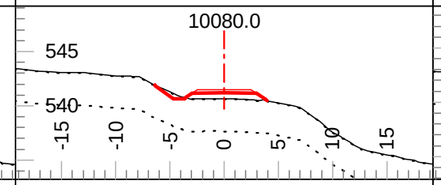

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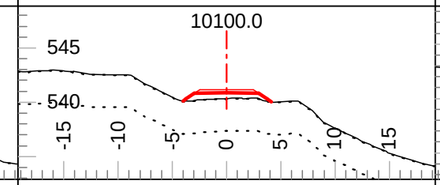

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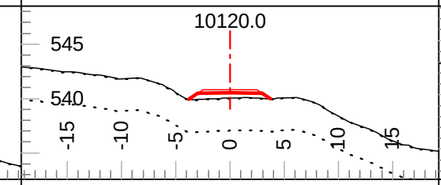

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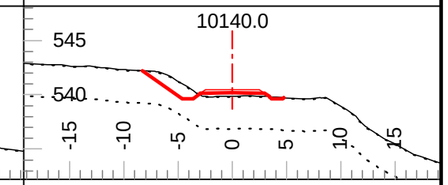

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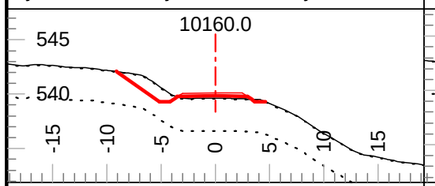

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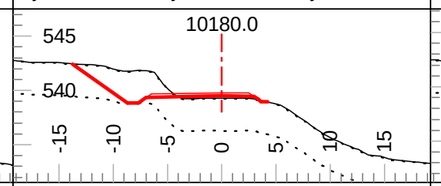

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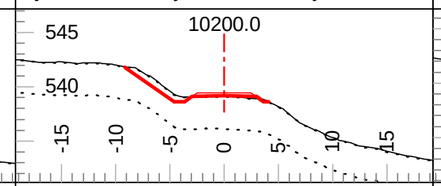

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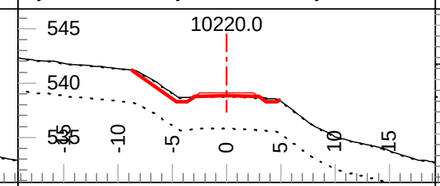

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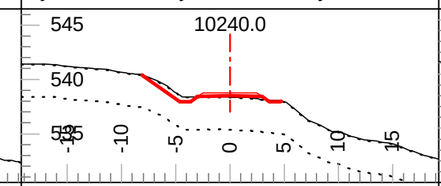

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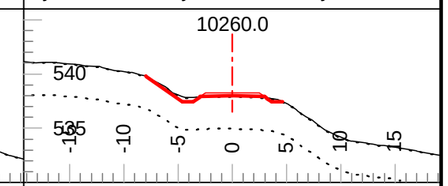

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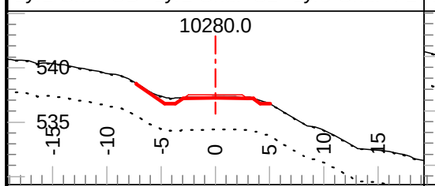

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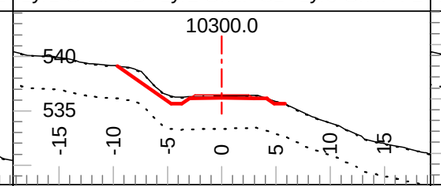

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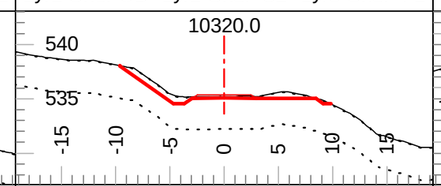

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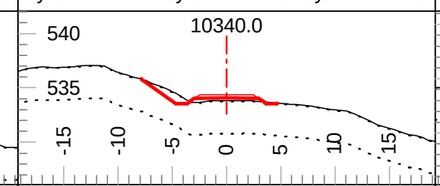

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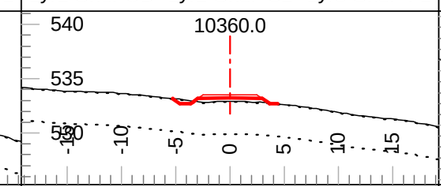

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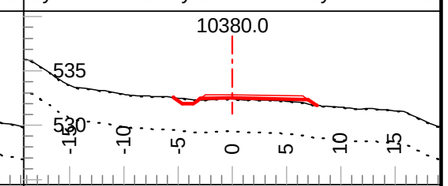

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Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

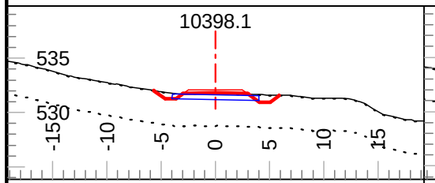
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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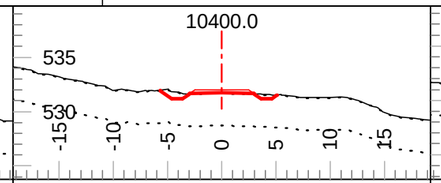

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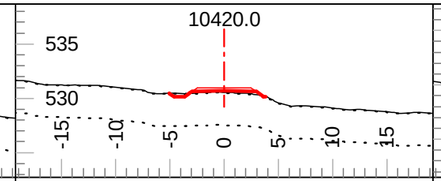

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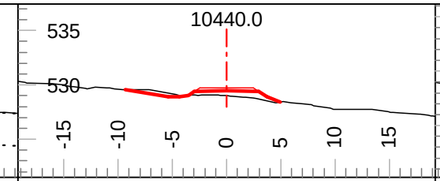

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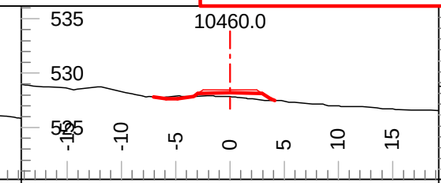

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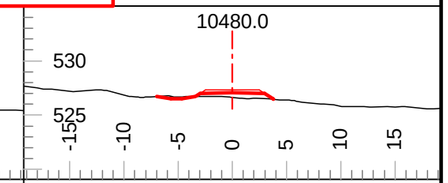

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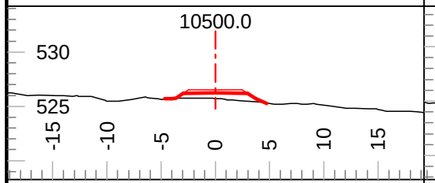

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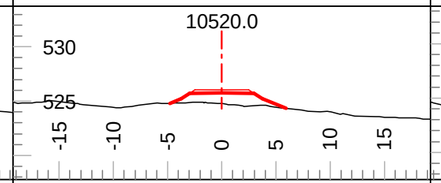

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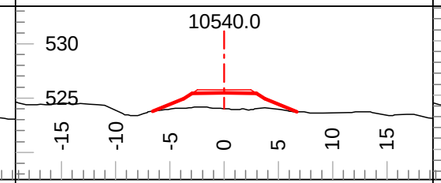

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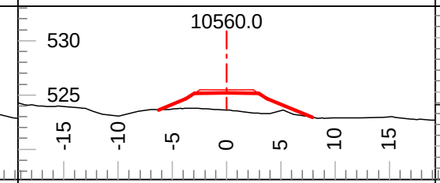

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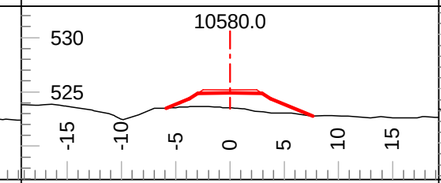

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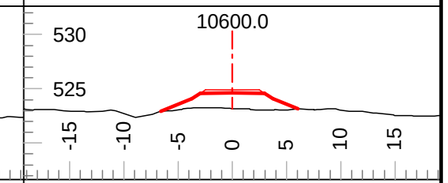

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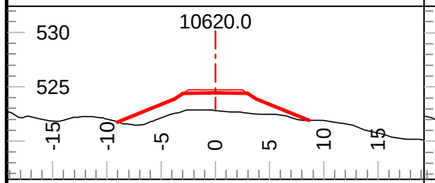

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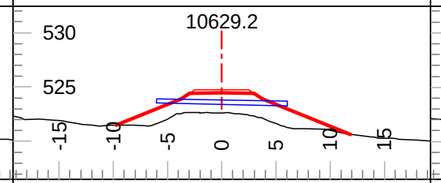

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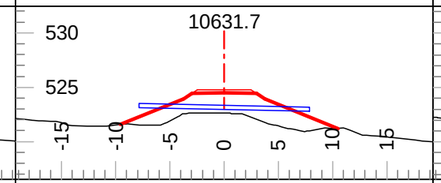

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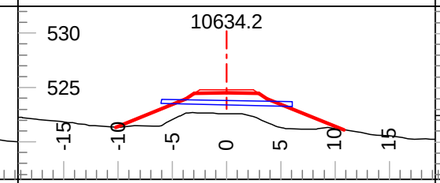

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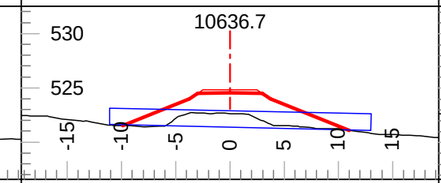

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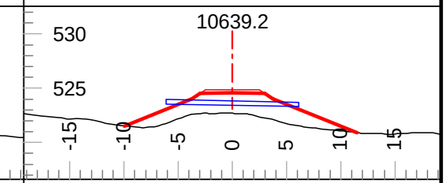

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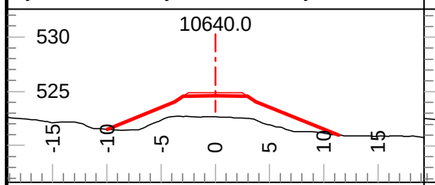

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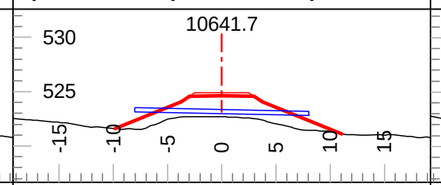

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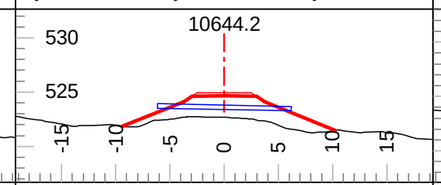

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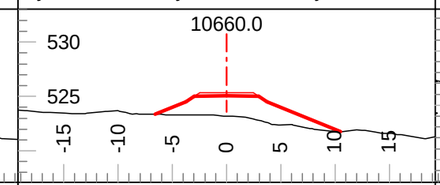

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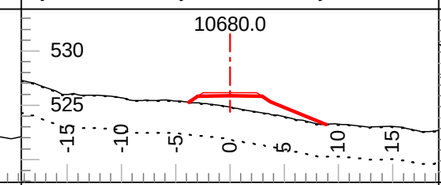

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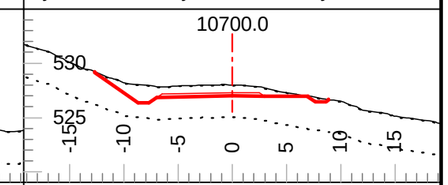

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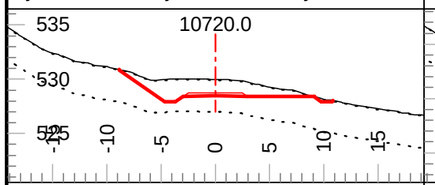

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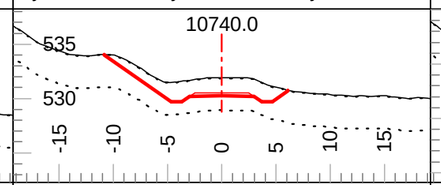

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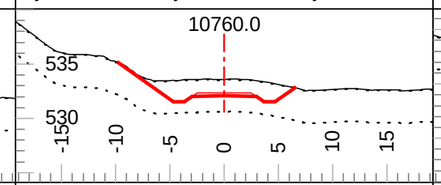

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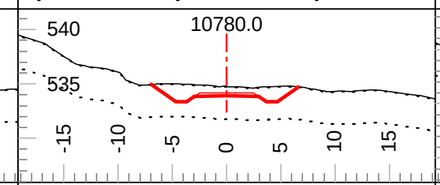

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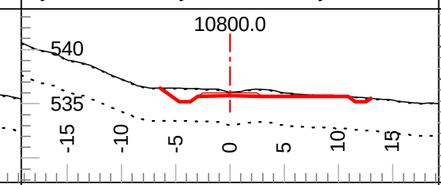

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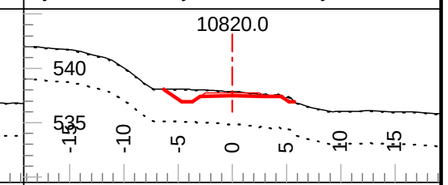

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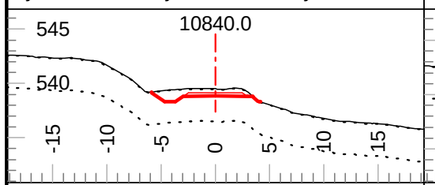

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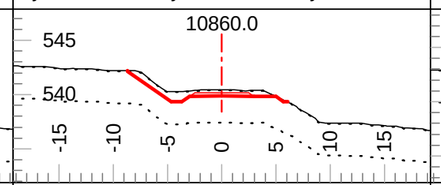

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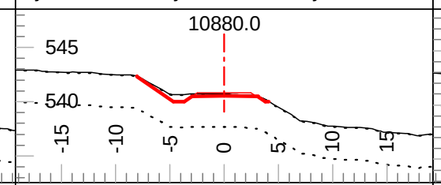

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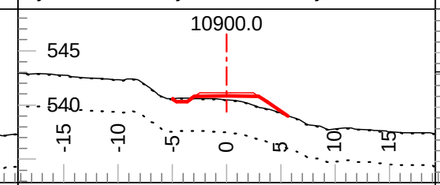

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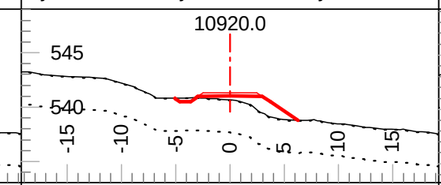

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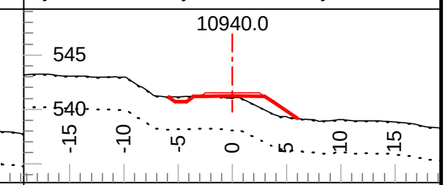

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Coffee Gold Mine

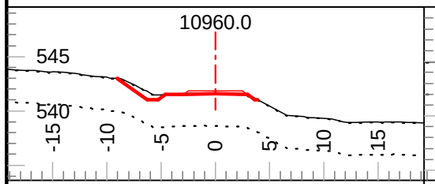
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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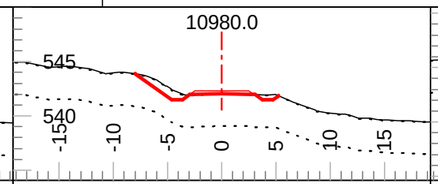

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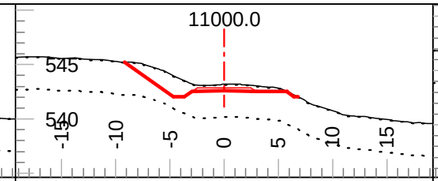

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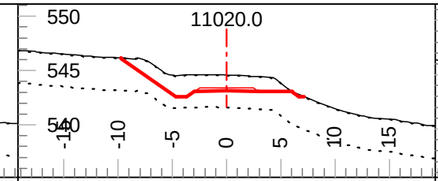

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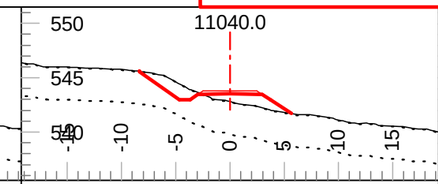

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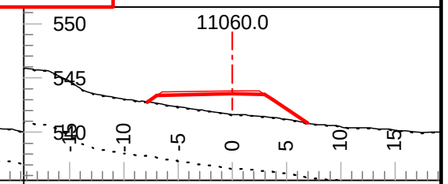

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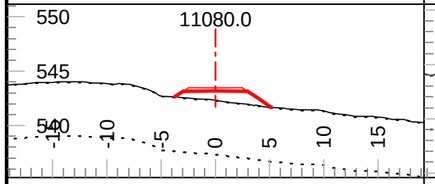

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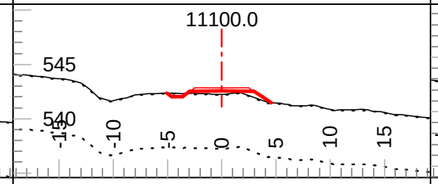

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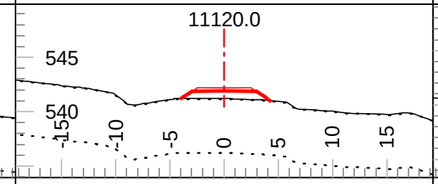

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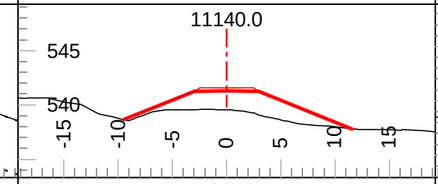

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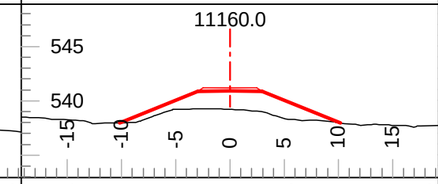

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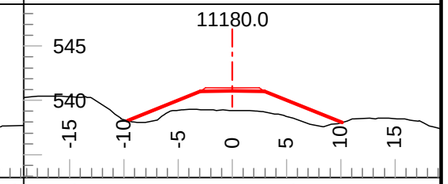

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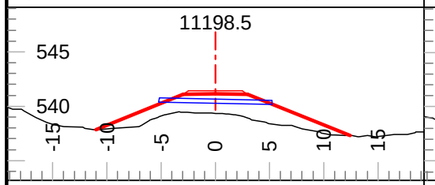

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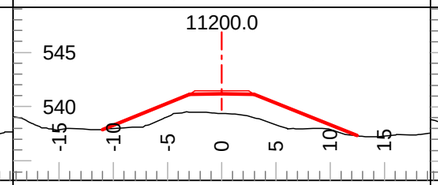

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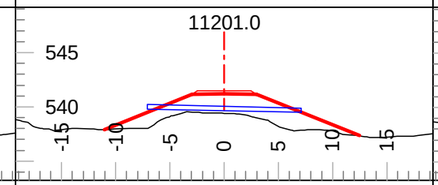

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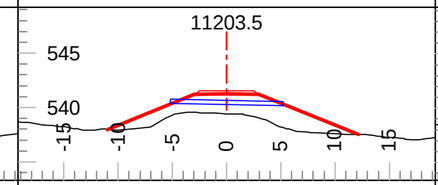

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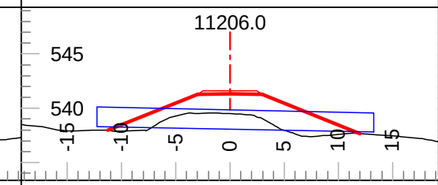

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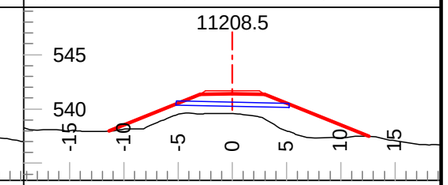

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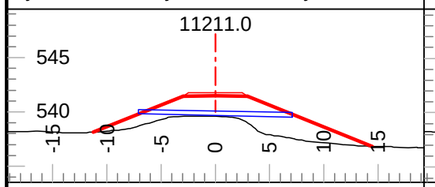

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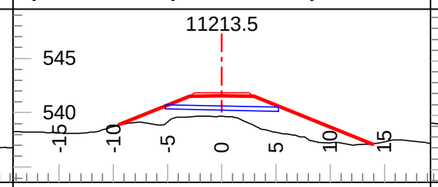

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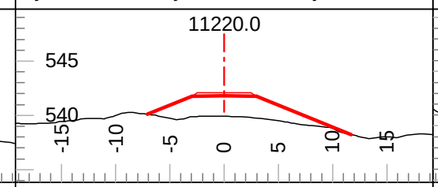

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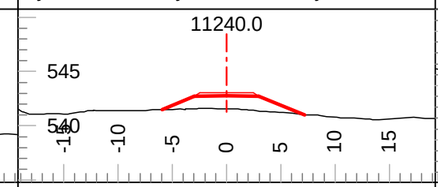

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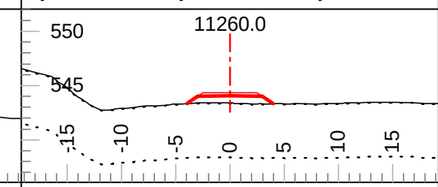

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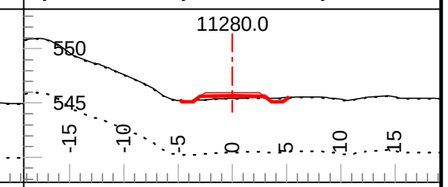

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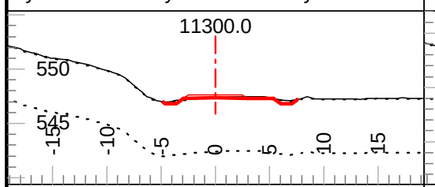

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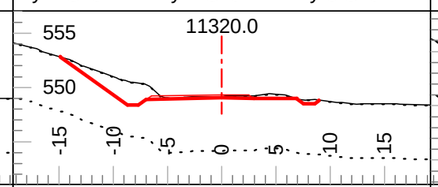

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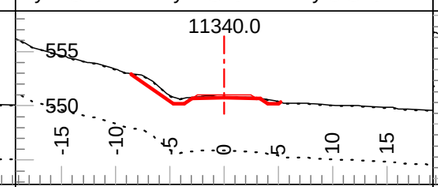

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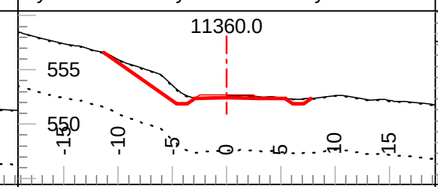

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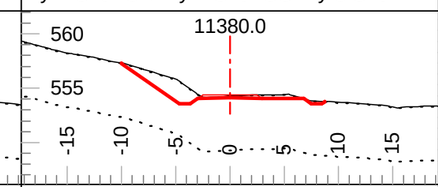

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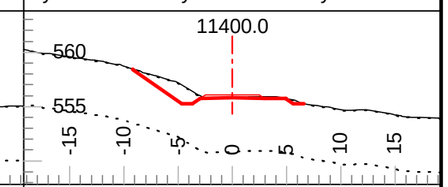

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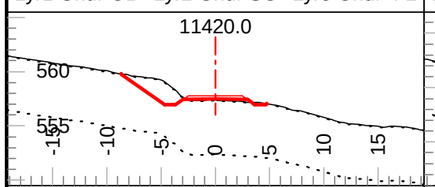

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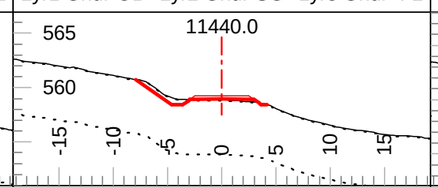

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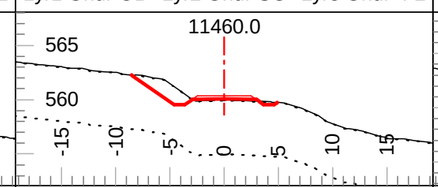

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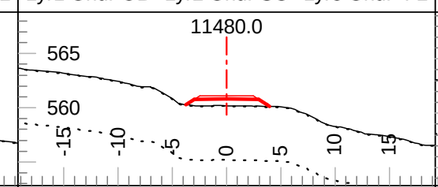

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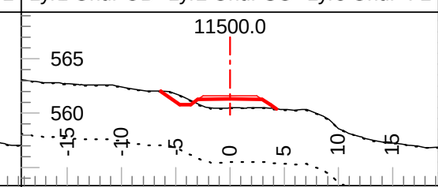

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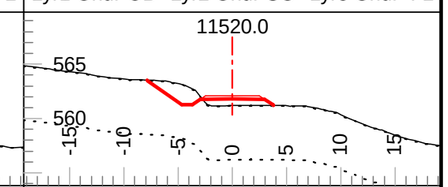

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Coffee Gold Mine

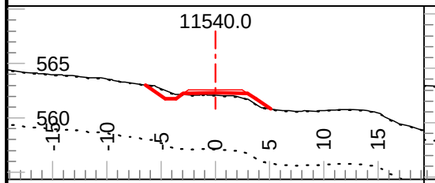
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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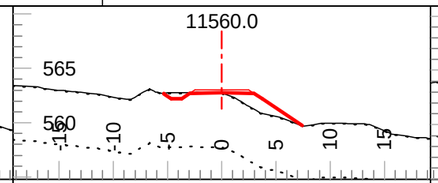

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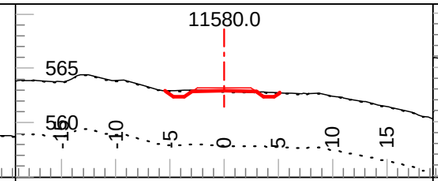

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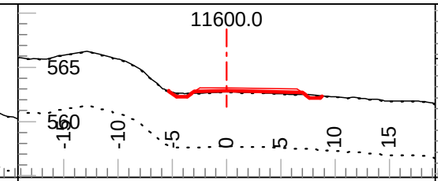

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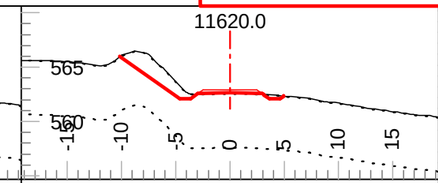

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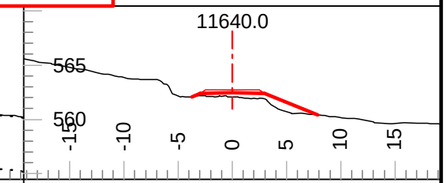

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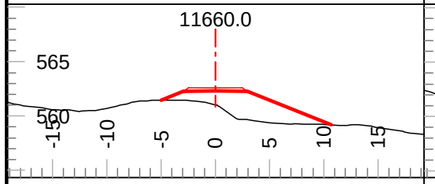

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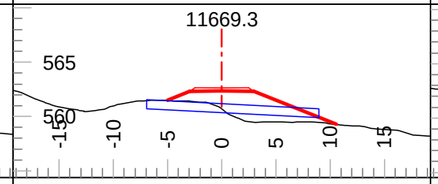

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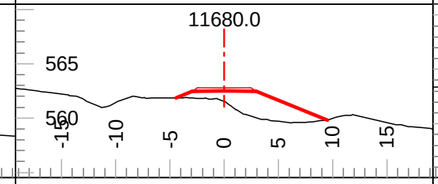

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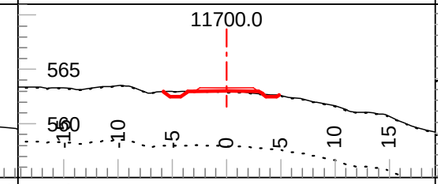

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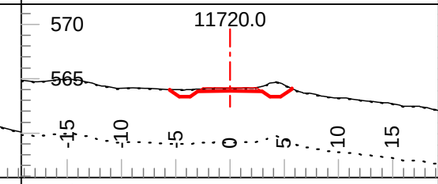

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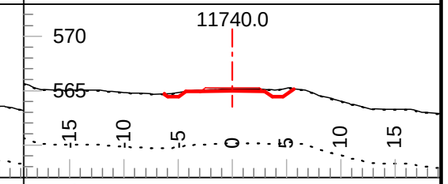

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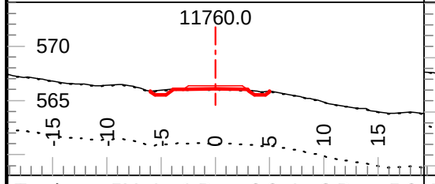

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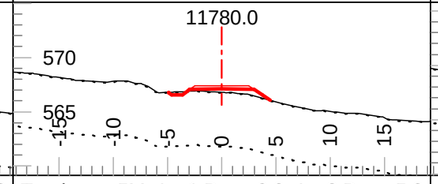
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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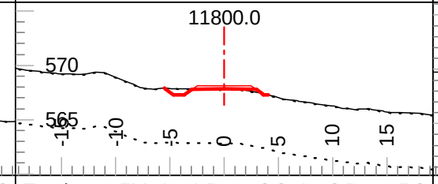
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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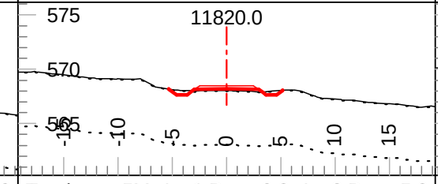

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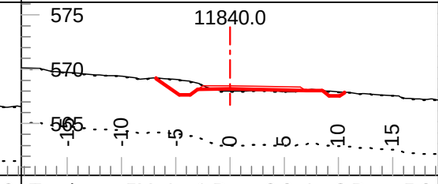

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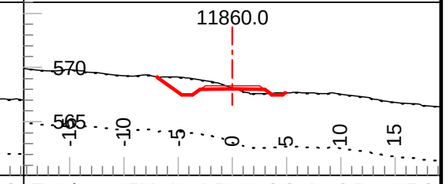

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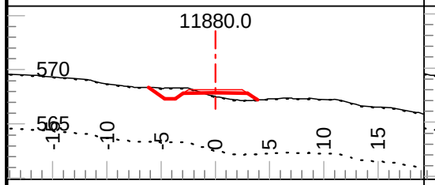

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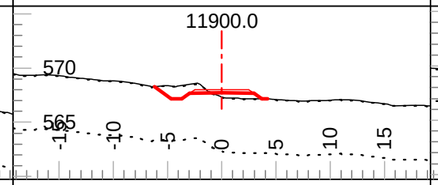

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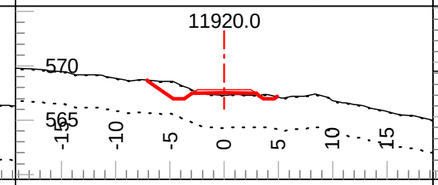

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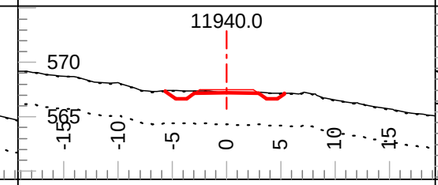

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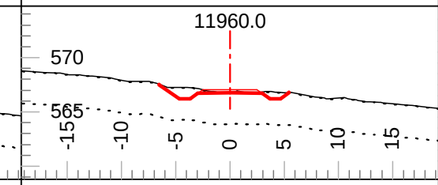

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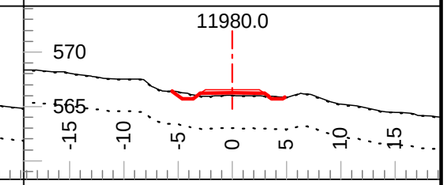

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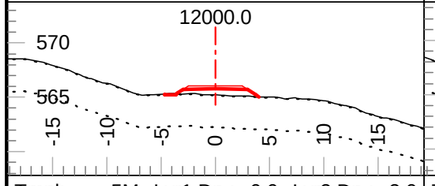

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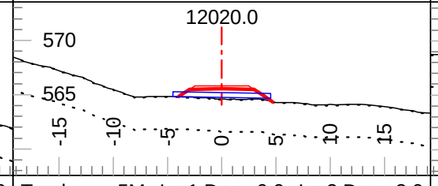

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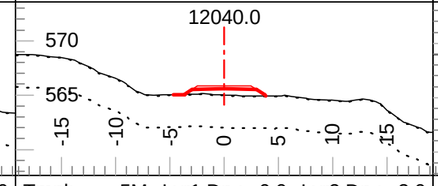

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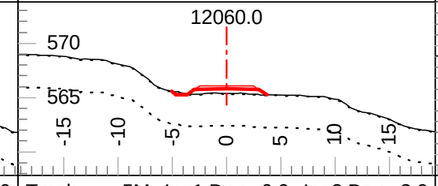

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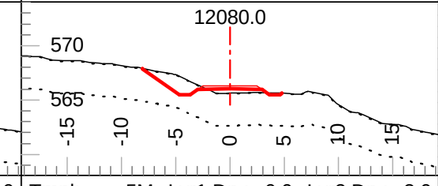

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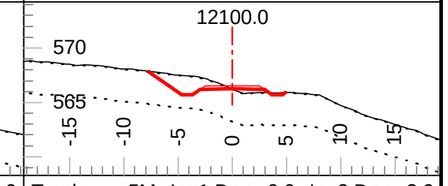

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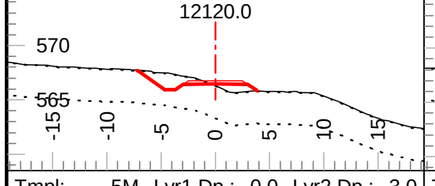

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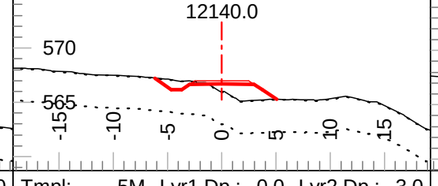

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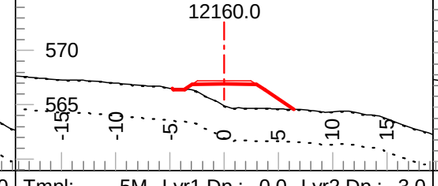

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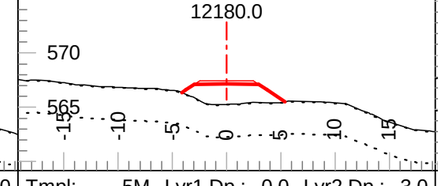

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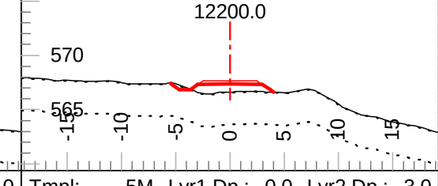

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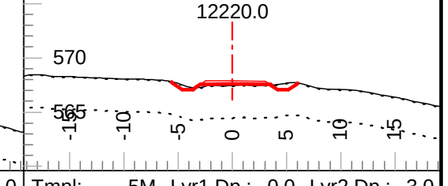

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

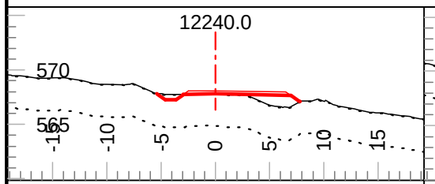
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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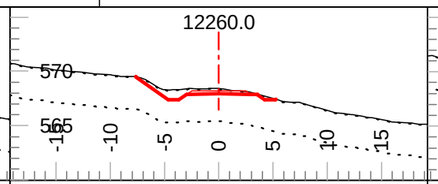

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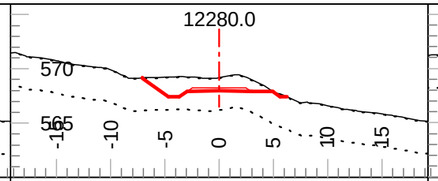

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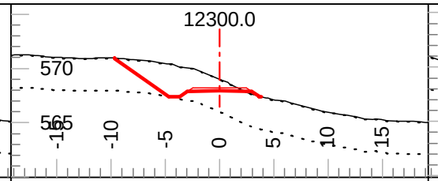

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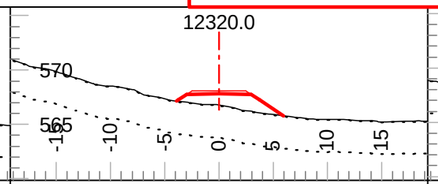

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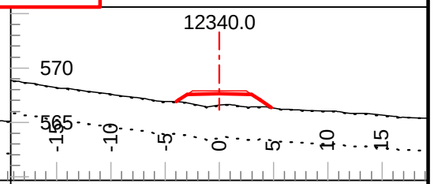

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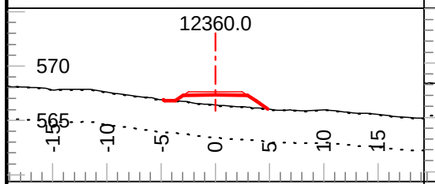

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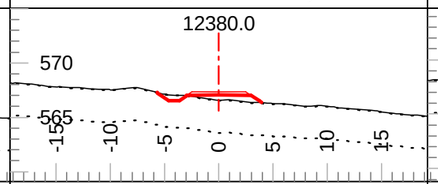

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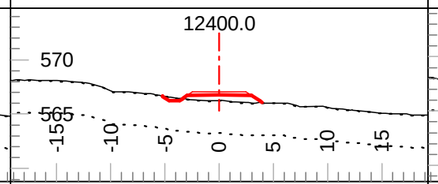

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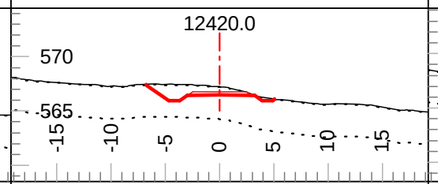

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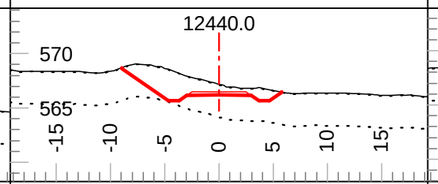

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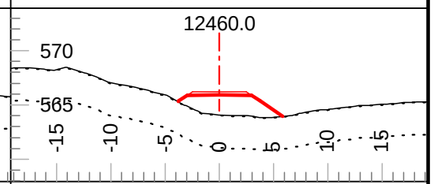

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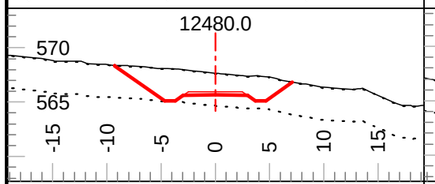

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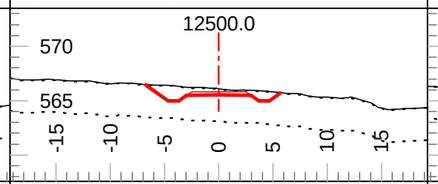

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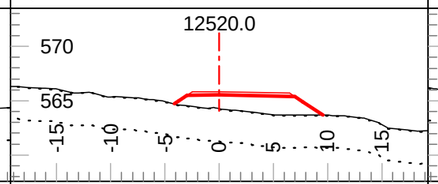

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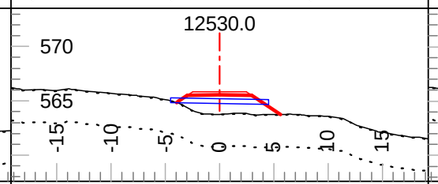

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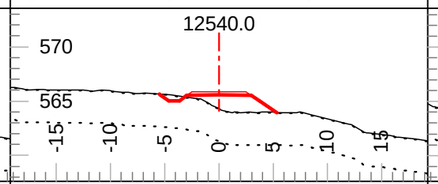

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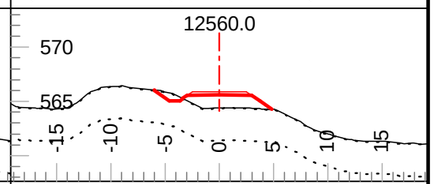

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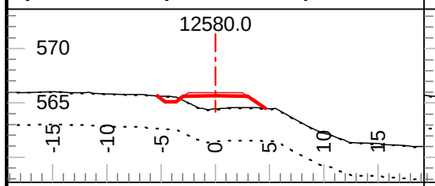

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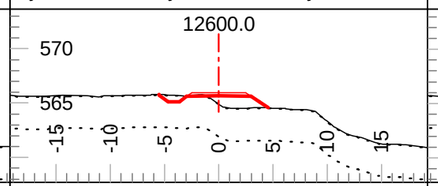

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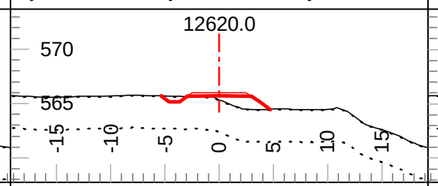

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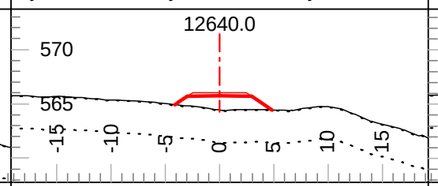

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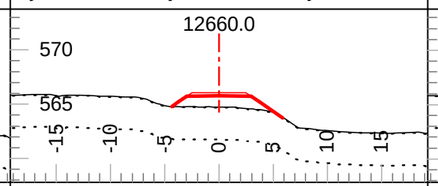

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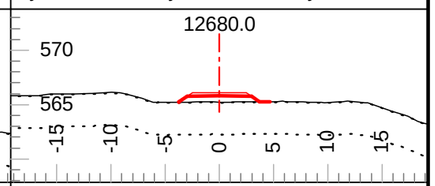

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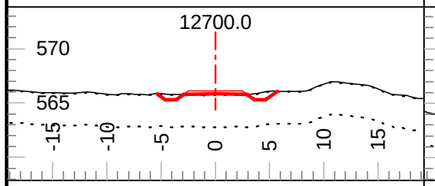

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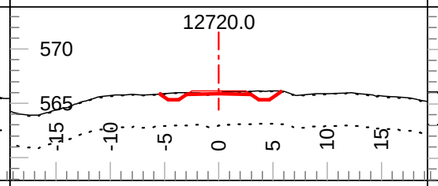

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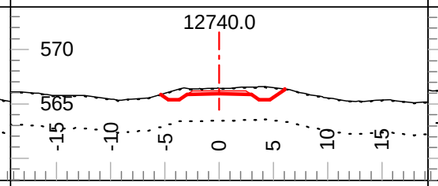

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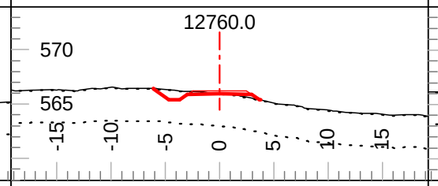

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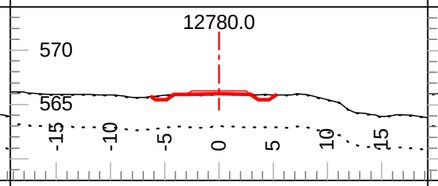

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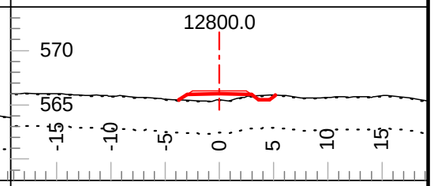

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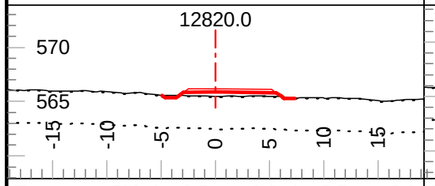

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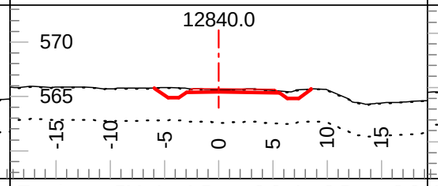

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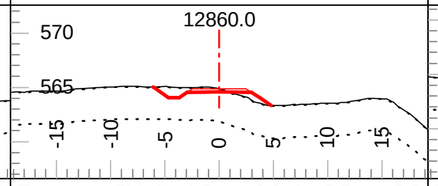

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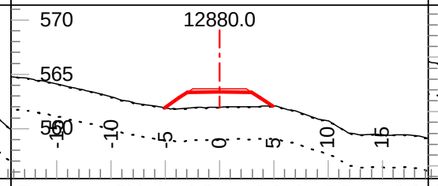

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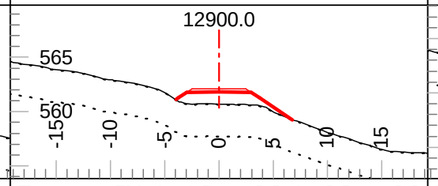

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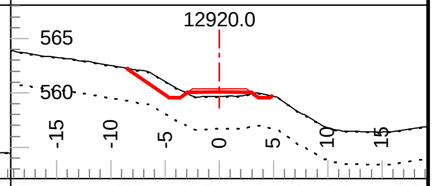

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Coffee Gold Mine

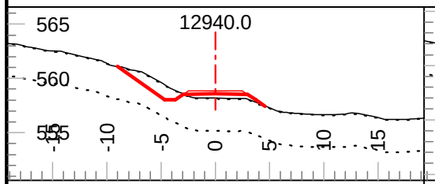
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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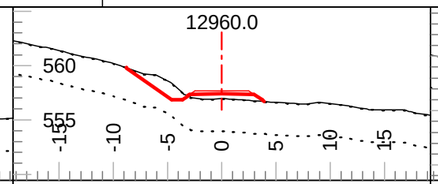

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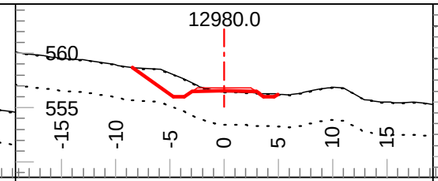

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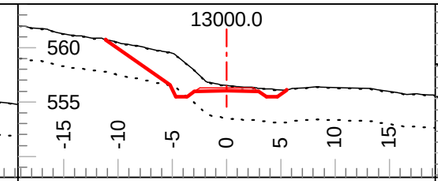

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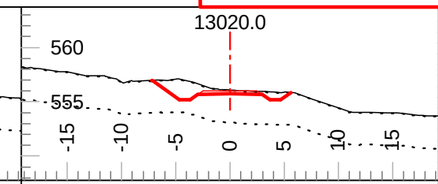

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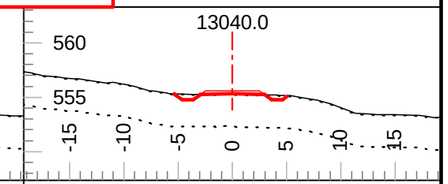

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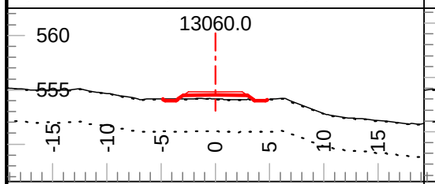

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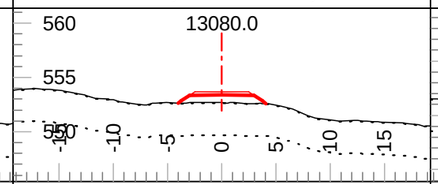

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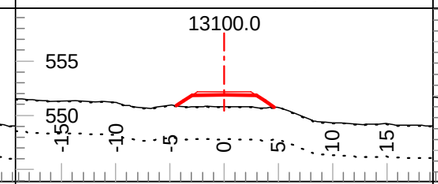

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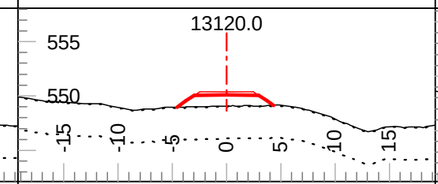

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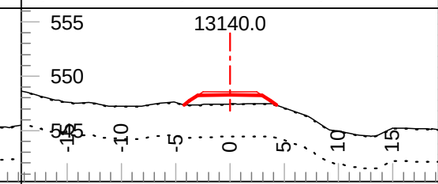

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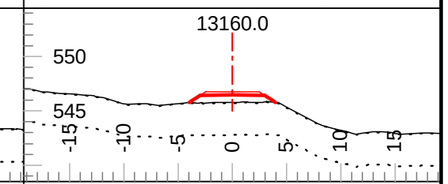

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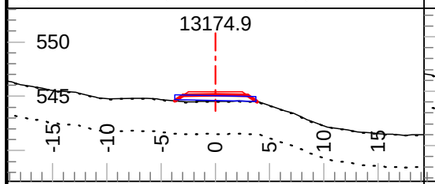

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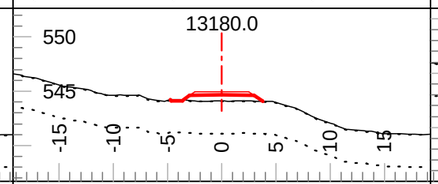

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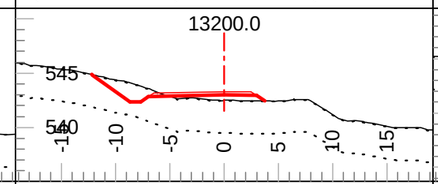

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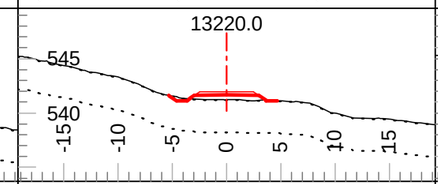

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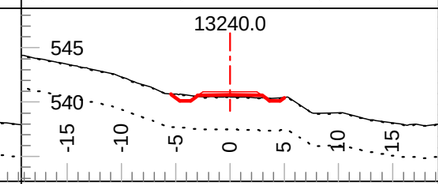

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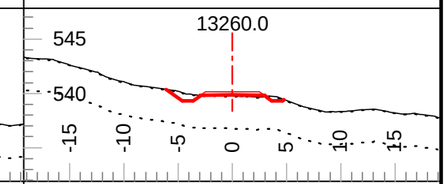

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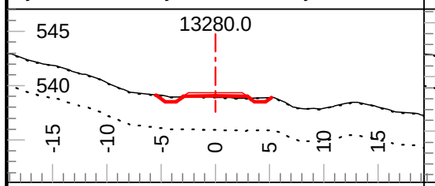

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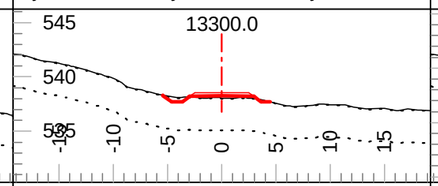

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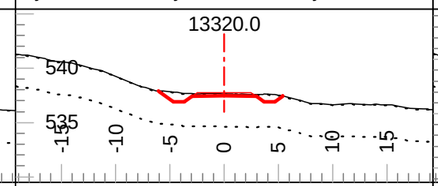

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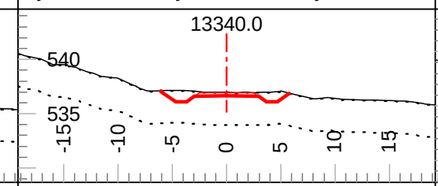

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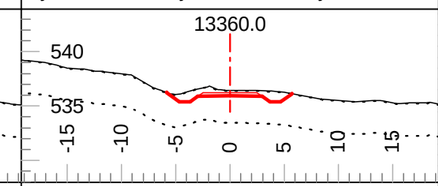

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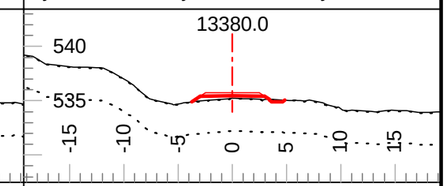

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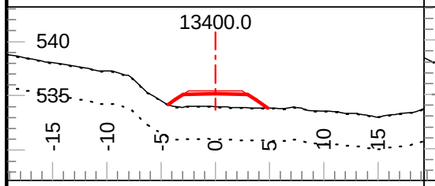

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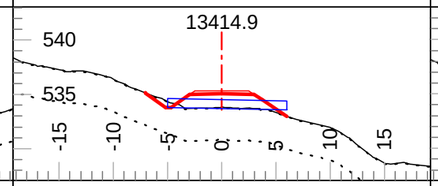

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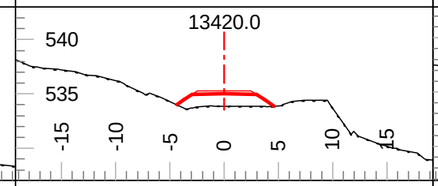

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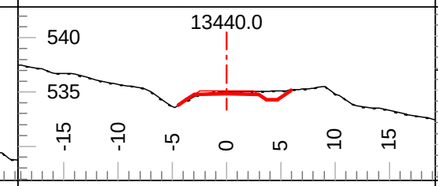
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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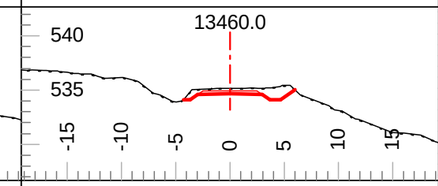

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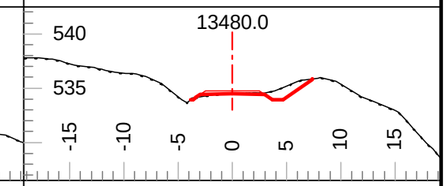

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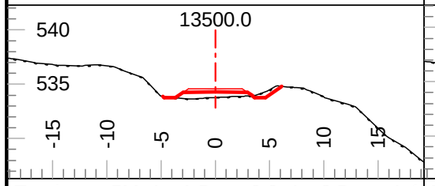

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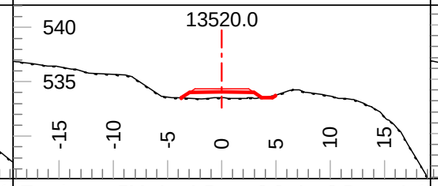

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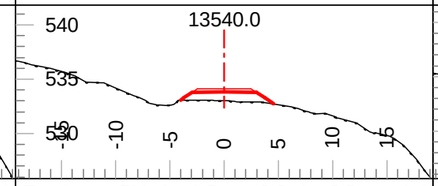

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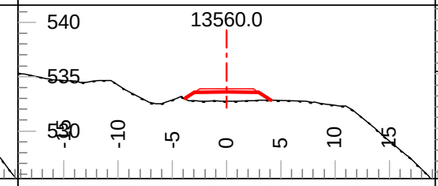

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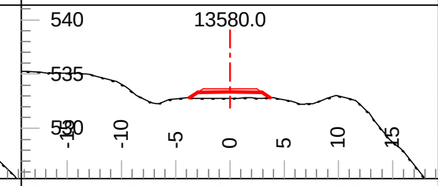

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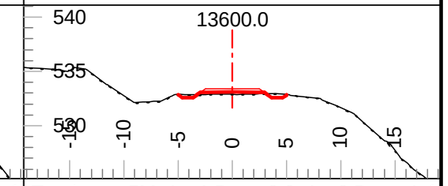

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Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:

Coffee Gold Mine

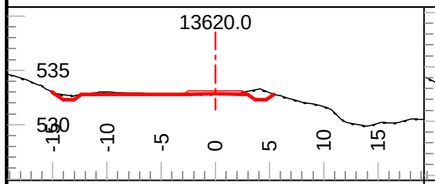
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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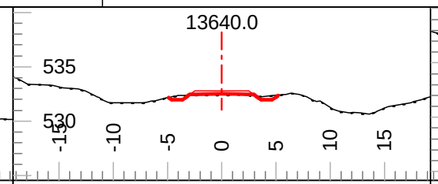

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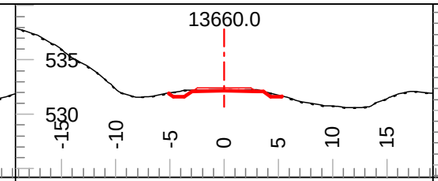

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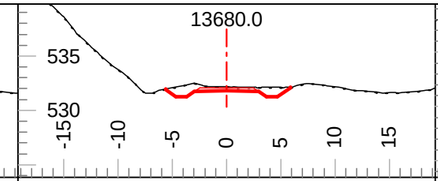

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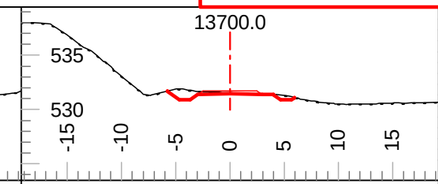

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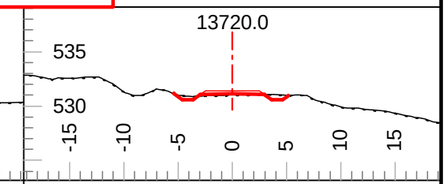

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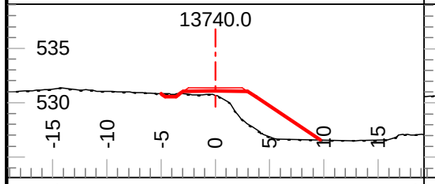

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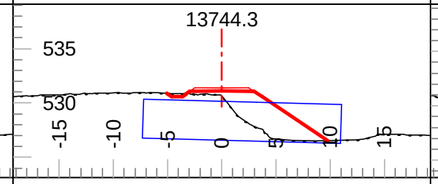

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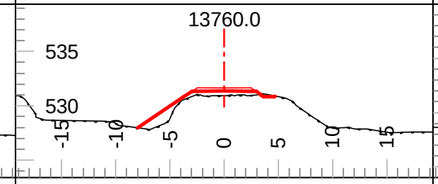

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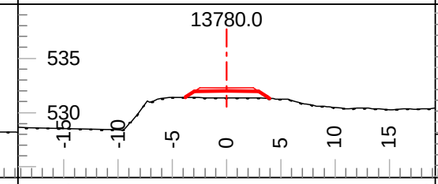

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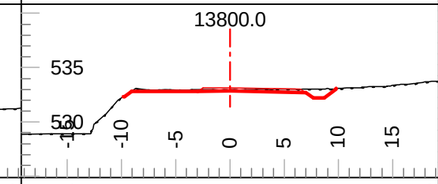

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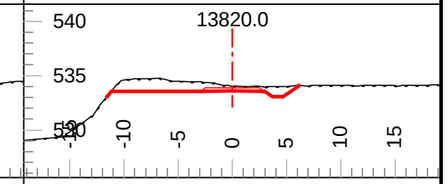

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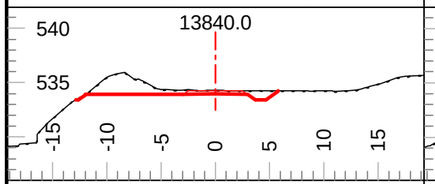

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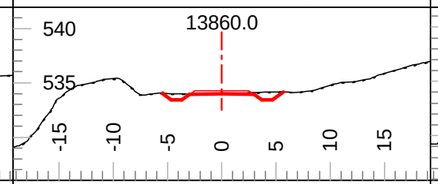

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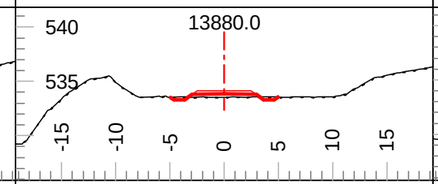

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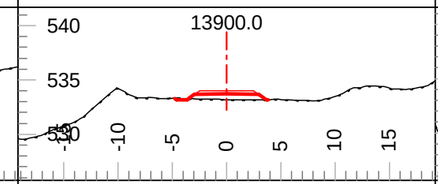

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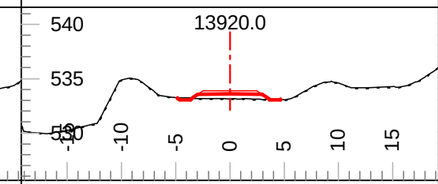

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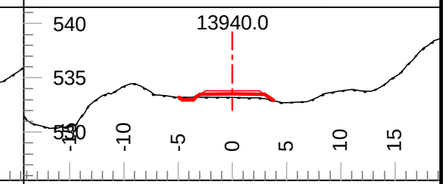

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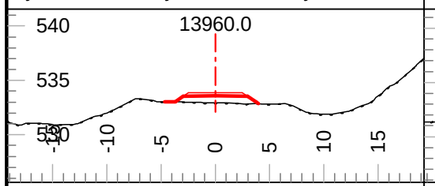

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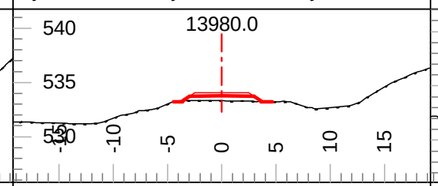

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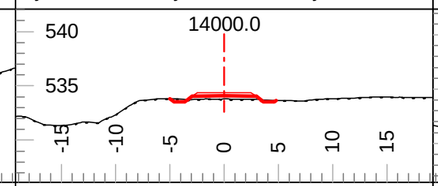

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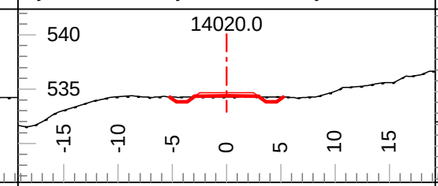

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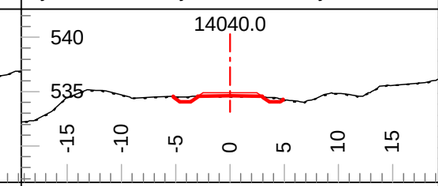

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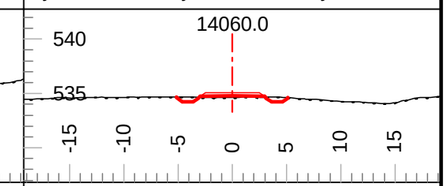

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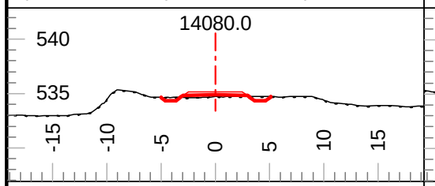

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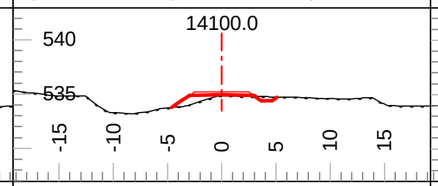

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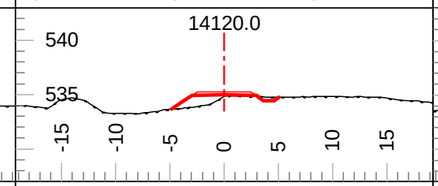

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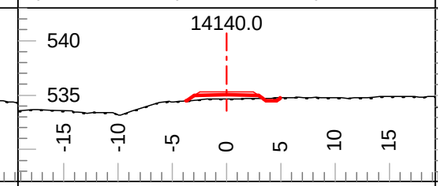

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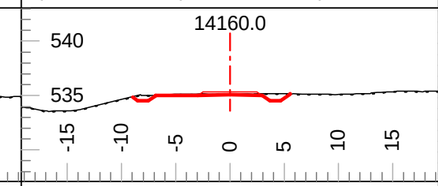

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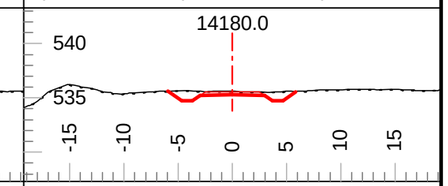

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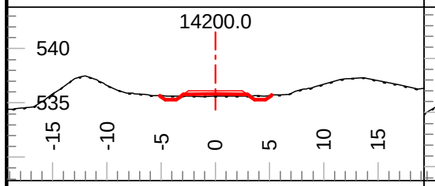

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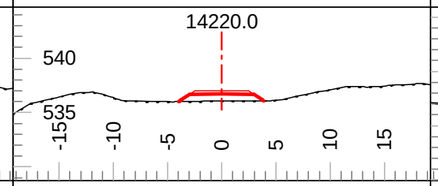

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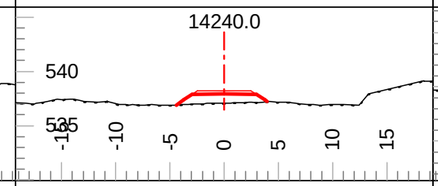

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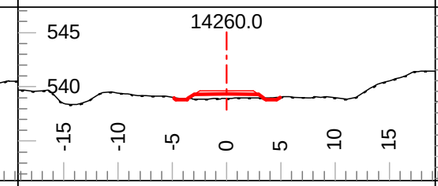

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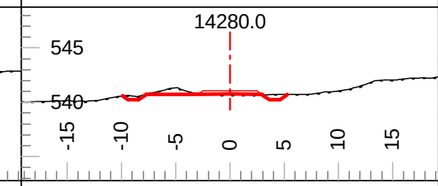

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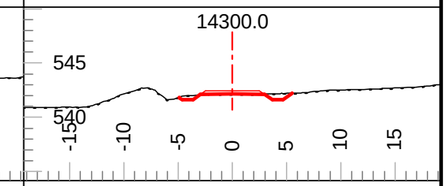

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

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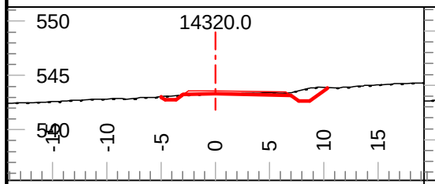
ONSITE Engineering Ltd.



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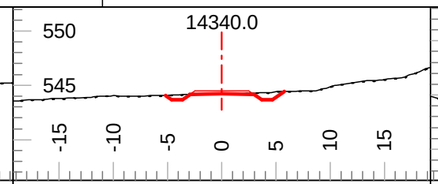

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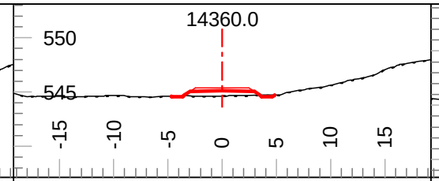

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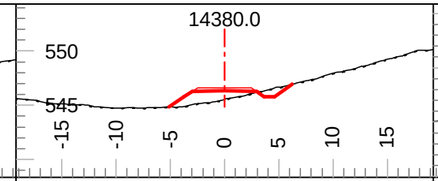

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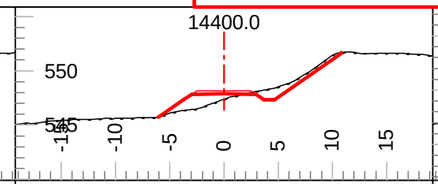

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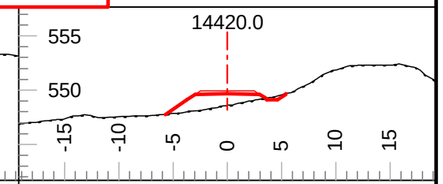

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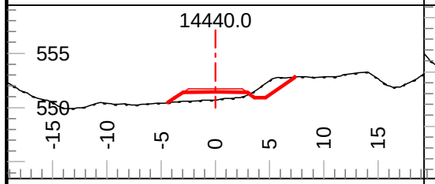

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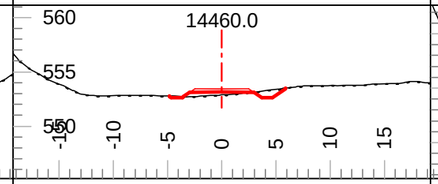

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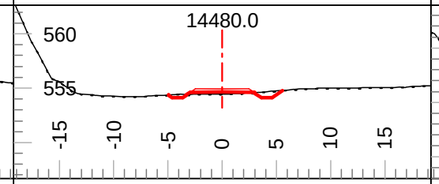

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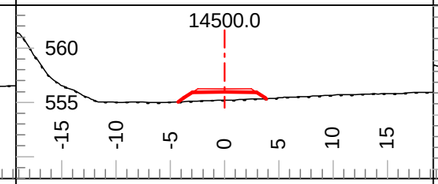

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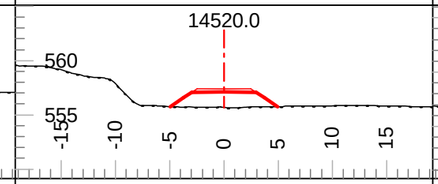

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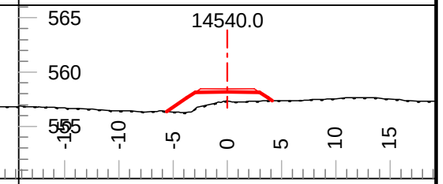

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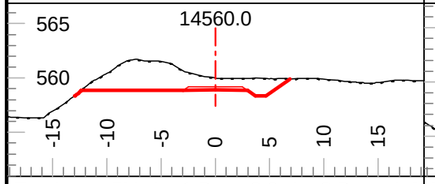

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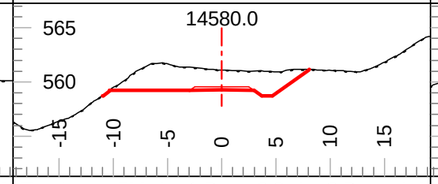

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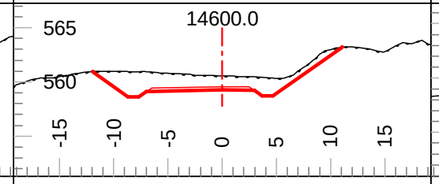

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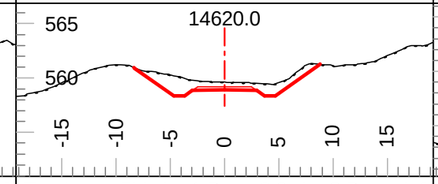

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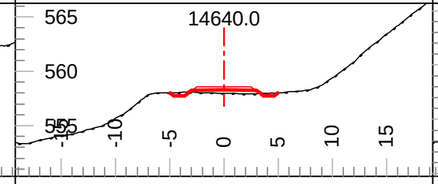

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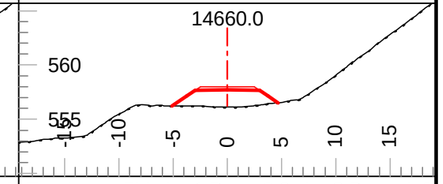

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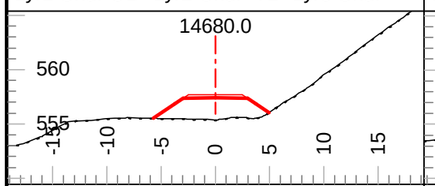

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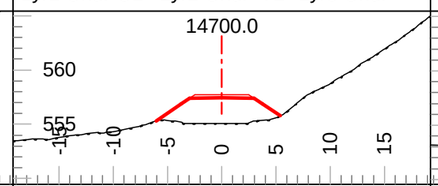

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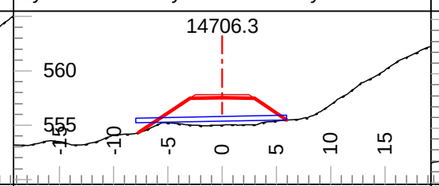

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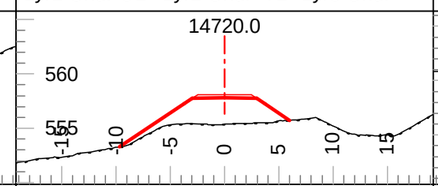

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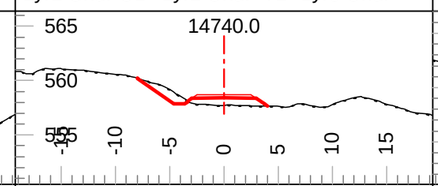

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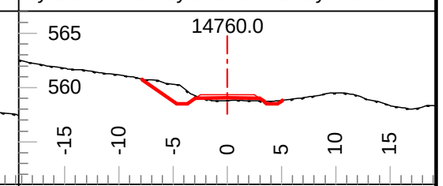

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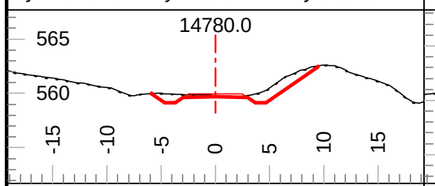

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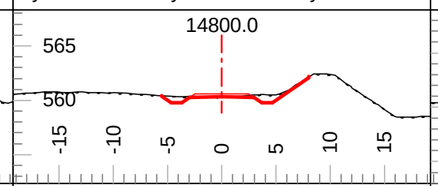

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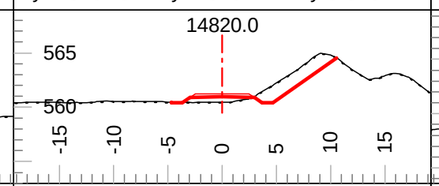

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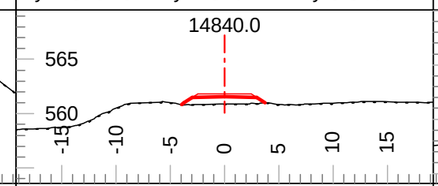

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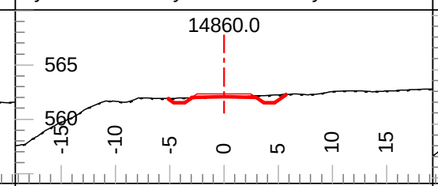

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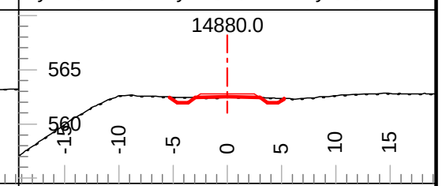

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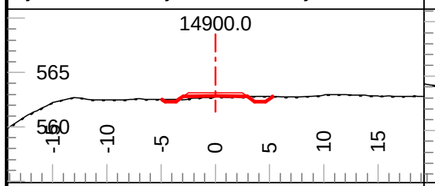

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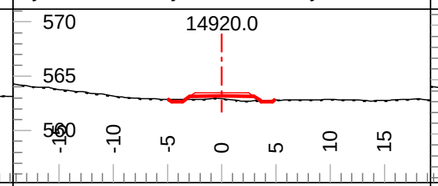

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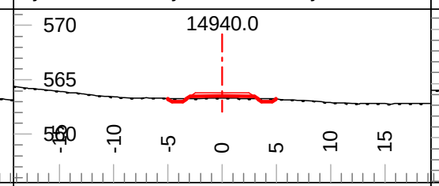

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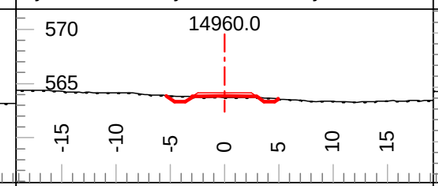

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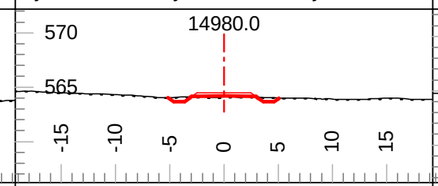

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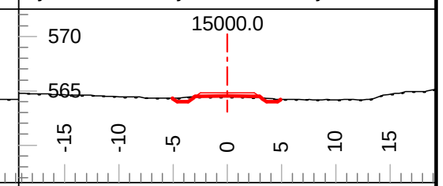

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Coffee Gold Mine

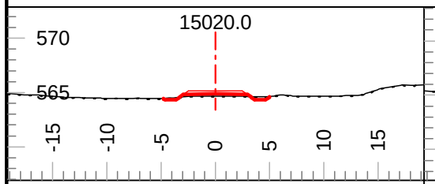
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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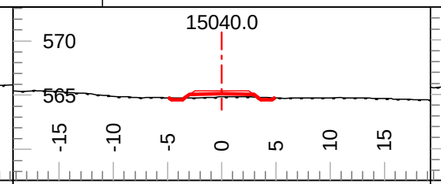

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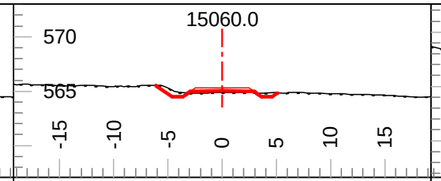

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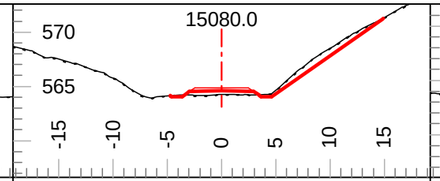

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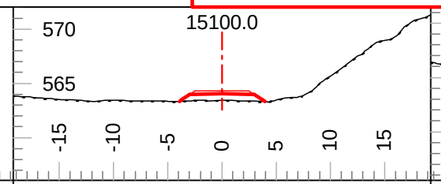

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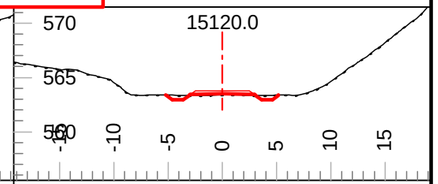

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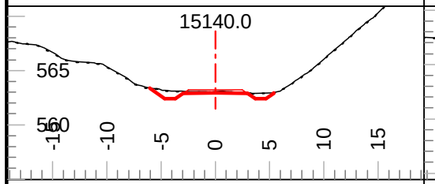

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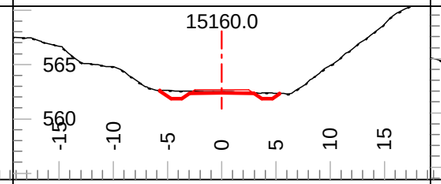

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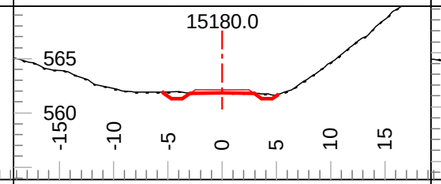

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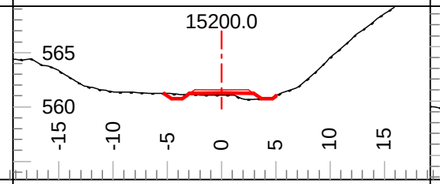

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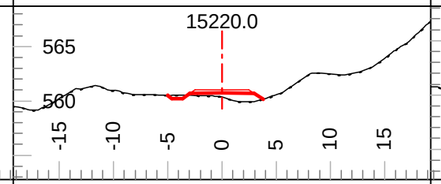

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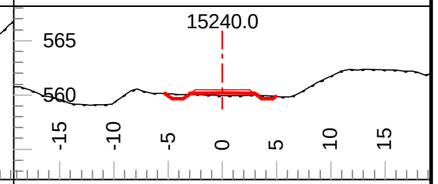

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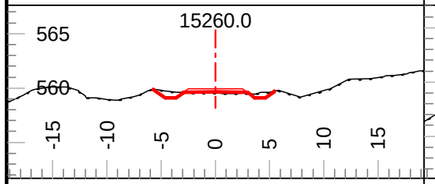

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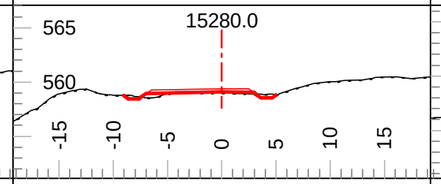

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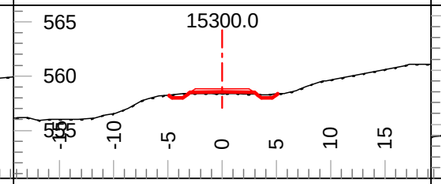

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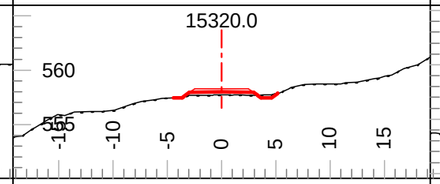

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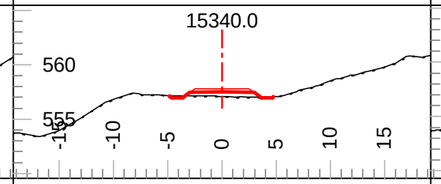

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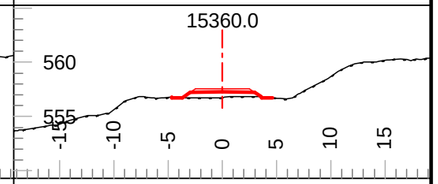

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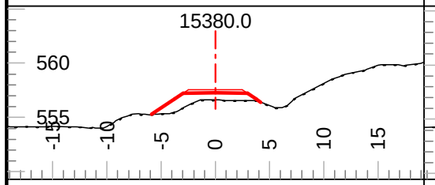

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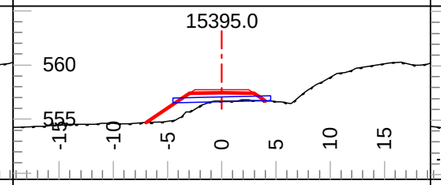

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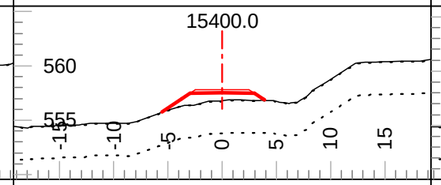

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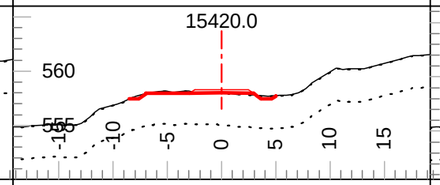

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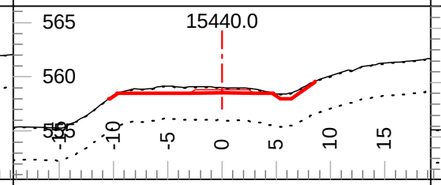

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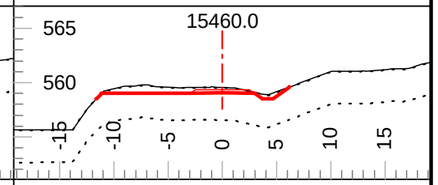

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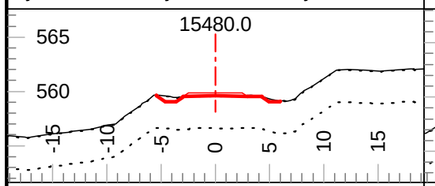

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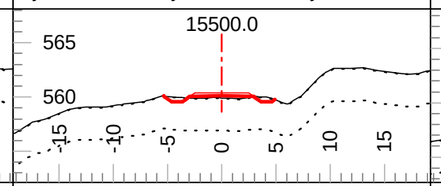

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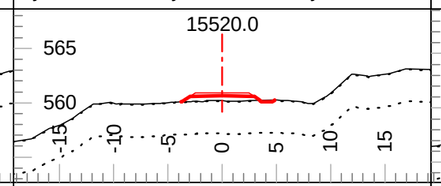

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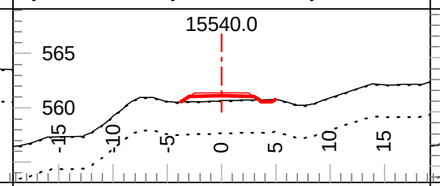

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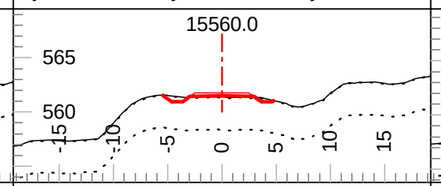

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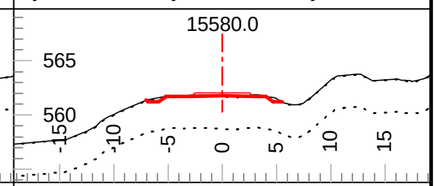

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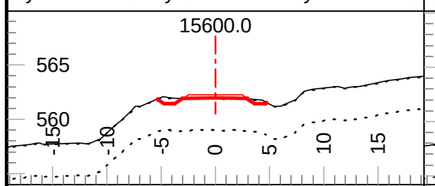

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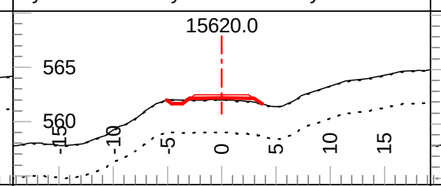

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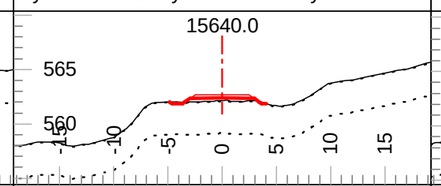

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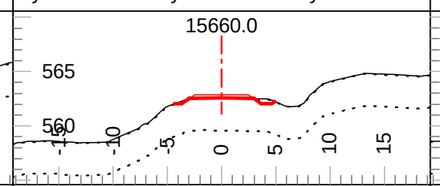

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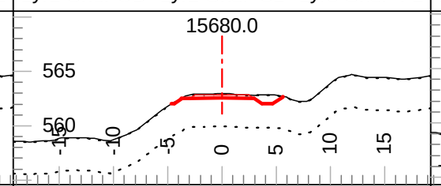

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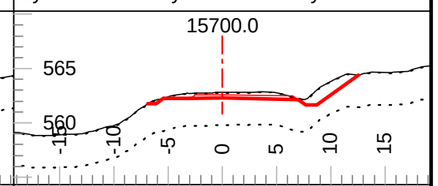

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

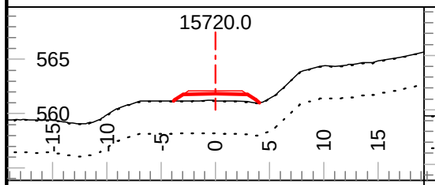
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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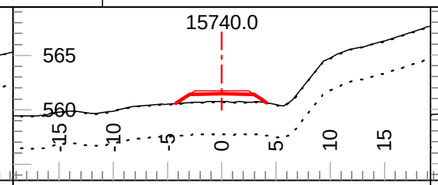

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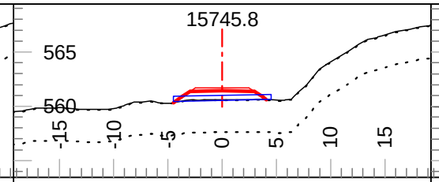

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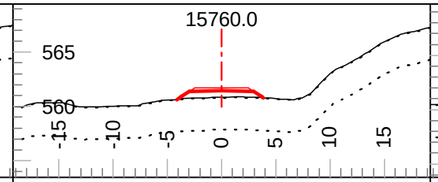

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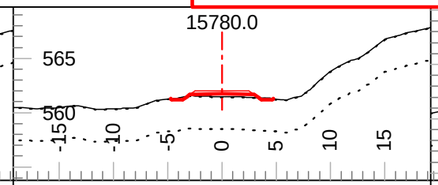

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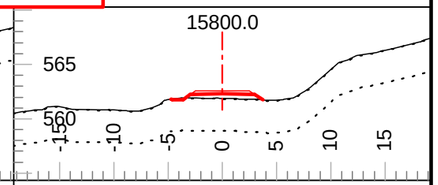

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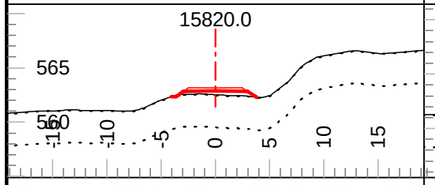

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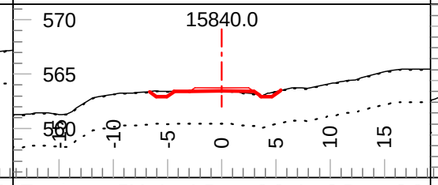

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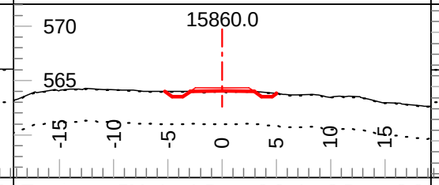

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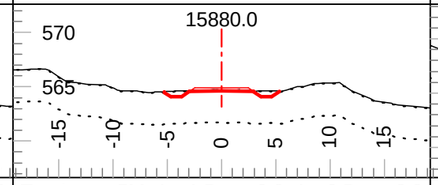

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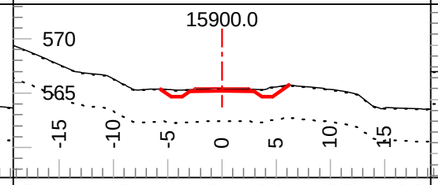

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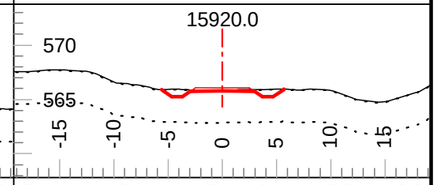

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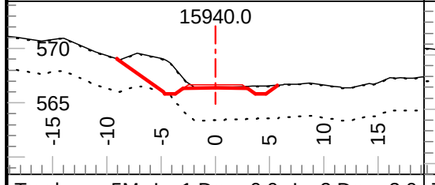

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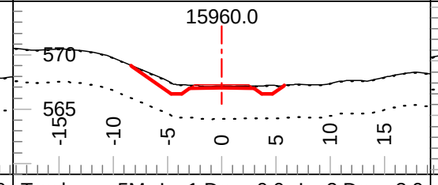

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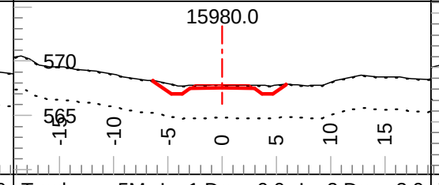

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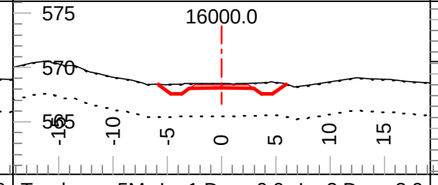

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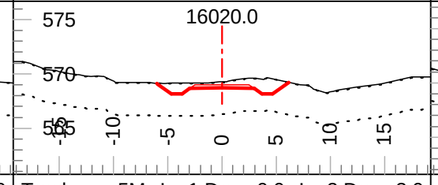

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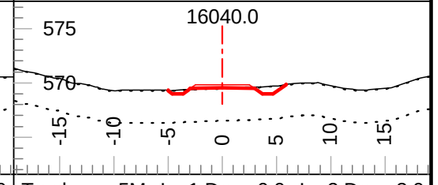

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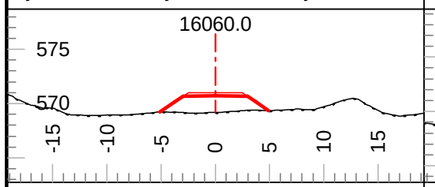

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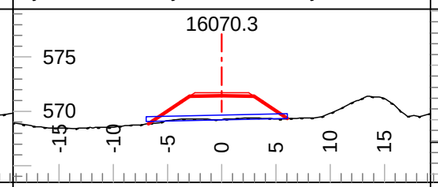

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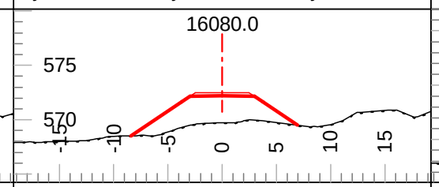

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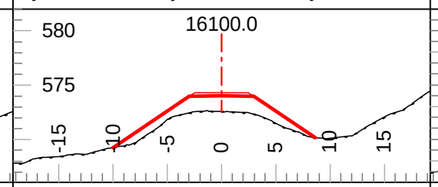

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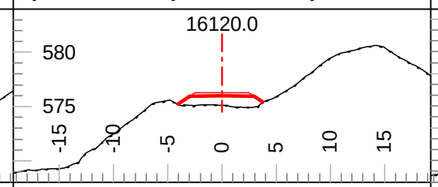

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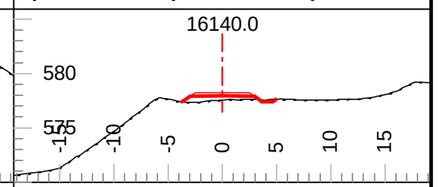

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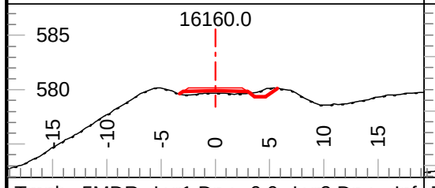

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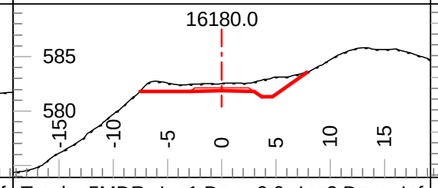

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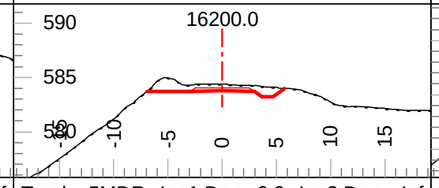

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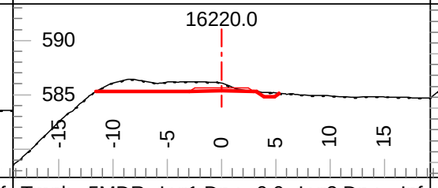

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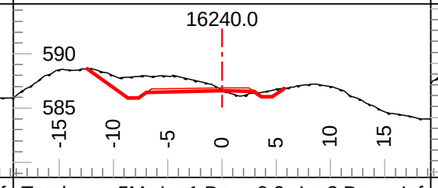

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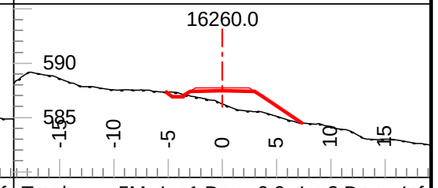

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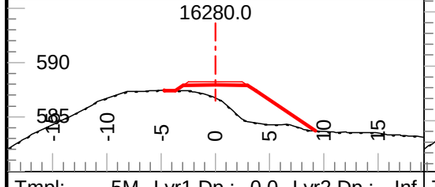

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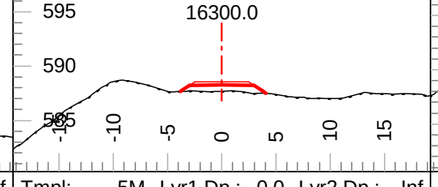

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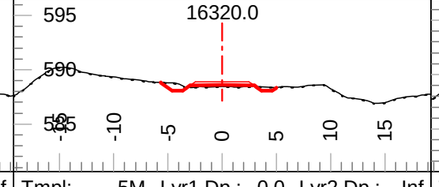

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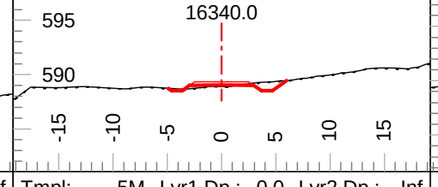

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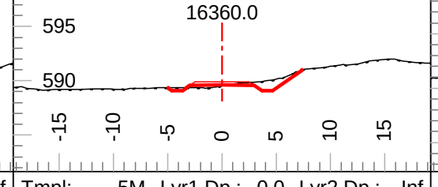

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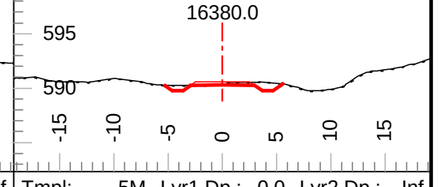

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Coffee Gold Mine

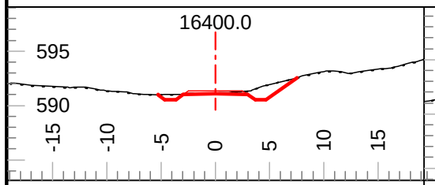
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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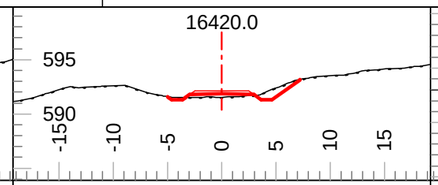

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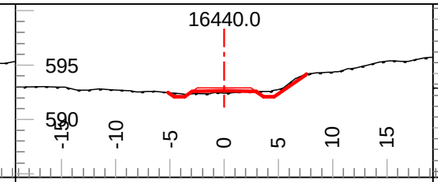

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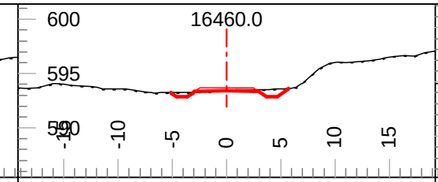

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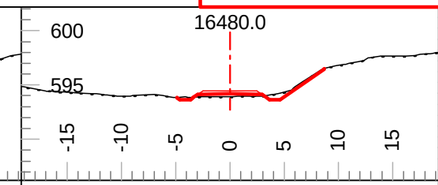

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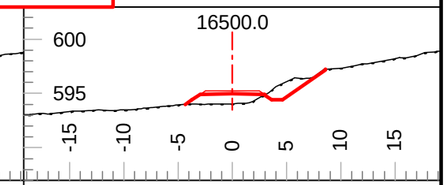

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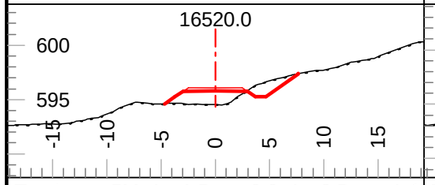

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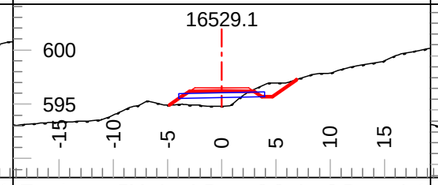

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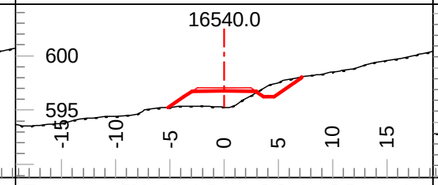

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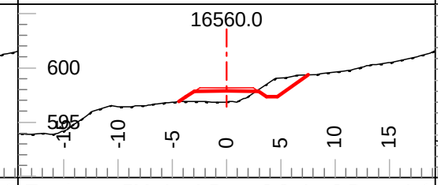

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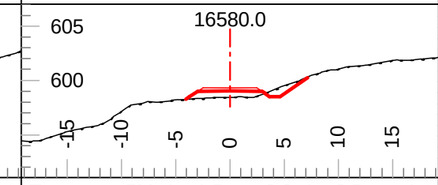

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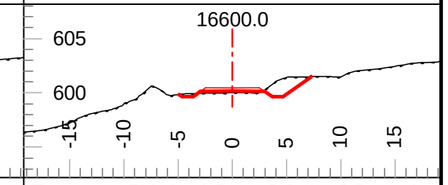

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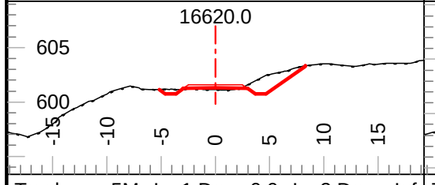

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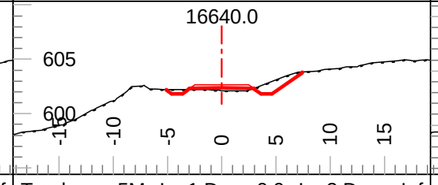

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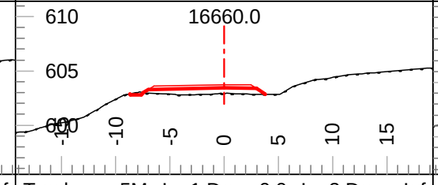

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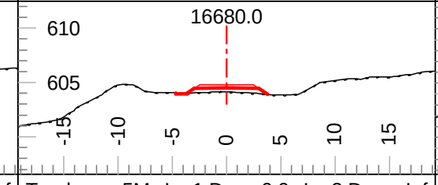

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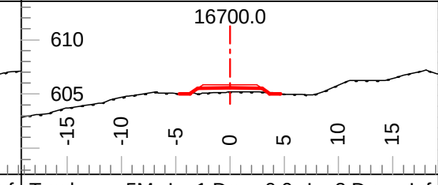

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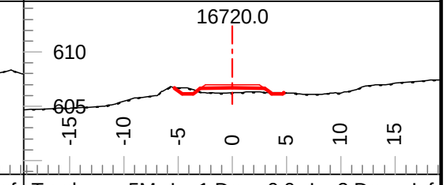

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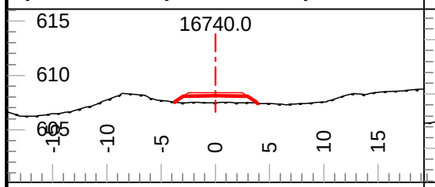

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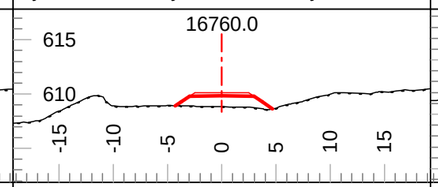

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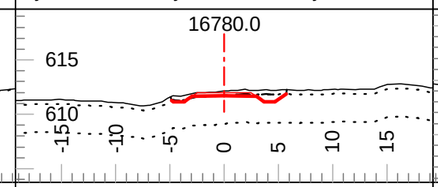

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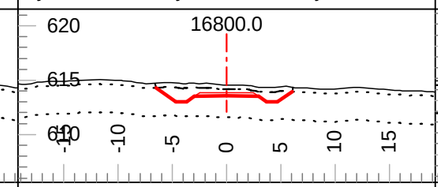
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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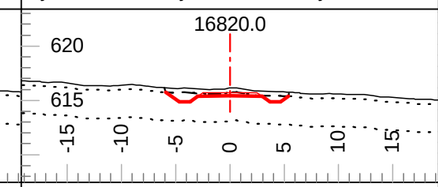

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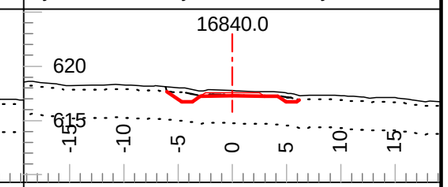

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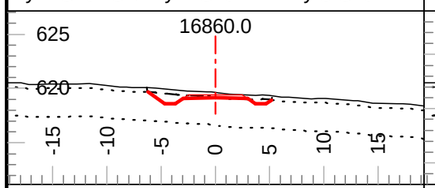

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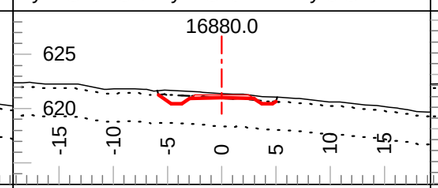

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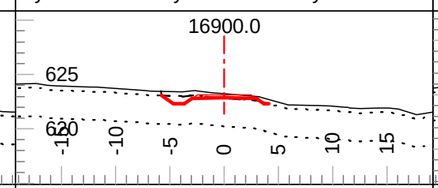

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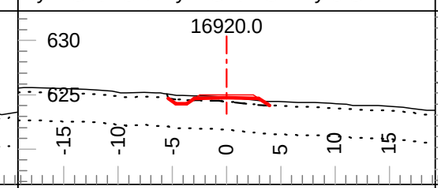

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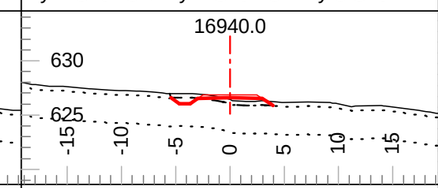

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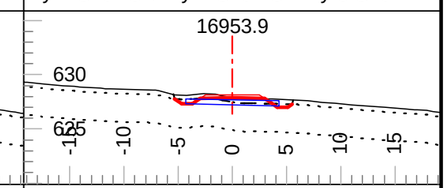

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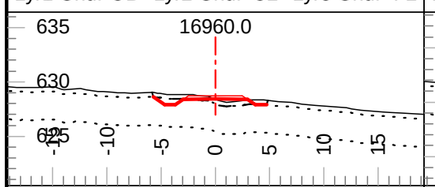

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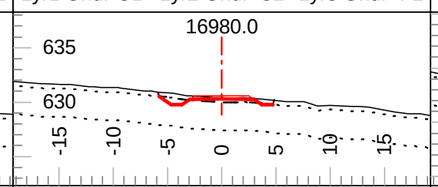

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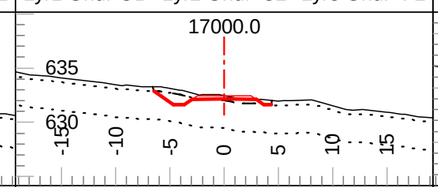

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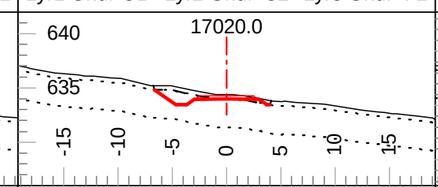

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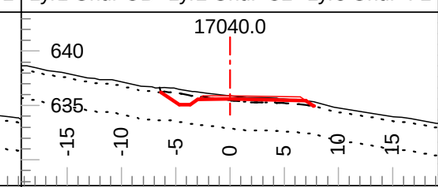

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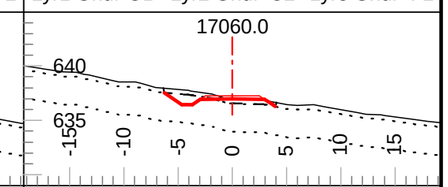

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

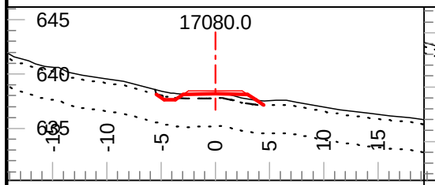
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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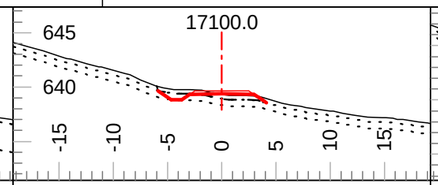

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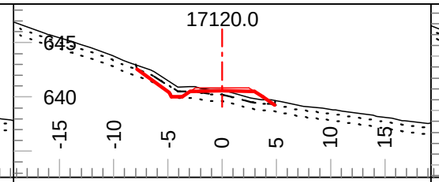

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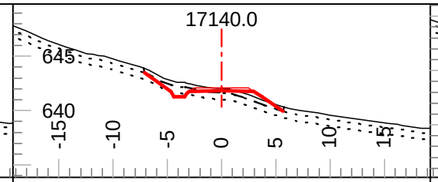

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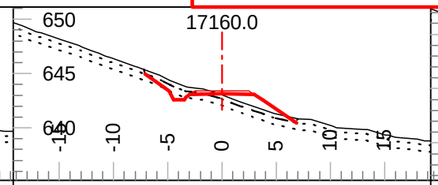

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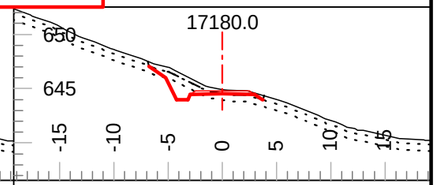

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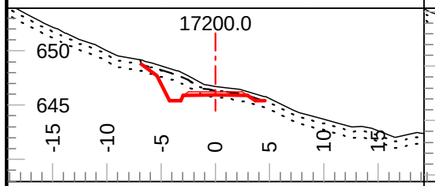

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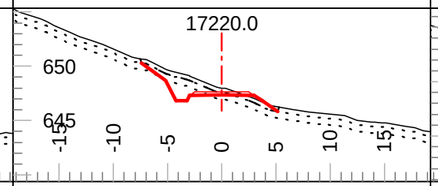

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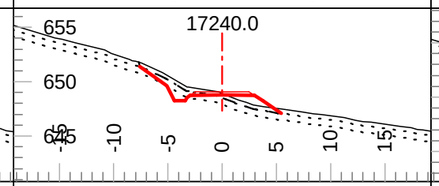

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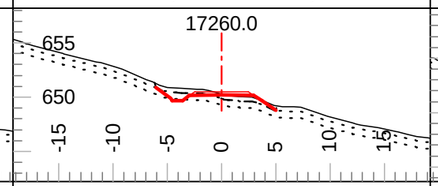

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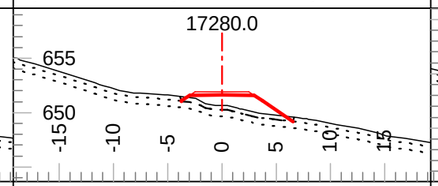

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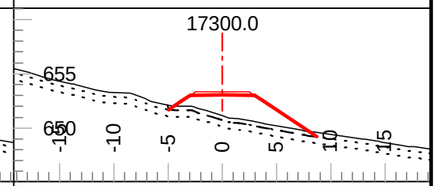

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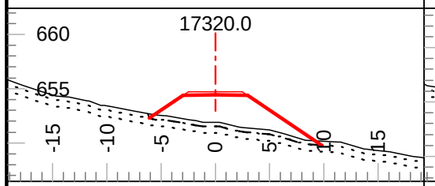

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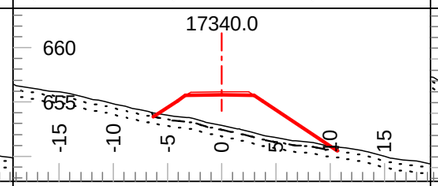

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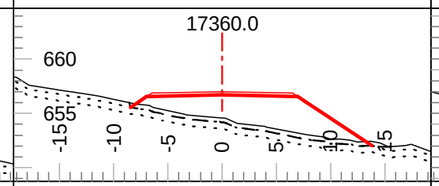

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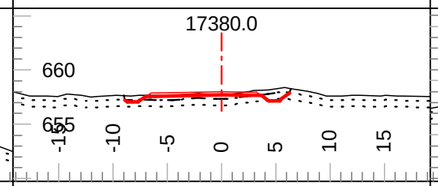

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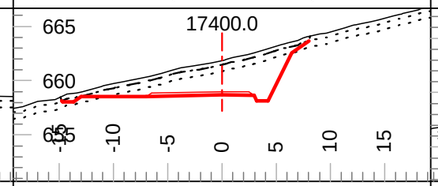

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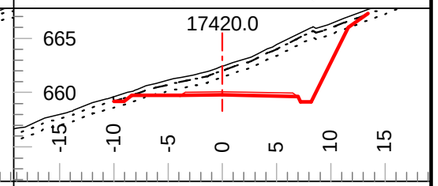

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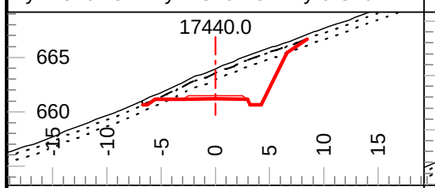

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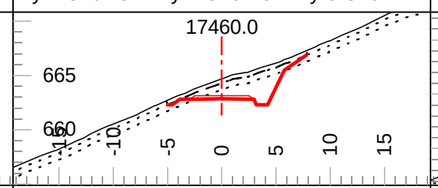

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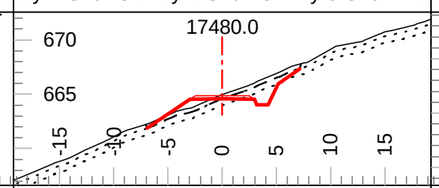

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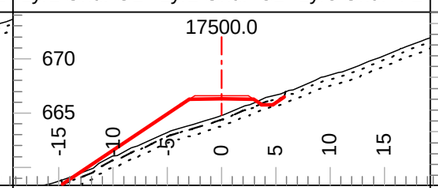

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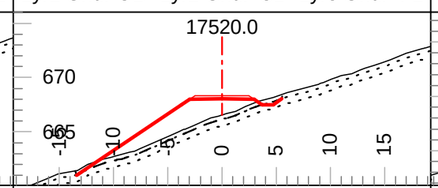

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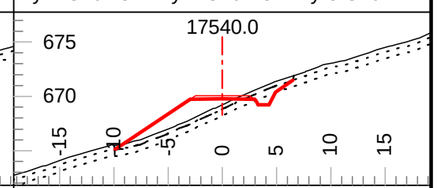

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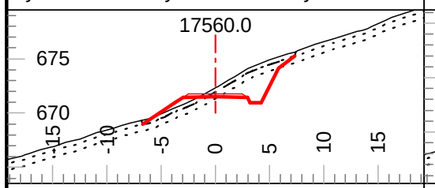

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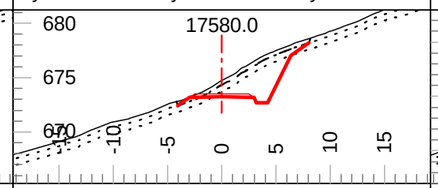

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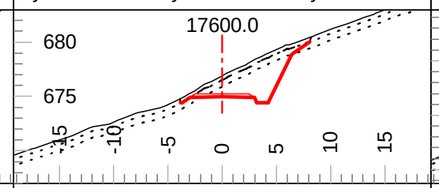

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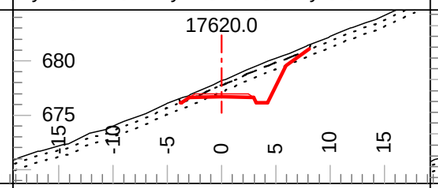

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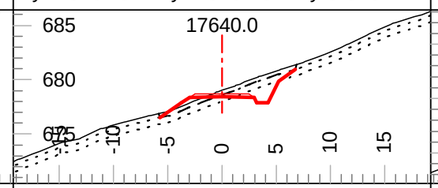

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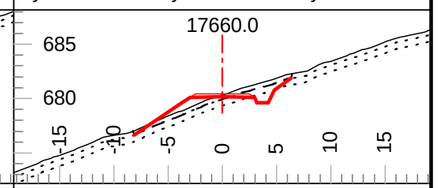

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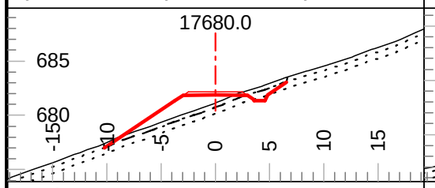

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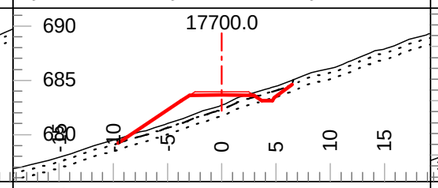

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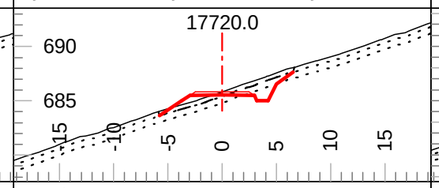

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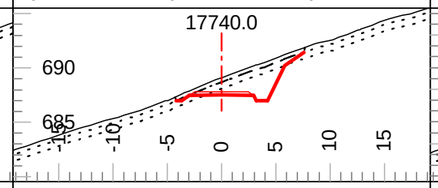

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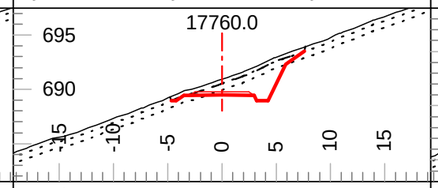

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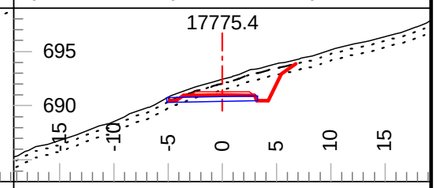

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Coffee Gold Mine

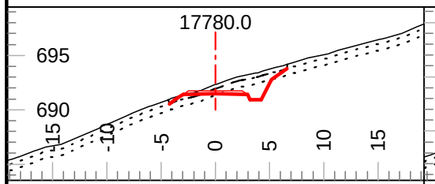
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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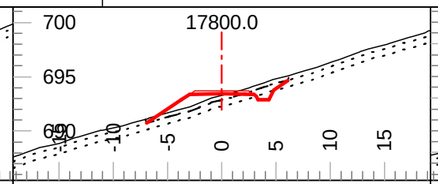

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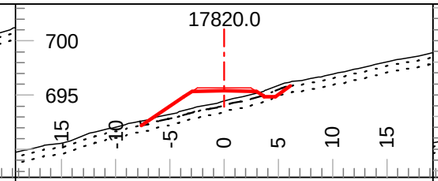

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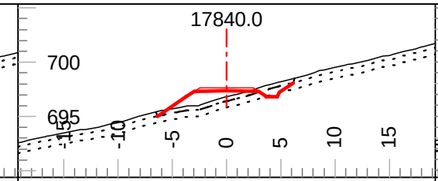

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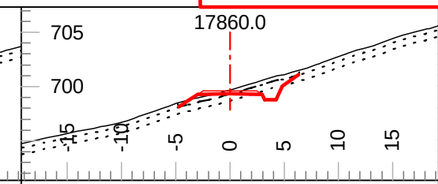

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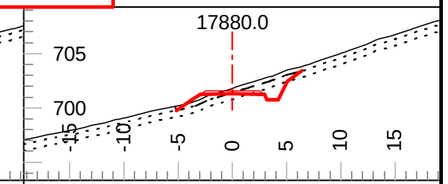

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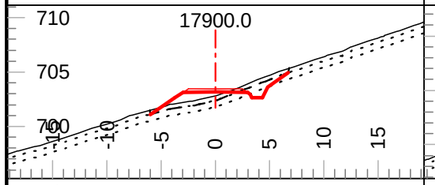

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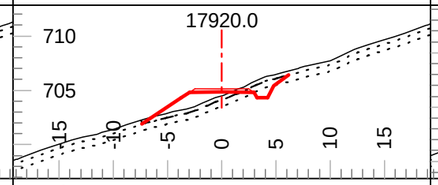

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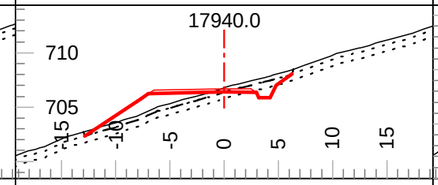

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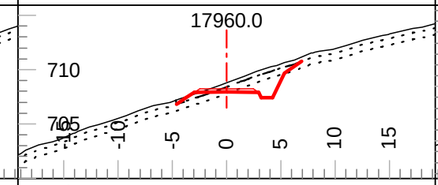

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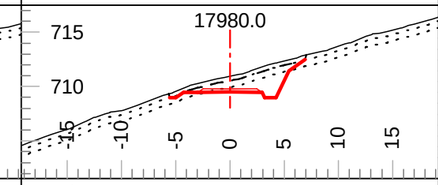

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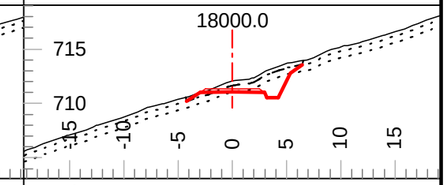

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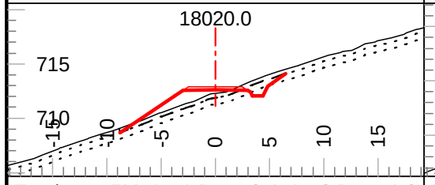

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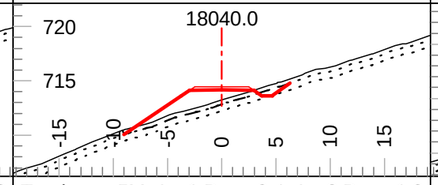

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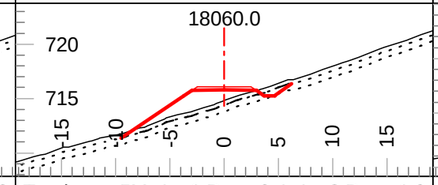

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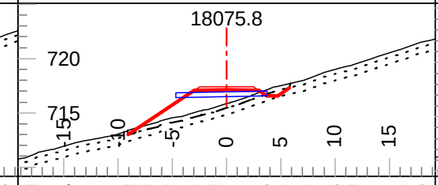

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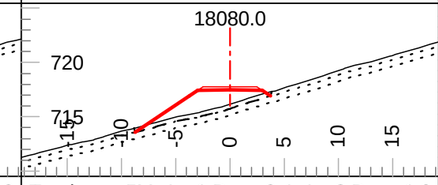

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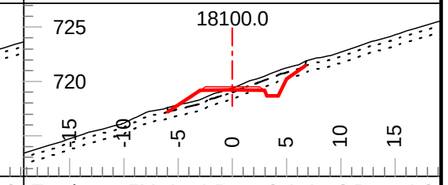

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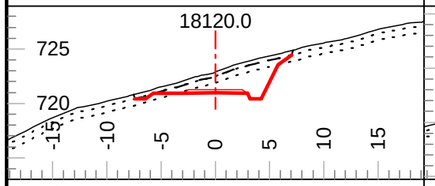

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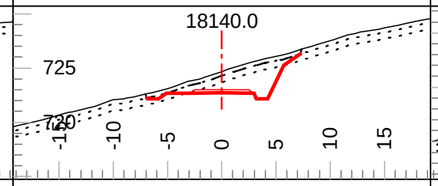

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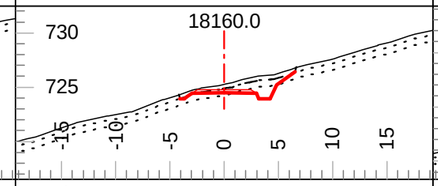

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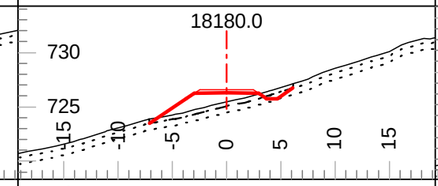

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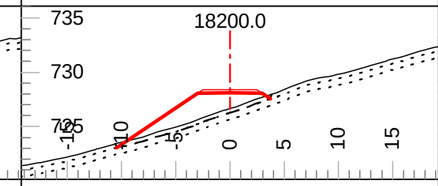

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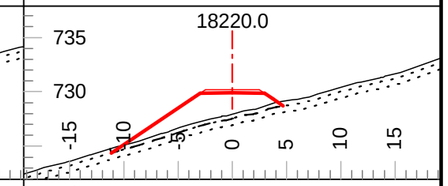

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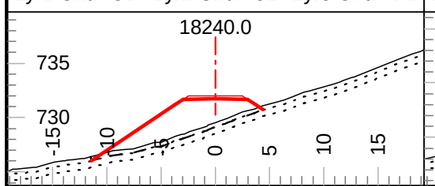

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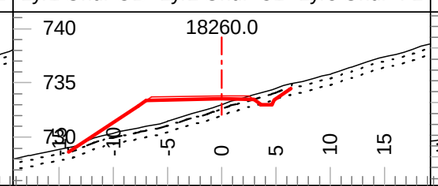

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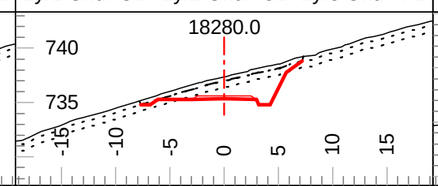

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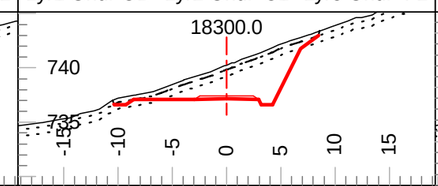

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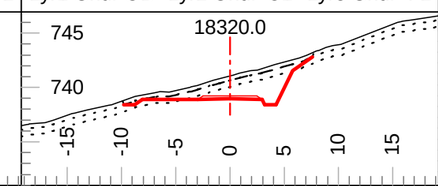

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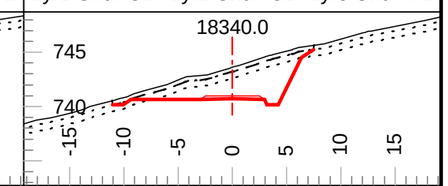

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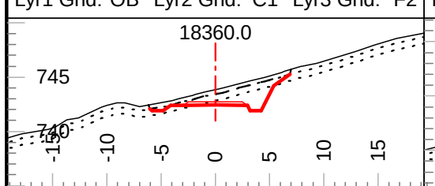

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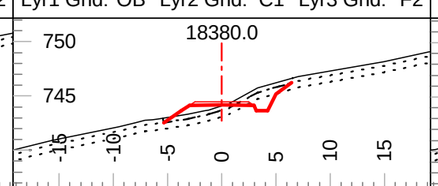

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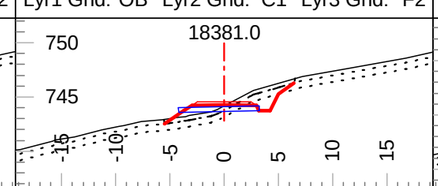

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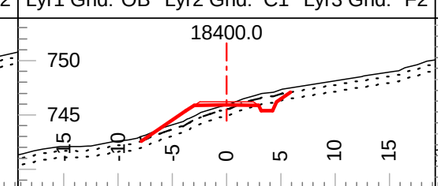
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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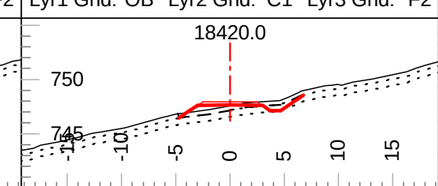

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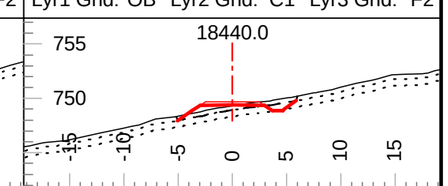

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 1
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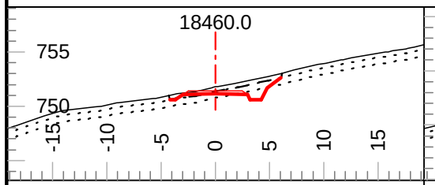
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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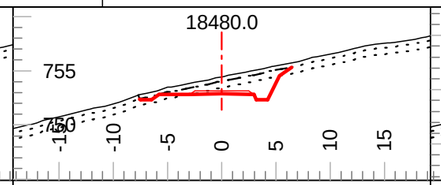

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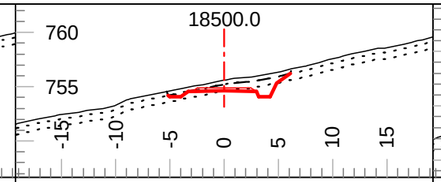

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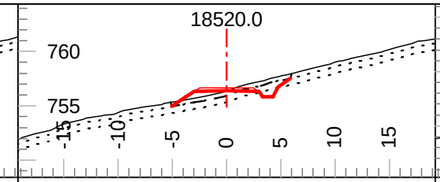

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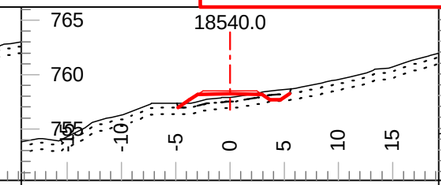

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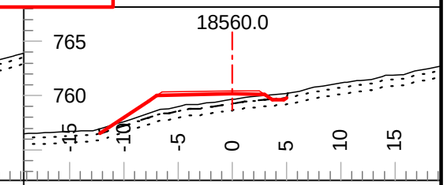

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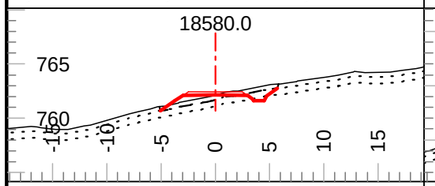

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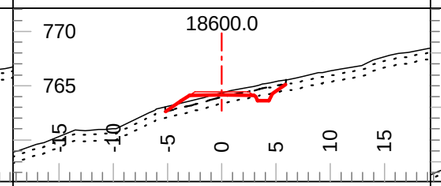

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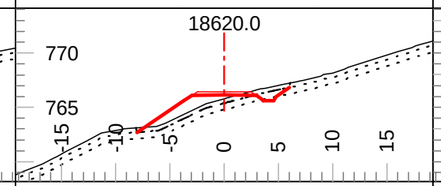

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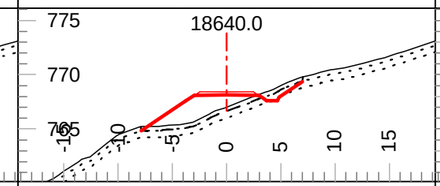

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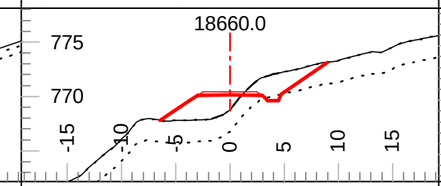

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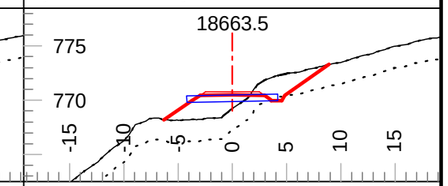

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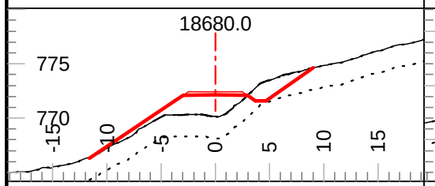

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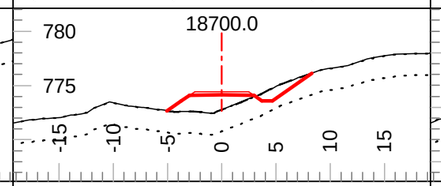

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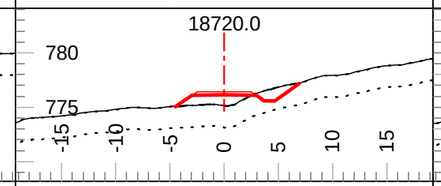

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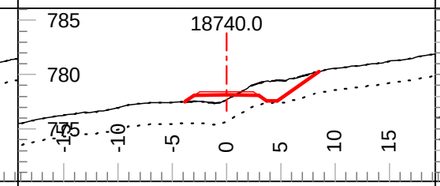

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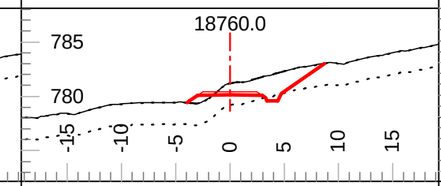

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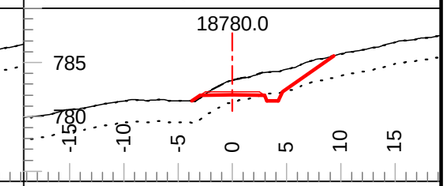

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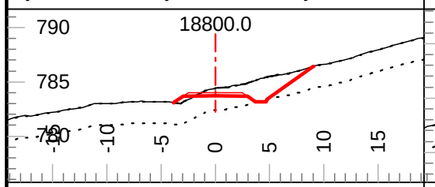

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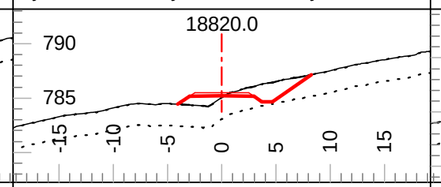

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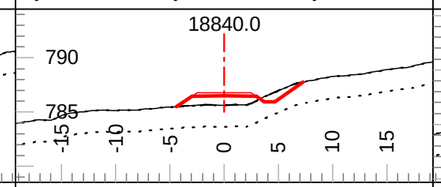

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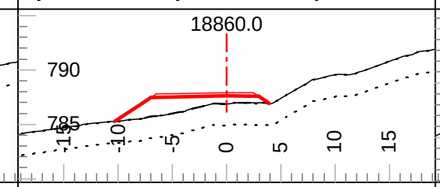

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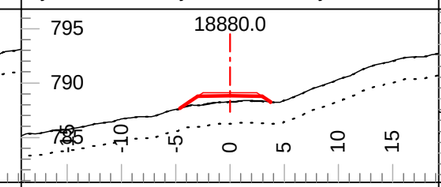

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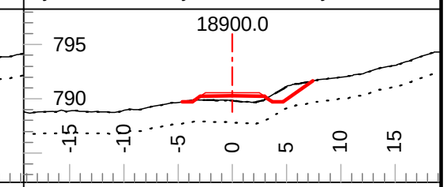

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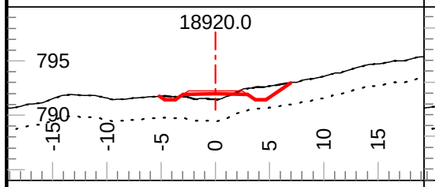

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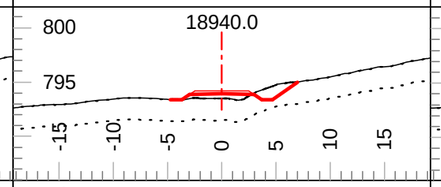

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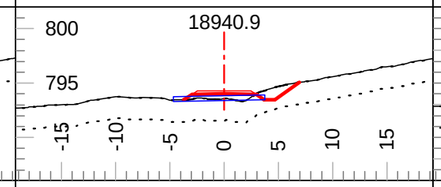

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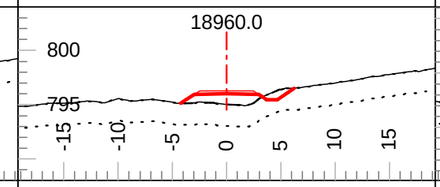

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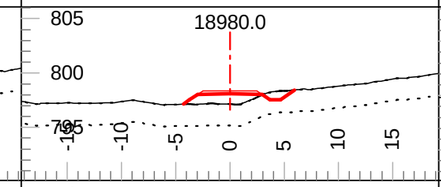

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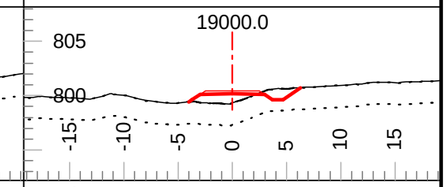

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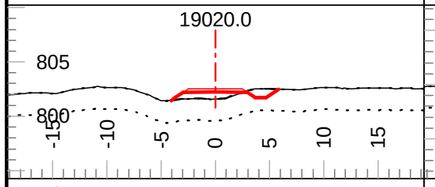

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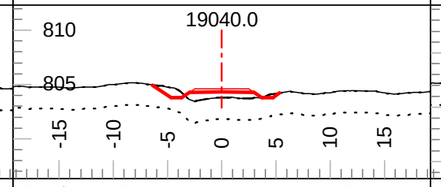

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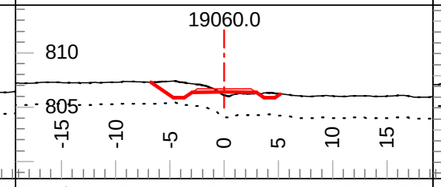

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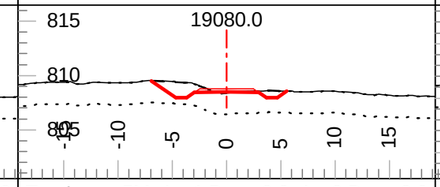

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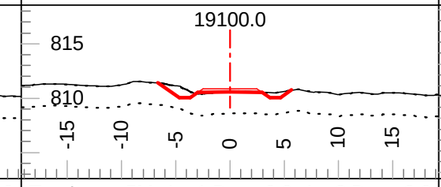

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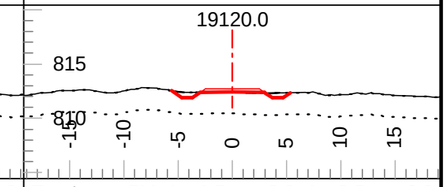

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Coffee Gold Mine

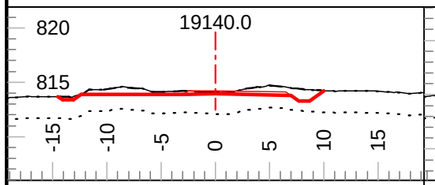
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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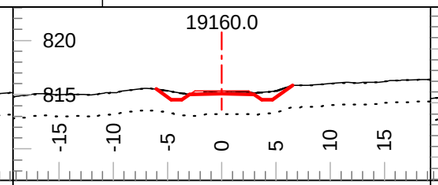

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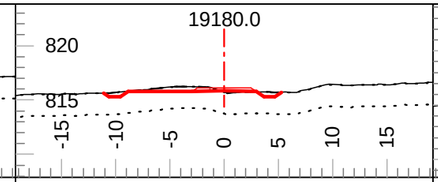

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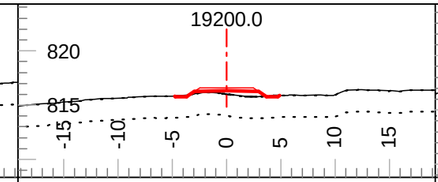
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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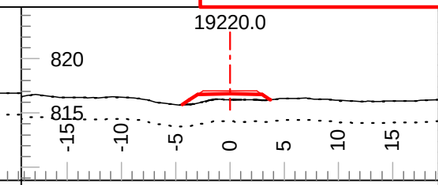

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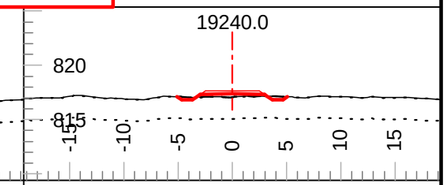

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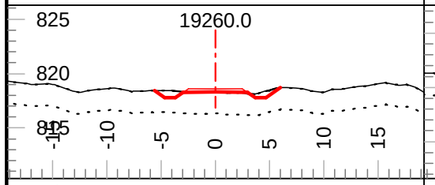

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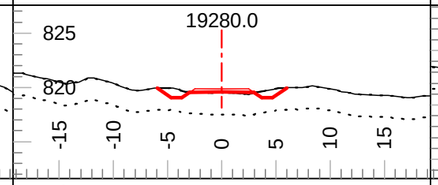

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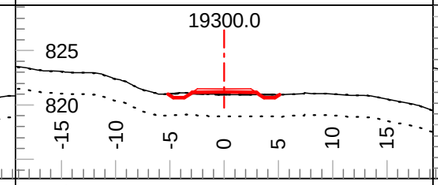

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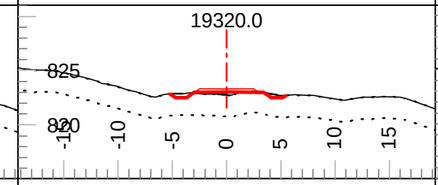

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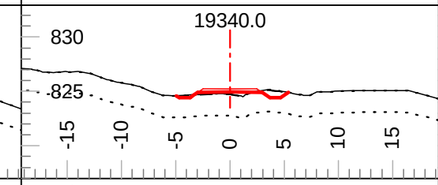

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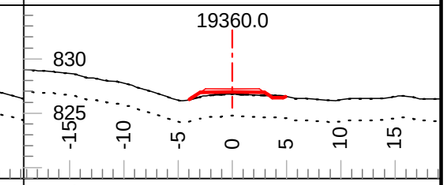

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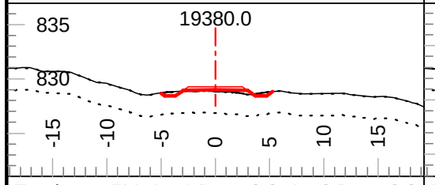

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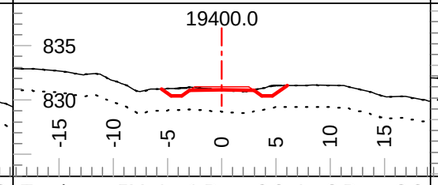

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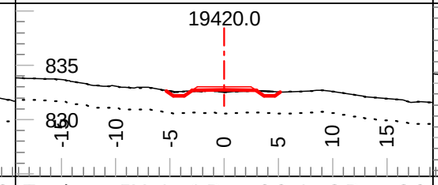

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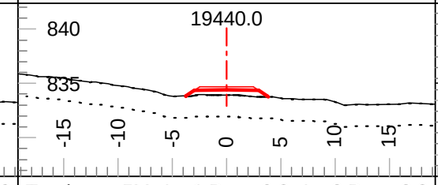

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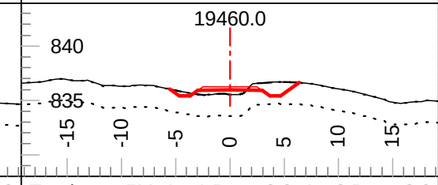

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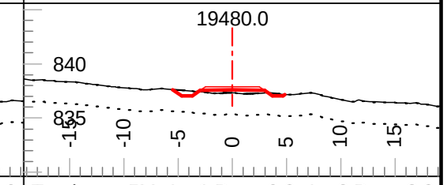

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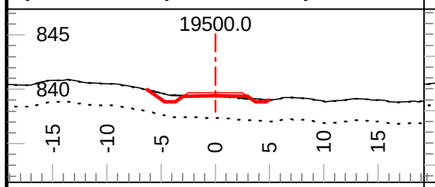

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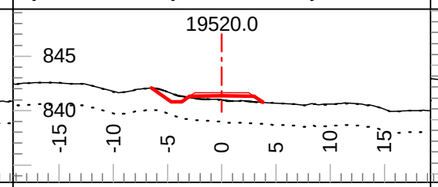

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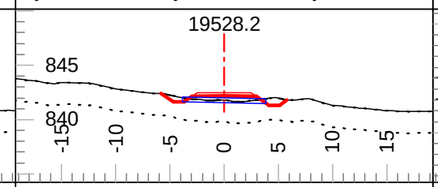

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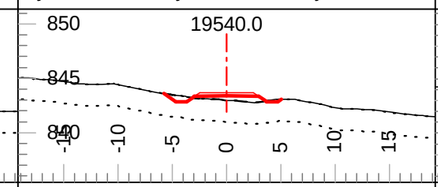

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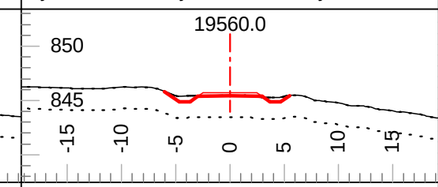

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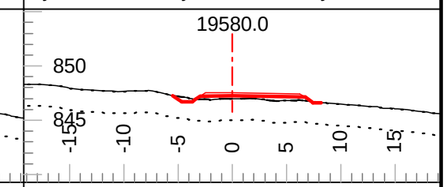

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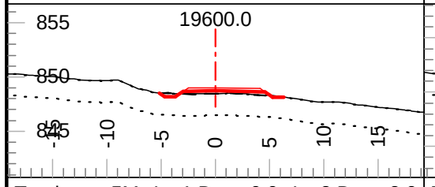

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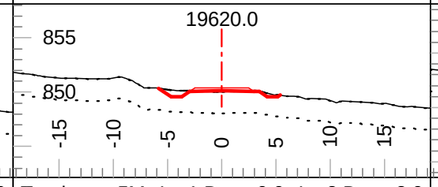

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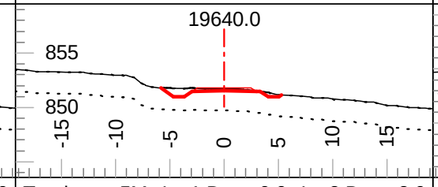

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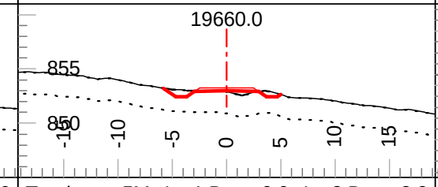

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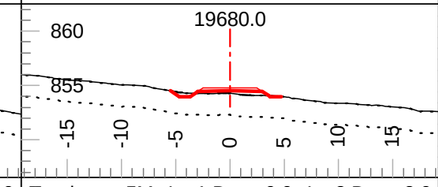

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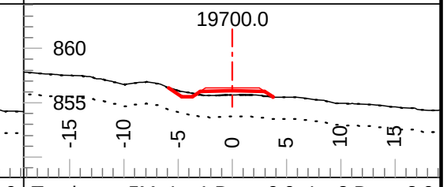

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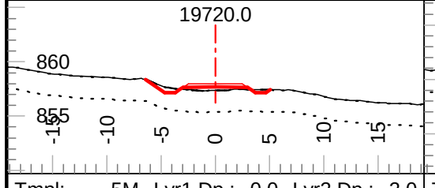

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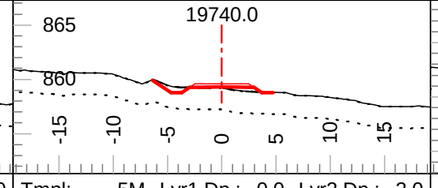

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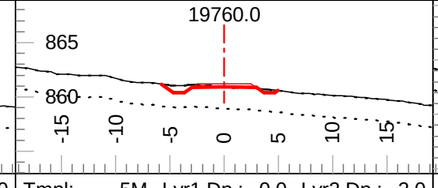

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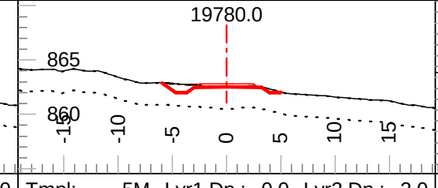

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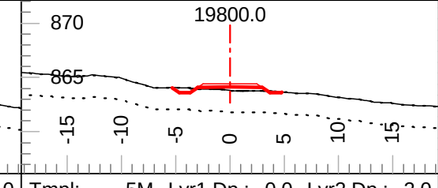

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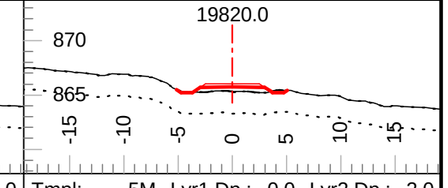

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Coffee Gold Mine

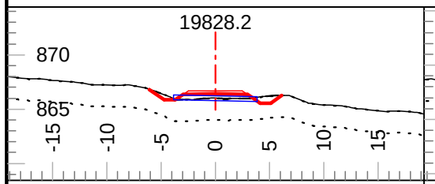
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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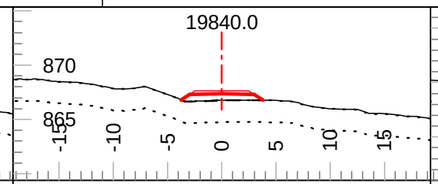

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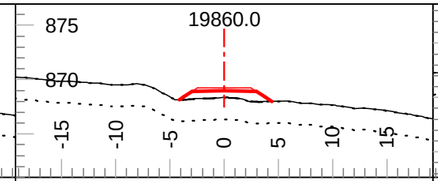

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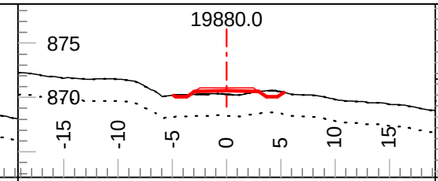

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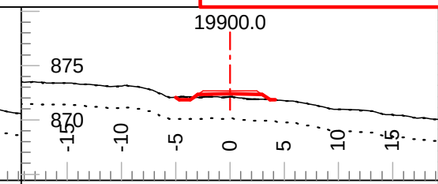

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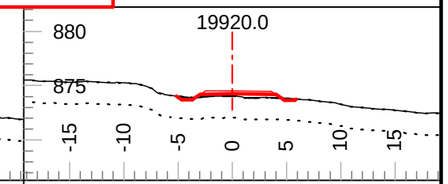

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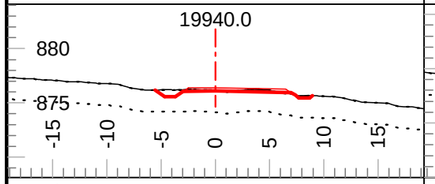

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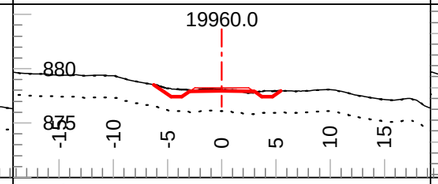

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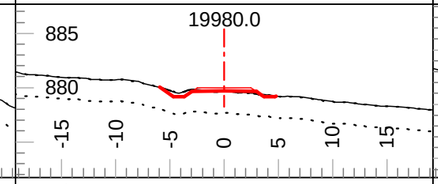

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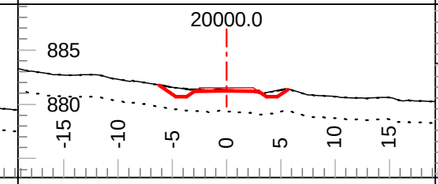

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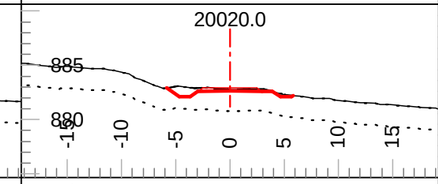

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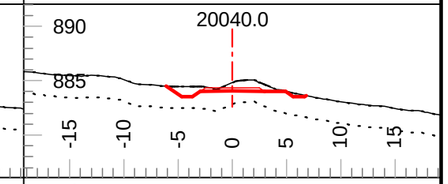

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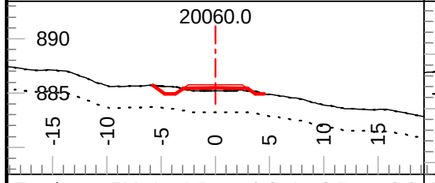

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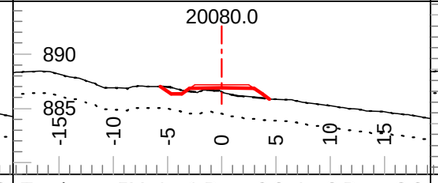

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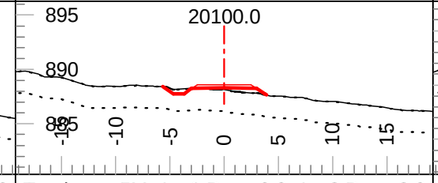

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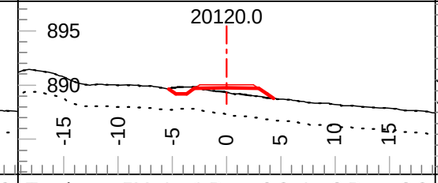

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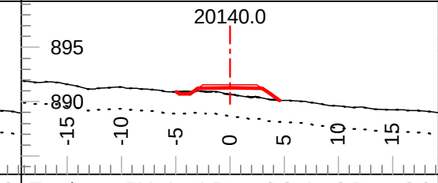

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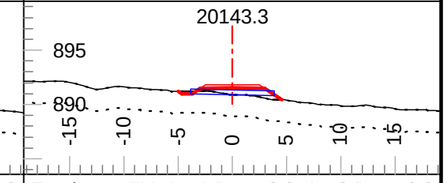

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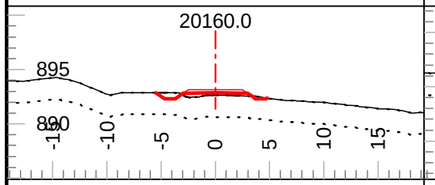

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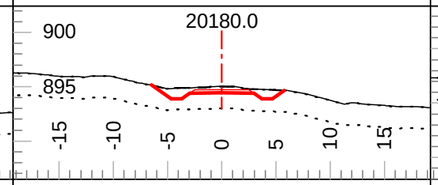

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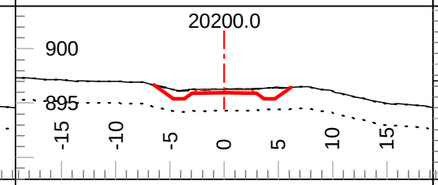

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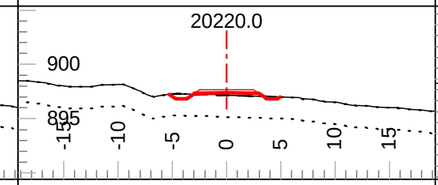

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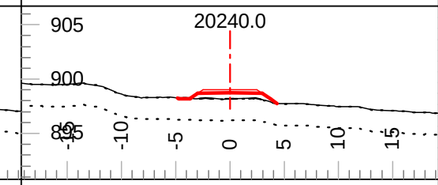

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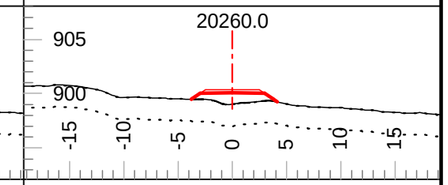

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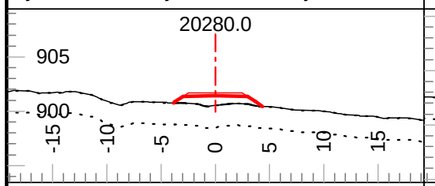

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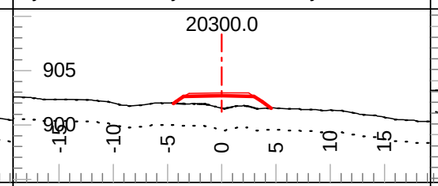

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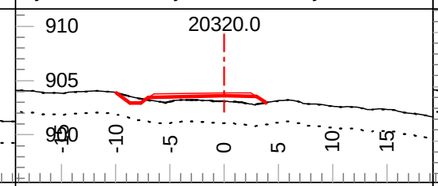

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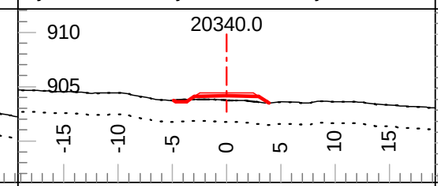

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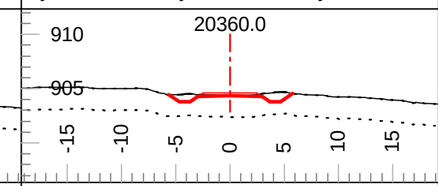

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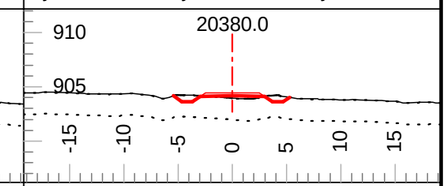

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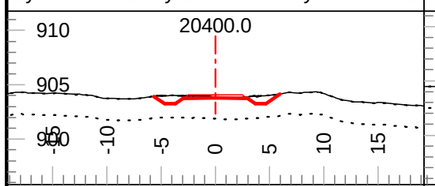

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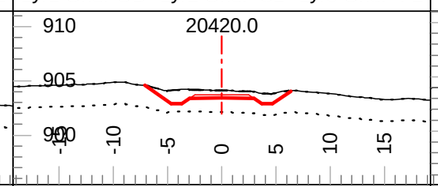

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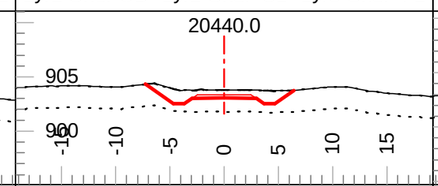

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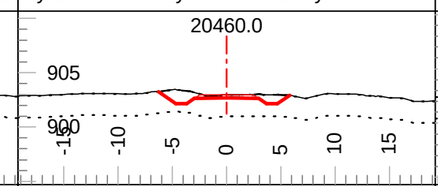

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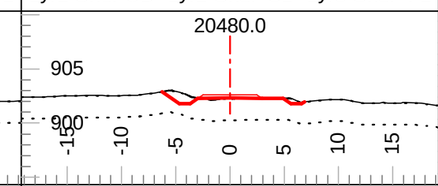

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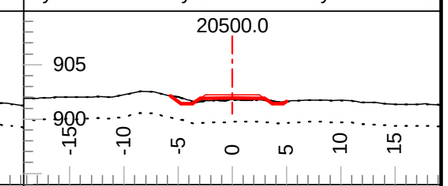

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

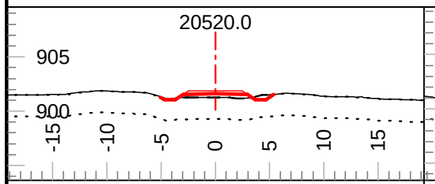
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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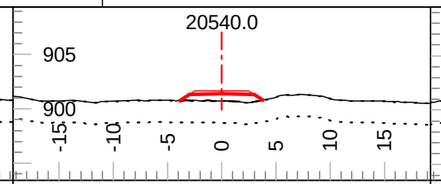

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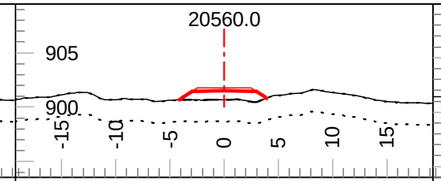

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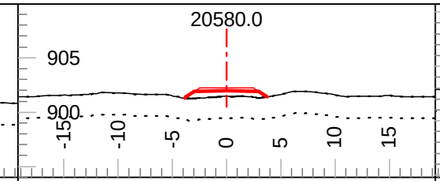

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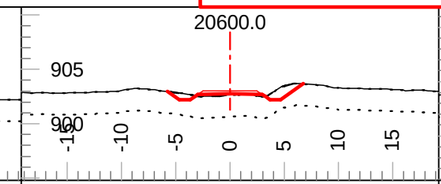

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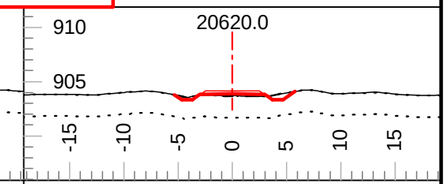

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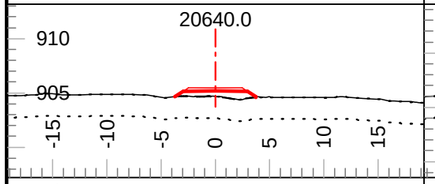

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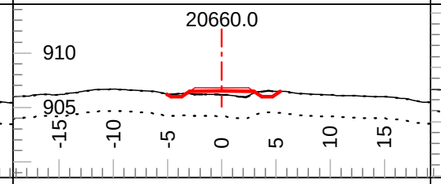

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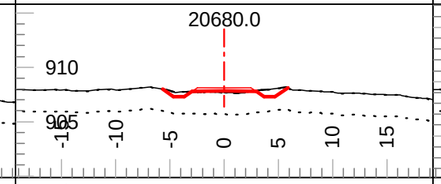

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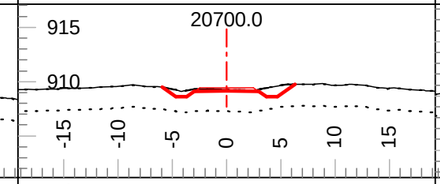

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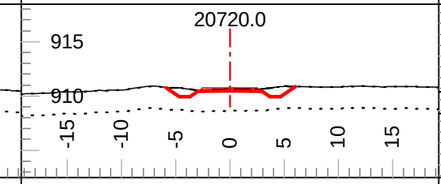

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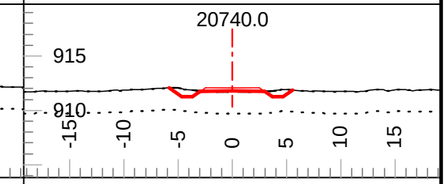

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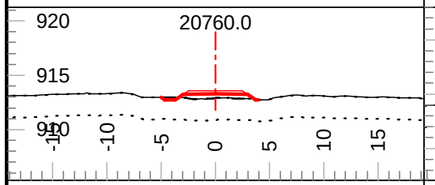

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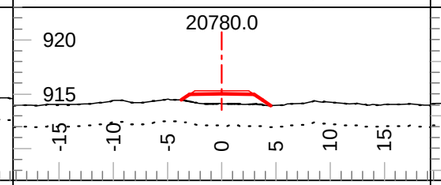

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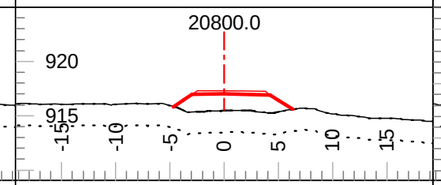

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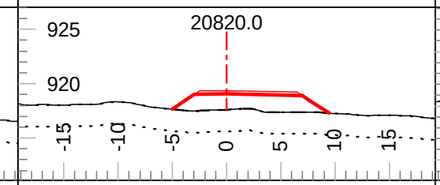

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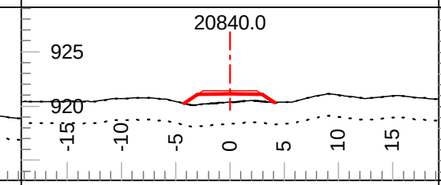
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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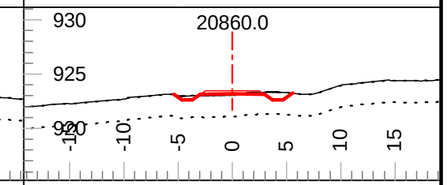

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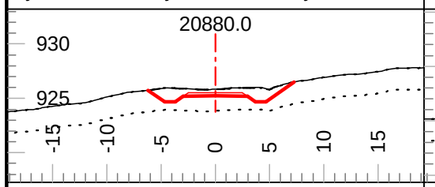

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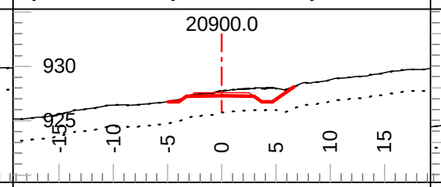

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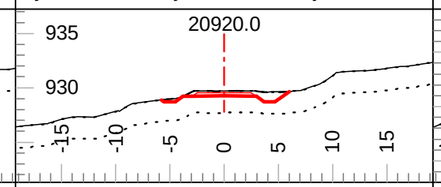

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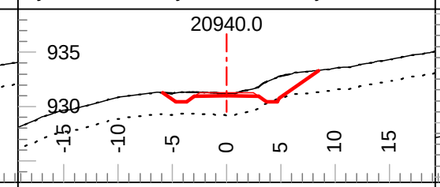

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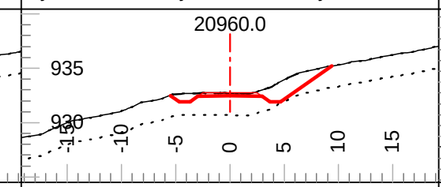

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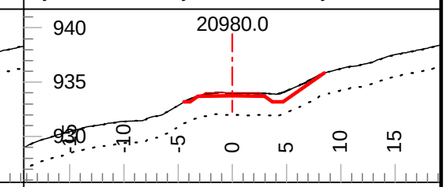

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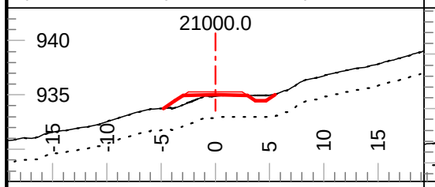

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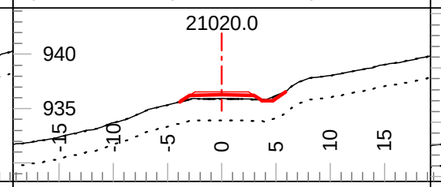

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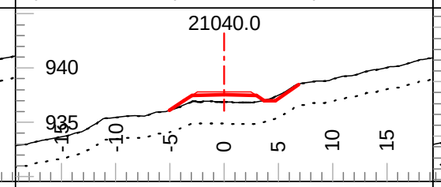

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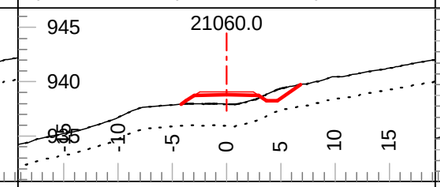

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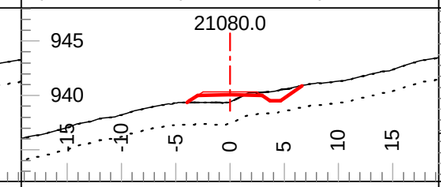

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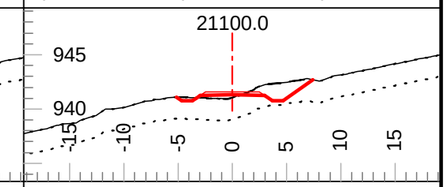

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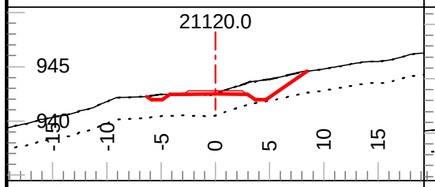

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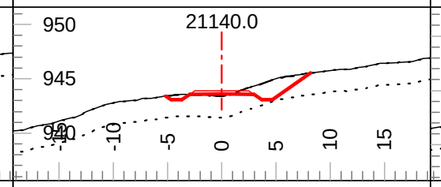

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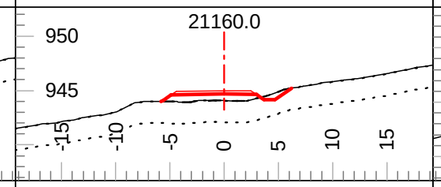

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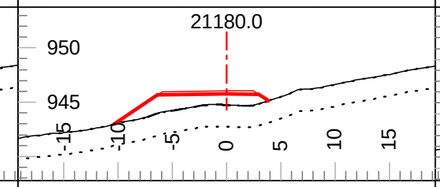

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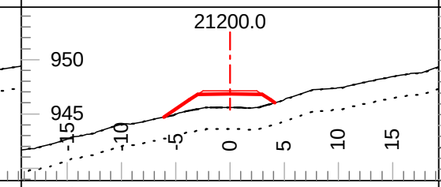

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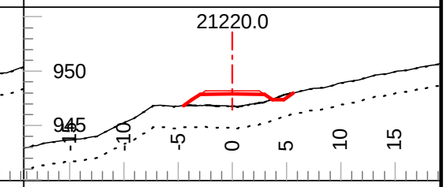

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Coffee Gold Mine

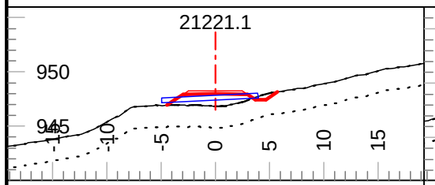
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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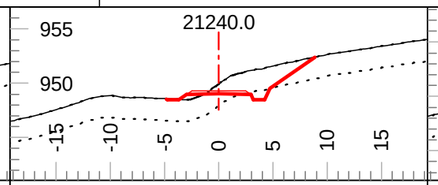

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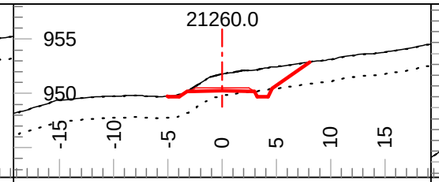

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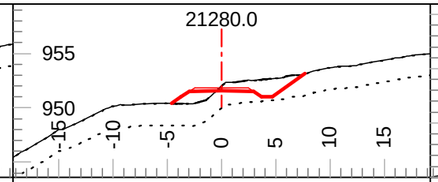

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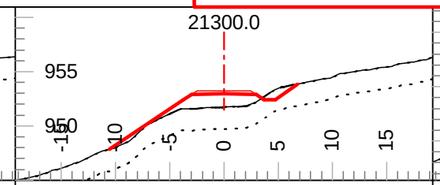

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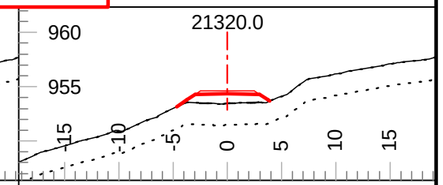

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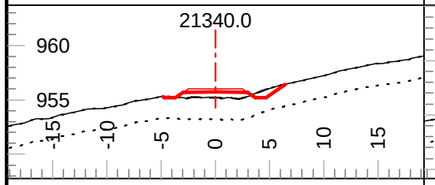

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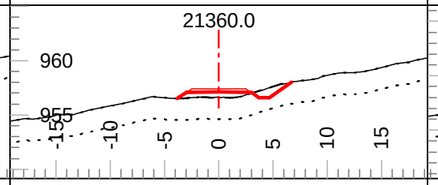

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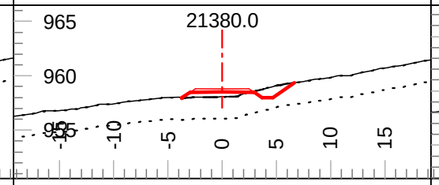

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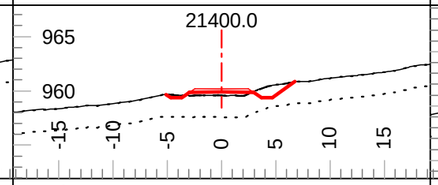

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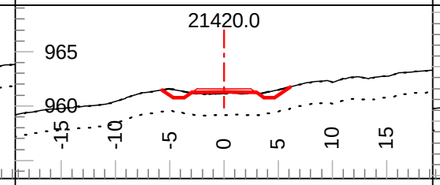

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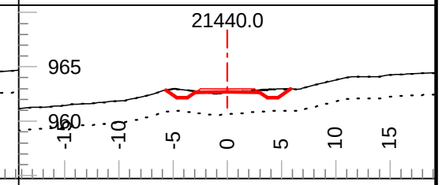

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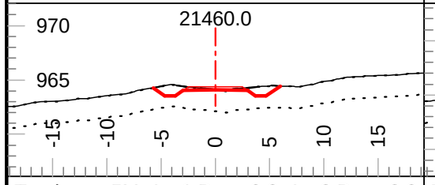

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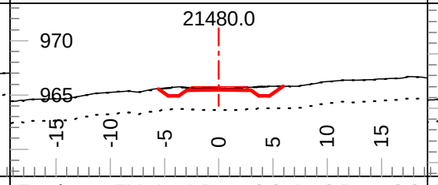

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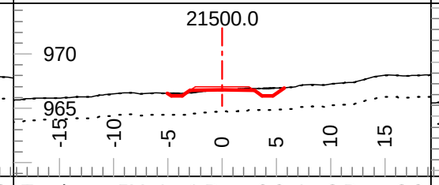

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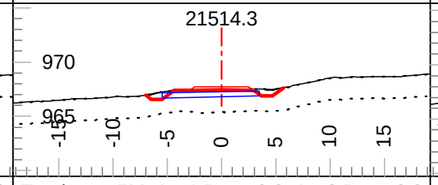

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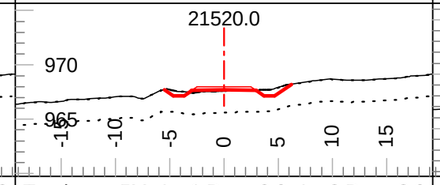

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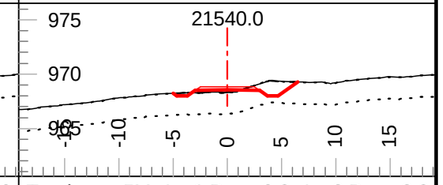

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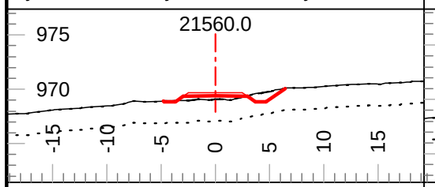

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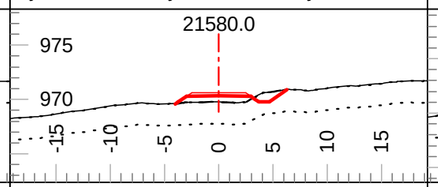

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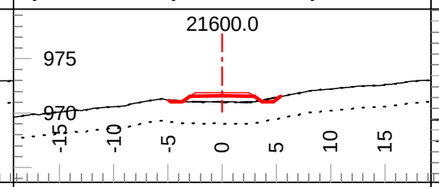

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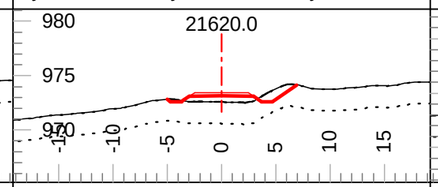

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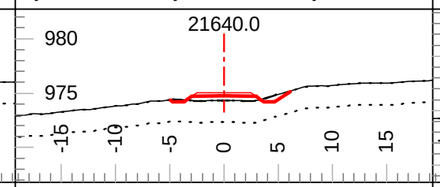
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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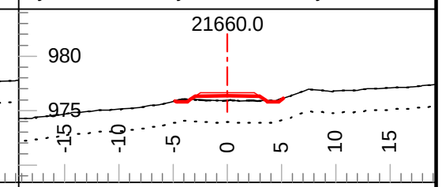

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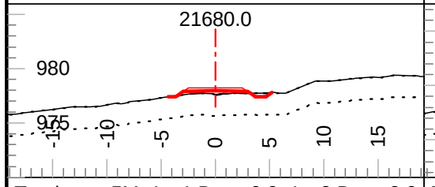

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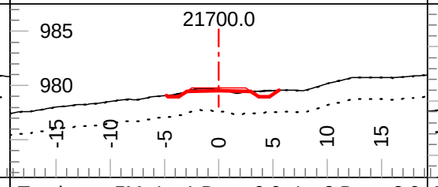

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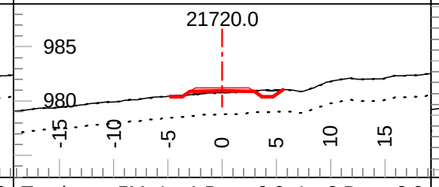

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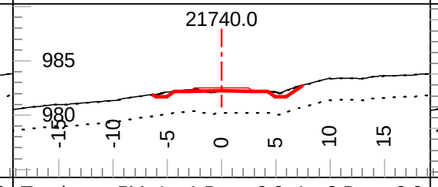

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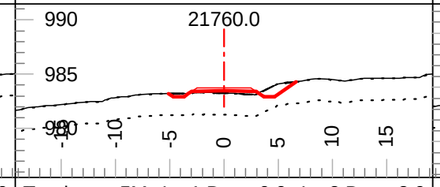

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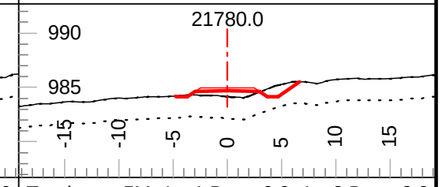

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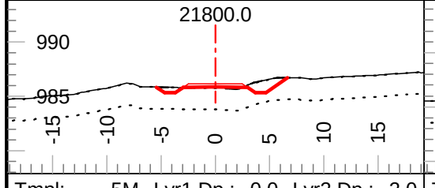

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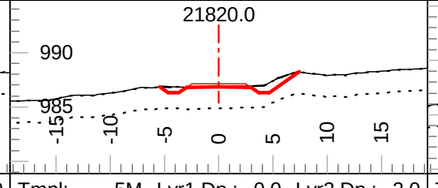

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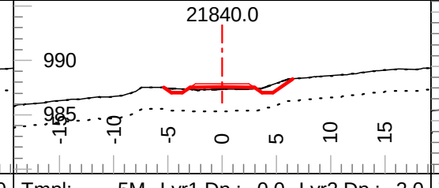

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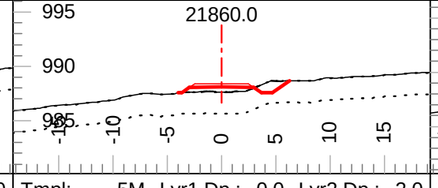

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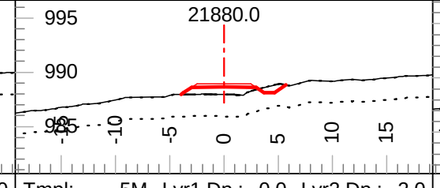

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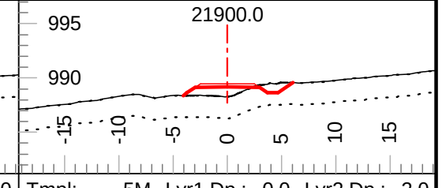

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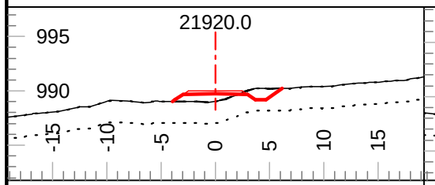

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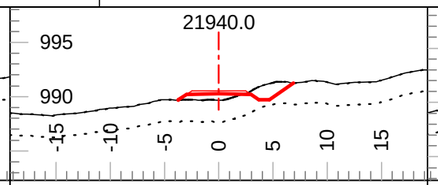

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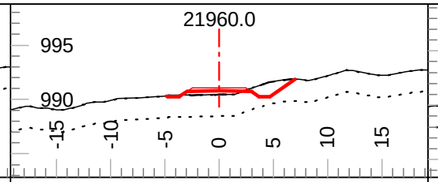

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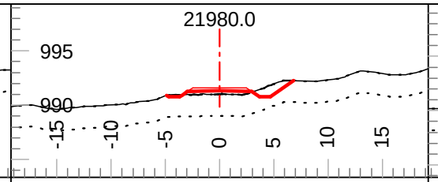

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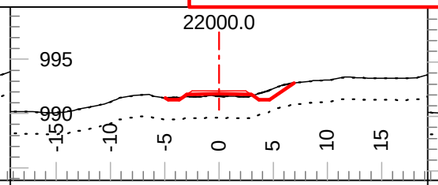

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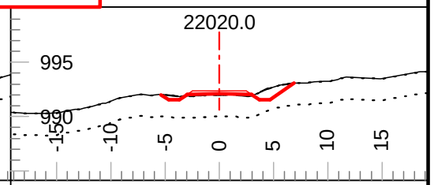

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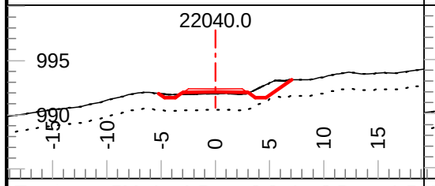

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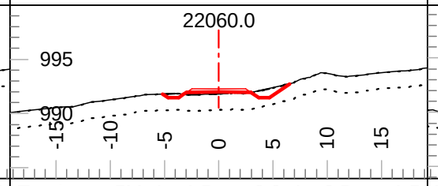

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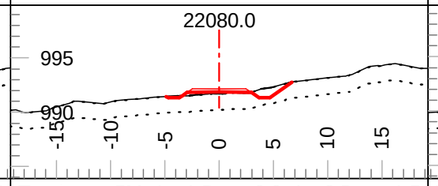

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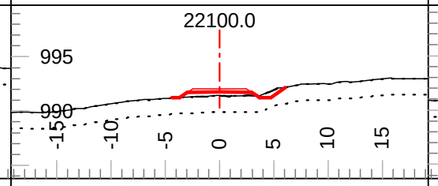

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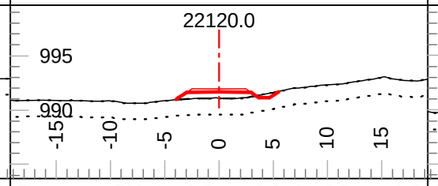

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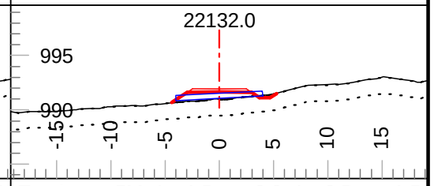

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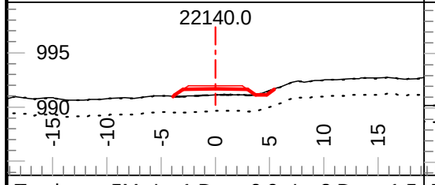

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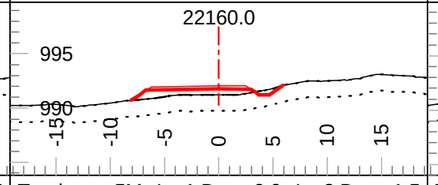

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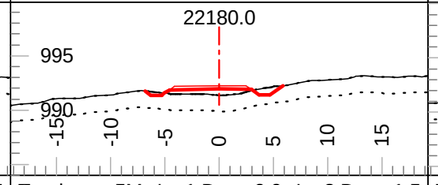

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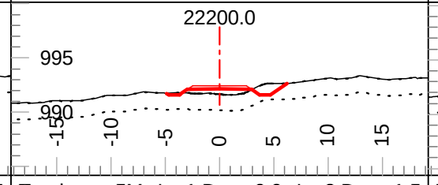

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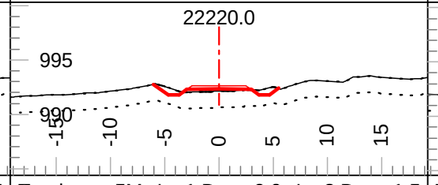

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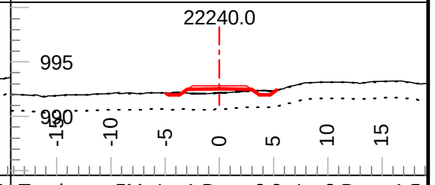

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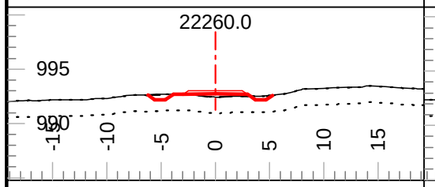

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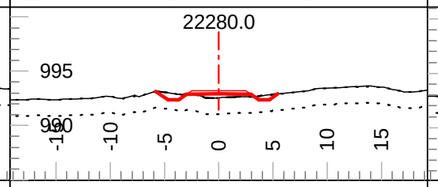

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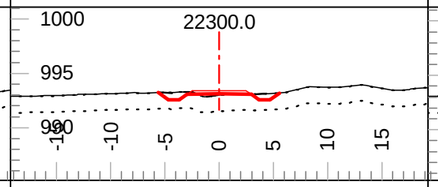

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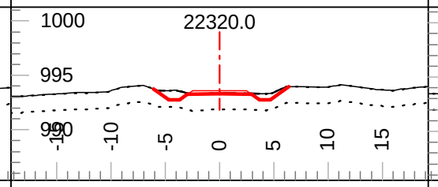

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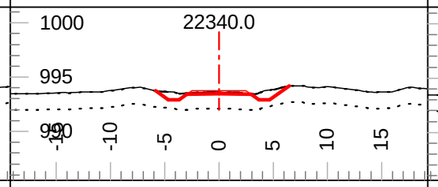

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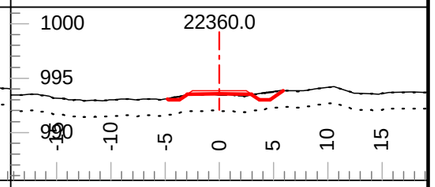

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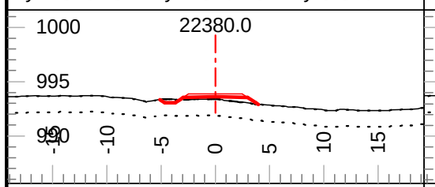

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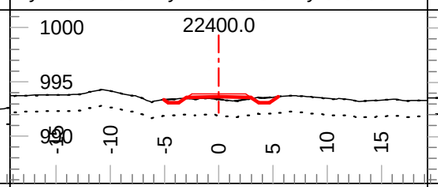

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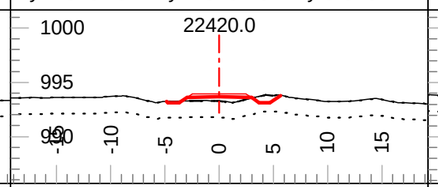

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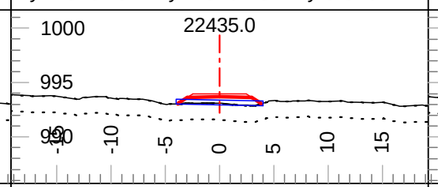

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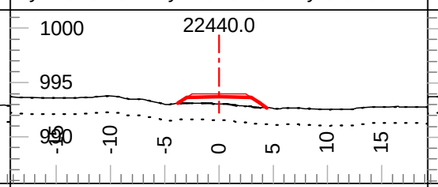

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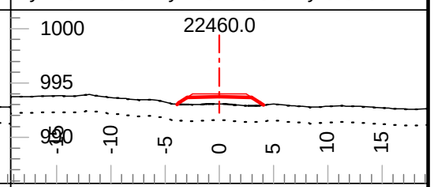
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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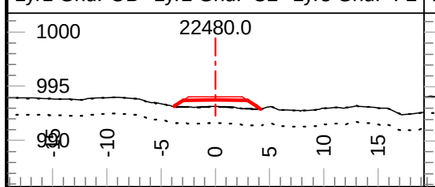

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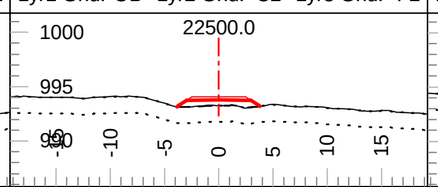

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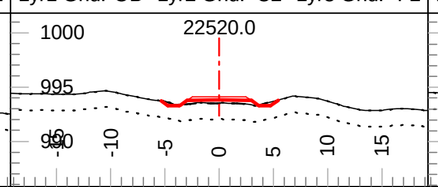

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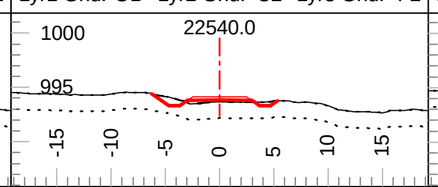

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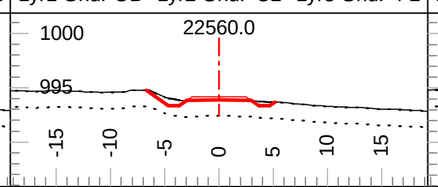

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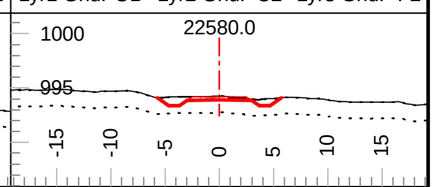


Tmpl: 5M Lyr1 Dp.: 0.0 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

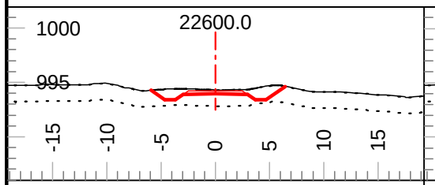
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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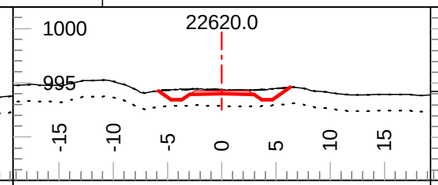
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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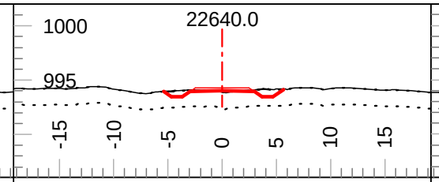

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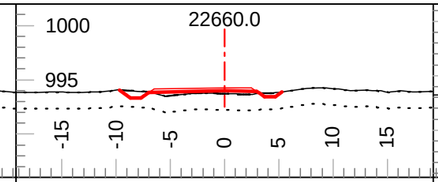

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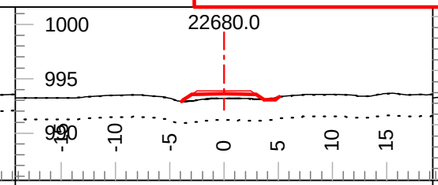

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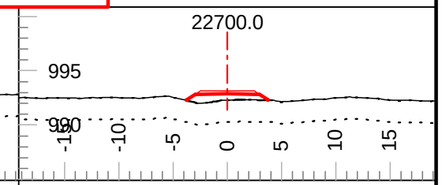

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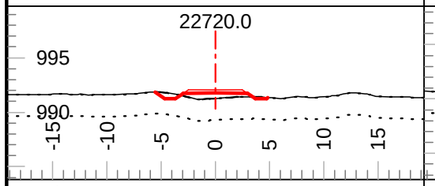

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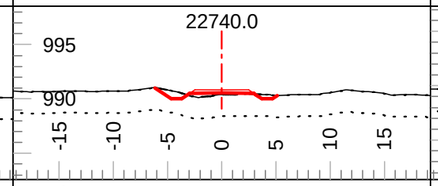

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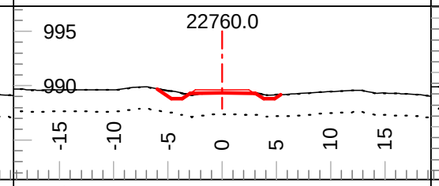

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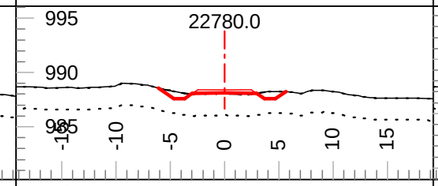

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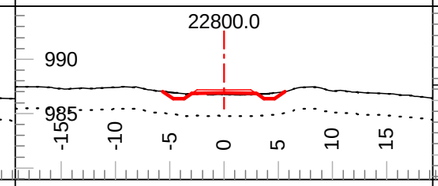

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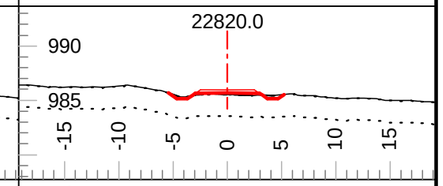

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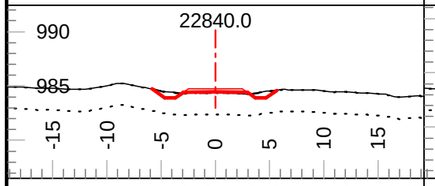

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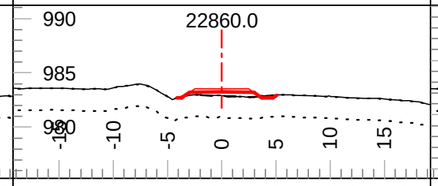

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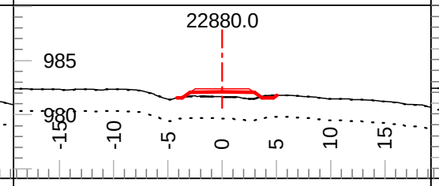

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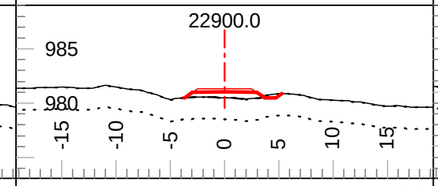

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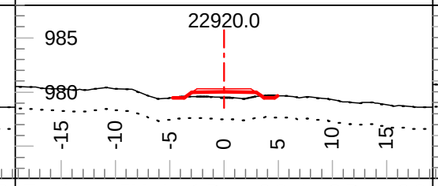

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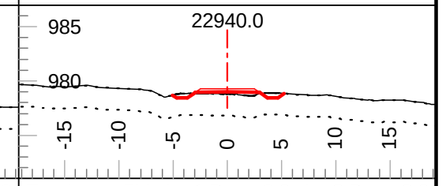

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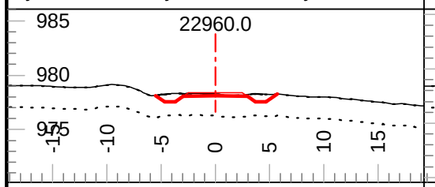

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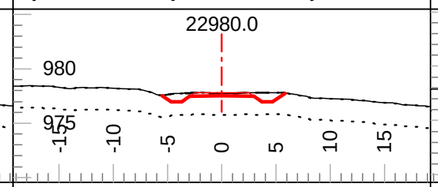

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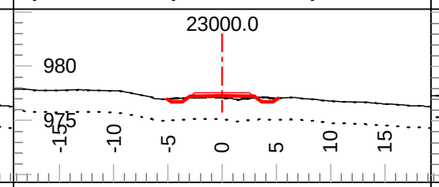

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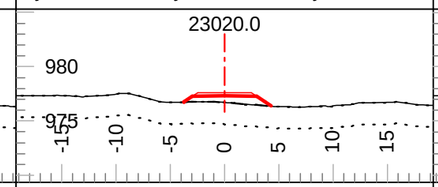

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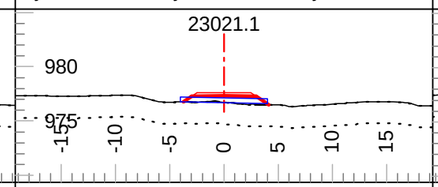

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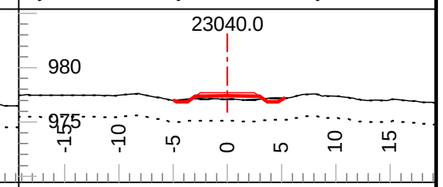

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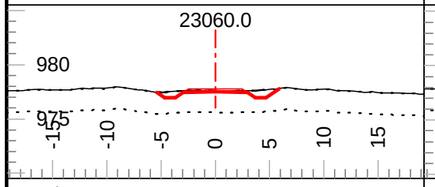

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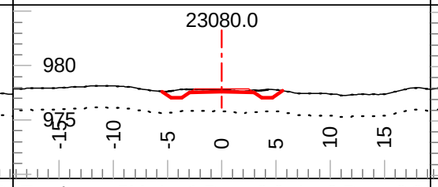

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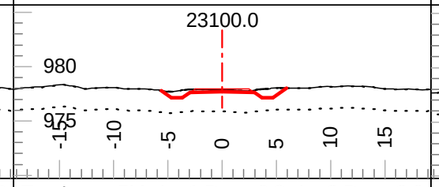

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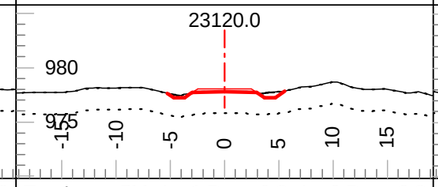

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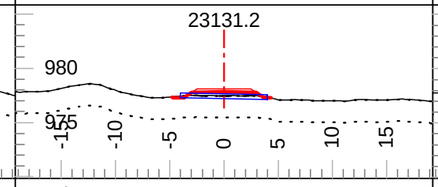

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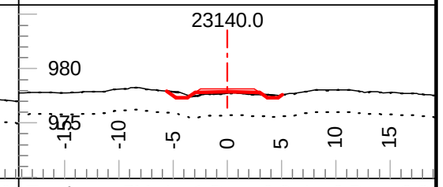

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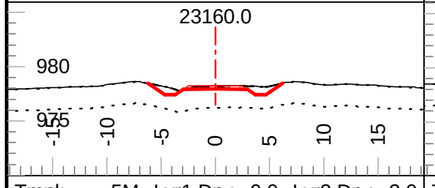

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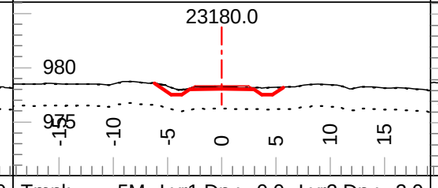

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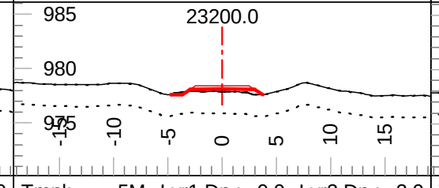

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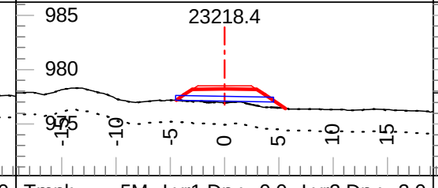

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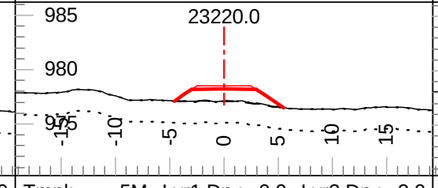

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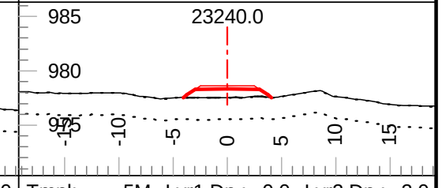

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

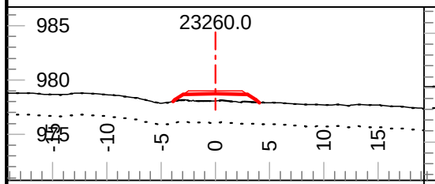
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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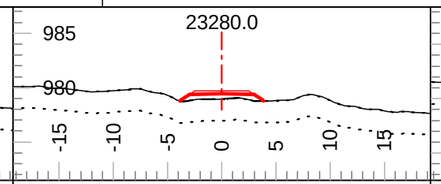
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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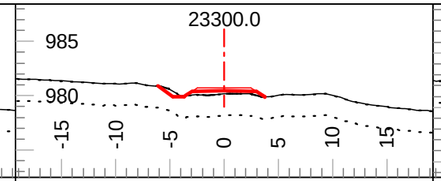

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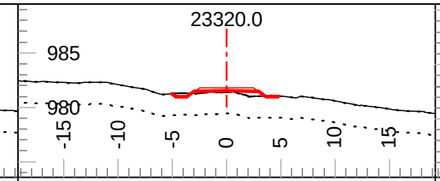

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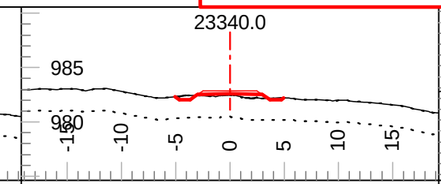

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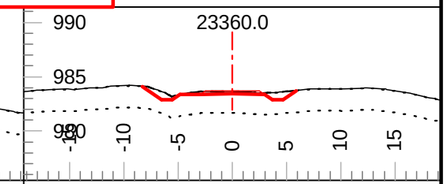

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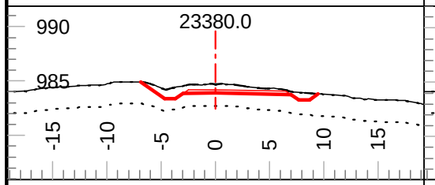

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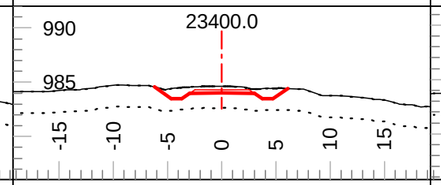

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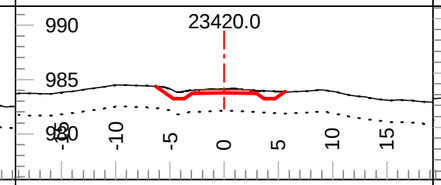

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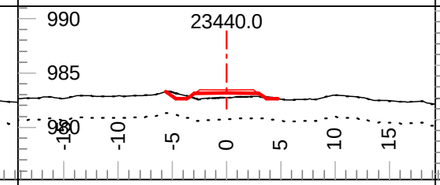

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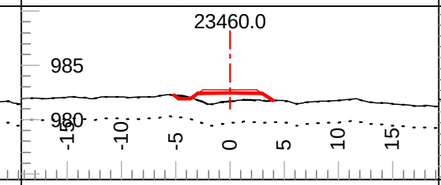

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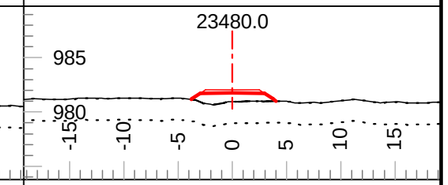

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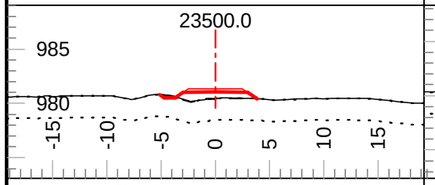

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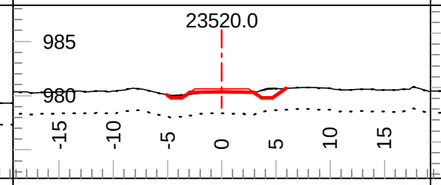

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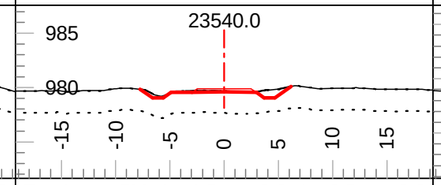

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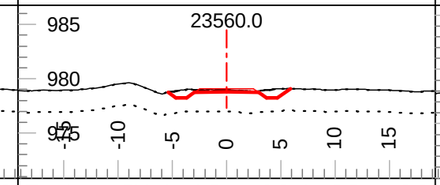

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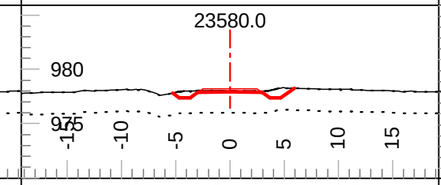

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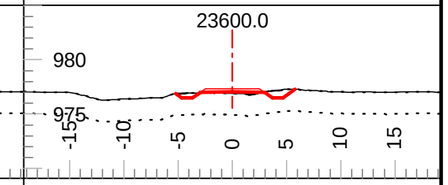

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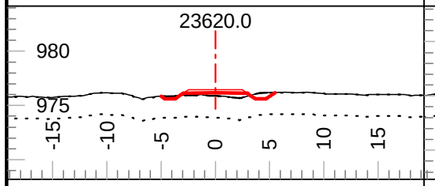

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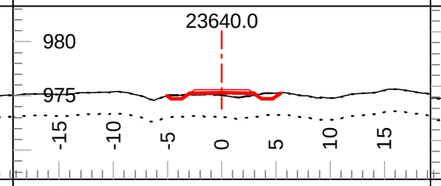

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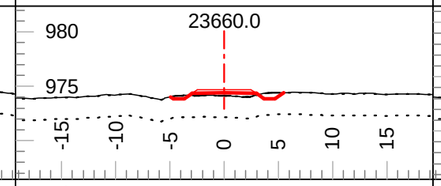

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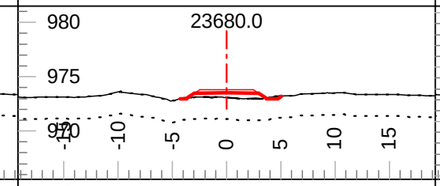

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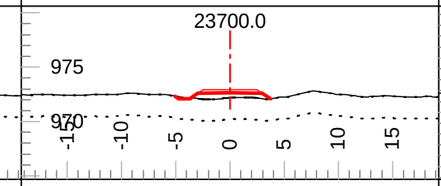

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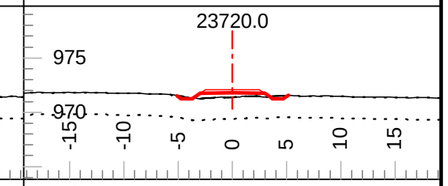

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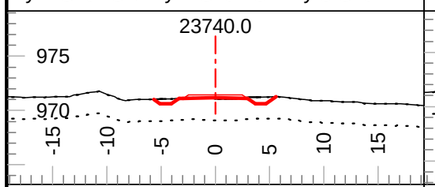

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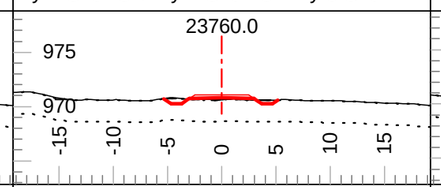

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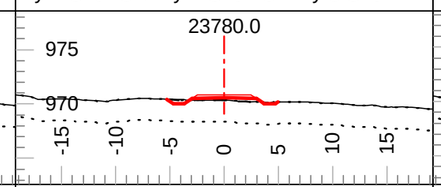

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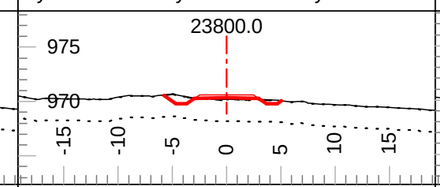

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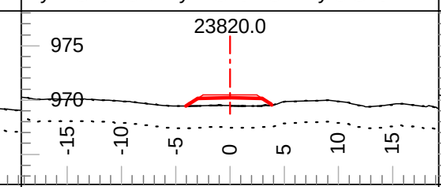

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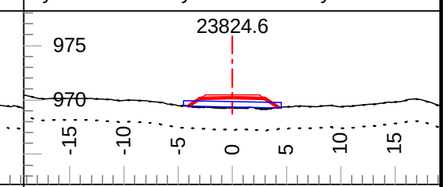

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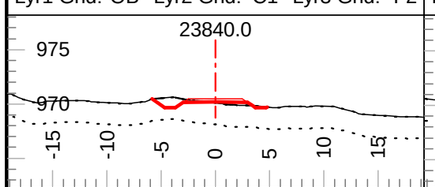

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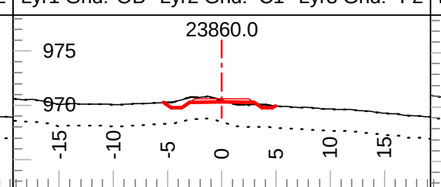

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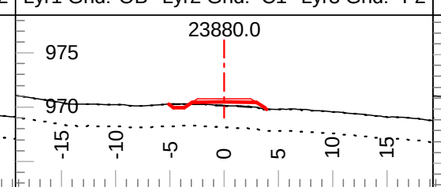

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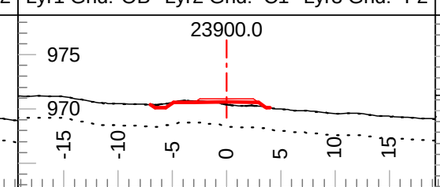

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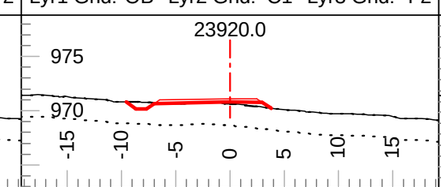

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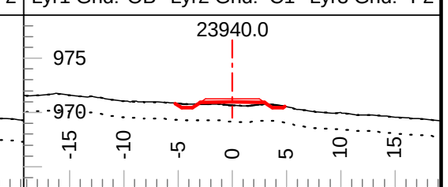

Tmpl: 5M Lyr1 Dp.: 0.0 Lyr2 Dp.: 1.5
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Coffee Gold Mine

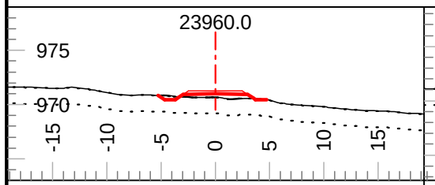
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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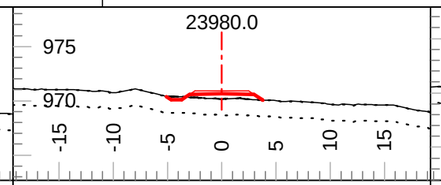

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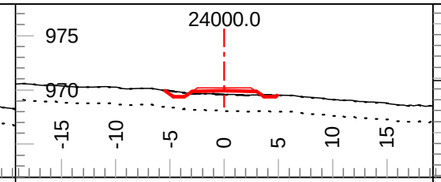

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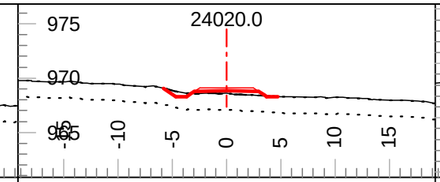

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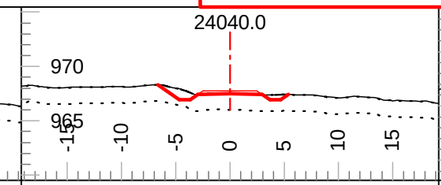

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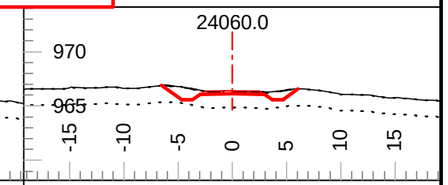

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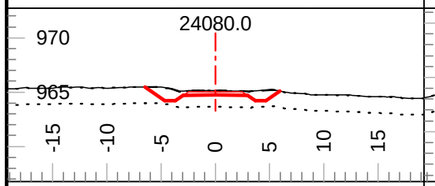

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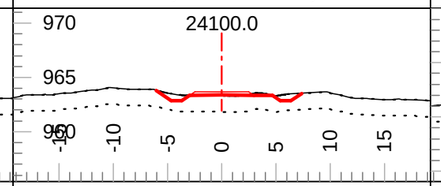

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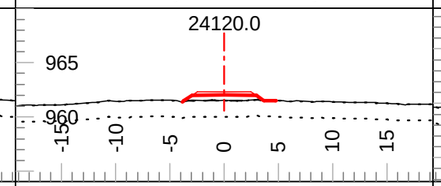

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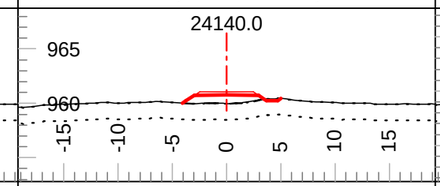

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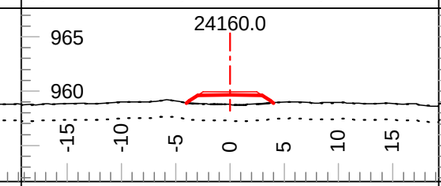

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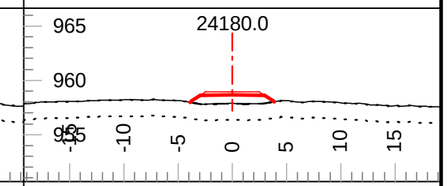

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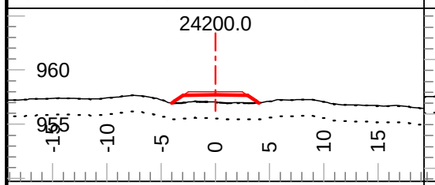

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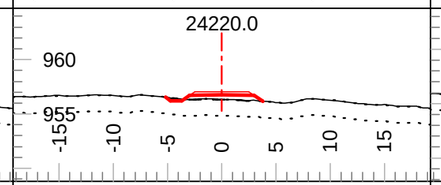

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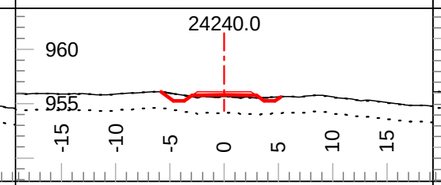

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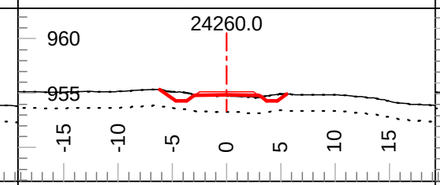

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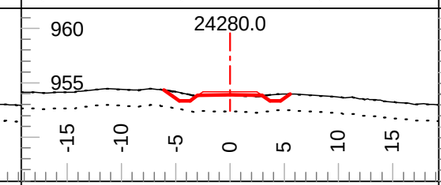

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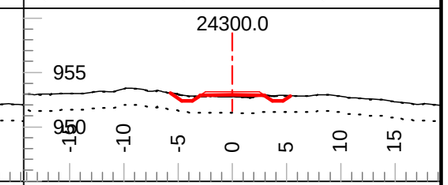

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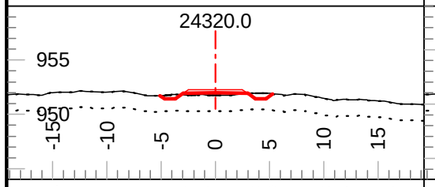

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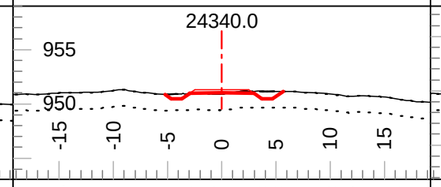

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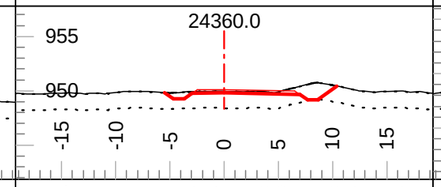

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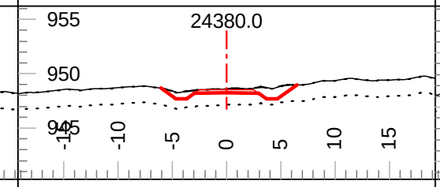

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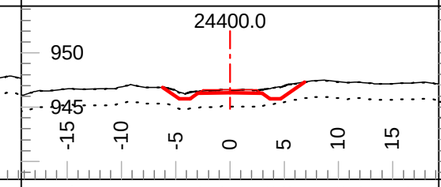

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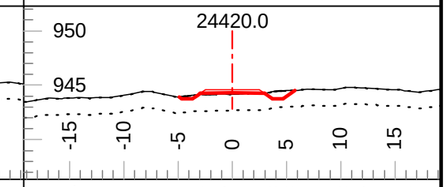

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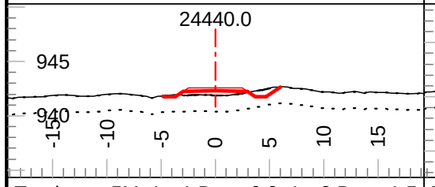

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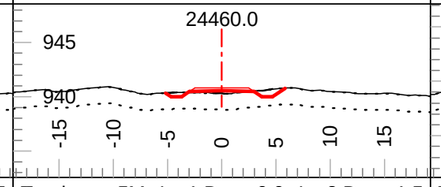

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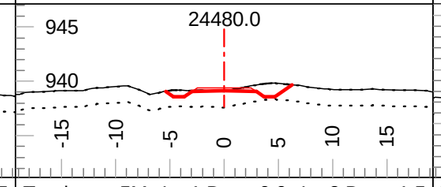

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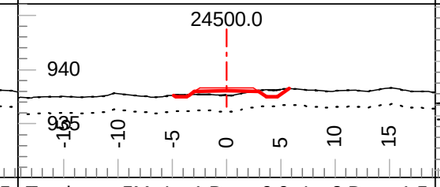

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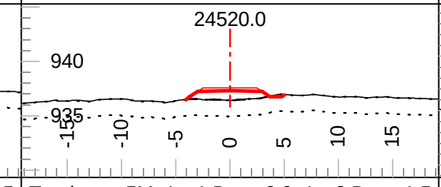

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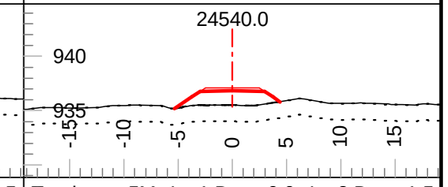

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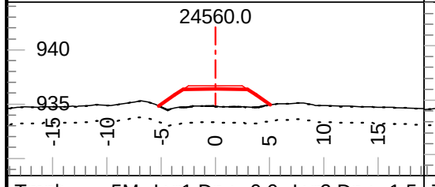

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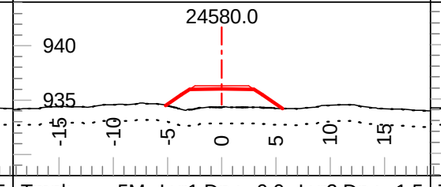

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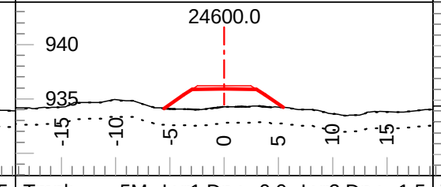

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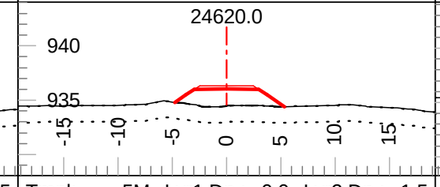

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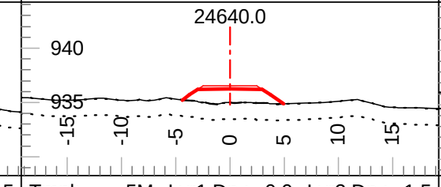

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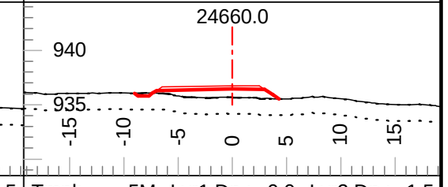

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Coffee Gold Mine

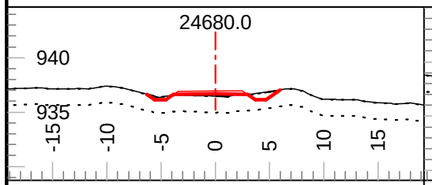
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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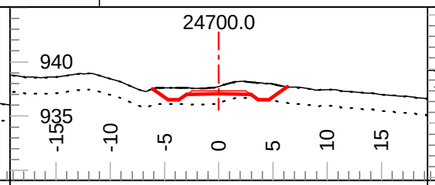

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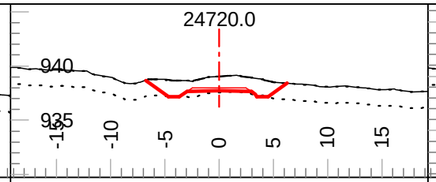

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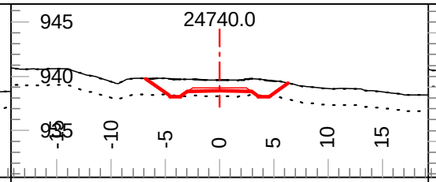

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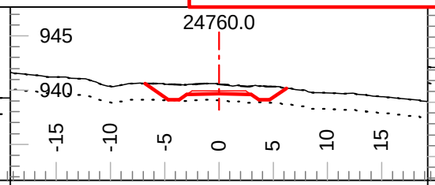

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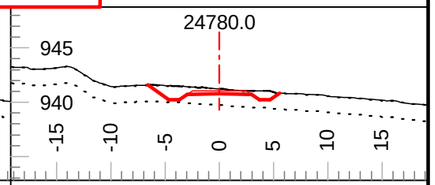

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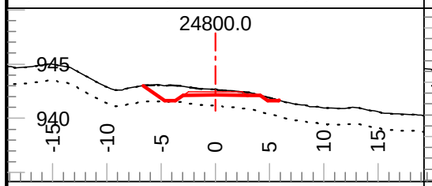

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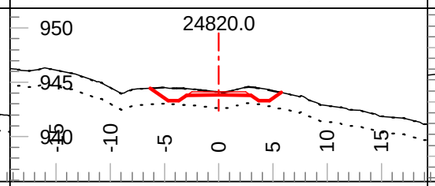

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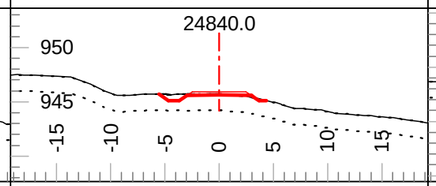

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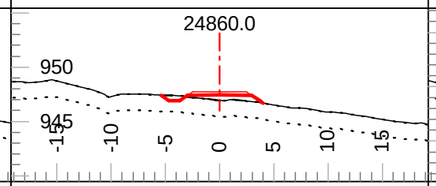

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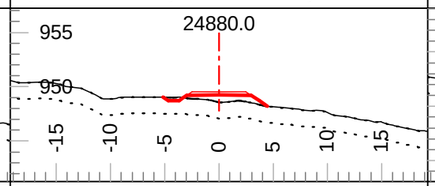

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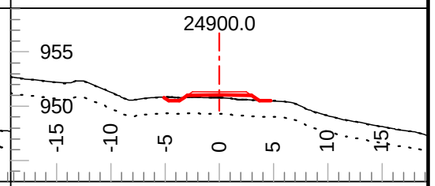

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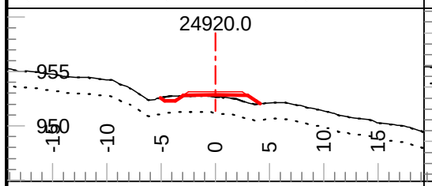

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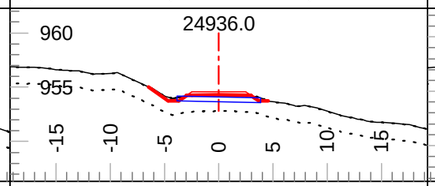

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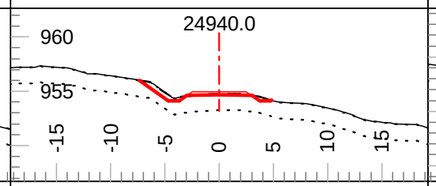

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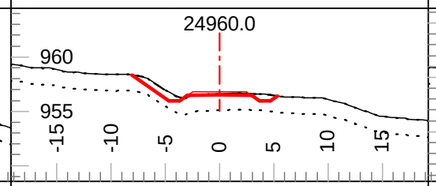

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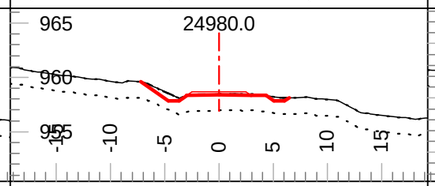

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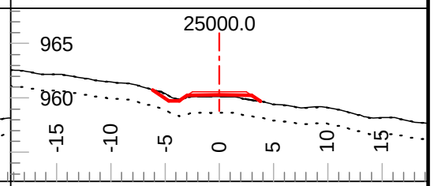

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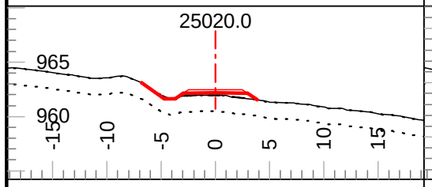

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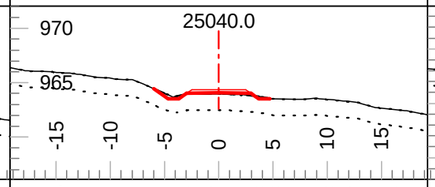

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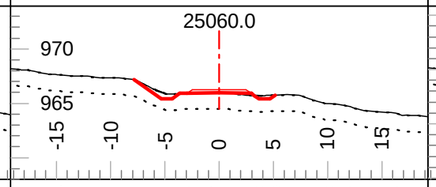

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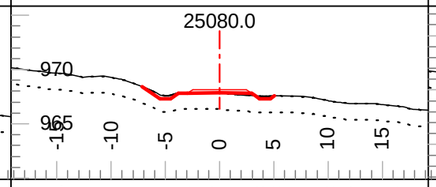

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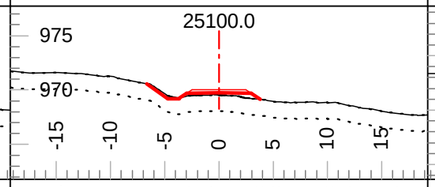

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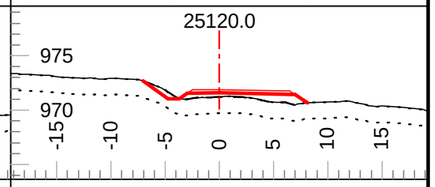

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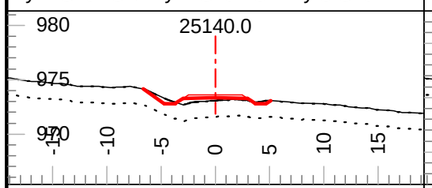

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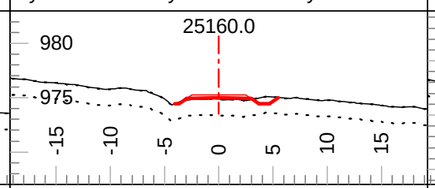

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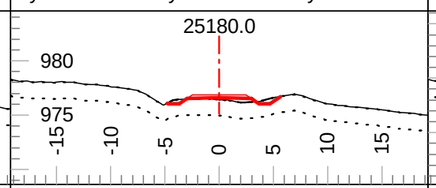

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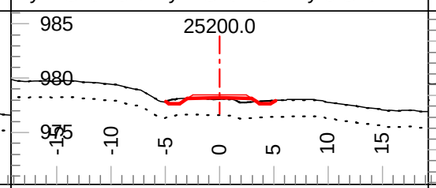

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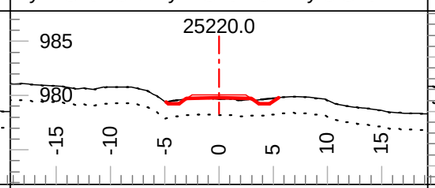

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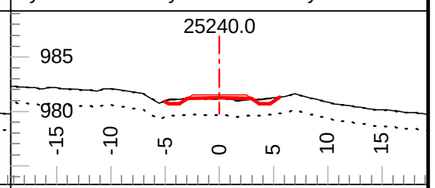

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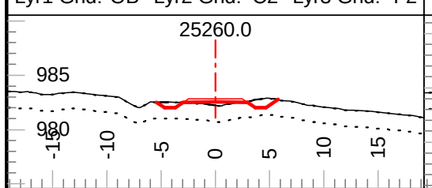

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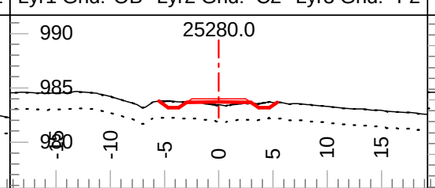

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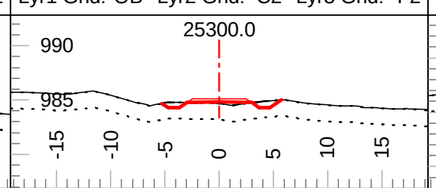

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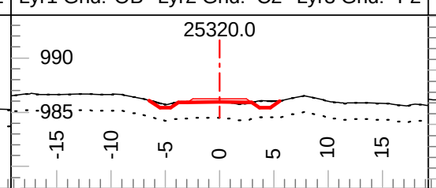

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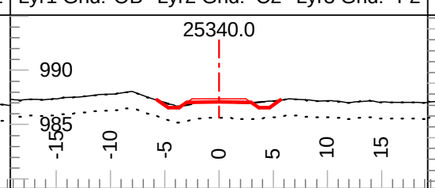

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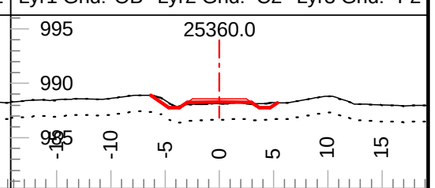

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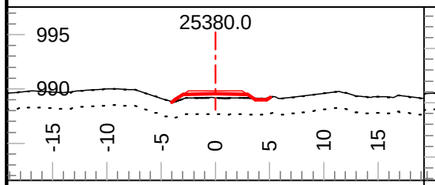

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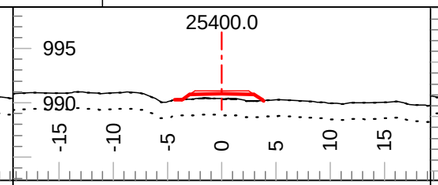

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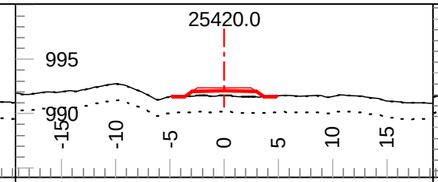

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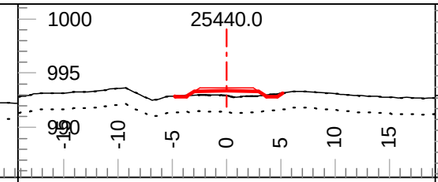

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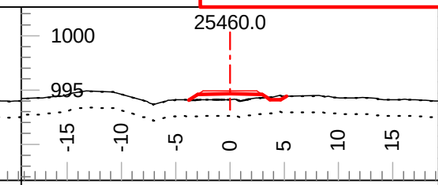

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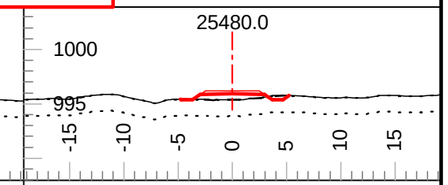

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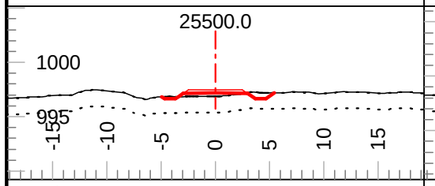

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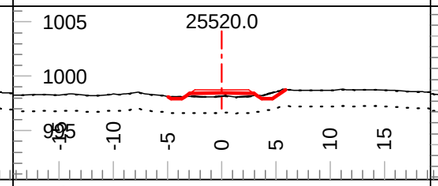

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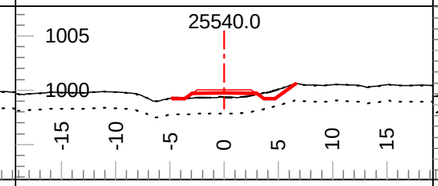

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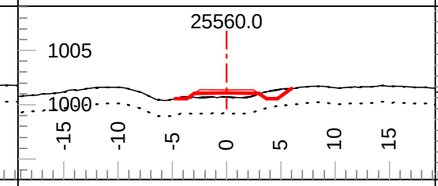

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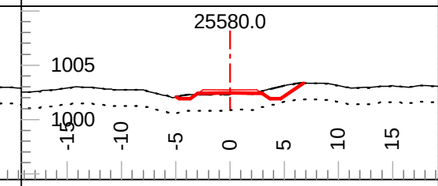

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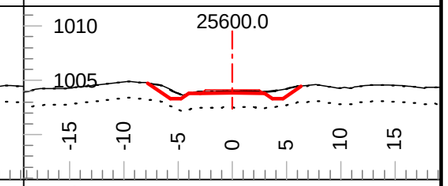

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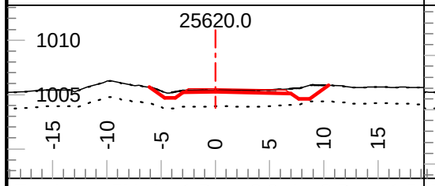

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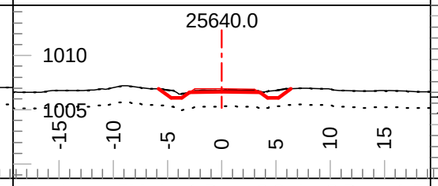

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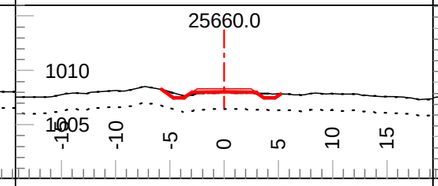

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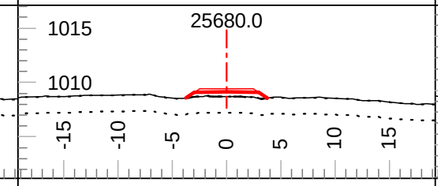

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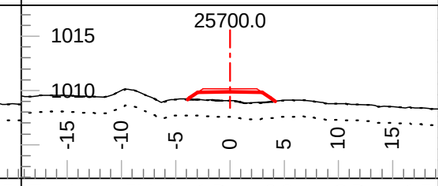

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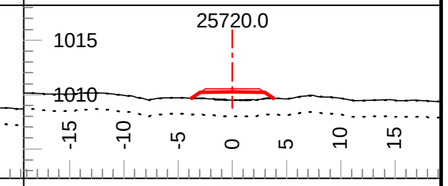

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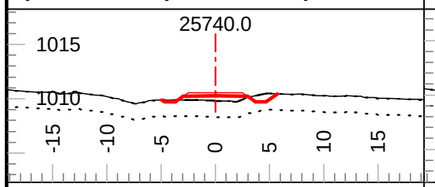

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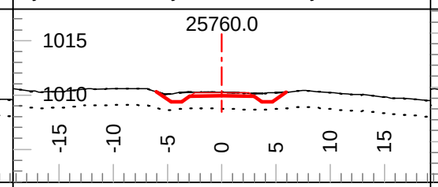

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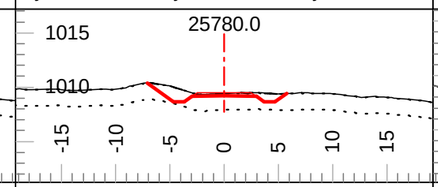

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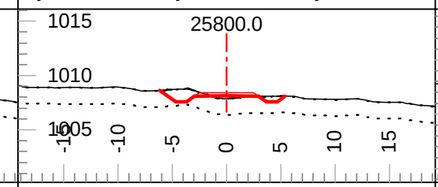

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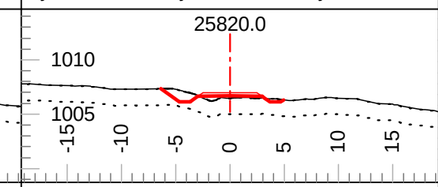

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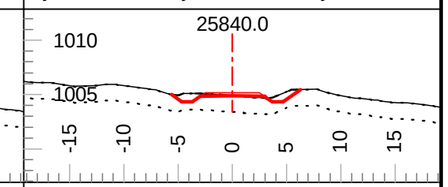

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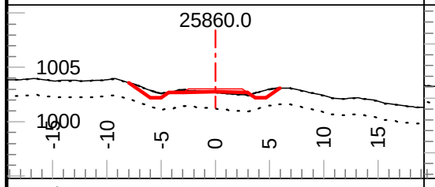

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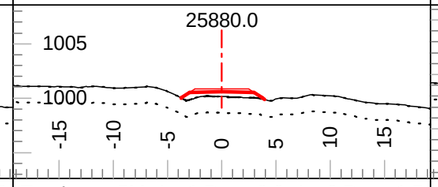

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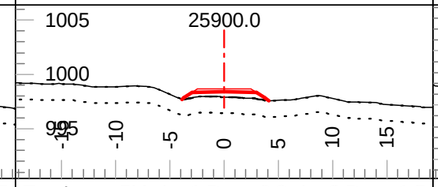

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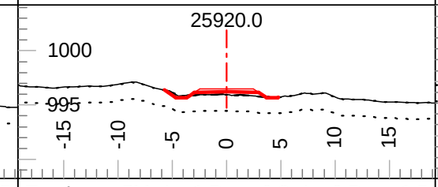

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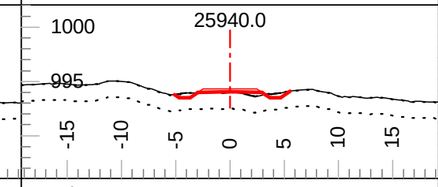

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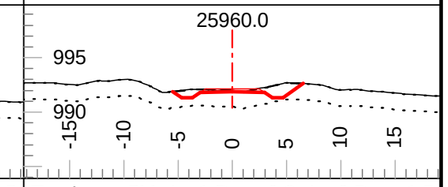

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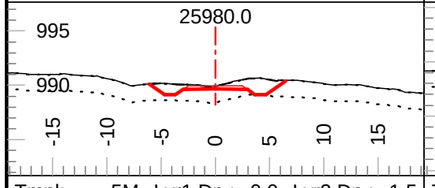

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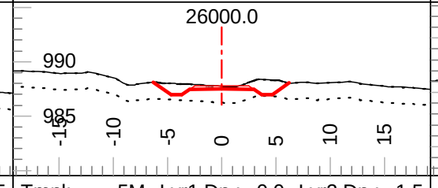

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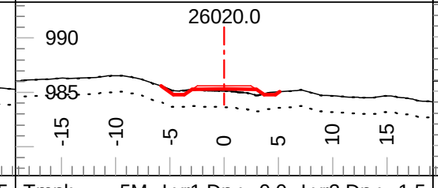

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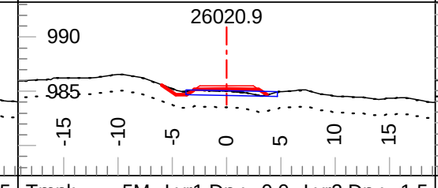

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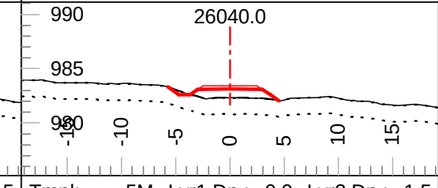

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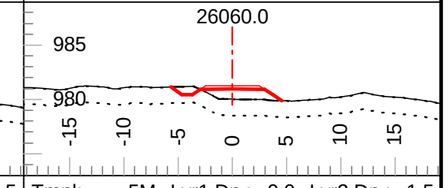

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Coffee Gold Mine

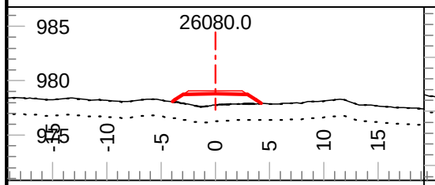
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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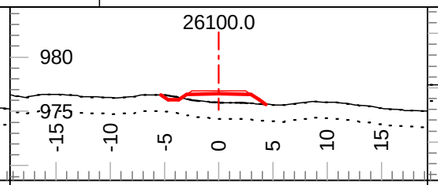

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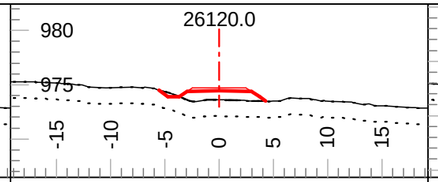

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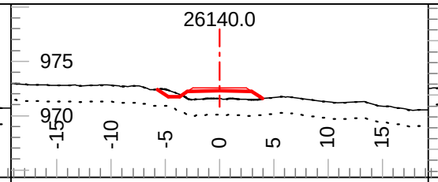

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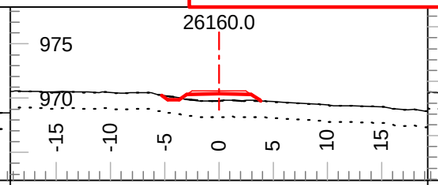

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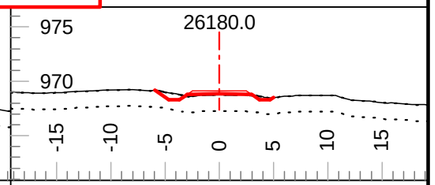

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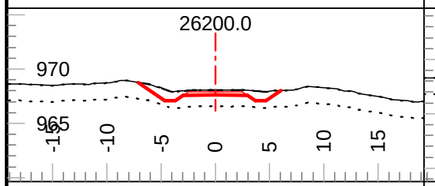

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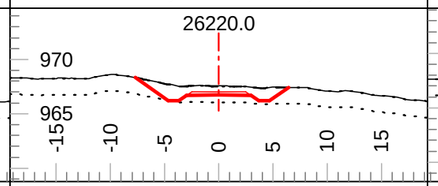

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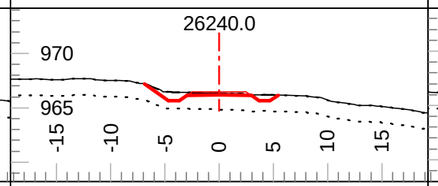

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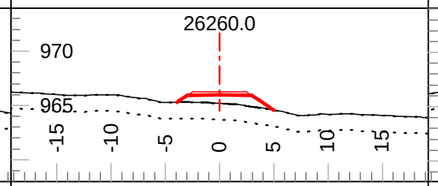

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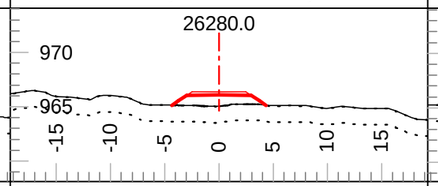

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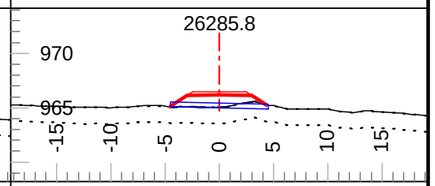

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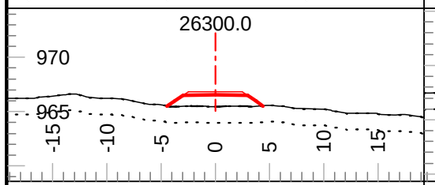

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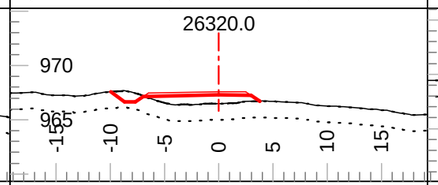

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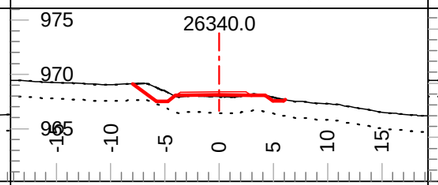

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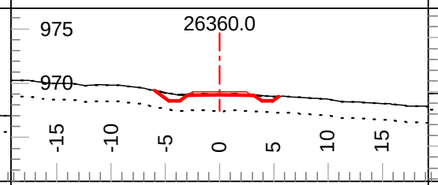

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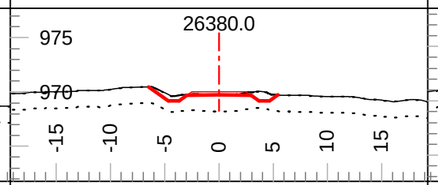

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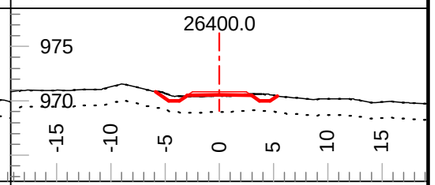

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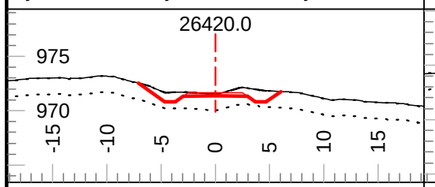

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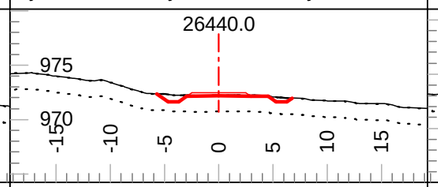

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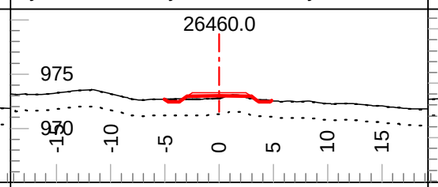

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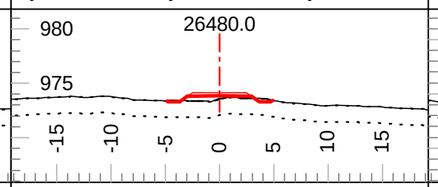

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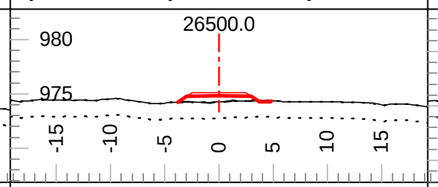

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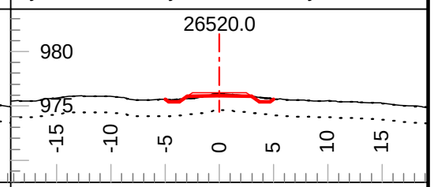

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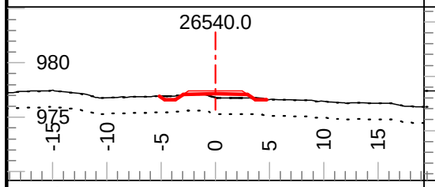

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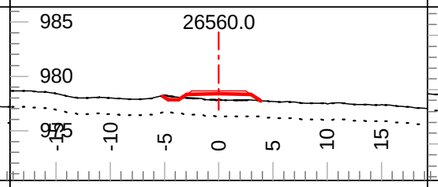

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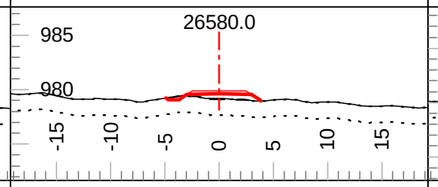

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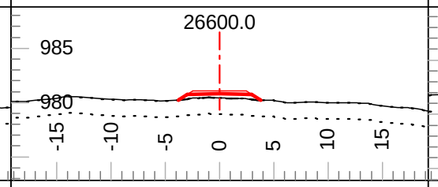
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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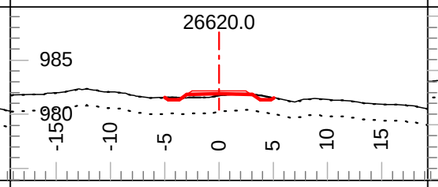

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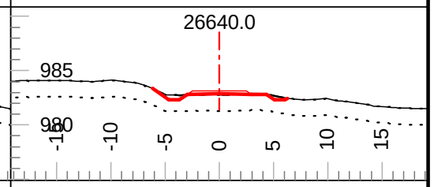

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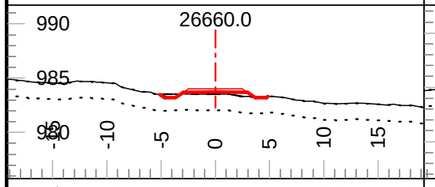

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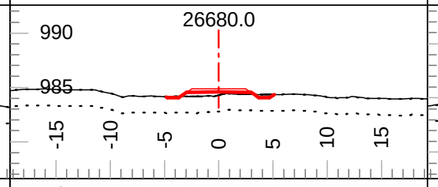

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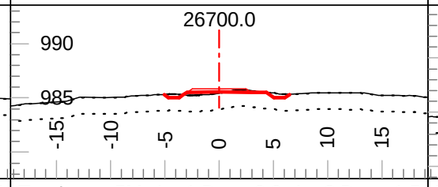

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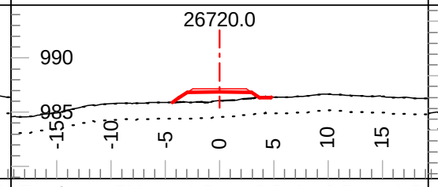

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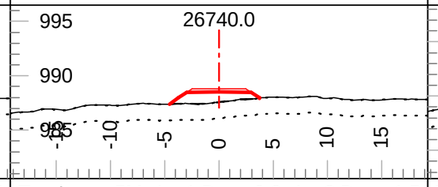

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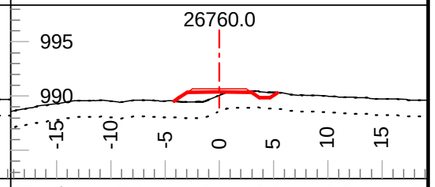

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Coffee Gold Mine

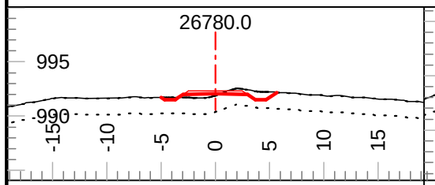
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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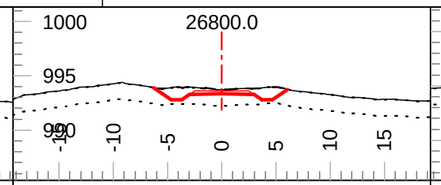

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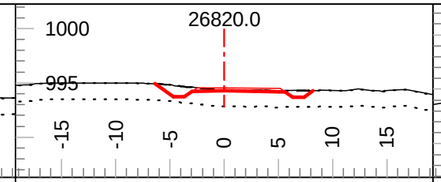

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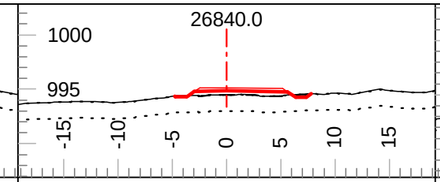

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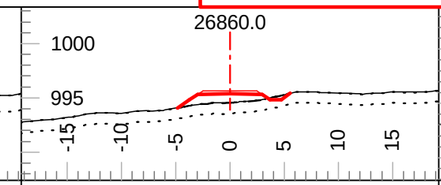

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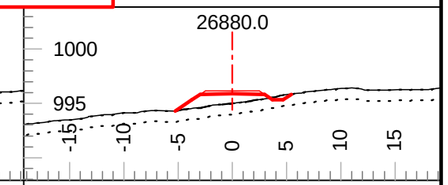

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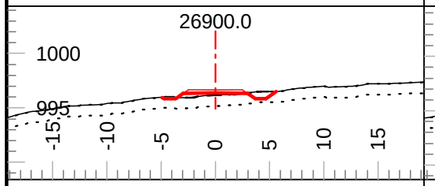

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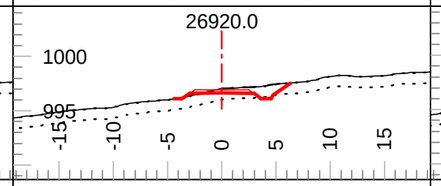

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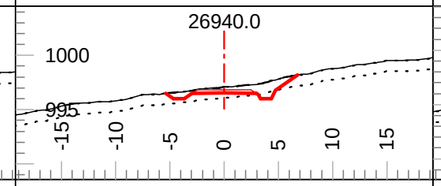

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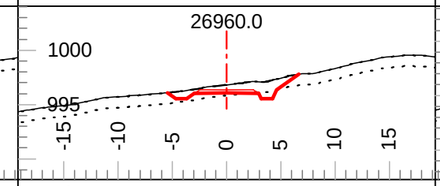

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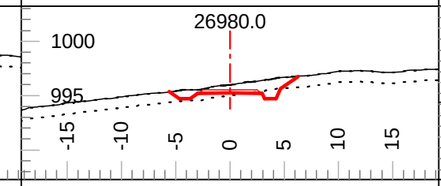

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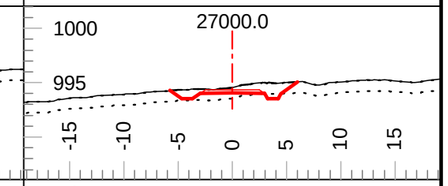

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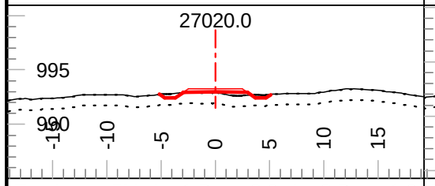

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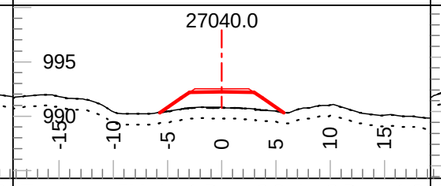

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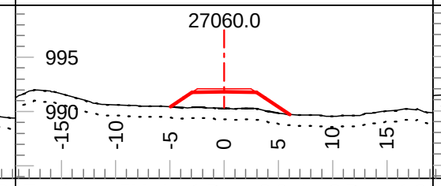

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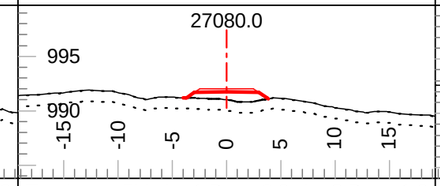

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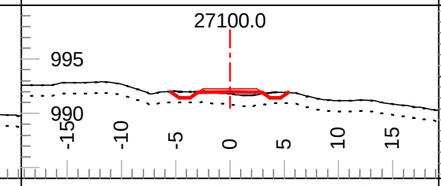

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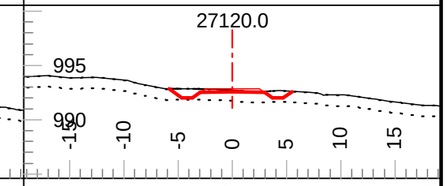

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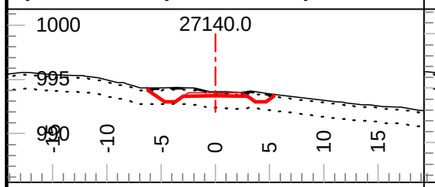

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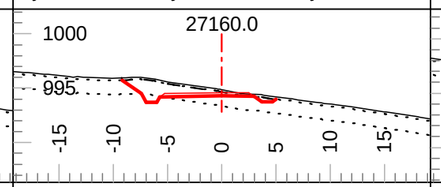

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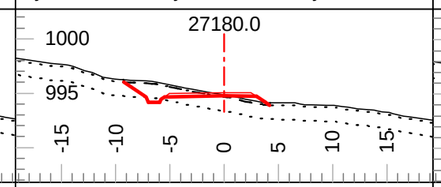

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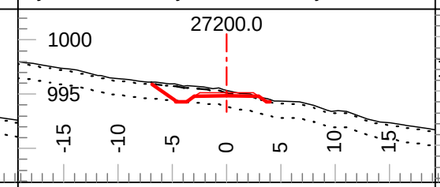

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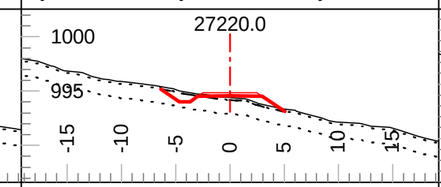

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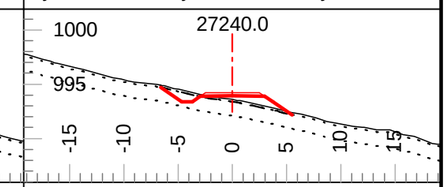

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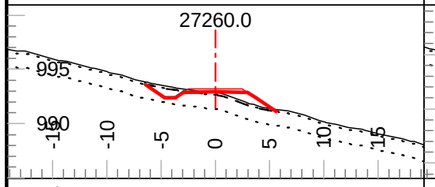

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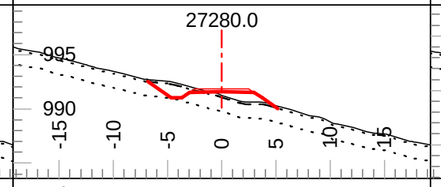

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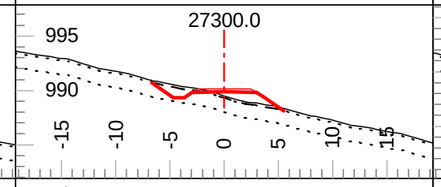

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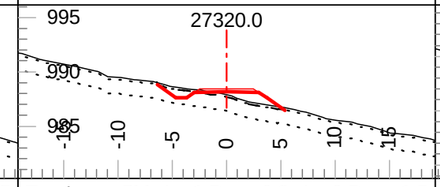

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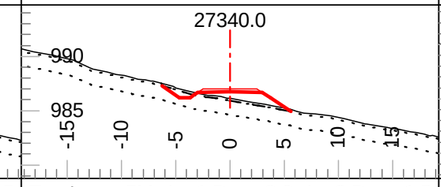

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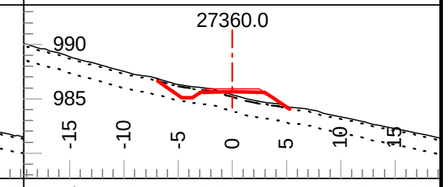

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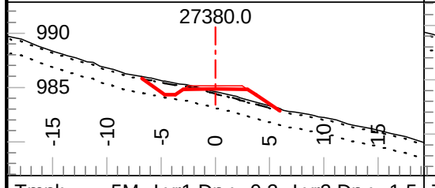

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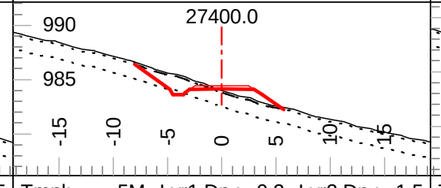

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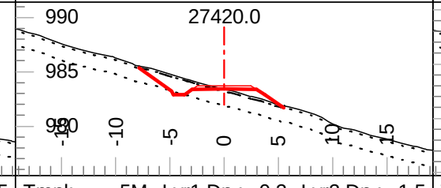

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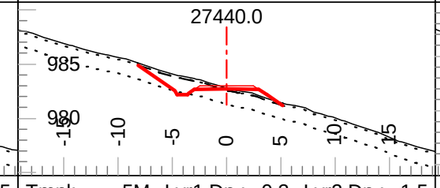

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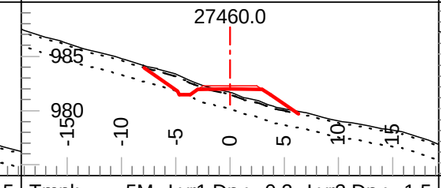

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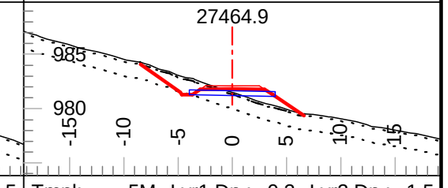

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
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km 0-41.1

GOLDCORP

Section Scale 1:550

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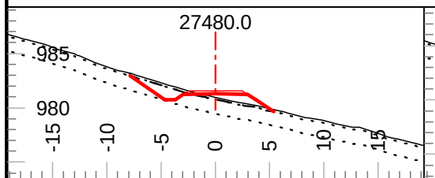
ONSITE Engineering Ltd.



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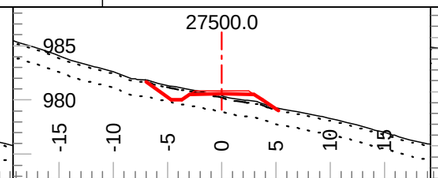

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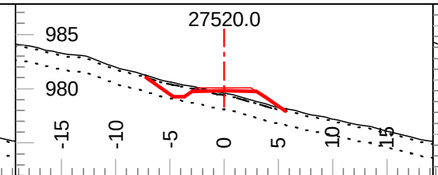

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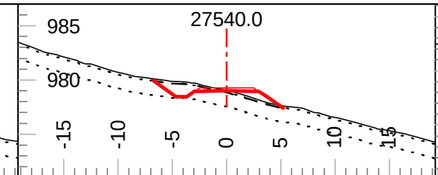

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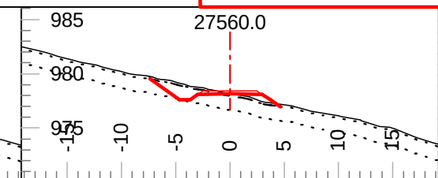

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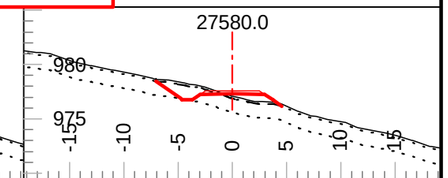

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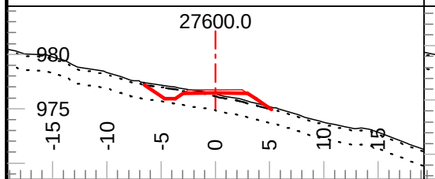

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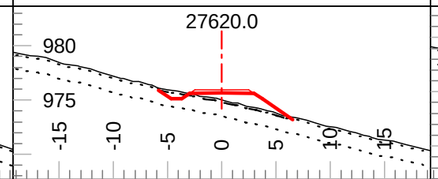

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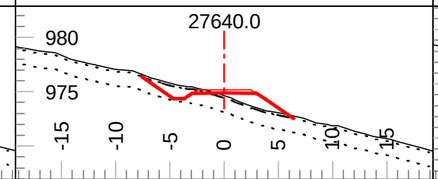

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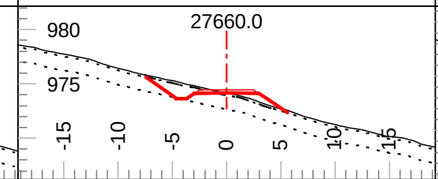

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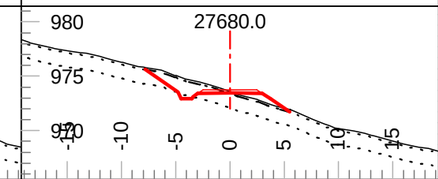

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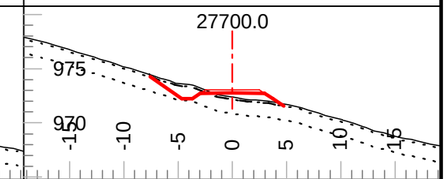

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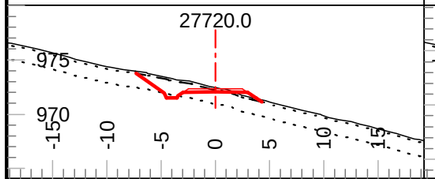

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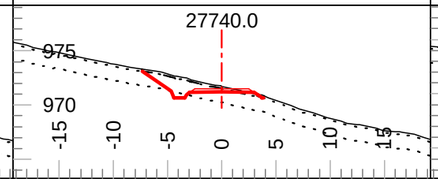

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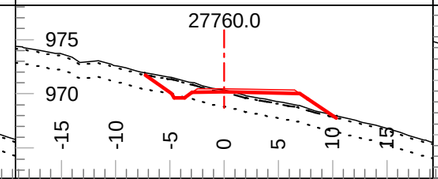

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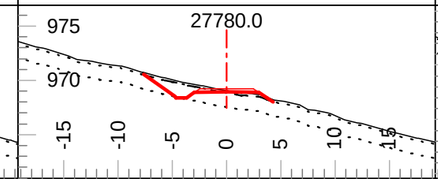

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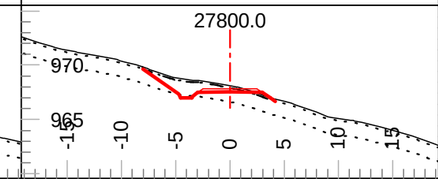

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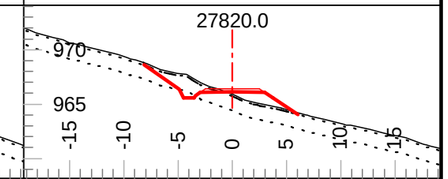

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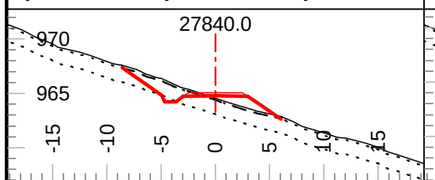

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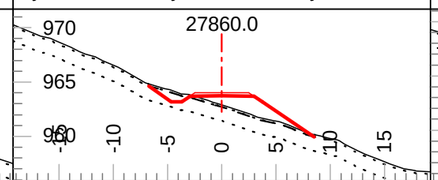

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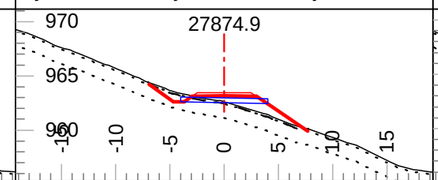

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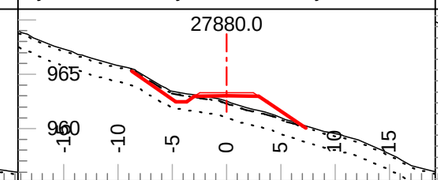

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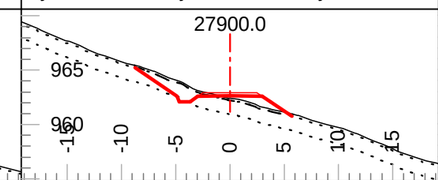

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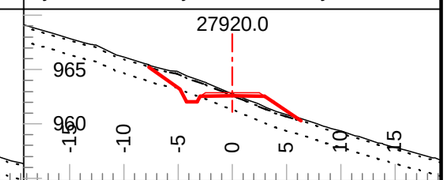

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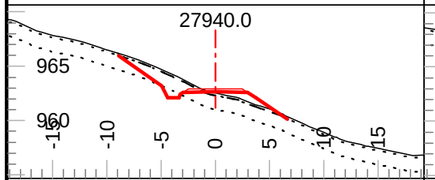

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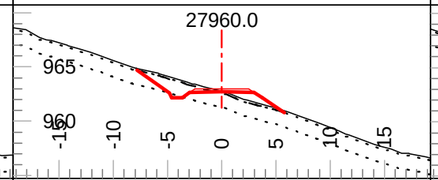

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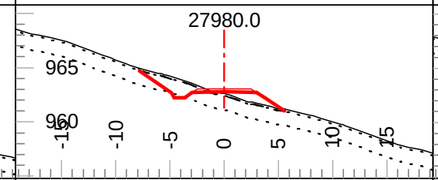

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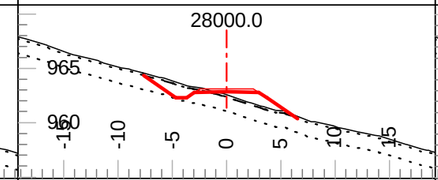

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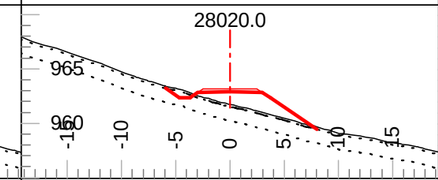

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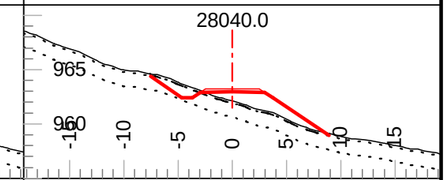

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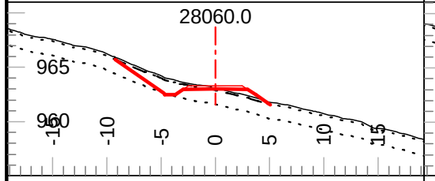

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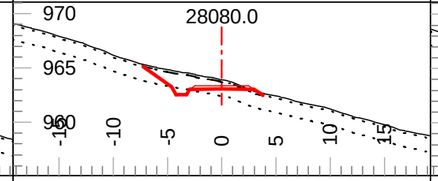

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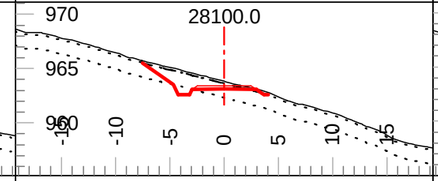

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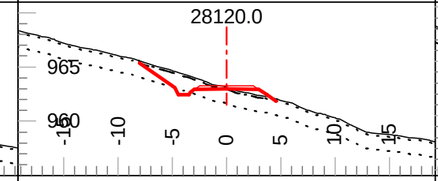

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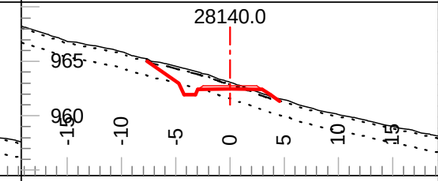

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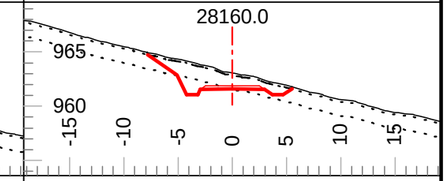

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

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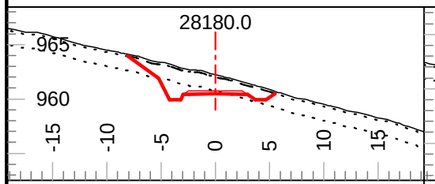
ONSITE Engineering Ltd.



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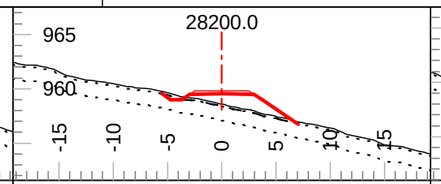

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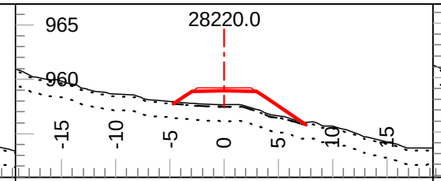

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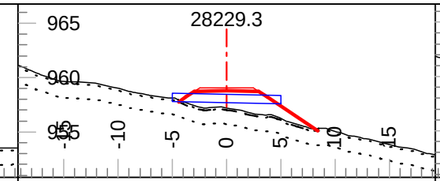

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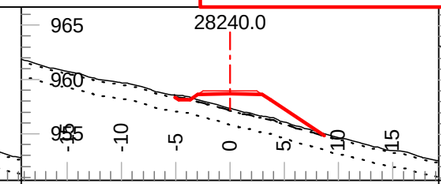

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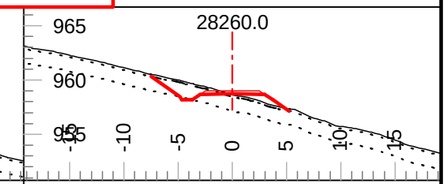

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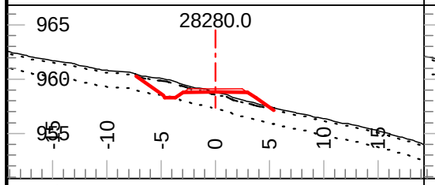

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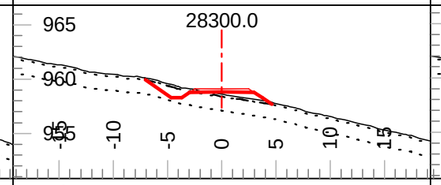

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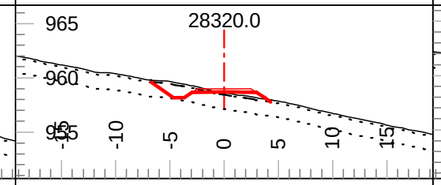

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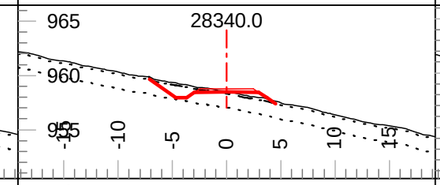

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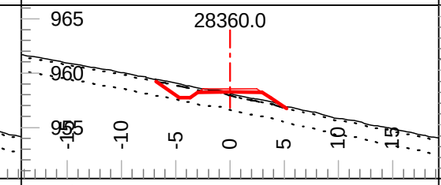

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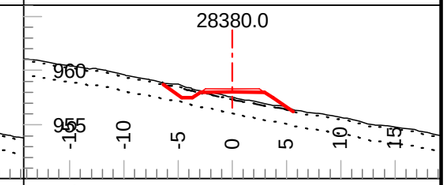

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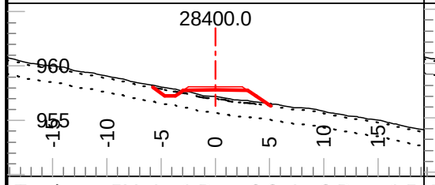

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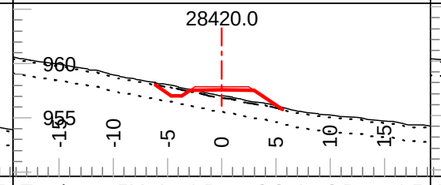

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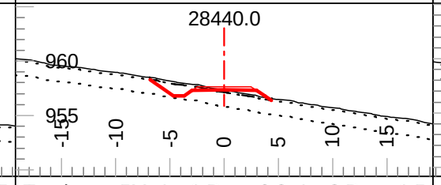

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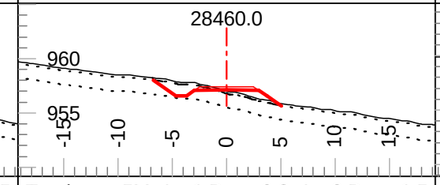

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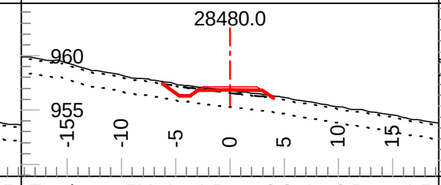

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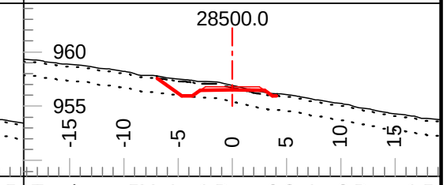

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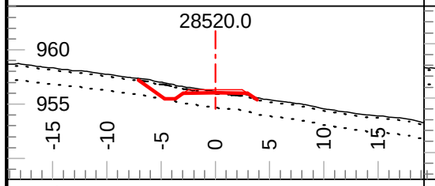

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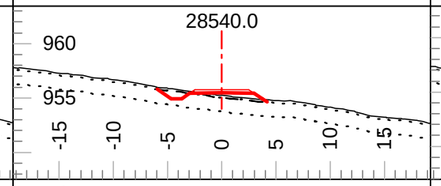

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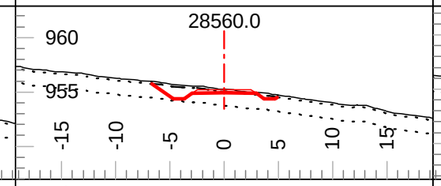

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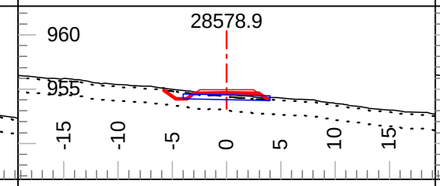

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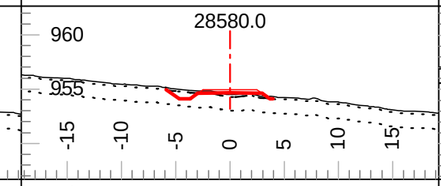

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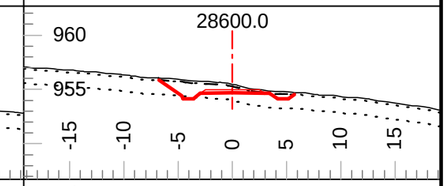

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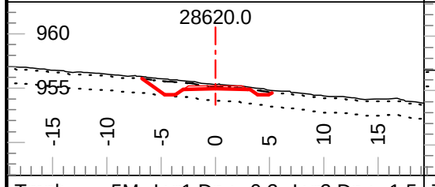

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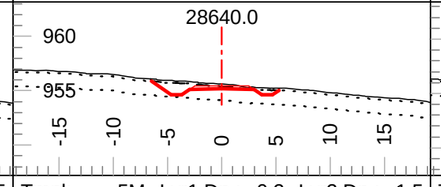

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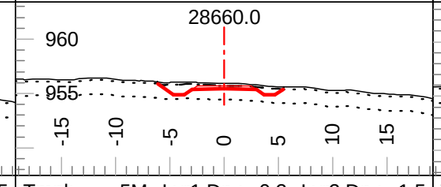

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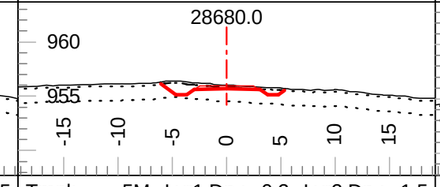

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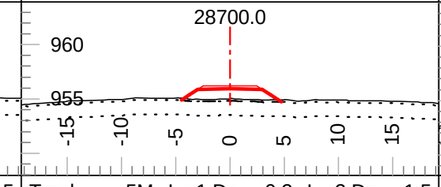

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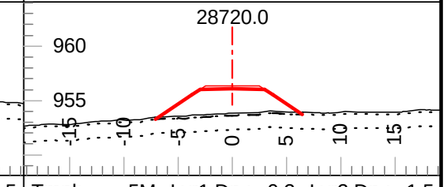

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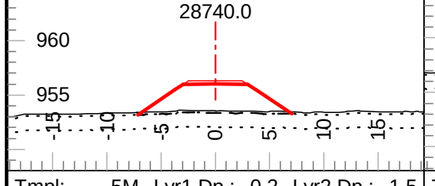

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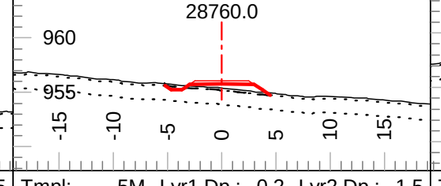

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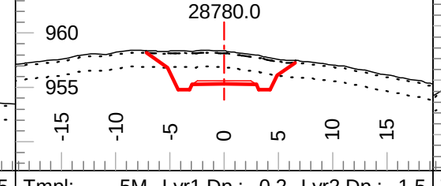

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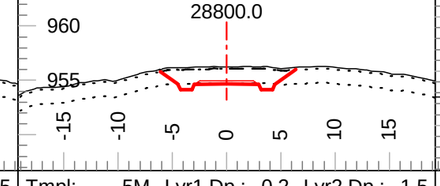

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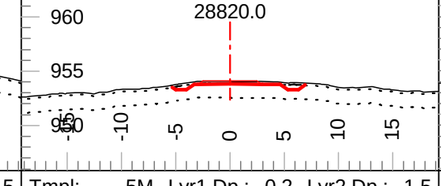

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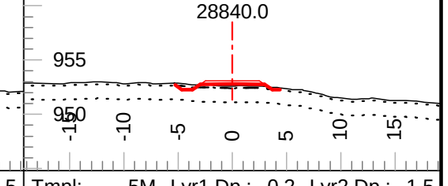

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Coffee Gold Mine

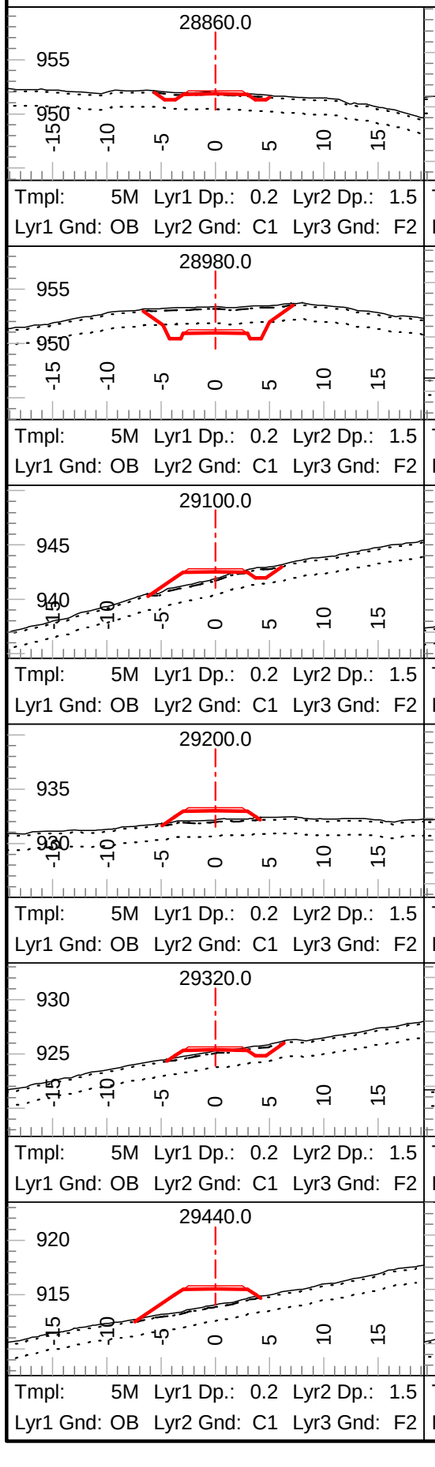
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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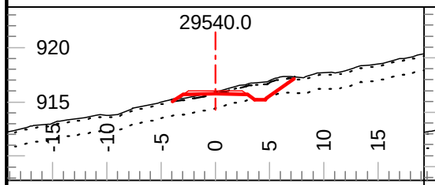

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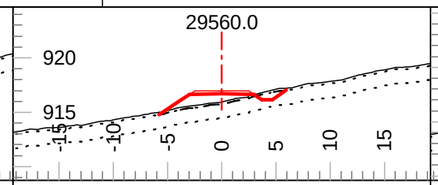

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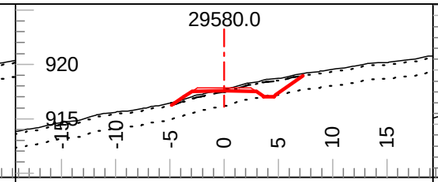

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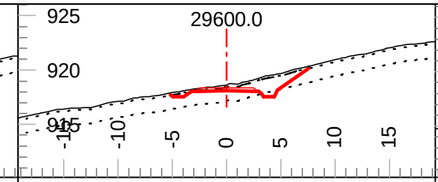

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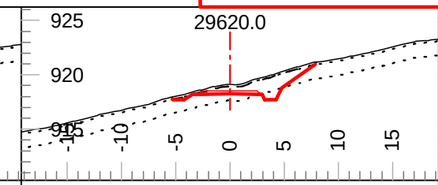

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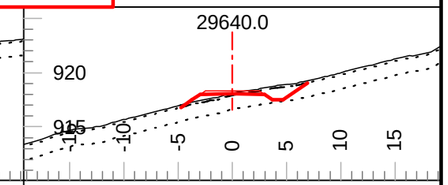

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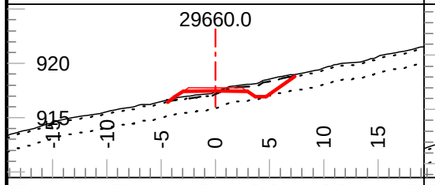

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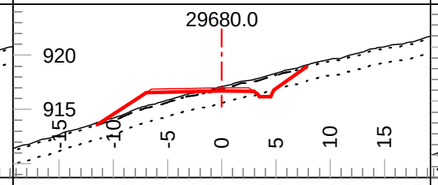

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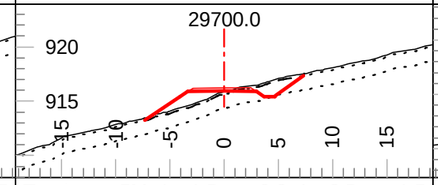

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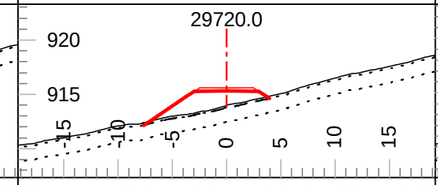
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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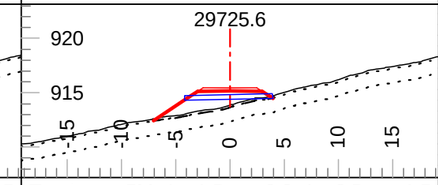

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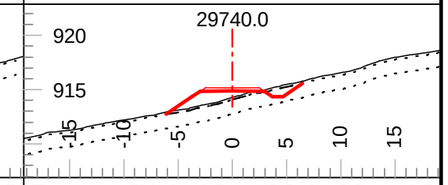

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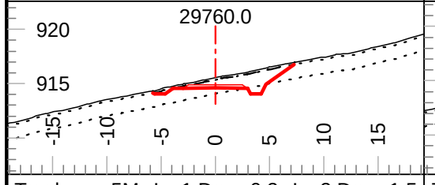

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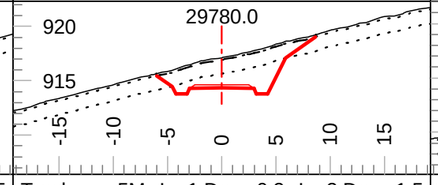

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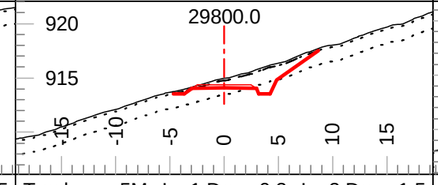

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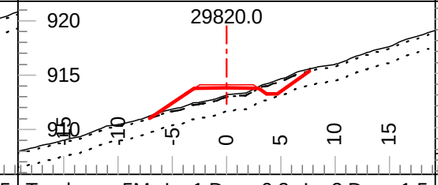

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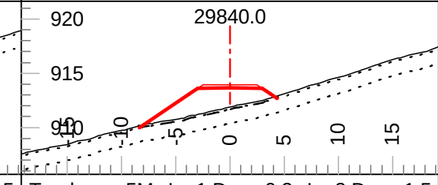

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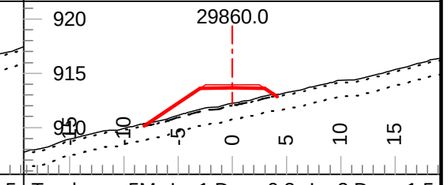

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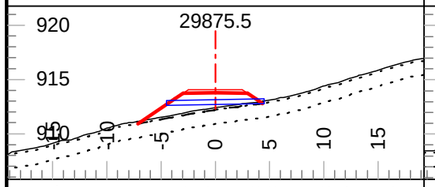

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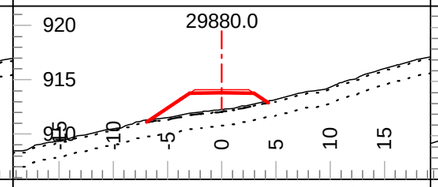

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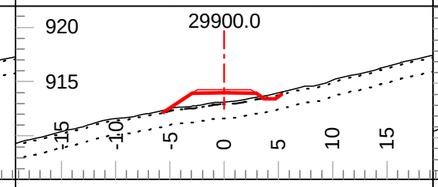

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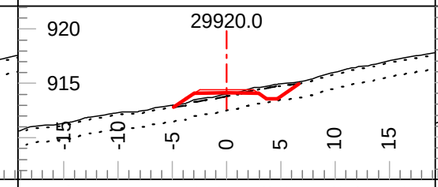

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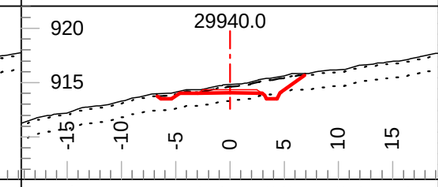

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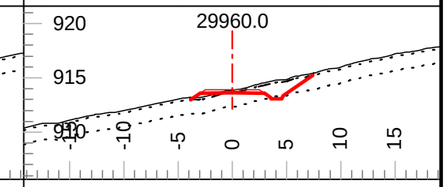

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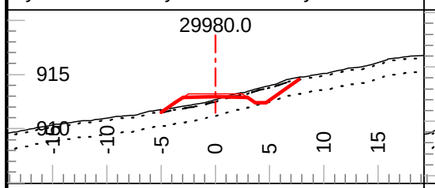

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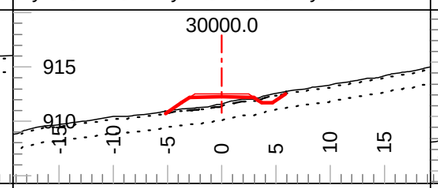

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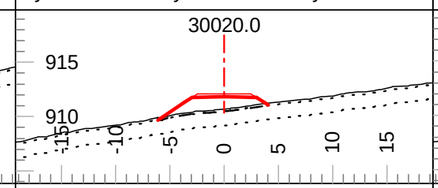

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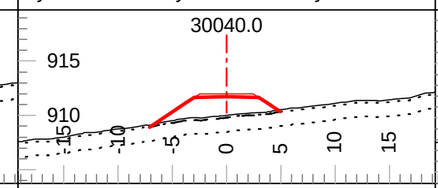

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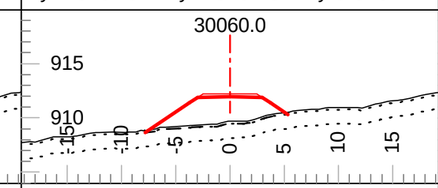

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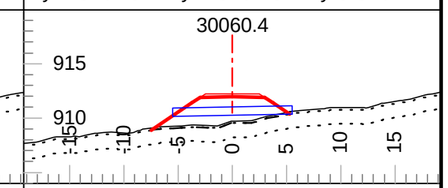

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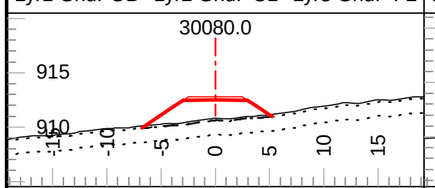

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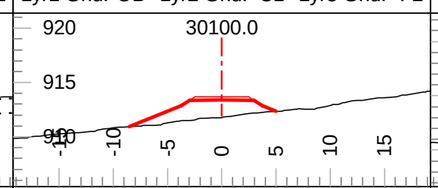

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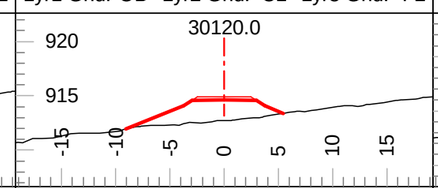

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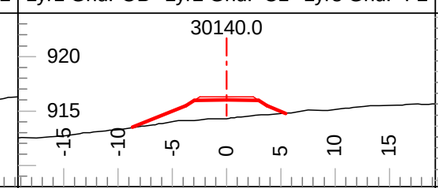

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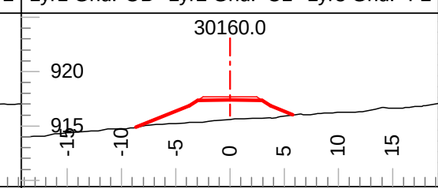

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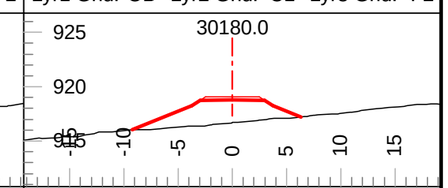

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Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

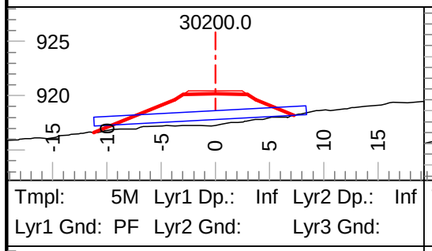
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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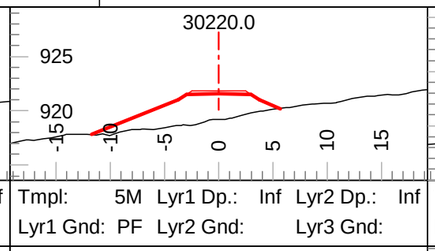

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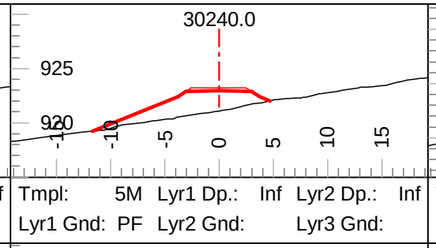

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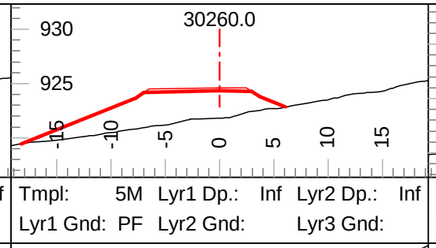

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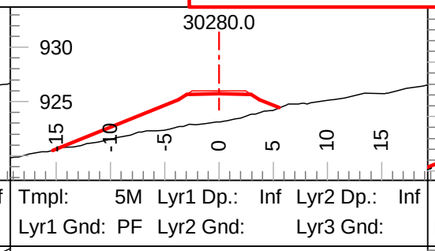

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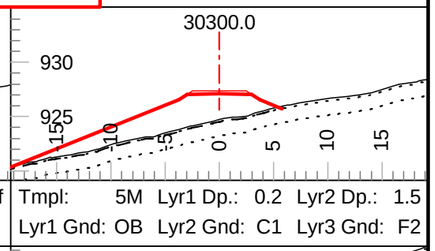

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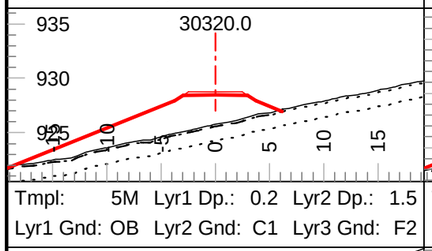

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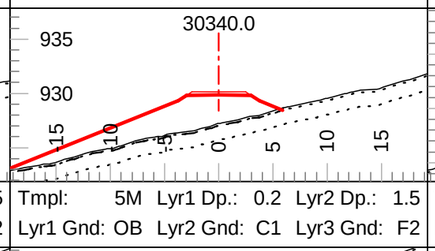

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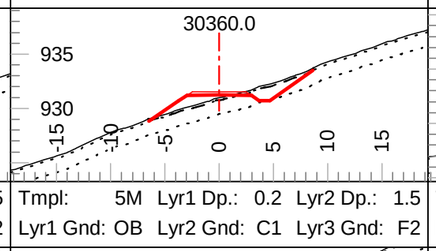

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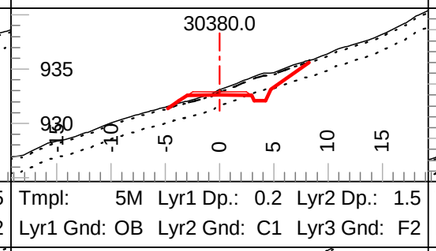

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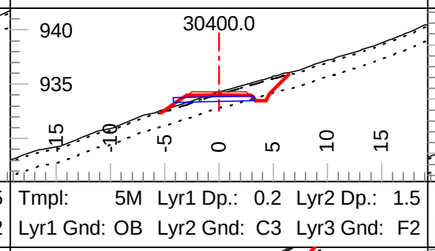

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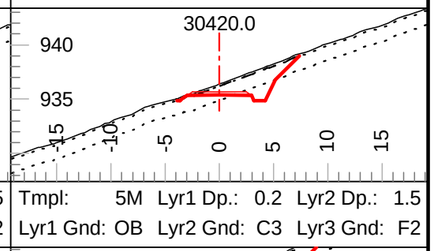

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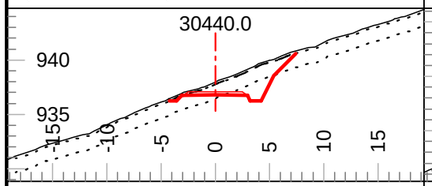

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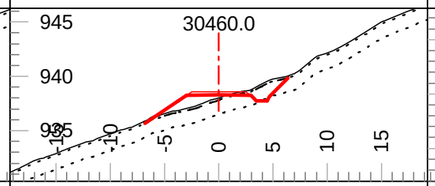

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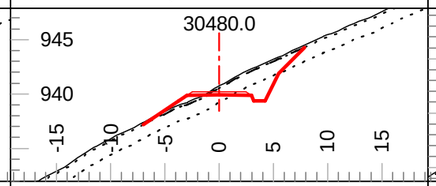

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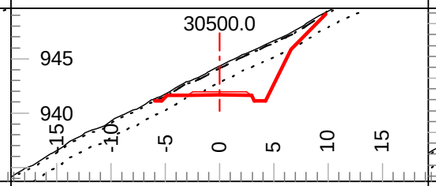

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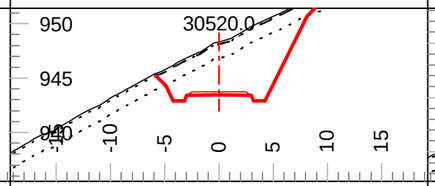

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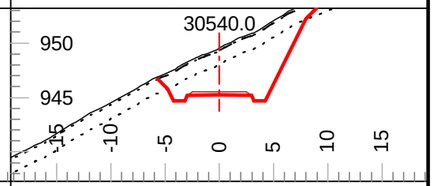

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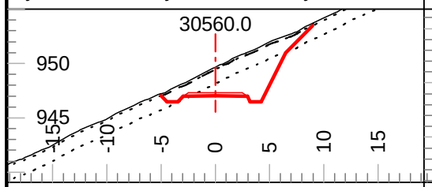

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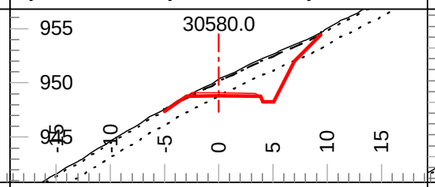

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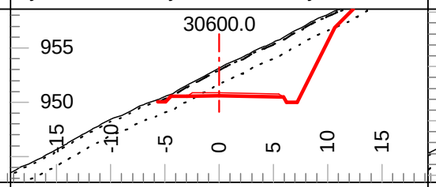

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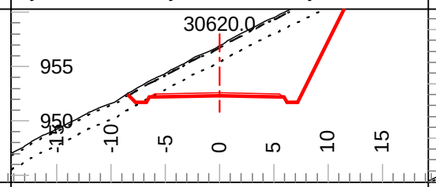

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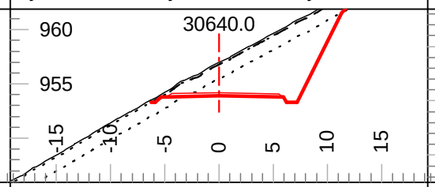

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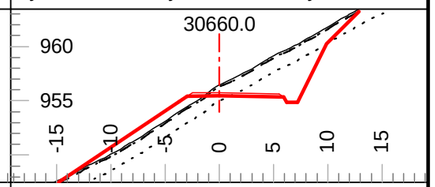

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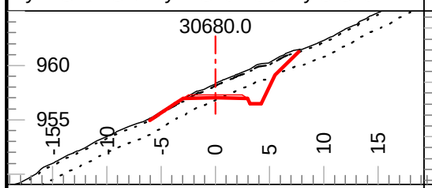

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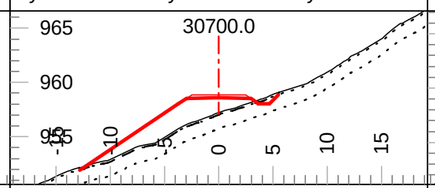

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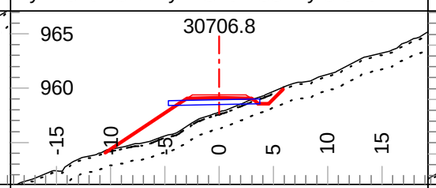

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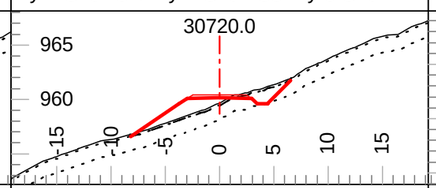

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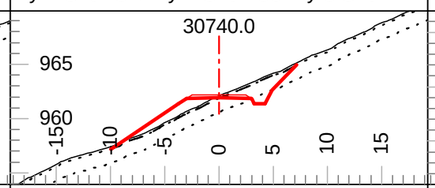

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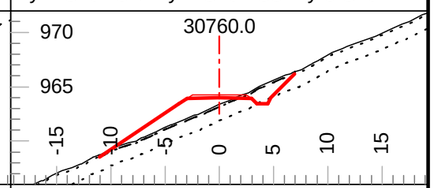

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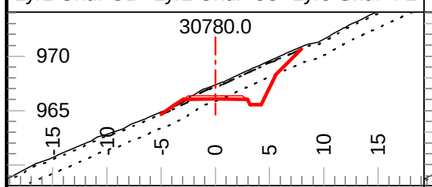

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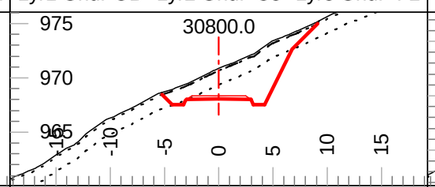

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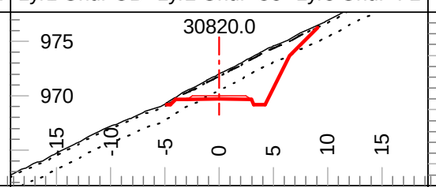

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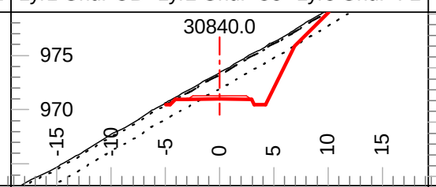

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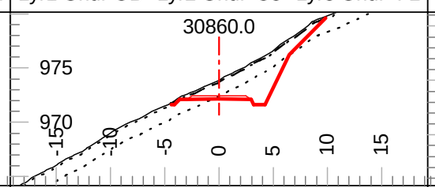

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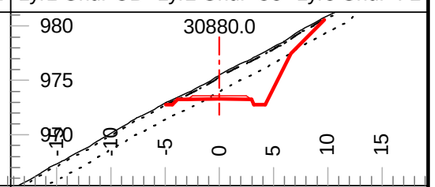

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Coffee Gold Mine

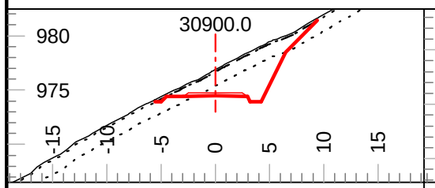
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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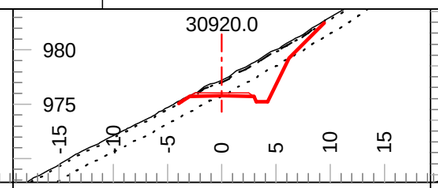

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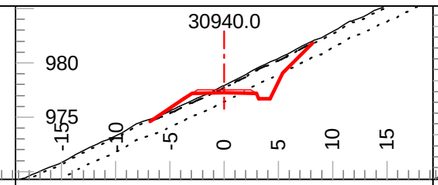

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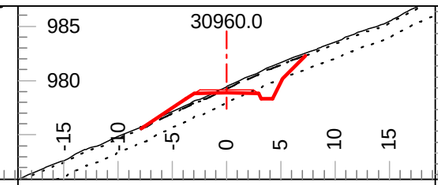

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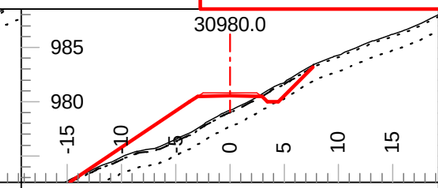

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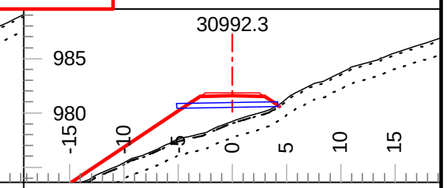

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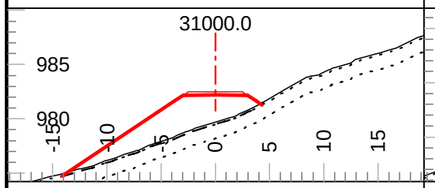

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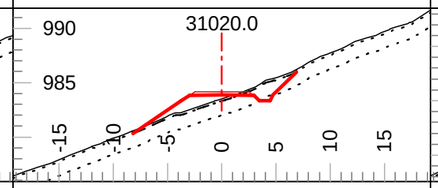

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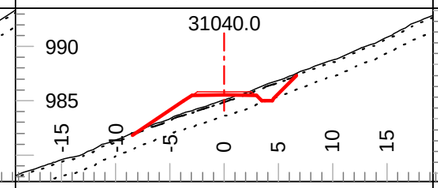

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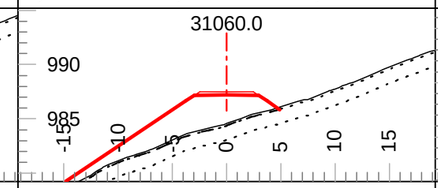

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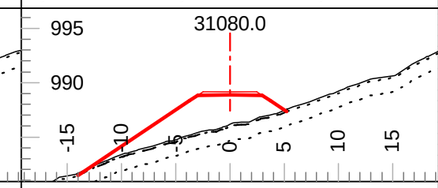

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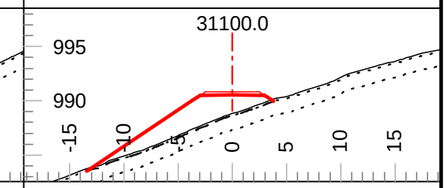

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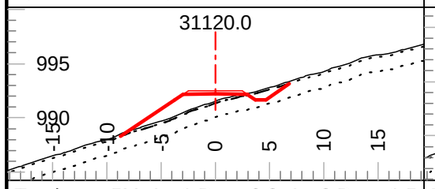

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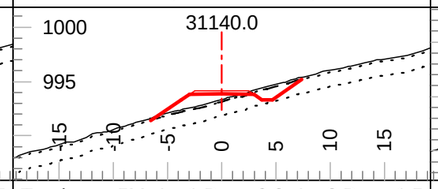

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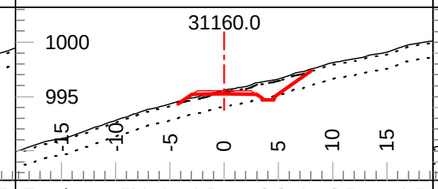

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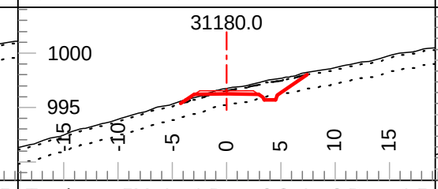

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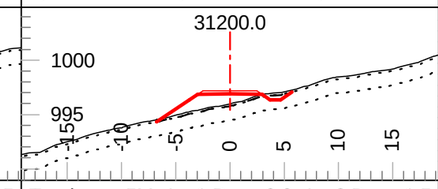

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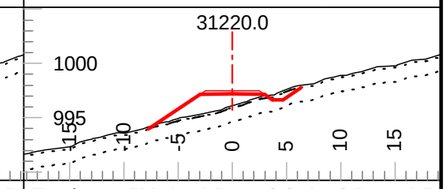

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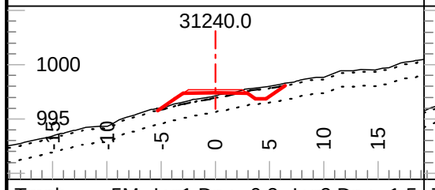

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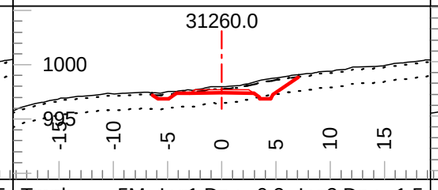

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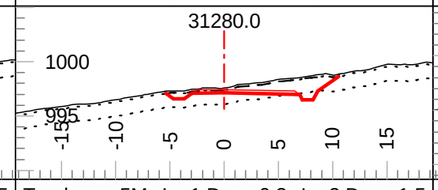

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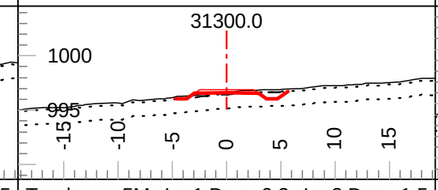

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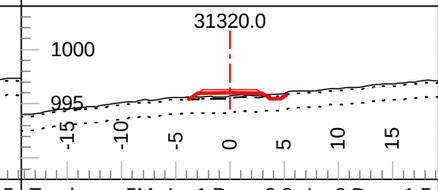
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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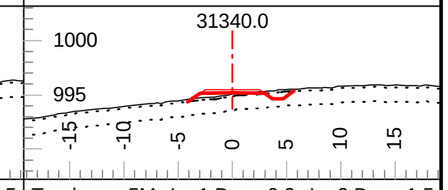

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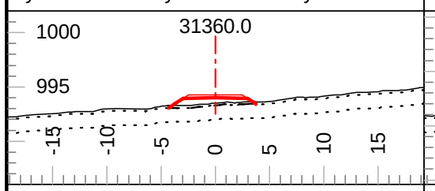

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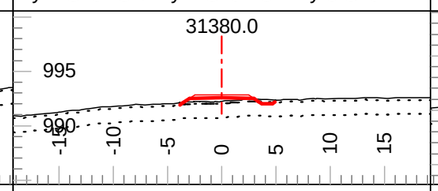

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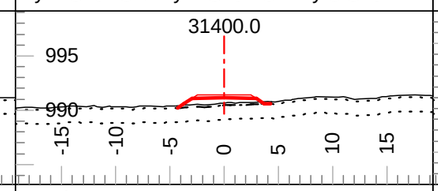

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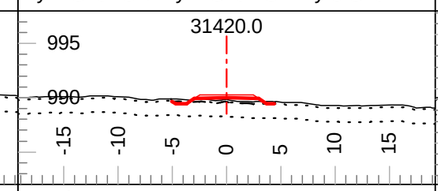

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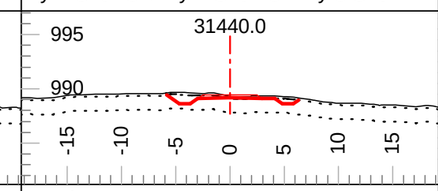

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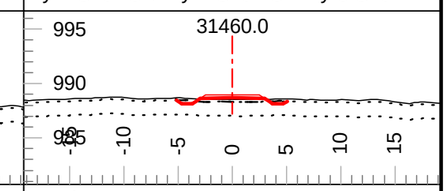

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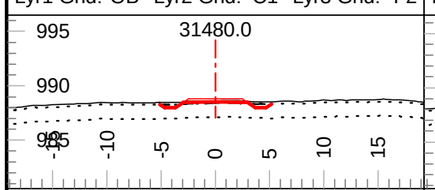

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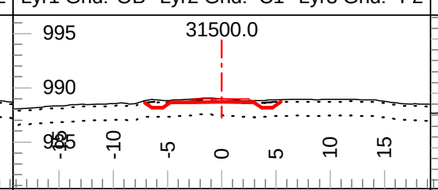

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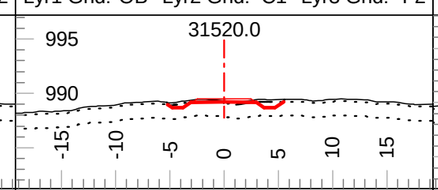

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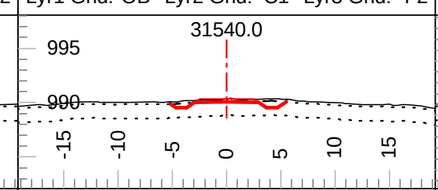

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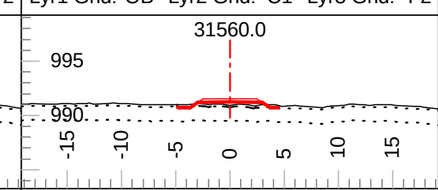

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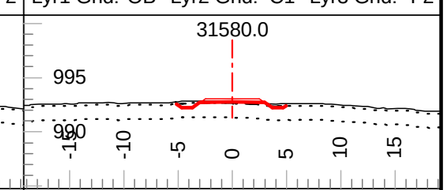

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Coffee Gold Mine

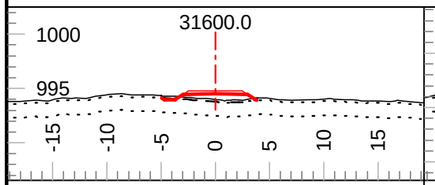
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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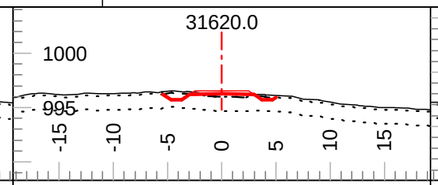

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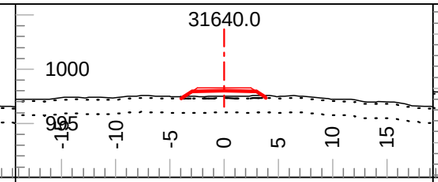

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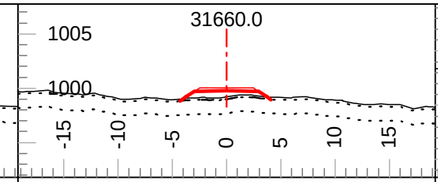

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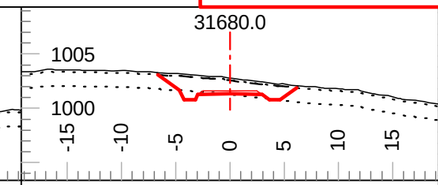

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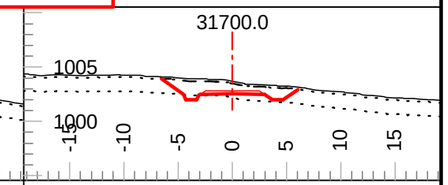

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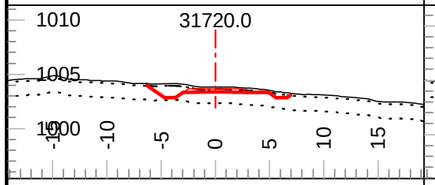

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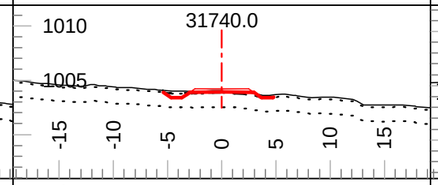

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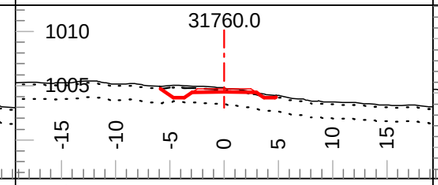

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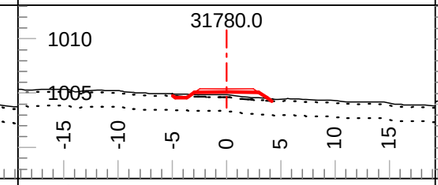

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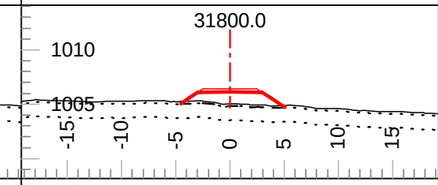

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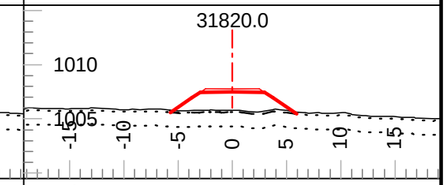

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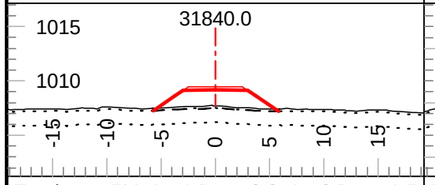

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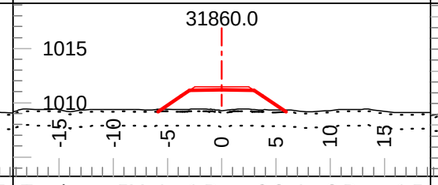

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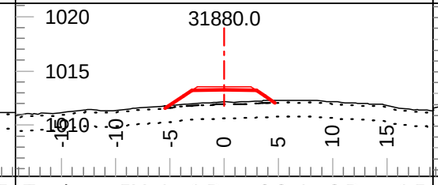

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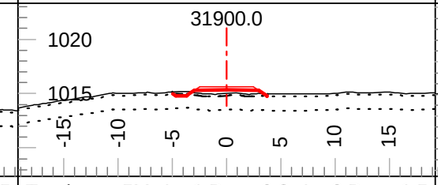

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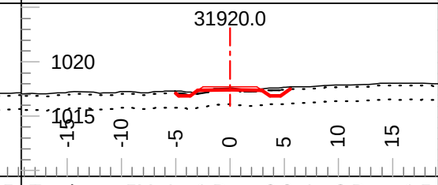

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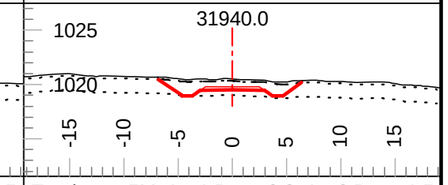

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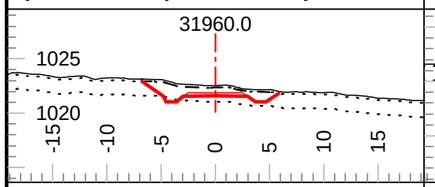

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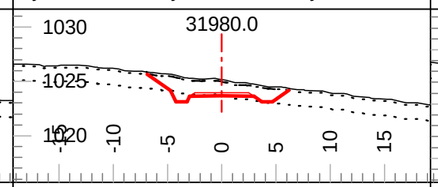

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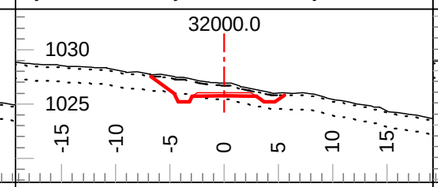

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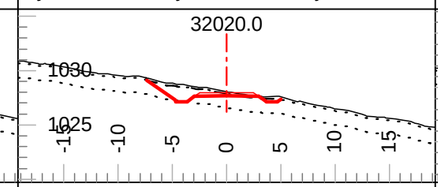

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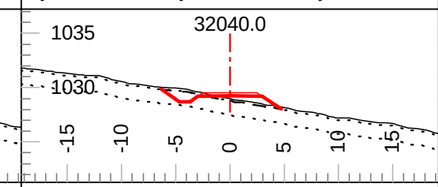

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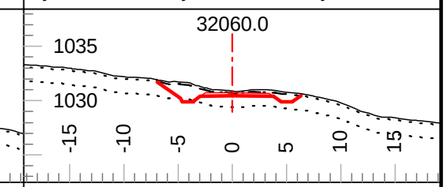

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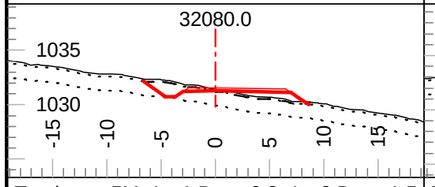

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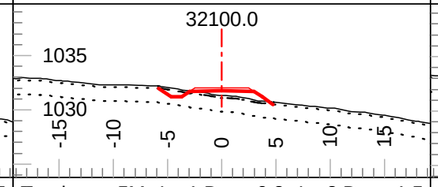

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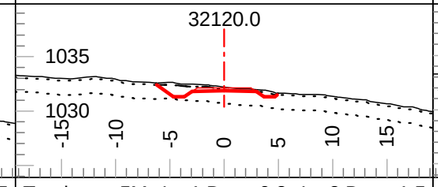

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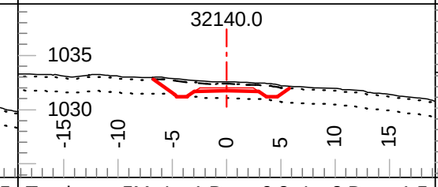

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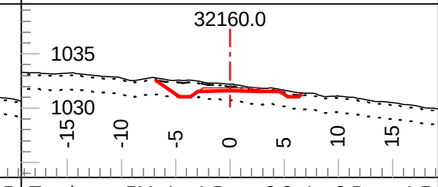

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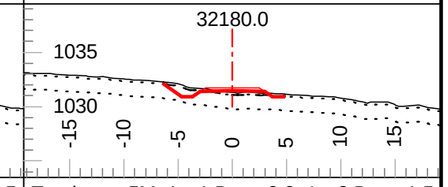

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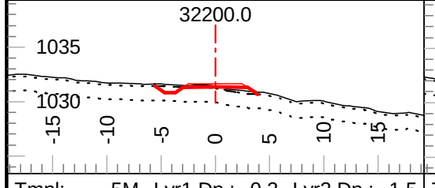

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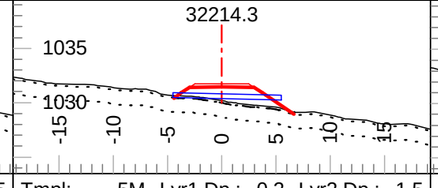

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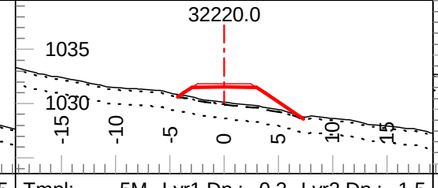

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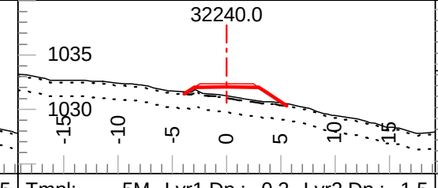

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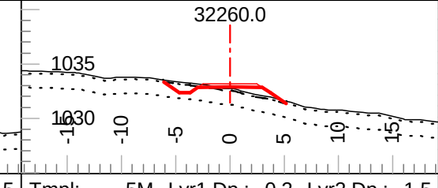

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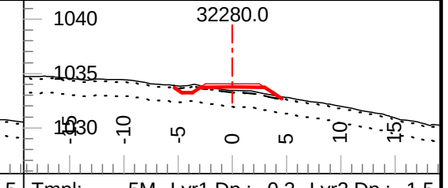

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Coffee Gold Mine

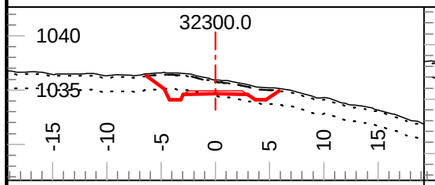
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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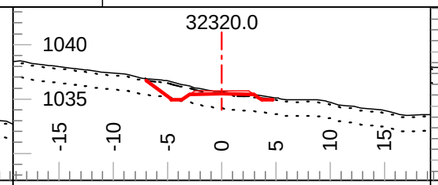

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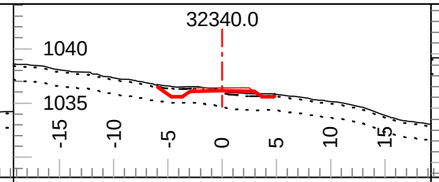

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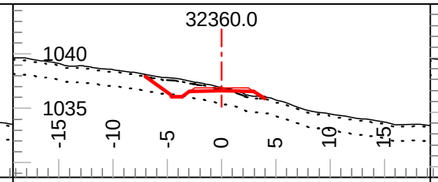

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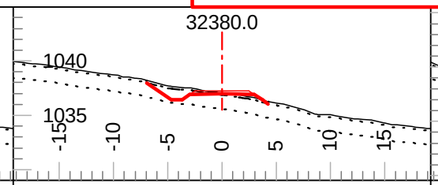

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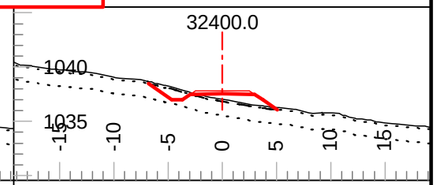

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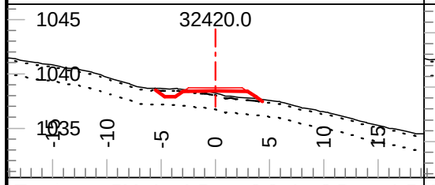

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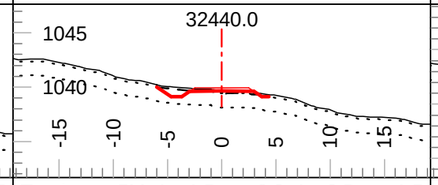

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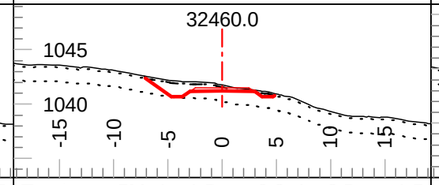

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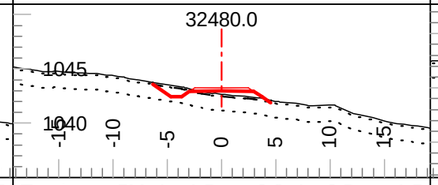

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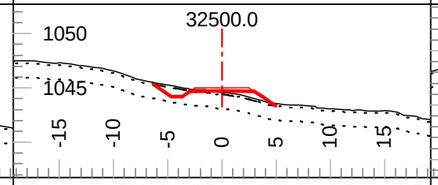

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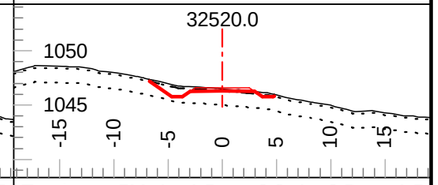

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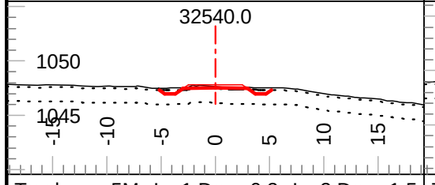

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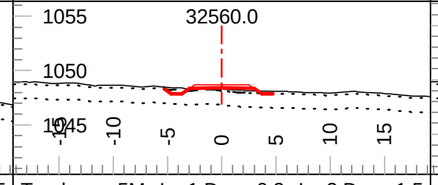

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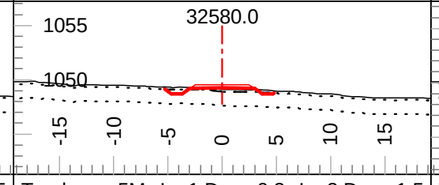

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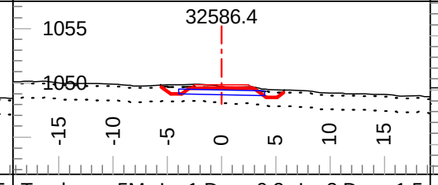

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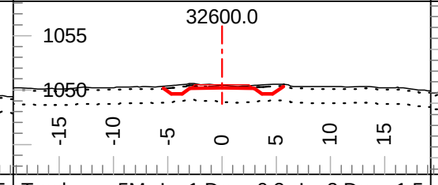

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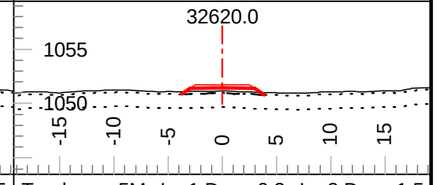

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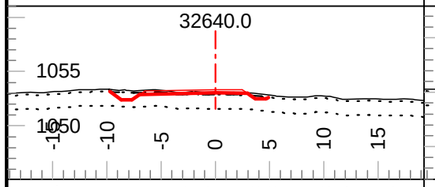

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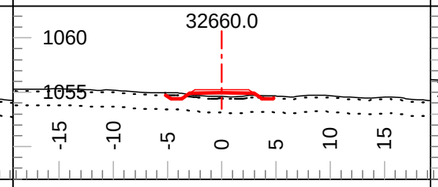

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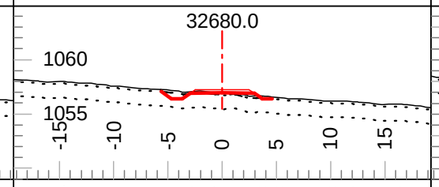

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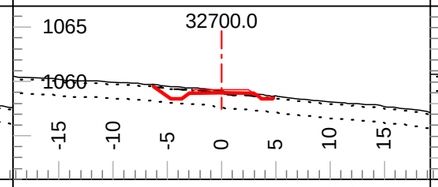

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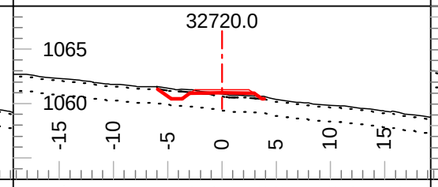

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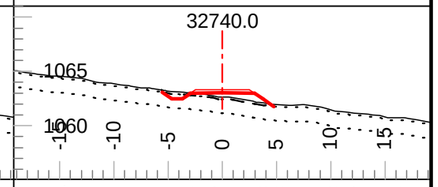

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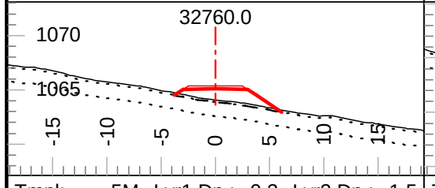

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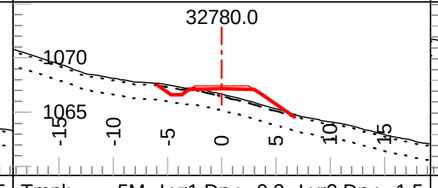

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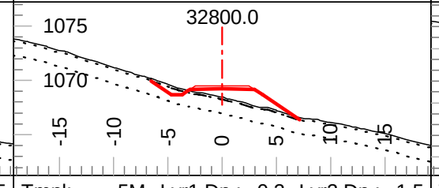

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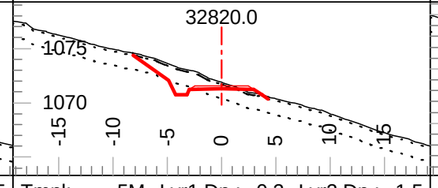

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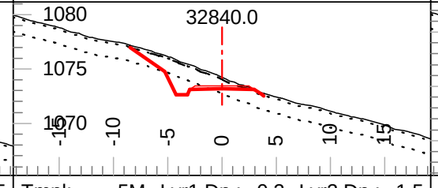

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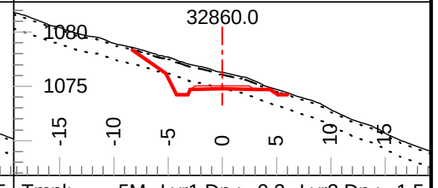

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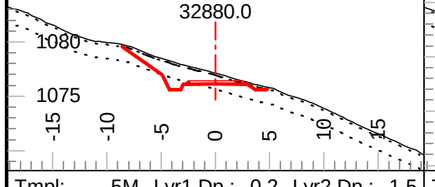

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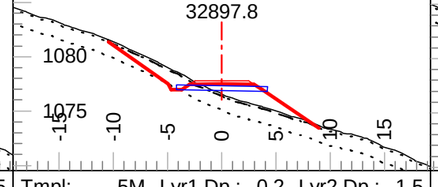

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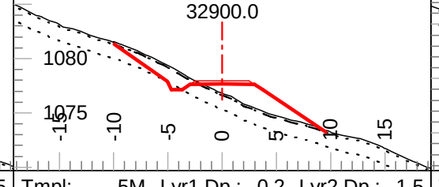

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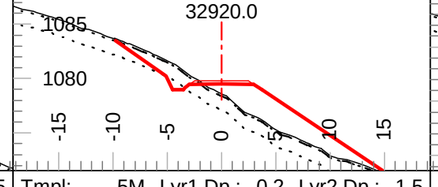

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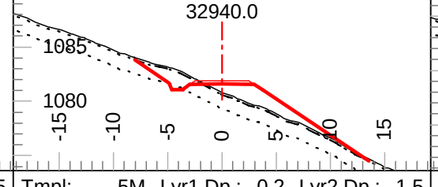

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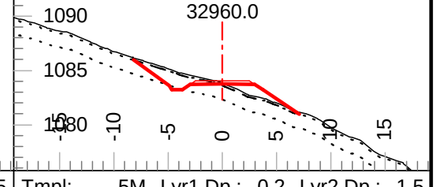
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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Coffee Gold Mine

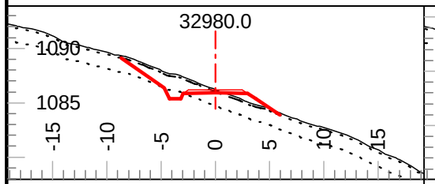
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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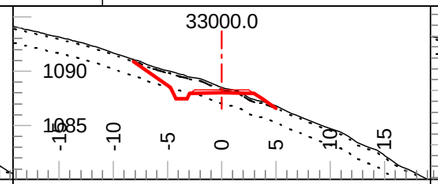

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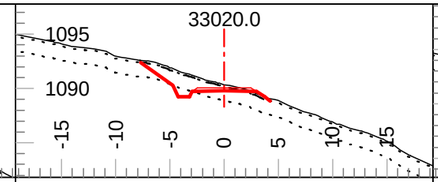

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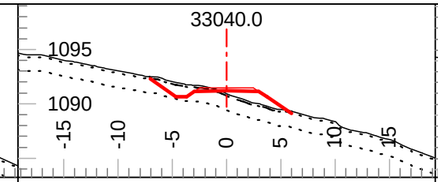

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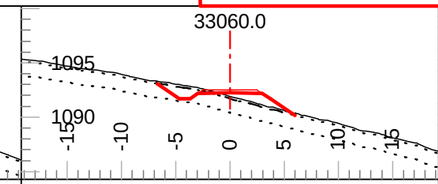

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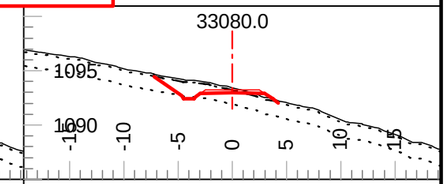

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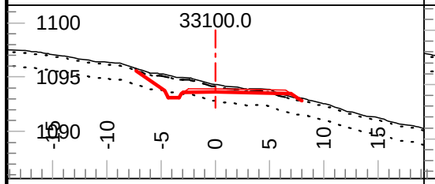

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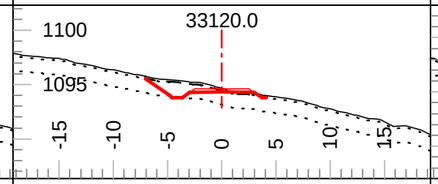

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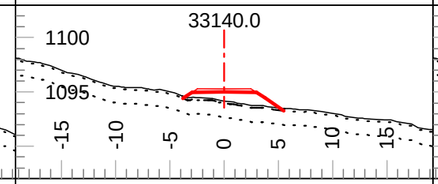

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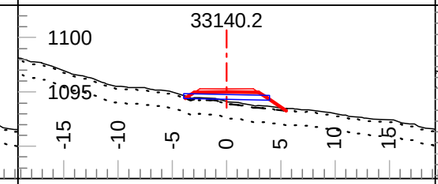

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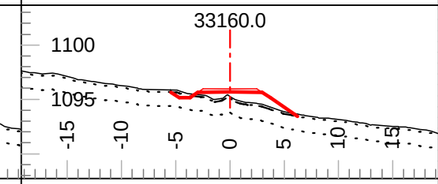

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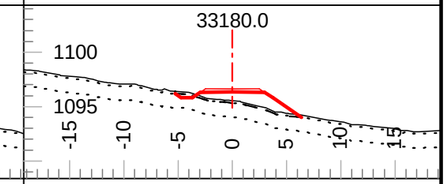

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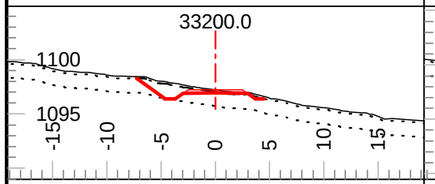

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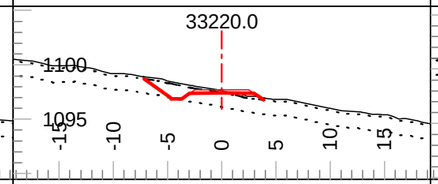

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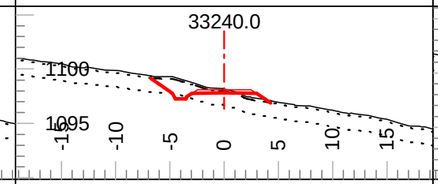

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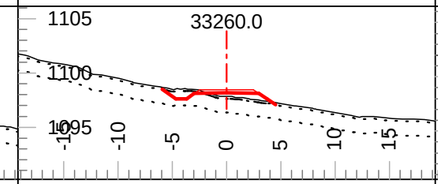

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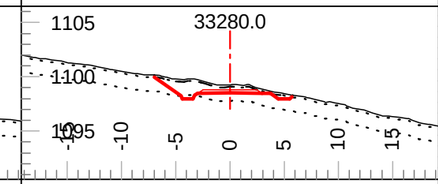

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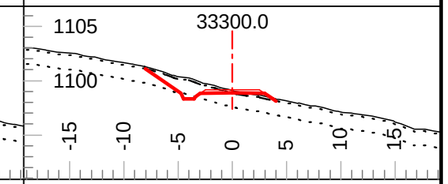

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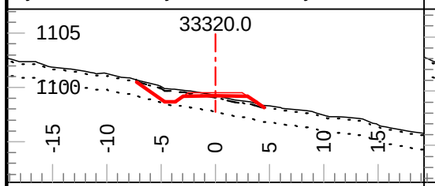

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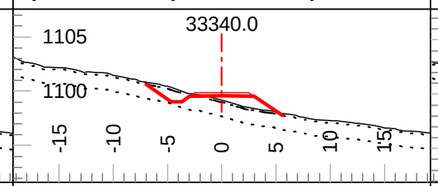

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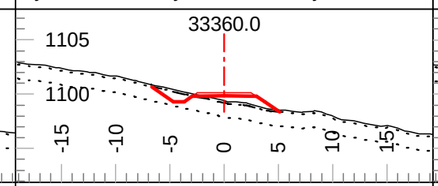

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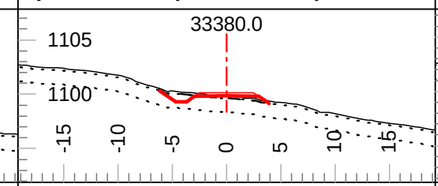

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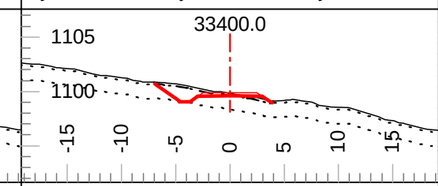

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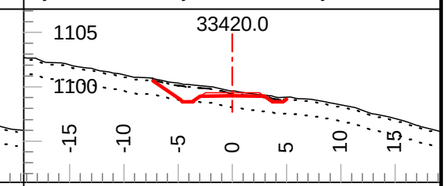

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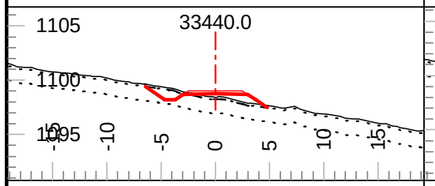

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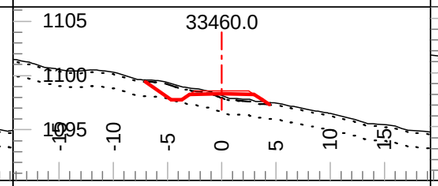

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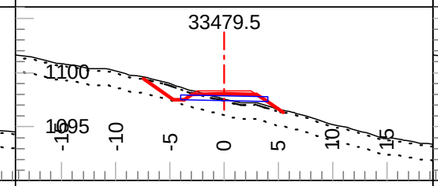

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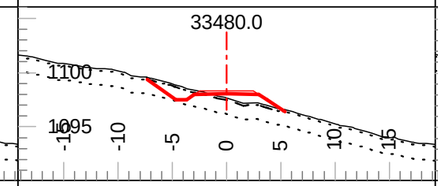

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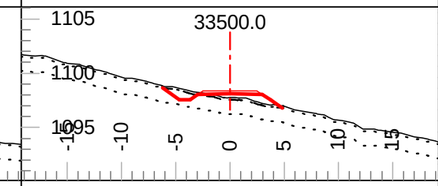

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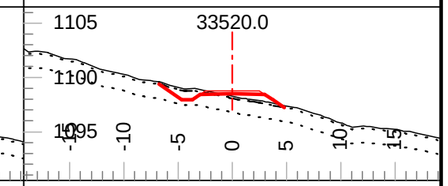

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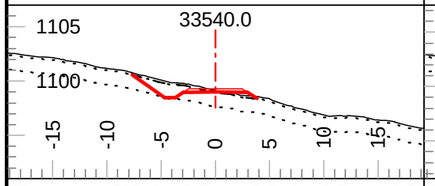

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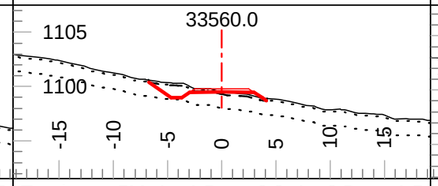

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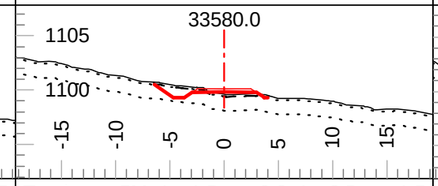

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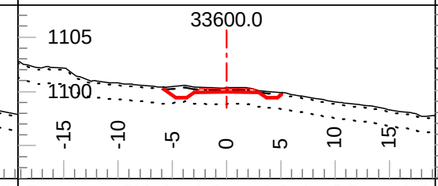

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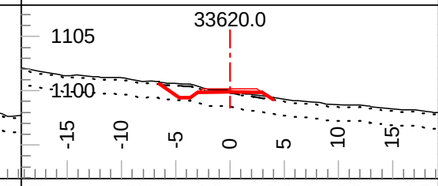

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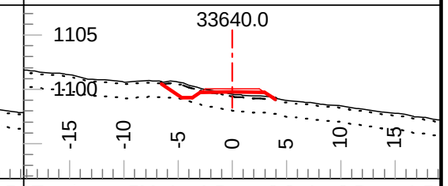

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Coffee Gold Mine

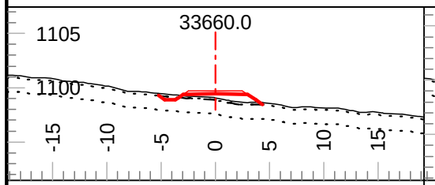
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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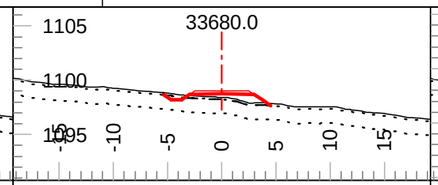

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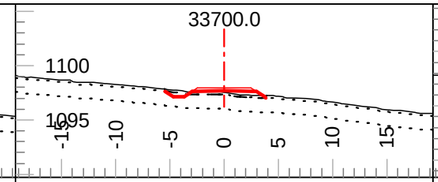

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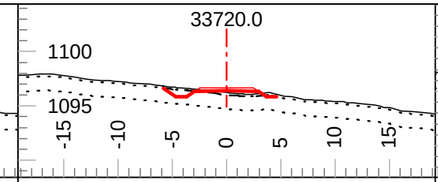

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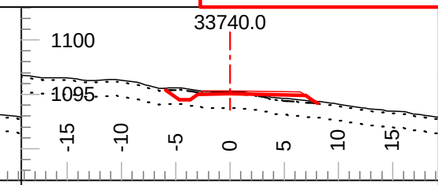

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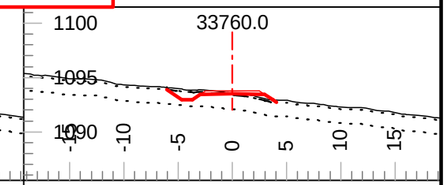
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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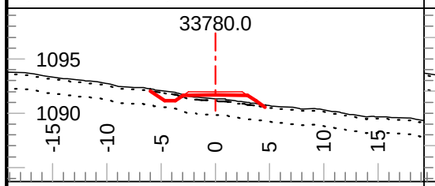

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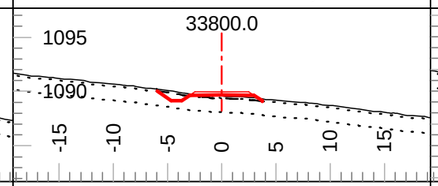

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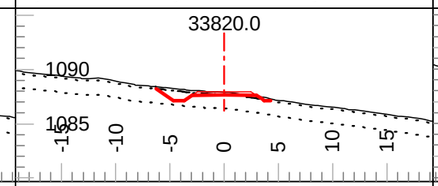

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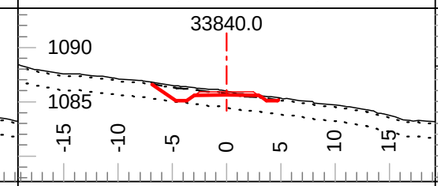

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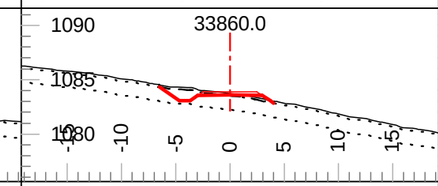

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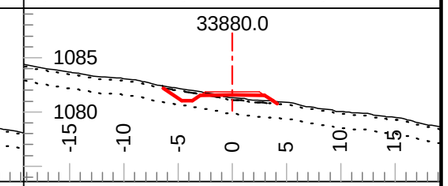

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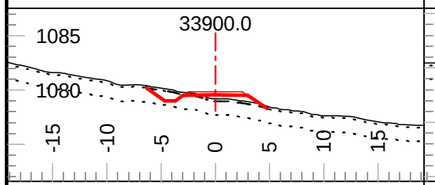

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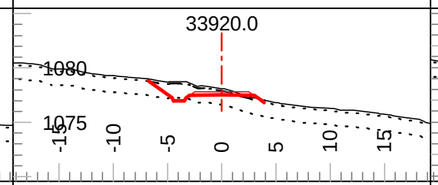

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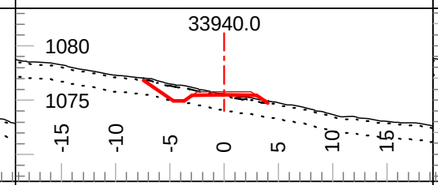

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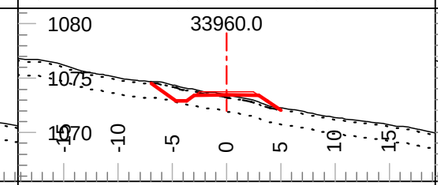

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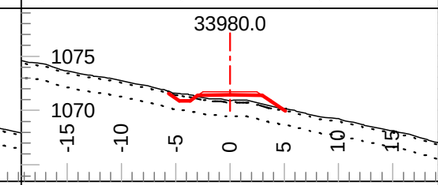

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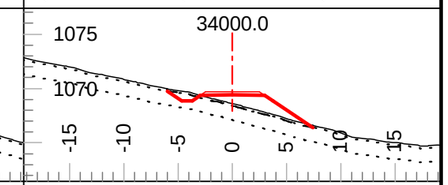

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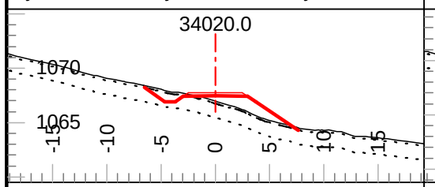

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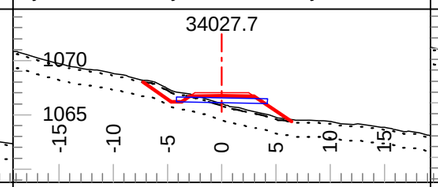

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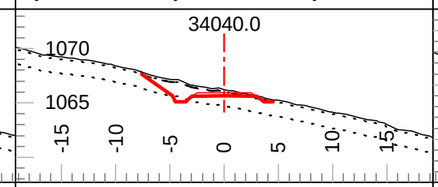

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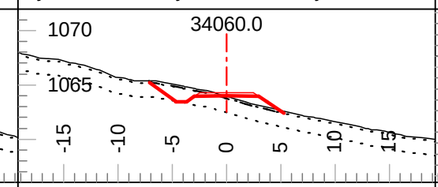

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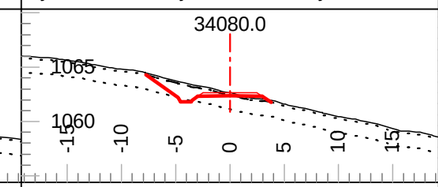

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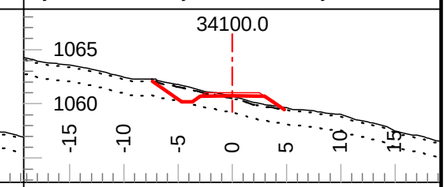

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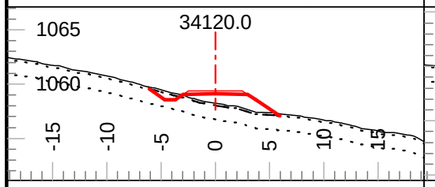

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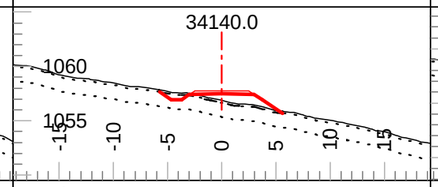

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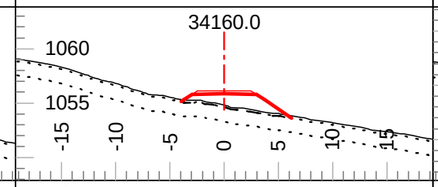

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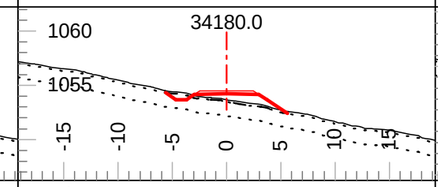

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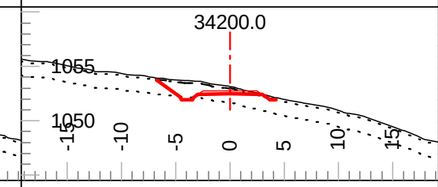

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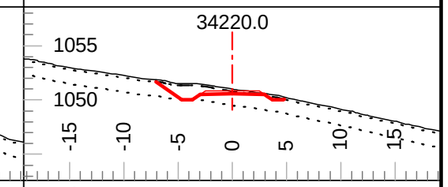

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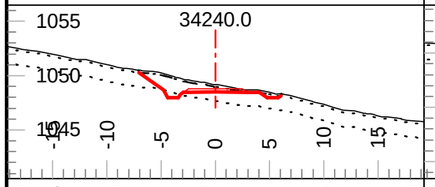

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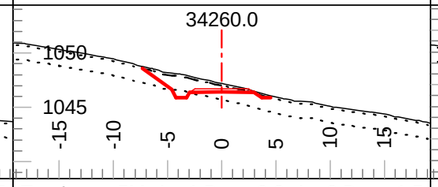

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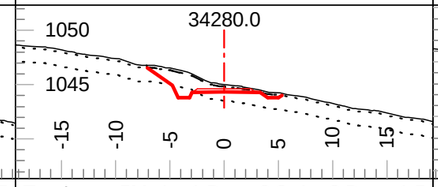

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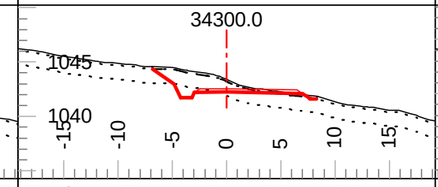

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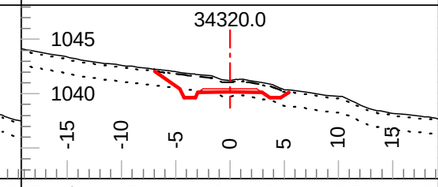

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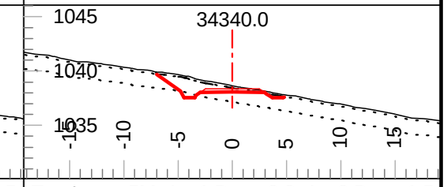

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Coffee Gold Mine

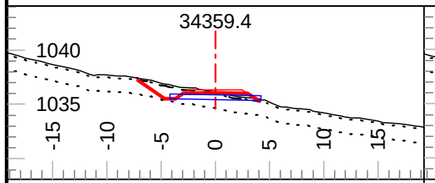
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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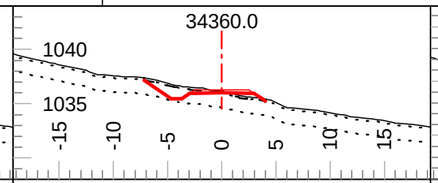

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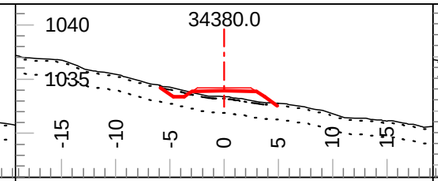

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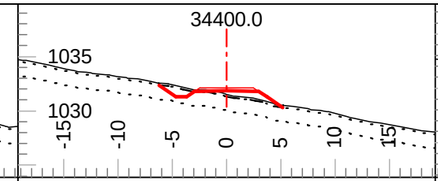

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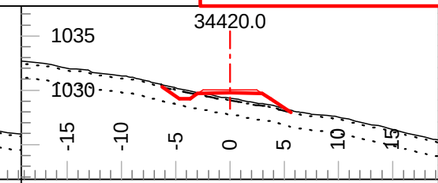

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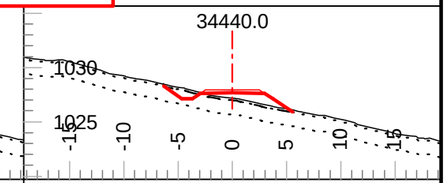

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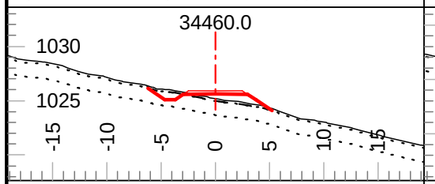

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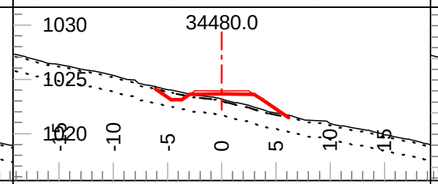

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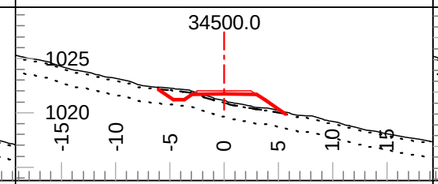

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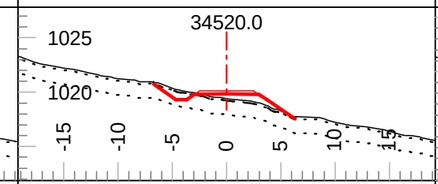

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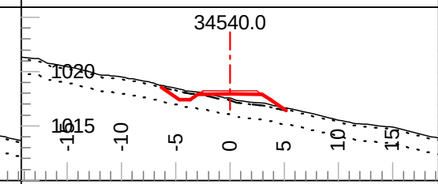

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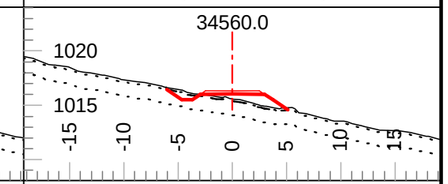

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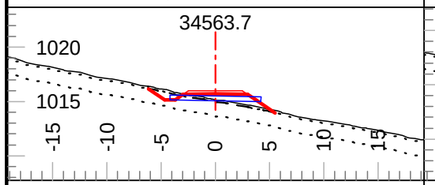

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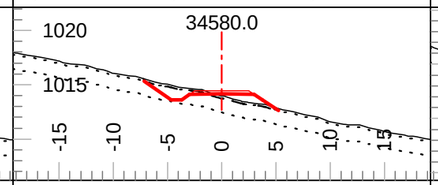

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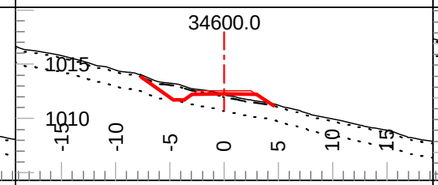

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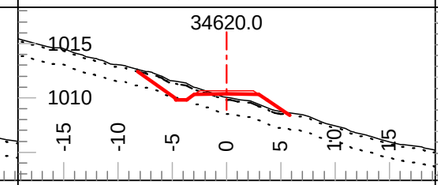

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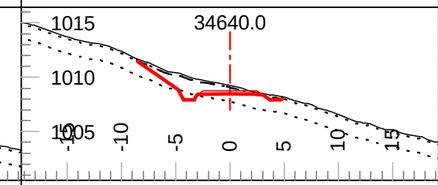

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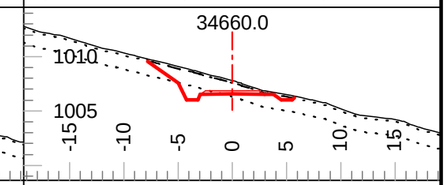

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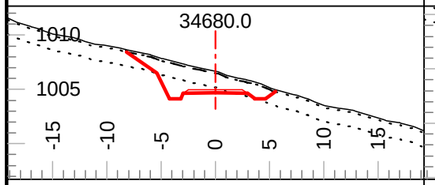

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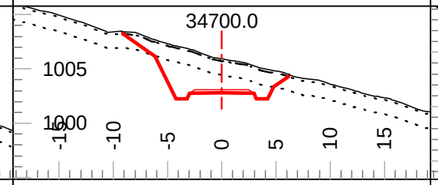

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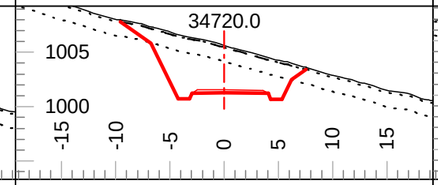

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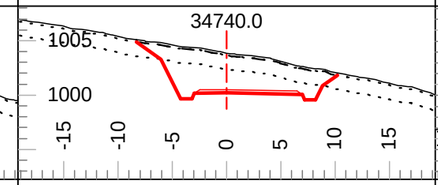

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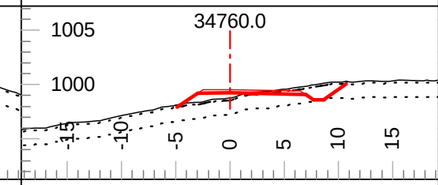

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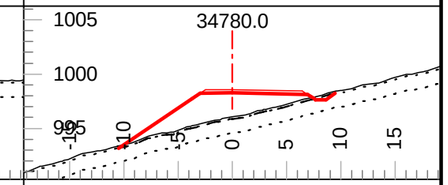

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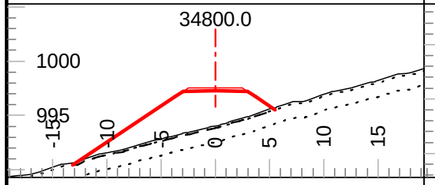

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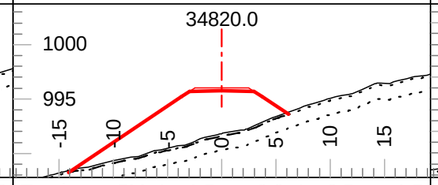

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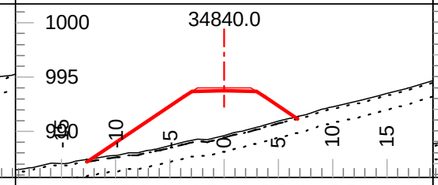

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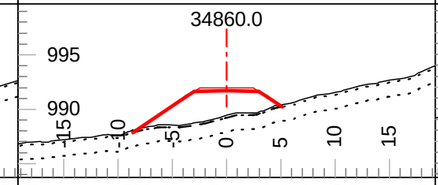

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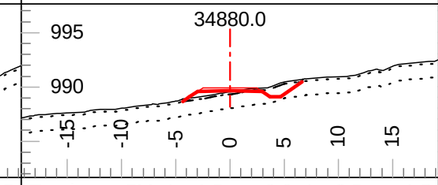

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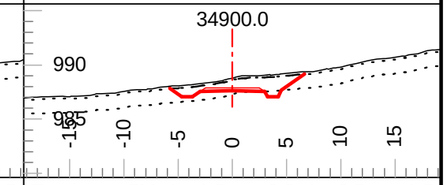

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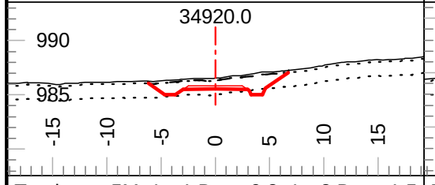

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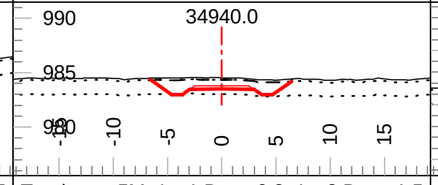

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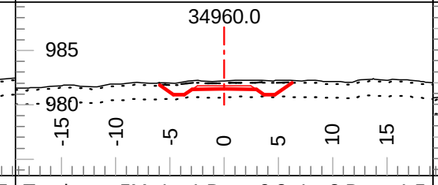

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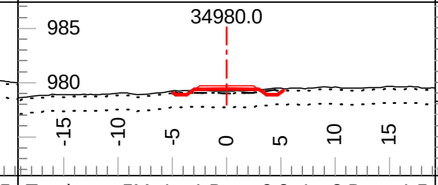

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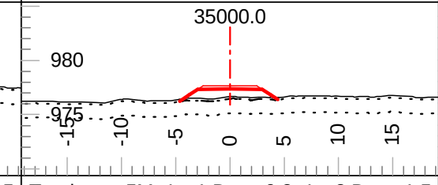

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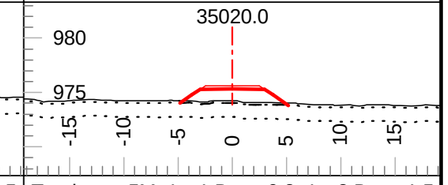

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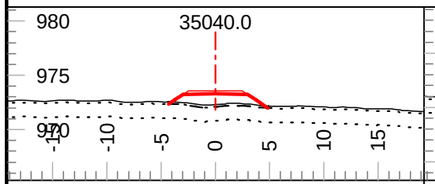

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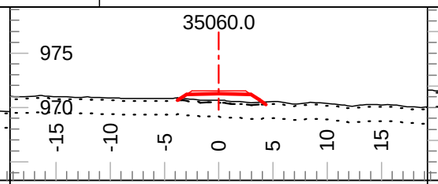

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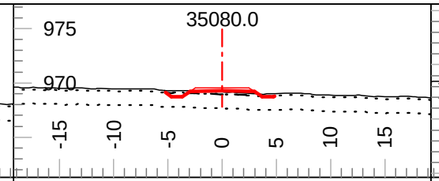

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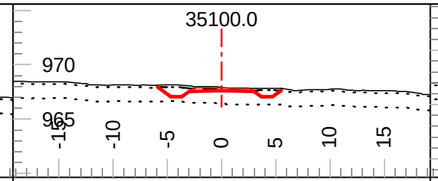

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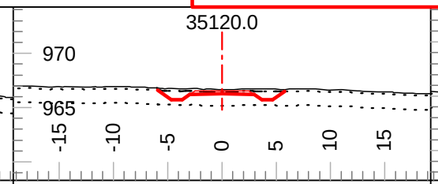

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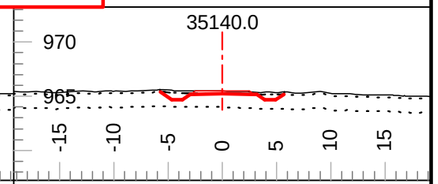

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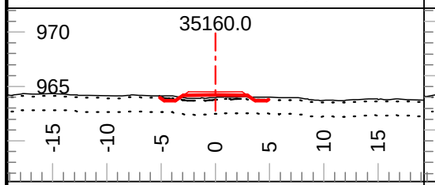

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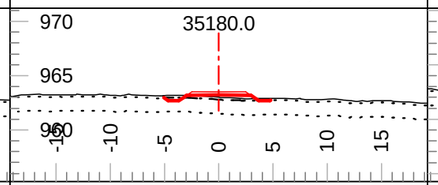

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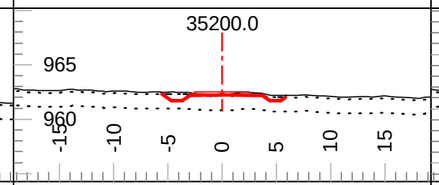

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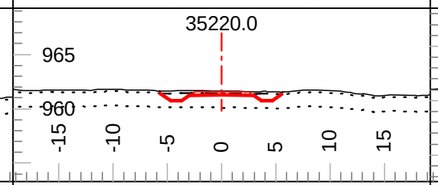

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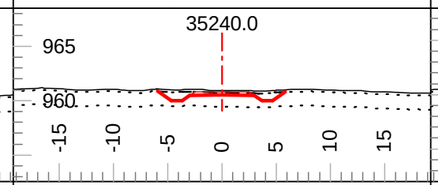

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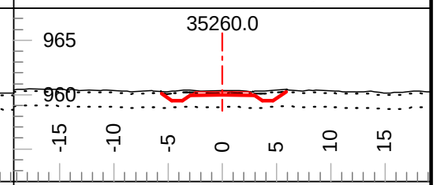

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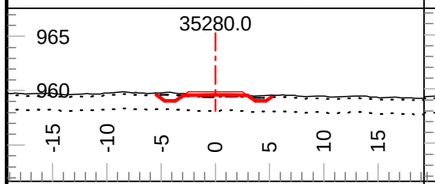

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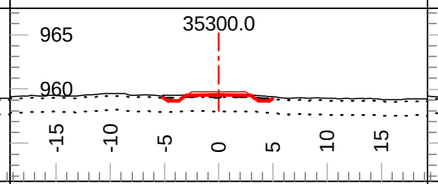

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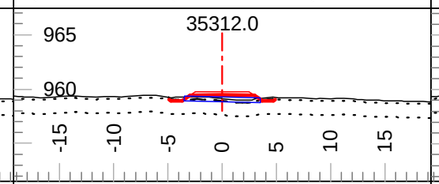

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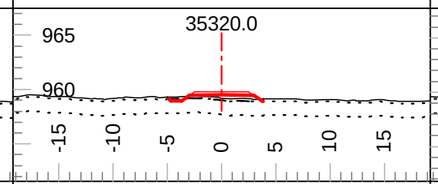

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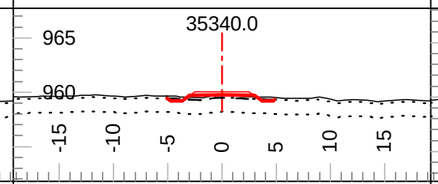

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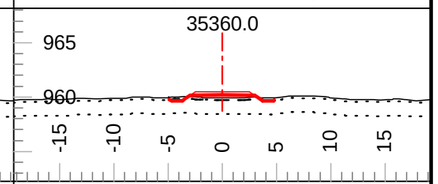

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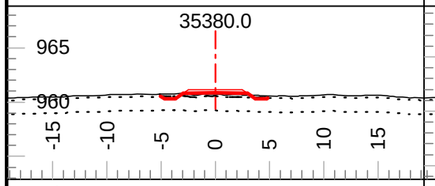

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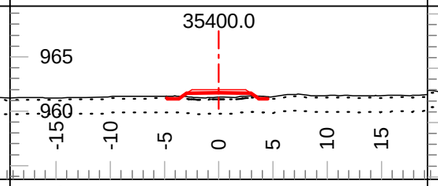

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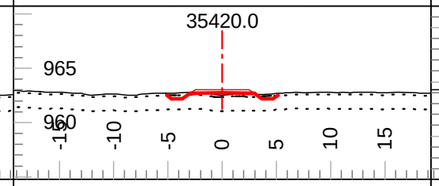

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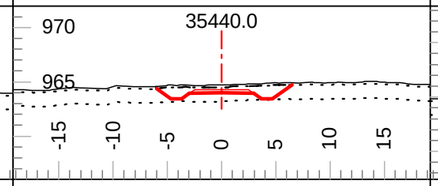

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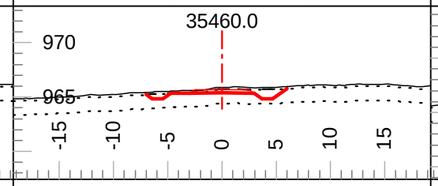

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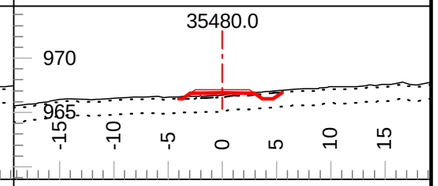

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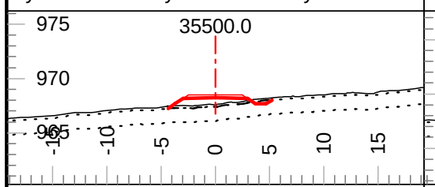

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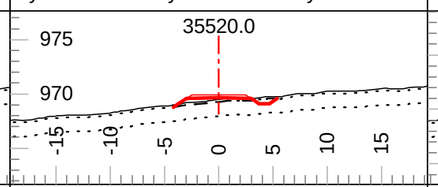

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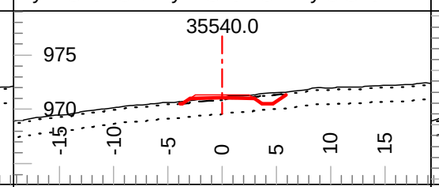

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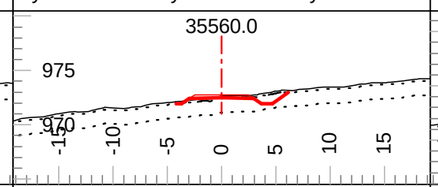

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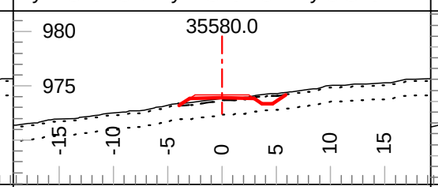

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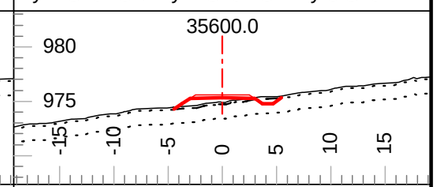

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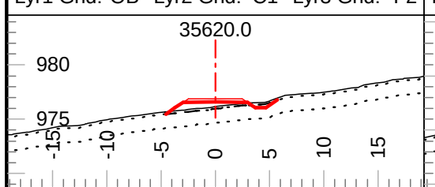

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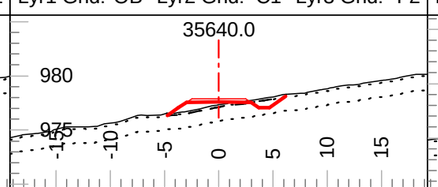

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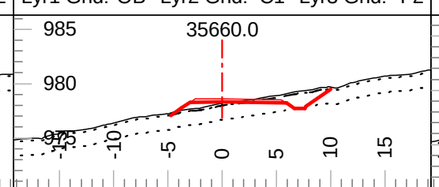

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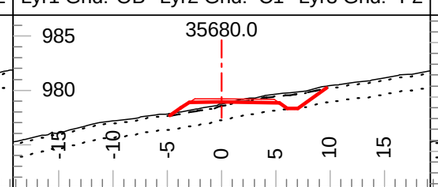

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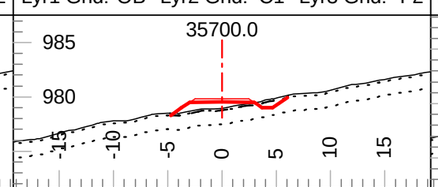

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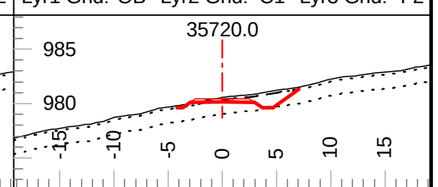

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Coffee Gold Mine

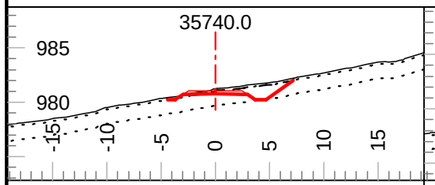
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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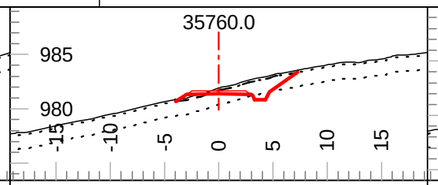

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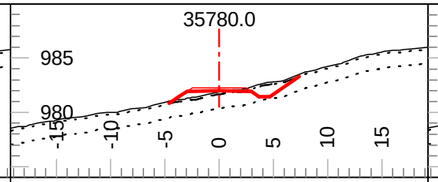

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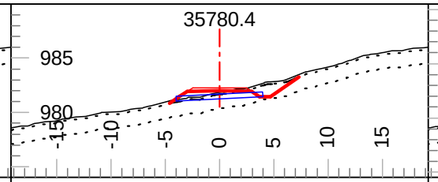

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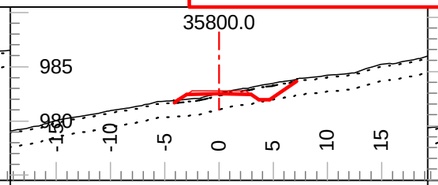

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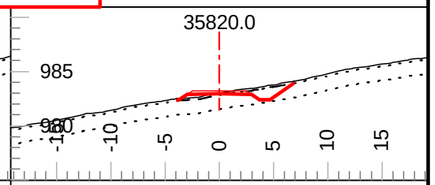

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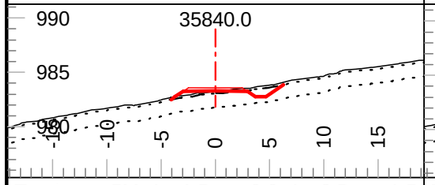

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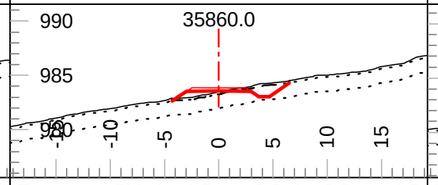

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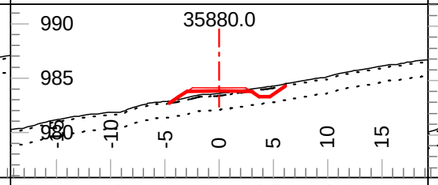

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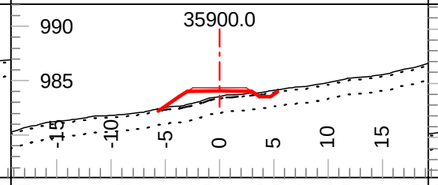

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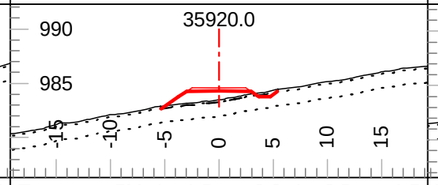

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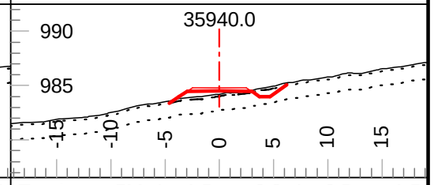

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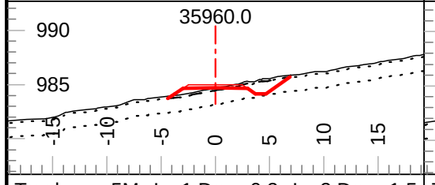

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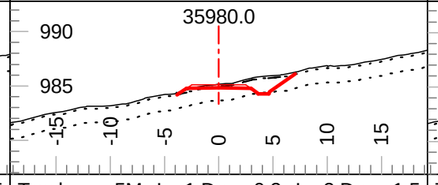

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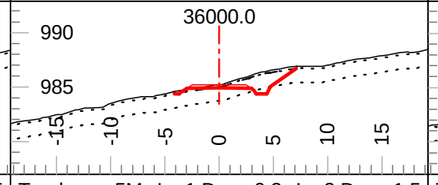

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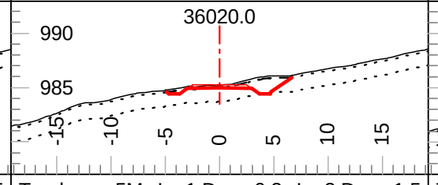

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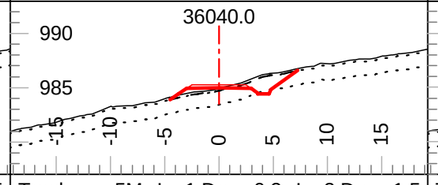

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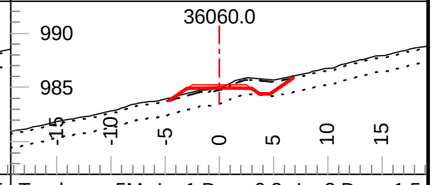

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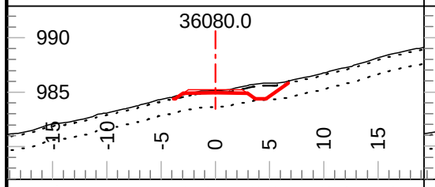

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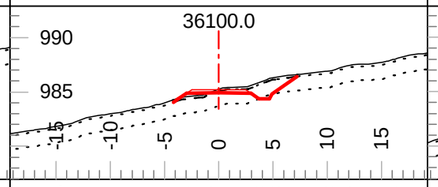

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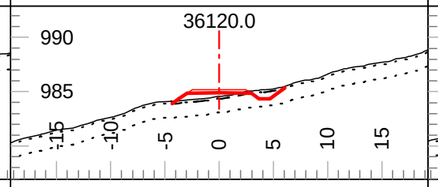

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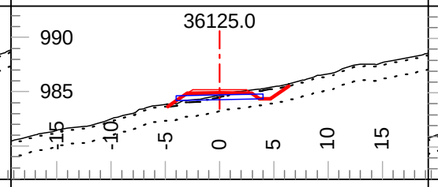

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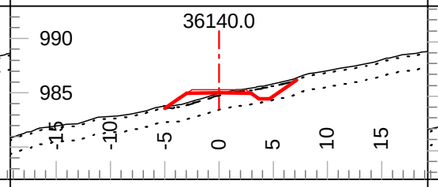

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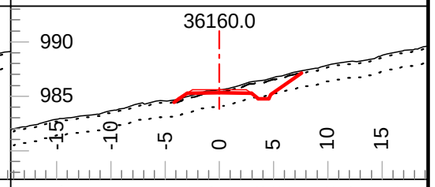

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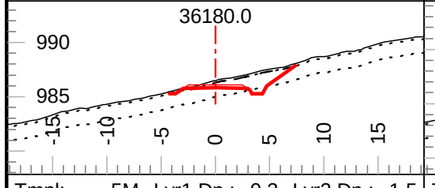

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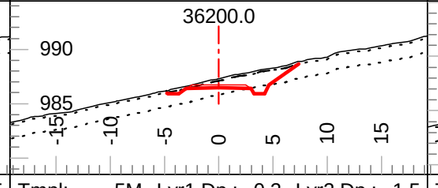
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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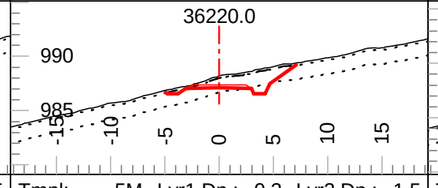

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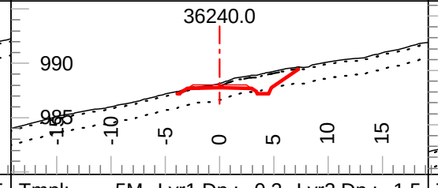

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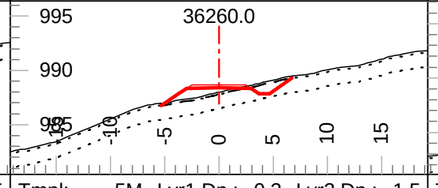

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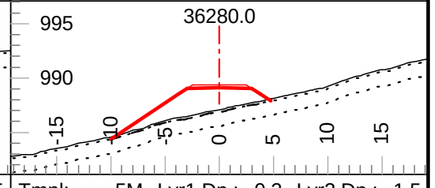

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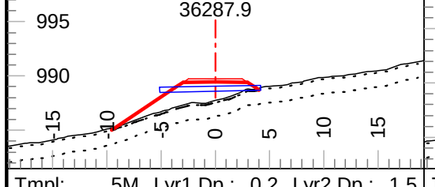

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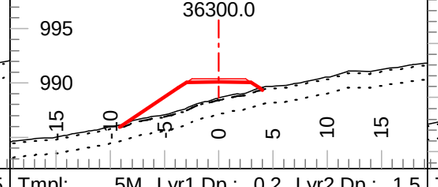

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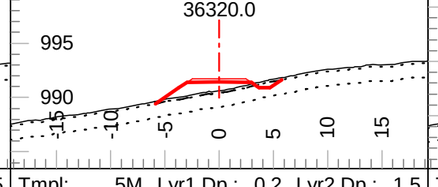

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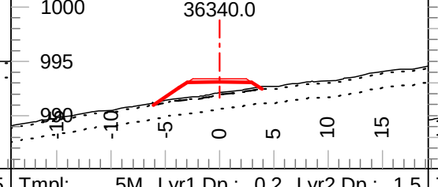

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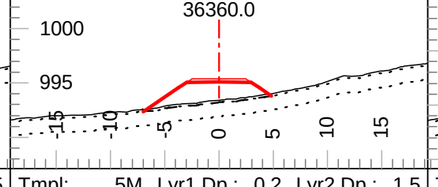

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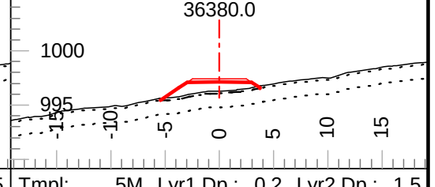

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Coffee Gold Mine

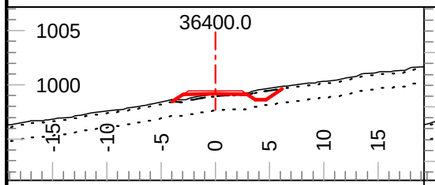
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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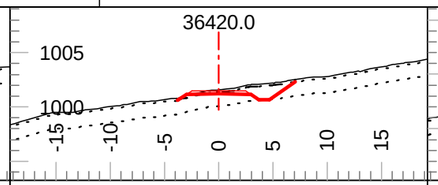

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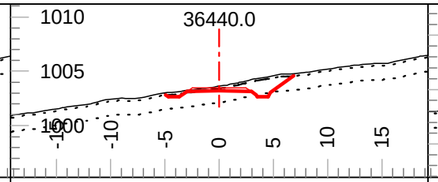

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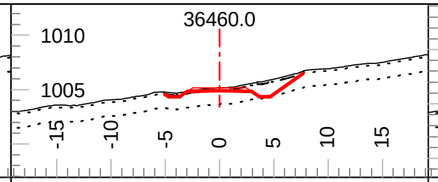

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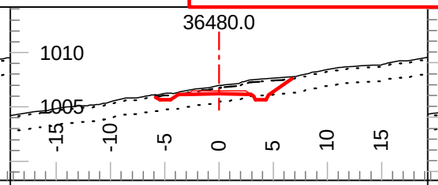

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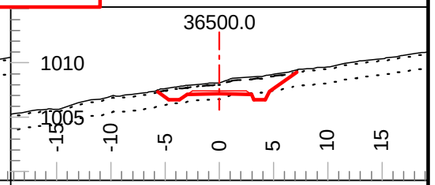

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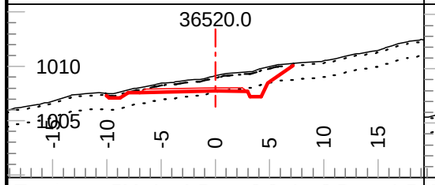

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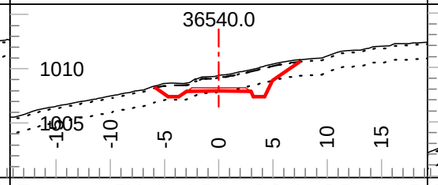

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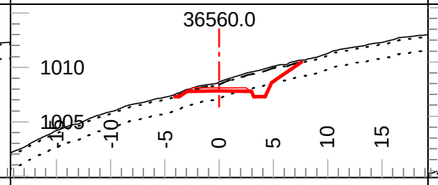

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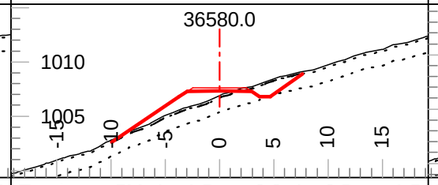

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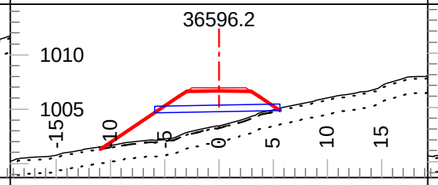

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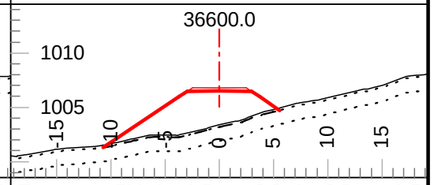

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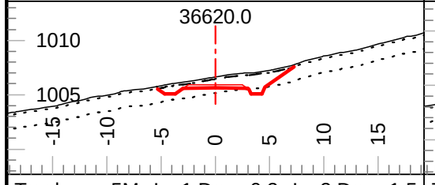

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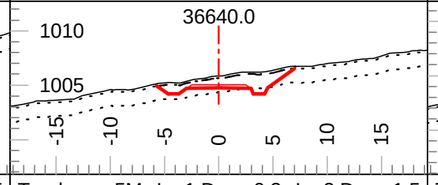

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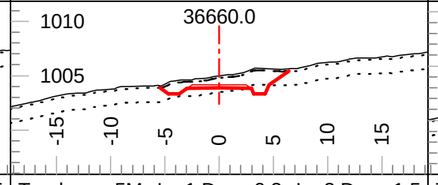

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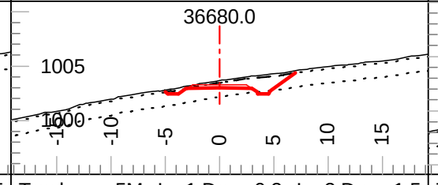

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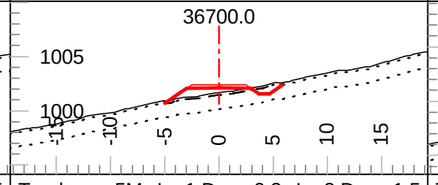

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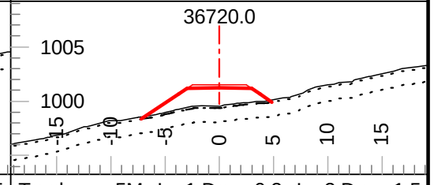

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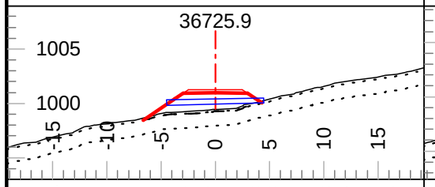

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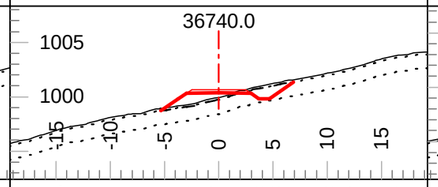

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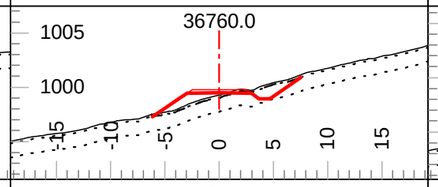

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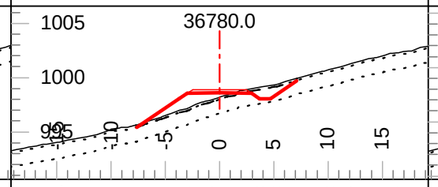

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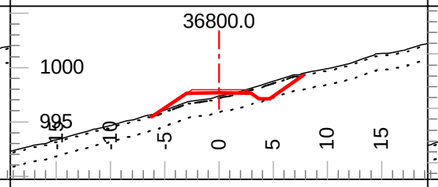

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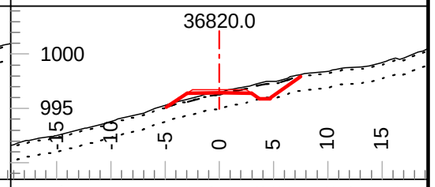

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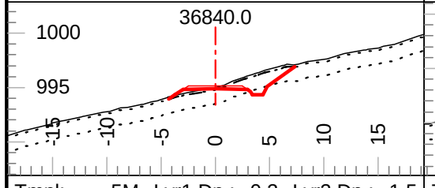

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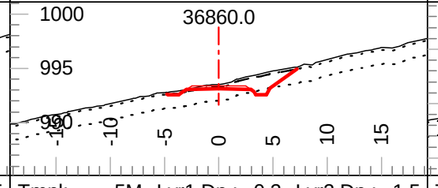

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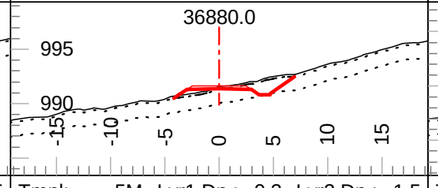

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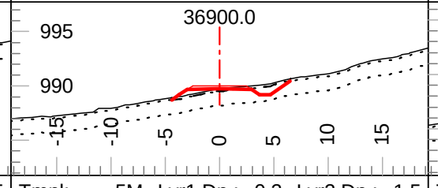

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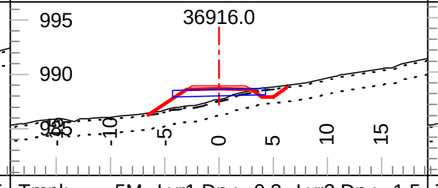

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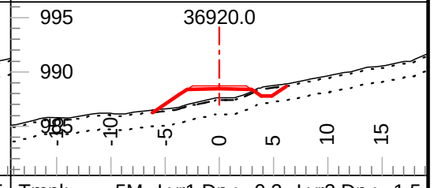

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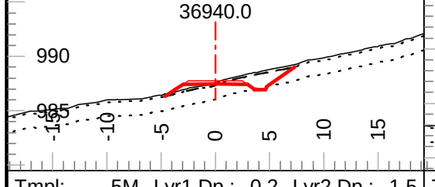

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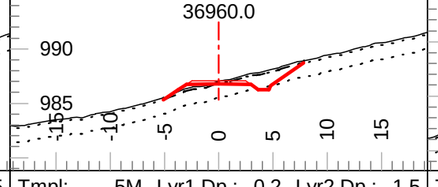

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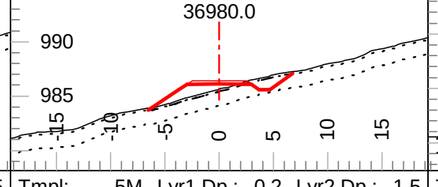

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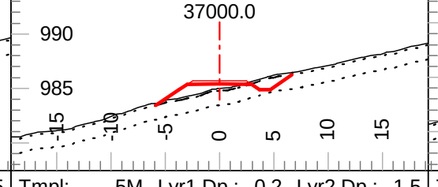

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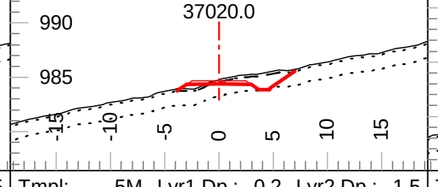

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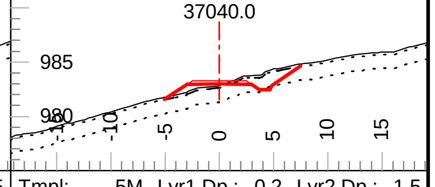

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Coffee Gold Mine

Northern Access Route Upgrade and Establishment
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km 0-41.1

GOLDCORP

Section Scale 1:550

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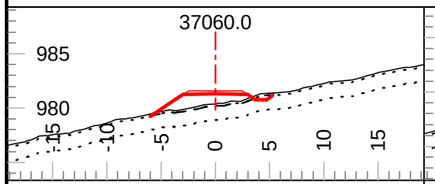
ONSITE Engineering Ltd.



