BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

DELOITTE & TOUCHE INC.

CONSTRUCTION COMPLETION REPORT VANGORDA DIVERSION FLUME ROCK SLOPE REHABILITATION

FARO MINE, YUKON

PROJECT NO.: 0257-003-03
DATE: MARCH 28, 2001

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March 28, 2001
0257-003-03

Deloitte & Touche Inc.
Suite 1400
181 Bay St.
Toronto, ON
M5J 2V1

Attention: Mr. Doug Sedgwick, Director, Environmental Services

Re: Faro Mine, Yukon -Vangorda Flume Rehabilitation Work

Dear Sir:

Please find enclosed two copies of the construction completion report for the Vangorda Diversion Flume Rock Slope Rehabilitation work carried out in February, 2001. Copies have also been forwarded to Mr. Dana Haggar in Faro and Mr. Eric Denholm in Yellowknife.

We trust that this information will satisfy your requirements and appreciate having the opportunity of providing our services on this project. If you have any questions or require any further information, please do not hesitate to contact us.

Thank, you.

Yours truly,
BGC Engineering Inc.
per:

James W. Cassie, M.Sc., P.Eng.
Specialist Geotechnical Engineer

JWC/sf

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LIMITATIONS OF REPORT

This report was prepared by BGC Engineering Inc. (BGC) for the account of Deloitte and Touche Inc. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of report preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be based on it are the responsibility of such Third Parties. BGC Engineering Inc. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

As a mutual protection to our client, the public, and ourselves, all reports and drawings are submitted for the confidential information of our client for a specific project and authorization for use and/or publication of data, statements, conclusions or abstracts from or regarding our reports and drawings is reserved pending our written approval.

1.0 INTRODUCTION

1.1 Background

The Vangorda Diversion Flume diverts the flow of Vangorda Creek around the Vangorda open pit at the Faro Mine, located about 10 km northeast of the Faro townsite in Yukon. The diversion arrangement consists of an 8-m high upstream diversion dam and intake culvert on Vangorda Creek, an 800 m long diversion channel lined with a 1500 mm diameter half-section culvert (flume) and a final stilling basin, drop structure and outfall basin to convey discharge water back into Vangorda Creek.

In 1999, a fall of rock from a near vertical rock cut overlooking one section of the flume necessitated emergency replacement of approximately 39 metres of the flume. It was considered likely that continuing freeze-thaw cycles in the presence of some seepage on the rock slope and unfavourable foliation planes would result in additional rock falls in the future.

In 2000, BGC Engineering Inc. (BGC) conducted an evaluation of short term management options for the flume for the next 1 to 3 years until an overall long term closure plan was in place for the mine. BGC (2000) identified four areas where rockfall mitigation work was required (Zones 1, 2, 3 and 4) and five options for treatment, which included:

- monitor and repair
- drill, blast and bolt
- shotcrete buttress and bolt
- flume covering
- flume relocation

As a result of this evaluation, a tender was issued on December 4, 2000 for a program of work on two areas- Zone 1 and Zone 4 where rockfall potential was greatest. Zone 1 was the area where the 1999 rockfall occurred.

1.2 Contract Scope of Work

The original tender called for installation of rock bolts in a rock face at the downstream end of Zone 1 and trim blasting of the overhanging rock along the crest of the rock cuts in Zone 1 and Zone 4. Flume protection during the blasting, excavating and scaling operations was also included. The contract also included production of 1000 m^3 of rip rap and 1000 m^3 of granular quarry development as provisional items.

After discussions with Mr. Bud McAlpine (DIAND) and Mr. Milos Stepanek (Geo-Engineering), it was decided that DIAND could accept some additional risk, relative to the complete rehabilitation of this slope. As a result, the contract was modified on December 18, 2000 by the deletion of the rock bolt component, which would be deferred into the spring, if required, under a new contract. The final contract consisted of 4 main items of work and two provisional items, as follows:

Main Contract:

1.	Scaling; as specified	Excavator hours	24
		Man-hours	20
2.	Trimming: as specified	Trim Drilling (lineal metres)	300
3.	Flume Protection; as specified		Lump Sum
4.	Mobilization and Demobilization		Lump Sum

Provisional Items:

1.	Granular Quarry Development	1000 bank cubic metres
2.	Rip Rap; as specified	1000 in place cubic metres

Appendix 1 contains the tender package along with Addendum 1.

2.0 CONSTRUCTION

2.1 General

This section describes the rehabilitation work carried out on the flume between February 12 and February 25, 2001 by Golden Hill Ventures Ltd., under contract to Deloitte & Touche. The work was supervised on behalf of Deloitte & Touche by Mr. Holger Hartmaier, P.Eng., of BGC, who reported to Mr. Dana Haggar, Site Manager for Deloitte & Touche.

Appendix 2 contains copies of the daily reports prepared during the construction period.

Appendix 3 contains a selection of construction photographs which illustrate the main items of work.

2.2 Tendering and Award

The Tender documents were prepared by BGC for Deloitte & Touche LLC, Interim Receiver for Anvil range Mining Corporation and issued for bid on December 4, 2000 to three Yukon based contractors:

- Golden Hill Ventures Ltd, Whitehorse, Yukon
- Pelly Construction Ltd., Whitehorse, Yukon
- Ketza Construction Corp., Whitehorse, Yukon

A site visit for all contractors was held on December 13, 2000, but Ketza did not attend.

Bids closed at 4:00 PM, December 21, 2000. Bids were received from Golden Hill and Pelly. The Contract was awarded to Golden Hill Ventures on January 4, 2001, for a price of $53,500.00 for the main items of work, excluding GST. Upon award of the contract, the provisional items for riprap production and granular borrow development, worth $45,000.00, was deferred.

After Golden Hill mobilized to site, it was determined that some of the riprap area had already been blasted. As a result, Golden Hill and Deloitte and Touche agreed to a volume of 1200 m^3 of riprap for a lump sum price of $35,000.

2.3 Mobilization

By February 12, 2001 Golden Hill had mobilized the following equipment to the site:

- Cat 235B backhoe
- Cat D9N bulldozer with ripper
- Cat 773B rock truck
- Atlas Copco track mounted pneumatic drill
- portable electric generator/diesel fired heater
- low-bed tractor trailer unit for moving equipment
- service truck
- crew cab pick-up truck

Initial site preparatory work by Golden Hill included clearing of snow along the flume access road and pioneering access roads to the top of Zones 1 and 4 for the drill.

The contractor's crew consisted of three persons for most of the contract:

Pat Magnuson- Supervisor
Scott Thompson- Operator
Tom Fisher- Operator/Mechanic

Peter Hildebrand, blaster for Golden Hill was on site from February 16 to February 21 to carry out the drilling and blasting operations. Jason Thompson of Golden Hill delivered the explosives and assisted Peter on February 20-21 in loading the blast holes. Tom Fisher left site on February 22, 2001.

The Golden Hill crew stayed in Faro at Hoang's Motel. Pat Magnuson and Holger Hartmaier stayed at the Anvil Range guest house in Faro.

2.4 Flume Protection

Protection of the flume was provided under a lump sum item in the contract. The purpose of the flume protection was to prevent damage to the culvert sections during blasting and to keep the blasted and scaled spoil from entering and/or blocking the flume. Scrap rock truck canopies from the mine were used to cover the half-culvert sections of the flume. These were loaded on to the low bed trailer at the main gate and transported over the Vangorda haul road to the site by Golden Hill.

Preparatory work for placement of the flume protection included removing snow and ripping and flattening the slope of the flume access road embankment next to the flume sections to be protected to allow access by the backhoe.

The canopies were hoisted into place with the Cat 235B backhoe. Golden Hill had to torch cut lifting eyes into the canopies to allow attachment of a clevis at each end. A heavy steel cable was then hooked onto the backhoe bucket and used to lift each canopy in place. Each canopy section was backfilled with the excavated embankment material, which then allowed access across the flume to the toe of the rock slopes.

Flume protection was initially placed in Zone 1, then relocated after the Zone 1 blast to Zone 4. A total of 8 truck canopies were utilized. Six canopies were in place at each Zone during the blast at that location.

After scaling and mucking was completed, the backfill around the canopies was removed and the canopies were lifted off the flume and returned by low-bed transport to the main mine gate area. Some follow-up clean up work was required in the flume to remove spoil materials that had fallen through gaps in the canopies. The sand bucket was obtained from the mine for this work.

Upon completion of this work, the flume was checked to ensure there was no obstruction to the flow.

2.5 Trimming

An access road was cut by Golden Hill from the Vangorda haul road to the top of Zones 1 and 4, using the bulldozer and backhoe. A flat bench was cut at both locations which allowed access by the track mounted pneumatic drill. Due to snow cover and sloping ground conditions, it was not possible to get access to the very upstream end of the Zone 1 area and very downstream end of Zone 4.

A drill hole pattern was marked out on the ground with spray paint by BGC and all holes were drilled and measured under supervision by BGC. In general, a nominal 1m square grid pattern was used for the production holes. Holes were drilled up to 3 m deep and stepped up so as to create a nominal 1:1 slope after the blast.

In Zone 1, a row of shear holes 0.5 m apart was drilled along the back row. No shear holes were used in Zone 4. Blast hole diameter was 3". Blasting was done using bagged ANFO with half stick dynamite primers and 1 m of stemming. In Zone 1, the shear line was loaded every other hole. The blasts were initiated with detonating cord with no delays.

A total of 266 lineal metres of blast hole was drilled in Zones 1 and 4. In Zone 1, all holes were drilled vertically except for two 3-m long holes near the face which were inclined at 15° from the vertical to help remove a large mass of rock. In Zone 4, all holes were drilled 15° off vertical. The breakdown in drill hole footage for the two areas is as follows:

Zone 1:

24 shear line holes, nominal depth 1.5 m	36 Meters
24 holes, nominal 2 m deep	48
14 holes, nominal 3 m deep	42

The actual total depth measured for payment purposes was 132 lineal metres

Zone 4:

20 holes, nominal depth 1.5 m	30 Meters
19 holes, nominal depth 2.0 m	38
20 holes, nominal depth 3.0 m	60

The actual total depth measured for payment purposes was 134 lineal metres.

The blast at Zone 1 was done at 2:30 PM on February 20 and used about 213 kg of ANFO and 50 half stick primers. The rock broke cleanly to the foliation plane, close to a 1:1 slope along the crest.

The Zone 4 blast was done at 10:50 AM on February 21 and used about 288 kg of ANFO, initiated by 35 full stick (16") and 25 half-stick (8") primers. Most of the loose, weathered rock in the overhang shattered into small fragments. A bed of massive pyrite up to 1 m thick was also encountered which broke up into larger angular blocks. The overall trim blast resulted in a 1:1 slope along the crest of the rock cut.

2.6 Scaling

Scaling was carried out after blasting in Zones 1 and 4 using the Cat 235B backhoe. A second Cat 235B backhoe from the mine was also used to help scale and excavate the blasted rock. The area of rock at the downstream end of Zone 1, which was originally identified for rock bolting, was heavily scaled by backhoe to remove weathered and loosened rock. All the accumulated talus at the base of this slope was removed, creating a large catch bench for any future talus accumulation. Rock bolting of this portion of the slope should no longer be necessary.

In Zone 1, the near surface bedrock at the top of the cut was deeply weathered and loosened. The blast resulted in back break along the prominent foliation planes allowing the hoe to neatly trim the slope back at 1:1 or flatter. An area of poorly scaled rock remains at the upstream edge of the Zone 1 blast (see photos). This area was not removed by blasting due to inaccessibility by the drill from the top of the outcrop and by the backhoe from the toe. Hand scaling was also not attempted due to icy slope conditions. The lower face of Zone 1 was cleared of talus debris and should have sufficient room on the bench next to the flume to catch any small rockfalls ($<1m^3$) which are expected to ravel out of the slope in this area. It is recommended that when the snow and ice are gone, hand scaling be attempted to clear the remaining loose materials. No unstable wedges were exposed after blasting that would require rock bolting.

In Zone 4, the blasted rock slope has been shaped to a much flatter slope, approaching 1:1. A weak and erodible graphitic phyllite unit is exposed along the base of the slope. Erosion of this unit will undercut a thick resistant quartzite-massive sulphide unit which forms the upper unit in the slope. It is recommended that in Zone 4, the existing talus accumulation be left in place to help preserve the integrity of the lower graphitic unit.

The excavated spoil from the blasting and scaling operations was cast onto the flume access road by backhoe, then pushed into the Vangorda Pit by bulldozer for disposal.

A total of 25.5 hours of scaling time was used by the excavators. No hand scaling time was used.

2.7 Rip Rap Production

A rip rap quarry site had been previously selected by Deloitte & Touche for the production of 1000 m^3 of rip rap. The quarry is located about 1.8 km west of the Vangorda Pit, adjacent to the Grum rock dumps. The rock at this location is a fine grained, dark green, faintly to slightly weathered, strong to very strong meta-volcanic rock of andesitic composition. Rip rap production was carried out by Golden Hill from February 14 to February 17, 2001.

Access to the quarry is about 1 km from the Vangorda haul road at the southwest end of the Grum Pit. The access road and quarry area had to be cleared of snow before production could get started.

Once the quarry had been cleared, it was realized that the rock had already been blasted. Negotiations ensued between Deloitte & Touche and Golden Hill which resulted in Golden Hill agreeing to produce a total of 1200 m^3 of rip rap in stockpile volume for a price of $35,000.00.

The product meets the specifications, with very few pieces larger that the 900 mm maximum size having to be rejected from the blasted material. The fines content is also quite high, however it was judged that the fines occupied the void spaces between the larger rock particles and that the required gradation specifications could be satisfied. Screening of the rip rap will be necessary, if a clean product is required.