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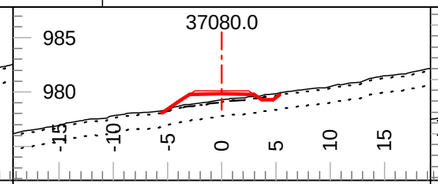

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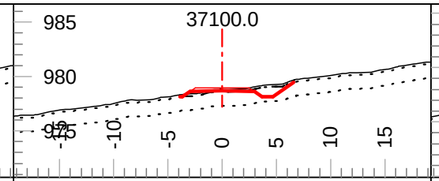

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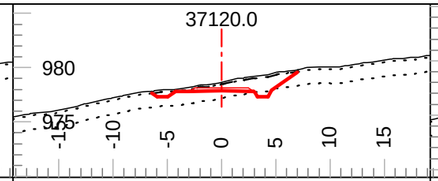

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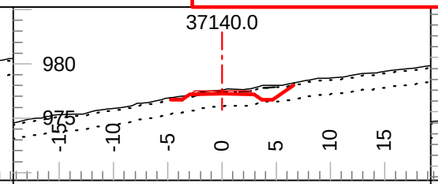

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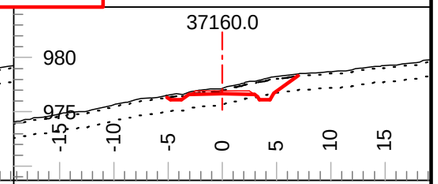

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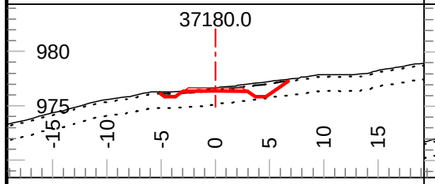

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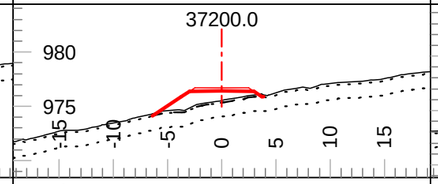

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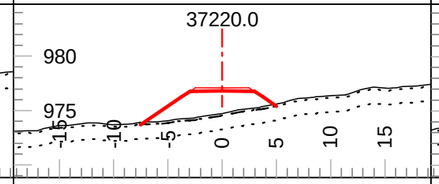

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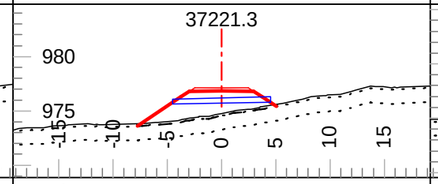

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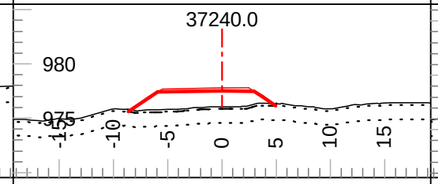

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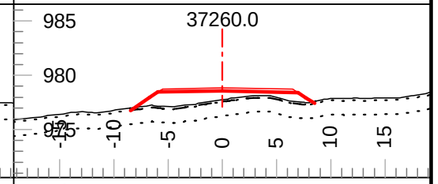

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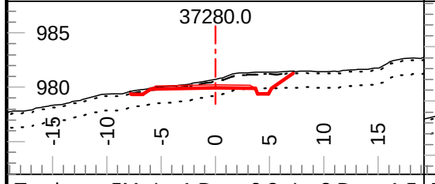

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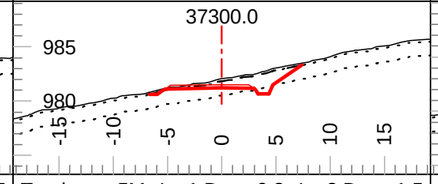

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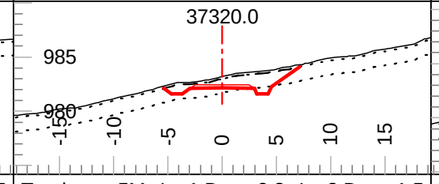

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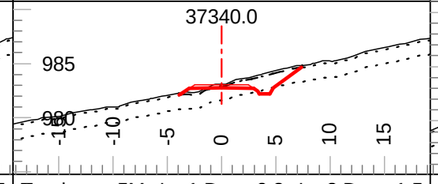

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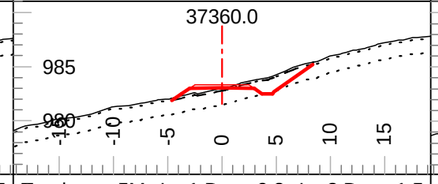

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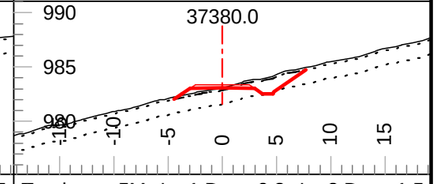

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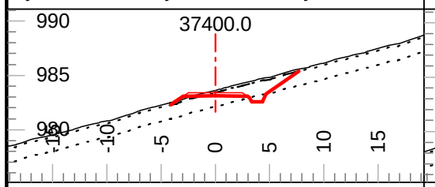

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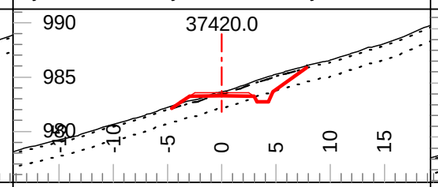

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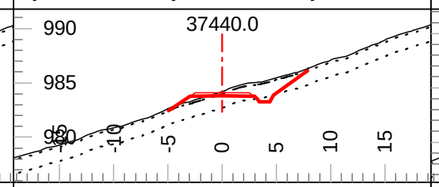

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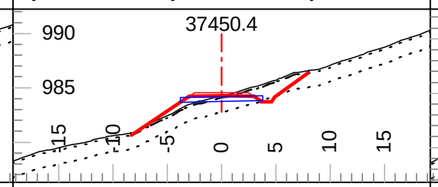

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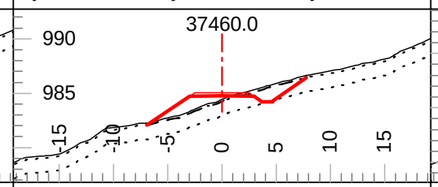

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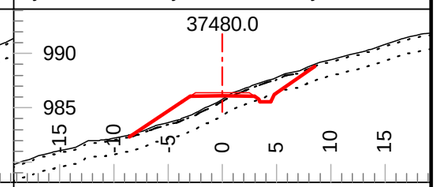

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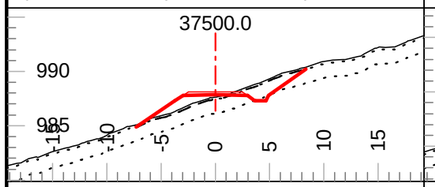

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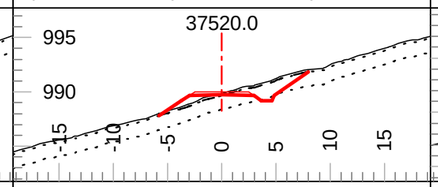

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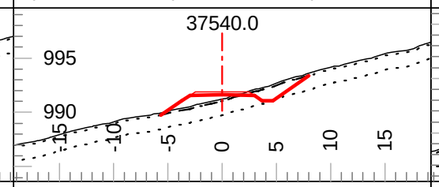

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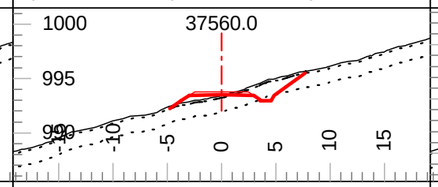

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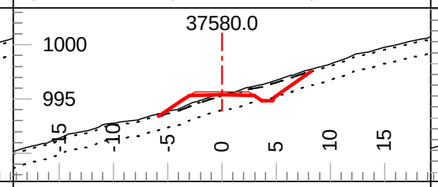

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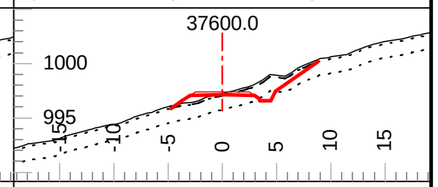

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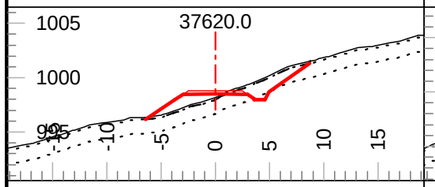

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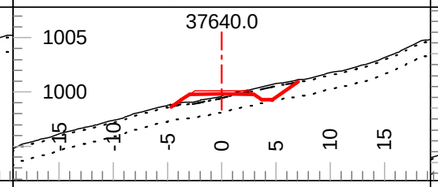

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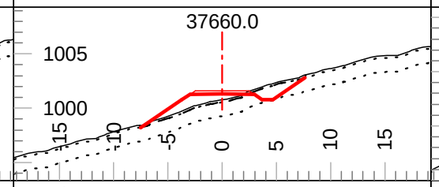

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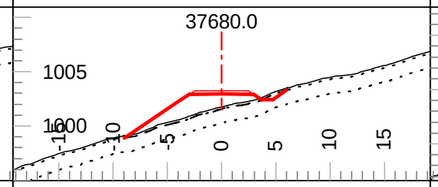

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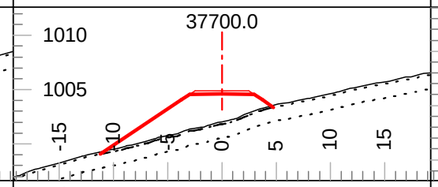

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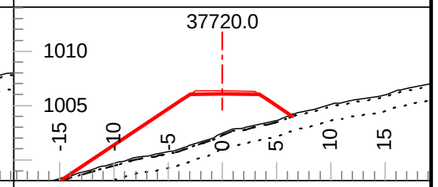

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Coffee Gold Mine

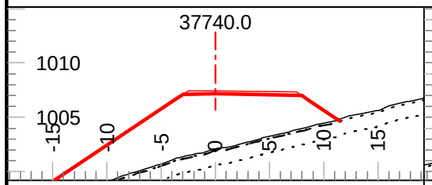
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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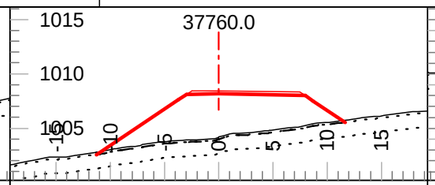

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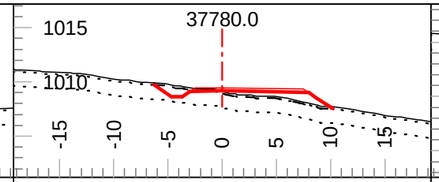

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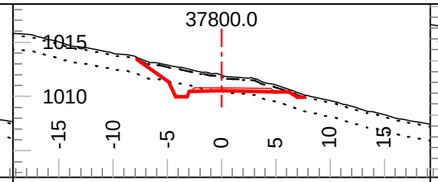

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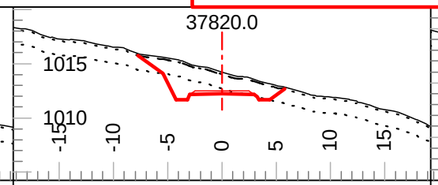

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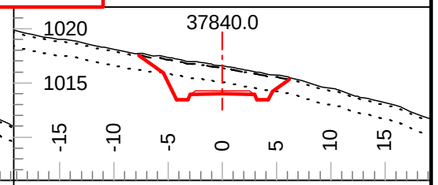

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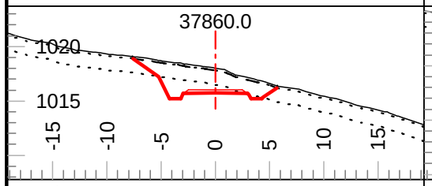

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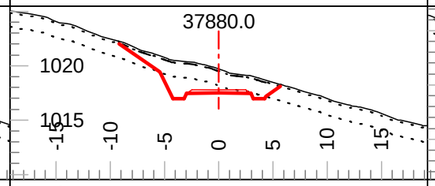

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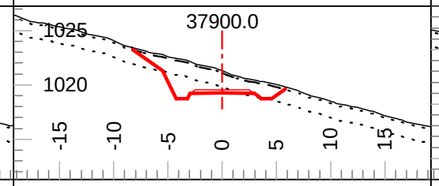

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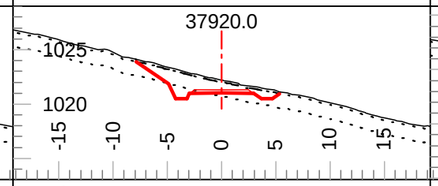

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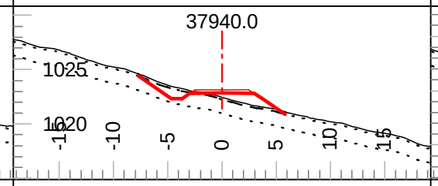

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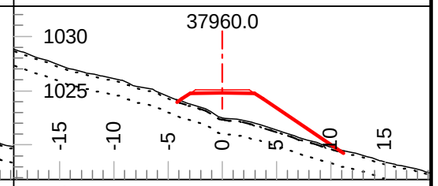

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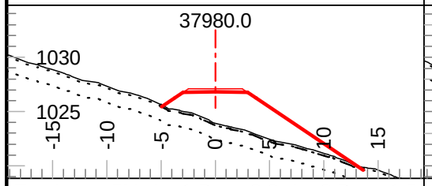

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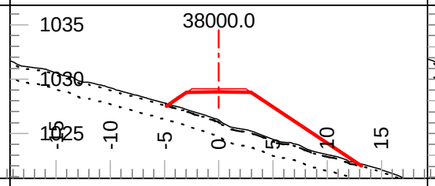

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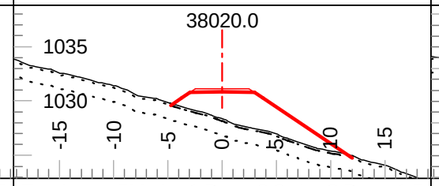

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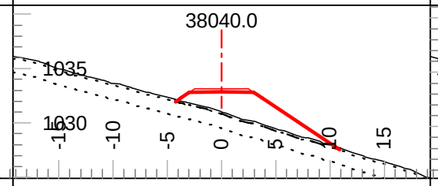

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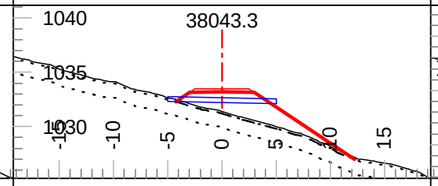

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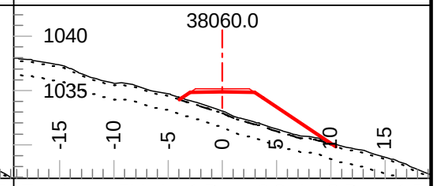

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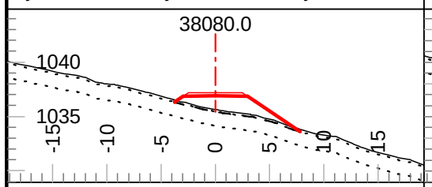

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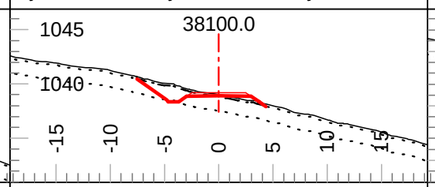

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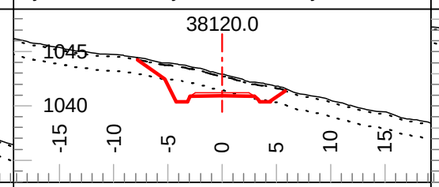

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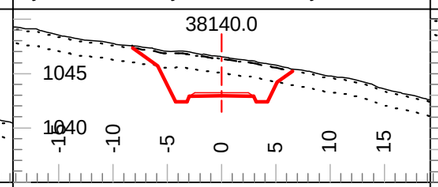

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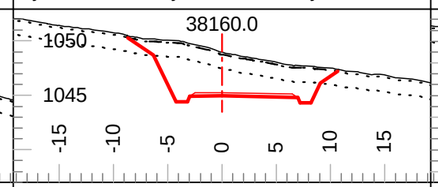

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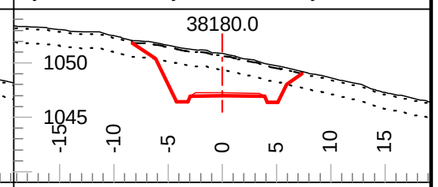

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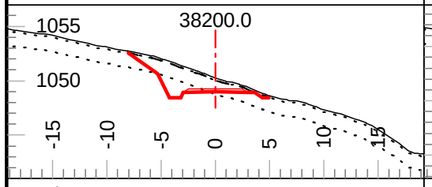

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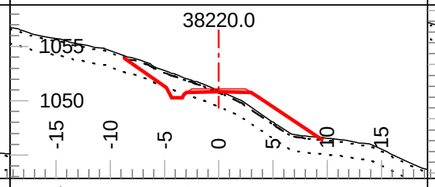

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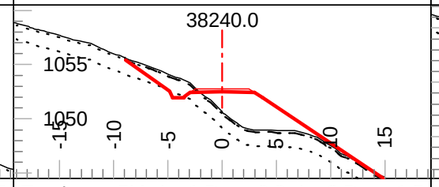

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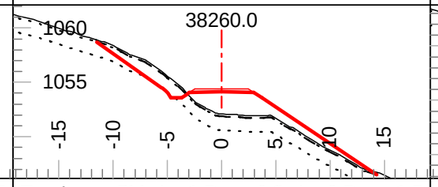

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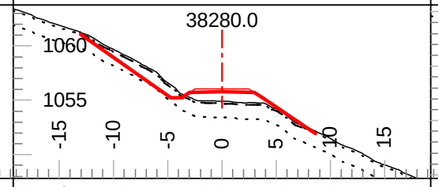

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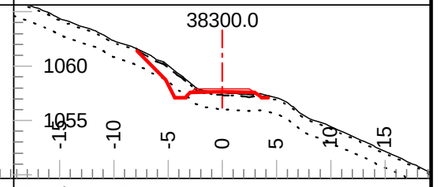

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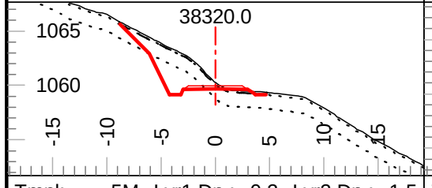

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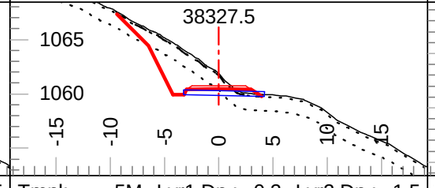

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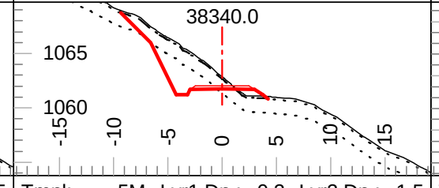

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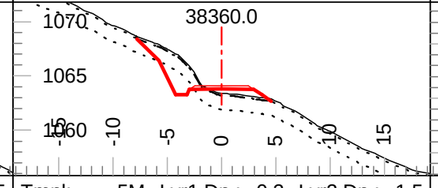

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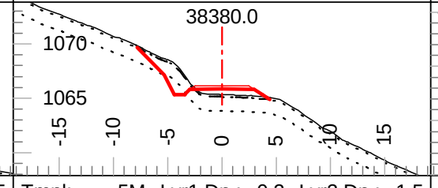

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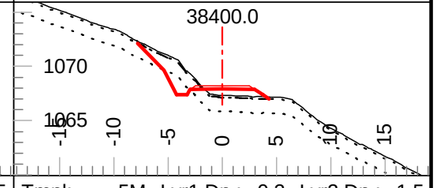

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Coffee Gold Mine

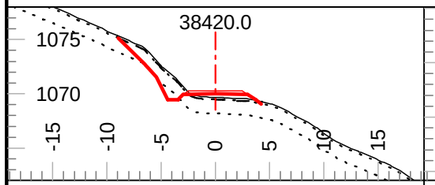
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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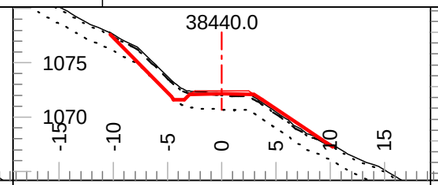

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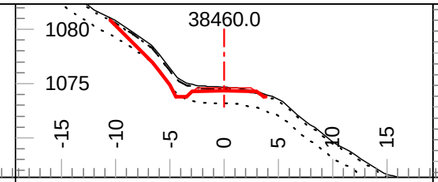

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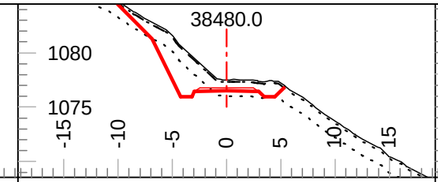

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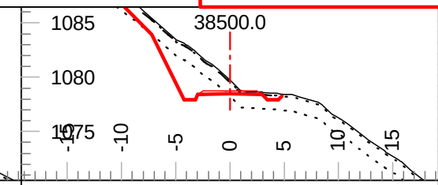

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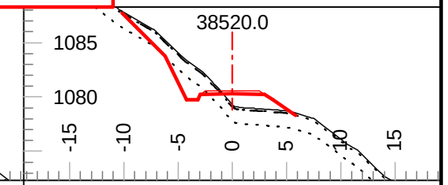

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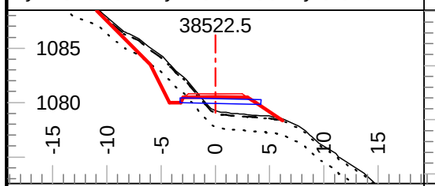

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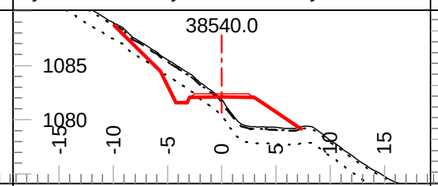

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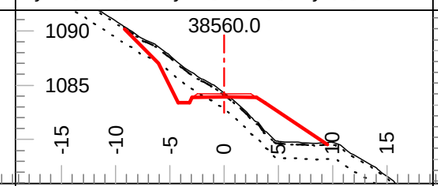

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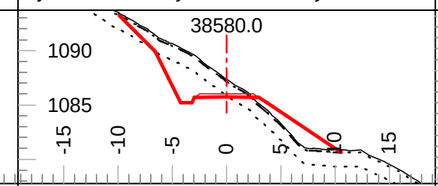

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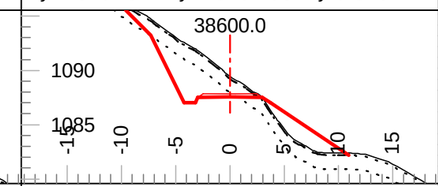

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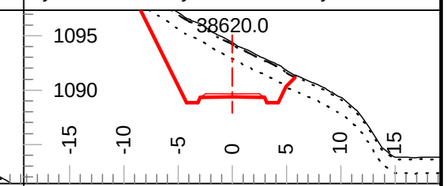

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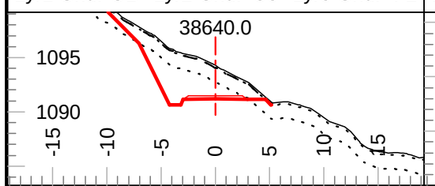

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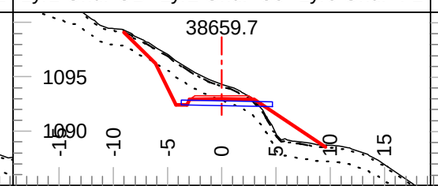

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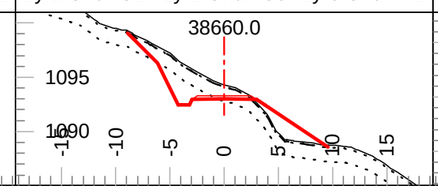

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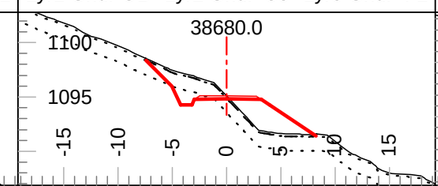

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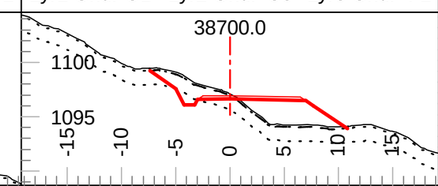

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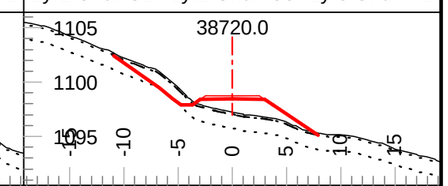

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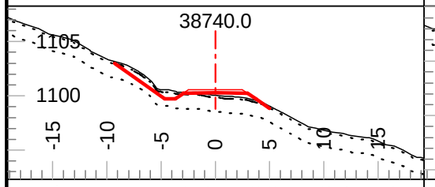

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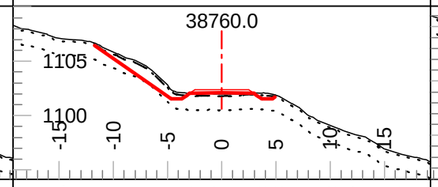

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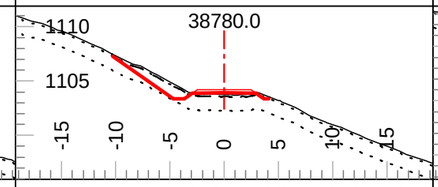

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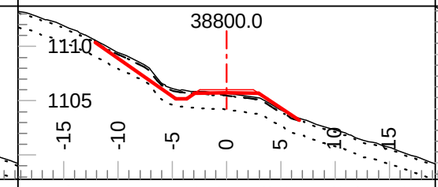

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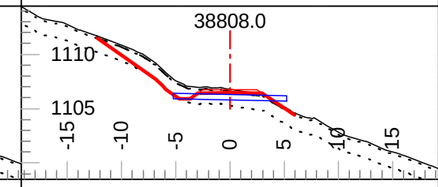

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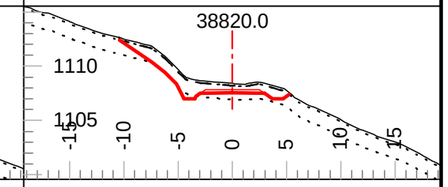

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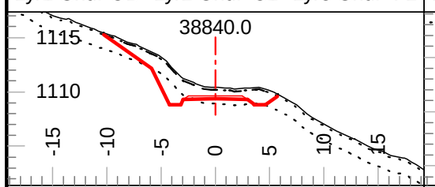

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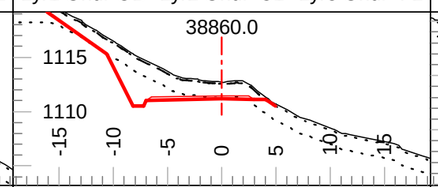

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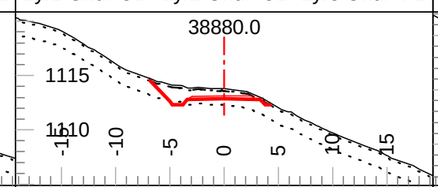

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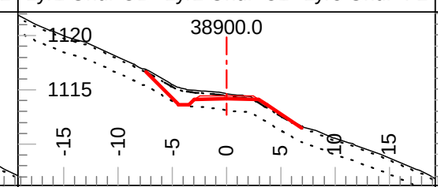

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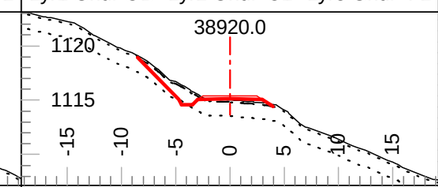

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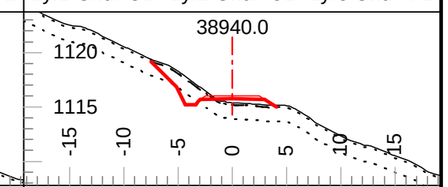

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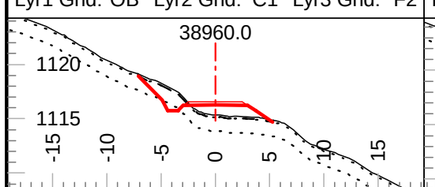

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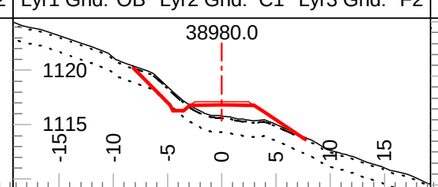

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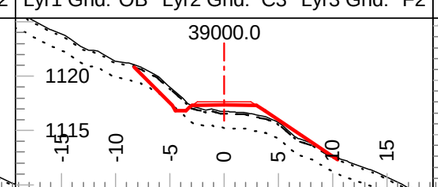

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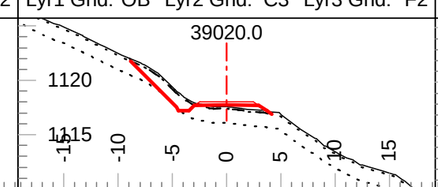

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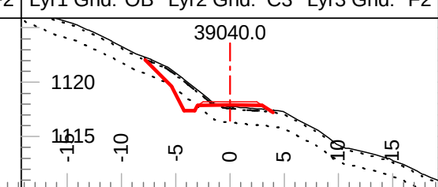

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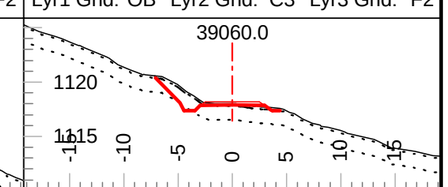

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Coffee Gold Mine

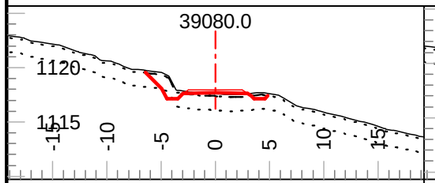
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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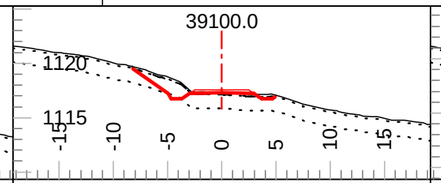

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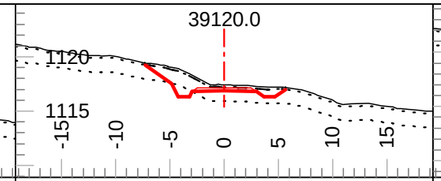

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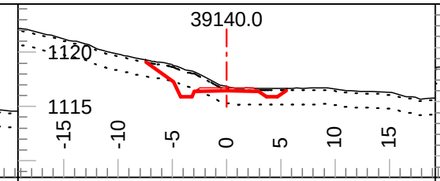

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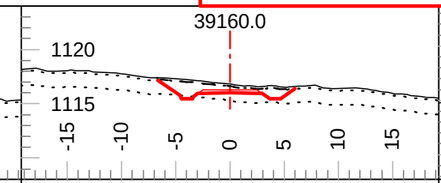

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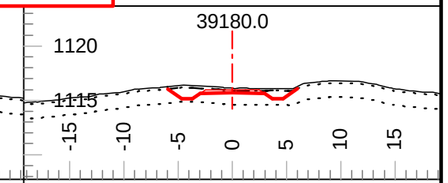

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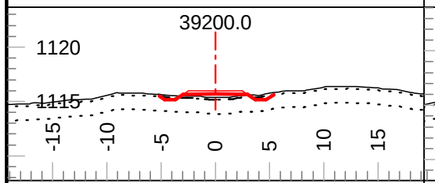

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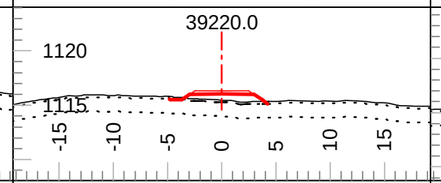

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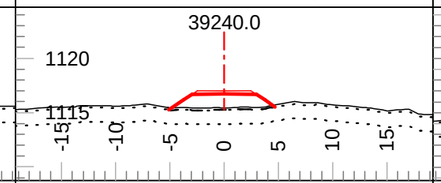

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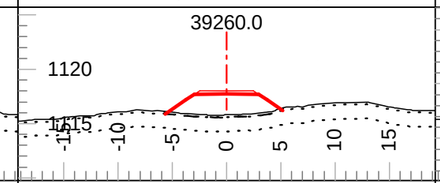

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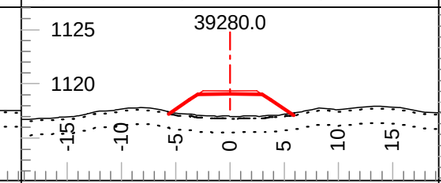

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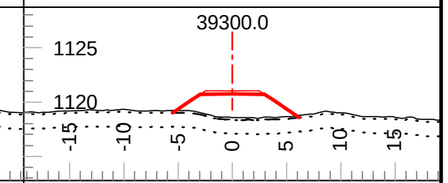

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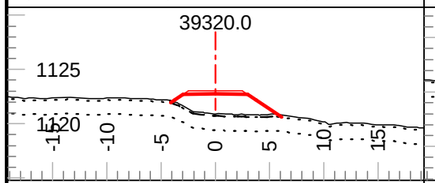

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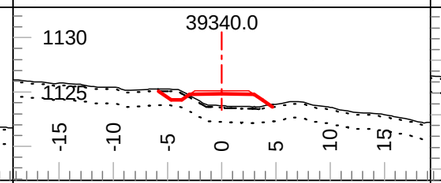

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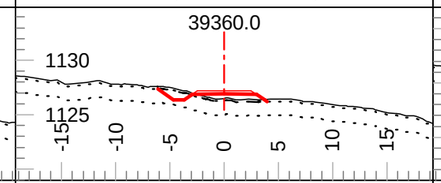

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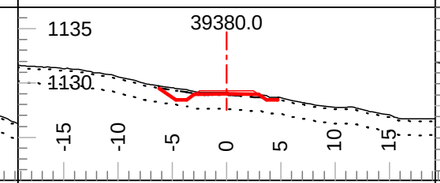
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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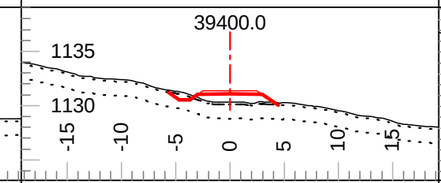

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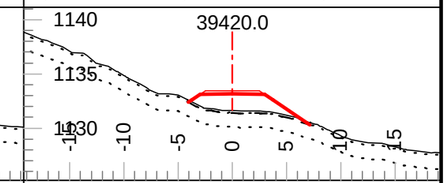

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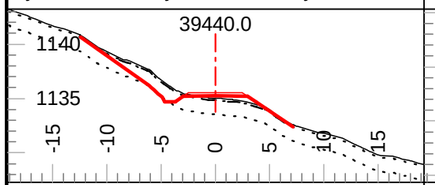

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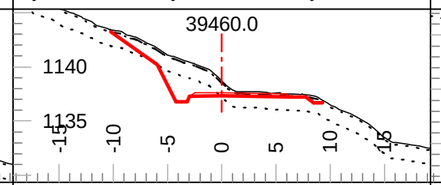

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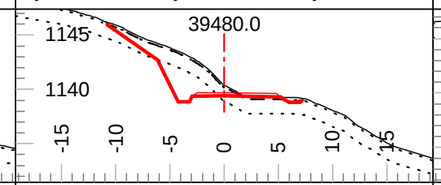

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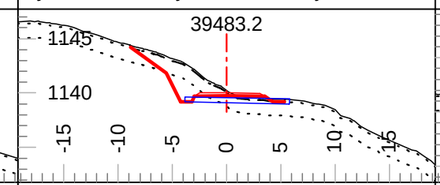

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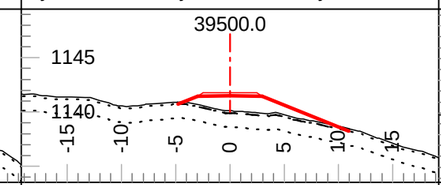

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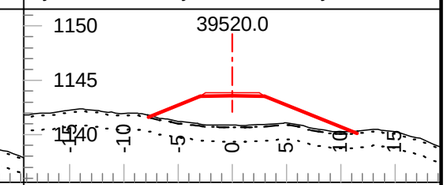

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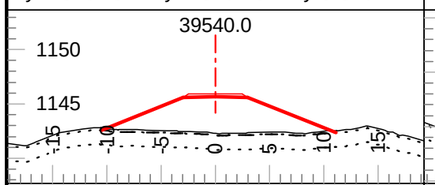

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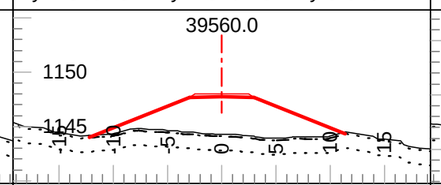

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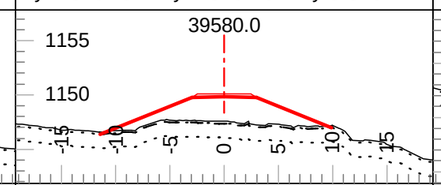

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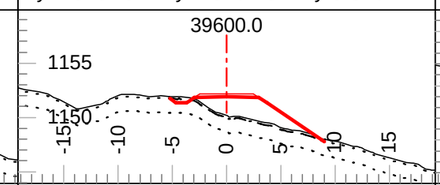

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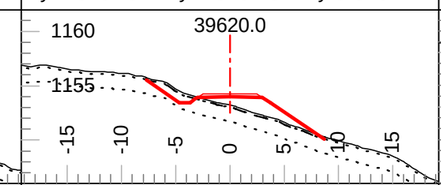

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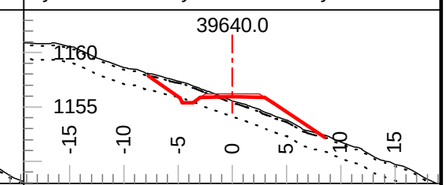

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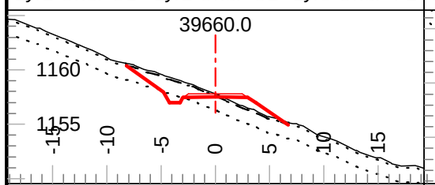

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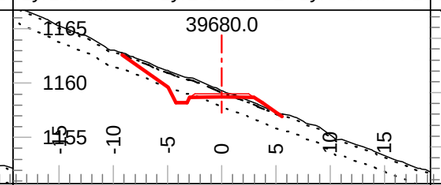

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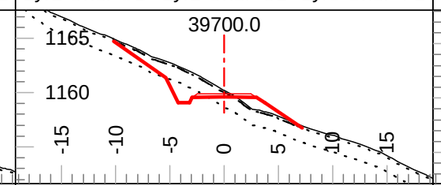

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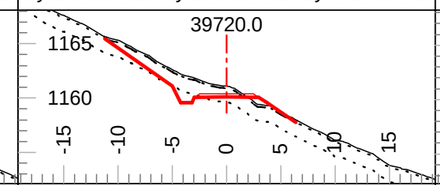

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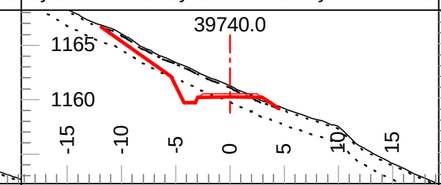

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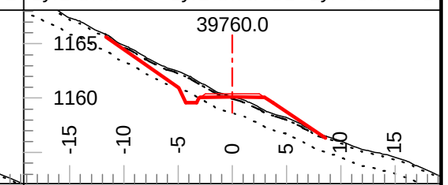

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Coffee Gold Mine

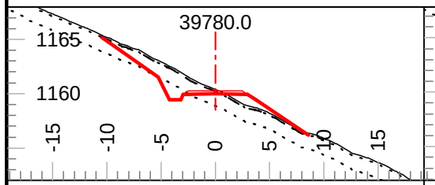
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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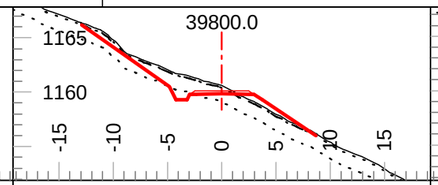

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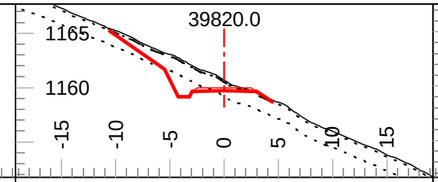

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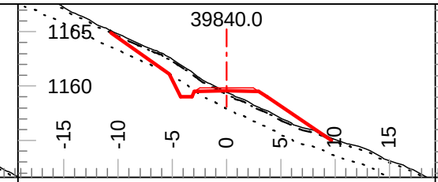

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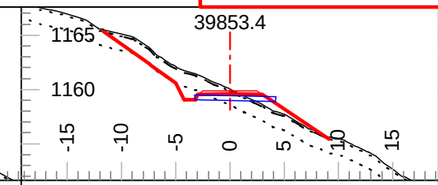

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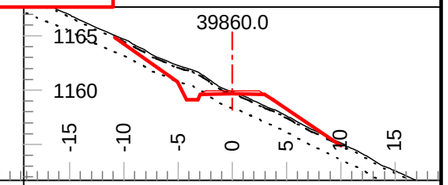

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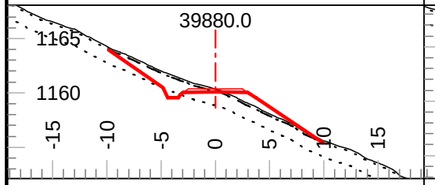

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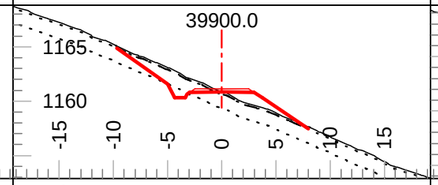

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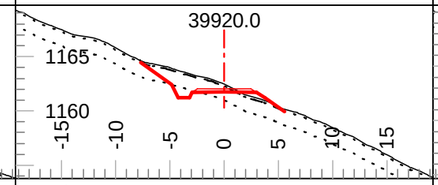

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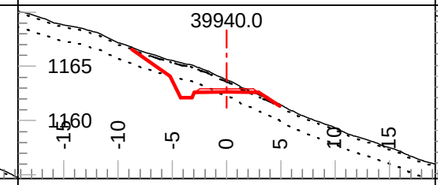

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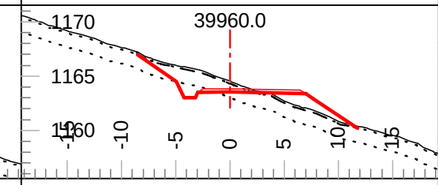

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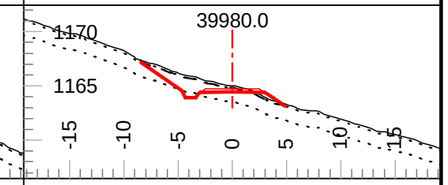

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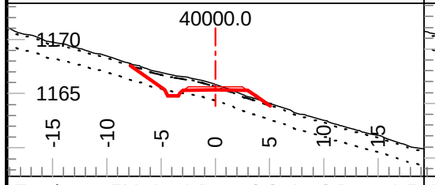

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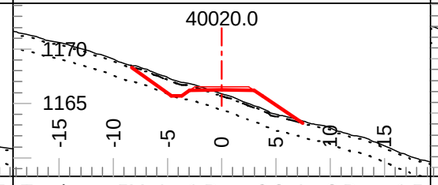

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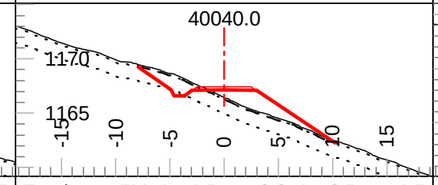

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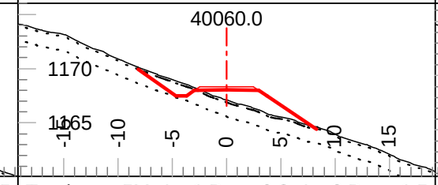

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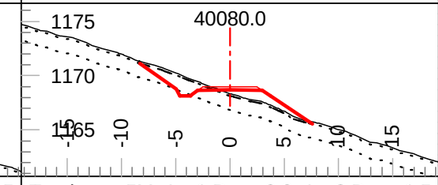

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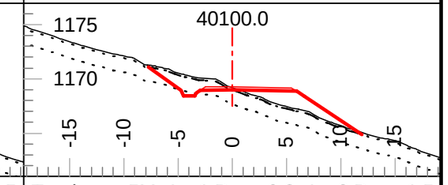

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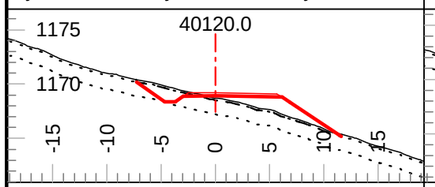

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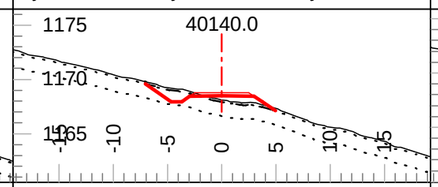

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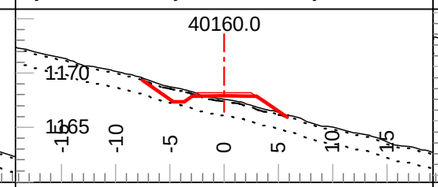

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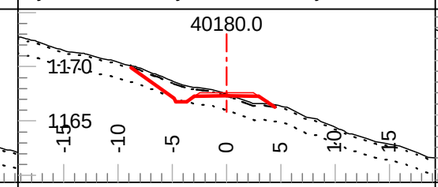

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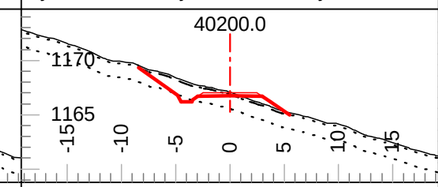

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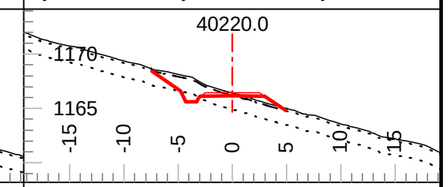

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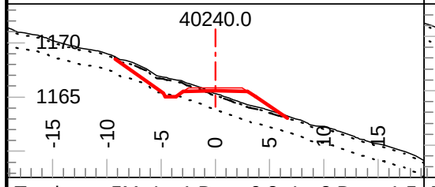

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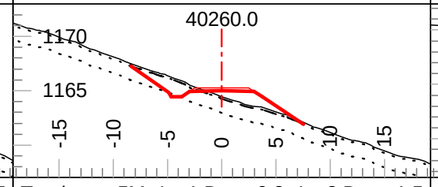

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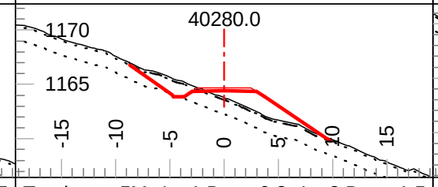

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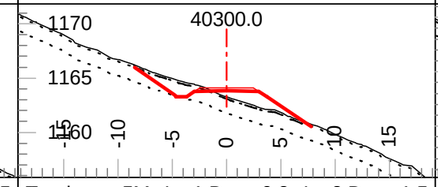

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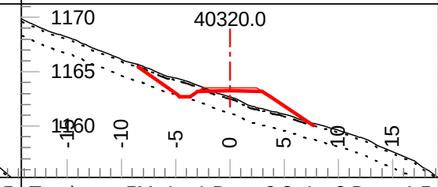

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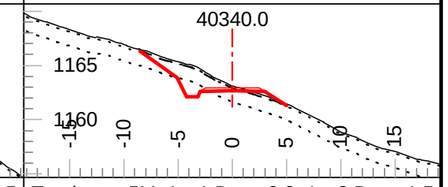

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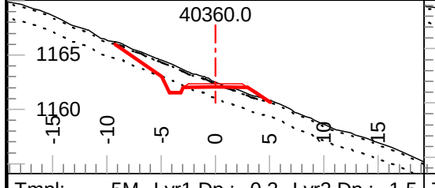

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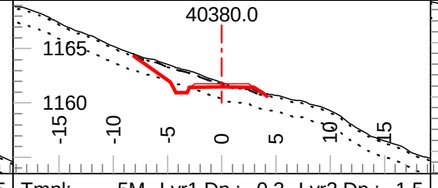

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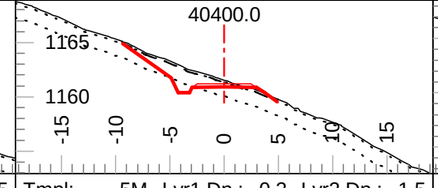

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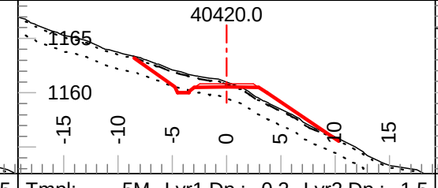

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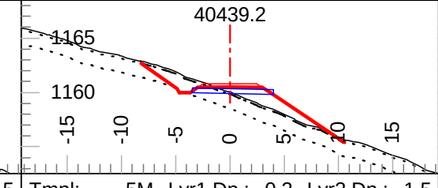

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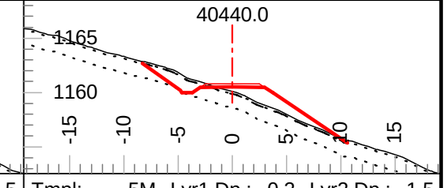

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Coffee Gold Mine

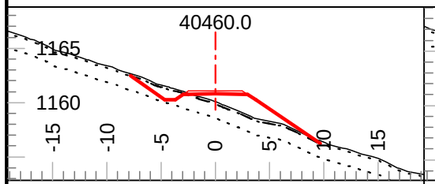
Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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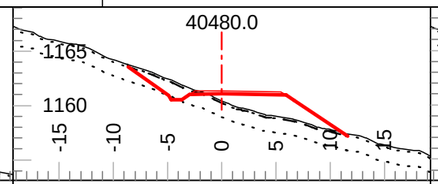

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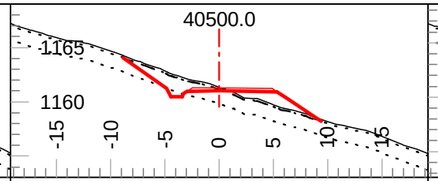

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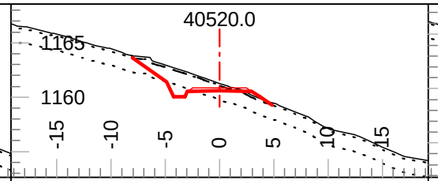

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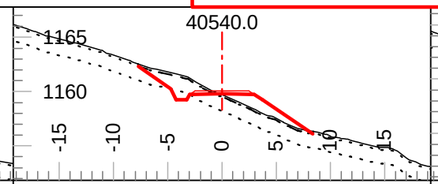

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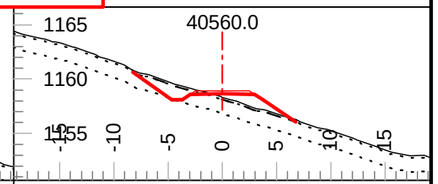

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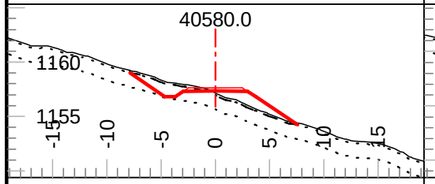

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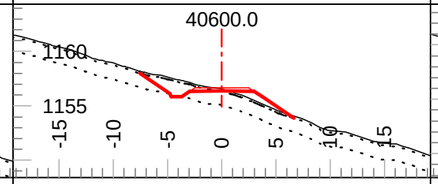

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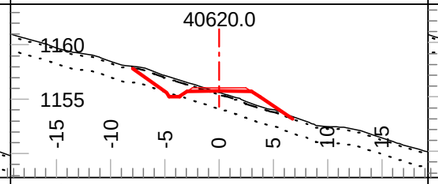

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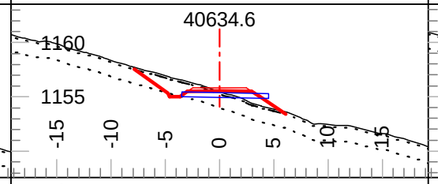

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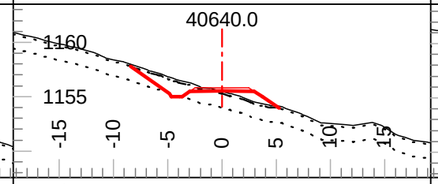

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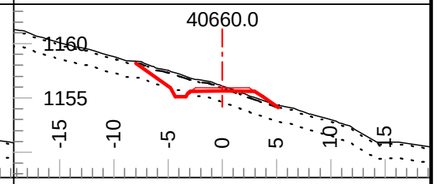

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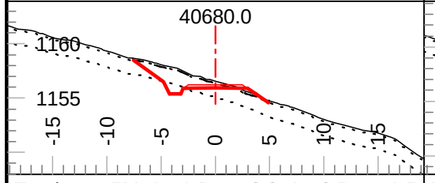

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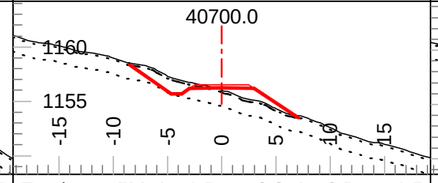

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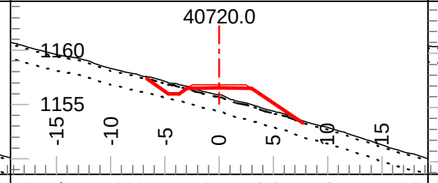

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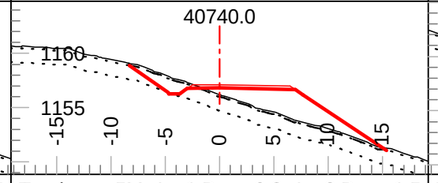

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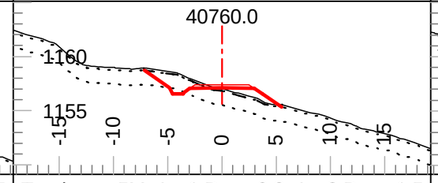

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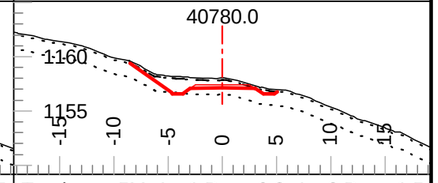

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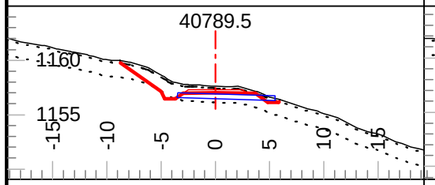

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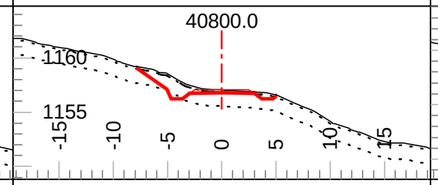

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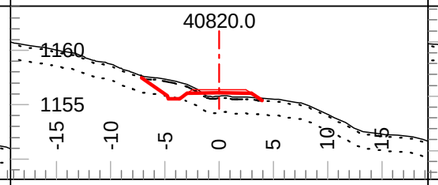

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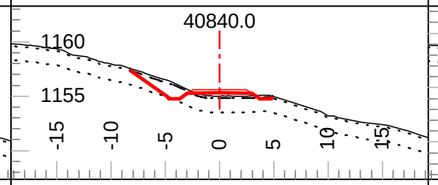

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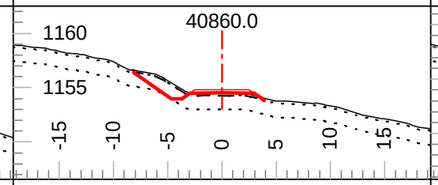

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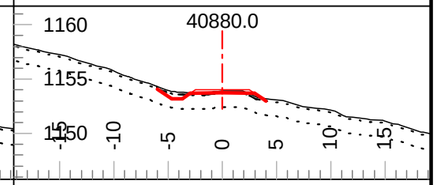

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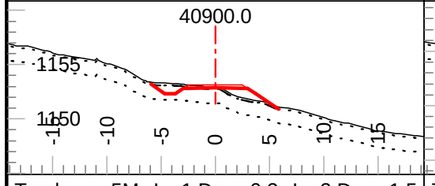

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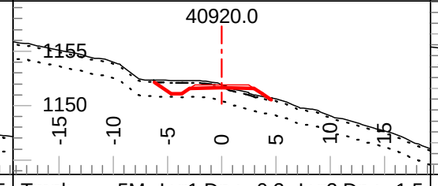

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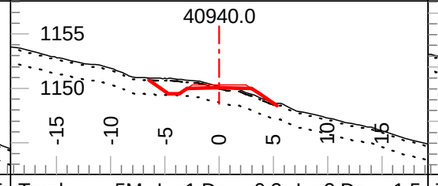

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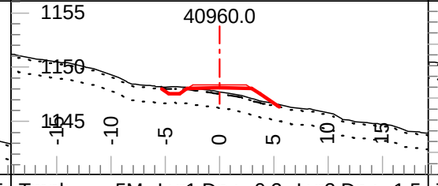
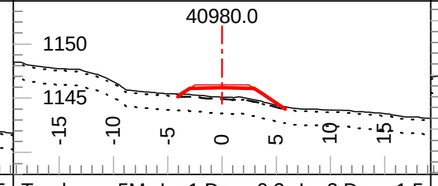


Tmpl: 5M Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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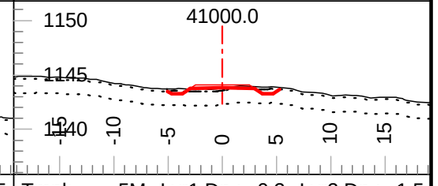
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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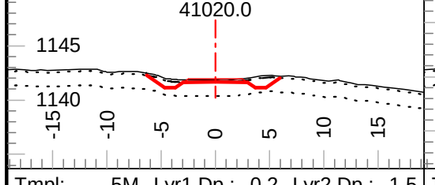
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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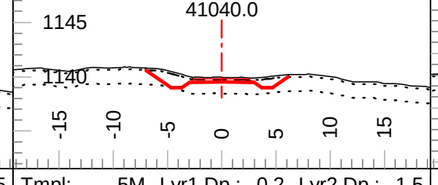

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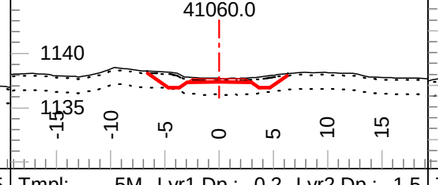

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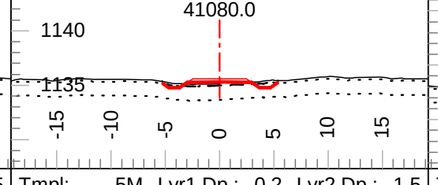

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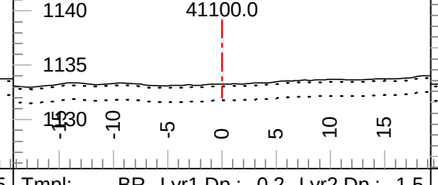
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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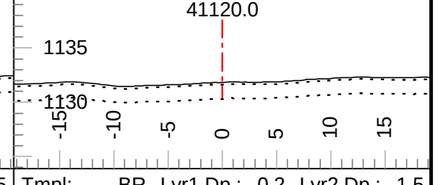
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 1
Geometric Alignment - Cross Sections
km 0-41.1

GOLDCORP

Section Scale 1:550

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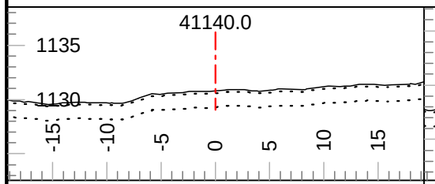
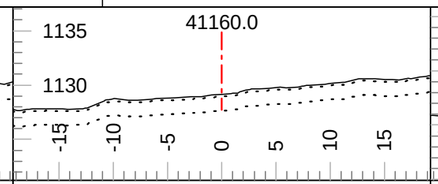


Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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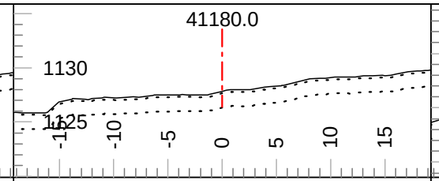
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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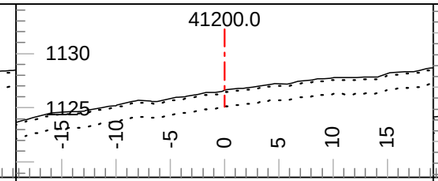
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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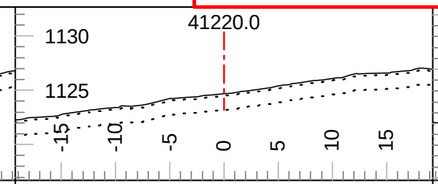

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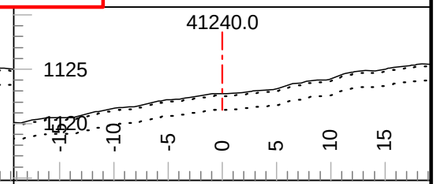

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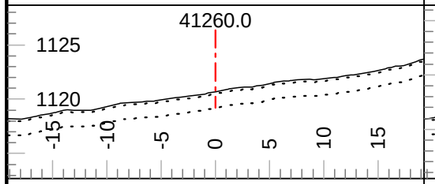

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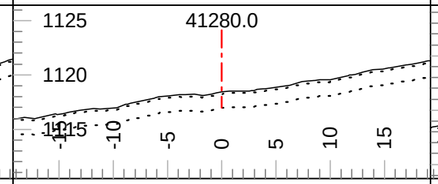
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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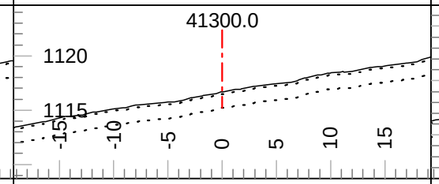

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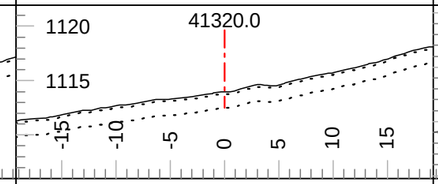

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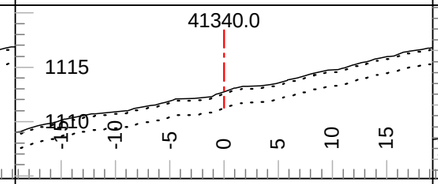

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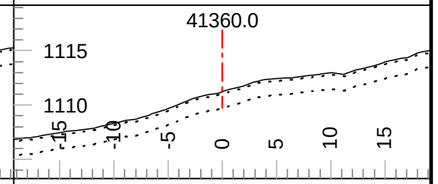

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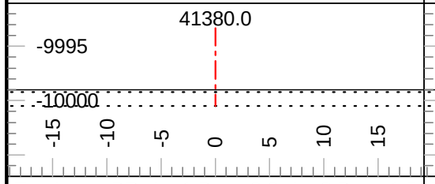

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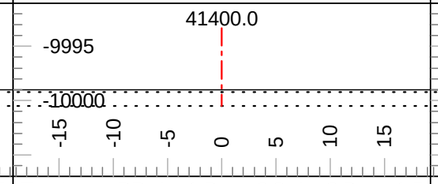

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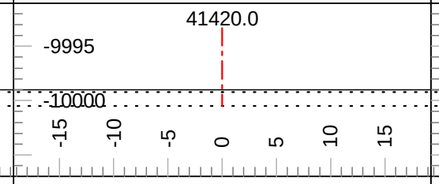
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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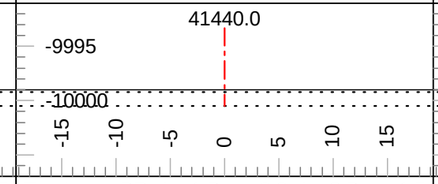
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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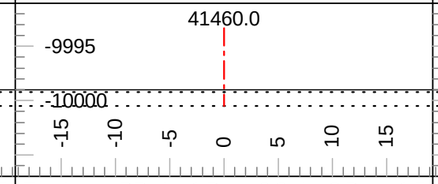
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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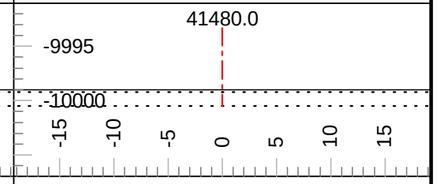

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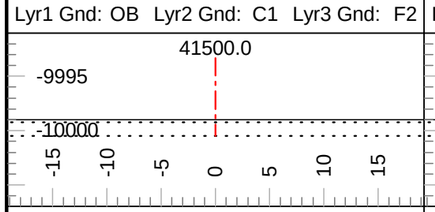

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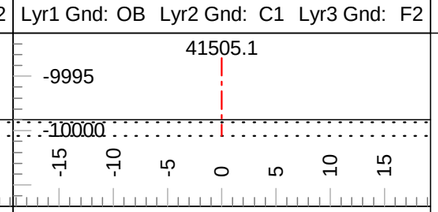

Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

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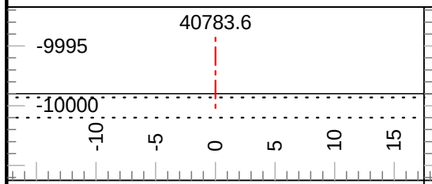
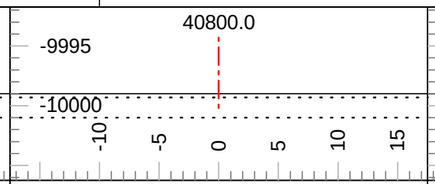


Tmpl: BR Lyr1 Dp.: 0.3 Lyr2 Dp.: 2.0
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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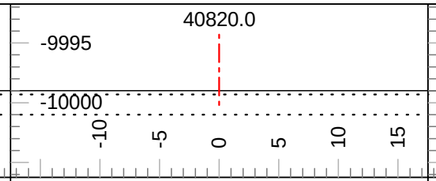
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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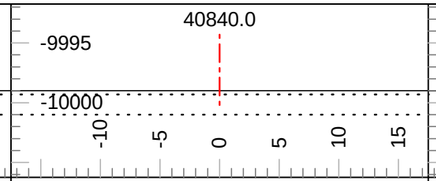

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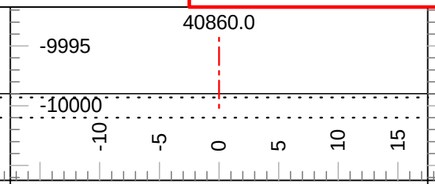

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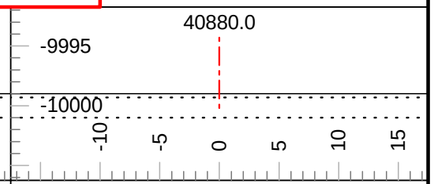

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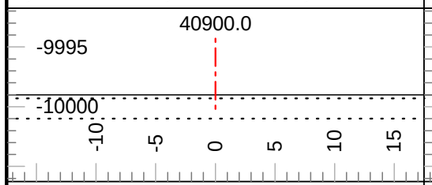

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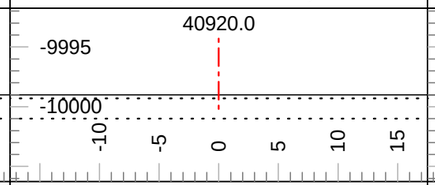

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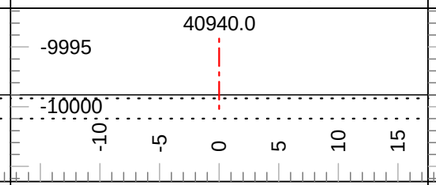

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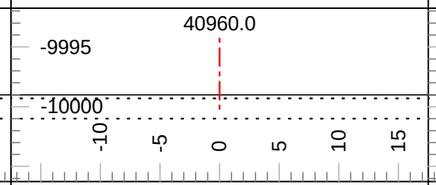

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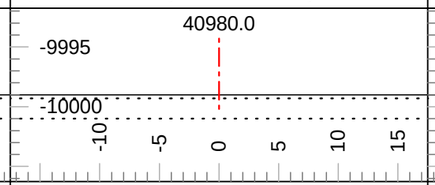

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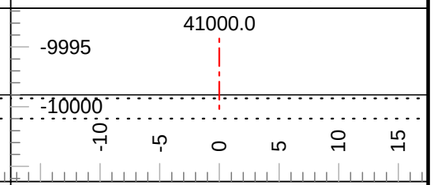
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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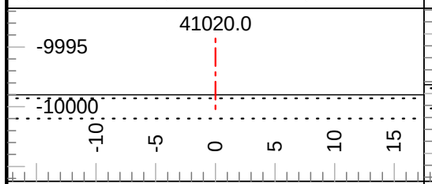
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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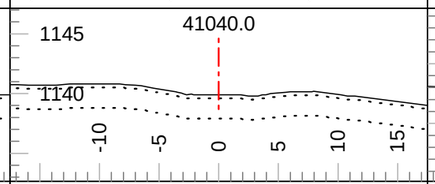
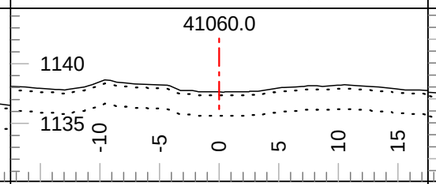
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.3 Lyr2 Dp.: 2.0
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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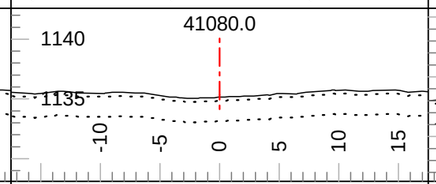
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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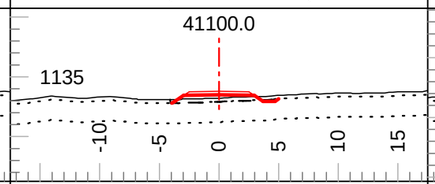
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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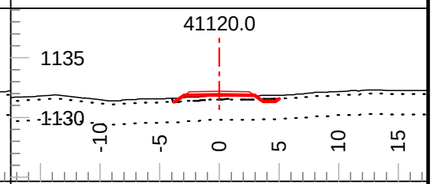

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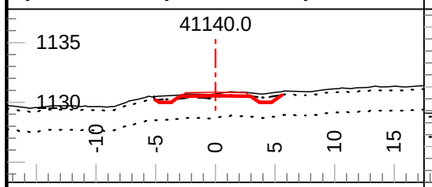
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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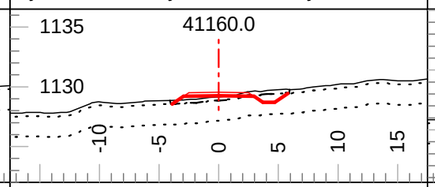
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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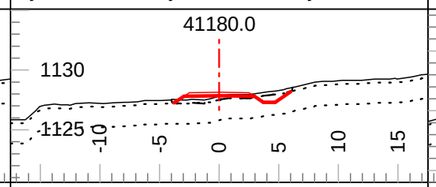

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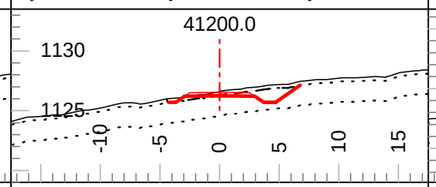
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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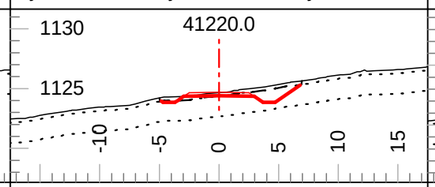

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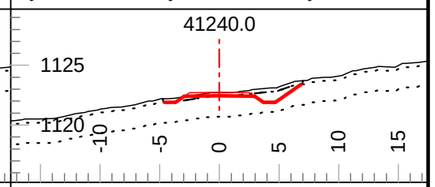

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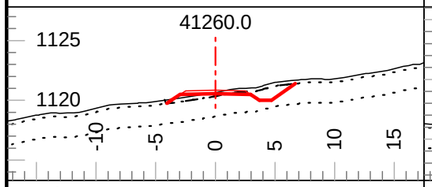

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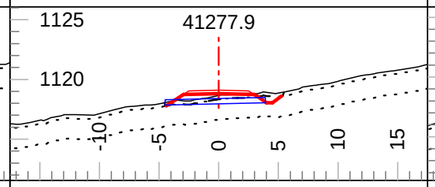

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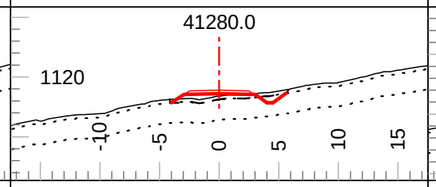

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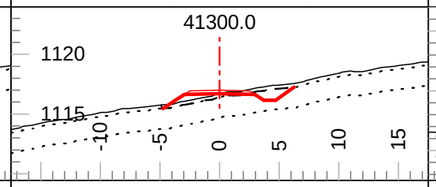

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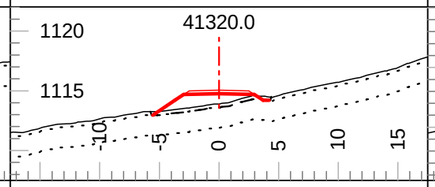

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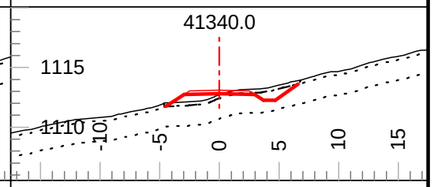

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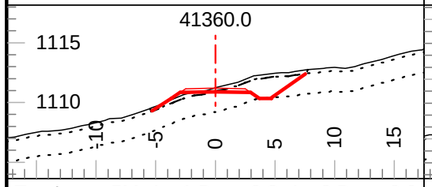

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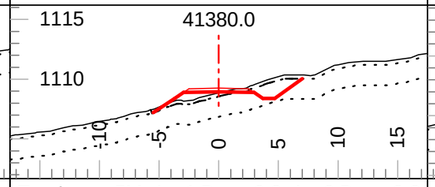

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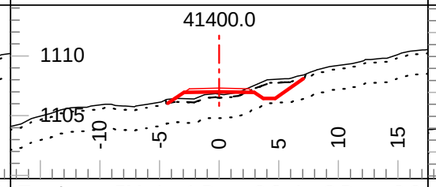

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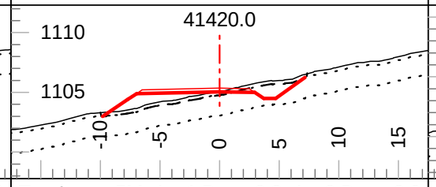

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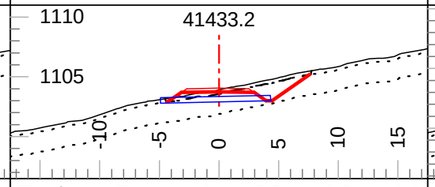

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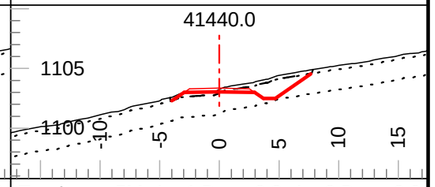

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

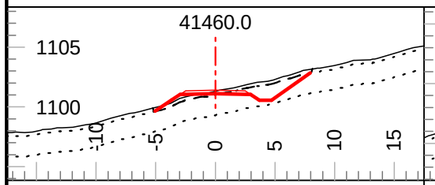
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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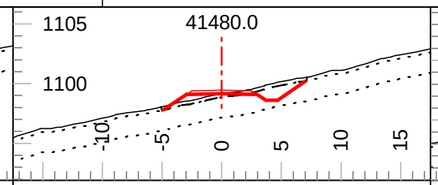
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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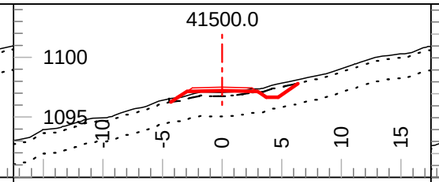

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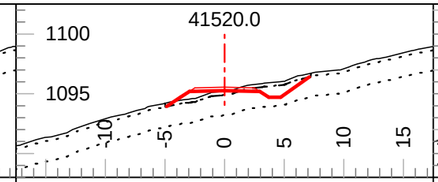

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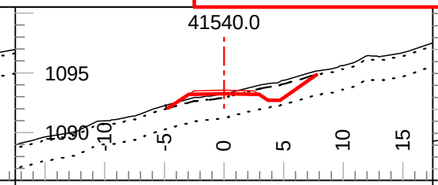

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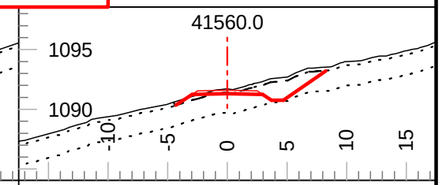

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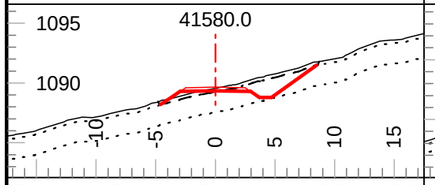

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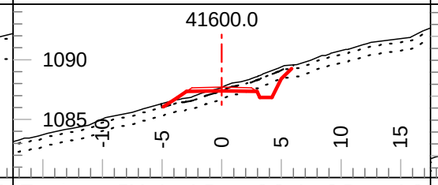

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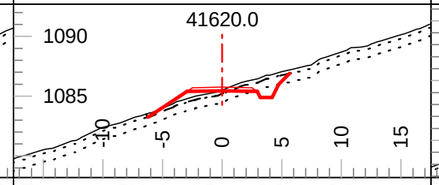

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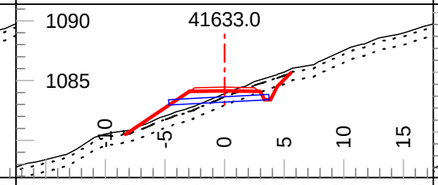

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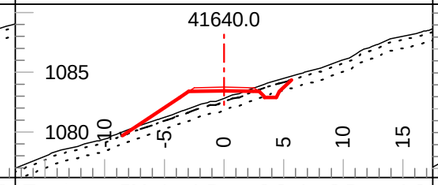

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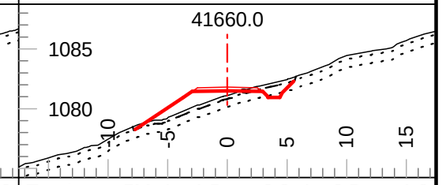

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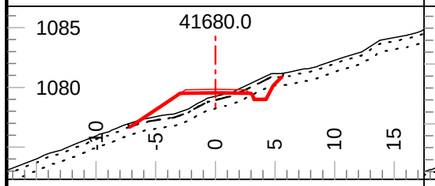

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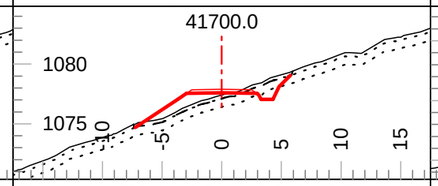

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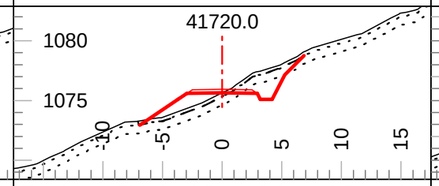

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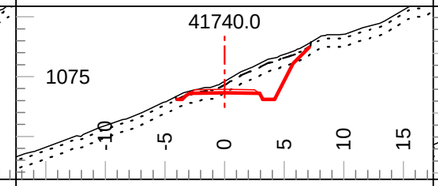

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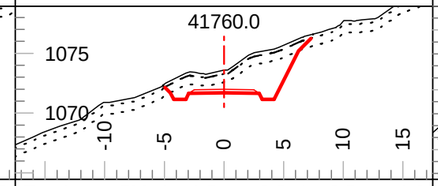

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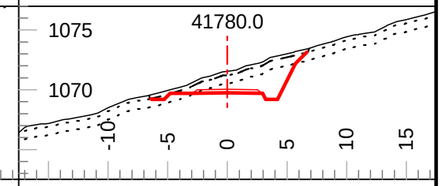

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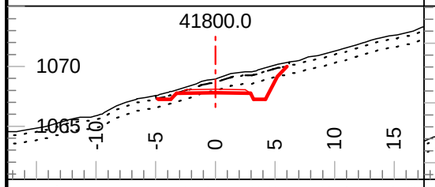

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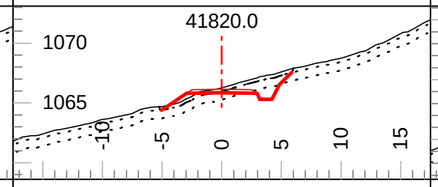

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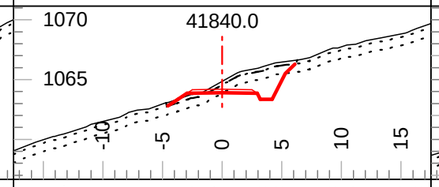

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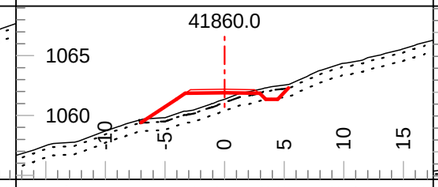

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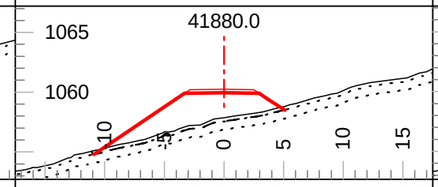

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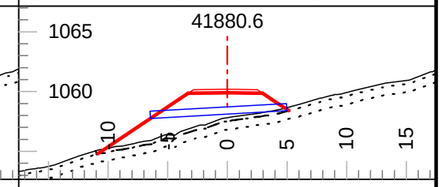

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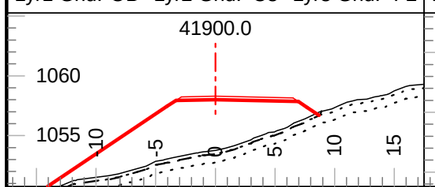

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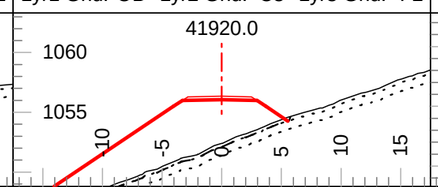

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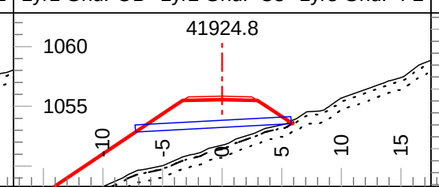

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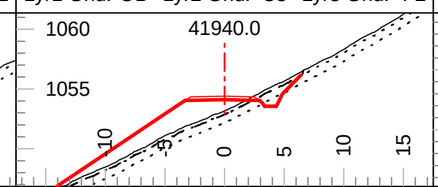

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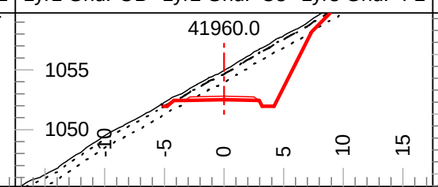

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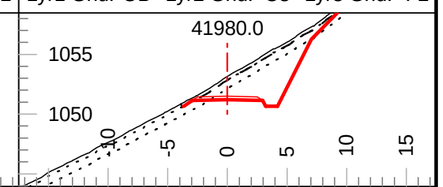

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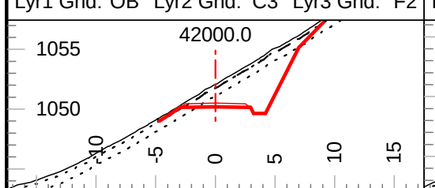

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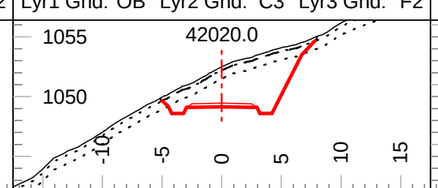

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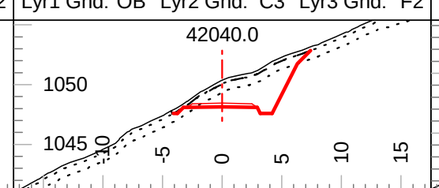

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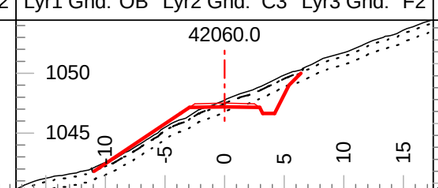

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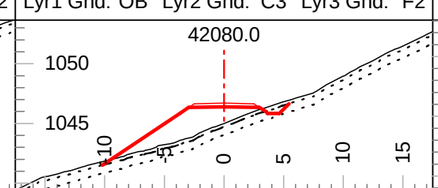

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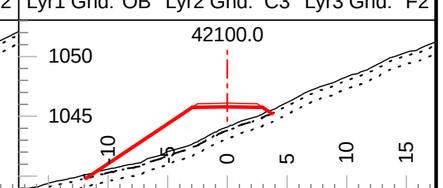

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Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

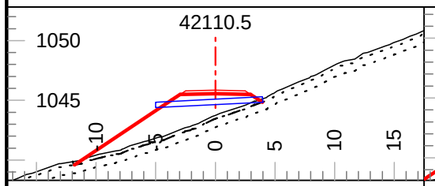
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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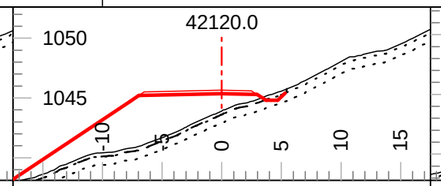

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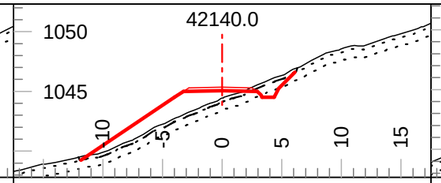

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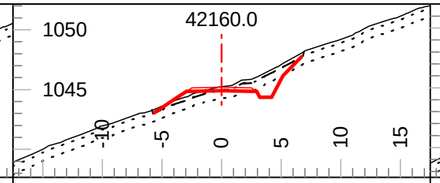

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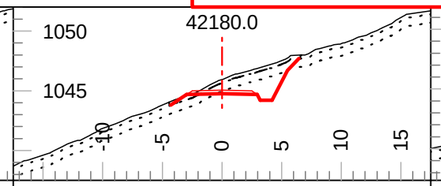

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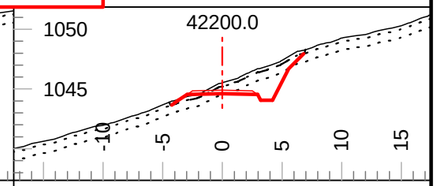

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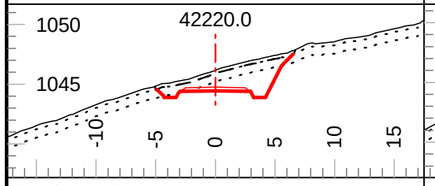

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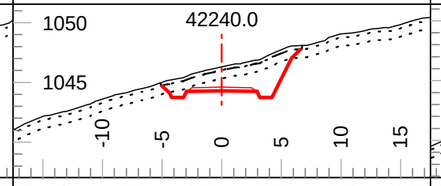

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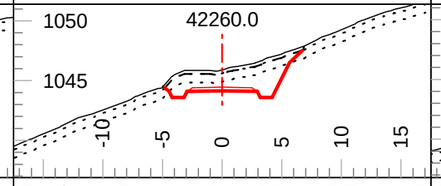

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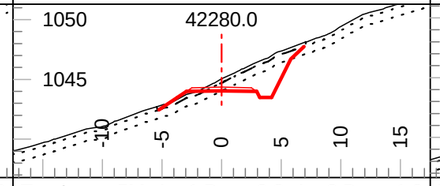

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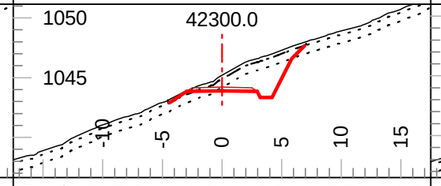

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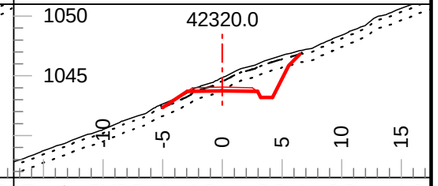

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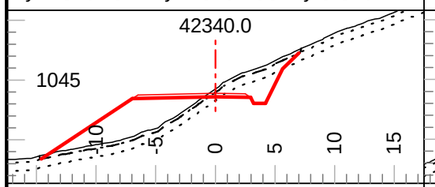

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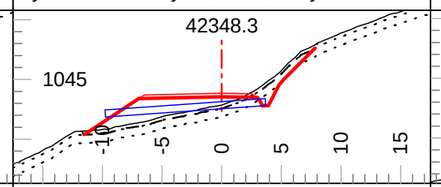

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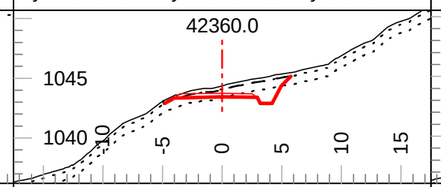

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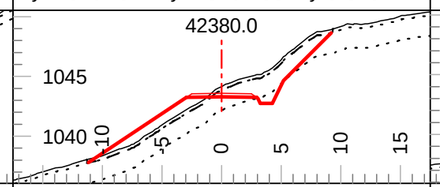

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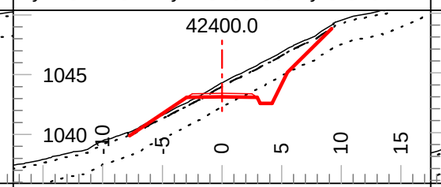

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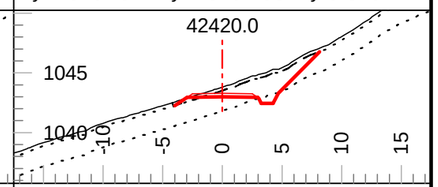

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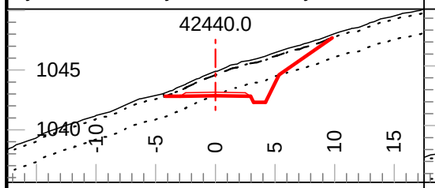

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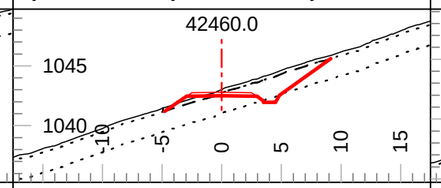

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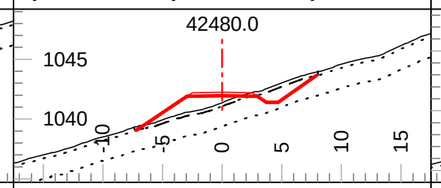

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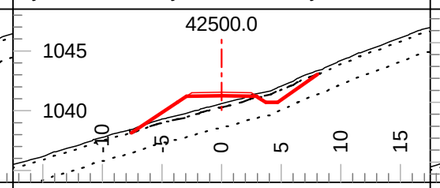

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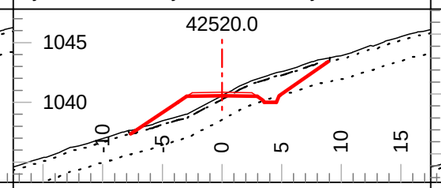

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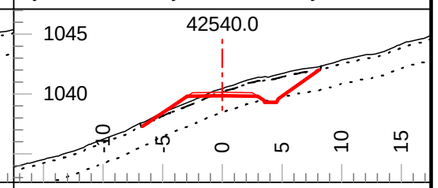

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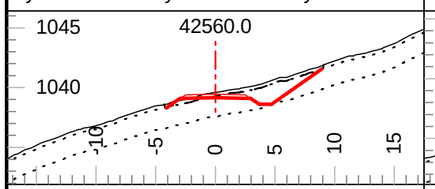

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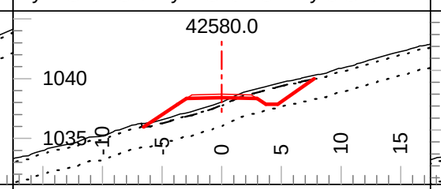

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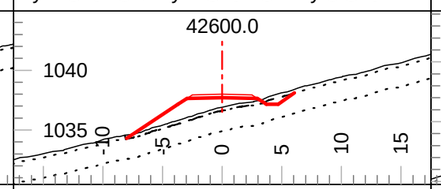

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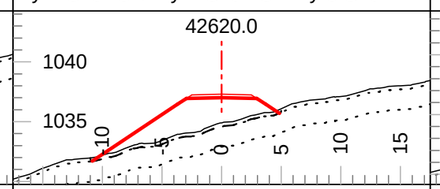
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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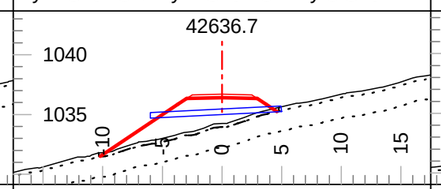

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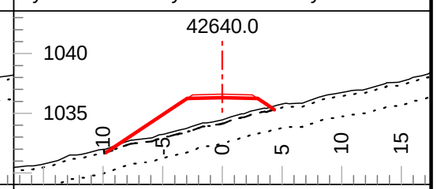

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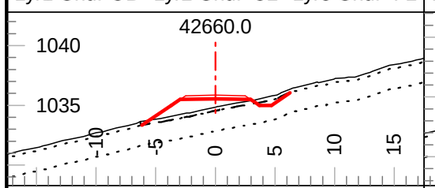

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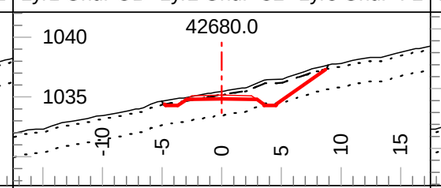

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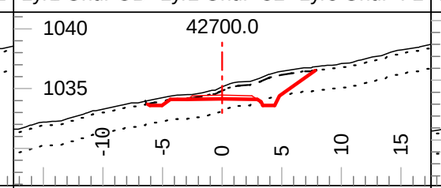

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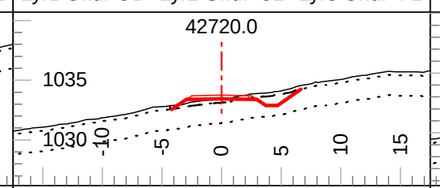

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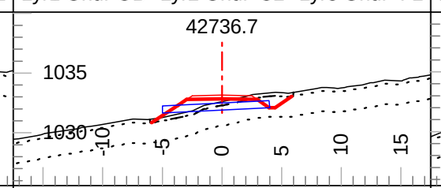

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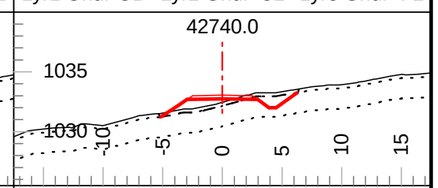

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Coffee Gold Mine

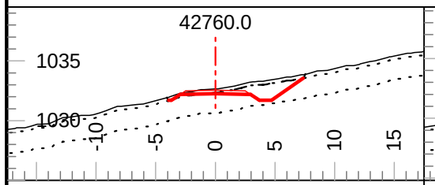
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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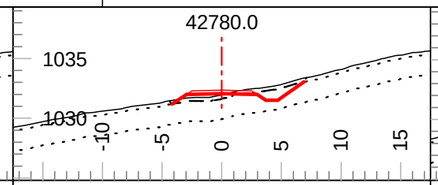
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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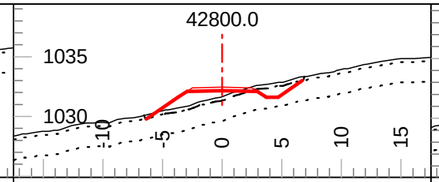

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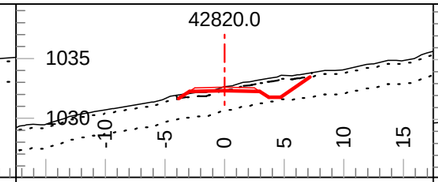

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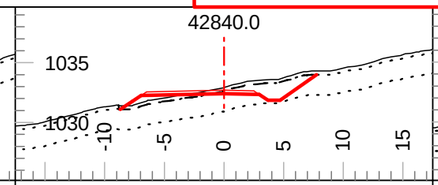

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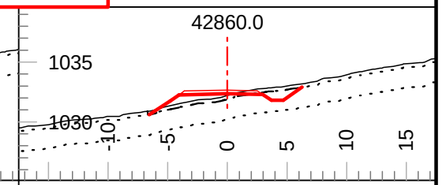

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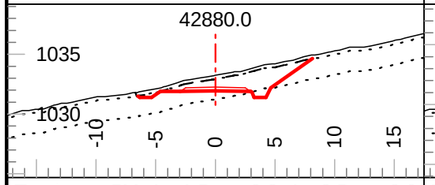

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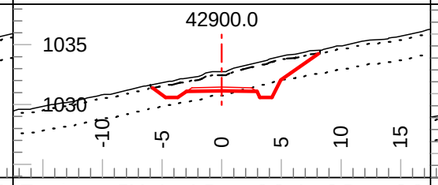

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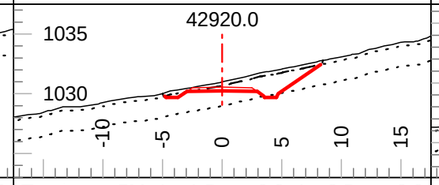

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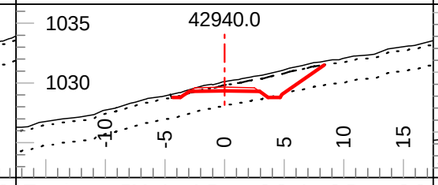

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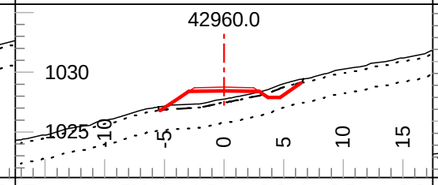

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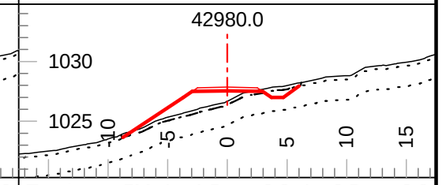

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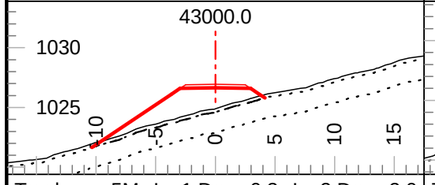

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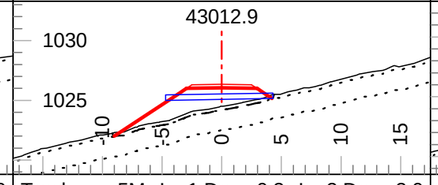

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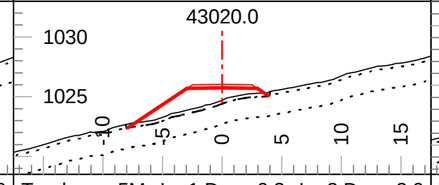

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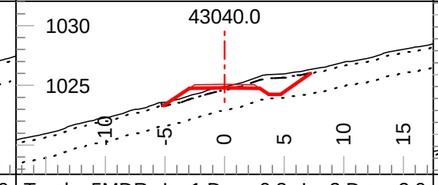

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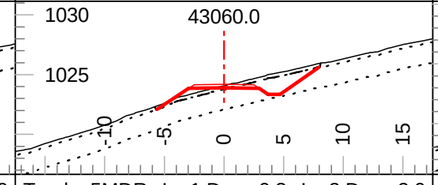

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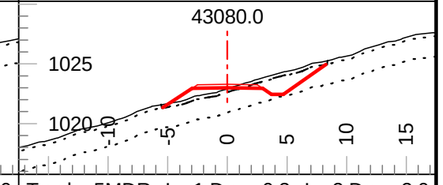

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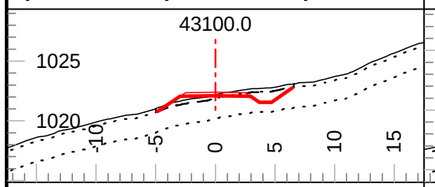

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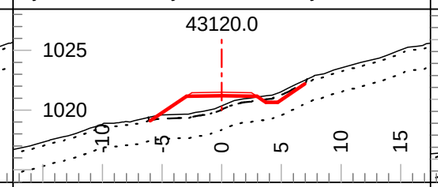

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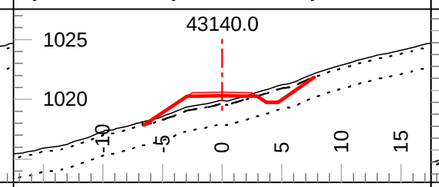

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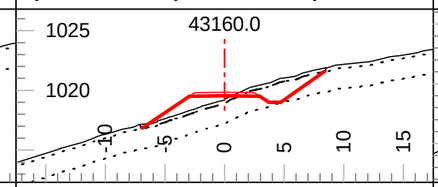

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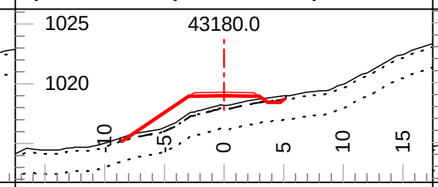

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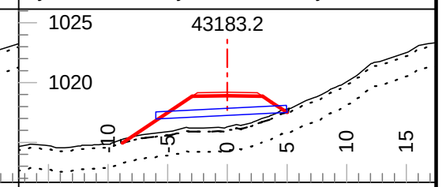
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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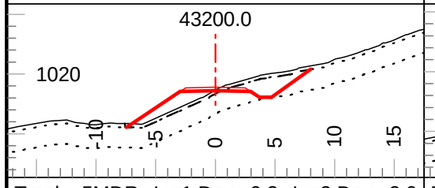

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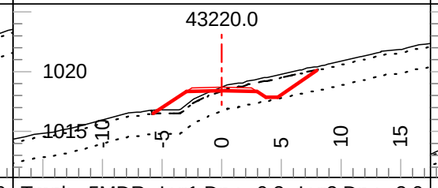

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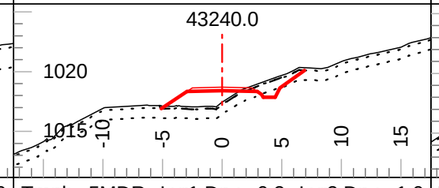

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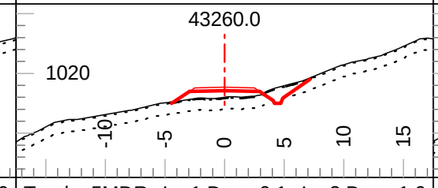
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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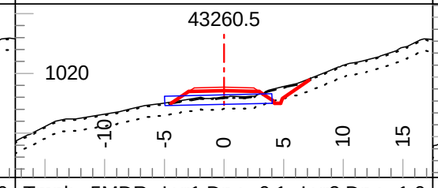
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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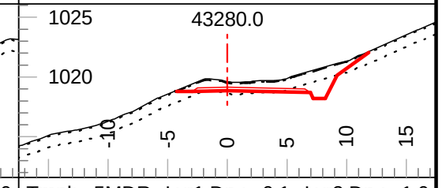
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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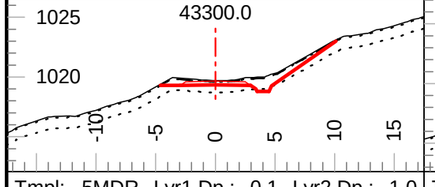

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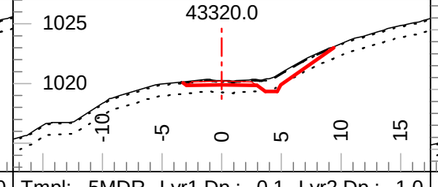

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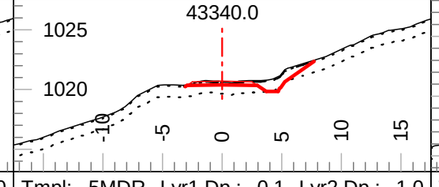
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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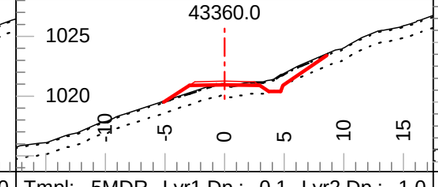

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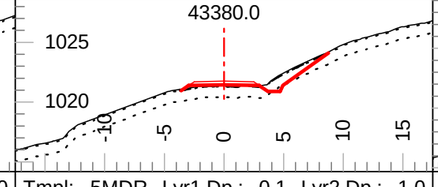

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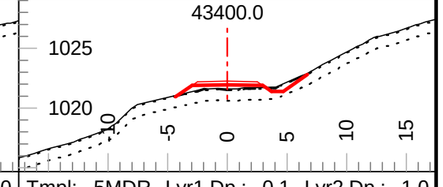


Tmpl: 5MDR Lyr1 Dp.: 0.1 Lyr2 Dp.: 1.0
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

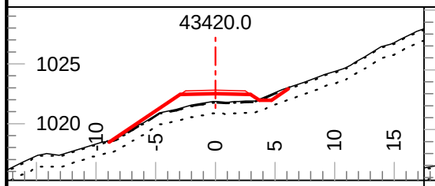
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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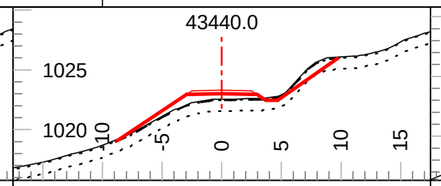

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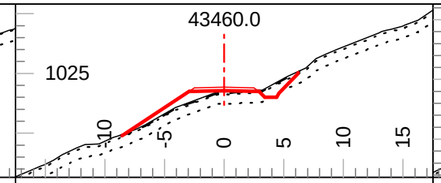

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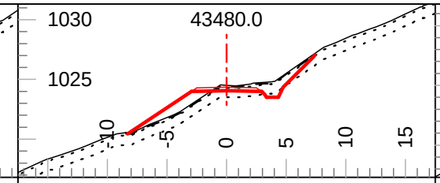

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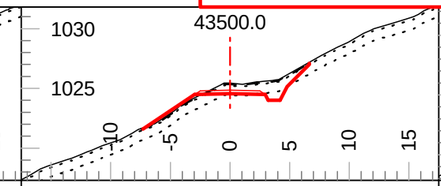

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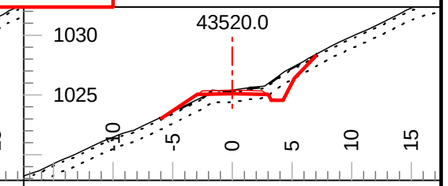

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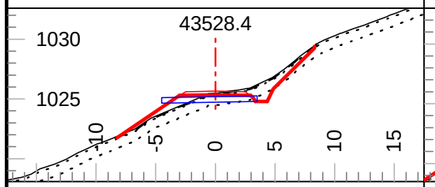

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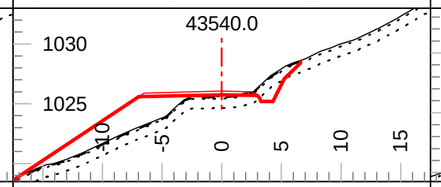

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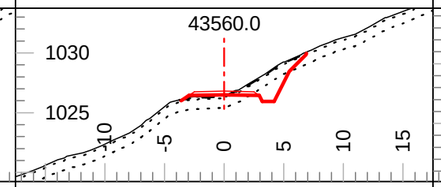

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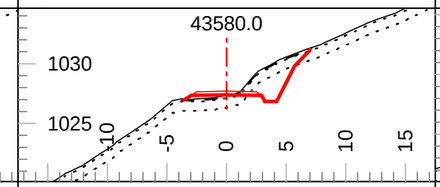

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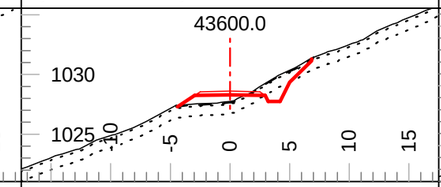

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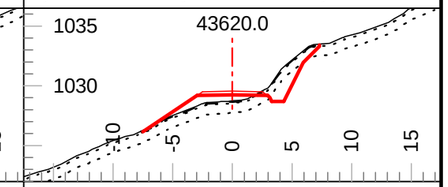

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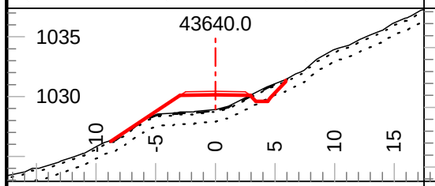

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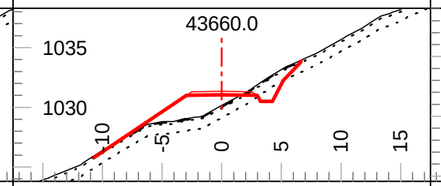

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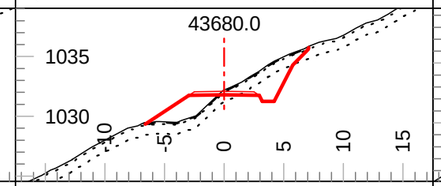

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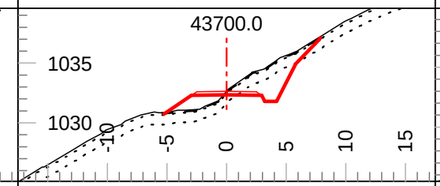

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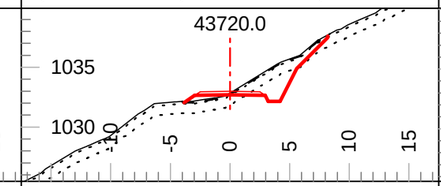

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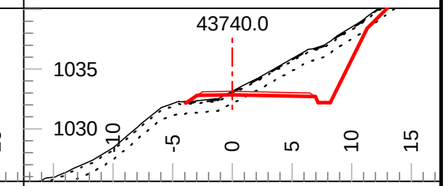

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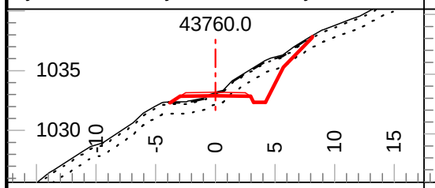

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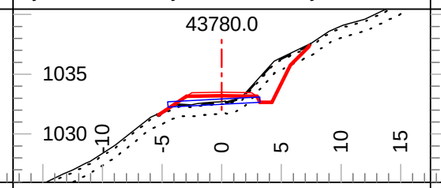

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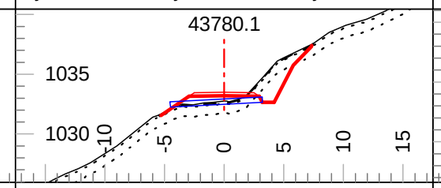

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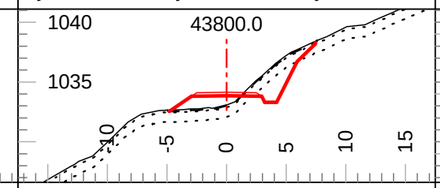

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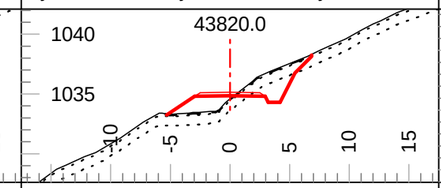

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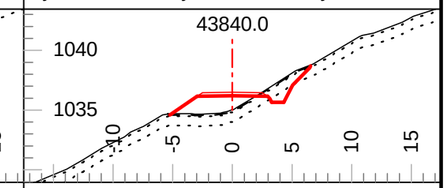

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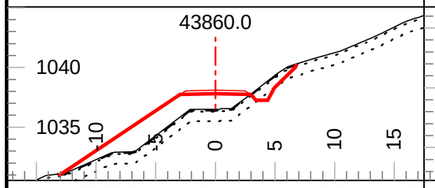

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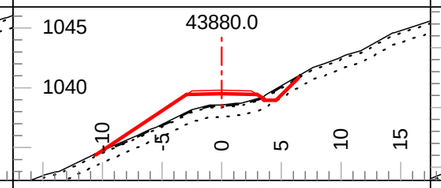

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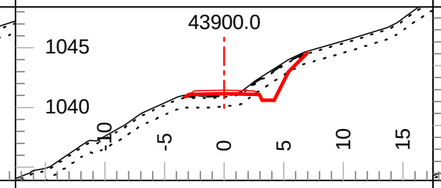

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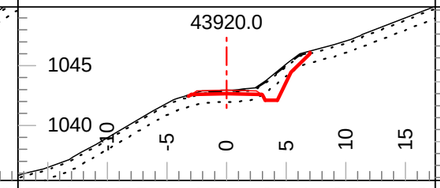

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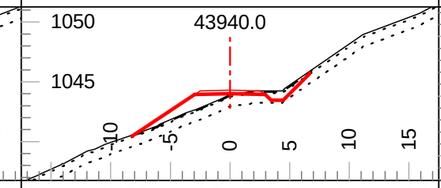

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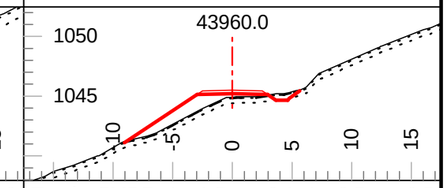

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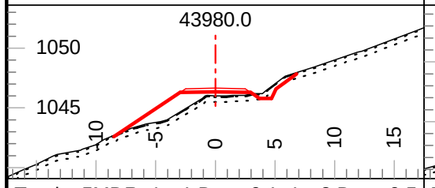

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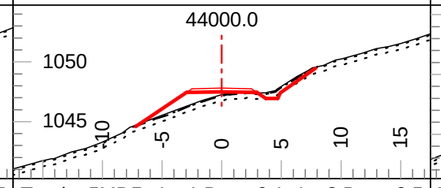

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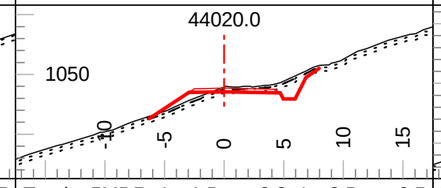

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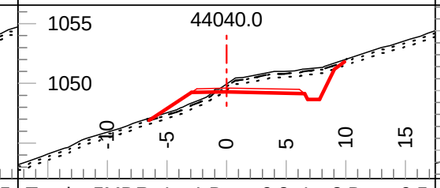

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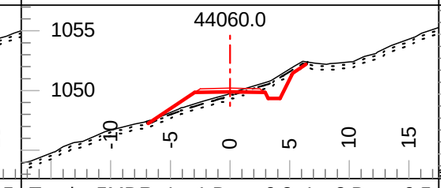

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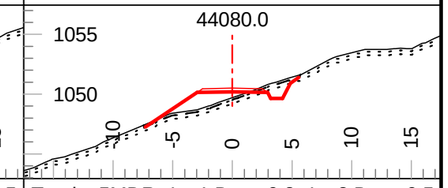


Tmpl: 5MDR Lyr1 Dp.: 0.2 Lyr2 Dp.: 0.5
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2

Coffee Gold Mine

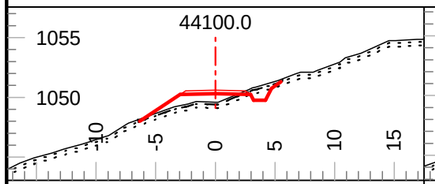
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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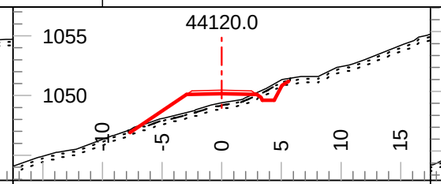

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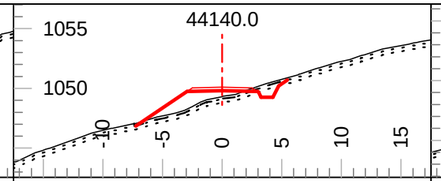
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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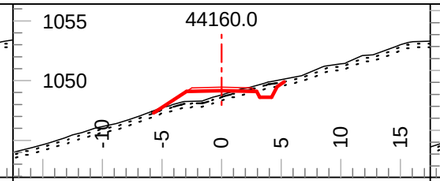
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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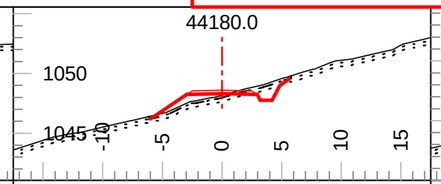
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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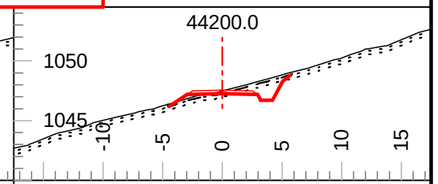

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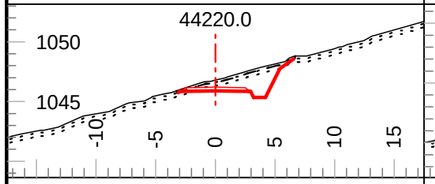
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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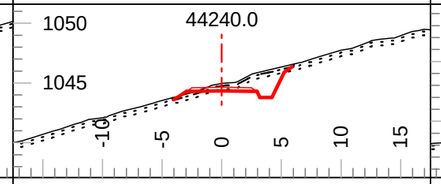

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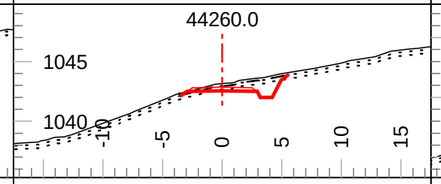

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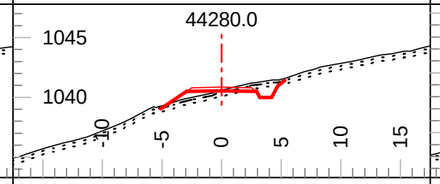
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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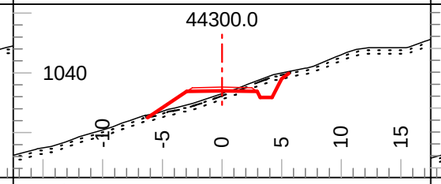

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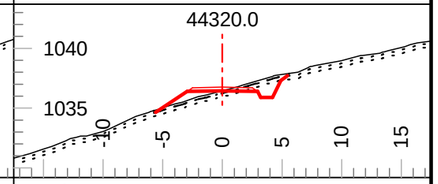

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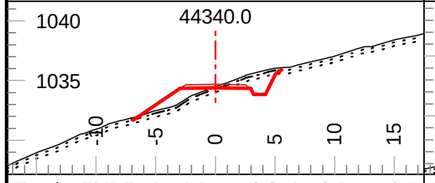

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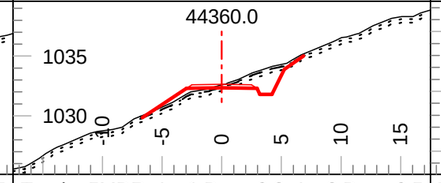

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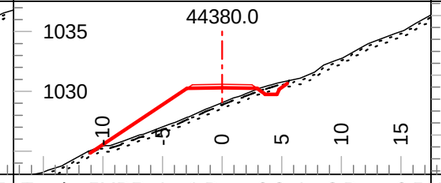
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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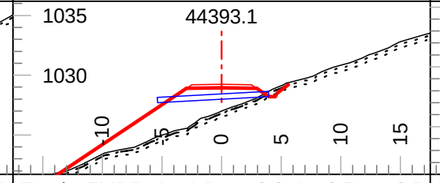

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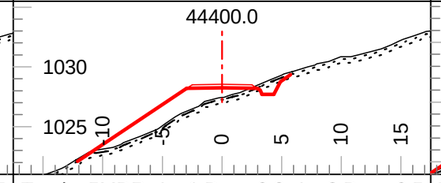

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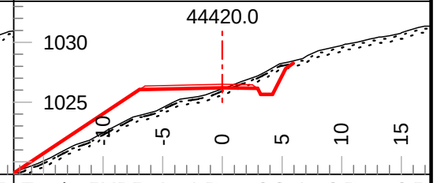

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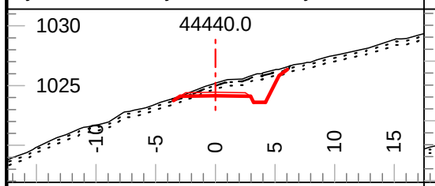

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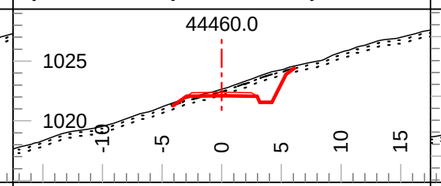

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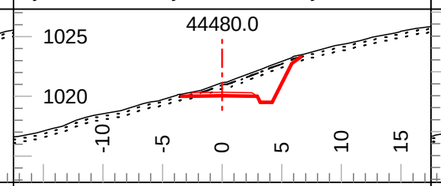

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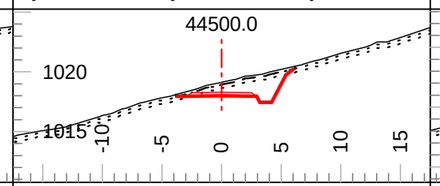

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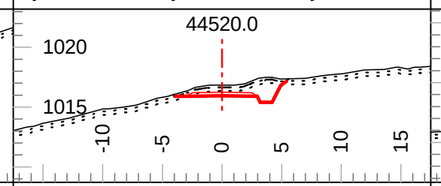

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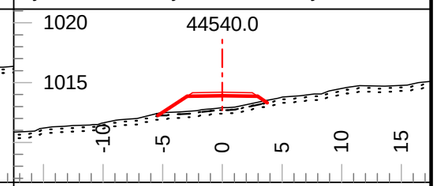

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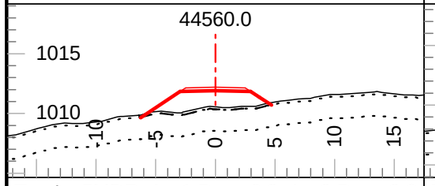

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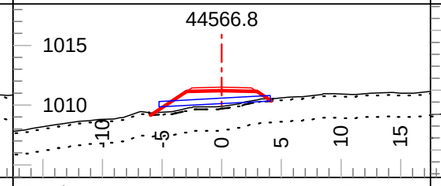

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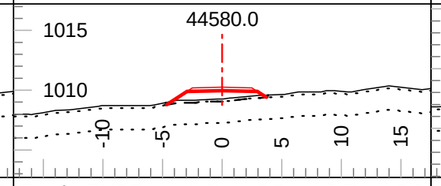

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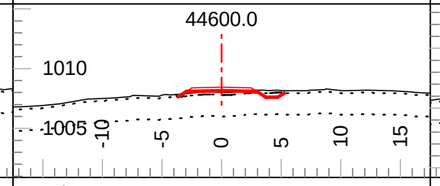

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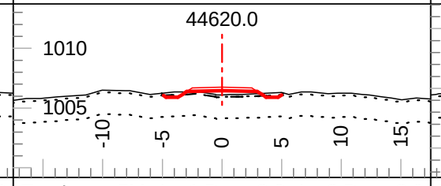

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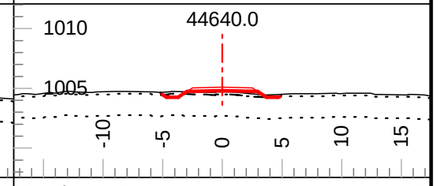

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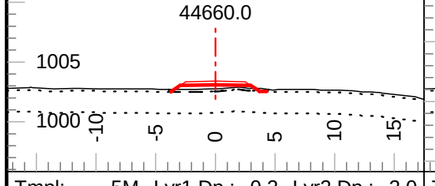

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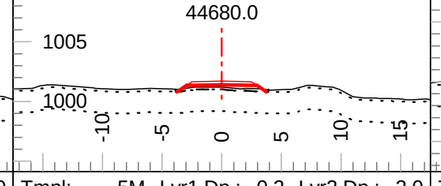

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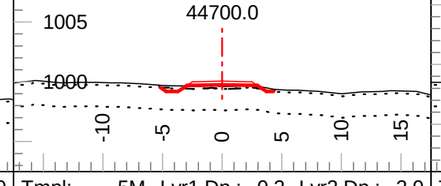

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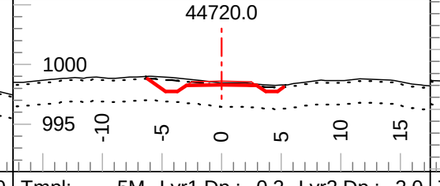

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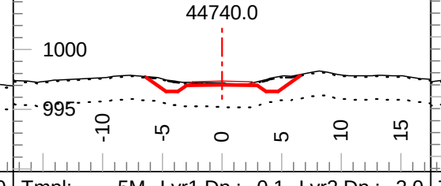

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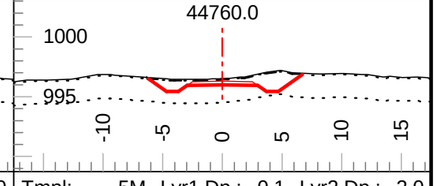


Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 2.0
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

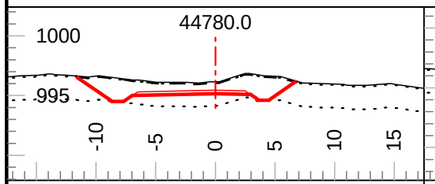
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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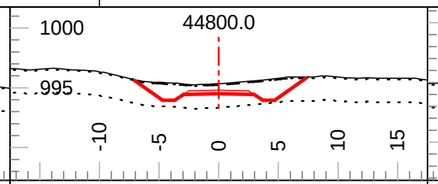
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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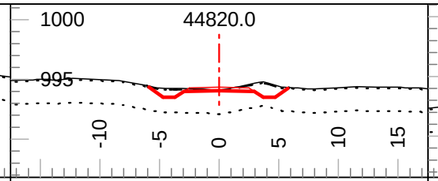

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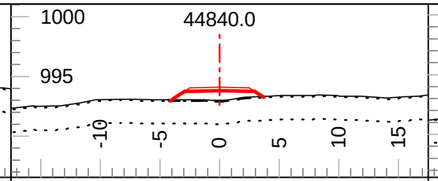

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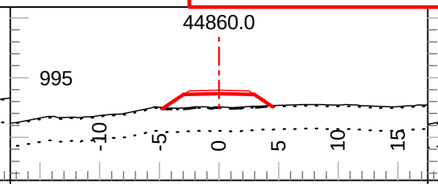

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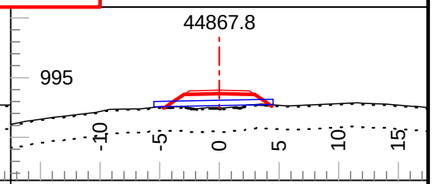

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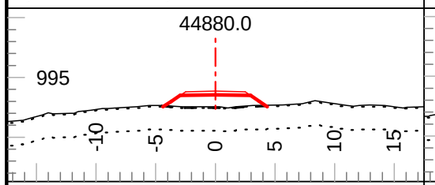

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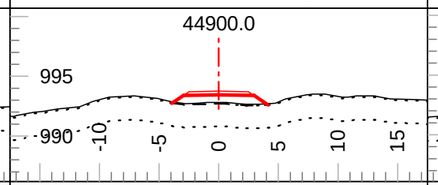

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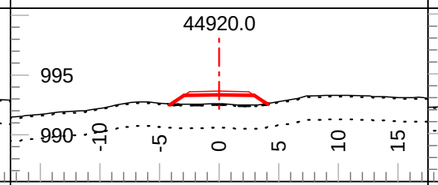

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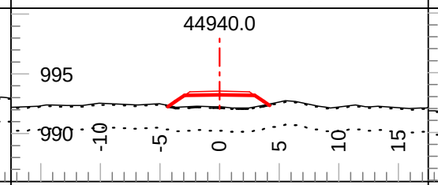
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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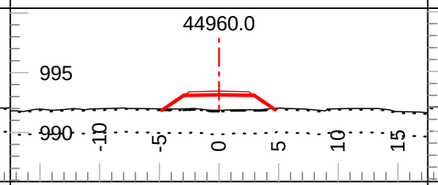

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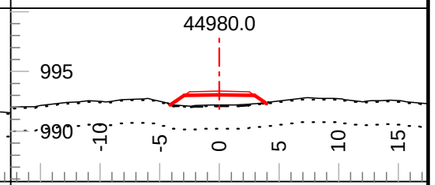

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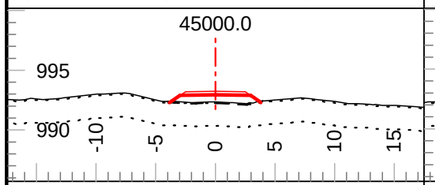

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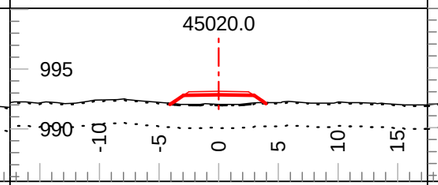

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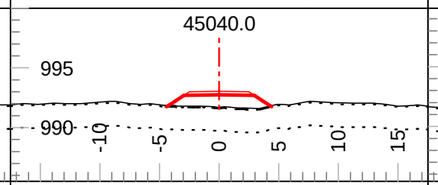

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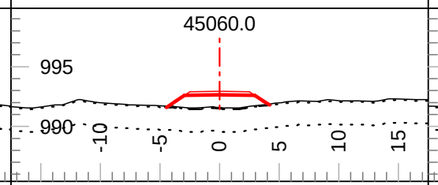

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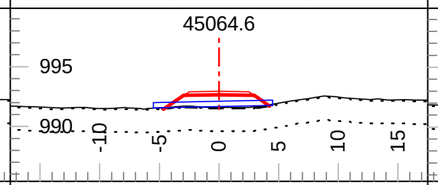

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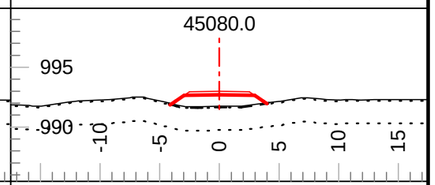

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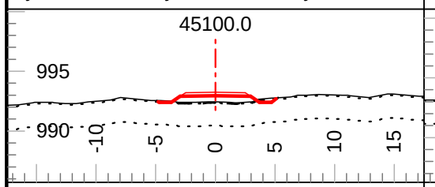

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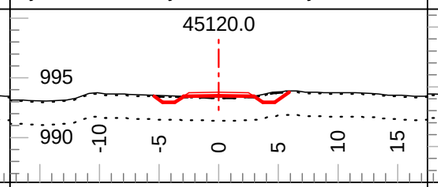

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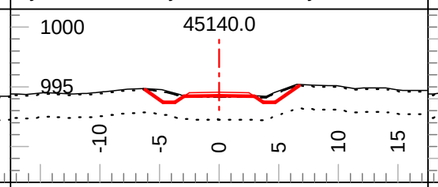

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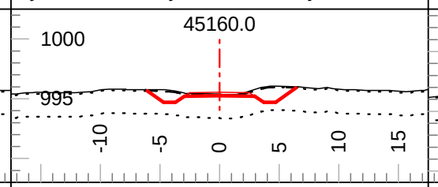

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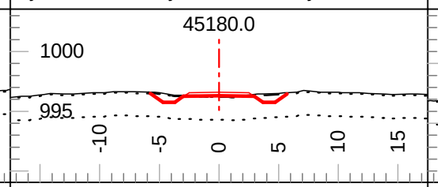

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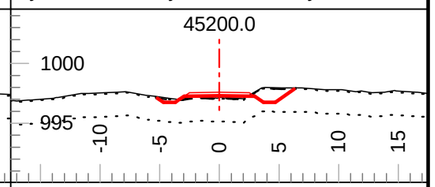

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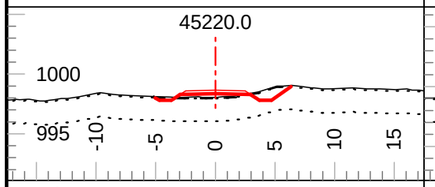

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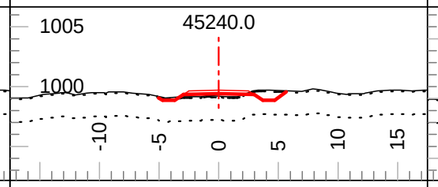

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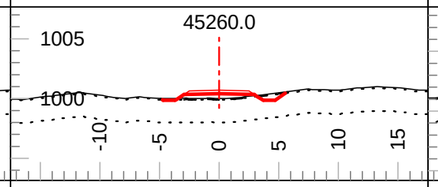

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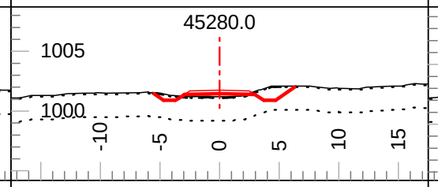

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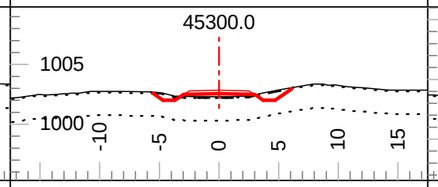

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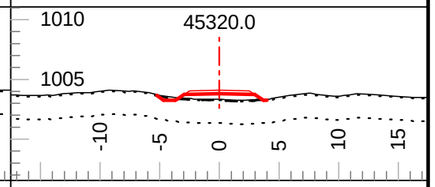

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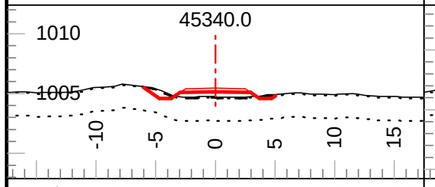

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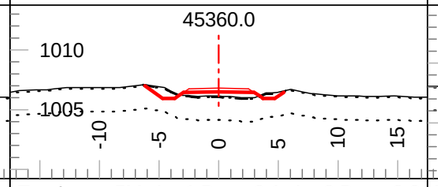

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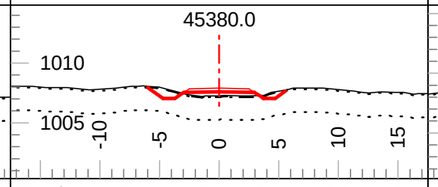

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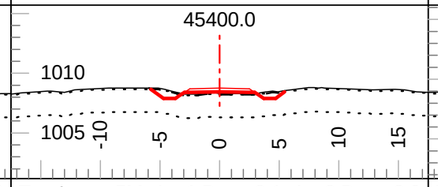

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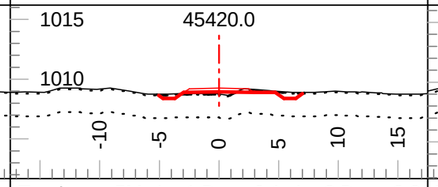

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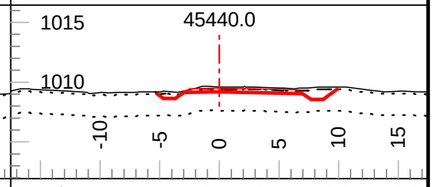

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Coffee Gold Mine

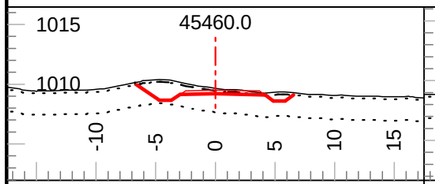
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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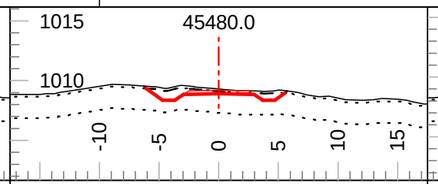

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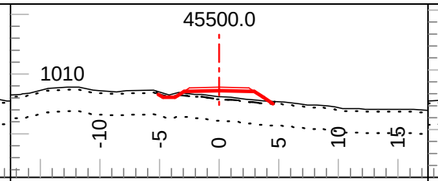

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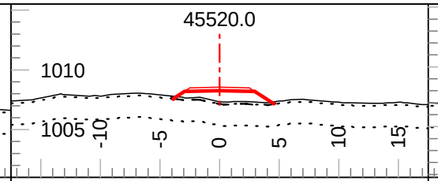

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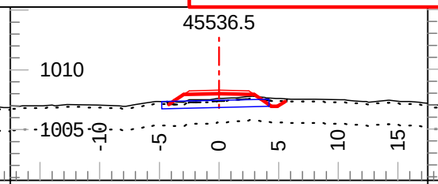

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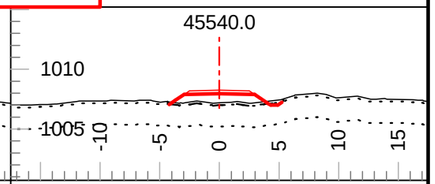

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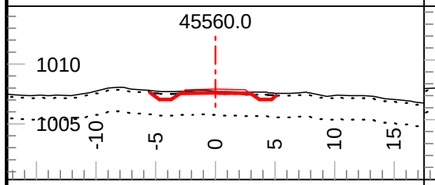

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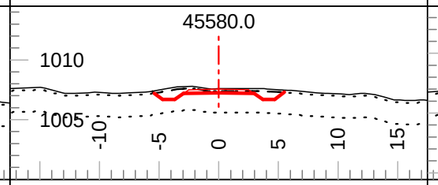

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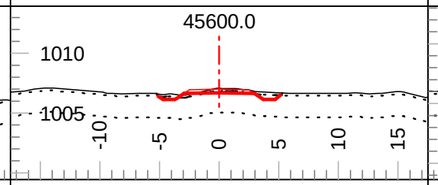

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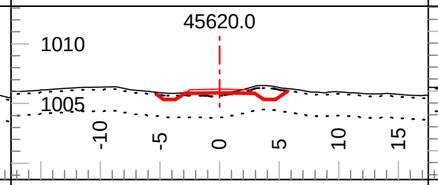

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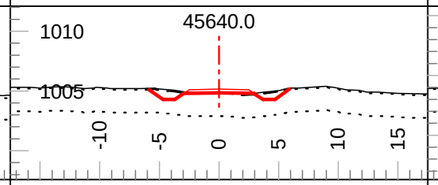

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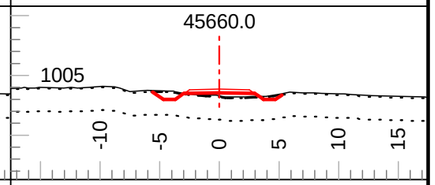

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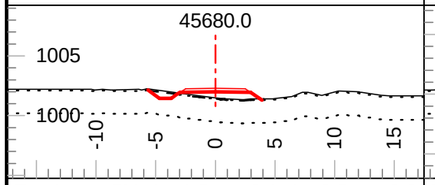

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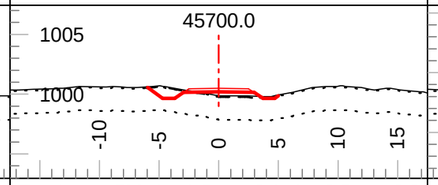

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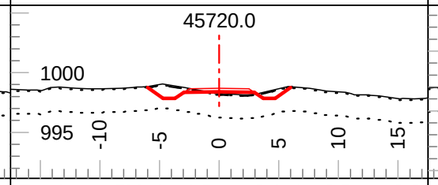

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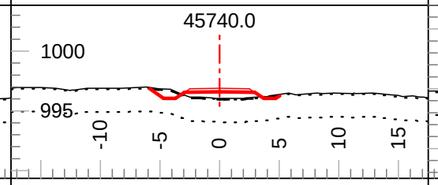

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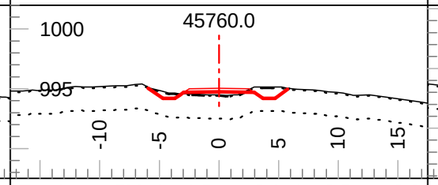

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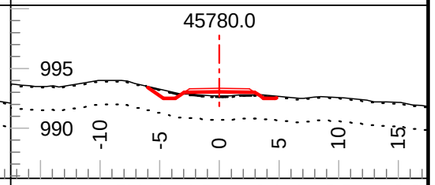

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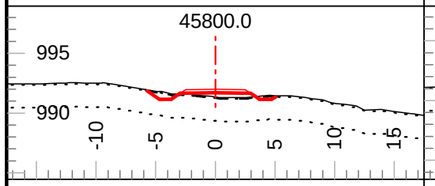

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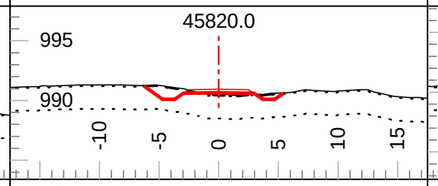

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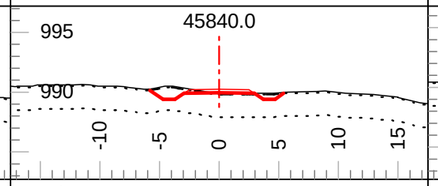

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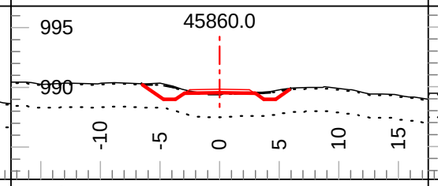

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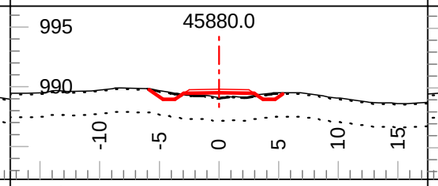

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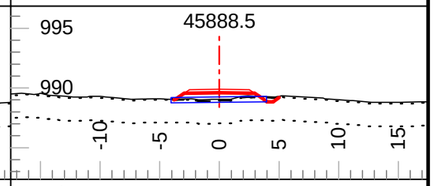

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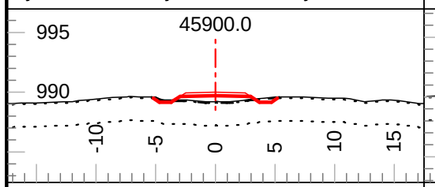

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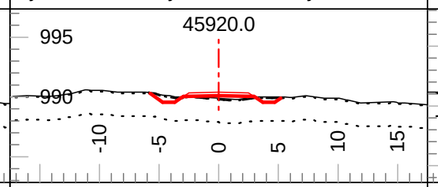

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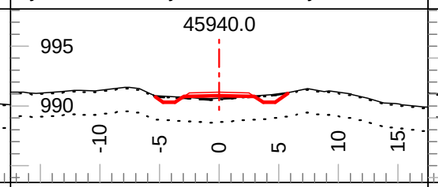

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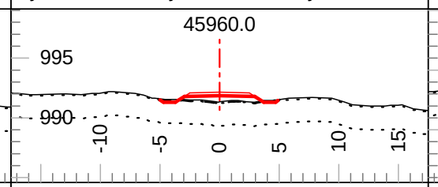

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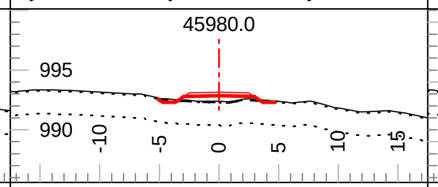

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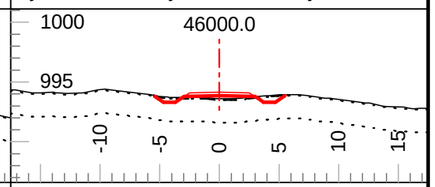

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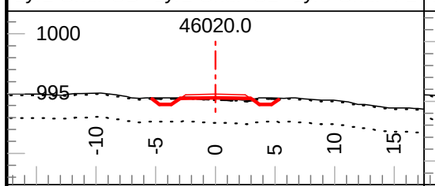

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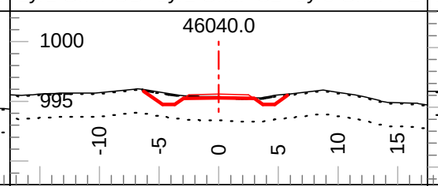

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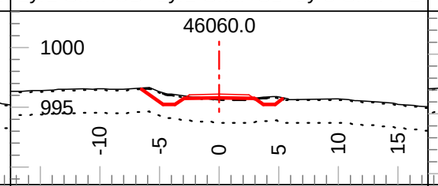

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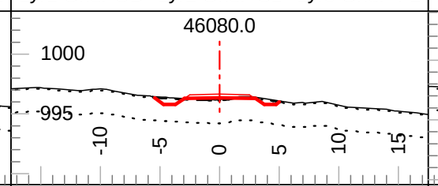

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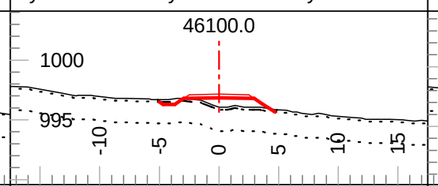

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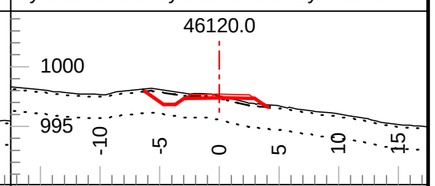

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

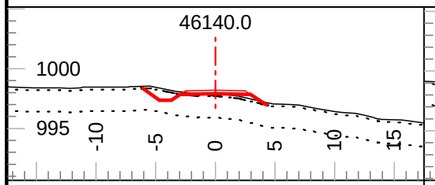
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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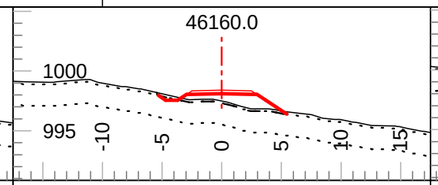

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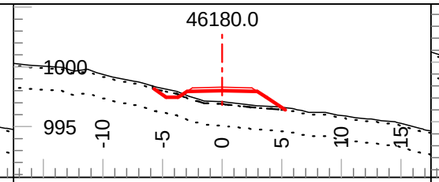

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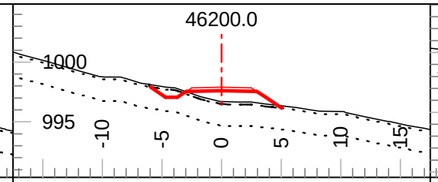

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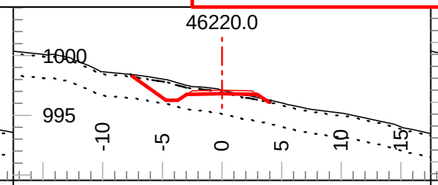

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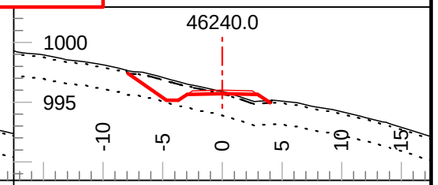

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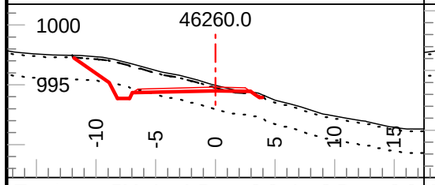

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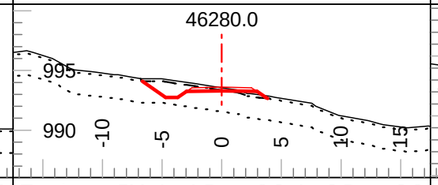

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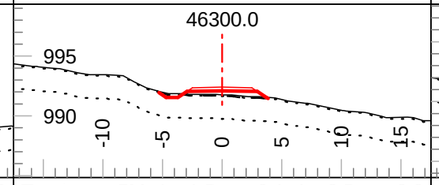

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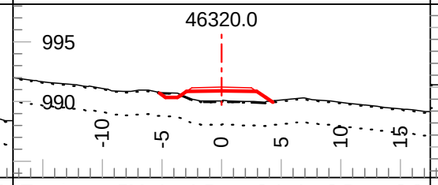

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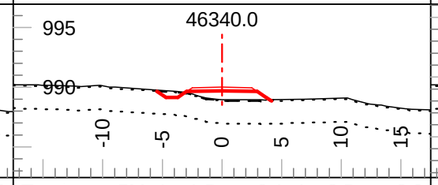

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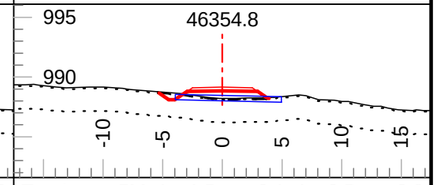

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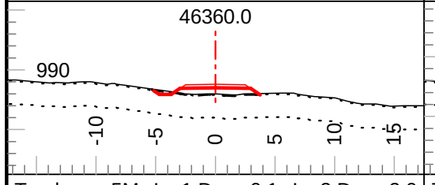

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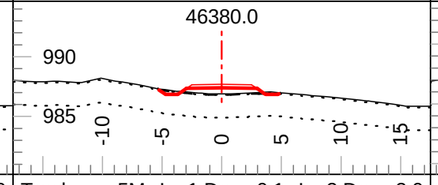

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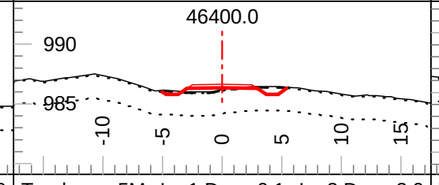

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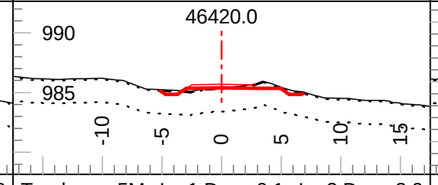

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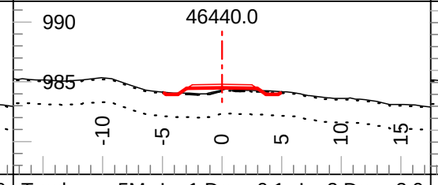

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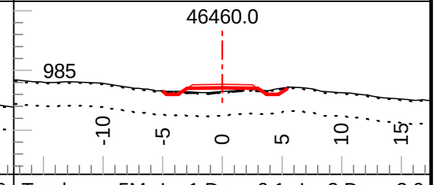

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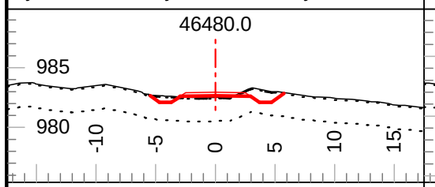

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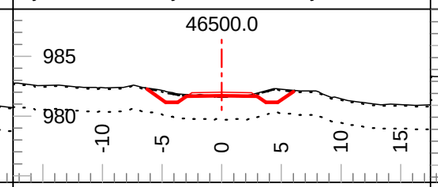

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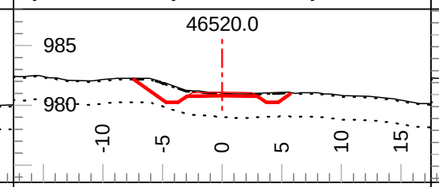

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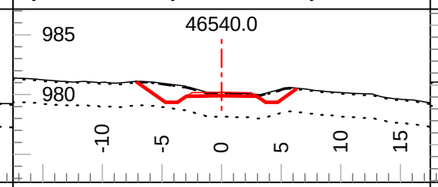

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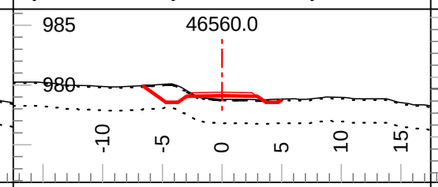
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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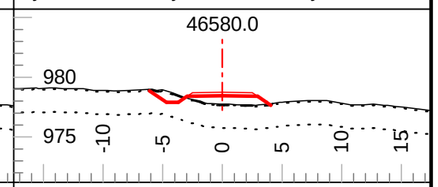

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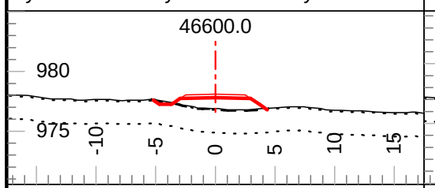

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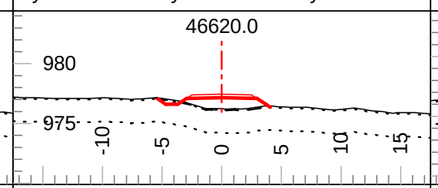

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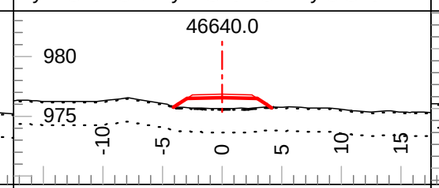

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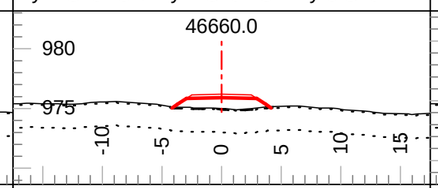

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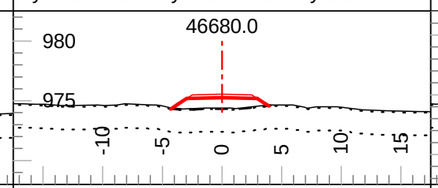

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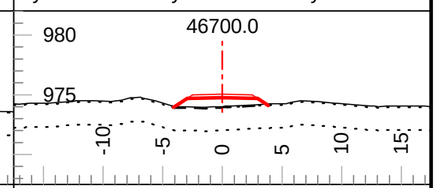

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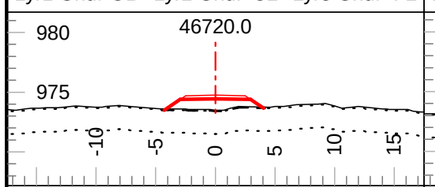

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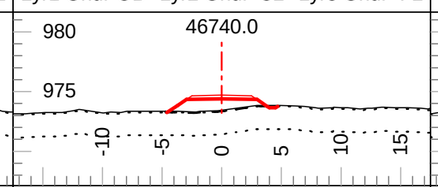

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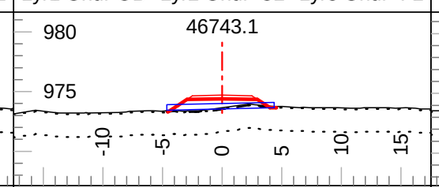

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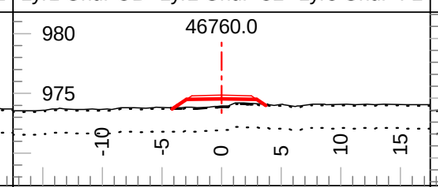

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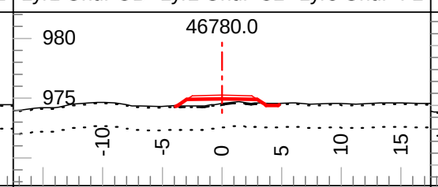

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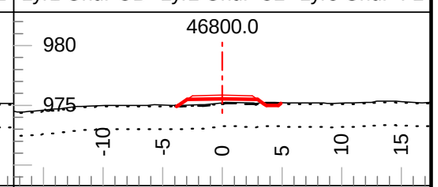

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Coffee Gold Mine

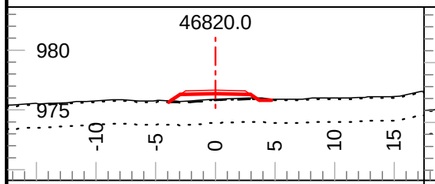
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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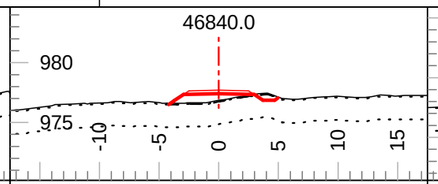

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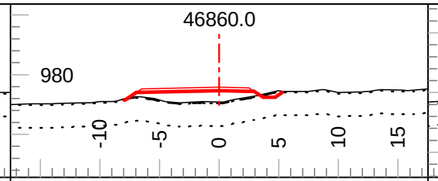

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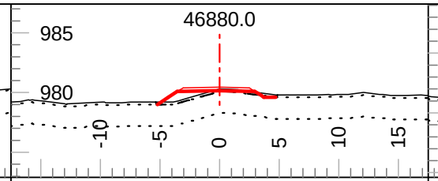

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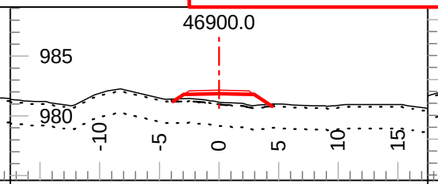

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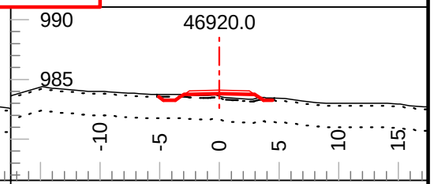

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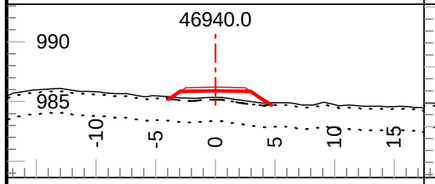

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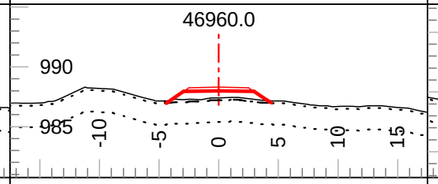

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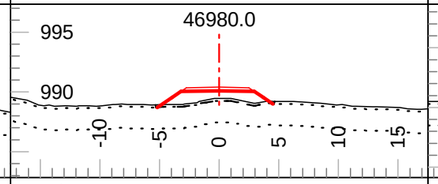

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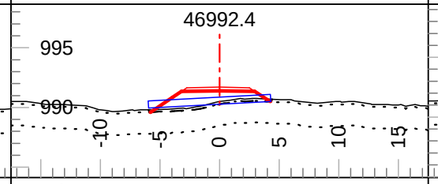

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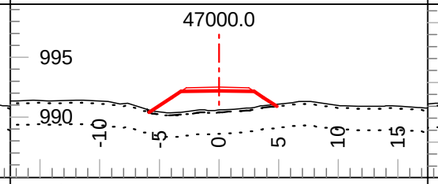

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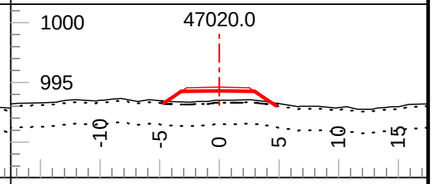

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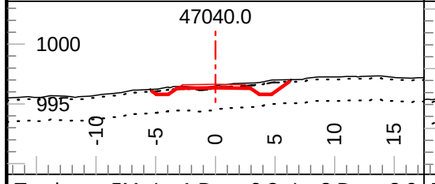

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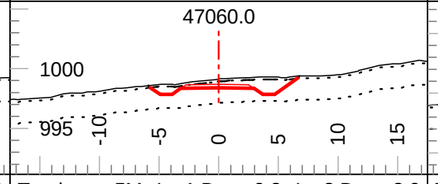

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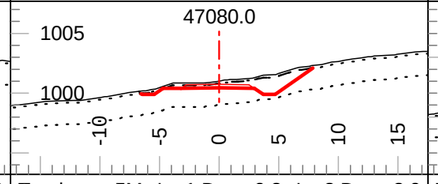

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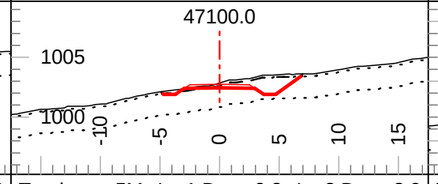

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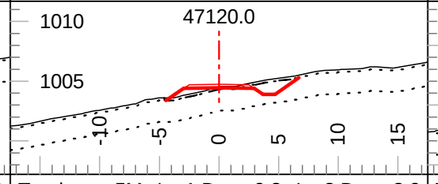

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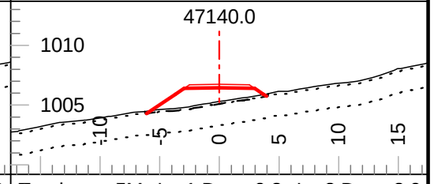

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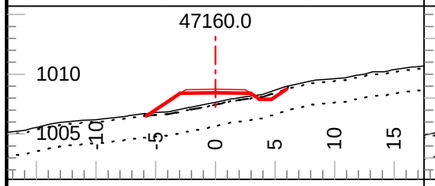

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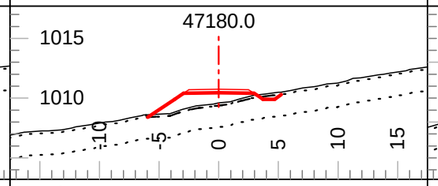

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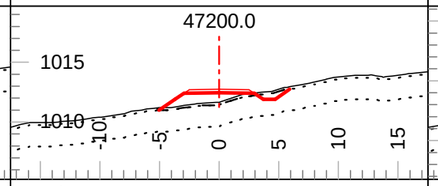

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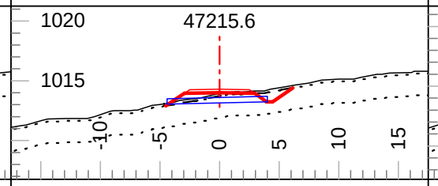

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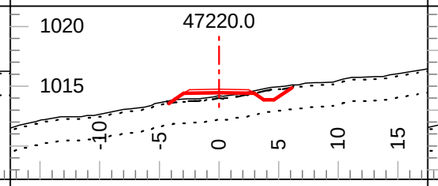

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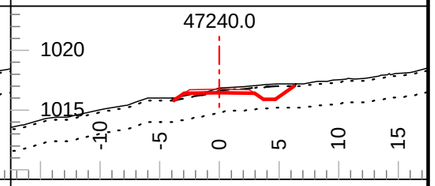

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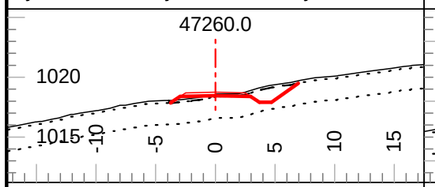

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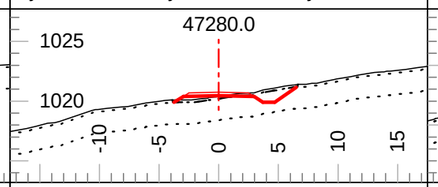

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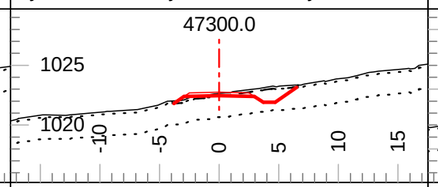

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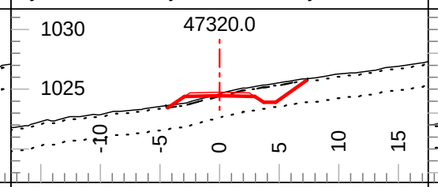

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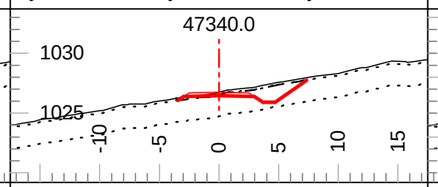

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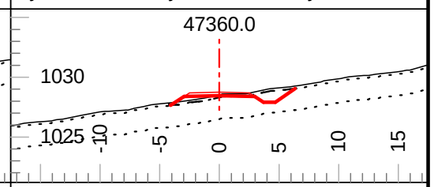
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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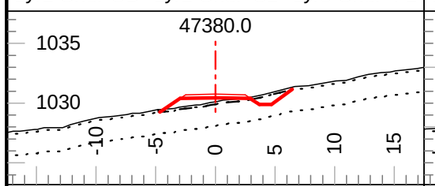

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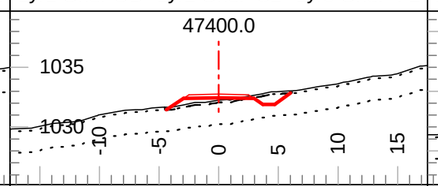

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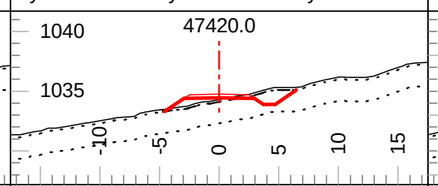

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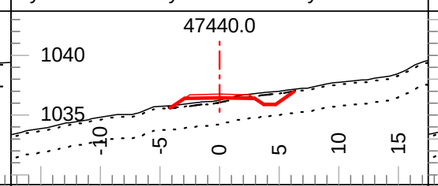

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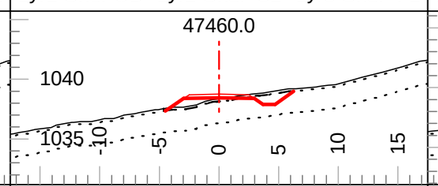

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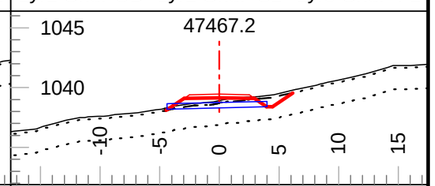

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Coffee Gold Mine

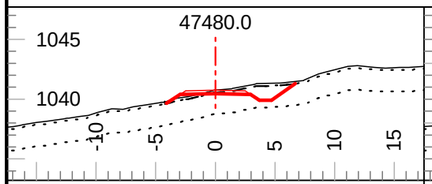
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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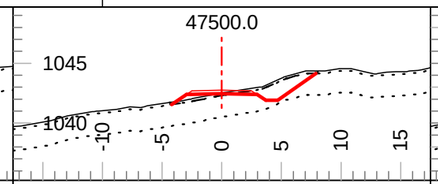

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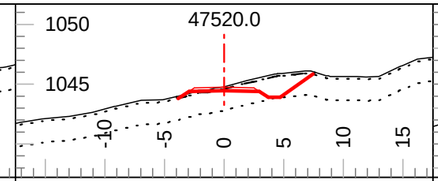

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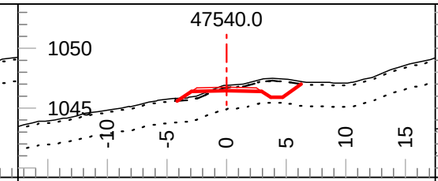

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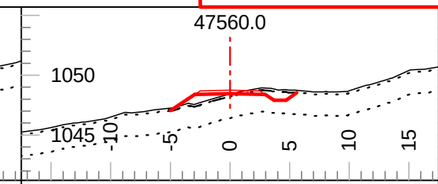

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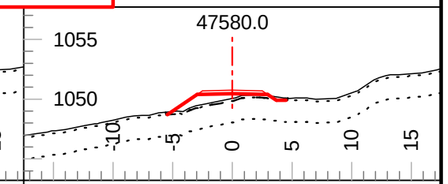

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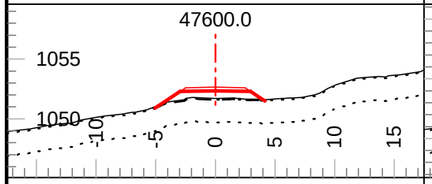

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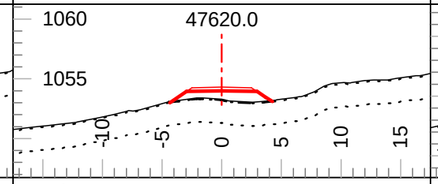

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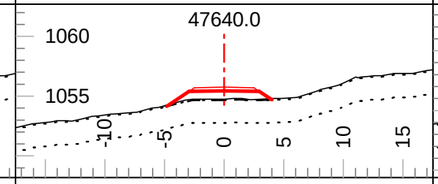

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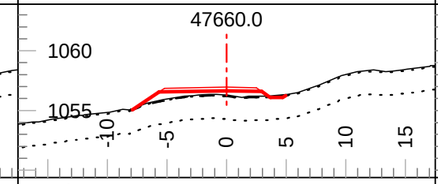

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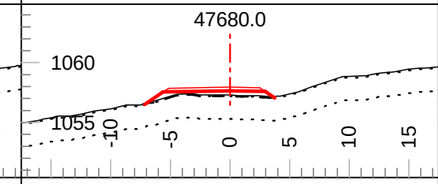

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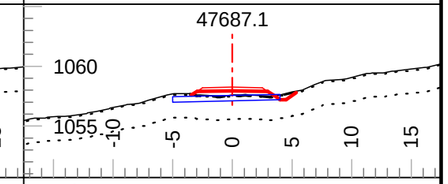

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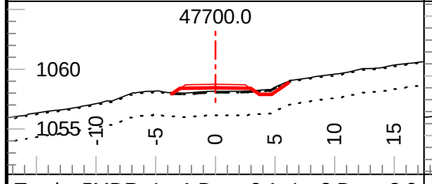

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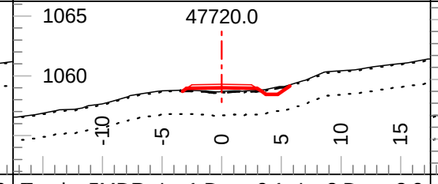

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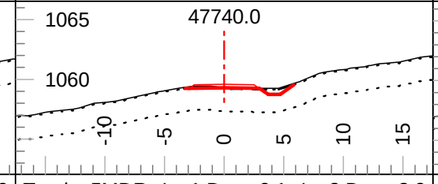

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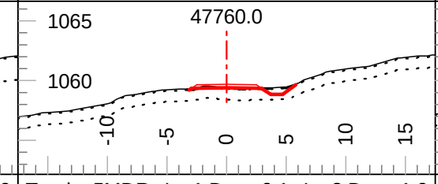

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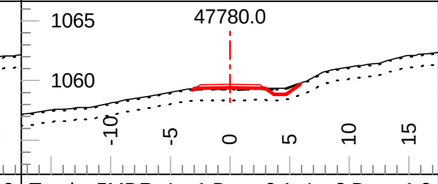

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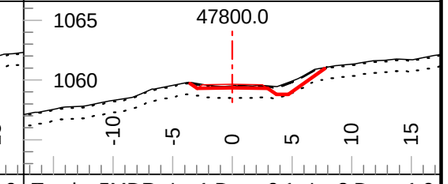

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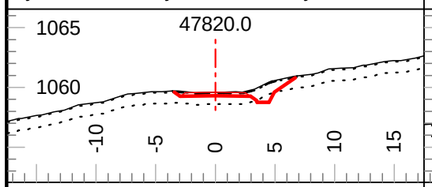

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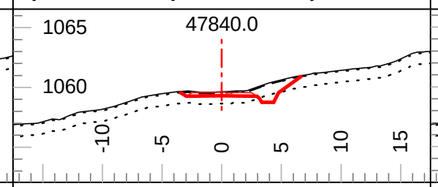

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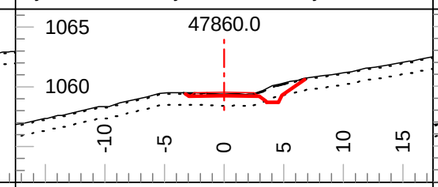

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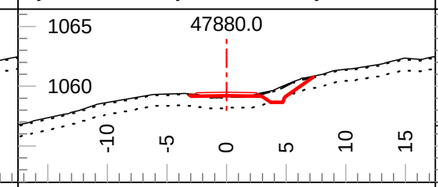

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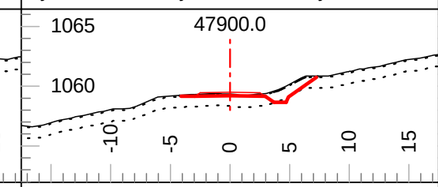

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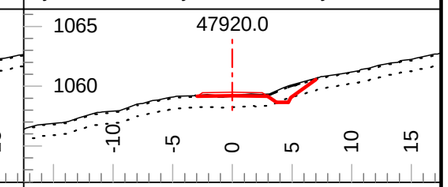

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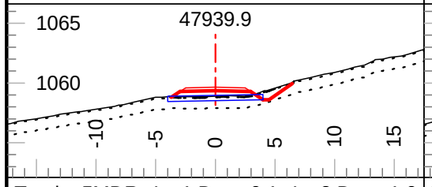

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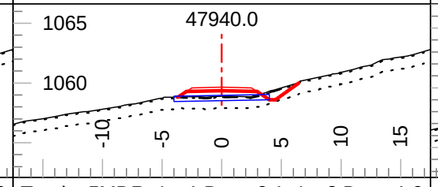

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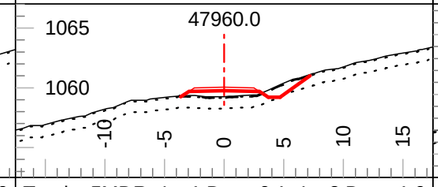

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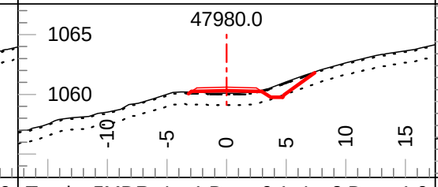

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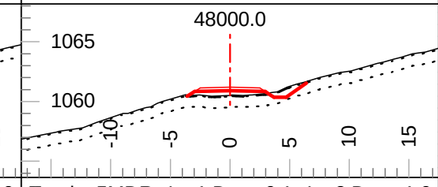

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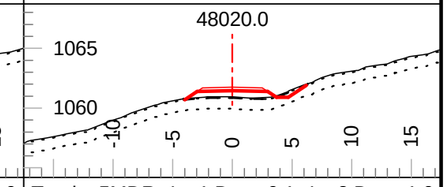

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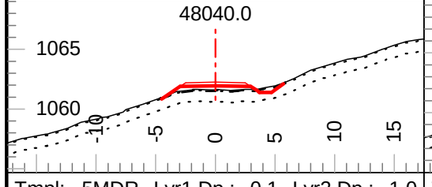

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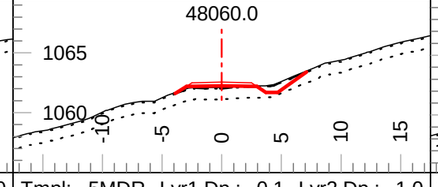

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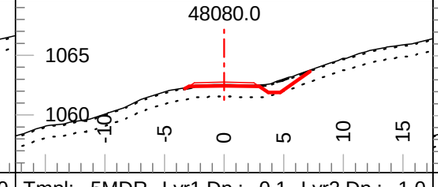

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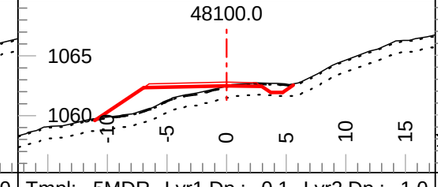

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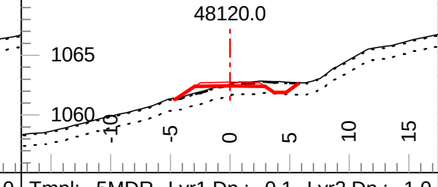

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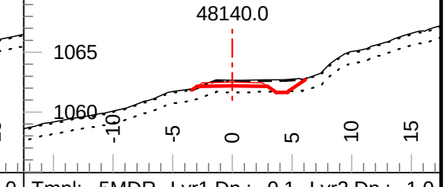

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Coffee Gold Mine

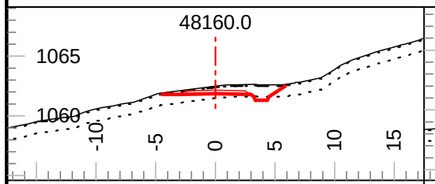
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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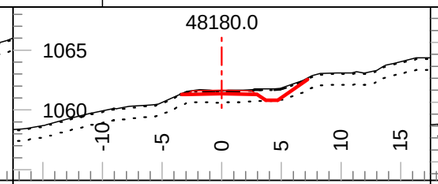

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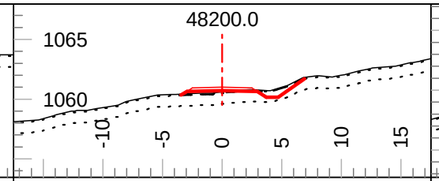

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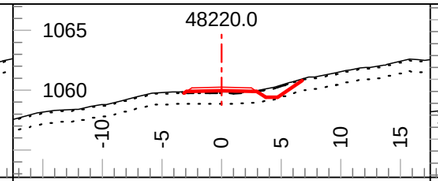

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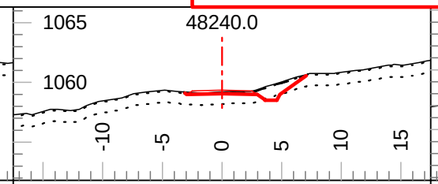

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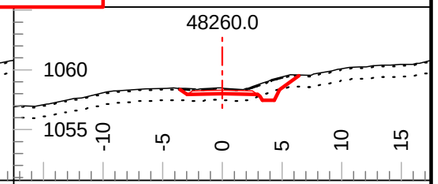

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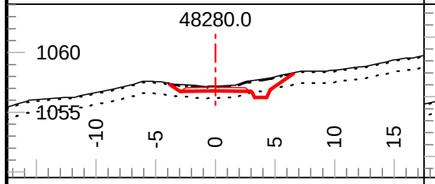

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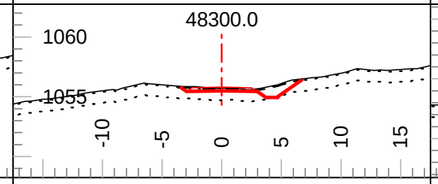

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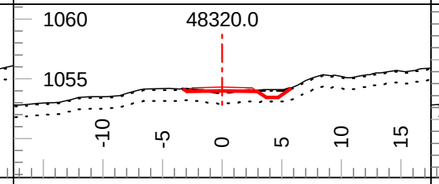

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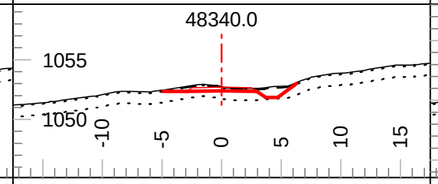

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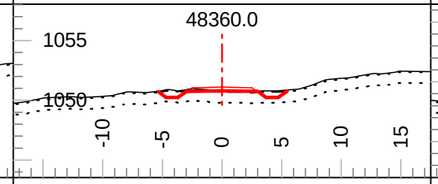

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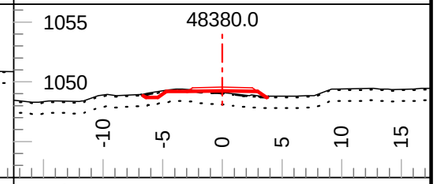

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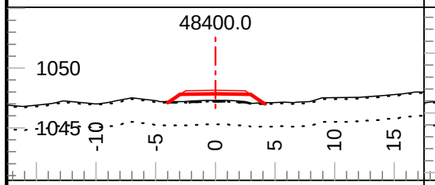

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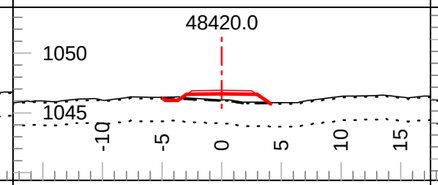

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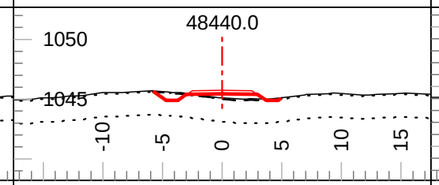

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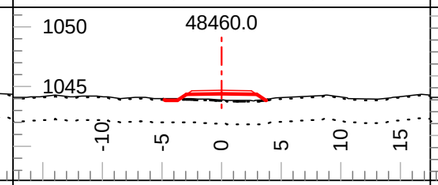

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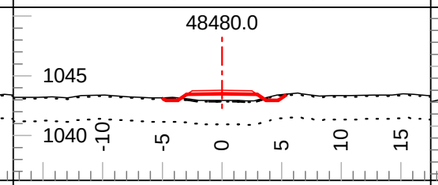

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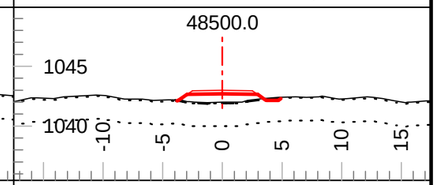

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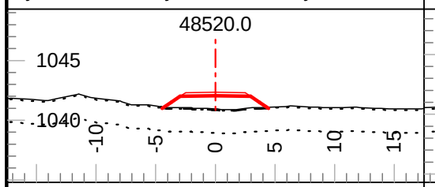

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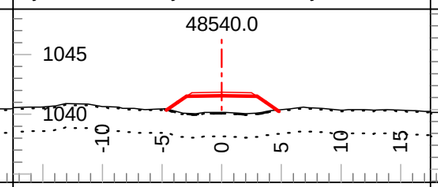

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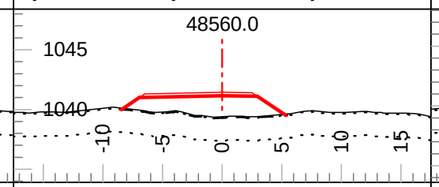

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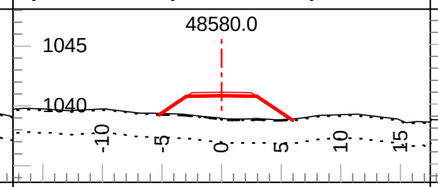

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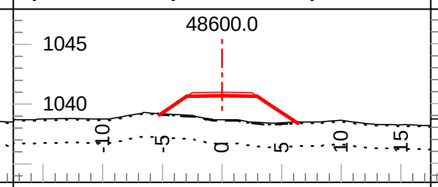

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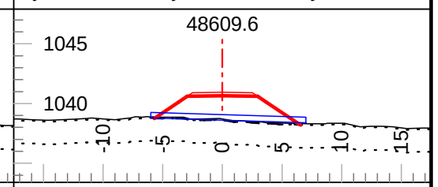

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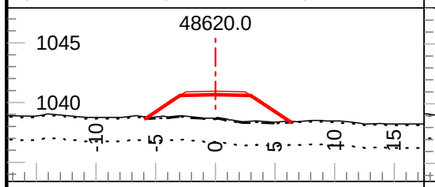

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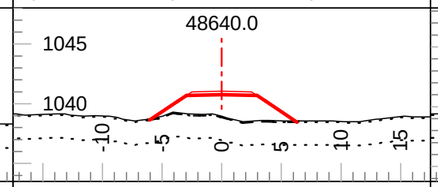

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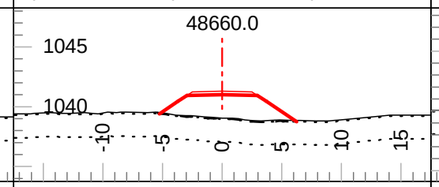

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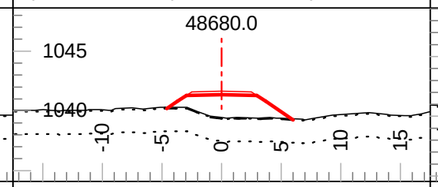

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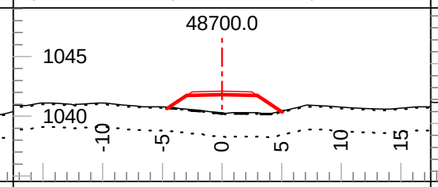

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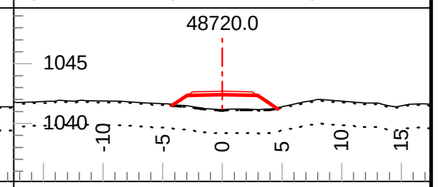

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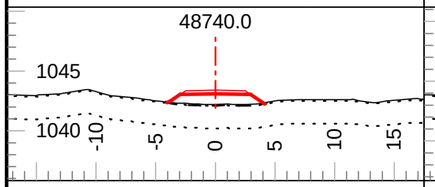

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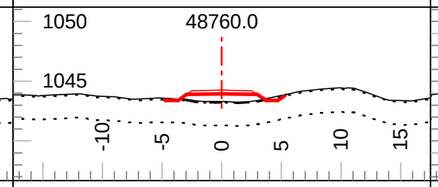

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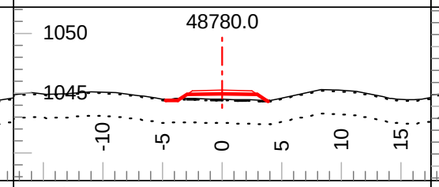

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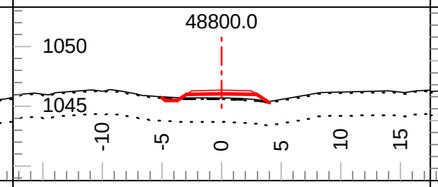

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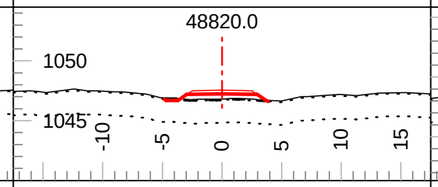

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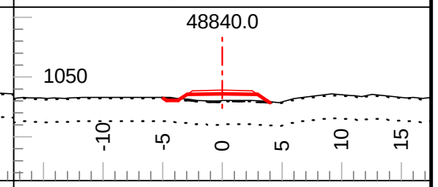

Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 2.0
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Coffee Gold Mine

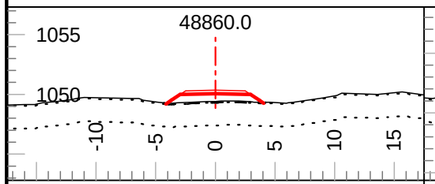
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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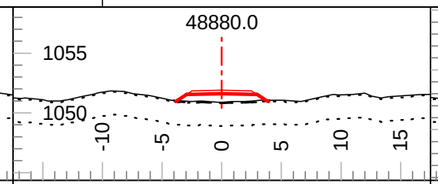

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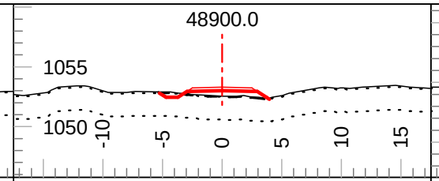

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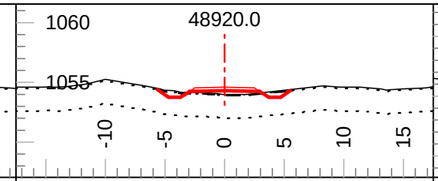

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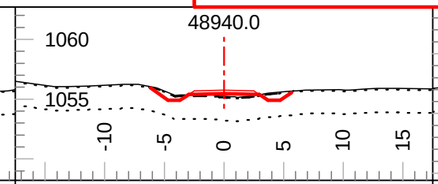

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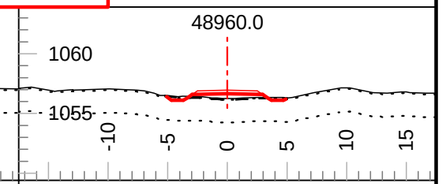

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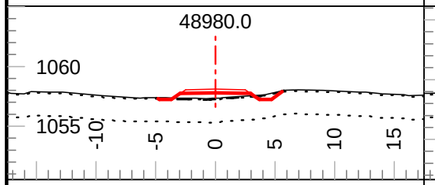

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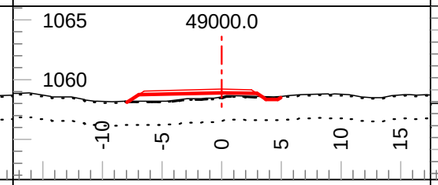

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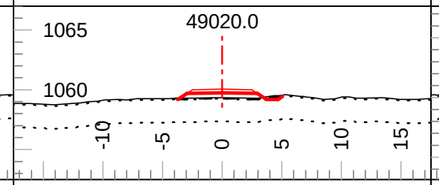

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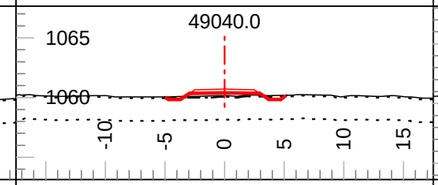

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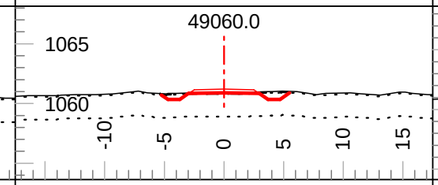

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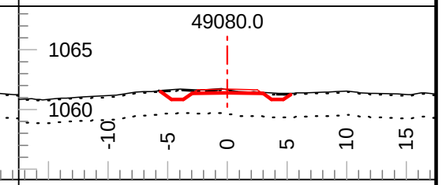

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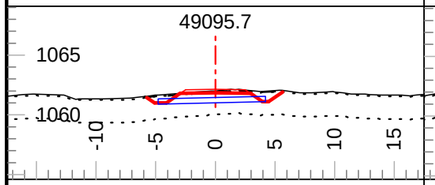

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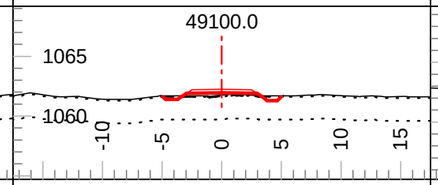

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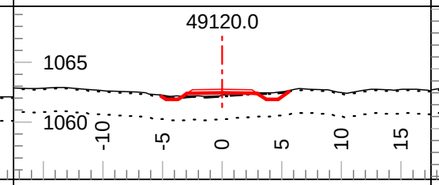

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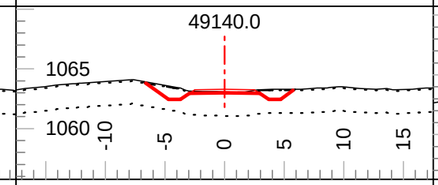

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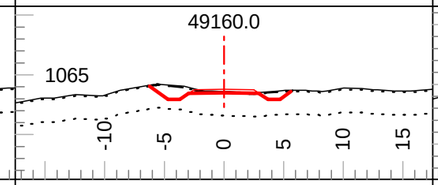

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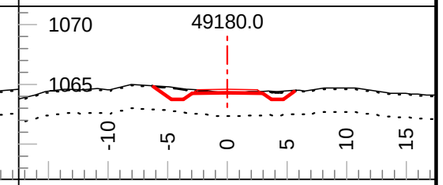

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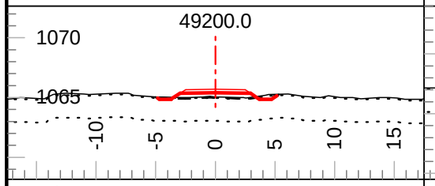

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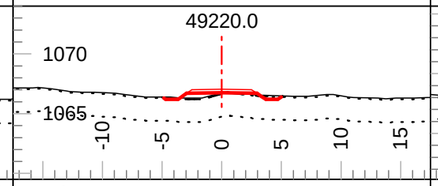

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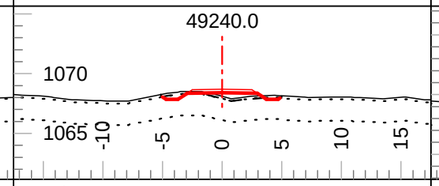

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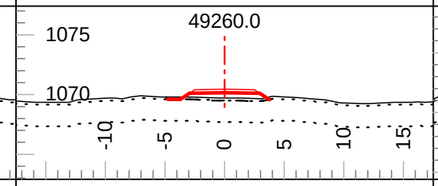

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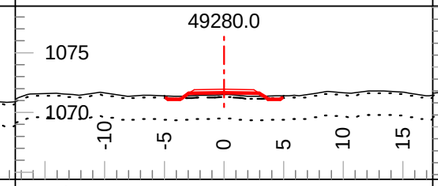

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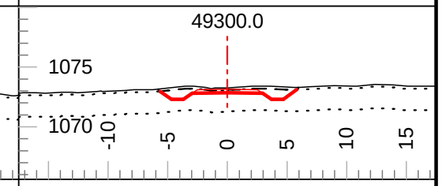

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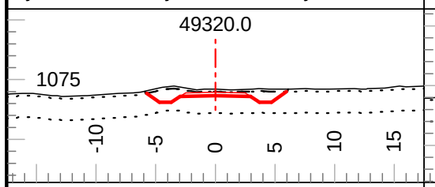

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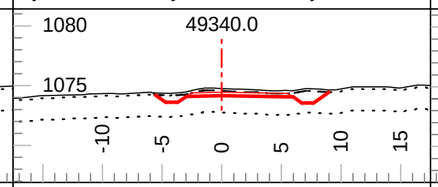

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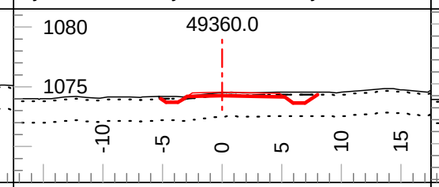

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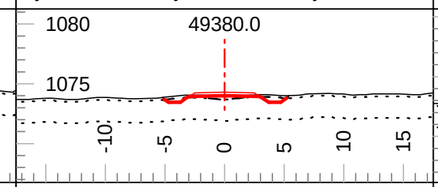

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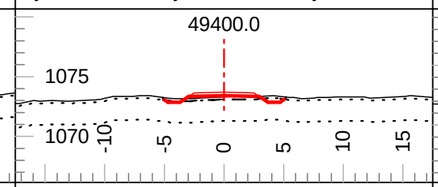

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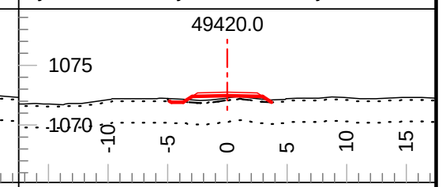

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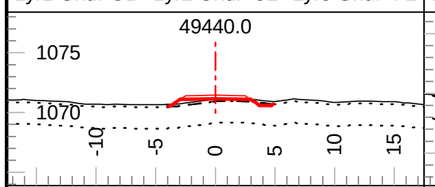

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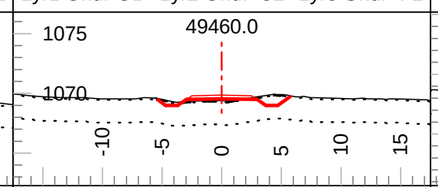

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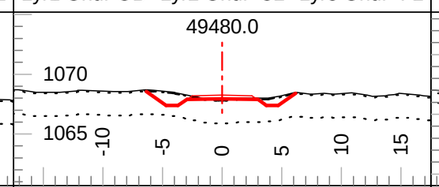

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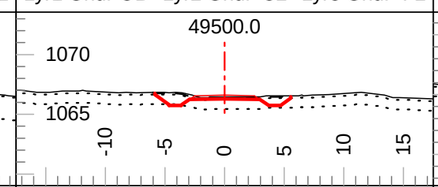

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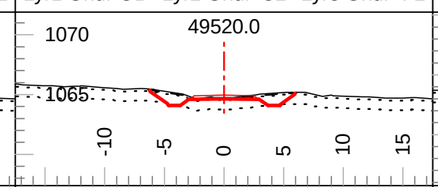

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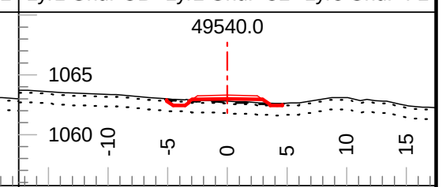

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Coffee Gold Mine

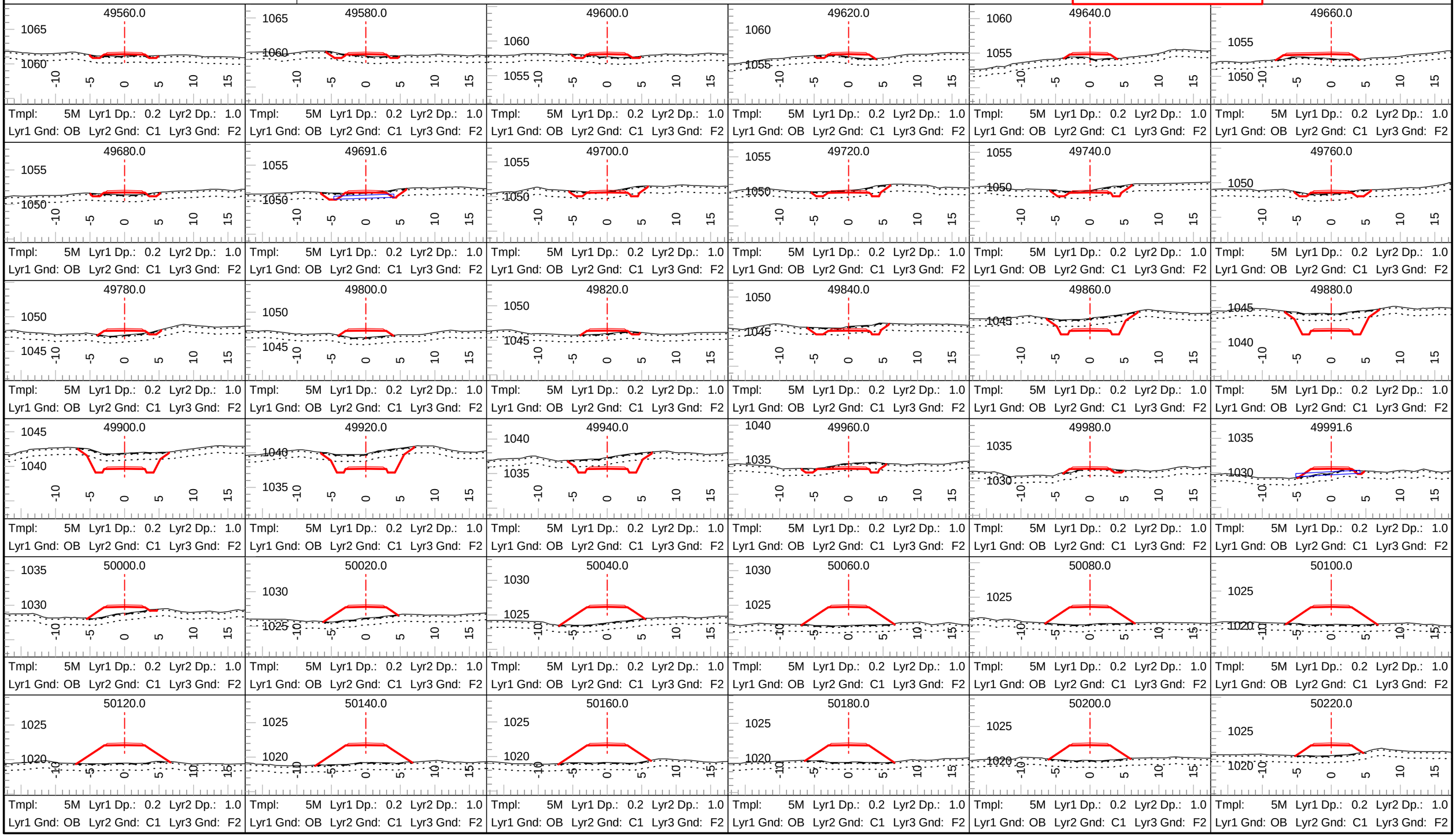
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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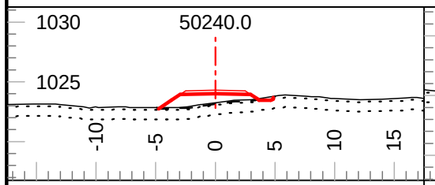

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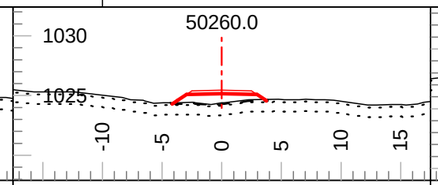

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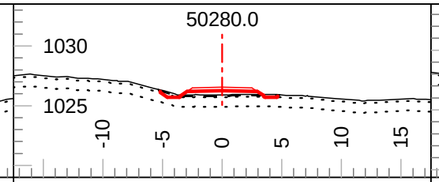

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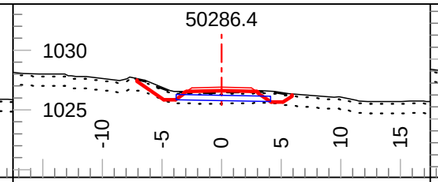

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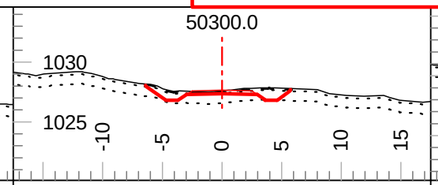

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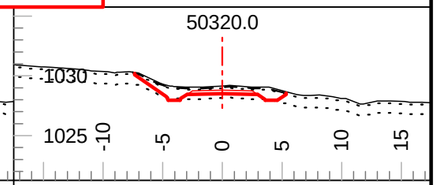

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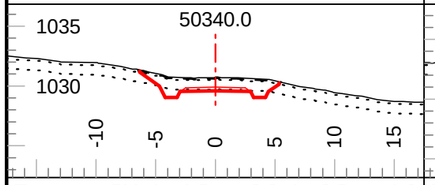

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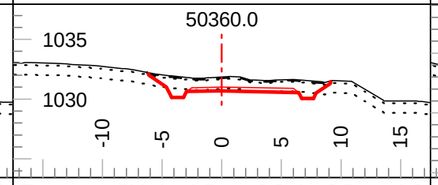

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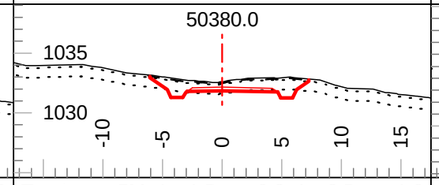

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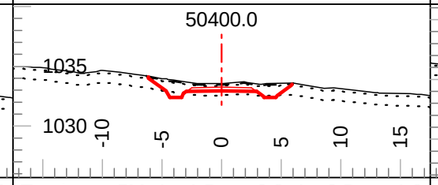

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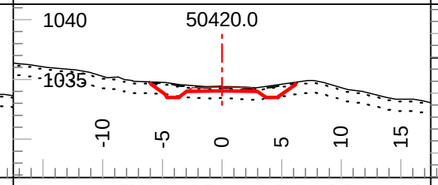

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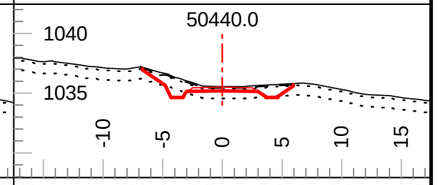
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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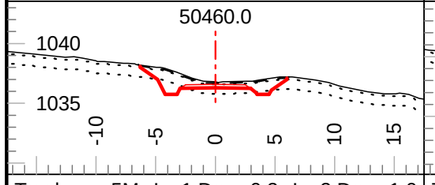

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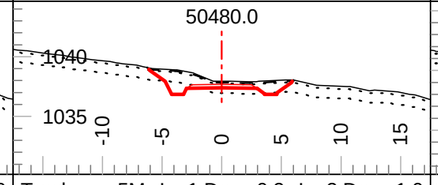

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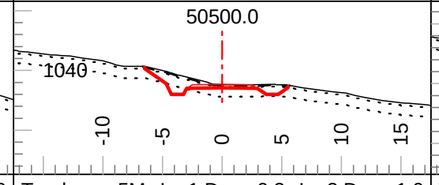

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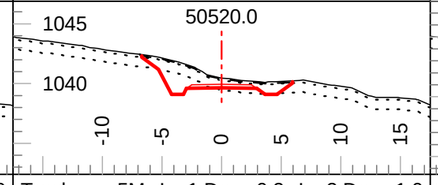

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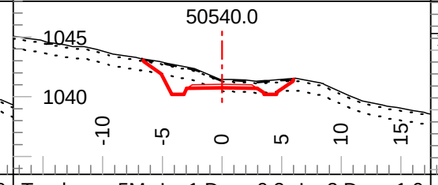

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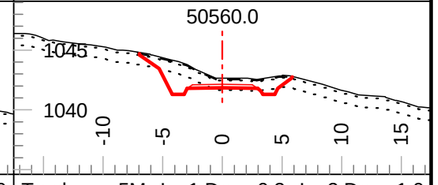

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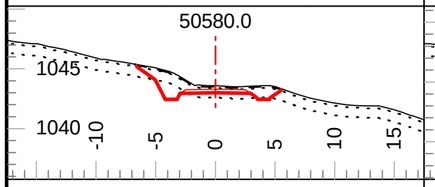

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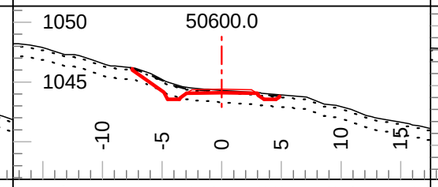

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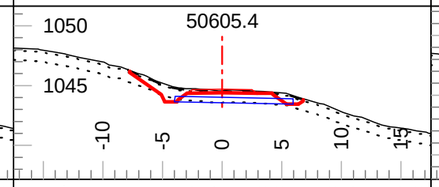

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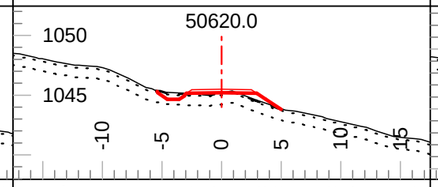

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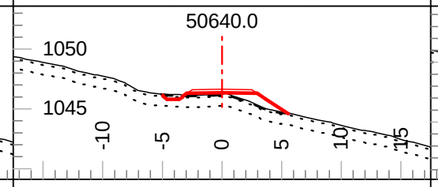

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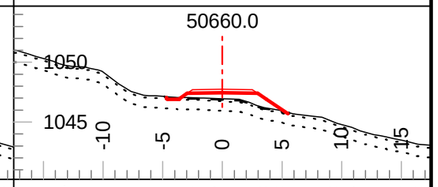

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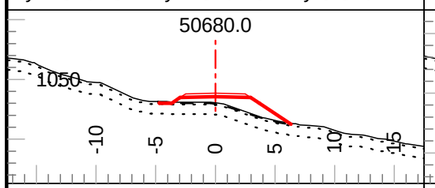

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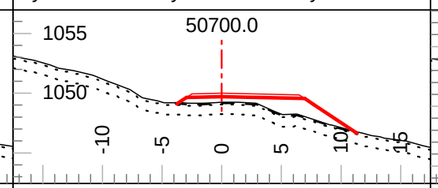

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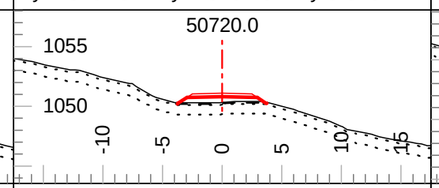

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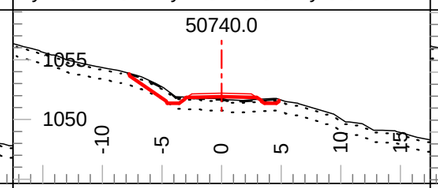

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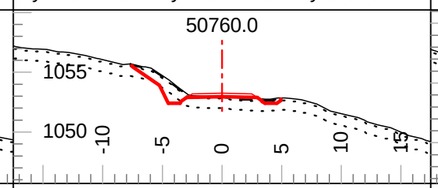

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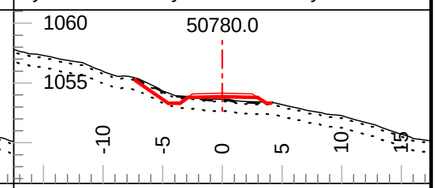

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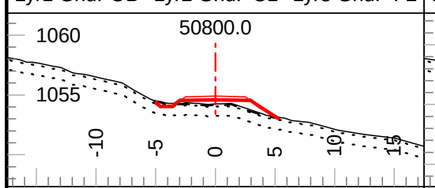

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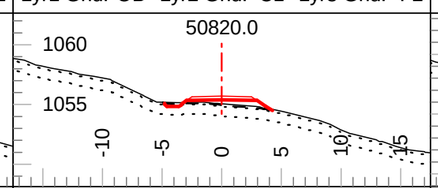

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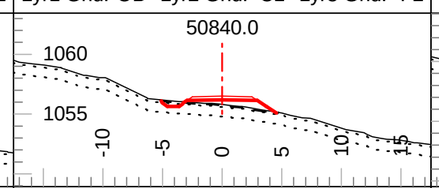

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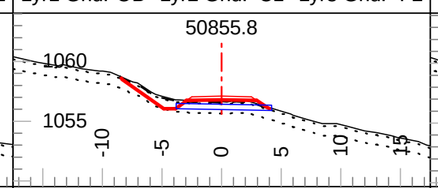

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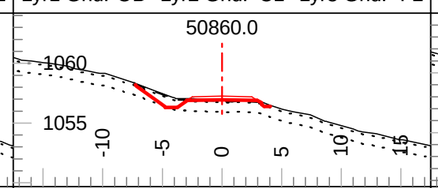

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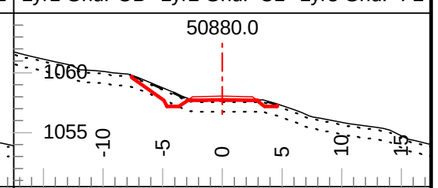

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Coffee Gold Mine

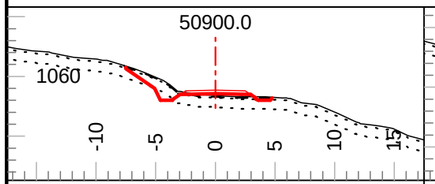
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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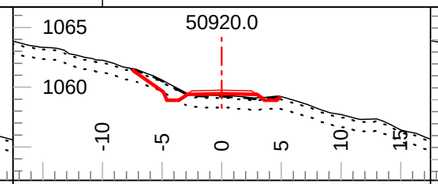

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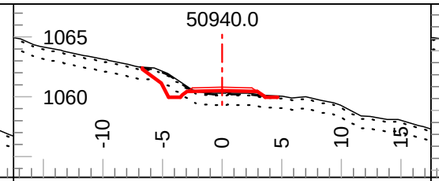

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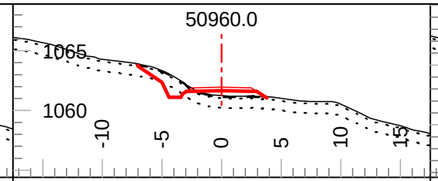

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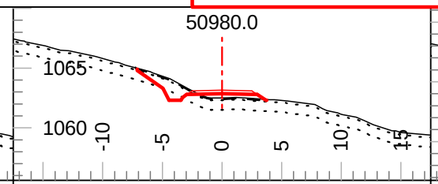

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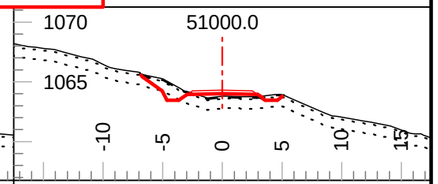

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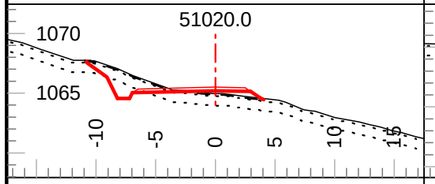

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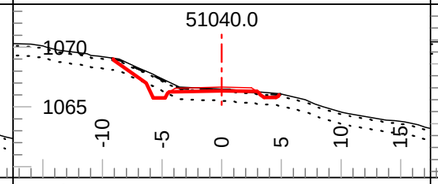

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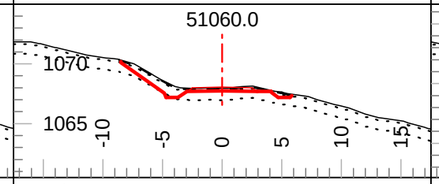

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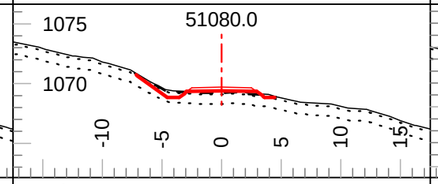

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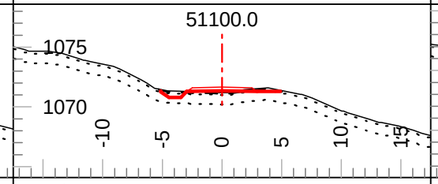

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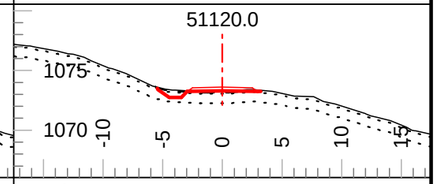

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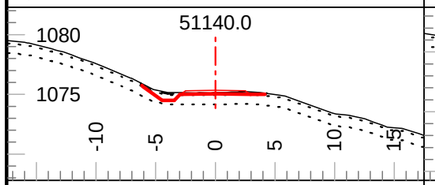

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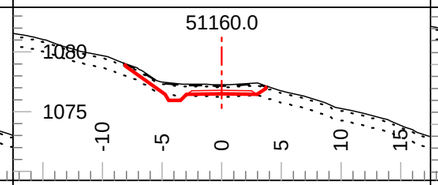

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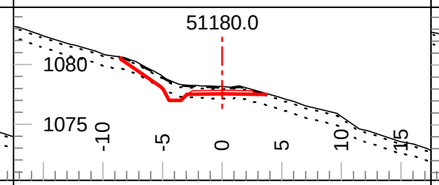

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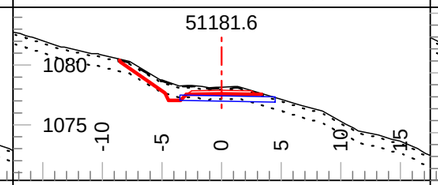

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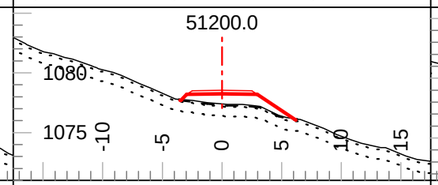

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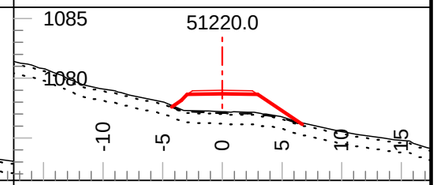

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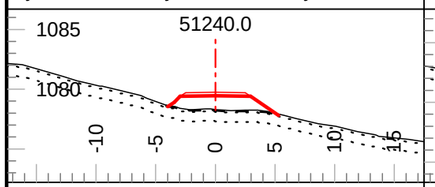

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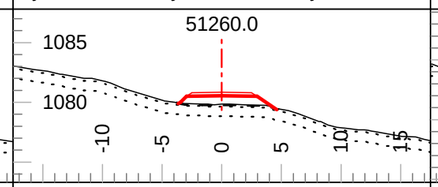

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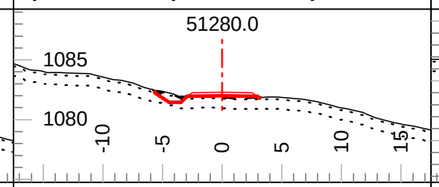

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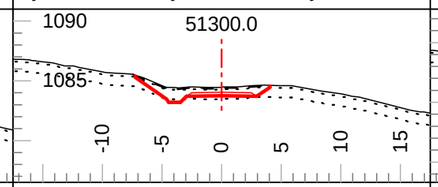

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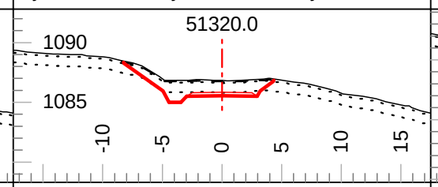

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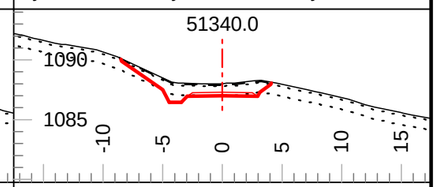

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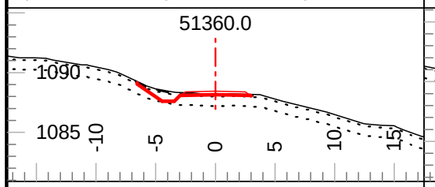

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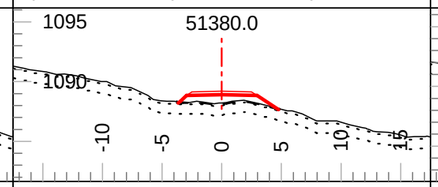

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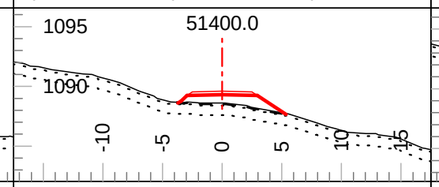

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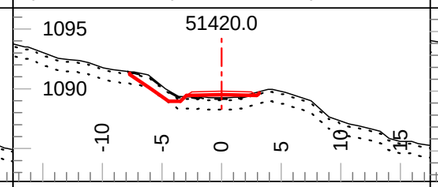

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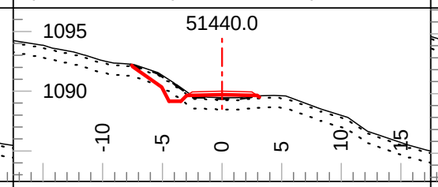

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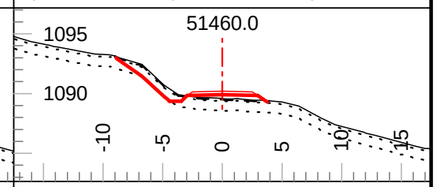

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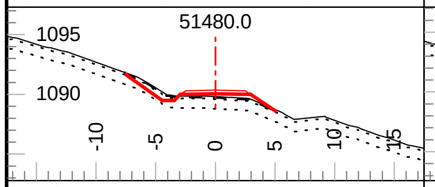

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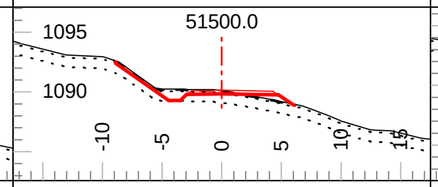

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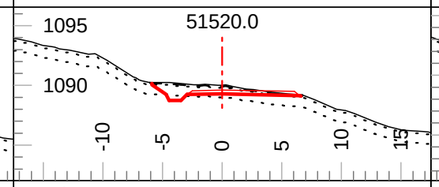

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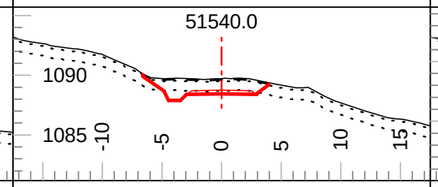

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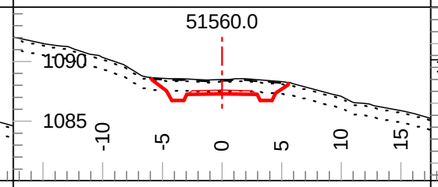

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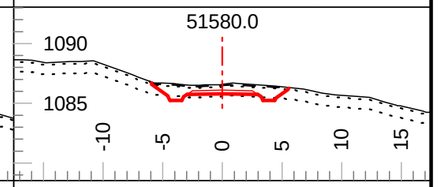

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Coffee Gold Mine

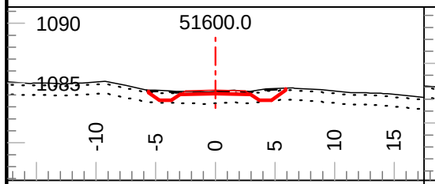
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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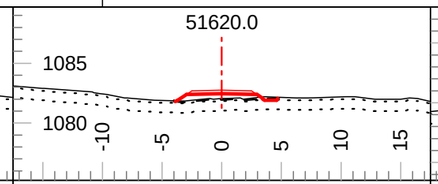

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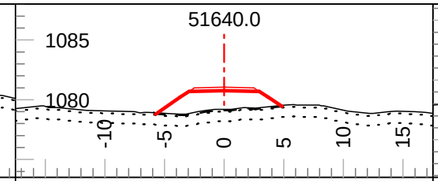

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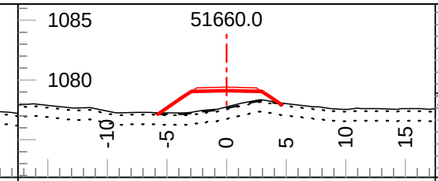

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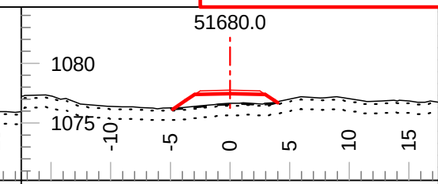

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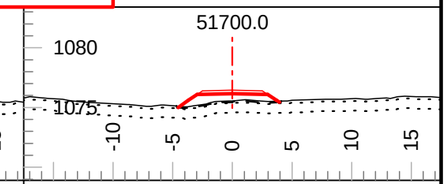

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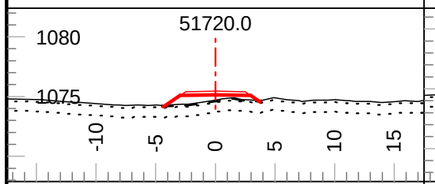

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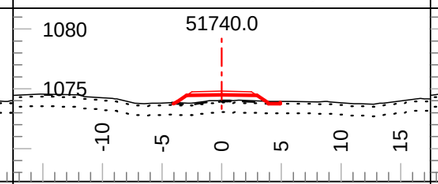

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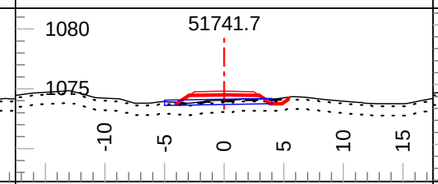

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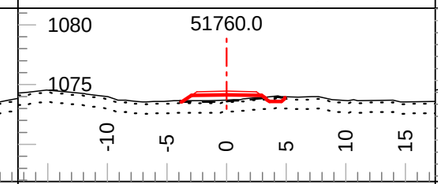

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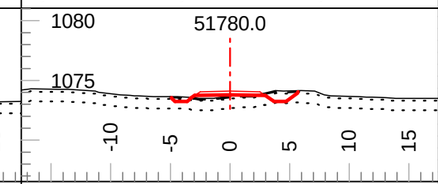

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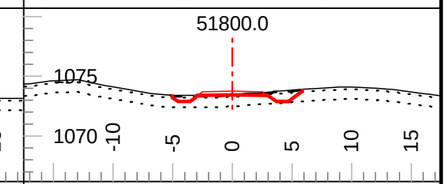

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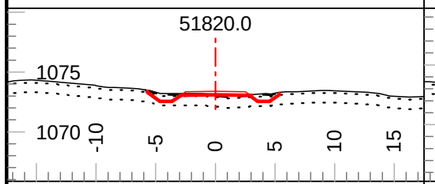

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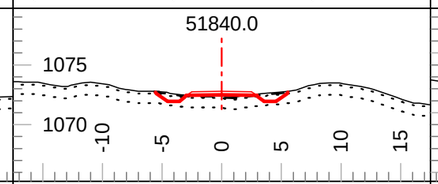

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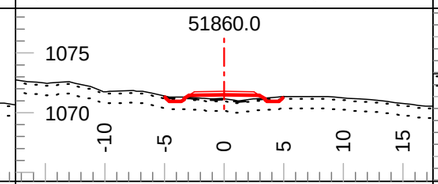

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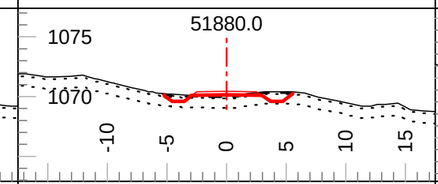

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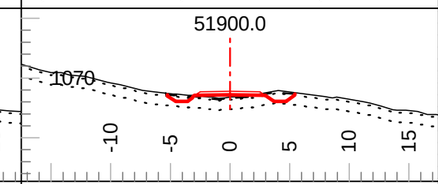

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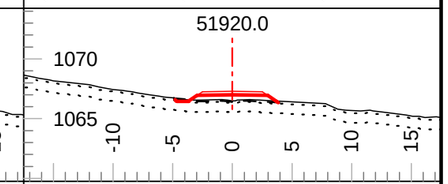

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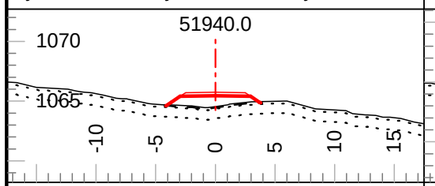

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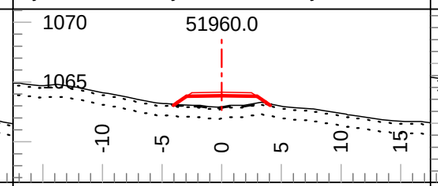

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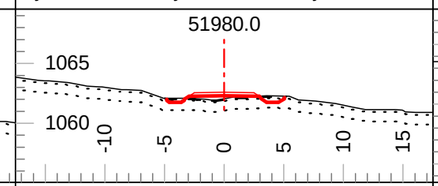

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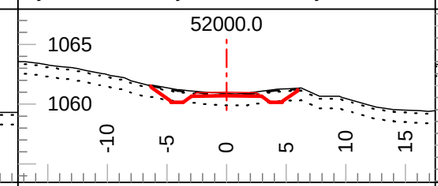

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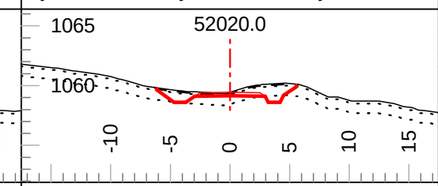

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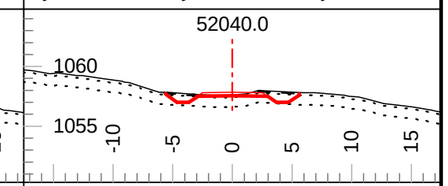

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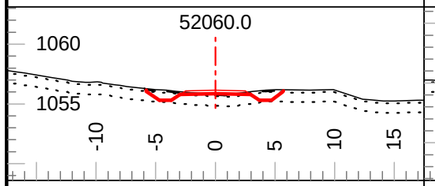

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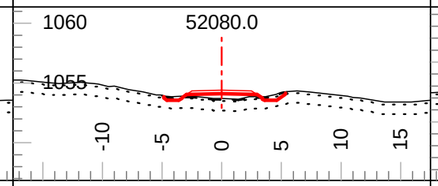

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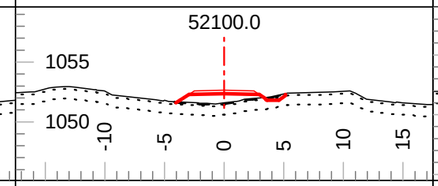

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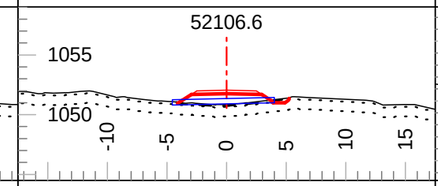

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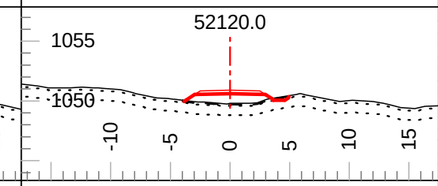

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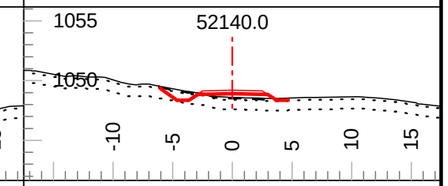

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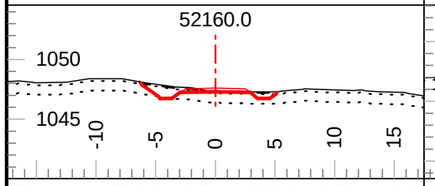

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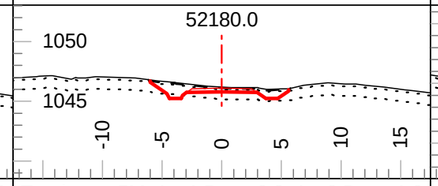

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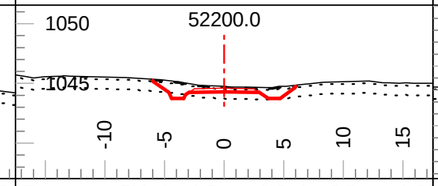

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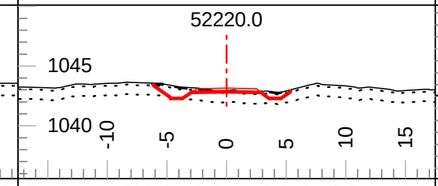

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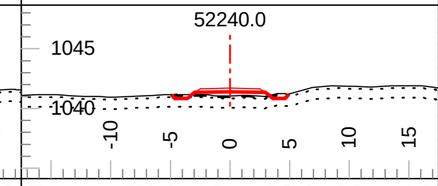

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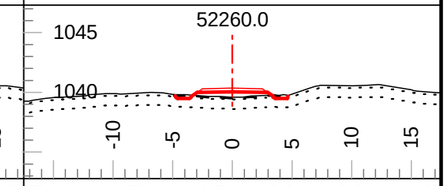

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Coffee Gold Mine

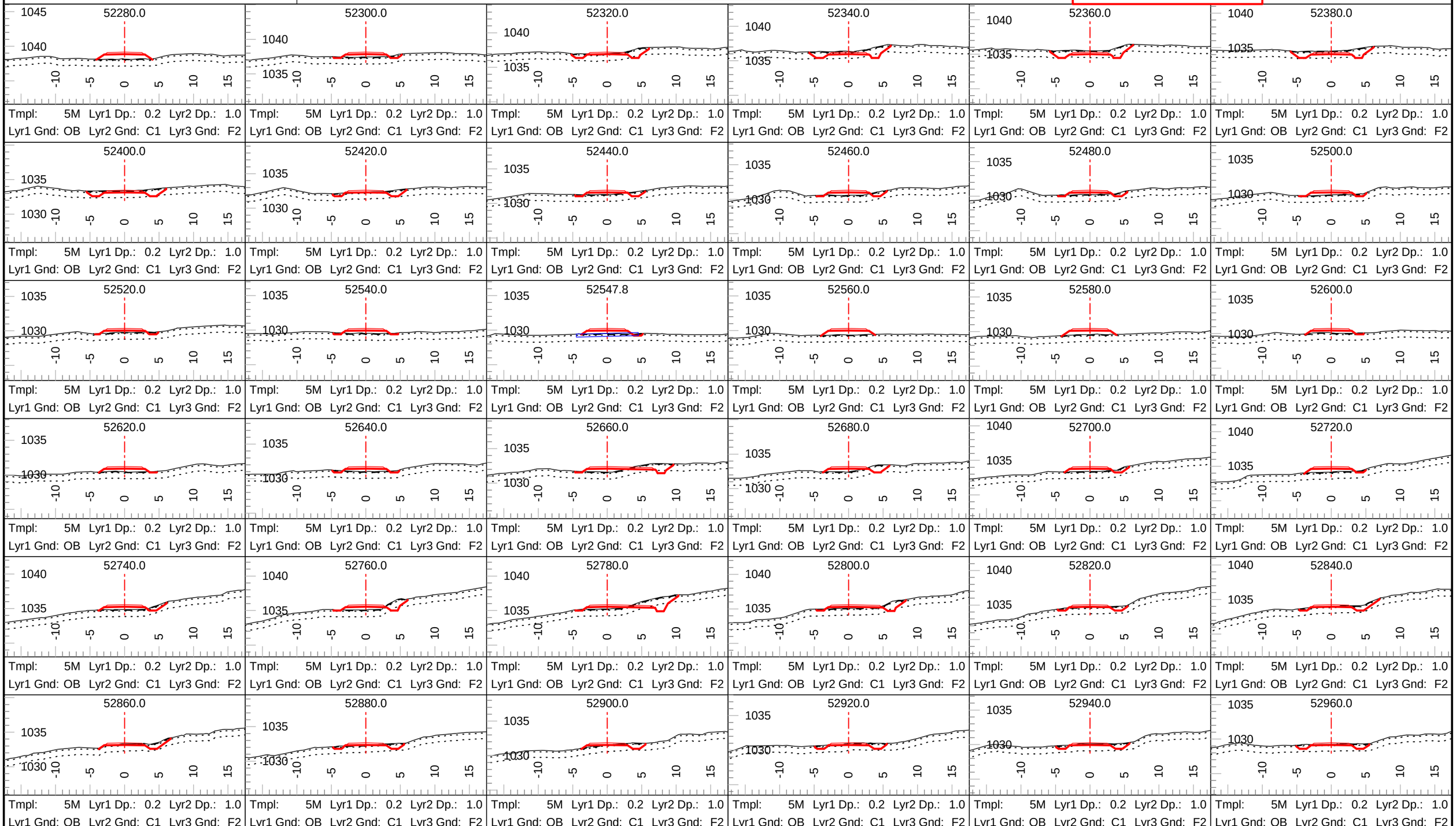
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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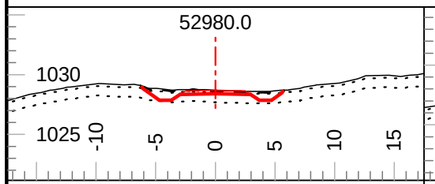

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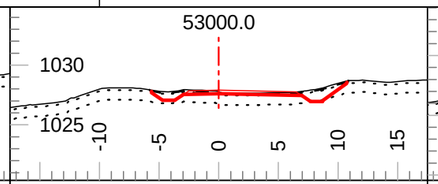

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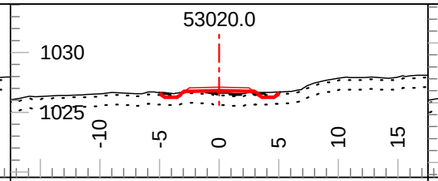

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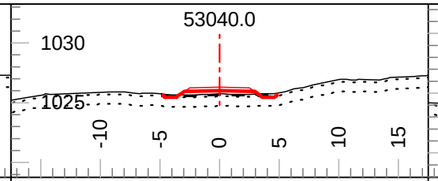

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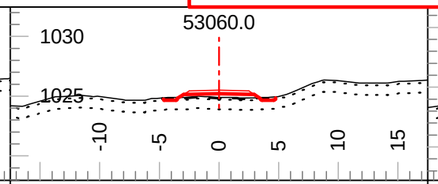

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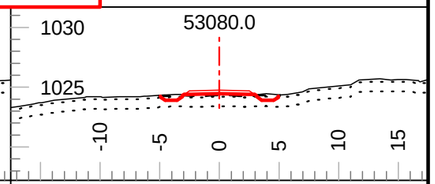

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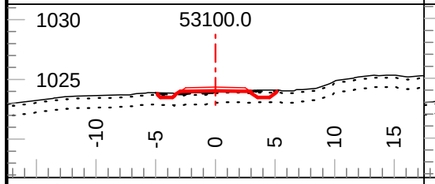

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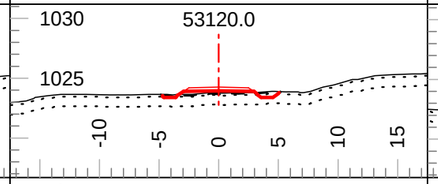

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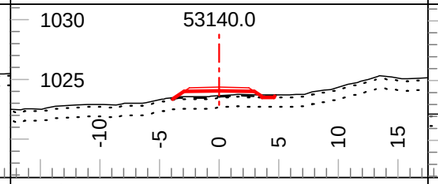

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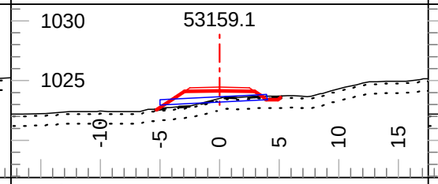

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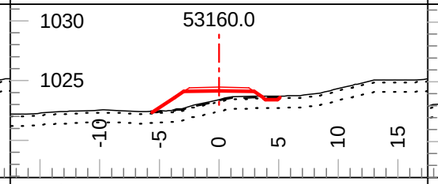

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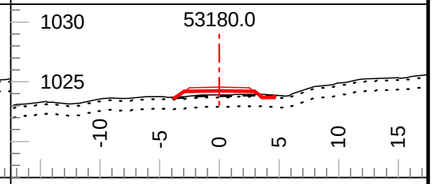

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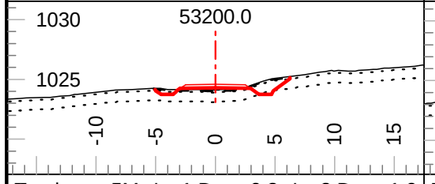

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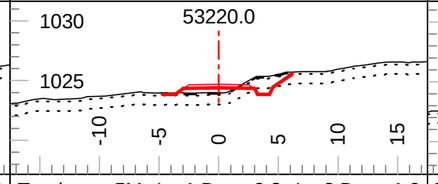

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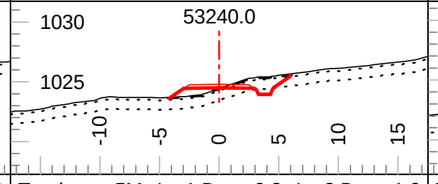

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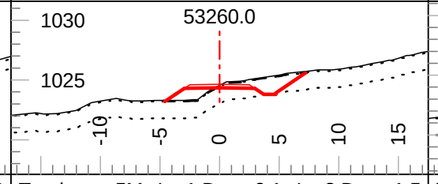

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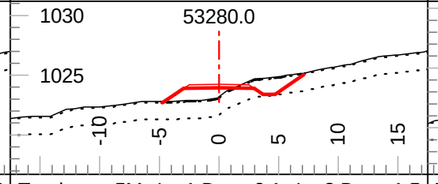

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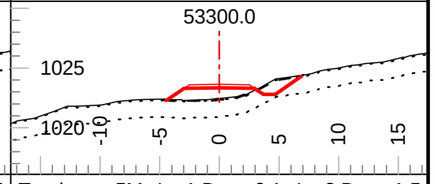

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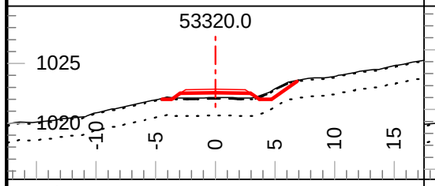

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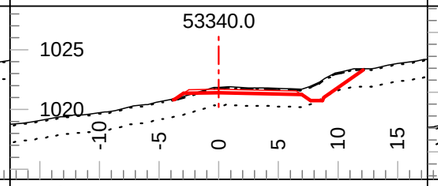

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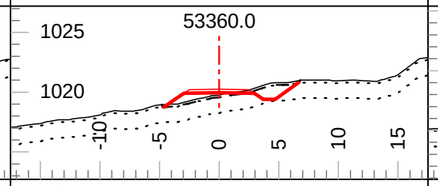

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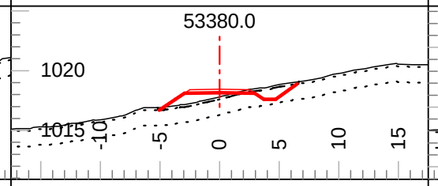

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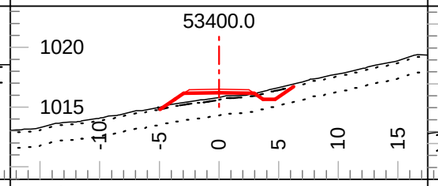

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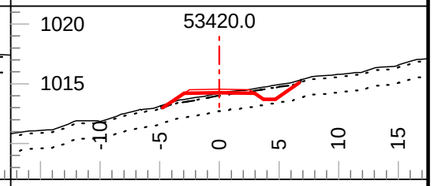

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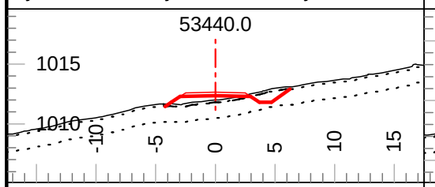

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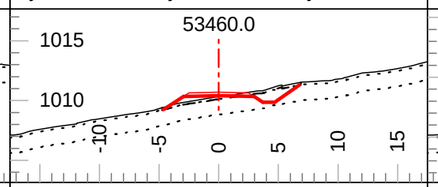

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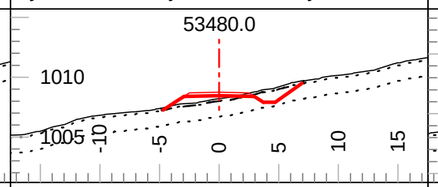

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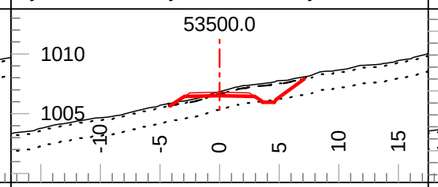

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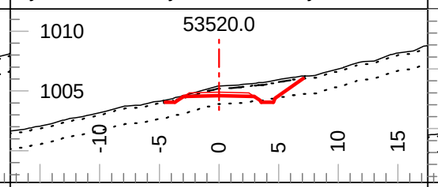

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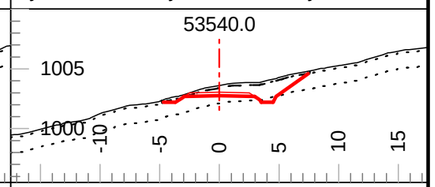
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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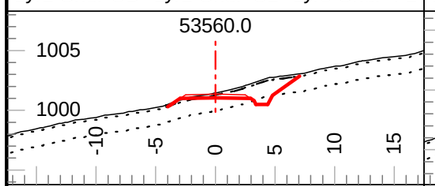

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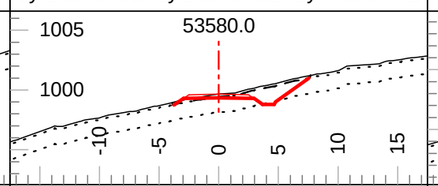

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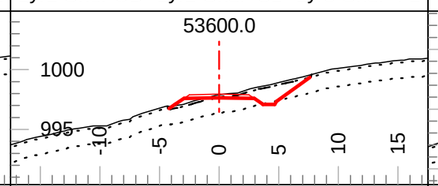

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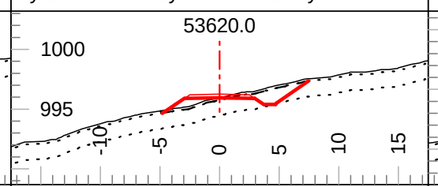

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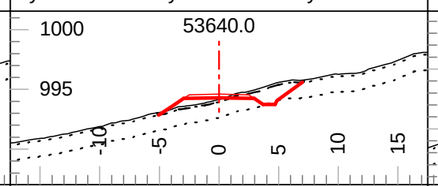

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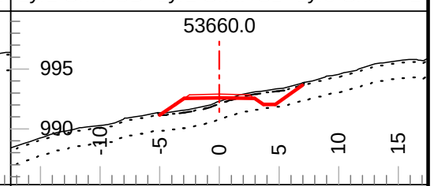

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Coffee Gold Mine

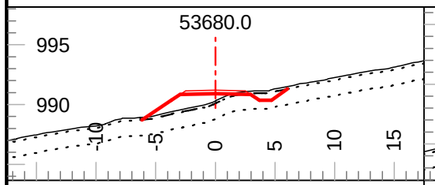
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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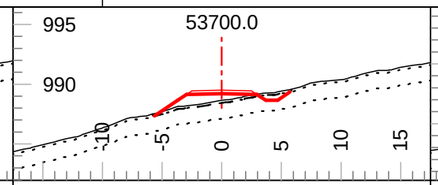

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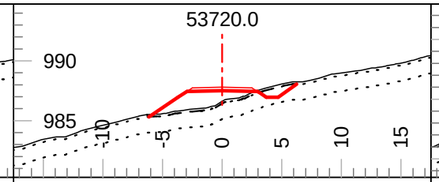

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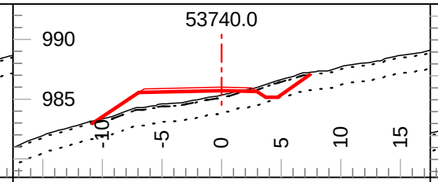

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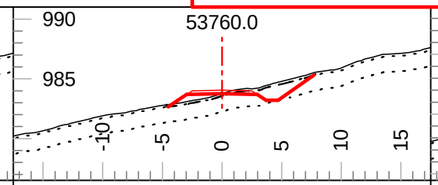

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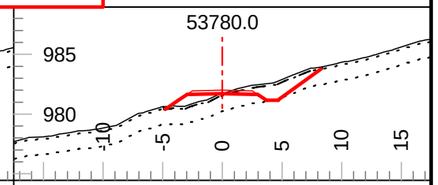

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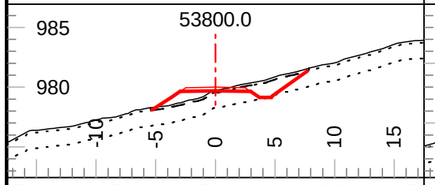

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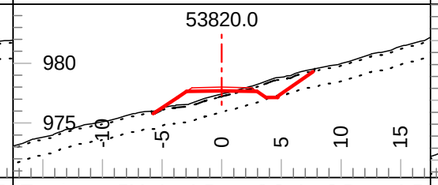

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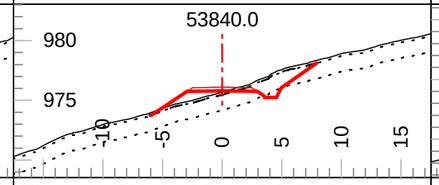

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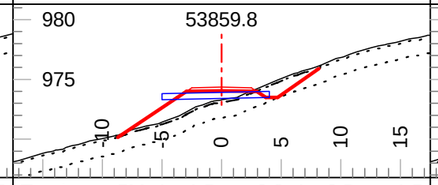

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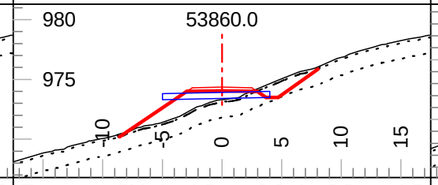

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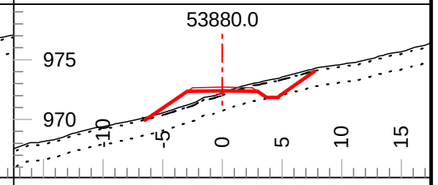

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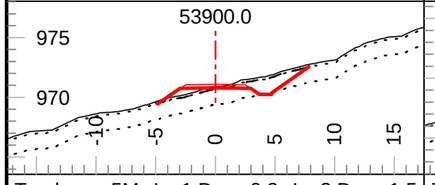

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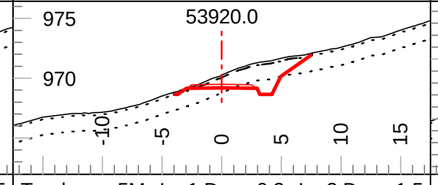

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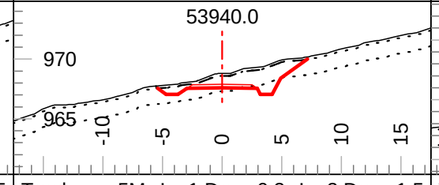

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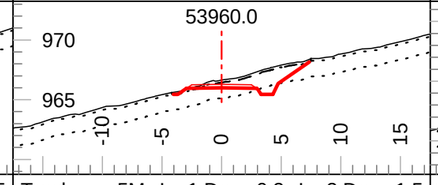

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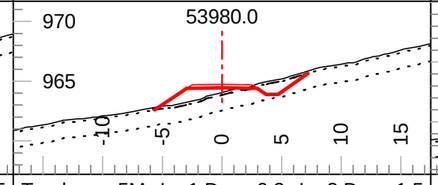

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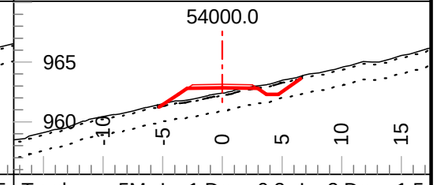

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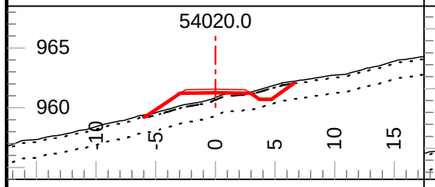

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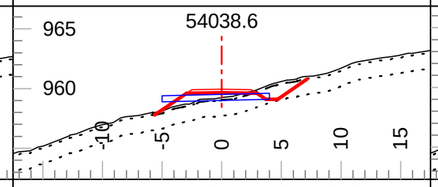

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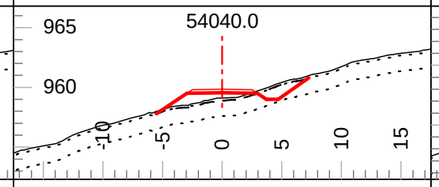

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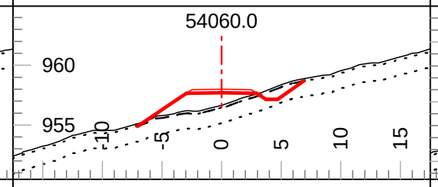

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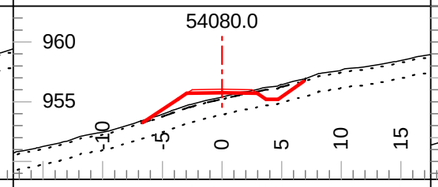

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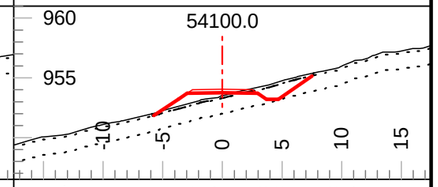

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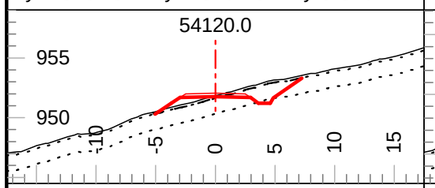

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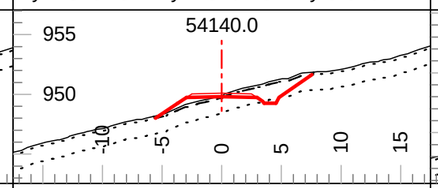

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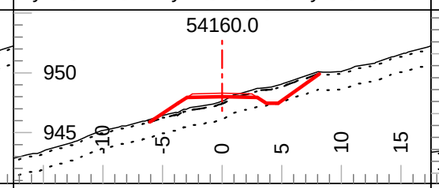

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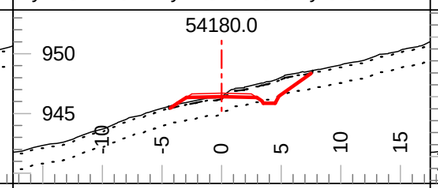

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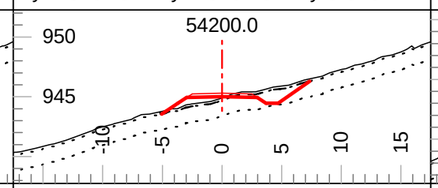

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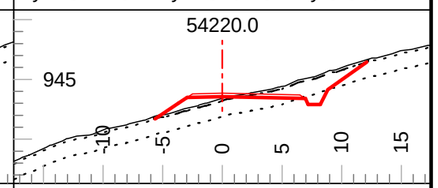

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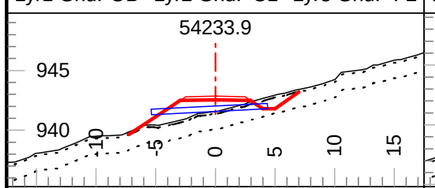

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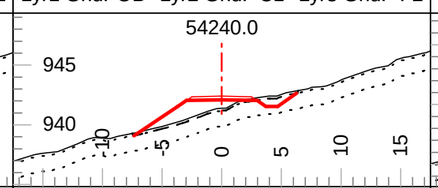

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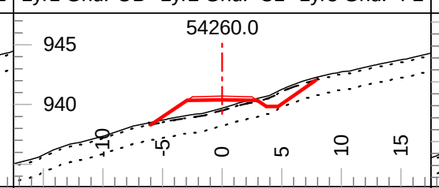

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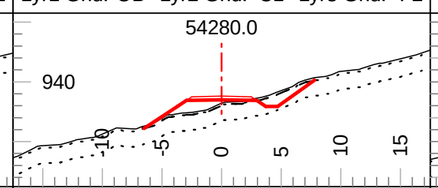

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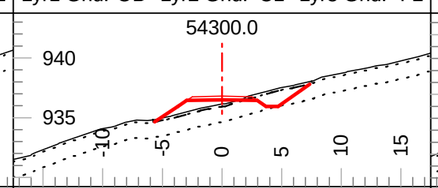

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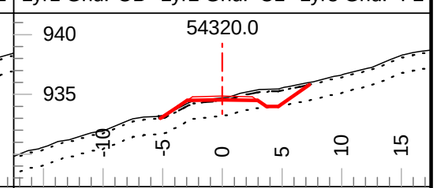

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

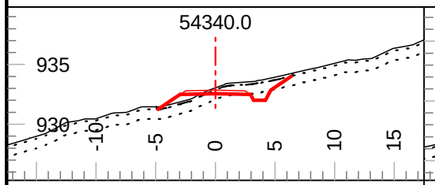
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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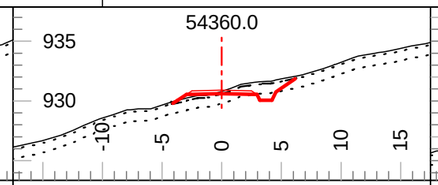

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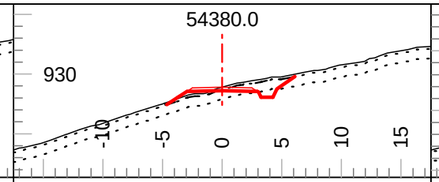

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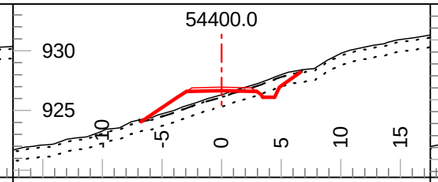

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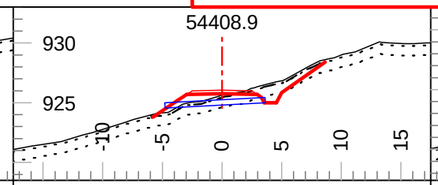

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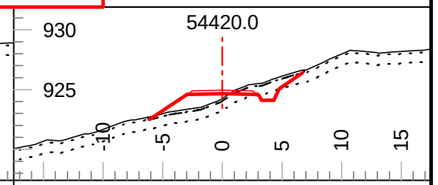

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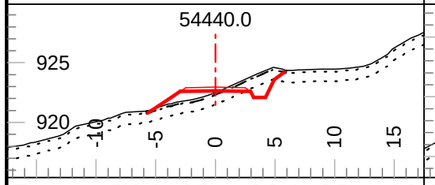

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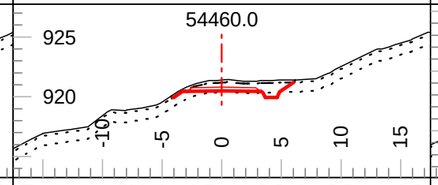

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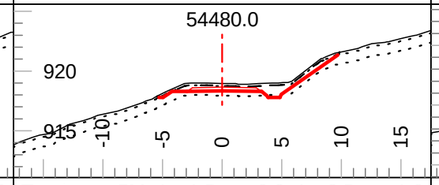

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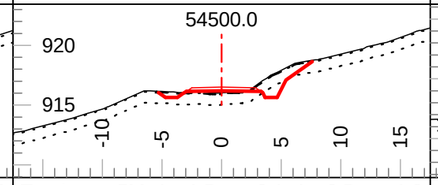

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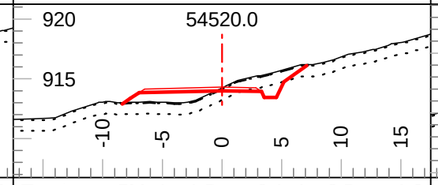

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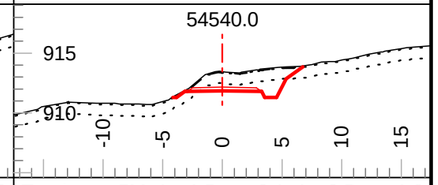
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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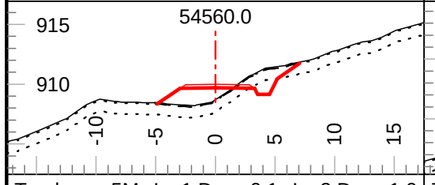

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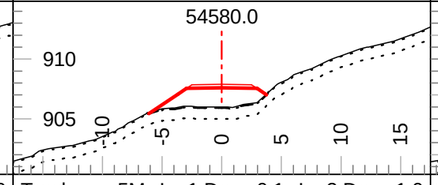

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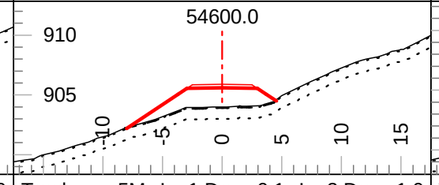

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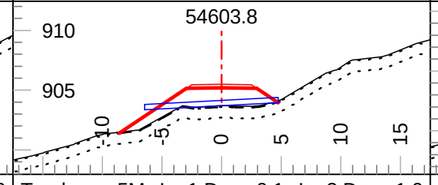

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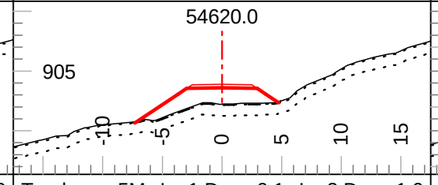

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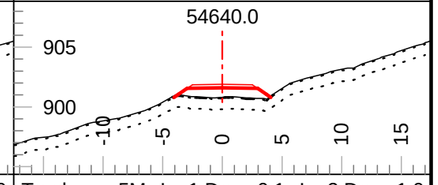

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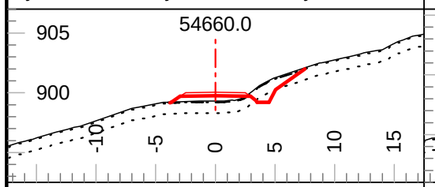

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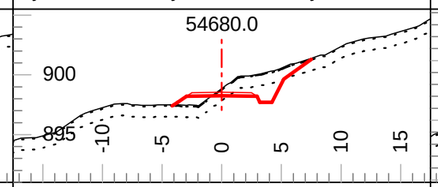

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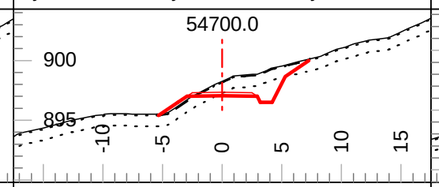

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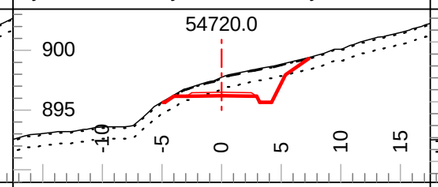

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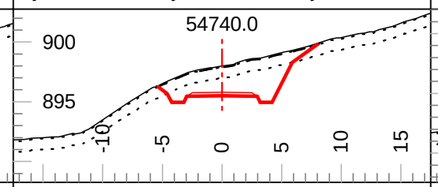

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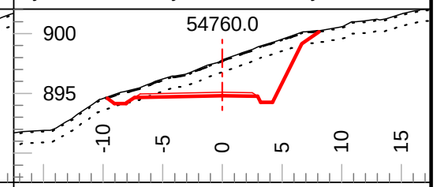

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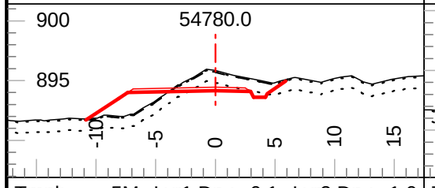

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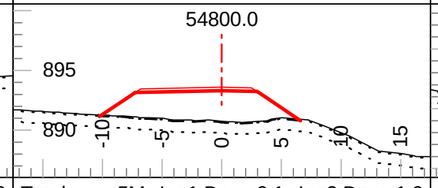

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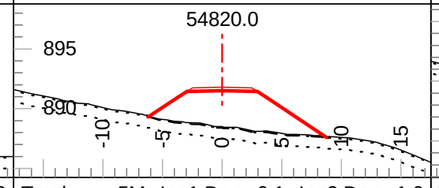

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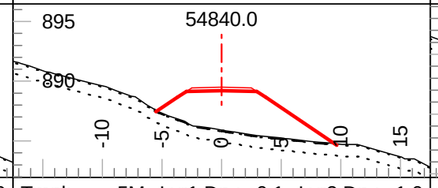

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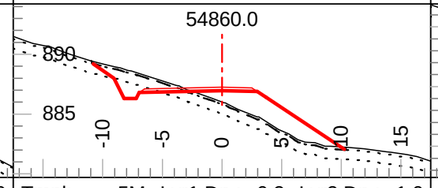

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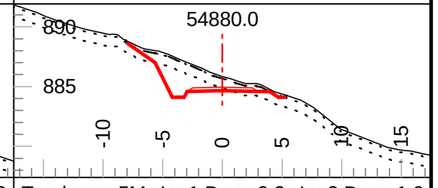

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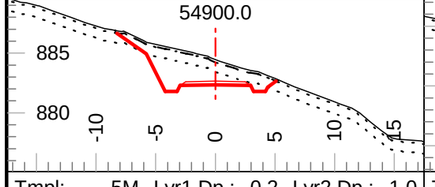

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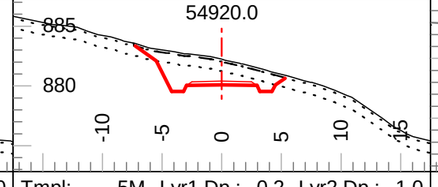

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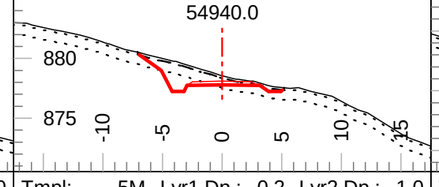

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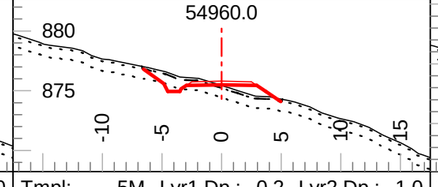

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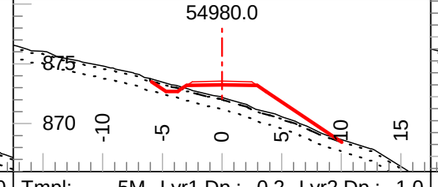

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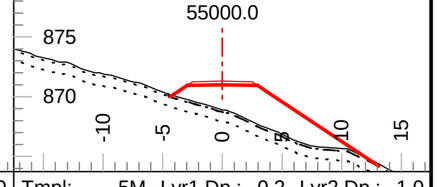


Tmpl: 5M Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.0
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

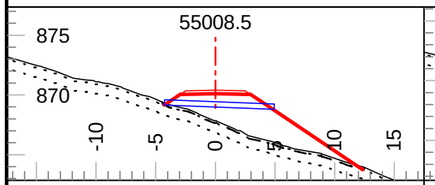
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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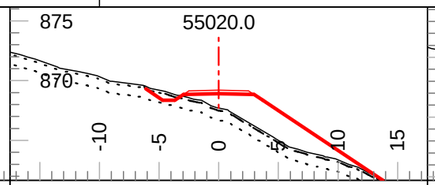

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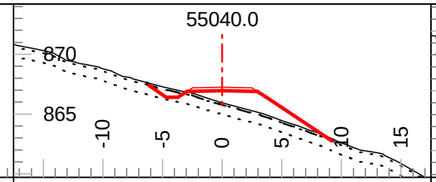

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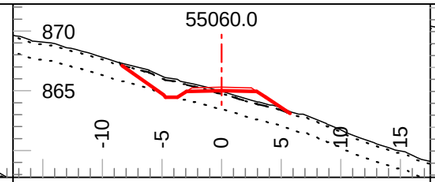
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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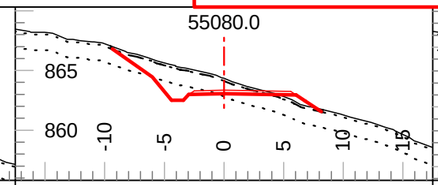
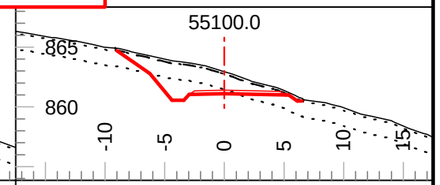


Tmpl: 5M Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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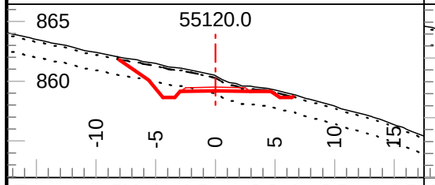
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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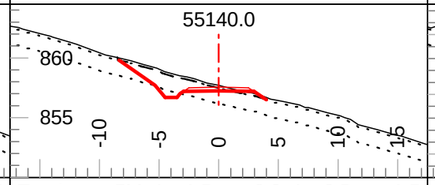
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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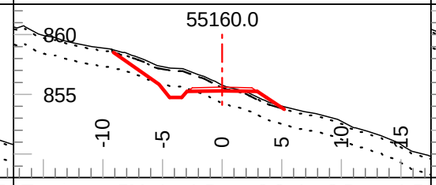

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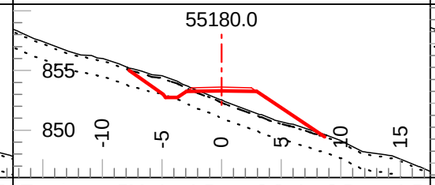
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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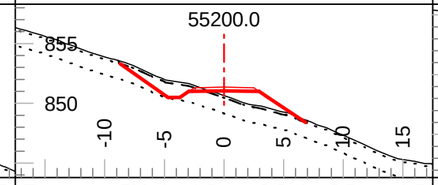

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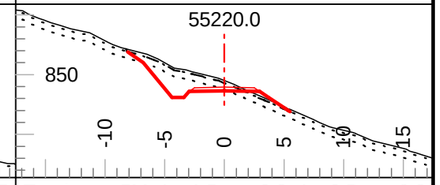
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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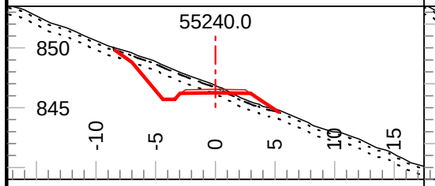
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F1



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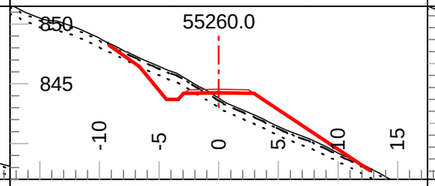

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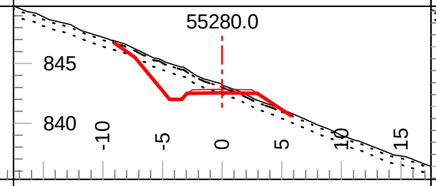

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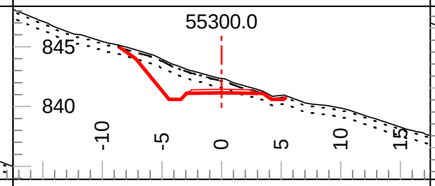

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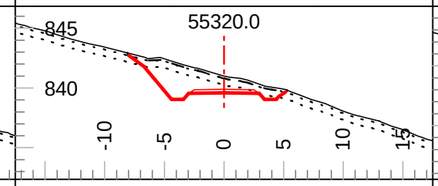

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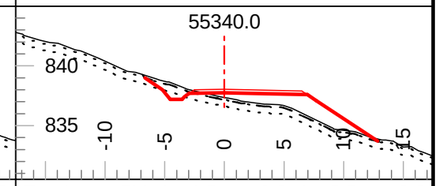

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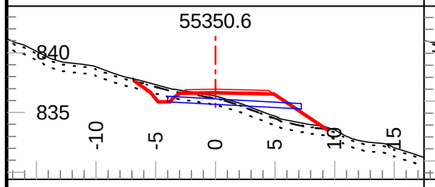

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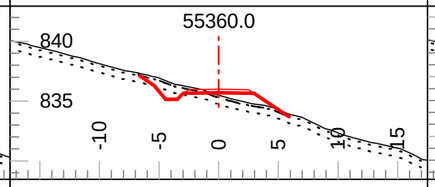

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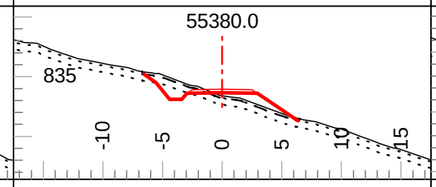

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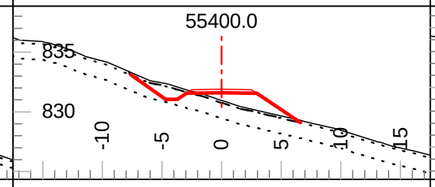

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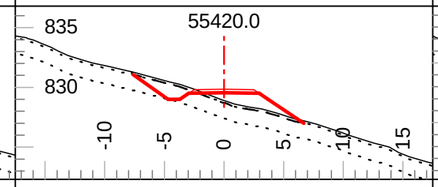

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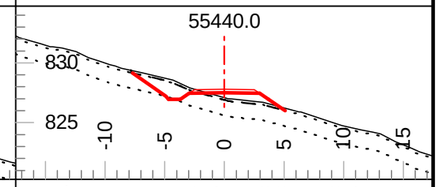

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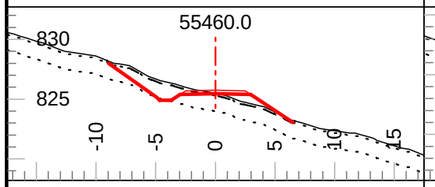

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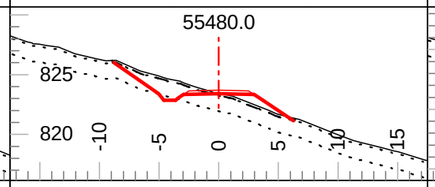

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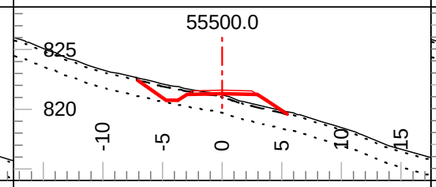

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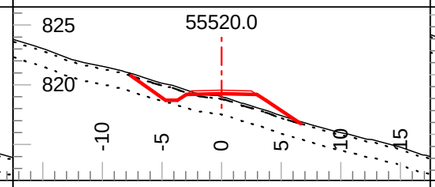

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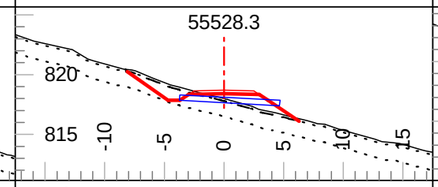

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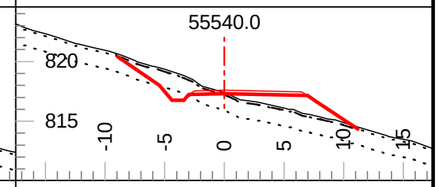

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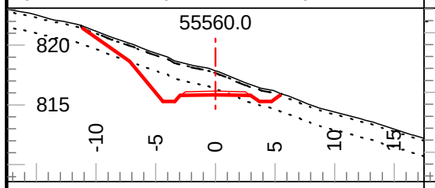

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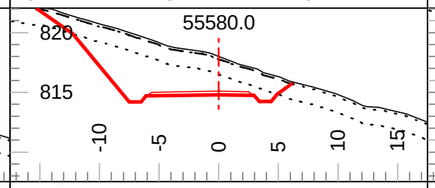

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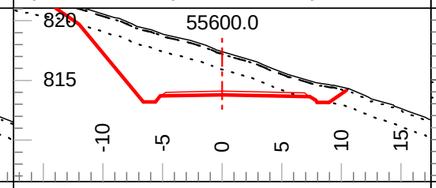

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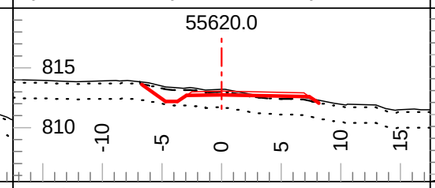

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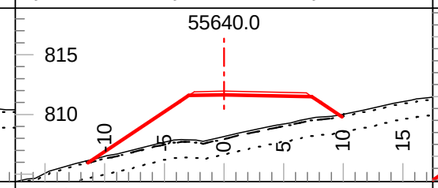

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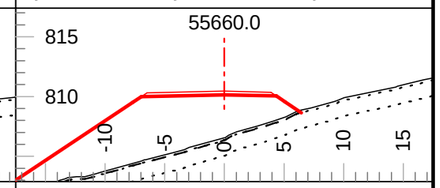

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Coffee Gold Mine

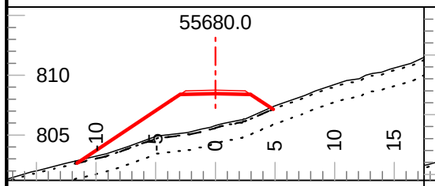
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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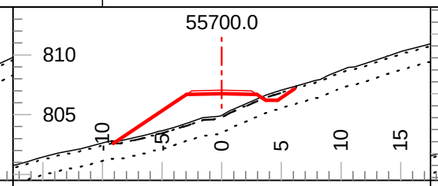

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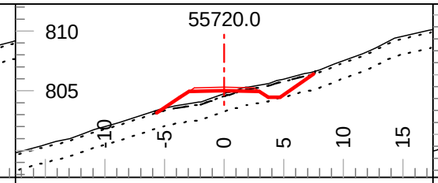

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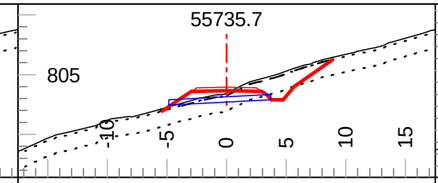

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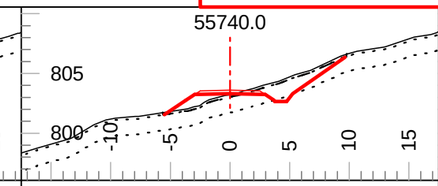

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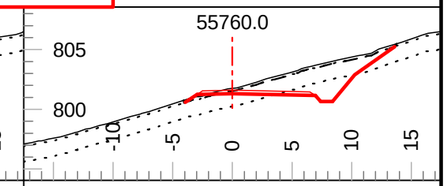

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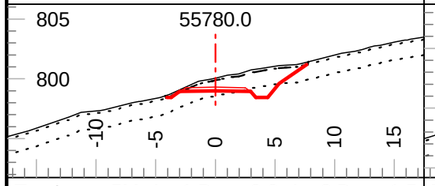

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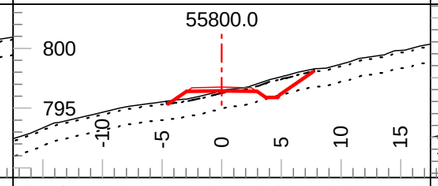

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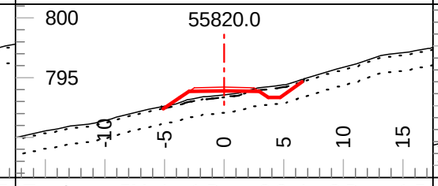

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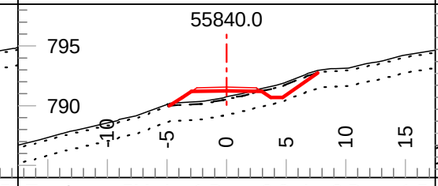

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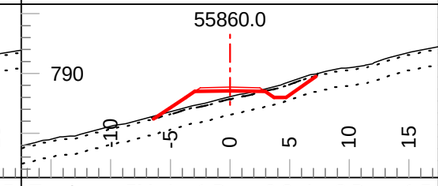

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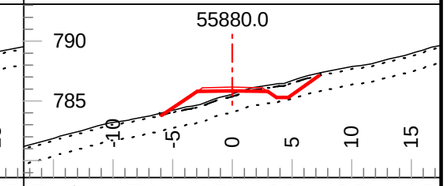

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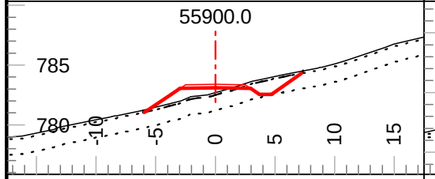
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F1



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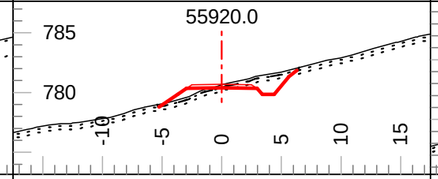
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F1



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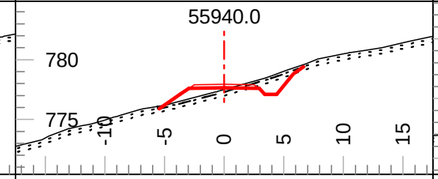

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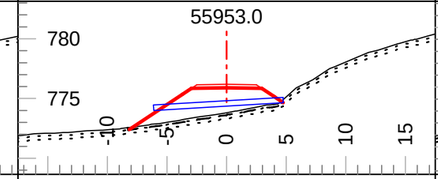

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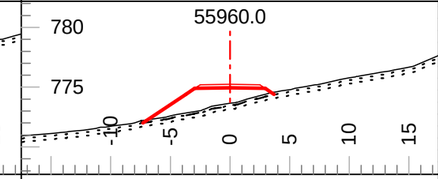

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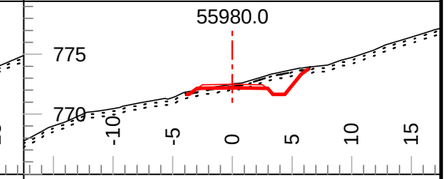

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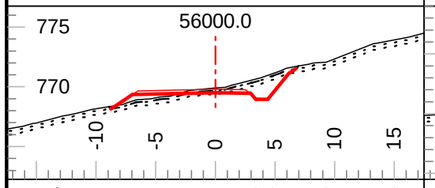

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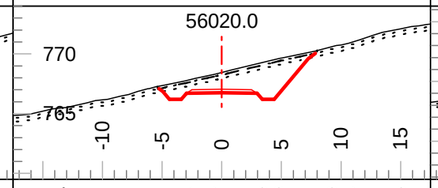

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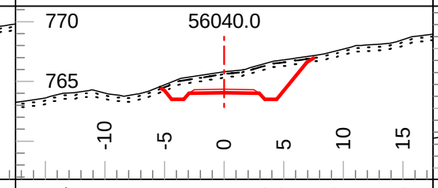

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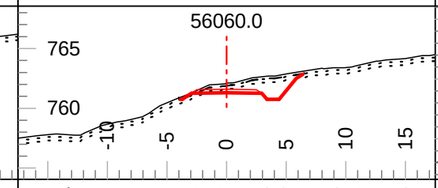

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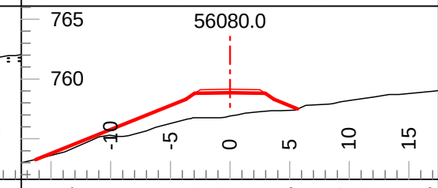

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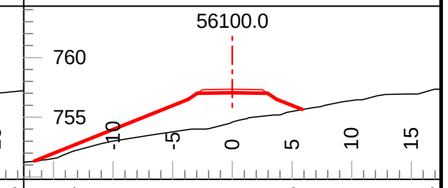
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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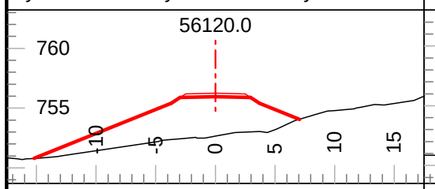

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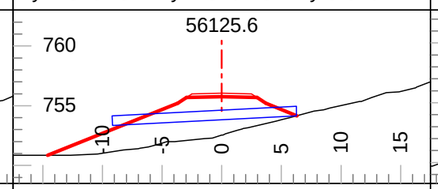

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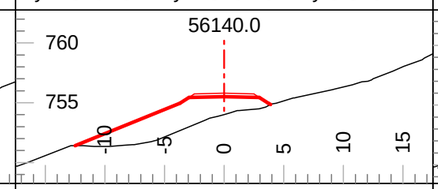

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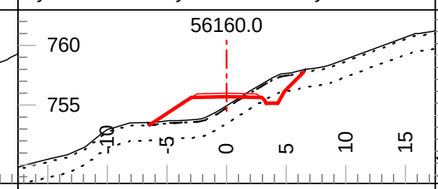

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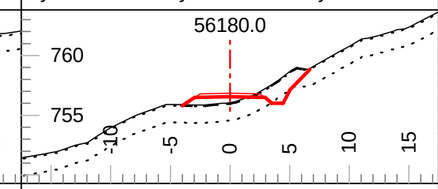
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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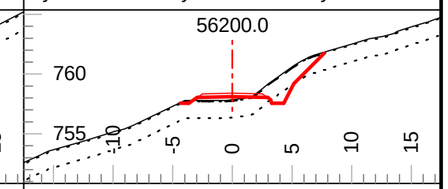

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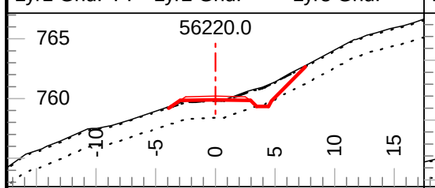

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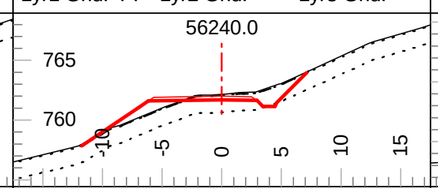

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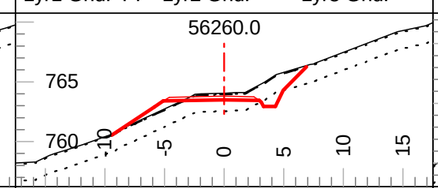

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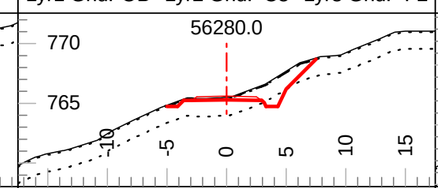

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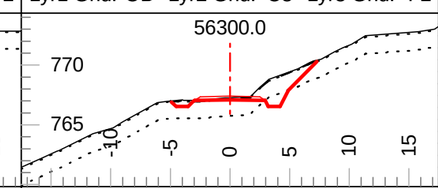

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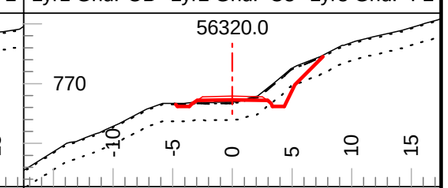

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Coffee Gold Mine

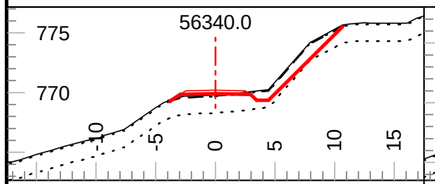
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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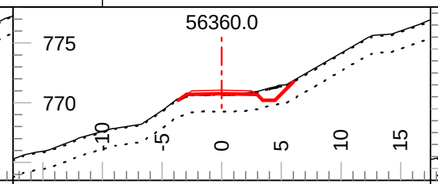
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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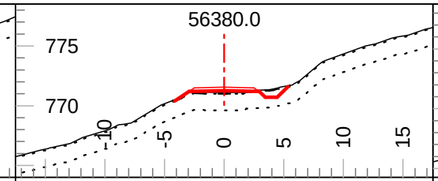

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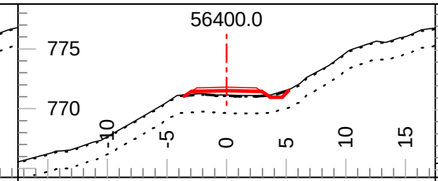

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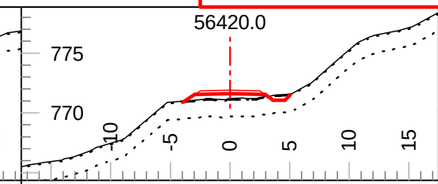

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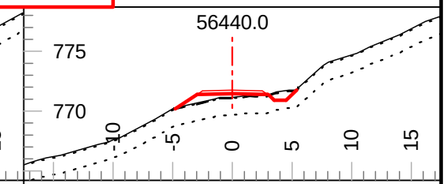

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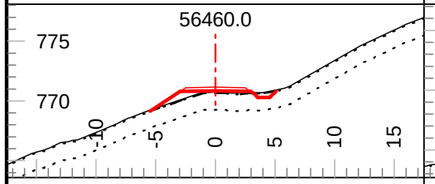

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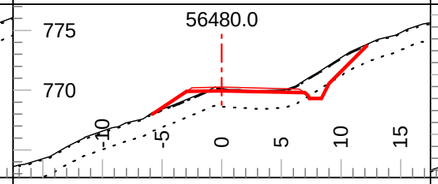

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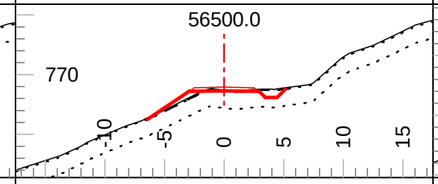

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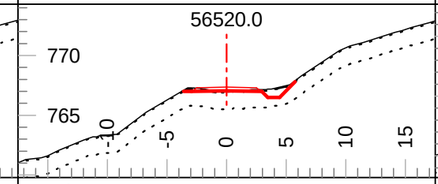

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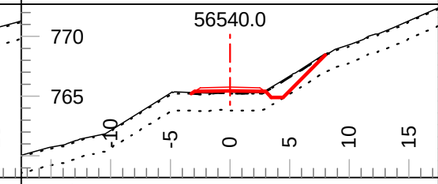

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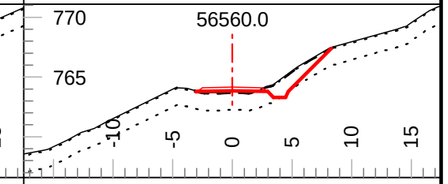

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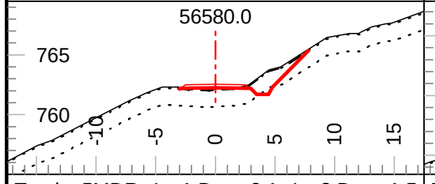

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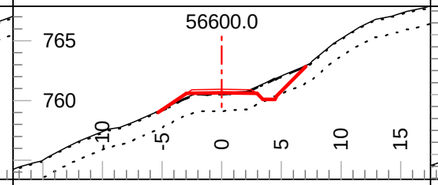

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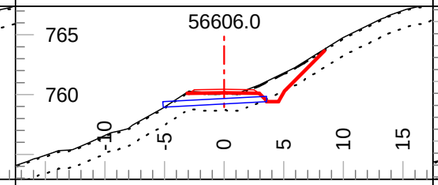

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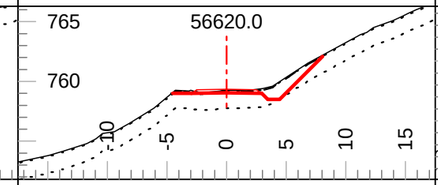

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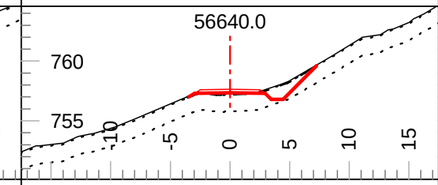

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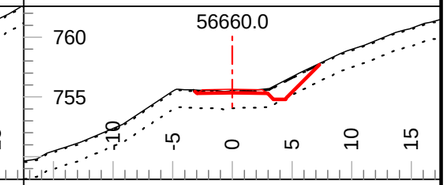

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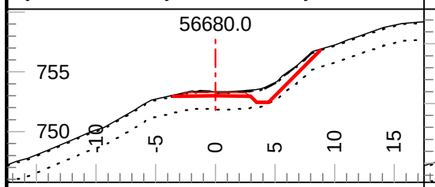

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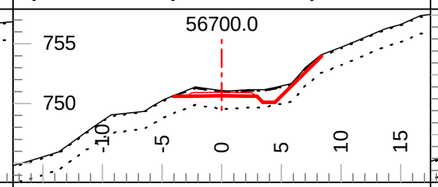

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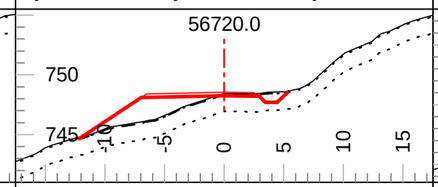

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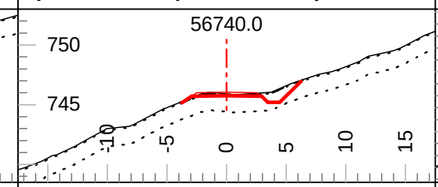

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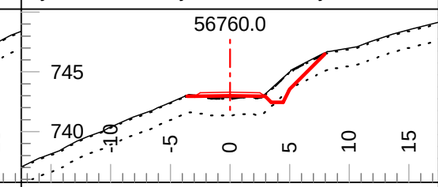

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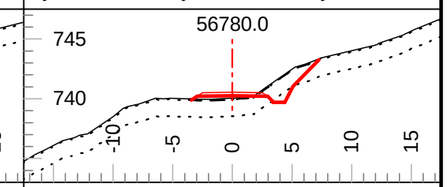

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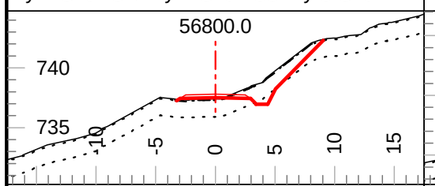

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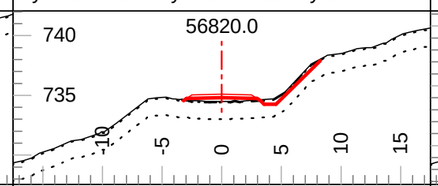

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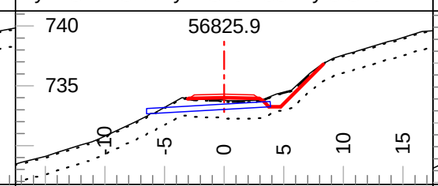

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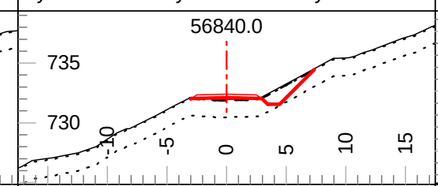

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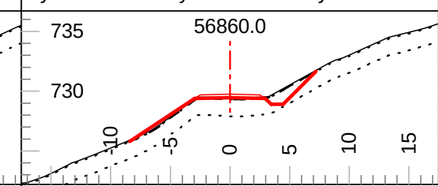

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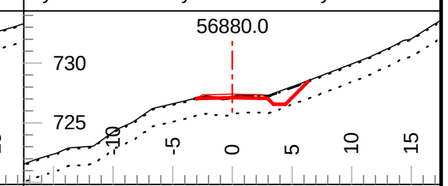

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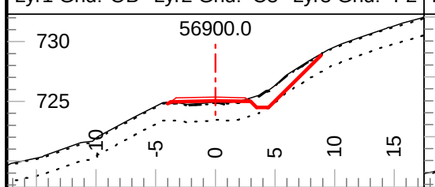

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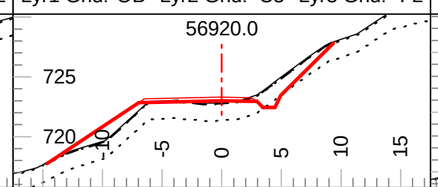

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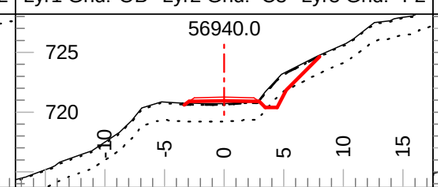

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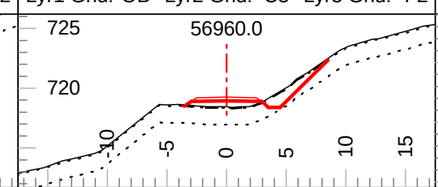

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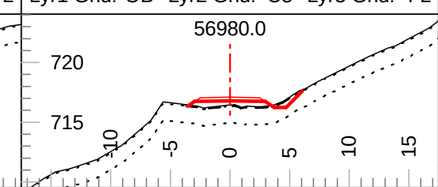

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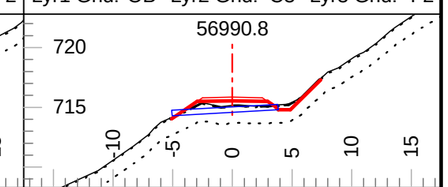

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Coffee Gold Mine

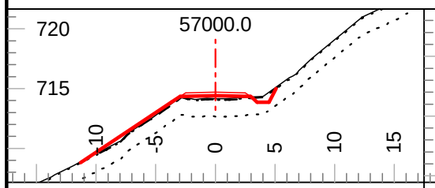
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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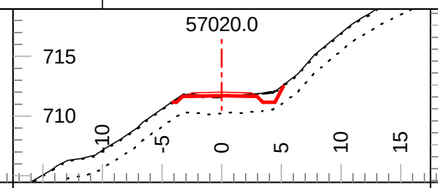

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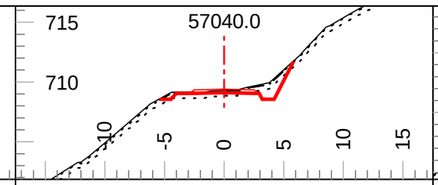

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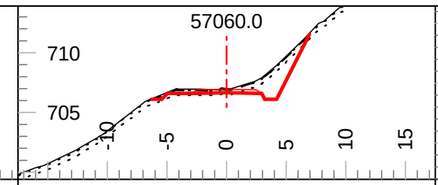

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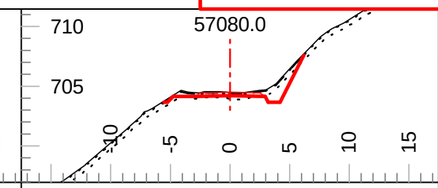

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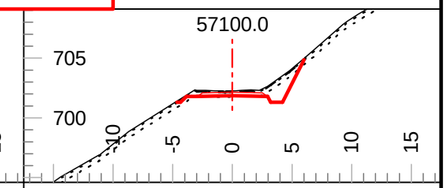

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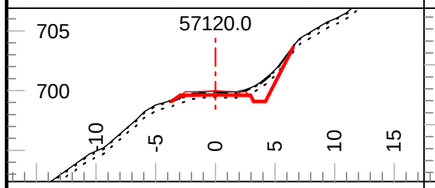

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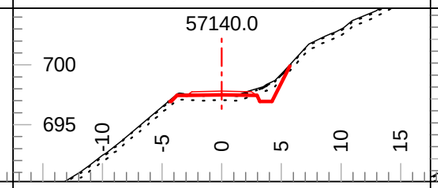

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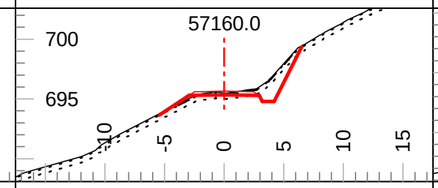

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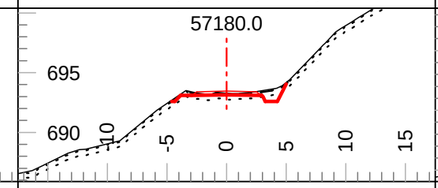

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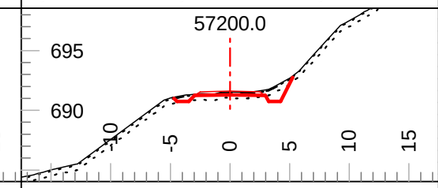

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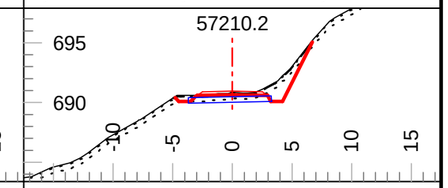

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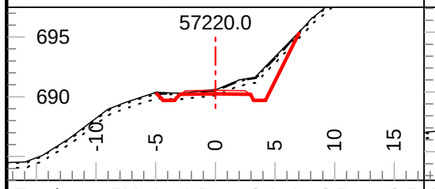

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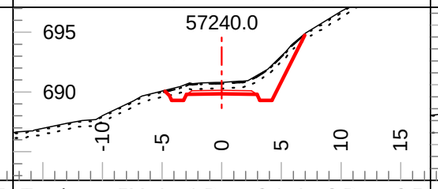

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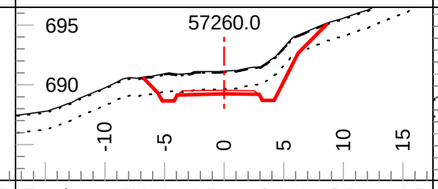

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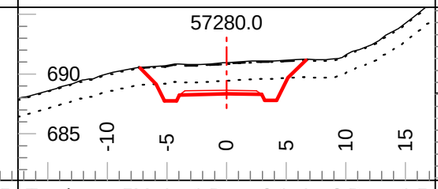

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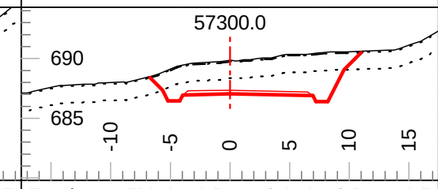

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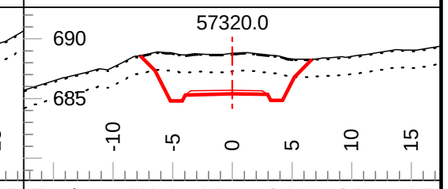

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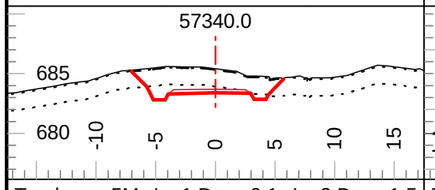

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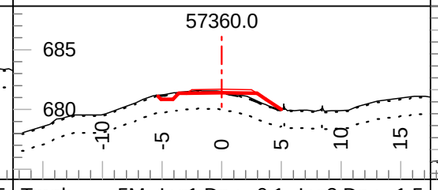

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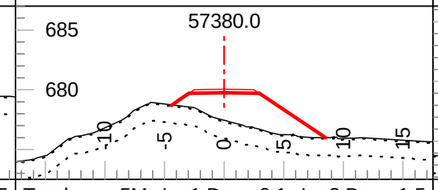

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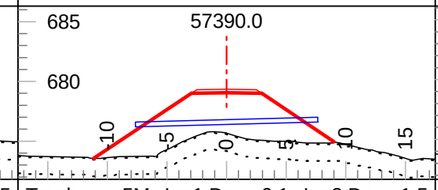

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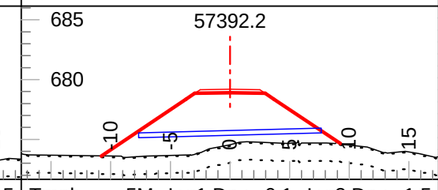

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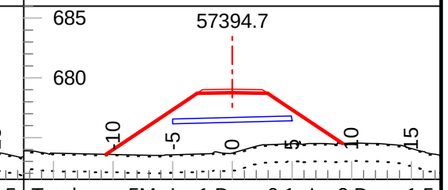

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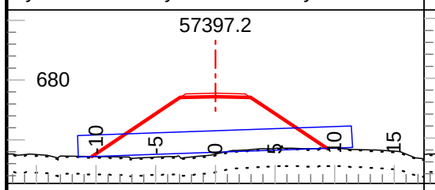

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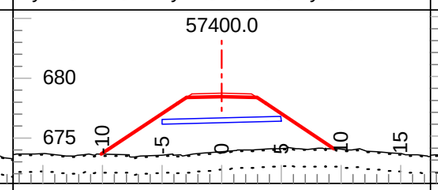
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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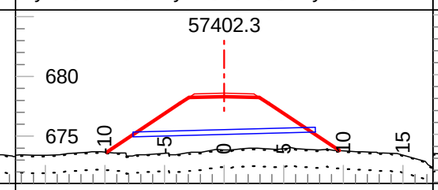

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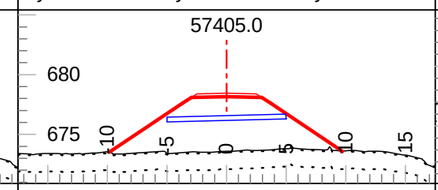

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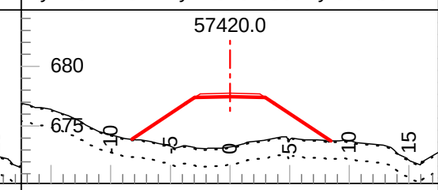

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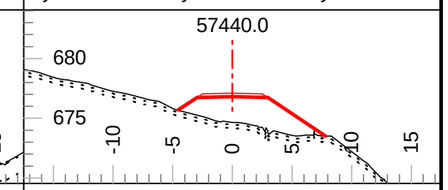

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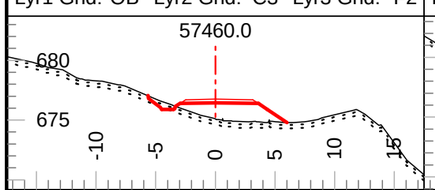

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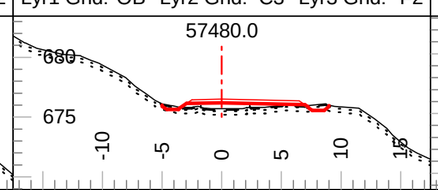

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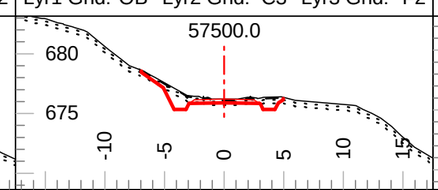

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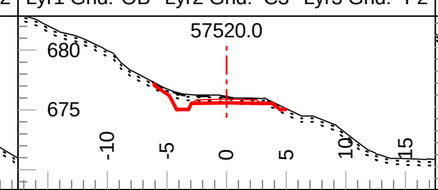

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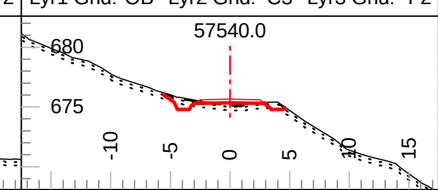

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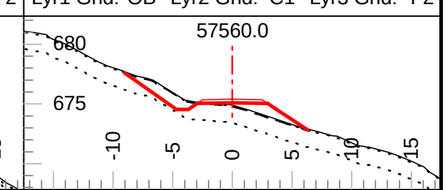

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

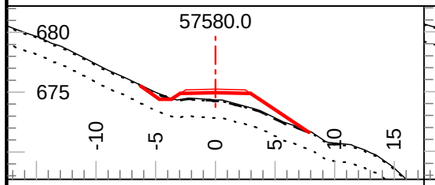
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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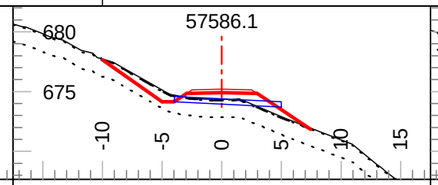
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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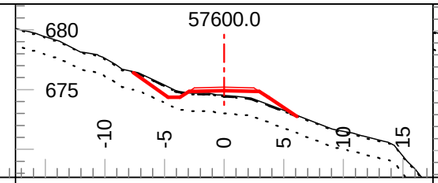

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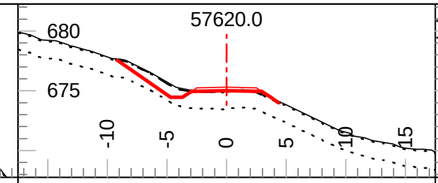

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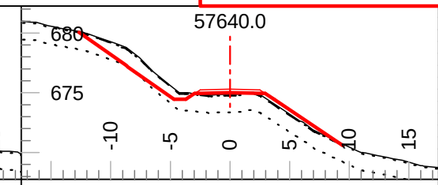

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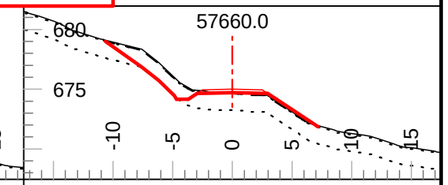

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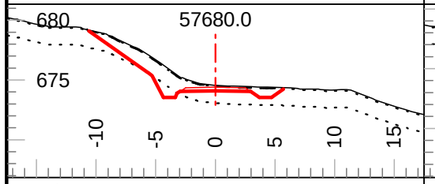

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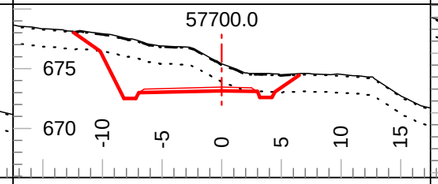

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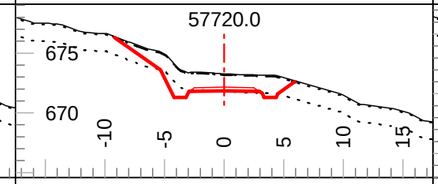

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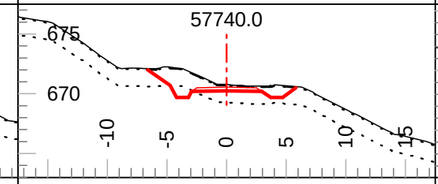

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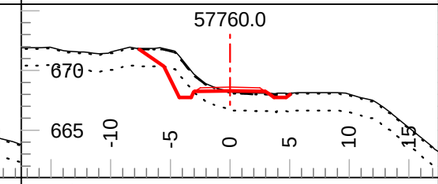

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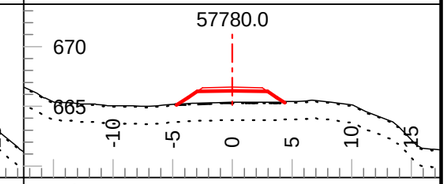

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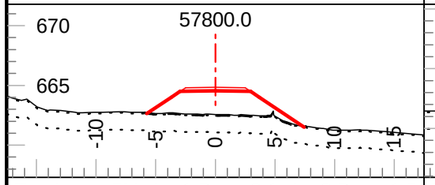

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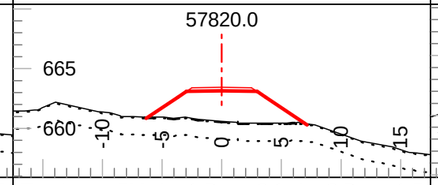

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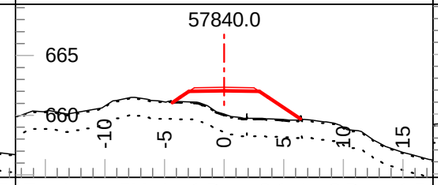

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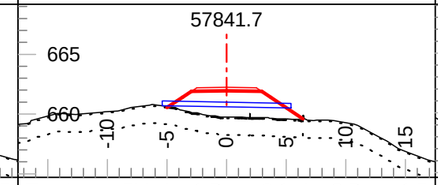

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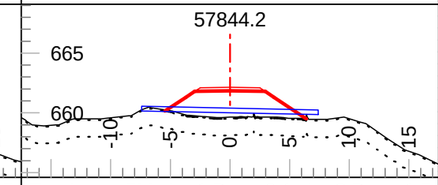

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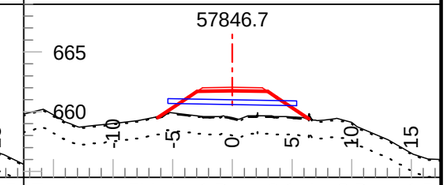

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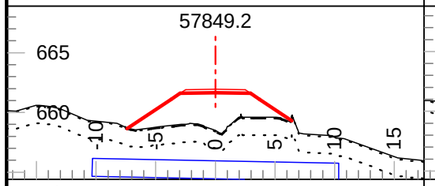

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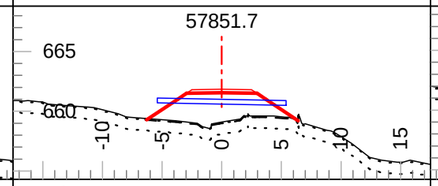

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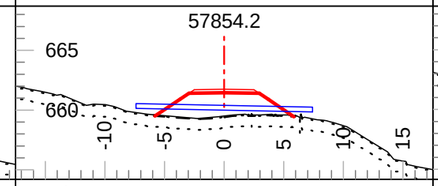

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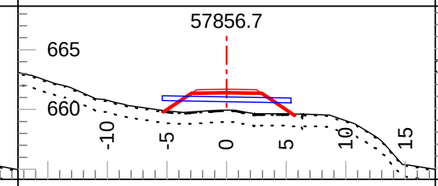

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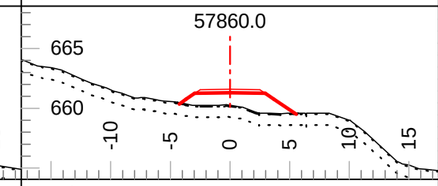

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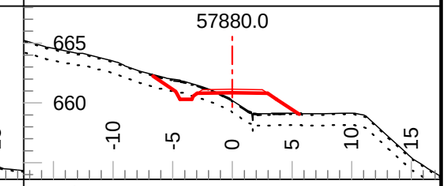

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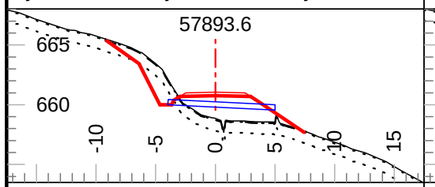

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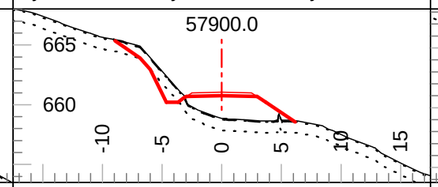

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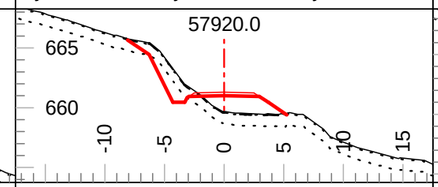

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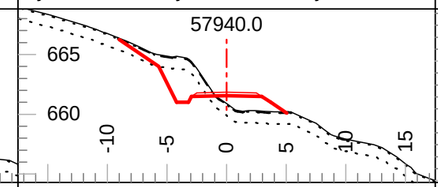

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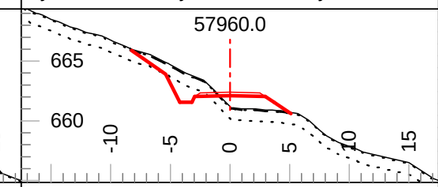

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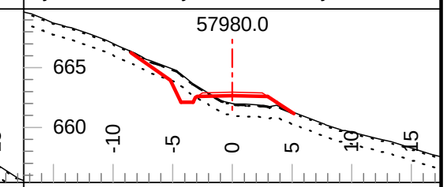

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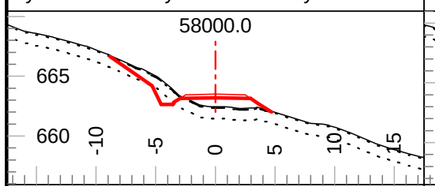

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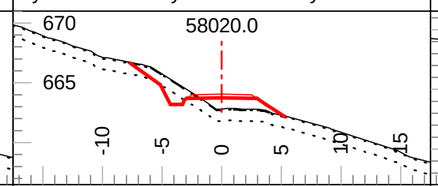
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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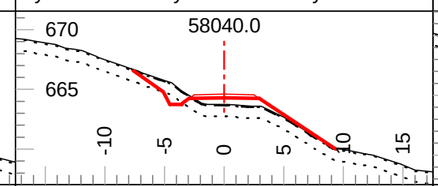

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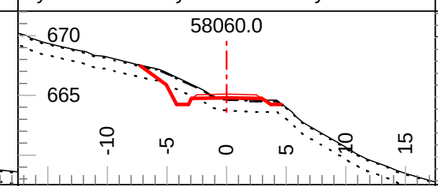

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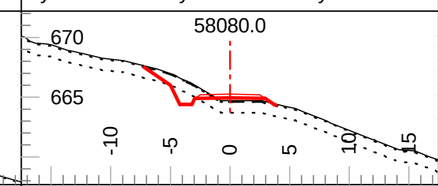

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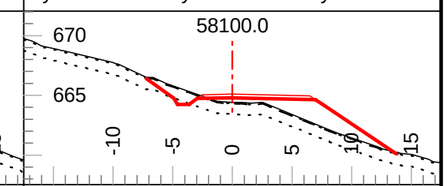


Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 1.0
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

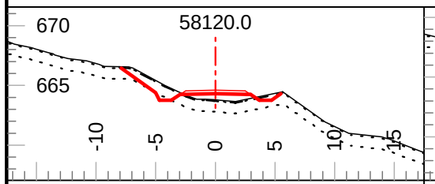
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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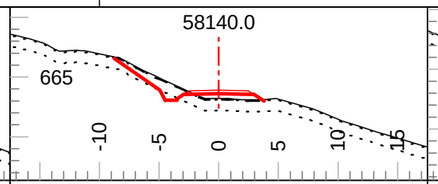
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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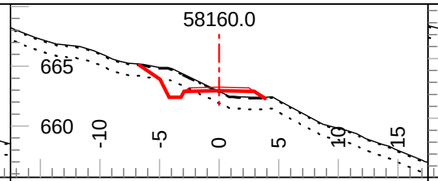

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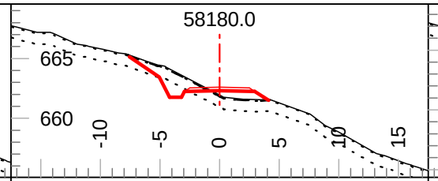

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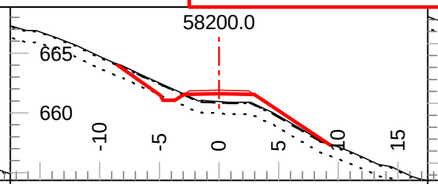

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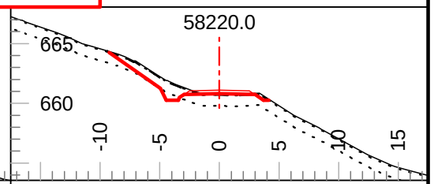

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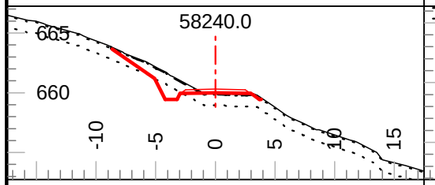

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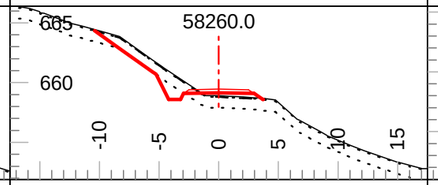

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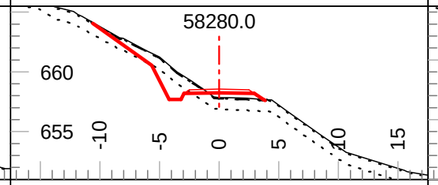

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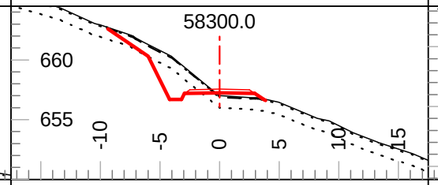

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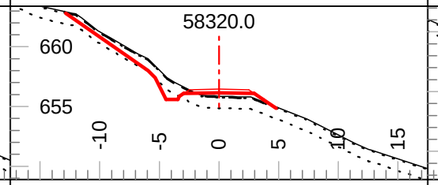

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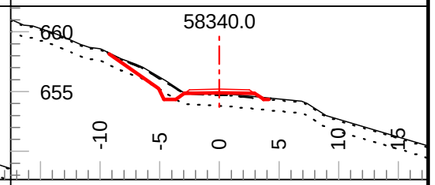

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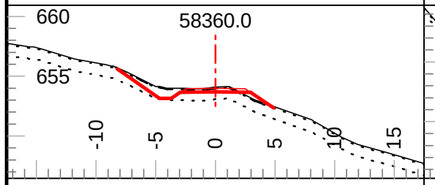
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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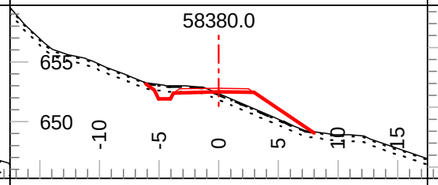

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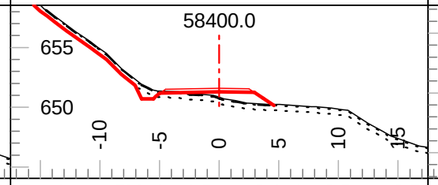

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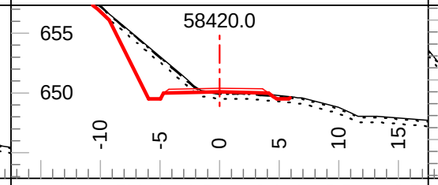

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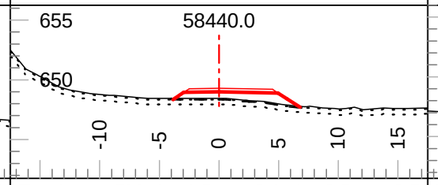

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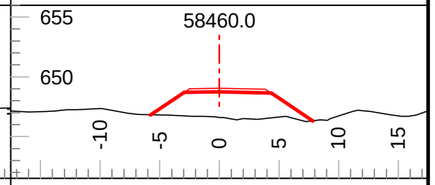

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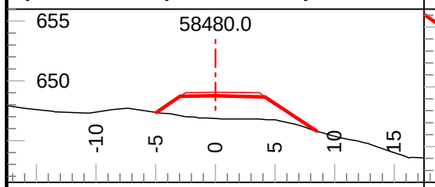

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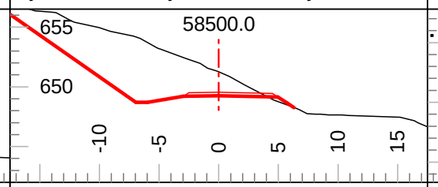

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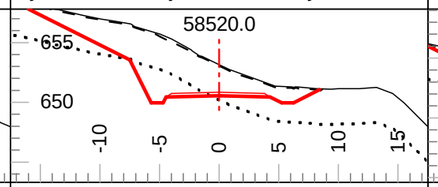

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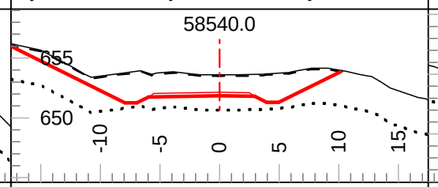
Lyr1 Gnd: SI Lyr2 Gnd: SI Lyr3 Gnd: F2



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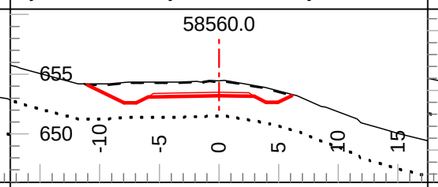

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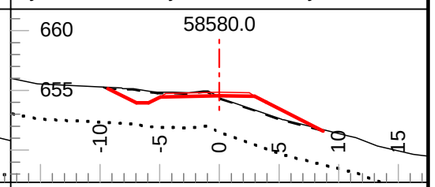

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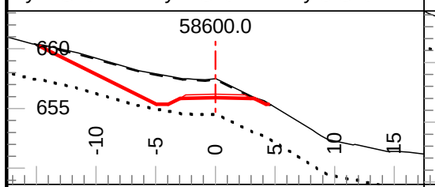

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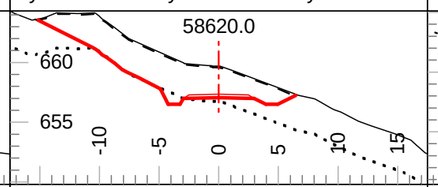

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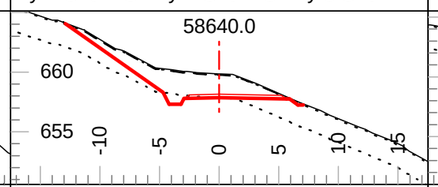

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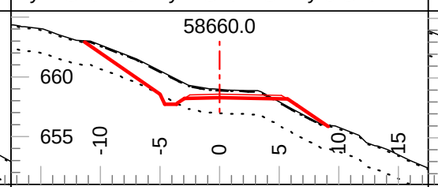

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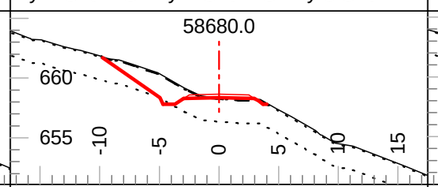

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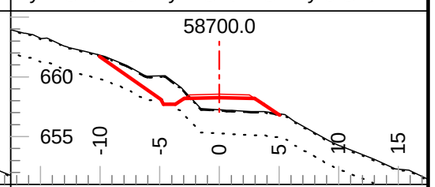

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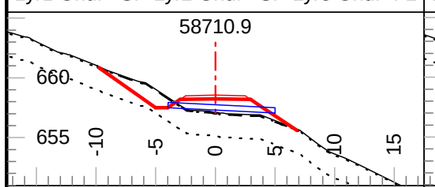

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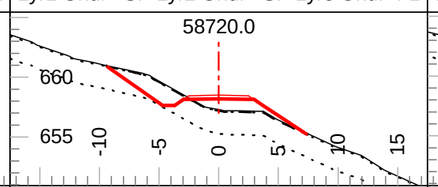

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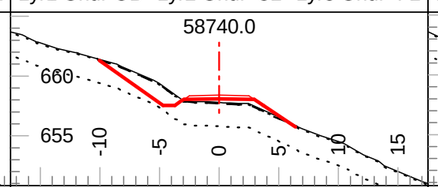

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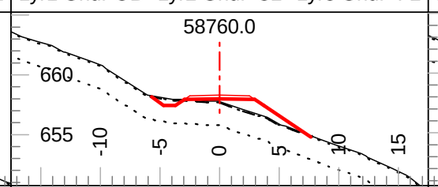

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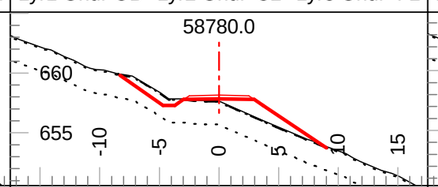

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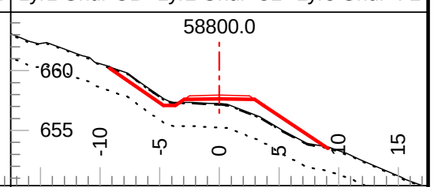


Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 2.0
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

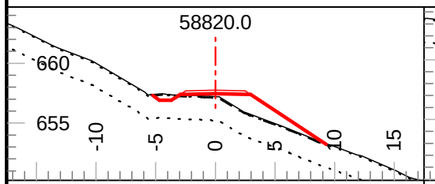
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

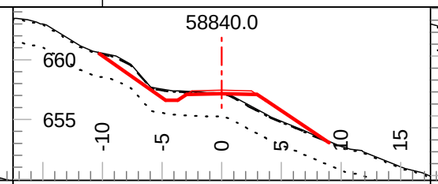
Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 2.0
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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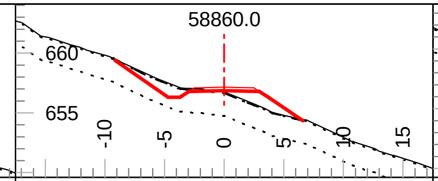
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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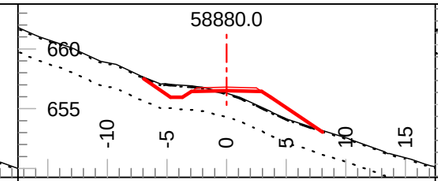

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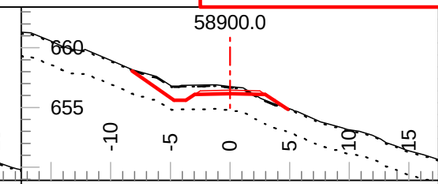

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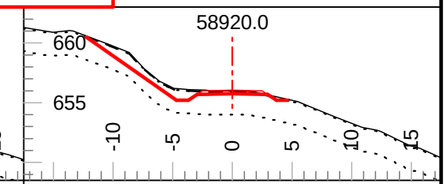

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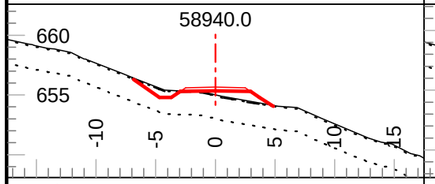

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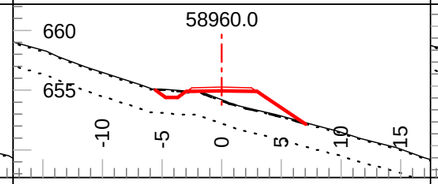

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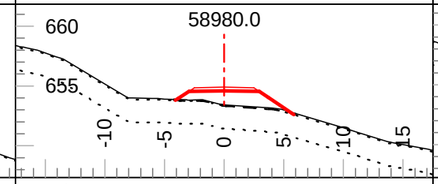

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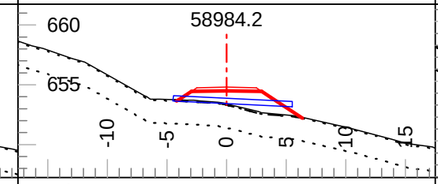

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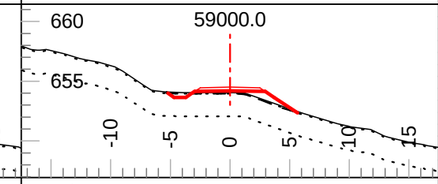

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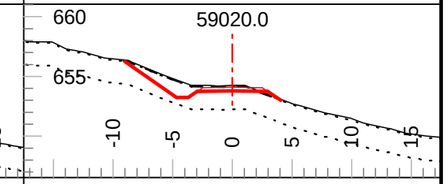

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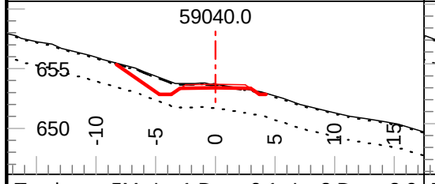

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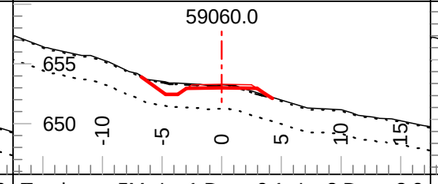

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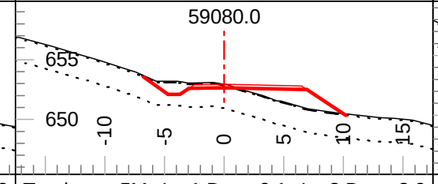

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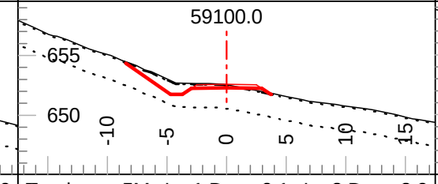

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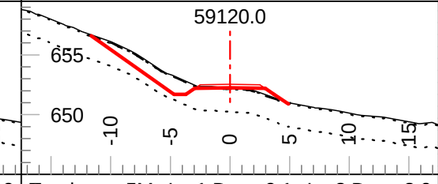

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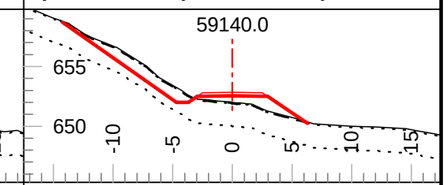

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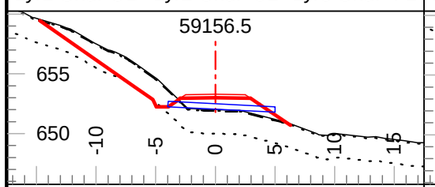

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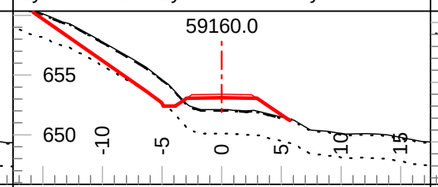

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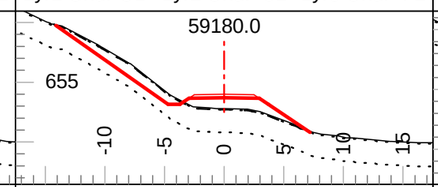

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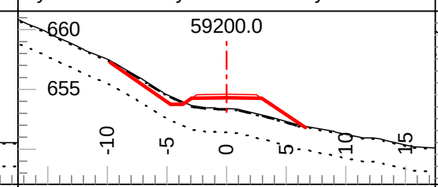

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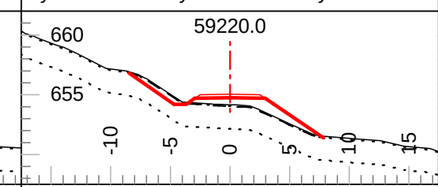

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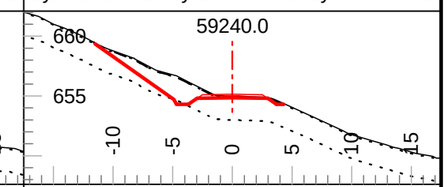

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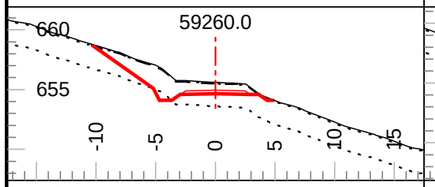

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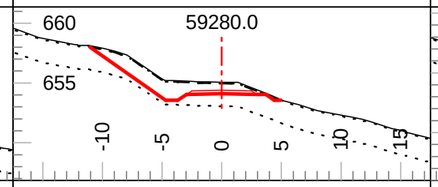

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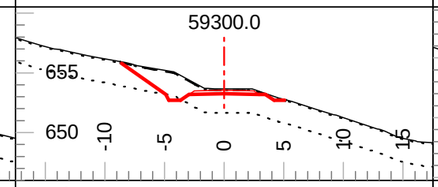

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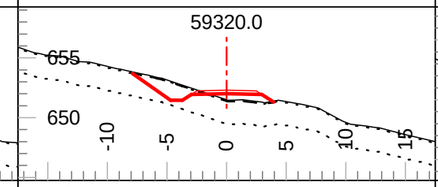

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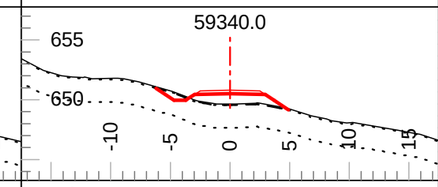

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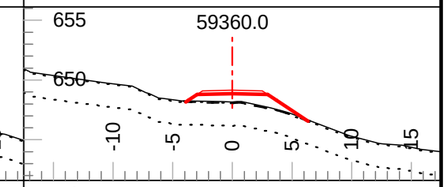

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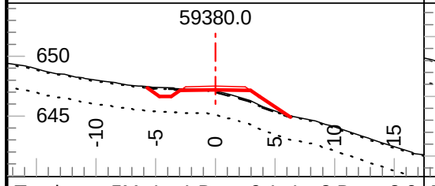

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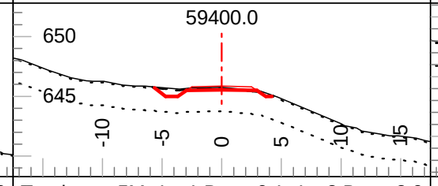

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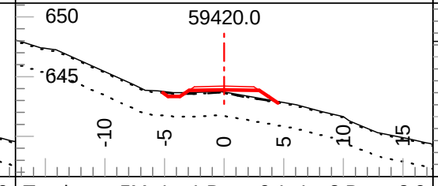

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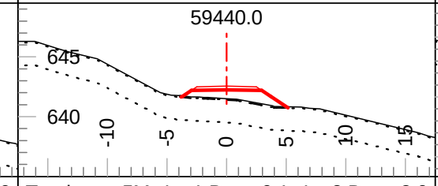

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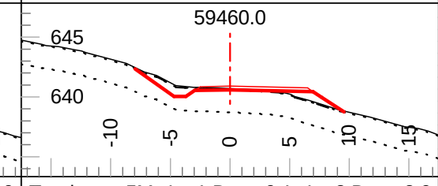

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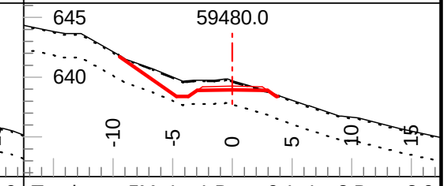

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

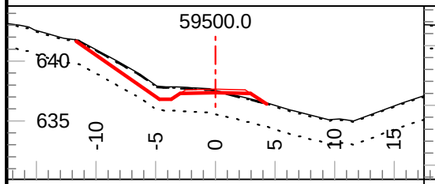
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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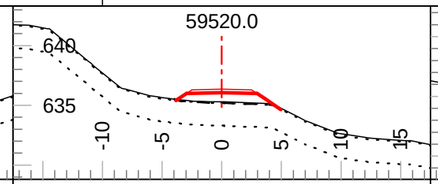

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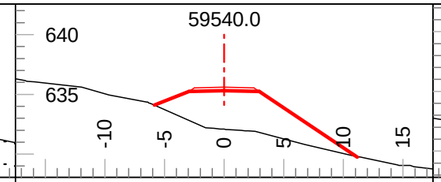

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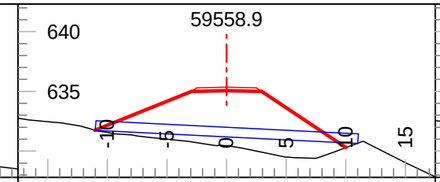
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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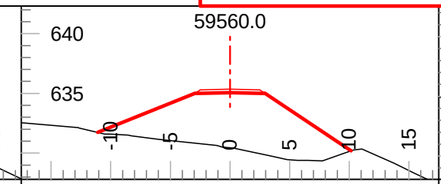

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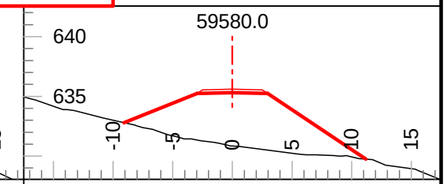

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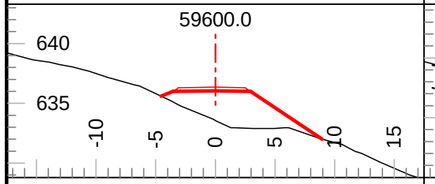

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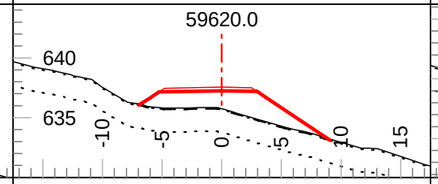

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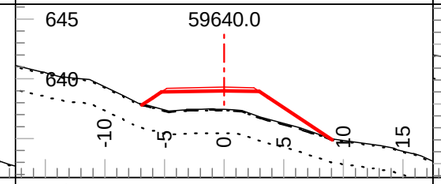
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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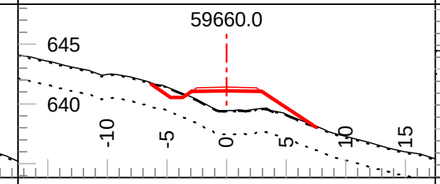

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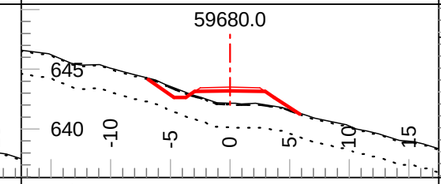

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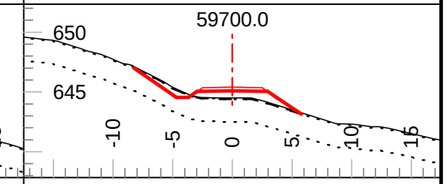

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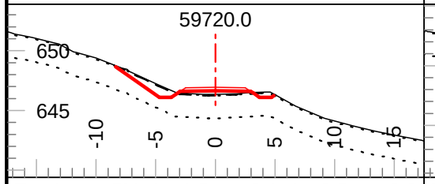

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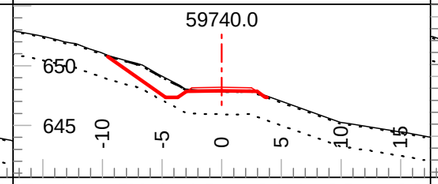

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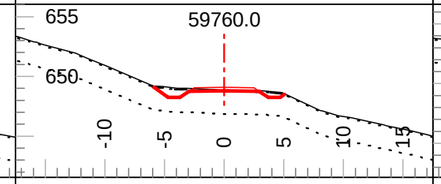

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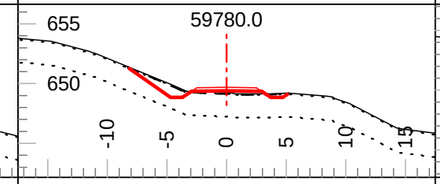

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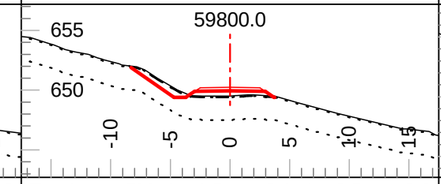

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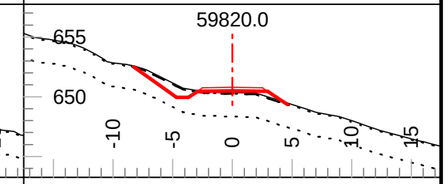

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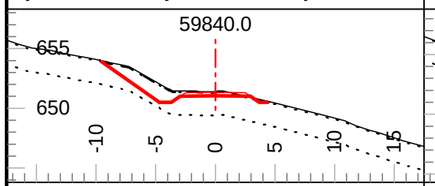

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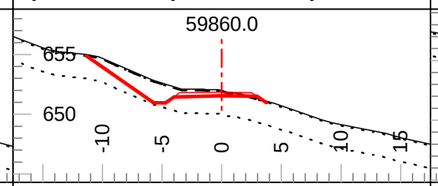

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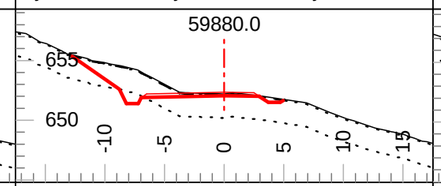

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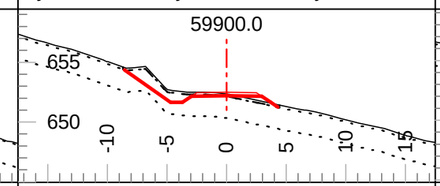

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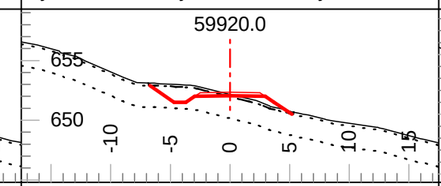

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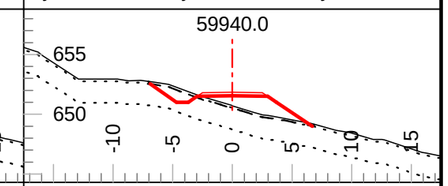

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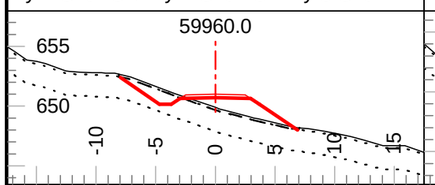

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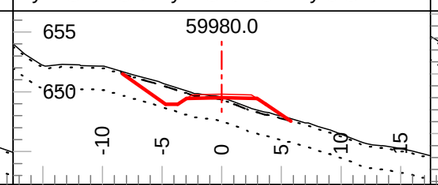

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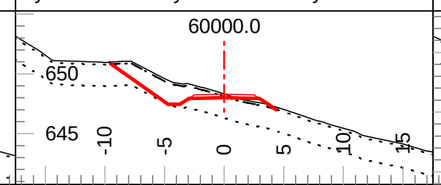

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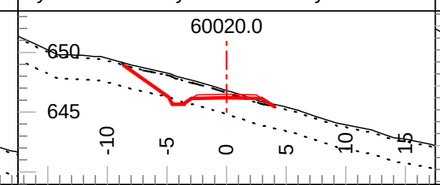

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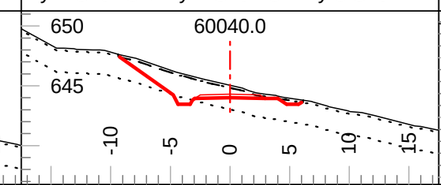

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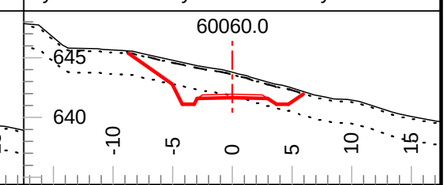

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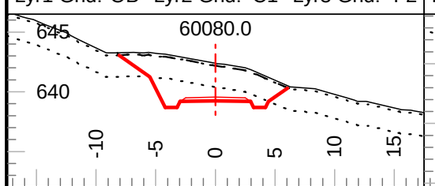

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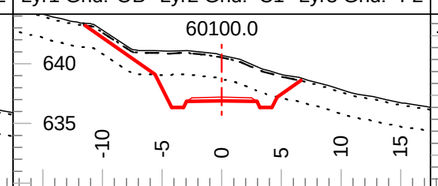

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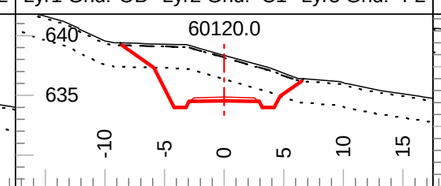

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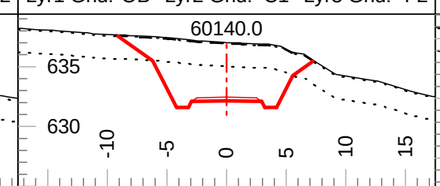

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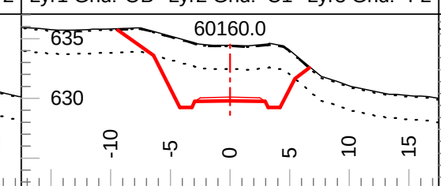

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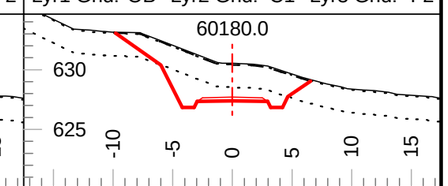

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

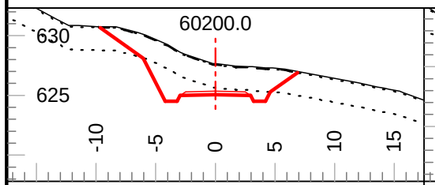
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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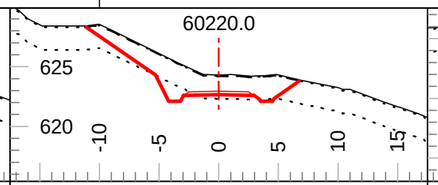

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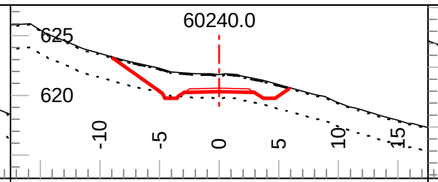

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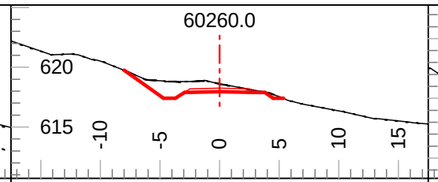

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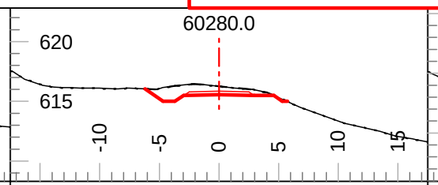

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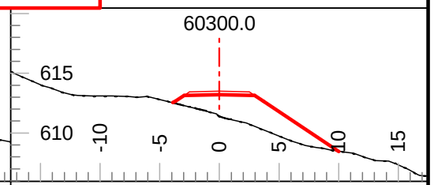

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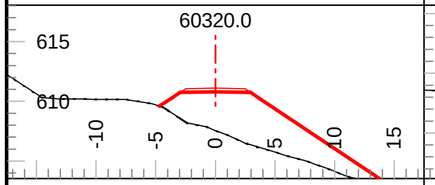

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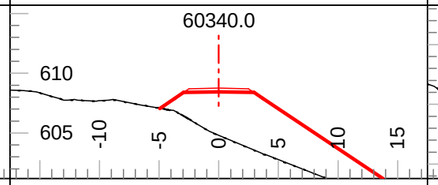

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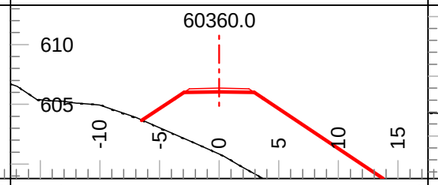

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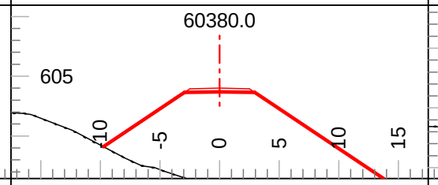

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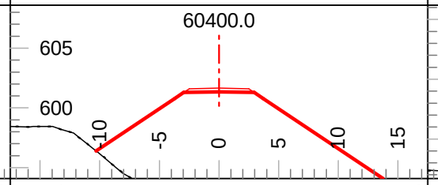

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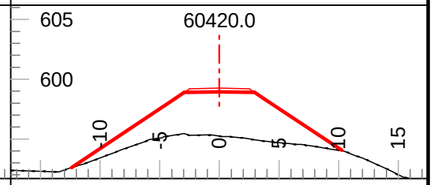

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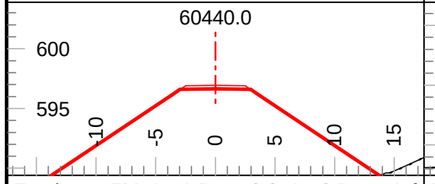

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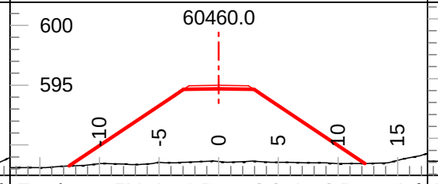

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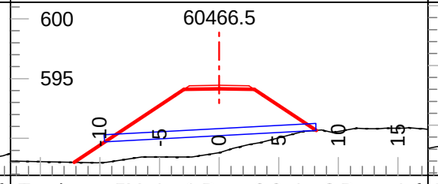

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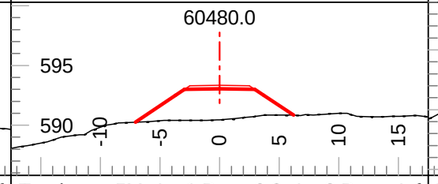
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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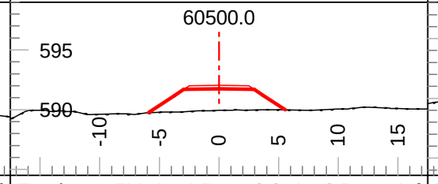

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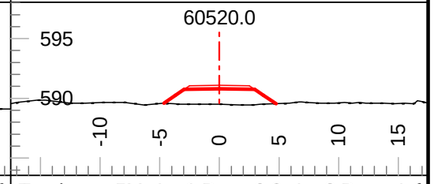

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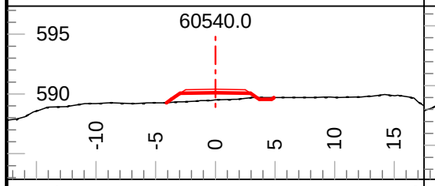

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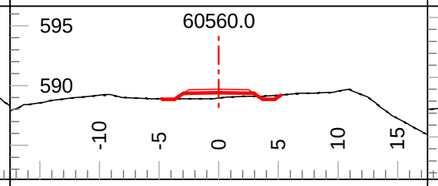

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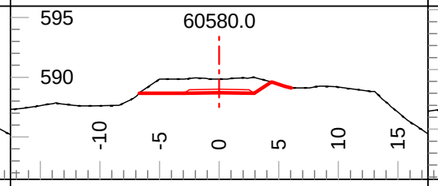

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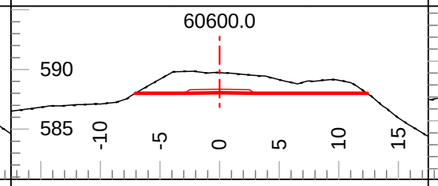

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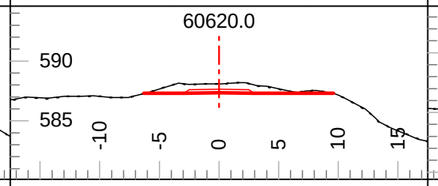

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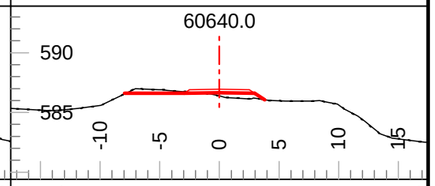

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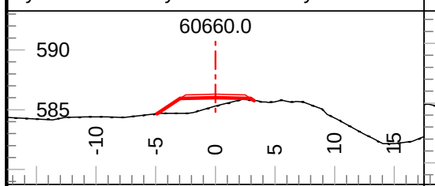

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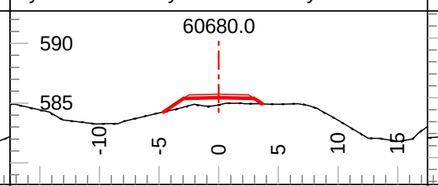

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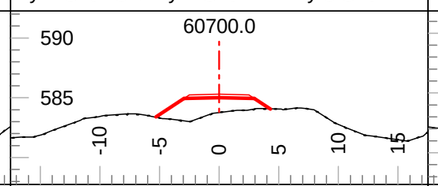

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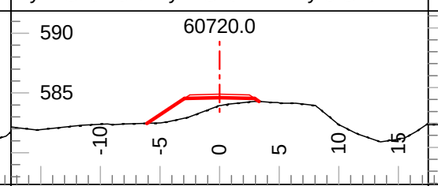

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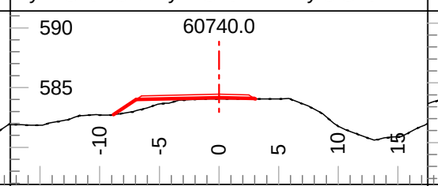

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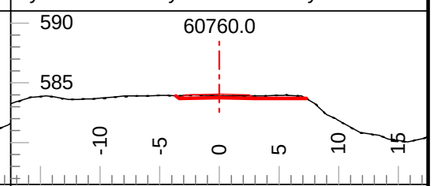

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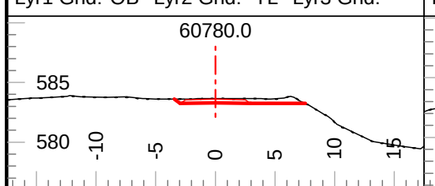

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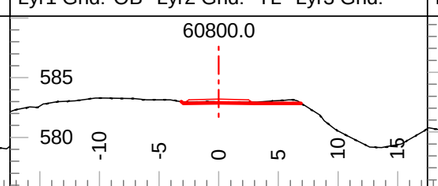

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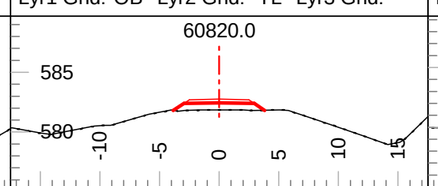

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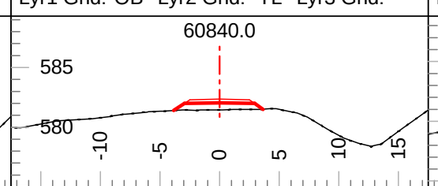

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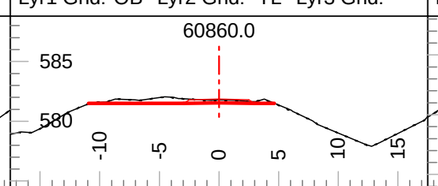

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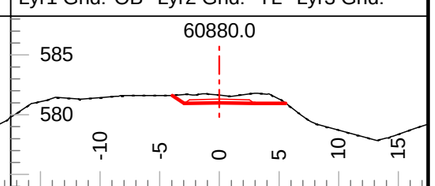

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Coffee Gold Mine

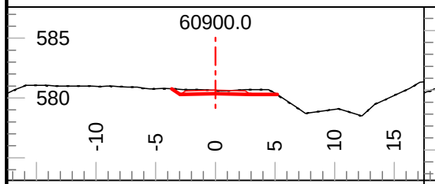
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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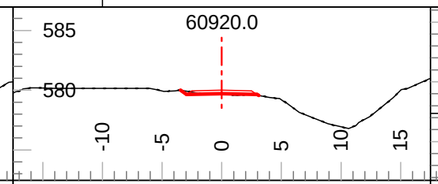

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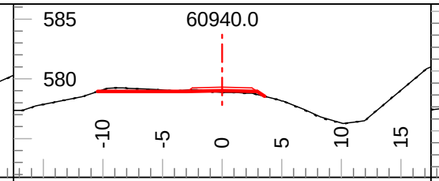

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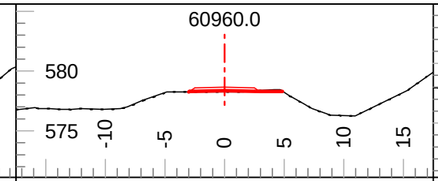

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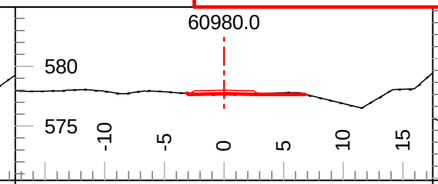

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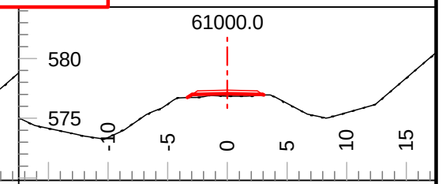

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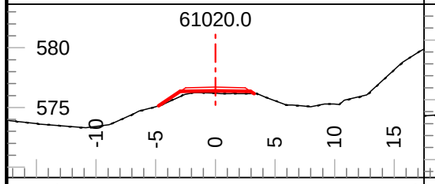

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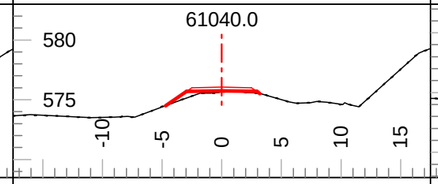

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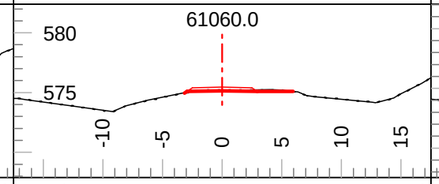

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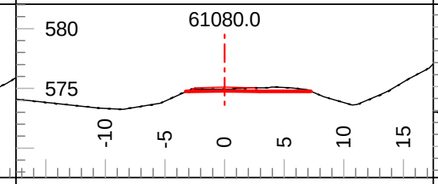

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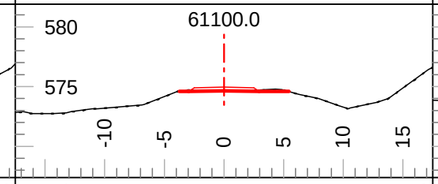

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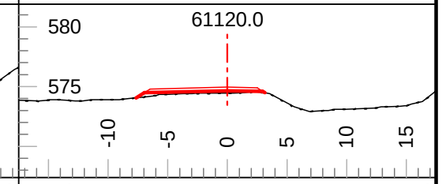

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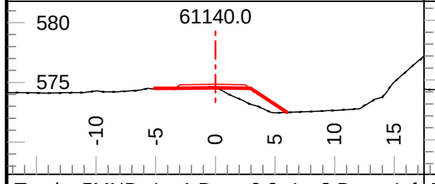

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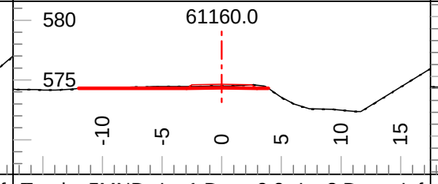

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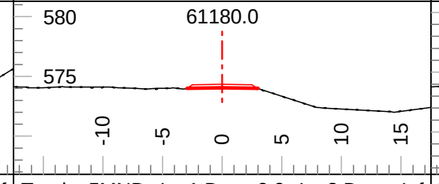

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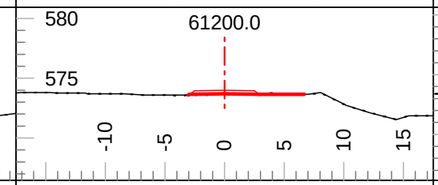

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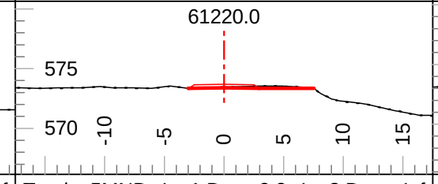

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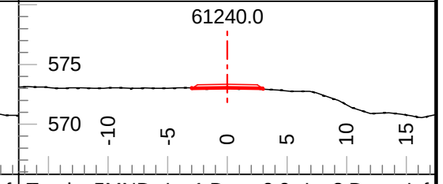

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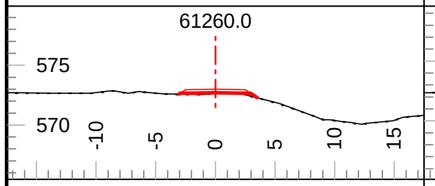

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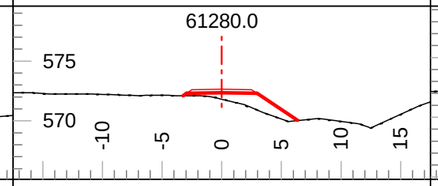

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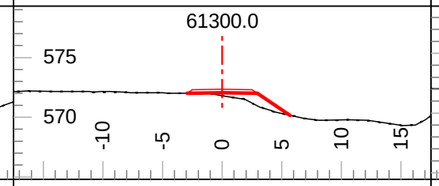

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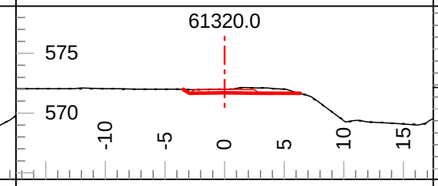

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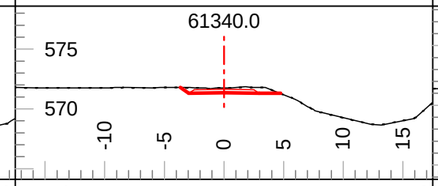

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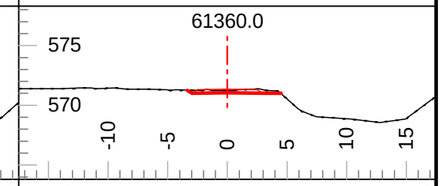

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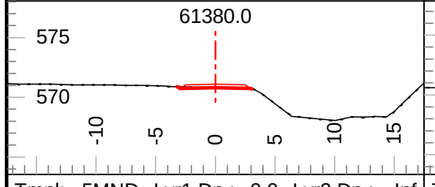

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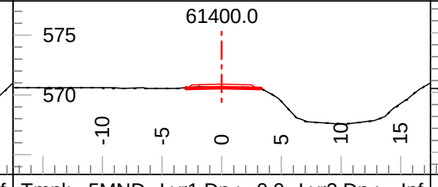

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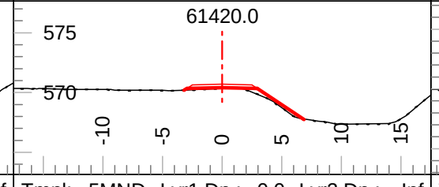

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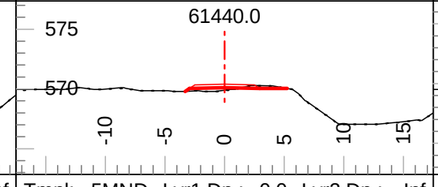

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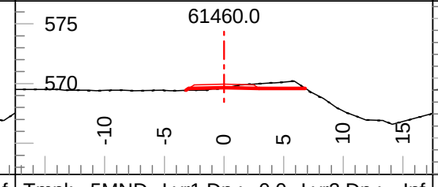

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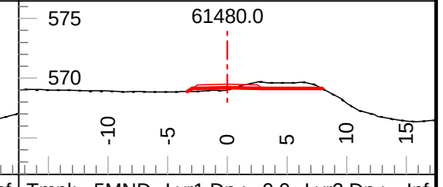

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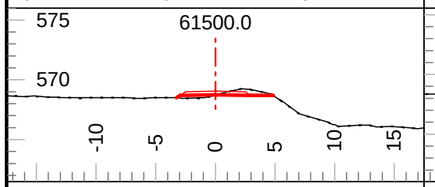

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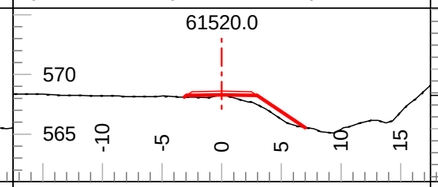

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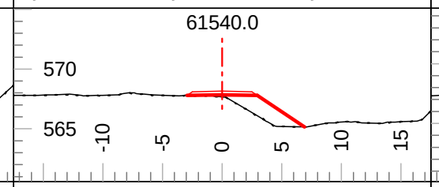

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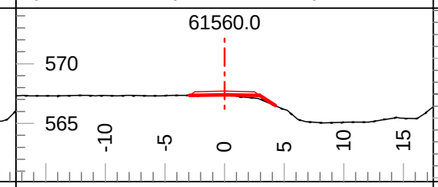

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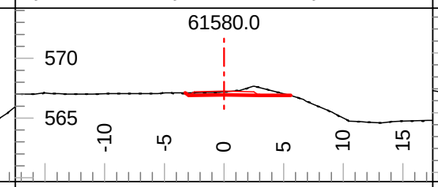

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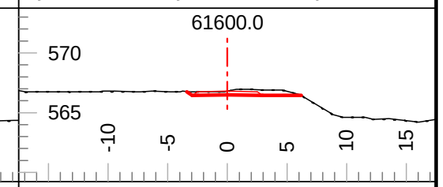

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Coffee Gold Mine

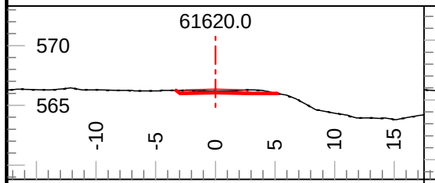
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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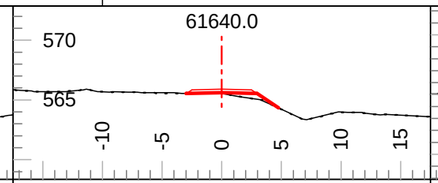

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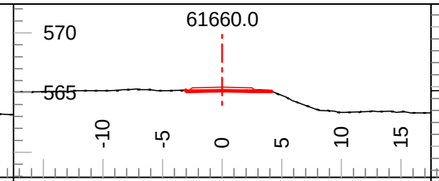

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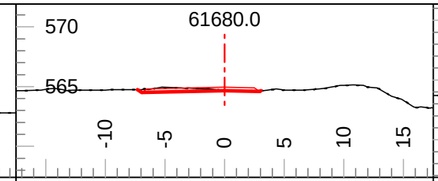

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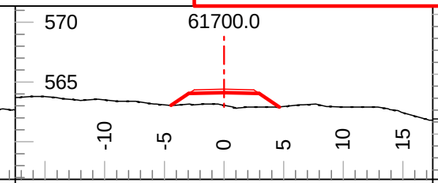

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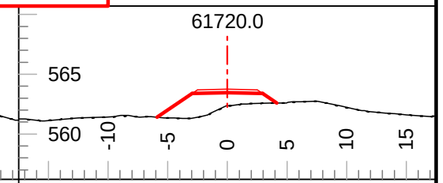

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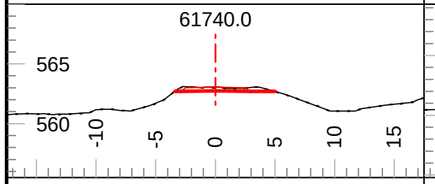

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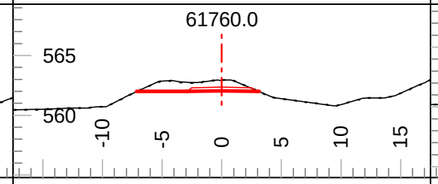

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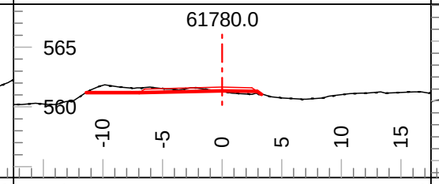

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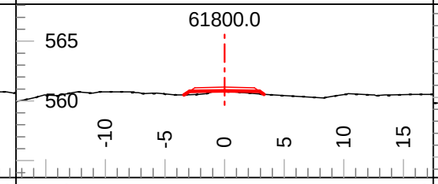

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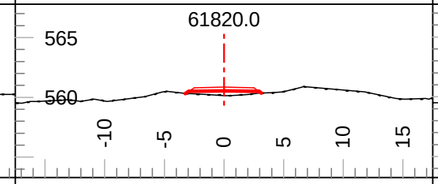

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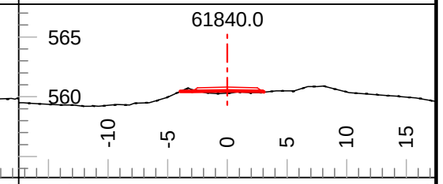

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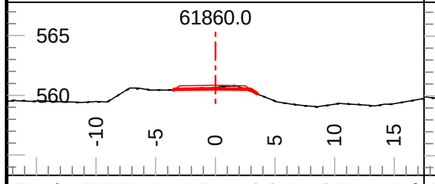

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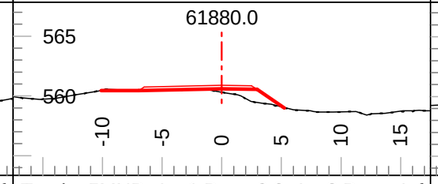

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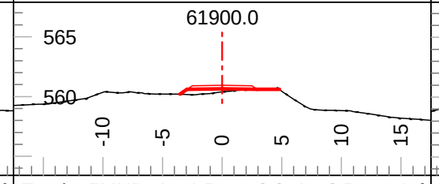

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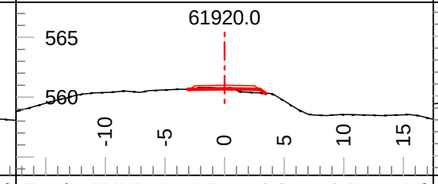

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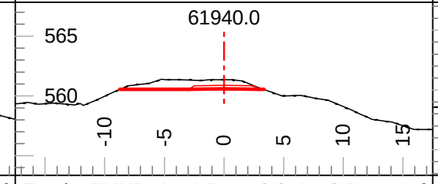

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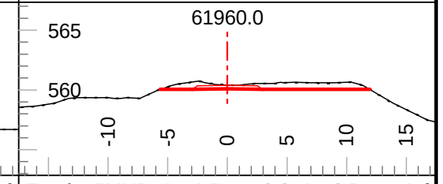

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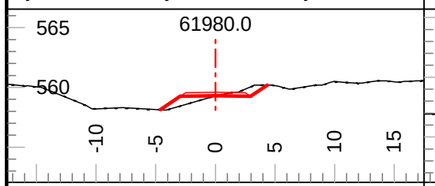

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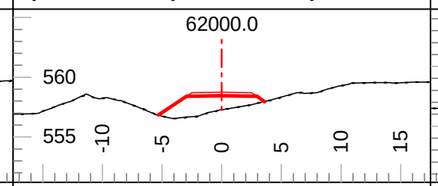

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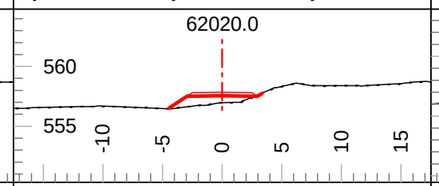

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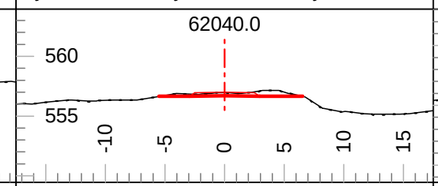

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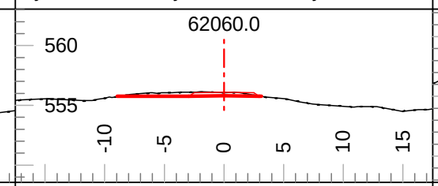

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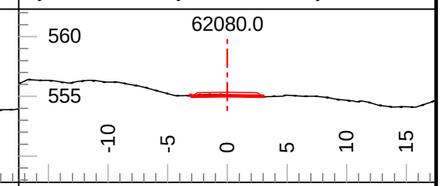

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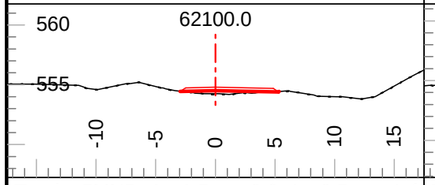

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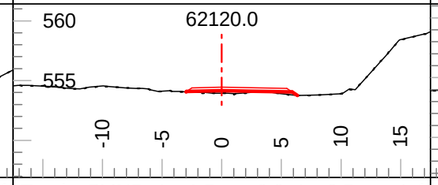

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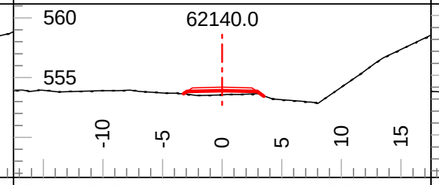

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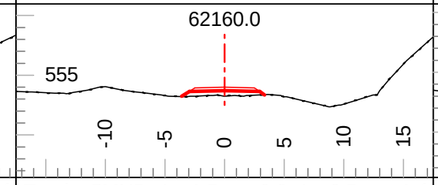

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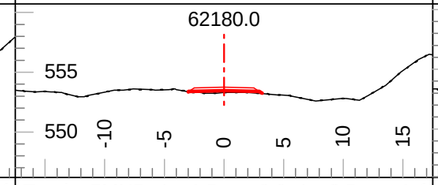

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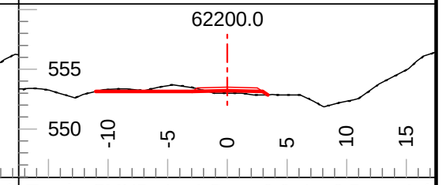

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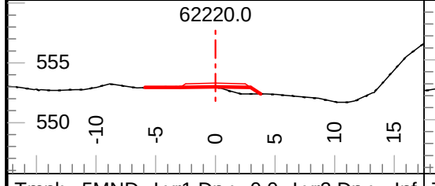

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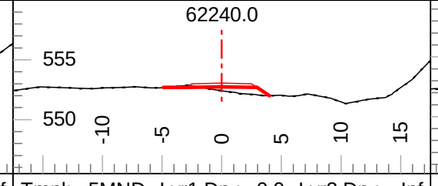

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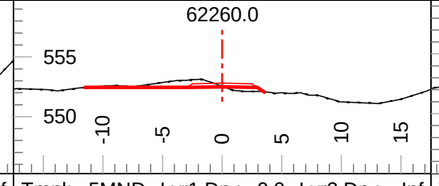

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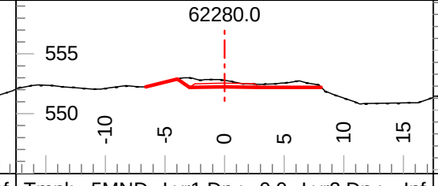

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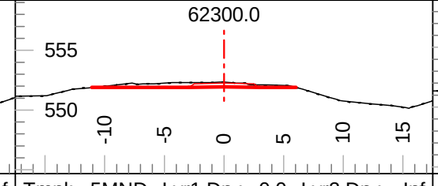

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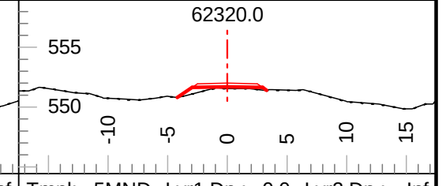

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Coffee Gold Mine

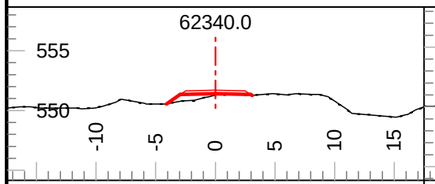
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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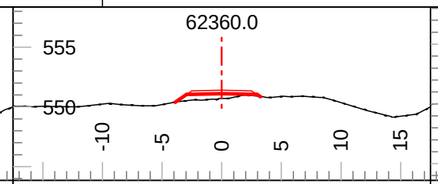

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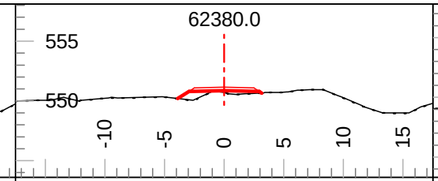

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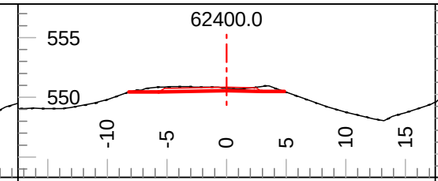

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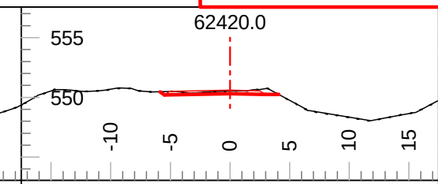

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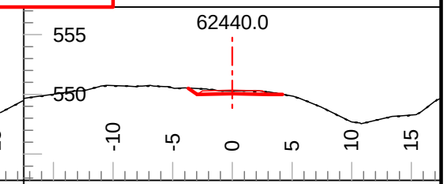

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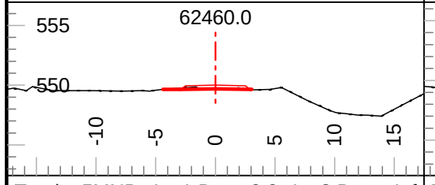

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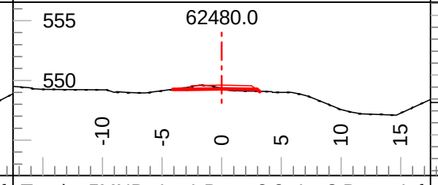

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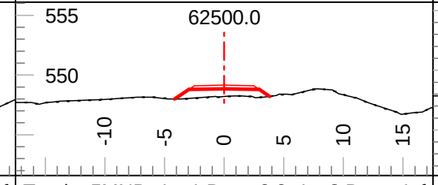

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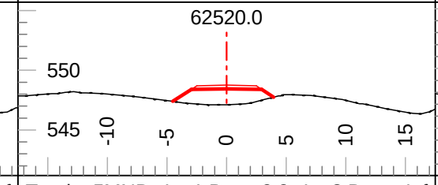

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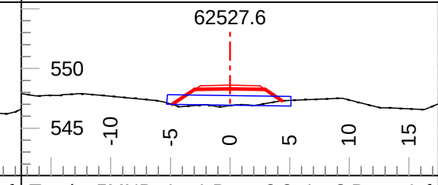

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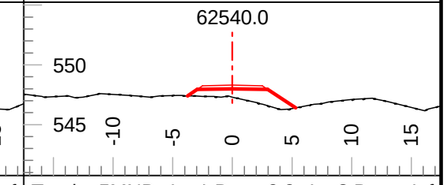

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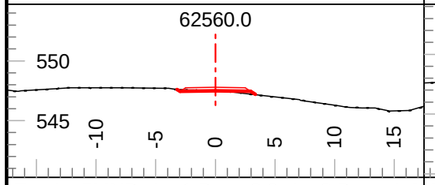

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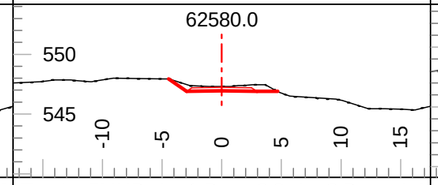

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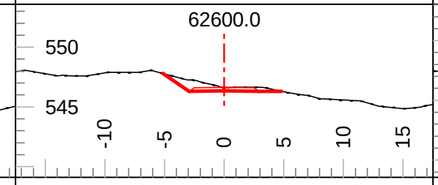

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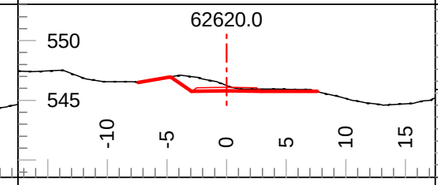

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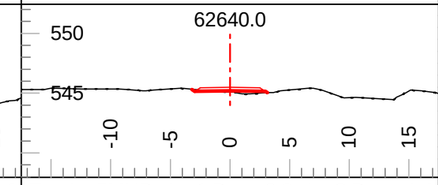

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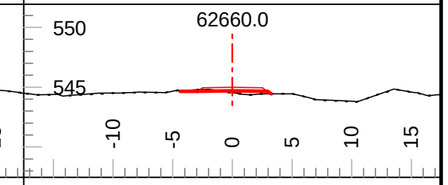

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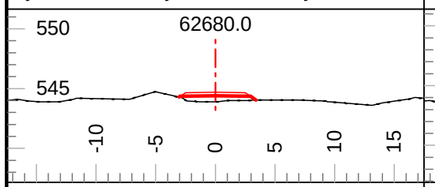

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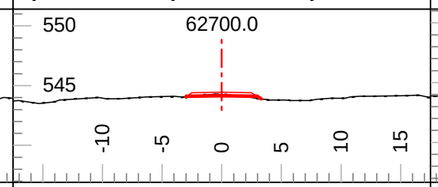

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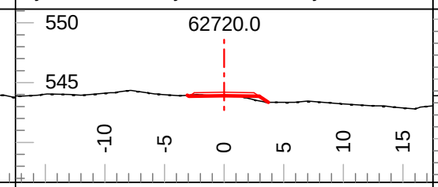

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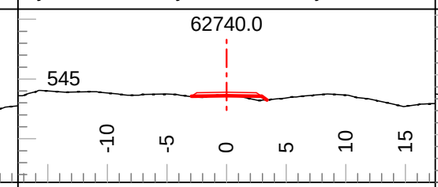

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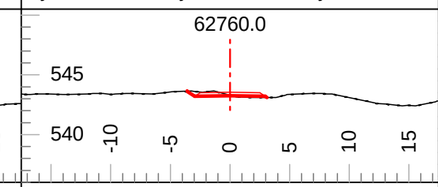

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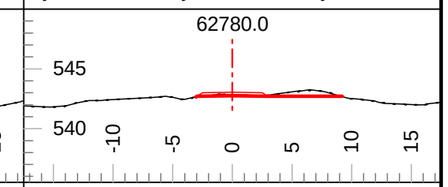

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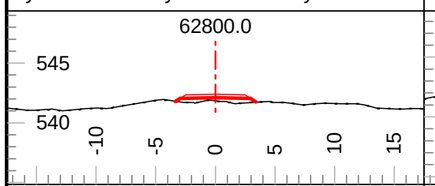

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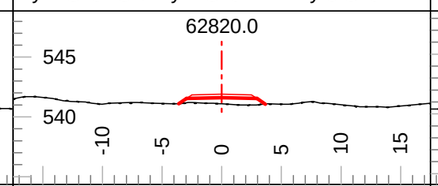

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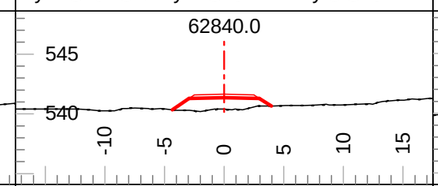

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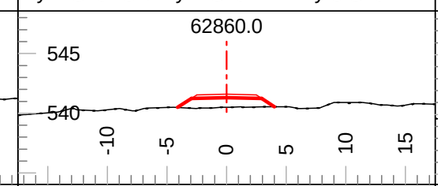

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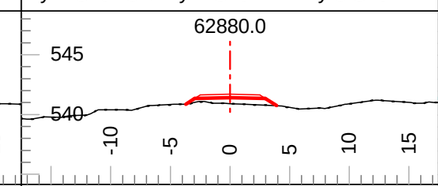

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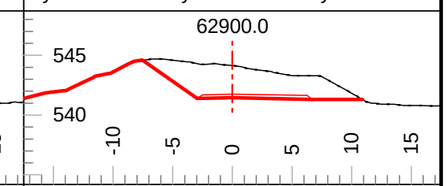

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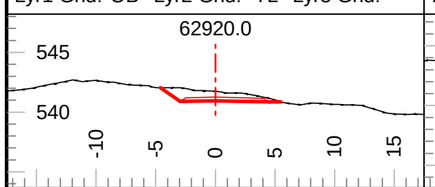

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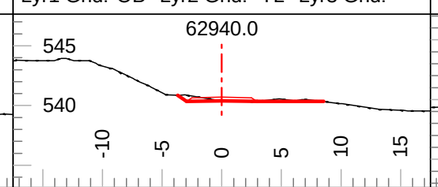

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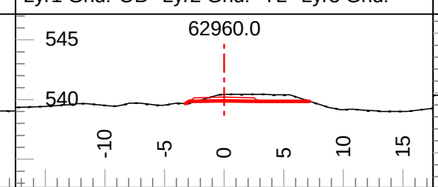

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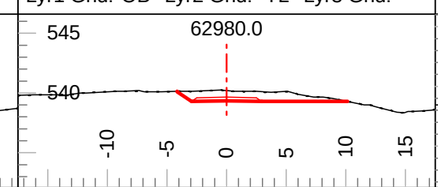

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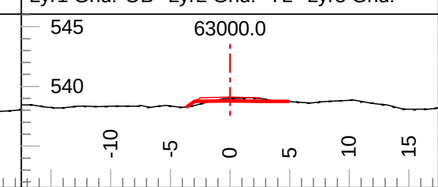

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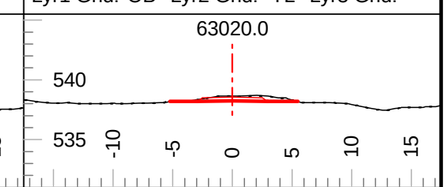

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Coffee Gold Mine

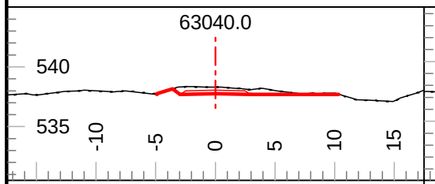
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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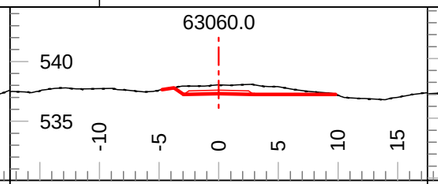

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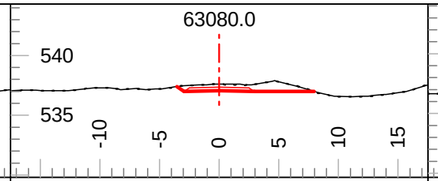

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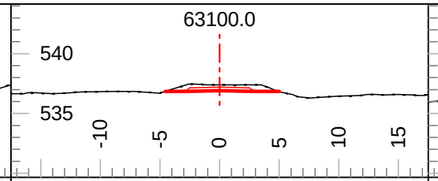

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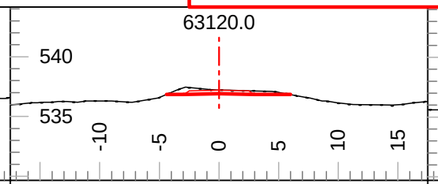

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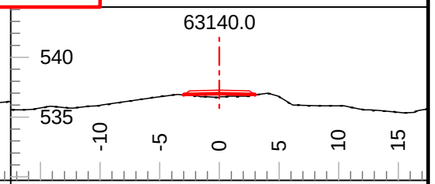

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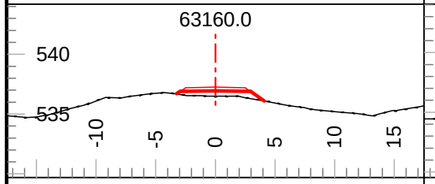

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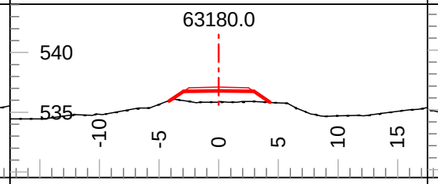

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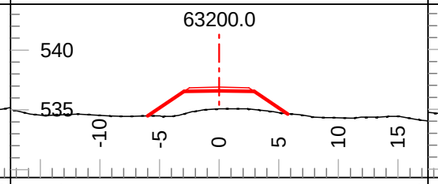

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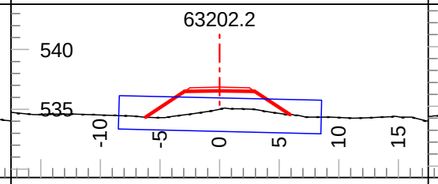

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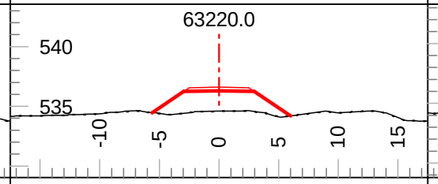

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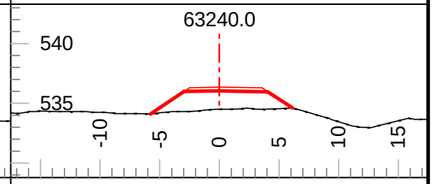

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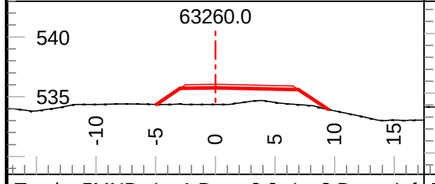

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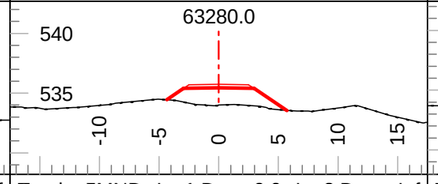

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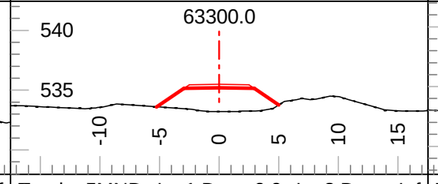

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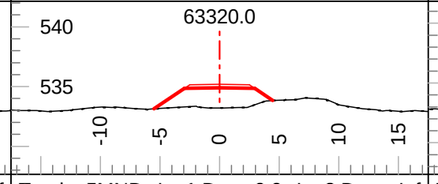

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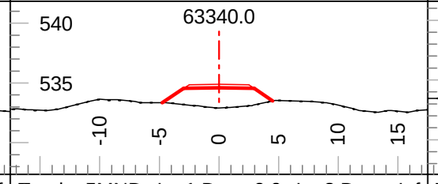

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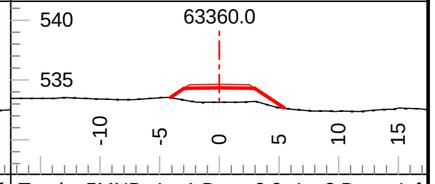

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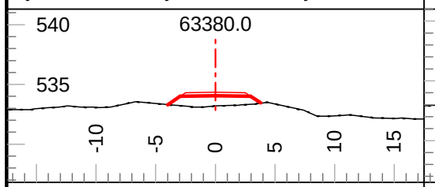

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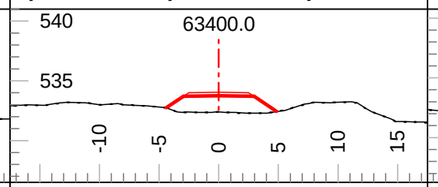

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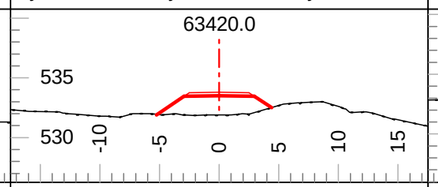

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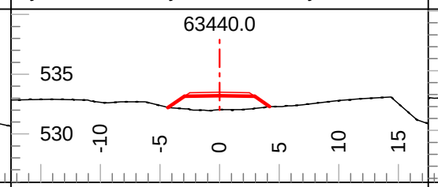

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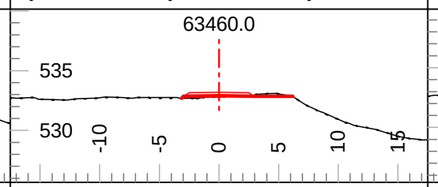

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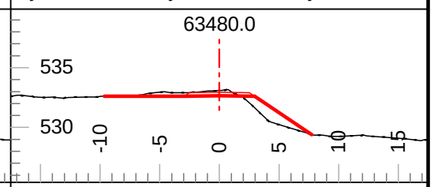

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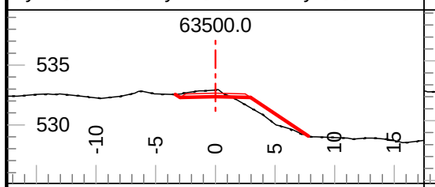

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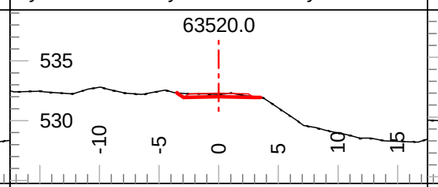

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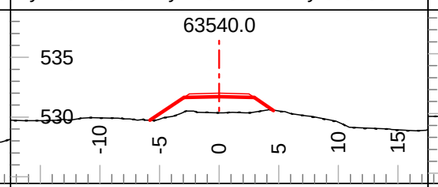

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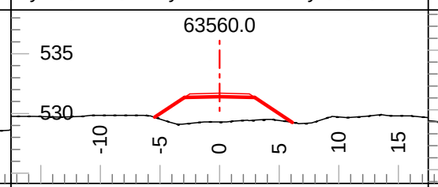

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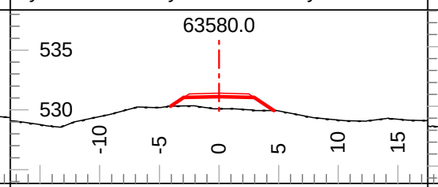

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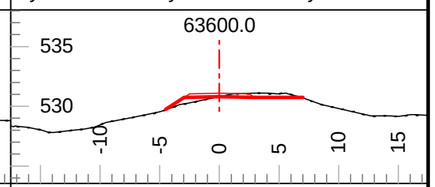

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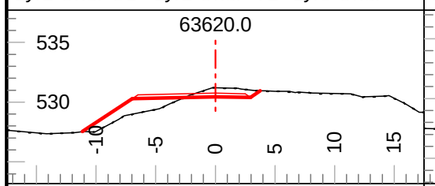

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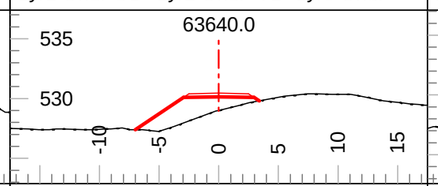

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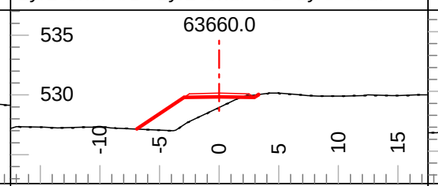

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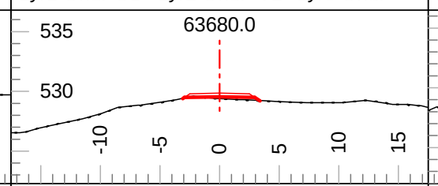

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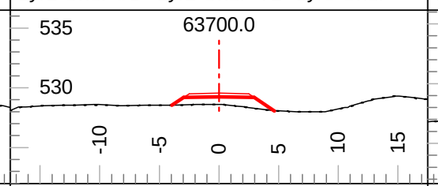

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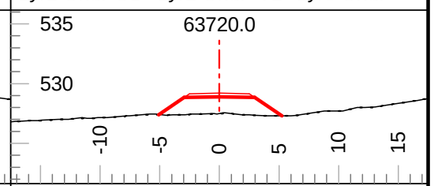

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Coffee Gold Mine

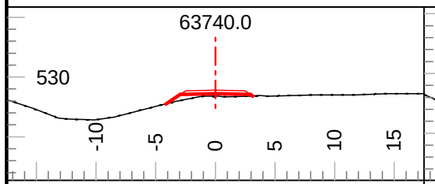
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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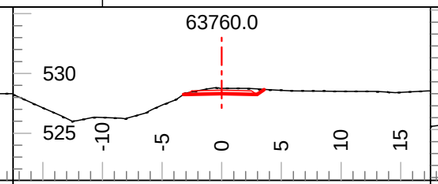

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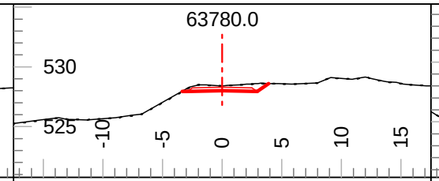

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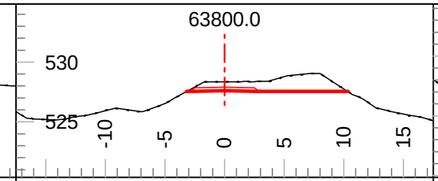

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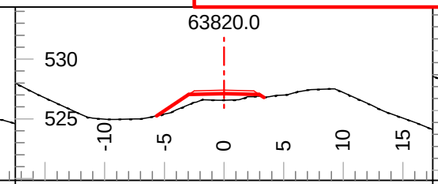

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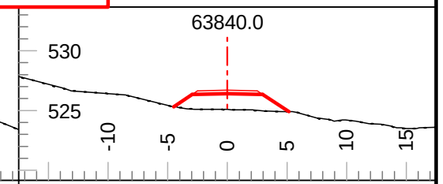

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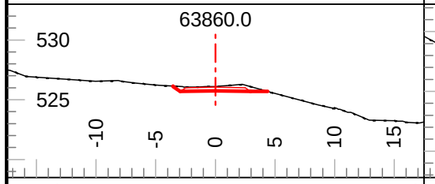

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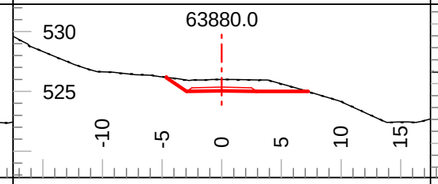

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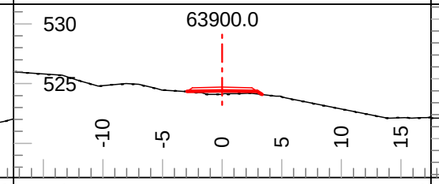

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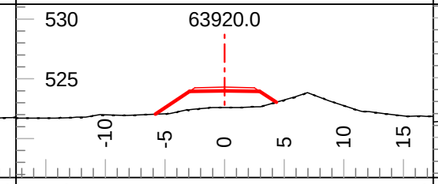
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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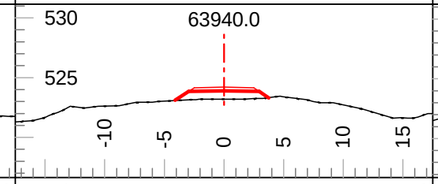

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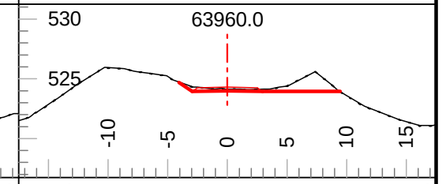

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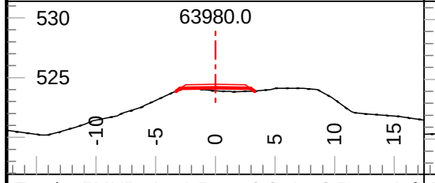

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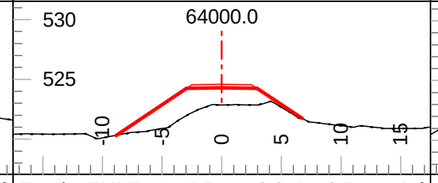

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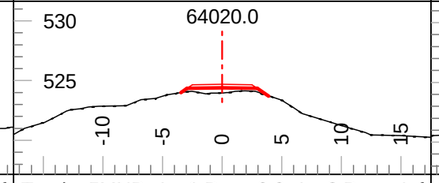

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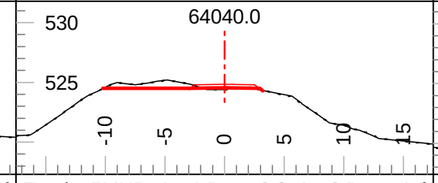

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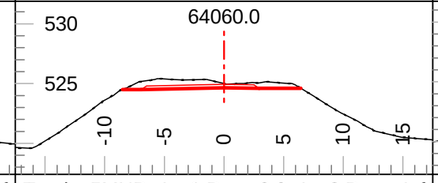

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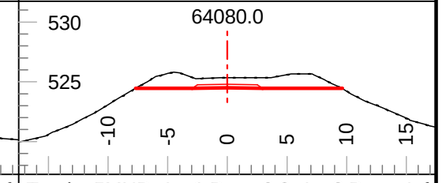

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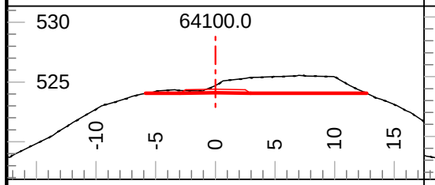

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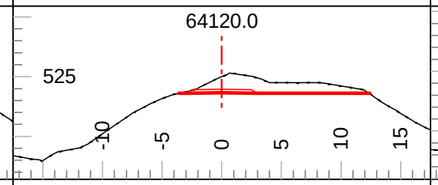

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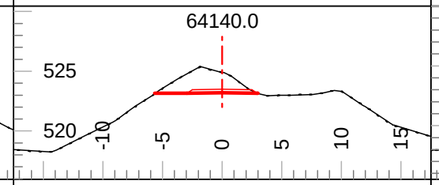

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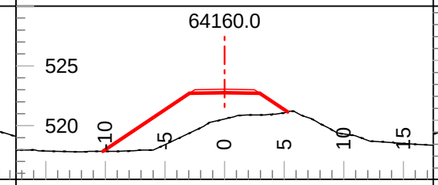

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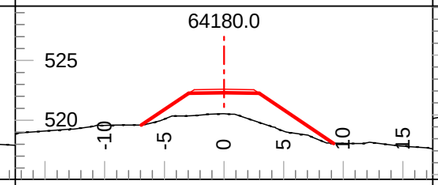

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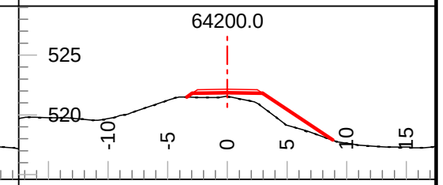

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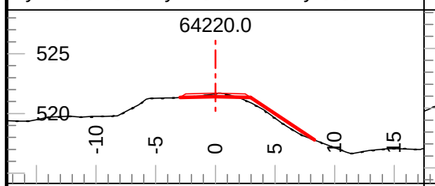

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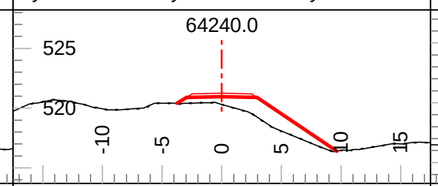

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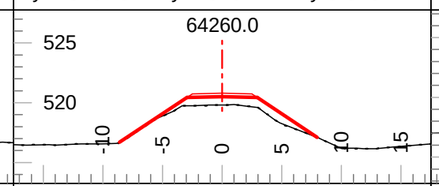

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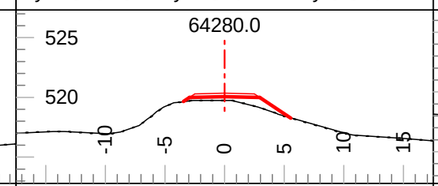

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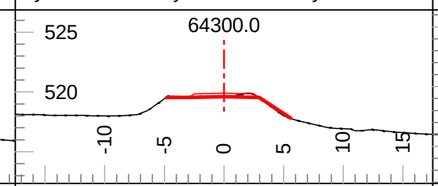

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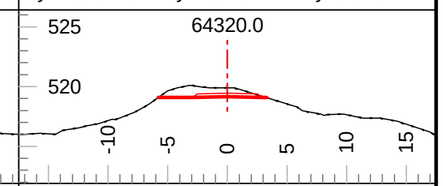

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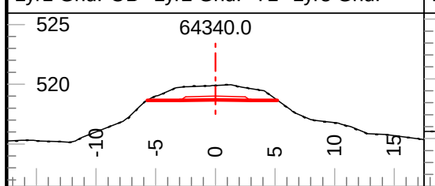

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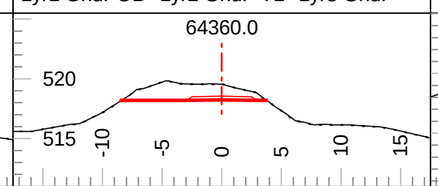

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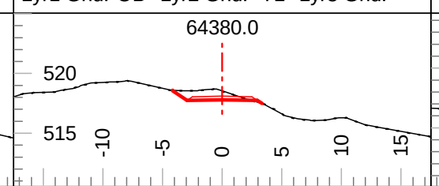

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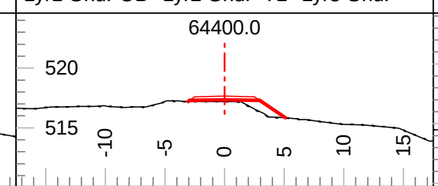

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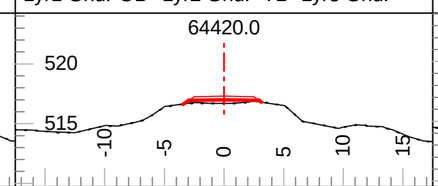

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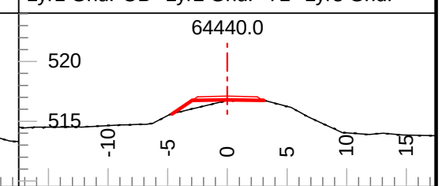


Tmpl: 5MND Lyr1 Dp.: 0.0 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:

Coffee Gold Mine

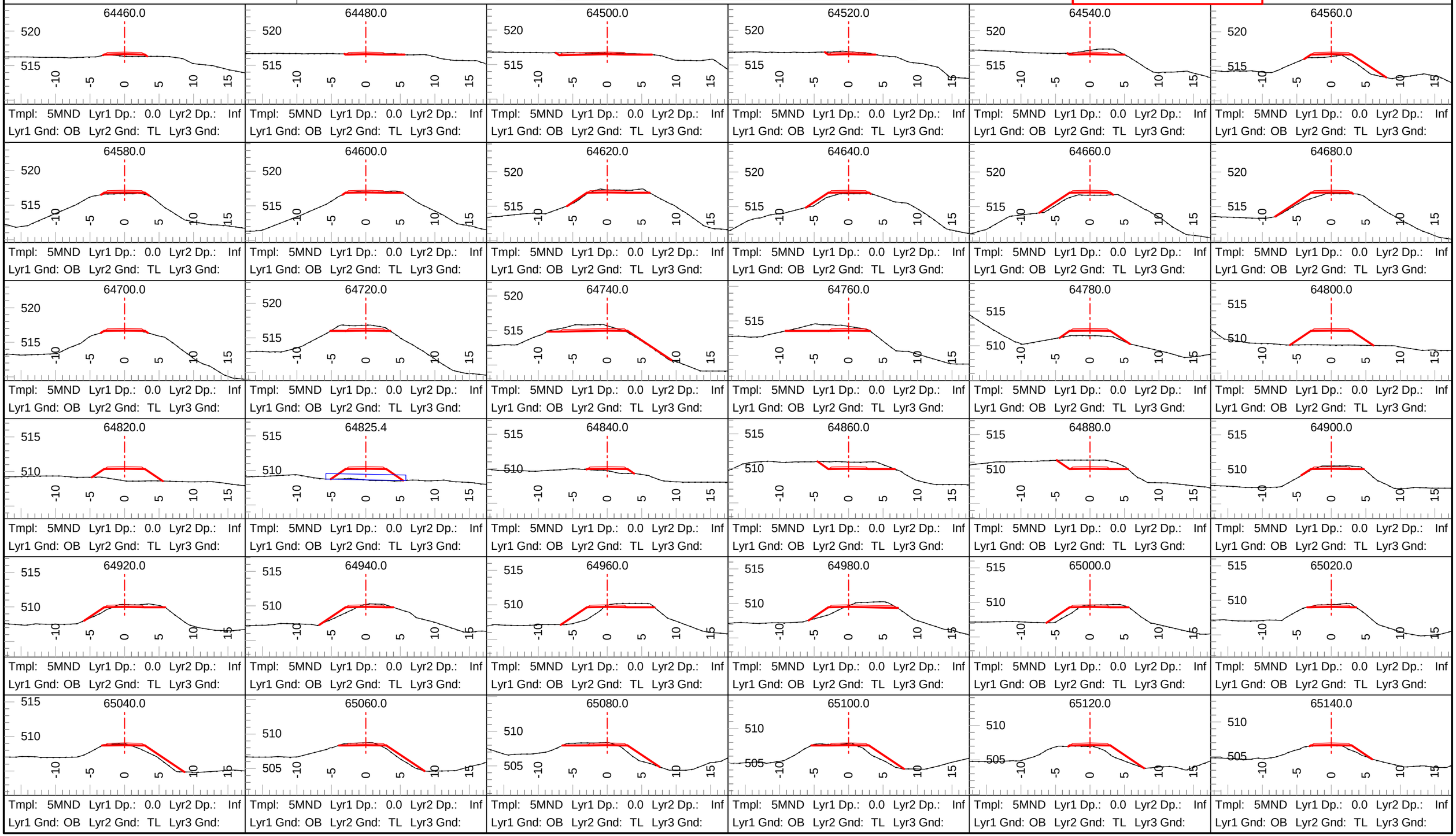
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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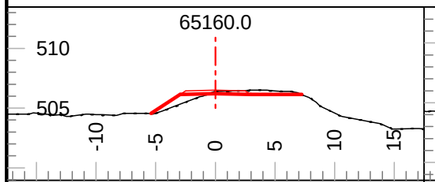

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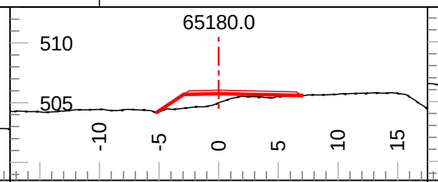
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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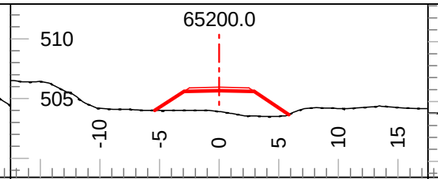
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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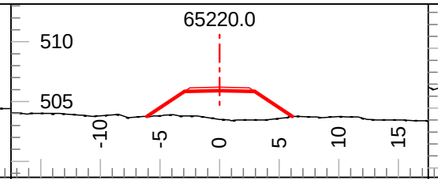
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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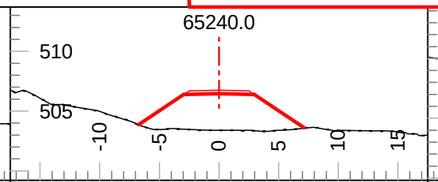
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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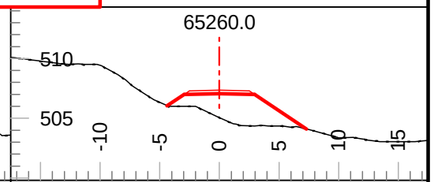

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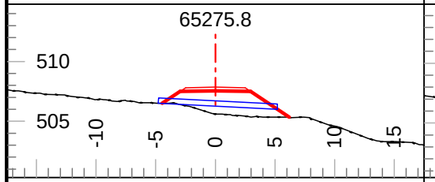

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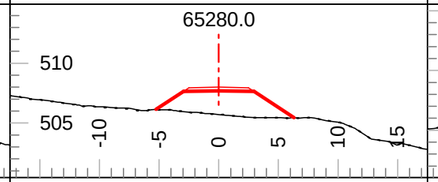
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



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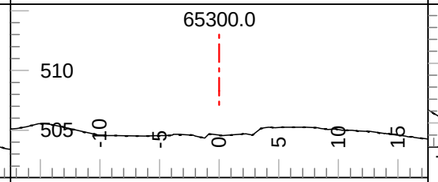
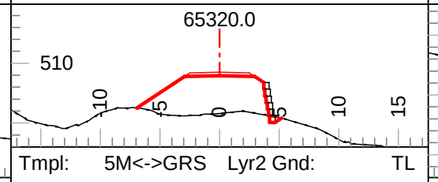
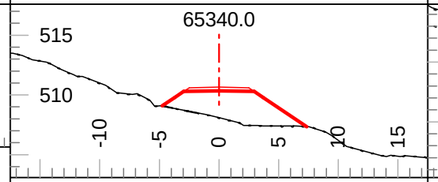


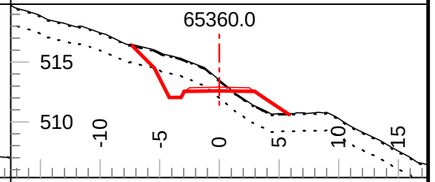
Tmpl: BR Lyr1 Dp.: 0.0 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



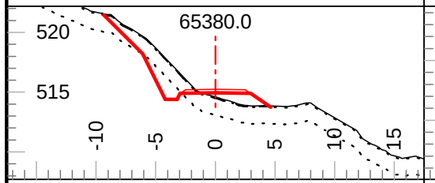
Tmpl: 5M<->GRS Lyr2 Gnd: TL
Lyr1 Gnd: OB Lyr2 Dp.: Inf
Lyr1 Dp.: 0.0 Lyr3 Gnd:



Tmpl: 5M Lyr1 Dp.: 0.0 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd:



Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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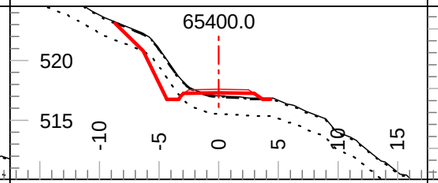
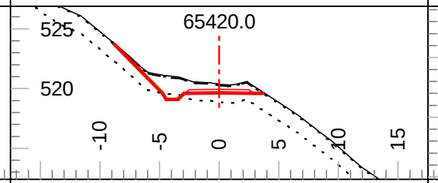
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



Tmpl: 5M Lyr1 Dp.: 0.1 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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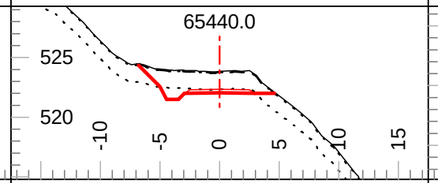
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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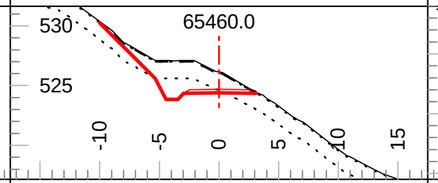

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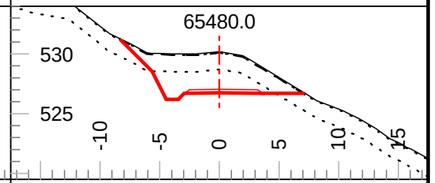

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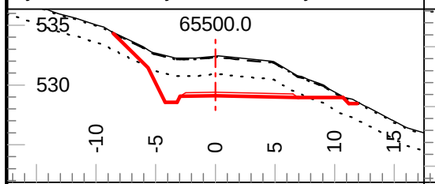

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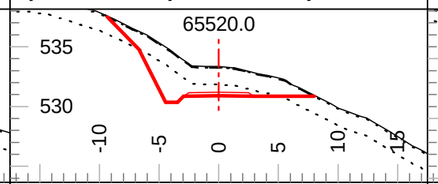

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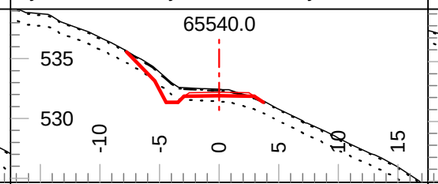

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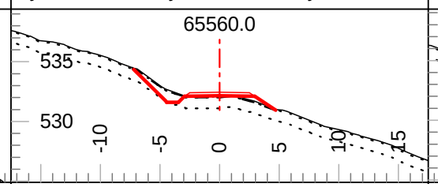

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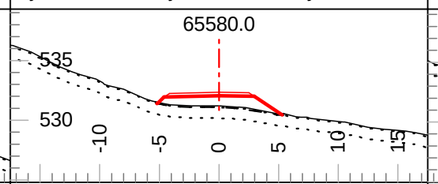

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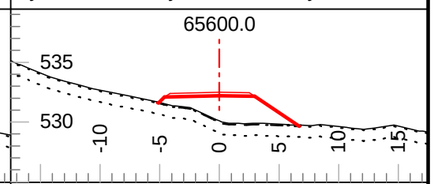

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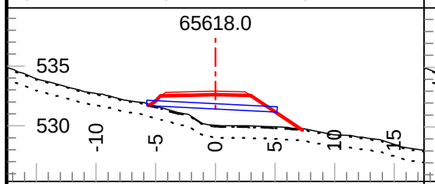

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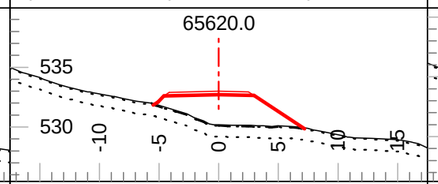

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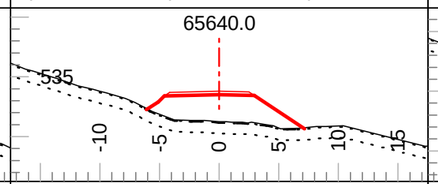

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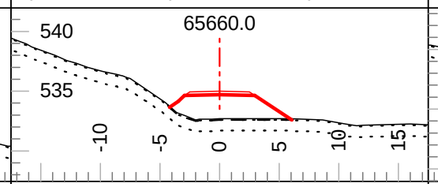

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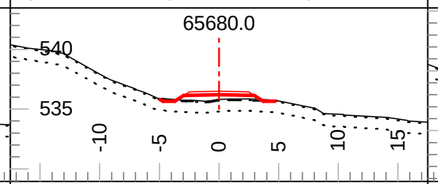

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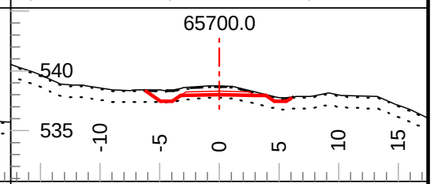

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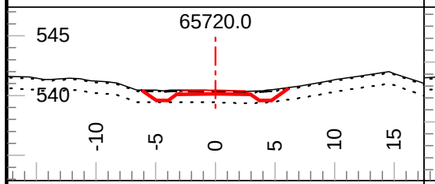

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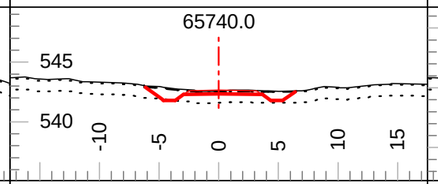

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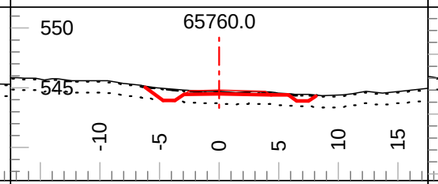

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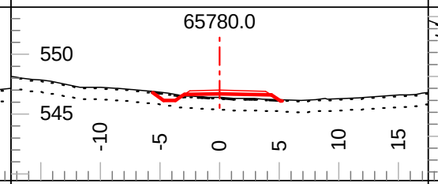

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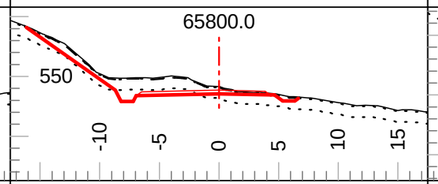

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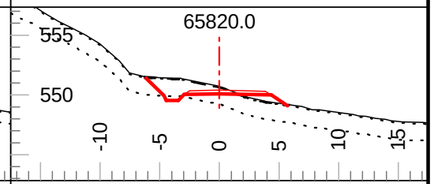

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Coffee Gold Mine

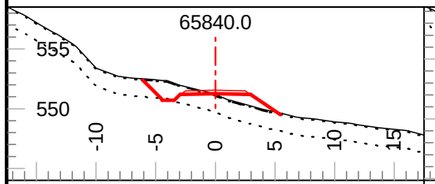
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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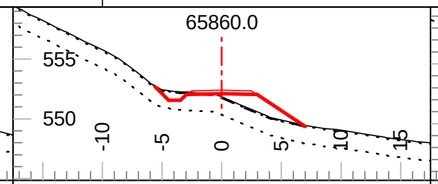

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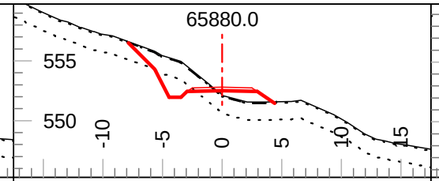

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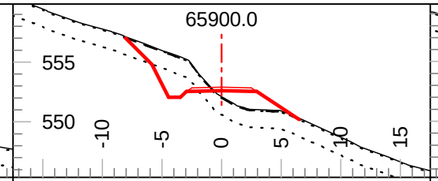

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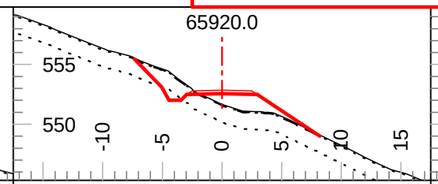

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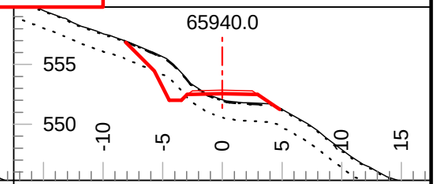

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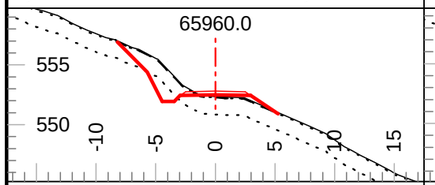

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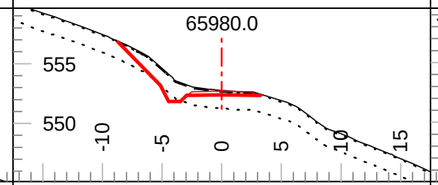

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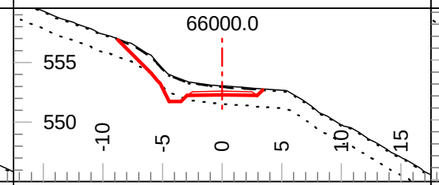

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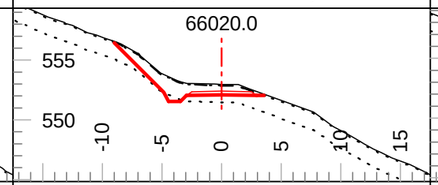

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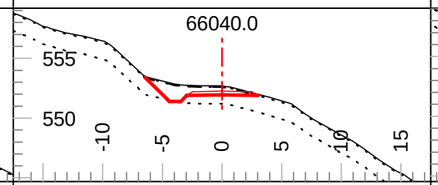

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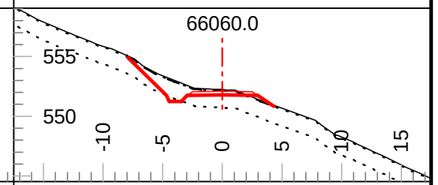

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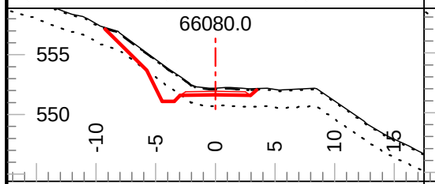

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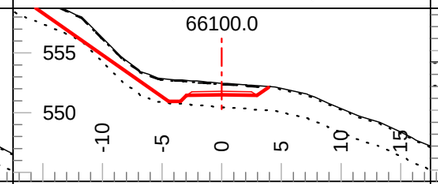

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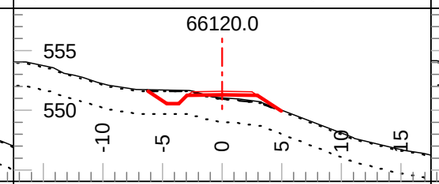

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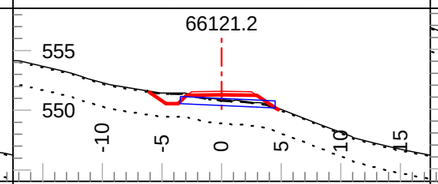

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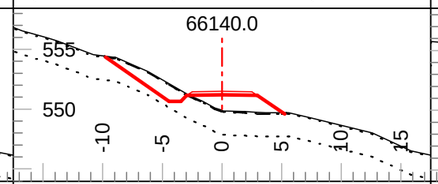

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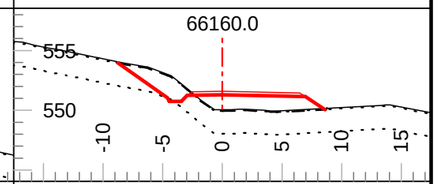

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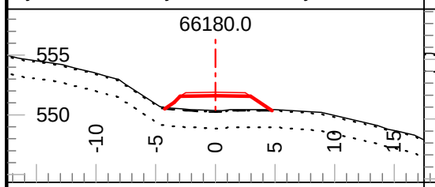

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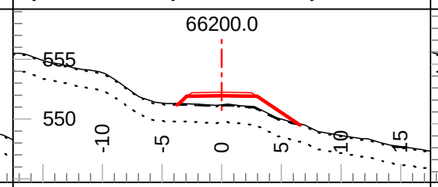

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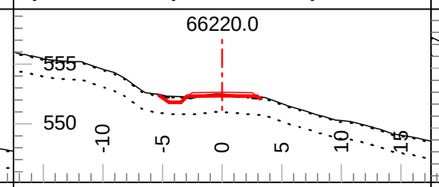

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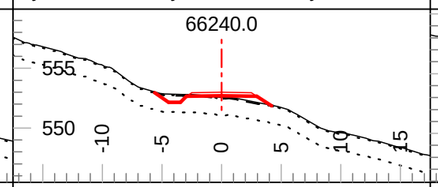

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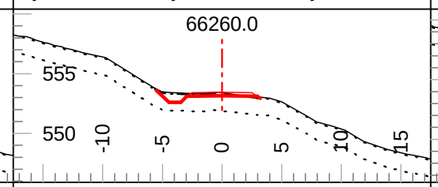

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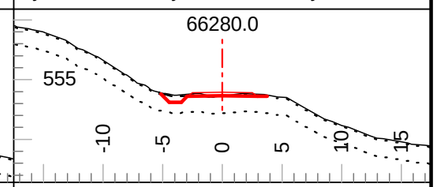

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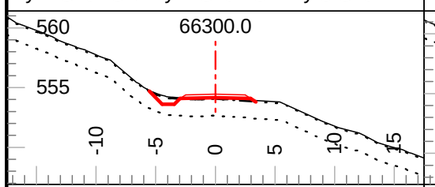

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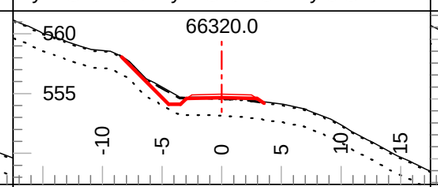

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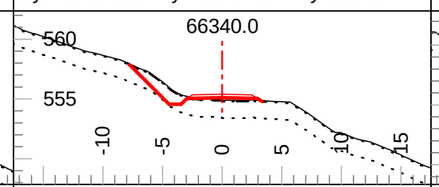

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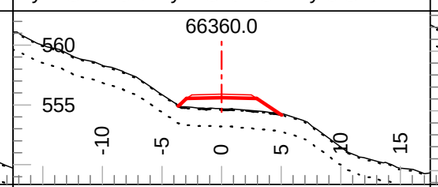

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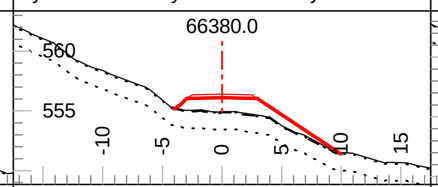

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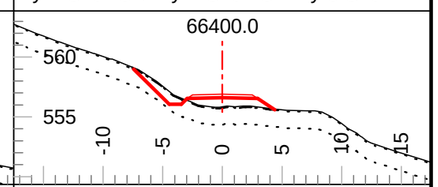

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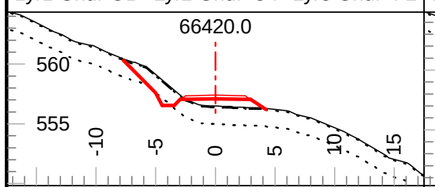

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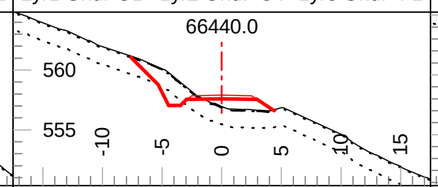

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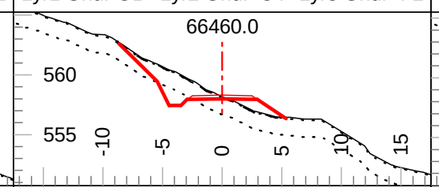

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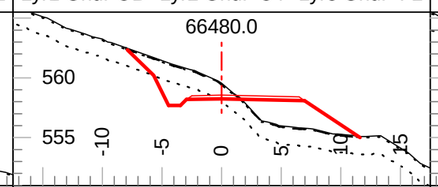

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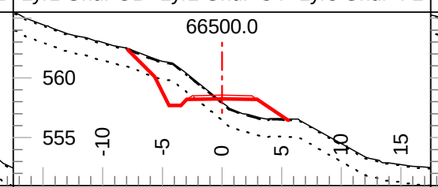

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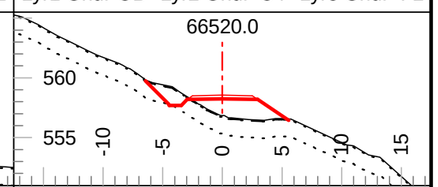

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Coffee Gold Mine

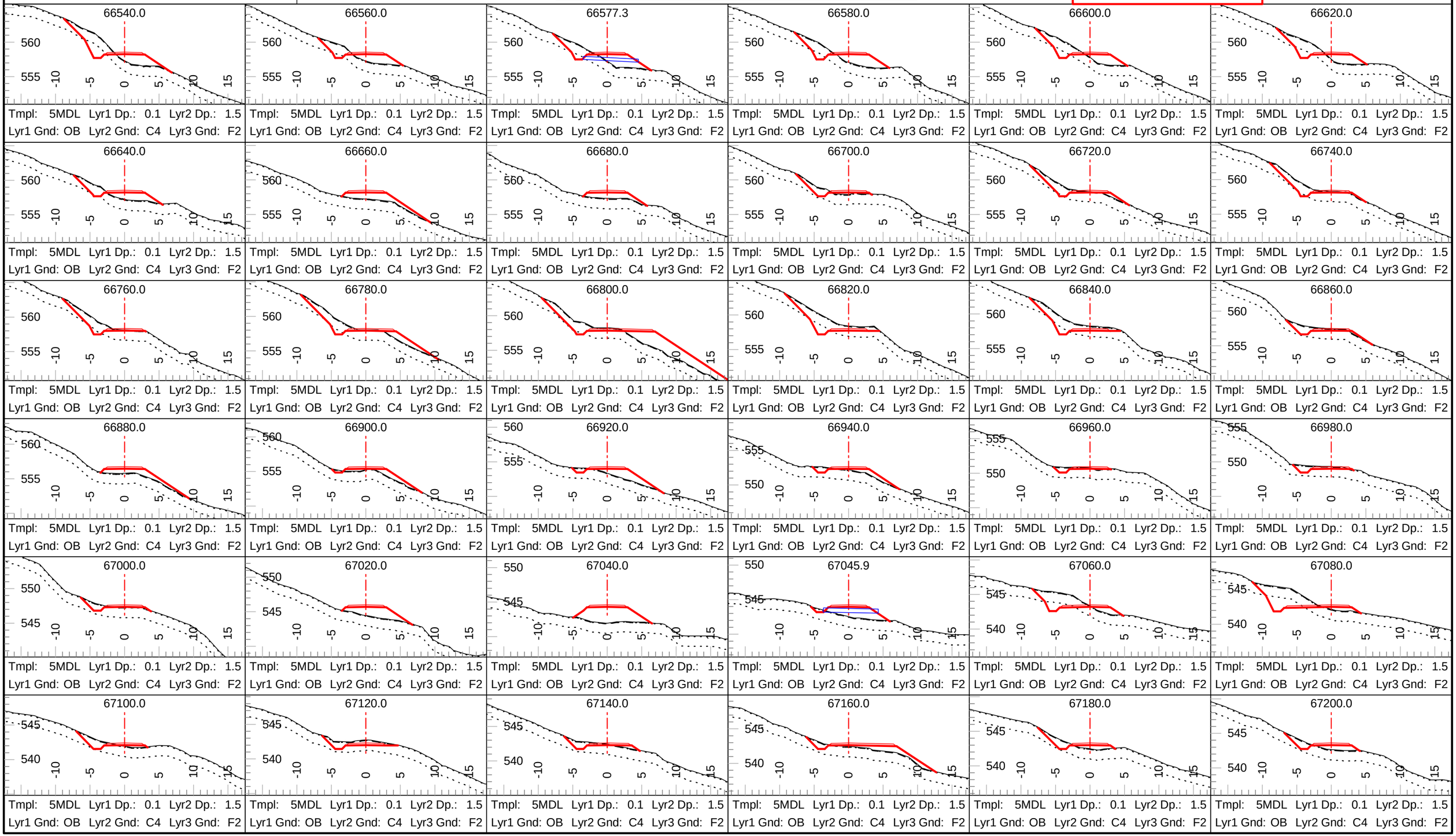
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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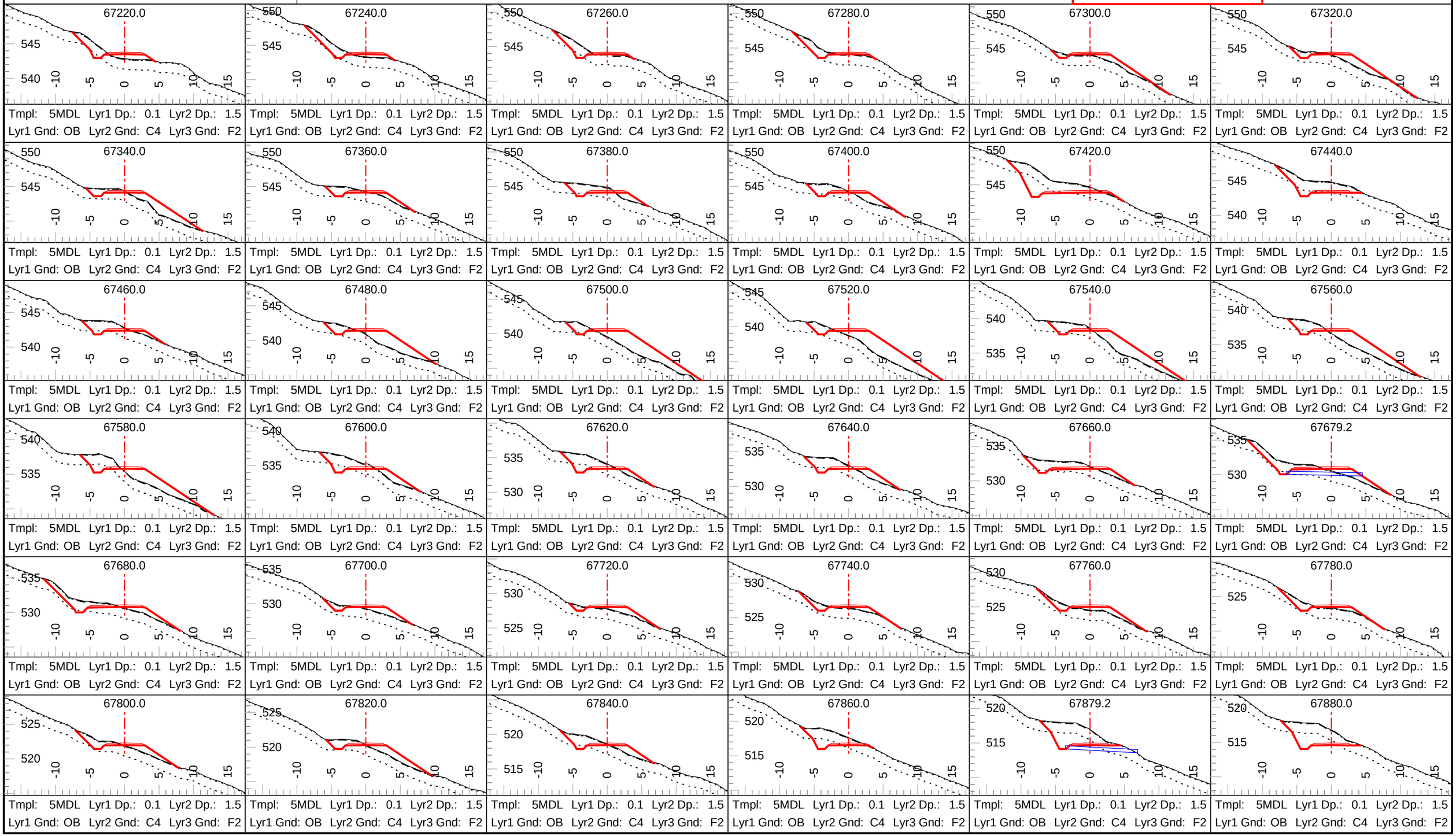

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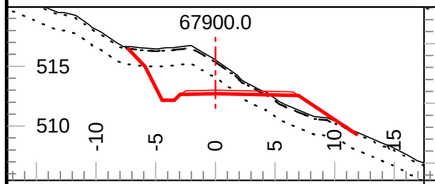

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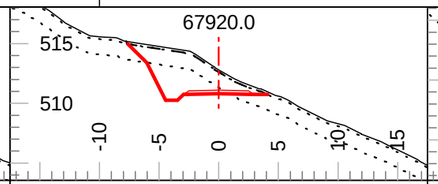

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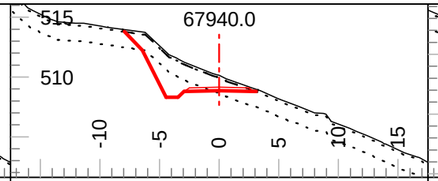

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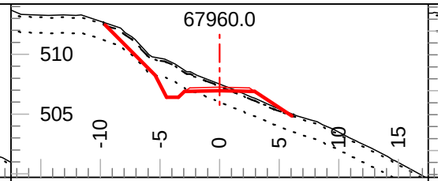

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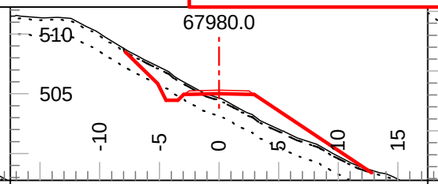

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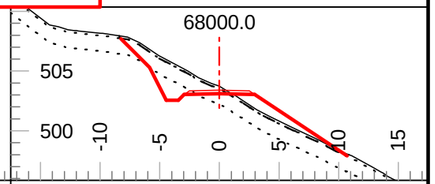

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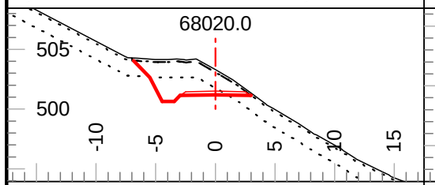

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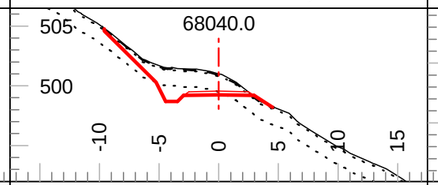

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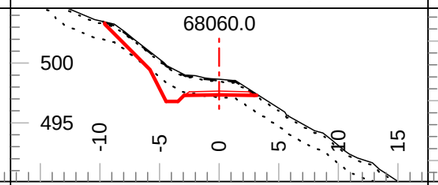

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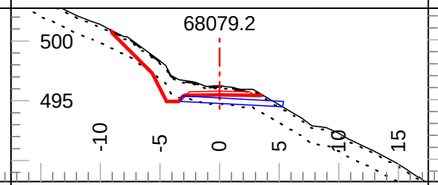

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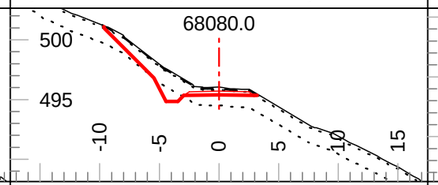

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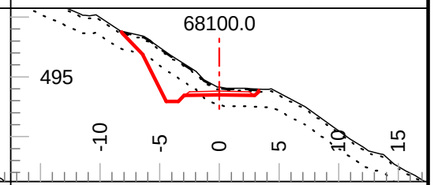

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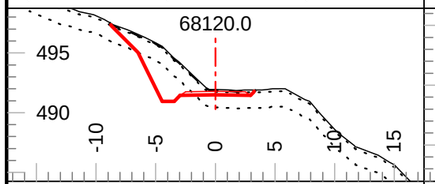

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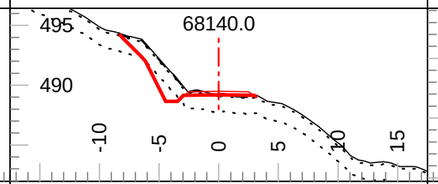

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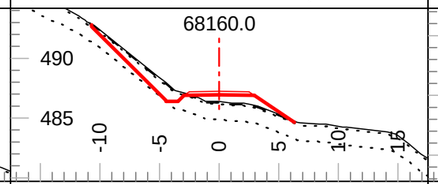

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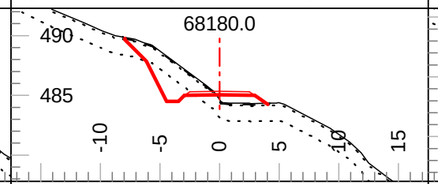

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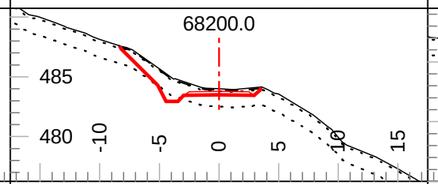

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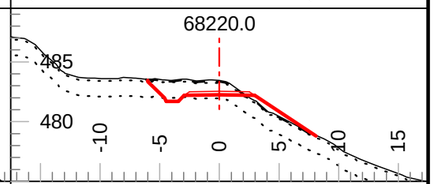

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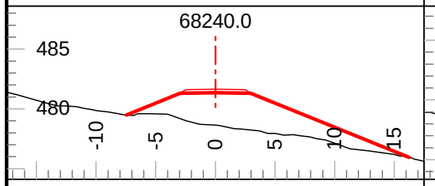

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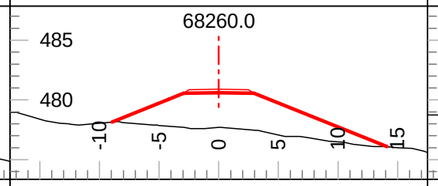

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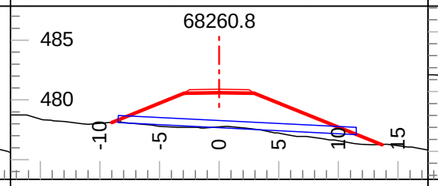

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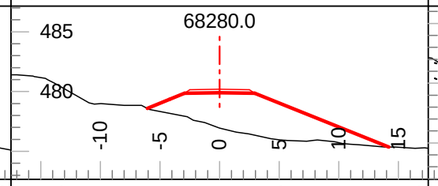

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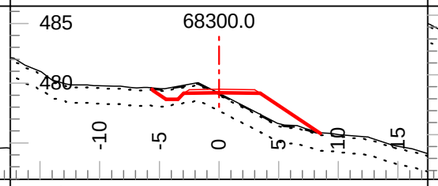

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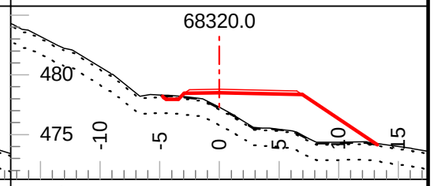

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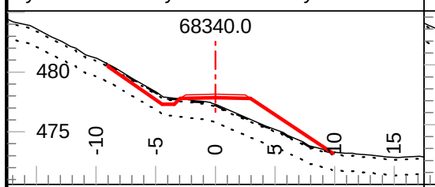

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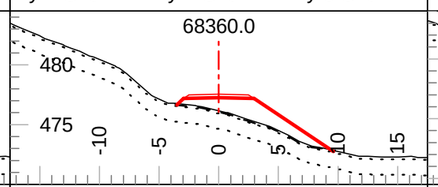
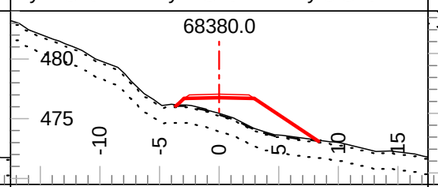


Tmpl: 5MDL Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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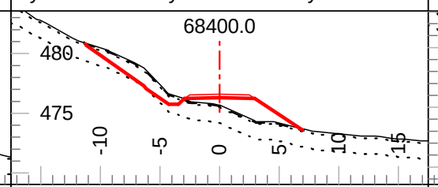
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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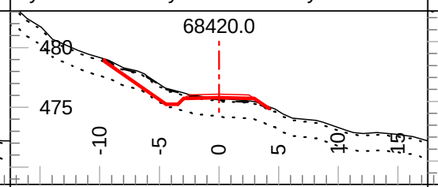

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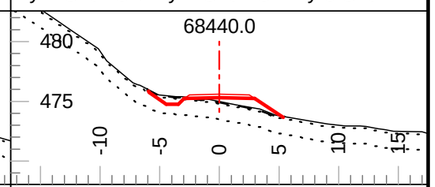

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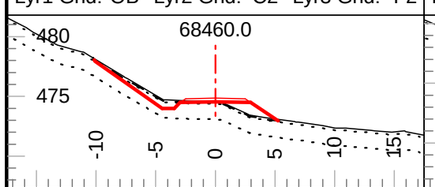

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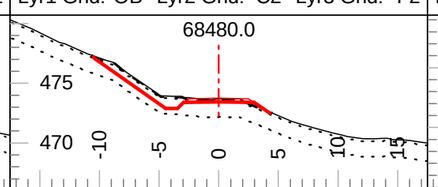

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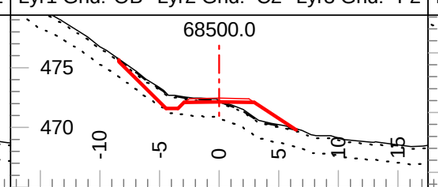

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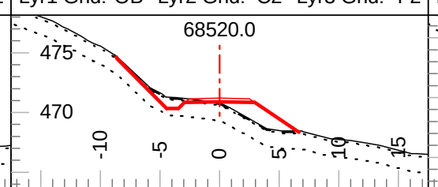

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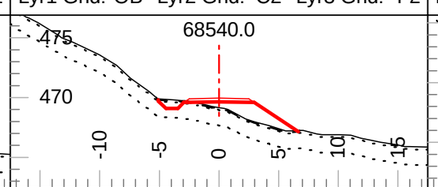
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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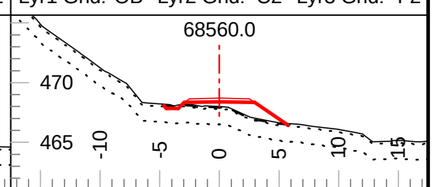

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Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2

Coffee Gold Mine

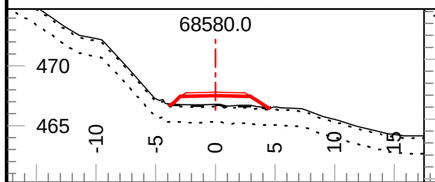
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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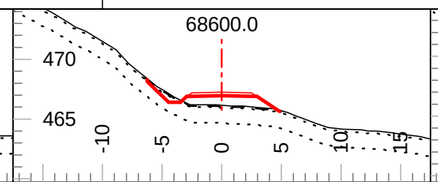
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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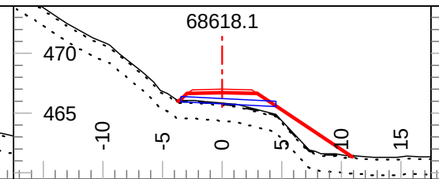

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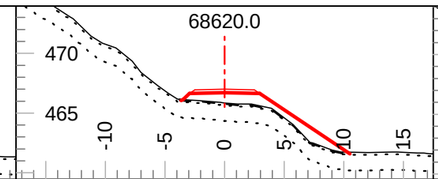

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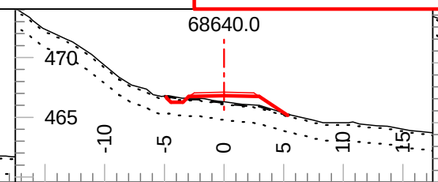

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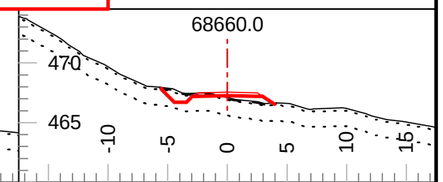

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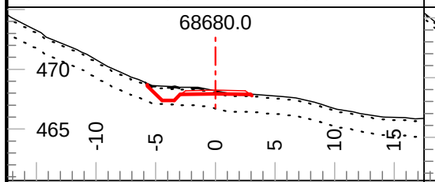
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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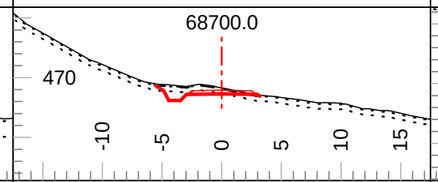

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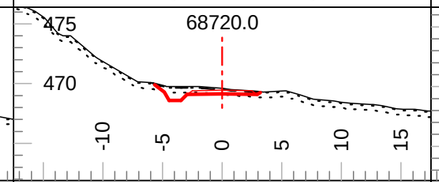

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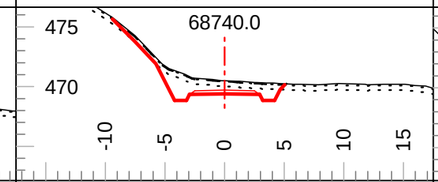

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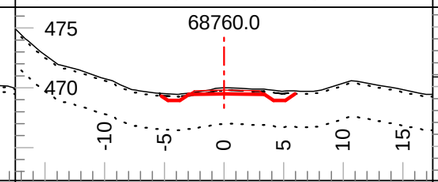

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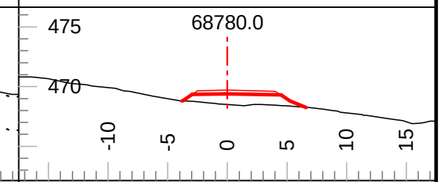

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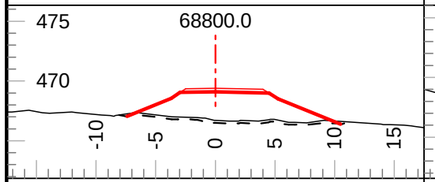

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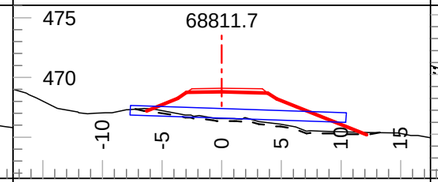

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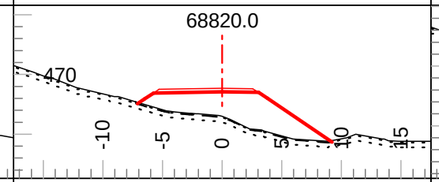
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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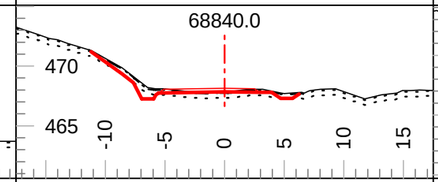

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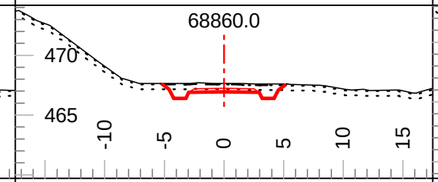

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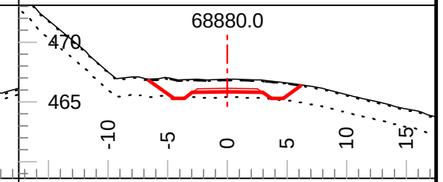

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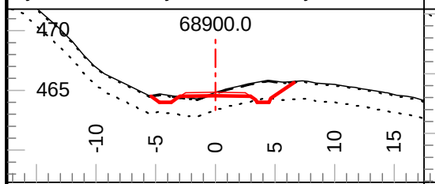

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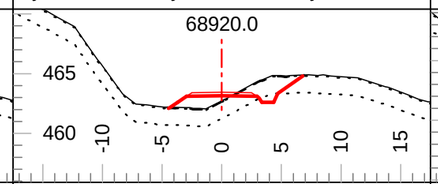

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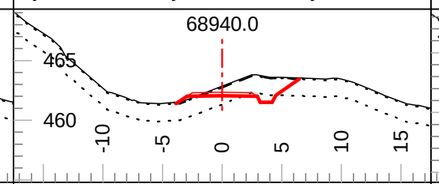

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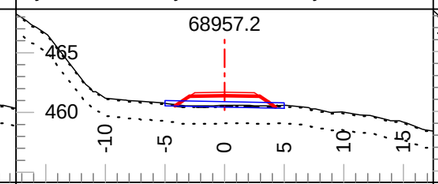

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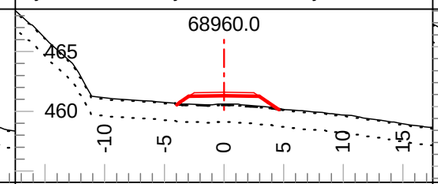

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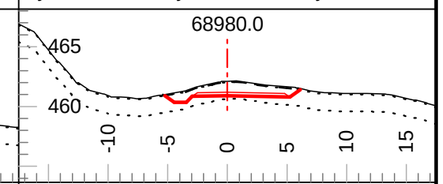

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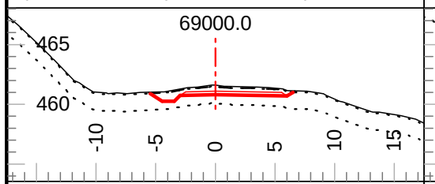

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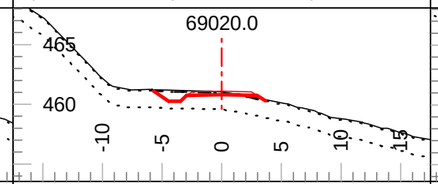

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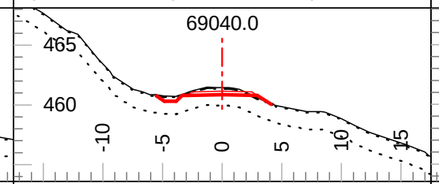

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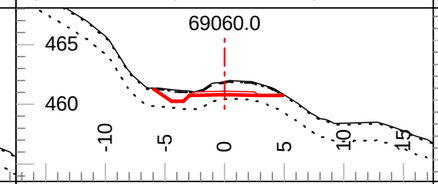

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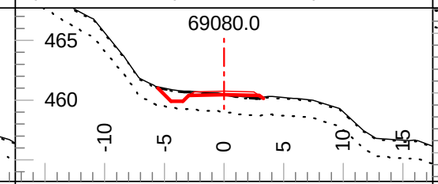

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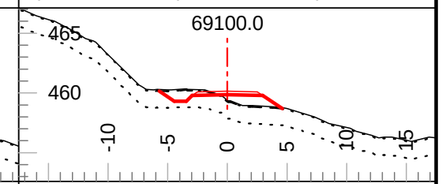

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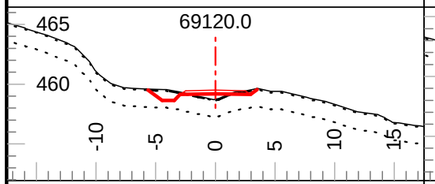

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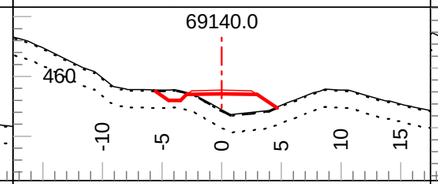

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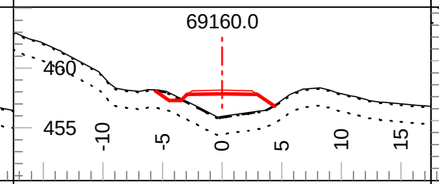
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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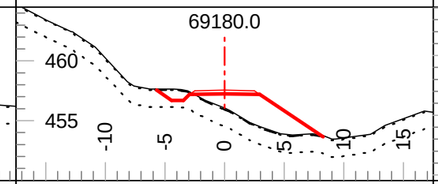

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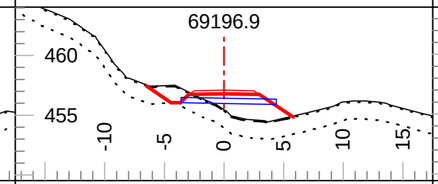

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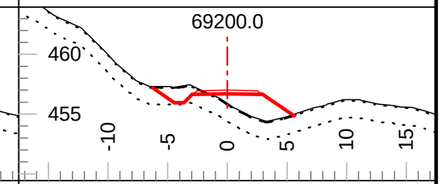

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Coffee Gold Mine

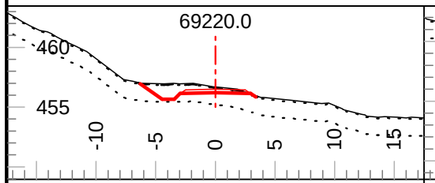
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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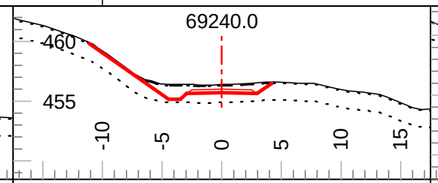

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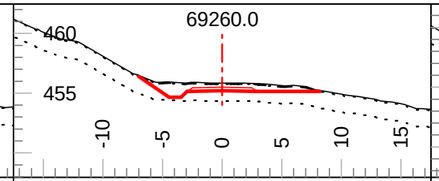

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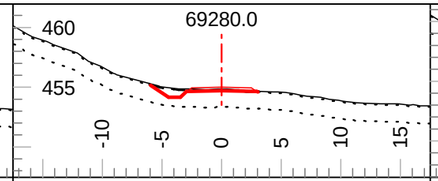

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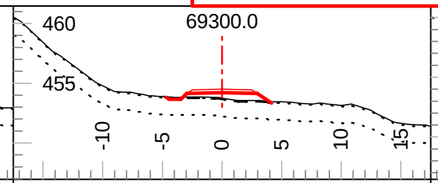

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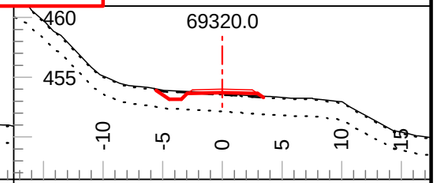

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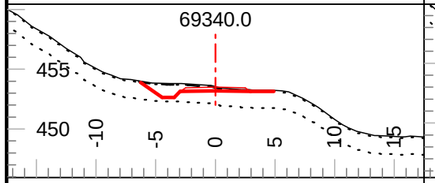

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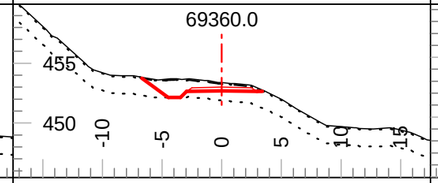

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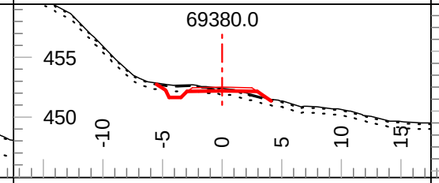

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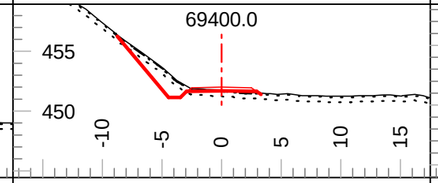

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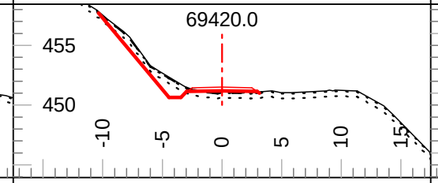

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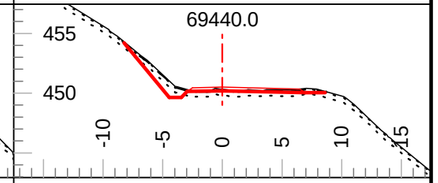

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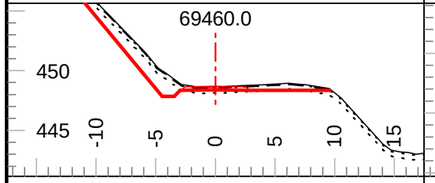

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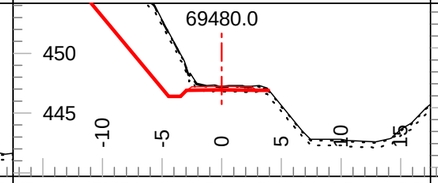

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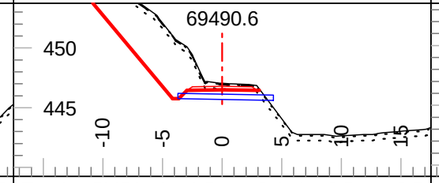

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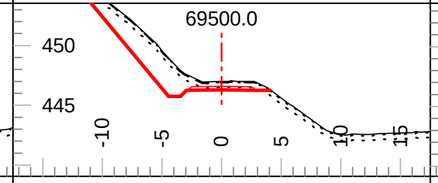

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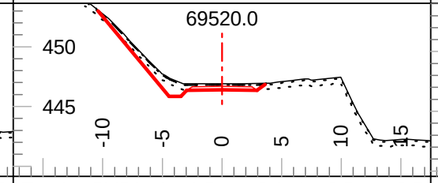

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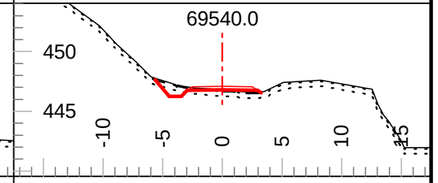

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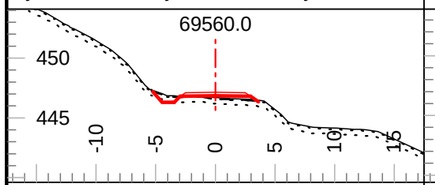

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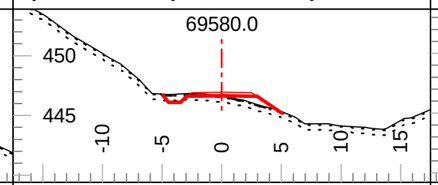

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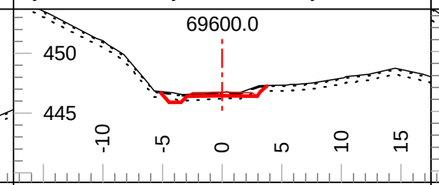

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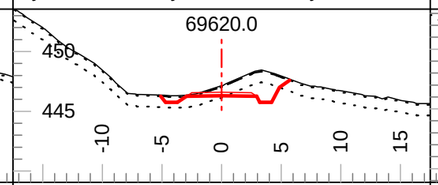

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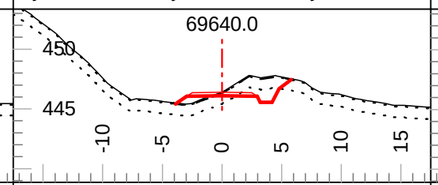

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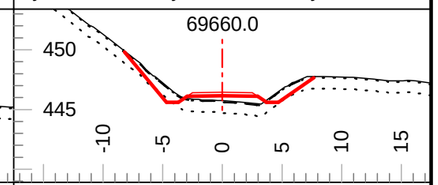

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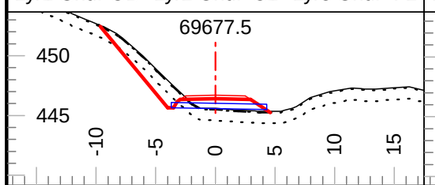

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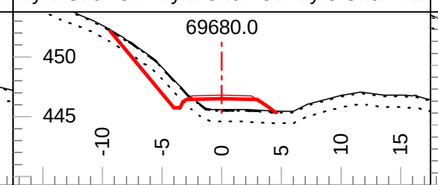

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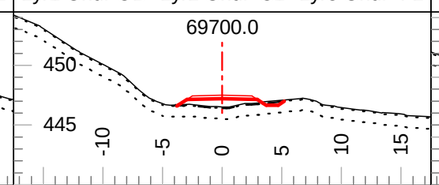

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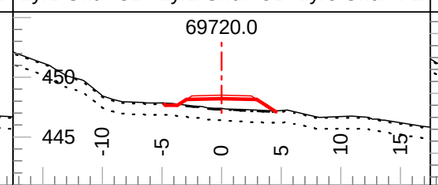

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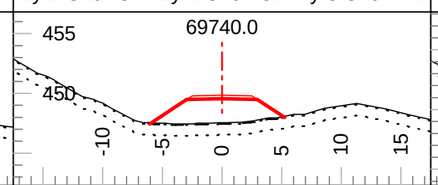

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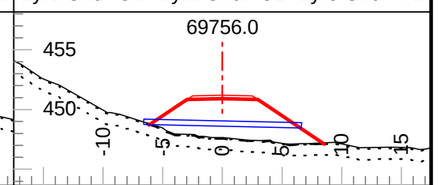

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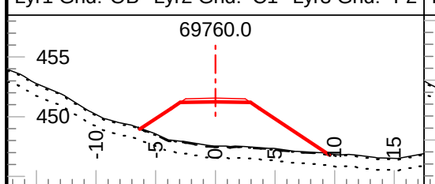

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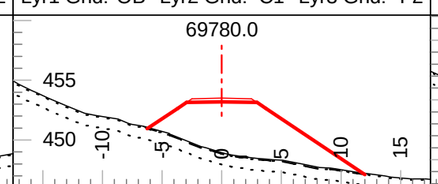

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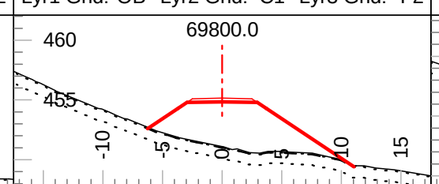

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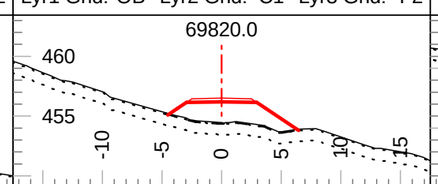

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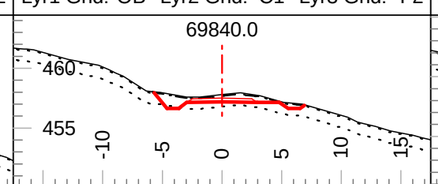

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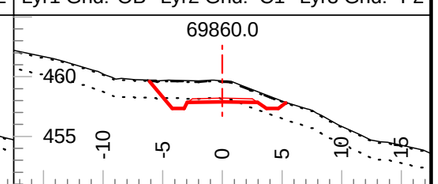

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Coffee Gold Mine

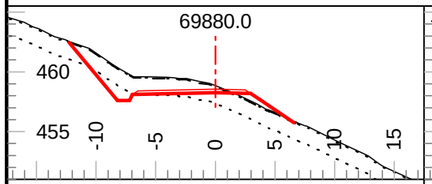
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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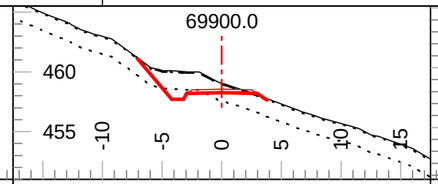

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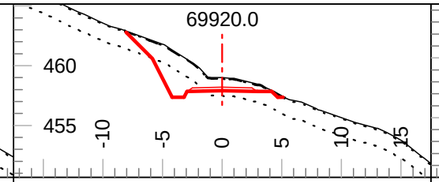
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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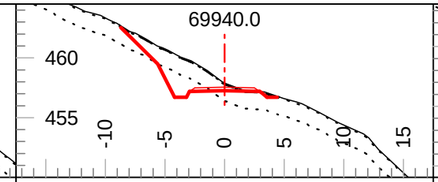
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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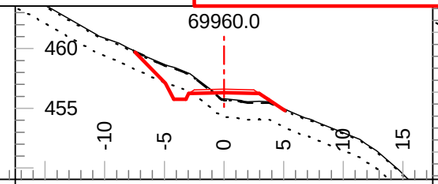

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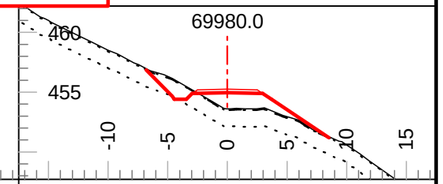

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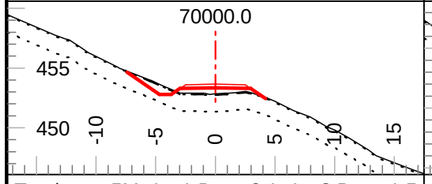

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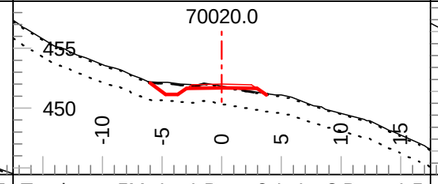

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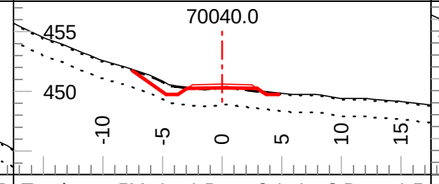

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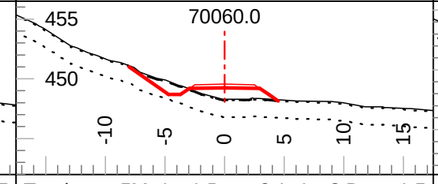

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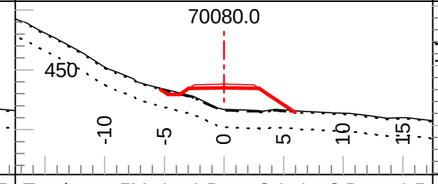

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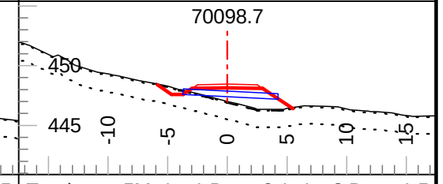

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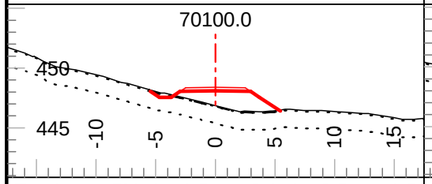

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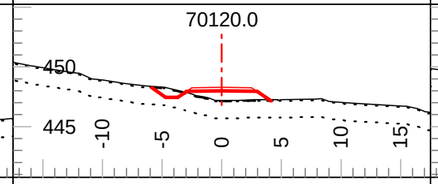

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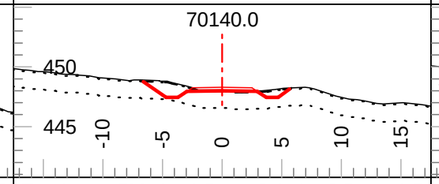

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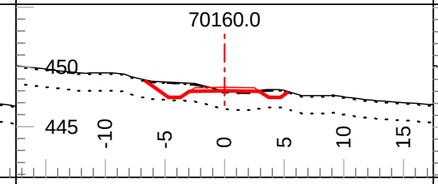

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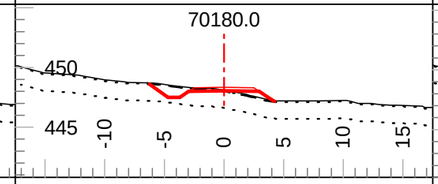

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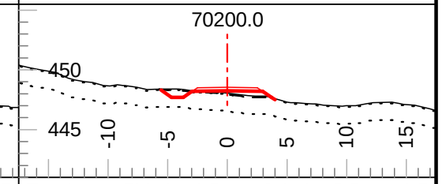

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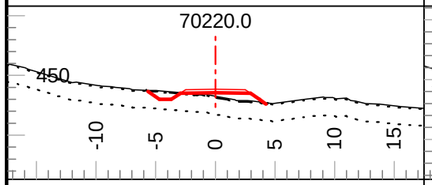

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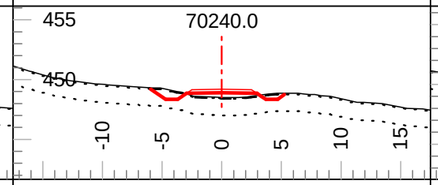

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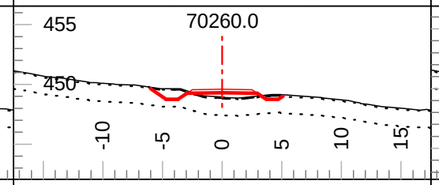

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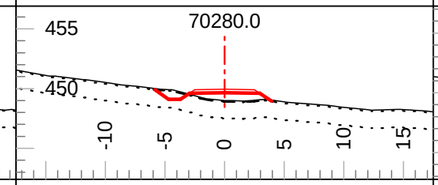

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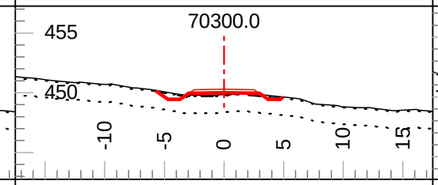

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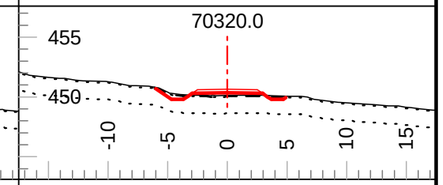

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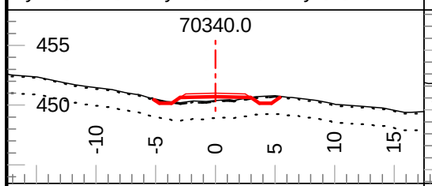

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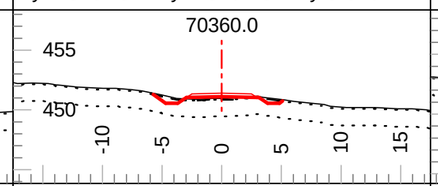

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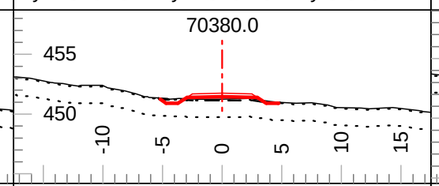

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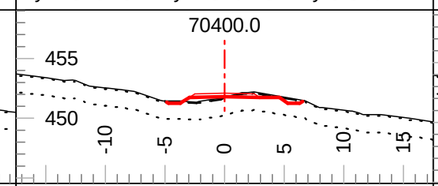

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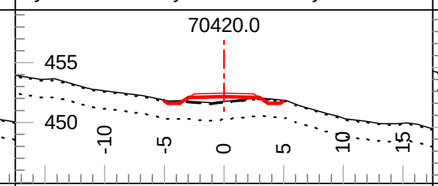

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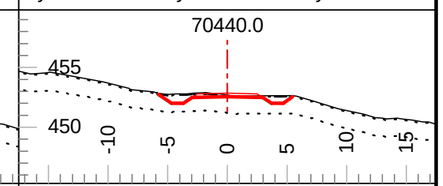

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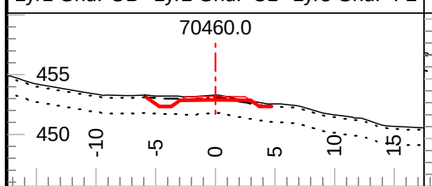

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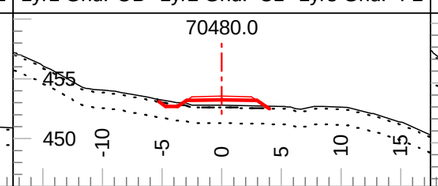

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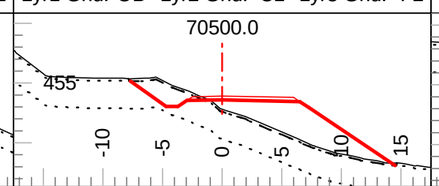

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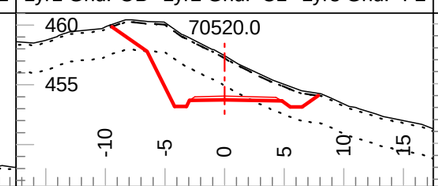

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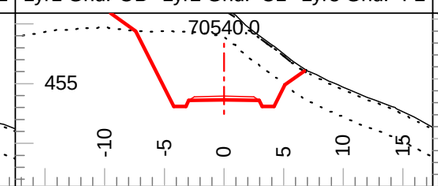

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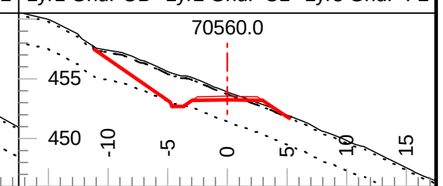

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Coffee Gold Mine

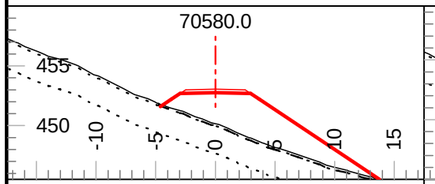
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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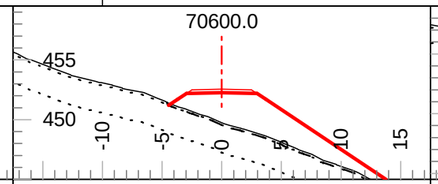

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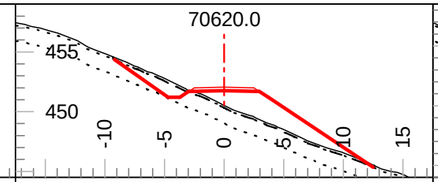

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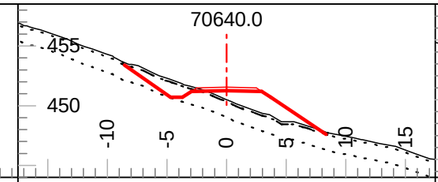

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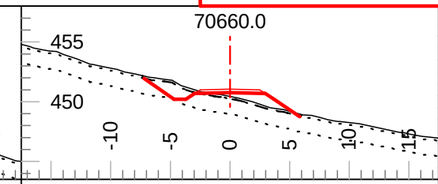

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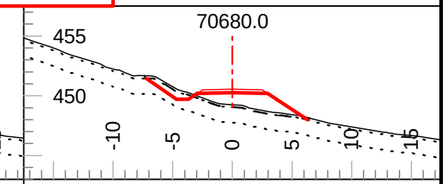

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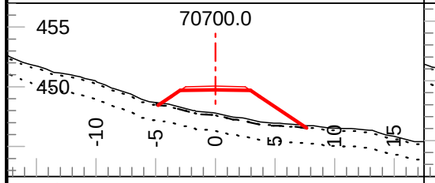

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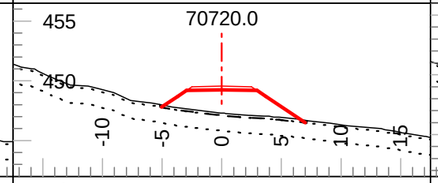

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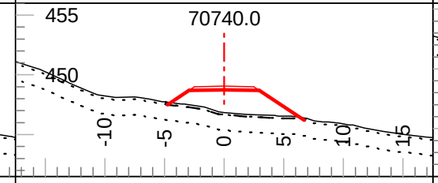

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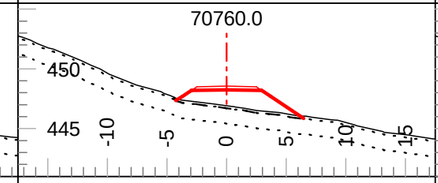
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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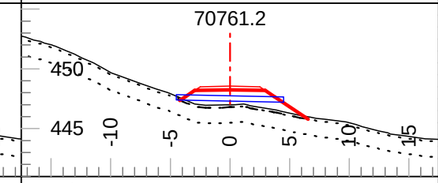
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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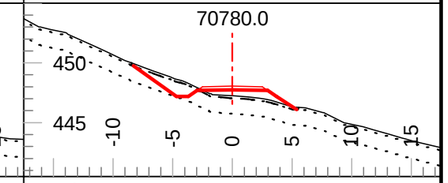

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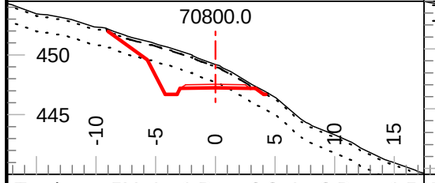

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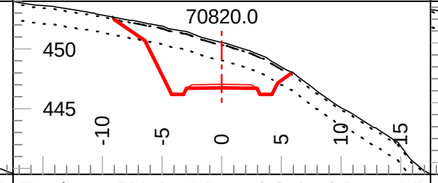

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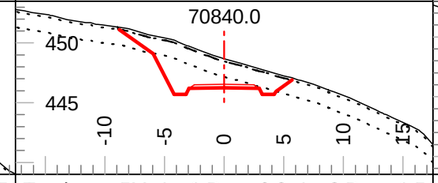

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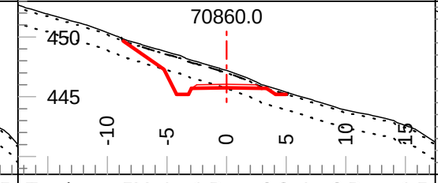

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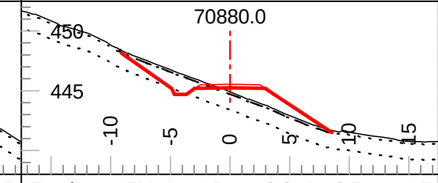

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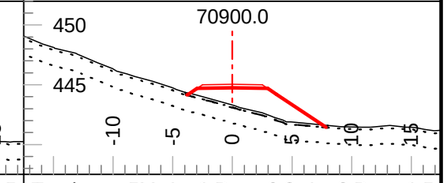

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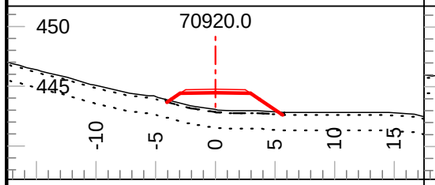

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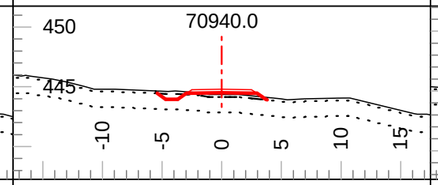

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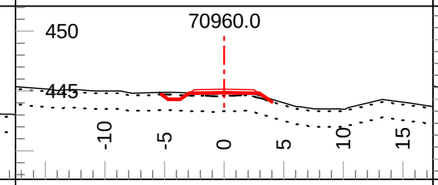

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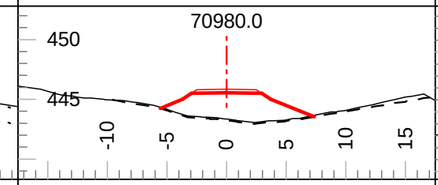

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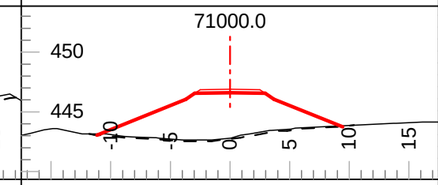

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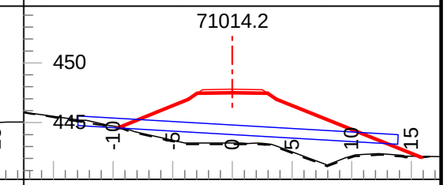

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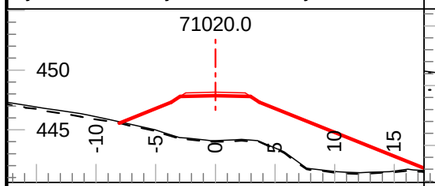

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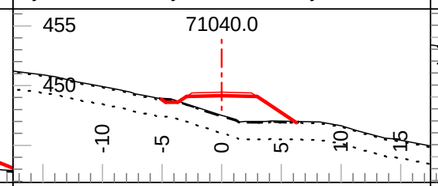

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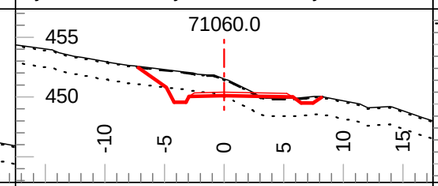
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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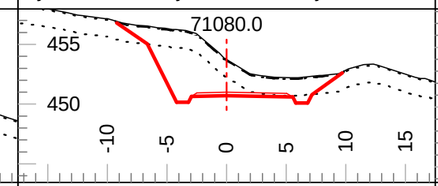

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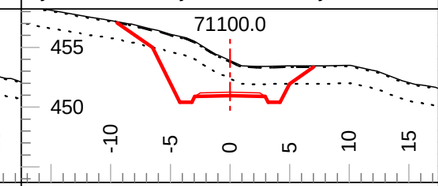

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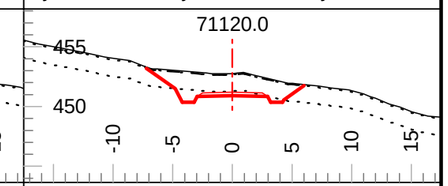

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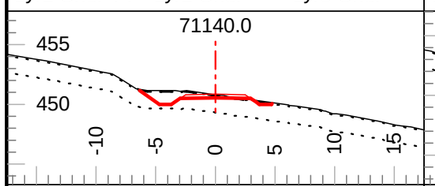

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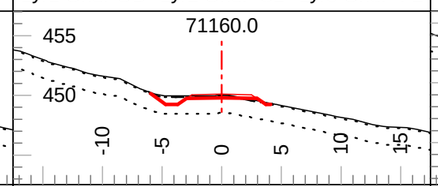

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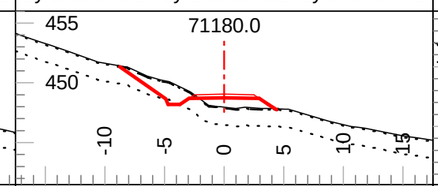

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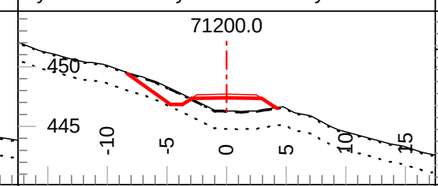

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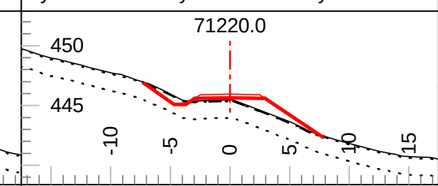

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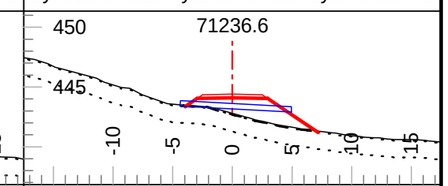

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

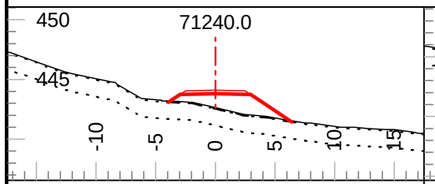
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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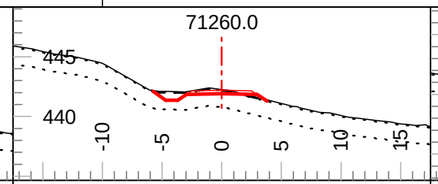

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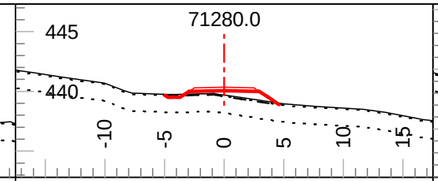

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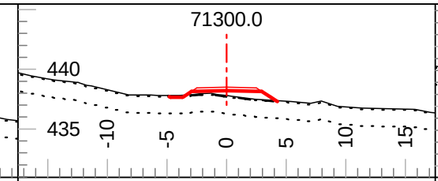

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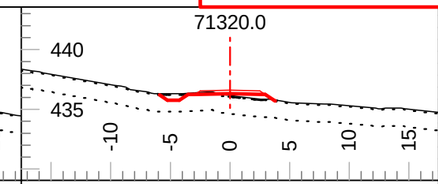

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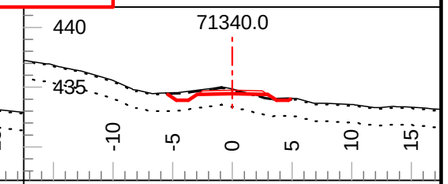

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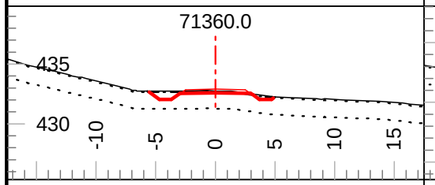

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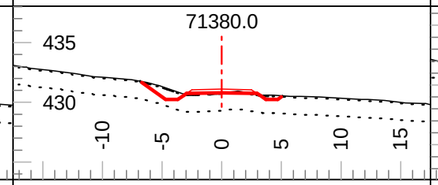

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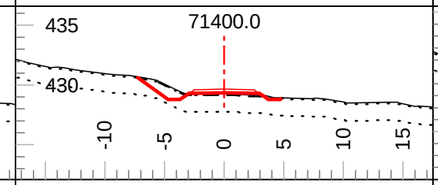

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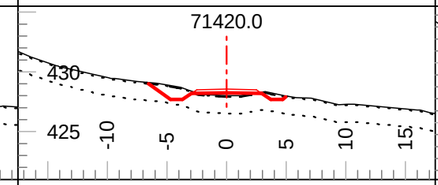

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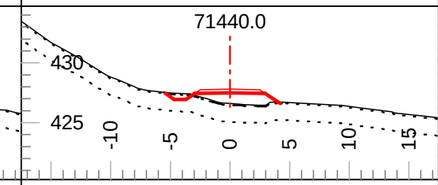

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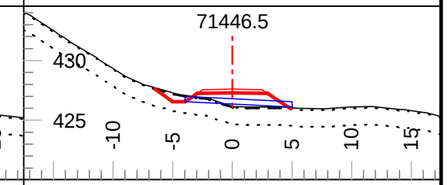

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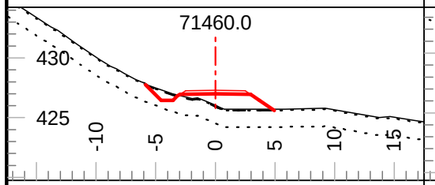

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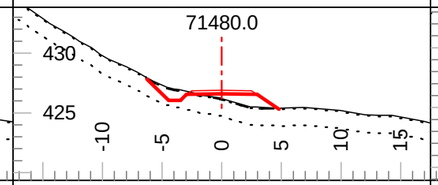

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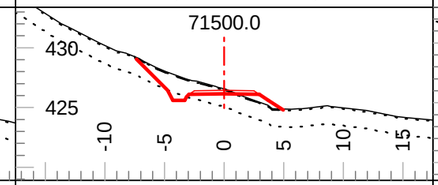

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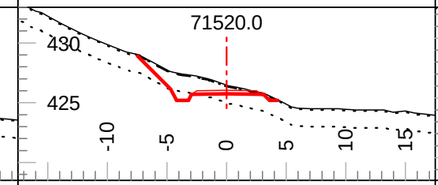

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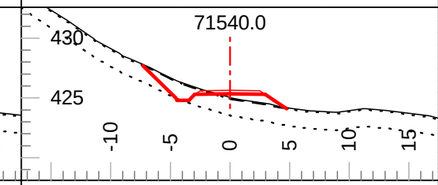

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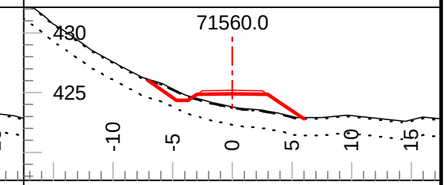

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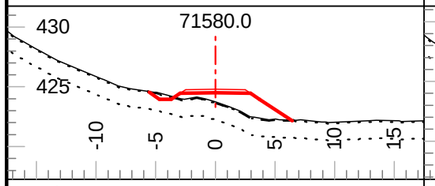

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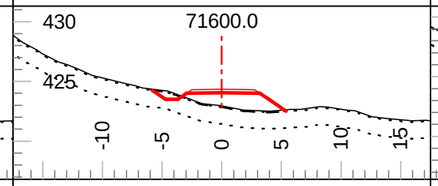

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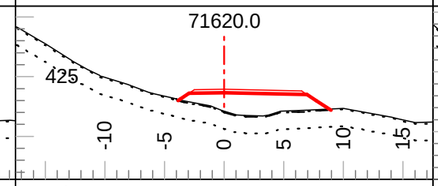

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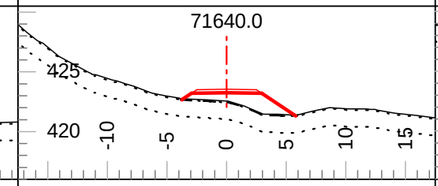

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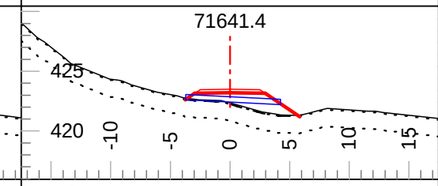

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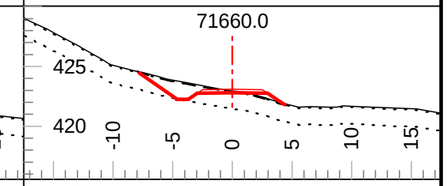

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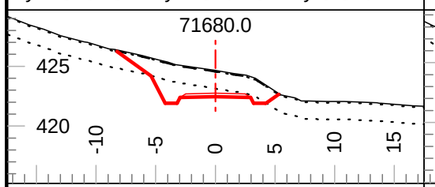

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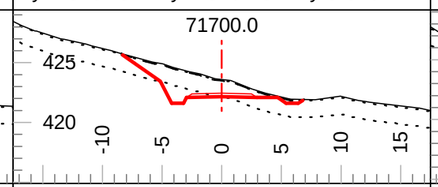

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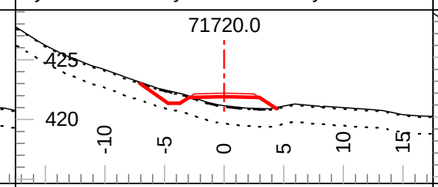

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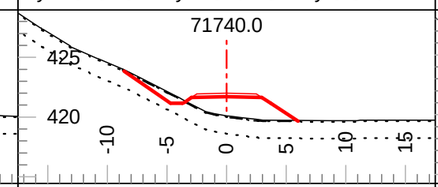

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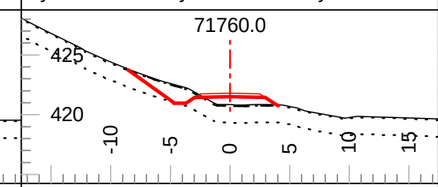

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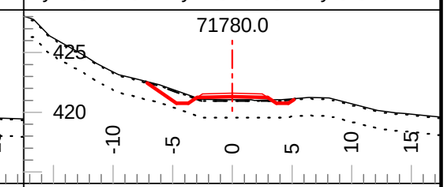

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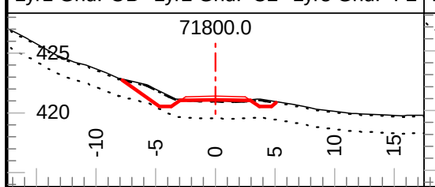

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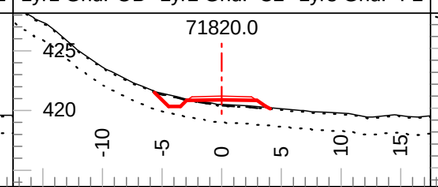

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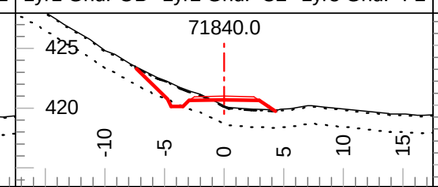

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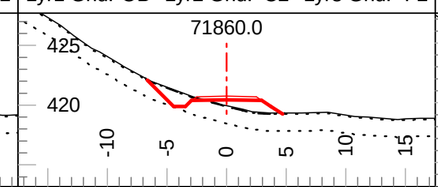

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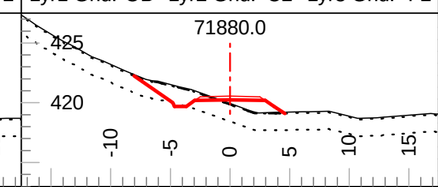

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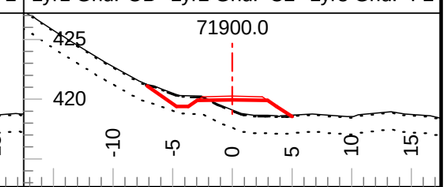

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Coffee Gold Mine

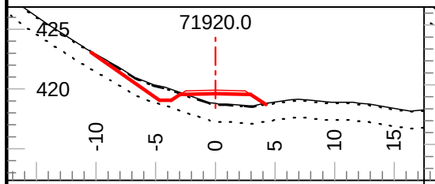
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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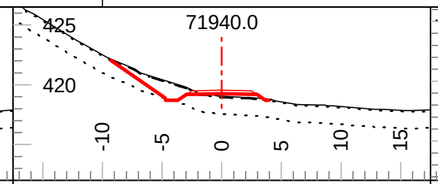

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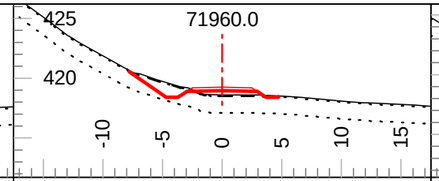

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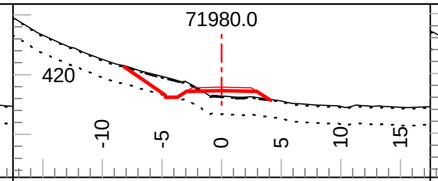

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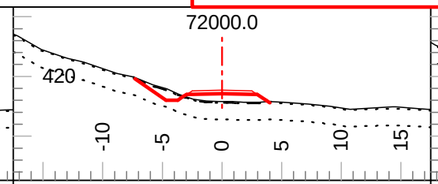

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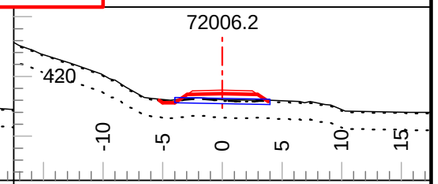

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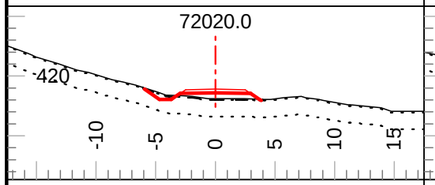

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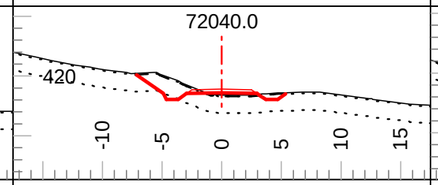

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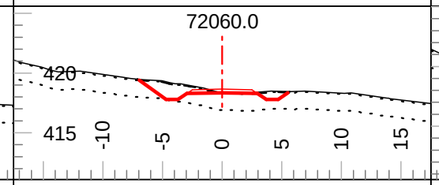

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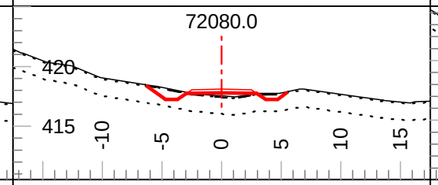

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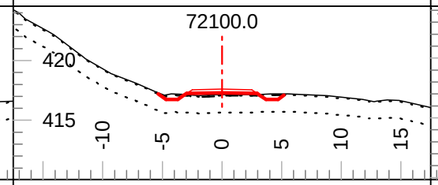

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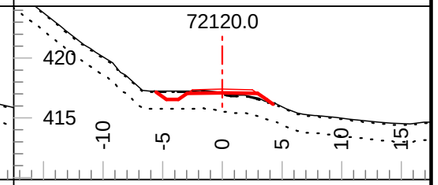

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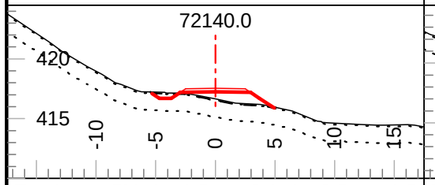

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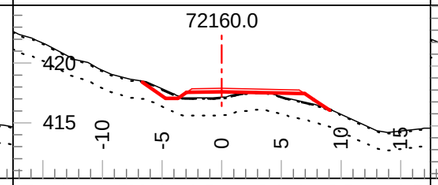

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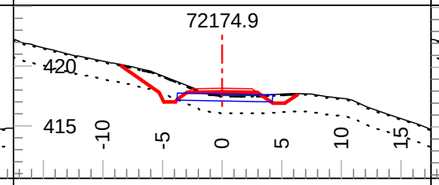

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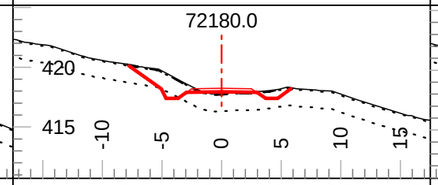

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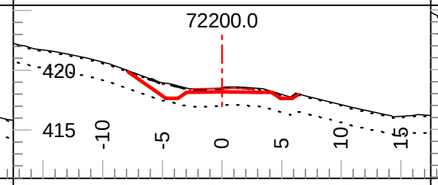

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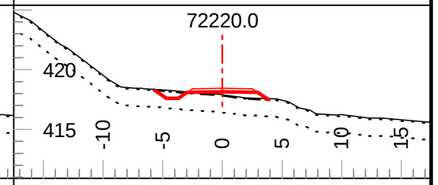

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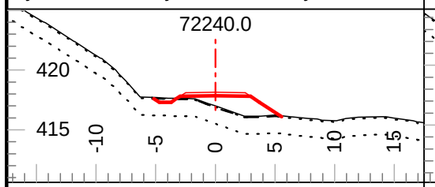

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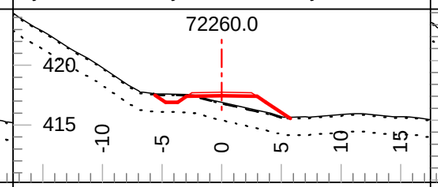

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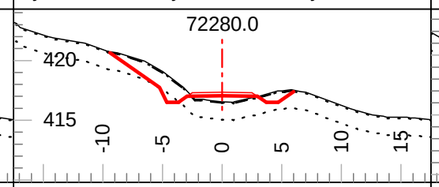

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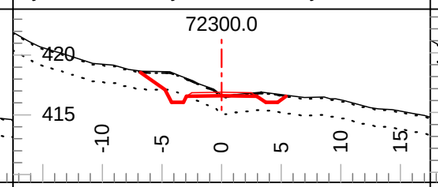

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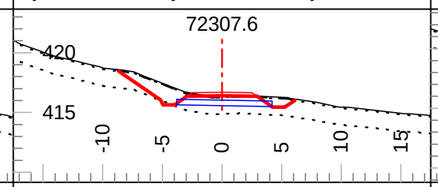
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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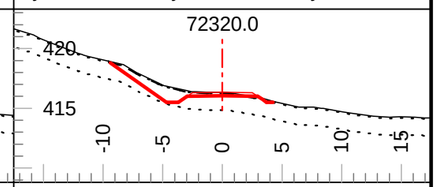

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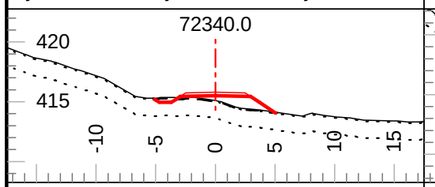

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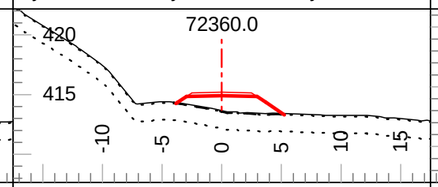

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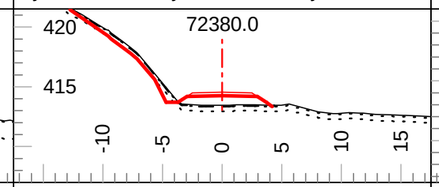

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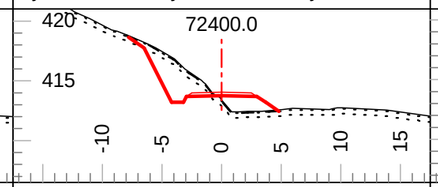

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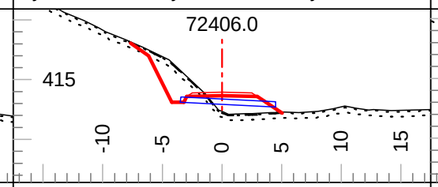

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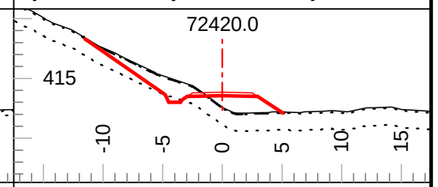

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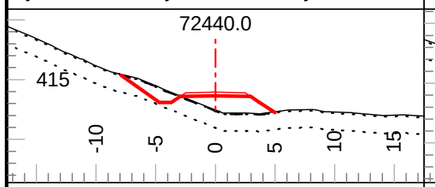

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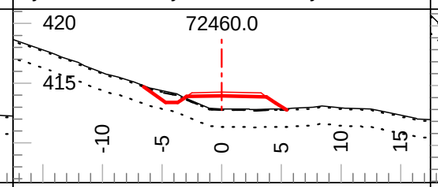

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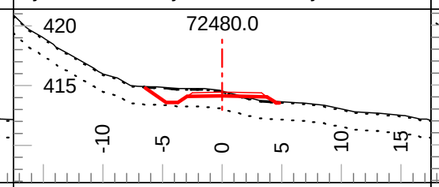

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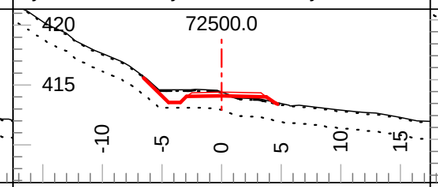

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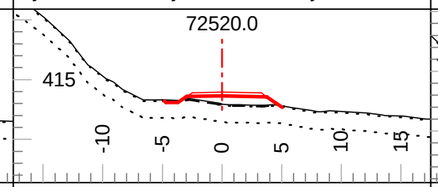

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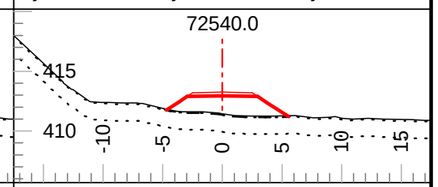

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Coffee Gold Mine

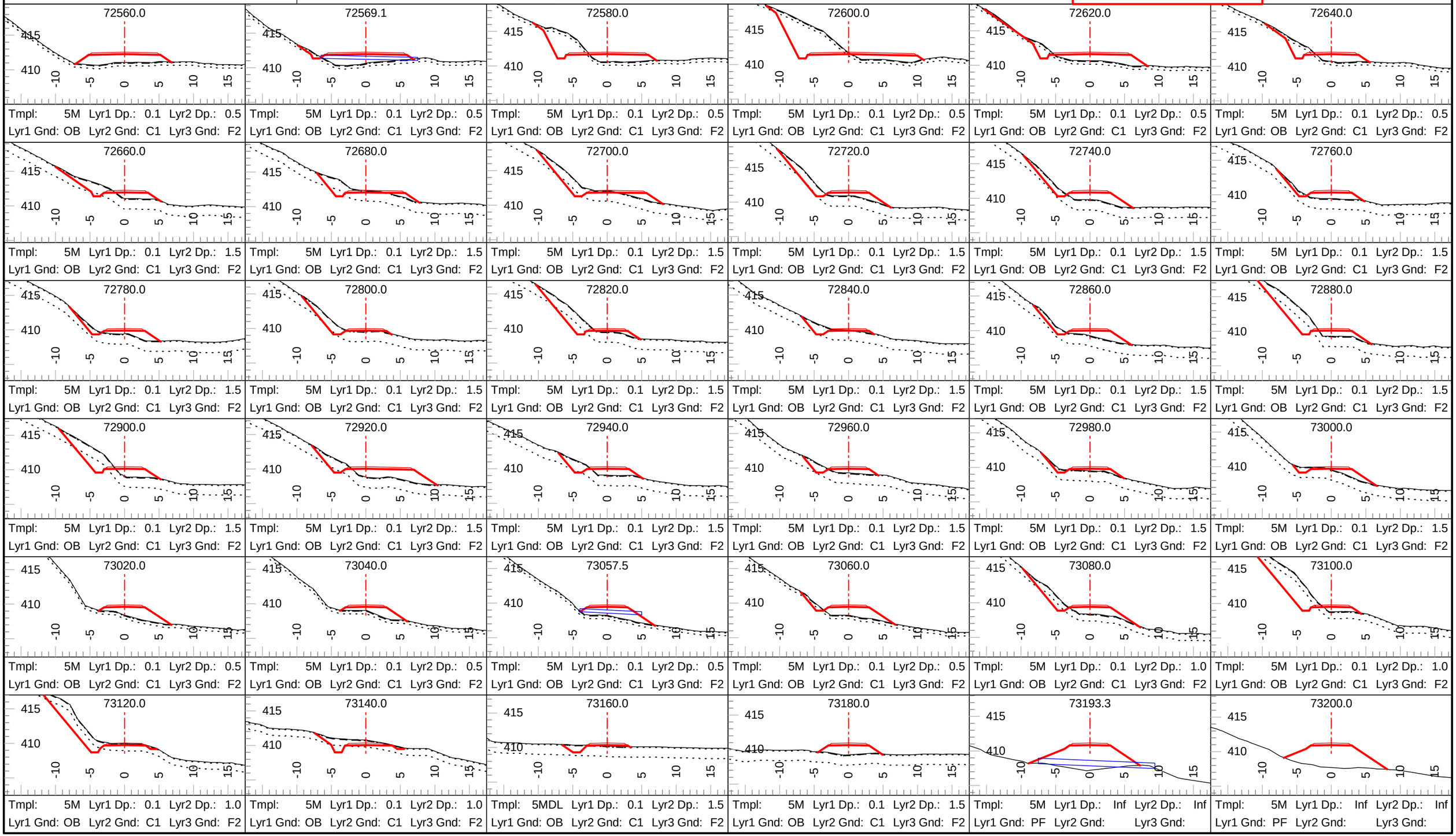
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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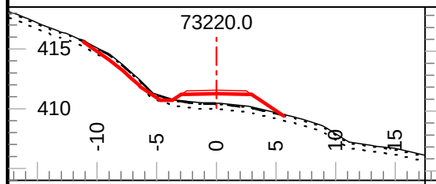

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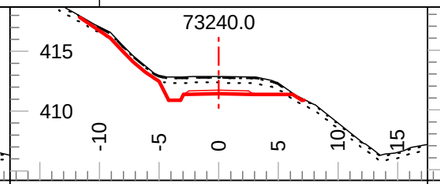

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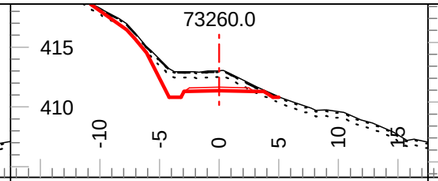

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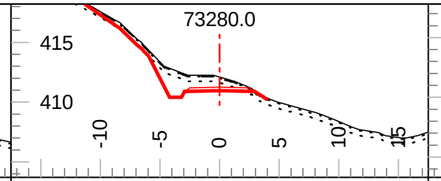

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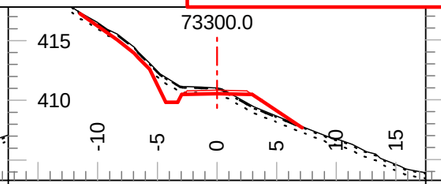

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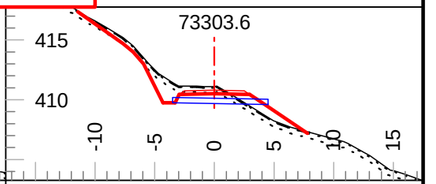

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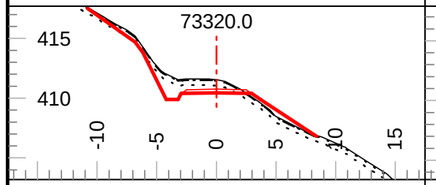

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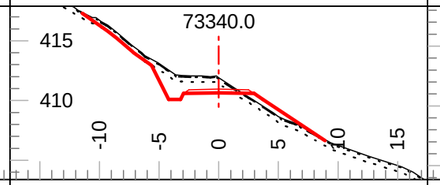

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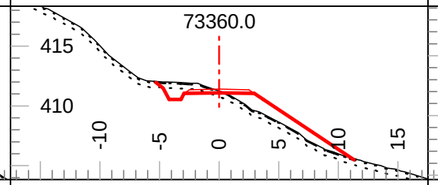

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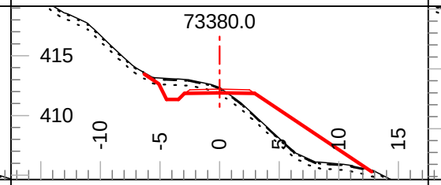

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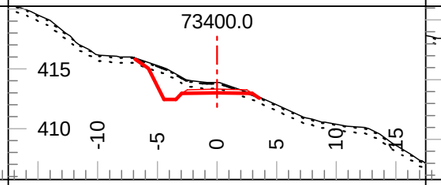

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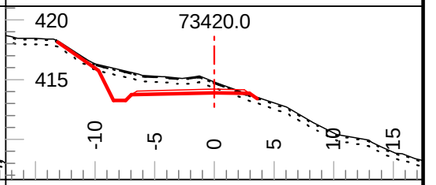

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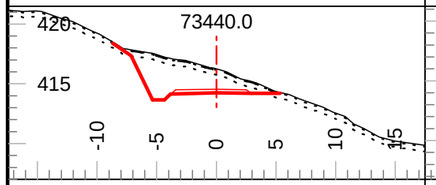

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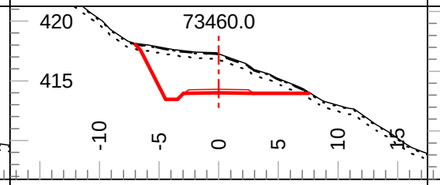

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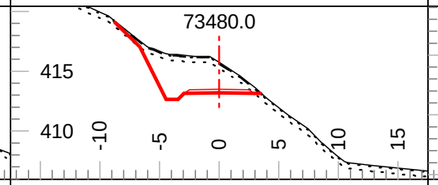

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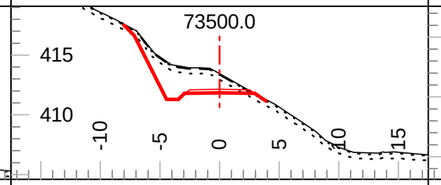

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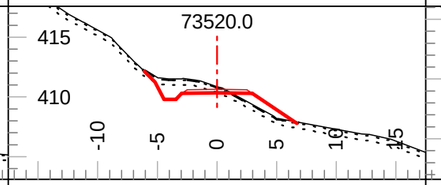

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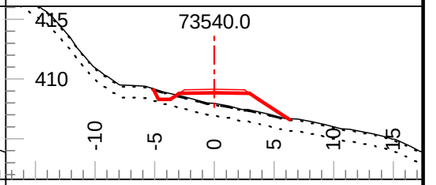

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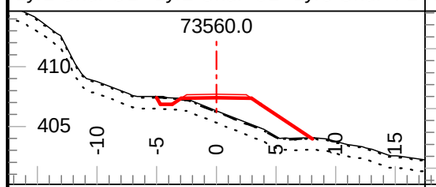

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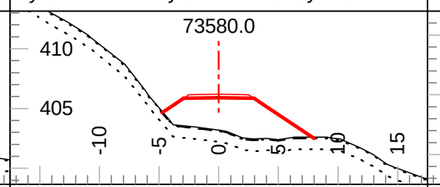

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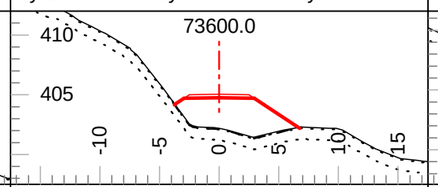

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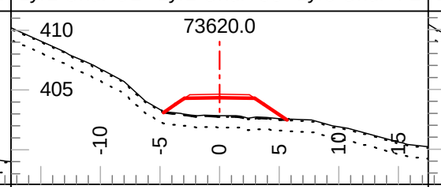

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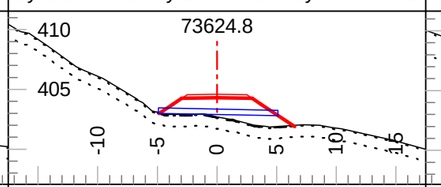

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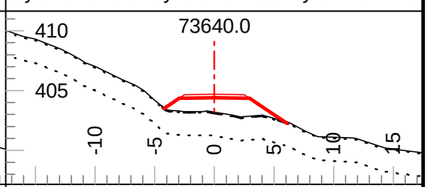

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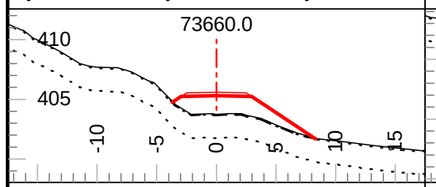

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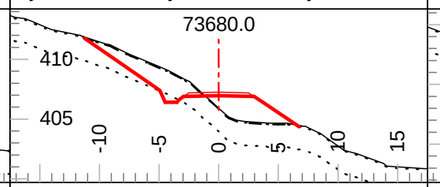

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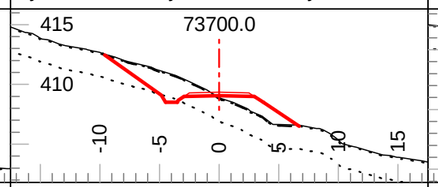

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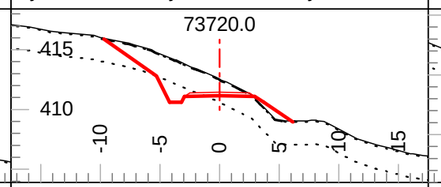

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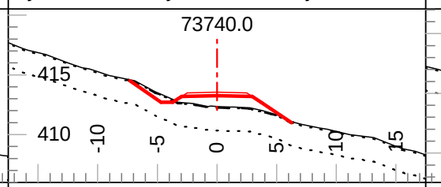

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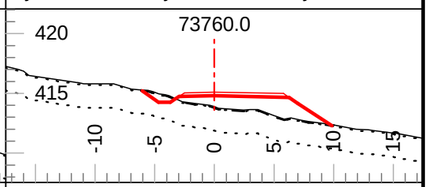

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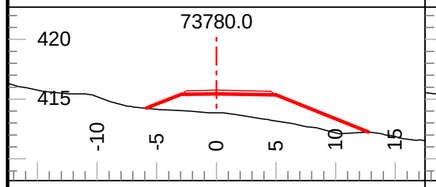

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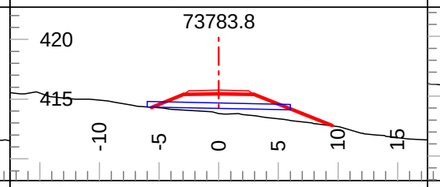

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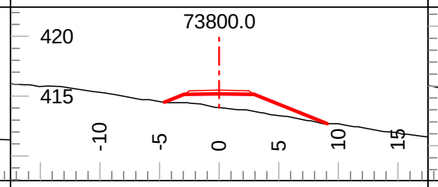

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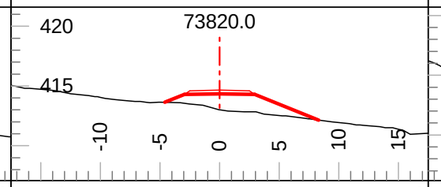

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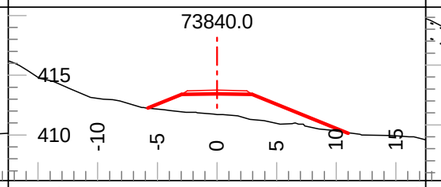

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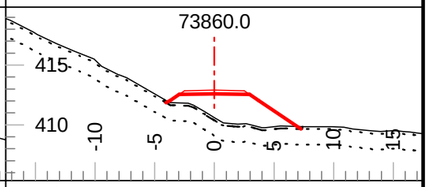


Coffee Gold Mine

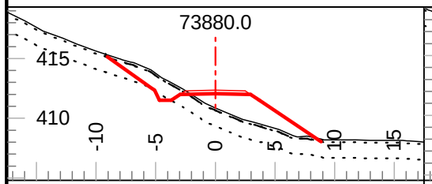
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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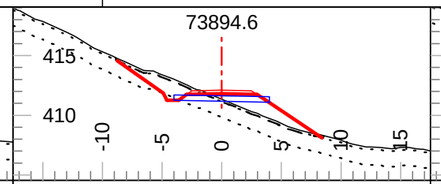

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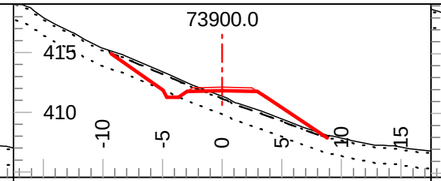

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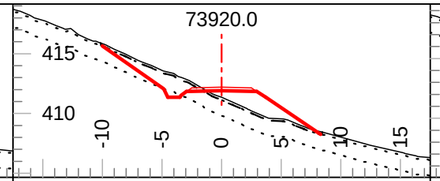

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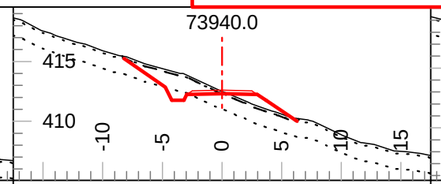

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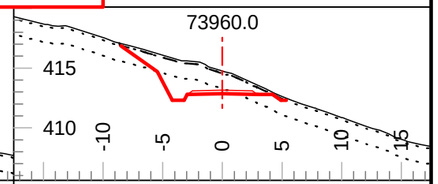

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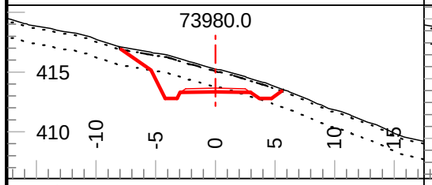

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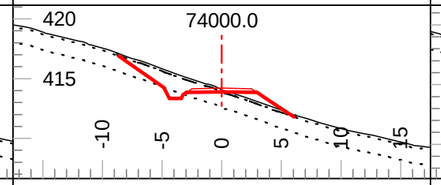

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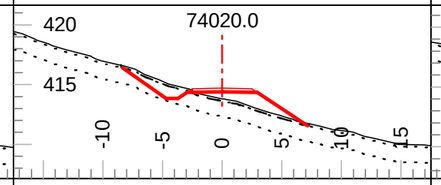

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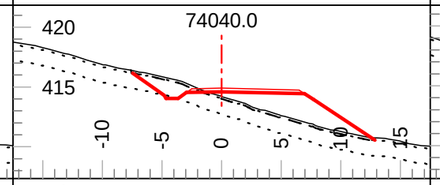

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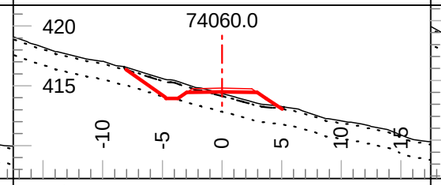

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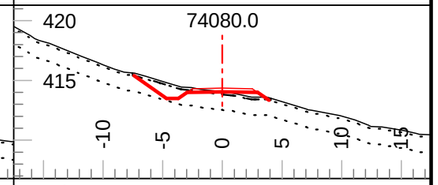

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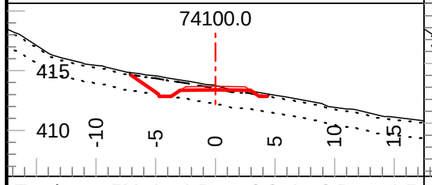

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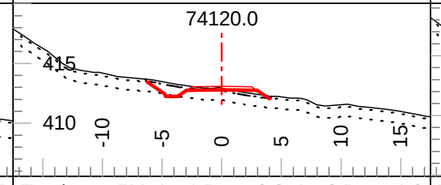

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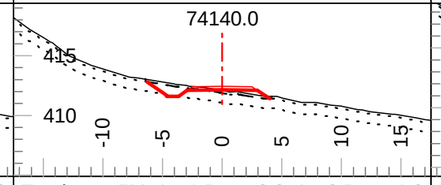

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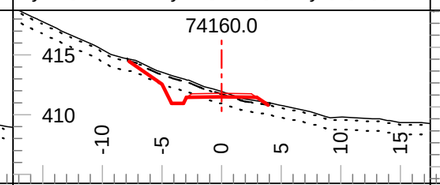

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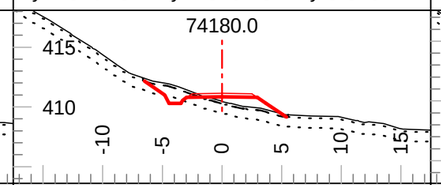

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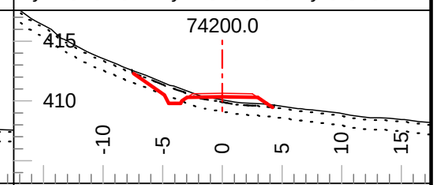

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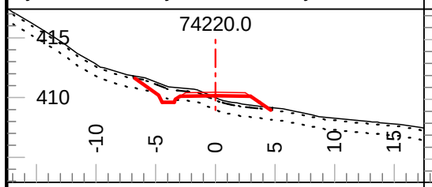

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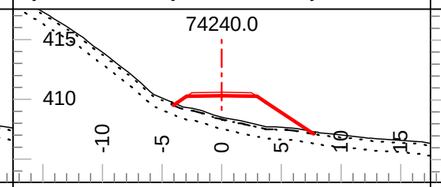

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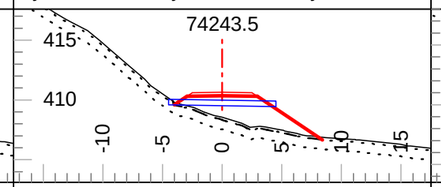

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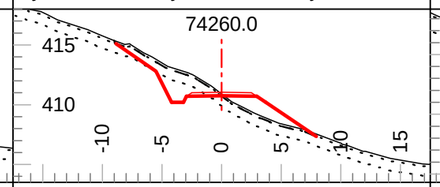

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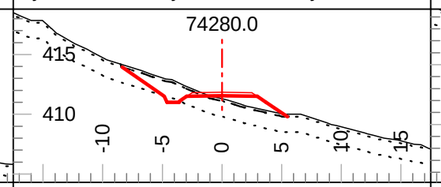

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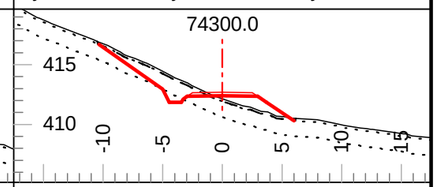

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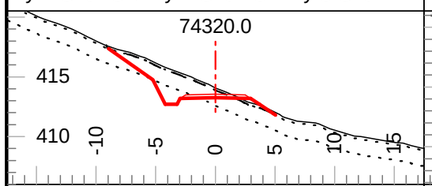

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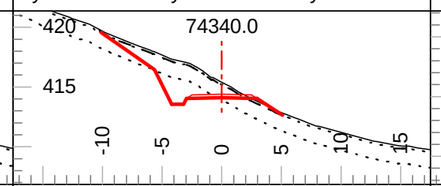

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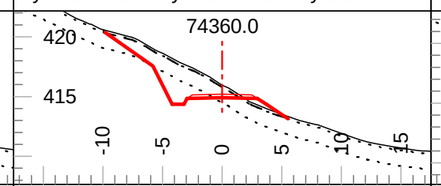

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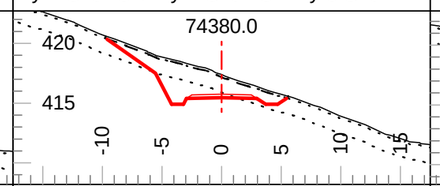

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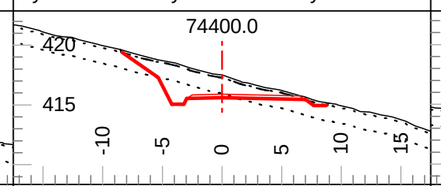

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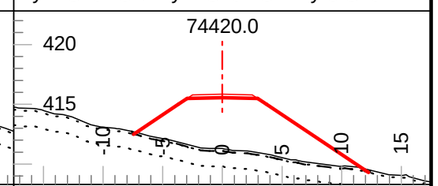

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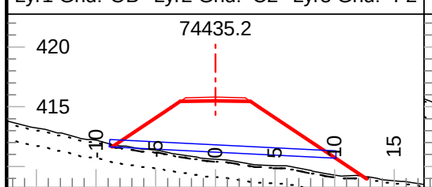

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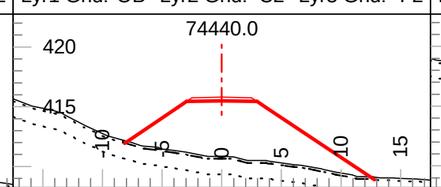

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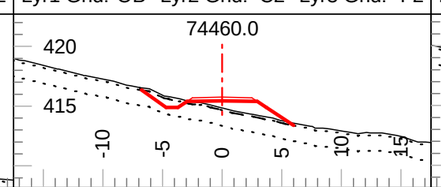

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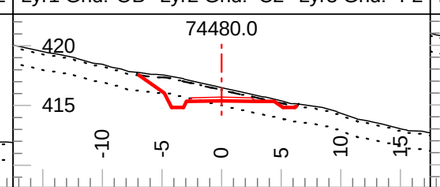
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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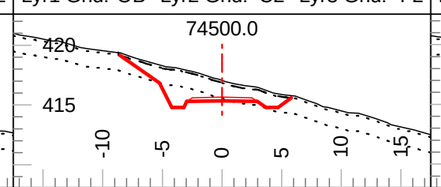

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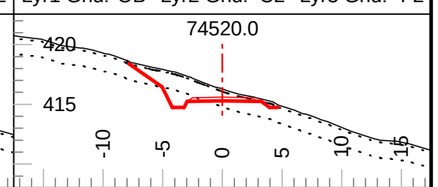

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Coffee Gold Mine

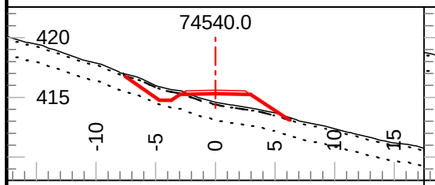
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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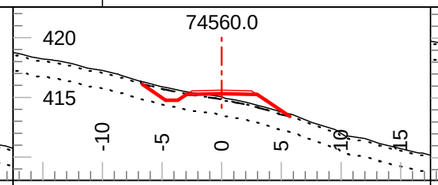

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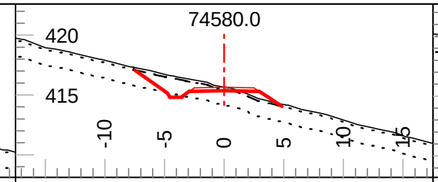

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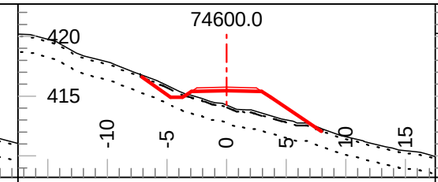

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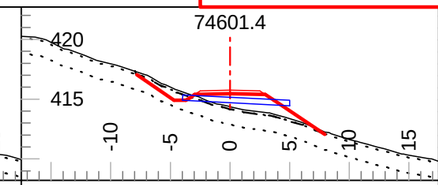

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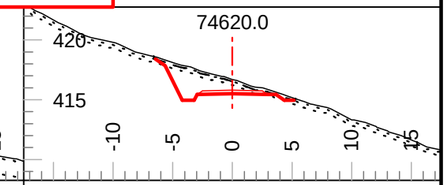

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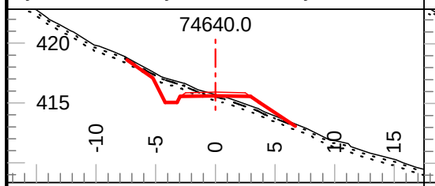

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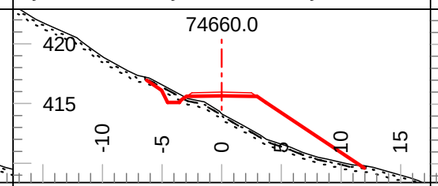

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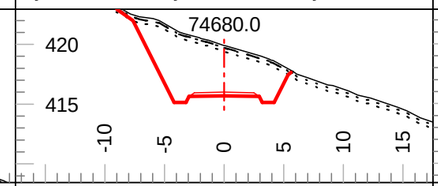

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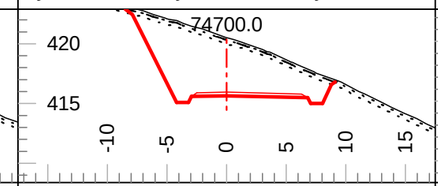

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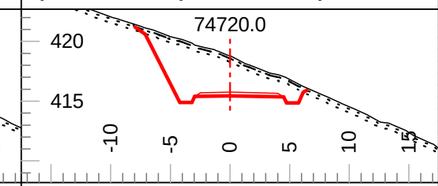

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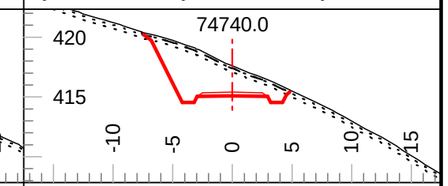

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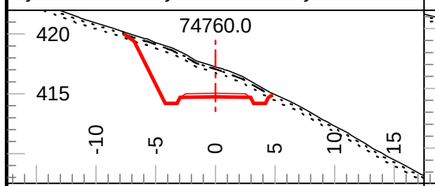

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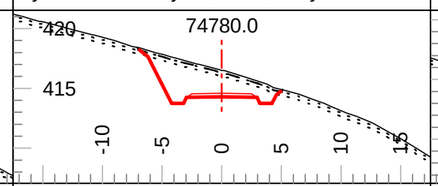

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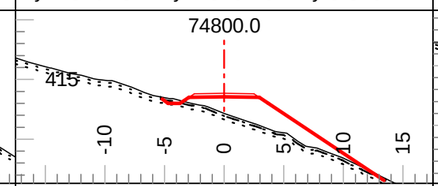

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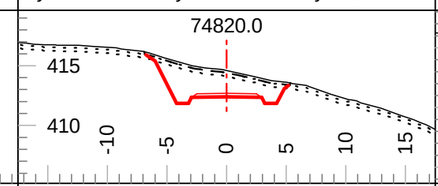

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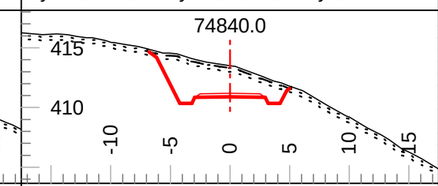

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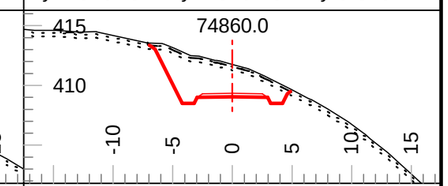

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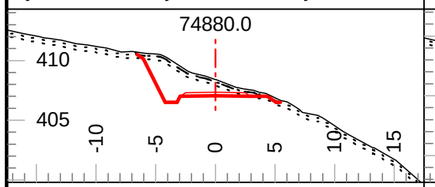

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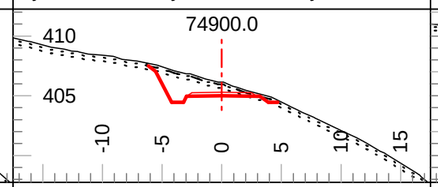

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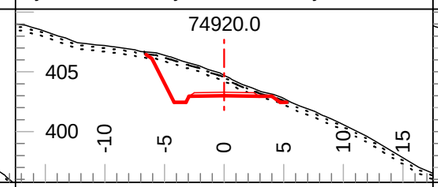

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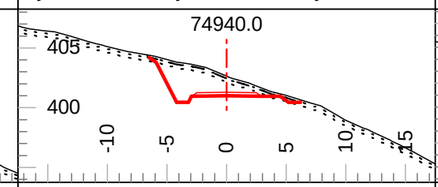

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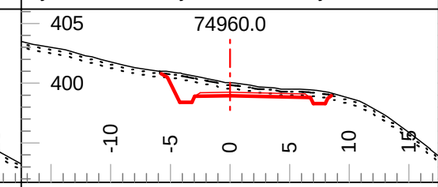

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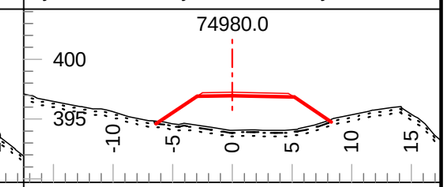

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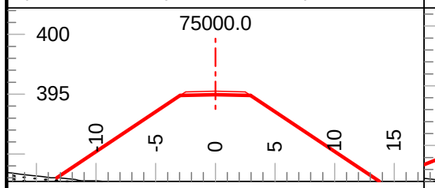

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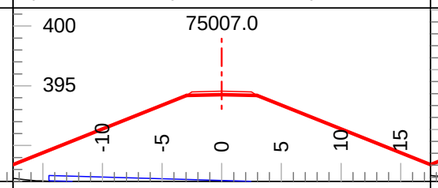

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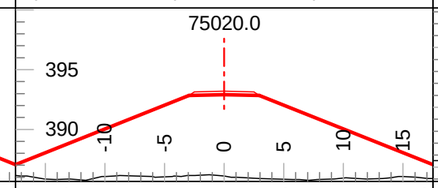

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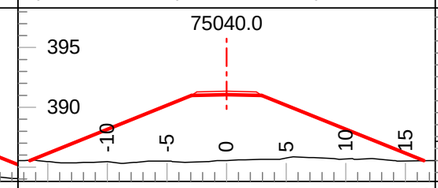

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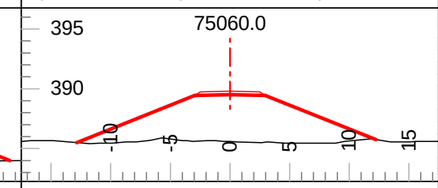

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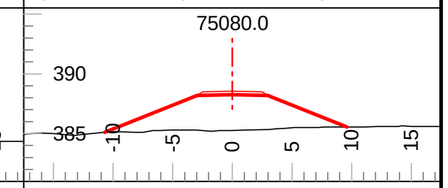

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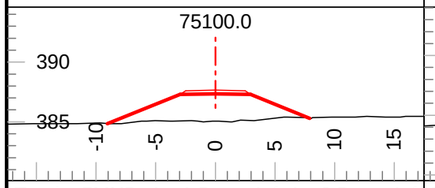

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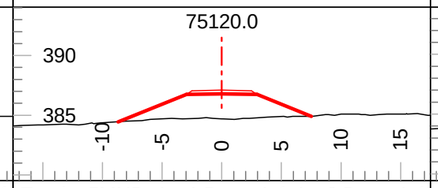

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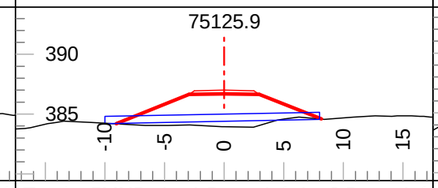

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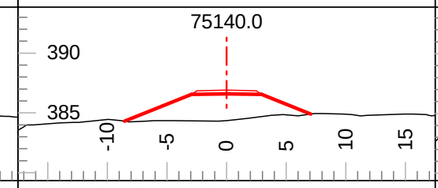

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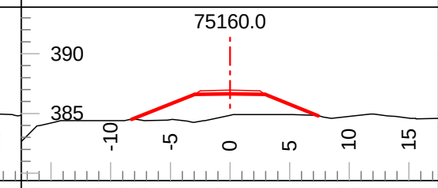

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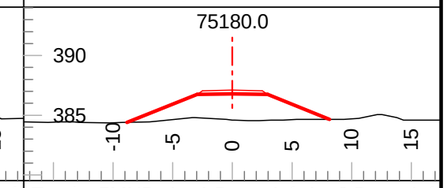


Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

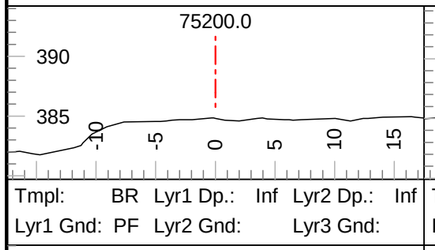
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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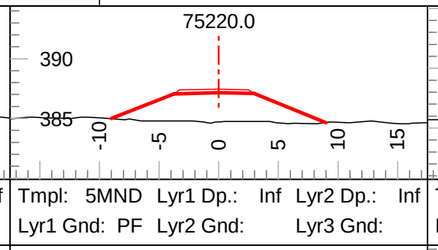

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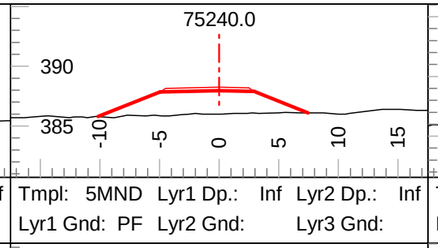

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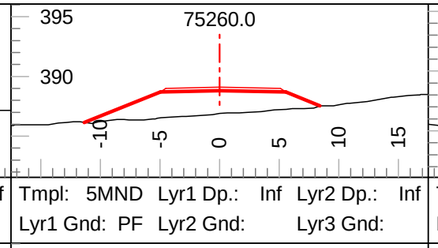

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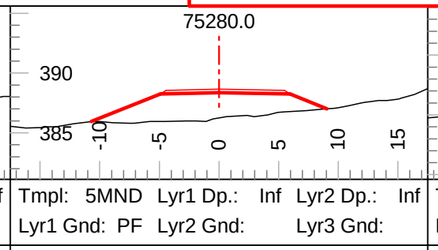
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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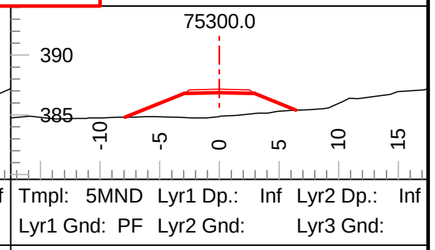
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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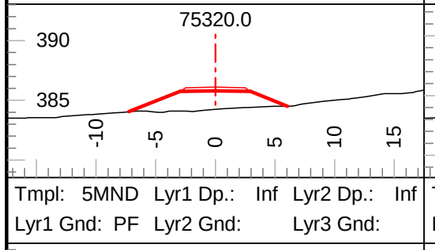
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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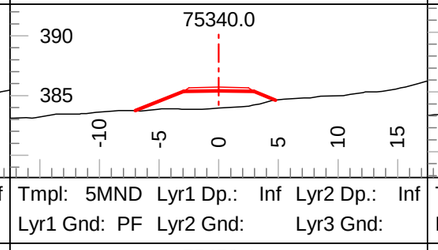

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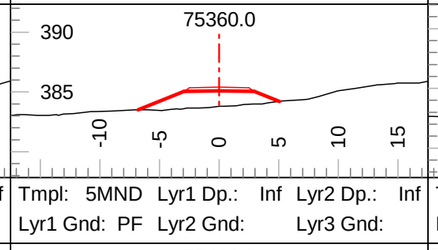

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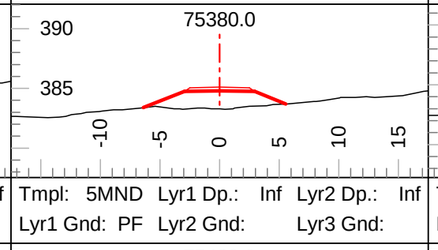

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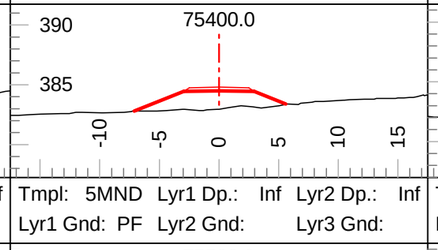

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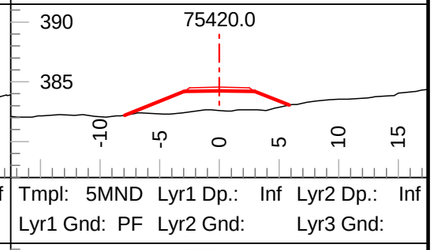

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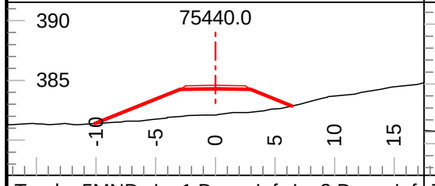

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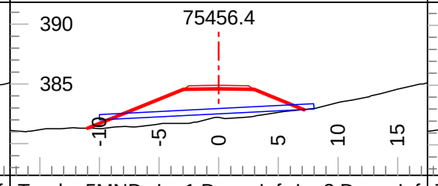

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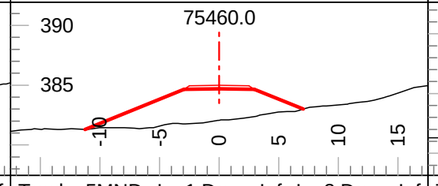

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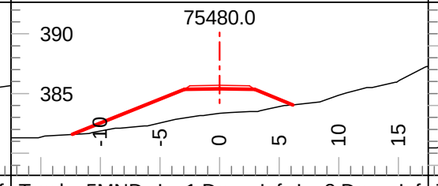

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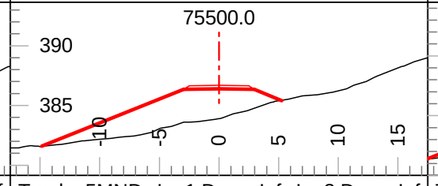

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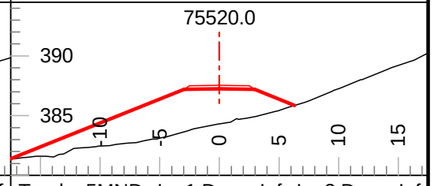

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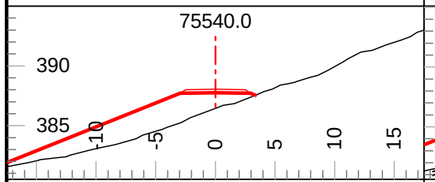

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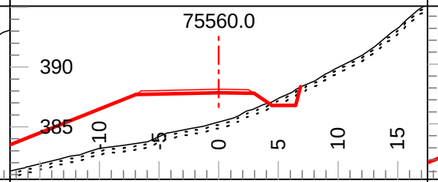

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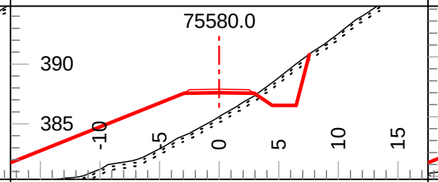
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F1



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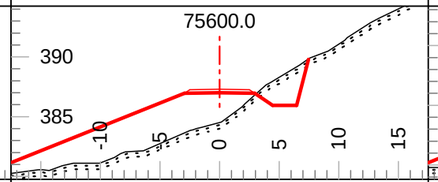

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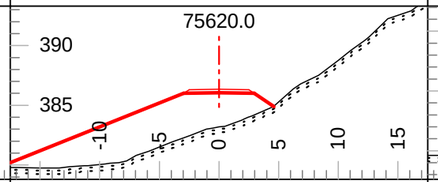

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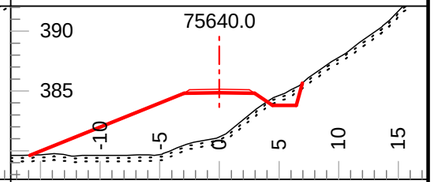

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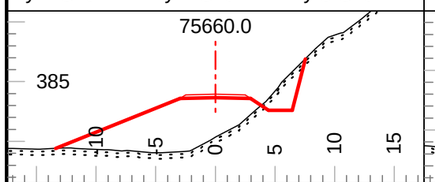

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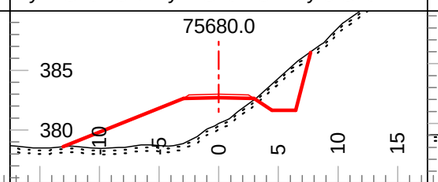

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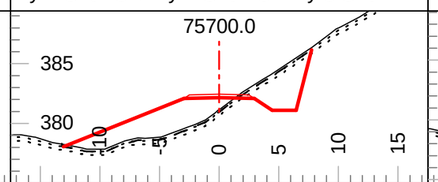

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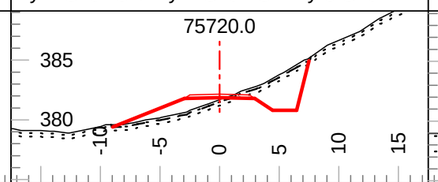

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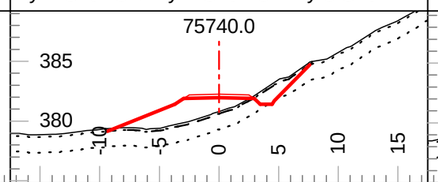

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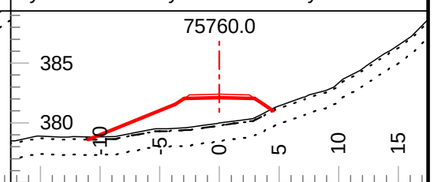

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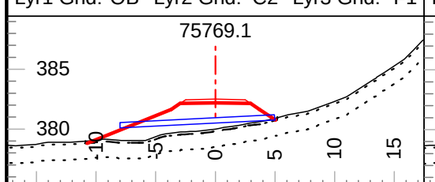

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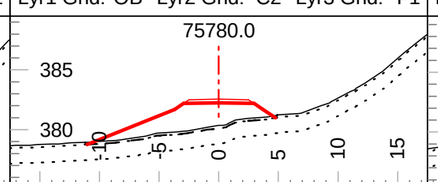

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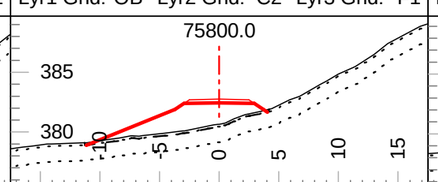

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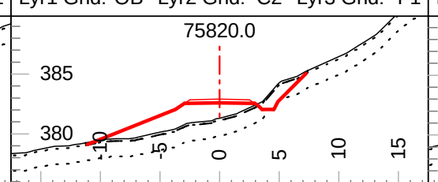

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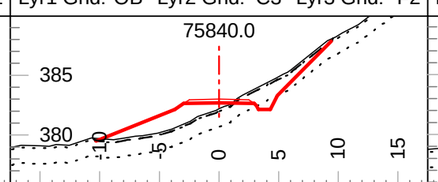

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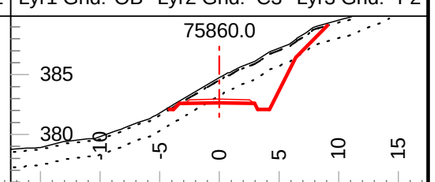

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Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

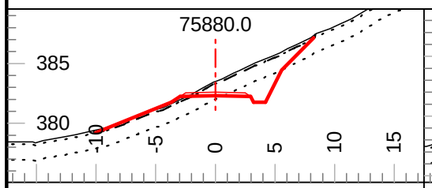
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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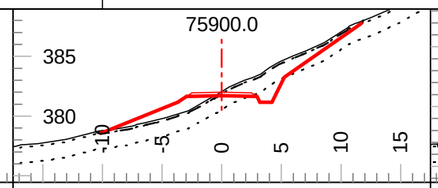

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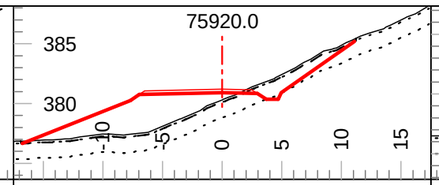

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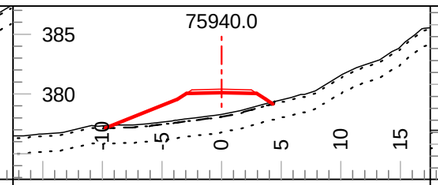

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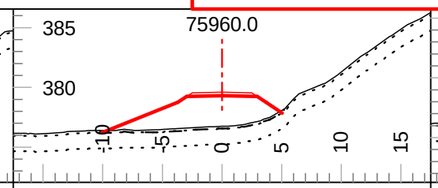

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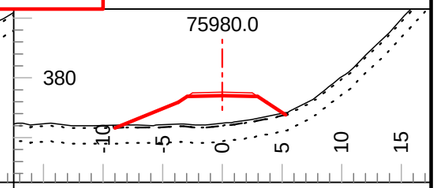

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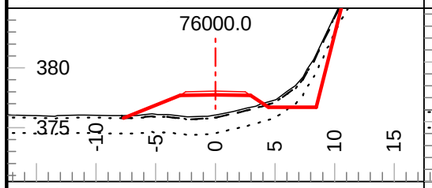

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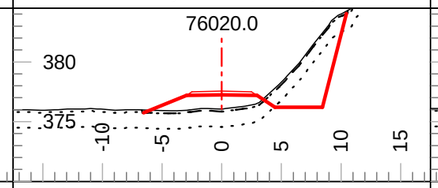
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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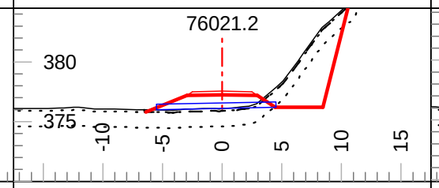
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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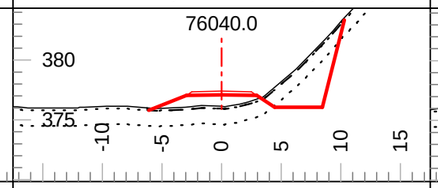
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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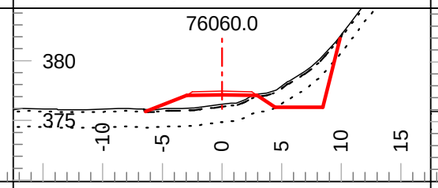

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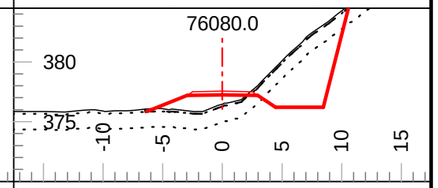
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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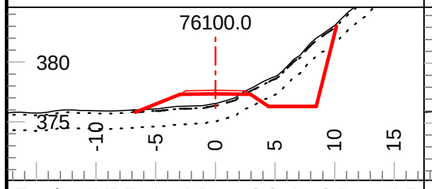
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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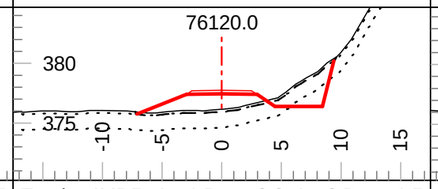
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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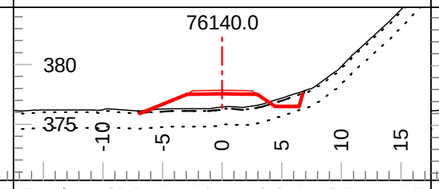
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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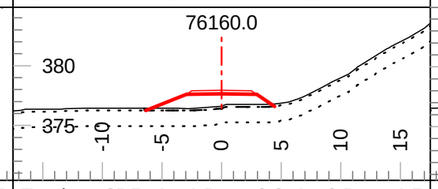
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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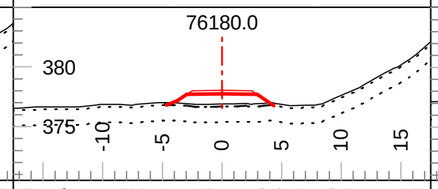
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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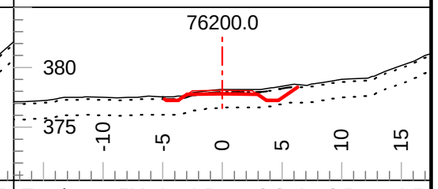

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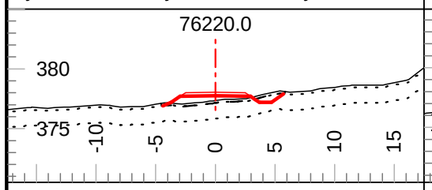

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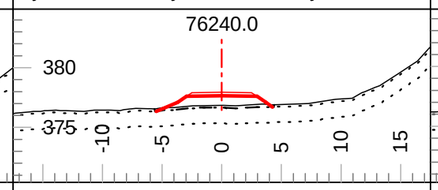
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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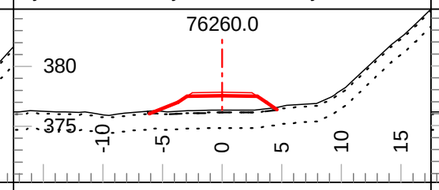
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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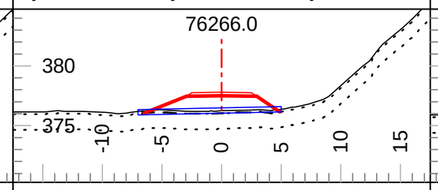

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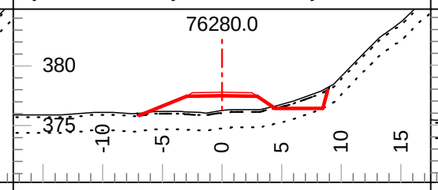

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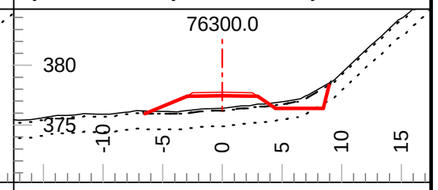

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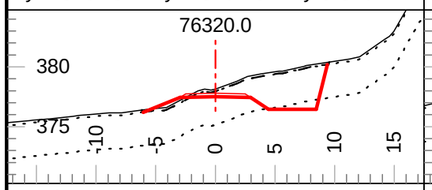

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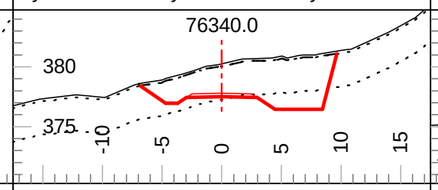

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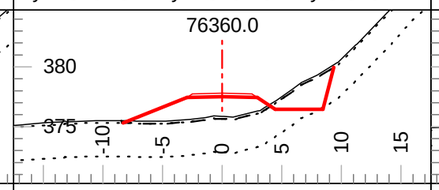

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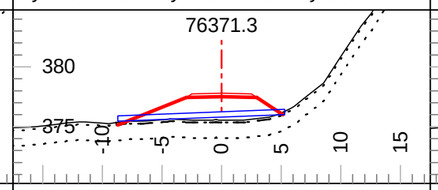

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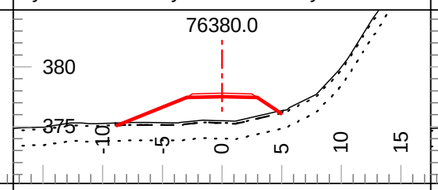

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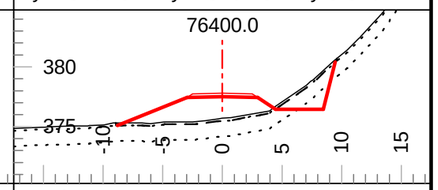

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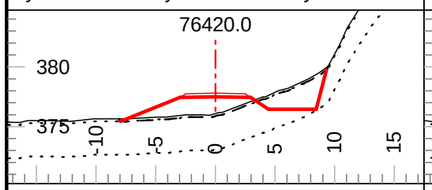

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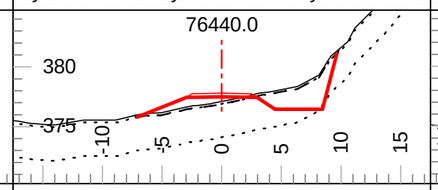

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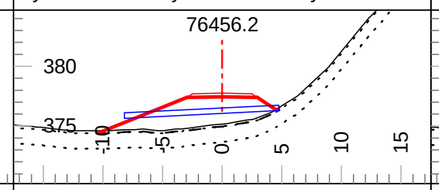

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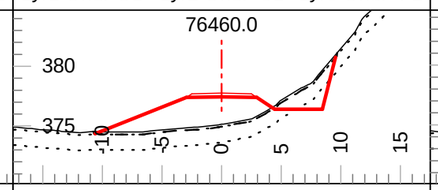

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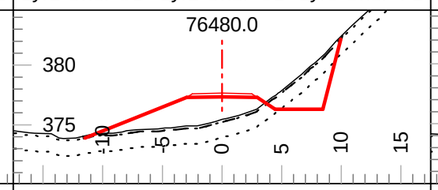

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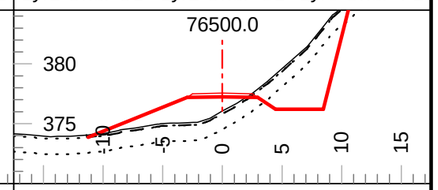

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

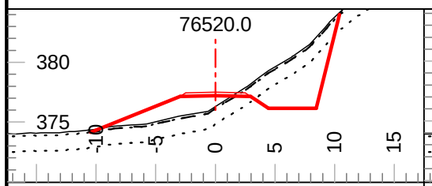
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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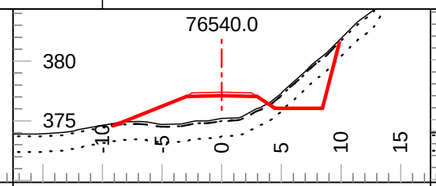

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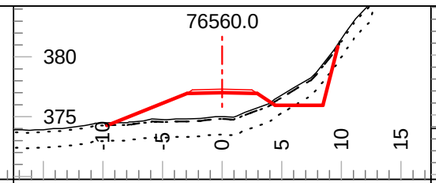

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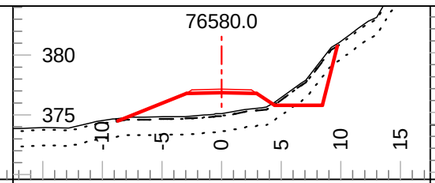

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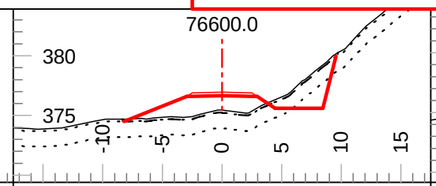

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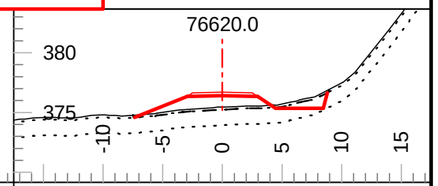

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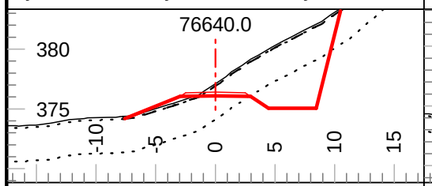

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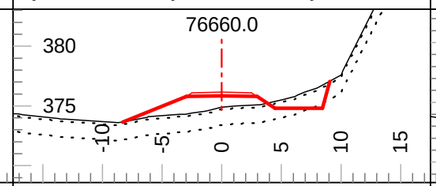

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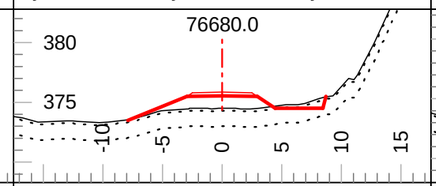

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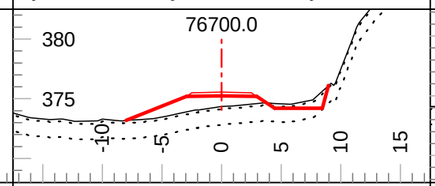

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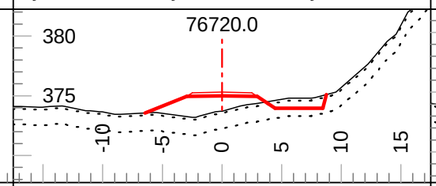

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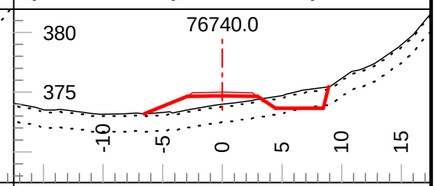

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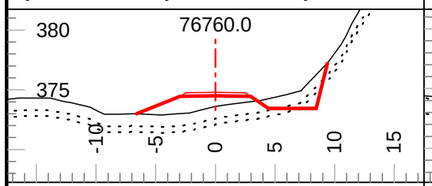

Tmpl: 4MDR Lyr1 Dp.: 1.0 Lyr2 Dp.: 1.5
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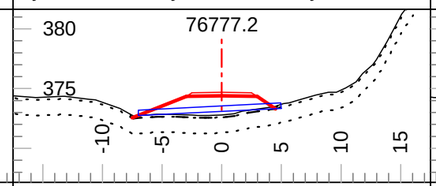

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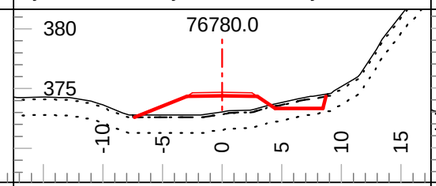
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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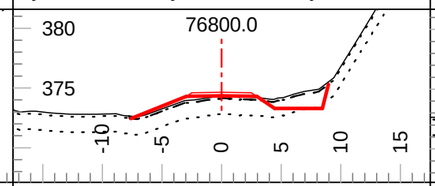

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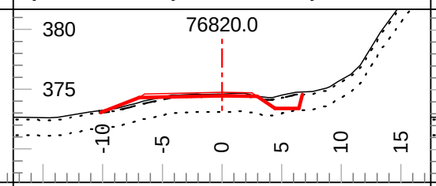

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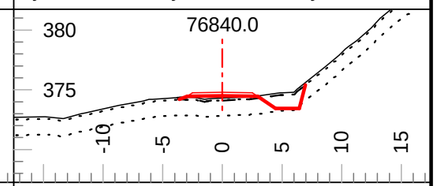
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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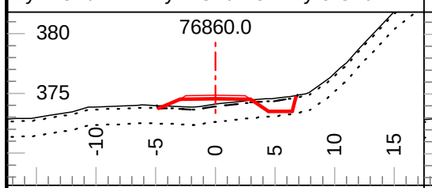
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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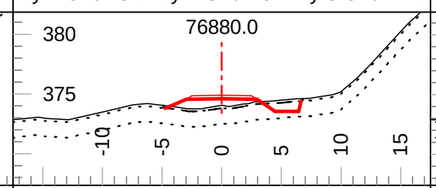

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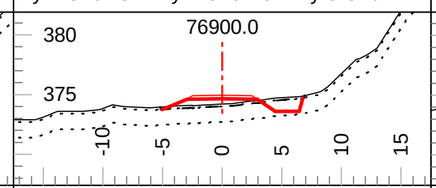

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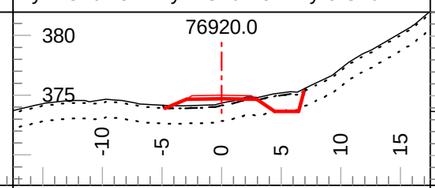

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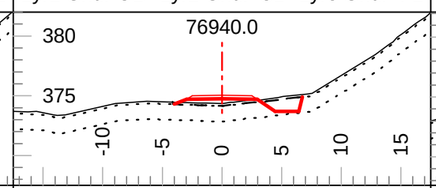

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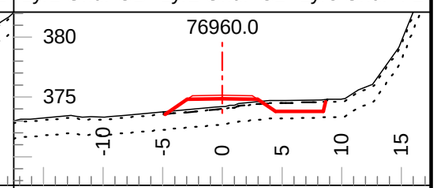

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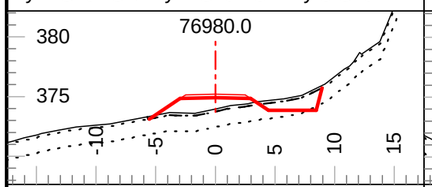

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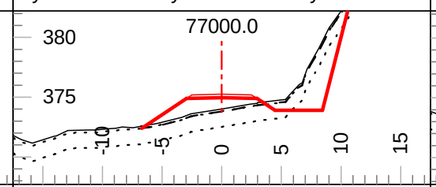

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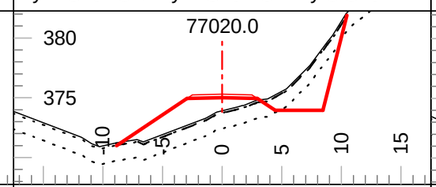

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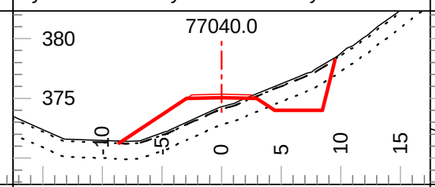

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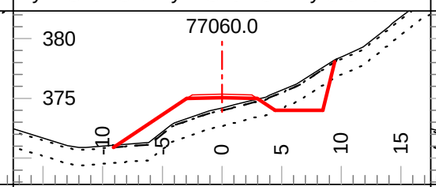

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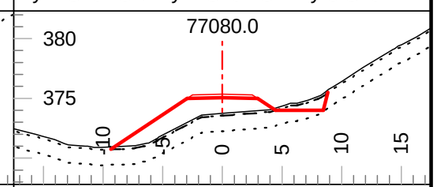

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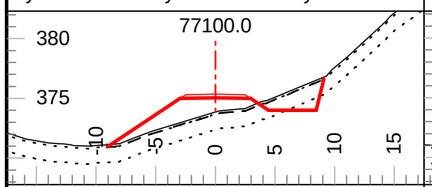

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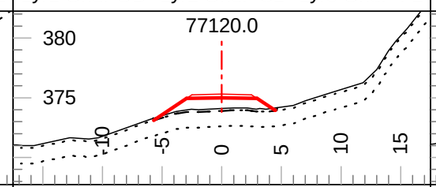

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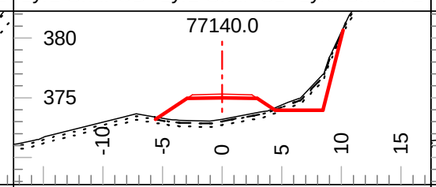

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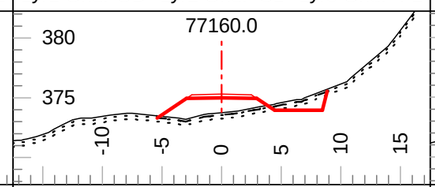

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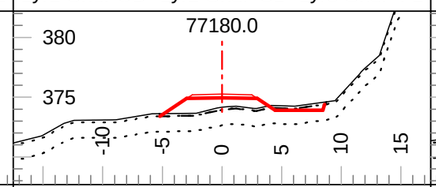

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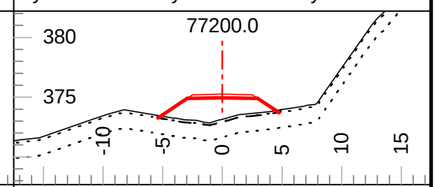

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Coffee Gold Mine

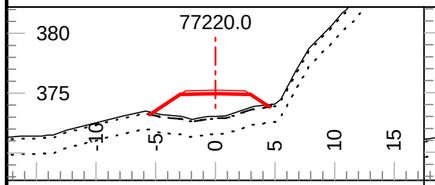
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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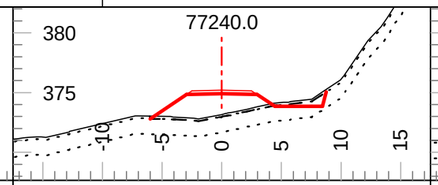

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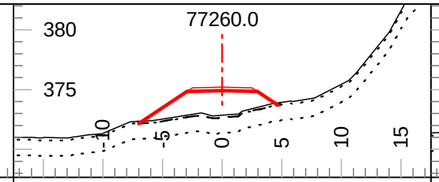

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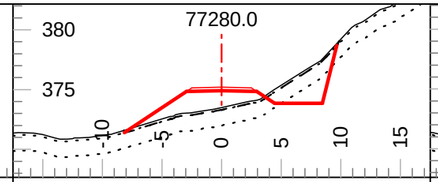

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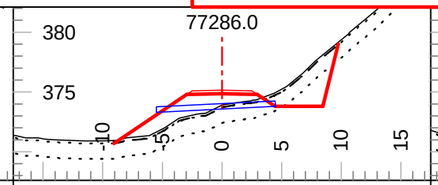

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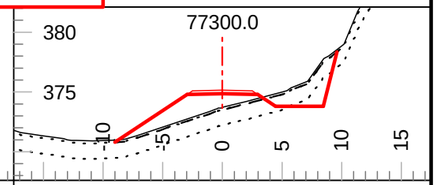

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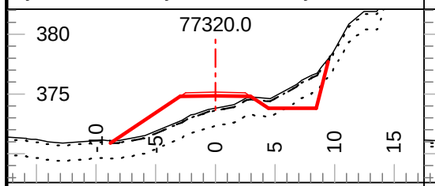

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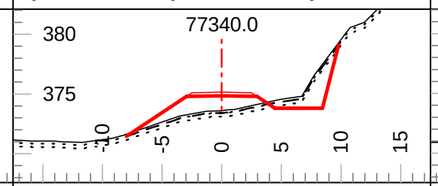

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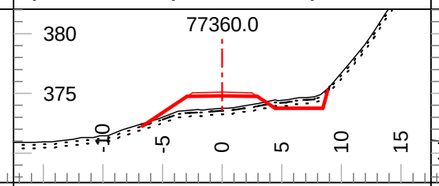

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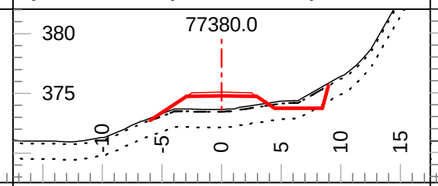

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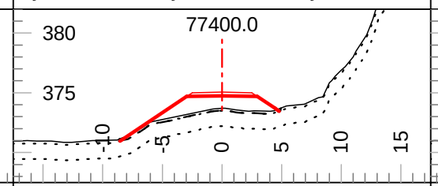

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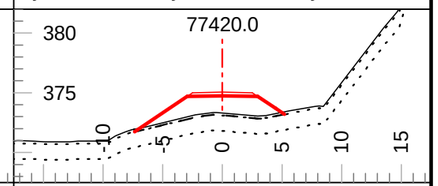

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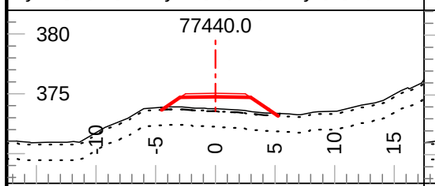

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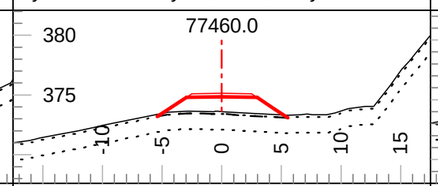

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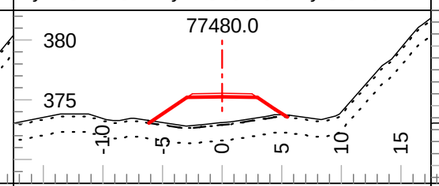

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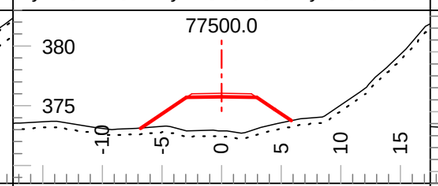

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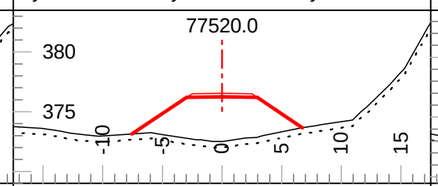
Lyr1 Gnd: C1 Lyr2 Gnd: F2 Lyr3 Gnd:



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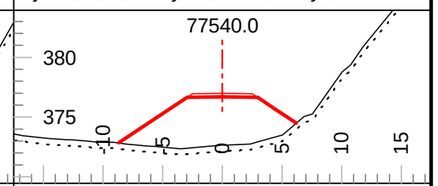

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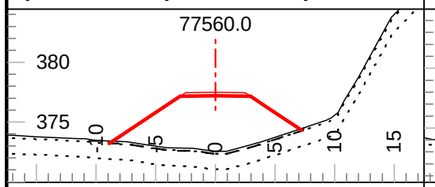

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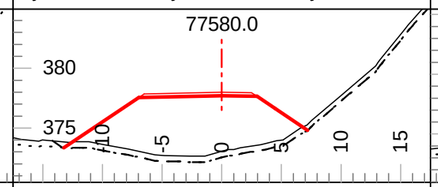

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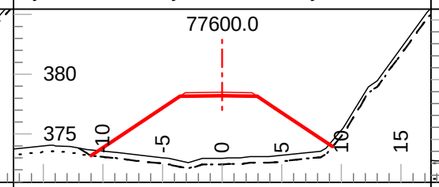

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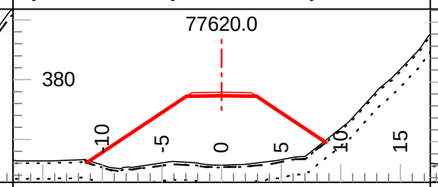

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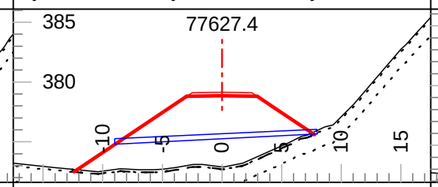

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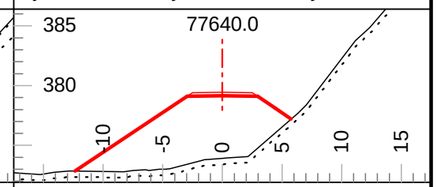

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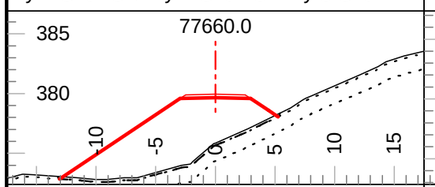
Lyr1 Gnd: C1 Lyr2 Gnd: F2 Lyr3 Gnd:



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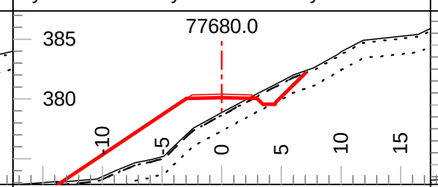
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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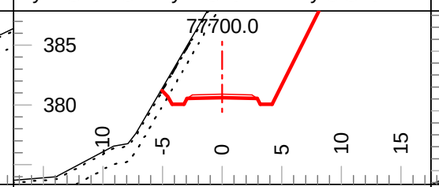

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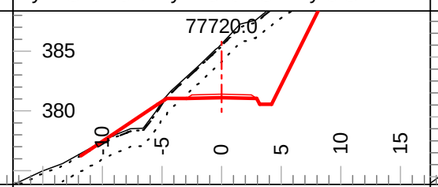

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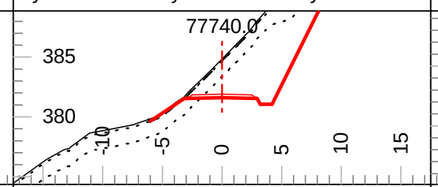

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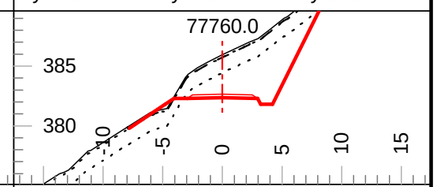

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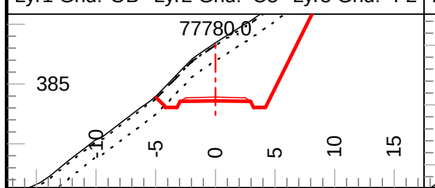

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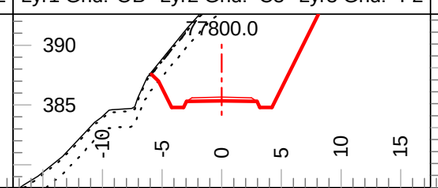

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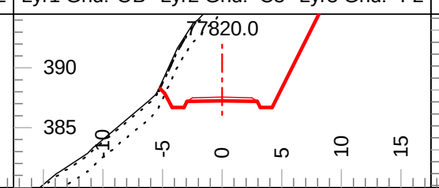

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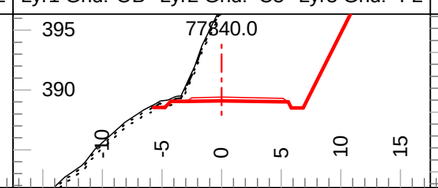

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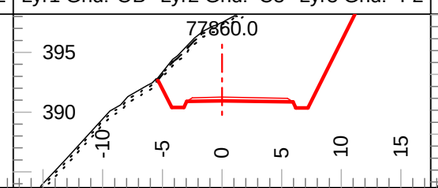

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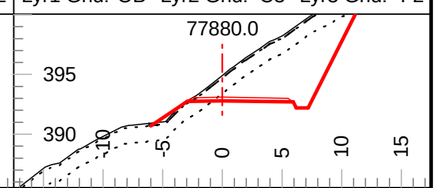

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Coffee Gold Mine

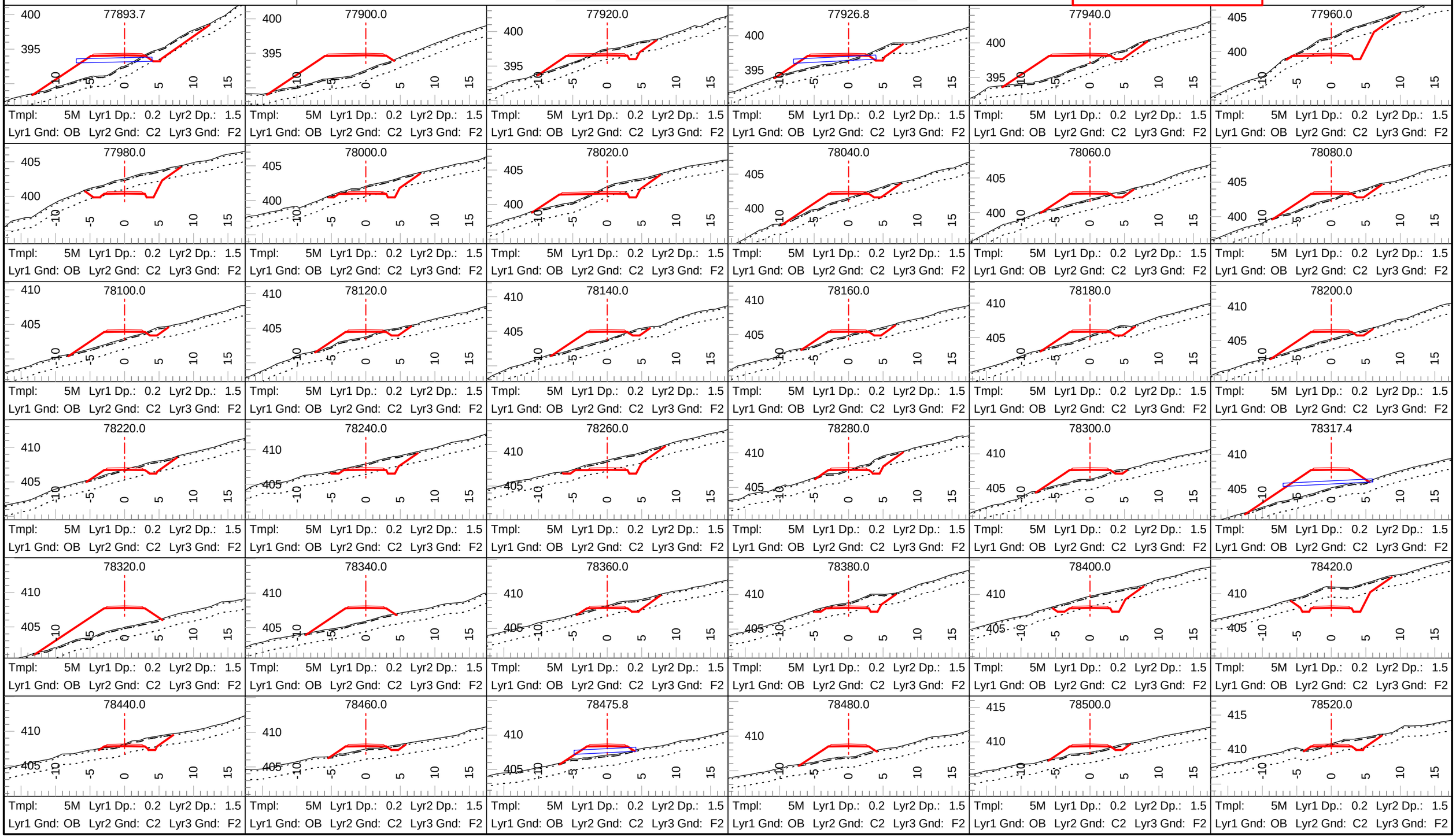
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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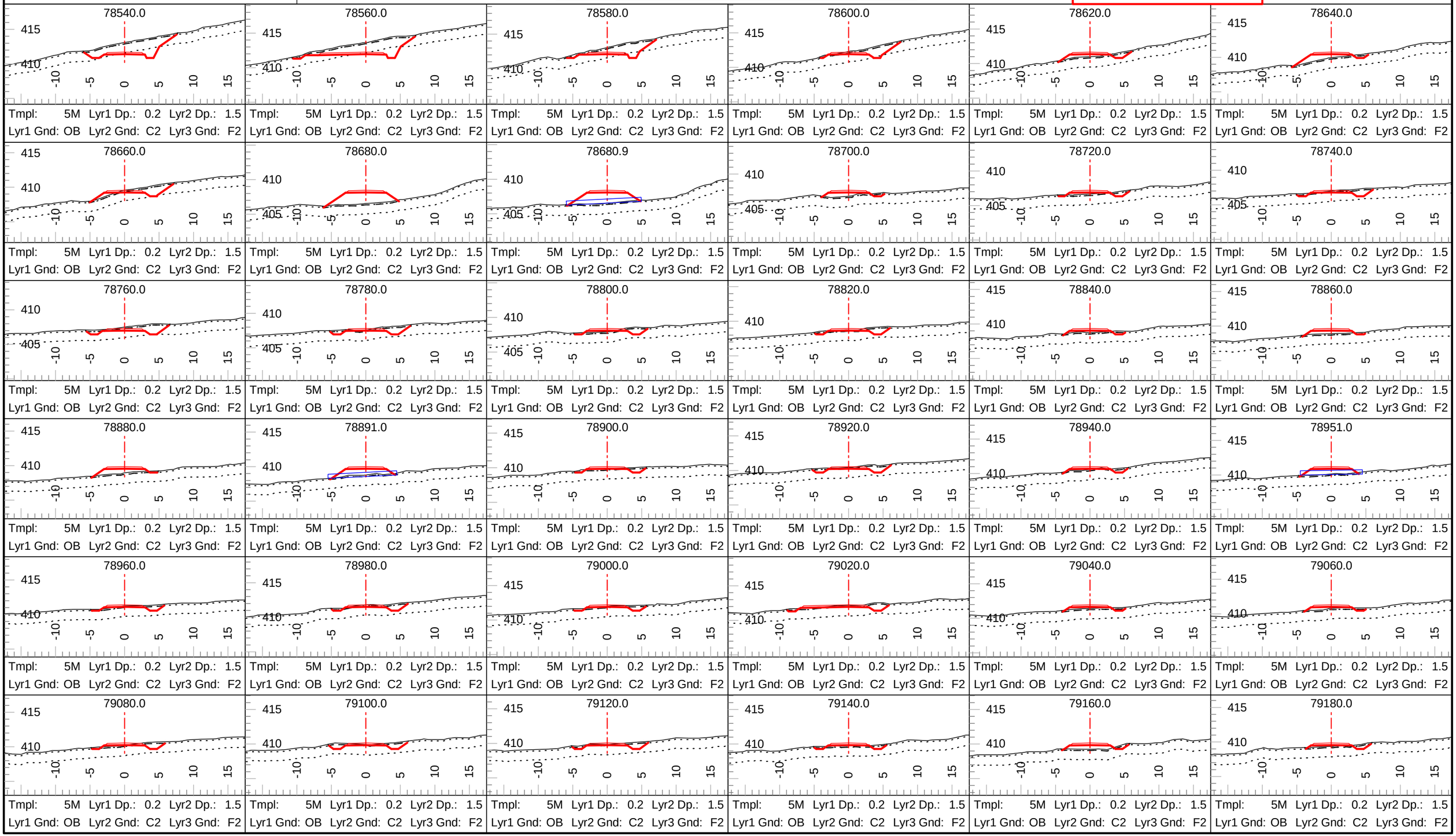

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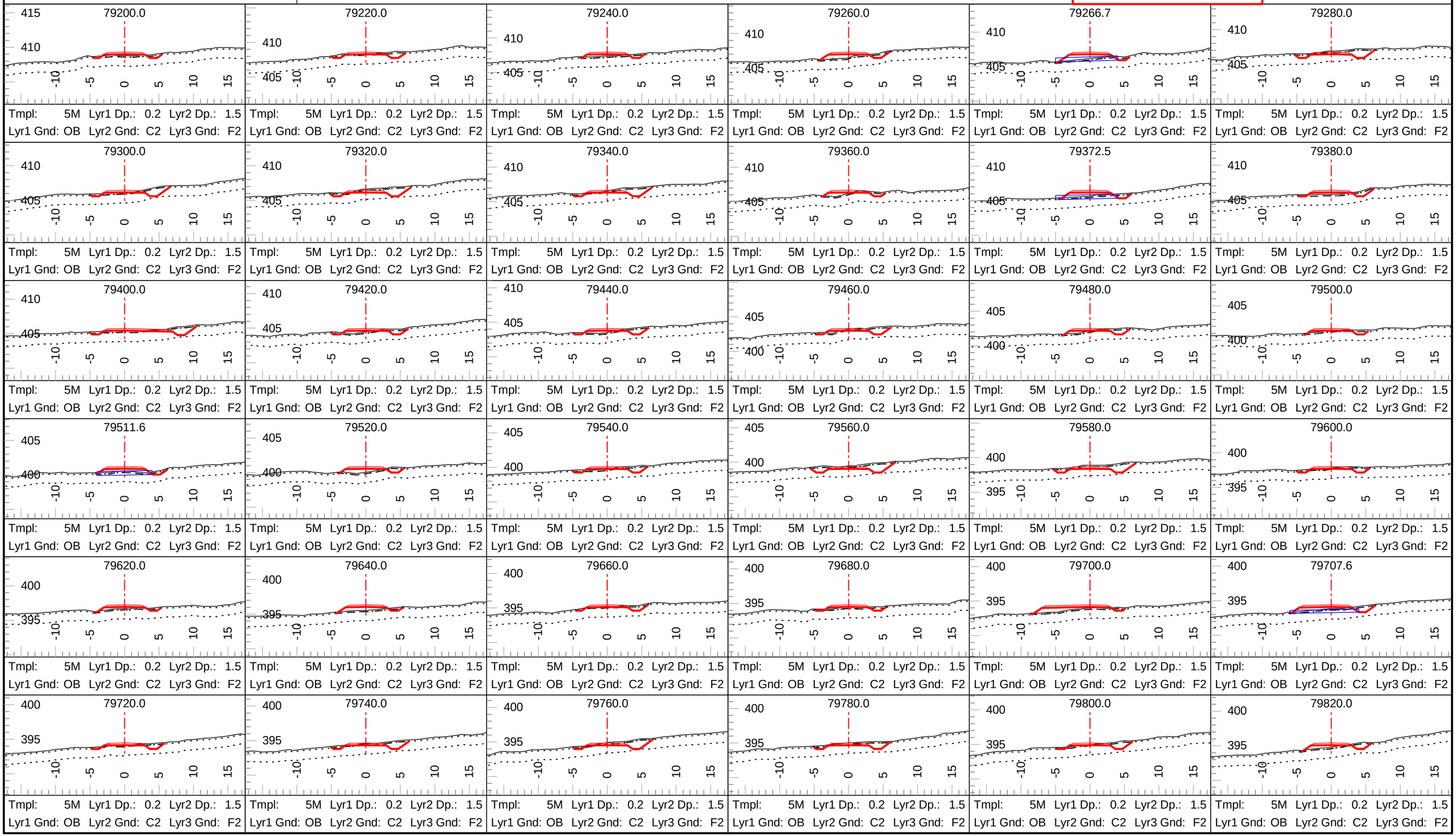

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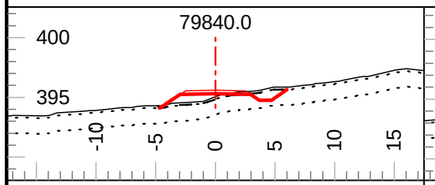

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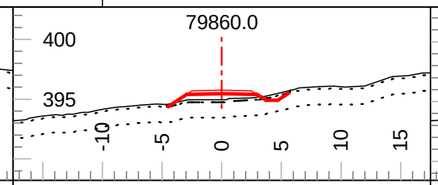
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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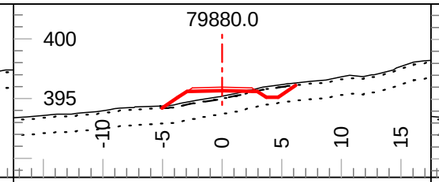

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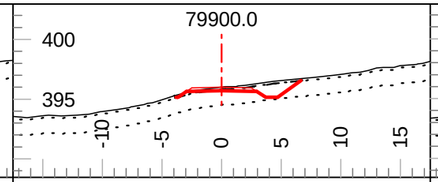

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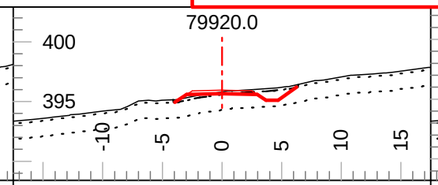

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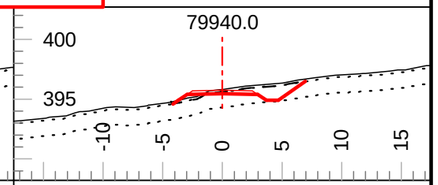

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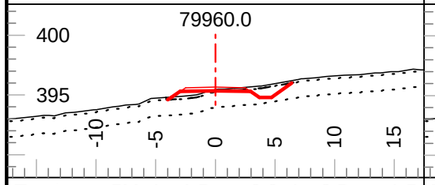

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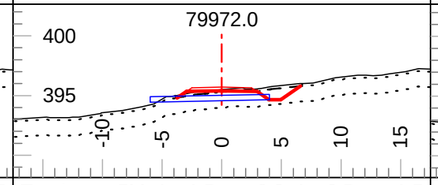

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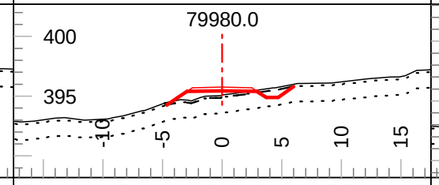

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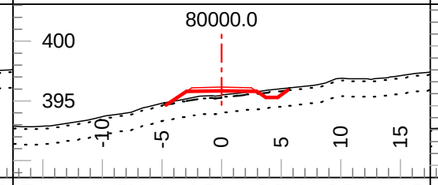

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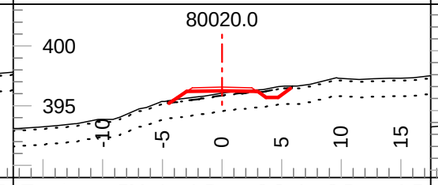

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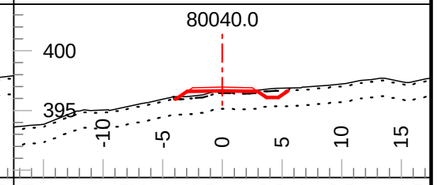

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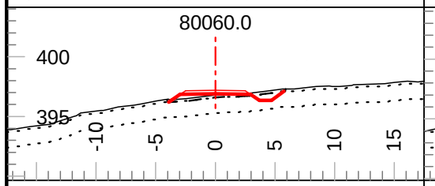

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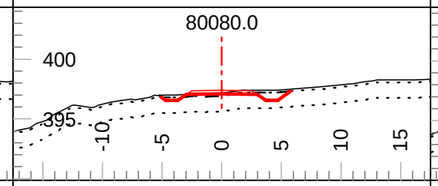

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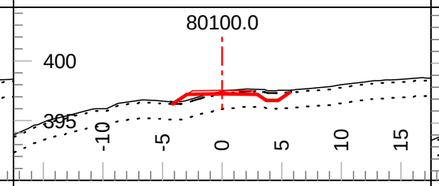

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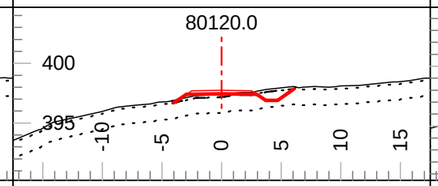

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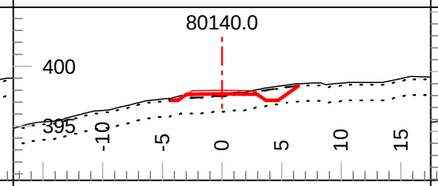

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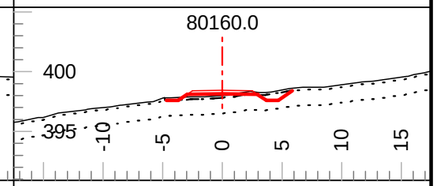

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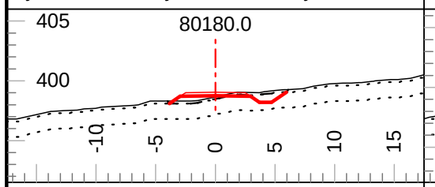

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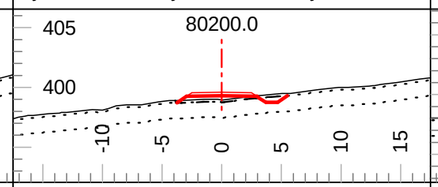

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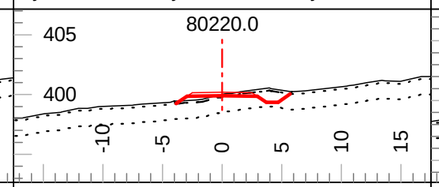

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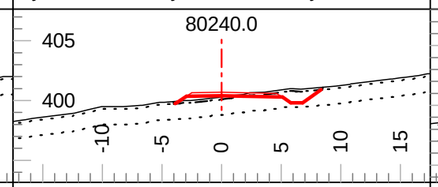

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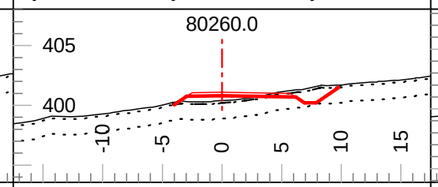

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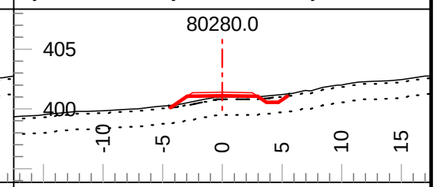

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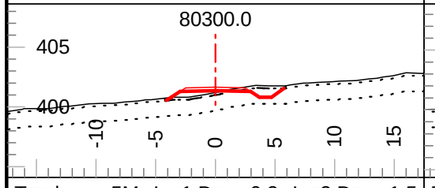

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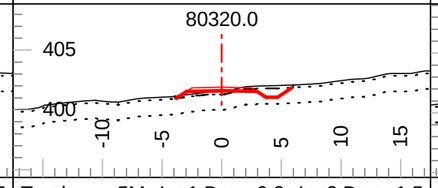

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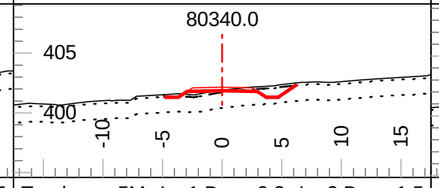
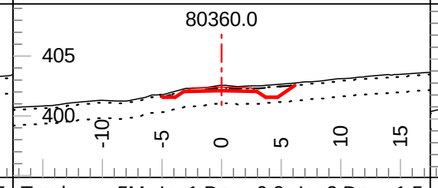


Tmpl: 5M Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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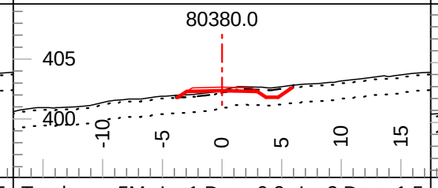

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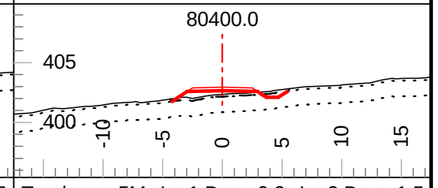

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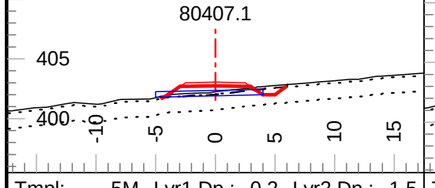

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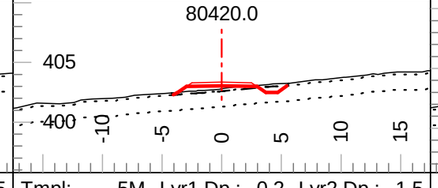

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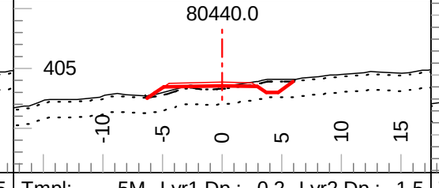

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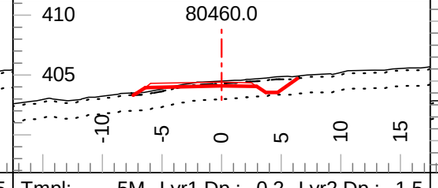

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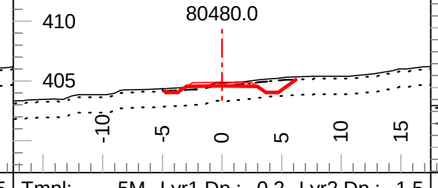

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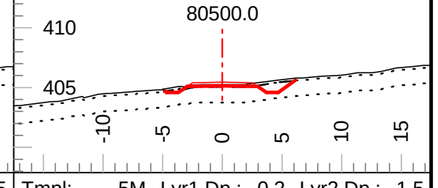

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Coffee Gold Mine

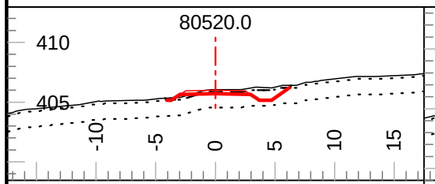
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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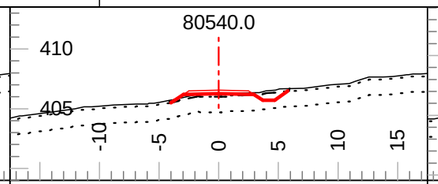

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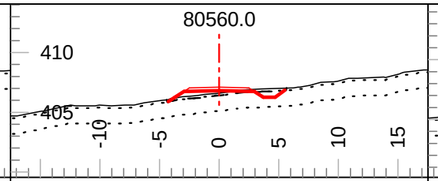

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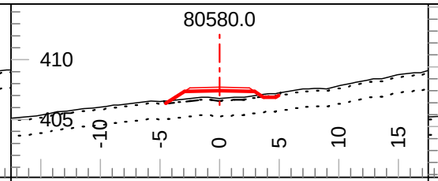

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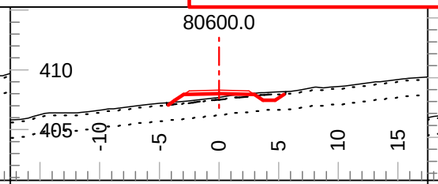

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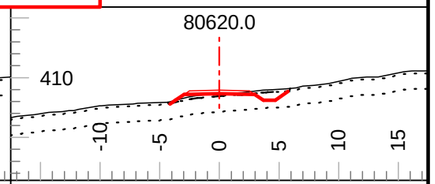

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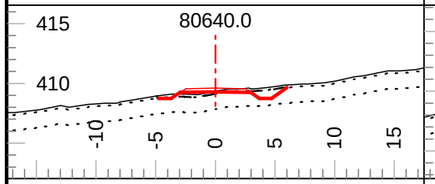

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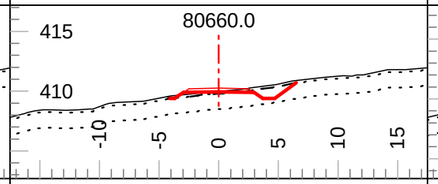

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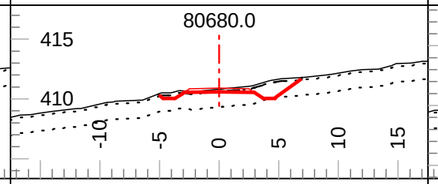

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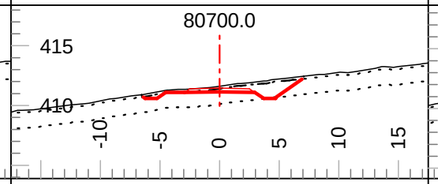

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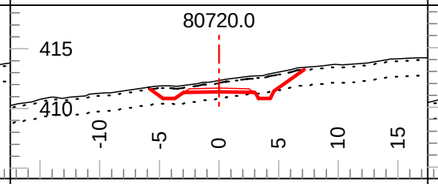

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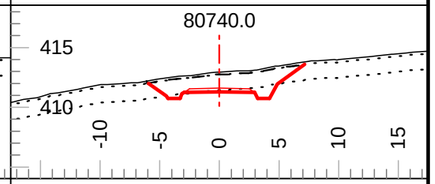

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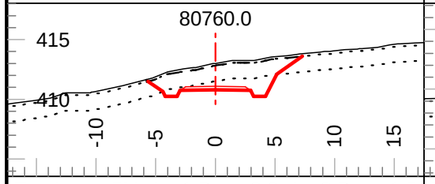

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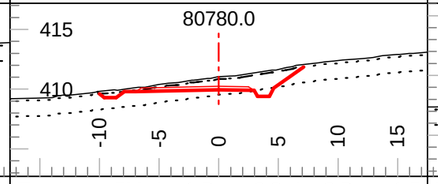

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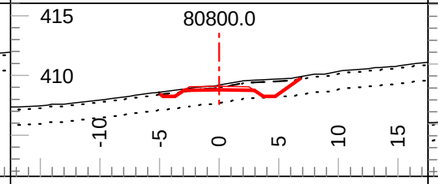

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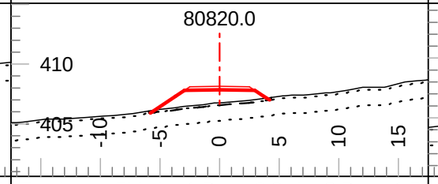

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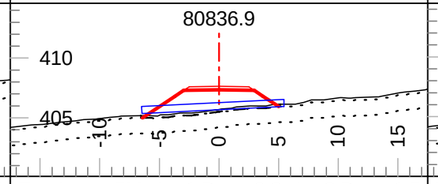

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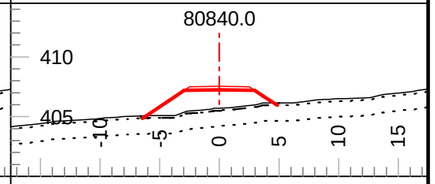

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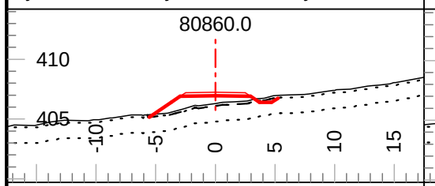

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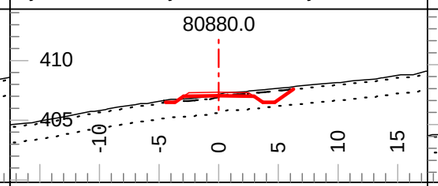

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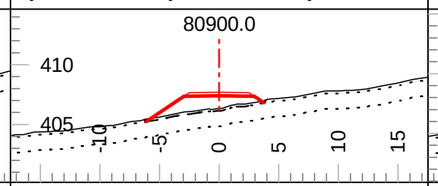

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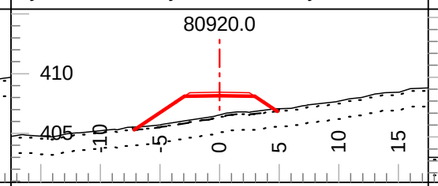

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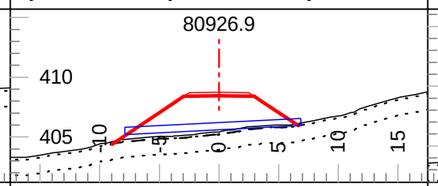

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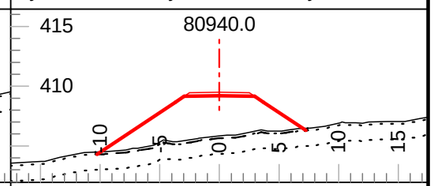

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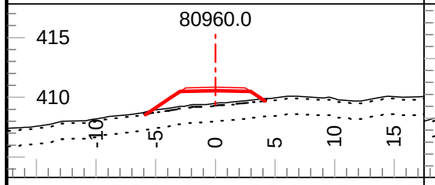

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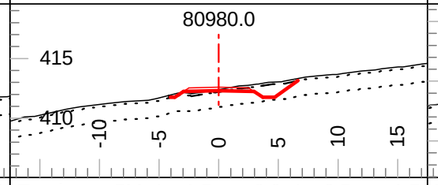

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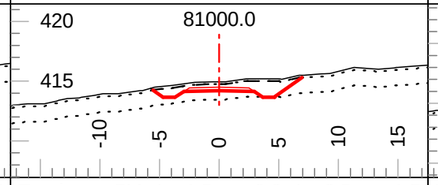

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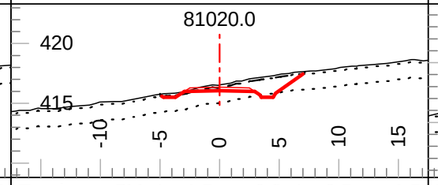

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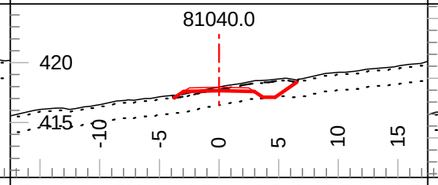

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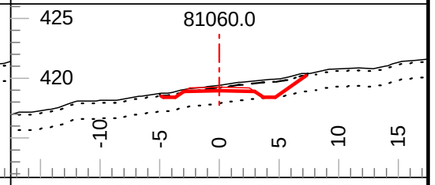

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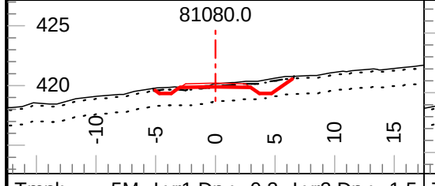

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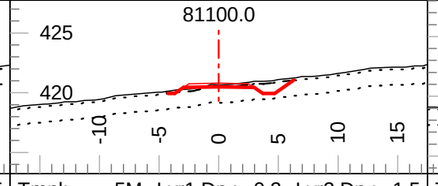

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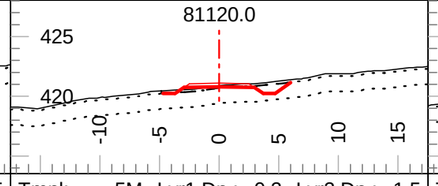

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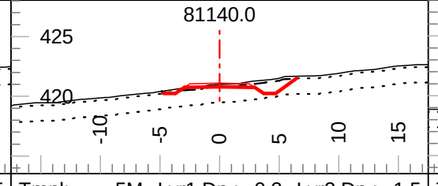
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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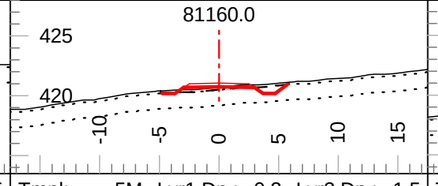

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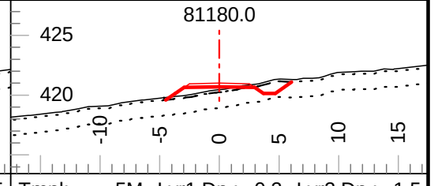

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Coffee Gold Mine

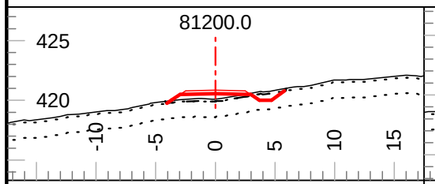
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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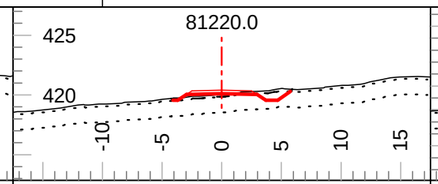

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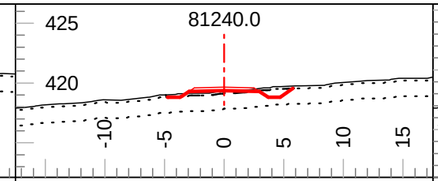

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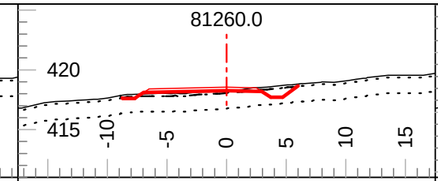

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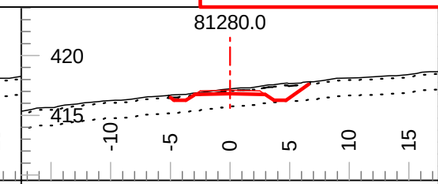

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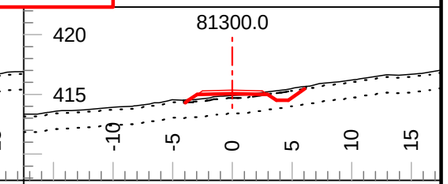

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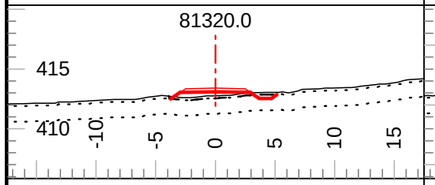

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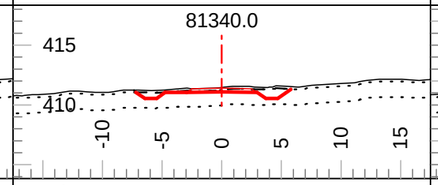

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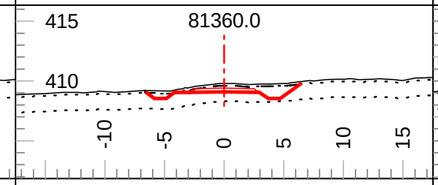

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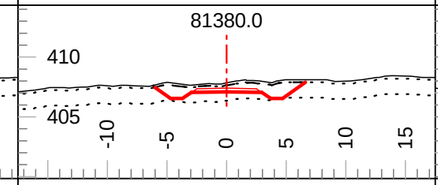

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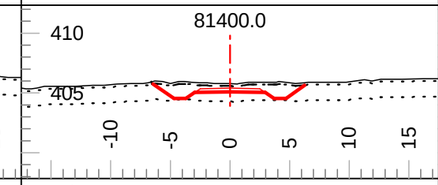

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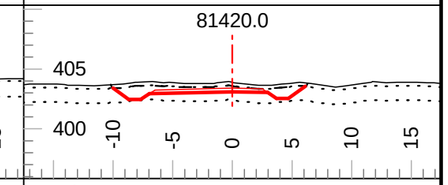

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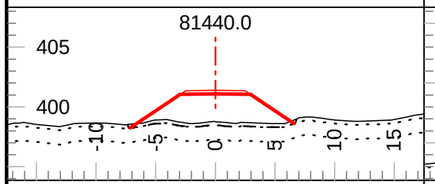

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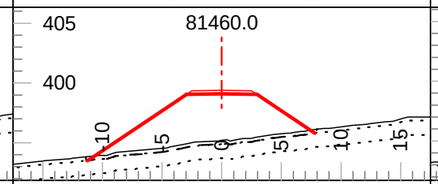

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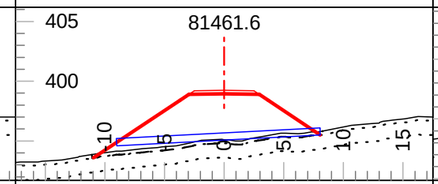

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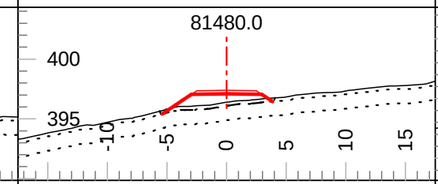

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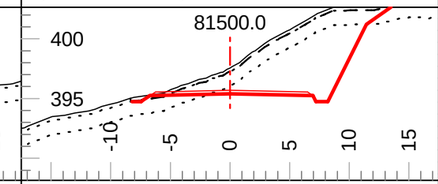

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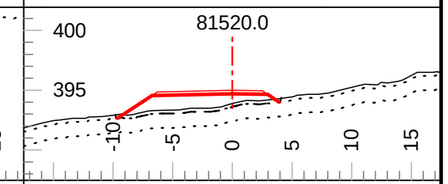

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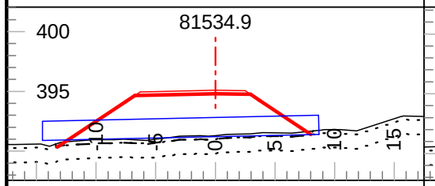

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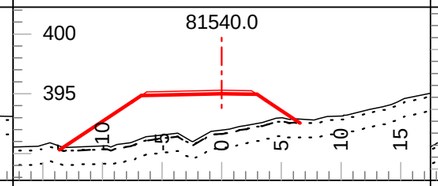

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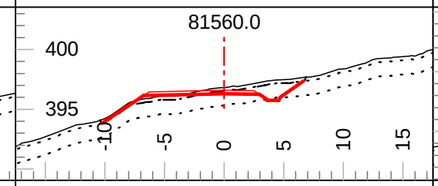

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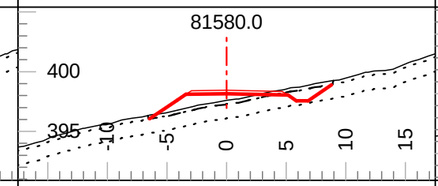

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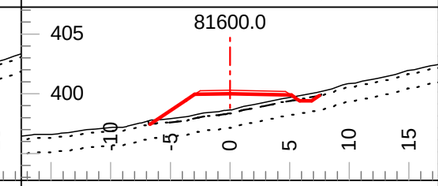

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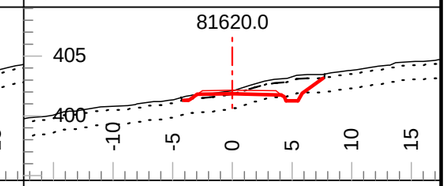

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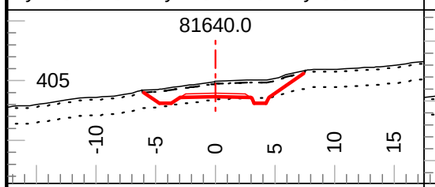

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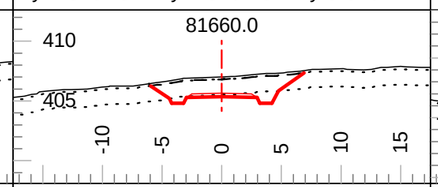

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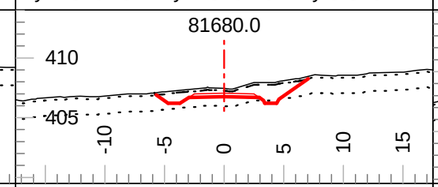

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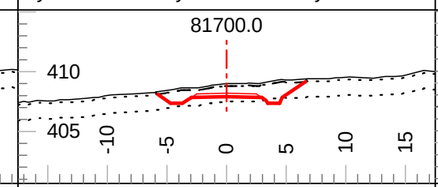

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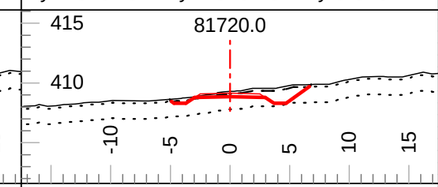

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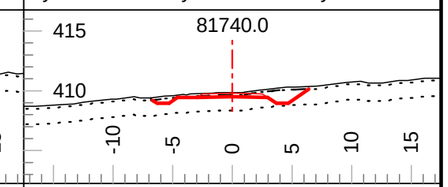

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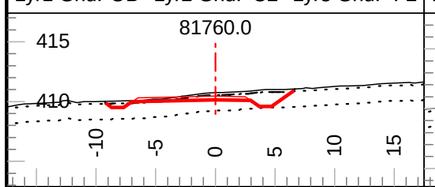

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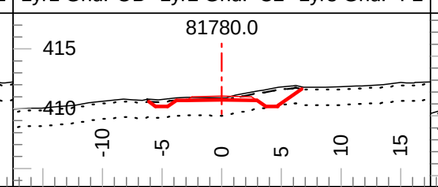

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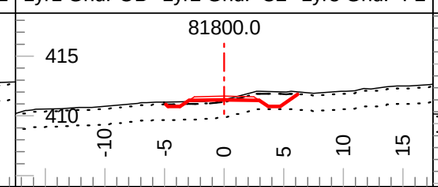

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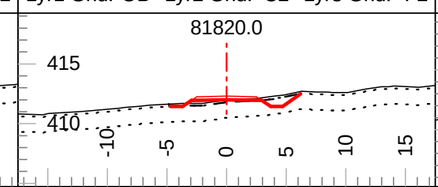

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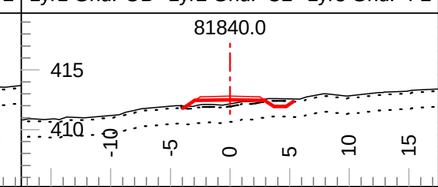

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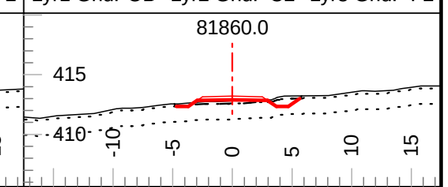

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Coffee Gold Mine

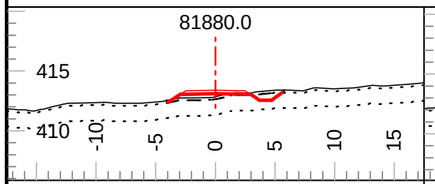
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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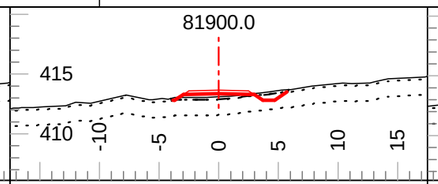

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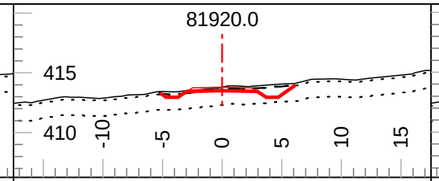

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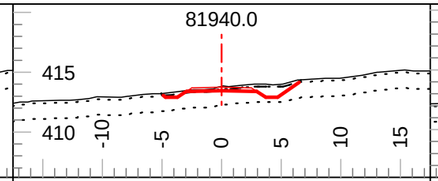
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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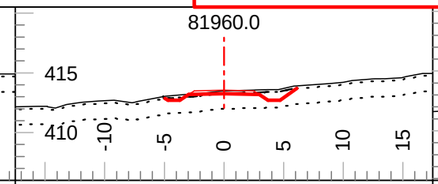

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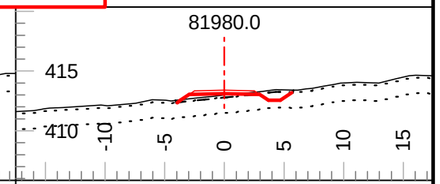

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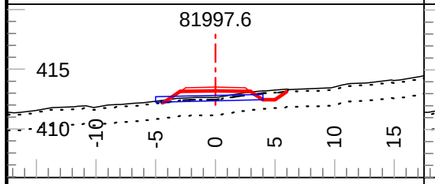

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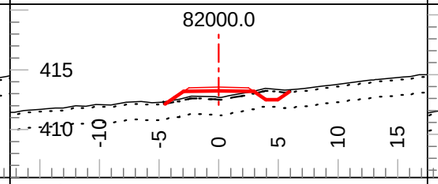

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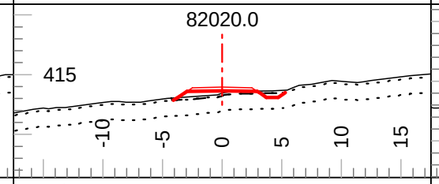

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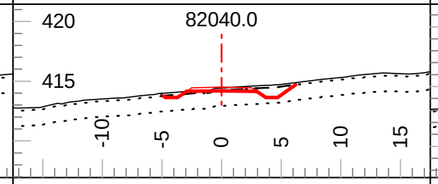

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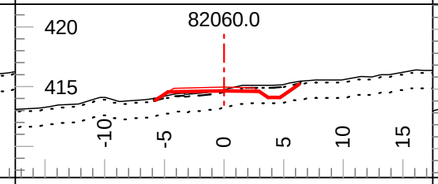

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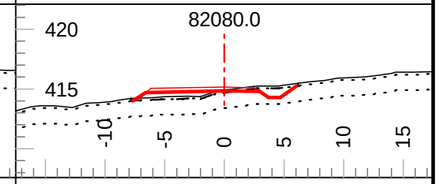

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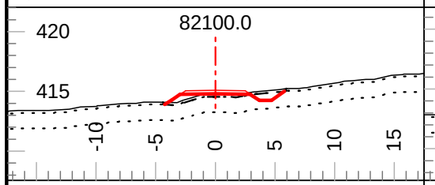

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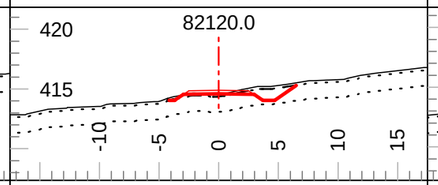

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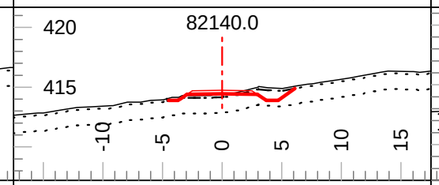

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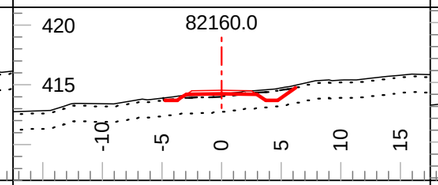

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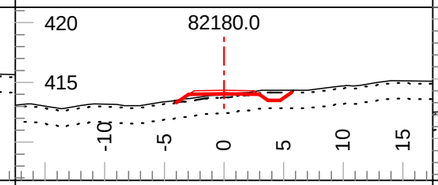

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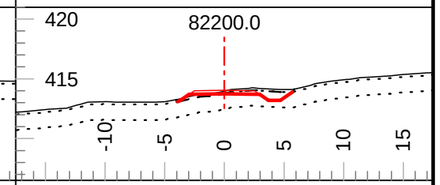

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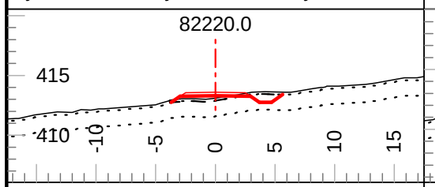

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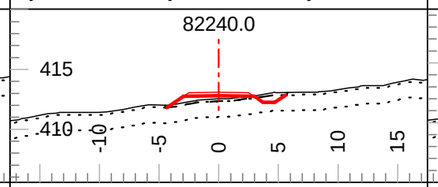

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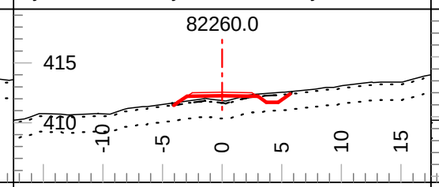

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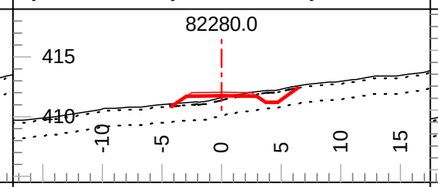

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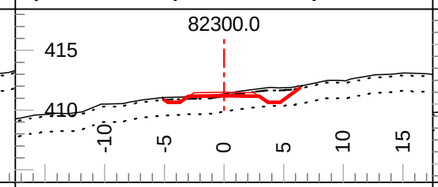

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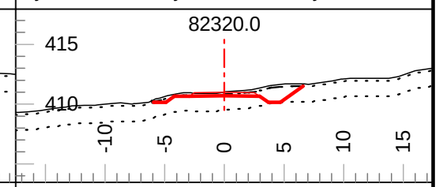

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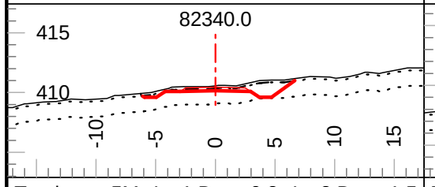

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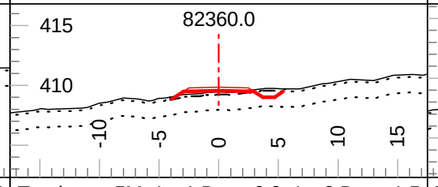

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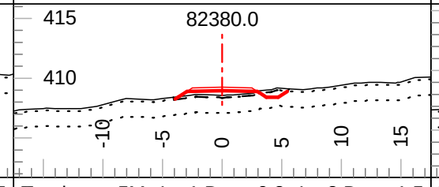

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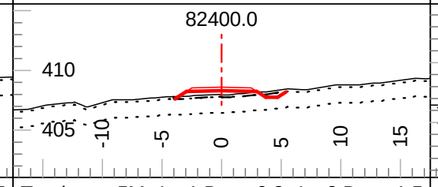

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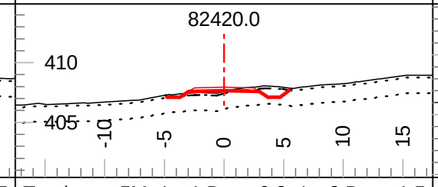

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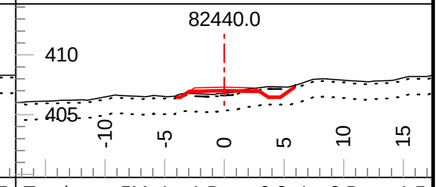

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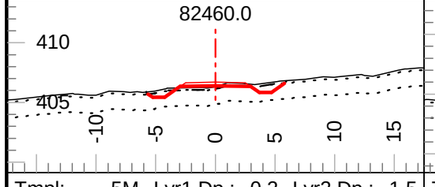

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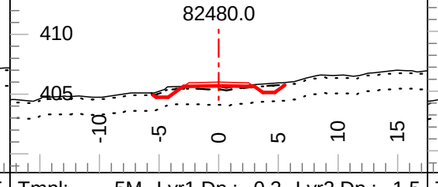

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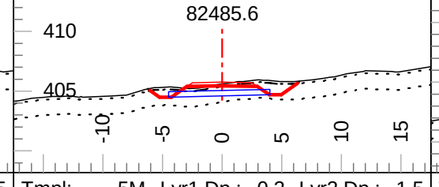

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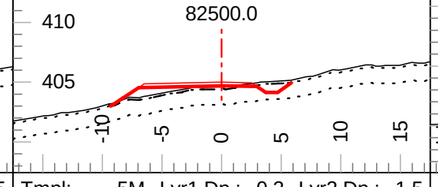

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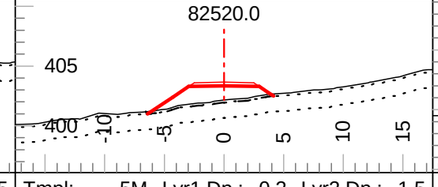

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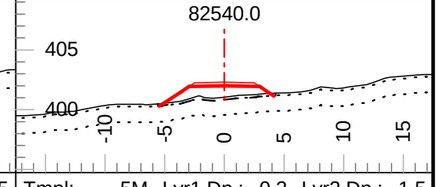

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Coffee Gold Mine

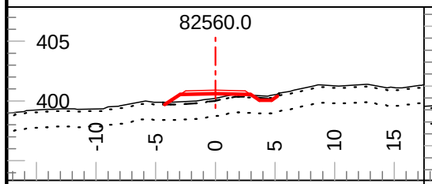
Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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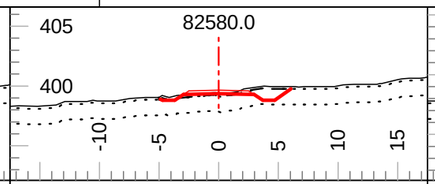

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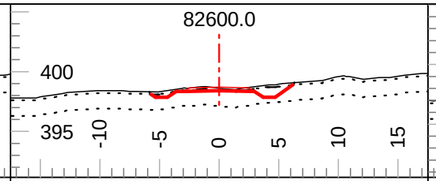

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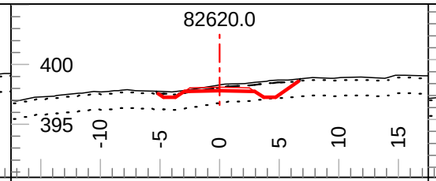

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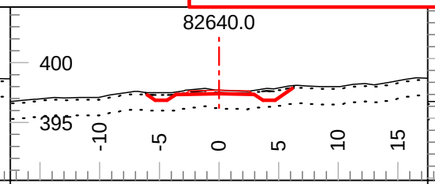

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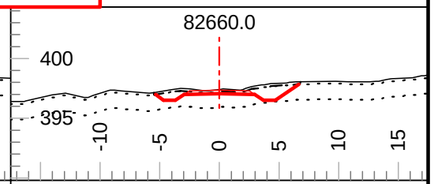

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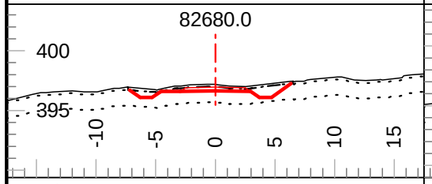

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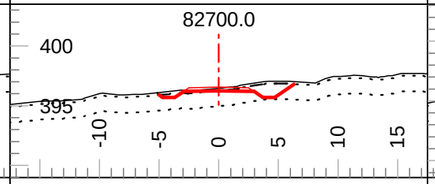

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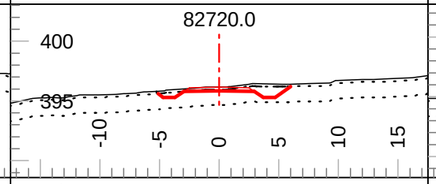

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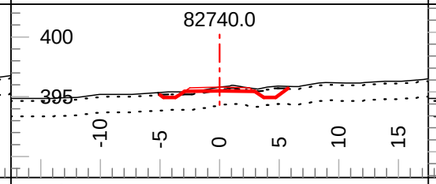
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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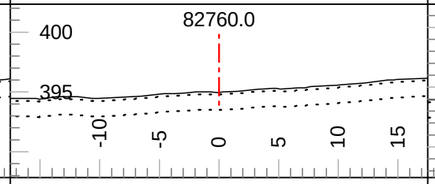
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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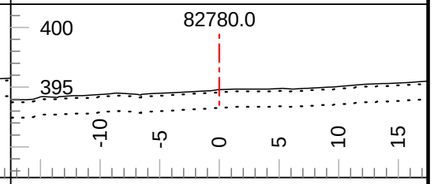
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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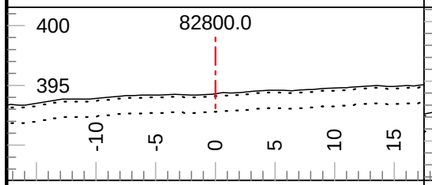
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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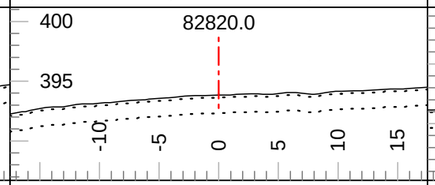
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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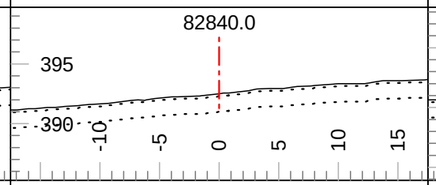
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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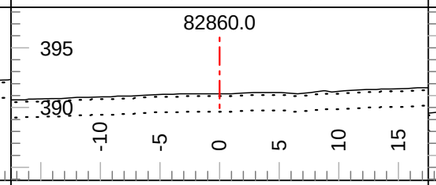
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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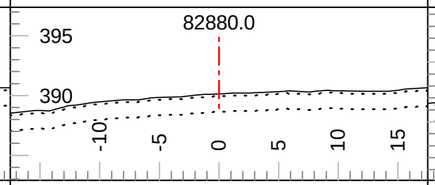
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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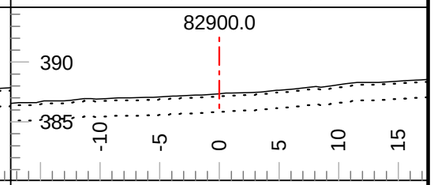
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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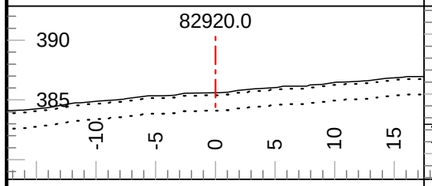
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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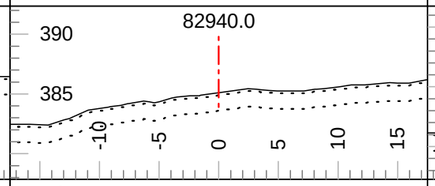
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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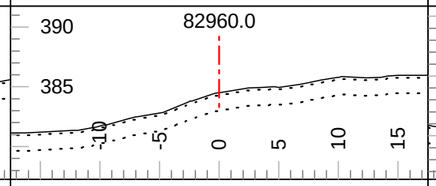
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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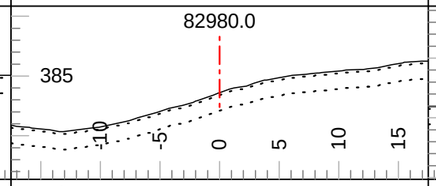
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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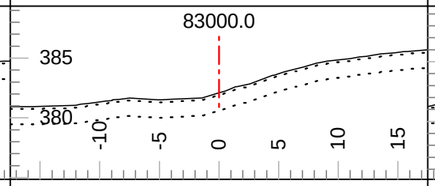
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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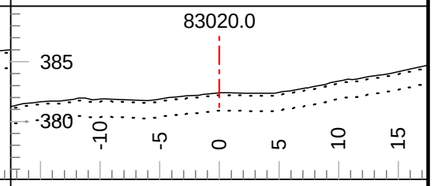
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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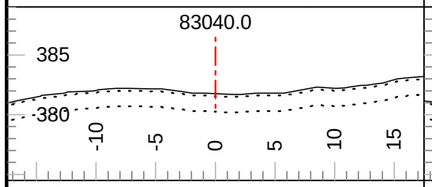
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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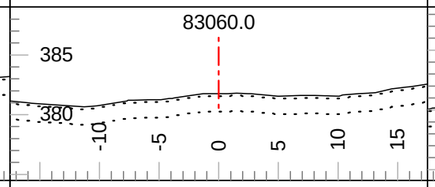
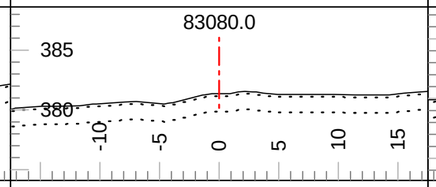
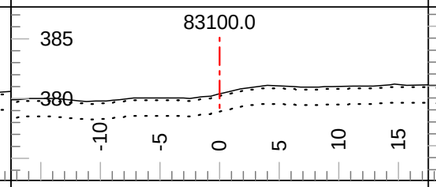
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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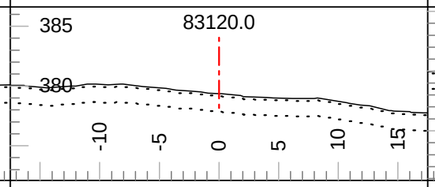
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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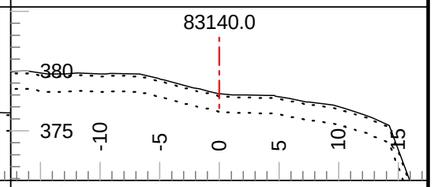
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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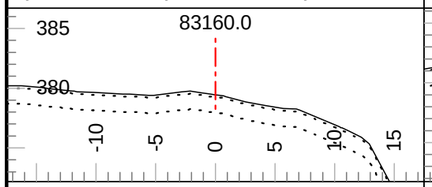
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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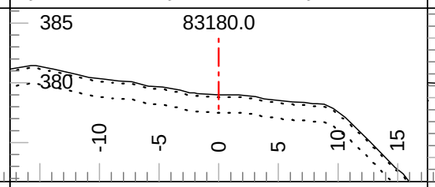
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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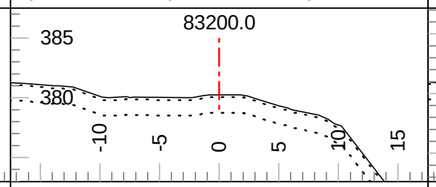
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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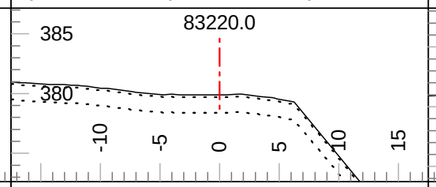
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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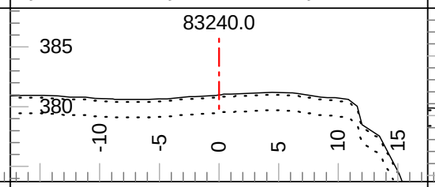
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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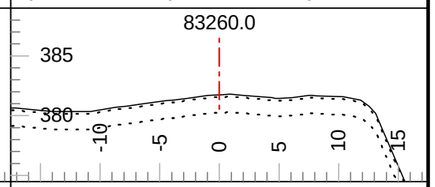
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 2
Geometric Alignment - Cross Sections
km 41.1 to 82.7

GOLDCORP

Section Scale 1:500

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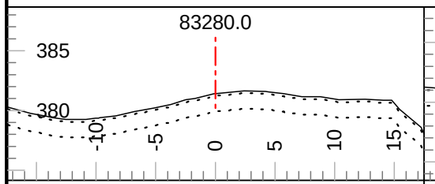

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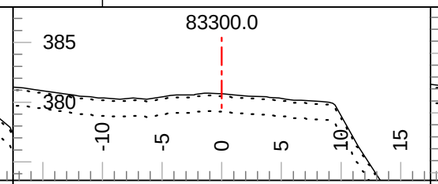
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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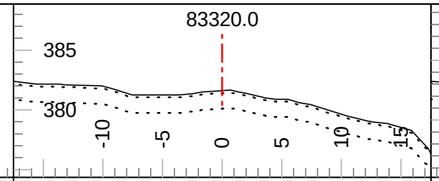
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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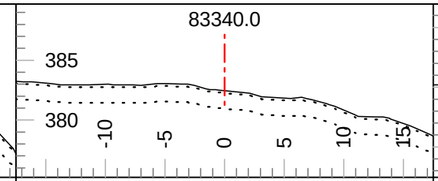
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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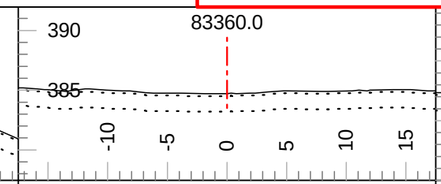
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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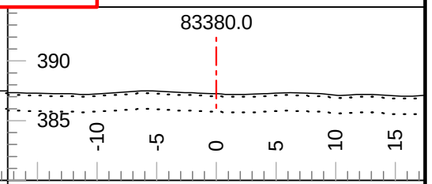
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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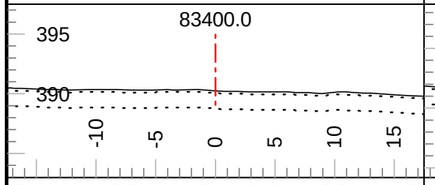
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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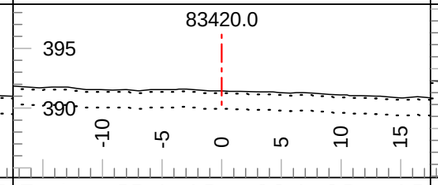
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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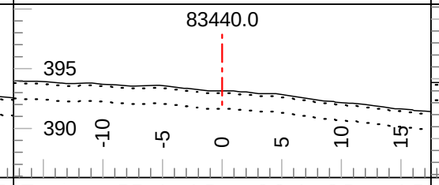
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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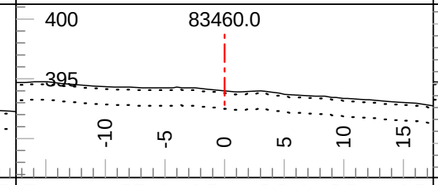
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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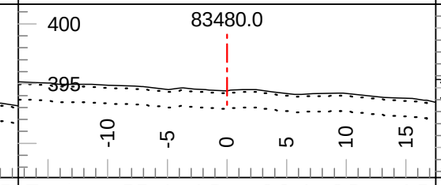
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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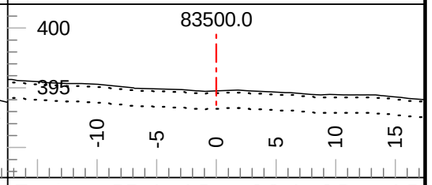
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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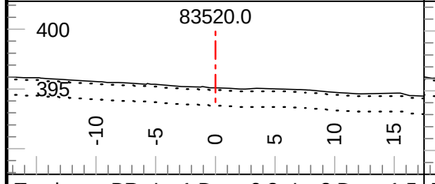
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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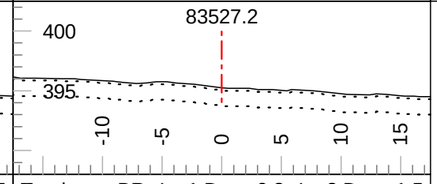
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.2 Lyr2 Dp.: 1.5
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

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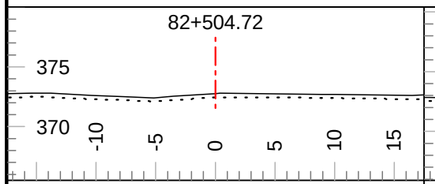

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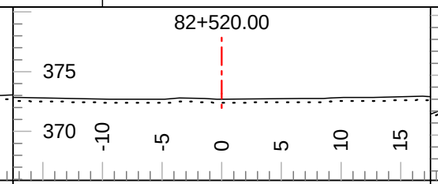
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd:



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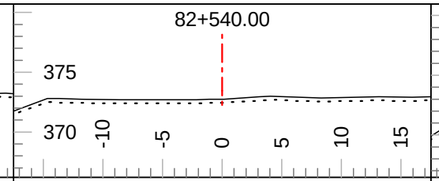
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd:



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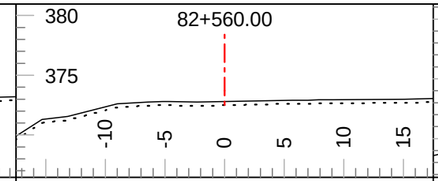

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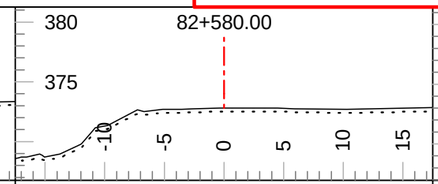

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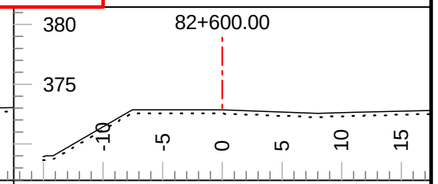

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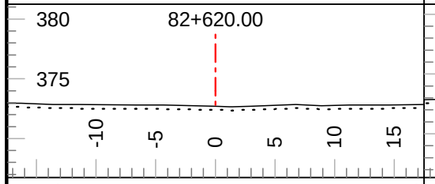

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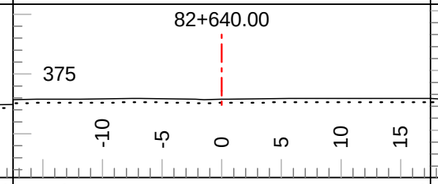

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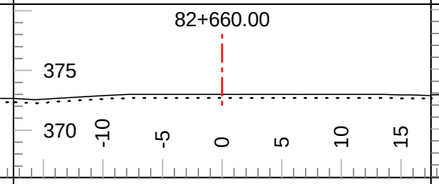

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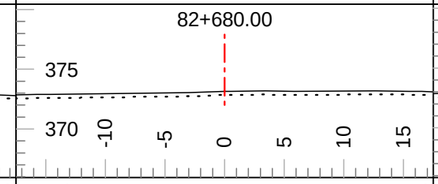

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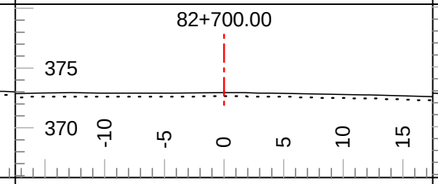

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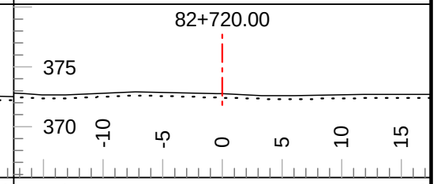

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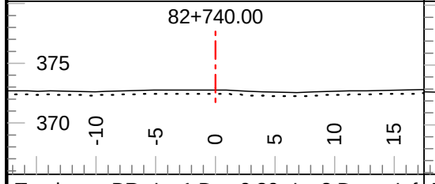

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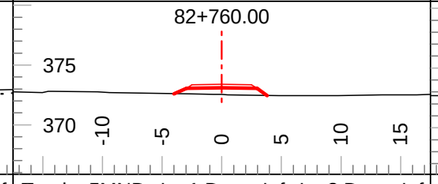

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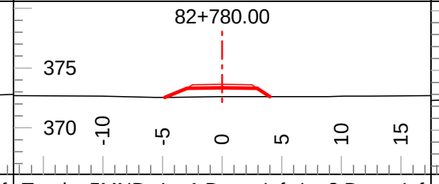
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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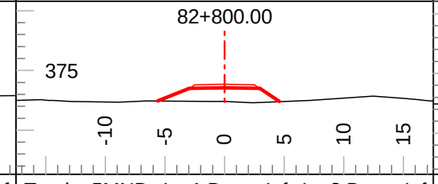

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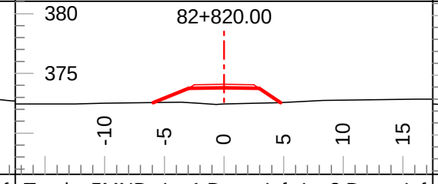

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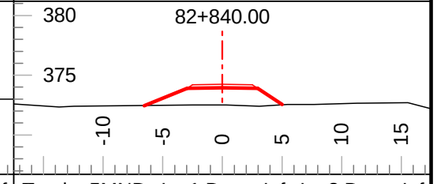

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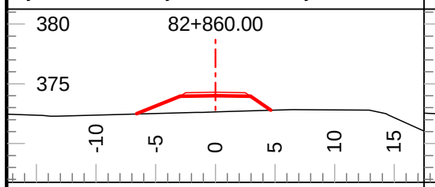

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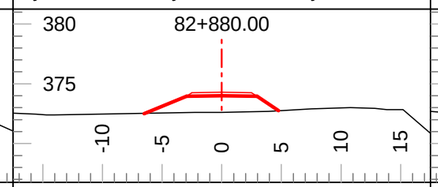

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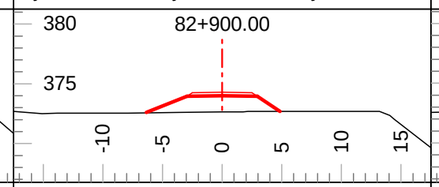

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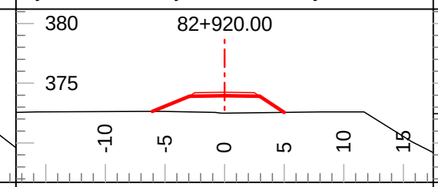

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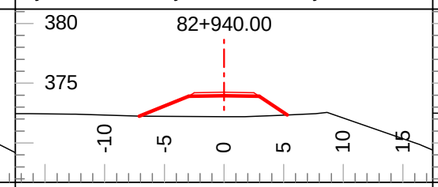

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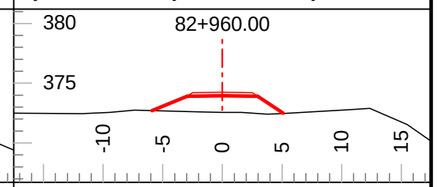

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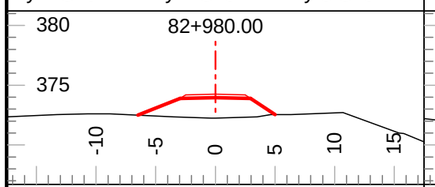

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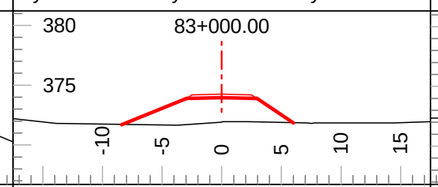

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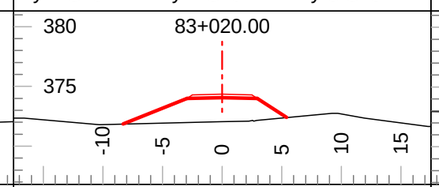

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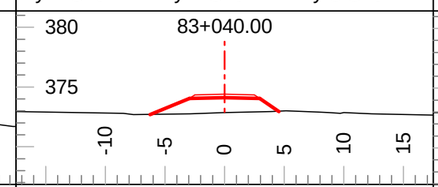

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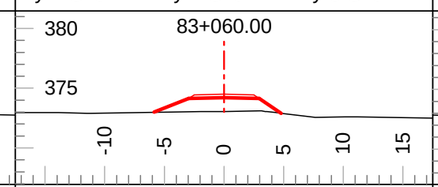

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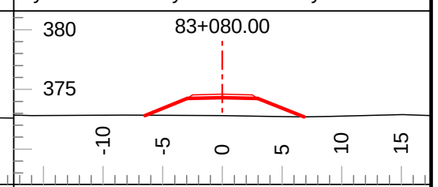

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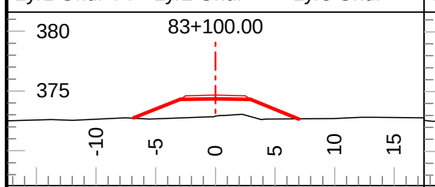

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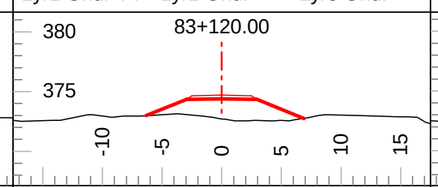

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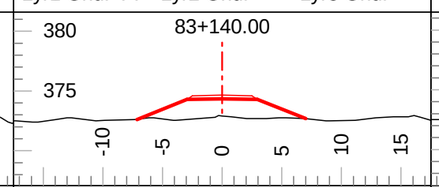

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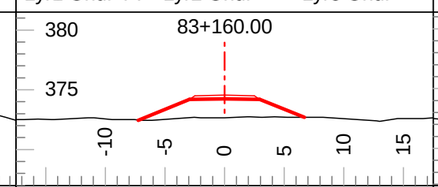

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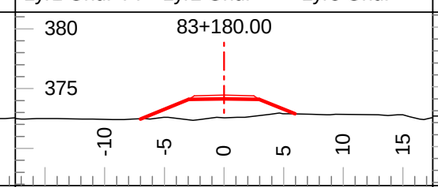

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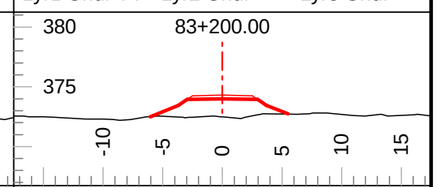


Tmpl: 5M Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

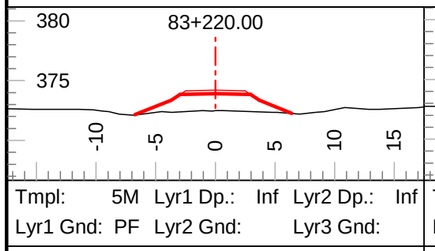
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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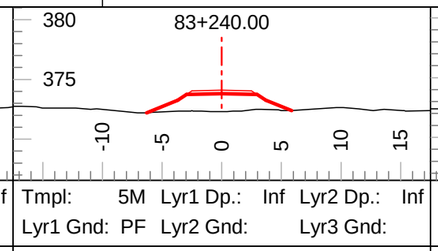

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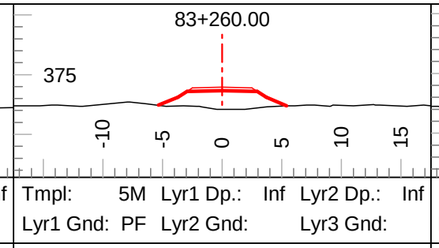

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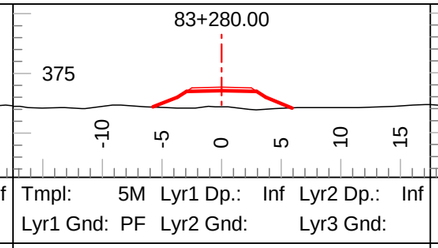

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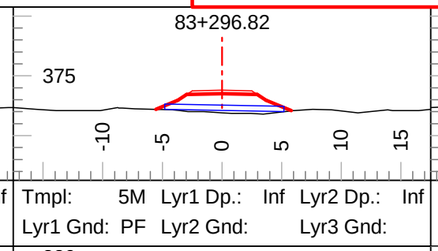

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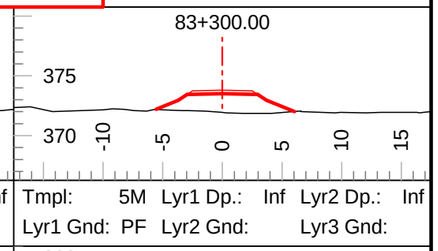

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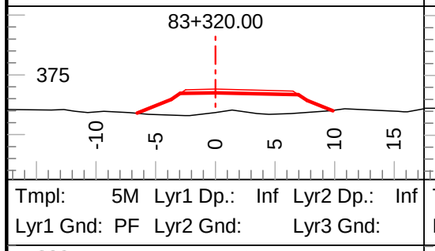

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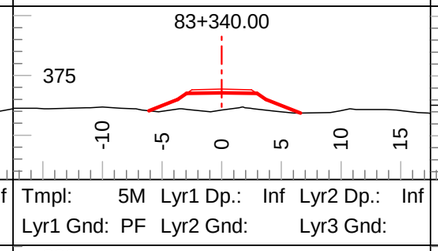

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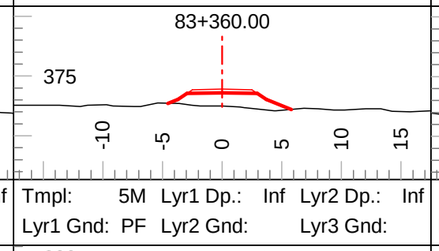

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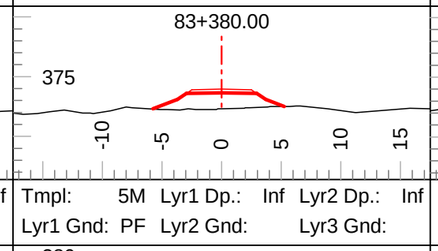

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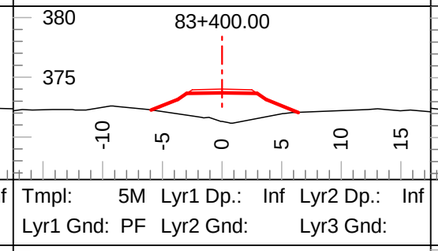

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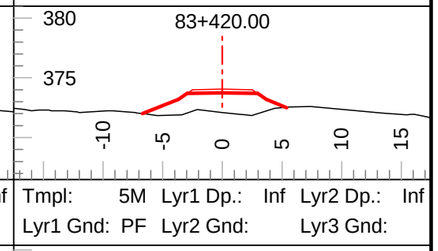

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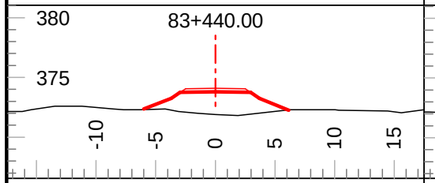

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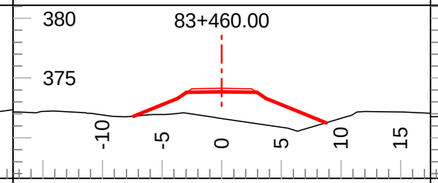

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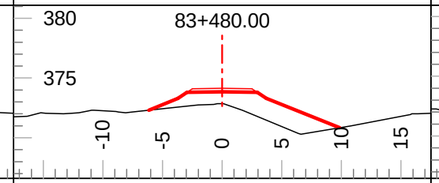

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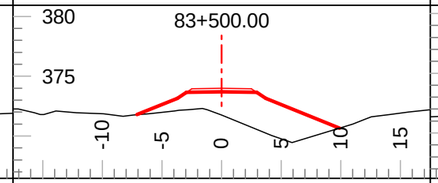

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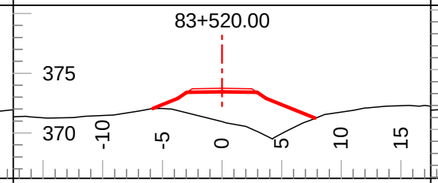

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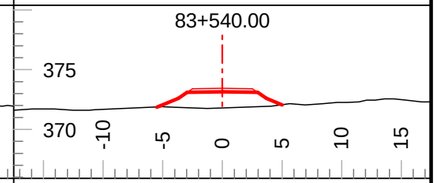

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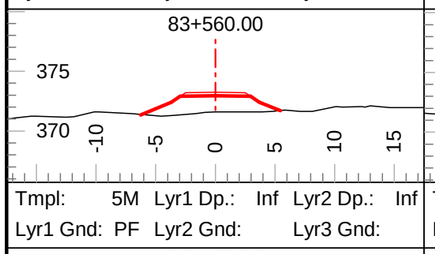

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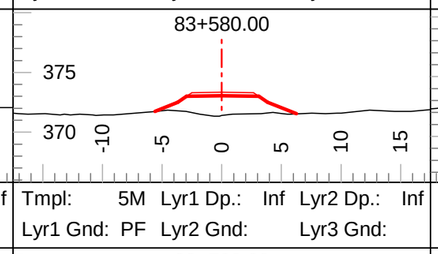

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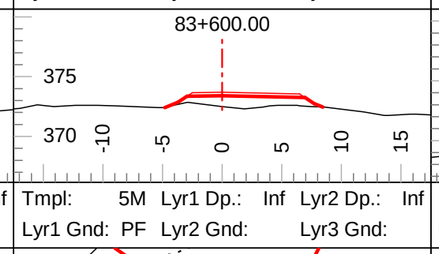

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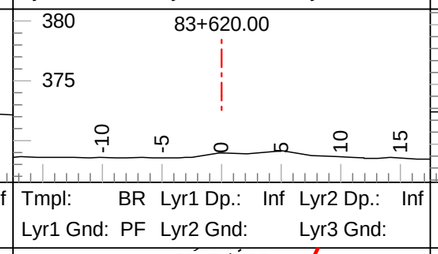

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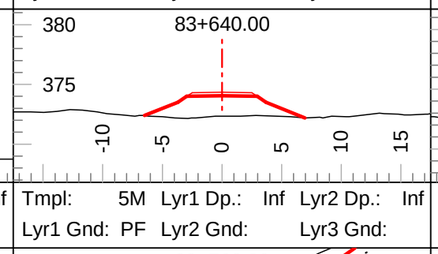

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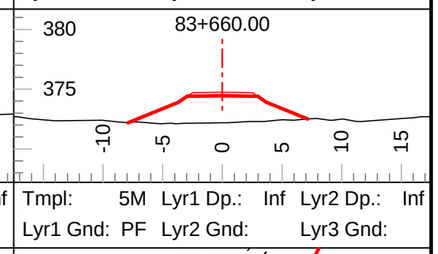

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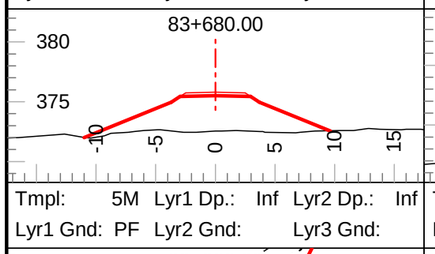

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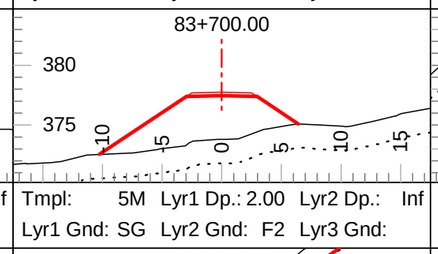

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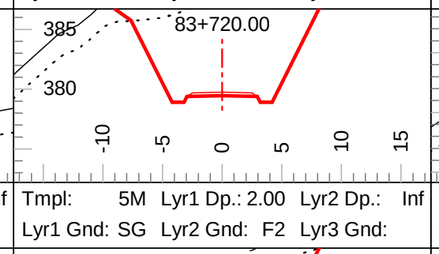
Lyr1 Gnd: SG Lyr2 Gnd: F2 Lyr3 Gnd:



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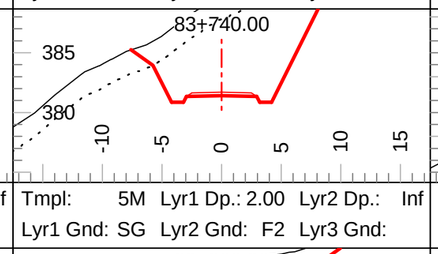

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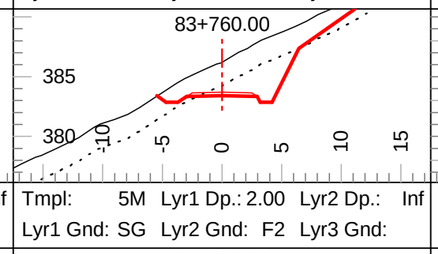

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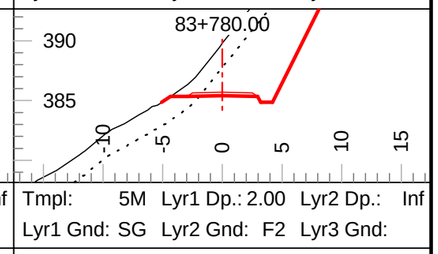

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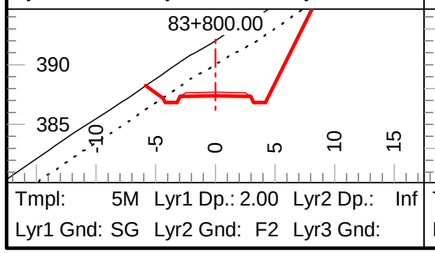

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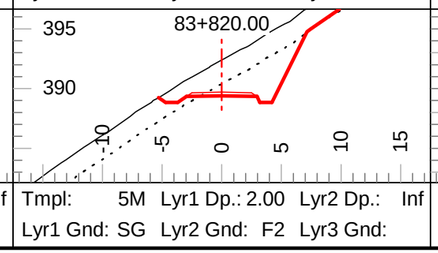

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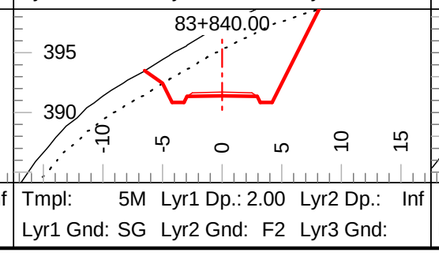

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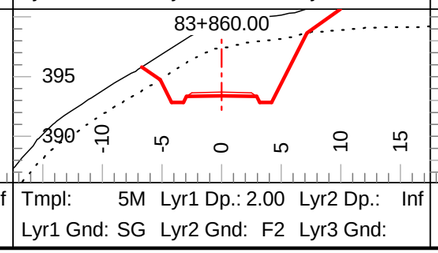

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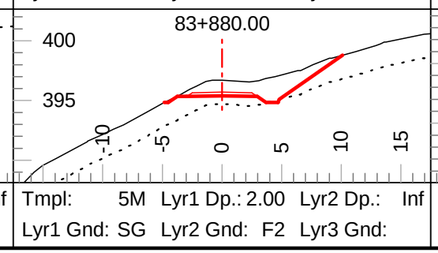

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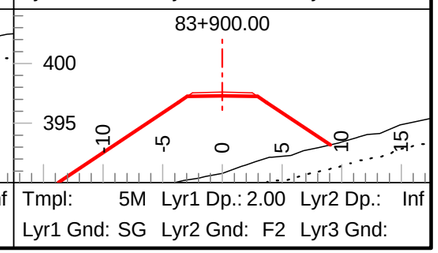

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Lyr1 Gnd: SG Lyr2 Gnd: F2 Lyr3 Gnd:

Coffee Gold Mine

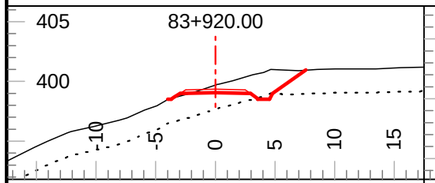
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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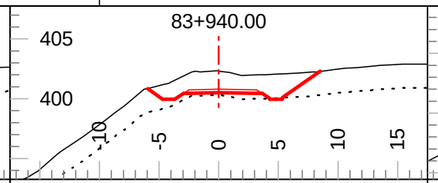

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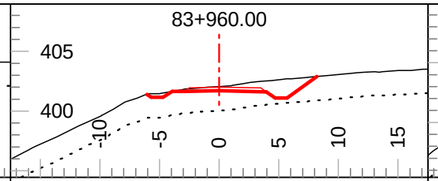

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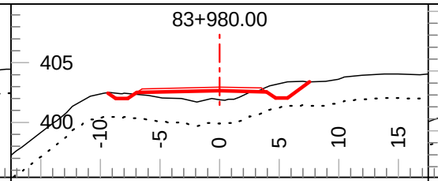

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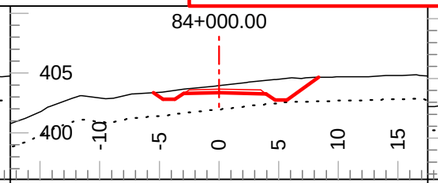

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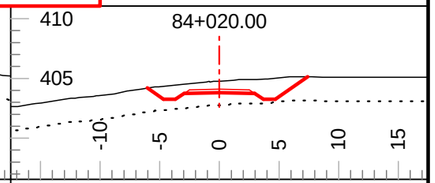

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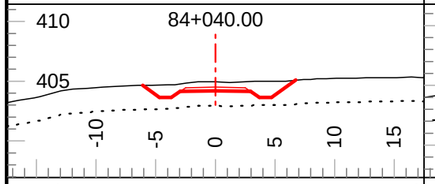

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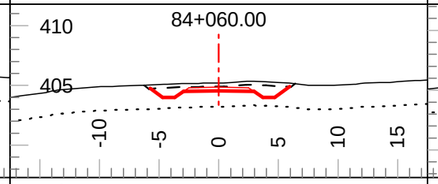

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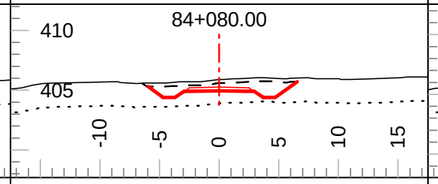

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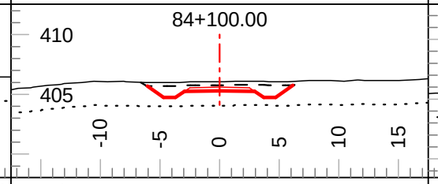

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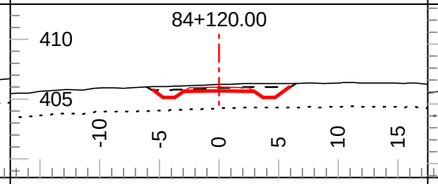

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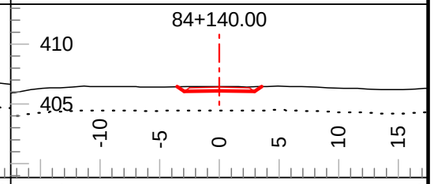

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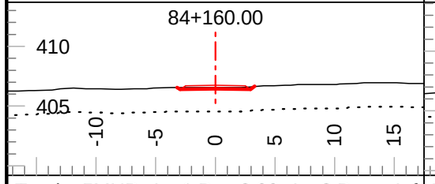

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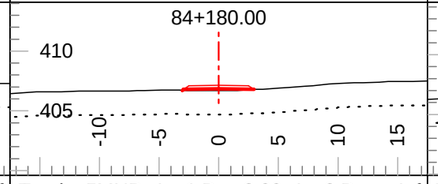

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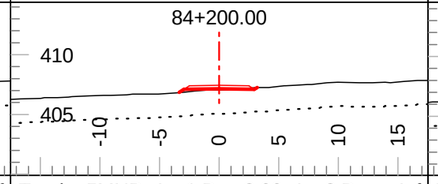

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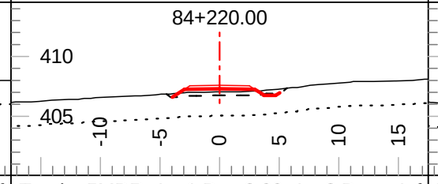

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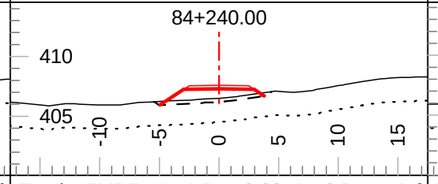

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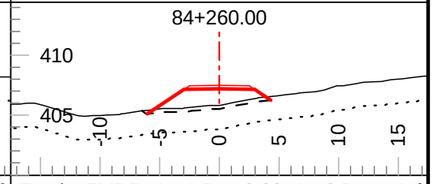

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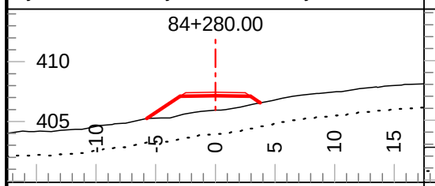

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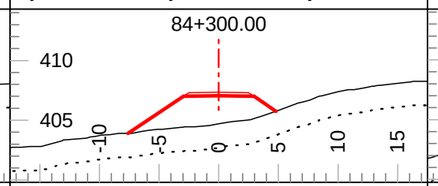

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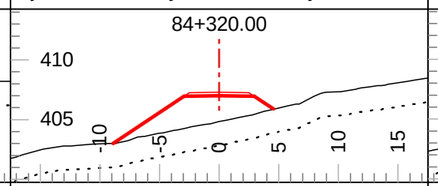

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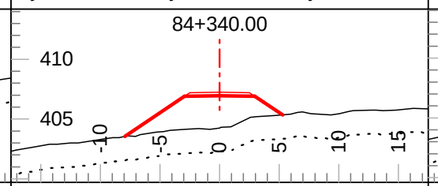

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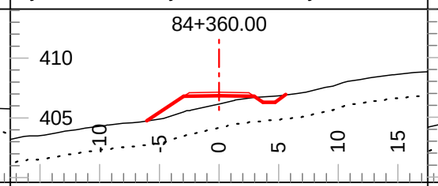

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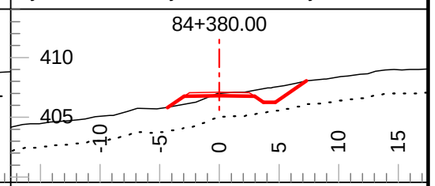

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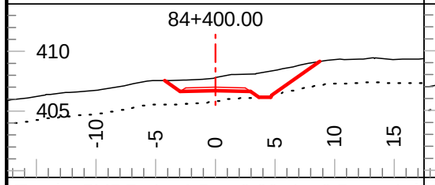

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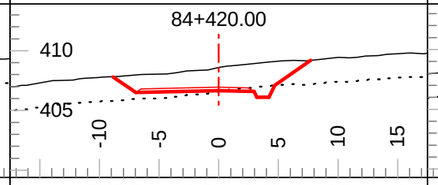

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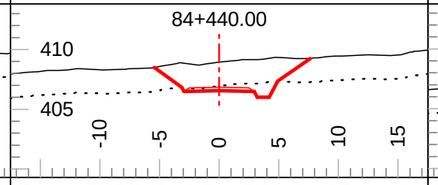

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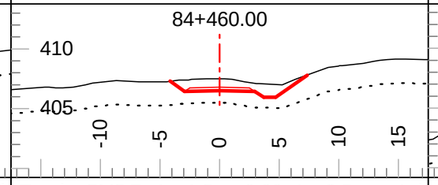

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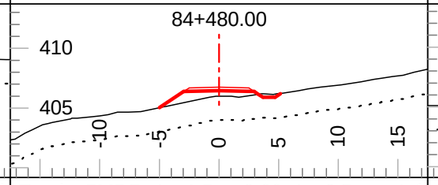

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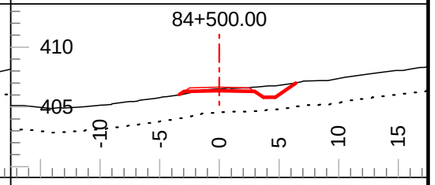

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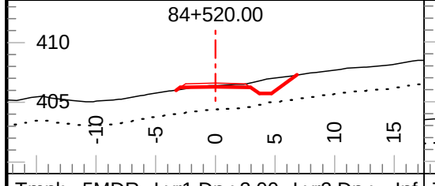

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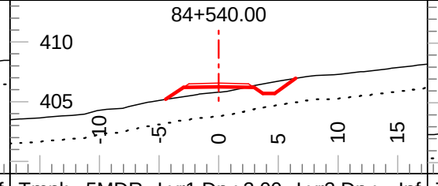

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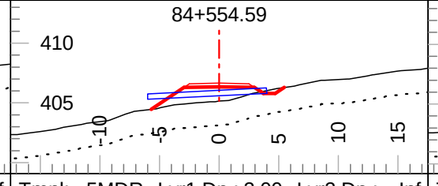

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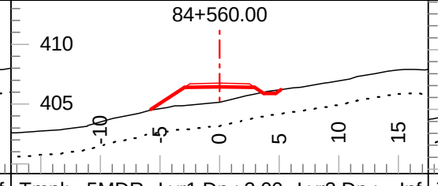

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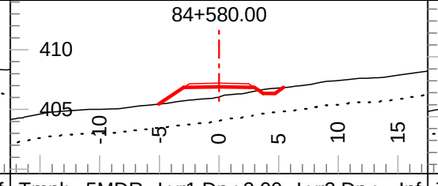

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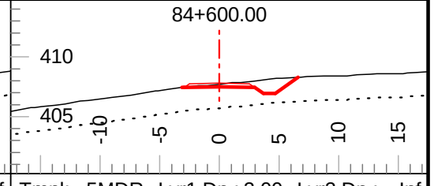

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Lyr1 Gnd: SG Lyr2 Gnd: F2 Lyr3 Gnd:

Coffee Gold Mine

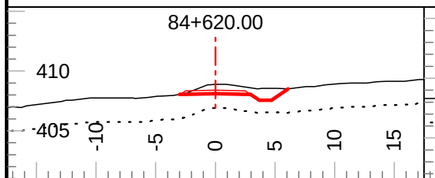
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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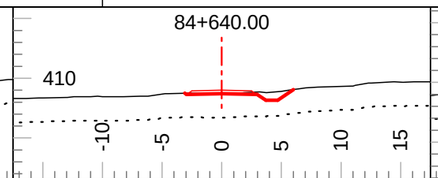

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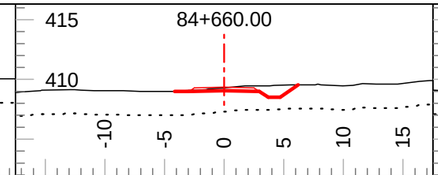

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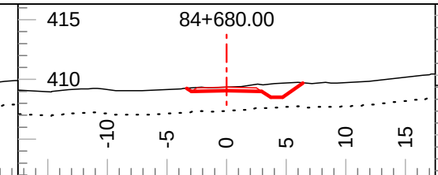

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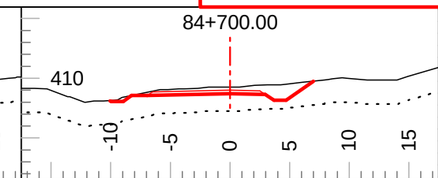

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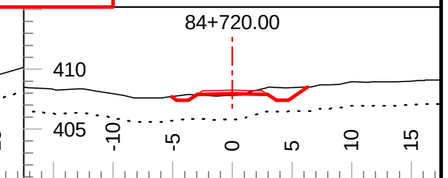

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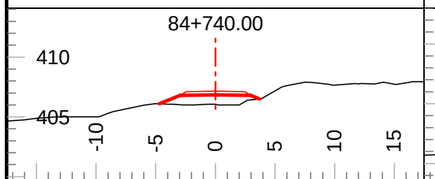

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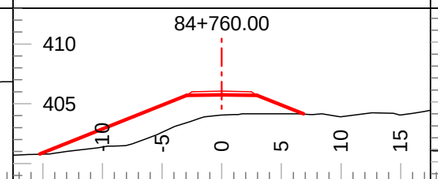

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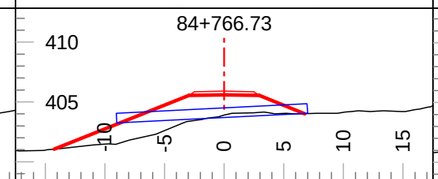

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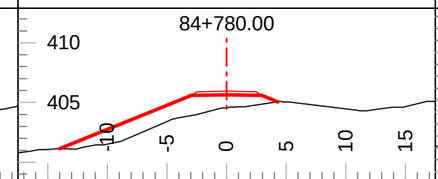

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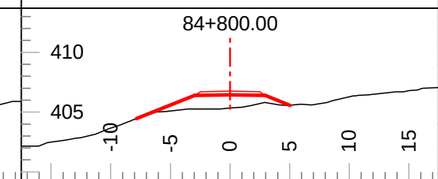

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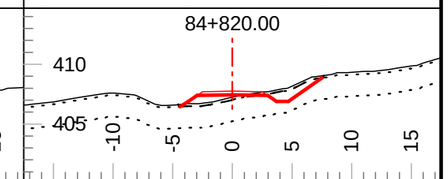

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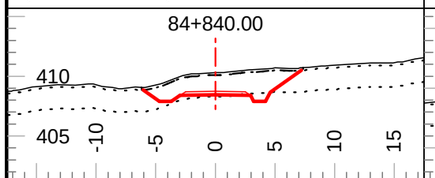
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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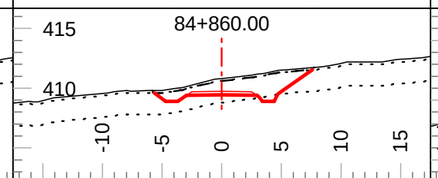

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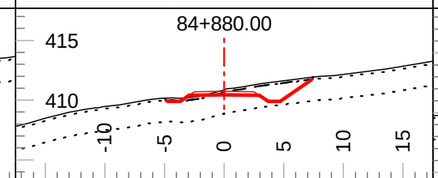

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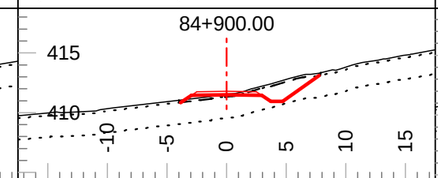

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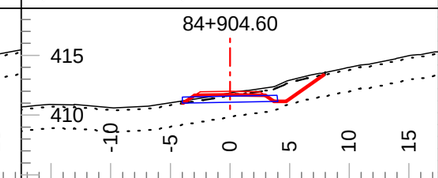

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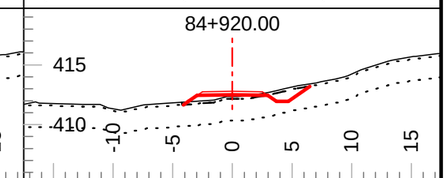

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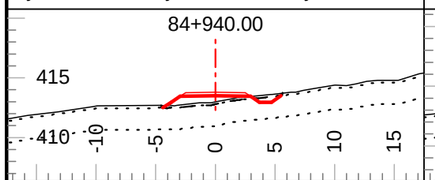

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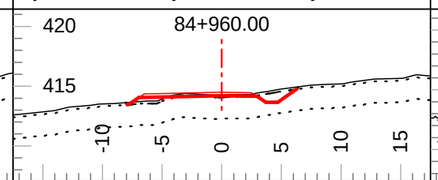

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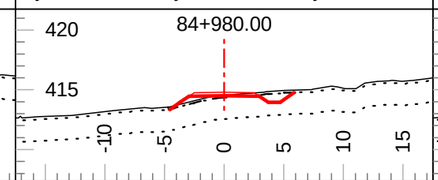

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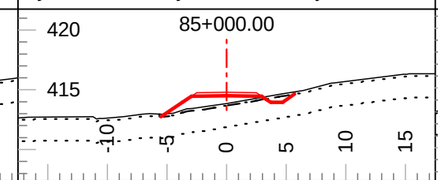

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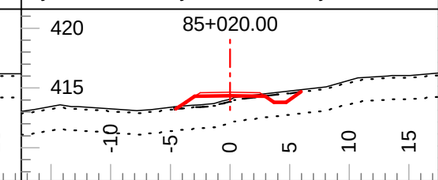

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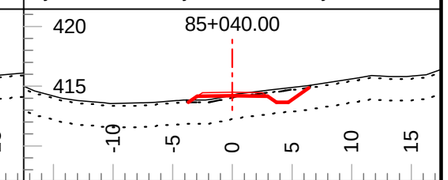

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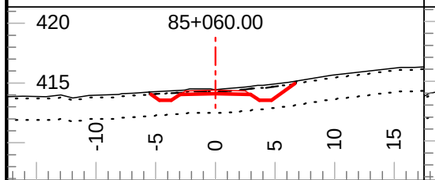
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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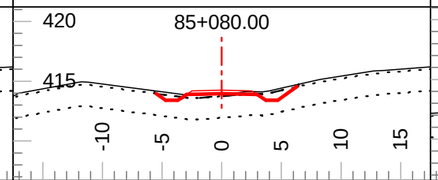

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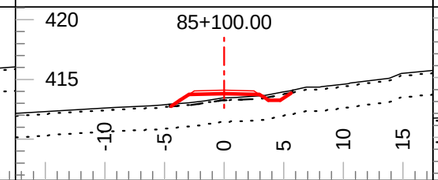

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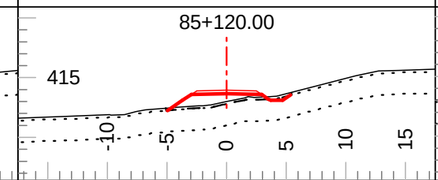

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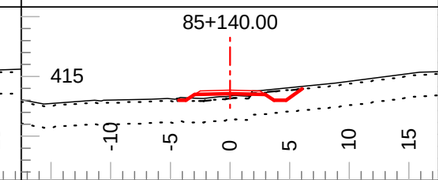

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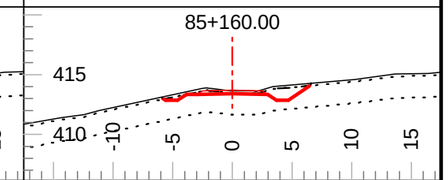

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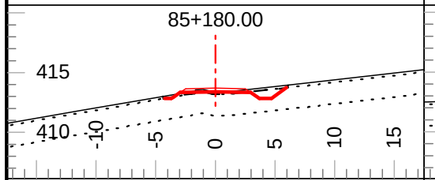

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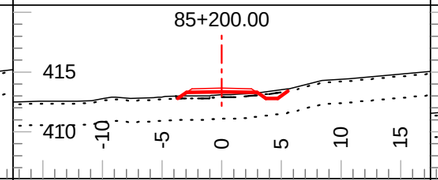

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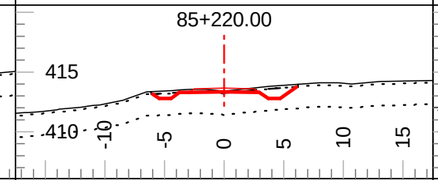

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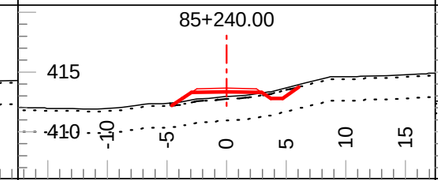

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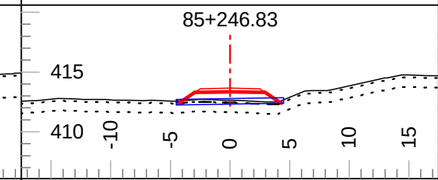

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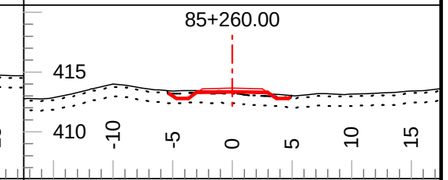

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Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

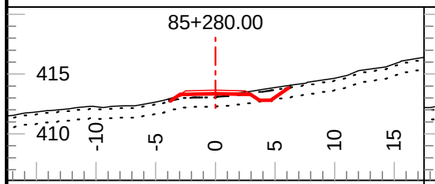
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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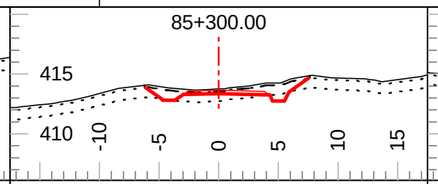

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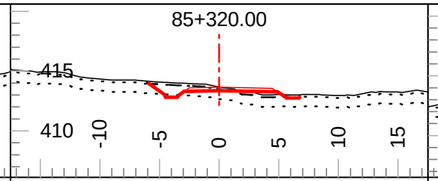

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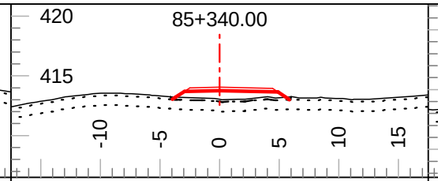

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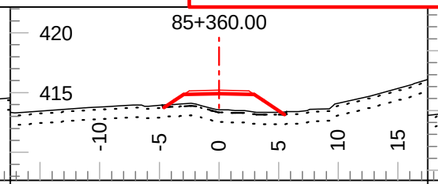

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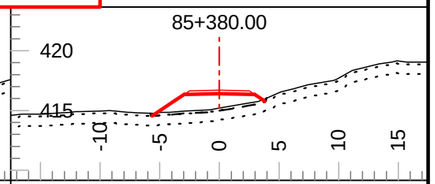

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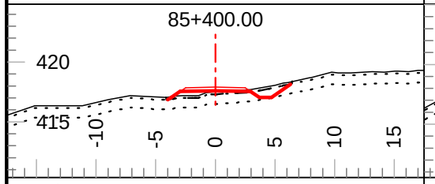

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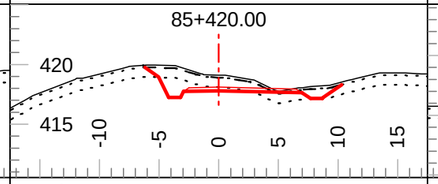

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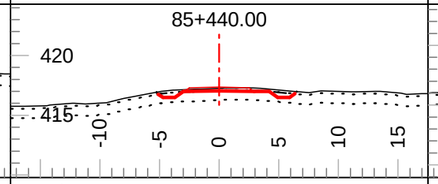

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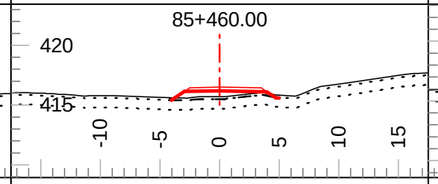

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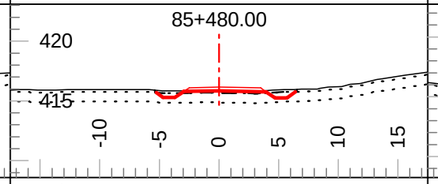

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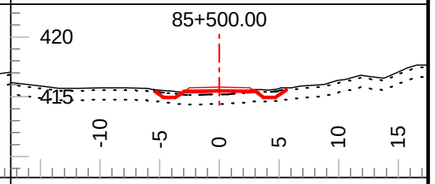

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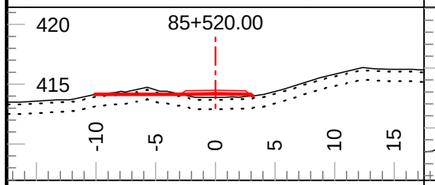

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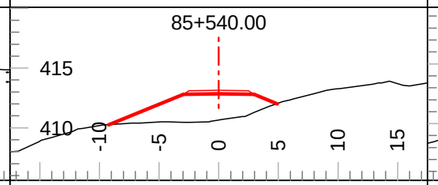

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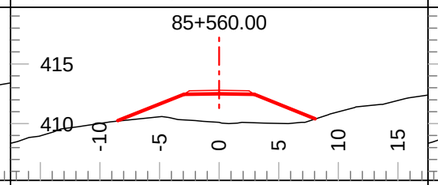

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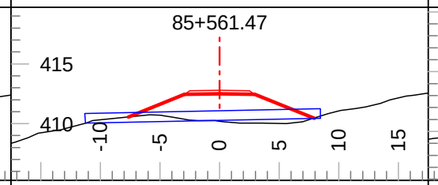

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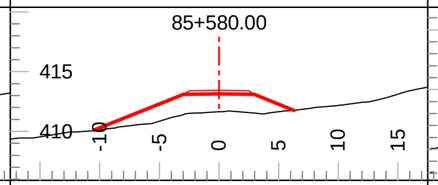

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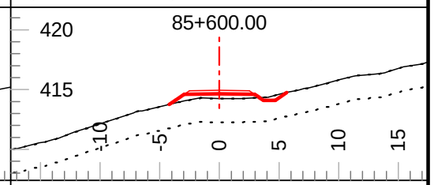

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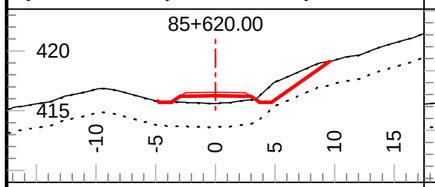

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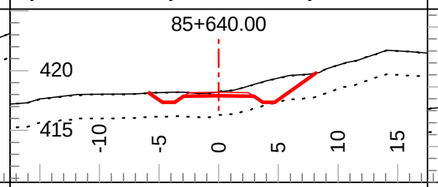

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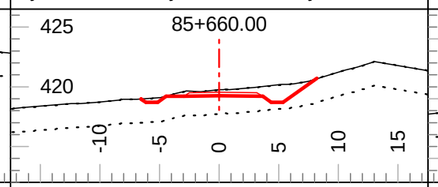

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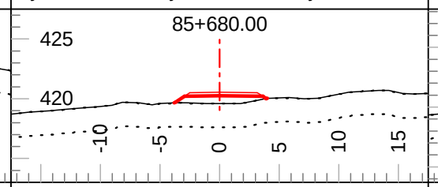

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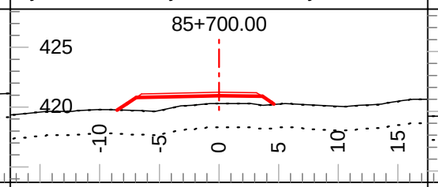

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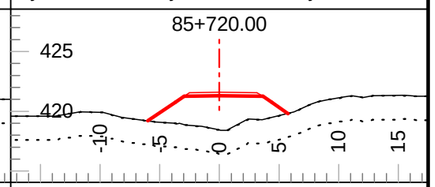

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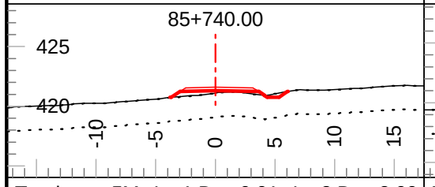

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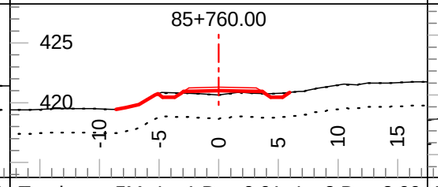

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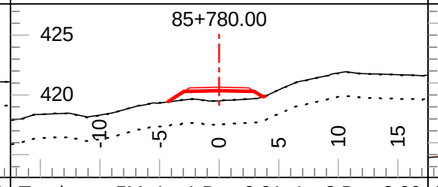

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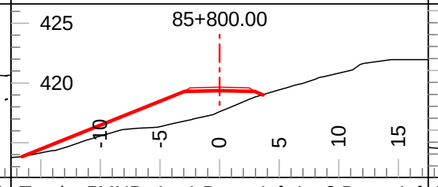

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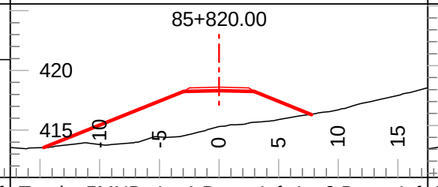

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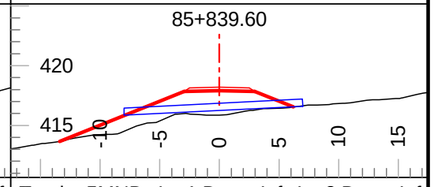

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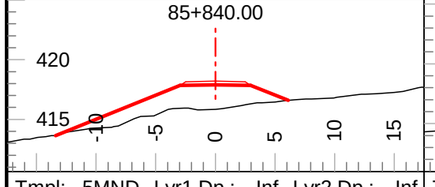

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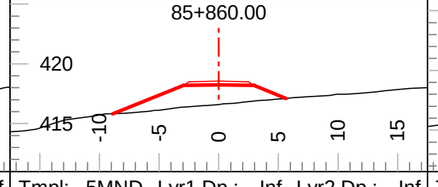

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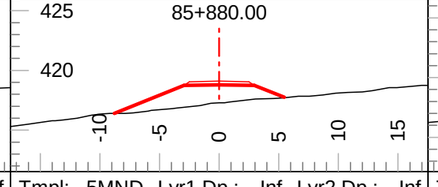

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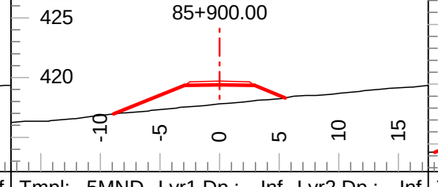

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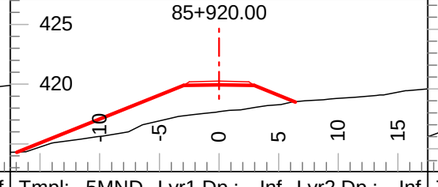

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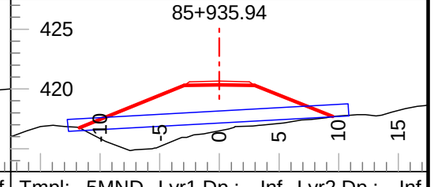


Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

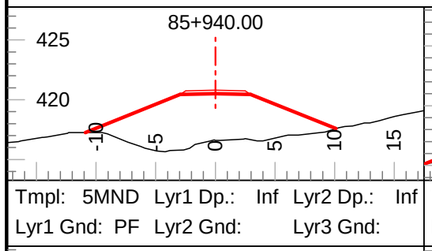
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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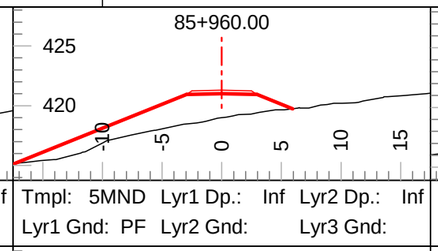

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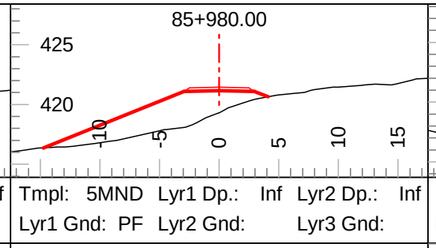

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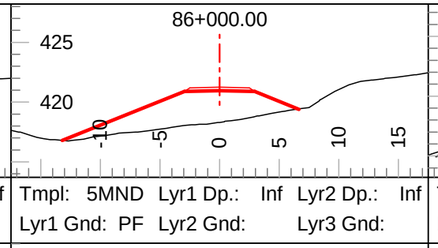

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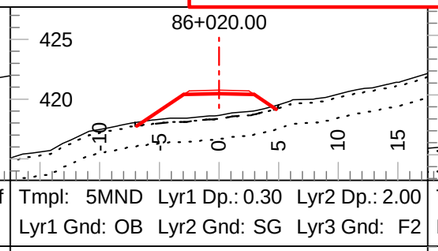

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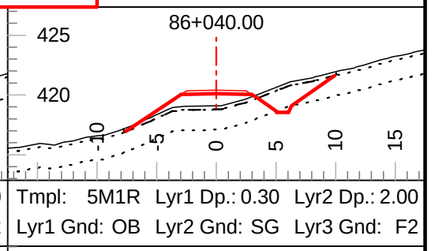
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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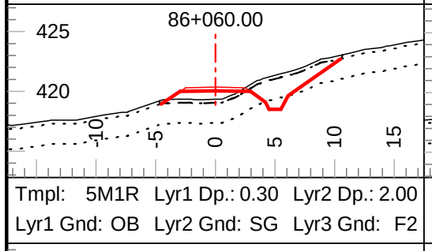

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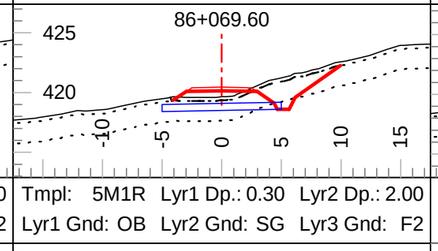

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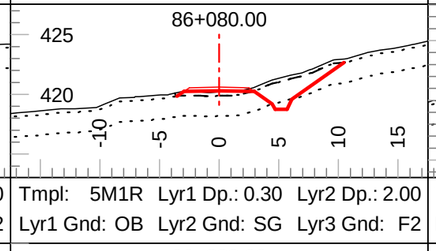

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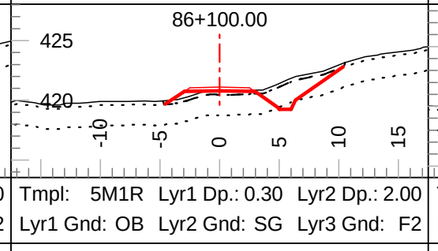

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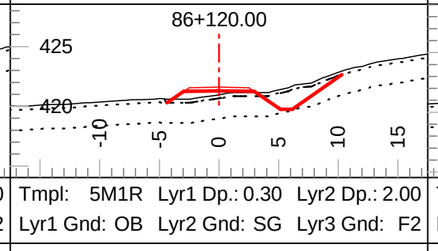

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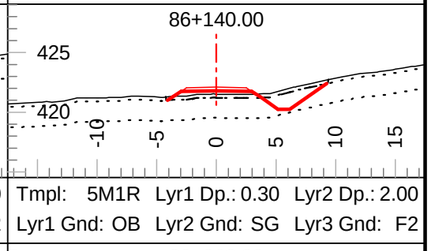

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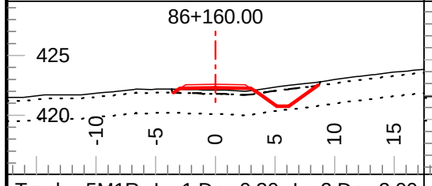

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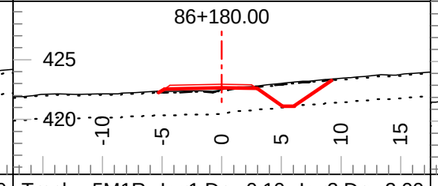

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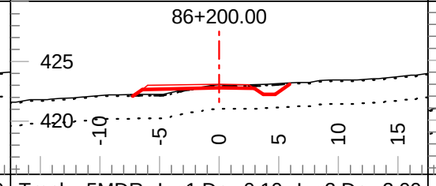

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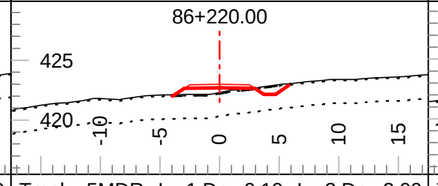

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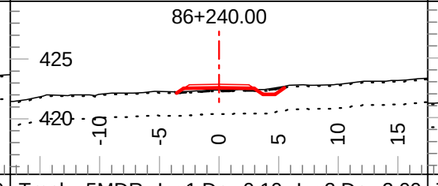

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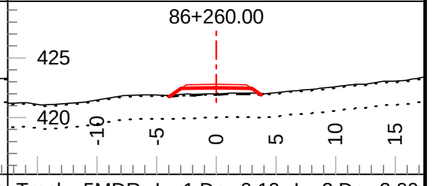

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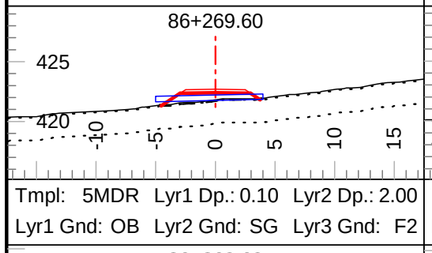

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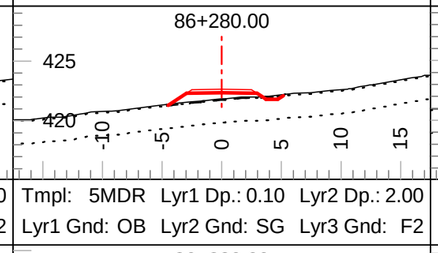

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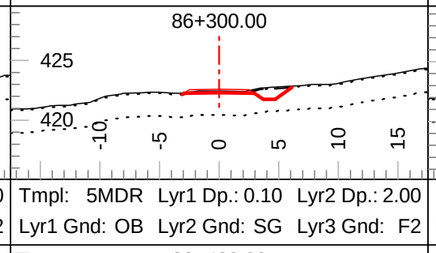

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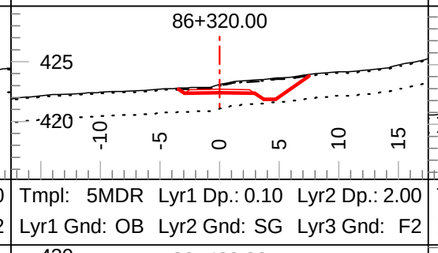

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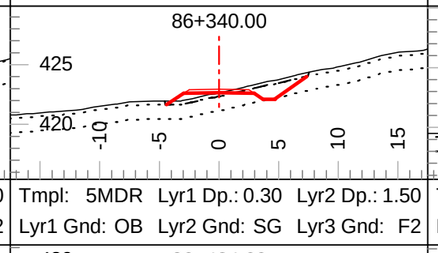

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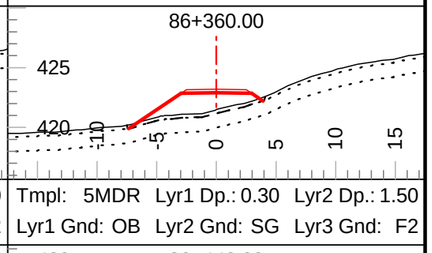

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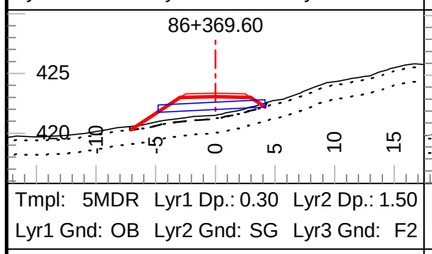

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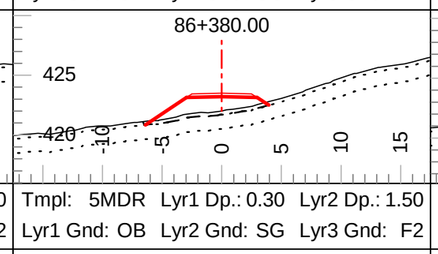

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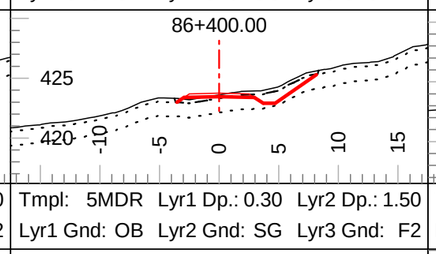

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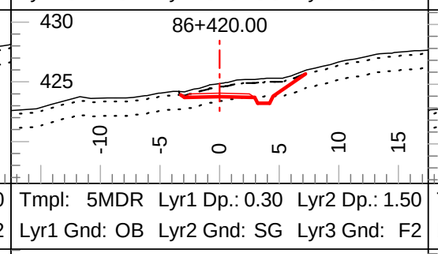

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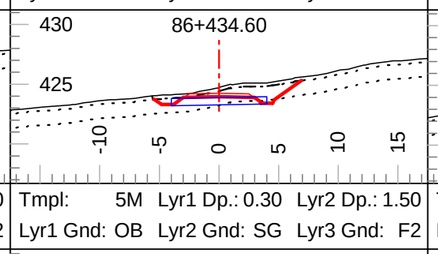

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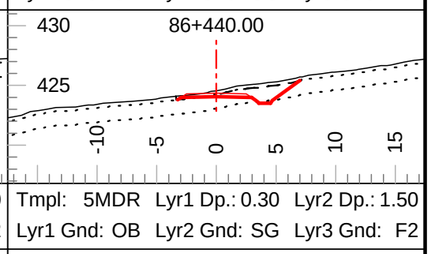

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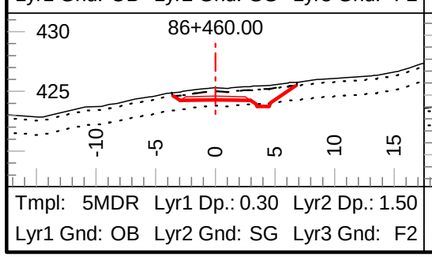

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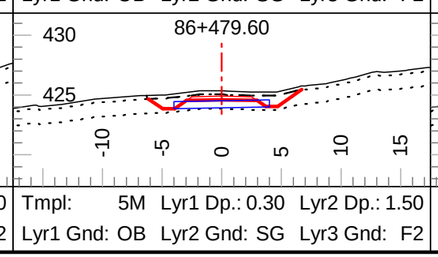

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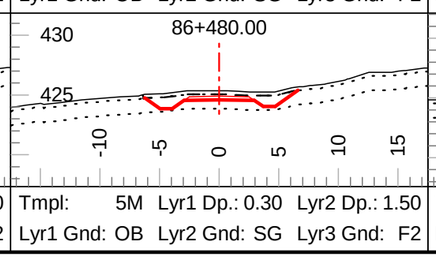

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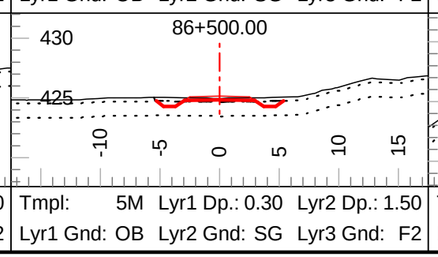

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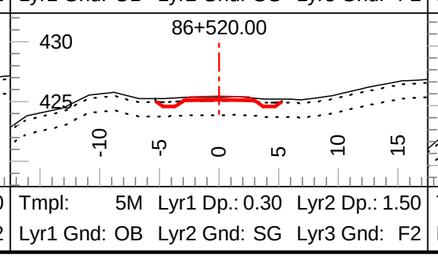

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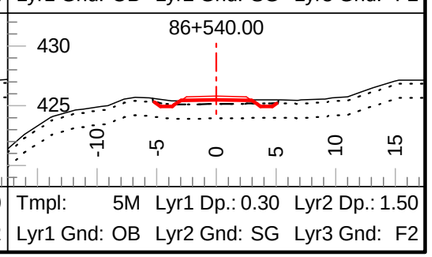

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Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

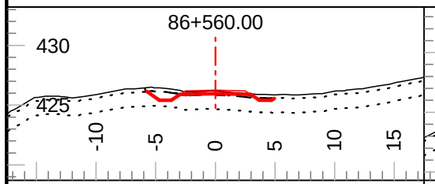
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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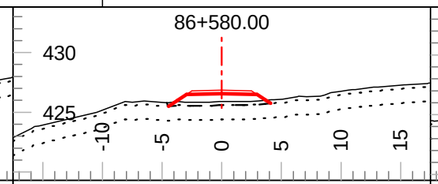

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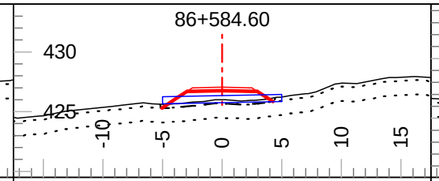
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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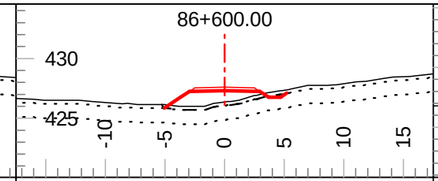

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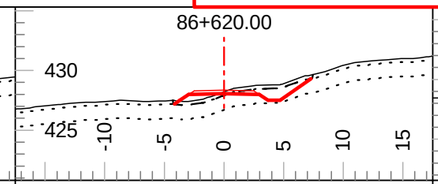

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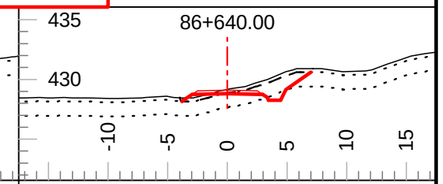

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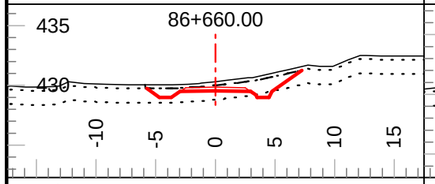

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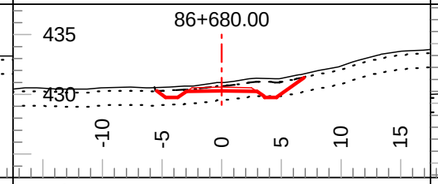

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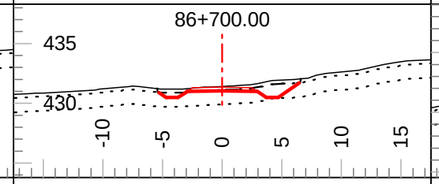

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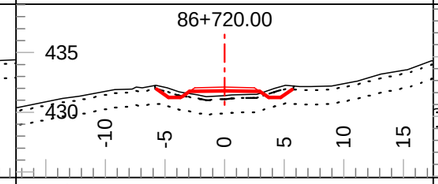

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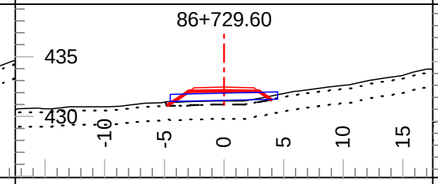

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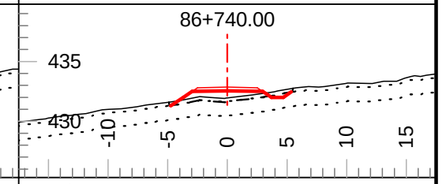

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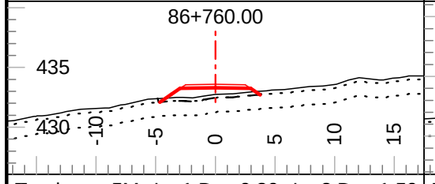

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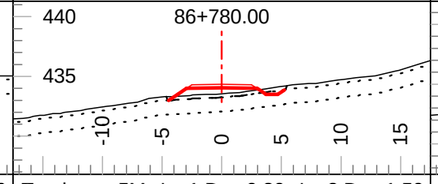

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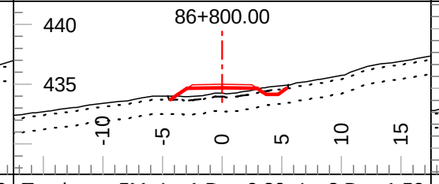

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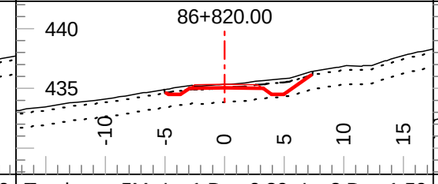

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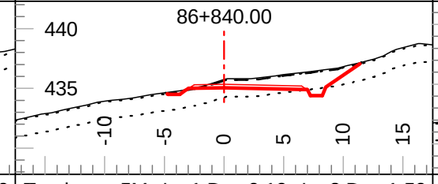

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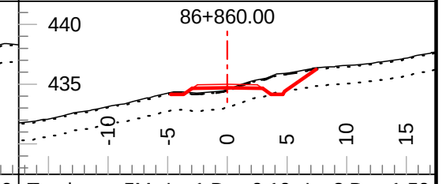

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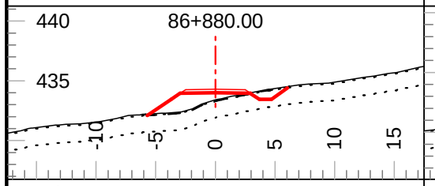

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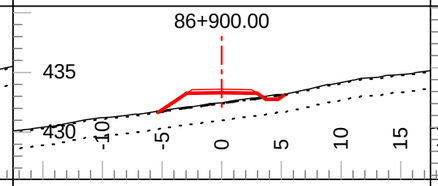

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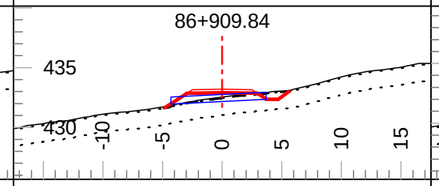

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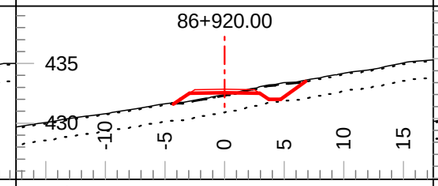

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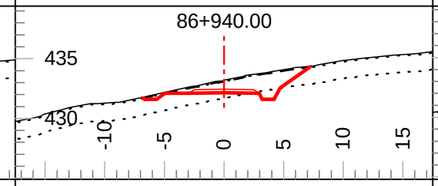

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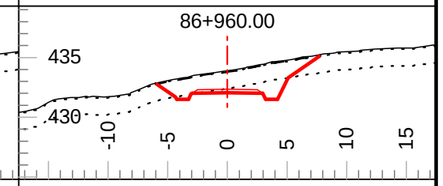

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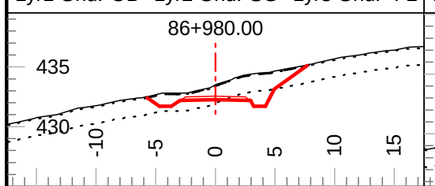

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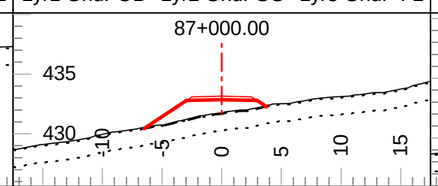