The blasted rock was ripped by the dozer in the pit to break up the frozen material and bladed to a face where it was loaded by Cat 235B backhoe into the Cat 773B rock truck. The truck hauled the rock to the stockpile area located at the side of the Vangorda haul road, near the south end of the Grum Pit. Based on an estimated volume of 20 m^3 per rock truck load, 60 loads were hauled to the stockpile area.

The stockpile was bladed into a neat rectangular pad to allow a volumetric measurement. Measurements were made by Pat Magnuson of Golden Hill and Holger Hartmaier of BGC jointly using a survey tape and clinometer. The final volume in the stockpile was estimated to be 1204 m^3.

2.8 Demobilization

All work at the site was completed on February 25, 2001. Golden Hill transported all their equipment back to the main mine gate for demobilization. Some equipment remained on site to carry on other work required by Deloitte & Touche.

A meeting was held on the evening of February 25, 2001 at the Faro guest house between Pat Magnuson of Golden Hill, Dana Haggar of Deloitte & Touche and Holger Hartmaier of BGC to agree on the final pay items for invoicing.

2.9 Final Quantities and Costs

Based on the site inspection records kept by BGC, the following are the approved quantities and costs which were submitted to Deloitte & Touche as a basis for payment:

1.) Scaling- Excavator hours- 25.5 @ $250.00	$ 6,375.00
Man-hours- None Used	NIL
2.) Trimming- 266 lineal metres @ $35.00/m	$ 9, 310.00
3.) Flume Protection- Lump Sum	$20,000.00
4.) Mobilization/Demobilization- Lump Sum	$16,000.00
TOTAL	**$51,685.00**
Provisional Item:	
Rip rap production- 1200 cubic metres- Lump Sum	35,000.00
TOTAL CONTRACT VALUE SPENT	**$86,685.00**
	(Excluding GST)

3.0 RECOMMENDATIONS AND CONCLUSIONS

Access difficulties prevented a complete scaling of the upstream edge of the Zone 1 blast. This area may continue to ravel small pieces of rock until hand scaling can be carried out, preferably when the snow and ice is off the slope. The toe of the slope in Zone 1 has been cleaned out and there should be sufficient talus catchment for the near future.

The existing talus slope at the base of Zone 4 should be largely left intact as it serves to protect the erodible graphitic phyllite unit which would otherwise lead to progressive undercutting of the trimmed slope, if exposed.

When all the snow and ice has disappeared, the channel section on either side of the flume should be inspected to make sure that there are no constrictions due to talus accumulations, which would reduce the hydraulic cross section required to pass the design flood.

The scaling and trimming operations at Zone 1 and 4 were successfully carried out, leaving a manageable slope that will not threaten the integrity of the flume for the foreseeable future. No areas were identified where follow-up rock bolting would be necessary. Due to the weathered and fractured nature of the rock, trimming of the slopes to flatter angles is a more effective long term means of stabilizing the rock cuts along the flume.

4.0 CLOSURE

The 2001 work program of slope rehabilitation along the Vangorda Flume was carried out in accordance with recommendations input from DIAND, Deloitte and Touche and BGC, and

should satisfy the interim mine closure management objectives for the next few years until a final long term closure plan for the entire mine site is in place.

We trust that this report and the work involved has satisfied your requirements. If you have any questions or require any further input, please do not hesitate to contact the undersigned at your convenience.

BGC Engineering Inc.
Per:

for Holger H. Hartmaier, P.Eng., M.Eng.
Senior Geotechnical Engineer

James W. Cassie, M.Sc., P.Eng.
Senior Geotechnical Engineer

REFERENCES

BGC Engineering Inc. (2000), "Evaluation of Short Term Management Options, Vangorda Diversion Flume, Faro Mine, Yukon", prepared for Deloitte & Touche Inc., November 20, 2000.

Appendix 1
Contract and Addendums

TENDER DOCUMENTS FOR:

VANGORDA DIVERSION FLUME REHABILITATION, FARO MINE, YUKON

Deloitte & Touche LLC
Interim Receiver for
Anvil Range Mining Corporation

BGC PROJECT NO.: 0257-003-01
DATE: DECEMBER 4, 2000

DISTRIBUTION LIST:
DELOITTE & TOUCHE: 2 COPIES
CONTRACTORS: 3 COPIES
BGC: 2 COPIES

1. VISITING THE SITE

.1 The contractor shall visit the site before submitting Tender in order to thoroughly acquaint himself with all local conditions under which he will be called upon to carry out the work coming under his Contract.

.2 A mandatory site visit will be held on December 13, 2000. All interested Contractors are to meet at the Faro Guest House at 11:00 AM, Pacific Standard Time.

.3 Tenderers must contact Mr. Dana Haggar (phone (867) 994-2647; fax 994-3349) to confirm intention to attend.

2. GENERAL CONDITIONS

.1 If the work has not been initiated by March 19, 2001, then the Tender may be reissued, at the discretion of the Owner.

3. TENDER CONDITIONS

.1 Tenderer shall submit, on the attached Form of Tender, a complete list of trades he proposes to execute with his own forces, as well as a complete list of Sub-contractors he proposes to employ.

.2 Any substitution of Sub-contractors must be approved in writing by the Engineer.

.3 Failure to comply with these provisions will involve rejection of the Tender.

.4 The Contractor shall also submit, in the space provided, a complete breakdown of his various Lump Sum Prices broken down to comply with the various sections of the Specification or sub-trades concerned.

4. TENDER CLOSING

1. Time for receiving Tenders will close at 4:00 PM, Eastern Standard Time, on December 21, 2000 and no tender will be accepted or considered if received after that hour.

.2 All Tenders must be submitted on the Form of Tender attached hereto. Tenders submitted by facsimile will be accepted. Confidentiality of facsimile information cannot be guaranteed.

.3 Completed Form of Tender to be delivered to Mr. Douglas Sedgwick and copied to Mr. Jim Cassie, as noted in 1.7.1 and 1.7.7.

.4 The lowest or any Tender will not necessarily be accepted.

.5 Notification of award of Tender will be issued to all Tenderers on or around January 4, 2001.

5. ADDENDA

.1 If necessary, written instructions or explanations in the form of Addenda will be sent to all Tenderers.

.2 Tenderers shall state on the Tender Form in the space provided the numbers of all Addenda received and included by them in the preparation of the tender.

6. ENQUIRIES

.1 All technical enquiries for clarification of drawings and specifications shall be made to:

Mr. Jim Cassie
BGC Engineering Inc.
#1170, 840-7th Avenue S.W.
Calgary, Alberta, T2P 3G2
Telephone: (403) 250 5185 ext. 103
Fax: (403) 250 5330

.2 All other tender enquires (bonding, insurance, closing date, progress payments, etc.) shall be made to:

Mr. Douglas Sedgwick
Director, Environmental Services
Deloitte & Touche Inc.
Suite 1400, BCE Place
181 Bay Street
Toronto, Ontario, M5J 2V1
Telephone: (416) 643 8034
Fax: (416) 601 6390

7. DEFINITIONS

.1 "Work" or "works" shall, unless the context otherwise requires, mean the whole of the work and materials, matters and things required to be done, furnished, and performed by the Contractor in or under this Contract.

.2 "Engineer" shall mean the Director, Environmental Services of Deloitte & Touche Inc. in their capacity of Interim Receiver for Anvil Range Mining Corporation, or his duly authorized agents, limited by the particular duties respectively assigned to them.

.3 "Owner" shall mean the Anvil Range Mining Corporation (Interim Receivership).

The undersigned hereby offer and agree to furnish all and every kind of labour, scaffolding, tools, implements, machinery, service and materials that may be required, to execute and to complete, in a satisfactory and a workmanlike manner, all the Work in accordance with Plans and Specifications attached hereto and exhibited, and such further details as may be furnished from time to time during the progress of the work.

We have examined the Plans, Specifications, Instructions to Bidders, the site and the existing conditions, and have ascertained all necessary particulars with regard to the Work and upon acceptance of this Tender we are prepared to enter into a Contract in the form exhibited with the said Specification, for the performance of the Work at the Lump Sum and Unit Prices given below.

SCHEDULE OF PRICES

Item	Description of Work	Unit	Approx. Quantity	Unit Price	Total
1)	Scaling; as specified	Man Hours	60	$_____	$_____
2)	Trimming; as specified				
	Trim Drilling	Lineal meter	100	$_____	$_____
3)	Rock bolting; as specified				
	Rock Bolting	Grouted lineal meter	40	$_____	$_____
4)	Flume Protection; as specified				
		Lump Sum	1	$_____	$_____
5)	Mobilization and Demobilization; as specified				
		Lump Sum	1	$_____	$_____

TOTAL AMOUNT OF TENDER ITEMS – TO INCLUDE ITEM NOS. 1 TO 5 $_____

APPLICABLE GOODS AND SERVICES TAX ON ABOVE ITEM NOS. 1 TO 5 $_____

PROVISIONAL ITEMS – IF AND AS REQUIRED BY THE ENGINEER

Item	Description of Work	Unit	Approx. Quantity	Unit Price	Total
1)	Rock Bolting; as specified				
	Excess Cement	Grout per 30 kg bag	20	$_____	$_____
2)	Rock Bolting; as specified				
	Rock Bolt Strapping	Lineal meter	10	$_____	$_____
3)	Rip Rap; as specified				
		Bank cu.m	1,000	$_____	$_____

TENDERERS PERSONNEL

The following is a list of the Tenderer's Personnel who will actively engage in the work if the Tenderer is awarded the Contract, with a record of each person's experience, knowledge and ability. It is understood that the work will be directed by the listed Personnel if accepted by the Engineer, no change can be made without his prior written approval.

- Supervisory

TENDERER'S EQUIPMENT

The undersigned submit herewith a list of equipment which is available and will be used on this job if the Tender is accepted:

Type of Equipment	Make, Model, Serial No.	State if Owned or Rented	Present Condition	On Job (State Dates)

LIST OF SUB-CONTRACTORS

....., the undersigned, submit herewith a list of sub-contractors whose services will be employed if the tender is accepted:

Name	Address	Trade	Approximate Value

We understand that where we plan on using our own forces for any of the sub-trades, we will so indicate in the spaces provided by inserting our own Company name. We acknowledge we have investigated the above sub-contractors and confirm they are reliable and competent to carry out the work satisfactorily. It is agreed that there will be no substitution of or any addition of sub-contractors without the prior written approval of the Owner.

TRADE BY OWN FORCES

The undersigned, submit herewith a list of the trades to be executed by our own forces.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

WORK SHIFT SCHEDULE

The undersigned, submit that our forces will operate under the following:

DATES From _____, 2000 to _____, 2000

	Time	
Shift	from	to
Day	.....	.....
Night	.....	.....

Days per week of operation ..... days. (State which days)

SITE VISIT

The site was visited and inspected on the _____ day of _____, 2000 by _____ being the authorized representative of the tenderer and holding the titles or position of _____.

CONTRACTOR'S HISTORY

The following is a list of projects of similar nature to this one completed by the Tenderer.

Project	Owner	Approximate Cost

The undersigned will execute, at prices to be established under the provisions of the Tender, any and all other items of work requested by the Project Manager of the Owner.

NAME OF COMPANY .....

WITNESS ..... SIGNATURE .....

WITNESS ..... SIGNATURE .....

ADDRESS .....

.....

POSTAL CODE .....

TELEPHONE NO. .....

FAX NO. .....

DATED AT .....

THIS ..... DAY OF ....., 2000

NAME AND LOCATION OF YOUR BANK .....

.....

G.S.T. REGISTRATION NO. .....

INSERT NUMBER OF ADDENDA
INCLUDED WITH THIS TENDER .....

DIVISION 1

1. BASIS FOR TENDERING

.1 Payment for the work will be made on the basis of the various Unit and Lump Sum Prices as submitted on the Form of Tender. Quantities for payment under Unit Price items will be determined by the Engineer, based on actual quantities of work and material installed.

.2 Unless otherwise stated in this specification, the Unit and Lump Sum Prices provide herein shall include all labour, scaffolding, tools, implements, machinery, service and materials constructed in place, and shall include all overhead profit and supervision and the entire costs of all permits, certificates, Provincial Sales Tax, Provincial Labour Taxes, Workers' Compensation, Public Liability and Property Damage, Surety Bond, Royalties and any and all other costs of a like nature to which the work is liable.

.3 Federal Goods and Services Tax is not to be included in the Unit and Lump Sum Prices. This tax is to be shown as a separate item on the Form of Tender.

.4 If it is found that any portion of the work specified herein and/or shown on the drawings can be omitted or added, the Engineer reserves the right to omit or add such portions of the work as he may see fit. Deductions shall be made from the Contract price for any work omitted at the Unit Price stated in the Contractor's Tender. Additions shall be made from the Contract price for any work added at the Unit Price stated in the Contractor's Tender.

.5 Take into consideration all of the precautions, conditions and limitations of every kind which may affect the work or operations and allow for same in the various Unit and Lump Sum Prices submitted.

2. VISITING THE SITE

.1 The Contractor shall visit the site before submitting Tender.

.2 The Contractor shall be thoroughly acquainted with all local conditions under which this Contract will be carried out.

.3 The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, water, electric power, roads and uncertainties of weather, or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Contract.

.4 The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of any and all surface and subsurface materials, including streams and groundwater to be encountered and including the Vangorda Creek Diversion Flume.

.5 Any failure of the Contractor to acquaint himself with all the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

.6 Representations made but not so expressly stated and for which liability is not expressly assumed by the Owner in the Contract and for information on or opinions concerning soils and subsurface conditions or other matters furnished by or for the Owner or for any understanding, opinions, or representations made or so expressed by any of its officers or agents during or prior to the execution of this Contract, shall be deemed only for the information of the Contractor and the Contractor shall have no claim against the Owner resulting from such information.

3. EMERGENCIES

.1 In the event of any part of the work being in danger from any cause whatsoever or if the work cannot be completed by the specified time, the Engineer shall have the right to call upon the Contractor for continuance of work without interruption.