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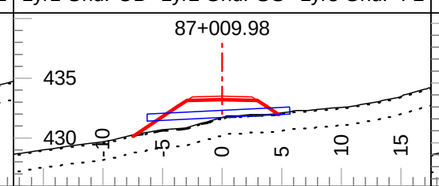

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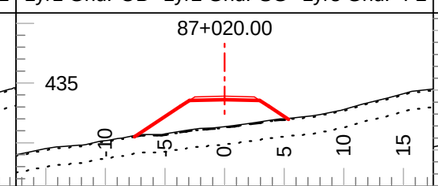

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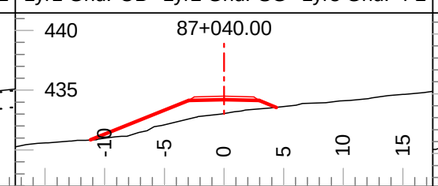

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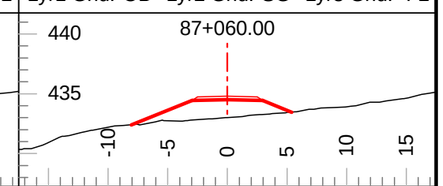

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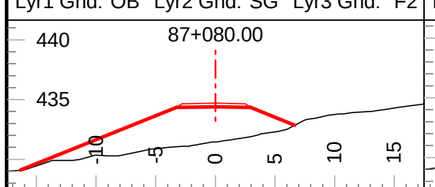

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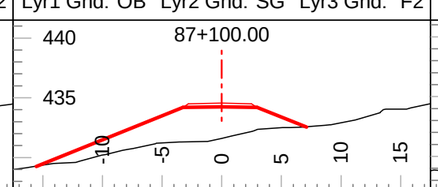

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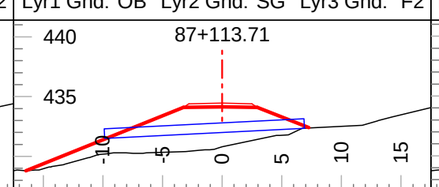

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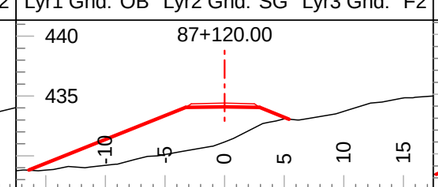

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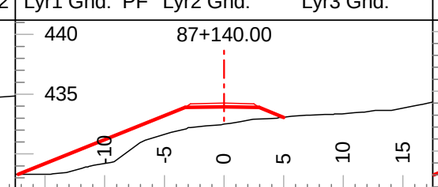

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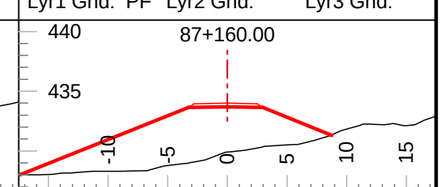


Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

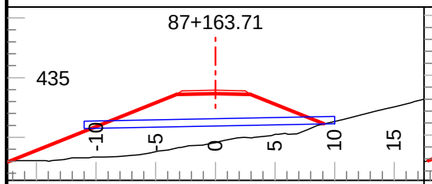
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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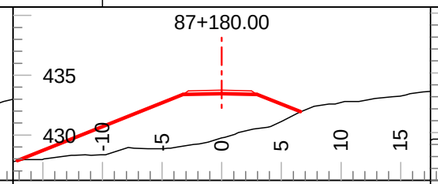

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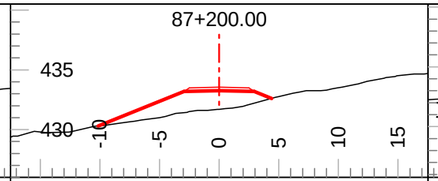

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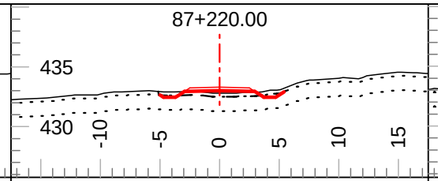

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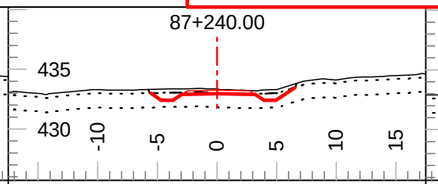

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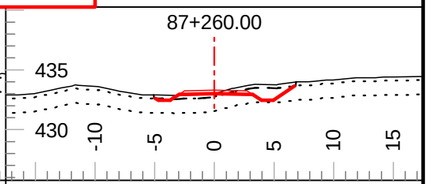

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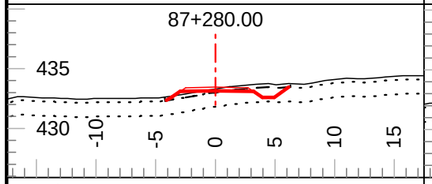

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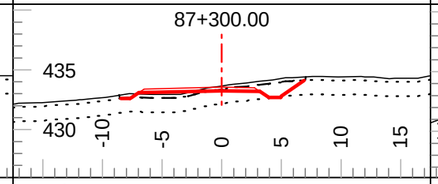

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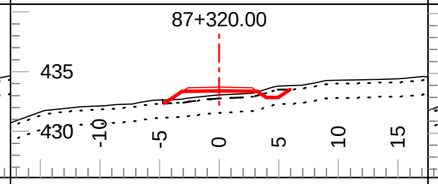
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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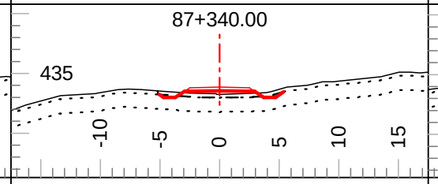

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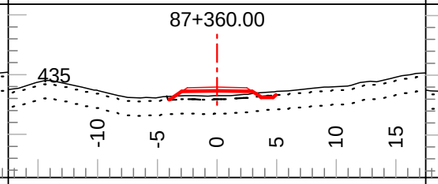

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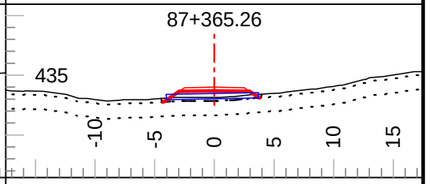

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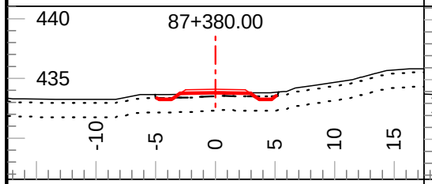

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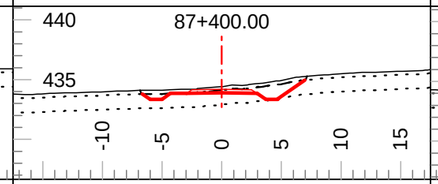

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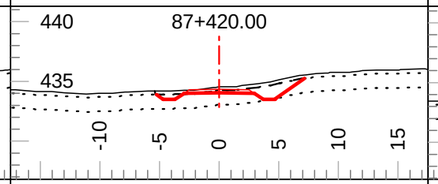

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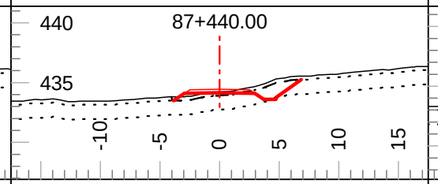

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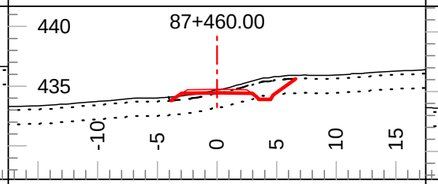

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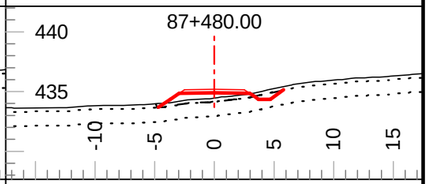

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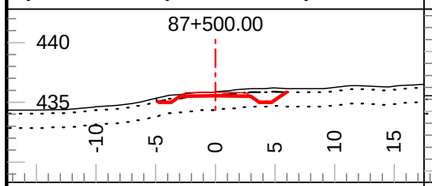

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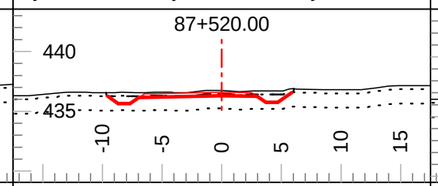

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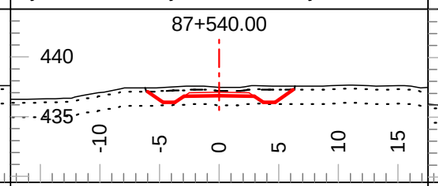

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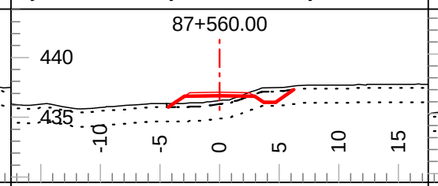

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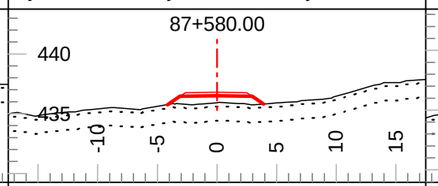

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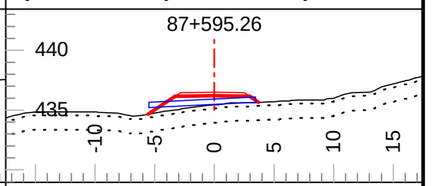

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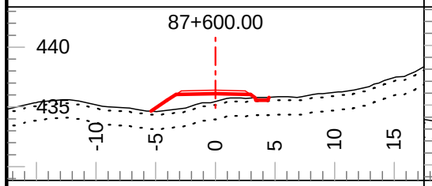

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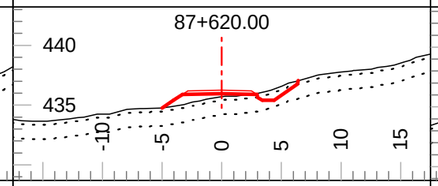

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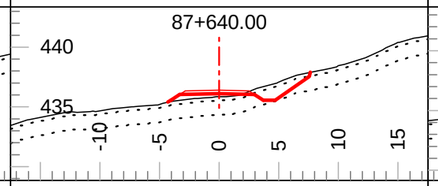

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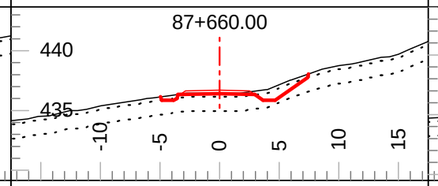

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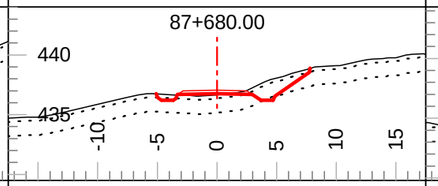

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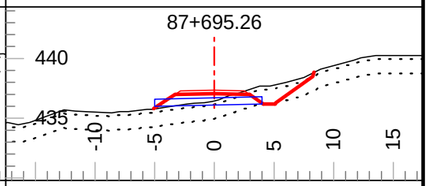

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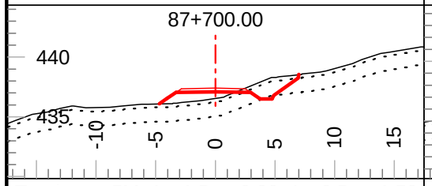

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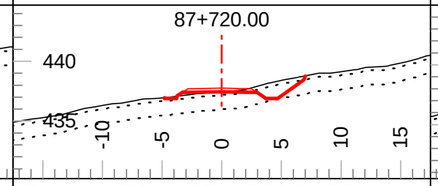

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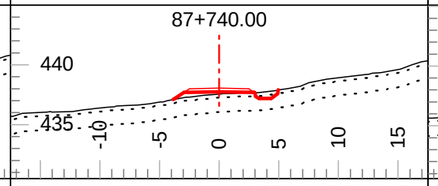

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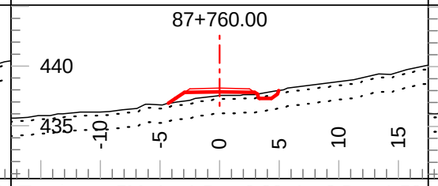

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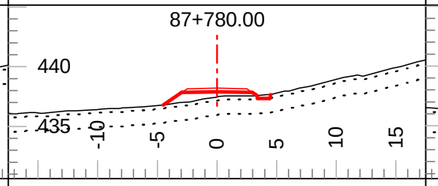

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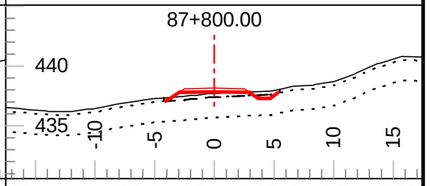

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Coffee Gold Mine

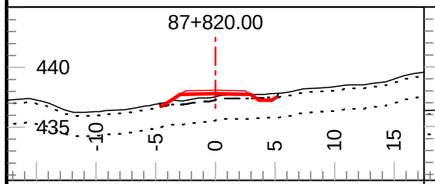
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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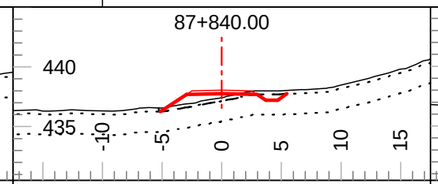

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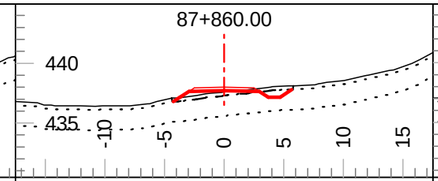

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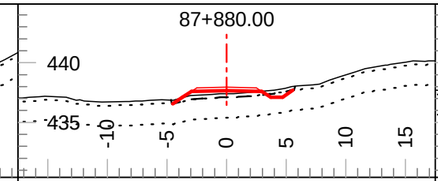

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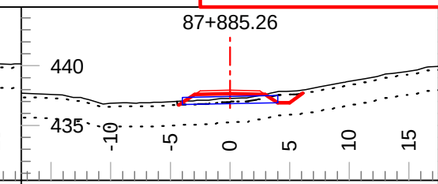

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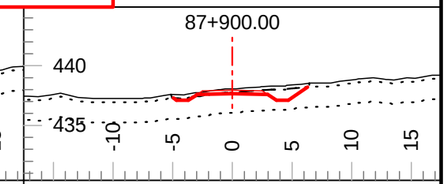

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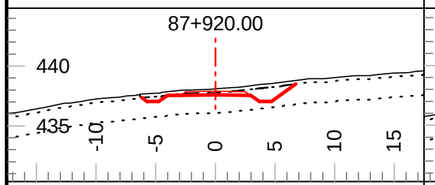

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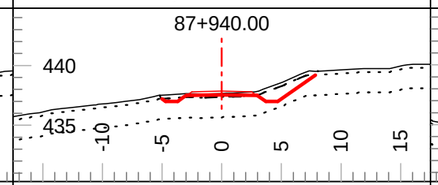

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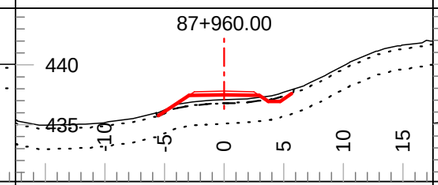

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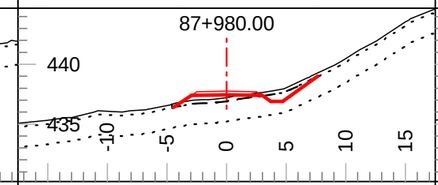

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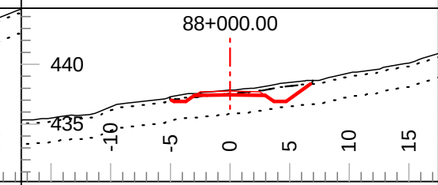

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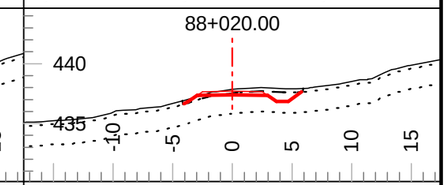

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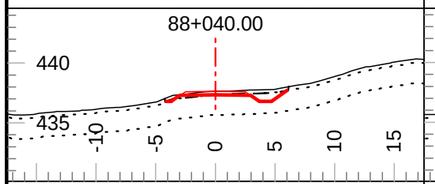

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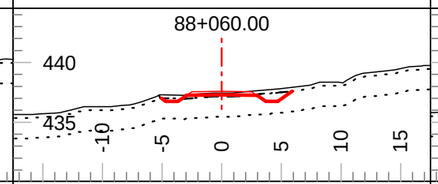

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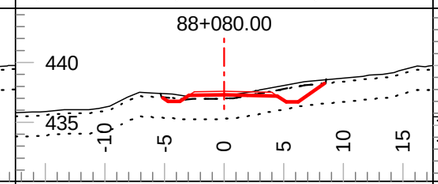

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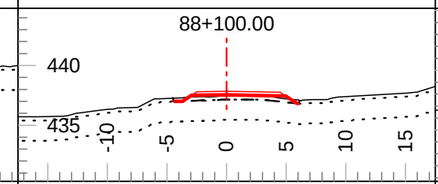

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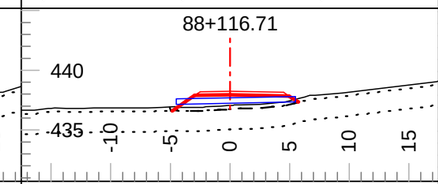

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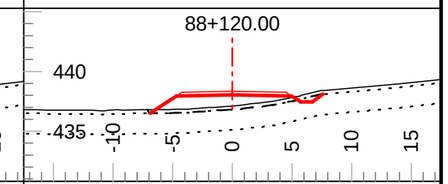

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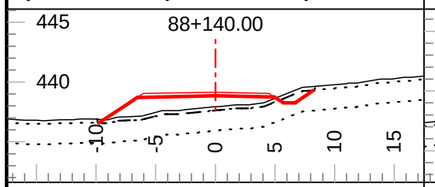

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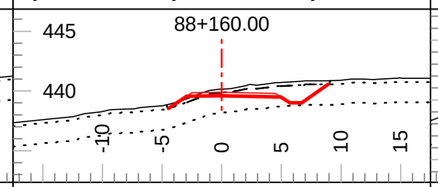

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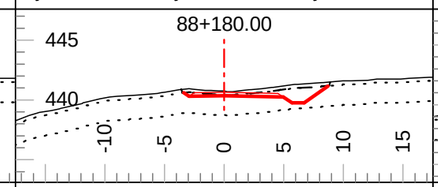

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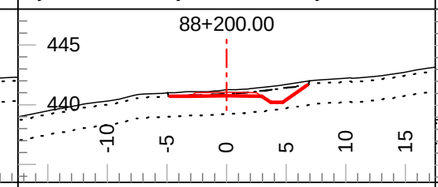

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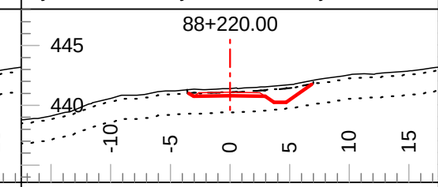

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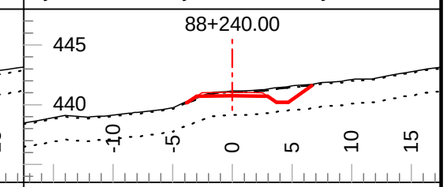

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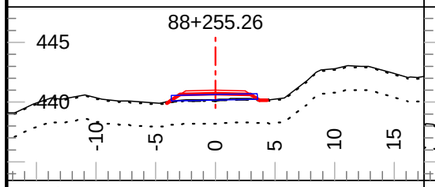

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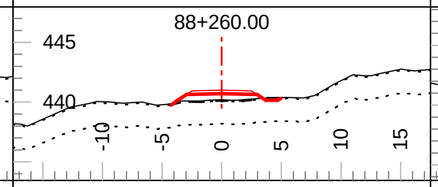

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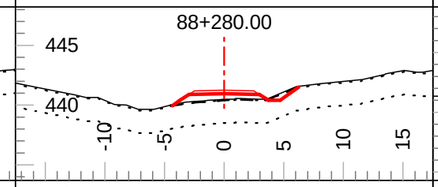

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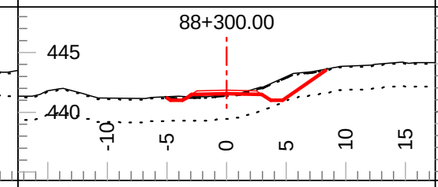

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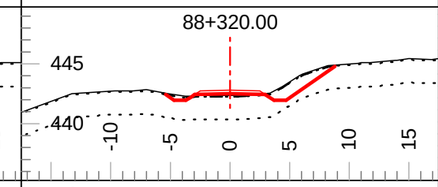

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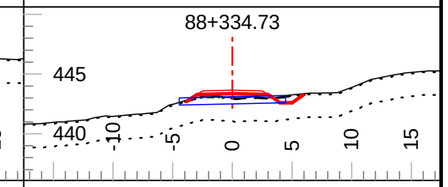

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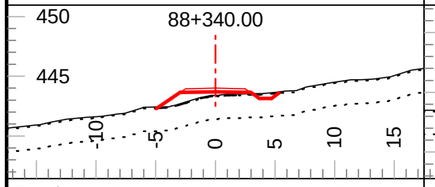

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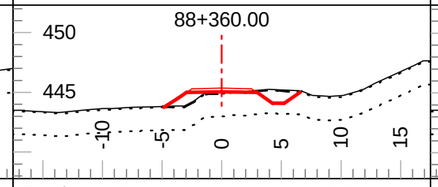

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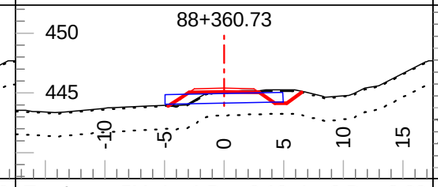

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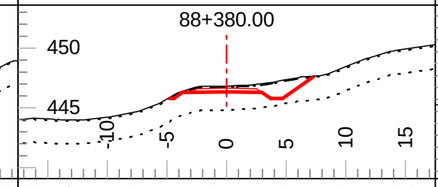

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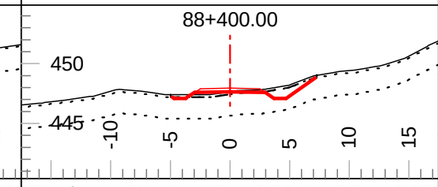

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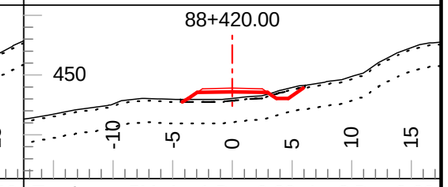

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Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

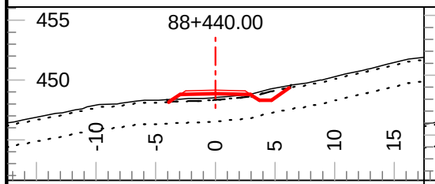
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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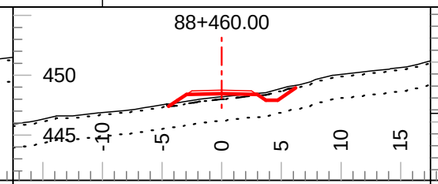

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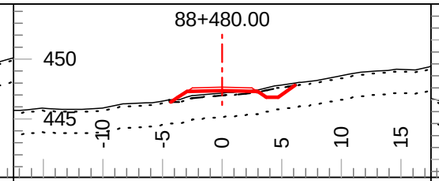

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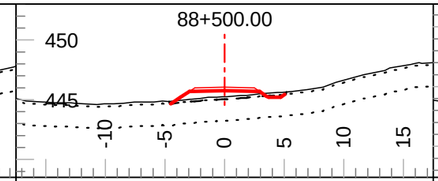

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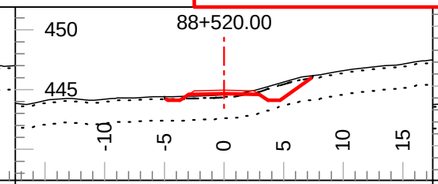

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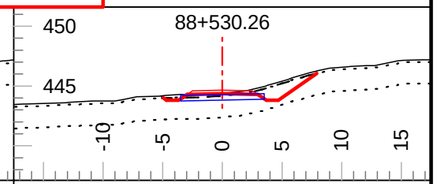

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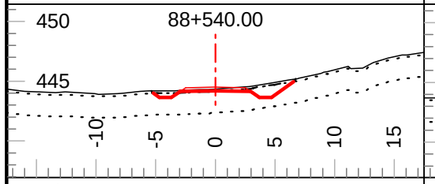

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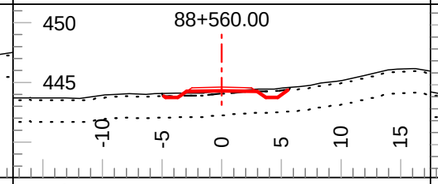

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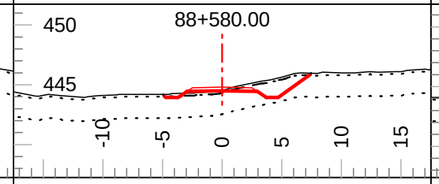

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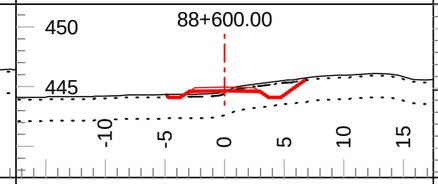

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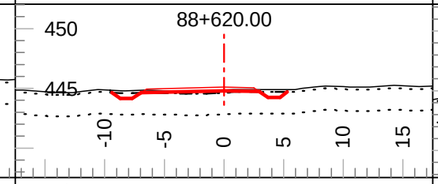

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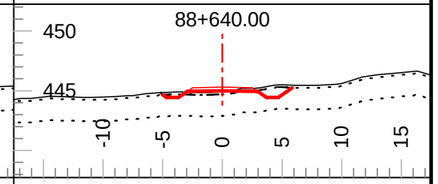

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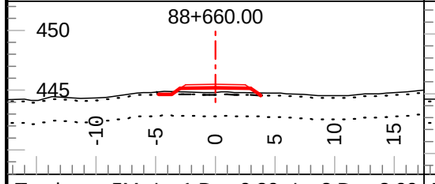

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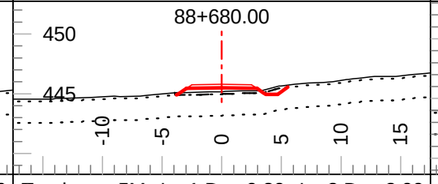

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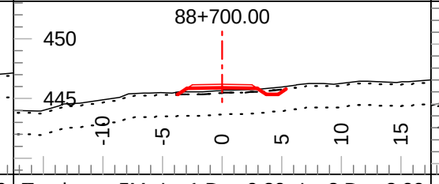

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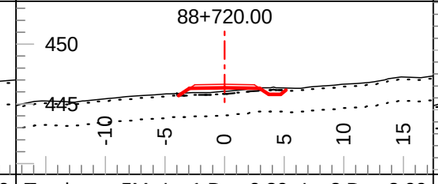

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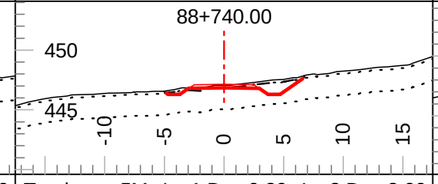

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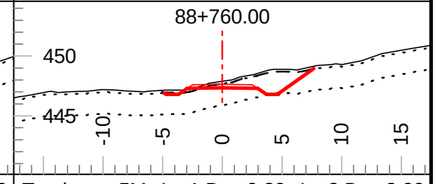

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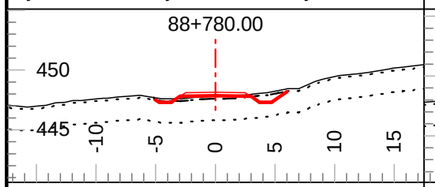

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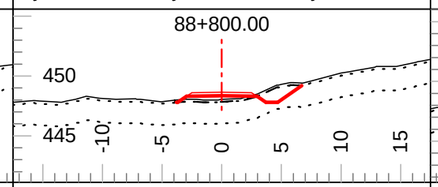

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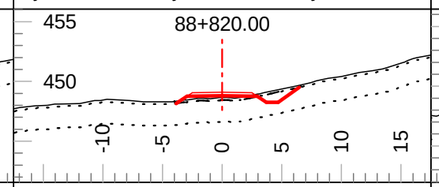

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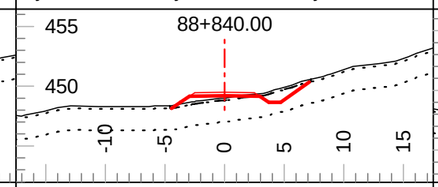

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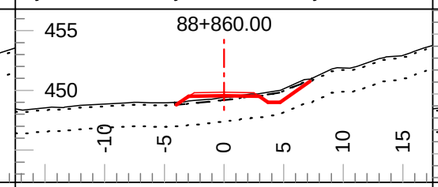
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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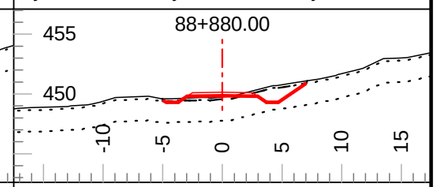

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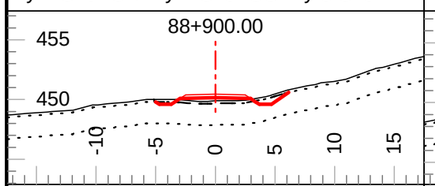

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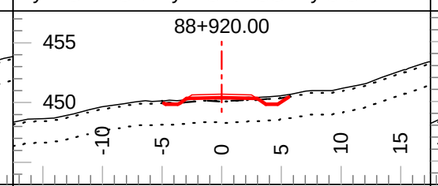

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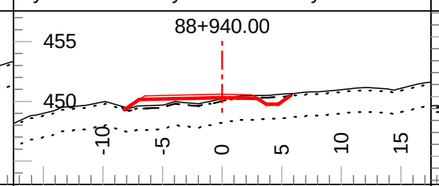

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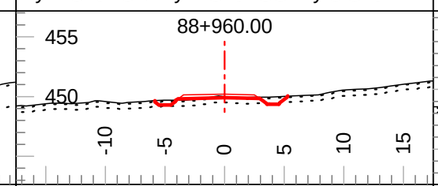

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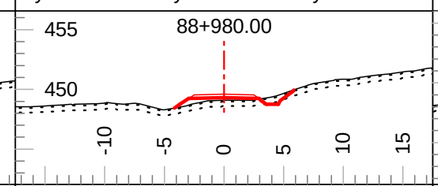

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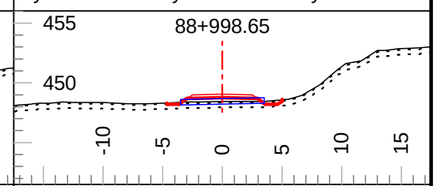

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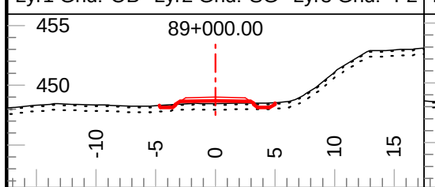

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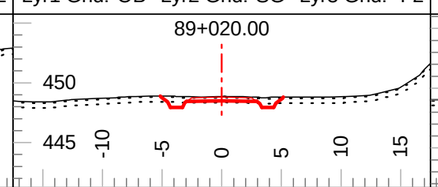

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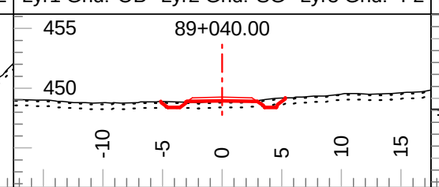

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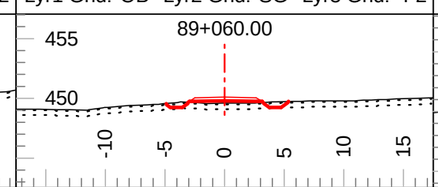

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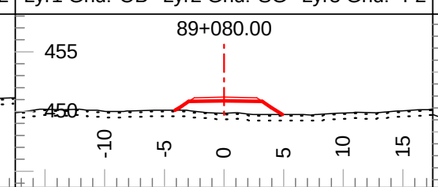

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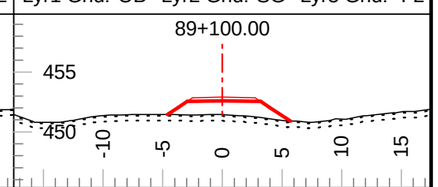

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Coffee Gold Mine

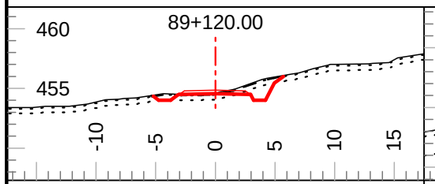
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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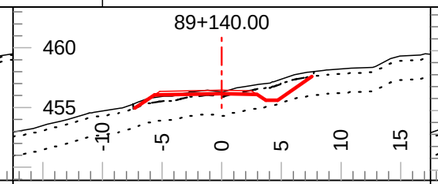

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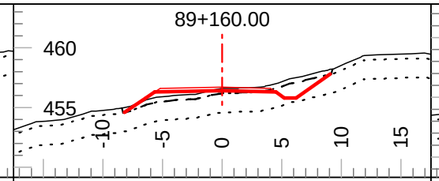

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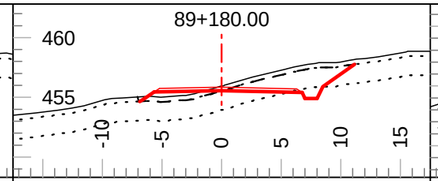

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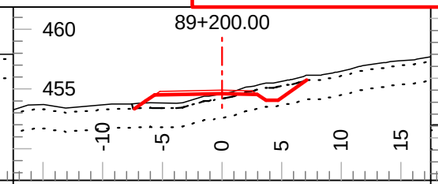

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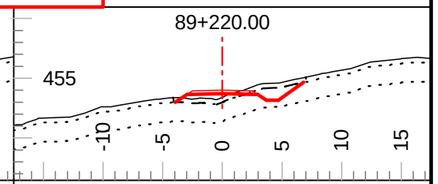

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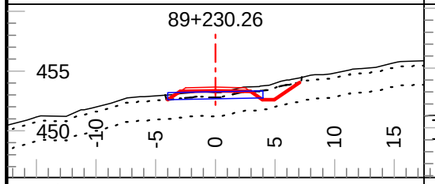

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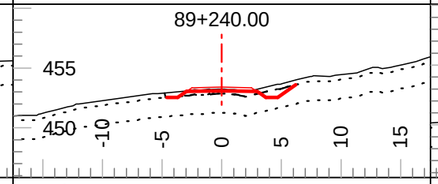

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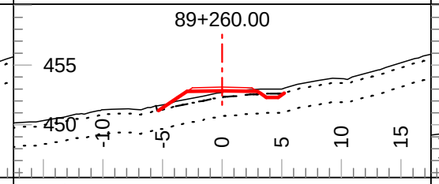

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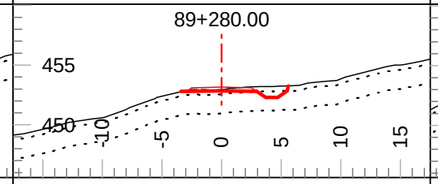

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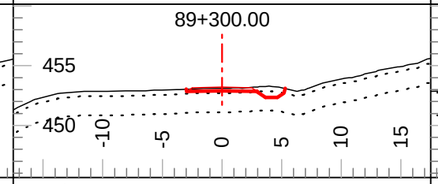

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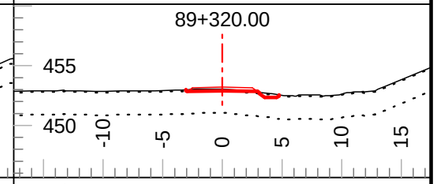

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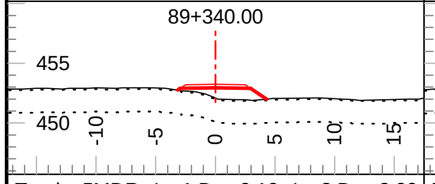

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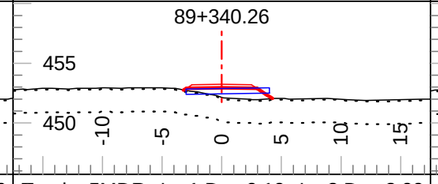

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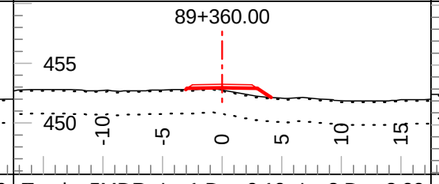

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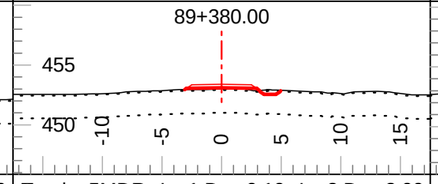

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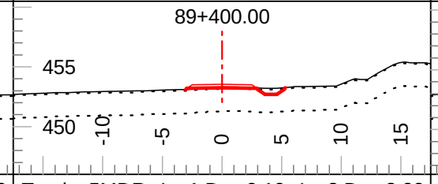

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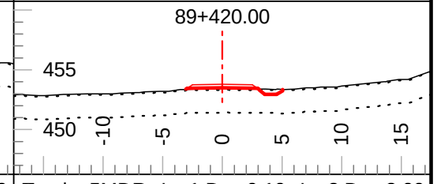

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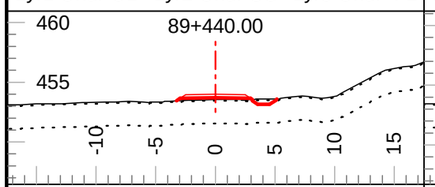

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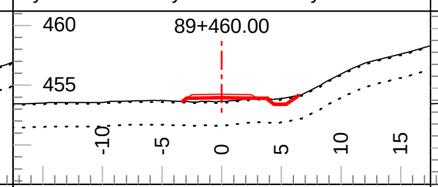

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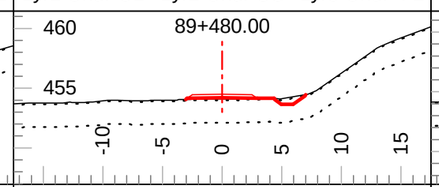

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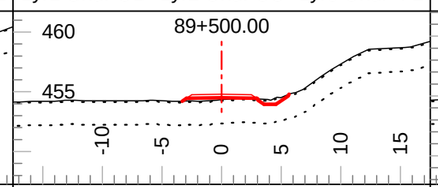

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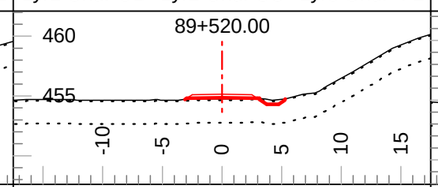

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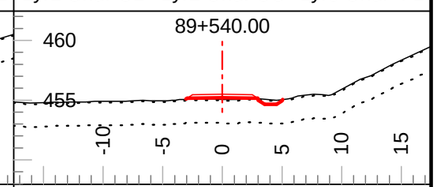

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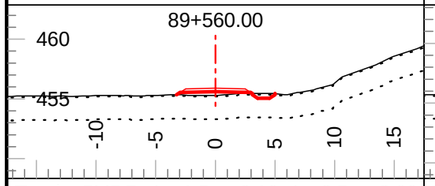

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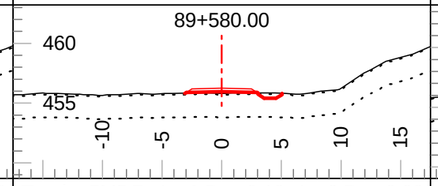

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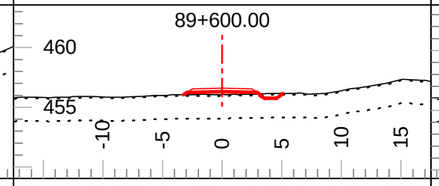

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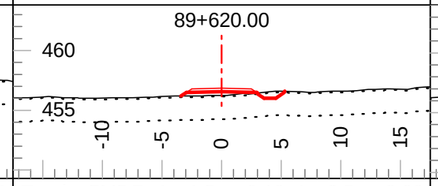

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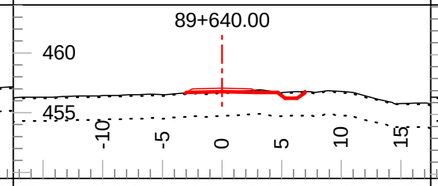

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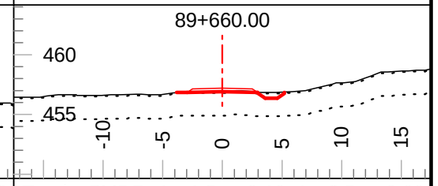
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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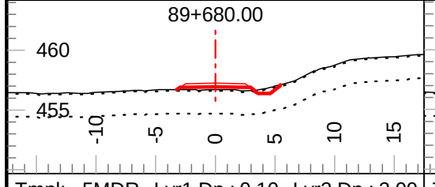

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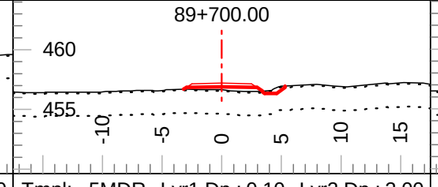

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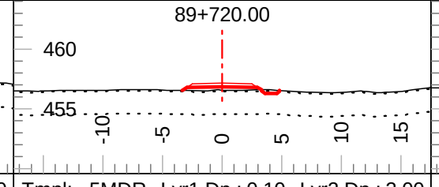

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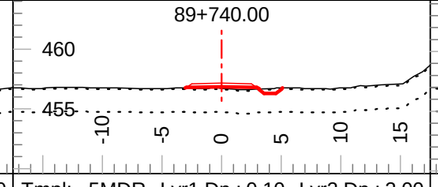

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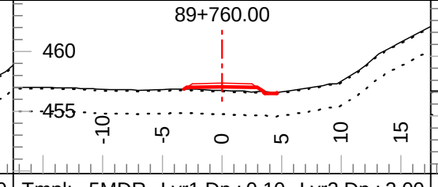

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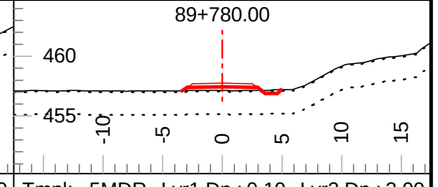

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Coffee Gold Mine

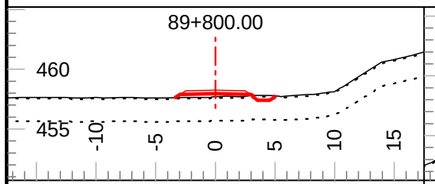
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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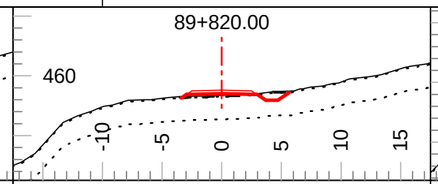

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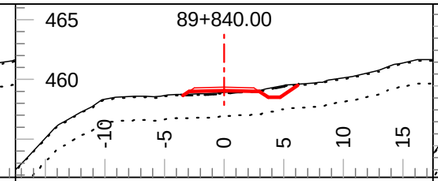

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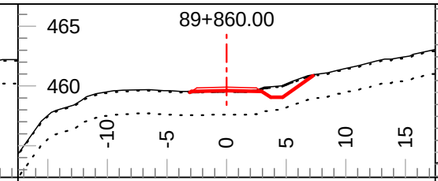

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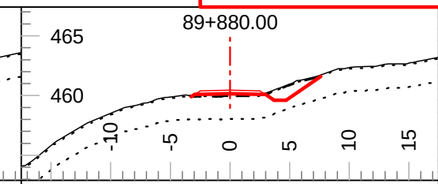

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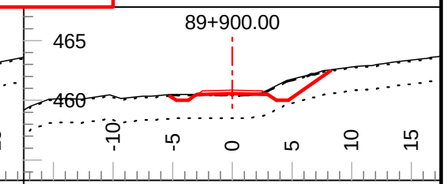

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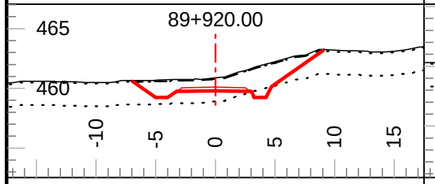

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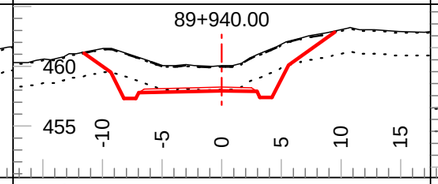

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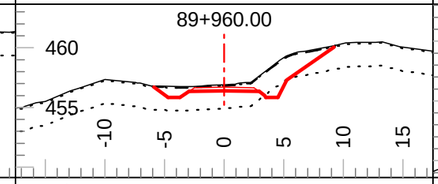

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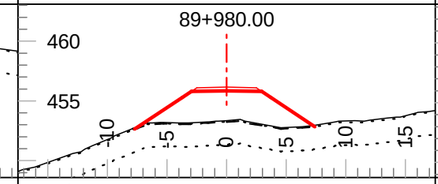

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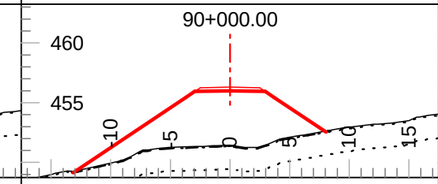

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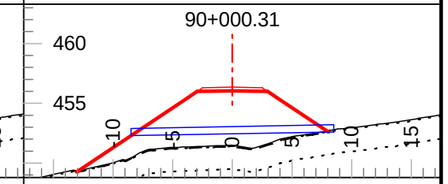

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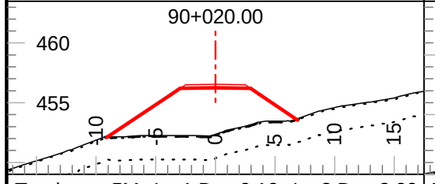

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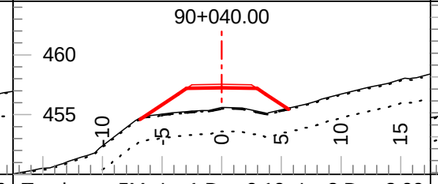

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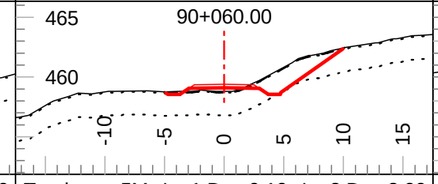

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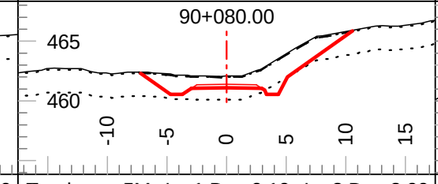

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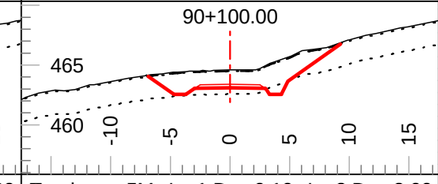

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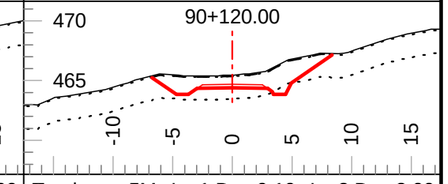

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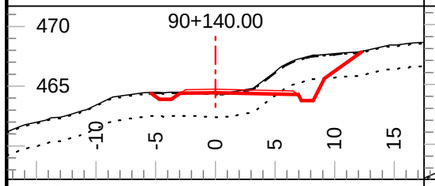

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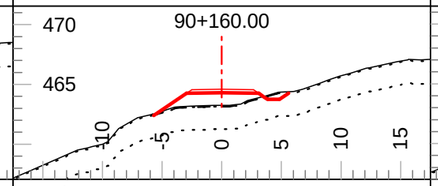

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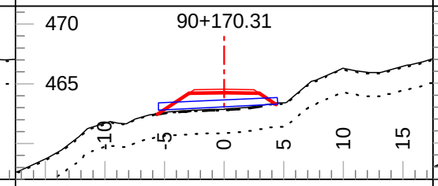

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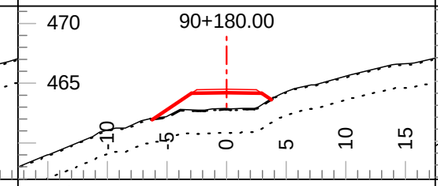

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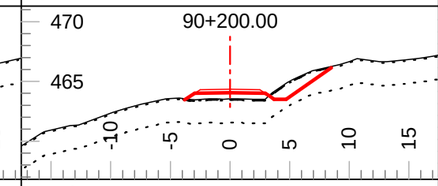

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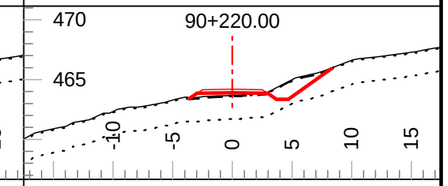

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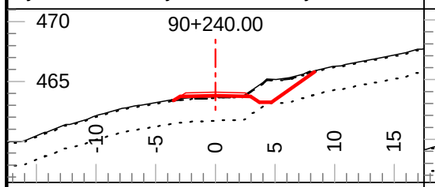

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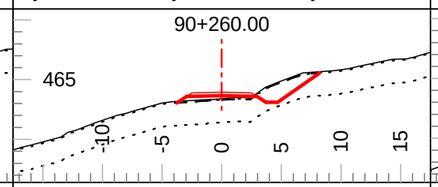

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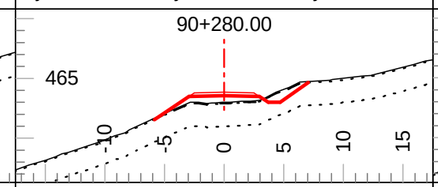

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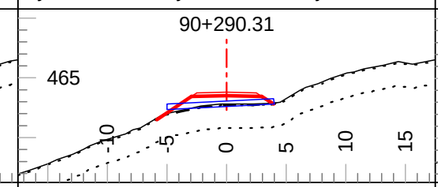

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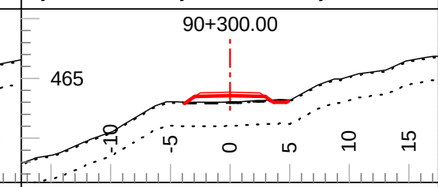

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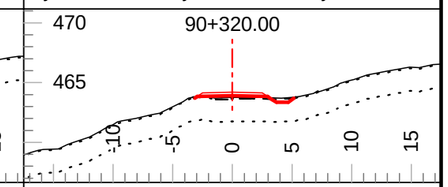

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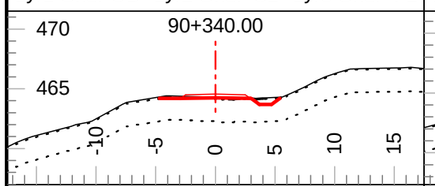

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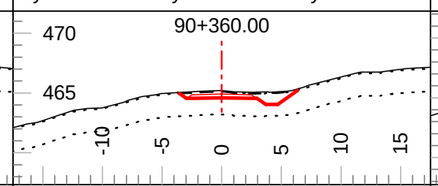

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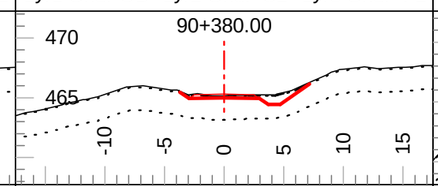

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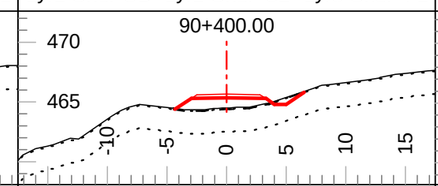

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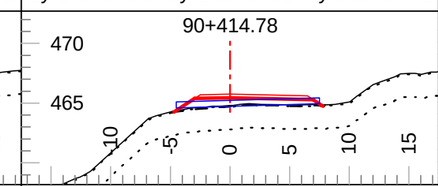

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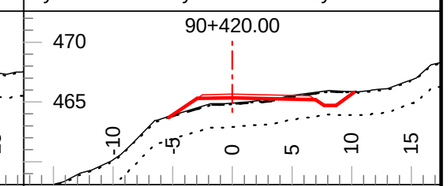

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

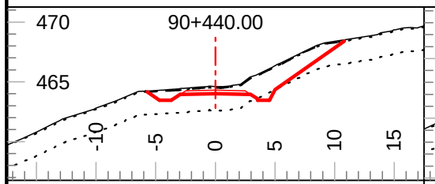
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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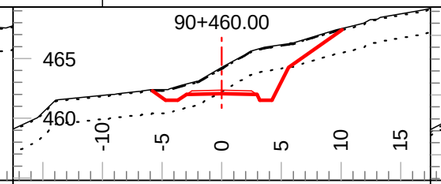

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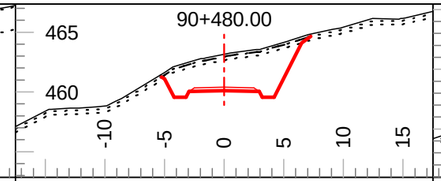

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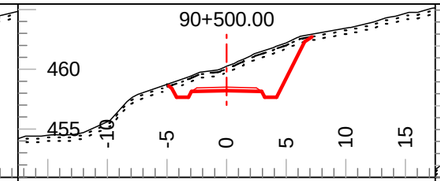

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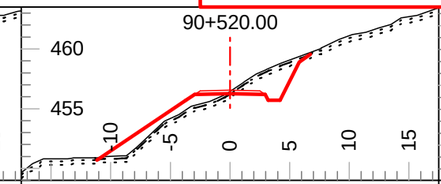

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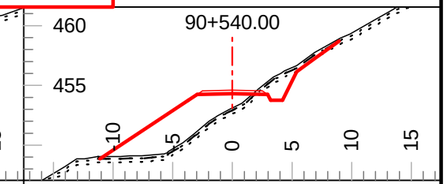

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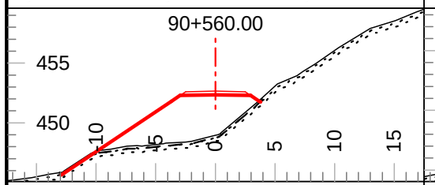

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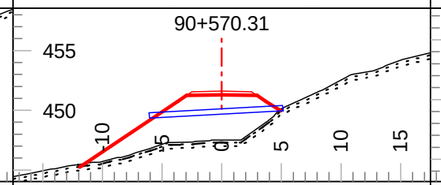

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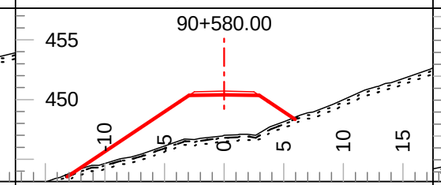

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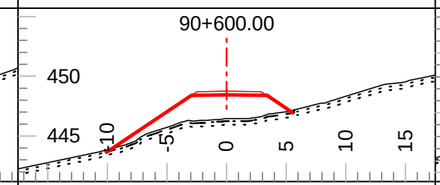

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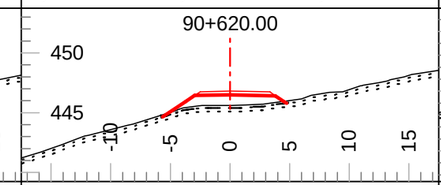

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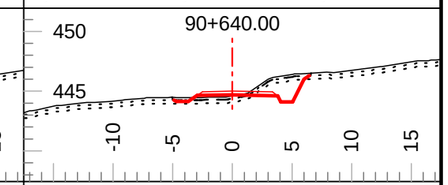

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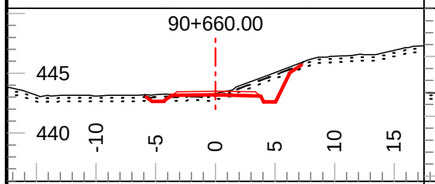

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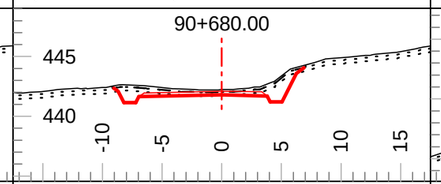

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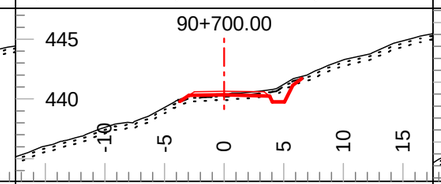

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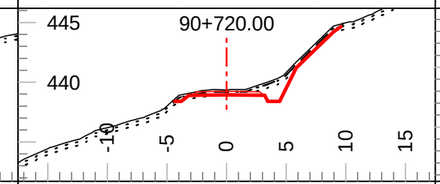

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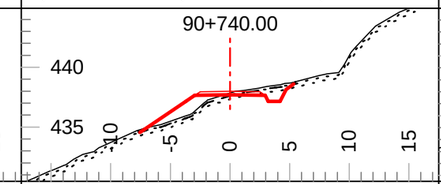

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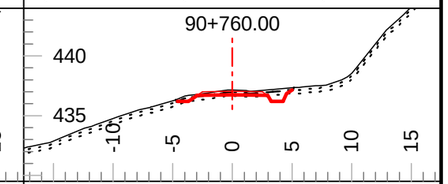

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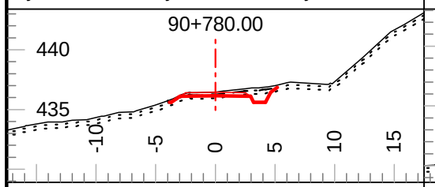

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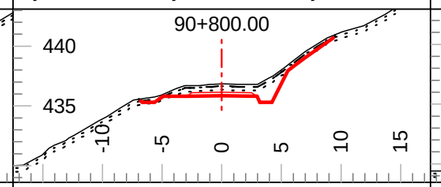

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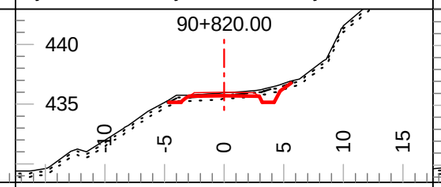

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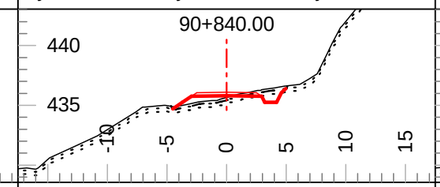

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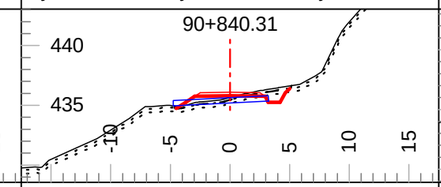

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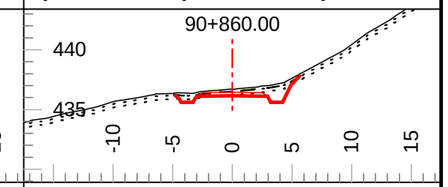

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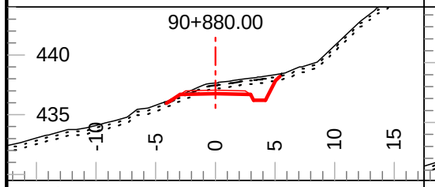

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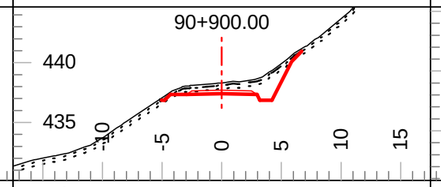

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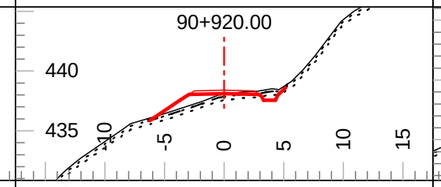

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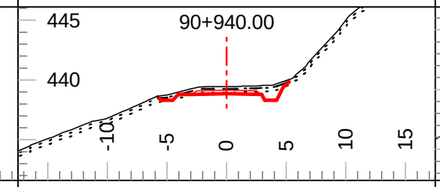

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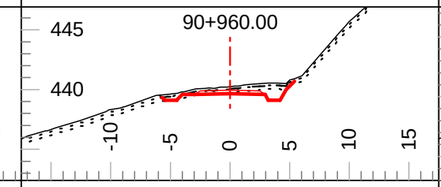

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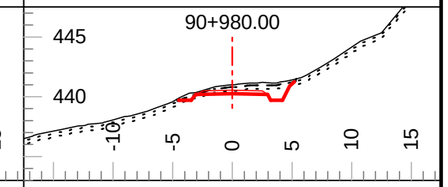

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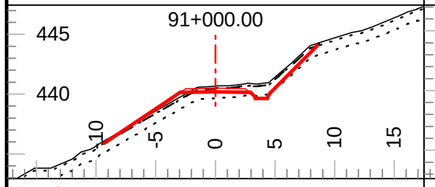

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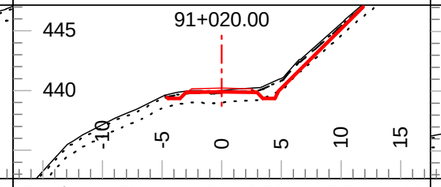

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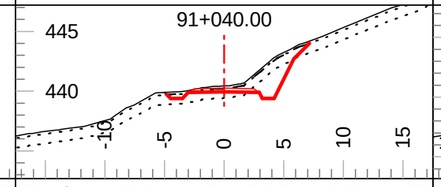

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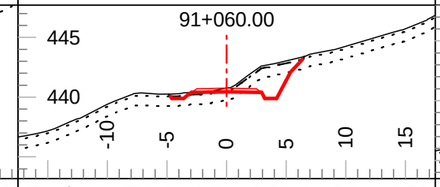

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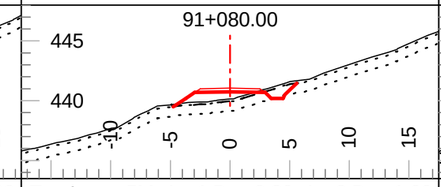

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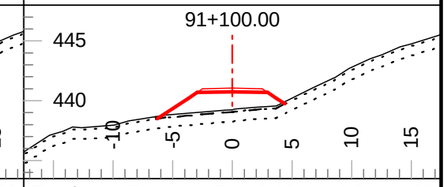


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

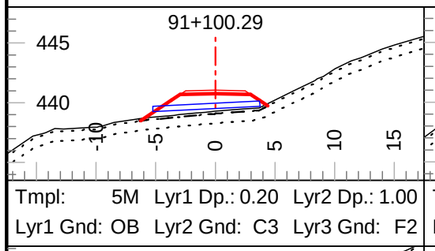
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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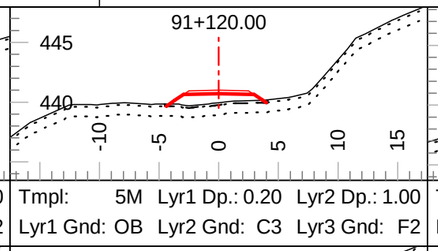
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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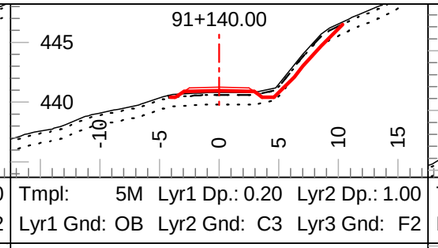

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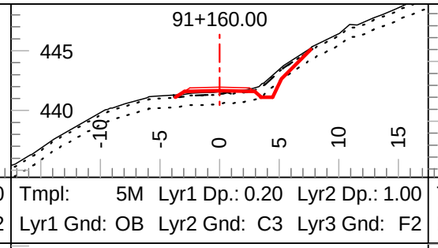

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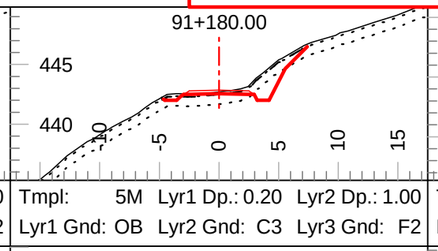

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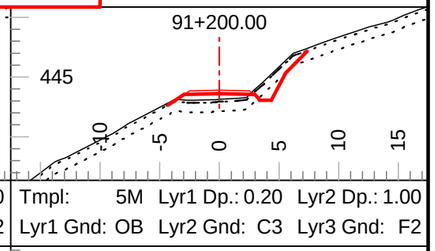

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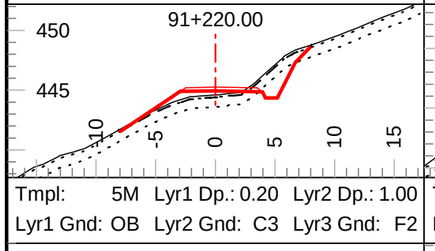

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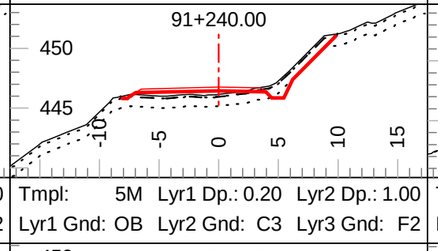

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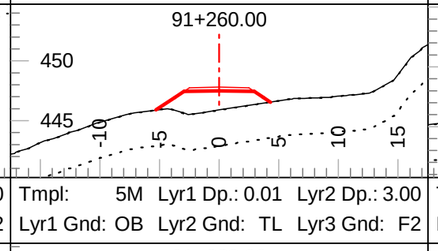

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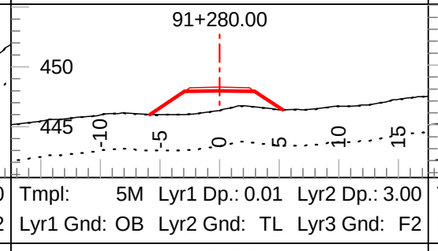

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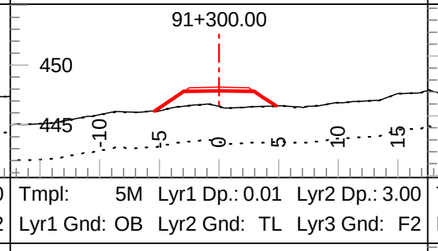

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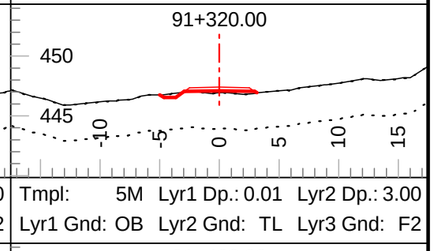

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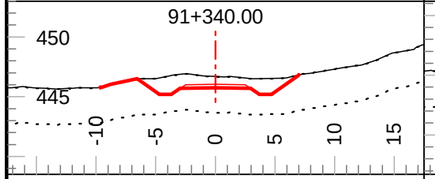

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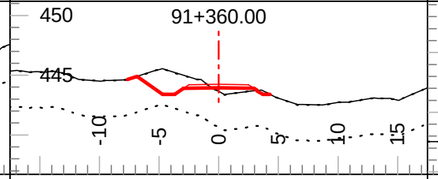

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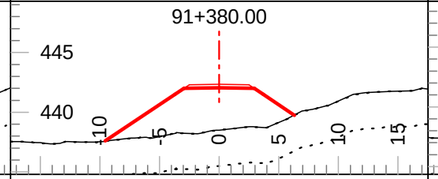

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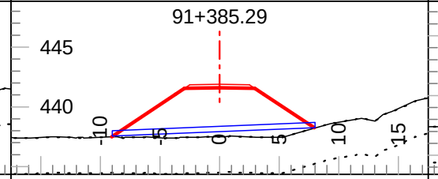

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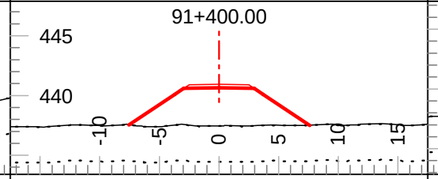

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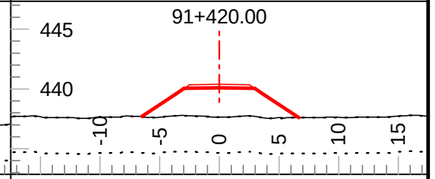

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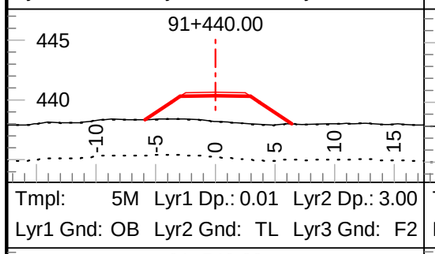

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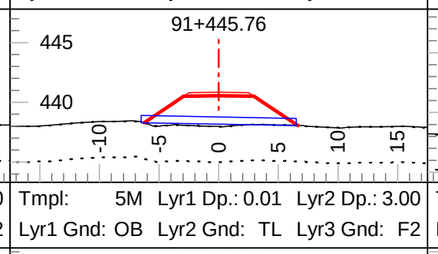

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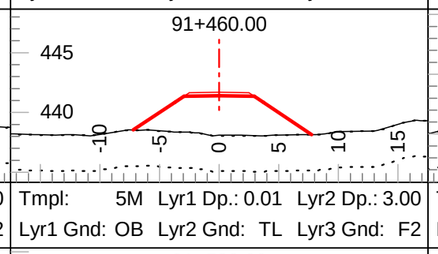

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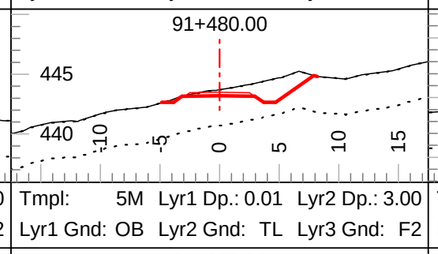

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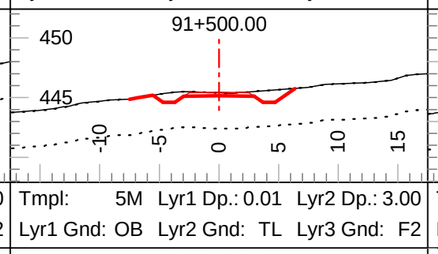

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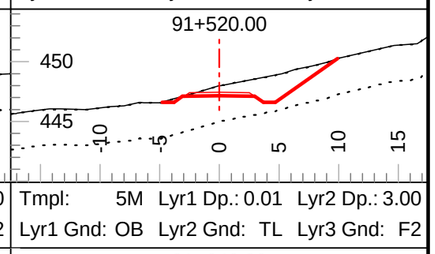

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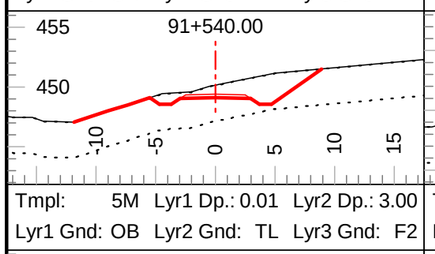

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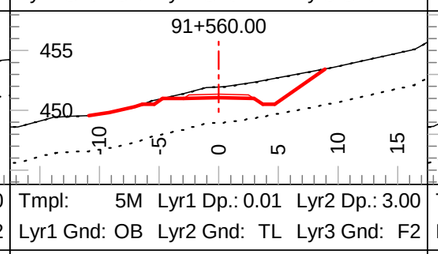

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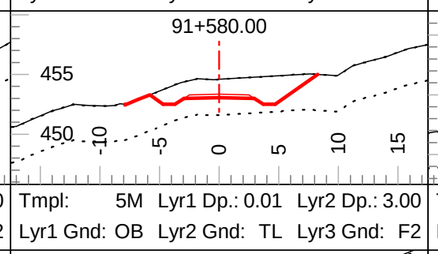

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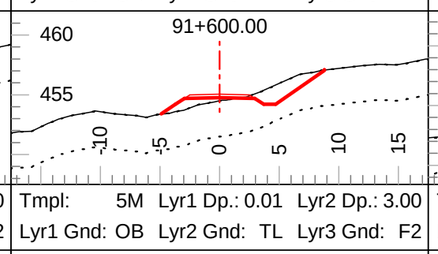

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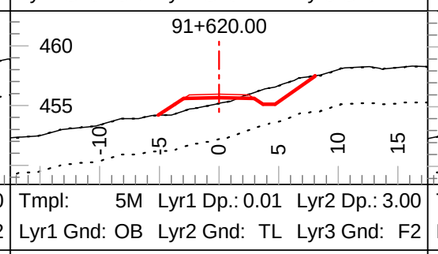

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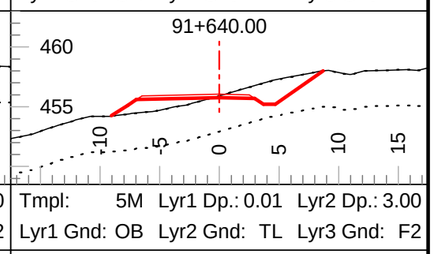

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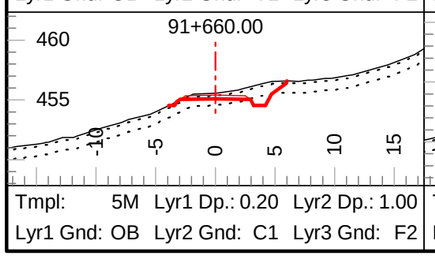

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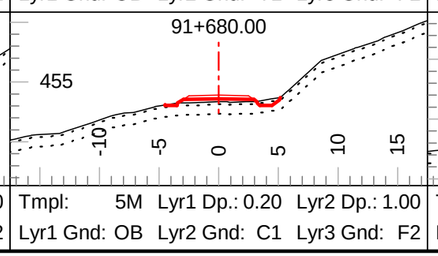

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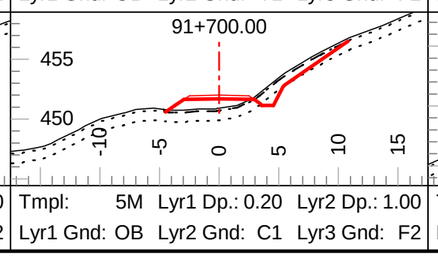

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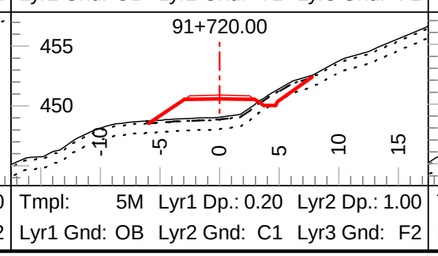

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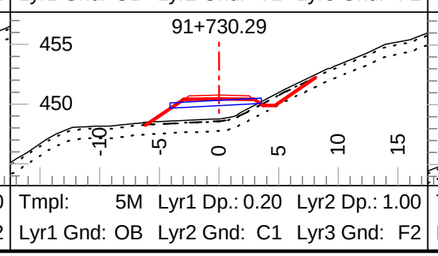

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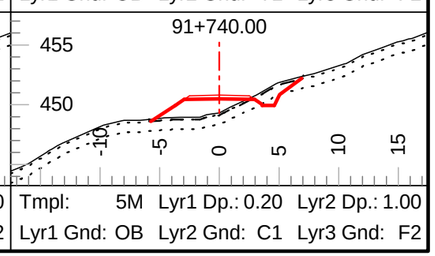


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

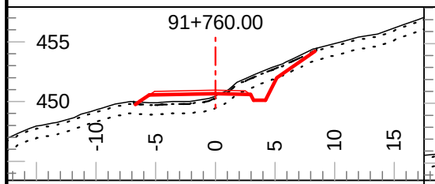
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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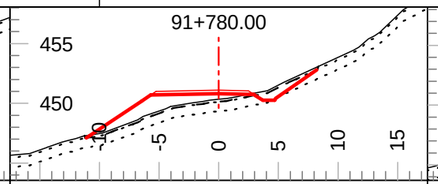

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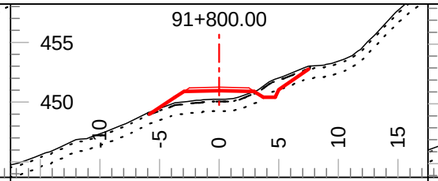

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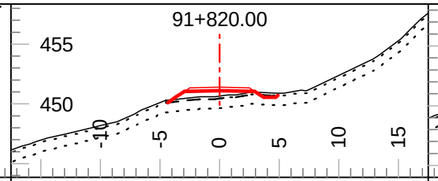

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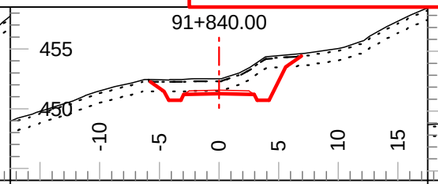

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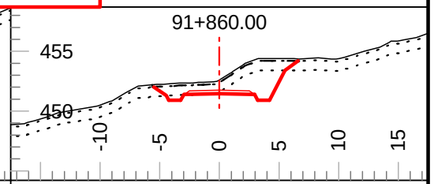

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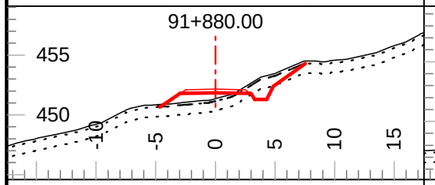

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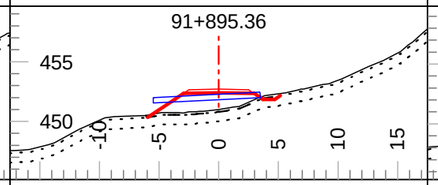

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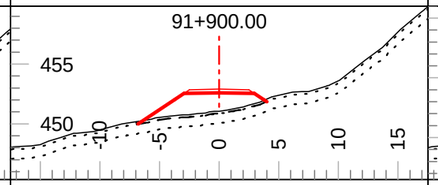

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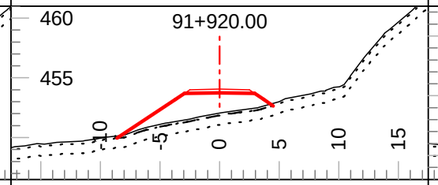

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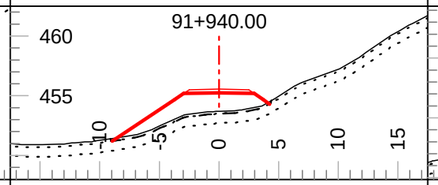

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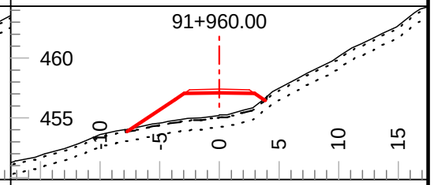

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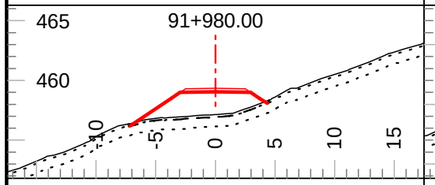
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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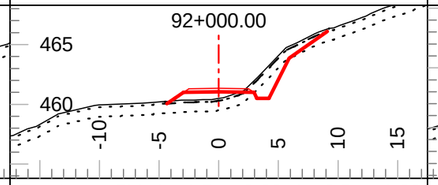

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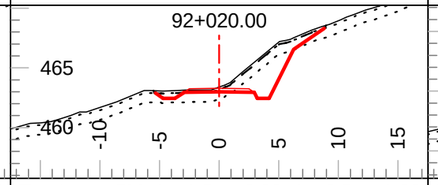

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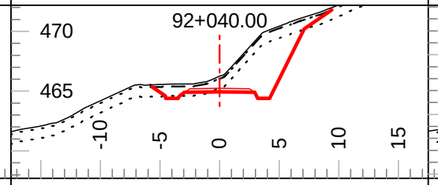

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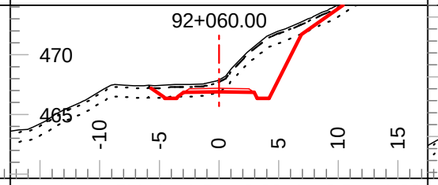

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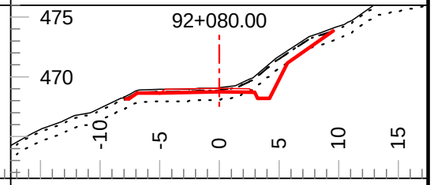

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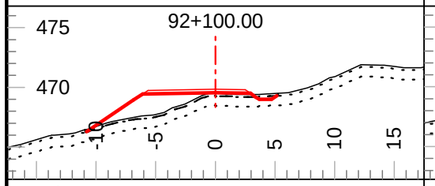

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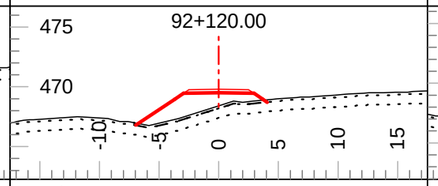

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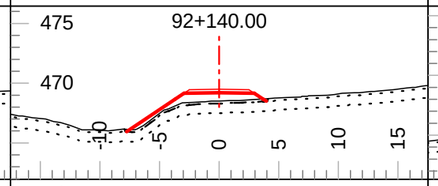

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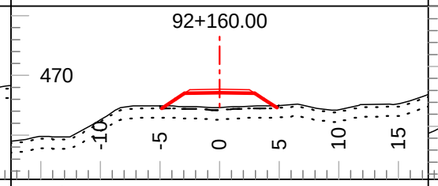

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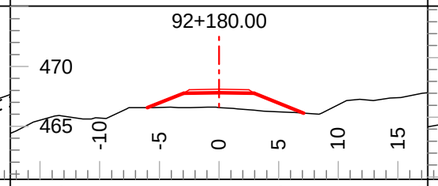

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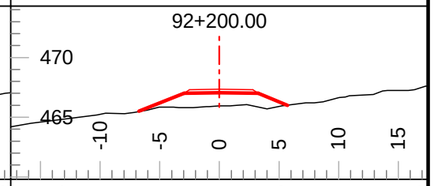

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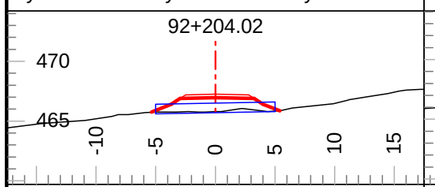

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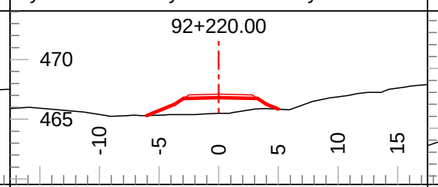
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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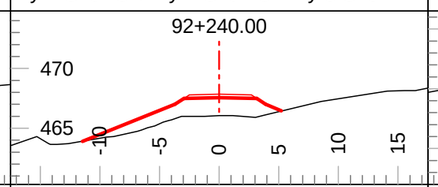

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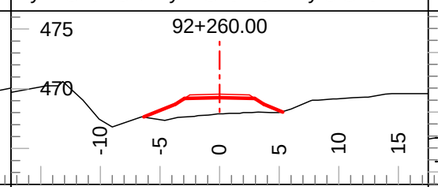

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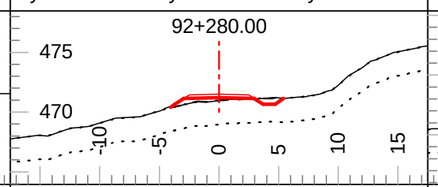

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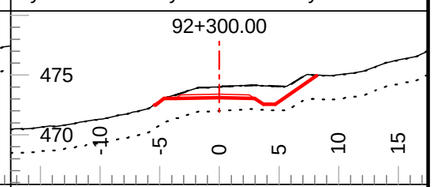
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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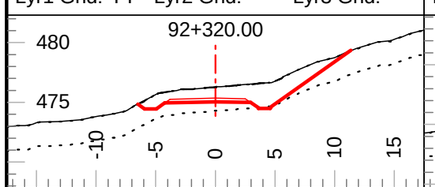

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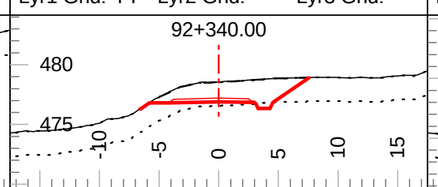

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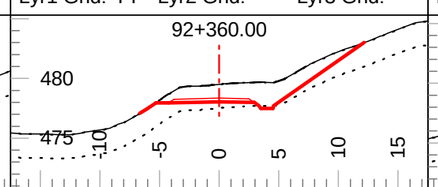

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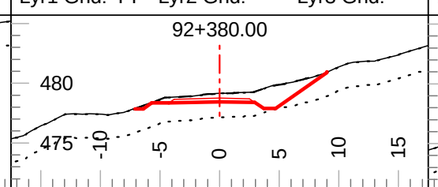

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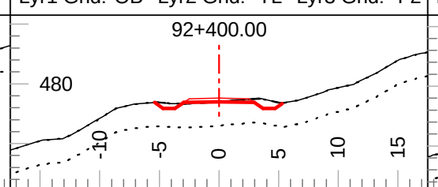

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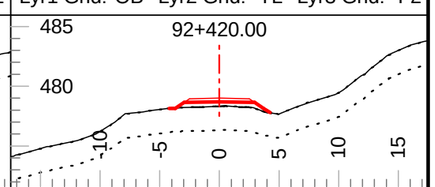

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Coffee Gold Mine

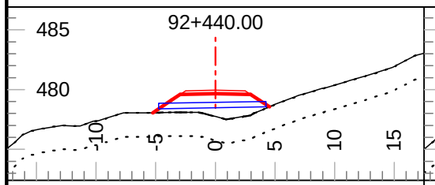
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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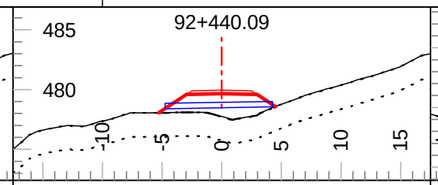

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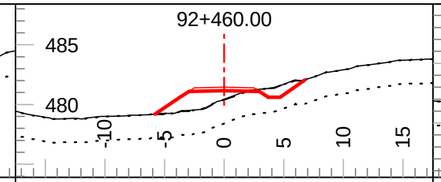

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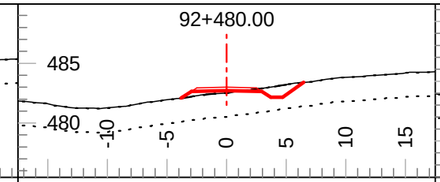

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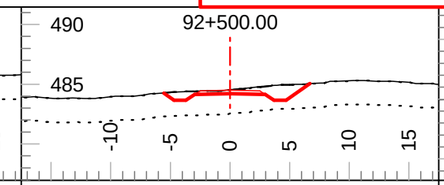

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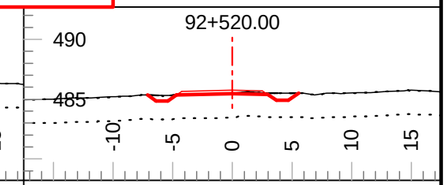

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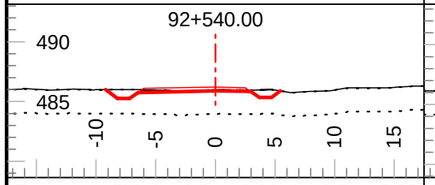

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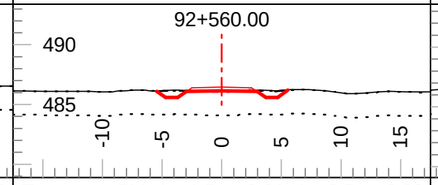

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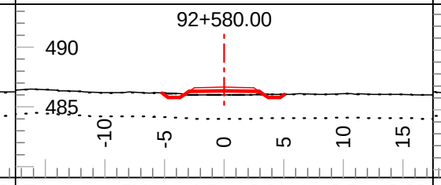

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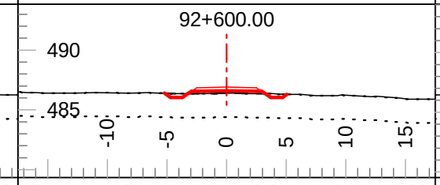

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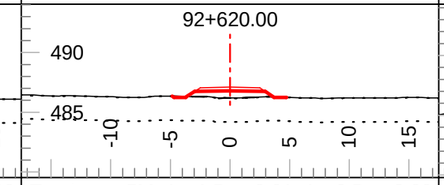

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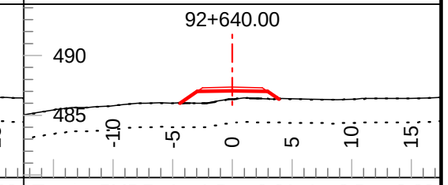

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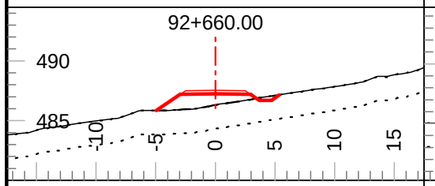

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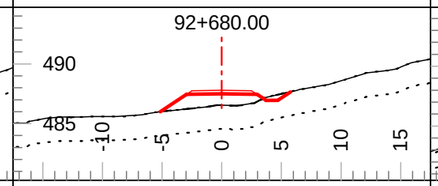

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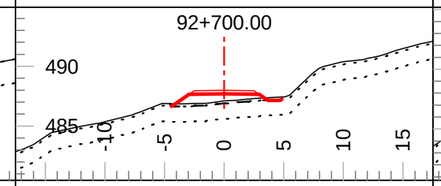

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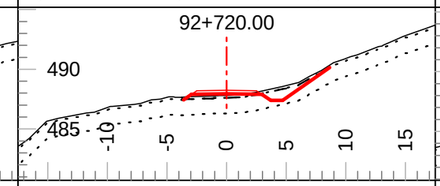

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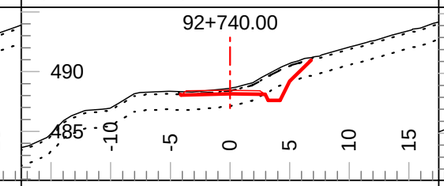

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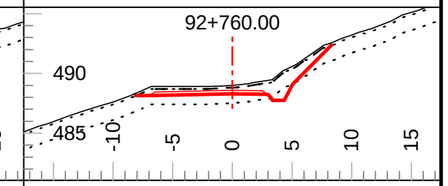

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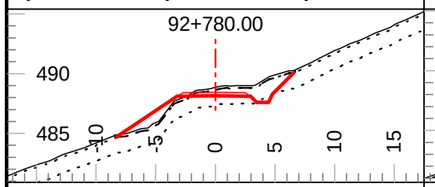

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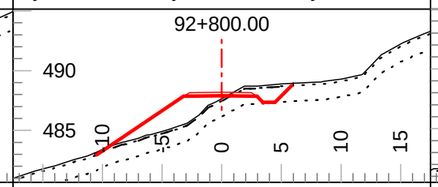
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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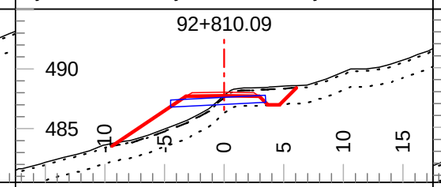

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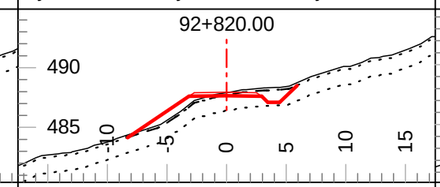

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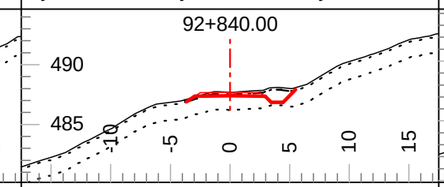

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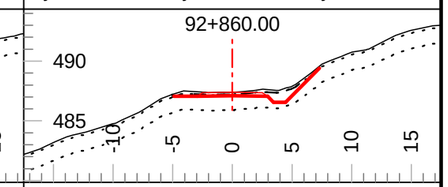

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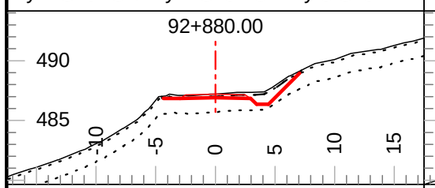

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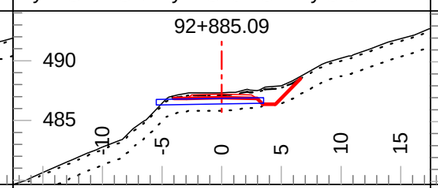

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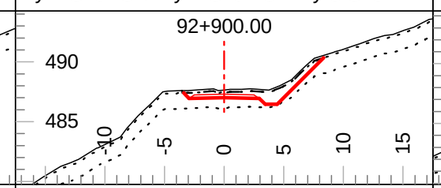

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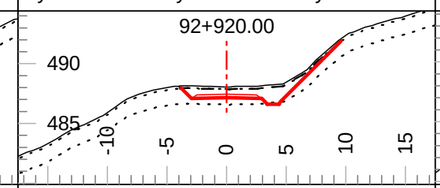

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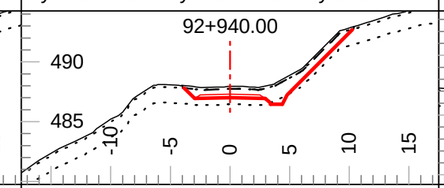

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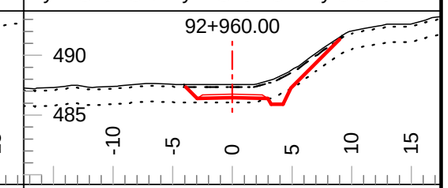

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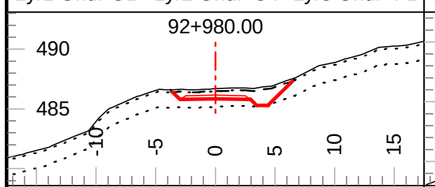

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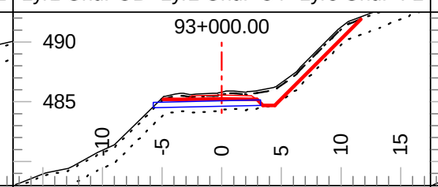

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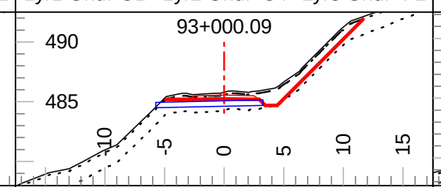

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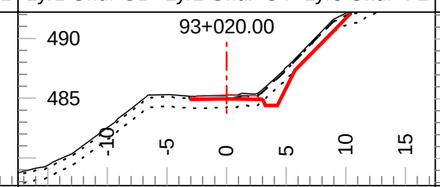

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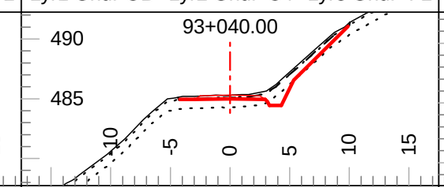

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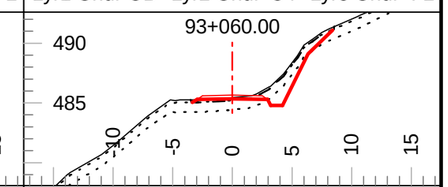

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Coffee Gold Mine

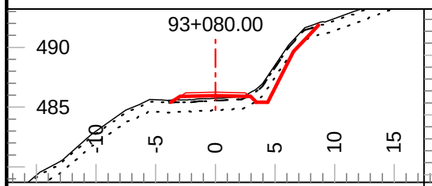
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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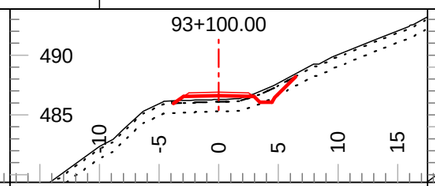

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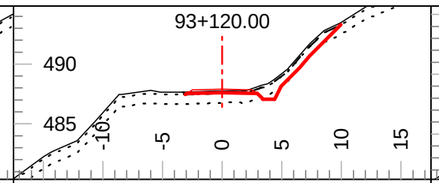

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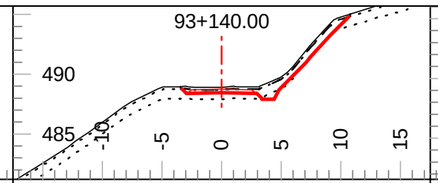

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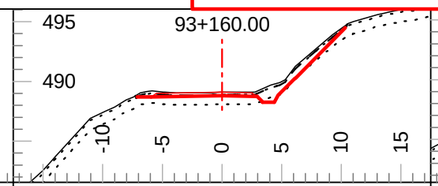

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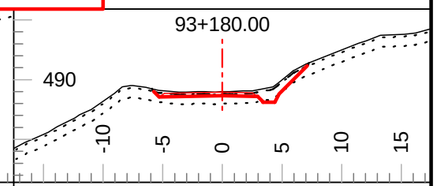

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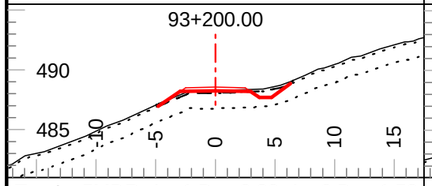

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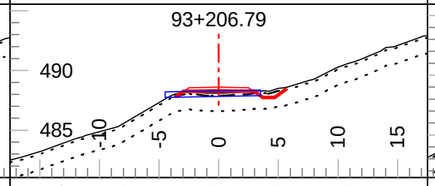

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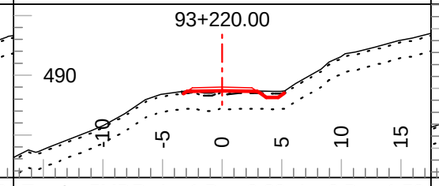

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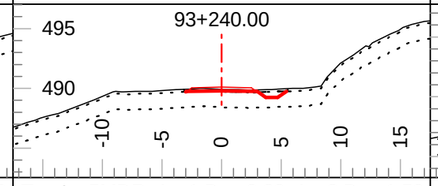

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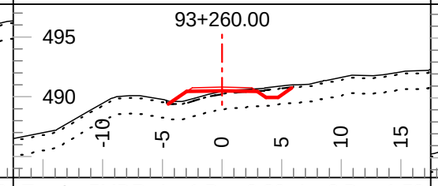

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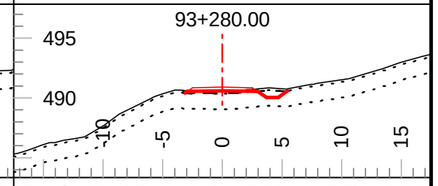

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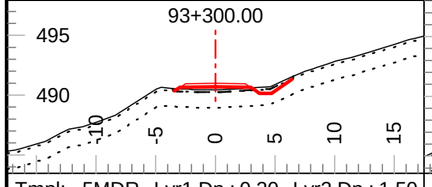

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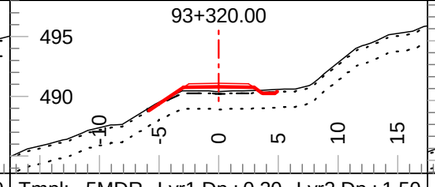

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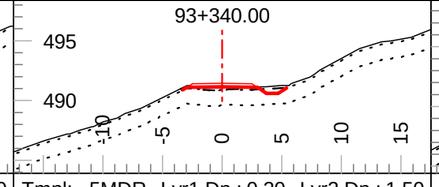

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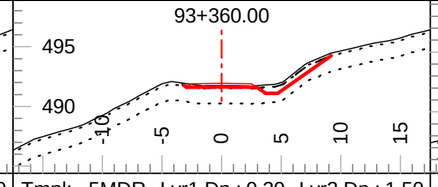

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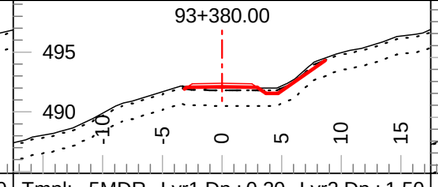

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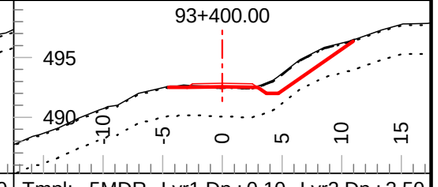

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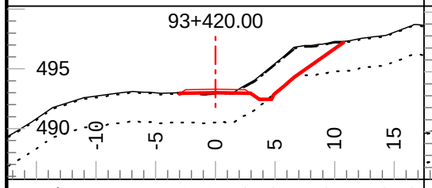

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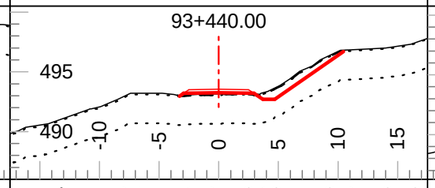

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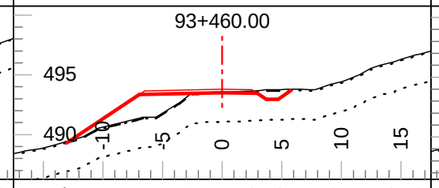

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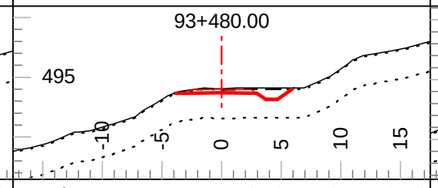

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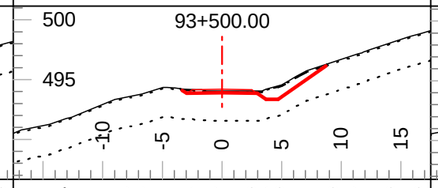

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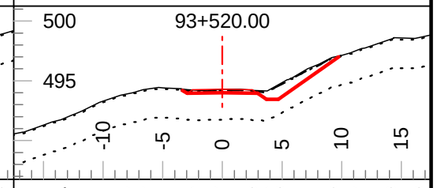

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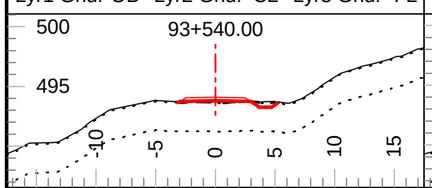

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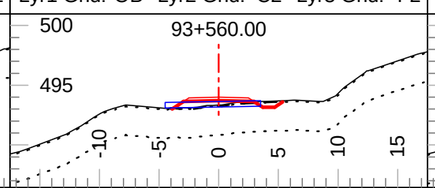
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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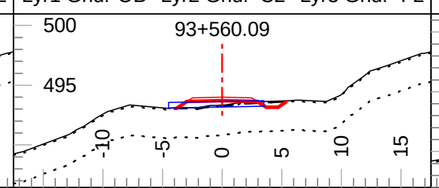

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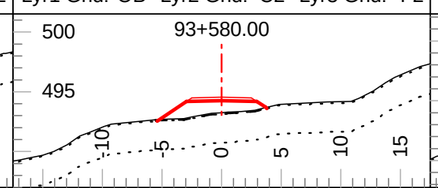

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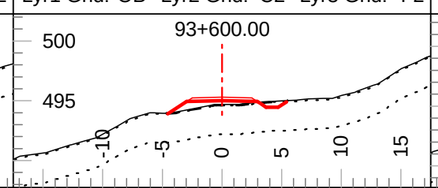

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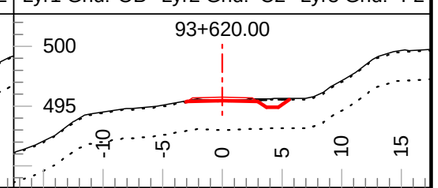

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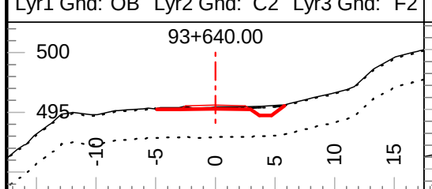

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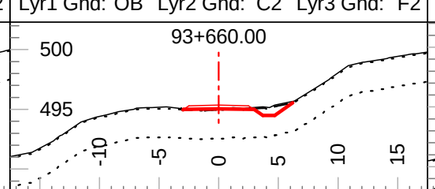

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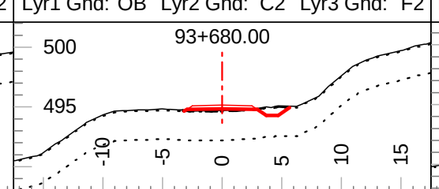

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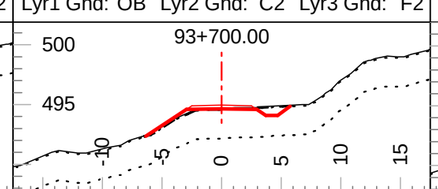

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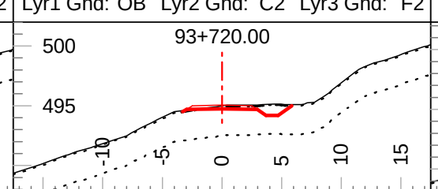

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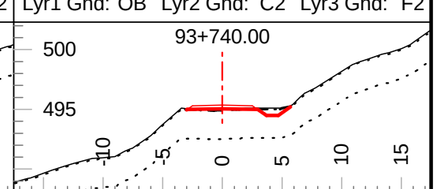

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Coffee Gold Mine

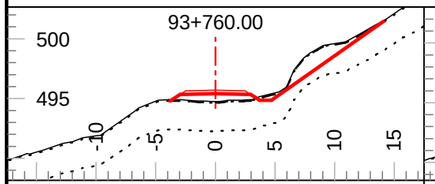
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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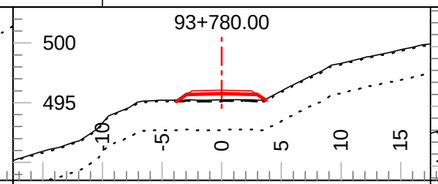

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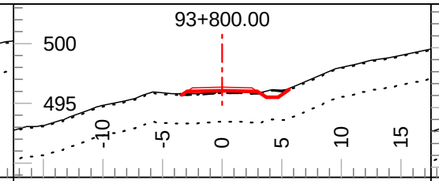

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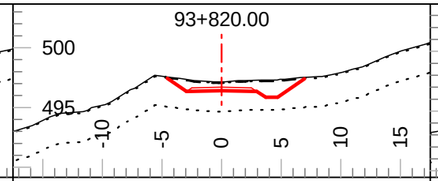

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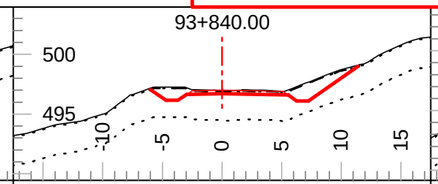

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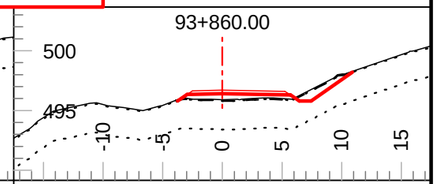

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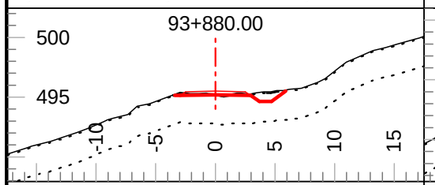

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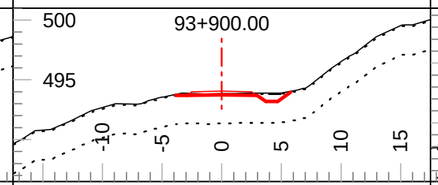

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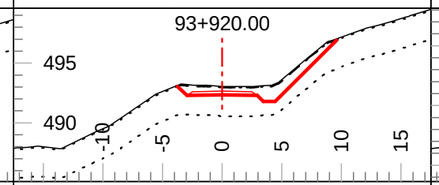

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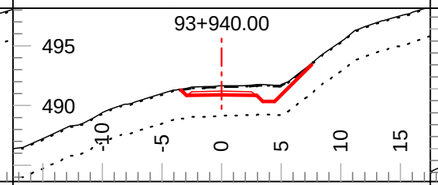

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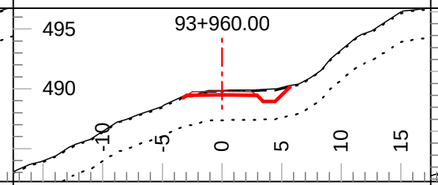

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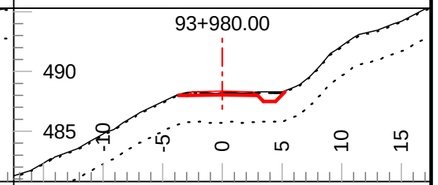

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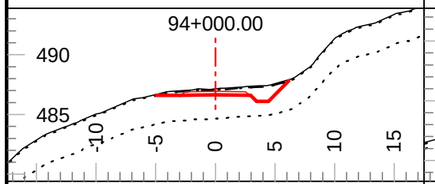

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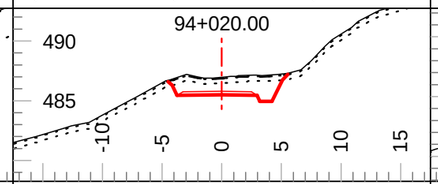

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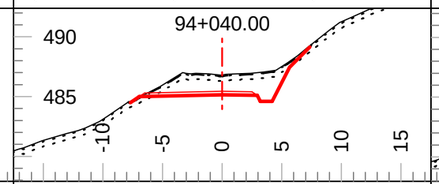

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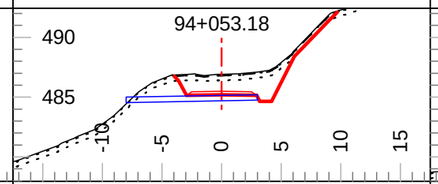

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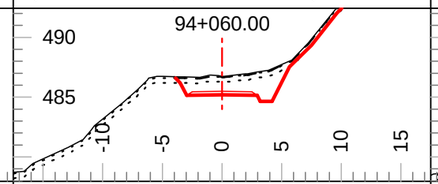

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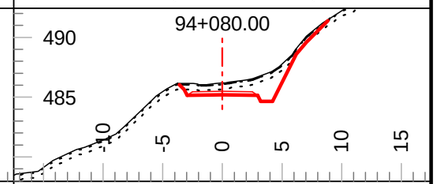

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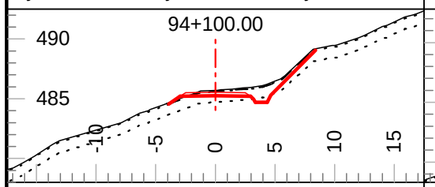

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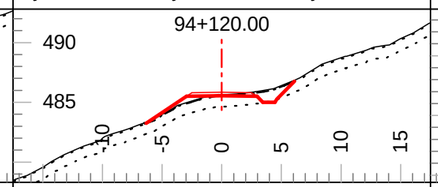

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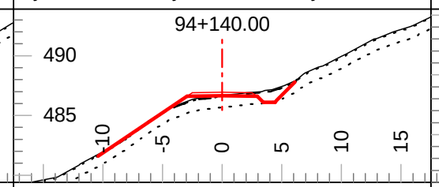

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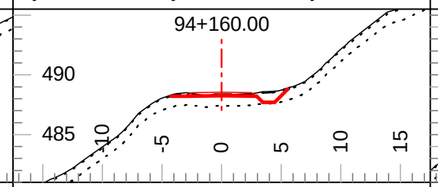

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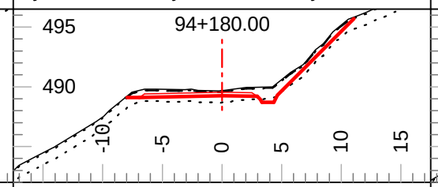

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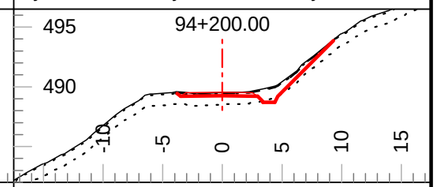

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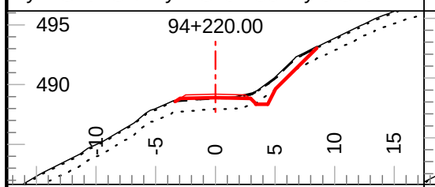

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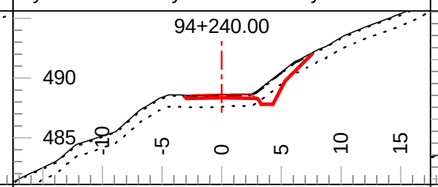

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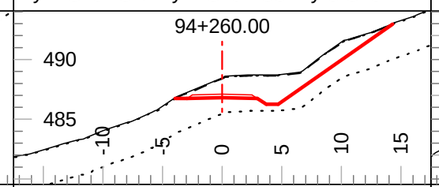

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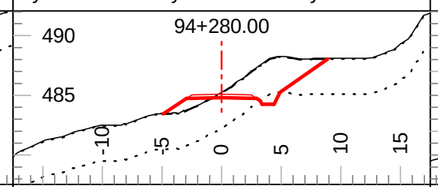

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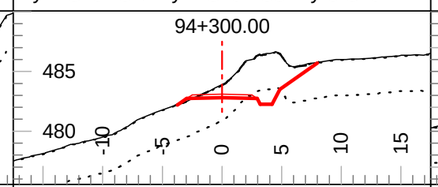

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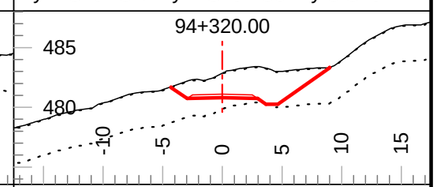

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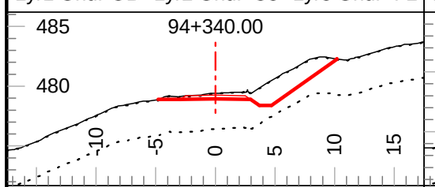

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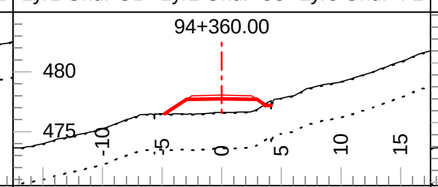
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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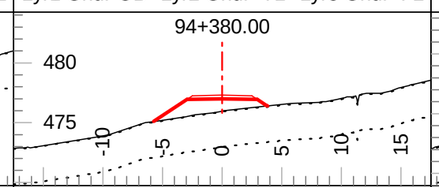

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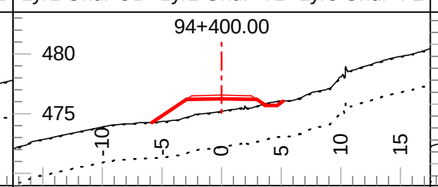

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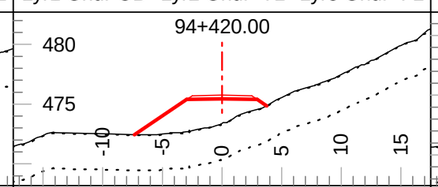

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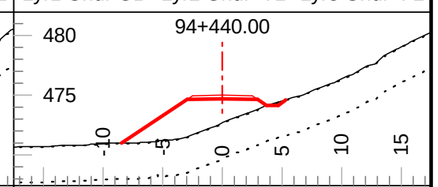

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Coffee Gold Mine

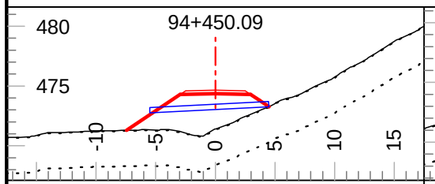
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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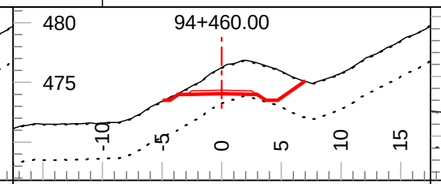

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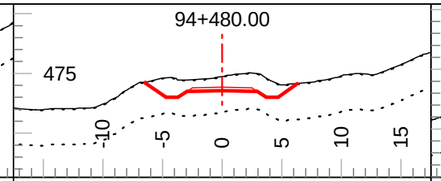

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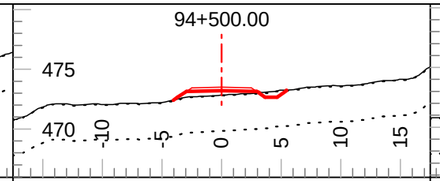

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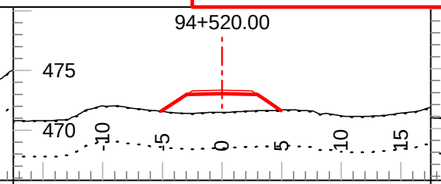

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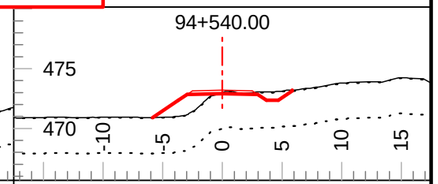

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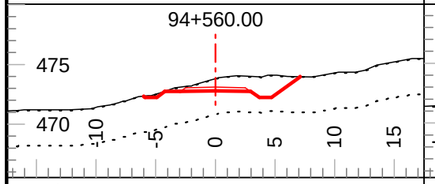

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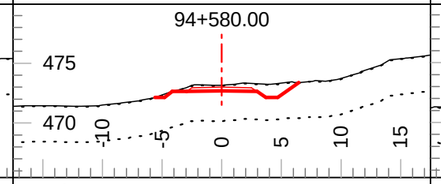

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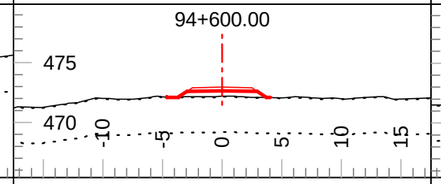

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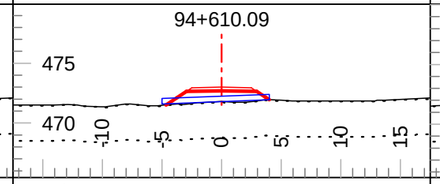

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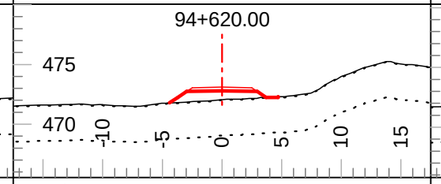

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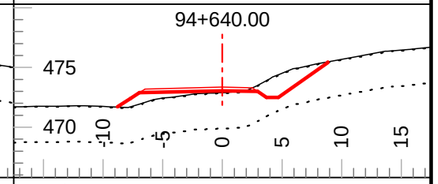

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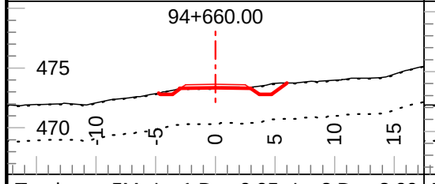

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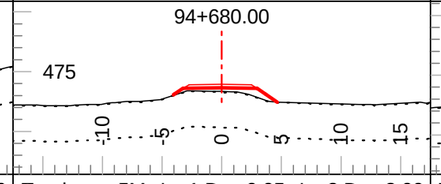

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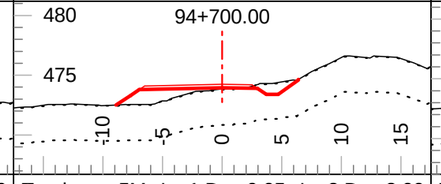

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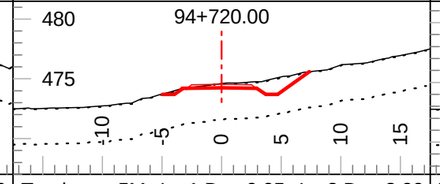

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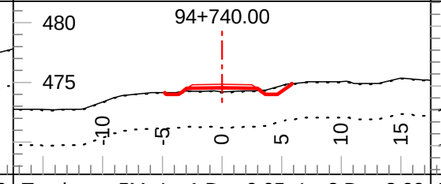

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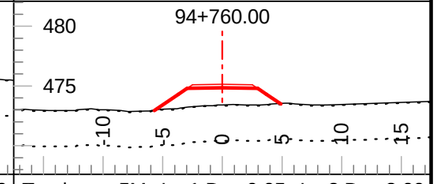

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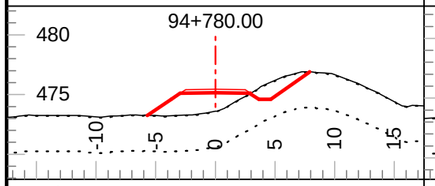

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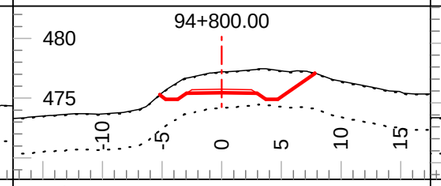

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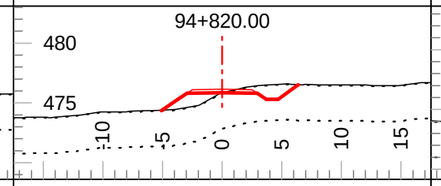

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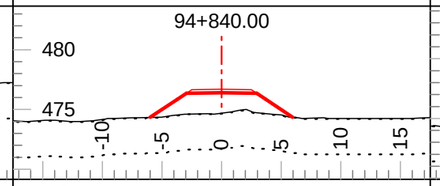

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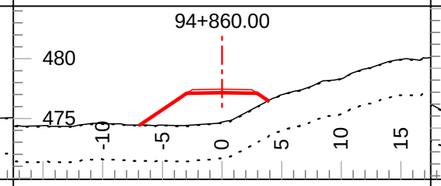

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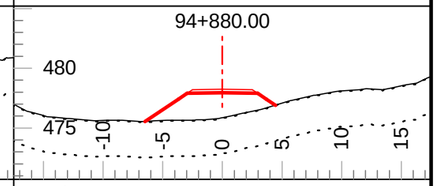

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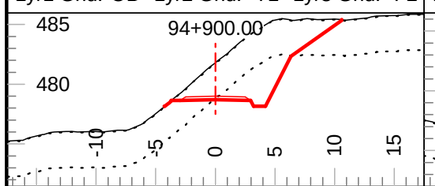

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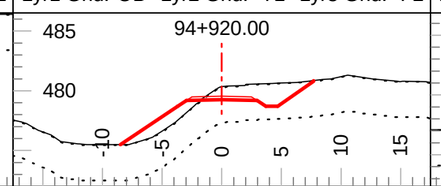

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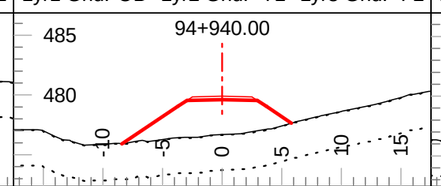

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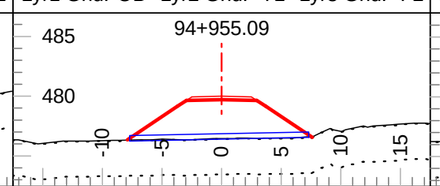

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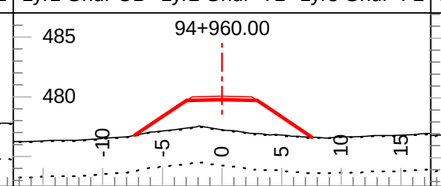

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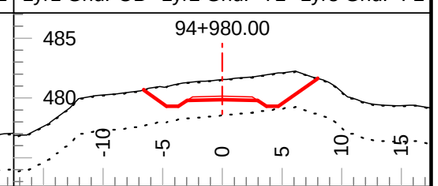

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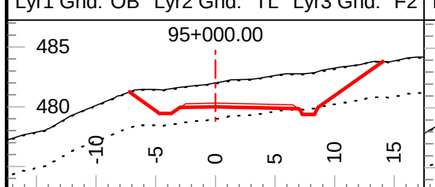

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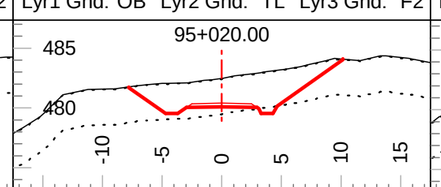

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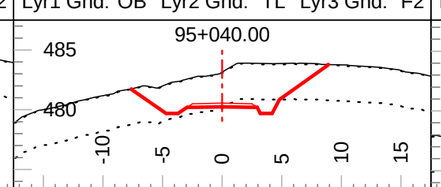

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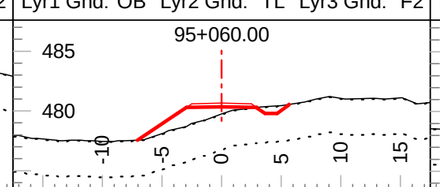

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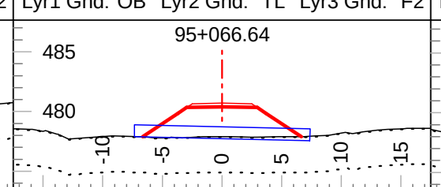

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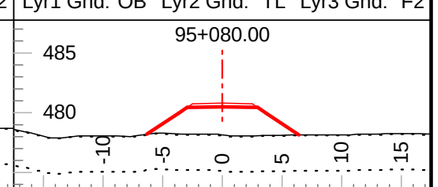

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Coffee Gold Mine

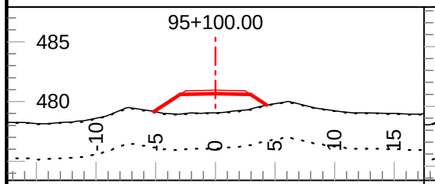
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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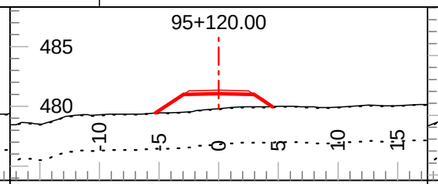
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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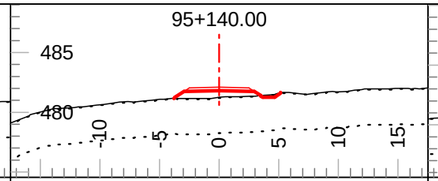
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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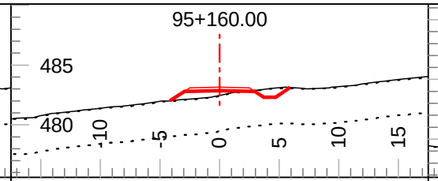

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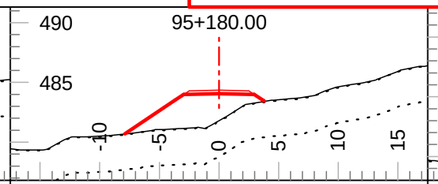

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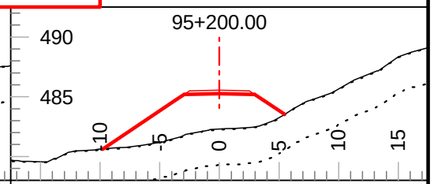

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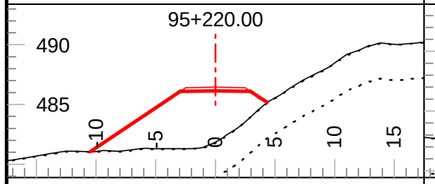

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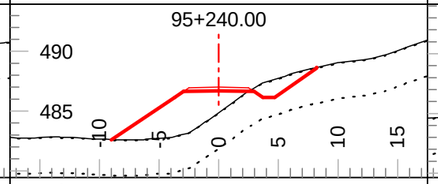

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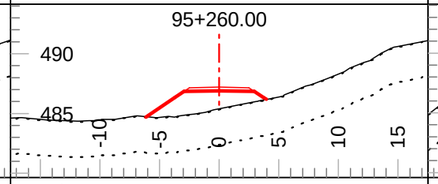

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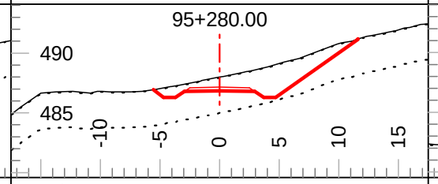

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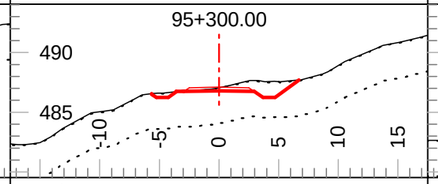

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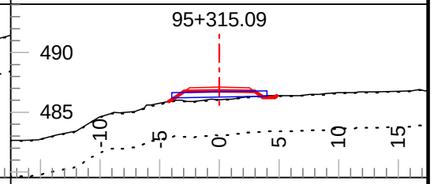

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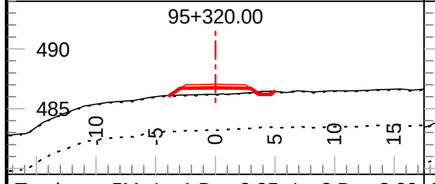

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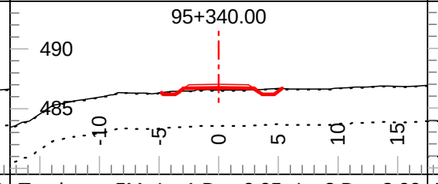

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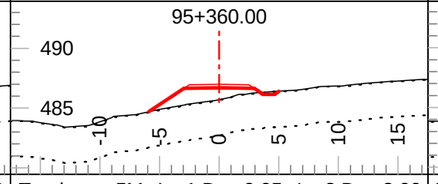

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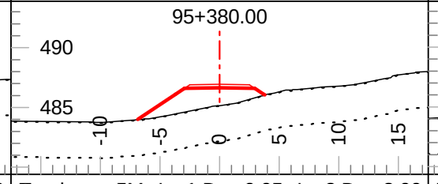

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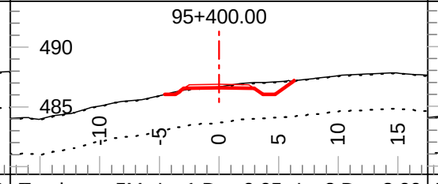

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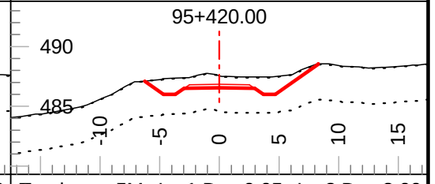

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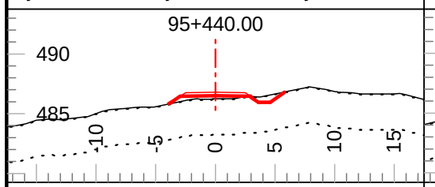

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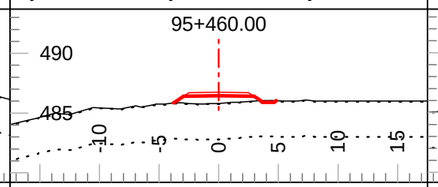

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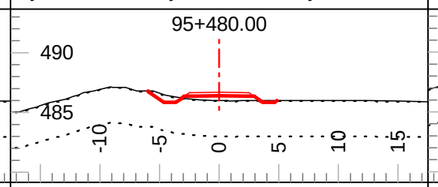

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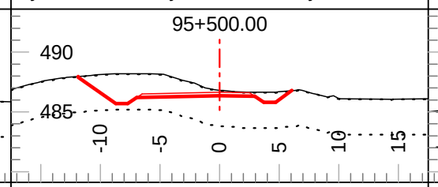

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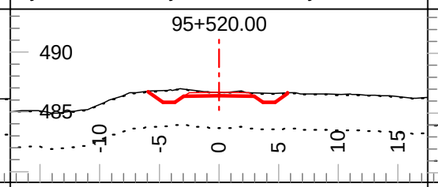

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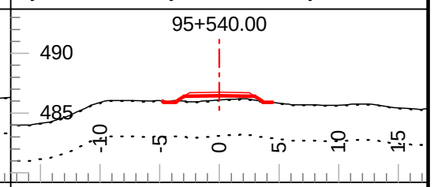

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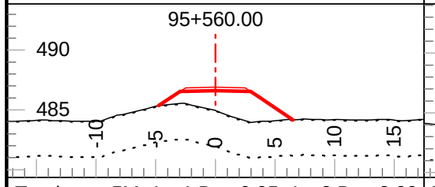

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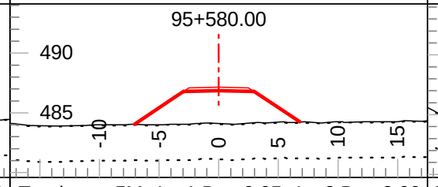

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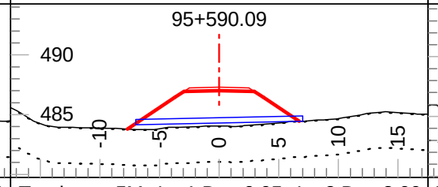

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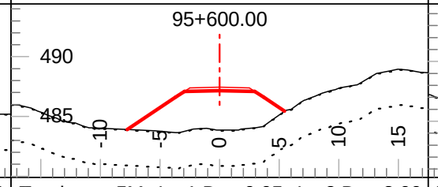

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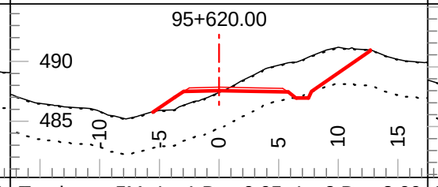

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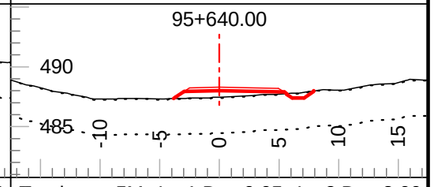

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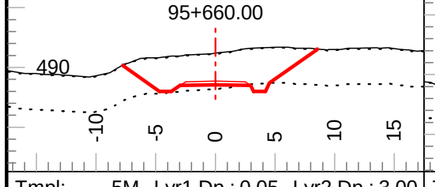

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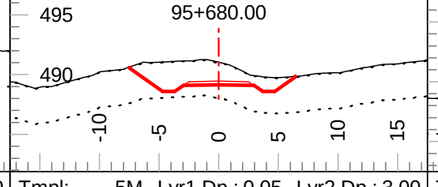

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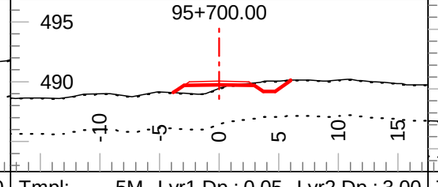

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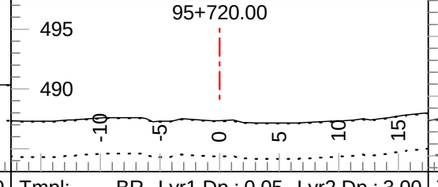

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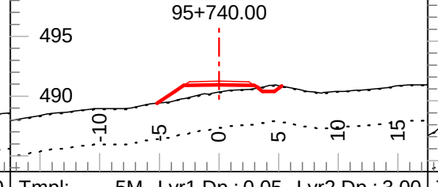

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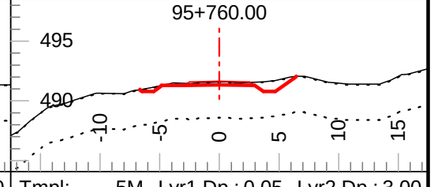


Tmpl: 5M Lyr1 Dp.: 0.05 Lyr2 Dp.: 3.00
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2

Coffee Gold Mine

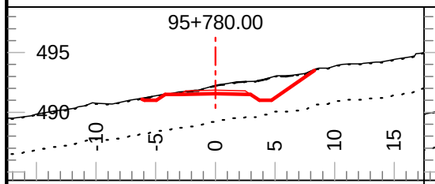
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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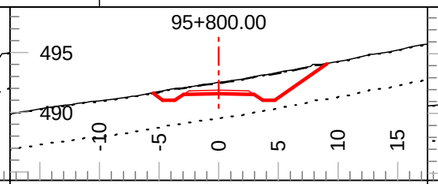

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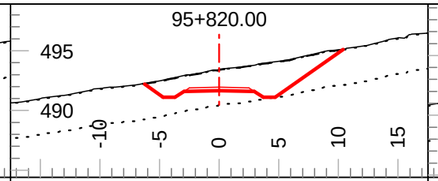

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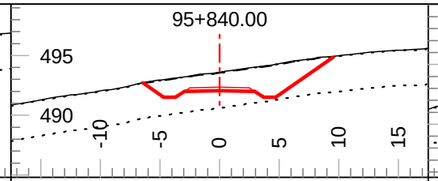

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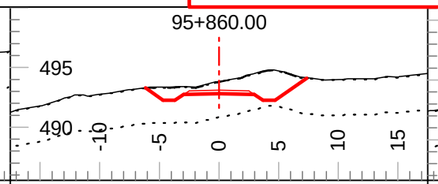

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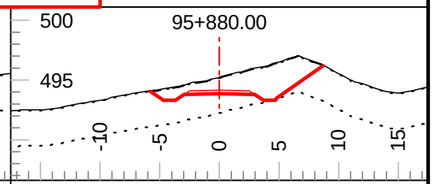

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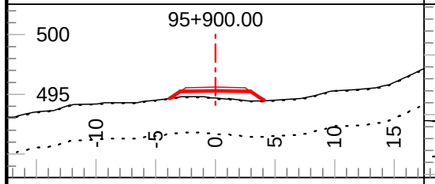

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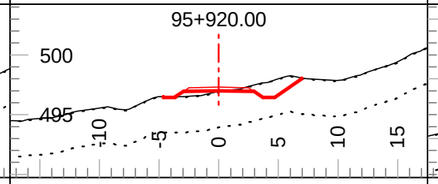

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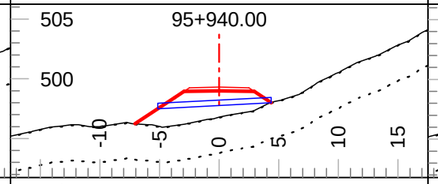

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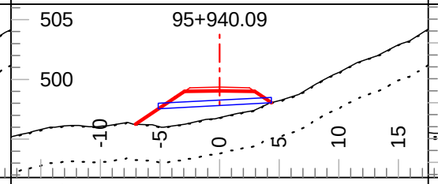

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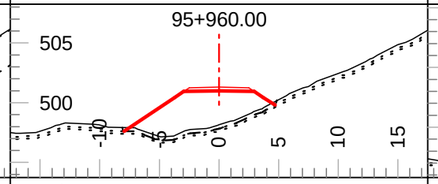

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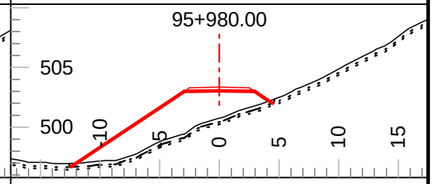

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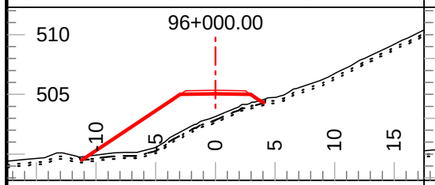
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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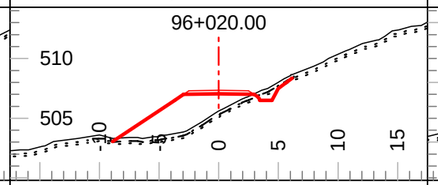

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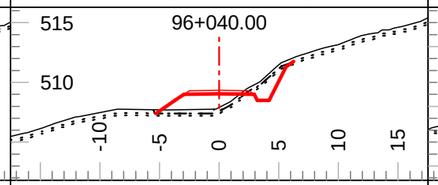

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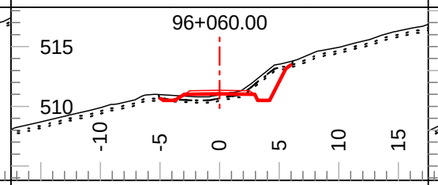

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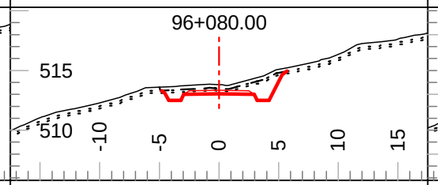

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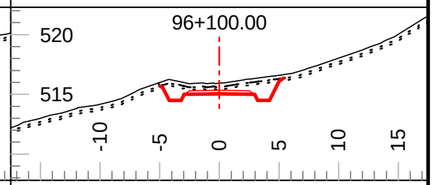

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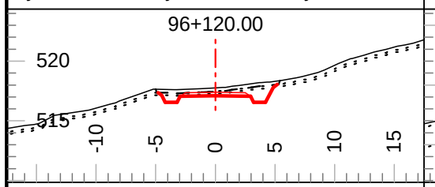

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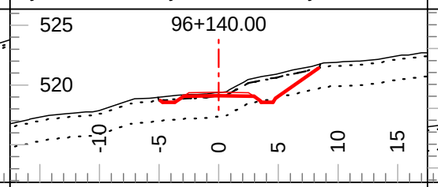

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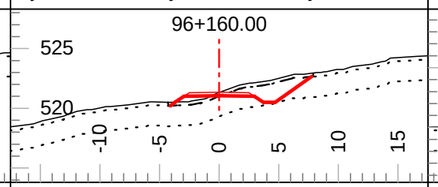

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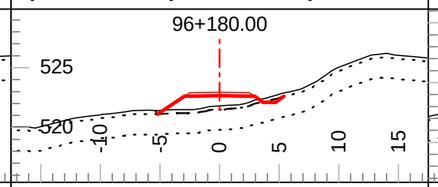

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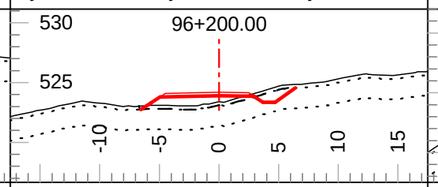

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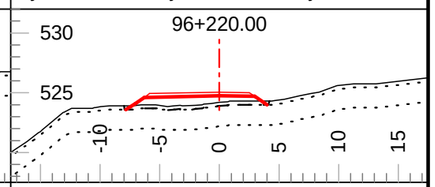

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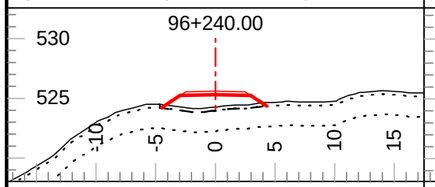

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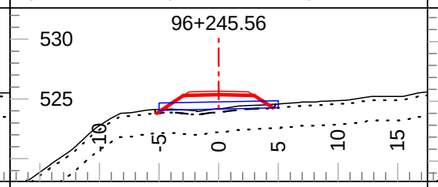

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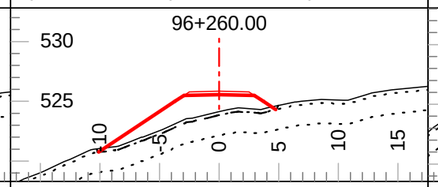

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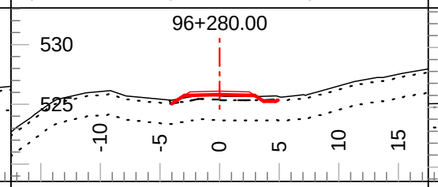

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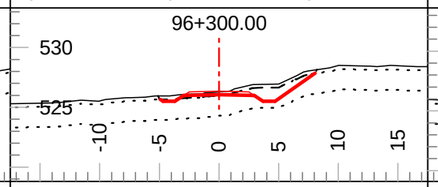

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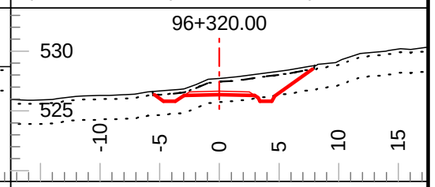

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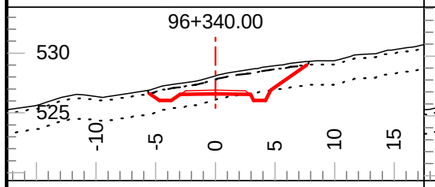

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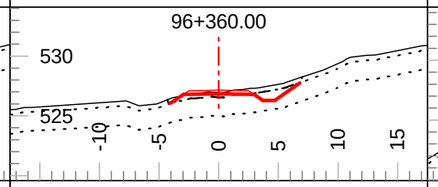

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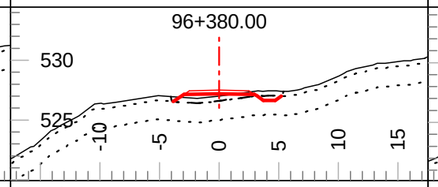

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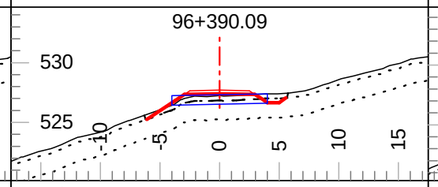

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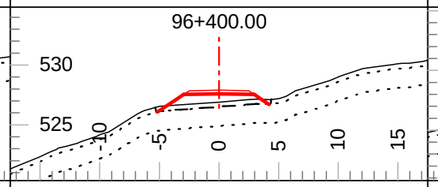

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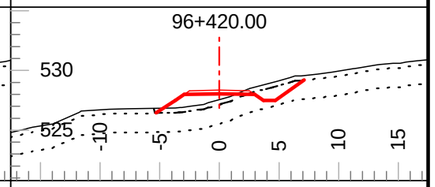

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Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

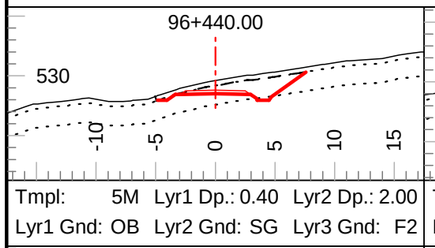
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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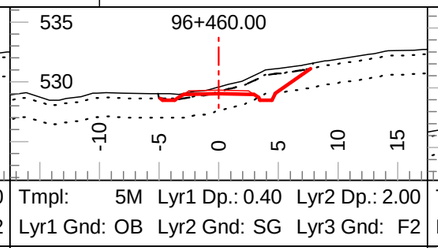

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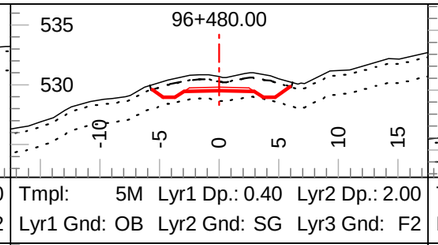

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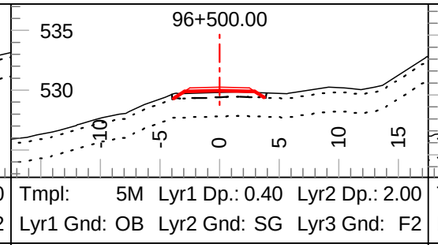

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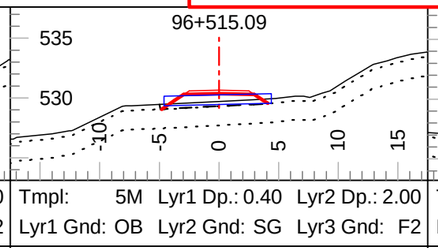

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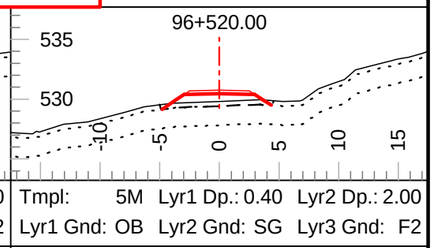

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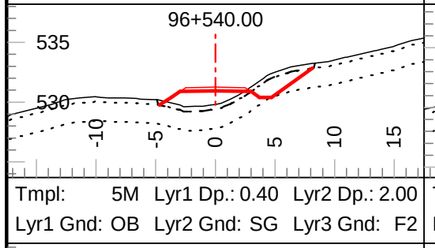

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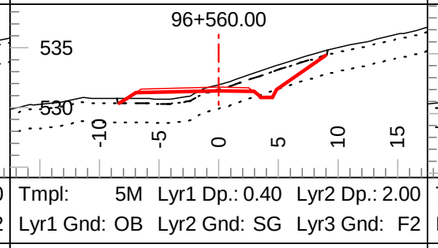

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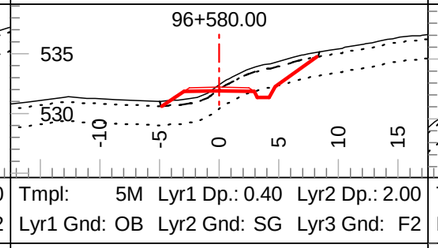

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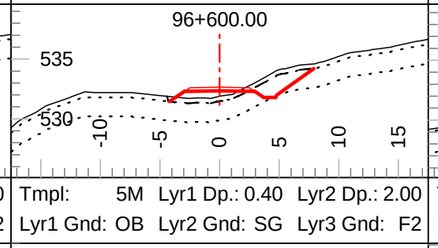

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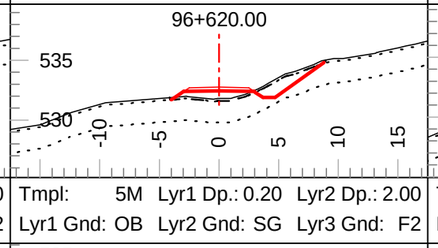
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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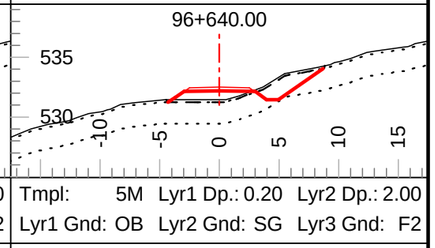

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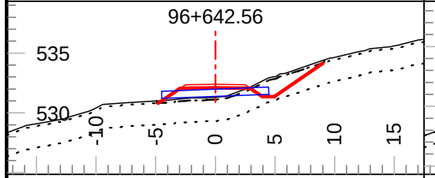

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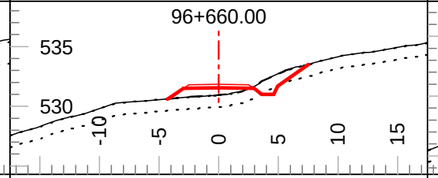

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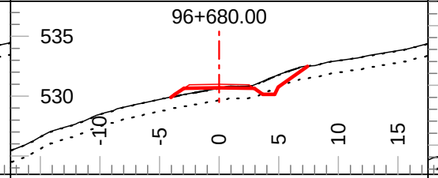

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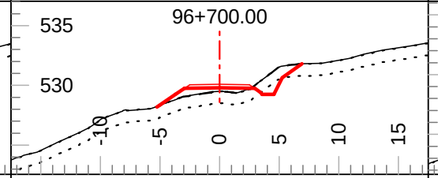
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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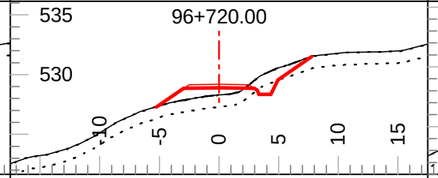

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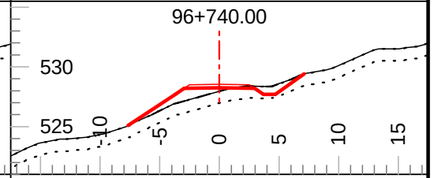

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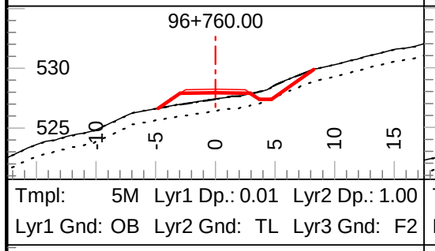

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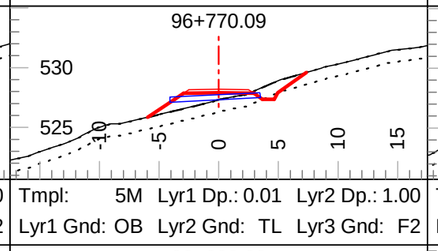

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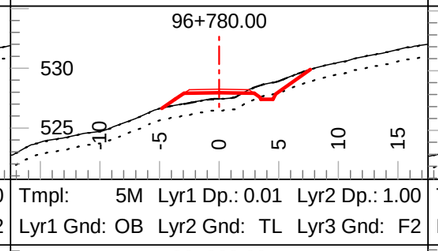

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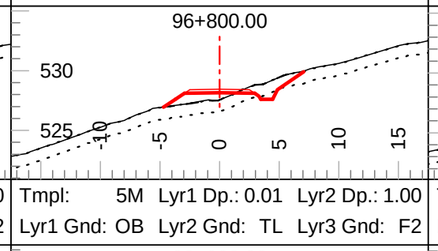

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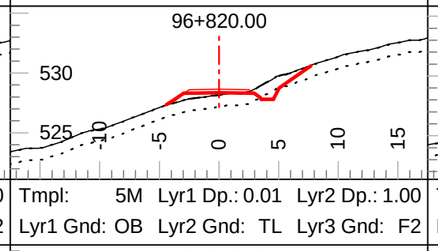

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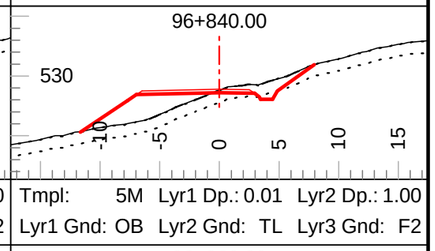

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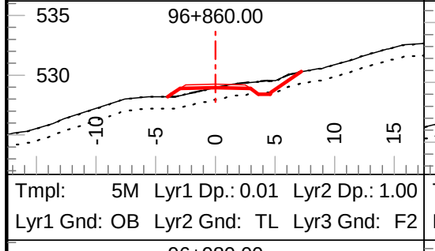

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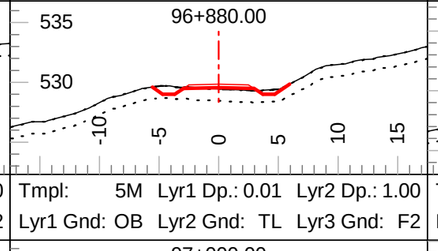

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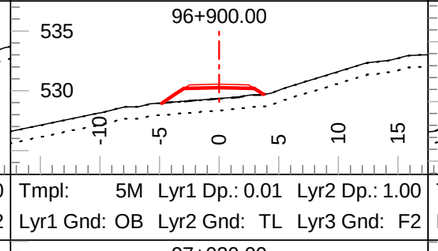

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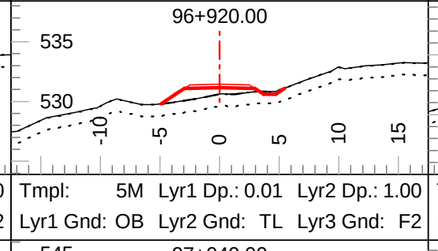

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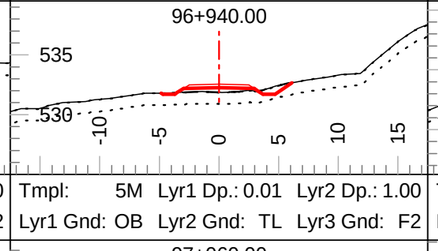

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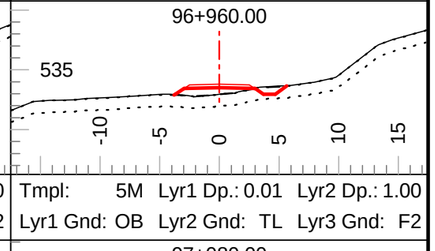

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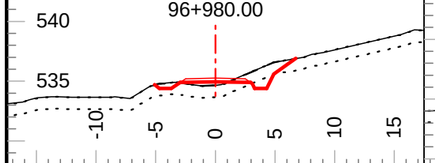

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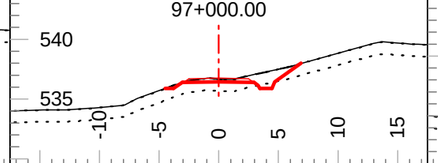

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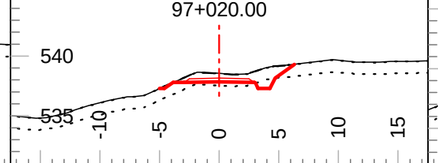

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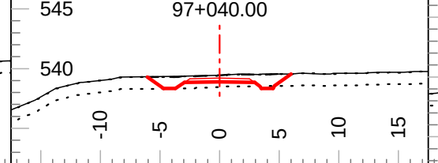

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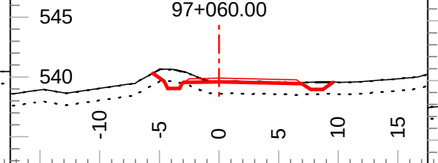

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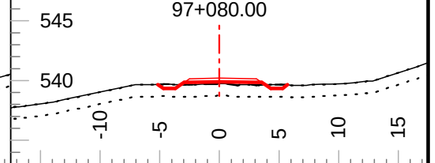

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Coffee Gold Mine

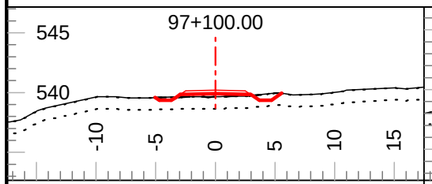
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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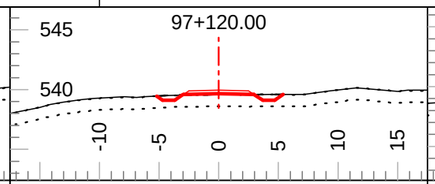

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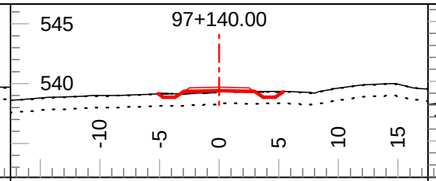

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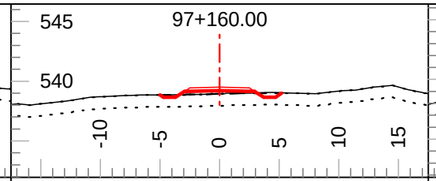

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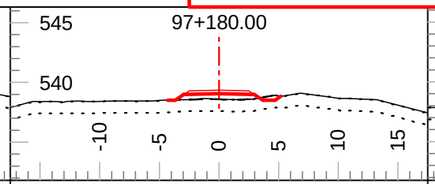

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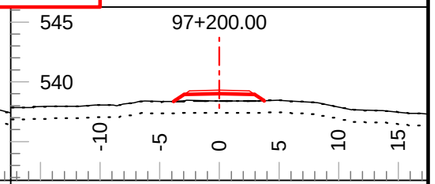

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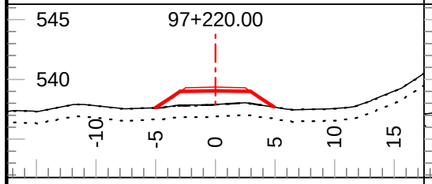

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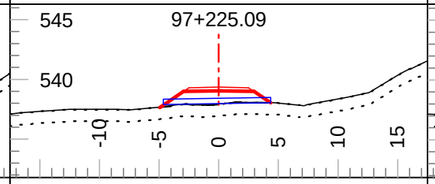

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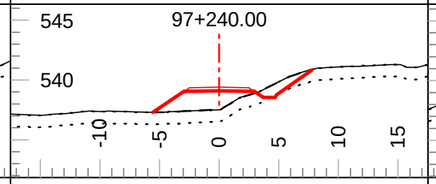

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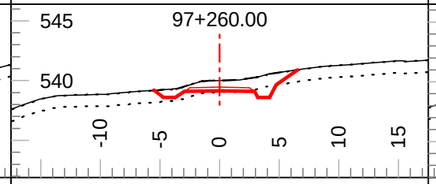

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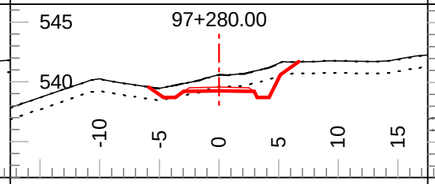

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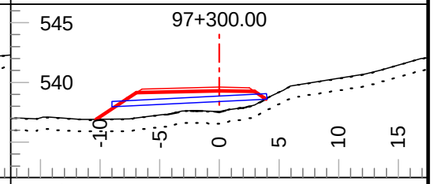

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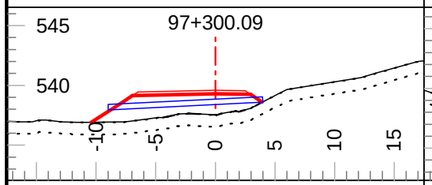

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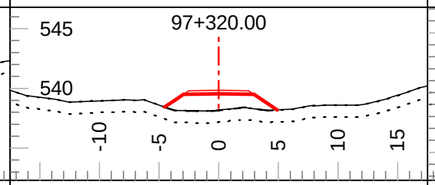

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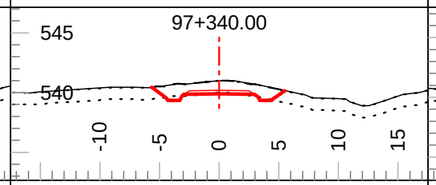

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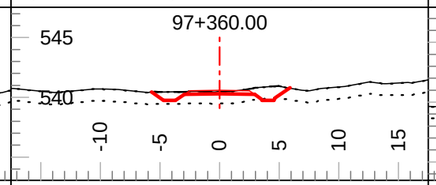

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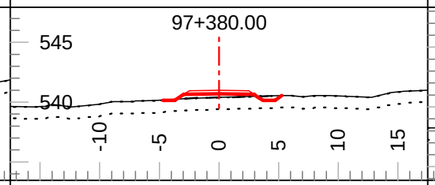

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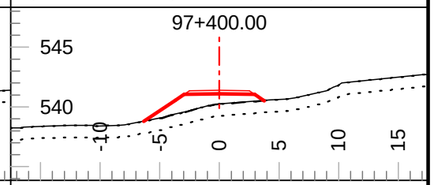

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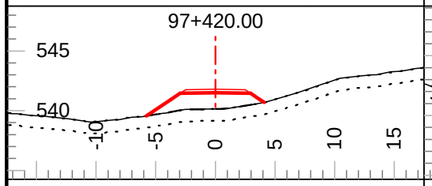

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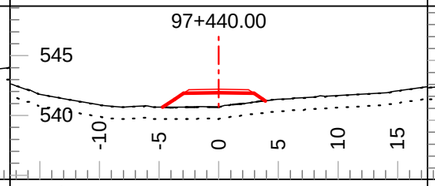

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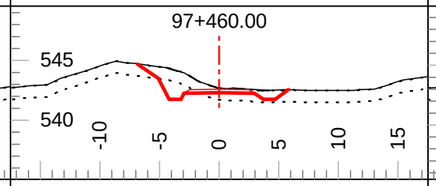

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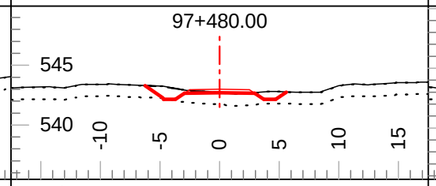

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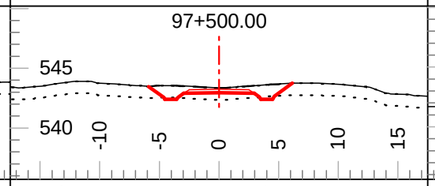

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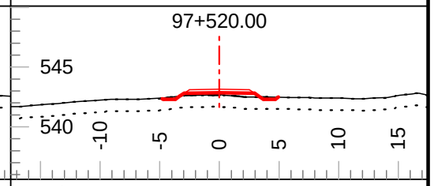

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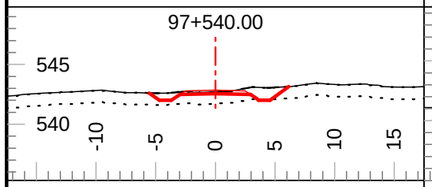

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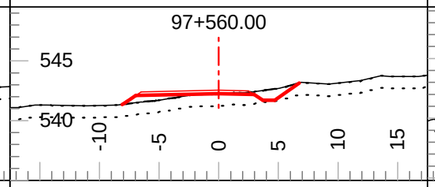

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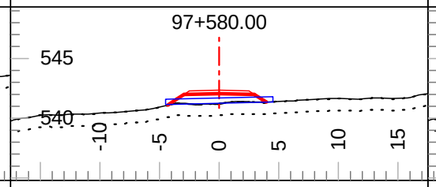

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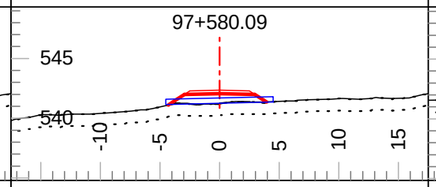

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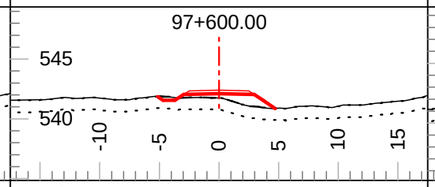

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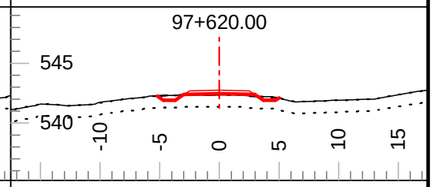

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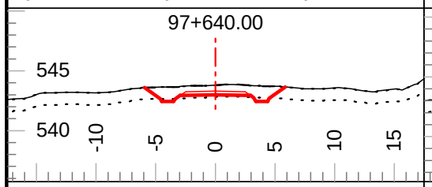

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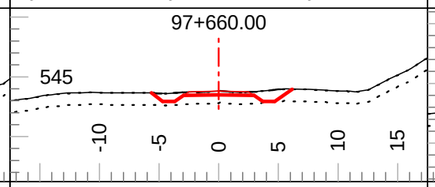

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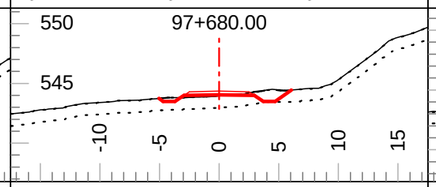

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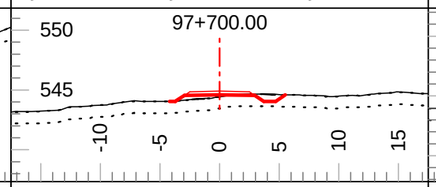

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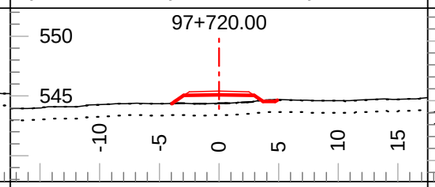

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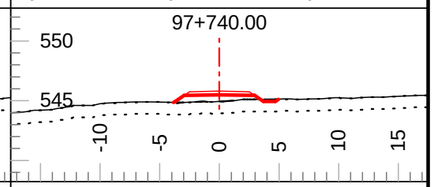

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Coffee Gold Mine

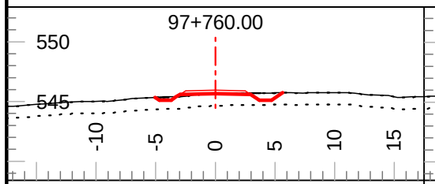
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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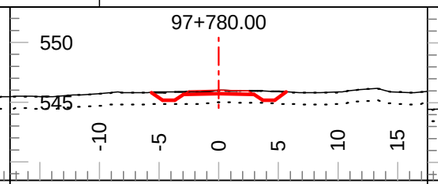

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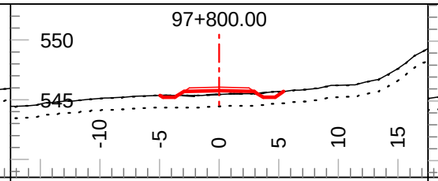

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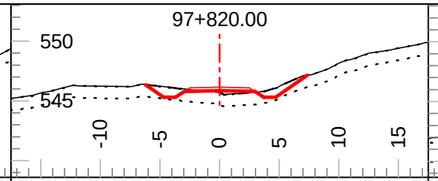

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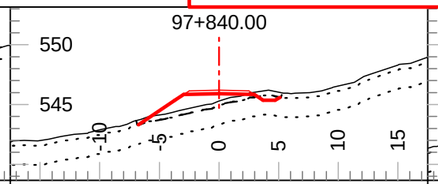

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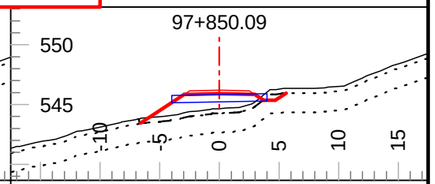

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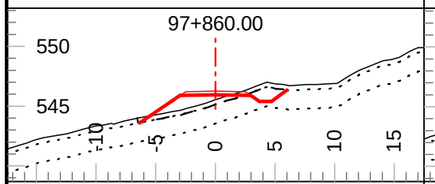

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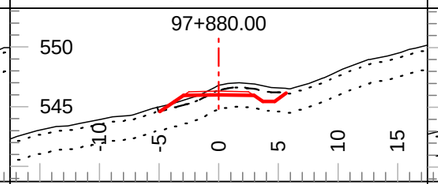

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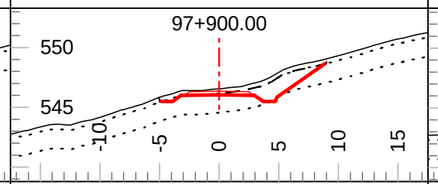

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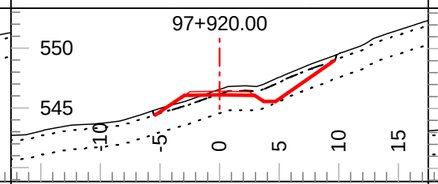

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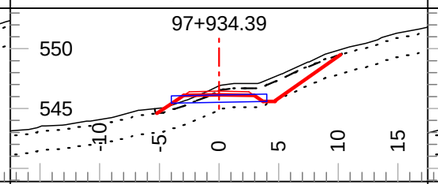

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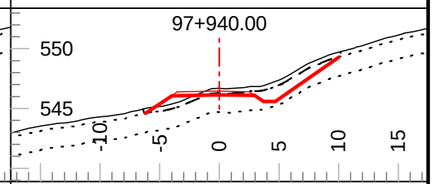

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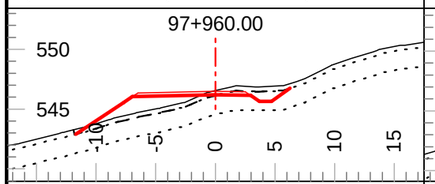

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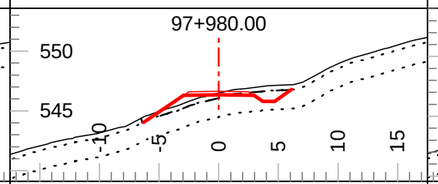

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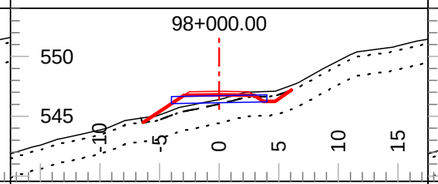

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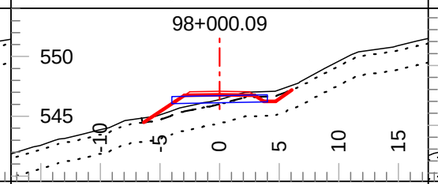

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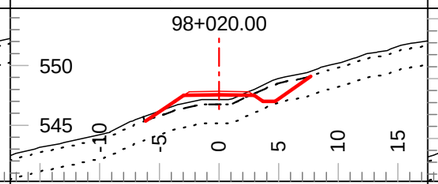

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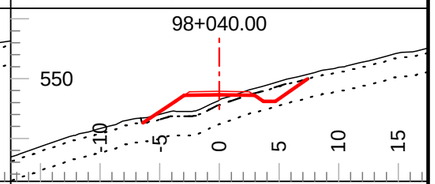

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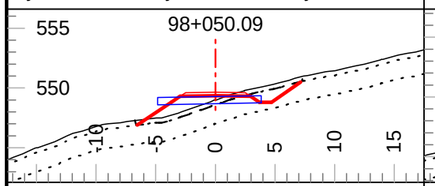

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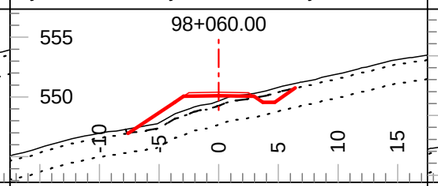

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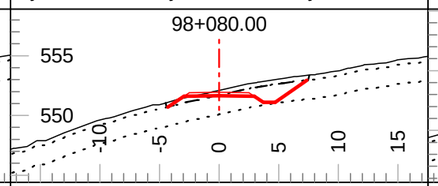

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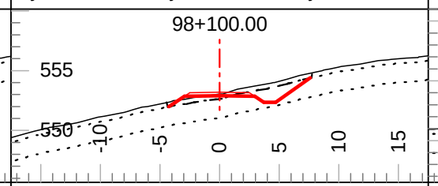

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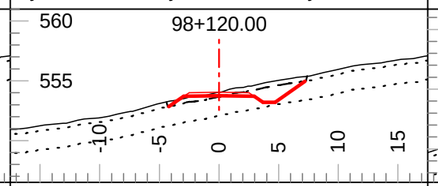

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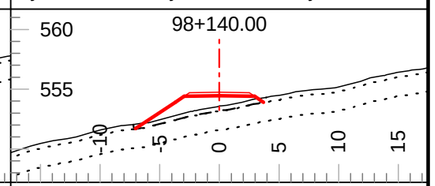

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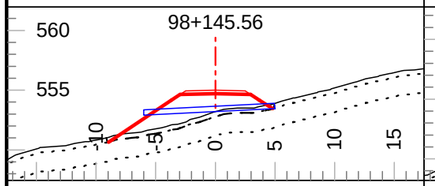

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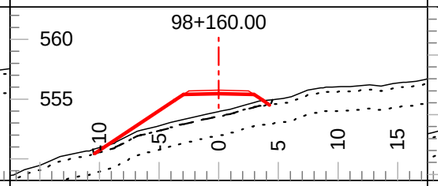

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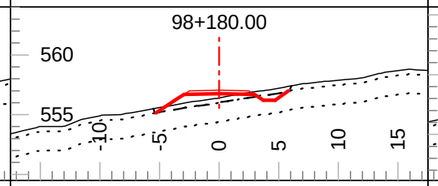

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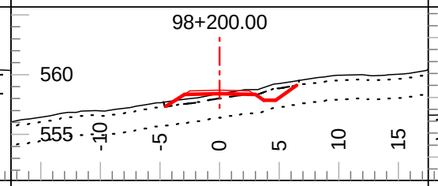

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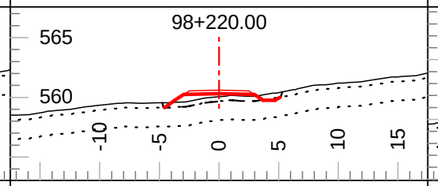

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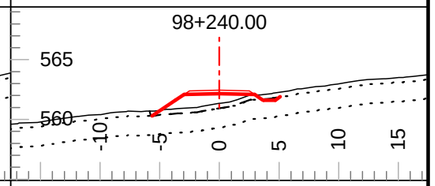

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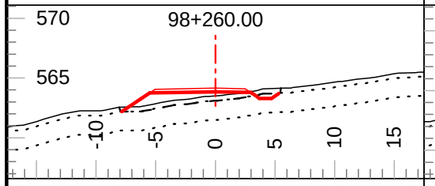

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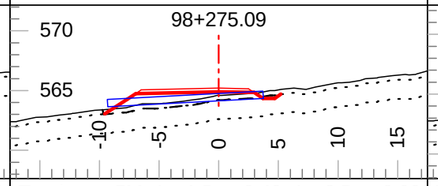

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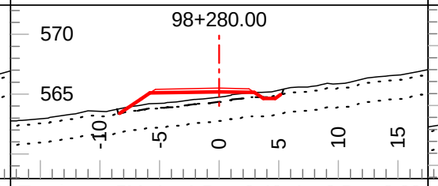

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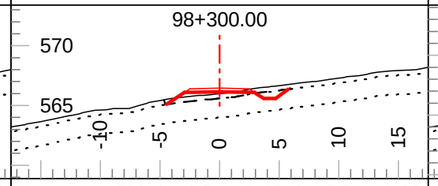

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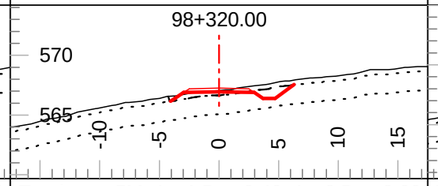

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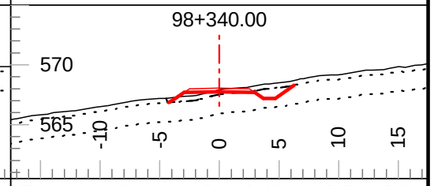

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Coffee Gold Mine

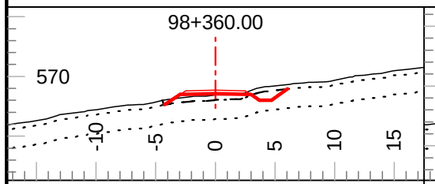
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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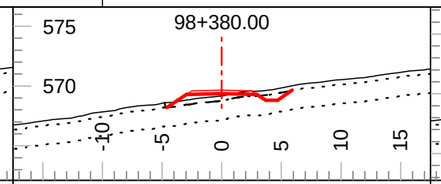

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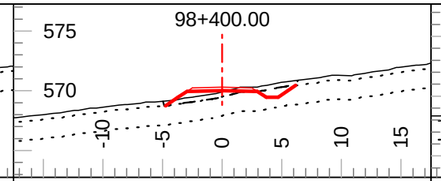

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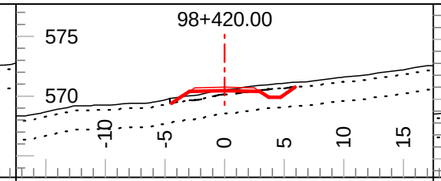

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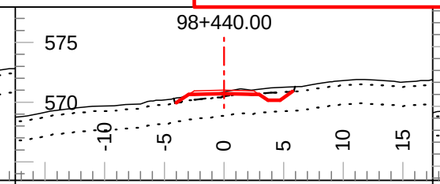

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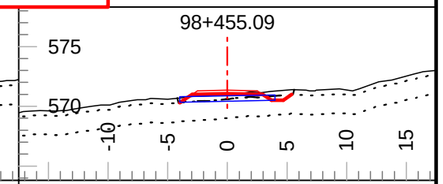

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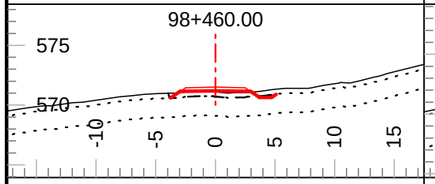

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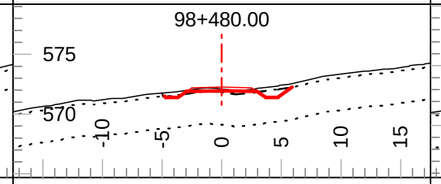

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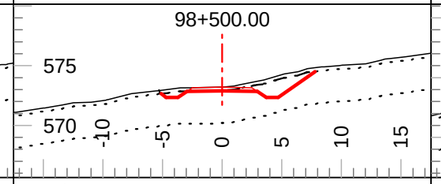

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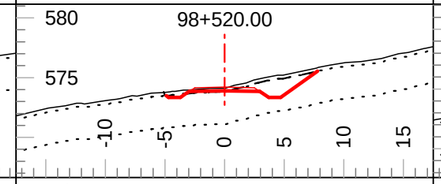

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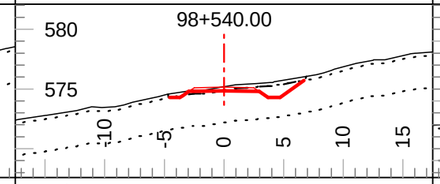

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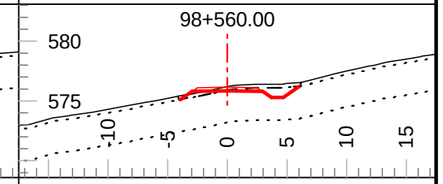

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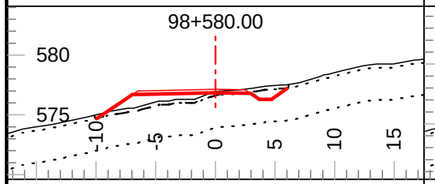

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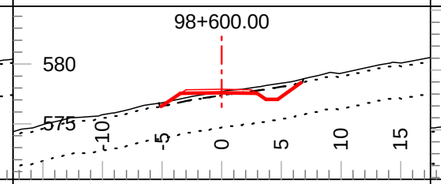

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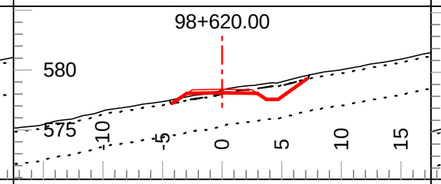

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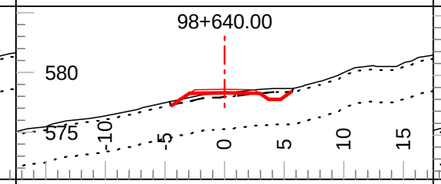

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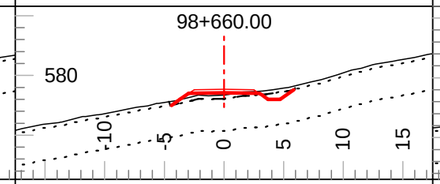

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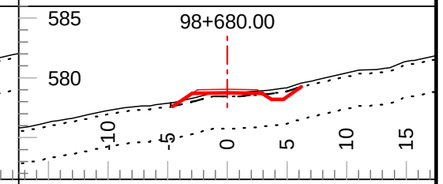

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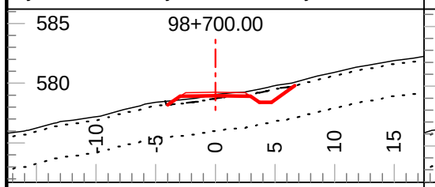

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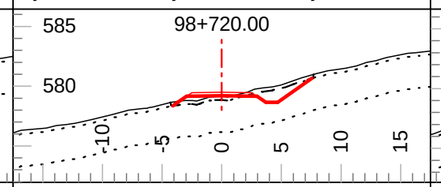

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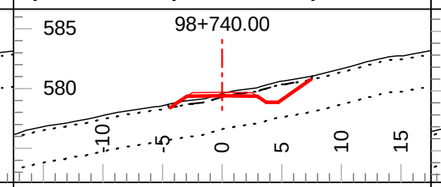

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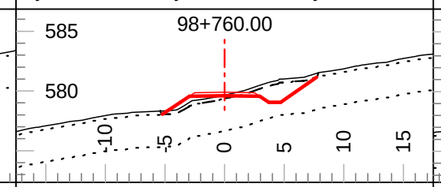

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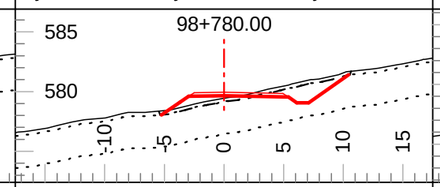

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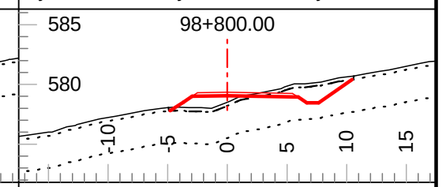

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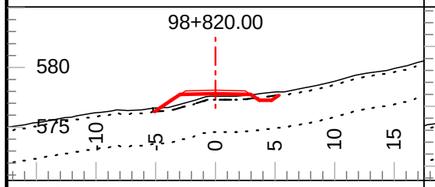

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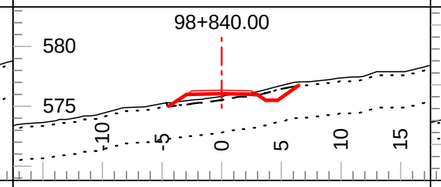

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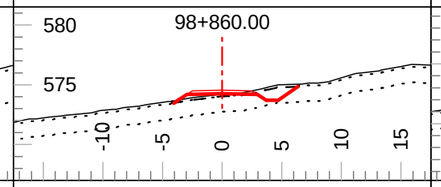

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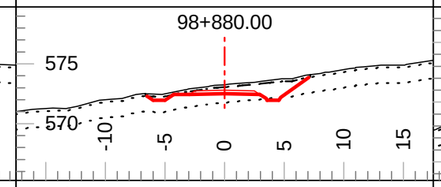

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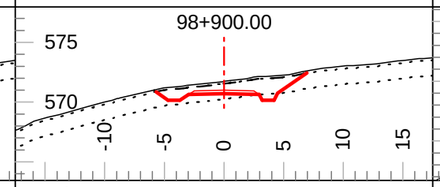

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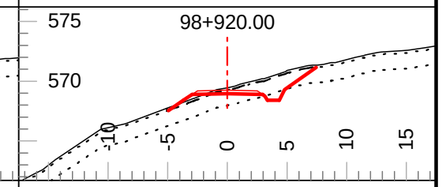

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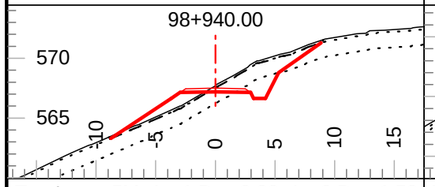

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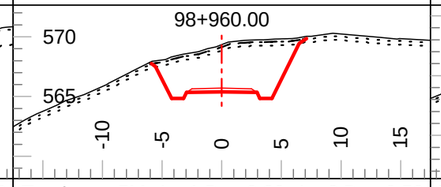

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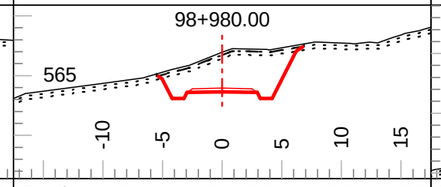

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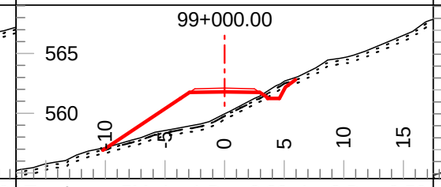

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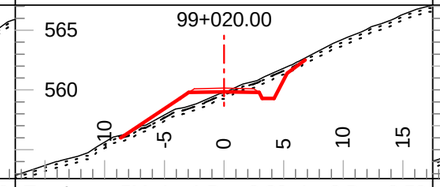

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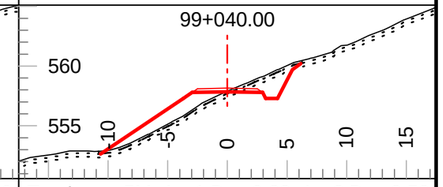


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 0.50
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

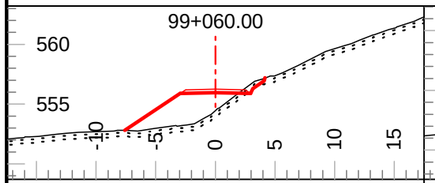
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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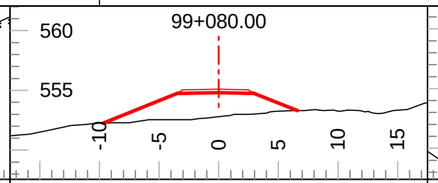
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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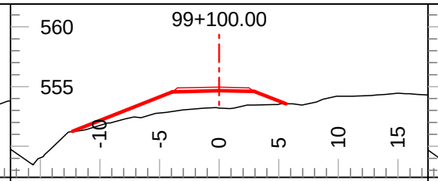

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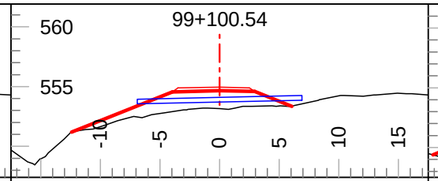

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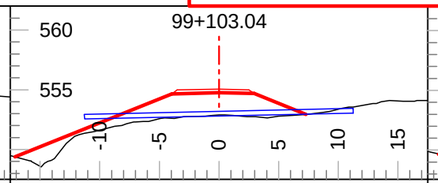

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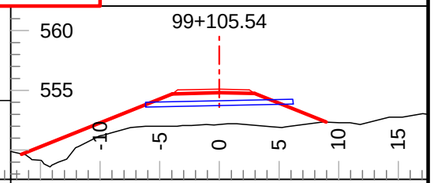

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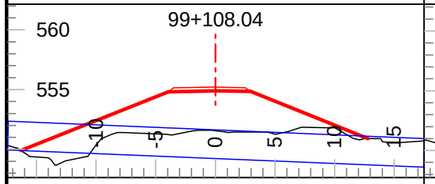

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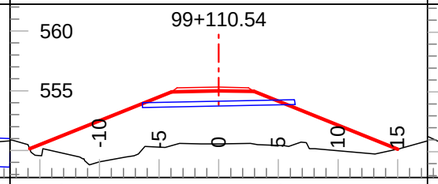

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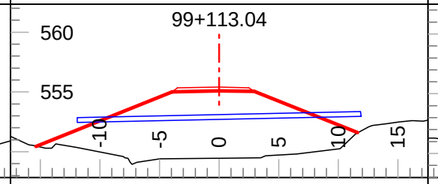

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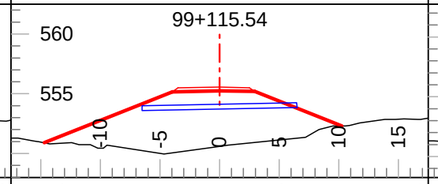

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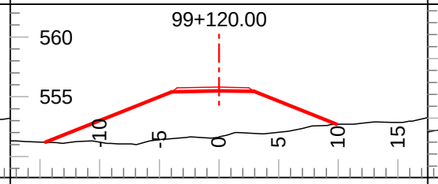

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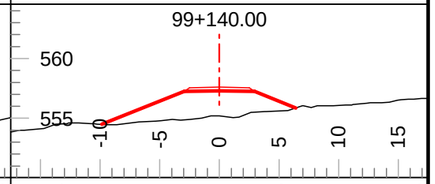

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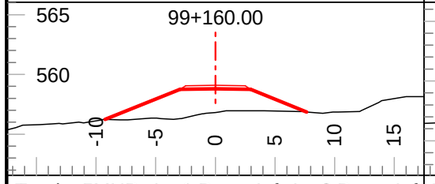

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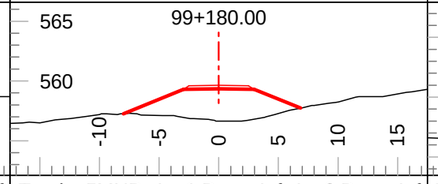

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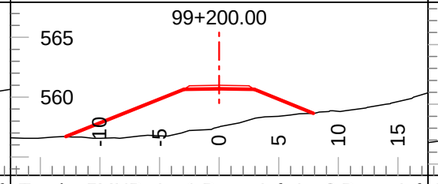

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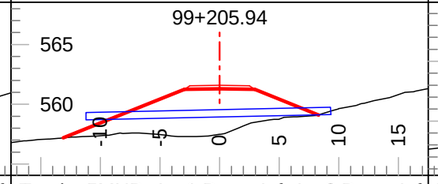

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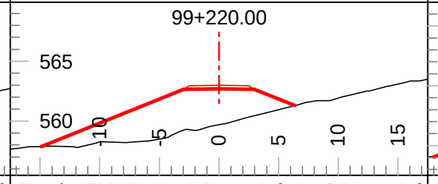

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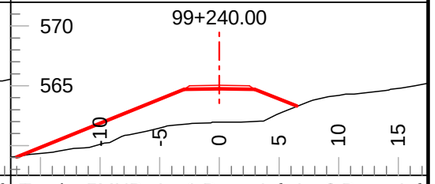

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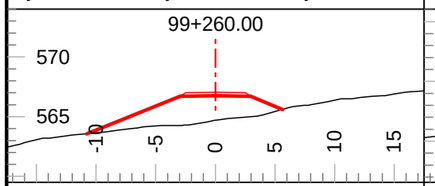

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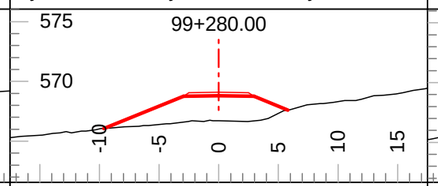

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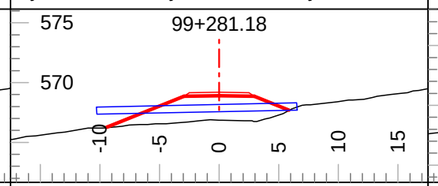

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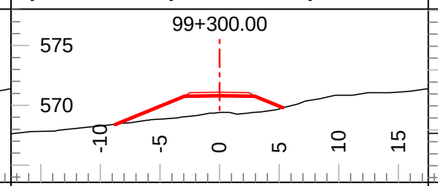

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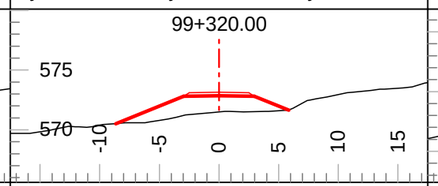

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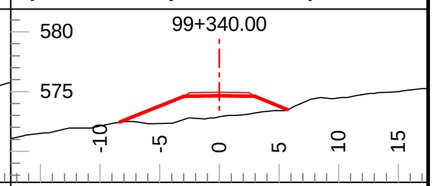

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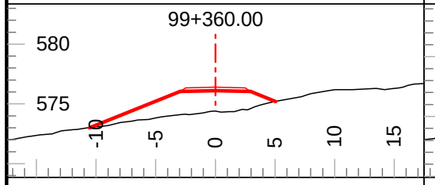

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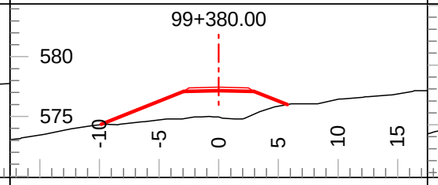

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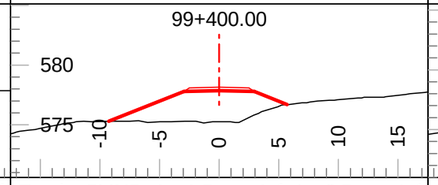

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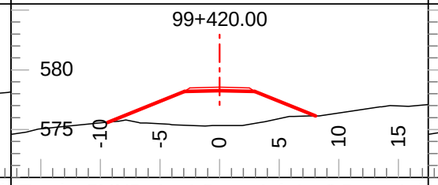

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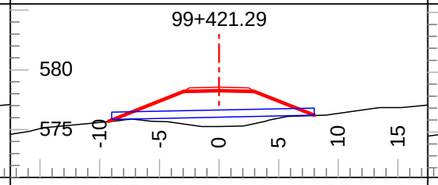

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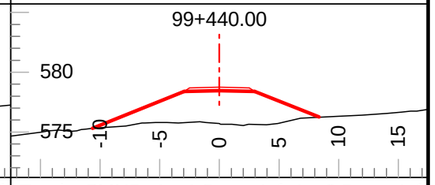

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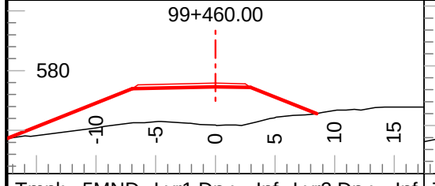

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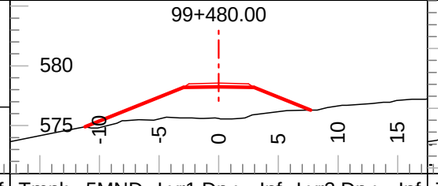

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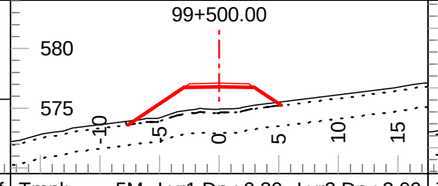

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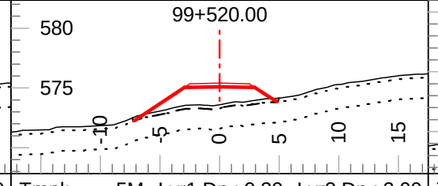

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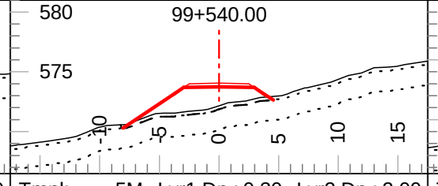

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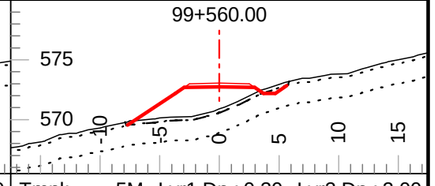

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Coffee Gold Mine

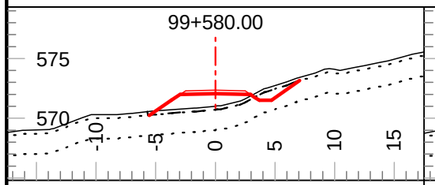
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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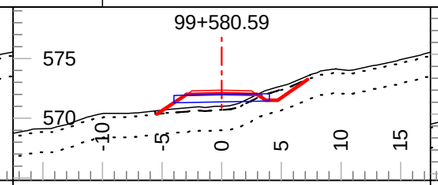

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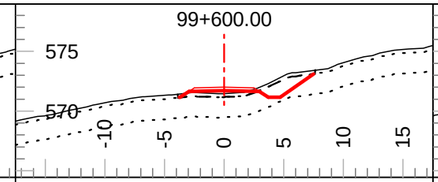

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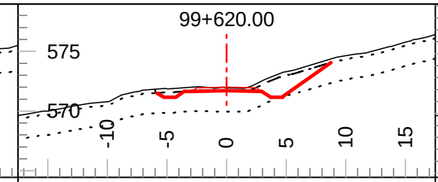

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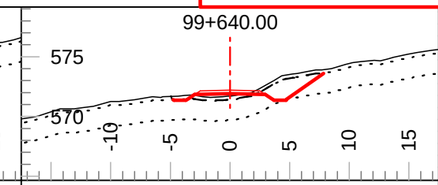

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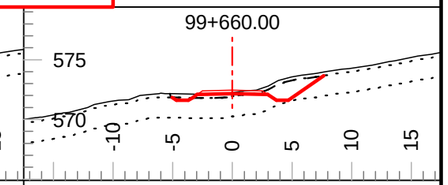

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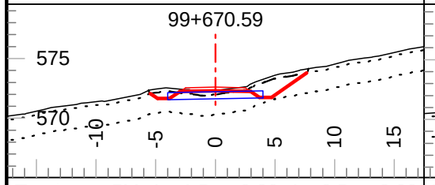

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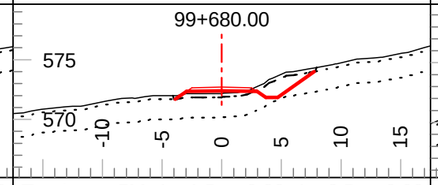

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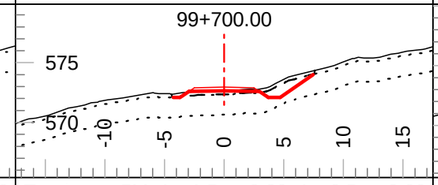

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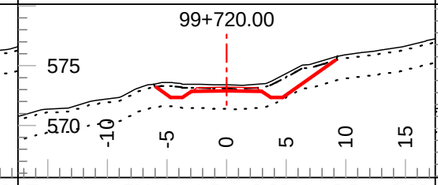

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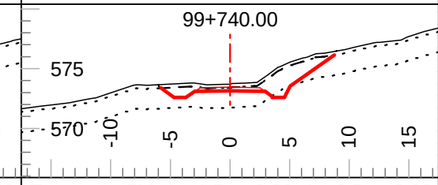

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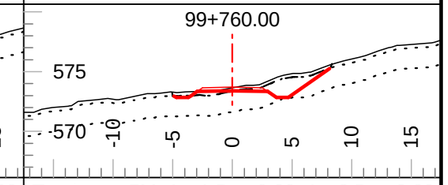

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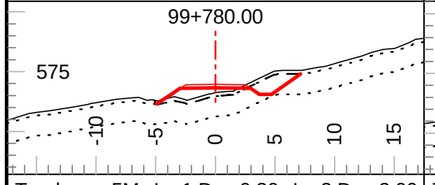

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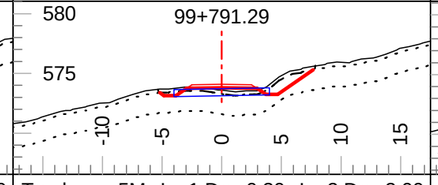

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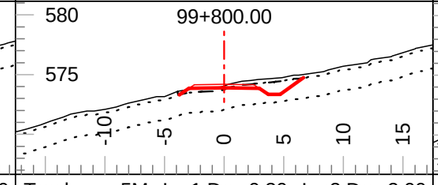

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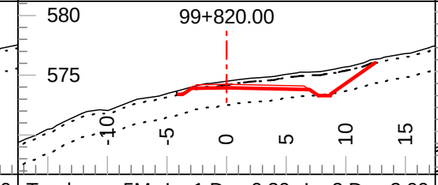

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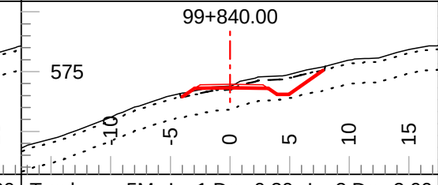

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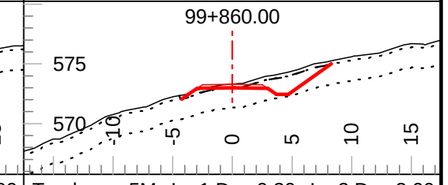

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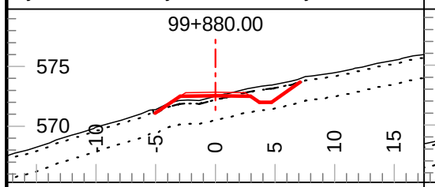

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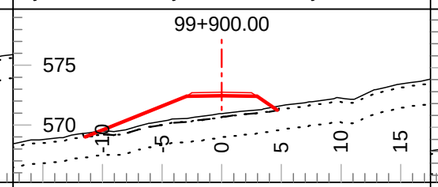

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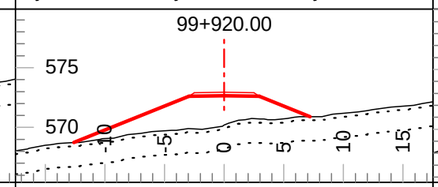

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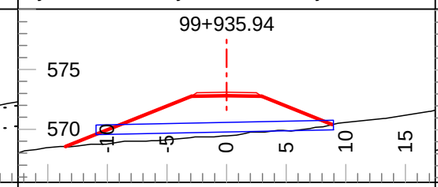

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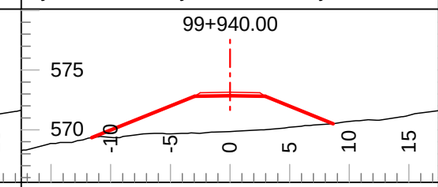

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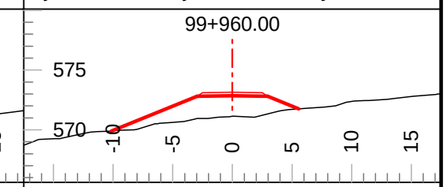

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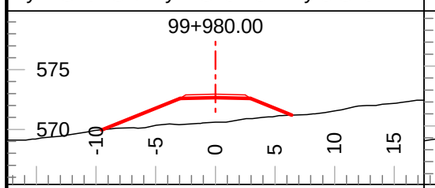

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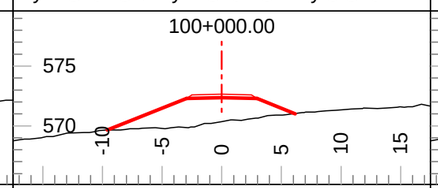

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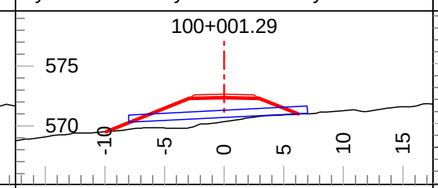

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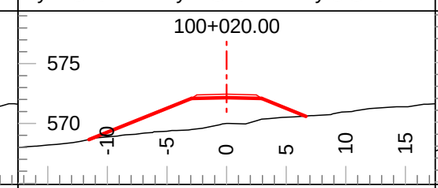

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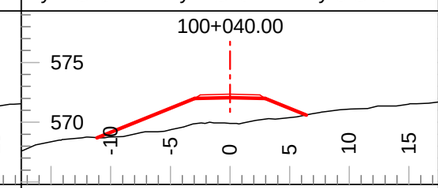

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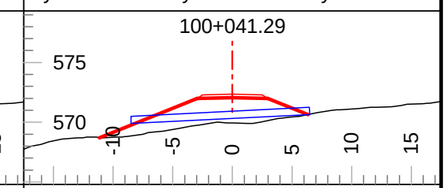

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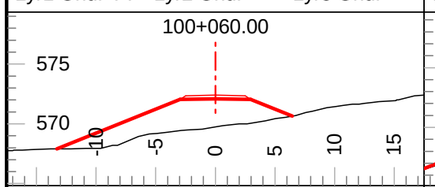

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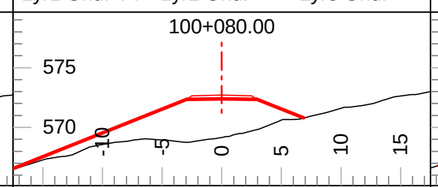

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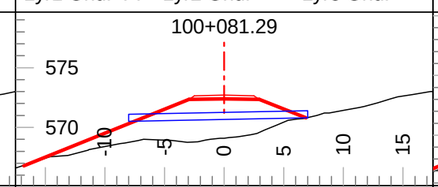

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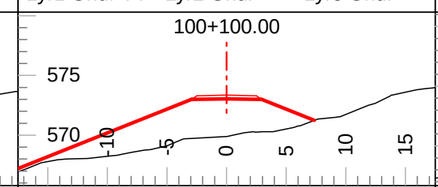

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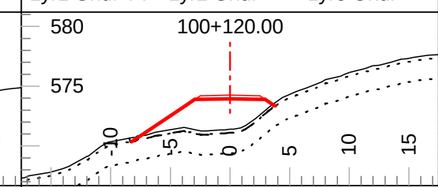

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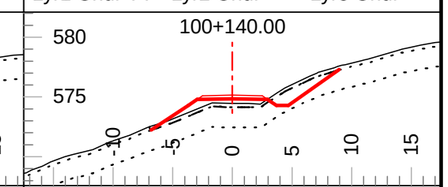
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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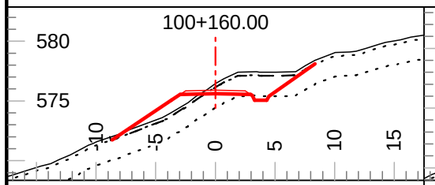

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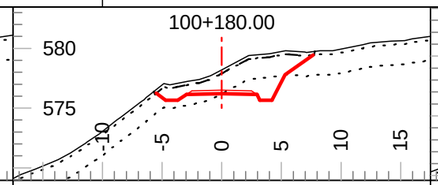

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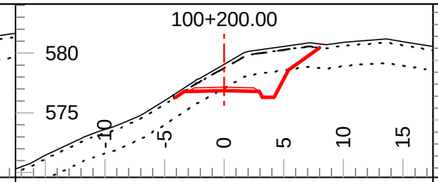

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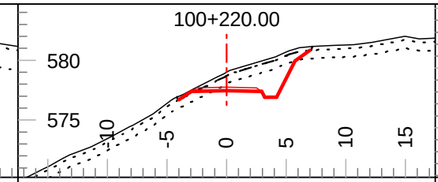

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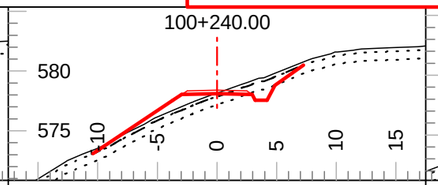

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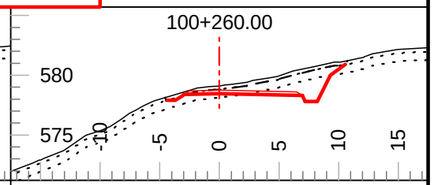

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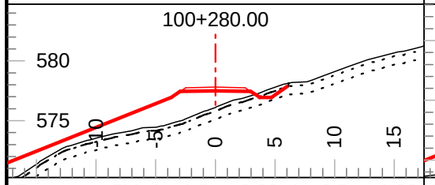

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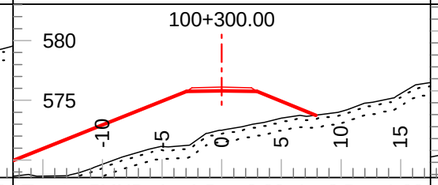

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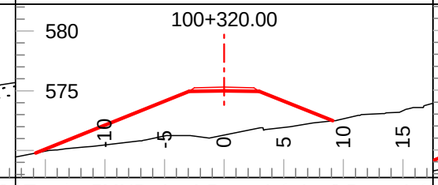

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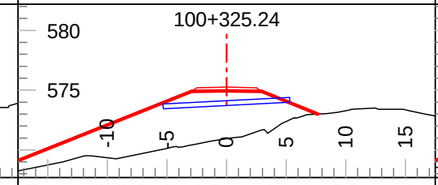

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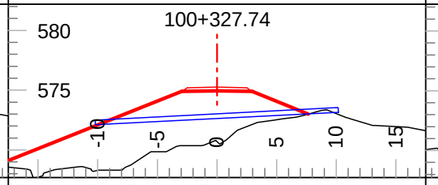

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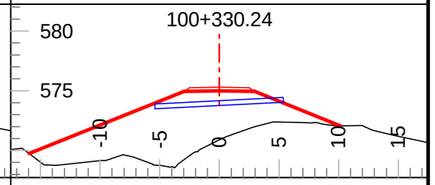

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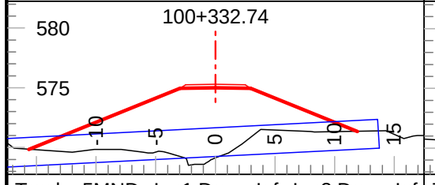

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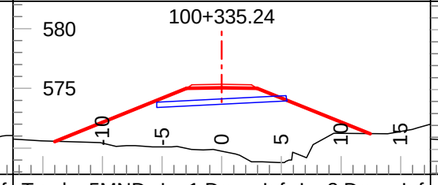

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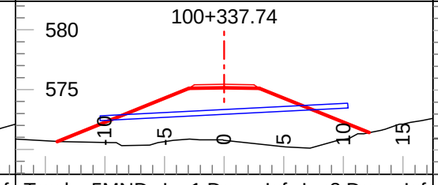

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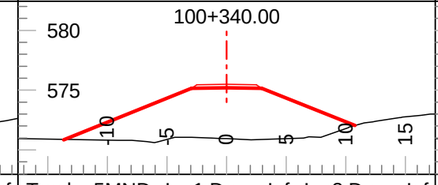

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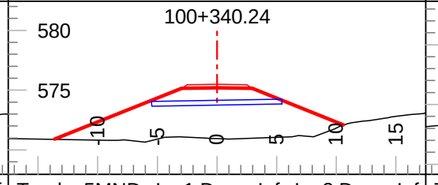

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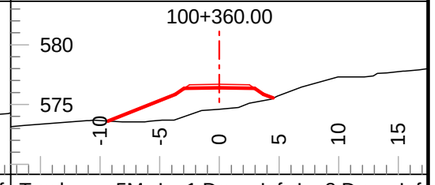

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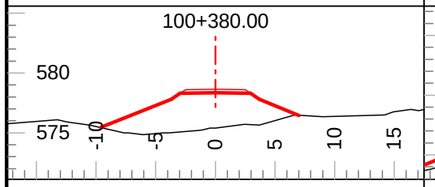

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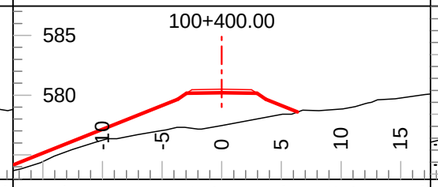

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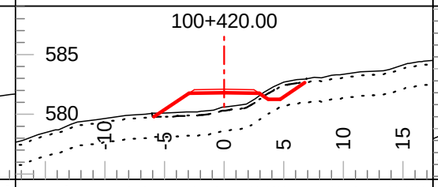

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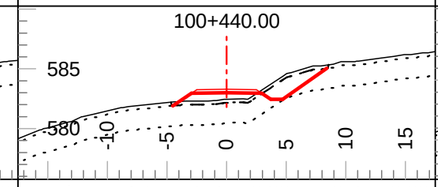
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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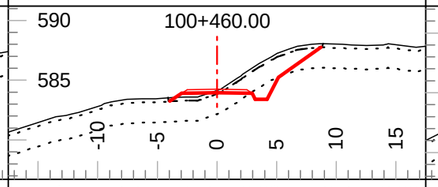

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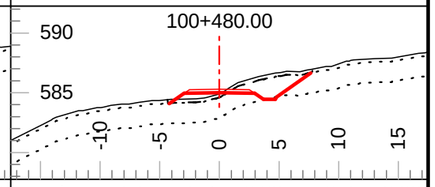

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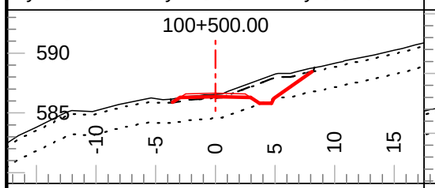

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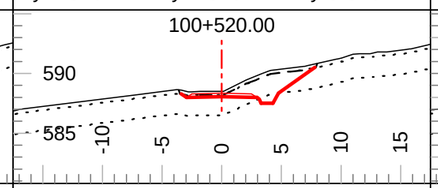

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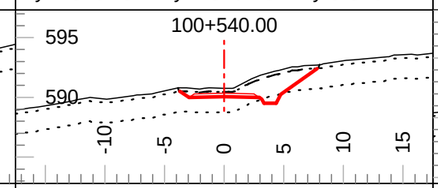

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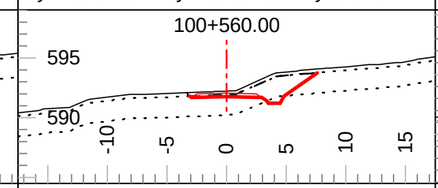

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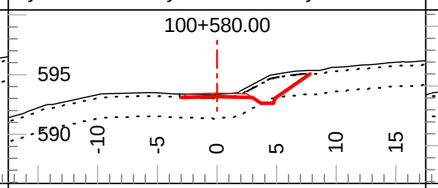

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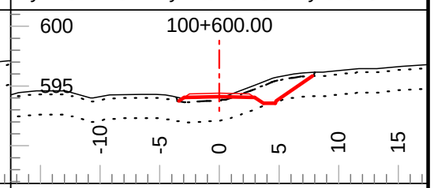

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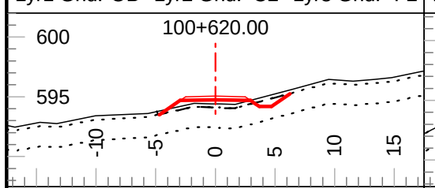

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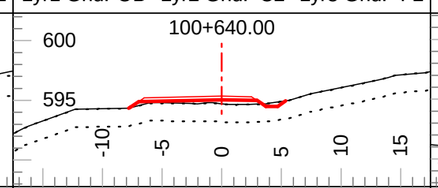

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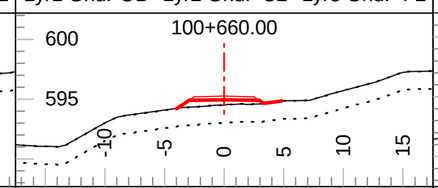
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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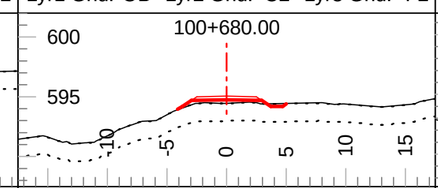

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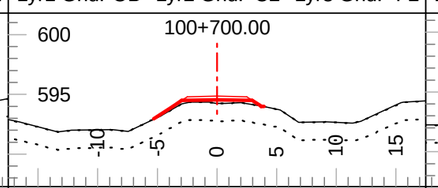

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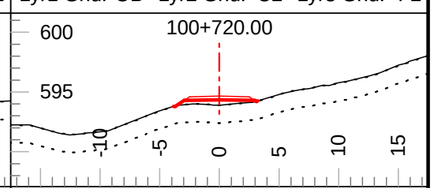

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Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2

Coffee Gold Mine

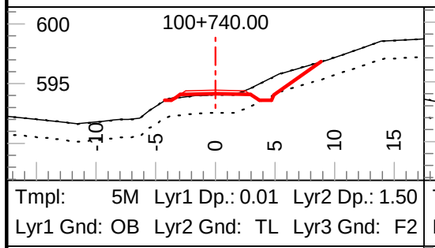
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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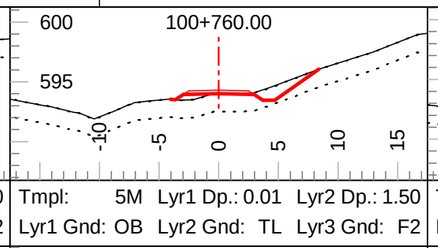

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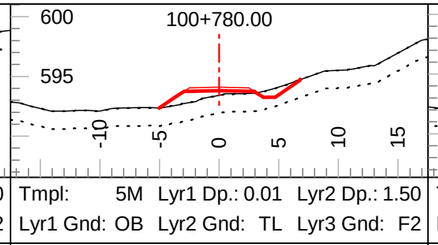

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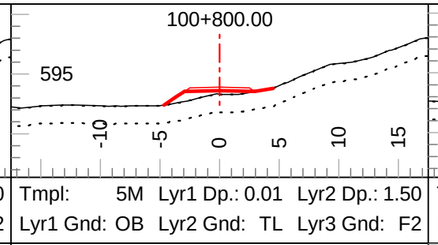

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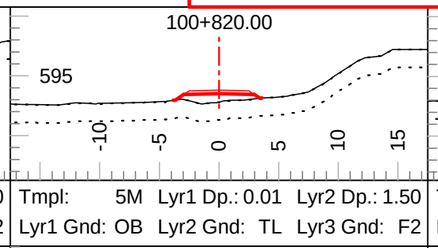

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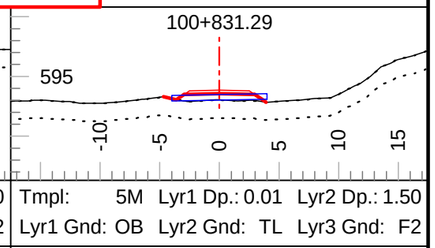

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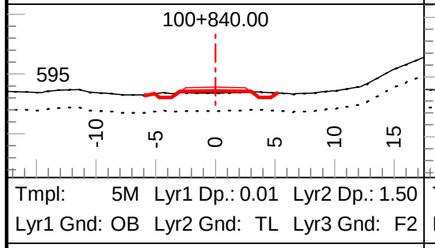

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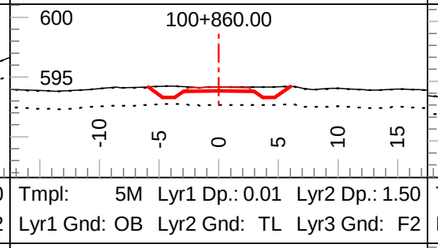
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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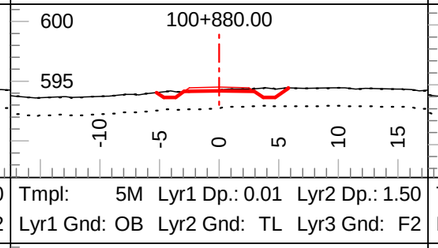

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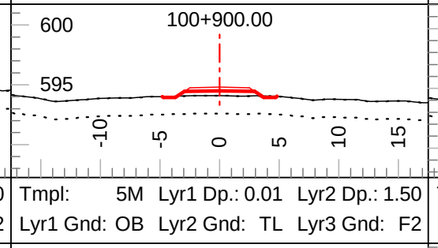

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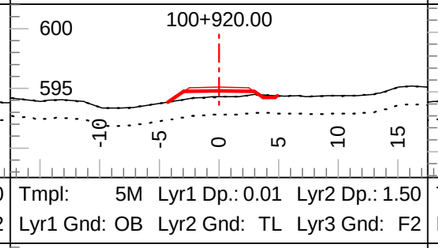

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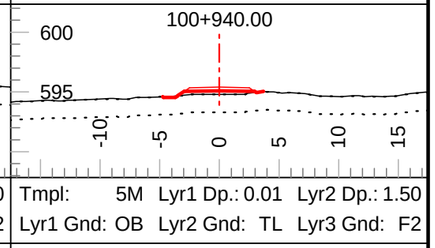

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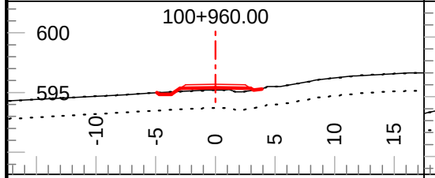

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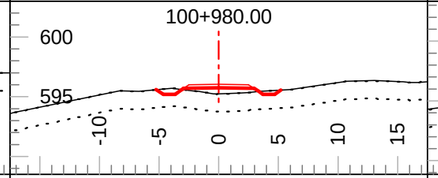

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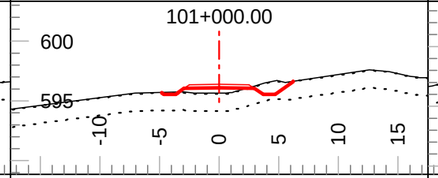

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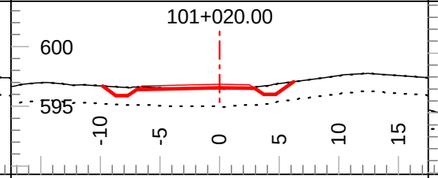

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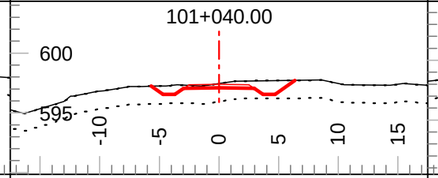

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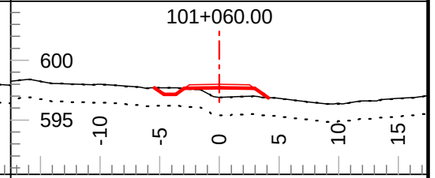

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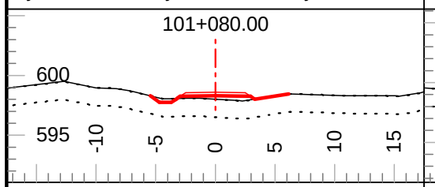

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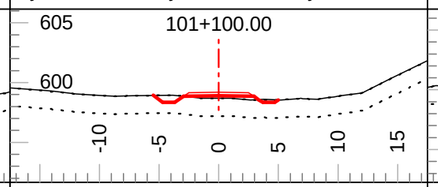

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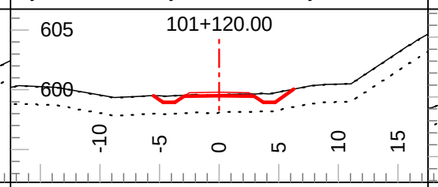

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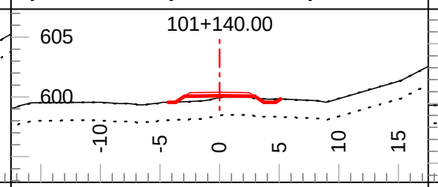

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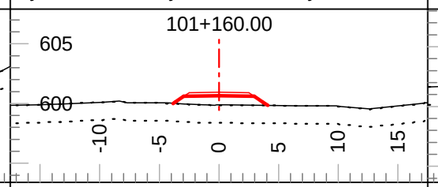
Lyr1 Gnd: OB Lyr2 Gnd: TL Lyr3 Gnd: F2



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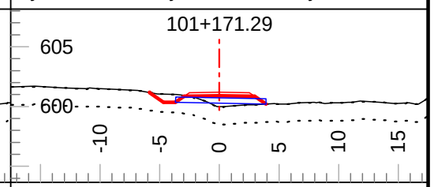

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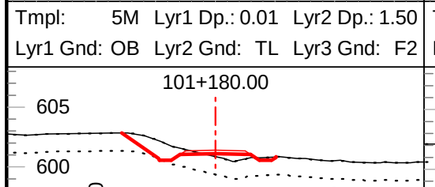

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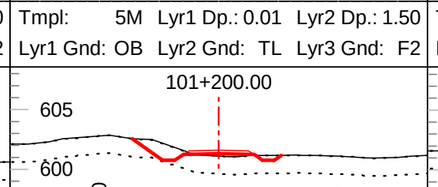

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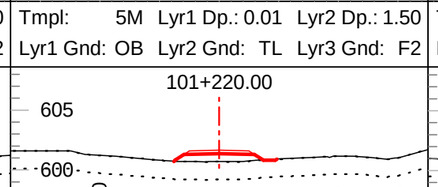

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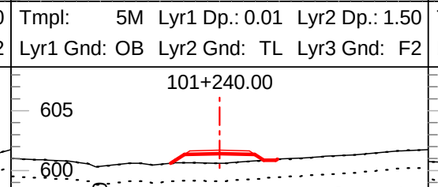

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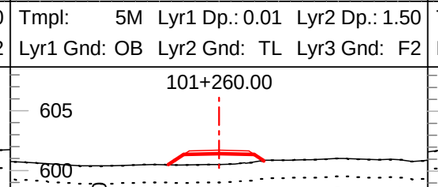

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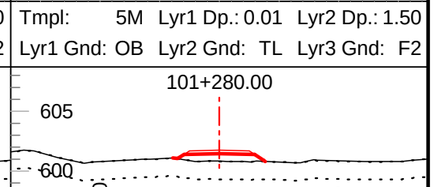

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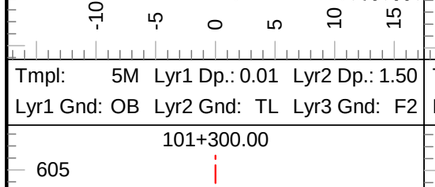

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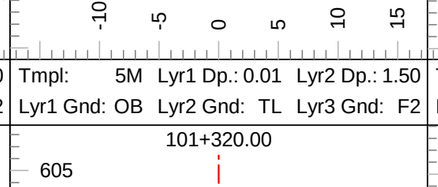

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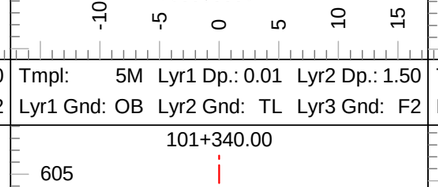

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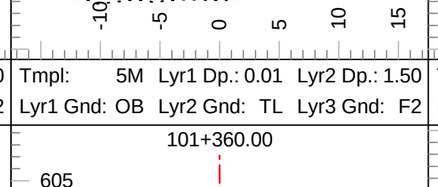

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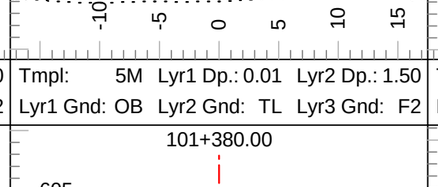

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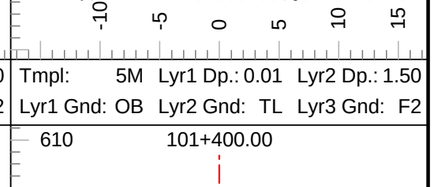

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Coffee Gold Mine

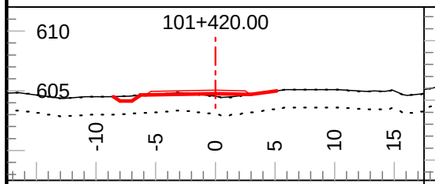
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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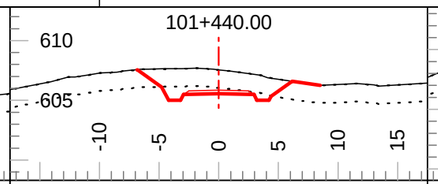

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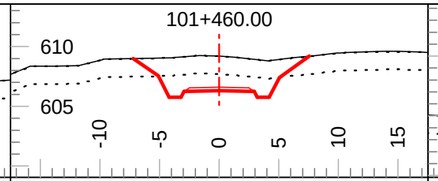

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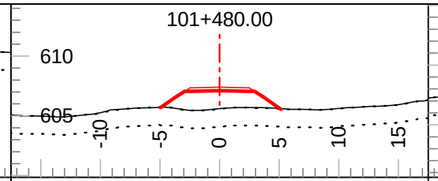

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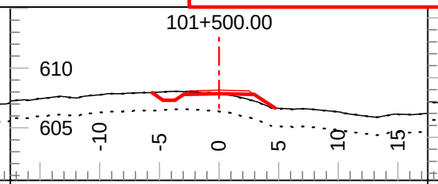

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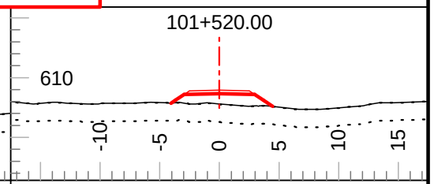

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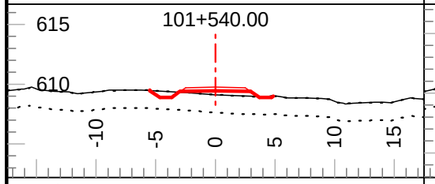

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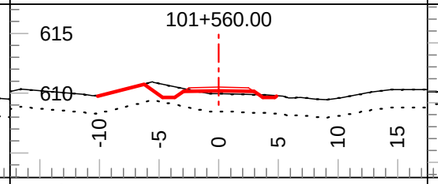

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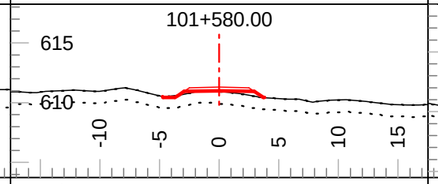

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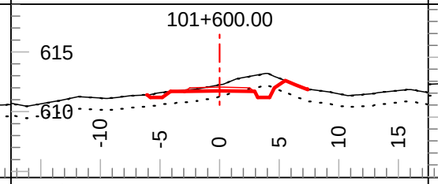

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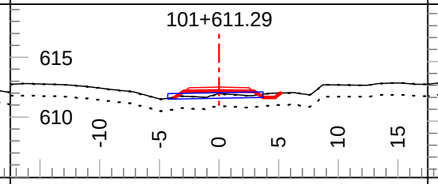

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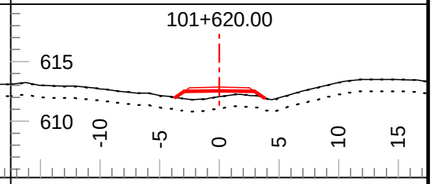

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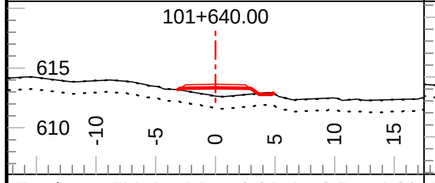

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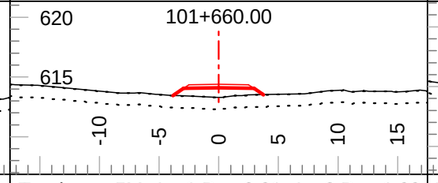

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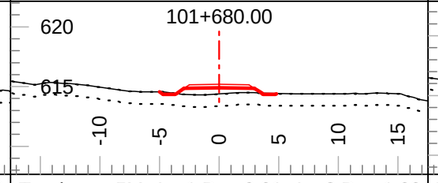

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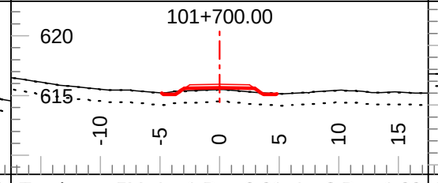

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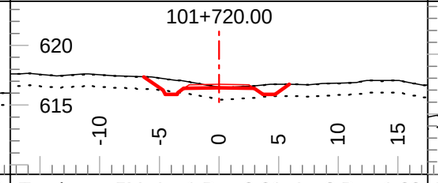

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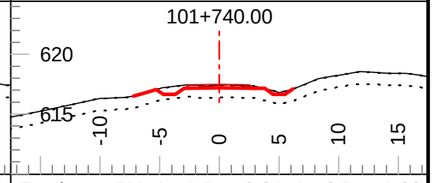

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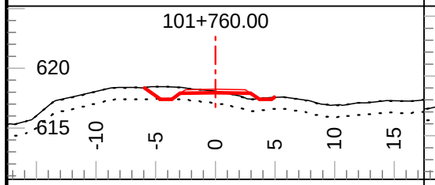

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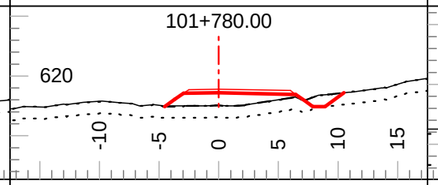

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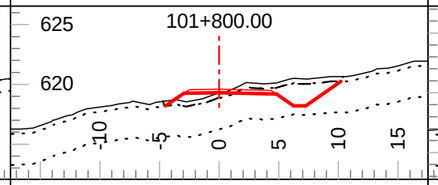

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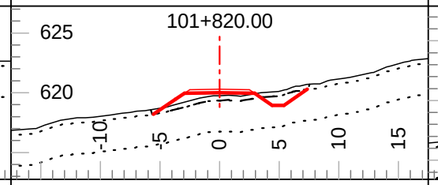

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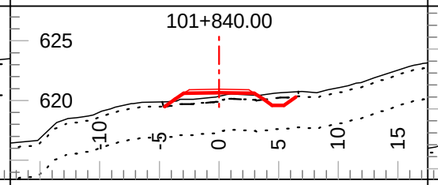

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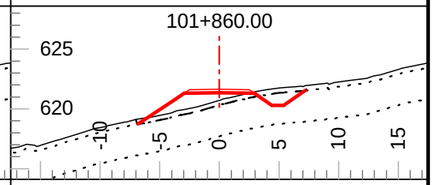

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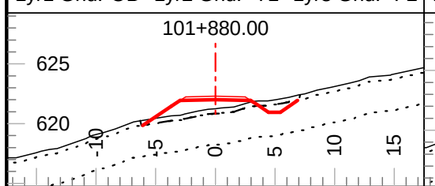

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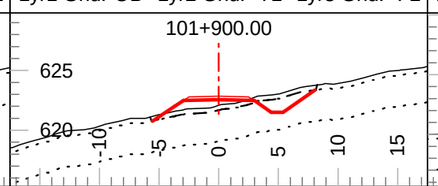

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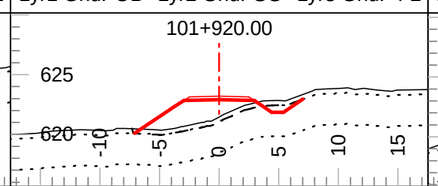

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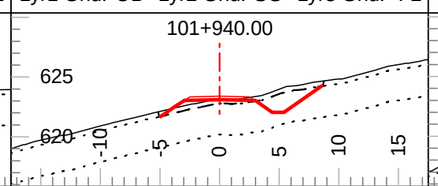

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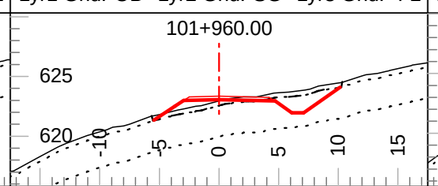

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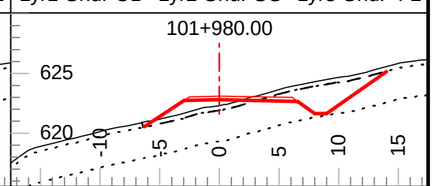

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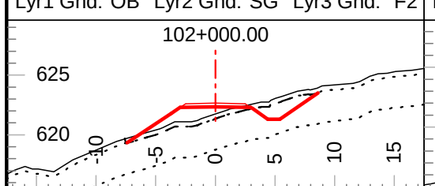
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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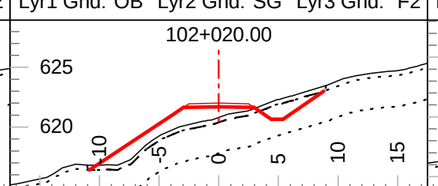

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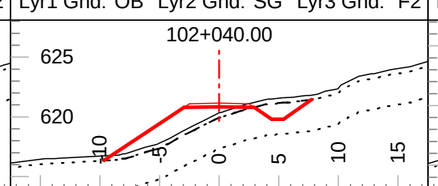

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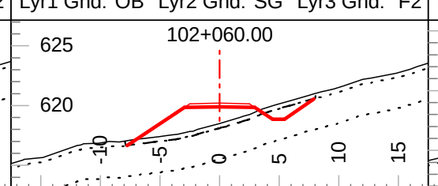

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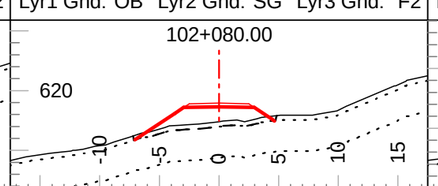
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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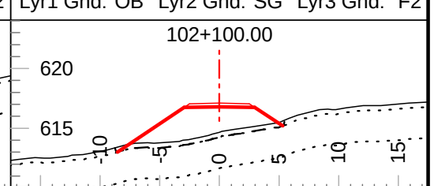

Tmpl: 5MND Lyr1 Dp.: 0.40 Lyr2 Dp.: 3.00
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2

Coffee Gold Mine

Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

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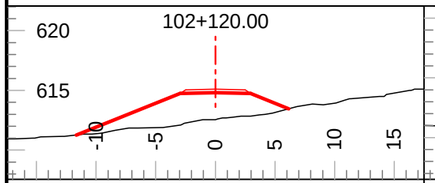

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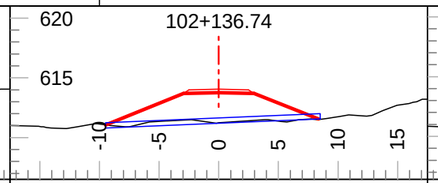

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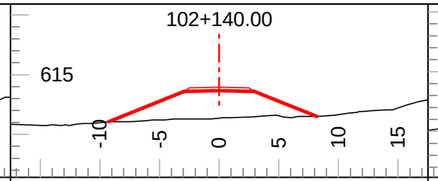

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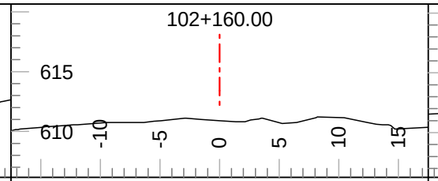

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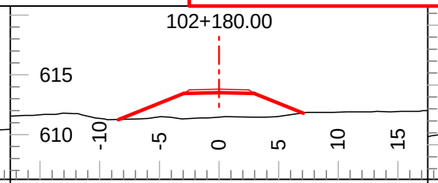

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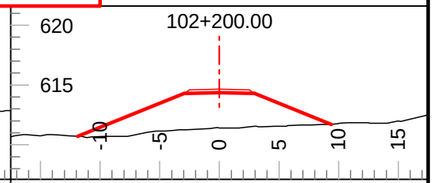

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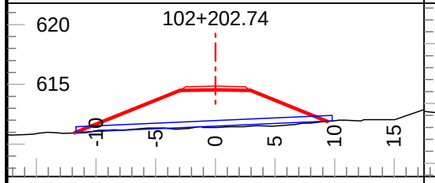
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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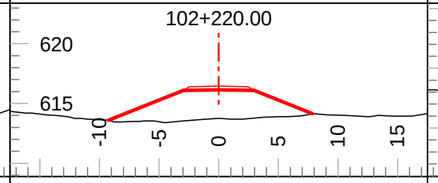

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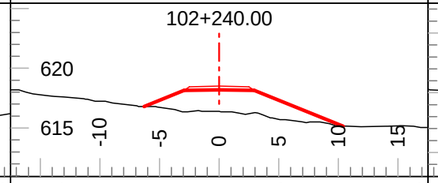

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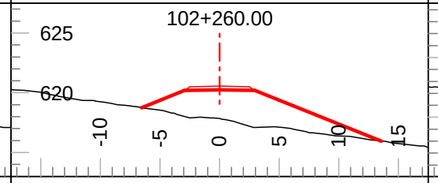

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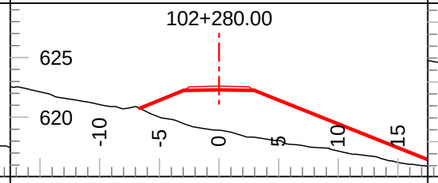

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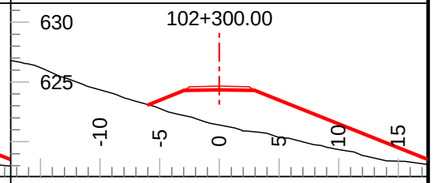

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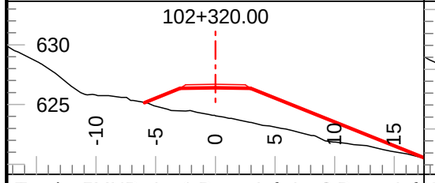

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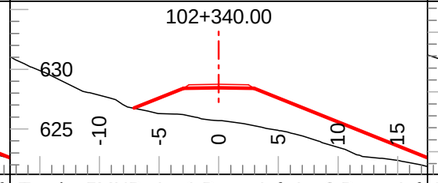

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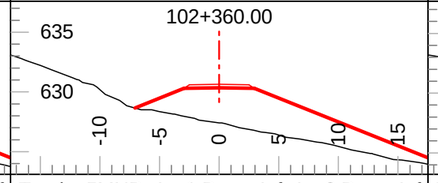

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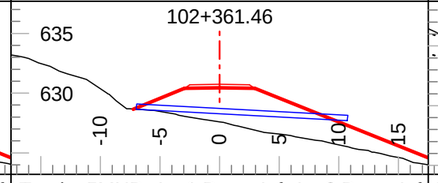

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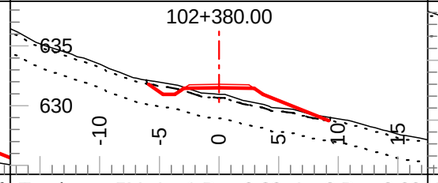

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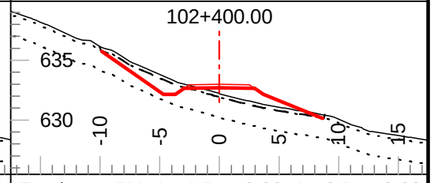

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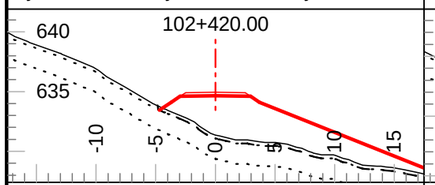

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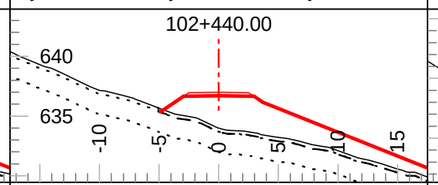

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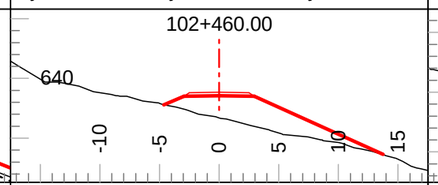

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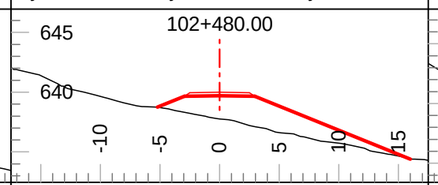

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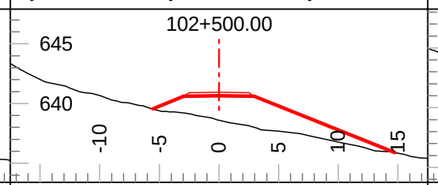

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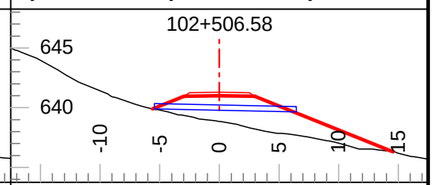

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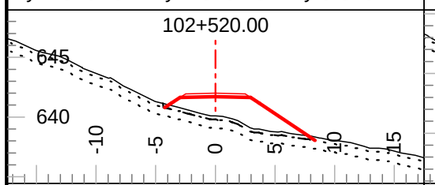

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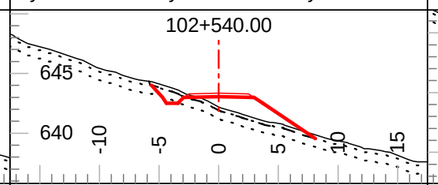

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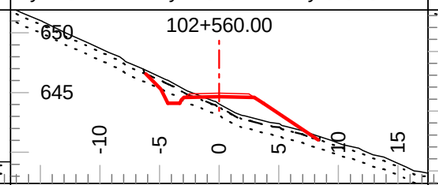

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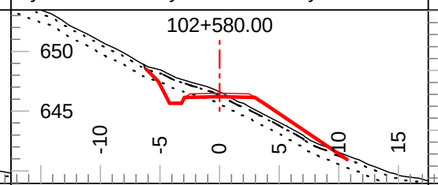

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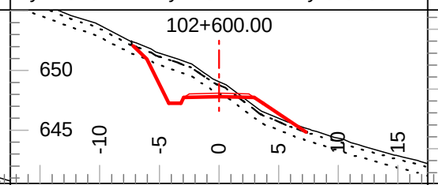

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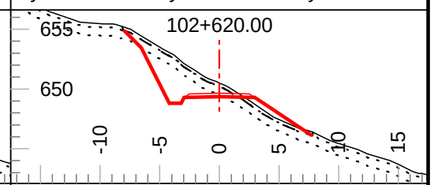

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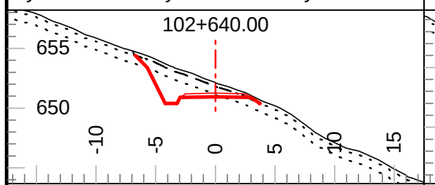
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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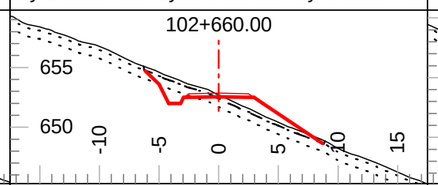
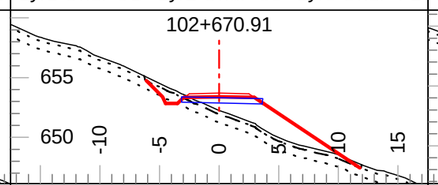
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



Tmpl: 5M Lyr1 Dp.: 0.30 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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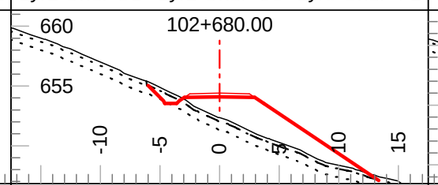

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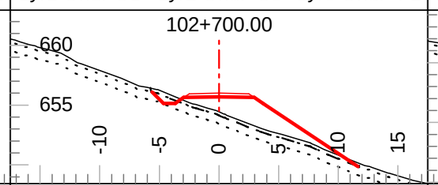
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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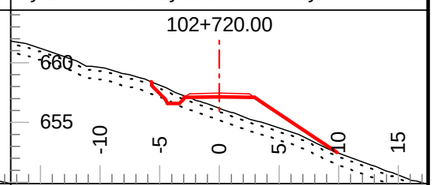
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



Tmpl: 5M Lyr1 Dp.: 0.30 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

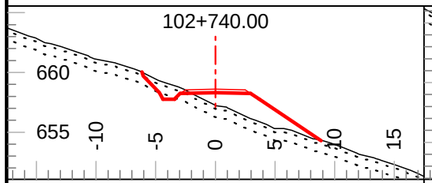
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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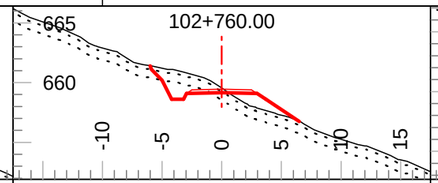
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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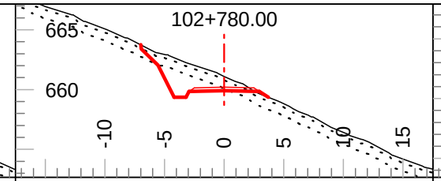

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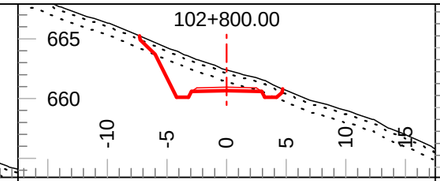

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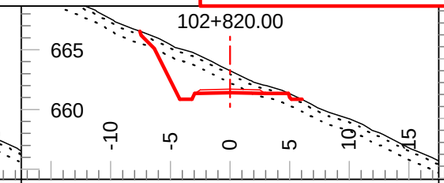

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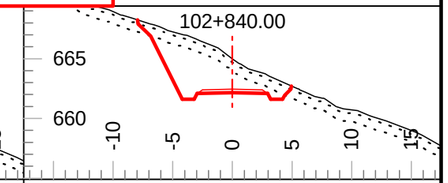

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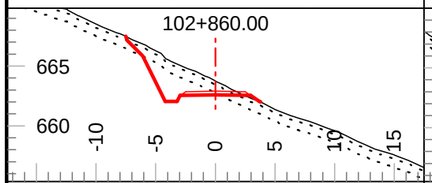

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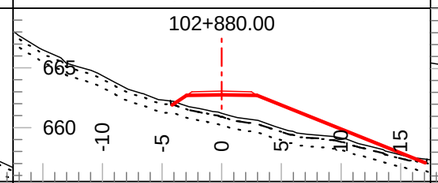

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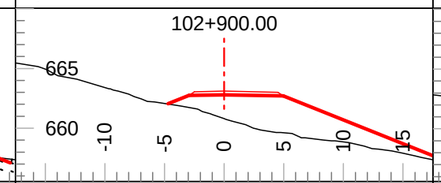

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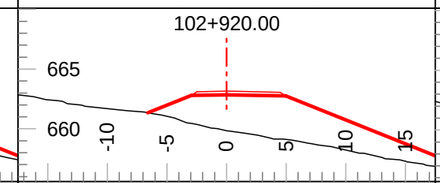

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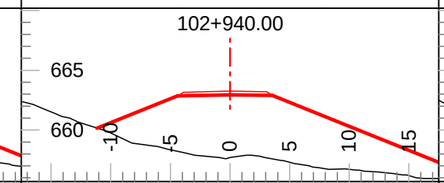

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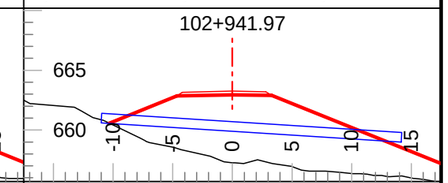

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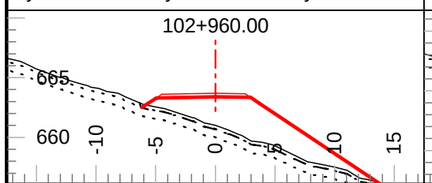
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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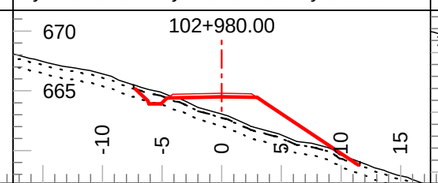

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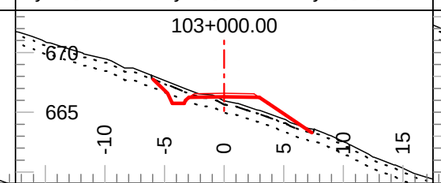

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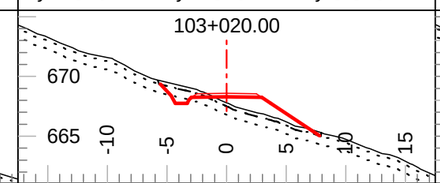

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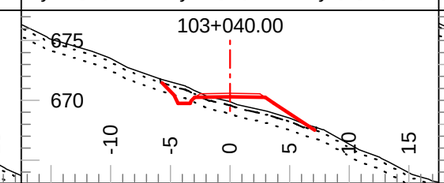

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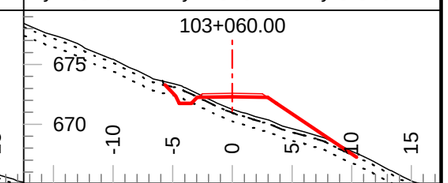

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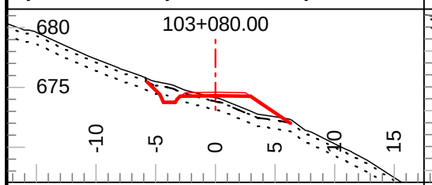

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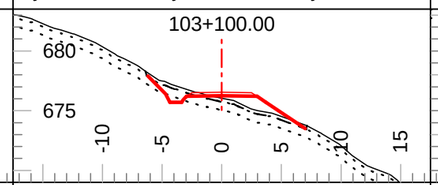

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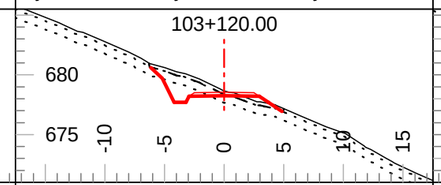

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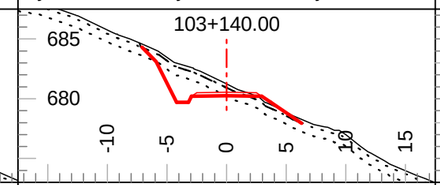

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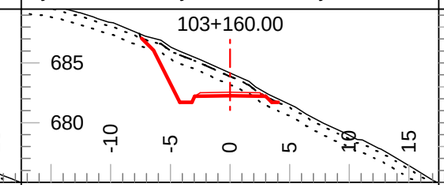

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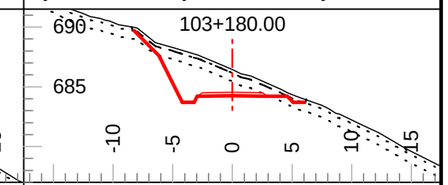

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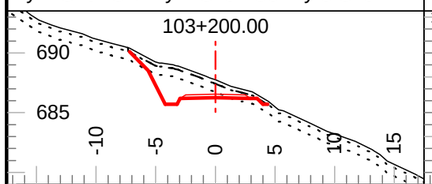

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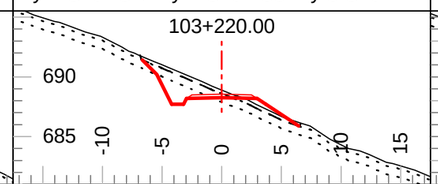

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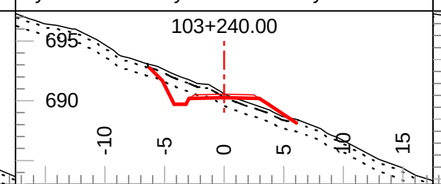

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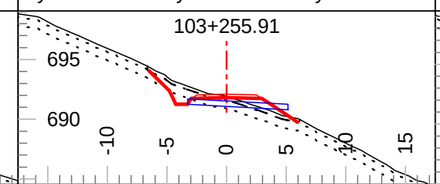

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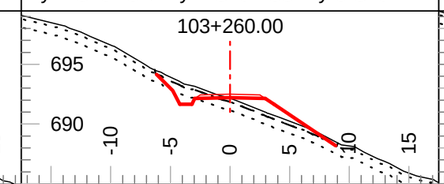

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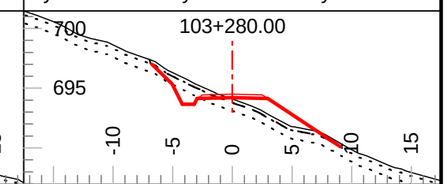

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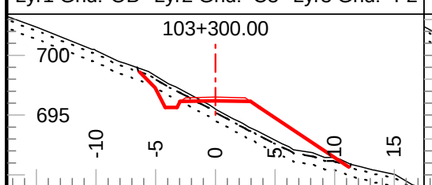

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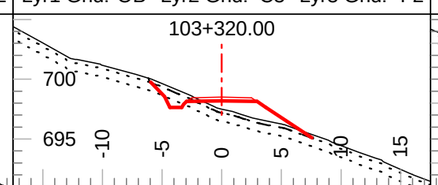

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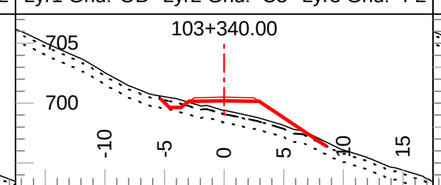

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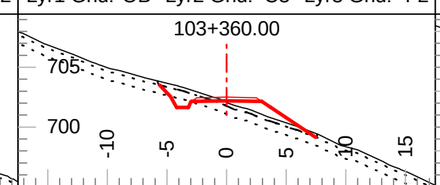

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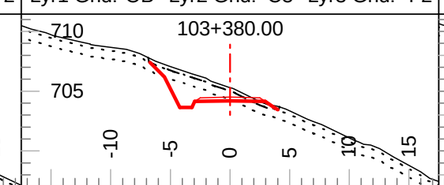

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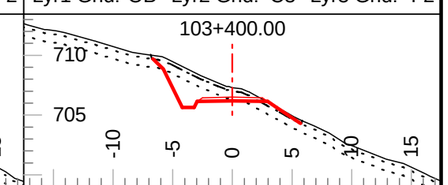

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Coffee Gold Mine

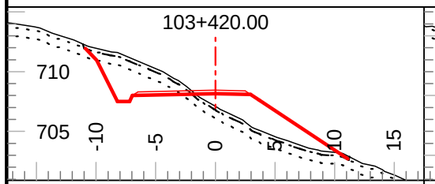
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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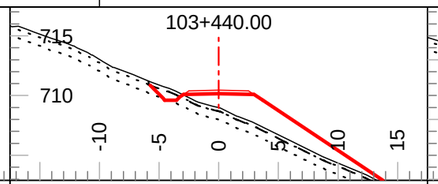

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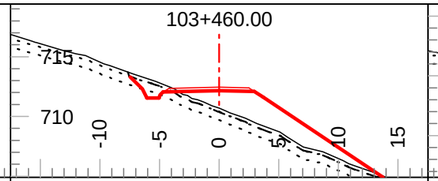

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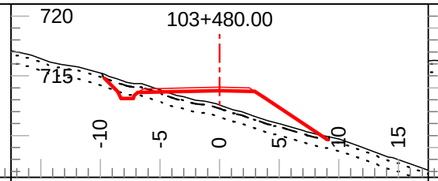

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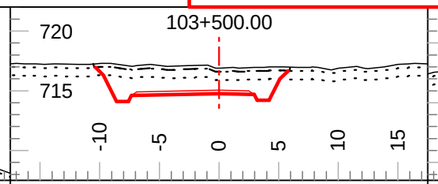

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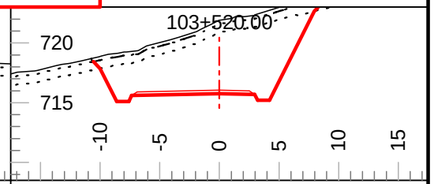

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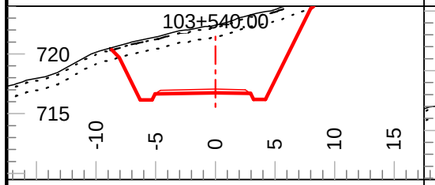

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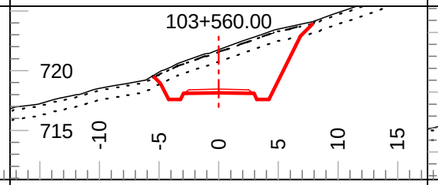
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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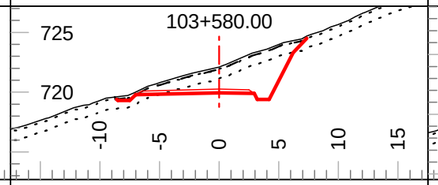

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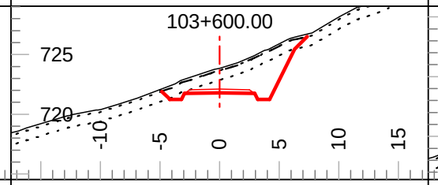

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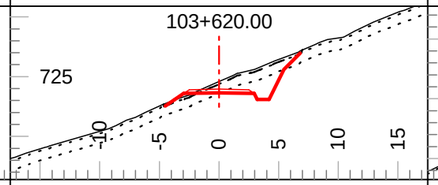

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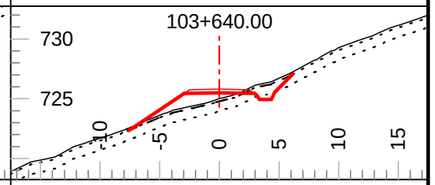

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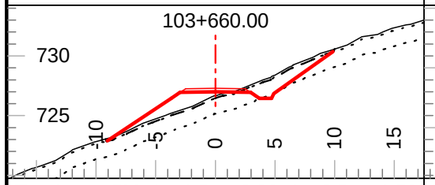

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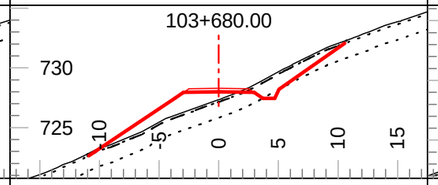

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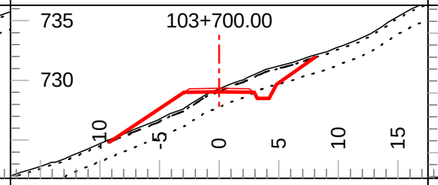

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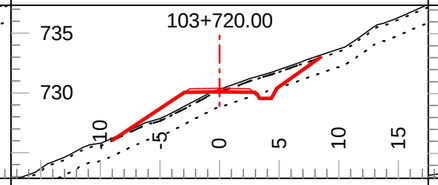

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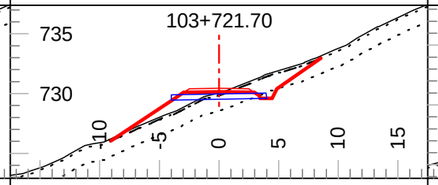

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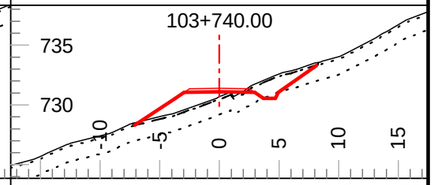

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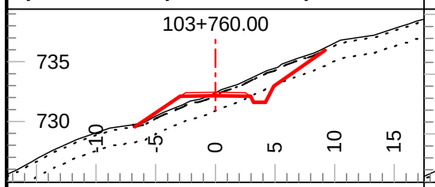

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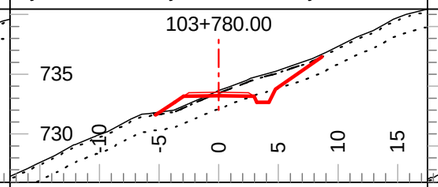

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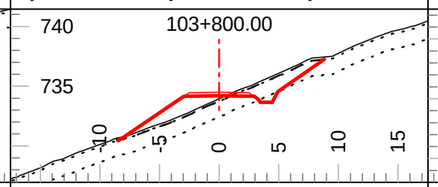

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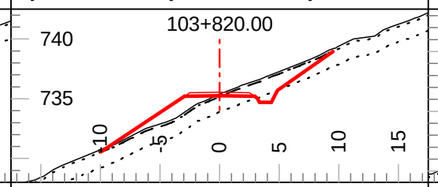

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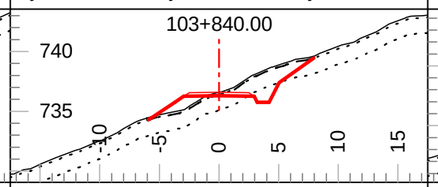

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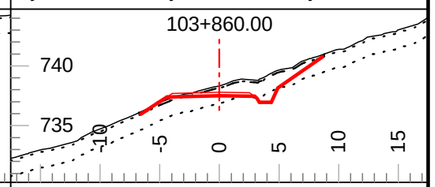

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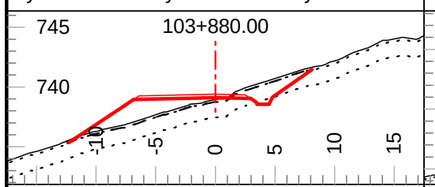

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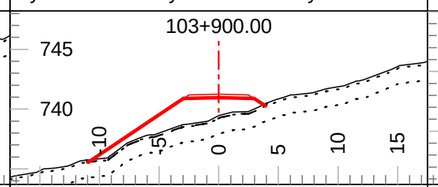

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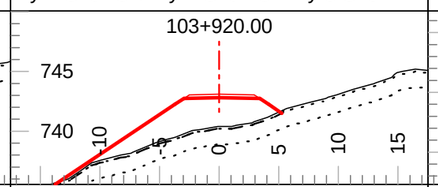

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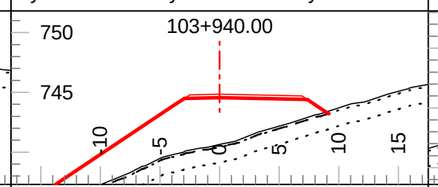

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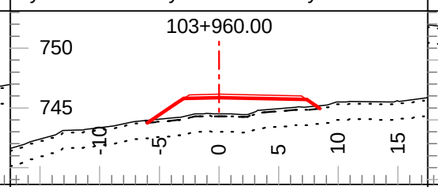

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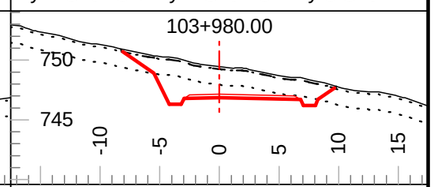

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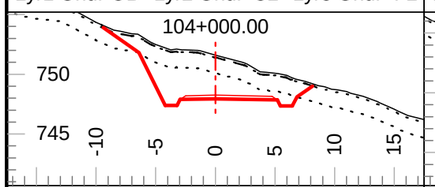

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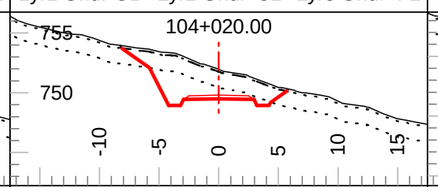

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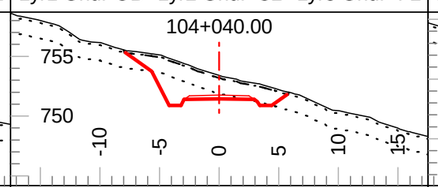

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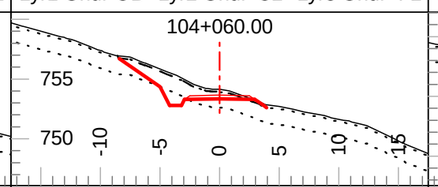

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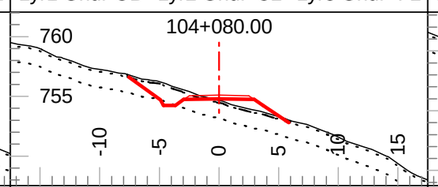

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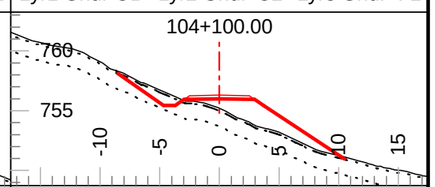

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Coffee Gold Mine

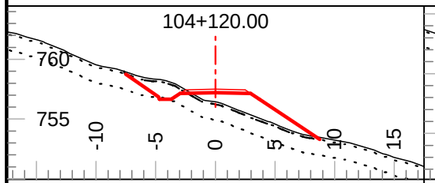
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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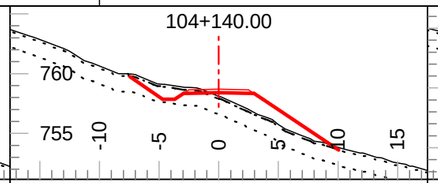

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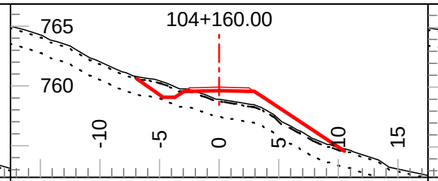

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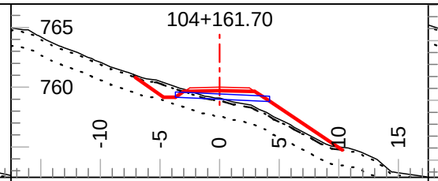

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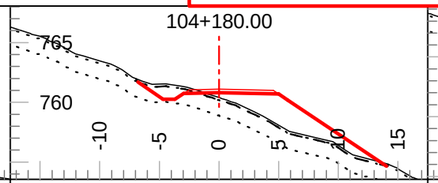

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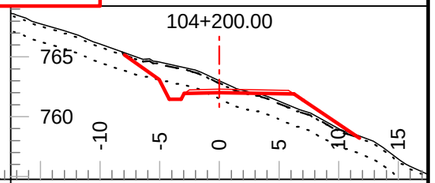

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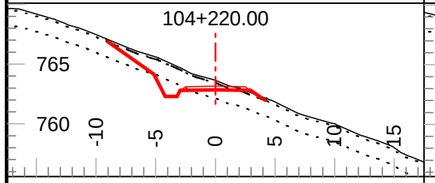

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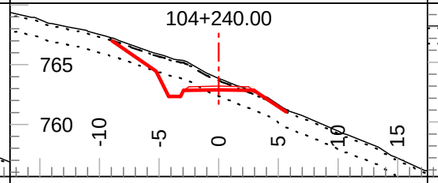

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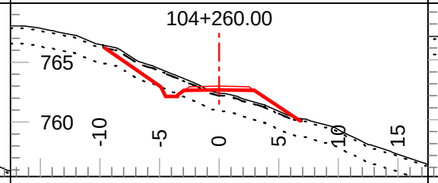

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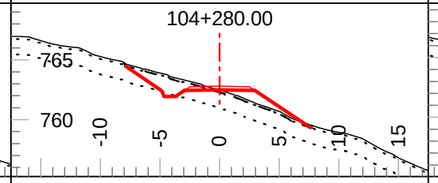

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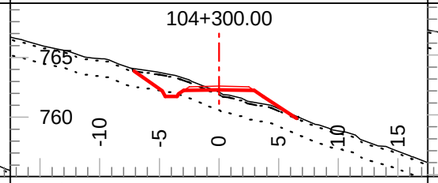

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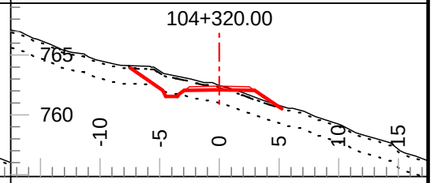

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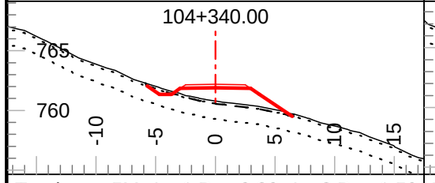

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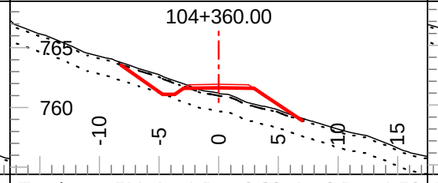

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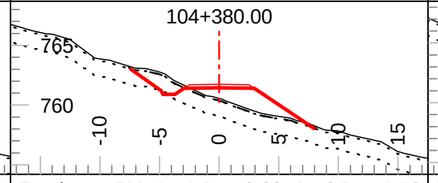

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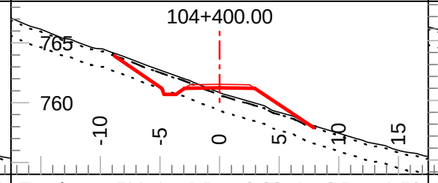

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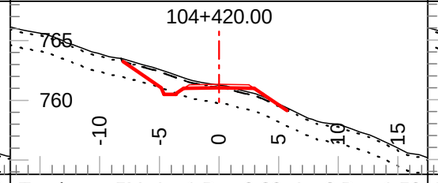

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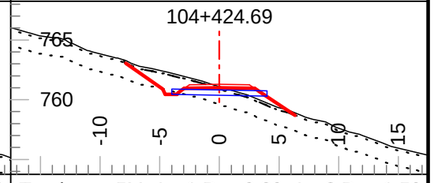

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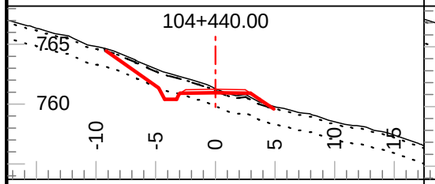

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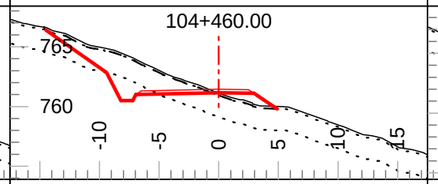

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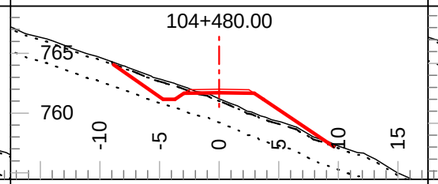

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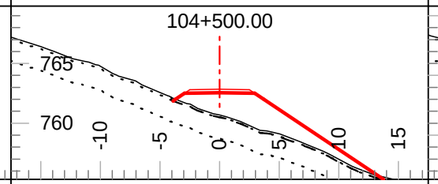

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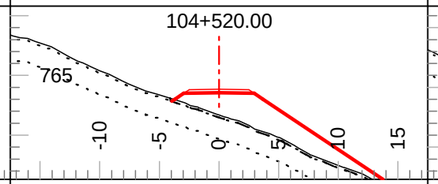

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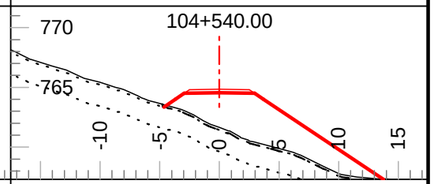

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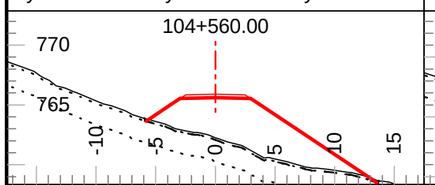

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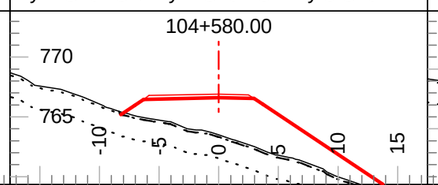

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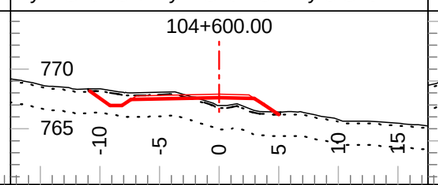

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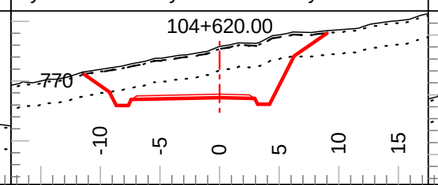

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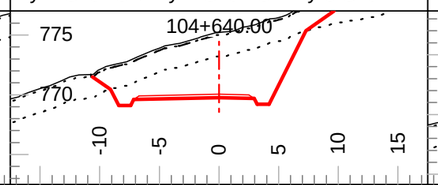

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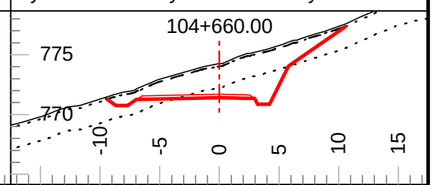

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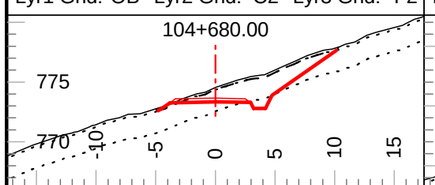

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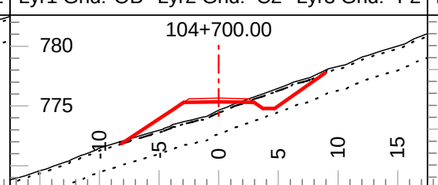

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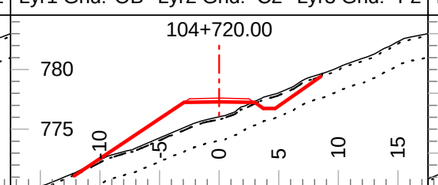

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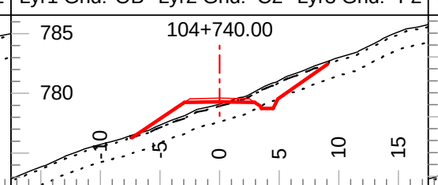

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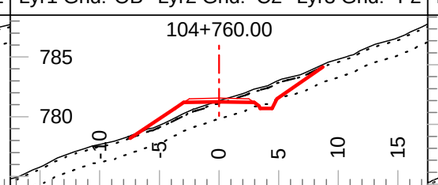

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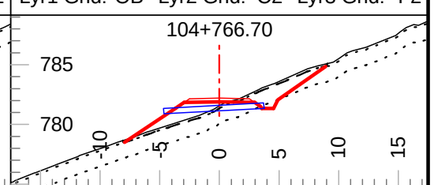

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Coffee Gold Mine

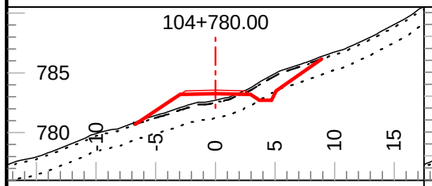
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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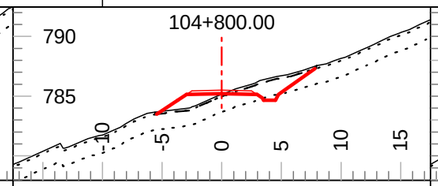

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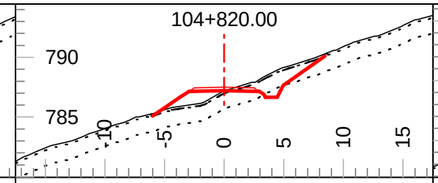

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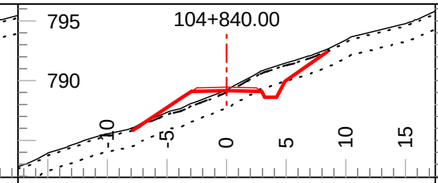

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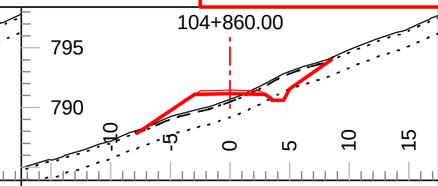

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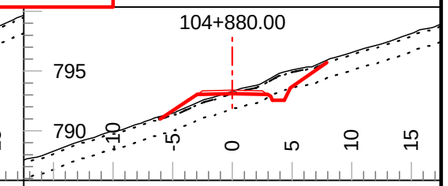

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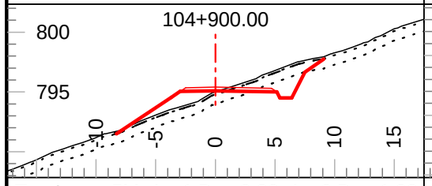

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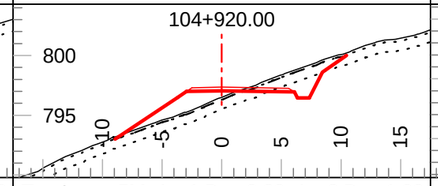

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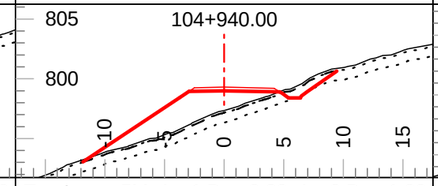

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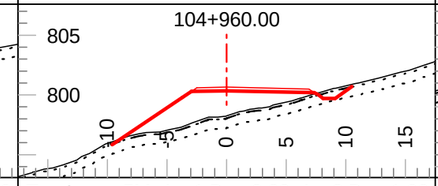

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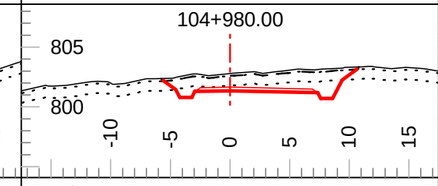

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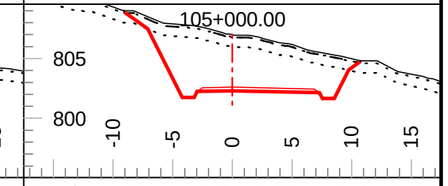

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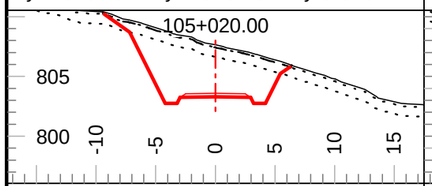

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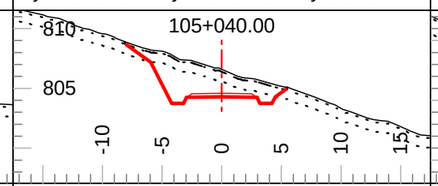

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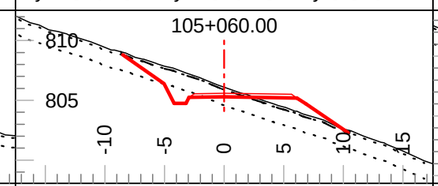

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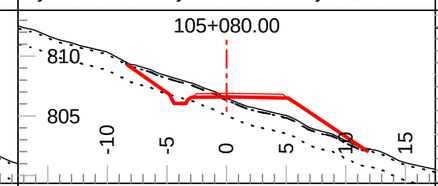

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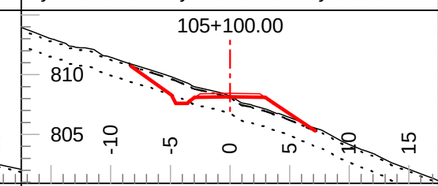

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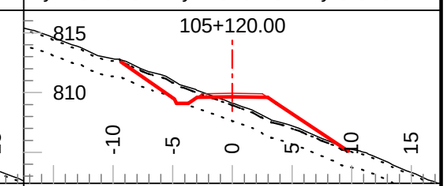

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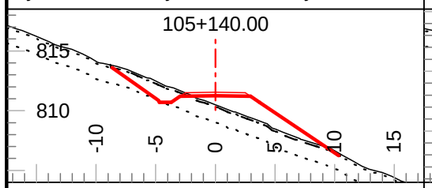

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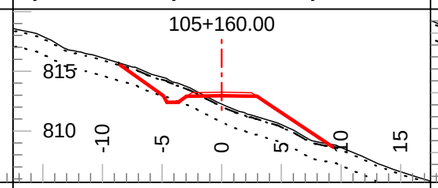

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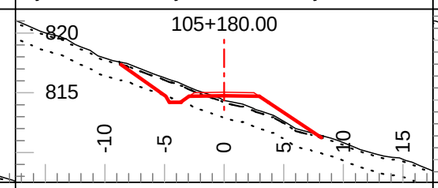

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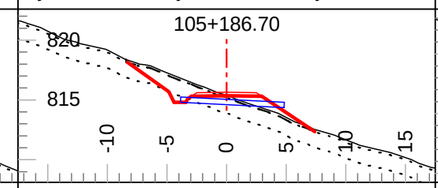
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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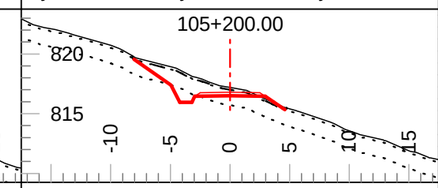

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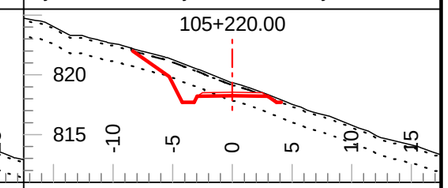

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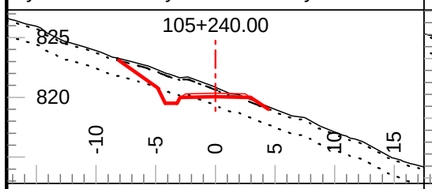

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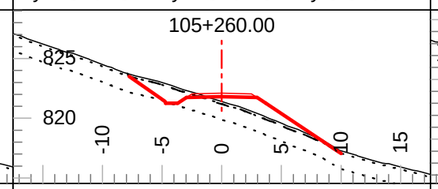

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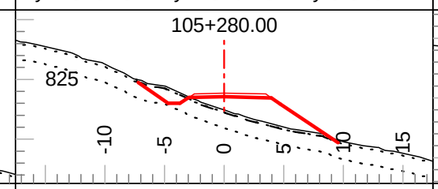

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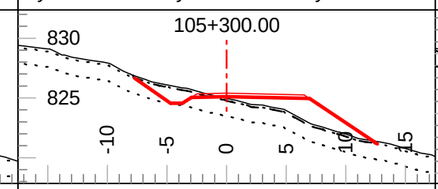

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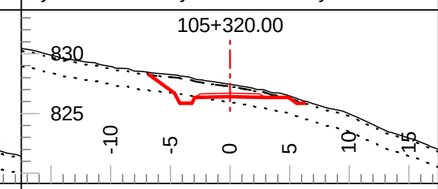

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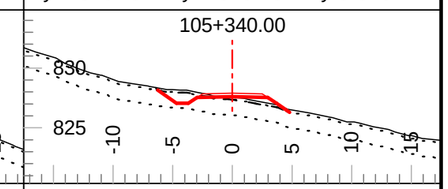

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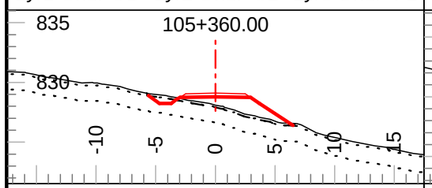

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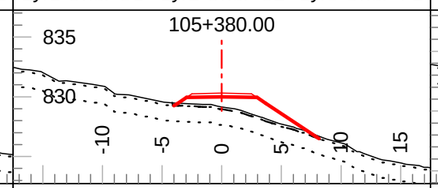

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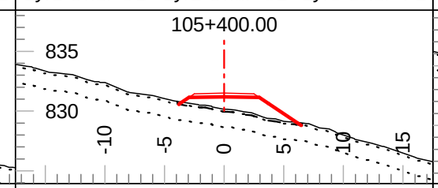

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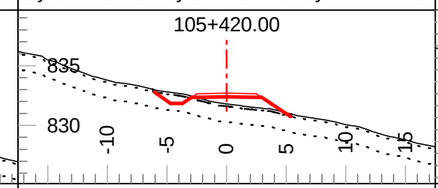

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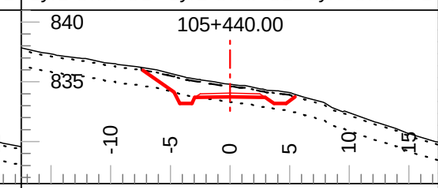

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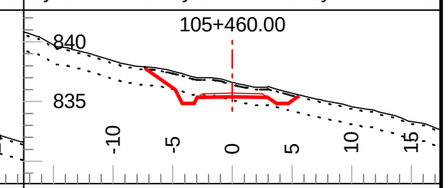

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Coffee Gold Mine

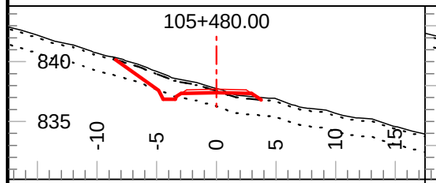
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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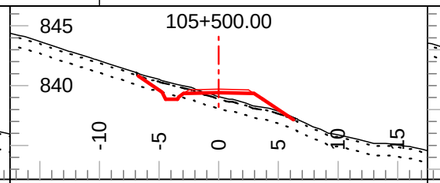

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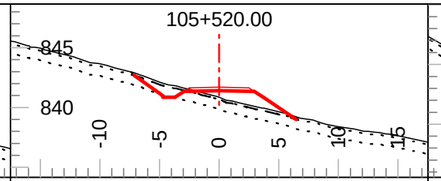

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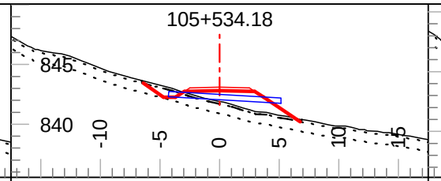

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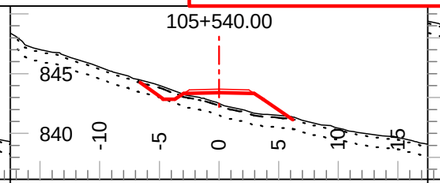

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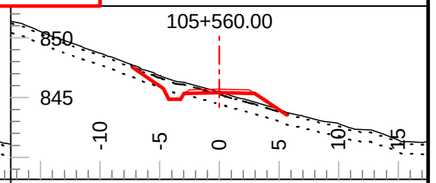

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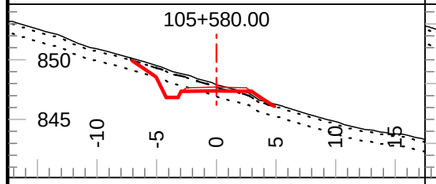

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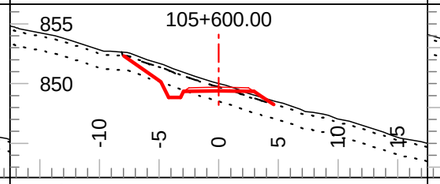

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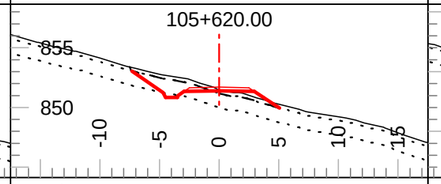

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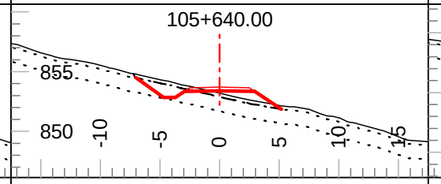

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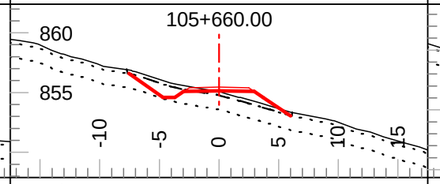

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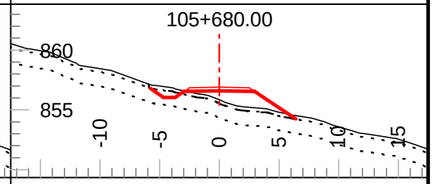

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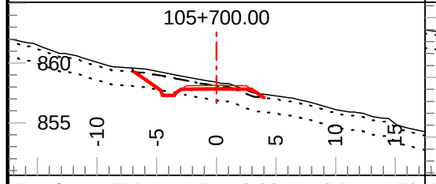

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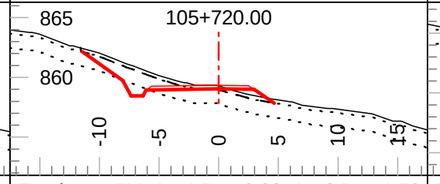

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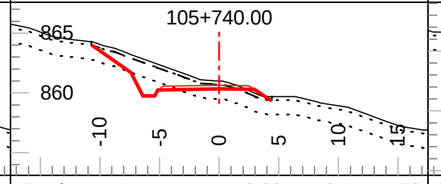

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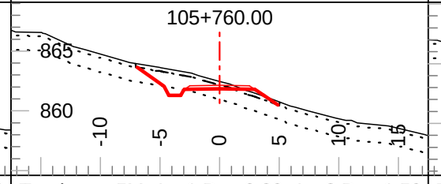

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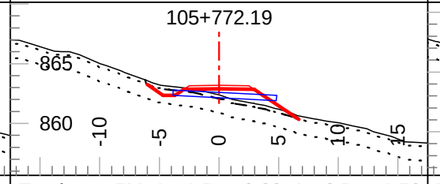

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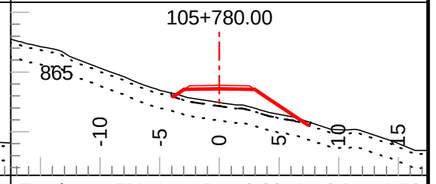

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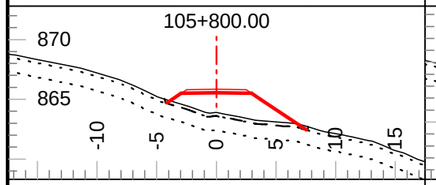

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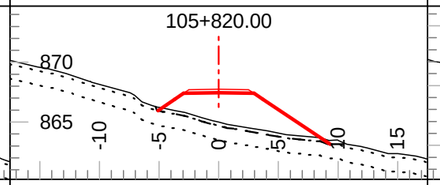

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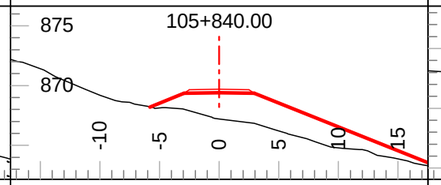

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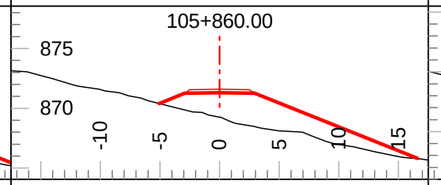

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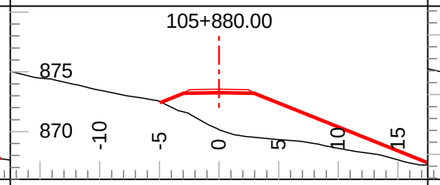

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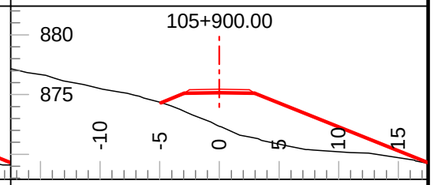

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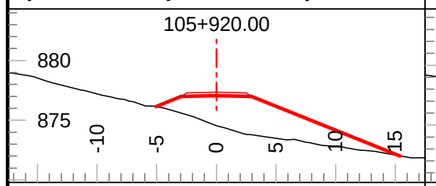

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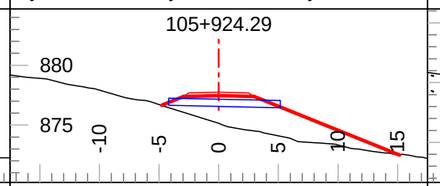

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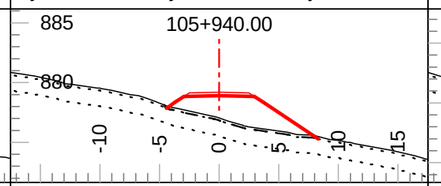

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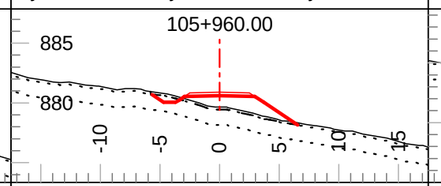
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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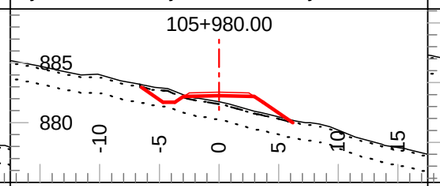

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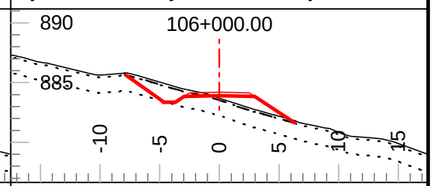

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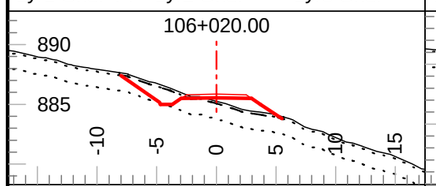

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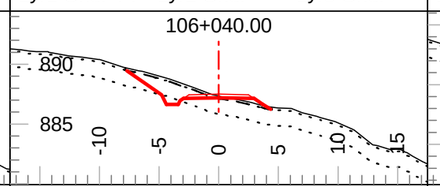

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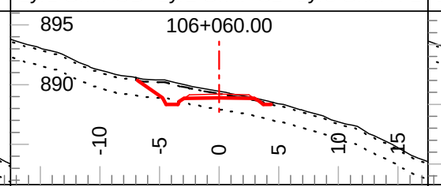

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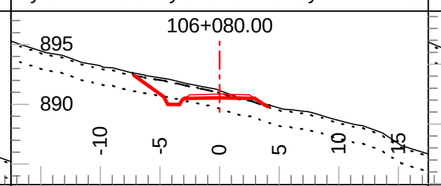

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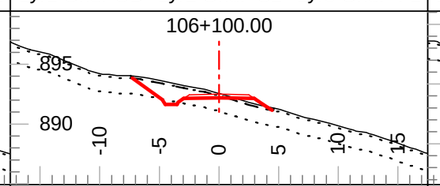

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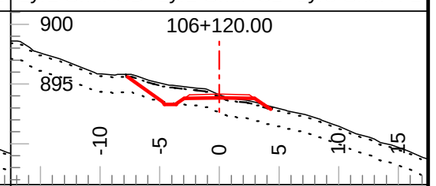

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Coffee Gold Mine

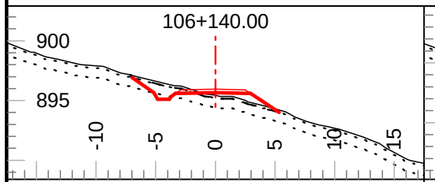
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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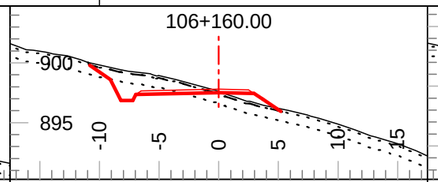

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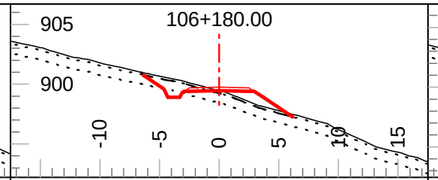

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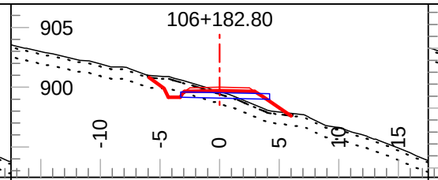

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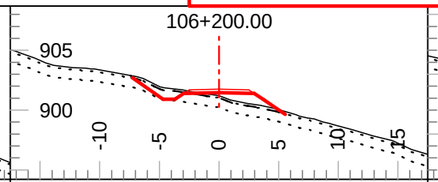

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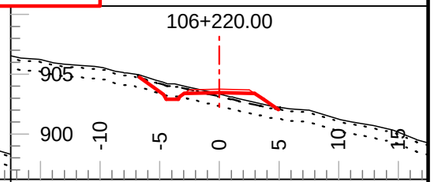

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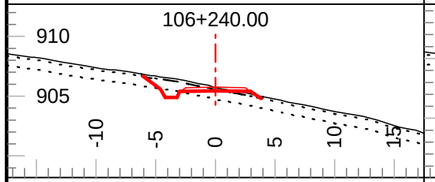

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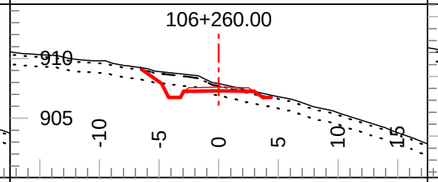

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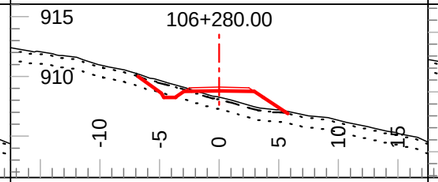

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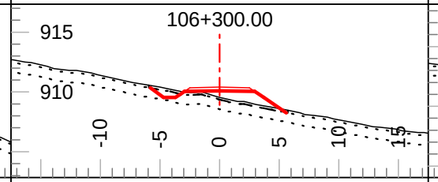

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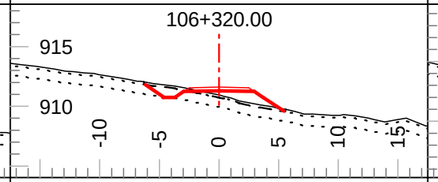

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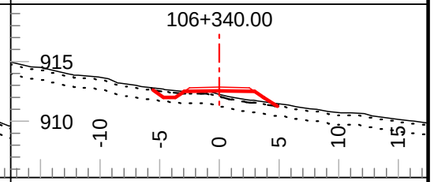

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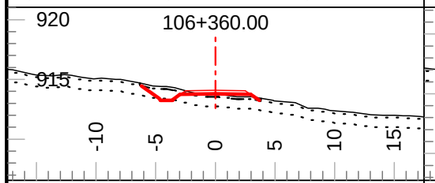

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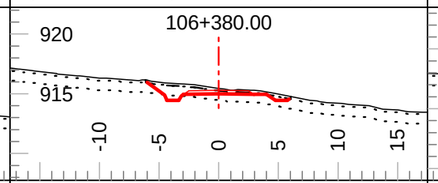

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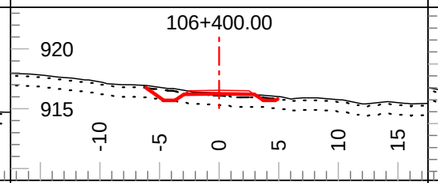

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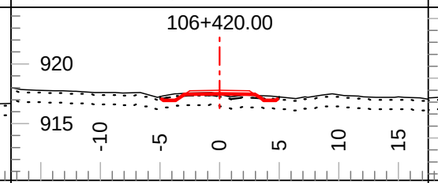

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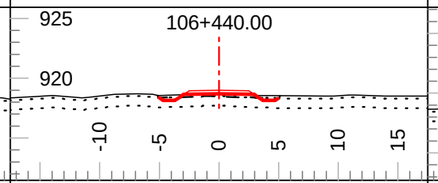

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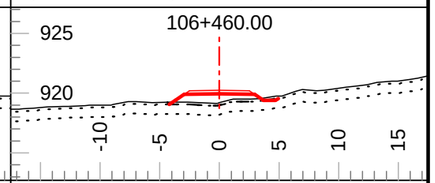

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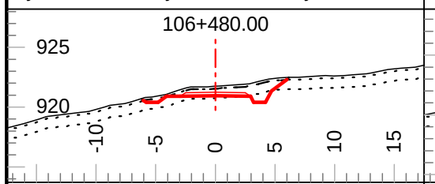

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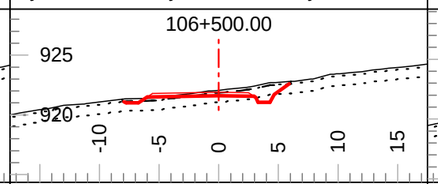

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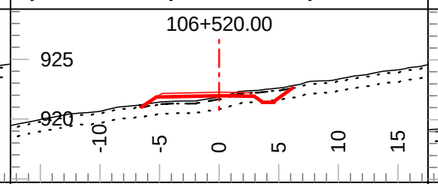

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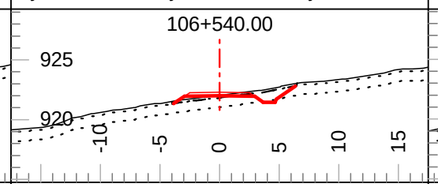

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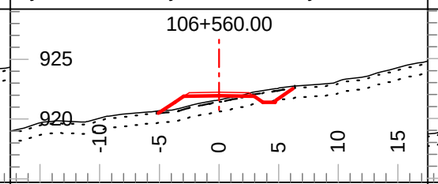

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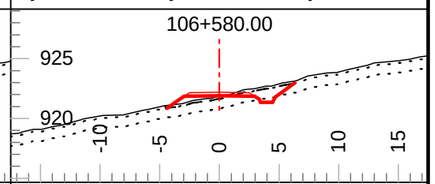

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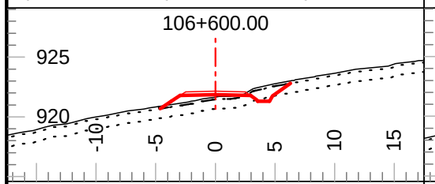

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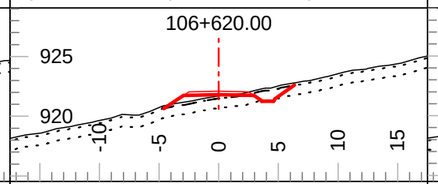

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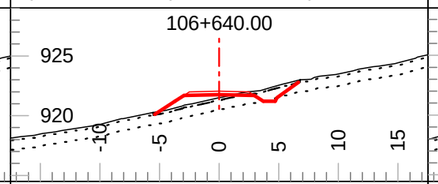

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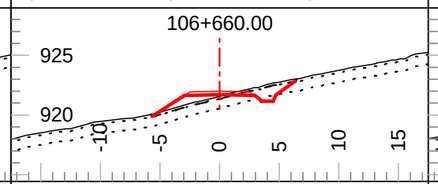

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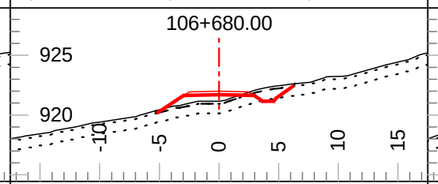

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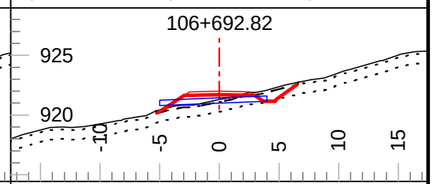

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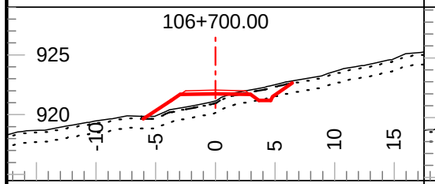

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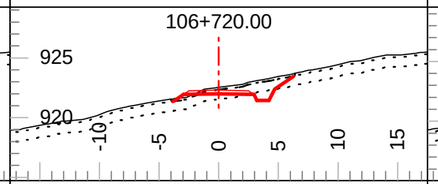

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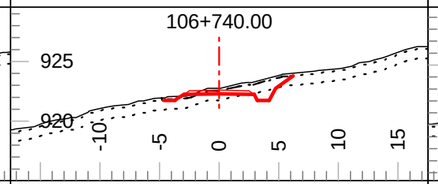

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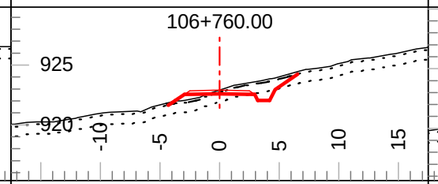

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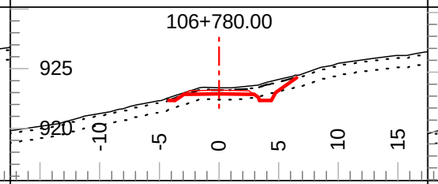

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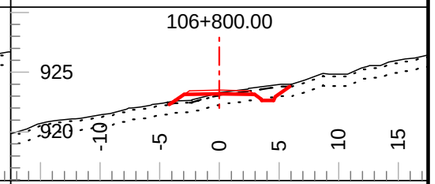

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Coffee Gold Mine

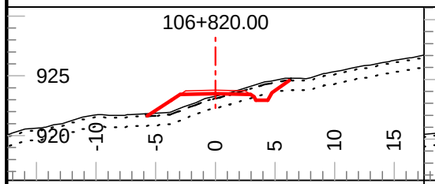
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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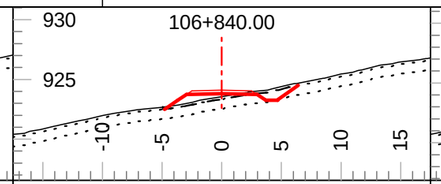

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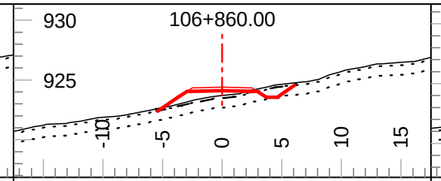

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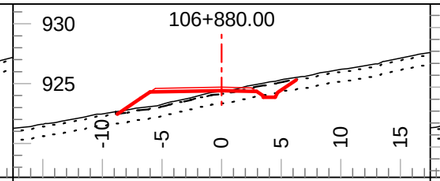

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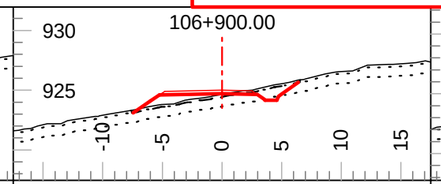

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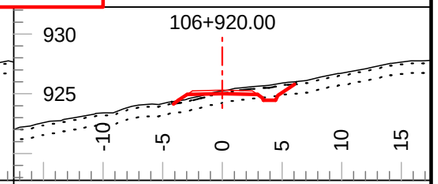

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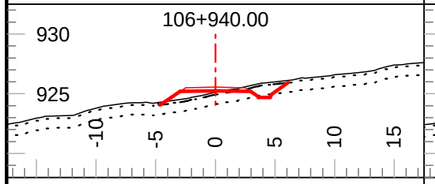

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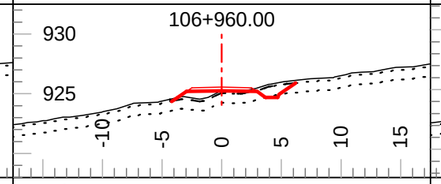

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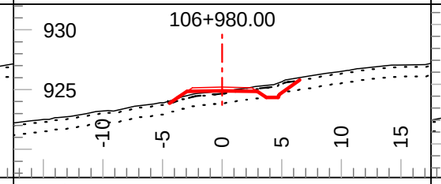

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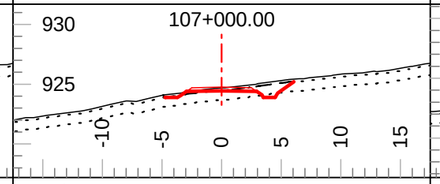

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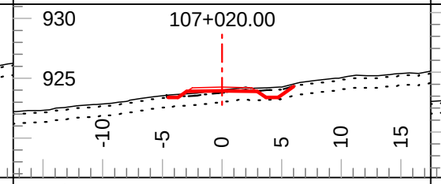

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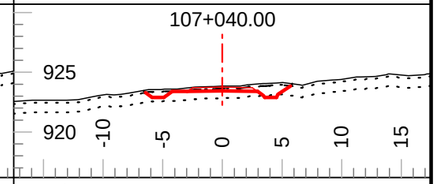

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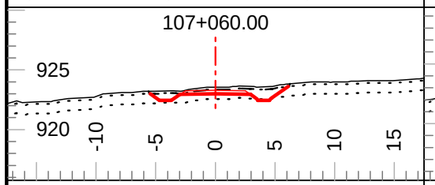

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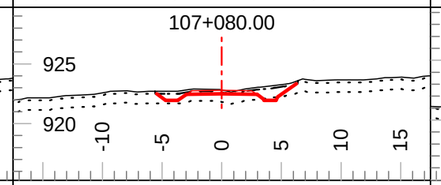

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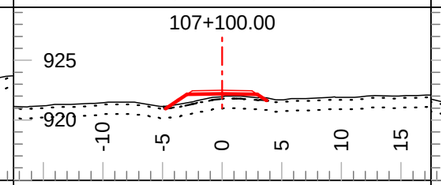

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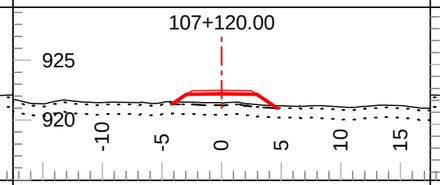

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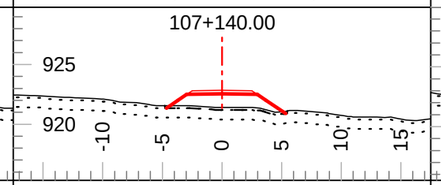

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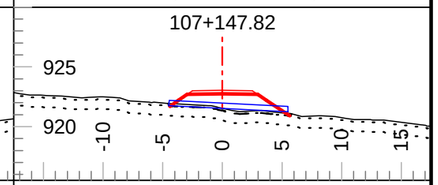

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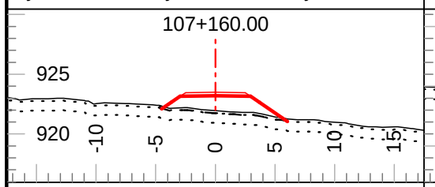

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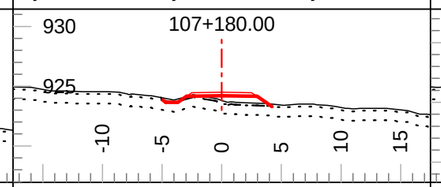

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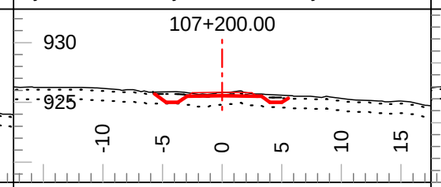

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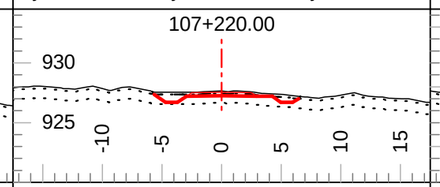

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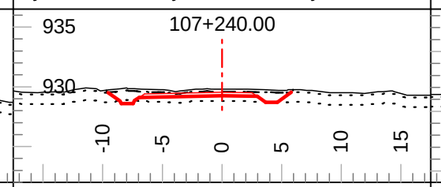

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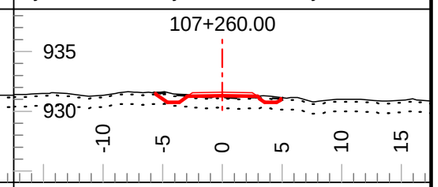

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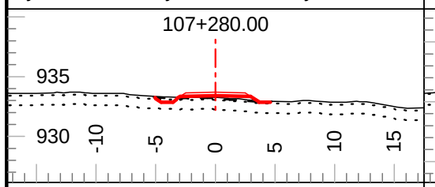

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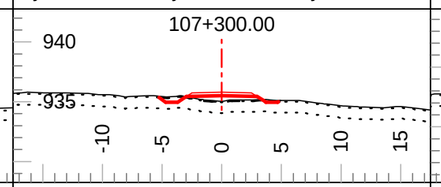

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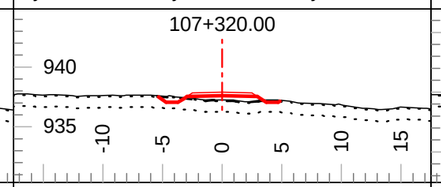

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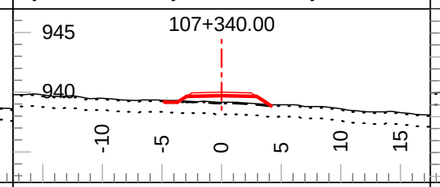

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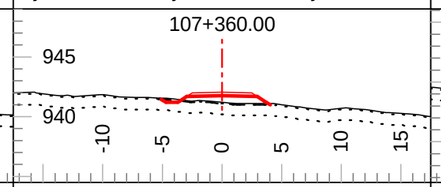

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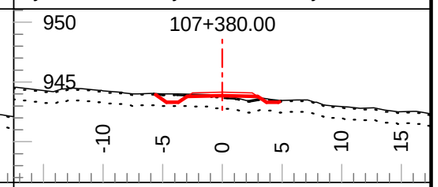

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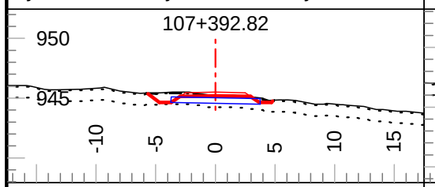

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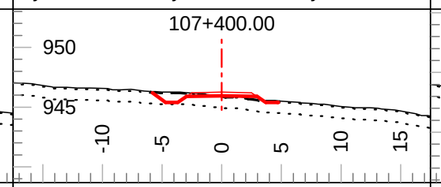

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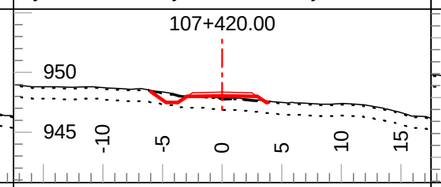

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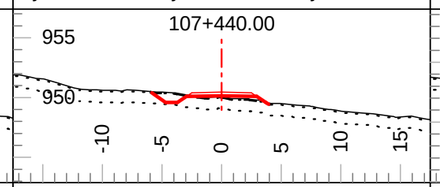

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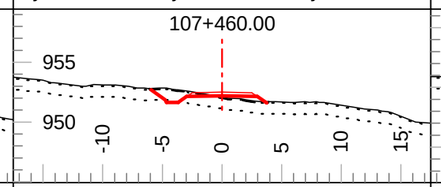

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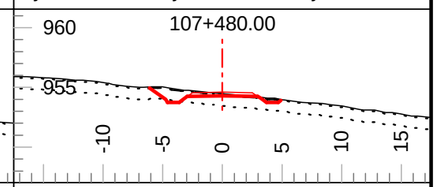

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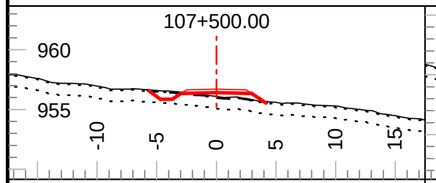

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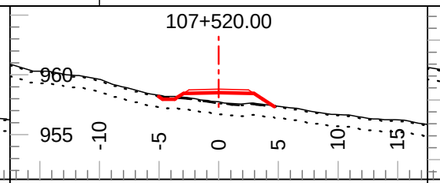

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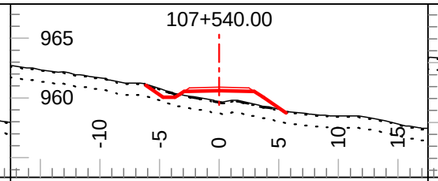

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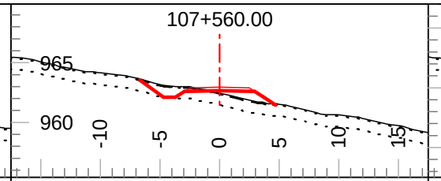

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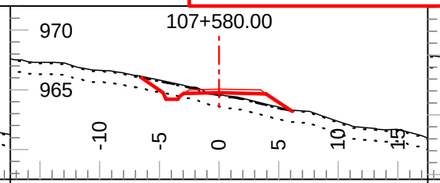

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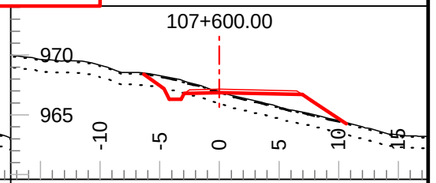

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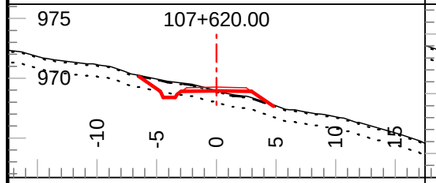

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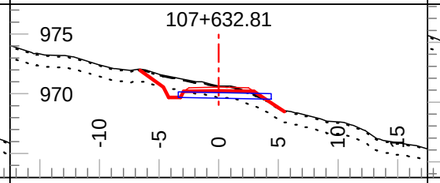

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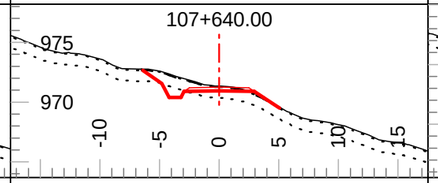

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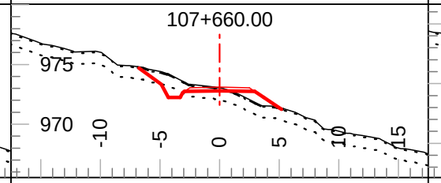

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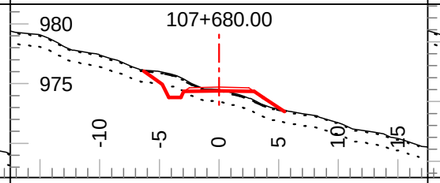

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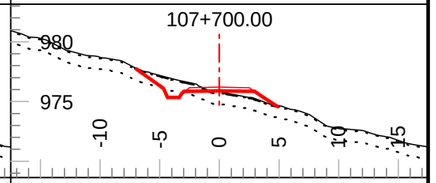

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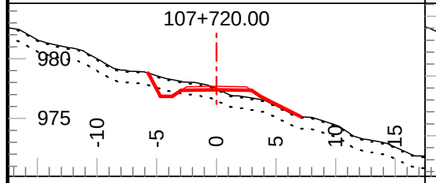

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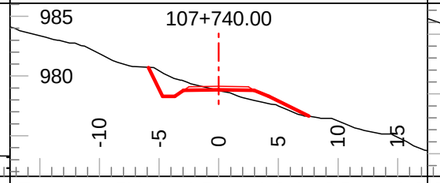

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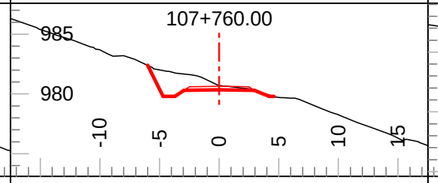

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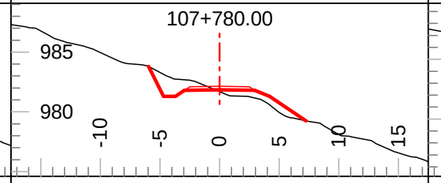

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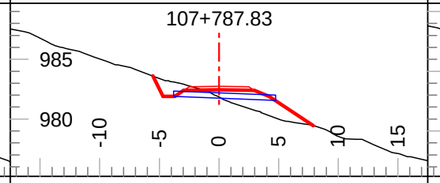

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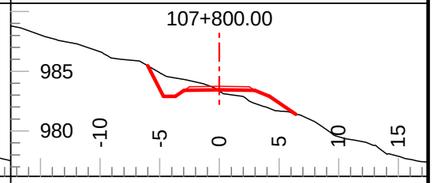

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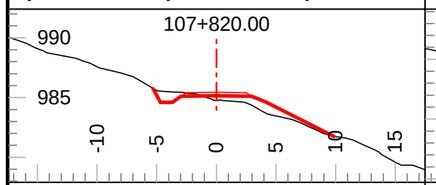

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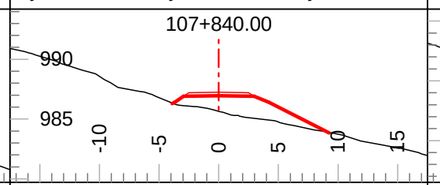

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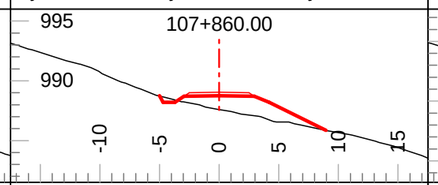

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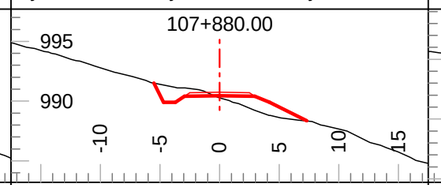

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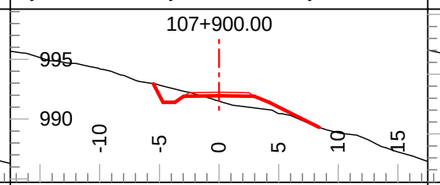

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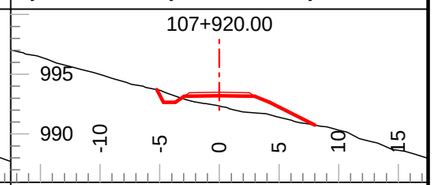

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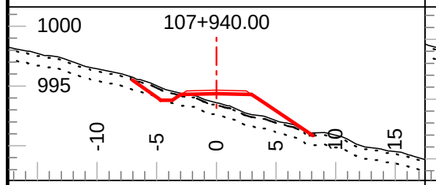

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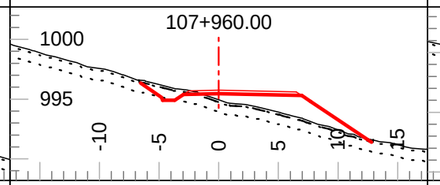

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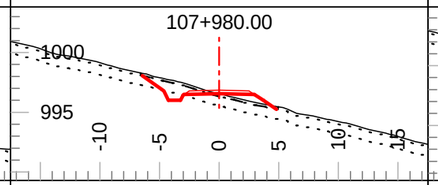

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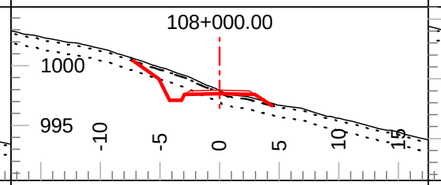

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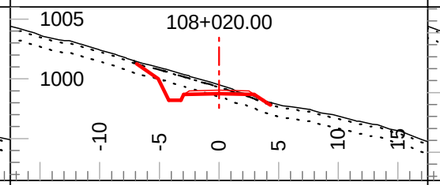

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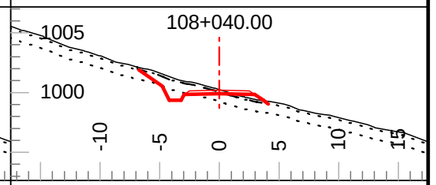

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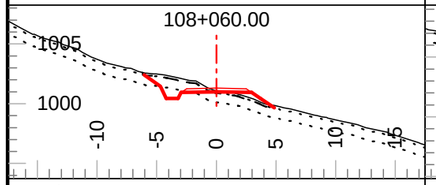

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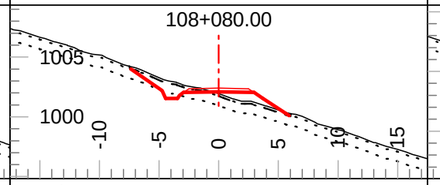

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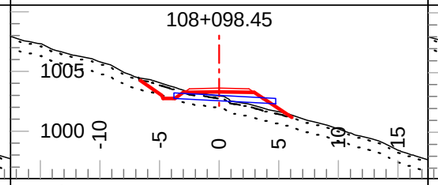

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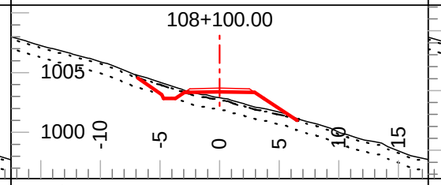

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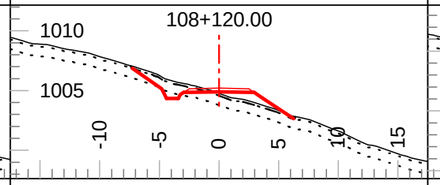

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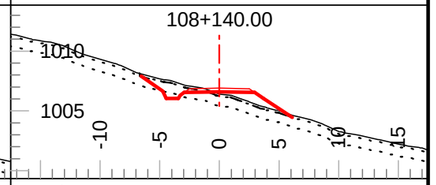

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

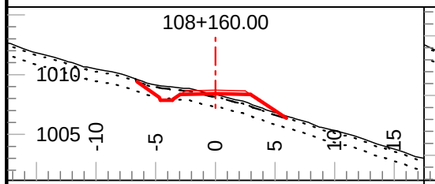
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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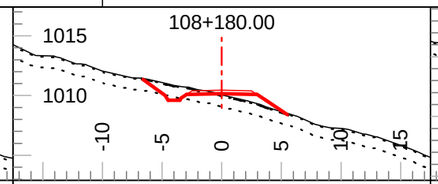

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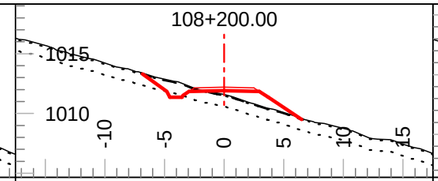

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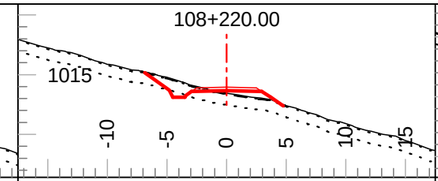

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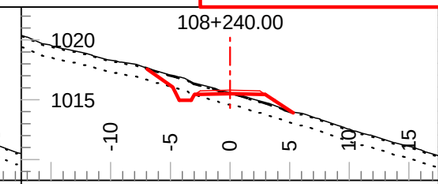

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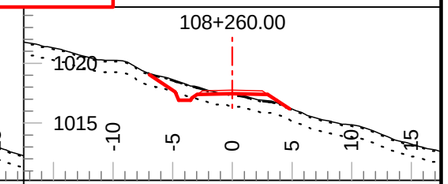

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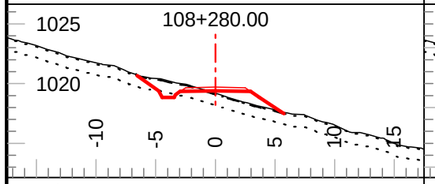

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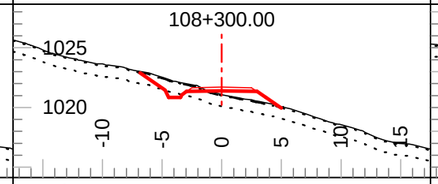

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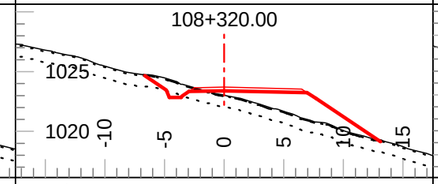

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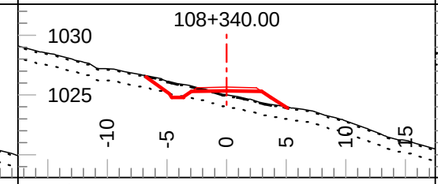

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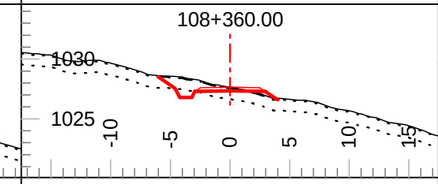

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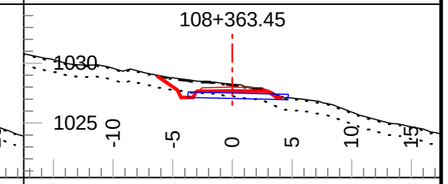

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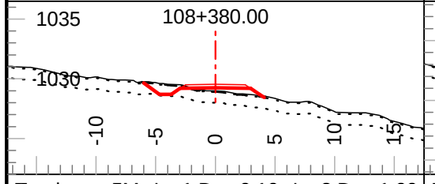
Lyr1 Gnd: OB Lyr2 Gnd: TA Lyr3 Gnd: F2



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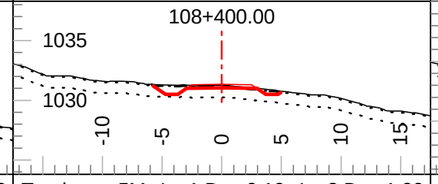

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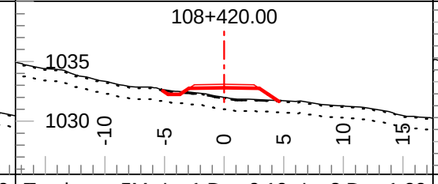

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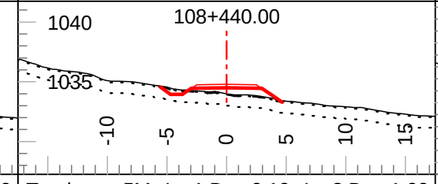

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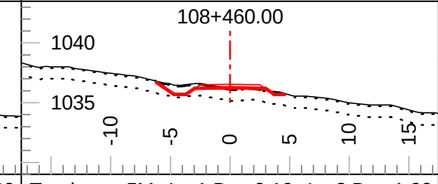

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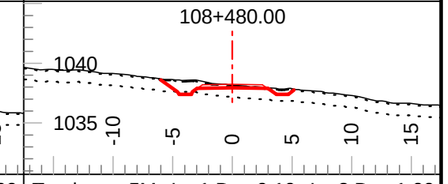

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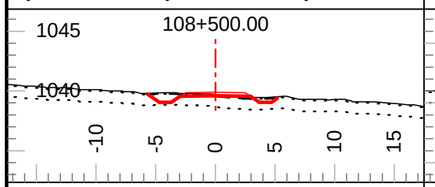

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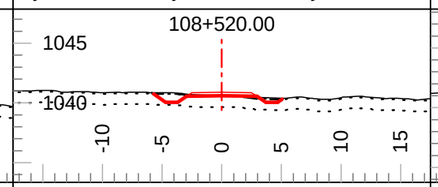

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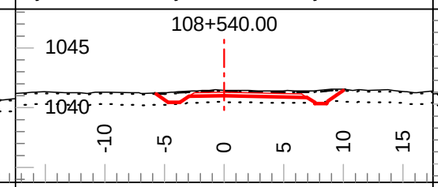

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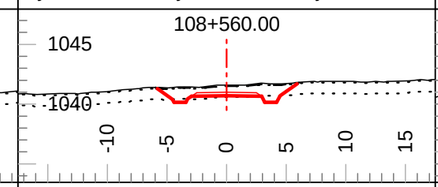

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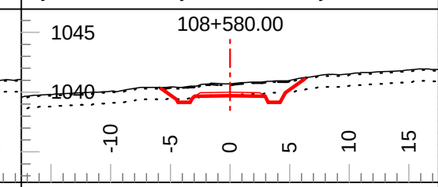

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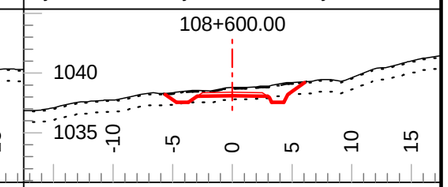

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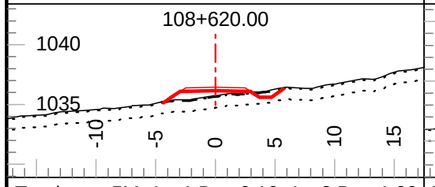

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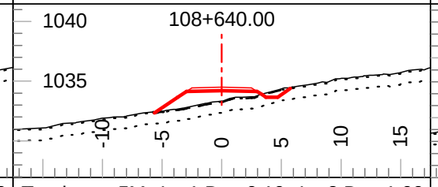

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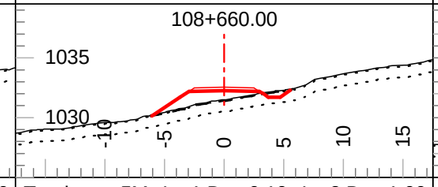

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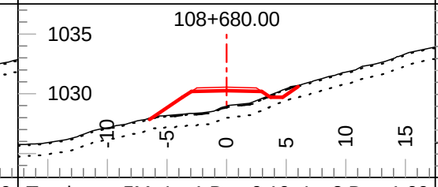

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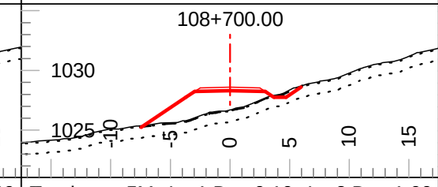

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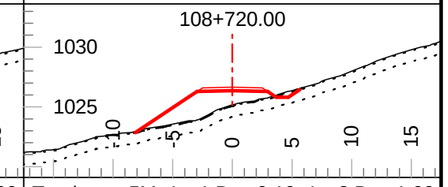

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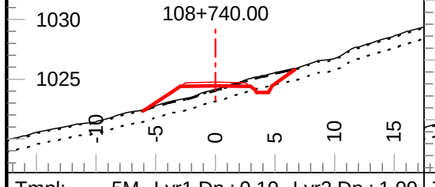

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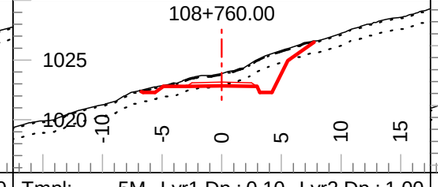

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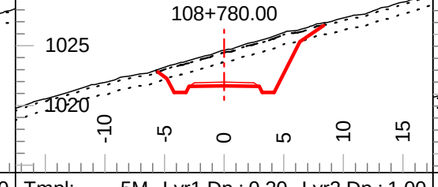

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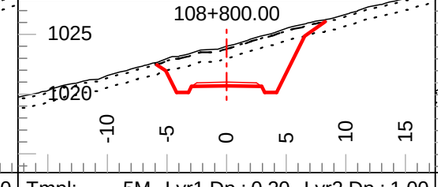

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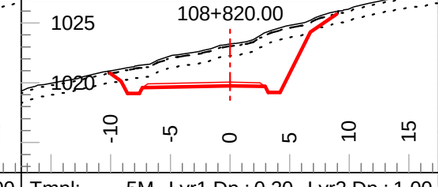

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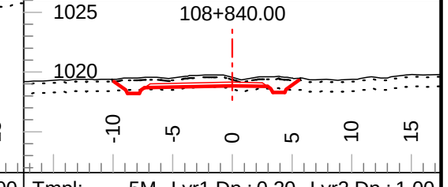

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Coffee Gold Mine

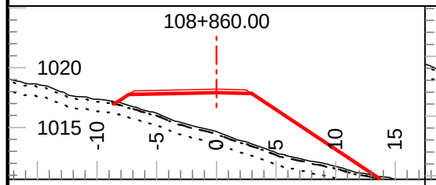
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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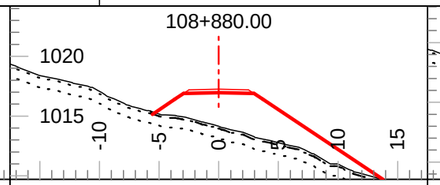

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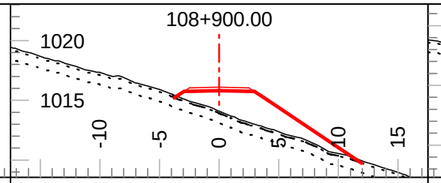

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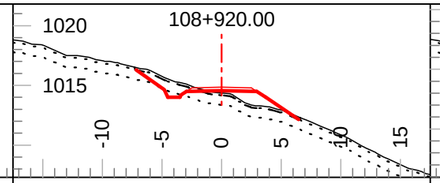

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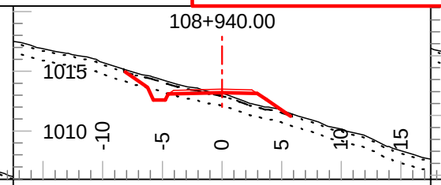

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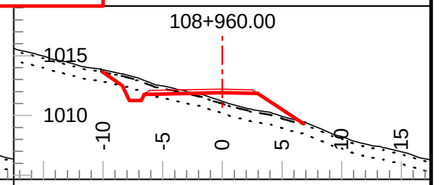

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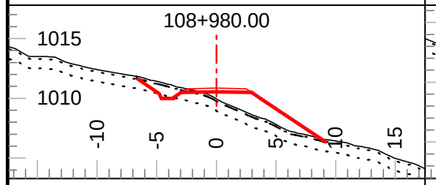

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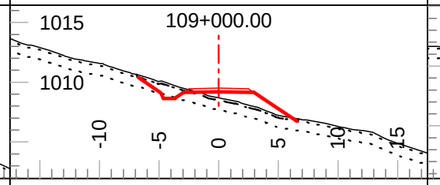

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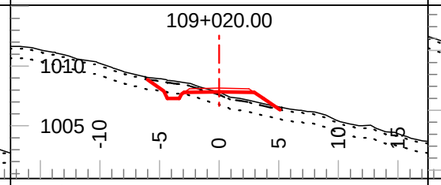

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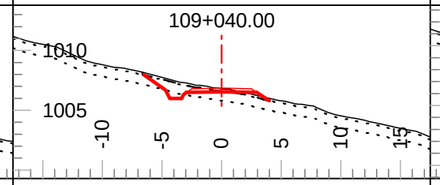

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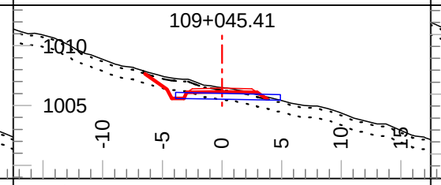

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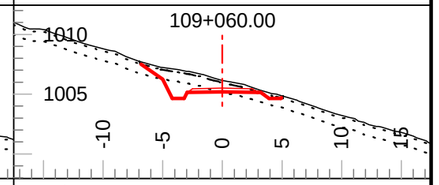

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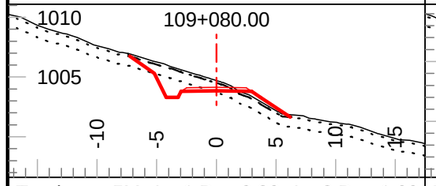

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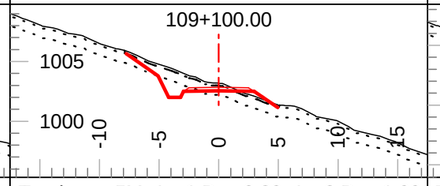

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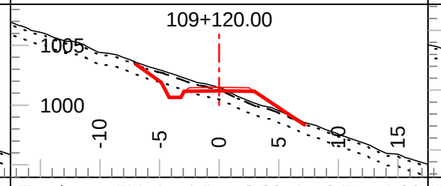

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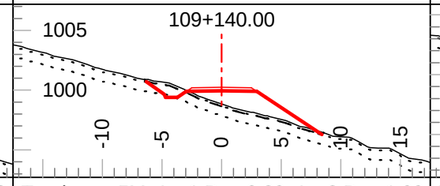

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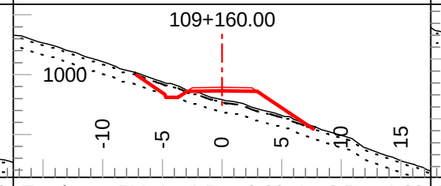

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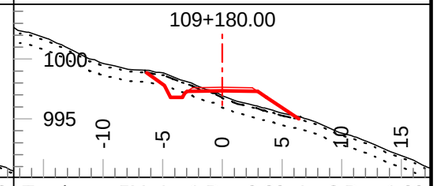

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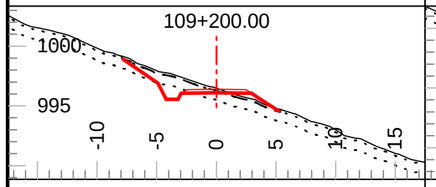

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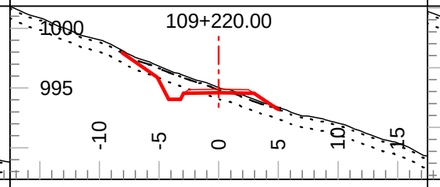

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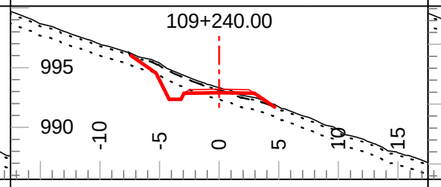

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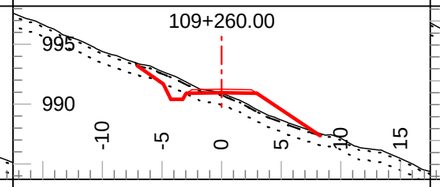

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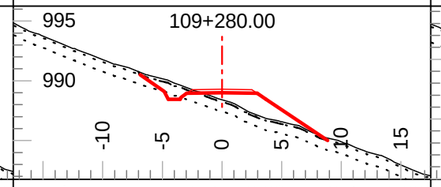

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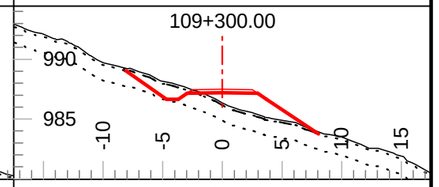

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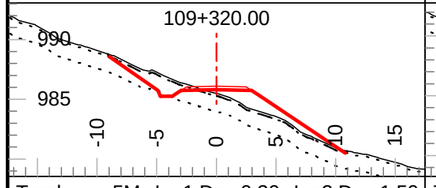

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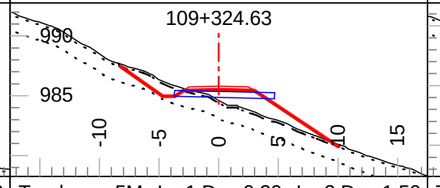

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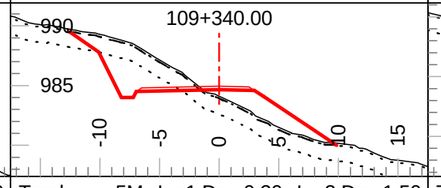

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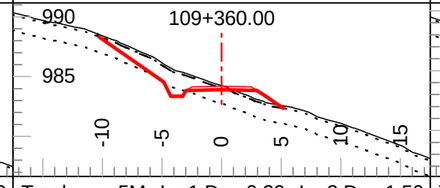

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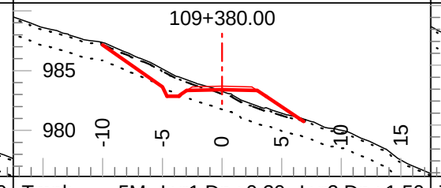

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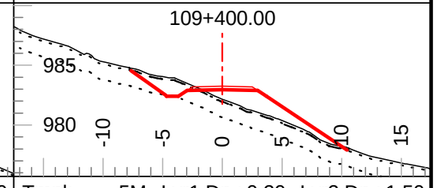

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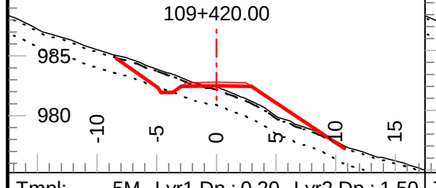

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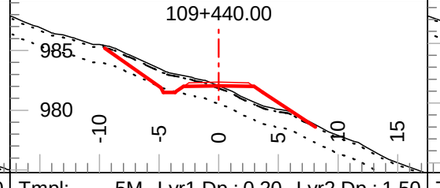

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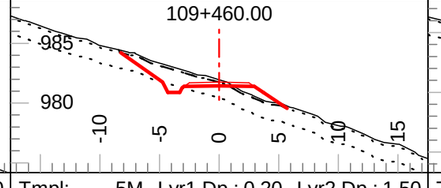

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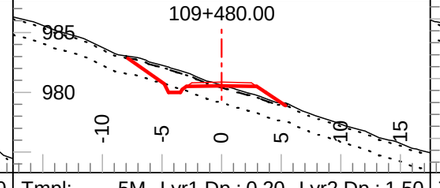

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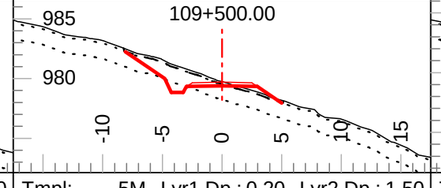

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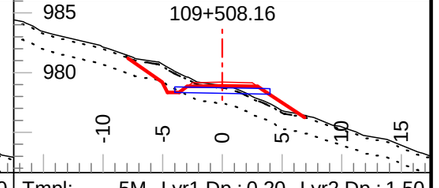

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Coffee Gold Mine

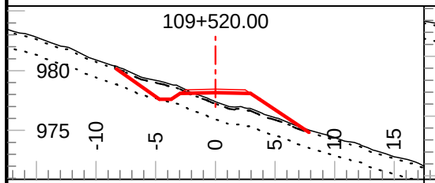
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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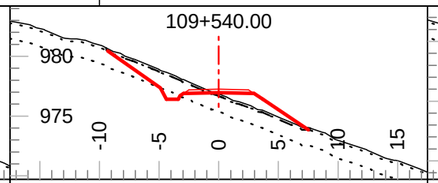

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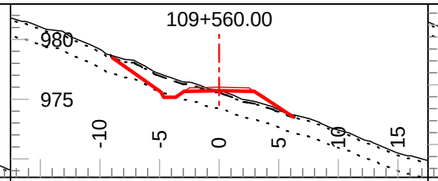

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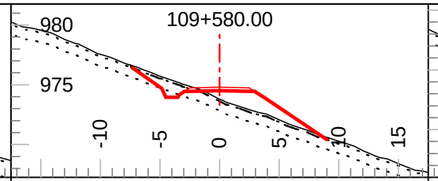

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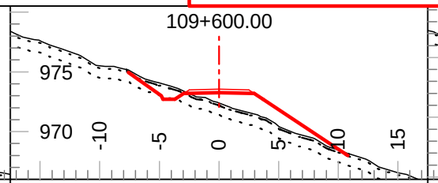

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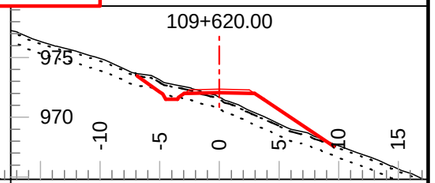

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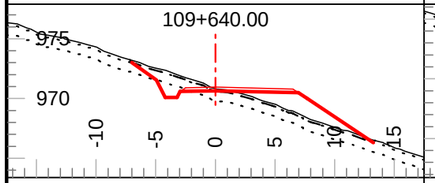

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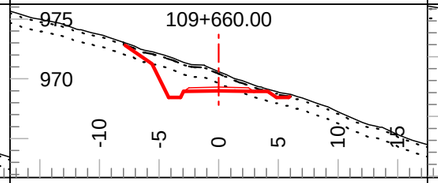

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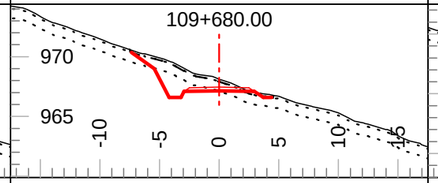

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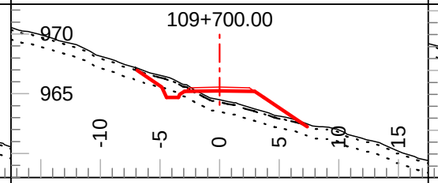

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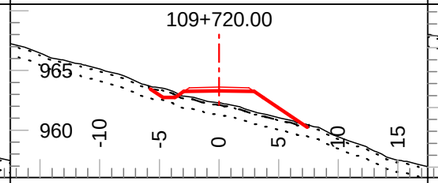

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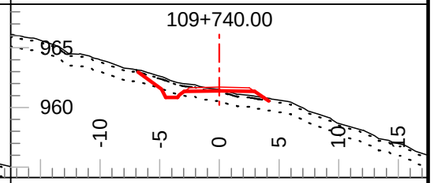

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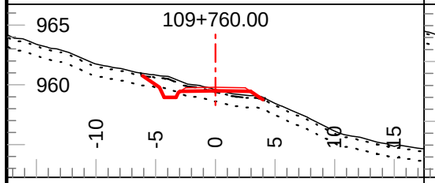

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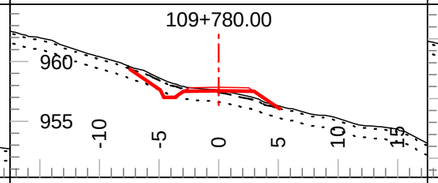

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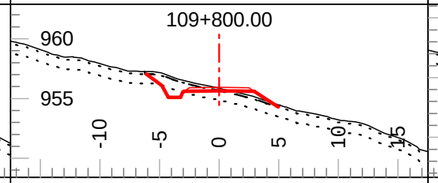

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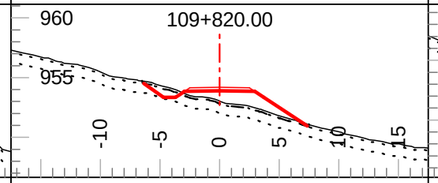

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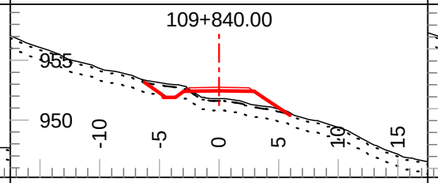

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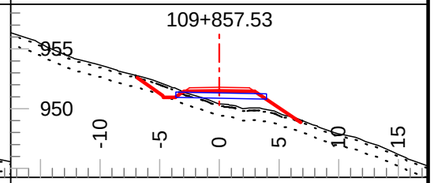

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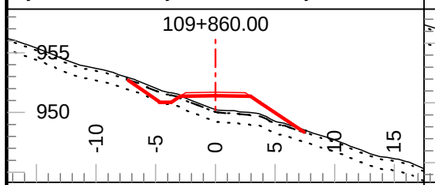

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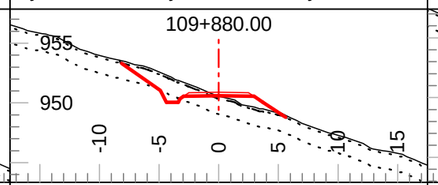

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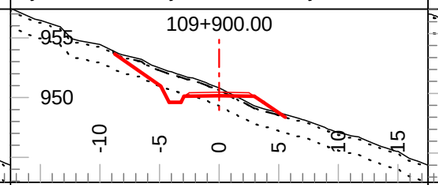

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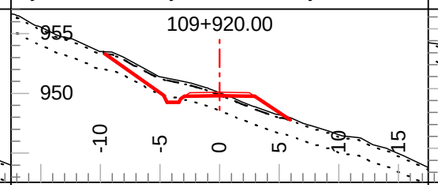

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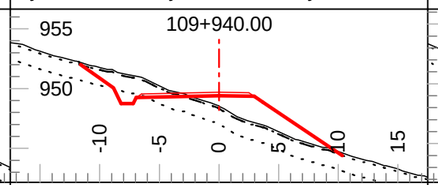

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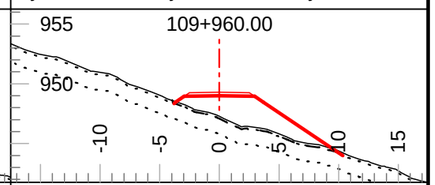

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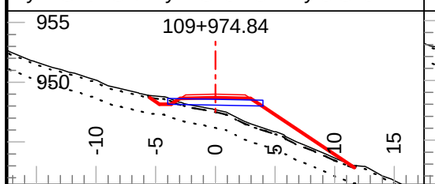

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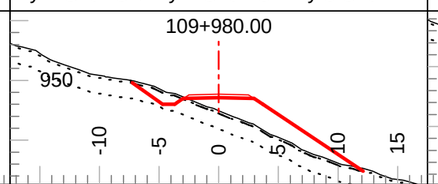

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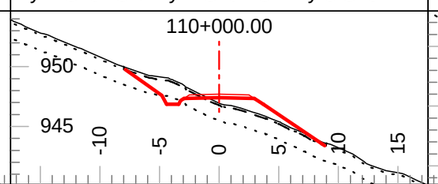

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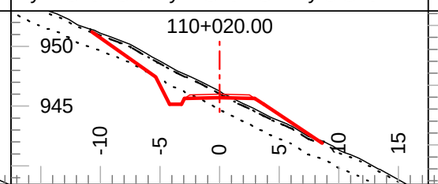

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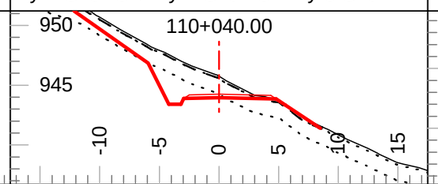

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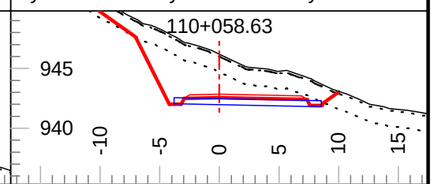

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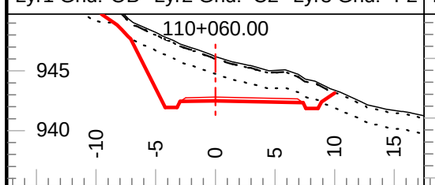

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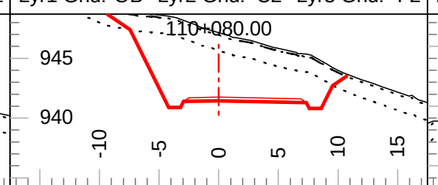

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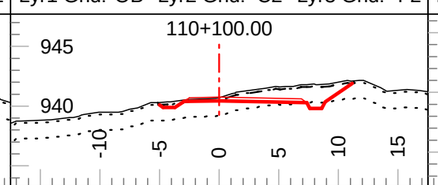

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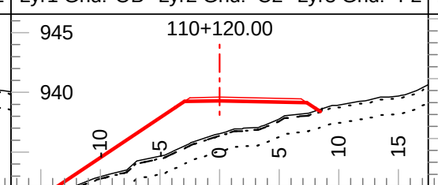

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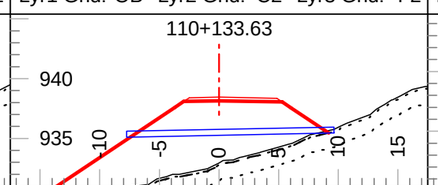

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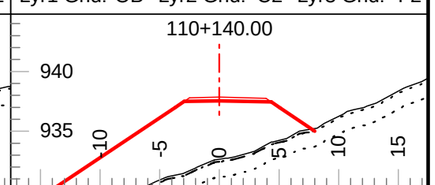

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Coffee Gold Mine

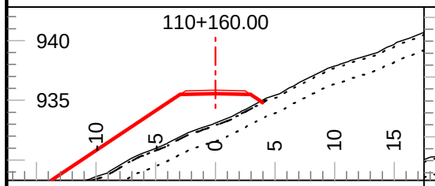
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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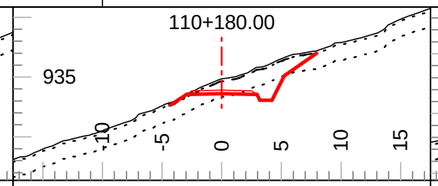

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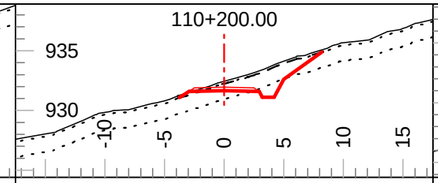

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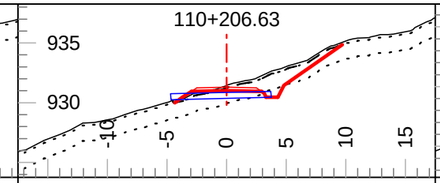

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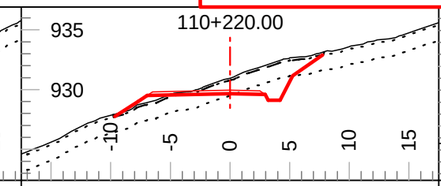

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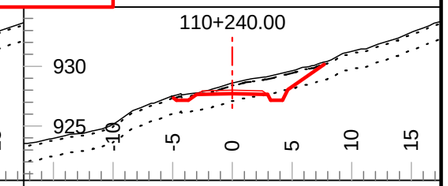

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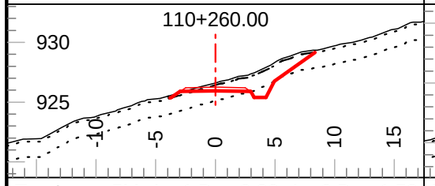

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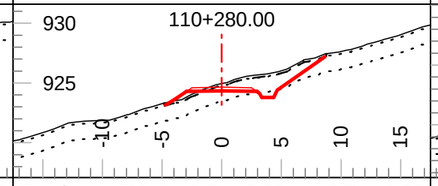

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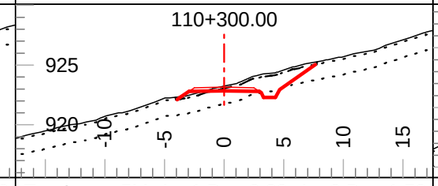

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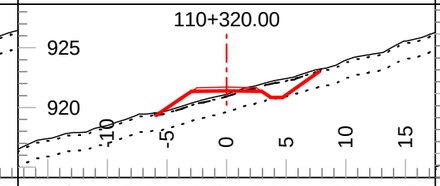

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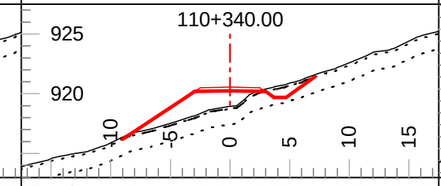

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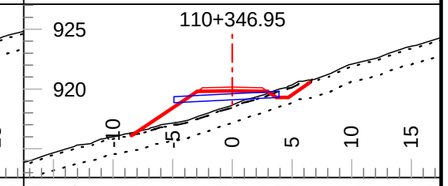

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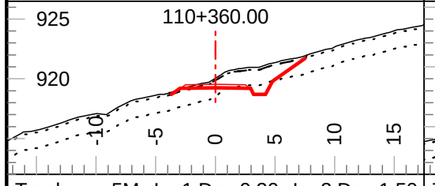

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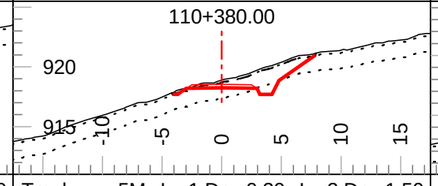

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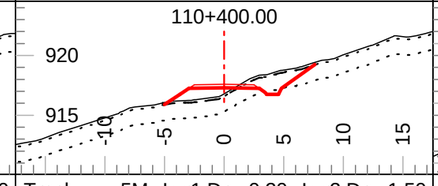

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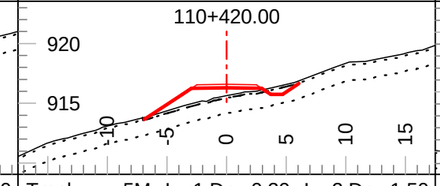

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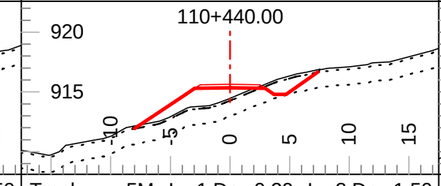

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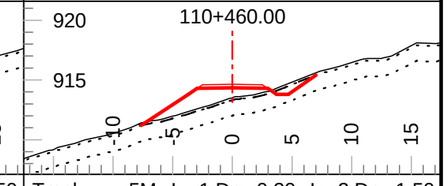

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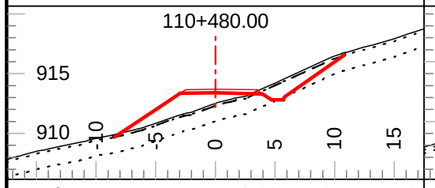

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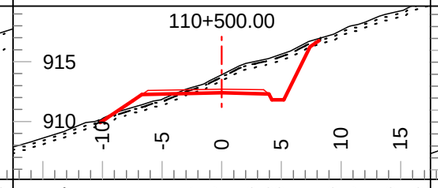

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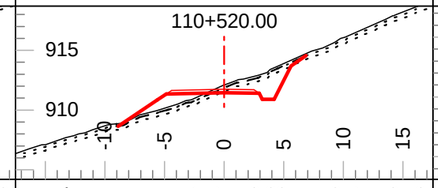

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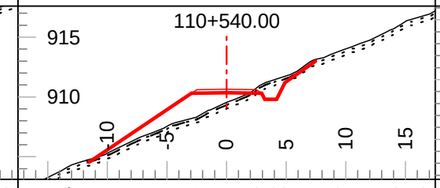

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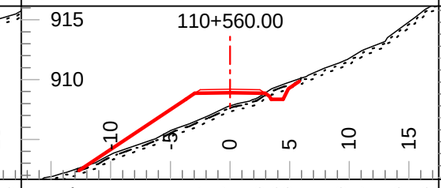

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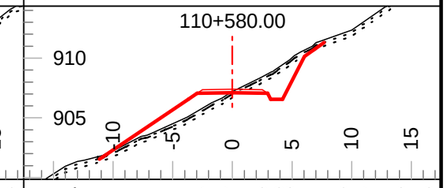

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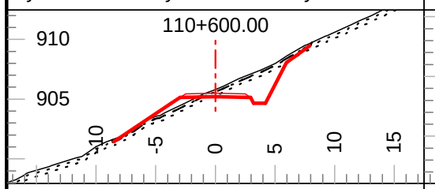

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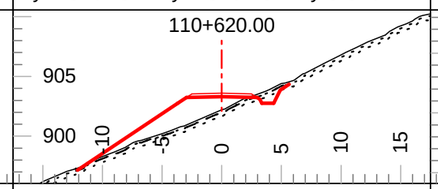

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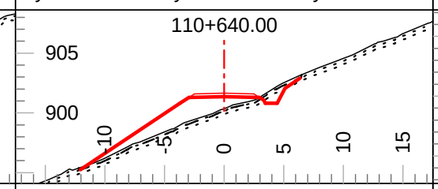

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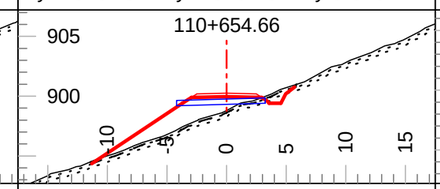

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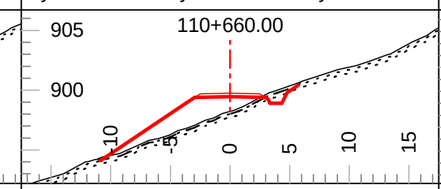

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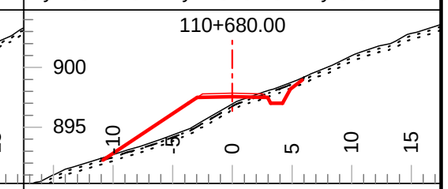

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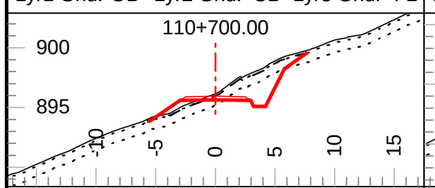

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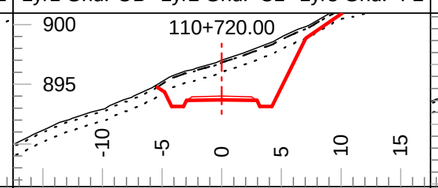

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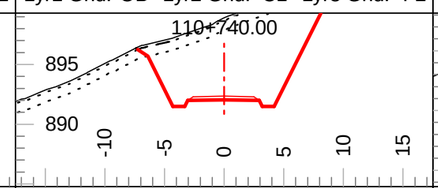
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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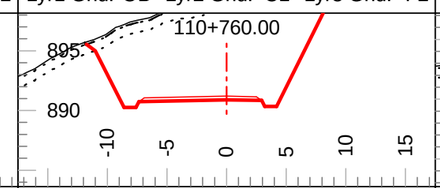

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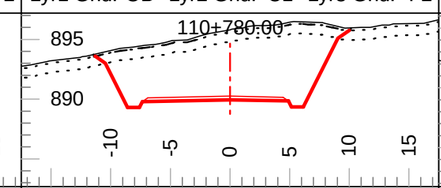

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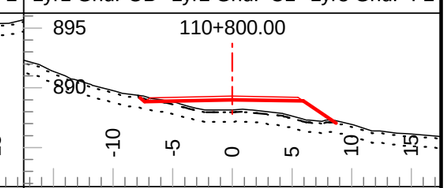


Tmpl: 5MND Lyr1 Dp.: 0.20 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

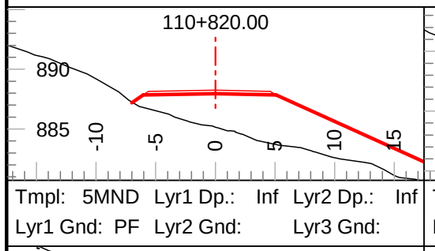
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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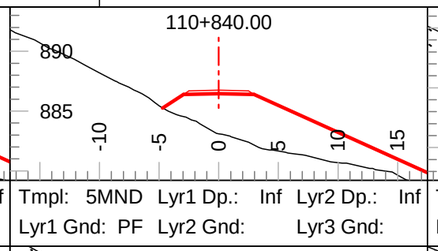

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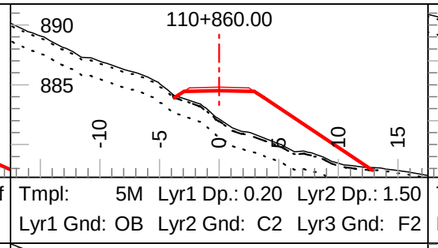

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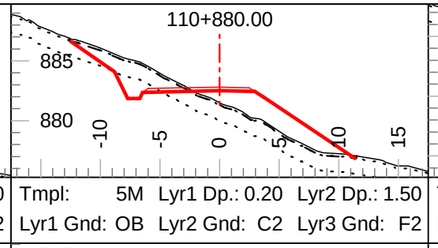

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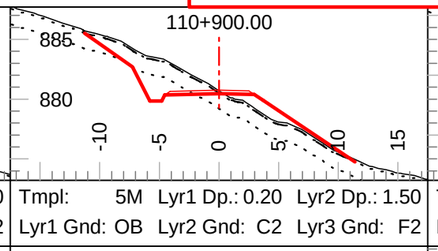

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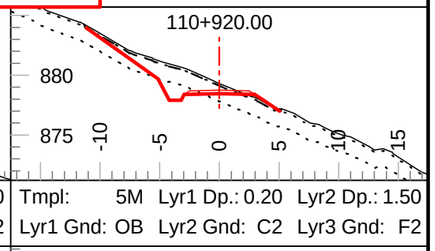

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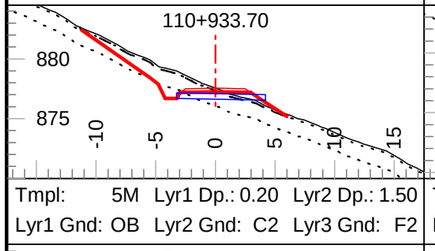

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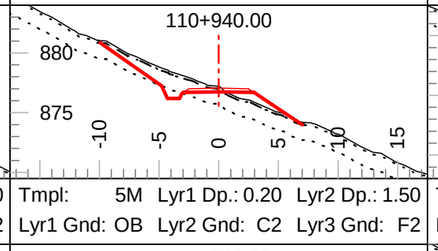

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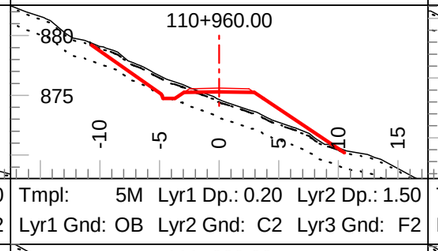

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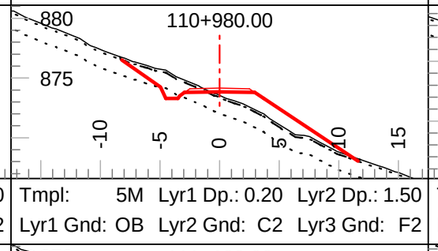

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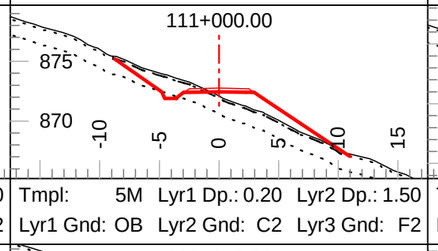

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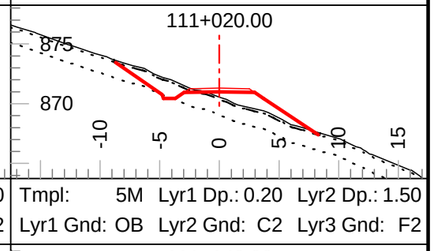

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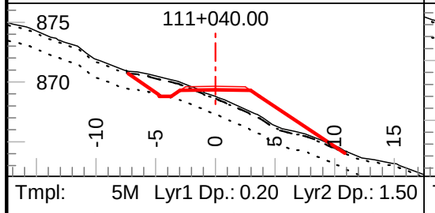

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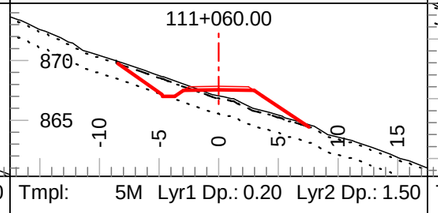

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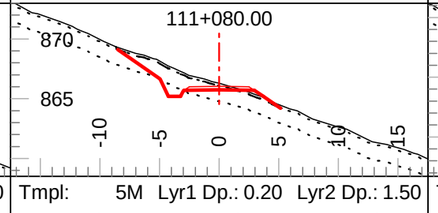

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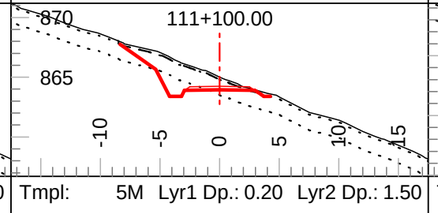

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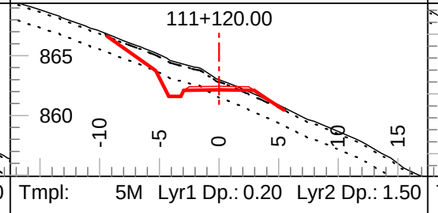

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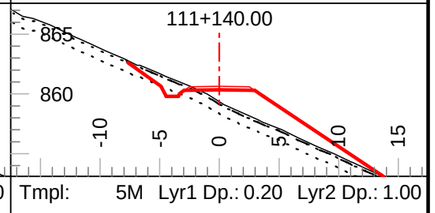

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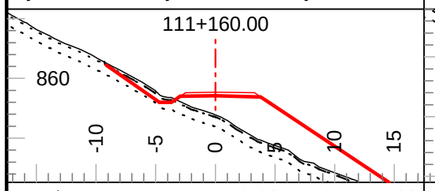

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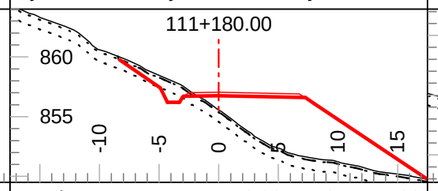

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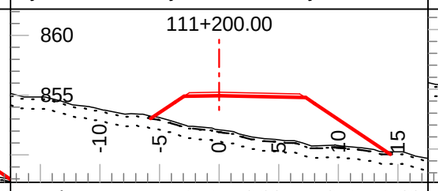

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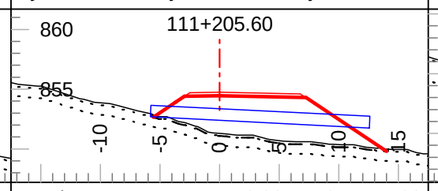

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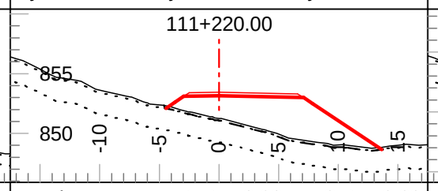

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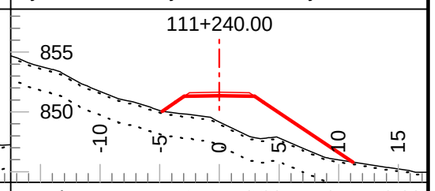

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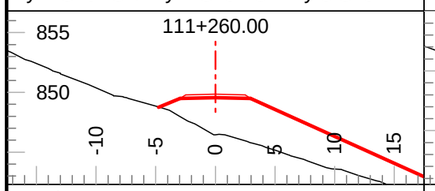

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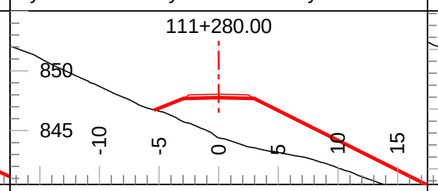

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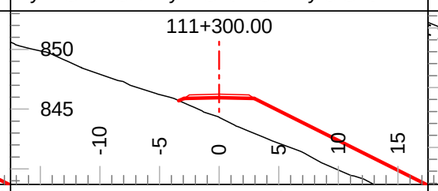

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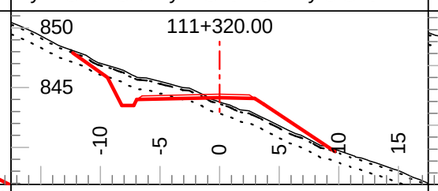

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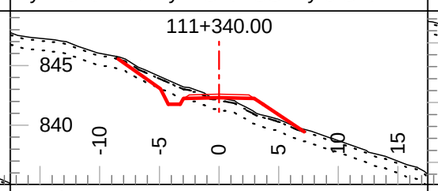

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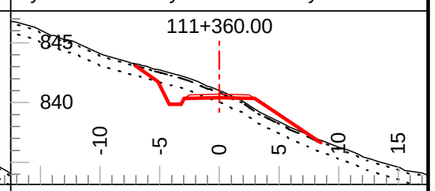

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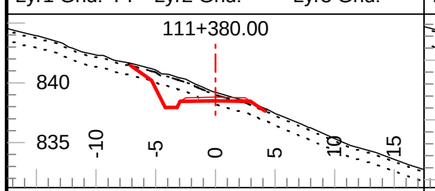

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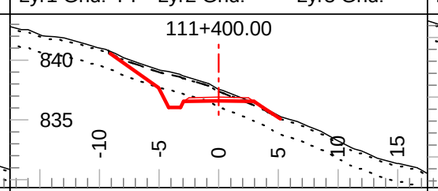

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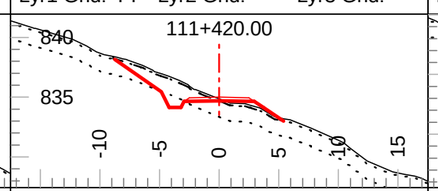

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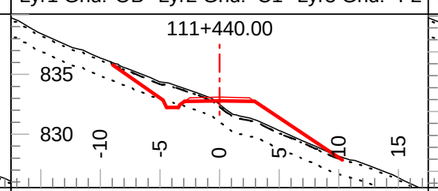

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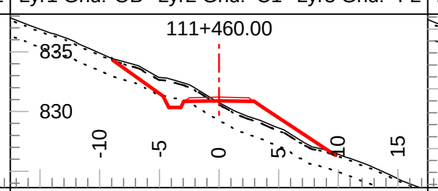

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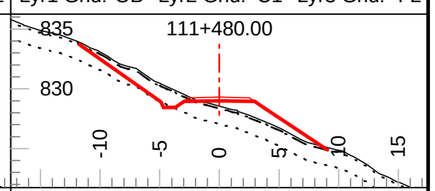


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 1.50
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

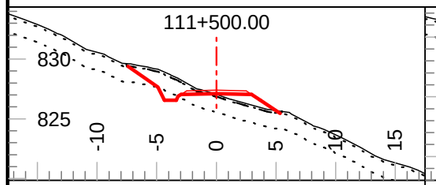
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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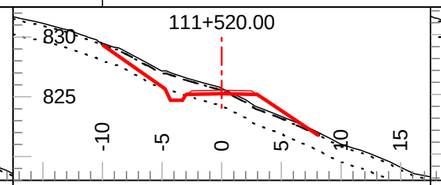
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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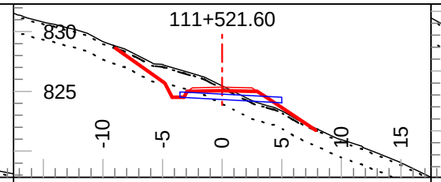
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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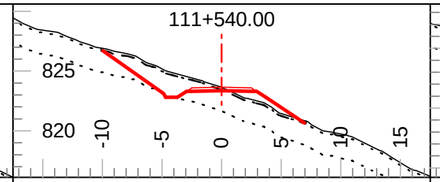

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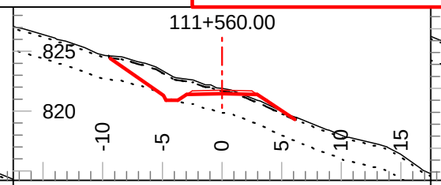

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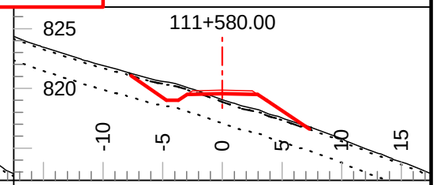

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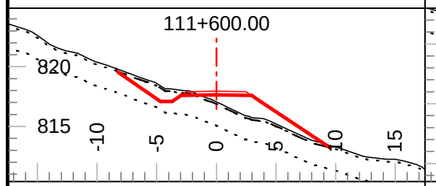

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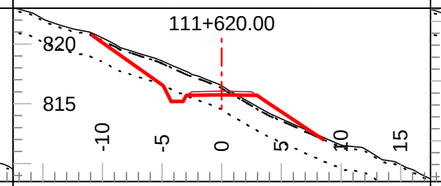

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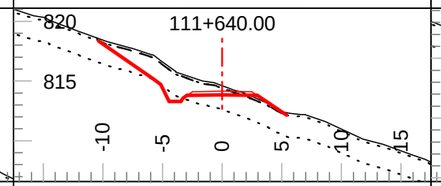

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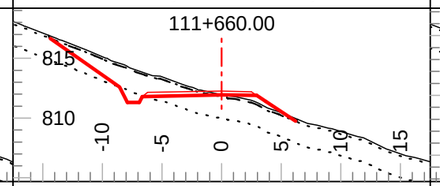

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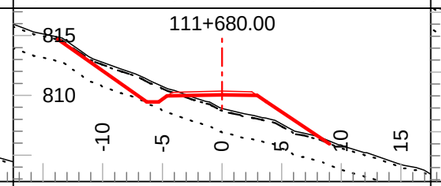

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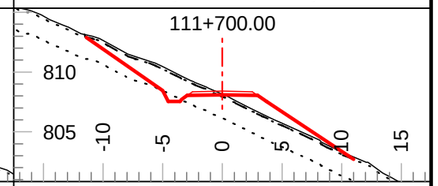

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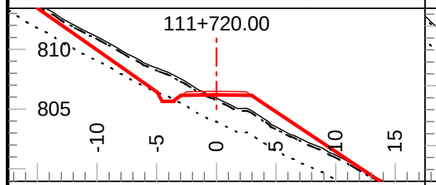

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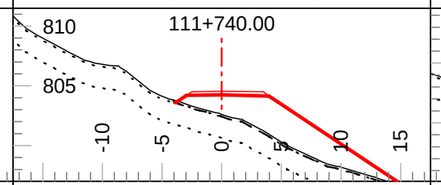

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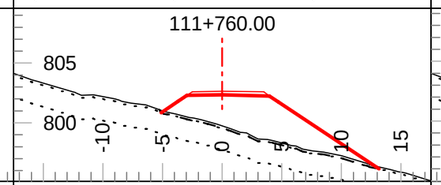

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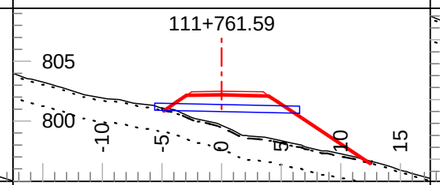

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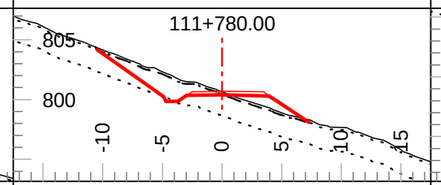

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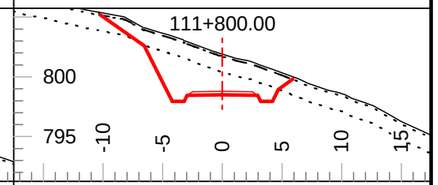

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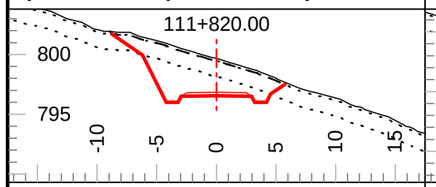

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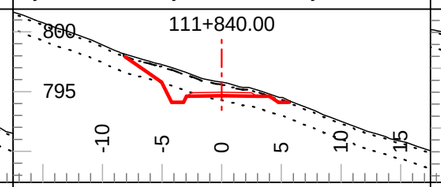

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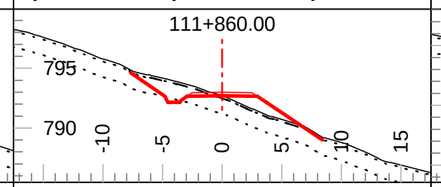

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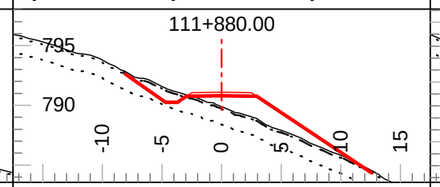

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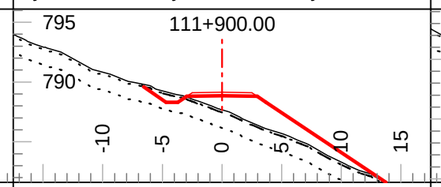

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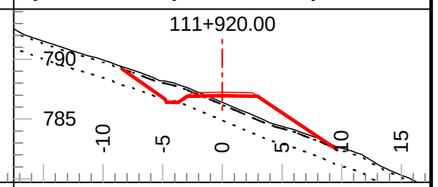

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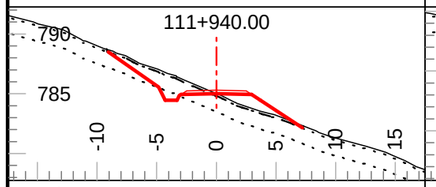

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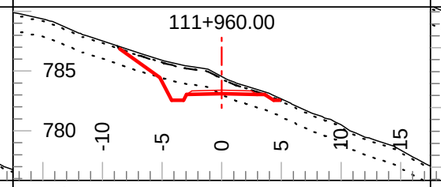

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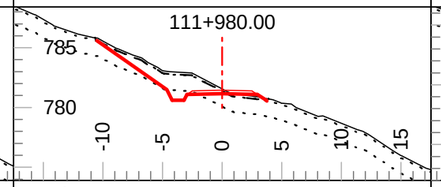

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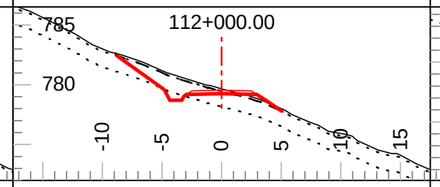

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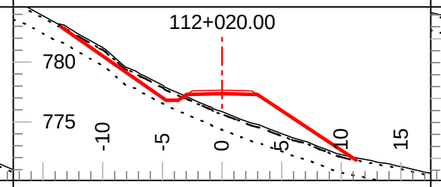

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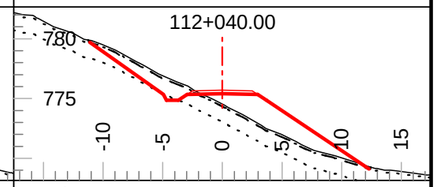

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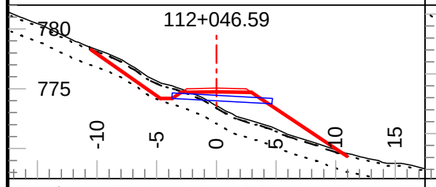

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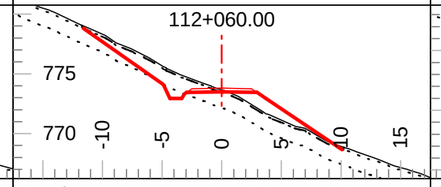

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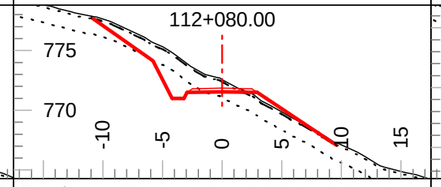

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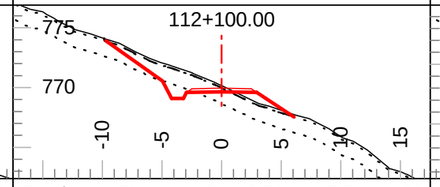

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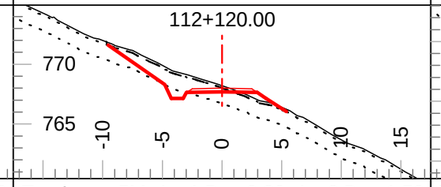

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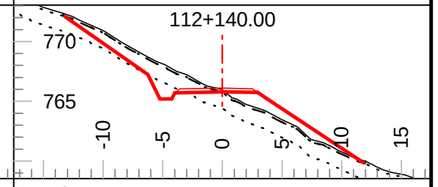

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Coffee Gold Mine

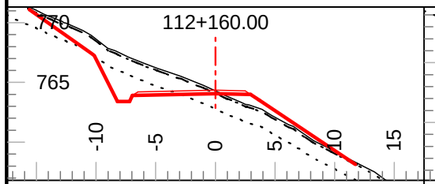
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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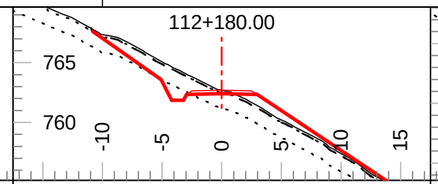

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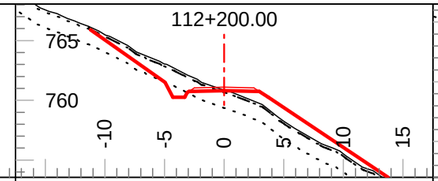

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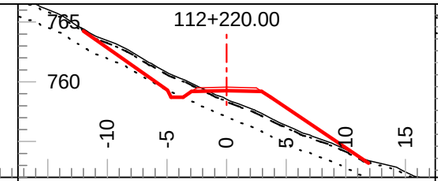

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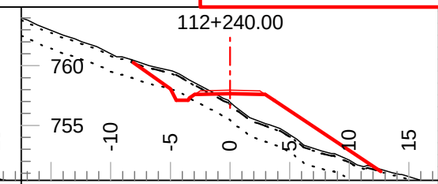

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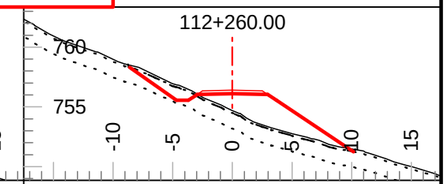

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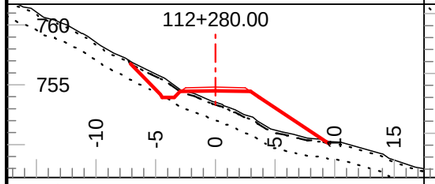

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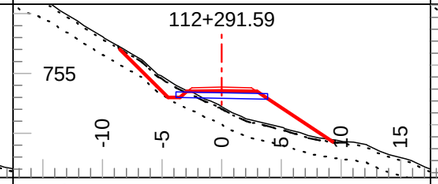

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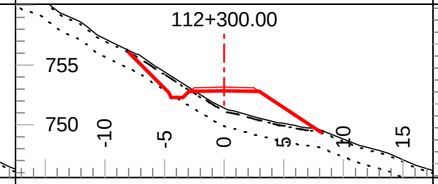
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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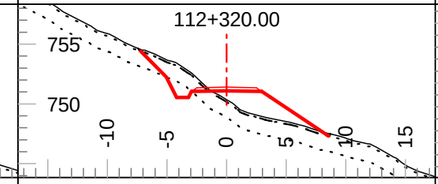
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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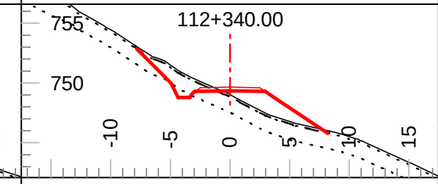

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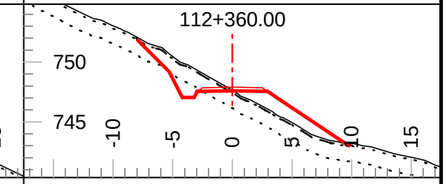

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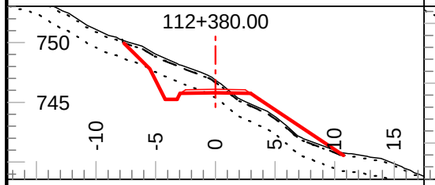
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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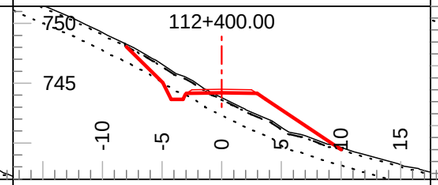

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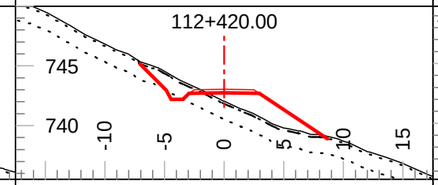

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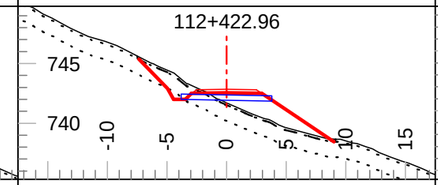

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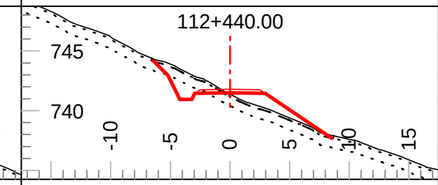

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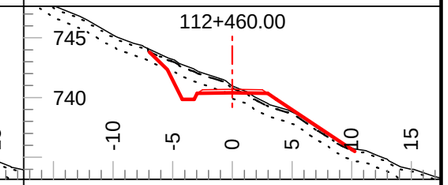

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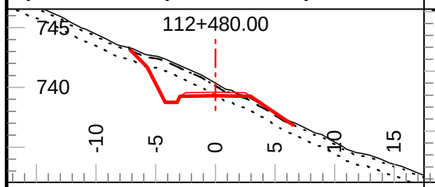

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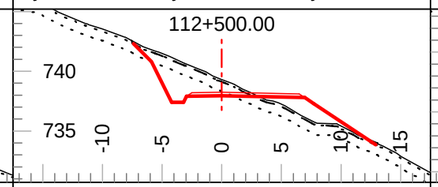

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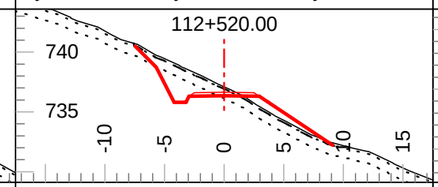
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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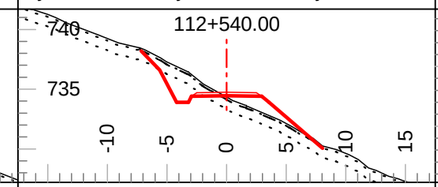
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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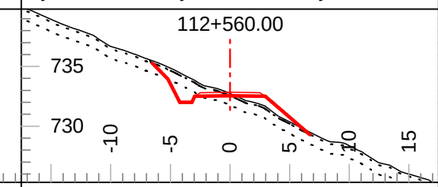
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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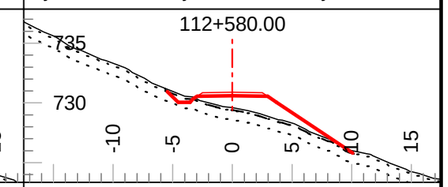

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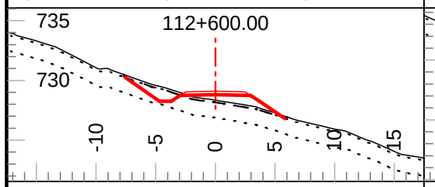

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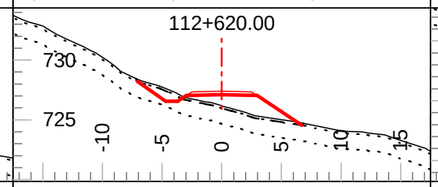

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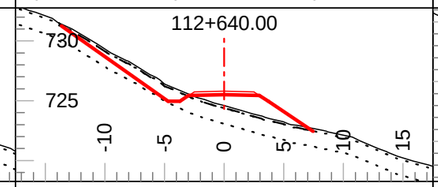

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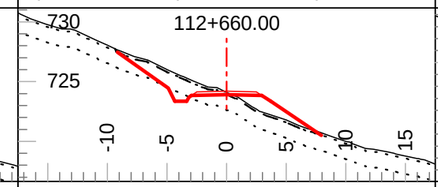

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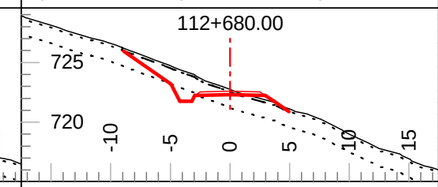

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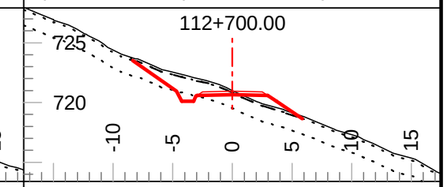

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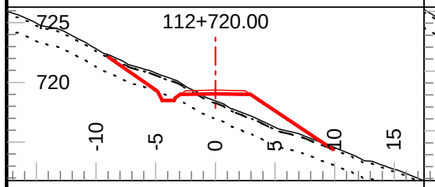

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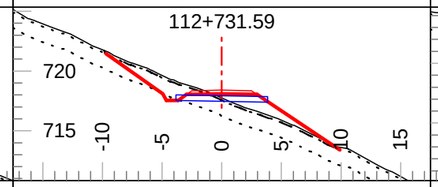

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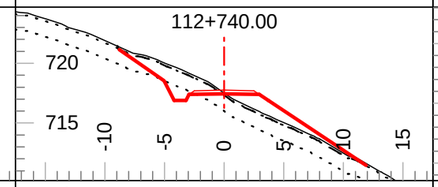

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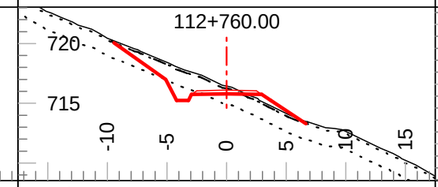

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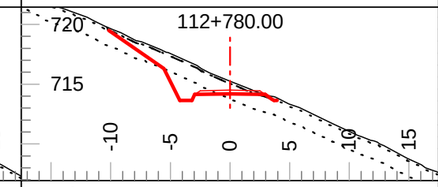

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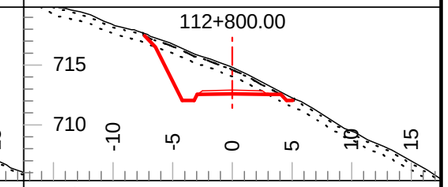
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 0.75
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

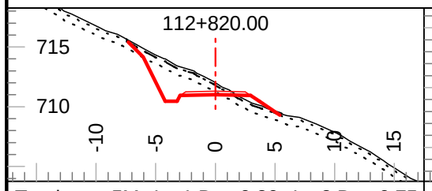
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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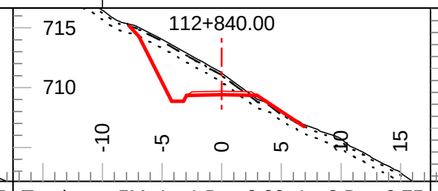
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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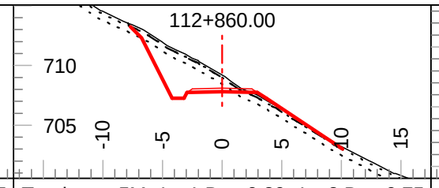

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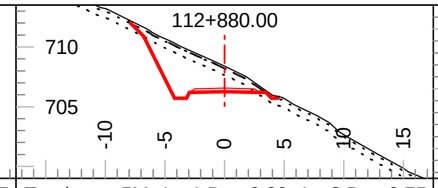
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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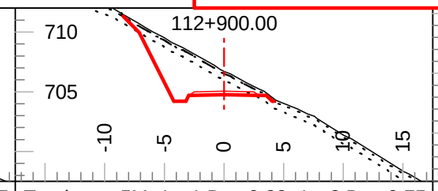
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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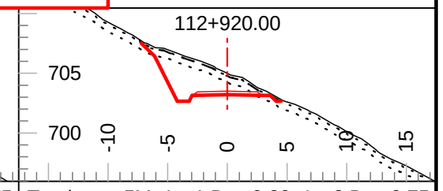
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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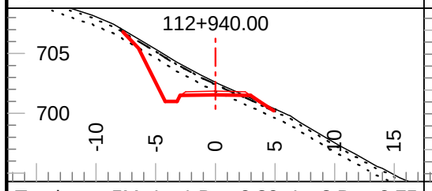
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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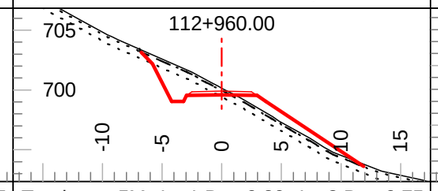
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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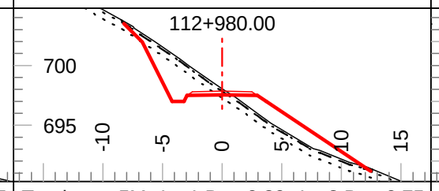

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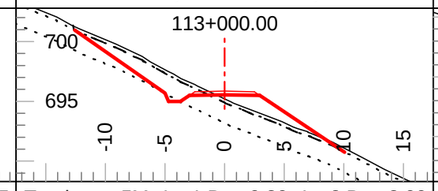
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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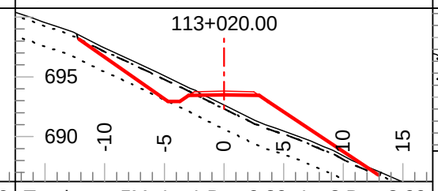
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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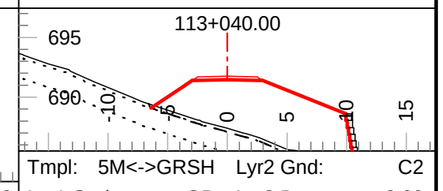
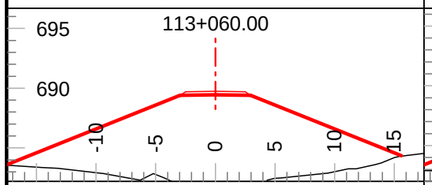
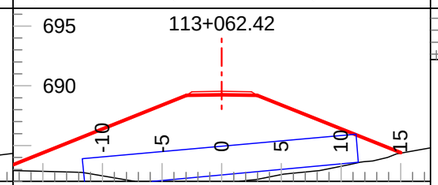
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



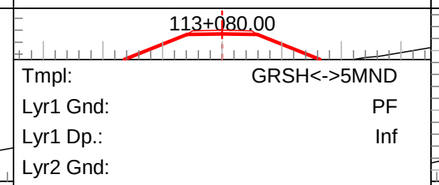
Tmpl: 5M<->GRSH Lyr2 Gnd: C2
Lyr1 Gnd: OB Lyr2 Dp.: 2.00
Lyr1 Dp.: 0.30 Lyr3 Gnd: F2



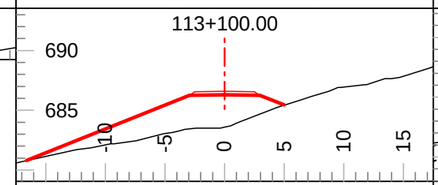
Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



Tmpl: GRSH<->5MND
Lyr1 Gnd: PF
Lyr1 Dp.: Inf
Lyr2 Gnd:
Lyr2 Dp.: Inf
Lyr3 Gnd:



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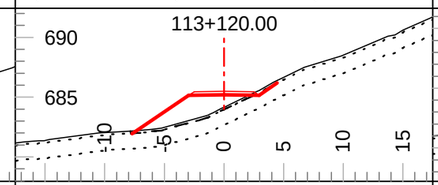
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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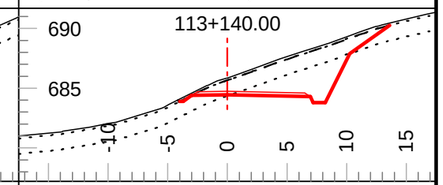
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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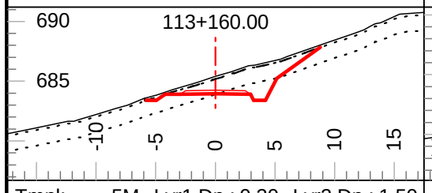

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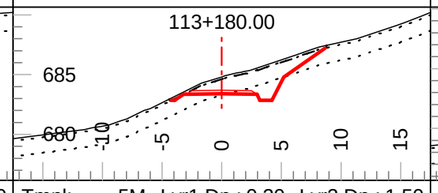

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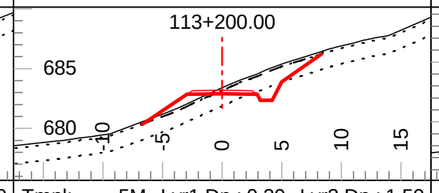

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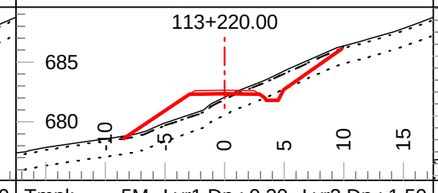

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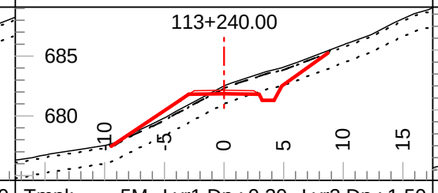

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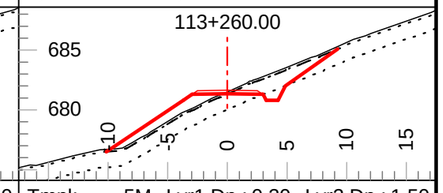

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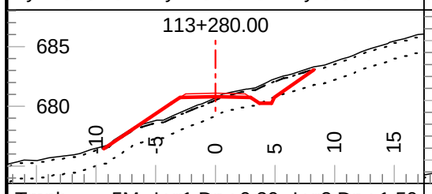

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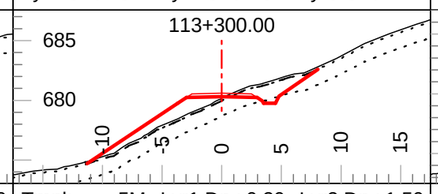

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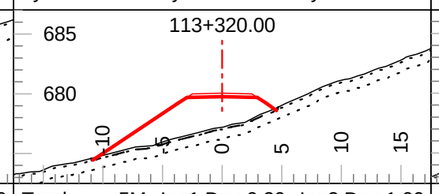

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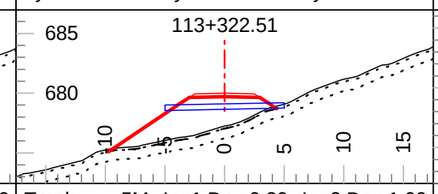

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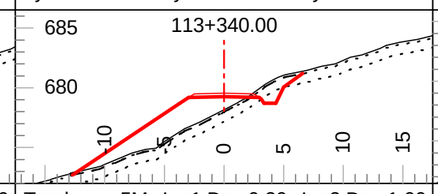

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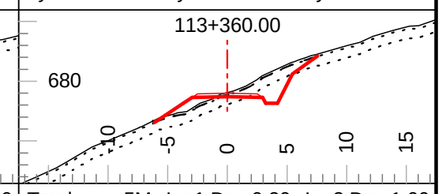

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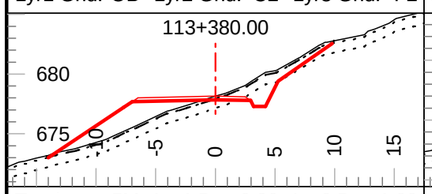

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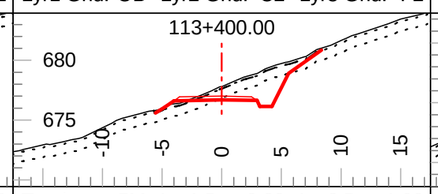

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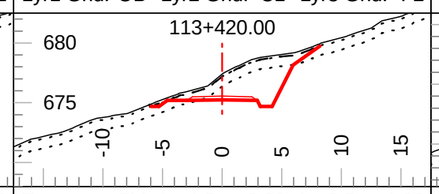

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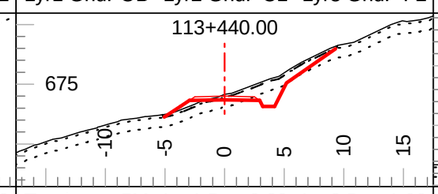

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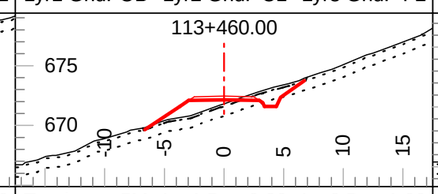

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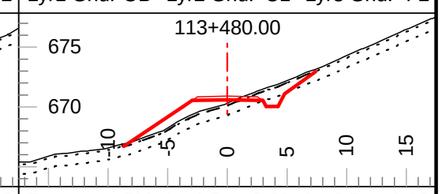


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 1.00
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

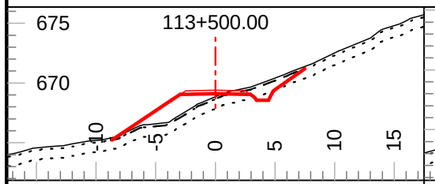
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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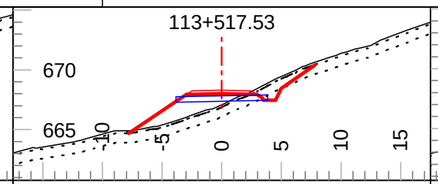

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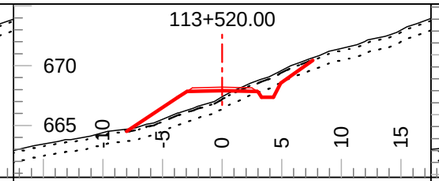

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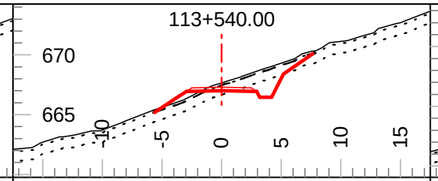

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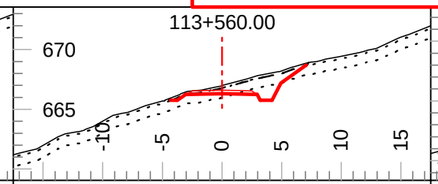

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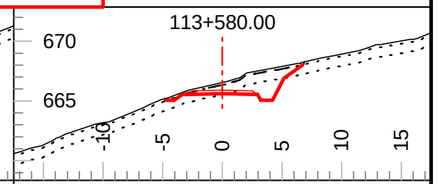

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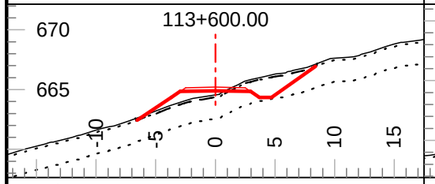

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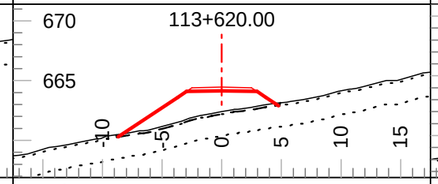

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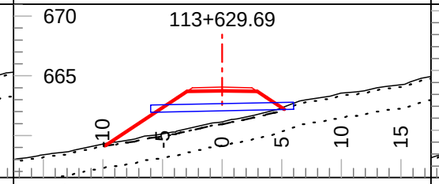

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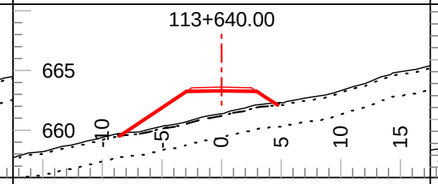

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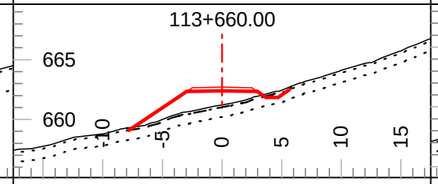

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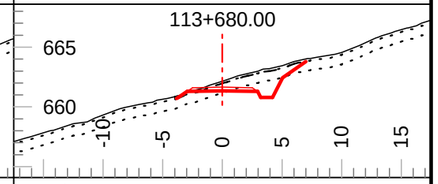

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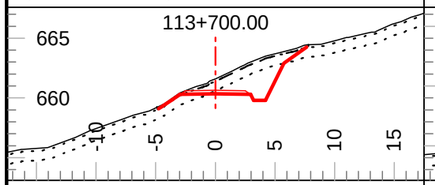

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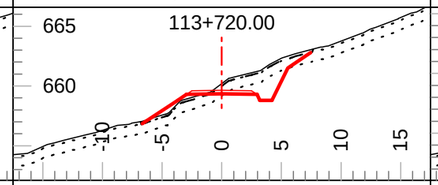

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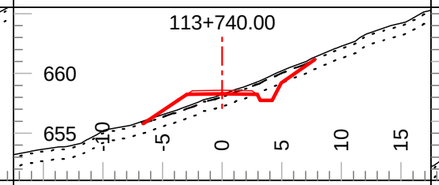

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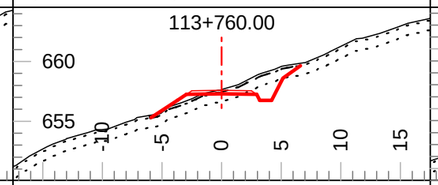

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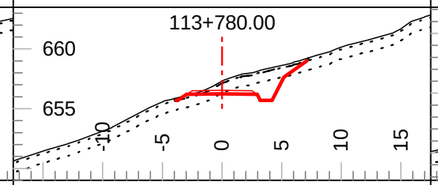

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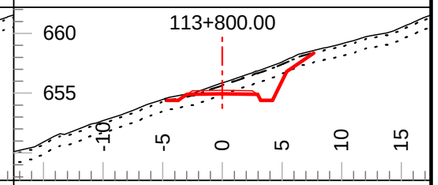

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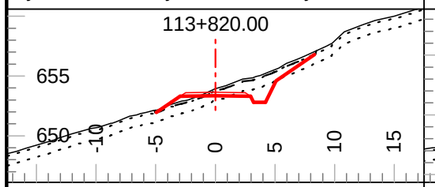

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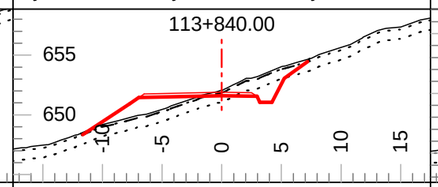

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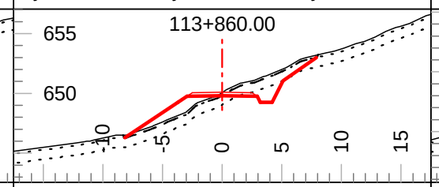

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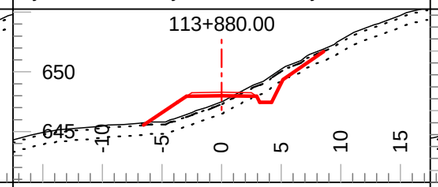

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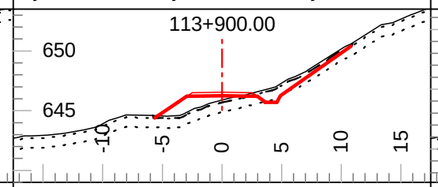
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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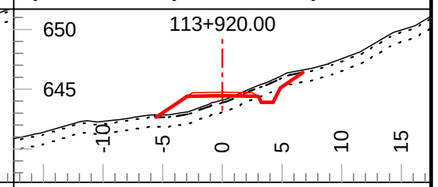

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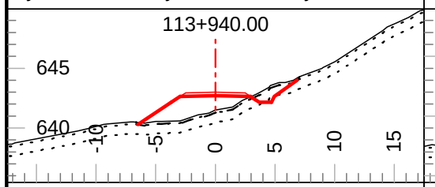

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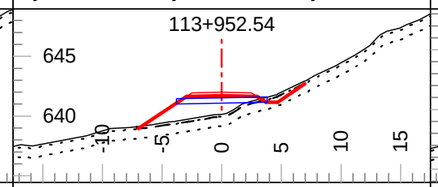

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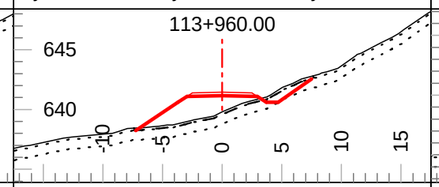

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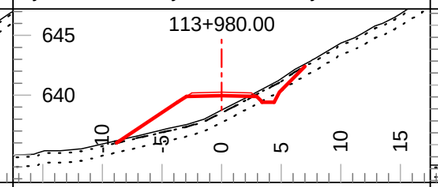

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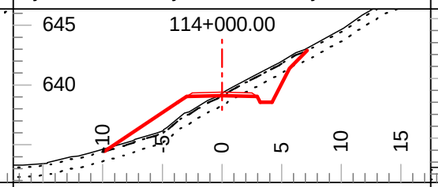

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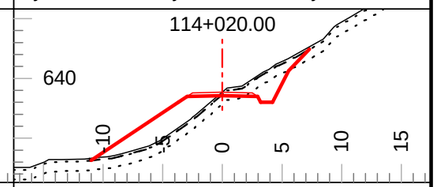

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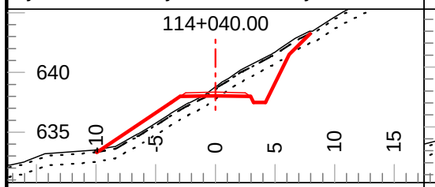

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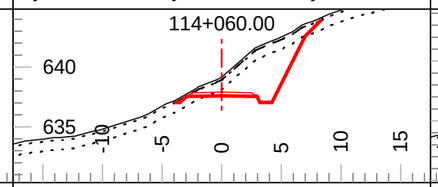

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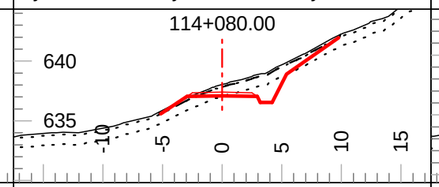

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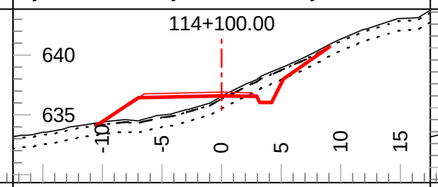

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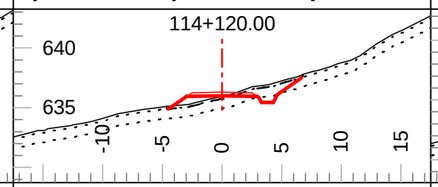

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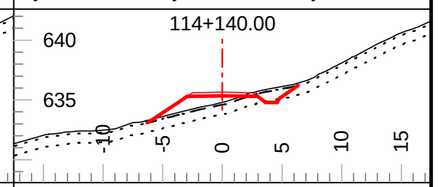

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Coffee Gold Mine

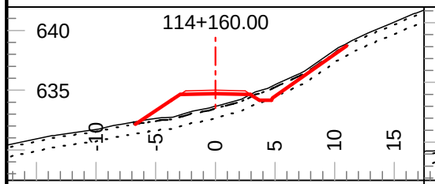
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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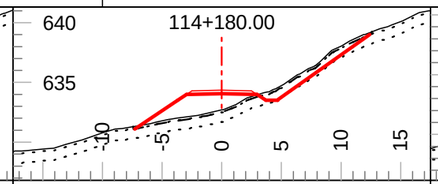

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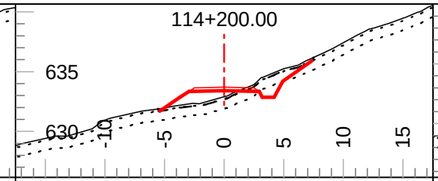

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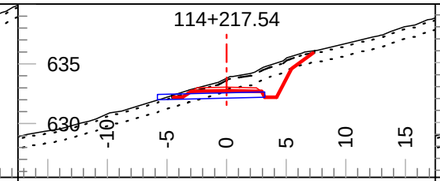

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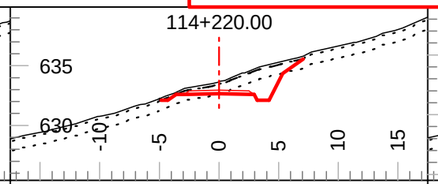

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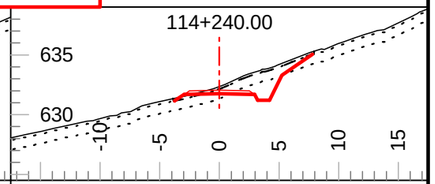

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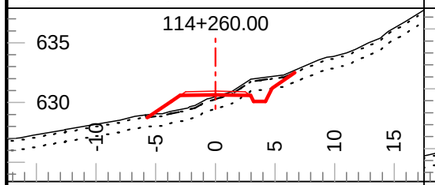

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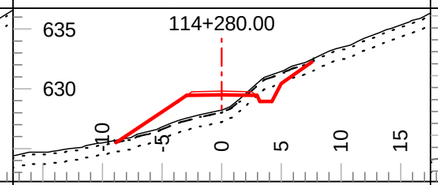

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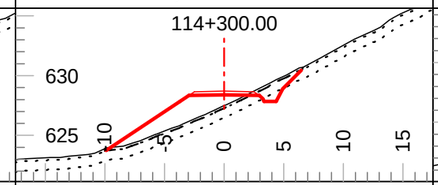

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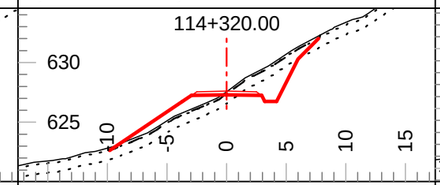

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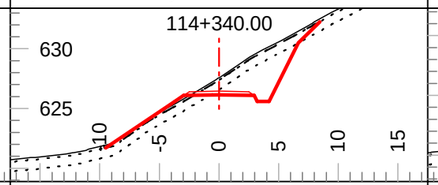

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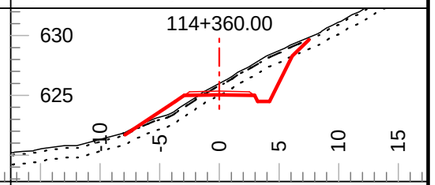

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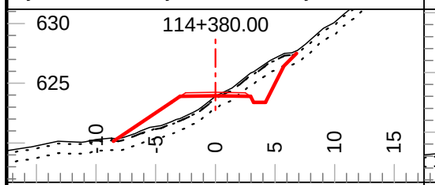

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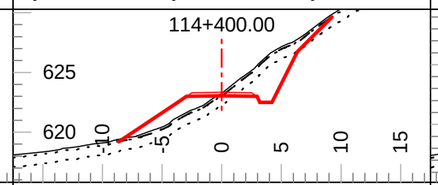

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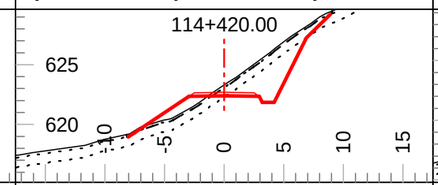

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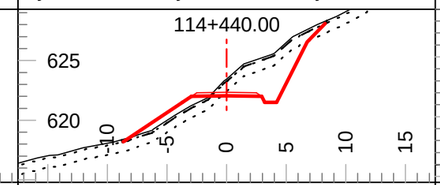

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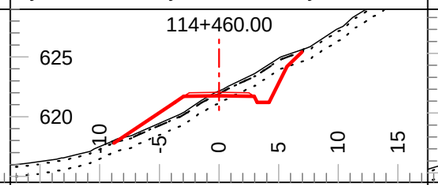

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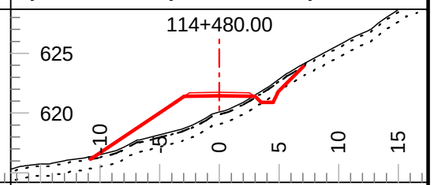

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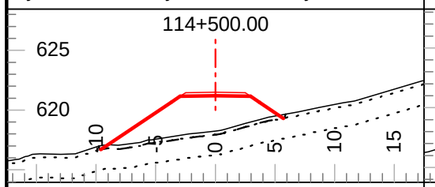

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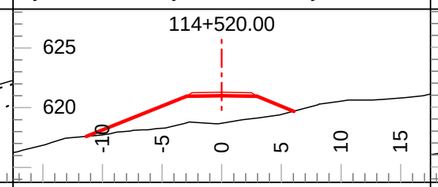

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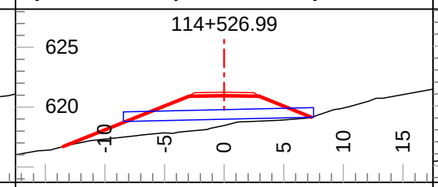

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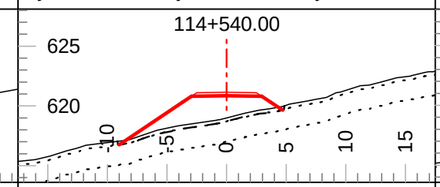

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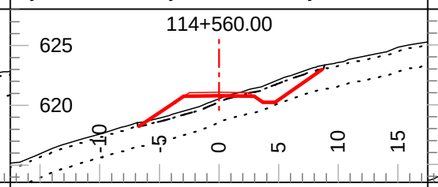

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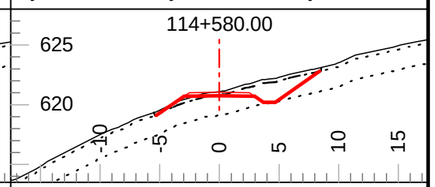

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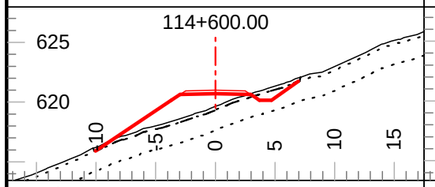

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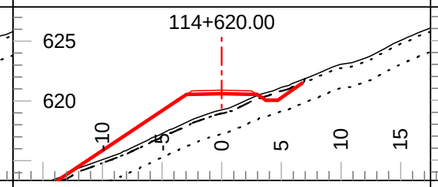

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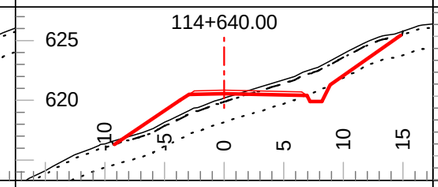

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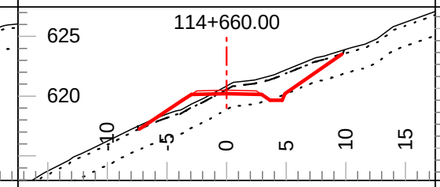

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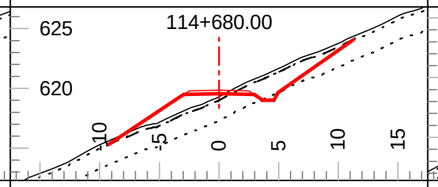
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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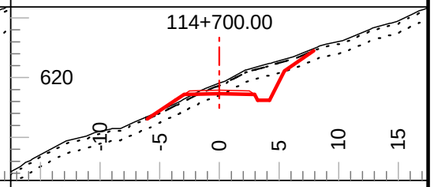

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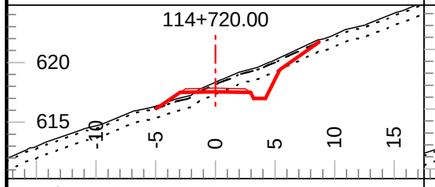

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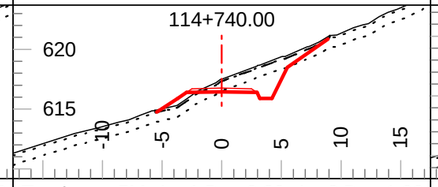

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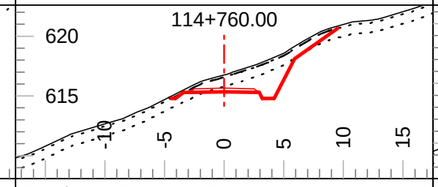

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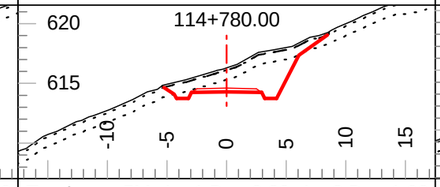

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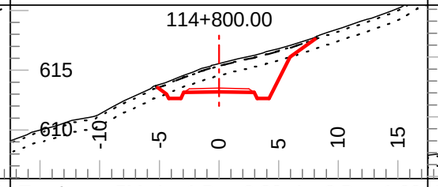

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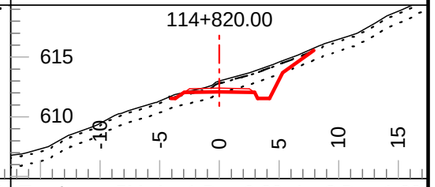

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

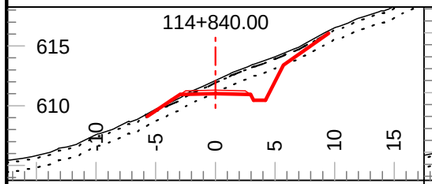
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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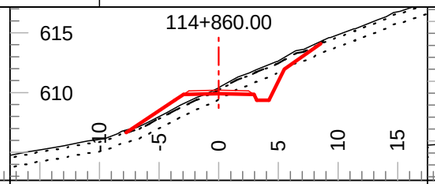

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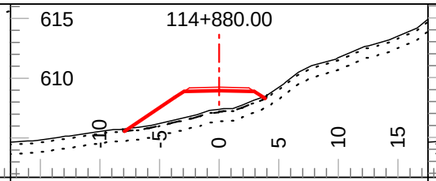

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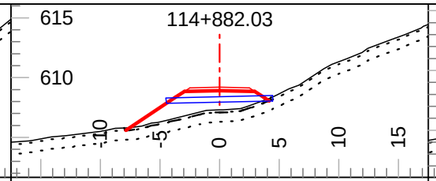

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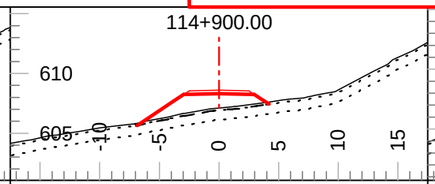

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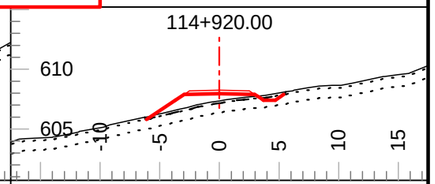

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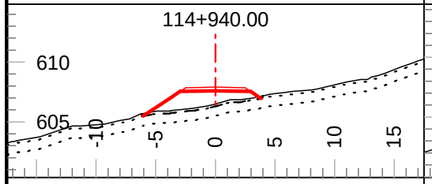

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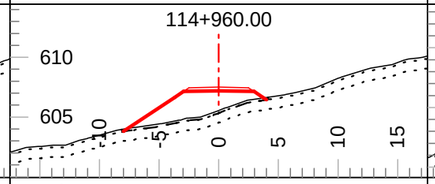

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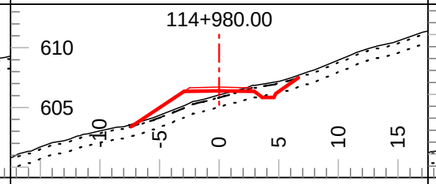

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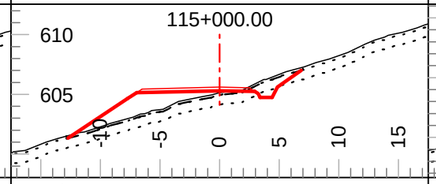

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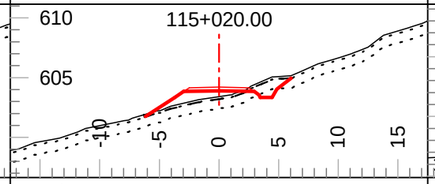

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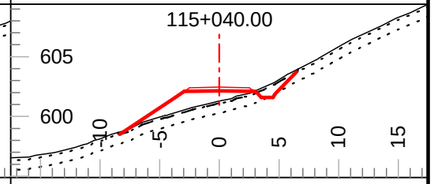

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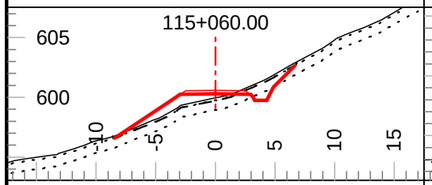

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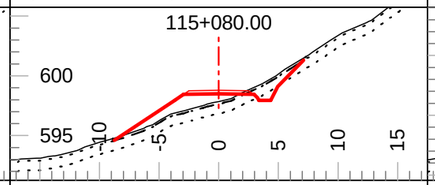

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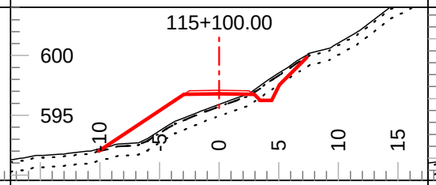

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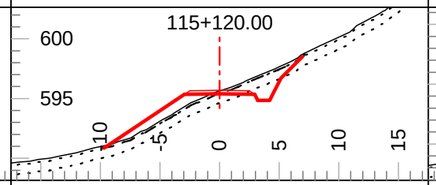

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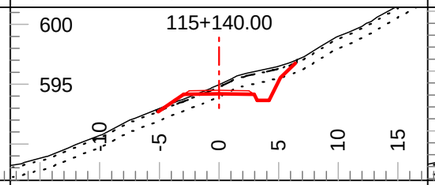

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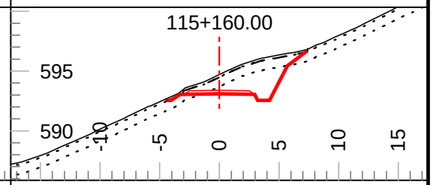

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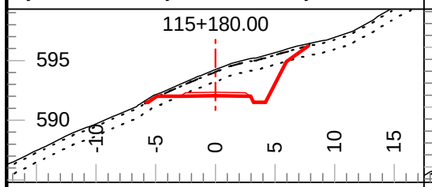

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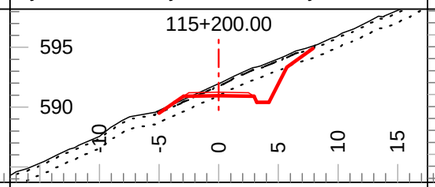

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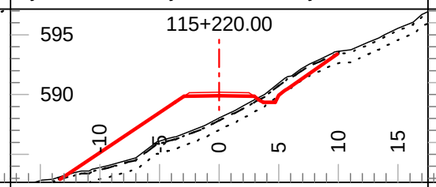

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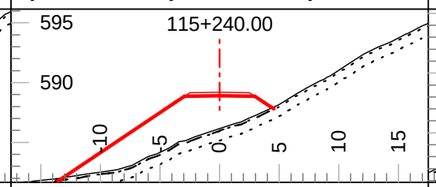

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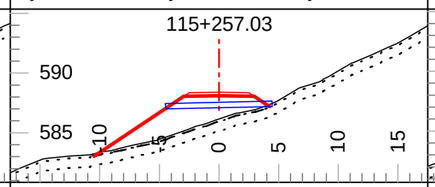

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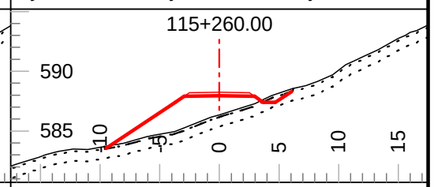

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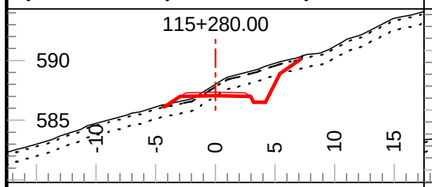

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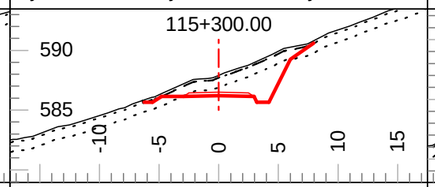

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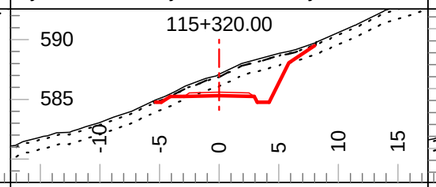

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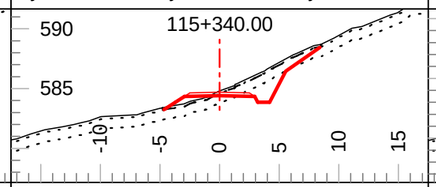

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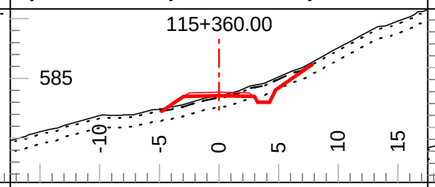

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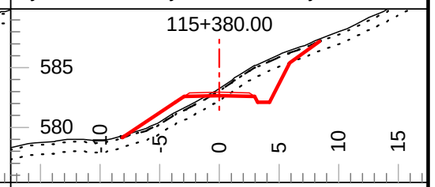

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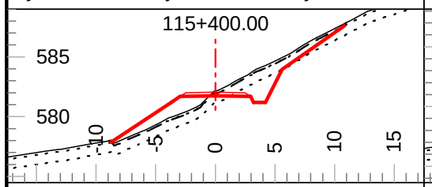

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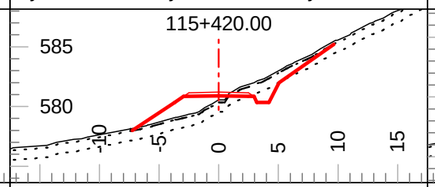

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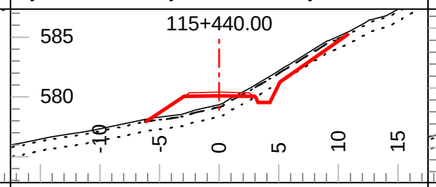

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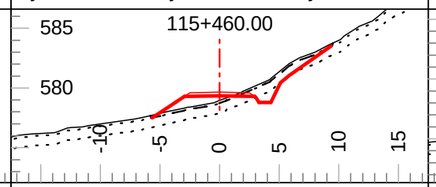

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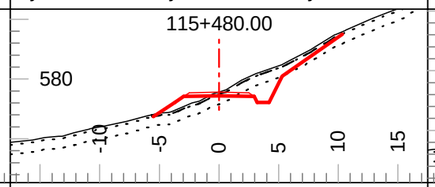

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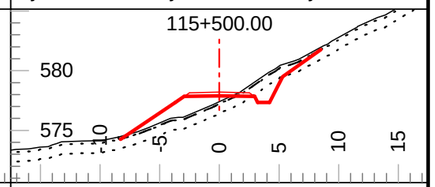
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

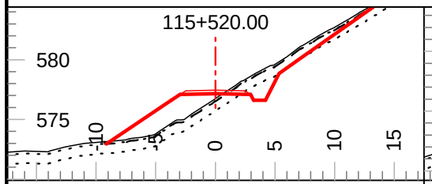
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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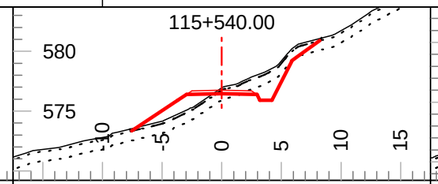

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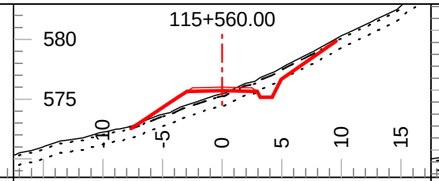

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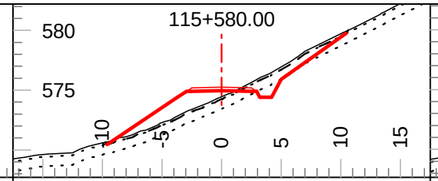

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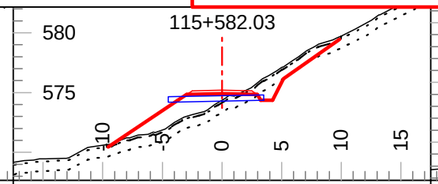

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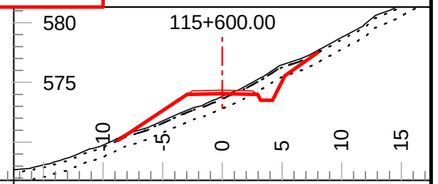

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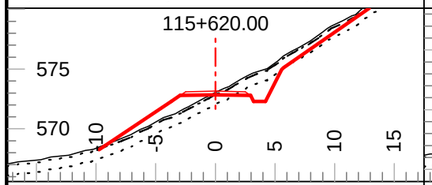

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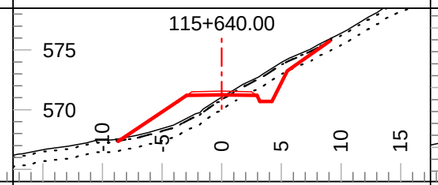

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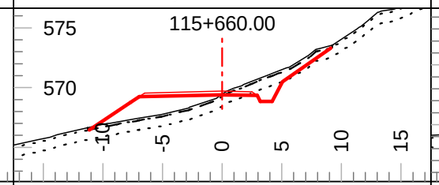

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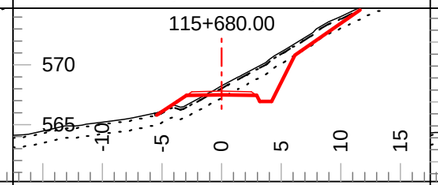

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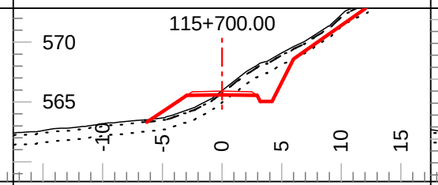

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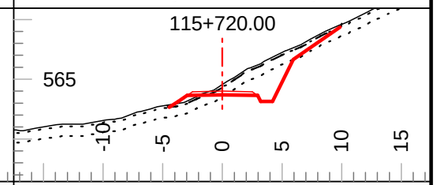

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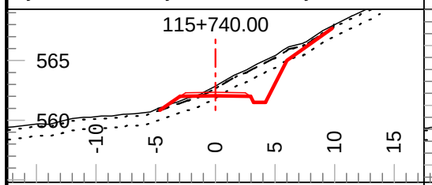

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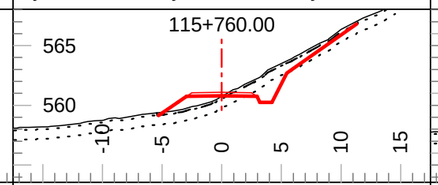

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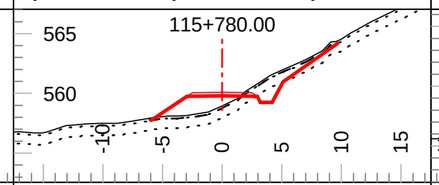

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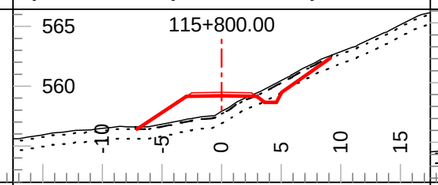

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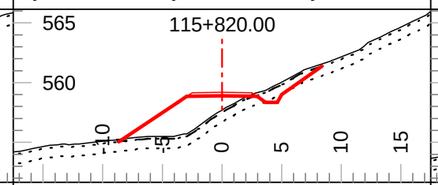

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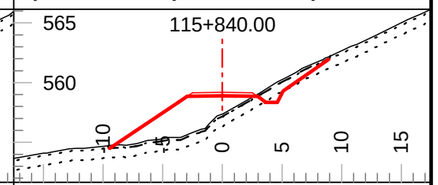

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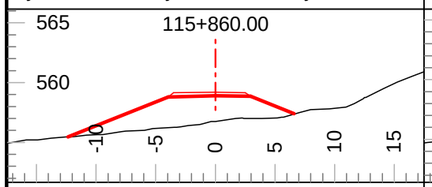

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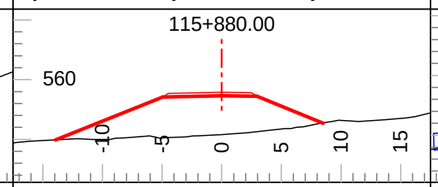

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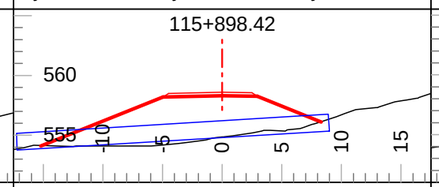

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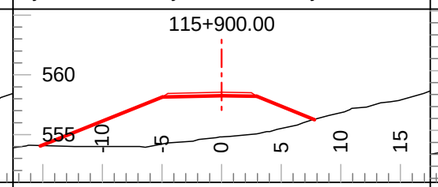

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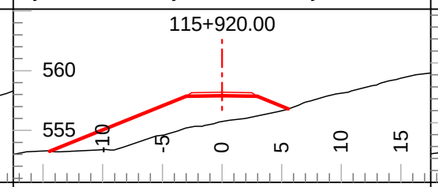

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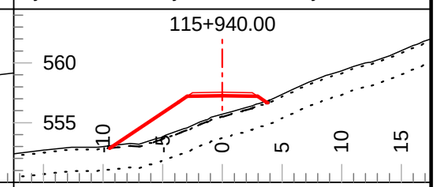

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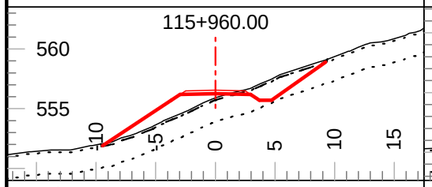

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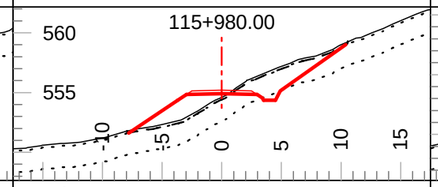

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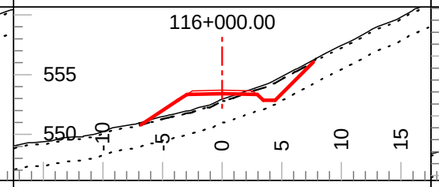

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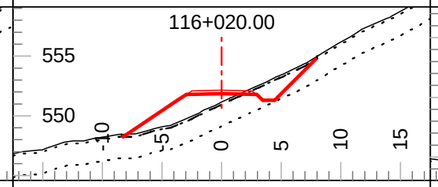

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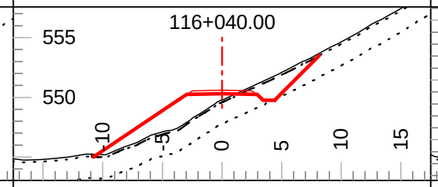

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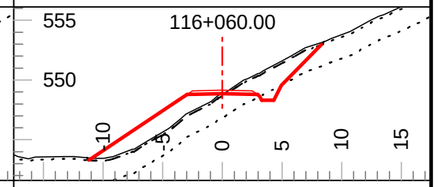

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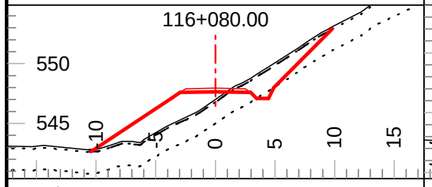

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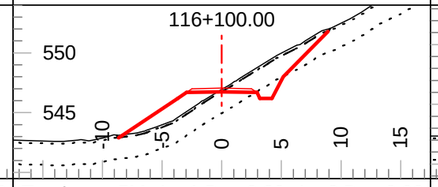

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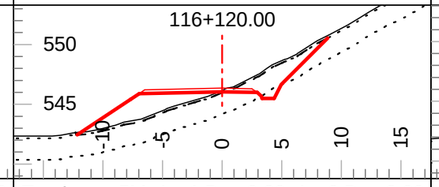

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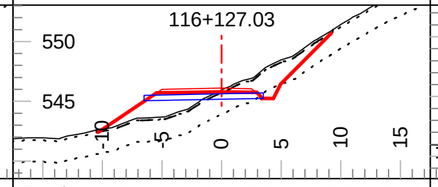

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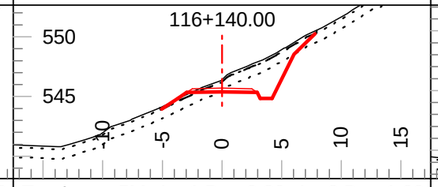

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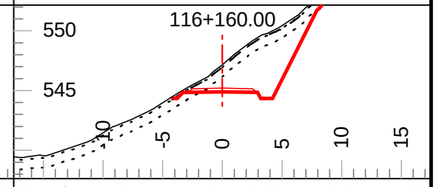

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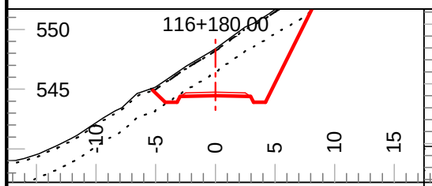

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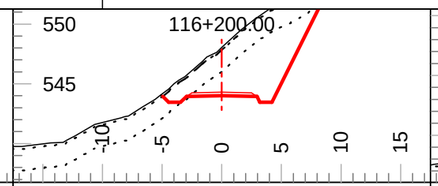
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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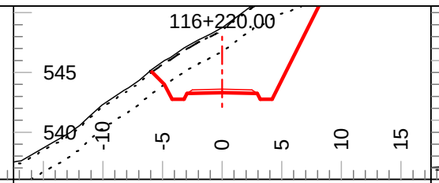

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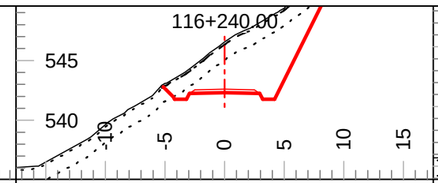
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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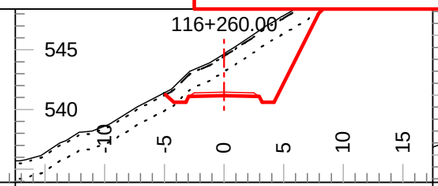

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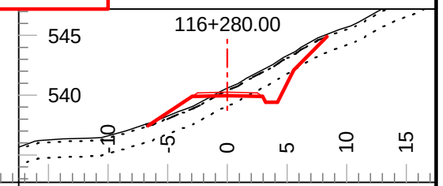
Lyr1 Gnd: OB Lyr2 Gnd: C4 Lyr3 Gnd: F2



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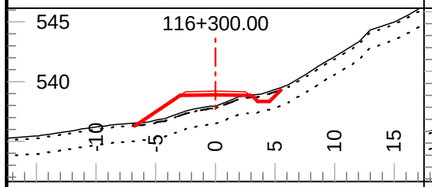

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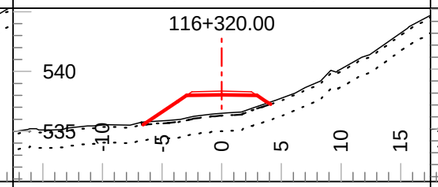

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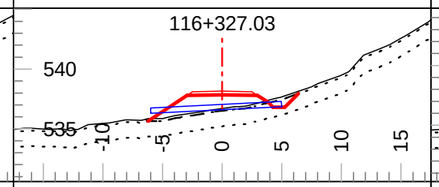

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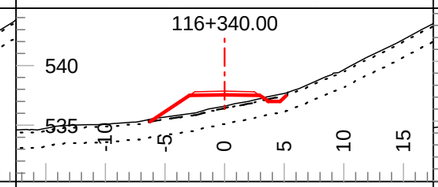

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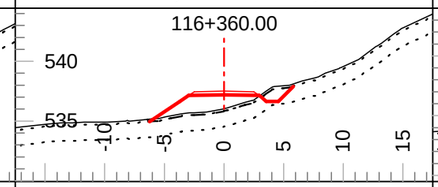

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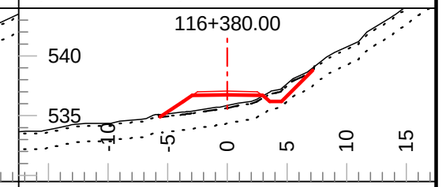

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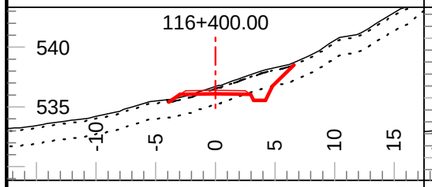

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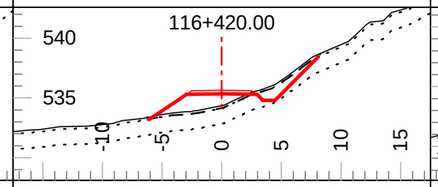

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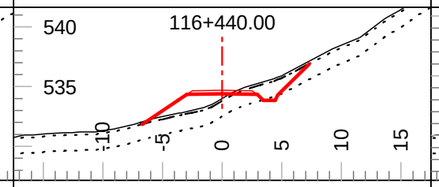

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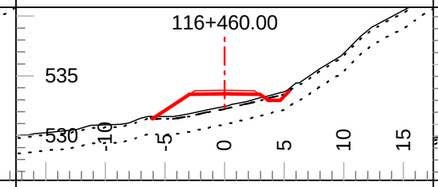

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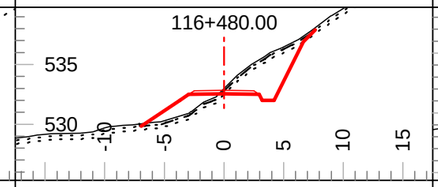

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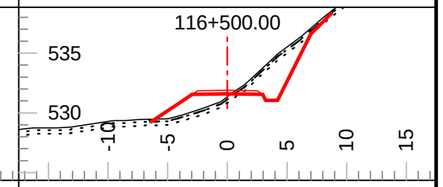

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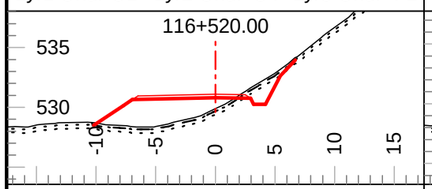

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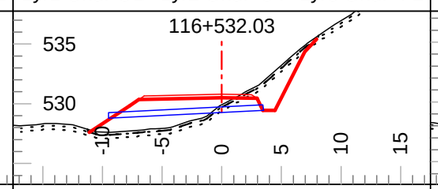

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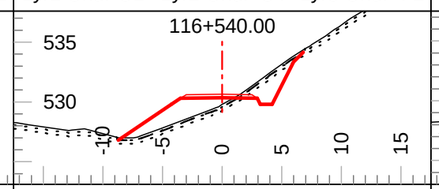

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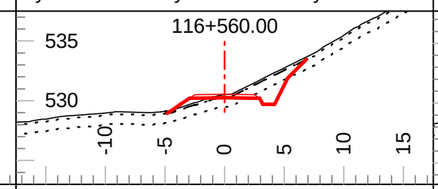

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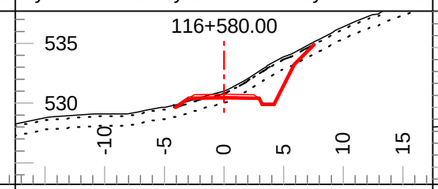

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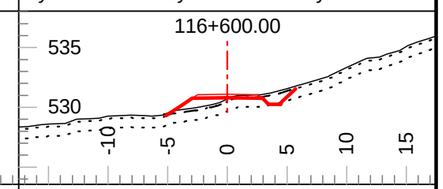

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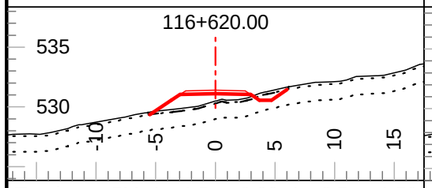

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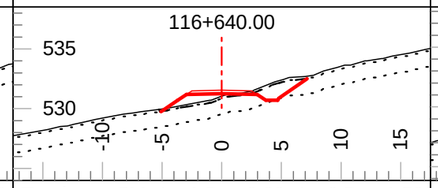

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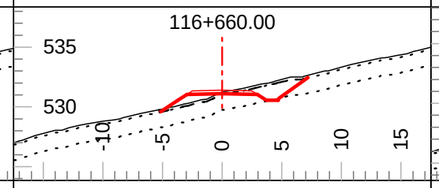

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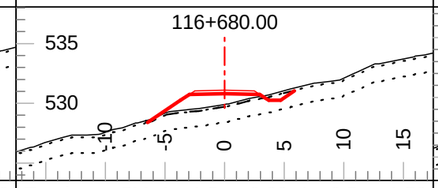

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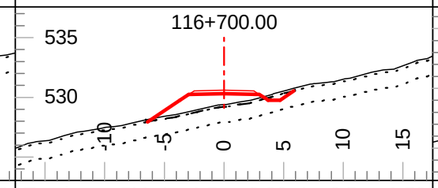

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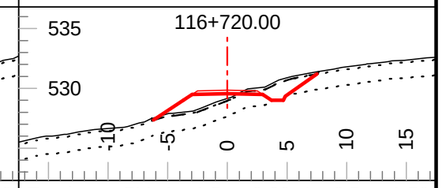

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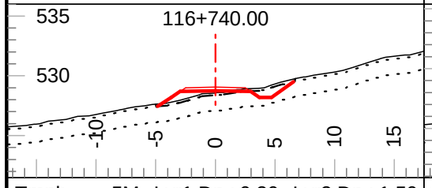

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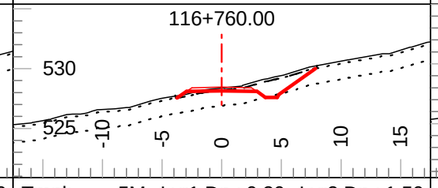

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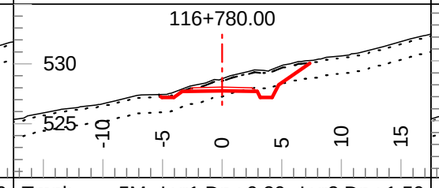

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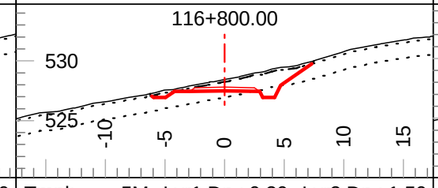

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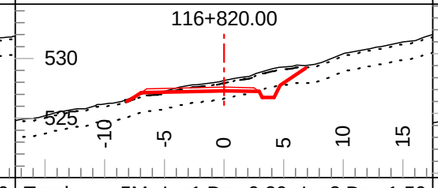

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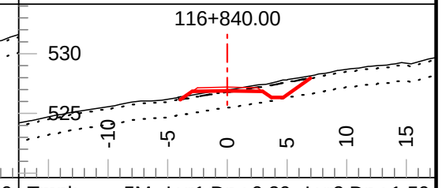

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Coffee Gold Mine

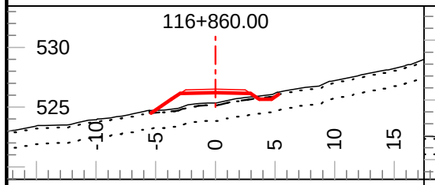
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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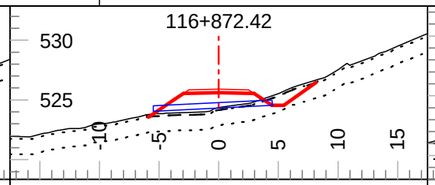

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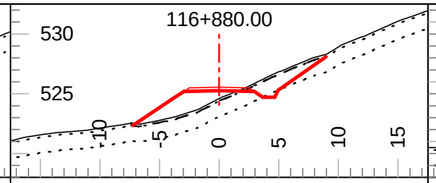

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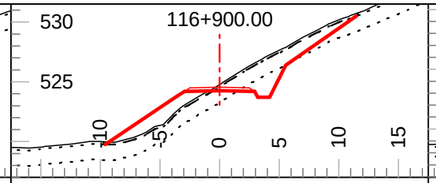

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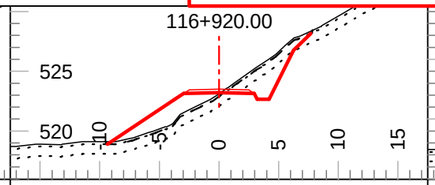

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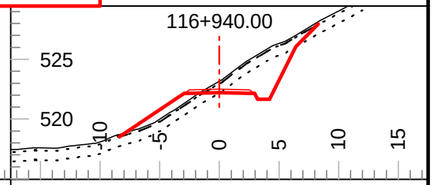

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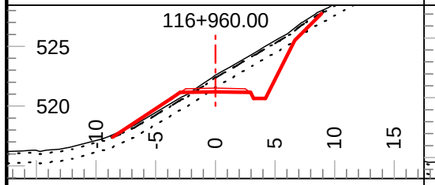

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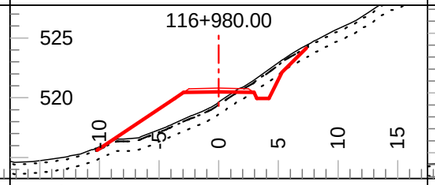

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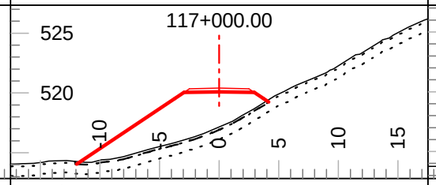

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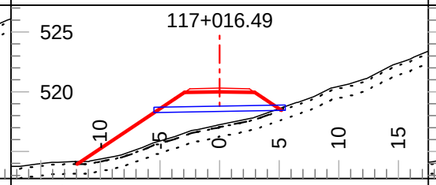

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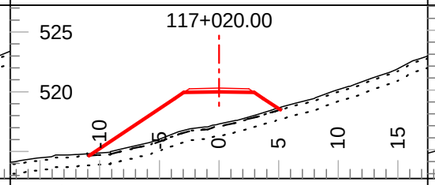

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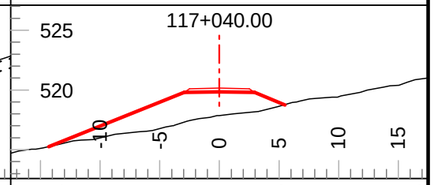

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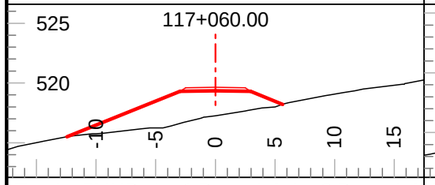
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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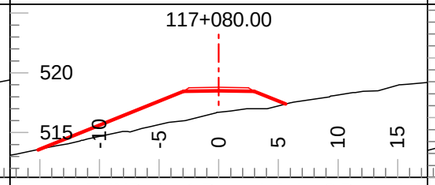

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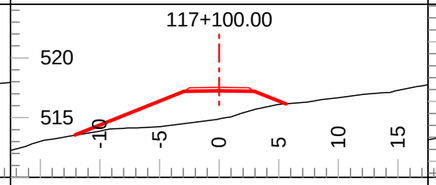

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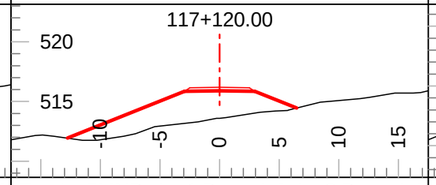

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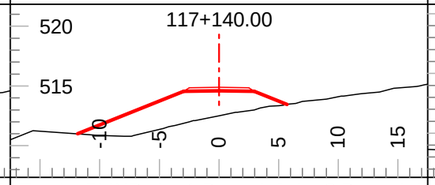

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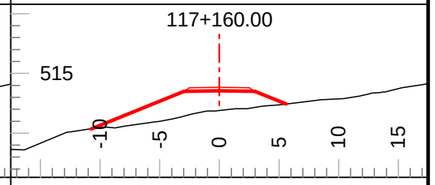

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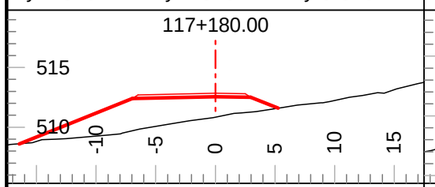

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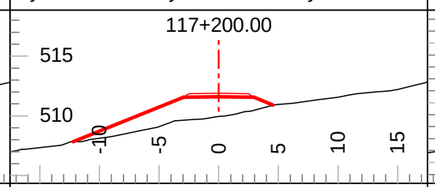

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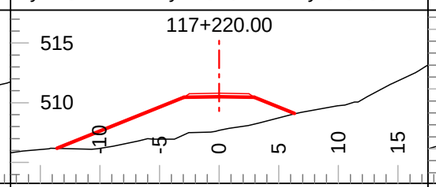

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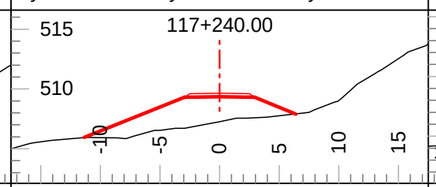

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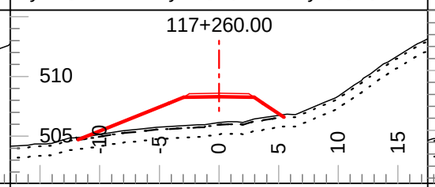

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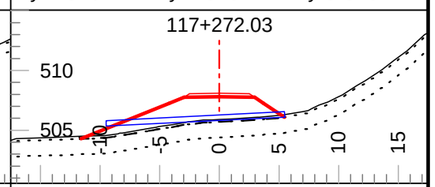

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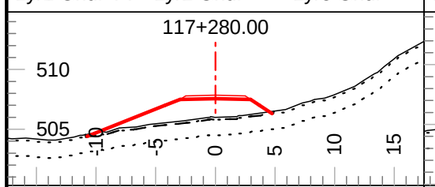

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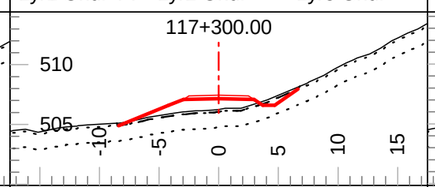

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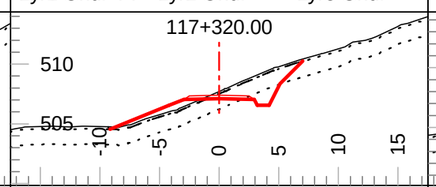

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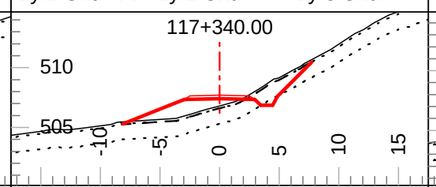

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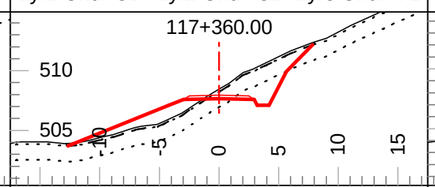

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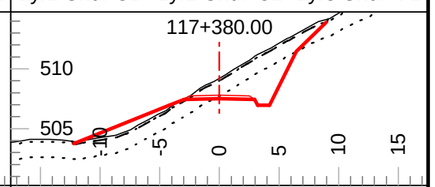

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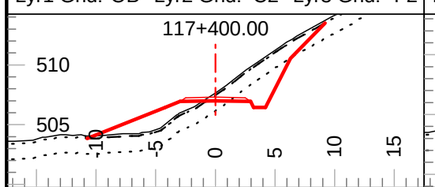

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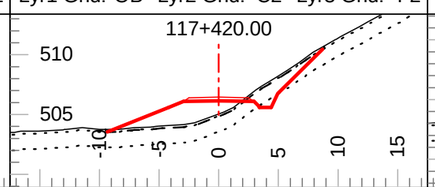

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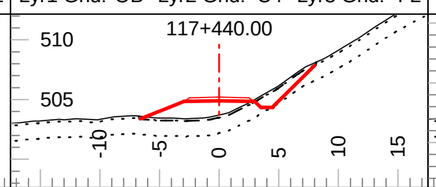

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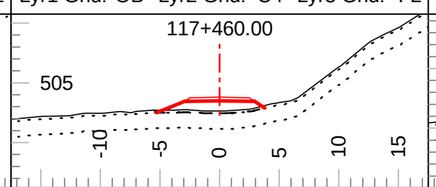

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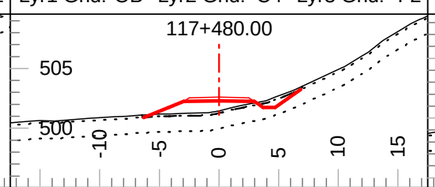

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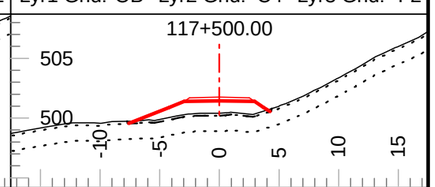

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Coffee Gold Mine

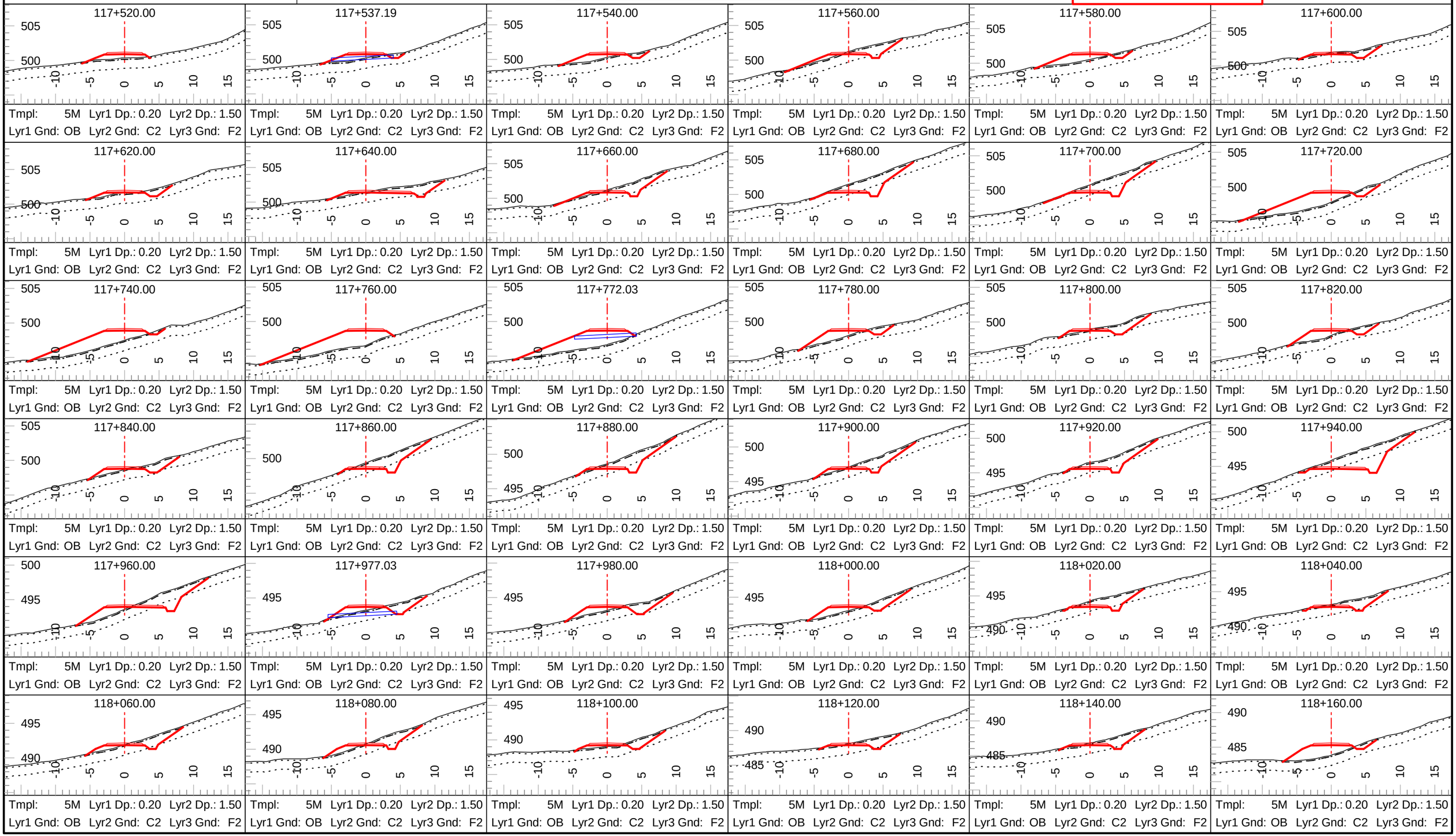
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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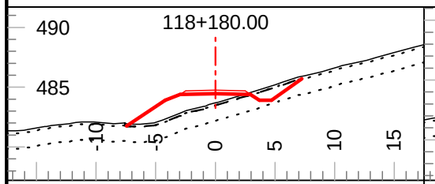

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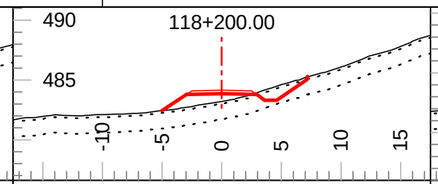

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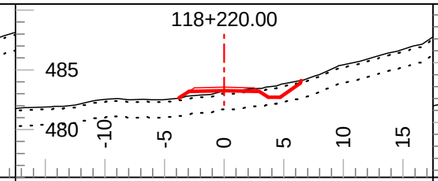

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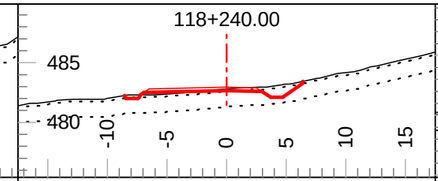

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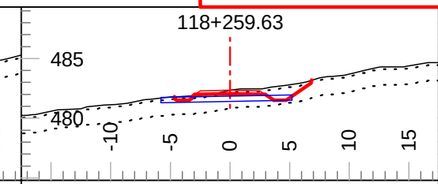

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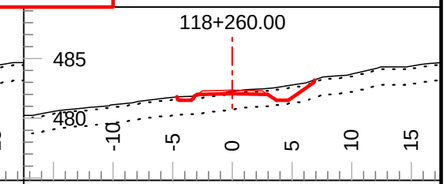

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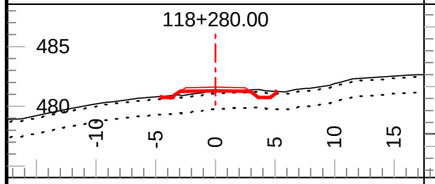

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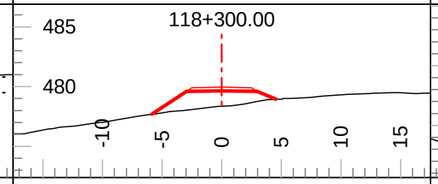

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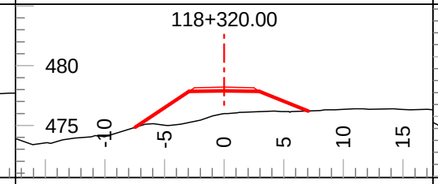

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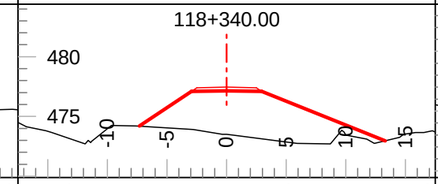

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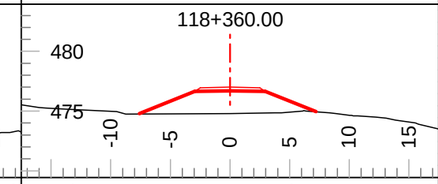

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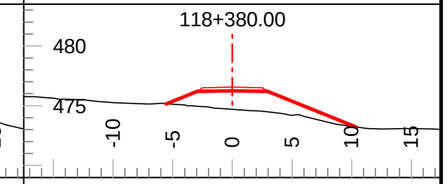

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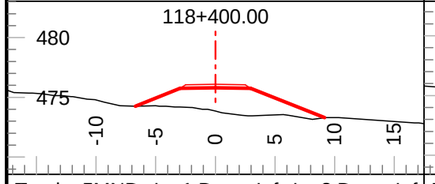

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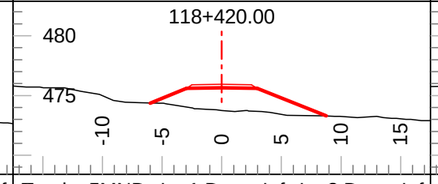

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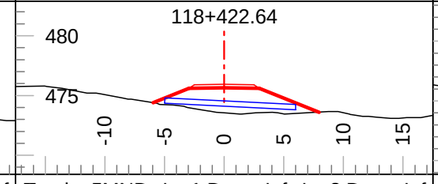

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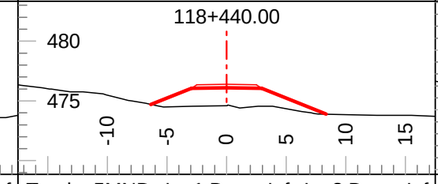

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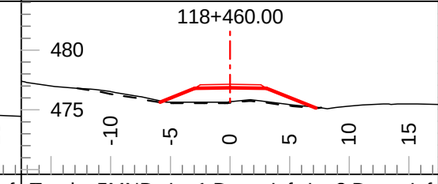

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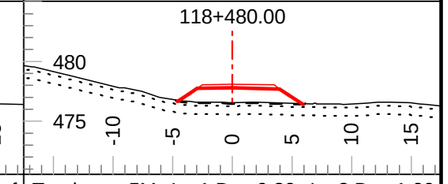

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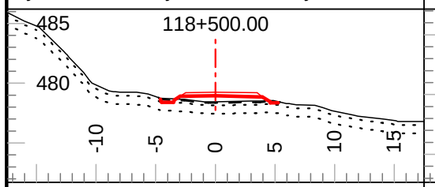
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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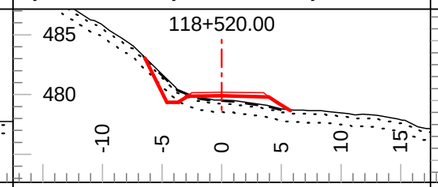

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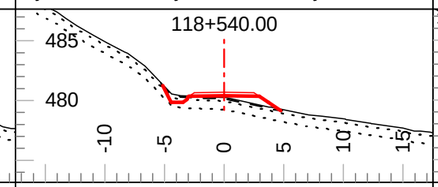

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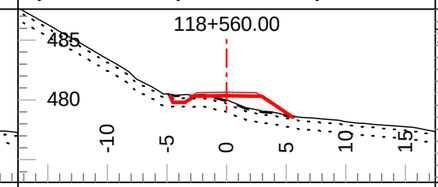

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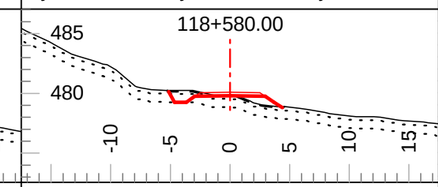

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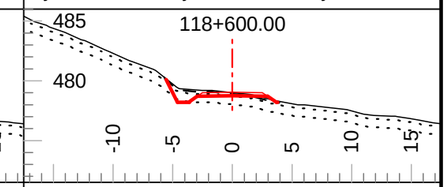

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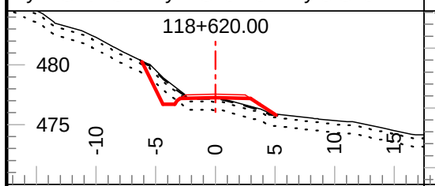

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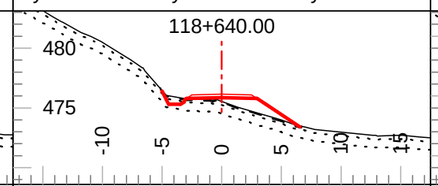

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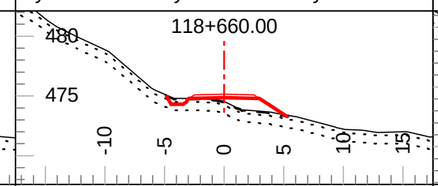

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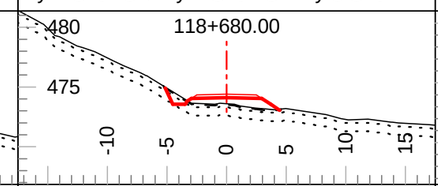

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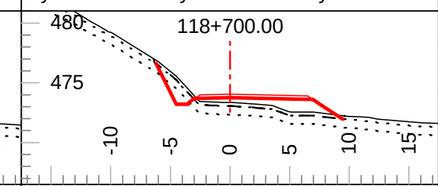

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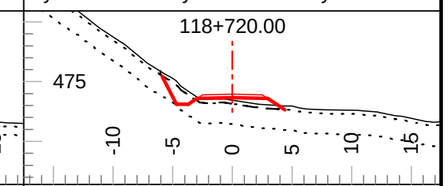

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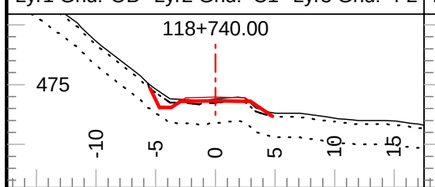

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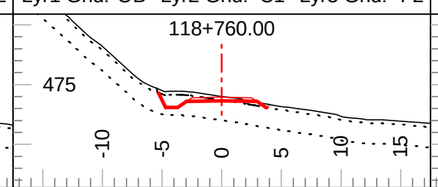

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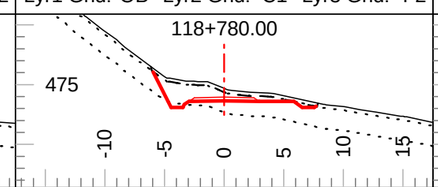

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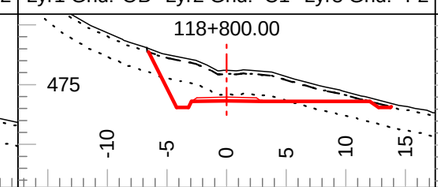

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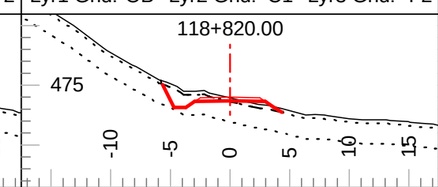

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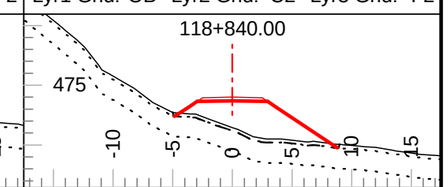

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Coffee Gold Mine

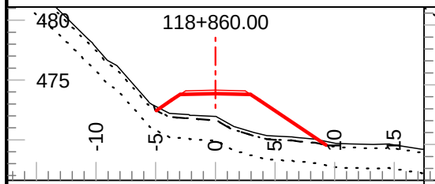
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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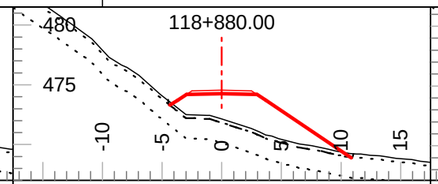

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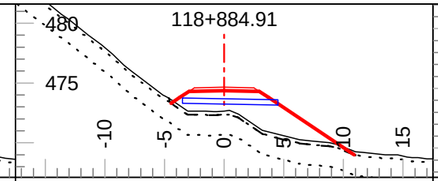

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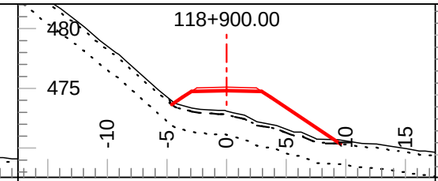

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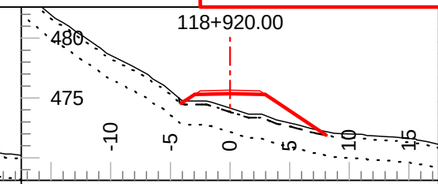

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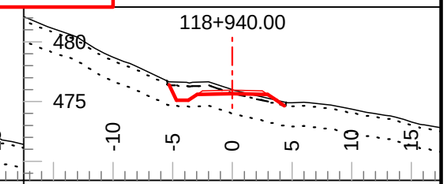

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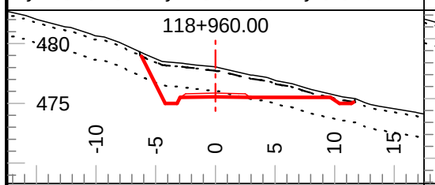

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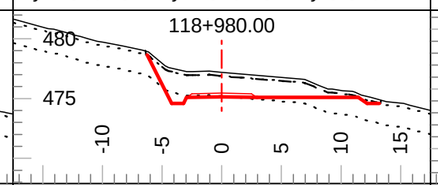

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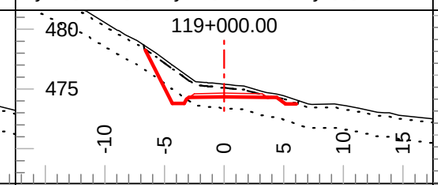

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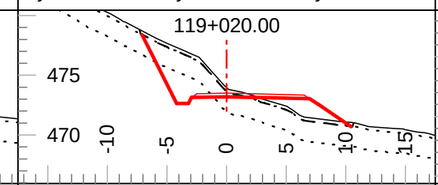

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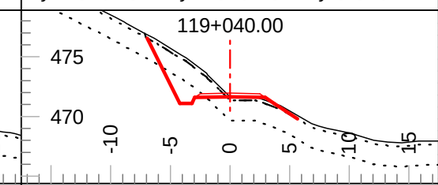

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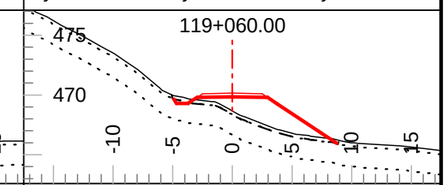

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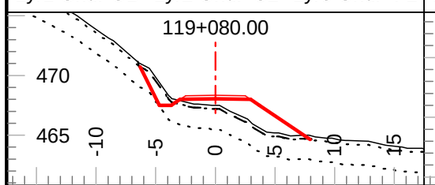

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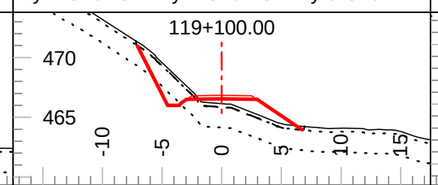

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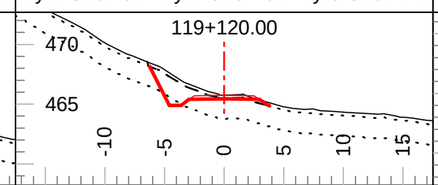

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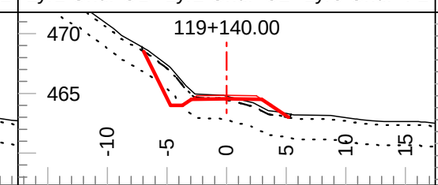

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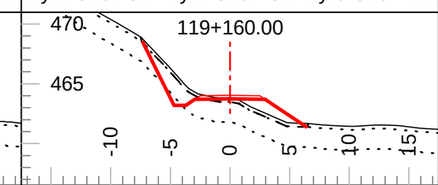

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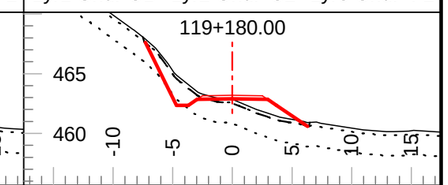

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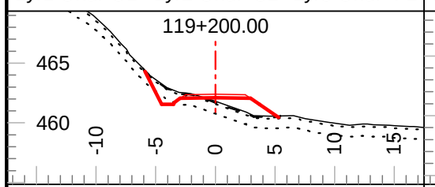

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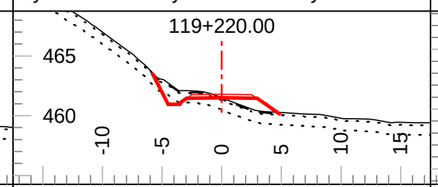

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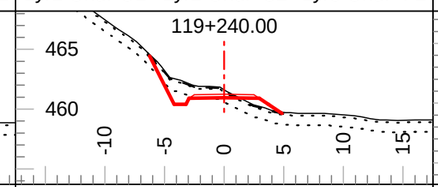

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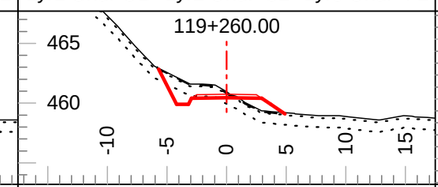

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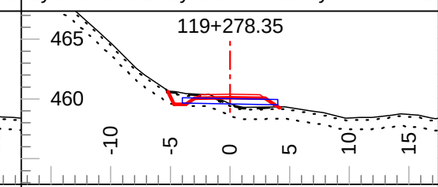

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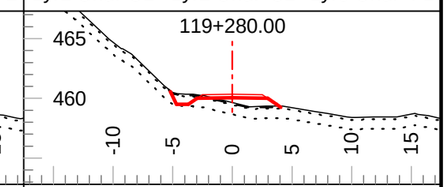

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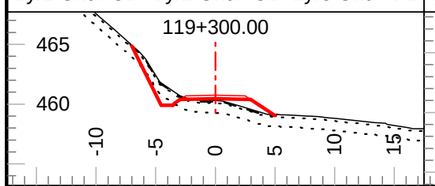
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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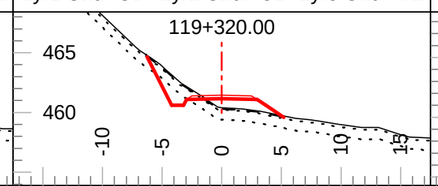

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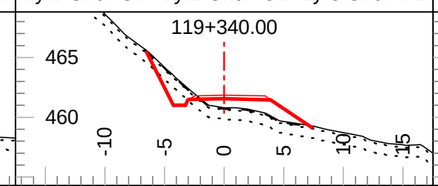

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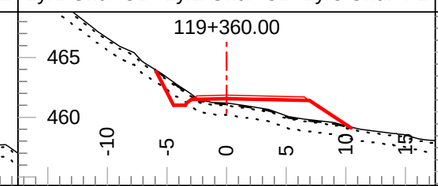

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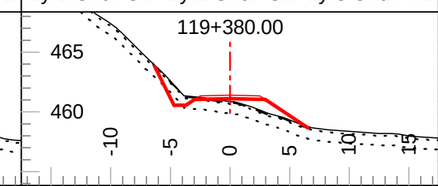

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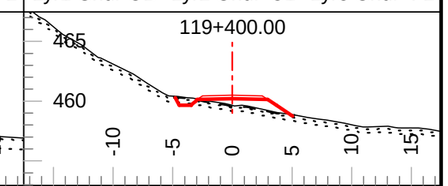

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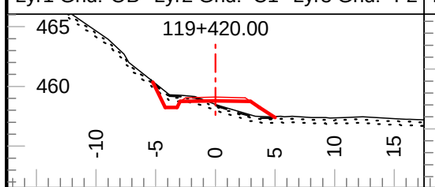

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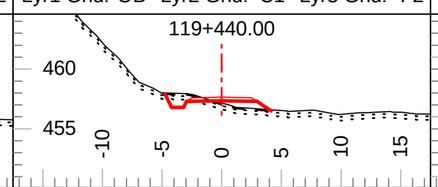

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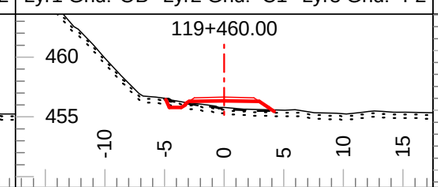

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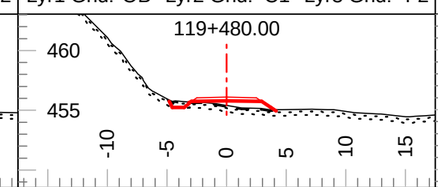

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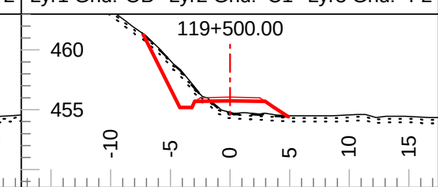

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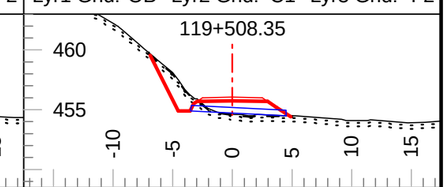

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Coffee Gold Mine

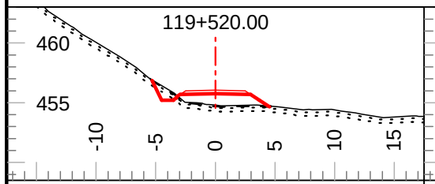
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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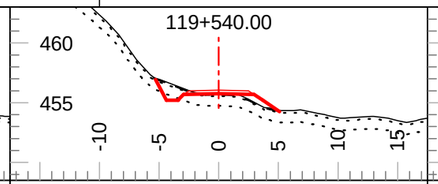

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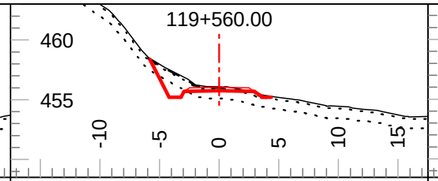

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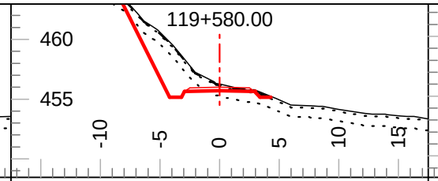

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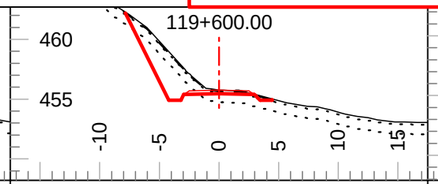

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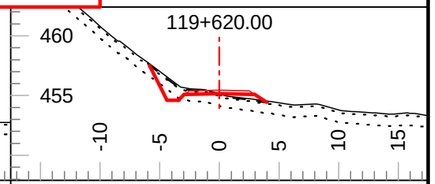

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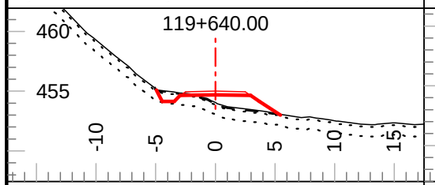

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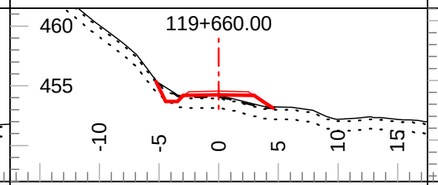

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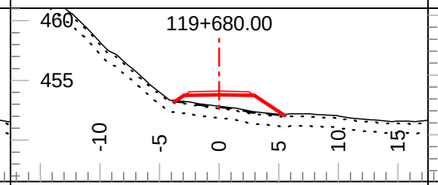

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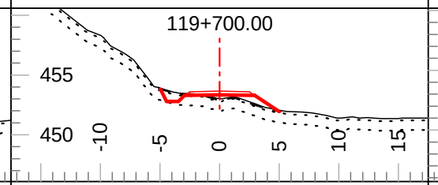

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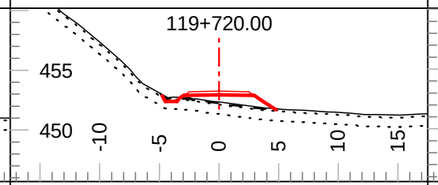

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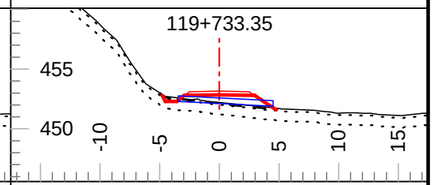

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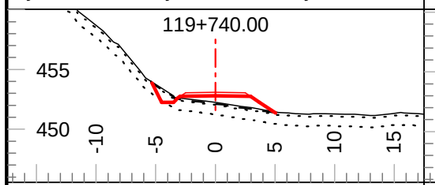

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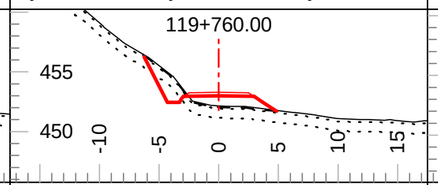

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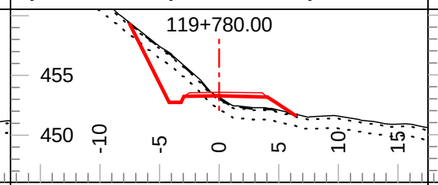

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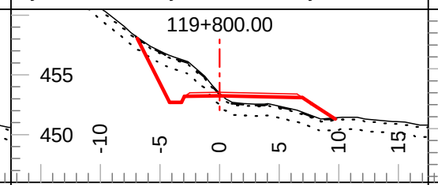

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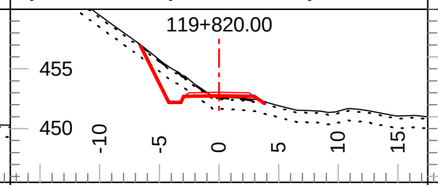

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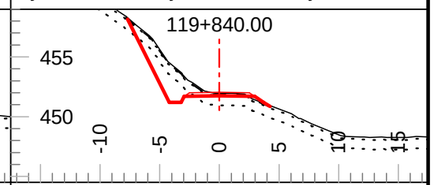

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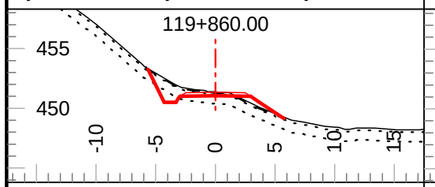

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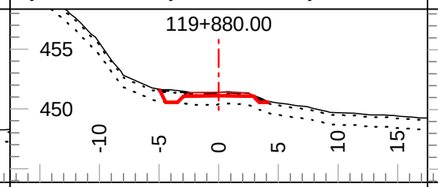

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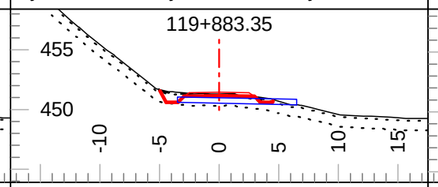

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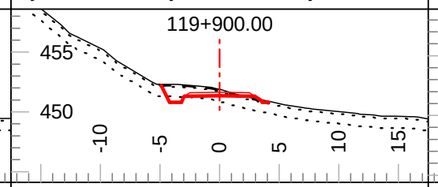

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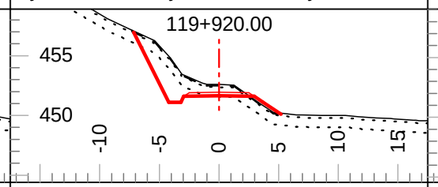

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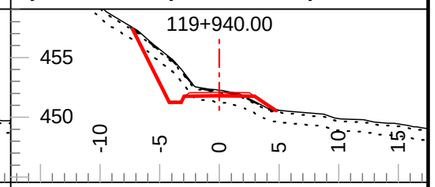

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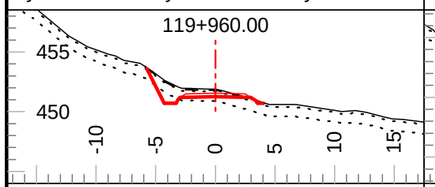

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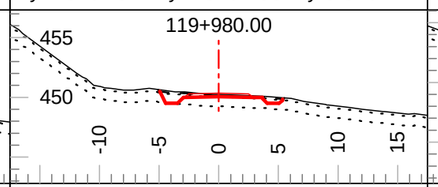

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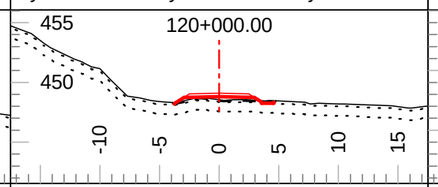

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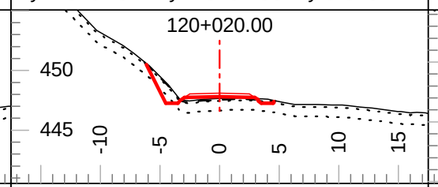

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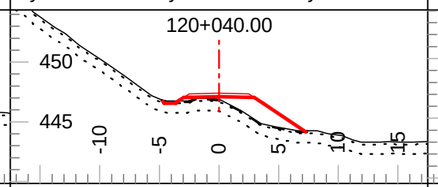

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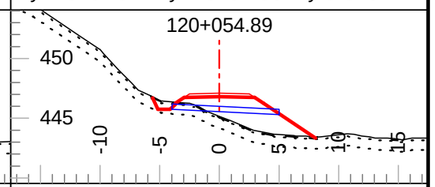

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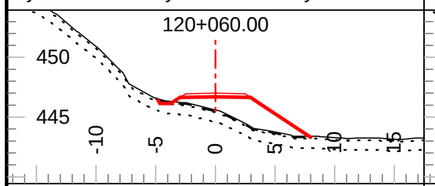

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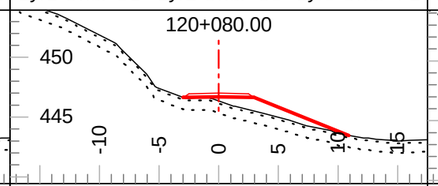
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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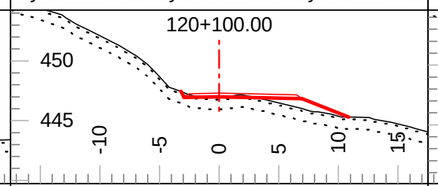

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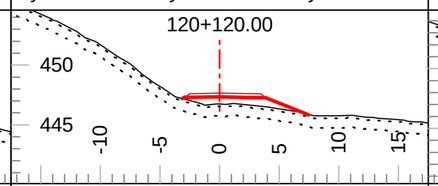

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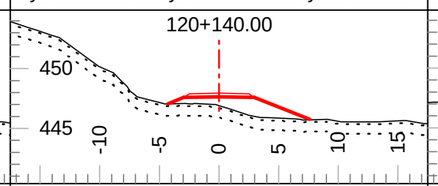

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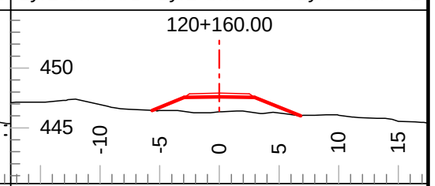
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



Tmpl: 5MND Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

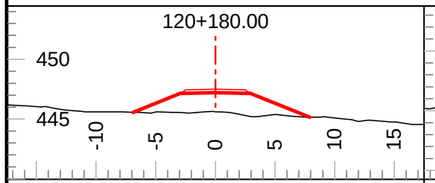
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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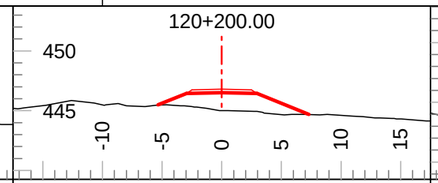

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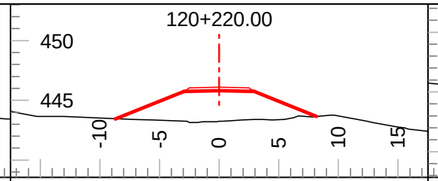

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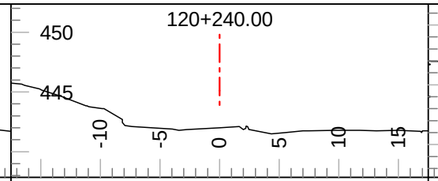

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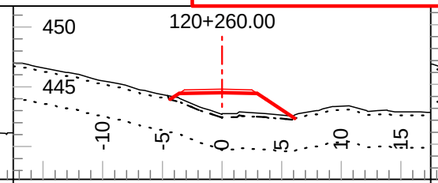

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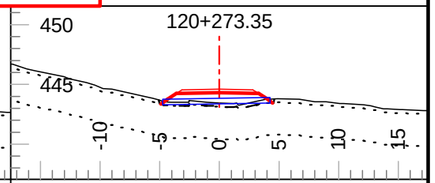
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd: F2



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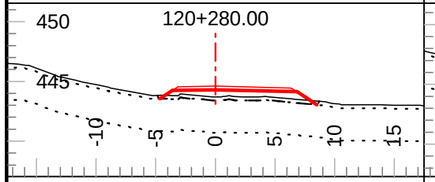

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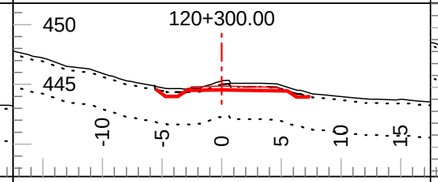

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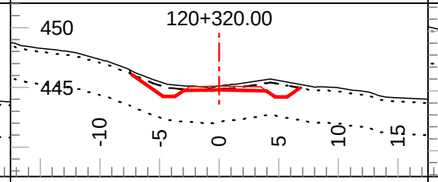

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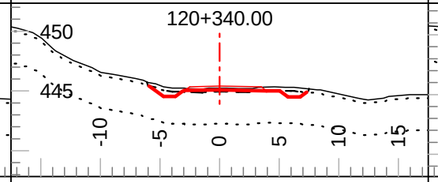

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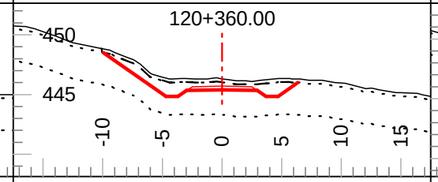

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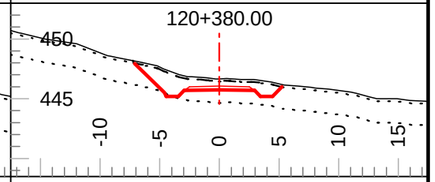

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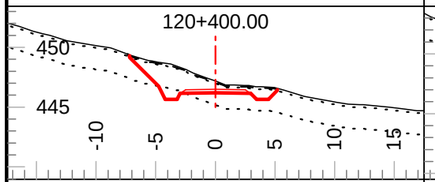

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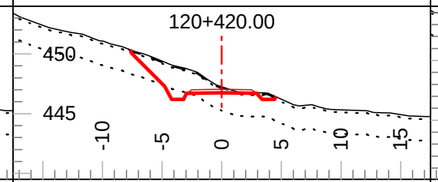

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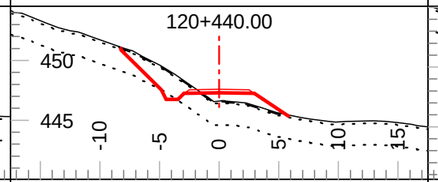

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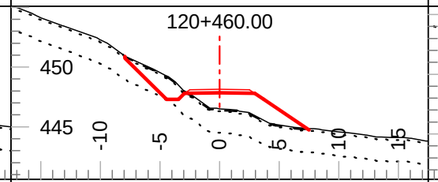

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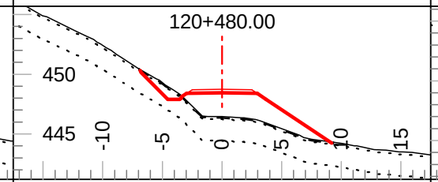

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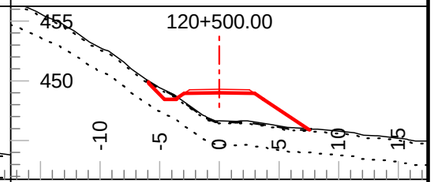

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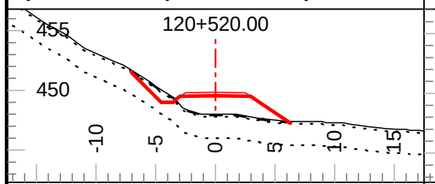

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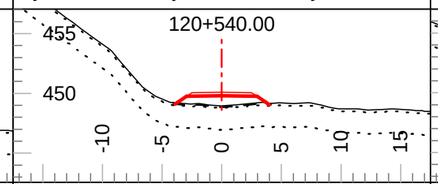

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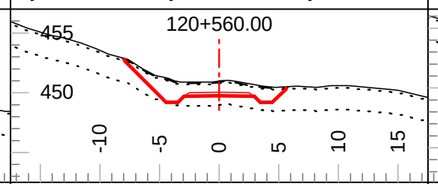

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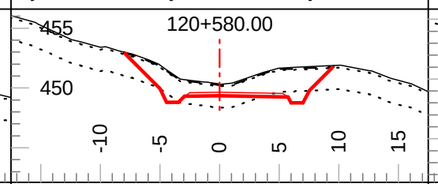

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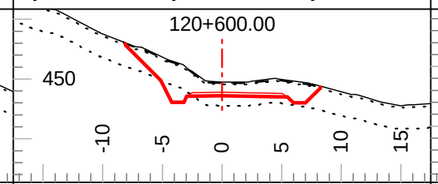

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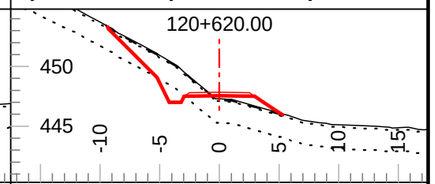

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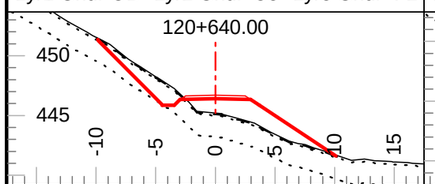

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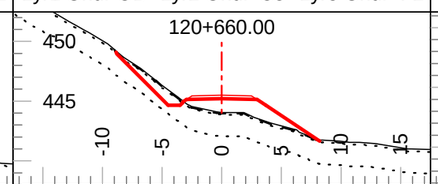

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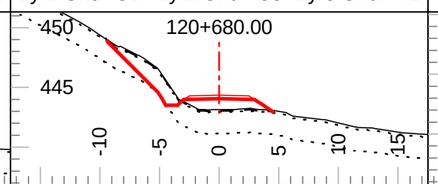

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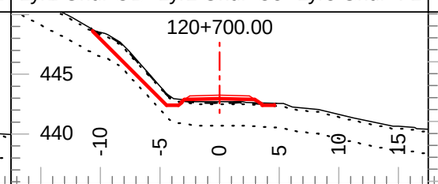

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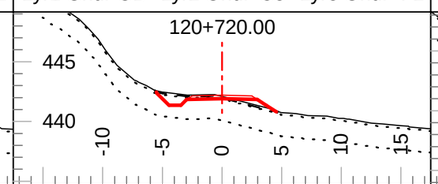

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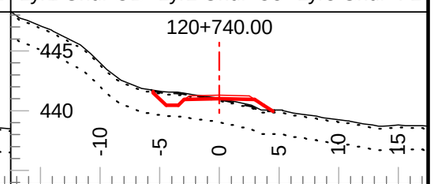

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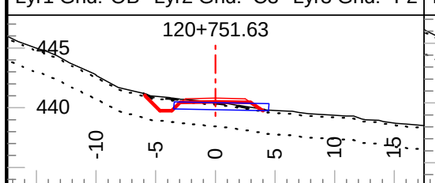

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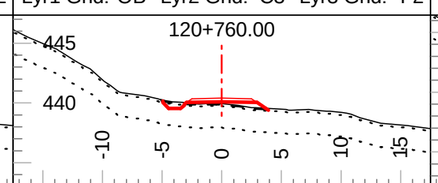

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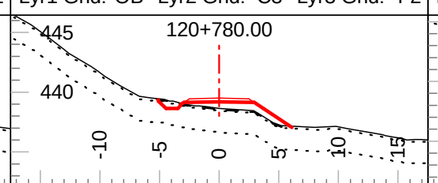

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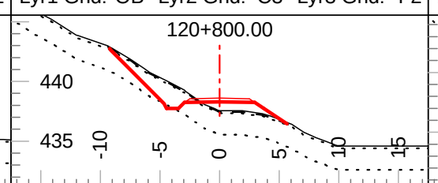

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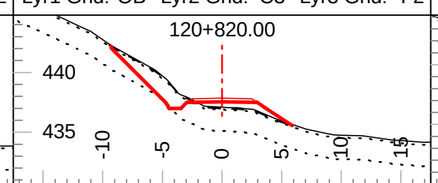

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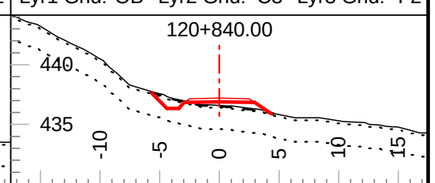


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 2.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

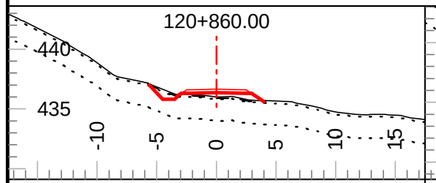
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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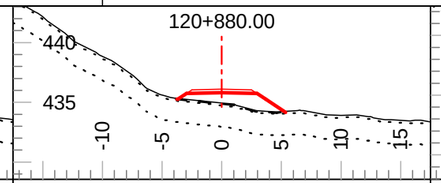
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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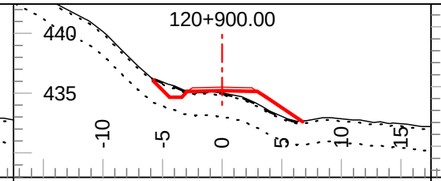

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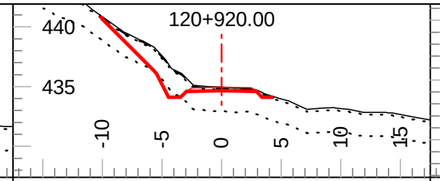

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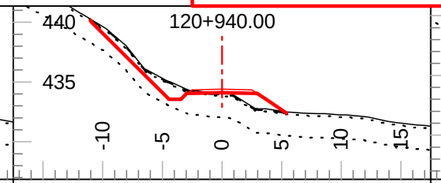

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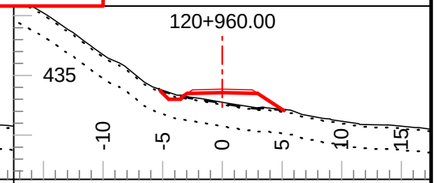

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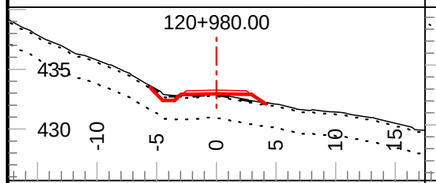

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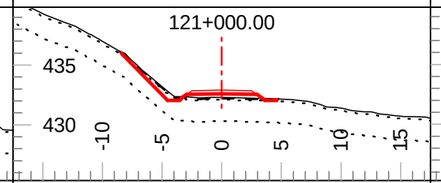

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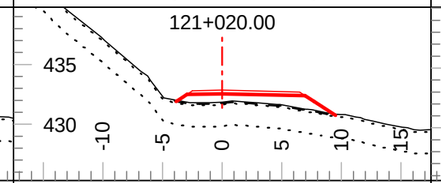

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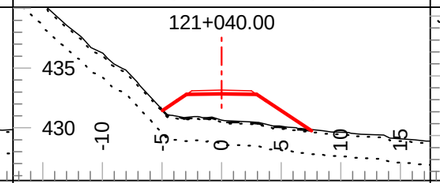

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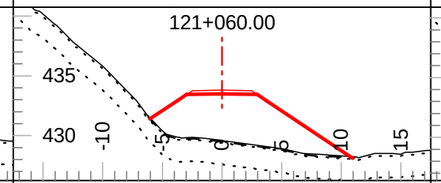

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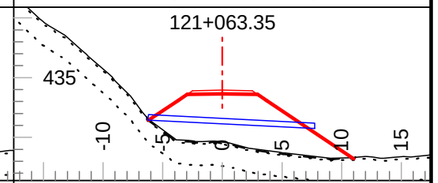

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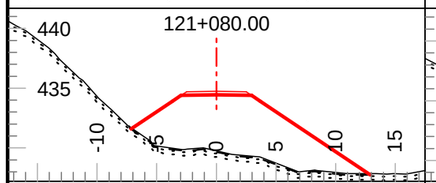

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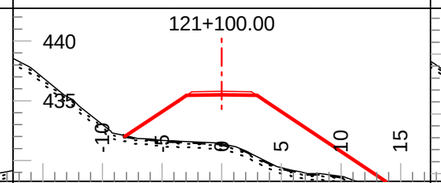

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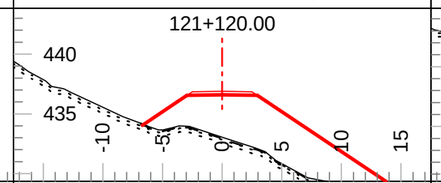

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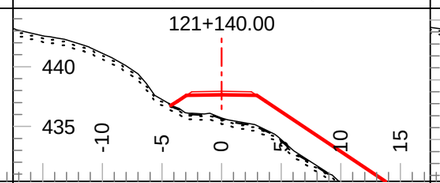

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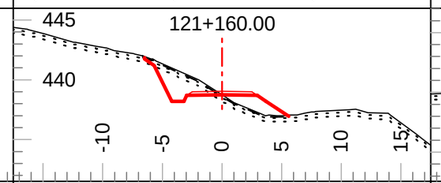

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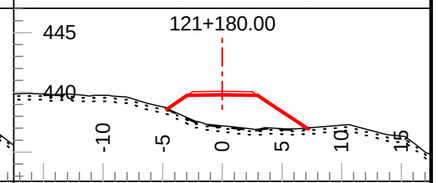

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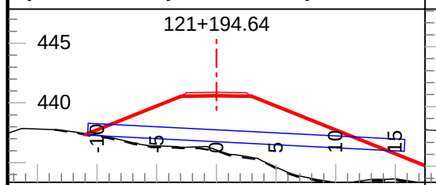

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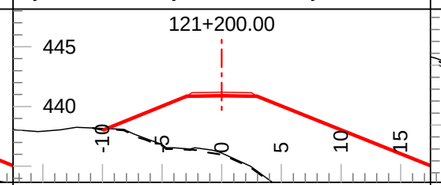

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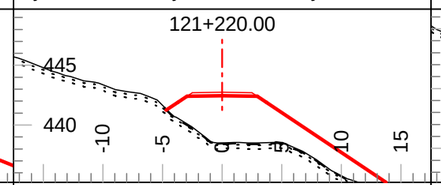

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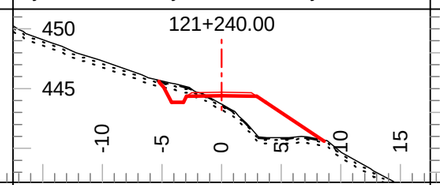

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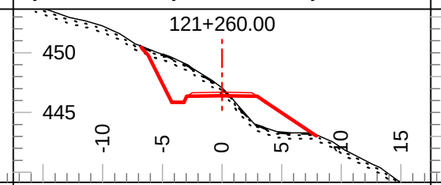

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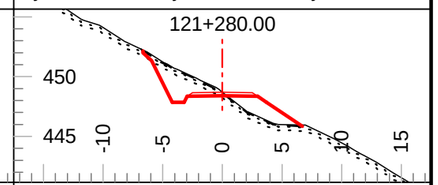

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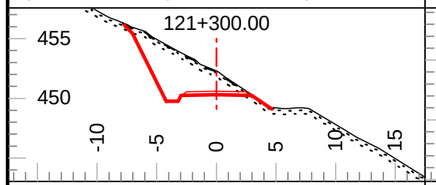

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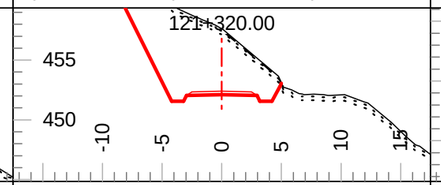

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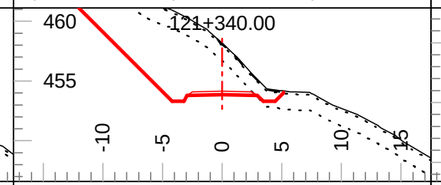

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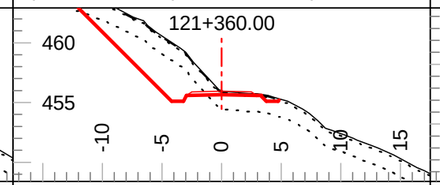

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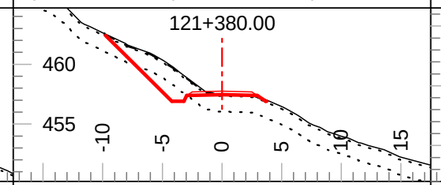

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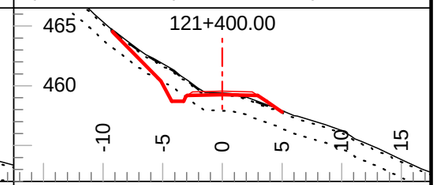

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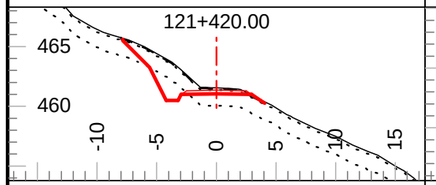

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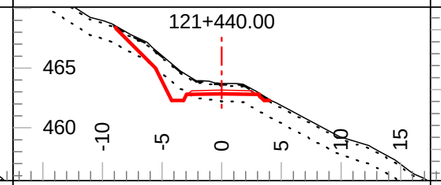

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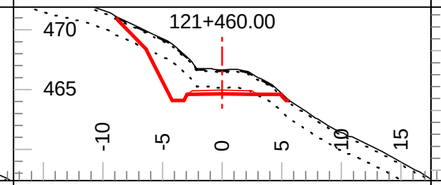

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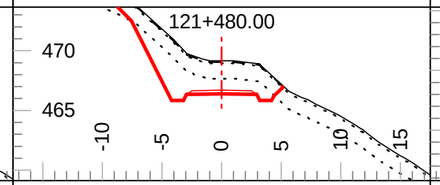

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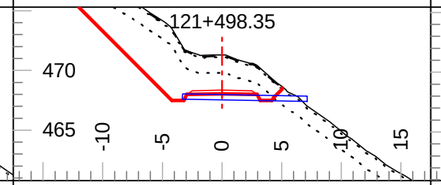

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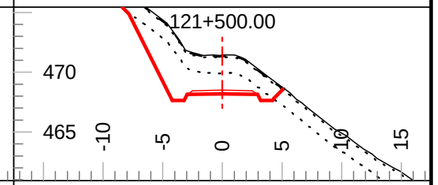

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Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

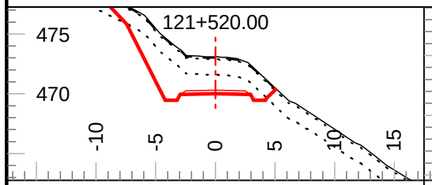
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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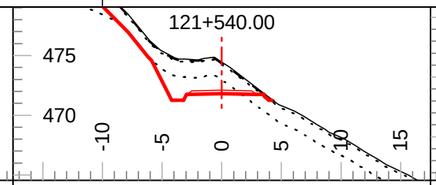

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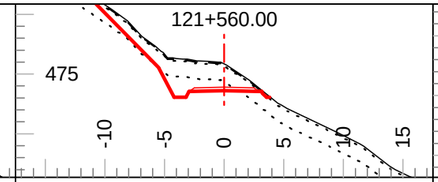

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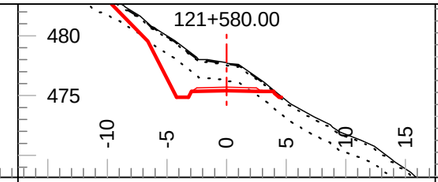

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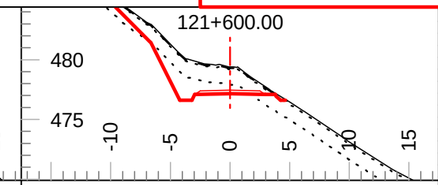

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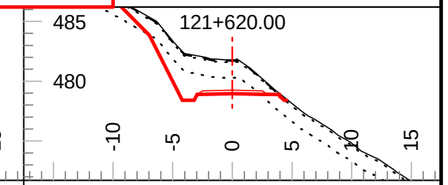

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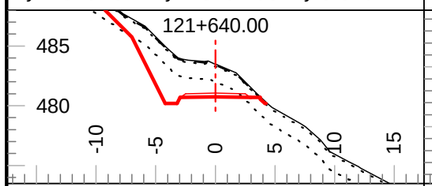

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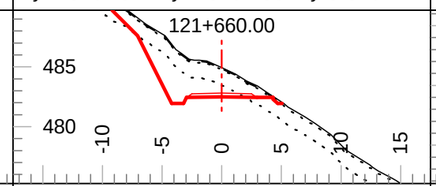

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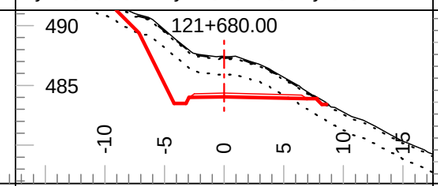
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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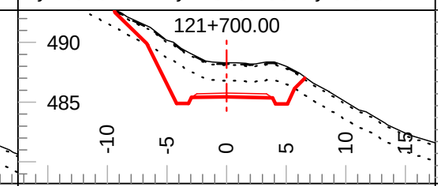

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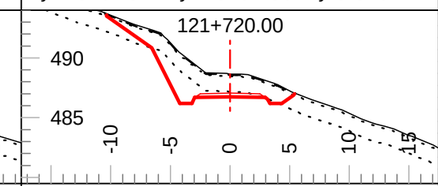

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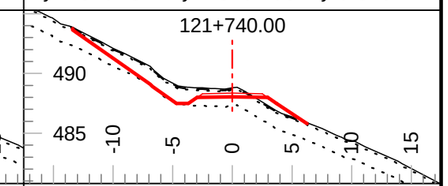

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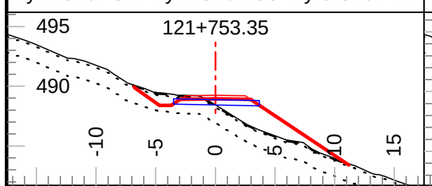

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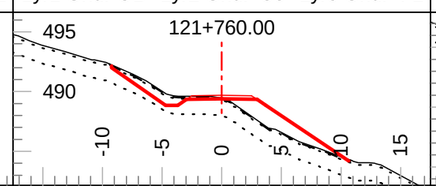

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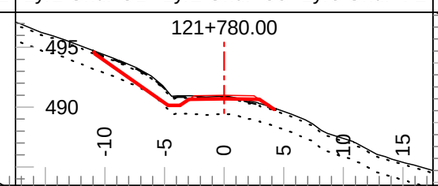

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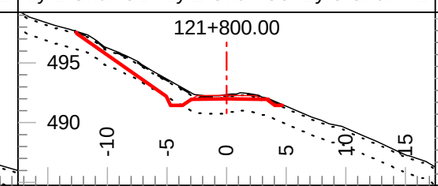

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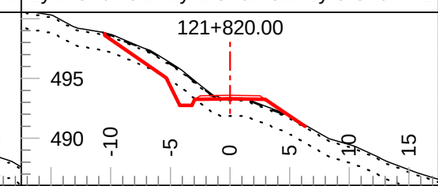

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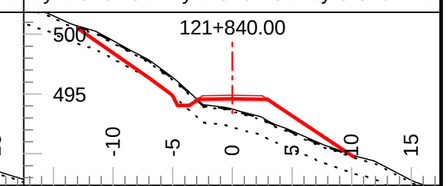

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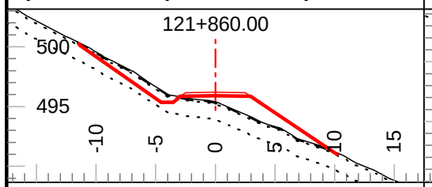

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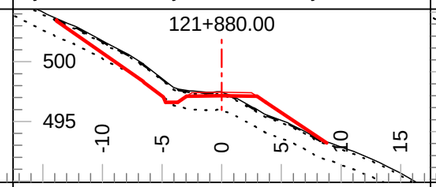

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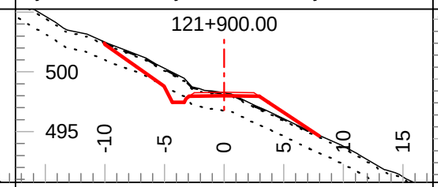

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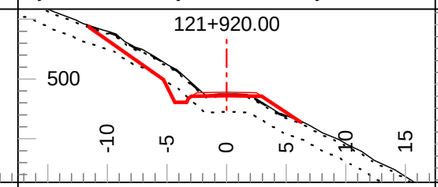

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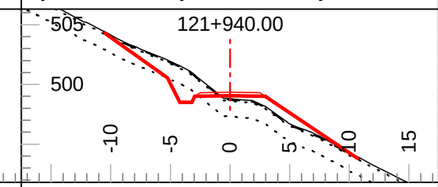

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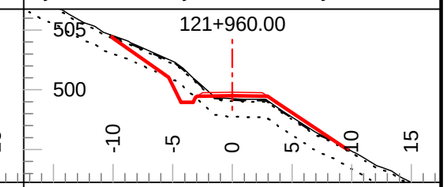

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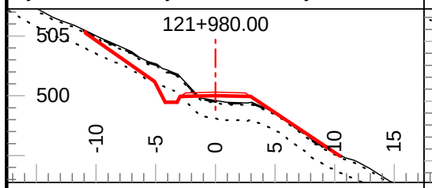

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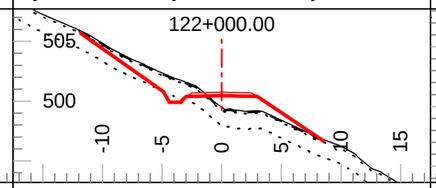

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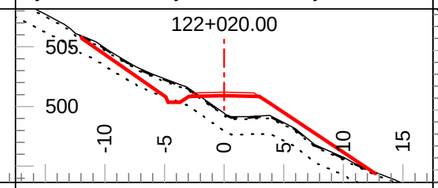

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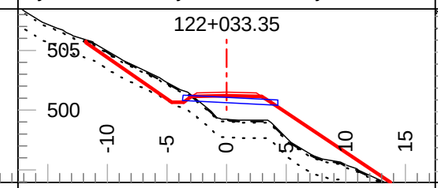

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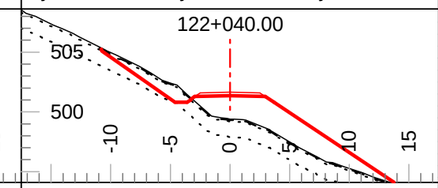

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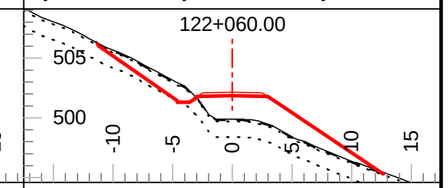

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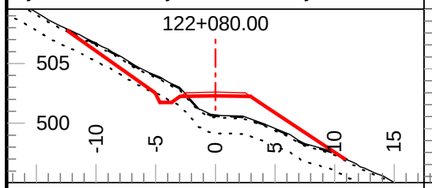

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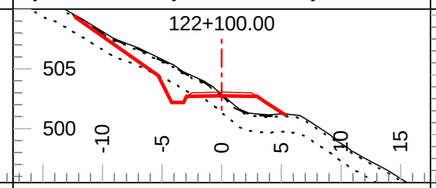

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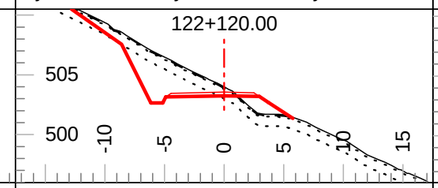

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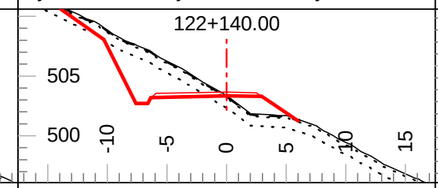

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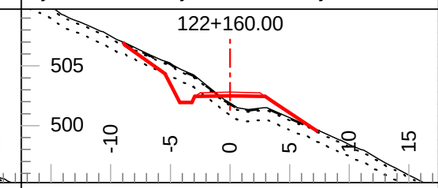

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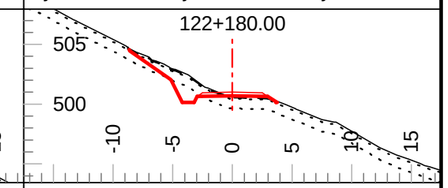

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Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2

Coffee Gold Mine

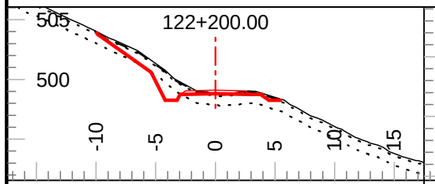
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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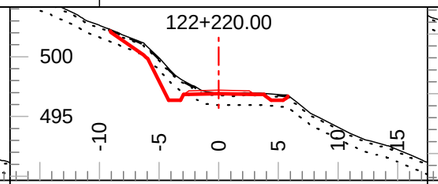
Lyr1 Gnd: OB Lyr2 Gnd: C1 Lyr3 Gnd: F2



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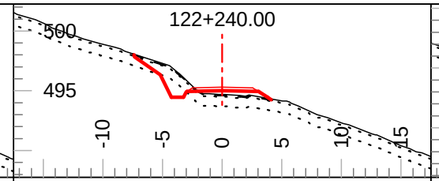

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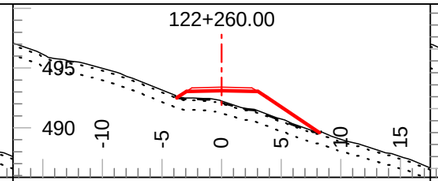

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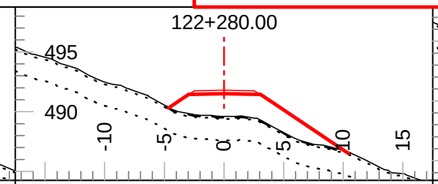

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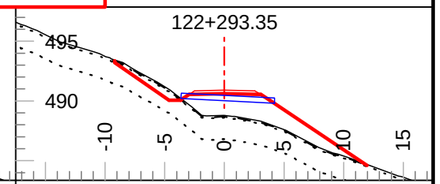

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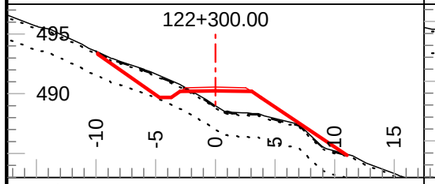

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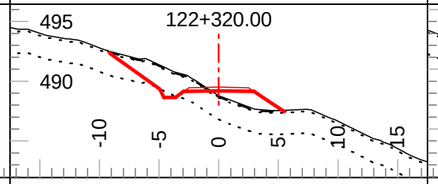

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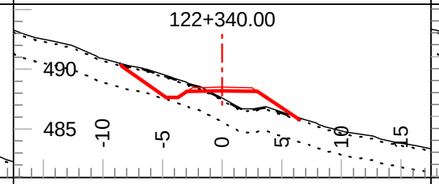

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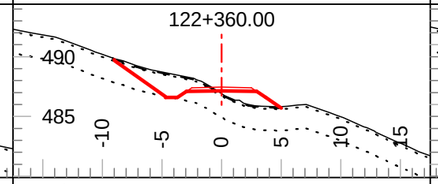

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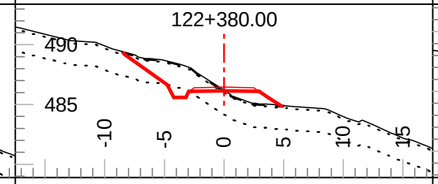

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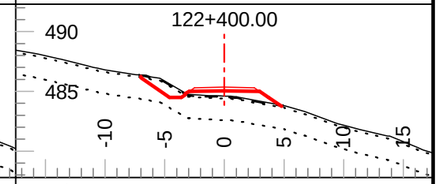

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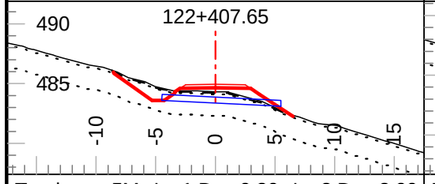

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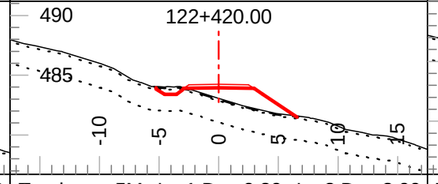

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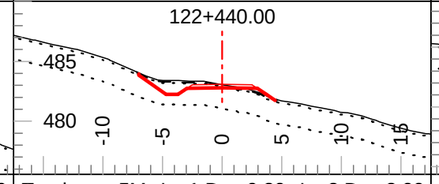
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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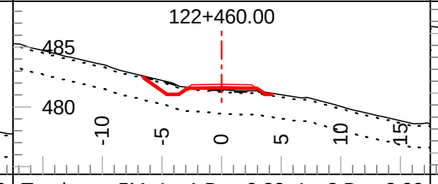

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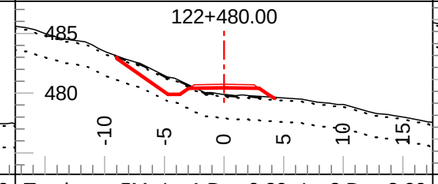

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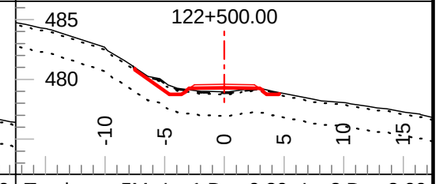

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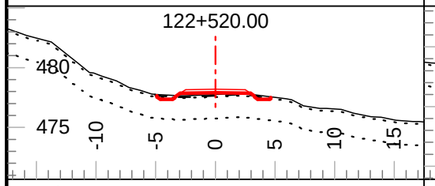

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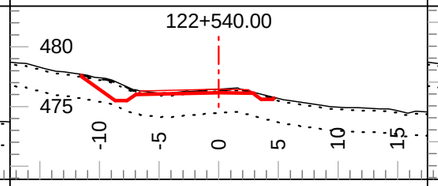

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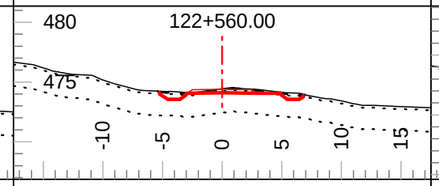

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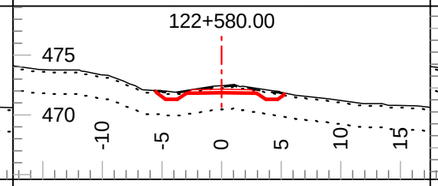

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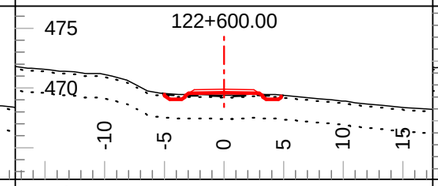

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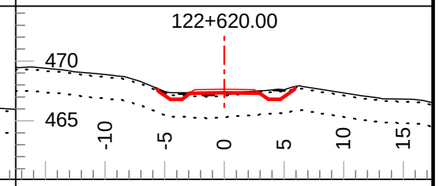

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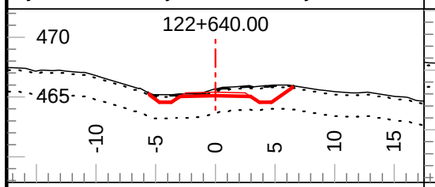

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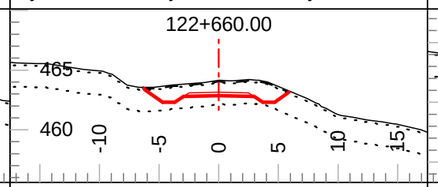

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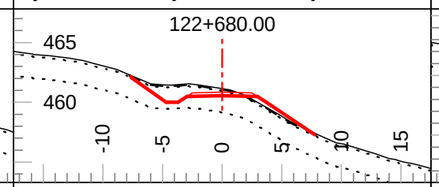

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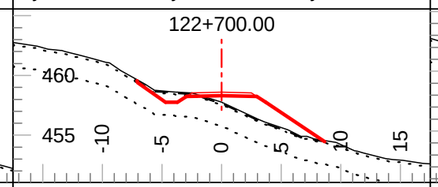

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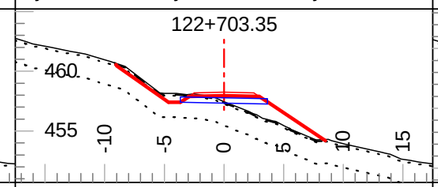

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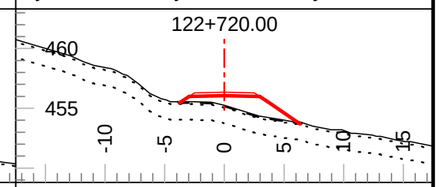

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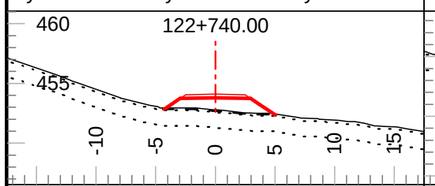

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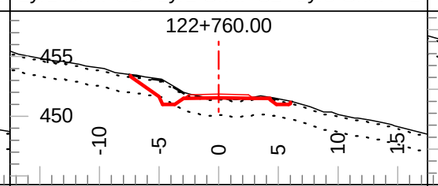

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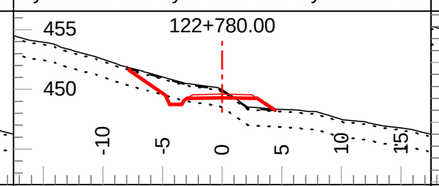

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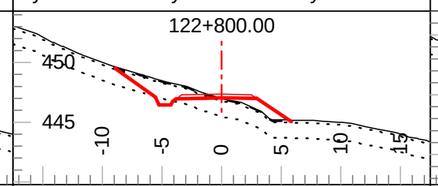

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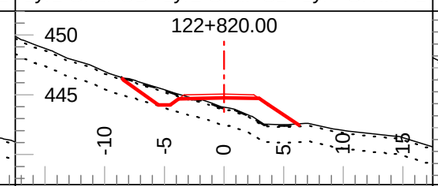

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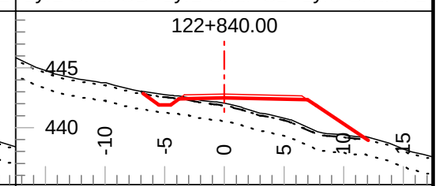

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Coffee Gold Mine

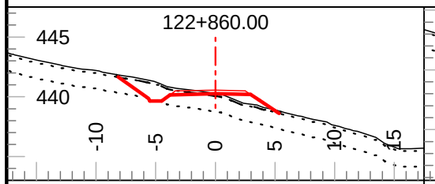
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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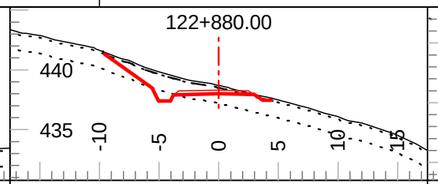

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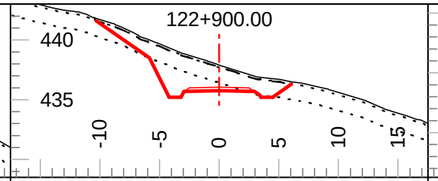

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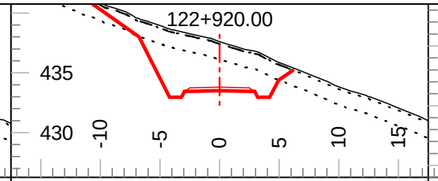

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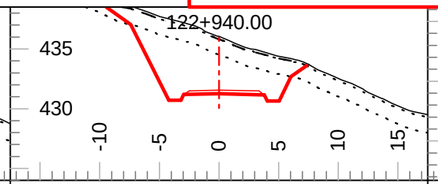

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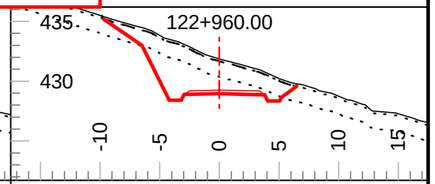

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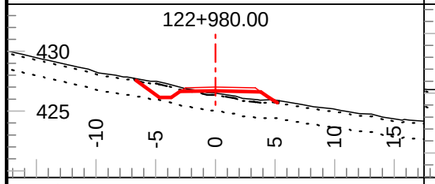

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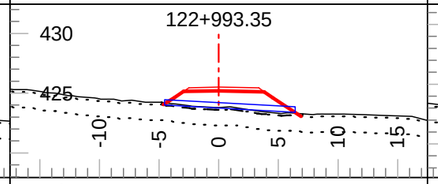

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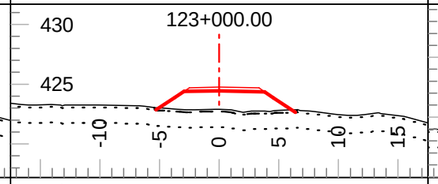

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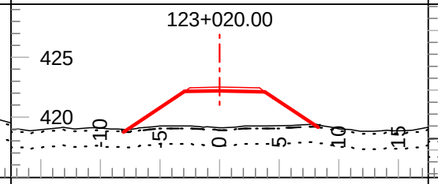

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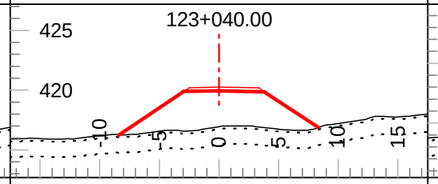

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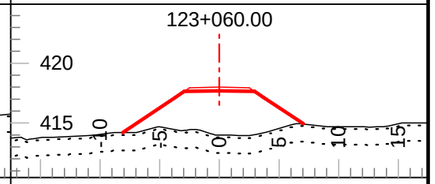

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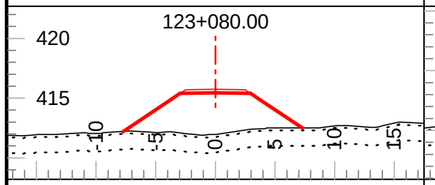

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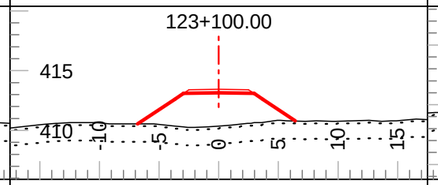

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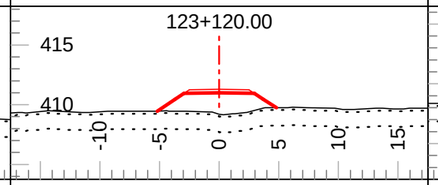

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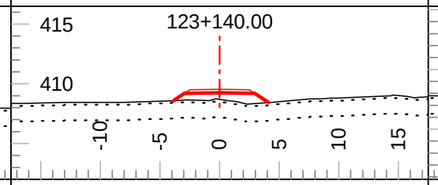

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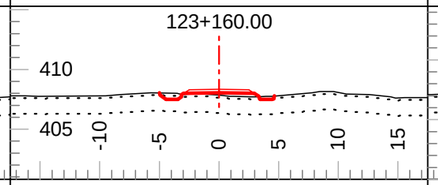

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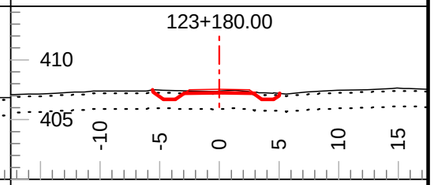

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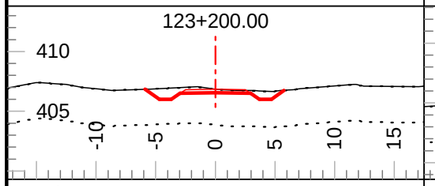

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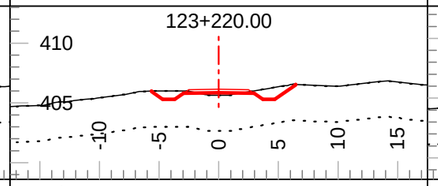

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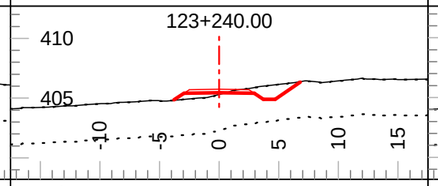

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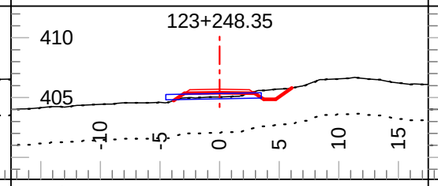
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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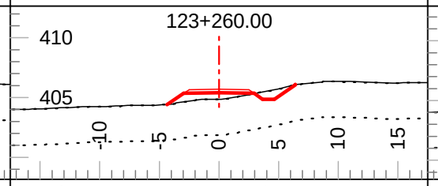

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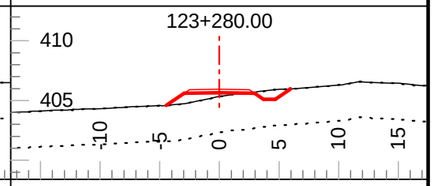

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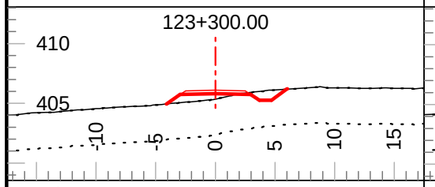

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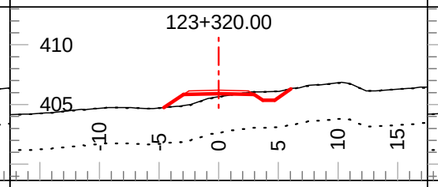

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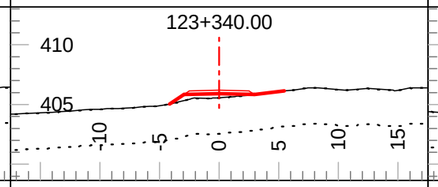

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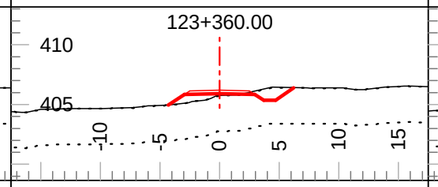

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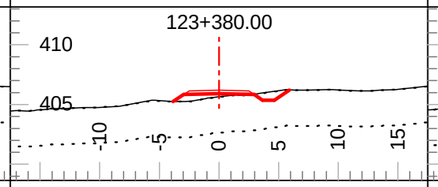

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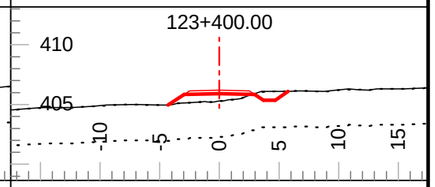

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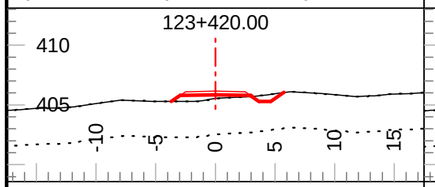

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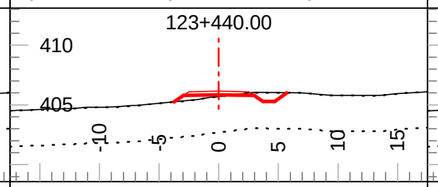

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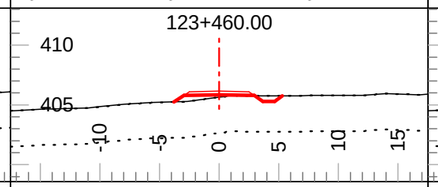

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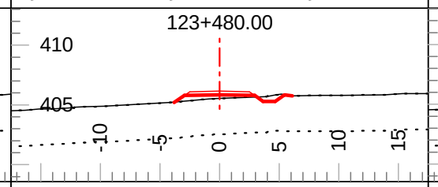

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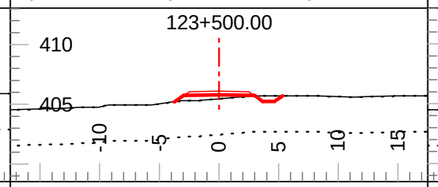

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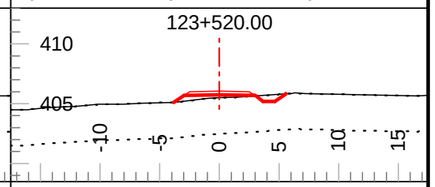

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Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2

Coffee Gold Mine

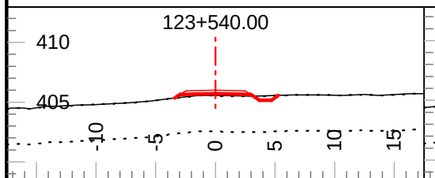
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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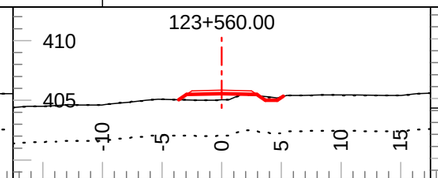

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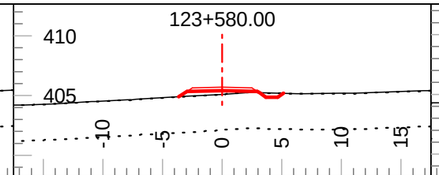

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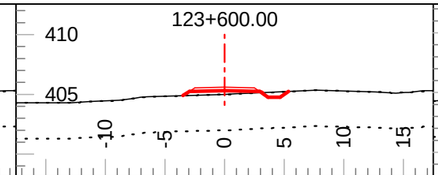

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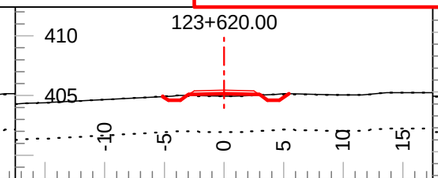

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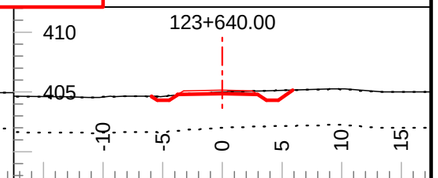

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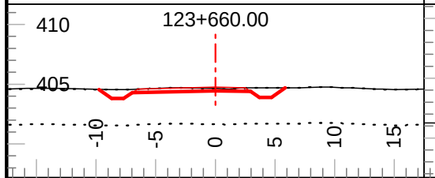

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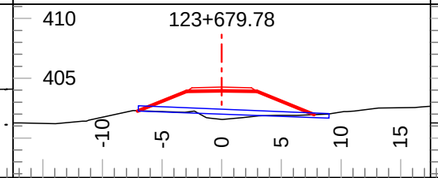

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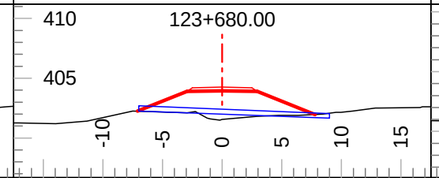

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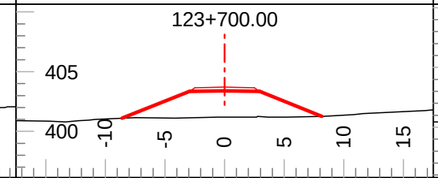

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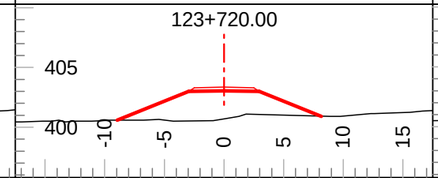

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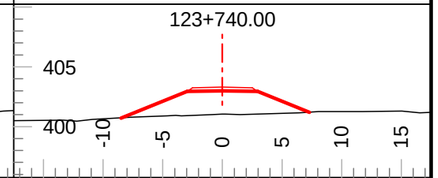

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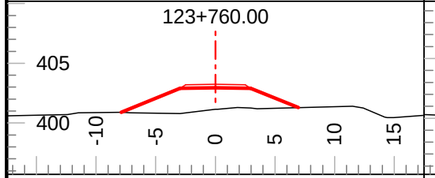

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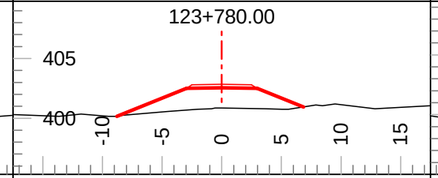

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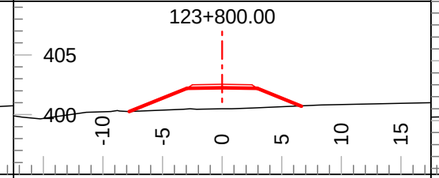

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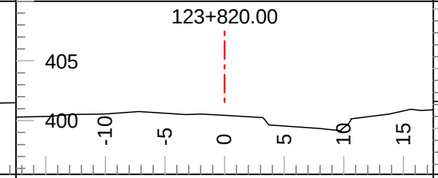

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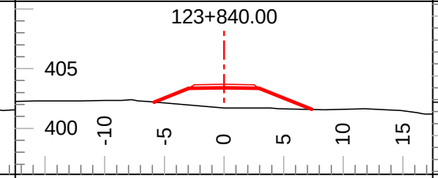

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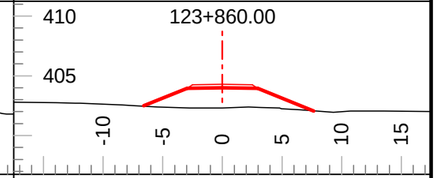

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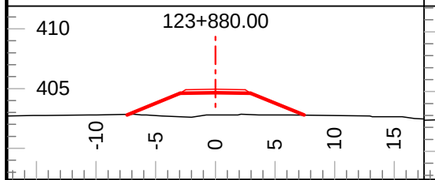

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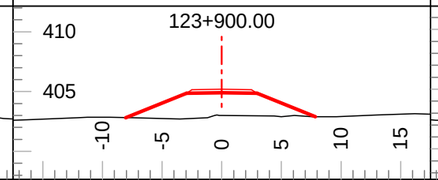

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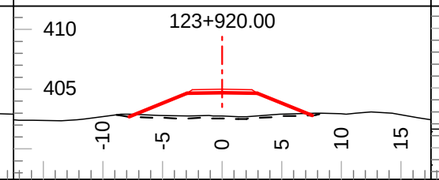

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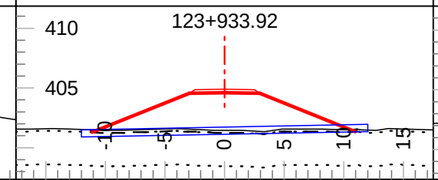

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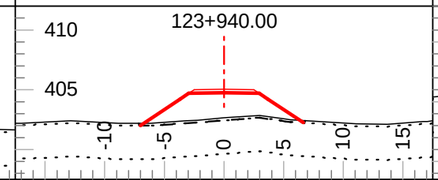

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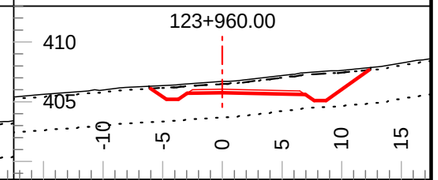

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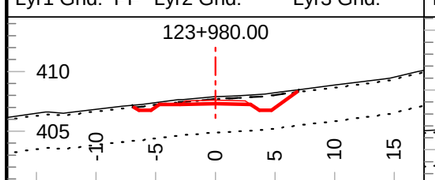

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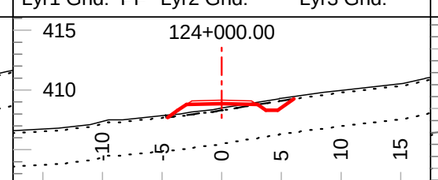

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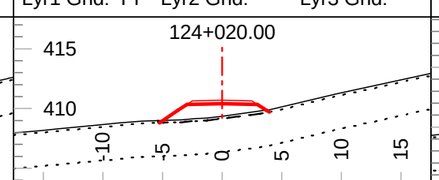

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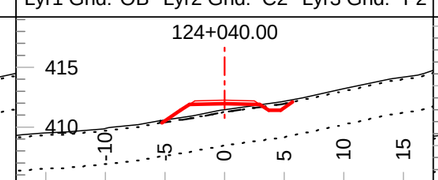
Lyr1 Gnd: OB Lyr2 Gnd: C2 Lyr3 Gnd: F2



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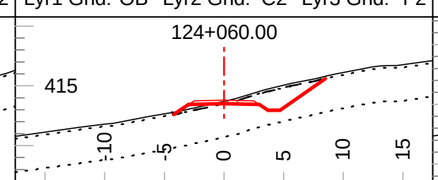

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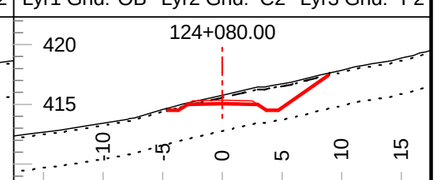

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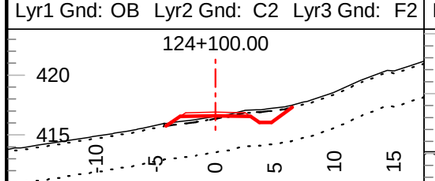

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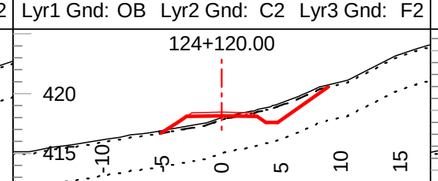

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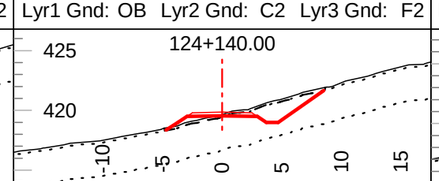

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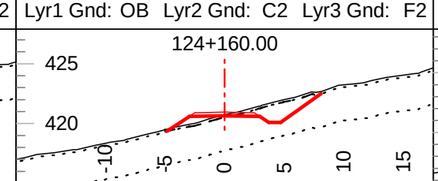

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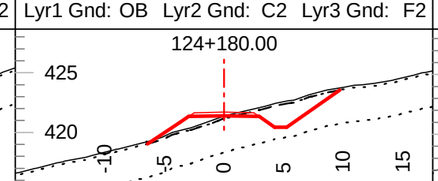

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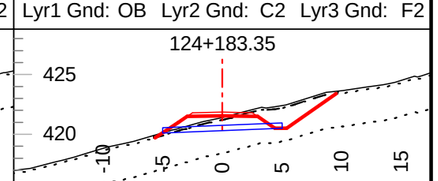

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Coffee Gold Mine

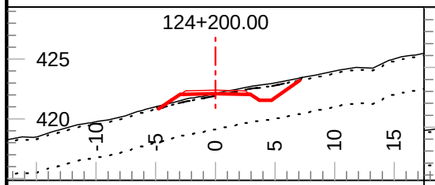
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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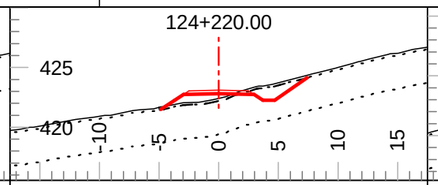

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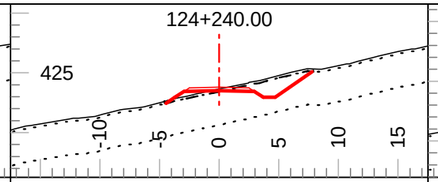

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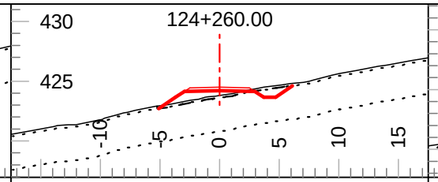

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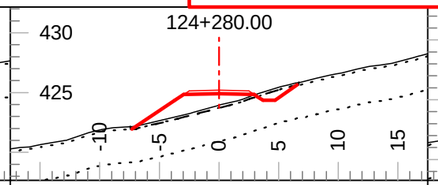

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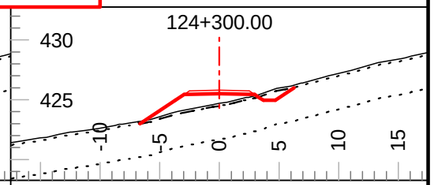

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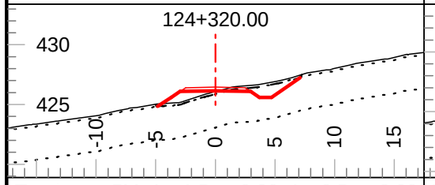

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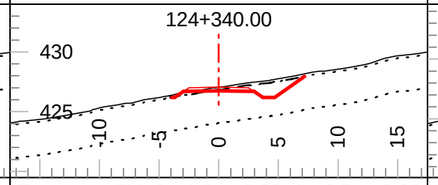

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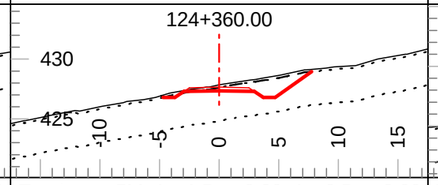

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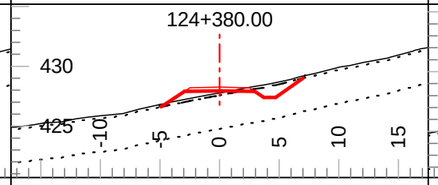

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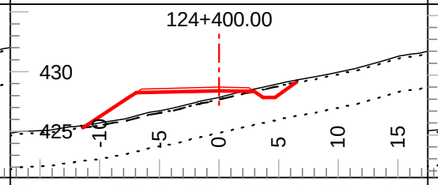

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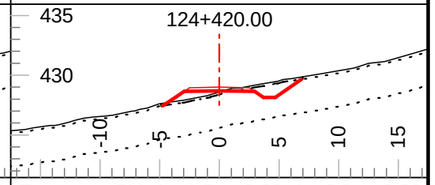

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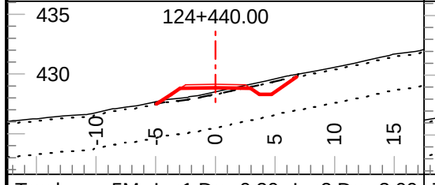

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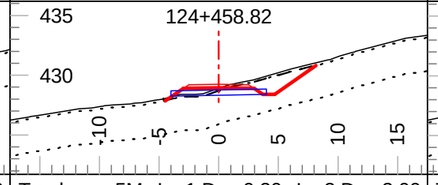

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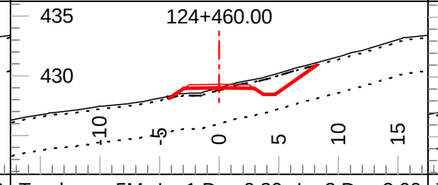

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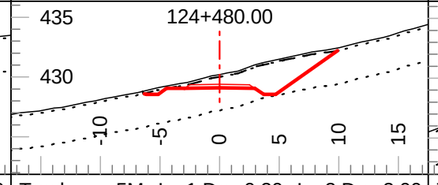

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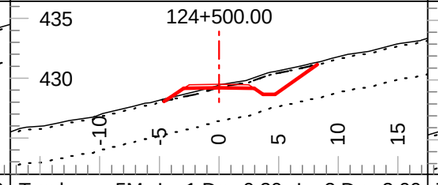

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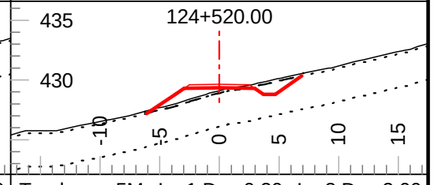

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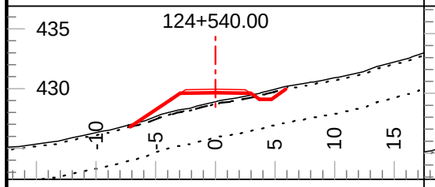

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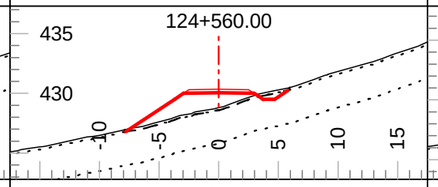

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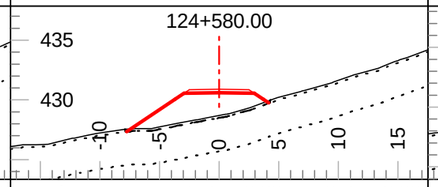

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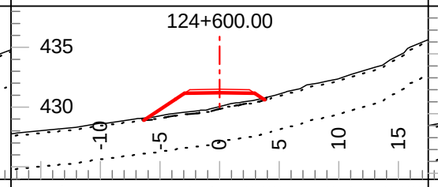

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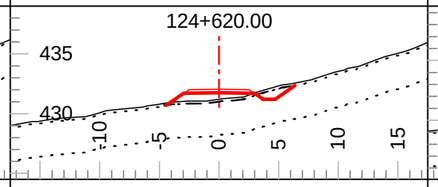

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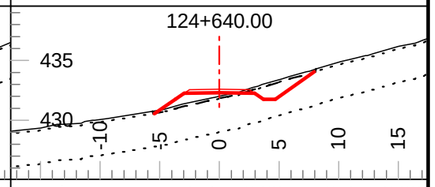

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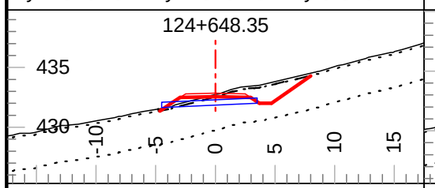

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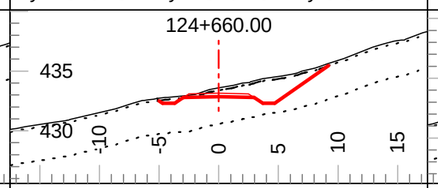

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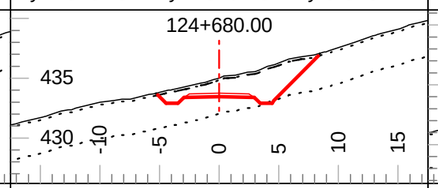

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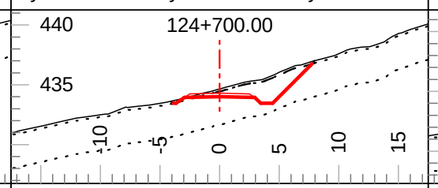

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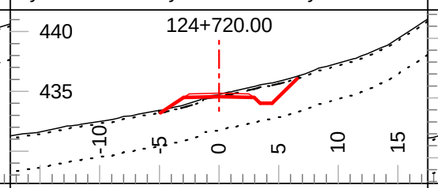

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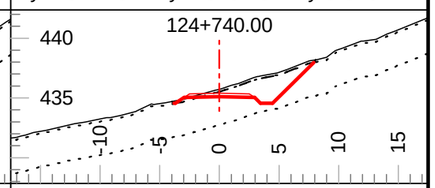

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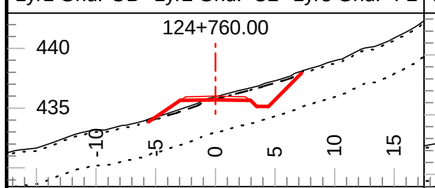

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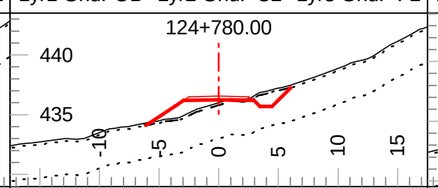

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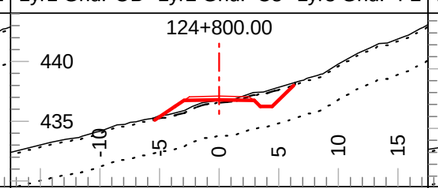

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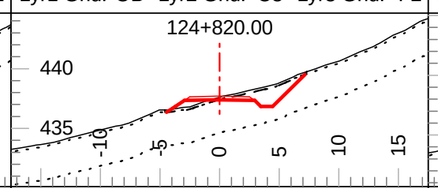

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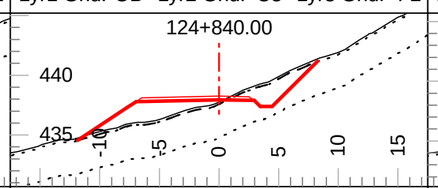

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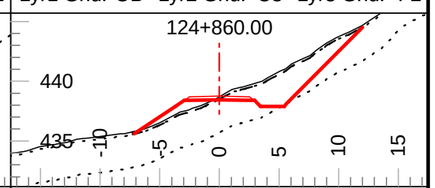

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Coffee Gold Mine

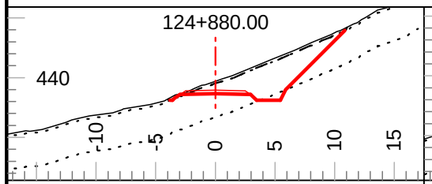
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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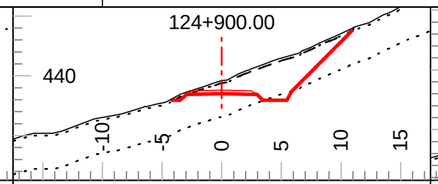

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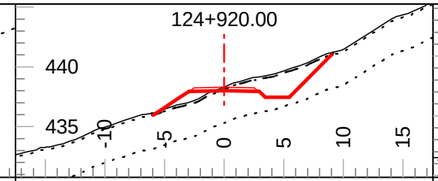

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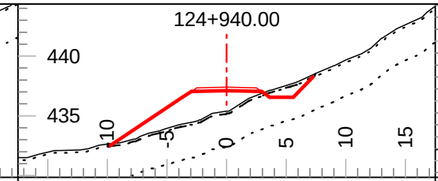

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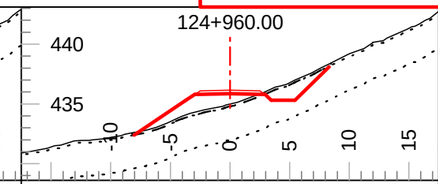

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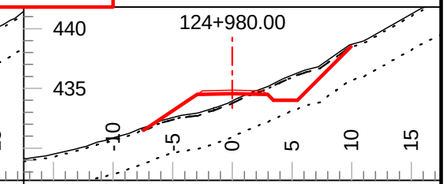

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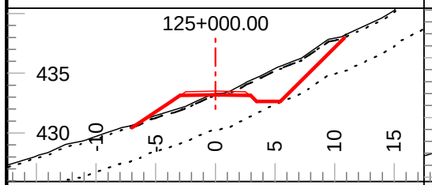

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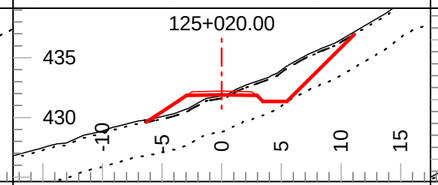

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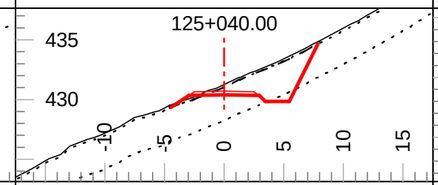

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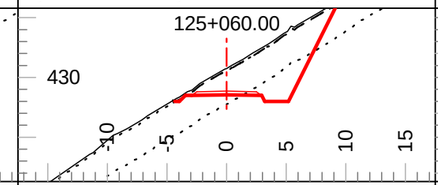

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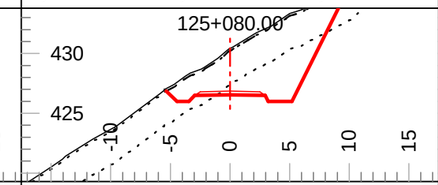

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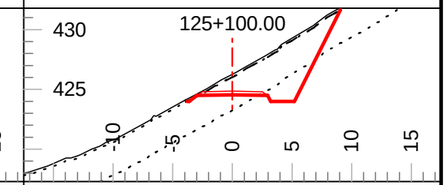

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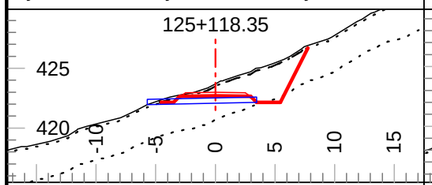

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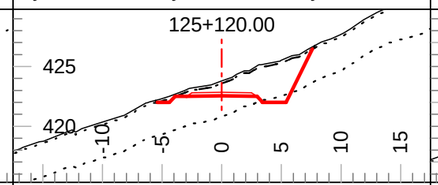

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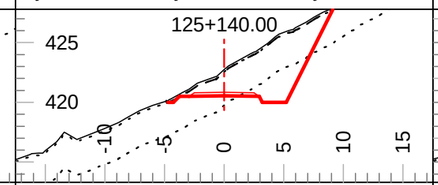

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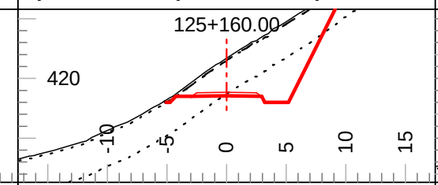

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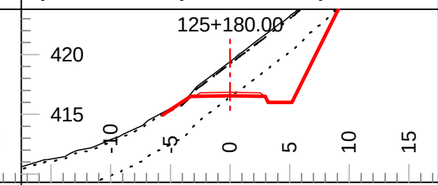

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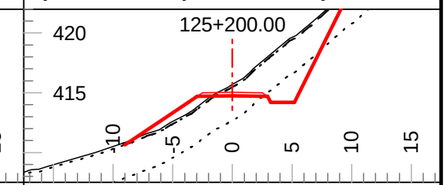

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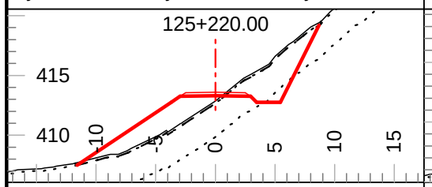

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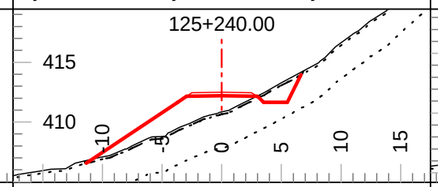

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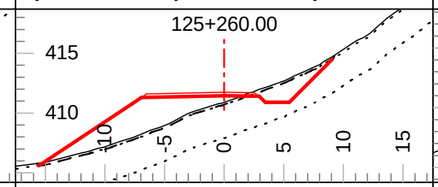

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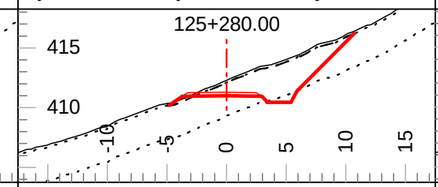

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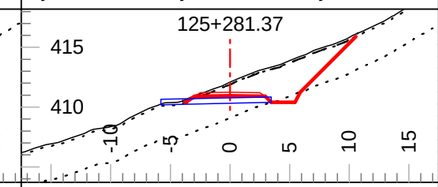

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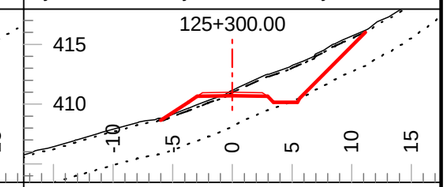

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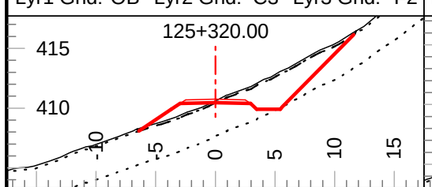

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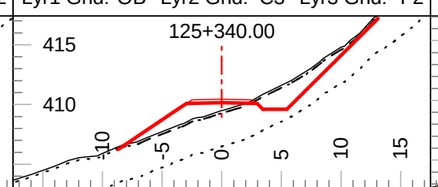

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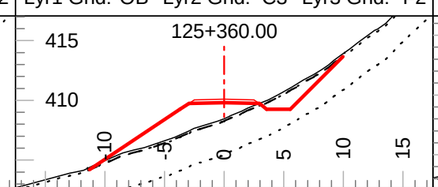

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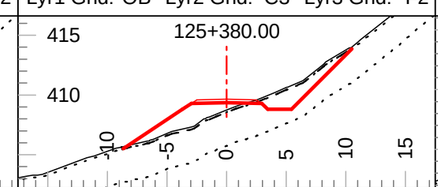

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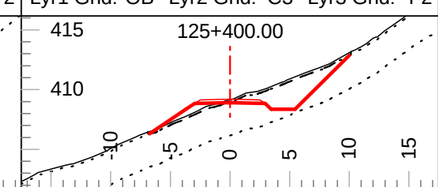

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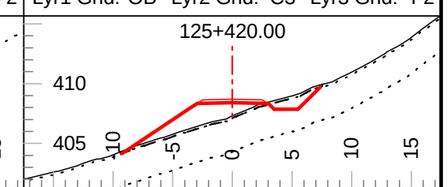

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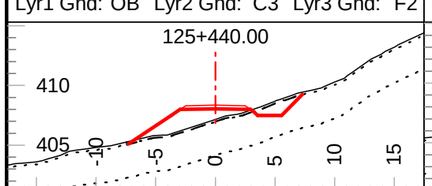

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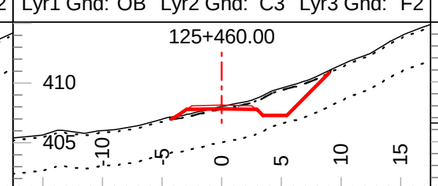

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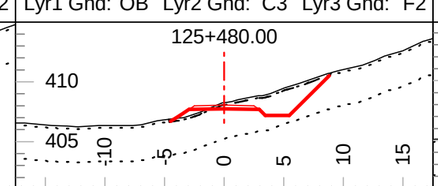

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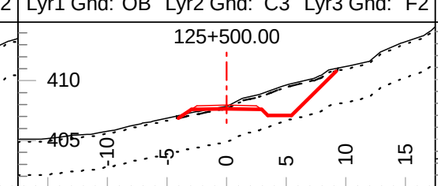

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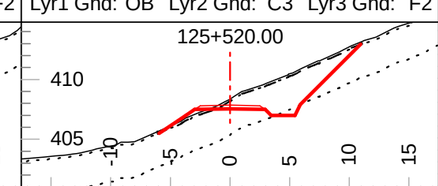

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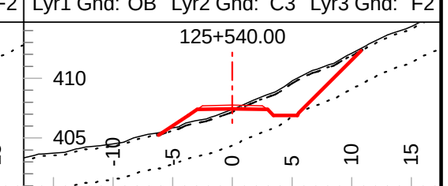


Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 3.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

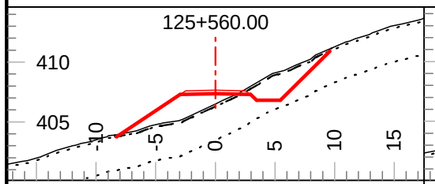
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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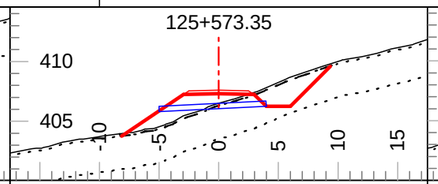

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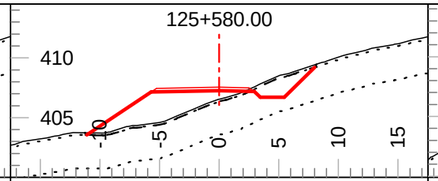

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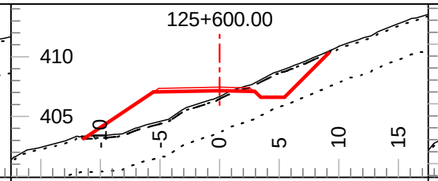
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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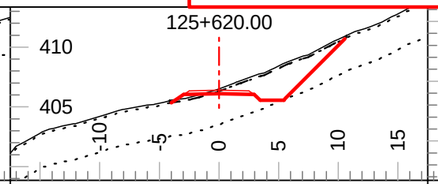
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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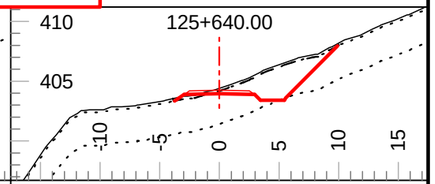

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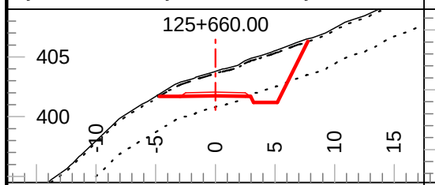

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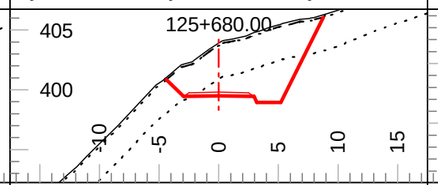

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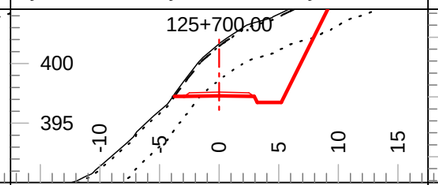

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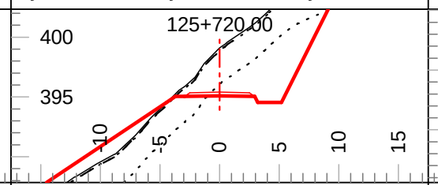

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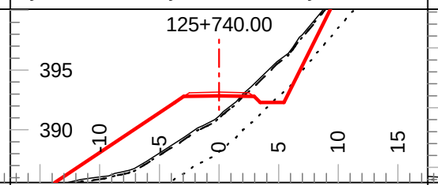

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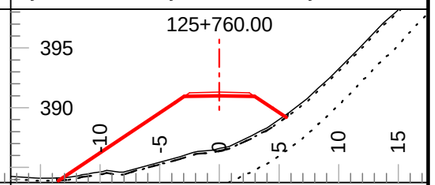

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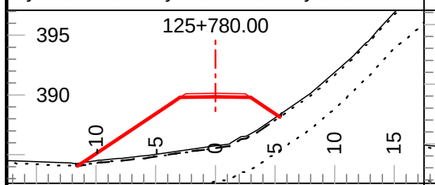

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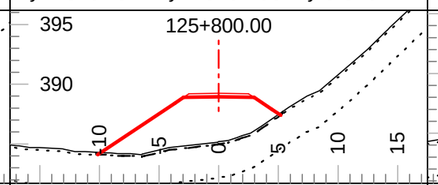

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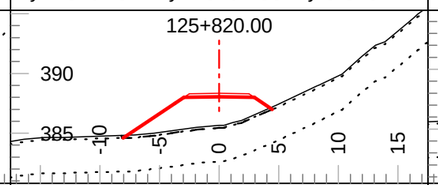

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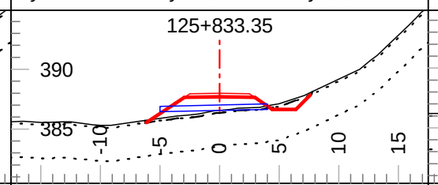

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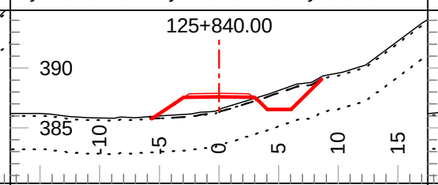

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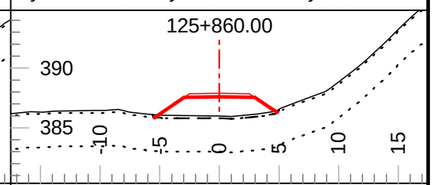

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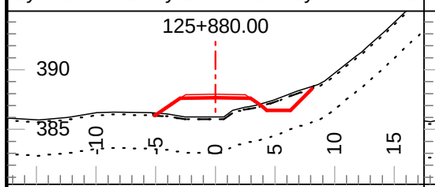

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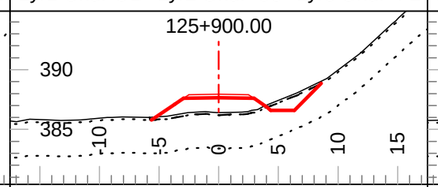

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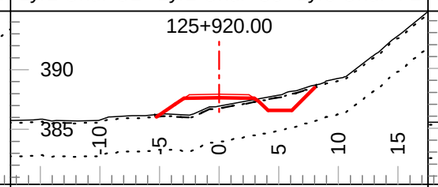

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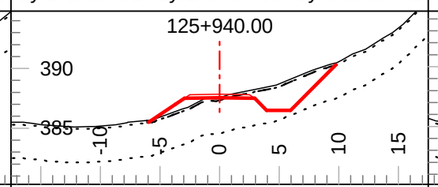

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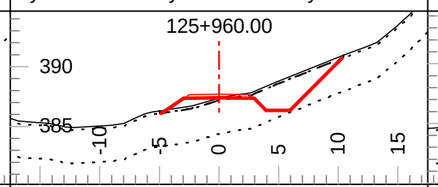

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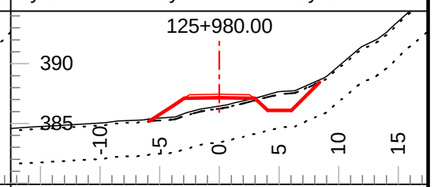

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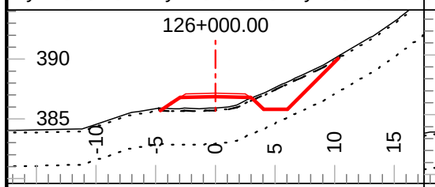

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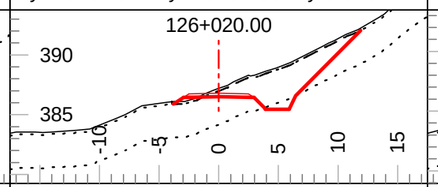

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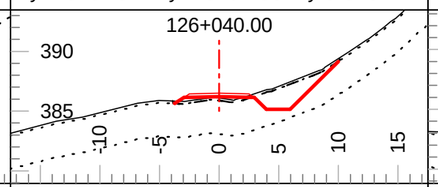

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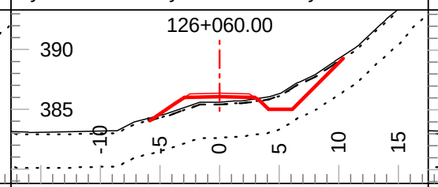

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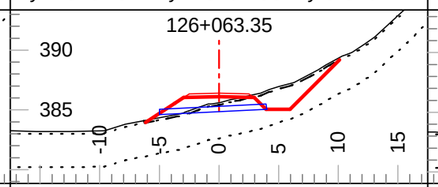

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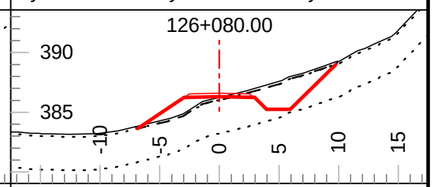

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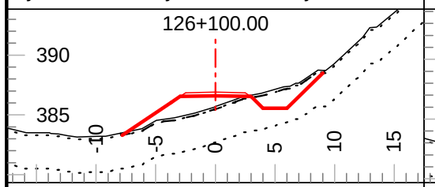

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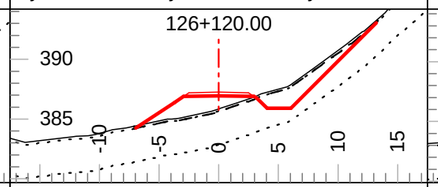

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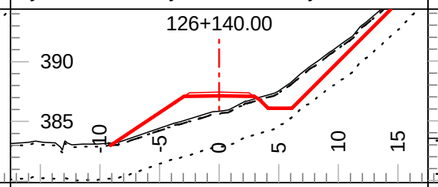

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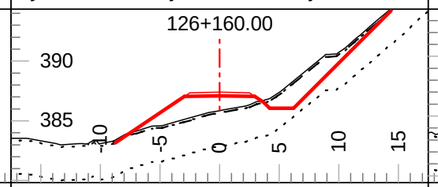

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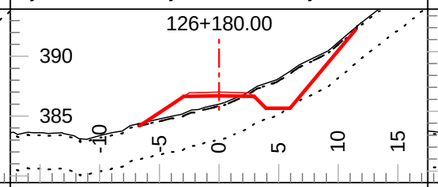

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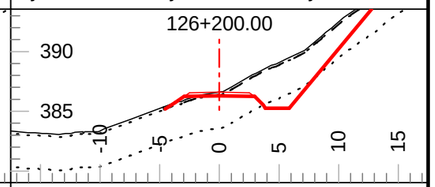
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



Tmpl: 5M Lyr1 Dp.: 0.20 Lyr2 Dp.: 3.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

Coffee Gold Mine

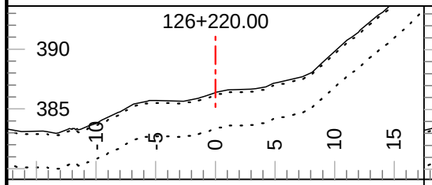
Northern Access Route Upgrade and Establishment
Section 3
Geometric Alignment - Cross Sections
km 82.7 - 126.2

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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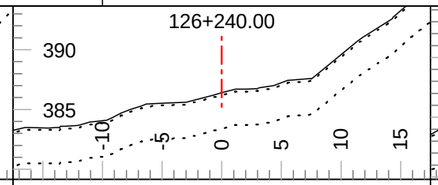

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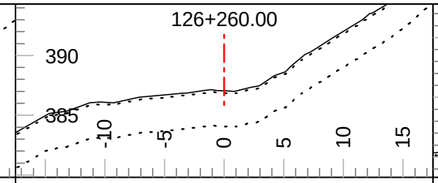
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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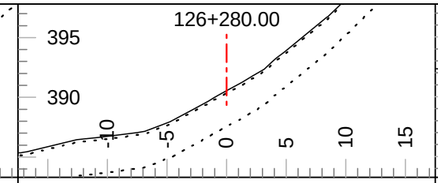
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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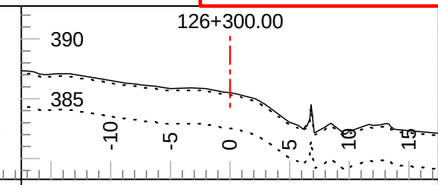

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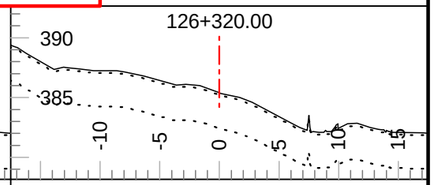

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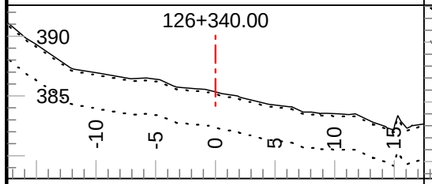
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



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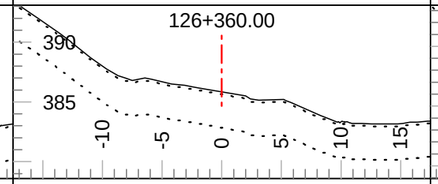

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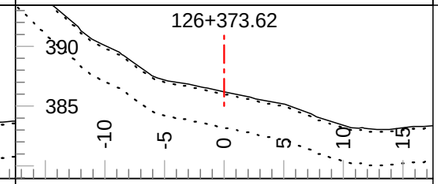
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2



Tmpl: BR Lyr1 Dp.: 0.20 Lyr2 Dp.: 3.00
Lyr1 Gnd: OB Lyr2 Gnd: C3 Lyr3 Gnd: F2

APPENDIX 31-A-XVI

Detailed Design Road Drawings

Part 2 of 5

GOLDCORP

Coffee Gold Project

Coffee Creek Access Route Upgrade and Establishment Section 2 Geometric Alignment Km 41.1 - 82.7

Page Stations: 40783.6 to 42063.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C1	C2	C3	C4	C5	C6	C7
IP Stn.	40952	41099	41395	41505	41767	41921	42093
BC Stn.	40896	41072	41369	41479	41742	41847	42026
Arc. Len.	109	53	53	52	50	119	118
EC Stn.	41005	41125	41422	41531	41792	41966	42144
Radius	200	180	180	300	500	80	100
Angle	31	-17	17	10	-6	-85	68
Tangent	56	27	27	26	25	74	67
Da, a=100	29	32	32	19	11	72	57

EARTH WORK VOLUMES (Final Cubic Meters)

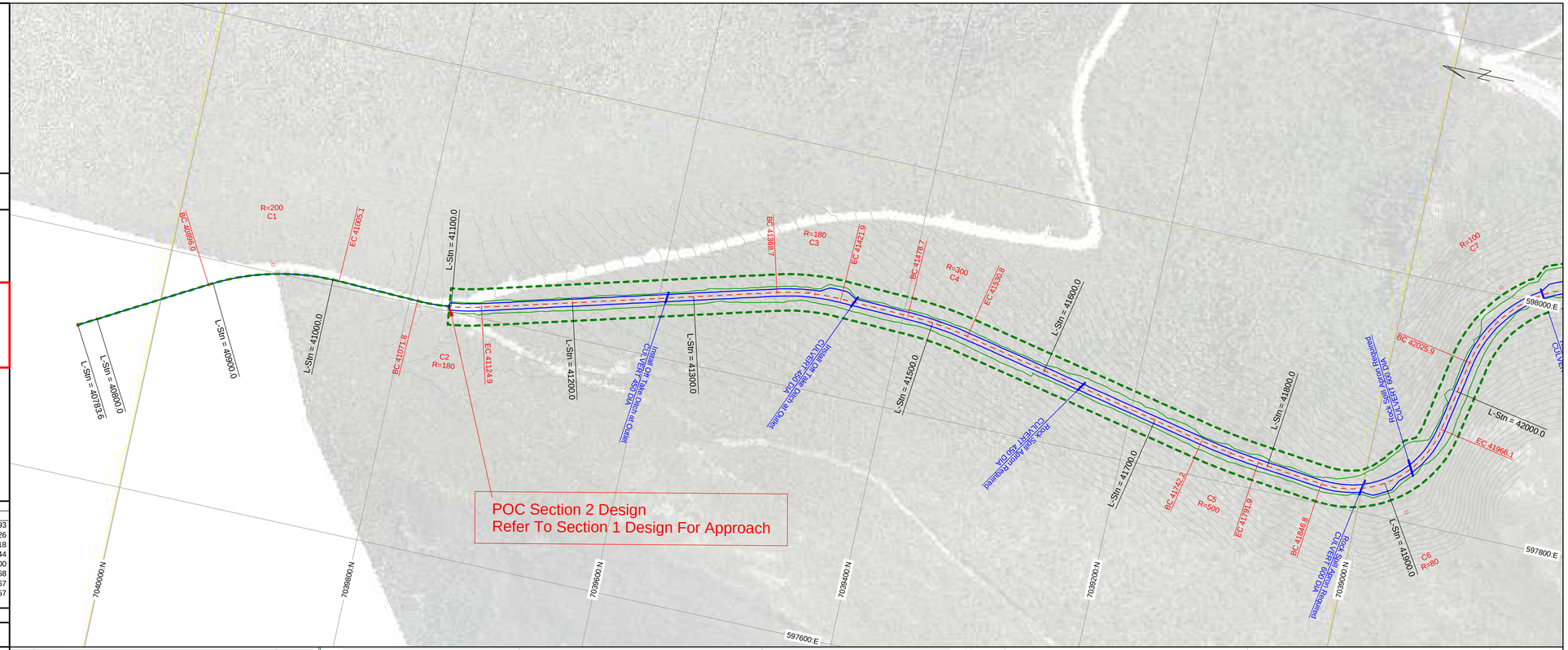
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 40783.6	0	0	0	0	0		0
B 40800.0	0	0	0	0	0		0
B 41000.0	310	0	132	0	207		167
41200.0	684	0	542	0	553		328
41400.0	772	0	849	14	565		354
41600.0	782	0	679	1003	895		328
41800.0	979	0	576	1273	4225		368
42000.0							
Pg. Tot.	3528	0	2778	2289	6444		1544
Cum. Tot.	3528	0	2778	2289	6444		1544

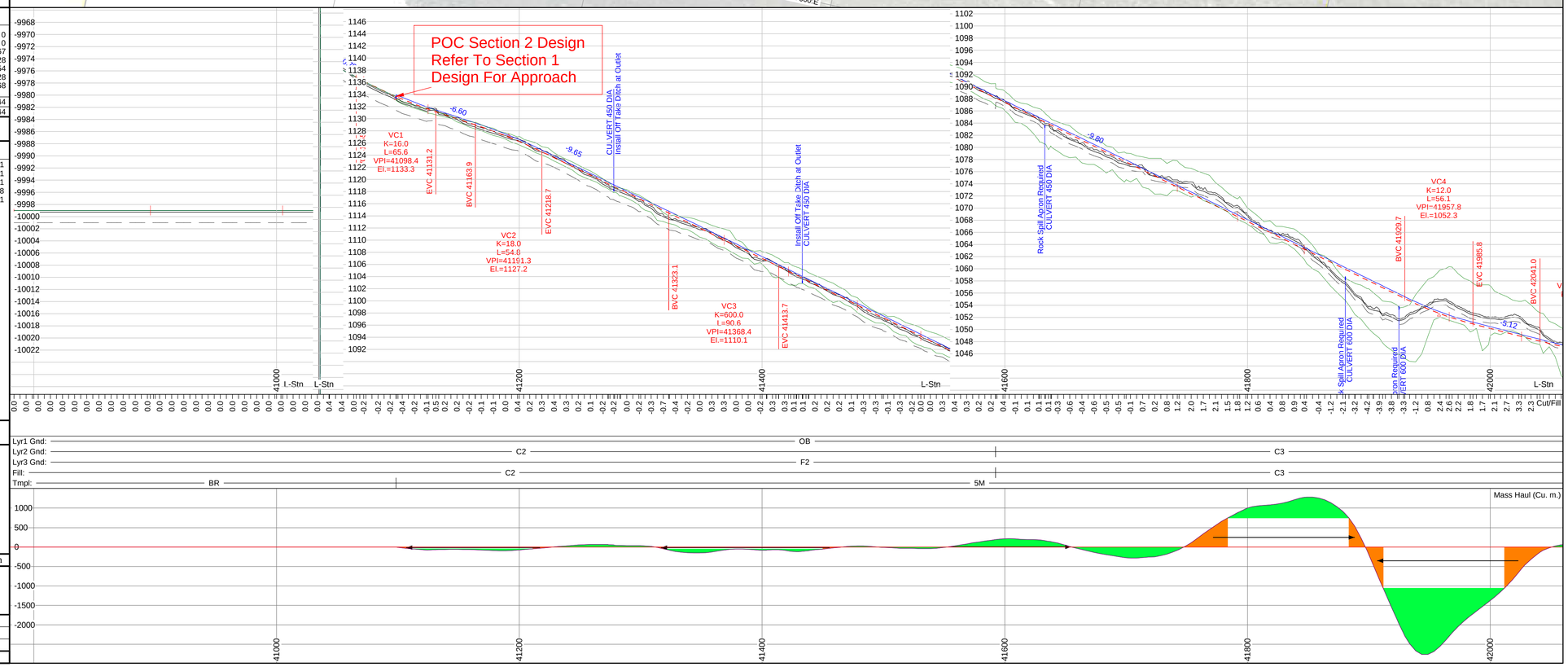
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
41277.9	450	9.0	4.8	4.2	111
41433.2	450	9.9	5.3	4.6	111
41633.0	450	9.0	5.0	4.0	111
41880.6	600	13.0	7.3	5.7	118
41924.8	600	14.0	7.8	6.2	111

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 41807.6 to 43087.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C6	C7	C8	C9	C10	C11	C12
IP Stn.	41921	42093	42345	42422	42488	42816	43068
BC Stn.	41847	42026	42329	42401	42471	42782	43041
Arc. Len.	119	118	31	42	33	66	54
EC Stn.	41966	42144	42360	42443	42504	42848	43095
Radius	80	100	150	150	200	100	250
Angle	-85	68	12	-16	10	38	-12
Tangent	74	67	16	21	17	34	27
Da, a=100	72	57	38	38	29	57	23

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
42000.0	905	0	644	1397	2587		355
42200.0	855	0	1168	1519	709		355
42400.0	877	0	1443	207	899		328
42600.0	771	0	710	16	1476		328
42800.0	826	0	1331	66	787		355
43000.0	830	0	619	0	1725		328
43200.0							
Pg. Tot.	5064	0	5915	3205	8182		2048
Cum. Tot.	8592	0	8694	5495	14626		3592

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
41880.6	600	13.0	7.3	5.7	118
41924.8	600	14.0	7.8	6.2	111
42110.5	450	9.0	5.0	4.0	90
42348.3	600	19.0	13.8	5.2	45
42636.7	450	11.0	6.0	5.0	93
42736.7	600	9.0	5.0	4.0	93
43012.9	450	9.0	4.7	4.3	87

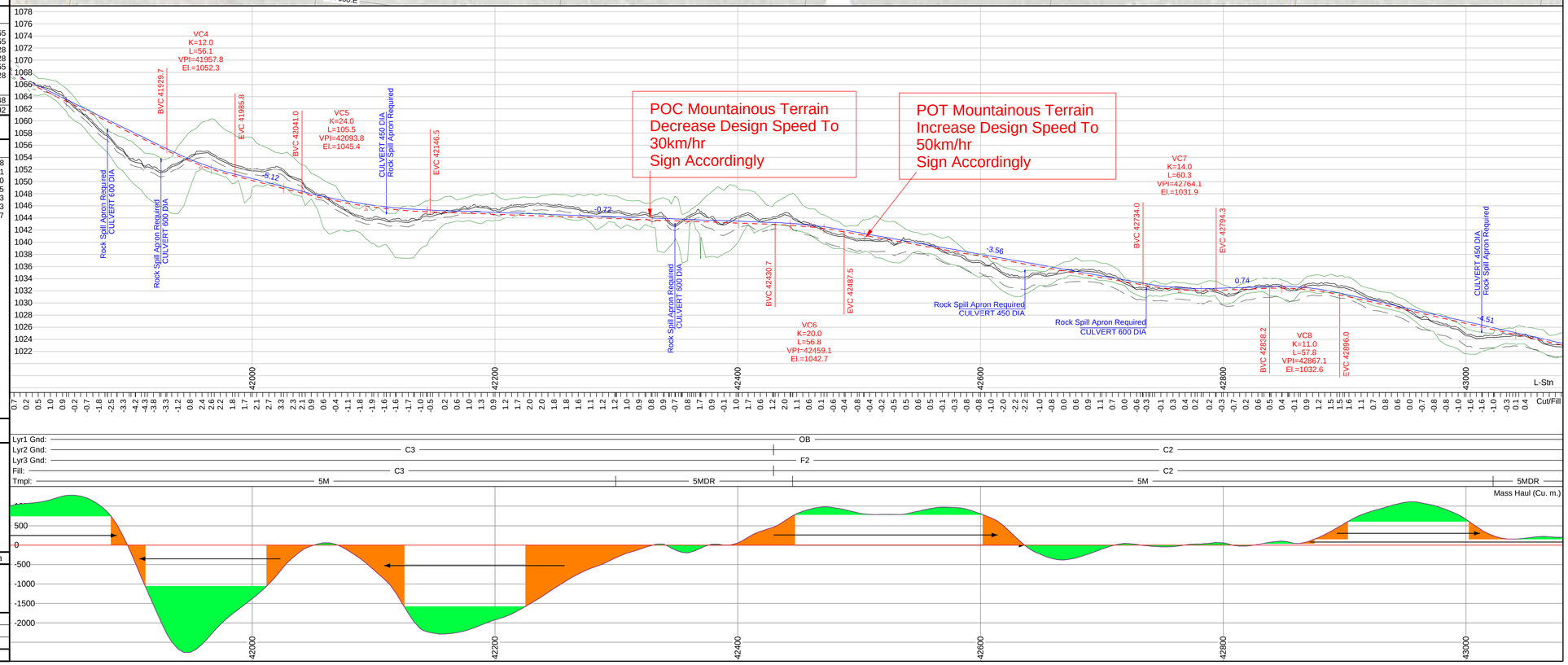
SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 42831.6 to 44111.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C11	C12	C13	C14	C15	C16	C17
IP Stn.	42816	43068	43261	43537	43803	43918	44031
BC Stn.	42782	43041	43232	43512	43759	43893	44005
Arc. Len.	66	54	58	51	87	50	51
EC Stn.	42848	43095	43290	43563	43845	43943	44056
Radius	100	250	150	360	160	160	150
Angle	38	-12	-22	8	31	-18	-19
Tangent	34	27	29	25	45	25	26
Da, a=100	57	23	38	16	36	36	38

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
43000.0	830	0	619	0	1725		328
43200.0	381	0	896	143	465		355
43400.0	294	103	488	297	1196		355
43600.0	273	142	819	1389	879		355
43800.0	286	83	431	314	1405		328
44000.0	501	0	231	560	1039		355
44200.0							
Pg. Tot.	2565	328	3483	2703	6707		2075
Cum. Tot.	10327	328	11558	8197	19609		5339

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
43012.9	450	9.0	4.7	4.3	87
43183.2	600	11.0	6.0	5.0	90
43260.5	800	9.0	5.0	4.0	90
43528.4	450	8.0	4.5	3.5	90
43780.1	450	8.0	4.7	3.3	75

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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- 2DR = 5m running surface with 2m wide ditch on right

- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings

- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn



GOLDCORP

Coffee Gold Project

Coffee Creek Access Route Upgrade and Establishment Section 2 Geometric Alignment Km 41.1 - 82.7

Page Stations: 43855.6 to 45135.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
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- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C16	C17	C18	C19	C20	C21	C22	C23
IP Stn.	43918	44031	44232	44315	44421	44562	44750	45071
BC Stn.	43893	44005	44202	44287	44381	44501	44723	45043
Arc. Len.	50	51	59	56	76	121	55	56
EC Stn.	43943	44056	44261	44343	44457	44622	44778	45099
Radius	160	150	120	300	100	250	900	700
Angle	-18	-19	-28	-11	43	-28	3	5
Tangent	25	26	30	28	40	62	27	28
Da, a=100	36	38	48	19	57	23	6	8

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
44000.0	501	0	231	560	1039		355
44200.0	488	0	257	684	1063		328
44400.0	478	0	259	880	1258	771	355
44600.0	374	0	825	5	257		355
44800.0	189	0	220	0	1238		328
45000.0	208	0	273	0	757		328
45200.0							
Pg. Tot.	2238	0	2065	2129	5612		2048
Cum. Tot.	12064	328	13392	9766	24182		7033

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
44393.1	450	10.0	5.8	4.3	111
44566.8	450	10.0	5.6	4.4	111
44867.8	450	10.0	5.5	4.5	90
45064.6	450	10.0	5.5	4.5	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
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ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right

- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings

- Surfacing depth = 0.3m

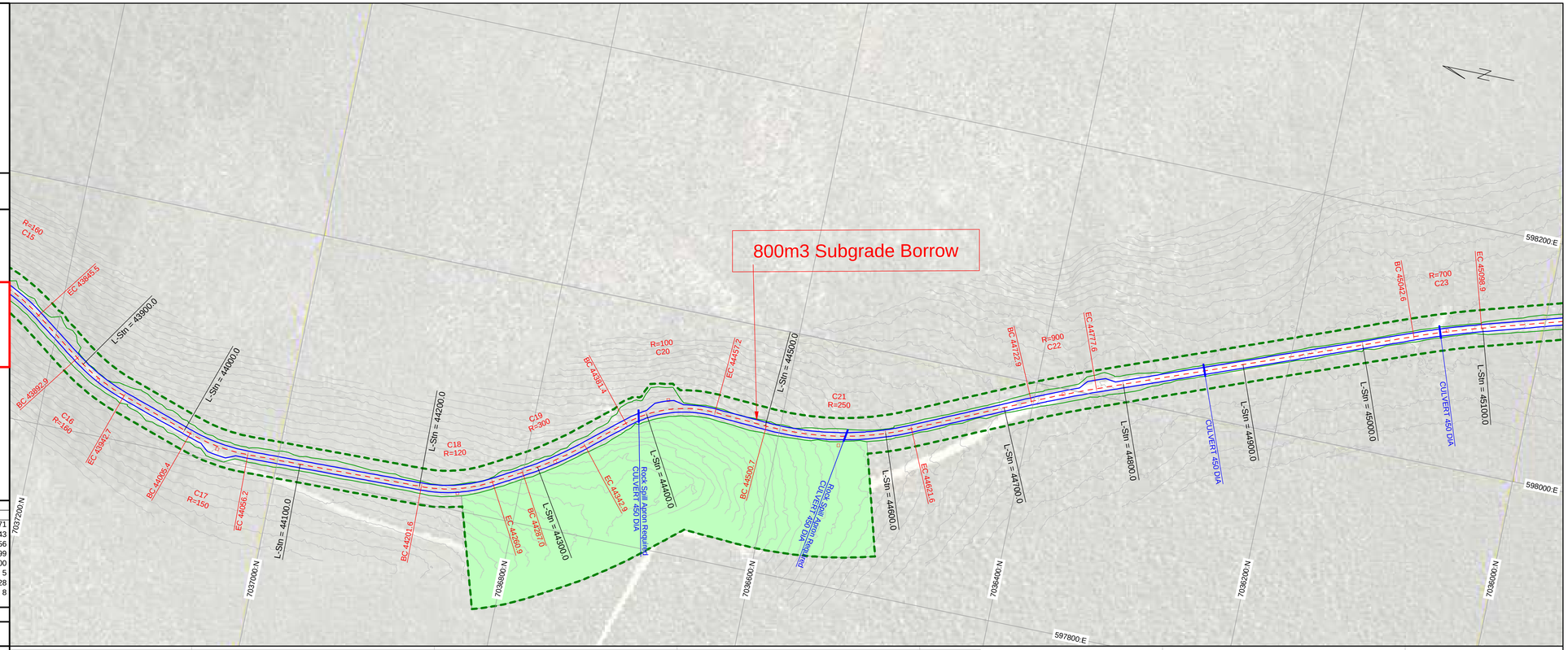
Revision	Description	Date	By	Approved	Revision

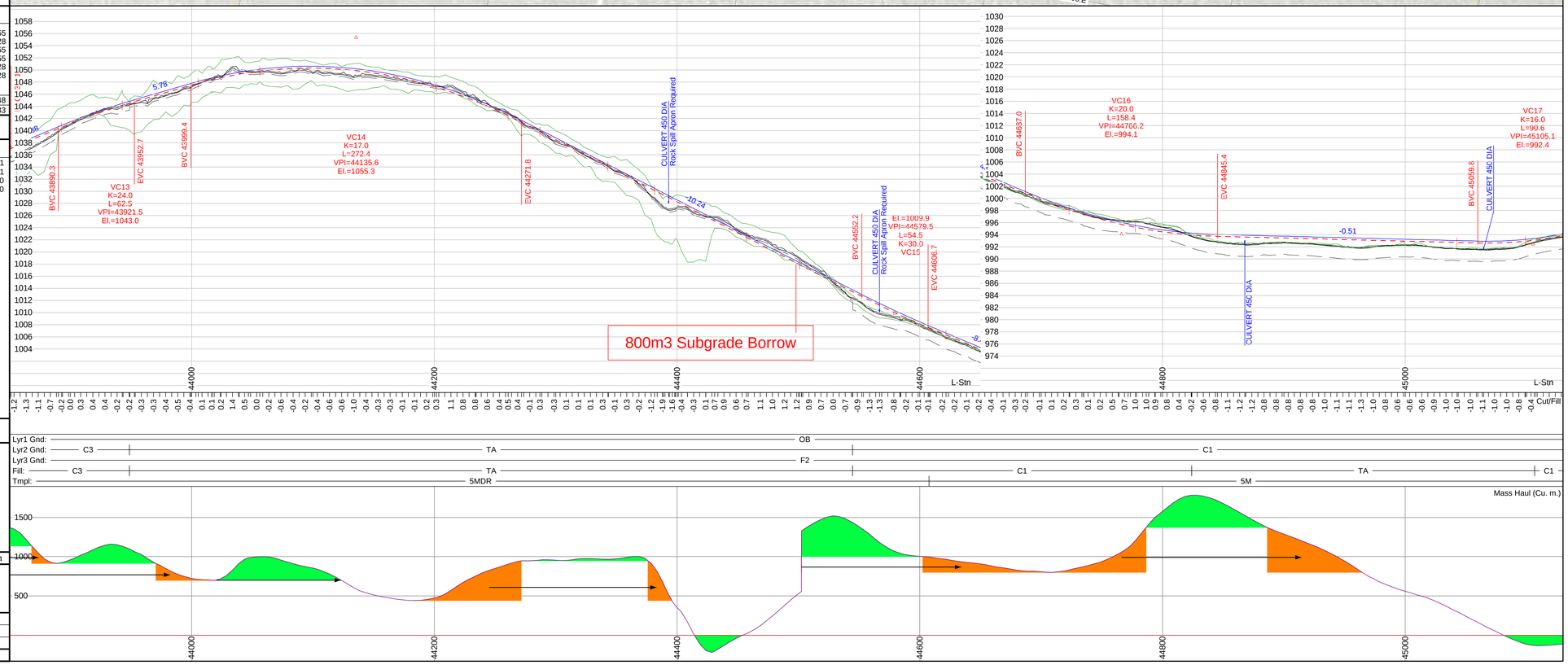
ONSITE Engineering Ltd.

Page 4 of 42

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 44879.6 to 46159.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C23	C24	C25	C26	C27
IP Stn.	45071	45549	45855	45981	46239
BC Stn.	45043	45356	45807	45949	46058
Arc. Len.	56	321	94	62	285
EC Stn.	45099	45677	45901	46011	46342
Radius	700	230	250	180	180
Angle	5	-80	22	-20	91
Tangent	28	193	48	31	182
Da, a=100	8	25	23	32	32

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
45000.0	208	0	273	0	757		328
45200.0	228	0	308	0	457		328
45400.0	424	0	427	0	354		355
45600.0	249	0	378	0	367		328
45800.0	221	0	310	0	365		328
46000.0	340	0	275	0	567		328
46200.0							
Pg. Tot.	1670	0	1970	0	2867		1994
Cum. Tot.	13526	328	15090	9766	26292		8699

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
45064.6	450	10.0	5.5	4.5	90
45536.5	600	9.0	4.8	4.2	90
45888.5	450	8.0	4.0	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 45903.6 to 47183.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
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- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C26	C27	C28	C29	C30
IP Stn.	45981	46239	46875	47041	47175
BC Stn.	45949	46058	46844	46977	47149
Arc. Len.	62	285	59	108	52
EC Stn.	46011	46342	46903	47085	47200
Radius	180	180	80	80	220
Angle	-20	91	42	-77	13
Tangent	31	182	31	64	26
Da, a=100	32	32	72	72	26

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
46000.0							
46200.0	340	0	275	0	567		328
46400.0	347	0	692	31	558		354
46600.0	224	0	504	0	354		328
46800.0	174	0	20	0	1150		328
47000.0	328	0	43	0	1143		356
47200.0	461	0	538	0	971		334
Pg. Tot.	1875	0	2072	31	4744		2028
Cum. Tot.	15061	328	16887	9797	30468		10399

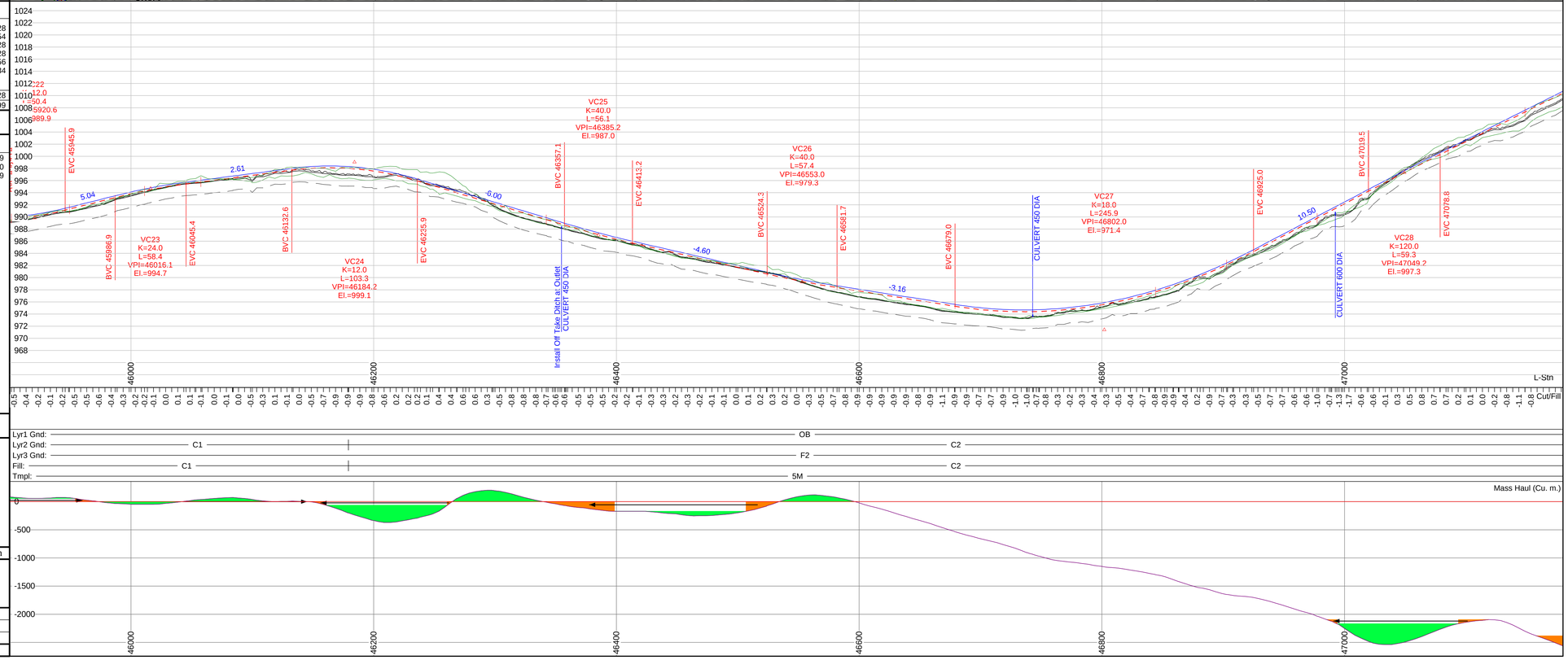
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
46354.8	450	9.0	4.0	5.0	99
46743.1	450	9.0	4.7	4.3	90
46992.4	600	11.0	6.4	4.6	69

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 6 of 42	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 46927.6 to 48207.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C29	C30	C31	C32	C33
IP Stn.	47041	47175	47578	47869	48114
BC Stn.	46977	47149	47553	47841	48085
Arc. Len.	108	52	50	55	57
EC Stn.	47085	47200	47603	47896	48142
Radius	80	220	310	800	100
Angle	-77	13	9	4	33
Tangent	64	26	25	28	29
Da, a=100	72	26	18	7	57

EARTH WORK VOLUMES (Final Cubic Meters)

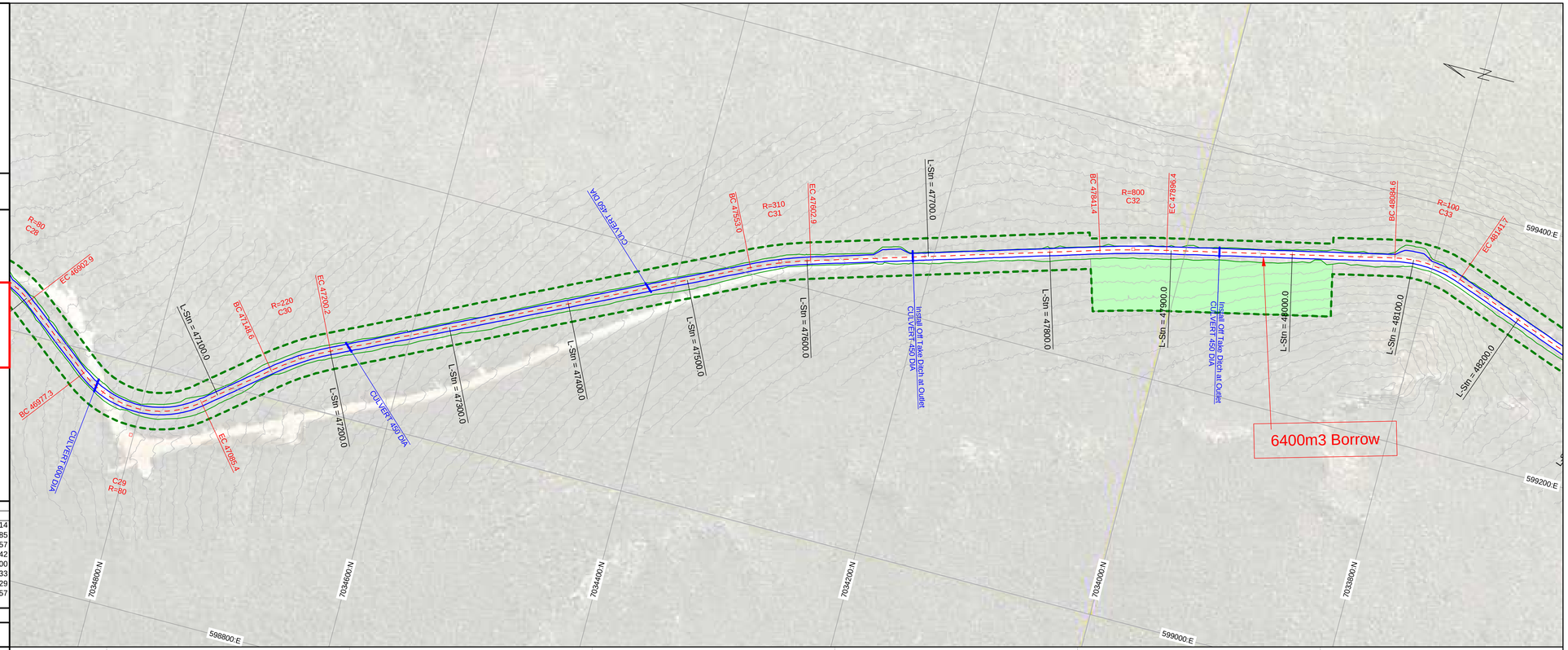
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
47000.0	461	0	538	0	971		334
47200.0	437	0	605	0	361		328
47400.0	440	0	567	0	472		328
47600.0	197	0	103	0	615		355
47800.0	216	0	513	66	189	6360	328
48000.0	226	0	408	11	461		355
48200.0	201	0	452	48	116		328
48400.0							
Pg. Tot.	2177	0	3186	125	3186		2355
Cum. Tot.	16777	328	19535	9922	32683		12420

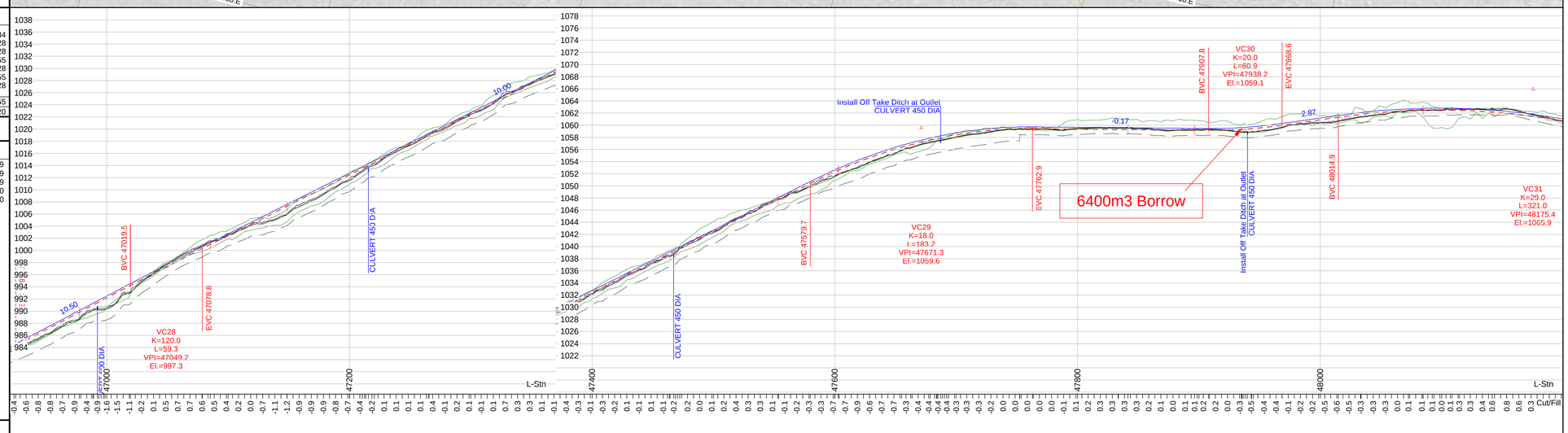
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
46992.4	600	11.0	6.4	4.6	69
47215.6	450	9.0	4.7	4.3	69
47467.2	450	9.0	4.7	4.3	69
47687.1	450	9.0	5.0	4.0	90
47939.9	450	8.0	4.0	4.0	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access Route Upgrade and Establishment Section 2 Geometric Alignment Km 41.1 - 82.7

Page Stations: 47951.6 to 49231.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C33	C34	C35	C36
IP Stn.	48114	48520	49062	49359
BC Stn.	48085	48480	48926	49216
Arc. Len.	57	79	221	228
EC Stn.	48142	48559	49147	49444
Radius	100	250	150	150
Angle	33	-18	84	-87
Tangent	29	40	136	143
Da, a=100	57	23	38	38

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
48000.0	226	0	408	11	461		355
48200.0	201	0	452	48	116		328
48400.0	204	0	45	0	1696		355
48600.0	209	0	15	0	2277		328
48800.0	196	0	99	0	677		342
49000.0	221	0	389	0	267		341
49200.0	421	0	425	0	303		355
49400.0							
Pg. Tot.	1679	0	1833	59	5798		2403
Cum. Tot.	18030	328	20508	9922	37904		14140

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
48609.6	450	13.0	6.0	7.0	90
49095.7	450	9.0	4.8	4.2	87

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

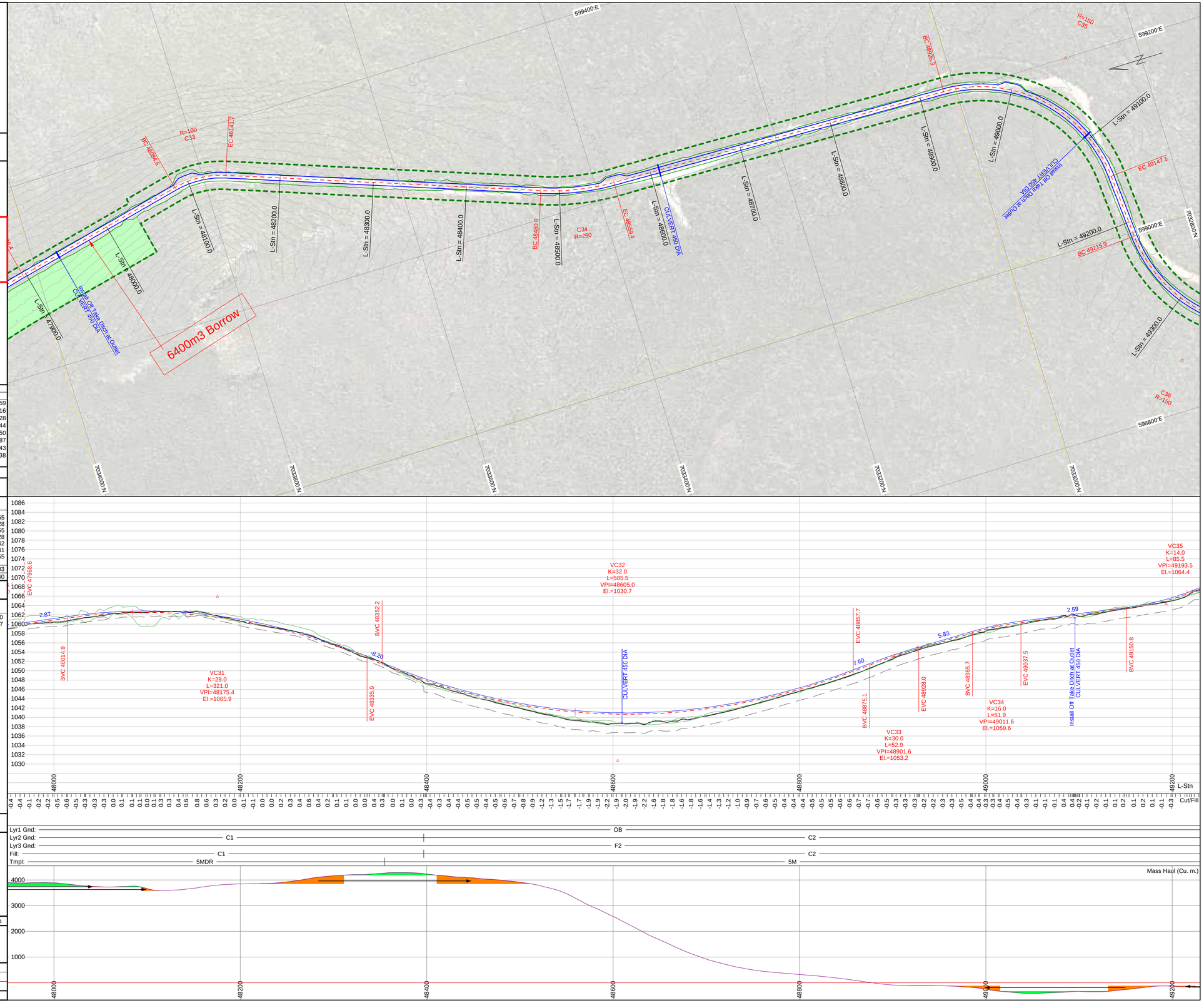
ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



ONSITE Engineering Ltd.	Survey By: See Notes Above	---
Page 8 of 42	Design By: Matthew Dickie, EIT	March 2017
	Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 48975.6 to 50255.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C35	C36	C37	C38	C39
IP Stn.	49062	49359	49687	49909	50239
BC Stn.	48926	49216	49578	49882	50195
Arc. Len.	221	228	197	53	83
EC Stn.	49147	49444	49775	49935	50278
Radius	150	150	180	220	100
Angle	84	-87	63	-14	48
Tangent	136	143	110	27	44
Da, a=100	38	38	32	26	57

EARTH WORK VOLUMES (Final Cubic Meters)

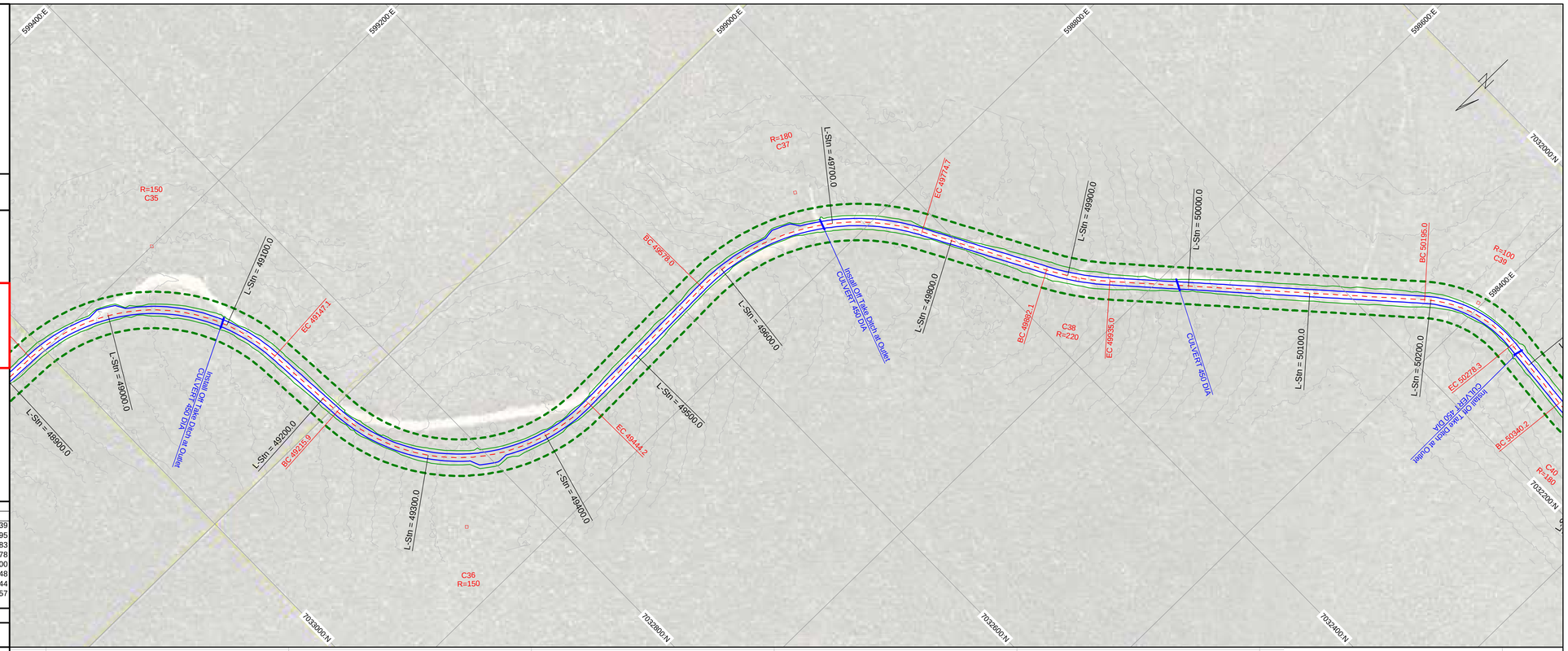
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
49000.0	221	0	389	0	267		341
49200.0	421	0	425	0	303		355
49400.0	263	64	303	7	296		328
49600.0	210	87	256	28	573		355
49800.0	236	184	1059	1525	238		328
50000.0	259	0	0	0	4574		328
50200.0	232	146	757	200	741		354
50400.0							
Pg. Tot.	1843	481	3189	1760	6991		2389
Cum. Tot.	19230	809	22883	11682	44325		15832

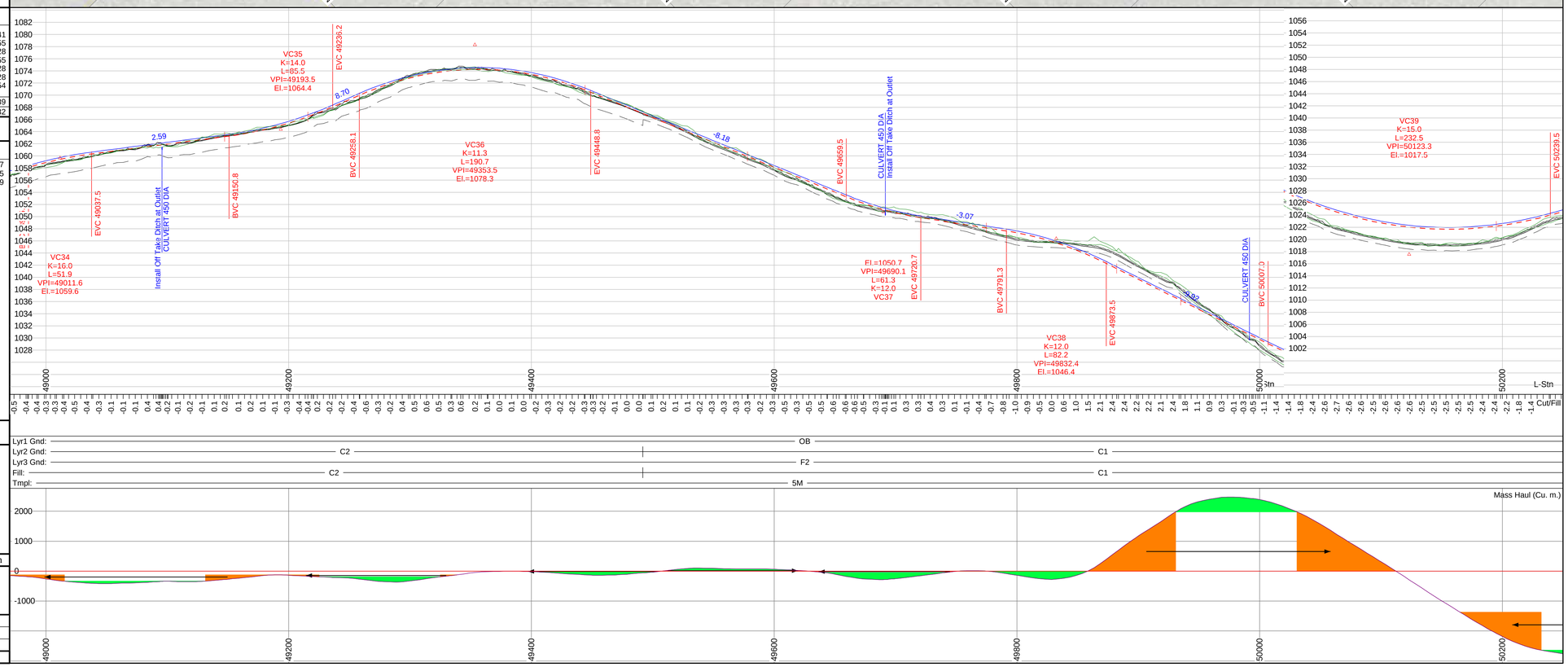
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
49095.7	450	9.0	4.8	4.2	87
49691.6	450	9.0	4.8	4.2	75
49991.6	450	10.0	5.5	4.5	69

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 49999.6 to 51279.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C39	C40	C41	C42	C43	C44
IP Stn.	50239	50372	50682	50817	50974	51226
BC Stn.	50195	50340	50617	50770	50905	51201
Arc. Len.	83	63	126	93	135	51
EC Stn.	50278	50403	50743	50863	51040	51251
Radius	100	180	250	250	250	750
Angle	48	-20	-29	-21	-31	4
Tangent	44	32	64	47	69	25
Da, a=100	57	32	23	23	23	8

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
50000.0	259	0	0	0	4574		328
50200.0	232	146	757	200	741		354
50400.0	250	244	1113	519	0		328
50600.0	235	67	185	22	783		355
50800.0	229	89	340	93	390		328
51000.0	239	150	547	134	148		360
51200.0	206	93	449	142	869		328
51400.0							
Pg. Tot.	1650	790	3391	1110	7505		2380
Cum. Tot.	20389	1453	25517	12592	46514		17531

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
50286.4	450	8.0	3.9	4.2	99
50605.4	450	10.0	4.0	6.0	96
50855.8	450	8.0	3.8	4.2	93
51181.6	450	8.0	3.5	4.5	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access Route Upgrade and Establishment Section 2 Geometric Alignment Km 41.1 - 82.7

Page Stations: 51023.6 to 52303.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C43	C44	C45	C46	C47	C48	C49	C50	C51
IP Stn.	50974	51226	51343	51512	51659	51810	51904	52096	52335
BC Stn.	50905	51201	51307	51486	51584	51785	51879	52036	52300
Arc. Len.	135	51	70	51	129	50	50	119	71
EC Stn.	51040	51251	51377	51538	51713	51835	51929	52155	52371
Radius	250	750	200	220	100	180	260	500	1000
Angle	-31	4	-20	-13	74	16	-11	14	4
Tangent	69	25	35	26	75	25	25	60	35
Da, a=100	23	8	29	26	57	32	22	11	6

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
51200.0	206	93	449	142	869		328
51400.0	240	155	755	209	271		355
51600.0	196	37	90	2	1088		328
51800.0	203	76	184	0	468		328
52000.0	222	138	436	29	312		328
52200.0	220	142	478	54	286		328
52400.0							
Pg. Tot.	1287	641	2391	436	3294		1994
Cum. Tot.	21469	2001	27459	12885	48940		19197

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
51181.6	450	8.0	3.5	4.5	90
51741.7	450	9.0	5.0	4.0	90
52106.6	450	9.0	4.8	4.2	108

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 52047.6 to 53327.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C50	C51	C52	C53	C54	C55	C56
IP Stn.	52096	52335	52733	52854	52959	53043	53332
BC Stn.	52036	52300	52656	52827	52933	53017	53303
Arc. Len.	119	71	138	53	53	52	57
EC Stn.	52155	52371	52793	52880	52985	53069	53360
Radius	500	1000	120	180	120	180	300
Angle	14	4	-66	-17	-25	-17	-11
Tangent	60	35	77	27	27	26	29
Da, a=100	11	6	48	32	48	32	19

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
52200.0	220	142	478	54	286		328
52400.0	197	53	99	0	537		328
52600.0	222	71	243	60	586		383
52800.0	227	145	300	2	81		348
53000.0	200	56	92	1	435		336
53200.0	311	26	578	37	630		355
53400.0							
Pg. Tot.	1376	493	1790	154	2556		2078
Cum. Tot.	22626	2352	28772	12986	51209		20947

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
52106.6	450	9.0	4.8	4.2	108
52547.8	450	9.0	4.5	4.5	90
53159.1	450	9.0	5.0	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 53071.6 to 54351.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C56	C57	C58	C59	C60	C61	C62
IP Stn.	53332	53474	53614	53712	53813	53929	54206
BC Stn.	53303	53445	53587	53685	53782	53903	54182
Arc. Len.	57	57	53	54	62	52	49
EC Stn.	53360	53502	53640	53738	53844	53955	54231
Radius	300	250	300	180	240	240	500
Angle	-11	13	10	17	15	-12	-6
Tangent	29	29	27	27	31	26	25
Da, a=100	19	23	19	32	24	24	11

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
53200.0	311	26	578	37	630		355
53400.0	470	0	765	49	349		328
53600.0	528	0	546	11	1048		355
53800.0	540	0	967	134	698		328
54000.0	525	0	596	17	984		328
54200.0	532	0	662	119	851		355
54400.0							
Pg. Tot.	2906	26	4114	368	4561		2048
Cum. Tot.	25220	2352	32308	13317	55140		22640

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
53159.1	450	9.0	5.0	4.0	90
53859.8	500	9.0	5.0	4.0	90
54038.6	500	9.0	5.0	4.0	90
54233.9	450	10.0	5.5	4.5	102

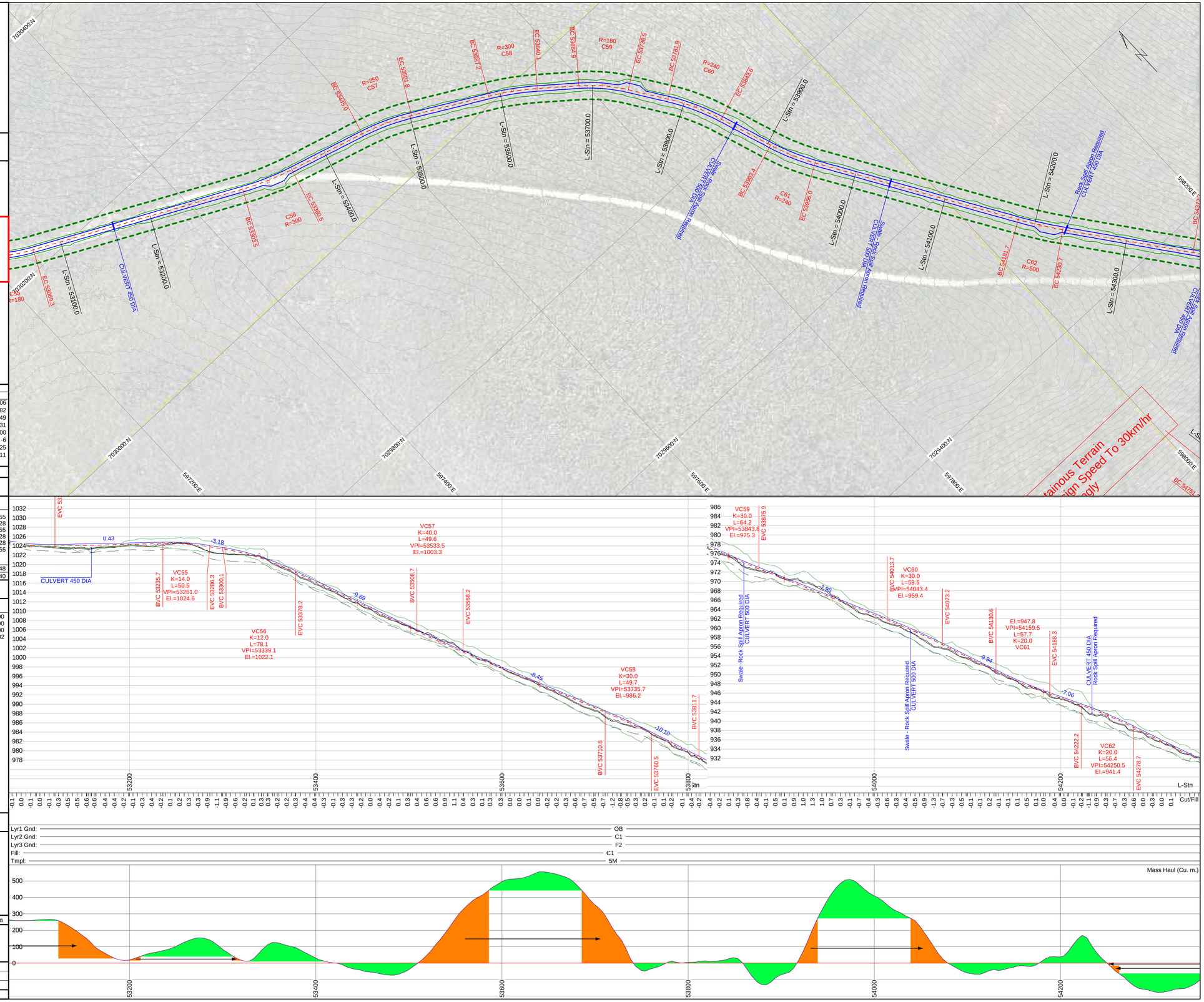
SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



ONSITE Engineering Ltd.	Survey By: See Notes Above	---
Page 13 of 42	Design By: Matthew Dickie, EIT	March 2017
	Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 54095.6 to 55375.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C62	C63	C64	C65	C66	C67	C68	C69	C70	C71	C72	C73
IP Stn.	54206	54399	54528	54647	54772	54796	54892	54979	55064	55138	55259	55361
BC Stn.	54182	54373	54459	54619	54751	54782	54865	54954	55032	55111	55219	55331
Arc. Len.	49	51	114	54	31	24	53	50	63	53	78	60
EC Stn.	54231	54424	54573	54674	54782	54806	54917	55004	55094	55164	55297	55391
Radius	500	160	80	180	18	18	80	160	150	160	150	250
Angle	-6	18	82	17	-98	-77	38	-18	-24	-19	-30	-14
Tangent	25	26	69	27	21	14	27	25	32	27	40	30
Da, a=100	11	36	72	32	318	318	72	36	38	36	38	23

EARTH WORK VOLUMES (Final Cubic Meters)

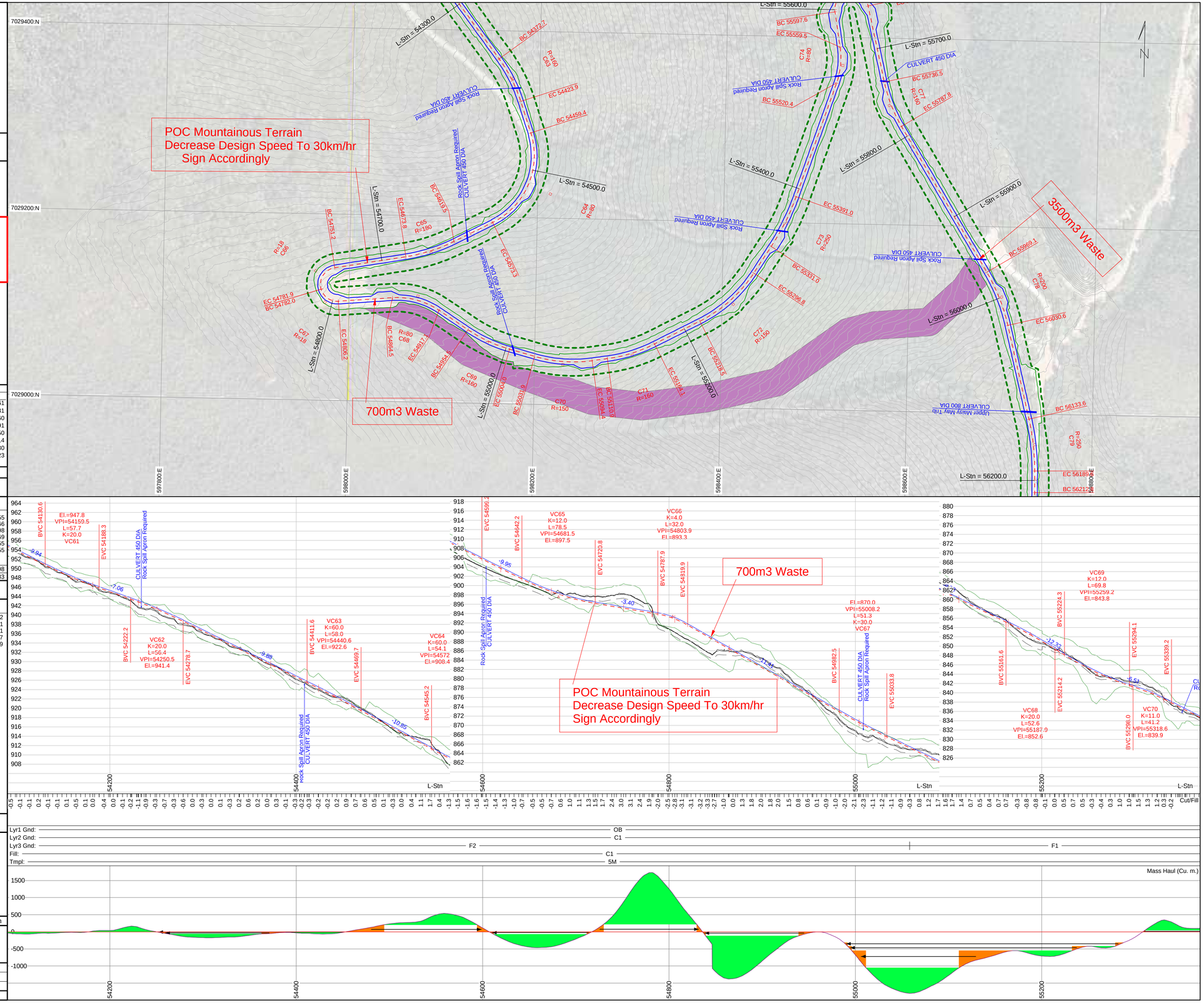
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
54200.0	532	0	662	119	851		355
54400.0	368	0	707	331	892		366
54600.0	271	0	974	1388	1220		398
54800.0	516	0	713	851	2798	-700	369
55000.0	618	0	1160	352	1545		355
55200.0	616	0	709	1002	912		355
55400.0							
Pg. Tot.	2921	0	4925	4042	8218		2198
Cum. Tot.	27609	2352	36571	17240	62507		24483

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
54233.9	450	10.0	5.5	4.5	102
54408.9	450	9.0	5.1	3.9	111
54603.8	450	12.0	6.9	5.1	111
55008.5	450	11.0	5.1	5.9	57
55350.6	450	12.0	4.3	7.7	69

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 55119.6 to 56399.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81
IP Stn.	55138	55259	55361	55540	55618	55643	55762	56000	56162	56240	56349
BC Stn.	55111	55219	55331	55520	55598	55628	55737	55969	56134	56213	56320
Arc. Len.	53	78	60	39	30	25	51	62	56	54	57
EC Stn.	55164	55297	55391	55559	55628	55653	55788	56031	56190	56267	56377
Radius	160	150	250	80	18	18	160	200	250	200	200
Angle	-19	-30	-14	-28	97	80	-18	18	13	15	-16
Tangent	27	40	30	20	20	15	26	31	28	27	29
Da, a=100	36	38	23	72	318	318	36	29	23	29	29

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
55200.0							
55400.0	616	0	709	1002	912		355
55600.0	657	0	1794	1578	847		390
55800.0	698	0	1122	543	4164		460
56000.0	509	0	422	241	1019	-3469	342
56200.0	296	4	400	920	2790		341
56400.0	254	0	889	145	273		355
Pg. Tot.	3030	4	5335	4428	10005		2242
Cum. Tot.	30023	2356	41198	20667	71600		26371

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
55350.6	450	12.0	4.3	7.7	69
55528.3	450	9.0	4.0	5.0	69
55735.7	450	9.0	5.1	3.9	108
55953.0	450	13.0	7.3	5.7	123
56125.6	800	16.0	9.5	6.5	105

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

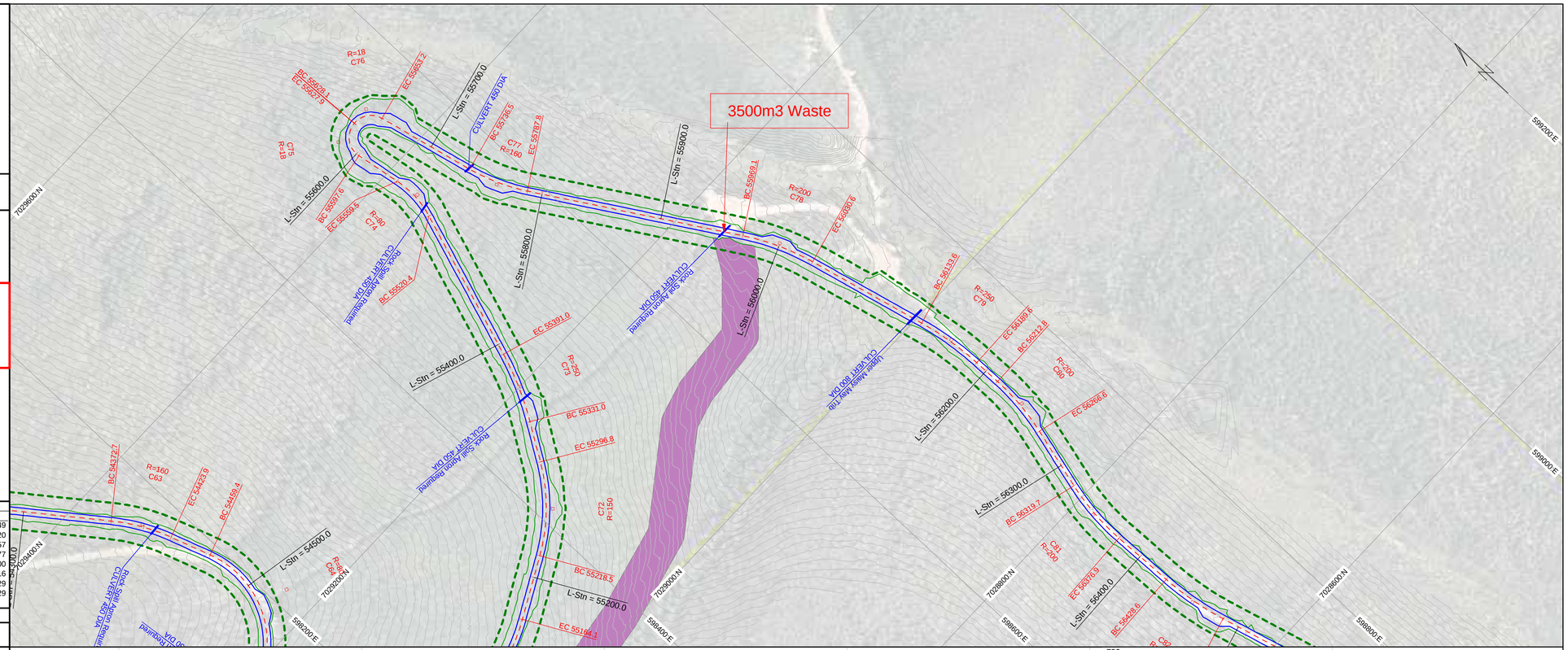
Revision	Description	Date	By	Approved	Revision

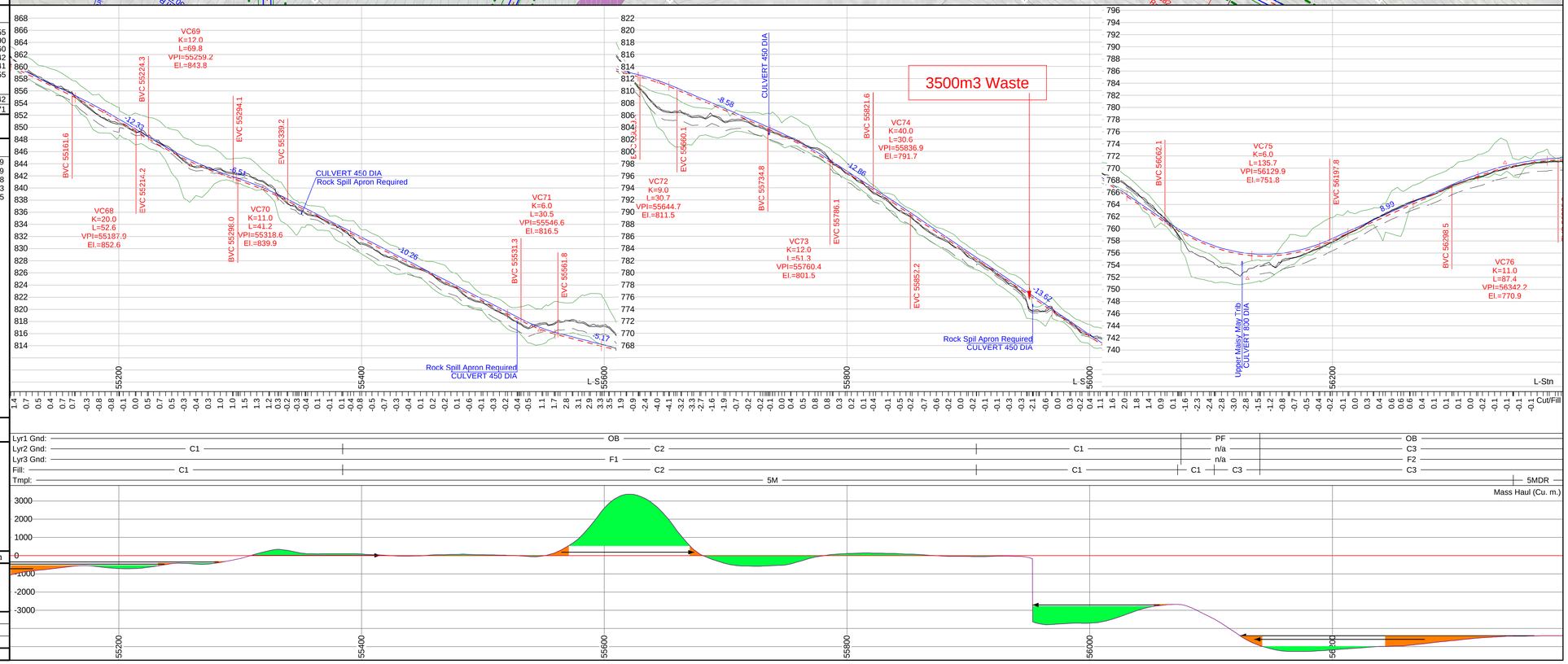
ONSITE Engineering Ltd.

Page 15 of 42

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng		March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 56143.6 to 57423.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89
IP Stn.	56162	56240	56349	56457	56690	56797	56913	57013	57128	57213	57308
BC Stn.	56134	56213	56320	56429	56664	56781	56897	56997	57104	57187	57251
Arc. Len.	56	54	57	57	52	31	31	33	47	50	91
EC Stn.	56190	56267	56377	56486	56716	56812	56928	57030	57151	57236	57342
Radius	250	200	200	250	900	800	600	350	250	60	60
Angle	13	15	-16	-13	-3	2	3	-5	11	47	-86
Tangent	28	27	29	29	26	16	15	17	24	26	56
Da, a=100	23	29	29	23	6	7	10	16	23	95	95

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
56200.0	254	0	889	145	273		355
56400.0	232	0	519	36	310		355
56600.0	246	0	781	56	382		355
56800.0	258	0	669	49	463		355
57000.0	222	0	448	612	58		328
57200.0	237	0	1989	2093	1247		385
57400.0	158	72	206	102	2544		355
57600.0							
Pg. Tot.	1606	72	5500	3092	5277		2487
Cum. Tot.	31375	2428	45809	23615	76603		28503

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
56606.0	450	9.0	5.3	3.7	105
56825.9	450	12.0	7.5	4.5	120
56990.8	450	10.0	5.7	4.3	117
57210.2	450	7.0	3.7	3.3	96
57390.0	400	20.0	10.0	10.0	50
57392.2	400	20.0	10.0	10.0	50
57394.7	400	13.0	6.5	6.5	50
57397.2	1800	30.0	15.0	15.0	50
57400.0	400	13.0	6.5	6.5	50
57402.3	400	20.0	10.0	10.0	50
57405.0	400	13.0	6.5	6.5	50

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
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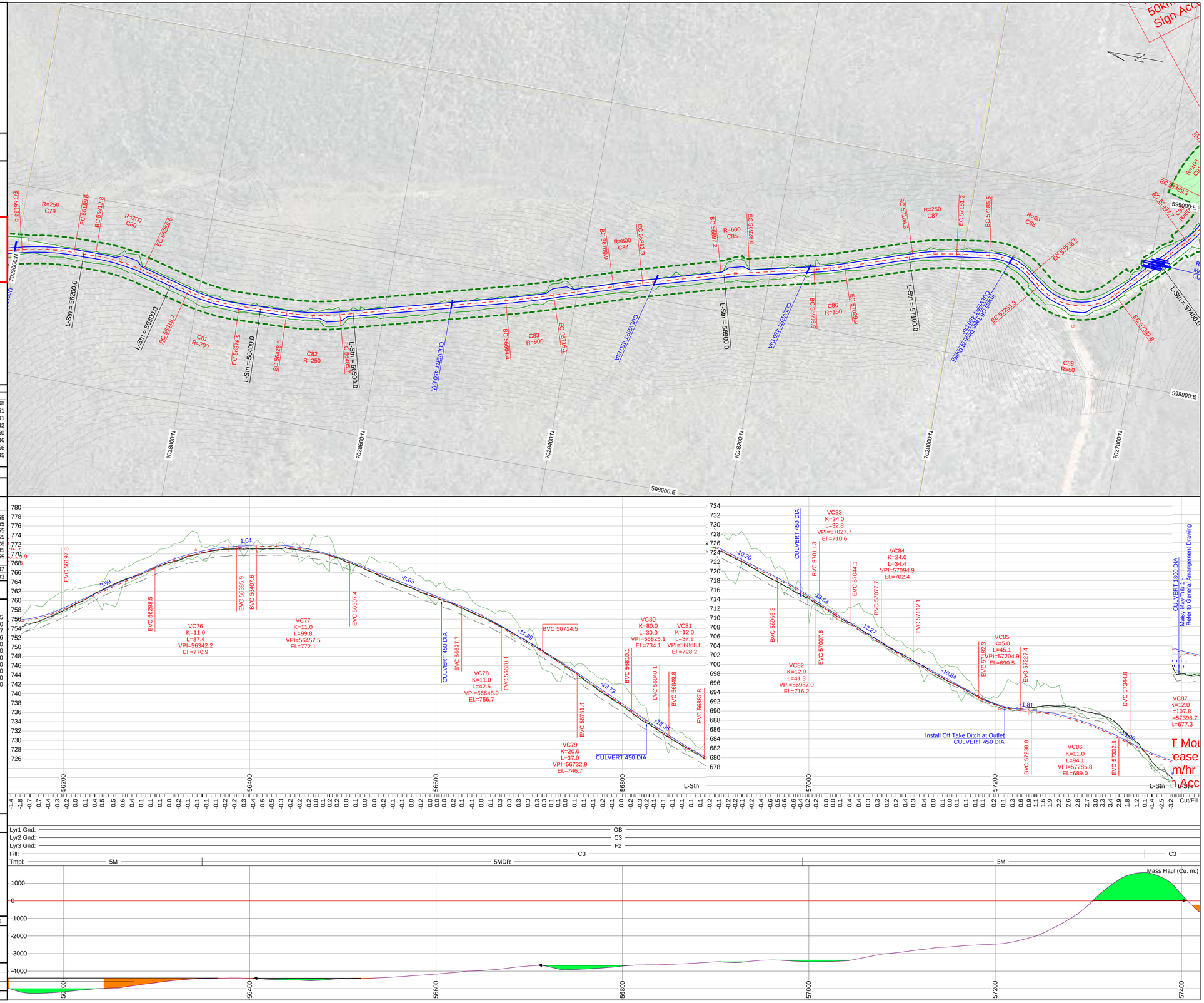
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 57167.6 to 58447.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
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- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C88	C89	C90	C91	C92	C93	C94	C95	C96	C97	C98
IP Stn.	57213	57308	57457	57507	57699	57894	58074	58208	58285	58404	58442
BC Stn.	57187	57251	57438	57489	57671	57867	58046	58183	58259	58389	58427
Arc. Len.	50	91	39	35	55	54	56	51	51	29	29
EC Stn.	57236	57342	57476	57524	57726	57921	58102	58234	58310	58418	58455
Radius	60	60	80	100	150	200	250	2800	250	35	35
Angle	47	-86	-28	20	21	-15	13	1	12	-48	47
Tangent	26	56	20	18	28	27	28	25	26	15	15
Da, a=100	95	95	72	57	38	29	23	2	23	164	164

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
57200.0	237	0	1989	2093	1247		385
57400.0	158	72	206	102	2544		355
57600.0	303	0	1786	855	488		355
57800.0	280	0	584	356	2334		328
58000.0	280	0	682	254	879		355
58200.0	286	0	824	414	464		339
58400.0	232	3264	117	634	718		425
58600.0							
Pg. Tot.	1776	3336	6188	4707	8674		2541
Cum. Tot.	32756	5692	49802	26127	81487		30304

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
57210.2	450	7.0	3.7	3.3	96
57390.0	400	20.0	10.0	10.0	50
57392.2	400	20.0	10.0	10.0	50
57394.7	400	13.0	6.5	6.5	50
57397.2	1800	30.0	15.0	15.0	50
57400.0	400	13.0	6.5	6.5	50
57402.3	400	20.0	10.0	10.0	50
57405.0	400	13.0	6.5	6.5	50
57586.1	450	9.0	4.0	5.0	90
57841.7	400	11.0	5.5	5.5	80
57844.2	400	15.0	7.5	7.5	80
57846.7	400	11.0	5.5	5.5	80
57849.2	1500	21.0	10.5	10.5	80
57851.7	400	11.0	5.5	5.5	80
57854.2	400	15.0	7.5	7.5	80
57856.7	400	11.0	5.5	5.5	80
57893.6	450	9.0	4.0	5.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

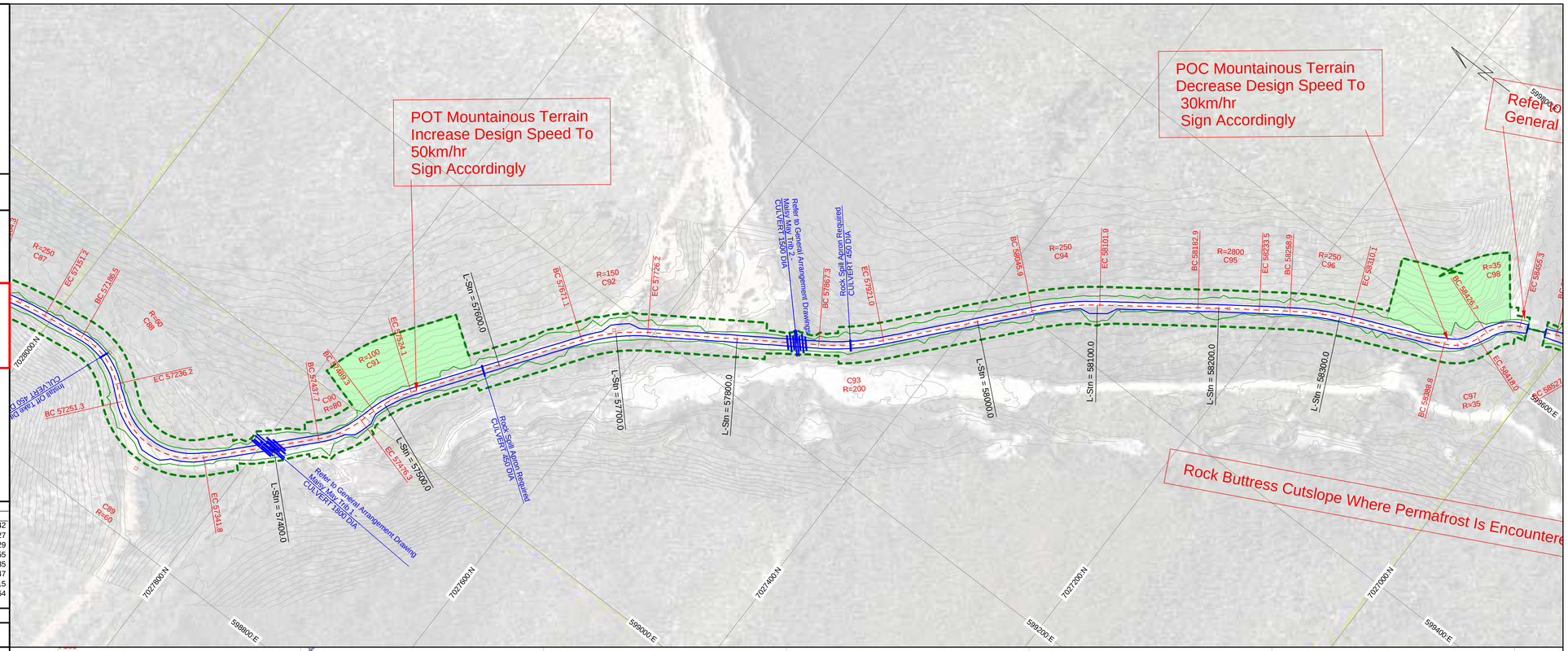
Surfacing depth = 0.3m

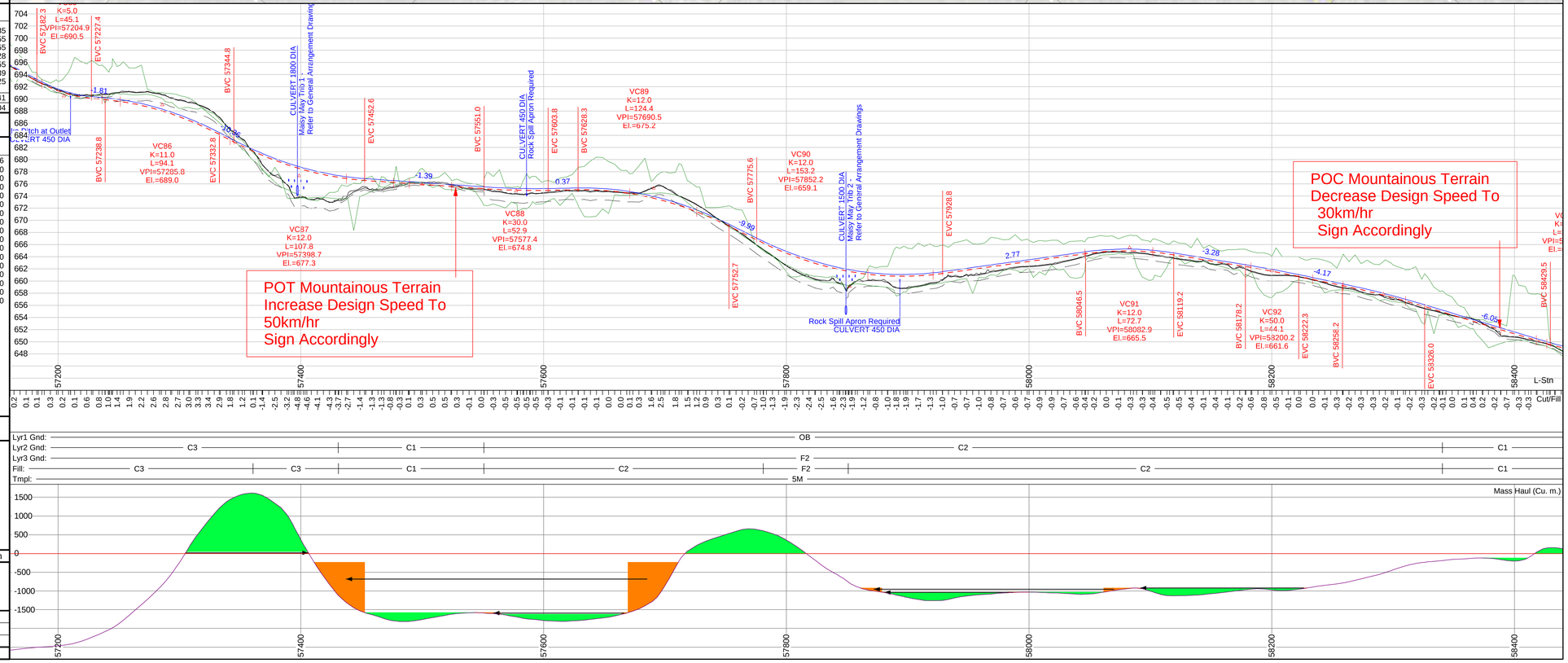
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 58191.6 to 59471.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C95	C96	C97	C98	C99	C100	C101	C102	C103	C104	C105	C106
IP Stn.	58208	58285	58404	58442	58501	58556	58616	58918	59051	59214	59282	59465
BC Stn.	58183	58259	58389	58427	58486	58528	58593	58890	58992	59188	59256	59442
Arc. Len.	51	51	29	29	29	47	44	55	117	54	52	45
EC Stn.	58234	58310	58418	58455	58515	58575	58637	58946	59109	59241	59308	59487
Radius	2800	250	35	35	35	35	80	600	250	350	120	80
Angle	1	12	-48	47	47	-78	32	5	-27	9	25	-32
Tangent	25	26	15	15	15	28	23	28	59	27	26	23
Da, a=100	2	23	164	164	164	164	72	10	23	16	48	72

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
58200.0							
58400.0	286	0	824	414	464		339
58600.0	232	3264	117	634	718		425
58800.0	354	1192	1421	91	713		355
59000.0	298	0	634	0	1147		328
59200.0	319	0	1106	1	796		355
59400.0	266	0	1061	15	658		328
59600.0	162	0	307	0	3737		355
Pg. Tot.	1916	4456	5471	1154	8233		2484
Cum. Tot.	34154	6884	54332	26233	88537		32025

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
58710.9	450	9.0	4.0	5.0	90
58984.2	450	10.0	4.5	5.5	90
59156.5	450	9.0	4.0	5.0	90

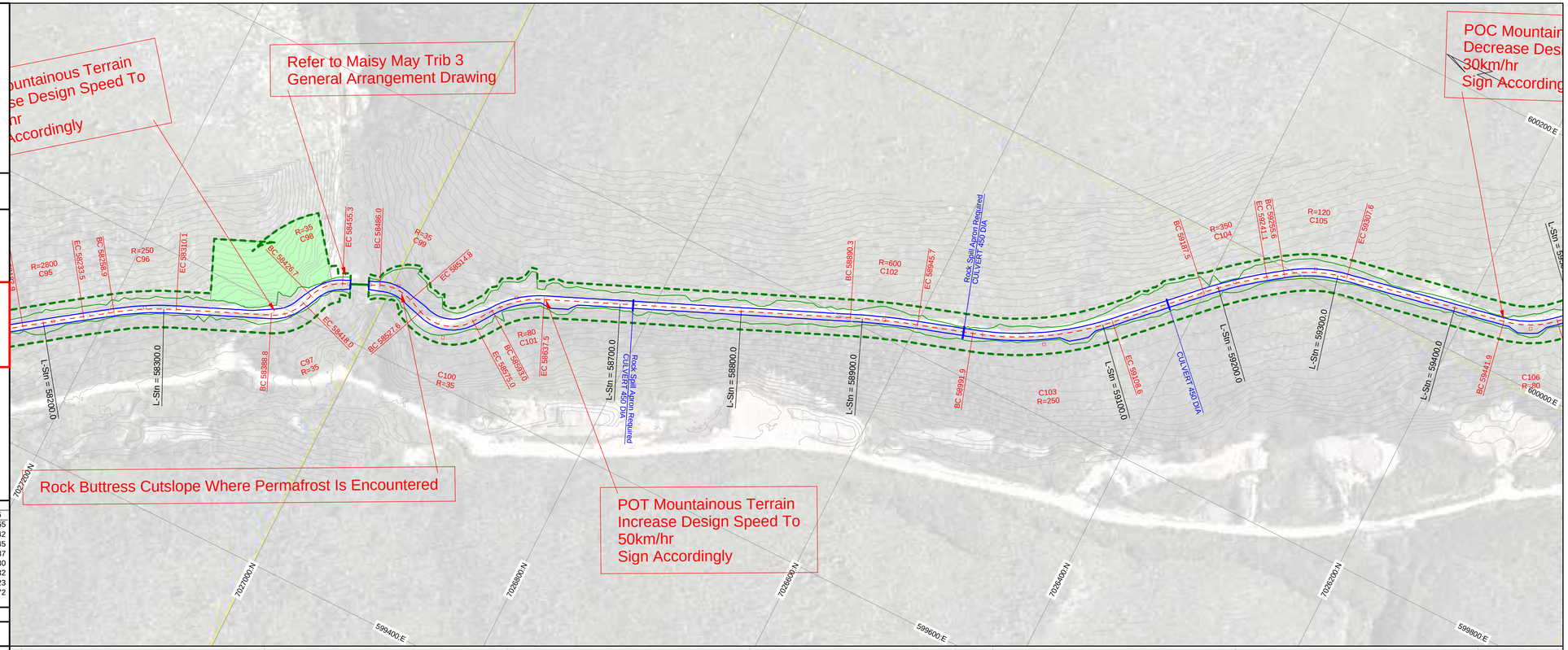
SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

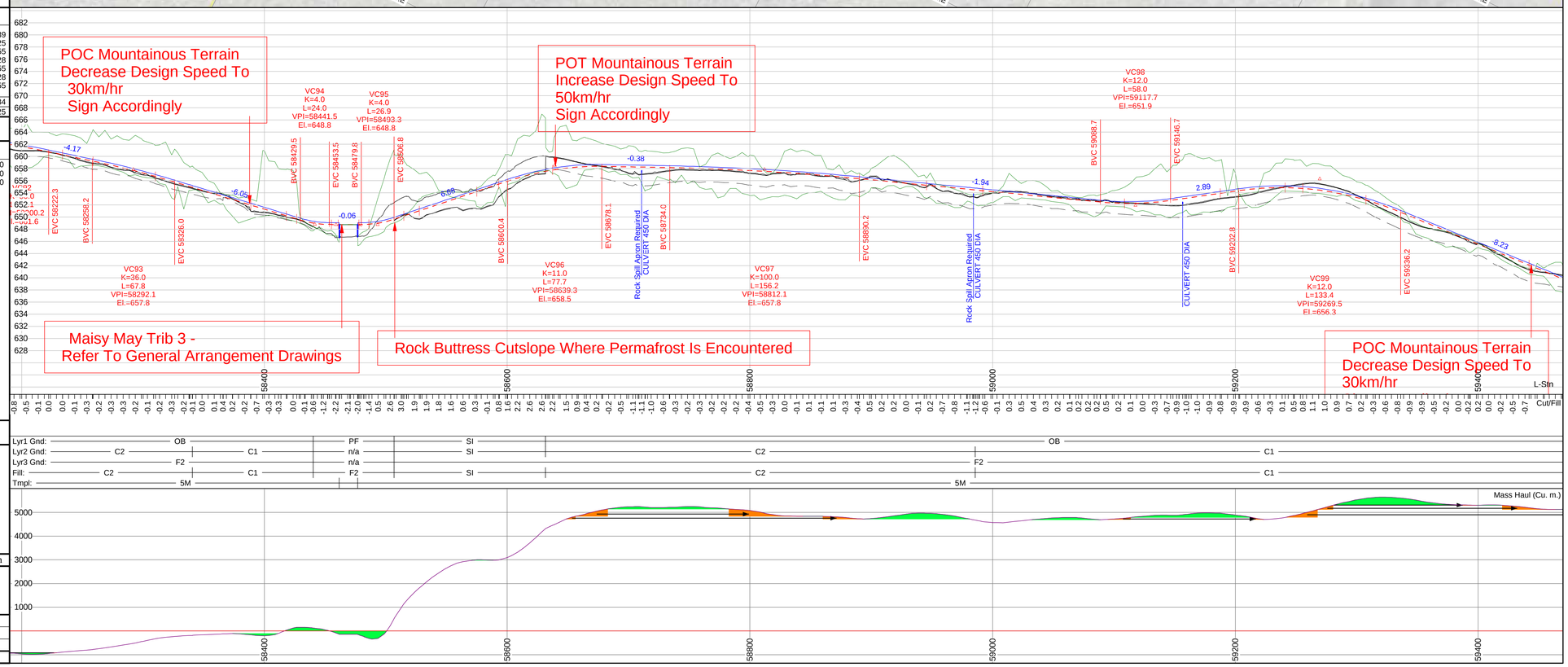
Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 59215.6 to 60495.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C104	C105	C106	C107	C108	C109	C110	C111	C112	C113	C114
IP Stn.	59214	59282	59465	59578	59627	59715	59898	60117	60238	60397	60529
BC Stn.	59188	59256	59442	59561	59607	59692	59873	60091	60212	60370	60478
Arc. Len.	54	52	45	31	36	47	50	52	51	54	93
EC Stn.	59241	59308	59487	59593	59644	59738	59923	60143	60263	60424	60571
Radius	350	120	80	50	35	120	140	700	250	250	100
Angle	9	25	-32	36	-59	22	20	4	12	12	-53
Tangent	27	26	23	16	20	24	25	26	26	27	50
Da, a=100	16	48	72	115	164	48	41	8	23	23	57

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
59400.0	162	0	307	0	3737		355
59600.0	550	0	372	0	1783		360
59800.0	426	0	1037	71	565		355
60000.0	515	0	3800	3255	17		328
60200.0	98	0	1371	172	11552		328
60400.0	0	7	590	0	9002	10400	328
60600.0							
Pg. Tot.	1751	7	7477	3498	26656		2053
Cum. Tot.	35743	6890	61502	29731	111457		33723

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
59558.9	800	22.0	11.0	11.0	90
60466.5	600	19.0	10.3	8.7	111

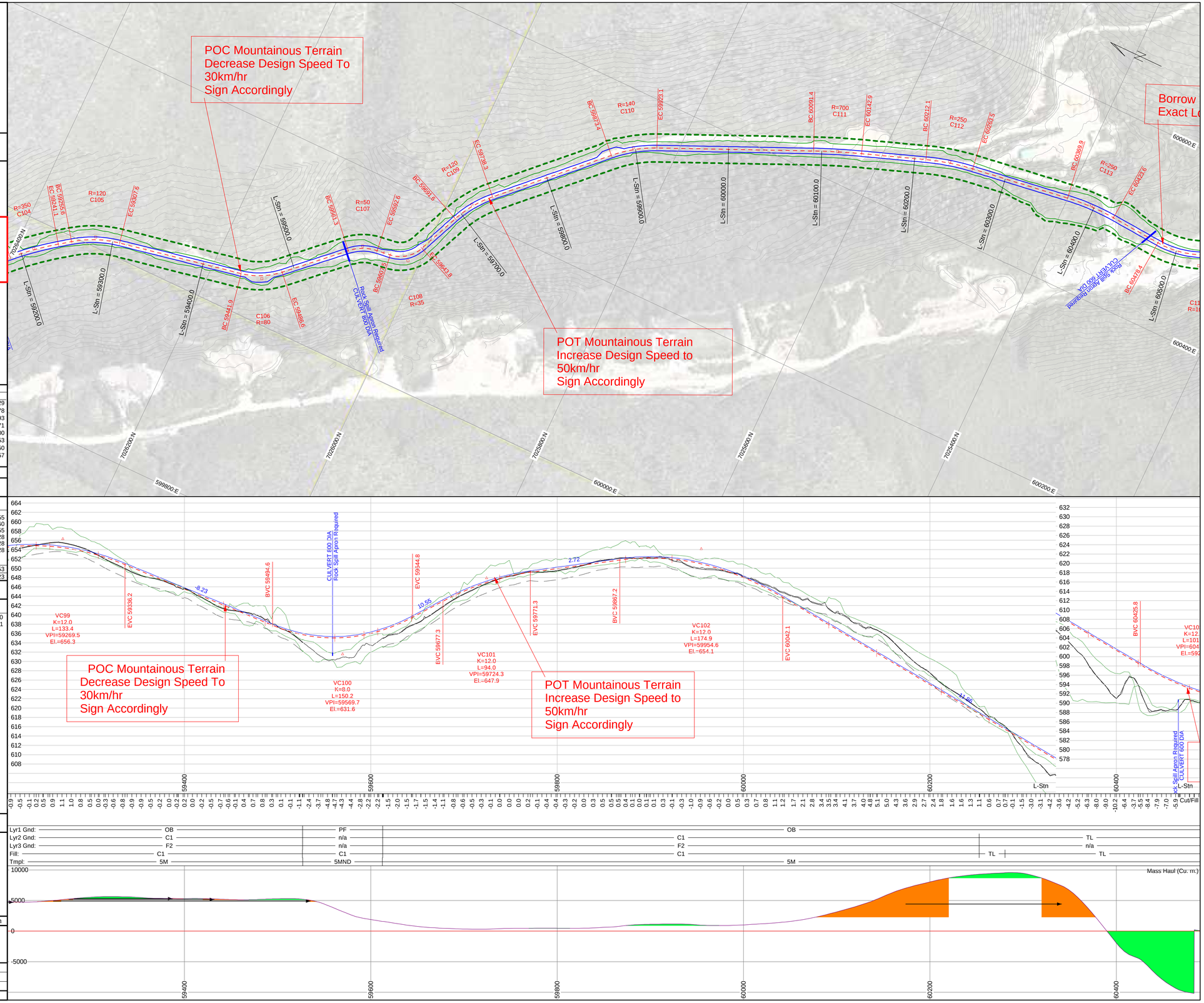
SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng		March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 60239.6 to 61519.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C112	C113	C114	C115	C116	C117	C118
IP Stn.	60238	60397	60529	60720	61082	61279	61483
BC Stn.	60212	60370	60478	60694	61052	61252	61457
Arc. Len.	51	54	93	52	60	54	51
EC Stn.	60263	60424	60571	60746	61112	61306	61508
Radius	250	250	100	130	1500	600	5000
Angle	12	12	-53	23	2	5	1
Tangent	26	27	50	26	30	27	26
Da, a=100	23	23	57	44	4	10	1

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
60400.0		7	590	0	9002	10400	328
60600.0	0	12	582	0	708		355
60800.0	0	10	281	0	176		328
61000.0	0	9	118	0	153		355
61200.0	0	10	202	0	187		328
61400.0	0	9	278	0	304		328
61600.0							
Pg. Tot.	0	57	2051	0	10530		2021
Cum. Tot.	35743	6941	62963	29731	112985		35416

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
60466.5	600	19.0	10.3	8.7	111

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

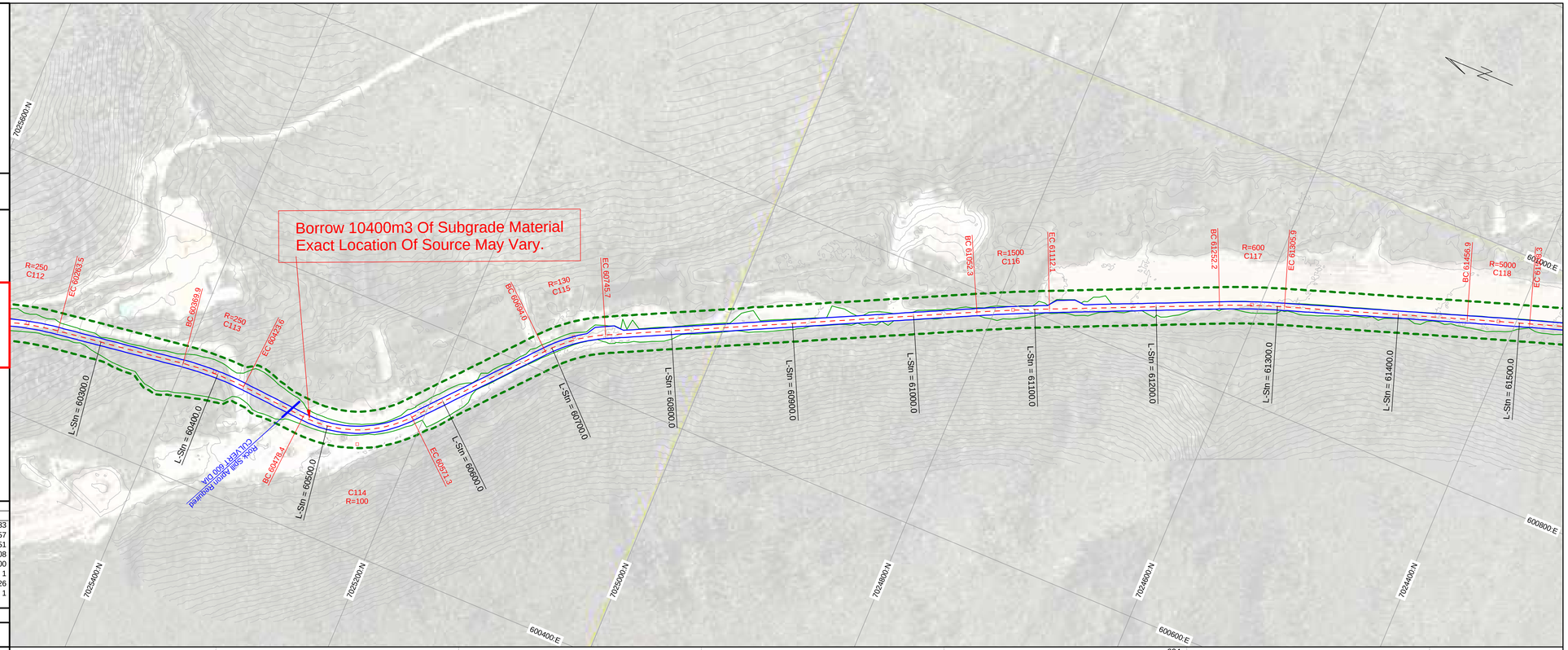
ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 61263.6 to 62543.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C117	C118	C119	C120	C121	C122	C123	C124	C125	C126
IP Stn.	61279	61483	61690	61770	61861	61959	62060	62203	62412	62567
BC Stn.	61252	61457	61653	61744	61835	61931	62019	62177	62387	62526
Arc. Len.	54	51	76	51	52	55	80	53	50	82
EC Stn.	61306	61508	61728	61796	61887	61986	62099	62229	62437	62608
Radius	600	5000	3000	200	120	350	150	250	600	250
Angle	5	1	1	15	-25	-9	31	-12	5	-19
Tangent	27	26	38	26	26	28	41	26	25	41
Da, a=100	10	1	2	29	48	16	38	23	10	23

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
61400.0		9	278	0	304		328
61600.0	0	13	388	0	416		382
61800.0	0	10	326	0	339		355
62000.0	0	8	175	0	322		355
62200.0	0	11	296	0	241		330
62400.0	0	12	328	0	400		353
62600.0							
Pg. Tot.	0	62	1792	0	2022		2101
Cum. Tot.	35743	6994	64477	29731	114703		37190

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
62527.6	800	12.0	6.1	5.9	60

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

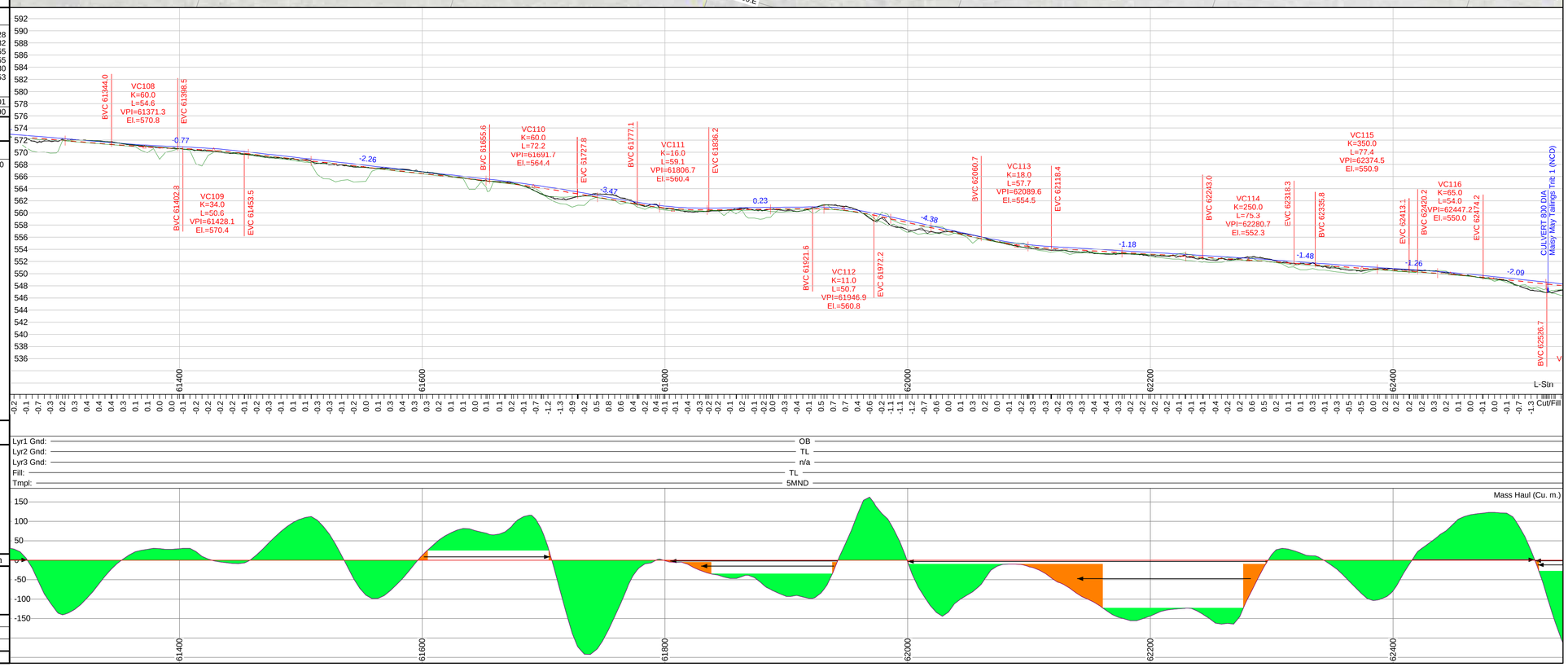
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 62287.6 to 63567.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C125	C126	C127	C128	C129	C130	C131	C132	C133
IP Stn.	62412	62567	62674	62799	62966	63173	63249	63342	63487
BC Stn.	62387	62526	62648	62773	62937	63150	63223	63315	63430
Arc. Len.	50	82	51	52	58	45	52	52	112
EC Stn.	62437	62608	62699	62825	62995	63195	63275	63367	63542
Radius	600	250	400	300	120	200	250	150	260
Angle	5	-19	7	10	-28	-13	-12	20	-25
Tangent	25	41	26	26	30	22	26	26	57
Da, a=100	10	23	14	19	48	29	23	38	22

EARTH WORK VOLUMES (Final Cubic Meters)

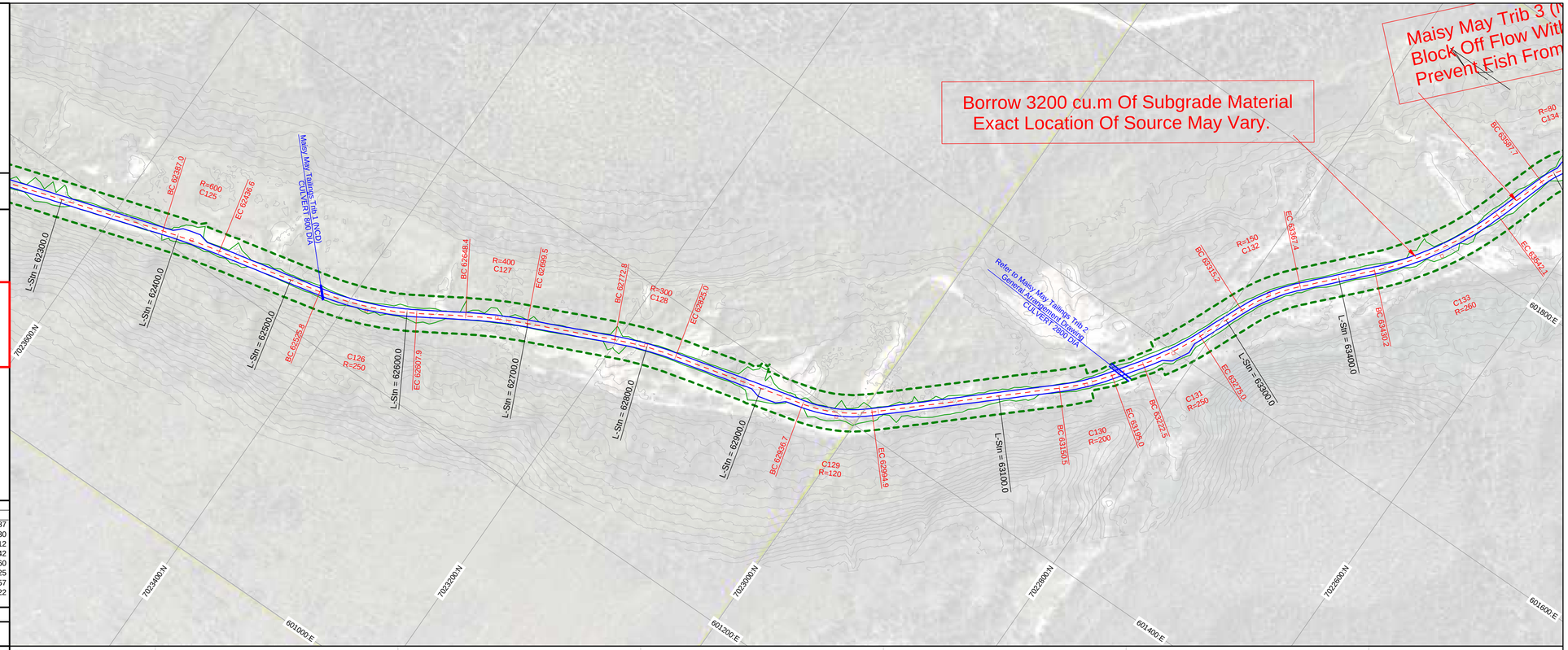
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
62400.0		12	328	0	400		353
62600.0	0	10	257	0	122		328
62800.0	0	15	1459	0	417		355
63000.0	0	15	572	0	363		328
63200.0	0	0	0	0	2421		355
63400.0	0	5	137	0	1371	3400	328
63600.0							
Pg. Tot.	0	58	2754	0	5092		2046
Cum. Tot.	35743	7040	66903	29731	119395		38883

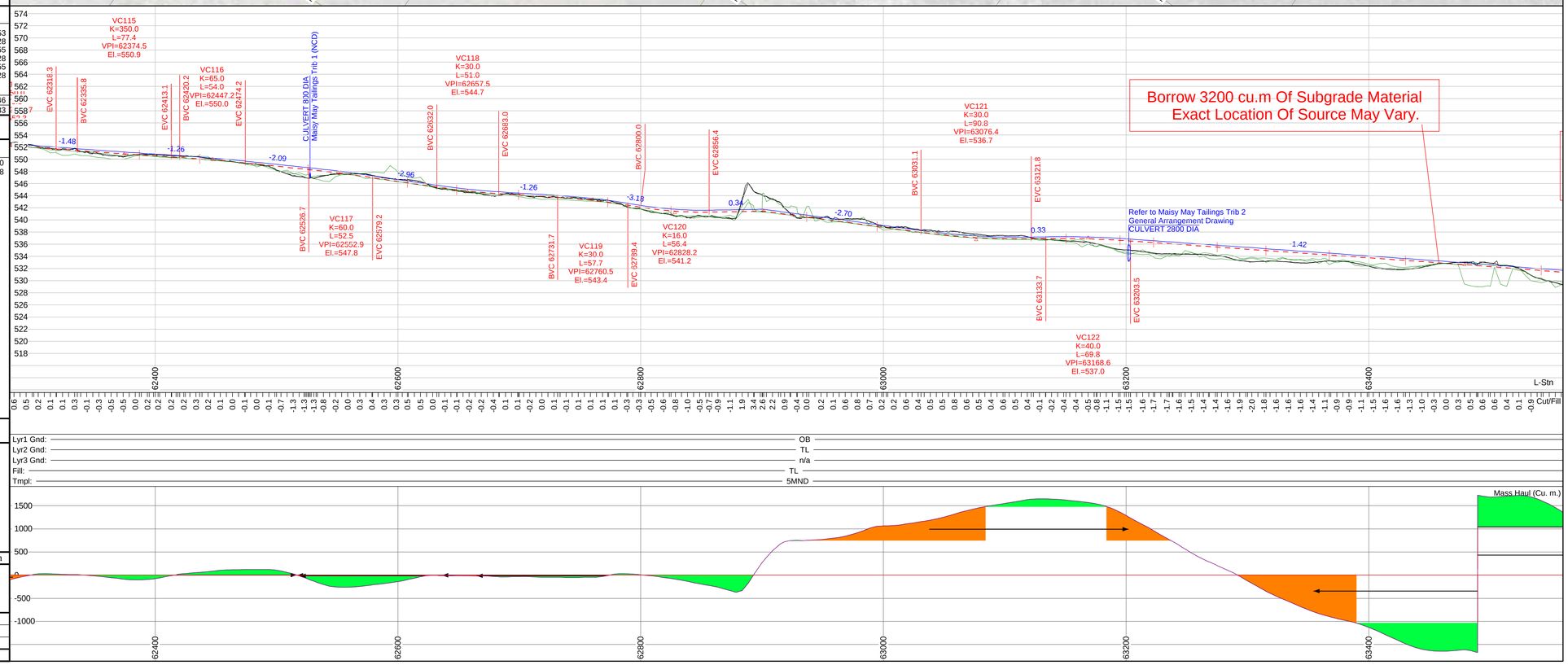
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
62527.6	800	12.0	6.1	5.9	60
63202.2	2800	20.0	10.0	10.0	58

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 63311.6 to 64591.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C132	C133	C134	C135	C136	C137	C138	C139	C140	C141
IP Stn.	63342	63487	63613	63712	63816	63925	64013	64129	64219	64452
BC Stn.	63315	63430	63588	63686	63770	63894	63987	64101	64189	64400
Arc. Len.	52	112	49	51	84	61	51	53	58	101
EC Stn.	63367	63542	63637	63736	63854	63955	64038	64155	64248	64501
Radius	150	260	80	80	80	150	150	130	130	250
Angle	20	-25	35	36	-60	23	-20	24	-26	23
Tangent	26	57	25	26	47	31	26	27	30	51
Da, a=100	38	22	72	72	72	38	38	44	44	23

EARTH WORK VOLUMES (Final Cubic Meters)

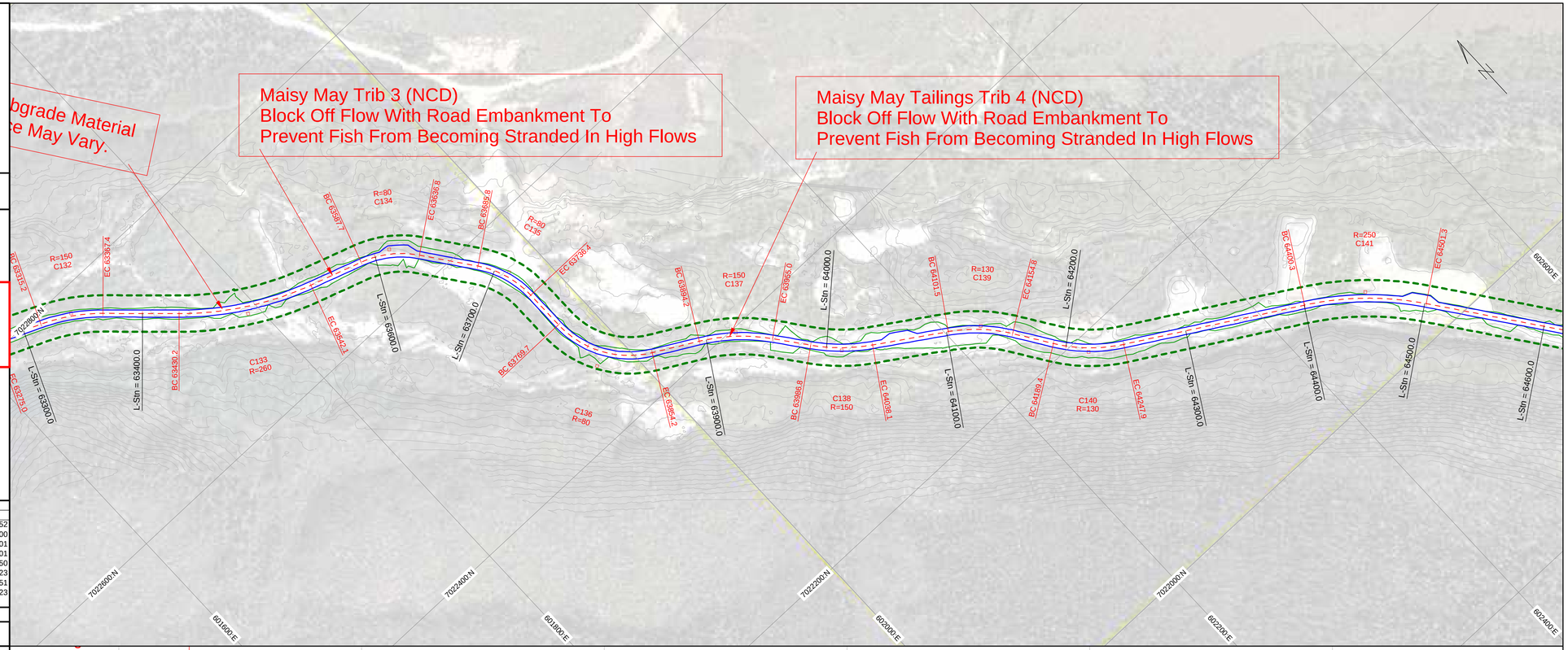
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
63400.0	0	5	137	0	1371	3400	328
63600.0	0	8	348	0	1086		355
63800.0	0	10	661	0	840		328
64000.0	0	17	1323	0	1384		355
64200.0	0	10	692	0	644		328
64400.0	0	9	196	0	247		355
64600.0							
Pg. Tot.	0	59	3358	0	5572		2048
Cum. Tot.	35743	7094	70124	29731	123597		40603

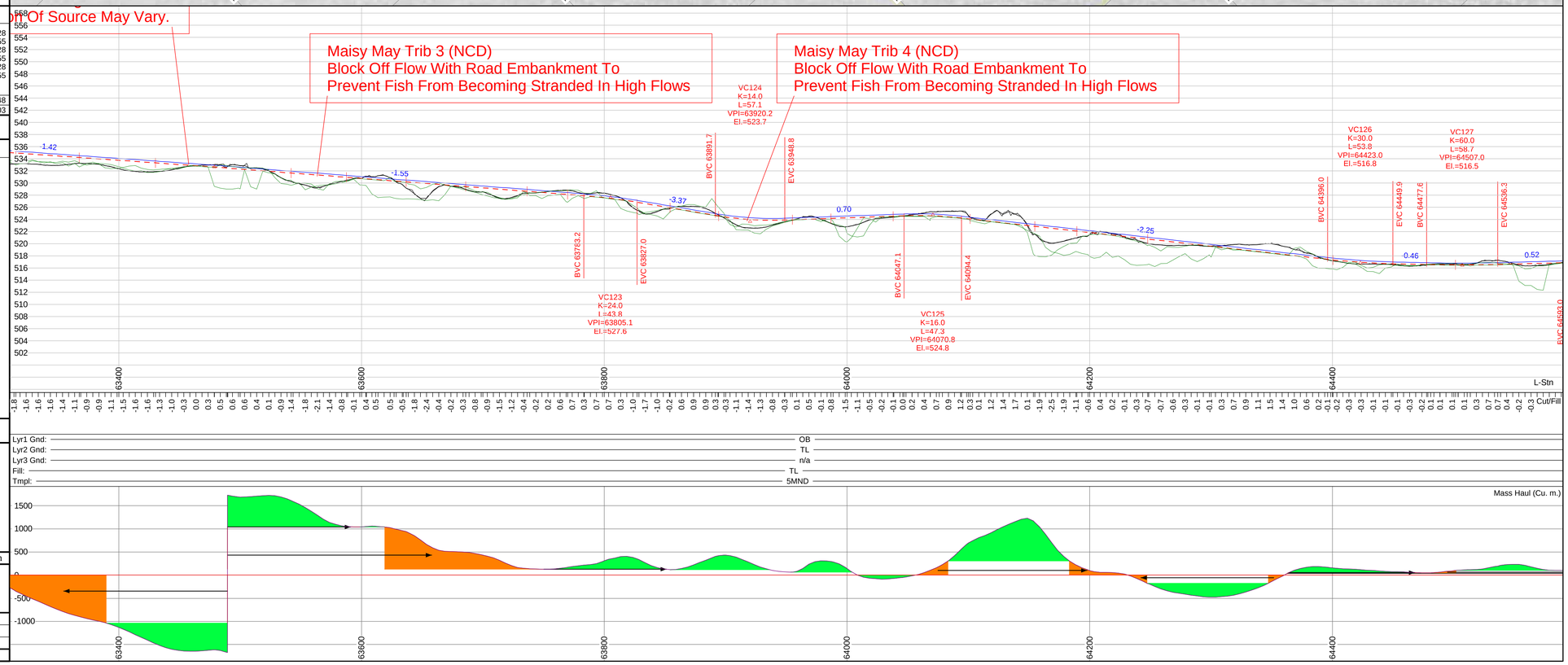
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
64825.4					

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 64335.6 to 65615.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C141	C142	C143	C144	C145	C146	C147	C148	C149	C150	C151
IP Stn.	64452	64663	64855	64964	65175	65270	65330	65386	65465	65529	65624
BC Stn.	64400	64637	64824	64936	65139	65253	65315	65368	65450	65512	65568
Arc. Len.	101	52	62	54	70	34	30	35	30	33	84
EC Stn.	64501	64689	64885	64991	65209	65287	65345	65403	65480	65545	65652
Radius	250	250	150	400	100	80	90	90	180	80	50
Angle	23	-12	24	-8	-40	24	19	-22	10	24	-96
Tangent	51	26	31	27	37	17	15	18	15	17	56
Da, a=100	23	23	38	14	57	72	64	64	32	72	115

EARTH WORK VOLUMES (Final Cubic Meters)

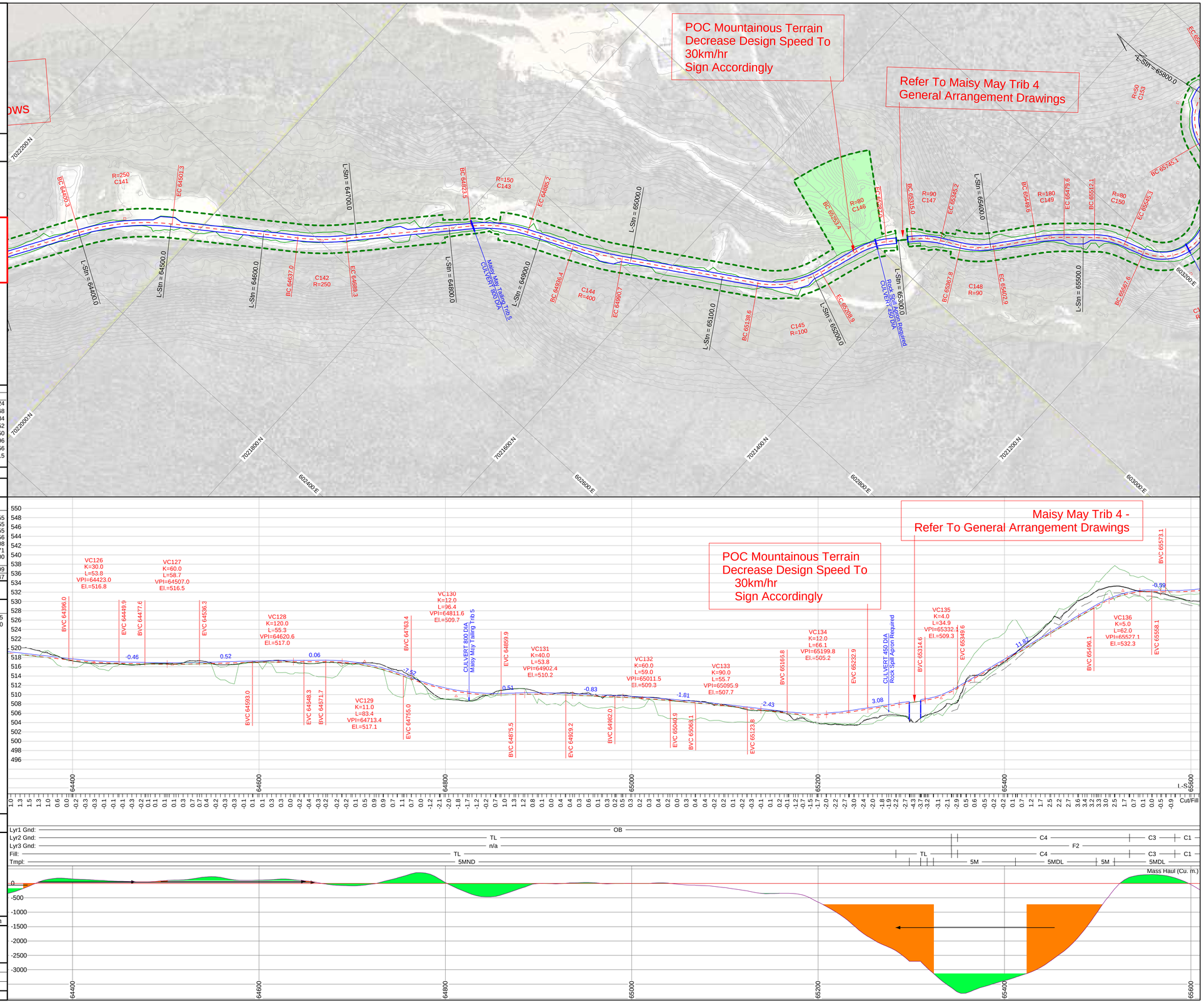
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
64400.0	0	9	196	0	247		355
64600.0	0	10	549	0	640		355
64800.0	0	13	742	0	788		355
65000.0	0	10	232	0	892		356
65200.0	77	0	402	224	3351		308
65400.0	273	0	2187	1553	401		371
65600.0	249	0	483	24	1541		400
65800.0							
Pg. Tot.	599	41	4791	1801	7861		2499
Cum. Tot.	36342	7127	74719	31532	131211		42747

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
64825.4	800	12.0	6.0	6.0	75
65275.8	450	10.0	4.8	5.2	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 65359.6 to 66639.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C148	C149	C150	C151	C152	C153	C154	C155	C156	C157	C158	C159	C160
IP Stn.	65386	65465	65529	65624	65704	65795	65897	65972	66051	66113	66165	66404	66500
BC Stn.	65368	65450	65512	65568	65682	65745	65867	65947	66036	66097	66149	66377	66474
Arc. Len.	35	30	33	84	42	78	60	51	30	30	32	54	52
EC Stn.	65403	65480	65545	65652	65723	65823	65927	65998	66066	66127	66181	66431	66526
Radius	90	180	80	50	50	50	250	500	150	35	80	450	550
Angle	-22	10	24	-96	-48	89	14	6	-11	49	-23	-7	5
Tangent	18	15	17	56	22	49	30	26	15	16	16	27	26
Da, a=100	64	32	72	115	115	115	23	11	38	164	72	13	10

EARTH WORK VOLUMES (Final Cubic Meters)

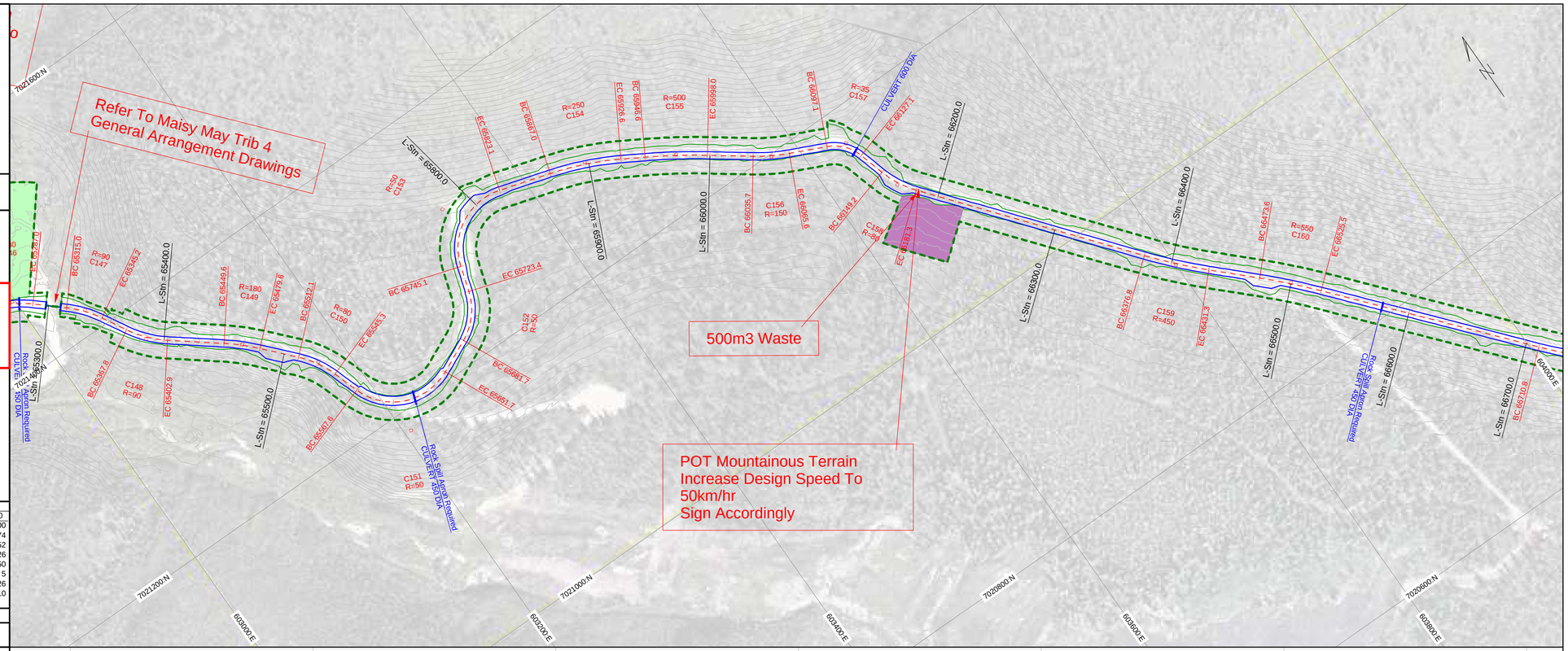
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
65400.0	273	0	2187	1553	401		371
65600.0	249	0	483	24	1541		400
65800.0	270	0	1270	421	703		348
66000.0	257	0	1370	103	747	-430	355
66200.0	208	0	268	0	617		328
66400.0	282	0	1232	431	1464		355
66600.0	289	0	954	140	1169		350
Pg. Tot.	1826	0	7764	2671	6643		2507
Cum. Tot.	37647	7127	79812	32626	135911		44483

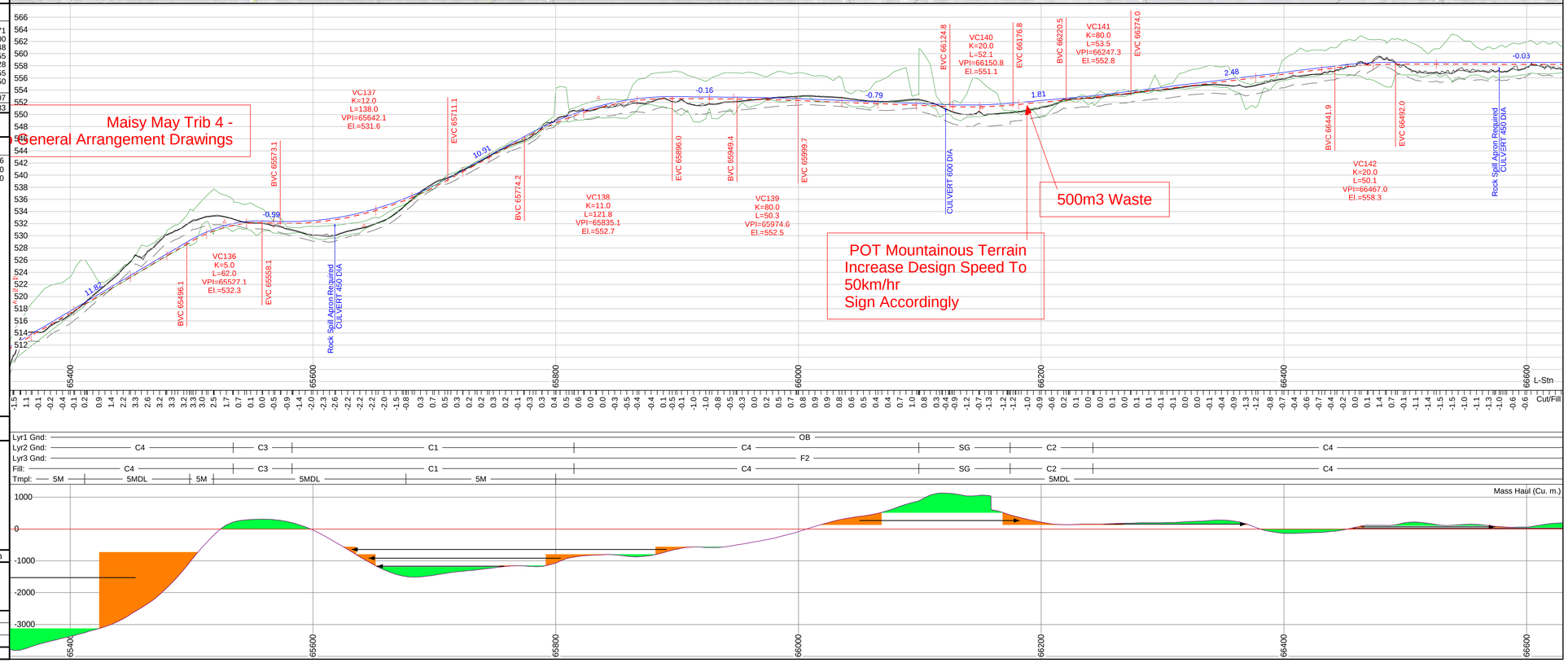
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
65618.0	450	11.0	5.8	5.2	96
66121.2	600	8.0	3.5	4.5	90
66577.3	450	8.0	3.5	4.5	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 25 of 42	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng	March 2017
Plot Date:17/03/23	Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn		

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 66383.6 to 67663.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C159	C160	C161	C162	C163	C164	C165	C166	C167	C168	C169
IP Stn.	66404	66500	66765	66876	66967	67041	67112	67284	67447	67519	67628
BC Stn.	66377	66474	66711	66849	66933	67021	67083	67253	67424	67502	67613
Arc. Len.	54	52	107	52	66	36	58	63	44	34	30
EC Stn.	66431	66526	66818	66901	66999	67057	67141	67316	67469	67536	67643
Radius	450	550	350	150	100	35	250	1000	150	250	200
Angle	-7	5	-17	20	-38	59	-13	-4	17	-8	9
Tangent	27	26	54	26	35	20	29	32	22	17	15
Da, a=100	13	10	16	38	57	164	23	6	38	23	29

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
66400.0	282	0	1232	431	1464		355
66600.0	289	0	954	140	1169		350
66800.0	251	0	792	97	671		332
67000.0	249	0	740	190	1033		382
67200.0	281	0	859	64	865		328
67400.0	364	0	1451	359	2424		355
67600.0	299	0	1024	159	805		355
67800.0							
Pg. Tot.	2013	0	7053	1441	8431		2457
Cum. Tot.	39090	7127	84679	33496	141709		46235

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
66577.3	450	8.0	3.5	4.5	90
67045.9	600	8.0	3.7	4.3	96

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

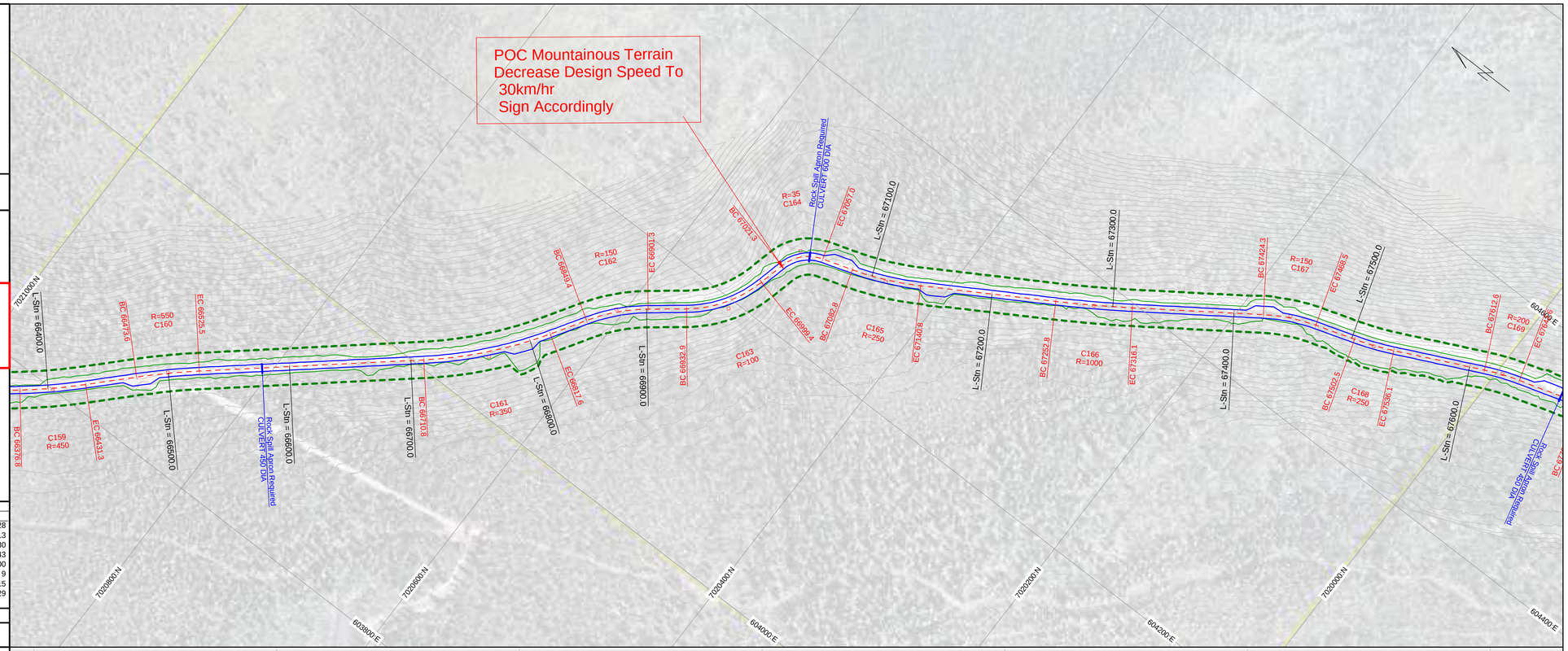
ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 67407.6 to 68687.6

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Cut / Fill limits
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- Historic Sites
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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C167	C168	C169	C170	C171	C172	C173	C174	C175	C176	C177	C178
IP Stn.	67447	67519	67628	67717	67874	67997	68042	68212	68301	68431	68517	68606
BC Stn.	67424	67502	67613	67701	67859	67982	68025	68184	68271	68392	68482	68577
Arc. Len.	44	34	30	32	31	31	33	56	60	74	70	57
EC Stn.	67469	67536	67643	67733	67890	68013	68058	68240	68331	68466	68552	68634
Radius	150	250	200	800	300	300	300	1200	150	100	500	700
Angle	17	-8	9	-2	-6	-6	6	-3	-23	43	-8	-5
Tangent	22	17	15	16	16	15	17	28	30	39	35	29
Da, a=100	38	23	29	7	19	19	19	5	38	57	11	8

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
67600.0							
67800.0	299	0	1024	159	805		355
68000.0	460	0	1793	1111	731		355
68200.0	299	188	1826	931	238		328
68400.0	226	55	322	13	4437		355
68600.0	263	98	398	0	1033		328
68800.0	261	34	330	338	920		345
Pg. Tot.	1808	374	5694	2552	8165		2065
Cum. Tot.	40599	7501	89349	35889	149069		47945

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
67679.2	450	11.0	6.5	4.5	93
67879.2	450	11.0	3.8	7.3	72
68079.2	450	9.0	3.4	5.6	72
68260.8	600	20.0	8.5	11.5	90
68618.1	450	8.0	3.5	4.5	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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- 4MDR = 5m running surface with 4m wide ditch on right
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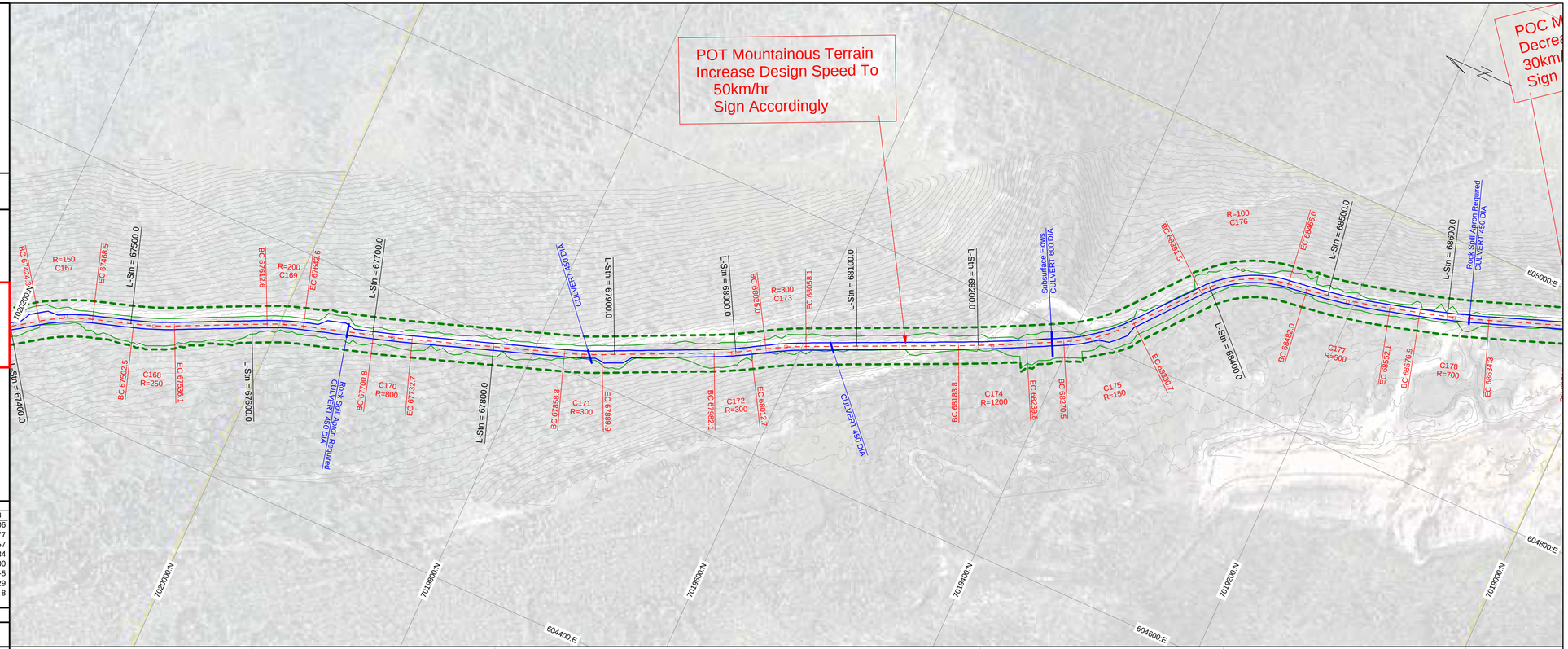
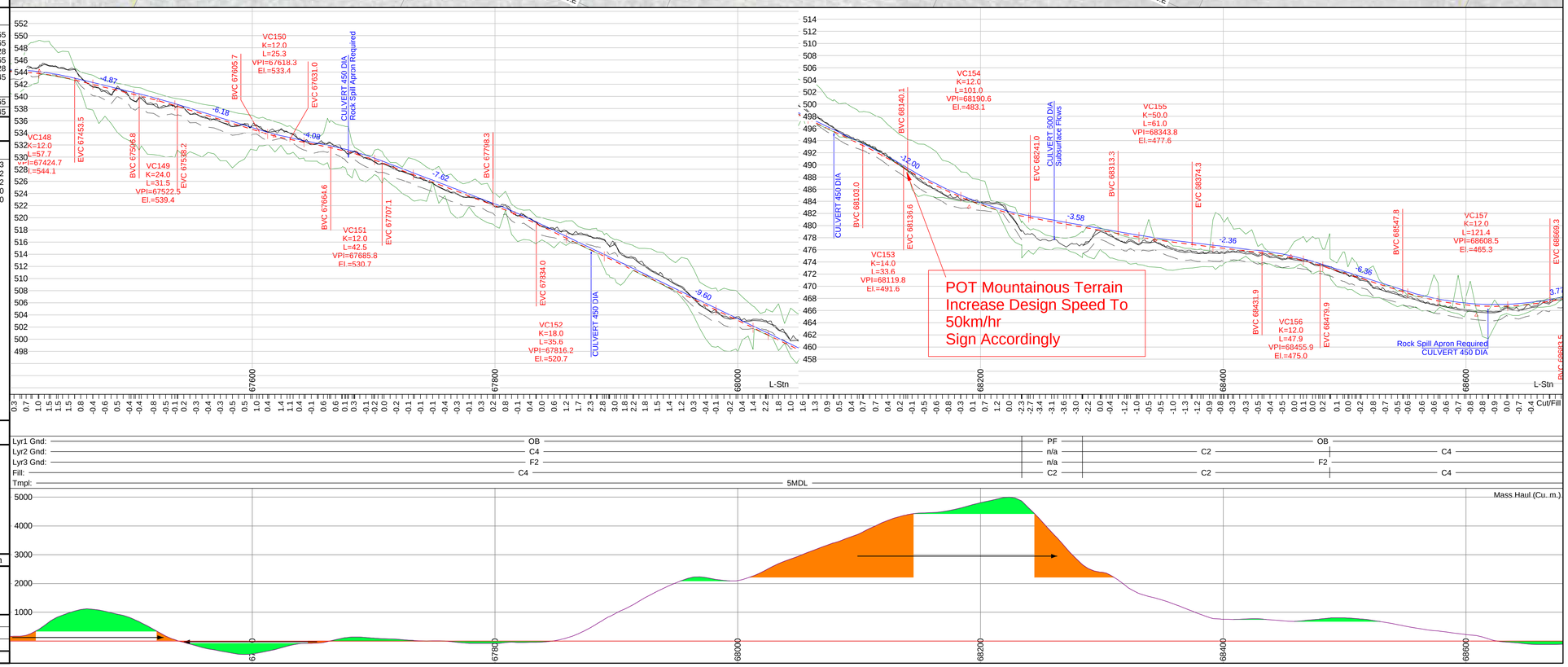
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 68431.6 to 69711.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C176	C177	C178	C179	C180	C181	C182	C183	C184	C185	C186
IP Stn.	68431	68517	68606	68720	68789	68845	68969	69075	69255	69460	69563
BC Stn.	68392	68482	68577	68703	68771	68829	68939	69050	69173	69434	69535
Arc. Len.	74	70	57	32	35	32	57	50	153	52	54
EC Stn.	68466	68552	68634	68736	68806	68860	68996	69099	69326	69486	69589
Radius	100	500	700	60	40	120	80	250	175	120	80
Angle	43	-8	-5	-31	50	-15	-41	-11	50	-25	-39
Tangent	39	35	29	17	19	16	30	25	82	26	28
Da, a=100	57	11	8	95	143	48	72	23	33	48	72