4. AWARDS

.1 The Owner reserves the right to reject any or all tenders.

5. ENVIRONMENTAL PROTECTION

.1 It is the policy of the Owner to ensure the protection of the environment by integrating environmental priorities into each work plan.

.2 Abide by the appropriate good conservation and recycling practices.

.3 Adhere to all Federal, Provincial and Municipal Environmental Laws and Regulations pertaining to the Work.

.4 Execute all work in a manner that will minimize environmental impact.

.5 Immediately contain and clean up all spills of deleterious substances and follow-up reporting of such spills to the proper authorities.

.6 Forward a copy of the spill reporting to the Engineer.

.7 Refrain from destroying, removing or clearing trees, timber and shrubs to an extent greater than is necessary for the execution of the Contract.

.8 Take such measures as may be necessary to prevent employees from illegally hunting, disturbing, capturing or destroying animals and birds or illegally taking fish from any water.

.9 Prevent unnecessary disfigurement of the countryside.

.10 Execute all work in a manner that will minimize the release of silt and ensure that cement, paint or petroleum products and other materials deleterious to aquatic life does not enter into surface or subsurface waterbodies.

6. NATURAL AND HISTORICAL OBJECTS

.1 All fossils, coins, structures, articles of value or antiquity and other remains or things of geological or archaeological interest discovered on the site shall be as between the Owner and Contractor the absolute property of the Owner.

.2 Take all reasonable precautions and any precautions required by the Engineer to prevent workers or other persons from removing or damaging any such article or thing.

.3 Immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out, at the expense of the Owner, the Engineer's orders as to the preservation and disposal of the same.

7. ADDENDA TO SPECIFICATIONS

.1 Should any bidder find discrepancies in or omissions from the Contract drawings or specifications or be in doubt as to their meaning, he shall notify the Engineer who will forthwith interpret the true intent and if necessary, issue Addenda to Specifications stating the true intent and purpose of the Contract Drawings or Specifications relative thereto. Upon award of Contract, said Addenda shall become an integral part of the Contract.

8. DRUG AND ALCOHOL POLICY PROCEDURES

.1 In the performance of all works specified under this contract, ensure that all Contractor personnel conform to the following policy statement:

"All employees are required to report and remain fit for duty, free of the negative effects of alcohol and other drugs. It is prohibited to be on duty or to be in control of a vehicle or equipment while under the influence of alcohol or other drugs, including the after-effects of such use".

.2 Policy Standards: The Contractor is to ensure that all employees and employees of all sub-contractors adhere to the following standards when on the Owner's business or premises:

.1 No use, possession, distribution, offering or sale of illegal drugs or drug paraphernalia.

.2 No use, possession, distribution, offering or sale of alcohol.

.3 Responsible use of prescribed and over-the-counter medications.

.4 No trafficking (distribution, offering or sale) of prescription medications.

.5 Report fit for duty and remains fit for duty.

.3 Policy Violation Procedures: Where the Engineer has reasonable grounds to believe any individual in the employ of the Contractor is on duty in an unfit condition, or where during the preliminary phase of an investigation, an individual has been identified as being directly involved in the chain of acts or omissions leading up to an accident or incident:

.1 The Contractor will be notified.

.2 The Contractor will be required to conduct the individual(s) to a safe place.

.3 The Contractor will be expected to investigate the situation.

.4 The Contractor must satisfy the Owner that there was not a policy breach.

.5 The individual will not be allowed to return to any position without the written permission of the Owner and will be required to adhere to any conditions regarding their return.

.4 Consequences of Violation: Failure of the Contractor, its employees or subcontractors to meet these standards will be considered a breach of the Contract.

9. FIRST AID AND SAFETY

.1 Provide and maintain readily accessible at the works all first aid equipment and installations required by the Workers' Compensation Act and all safety and lifesaving equipment appropriate to the nature of the works.

.2 Ensure personnel with first aid certification in good standing are present on site, as per all regulations of Authorities having jurisdiction.

10. EMERGENCY PROCEDURES

.1 The Contractor shall maintain written emergency procedures to facilitate the speedy removal of an injured worker or other such emergency.

.2 A copy of the emergency procedures shall be submitted to the Engineer prior to the commencement of work.

.3 These procedures shall include but not be limited to the following:

.1 Emergency telephone numbers for ambulance, fire department, police and hospital.

.2 Directions for an ambulance to access the work site.

.3 Emergency procedure for rescue.

.4 Maintain a copy of these procedures on the job site and make all workers aware of their existence.

.5 The job site supervisor should keep a copy in his possession for quick reference in the event of an accident.

DIVISION 2

INDEX

PART 1 – GENERAL

1.1 Description of Work

.1 The Unit and Lump Sum Prices submitted on this Form of Tender shall include the entire cost of supplying all labour, materials, tools and equipment to do:

Scaling, Trimming, Rock Bolting, Flume Protection, Rip Rap Production and Mobilization-Demobilization of necessary equipment, supplies and labour; all as required to do the works as shown on the Drawings and as specified in this Specification.

1.2 Definitions

.1 Scaling: Scaling shall mean the removal by scaling bar, jacking or other means of all cracked or broken rock which, in the opinion of the Engineer cannot be properly secured by trimming, bolting, shotcreting, concreting or other means to ensure stability of the rock face. It may include light blasting, commonly referred to as "bulldozing" or "bag charging" and the removal and disposal of scaled rock, brush, overburden or other debris resulting from scaling operations.

.2 Trimming: Trimming shall mean the removal by appropriate drilling and blasting methods of loose and open jointed rock or overhanging rock and all other rock unsuitable to scaling or bolting, to produce a sound rock surface. Trimming operations include all activities related to blasting, including collaring and drilling of holes, fixing and firing of explosive charges, handling of misfires, and removal and disposal of trimmed rock or other debris resulting from trimming operations.

3 Rock Bolting: Rock Bolting shall mean the drilling of holes and the supply and installation by appropriate rock bolting methods of grouted anchored steel bars, tensioned and locked off against face plates, with mortar pads or rock surface preparation as required by the Engineer. This will also include rock strapping as a separate item.

.4 Flume Protection: Flume protection shall mean provision of cover to protect the flume and its flow during slope remediation and the removal of cover after slope rehabilitation.

.5 Rip rap: Rip rap shall mean the production (drilling and blasting) of rip rap to specified size and its' stockpiling in a satisfactory manner in a designated area.

.6 Mobilization and Demobilization: Mobilization and demobilization shall constitute the import of people, equipment, material, supplies and buildings to the worksite, their removal upon satisfactory completion of the work, and restoration of the worksite.

PART 1 – GENERAL (CONT'D.)

.7 Restoration shall mean cleanup of the site such that all debris, waste materials, diversion blockage materials and equipment are removed and properly disposed of as required, and that the site is left in the same or better condition than before the start of the work.

1.3 Qualifications of Operators

.1 Scaling:

.1 The Contractor shall submit to the Engineer the qualifications of the scaling personnel. The foreman shall have a minimum of three (3) year's demonstrated experience as a working foreman on similar projects, as determined by the Engineer. The rock scalers shall have a minimum of one (1) year's demonstrated experience on similar projects, as determined by the Engineer.

.2 Only experienced, licensed powdermen shall do bulldoze or bag charge blasting; licensed in accordance with Authorities having jurisdiction over blasting for scaling.

.2 Trimming:

.1 The Contractor shall submit to the Engineer the qualifications of the trimming personnel. The foreman shall have designed and supervised controlled blasts for projects over the last three (3) years. The rock trimming workers shall have one (1) year's demonstrated experience on similar projects, as determined by the Engineer.

.2 Only experienced, licensed powdermen shall do trim blasting, licensed in accordance with Authorities having jurisdiction over blasting for trimming.

.3 Rock Bolting:

.1 The Contractor shall submit to the Engineer the qualifications of the rock bolting personnel. The foreman shall have a minimum of three (3) year's experience supervising crews on similar projects, as determined by the Engineer. The rock bolting workers shall have two (2) year's demonstrated experience on similar projects.

.4 Flume Protection - Not Used

.5 Rip Rap:

.1 Only experienced, licensed powdermen shall do rip rap blasting; licensed in accordance with Authorities having jurisdiction over blasting.

PART 1 – GENERAL (CONT'D.)

1.4 Requirements of Regulatory Agencies

.1 Scaling:

.1 The Contractor shall adhere to Regulations of Authorities having jurisdiction for scaling.

.2 Trimming:

.1 The Contractor shall adhere to Regulations of Authorities having jurisdiction for blasting.

.3 Rock Bolting – Not used.

.4 Flume Protection: - Not used.

.5 Rip Rap:

.1 The Contractor shall adhere to Regulations of Authorities having jurisdiction for blasting.

.6 Mobilization and Demobilization

.1 The Contractor shall adhere to Regulations of Authorities having jurisdiction any aspects of the work with regard to mobilization and demobilization.

.7 General:

.1 The Contractor shall adhere to the Regulations of the Worker's Compensation Board (WCB) and all other Agencies having jurisdiction for this work.

1.5 Design Criteria

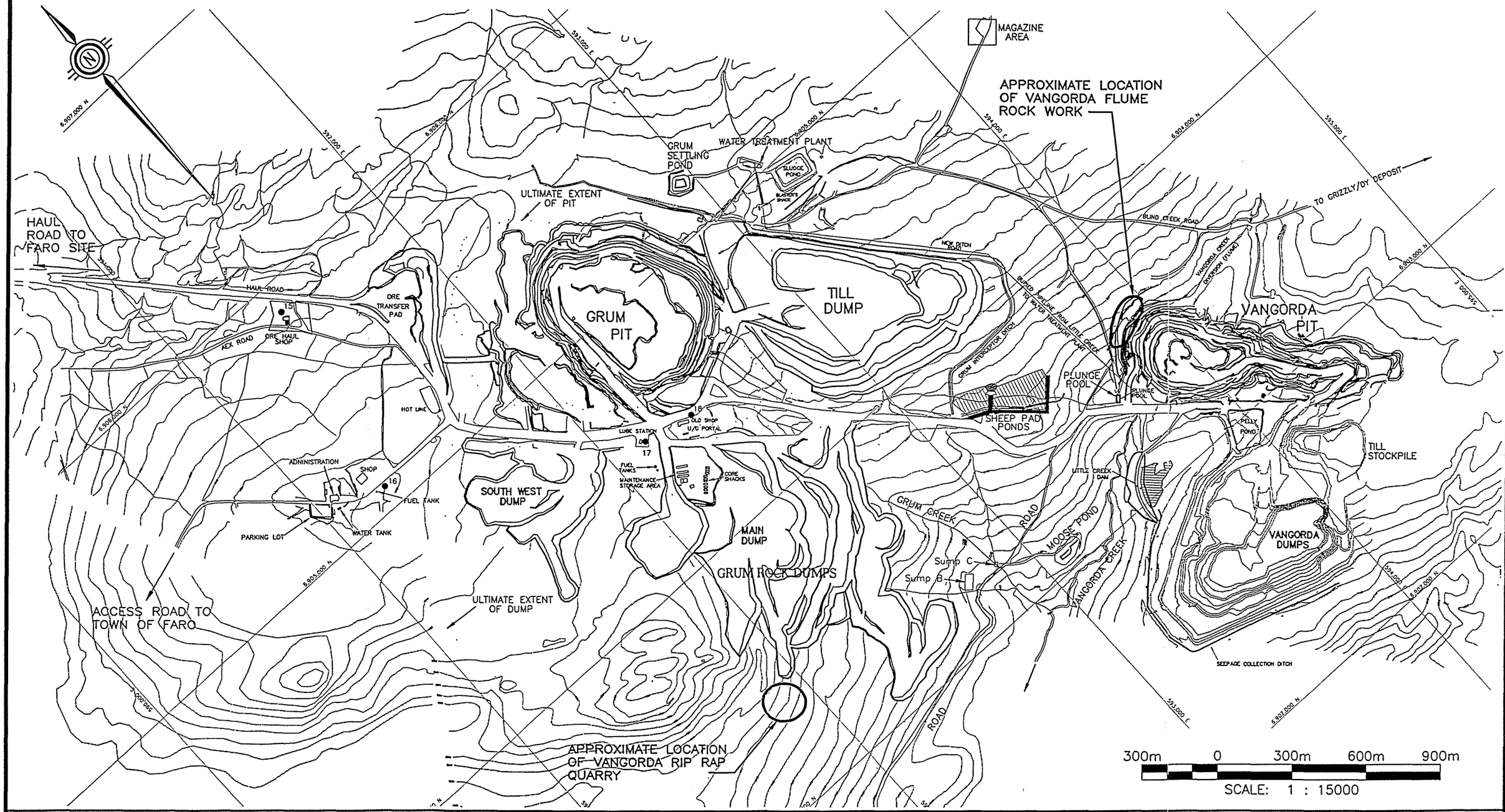
.1 Scaling – Not used.

.2 Trimming – Not used.

.3 Rock Bolting

.1 Warm Weather Cement Grout Properties: Microsil Anchor Grout, or an approved equivalent (non-shrink, for rock bolts where high early strength is required with low permeability, high corrosion resistance and ease of pumping), may be used when downhole temperatures exceed +5°C.

.1 Cement grout should be prepared according to manufacturer's specifications. Cement grout compressive strengths in MPa (psi) shall be at least:



REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	AS SHOWN
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250 5185

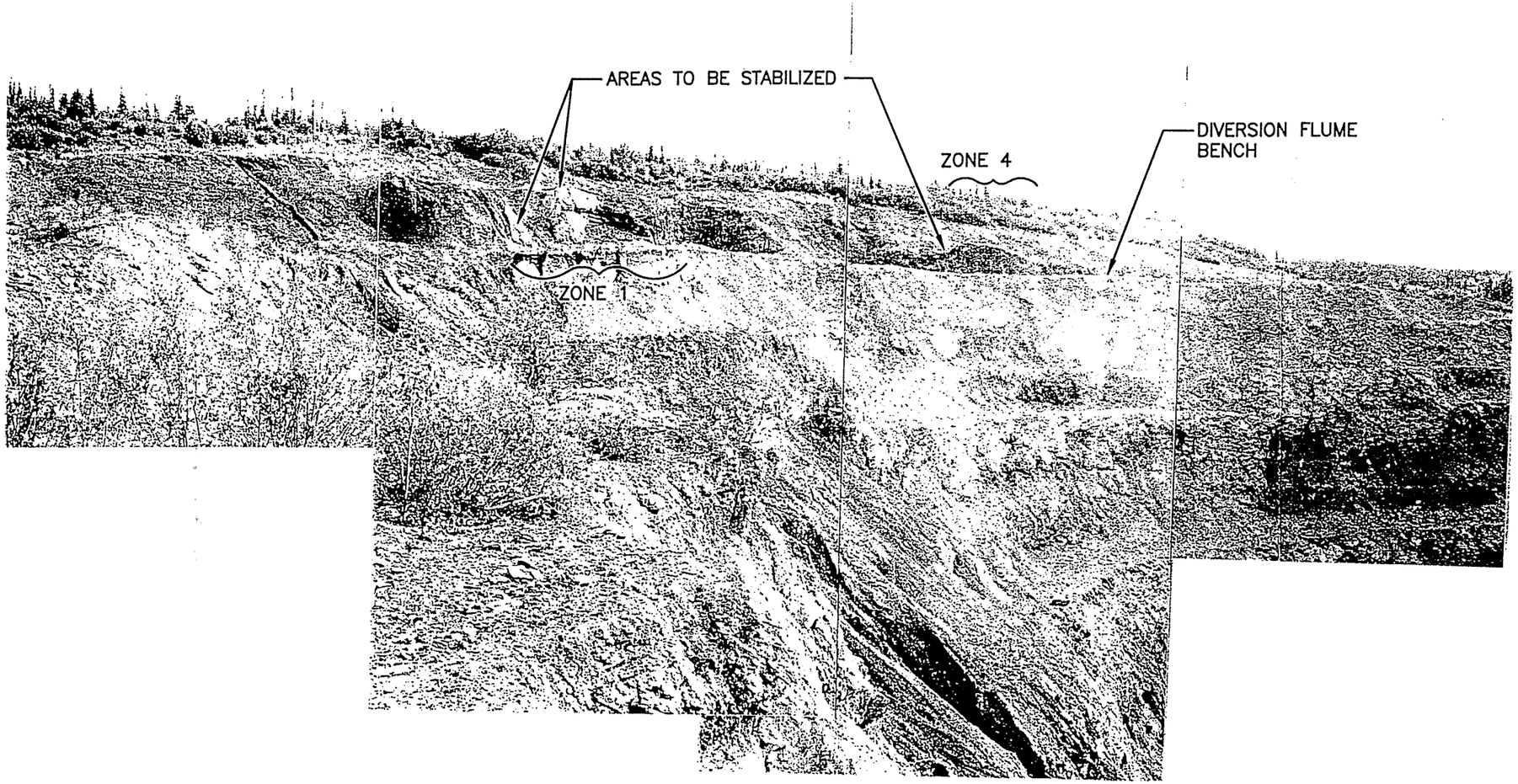
CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: SITE LOCATION PLAN

PROJECT No.	DWG. No.	REV.
0257-003-01	025700301-01	1

N:\BGC\PROJECTS\0257\003\DRAWINGS\025700301-01.DWG



REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.A.
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250-5185

CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

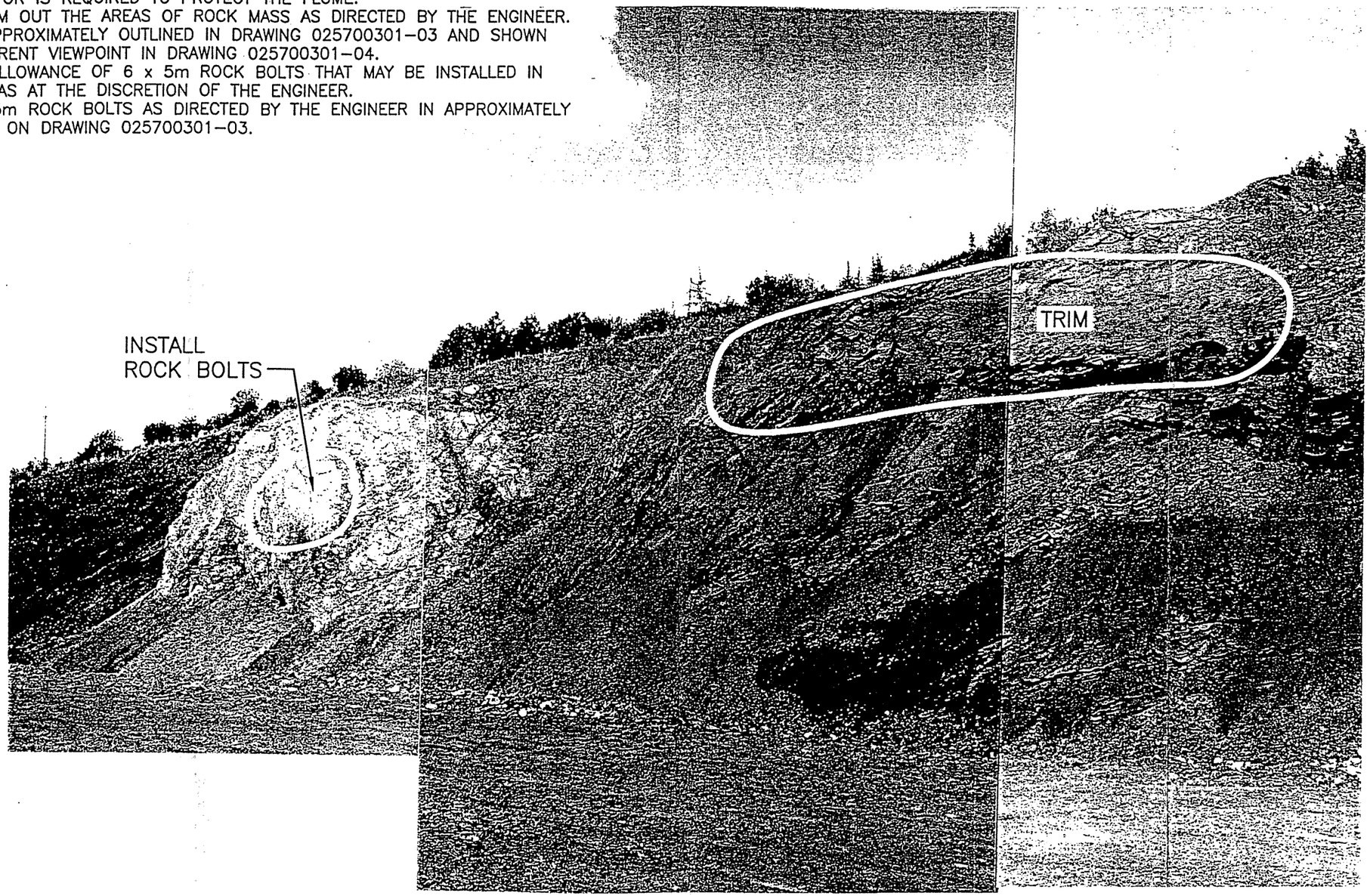
TITLE: PANORAMA OF VANGORDA PIT SLOPE BELOW DIVERSION FLUME

PROJECT No.	DWG. No.	REV.
0257-003-01	025700301-2	1

N:\BGC\PROJECTS\0257\003\DRAWINGS\025700301-02.DWG

SYNOPSIS

1. THE CONTRACTOR IS REQUIRED TO PROTECT THE FLUME.
2. SCALE OR TRIM OUT THE AREAS OF ROCK MASS AS DIRECTED BY THE ENGINEER. AREAS ARE APPROXIMATELY OUTLINED IN DRAWING 025700301-03 AND SHOWN FROM A DIFFERENT VIEWPOINT IN DRAWING 025700301-04.
3. PROVIDE AN ALLOWANCE OF 6 x 5m ROCK BOLTS THAT MAY BE INSTALLED IN THE TRIM AREAS AT THE DISCRETION OF THE ENGINEER.
4. INSTALL 2 x 5m ROCK BOLTS AS DIRECTED BY THE ENGINEER IN APPROXIMATELY THE LOCATION ON DRAWING 025700301-03.



REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.A.
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC

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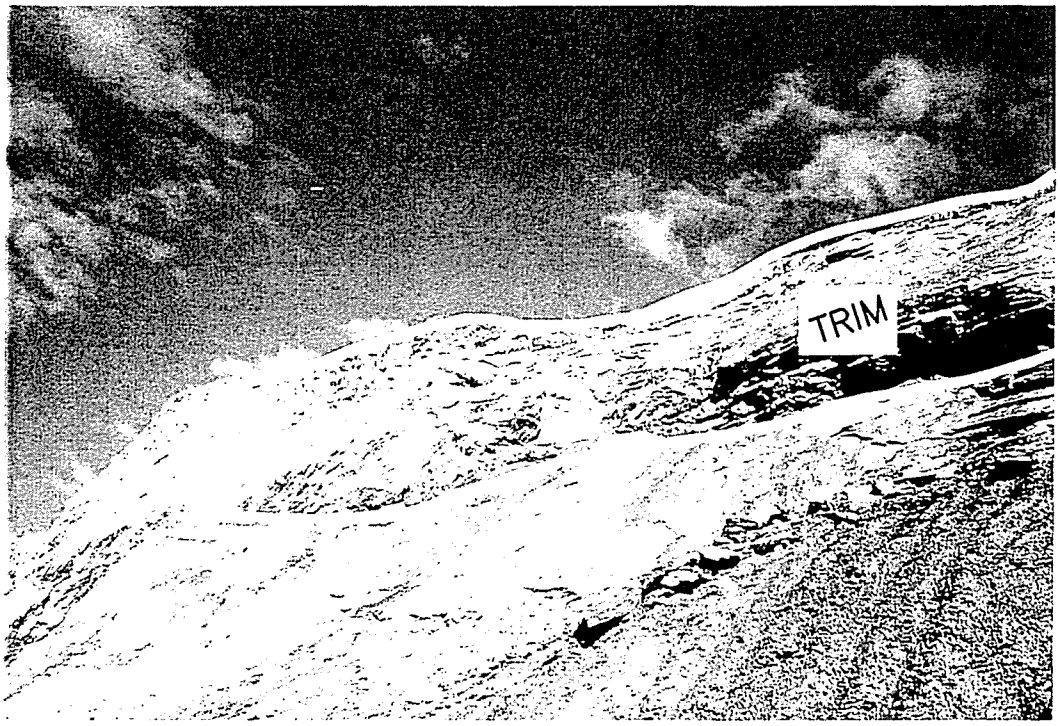
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250-5185

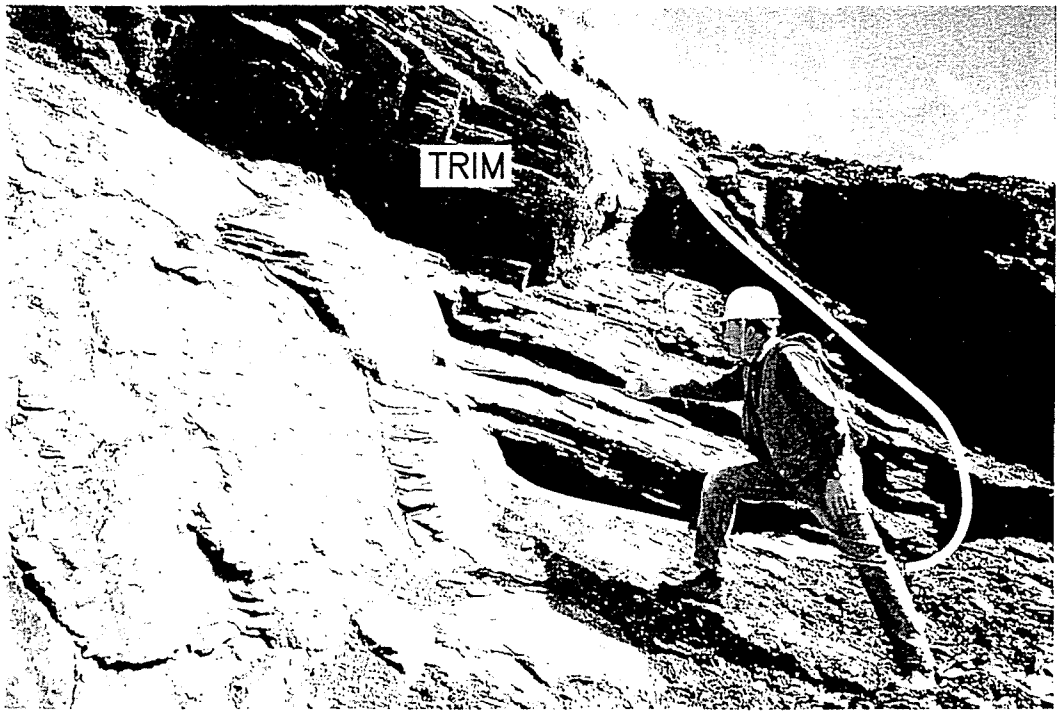
CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: PANORAMA OF ZONE 1

PROJECT No.	DWG. No.	REV.
0257-003-01	025700301-03	1





SYNOPSIS:
SEE DRAWING 025700301–B.