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
68600.0							
68800.0	261	34	330	338	920		345
69000.0	298	0	1111	149	1124		385
69200.0	207	0	469	0	967		330
69400.0	226	0	775	91	220		328
69600.0	303	0	719	2426	119		355
69800.0	258	0	400	198	3029		328
Pg. Tot.	1554	34	3804	3202	6380		2071
Cum. Tot.	41891	7501	92823	38753	154529		49672

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
68618.1	450	8.0	3.5	4.5	90
68811.7	800	20.0	8.5	11.5	65
68957.2	450	10.0	5.0	5.0	86
69196.9	450	8.0	3.6	4.4	87
69490.6	450	8.0	3.7	4.3	87
69677.5	450	8.0	3.7	4.3	90

SOIL TYPES

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- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
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- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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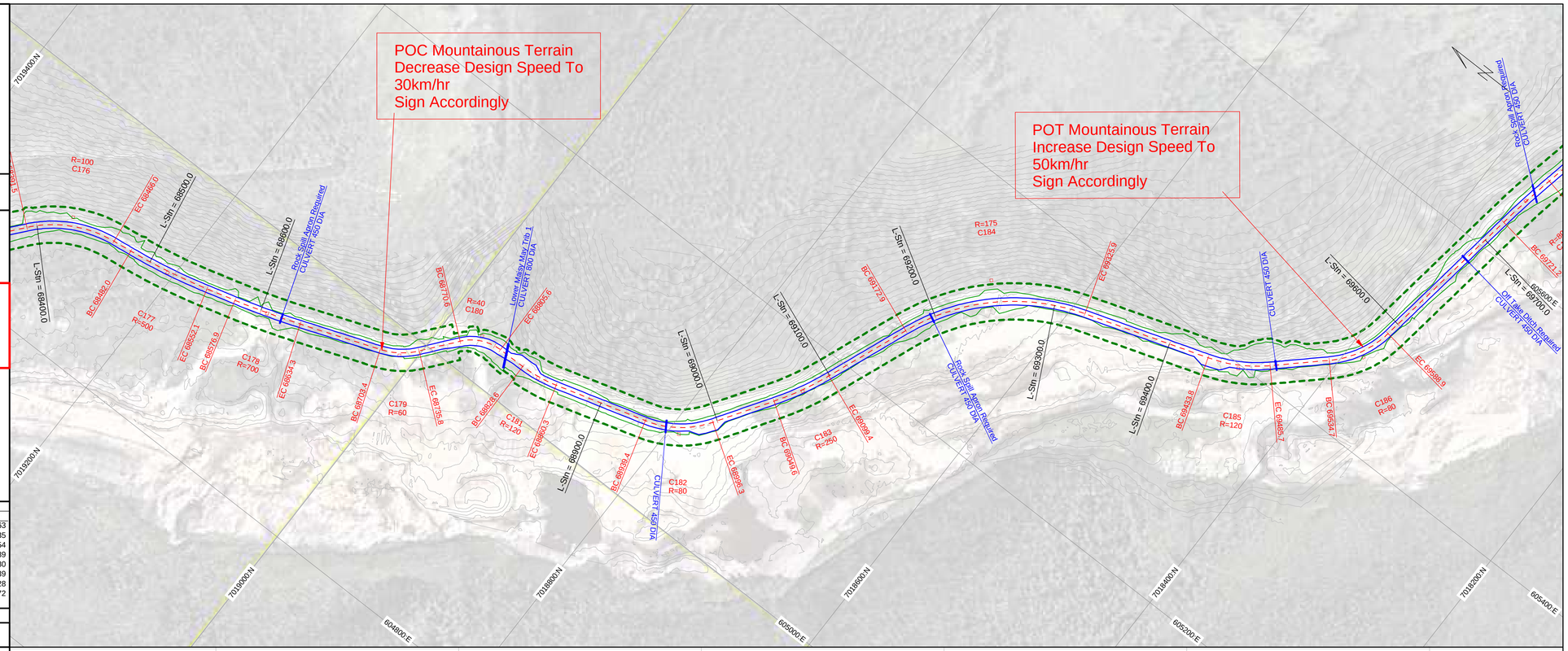
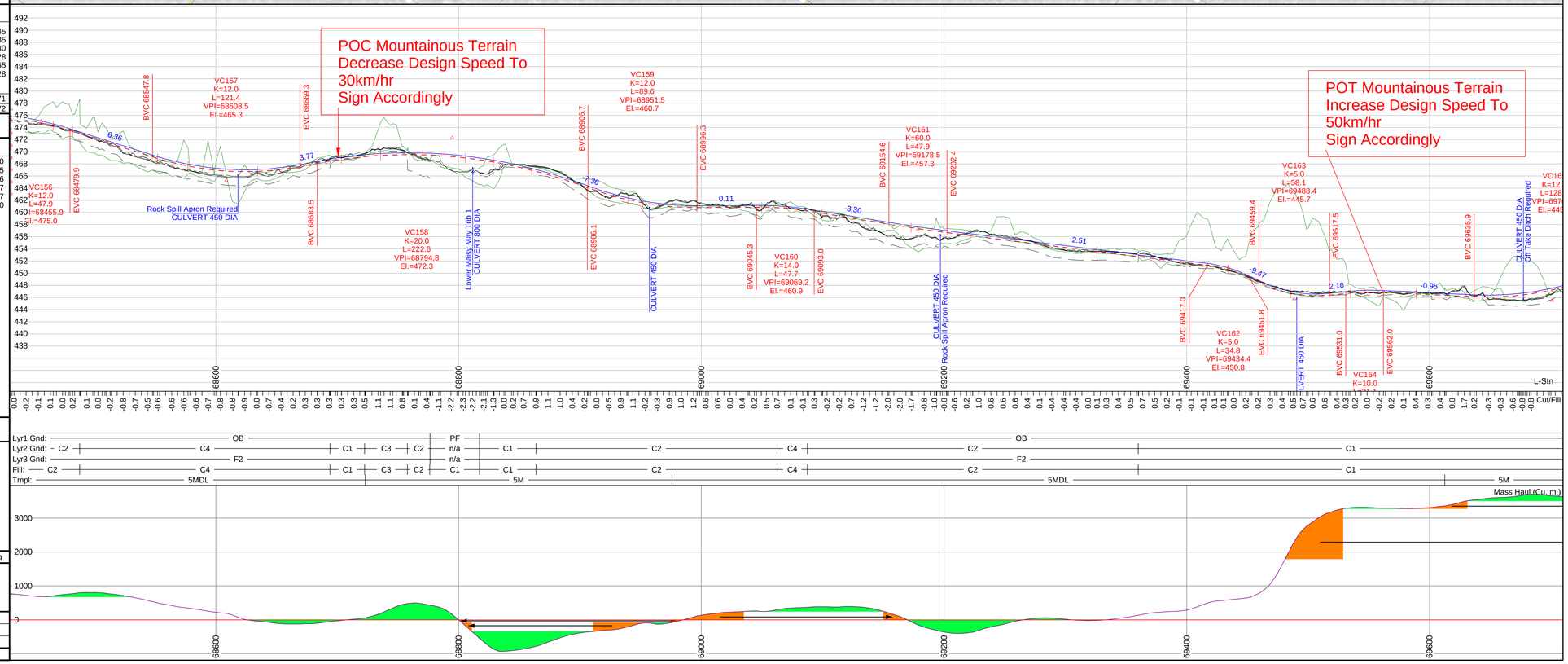
- 2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 28 of 42	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 69455.6 to 70735.6

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C185	C186	C187	C188	C189	C190	C191	C192	C193	C194
IP Stn.	69460	69563	69747	69930	70058	70151	70236	70446	70568	70671
BC Stn.	69434	69535	69721	69869	70033	70126	70210	70421	70521	70631
Arc. Len.	52	54	51	113	50	49	53	49	84	74
EC Stn.	69486	69589	69772	69982	70083	70175	70263	70470	70605	70705
Radius	120	80	800	120	150	160	150	200	80	80
Angle	-25	-39	4	54	-19	-18	20	14	-60	53
Tangent	26	28	25	61	25	25	27	25	47	40
Da, a=100	48	72	7	48	38	36	38	29	72	72

EARTH WORK VOLUMES (Final Cubic Meters)

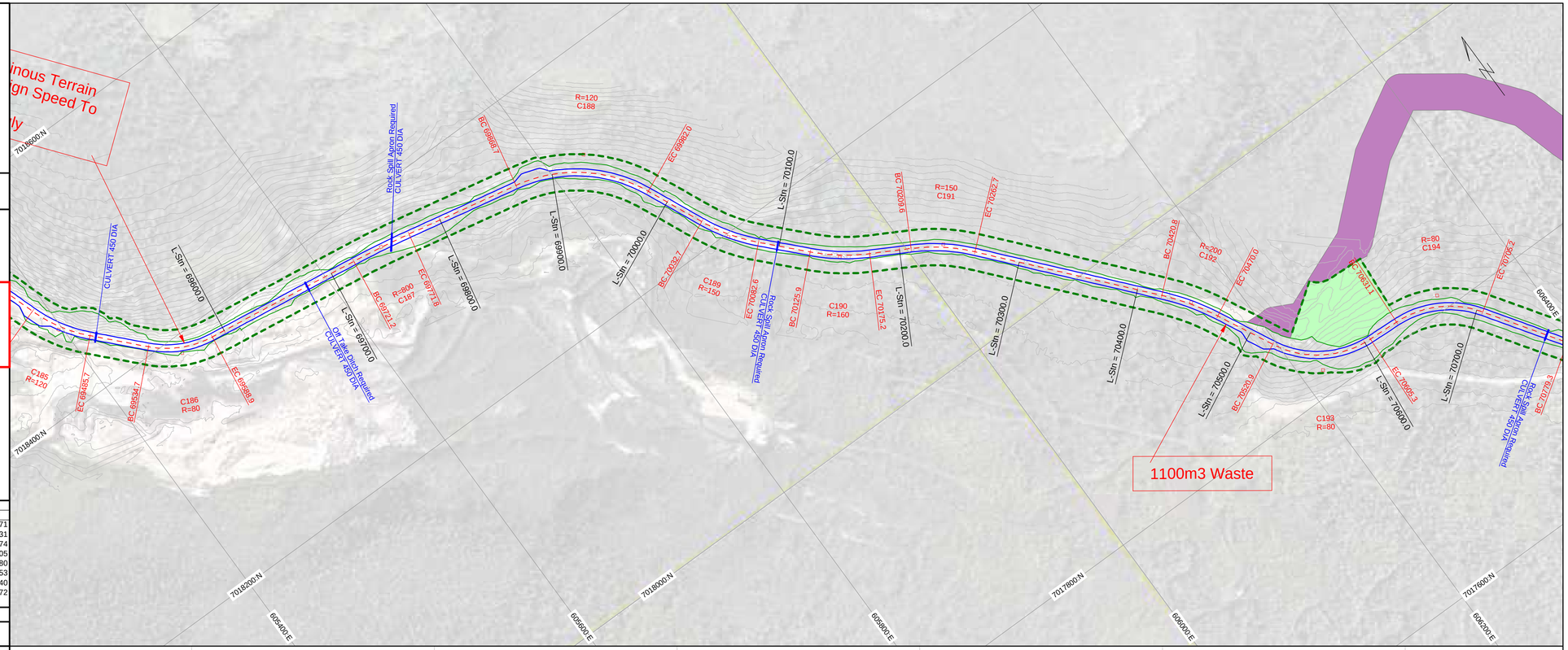
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
69600.0	258	0	400	198	3029		328
69800.0	265	0	1334	516	1051		355
70000.0	227	0	383	0	740		328
70200.0	214	0	243	0	416		328
70400.0	573	0	1669	1621	2019	-1100	355
70600.0	584	0	371	46	2749		328
70800.0							
Pg. Tot.	2120	0	4401	2381	10004		2021
Cum. Tot.	43754	7501	96824	40936	161504		51365

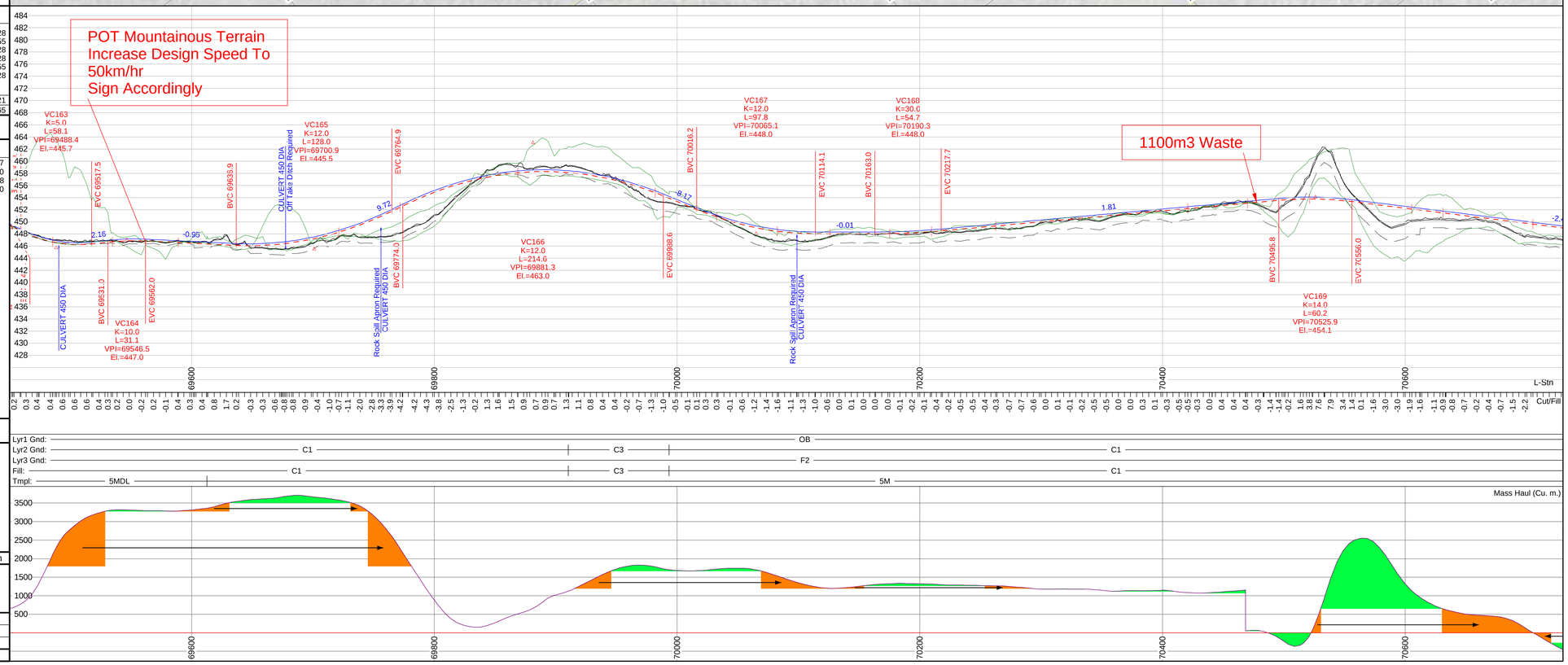
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
69490.6	450	8.0	3.7	4.3	87
69677.5	450	8.0	3.7	4.3	90
69756.0	450	15.0	7.5	7.5	118
70098.7	450	8.0	3.8	4.3	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 70479.6 to 71759.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C193	C194	C195	C196	C197	C198	C199
IP Stn.	70568	70671	70843	70972	71191	71390	71744
BC Stn.	70521	70631	70779	70926	71111	71360	71717
Arc. Len.	84	74	117	86	155	59	54
EC Stn.	70605	70705	70897	71012	71266	71419	71771
Radius	80	80	120	100	300	150	200
Angle	-60	53	-56	49	30	-23	15
Tangent	47	40	64	46	79	30	27
Da, a=100	72	72	48	57	19	38	29

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
70600.0	584	0	371	46	2749		328
70800.0	547	2	1141	1171	1676		328
71000.0	536	0	1611	1264	2155		355
71200.0	218	0	287	0	599		328
71400.0	233	0	577	39	924		328
71600.0	261	0	967	282	1128		355
71800.0							
Pg. Tot.	2379	2	4953	2801	9232		2021
Cum. Tot.	45549	7503	101407	43691	167987		53058

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
70761.2	450	9.0	4.5	4.5	90
71014.2	800	31.0	15.0	16.0	60
71236.6	450	10.0	4.7	5.3	69
71446.5	450	9.0	4.0	5.0	87
71641.4	450	8.0	3.8	4.3	90

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
C2 - Silty Sand Colluvium with
C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
TA - Talus
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TL - Tailings
F1 - Weak Fractured Rock
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 71503.6 to 72783.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
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ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
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- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C199	C200	C201	C202	C203	C204	C205	C206	C207	C208
IP Stn.	71744	71850	71932	72160	72275	72407	72495	72607	72691	72737
BC Stn.	71717	71822	71906	72131	72246	72373	72458	72565	72668	72721
Arc. Len.	54	57	52	56	57	65	64	61	40	32
EC Stn.	71771	71879	71958	72187	72303	72439	72522	72626	72709	72753
Radius	200	400	600	100	100	100	55	35	35	55
Angle	15	-8	-5	-32	33	-38	67	-101	66	-33
Tangent	27	28	26	29	29	34	36	42	23	16
Da, a=100	29	14	10	57	57	57	104	164	164	104

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
71600.0	261	0	967	282	1128		355
71800.0	258	0	777	9	684		328
72000.0	247	0	586	17	506		355
72200.0	238	0	531	171	820		328
72400.0	272	0	502	803	1384		445
72600.0	330	0	873	499	1298		443
72800.0							
Pg. Tot.	1607	0	4236	1780	5818		2254
Cum. Tot.	46895	7503	104676	45189	172677		54957

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
71641.4	450	8.0	3.8	4.3	90
72006.2	450	8.0	4.0	4.0	90
72174.9	600	8.0	3.8	4.2	90
72307.6	450	8.0	3.8	4.2	90
72406.0	450	8.0	3.5	4.5	90
72569.1	450	14.0	6.5	7.5	90

SOIL TYPES

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- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
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5M = 5m running surface with 0.5m deep by 1m wide ditch
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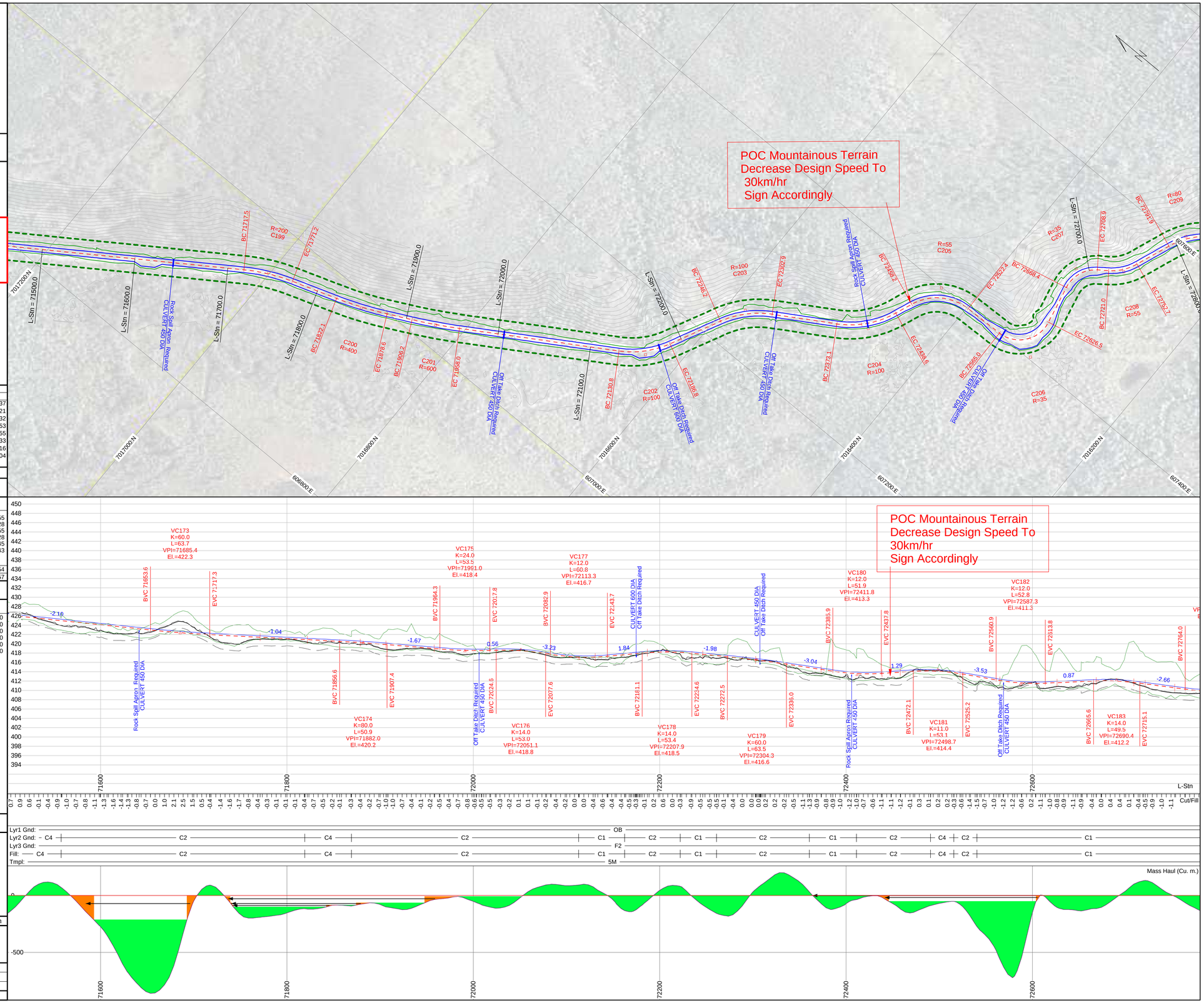
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 72527.6 to 73807.6

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
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ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C206	C207	C208	C209	C210	C211	C212	C213	C214	C215	C216	C217	C218	C219	C220
IP Stn.	72607	72691	72737	72813	72901	72966	73054	73127	73185	73259	73379	73462	73522	73614	73735
BC Stn.	72565	72668	72721	72792	72885	72947	73028	73112	73165	73237	73354	73446	73498	73570	73704
Arc. Len.	61	40	32	41	33	38	51	29	40	44	49	33	47	83	59
EC Stn.	72626	72709	72753	72833	72918	72985	73080	73141	73205	73281	73403	73479	73544	73653	73764
Radius	35	35	55	80	100	80	145	100	100	150	100	150	100	100	80
Angle	-101	66	-33	29	-19	27	-20	16	-23	17	-28	13	27	-48	43
Tangent	42	23	16	21	17	19	26	14	20	22	25	17	24	44	31
Da, a=100	164	164	104	72	57	72	40	57	57	38	57	38	57	57	72

EARTH WORK VOLUMES (Final Cubic Meters)

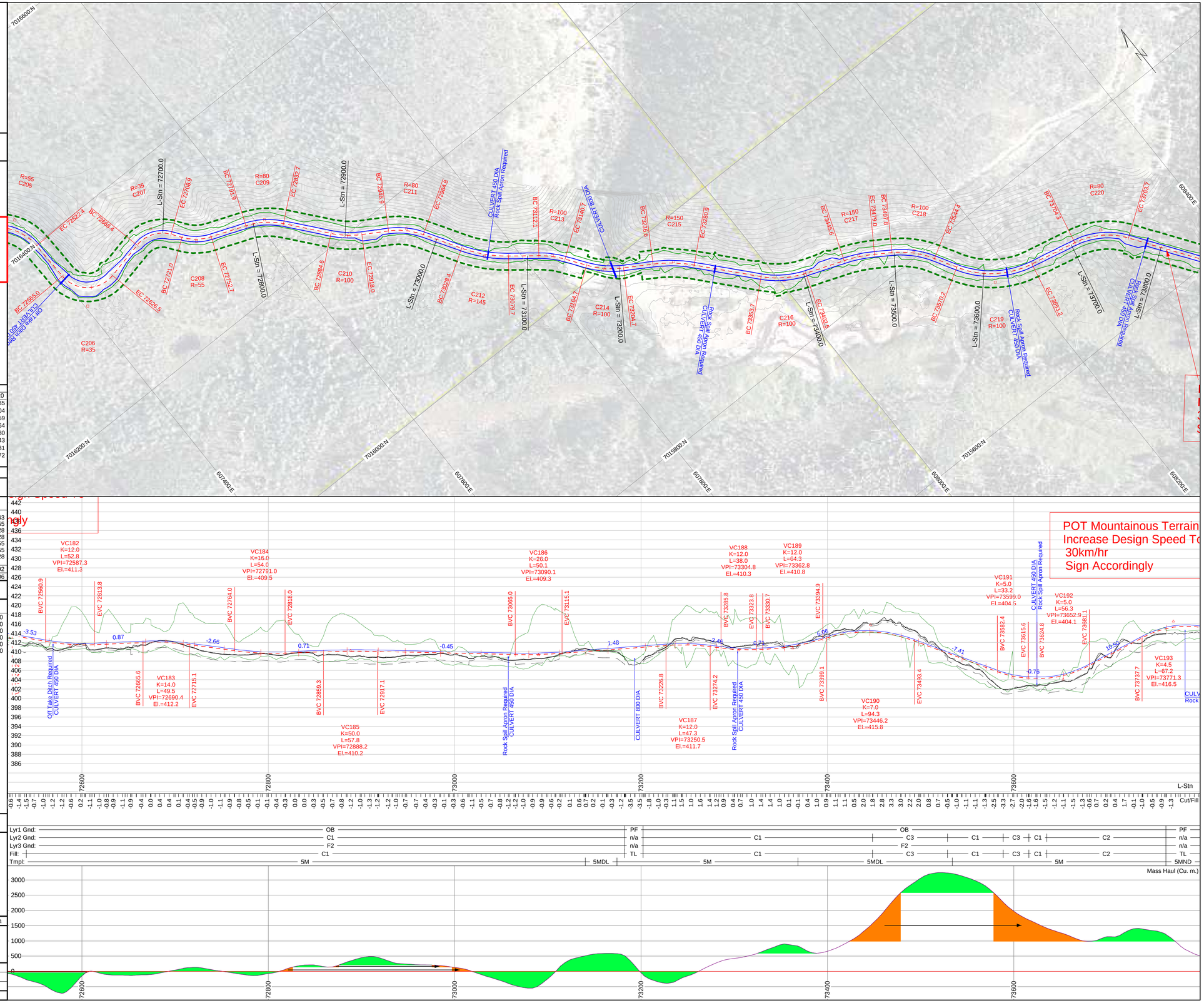
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
72600.0							
72800.0	330	0	873	499	1298		443
73000.0	283	0	945	397	1134		355
73200.0	246	0	609	836	1627		328
73400.0	330	0	637	1146	1070		328
73600.0	277	0	563	2198	1446		355
73800.0	231	0	763	107	2345		355
74000.0	450	0	1094	350	1874		328
Pg. Tot.	2147	0	5484	5534	10795		2492
Cum. Tot.	48711	7503	109286	50224	182174		57006

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
72569.1	450	14.0	6.5	7.5	90
73057.5	450	9.0	4.0	5.0	90
73193.3	800	18.0	8.0	10.0	70
73303.6	450	8.0	3.5	4.5	90
73624.8	450	10.0	4.9	5.1	90
73783.8	450	12.0	6.0	6.0	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision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7016400 N
7016200 N
7016000 N
7015800 N
7015600 N
607400 E
607600 E
607800 E
608000 E
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608400 E
R=55 C205
R=35 C207
R=80 C209
R=80 C211
R=100 C213
R=150 C215
R=100 C218
R=80 C220
C206 R=35
C208 R=55
C210 R=100
C212 R=145
C214 R=100
C216 R=100
C219 R=100
L-Stn = 72100.0
L-Stn = 72900.0
L-Stn = 73100.0
L-Stn = 73200.0
L-Stn = 73400.0
L-Stn = 73500.0
L-Stn = 73600.0
L-Stn = 73700.0
L-Stn = 73800.0
CULVERT 450 DIA Rock Spill Apron Required
CULVERT 600 DIA
Off Take Ditch Required CULVERT 450 DIA
Rock Spill Apron Required CULVERT 450 DIA
CULVERT 800 DIA
Rock Spill Apron Required CULVERT 450 DIA
Rock Spill Apron Required CULVERT 450 DIA
Rock Spill Apron Required CULVERT 450

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 73551.6 to 74831.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C219	C220	C221	C222	C223	C224	C225	C226	C227
IP Stn.	73614	73735	73909	74103	74257	74429	74620	74711	74796
BC Stn.	73570	73704	73871	74052	74231	74401	74583	74677	74764
Arc. Len.	83	59	72	100	53	55	71	66	61
EC Stn.	73653	73764	73944	74152	74284	74457	74654	74742	74825
Radius	100	80	100	200	200	200	100	100	80
Angle	-48	43	-41	29	-15	16	41	-38	44
Tangent	44	31	38	51	27	28	37	34	32
Da, a=100	57	72	57	29	29	29	57	57	72

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
73600.0							
73800.0	231	0	763	107	2345		355
74000.0	450	0	1094	350	1874		328
74200.0	529	0	670	77	937		355
74400.0	611	0	1581	685	824		346
74600.0	586	0	1085	289	2684		337
74800.0	571	0	538	5024	867		355
75000.0	490	0	468	2903	1912		357
Pg. Tot.	3468	0	6199	9435	11444		2432
Cum. Tot.	51498	7503	113628	59203	189398		58755

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
73624.8	450	10.0	4.9	5.1	90
73783.8	450	12.0	6.0	6.0	90
73894.6	450	8.0	4.0	4.0	90
74243.5	450	9.0	4.5	4.5	90
74435.2	600	19.0	8.9	10.1	90
74601.4	450	9.0	4.0	5.0	90

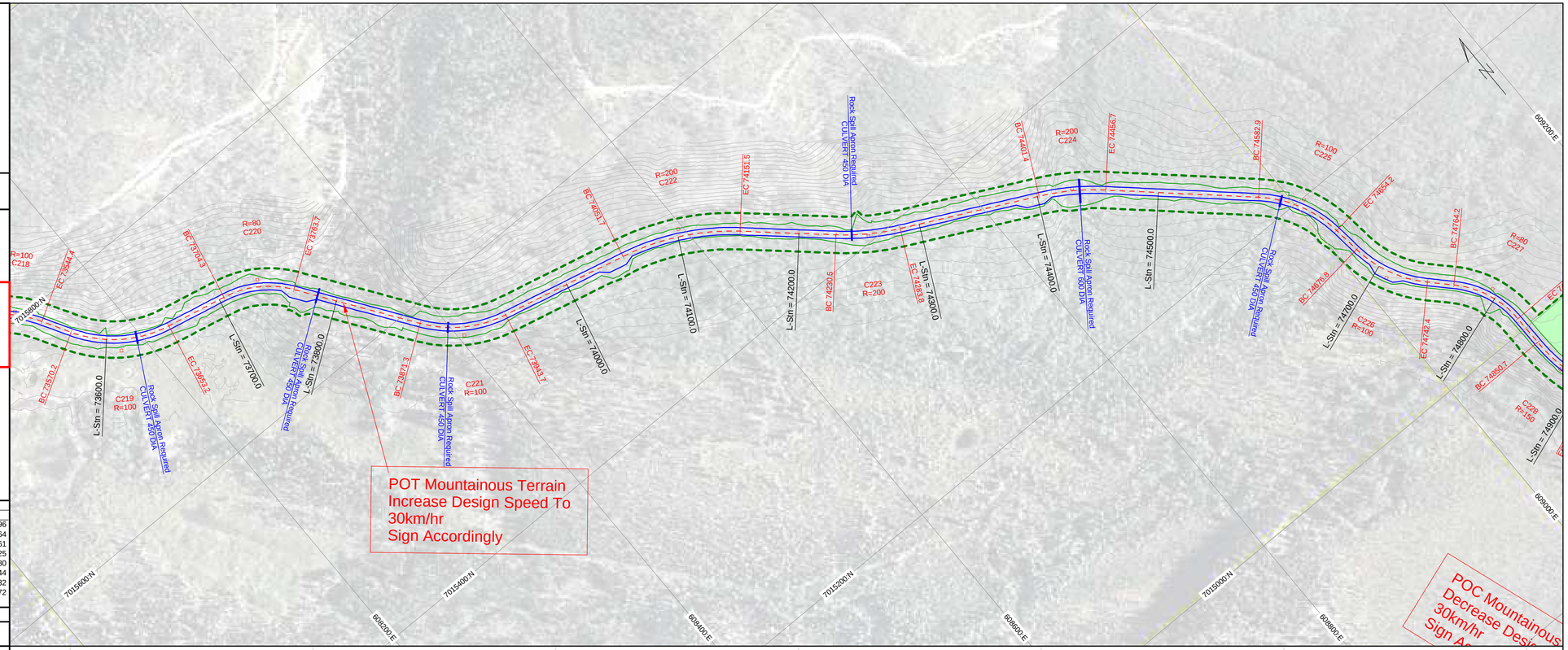
SOIL TYPES

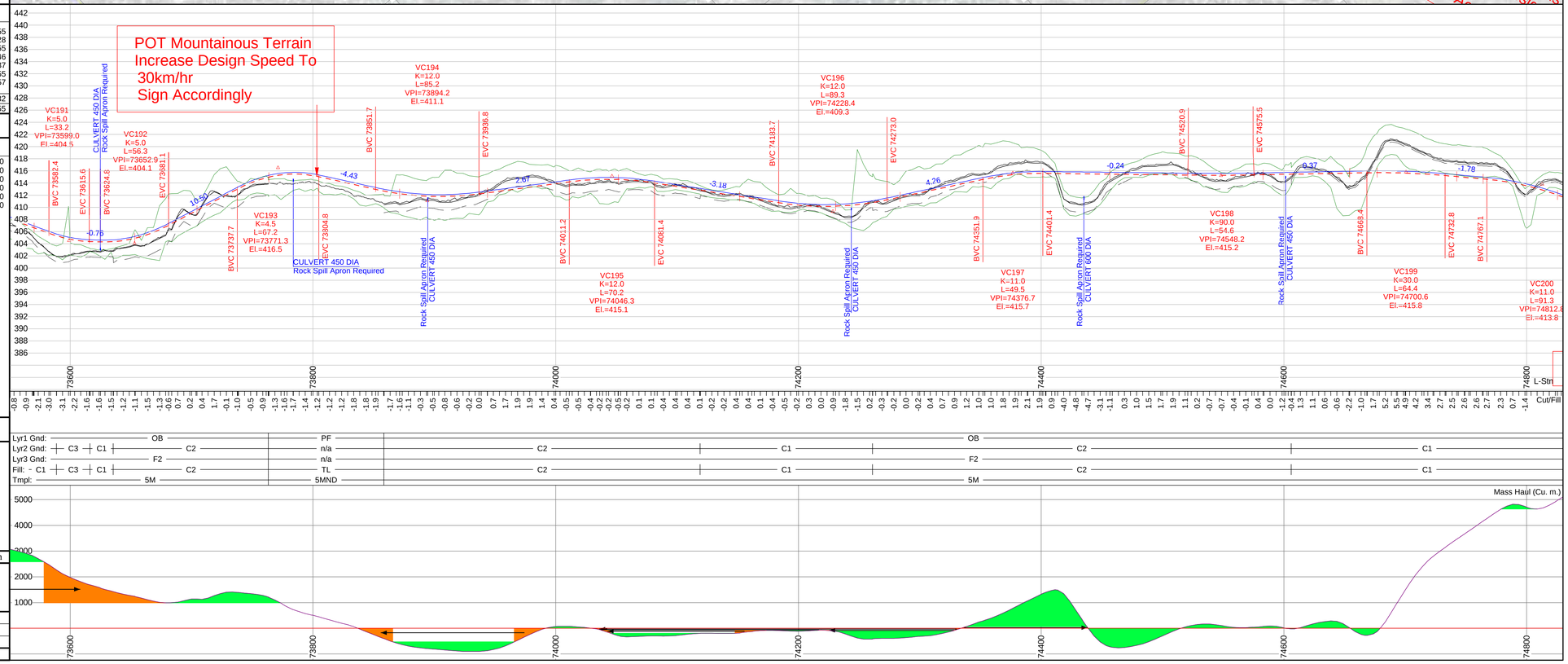
- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/23 Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 74575.6 to 75855.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C225	C226	C227	C228	C229	C230	C231	C232	C233	C234
IP Stn.	74620	74711	74796	74880	74998	75089	75258	75445	75529	75702
BC Stn.	74583	74677	74764	74851	74972	75062	75226	75418	75504	75656
Arc. Len.	71	66	61	58	49	53	54	52	51	90
EC Stn.	74654	74742	74825	74909	75022	75116	75280	75471	75555	75746
Radius	100	100	80	150	100	150	40	120	300	165
Angle	41	-38	44	-22	28	20	-77	25	-10	31
Tangent	37	34	32	29	25	27	32	27	26	46
Da, a=100	57	57	72	38	57	38	143	48	19	35

EARTH WORK VOLUMES (Final Cubic Meters)

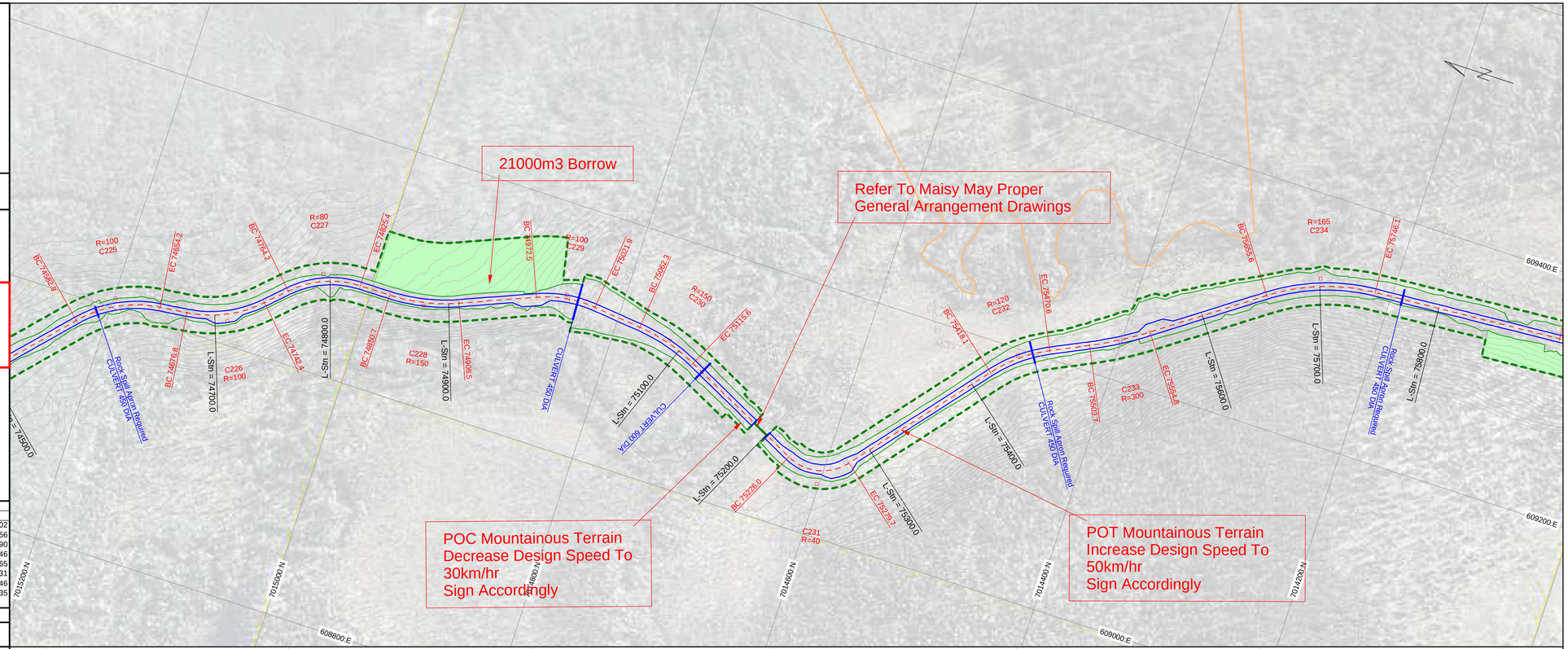
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
74600.0		0	538	5024	867		355
74800.0	571	0	468	2903	1912	21000	357
75000.0	490	0	0	0	11061		305
B 75200.0	0	0	0	0	3961		392
75400.0	0	40	55	234	7749		355
75600.0	396	45	211	746	6285		328
75800.0	721	0	875	553	3292		355
76000.0							
Pg. Tot.	2178	85	2148	9460	35126		2446
Cum. Tot.	52615	7588	114770	60736	221745		60489

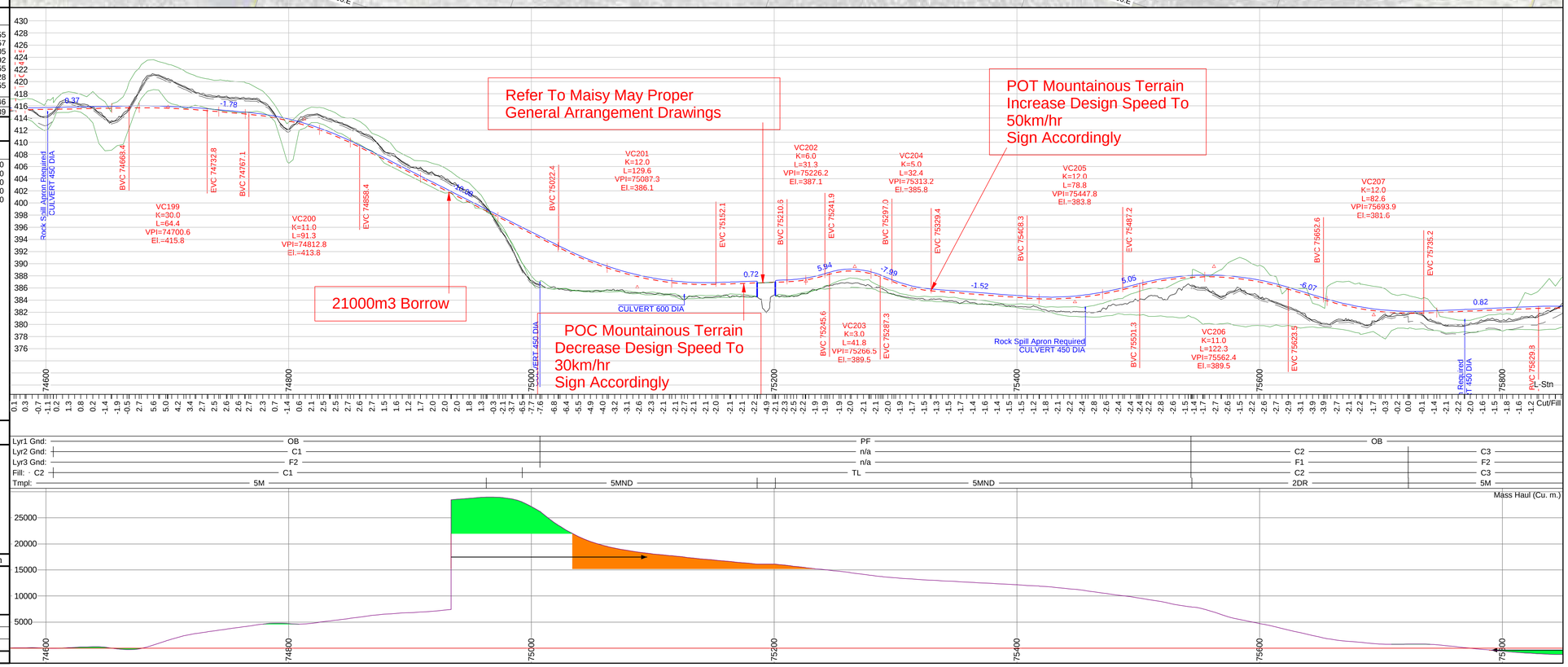
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
74601.4	450	9.0	4.0	5.0	90
75007.0	450	30.0	14.5	15.5	90
75125.9	600	18.0	10.0	8.0	90
75456.4	450	18.0	10.0	8.0	90
75769.1	450	13.0	8.0	5.0	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 75599.6 to 76879.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C234	C235	C236	C237	C238	C239
IP Stn.	75702	75929	76046	76254	76521	76782
BC Stn.	75656	75903	76019	76227	76496	76735
Arc. Len.	90	52	55	53	50	93
EC Stn.	75746	75955	76073	76280	76546	76828
Radius	165	200	180	160	500	300
Angle	31	15	17	-19	-6	18
Tangent	46	26	27	27	25	47
Da, a=100	35	29	32	36	11	19

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
75600.0							
75800.0	396	45	211	746	6285		328
76000.0	721	0	875	553	3292		355
76200.0	603	0	975	1650	1767		328
76400.0	549	0	1314	320	1852		328
76600.0	749	0	1350	1527	3458		328
76800.0	292	186	1020	358	1798		328
77000.0	521	0	583	111	894		355
Pg. Tot.	3832	232	6329	5266	19347		2349
Cum. Tot.	55330	7775	120012	64702	231515		62155

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
75769.1	450	13.0	8.0	5.0	90
76021.2	450	10.0	5.5	4.5	90
76266.0	450	12.0	7.0	5.0	90
76371.3	450	14.0	8.7	5.3	90
76456.2	450	13.0	8.2	4.8	90
76777.2	450	12.0	7.0	5.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 76623.6 to 77903.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C239	C240	C241	C242	C243	C244	C245	C246	C247	C248	C249	C250
IP Stn.	76782	77034	77101	77141	77326	77370	77433	77614	77706	77801	77866	77939
BC Stn.	76735	77004	77083	77124	77310	77354	77414	77592	77685	77787	77841	77899
Arc. Len.	93	60	36	33	33	32	39	43	42	28	43	60
EC Stn.	76828	77064	77119	77157	77343	77386	77453	77635	77727	77815	77884	77959
Radius	300	110	100	210	300	180	150	80	100	250	35	35
Angle	18	-31	21	-9	6	-10	15	31	-24	-6	70	-98
Tangent	47	31	18	17	17	16	20	22	22	14	24	40
Da, a=100	19	52	57	27	19	32	38	72	57	23	164	164

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
76800.0	521	0	583	111	894		355
77000.0	643	0	731	724	2699		328
77200.0	615	0	511	504	2794	-2000	328
77400.0	1582	0	4	0	6722		355
77600.0	1070	10	2140	7436	5498		328
77800.0	755	0	2191	10241	1377		442
78000.0							
Pg. Tot.	5186	10	6160	19017	19985		2135
Cum. Tot.	59994	7785	125589	83608	250605		63936

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
76777.2	450	12.0	7.0	5.0	90
77286.0	450	10.0	5.5	4.5	90
77627.4	450	17.0	9.0	8.0	90
77893.7	600	11.0	7.0	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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GRS = GRS Template Refer To Genter Arrangement Drawings

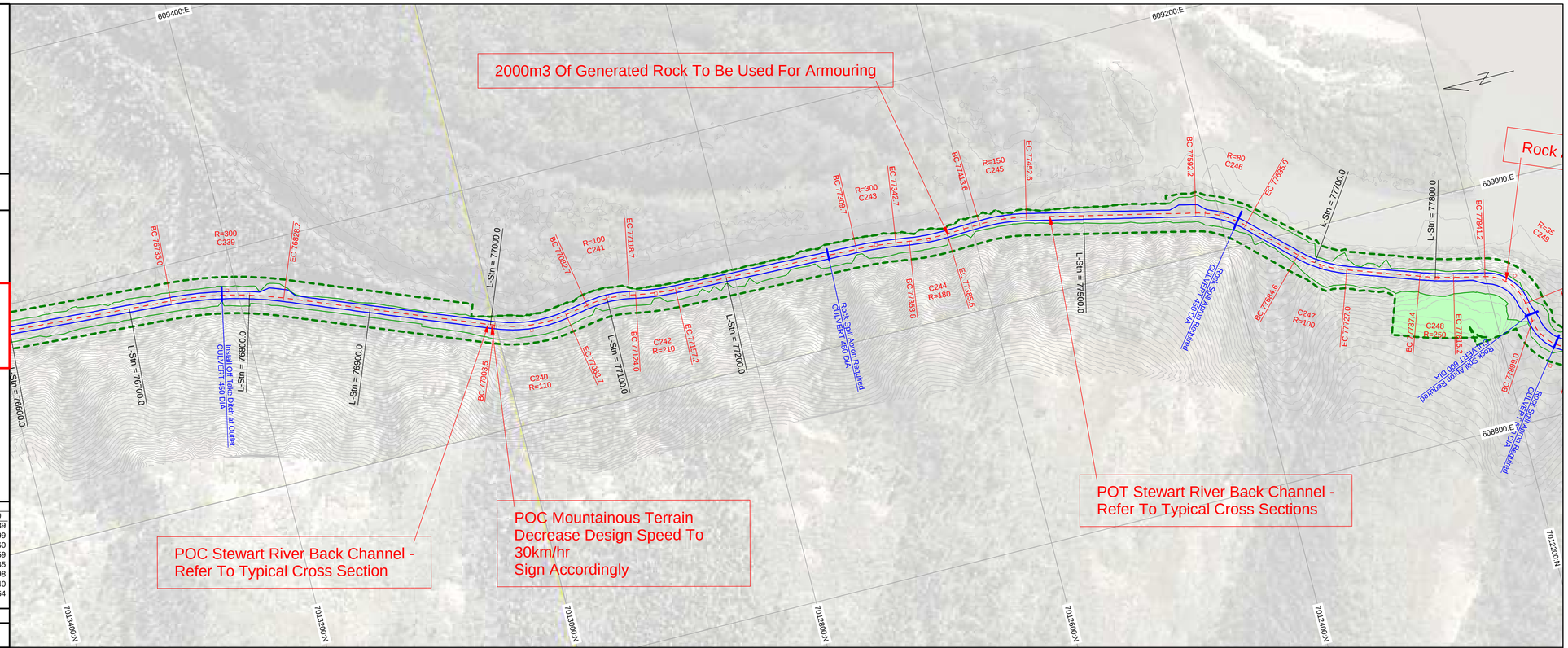
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 77647.6 to 78927.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C247	C248	C249	C250	C251	C252	C253	C254
IP Stn.	77706	77801	77866	77939	78005	78295	78388	78910
BC Stn.	77685	77787	77841	77899	77983	78269	78365	78883
Arc. Len.	42	28	43	60	44	52	47	54
EC Stn.	77727	77815	77884	77959	78027	78321	78411	78937
Radius	100	250	35	35	80	1000	260	1100
Angle	-24	-6	70	-98	32	-3	10	3
Tangent	22	14	24	40	23	26	23	27
Da, a=100	57	23	164	164	72	6	22	5

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
77800.0	755	0	2191	10241	1377		442
78000.0	607	0	580	60	1963		355
78200.0	552	0	1048	220	1651		328
78400.0	523	0	1556	558	619		355
78600.0	449	0	459	4	653		328
78800.0	415	0	307	0	478		328
79000.0							
Pg. Tot.	3301	0	6141	11083	6742		2135
Cum. Tot.	62541	7785	129538	84450	255970		65629

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
77893.7	600	11.0	7.0	4.0	90
77926.8	600	12.0	8.0	4.0	90
78317.4	450	13.0	7.0	6.0	90
78475.8	600	9.0	4.8	4.2	90
78680.9	600	11.0	6.0	5.0	99
78891.0	600	10.0	5.5	4.5	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 78671.6 to 79951.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C254	C255	C256	C257
IP Stn.	78910	79244	79358	79677
BC Stn.	78883	79218	79329	79643
Arc. Len.	54	53	57	65
EC Stn.	78937	79271	79386	79707
Radius	1100	300	100	80
Angle	3	10	-33	46
Tangent	27	26	29	34
Da, a=100	5	19	57	72

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
78800.0	415	0	307	0	478		328
79000.0	427	0	268	0	422		355
79200.0	442	0	477	0	339		335
79400.0	447	0	432	0	336		348
79600.0	445	0	366	0	410		355
79800.0	437	0	462	2	513		328
80000.0							
Pg. Tot.	2612	0	2312	2	2498		2048
Cum. Tot.	64738	7785	131544	84451	257990		67349

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
78680.9	600	11.0	6.0	5.0	99
78891.0	600	10.0	5.5	4.5	90
78951.0	600	9.0	4.5	4.5	90
79266.7	600	9.0	5.0	4.0	90
79372.5	600	9.0	5.0	4.0	90
79511.6	600	8.0	4.0	4.0	93
79707.6	450	10.0	6.0	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
4MDR = 5m running surface with 4m wide ditch on right
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 79695.6 to 80975.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C257	C258	C259	C260
IP Stn.	79677	80133	80414	80923
BC Stn.	79643	80107	80387	80897
Arc. Len.	65	53	53	51
EC Stn.	79707	80160	80440	80948
Radius	80	350	160	120
Angle	46	9	19	-25
Tangent	34	27	27	26
Da, a=100	72	16	36	48

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
79800.0							
80000.0	437	0	462	2	513		328
80200.0	415	0	293	0	312		328
80400.0	432	0	365	0	352		355
80600.0	439	0	359	0	404		355
80800.0	499	0	1480	312	106		355
81000.0	475	0	233	1	2400		328
Pg. Tot.	2697	0	3192	315	4088		2048
Cum. Tot.	66998	7785	134274	84764	261564		69070

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
79707.6	450	10.0	6.0	4.0	90
79972.0	450	10.0	6.0	4.0	90
80407.1	450	9.0	5.0	4.0	87
80836.9	600	12.0	6.5	5.5	96
80926.9	600	15.0	8.0	7.0	99

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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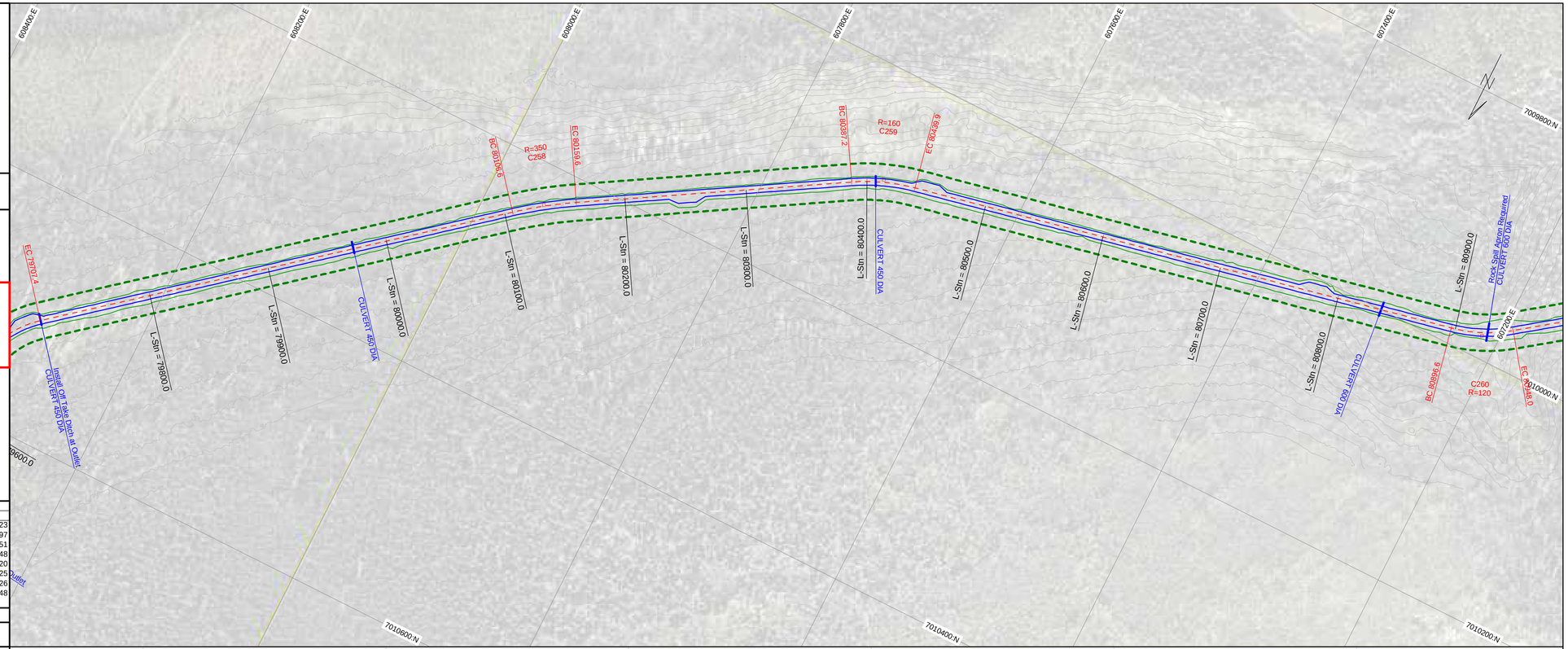
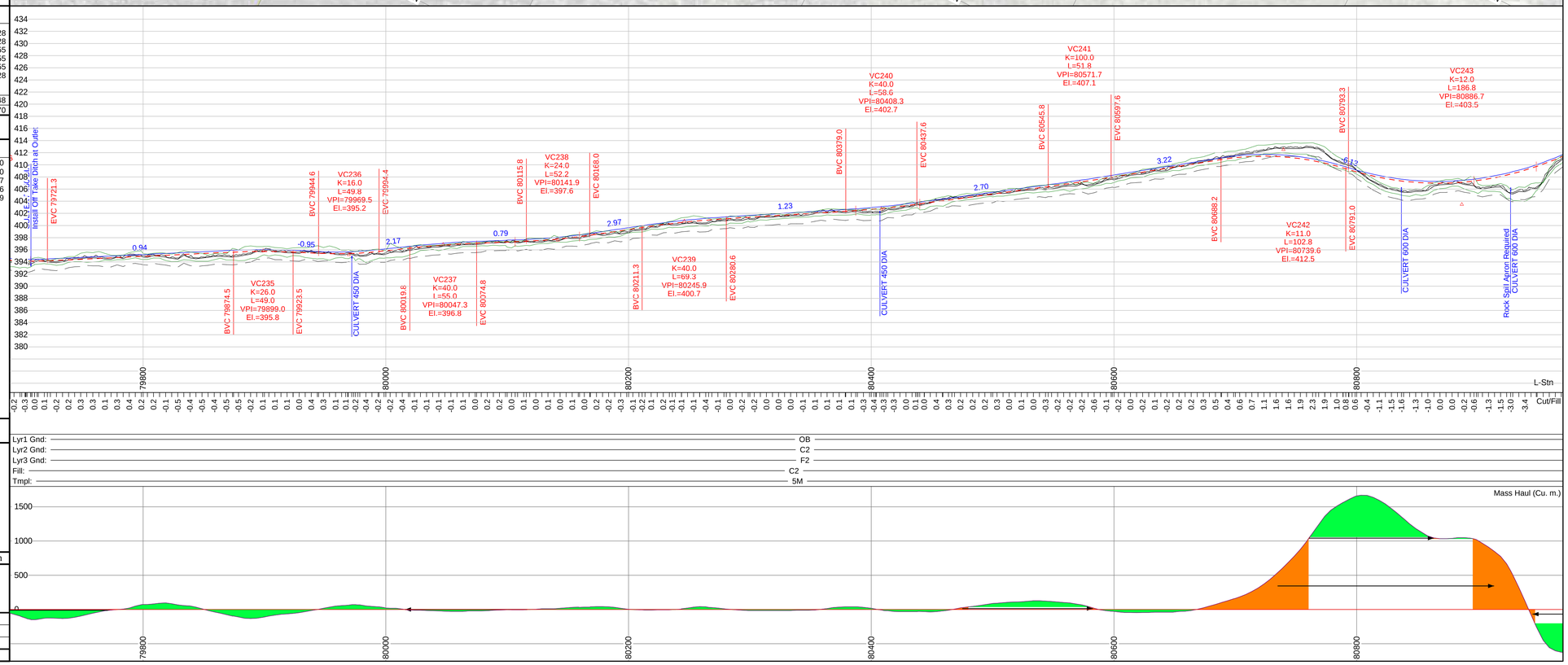
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 80719.6 to 81999.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C260	C261	C262	C263	C264
IP Stn.	80923	81174	81442	81549	81597
BC Stn.	80897	81148	81413	81500	81578
Arc. Len.	51	52	55	67	35
EC Stn.	80948	81200	81468	81567	81613
Radius	120	800	80	35	35
Angle	-25	-4	39	-109	57
Tangent	26	26	28	49	19
Da, a=100	48	7	72	164	164

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
80800.0	475	0	233	1	2400		328
81000.0	447	0	678	19	181		328
81200.0	463	0	685	1	243		355
81400.0	982	0	785	770	3387		495
81600.0	561	0	1490	119	176		368
81800.0	423	0	341	0	346		328
82000.0							
Pg. Tot.	3351	0	4212	909	6734		2201
Cum. Tot.	69874	7785	138252	85673	265897		70943

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
80836.9	600	12.0	6.5	5.5	96
80926.9	600	15.0	8.0	7.0	99
81461.6	600	18.0	9.5	8.5	108
81534.9	1600	24.0	15.0	9.0	105
81997.6	450	9.0	5.0	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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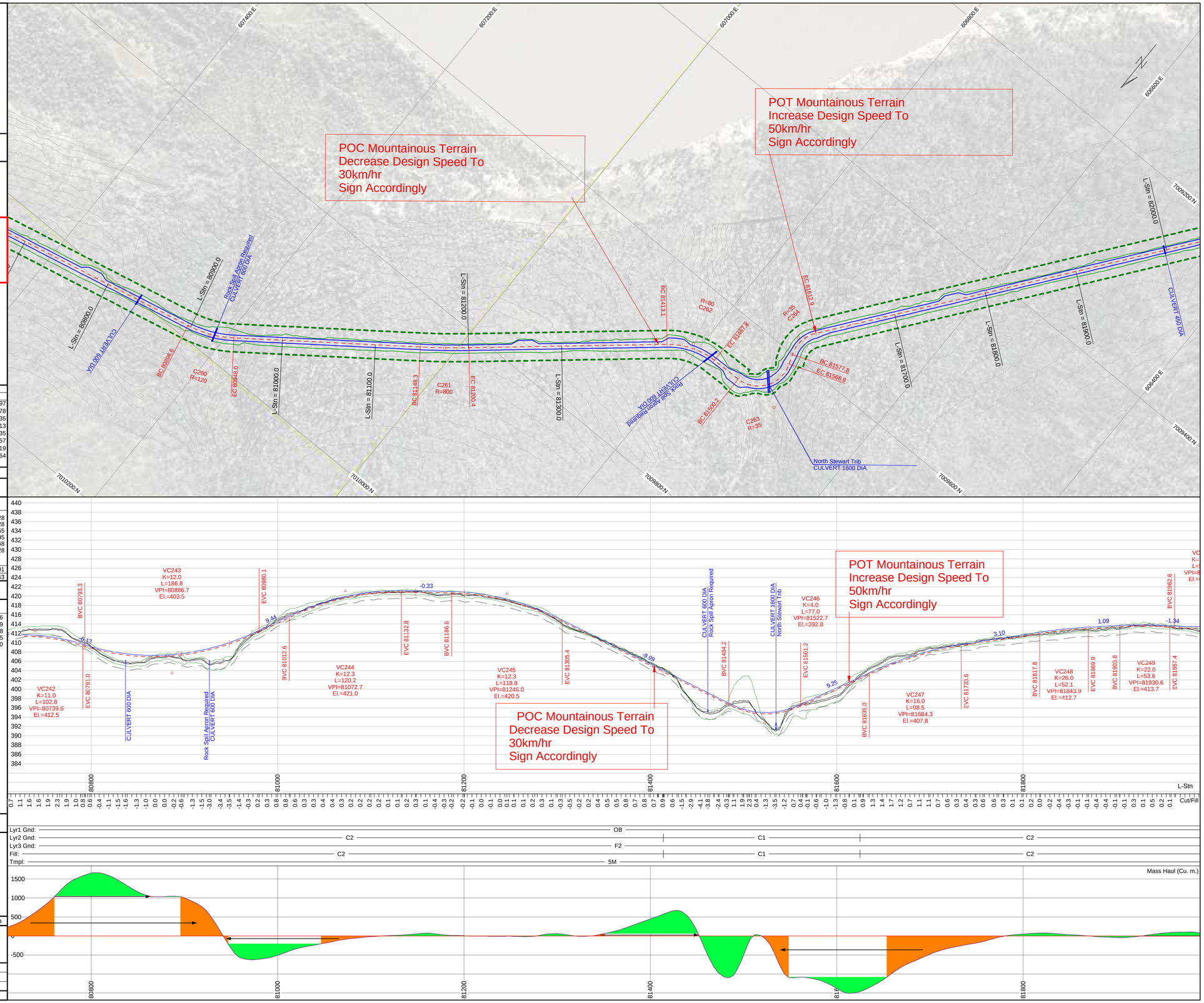
2DR = 5m running surface with 2m wide ditch on right

BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
GRS = GRS Template Refer To Genter Arrangement Drawings

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 81743.6 to 83023.6

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C265	C266	C267	C268
IP Stn.	82167	82374	82833	82945
BC Stn.	82138	82348	82794	82893
Arc. Len.	58	52	75	100
EC Stn.	82196	82399	82869	82994
Radius	500	800	150	150
Angle	-7	4	-29	38
Tangent	29	26	39	52
Da, a=100	11	7	38	38

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
81800.0	423	0	341	0	346		328
82000.0	439	0	370	0	395		355
82200.0	424	0	375	0	408		328
82400.0	450	0	269	0	779		356
82600.0	348	0	542	0	23		241
B 82800.0	0	0	0	0	0		0
B 83000.0	0	0	0	0	0		0
B 83200.0	0	0	0	0	0		0
Pg. Tot.	2084	0	1897	0	1952		1607
Cum. Tot.	71534	7785	139809	85673	267503		72222

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
81997.6	450	9.0	5.0	4.0	90
82485.6	450	8.5	4.5	4.0	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

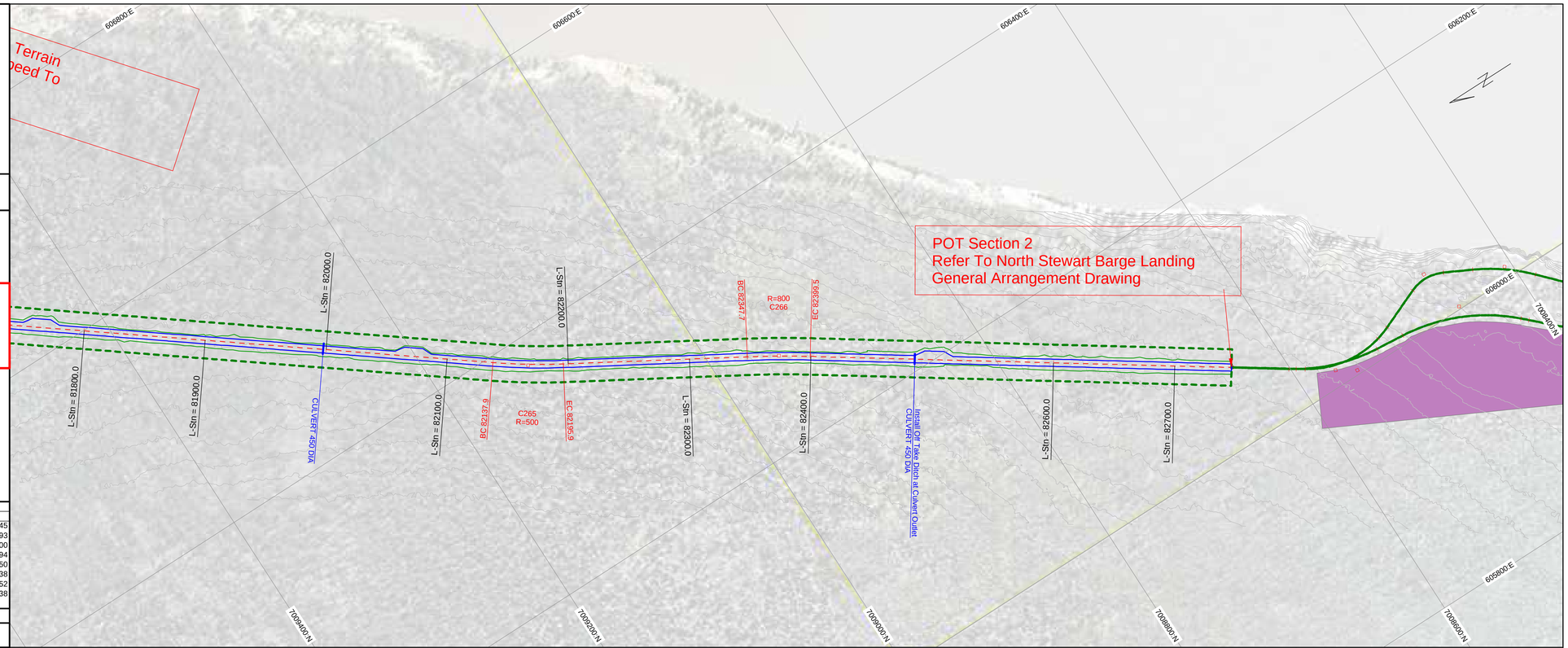
- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 4MDR = 5m running surface with 4m wide ditch on right
- 2DR = 5m running surface with 2m wide ditch on right
- BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
- GRS = GRS Template Refer To Genter Arrangement Drawings
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/23 | Design File Name: U:\Projects\1343\2\8\Section 2\RoadEng\Section 2.dsn



GOLDCORP

Coffee Gold Project

Coffee Creek Access
Route Upgrade and Establishment
Section 2
Geometric Alignment
Km 41.1 - 82.7

Page Stations: 82767.6 to 84047.6

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C267	C268	C269	C270	C271	C272	C273
IP Stn.	82833	82945	83111	83136	83271	83337	83431
BC Stn.	82794	82893	83096	83120	83244	83321	83388
Arc. Len.	75	100	24	25	52	30	79
EC Stn.	82869	82994	83120	83146	83297	83351	83467
Radius	150	150	16	16	150	35	80
Angle	-29	38	-87	-90	-20	-50	57
Tangent	39	52	15	16	26	16	43
Da, a=100	38	38	358	358	38	164	72

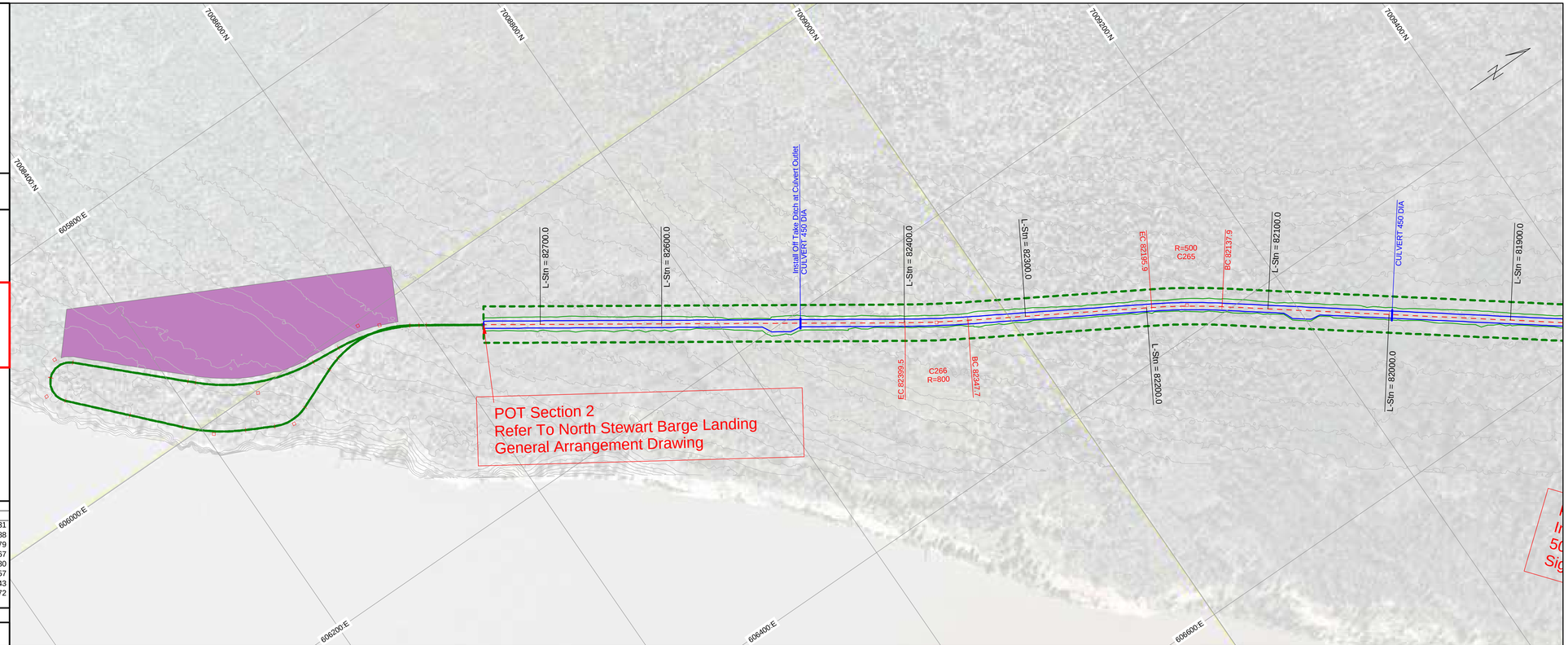
EARTH WORK VOLUMES (Final Cubic Meters)

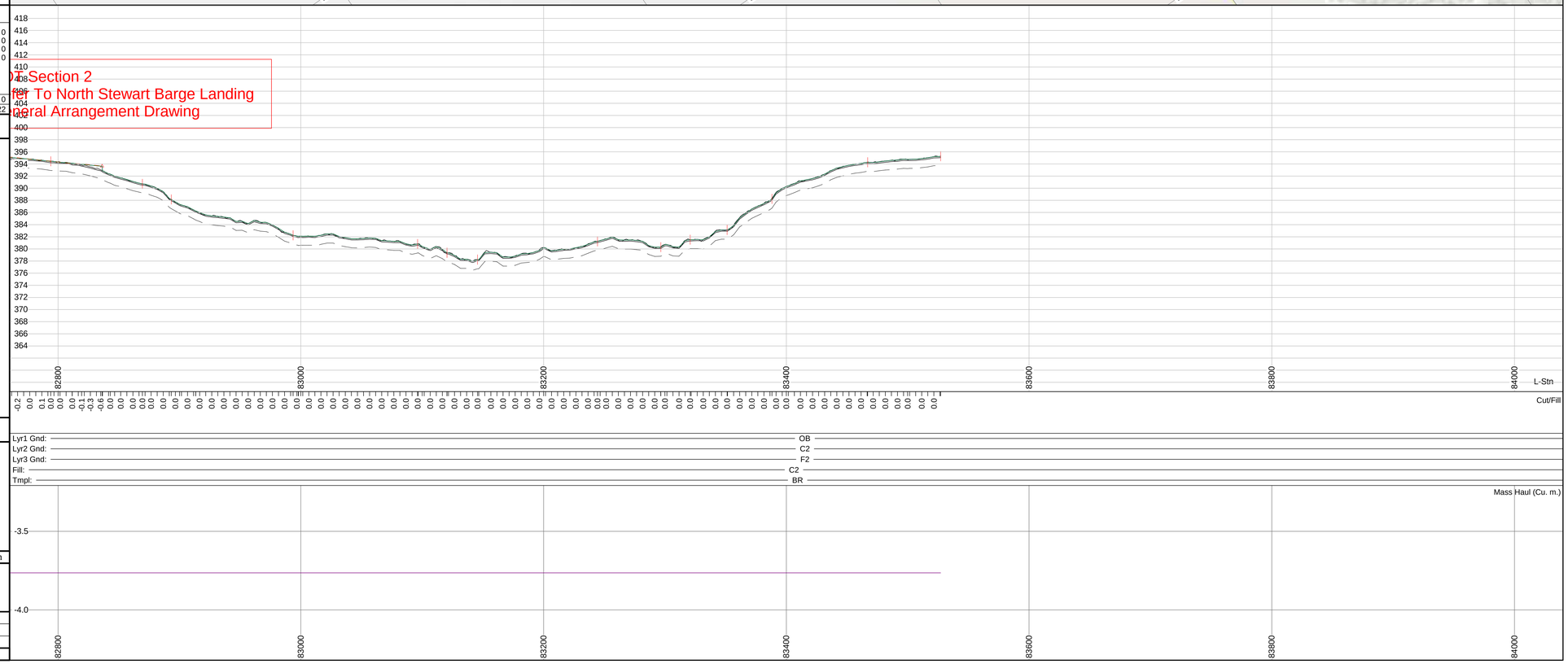
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 82800.0							
B 83000.0	0	0	0	0	0		0
B 83200.0	0	0	0	0	0		0
B 83400.0	0	0	0	0	0		0
B 83527.2	0	0	0	0	0		0
Pg. Tot.	0	0	0	0	0		0
Cum. Tot.	71534	7785	139809	85673	267503		72222

CULVERT TABLE

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	4MDR = 5m running surface with 4m wide ditch on right
C4 - C2 with 100% Cut	2DR = 5m running surface with 2m wide ditch on right
TA - Talus	
SG - Sand and Gravel	
TL - Tailings	BR5 = Bridge Template (No Cut/Fill) Refer To Genteral Arrangement Drawings
F1 - Weak Fractured Rock	GRS = GRS Template Refer To Genter Arrangement Drawings
F2 - Strong Fractured Rock	
PF - Permafrost	Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





APPENDIX 31-A-XVI

Detailed Design Road Drawings

Part 3 of 5

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 82+504.72 to 83+784.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
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- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
IP Stn.	82+611	82+649	82+748	82+926	83+022	83+122	83+311	83+494	83+597	83+728
BC Stn.	82+586	82+622	82+739	82+894	82+996	83+096	83+276	83+470	83+585	83+701
Arc. Len.	35	37	18	63	51	50	68	48	24	52
EC Stn.	82+622	82+659	82+757	82+958	83+047	83+147	83+345	83+518	83+609	83+754
Radius	20	20	150	600	250	360	150	500	80	300
Angle	101°	106°	-7°	-6°	12°	-8°	-26°	5°	-17°	10°
Tangent	24	27	9	32	26	25	35	24	12	26
Da, a=100	286°	286°	38°	10°	23°	16°	38°	11°	72°	19°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 82+504.72	0	0	0	0	0		0
B 82+600.00	0	0	0	0	304		88
82+800.00	0	0	0	0	2398		328
83+000.00	0	0	0	0	2903		328
83+200.00	0	0	0	0	2492		354
83+400.00	0	1	0	0	3508		348
83+600.00	0	3455	6399	0	2626		303
Pg. Tot.	0	3456	6399	0	14231		1748
Cum. Tot.	0	3456	6399	0	14231		1748

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
83+296.82	450	10.00	4.80	5.20	90

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
C2 - Silty Sand Colluvium with
C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
TA - Talus
SG - Sand and Gravel
TL - Tailings
F1 - Weak Fractured Rock
F2 - Strong Fractured Rock
PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

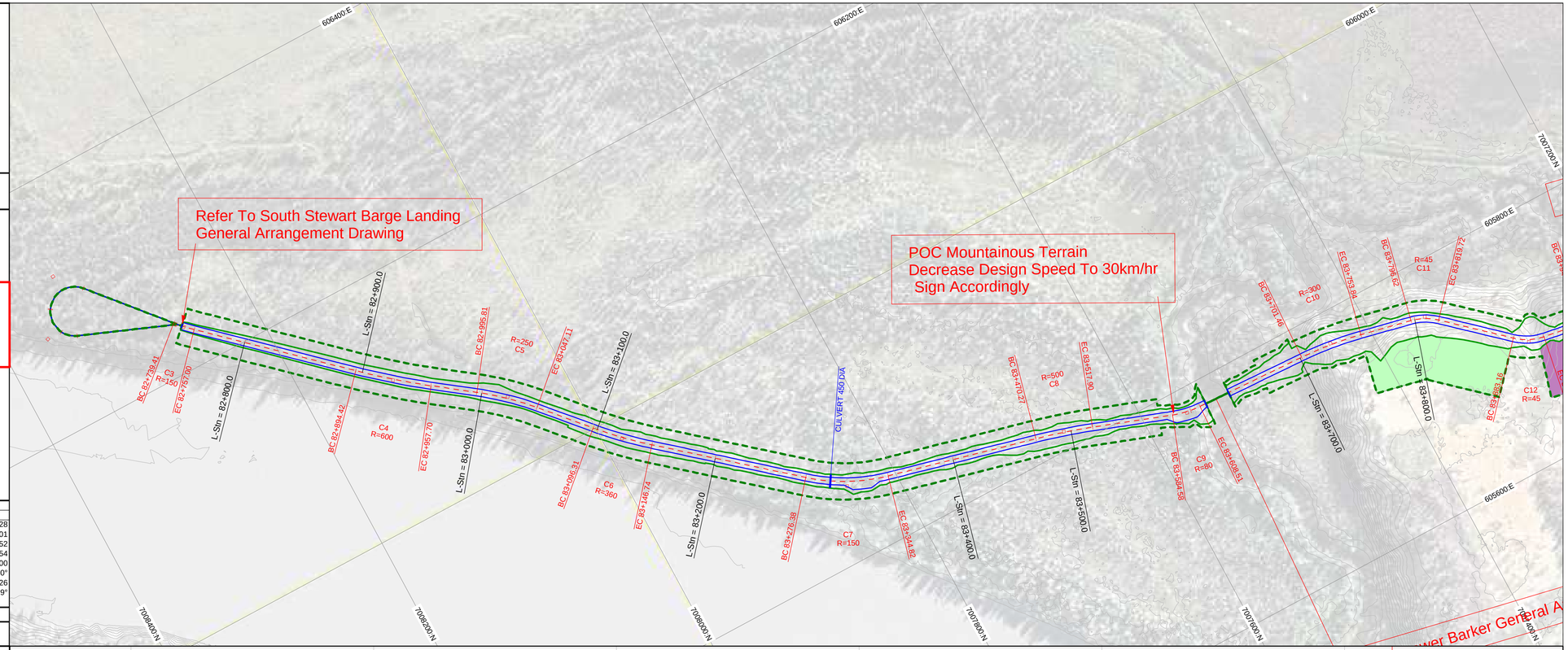
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn



GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 83+528.72 to 84+808.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
IP Stn.	83+597	83+728	83+808	83+896	83+977	84+178	84+298	84+480	84+644	84+744	84+821
BC Stn.	83+585	83+701	83+797	83+883	83+944	84+067	84+273	84+451	84+621	84+727	84+795
Arc. Len.	24	52	23	25	57	161	50	57	44	34	54
EC Stn.	83+609	83+754	83+820	83+909	84+002	84+227	84+323	84+508	84+665	84+761	84+848
Radius	80	300	45	45	50	90	600	150	100	350	750
Angle	-17°	10°	29°	-32°	66°	-102°	5°	22°	25°	-5°	-4°
Tangent	12	26	12	13	32	112	25	29	22	17	27
Da, a=100	72°	19°	127°	127°	115°	64°	10°	38°	57°	16°	8°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
83+600.00		3455	6399	0	2626		303
83+800.00	0	3577	2913	0	1861	-816	374
84+000.00	291	1223	0	0	8		331
84+200.00	214	244	1	0	2118		328
84+400.00	0	1540	134	0	433		355
84+600.00	0	606	0	0	1433		355
84+800.00	466	0	1102	46	476		355
85+000.00							
Pg. Tot.	971	10645	10548	46	8956		2400
Cum. Tot.	971	10646	10548	46	20561		3845

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
84+554.59	450	10.00	6.00	4.00	90
84+766.73	800	16.00	9.00	7.00	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

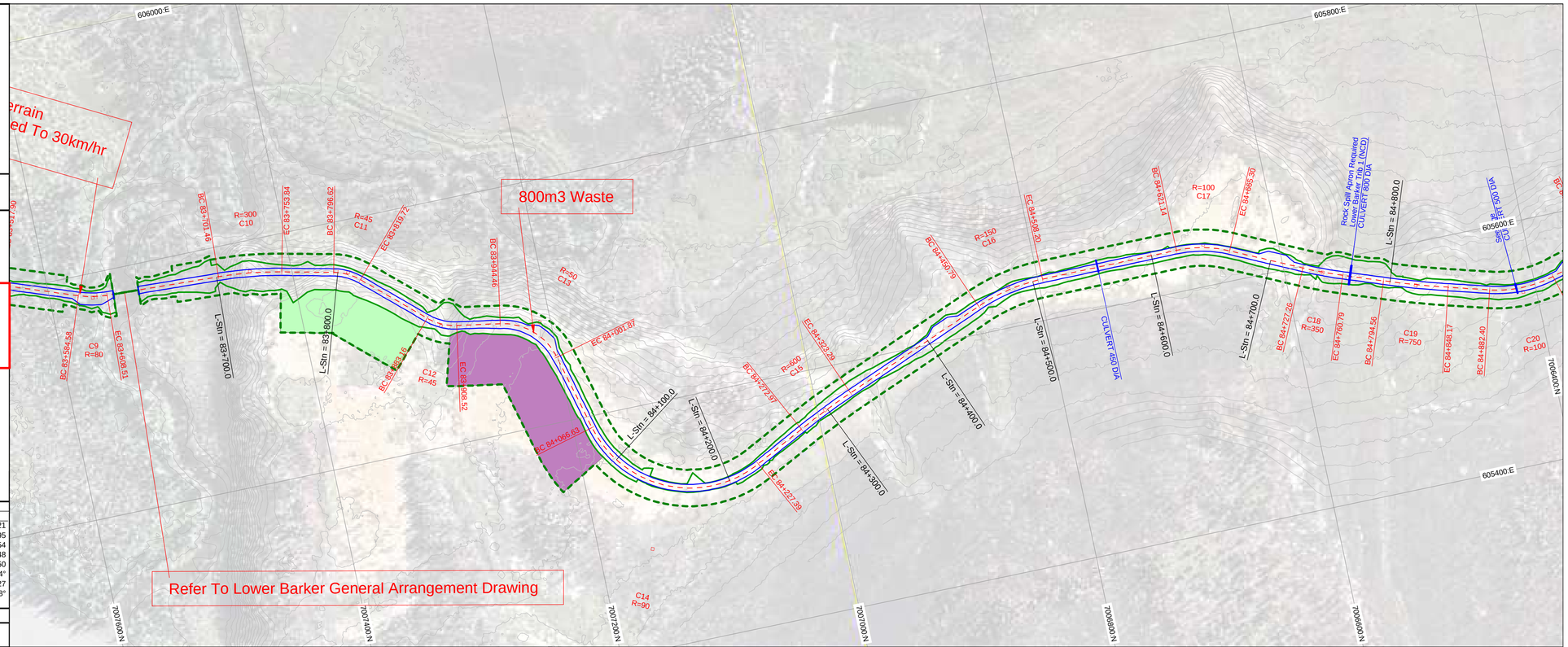
ROAD TEMPLATES

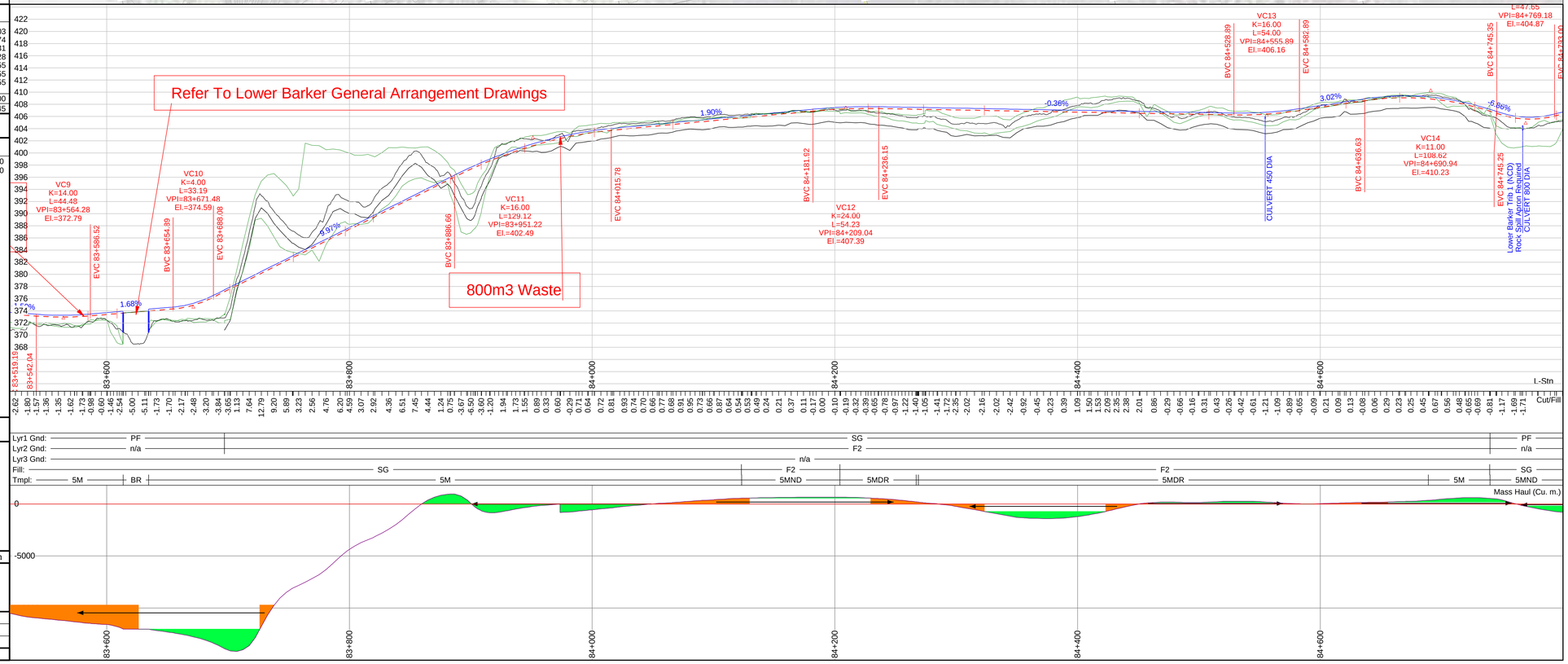
5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 2 of 43	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng.	March 2017
Plot Date:17/03/22	Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn		

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 84+552.72 to 85+832.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
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- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31
IP Stn.	84+644	84+744	84+821	84+910	85+005	85+076	85+202	85+267	85+326	85+404	85+475	85+520	85+585	85+729	85+833
BC Stn.	84+621	84+727	84+795	84+882	84+979	85+049	85+177	85+252	85+305	85+388	85+458	85+505	85+548	85+651	85+797
Arc. Len.	44	34	54	54	51	52	49	30	38	31	32	31	68	117	66
EC Stn.	84+665	84+761	84+848	84+936	85+030	85+101	85+226	85+282	85+343	85+420	85+490	85+536	85+616	85+765	85+863
Radius	100	350	750	100	1000	120	100	80	40	80	45	60	80	70	70
Angle	25°	-5°	-4°	-31°	3°	-25°	28°	-22°	55°	-23°	41°	-30°	-49°	96°	-54°
Tangent	22	17	27	28	26	26	25	15	21	16	17	16	36	77	35
Da, a=100	57°	16°	8°	57°	6°	48°	57°	72°	143°	72°	127°	95°	72°	82°	82°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
84+600.00	0	606	0	0	1433		355
84+800.00	466	0	1102	46	476		355
85+000.00	452	0	550	0	420		328
85+200.00	446	0	389	45	746		359
85+400.00	286	5	382	101	1625		368
85+600.00	0	9	489	0	963	7930	379
85+800.00	0	0	0	0	5830		328
86+000.00							
Pg. Tot.	1650	619	2912	191	11494		2472
Cum. Tot.	2156	10660	12358	191	30145		5607

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
84+554.59	450	10.00	6.00	4.00	90
84+766.73	800	16.00	9.00	7.00	90
84+904.60	500	8.00	4.00	4.00	84
85+246.83	450	9.00	4.50	4.50	90
85+561.47	800	21.00	12.00	9.00	70

SOIL TYPES

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- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
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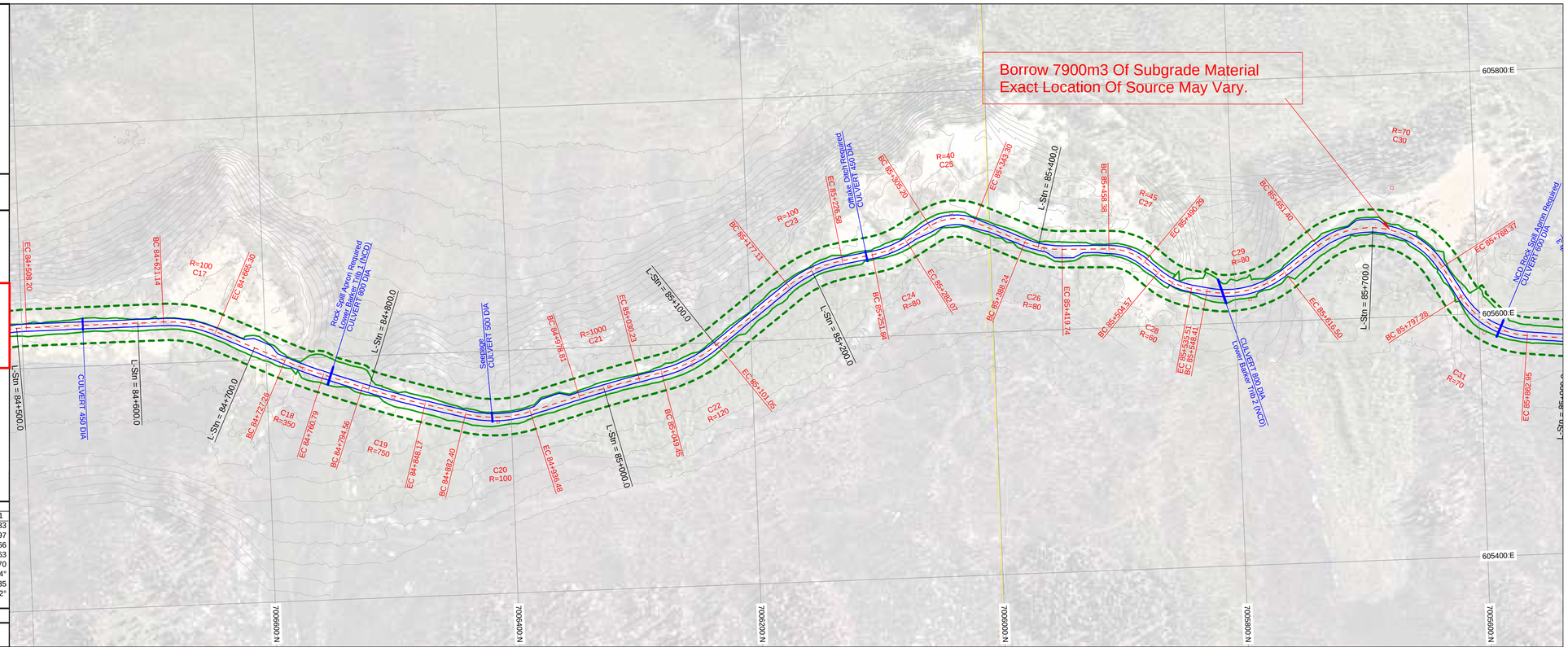
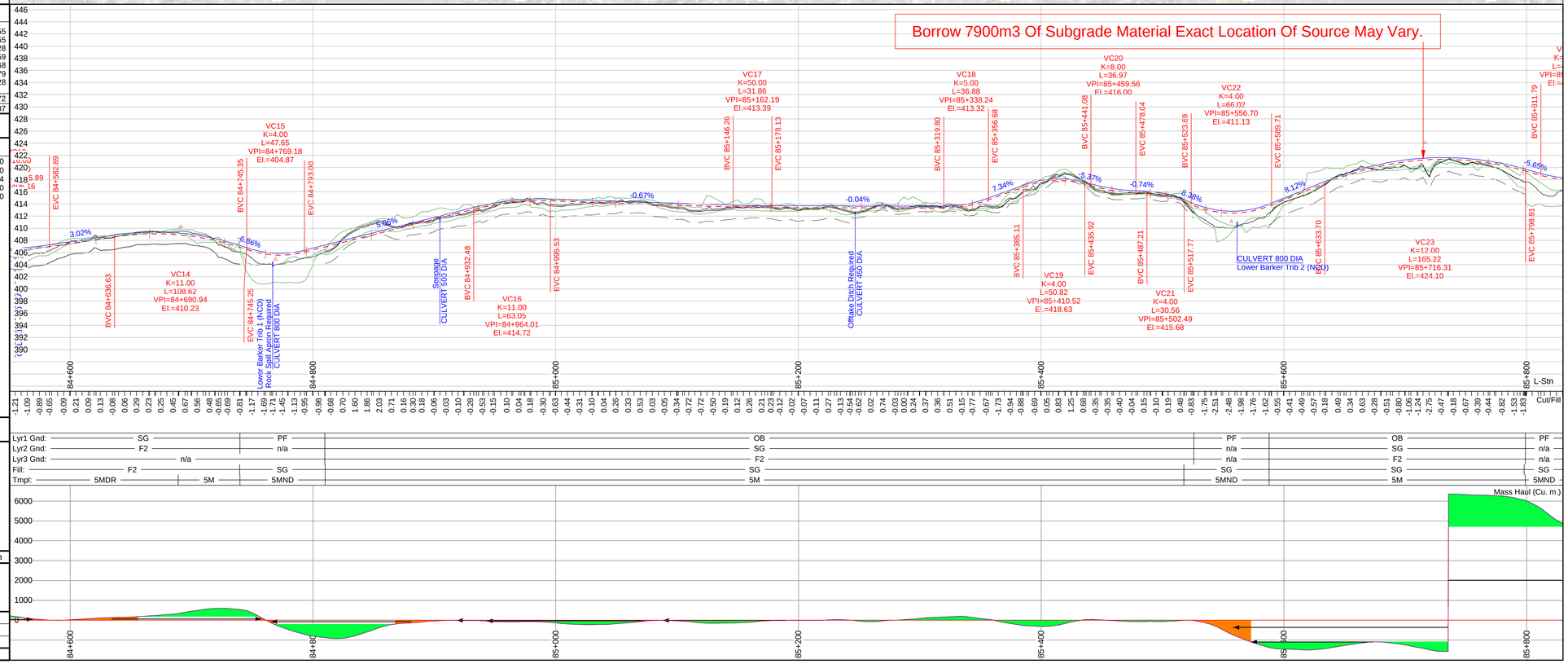
BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 3 of 43	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng.	March 2017
Plot Date:17/03/22	Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn		

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 85+576.72 to 86+856.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
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Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40
IP Stn.	85+585	85+729	85+833	85+937	86+000	86+213	86+303	86+391	86+503	86+593	86+726	86+835
BC Stn.	85+548	85+651	85+797	85+920	85+970	86+157	86+288	86+338	86+474	86+569	86+700	86+810
Arc. Len.	68	117	66	35	57	98	29	93	55	49	52	50
EC Stn.	85+616	85+768	85+863	85+955	86+027	86+254	86+317	86+431	86+530	86+617	86+752	86+860
Radius	80	70	70	150	80	80	100	80	80	170	150	120
Angle	-49°	96°	-54°	-13°	-41°	70°	17°	-67°	40°	-16°	20°	-24°
Tangent	36	77	35	18	30	56	15	53	29	24	26	25
Da, a=100	72°	82°	82°	38°	72°	72°	57°	72°	72°	34°	38°	48°

EARTH WORK VOLUMES (Final Cubic Meters)

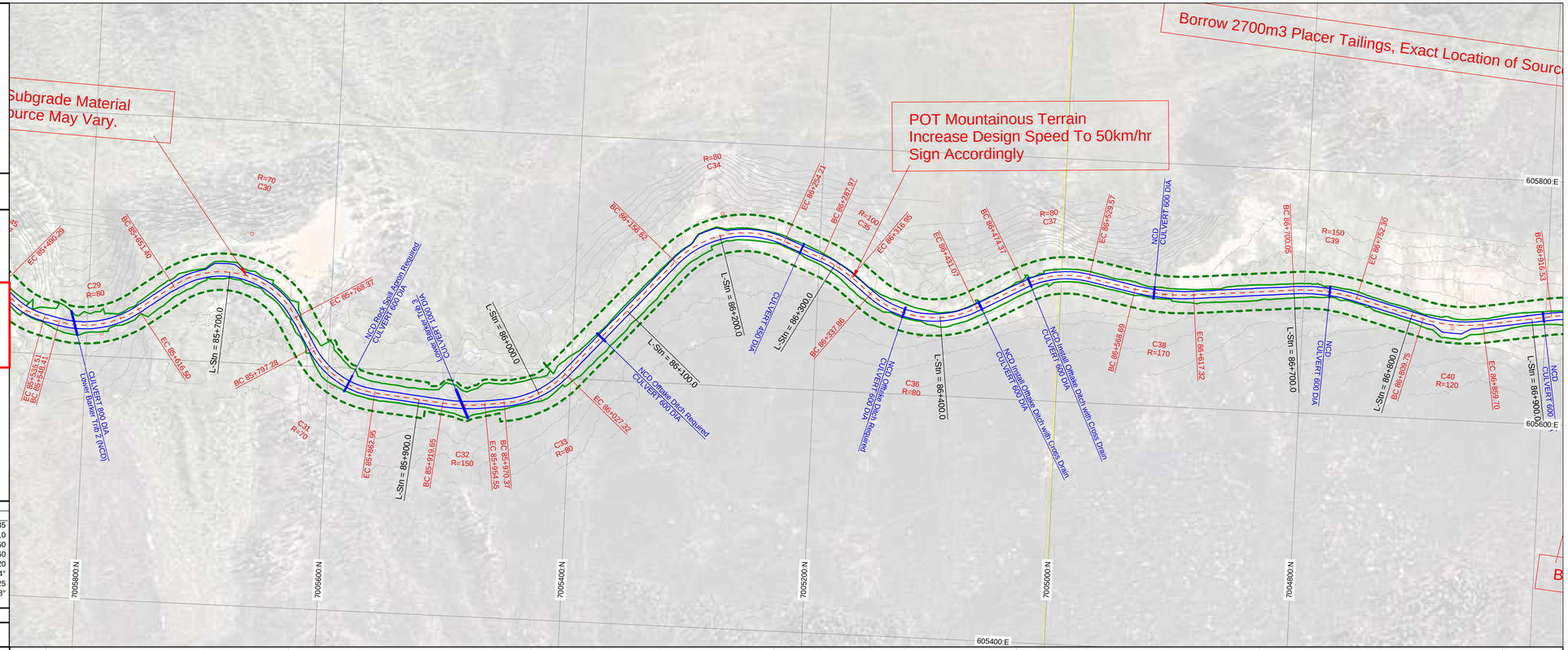
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
85+600.00		9	489	0	963	7930	379
85+800.00	0	0	0	0	5830		328
86+000.00	713	0	1069	72	1386		351
86+200.00	357	0	350	0	912		331
86+400.00	631	0	644	32	309		328
86+600.00	664	0	590	30	655		328
86+800.00	310	0	1334	255	429		355
87+000.00							
Pg. Tot.	2675	9	4477	389	10483		2400
Cum. Tot.	4831	10660	16346	580	33836		7300

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
85+839.60	600	15.00	8.00	7.00	90
85+935.94	1000	26.00	14.00	12.00	65
86+069.60	600	10.00	5.00	5.00	90
86+269.60	450	9.00	5.00	4.00	90
86+369.60	600	9.00	4.80	4.20	90
86+434.60	600	8.00	4.00	4.00	90
86+479.60	600	8.00	4.00	4.00	90
86+584.60	600	10.00	5.00	5.00	87
86+729.60	600	9.00	4.50	4.50	87

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

Revision	Description	Date	By	Approved	Revision



ONSITE Engineering Ltd.	Page 4 of 43	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng.	March 2017
Plot Date:17/03/22	Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn		

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 86+600.72 to 87+880.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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Curve Table (Da = deflection angle for a 10m arc.)

	C38	C39	C40	C41	C42	C43	C44	C45	C46
IP Stn.	86+593	86+726	86+835	86+941	87+144	87+291	87+519	87+683	87+850
BC Stn.	86+569	86+700	86+810	86+917	87+077	87+226	87+468	87+583	87+820
Arc. Len.	49	52	50	48	111	109	92	143	58
EC Stn.	86+617	86+752	86+860	86+965	87+188	87+335	87+559	87+726	87+877
Radius	170	150	120	100	80	80	80	80	80
Angle	-16°	20°	-24°	28°	-79°	78°	66°	-103°	41°
Tangent	24	26	25	25	66	65	52	100	30
Da, a=100	34°	38°	48°	57°	72°	72°	72°	72°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
86+800.00							
87+000.00	310	0	1334	255	429	3000	355
87+200.00	47	0	0	0	6705		338
87+400.00	657	0	364	1	576	2650	364
87+600.00	619	1	623	6	391		356
87+800.00	10	242	348	14	388		341
88+000.00	672	0	386	0	525		328
Pg. Tot.	2315	243	3055	276	9013		2082
Cum. Tot.	6835	10903	18067	601	42420		9027

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
86+729.60	600	9.00	4.50	4.50	87
86+909.84	600	8.00	4.30	3.70	90
87+009.98	600	12.00	6.30	5.70	90
87+113.71	800	17.00	10.00	7.00	100
87+163.71	600	21.00	11.00	10.00	90
87+365.26	450	7.74	4.02	3.72	90
87+595.26	450	9.00	5.50	3.50	90
87+695.26	600	9.00	5.00	4.00	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
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5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

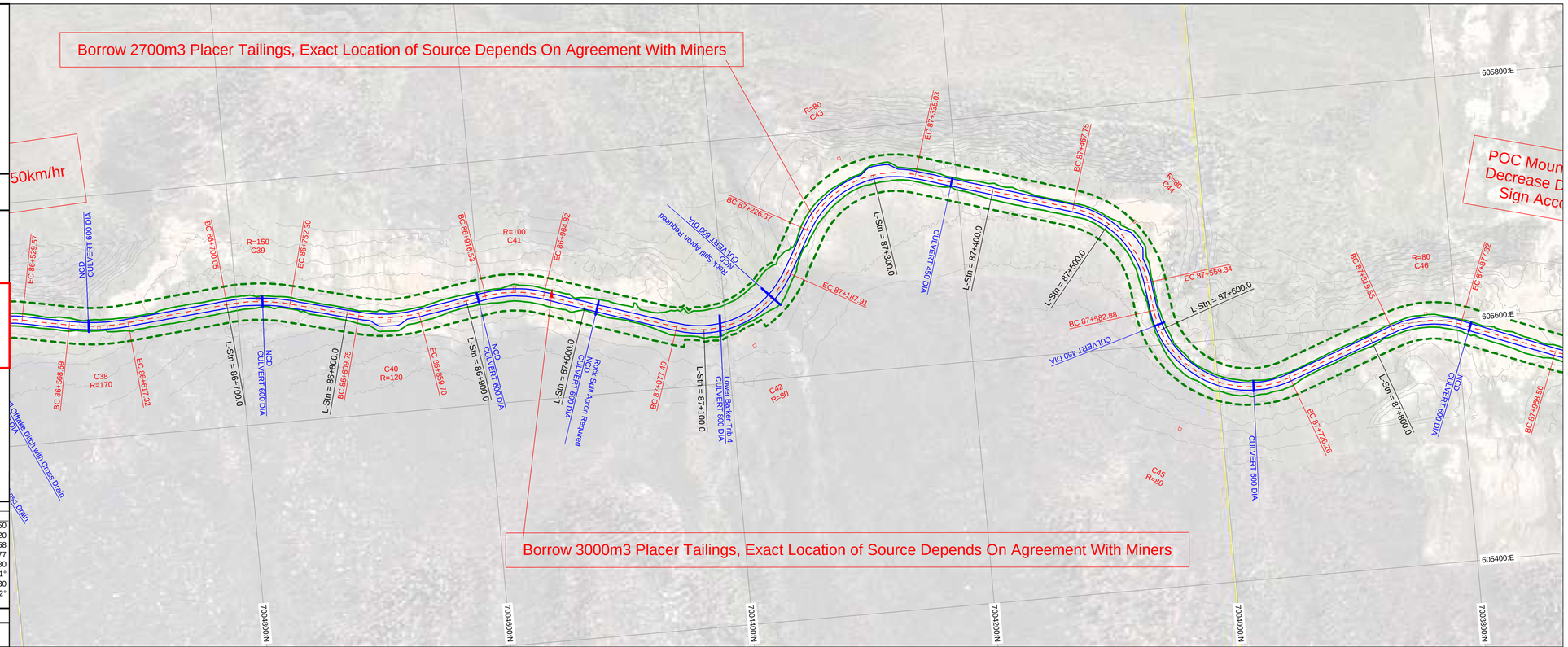
BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn



GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 87+624.72 to 88+904.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C45	C46	C47	C48	C49	C50	C51	C52	C53	C54	C55	C56
IP Stn.	87+683	87+850	87+988	88+158	88+215	88+280	88+386	88+453	88+519	88+652	88+739	88+842
BC Stn.	87+583	87+820	87+959	88+084	88+194	88+256	88+350	88+426	88+502	88+616	88+723	88+823
Arc. Len.	143	58	58	98	40	49	65	54	33	65	32	38
EC Stn.	87+726	87+877	88+016	88+181	88+234	88+305	88+415	88+480	88+535	88+681	88+755	88+861
Radius	80	80	100	50	50	200	65	1200	120	65	65	65
Angle	-103°	41°	-33°	112°	-46°	-14°	-58°	-3°	16°	57°	-29°	-34°
Tangent	100	30	30	74	21	25	36	27	17	36	17	20
Da, a=100	72°	72°	57°	115°	115°	29°	88°	5°	48°	88°	88°	88°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
87+800.00							
88+000.00	672	0	386	0	525		328
88+200.00	745	0	523	0	693		423
88+400.00	312	0	674	0	360		329
88+600.00	447	0	419	0	485		328
88+800.00	440	0	428	3	439		355
89+000.00	343	28	327	12	402		355
Pg. Tot.	2959	28	2756	15	2903		2117
Cum. Tot.	9122	10931	20437	616	44798		10816

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
87+695.26	600	9.00	5.00	4.00	90
87+885.26	600	8.00	4.00	4.00	90
88+116.71	450	10.00	4.50	5.50	90
88+255.26	450	7.25	3.71	3.53	90
88+334.73	600	9.00	4.50	4.50	81
88+360.73	800	10.00	5.00	5.00	81
88+530.26	450	7.00	3.50	3.50	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
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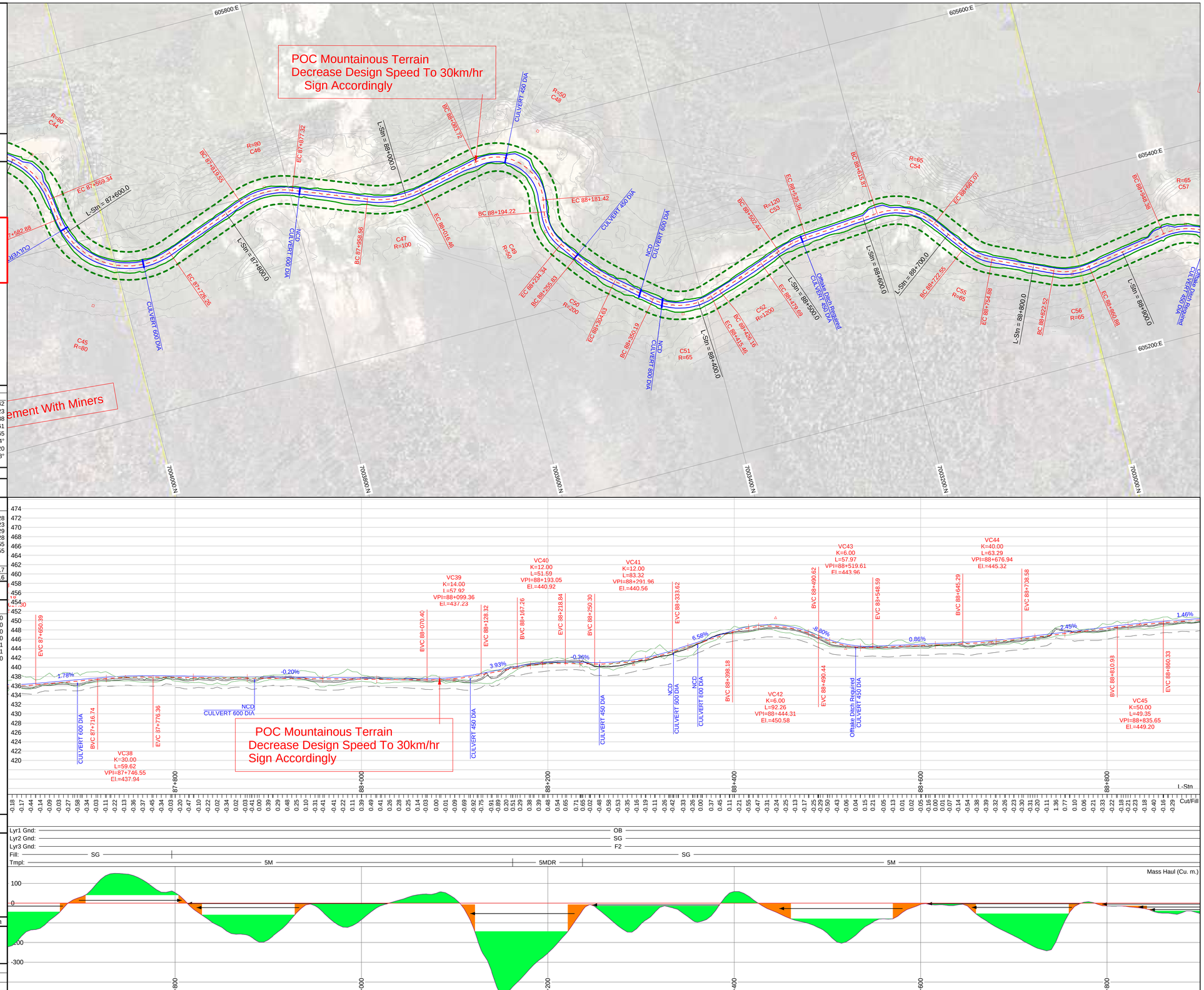
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision



ONSITE Engineering Ltd.	Page 6 of 43	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng.	March 2017
Plot Date:17/03/22	Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn		

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 88+648.72 to 89+928.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
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ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Cut / Fill limits
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
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- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C54	C55	C56	C57	C58	C59	C60	C61	C62	C63	C64
IP Stn.	88+652	88+739	88+842	88+974	89+086	89+180	89+403	89+640	89+755	89+846	89+933
BC Stn.	88+616	88+723	88+823	88+948	89+064	89+134	89+291	89+618	89+727	89+818	89+916
Arc. Len.	65	32	38	49	42	68	208	44	56	56	33
EC Stn.	88+681	88+755	88+861	88+997	89+105	89+202	89+500	89+662	89+783	89+873	89+949
Radius	65	65	65	65	50	40	230	150	1500	450	70
Angle	57°	-29°	-34°	43°	48°	-97°	52°	17°	2°	-7°	27°
Tangent	36	17	20	26	22	45	112	22	28	28	17
Da, a=100	88°	88°	88°	88°	115°	143°	25°	38°	4°	13°	82°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
88+800.00							
89+000.00	343	28	327	12	402		355
89+200.00	464	48	539	122	631		418
89+400.00	340	98	205	0	379		336
89+600.00	0	43	104	0	145		328
89+800.00	0	47	92	0	252		328
90+000.00	275	0	1618	234	1313		355
Pg. Tot.	1421	265	2885	369	3121		2119
Cum. Tot.	10201	11168	22995	973	47517		12580

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
88+998.65	450	7.00	3.50	3.50	90
89+230.26	600	8.00	4.00	4.00	90
89+340.26	450	7.00	3.00	4.00	90

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
C2 - Silty Sand Colluvium with
C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
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SG - Sand and Gravel
TL - Tailings
F1 - Weak Fractured Rock
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
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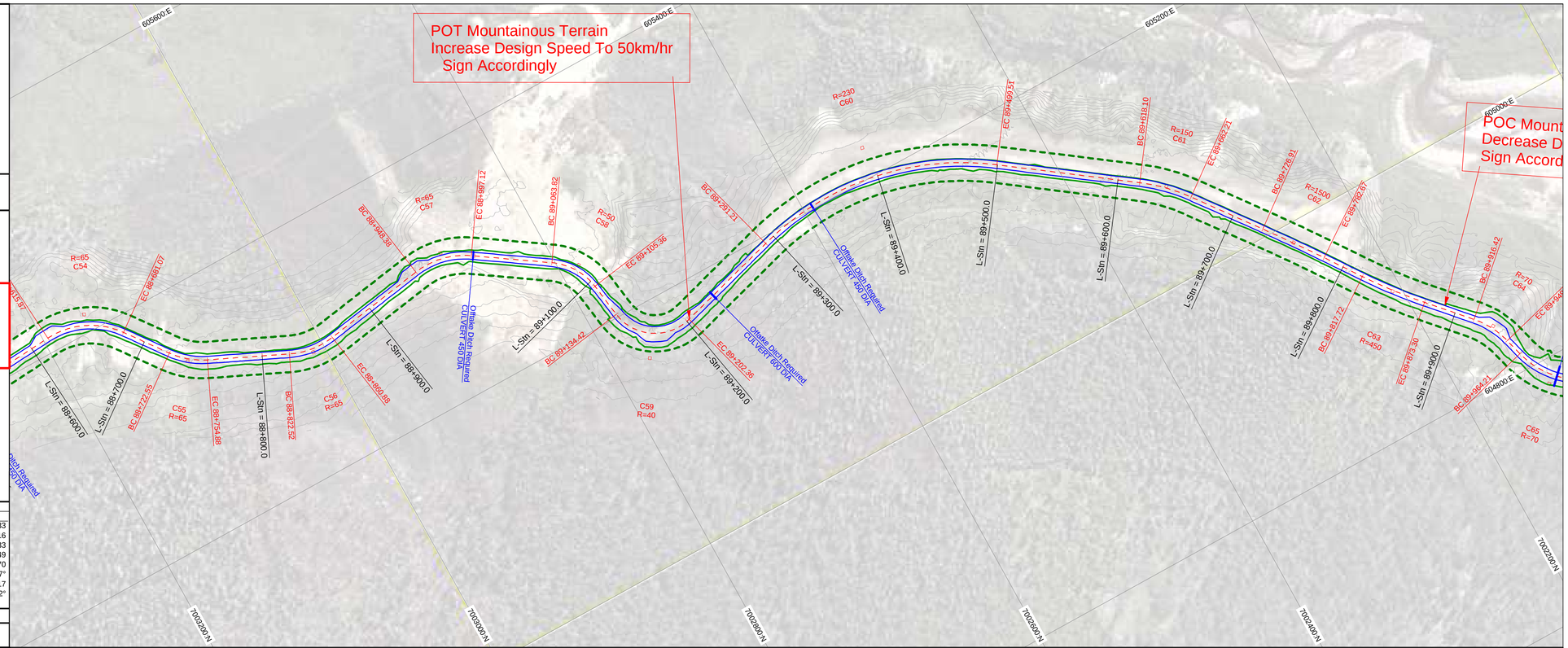
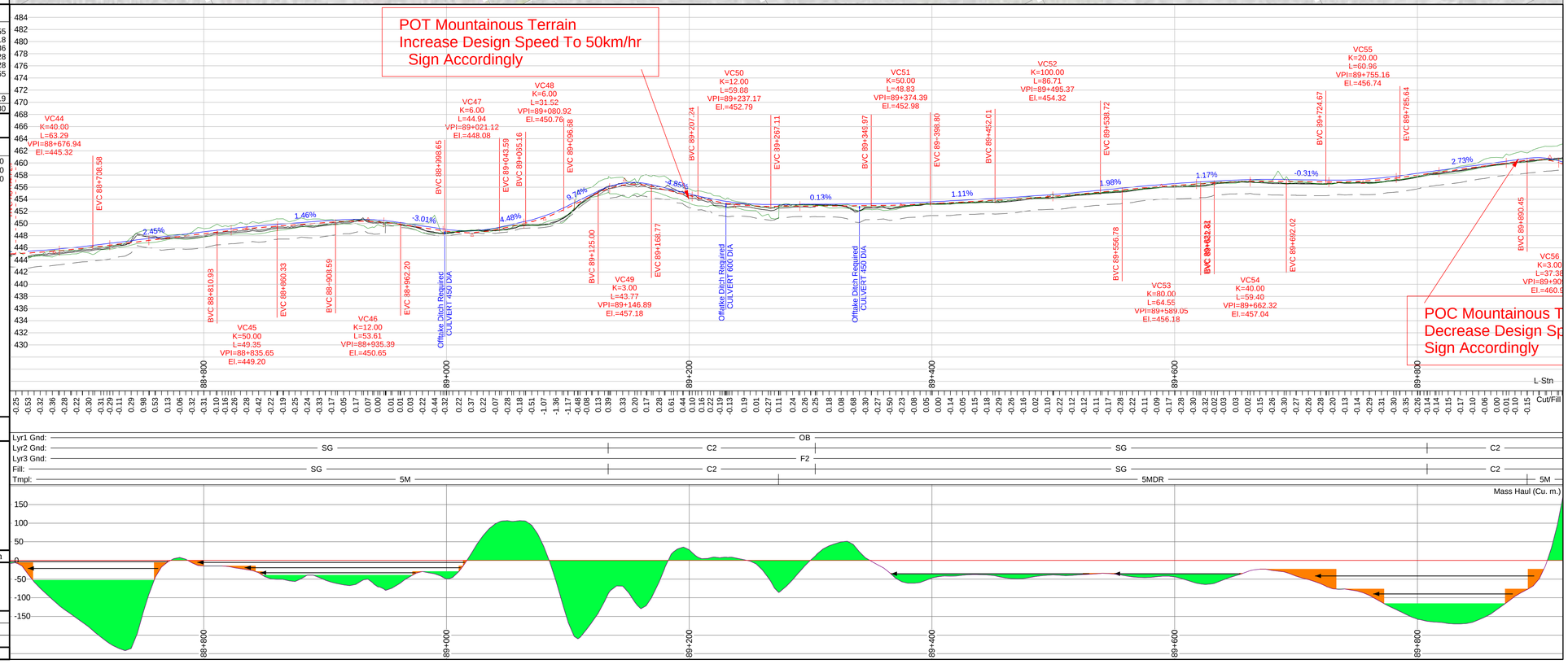
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 89+672.72 to 90+952.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C62	C63	C64	C65	C66	C67	C68	C69	C70	C71	C72	C73	C74	C75
IP Stn.	89+755	89+846	89+933	89+999	90+074	90+133	90+201	90+261	90+353	90+434	90+556	90+681	90+899	90+956
BC Stn.	89+727	89+818	89+916	89+964	90+059	90+115	90+186	90+246	90+329	90+402	90+531	90+602	90+882	90+940
Arc. Len.	56	56	33	64	31	36	30	31	46	59	48	114	35	32
EC Stn.	89+783	89+873	89+949	90+028	90+090	90+150	90+216	90+277	90+375	90+461	90+579	90+716	90+916	90+973
Radius	1500	450	70	70	70	70	120	80	60	60	60	65	100	230
Angle	2°	-7°	27°	-53°	25°	-29°	14°	-22°	44°	-56°	-46°	100°	-20°	8°
Tangent	28	28	17	35	16	18	15	16	24	32	25	78	18	16
Da, a=100	4°	13°	82°	82°	82°	82°	48°	72°	95°	95°	95°	88°	57°	25°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
89+800.00	275	0	1618	234	1313		355
90+000.00	305	0	1661	116	2265		355
90+200.00	222	0	606	0	420		328
90+400.00	530	0	1052	1601	2807		355
90+600.00	502	0	322	569	552		384
90+800.00	452	0	424	641	94		328
91+000.00							
Pg. Tot.	2285	0	5682	3162	7451		2105
Cum. Tot.	12211	11168	27059	3900	53655		14331

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
90+000.31	600	17.00	8.50	8.50	90
90+170.31	600	10.00	5.50	4.50	90
90+290.31	450	9.00	5.00	4.00	90
90+414.78	500	12.00	4.50	7.50	90
90+570.31	450	12.00	6.50	5.50	111
90+840.31	450	8.00	4.75	3.25	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

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Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 90+696.72 to 91+976.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85
IP Stn.	90+681	90+899	90+956	91+019	91+104	91+165	91+233	91+355	91+425	91+512	91+558	91+718	91+876
BC Stn.	90+602	90+882	90+940	90+990	91+087	91+147	91+216	91+340	91+404	91+495	91+541	91+680	91+860
Arc. Len.	114	35	32	56	33	35	31	31	40	35	35	76	33
EC Stn.	90+716	90+916	90+973	91+046	91+121	91+182	91+247	91+371	91+444	91+530	91+576	91+756	91+892
Radius	65	100	230	100	120	150	40	90	90	150	300	200	250
Angle	100°	-20°	8°	-32°	-16°	13°	44°	20°	-25°	-13°	-7°	22°	7°
Tangent	78	18	16	28	17	18	16	16	20	17	18	39	16
Da, a=100	88°	57°	25°	57°	48°	38°	143°	64°	64°	38°	19°	29°	23°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
90+800.00	452	0	424	641	94		328
91+000.00	468	0	500	289	653		328
91+200.00	132	6	860	136	2106		367
91+400.00	0	19	1656	0	1678		328
91+600.00	347	38	826	106	1135		382
91+800.00	509	0	464	407	2020		328
92+000.00							
Pg. Tot.	1909	63	4729	1578	7687		2060
Cum. Tot.	13669	11231	31364	4838	61247		16063

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
90+840.31	450	8.00	4.75	3.25	90
91+100.29	450	9.00	5.25	3.75	90
91+385.29	450	17.00	9.00	8.00	90
91+445.76	600	13.00	6.50	6.50	90
91+730.29	450	7.66	4.09	3.58	90
91+895.36	450	9.00	5.50	3.50	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 91+720.72 to 93+000.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
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Profile Legend

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- Profile Subgrade
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- 1st Stratum
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Curve Table (Da = deflection angle for a 10m arc.)

	C84	C85	C86	C87	C88	C89	C90	C91	C92	C93	C94
IP Stn.	91+718	91+876	92+149	92+216	92+352	92+459	92+563	92+673	92+799	92+936	92+988
BC Stn.	91+680	91+860	92+132	92+194	92+304	92+410	92+548	92+655	92+778	92+918	92+973
Arc. Len.	76	33	33	42	76	91	30	35	41	35	30
EC Stn.	91+756	91+892	92+165	92+236	92+380	92+501	92+578	92+690	92+819	92+953	93+003
Radius	200	250	50	50	50	100	100	150	50	80	80
Angle	22°	7°	-38°	48°	-87°	52°	17°	13°	-47°	25°	-21°
Tangent	39	16	17	22	48	49	15	18	22	18	15
Da, a=100	29°	23°	115°	115°	115°	57°	57°	38°	115°	72°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
91+800.00	509	0	464	407	2020		328
92+000.00	466	0	663	1137	1292		355
92+200.00	18	2	1676	23	866		365
92+400.00	23	0	422	0	559		355
92+600.00	293	0	539	86	884		357
92+800.00	490	0	1315	47	221		329
93+000.00	530	0	908	319	129		355
Pg. Tot.	2330	2	5986	2019	5971		2444
Cum. Tot.	15489	11233	36887	6450	65198		18179

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
91+730.29	450	7.66	4.09	3.58	90
91+895.36	450	9.00	5.50	3.50	90
92+204.02	800	10.00	5.00	5.00	90
92+440.09	450	9.00	4.75	4.25	90
92+810.09	600	8.00	4.50	3.50	90
92+885.09	450	9.00	5.50	3.50	90
93+000.09	450	9.00	5.75	3.25	90

SOIL TYPES

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- C1 - Silty Sand Colluvium
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- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 92+744.72 to 94+024.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C92	C93	C94	C95	C96	C97	C98	C99	C100	C101	C102	C103	C104
IP Stn.	92+799	92+936	92+988	93+055	93+111	93+192	93+286	93+374	93+563	93+626	93+722	93+863	94+034
BC Stn.	92+778	92+918	92+973	93+040	93+094	93+177	93+270	93+355	93+543	93+610	93+706	93+798	94+015
Arc. Len.	41	35	30	31	33	30	31	37	41	32	31	122	38
EC Stn.	92+819	92+953	93+003	93+071	93+128	93+207	93+301	93+392	93+584	93+642	93+737	93+920	94+053
Radius	50	80	80	120	120	80	50	100	150	300	100	150	80
Angle	-47°	25°	-21°	15°	-16°	21°	-36°	21°	-16°	6°	18°	-47°	27°
Tangent	22	18	15	16	17	15	16	19	21	16	16	65	20
Da, a=100	115°	72°	72°	48°	48°	72°	115°	57°	38°	19°	57°	38°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
92+800.00							
93+000.00	490	0	1315	47	221		329
93+200.00	530	0	908	319	129		355
93+400.00	403	0	248	0	333	-2525	328
93+600.00	245	0	828	1	480		355
93+800.00	207	0	335	0	288		328
94+000.00	233	0	1050	0	112		355
94+200.00	258	0	820	1014	74		382
Pg. Tot.	2365	0	5503	1381	1637		2431
Cum. Tot.	16835	11233	40167	7465	66485		19926

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
92+810.09	600	8.00	4.50	3.50	90
92+885.09	450	9.00	5.50	3.50	90
93+000.09	450	9.00	5.75	3.25	90
93+206.79	450	8.00	4.50	3.50	90
93+560.09	450	8.00	4.50	3.50	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Page 11 of 43

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 93+768.72 to 95+048.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
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- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C103	C104	C105	C106	C107	C108	C109	C110	C111	C112	C113
IP Stn.	93+863	94+034	94+135	94+194	94+258	94+341	94+398	94+469	94+567	94+678	94+773
BC Stn.	93+798	94+015	94+119	94+179	94+242	94+325	94+381	94+446	94+540	94+653	94+747
Arc. Len.	122	38	32	31	32	30	33	47	53	51	53
EC Stn.	93+920	94+053	94+151	94+210	94+274	94+356	94+414	94+492	94+593	94+704	94+799
Radius	150	80	150	200	200	100	120	150	400	650	220
Angle	-47°	27°	-12°	9°	-9°	-17°	16°	-18°	8°	4°	14°
Tangent	65	20	16	16	16	15	17	24	27	25	26
Da, a=100	38°	72°	38°	29°	29°	57°	48°	38°	14°	9°	26°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
93+800.00	233	0	1050	0	112		355
94+000.00	258	0	820	1014	74		382
94+200.00	100	38	2065	138	308	-3926	313
94+400.00	0	55	1107	53	1467		328
94+600.00	0	50	799	12	884		382
94+800.00	0	65	2069	292	2131		336
95+000.00	0	56	2103	163	1891		347
95+200.00							
Pg. Tot.	591	265	10014	1671	6868		2441
Cum. Tot.	16935	11498	48311	8122	73167		21631

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
94+053.18	450	11.00	8.00	3.00	90
94+450.09	450	10.00	5.50	4.50	90
94+610.09	450	9.00	5.00	4.00	90
94+955.09	450	15.00	7.70	7.30	90

SOIL TYPES

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- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
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- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

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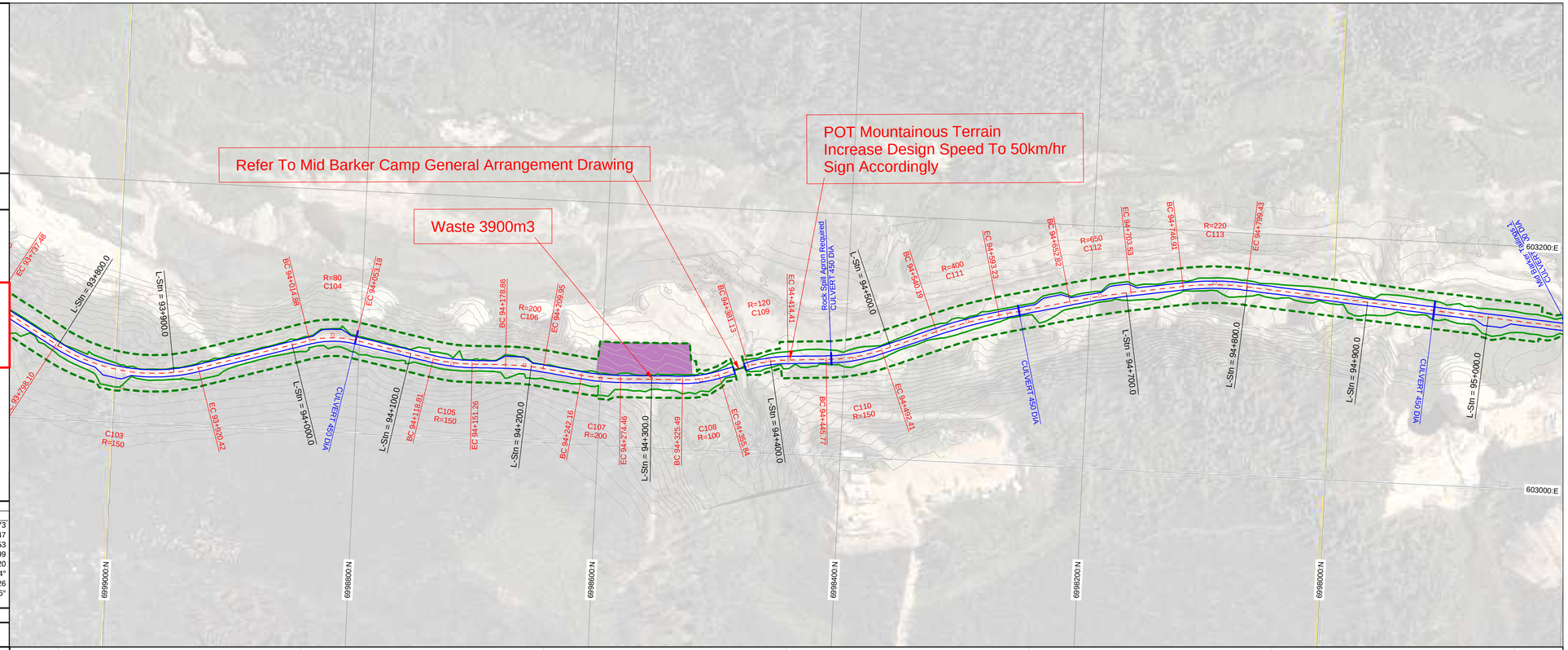
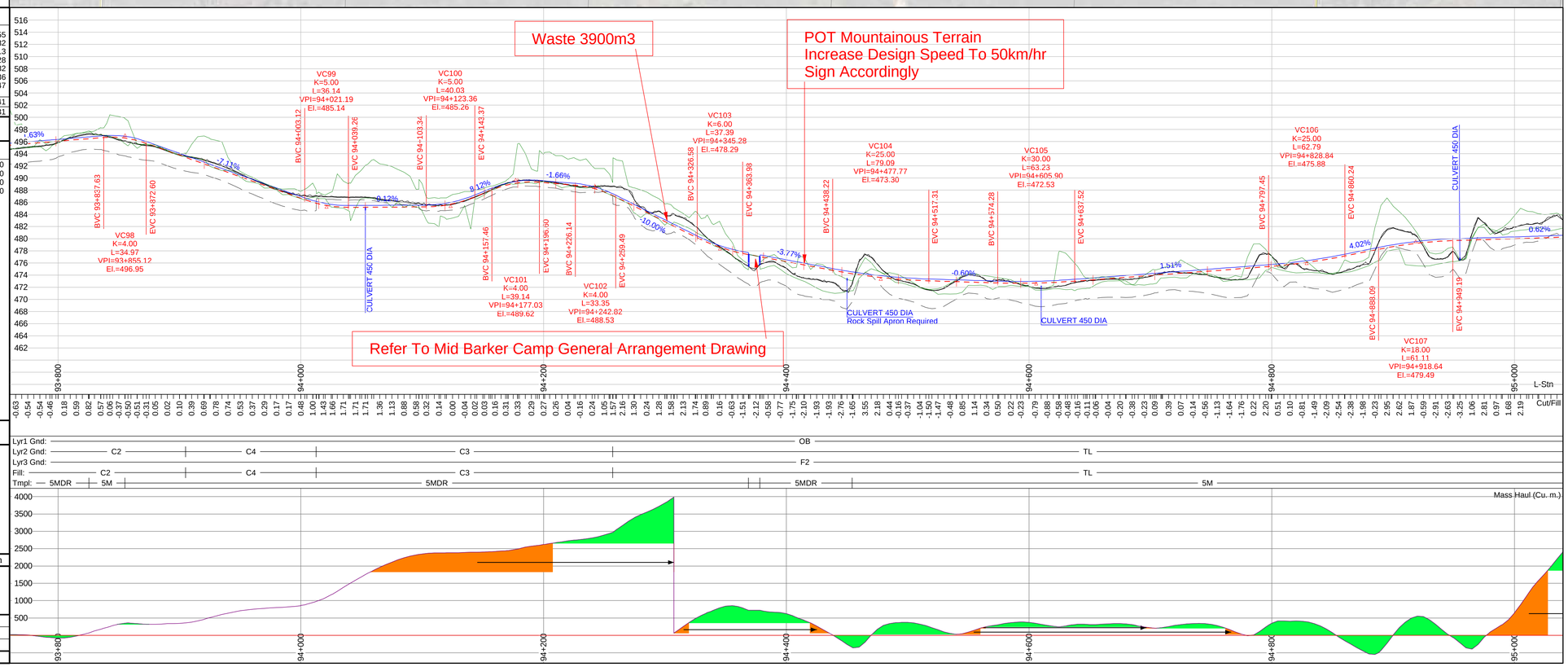
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 94+792.72 to 96+072.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C113	C114	C115	C116	C117	C118	C119	C120
IP Stn.	94+773	95+129	95+235	95+325	95+430	95+519	95+642	96+025
BC Stn.	94+747	95+103	95+207	95+299	95+406	95+492	95+615	95+999
Arc. Len.	53	50	55	50	48	53	52	52
EC Stn.	94+799	95+153	95+261	95+350	95+454	95+545	95+668	96+051
Radius	220	220	80	120	200	100	250	450
Angle	14°	-13°	39°	-24°	-14°	-30°	12°	7°
Tangent	26	25	28	26	24	27	26	26
Da, a=100	26°	26°	72°	48°	29°	57°	23°	13°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
94+800.00		65	2069	292	2131		336
95+000.00	0	56	2103	163	1891		347
95+200.00	0	46	715	0	2263		328
95+400.00	0	61	888	0	1381		355
95+600.00	23	56	1949	32	886		335
95+800.00	313	6	2054	6	2127		328
96+000.00	724	0	454	727	1183		329
96+200.00							
Pg. Tot.	1060	290	10233	1220	11863		2357
Cum. Tot.	17994	11667	54371	8888	81007		23305

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
94+955.09	450	15.00	7.70	7.30	90
95+066.64	1000	18.00	9.00	9.00	55
95+315.09	450	8.00	4.00	4.00	90
95+590.09	450	14.00	7.00	7.00	90
95+940.09	450	10.18	5.50	4.68	69

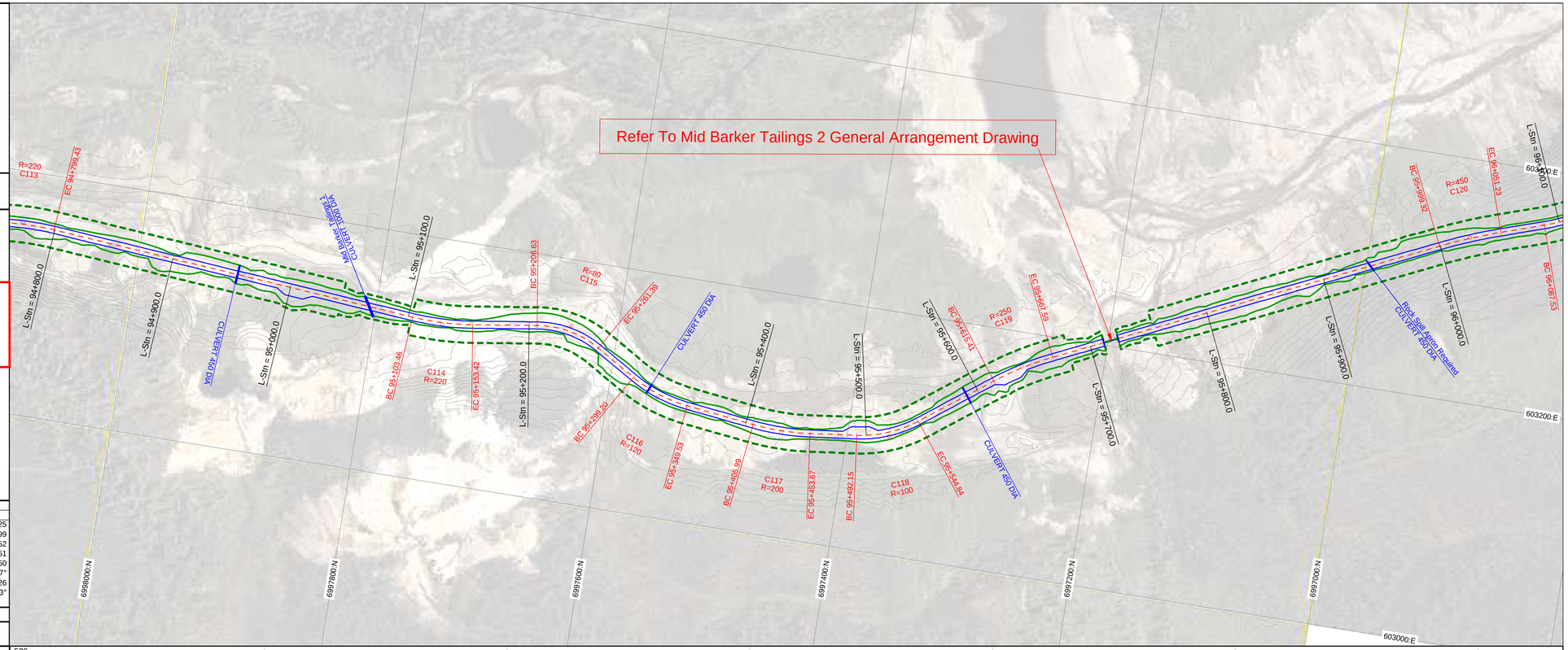
SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

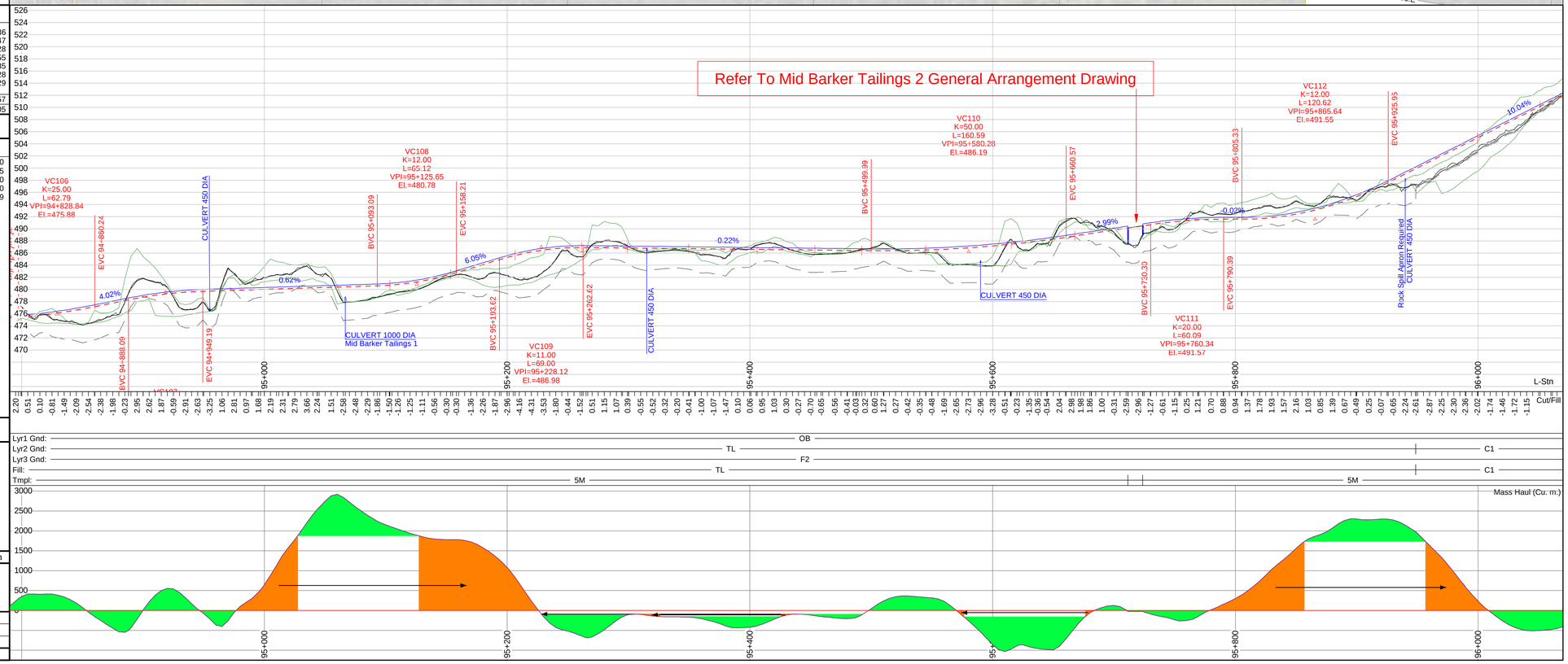
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 95+816.72 to 97+096.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
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- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C120	C121	C122	C123	C124	C125	C126	C127	C128	C129
IP Stn.	96+025	96+114	96+211	96+341	96+417	96+510	96+633	96+758	96+932	97+067
BC Stn.	95+999	96+088	96+179	96+312	96+391	96+476	96+606	96+731	96+906	97+036
Arc. Len.	52	52	61	56	51	66	54	54	52	62
EC Stn.	96+051	96+140	96+240	96+368	96+442	96+541	96+660	96+785	96+958	97+098
Radius	450	150	80	100	100	100	400	150	250	200
Angle	7°	-20°	44°	-32°	29°	-38°	-8°	21°	-12°	-18°
Tangent	26	26	32	29	26	34	27	28	26	31
Da, a=100	13°	38°	72°	57°	57°	57°	14°	38°	23°	29°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
96+000.00							
96+200.00	724	0	454	727	1183		329
96+400.00	767	0	758	34	997		354
96+600.00	1000	0	968	53	932		355
96+800.00	215	0	722	72	804		328
97+000.00	23	0	539	78	723		355
97+200.00	22	1	494	41	200		355
Pg. Tot.	2751	1	3934	1004	4840		2075
Cum. Tot.	20021	11668	57852	9165	84664		25051

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
95+940.09	450	10.18	5.50	4.68	69
96+245.56	600	10.00	5.00	5.00	90
96+390.09	800	8.00	4.00	4.00	90
96+515.09	800	9.00	4.60	4.40	90
96+642.56	600	9.00	4.50	4.50	90
96+770.09	450	7.58	4.09	3.49	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 96+840.72 to 98+120.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
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ISSUED FOR PERMIT APPROVAL

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- Profile Subgrade
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- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C128	C129	C130	C131	C132	C133	C134	C135	C136
IP Stn.	96+932	97+067	97+161	97+301	97+549	97+679	97+911	98+040	98+129
BC Stn.	96+906	97+036	97+134	97+270	97+518	97+651	97+882	98+012	98+113
Arc. Len.	52	62	53	61	59	54	56	55	30
EC Stn.	96+958	97+098	97+187	97+331	97+577	97+706	97+938	98+067	98+144
Radius	250	200	100	150	100	1200	80	100	65
Angle	-12°	-18°	30°	23°	34°	3°	-40°	31°	-27°
Tangent	26	31	27	31	30	27	29	28	15
Da, a=100	23°	29°	57°	38°	57°	5°	72°	57°	88°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
97+000.00		1	494	41	200		355
97+200.00	22	0	712	239	1177		355
97+400.00	22	0	512	42	667		355
97+600.00	21	0	470	6	278		328
97+800.00	968	0	725	9	896		355
98+000.00	1045	0	501	1	1508		328
98+200.00							
Pg. Tot.	2099	2	3414	337	4727		2075
Cum. Tot.	22099	11669	60771	9460	89191		26771

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
97+225.09	450	9.00	4.64	4.36	90
97+300.09	450	13.00	9.00	4.00	90
97+580.09	450	9.00	4.50	4.50	90
97+850.09	600	8.00	4.00	4.00	90
97+934.39	600	8.00	4.00	4.00	90
98+000.09	600	8.00	4.00	4.00	90
98+050.09	600	9.00	5.00	4.00	75

SOIL TYPES

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- C2 - Silty Sand Colluvium with
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BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

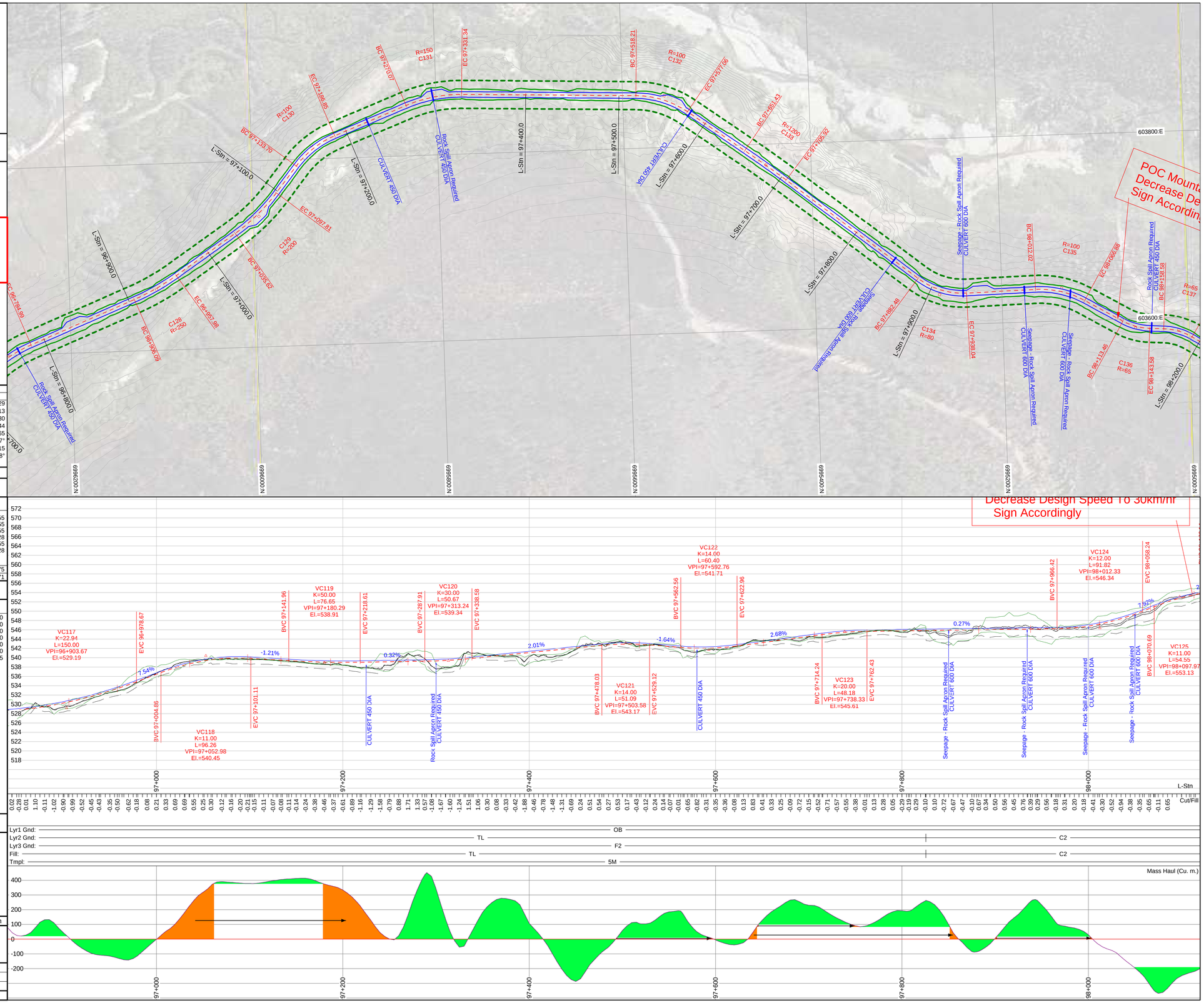
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn



GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 97+864.72 to 99+144.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C134	C135	C136	C137	C138	C139	C140	C141	C142	C143	C144	C145
IP Stn.	97+911	98+040	98+129	98+175	98+240	98+329	98+458	98+620	98+792	98+932	99+034	99+107
BC Stn.	97+882	98+012	98+113	98+159	98+224	98+314	98+430	98+595	98+764	98+906	99+001	99+087
Arc. Len.	56	55	30	32	32	30	56	50	55	51	64	37
EC Stn.	97+938	98+067	98+144	98+191	98+256	98+344	98+486	98+645	98+819	98+957	99+066	99+124
Radius	80	100	65	65	150	300	400	250	120	100	130	45
Angle	-40°	31°	-27°	28°	12°	-6°	-8°	-12°	-26°	29°	28°	-47°
Tangent	29	28	15	16	16	15	28	25	28	26	33	20
Da, a=100	72°	57°	88°	88°	38°	19°	14°	23°	48°	57°	44°	127°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
98+000.00	1045	0	501	1	1508		328
98+200.00	889	0	213	0	955		355
98+400.00	773	0	494	0	438		355
98+600.00	729	0	693	0	492		353
98+800.00	558	0	804	1795	554		330
99+000.00	188	2	72	227	5317	24670	343
99+200.00							
Pg. Tot.	4182	2	2776	2023	9265		2064
Cum. Tot.	25236	11671	63046	11482	96947		28508

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
97+934.39	600	8.00	4.00	4.00	90
98+000.09	600	8.00	4.00	4.00	90
98+050.09	600	10.00	5.00	5.00	75
98+145.56	450	11.00	6.00	5.00	90
98+275.09	600	14.00	10.00	4.00	69
98+455.09	450	8.00	4.00	4.00	90
99+100.54	400	15.00	7.50	7.50	67
99+103.04	400	24.00	12.00	12.00	70
99+105.54	400	13.00	6.50	6.50	72
99+108.04	2400	36.00	18.00	18.00	76
99+110.54	400	13.00	6.50	6.50	79
99+113.04	400	24.00	12.00	12.00	82
99+115.54	400	13.00	6.50	6.50	86

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 98+888.72 to 100+168.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
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- Clearing Limits
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C143	C144	C145	C146	C147	C148	C149	C150	C151	C152	C153
IP Stn.	98+932	99+034	99+107	99+228	99+336	99+498	99+555	99+676	99+785	99+980	100+130
BC Stn.	98+906	99+001	99+087	99+203	99+309	99+480	99+539	99+650	99+760	99+898	100+105
Arc. Len.	51	64	37	49	54	35	33	52	50	160	49
EC Stn.	98+957	99+066	99+124	99+252	99+363	99+514	99+571	99+702	99+810	100+058	100+154
Radius	100	130	45	130	120	65	65	600	300	300	400
Angle	29°	28°	-47°	21°	-26°	-31°	29°	-5°	10°	-31°	-7°
Tangent	26	33	20	25	27	18	17	26	25	82	24
Da, a=100	57°	44°	127°	44°	48°	88°	88°	10°	19°	19°	14°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
99+000.00	188	2	72	227	5317	24670	343
99+200.00	0	0	0	0	5212		328
99+400.00	431	0	96	0	4923		355
99+600.00	803	0	1161	14	276		328
99+800.00	413	0	597	6	2949		355
100+000.00	379	0	664	166	4500		328
100+200.00							
Pg. Tot.	2213	2	2590	414	23177		2037
Cum. Tot.	27262	11671	65564	11669	114807		30201

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
99+100.54	400	15.00	7.50	7.50	67
99+103.04	400	24.00	12.00	12.00	70
99+105.54	400	13.00	6.50	6.50	72
99+108.04	2400	36.00	18.00	18.00	76
99+110.54	400	13.00	6.50	6.50	79
99+113.04	400	24.00	12.00	12.00	82
99+115.54	400	13.00	6.50	6.50	86
99+205.94	600	22.00	12.00	10.00	69
99+281.18	600	18.00	11.00	7.00	69
99+421.29	600	17.00	9.00	8.00	90
99+580.59	600	8.00	4.00	4.00	90
99+670.59	600	8.00	4.00	4.00	90
99+791.29	600	8.00	4.00	4.00	90
99+935.94	800	20.00	11.00	9.00	85
100+001.29	600	15.00	8.00	7.00	90
100+041.29	600	15.00	8.50	6.50	90
100+081.29	600	15.00	8.00	7.00	90

SOIL TYPES

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GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Page 17 of 43

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 99+912.72 to 101+192.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
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Curve Table (Da = deflection angle for a 10m arc.)

	C152	C153	C154	C155	C156	C157	C158	C159	C160	C161	C162	C163	C164	C165
IP Stn.	99+980	100+130	100+231	100+341	100+452	100+528	100+610	100+718	100+780	100+838	100+946	101+016	101+111	101+194
BC Stn.	99+898	100+105	100+191	100+308	100+423	100+522	100+591	100+693	100+754	100+811	100+921	100+988	101+073	101+167
Arc. Len.	160	49	76	63	58	12	37	52	53	53	50	54	70	54
EC Stn.	100+058	100+154	100+261	100+371	100+480	100+533	100+628	100+744	100+801	100+864	100+971	101+042	101+143	101+222
Radius	300	400	100	80	130	65	65	700	1200	400	400	80	80	300
Angle	-31°	-7°	44°	-45°	25°	10°	-33°	-4°	-3°	-8°	7°	39°	-50°	-10°
Tangent	82	24	40	33	29	6	19	26	26	26	25	28	38	27
Da, a=100	19°	14°	57°	72°	44°	88°	88°	8°	5°	14°	14°	72°	72°	19°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
100+000.00	379	0	664	166	4500		328
100+200.00	445	0	493	461	6525		355
100+400.00	651	0	1261	99	773		328
100+600.00	80	7	356	2	516		355
100+800.00	0	11	308	0	379		328
101+000.00	0	13	468	14	356		355
101+200.00							
Pg. Tot.	1555	31	3550	742	13048		2048
Cum. Tot.	28438	11702	68450	12245	123355		31921

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
99+935.94	800	20.00	11.00	9.00	85
100+001.29	600	15.00	8.00	7.00	90
100+041.29	600	15.00	8.00	7.00	90
100+081.29	600	15.00	8.00	7.00	90
100+325.24	400	11.00	5.50	5.50	75
100+327.74	400	21.00	10.50	10.50	76
100+330.24	400	11.00	5.50	5.50	79
100+332.74	2400	37.00	23.00	14.00	79
100+335.24	450	11.00	5.50	5.50	81
100+337.74	400	21.00	10.50	10.50	82
100+340.24	400	11.00	5.50	5.50	84
100+831.29	450	8.00	4.00	4.00	90
101+171.29	450	7.59	3.68	3.91	90

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Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 100+936.72 to 102+216.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
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ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
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Curve Table (Da = deflection angle for a 10m arc.)

	C162	C163	C164	C165	C166	C167	C168	C169	C170	C171
IP Stn.	100+946	101+016	101+110	101+194	101+285	101+397	101+563	101+923	102+078	102+213
BC Stn.	100+921	100+988	101+073	101+167	101+259	101+358	101+534	101+892	102+063	102+199
Arc. Len.	50	54	70	54	51	75	57	63	30	29
EC Stn.	100+971	101+042	101+143	101+222	101+310	101+433	101+591	101+955	102+093	102+227
Radius	400	80	80	300	160	100	180	200	50	120
Angle	7°	39°	-50°	-10°	18°	43°	18°	-18°	-35°	14°
Tangent	25	28	39	27	26	40	29	32	16	14
Da, a=100	14°	72°	72°	19°	36°	57°	32°	29°	115°	48°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
101+000.00	0	13	468	14	356		355
101+200.00	0	14	118	0	696		330
101+400.00	0	15	943	231	543		353
101+600.00	67	8	427	31	501		354
101+800.00	1138	0	743	0	1396		356
102+000.00	656	0	276	0	4069	20000	313
102+200.00	125	0	40	0	7338		328
102+400.00							
Pg. Tot.	1986	49	3013	276	14898		2388
Cum. Tot.	30424	11738	70996	12507	137897		33954

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
101+171.29	450	7.59	3.68	3.91	90
101+611.29	450	8.00	4.30	3.70	87
102+136.74	450	18.00	9.50	8.50	90
102+202.74	450	23.00	12.50	10.50	69

SOIL TYPES

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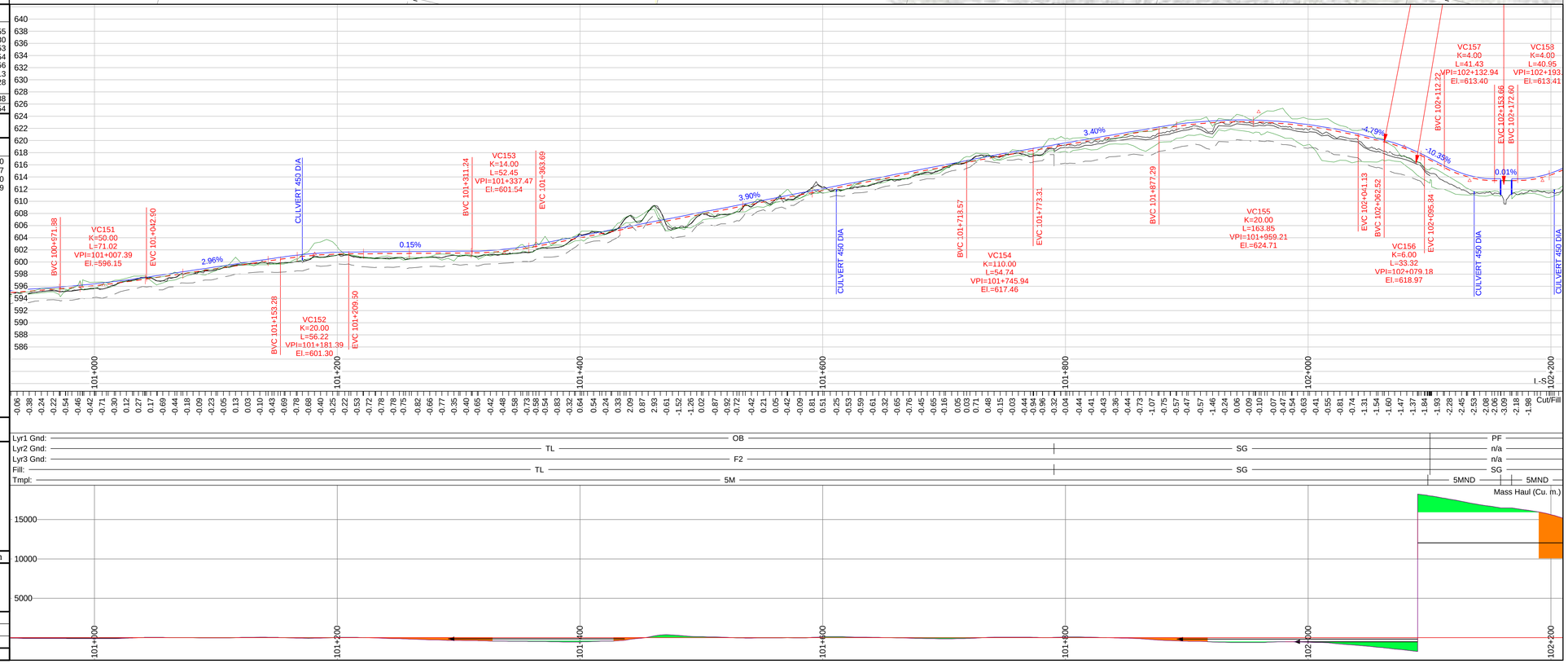
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

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Km 82.7 - 126.2

Page Stations: 101+960.72 to 103+240.72

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Curve Table (Da = deflection angle for a 10m arc.)

	C170	C171	C172	C173	C174	C175	C176	C177	C178	C179	C180	C181	C182
IP Stn.	102+078	102+213	102+293	102+349	102+398	102+473	102+622	102+869	102+916	102+962	103+114	103+162	103+245
BC Stn.	102+063	102+199	102+270	102+334	102+376	102+452	102+602	102+851	102+900	102+944	103+099	103+146	103+220
Arc. Len.	30	29	44	31	42	43	41	36	29	33	30	32	50
EC Stn.	102+093	102+227	102+314	102+365	102+419	102+494	102+643	102+887	102+929	102+977	103+129	103+179	103+270
Radius	50	120	80	80	80	80	450	150	35	35	330	150	860
Angle	-35°	14°	32°	-22°	30°	-31°	-5°	14°	48°	-54°	-5°	12°	-3°
Tangent	16	14	23	16	22	22	20	18	16	18	15	16	25
Da, a=100	115°	48°	72°	72°	72°	72°	13°	38°	164°	164°	17°	38°	7°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
102+000.00	656	0	276	0	4069	20000	313
102+200.00	125	0	40	0	7338		328
102+400.00	716	0	204	226	4926		328
102+600.00	552	170	616	949	1673		328
102+800.00	348	239	486	1221	6675	-4635	383
103+000.00	822	0	642	1144	1103		328
103+200.00	833	0	546	579	1324		328
Pg. Tot.	4051	409	2810	4120	27108		2335
Cum. Tot.	33694	12147	73490	16626	153598		35649

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
102+136.74	450	18.00	9.50	8.50	90
102+202.74	450	23.00	12.50	10.50	69
102+361.46	450	19.00	7.50	11.50	111
102+506.58	450	12.00	5.50	6.50	96
102+670.91	450	7.00	3.25	3.75	105
102+941.97	800	32.00	14.00	18.00	52

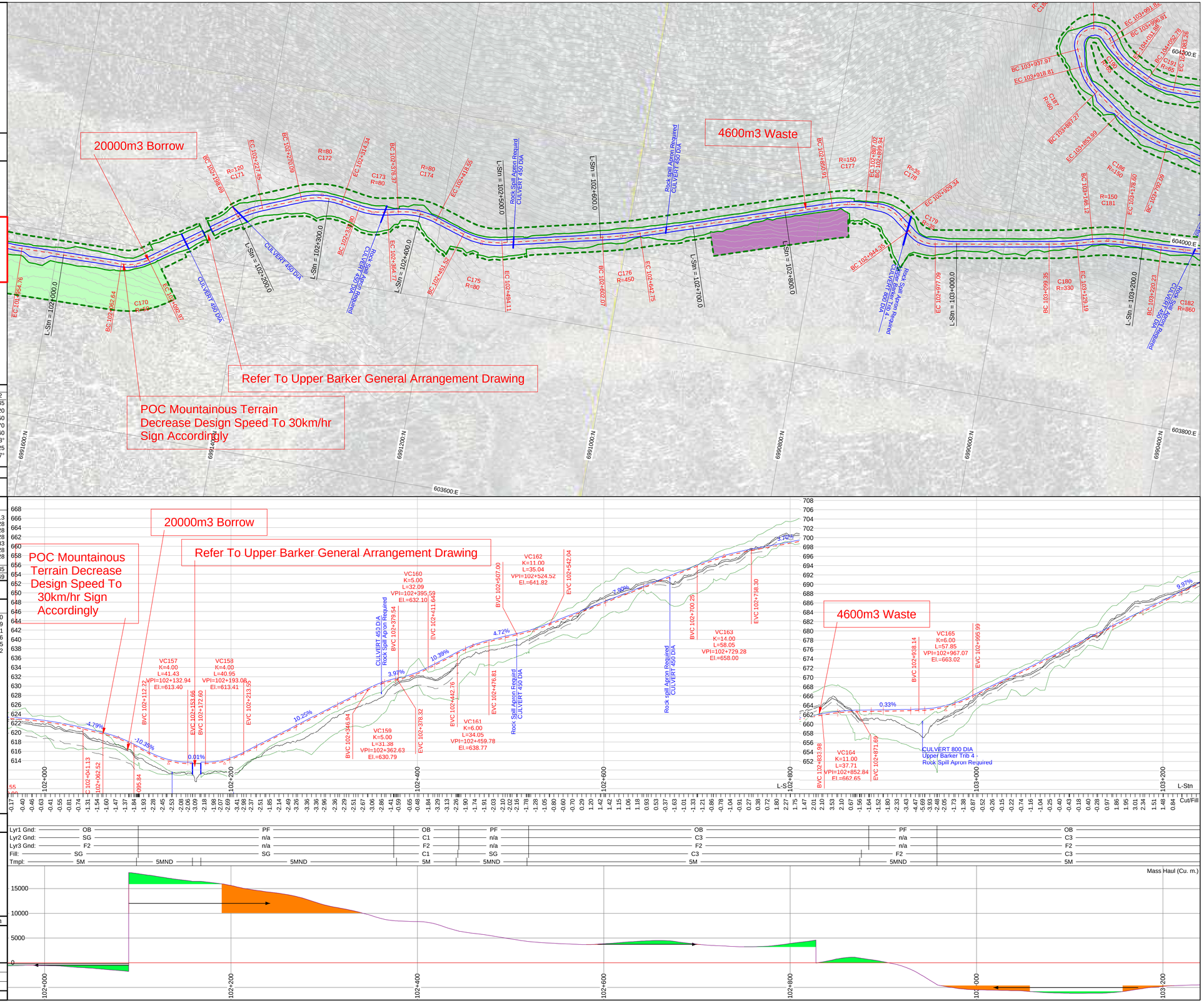
SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/22 Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn



GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 102+984.72 to 104+264.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C180	C181	C182	C183	C184	C185	C186	C187	C188	C189	C190	C191	C192
IP Stn.	103+114	103+162	103+245	103+483	103+518	103+548	103+823	103+903	103+961	103+983	104+015	104+068	104+277
BC Stn.	103+099	103+146	103+220	103+471	103+493	103+533	103+792	103+887	103+938	103+971	103+997	104+053	104+247
Arc. Len.	30	32	50	21	34	30	62	32	33	21	35	30	61
EC Stn.	103+129	103+179	103+270	103+493	103+527	103+563	103+854	103+919	103+971	103+992	104+032	104+083	104+307
Radius	330	150	860	18	18	120	150	60	18	18	65	65	150
Angle	-5°	12°	-3°	-68°	-108°	14°	24°	30°	104°	67°	-31°	-27°	-23°
Tangent	15	16	25	12	25	15	31	16	23	12	18	16	31
Da, a=100	17°	38°	7°	318°	318°	48°	38°	95°	318°	318°	88°	88°	38°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
103+000.00	822	0	642	1144	1103		328
103+200.00	833	0	546	579	1324		328
103+400.00	996	0	1360	5292	1917		481
103+600.00	661	0	1209	455	1202		328
103+800.00	744	0	1245	784	3498		443
104+000.00	670	0	1488	884	1588		356
104+200.00	587	0	1093	210	1033		331
104+400.00							
Pg. Tot.	5312	0	7584	9349	11665		2594
Cum. Tot.	37352	12148	79885	24252	162837		37587

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
103+255.91	450	9.00	3.50	5.50	111
103+721.70	450	8.00	4.00	4.00	96
104+161.70	450	8.00	3.75	4.25	99

SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 104+008.72 to 105+288.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C190	C191	C192	C193	C194	C195	C196	C197	C198	C199	C200	C201	C202	C203
IP Stn.	104+015	104+068	104+271	104+479	104+588	104+633	104+701	104+813	104+898	104+971	104+995	105+054	105+179	105+256
BC Stn.	103+991	104+053	104+241	104+453	104+571	104+598	104+682	104+782	104+871	104+948	104+980	105+030	105+141	105+229
Arc. Len.	35	30	61	52	20	41	50	62	55	34	25	51	75	52
EC Stn.	104+032	104+083	104+301	104+505	104+591	104+639	104+731	104+844	104+926	104+980	105+005	105+081	105+216	105+282
Radius	65	65	150	650	19	19	100	500	400	18	18	160	200	450
Angle	-31°	-27°	-23°	-5°	-60°	-123°	28°	-7°	-8°	108°	78°	-18°	-21°	-7°
Tangent	18	16	31	26	11	35	25	31	27	25	15	26	38	26
Da, a=100	88°	88°	38°	9°	302°	302°	57°	11°	14°	318°	318°	36°	29°	13°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
104+200.00	587	0	1093	210	1033		331
104+400.00	749	0	842	124	4653		387
104+600.00	733	0	2845	2100	925		420
104+800.00	695	0	1031	1137	1734	-2750	432
105+000.00	706	0	1357	2149	1403		367
105+200.00	565	0	899	160	1274		355
Pg. Tot.	4035	0	8067	5880	11022		2292
Cum. Tot.	40800	12148	86860	29921	172826		39548

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
104+161.70	450	8.00	3.75	4.25	99
104+424.69	450	8.00	4.00	4.00	90
104+766.70	450	9.00	5.00	4.00	69
105+186.70	450	9.00	4.00	5.00	105

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

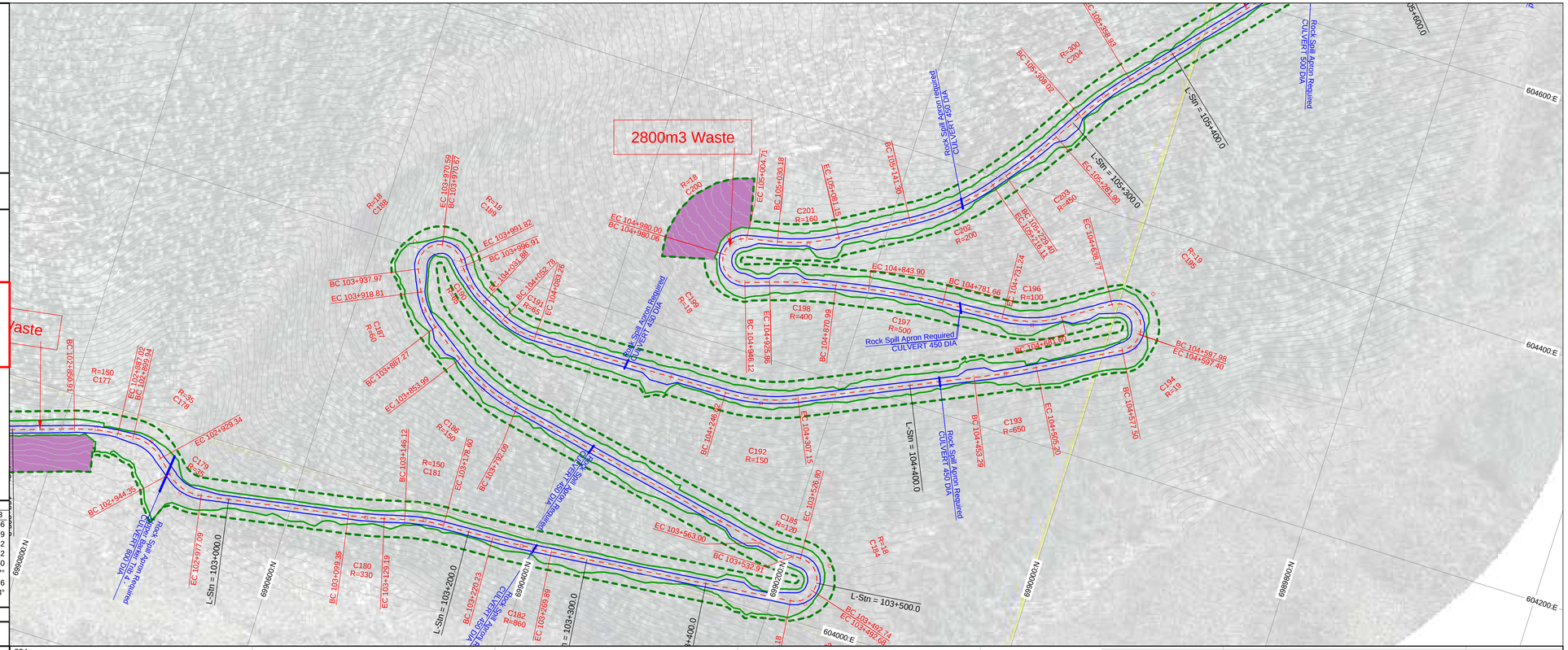
- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 5M1R = 5m running surface with 1.5m deep ditch on right
- BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
- GRSH = GRS Headwall (Refer To General Arrangement Drawings)
- Surfacing depth = 0.3m

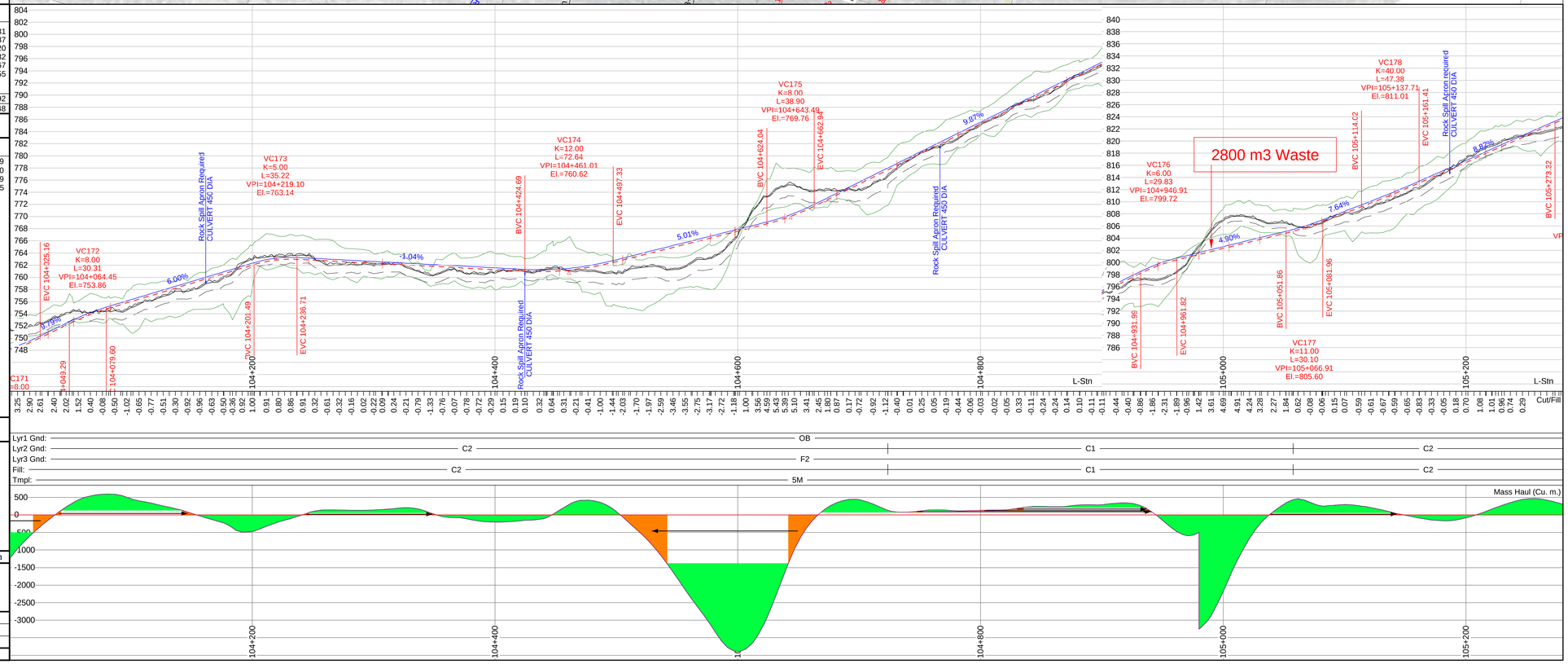
Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 105+032.72 to 106+312.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C201	C202	C203	C204	C205	C206	C207	C208	C209	C210
IP Stn.	105+056	105+179	105+256	105+334	105+535	105+729	105+848	105+925	106+121	106+262
BC Stn.	105+030	105+141	105+229	105+308	105+506	105+699	105+824	105+896	106+095	106+235
Arc. Len.	51	75	52	51	57	57	47	58	51	53
EC Stn.	105+081	105+216	105+282	105+359	105+564	105+756	105+871	105+954	106+147	106+288
Radius	160	200	450	300	500	100	750	250	300	250
Angle	-18°	-21°	-7°	10°	7°	32°	4°	-13°	10°	12°
Tangent	26	38	26	26	29	29	24	29	26	27
Da, a=100	36°	29°	13°	19°	11°	57°	8°	23°	19°	23°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
105+200.00							
105+400.00	565	0	899	160	1274		355
105+600.00	535	0	941	205	788		328
105+800.00	778	0	836	209	945	4475	355
106+000.00	351	0	83	0	5362		328
106+200.00	509	0	940	199	462		355
106+400.00	454	0	458	109	542		328
Pg. Tot.	3193	0	4156	882	9373		2048
Cum. Tot.	43427	12148	90117	30643	180925		41242

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
105+186.70	450	9.00	4.00	5.00	105
105+534.18	500	11.00	5.00	6.00	121
105+772.19	450	9.00	4.00	5.00	105
105+924.29	600	10.00	4.50	5.50	111
106+182.80	450	8.00	3.50	4.50	111

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 106+056.72 to 107+336.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C209	C210	C211	C212	C213	C214	C215	C216
IP Stn.	106+121	106+262	106+685	106+864	107+019	107+180	107+265	107+360
BC Stn.	106+095	106+235	106+660	106+839	106+993	107+149	107+240	107+335
Arc. Len.	51	53	49	50	51	58	50	50
EC Stn.	106+147	106+288	106+709	106+889	107+044	107+207	107+290	107+385
Radius	300	250	250	250	150	80	130	1550
Angle	10°	12°	11°	11°	20°	-42°	22°	-2°
Tangent	26	27	24	25	26	30	26	25
Da, a=100	19°	23°	23°	23°	38°	72°	44°	4°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
106+200.00	454	0	458	109	542		328
106+400.00	434	0	375	54	409		355
106+600.00	448	0	473	106	458		328
106+800.00	463	0	360	49	688		355
107+000.00	413	0	317	33	781		328
107+200.00	279	19	299	6	334		355
107+400.00							
Pg. Tot.	2492	19	2281	357	3212		2048
Cum. Tot.	45465	12167	91940	30891	183595		42962

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
106+182.80	450	8.00	3.50	4.50	111
106+692.82	450	9.00	5.00	4.00	90
107+147.82	450	10.00	4.50	5.50	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Page 24 of 43

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 107+080.72 to 108+360.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
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- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C214	C215	C216	C217	C218	C219	C220	C221	C222	C223
IP Stn.	107+180	107+265	107+360	107+501	107+572	107+653	107+731	107+839	107+948	108+107
BC Stn.	107+149	107+240	107+335	107+473	107+546	107+633	107+675	107+809	107+917	108+081
Arc. Len.	58	50	50	55	51	42	109	60	62	53
EC Stn.	107+207	107+290	107+385	107+529	107+597	107+674	107+783	107+869	107+978	108+134
Radius	80	130	1550	260	300	180	180	200	150	200
Angle	-42°	22°	-2°	12°	10°	13°	35°	-17°	-24°	-15°
Tangent	30	26	25	28	26	21	56	30	31	26
Da, a=100	72°	44°	4°	22°	19°	32°	32°	29°	38°	29°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
107+200.00	279	19	299	6	334	1300	355
107+400.00	228	0	355	27	597		350
107+600.00	142	462	427	131	535		333
107+800.00	211	252	157	50	1697		355
108+000.00	475	0	581	247	624		328
108+200.00	252	0	546	127	766		355
108+400.00							
Pg. Tot.	1587	733	2365	588	4553		2075
Cum. Tot.	46773	12881	94006	31473	187814		44682

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
107+147.82	450	10.00	4.50	5.50	90
107+392.82	450	8.00	4.00	4.00	111
107+632.81	450	8.00	3.50	4.50	102
107+787.83	450	9.00	4.00	5.00	108
108+098.45	450	9.00	4.00	5.00	108

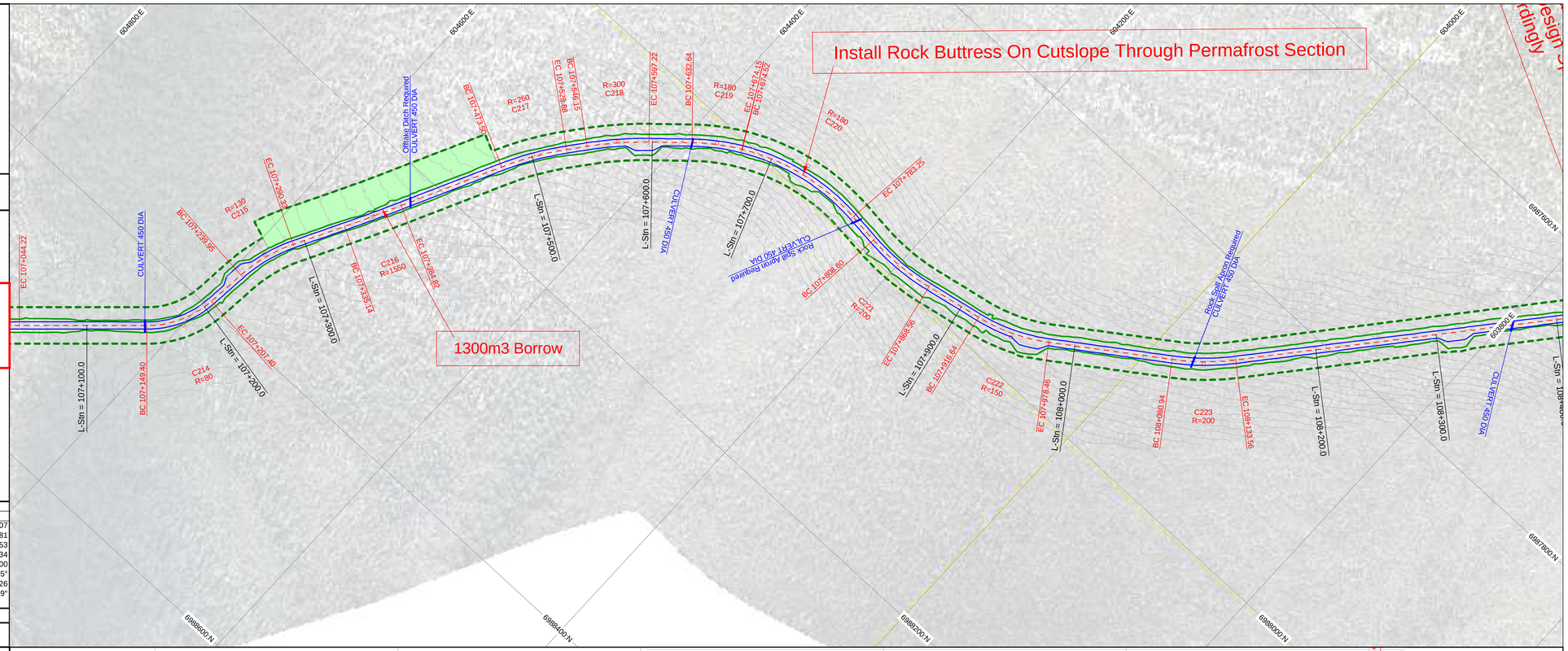
SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

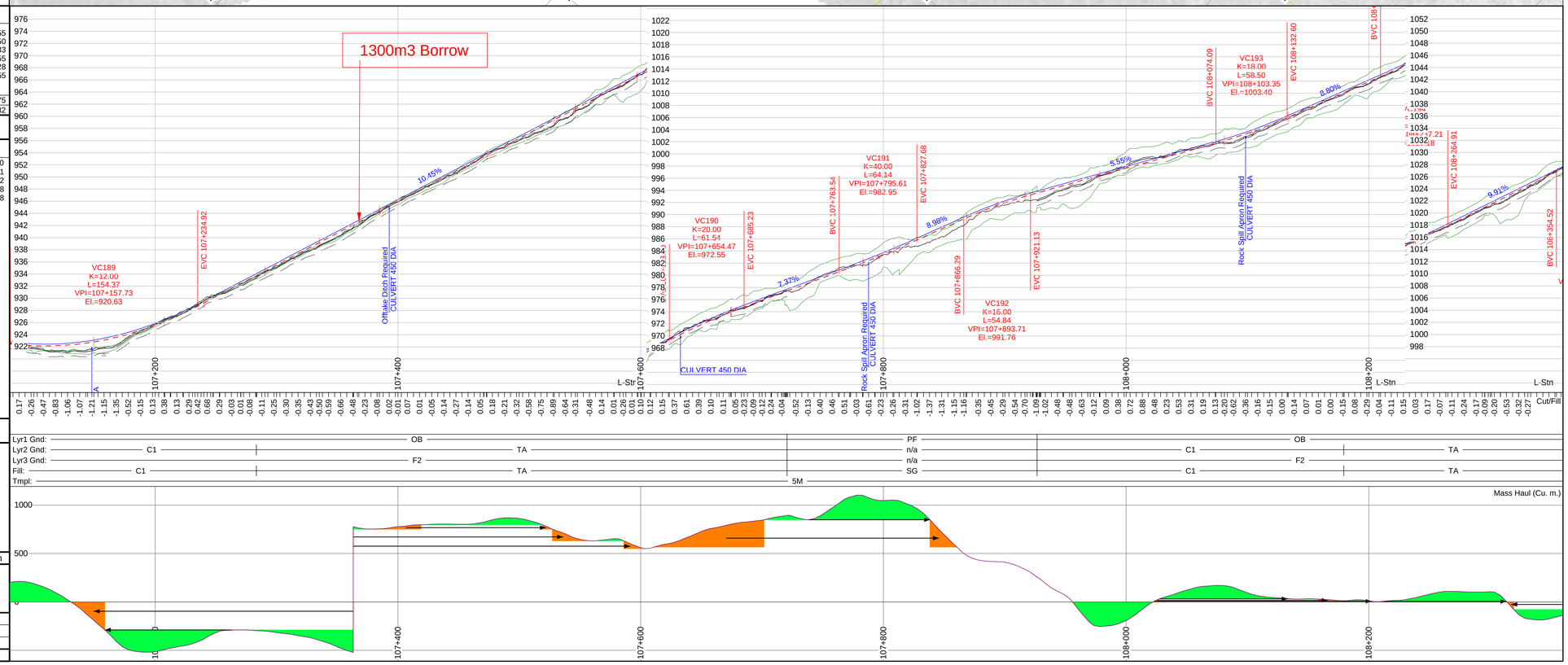
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 108+104.72 to 109+384.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C223	C224	C225	C226	C227	C228	C229	C230	C231	C232
IP Stn.	108+107	108+539	108+636	108+738	108+833	108+859	108+935	109+041	109+172	109+373
BC Stn.	108+081	108+514	108+607	108+720	108+813	108+844	108+919	109+014	109+138	109+347
Arc. Len.	53	50	58	36	31	26	31	55	68	51
EC Stn.	108+134	108+564	108+665	108+756	108+843	108+869	108+951	109+069	109+206	109+398
Radius	200	300	300	80	18	18	65	1000	3000	150
Angle	-15°	-9°	11°	26°	-98°	-81°	28°	3°	-1°	20°
Tangent	26	25	29	18	21	15	16	28	34	26
Da, a=100	29°	19°	19°	72°	318°	318°	88°	6°	2°	38°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
108+200.00	252	0	546	127	766		355
108+400.00	232	0	728	121	238		355
108+600.00	294	0	617	1028	1219		328
108+800.00	672	0	692	1308	3056		442
109+000.00	520	0	694	321	903		328
109+200.00	661	0	1119	478	1367		355
Pg. Tot.	2632	0	4397	3383	7549		2162
Cum. Tot.	49152	12881	97856	34729	194597		46489

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
108+363.45	450	9.00	4.00	5.00	111
109+045.41	500	9.00	4.00	5.00	78
109+324.63	500	9.00	4.00	5.00	69

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

POC Mountainous Terrain
Decrease Design Speed To 30km/hr
Sign Accordingly

POC Mountainous Terrain
Decrease Design Speed To 30km/hr
Sign Accordingly

Lyr1 Gnd: OB
Lyr2 Gnd: C1 TA C1 C2
Lyr3 Gnd:
Fill: C1 TA F2 C1 C2
Tmpl: 5M

Mass Haul (Cu. m.)

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 109+128.72 to 110+408.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Historic Sites
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- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C231	C232	C233	C234	C235	C236	C237	C238	C239	C240	C241
IP Stn.	109+172	109+373	109+502	109+628	109+783	109+902	109+997	110+075	110+110	110+155	110+335
BC Stn.	109+138	109+347	109+475	109+590	109+753	109+875	109+975	110+058	110+086	110+129	110+310
Arc. Len.	68	51	53	68	59	52	45	28	34	51	49
EC Stn.	109+206	109+398	109+528	109+658	109+812	109+928	110+020	110+085	110+120	110+180	110+359
Radius	3000	150	200	65	100	1300	300	18	18	85	100
Angle	-1°	20°	15°	-60°	34°	-2°	-9°	89°	108°	-35°	-28°
Tangent	34	26	27	37	30	26	22	18	25	26	25
Da, a=100	2°	38°	29°	88°	57°	4°	19°	318°	318°	67°	57°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
109+200.00	661	0	1119	478	1367		355
109+400.00	643	0	1014	129	1258		328
109+600.00	570	0	715	433	1224		355
109+800.00	637	0	828	140	1921		355
110+000.00	847	0	2092	2757	4201		449
110+200.00	547	0	1338	272	558		355
110+400.00	659	0	455	792	1997		368
110+600.00							
Pg. Tot.	4565	0	7562	5000	12526		2565
Cum. Tot.	53056	12881	104299	39252	205755		48699

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
109+324.63	500	9.00	4.00	5.00	69
109+508.16	450	8.00	4.00	4.00	90
109+857.53	450	8.00	3.85	4.15	72
109+974.84	500	8.00	4.00	4.00	90
110+058.63	500	13.00	4.00	9.00	108
110+133.63	500	18.00	8.00	10.00	105
110+206.63	500	9.00	5.00	4.00	111
110+346.95	500	9.00	5.00	4.00	102

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
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C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
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GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Page 27 of 43

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 110+152.72 to 111+432.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Cut / Fill limits
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- Culverts
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- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C240	C241	C242	C243	C244	C245	C246	C247	C248	C249	C250	C251	C252
IP Stn.	110+155	110+335	110+491	110+623	110+709	110+776	110+804	110+887	111+064	111+116	111+213	111+304	111+342
BC Stn.	110+129	110+310	110+474	110+607	110+686	110+755	110+787	110+877	111+046	111+092	111+176	111+285	111+327
Arc. Len.	51	49	33	30	46	32	27	21	37	46	43	37	30
EC Stn.	110+180	110+359	110+507	110+638	110+732	110+786	110+814	110+897	111+083	111+138	111+219	111+322	111+357
Radius	85	100	45	125	150	18	18	100	140	80	20	110	200
Angle	-35°	-28°	43°	14°	17°	-101°	-86°	12°	-15°	-33°	124°	-19°	-9°
Tangent	26	25	18	15	23	22	17	10	19	24	37	19	15
Da, a=100	67°	57°	127°	46°	38°	318°	318°	57°	41°	72°	286°	52°	29°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
110+200.00	547	0	1338	272	558		355
110+400.00	659	0	455	792	1997		368
110+600.00	740	0	1465	7762	1459		418
110+800.00	604	0	1083	320	4886		408
111+000.00	793	0	1071	245	3903		371
111+200.00	386	0	500	371	5549		392
111+400.00	670	0	1307	173	1153		328
111+600.00							
Pg. Tot.	4400	0	7218	9935	19505		2641
Cum. Tot.	56250	12881	109724	48124	222706		50617

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
110+206.63	500	9.00	5.00	4.00	111
110+346.95	500	9.00	5.00	4.00	102
110+654.66	450	8.00	4.50	3.50	111
110+933.70	450	8.00	3.50	4.50	69
111+205.60	1000	19.00	6.00	13.00	75

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
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BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 111+176.72 to 112+456.72

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C250	C251	C252	C253	C254	C255	C256	C257	C258	C259	C260
IP Stn.	111+213	111+304	111+342	111+502	111+700	111+764	111+881	111+990	112+114	112+284	112+416
BC Stn.	111+176	111+285	111+327	111+474	111+684	111+733	111+856	111+964	112+089	112+257	112+389
Arc. Len.	43	37	30	56	31	56	49	52	50	53	53
EC Stn.	111+219	111+322	111+357	111+531	111+715	111+789	111+905	112+016	112+138	112+310	112+442
Radius	20	110	200	700	50	50	100	250	2000	450	200
Angle	124°	-19°	-9°	-5°	-35°	64°	-28°	12°	-1°	7°	-15°
Tangent	37	19	15	28	16	31	25	26	25	27	27
Da, a=100	286°	52°	29°	8°	115°	115°	57°	23°	3°	13°	29°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
111+200.00	386	0	500	371	5549		392
111+400.00	670	0	1307	173	1153		328
111+600.00	802	0	1761	371	2801	2450	375
111+800.00	664	0	1640	1003	1214		328
112+000.00	858	0	1767	636	1869		355
112+200.00	765	0	1075	268	2819		328
112+400.00	625	0	828	918	1363		355
Pg. Tot.	4770	0	8878	3739	16768		2460
Cum. Tot.	59964	12881	116796	51319	232772		52357

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
111+205.60	1000	19.00	6.00	13.00	75
111+521.60	450	9.00	3.75	5.25	72
111+761.59	600	13.00	6.00	7.00	69
112+046.59	450	9.00	4.00	5.00	69
112+291.59	450	8.00	4.00	4.00	75
112+422.96	450	8.00	4.00	4.00	72

SOIL TYPES

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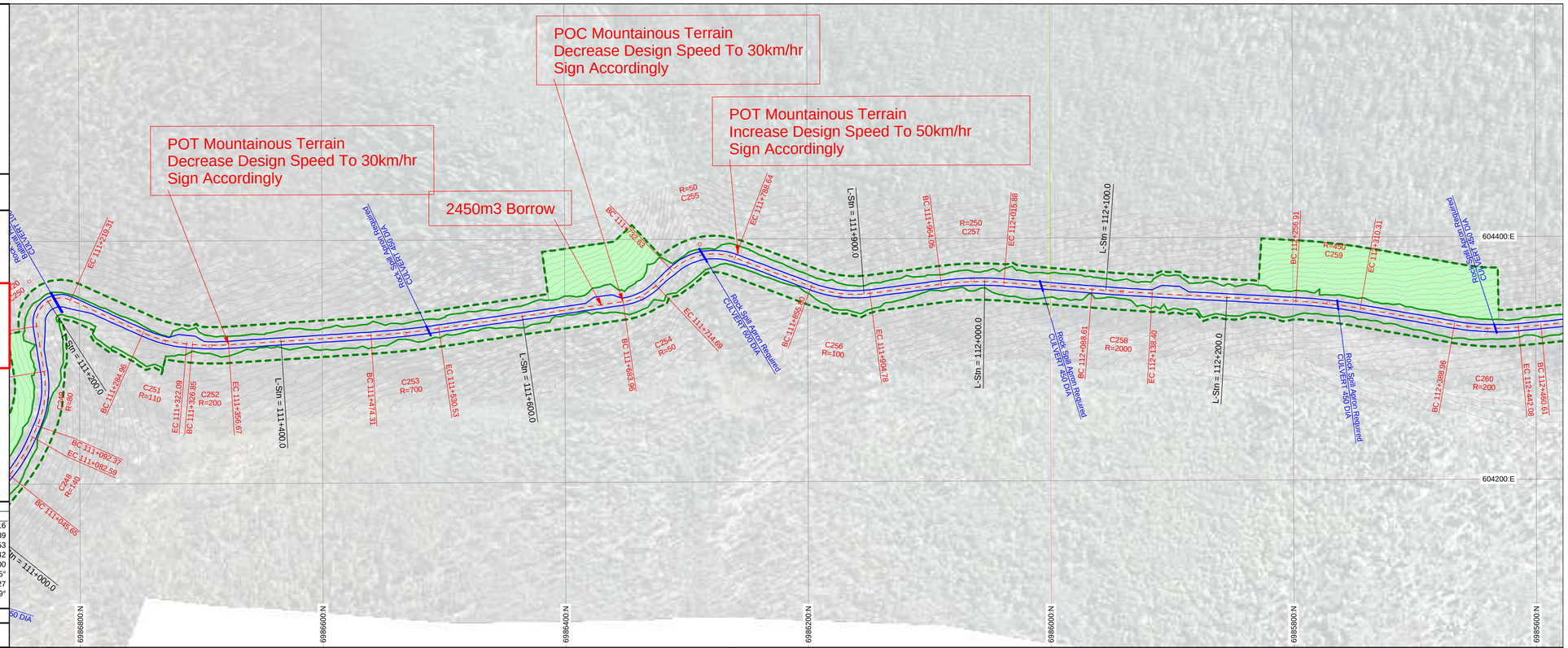
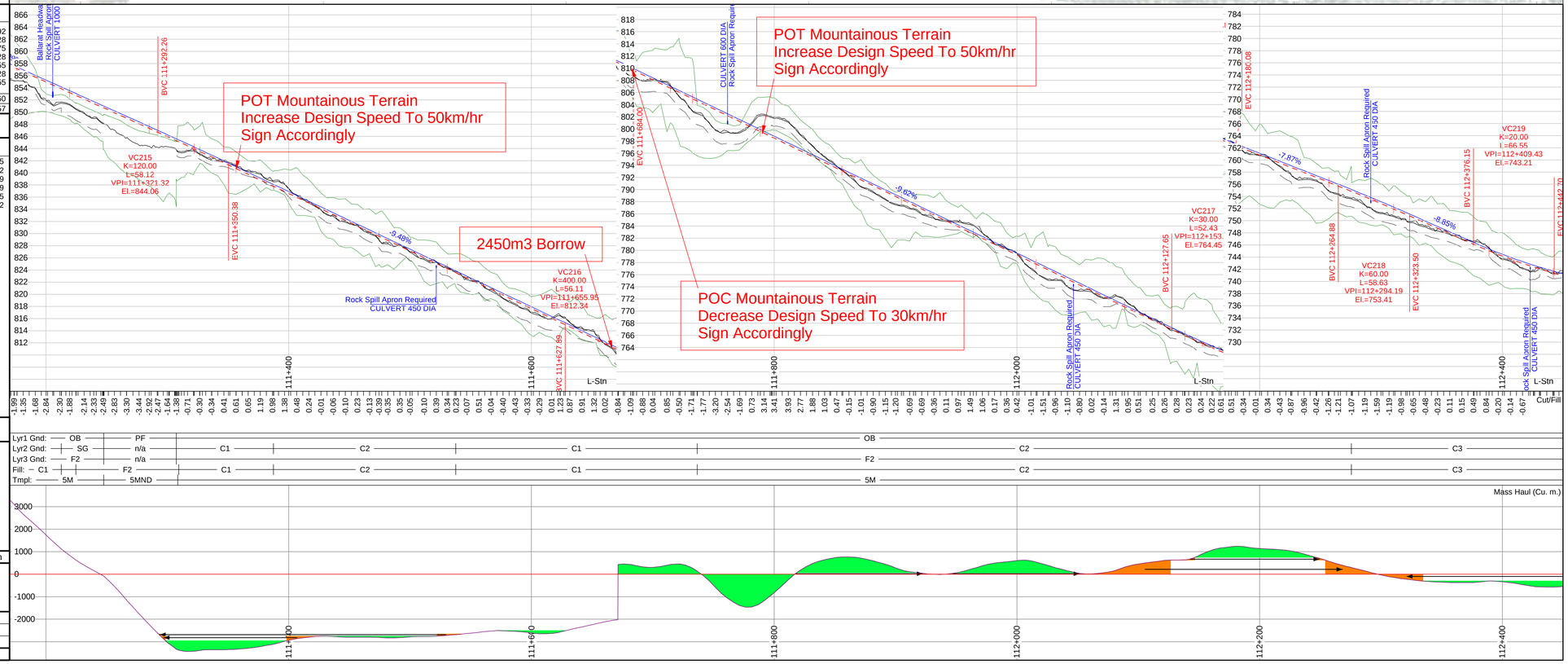
Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 112+200.72 to 113+480.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

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- Profile Subgrade
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- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C259	C260	C261	C262	C263	C264	C265	C266
IP Stn.	112+284	112+416	112+528	112+731	112+883	113+027	113+086	113+335
BC Stn.	112+257	112+389	112+461	112+662	112+858	112+983	113+063	113+307
Arc. Len.	53	53	135	136	50	80	44	55
EC Stn.	112+310	112+442	112+596	112+799	112+908	113+063	113+107	113+362
Radius	450	200	1000	500	700	80	80	150
Angle	7°	-15°	-8°	-16°	4°	57°	-31°	21°
Tangent	27	27	68	69	25	44	23	28
Da, a=100	13°	29°	6°	11°	8°	72°	72°	38°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
112+400.00	625	0	828	918	1363		355
112+600.00	664	0	1432	502	1054		328
112+800.00	588	0	870	2928	627	1500	328
113+000.00	624	5	1210	582	6973		355
113+200.00	729	0	996	389	2398		355
113+400.00	560	0	886	780	832		328
113+600.00							
Pg. Tot.	3788	5	6223	6099	13246		2048
Cum. Tot.	63127	12886	122190	56500	244655		54050

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
112+291.59	450	8.00	4.00	4.00	75
112+422.96	450	8.00	4.00	4.00	72
112+731.59	450	8.00	4.00	4.00	75
113+062.42	2400	30.00	15.00	15.00	130
113+322.51	450	10.00	5.00	5.00	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

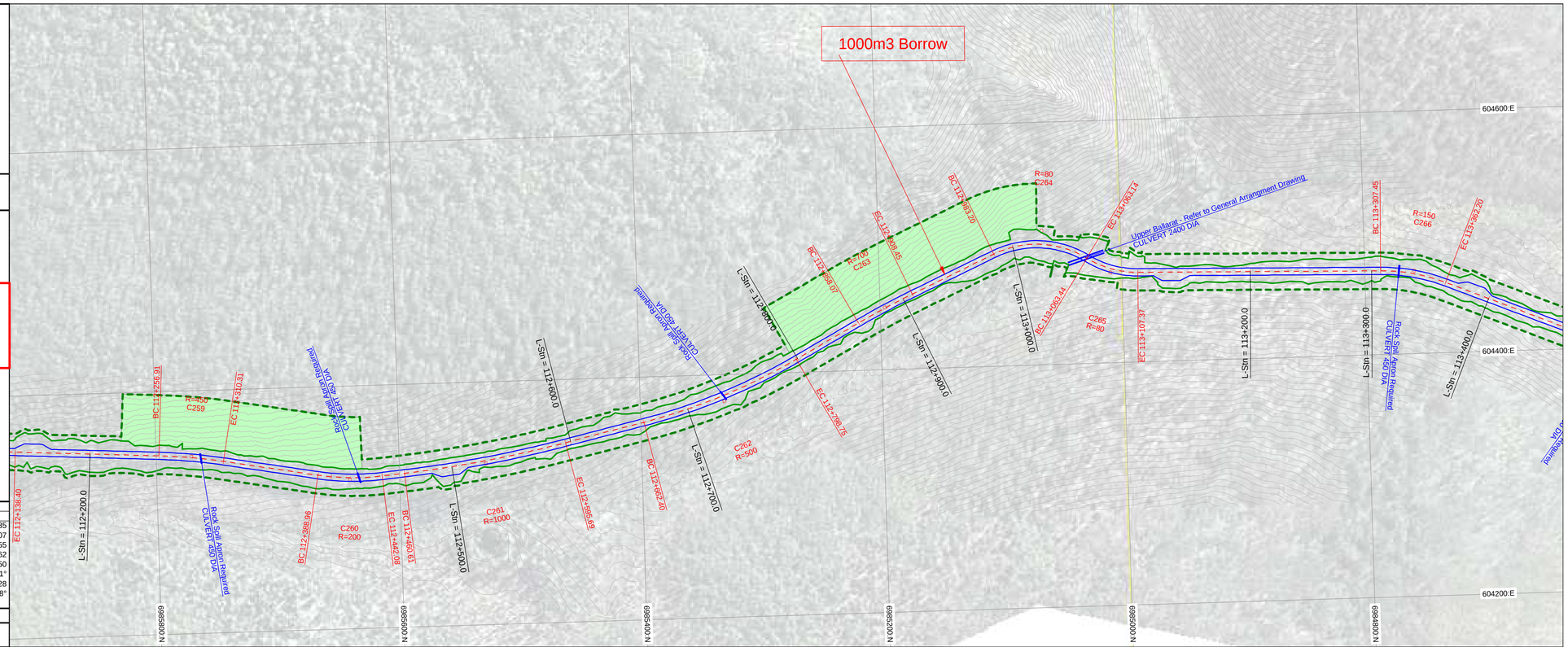
ROAD TEMPLATES

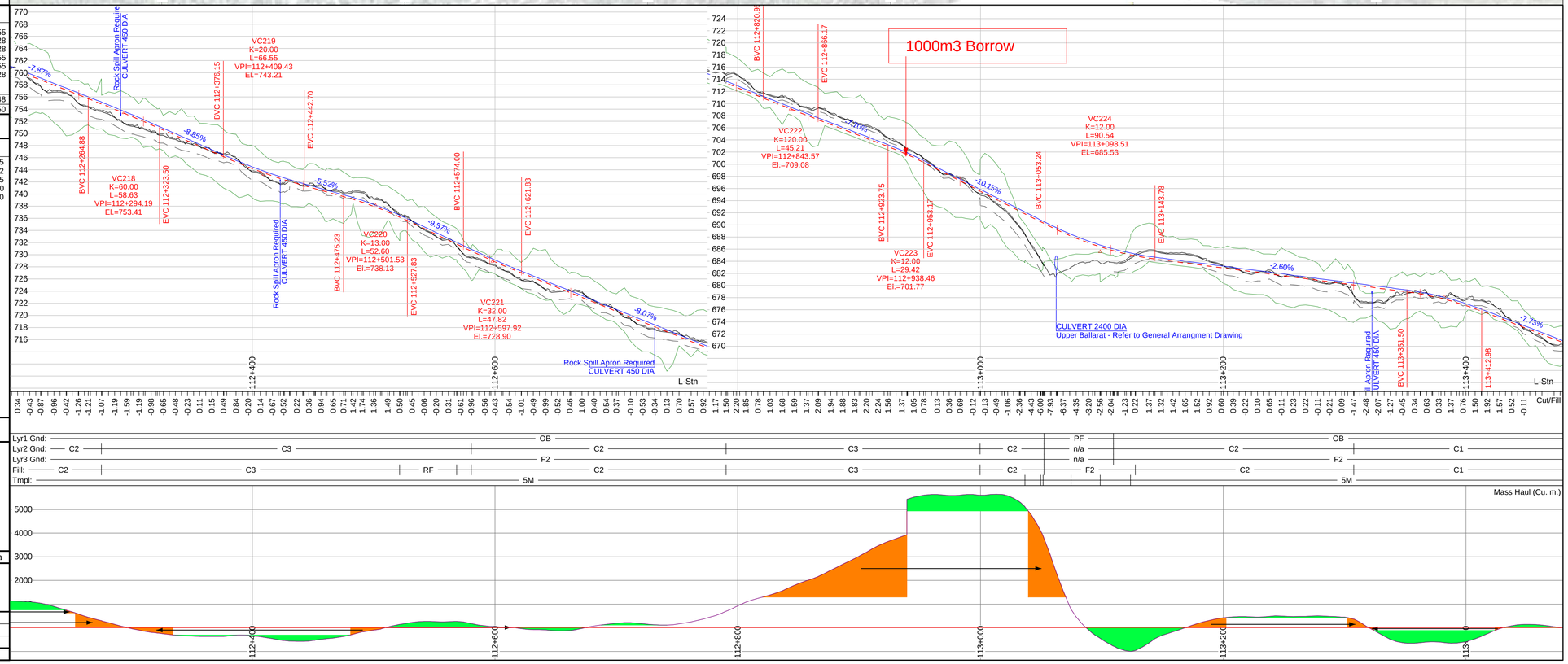
5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 113+224.72 to 114+504.72

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C266	C267	C268	C269	C270	C271
IP Stn.	113+335	113+632	113+804	113+955	114+236	114+403
BC Stn.	113+307	113+607	113+776	113+925	114+207	114+375
Arc. Len.	55	50	57	60	58	57
EC Stn.	113+362	113+657	113+833	113+985	114+266	114+432
Radius	150	600	200	200	2000	1000
Angle	21°	-5°	-16°	17°	-2°	-3°
Tangent	28	25	29	30	29	28
Da, a=100	38°	10°	29°	29°	3°	6°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
113+400.00	560	0	886	780	832		328
113+600.00	514	0	653	594	1376		328
113+800.00	620	0	670	411	1653		355
114+000.00	637	0	821	945	1487		355
114+200.00	622	0	885	1121	1214		328
114+400.00	650	0	646	805	2871		328
114+600.00							
Pg. Tot.	3603	0	4561	4657	9433		2021
Cum. Tot.	66170	12886	125865	60377	253257		55743

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
113+322.51	450	10.00	5.00	5.00	90
113+517.53	450	8.00	4.00	4.00	105
113+629.69	600	12.00	6.00	6.00	93
113+952.54	450	8.00	4.00	4.00	108
114+217.54	450	9.00	5.80	3.20	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 114+248.72 to 115+528.72

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C270	C271	C272	C273	C274	C275	C276
IP Stn.	114+236	114+403	114+579	114+865	115+007	115+302	115+382
BC Stn.	114+207	114+375	114+553	114+839	114+980	115+277	115+356
Arc. Len.	58	57	50	53	54	51	53
EC Stn.	114+266	114+432	114+604	114+892	115+034	115+328	115+409
Radius	2000	1000	750	500	2000	1600	450
Angle	-2°	-3°	-4°	-6°	2°	2°	-7°
Tangent	29	28	25	27	27	25	27
Da, a=100	3°	6°	8°	11°	3°	4°	13°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
114+400.00	650	0	646	805	2871		328
114+600.00	867	0	1413	1145	1262		355
114+800.00	543	0	497	520	1822		343
115+000.00	595	0	752	822	1363		339
115+200.00	624	0	849	1020	2079		328
115+400.00	719	0	882	568	1645		328
115+600.00							
Pg. Tot.	3999	0	5039	4880	11043		2021
Cum. Tot.	69519	12886	130258	64453	261428		57436

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
114+526.99	800	17.00	9.00	8.00	110
114+882.03	450	9.00	4.50	4.50	96
115+257.03	450	9.00	4.50	4.50	96

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
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ROAD TEMPLATES

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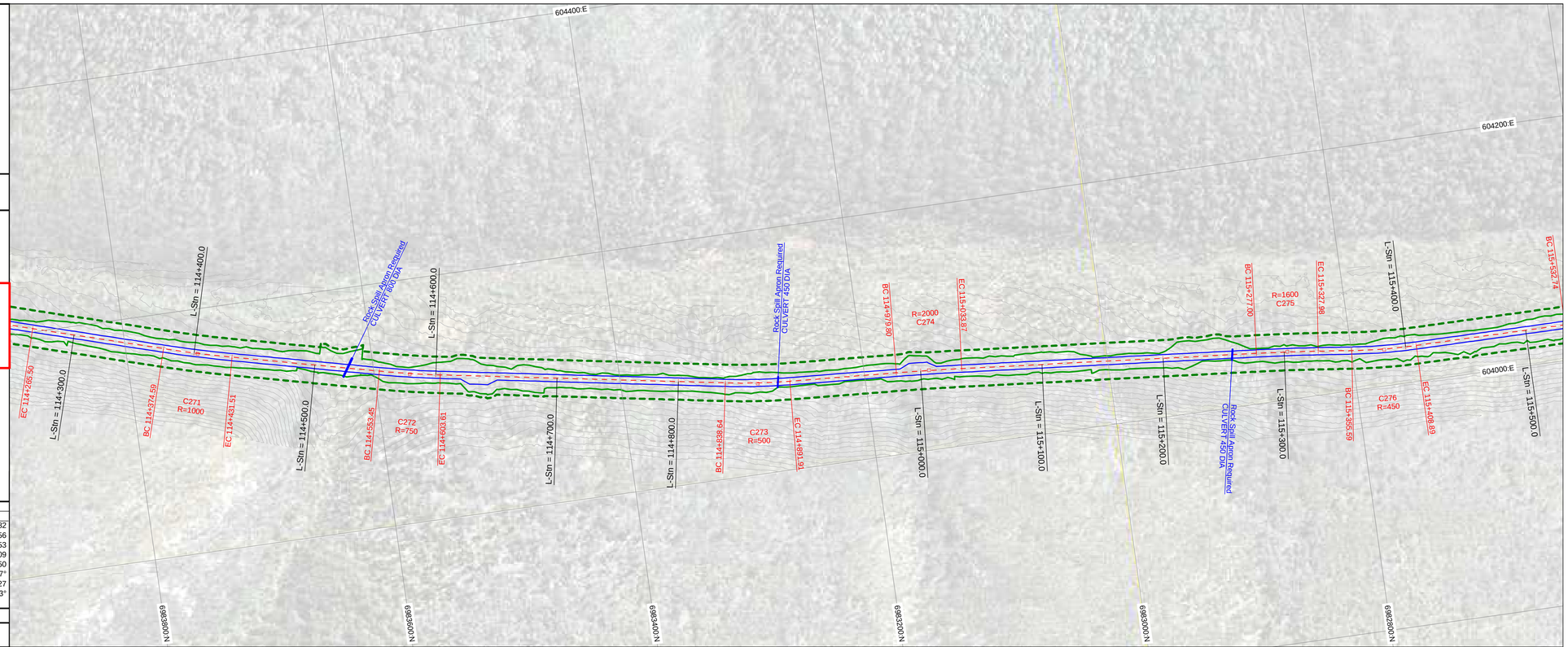
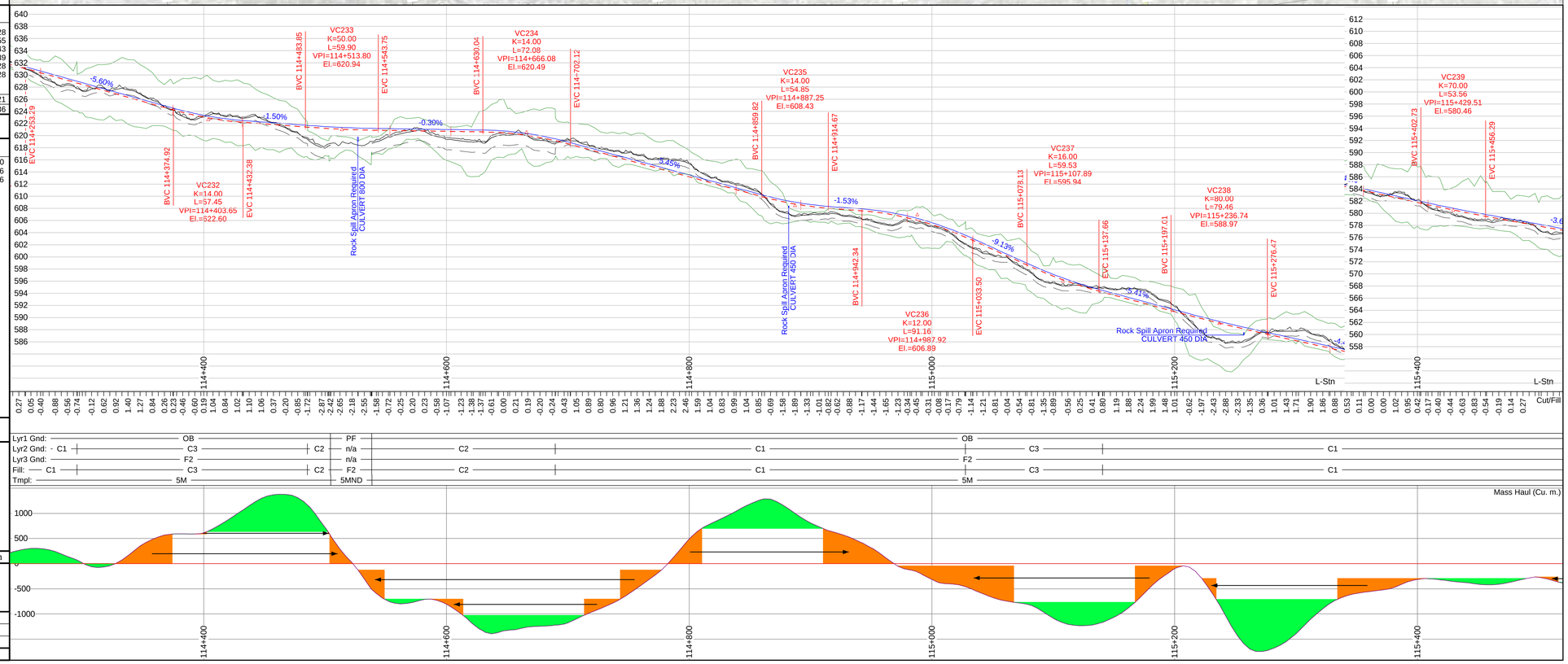
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 115+272.72 to 116+552.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C275	C276	C277	C278	C279	C280	C281	C282	C283	C284	C285	C286	C287	C288
IP Stn.	115+302	115+382	115+558	115+621	115+701	115+830	115+888	115+944	116+041	116+145	116+239	116+299	116+391	116+535
BC Stn.	115+271	115+358	115+533	115+596	115+676	115+803	115+870	115+918	116+010	116+118	116+224	116+276	116+367	116+512
Arc. Len.	51	53	51	51	50	52	30	52	63	52	30	44	48	44
EC Stn.	115+328	115+409	115+583	115+646	115+721	115+856	115+900	115+970	116+079	116+170	116+254	116+320	116+415	116+556
Radius	1600	450	420	280	465	110	35	200	500	100	100	100	200	80
Angle	2°	-7°	7°	-10°	-6°	27°	-49°	15°	7°	30°	-17°	25°	-14°	31°
Tangent	25	27	25	25	25	27	16	26	32	27	15	23	24	22
Da, a=100	4°	13°	14°	20°	12°	52°	164°	29°	11°	57°	57°	57°	29°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
115+400.00	719	0	882	568	1645		328
115+600.00	710	0	1056	1074	1302		355
115+800.00	382	0	479	22	5212	-1350	358
116+000.00	700	0	1899	1926	1940		355
116+200.00	540	0	1782	3228	1109		328
116+400.00	550	0	552	942	1388		355
116+600.00							
Pg. Tot.	3600	0	6649	7760	12597		2078
Cum. Tot.	72400	12886	136025	71644	272380		59186

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
115+582.03	450	8.00	4.50	3.50	93
115+898.42	1400	32.00	21.00	11.00	125
116+127.03	450	10.00	6.50	3.50	90
116+327.03	450	11.00	6.00	5.00	90
116+532.03	450	13.00	9.50	3.50	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 116+296.72 to 117+576.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C286	C287	C288	C289	C290	C291	C292	C293	C294	C295
IP Stn.	116+299	116+391	116+535	116+591	116+730	116+839	117+012	117+171	117+423	117+507
BC Stn.	116+276	116+367	116+512	116+576	116+700	116+815	116+986	117+144	117+395	117+480
Arc. Len.	44	48	44	31	60	49	52	52	56	52
EC Stn.	116+320	116+415	116+556	116+607	116+760	116+863	117+038	117+196	117+451	117+532
Radius	100	200	80	80	230	230	400	170	130	130
Angle	25°	-14°	31°	-23°	15°	-12°	-7°	18°	-25°	23°
Tangent	23	24	22	16	30	24	26	26	29	26
Da, a=100	57°	29°	72°	72°	25°	25°	14°	34°	44°	44°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
116+400.00							
116+600.00	550	0	552	942	1388		355
116+800.00	502	0	743	52	852		328
117+000.00	639	0	1097	897	1681		355
117+200.00	107	0	0	0	5744		355
117+400.00	545	0	763	518	3313		328
117+600.00	561	0	468	80	1660		328
Pg. Tot.	2904	0	3623	2488	14639		2048
Cum. Tot.	74754	12886	139096	73191	285631		60879

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
116+327.03	450	11.00	6.00	5.00	90
116+532.03	450	13.00	9.50	3.50	90
116+872.42	450	10.00	5.50	4.50	90
117+016.49	450	11.00	5.50	5.50	90
117+272.03	450	15.00	9.50	5.50	90
117+537.19	450	9.00	5.00	4.00	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

- 5M = 5m running surface with 0.5m deep by 1m wide ditch
- 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
- 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
- 5MND = 5m running surface with no ditch
- 5M1R = 5m running surface with 1.5m deep ditch on right
- BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
- GRSH = GRS Headwall (Refer To General Arrangement Drawings)
- Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 117+320.72 to 118+600.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Cut / Fill limits
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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C294	C295	C296	C297	C298	C299	C300	C301	C302	C303	C304	C305	C306
IP Stn.	117+423	117+507	117+686	117+782	117+882	118+021	118+122	118+171	118+219	118+282	118+373	118+434	118+503
BC Stn.	117+395	117+480	117+661	117+752	117+855	118+000	118+111	118+156	118+204	118+264	118+356	118+414	118+469
Arc. Len.	56	52	50	58	53	42	22	29	29	33	33	36	59
EC Stn.	117+451	117+532	117+711	117+810	117+908	118+042	118+133	118+185	118+234	118+298	118+389	118+451	118+528
Radius	130	130	130	130	180	210	100	60	80	50	250	50	50
Angle	-25°	23°	-22°	25°	-17°	-11°	-13°	28°	-21°	-38°	8°	-42°	68°
Tangent	29	26	25	29	27	21	11	15	15	17	16	19	34
Da, a=100	44°	44°	44°	44°	32°	27°	57°	95°	72°	115°	23°	115°	115°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
117+400.00	561	0	468	80	1660		328
117+600.00	652	0	942	224	2016		355
117+800.00	589	0	1409	477	712		355
118+000.00	511	9	955	84	862		328
118+200.00	0	112	172	0	2236		337
118+400.00	201	60	86	26	1662	11646	349
118+600.00	496	55	709	167	661		355
Pg. Tot.	3010	236	4741	1057	9811		2406
Cum. Tot.	77202	13122	143369	74168	293781		62958

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
117+537.19	450	9.00	5.00	4.00	90
117+772.03	450	9.00	4.75	4.25	90
117+977.03	450	10.00	5.50	4.50	90
118+259.63	450	11.00	5.80	5.20	90
118+422.64	450	11.00	5.00	6.00	90

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
C2 - Silty Sand Colluvium with
C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
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5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 118+344.72 to 119+624.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C304	C305	C306	C307	C308	C309	C310	C311	C312	C313	C314
IP Stn.	118+373	118+434	118+503	118+686	118+966	119+073	119+137	119+195	119+398	119+499	119+568
BC Stn.	118+356	118+414	118+469	118+612	118+937	119+055	119+112	119+167	119+367	119+459	119+553
Arc. Len.	33	36	59	144	57	35	51	55	60	75	29
EC Stn.	118+389	118+451	118+528	118+756	118+994	119+090	119+163	119+223	119+427	119+534	119+582
Radius	250	50	50	250	200	220	220	220	135	80	80
Angle	8°	-42°	68°	-33°	16°	-9°	13°	-14°	25°	-54°	21°
Tangent	16	19	34	74	29	18	26	28	30	41	15
Da, a=100	23°	115°	115°	23°	29°	26°	26°	26°	42°	72°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
118+400.00	201	60	86	26	1662	11646	349
118+600.00	496	55	709	167	661		355
118+800.00	894	0	1425	289	2555		328
119+000.00	789	6	1117	392	1236		355
119+200.00	242	91	447	257	976		355
119+400.00	212	93	329	629	617	-980	328
119+600.00	223	72	325	431	937		350
Pg. Tot.	3057	376	4438	2190	8644		2418
Cum. Tot.	79563	13383	147012	76166	300102		64673

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
118+422.64	450	11.00	5.00	6.00	90
118+884.91	450	8.00	3.50	4.50	90
119+278.35	450	8.00	4.00	4.00	90
119+508.35	450	8.00	3.50	4.50	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

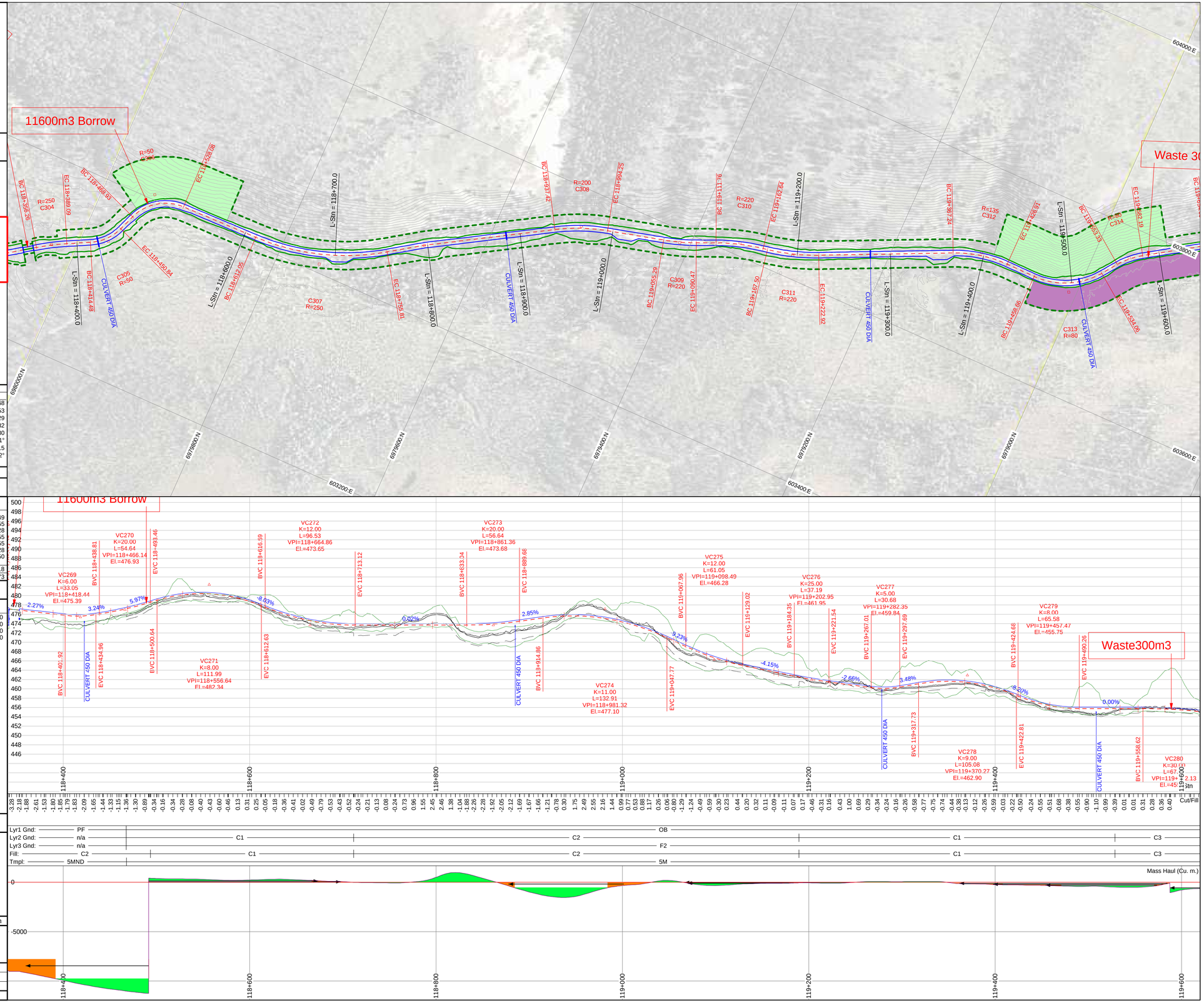
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn



GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 119+368.72 to 120+648.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
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- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C312	C313	C314	C315	C316	C317	C318	C319	C320	C321	C322	C323	C324	C325	C326
IP Stn.	119+398	119+499	119+568	119+688	119+762	119+902	119+960	120+030	120+140	120+201	120+270	120+322	120+376	120+488	120+558
BC Stn.	119+367	119+459	119+553	119+655	119+737	119+876	119+930	120+000	120+125	120+185	120+252	120+302	120+362	120+465	120+539
Arc. Len.	60	75	29	51	50	51	50	52	30	45	30	38	31	30	35
EC Stn.	119+427	119+534	119+582	119+705	119+786	119+927	119+980	120+052	120+155	120+229	120+282	120+341	120+393	120+494	120+575
Radius	135	80	80	125	150	180	90	90	100	100	45	45	100	80	65
Angle	25°	-54°	21°	23°	-19°	16°	32°	-33°	17°	-26°	-38°	48°	-18°	-21°	31°
Tangent	30	41	15	26	25	26	26	27	15	23	16	20	16	15	18
Da, a=100	42°	72°	72°	46°	38°	32°	64°	64°	57°	57°	127°	127°	57°	72°	88°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
119+400.00	212	93	329	629	617	-980	328
119+600.00	223	72	325	431	937		350
119+800.00	218	149	646	696	144		333
120+000.00	80	30	42	3	1765		355
120+200.00	584	5	779	13	1324		362
120+400.00	280	153	1322	142	1466		353
120+600.00	278	124	869	77	997		330
Pg. Tot.	1876	626	4313	1990	7250		2410
Cum. Tot.	81003	13844	150670	77096	305798		66405

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
119+508.35	450	8.00	3.50	4.50	90
119+733.35	450	8.00	3.50	4.50	90
119+883.35	450	10.00	3.50	6.50	90
120+054.89	450	9.00	4.00	5.00	90
120+273.35	450	9.00	4.75	4.25	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
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- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

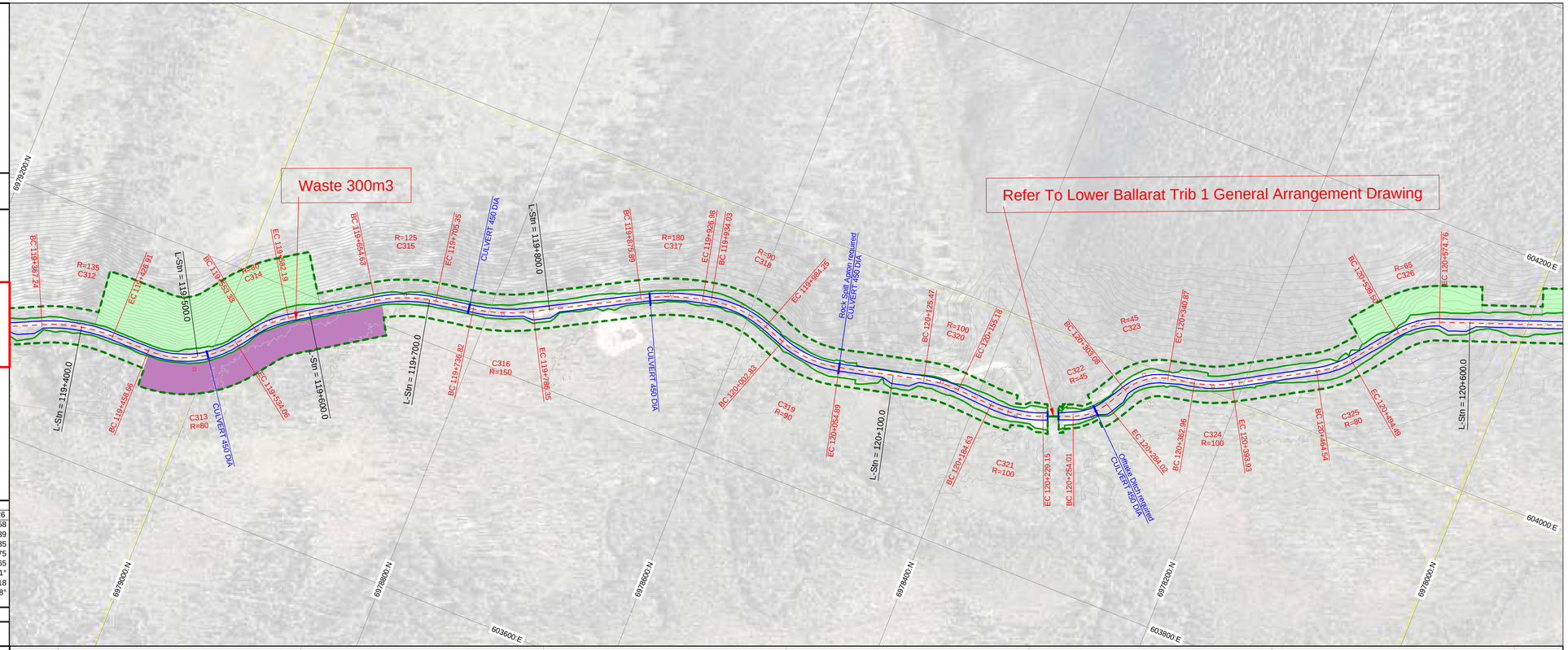
Surfacing depth = 0.3m

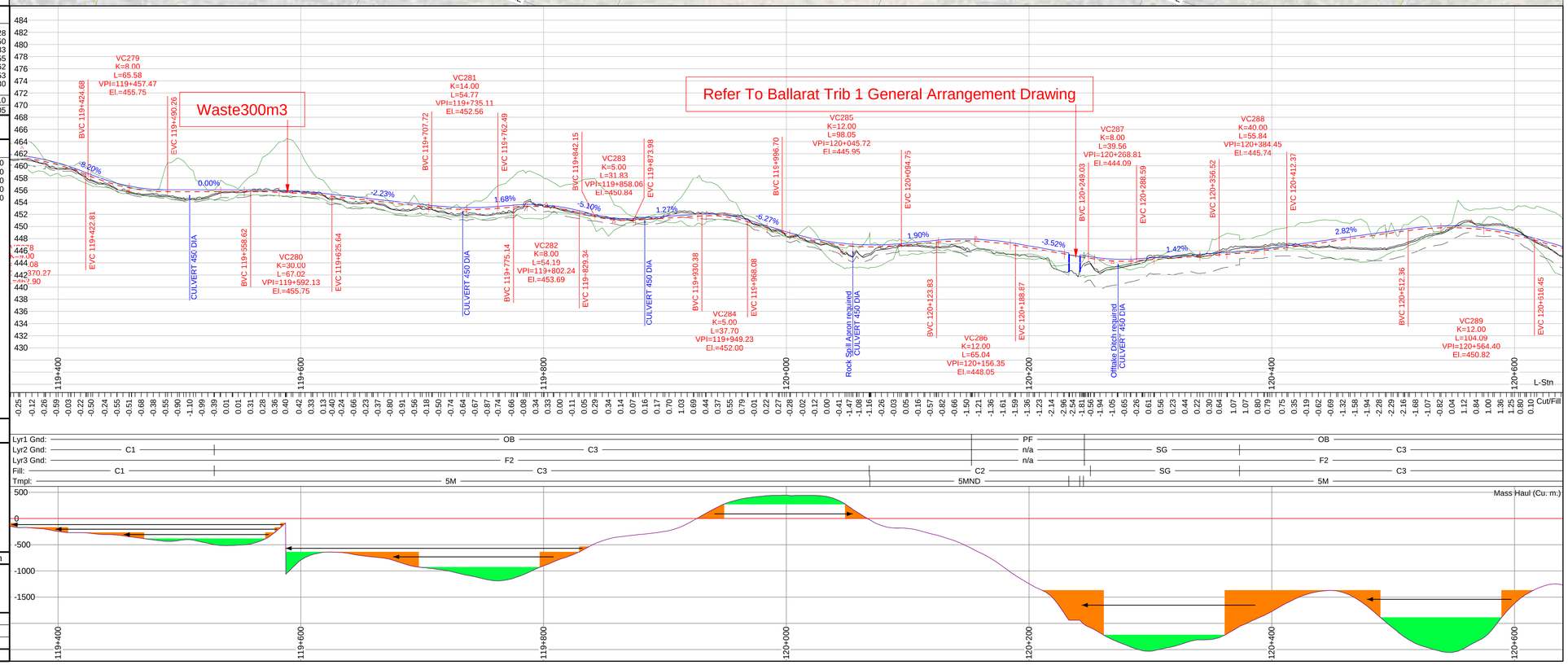
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 120+392.72 to 121+672.72

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C324	C325	C326	C327	C328	C329	C330	C331	C332	C333	C334	C335	C336	C337	C338
IP Stn.	120+379	120+486	120+555	120+737	120+801	120+901	120+988	121+141	121+188	121+251	121+369	121+425	121+501	121+563	121+673
BC Stn.	120+363	120+465	120+539	120+711	120+785	120+875	120+972	121+121	121+178	121+226	121+340	121+401	121+485	121+548	121+657
Arc. Len.	31	30	35	46	32	51	31	29	30	50	50	50	31	36	32
EC Stn.	120+394	120+495	120+574	120+760	120+817	120+926	121+003	121+155	121+202	121+276	121+390	121+452	121+516	121+584	121+689
Radius	100	80	65	185	250	170	100	60	75	260	220	720	150	80	100
Angle	-18°	-21°	31°	14°	-7°	17°	-18°	-28°	23°	-11°	13°	4°	-12°	26°	-18°
Tangent	16	15	18	23	16	26	16	15	15	25	25	25	16	18	16
Da, a=100	57°	72°	88°	31°	23°	34°	57°	95°	76°	22°	26°	8°	38°	72°	57°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
120+400.00							
120+600.00	280	153	1322	142	1466		353
120+800.00	278	124	869	77	997		330
121+000.00	252	103	572	6	760		328
121+200.00	379	24	57	162	8427	-3320	355
121+400.00	937	196	1087	4135	3332		328
121+600.00	308	290	2654	2895	21		328
121+800.00	333	283	2362	2416	322		355
Pg. Tot.	2767	1173	8924	9833	15325		2376
Cum. Tot.	83212	14740	157402	86711	318660		68098

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
120+751.63	600	8.00	3.50	4.50	84
121+063.35	450	14.00	6.25	7.75	90
121+194.64	1000	27.00	11.00	16.00	80
121+498.35	450	11.00	3.50	7.50	108

SOIL TYPES

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- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
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ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
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BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

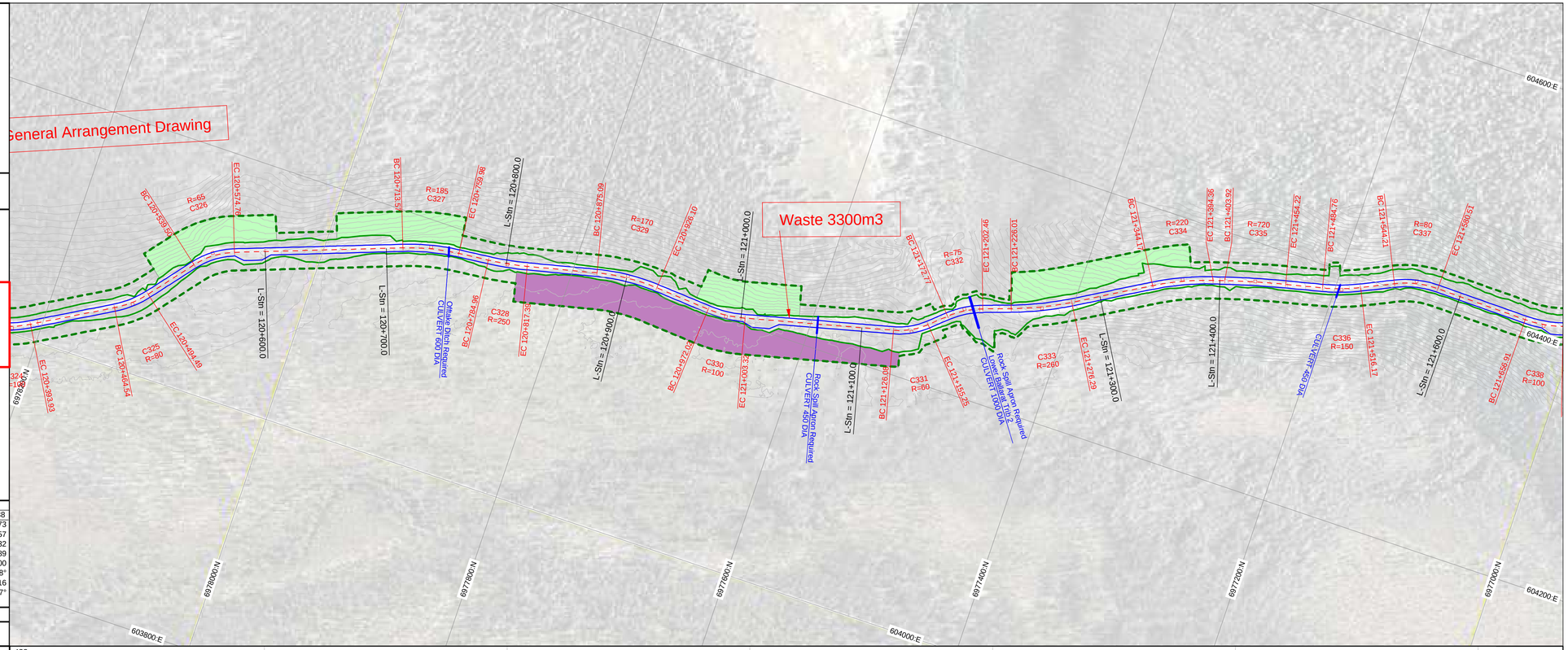
Surfacing depth = 0.3m

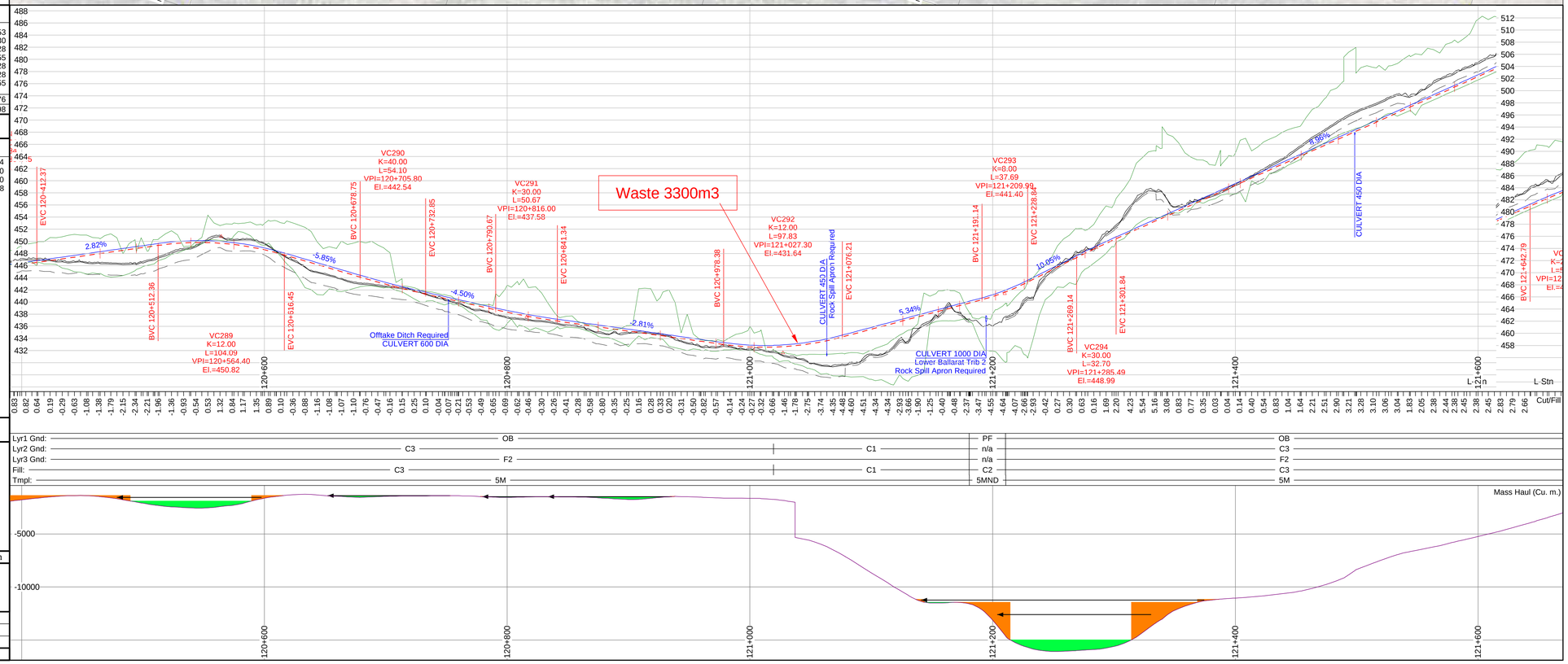
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng.	March 2017

Plot Date:17/03/22 Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 121+416.72 to 122+696.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
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- Cut / Fill limits
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- Historic Sites
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- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C335	C336	C337	C338	C339	C340	C341	C342	C343	C344	C345	C346
IP Stn.	121+429	121+501	121+563	121+673	121+761	121+886	122+065	122+161	122+266	122+336	122+532	122+656
BC Stn.	121+404	121+485	121+544	121+657	121+731	121+862	122+037	122+135	122+220	122+321	122+498	122+639
Arc. Len.	50	31	36	32	59	49	56	51	80	30	65	34
EC Stn.	121+454	121+516	121+581	121+689	121+790	121+911	122+093	122+186	122+300	122+351	122+563	122+672
Radius	720	150	80	100	500	600	300	300	65	65	100	65
Angle	4°	-12°	26°	-18°	7°	5°	-11°	-10°	71°	-26°	37°	-30°
Tangent	25	16	18	16	29	25	28	25	46	15	33	17
Da, a=100	8°	38°	72°	57°	11°	10°	19°	19°	88°	88°	57°	88°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
121+600.00							
121+800.00	333	283	2362	2416	322		355
122+000.00	412	210	1353	268	1191		328
122+200.00	401	200	1167	933	2185		355
122+400.00	297	133	993	187	1507		330
122+600.00	244	119	452	0	467		355
122+800.00	252	138	803	44	720		331
Pg. Tot.	1939	1082	7130	3849	6393		2053
Cum. Tot.	84818	15540	162170	88144	324731		69797

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
121+498.35	450	11.00	3.50	7.50	108
121+753.35	450	7.31	3.55	3.76	99
122+033.35	450	8.00	3.70	4.30	90
122+293.35	450	8.38	3.89	4.49	69
122+407.65	500	10.00	4.50	5.50	86

SOIL TYPES

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- C4 - C2 with 100% Cut
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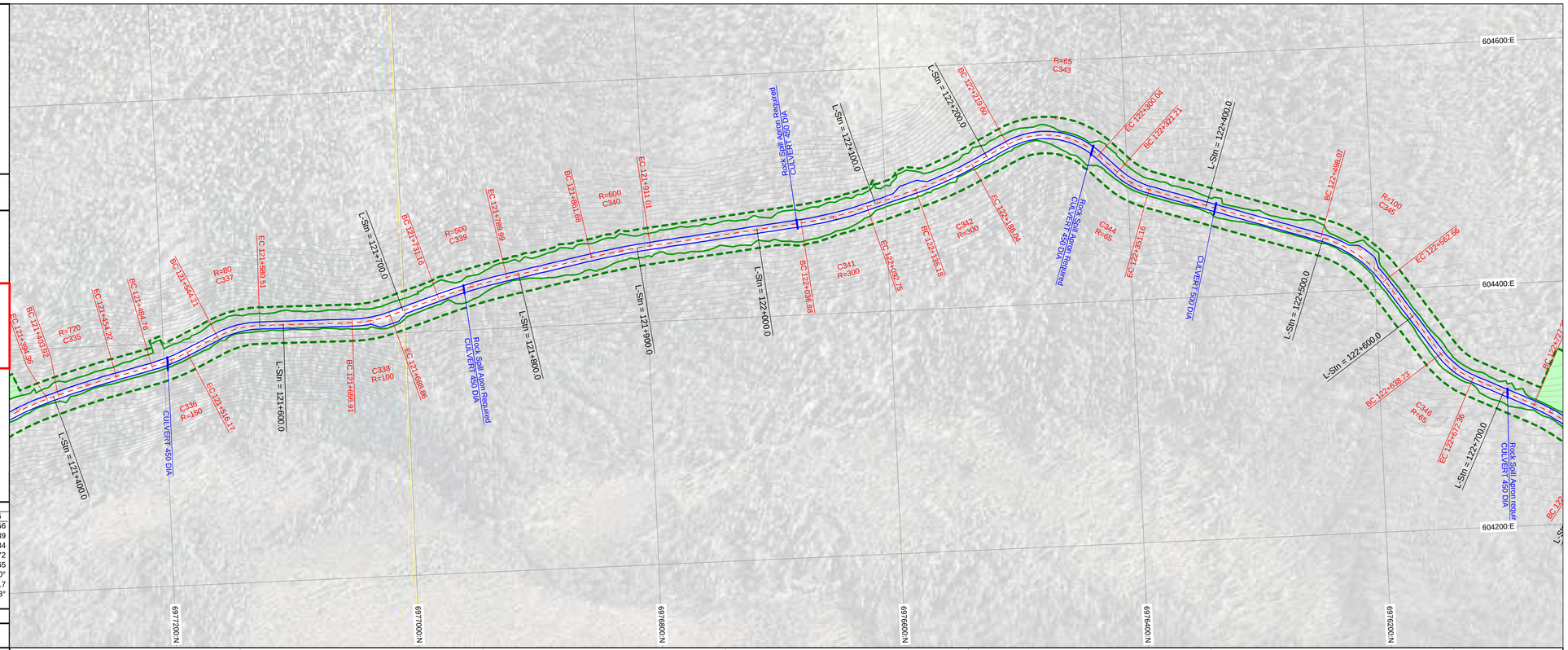
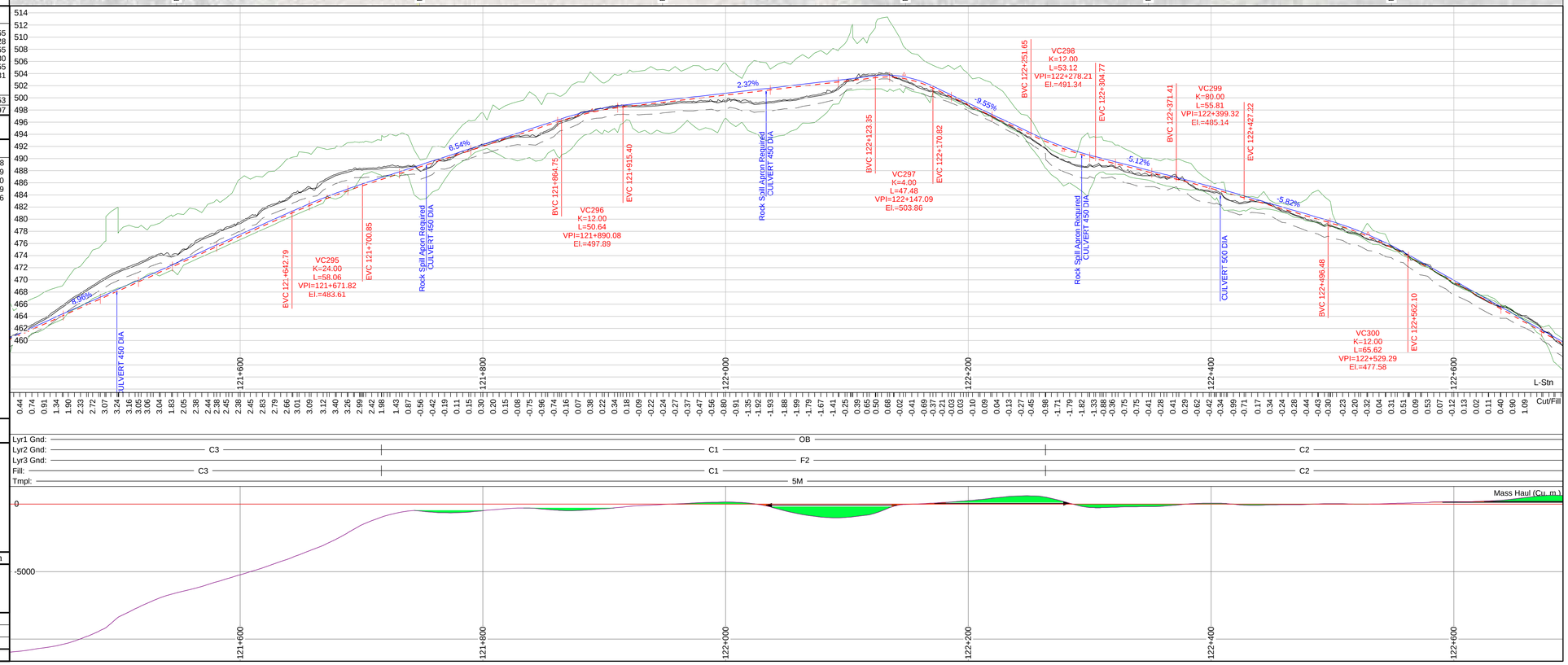
Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 39 of 43	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng.	March 2017
Plot Date:17/03/22	Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn		

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 122+440.72 to 123+720.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

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- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
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- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C345	C346	C347	C348	C349	C350	C351	C352	C353
IP Stn.	122+532	122+656	122+742	122+849	123+004	123+231	123+404	123+530	123+631
BC Stn.	122+498	122+639	122+727	122+793	122+932	123+184	123+379	123+504	123+584
Arc. Len.	65	34	30	92	108	86	50	52	86
EC Stn.	122+563	122+672	122+757	122+885	123+041	123+270	123+429	123+556	123+670
Radius	100	65	155	65	65	80	445	850	90
Angle	37°	-30°	11°	-82°	96°	62°	-6°	-4°	55°
Tangent	33	17	15	56	72	48	25	26	46
Da, a=100	57°	88°	37°	88°	88°	72°	13°	7°	64°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
122+600.00	252	138	803	44	720		331
122+800.00	593	19	1977	2382	923		396
123+000.00	81	48	102	0	3931		339
123+200.00	0	10	503	0	409		328
123+400.00	0	5	182	0	360		328
123+600.00	0	13	189	0	2681	4780	355
123+800.00							
Pg. Tot.	926	234	3757	2426	9025		2076
Cum. Tot.	85492	15636	165124	90526	333035		71542

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
122+703.35	450	8.00	4.00	4.00	66
122+993.35	450	12.00	5.00	7.00	66
123+248.35	450	8.00	4.50	3.50	90
123+679.78	450	16.00	7.00	9.00	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 123+464.72 to 124+744.72

ROAD DESIGN SPECIFICATIONS
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C352	C353	C354	C355	C356	C357	C358
IP Stn.	123+530	123+631	123+740	123+793	123+856	123+968	124+552
BC Stn.	123+504	123+584	123+724	123+776	123+842	123+943	124+521
Arc. Len.	52	86	31	34	29	49	62
EC Stn.	123+556	123+670	123+756	123+810	123+871	123+992	124+583
Radius	850	90	80	80	65	80	2700
Angle	-4°	55°	-22°	24°	-25°	-35°	1°
Tangent	26	46	16	17	15	25	31
Da, a=100	7°	64°	72°	72°	88°	72°	2°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
123+600.00	0	13	189	0	2681	4780	355
123+800.00	300	0	523	0	2832		330
124+000.00	505	0	983	0	649		328
124+200.00	513	0	733	0	869		342
124+400.00	535	0	779	0	1484		341
124+600.00	494	0	1205	1	530	-7610	328
124+800.00							
Pg. Tot.	2347	13	4411	1	9046		2023
Cum. Tot.	87839	15636	169346	90526	339399		73211

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
123+679.78	450	16.00	7.00	9.00	90
123+933.92	600	24.00	12.00	12.00	90
124+183.35	450	10.00	5.00	5.00	90
124+458.82	450	8.00	4.00	4.00	90
124+648.35	450	8.00	4.50	3.50	90

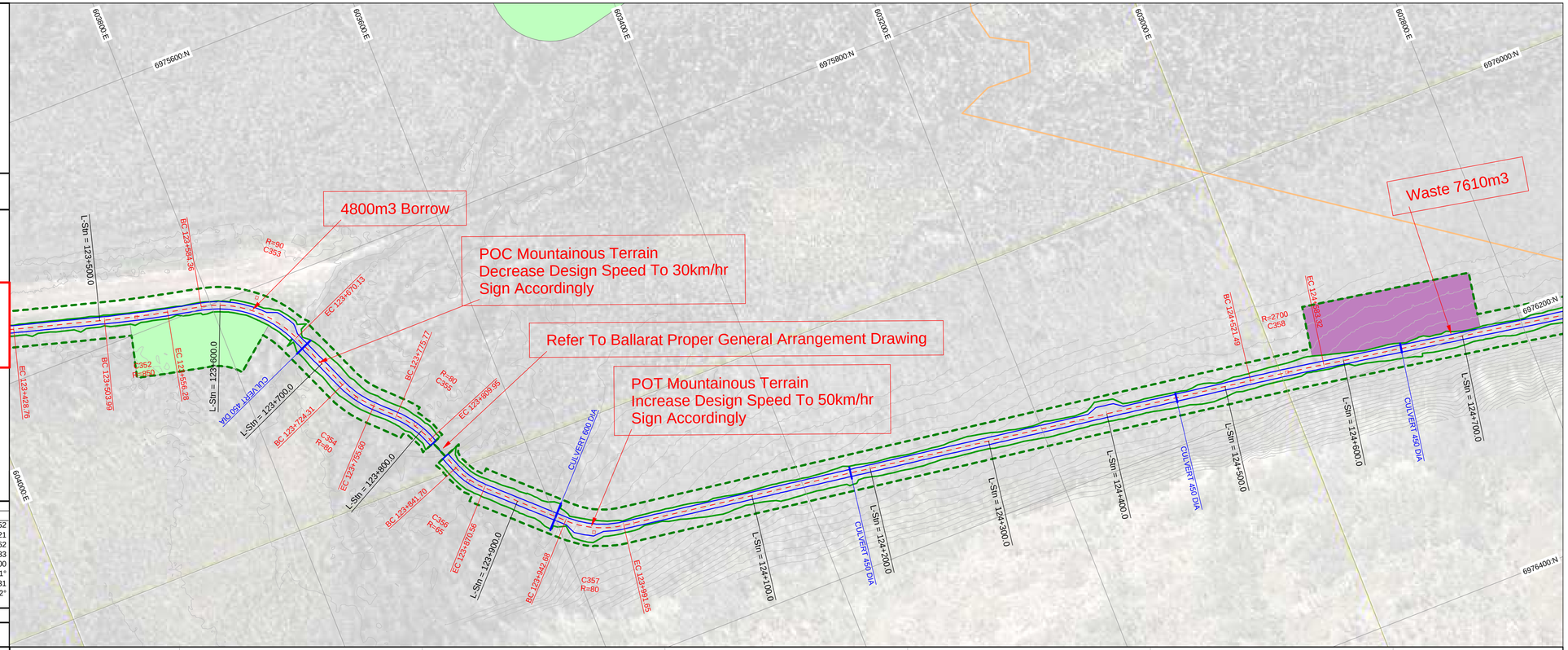
SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

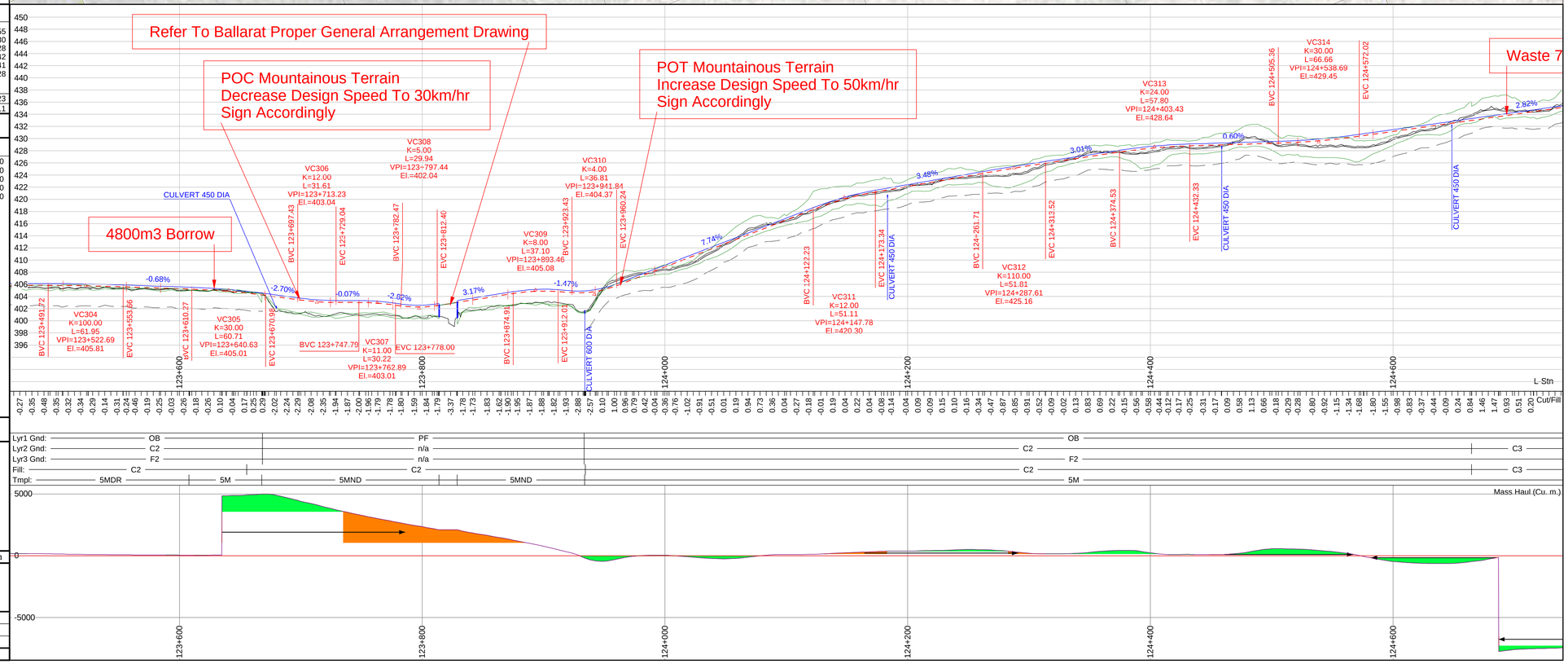
Revision	Description	Date	By	Approved	Revision

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng.		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 124+488.72 to 125+768.72

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C358	C359	C360	C361	C362	C363	C364	C365	C366	C367
IP Stn.	124+552	124+862	125+056	125+188	125+233	125+405	125+571	125+645	125+721	125+756
BC Stn.	124+521	124+834	124+998	125+173	125+218	125+394	125+556	125+633	125+710	125+747
Arc. Len.	62	55	115	29	29	21	31	25	23	19
EC Stn.	124+583	124+889	125+114	125+202	125+248	125+415	125+587	125+658	125+732	125+766
Radius	2700	380	920	350	120	250	225	600	80	80
Angle	1°	-8°	7°	-5°	14°	-5°	8°	2°	-16°	14°
Tangent	31	28	58	15	15	10	16	13	11	10
Da, a=100	2°	15°	6°	16°	48°	23°	25°	10°	72°	72°

EARTH WORK VOLUMES (Final Cubic Meters)

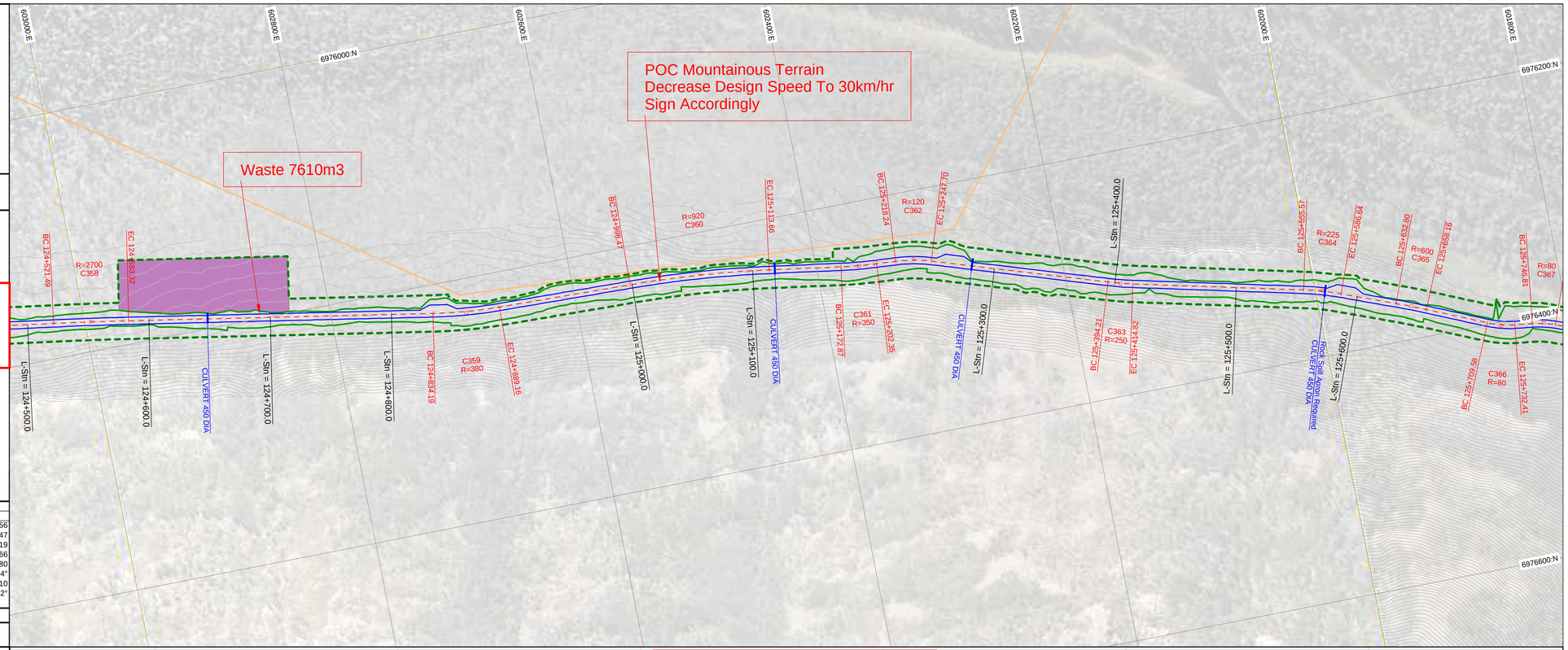
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
124+600.00	494	0	1205	1	530	-7610	328
124+800.00	655	0	1841	40	1395		355
125+000.00	623	0	4456	2140	230		328
125+200.00	792	0	2169	129	2278		355
125+400.00	657	0	1711	20	1667		353
125+600.00	674	0	3103	1793	3667		330
125+800.00							
Pg. Tot.	3894	0	14484	4122	9767		2048
Cum. Tot.	91239	15636	182626	94647	348636		74931

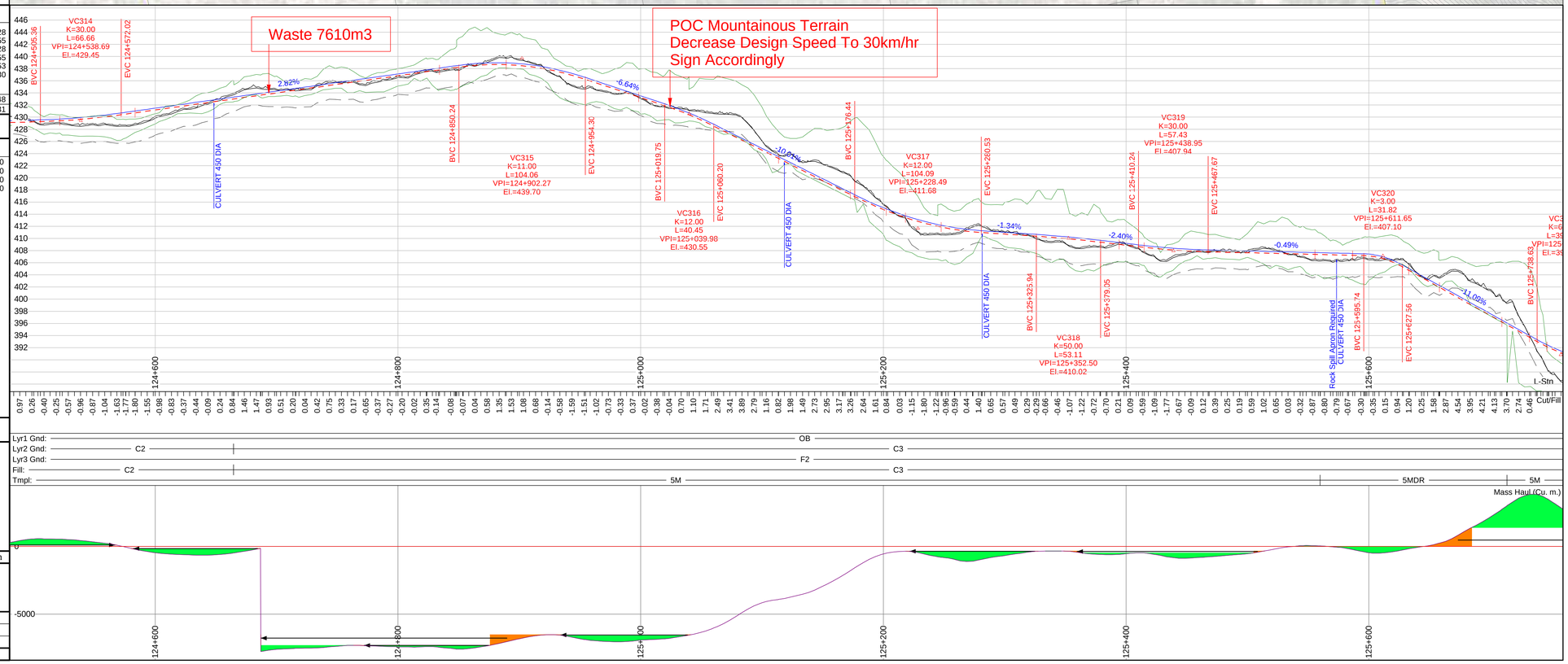
CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
124+648.35	450	8.00	4.50	3.50	90
125+118.35	450	9.16	5.70	3.46	90
125+281.37	450	9.25	5.78	3.46	90
125+573.35	450	9.00	5.00	4.00	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden SI - Silt C1 - Silty Sand Colluvium C2 - Silty Sand Colluvium with C3 - C1 with 100% Cut C4 - C2 with 100% Cut TA - Talus SG - Sand and Gravel TL - Tailings F1 - Weak Fractured Rock F2 - Strong Fractured Rock PF - Permafrost	5M = 5m running surface with 0.5m deep by 1m wide ditch 5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left 5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right 5MND = 5m running surface with no ditch 5M1R = 5m running surface with 1.5m deep ditch on right BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings) GRSH = GRS Headwall (Refer To General Arrangement Drawings) Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
Section 3
Geometric Alignment
Km 82.7 - 126.2

Page Stations: 125+512.72 to 126+792.72

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C364	C365	C366	C367	C368	C369	C370	C371	C372	C373	C374	C375	C376
IP Stn.	125+571	125+645	125+721	125+756	125+843	125+903	125+961	126+124	126+254	126+274	126+285	126+302	126+309
BC Stn.	125+556	125+633	125+710	125+747	125+840	125+883	125+949	126+109	126+245	126+271	126+276	126+291	126+307
Arc. Len.	31	25	23	19	6	39	23	31	17	5	14	16	4
EC Stn.	125+587	125+658	125+732	125+766	125+845	125+922	125+972	126+140	126+262	126+276	126+290	126+307	126+311
Radius	225	600	80	80	100	500	250	500	30	10	10	10	10
Angle	8°	2°	-16°	14°	3°	-5°	-5°	-4°	33°	-30°	-79°	-93°	-20°
Tangent	16	13	11	10	3	20	12	15	9	3	8	11	2
Da, a=100	25°	10°	72°	72°	57°	11°	23°	11°	191°	213°	213°	213°	213°

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
125+600.00	674	0	3103	1793	3667		330
125+800.00	574	0	828	0	2356		328
126+000.00	759	0	2106	41	1454		328
126+200.00	37	0	178	15	20		18
B 126+373.62							
Pg. Tot.	2043	0	6216	1849	7497		1003
Cum. Tot.	92608	15636	185739	94703	352467		75604

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
125+573.35	450	9.00	5.00	4.00	90
125+833.35	450	9.00	5.00	4.00	90
126+063.35	450	9.00	5.00	4.00	90

SOIL TYPES

OB - Overburden
SI - Silt
C1 - Silty Sand Colluvium
C2 - Silty Sand Colluvium with
C3 - C1 with 100% Cut
C4 - C2 with 100% Cut
TA - Talus
SG - Sand and Gravel
TL - Tailings
F1 - Weak Fractured Rock
F2 - Strong Fractured Rock
PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

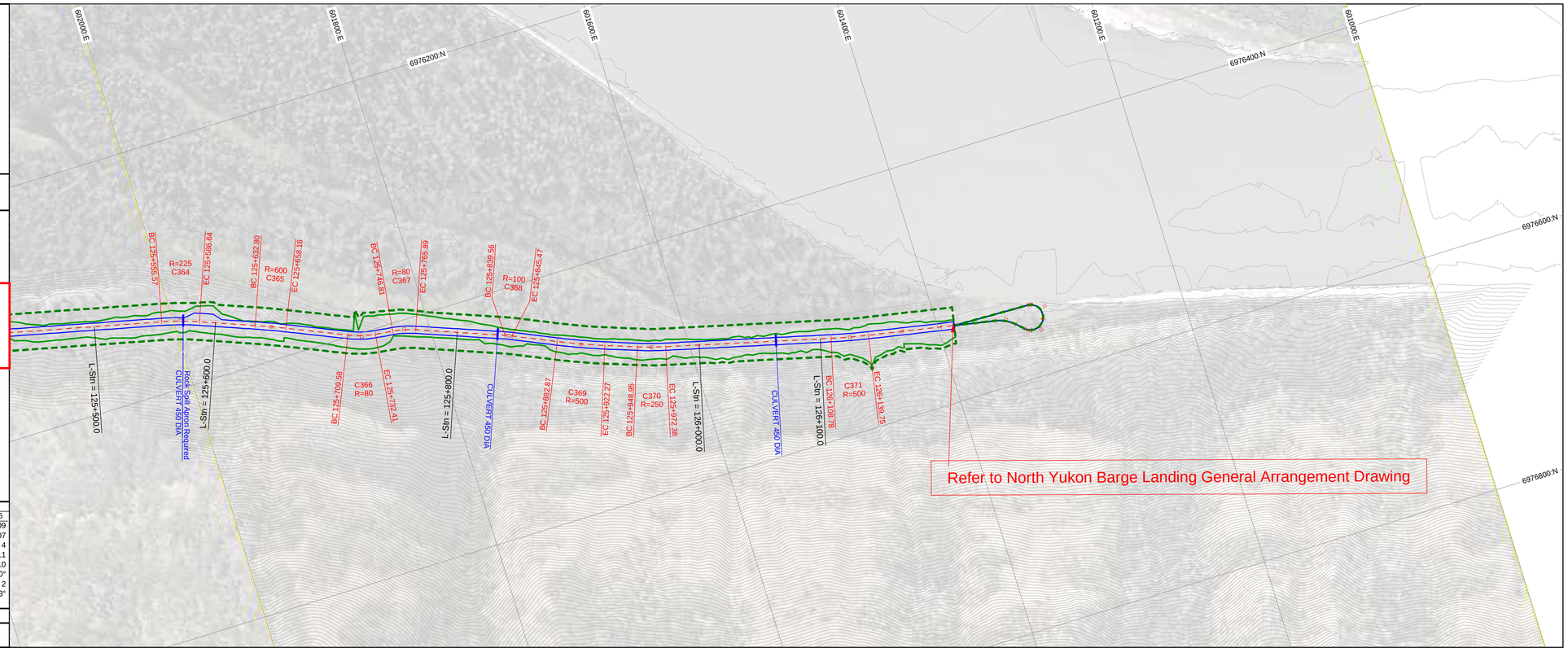
Surfacing depth = 0.3m

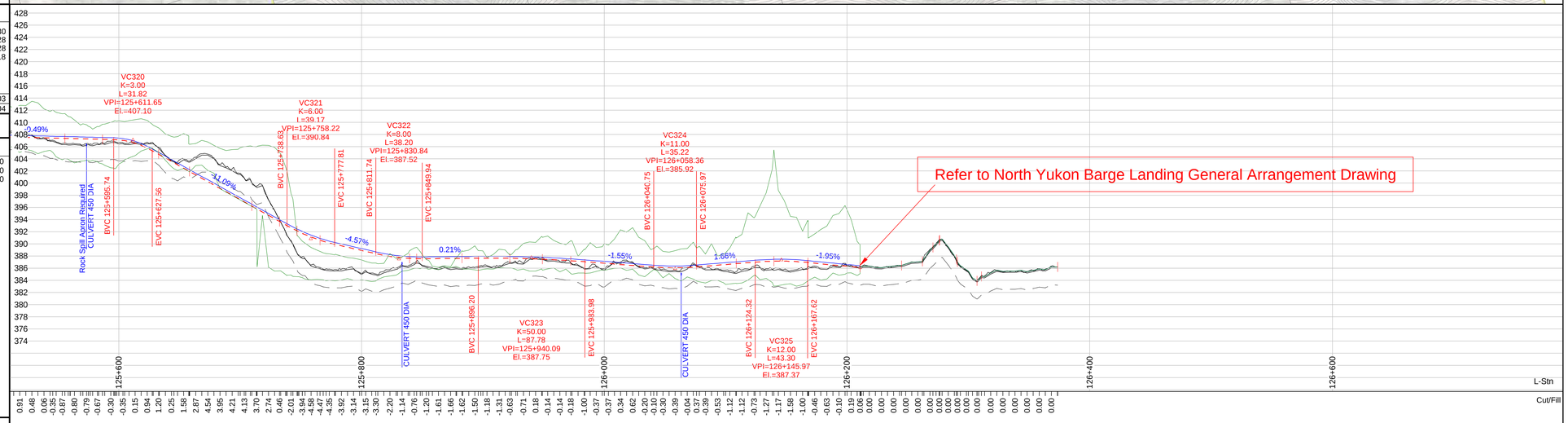
Revision	Description	Date	By	Approved	Revision

ONSITE Engineering Ltd.

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/22 | Design File Name: U:\Projects\1343\2\8\Section 3\RoadEng\Section 3.dsn





APPENDIX 31-A-XVI

Detailed Design Road Drawings

Part 4 of 5

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment
Km 126.2 - 129.8

Page Stations: 125719.49 to 126999.49

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C1
IP Stn.	126444
BC Stn.	126320
Arc. Len.	207
EC Stn.	126528
Radius	150
Angle	79
Tangent	124
Da, a=100	38

EARTH WORK VOLUMES (Final Cubic Meters)

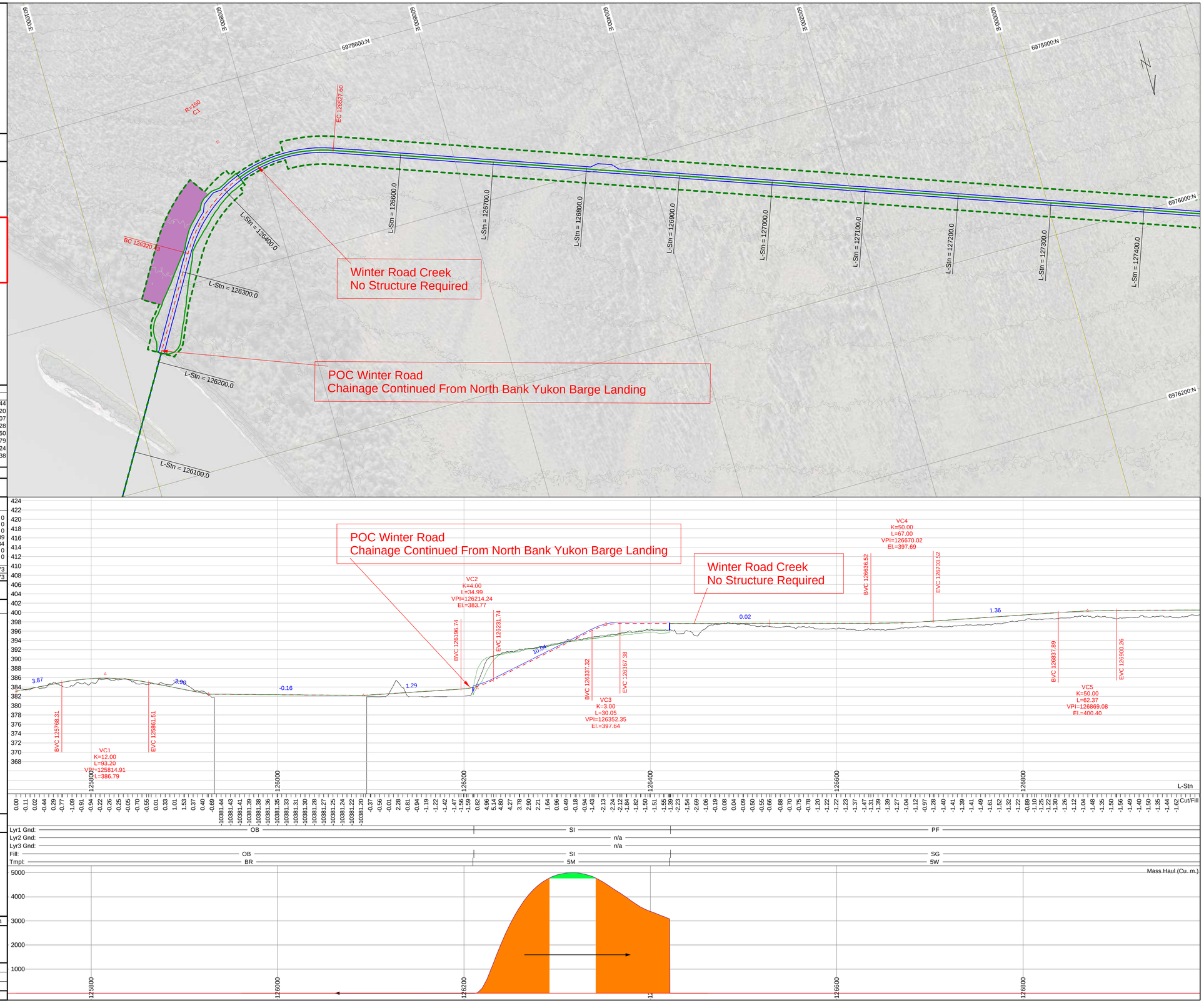
L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 125719.49							
B 125800.00	0	0	0	0	0		0
B 126000.00	0	0	0	0	0		0
B 126200.00	0	0	0	0	0		0
126400.00	666	5022	0	0	1627		339
B 126600.00	48	0	0	0	312	-3080	34
B 126800.00	0	0	0	0	0		0
B 127000.00	0	0	0	0	0		0
Pg. Tot.	714	5022	0	0	1938		373
Cum. Tot.	714	5022	0	0	1938		373

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
128139.24					

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

Revision	Description	Date	By	Approved	Revision



ONSITE Engineering Ltd.	Page 1 of 4	Survey By: See Notes Above — ---
		Design By: Matthew Dickie, EIT — March 2017
		Reviewed By: Jeremy Araki, P.Eng — March 2017
Plot Date:17/03/24	Design File Name: U:\Projects\1343\2\8\Winter Road\RoadEng\Coffee Winter Road.dsn	

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment
Km 126.2 - 129.8

Page Stations: 126743.49 to 128023.49

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C2
IP Stn.	127772
BC Stn.	127746
Arc. Len.	50
EC Stn.	127797
Radius	150
Angle	-19
Tangent	25
Da, a=100	38

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 126800.00	0	0	0	0	0		0
B 127000.00	0	0	0	0	0		0
B 127200.00	0	0	0	0	0		0
B 127400.00	0	0	0	0	0		0
B 127600.00	23	0	32	0	12		36
127800.00	221	0	397	0	216		354
128000.00	244	66	2294	0	646		328
128200.00							
Pg. Tot.	488	66	2723	0	874		718
Cum. Tot.	1202	5088	2723	0	2813		1090

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
128139.24					

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

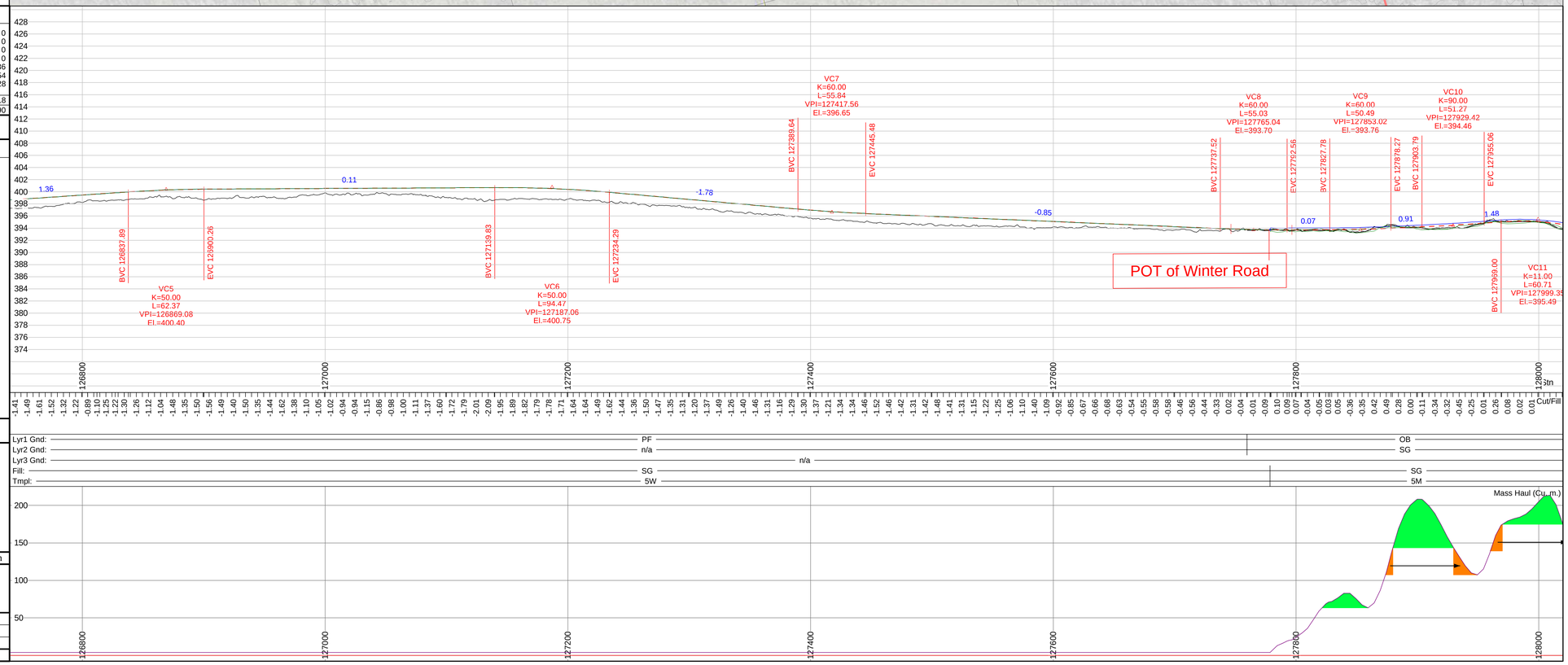
5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





ONSITE Engineering Ltd.	Page 2 of 4	Survey By: See Notes Above	---
		Design By: Matthew Dickie, EIT	March 2017
		Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/24 | Design File Name: U:\Projects\1343\2\8\Winter Road\RoadEng\Coffee Winter Road.dsn

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment
Km 126.2 - 129.8

Page Stations: 127767.49 to 129047.49

ROAD DESIGN SPECIFICATIONS	
Valley Bottom Design Speed: 50 km/h Min Curve Radius = 80m Mountainous Terrain Design Speed: 30 km/hr Min Curve Radius = 35m Avg. Stab. Road Width: 5.0m Max. Grade 10%	**Plan Scale 1:2000** **Profile Vert Scale 1:400** **Profile Horz Scale 1:2000** **Formated to Plot on 24"x36" Paper**

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C2	C3	C4	C5	C6	C7	C8
IP Stn.	127772	128308	128480	128578	128750	128834	128971
BC Stn.	127746	128279	128452	128542	128727	128816	128917
Arc. Len.	50	57	55	70	41	32	100
EC Stn.	127797	128336	128508	128611	128768	128849	129017
Radius	150	150	400	100	35	35	100
Angle	-19	22	8	40	-67	-53	57
Tangent	25	29	28	36	23	17	54
Da, a=100	38	38	14	57	164	164	57

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
127800.00							
128000.00	221	0	397	0	216		354
128200.00	244	66	2294	0	646		328
128400.00	220	0	0	0	3837		355
128600.00	193	21	0	0	3371		269
128800.00	120	0	0	0	2224		398
129000.00	280	0	3227	0	620	3500	328
129200.00	228	0	377	0	209		328
Pg. Tot.	1505	88	6294	0	11122		2411
Cum. Tot.	2243	5110	6327	0	13073		2820

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
128139.24	600	12.00	6.00	6.00	110
128284.18	600	10.00	5.00	5.00	90
128799.04	600	22.00	11.00	11.00	80
128934.04	450	7.57	3.90	3.68	90

SOIL TYPES	ROAD TEMPLATES
OB - Overburden	5M = 5m running surface with 0.5m deep by 1m wide ditch
SI - Silt	5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
C1 - Silty Sand Colluvium	5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
C2 - Silty Sand Colluvium with	5MND = 5m running surface with no ditch
C3 - C1 with 100% Cut	5M1R = 5m running surface with 1.5m deep ditch on right
C4 - C2 with 100% Cut	
TA - Talus	BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
SG - Sand and Gravel	GRSH = GRS Headwall (Refer To General Arrangement Drawings)
TL - Tailings	
F1 - Weak Fractured Rock	Surfacing depth = 0.3m
F2 - Strong Fractured Rock	
PF - Permafrost	

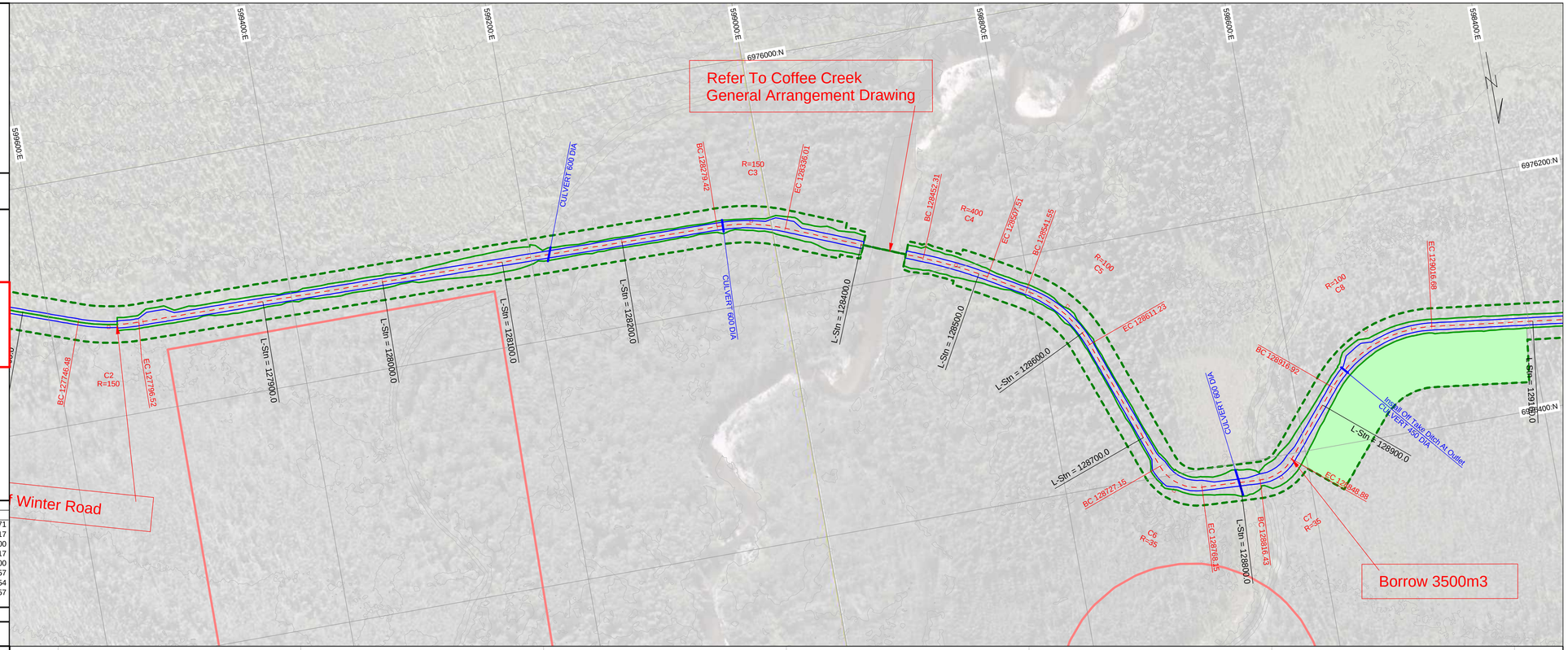
Revision	Description	Date	By	Approved	Revision

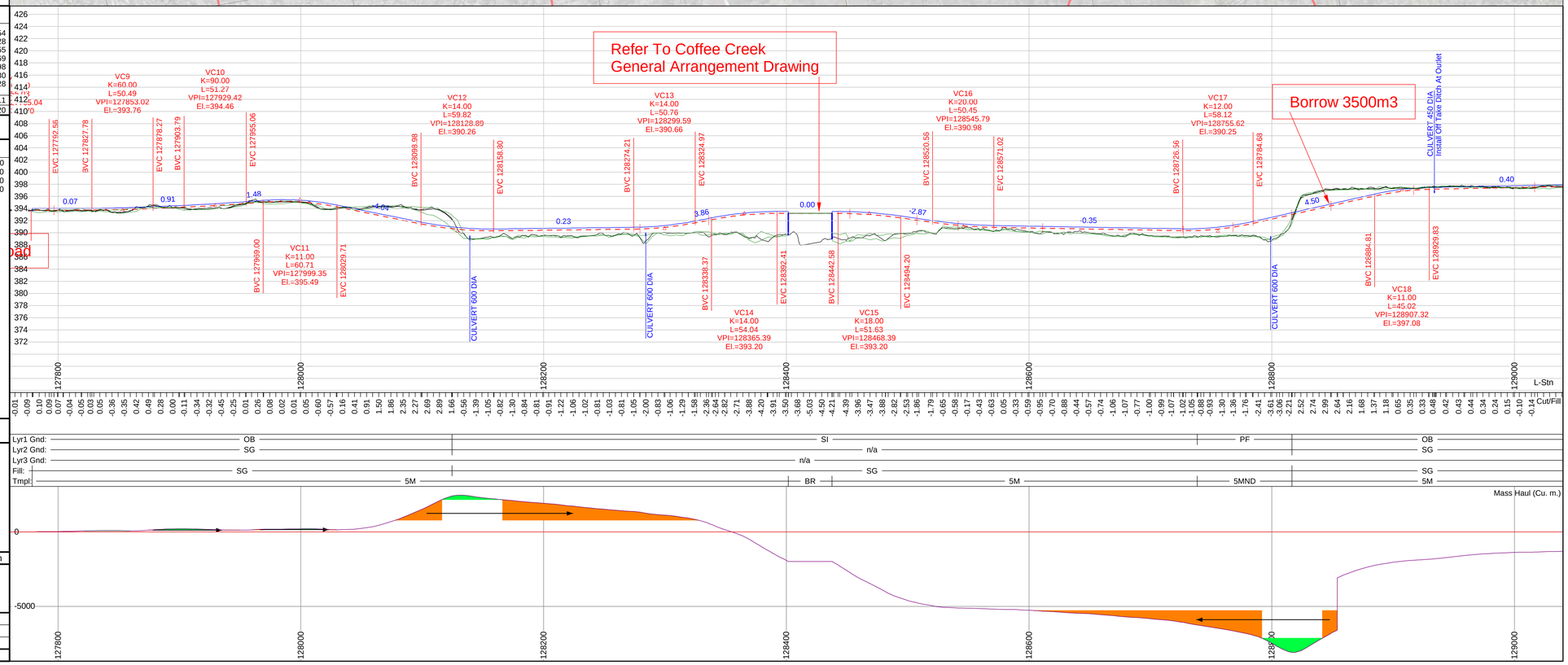
ONSITE Engineering Ltd.

Page 3 of 4

Survey By: See Notes Above	---
Design By: Matthew Dickie, EIT	March 2017
Reviewed By: Jeremy Araki, P.Eng	March 2017

Plot Date:17/03/24 | Design File Name: U:\Projects\1343\2\8\Winter Road\RoadEng\Coffee Winter Road.dsn





GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment
Km 126.2 - 129.8

Page Stations: 128791.49 to 130071.49

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

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- Finished Road Surface
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Curve Table (Da = deflection angle for a 10m arc.)

	C7	C8	C9	C10	C11
IP Stn.	128834	128971	129295	129475	129803
BC Stn.	128816	128917	129269	129444	129771
Arc. Len.	32	100	52	61	57
EC Stn.	128849	129017	129321	129505	129827
Radius	35	100	120	150	45
Angle	-53	57	25	-23	-72
Tangent	17	54	26	31	33
Da, a=100	164	57	48	38	127

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
128800.00							
129000.00	280	0	3227	0	620	3500	380
129200.00	228	0	377	0	209		328
129400.00	231	0	289	0	238		355
129600.00	228	0	273	0	214		355
129800.00	238	0	1113	0	185		349
129844.17	55	0	237	0	76		92
Pg. Tot.	1261	0	5515	0	1543		1858
Cum. Tot.	2995	5110	8238	0	13787		3970

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
128799.04	600	22.00	11.00	11.00	80
128934.04	450	7.57	3.90	3.68	90
129178.99	450	7.72	4.03	3.69	90
129543.69	450	8.00	4.00	4.00	90

SOIL TYPES

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- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
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- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
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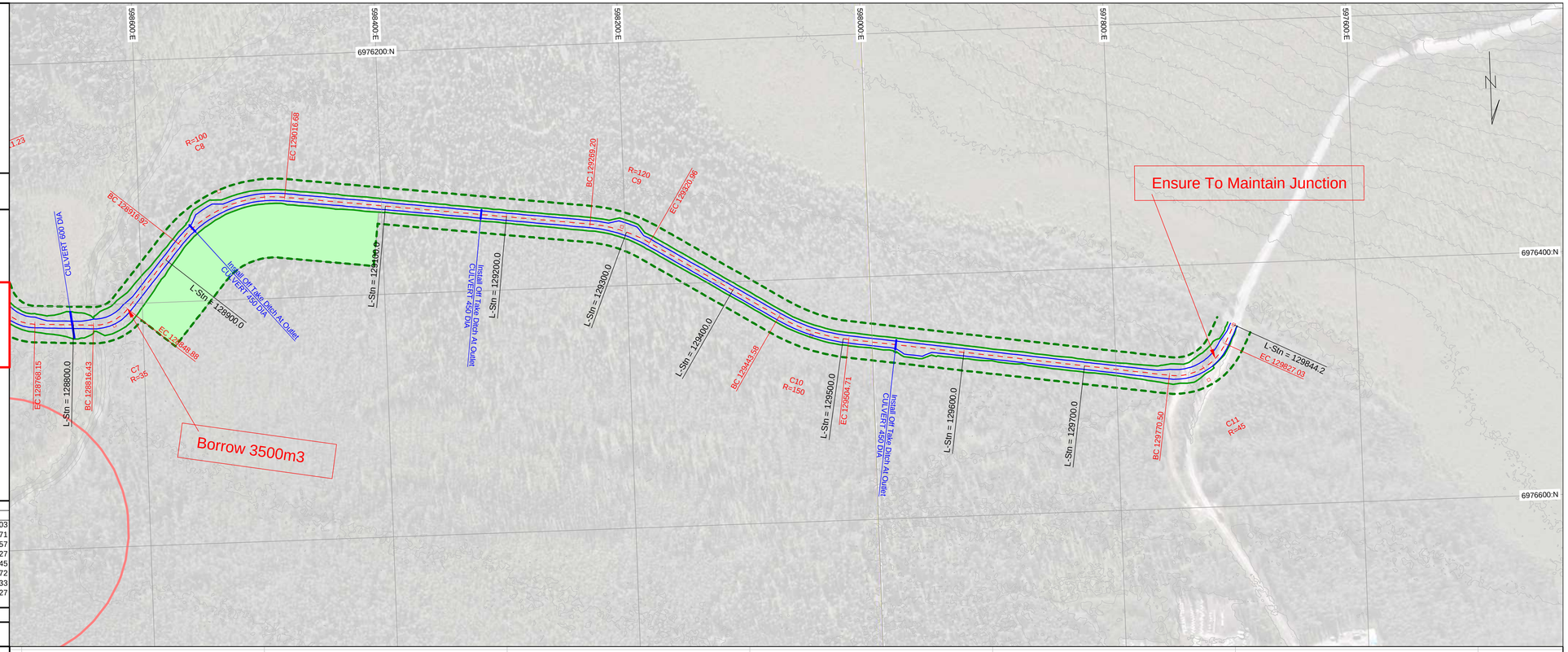
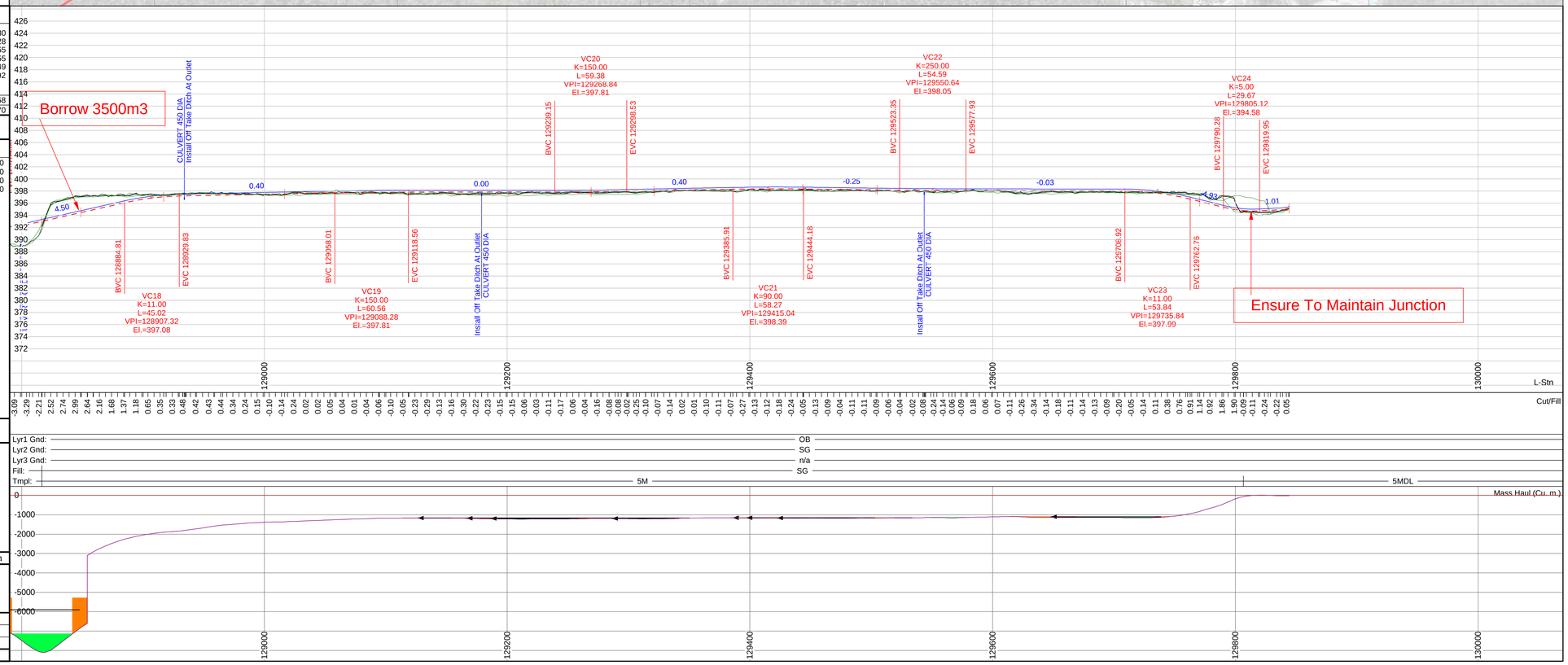
BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

Revision	Description	Date	By	Approved	Revision





Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2017
Reviewed By: Jeremy Araki, P.Eng		March 2017

ONSITE Engineering Ltd.

Plot Date:17/03/24 Design File Name: U:\Projects\1343\2\8\Winter Road\RoadEng\Coffee Winter Road.dsn

Coffee Gold Mine

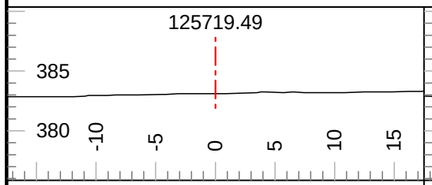
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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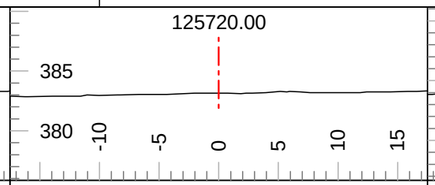
Lyr1 Gnd: OB Lyr2 Gnd: Lyr3 Gnd:



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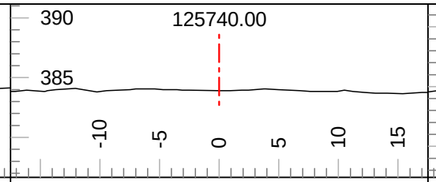

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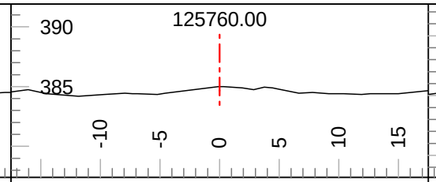

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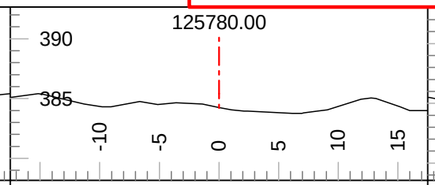

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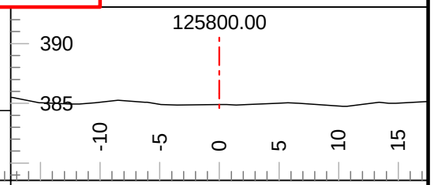

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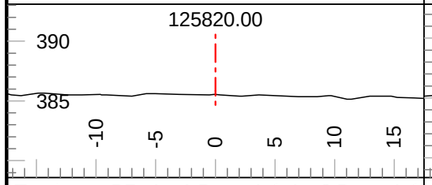

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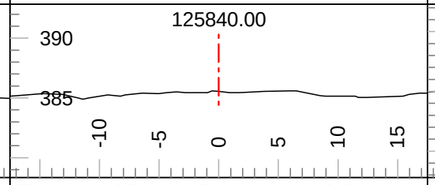

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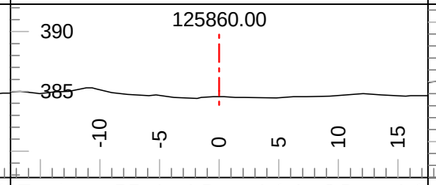

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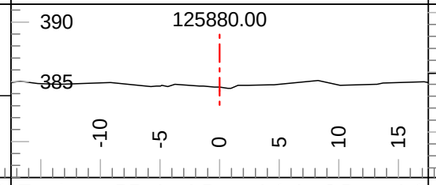

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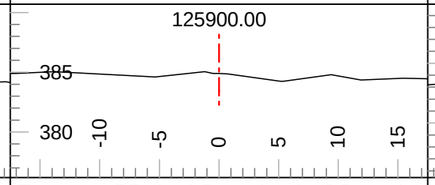

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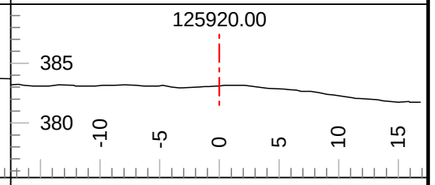

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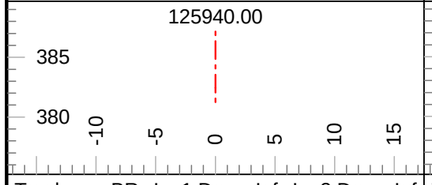

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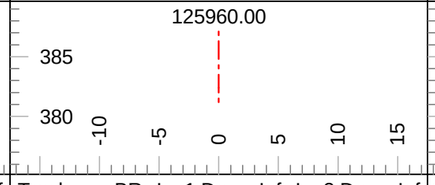

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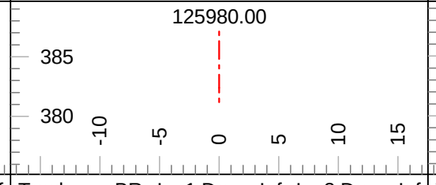

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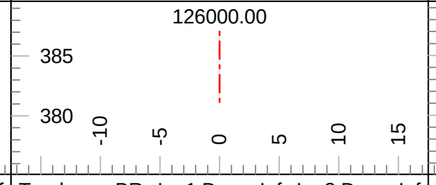

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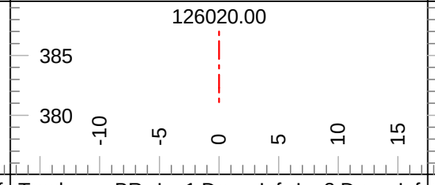

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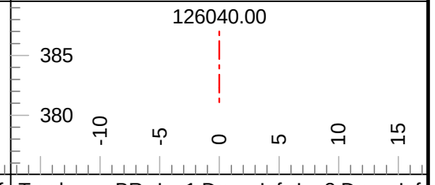

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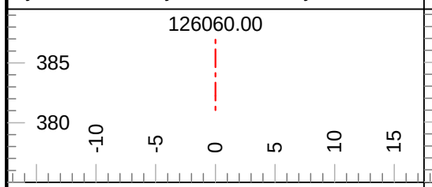

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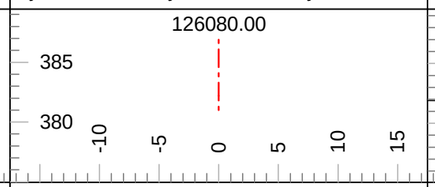

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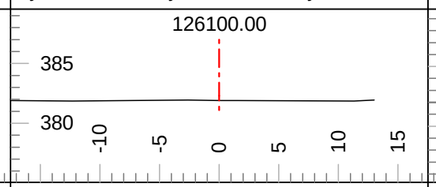

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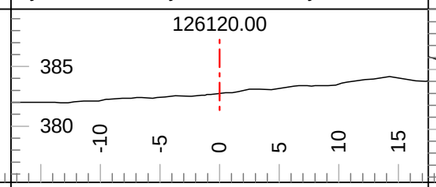

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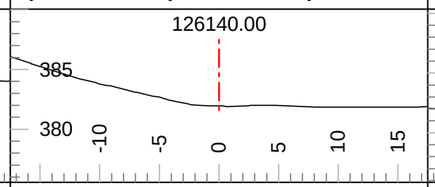

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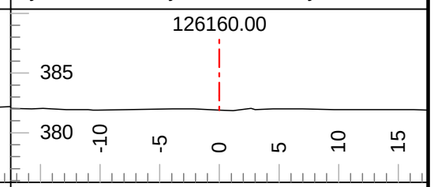

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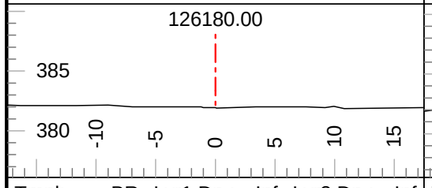

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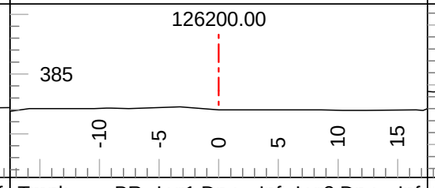
Lyr1 Gnd: OB Lyr2 Gnd: Lyr3 Gnd:



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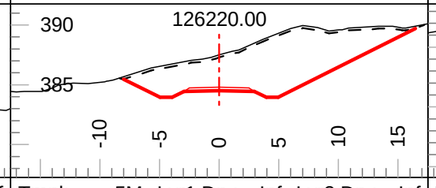

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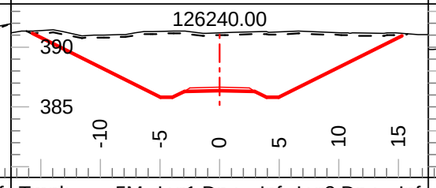

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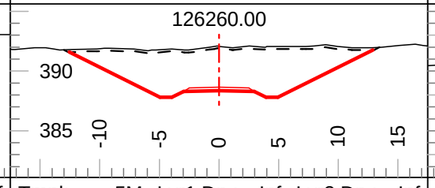

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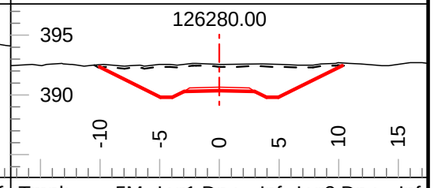

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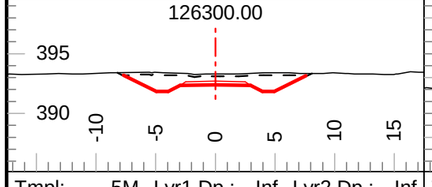

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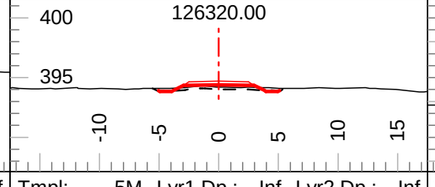

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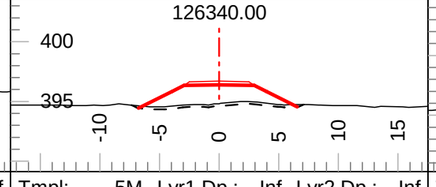

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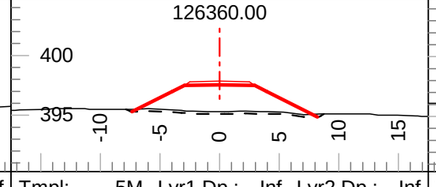

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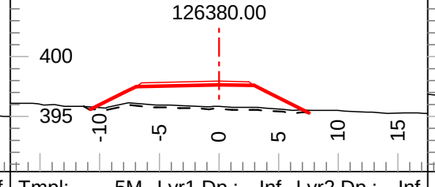

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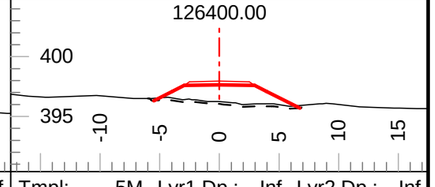

Tmpl: 5M Lyr1 Dp.: Inf Lyr2 Dp.: Inf
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Coffee Gold Mine

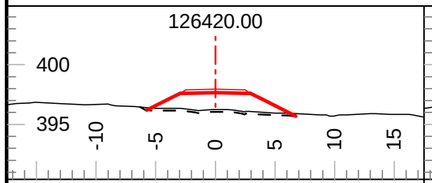
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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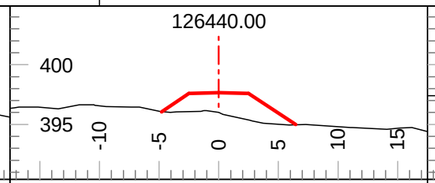

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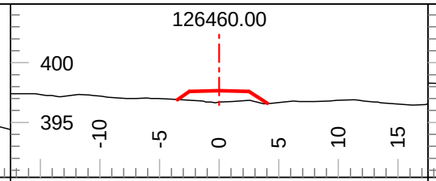

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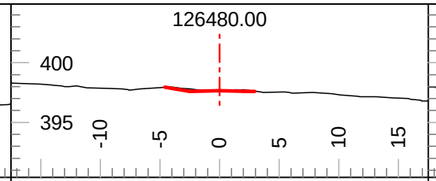

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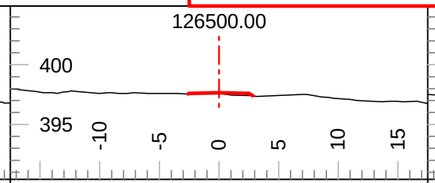

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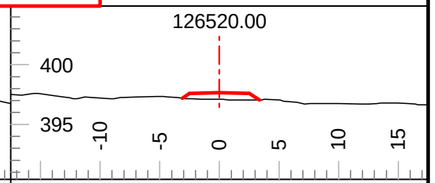

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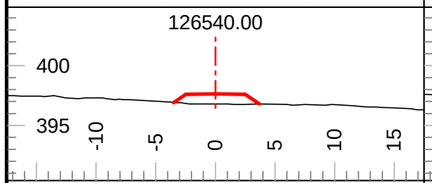

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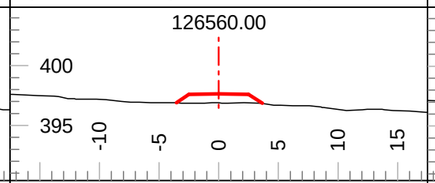

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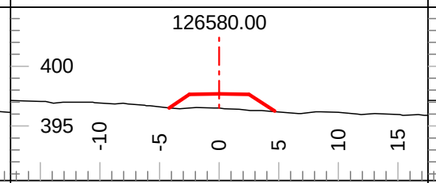

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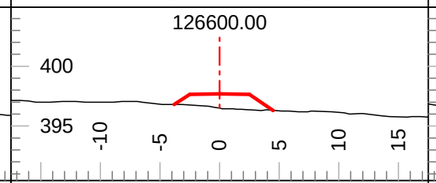

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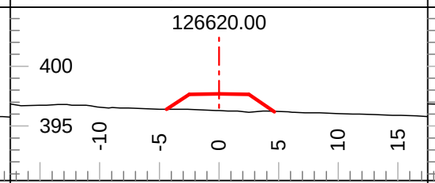

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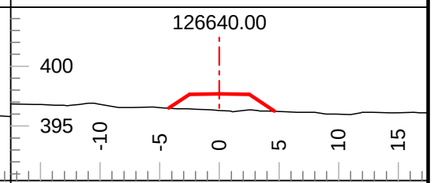

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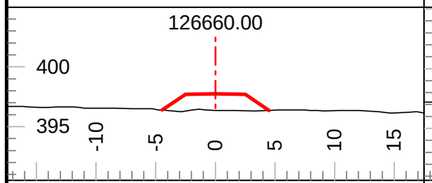

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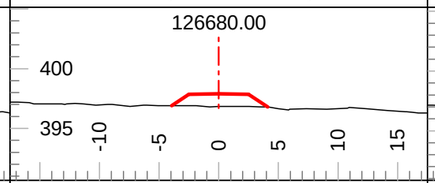

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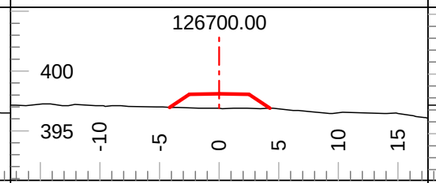

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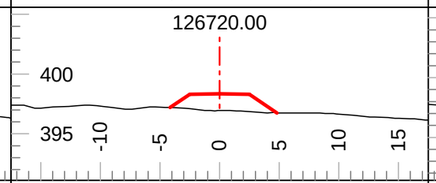

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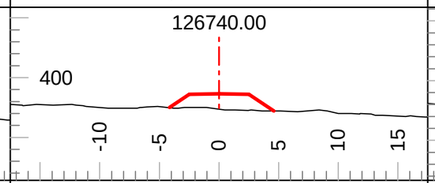

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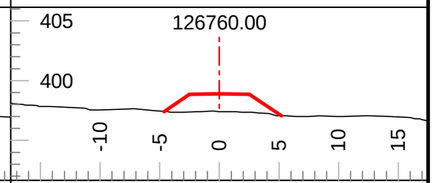

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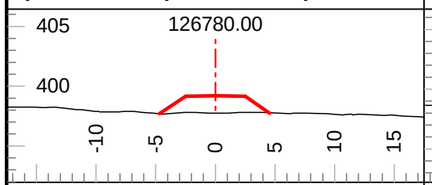

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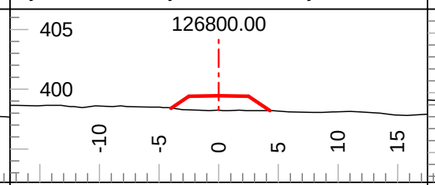

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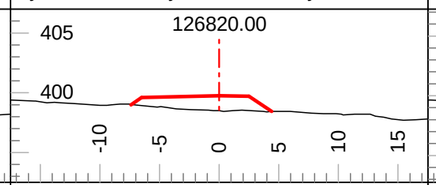

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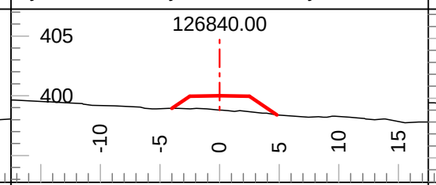

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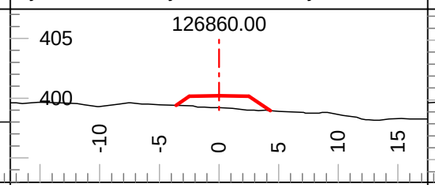

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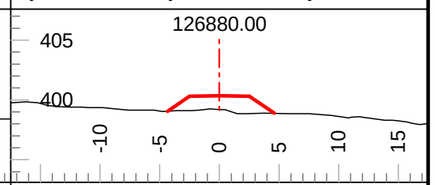

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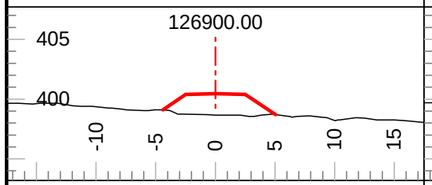

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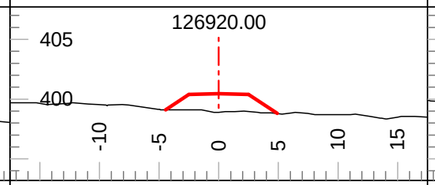

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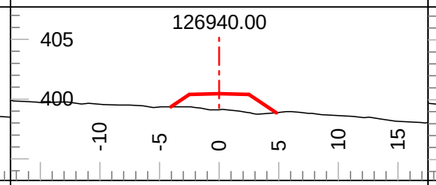

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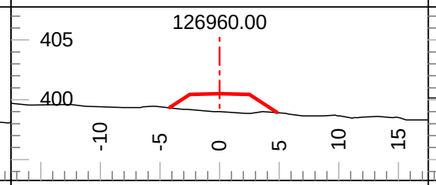

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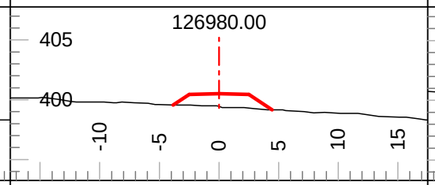

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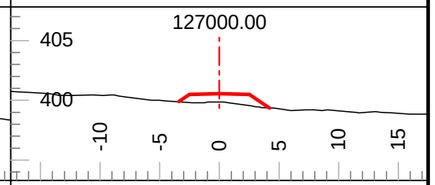

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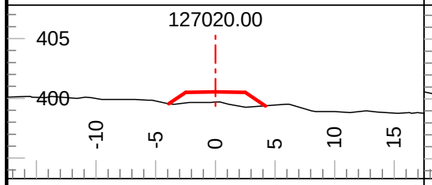

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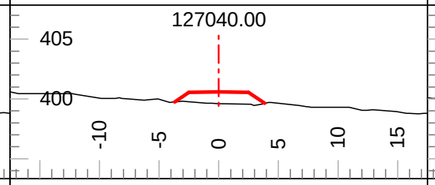

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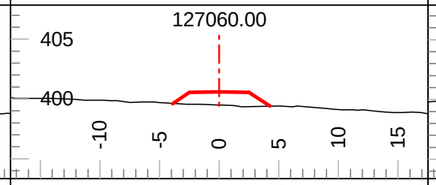

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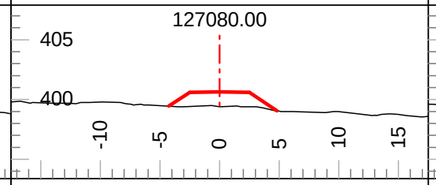

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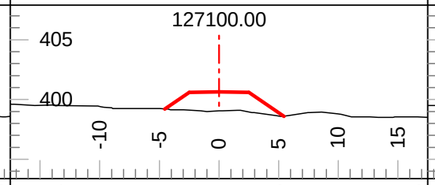

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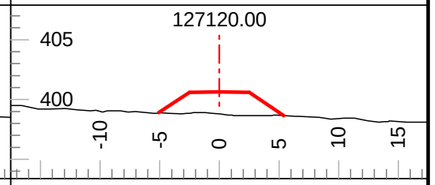

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Coffee Gold Mine

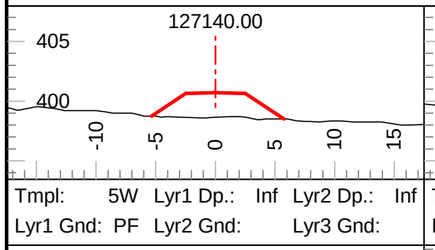
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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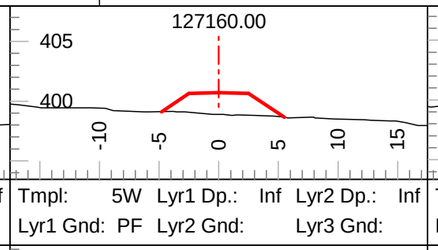

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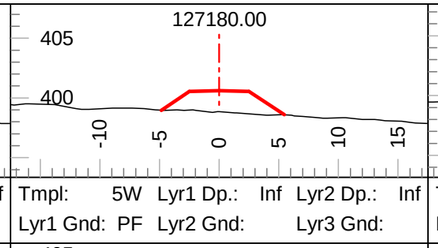

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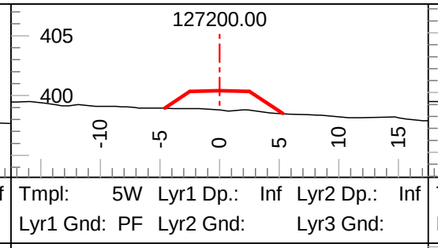

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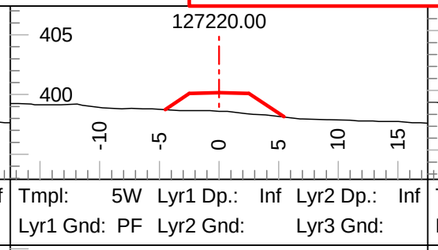

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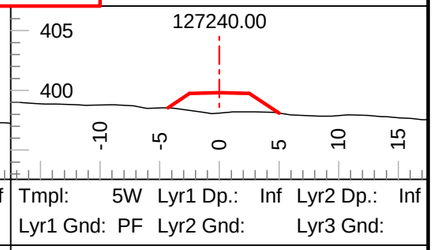

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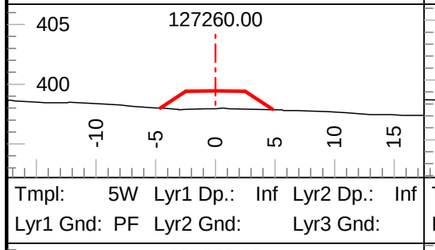

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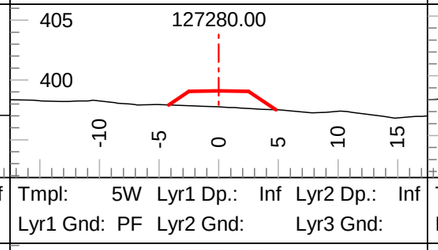

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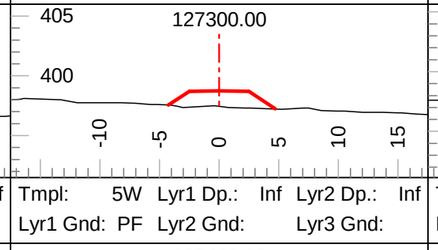

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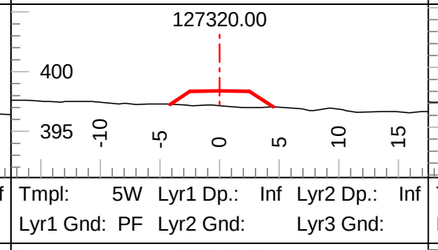

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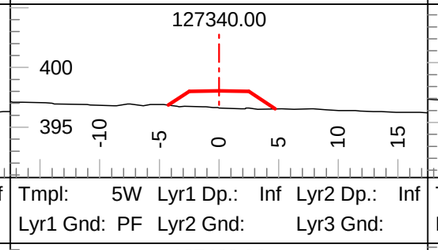

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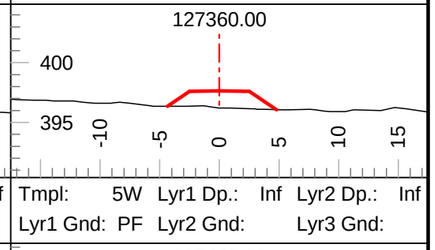

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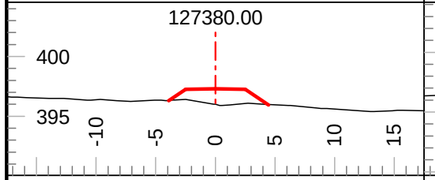

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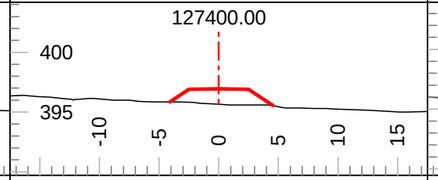

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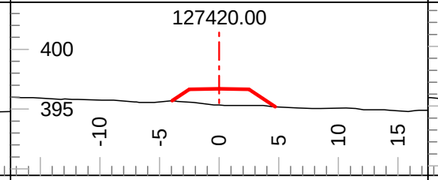

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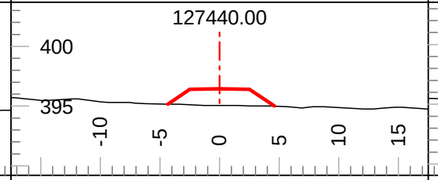

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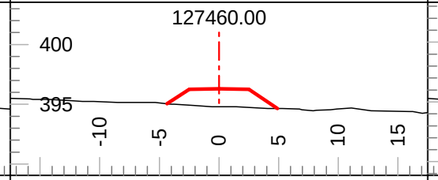

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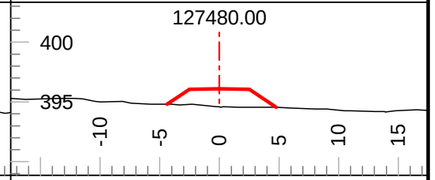

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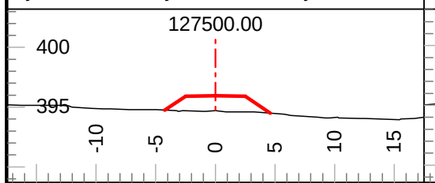

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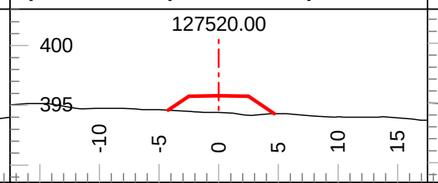

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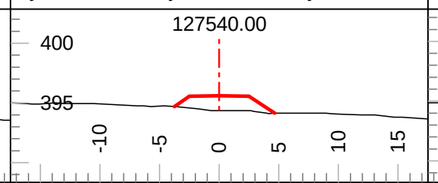

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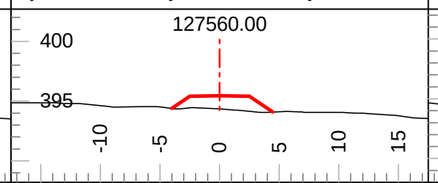

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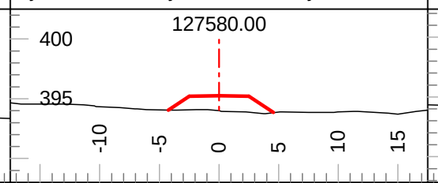

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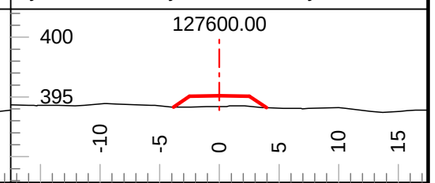

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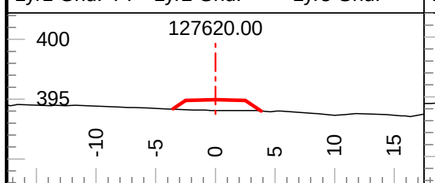

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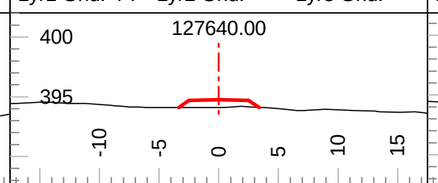

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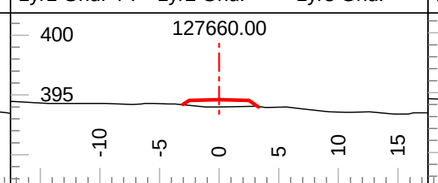

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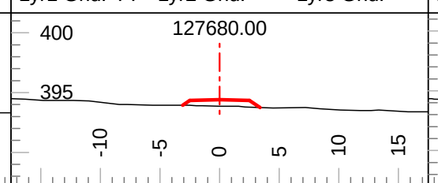

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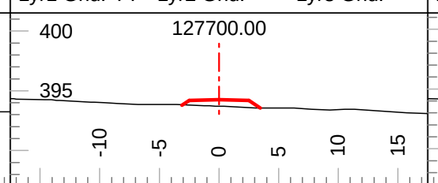

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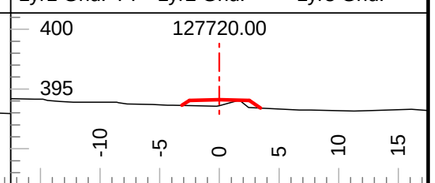

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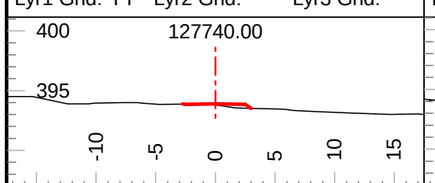

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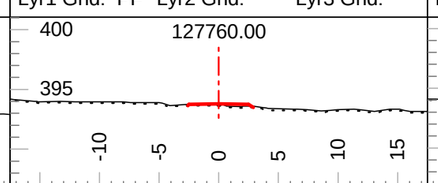

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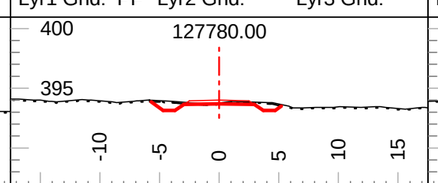

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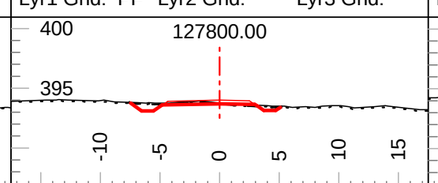

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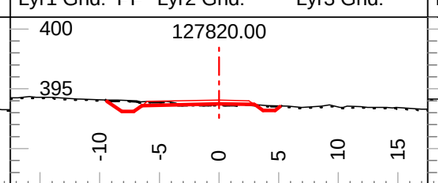

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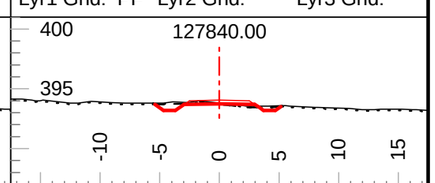

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Coffee Gold Mine

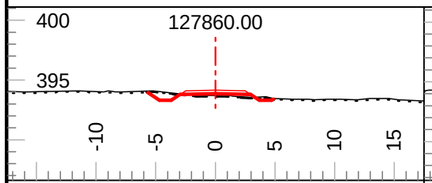
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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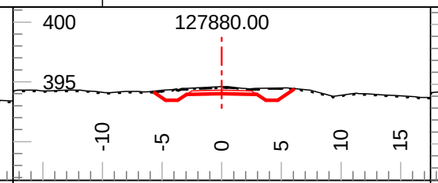

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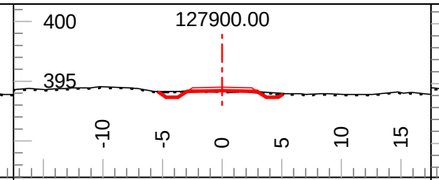

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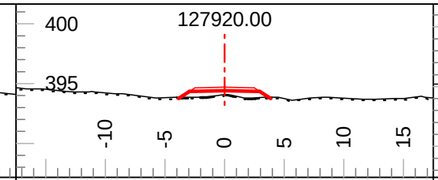

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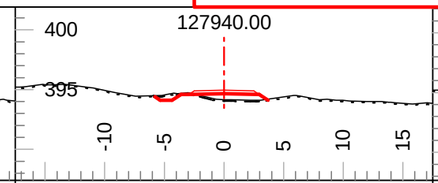

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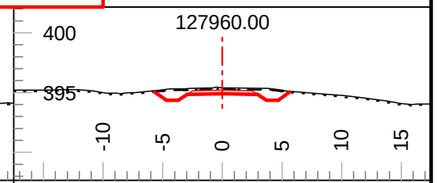

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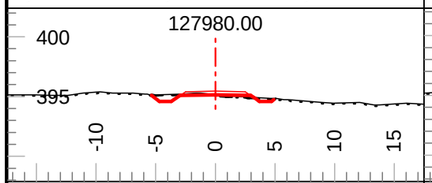

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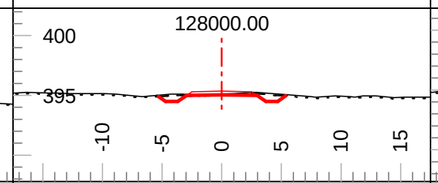

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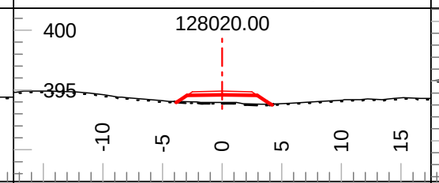

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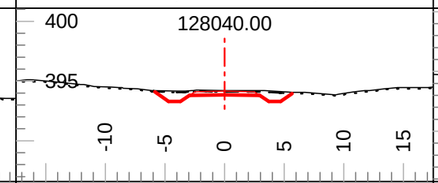

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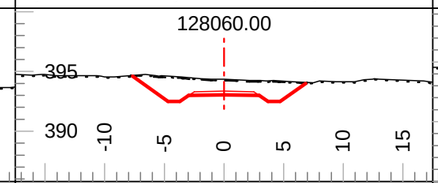

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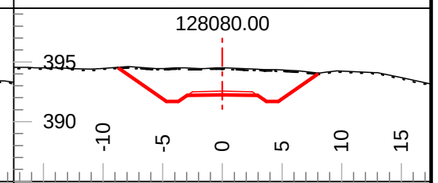

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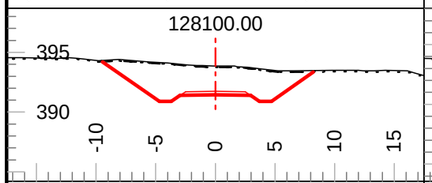

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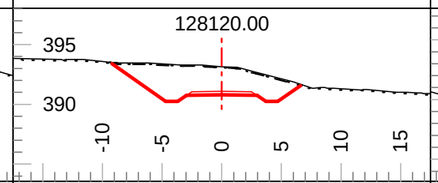

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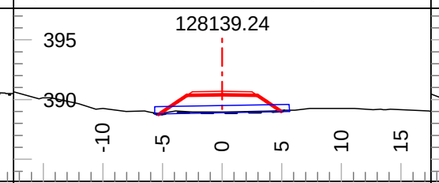

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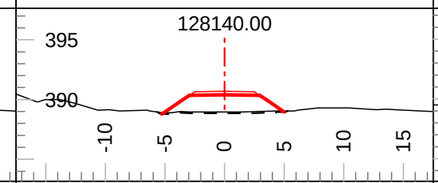

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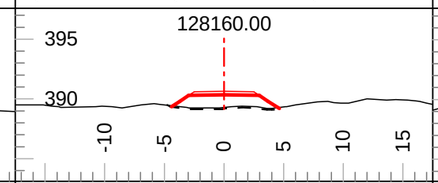

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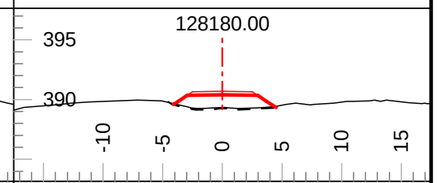

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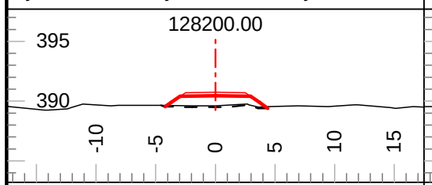

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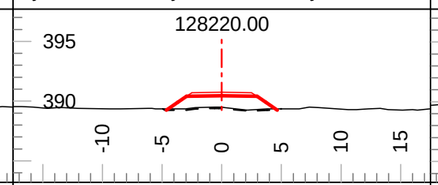

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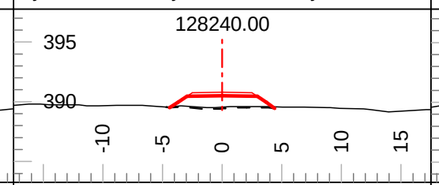

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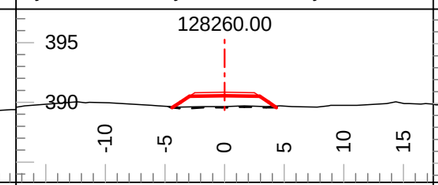

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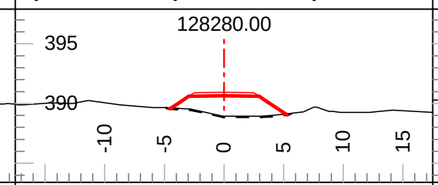

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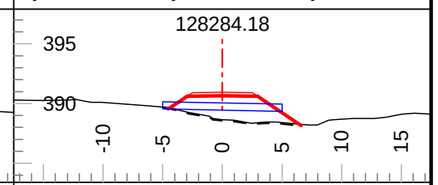

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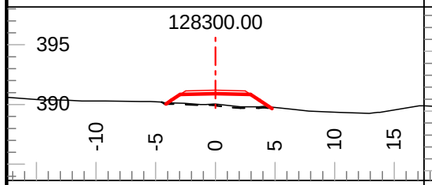

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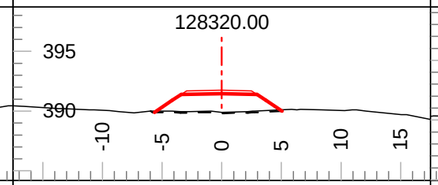

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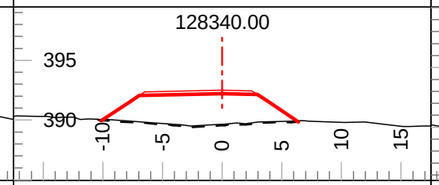

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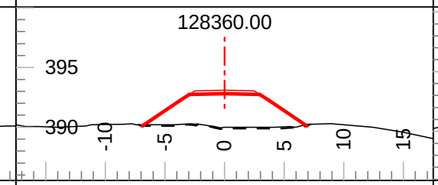

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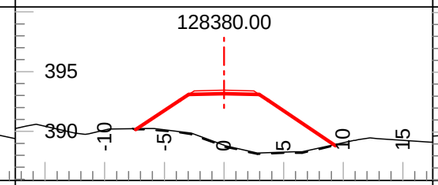

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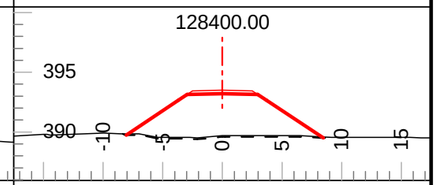

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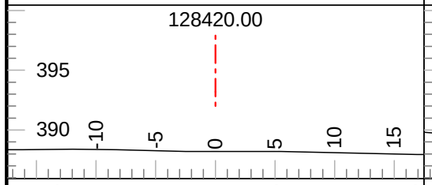

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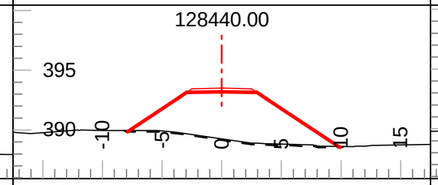

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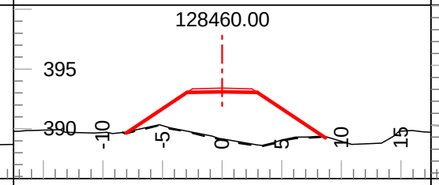

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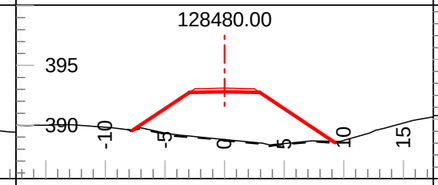
Lyr1 Gnd: SI Lyr2 Gnd: Lyr3 Gnd:



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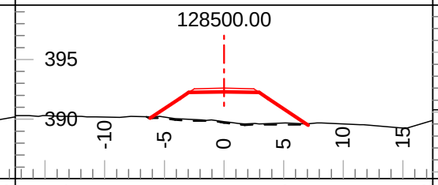

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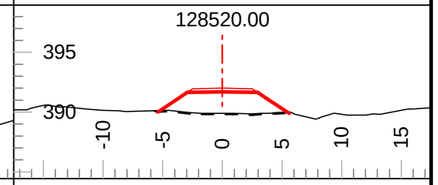


Tmpl: 5M Lyr1 Dp.: Inf Lyr2 Dp.: Inf
Lyr1 Gnd: SI Lyr2 Gnd: Lyr3 Gnd:

Coffee Gold Mine

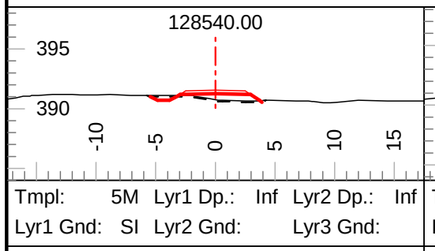
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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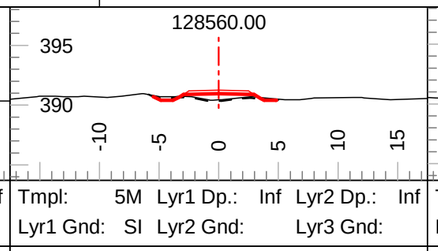

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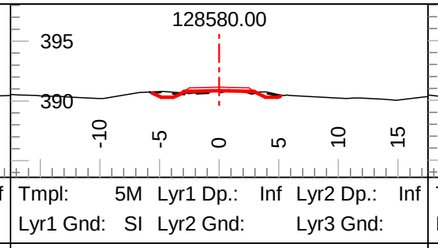

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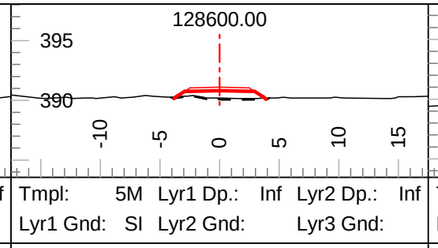

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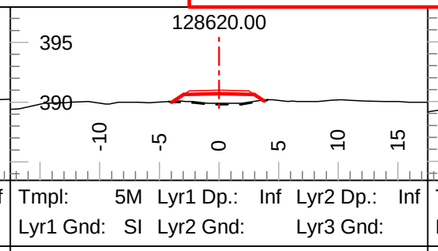

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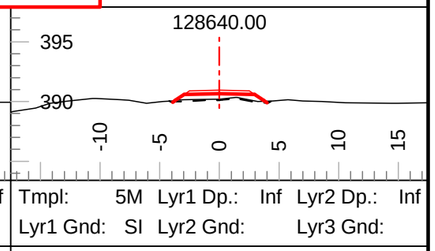

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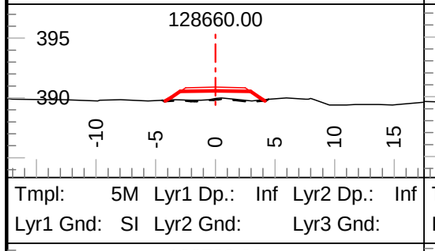

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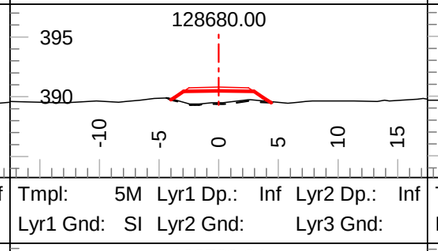

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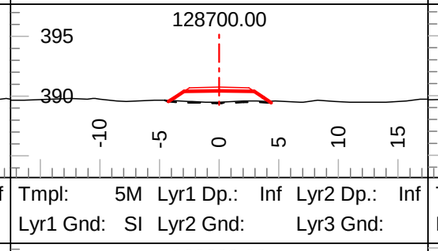

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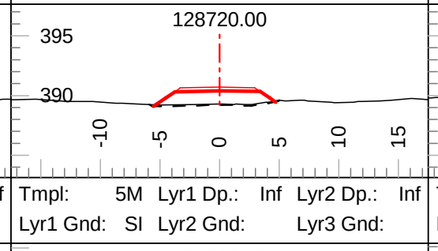

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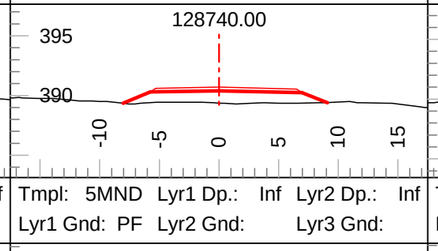

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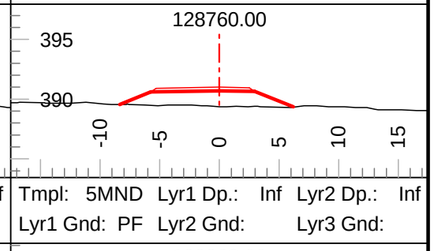

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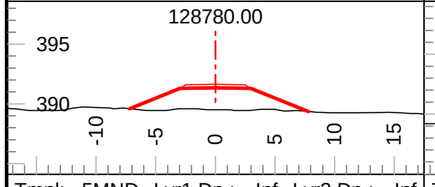

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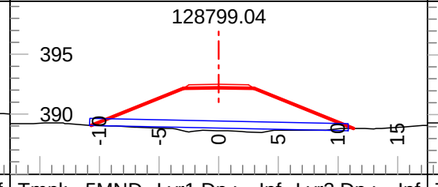
Lyr1 Gnd: PF Lyr2 Gnd: Lyr3 Gnd:



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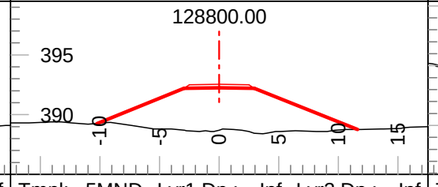

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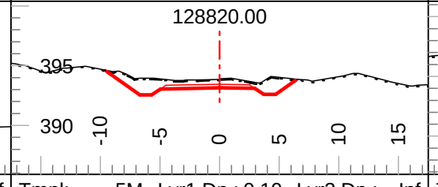

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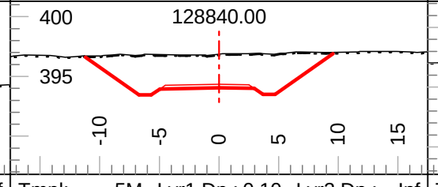

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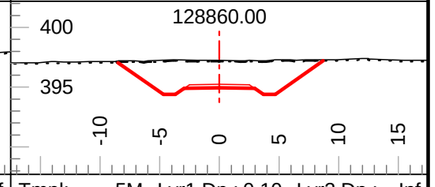

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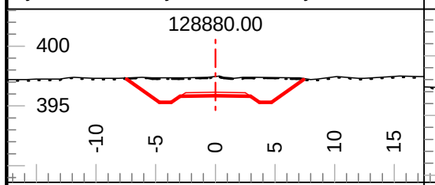

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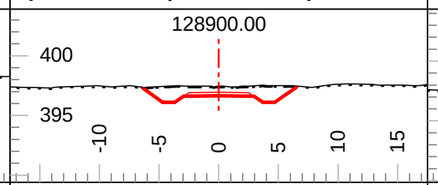

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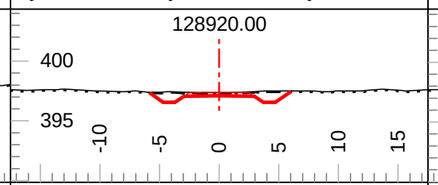

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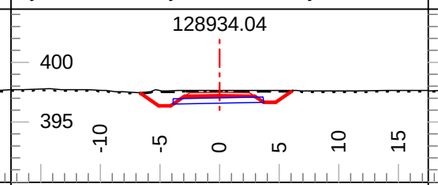

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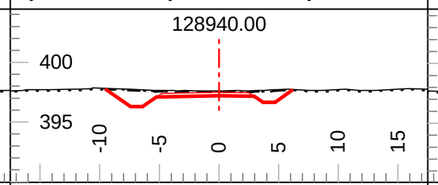

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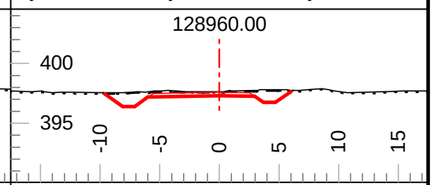

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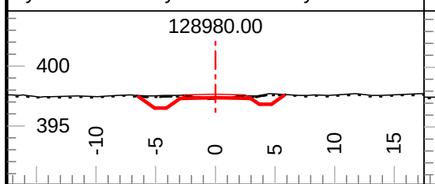

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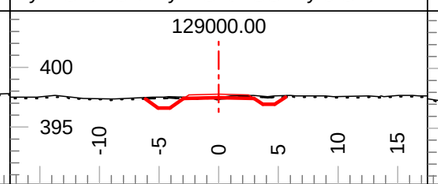

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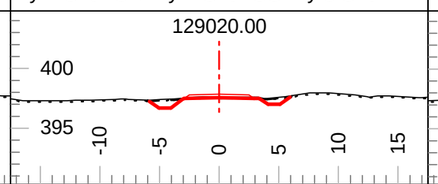

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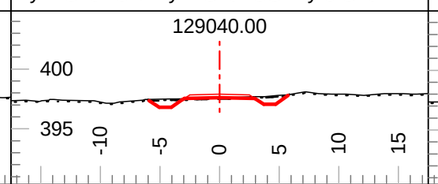

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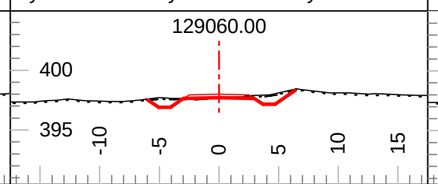

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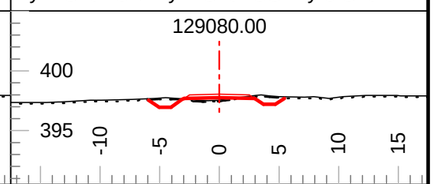

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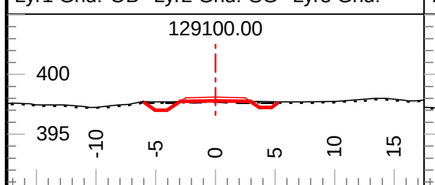

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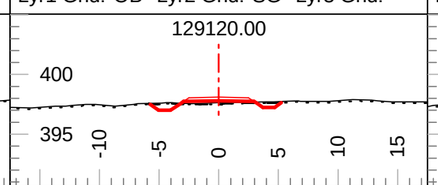

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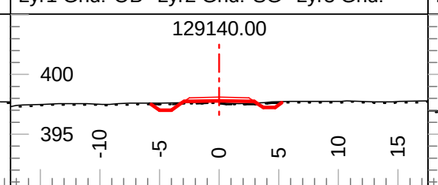

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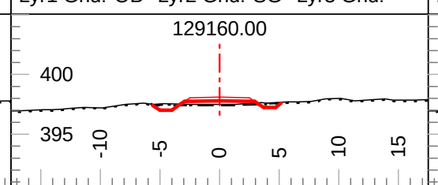

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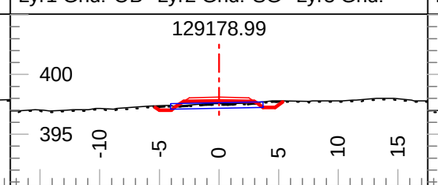

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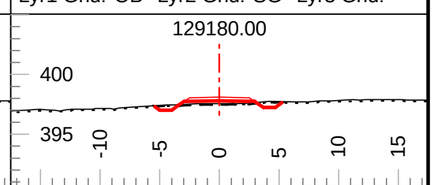


Tmpl: 5M Lyr1 Dp.: 0.10 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:

Coffee Gold Mine

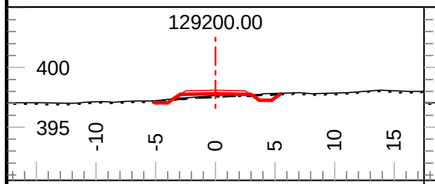
Northern Access Route Upgrade and Establishment
South Yukon Winter Road
Geometric Alignment - Cross Sections
km 126.2 - 129.8

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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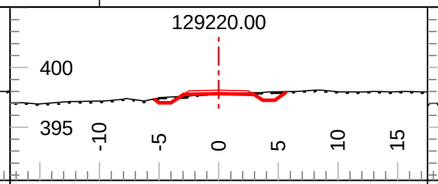

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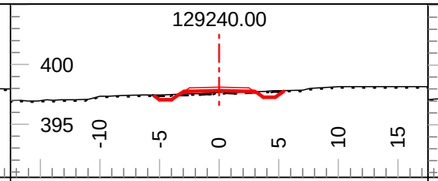

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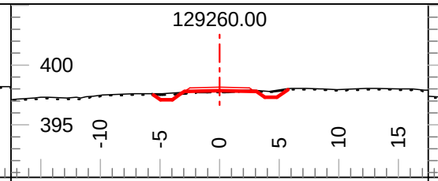

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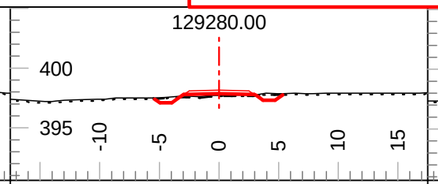

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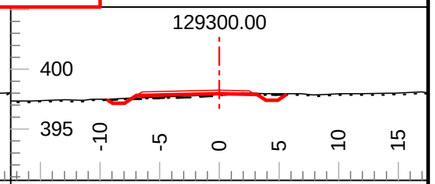

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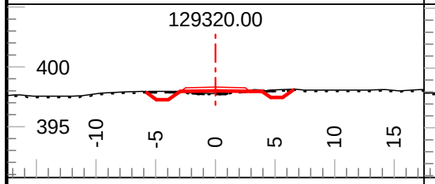

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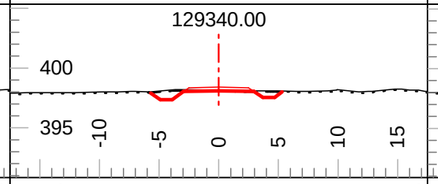

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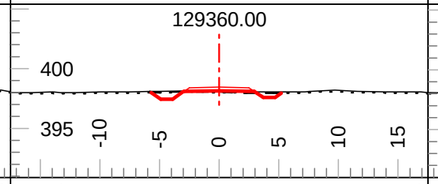

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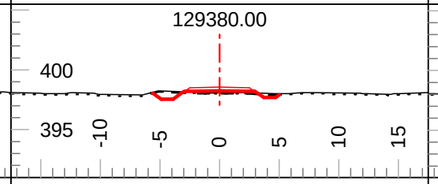

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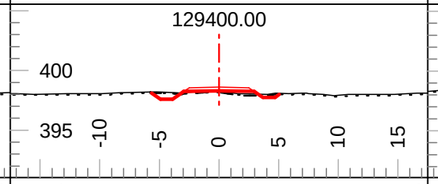

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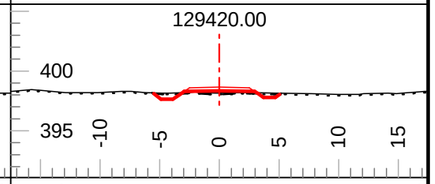

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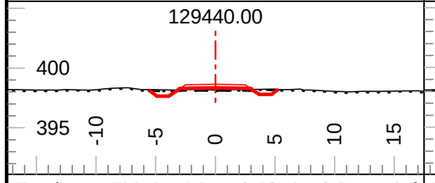

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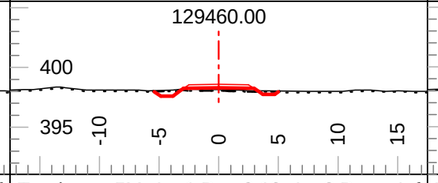

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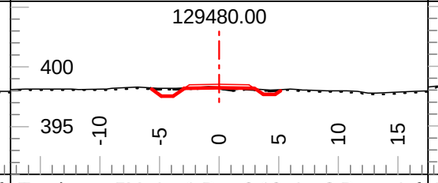

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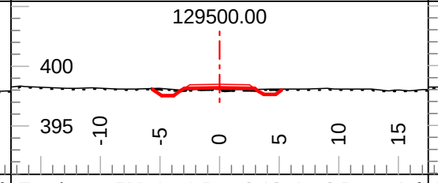

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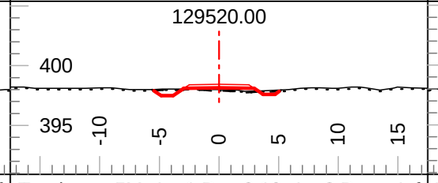

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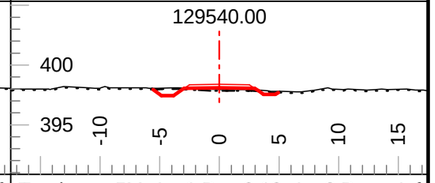

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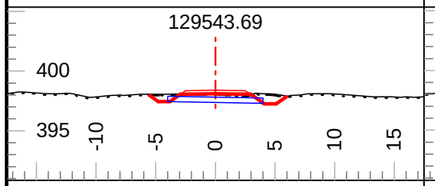

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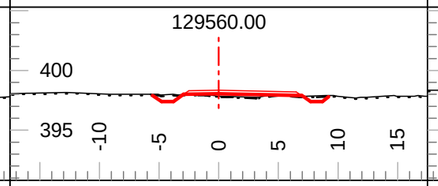

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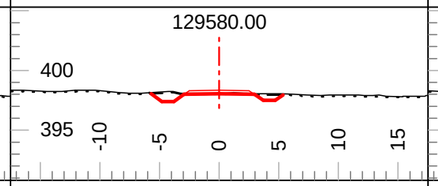

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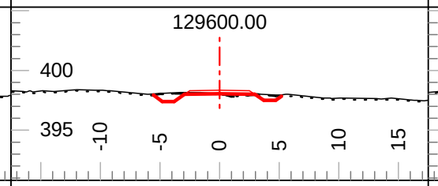
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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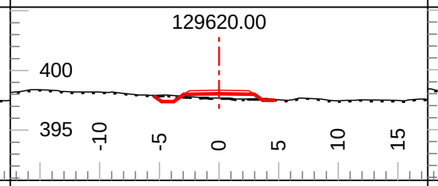
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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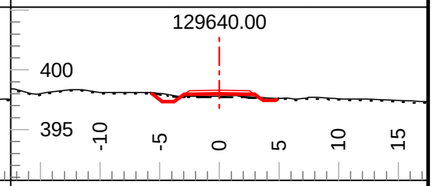
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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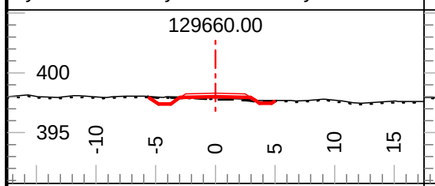
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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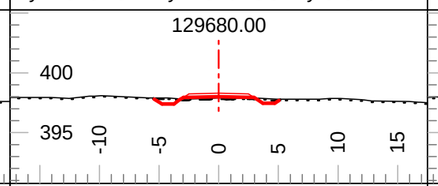
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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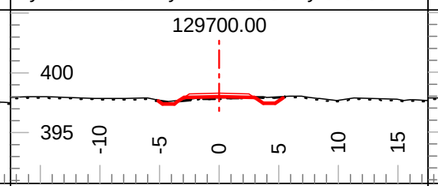
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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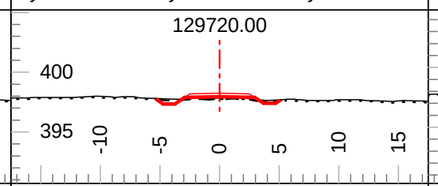

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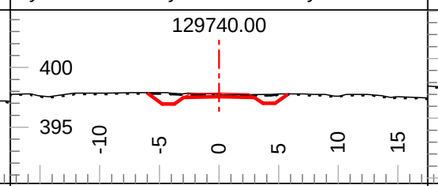
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



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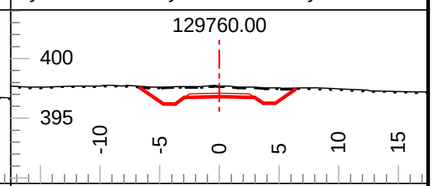

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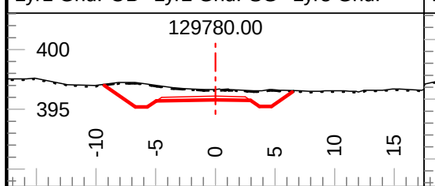

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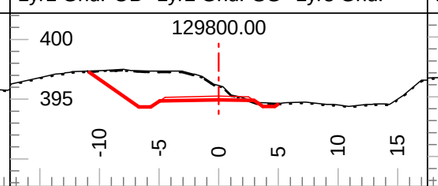

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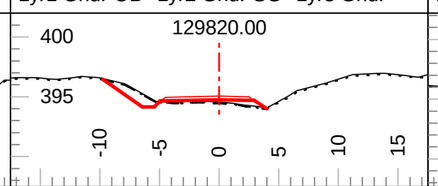

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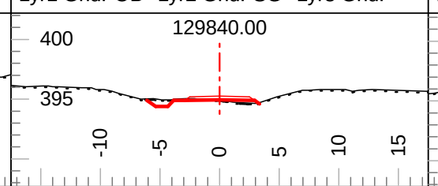

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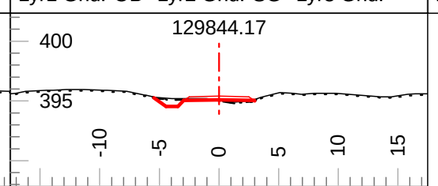
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:



Tmpl: 5MDL Lyr1 Dp.: 0.10 Lyr2 Dp.: Inf
Lyr1 Gnd: OB Lyr2 Gnd: SG Lyr3 Gnd:

GOLDCORP

Coffee Gold Project

Northern Access
Route Upgrade and Establishment
South Yukon Barge Road
Geometric Alignment
Km 126.2 - 126.7

Page Stations: 125955.59 to 127235.59

ROAD DESIGN SPECIFICATIONS

Valley Bottom Design Speed: 50 km/h
Min Curve Radius = 80m
Mountainous Terrain Design Speed: 30 km/hr
Min Curve Radius = 35m

Avg. Stab. Road Width: 5.0m
Max. Grade 10%

Plan Scale 1:2000
Profile Vert Scale 1:400
Profile Horz Scale 1:2000

Formated to Plot on 24"x36" Paper

Notes:
- Ground model data obtained by Lidar Survey method by McElhanney Consulting Services Ltd. 2015

ISSUED FOR PERMIT APPROVAL

Plan Legend (all may not be applicable)

- L-line Location
- Road Edges
- Cut / Fill limits
- Clearing Limits
- Culverts
- Benchmark
- Historic Sites
- Arch Sites
- Heritage Buffer
- FN Settlement Lands
- Borrow Site
- Waste Site

Profile Legend

- Finished Road Surface
- Profile Subgrade
- Cut / Fill limits
- Original Ground
- 1st Stratum
- 2nd Stratum (Rock)

Curve Table (Da = deflection angle for a 10m arc.)