SCALE:	N.A.	DESIGNED:	BB
DATE:	NOV 2000	CHECKED:	JWC
DRAWN:	MT	APPROVED:	JWC

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AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250 5185

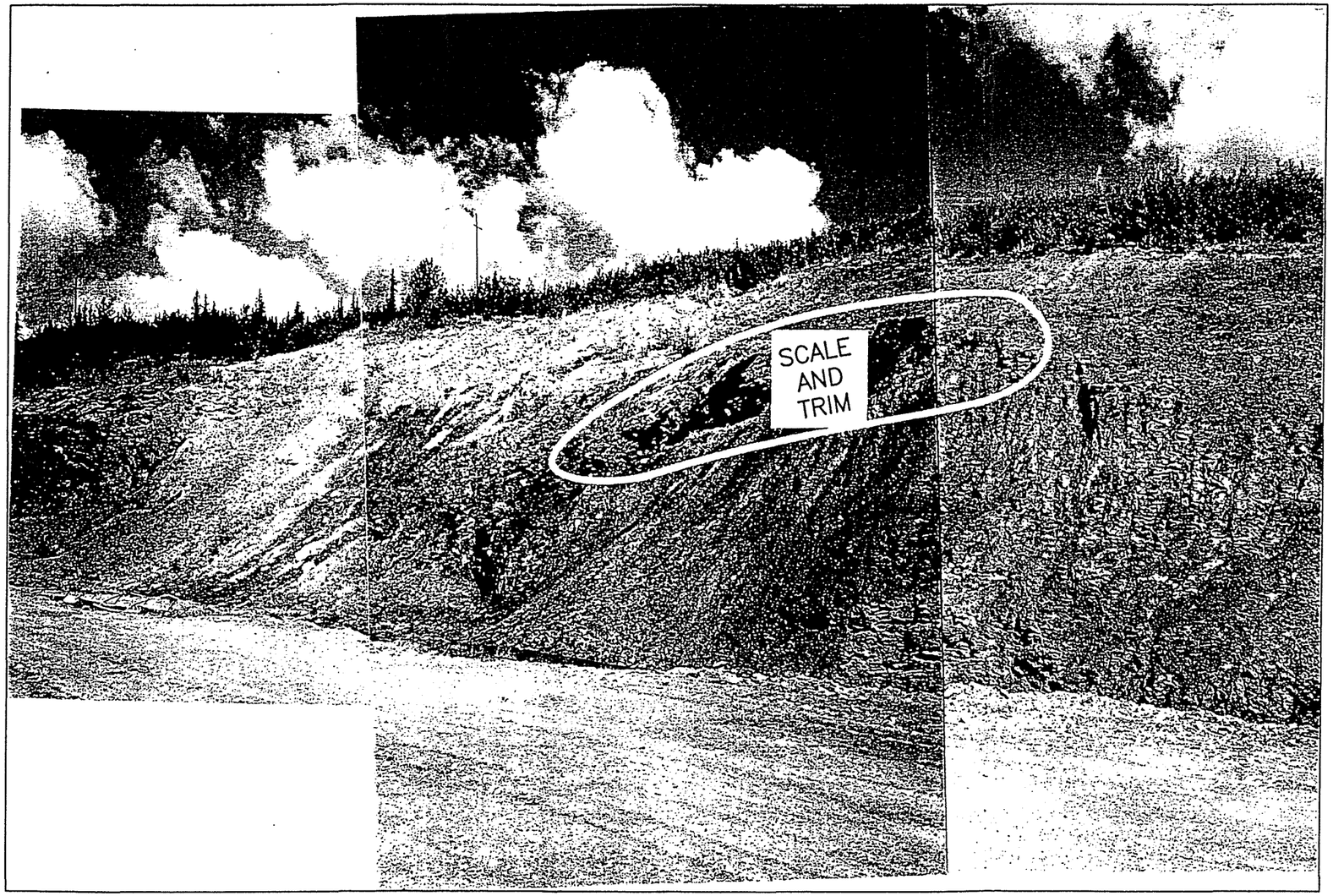
PROJECT
VANGORDA CREEK DIVERSION FLUME REHABILITATION

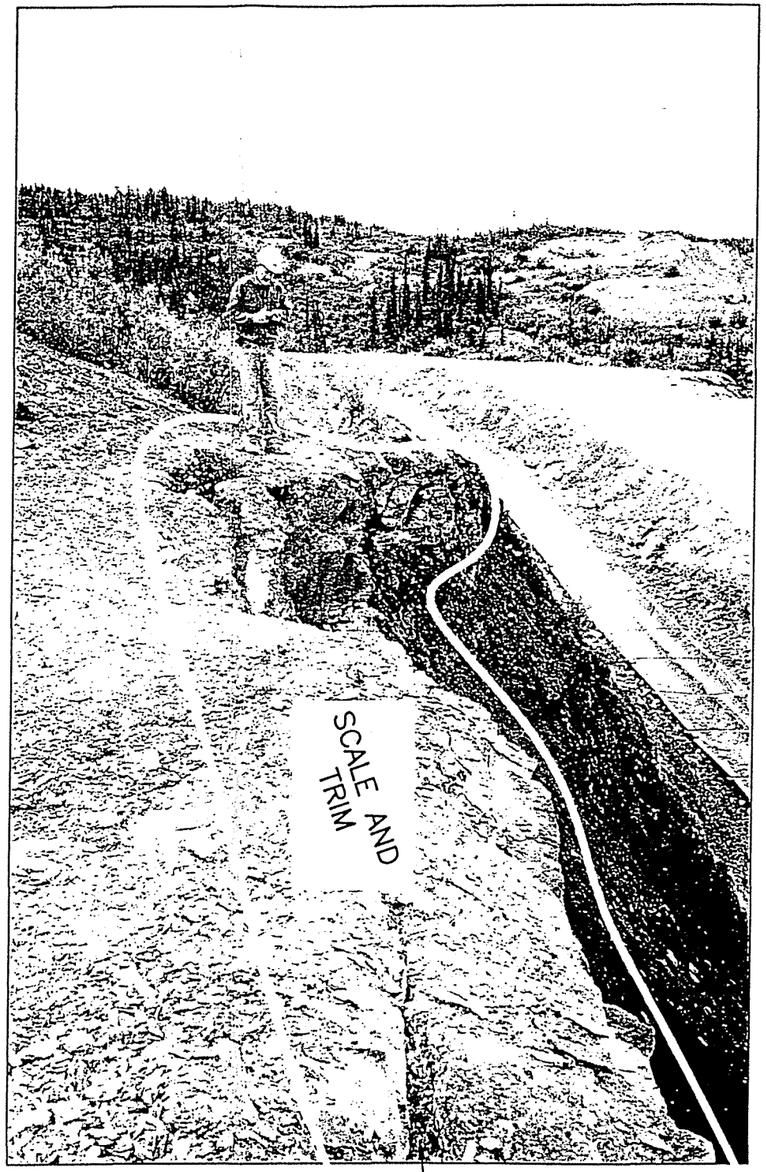
TITLE
PHOTOGRAPHS OF ZONE 1

CLIENT:	PROJECT No.	DWG. No.	REV.
DELOITTE & TOUCHE INC.	0257–003–01	025700301–04	1

SYNOPSIS:

1. THE CONTRACTOR IS REQUIRED TO PROTECT THE FLUME.
2. SCALE OR TRIM OUT THE AREAS OF ROCK MASS THAT ARE APPROXIMATELY OUTLINED IN DRAWING 025700301–05.





NOTE: TENSION CRACK FORMED IN UPPER MORE COMPETENT MATERIAL

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.A.
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC

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AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250–5185

CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: PANORAMA OF ZONE 4

PROJECT No.	DWG. No.	REV.
0257–003–01	025700301–05	1

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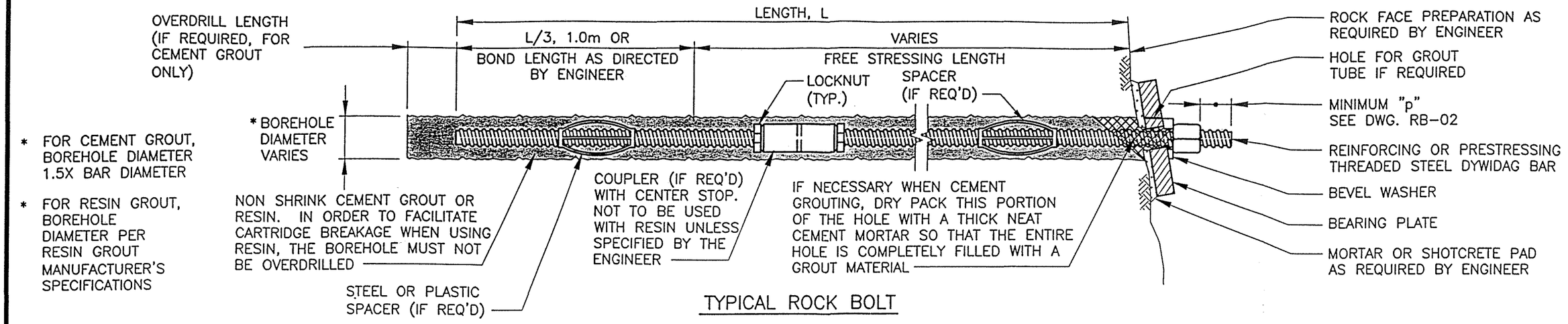
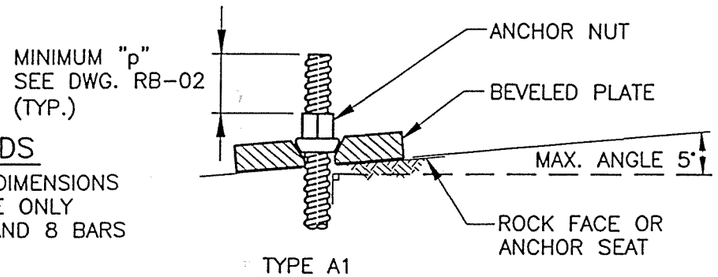


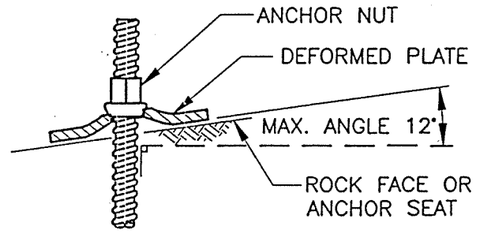
TYPICAL ROCK BOLT

TYPE A ANCHOR HEADS

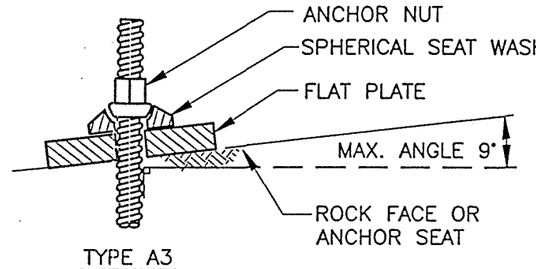
SEE DRAWING RB-02 FOR DIMENSIONS
TYPE A ANCHOR HEADS ARE ONLY AVAILABLE FOR SIZE 6, 7 AND 8 BARS



TYPE A1
ANCHOR NUT WITH BEARING PLATE



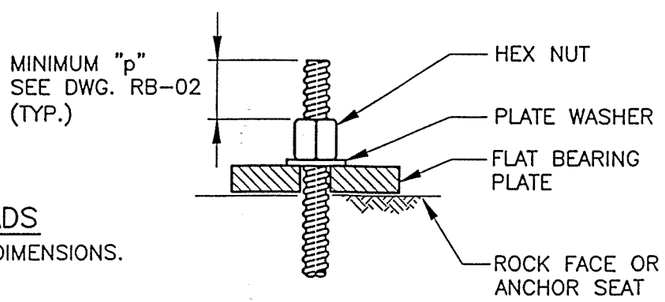
TYPE A2
ANCHOR NUT WITH DEFORMED BEARING PLATE



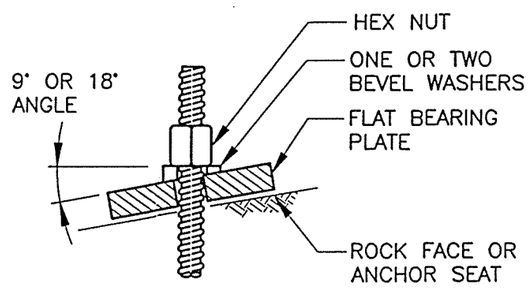
TYPE A3
ANCHOR NUT WITH FLAT PLATE AND SPHERICAL SEAT WASHER

TYPE H ANCHOR HEADS

SEE DRAWING RB-02 FOR DIMENSIONS.



TYPE H1
HEX NUT WITH FLAT BEARING PLATE



TYPE H3
HEX NUT WITH BEVEL WASHER AND FLAT BEARING PLATE

NOTES

1. THIS DRAWING HAS BEEN CREATED TO PROVIDE TYPICAL ROCK BOLT CONSTRUCTION AND HAS BEEN CREATED USING SPECIFICATIONS FROM DYWIDAG-SYSTEMS INTERNATIONAL. A DIFFERENT SUPPLIER OF MATERIALS MAY BE USED IF APPROVED BY THE ENGINEER.
2. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS IT IS ACCOMPANIED BY A SPECIFICATION TEXT.
3. THE ENGINEER MAY DECIDE TO USE AN ANCHOR HEAD TYPE OTHER THAN THOSE DETAILED IN THIS DRAWING. IN SUCH A CASE, ADDITIONAL DRAWINGS SHALL BE INCLUDED DETAILING THE ALTERNATE ANCHOR HEADS TO BE USED.
4. WASHERS AND NUTS CAN BE SPECIFIED USING THE THREAD BAR SIZE DESIGNATION.
5. BEVEL WASHERS ARE AVAILABLE IN 9° ANGLES. NO MORE THAN TWO WASHERS SHOULD BE STACKED TO CREATE GREATER ANGLES.
6. ALL BOLTS AND BOLT COMPONENTS (NUTS, WASHERS, PLATES, ETC.) SHALL BE HOT-DIP GALVANIZED.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
A	30NOV00	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.T.S.
DATE:	11 DEC 98
DRAWN:	MT
DESIGNED:	BB
CHECKED:	BB/RGT
APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900

CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: TYPICAL ROCK BOLT AND ANCHOR HEAD TYPE

PROJECT No.	DWG. No.	REV.
0257-003-01	RB-01	A

N:\BGC\PROJECTS\0257\003\DRAWINGS\RB-01.DWG

DYWIDAG ROCK BOLTS – TECHNICAL DATA (OR APPROVED EQUIVALENT)

REINFORCING STEEL PROPERTIES					
THREADBAR SIZE DESIGNATION	BAR SIZE (mm)	MAXIMUM DIAMETER ACROSS THREAD (mm)	CROSS SECTIONAL AREA (sq. mm)	WEIGHT (kg/m)	YIELD STRENGTH (kN)
# 6 GRADE 60*	19.1	21.8	284	2.236	117
# 7 GRADE 60	22.2	25.1	387	3.043	160
# 8 GRADE 60	25.4	28.4	510	3.975	211
# 9 GRADE 60	28.6	32.0	645	5.061	267
# 10 GRADE 60	32.0	36.3	819	6.405	339
# 11 GRADE 60	34.9	40.9	1006	7.909	417
# 14 GRADE 60	44.5	47.2	1452	11.388	601
# 18 GRADE 60	57.2	63.5	2581	20.240	1068

TAKEN FROM DYWIDAG SYSTEMS DETAILS, REINFORCING STEEL PROPERTIES – ASTM A 615 (GRADE 60 & 75) 1993.

COUPLER	
DIAMETER b (mm)	LENGTH c (mm)
28.6	88.9
33.3	95.3
38.1	101.6
42.9	108.0
47.6	127.0
54.0	152.4
69.9	177.8
88.9	203.2

ANCHOR/HEX NUT	
DIAMETER a (mm)	LENGTH d (mm)
25.4	28.6
31.8	31.8
34.9	36.5
41.3	41.3
47.6	44.5
50.8	50.8
76.2	63.5
88.1	82.6

LOCK OFF LOAD AT 60% YIELD*		
kN	Kg	lb
70	7,200	15,200
96	9,800	21,600
127	13,000	29,000
160	16,500	36,000
203	20,700	45,600
250	25,500	56,000
360	36,800	80,800
640	65,500	143,500

* 60% OF 413 MPa = 248 MPa

USE THIS THREADBAR SIZE AND LOCK OFF LOAD

NOTES

1. LEFT HAND THREAD FOR SIZE #6 THROUGH #11, RIGHT HAND THREAD FOR #14 THROUGH #18.
2. "p" IS THE MINIMUM THREADBAR PROTRUSION LENGTH TO ACCOMMODATE COUPLING. "p" = 0.5c + 12.7mm.

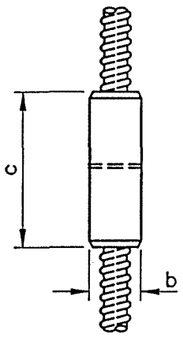
NOTES FOR VANGORDA CREEK DIVERSION REHABILITATION

1. ALL BOLTS AND BOLT COMPONENTS SHALL BE HOT-DIP GALVANIZED.
2. GROUT TYPE TO BE SELECTED BY CONTRACTOR TO SUIT FIELD AND CLIMATIC CONDITIONS.
3. BOLTS SHALL BE #8 GRADE 60 OR AN APPROVED EQUIVALENT.

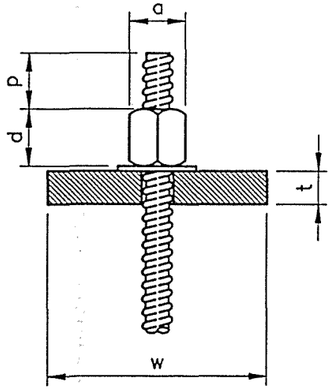
BEARING PLATE *			
BAR SIZE (mm)	WIDTH w (mm)	BREADTH w (mm)	THICKNESS t (mm)
19.1 (#6)	152	152	10
22.2 (#7)	152	152	10
25.4 (#8)	203	203	10
28.6 (#9)	203	203	13
32.0 (#10)	203	203	13
34.9 (#11)	203	203	19
44.5 (#14)	–	–	–
57.2 (#18)	–	–	–

USE THIS BEARING PLATE SETUP

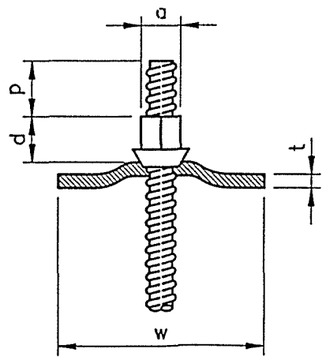
* BEARING PLATE SHALL REQUIRE A GROUT HOLE IF CEMENT GROUT IS USED.



COUPLER WITH CENTER STOP



HEX NUT WITH FLAT BEARING PLATE (TYPE H)



ANCHOR NUT WITH DEFORMED BEARING PLATE (TYPE A)

NOTES

1. THIS DRAWING HAS BEEN CREATED TO PROVIDE TYPICAL ROCK BOLT CONSTRUCTION DETAILS AND HAS BEEN CREATED USING SPECIFICATIONS FROM DYWIDAG-SYSTEMS INTERNATIONAL. A DIFFERENT SUPPLIER OF MATERIALS MAY BE USED IF APPROVED BY THE ENGINEER.
2. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS IT IS ACCOMPANIED BY A SPECIFICATION TEXT.
3. WASHERS AND NUTS SHALL BE SPECIFIED USING THE THREADBAR SIZE DESIGNATION.
4. BEVEL WASHERS ARE AVAILABLE IN 9° ANGLES. NO MORE THAN TWO WASHERS SHOULD BE STACKED TO CREATE GREATER ANGLES.

* 5. GRADE 60 = 60 ksi = 413 MPa, YIELD STRENGTH.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	30NOV00	ISSUED FOR TENDER	MT	BB	JWC

SCALE: N.T.S.
DATE: 11 DEC 98
DRAWN: MT
DESIGNED: BB
CHECKED: BB/RGT
APPROVED: JWC

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Vancouver, B.C. Phone: (604) 684 5900

CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: TYPICAL ROCK BOLT DIMENSIONS

PROJECT No. 0257-003-01 | DWG. No. RB-02 | REV. 1

N:\BGC\PROJECTS\0257\003\DRAWINGS\RB-02.DWG

N:\BGC\PROJECTS\0257\003\DRAWINGS\RB-03.DWG

NOTES:

1. THIS DRAWING HAS BEEN CREATED TO PROVIDE TYPICAL ROCK ANCHOR CONSTRUCTION DETAILS.
2. THIS DRAWING HAS BEEN CREATED USING SPECIFICATIONS FROM DYWIDAG-SYSTEMS INTERNATIONAL. A DIFFERENT ROCK BOLT SUPPLIER MAY BE SUBSTITUTED BY THE CONTRACTOR IF APPROVED BY THE ENGINEER. IF DYWIDAG SYSTEM IS NOT USED, THIS STANDARD ROCK BOLT DRAWING MAY NOT BE APPLICABLE.
3. THIS STANDARD ROCK BOLT DRAWING CANNOT BE ISSUED FOR CONSTRUCTION UNLESS ACCOMPANIED BY A SPECIFICATION TEXT.

GENERAL PROCEDURE

1. THE ENGINEER SHALL DETERMINE WHERE ROCK BOLTS ARE REQUIRED. ACTUAL FIELD DOCUMENTATION OF ROCK BOLT LOCATIONS SHALL BE IDENTIFIED ON AN AS-BUILT ROCK BOLT PLAN SKETCH PROVIDED BY THE CONTRACTOR. EACH BOLT SHALL BE IDENTIFIED WITH A DIFFERENT ROCK BOLT NUMBER AND MARKED WITH RED PAINT IN THE FIELD ON THE SURFACE ADJACENT TO THE BOLT.
2. THE CONTRACTOR SHALL LIST THE INDIVIDUAL DETAILS FOR THE BOLTS SUCH AS BAR DIAMETER, TYPE, ANCHOR HEAD, ETC., SUBJECT TO APPROVAL BY THE ENGINEER.
3. THE CONTRACTOR SHALL PREPARE AN INSTALLATION PROCEDURES SPECIFICATION WHICH SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ONCE APPROVED, THE INSTALLATION PROCEDURES SPECIFICATION SHALL BECOME PART OF THE CONSTRUCTION DOCUMENTS.

ROCK BOLT AS-BUILT CONSTRUCTION DETAILS - TO BE PROVIDED BY THE CONTRACTOR AS CONSTRUCTION PROCEEDS.

DOMAIN	ROCK BOLT NUMBER[4]	THREADBAR SIZE DESIGNATION[2]	BAR GRADE[2]	BAR SIZE (mm)	GROUTED BAR LENGTH (mm)	BOND LENGTH$_1$ (mm)	FREE STRESSING LENGTH[1] (mm)	BONDING AREA		FREE STRESSING AREA		BOREHOLE DIAM. (mm)	OVERDRILL LENGTH$_1$ (mm)	ANCHOR HEAD TYPE[1]	BEARING PLATE	
								BONDING AGENT[3]	QUANTITY USED	BONDING AGENT	QUANTITY USED				SIZE (mm x mm)	THICKNESS (mm)

NOTES:

1. SEE DRAWING NO. RB-01, 'TYPICAL ROCK BOLT AND ANCHOR HEAD TYPES'
2. SEE DRAWING NO. RB-02, 'ROCK BOLT DIMENSIONS'
3. CEMENT GROUT OR RESIN AS PER SPECIFICATIONS.
4 ROCK BOLT NUMBERS IN THE ABOVE TABLE TO CORRESPOND WITH THE NUMBERS 'AS-BUILT' IN THE FIELD PAINTED ON ROCK AND SHOWN ON THE AS-BUILT ROCK BOLT SKETCH.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	30NOV00	ISSUED FOR TENDER	MT	BB	JWC

SCALE: N.T.S.
DATE: 11 DEC 98
DRAWN: MT
DESIGNED: BB
CHECKED: BB/RGT
APPROVED: JWC

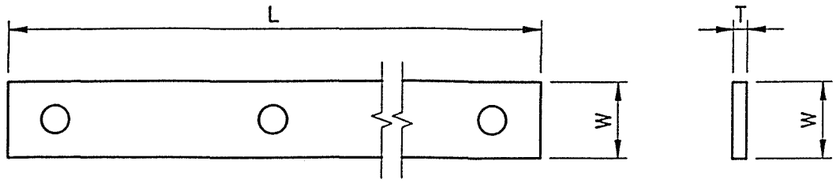
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900

CLIENT: DELOITTE & TOUCHE INC.

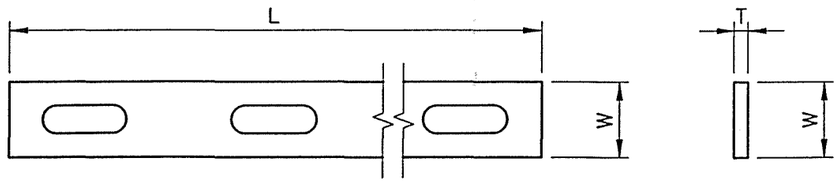
PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: CONSTRUCTION NOTES FOR ROCK BOLTS

PROJECT No. 0257-003-01 | DWG. No. RB-03 | REV. 1



HOLES



SLOTS

ROCK BOLT STRAPS					
ROCK BOLT STRAP TYPE NUMBER	T (THICKNESS)	W (WIDTH)	L (LENGTH)	NOTES	
65 – 10000	1/8" (3mm)	4" (0.10m)	5' (1.52m)	3 SLOTS	
65 – 10125	3/16" (5mm)	6" (0.15m)	8' (2.44m)	5 SLOTS	
65 – 10165	0.1205" (3mm)	6" (0.15m)	6' (1.83m)	3 SLOTS	USE THIS ROCK BOLT STRAP
65 – 10200	0.1055" (3mm)	7 7/8" (0.20m)	6 1/5' (1.89m)	3 SLOTS	
65 – 10355	1/16" (2mm)	10" (0.25m)	9' (2.74m)	8 HOLES WITH STRAP	
65 – 10394	10mm	75mm	2.1m	SPILE PIN STRAP	
88 – 10035	0/0 GAUGE	12" (0.30m)	7' (2.13m)	4"x4" MESH STRAP	

* AS SUPPLIED BY THIESSEN EQUIPMENT LTD. OF VANCOUVER, B.C. OR APPROVED EQUIVALENT.

NOTES:

1. SLOTS ARE 1 3/8" WIDE x 2 1/2" LONG.
2. HOLE DIAMETERS ARE AS REQUIRED.
3. STRAPS ARE MADE OF A–36 STEEL (36,000 PSI).

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
A	30NOV00	ISSUED FOR CONSTRUCTION	MT	BB	JWC

SCALE:	N.T.S.
DATE:	11 DEC 98
DRAWN:	MT
DESIGNED:	BB
CHECKED:	BB
APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900

CLIENT: DELOITTE & TOUCHE

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: TYPICAL ROCK BOLT STRAPS DRAWINGS AND DIMENSIONS

PROJECT No.	DWG. No.	REV.
0257–003–01	RB–04	1

CONTRACTOR'S PROPOSED ROCK BOLT SYSTEM

PROJECT NAME : _____

(TO BE SUBMITTED BY THE CONTRACTOR BEFORE MOBILIZATION)

ROCK BOLT BAR TYPE: _____ DIAMETER: _____ STEEL GRADE: _____

MANUFACTURER: _____

BEARING PLATE TYPE: (CIRCLE) FLAT DOME WxWxT: _____ MANUFACTURER: _____

BEVEL WASHER TYPE: _____ DIMENSIONS _____ MANUFACTURER: _____

NUT TYPE: (CIRCLE) ANCHOR HEX. OTHER (SPECIFY) _____

MANUFACTURER: _____

PROPOSED GROUT AND TYPE: (CIRCLE LETTER)

(A) RESIN

(B) CEMENT

NOTE: THE ENTIRE ROCK BOLT SYSTEM SHALL BE HOT-DIP GALVANIZED ACCORDING TO THE SPECIFICATIONS. SEE SPECIFICATIONS FOR FURTHER DETAILS.