	C1	C2	C3	C4	C5
IP Stn.	126065	126104	126195	126349	126676
BC Stn.	126049	126080	126169	126324	126634
Arc. Len.	24	31	52	50	62
EC Stn.	126074	126111	126221	126374	126695
Radius	15	16	150	460	35
Angle	93	112	-20	-6	-101
Tangent	16	24	26	25	42
Da, a=100	22	358	38	12	164

EARTH WORK VOLUMES (Final Cubic Meters)

L-Stn m.	Strip V. Cu. m.	Lyr1 V. Cu. m.	Lyr2 V. Cu. m.	Lyr3 V. Cu. m.	SG Fill V. Cu. m.	B/W Vol. Cu. m.	Srf1 Fill V. Cu. m.
B 125955.59	0	0	0	0	0		0
B 126000.00	0	0	0	0	0		0
B 126200.00	233	0	336	0	322		326
126400.00	263	0	380	0	341		355
126600.00	199	0	244	0	310		303
126740.11							
Pg. Tot.	695	0	960	0	973		984
Cum. Tot.	695	0	960	0	973		984

CULVERT TABLE

L-Stn m.	Cul DIA mm.	Cul Len m.	Cul Len L m.	Cul Len R m.	Cul Skew deg.
126399.27	600	9.00	4.50	4.50	90
126613.89	600	9.00	4.50	4.50	90

SOIL TYPES

- OB - Overburden
- SI - Silt
- C1 - Silty Sand Colluvium
- C2 - Silty Sand Colluvium with
- C3 - C1 with 100% Cut
- C4 - C2 with 100% Cut
- TA - Talus
- SG - Sand and Gravel
- TL - Tailings
- F1 - Weak Fractured Rock
- F2 - Strong Fractured Rock
- PF - Permafrost

ROAD TEMPLATES

5M = 5m running surface with 0.5m deep by 1m wide ditch
5MDL = 5m running surface with 0.5m deep by 1m wide ditch on the left
5MDR = 5m running surface with 0.5m deep by 1m wide ditch on the right
5MND = 5m running surface with no ditch
5M1R = 5m running surface with 1.5m deep ditch on right

BR5 = Bridge Template (No Cut/Fill Refer To General Arrangement Drawings)
GRSH = GRS Headwall (Refer To General Arrangement Drawings)

Surfacing depth = 0.3m

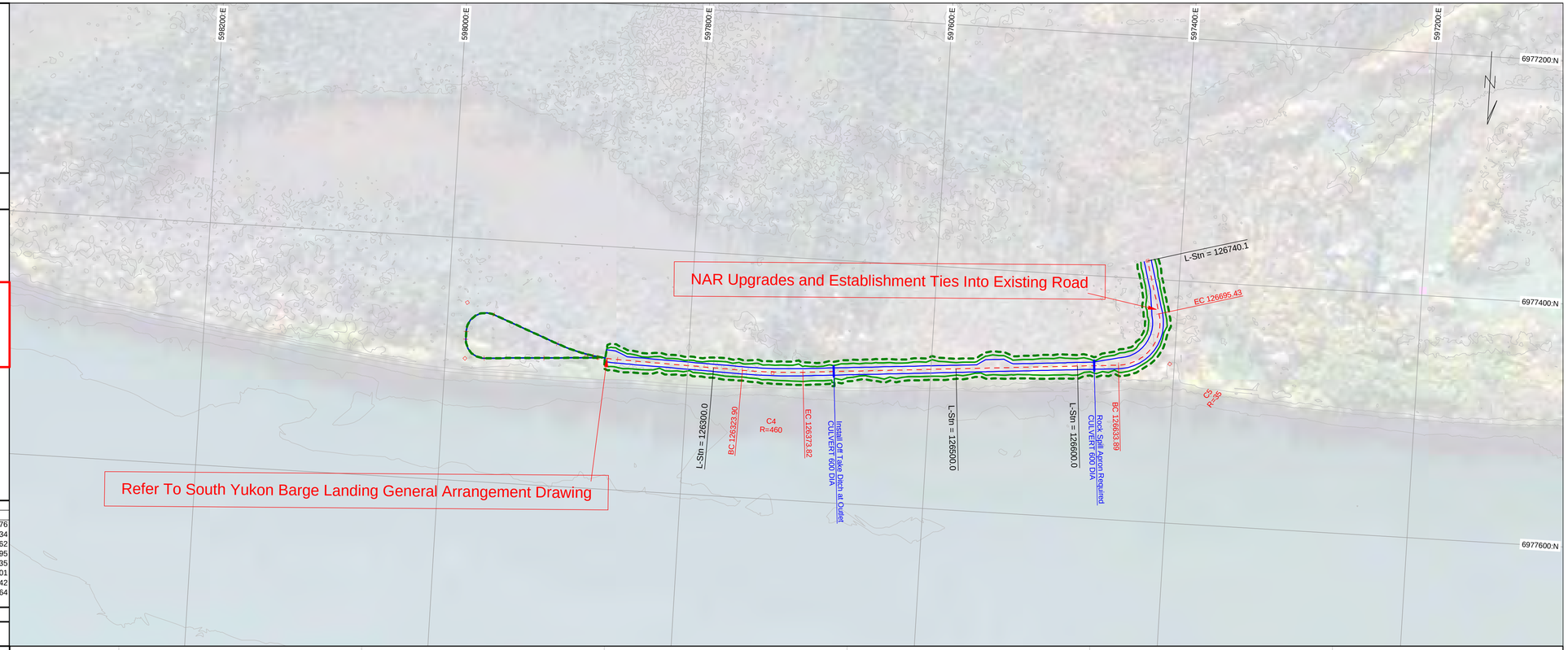
Revision	Description	Date	By	Approved	Revision

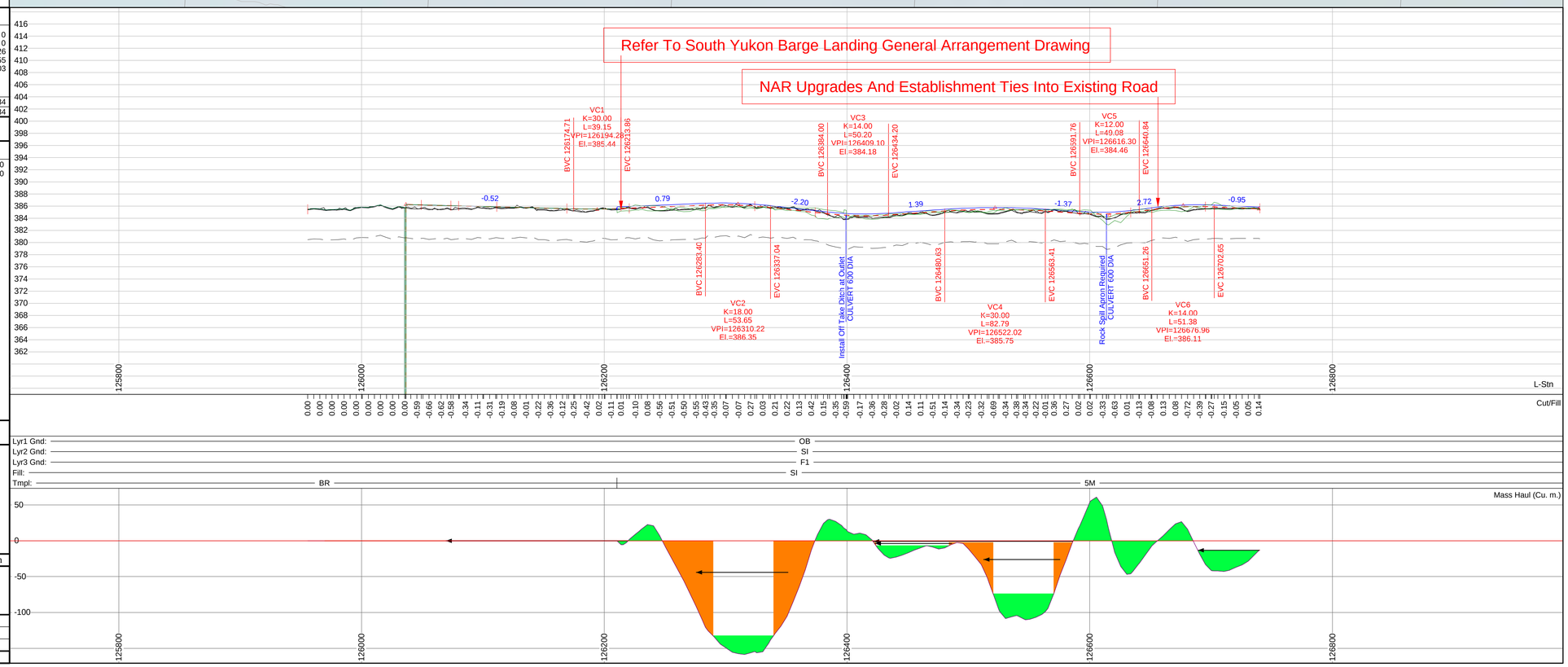
ONSITE Engineering Ltd.

Page 1 of 1

Survey By: See Notes Above		---
Design By: Matthew Dickie, EIT		March 2016
Reviewed By: Jeremy Araki, P.Eng		March 2016

Plot Date:17/03/24 | Design File Name: U:\Projects\1343\2\8\South Yukon Barge Road\RoadEng\South Yukon Barge Road.dsn





Coffee Gold Mine

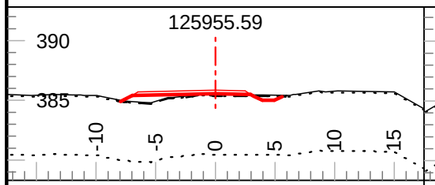
Northern Access Route Upgrade and Establishment
South Yukon Barge Road
Geometric Alignment - Cross Sections
km 126.2 - 126.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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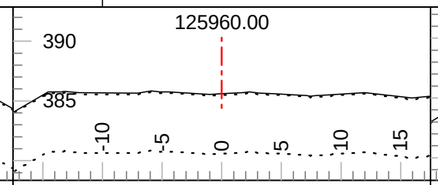
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd: F1



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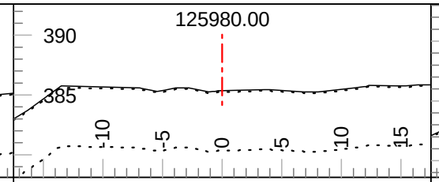

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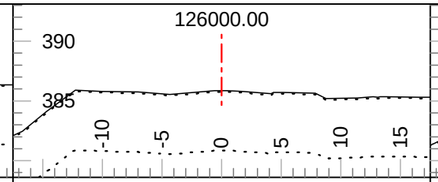

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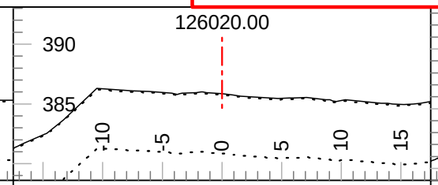

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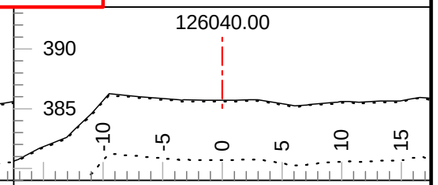

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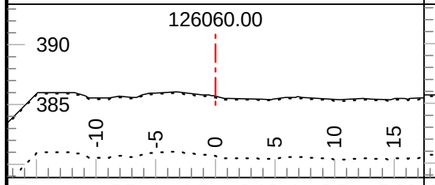

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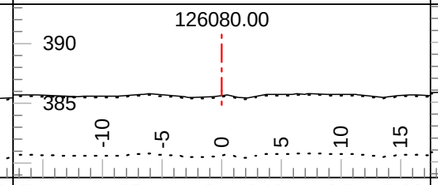

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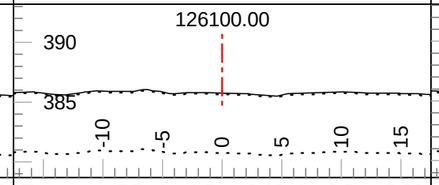

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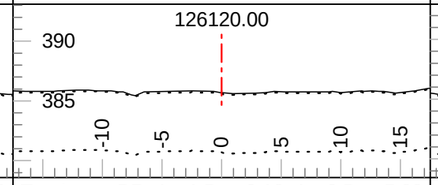

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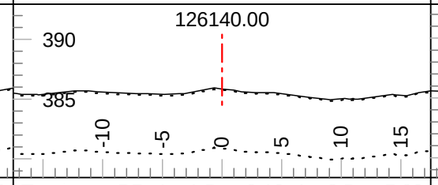

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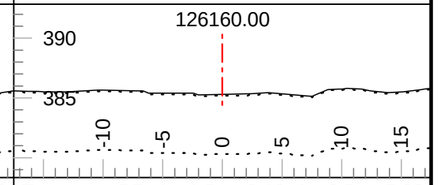

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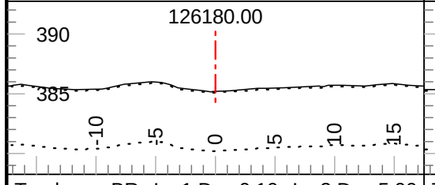

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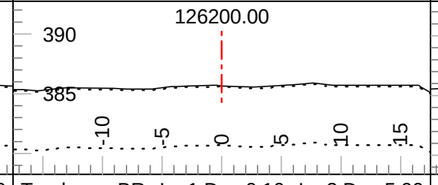

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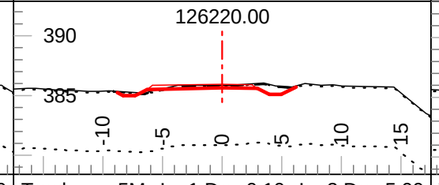

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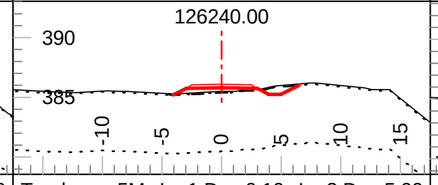

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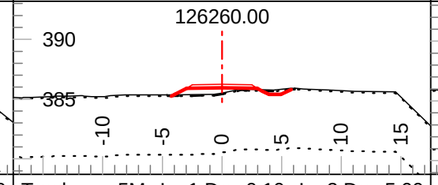

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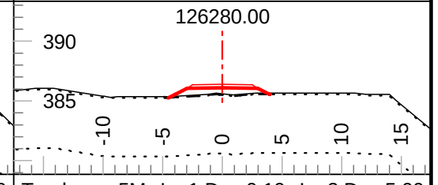

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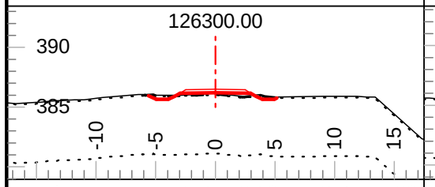

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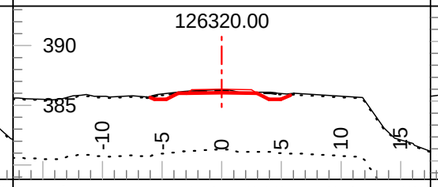

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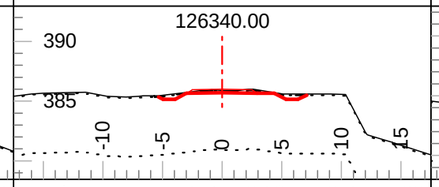

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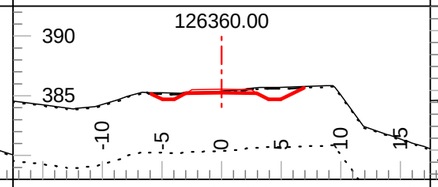
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd: F1



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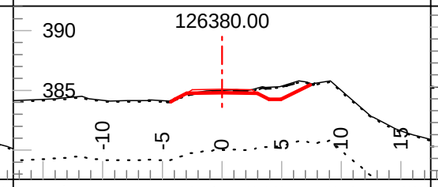

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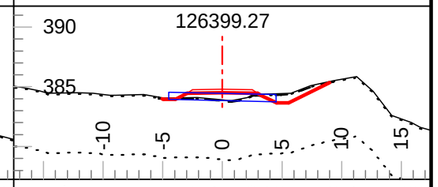

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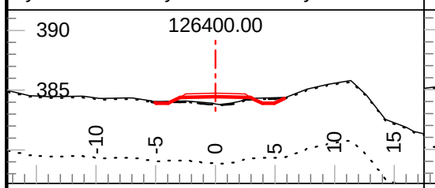

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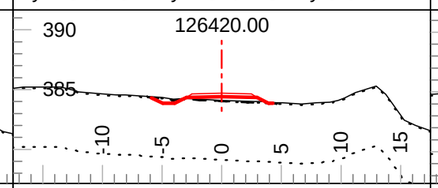

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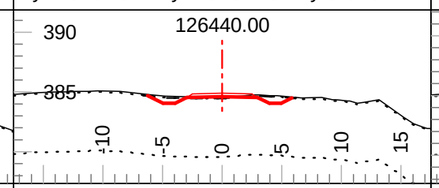

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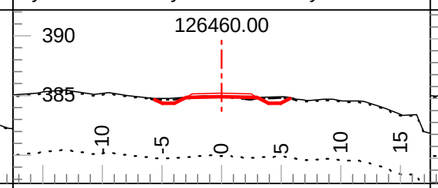

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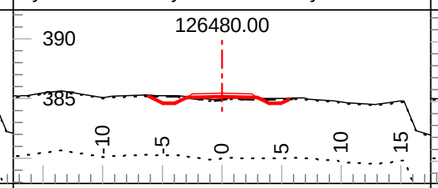

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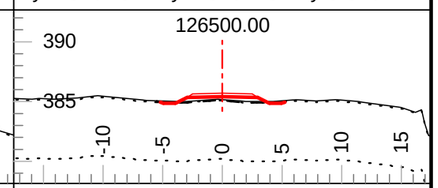

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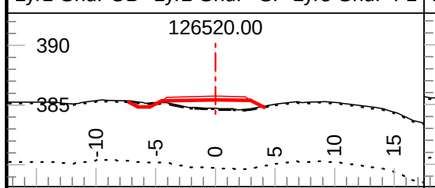

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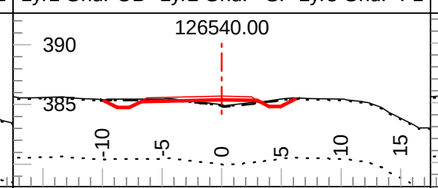

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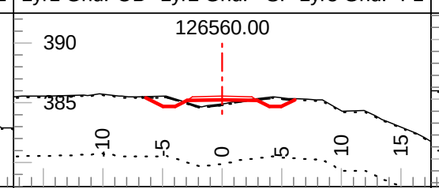

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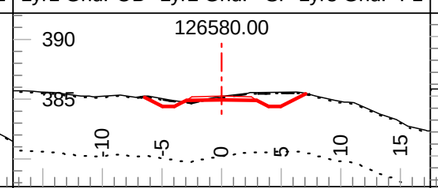

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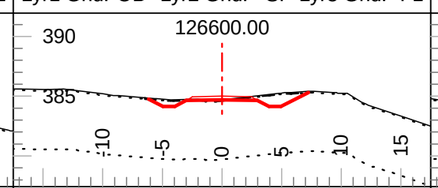

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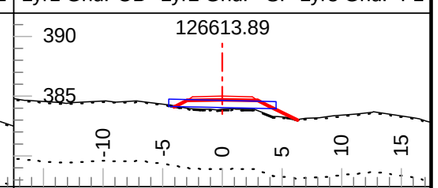


Tmpl: 5M Lyr1 Dp.: 0.10 Lyr2 Dp.: 5.00
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd: F1

Coffee Gold Mine

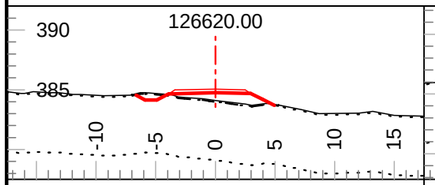
Northern Access Route Upgrade and Establishment
South Yukon Barge Road
Geometric Alignment - Cross Sections
km 126.2 - 126.7

GOLDCORP

Section Scale 1:500

ISSUED FOR PERMIT APPROVAL

ONSITE Engineering Ltd.



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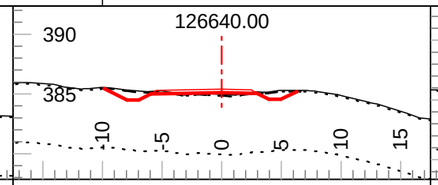

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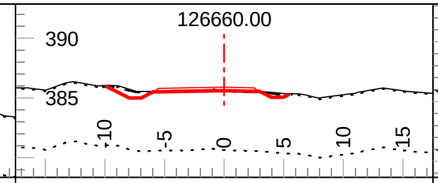

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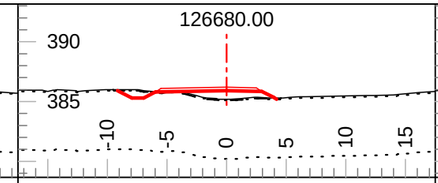

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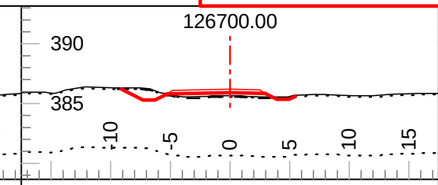

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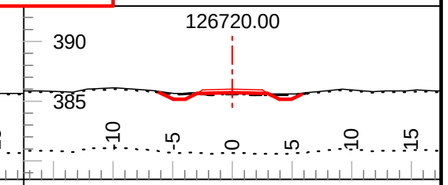

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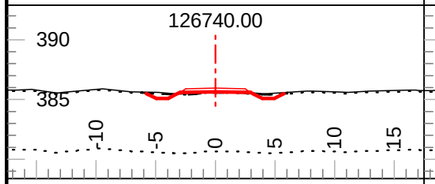

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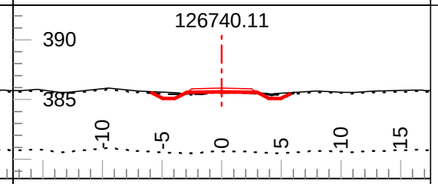
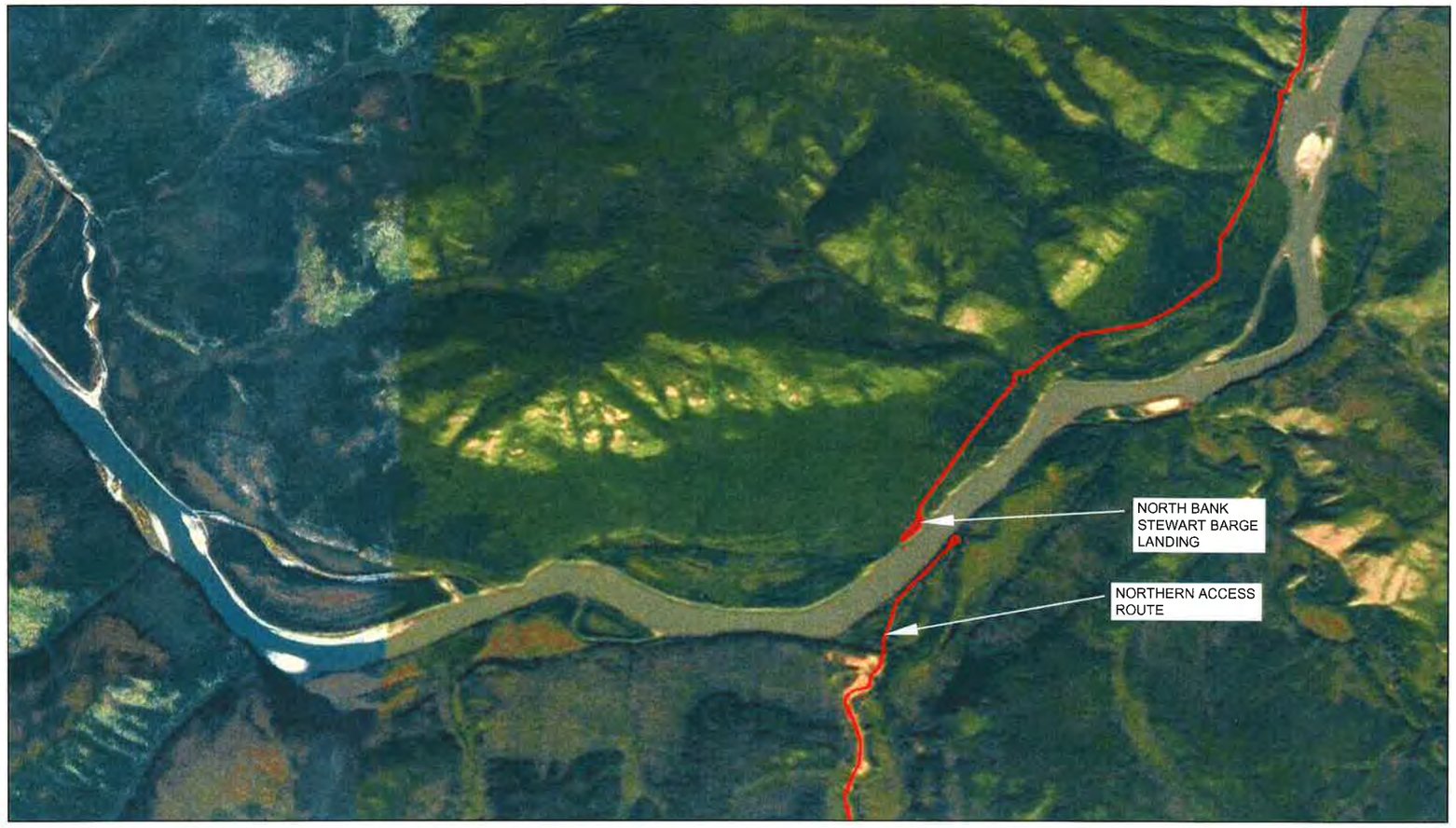


Tmpl: 5M Lyr1 Dp.: 0.10 Lyr2 Dp.: 5.00
Lyr1 Gnd: OB Lyr2 Gnd: SI Lyr3 Gnd: F1

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



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NOT TO SCALE

Signature REDACTED

SIGN...

Date MAR 2 4 2017

PERMIT NUMBER PP289
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-1-NORTHSTEWART-001

SHEET: 1 OF 11

PREPARED FOR:

GOLDCORP

PREPARED BY:

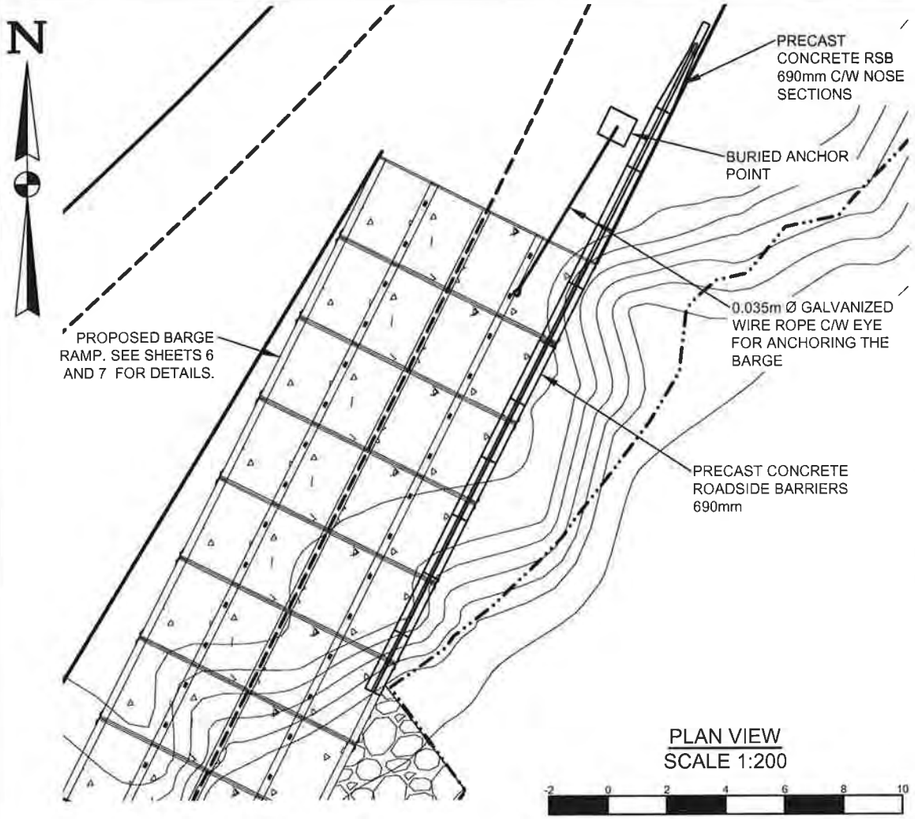
ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

SHEET 2 OF 11 - PLAN VIEWS
SHEET 3 OF 11 - RIPRAP CROSS SECTIONS AND ROAD PROFILE VIEWS
SHEET 4 - 6 OF 11 - ROAD PROFILE VIEWS
SHEET 7 OF 11 - DRAINAGE PLAN VIEW AND RIPRAP DETAIL
SHEET 8OF 11 - SUMP AND DITCH CROSS SECTION VIEWS
SHEET 9 OF 11 - BARGE PANEL PLAN AND CROSS SECTION VIEWS
SHEET 10 OF 11 - BARGE PANEL DETAIL VIEWS
SHEET 11 OF 11 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

NOTES:

1. BCL-625 DESIGN VEHICLE LOADING.
2. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
3. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
4. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - GRADING, SURFACING AND SUMP CONSTRUCTION.
   - RIPRAP PLACEMENT AND RAMP CONSTRUCTION.
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

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ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-002

SHEET: 2 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF J. T. P.ENG.

PROFESSIONAL ENGINEER

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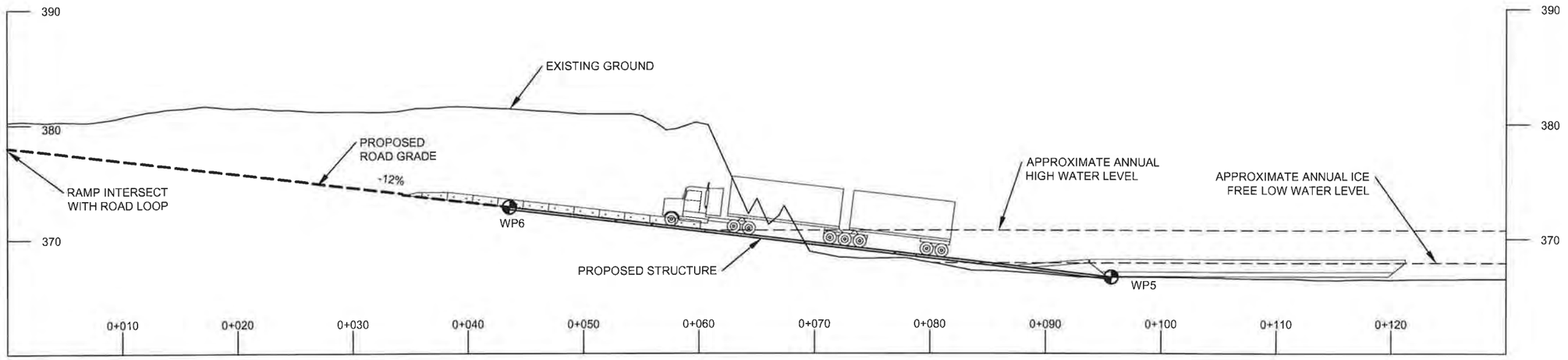
MAR 2

DESIGNED ROAD EDGES

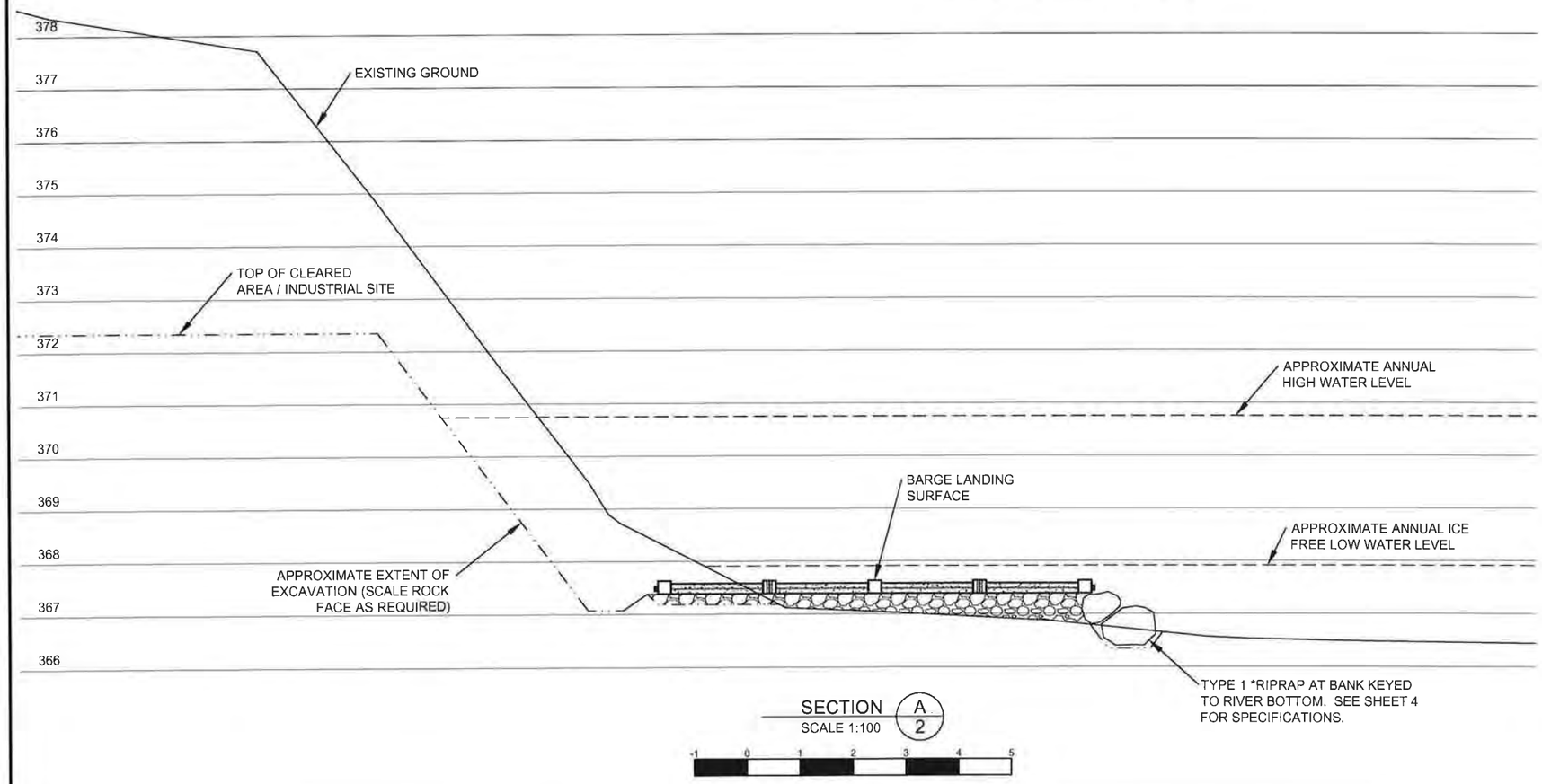
DESIGNED ROAD C/L

PRESENT WATER LEVEL

STORAGE BOUNDARY



ROAD PROFILE VIEW AT BARGE RAMP
SCALE 1:400



SECTION A/2
SCALE 1:100

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PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-003

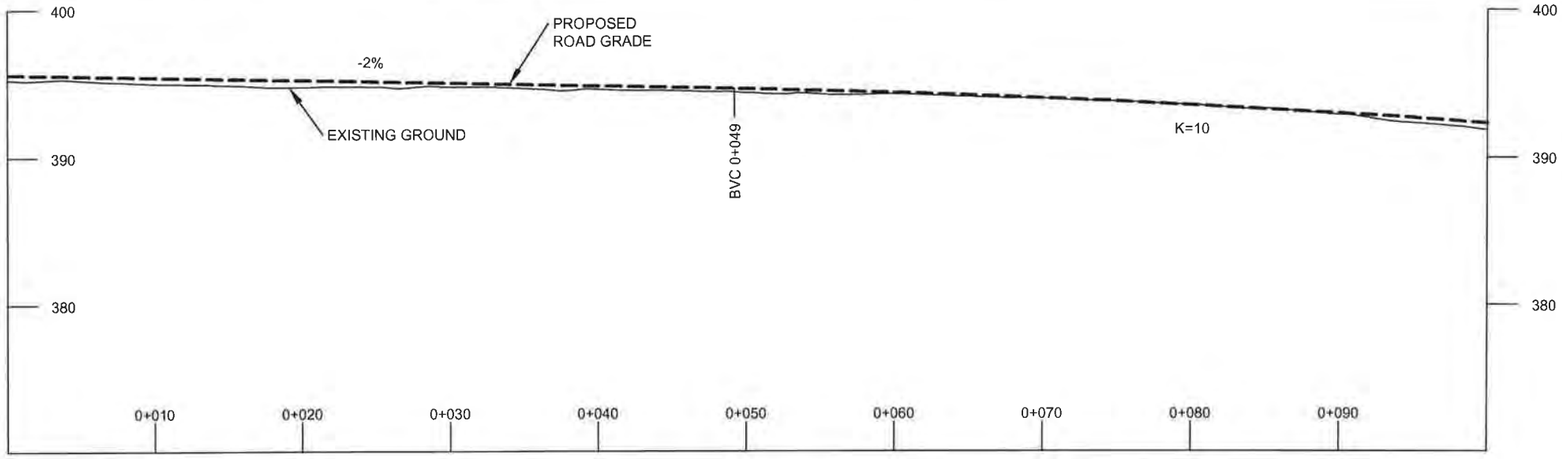
SHEET: 3 OF 11

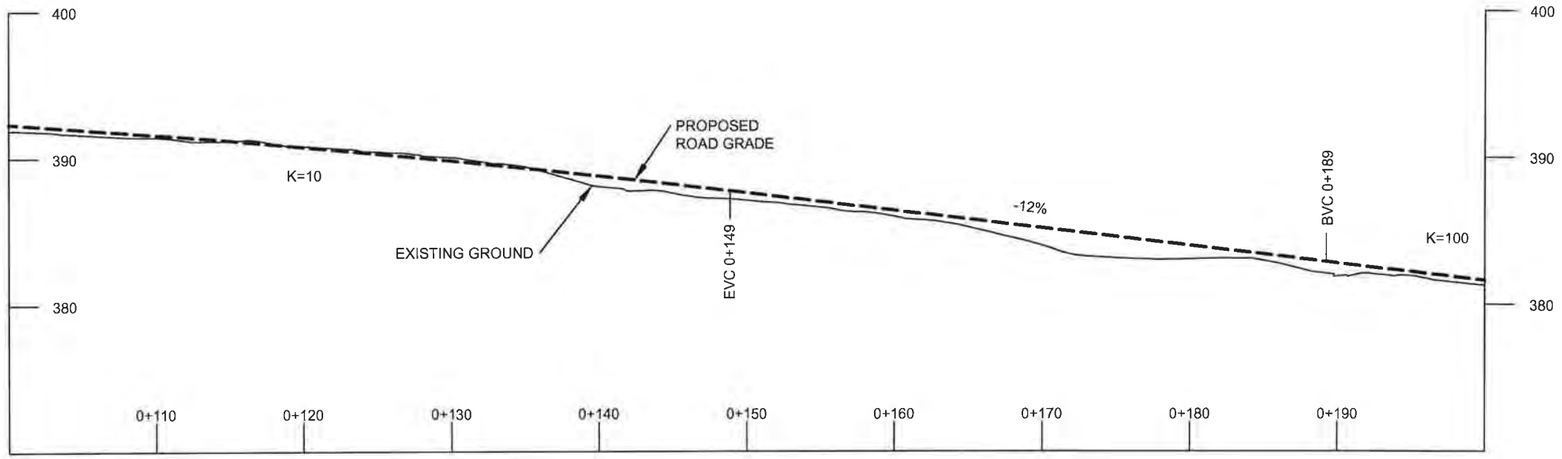
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

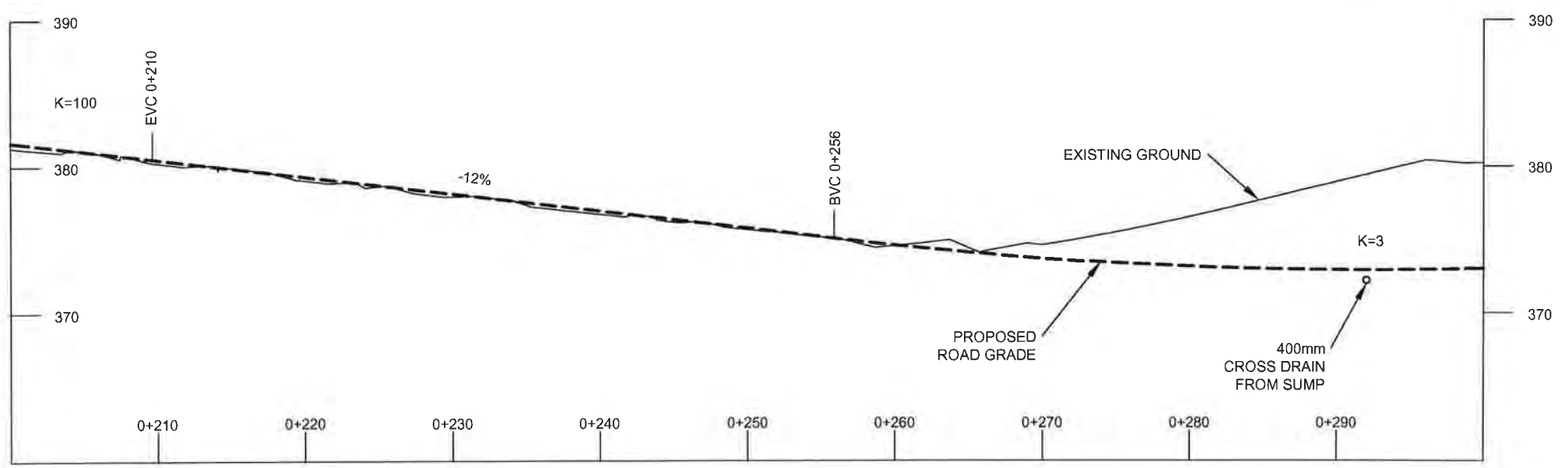
Signature REDACTED

MAR 24 2017

PROPOSED ROAD GRADE — — — — — PRESENT WATER LEVEL — — — —
EXISTING GROUND
BEDROCK







ROAD PROFILE VIEWS
SCALE 1:400

-4 0 4 8 12 16 20

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

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PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-004

SHEET: 4 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF P.T. P.ENG.

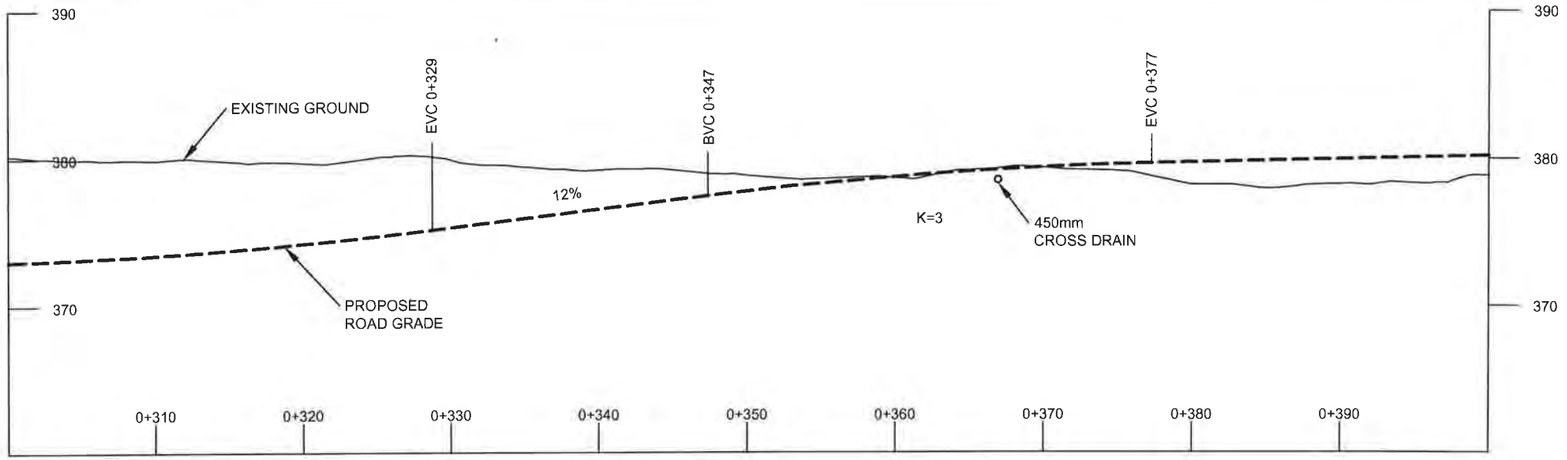
PROFESSIONAL ENGINEER

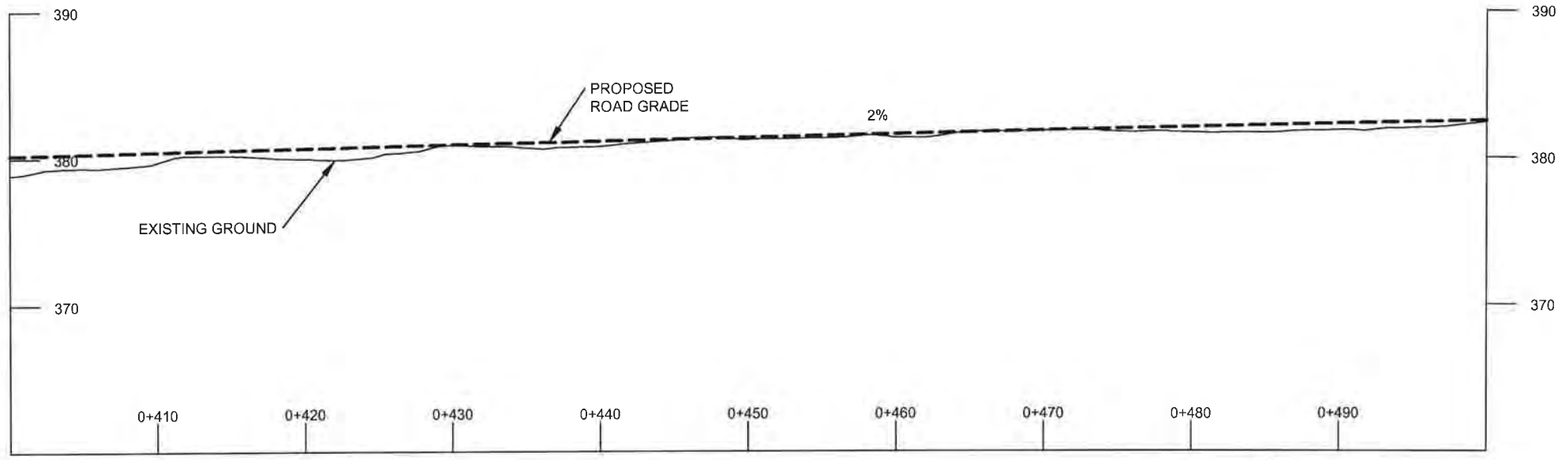
Signature REDACTED

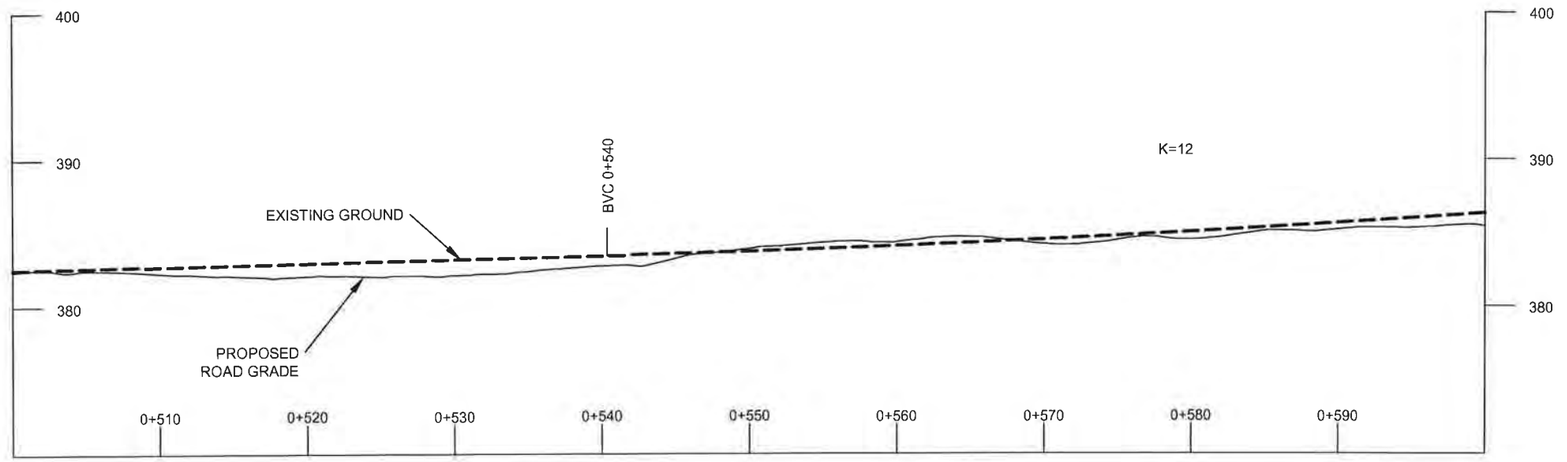
MAR 24 2017 J.C. TE

PROPOSED ROAD GRADE ——————

EXISTING GROUND ——————







ROAD PROFILE VIEWS
SCALE 1:400

-4 0 4 8 12 16 20

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-005

SHEET: 5 OF 11

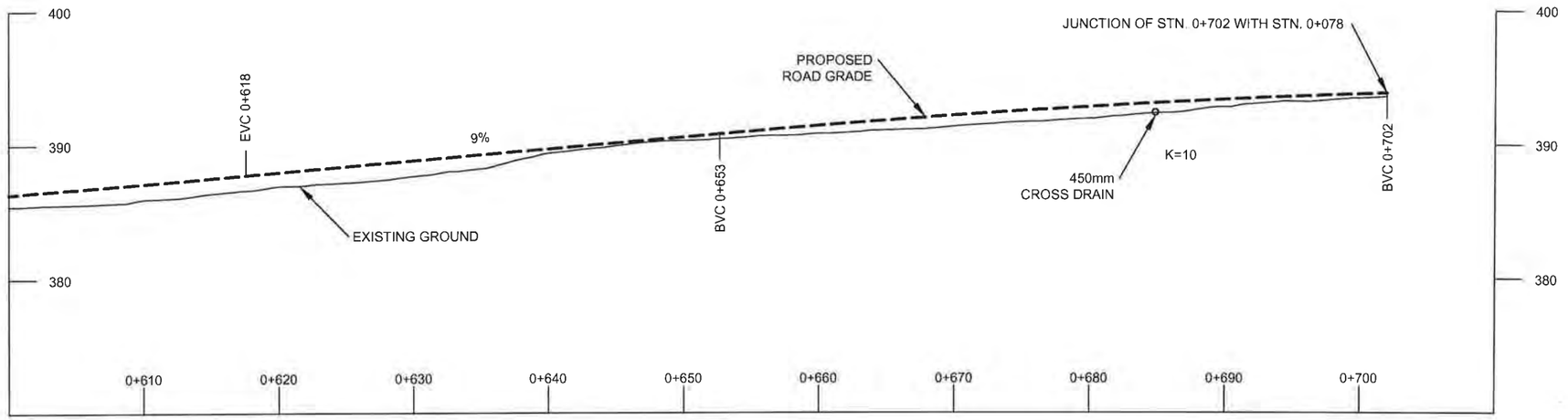
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF Signature REDACTED

MAR 2 [illegible] 2017 J.[illegible]

PROPOSED ROAD GRADE ------

EXISTING GROUND ——————



ROAD PROFILE VIEW
SCALE 1:400

-4 0 4 8 12 16 20

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CAUTION:

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-006

SHEET: 6 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
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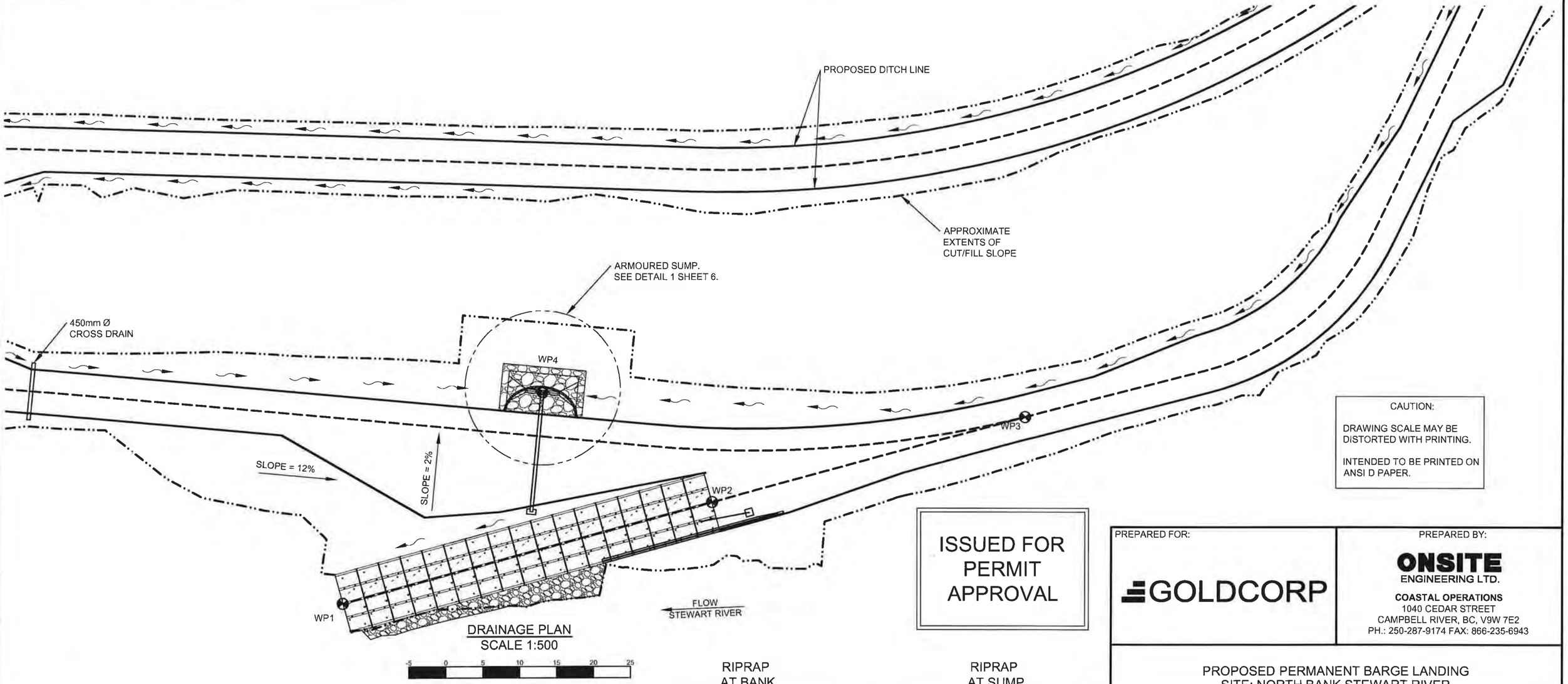
SEAL OF T. D. FORBES
Signature REDACTED
PROFESSIONAL ENGINEER
YUKON
TERRITORY
MAR 2 4 2017

PROPOSED ROAD GRADE ——————

EXISTING GROUND ——————



DRAINAGE PLAN
SCALE 1:500

-5 0 5 10 15 20 25

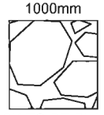
UTM ZONE 7			
WP	N	E	ELEV
WP1	7008343.05	605978.43	366.67
WP2	7008389.40	606001.59	372.78
WP3	7008428.61	606021.21	377.64
WP4	7008382.35	605975.10	370.02

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

RIPRAP AT BANK

TYPE 1 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 25(260)
50% 250(565)
85% 750(815)
NOMINAL THICKNESS OF RIPRAP
1000mm

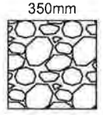


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

RIPRAP AT SUMP

TYPE 2 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 1(90)
50% 10(195)
85% 30(280)
NOMINAL THICKNESS OF RIPRAP
350mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

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GOLDCORP

PREPARED BY:

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-007

SHEET: 7 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

PROFESSIONAL ENGINEER
Signature REDACTED
SEAL OF Y.T. P
YUK
MAR 24 2017 J.C.P.
TERRI
ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
DITCH FLOW
PRESENT WATER LEVEL
STORAGE BOUNDARY

PARTIAL MATERIALS LIST	
1	400mm Ø X 15m LONG CORRUGATED STEEL PIPE
2	450mm Ø X 8m LONG CORRUGATED STEEL PIPE CROSS DRAIN
1	SPILL BOOM
1	SPILL BASKET C/W SPILL PADS
1	125m² PVC LINER
#	RIPRAP: SEE SPECIFICATIONS ON SHEET 7

CAUTION:

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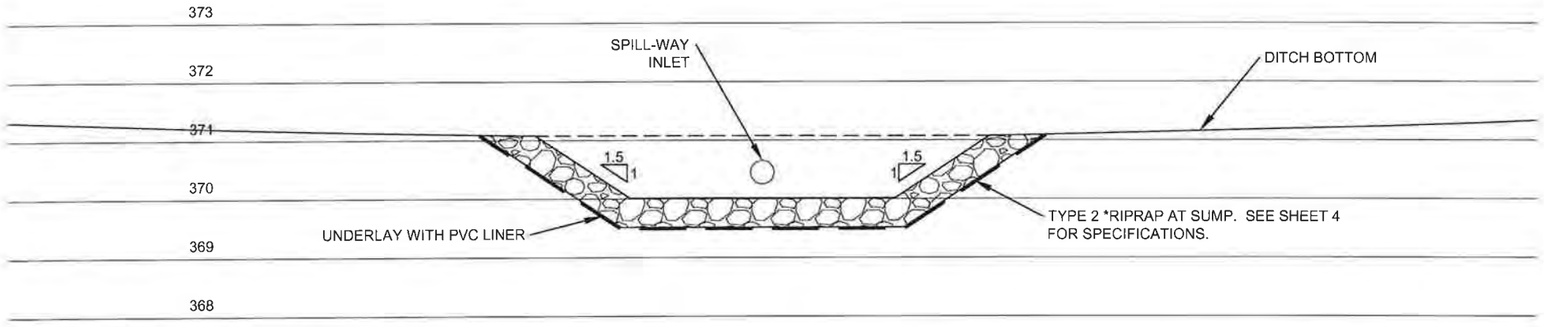
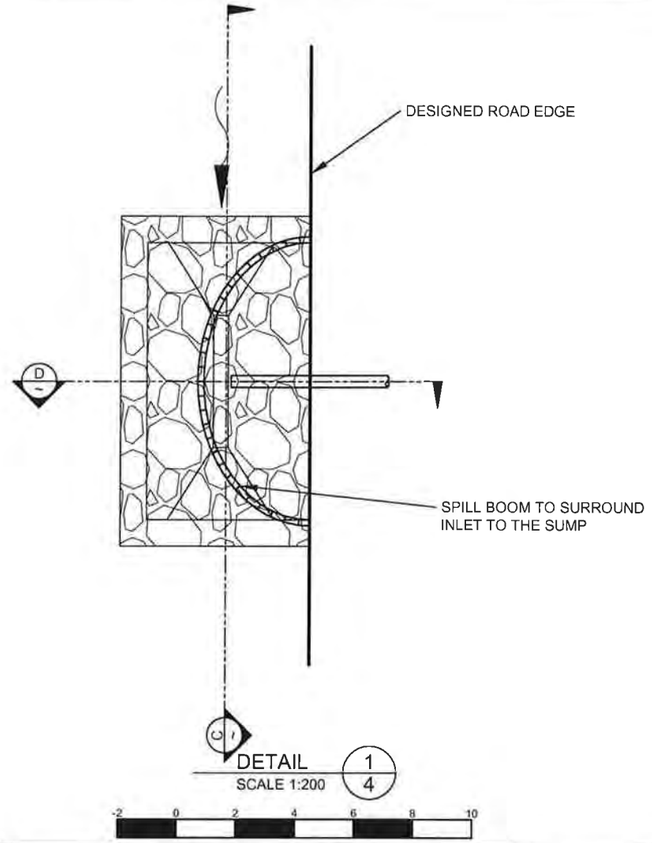
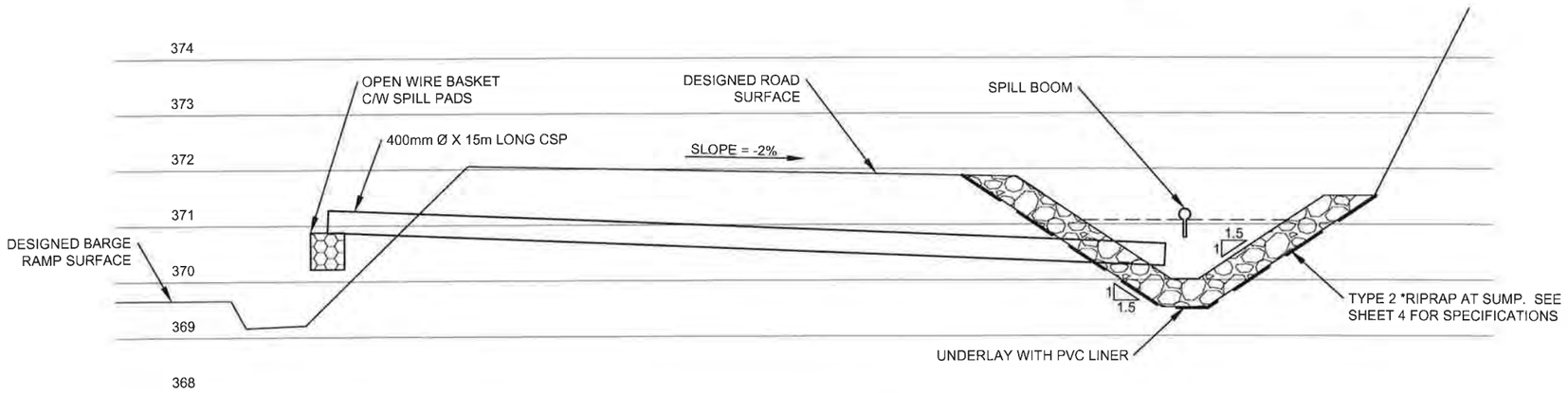


SECTION C
SCALE 1:100



DETAIL 1/4
SCALE 1:200

ISSUED FOR PERMIT APPROVAL



SECTION D
SCALE 1:100

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-008

SHEET: 8 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
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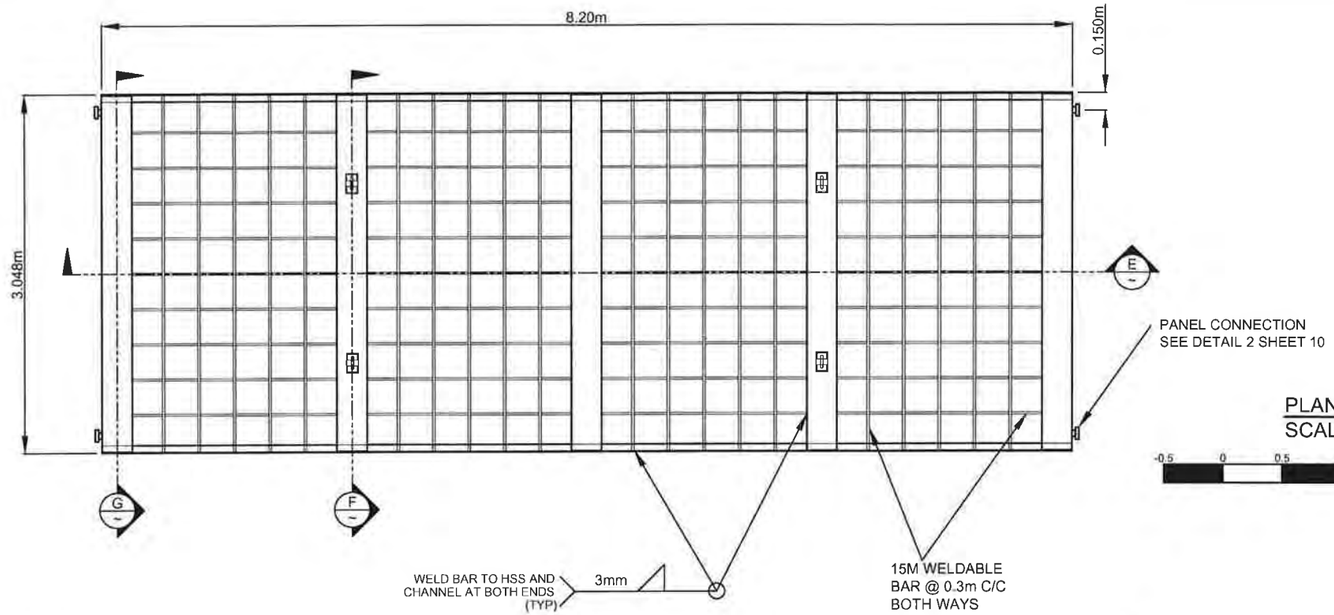
SEAL OF Y.T. P
PROFESSIO
YUKO
J.C.P. AF
TERRIT
ENGINEER
MAR 24 2017

BARGE LANDING SURFACE
DITCH BOTTOM
PVC LINER



PLAN VIEW
SCALE 1:25

SECTION E
SCALE 1:25

SECTION F
SCALE 1:10

SECTION G
SCALE 1:10

PARTIAL MATERIALS LIST PER PANEL	
5	HSS 254 X 254 X 9.5 X 3.048m LONG
2	C200 X 28 X 7.94m LONG
125m	WELDABLE 15M REBAR
10	254mm X 508mm X 9.5mm PLATES FOR END OF HSS
8	254mm X 171mm X 9.5mm PLATES FOR LIFTING ANCHORS
8	254mm X 83mm X 9.5mm PLATES FOR LIFTING ANCHORS
4	0.102m X 0.0508Øm STEEL PINS (LIFTING ANCHORS)
4	0.203m X 0.1142m X 19Ømm STEEL RINGS (LIFTING RINGS)
2	0.567m X 0.203m X 0.0254m PLATES (PANEL CONNECTION PLATES)
4	CONNECTION PINS (SEE SHEET 10 FOR DETAILS)
4m³	35MPa CONCRETE, MAX 0.025mm AGGREGATE, MIN 5% AIR ENTRAINMENT

CAUTION:

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1040 CEDAR STREET
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PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-009

SHEET

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
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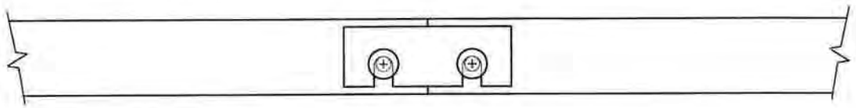
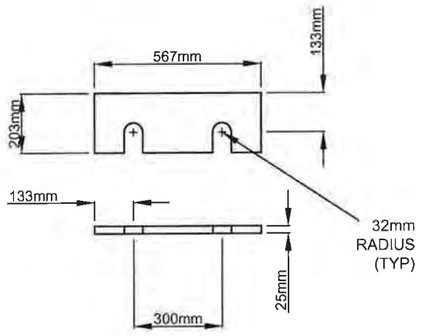
SIDE VIEW OF PANEL CONNECTION

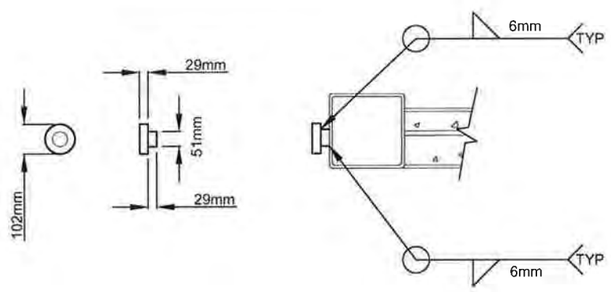


DETAIL 2/9
PANEL CONNECTION
SCALE 1:10

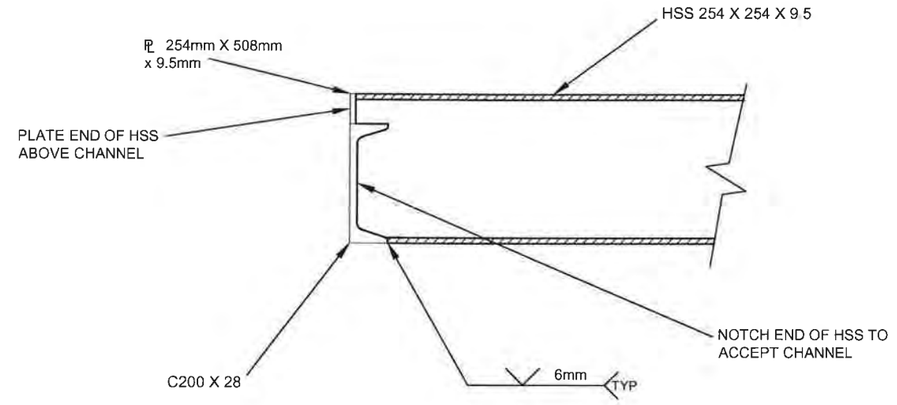
CONNECTION TAB



CONNECTION PIN

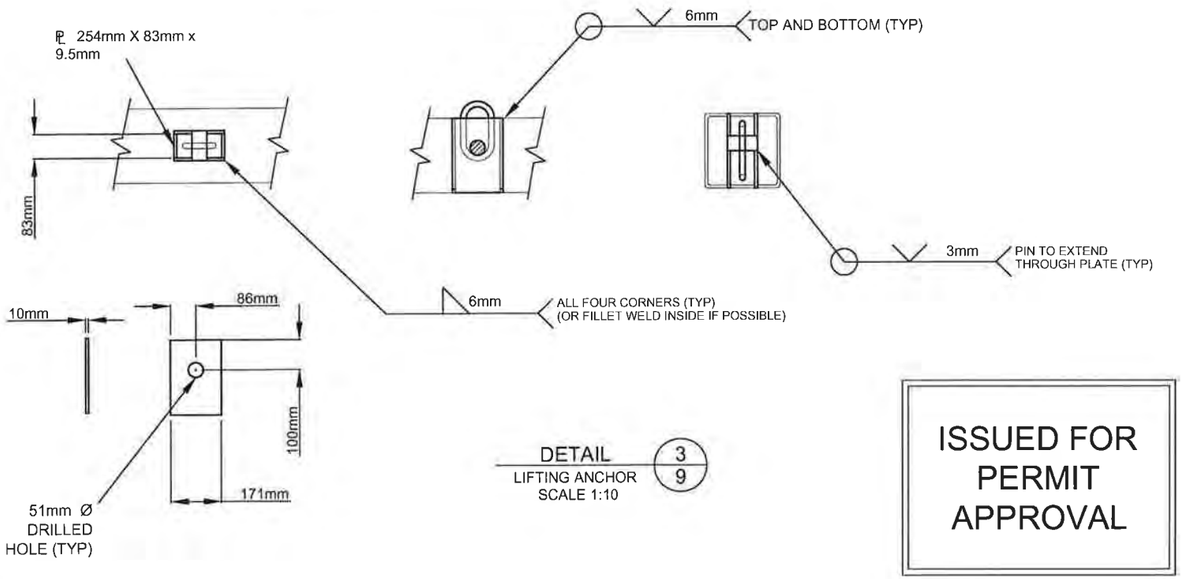


HSS TO C CHANNEL



DETAIL 4/9
HSS BEAM END
SCALE 1:5

LIFTING POINT DETAIL



DETAIL 3/9
LIFTING ANCHOR
SCALE 1:10

LIFTING RING



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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-010

SHEET 10 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

SEAL OF PROFESSIONAL ENGINEER

MAR 2 4 2017



PHOTO #1 - VIEW OF NORTH STEWART RIVER BANK



PHOTO #2 - VIEW OF NORTH STEWART RIVER BANK

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK STEWART RIVER
(63° 11' 16.52" N, 138° 53' 47.83" W)

DWG No:1343-1-NORTHSTEWART-011

SHEET: 11 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 4, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: NORTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 4, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

SIGN
Date

Association of Professional Engineers of Yukon

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-1-SOUTHSTEWART- 001

SHEET: 1 OF 9

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
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DRAWING INDEX:

SHEET 2 OF 9 - PLAN VIEWS
SHEET 3 OF 9 - RIPRAP CROSS SECTION A AND ROAD PROFILE VIEWS
SHEET 4 OF 9 - RIPRAP CROSS SECTION B VIEW
SHEET 5 OF 9 - DRAINAGE PLAN VIEW AND RIPRAP DETAIL
SHEET 6 OF 9 - SUMP AND DITCH CROSS SECTION VIEWS
SHEET 7 OF 9 - BARGE PANEL PLAN AND CROSS SECTION VIEWS
SHEET 8 OF 9 - BARGE PANEL DETAIL VIEWS
SHEET 9 OF 9 - SITE PHOTOS

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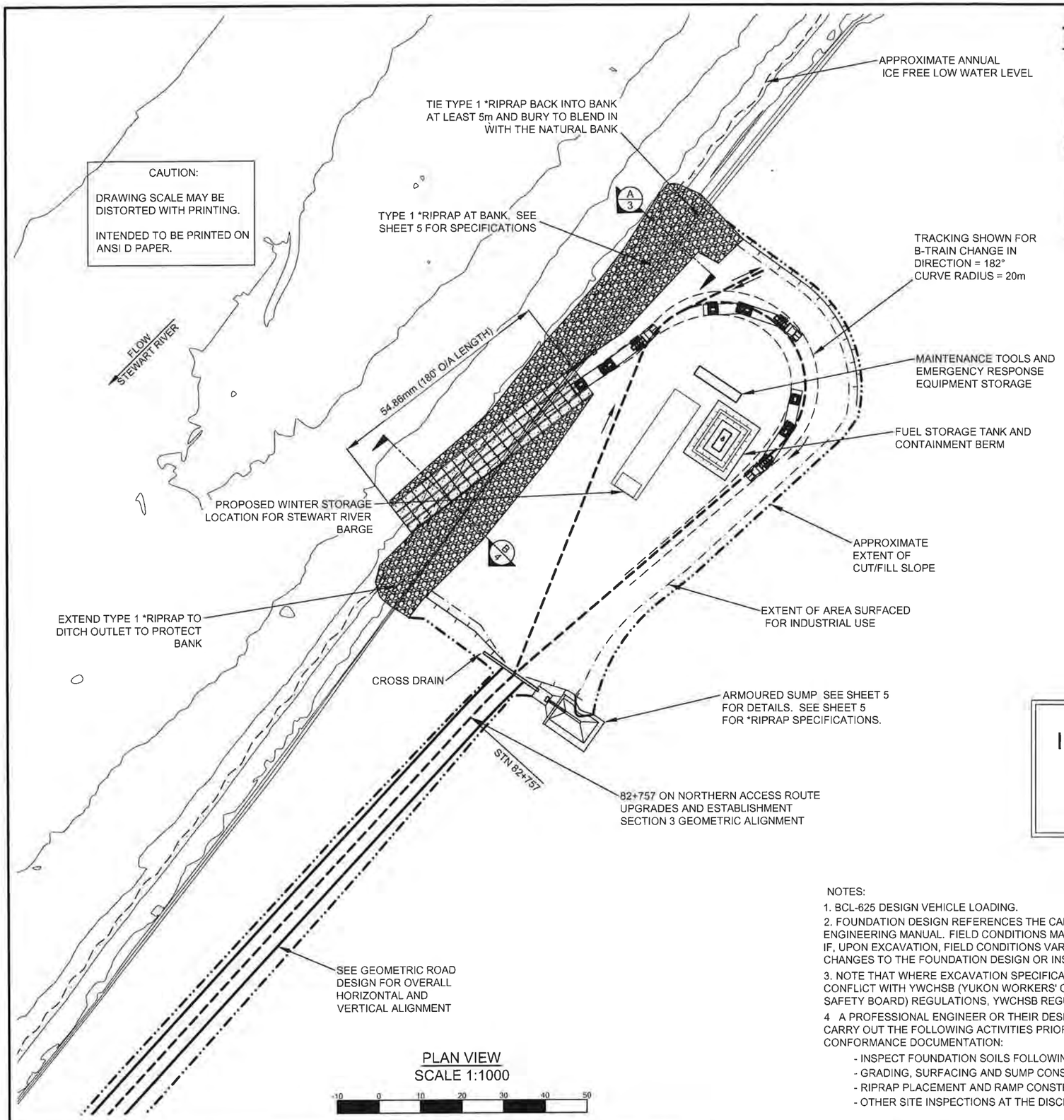
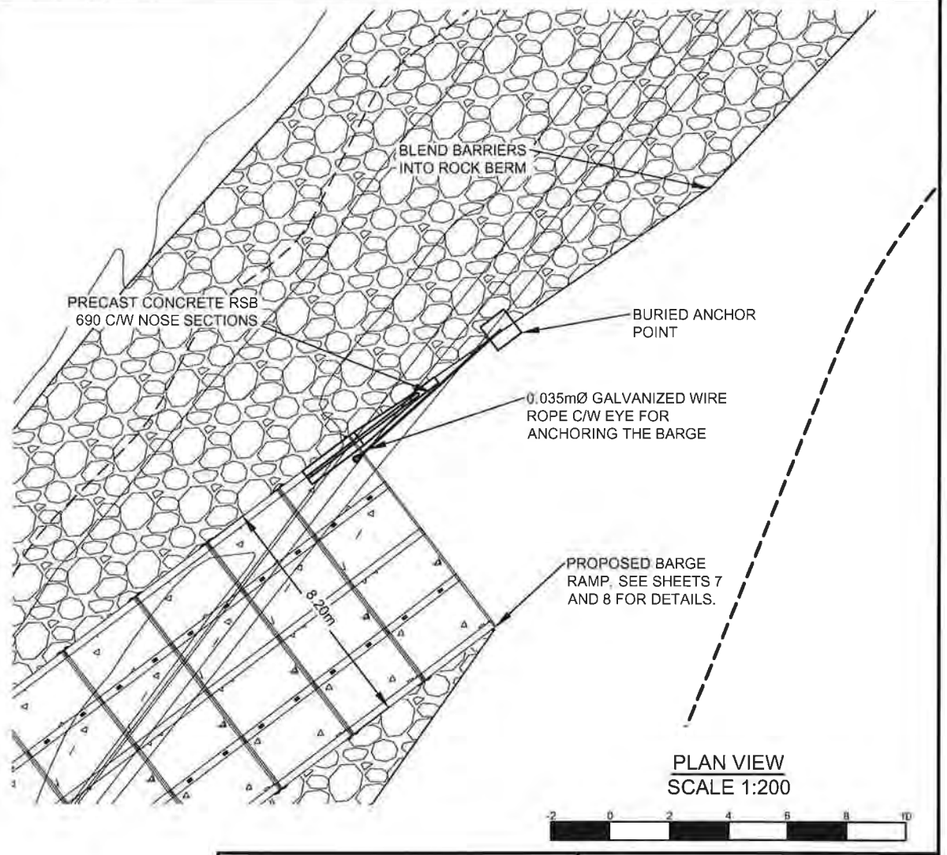


PLAN VIEW
SCALE 1:1000



PLAN VIEW
SCALE 1:200

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NOTES:

1. BCL-625 DESIGN VEHICLE LOADING.
2. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
3. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
4. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - GRADING, SURFACING AND SUMP CONSTRUCTION.
   - RIPRAP PLACEMENT AND RAMP CONSTRUCTION.
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR SITE: SOUTH BANK STEWART RIVER

(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-002

SHEET:

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
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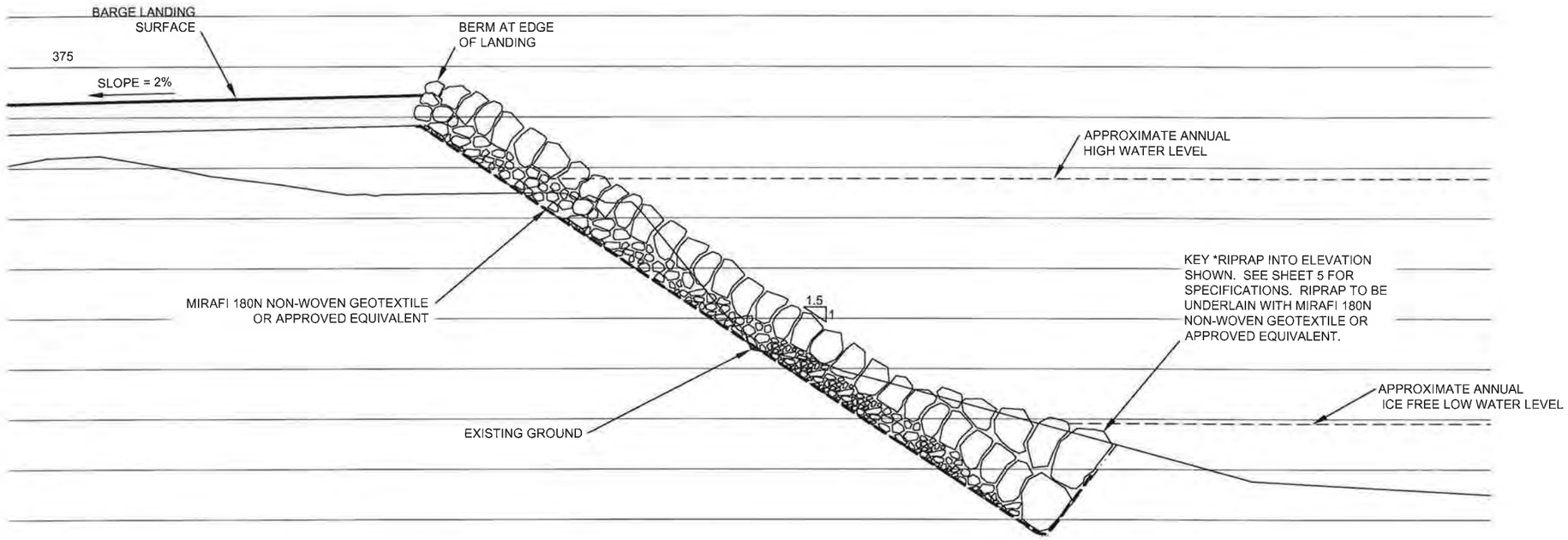
SEAL OF Y... PROFE... YL... J.C.F... TERI... ENGINEER...

MAR 24, 2017

DESIGNED ROAD EDGES ——— PRESENT WATER LEVEL — — — —

DESIGNED ROAD C/L — — — — STORAGE BOUNDARY — — — —



SECTION A/2
SCALE 1:100

-1 0 1 2 3 4 5

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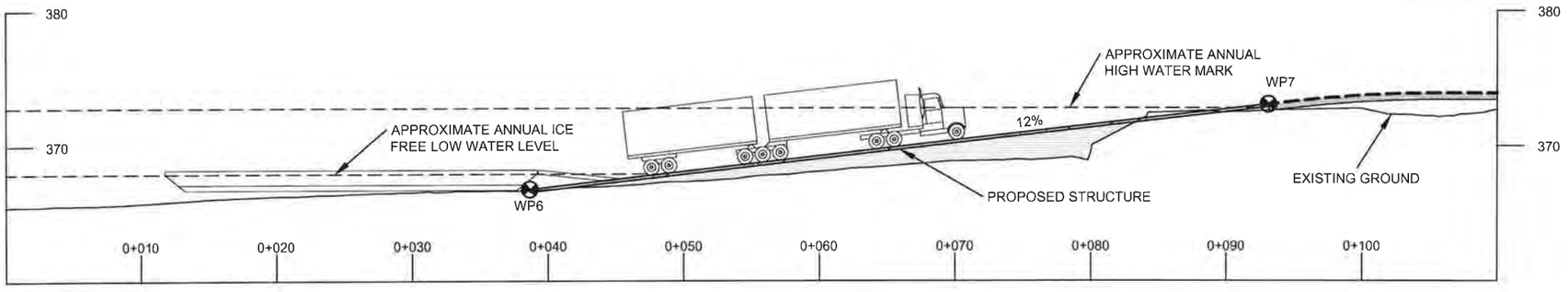

ROAD PROFILE VIEW AT BARGE RAMP
SCALE 1:400

-4 0 4 8 12 16 20

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-003

SHEET 3

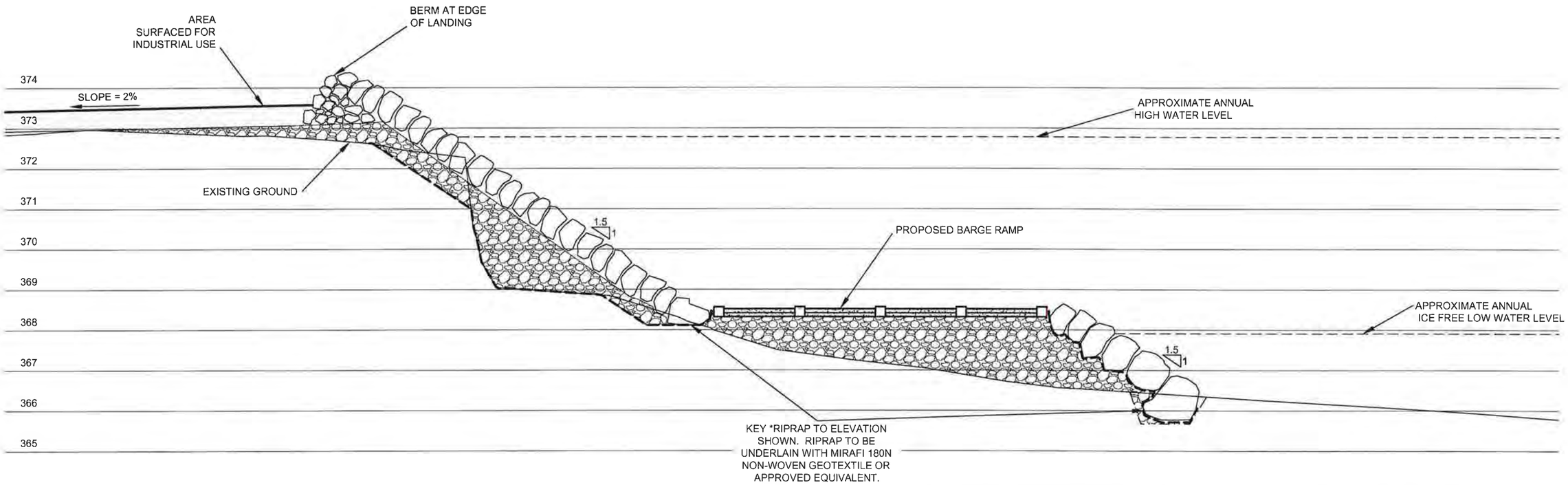
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

PROFESS
SEAL OF Y.T.
YUK
J.C.P. A
TERRIT
ENGINEE

MAR 2 4 2017

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
PRESENT WATER LEVEL
STORAGE BOUNDARY



SECTION B/2
SCALE 1:100

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CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

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PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-004

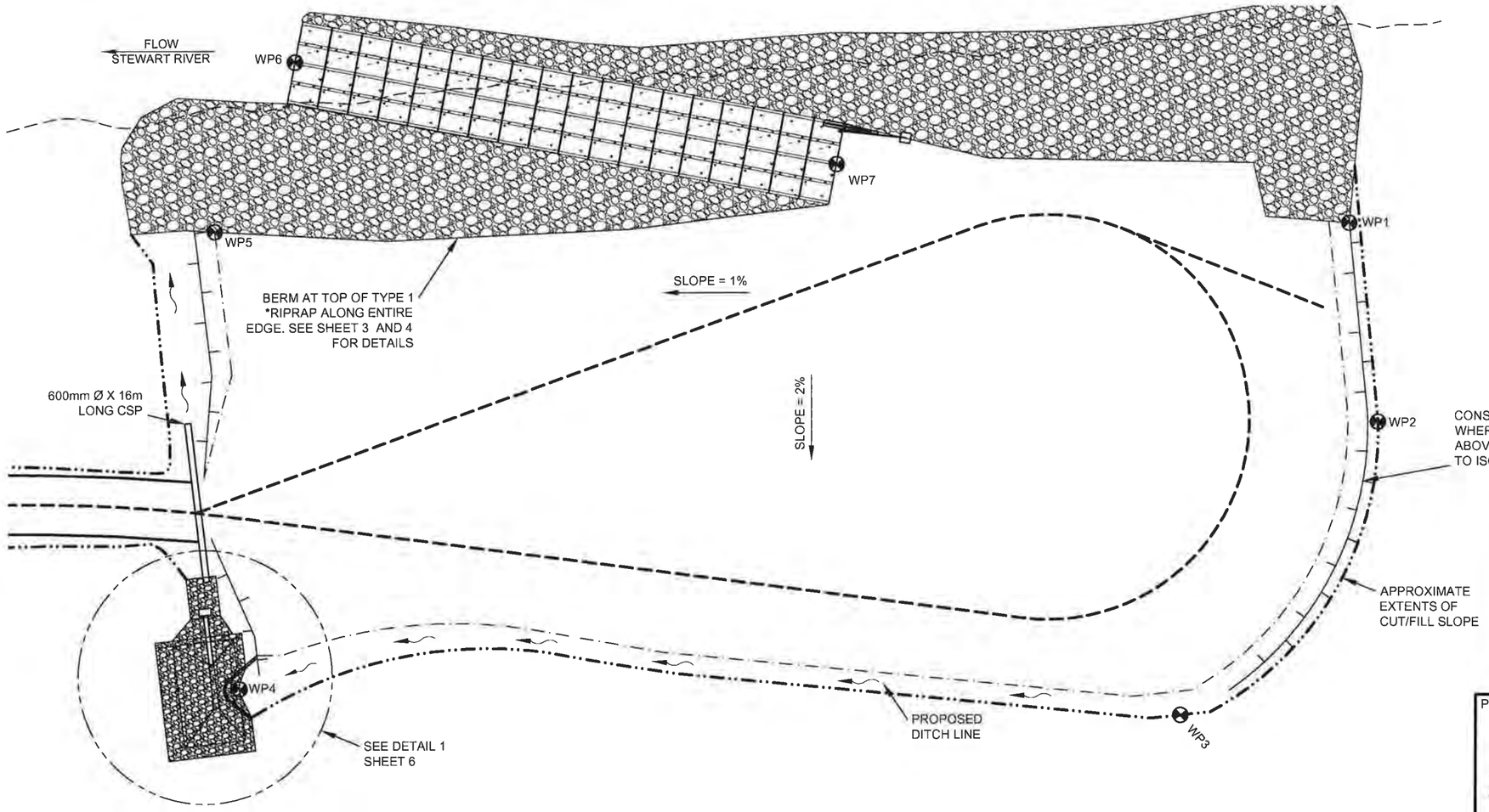
Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAR 1 4 20

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
PRESENT WATER LEVEL
STORAGE BOUNDARY



UTM ZONE 7			
WP	N	E	ELEV
WP1	7008367.60	606293.93	374.20
WP2	7008356.46	606310.76	373.83
WP3	7008322.20	606319.59	373.05
WP4	7008254.26	606254.89	371.62
WP5	7008283.13	606219.15	373.06
WP6	7008300.38	606211.93	366.78
WP7	7008333.64	606255.56	373.05

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DRAINAGE PLAN
SCALE 1:500

-5 0 5 10 15 20 25

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

RIPRAP
AT BANK

TYPE 1 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 25(260)
50% 250(565)
85% 750(815)
NOMINAL THICKNESS OF RIPRAP
1000mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 2500m³ OF RIPRAP REQUIRED.

RIPRAP
AT SUMP

TYPE 2 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 1(90)
50% 10(195)
85% 30(280)
NOMINAL THICKNESS OF RIPRAP
350mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-005

SHEET: 5 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

MAR 2 ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
DITCH FLOW
PRESENT WATER LEVEL
STORAGE BOUNDARY

PARTIAL MATERIALS LIST	
6	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
1	600mm Ø X 5m LONG CORRUGATED STEEL PIPE
1	SPILL BOOM
1	SPILL BASKET C/W SPILL PADS
1	136m² PVC LINER
#	RIPRAP: SEE SPECIFICATIONS ON SHEET 5

CAUTION:

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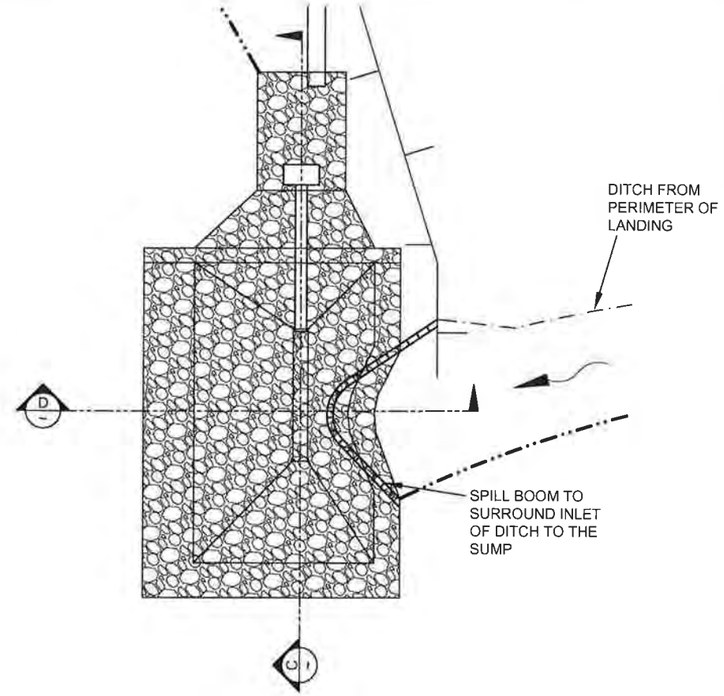
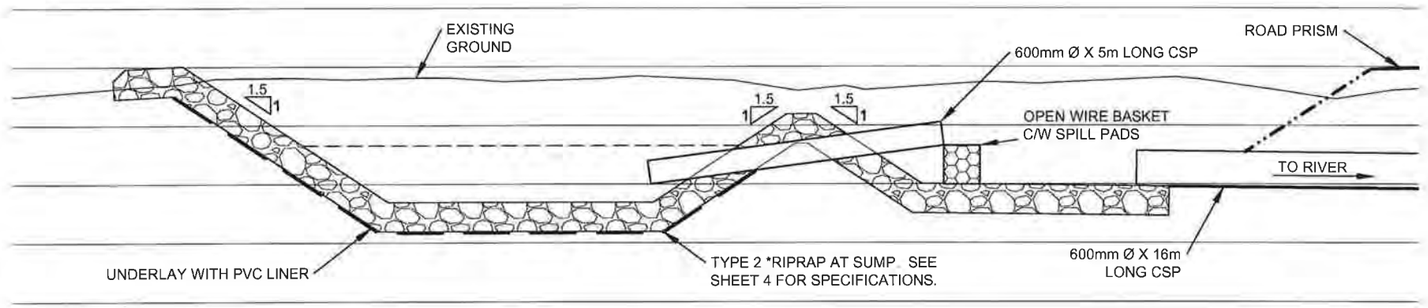
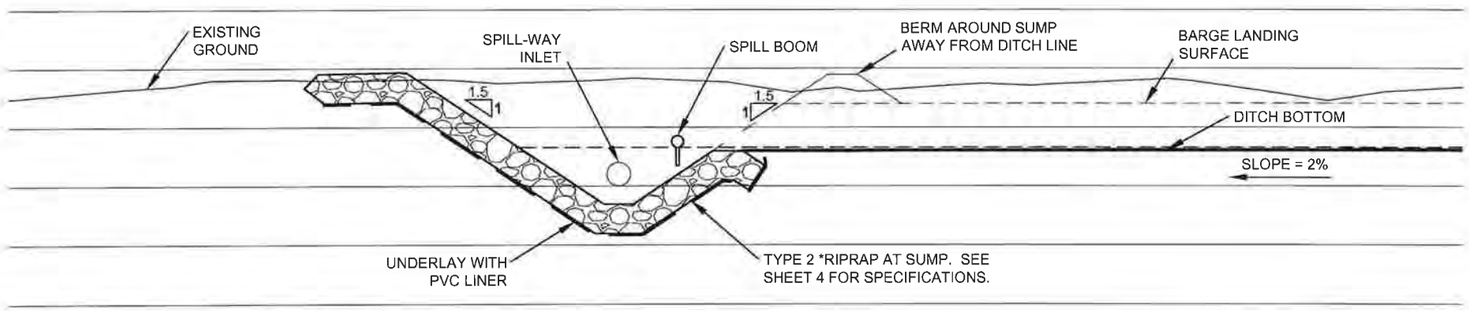


DETAIL 1/5
SCALE 1:200

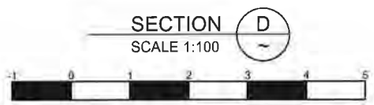


SECTION C
SCALE 1:100

ISSUED FOR PERMIT APPROVAL



SECTION D
SCALE 1:100



PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-006

SHEET: 6 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

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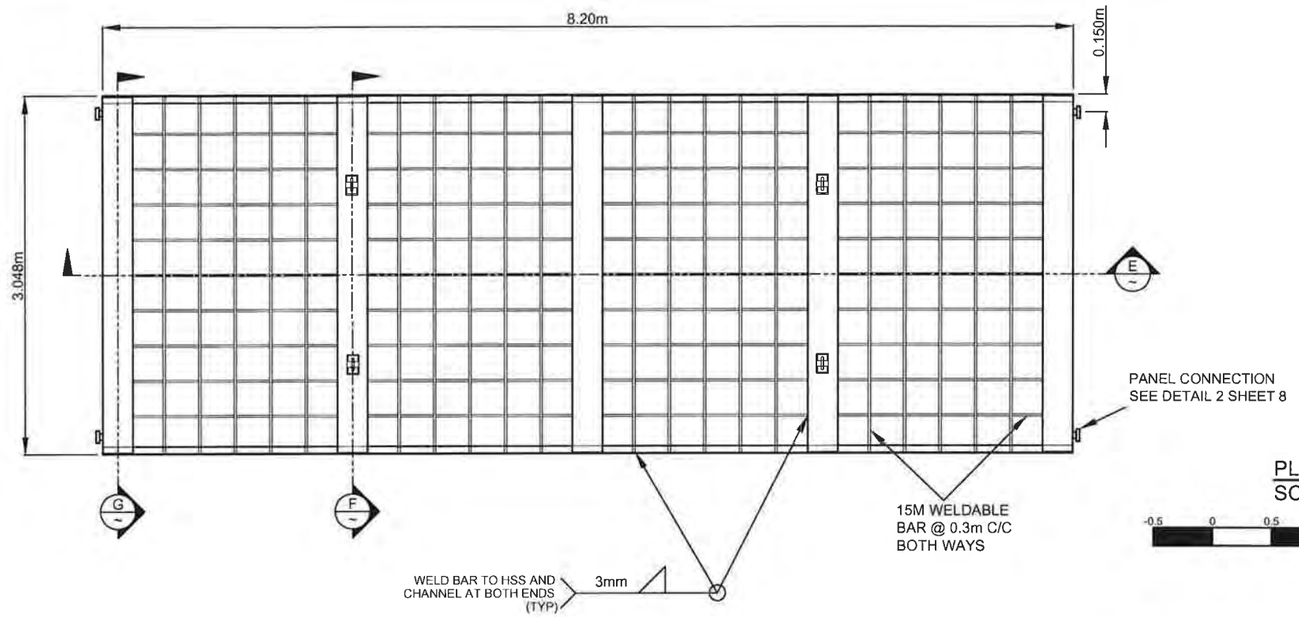
BARGE LANDING SURFACE
DITCH BOTTOM
PVC LINER



PLAN VIEW
SCALE 1:50

-0.5 0 0.5 1 1.5 2 2.5

PARTIAL MATERIALS LIST PER PANEL	
5	HSS 254 X 254 X 9.5 X 3.048m LONG
2	C200 X 28 X 7.94m LONG
125m	WELDABLE 15M REBAR
10	254mm X 508mm X 9.5mm PLATES FOR END OF HSS
8	254mm X 171mm X 9.5mm PLATES FOR LIFTING ANCHORS
8	254mm X 83mm X 9.5mm PLATES FOR LIFTING ANCHORS
4	0.102m X 0.0508Øm STEEL PINS (LIFTING ANCHORS)
4	0.203m X 0.1142m X 19Ømm STEEL RINGS (LIFTING RINGS)
2	0.567m X 0.203m X 0.0254m PLATES (PANEL CONNECTION PLATES)
4	CONNECTION PINS (SEE SHEET 8 FOR DETAILS)
4m³	35MPa CONCRETE, MAX 0.025mm AGGREGATE, MIN 5% AIR ENTRAINMENT

CAUTION:

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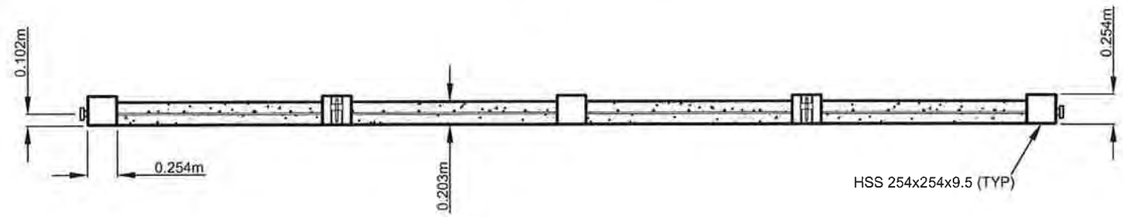

SECTION E
SCALE 1:50

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SECTION F
SCALE 1:10

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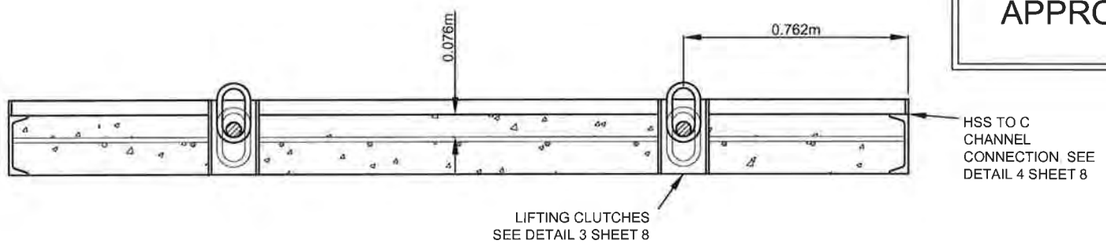

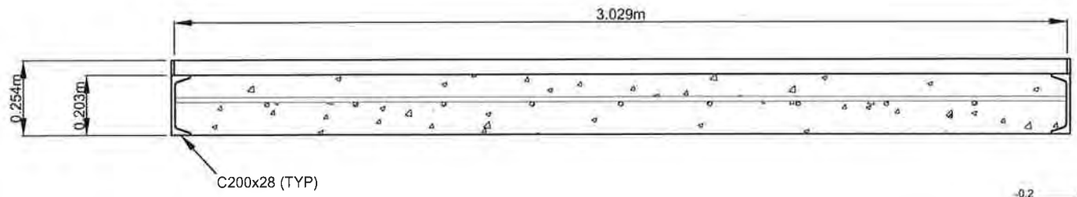

SECTION G
SCALE 1:20

-0.2 0 0.2 0.4 0.6 0.8 1

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GOLDCORP

PREPARED BY:

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ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-007

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAR 2

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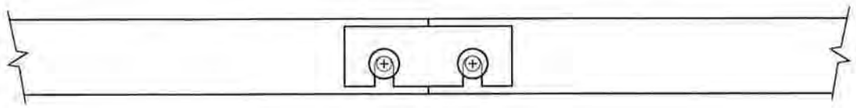
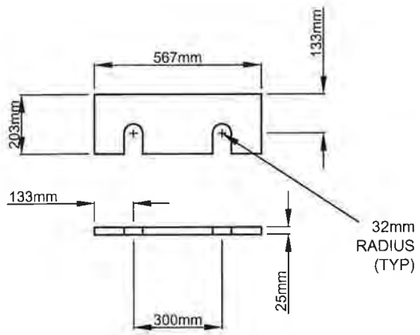
SIDE VIEW OF PANEL CONNECTION

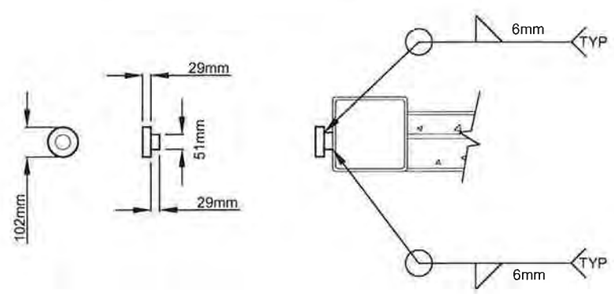


DETAIL 2/7
PANEL CONNECTION
SCALE 1:20

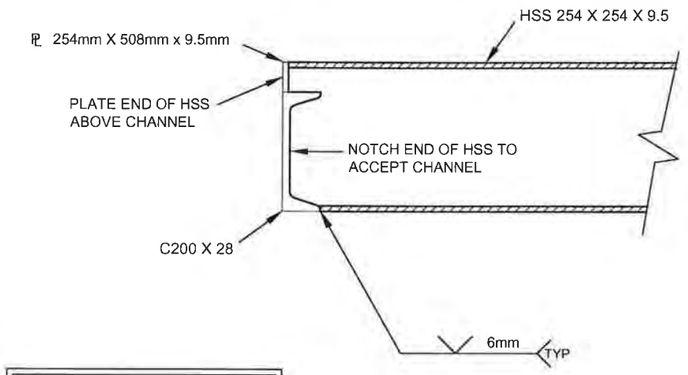
CONNECTION TAB



CONNECTION PIN



HSS TO C CHANNEL



DETAIL 4/7
HSS BEAM END
SCALE 1:10

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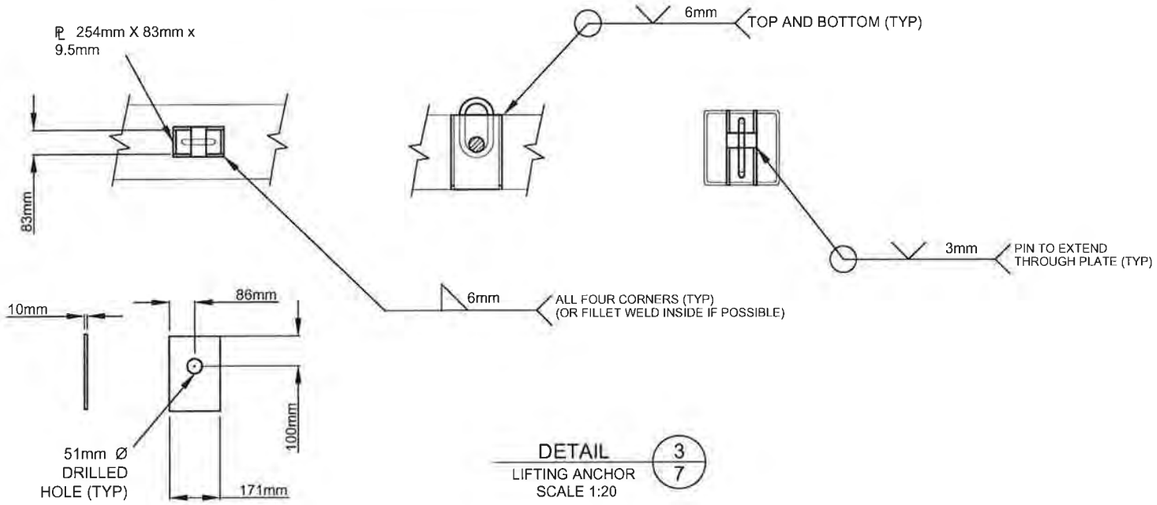
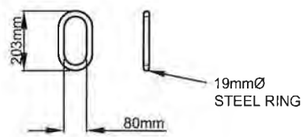
LIFTING POINT DETAIL



DETAIL 3/7
LIFTING ANCHOR
SCALE 1:20

LIFTING RING



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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART-008

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAR 24

ENGINEER



PHOTO #1 - VIEW OF COFFEE GOLD MINE APPROACH TO SITE



PHOTO #2 - VIEW UPSTREAM ALONG EXISTING ROAD



PHOTO #3 - VIEW OF STEWART RIVER BANK, UPSTREAM



PHOTO #4 - VIEW FROM UPSTREAM OF SITE LOOKING DOWNSTREAM

PREPARED FOR:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING FOR
SITE: SOUTH BANK STEWART RIVER
(63° 11' 08.75" N, 138° 53' 35.65" W)

DWG No:1343-1-SOUTHSTEWART- 009

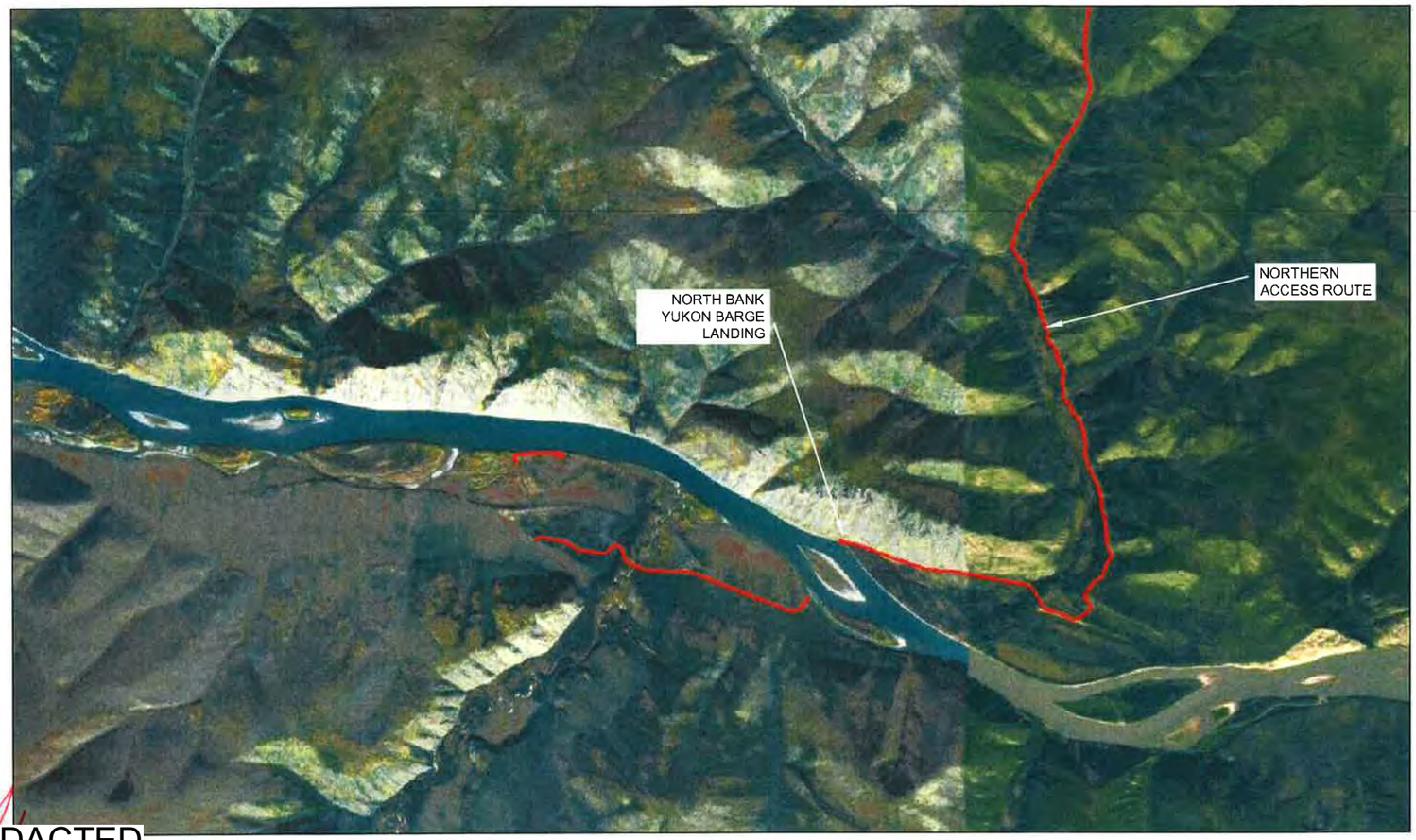
SHEET: 9 OF 9

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHSTEWART.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 5, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

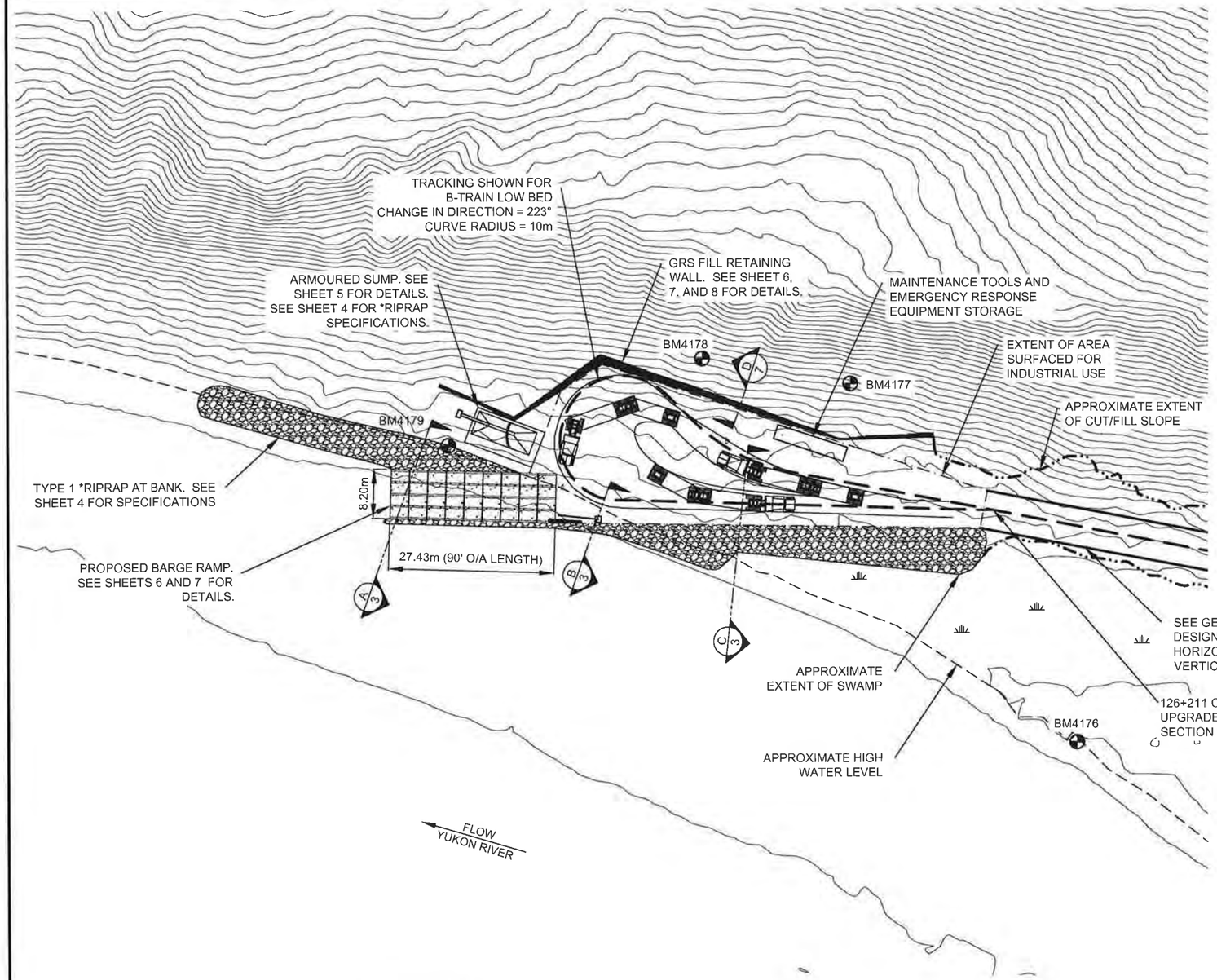
SI
D

PERMIT NUMBER PP289
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

ISSUED FOR
PERMIT
APPROVAL

DWG No:1343-1-NORTHYUKON-001	SHEET: 1 OF 11	DESIGN BY: JEREMY ARAKI, P.Eng. DESIGN DATE: MAY 10, 2016 REVIEWED BY: MICHAEL FOSTER, P.Eng. DRAWN BY: TODD FORBES, ROBERT KEMMLER SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016 FILE NAME: NORTHYUKON.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 3, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 11 - PLAN VIEWS SHEET 3 OF 11 - RIPRAP CROSS SECTIONS AND ROAD PROFILE VIEWS SHEET 4 OF 11 - DRAINAGE PLAN VIEW AND RIPRAP DETAIL SHEET 5 OF 11 - SUMP AND DITCH CROSS SECTION VIEWS SHEET 6 OF 11 - GRS PROFILE VIEW SHEET 7 OF 11 - GRS SECTION AND FRENCH DRAIN DETAIL SHEET 8 OF 11 - GRS SPECIFICATION SHEET SHEET 9 OF 11 - BARGE PANEL PLAN AND CROSS SECTION VIEWS SHEET 10 OF 11 - BARGE PANEL DETAIL VIEWS SHEET 11 OF 11 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:800

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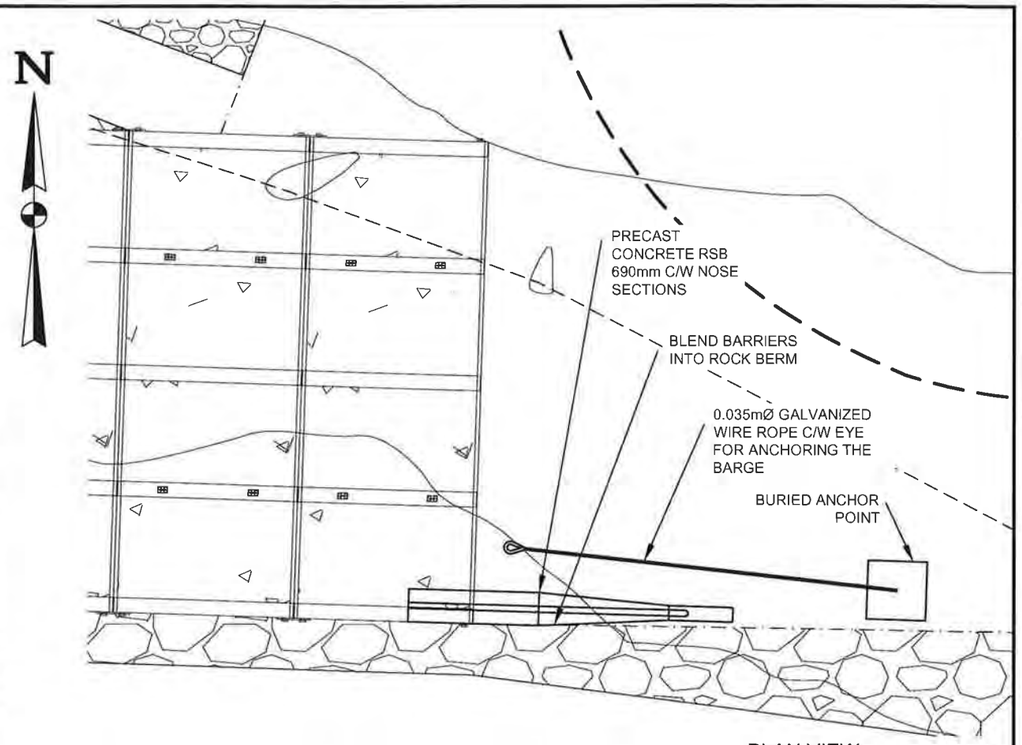

PLAN VIEW
SCALE 1:100

-2 0 2 4 6 8 10

CAUTION:

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NOTES:

1. BCL-625 DESIGN VEHICLE LOADING.
2. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
3. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
4. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - GRADING, SURFACING AND SUMP CONSTRUCTION
   - RETAINING WALL CONSTRUCTION
   - RIPRAP PLACEMENT AND RAMP CONSTRUCTION.
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-002

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

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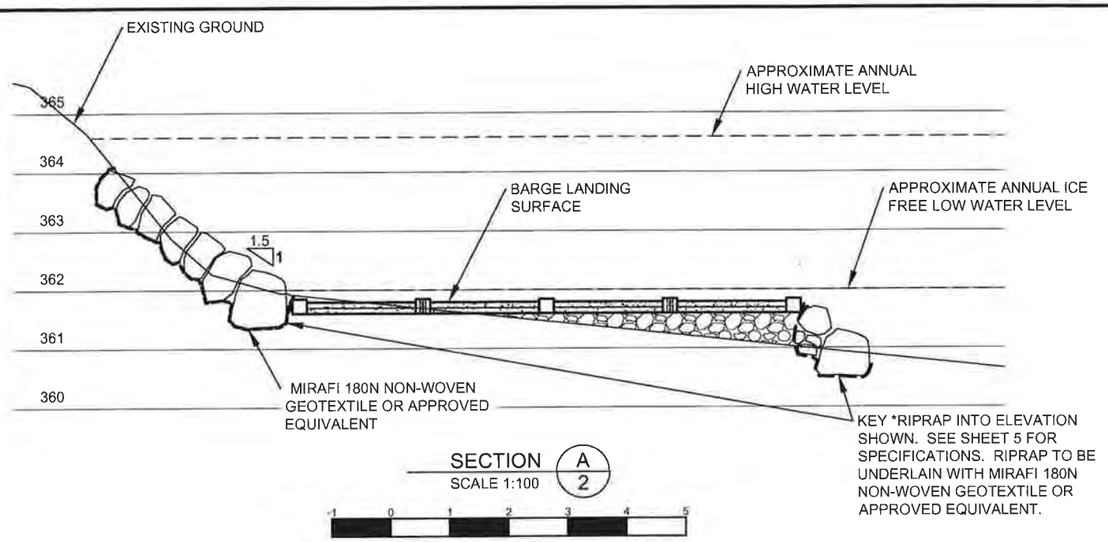
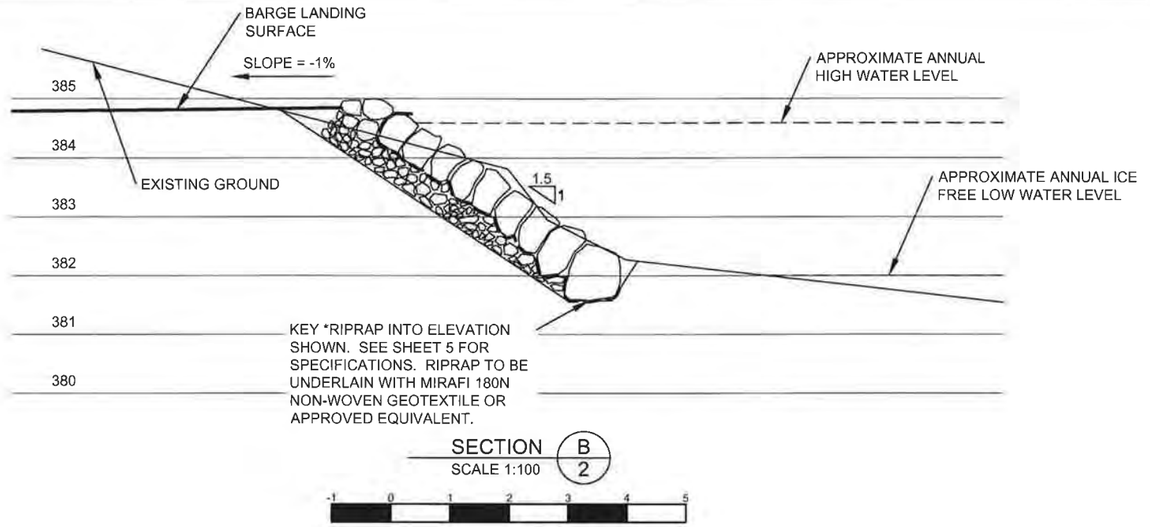
DESIGNED ROAD EDGES ——— PRESENT WATER LEVEL — — — — —
DESIGNED ROAD C/L — — — — — STORAGE BOUNDARY — · — · —



SECTION A 2
SCALE 1:100



SECTION B 2
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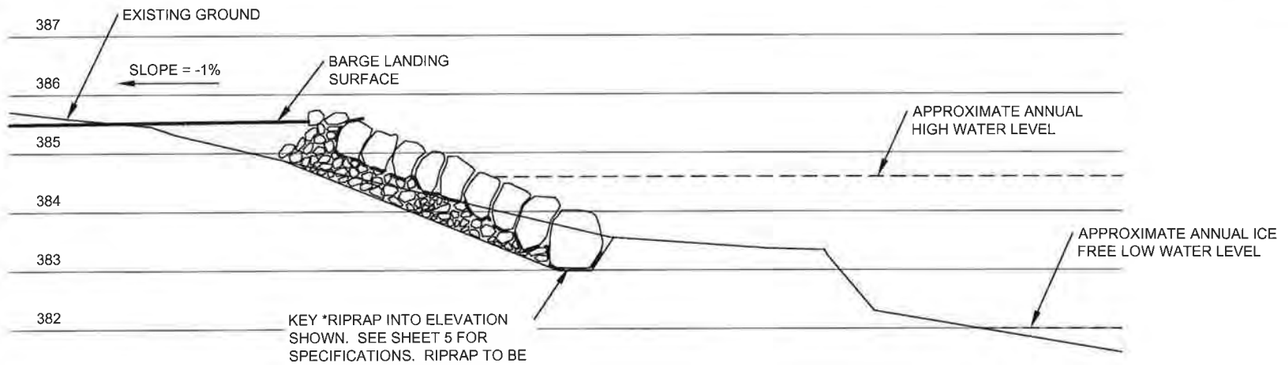

SECTION C 2
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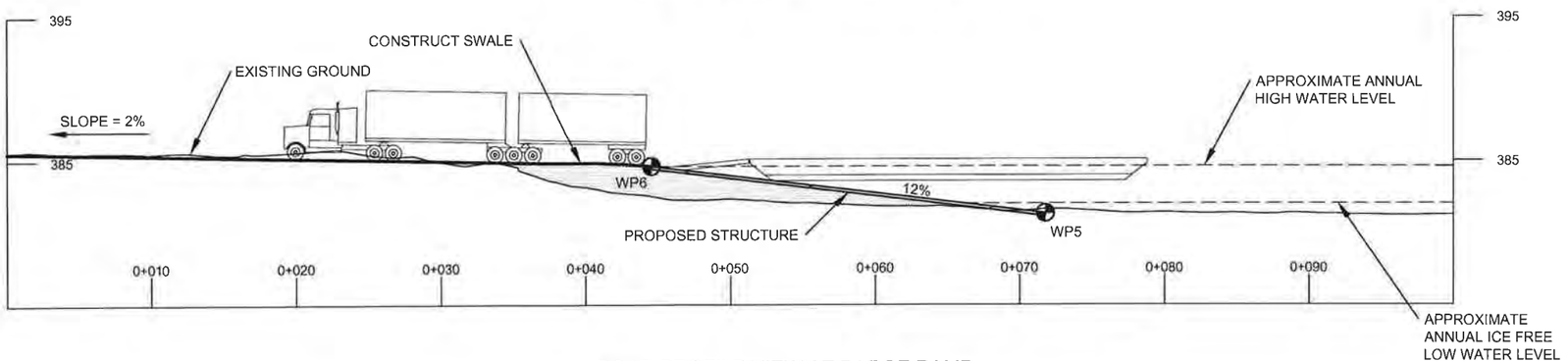

ROAD PROFILE VIEW AT BARGE RAMP
SCALE 1:400



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CAUTION:

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-003

SHEET: 3 OF 11

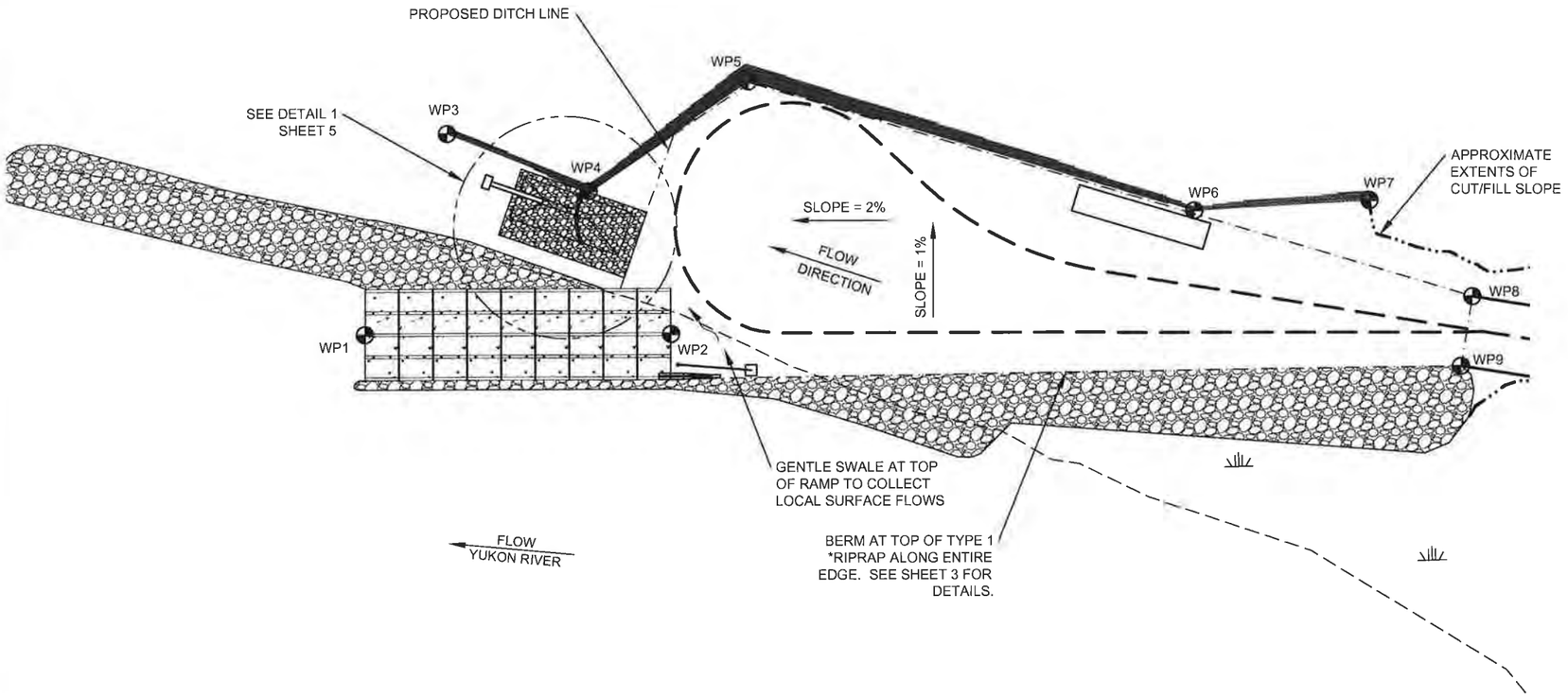
DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

M

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
MIRAFI 180N GEOTEXTILE (OR APPROVED EQUIVALENT)
PRESENT WATER LEVEL
STORAGE BOUNDARY



UTM ZONE 7			
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WP2	6976541.01	601313.54	384.59
WP3	6976559.74	601294.08	384.29
WP4	6976554.14	601306.58	383.34
WP5	6976563.53	601321.19	384.58
WP6	6976550.57	601360.61	385.50
WP7	6976550.99	601376.30	385.79
WP8	6976542.03	601385.21	386.07
WP9	6976535.78	601384.01	386.11

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DRAINAGE PLAN
SCALE 1:500

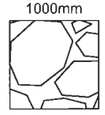
5 0 5 10 15 20 25

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

RIPRAP AT BANK

TYPE 1 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 25(260)
50% 250(565)
85% 750(815)
NOMINAL THICKNESS OF RIPRAP
1000mm

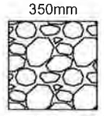


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 700m³ OF RIPRAP REQUIRED.

RIPRAP AT SUMP

TYPE 2 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 1(90)
50% 10(195)
85% 30(280)
NOMINAL THICKNESS OF RIPRAP
350mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-004

SHEET: 4 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

MAF

ENGINEER

DESIGNED ROAD EDGES

DESIGNED ROAD C/L

DITCH FLOW

PRESENT WATER LEVEL

STORAGE BOUNDARY

PARTIAL MATERIALS LIST	
2	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
1	600mm Ø X 5m LONG CORRUGATED STEEL PIPE
1	SPILL BOOM
1	SPILL BASKET C/W SPILL PADS
1	130m² PVC LINER
281	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
2000	GALVANIZED WIRE STRUTS - 4 GAUGE
18	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
#	RIPRAP: SEE SPECIFICATIONS ON SHEET 4

CAUTION:

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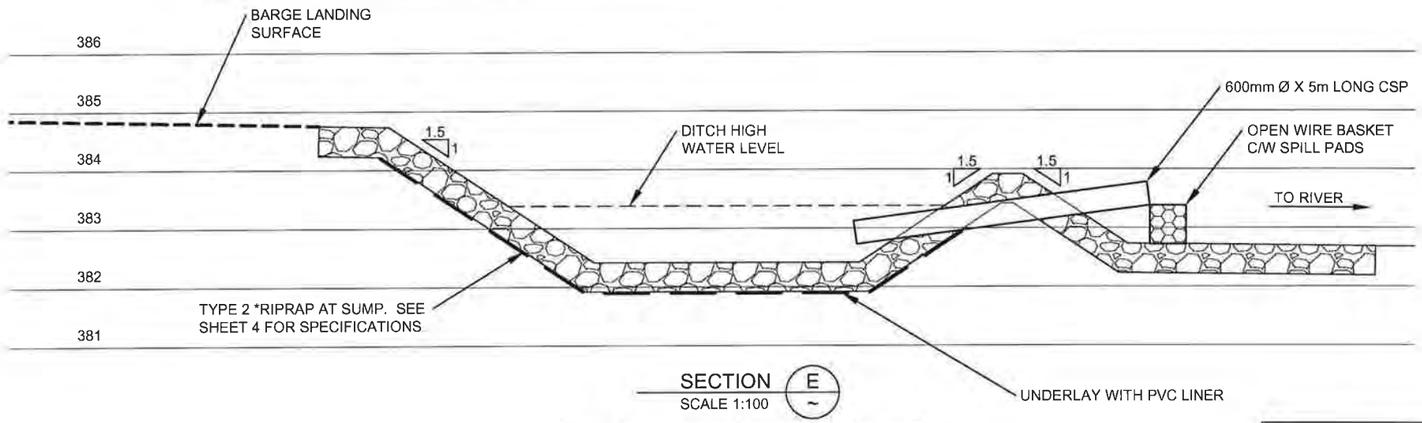
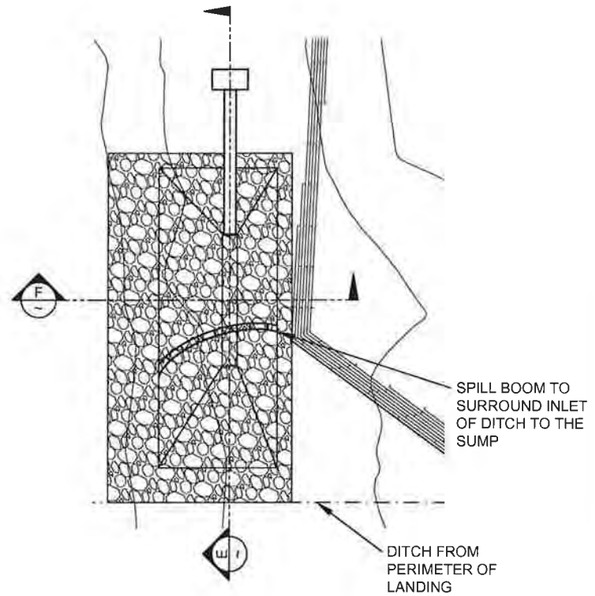


SECTION E
SCALE 1:100



DETAIL 1
SCALE 1:200

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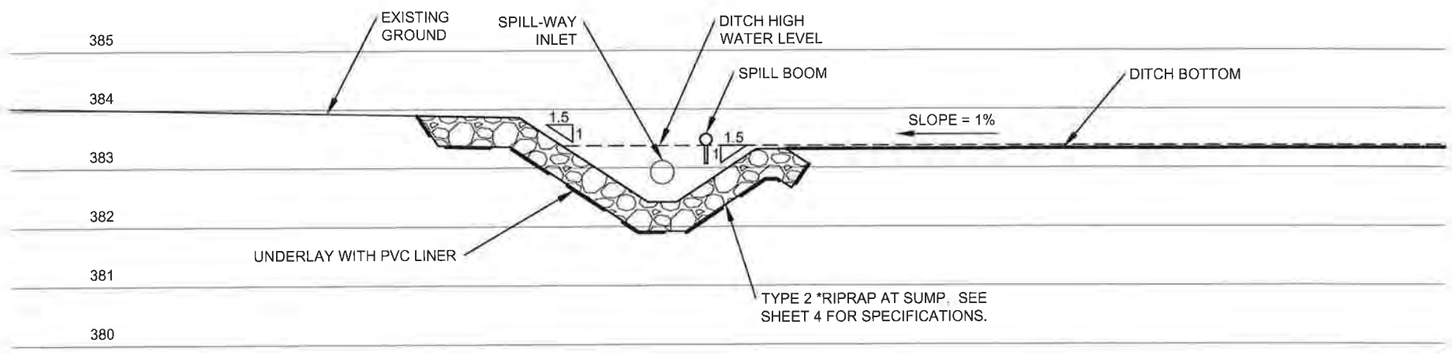
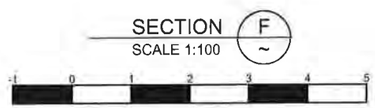


SECTION F
SCALE 1:100



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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-005

SHEET: 5 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

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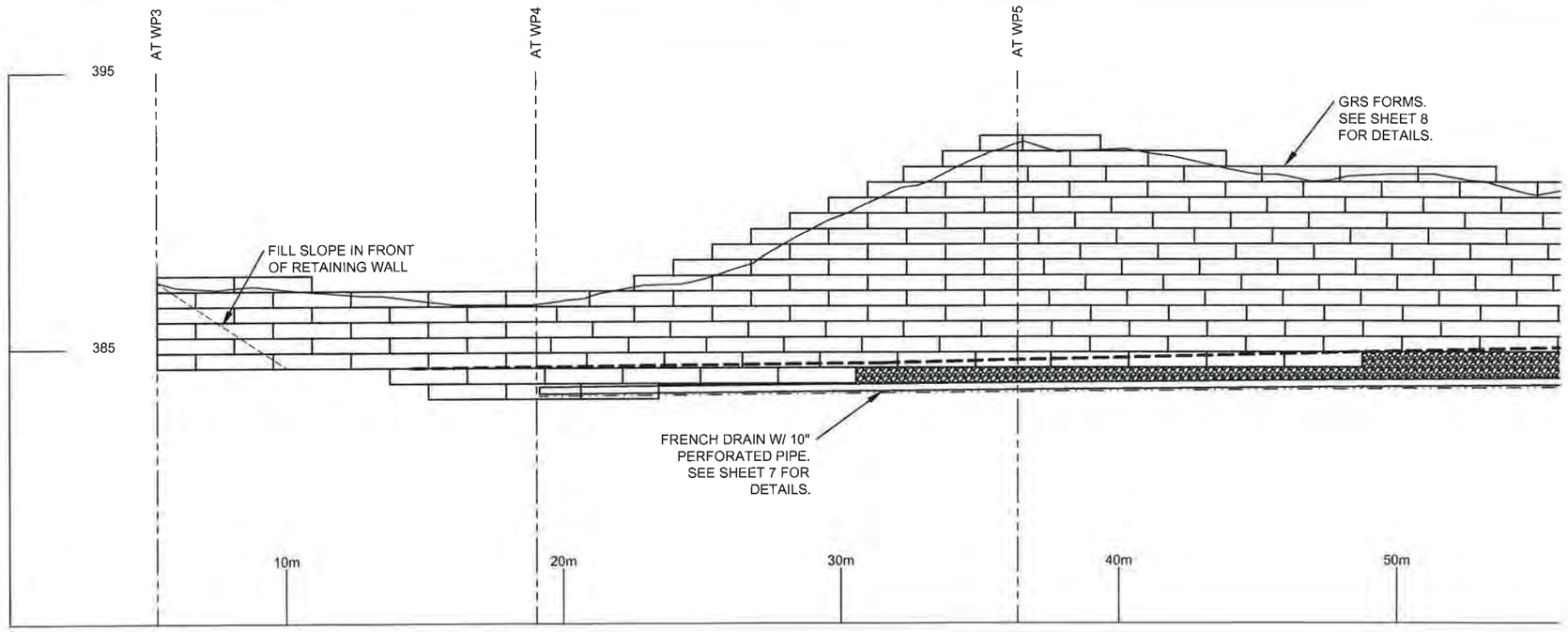
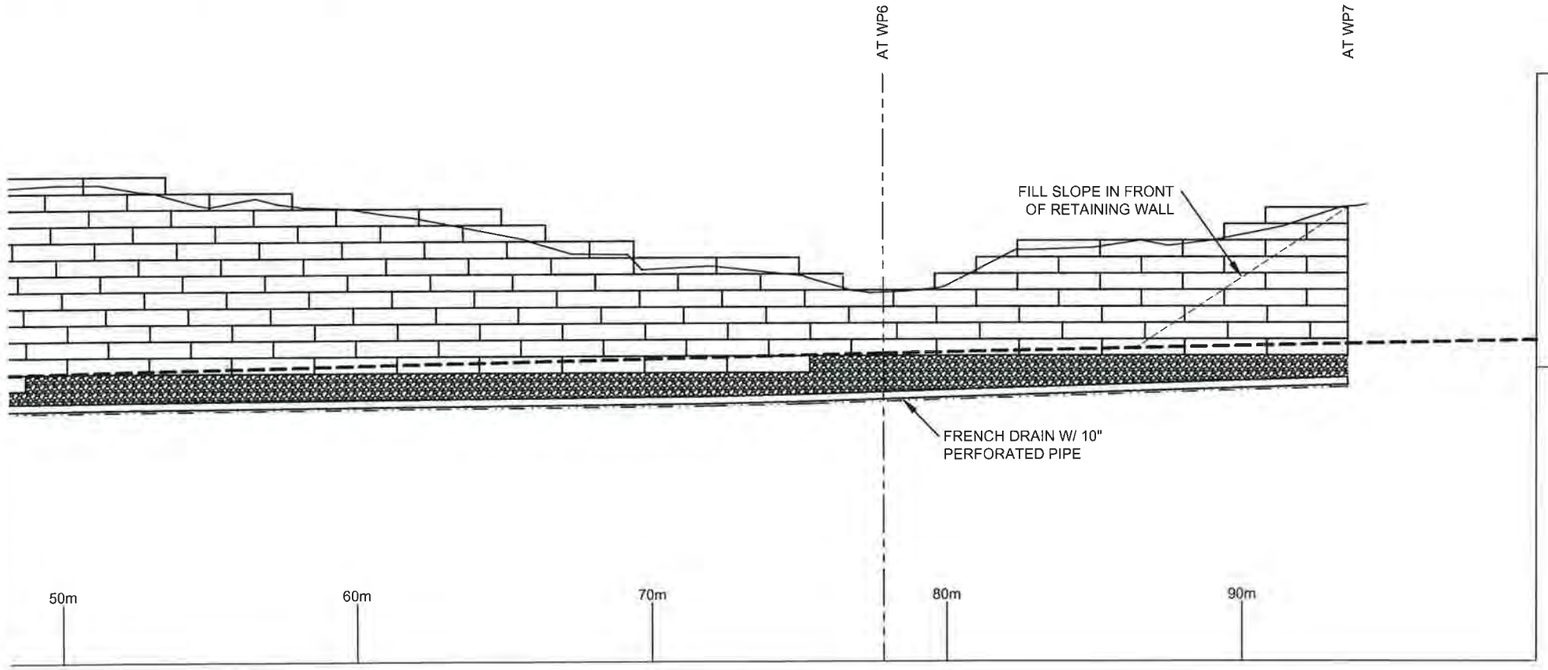
BARGE LANDING SURFACE
DITCH BOTTOM
PVC LINER





GRS PROFILE VIEW
SCALE 1:200

-10 0 10 20 30 40 50

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-006

SHEET: 6 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
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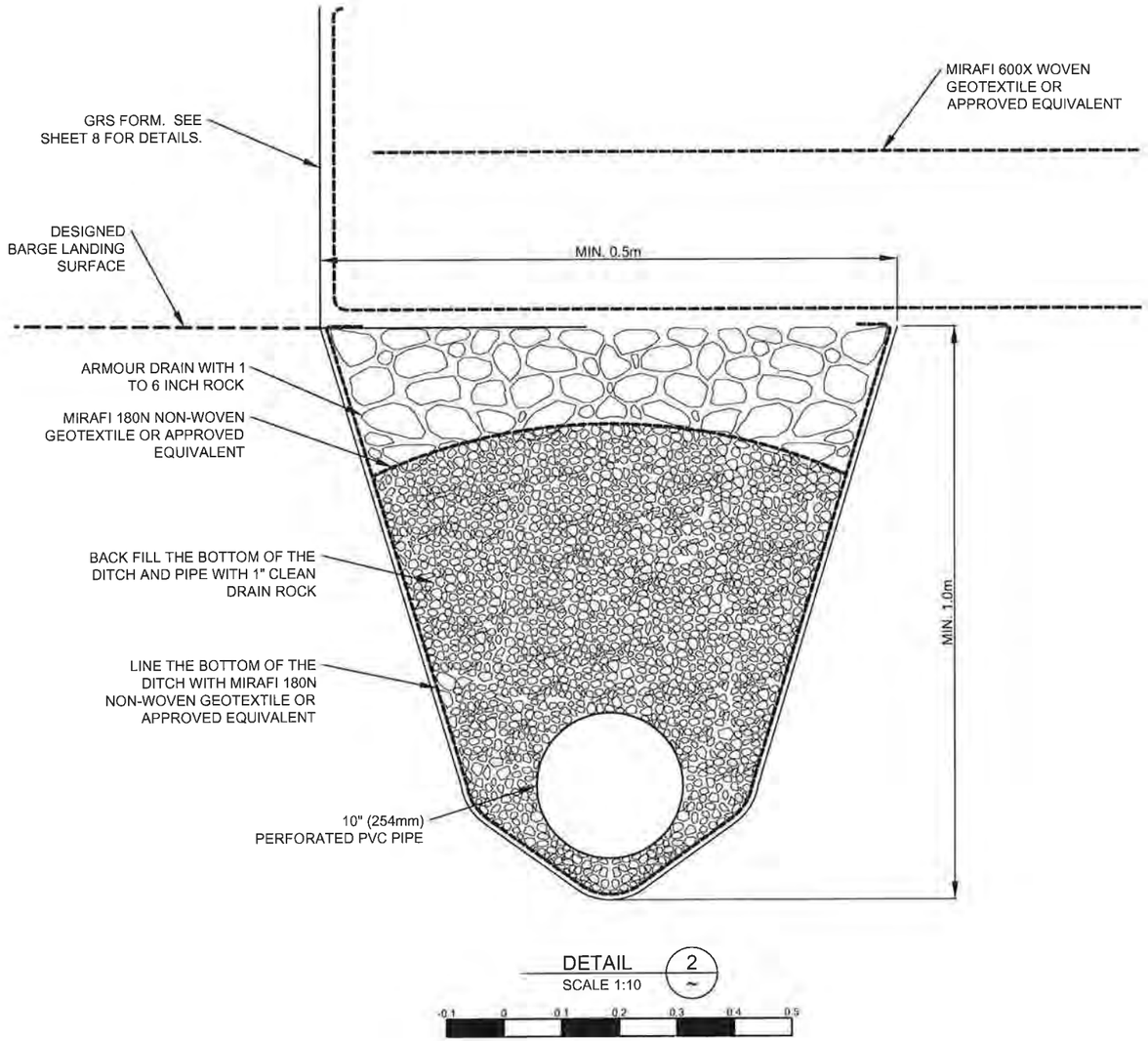
BARGE LANDING SURFACE

DITCH BOTTOM

MIRAFI 600X
(OR APPROVED EQUIVALENT)



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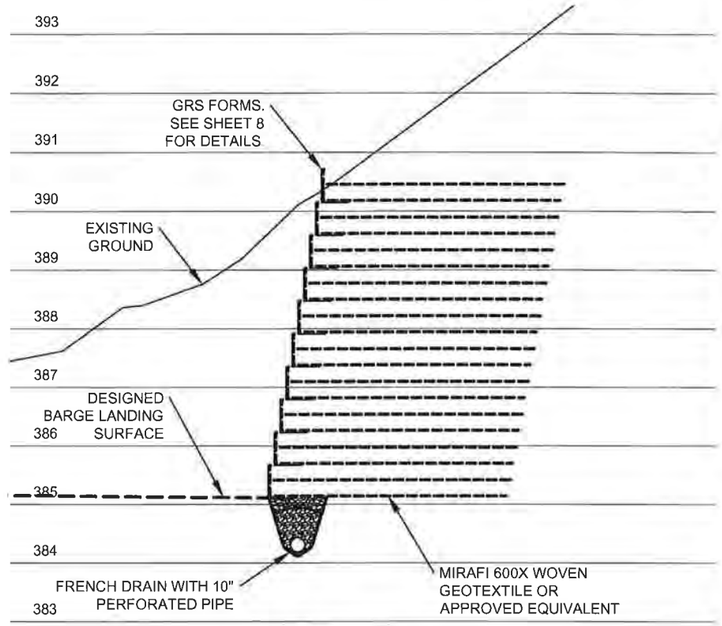

SECTION D 2
SCALE 1:100

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

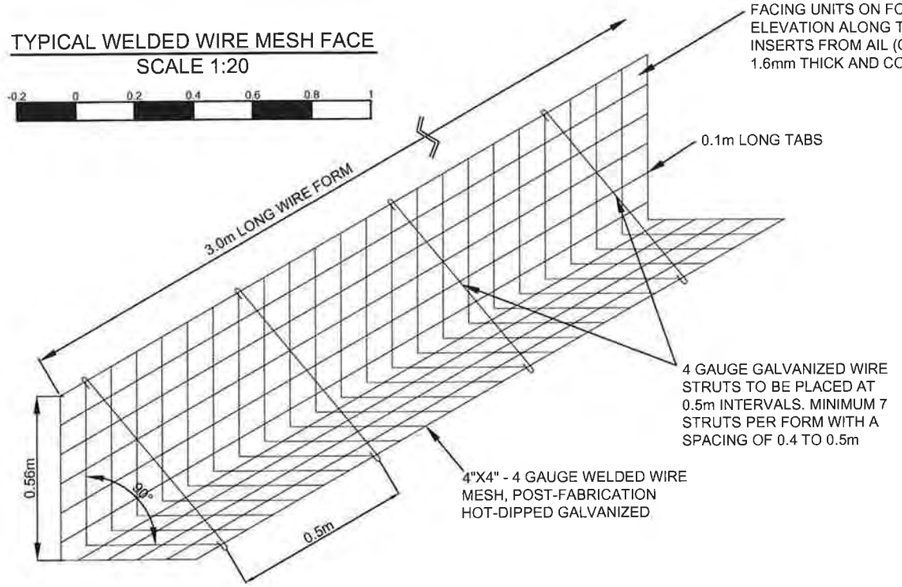
DWG No:1343-1-NORTHYUKON-007

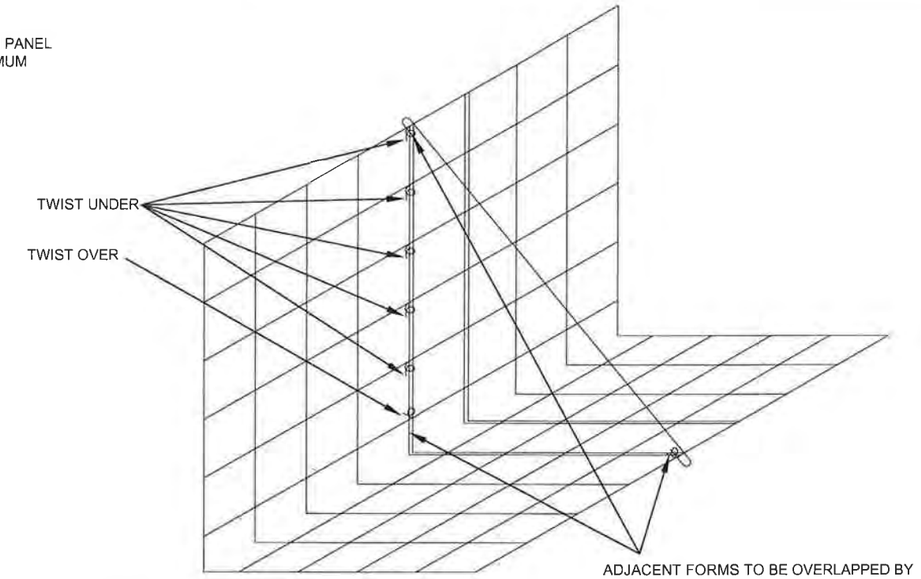
Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

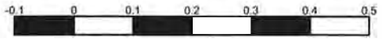
BARGE LANDING SURFACE
DITCH BOTTOM
MIRAFI 600X (OR APPROVED EQUIVALENT)

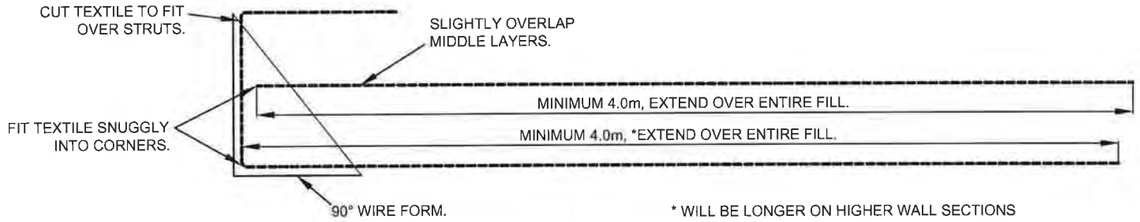
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.35m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

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PREPARED FOR:

GOLDCORP

PREPARED BY:

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ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

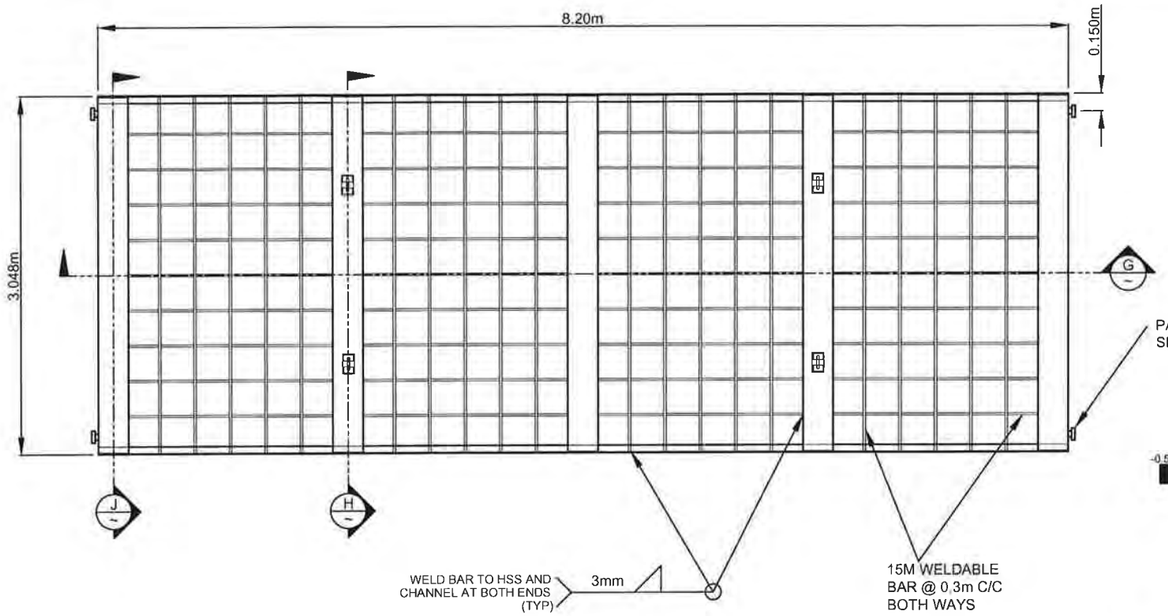
DWG No:1343-1-NORTHYUKON-008

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MP

ENGINEER



PLAN VIEW
SCALE 1:25



PARTIAL MATERIALS LIST PER PANEL	
5	HSS 254 X 254 X 9.5 X 3.048m LONG
2	C200 X 28 X 7.94m LONG
125m	WELDABLE 15M REBAR
10	254mm X 508mm X 9.5mm PLATES FOR END OF HSS
8	254mm X 171mm X 9.5mm PLATES FOR LIFTING ANCHORS
8	254mm X 83mm X 9.5mm PLATES FOR LIFTING ANCHORS
4	0.102m X 0.0508Øm STEEL PINS (LIFTING ANCHORS)
4	0.203m X 0.1142m X 19Ømm STEEL RINGS (LIFTING RINGS)
2	0.567m X 0.203m X 0.0254m PLATES (PANEL CONNECTION PLATES)
4	CONNECTION PINS (SEE SHEET 10 FOR DETAILS)
4m³	35MPa CONCRETE, MAX 0.025mm AGGREGATE, MIN 5% AIR ENTRAINMENT

CAUTION:

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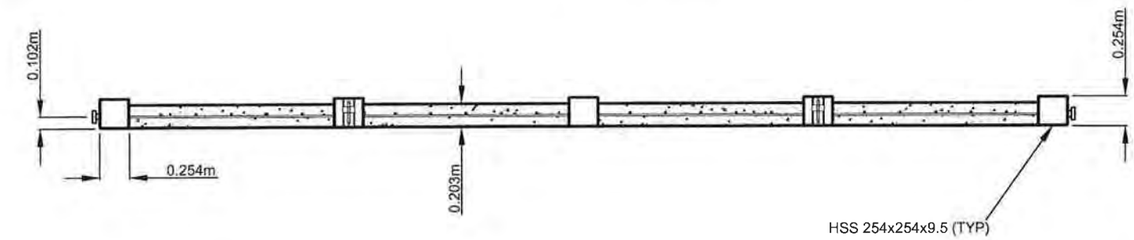
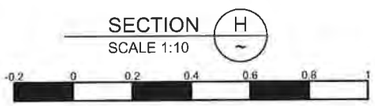


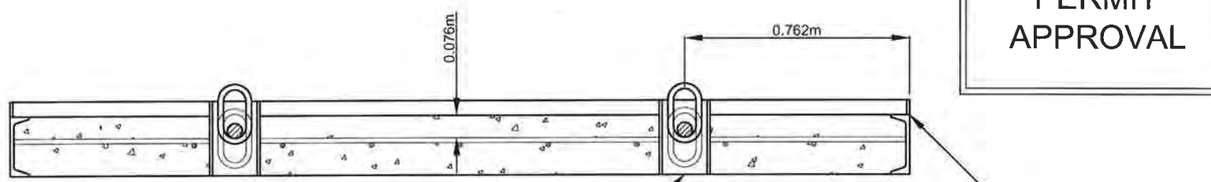
SECTION G
SCALE 1:25

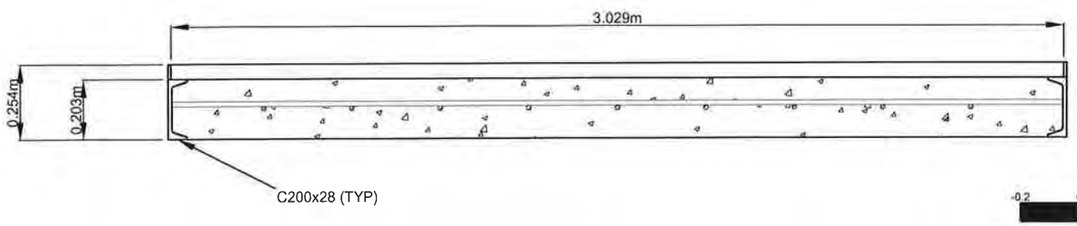


ISSUED FOR PERMIT APPROVAL

SECTION H
SCALE 1:10







SECTION J
SCALE 1:10



PREPARED FOR:

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-009

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 2, 2015, AUGUST 18, 2016
FILE NAME: NORTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
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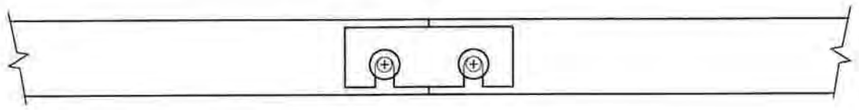
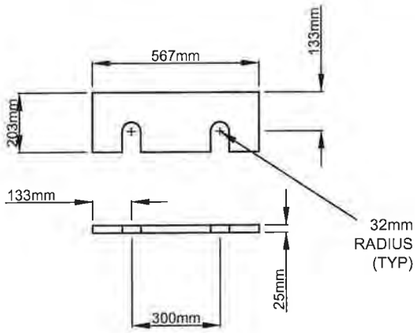
SIDE VIEW OF PANEL CONNECTION



DETAIL 3/9
PANEL CONNECTION
SCALE 1:10

CONNECTION TAB



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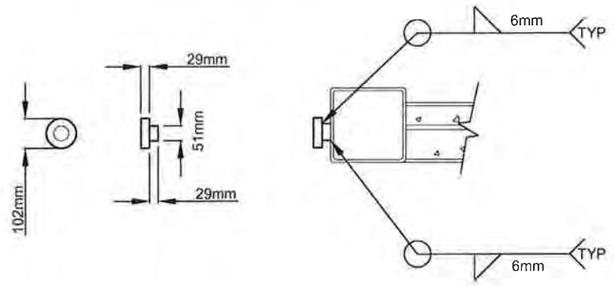
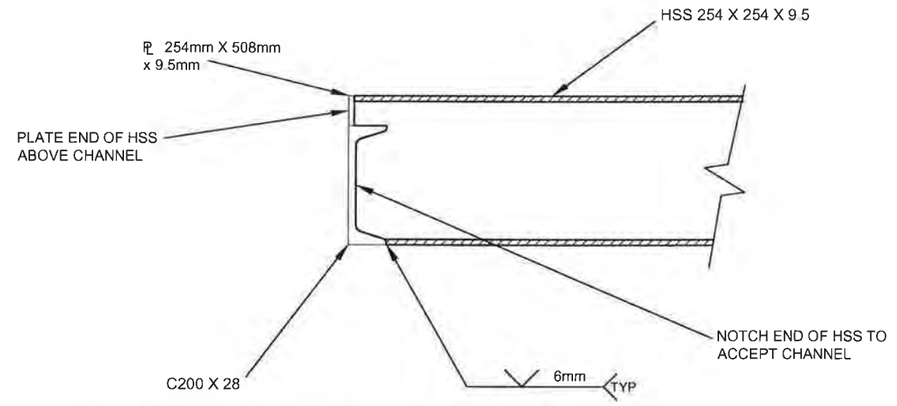
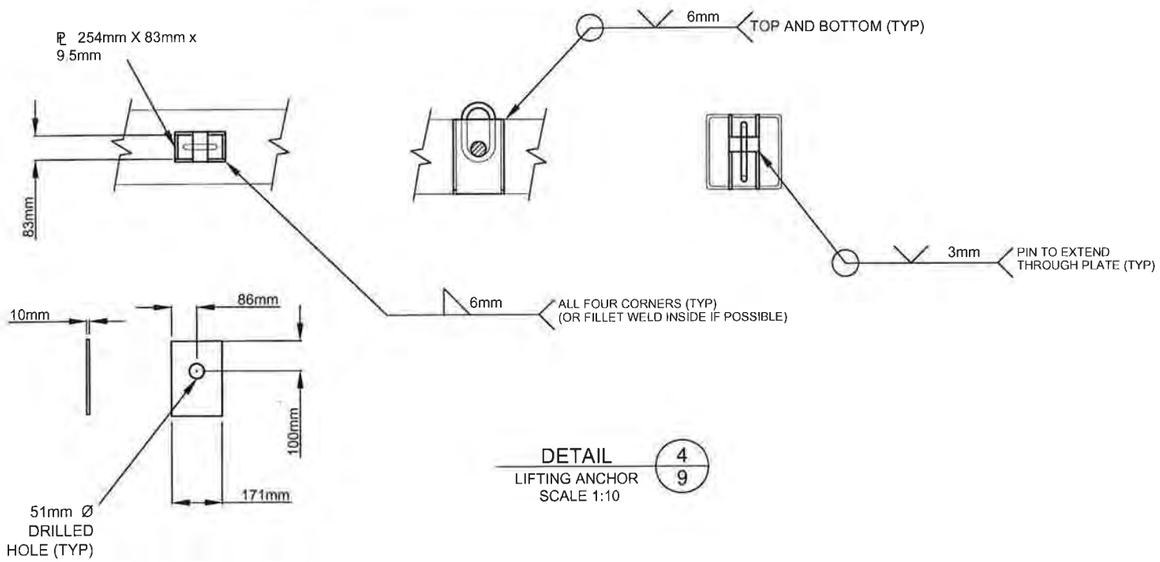


HSS TO C CHANNEL



DETAIL 5/9
HSS BEAM END
SCALE 1:5

LIFTING POINT DETAIL



DETAIL 4/9
LIFTING ANCHOR
SCALE 1:10

LIFTING RING



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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
(62° 54' 16.89" N, 139° 00' 21.98" W)

DWG No:1343-1-NORTHYUKON-010

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DESIGN BY: JEREMY ARAKI, P.Eng.
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PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW AWAY FROM YUKON RIVER BANK



PHOTO #3 - VIEW OF YUKON RIVER BANK, UPSTREAM



PHOTO #4 - VIEW OF YUKON RIVER BANK, DOWNSTREAM

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PROPOSED PERMANENT BARGE LANDING
SITE: NORTH BANK YUKON RIVER
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DWG No:1343-1-NORTHYUKON-011

SHEET: 11 OF 11

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 10, 2016
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DRAWN BY: TODD FORBES, ROBERT KEMMLER
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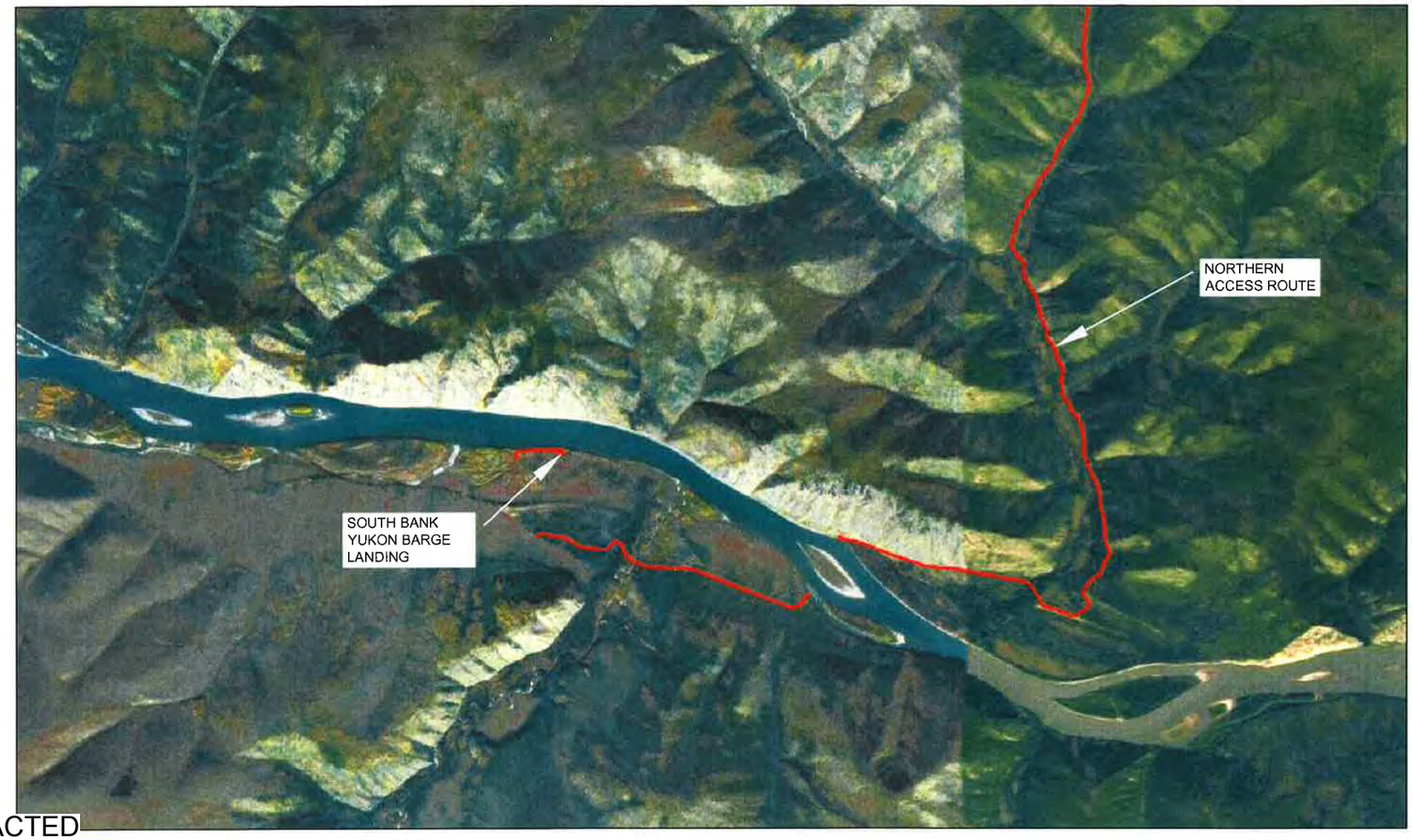
COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



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SIGI
Date

Association of Professional Engineers of Yukon

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-001	SHEET: 1 OF 8	DESIGN BY: JEREMY ARAKI, P.Eng. DESIGN DATE: MAY 9, 2016 REVIEWED BY: MICHAEL FOSTER, P.Eng. DRAWN BY: TODD FORBES, ROBERT KEMMLER SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 31, 2015 FILE NAME: SOUTHYUKON.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: JANUARY 3, 2017 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 8 - PLAN VIEWS SHEET 3 OF 8 - RIPRAP CROSS SECTIONS AND ROAD PROFILE VIEWS SHEET 4 OF 8 - DRAINAGE PLAN VIEW AND RIP RAPDETAIL SHEET 5 OF 8 - SUMP AND DITCH CROSS SECTION VIEWS SHEET 6 OF 8 - BARGE PANEL PLAN AND CROSS SECTION VIEWS SHEET 7 OF 8 - BARGE PANEL DETAIL VIEWS SHEET 8 OF 8 - SITE PHOTOS
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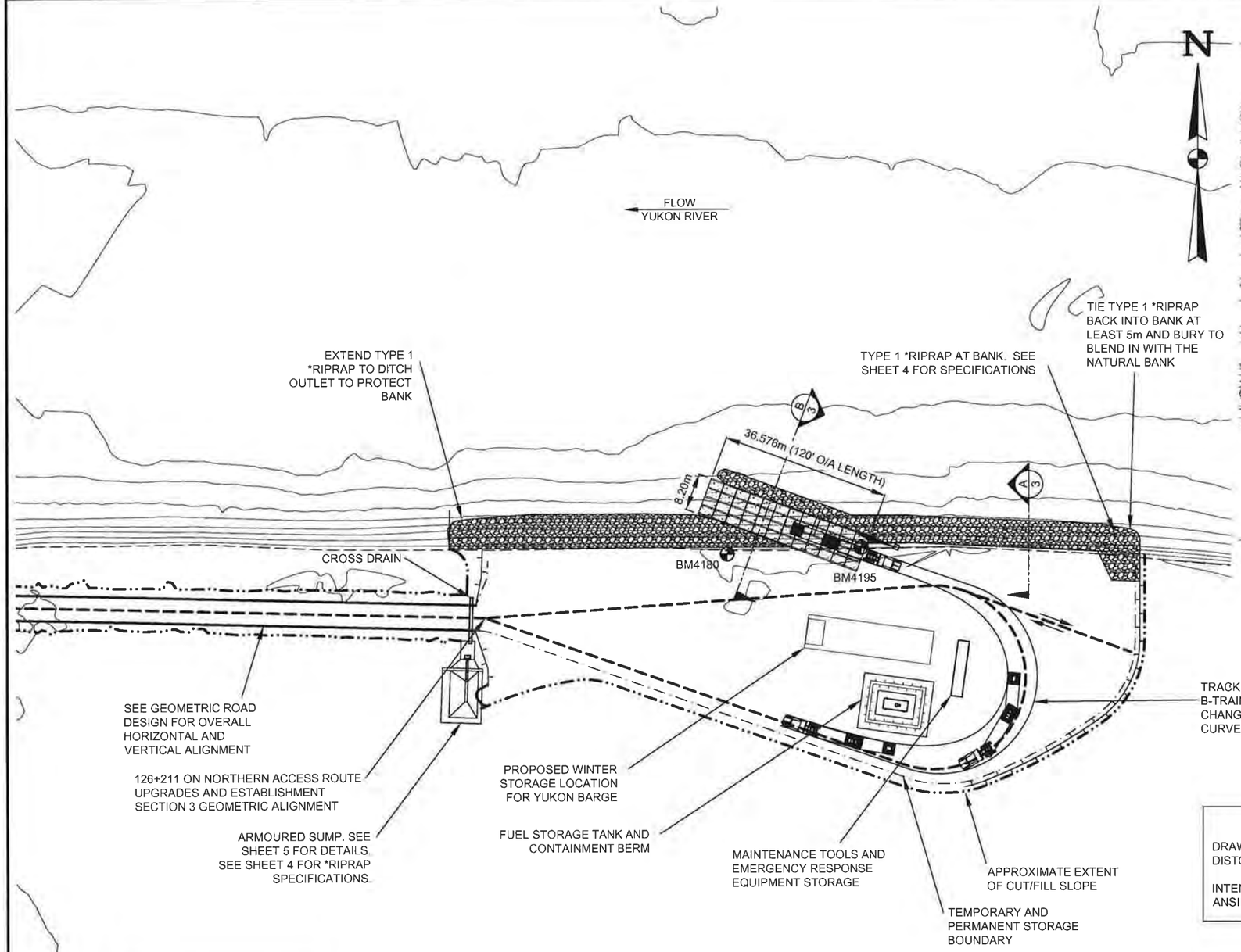
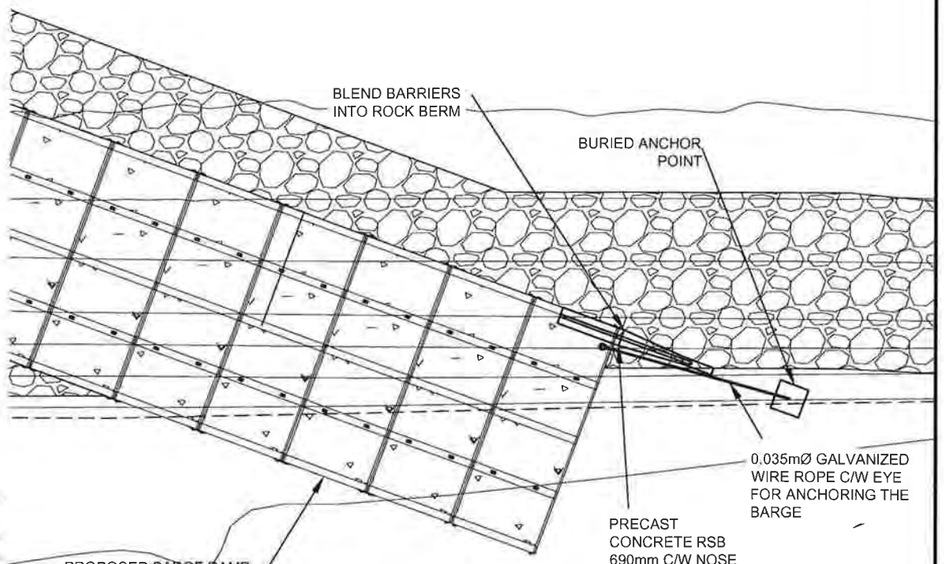


PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10

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NOTES:

1. BCL-625 DESIGN VEHICLE LOADING
2. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
3. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
4. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - GRADING, SURFACING AND SUMP CONSTRUCTION.
   - RIPRAP PLACEMENT AND RAMP CONSTRUCTION.
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

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PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-002

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DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 9, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHYUKON.DWG
SCALE: AS NOTED
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MAR 2

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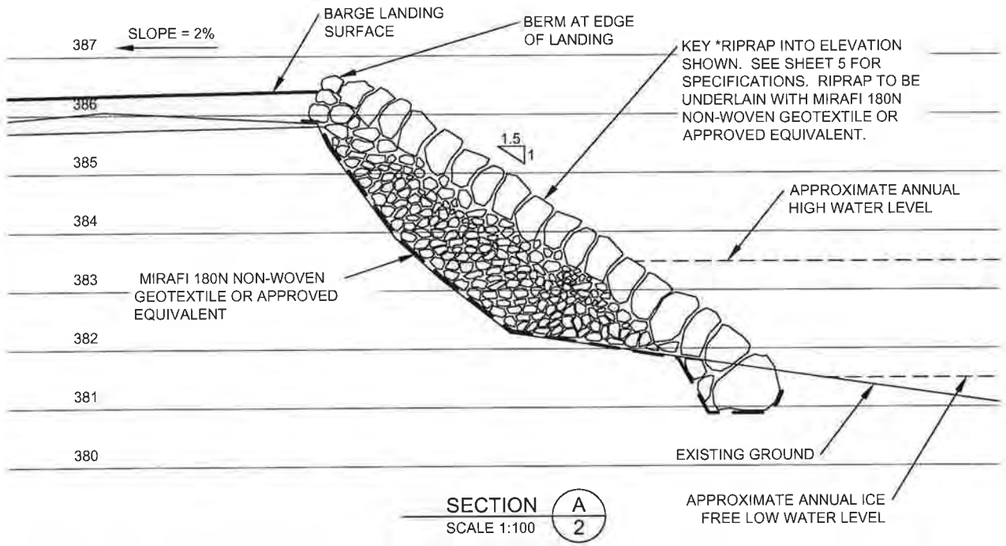
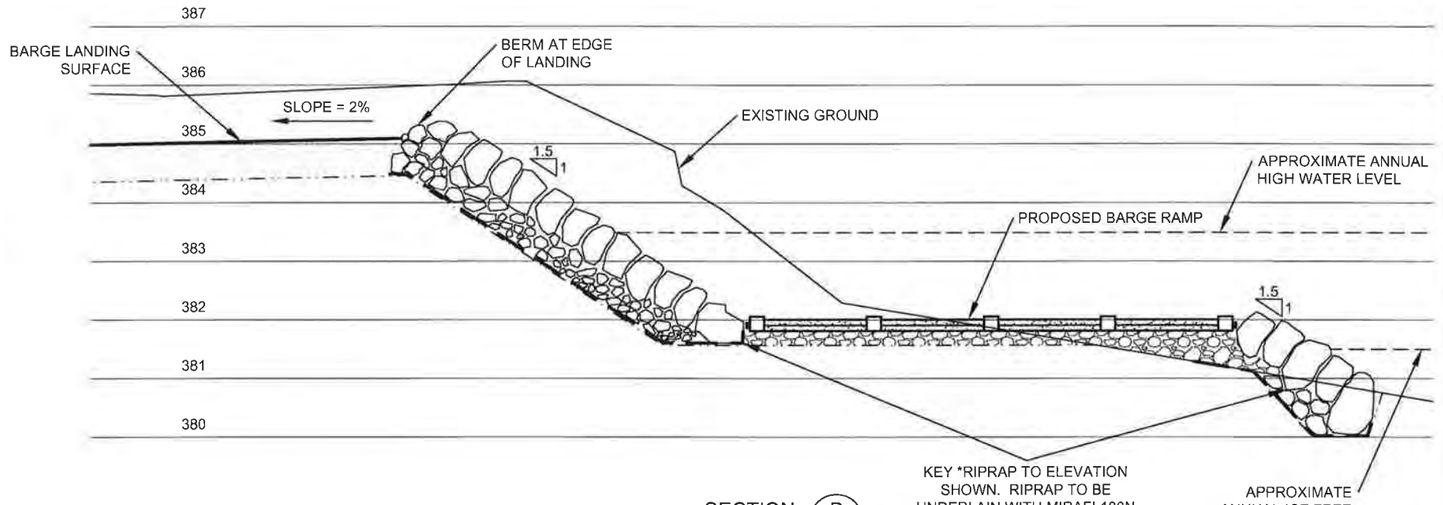
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
PRESENT WATER LEVEL
STORAGE BOUNDARY



SECTION A 2
SCALE 1:100



SECTION B 2
SCALE 1:100

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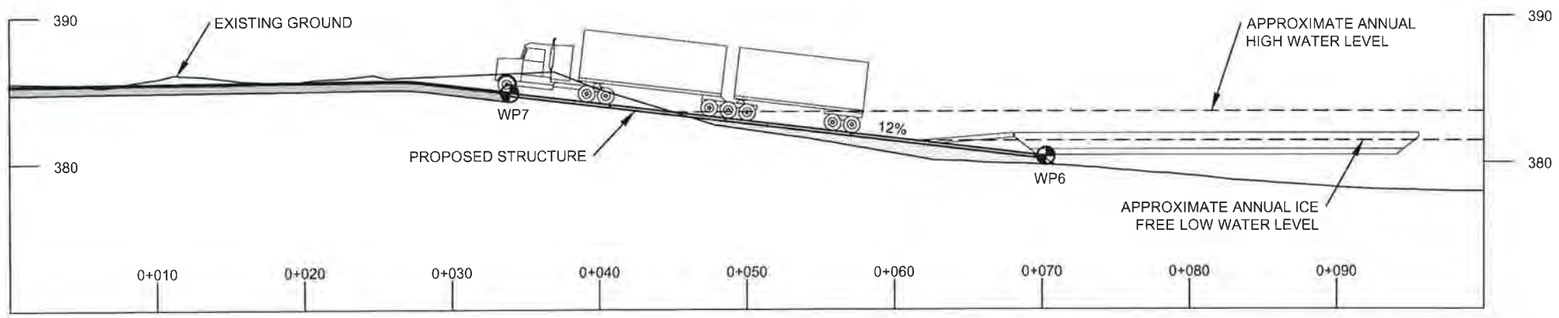

ROAD PROFILE VIEW AT BARGE RAMP
SCALE 1:400



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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-003

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DESIGN BY: JEREMY ARAKI, P.Eng.
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DRAWN BY: TODD FORBES, ROBERT KEMMLER
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FILE NAME: SOUTHYUKON.DWG
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REVISION DATE: JANUARY 3, 2017
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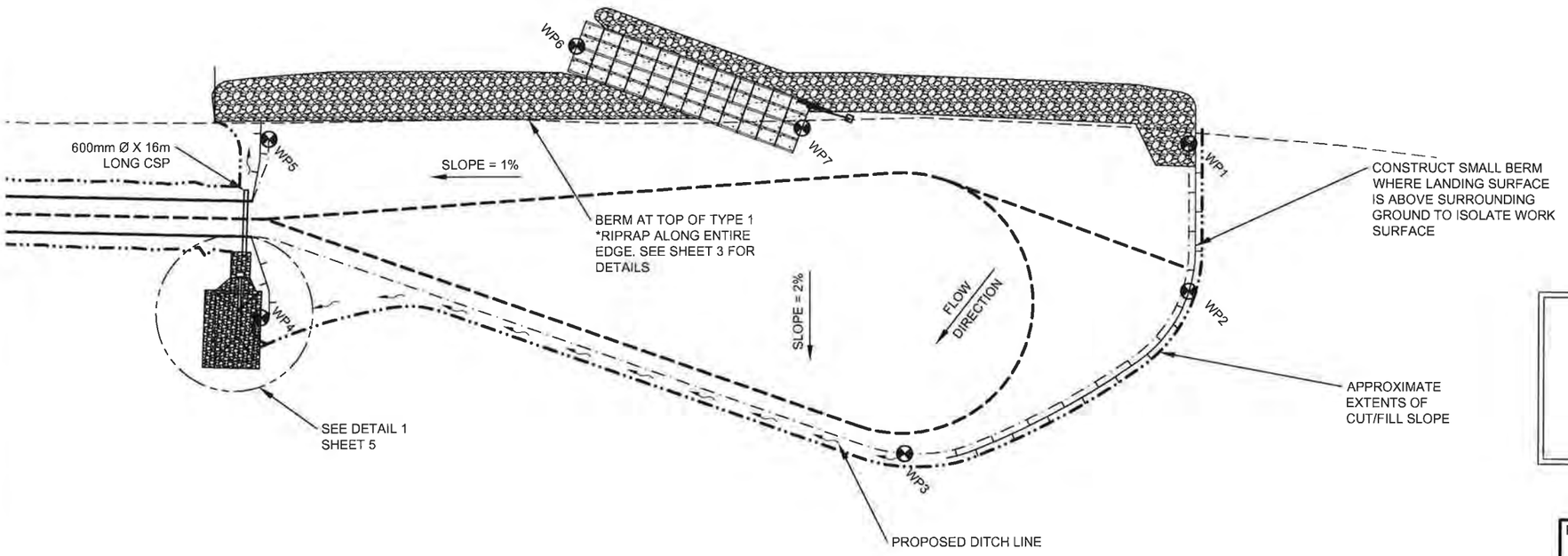
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
MIRAFI 180N GEOTEXTILE (OR APPROVED EQUIVALENT)
PRESENT WATER LEVEL
STORAGE BOUNDARY



UTM ZONE 7			
WP	N	E	ELEV
WP1	6977503.29	598017.66	386.09
WP2	6977480.60	598017.66	385.64
WP3	6977455.75	597974.39	384.71
WP4	6977476.92	597876.23	384.15
WP5	6977504.34	597877.48	384.71
WP6	6977518.47	597924.47	380.43
WP7	6977505.79	597958.80	384.78

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DRAINAGE PLAN
SCALE 1:800

-5 0 5 10 15 20 25

**GROUND TYPE	*CUT SLOPE (%)(RATIO)	*FILL SLOPE (%)(RATIO)
SILTY SAND COLLUVIUM	70(1.4:1)	66.7(1.5:1)
SILTY SAND COLLUVIUM WITH 100% CUT	100(1:1)	66.7(1.5:1)
TALUS	70(1.4:1)	66.7(1.5:1)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
TAILINGS	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1))	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)

RIPRAP
AT BANK

TYPE 1 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 25(260)
50% 250(565)
85% 750(815)
NOMINAL THICKNESS OF RIPRAP
1000mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 950m³ OF RIPRAP REQUIRED.

RIPRAP
AT SUMP

TYPE 2 *RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 1(90)
50% 10(195)
85% 30(280)
NOMINAL THICKNESS OF RIPRAP
350mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-004

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DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 9, 2016
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DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
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DESIGNED ROAD EDGES
DESIGNED ROAD C/L
DITCH FLOW
PRESENT WATER LEVEL
STORAGE BOUNDARY

PARTIAL MATERIALS LIST	
4	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
1	600mm Ø X 5m LONG CORRUGATED STEEL PIPE
1	SPILL BOOM
1	SPILL BASKET C/W SPILL PADS
1	125m² PVC LINER
#	RIPRAP: SEE SPECIFICATIONS ON SHEET 4

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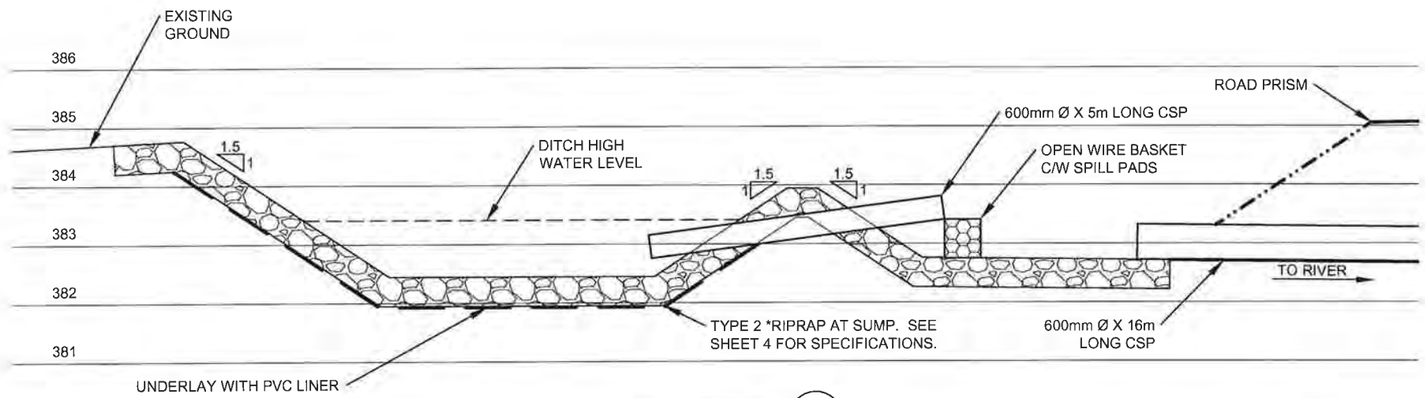
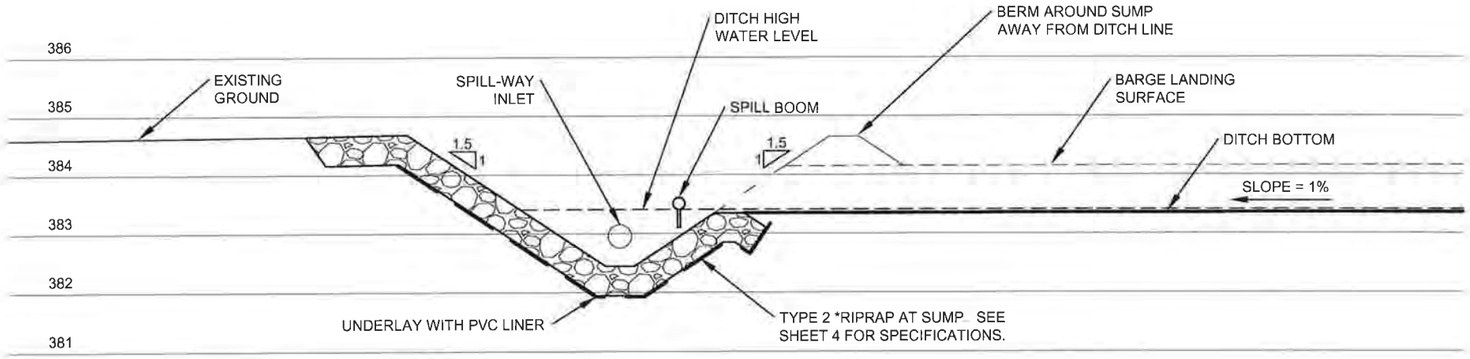


SECTION C
SCALE 1:100



SECTION D/4
SCALE 1:100

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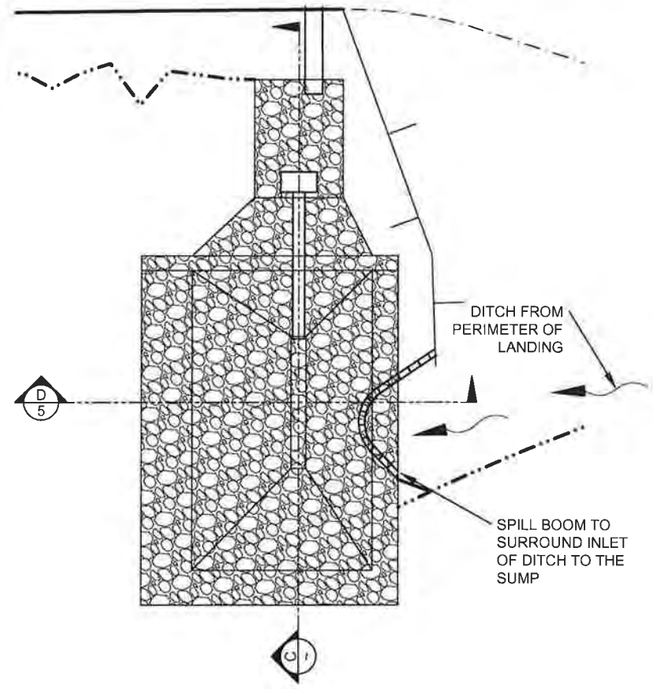

DETAIL 1/~
SCALE 1:200

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-005

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DESIGN BY: JEREMY ARAKI, P.Eng.
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SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
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MAR 2

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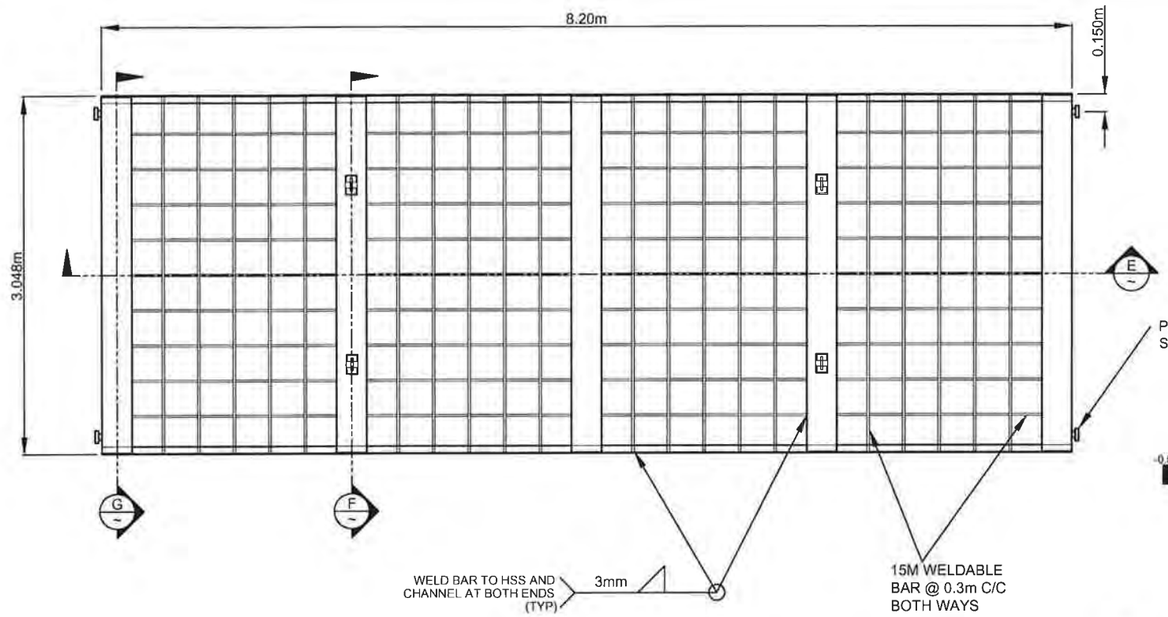
BARGE LANDING SURFACE
DITCH BOTTOM
DITCH FLOW
PVC LINER



PLAN VIEW
SCALE 1:25

-0.5 0 0.5 1 1.5 2 2.5

PARTIAL MATERIALS LIST PER PANEL	
5	HSS 254 X 254 X 9.5 X 3.048m LONG
2	C200 X 28 X 7.94m LONG
125m	WELDABLE 15M REBAR
10	254mm X 508mm X 9.5mm PLATES FOR END OF HSS
8	254mm X 171mm X 9.5mm PLATES FOR LIFTING ANCHORS
8	254mm X 83mm X 9.5mm PLATES FOR LIFTING ANCHORS
4	0.102m X 0.0508Øm STEEL PINS (LIFTING ANCHORS)
4	0.203m X 0.1142m X 19Ømm STEEL RINGS (LIFTING RINGS)
2	0.567m X 0.203m X 0.0254m PLATES (PANEL CONNECTION PLATES)
4	CONNECTION PINS (SEE SHEET 7 FOR DETAILS)
4m³	35MPa CONCRETE, MAX 0.025mm AGGREGATE, MIN 5% AIR ENTRAINMENT

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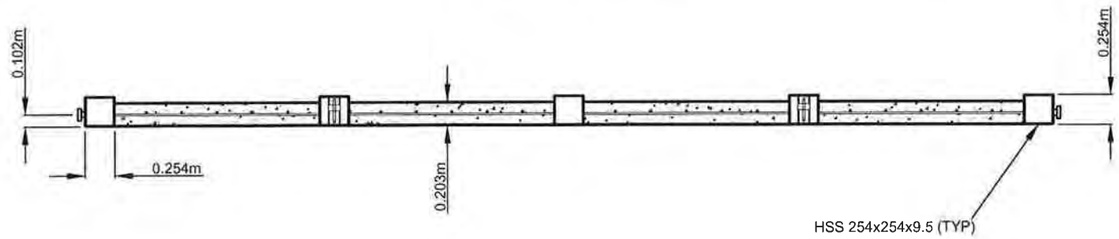

SECTION E
SCALE 1:25

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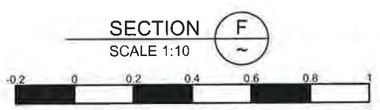

SECTION F
SCALE 1:10

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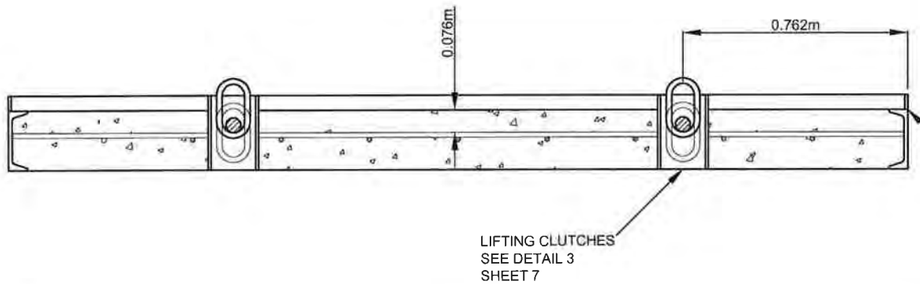

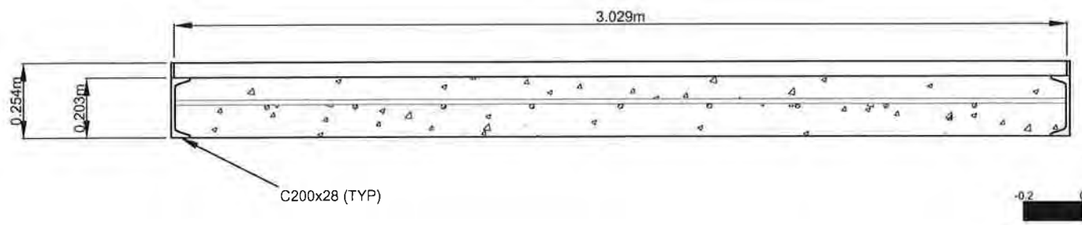

SECTION G
SCALE 1:10

-0.2 0 0.2 0.4 0.6 0.8 1

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PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-006

Signature REDACTED

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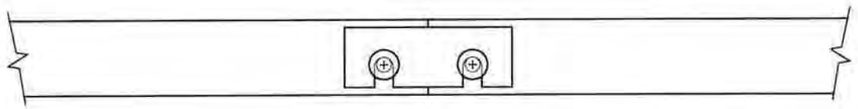
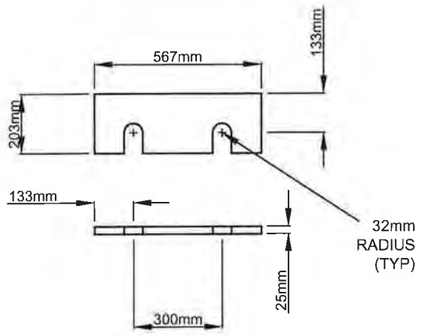
SIDE VIEW OF PANEL CONNECTION

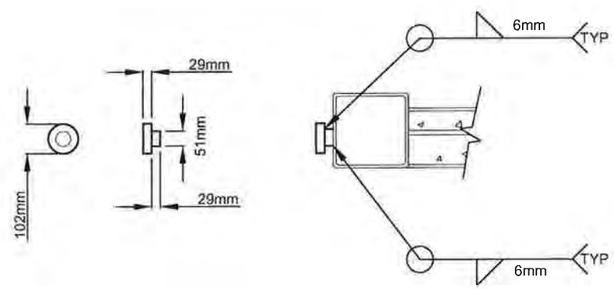


DETAIL 2/6
PANEL CONNECTION
SCALE 1:10

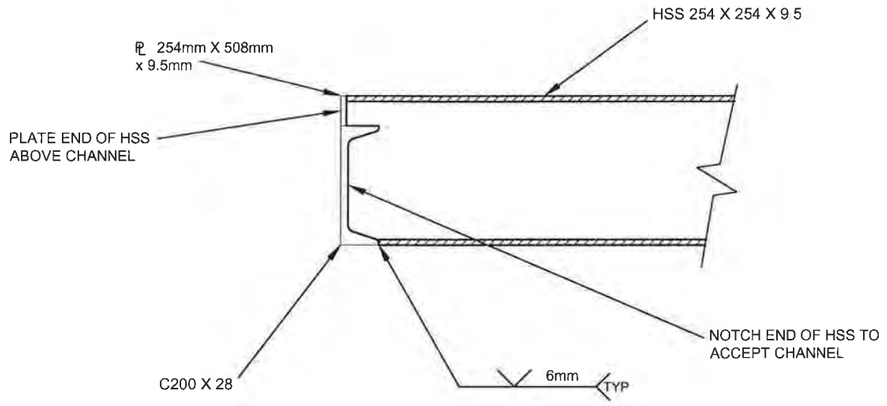
CONNECTION TAB



CONNECTION PIN

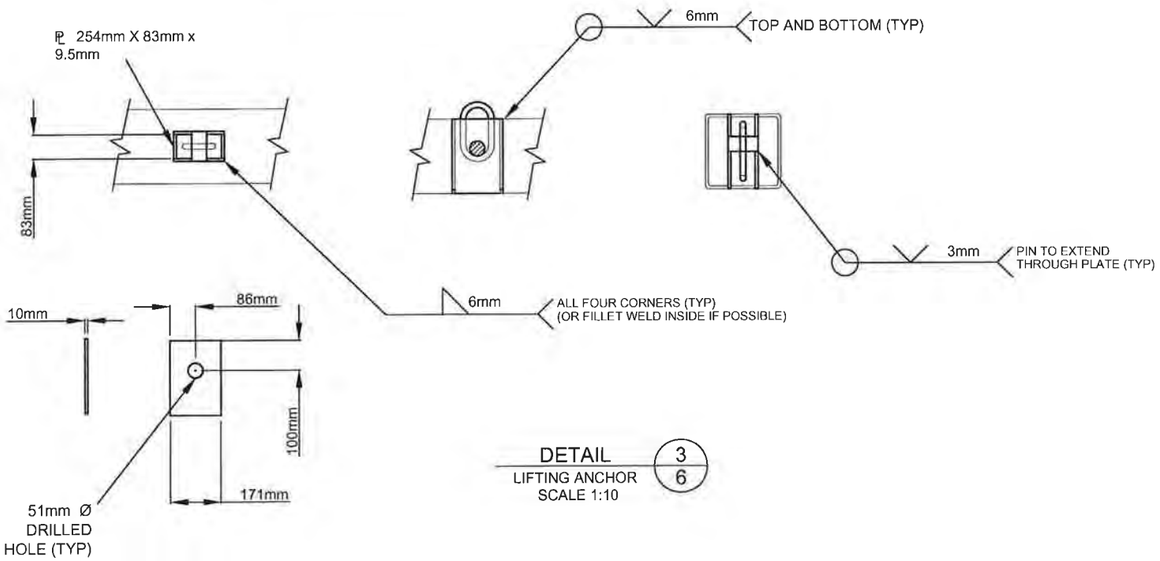


HSS TO C CHANNEL



DETAIL 4/6
HSS BEAM END
SCALE 1:5

LIFTING POINT DETAIL



DETAIL 3/6
LIFTING ANCHOR
SCALE 1:10

LIFTING RING



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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-007

Signature REDACTED

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 9, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHYUKON.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: JANUARY 3, 2017
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PHOTO #1 - VIEW UPSTREAM ALONG BANK

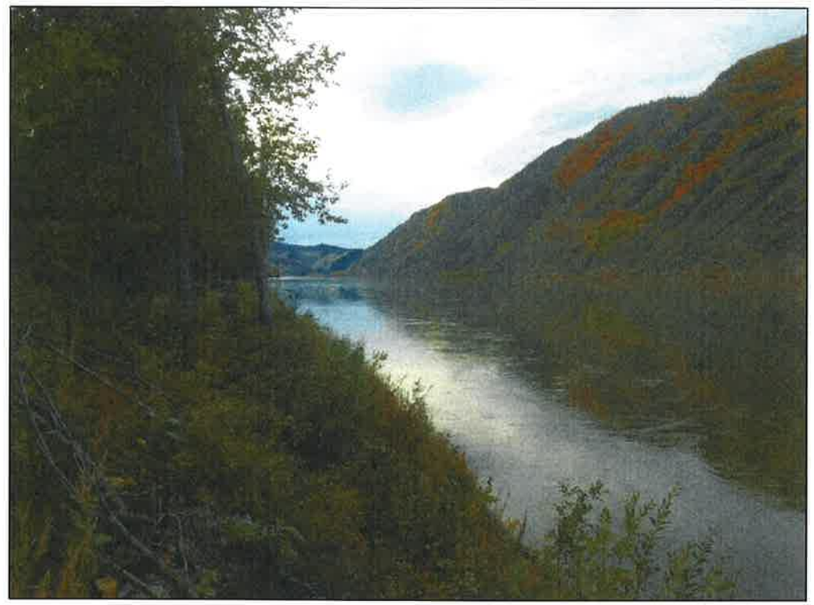

PHOTO #2 - VIEW OF YUKON RIVER DOWNSTREAM



PHOTO #3 - VIEW OF YUKON RIVER BANK, UPSTREAM



PHOTO #4 - VIEW OF YUKON RIVER SOUTH BANK

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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT BARGE LANDING
SITE: SOUTH BANK YUKON RIVER
(62° 54' 50.70" N, 139° 04' 19.29" W)

DWG No:1343-1-SOUTHYUKON-008

SHEET: 8 OF 8

DESIGN BY: JEREMY ARAKI, P.Eng.
DESIGN DATE: MAY 9, 2016
REVIEWED BY: MICHAEL FOSTER, P.Eng.
DRAWN BY: TODD FORBES, ROBERT KEMMLER
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 31, 2015
FILE NAME: SOUTHYUKON.DWG
SCALE: AS NOTED
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REVISION DATE: JANUARY 3, 2017
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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



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Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK

(63° 37' 31.05" N, 138° 41' 40.64" W)

ISSUED FOR
PERMIT
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DWG No:1343-2-SULPHUR-001

SHEET: 1 OF 6

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
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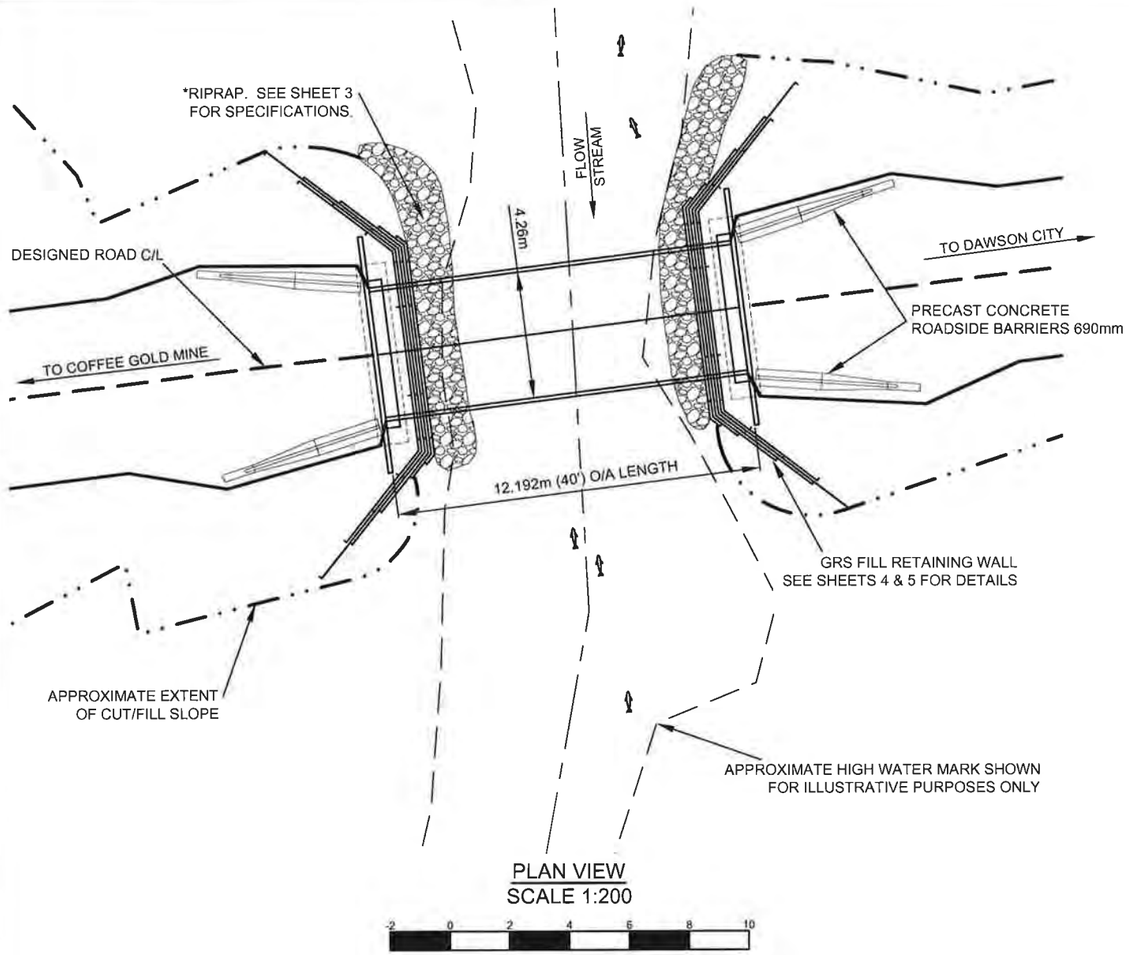
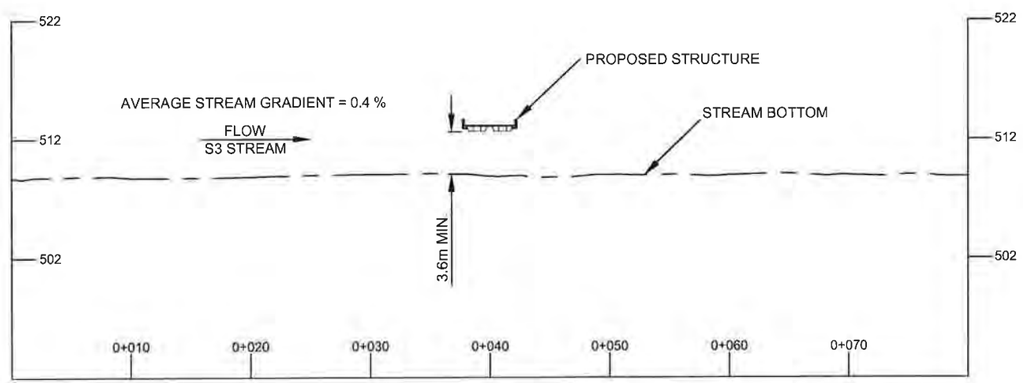
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS



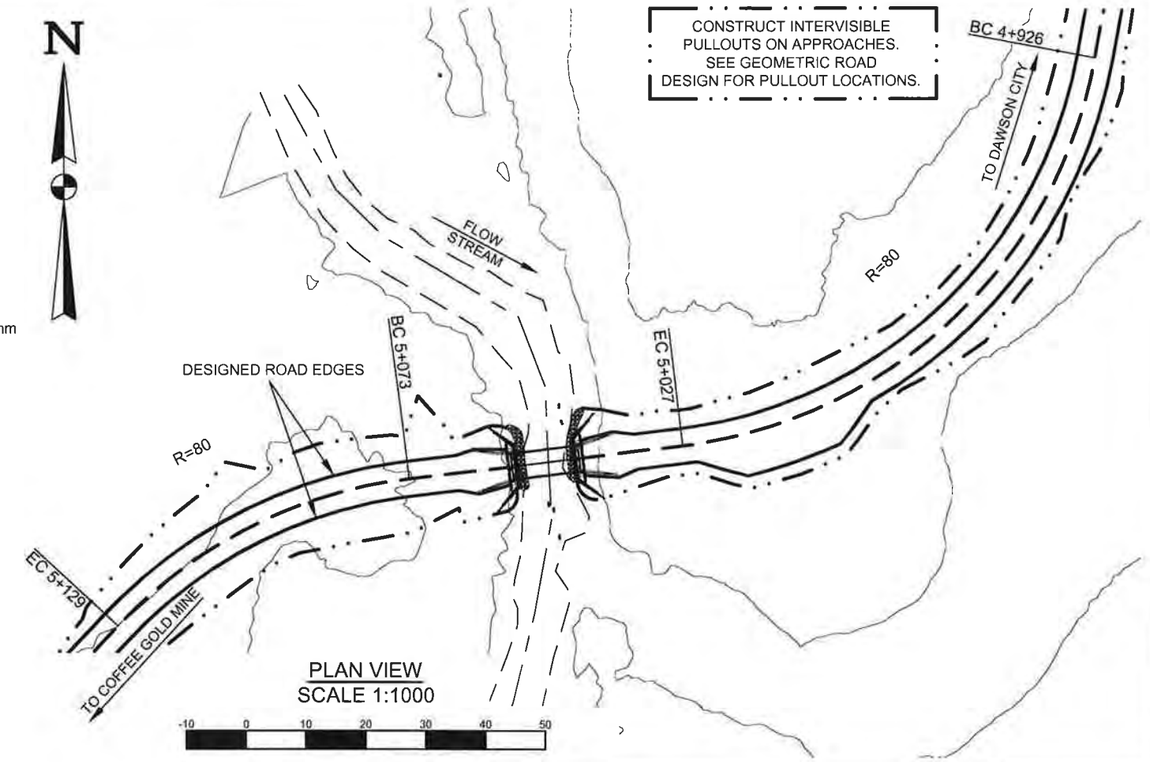
PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK
(63° 37' 31.05" N, 138° 41' 40.64" W)

DWG No:1343-2-SULPHUR-002

SHEET 2 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
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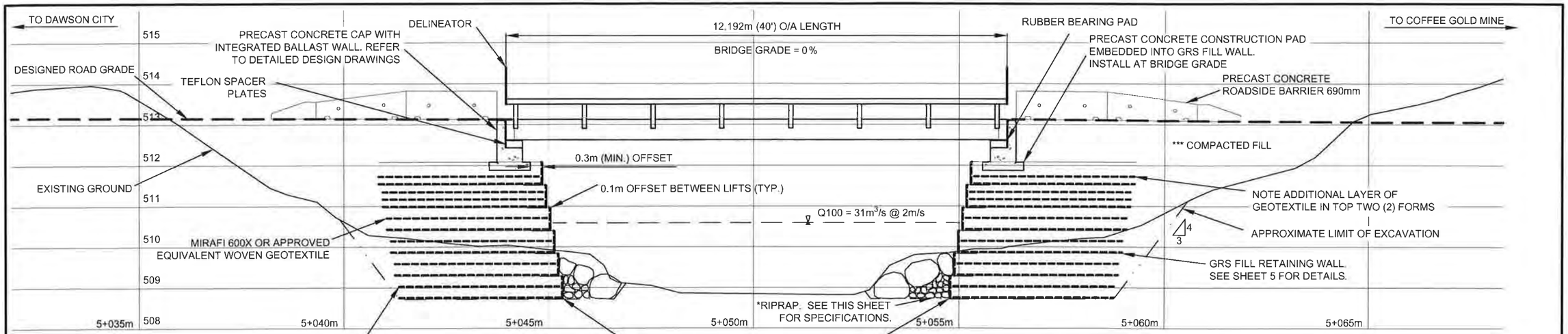
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG



ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 5(155)
50% 50(330)
85% 150(475)
NOMINAL THICKNESS OF RIPRAP
550mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 40m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
3	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS.
54	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
400	GALVANIZED WIRE STRUTS - 4 GAUGE
108	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

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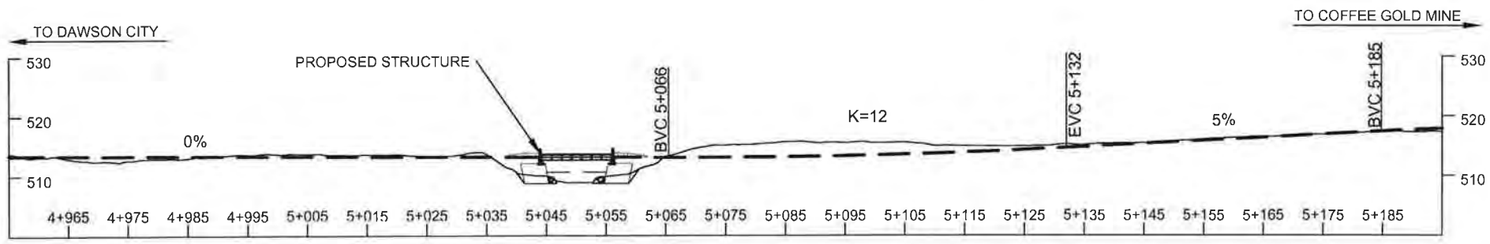

ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK
(63° 37' 31.05" N, 138° 41' 40.64" W)

DWG No:1343-2-SULPHUR-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
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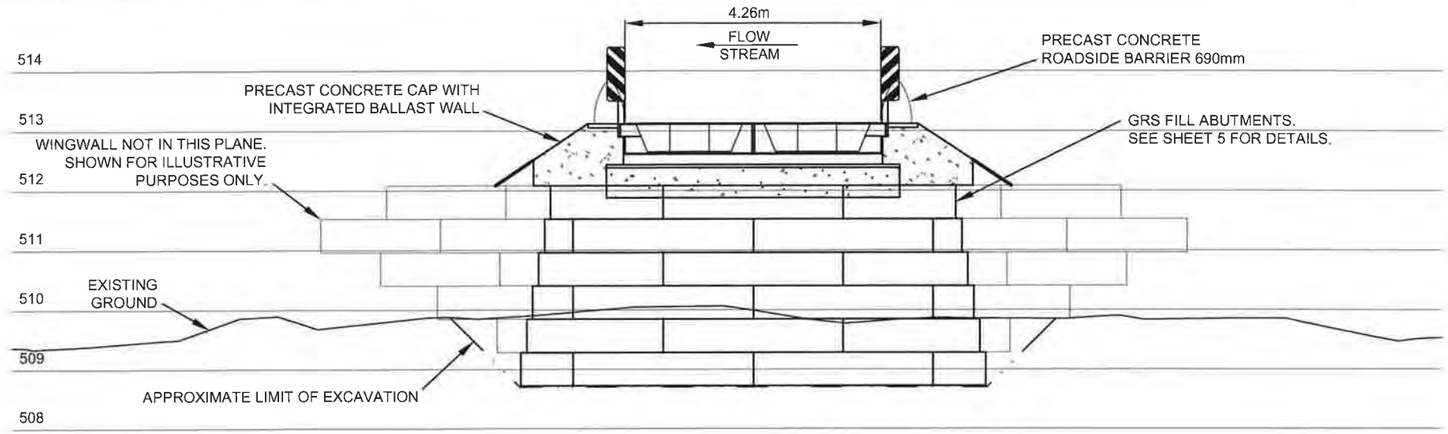
DESIGNED ROAD GRADE — — —
HIGH WATER LEVEL — — —
MIRAFI 600x OR EQUIVALENT ----------
LIMIT OF EXCAVATION — · —



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

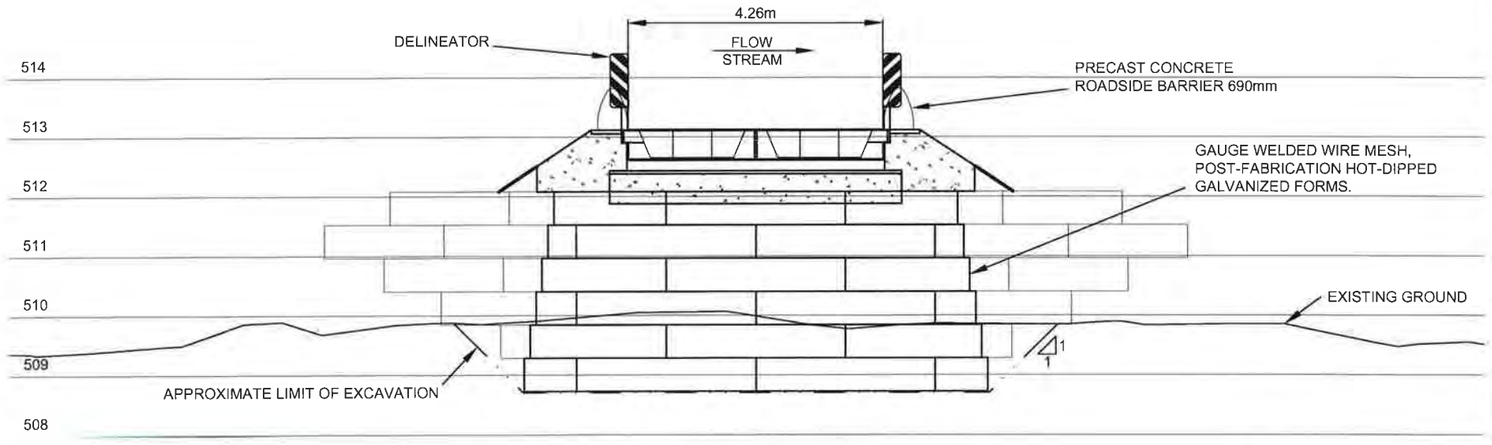
ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF TAILINGS.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK
(63° 37' 31.05" N, 138° 41' 40.64" W)

DWG No:1343-2-SULPHUR- 004

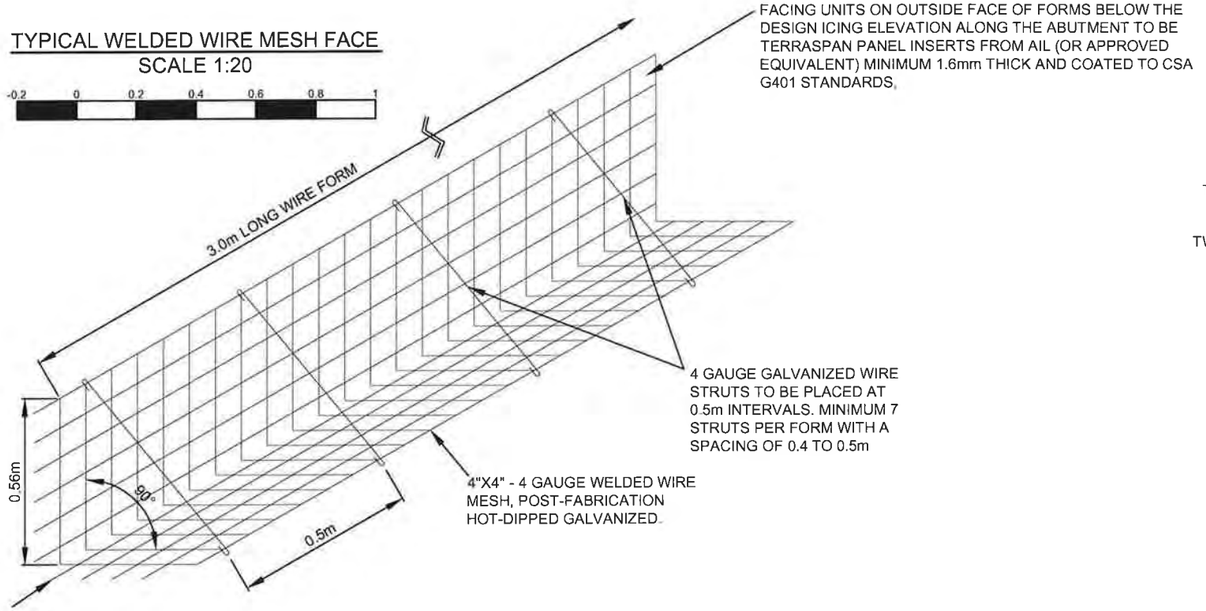
Signature REDACTED

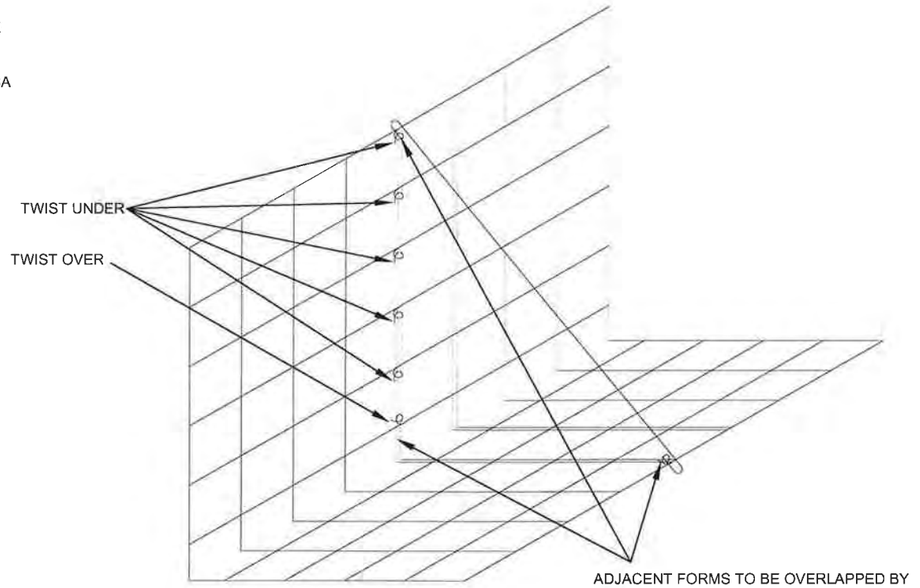
MAY 2

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

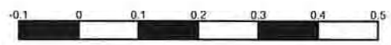
LIMIT OF EXCAVATION

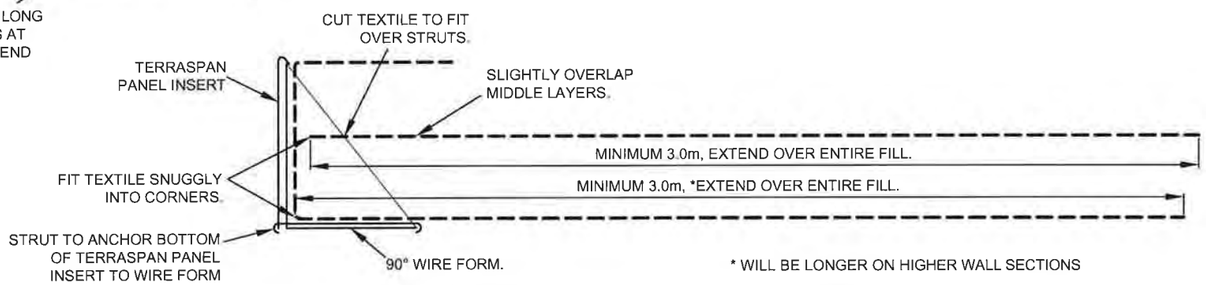
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





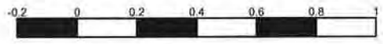
TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK
(63° 37' 31.05" N, 138° 41' 40.64" W)

DWG No:1343-2-SULPHUR- 005

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAR

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW DOWNSTREAM FROM DAWSON CITY ABUTMENT



PHOTO #2 - VIEW UPSTREAM FROM DAWSON CITY ABUTMENT



PHOTO #3 - VIEW OF DAWSON CITY ABUTMENT



PHOTO #4 - VIEW OF COFFEE GOLD MINE ABUTMENT FROM DAWSON CITY ABUTMENT

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 5+044
SITE: SULPHUR CREEK
(63° 37' 31.05" N, 138° 41' 40.64" W)

DWG No:1343-2-SULPHUR- 006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: SULPHUR.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

PE
ON
SIGNATI
Date
PE
Association of Professional
Engineers of Yukon

PROPOSED TEMPORARY 27.432m (90') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 7+043 SITE: INDIAN RIVER

(63° 36' 42" N , 138° 42' 58" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-INDIANRIVER-001	SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

PREPARED BY:

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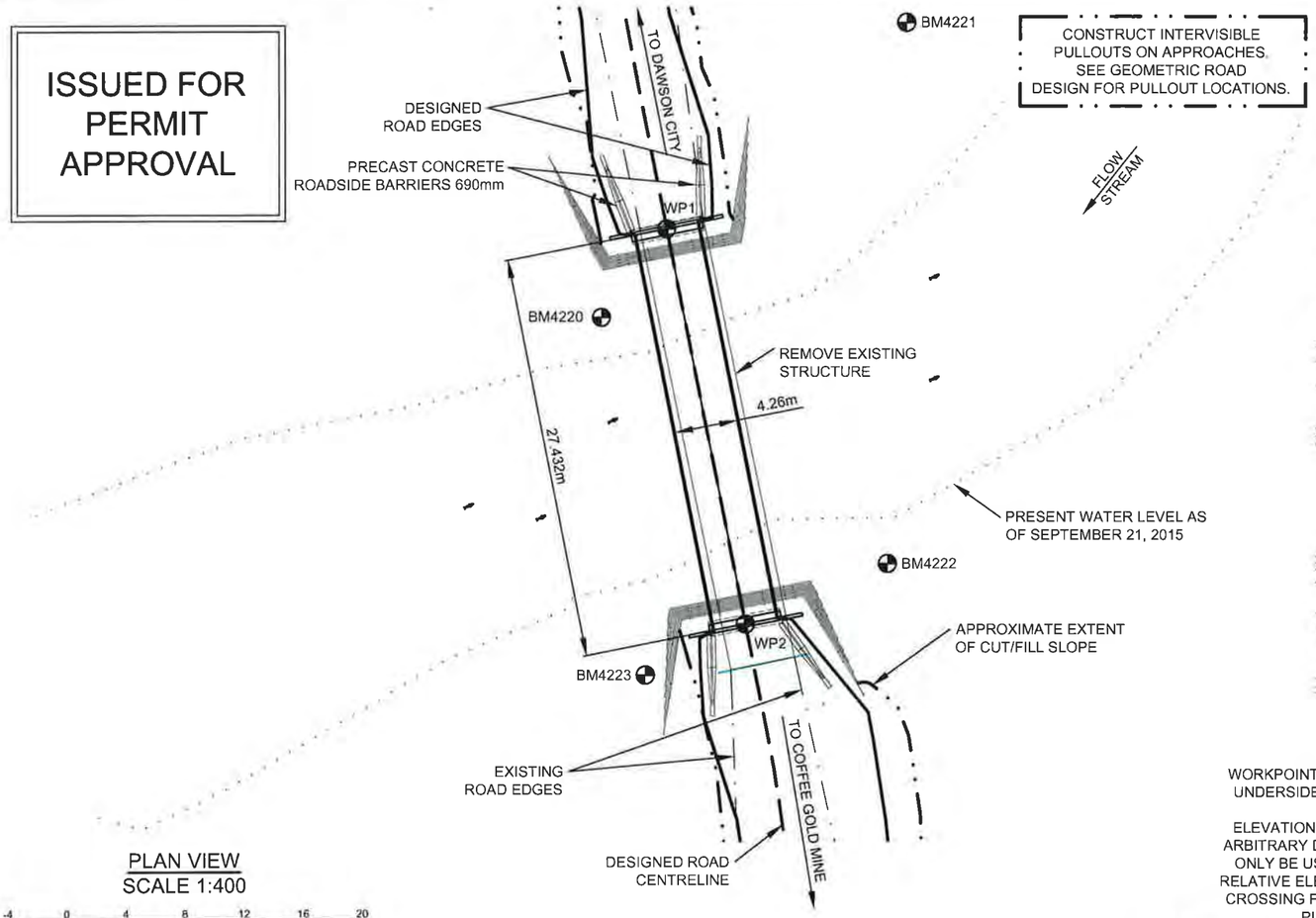
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANRIVER.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

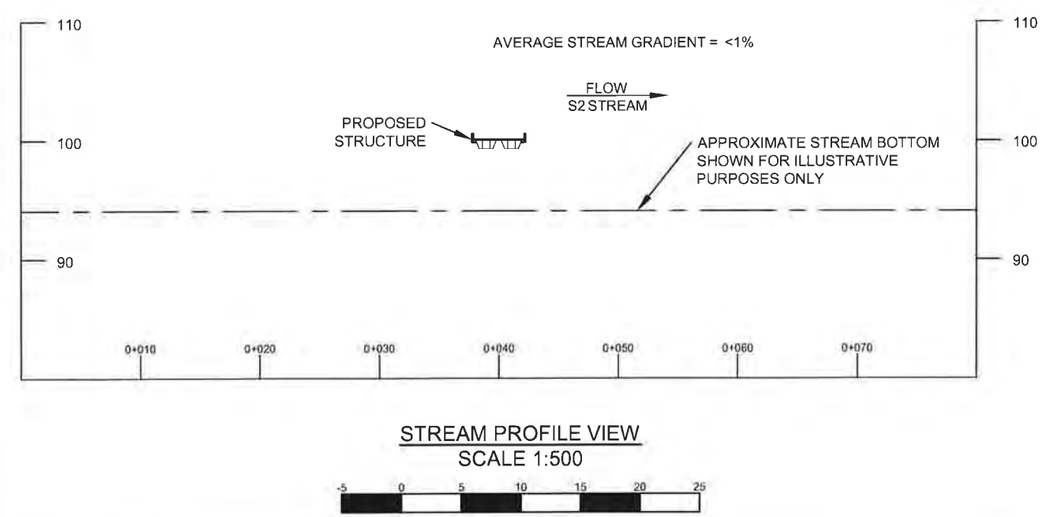
SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS

ISSUED FOR PERMIT APPROVAL



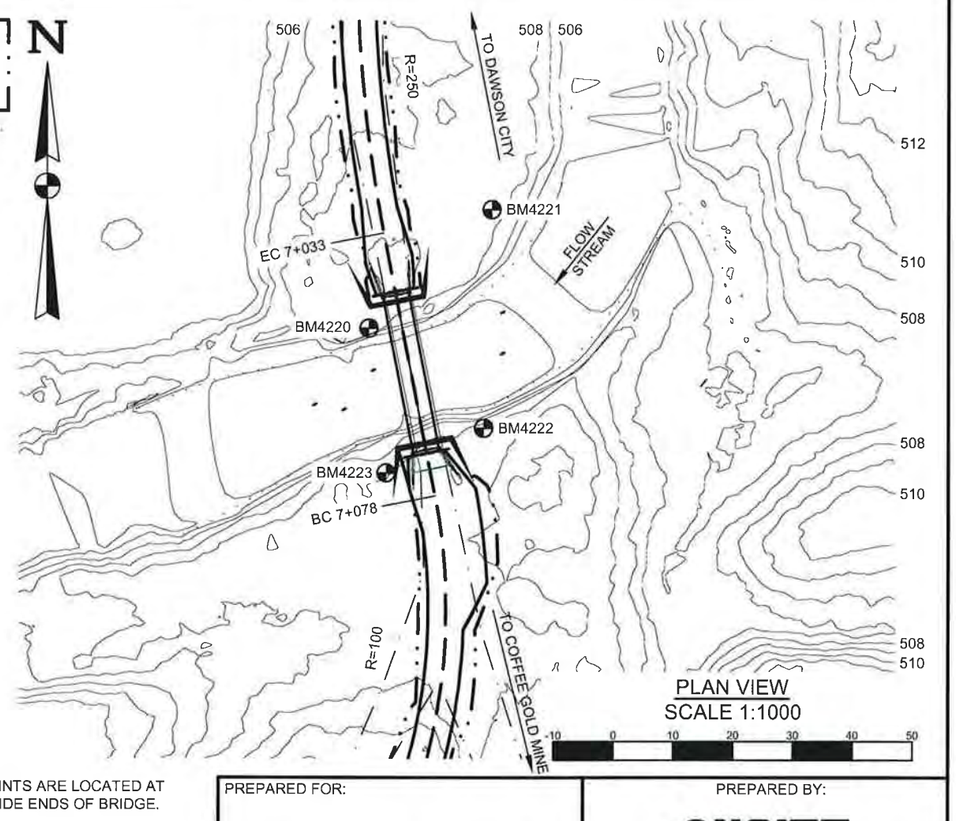
PLAN VIEW
SCALE 1:400

-4 0 4 8 12 16 20



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25



PLAN VIEW
SCALE 1:1000

10 0 10 20 30 40 50

WORKPOINTS ARE LOCATED AT UNDERSIDE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4420	BM4421	350° 25' 02"	7.45
	BM4421	BM4422	47° 15' 07"	21.38
	BM4422	BM4423	81° 40' 59"	27.24
	BM4423	BM4420	9° 40' 40"	30.41
2	BM4420	BM4421	109° 04' 27"	23.07
	BM4421	BM4422	12° 53' 12"	42.28
	BM4422	BM4423	1° 39' 10"	10.42
	BM4423	BM4420	69° 50' 27"	7.60

WP	N	E	ELEV
WP1	7055768.99	613235.53	509.80
WP2	7055742.08	613240.85	510.37
BM4420	7055762.99	613231.11	508.21
BM4421	7055782.93	613251.73	508.23
BM4422	7055746.18	613250.43	509.33
BM4423	7055738.61	613234.08	508.99

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 27.432m (90') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 7+043
SITE: INDIAN RIVER
(63° 36' 42" N , 138° 42' 58" W)

DWG No: 1343-2-INDIANRIVER-002

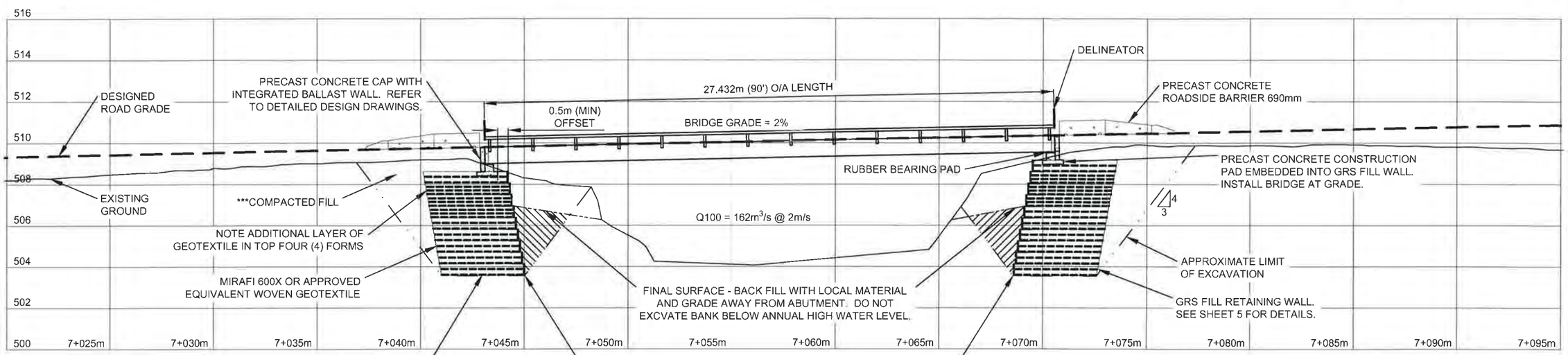
SHEET: 2 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANRIVER.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

PROFESSIONAL ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD CENTRELINE
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
PRESENT WATER LEVEL
WORKPOINT WP1
BENCH MARK BM1



4m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

CONSTRUCT GRS ABUTMENTS TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

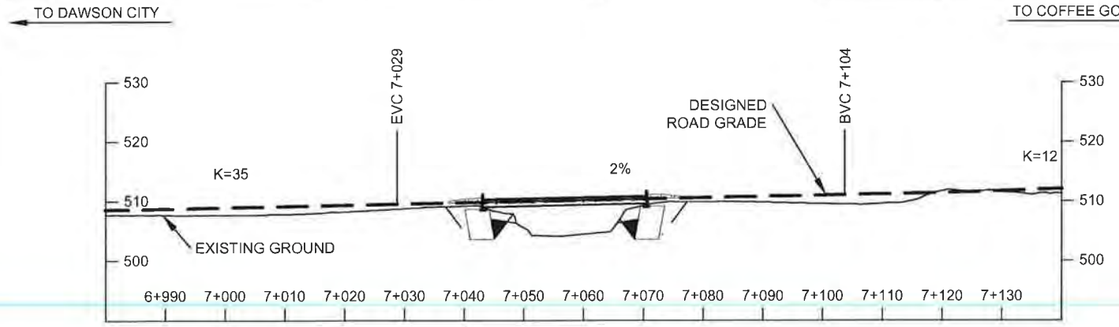
ELEVATION VIEW
SCALE 1:200

-2 0 2 4 6 8 10

PARTIAL MATERIALS LIST	
8	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-27.432MCAPBEAM FOR SPECIFICATIONS
120	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
850	GALVANIZED WIRE STRUTS - 4 GAUGE
240	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-27.432MCAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 27.432m (90') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 7+043
SITE: INDIAN RIVER
(63° 36' 42" N , 138° 42' 58" W)

DWG No: 1343-2-INDIANRIVER-003

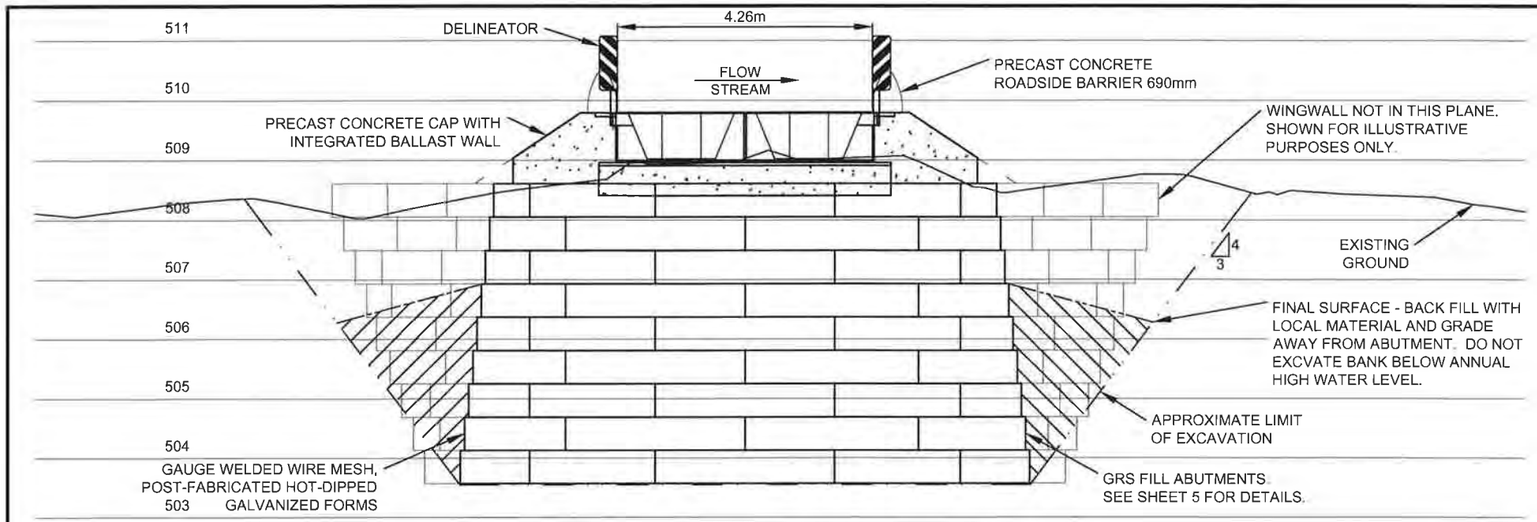
SHEET: 3 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANRIVER.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

ENGINEERED

DESIGNED ROAD GRADE
APPROXIMATE LIMIT OF FILL SLOPE
APPROXIMATE LIMIT OF EXCAVATION
HIGH WATER LEVEL
MIRAFI 180N GEOTEXTILE (OR APPROVED EQUIVALENT)



DAWSON CITY ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

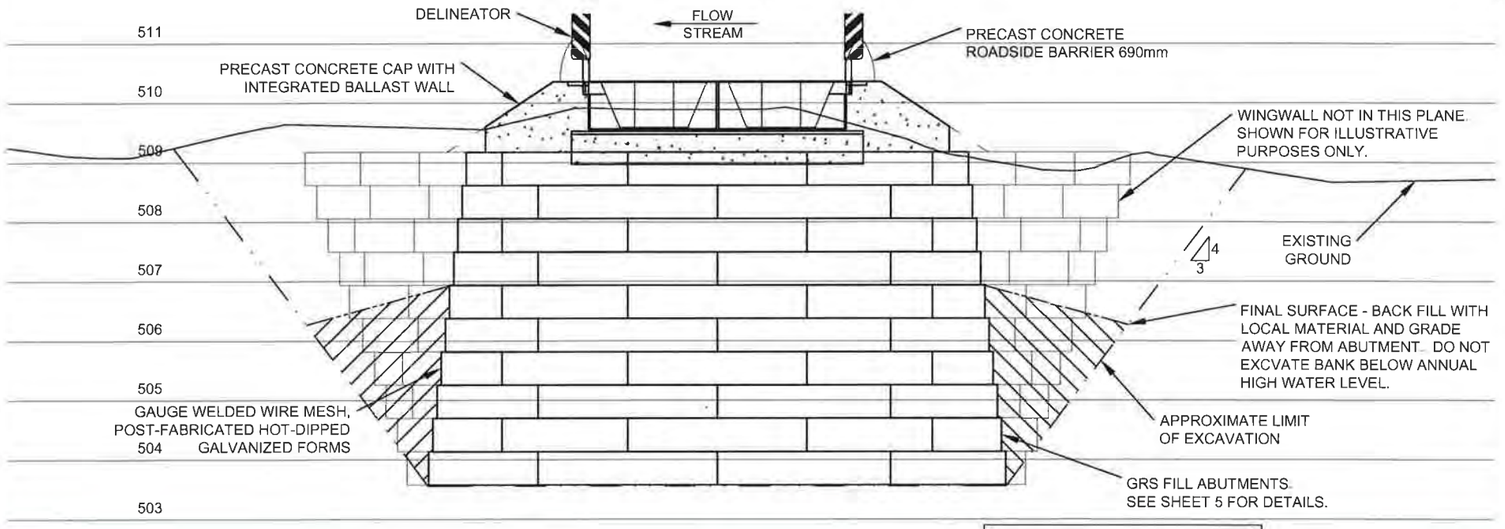
ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

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CAUTION:

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 27.432m (90') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 7+043
SITE: INDIAN RIVER
(63° 36' 42" N , 138° 42' 58" W)

DWG No: 1343-2-INDIANRIVER-004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANRIVER.DWG
SCALE: AS NOTED
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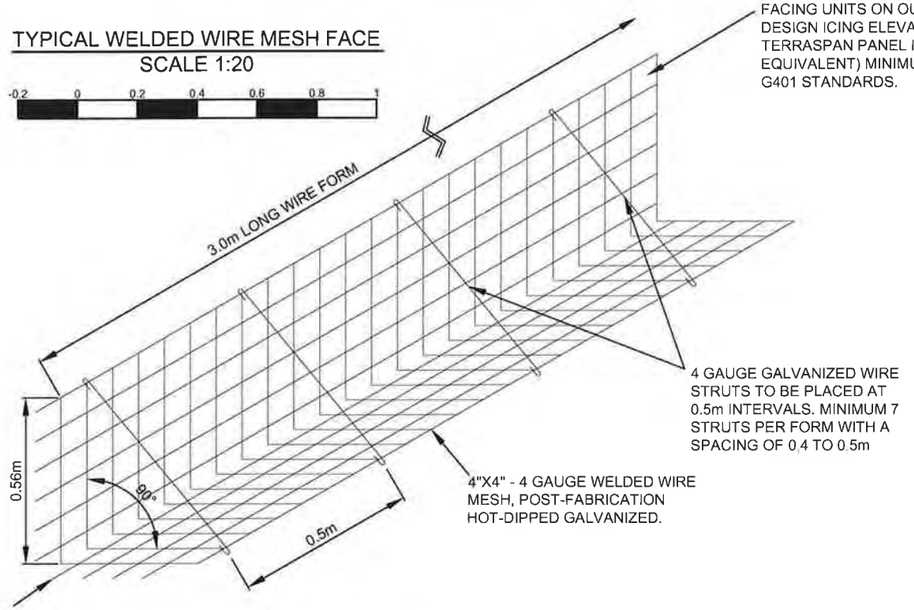
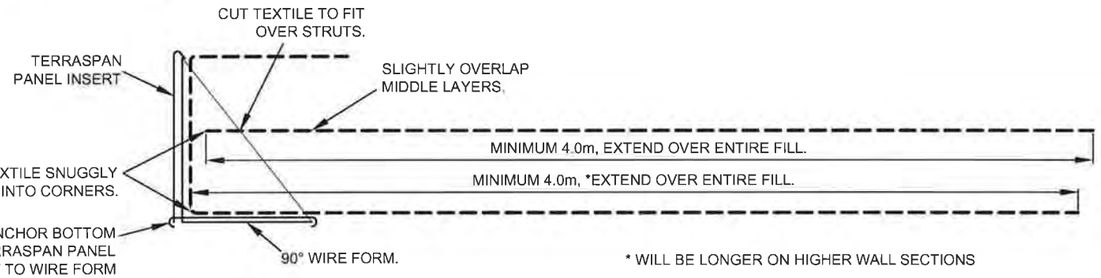
EXISTING GROUND ——— LIMIT OF EXCAVATION ———

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





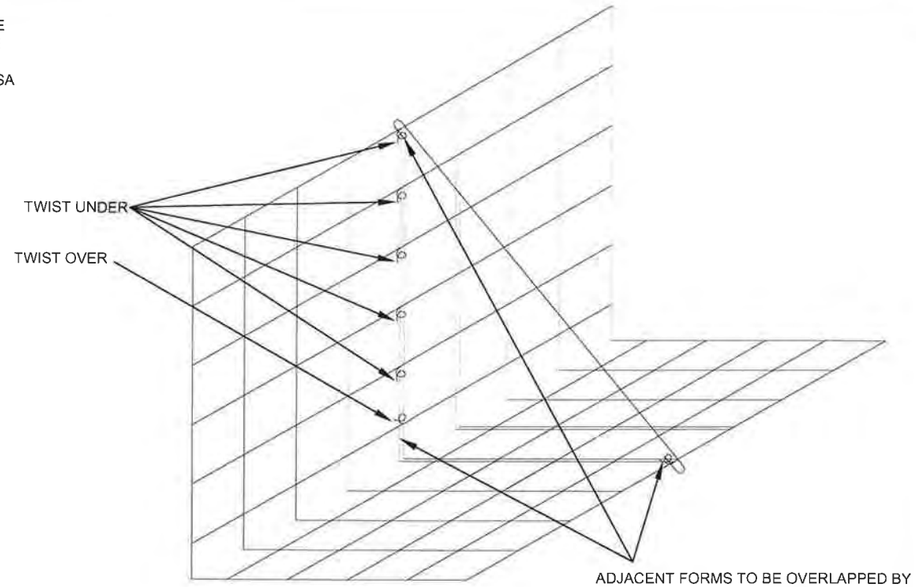
* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20

-0.2 0 0.2 0.4 0.6 0.8 1

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 4 0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4 0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.



TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

-0.1 0 0.1 0.2 0.3 0.4 0.5

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 27.432m (90') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 7+043
SITE: INDIAN RIVER
(63° 36' 42" N , 138° 42' 58" W)

DWG No: 1343-2-INDIANRIVER-005

SHEET 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
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Signature REDACTED

ENGINEER

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW OF DAWSON CITY ABUTMENT

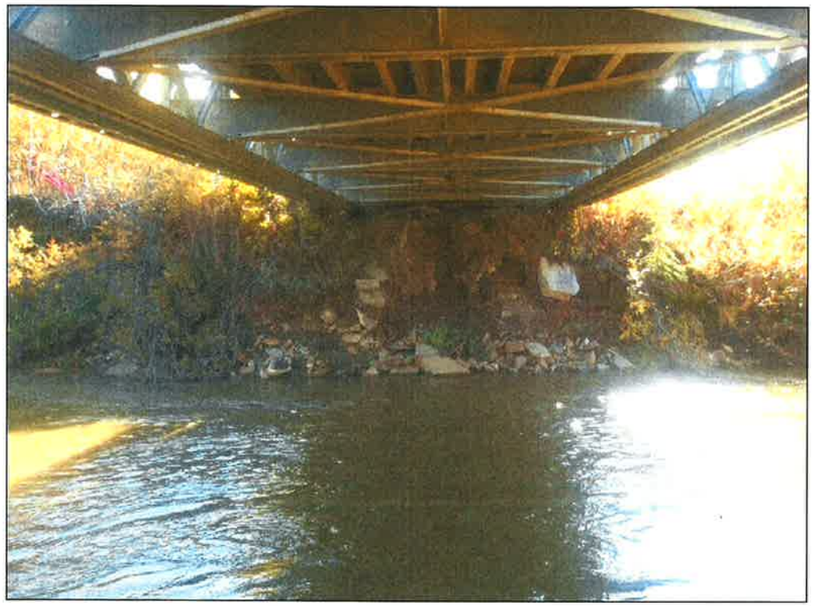

PHOTO #4 - VIEW OF COFFEE GOLD MINE ABUTMENT

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
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PROPOSED TEMPORARY 27.432m (90') O/A LENGTH
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(63° 36' 42" N , 138° 42' 58" W)

DWG No: 1343-2-INDIANRIVER-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: DECEMBER 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANRIVER.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

St
Da

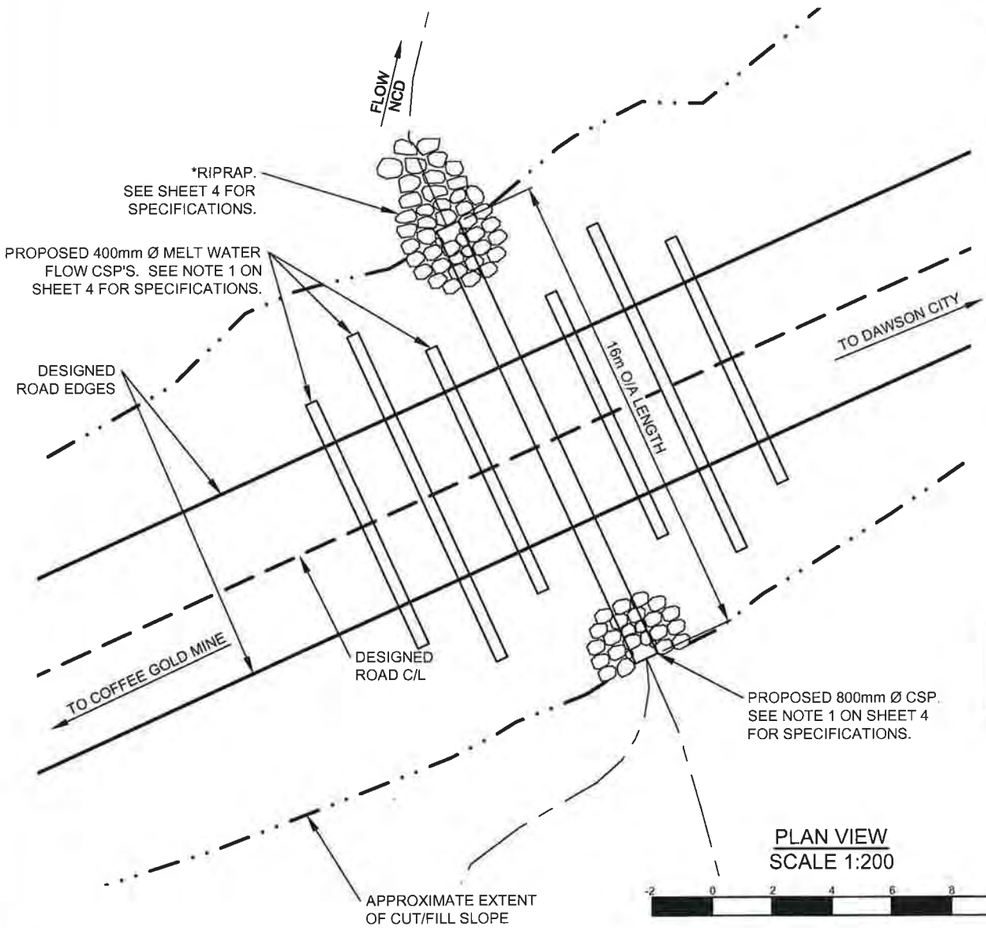
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 800mm Ø X 16m LONG CORRUGATED STEEL PIPE AT 9+334 SITE: INDIAN RIVER TRIBUTARY 1

(63° 36' 22.95' N, 138° 45' 19.36" W)

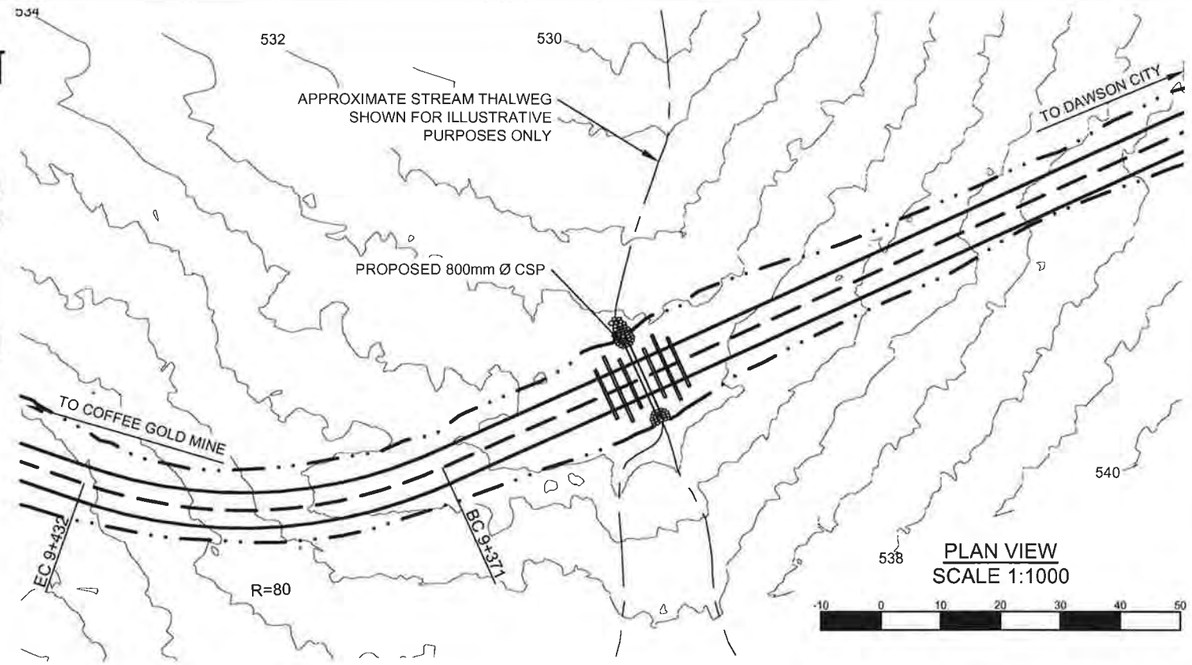
ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-INDIANTRIB1-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: APRIL 8, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: INDIANTRIB1.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: NOVEMBER 18, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW AND NOTES SHEET 5 OF 5 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10



PLAN VIEW
SCALE 1:1000

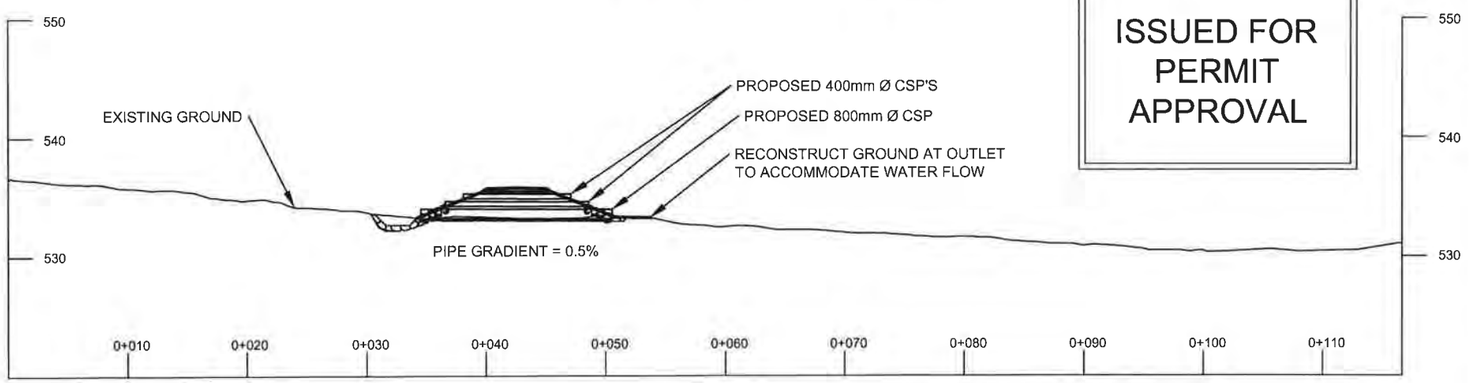
-10 0 10 20 30 40 50

NO DEFINABLE STREAM CHANNEL AT CROSSING SITE. GROUND AROUND CROSSING IS A SWAMP/WET AREA THAT EXPERIENCES SIGNIFICANT ICE ACCUMULATIONS.

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 800mm Ø X 16m LONG
CORRUGATED STEEL PIPE AT 9+334
SITE: INDIAN RIVER TRIBUTARY 1
(63° 36' 22.95' N, 138° 45' 19.36" W)

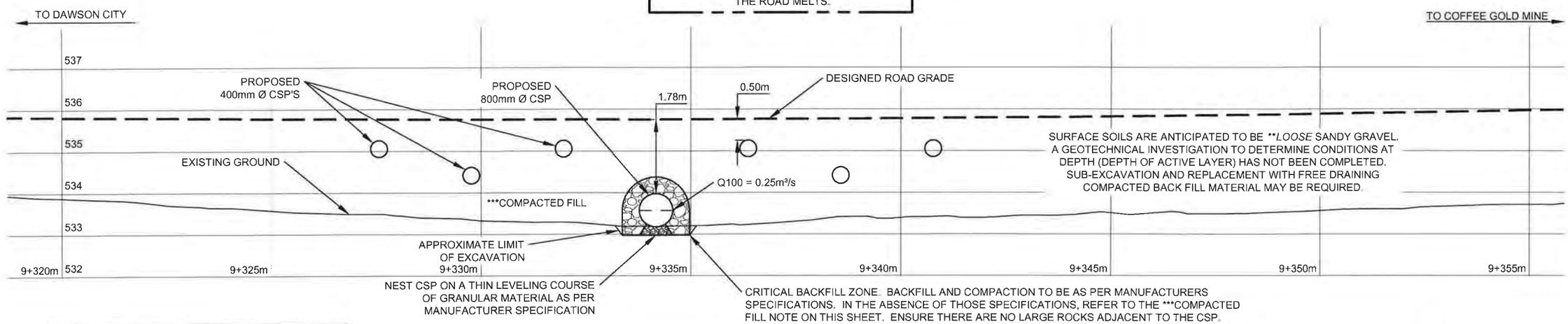
DWG No: 1343-2-INDIANTRIB1-002

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
STREAM THALWEG

NOTE THAT UPPER CULVERTS ARE INTENDED TO HELP CARRY MELT WATER FLOWS IN THE SPRING AS THE BUILT UP ICE UPSTREAM OF THE ROAD MELTS.



ELEVATION VIEW
SCALE 1:100

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

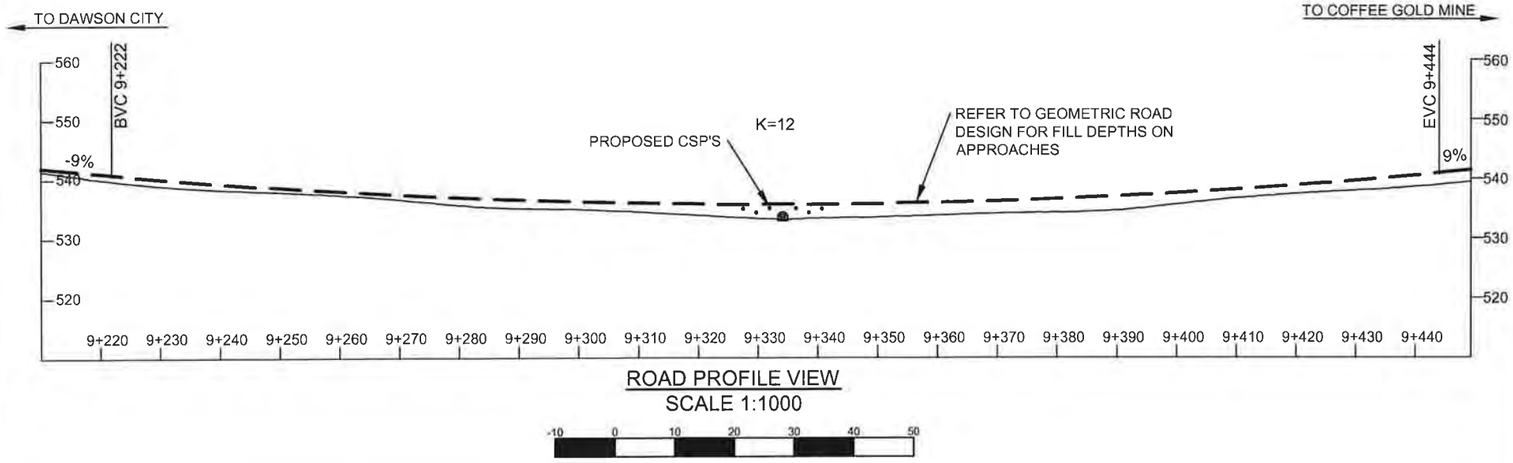
CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 800mm Ø X 16m LONG
CORRUGATED STEEL PIPE AT 9+334
SITE: INDIAN RIVER TRIBUTARY 1
(63° 36' 22.95' N, 138° 45' 19.36" W)

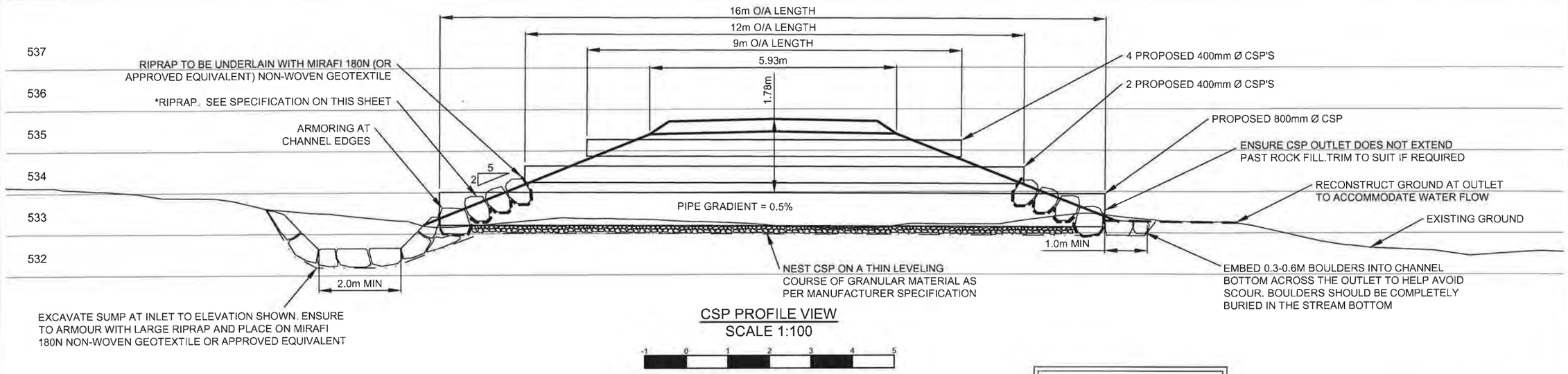
DWG No: 1343-2-INDIANTRIB1-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE

APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:100

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

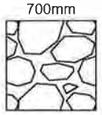
NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, MIN 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 800mm DIAMETER X 16m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D , 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

MATERIALS LIST	
2	400mm Ø X 12m LONG CORRUGATED STEEL PIPE
4	400mm Ø X 9m LONG CORRUGATED STEEL PIPE
1	800mm Ø X 16m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 40m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 800mm Ø X 16m LONG CORRUGATED STEEL PIPE AT 9+334
SITE: INDIAN RIVER TRIBUTARY 1
(63° 36' 22.95' N, 138° 45' 19.36" W)

Signature REDACTED

DWG No: 1343-2-INDIANTRIB1-004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAY 2

APPROXIMATE LIMIT OF EXCAVATION — MIRAFI 180N OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 800mm Ø X 16m LONG
CORRUGATED STEEL PIPE AT 9+334
SITE: INDIAN RIVER TRIBUTARY 1
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DWG No: 1343-2-INDIANTRIB1-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 8, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB1.DWG
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REVISION DATE: NOVEMBER 18, 2016
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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



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NOT TO SCALE

Signature REDACTED

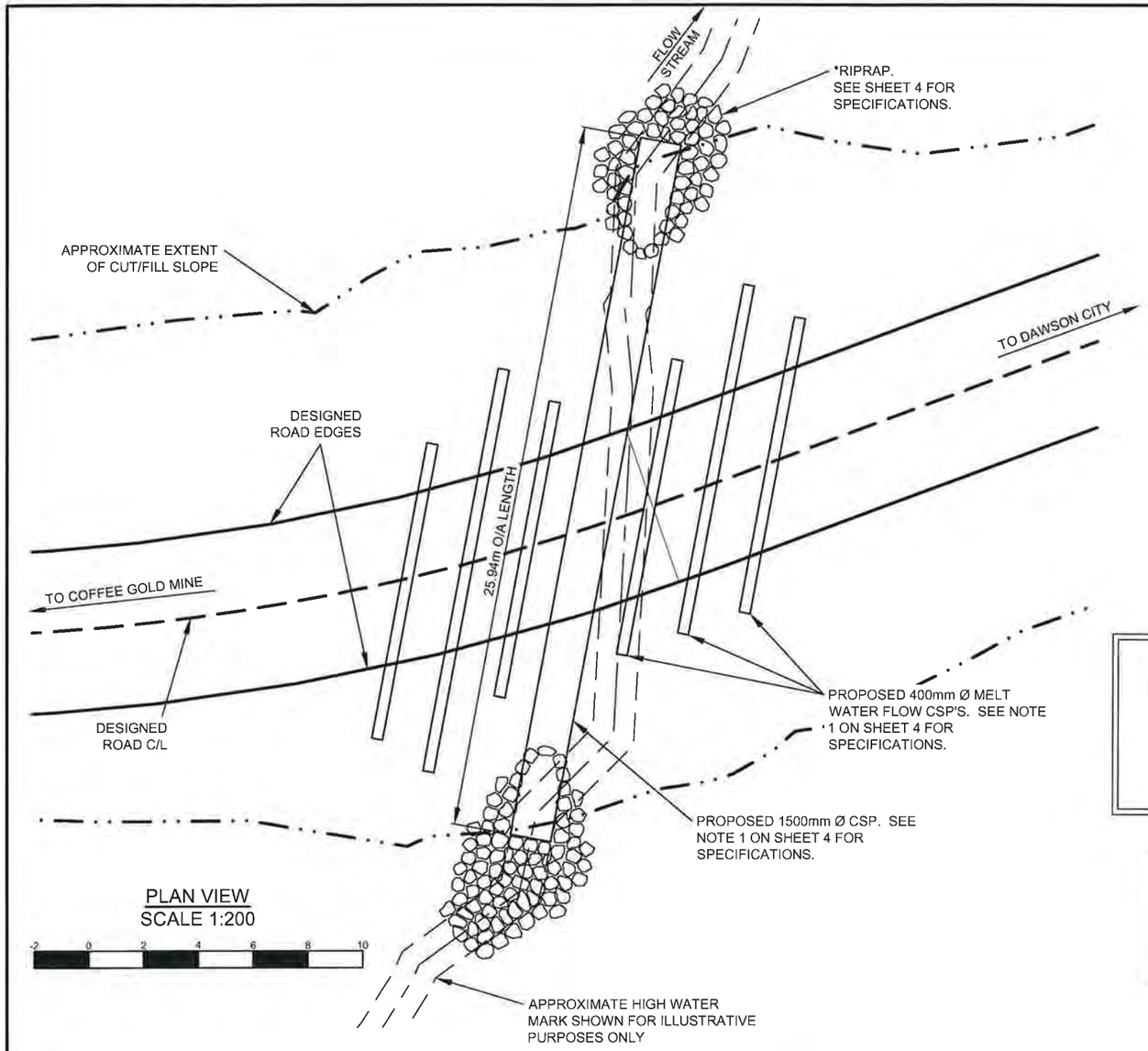
PE
ON
SIGNATU
Date
PERMIT NUMBER PP289
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 1500mm Ø X 26m LONG CORRUGATED STEEL PIPE AT 10+636 SITE: INDIAN RIVER TRIBUTARY 2

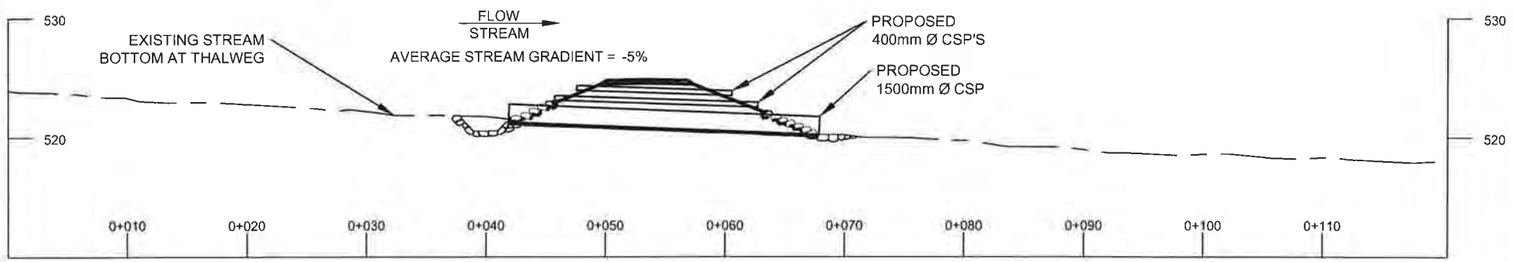
(63° 36' 33.04" N, 138° 46' 44.91" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-INDIANTRIB2-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: APRIL 12, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: INDIANTRIB2.dwg SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: NOVEMBER 18, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION AND ROAD PROFILE VIEW SHEET 4 OF 5 - CULVERT PROFILE VIEW AND NOTES SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:200



STREAM PROFILE VIEW
SCALE 1:500

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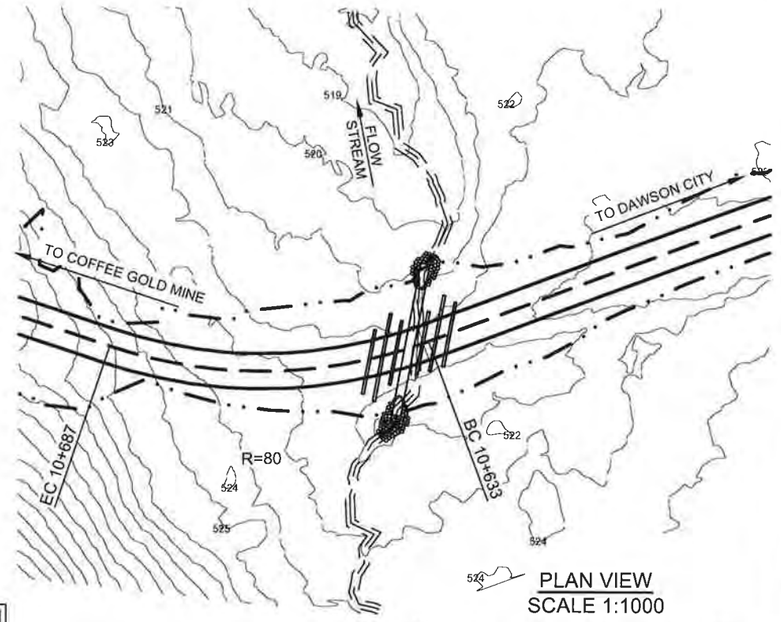

PLAN VIEW
SCALE 1:1000

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1500mm Ø X 26m LONG CORRUGATED STEEL PIPE AT 10+636

SITE: INDIAN RIVER TRIBUTARY 2
(63° 36' 33.04" N, 138° 46' 44.91" W)

DWG No:1343-2-INDIANTRIB2-002

DESIGN BY: SCOTT WILSON, P ENG
DESIGN DATE: APRIL 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB2 dwg
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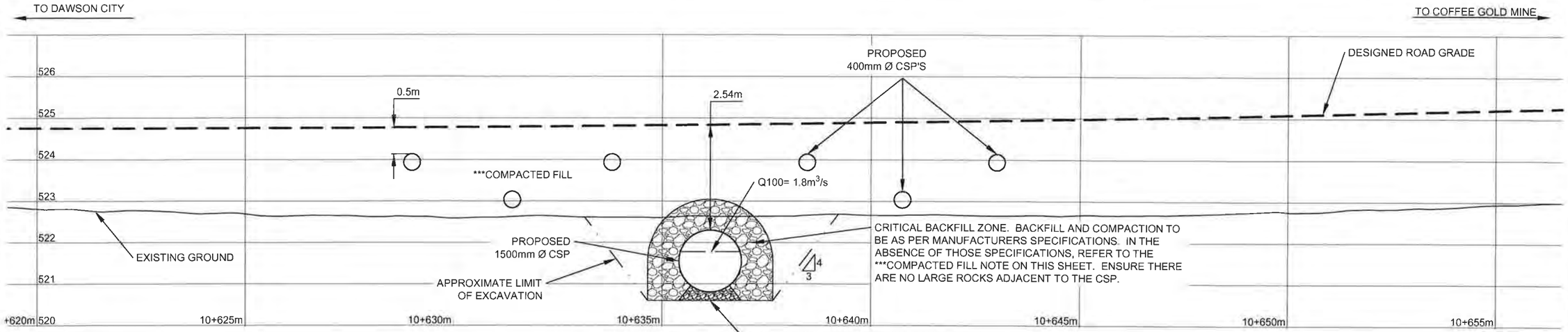
Signature REDACTED

MAR 2

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG



ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

SURFACE SOILS ARE ANTICIPATED TO BE ***LOOSE TO COMPACT* ORGANICS WITH NEAR-SURFACE PERMAFROST. A GEOTECHNICAL INVESTIGATION TO DETERMINE CONDITIONS AT DEPTH HAS NOT BEEN COMPLETED. SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL MAY BE REQUIRED

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
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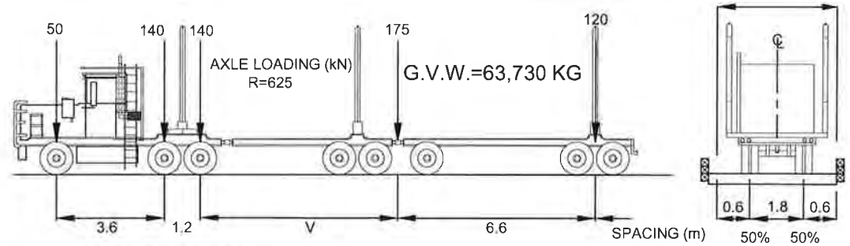
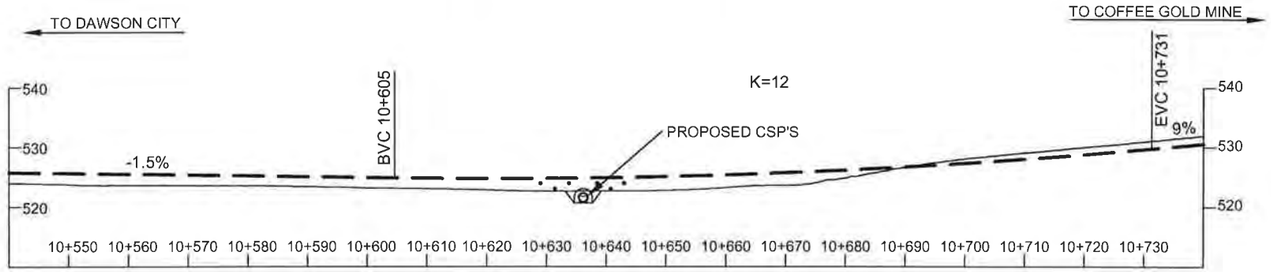


BCL-625 DESIGN TRUCK LOADING DIAGRAM
SCALE 1:200

-2 0 2 4 6 8 10

V = VARIABLE SPACING - 6.6m TO 18m INCLUSIVE. SPACING TO BE USED IS THAT WHICH PRODUCES THE MAXIMUM STRESSES

NOTE THAT UPPER CULVERTS ARE INTENDED TO HELP CARRY MELT WATER FLOWS IN THE SPRING AS THE BUILT UP ICE UPSTREAM OF THE ROAD MELTS.



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:
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PREPARED FOR:
GOLDCORP

PREPARED BY:
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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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SITE: INDIAN RIVER TRIBUTARY 2
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DWG No:1343-2-INDIANTRIB2-003

Signature REDACTED

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DESIGN DATE: APRIL 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
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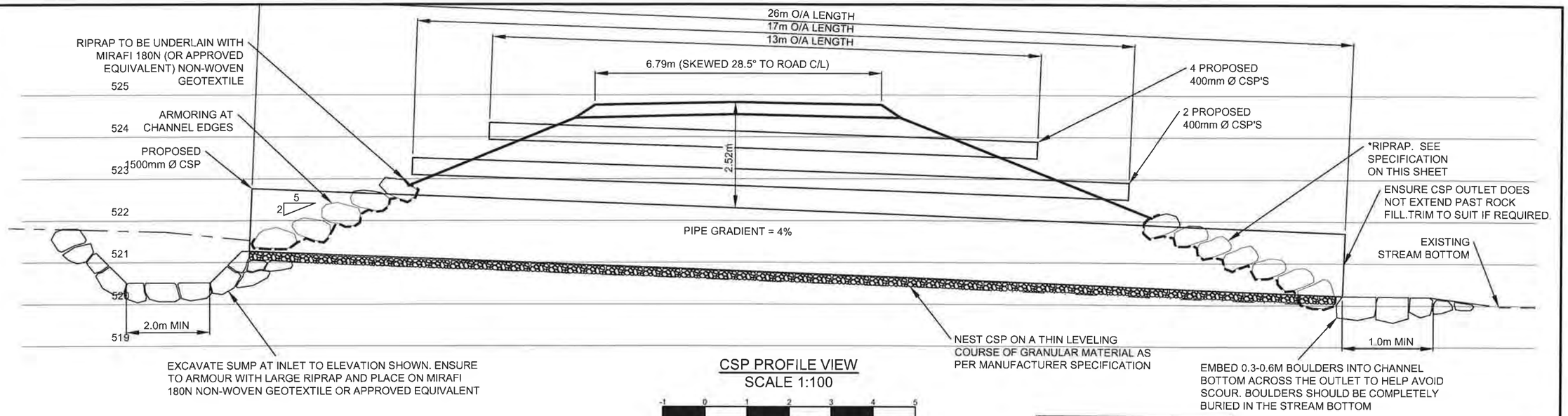
PROFESSIONAL ENGINEER

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

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2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

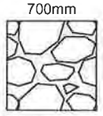
MATERIALS LIST	
2	400mm Ø X 17m LONG CORRUGATED STEEL PIPE
4	400mm Ø X 13m LONG CORRUGATED STEEL PIPE
1	1500mm Ø X 26m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, MIN 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 1500mm DIAMETER X 26m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP
700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 50m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1500mm Ø X 26m LONG
CORRUGATED STEEL PIPE AT 10+636
SITE: INDIAN RIVER TRIBUTARY 2
(63° 36' 33.04" N, 138° 46' 44.91" W)

DWG No:1343-2-INDIANTRIB2-004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB2.dwg
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
MIRAFI 180N OR EQUIVALENT
EXISTING STREAM BOTTOM



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1500mm Ø X 26m LONG
CORRUGATED STEEL PIPE AT 10+636
SITE: INDIAN RIVER TRIBUTARY 2
(63° 36' 33.04" N, 138° 46' 44.91" W)

DWG No:1343-2-INDIANTRIB2-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 12, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB2.dwg
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

SIGN
Date

Engineers of Yukon

PROPOSED PERMANENT 1000mm Ø X 27m O/A LENGTH CORRUGATED STEEL PIPE AT 11+208 SITE: INDIAN RIVER TRIBUTARY 3

(63° 36' 28.48" N, 138° 47' 19.29" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-INDIANTRIB3-001

SHEET: 1 OF 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

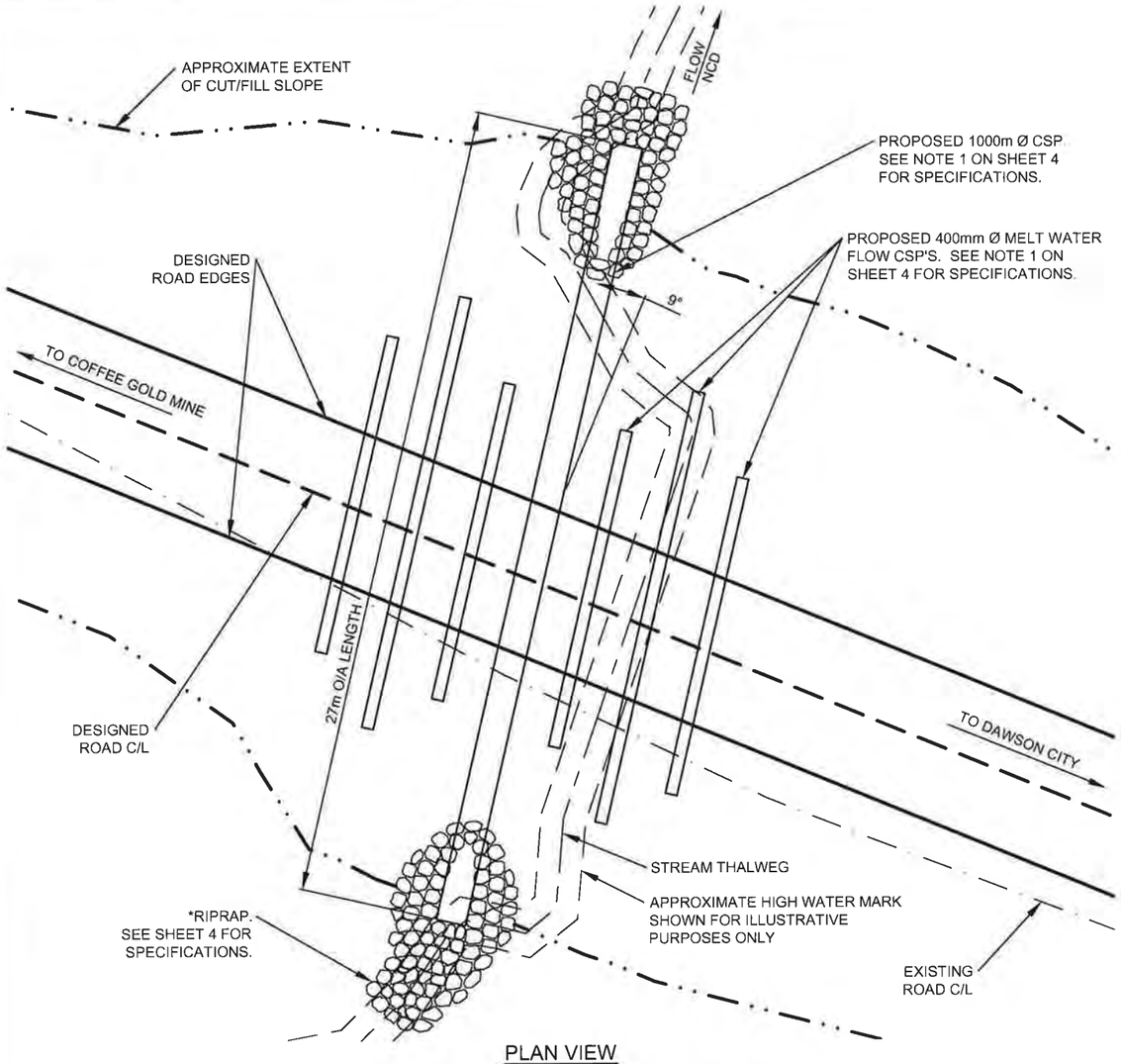
ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

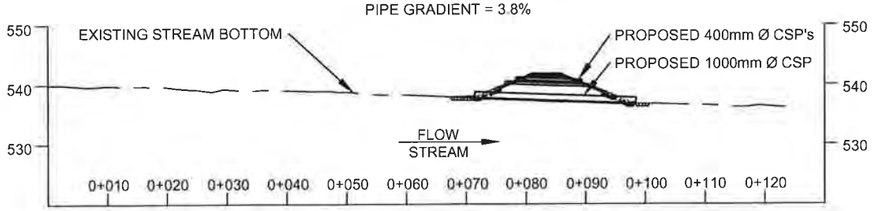
SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW
SHEET 4 OF 5 - CSP PROFILE VIEW AND NOTES
SHEET 4 OF 5 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

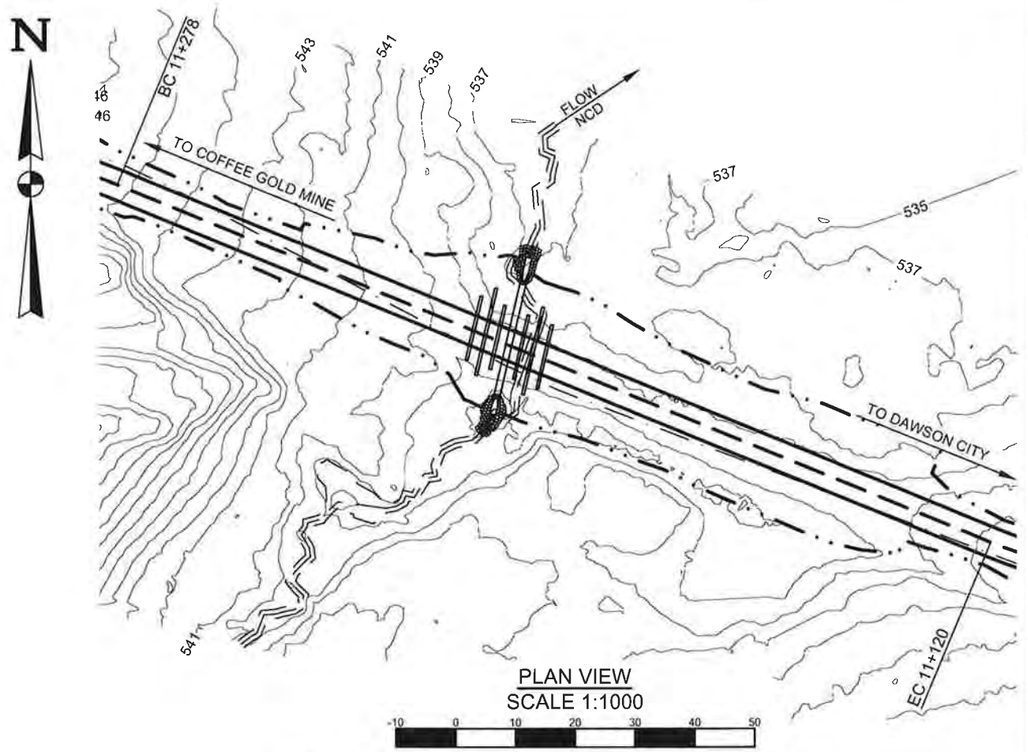
-2 0 2 4 6 8 10

AVERAGE STREAM GRADIENT = 2.9%
PIPE GRADIENT = 3.8%



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR
PERMIT
APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1000mm Ø X 27m O/A LENGTH
CORRUGATED STEEL PIPE AT 11+208
SITE: INDIAN RIVER TRIBUTARY 3
(63° 36' 28.48" N, 138° 47' 19.29" W)

DWG No: 1343-2-INDIANTRIB3-002

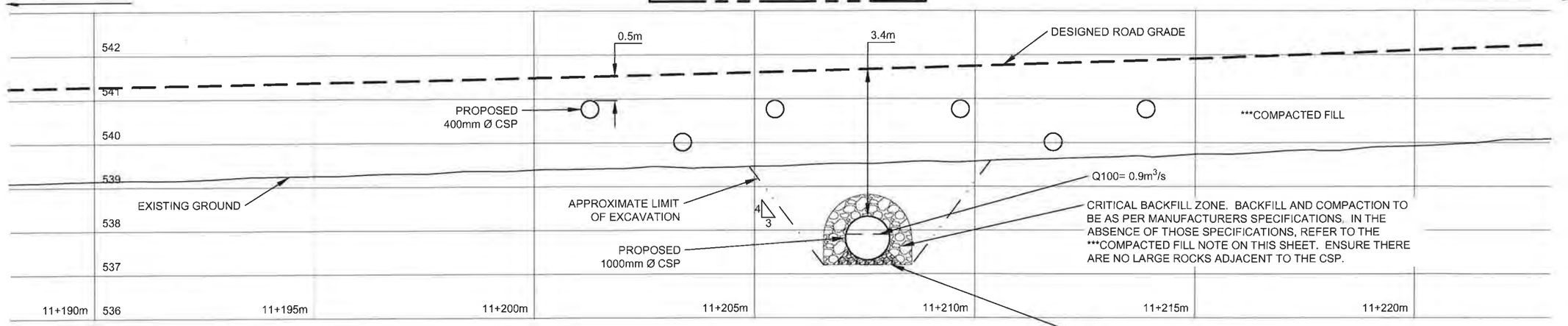
Signature REDACTED

ENGINEER

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG
EXISTING ROAD EDGES
PROPOSED STREAM BOTTOM

NOTE THAT UPPER CULVERTS ARE INTENDED TO HELP CARRY MELT WATER FLOWS IN THE SPRING AS THE BUILT UP ICE UPSTREAM OF THE ROAD MELTS.



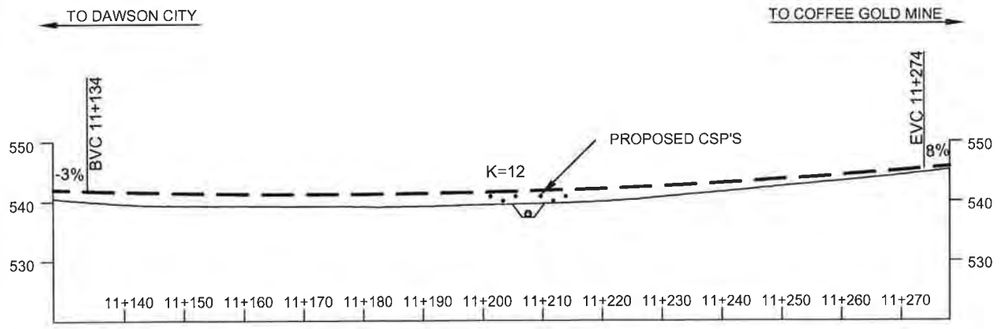
ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

SURFACE SOILS ARE ANTICIPATED TO BE ***LOOSE TO COMPACT ORGANICS WITH NEAR-SURFACE PERMAFROST*. A GEOTECHNICAL INVESTIGATION TO DETERMINE CONDITIONS AT DEPTH HAS NOT BEEN COMPLETED. SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL MAY BE REQUIRED.

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

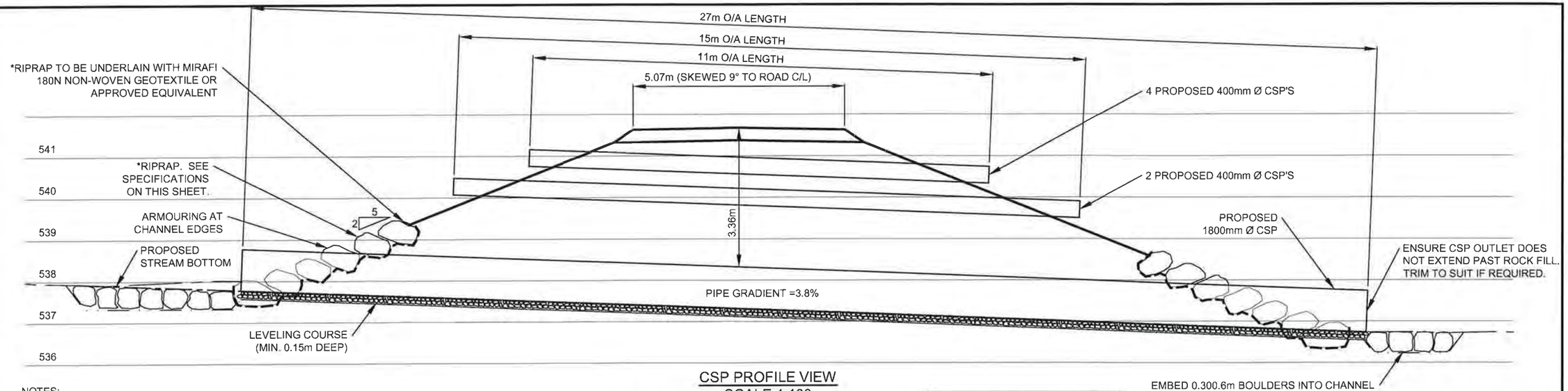
PROPOSED PERMANENT 1000mm Ø X 27m O/A LENGTH
CORRUGATED STEEL PIPE AT 11+208
SITE: INDIAN RIVER TRIBUTARY 3
(63° 36' 28.48" N, 138° 47' 19.29" W)

DWG No: 1343-2-INDIANTRIB3-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:100

-1 0 1 2 3 4 5

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, MIN 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 1800mm DIAMETER X 27m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

MATERIALS LIST	
2	400mm Ø X 15m LONG CORRUGATED STEEL PIPE
4	400mm Ø X 11m LONG CORRUGATED STEEL PIPE
1	1800mm Ø X 27m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP
700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 40m³ OF RIPRAP REQUIRED.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1000mm Ø X 27m O/A LENGTH CORRUGATED STEEL PIPE AT 11+208
SITE: INDIAN RIVER TRIBUTARY 3
(63° 36' 28.48" N, 138° 47' 19.29" W)

DWG No: 1343-2-INDIANTRIB3-004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
EXISTING STREAM BOTTOM
MIRAFI 180N OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

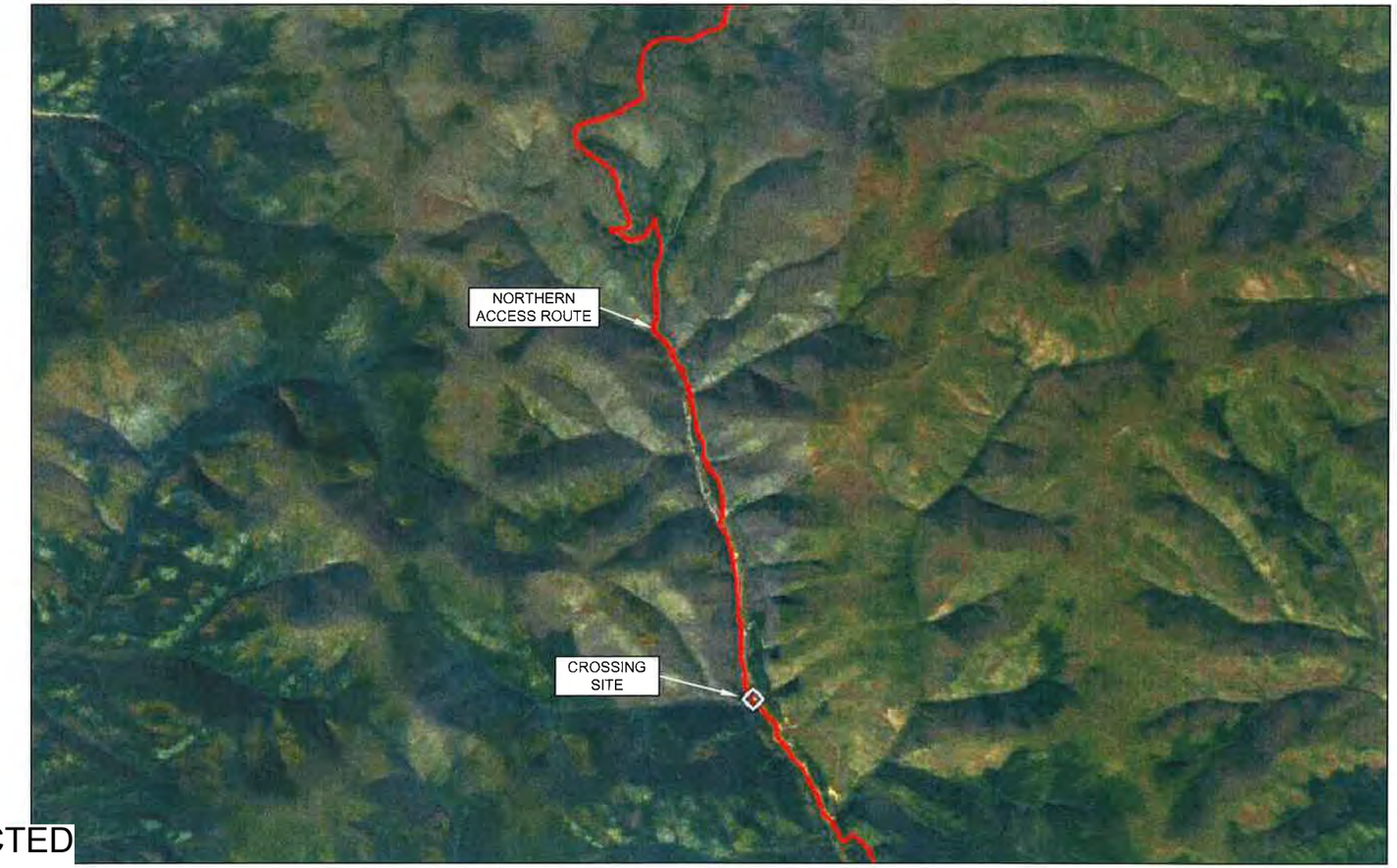
PROPOSED PERMANENT 1000mm Ø X 27m O/A LENGTH
CORRUGATED STEEL PIPE AT 11+208
SITE: INDIAN RIVER TRIBUTARY 3
(63° 36' 28.48" N, 138° 47' 19.29" W)

DWG No: 1343-2-INDIANTRIB3-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: INDIANTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 18, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



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NOT TO SCALE

Signature REDACTED

PERI
ONSI
SIGNATURE
Date ____
PERMIT NUMBER PP289
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 2800mm Ø X 17m LONG EMBEDDED CORRUGATED STEEL PIPE AT 63+203 SITE: MAISY MAY TAILINGS TRIB 2

(63° 19' 11.80" N, 138° 58' 21.06" W)

ISSUED FOR PERMIT APPROVAL

DWG No:
1343-2-MAISYMAYTAILINGSTRIB2- 001

SHEET: 1 OF 5

PREPARED FOR:

GOLDCORP

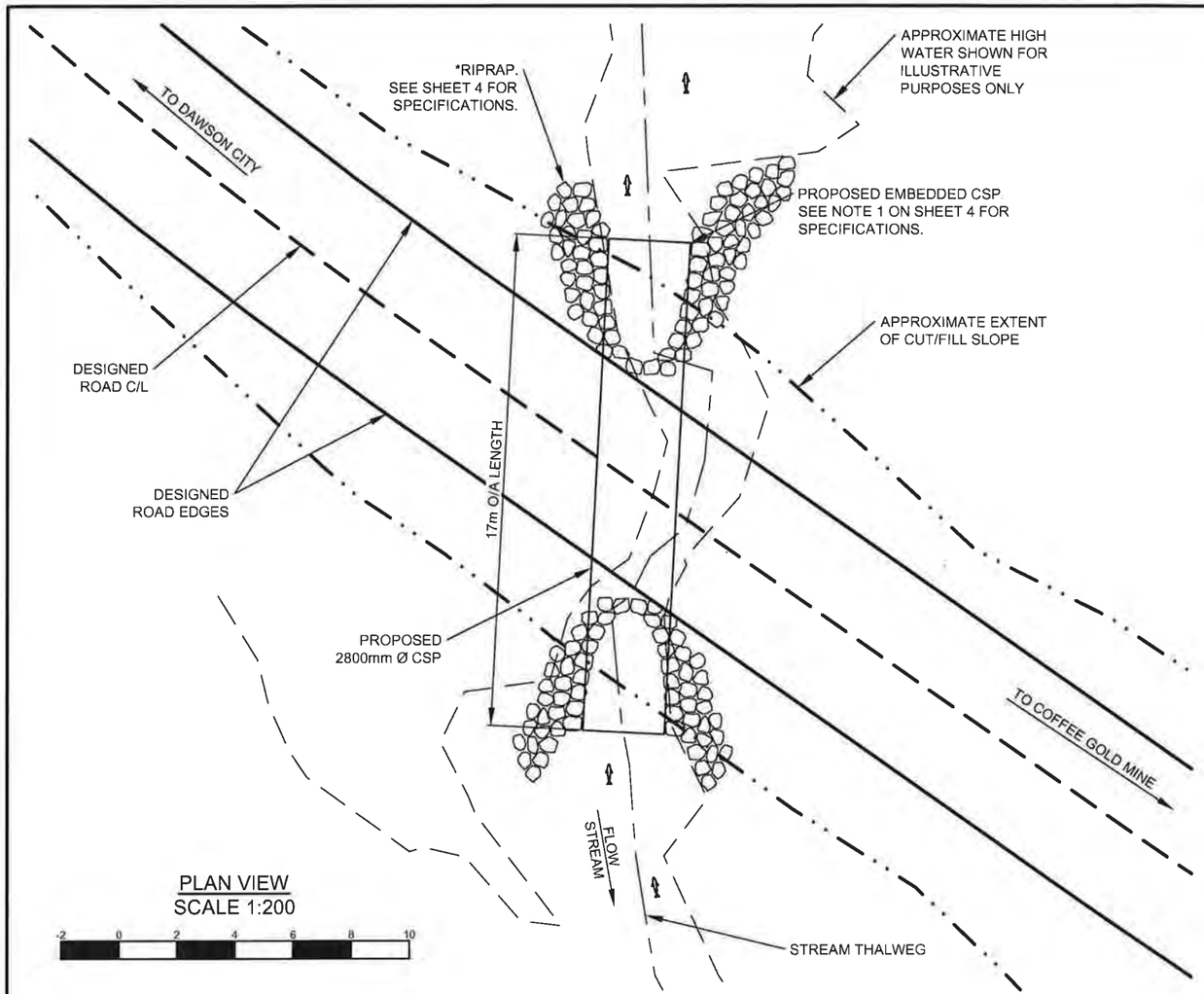
PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: NOVEMBER 28, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: MAISYMAYTRAILINGTRIB2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW
SHEET 4 OF 5 - CSP PROFILE VIEW
SHEET 5 OF 5 - PHOTOS



PLAN VIEW
SCALE 1:200

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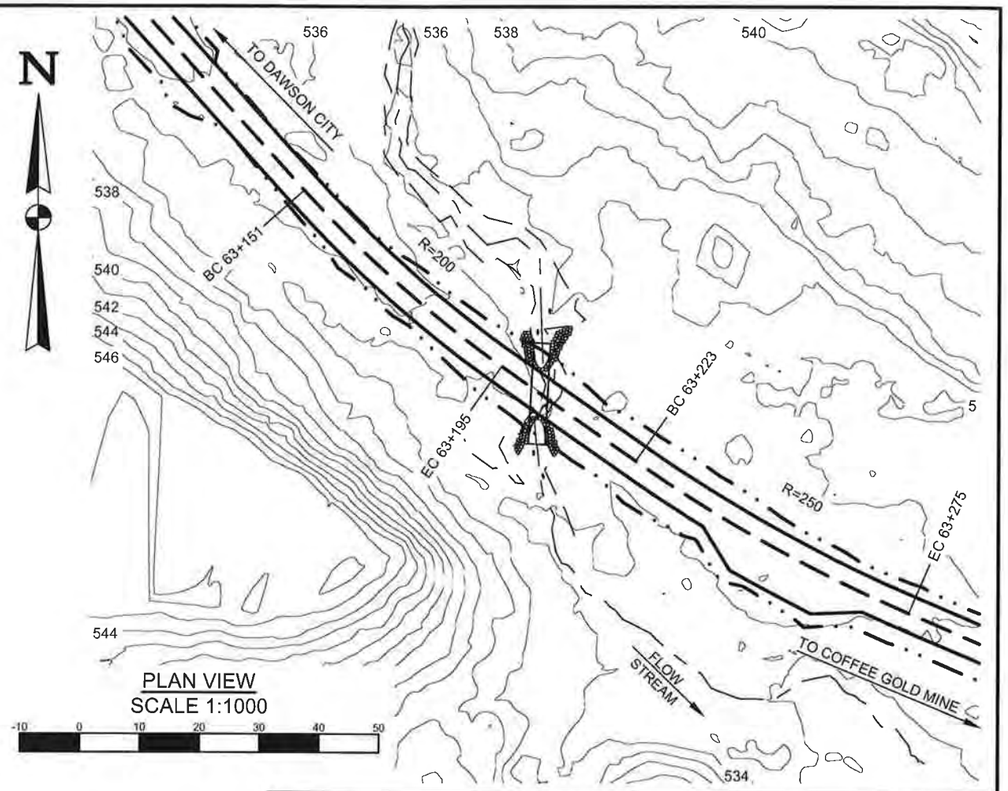
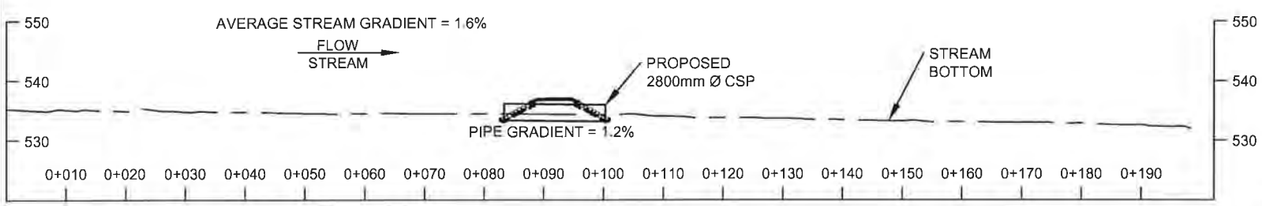


PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

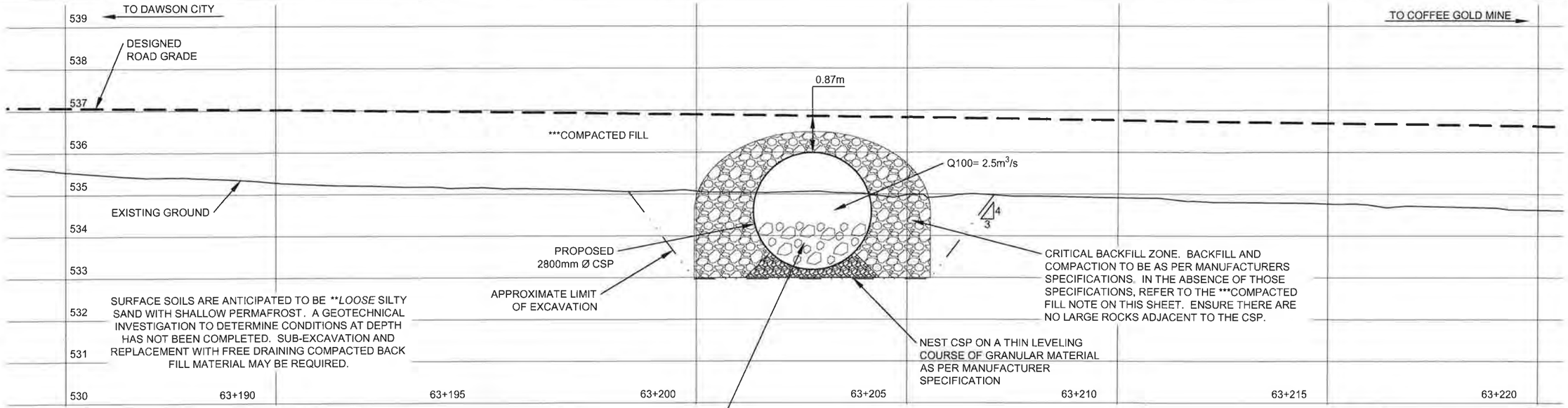
PROPOSED PERMANENT 2800mm Ø X 17m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 63+203
SITE: MAISY MAY TAILINGS TRIB 2
(63° 19' 11.80" N, 138° 58' 21.06" W)

DWG No:
1343-2-MAISYMAYTAILINGSTRIB2- 002

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: NOVEMBER 28, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: MAISYMAYTRAILINGTRIB2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG



FILL CSP WITH SUBSTRATE OF INTERMIXED 0.2mØ TO 0.3mØ ROCK, SAND, AND GRAVEL. FILL CSP TO 40% OF OVERALL DIAMETER (APPROXIMATELY 1.12m DEEP). RECONSTRUCTED STREAM BOTTOM TO CLOSELY RESEMBLE THE SURROUNDING UNDISTURBED STREAM BOTTOM. THE CHANNEL SHOULD BE FLUSHED WITH WATER THAT IS PUMPED AWAY FROM THE CHANNEL TO HELP "SEAT AND SEAL" THE STREAM BOTTOM MATERIAL WHICH WILL HELP REDUCE POST CONSTRUCTION SEDIMENT DELIVERY AND CHANNEL DEWATERING.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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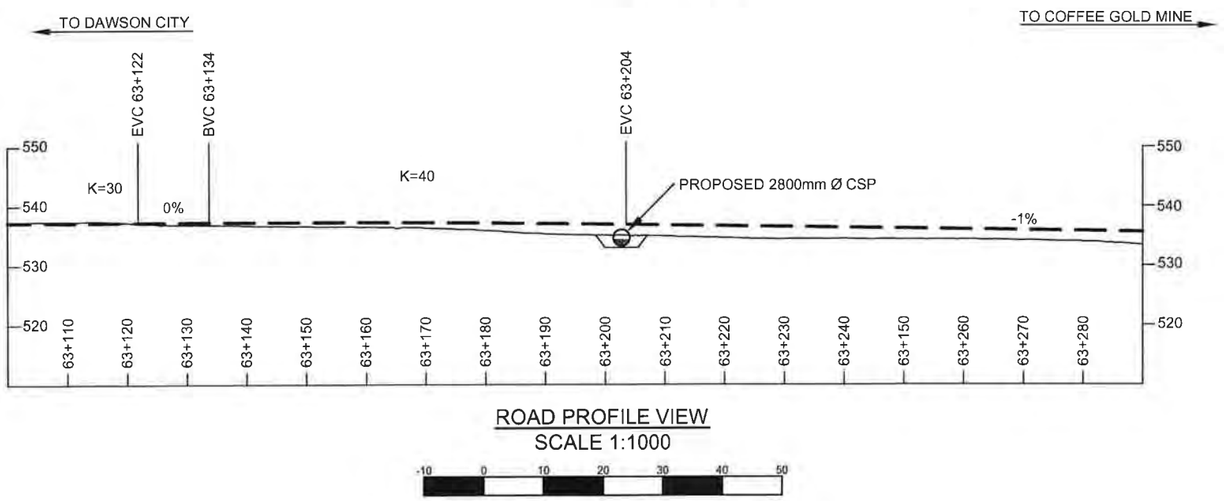
***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

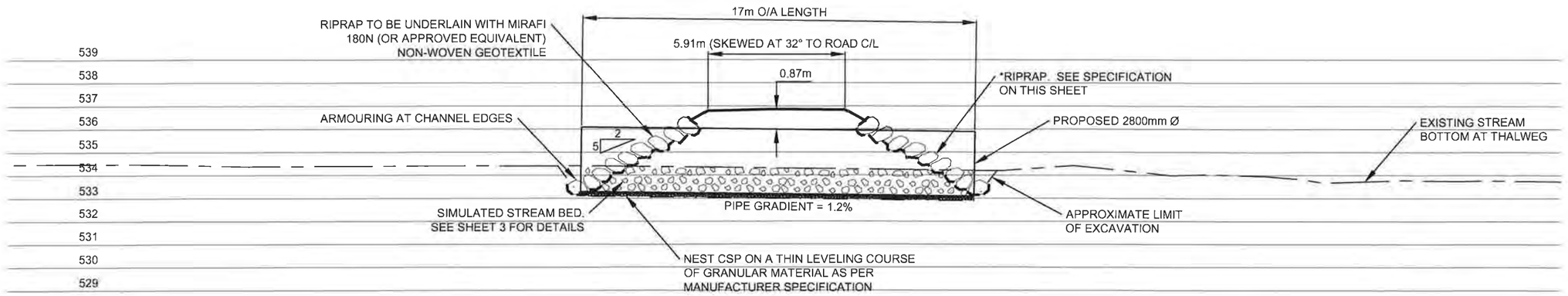
PROPOSED PERMANENT 2800mm Ø X 17m LONG EMBEDDED CORRUGATED STEEL PIPE AT 63+203
SITE: MAISY MAY TAILINGS TRIB 2
(63° 19' 11.80" N, 138° 58' 21.06" W)

DWG No:
1343-2-MAISYMAYTAILINGSTRIB2- 003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: NOVEMBER 28, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: MAISYMAYTRAILINGTRIB2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

MATERIALS LIST	
1	2800mm Ø X 17m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

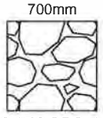
NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm) TO BE DETERMINED BY FABRICATOR. SUPPLY 2800mm DIAMETER X 17m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 60m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2800mm Ø X 17m LONG EMBEDDED CORRUGATED STEEL PIPE AT 63+203
SITE: MAISY MAY TAILINGS TRIB 2
(63° 19' 11.80" N, 138° 58' 21.06" W)

DWG No:
1343-2-MAISYMAYTAILINGSTRIB2- 004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: NOVEMBER 28, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: MAISYMAYTRAILINGTRIB2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
STREAM THALWEG
MIRAFI 180N OR EQUIVALENT



PHOTO #1 - VIEW OF TOWARDS DAWSON CITY



PHOTO #2 - VIEW OF UPSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2800mm Ø X 17m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 63+203
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(63° 19' 11.80" N, 138° 58' 21.06" W)

DWG No:
1343-2-MAISYMAYTAILINGSTRIB2- 005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: NOVEMBER 28, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: MAISYMAYTRAILINGTRIB2.DWG
SCALE: AS NOTED
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ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPENDIX 31-A-XVI

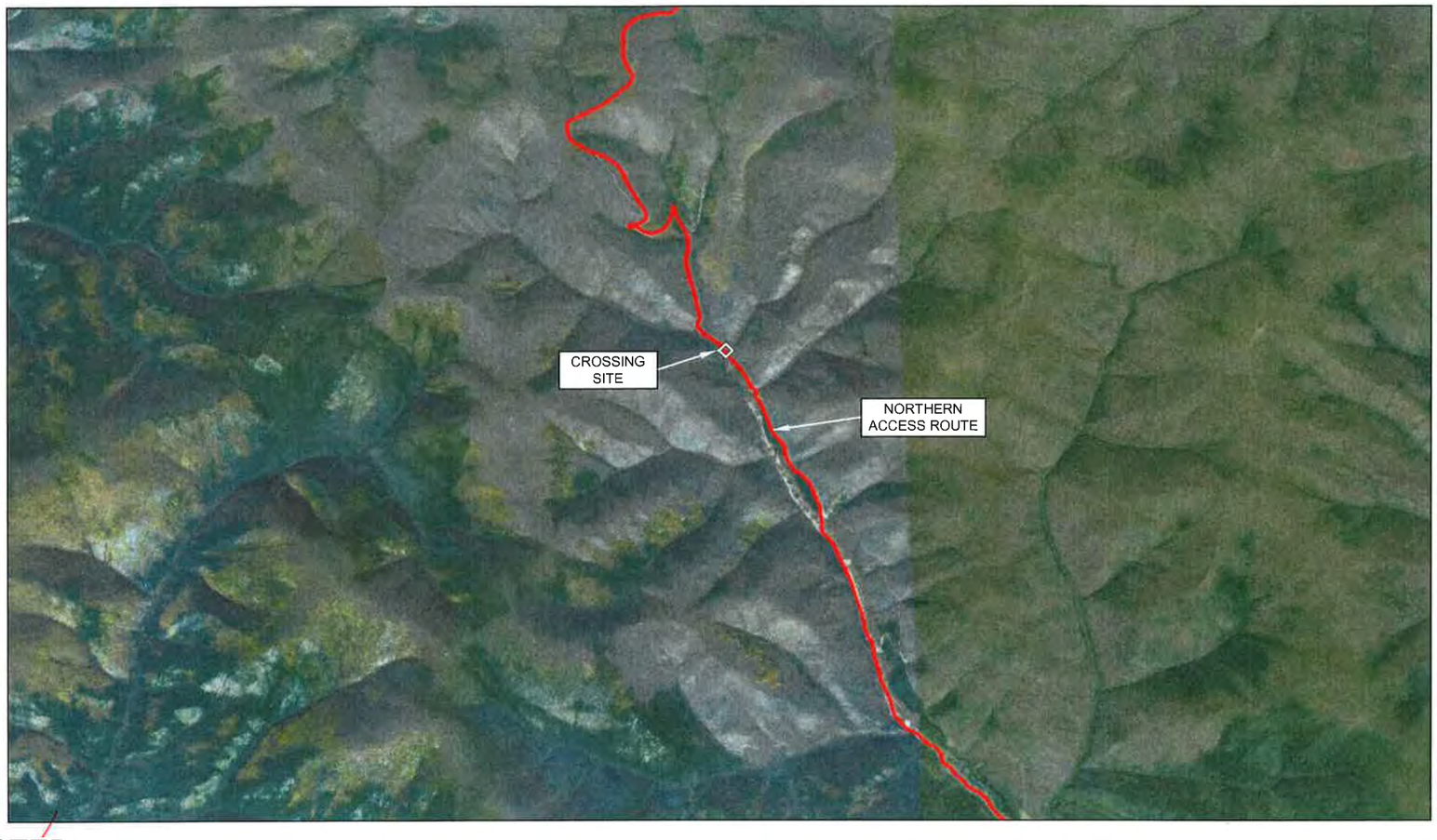
Detailed Design Road Drawings

Part 5 of 5

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

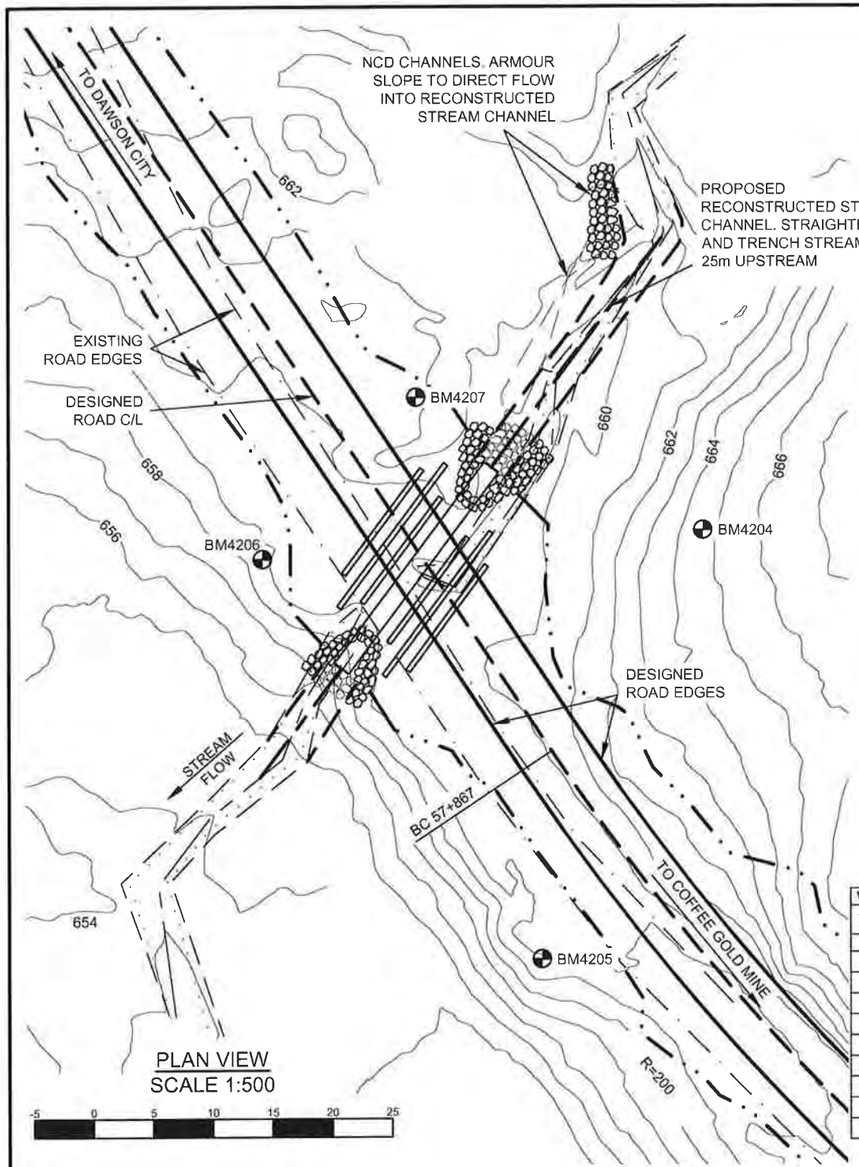
P
O
SIGNA
Date
I
Association of Professional Engineers of Yukon

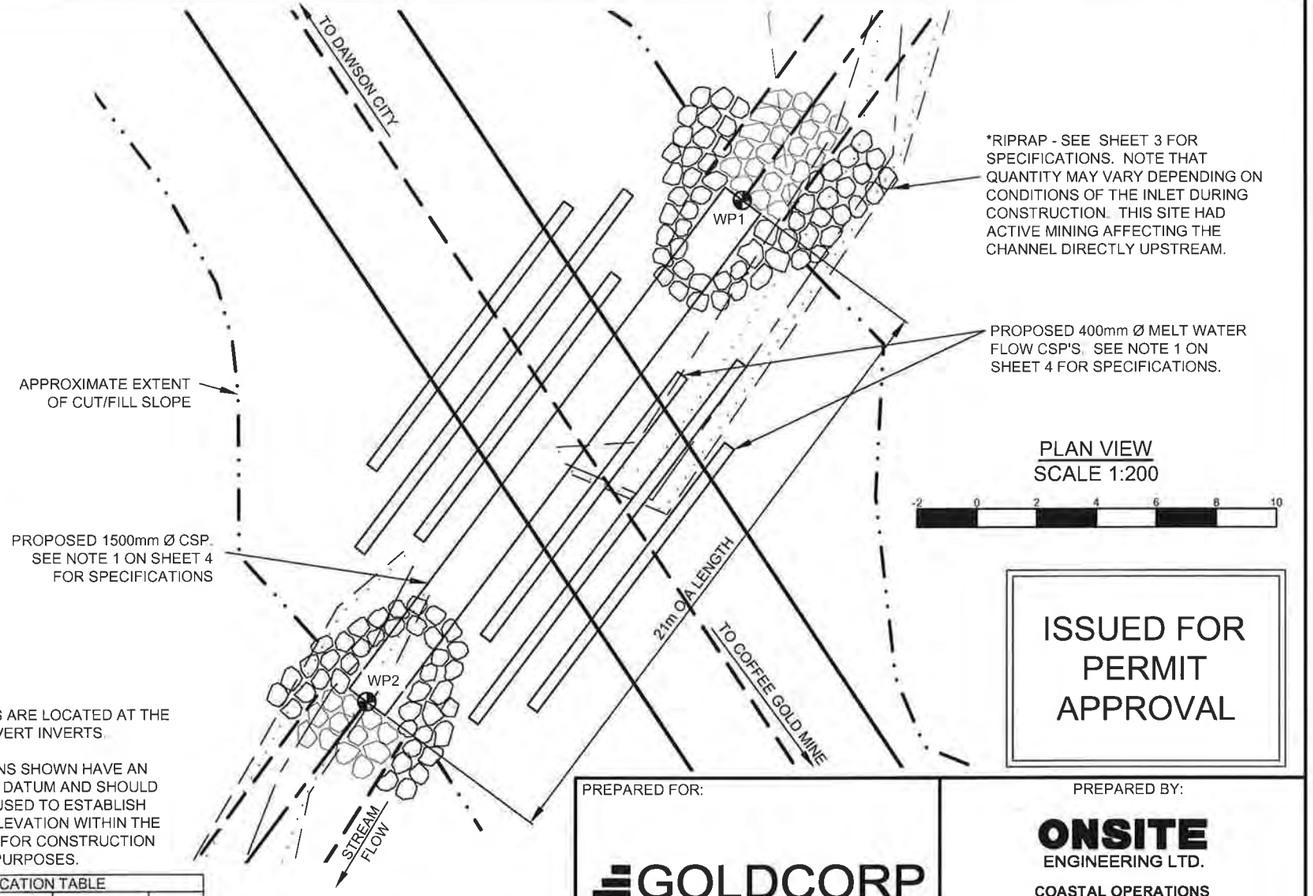
PROPOSED PERMANENT 1500mm Ø X 21m LONG CORRUGATED STEEL PIPE AT 57+848 SITE: MAISY MAY TRIBUTARY 2

(63° 21' 44.45" N, 139° 00' 55.65" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-MAISYMAYTRIB2-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P. ENG DESIGN DATE: APRIL 22, 2016 REVIEWED BY: JEREMY ARAKI, P. ENG DRAWN BY: JUSTIN BEVERIDGE, E.I.T. SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATE: SEPTEMBER 12, 2015 FILE NAME: MAISYMAYTRIB2.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION AND ROAD PROFILE VIEWS SHEET 4 OF 5 - CSP PROFILE VIEW AND NOTES SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		





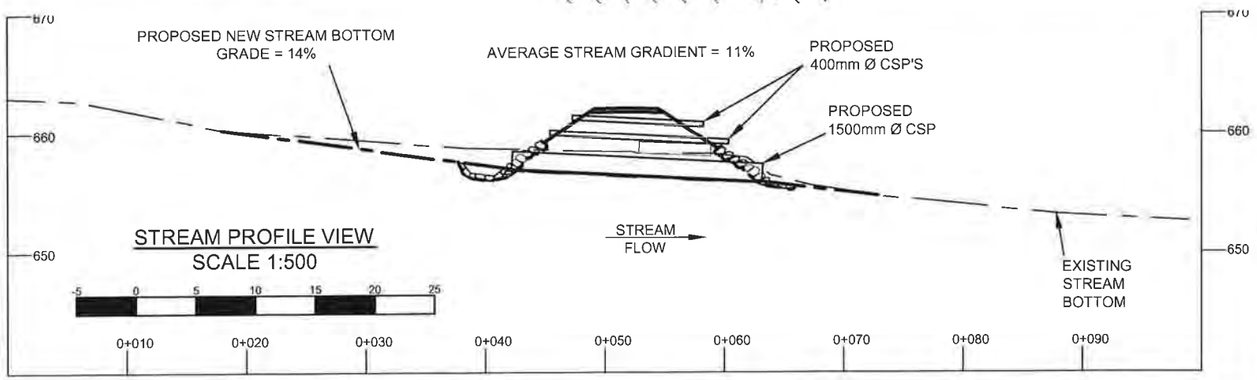
N

WORKPOINTS ARE LOCATED AT THE CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4204	BM4205	86°1'26"	18.48
	BM4205	BM4206	28°57'59"	41.53
	BM4206	BM4207	24°47'46"	20.63
	BM4207	BM4204	18°12'33"	8.65
2	BM4204	BM4205	48°27'47"	32.37
	BM4205	BM4206	0°24'51"	29.61
	BM4206	BM4207	100°47'27"	11.33
	BM4207	BM4204	80°14'23"	23.62

WP	N	E	ELEV
WP1	7027510.55	599270.53	656.99
WP2	7027493.70	599258.00	655.88
BM4204	7027505.27	599288.24	664.70
BM4205	7027469.24	599274.69	659.06
BM4206	7027502.89	599251.37	659.04
BM4207	7027516.48	599264.23	660.56



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PREPARED FOR:

GOLDCORP

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ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1500mm Ø X 21m LONG CORRUGATED STEEL PIPE AT 57+848
SITE: MAISY MAY TRIBUTARY 2
(63° 21' 44.45" N, 139° 00' 55.6[illegible]

Signature REDACTED

DWG No:1343-2-MAISYMAYTRIB2-002

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, E.I.T.
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: SEPTEMBER 12, 2015
FILE NAME: MAISYMAYTRIB2.DWG
SCALE: AS NOTED
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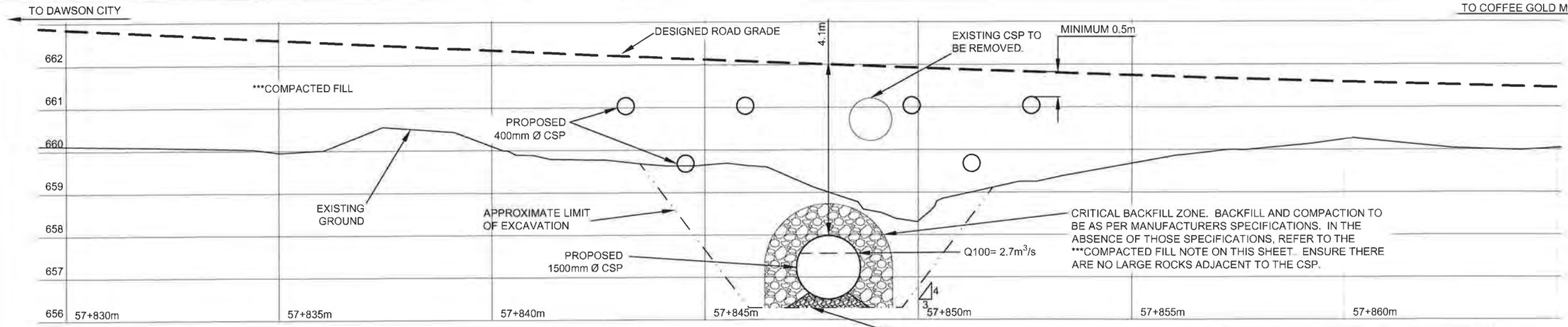
ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1
PROPOSED STREAM BOTTOM



SURFACE SOILS ARE ANTICIPATED TO BE ***LOOSE TO COMPACT* SILTY SAND COLLUVIUM. A GEOTECHNICAL INVESTIGATION TO DETERMINE CONDITIONS AT DEPTH HAS NOT BEEN COMPLETED. SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL MAY BE REQUIRED.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

NOTE THAT UPPER CULVERTS ARE INTENDED TO HELP CARRY MELT WATER FLOWS IN THE SPRING AS THE BUILT UP ICE UPSTREAM OF THE ROAD MELTS.

ISSUED FOR PERMIT APPROVAL

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
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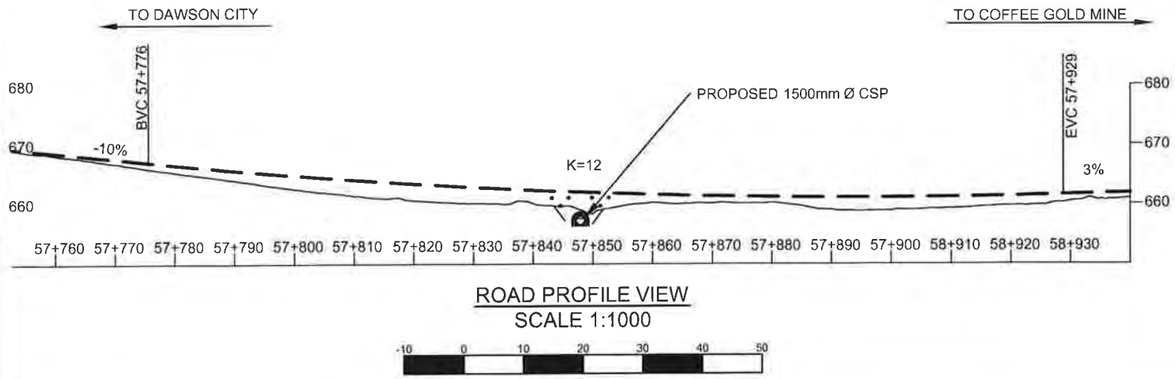
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS (MEASURED LOOSE) TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 80m³ OF RIPRAP REQUIRED.



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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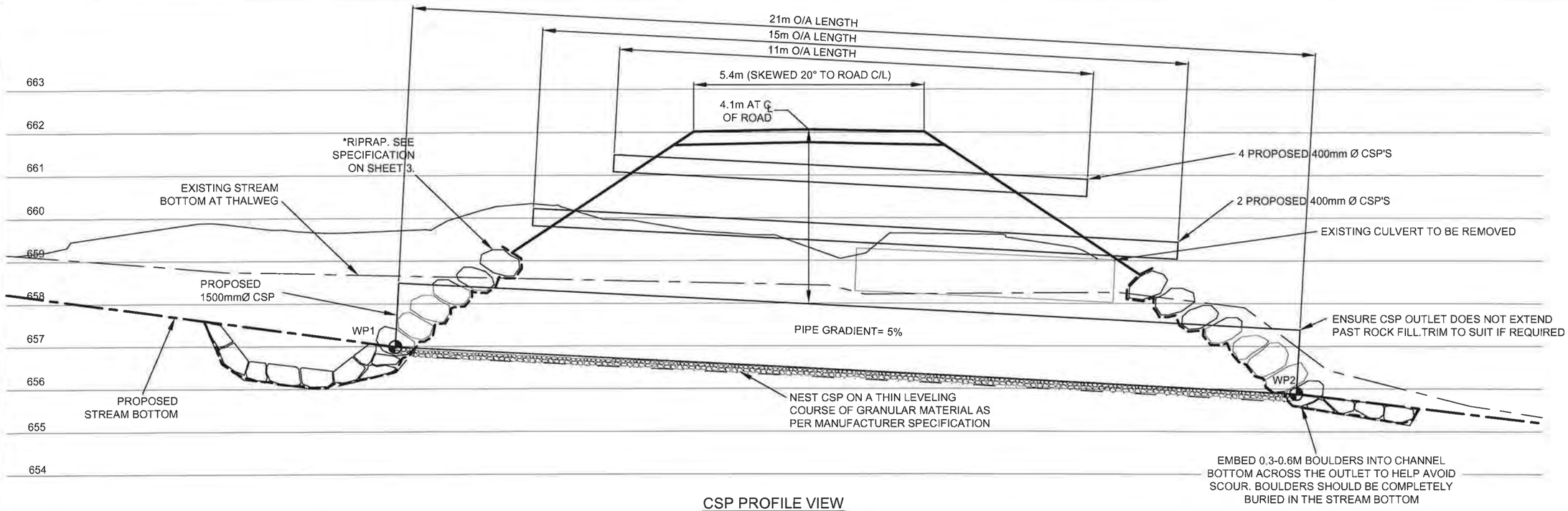
DESIGNED ROAD GRADE
HIGH WATER LEVEL
MIRAFI 180N OR EQUIVALENT



CSP PROFILE VIEW
SCALE 1:100

-1 0 1 2 3 4 5

MATERIALS LIST	
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE
1	1500mm Ø X 21m LONG CORRUGATED STEEL PIPE
2	400mm Ø X 15m LONG CORRUGATED STEEL PIPE
4	400mm Ø X 11m LONG CORRUGATED STEEL PIPE

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm. 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 1500mm DIAMETER X 21m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL, COBBLE, AND SMALL BOULDERS.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1500mm Ø X 21m LONG CORRUGATED STEEL PIPE AT 57+848
SITE: MAISY MAY TRIBUTARY 2
(63° 21' 44.45" N, 139° 00' 55.65" W)

DWG No:1343-2-MAISYMAYTRIB2-004

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: APRIL 22, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, E.I.T.
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: SEPTEMBER 12, 2015
FILE NAME: MAISYMAYTRIB2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

MAR

ENGINEER

MIRAFI 180N OR EQUIVALENT

PROPOSED STREAM BOTTOM

STREAM THALWEG



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM FROM CROSSING



PHOTO #4 - VIEW DOWNSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

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ENGINEERING LTD.