_____
(NAME OF CONTRACTOR)

_____
(DATE)

_____
(SIGNATURE OF AUTHORIZED CONTRACTOR'S REPRESENTATIVE)

SCALE:	N.A.	DESIGNED:	BB
DATE:	11 DEC 98	CHECKED:	RGT
DRAWN:	MT	APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: CONTRACTOR'S PROPOSED ROCK BOLT SYSTEM

CLIENT:	PROJECT No.	DWG. No.	REV.
DELOITTE & TOUCHE INC.	0257-003-01	RB-05	1

N:\BGC\PROJECTS\0257\003\DRAWINGS\RB-05.DWG

- Delete sections 1.13.1.1 and 1.13.1.2 and replace with:

  1.13.1 Scaling:

  .1 Scaling shall be measured in man-hours, for those crews directly engaged in scaling on the slopes, and in excavator hours, for equipment and operator directly engaged in scaling on the slopes. The supervision of scaling personnel shall be considered incidental to scaling.

  .2 Calculation of scaling man-hours shall be obtained from time slips of scalers actively employed in the scaling operation and whose times have been authorized and approved by the Engineer. Calculation of excavator hours shall be obtained from daily records of active scaling time that have been authorized and approved by the Engineer. The operator hours shall be considered incidental to excavator hours.

Item No. 2 – Omissions

- Delete all sections and subsections referring to the installation of rockbolts and straps and replace with "Not used". The sections to delete include the following:
  - 1.3.3.1
  - 1.5.3
  - 1.6.3
  - 1.7.3
  - 1.9.3
  - 1.13.3
  - 2.1.3
  - 2.2.3
  - 3.1.3
- Delete all drawings referring to the installation of rockbolts and straps. The drawings to delete include the following:
  - RB-01
  - RB-02
  - RB-03
  - RB-04
  - RB-05

Item No. 3 – Additions

- Add the following sections:
  - 1.2.7 Granular Quarry Development – Granular Quarry Development shall mean the drilling and blasting of frozen granular material.
  - 1.3.6 Granular Quarry Development:

    .1 Only experienced, licensed powdermen shall do granular quarry development blasting; licensed in accordance with Authorities having jurisdiction over blasting.
  - 1.4.8 Granular Quarry Development:

    .1 The Contractor shall adhere to Regulations of Authorities having jurisdiction for blasting.

- 1.7.7 Granular Quarry Development

  .1 The location of the storage area for explosives for rip rap production shall be in accordance with the requirements of Regulatory Authorities. The explosives storage area shall be separate from other storage areas.

  .2 The Contractor shall prepare an explosives storage area in a location approved by the Engineer.

- 1.13.8 Granular Quarry Development

  .1 Preparation of the granular quarry development area for access and for blasting shall be considered incidental to the work. This includes stripping and removal of overdurden/tree debris to a designated waste area as required.

  .2 The unit of measurement for granular quarry development shall be per cubic meter of bank material blasted.

  .3 The unit measurement for granular quarry development shall include all mobilization – demobilisation costs.

  .4 Restoration of the quarry site to the satisfaction of the Engineer upon demobilization shall be considered incidental to granular quarry development.

- 3.1.6 Granular Quarry Development

  .1 Where granular quarry development activities may impact on any structure or utility installation, the Contractor shall provide protective measures as detailed in Section 1.8, Protection.

  .2 The supply, placement and removal of protective materials shall be incidental to granular quarry development.

  .3 The quantity of granular quarry development blasting shall be 1,000 bank cubic meters volume. All blasting shall be done with a 3 m spacing between drillholes.

  .4 The Contractor shall submit his proposed blast plan for granular quarry development operations at least twenty four (24) hours in advance of anticipated blasting.

    .1 The proposed blasting plan which shall include hole diameter, inclination, depth, amount and distribution of explosive material in each hole, type, sequence and number of delays. Approval by the Engineer of the blasting plan shall in no manner relieve the Contractor from his responsibility to ensure that the trimming and blasting work is carried out as required.

.5 Holes shall not be loaded for blasting before the Engineer has reviewed the blasting design.

.6 Blasted granular material shall be left in place for excavation by the owner in the spring.

.7 The Contractor shall perform blasting for granular quarry development in a safe manner to prevent injury to personnel and property. Warning procedures of proposed blasting shall include but not be limited to posting warning signs, conducting a sweep of the area affected and using readily recognizable audible warning signals in accordance with the regulations of the Authority having Jurisdiction.

.8 The remaining slope after quarry operations shall be dressed and left in a condition as required by Authorities having jurisdiction for Quarries and as required by the Engineer.

The undersigned hereby offer and agree to furnish all and every kind of labour, scaffolding, tools, implements, machinery, service and materials that may be required, to execute and to complete, in a satisfactory and a workmanlike manner, all the Work in accordance with Plans and Specifications attached hereto and exhibited, and such further details as may be furnished from time to time during the progress of the work.

.1 We have examined the Plans, Specifications, Instructions to Bidders, the site and the existing conditions, and have ascertained all necessary particulars with regard to the Work and upon acceptance of this Tender we are prepared to enter into a Contract in the form exhibited with the said Specification, for the performance of the Work at the Lump Sum and Unit Prices given below.

SCHEDULE OF PRICES

Item	Description of Work	Unit	Approx. Quantity	Unit Price	Total
1)	Scaling; as specified	Excavator Hours	24	$_____	$_____
		Man-hours	20	$_____	$_____
2)	Trimming; as specified				
	Trim Drilling	Lineal meter	300	$_____	$_____
3)	Flume Protection; as specified				
		Lump Sum	1	$_____	$_____
4)	Mobilization and Demobilization; as specified				
		Lump Sum	1	$_____	$_____

TOTAL AMOUNT OF TENDER ITEMS – TO INCLUDE ITEM NOS. 1 TO 4 $_____

APPLICABLE GOODS AND SERVICES TAX ON ABOVE ITEM NOS. 1 TO 4 $_____

PROVISIONAL ITEMS – IF AND AS REQUIRED BY THE ENGINEER

Item	Description of Work	Unit	Approx. Quantity	Unit Price	Total
1)	Granular Quarry Development; as specified				
		Bank cubic meter	1,000	$_____	$_____
2)	Rip Rap; as specified				
		In Place cubic meter	1,000	$_____	$_____

1. TENDERERS PERSONNEL

The following is a list of the Tenderer's Personnel who will actively engage in the work if the Tenderer is awarded the Contract, with a record of each person's experience, knowledge and ability. It is understood that the work will be directed by the listed Personnel if accepted by the Engineer, no change can be made without his prior written approval.

- Supervisory

TENDERER'S EQUIPMENT

The undersigned submit herewith a list of equipment which is available and will be used on this job if the Tender is accepted:

Type of Equipment	Make, Model, Serial No.	State if Owned or Rented	Present Condition	On Job (State Dates)

LIST OF SUB-CONTRACTORS

....., the undersigned, submit herewith a list of sub-contractors whose services will be employed if the tender is accepted:

Name	Address	Trade	Approximate Value

We understand that where we plan on using our own forces for any of the sub-trades, we will so indicate in the spaces provided by inserting our own Company name. We acknowledge we have investigated the above sub-contractors and confirm they are reliable and competent to carry out the work satisfactorily. It is agreed that there will be no substitution of or any addition of sub-contractors without the prior written approval of the Owner.

TRADE BY OWN FORCES

The undersigned, submit herewith a list of the trades to be executed by our own forces.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

WORK SHIFT SCHEDULE

The undersigned, submit that our forces will operate under the following:

DATES From _____, 2000 to _____, 2000

Shift	Time from	Time to
Day	.....	.....
Night	.....	.....

Days per week of operation ..... days. (State which days)

SITE VISIT

The site was visited and inspected on the _____ day of _____, 2000 by _____ being the authorized representative of the tenderer and holding the titles or position of _____.

CONTRACTOR'S HISTORY

The following is a list of projects of similar nature to this one completed by the Tenderer.

Project	Owner	Approximate Cost

The undersigned will execute, at prices to be established under the provisions of the Tender, any and all other items of work requested by the Project Manager of the Owner.

NAME OF COMPANY .....

WITNESS ..... SIGNATURE .....

WITNESS ..... SIGNATURE .....

ADDRESS .....

.....

POSTAL CODE .....

TELEPHONE NO. .....

FAX NO. .....

DATED AT .....

THIS ..... DAY OF ....., 2000

NAME AND LOCATION OF YOUR BANK .....

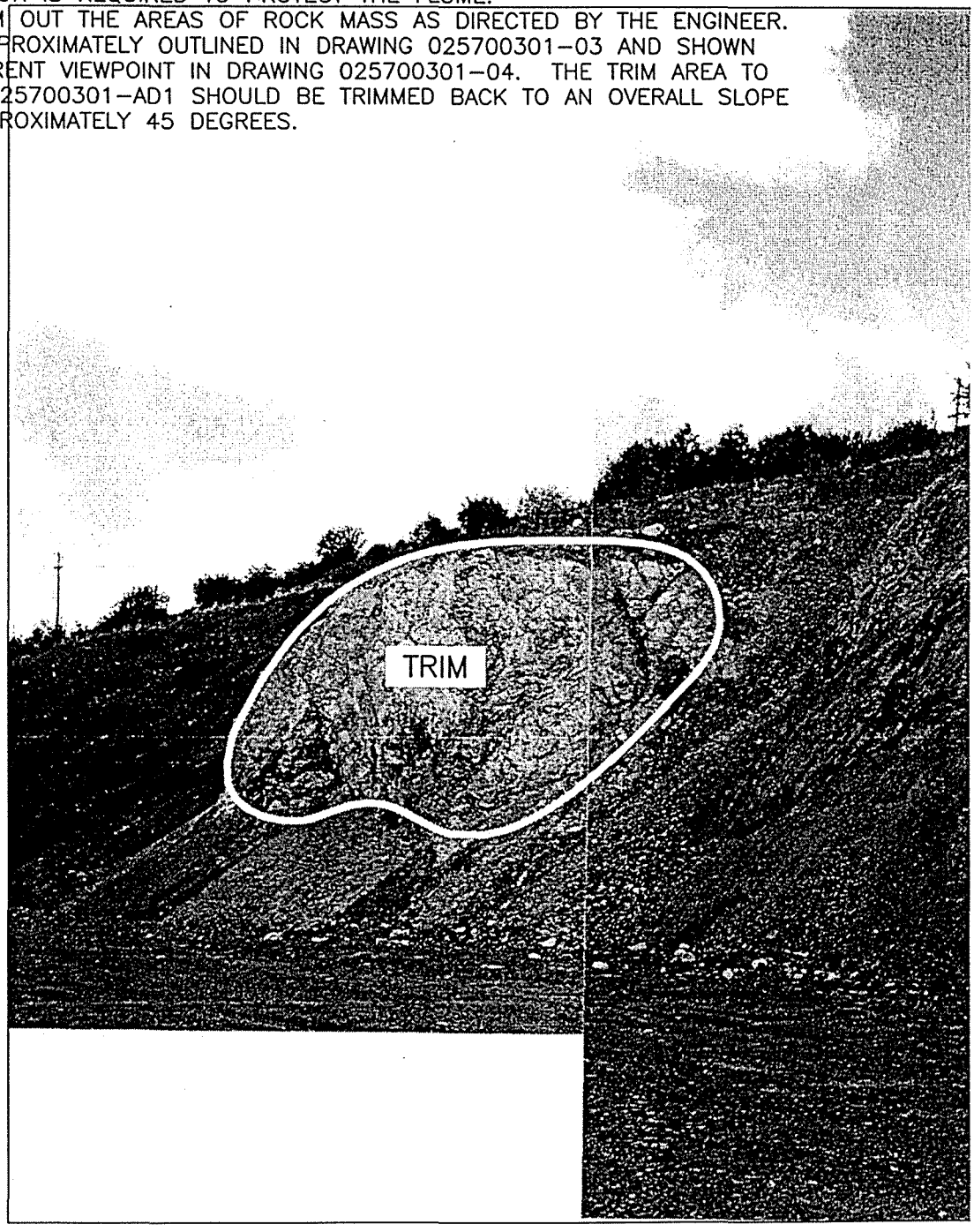
.....

G.S.T. REGISTRATION NO. .....

INSERT NUMBER OF ADDENDA
INCLUDED WITH THIS TENDER .....