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DWG No:1343-2-MAISYMAYTRIB2-005

SHEET: 5 OF 5

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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

SIG
Dat
PERMIT NUMBER PP288
Association of Professional Engineers of Yukon

PROPOSED TEMPORARY 12.192m (40') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 65+298 SITE: MAISY MAY TRIBUTARY 4

(63° 18' 25.31" N, 138° 56' 38.94" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-MAISYMAYTRIB4-001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
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PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 10, 2015
FILE NAME: MAISYMAYTRIB4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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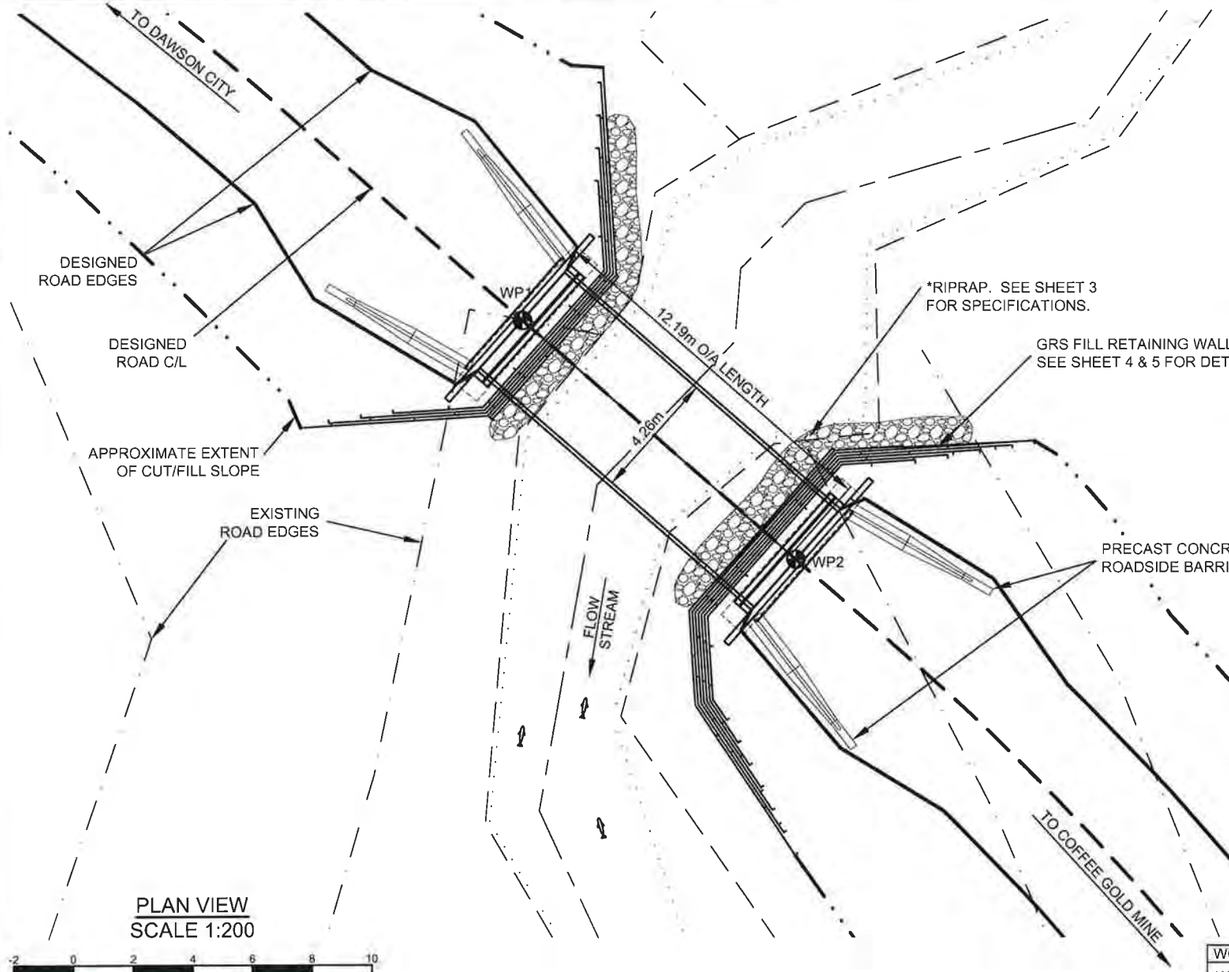
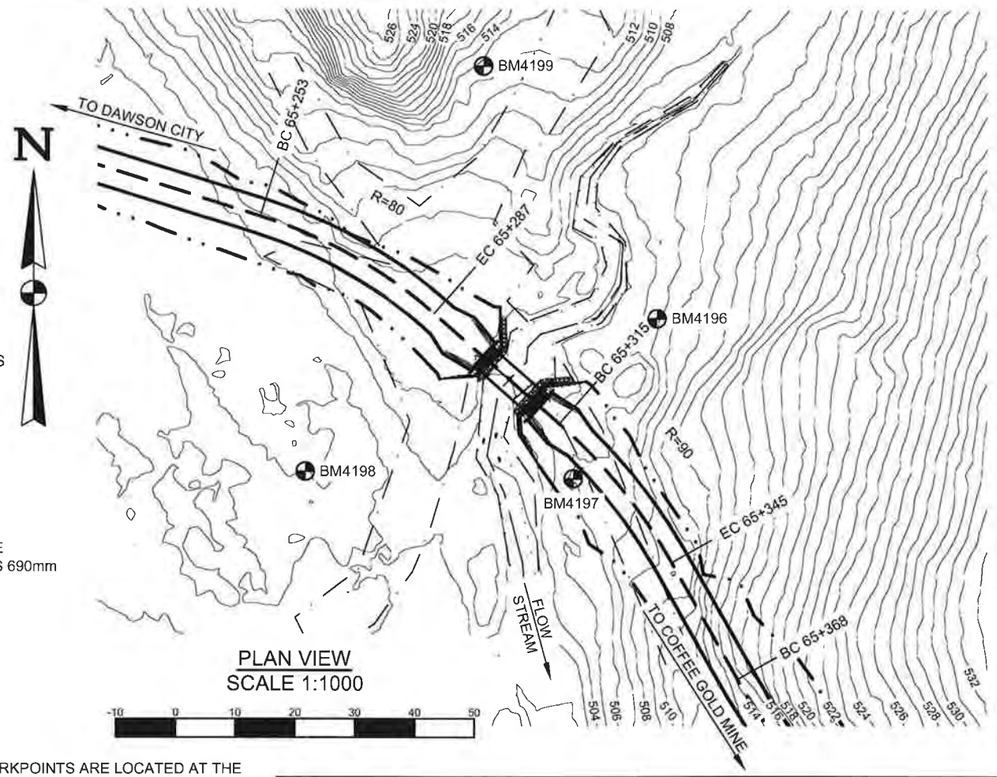
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS

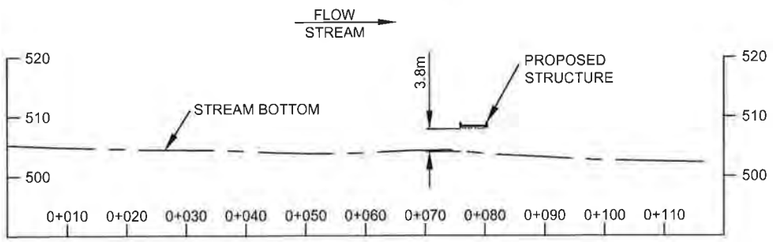


PLAN VIEW
SCALE 1:200



PLAN VIEW
SCALE 1:1000

AVERAGE STREAM GRADIENT = 2.5%



STREAM PROFILE VIEW
SCALE 1:1000

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4196	BM4197	49°48'22"	29.75
	BM4197	BM4198	52°3'39"	25.31
	BM4198	BM4199	33°47'33"	35.44
	BM4199	BM4196	34°23'21"	48.84
2	BM4196	BM4197	26°12'34"	24.66
	BM4197	BM4198	62°59'37"	13.65
	BM4198	BM4199	50°36'59"	40.51
	BM4199	BM4196	25°18'19"	57.67

WP	N	E	ELEV
WP1	7021440.44	603018.63	508.21
WP2	7021432.38	603027.77	508.59
BM4196	7021446.96	603047.66	507.15
BM4197	7021420.05	603033.63	506.37
BM4198	7021421.31	602988.80	503.05
BM4199	7021489.28	603018.39	512.38

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 12.192m (40') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 65+298

SITE: MAISY MAY TRIBUTARY 4

(63° 18' 25.31" N, 138° 56' 38.94" W)

Signature REDACTED

DWG No:1343-2-MAISYMAYTRIB4-002

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
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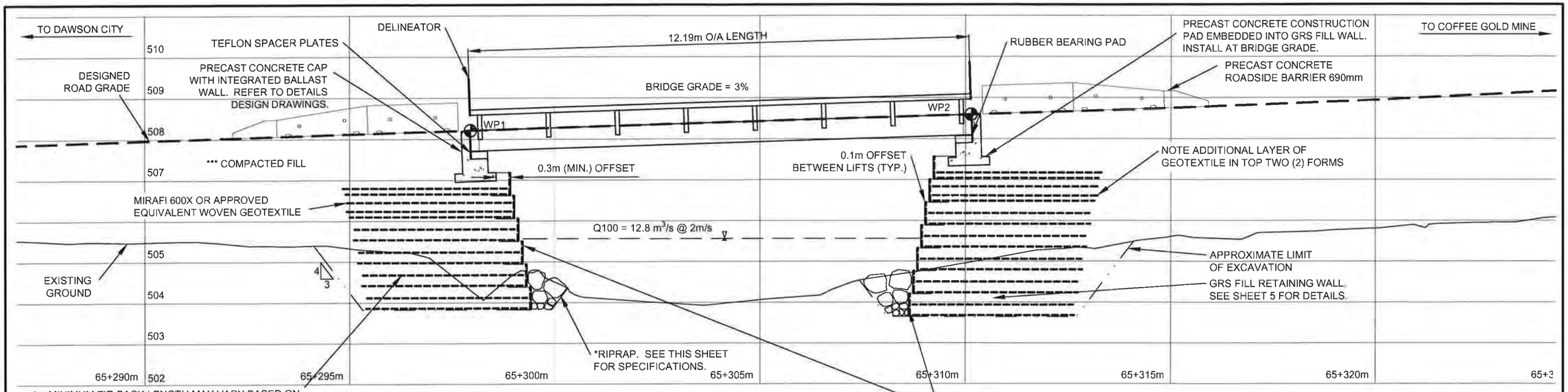
ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



4m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

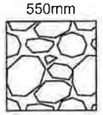
CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE LOOSE SILTY SAND. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	5(155)
50%	50(330)
85%	150(475)

NOMINAL THICKNESS OF RIPRAP 550mm

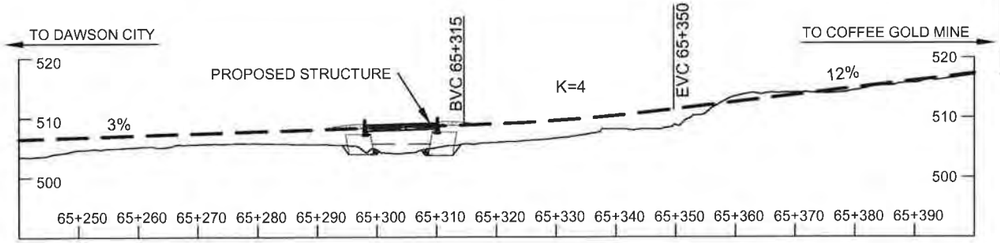


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 20m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
6	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1CAPBEAM FOR SPECIFICATIONS
88	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
600	GALVANIZED WIRE STRUTS - 4 GAUGE
88	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
12	TEFLON SPACER PLATES - SEE DWG 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 65+298
SITE: MAISY MAY TRIBUTARY 4
(63° 18' 25.31" N, 138° 56' 38.94" W)

DWG No:1343-2-MAISYMAYTRIB4-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
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FILE NAME: MAISYMAYTRIB4.DWG
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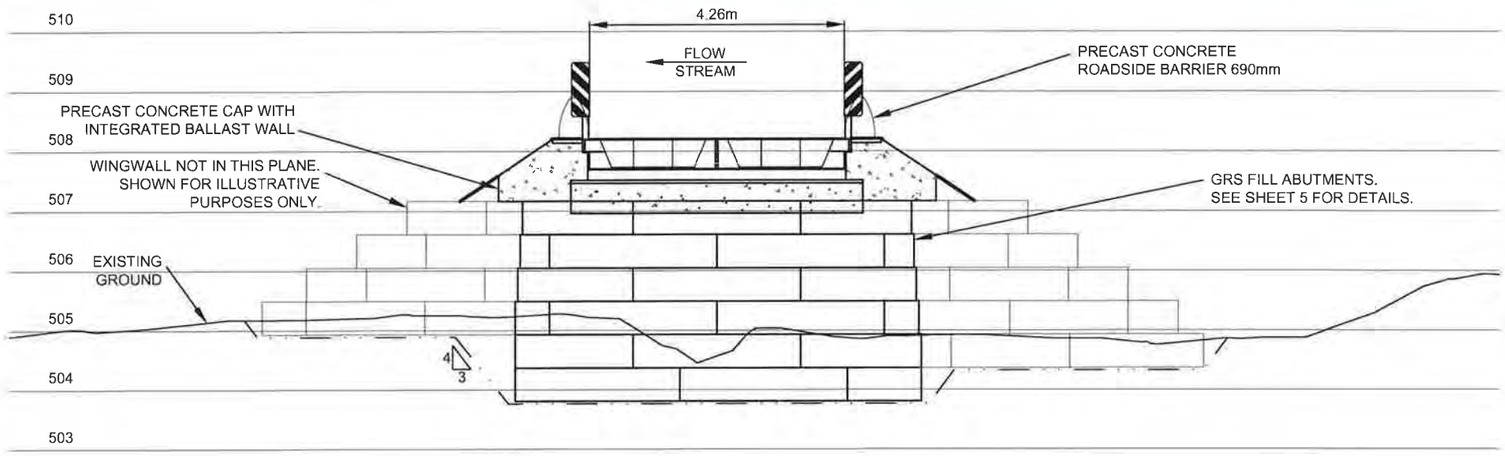
DESIGNED ROAD GRADE — — —
HIGH WATER LEVEL — — —
WORKPOINT ⊕ WP1
MIRAFI 600x OR EQUIVALENT ----------
APPROX. LIMIT OF EXC. — · · —



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY)
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

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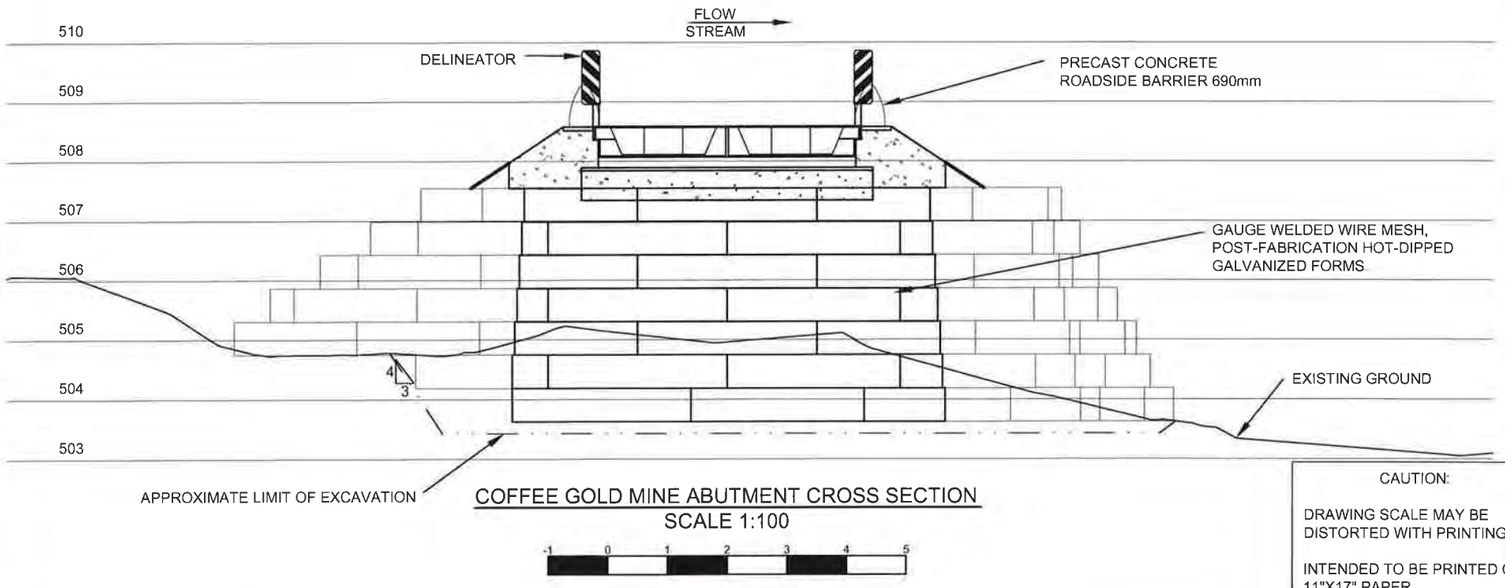

COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

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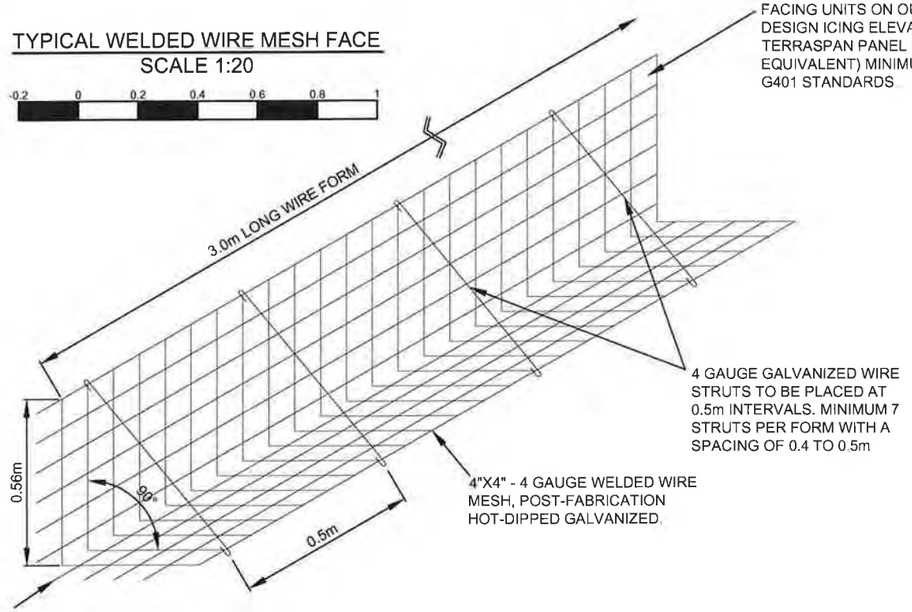
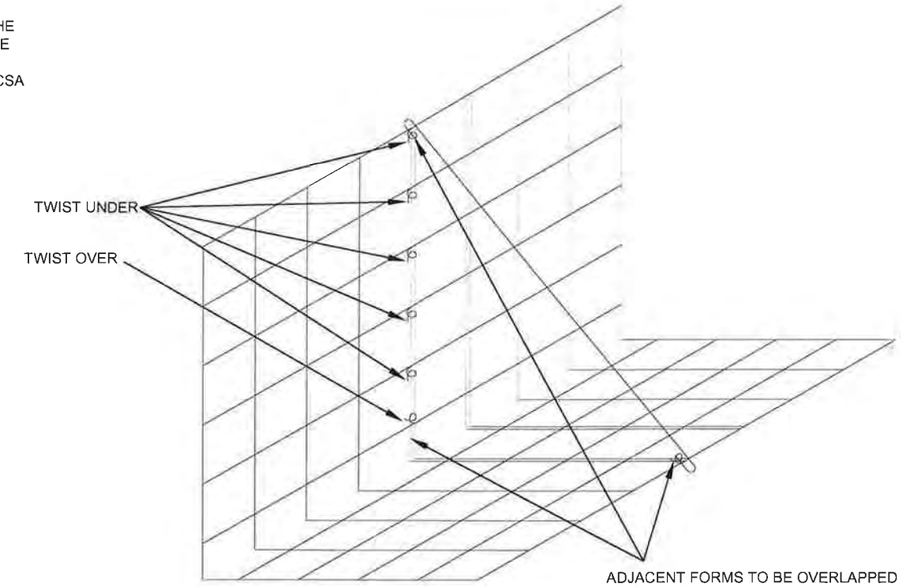
Signature REDACTED

APPROXIMATE EXTENT OF CUT/FILL SLOPE

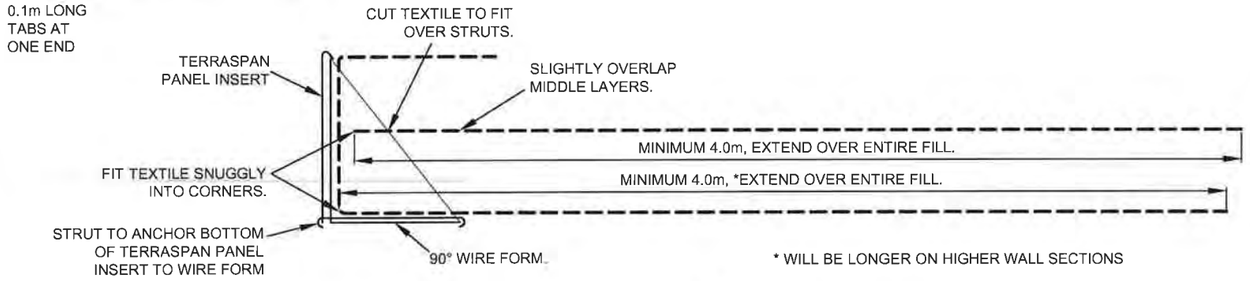
APPROXIMATE LIMIT OF EXCAVATION

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20

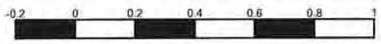




TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10



TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 4.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED TEMPORARY 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 65+298
SITE: MAISY MAY TRIBUTARY 4
(63° 18' 25.31" N, 138° 56' 38.94" W)

Signature REDACTED

DWG No:1343-2-MAISYMAYTRIB4-005

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 10, 2015
FILE NAME: MAISYMAYTRIB4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF DAWSON CITY APPROACH



PHOTO #2 - VIEW FROM DAWSON CITY TOWARDS CROSSING



PHOTO #3 - VIEW OF UPSTREAM FROM CROSSING



PHOTO #4 - VIEW OF DOWNSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 65+298
SITE: MAISY MAY TRIBUTARY 4
(63° 18' 25.31" N, 138° 56' 38.94" W)

DWG No:1343-2-MAISYMAYTRIB4-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 10, 2015
FILE NAME: MAISYMAYTRIB4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

SIGN

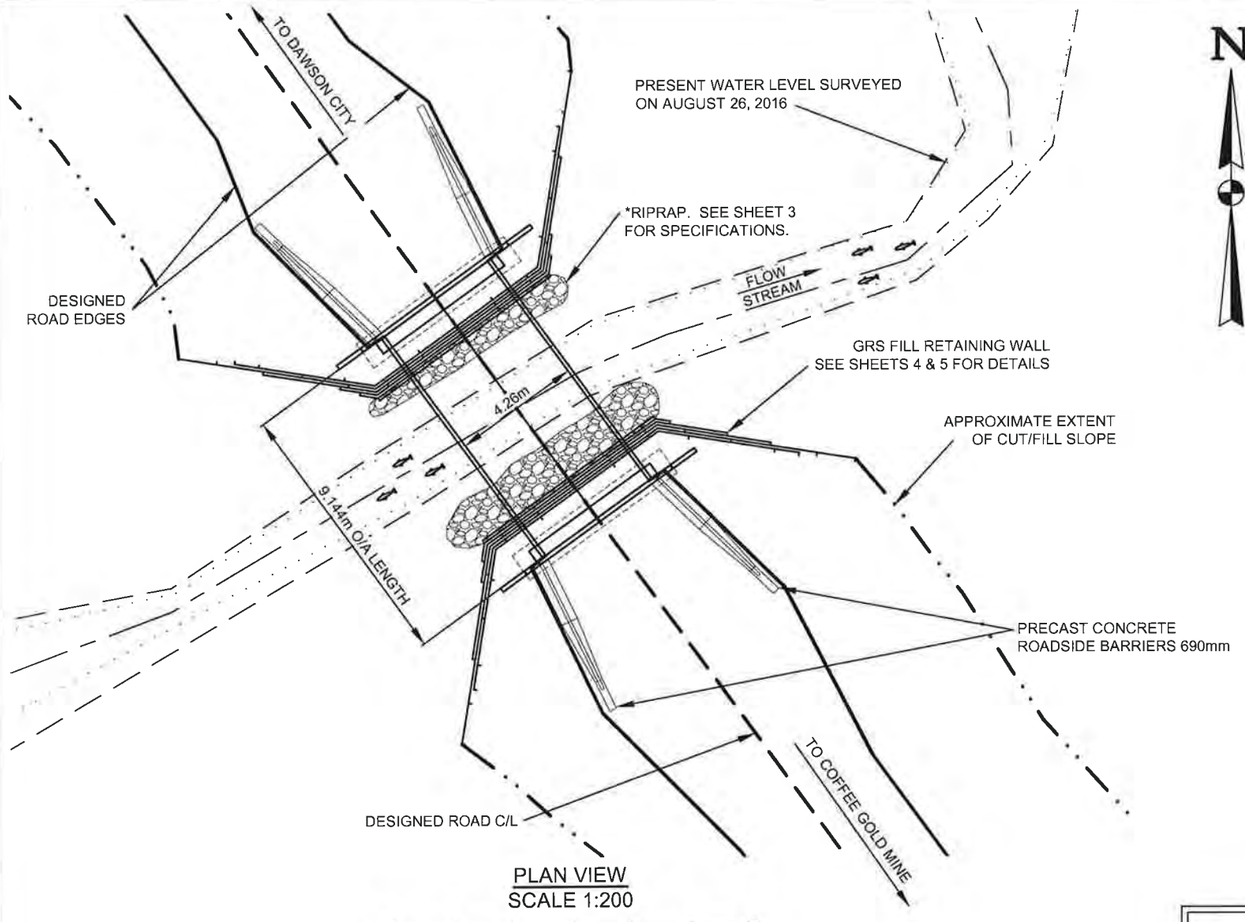
Date

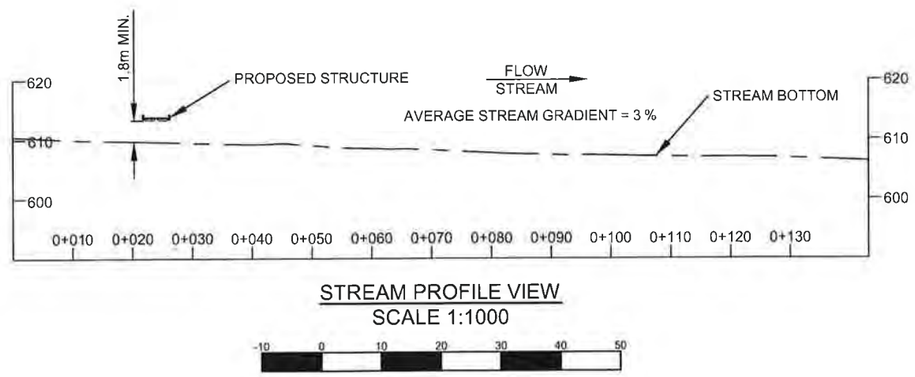
Association of Professional Engineers of Yukon

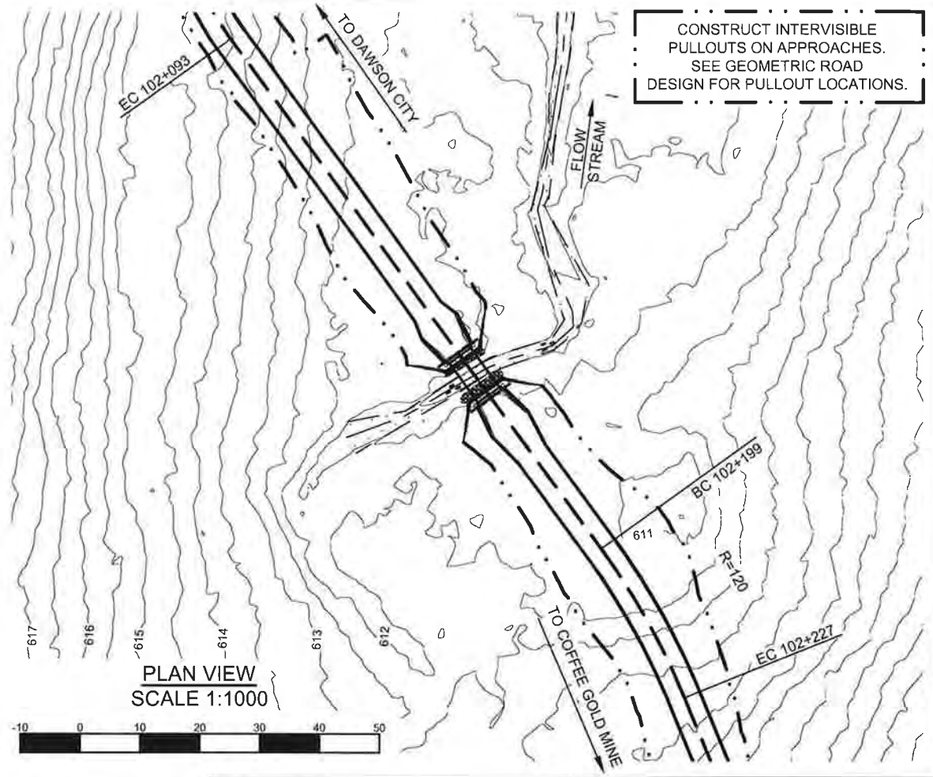
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 102+618
SITE: UPPER BARKER
(63° 02' 15.64" N, 138° 56' 50.31" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-UPPERBARKER-001	SHEET: 1 OF 6	DESIGN BY: SCOTT WILSON, P.ENG. DESIGN DATE: APRIL 15, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG. DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 26, 2015 FILE NAME: UPPER BARKER.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: NOVEMBER 30, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES SHEET 5 OF 6 - GRS DETAILS SHEET 6 OF 6 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		







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CAUTION:

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PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 102+618

SITE: UPPER BARKER

(63° 02' 15.64" N, 138° 56' 50.31" W)

DWG No: 1343-2-UPPERBARKER-002

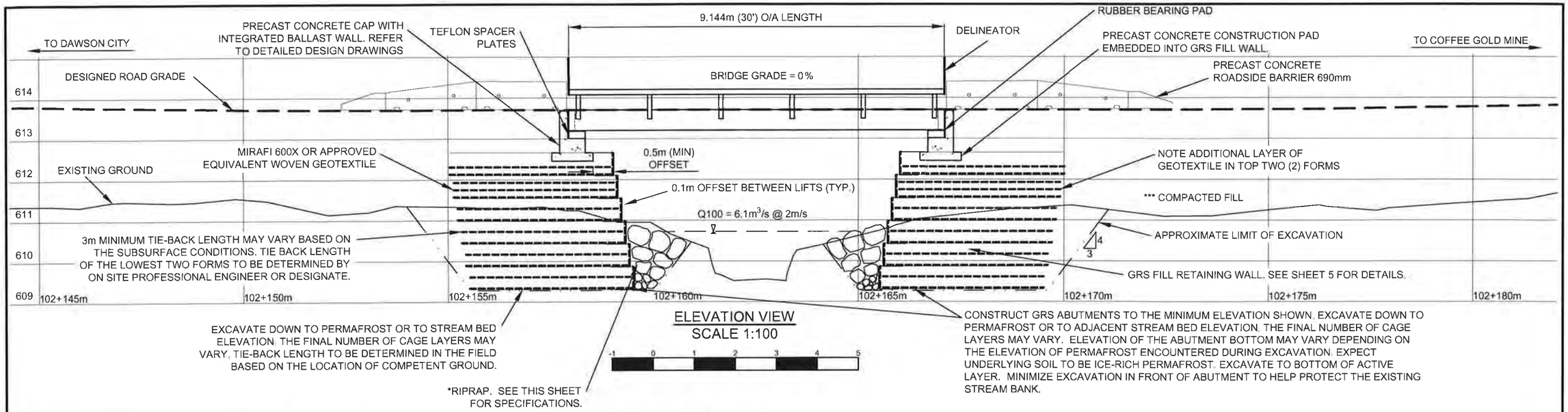
Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: UPPER BARKER.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAR

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL



ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	10(195)
50%	100(415)
85%	300(600)

NOMINAL THICKNESS OF RIPRAP 700mm

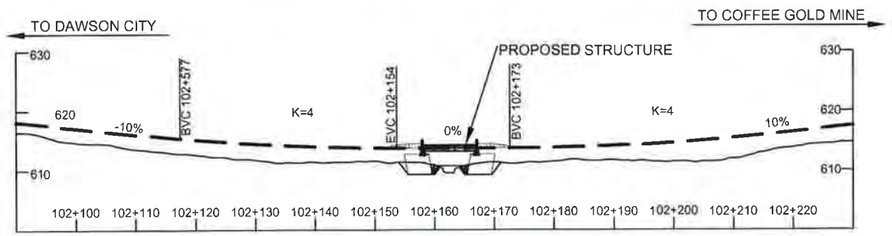


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 22m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
55	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED
400	GALVANIZED WIRE STRUTS - 4 GAUGE
110	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

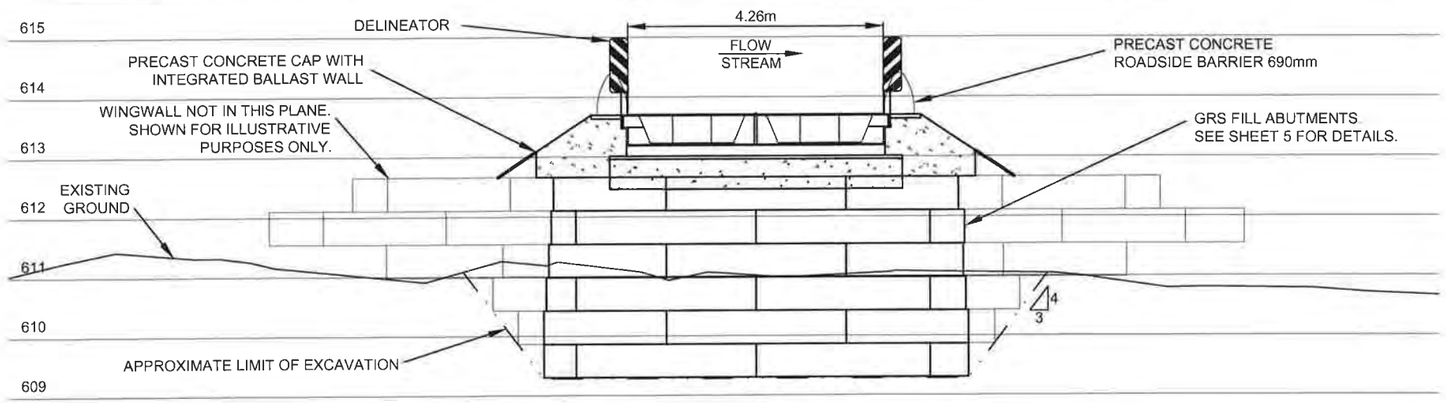
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 102+618
SITE: UPPER BARKER
(63° 02' 15.64" N, 138° 56' 50.31" W)

Signature REDACTED

DWG No: 1343-2-UPPERBARKER-003

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: UPPER BARKER.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE — — —
HIGH WATER LEVEL — — —
MIRAFI 600x OR EQUIVALENT ----------
LIMIT OF EXCAVATION —— · · ——

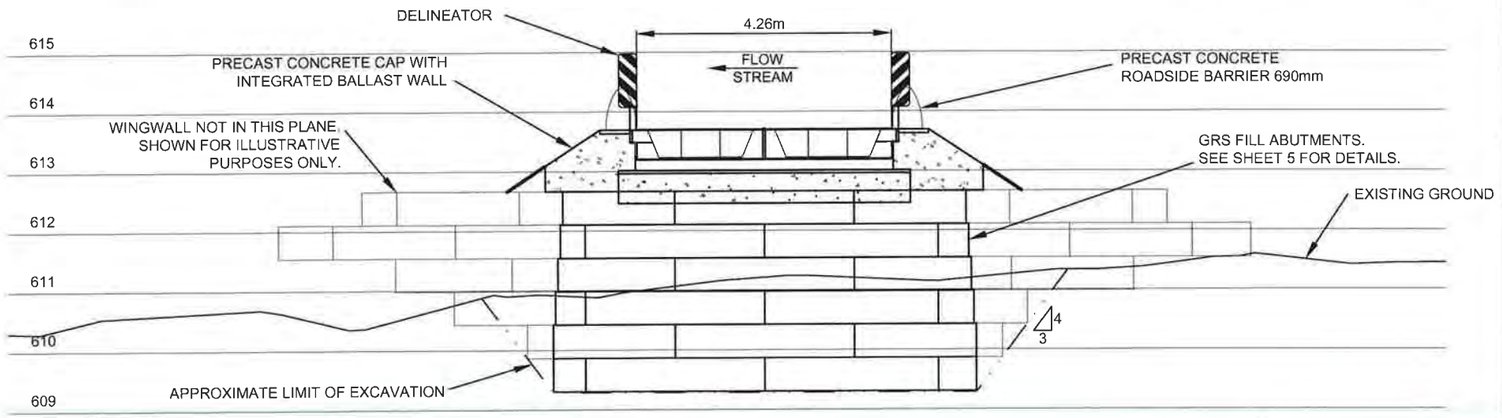


DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 102+618
SITE: UPPER BARKER
(63° 02' 15.64" N, 138° 56' 50.31" W)

DWG No: 1343-2-UPPERBARKER-004

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: UPPER BARKER.DWG
SCALE: AS NOTED
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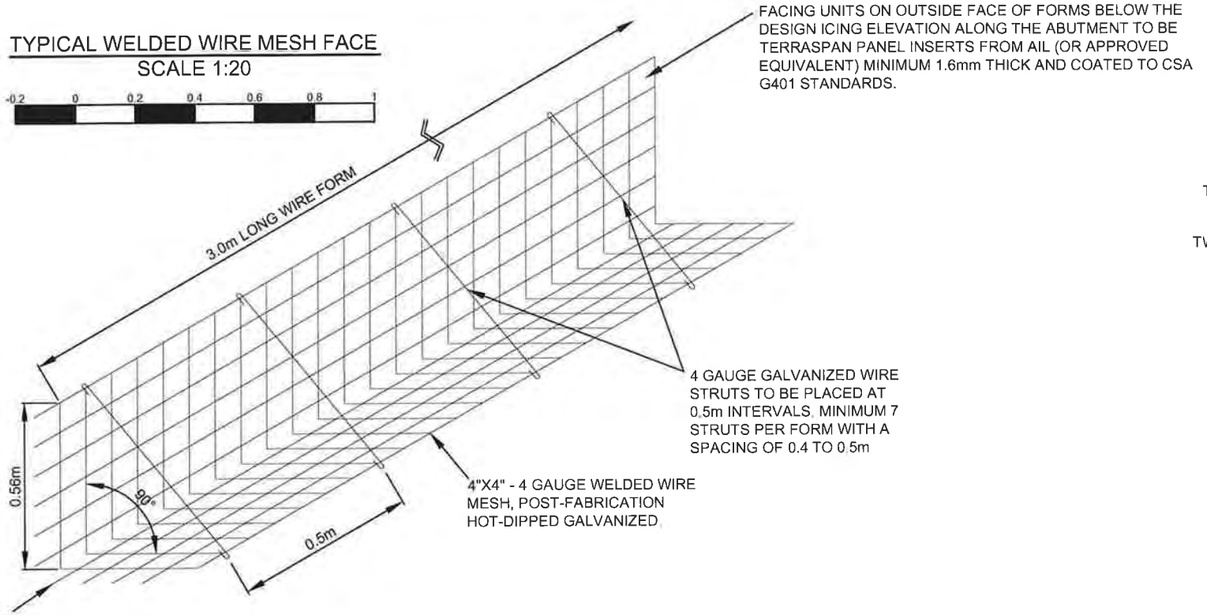
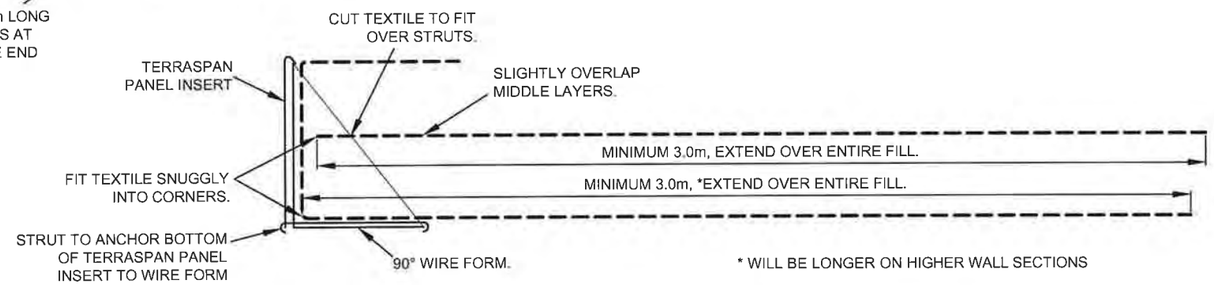
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

APPROXIMATE LIMIT OF EXCAVATION ——— - - ———

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20

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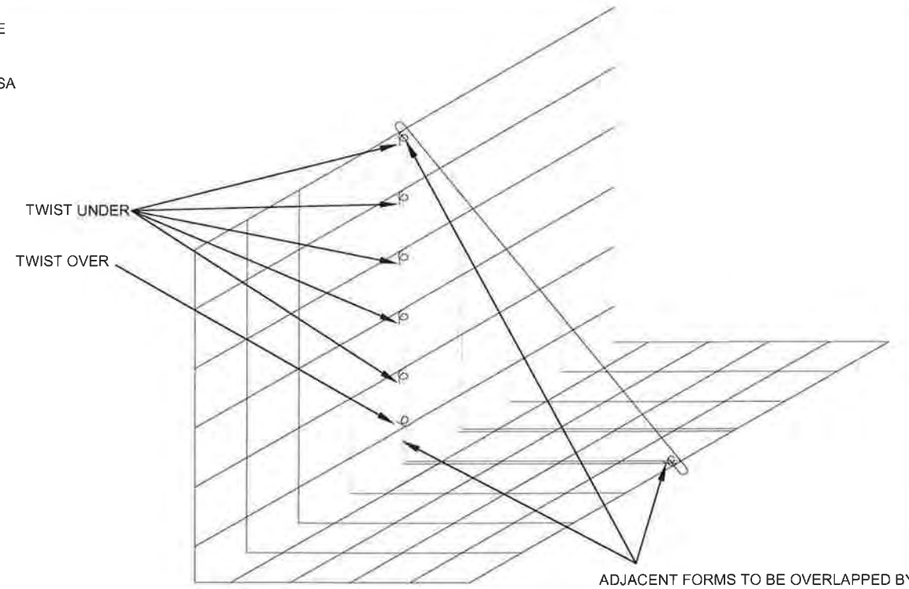

TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

-0.1 0 0.1 0.2 0.3 0.4 0.5

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

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DWG No: 1343-2-UPPERBARKER-005

Signature REDACTED

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DESIGN DATE: APRIL 15, 2016
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DRAWN BY: ANDREW BRABANDT
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ENGINEER

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF DOWNSTREAM FROM CROSSING



PHOTO #2 - VIEW OF UPSTREAM FROM CROSSING



PHOTO #3 - VIEW OF DAWSON CITY APPROACH FROM CROSSING



PHOTO #4 - VIEW OF COFFEE GOLD MINE APPROACH FROM CROSSING

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 102+618
SITE: UPPER BARKER
(63° 02' 15.64" N, 138° 56' 50.31" W)

DWG No: 1343-2-UPPERBARKER-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: UPPER BARKER.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

SI
D

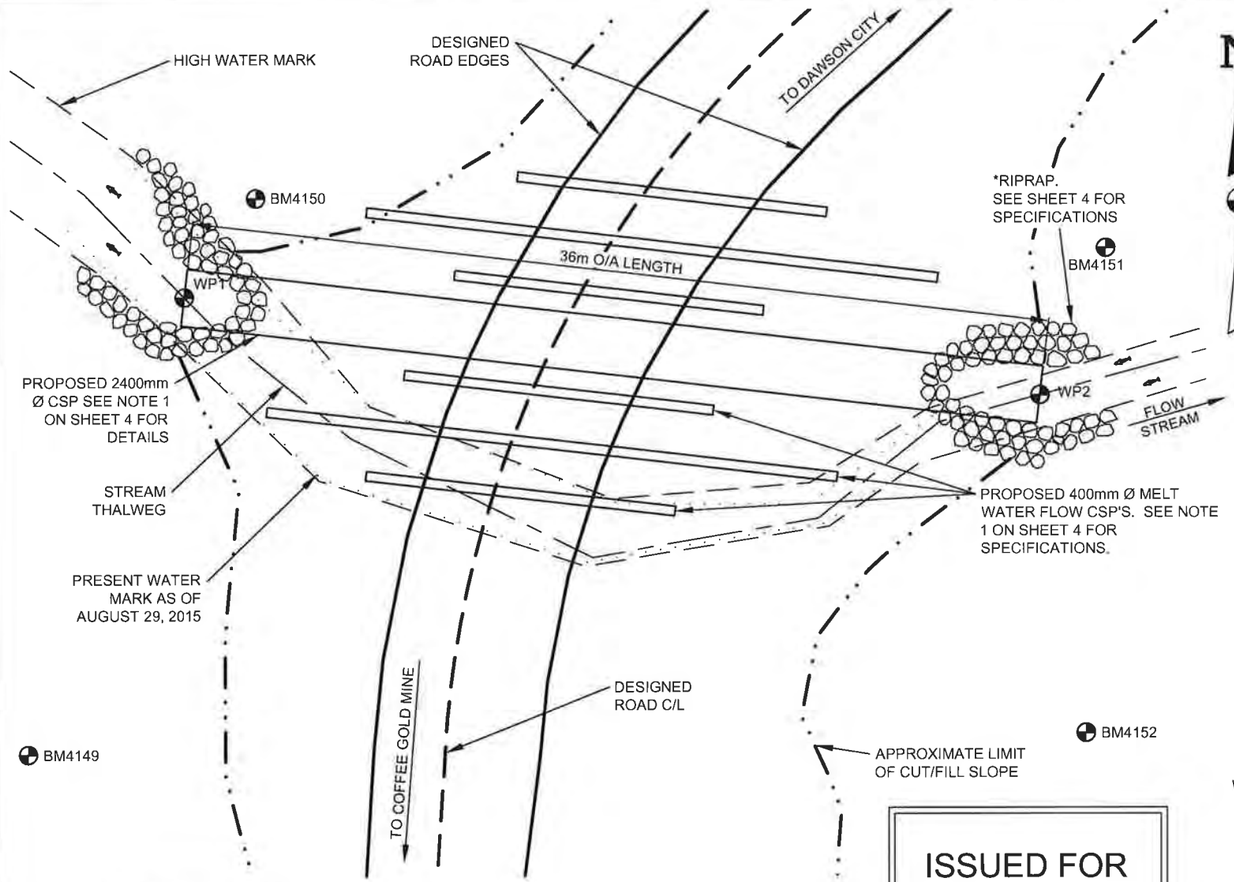
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 2400mm Ø X 36m LONG EMBEDDED CORRUGATED STEEL PIPE AT 99+106 SITE: UPPER BARKER TRIB 1

(63° 03' 45.3" N, 138° 57' 29.8" W)

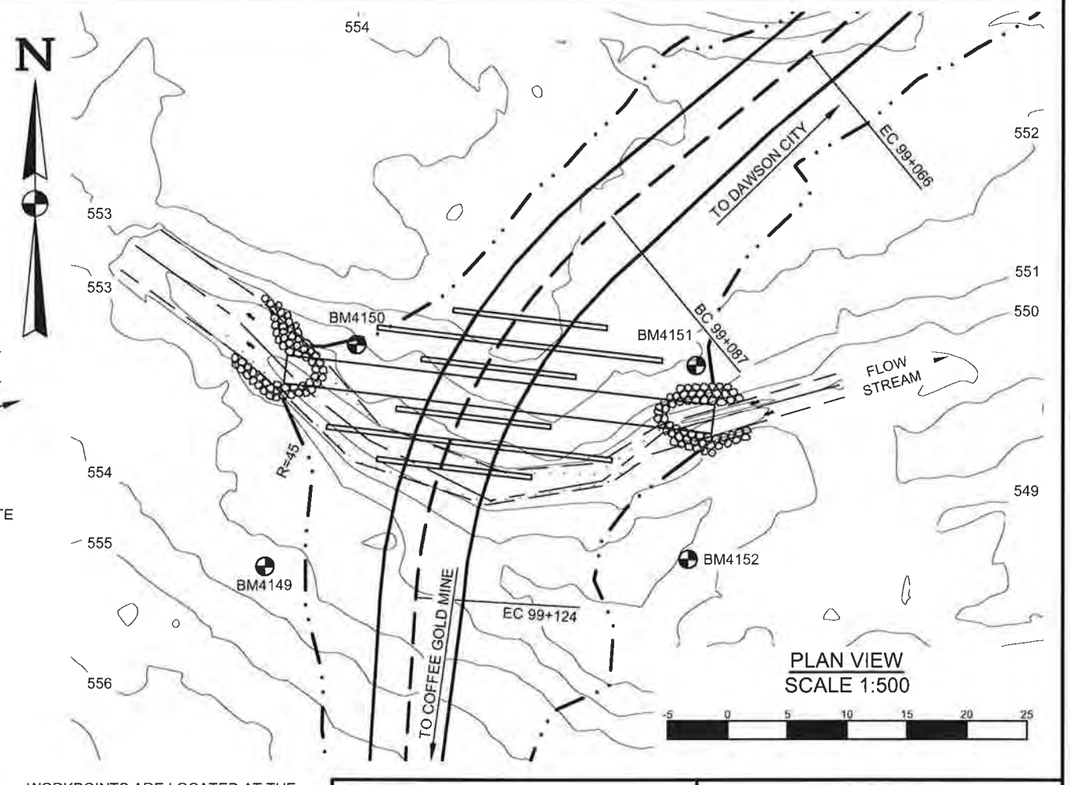
ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-UPPERBARKERTRIB1-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: MARCH 25, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG. DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 29, 2015 FILE NAME: UPPERBARKERTRIB1.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: NOVEMBER 30, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



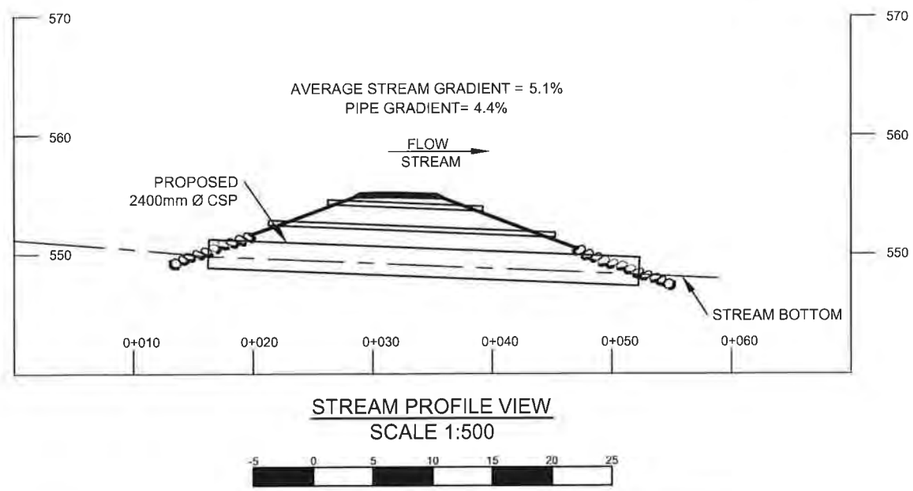
PLAN VIEW
SCALE 1:250

-2.5 0 2.5 5.0 7.5 10.0 12.5



PLAN VIEW
SCALE 1:500

-5 0 5 10 15 20 25



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

ISSUED FOR PERMIT APPROVAL

WORKPOINTS ARE LOCATED AT THE CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4149	BM4150	343°36'28"	16.70
	BM4150	BM4151	157°14'42"	6.29
	BM4151	BM4152	87°09'12"	34.34
	BM4152	BM4149	26°24'50"	37.28
2	BM4149	BM4150	49°26'48"	39.45
	BM4150	BM4151	8°21'45"	30.47
	BM4151	BM4152	340°18'09"	4.74
	BM4152	BM4149	101°00'57"	11.96

WP	N	E	ELEV
WP1	6994205.56	603179.90	548.88
WP2	6994201.39	603215.66	547.30
BM4149	6994188.94	603178.22	553.39
BM4150	6994207.64	603185.84	551.89
BM4151	6994205.91	603214.24	551.68
BM4152	6994189.61	603213.59	550.77

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 36m LONG EMBEDDED CORRUGATED STEEL PIPE AT 99+106
SITE: UPPER BARKER TRIB 1
(63° 03' 45.3" N, 138° 57' 29.8" W)

DWG No: 1343-2-UPPERBARKERTRIB1-002

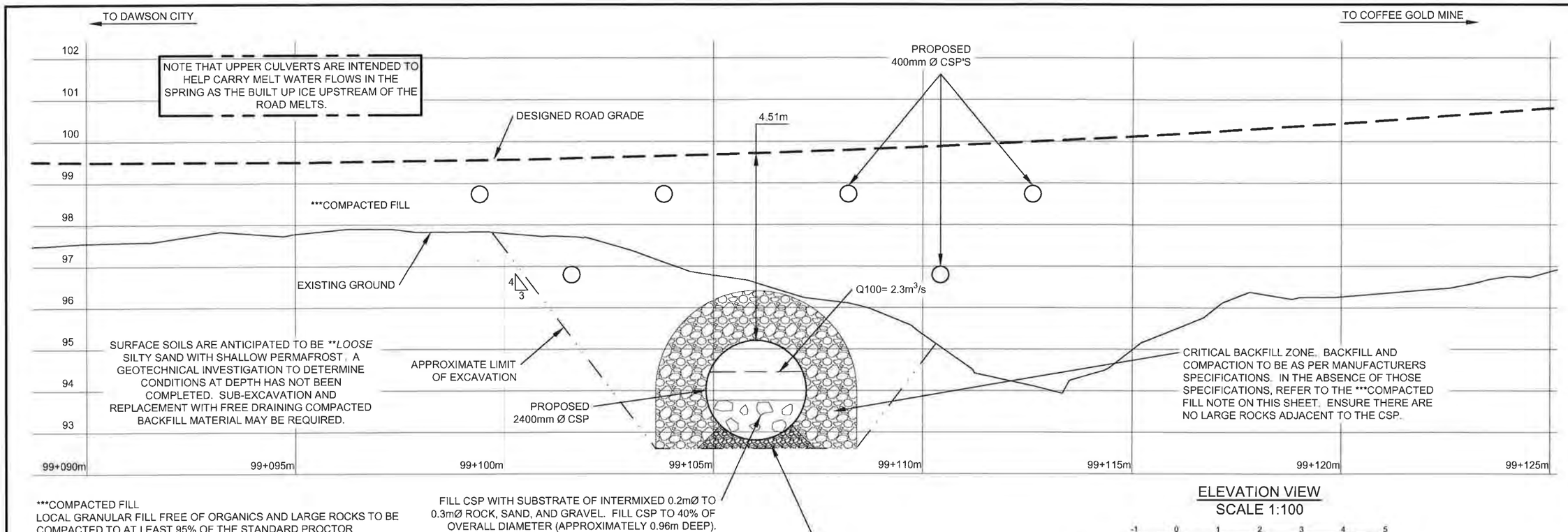
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MARCH 25, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: UPPERBARKERTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

Signature REDACTED

MAR 2

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lbs VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN PROXIMITY TO THE PIPE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

FILL CSP WITH SUBSTRATE OF INTERMIXED 0.2mØ TO 0.3mØ ROCK, SAND, AND GRAVEL. FILL CSP TO 40% OF OVERALL DIAMETER (APPROXIMATELY 0.96m DEEP). RECONSTRUCTED STREAM BOTTOM TO CLOSELY RESEMBLE THE SURROUNDING UNDISTURBED STREAM BOTTOM. THE CHANNEL SHOULD BE FLUSHED WITH WATER THAT IS PUMPED AWAY FROM THE CHANNEL TO HELP "SEAT AND SEAL" THE STREAM BOTTOM MATERIAL WHICH WILL HELP REDUCE POST CONSTRUCTION SEDIMENT DELIVERY AND CHANNEL DEWATERING.

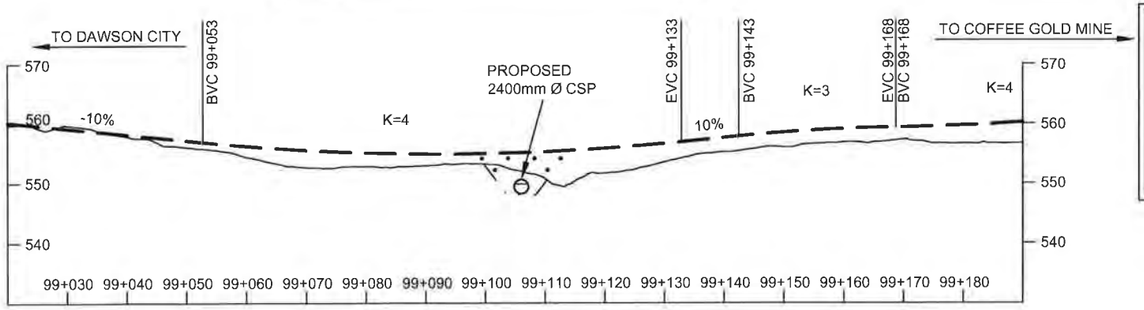
NEST CSP ON A THIN LEVELING COURSE OF GRANULAR MATERIAL AS PER MANUFACTURER SPECIFICATION

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

MATERIALS LIST	
1	2400mm Ø X 36m LONG CORRUGATED STEEL PIPE
4	400mm X 13m LONG CORRUGATED STEEL PIPE
2	400mm X 24m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 36m LONG EMBEDDED CORRUGATED STEEL PIPE AT 99+106
SITE: UPPER BARKER TRIB 1
(63° 03' 45.3" N, 138° 57' 29.8" W)

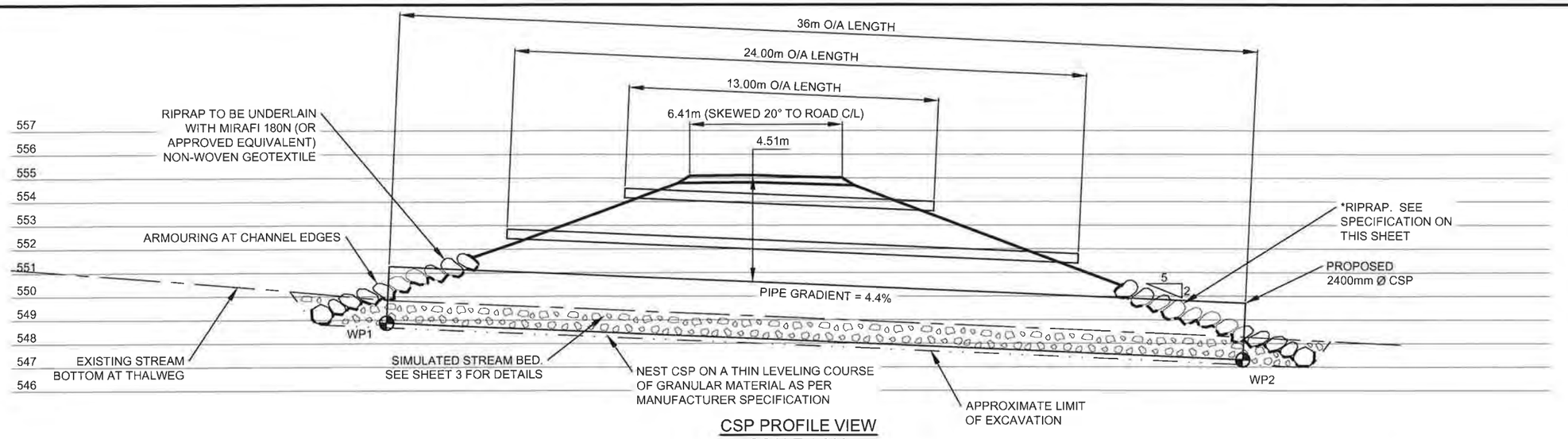
DWG No: 1343-2-UPPERBARKERTRIB1-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MARCH 25, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: UPPERBARKERTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MAY 2

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, MIN 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 2400mm DIAMETER X 36m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 70m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 36m LONG EMBEDDED CORRUGATED STEEL PIPE AT 99+106
SITE: UPPER BARKER TRIB 1
(63° 03' 45.3" N, 138° 57' 29.8" W)

DWG No: 1343-2-UPPERBARKERTRIB1-00

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MARCH 25, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: UPPERBARKERTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
STREAM THALWEG
MIRAFI 180N OR EQUIVALENT
WORKPOINT
WP1



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 36m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 99+106
SITE: UPPER BARKER TRIB 1
(63° 03' 45.3" N, 138° 57' 29.8" W)

DWG No: 1343-2-UPPERBARKERTRIB1-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MARCH 25, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: UPPERBARKERTRIB1.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 30, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



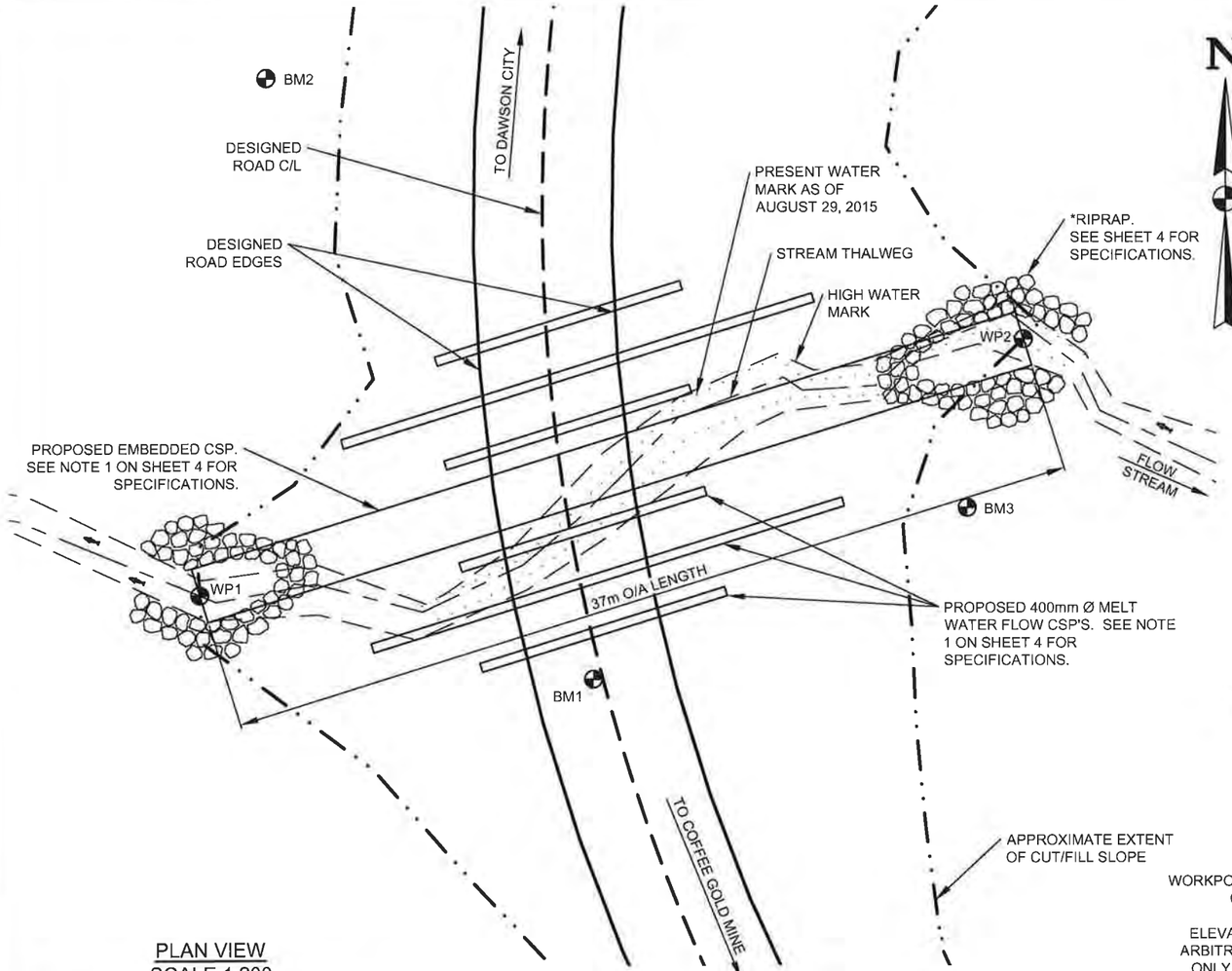
Signature REDACTED

Association of Professional Engineers of Yukon

PROPOSED PERMANENT 2400mm Ø X 37m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 100+331
SITE: UPPER BARKER TRIBUTARY 3
(63° 03' 07.27" N, 138° 57' 23.41" W)

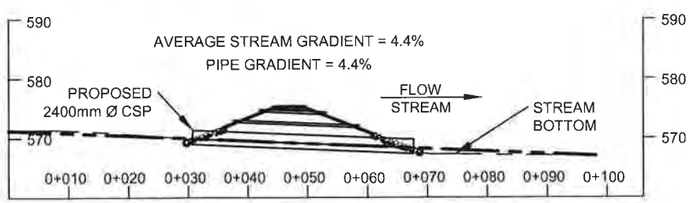
ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-UPPERBARKERTRIB3-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: FEBRUARY 29, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 13, 2015 FILE NAME: UPPERBARKERTRIB3.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: 15 DECEMBER, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: **ONSITE ENGINEERING LTD.** **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



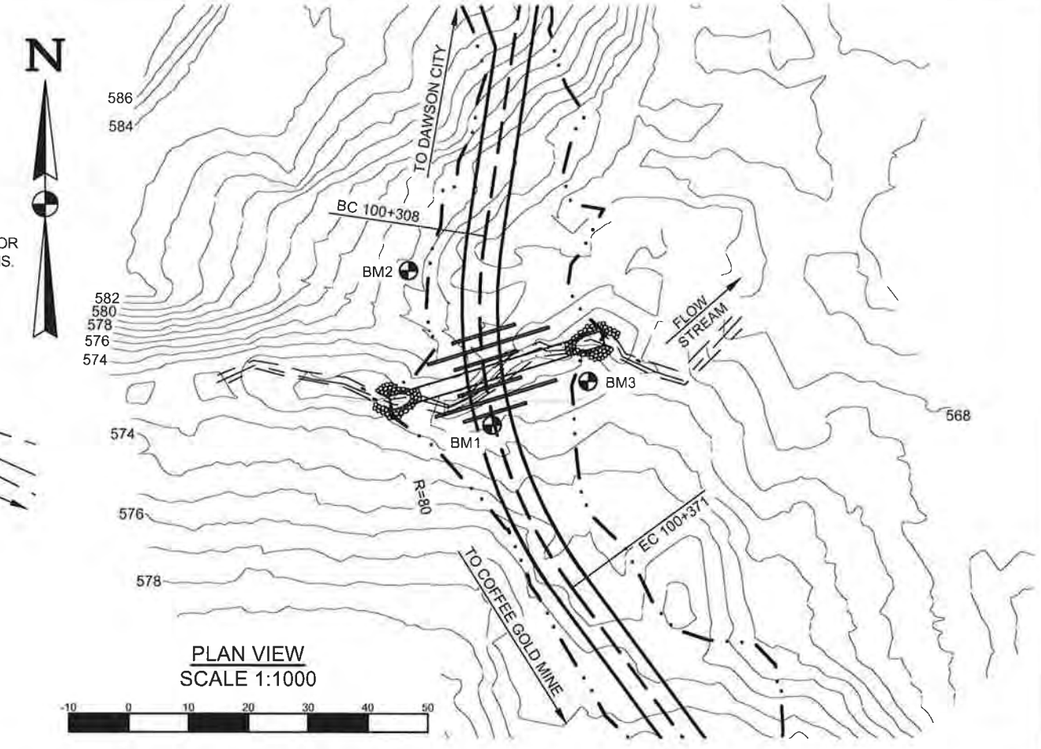
PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

APPROXIMATE EXTENT OF CUT/FILL SLOPE

WORKPOINTS ARE LOCATED AT THE CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

ISSUED FOR PERMIT APPROVAL

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM1	BM2	310°35'00"	17.28
	BM2	BM3	65°38'57"	22.47
	BM3	BM1	18°14'36"	33.13
2	BM1	BM2	79°53'55"	23.55
	BM2	BM3	347°27'04"	34.35
	BM3	BM1	132°55'42"	7.67

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

WP	N	E	ELEV
WP1	6993021.26	603287.19	568.96
WP2	6993032.26	603322.52	567.34
BM1	6993017.61	603304.08	570.99
BM2	6993043.54	603290.07	573.85
BM3	6993024.97	603320.11	571.39

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 37m LONG EMBEDDED CORRUGATED STEEL PIPE AT 100+331

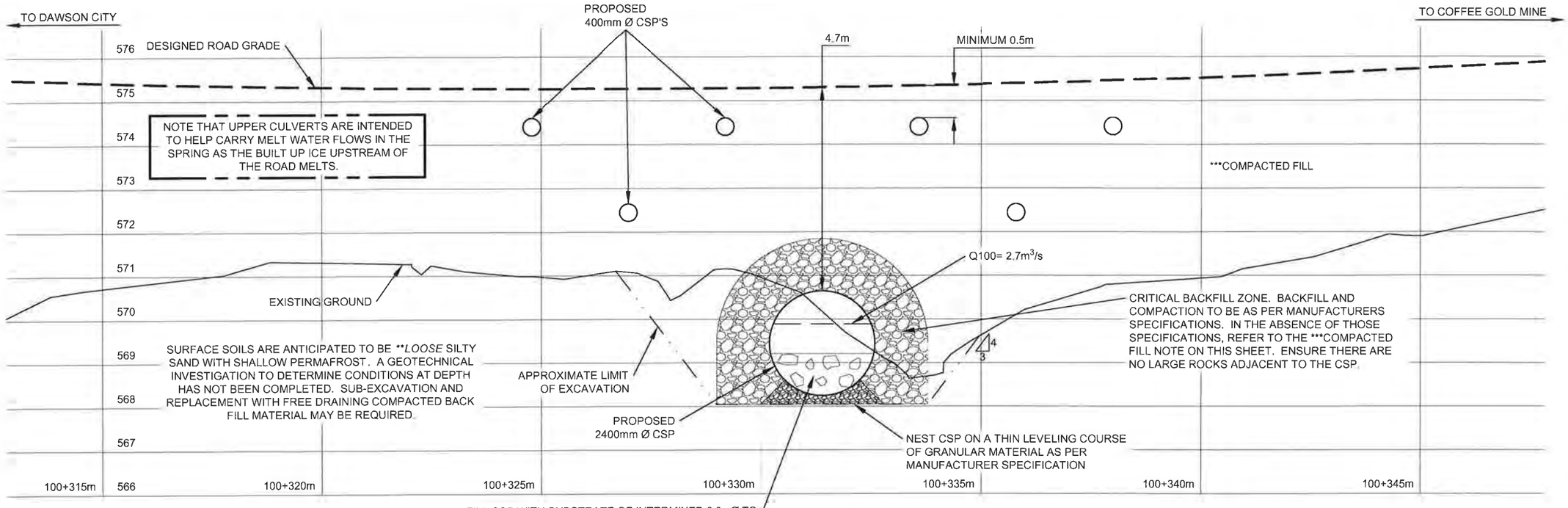
SITE: UPPER BARKER TRIBUTARY 3
(63° 03' 07.27" N, 138° 57' 23.41" W)

DWG No: 1343-2-UPPERBARKERTRIB3-002

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: FEBRUARY 29, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: UPPERBARKERTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: 15 DECEMBER, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

FILL CSP WITH SUBSTRATE OF INTERMIXED 0.2mØ TO 0.3mØ ROCK, SAND, AND GRAVEL. FILL CSP TO 40% OF OVERALL DIAMETER (APPROXIMATELY 1m DEEP). RECONSTRUCTED STREAM BOTTOM TO CLOSELY RESEMBLE THE SURROUNDING UNDISTURBED STREAM BOTTOM. THE CHANNEL SHOULD BE FLUSHED WITH WATER THAT IS PUMPED AWAY FROM THE CHANNEL TO HELP "SEAT AND SEAL" THE STREAM BOTTOM MATERIAL WHICH WILL HELP REDUCE POST CONSTRUCTION SEDIMENT DELIVERY AND CHANNEL DEWATERING.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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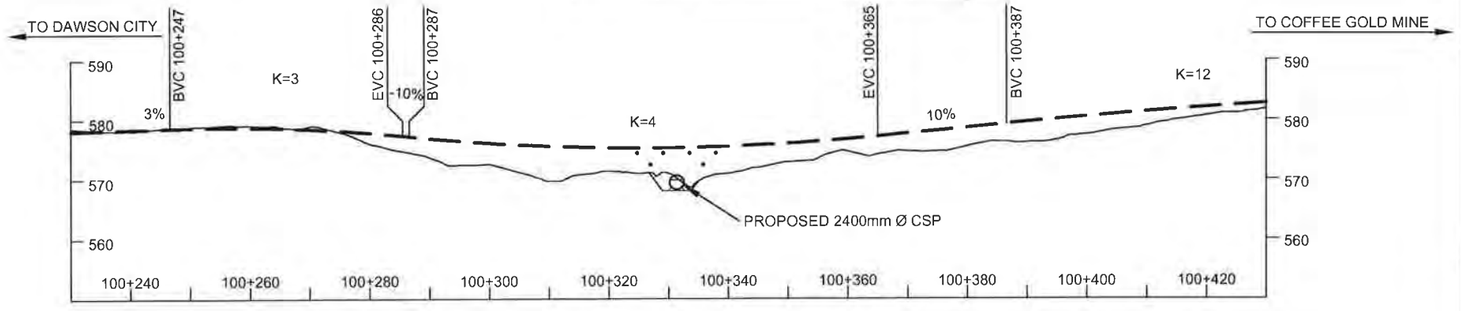
**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

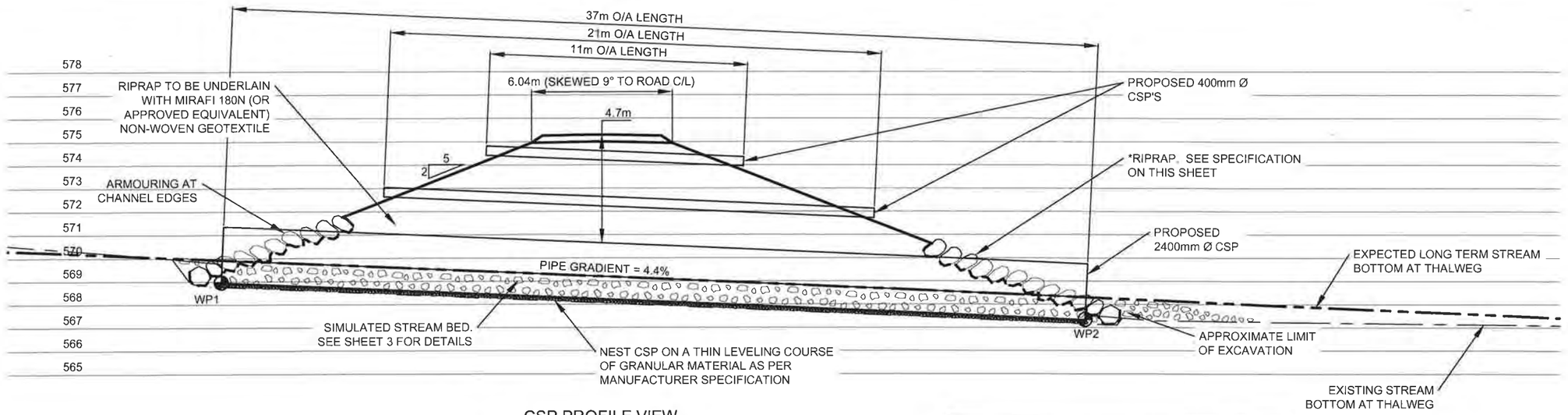
PROPOSED PERMANENT 2400mm Ø X 37m LONG EMBEDDED CORRUGATED STEEL PIPE AT 100+331
SITE: UPPER BARKER TRIBUTARY 3
(63° 03' 07.27" N, 138° 57' 23.41" W)

DWG No: 1343-2-UPPERBARKERTRIB3-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: FEBRUARY 29, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: UPPERBARKERTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: 15 DECEMBER, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

MATERIALS LIST	
1	2400mm Ø X 37m LONG CORRUGATED STEEL PIPE
2	400mm X 21m LONG CORRUGATED PIPE
4	400mm X 11m LONG CORRUGATED PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

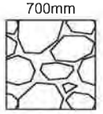
NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 2400mm DIAMETER X 37m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 80m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 37m LONG EMBEDDED CORRUGATED STEEL PIPE AT 100+331
SITE: UPPER BARKER TRIBUTARY 3
(63° 03' 07.27" N, 138° 57' 23.41" W)

DWG No: 1343-2-UPPERBARKERTRIB3-004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: FEBRUARY 29, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 13, 2015
FILE NAME: UPPERBARKERTRIB3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: 15 DECEMBER, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
STREAM THALWEG
EXPECTED LONG TERM STREAM THALWEG
MIRAFI 180N OR EQUIVALENT
WORKPOINT
WP1



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 37m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 100+331
SITE: UPPER BARKER TRIBUTARY 3
(63° 03' 07.27" N, 138° 57' 23.41" W)

DWG No: 1343-2-UPPERBARKERTRIB3-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: FEBRUARY 29, 2016
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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

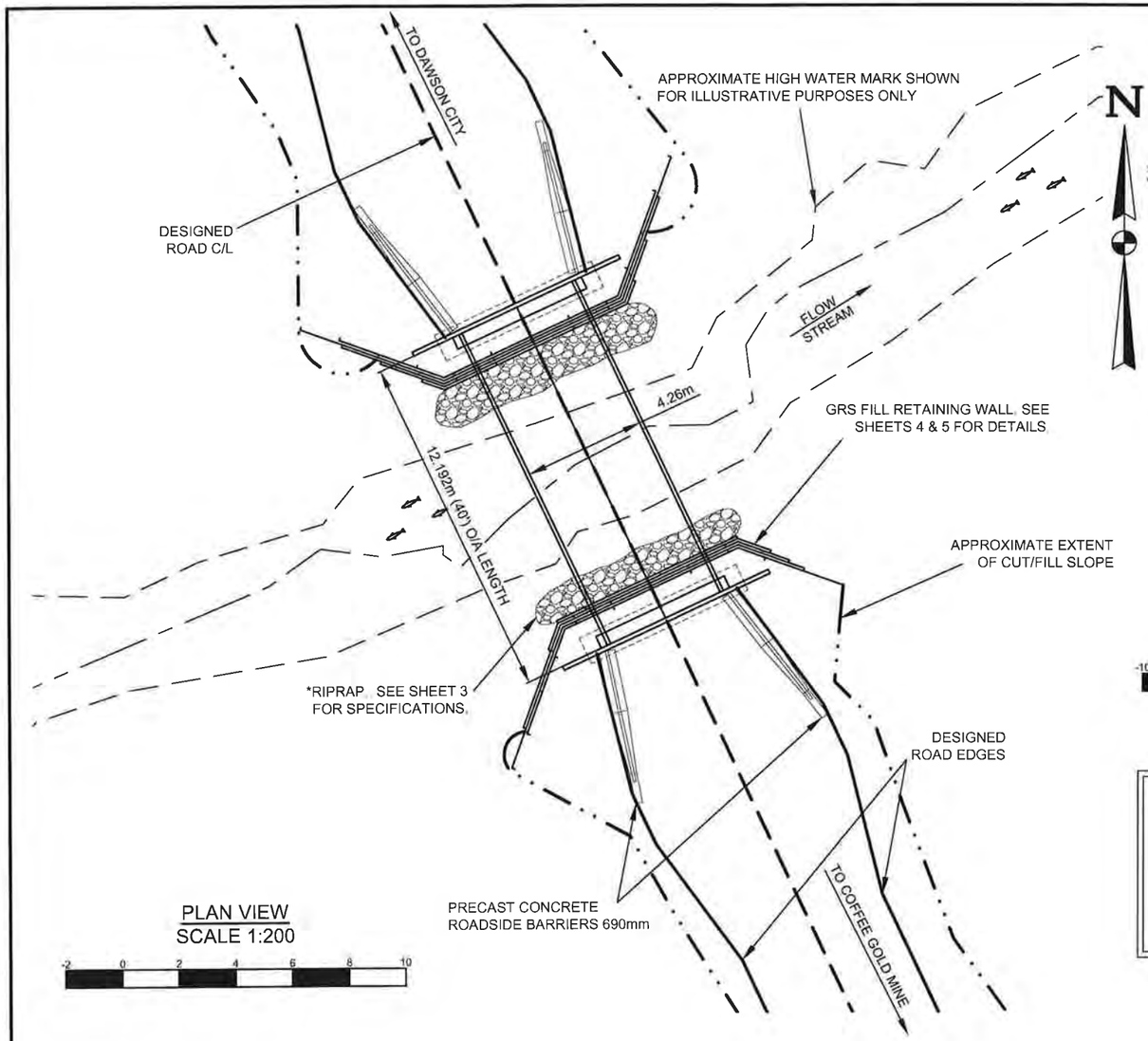
SI
D
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 12.192m (40') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 95+712 SITE: MIDDLE BARKER TAILINGS 2

(63° 05' 22.04" N, 138° 57' 21.60" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-MBT2-001	SHEET: 1 OF 6	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: APRIL 15, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 29, 2015 FILE NAME: MBT2.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 15, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES SHEET 5 OF 6 - GRS DETAILS SHEET 6 OF 6 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:200

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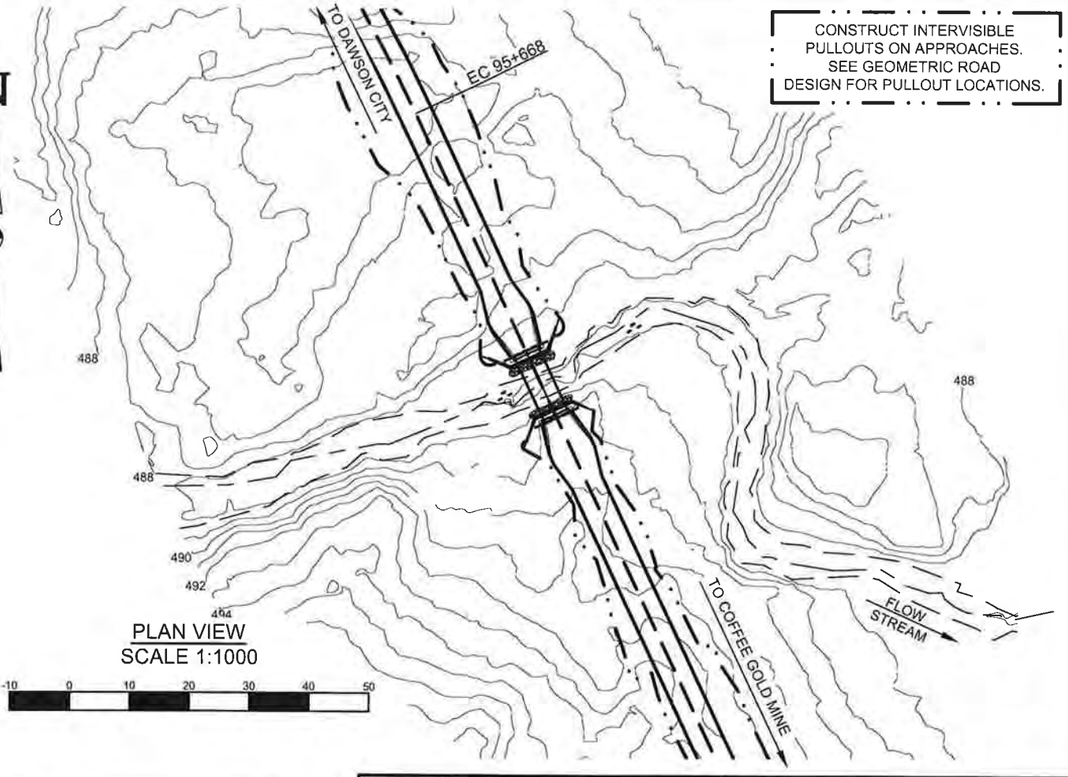
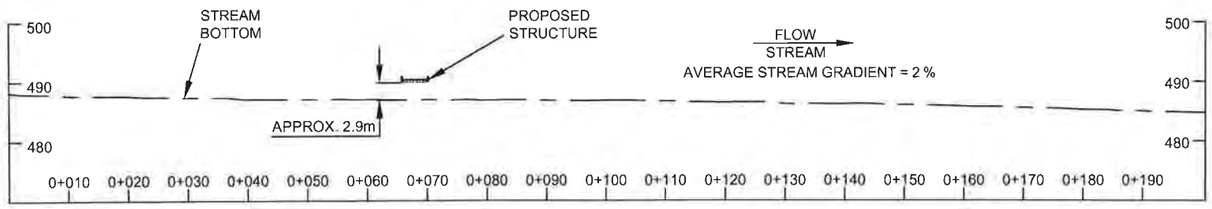


PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER

CONSTRUCT INTERVISIBLE PULLOUTS ON APPROACHES. SEE GEOMETRIC ROAD DESIGN FOR PULLOUT LOCATIONS.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 95+712
SITE: MIDDLE BARKER TAILINGS 2
(63° 05' 22.04" N, 138° 57' 21.60" W)

Signature REDACTED

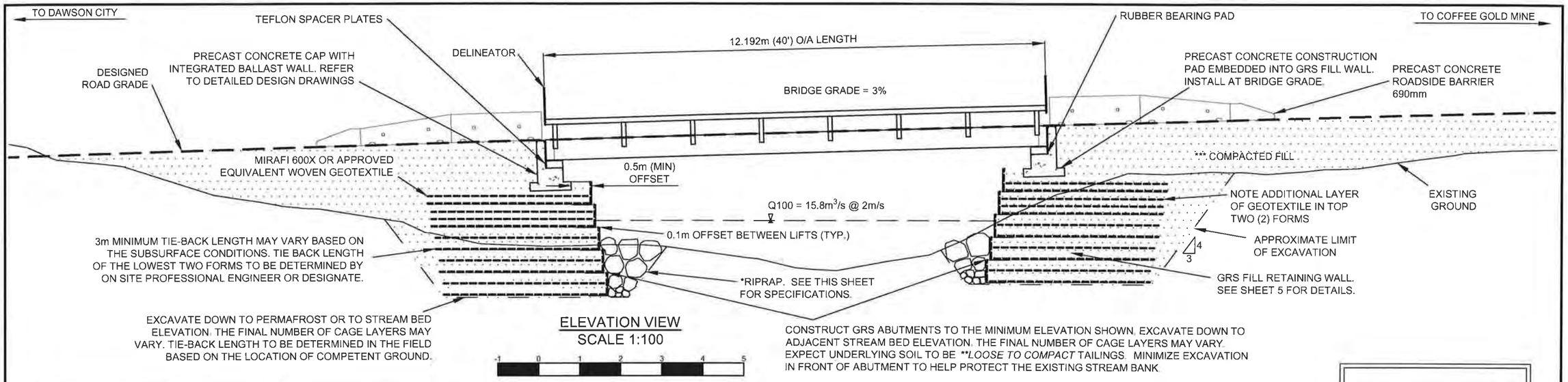
DWG No:1343-2-MBT2-002

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MBT2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MA

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
HIGH WATER LEVEL
STREAM THALWEG



ELEVATION VIEW
SCALE 1:100

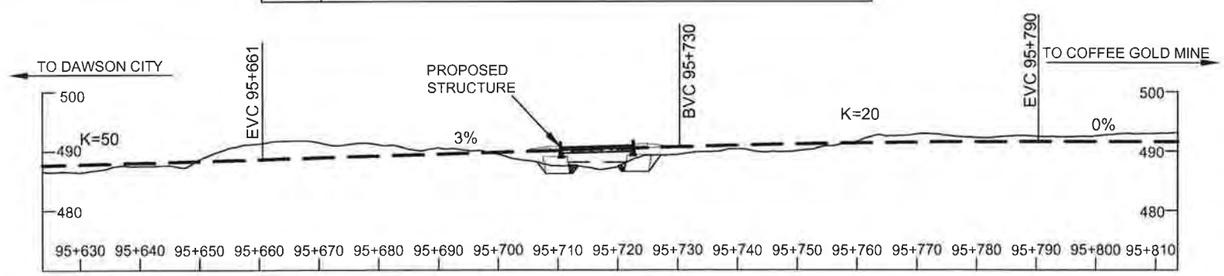
*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 5(155)
50% 50(330)
85% 150(475)
NOMINAL THICKNESS OF RIPRAP
550mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 30m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
36	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
300	GALVANIZED WIRE STRUTS - 4 GAUGE
72	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

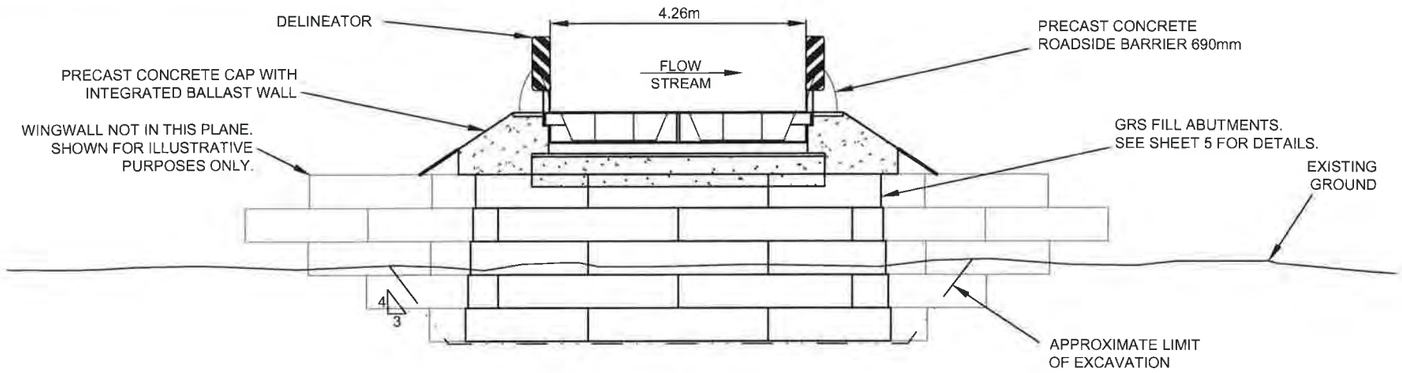
PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 95+712
SITE: MIDDLE BARKER TAILINGS 2
(63° 05' 22.04" N, 138° 57' 21.60" W)

Signature REDACTED

DWG No:1343-2-MBT2-003

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MBT2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
MIRAFI 600x OR EQUIVALENT
LIMIT OF EXCAVATION



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

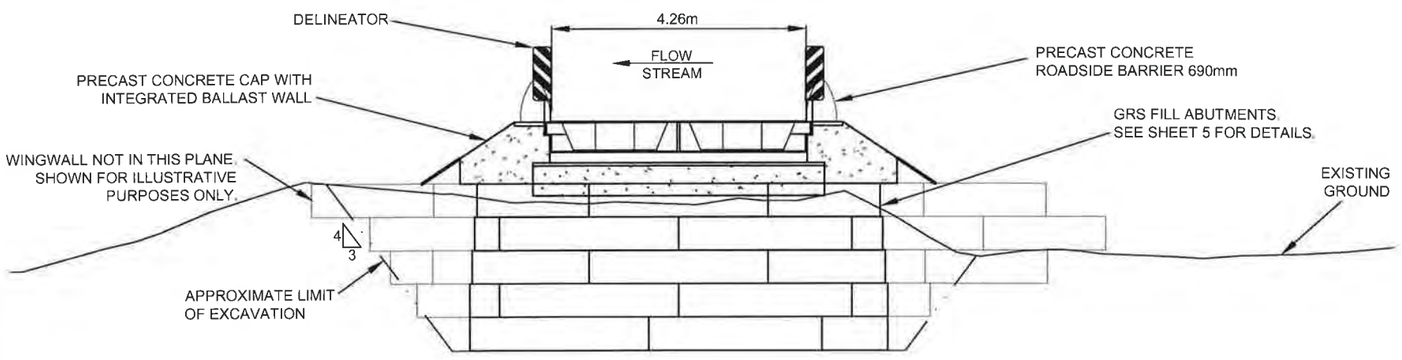
ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESECE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

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PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 95+712
SITE: MIDDLE BARKER TAILINGS 2
(63° 05' 22.04" N, 138° 57' 21.

Signature REDACTED

DWG No:1343-2-MBT2-004

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DESIGN DATE: APRIL 15, 2016
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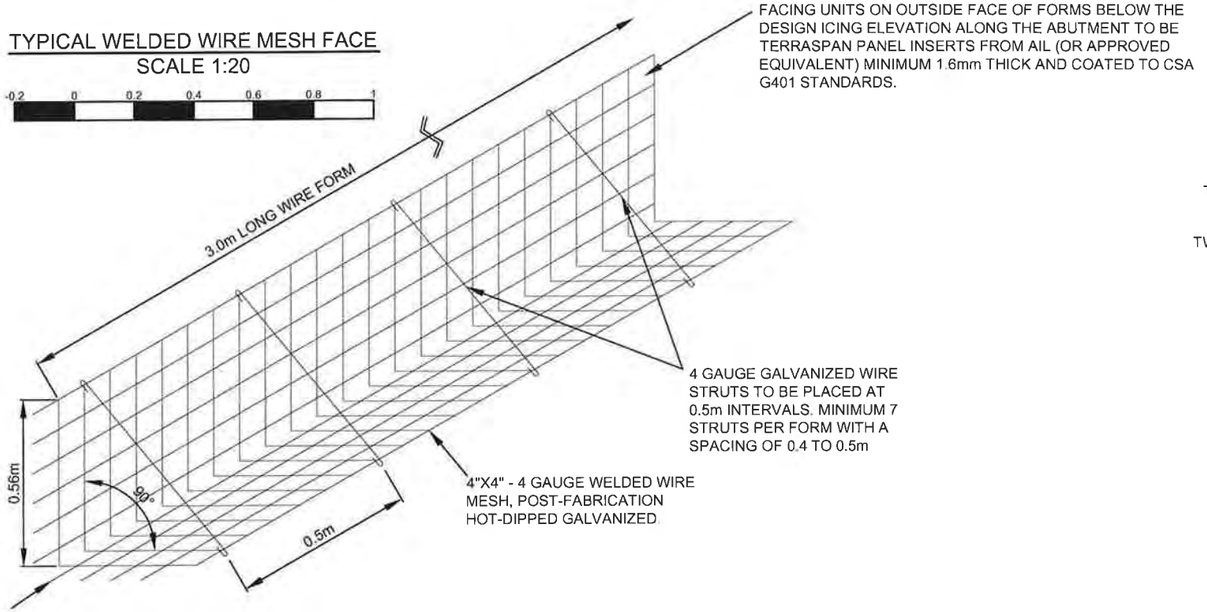
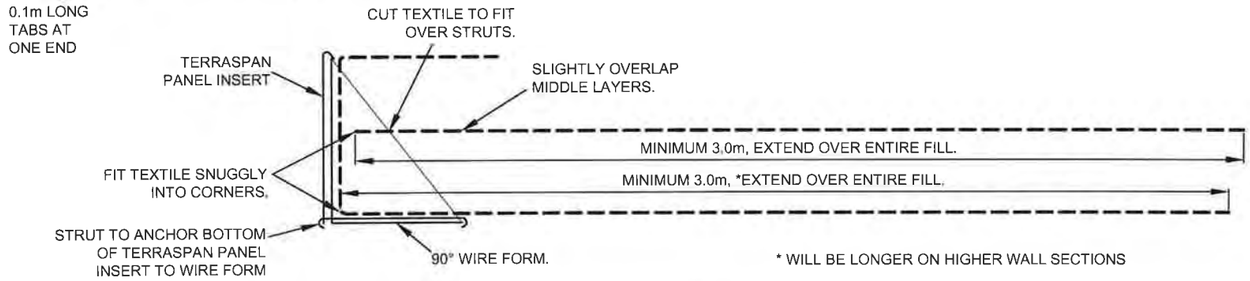
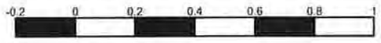
APPROXIMATE LIMIT OF EXCAVATION ——— · ———

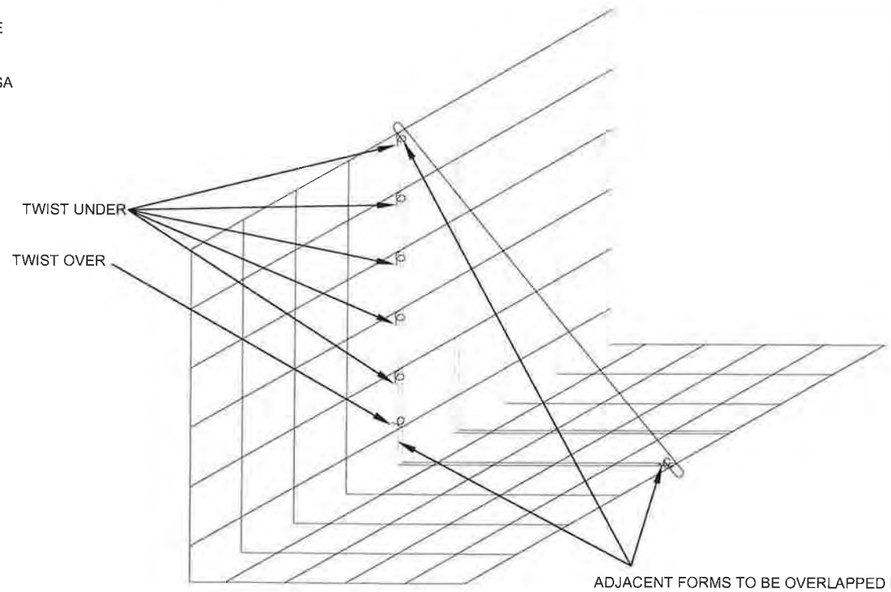
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

CAUTION:

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 12.192m (40') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 95+712
SITE: MIDDLE BARKER TAILINGS 2
(63° 05' 22.04" N, 138° 57' 21.60" W)

Signature REDACTED

DWG No:1343-2-MBT2-005

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MBT2 DWG
SCALE: AS NOTED
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MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF DAWSON CITY APPROACH FROM CROSSING



PHOTO #2 - VIEW OF COFFEE GOLD MINE APPROACH



PHOTO #3 - VIEW OF UPSTREAM



PHOTO #4 - VIEW OF DOWNSTREAM

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COASTAL OPERATIONS
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PH.: 250-287-9174 FAX: 866-235-6943

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DWG No:1343-2-MBT2-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 15, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MBT2.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 15, 2016
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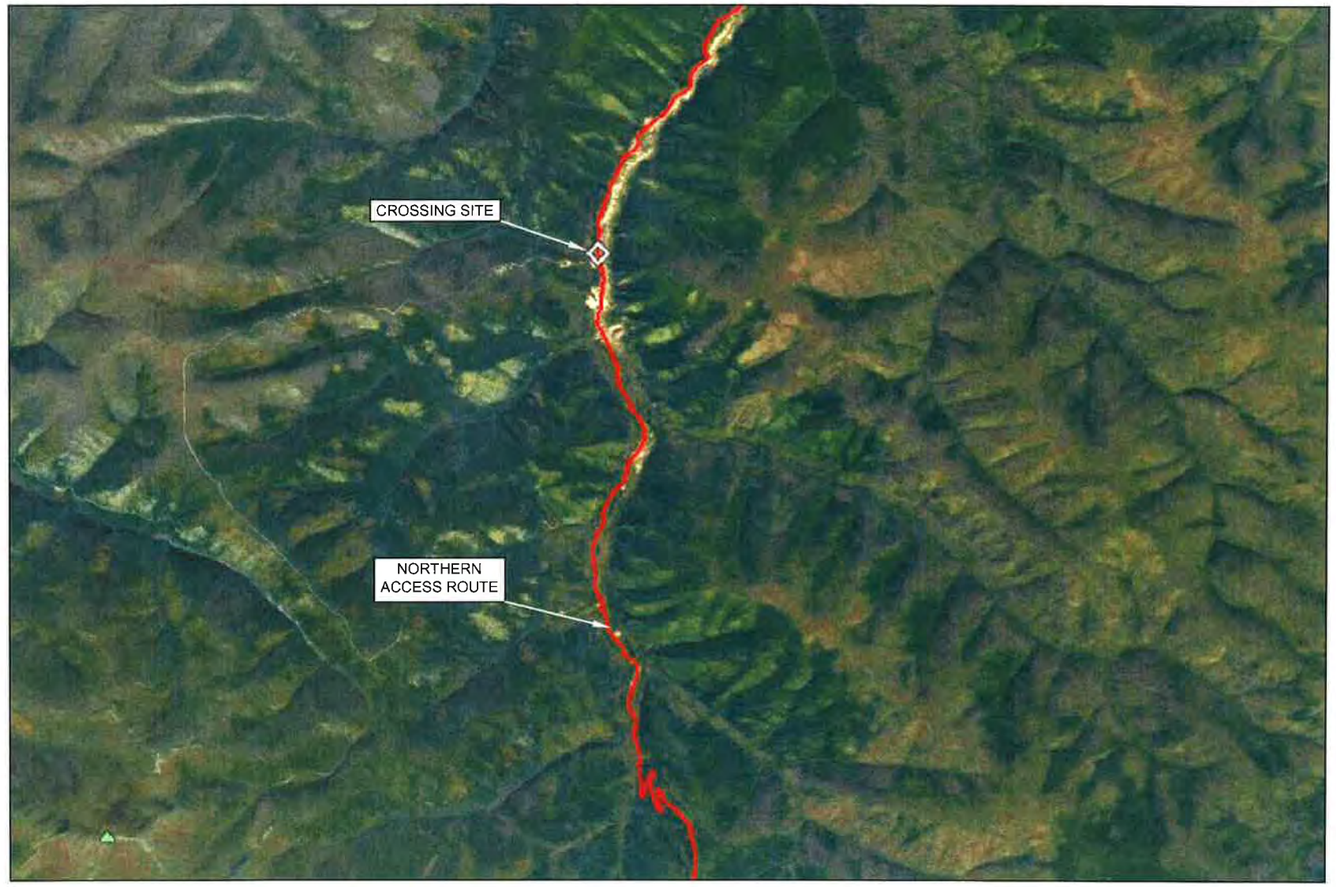
COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



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NOT TO SCALE

Signature REDACTED

SIGN
Date
PERMIT NUMBER PP289
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 94+369
SITE: MIDDLE BARKER PLACER CAMP

(63° 06' 03.77" N, 138° 57' 28.44" W)

ISSUED FOR
PERMIT
APPROVAL

DWG No:1343-2-MD3-001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
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REVISION DATE: DECEMBER 13, 2016
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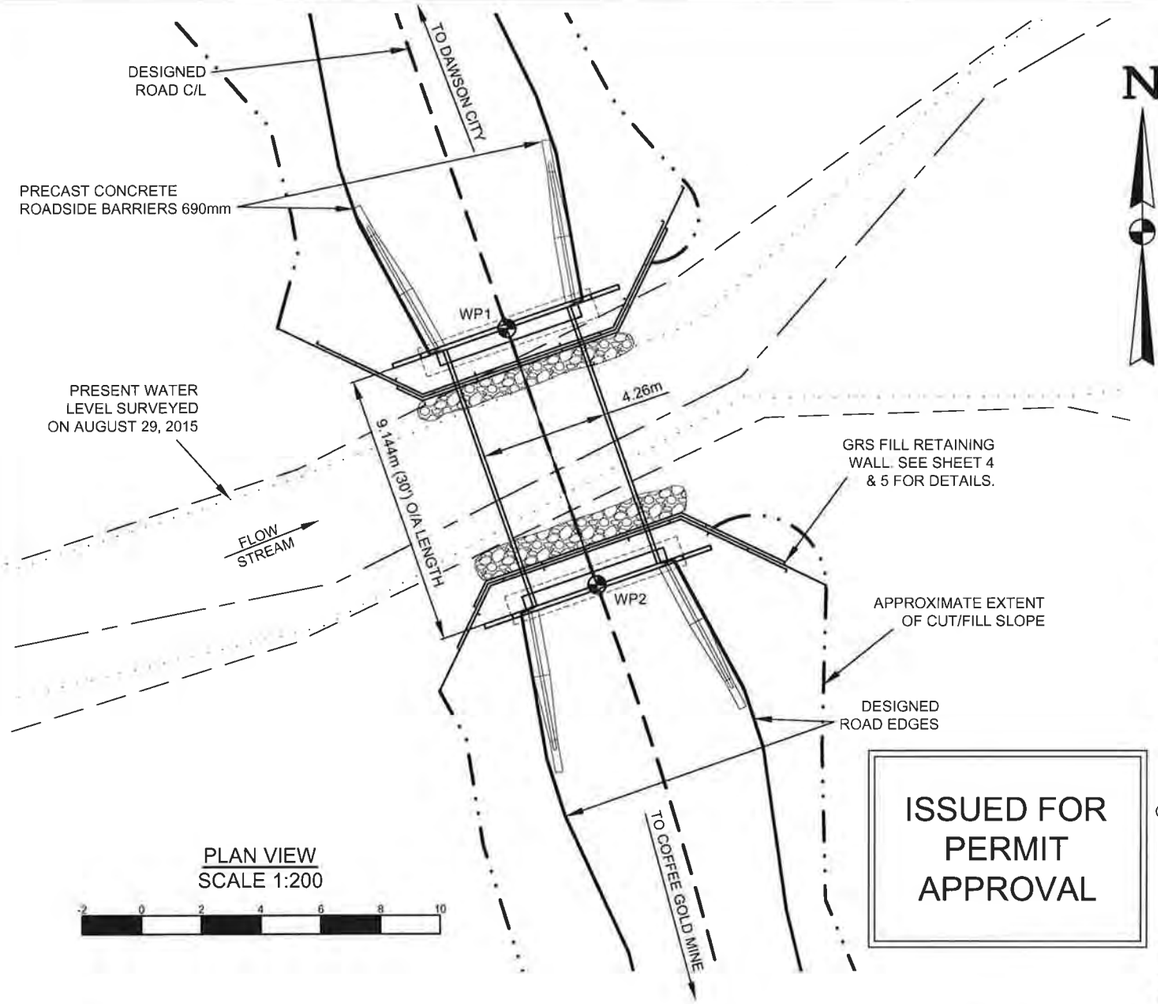
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

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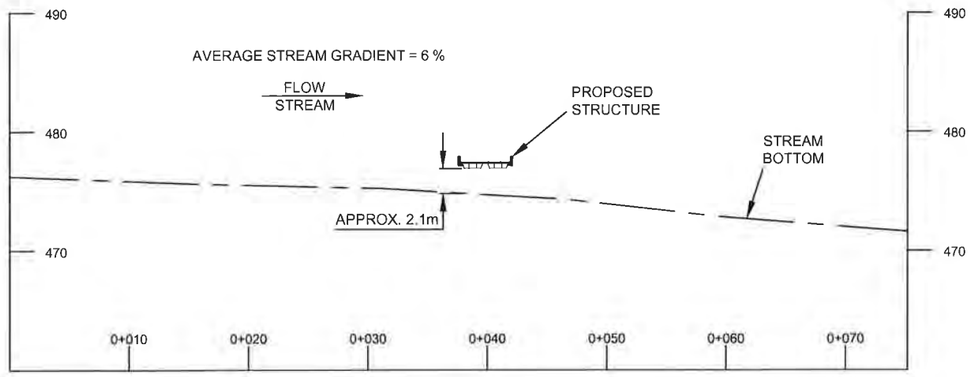

STREAM PROFILE VIEW
SCALE 1:500

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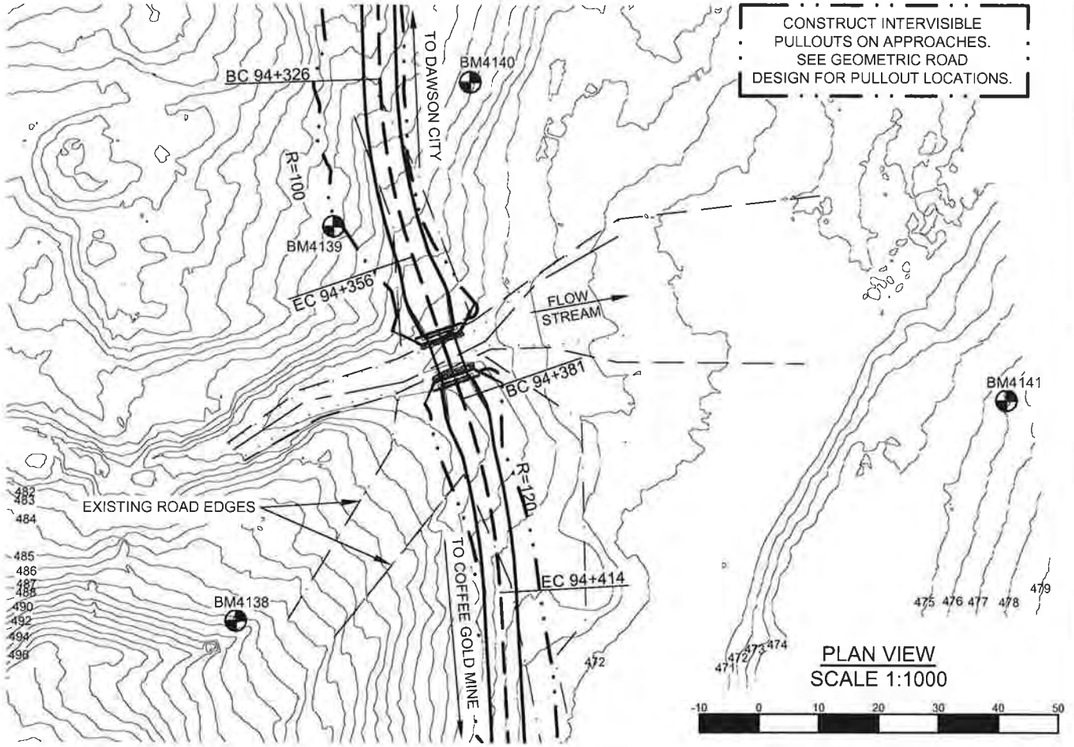

PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4138	BM4139	21°00'39"	59.25
	BM4139	BM4140	91°45'26"	24.87
	BM4140	BM4141	66°17'22"	42.03
	BM4141	BM4138	23°02'59"	95.87
2	BM4138	BM4139	28°49'08"	54.36
	BM4139	BM4140	98°36'43"	33.34
	BM4140	BM4141	61°41'54"	50.40
	BM4141	BM4138	17°56'42"	92.19

WP	N	E	ELEV
WP1	6998490.53	603067.24	477.55
WP2	6998481.90	603070.26	477.20
BM4138	6998441.73	603033.64	487.74
BM4139	6998508.08	603049.62	482.38
BM4140	6998532.26	603072.26	478.73
BM4141	6998478.99	603162.41	475.71

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 94+369
SITE: MIDDLE BARKER PLACER CAMP
(63° 06' 03.77" N, 138° 57' 28.44" W)

DWG No:1343-2-MD3-002

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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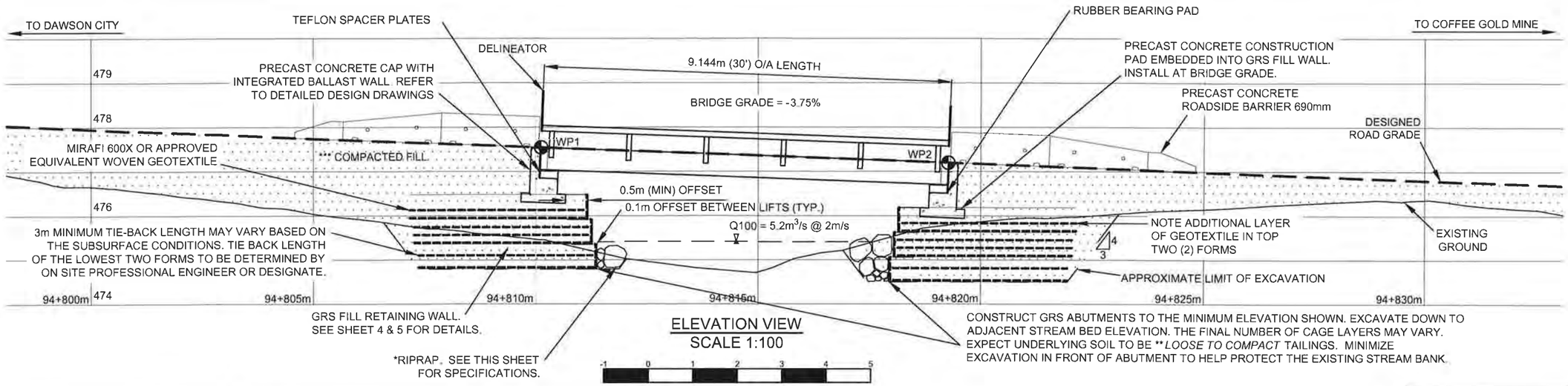
MA

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



ELEVATION VIEW
SCALE 1:100

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)

15%	5(155)
50%	50(330)
85%	150(475)

NOMINAL THICKNESS OF RIPRAP 550mm

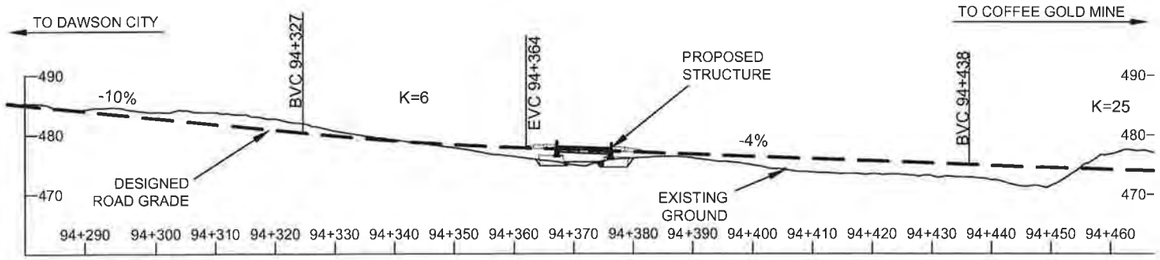


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 10m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
2	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
28	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
200	GALVANIZED WIRE STRUTS - 4 GAUGE
56	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

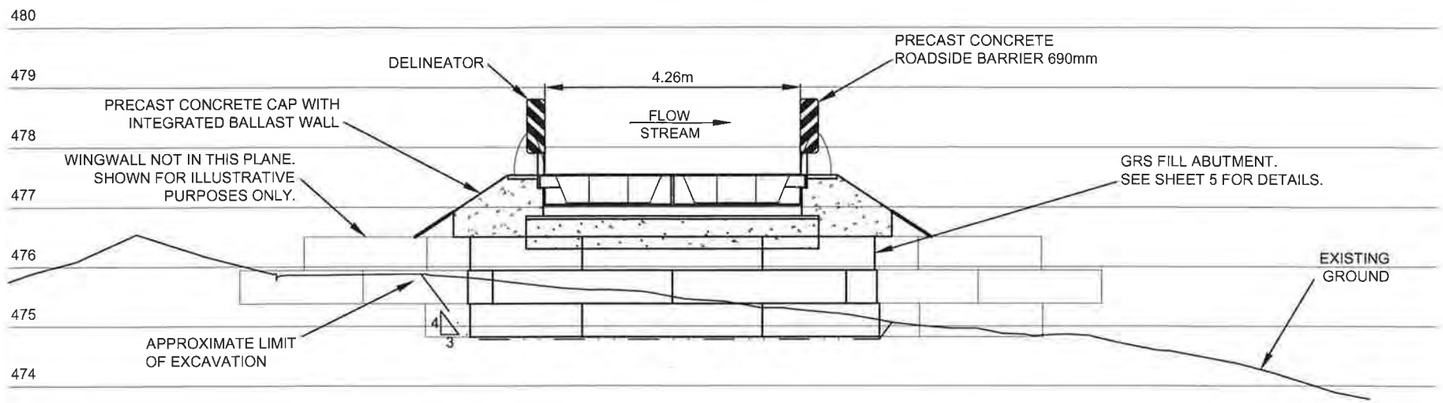
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 94+369
SITE: MIDDLE BARKER PLACER CAMP
(63° 06' 03.77" N, 138° 57' 2

Signature REDACTED

DWG No:1343-2-MD3-003

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
EXISTING GROUND
MIRAFI 600x OR EQUIVALENT
LIMIT OF EXCAVATION



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

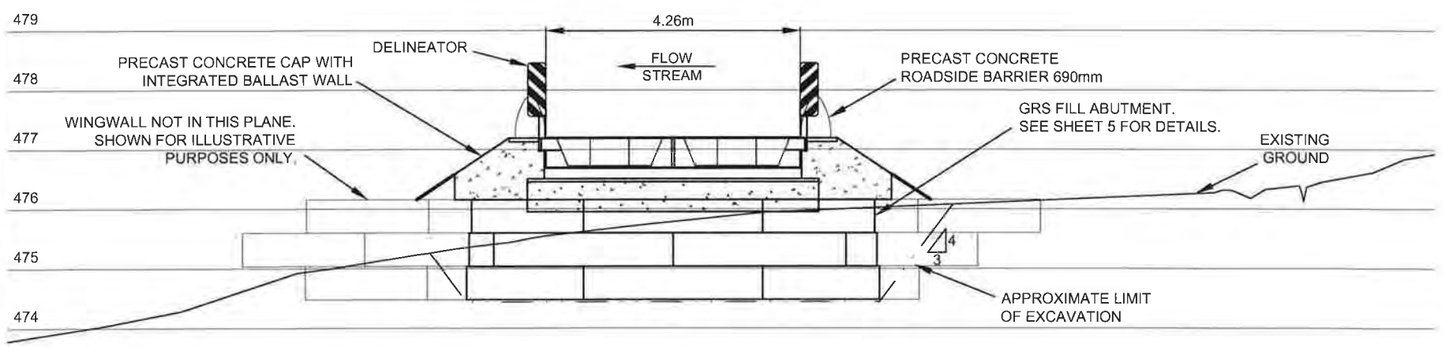
ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESECE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

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PREPARED BY:

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COASTAL OPERATIONS
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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 94+369
SITE: MIDDLE BARKER PLACER CAMP
(63° 06' 03.77" N, 138° 57' 28.44" W)

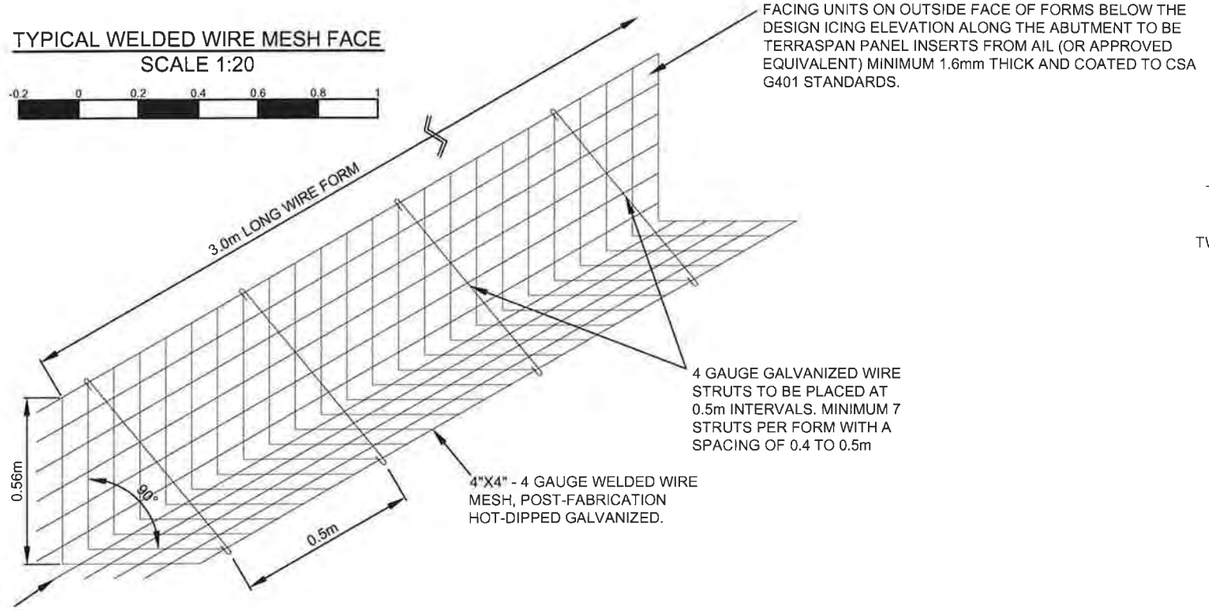
Signature REDACTED

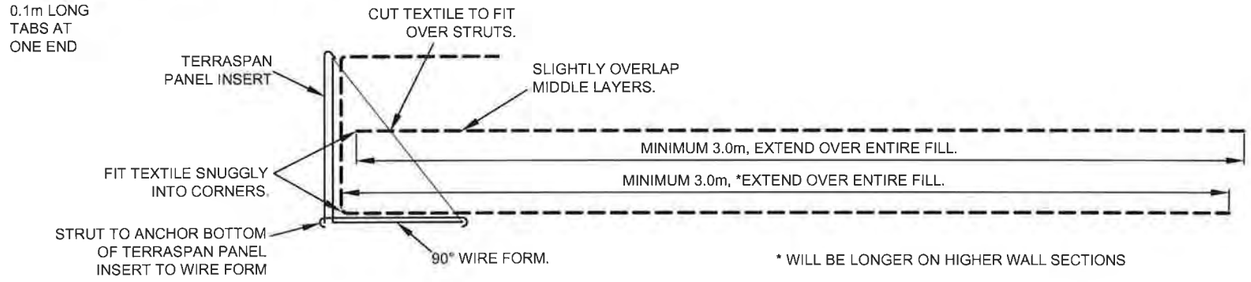
DWG No:1343-2-MD3-004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

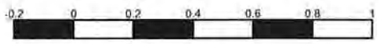
LIMIT OF EXCAVATION

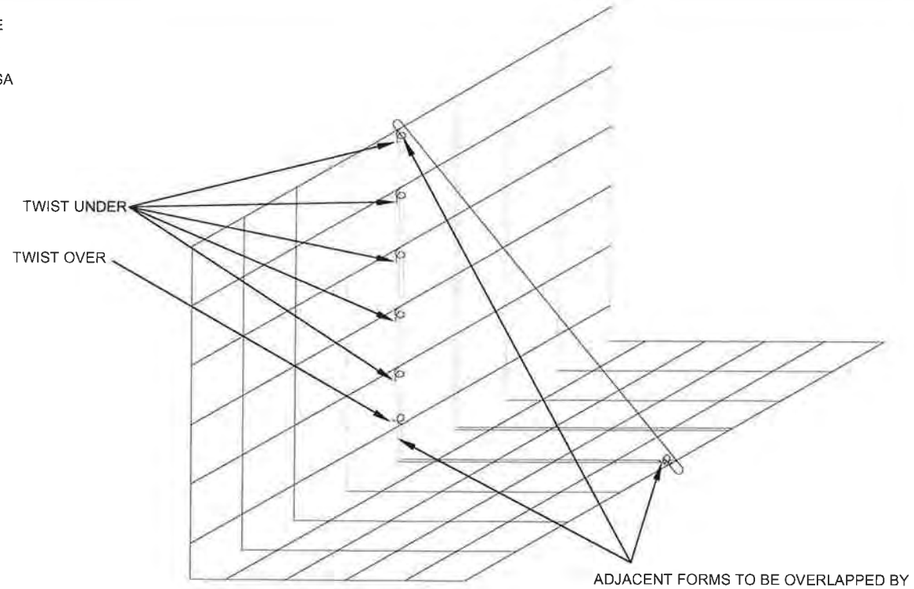
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 94+369
SITE: MIDDLE BARKER PLACER CAMP
(63° 06' 03.77" N, 138° 57' 28.44" W)

DWG No:1343-2-MD3-005

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 18, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF COFFEE GOLD MINE APPROACH FROM CROSSING



PHOTO #2 - VIEW OF DAWSON CITY APPROACH FROM CROSSING



PHOTO #3 - VIEW OF CROSSING FROM DOWNSTREAM



PHOTO #4 - VIEW OF CROSSING FROM UPSTREAM

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DWG No:1343-2-MD3-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG
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DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 29, 2015
FILE NAME: MD3.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

SIGN
Date
PERMIT NUMBER PP288
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 21.336m (70') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 83+614
SITE: LOWER BARKER

(63° 10' 53.13" N, 138° 53' 54.11" W)

ISSUED FOR
PERMIT
APPROVAL

DWG No: 1343-2-MD4-001

SHEET: 1 OF 6

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DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 20, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
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SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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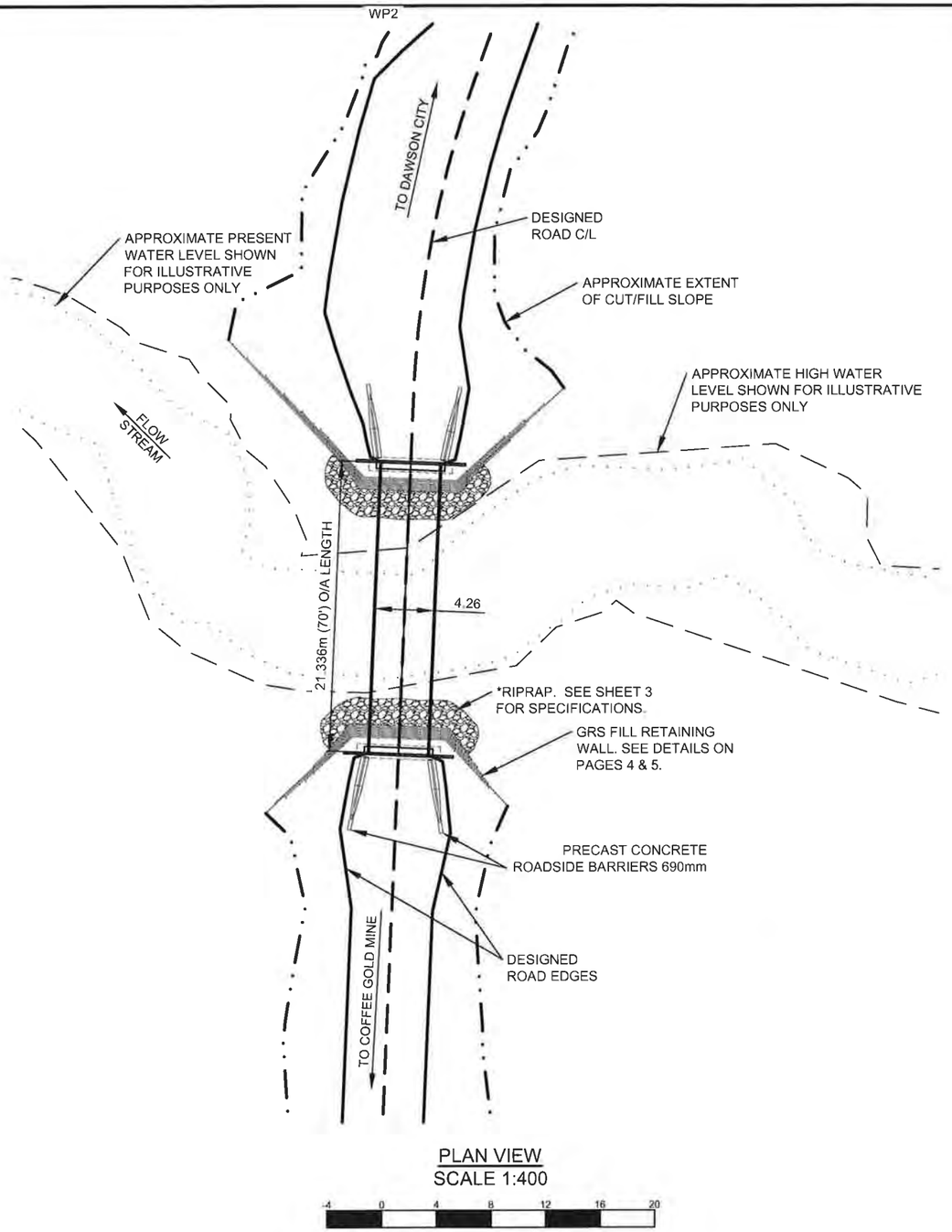
DRAWING INDEX:

SHEET 2 OF 6 - PLAN VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS
SHEET 4 OF 6 - DAWSON ABUTMENT CROSS SECTION AND ENVIRONMENTAL NOTES
SHEET 5 OF 6 - COFFEE GOLD MINE ABUTMENT CROSS SECTION AND GENERAL NOTES
SHEET 6 OF 6 - GRS DETAILS

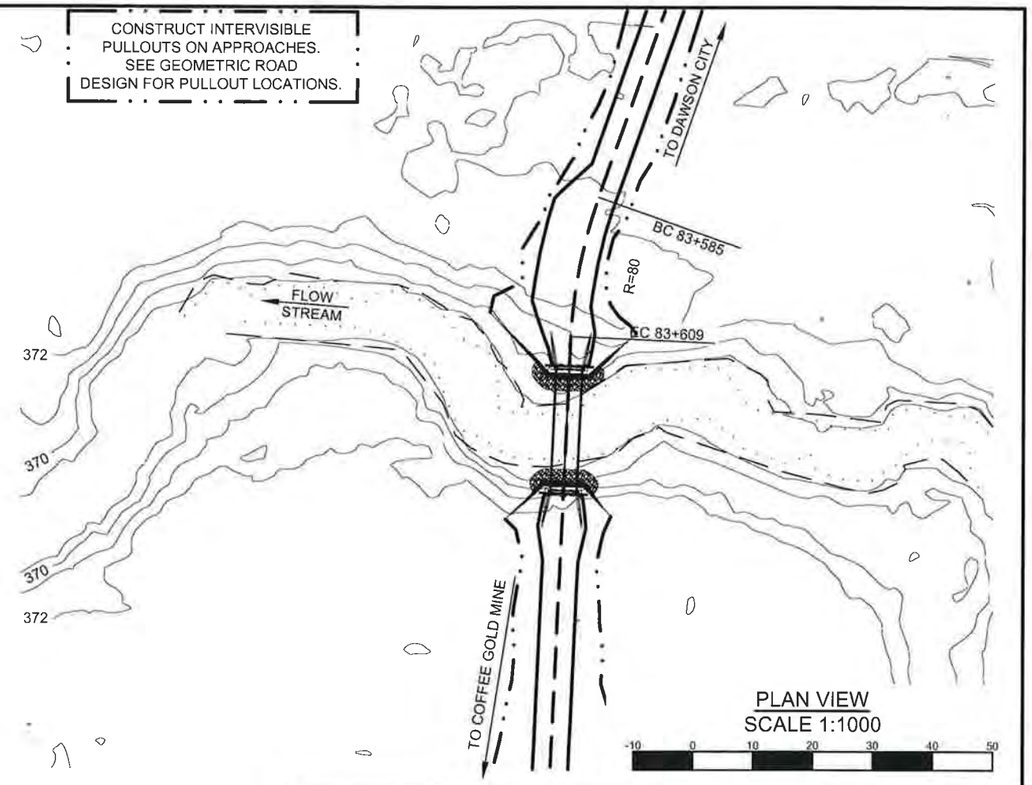


PLAN VIEW
SCALE 1:400

-4 0 4 8 12 16 20

N

CONSTRUCT INTERVISIBLE PULLOUTS ON APPROACHES. SEE GEOMETRIC ROAD DESIGN FOR PULLOUT LOCATIONS.



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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SITE: LOWER BARKER
(63° 10' 53.13" N, 138° 53' 54.1

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DWG No: 1343-2-MD4-002

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REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
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SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD4.DWG
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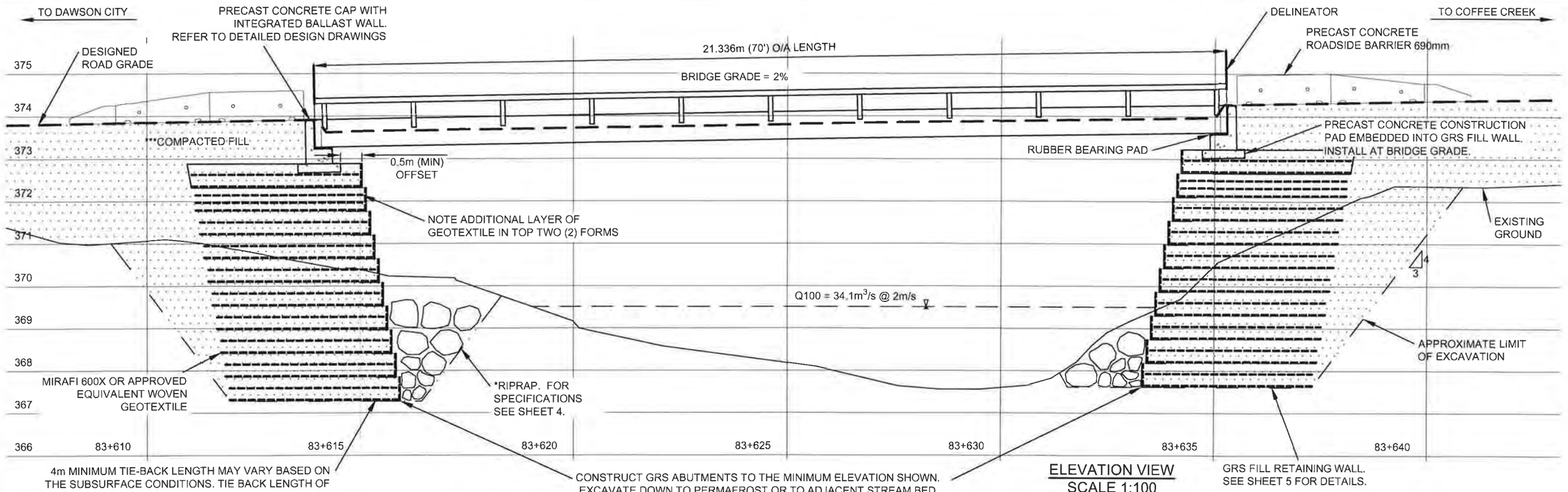
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL



ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

PARTIAL MATERIALS LIST	
7	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
113	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
800	GALVANIZED WIRE STRUTS - 4 GAUGE
226	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL

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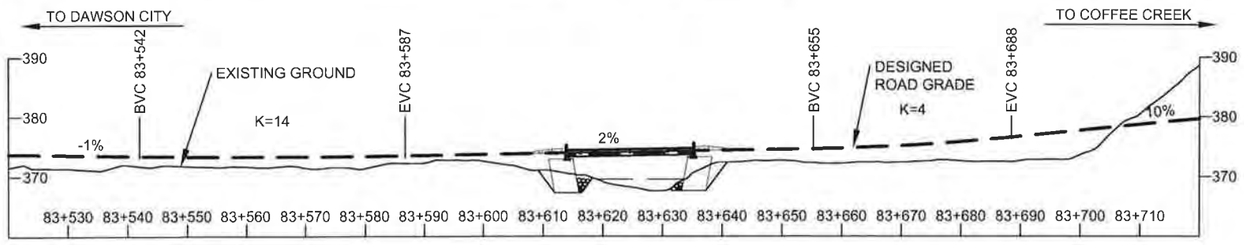

ROAD PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

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PH.: 250-287-9174 FAX: 866-235-6943

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Signature REDACTED

DWG No: 1343-2-MD4-003

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DESIGN DATE: APRIL 20, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD4.DWG
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REVISION NUMBER: 1
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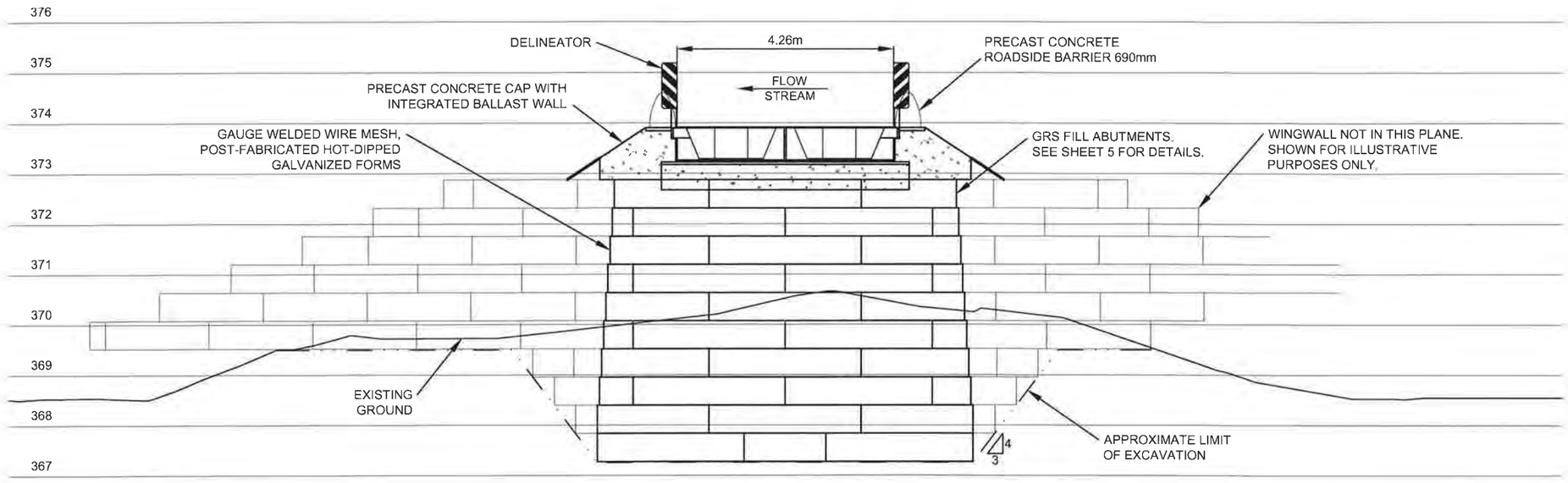
DESIGNED ROAD GRADE
HIGH WATER LEVEL
EXISTING GROUND
MIRAFI 600x OR EQUIVALENT
LIMIT OF EXCAVATION



DAWSON ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP
700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 100m³ OF RIPRAP REQUIRED.

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Signature REDACTED

DWG No: 1343-2-MD4-004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 20, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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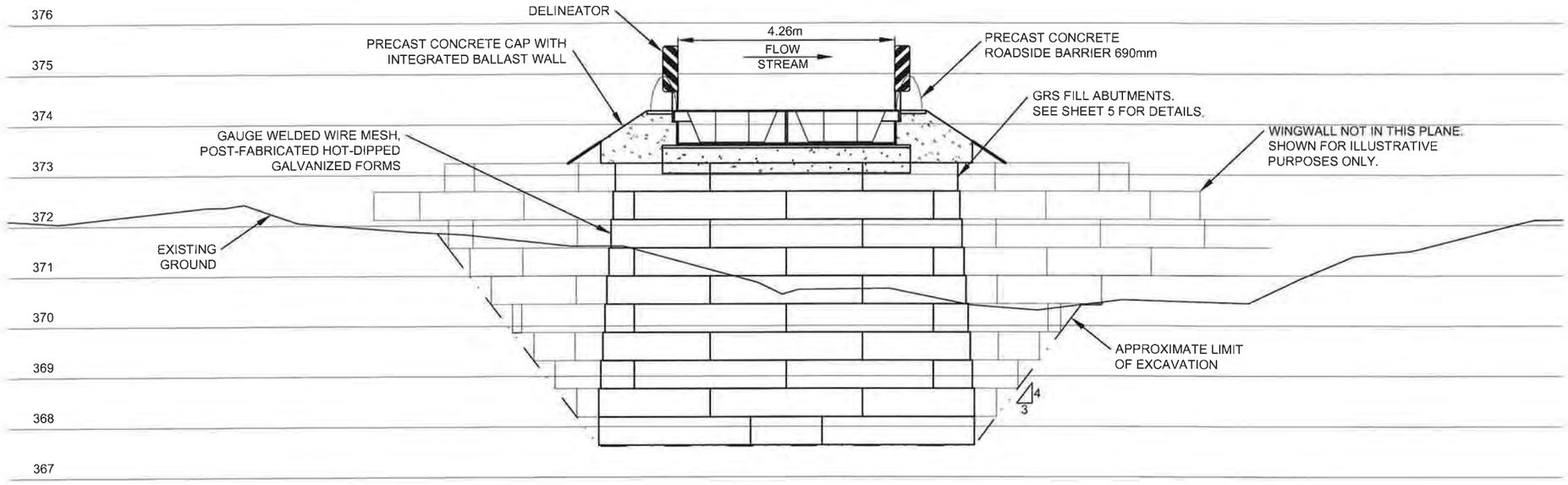
EXISTING GROUND ——— LIMIT OF EXCAVATION ———



COFFEE GOLD MINE ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

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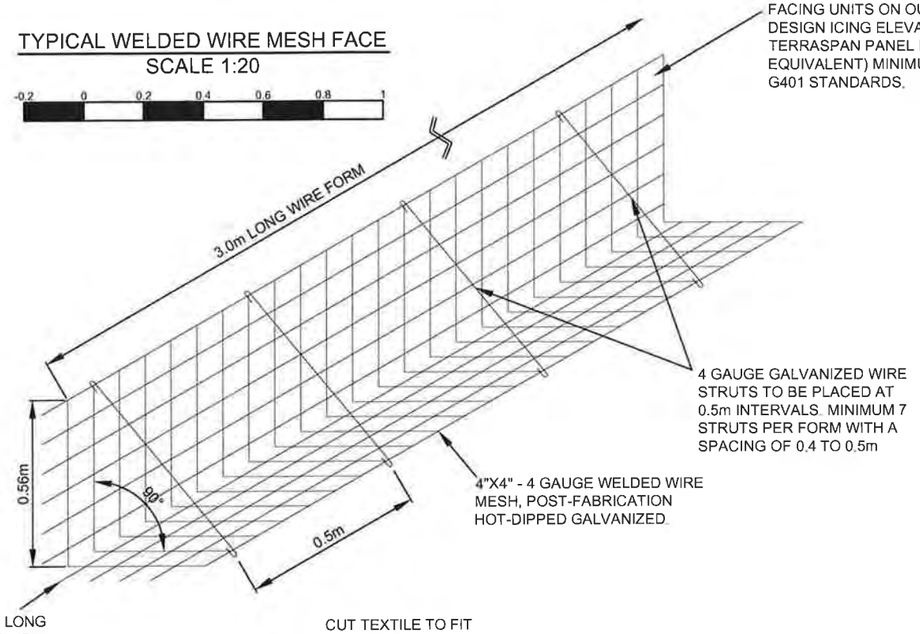
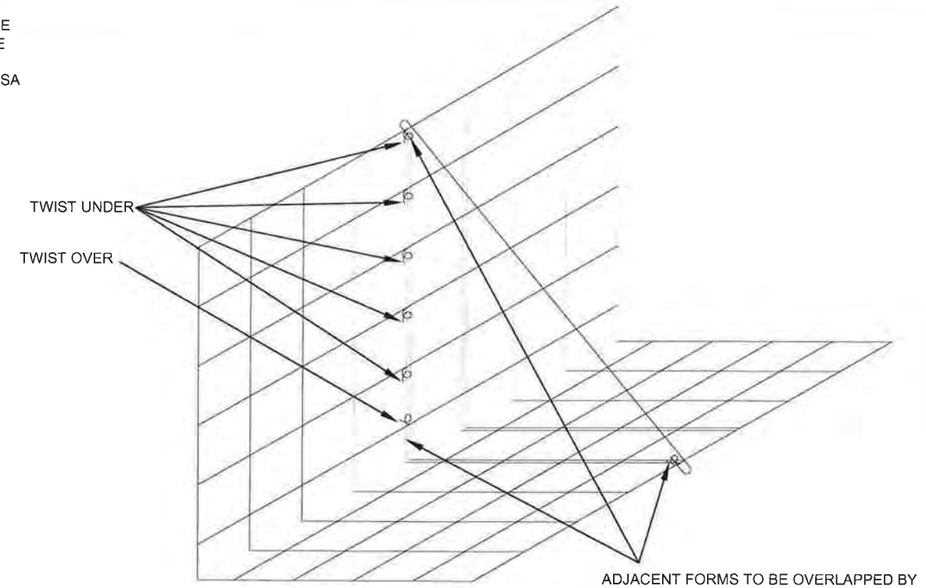
EXISTING GROUND ——— LIMIT OF EXCAVATION ———

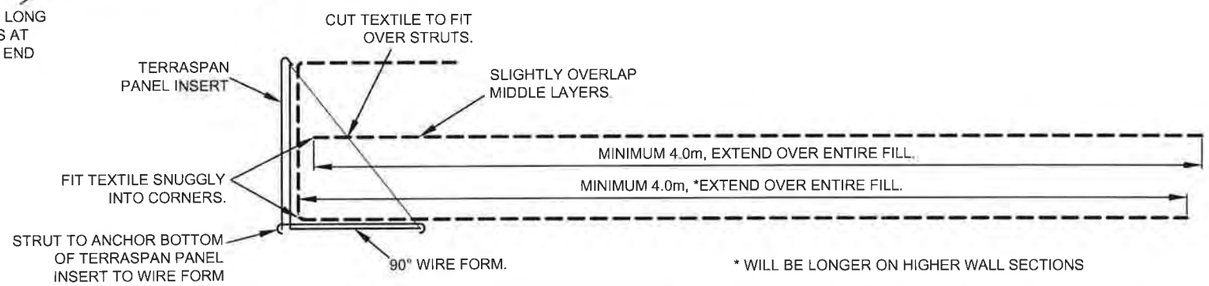
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20



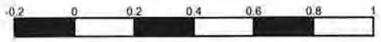


TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



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2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

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1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 21.336m (70') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 83+614
SITE: LOWER BARKER
(63° 10' 53.13" N, 138° 53' 54.11" W)

Signature REDACTED

DWG No: 1343-2-MD4-006

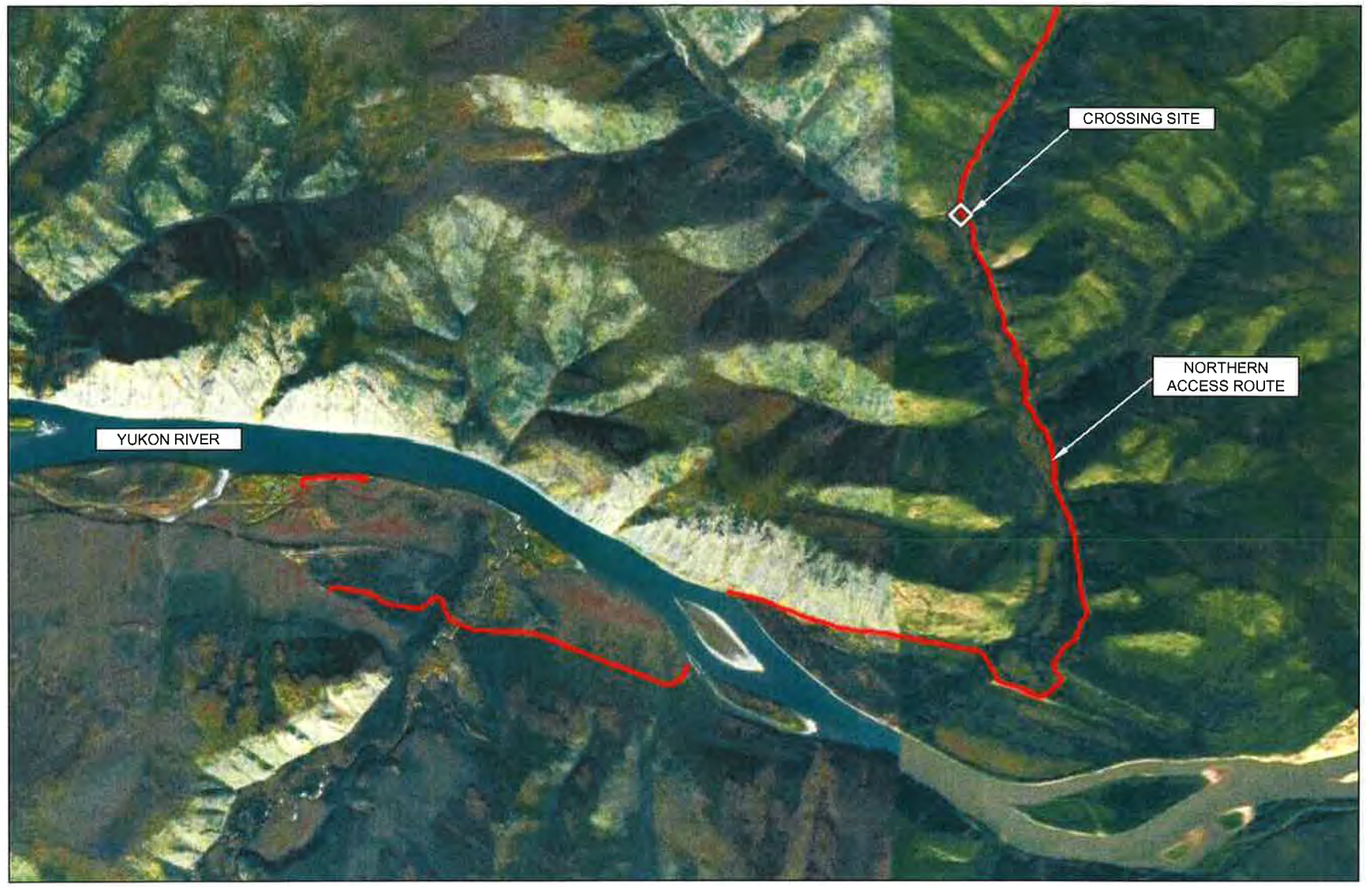
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 20, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD4.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MIRAFI 600X
OR EQUIVALENT

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

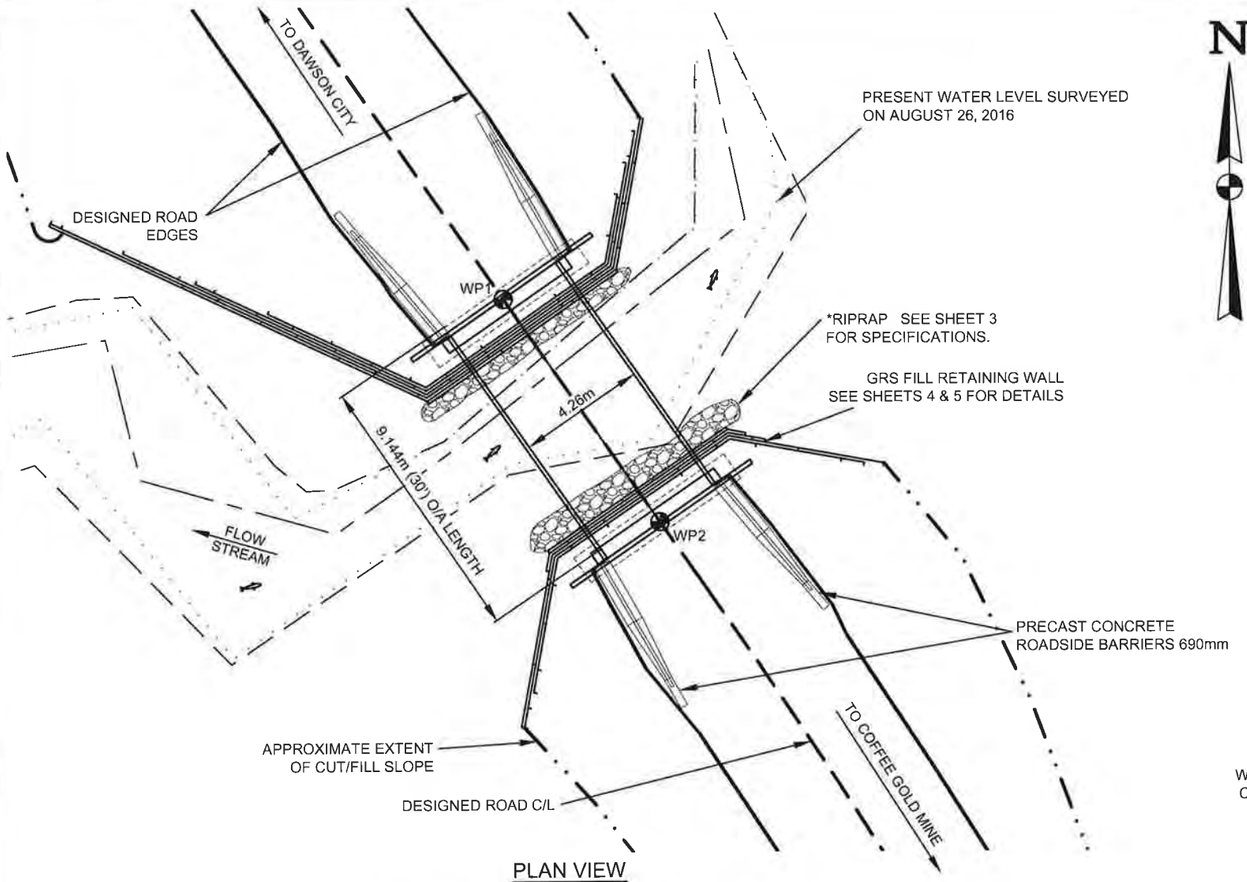
SIG
Dat
PERMIT NUMBER P7288
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 9.144m (30') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 118+770 SITE: MIDDLE BALLARAT

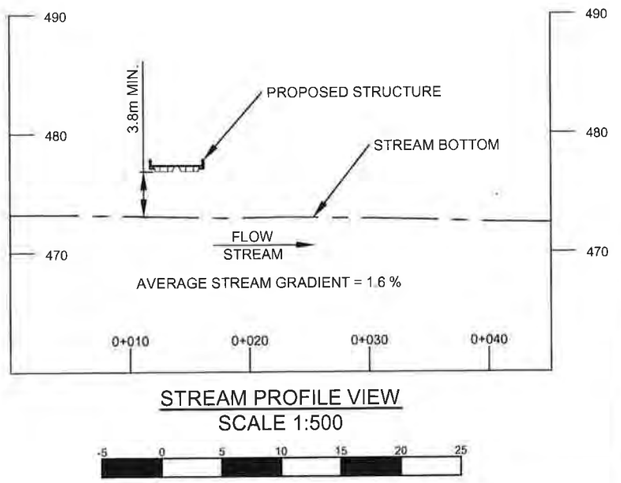
(62° 56' 07.78" N, 138° 57' 53.92" W)

ISSUED FOR PERMIT APPROVAL

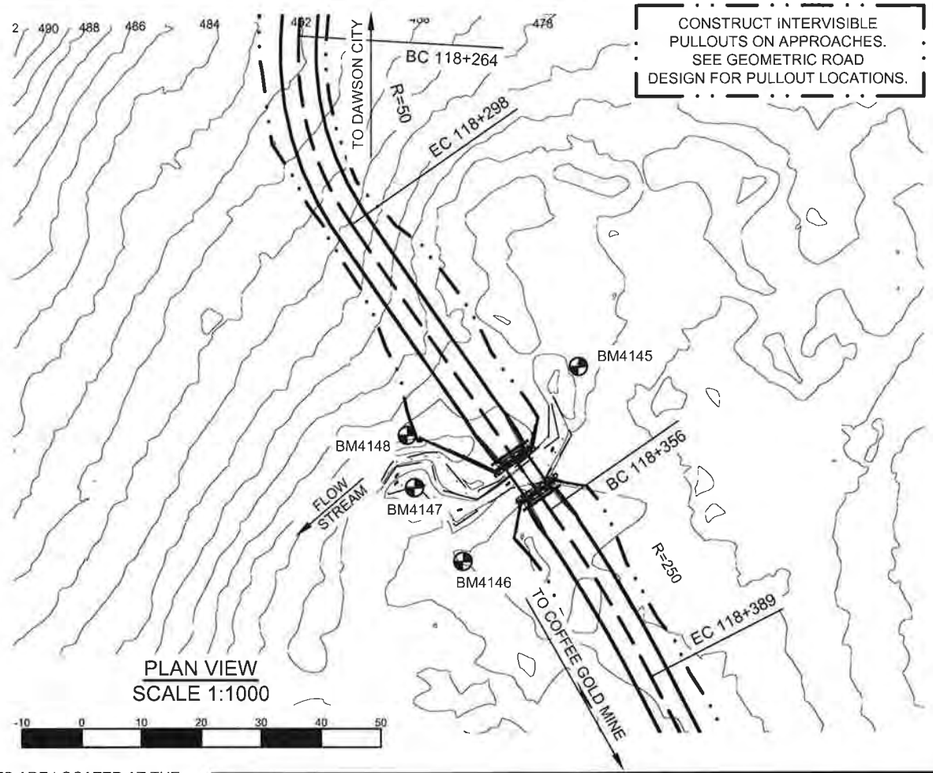
DWG No: 1343-2-MD5- 001	SHEET: 1 OF 6	DESIGN BY: SCOTT WILSON, P.ENG. DESIGN DATE: APRIL 13, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG. DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 26, 2015 FILE NAME: MD5.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES SHEET 5 OF 6 - GRS DETAILS SHEET 6 OF 6 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:200



STREAM PROFILE VIEW
SCALE 1:500



PLAN VIEW
SCALE 1:1000

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4145	BM4146	7°40'22"	18.46
	BM4146	BM4147	56°26'02"	19.88
	BM4147	BM4148	77°54'36"	17.00
	BM4148	BM4145	31°48'45"	17.46
2	BM4145	BM4146	345°12'54"	22.88
	BM4146	BM4147	83°43'31"	16.94
	BM4147	BM4148	102°30'16"	21.25
	BM4148	BM4145	47°02'40"	24.76

WP	N	E	ELEV
WP1	6980049.49	603295.62	477.36
WP2	6980041.97	603300.83	477.16
BM4145	6980064.00	603307.03	475.35
BM4146	6980031.24	603287.73	475.05
BM4147	6980043.66	603279.65	474.07
BM4148	6980052.49	603278.42	474.89

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CAUTION:

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 118+770
SITE: MIDDLE BALLARAT
(62° 56' 07.78" N, 138° 57' 53.92" W)

Signature REDACTED

DWG No: 1343-2-MD5- 002

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 13, 2016
REVIEWED BY: JEREMY ARAKI, P ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD5.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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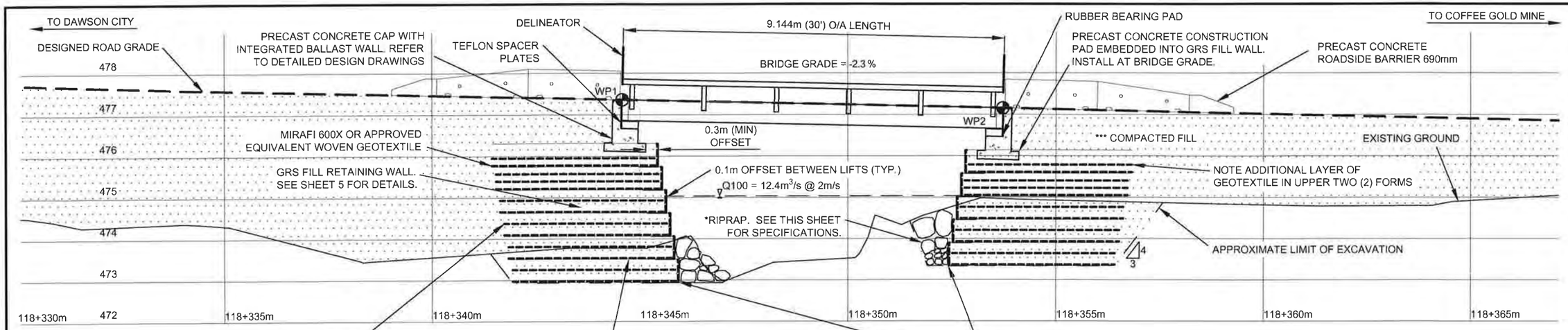
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



3m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

EXCAVATE DOWN TO PERMAFROST OR TO STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. TIE-BACK LENGTH TO BE DETERMINED IN THE FIELD BASED ON THE LOCATION OF COMPETENT GROUND.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CONSTRUCT GRS ABUTMENTS TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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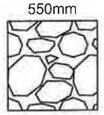
*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	5(155)
50%	50(330)
85%	150(475)

NOMINAL THICKNESS OF RIPRAP
550mm

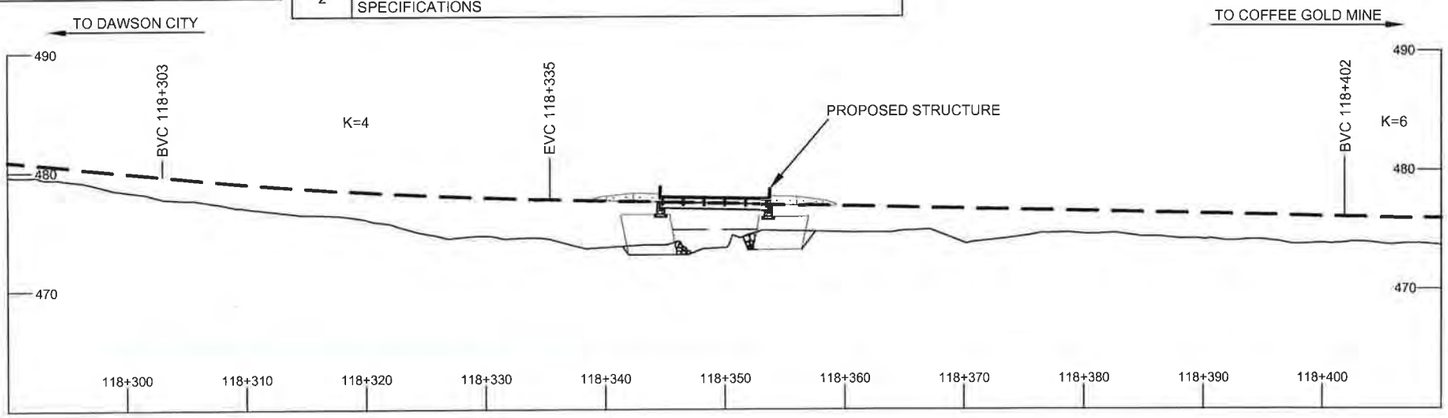


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 12m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
66	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
470	GALVANIZED WIRE STRUTS - 4 GAUGE
132	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATION
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

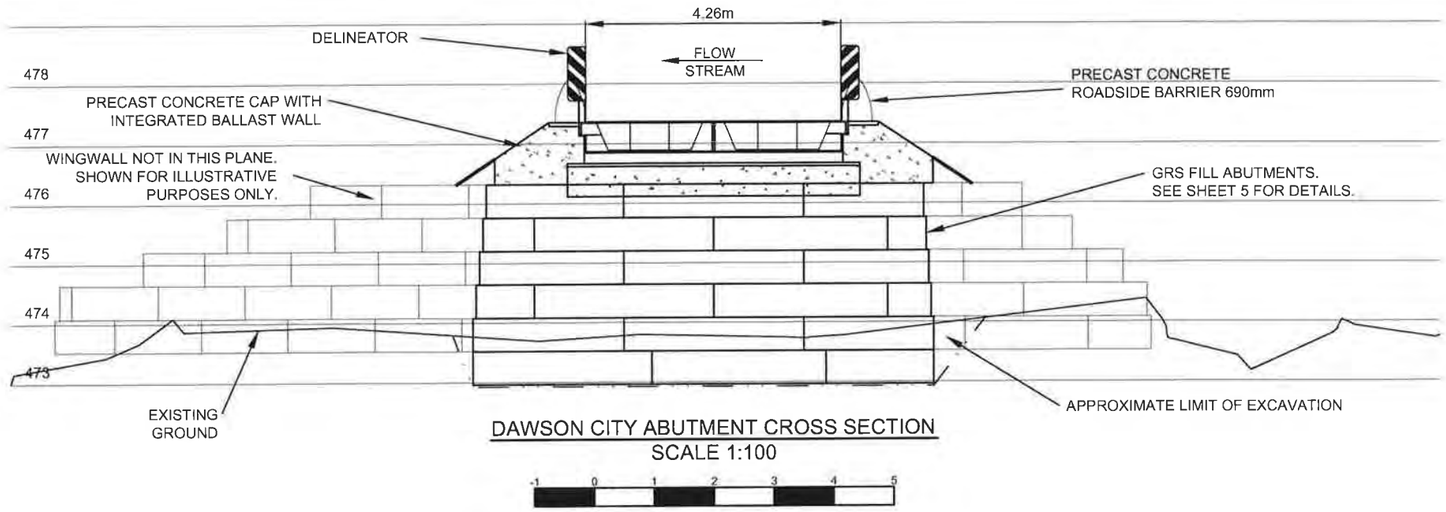
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 118+770
SITE: MIDDLE BALLARAT
(62° 56' 07.78" N, 138° 57' 53.92" W)

Signature REDACTED

DWG No: 1343-2-MD5- 003

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 13, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD5.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
WORKPOINT WP1
MIRAFI 180N OR EQUIVALENT
MIRAFI 600x OR EQUIVALENT
APPROXIMATE LIMIT OF EXCAVATION



DAWSON CITY ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

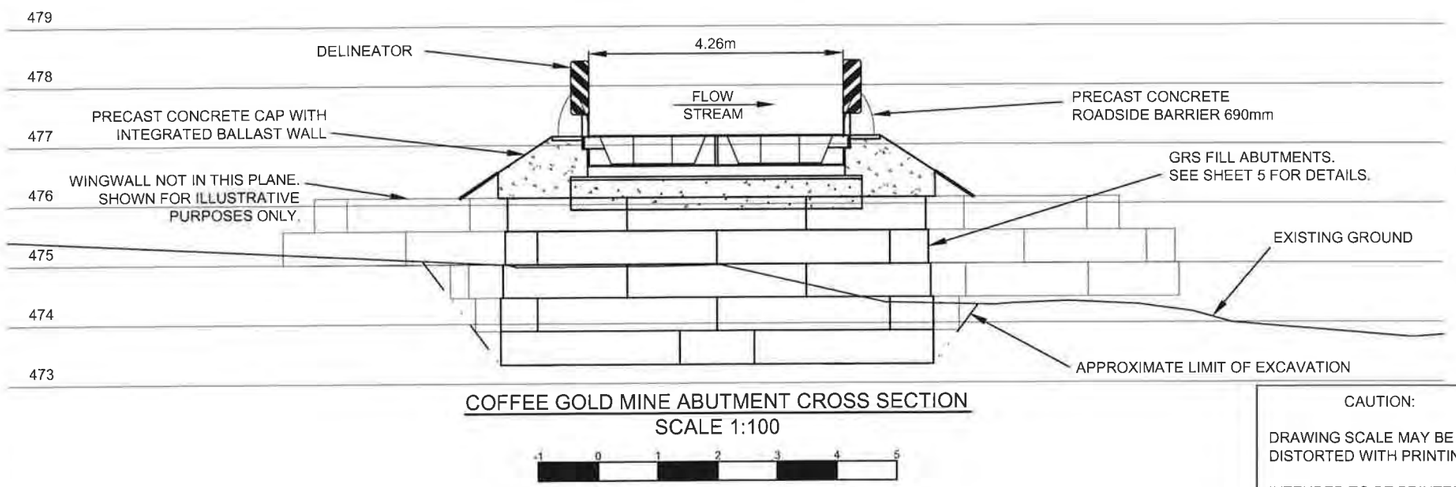
1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

ISSUED FOR PERMIT APPROVAL



COFFEE GOLD MINE ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D , 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN, REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 118+770
SITE: MIDDLE BALLARAT
(62° 56' 07.78" N, 138° 57' 53.92" W)

Signature REDACTED

DWG No: 1343-2-MD5- 004

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 13, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD5.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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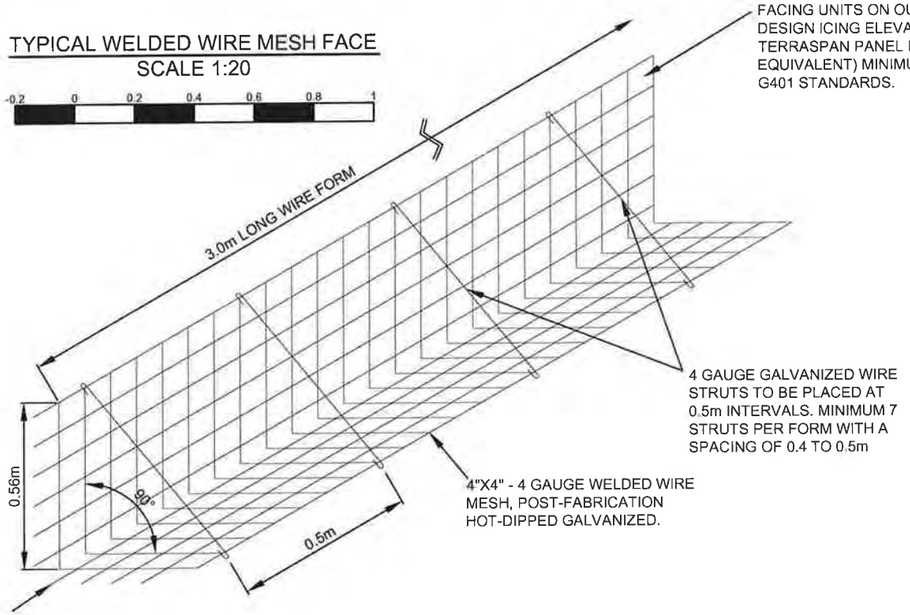
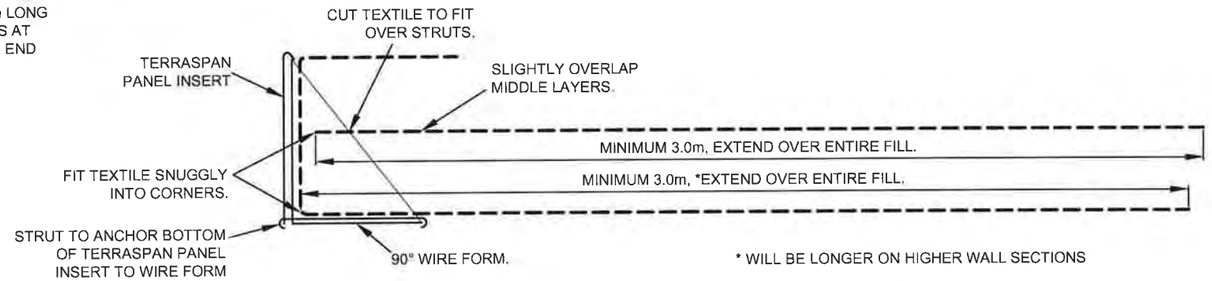
APPROXIMATE EXTENT OF CUT/FILL SLOPE

APPROXIMATE LIMIT OF EXCAVATION

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20

-0.2 0 0.2 0.4 0.6 0.8 1





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20

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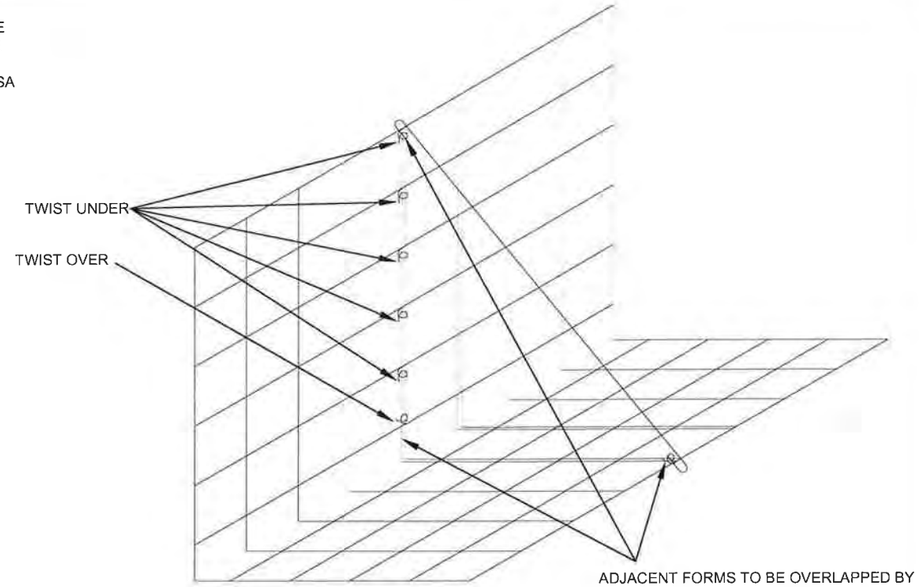

TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

-0.1 0 0.1 0.2 0.3 0.4 0.5

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
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CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 118+770
SITE: MIDDLE BALLARAT
(62° 56' 07.78" N, 138° 57' 53.92" W)

Signature REDACTED

DWG No: 1343-2-MD5- 005

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 13, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: MD5.DWG
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MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF DAWSON CITY APPROACH FROM CROSSING



PHOTO #2 - VIEW OF COFFEE GOLD MINE APPROACH FROM DAWSON CITY APPROACH



PHOTO #3 - VIEW UPSTREAM FROM CROSSING



PHOTO #4 - VIEW DOWNSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

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ENGINEERING LTD.

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SITE: MIDDLE BALLARAT
(62° 56' 07.78" N, 138° 57' 53.92" W)

DWG No: 1343-2-MD5- 006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 13, 2016
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DRAWN BY: ANDREW BRABANDT
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FILE NAME: MD5.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

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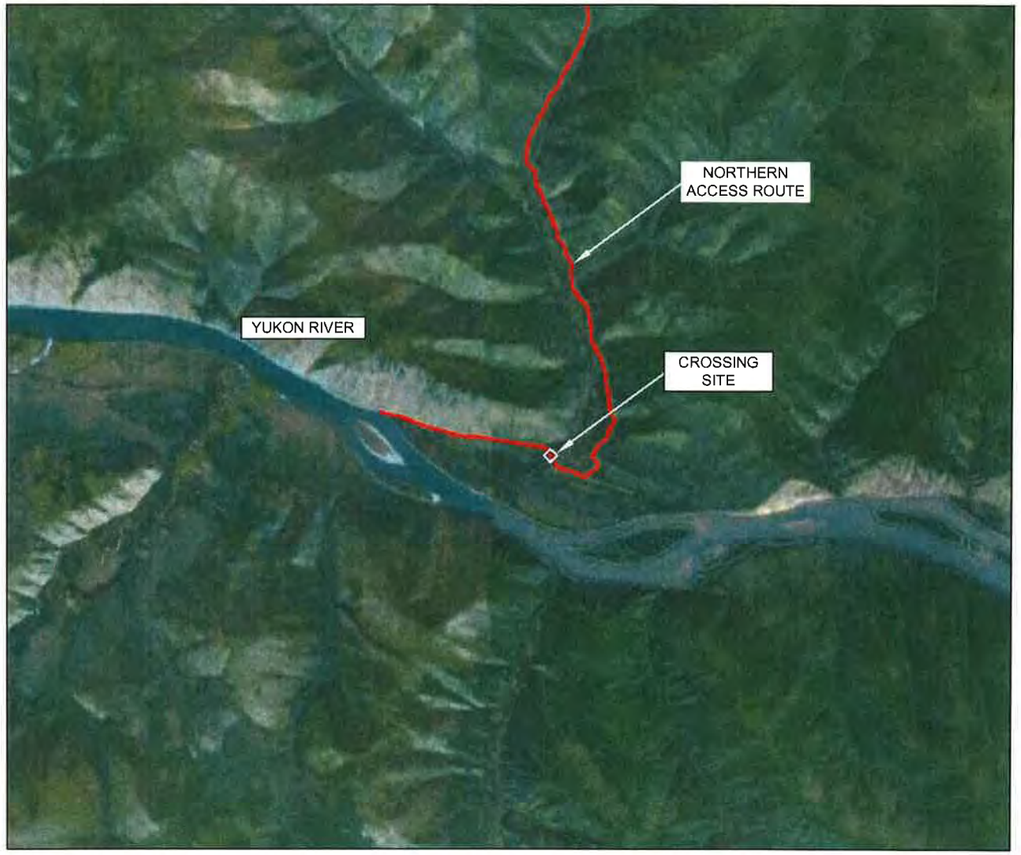

Signature REDACTED

SIG
Dat
PERMIT NUMBER PP289
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 15.24m (50') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 123+817 SITE: BALLARAT PROPER

(62° 53' 56.15" N, 138° 57' 36.19" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-MD12-001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD12.dwg
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 9, 2016
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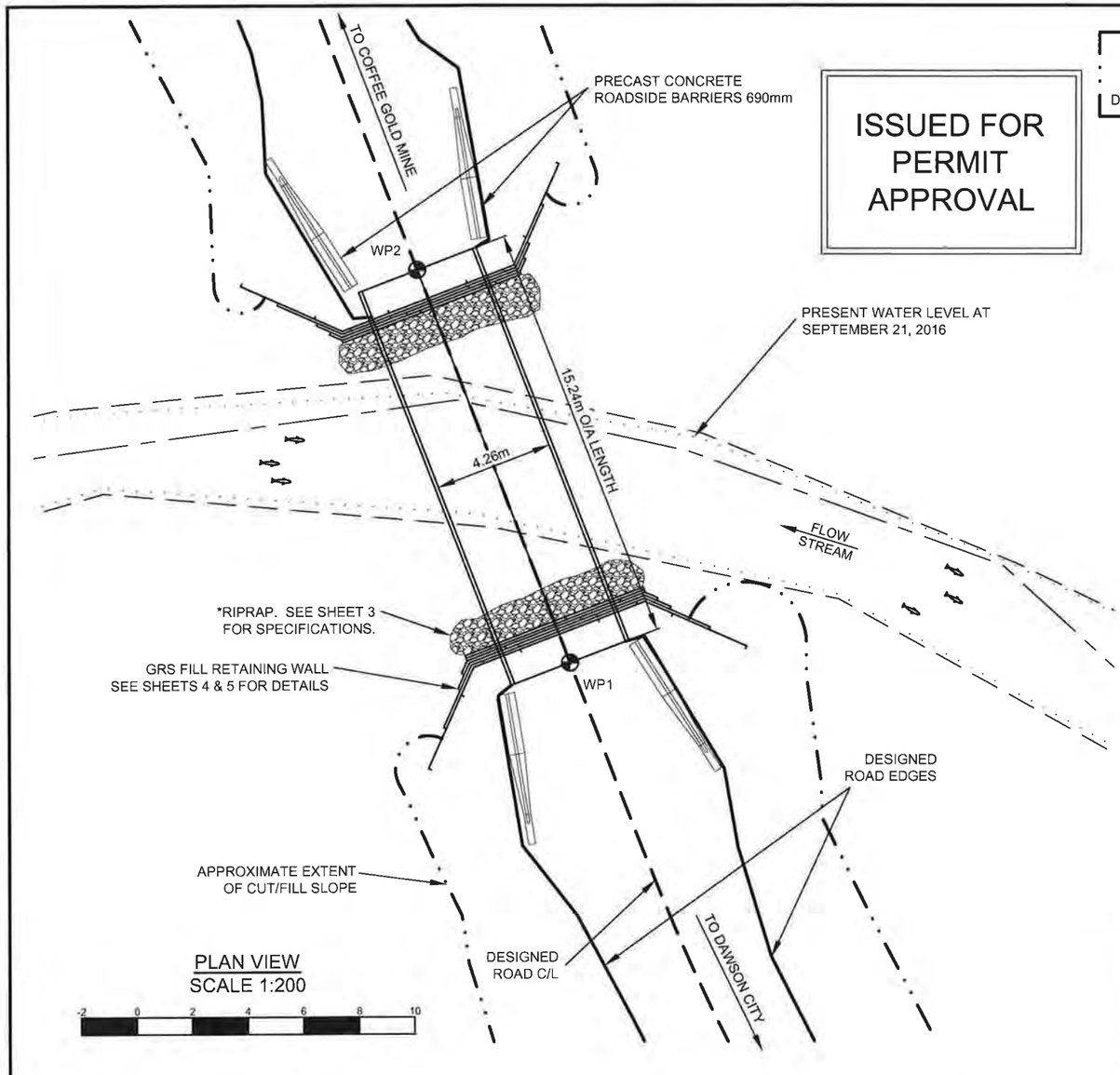
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS

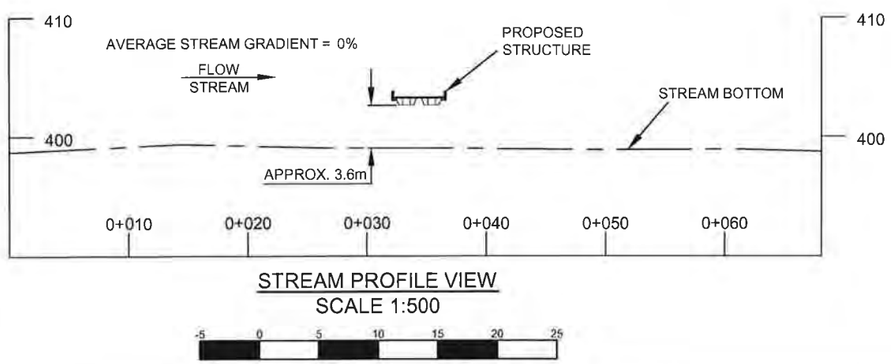
ISSUED FOR PERMIT APPROVAL

CONSTRUCT INTERVISIBLE PULLOUTS ON APPROACHES. SEE GEOMETRIC ROAD DESIGN FOR PULLOUT LOCATIONS.



PLAN VIEW
SCALE 1:200

-2 0 2 4 6 8 10



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

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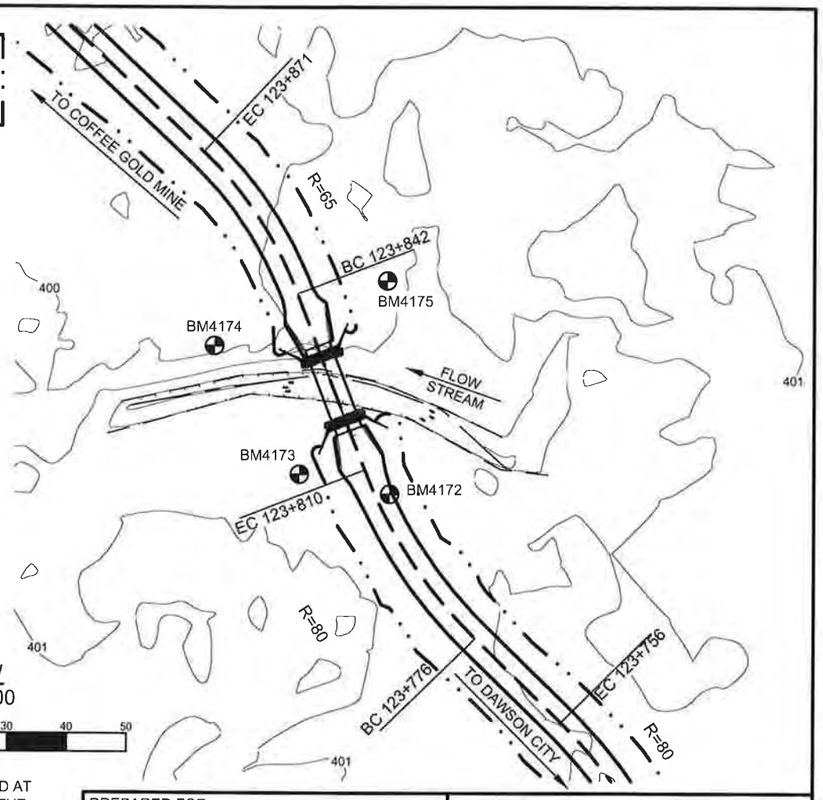

PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

WORKPOINTS ARE LOCATED AT THE CENTER OF DECK AT THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4172	BM4173	45°14'02"	12.65
	BM4173	BM4174	82°26'34"	11.16
	BM4174	BM4175	52°43'58"	26.88
	BM4175	BM4172	14°45'05"	25.99
2	BM4172	BM4173	51°25'43"	27.75
	BM4173	BM4174	41°21'51"	21.77
	BM4174	BM4175	20°49'38"	17.31
	BM4175	BM4172	47°38'44"	16.08

WP	N	E	ELEV
WP1	6975975.85	603669.93	402.96
WP2	6975990.07	603664.46	403.44
BM4172	6975965.17	603676.71	400.60
BM4173	6975968.49	603661.54	400.57
BM4174	6975990.11	603647.14	402.49
BM4175	6976001.08	603676.18	401.74

CAUTION:

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PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 123+817
SITE: BALLARAT PROPER
(62° 53' 56.15" N, 138° 57' 36.19" W)

Signature REDACTED

DWG No:1343-2-MD12-002

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD12.dwg
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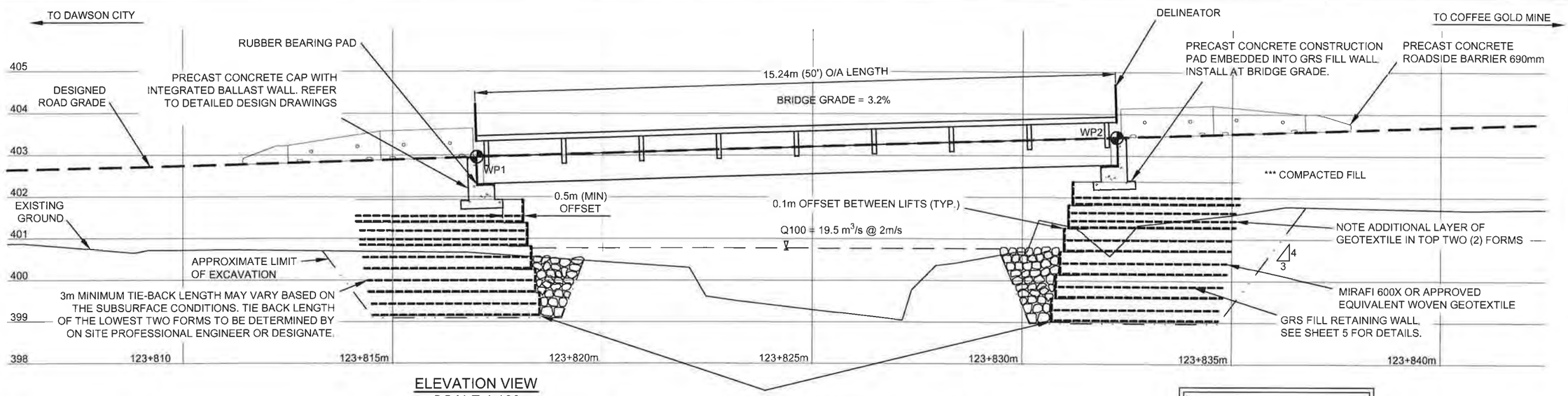
DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

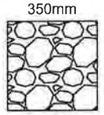
ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 10kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	1(90)
50%	10(195)
85%	30(280)

NOMINAL THICKNESS OF RIPRAP 350mm

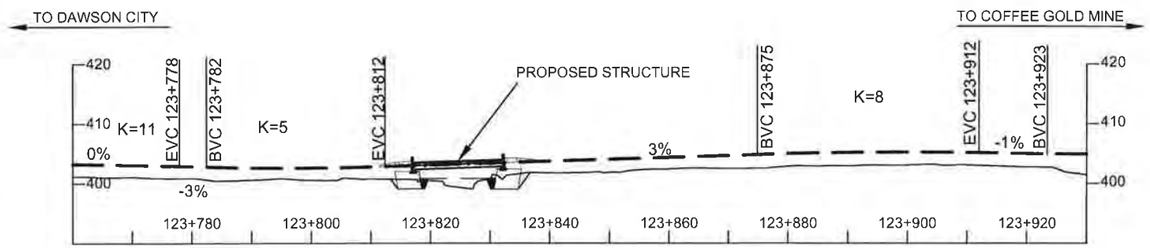


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 25m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
3	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
37	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
260	GALVANIZED WIRE STRUTS - 4 GAUGE
74	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

CAUTION:

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PH.: 250-287-9174 FAX: 866-235-6943

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SITE: BALLARAT PROPER
(62° 53' 56.15" N, 138° E

Signature REDACTED

DWG No:1343-2-MD12-003

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD12.dwg
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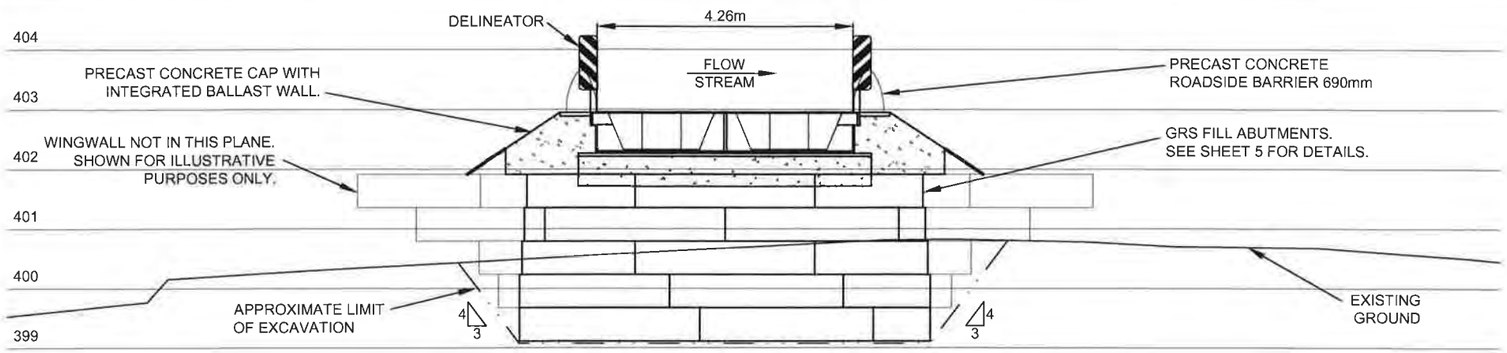
DESIGNED ROAD GRADE — — —
HIGH WATER LEVEL — — —
MIRAFI 600x OR EQUIVALENT ----------
WORKPOINT WP1



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

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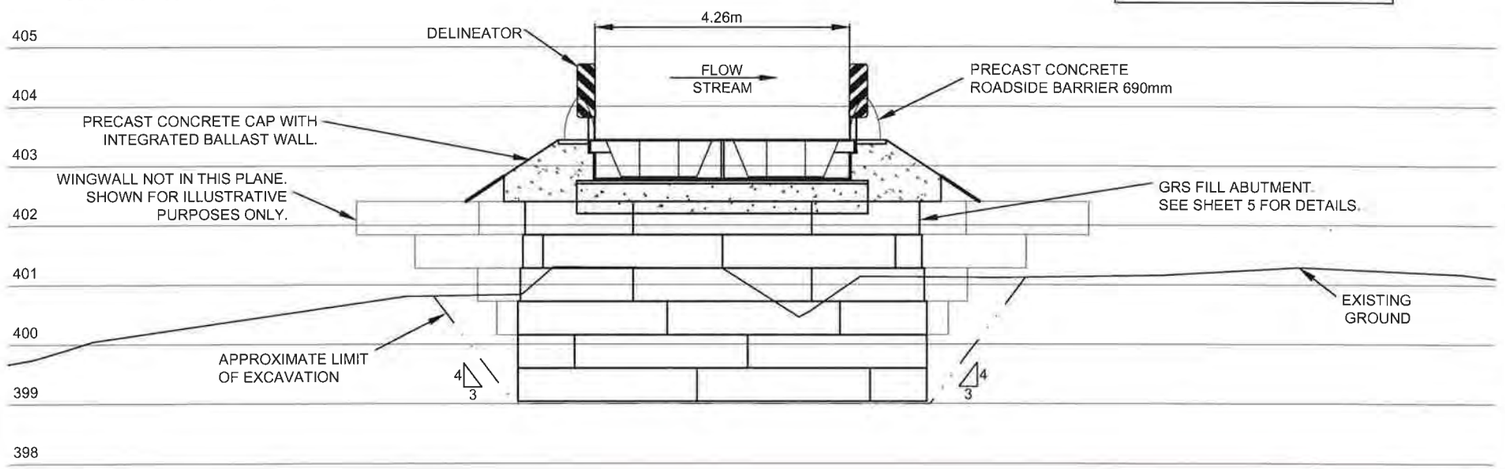

COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

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PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 123+817
SITE: BALLARAT PROPER
(62° 53' 56.15" N, 138° 57' 36.19" W)

Signature REDACTED

DWG No:1343-2-MD12-004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
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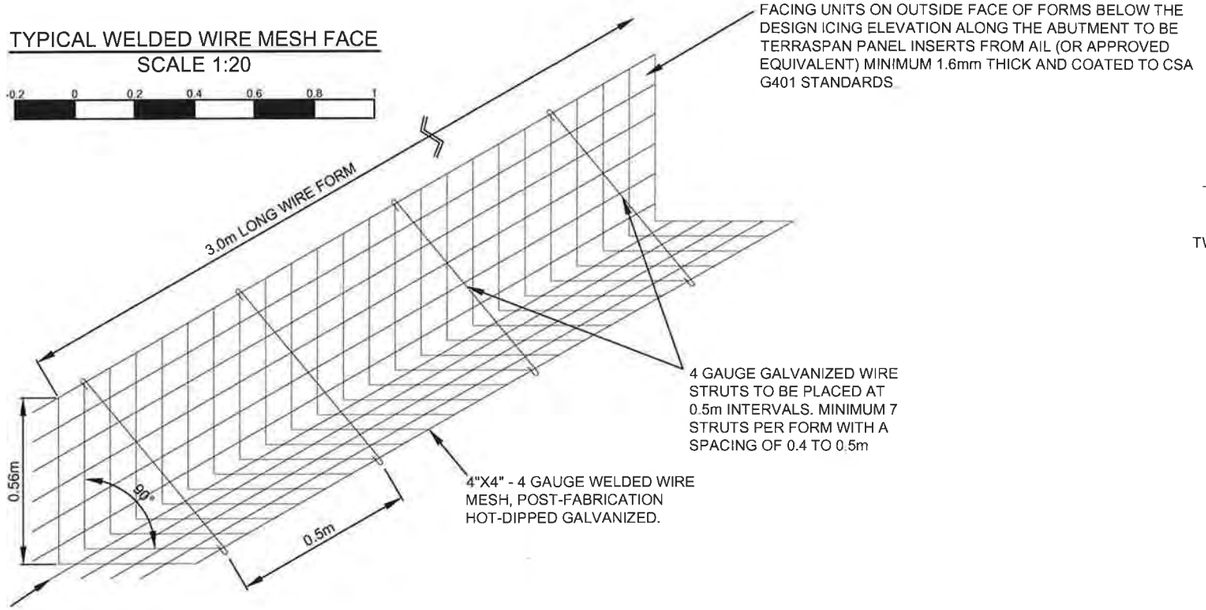
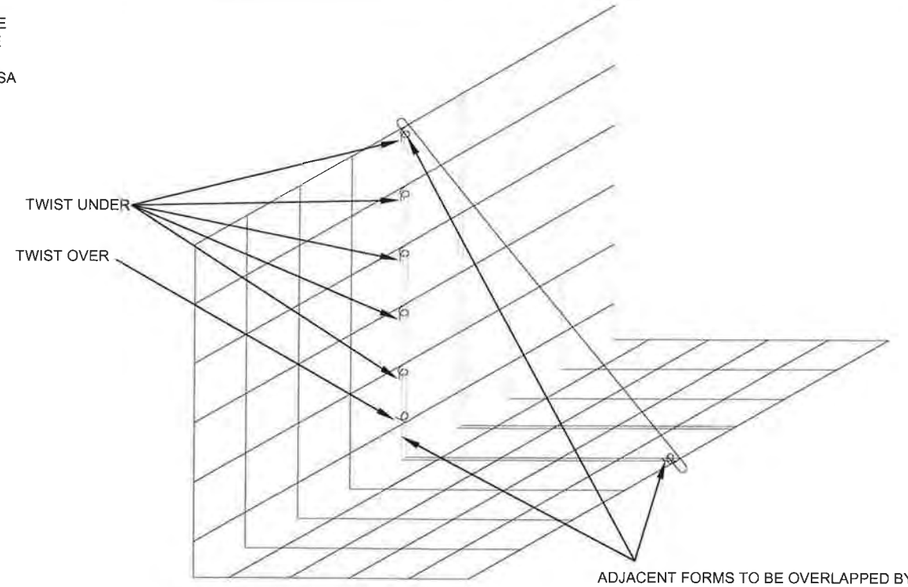
ENGINEER

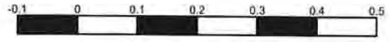
LIMIT OF EXCAVATION

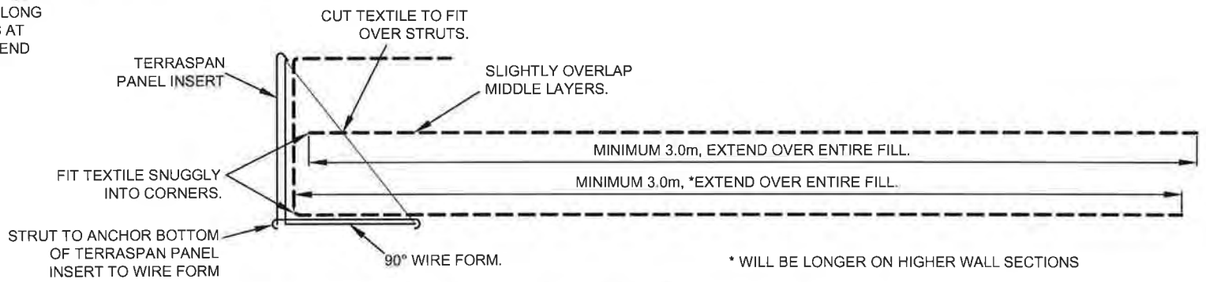
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20



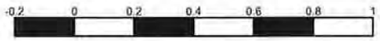


TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360° ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

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DWG No:1343-2-MD12-005

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
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MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - COFFEE GOLD MINE APPROACH FROM CROSSING



PHOTO #2 - DAWSON CITY APPROACH FROM CROSSING



PHOTO #3 - DOWNSTREAM FROM CROSSING



PHOTO #4 - UPSTREAM FROM CROSSING

PREPARED FOR:

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DWG No:1343-2-MD12-006

SHEET: 6 OF 6

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COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

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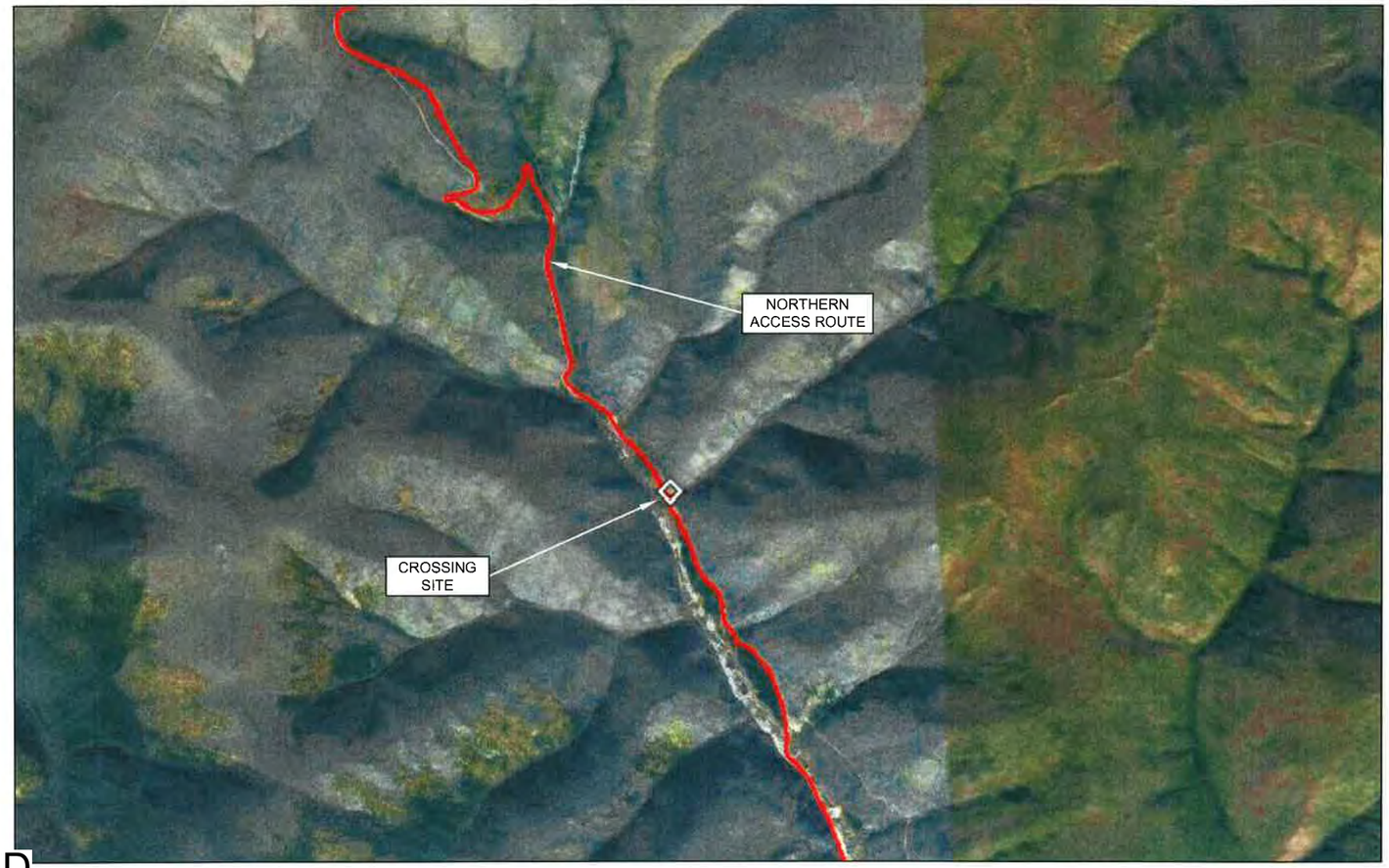
NOT TO SCALE

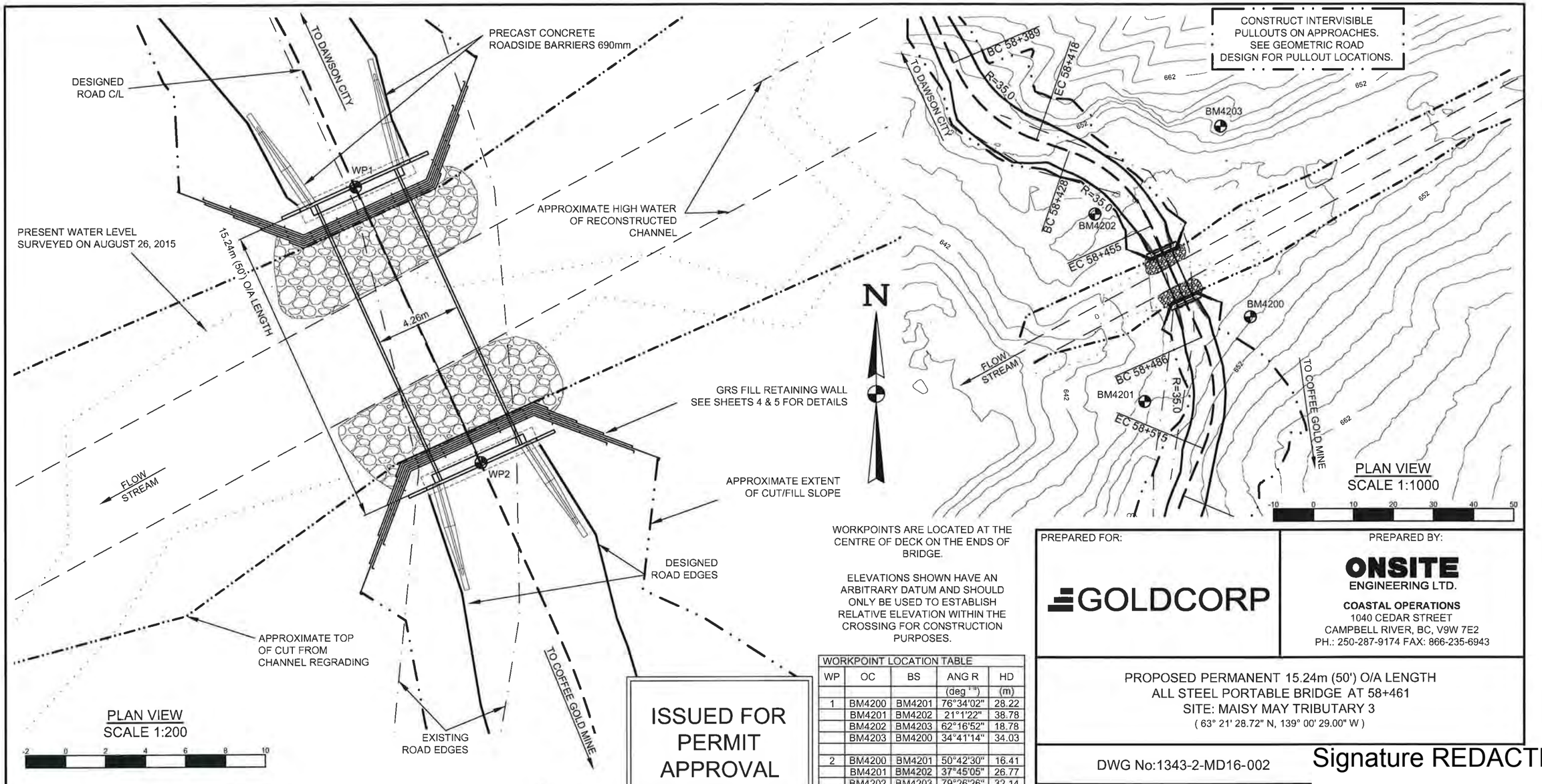


Signature REDACTED

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 58+461
SITE: MAISY MAY TRIBUTARY 3
(63° 21' 28.72" N, 139° 00' 29.00" W)

ISSUED FOR PERMIT APPROVAL

DWG No:1343-2-MD16-001	SHEET: 1 OF 6	DESIGN BY: SCOTT WILSON, P. ENG DESIGN DATE: MAY 3, 2016 REVIEWED BY: JEREMY ARAKI, P. ENG DRAWN BY: JUSTIN BEVERIDGE, EIT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATE: AUGUST 26, 2015 FILE NAME: MD16.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES SHEET 5 OF 6 - GRS DETAILS SHEET 6 OF 6 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



ISSUED FOR PERMIT APPROVAL

NOTE THAT THIS CHANNEL IS MODIFIED / DISTURBED UPSTREAM. THIS CHANNEL EXPERIENCES SIGNIFICANT ICE ACCUMULATIONS. THE CHANNEL REGRADING IS INTENDED TO IMPROVE FLOW IN THIS SECTION OF THE CHANNEL AND PROVIDE CLEARANCE FOR ICE ACCUMULATIONS.

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK ON THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4200	BM4201	76°34'02"	28.22
	BM4201	BM4202	21°1'22"	38.78
	BM4202	BM4203	62°16'52"	18.78
	BM4203	BM4200	34°41'14"	34.03
2	BM4200	BM4201	50°42'30"	16.41
	BM4201	BM4202	37°45'05"	26.77
	BM4202	BM4203	79°26'26"	32.14
	BM4203	BM4200	19°46'07"	45.36

WP	N	E	ELEV
WP1	7027032.24	599642.32	648.74
WP2	7027018.34	599648.58	648.74
BM4200	7027014.96	599664.64	650.02
BM4201	7026993.67	599638.19	647.46
BM4202	7027040.84	599625.63	648.46
BM4203	7027062.88	599657.11	655.91

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

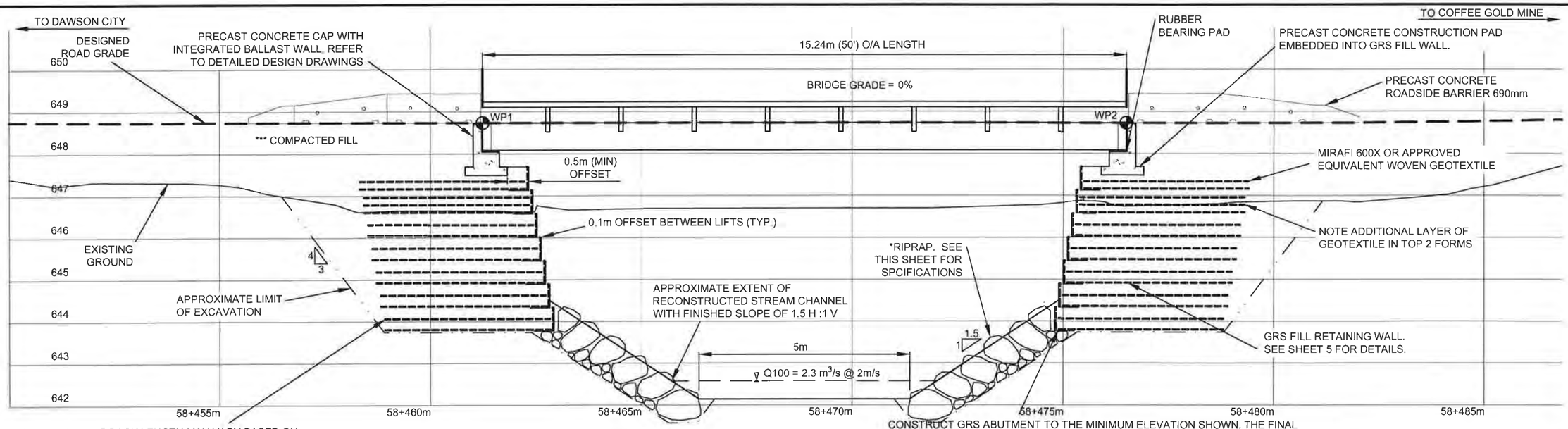
PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 58+461
SITE: MAISY MAY TRIBUTARY 3
(63° 21' 28.72" N, 139° 00' 29.00" W)

DWG No:1343-2-MD16-002

Signature REDACTED

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: MAY 3, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD16.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
PRESENT WATER LEVEL
WORKPOINT WP1



4m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE LOOSE SILTY SAND.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

PARTIAL MATERIALS LIST	
5	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
76	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
500	GALVANIZED WIRE STRUTS - 4 GAUGE
152	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBREAM FOR SPECIFICATIONS

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm

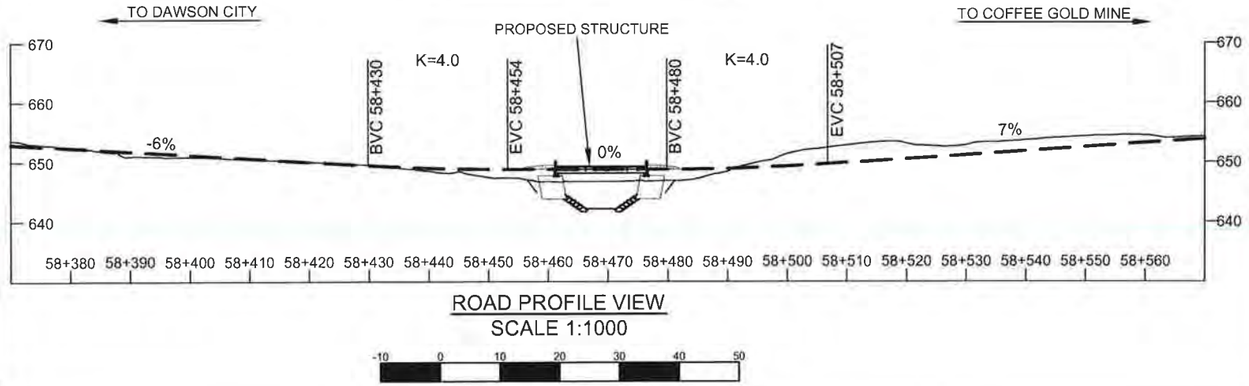


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 80m³ OF RIPRAP REQUIRED.

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

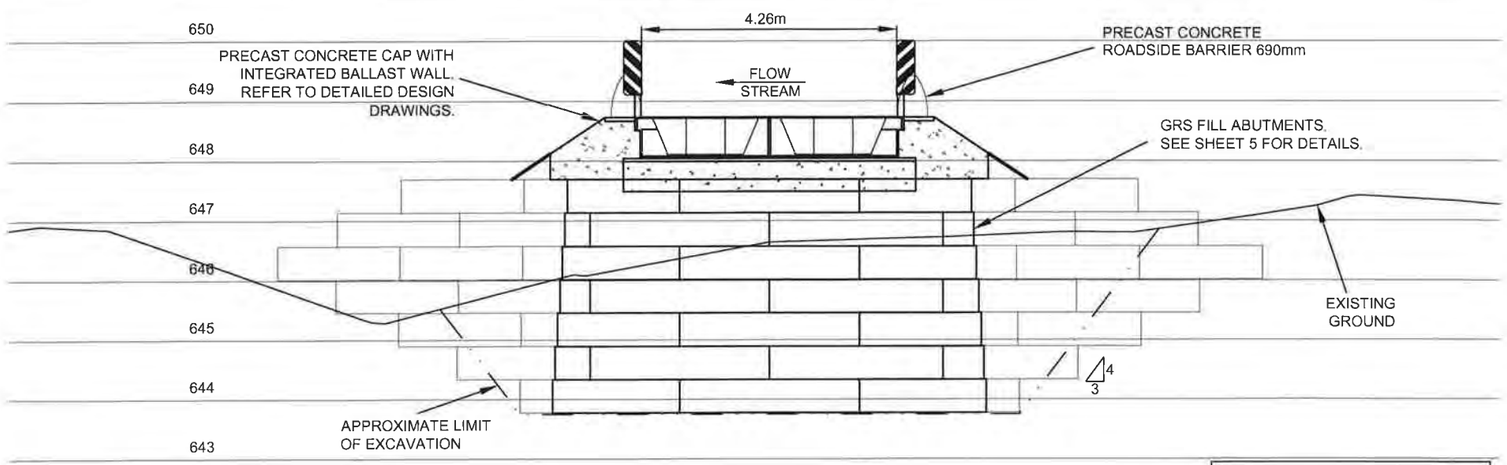
PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 58+461
SITE: MAISY MAY TRIBUTARY 3
(63° 21' 28.72" N, 139° 00' 29.00" W)

DWG No:1343-2-MD16-003

Signature REDACTED

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: MAY 3, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD16.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE — — —
HIGH WATER LEVEL — — —
MIRAFI 600x OR EQUIVALENT ----------
APPROX. LIMIT OF EXC. — · —



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

CAUTION:

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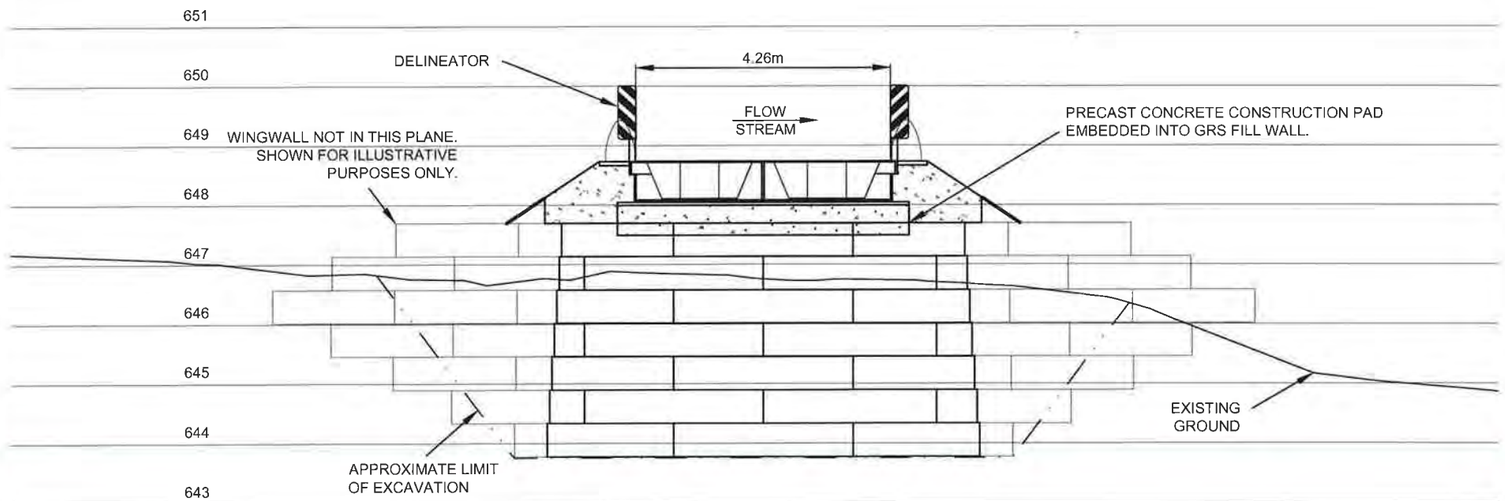
INTENDED TO BE PRINTED ON 11"X17" PAPER.

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php .
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 58+461
SITE: MAISY MAY TRIBUTARY 3
(63° 21' 28.72" N, 139° 00' 39.00" W)

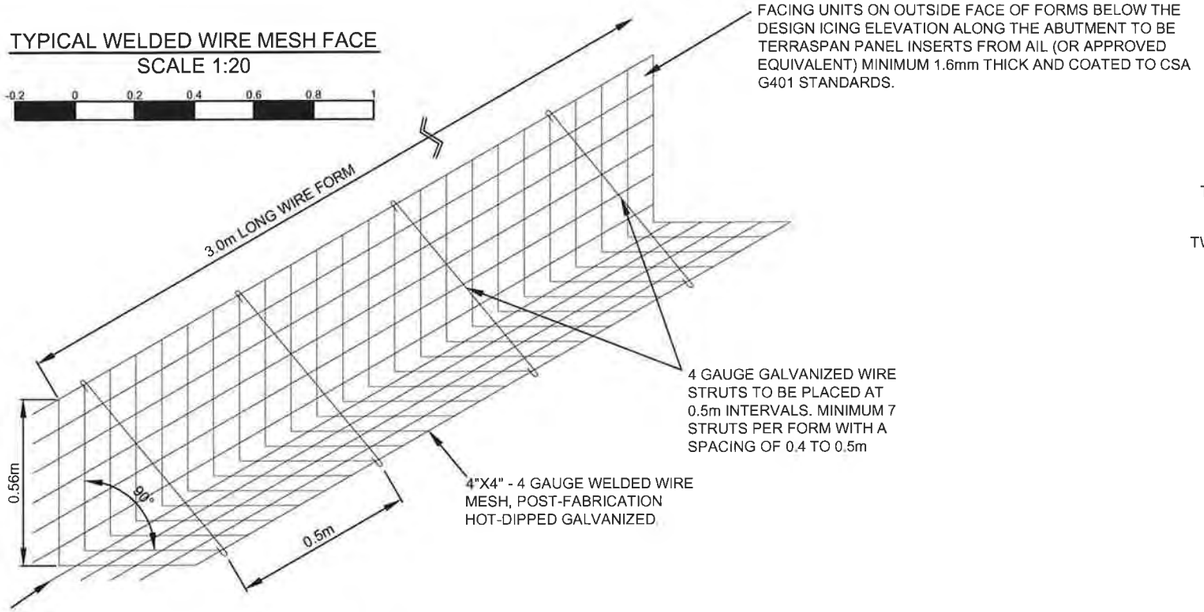
Signature REDACTED

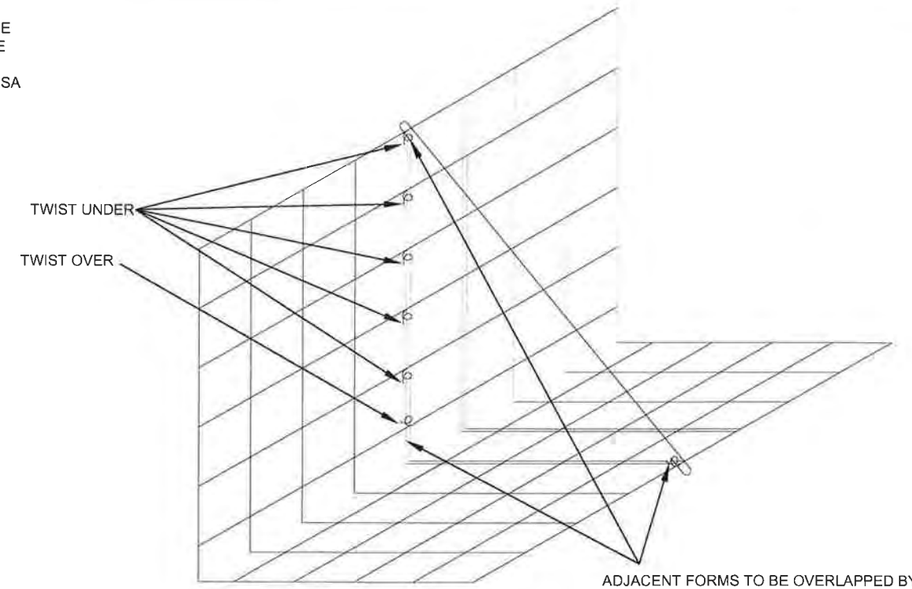
DWG No:1343-2-MD16-004

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: MAY 3, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD16.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

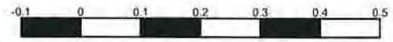
APPROX. LIMIT OF EXC. ——— - - ———

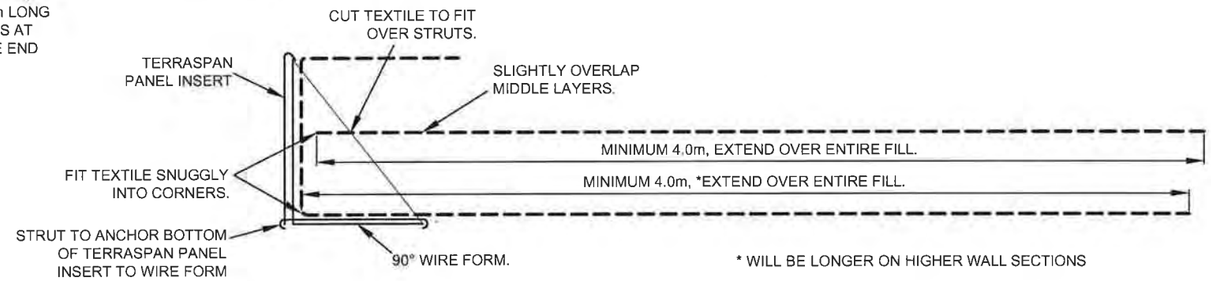
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





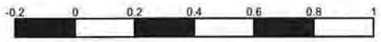
TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 4.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 58+461
SITE: MAISY MAY TRIBUTARY 3
(63° 21' 28.72" N, 139° 00' 29.00" W)

Signature REDACTED

DWG No:1343-2-MD16-005

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: MAY 3, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD16.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MIRAFI 600x
OR EQUIVALENT



PHOTO #1 - VIEW FROM COFFEE GOLD MINE APPROACH



PHOTO #2 - VIEW FROM DAWSON CITY APPROACH



PHOTO #3 - VIEW DOWNSTREAM FROM EXISTING CROSSING



PHOTO #4 - VIEW UPSTREAM FROM EXISTING CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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(63° 21' 28.72" N, 139° 00' 29.00" W)

DWG No:1343-2-MD16-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P. ENG
DESIGN DATE: MAY 3, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG
DRAWN BY: JUSTIN BEVERIDGE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD16.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

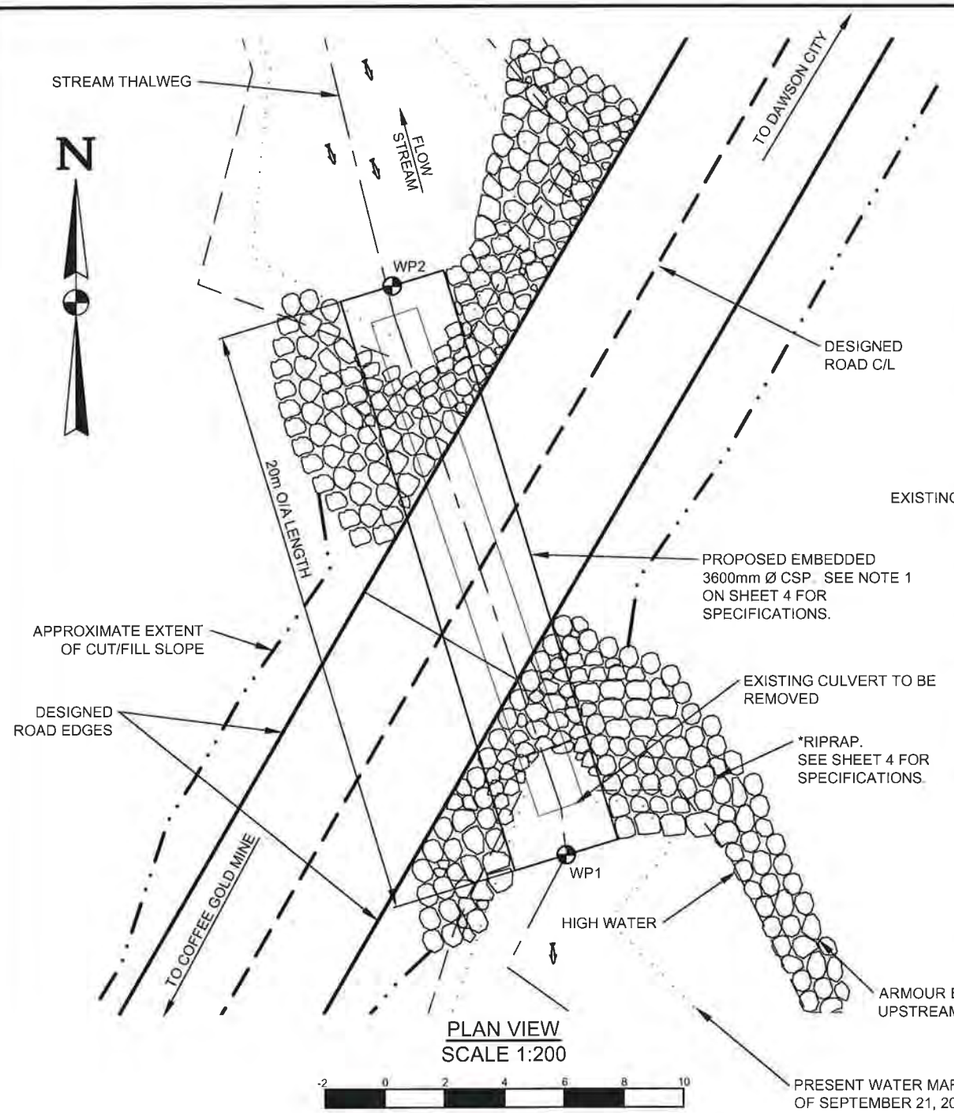
S
D
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752 SITE: EUREKA CREEK

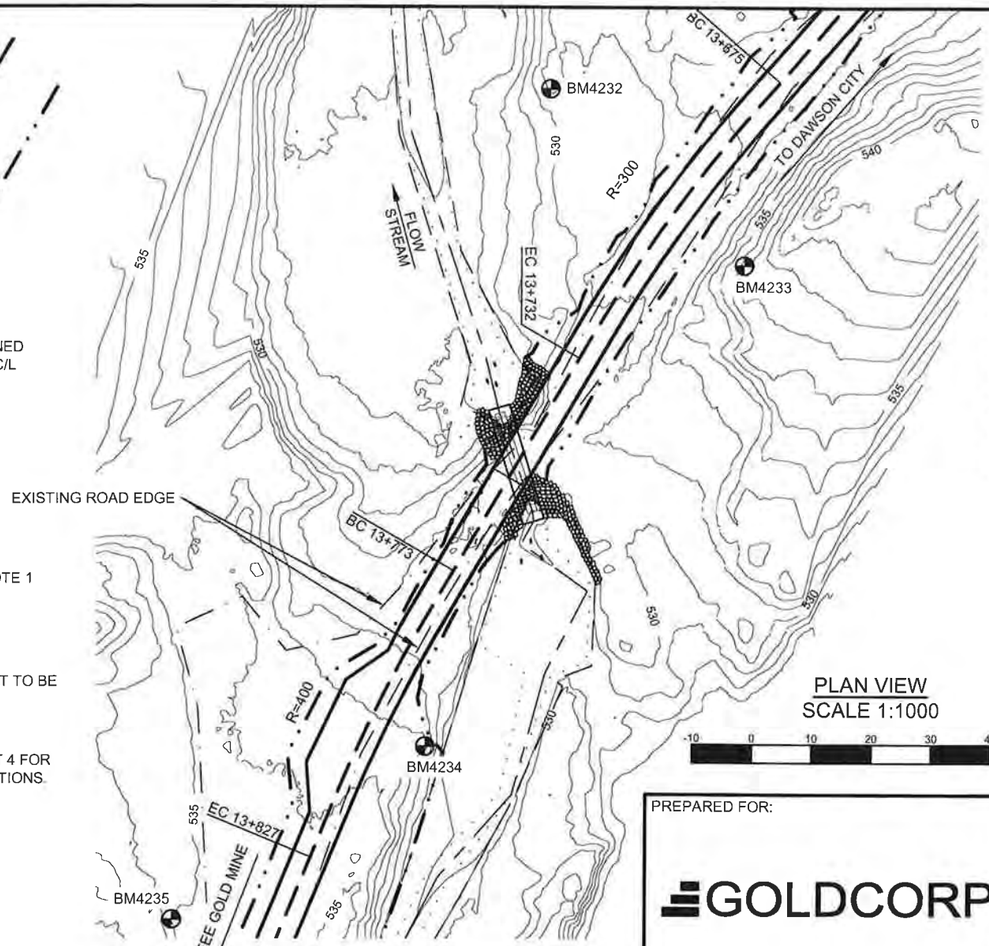
(63° 36' 23.39" N, 138° 49' 45.67" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-MD24-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: MAY 16, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: MD24.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



PLAN VIEW
SCALE 1:200



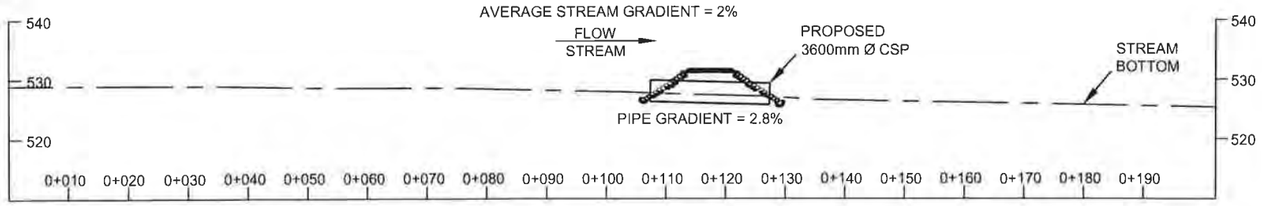
PLAN VIEW
SCALE 1:1000

WORKPOINTS ARE LOCATED AT CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4232	BM4233	49°38'28"	72.67
	BM4233	BM4234	5°51'6"	55.47
	BM4234	BM4235	149°52'37"	41.91
	BM4235	BM4232	17°46'5"	90.09
2	BM4232	BM4233	56°29'37"	54.13
	BM4233	BM4234	26°21'35"	47.23
	BM4234	BM4235	136°32'57"	58.30
	BM4235	BM4232	8°5'53"	101.89

WP	N	E	ELEV
WP1	7054970.50	607652.82	526.20
WP2	7054989.64	607647.01	525.65
BM4232	7055043.12	607655.31	531.46
BM4233	7055013.64	607687.69	537.02
BM4234	7054932.62	607634.88	533.84
BM4235	7054903.51	607592.58	535.19



STREAM PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

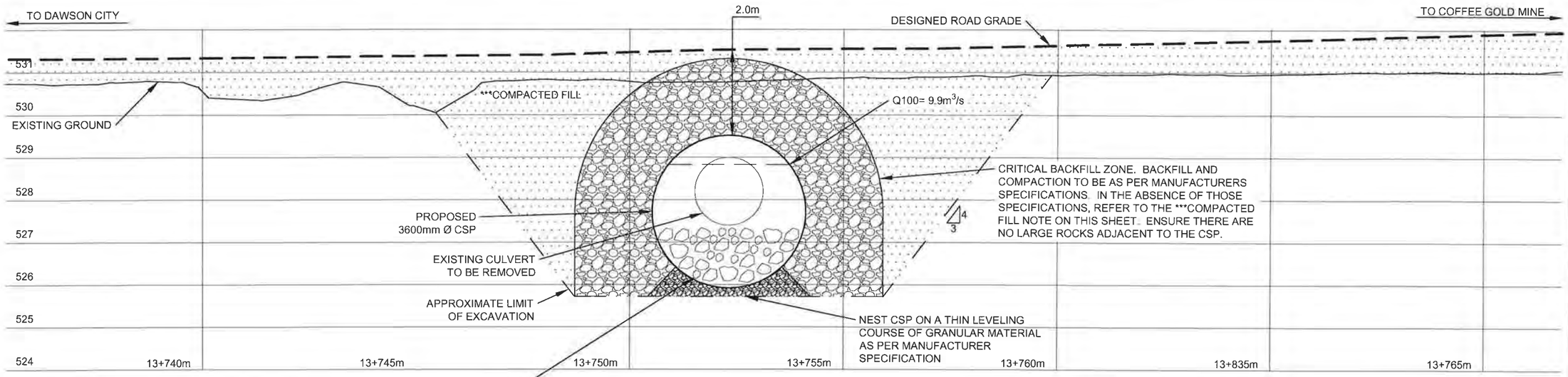
PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

Signature REDACTED

DWG No: 1343-2-MD24-002

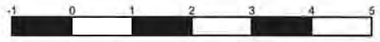
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD24.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER
EXISTING ROAD EDGES
WORKPOINT WP1



FILL CSP WITH SUBSTRATE OF INTERMIXED 0.2mØ TO 0.3mØ ROCK, SAND, AND GRAVEL. FILL CSP TO 40% OF OVERALL DIAMETER (APPROXIMATELY 1.44m DEEP). RECONSTRUCTED STREAM BOTTOM TO CLOSELY RESEMBLE THE SURROUNDING STREAM BOTTOM. THE CHANNEL SHOULD BE FLUSHED WITH WATER THAT IS PUMPED AWAY FROM THE CHANNEL TO HELP "SEAT AND SEAL" THE STREAM BOTTOM MATERIAL WHICH WILL HELP REDUCE POST CONSTRUCTION SEDIMENT DELIVERY AND CHANNEL DEWATERING.

ELEVATION VIEW
SCALE 1:100



SURFACE SOILS ARE ANTICIPATED TO BE **LOOSE* TAILINGS. A GEOTECHNICAL INVESTIGATION TO DETERMINE CONDITIONS AT DEPTH HAS NOT BEEN COMPLETED. SUB-EXCAVATION AND REPLACEMENT WITH FREE DRAINING COMPACTED BACK FILL MATERIAL MAY BE REQUIRED.

CAUTION:

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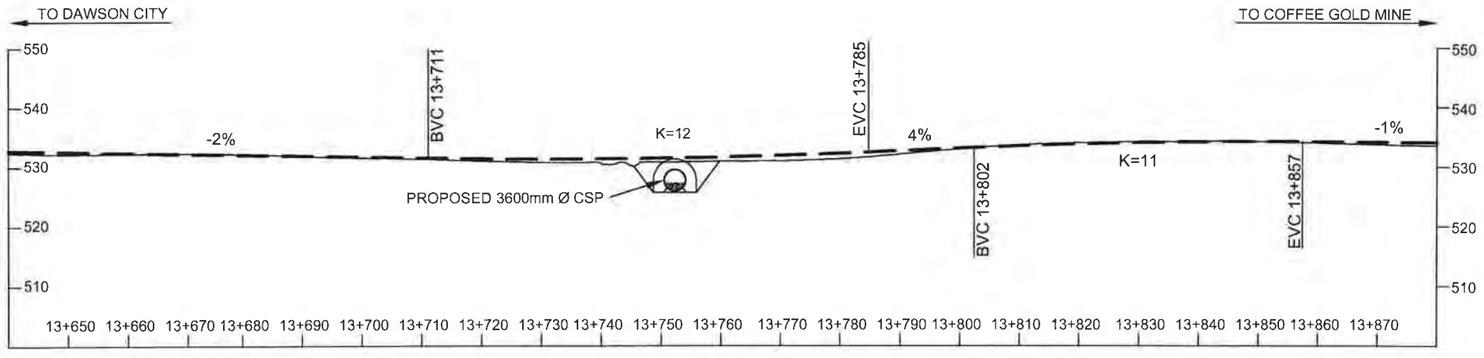
INTENDED TO BE PRINTED ON 11"X17" PAPER.

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

ISSUED FOR PERMIT APPROVAL



ROAD PROFILE VIEW
SCALE 1:1000



PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

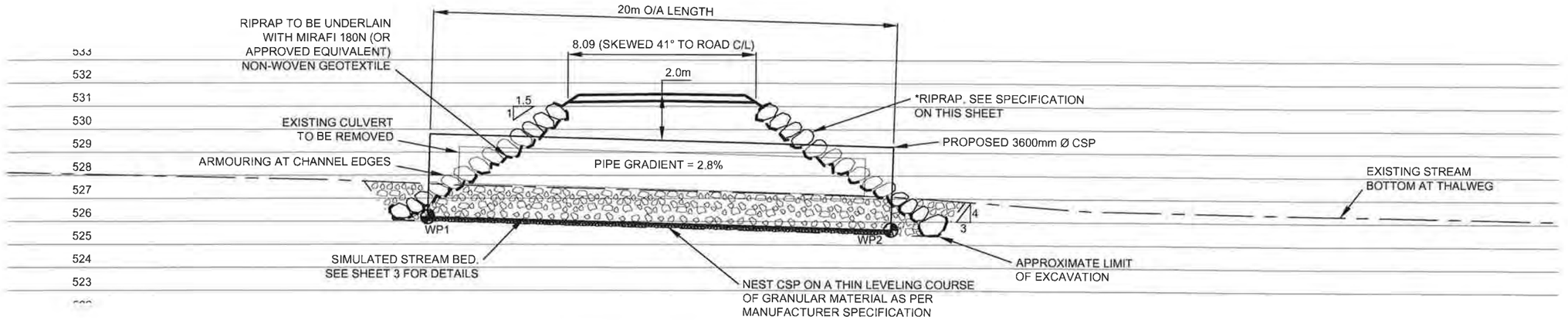
PROPOSED PERMANENT 3600mm Ø X 20m LONG EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

Signature REDACTED

DWG No: 1343-2-MD24-003

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD24.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm) TO BE DETERMINED BY FABRICATOR. SUPPLY 3600mm DIAMETER X 20m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

MATERIALS LIST	
1	3600mm Ø X 20m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

CAUTION:

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*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 160m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

Signature REDACTED

DWG No: 1343-2-MD24-004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD24.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
STREAM THALWEG
MIRAFI 180N OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM

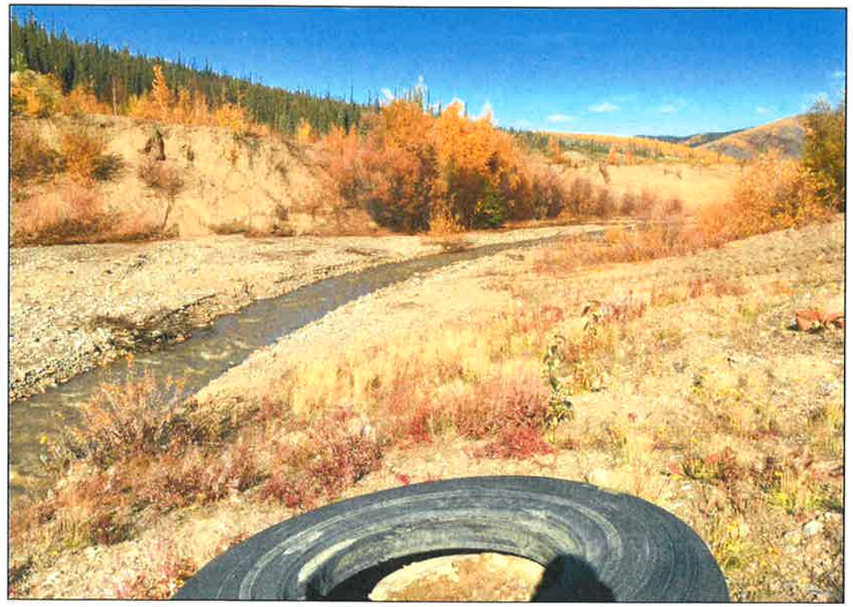

PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 3600mm Ø X 20m LONG
EMBEDDED CORRUGATED STEEL PIPE AT 13+752
SITE: EUREKA CREEK
(63° 36' 23.39" N, 138° 49' 45.67" W)

DWG No: 1343-2-MD24-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: MAY 16, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD24.DWG
SCALE: AS NOTED
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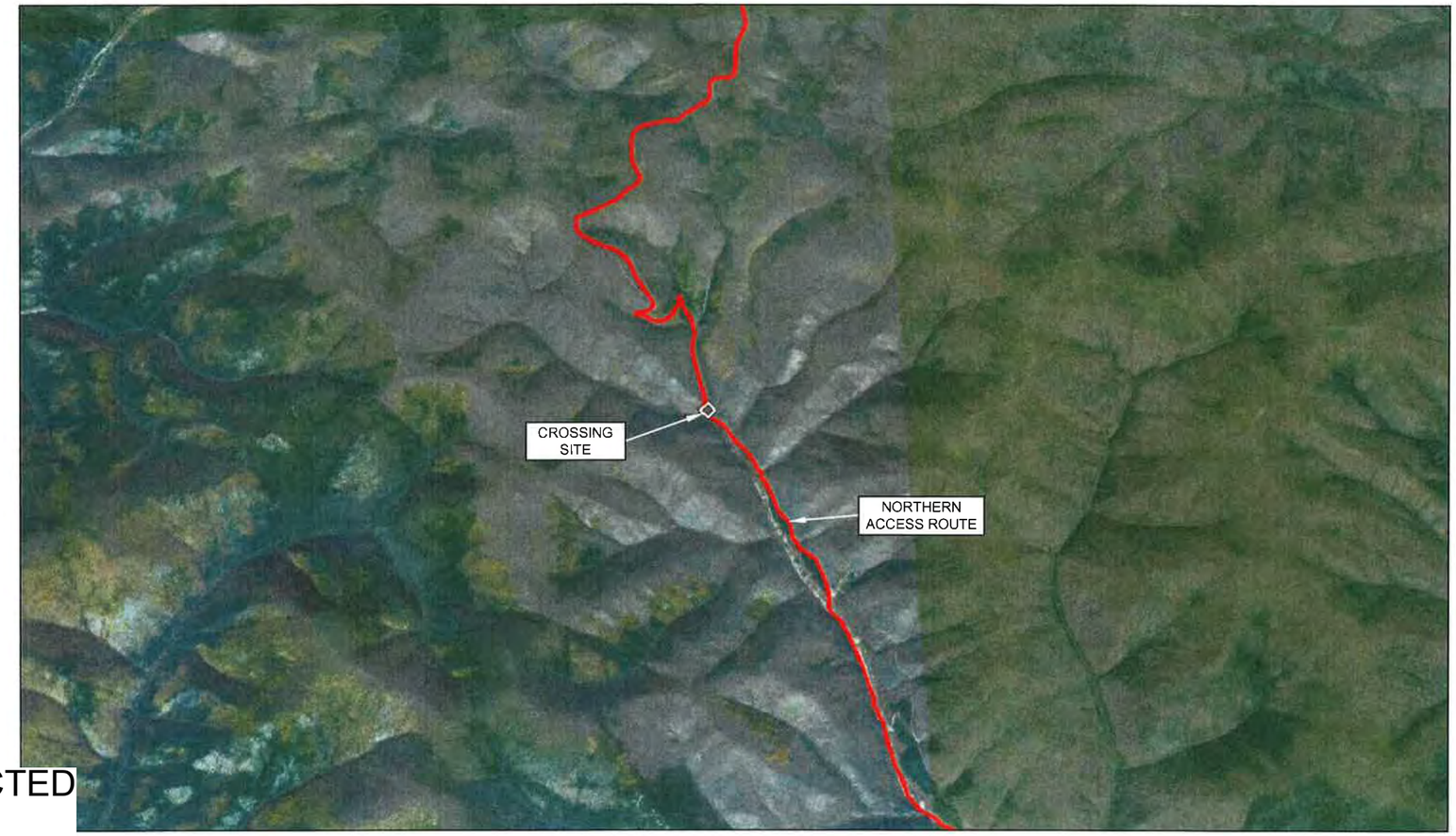
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



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NOT TO SCALE

Signature REDACTED

S
D

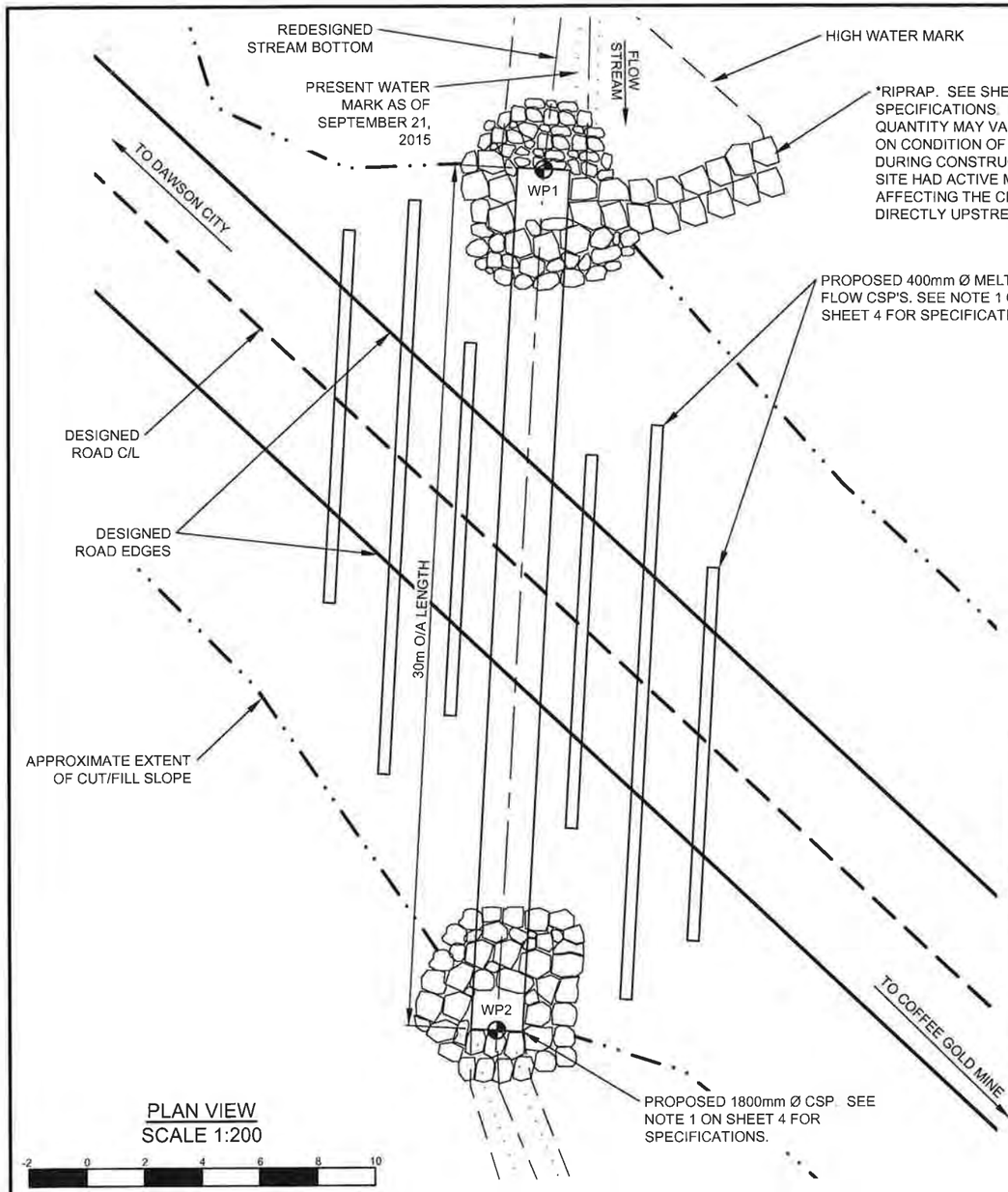
Association of Professional Engineers of Yukon

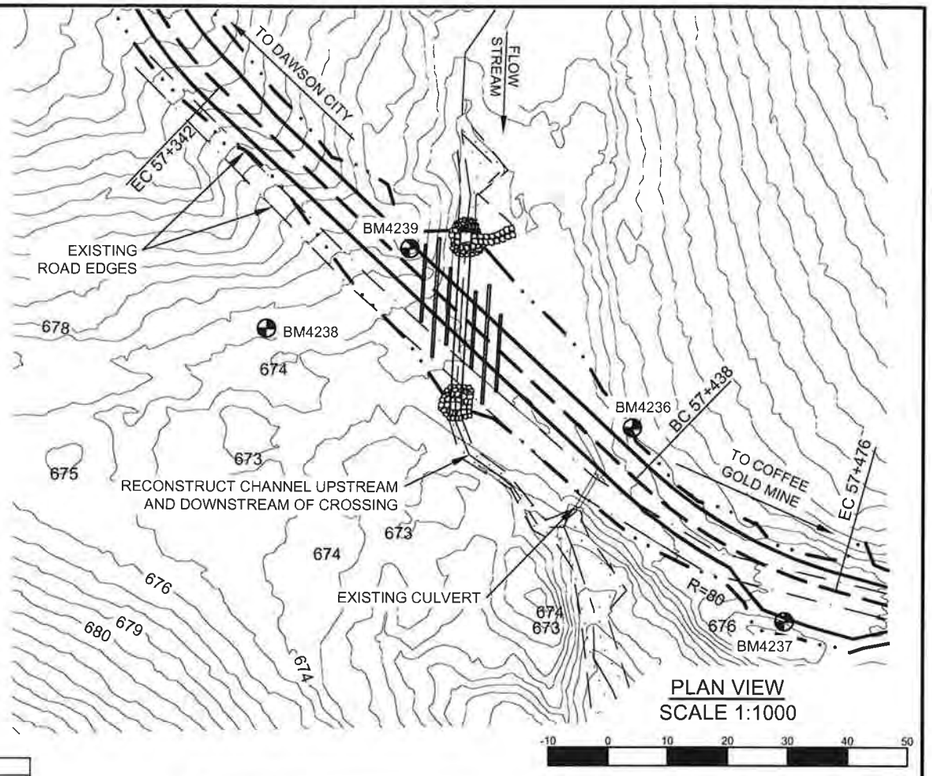
PROPOSED PERMANENT 1800mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 57+397 SITE: MAISY MAY TRIBUTARY 1

(63° 21' 53.17' N, 139° 01' 17.10" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-MD25-001	SHEET: 1 OF 5	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: APRIL 5, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: ANDREW BRABANDT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: MD25.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 5 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 5 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 5 - CSP PROFILE VIEW AND NOTES SHEET 5 OF 5 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		





CAUTION:

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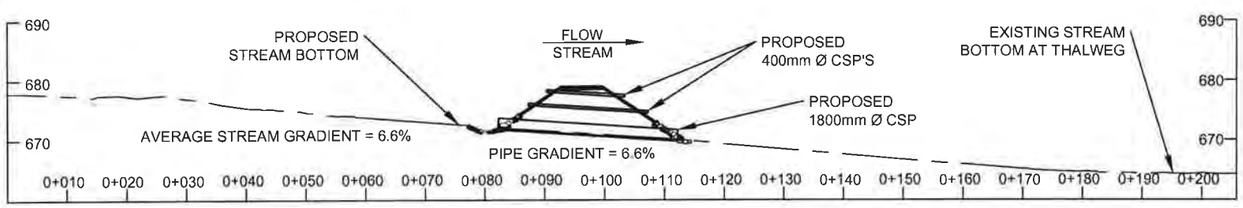
WORKPOINTS ARE LOCATED AT CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM4236	BM4237	177°31'10"	43.21
	BM4237	BM4238	21°13'06"	84.54
	BM4238	BM4239	3°20'47"	37.10
	BM4239	BM4236	304°37'12"	9.81
2	BM4236	BM4237	133°36'8"	29.83
	BM4237	BM4238	3°15'18"	65.58
	BM4238	BM4239	52°42'21"	34.52
	BM4239	BM4236	35°17'27"	28.24

WP	N	E	ELEV
WP1	7027807.64	598934.01	671.87
WP2	7027777.69	598932.33	669.89
BM4236	7027774.74	598962.02	676.37
BM4237	7027742.12	598987.43	676.24
BM4238	7027791.40	598900.65	675.52
BM4239	7027804.85	598924.61	679.08



STREAM PROFILE VIEW
SCALE 1:1000
-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1800mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 57+397

SITE: MAISY MAY TRIBUTARY 1
(63° 21' 53.17' N, 139° 01' 17.10" W)

Signature REDACTED

DWG No: 1343-2-MD25-002

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD25.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
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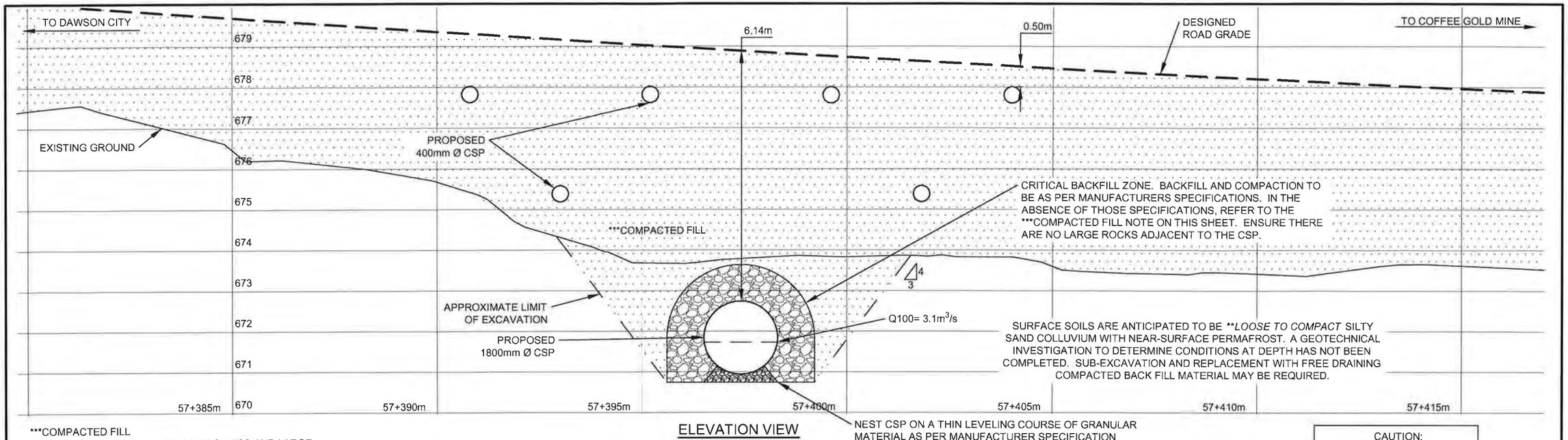
ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
WORKPOINT WP1
HIGH WATER LEVEL
STREAM THALWEG
EXISTING ROAD EDGES
PROPOSED STREAM BOTTOM



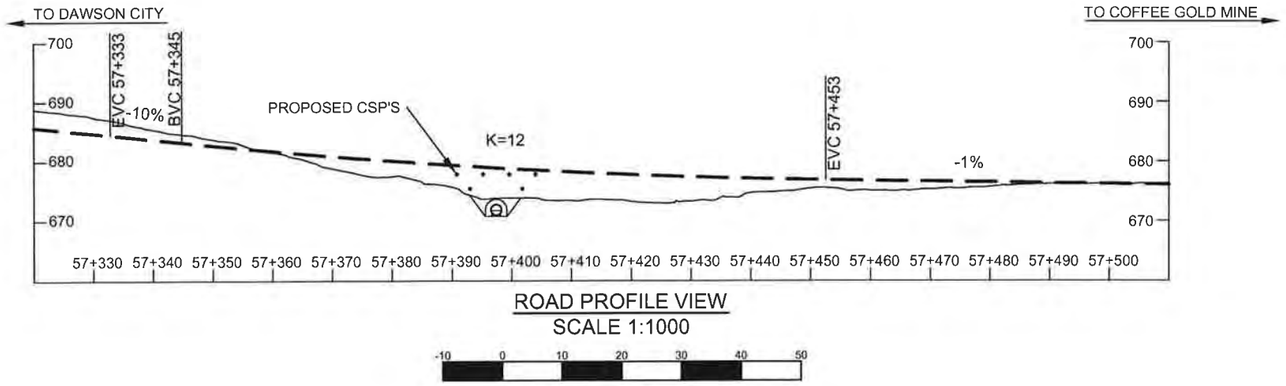
ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

NOTE THAT UPPER CULVERTS ARE INTENDED TO HELP CARRY MELT WATER FLOWS IN THE SPRING AS THE BUILT UP ICE UPSTREAM OF THE ROAD MELTS.



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

CAUTION:

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FILE NAME: MD25.DWG
SCALE: AS NOTED
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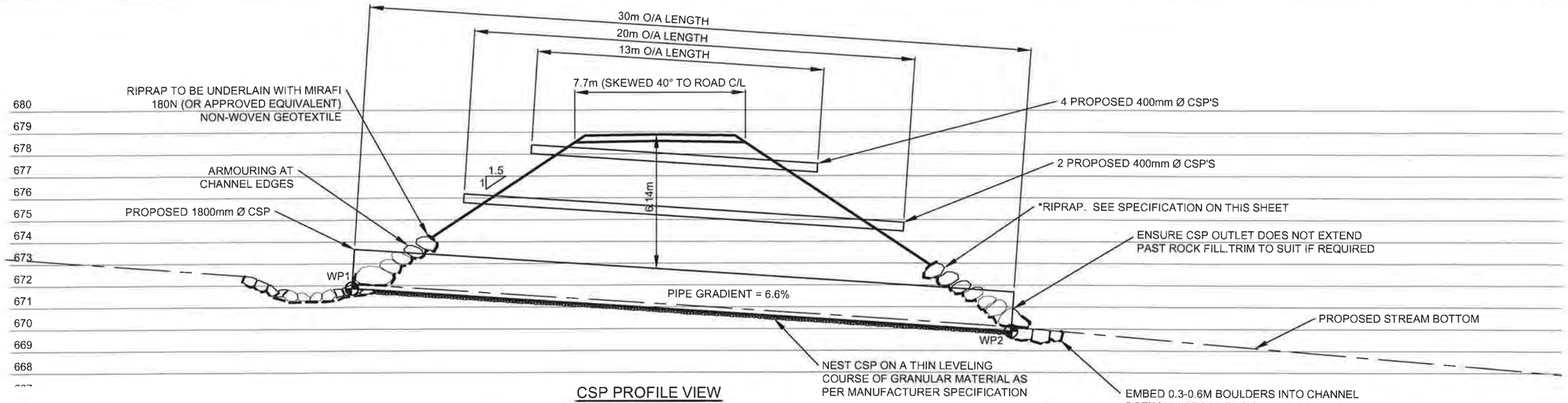
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

ISSUED FOR PERMIT APPROVAL

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2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

MATERIALS LIST	
2	400mm Ø X 20m LONG CORRUGATED STEEL PIPE
4	400mm Ø X 13m LONG CORRUGATED STEEL PIPE
1	1800mm Ø X 30m LONG CORRUGATED STEEL PIPE
1	ROLL MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm, MIN 2.8mm PLATE FOR 400mm Ø CSPS) TO BE DETERMINED BY FABRICATOR. SUPPLY 1800mm DIAMETER X 30m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - MATERIAL SELECTION AND PLACEMENT FOR SIMULATED STREAM BED MATERIALS IN THE PIPE
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP 700mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 70m³ OF RIPRAP REQUIRED.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 1800mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 57+397
SITE: MAISY MAY TRIBUTARY 1
(63° 21' 53.17' N, 139° 01' 17.10" W)

DWG No: 1343-2-MD25-004

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD25.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE

EXISTING STREAM BOTTOM —— — ——
MIRAFI 180N OR EQUIVALENT - - - - - -
WORKPOINT WP1

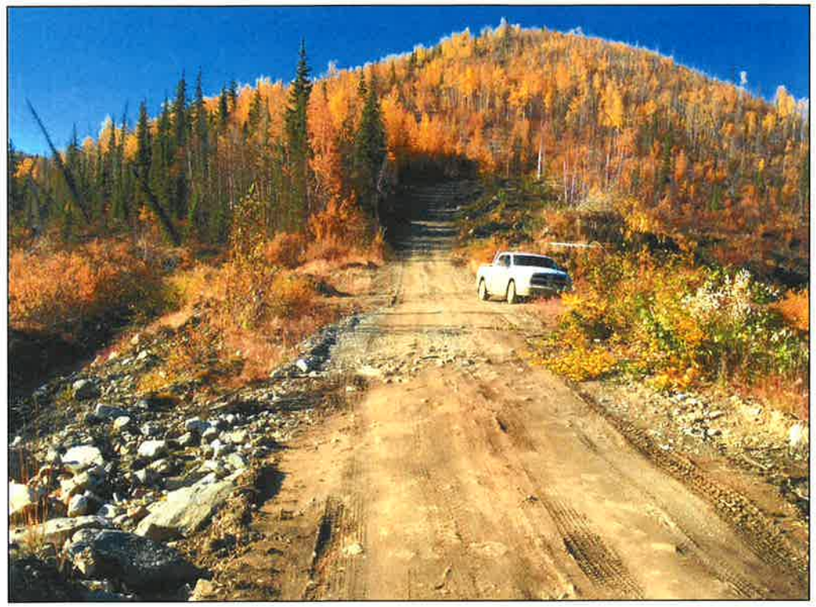

PHOTO #1 - VIEW TOWARDS DAWSON CITY

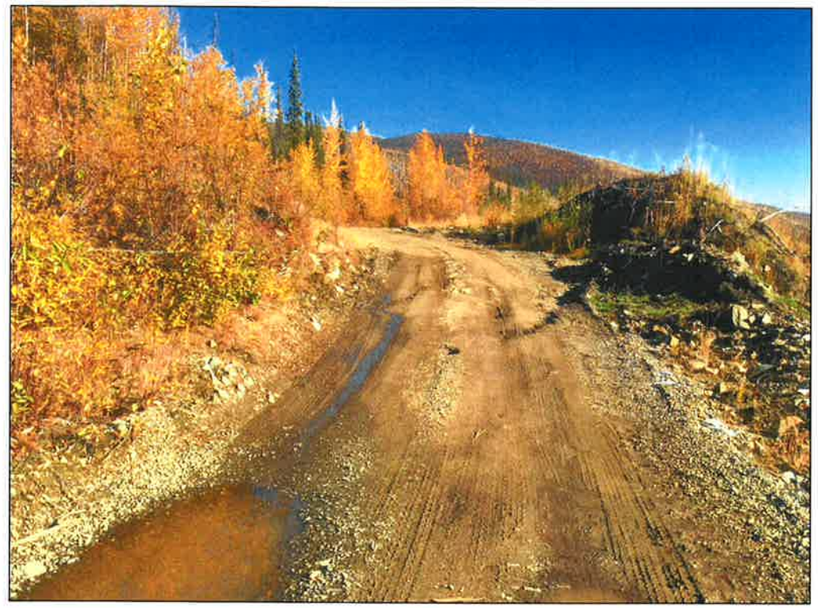

PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
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CORRUGATED STEEL PIPE AT 57+397
SITE: MAISY MAY TRIBUTARY 1
(63° 21' 53.17' N, 139° 01' 17.10" W)

DWG No: 1343-2-MD25-005

SHEET: 5 OF 5

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 5, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: MD25.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
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ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

SIG
Dat
Association of Professional
Engineers of Yukon

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER

(63° 14' 39.52" N, 138° 49' 41.67" W)

ISSUED FOR
PERMIT
APPROVAL

DWG No: 1343-2-MD26-001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

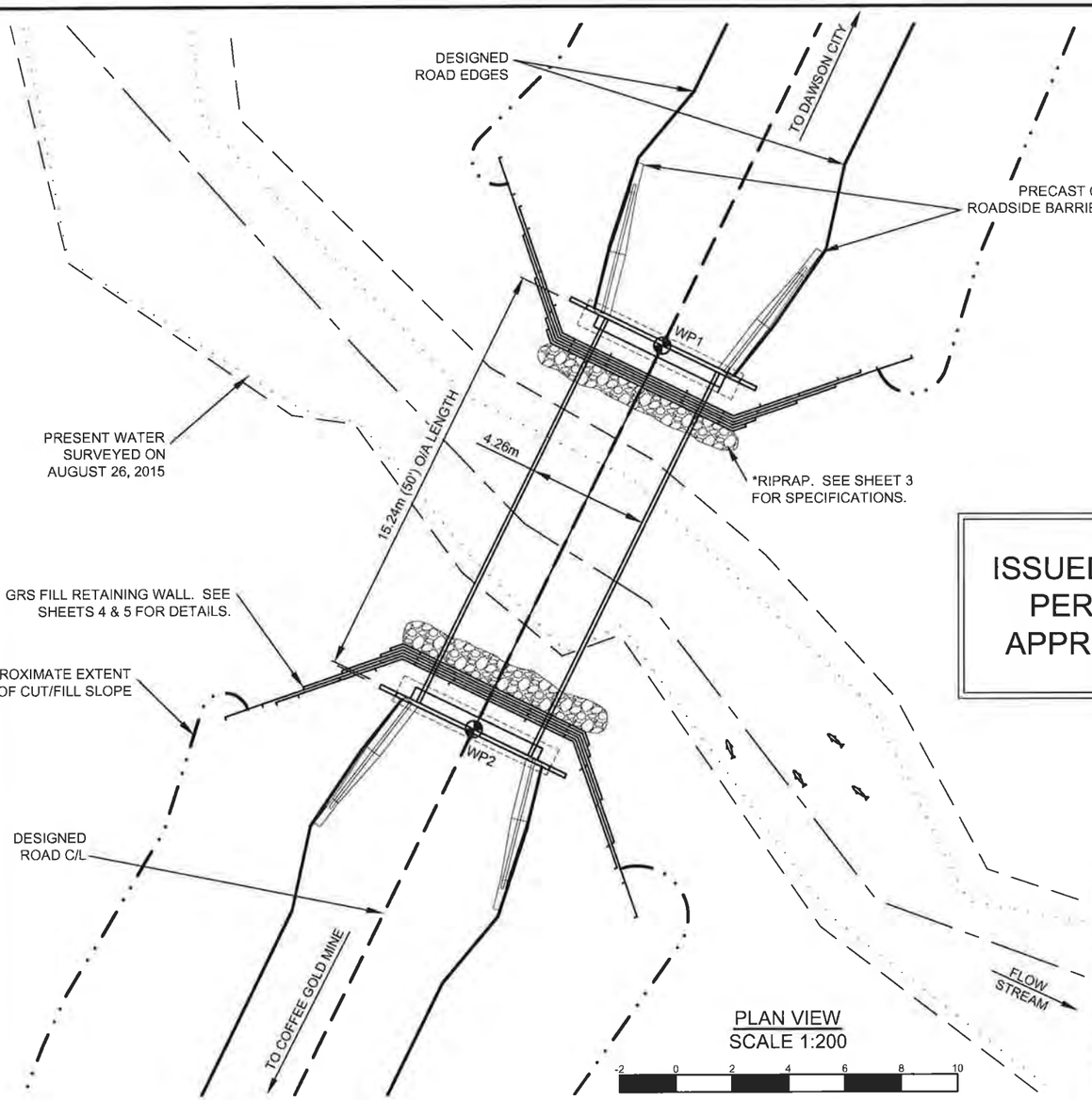
PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

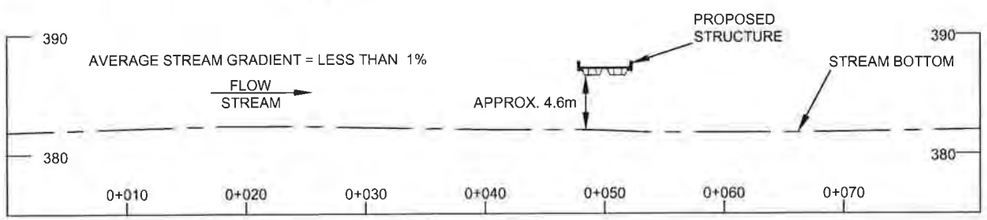
DRAWING INDEX:

SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEWS
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS AND NOTES
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

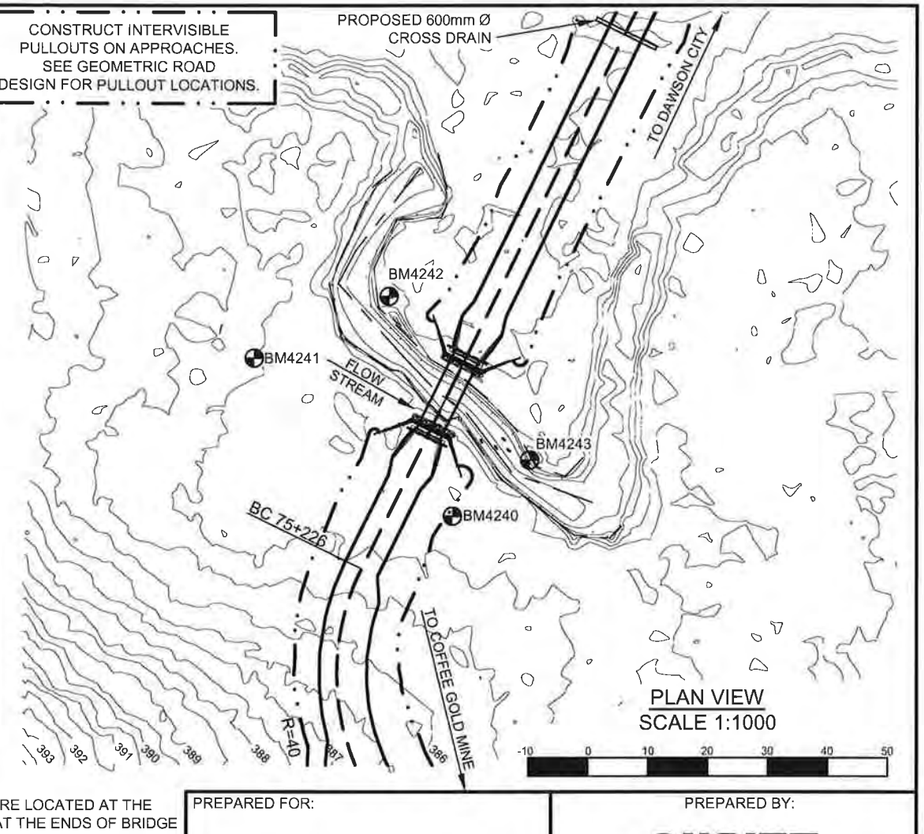
-2 0 2 4 6 8 10



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

CONSTRUCT INTERVISIBLE PULLOUTS ON APPROACHES. SEE GEOMETRIC ROAD DESIGN FOR PULLOUT LOCATIONS.



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

ISSUED FOR PERMIT APPROVAL

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4240	BM4241	56°29'21"	27.19
	BM4241	BM4242	24°03'32"	35.68
	BM4242	BM4243	347°40'58"	16.48
	BM4243	BM4240	95°21'31"	20.53
2	BM4240	BM4241	33°38'02"	14.07
	BM4241	BM4242	49°20'10"	31.81
	BM4242	BM4243	25°22'12"	24.48
	BM4243	BM4240	49°04'52"	17.67

WP	N	E	ELEV
WP1	7014666.65	609074.23	387.15
WP2	7014652.97	609067.51	387.26
BM4240	7014639.57	609071.79	384.88
BM4241	7014666.16	609038.56	385.30
BM4242	7014676.59	609061.08	384.77
BM4243	7014649.00	609084.73	384.04

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

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ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-0

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
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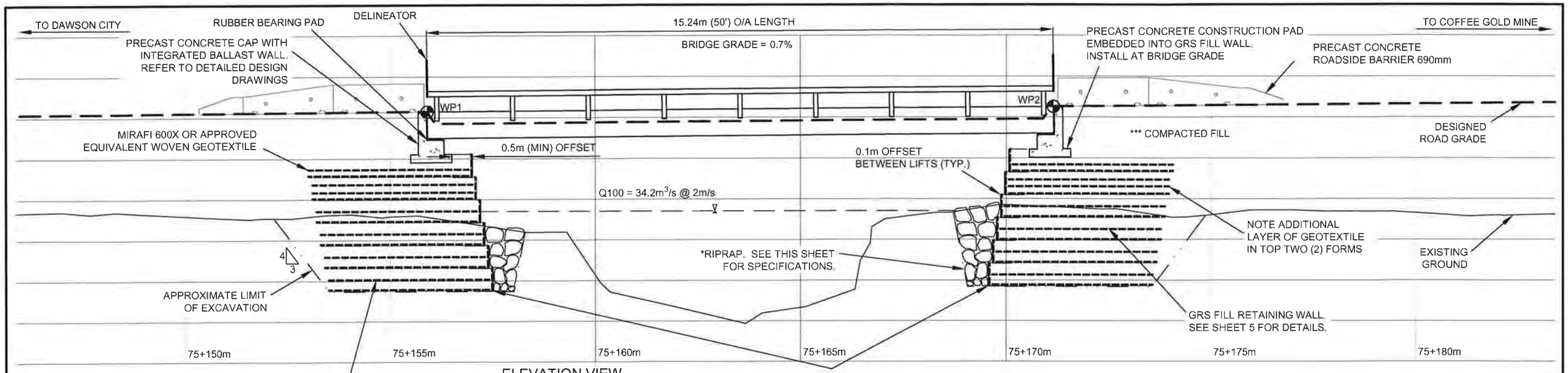
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



3m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

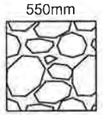
ISSUED FOR PERMIT APPROVAL

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	5(155)
50%	50(330)
85%	150(475)

NOMINAL THICKNESS OF RIPRAP 550mm

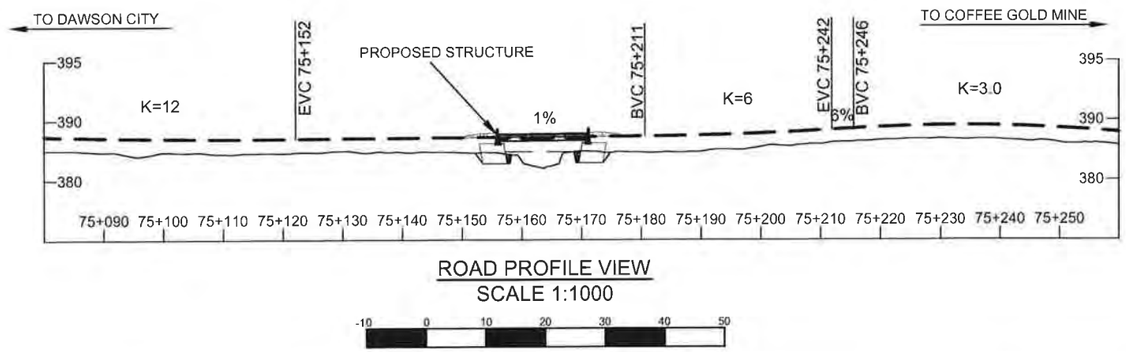


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 25m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
57	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
400	GALVANIZED WIRE STRUTS - 4 GAUGE
114	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

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GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

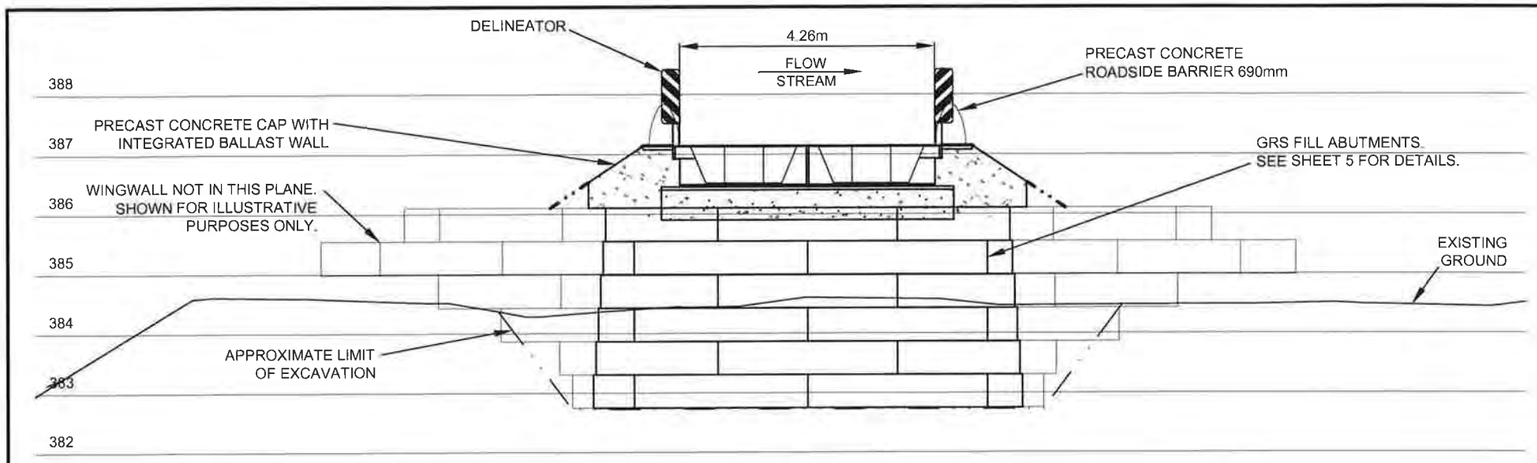
PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

Signature REDACTED

DWG No: 1343-2-MD26-003

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
EXISTING GROUND
MIRAFI 600x OR EQUIVALENT
LIMIT OF EXCAVATION



DAWSON CITY ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

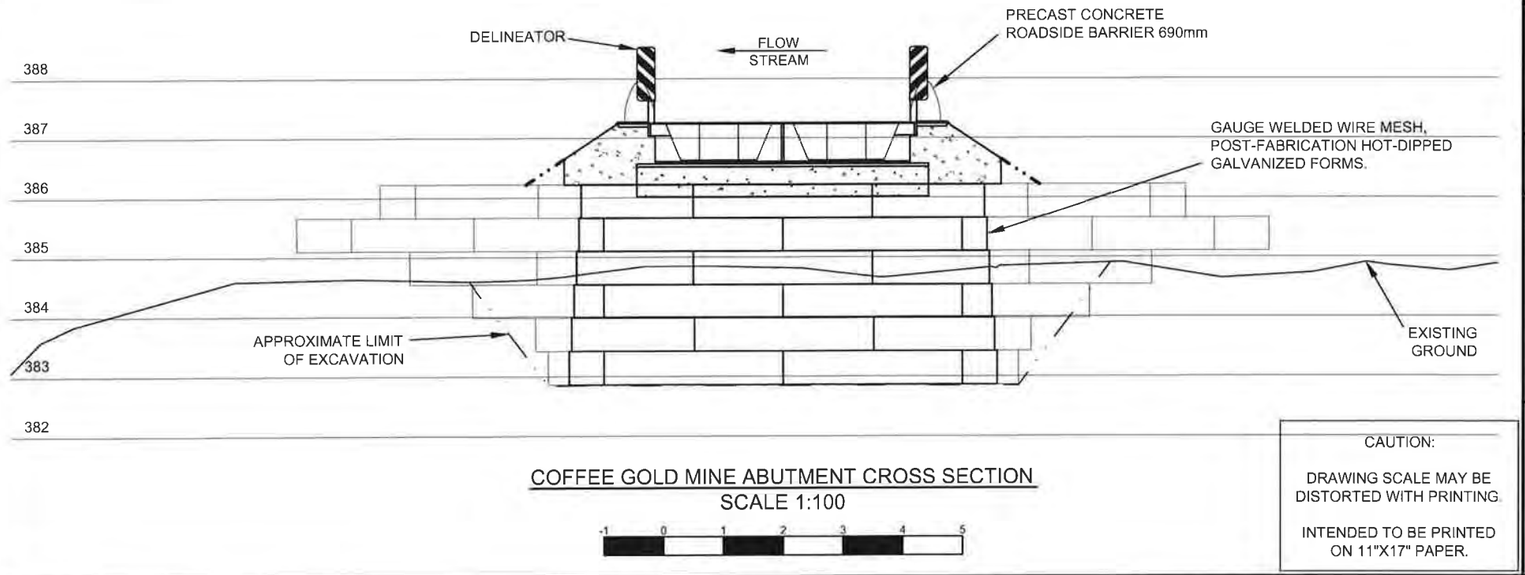
1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

ISSUED FOR PERMIT APPROVAL



COFFEE GOLD MINE ABUTMENT CROSS SECTION

SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

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ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

Signature REDACTED

DWG No: 1343-2-MD26-004

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DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
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SCALE: AS NOTED
REVISION NUMBER: 1
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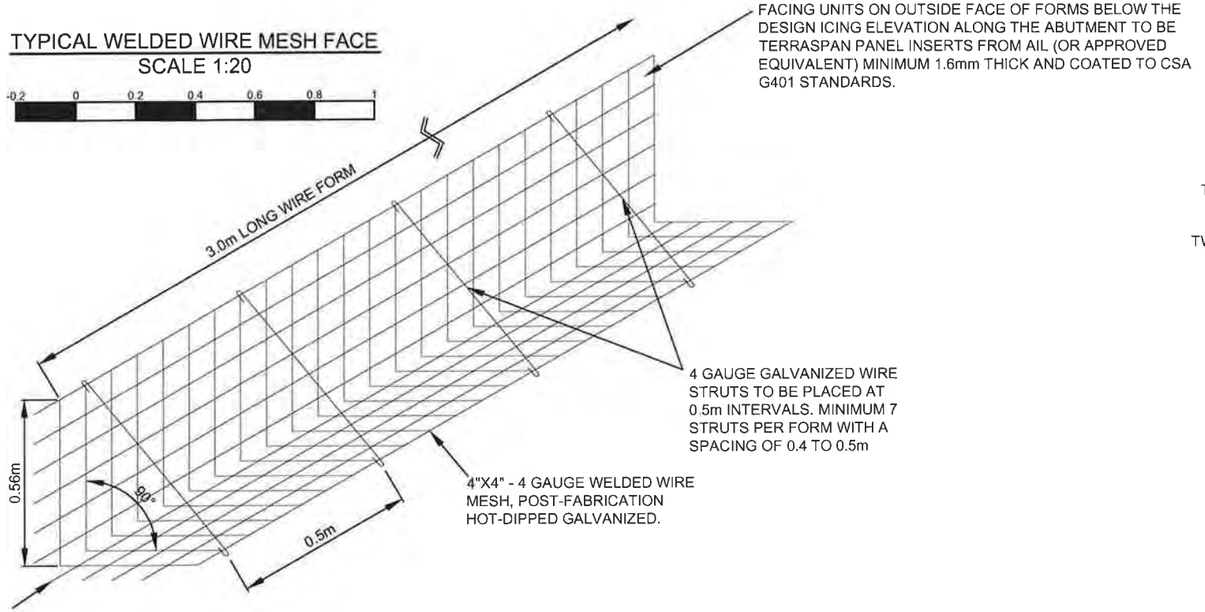
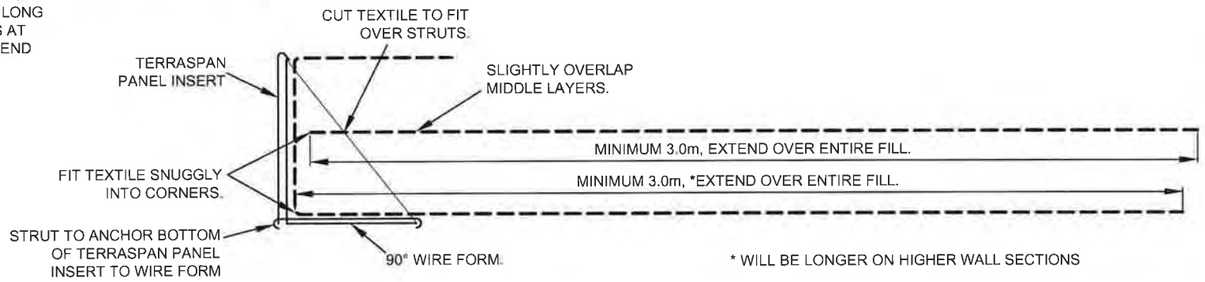
EXISTING GROUND ——————— LIMIT OF EXCAVATION ——— · ———

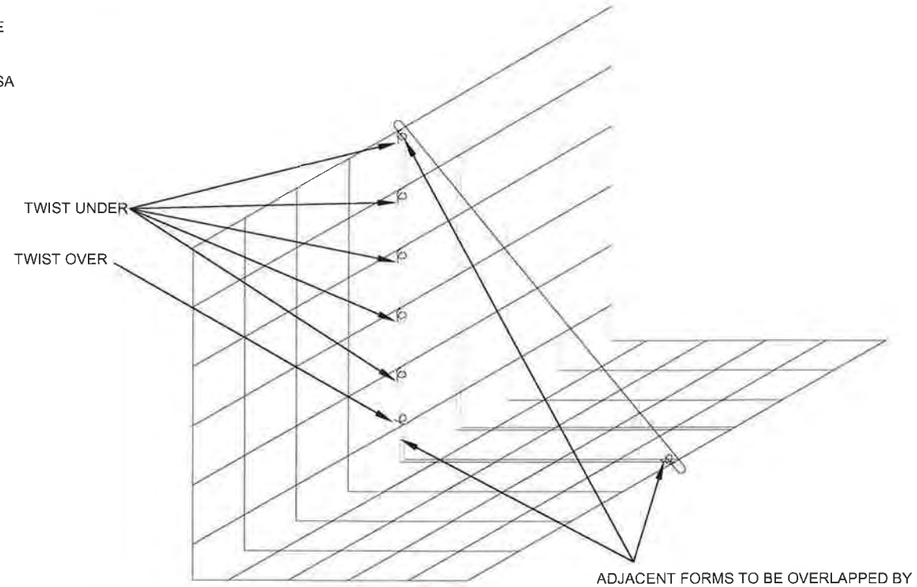
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.

2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.

3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.

4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY

5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.

6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 15.24m (50') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-005

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NO

MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW TOWARDS DAWSON CITY FROM COFFEE GOLD MINE SIDE



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE APPROACH FROM CROSSING



PHOTO #3 - VIEW TOWARDS DOWNSTREAM FROM CROSSING

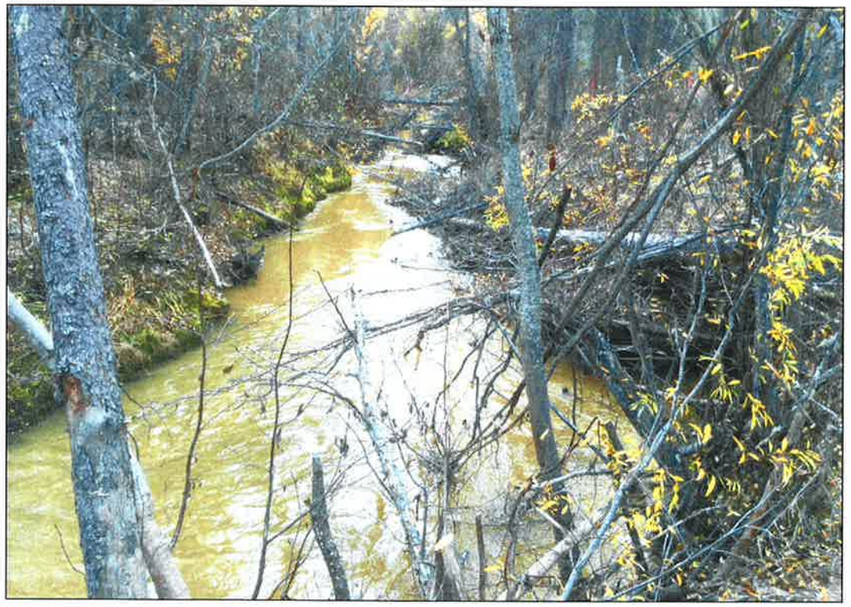


PHOTO #4 - VIEW TOWARDS UPSTREAM FROM CROSSING

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

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ALL STEEL PORTABLE BRIDGE AT 75+186
SITE: MAISY MAY PROPER
(63° 14' 39.52" N, 138° 49' 41.67" W)

DWG No: 1343-2-MD26-006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 19, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: ANDREW BRABANDT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATE: AUGUST 26, 2015
FILE NAME: MD26.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: NOVEMBER 25, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE



N

NOT TO SCALE

Signature REDACTED

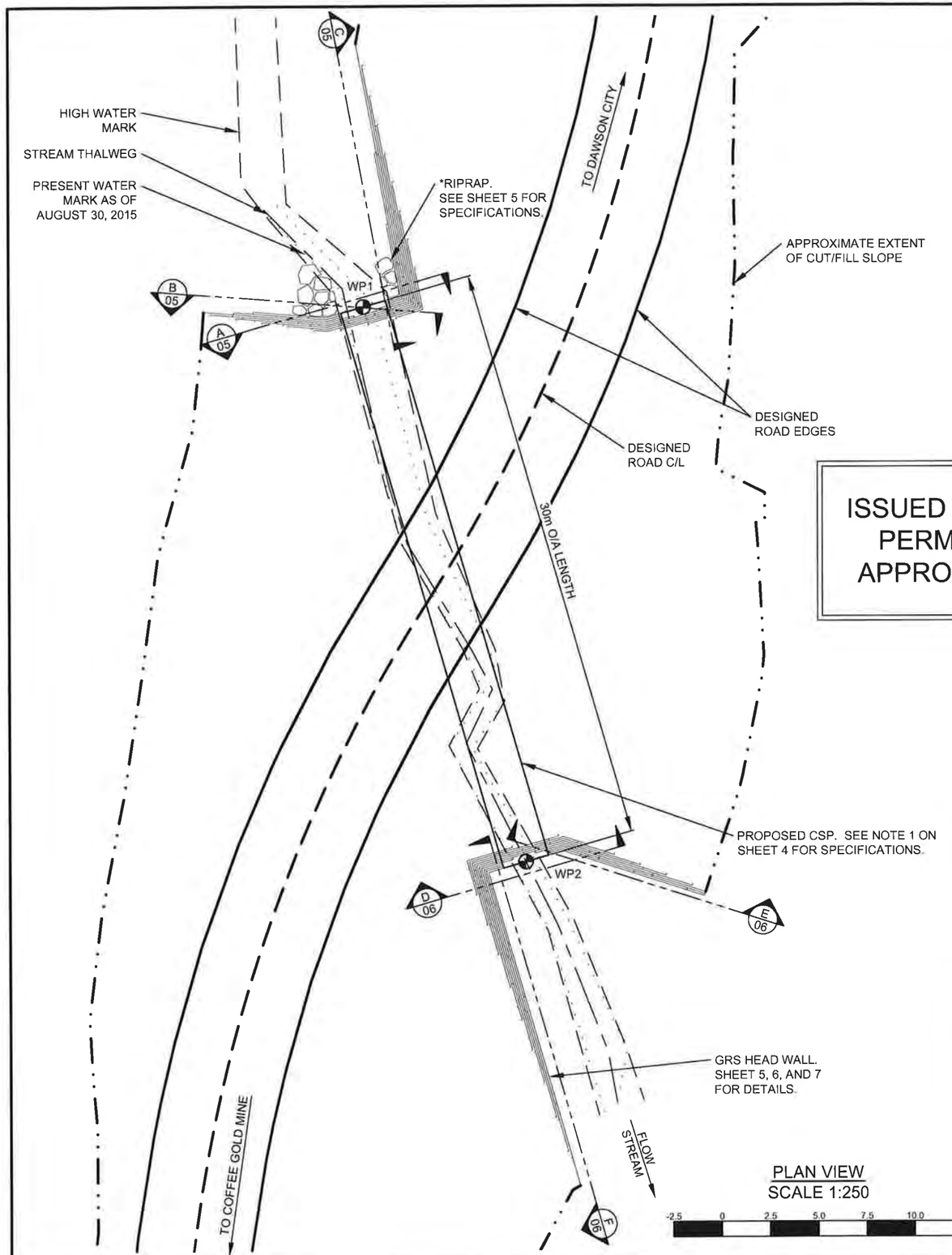
Association of Professional Engineers of Yukon

PROPOSED PERMANENT 2400mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 113+062 SITE: UPPER BALLARAT

(62° 58' 47.45" N, 138° 56' 17.96" W)

ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-UPPERBALLARAT-001	SHEET: 1 OF 8	DESIGN BY: SCOTT WILSON, P.ENG DESIGN DATE: APRIL 4, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 30, 2015 FILE NAME: UPPERBALLARAT.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 7, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.	DRAWING INDEX: SHEET 2 OF 8 - PLAN VIEWS SHEET 3 OF 8 - ELEVATION VIEW AND ROAD PROFILE VIEW SHEET 4 OF 8 - CSP PROFILE AND STREAM PROFILE VIEW SHEET 5 OF 8 - GRS HEADWALL INLET VIEWS SHEET 6 OF 8 - GRS HEADWALL OUTLET VIEWS SHEET 7 OF 8 - GRS DETAIL SHEET SHEET 8 OF 8 - SITE PHOTOS
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943		



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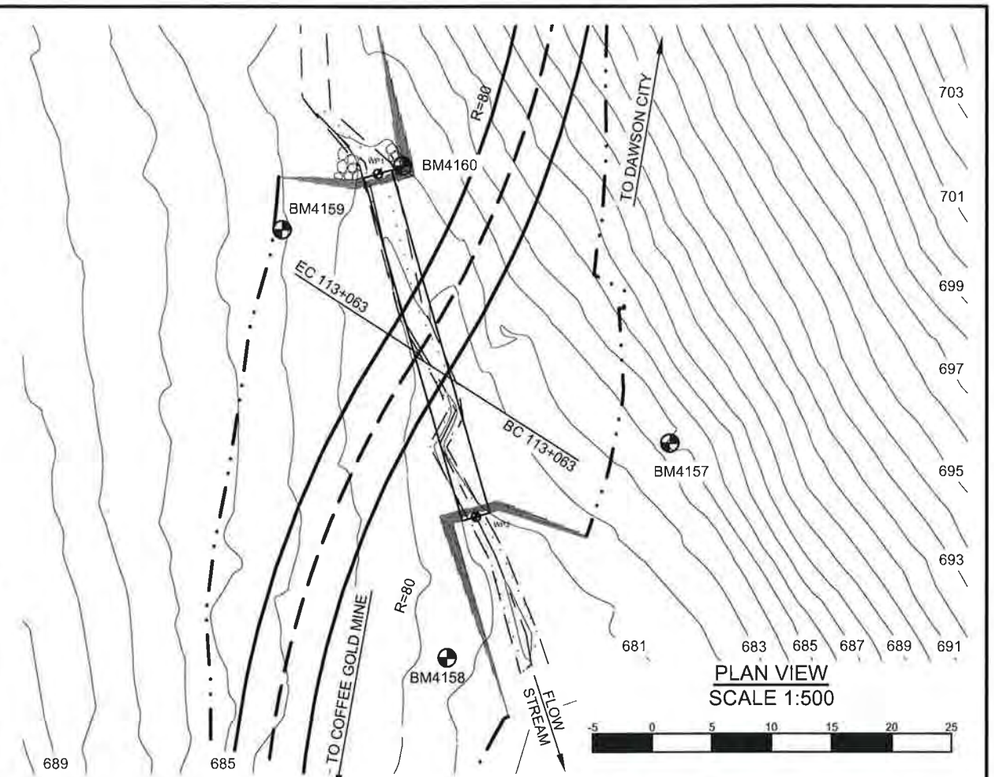

WORKPOINTS ARE LOCATED AT THE CULVERT INVERTS.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE				
WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4157	BM4158	86°47'06"	33.38
	BM4158	BM4159	12°48'17"	41.12
	BM4159	BM4160	357°44'37"	9.24
	BM4160	BM4157	115°25'32"	2.17
2	BM4157	BM4158	23°12'03"	17.38
	BM4158	BM4159	32°30'33"	12.11
	BM4159	BM4160	84°11'57"	29.12
	BM4160	BM4157	32°00'46"	30.17

WP	N	E	ELEV
WP1	6985043.66	604483.42	682.54
WP2	6985014.84	604491.72	680.31
BM4157	6985021.04	604507.96	689.00
BM4158	6985002.97	604489.31	685.51
BM4159	6985038.99	604475.45	688.06
BM4160	6985044.35	604485.48	683.76

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

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GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

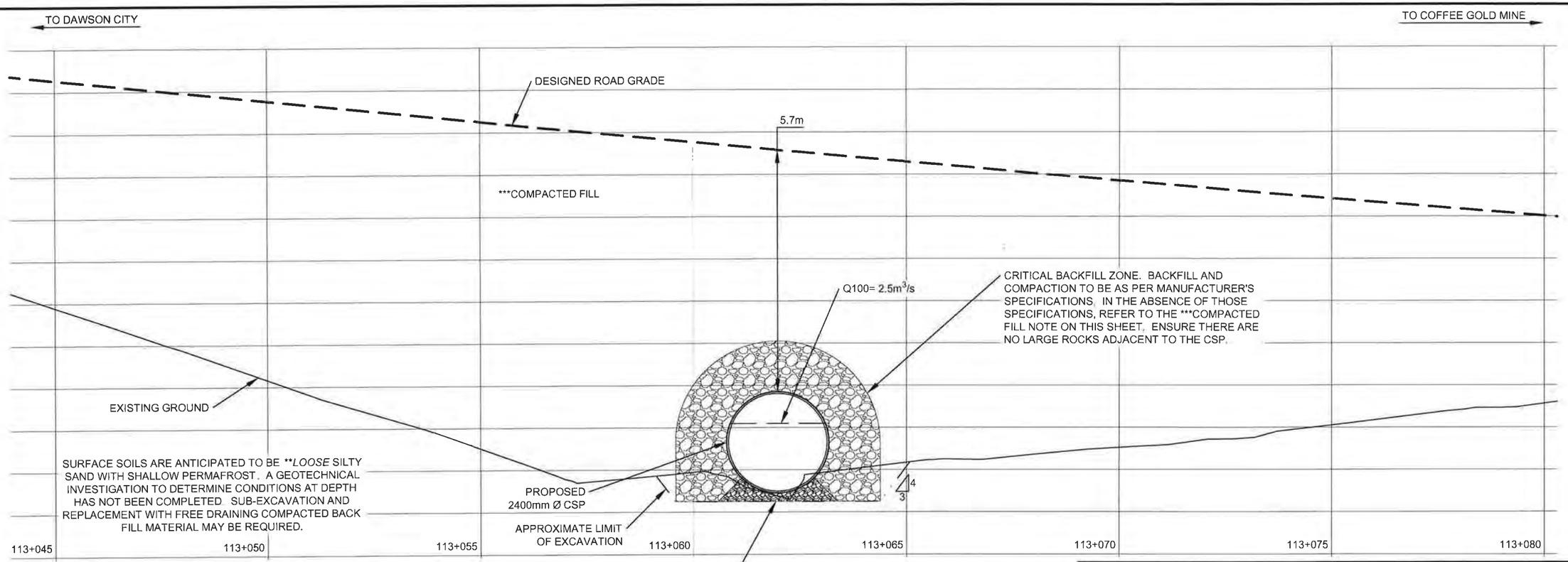
PROPOSED PERMANENT 2400mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

DWG No: 1343-2-UPPERBALLARAT-Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1

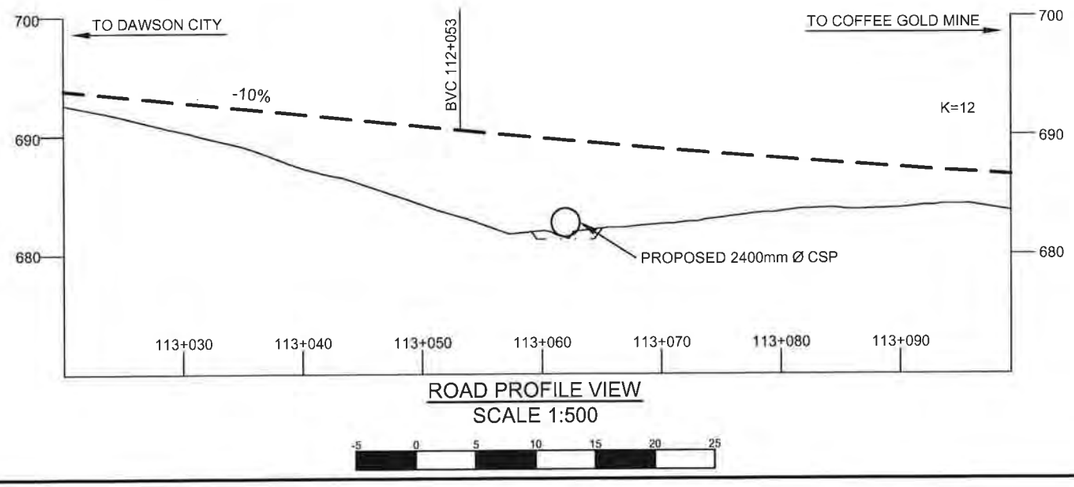


ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

***COMPACTED FILL
LOCAL GRANULAR FILL FREE OF ORGANICS AND LARGE ROCKS TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER. IT IS RECOMMENDED TO USE A 1000 lb VIBRATORY PLATE COMPACTOR WITH 0.2m LIFTS TO ACHIEVE THE REQUIRED COMPACTION IN THE CRITICAL BACKFILL ZONE. AWAY FROM THE PIPE, IT IS RECOMMENDED TO USE A DRUM ROLLER COMPACTOR. WATER MAY NEED TO BE ADDED (DURING SPREADING LIFTS AND PRIOR TO COMPACTION) TO ACHIEVE THE NECESSARY COMPACTION.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

ISSUED FOR PERMIT APPROVAL

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 113+062

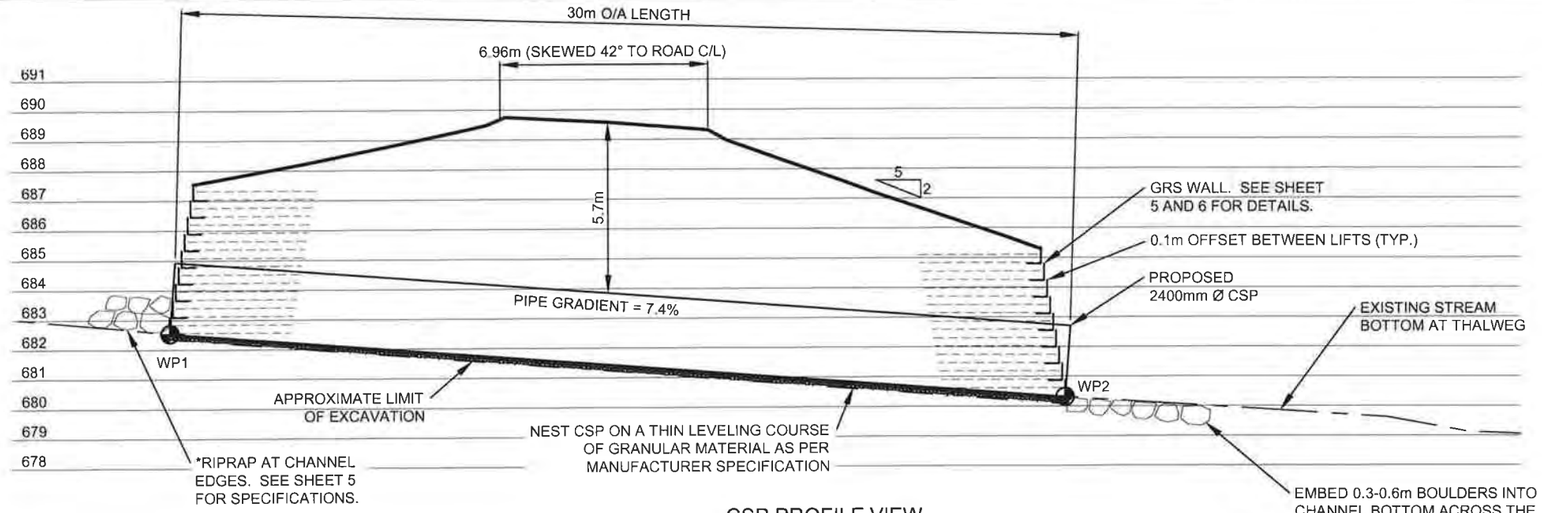
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

Signature REDACTED

DWG No: 1343-2-UPPERBALLARAT- 003

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
APPROXIMATE LIMIT OF EXCAVATION



CSP PROFILE VIEW
SCALE 1:200

-2 0 2 4 6 8 10

ENVIRONMENTAL NOTES:

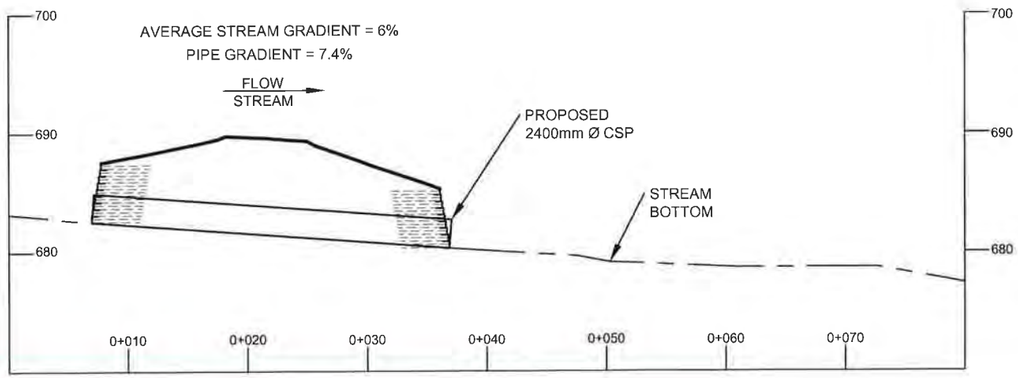
1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php .
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

PARTIAL MATERIALS LIST	
6	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
1	2400mm Ø X 30m LONG CORRUGATED STEEL PIPE
124	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
900	GALVANIZED WIRE STRUTS - 4 GAUGE
120	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT). TO BE INSTALLED ON UPSTREAM SIDE ONLY.
1	BAG ROADSIDE GRASS SEED MIX

NOTES:

1. STRUCTURE TO BE PROVIDED BY OTHERS. CORRUGATION PROFILE AND PLATE THICKNESS (MIN 3.5mm) TO BE DETERMINED BY FABRICATOR. SUPPLY 2400mm DIAMETER X 30m O/A LENGTH CORRUGATED STEEL PIPE WITH COUPLINGS. GALVANIZING SPECIFICATIONS TO BE AS PER CSA STANDARD CAN/CSA G401-14 FOR CORRUGATED STEEL PIPE.
2. BCL-625 VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A NON-FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF FINES, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED AND MAY NEED TO BE AMENDED DURING CONSTRUCTION. IF, UPON EXCAVATION, FIELD CONDITIONS VARY, THEN CONTACT THE DESIGN ENGINEER. INFORMATION WAS COLLECTED FROM SITE OBSERVATIONS.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. A QUALIFIED REGISTERED PROFESSIONAL IS REQUIRED TO INSPECT/ CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAY OUT LOCATION OF PIPE PLACEMENT AND GRS FORMS
   - CONFIRMATION OF COMPACTION OF FILLS
   - LAY OUT LOCATION OF RIPRAP PLACEMENT
   - OTHER SITE INSPECTIONS AT DISCRETION OF PROFESSIONAL

ISSUED FOR PERMIT APPROVAL



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

CAUTION:

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PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

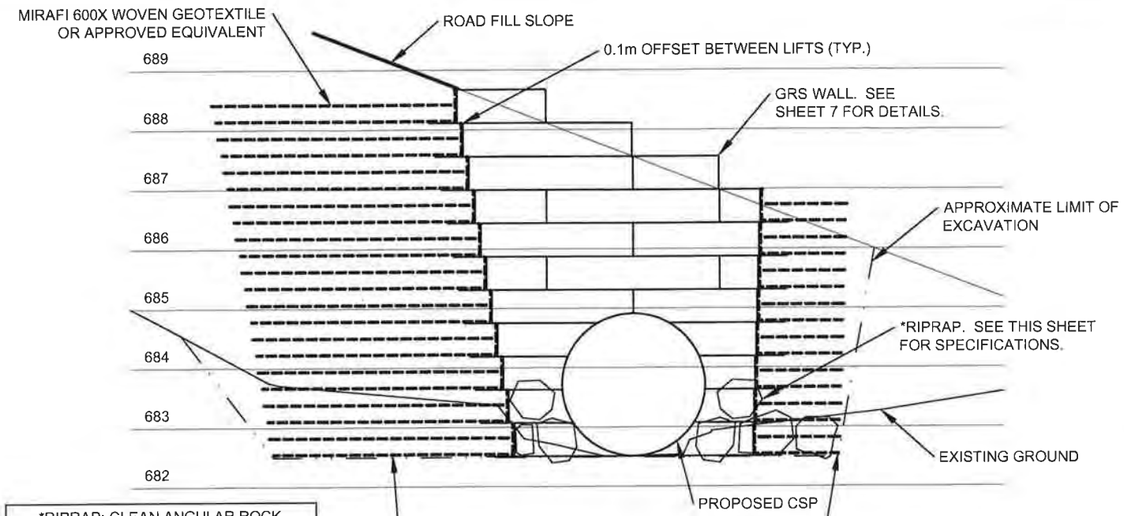
PROPOSED PERMANENT 2400mm Ø X 30m LONG CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

Signature REDACTED

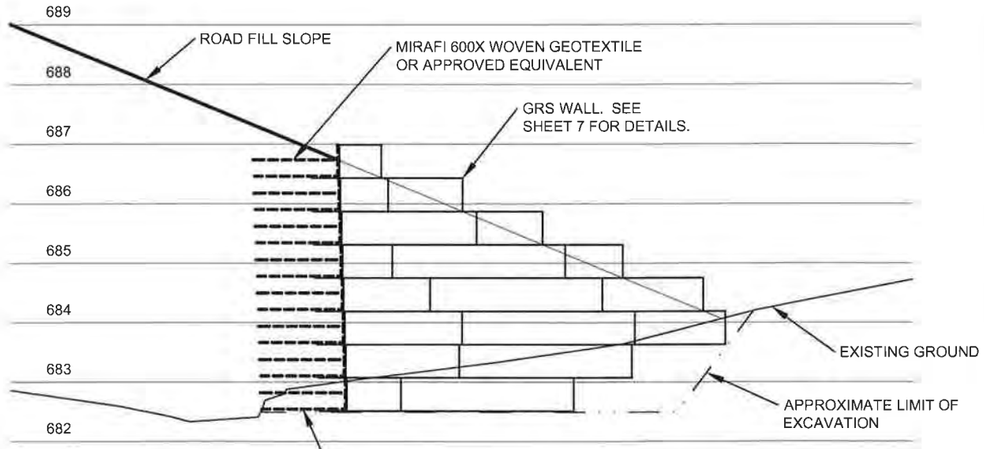
DWG No: 1343-2-UPPERBALLARAT- 004

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

APPROXIMATE LIMIT OF EXCAVATION
STREAM THALWEG
MIRAFI 600X OR EQUIVALENT
WORKPOINT
WP1



SECTION A 02
INLET HEADWALL FACE
SCALE 1:100



SECTION B 02
INLET HEADWALL RIGHT WING
SCALE 1:100

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 100kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN
ROCK MASS kg(mm)
15% 10(195)
50% 100(415)
85% 300(600)
NOMINAL THICKNESS OF RIPRAP
700mm

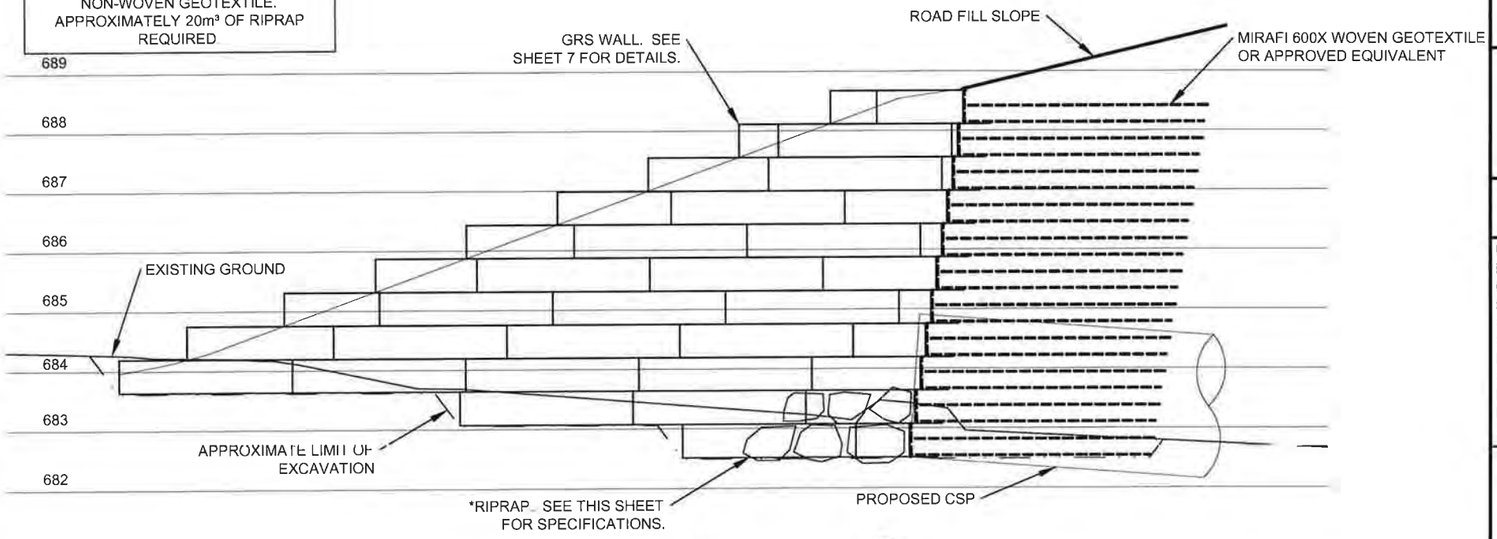


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH ARMTEC 250 OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 20m³ OF RIPRAP REQUIRED

CONSTRUCT GRS HEADWALL TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

ISSUED FOR PERMIT APPROVAL

3m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DELEGATE.



SECTION C 02
INLET HEADWALL LEFT WING
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

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COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 30m LONG
CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

Signature REDACTED

DWG No: 1343-2-UPPERBALLARAT- 005

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
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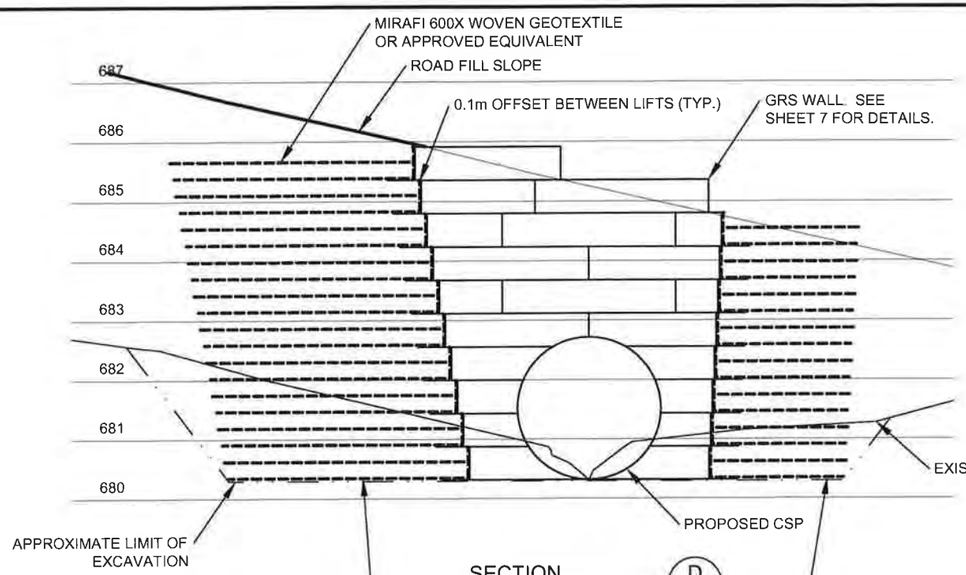
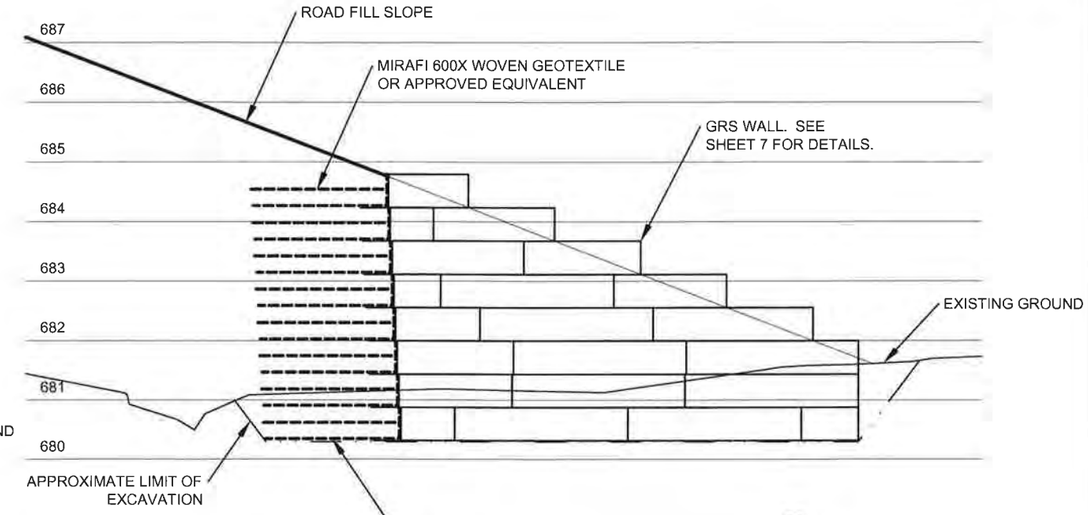
MIRAFI 600X OR EQUIVALENT
ROAD FILL SLOPE



SECTION D 02
OUTLET HEADWALL FACE
SCALE 1:100

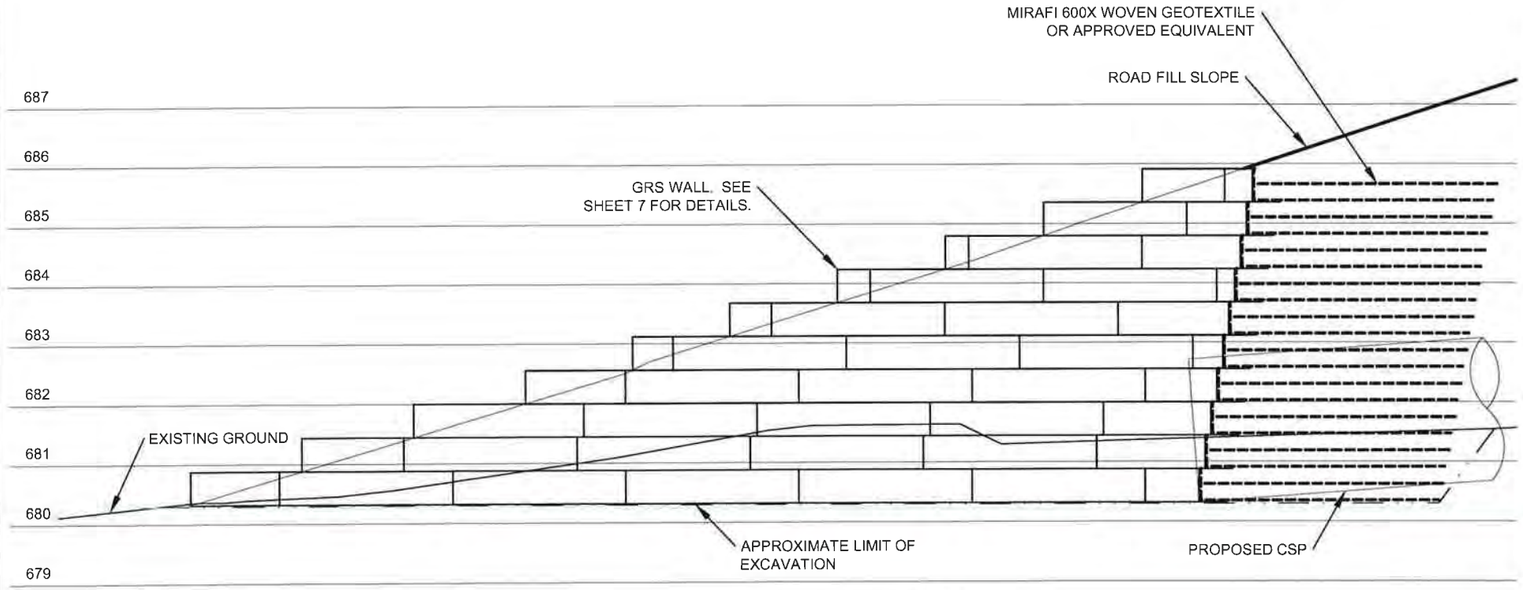
CONSTRUCT GRS HEADWALL TO THE MINIMUM ELEVATION SHOWN. EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION. EXPECT UNDERLYING SOIL TO BE ICE-RICH PERMAFROST. EXCAVATE TO BOTTOM OF ACTIVE LAYER. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.



SECTION E 02
OUTLET HEADWALL RIGHT WING
SCALE 1:100

3m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DELEGATE.

ISSUED FOR PERMIT APPROVAL



SECTION F 02
INLET HEADWALL LEFT WING
SCALE 1:100

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 30m LONG
CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 1[illegible]" W)

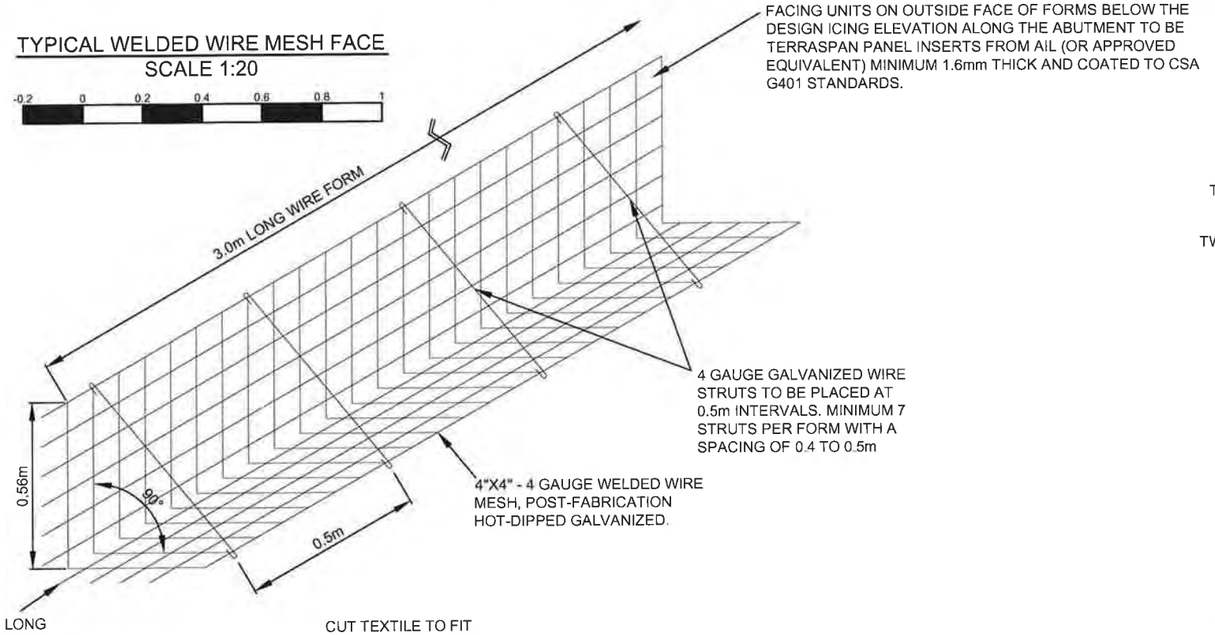
Signature REDACTED

DWG No: 1343-2-UPPERBALLARAT-006

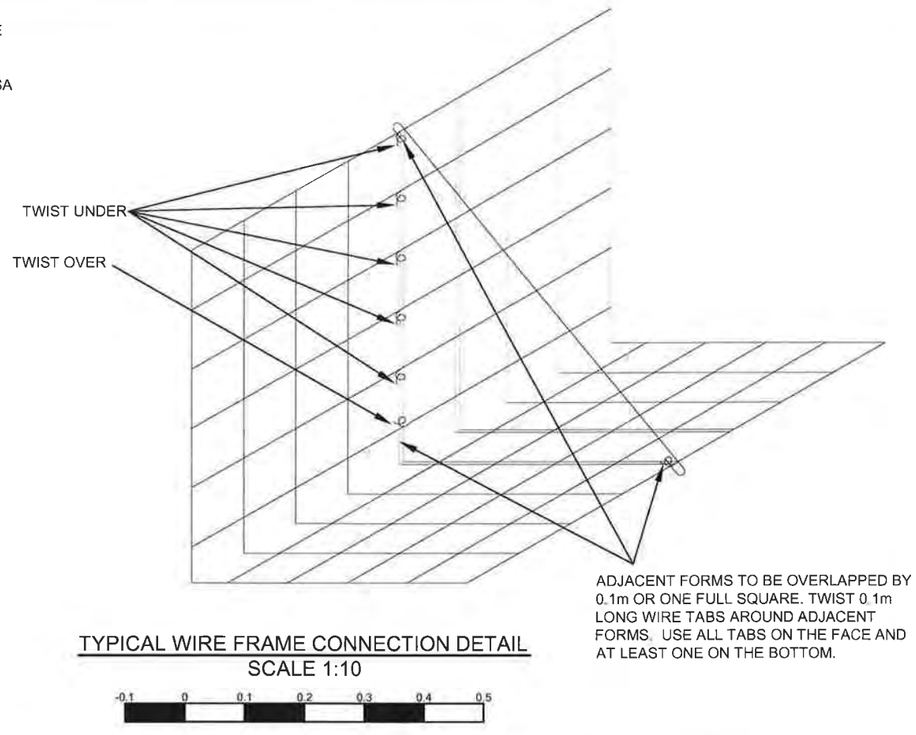
DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

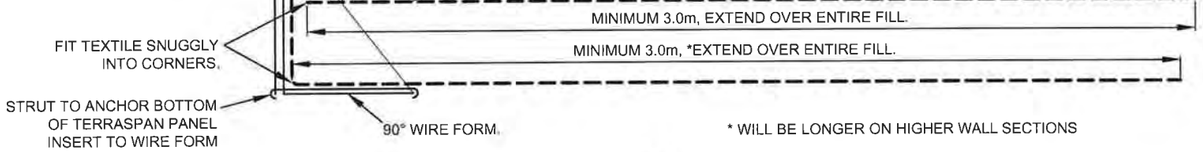
MIRAFI 600X OR EQUIVALENT ----------
ROAD FILL SLOPE ——————

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20

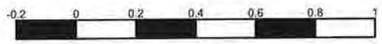


TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20



CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 30m LONG
CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

Signature REDACTED

DWG No: 1343-2-UPPERBALLARAT-007

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

MIRAFI 600X
OR EQUIVALENT

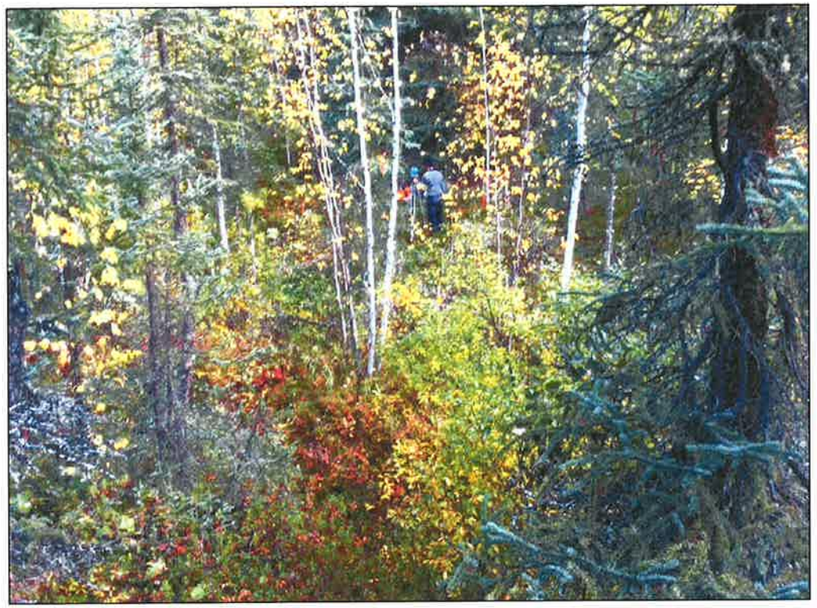


PHOTO #1 - VIEW TOWARDS DAWSON CITY



PHOTO #2 - VIEW TOWARDS COFFEE GOLD MINE



PHOTO #3 - VIEW UPSTREAM



PHOTO #4 - VIEW DOWNSTREAM

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 2400mm Ø X 30m LONG
CORRUGATED STEEL PIPE AT 113+062
SITE: UPPER BALLARAT
(62° 58' 47.45" N, 138° 56' 17.96" W)

DWG No: 1343-2-UPPERBALLARAT-008

SHEET: 8 OF 8

DESIGN BY: SCOTT WILSON, P.ENG
DESIGN DATE: APRIL 4, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 30, 2015
FILE NAME: UPPERBALLARAT.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 7, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

Association of Professional Engineers of Yukon

PROPOSED PERMANENT 9.144m (30') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 120+236 SITE: LOWER BALLARAT TRIBUTARY 1

(62° 55' 12.17" N, 138° 57' 12.40" W)

ISSUED FOR PERMIT APPROVAL

DWG No:
1343-2-LOWER BALLARAT TRIB1- 001

SHEET: 1 OF 6

PREPARED FOR:

GOLDCORP

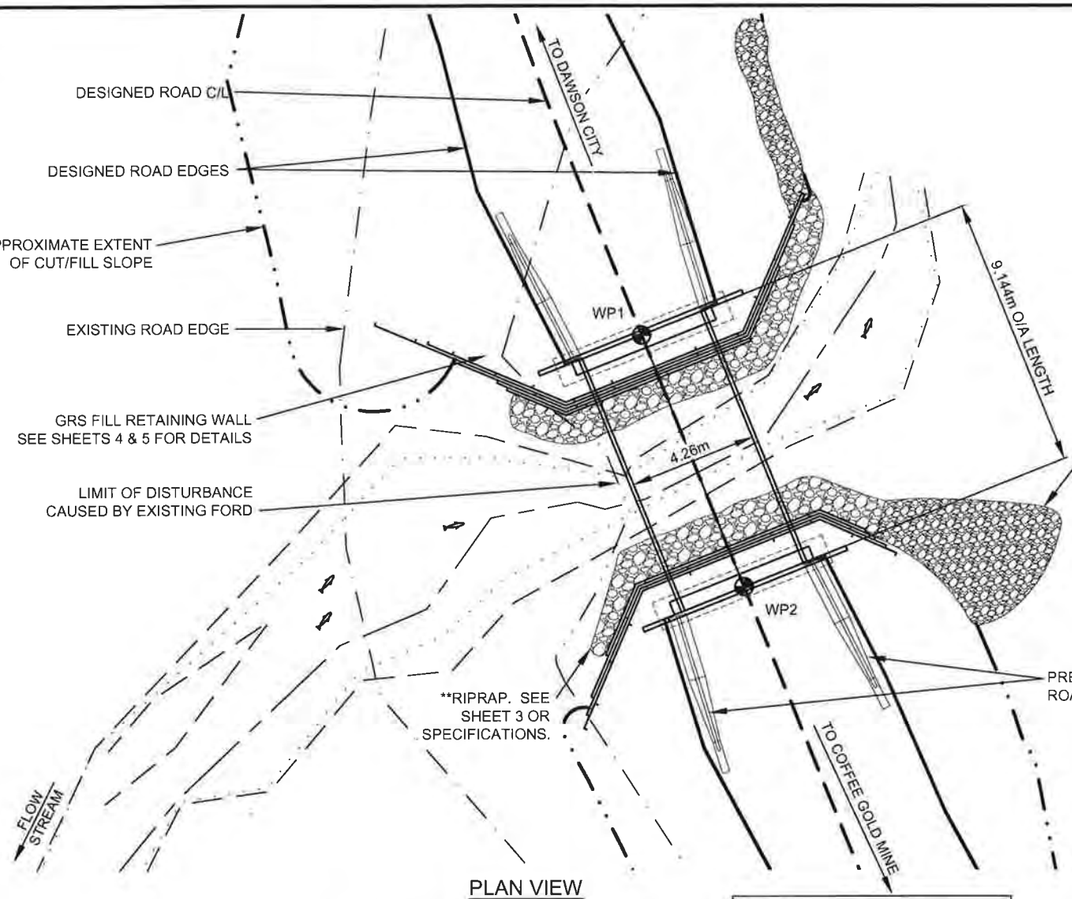
PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: LOWER BALLARAT TRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 8, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

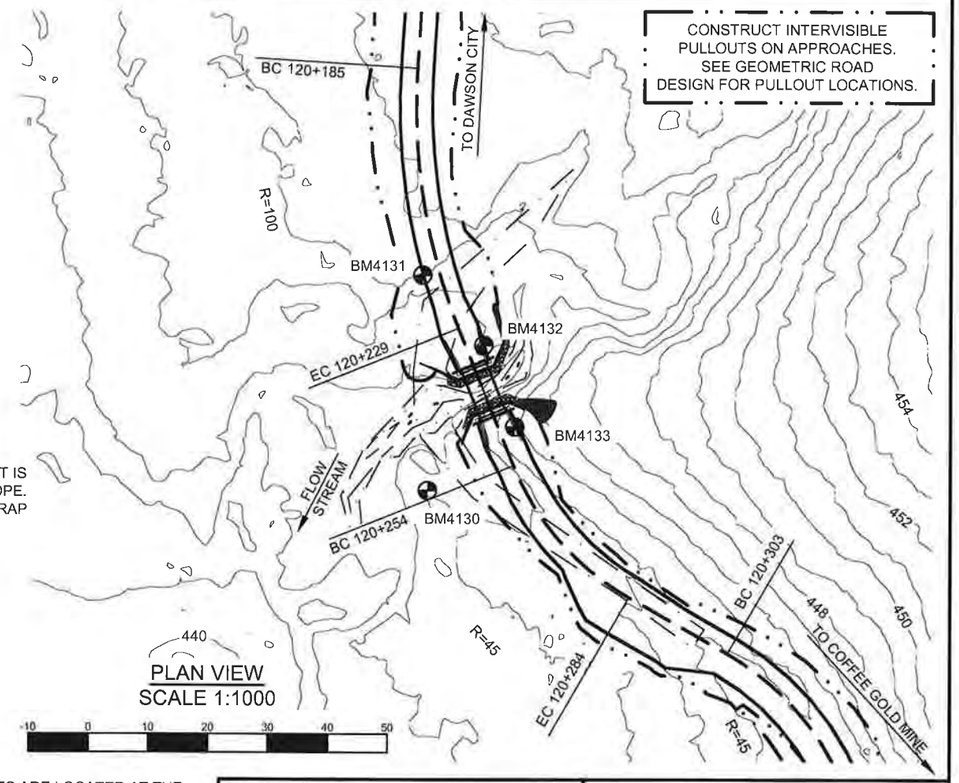
SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS
SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW
SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS
SHEET 5 OF 6 - GRS DETAILS
SHEET 6 OF 6 - SITE PHOTOS



PLAN VIEW
SCALE 1:200

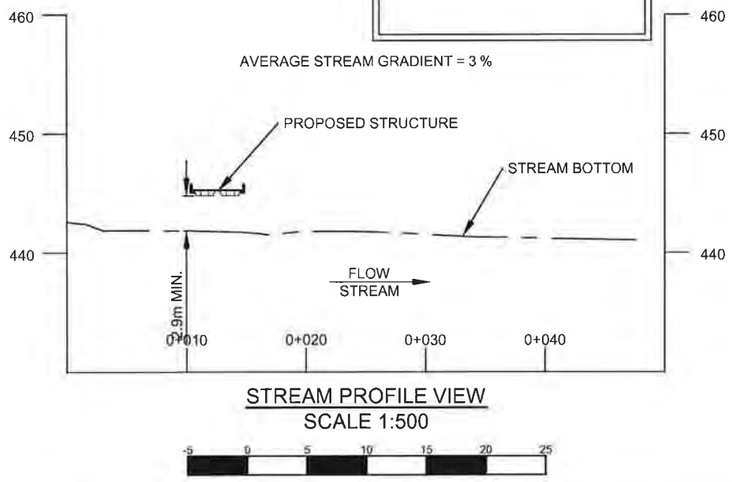
-2 0 2 4 6 8 10

ISSUED FOR PERMIT APPROVAL



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



STREAM PROFILE VIEW
SCALE 1:500

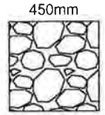
-5 0 5 10 15 20 25

*RIPRAP: CLEAN ANGULAR ROCK

CLASS 25kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	2.5(120)
50%	25(260)
85%	75(380)

NOMINAL THICKNESS OF RIPRAP 450mm



ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 15m³ OF RIPRAP REQUIRED.

WORKPOINTS ARE LOCATED AT THE CENTRE OF DECK AT THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4130	BM4131	21°21'13'	22.37
	BM4131	BM4132	11°48'07"	17.43
	BM4132	BM4133	48°19'35"	3.83
	BM4133	BM4130	92°11'37"	12.46
2	BM4130	BM4131	42°45'40"	16.71
	BM4131	BM4132	14°20'41"	26.52
	BM4132	BM4133	12°55'23"	11.99
	BM4133	BM4130	63°33'08"	4.02

WP	N	E	ELEV
WP1	6978337.58	603932.38	445.53
WP2	6978329.10	603935.80	445.21
BM4130	6978316.54	603924.79	442.65
BM4131	6978357.43	603923.70	444.77
BM4132	6978340.98	603934.14	443.43
BM4133	6978327.26	603939.37	445.08

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

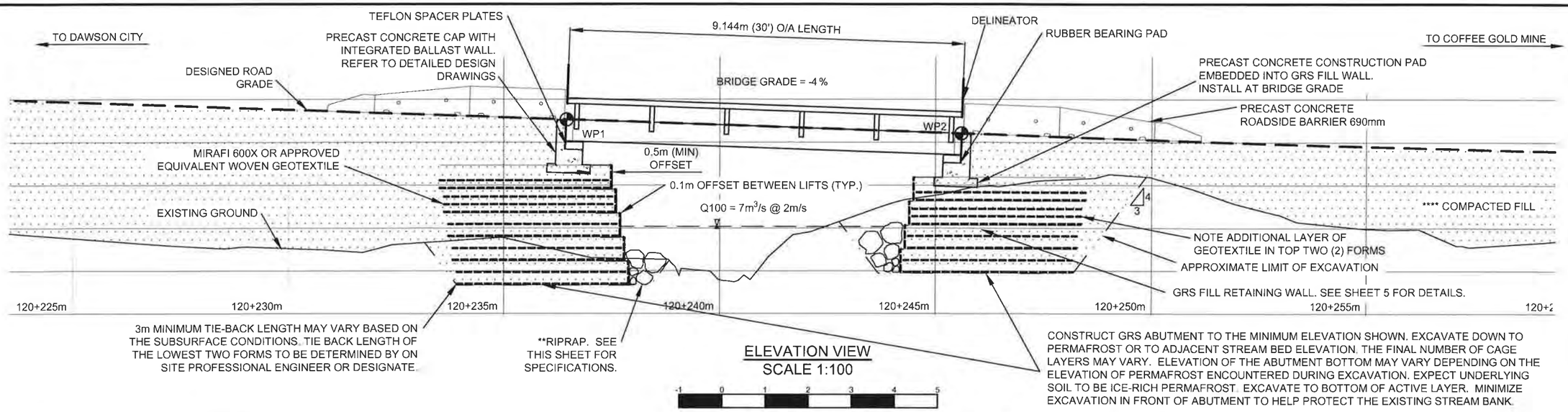
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 120+236
SITE: LOWER BALLARAT TRIBUTARY 1
(62° 55' 12.17" N, 138° 57' 12.40" W)

Signature REDACTED

DWG No:
1343-2-LOWER BALLARAT TRIB1- 002

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: LOWER BALLARAT TRIB DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 8, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTEI

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1

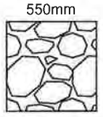


ELEVATION VIEW
SCALE 1:100

-1 0 1 2 3 4 5

**RIPRAP: CLEAN ANGULAR ROCK

CLASS 50kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)
15% 5(155)
50% 50(330)
85% 150(475)
NOMINAL THICKNESS OF RIPRAP 550mm

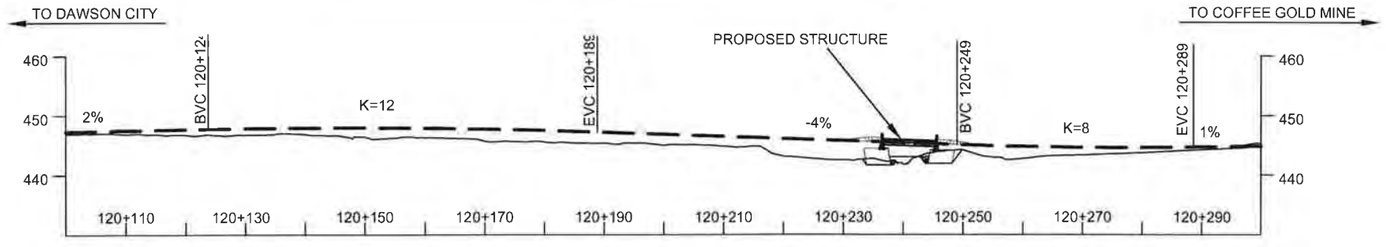


ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 35m³ OF RIPRAP REQUIRED.

PARTIAL MATERIALS LIST	
4	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	INTEGRATED CAP BEAM / BALLAST WALL - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
44	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
310	GALVANIZED WIRE STRUTS - 4 GAUGE
88	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
12	TEFLON SPACER PLATES - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS
2	RUBBER BEARING PAD - SEE DWG. 1343-1-CAPBEAM FOR SPECIFICATIONS

****COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

***SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

CAUTION:

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INTENDED TO BE PRINTED ON 11"X17" PAPER.

ISSUED FOR PERMIT APPROVAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

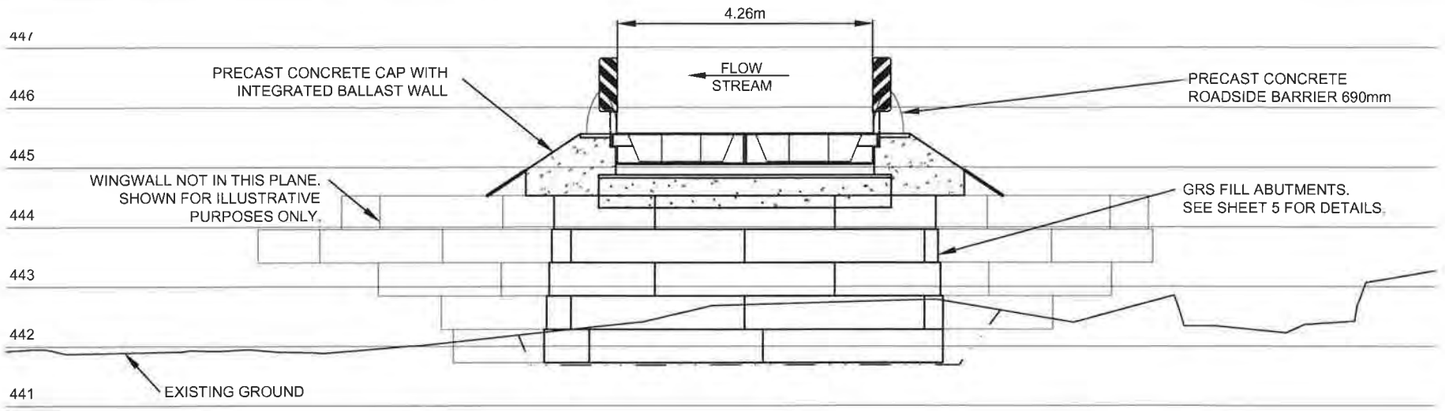
PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 120+236
SITE: LOWER BALLARAT
(62° 55' 12.17" N, 138° 57

Signature REDACTED

DWG No:
1343-2-LOWER BALLARAT TRIB1- 003

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: LOWER BALLARAT TRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 8, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DESIGNED ROAD GRADE
HIGH WATER LEVEL
WORKPOINT WP1
LIMIT OF EXCAVATION
MIRAFI 600x OR EQUIVALENT



DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

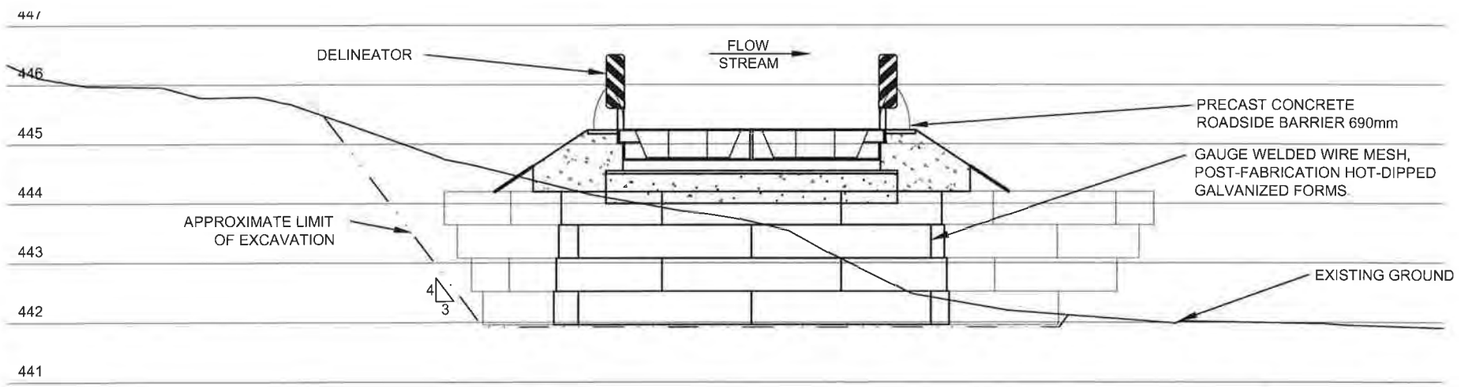
1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php. THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.

2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.

3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY) .

4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

ISSUED FOR PERMIT APPROVAL



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. TOP OF DECK ELEVATIONS TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D , 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
4. STREAM IS A FISH BEARING STREAM WITH LOW POTENTIAL OF DEBRIS MOVEMENT. STREAM CHANNEL CONSISTS OF SILT, GRAVEL AND COBBLES.
5. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. FIELD CONDITIONS MAY VARY FROM THOSE INFERRED (PREDOMINANTLY THE ELEVATION AND COMPETENCE OF THE TOP OF THE FROZEN LAYER). IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.
6. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH YWCHSB (YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD) REGULATIONS, YWCHSB REGULATIONS ARE TO GOVERN.
7. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.
8. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.
9. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT / CARRY OUT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING SUBSTANTIAL CONFORMANCE DOCUMENTATION:
   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 120+236
SITE: LOWER BALLARAT TRIBUTARY 1
(62° 55' 12.17" N, 138° 57' 12.40" W)

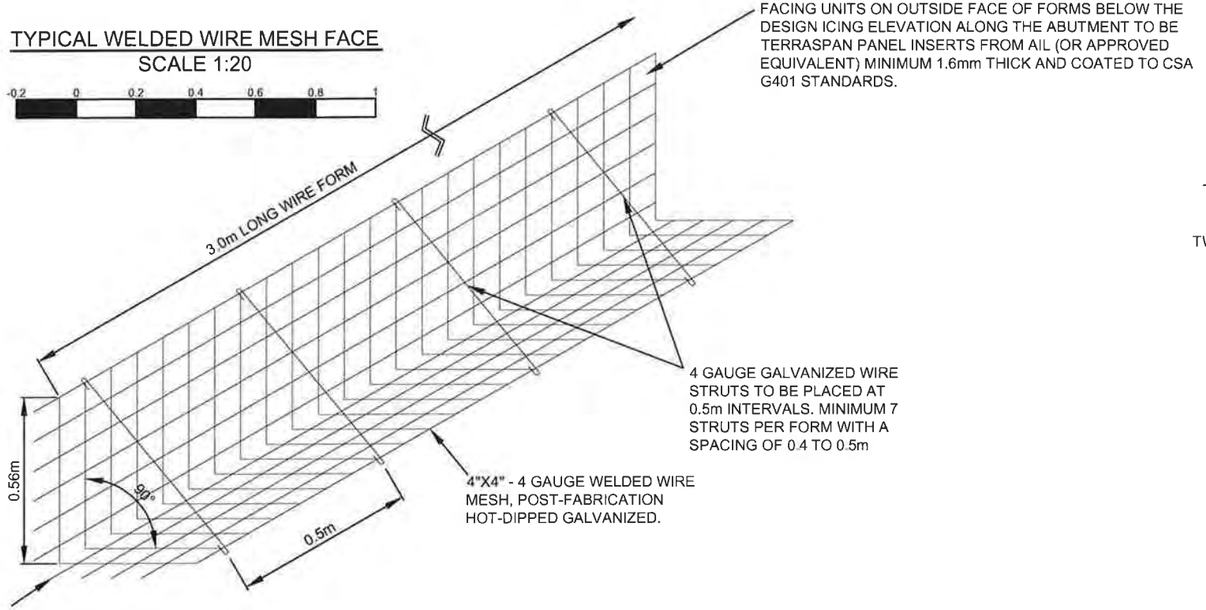
DWG No:
1343-2-LOWER BALLARAT TRIB1- 004

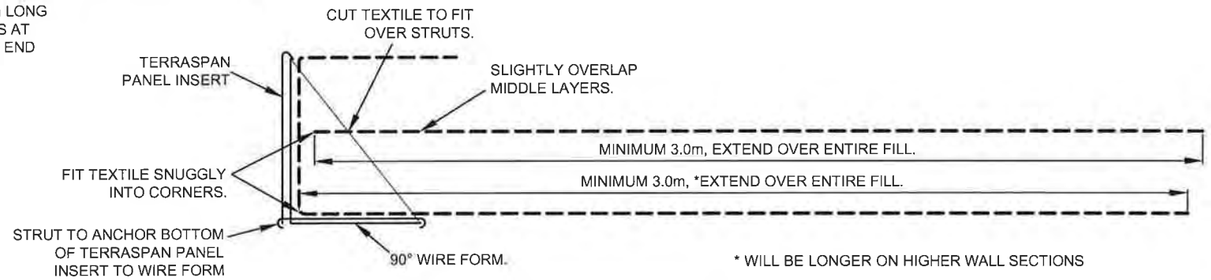
Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
FILE NAME: LOWER BALLARAT TRIB.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 8, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

LIMIT OF EXCAVATION

TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





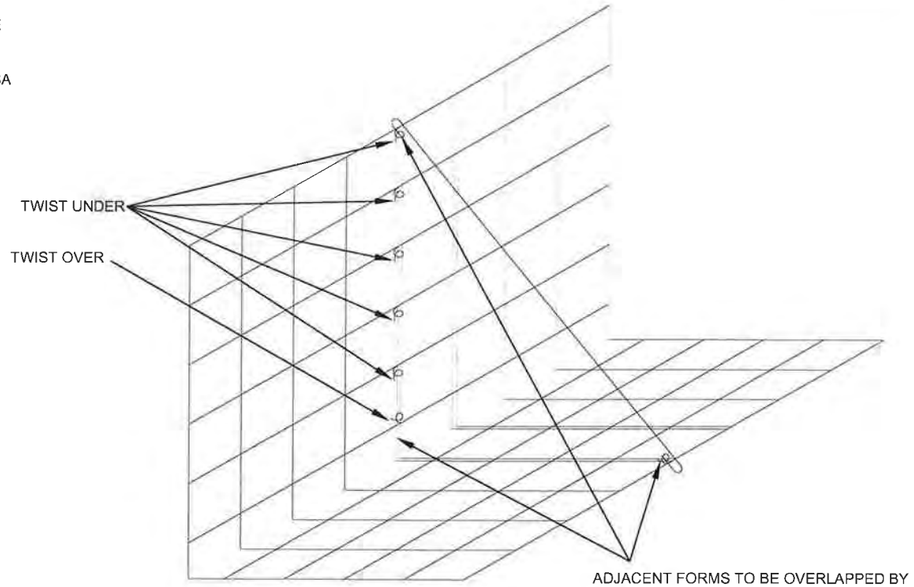
* WILL BE LONGER ON HIGHER WALL SECTIONS

TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20

-0.2 0 0.2 0.4 0.6 0.8 1

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 3.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 3.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.



TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

-0.1 0 0.1 0.2 0.3 0.4 0.5

CAUTION:

DRAWING SCALE MAY BE DISTORTED WITH PRINTING.

INTENDED TO BE PRINTED ON 11"X17" PAPER.

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE ENGINEERING LTD.

COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 9.144m (30') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 120+236
SITE: LOWER BALLARAT TRIBUTARY 1
(62° 55' 12.17" N, 138° 57' 12.40" W)

DWG No:
1343-2-LOWER BALLARAT TRIB1- 005

Signature REDACTED

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: APRIL 11, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: DANA TRENT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 26, 2015
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MIRAFI 600X
OR EQUIVALENT



PHOTO #1 - VIEW OF DAWSON CITY APPROACH FROM CROSSING



PHOTO #2 - VIEW OF COFFEE GOLD MINE APPROACH FROM DAWSON CITY APPROACH



PHOTO #3 - VIEW UPSTREAM FROM CROSSING

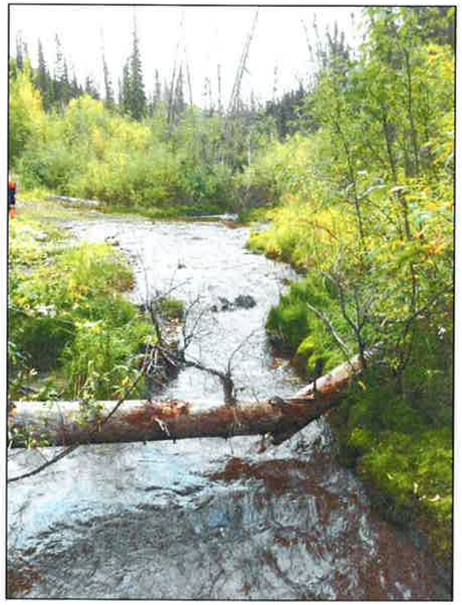


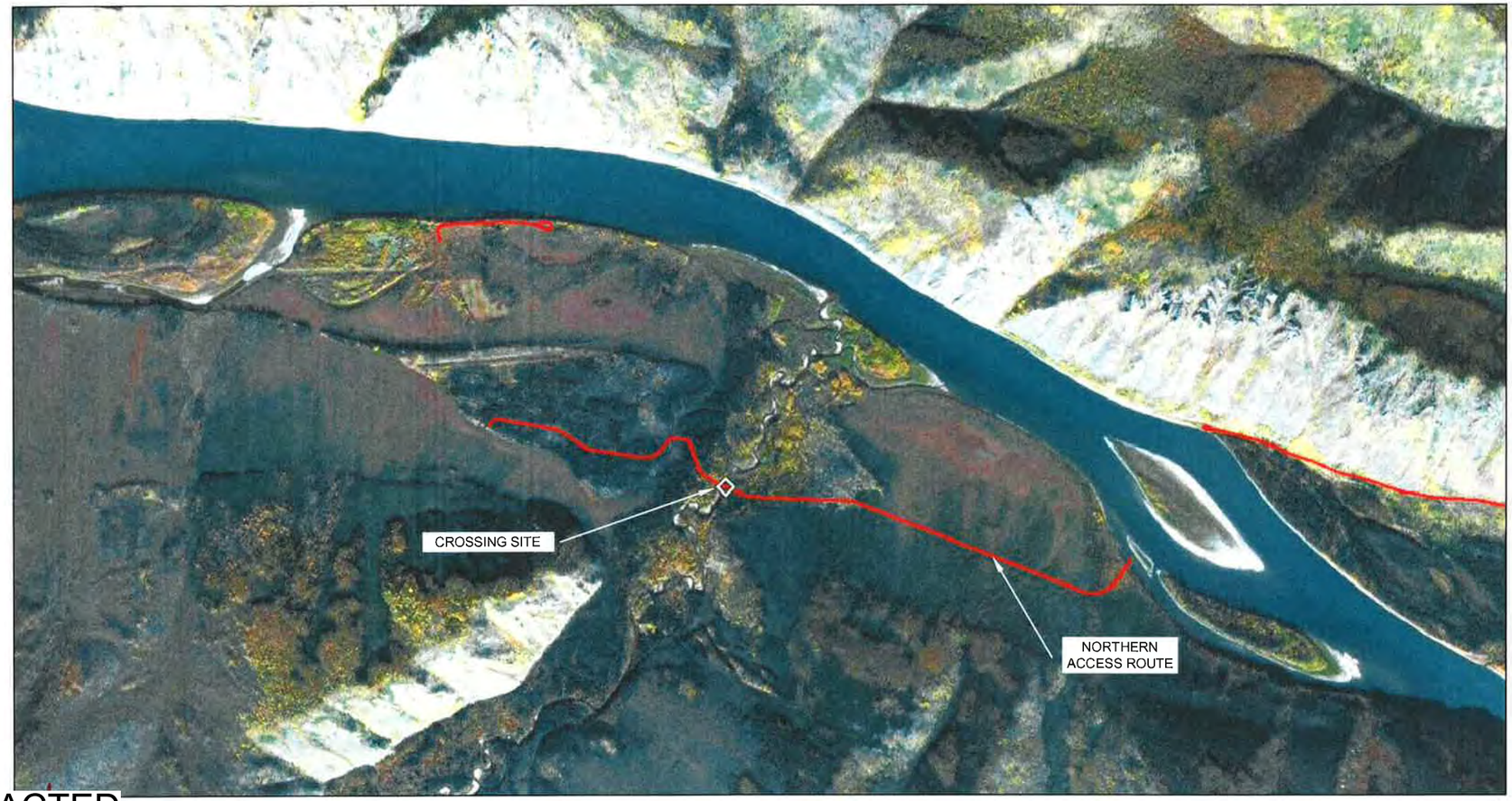
PHOTO #4 - VIEW DOWNSTREAM FROM CROSSING

PREPARED FOR: GOLDCORP	PREPARED BY: **ONSITE ENGINEERING LTD.** **COASTAL OPERATIONS** 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943	PROPOSED PERMANENT 9.144m (30') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 120+236 SITE: LOWER BALLARAT TRIBUTARY 1 (62° 55' 12.17" N, 138° 57' 12.40" W) DWG No: 1343-2-LOWER BALLARAT TRIB1- 006 SHEET: 6 OF 6	DESIGN BY: SCOTT WILSON, P.ENG. DESIGN DATE: APRIL 11, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG. DRAWN BY: DANA TRENT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: AUGUST 26, 2015 FILE NAME: LOWER BALLARAT TRIB.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 8, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

COFFEE GOLD MINE - NORTHERN ACCESS ROUTE

N

NOT TO SCALE



Signature REDACTED

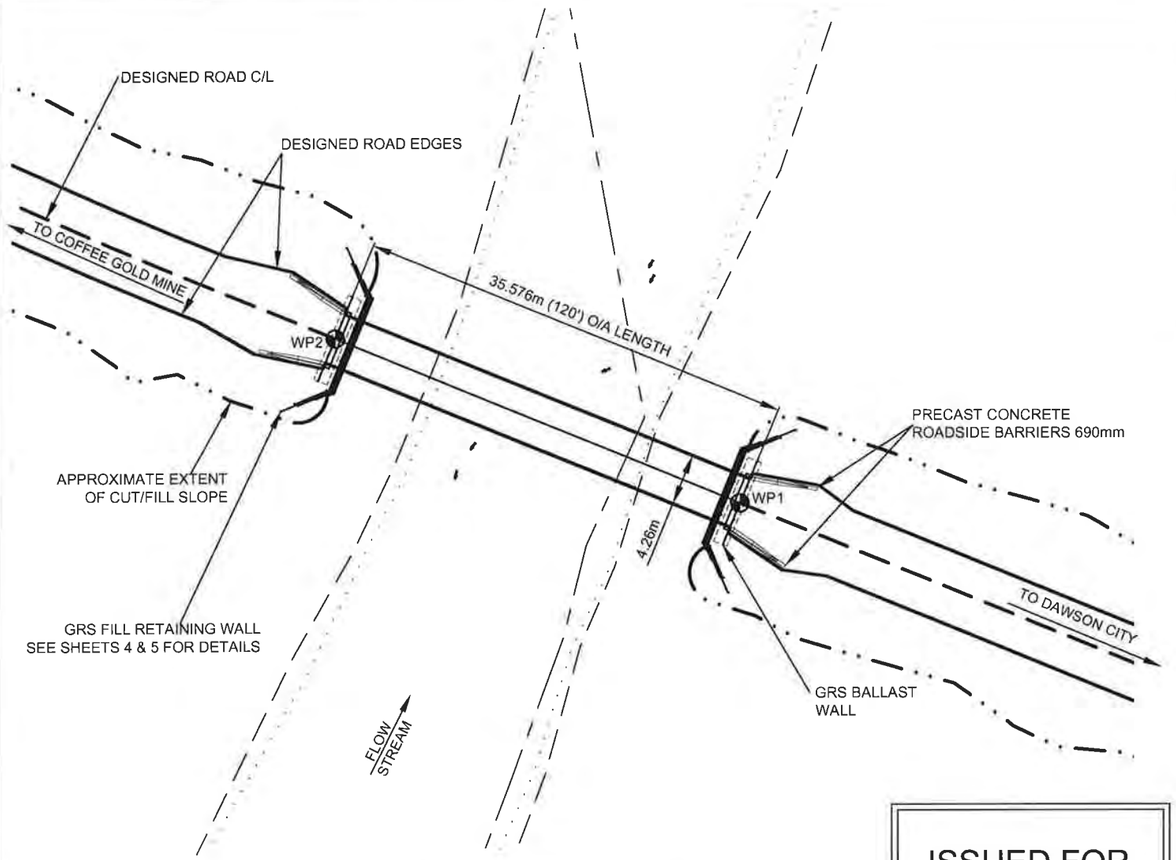
Engineers of Yukon

PROPOSED PERMANENT 36.576m (120') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 128+401
SITE: COFFEE CREEK

(62° 54' 7.51" N, 139° 3' 12.89" W)

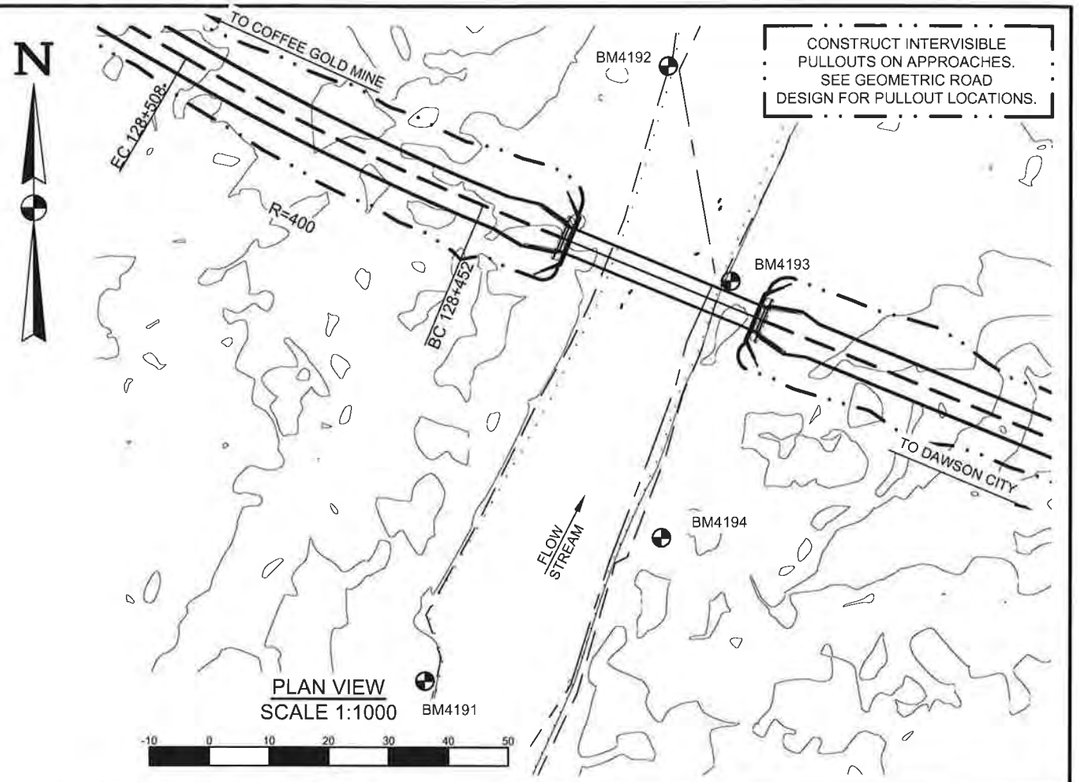
ISSUED FOR PERMIT APPROVAL

DWG No: 1343-2-COFFEE- 001	SHEET: 1 OF 6	DESIGN BY: SCOTT WILSON, P.ENG. DESIGN DATE: MAY 02, 2016 REVIEWED BY: JEREMY ARAKI, P.ENG. DRAWN BY: TODD FORBES SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: SEPTEMBER 21, 2015 FILE NAME: COFFEE.DWG SCALE: AS NOTED REVISION NUMBER: 1 REVISION DATE: DECEMBER 13, 2016 ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.
PREPARED FOR: GOLDCORP	PREPARED BY: ONSITE ENGINEERING LTD. COASTAL OPERATIONS 1040 CEDAR STREET CAMPBELL RIVER, BC, V9W 7E2 PH.: 250-287-9174 FAX: 866-235-6943	DRAWING INDEX: SHEET 2 OF 6 - PLAN AND STREAM PROFILE VIEWS SHEET 3 OF 6 - ELEVATION AND ROAD PROFILE VIEW SHEET 4 OF 6 - ABUTMENT CROSS SECTIONS SHEET 5 OF 6 - GRS DETAILS SHEET 6 OF 6 - SITE PHOTOS



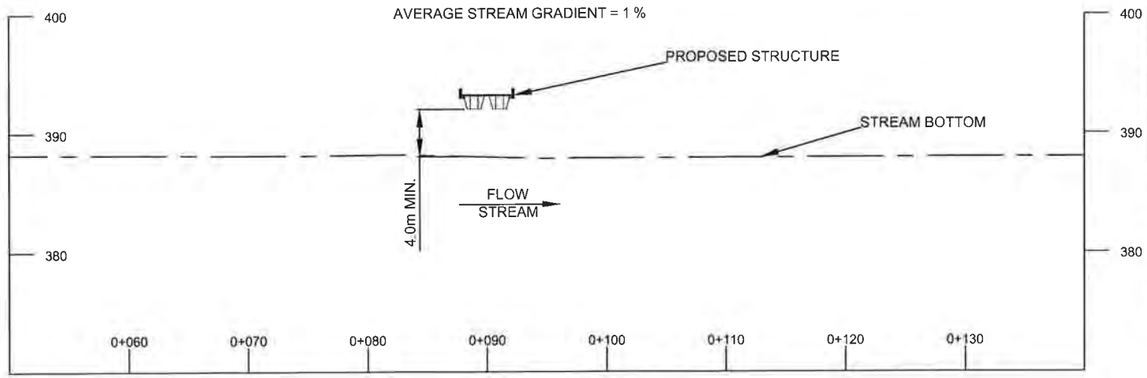
PLAN VIEW
SCALE 1:500

-5 0 5 10 15 20 25



PLAN VIEW
SCALE 1:1000

-10 0 10 20 30 40 50



STREAM PROFILE VIEW
SCALE 1:500

-5 0 5 10 15 20 25

ISSUED FOR PERMIT APPROVAL

WORKPOINTS ARE LOCATED UNDER THE BRIDGE AT THE ENDS OF BRIDGE.

ELEVATIONS SHOWN HAVE AN ARBITRARY DATUM AND SHOULD ONLY BE USED TO ESTABLISH RELATIVE ELEVATION WITHIN THE CROSSING FOR CONSTRUCTION PURPOSES.

WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
1	BM4191	BM4192	21°33'08"	82.88
	BM4192	BM4193	355°46'52"	45.49
	BM4193	BM4194	305°43'42"	8.60
	BM4194	BM4191	146°23'57"	40.27
2	BM4191	BM4192	355°29'30"	77.94
	BM4192	BM4193	48°14'47"	33.75
	BM4193	BM4194	89°23'07"	29.30
	BM4194	BM4191	102°58'50"	53.16

WP	N	E	ELEV
WP1	6976168.53	598928.86	391.99
WP2	6976182.45	598895.03	391.99
BM4191	6976107.88	598872.38	389.66
BM4192	6976211.11	598912.85	389.17
BM4193	6976175.18	598923.41	389.46
BM4194	6976132.02	598911.87	390.07

CAUTION:

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PREPARED BY:

ONSITE ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 36.576m (120') O/A LENGTH ALL STEEL PORTABLE BRIDGE AT 128+401 SITE: COFFEE CREEK

(62° 54' 7.51" N, 139° 3' 12.89" W)

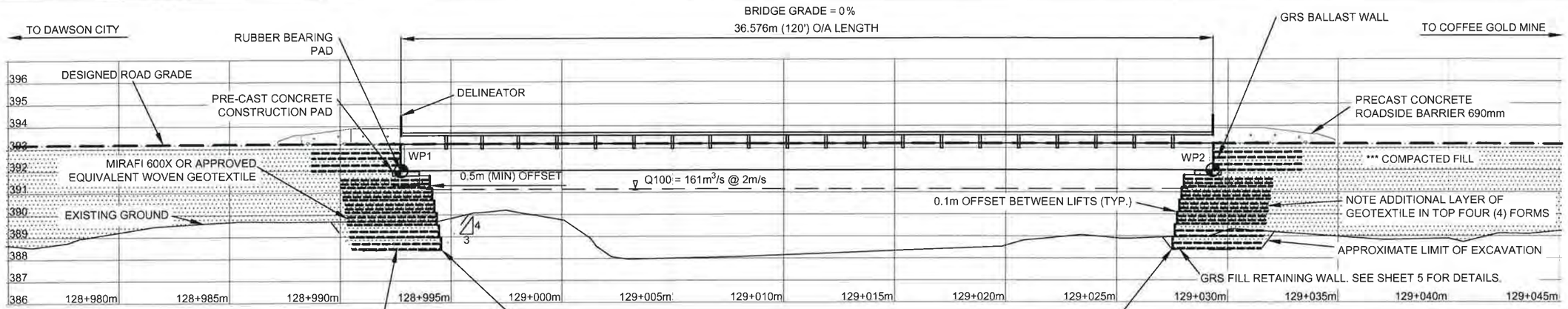
Signature REDACTED

DWG No: 1343-2-COFFEE- 002

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 02, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: COFFEE.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

ENGINEER

DESIGNED ROAD EDGES
DESIGNED ROAD C/L
APPROXIMATE EXTENT OF CUT/FILL SLOPE
BENCH MARK BM1
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1



4m MINIMUM TIE-BACK LENGTH MAY VARY BASED ON THE SUBSURFACE CONDITIONS. TIE BACK LENGTH OF THE LOWEST TWO FORMS TO BE DETERMINED BY ON SITE PROFESSIONAL ENGINEER OR DESIGNATE.

CONSTRUCT GRS ABUTMENT TO THE MINIMUM ELEVATION SHOWN, OR EXCAVATE DOWN TO PERMAFROST OR TO ADJACENT STREAM BED ELEVATION. THE FINAL NUMBER OF CAGE LAYERS MAY VARY. ELEVATION OF THE ABUTMENT BOTTOM MAY VARY DEPENDING ON THE ELEVATION OF PERMAFROST ENCOUNTERED DURING EXCAVATION EXPECT UNDERLYING SOIL TO BE LOOSE SILT. MINIMIZE EXCAVATION IN FRONT OF ABUTMENT TO HELP PROTECT THE EXISTING STREAM BANK.

ELEVATION VIEW
SCALE 1:200

-2 0 2 4 6 8 10

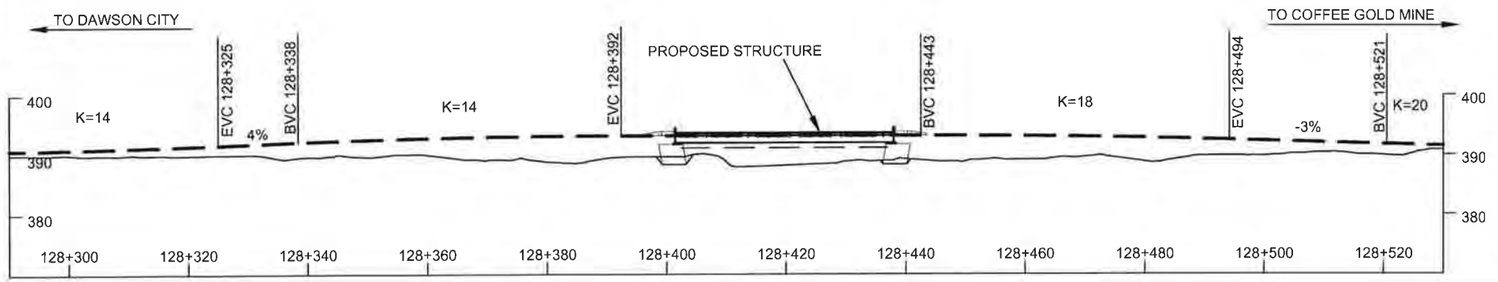
PARTIAL MATERIALS LIST	
6	ROLL WOVEN GEOTEXTILE: MIRAFI 600X OR APPROVED EQUIVALENT
2	1.2m X 7.62m X 0.2m THICK PRE-CAST CONCRETE CONSTRUCTION PAD*
55	GRS WIRE FORM - 4"X4", 4 GAUGE WELDED WIRE MESH, POST-FABRICATION HOT-DIPPED GALVANIZED.
400	GALVANIZED WIRE STRUTS - 4 GAUGE
110	TERRASPAN PANEL INSERT, AIL (OR EQUIVALENT)
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
2	RUBBER BEARING PAD 1" THICK SIZED TO MATCH BEARING PLATE

*CONSTRUCTION PAD TO BE REINFORCED WITH 2 ROWS 15M REBAR @ 250 C/C LONGITUDINAL, AND 12 - 15M REBAR HORIZONTAL.

ISSUED FOR PERMIT APPROVAL

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY UTILIZING METHODS APPROVED BY THE SUPERVISING ENGINEER.

**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK



ROAD PROFILE VIEW
SCALE 1:1000

-10 0 10 20 30 40 50

CAUTION:

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PROPOSED PERMANENT 36.576m (120') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 128+401
SITE: COFFEE CREEK
(62° 54' 7.51" N, 139° 3' 12.89" W)

Signature REDACTED

DWG No: 1343-2-COFFEE- 003

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 02, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG. MA
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
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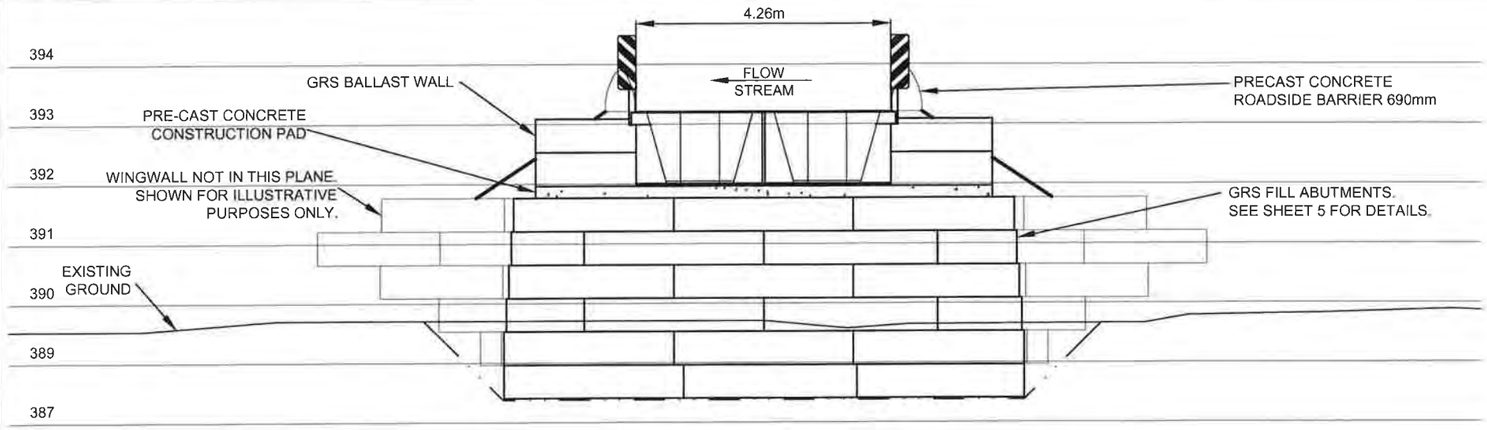
DESIGNED ROAD GRADE
HIGH WATER LEVEL
WORKPOINT WP1
MIRAFI 600x OR EQUIVALENT

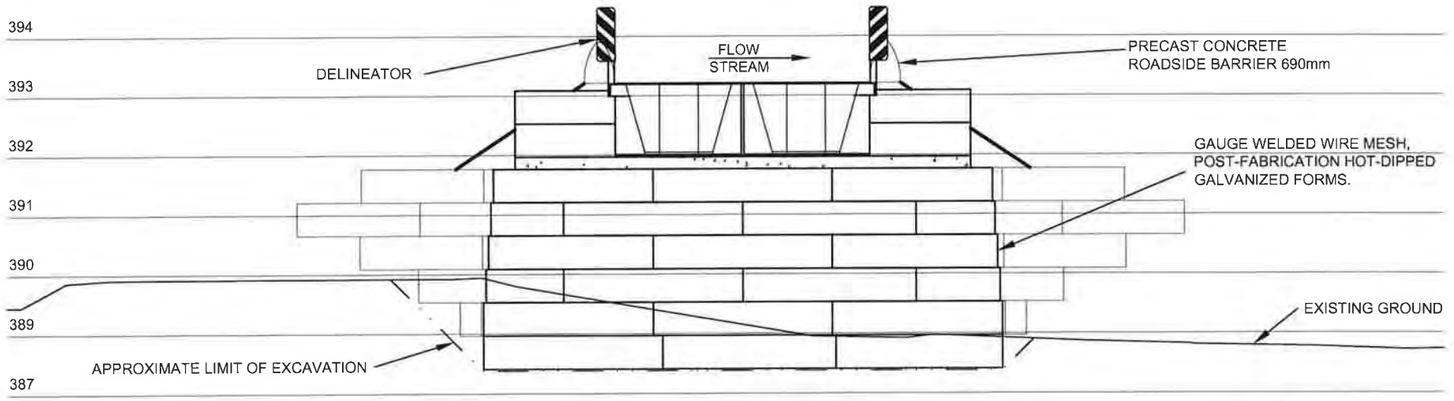


DAWSON CITY ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND ENVIRONMENT YUKON CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html AND http://www.env.gov.yk.ca/publications-maps/brochures.php . THE ENVIRONMENT YUKON REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENCE.
2. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. CUT BRUSH OFF TO GROUND HEIGHT IF NEEDED, BUT WITHOUT DISTURBING THE ROOTS. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
3. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA (30m AWAY FROM THE WATER BODY).
4. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. DIVERT THE DITCH FLOW TO A VEGETATED AREA WHERE IT CAN INFILTRATE INTO THE GROUND. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.



COFFEE GOLD MINE ABUTMENT CROSS SECTION
SCALE 1:100

-1 0 1 2 3 4 5

ISSUED FOR PERMIT APPROVAL

CAUTION:

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NOTES:

1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN GENERAL ACCORDANCE WITH CAN/CSA-S6. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS .BOTTOM OF GIRDER ELEVATION TO GOVERN. IF SUPERSTRUCTURE HAS BEEN USED PREVIOUSLY AT ANOTHER LOCATION IT MUST BE INSPECTED BY A PROFESSIONAL ENGINEER PRIOR TO USE AT THIS SITE.
2. BCL-625 DESIGN VEHICLE LOADING.
3. 100 YEAR FLOOD EVENTS WERE ESTIMATED USING RATIONAL AND REGIONAL METHODS, CROSS-SECTIONAL MANNING EQUATION, AND USGS PEAK FLOW ESTIMATION TOOL FOR THE YUKON RIVER WATERSHED (CURRAN, F, & D., 2003). ESTIMATES WERE ADJUSTED FOR CHANGES IN LOCALIZED WATERSHED CHARACTERISTICS, SUCH AS INFILTRATION RATES AND LOCALIZED RAINFALL INTENSITY. SITE OBSERVATIONS, EXISTING STRUCTURES, AND HISTORIC HIGH WATER EVIDENCE WERE ALSO USED TO ESTIMATE PEAK FLOW.
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   - INSPECT FOUNDATION SOILS FOLLOWING EXCAVATION
   - LAYOUT LOCATION OF FILL AND GRS FORM PLACEMENT
   - BACKFILL MATERIAL AND TECHNIQUE AND GEOTEXTILE PLACEMENT
   - WALL FACE LAYOUT AND OFFSETS
   - FINAL COMPACTION OF SURFACE PRIOR TO PLACING CONCRETE CAPS
   - FINAL INSPECTION OF ALL COMPLETED WORKS
   - OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

PREPARED FOR:

GOLDCORP

PREPARED BY:

ONSITE
ENGINEERING LTD.
COASTAL OPERATIONS
1040 CEDAR STREET
CAMPBELL RIVER, BC, V9W 7E2
PH.: 250-287-9174 FAX: 866-235-6943

PROPOSED PERMANENT 36.576m (120') O/A LENGTH
ALL STEEL PORTABLE BRIDGE AT 128+401
SITE: COFFEE CREEK
(62° 54' 7.51" N, 139° 3' 12.89" W)

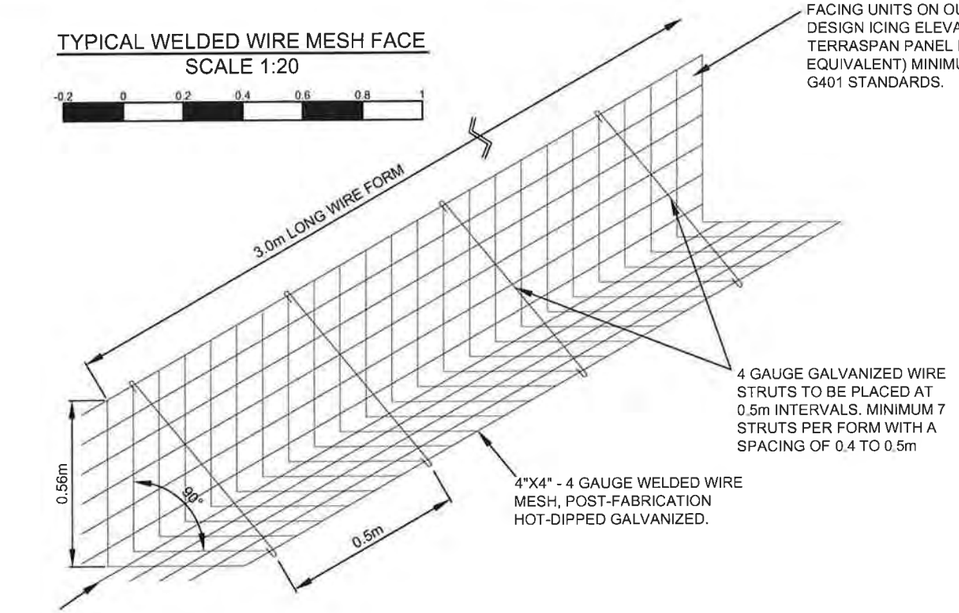
Signature REDACTED

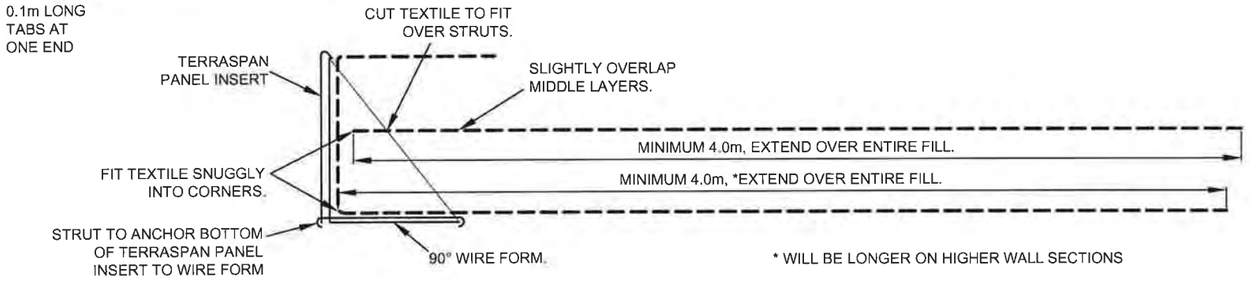
DWG No: 1343-2-COFFEE- 004

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 02, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
FILE NAME: COFFEE.DWG
SCALE: AS NOTED
REVISION NUMBER: 1
REVISION DATE: DECEMBER 13, 2016
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

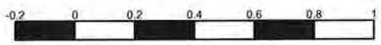
MIRAFI 180N
OR EQUIVALENT

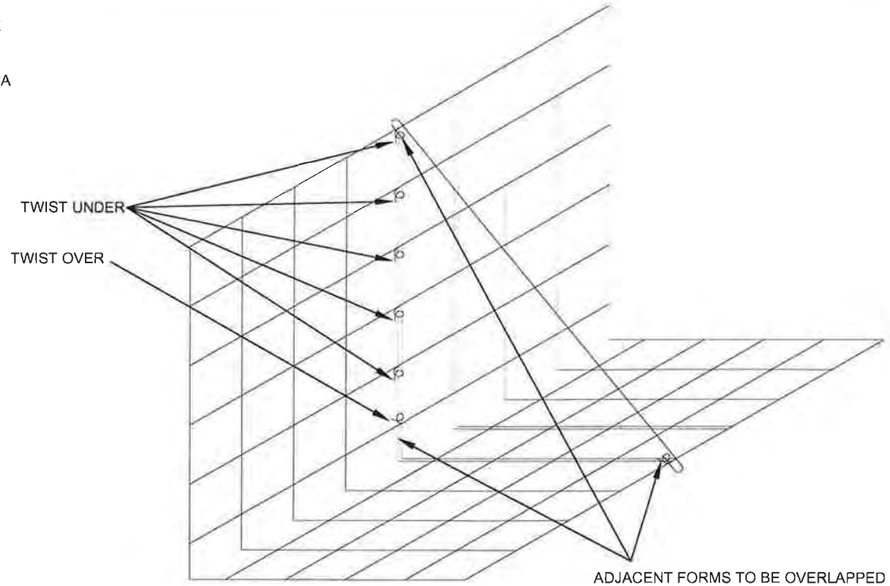
TYPICAL WELDED WIRE MESH FACE
SCALE 1:20





TYPICAL GEOTEXTILE PLACEMENT DETAIL
SCALE 1:20





TYPICAL WIRE FRAME CONNECTION DETAIL
SCALE 1:10

CONSTRUCTION NOTES FOR GRS AND WELDED WIRE FORM FACE:

1. BOTTOM ROWS OF WIRE FORMS MUST BE PLACED DIRECTLY ON NATIVE MINERAL SOIL, BEDROCK OR COMPACTED GRANULAR / BROKEN ROCK FILL LAYER AT OR BELOW THE ELEVATIONS SHOWN IN THE DESIGN AND AS PER THE ON-SITE DIRECTION OF THE DESIGN ENGINEER. FORMS ARE FOR FILL RETAINMENT ONLY. FOR PROPER GEOTEXTILE PLACEMENT A MINIMUM 4.0m WIDE FLAT AREA BEHIND THE FORMS MUST BE EXCAVATED WHERE PRACTICABLE. IF BEDROCK PREVENTS EXCAVATION, USE A MINIMUM OF 1.0m WIDE BENCH TO START THE GRS ON.
2. FORMS ARE 3m LONG AND CAN BE CUT TO SHORTER LENGTHS TO FORM AROUND CORNERS. ADJACENT FORMS MUST BE BOUND TOGETHER BY "TWISTING" THE 0.1m LONG WIRE TABS AROUND THE NEXT FORM TO AT LEAST 360°. ALL TABS ON THE FACE AND A MINIMUM OF ONE TAB ON THE BOTTOM MUST BE USED (SEE DETAIL ABOVE) TO BIND FORMS. TERRASPAN PANEL INSERTS MUST OVERLAP AT LEAST 0.03, AND THE JOINT MUST FACE DOWNSTREAM. PANEL JOINTS MUST BE OFFSET FROM WIRE FORM JOINTS WHERE POSSIBLE.
3. PLACE MIRAFI 600X (OR APPROVED EQUIVALENT) WOVEN GEOTEXTILE OVER FORMS WITH A MINIMUM 4.0m LONG TAIL EXTENDING BEHIND THE FACE. THE REMAINING GEOTEXTILE IS TO BE DRAPED OVER THE FACE OF THE FORMS. WHILE ENSURING THE GEOTEXTILE IS FIT TIGHTLY TO THE INSIDE OF THE FORM, THE STRUTS MUST BE ATTACHED TO THE FORMS THROUGH THE GEOTEXTILE AT A SPACING OF 0.4 TO 0.5m.
4. BACKFILL THE FORMS WITH COMPACTIBLE GRANULAR SOIL OR BROKEN ROCK FILL TO A LOOSE DEPTH OF ABOUT 0.3m AND COMPACT TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY. USE A VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 12,000 lbs OF CENTRIFUGAL FORCE. USE A JUMPING JACK COMPACTOR WITH A MINIMUM IMPACT FORCE OF 23 psi TO COMPACT THE SOIL BETWEEN THE STRUTS. A SECOND PLATE COMPACTOR OR LARGER COMPACTOR IS SUGGESTED FOR THE PURPOSE OF INCREASED PRODUCTIVITY.
5. PLACE THE SECOND LAYER OF GEOTEXTILE OVER THE COMPACTED LIFT AND CUT SLITS IN THE FABRIC (PERPENDICULAR TO THE WALL FACE) WHERE THE STRUTS INTERFERE SO THE GEOTEXTILE MAY BE PLACED TIGHT AGAINST THE WIRE FACE.
6. PLACE AND COMPACT GRANULAR FILL TO THE TOP OF THE WELDED WIRE FORM AS PER STEP 4.

ISSUED FOR PERMIT APPROVAL

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(62° 54' 7.51" N, 139° 3

Signature REDACTED

DWG No: 1343-2-COFFEE- 005

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 02, 2016
REVIEWED BY: JEREMY ARAKI, P.ENG.
DRAWN BY: TODD FORBES
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: SEPTEMBER 21, 2015
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MIRAFI 600X
OR EQUIVALENT

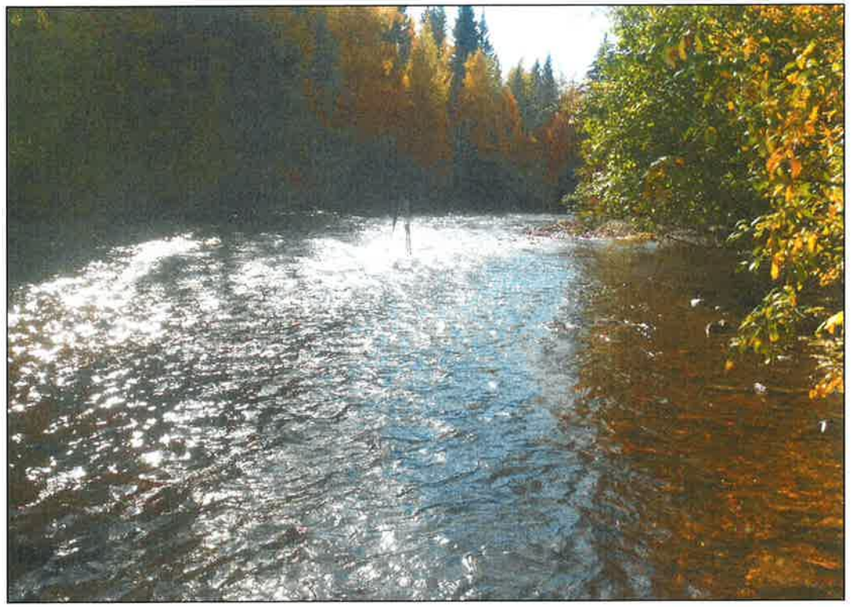

PHOTO #1 - VIEW UPSTREAM FROM CROSSING



PHOTO #2 - VIEW OF COFFEE GOLD MINE APPROACH



PHOTO #3 - VIEW OF DAWSON APPROACH

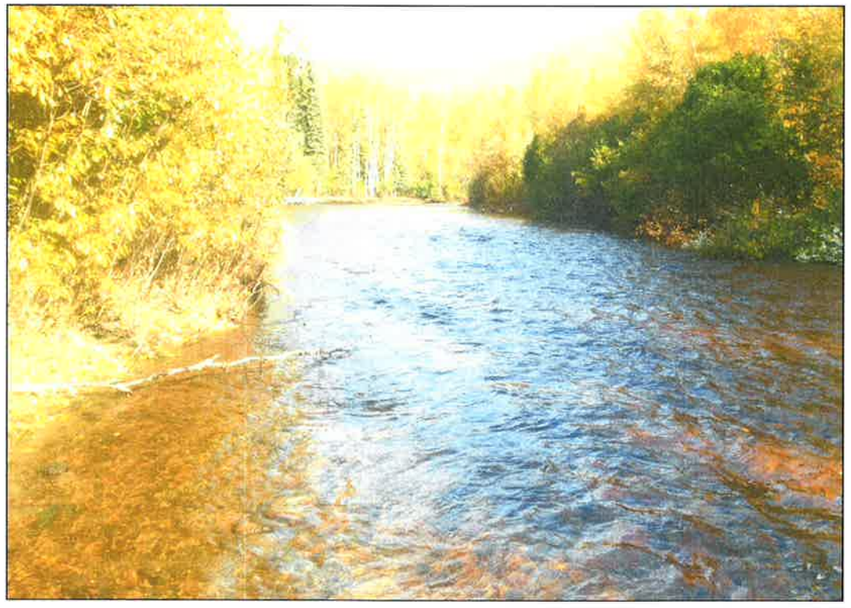

PHOTO #4 - VIEW DOWNSTREAM FROM CROSSING

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DWG No: 1343-2-COFFEE- 006

SHEET: 6 OF 6

DESIGN BY: SCOTT WILSON, P.ENG.
DESIGN DATE: MAY 02, 2016
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