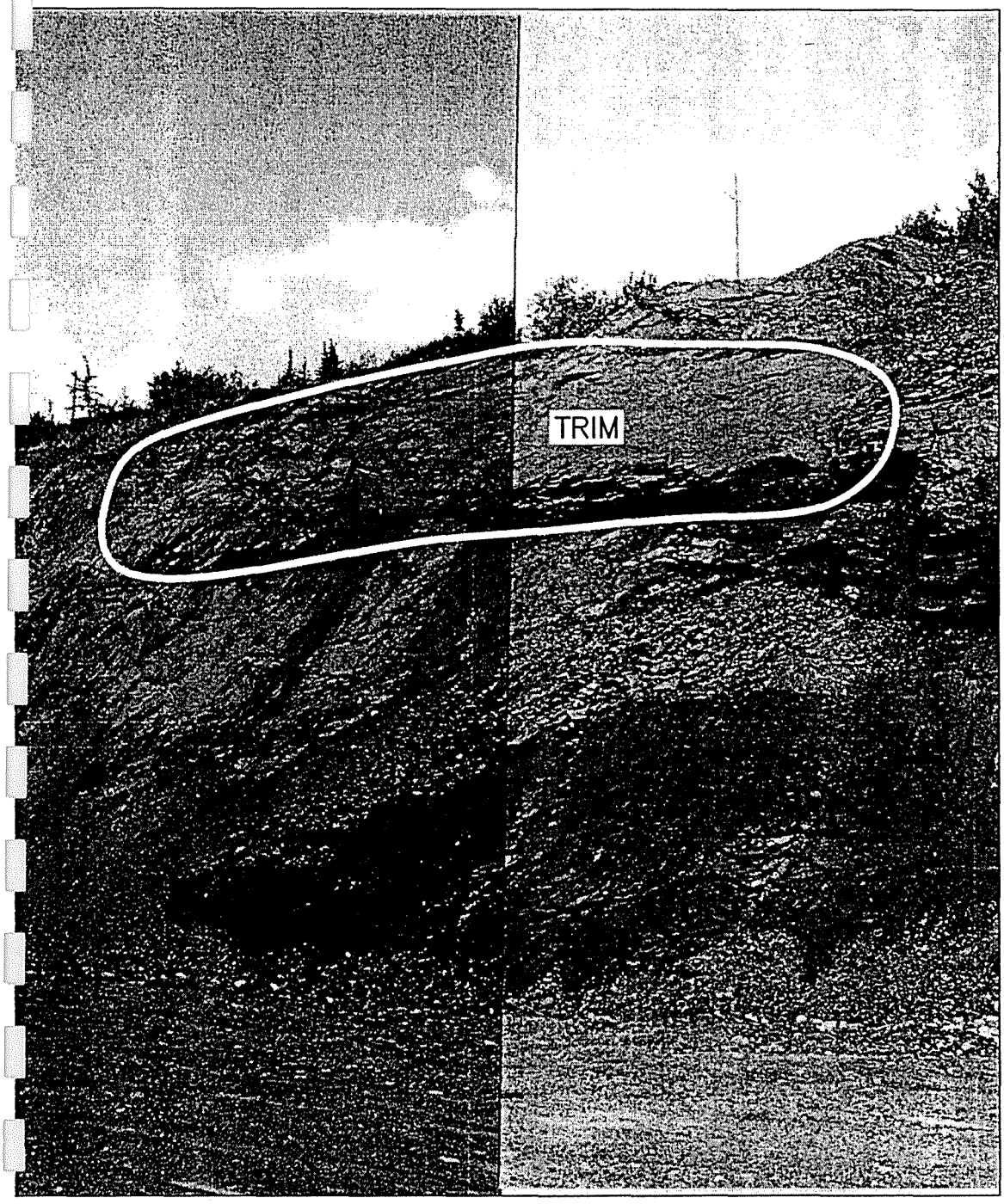
SYNOPSIS

1. THE CONTRACTOR IS REQUIRED TO PROTECT THE FLUME.
2. SCALE OR TRIM OUT THE AREAS OF ROCK MASS AS DIRECTED BY THE ENGINEER. AREAS ARE APPROXIMATELY OUTLINED IN DRAWING 025700301-03 AND SHOWN FROM A DIFFERENT VIEWPOINT IN DRAWING 025700301-04. THE TRIM AREA TO THE LEFT IN 025700301-AD1 SHOULD BE TRIMMED BACK TO AN OVERALL SLOPE ANGLE OF APPROXIMATELY 45 DEGREES.



REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000DEC15	ADDENDUM 1 TO TENDER	MT	BB	JWC
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.A.
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC



AREA OF 1999 ROCKFALL

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250-5185

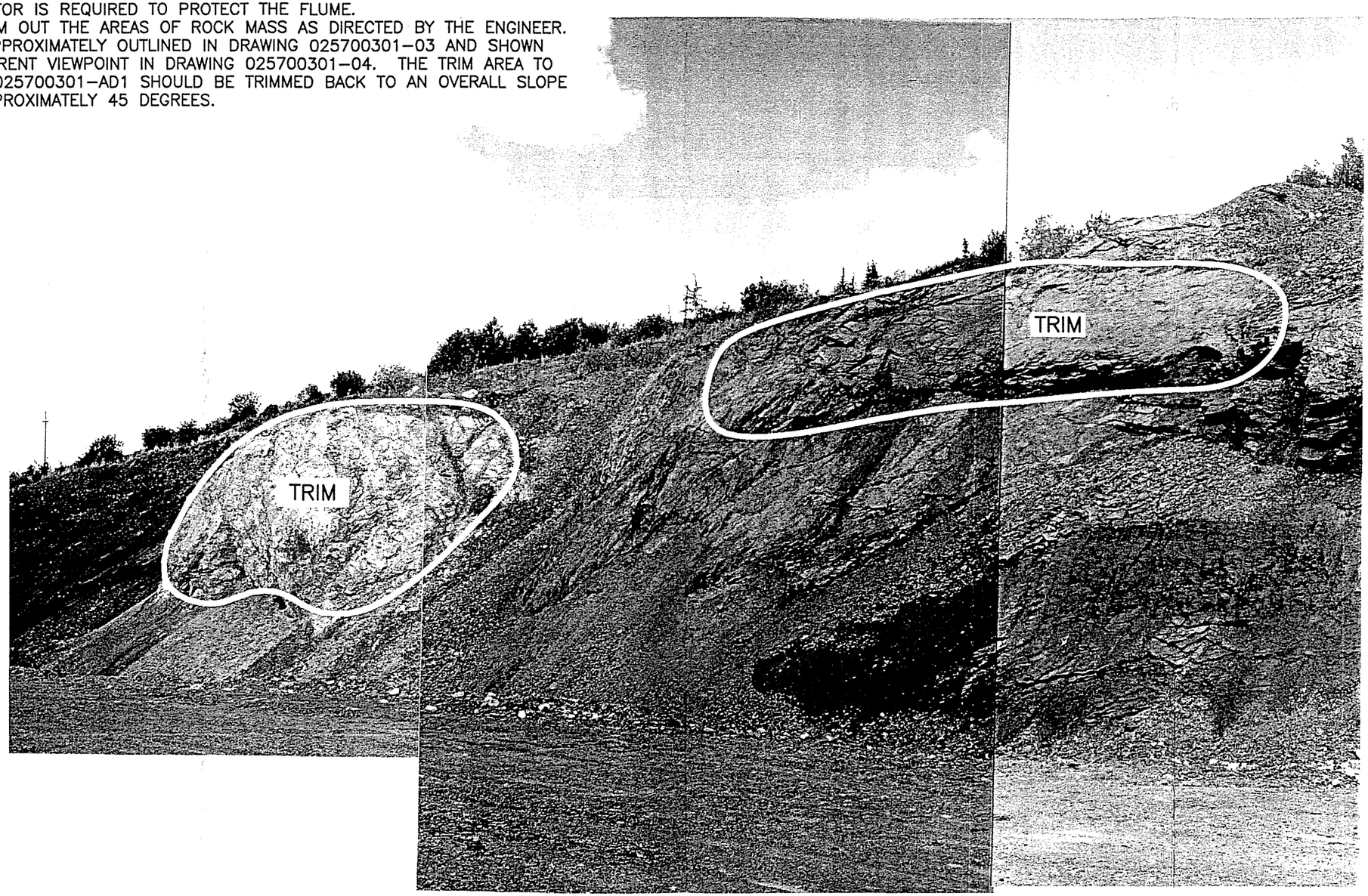
PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: PANORAMA OF ZONE 1

CLIENT:	PROJECT No.	DWG. No.	REV.
DELOITTE & TOUCHE INC.	0257-003-01	025700301-AD-1	1

SYNOPSIS

1. THE CONTRACTOR IS REQUIRED TO PROTECT THE FLUME.
2. SCALE OR TRIM OUT THE AREAS OF ROCK MASS AS DIRECTED BY THE ENGINEER. AREAS ARE APPROXIMATELY OUTLINED IN DRAWING 025700301–03 AND SHOWN FROM A DIFFERENT VIEWPOINT IN DRAWING 025700301–04. THE TRIM AREA TO THE LEFT IN 025700301–AD1 SHOULD BE TRIMMED BACK TO AN OVERALL SLOPE ANGLE OF APPROXIMATELY 45 DEGREES.



REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED
1	2000DEC15	ADDENDUM 1 TO TENDER	MT	BB	JWC
1	2000NOV30	ISSUED FOR TENDER	MT	BB	JWC

SCALE:	N.A.
DATE:	NOV 2000
DRAWN:	MT
DESIGNED:	BB
CHECKED:	JWC
APPROVED:	JWC

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Vancouver, B.C. Phone: (604) 684 5900
Calgary, AB. Phone: (403) 250–5185

CLIENT: DELOITTE & TOUCHE INC.

PROJECT: VANGORDA CREEK DIVERSION FLUME REHABILITATION

TITLE: PANORAMA OF ZONE 1

PROJECT No.	DWG. No.	REV.
0257–003–01	025700301–AD–1	1

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Appendix 2
Daily Construction Progress Reports

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Sunday February 11 and Monday February 12, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5185**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

Sunday, February 11, 2001:

H.Hartmaier of BGC mobilized to site from Calgary. Left Calgary 11:20 via commercial carrier to Vancouver/Whitehorse. Arrived Whitehorse 15:40. Purchased groceries in Whitehorse and drove to Faro. Arrived at Faro guest house at 22:15.

Monday, February 12, 2001:

1.0 Weather Conditions

- High of –13 C, clear in morning, becoming cloudy by mid-day.

2.0 Work Done and Progress

- Golden Hill equipment on site at the flume included a Cat 235 B Backhoe, a Cat D9N bulldozer with ripper, electrical generator/portable heater unit and airtrack drill.
- three steel truck canopies had also been transported to the site
- spent AM clearing snow from existing road next to flume for construction access
- spent PM pioneering new access road to top of rock cuts for drill access. Completed approximately 400 m of road

3.0 Meetings Held and Decisions Made

None today

4.0 Other Issues to be Raised/Co-ordinated

- Pat Magnuson thinks that the 300 lm of drilling may not be enough to do the work required. We will lay out holes together tomorrow and come up with estimate.

5.0 Photographs Taken

Roll 1-1 to 1-20. Notes are in field book.

6.0 Other Notes

All work today part of mobilization.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Tuesday, February 13, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Snowing in the morning, approximately 3 cm, some blowing and drifting due to moderate NW wind. AM –11°C, high –9, PM –11°C, clearing. Colder weather in forecast.

2.0 Work Done and Progress

- Golden Hill equipment on site at the flume included a Cat 235 B Backhoe, a Cat D9N bulldozer with ripper, electrical generator/portable heater unit and airtrack drill.
- Last night, Golden Hill brought in a Caterpillar 773B rock truck. Also have one service truck and mechanic as well as backhoe operator who arrived yesterday. Still expecting blaster.
- Present crew includes: Pat Magnuson- Supervisor/Operator
  Scott Thompson- Backhoe Operator
  ____ Thompson- Mechanic

- Cat D9N spent all clearing snow on access road to quarry, located south of Grum Pit and clearing snow over quarry area.
- Cat 235B backhoe spent all day cutting and access road across the slope above Zone 4 to allow airtrack access to top of Zone 4. Yesterday a cat trail had been pushed for about 400 m from the Zone 1 area towards Zone 4, along an old road clearing.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Co-ordinated

- Discussed rock volumes and trimming with Pat Magnuson. We still have to confirm the hole lengths required with respect to the trimming limits to stay within the allotted estimate.

5.0 Photographs Taken

Roll 1-20 to 1-24 (finished) and Roll 2-1 to 2-5 . Notes are in field book.

6.0 Other Notes

Work today is covered under lump sum pay items in contract.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Wednesday February 14, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear and sunny all day. AM –20° C, high –11° C, PM –16° C.

2.0 Work Done and Progress

- Cat D9N was working all day on rip rap quarry. After clearing off the snow yesterday it was determined that the rock had already been blasted and only ripping was necessary to loosen the shot rock. The dozer broke down in the early afternoon and quarry operations were suspended. New parts are supposed to arrive tonight from Whitehorse.
- The 235 B backhoe was moved from thew Zone 4 area to clear snow from the bank of the flume at Zone 1 and Zone 4, in preparation for placing the truck canopies for flume protection. work was completed by noon. Later in the afternoon the hoe was used to drag 2 canopies up the flume road to the Zone 1 area. At the end of the day, the hoe was floated by Golden Hill on the low-boy trailer to the junction of the rip rap quarry road. Plans are to use hoe to load the rock truck and begin stockpiling the rip rap tomorrow.
- Rip rap material looks suitable, maximum size about 4 ft, well graded, very strong, fresh. Looks like a fine grained metavolcanic rock, andesitic in composition.

3.0 Meetings Held and Decisions Made

- Met with Dana Haggar at the flume in the morning to review progress. Discussed extent of trimming and scaling required. Dana requested that Pat and I meet with him at noon to review contract items with respect to quarry and trimming.

Meeting held at noon at the mine office. Dana Haggar, Pat Magnuson and myself in attendance. Dana and Pat agreed that in lieu of having to blast the rip rap, Golden Hill would provide an extra 200 m^3 of rip rap in the stockpile for a revised total of 1200 m^3. Pat requested that the number of hoe hours be increased from the present contract amount of 24 hours to allow for more hoe work to remove rock. I recommended to Dana that when the blaster arrives on Friday, we will lay out a blast hole pattern based on the 80 lineal metres allowed in Zone 1 and 220 for Zone 4. I anticipate that there may be a need to carry out additional rock removal beyond the limits shown in the Contract Drawings and we should be prepared to allow for some increase in the pay item for trimming. Dana agreed, but requested that he be informed as soon as possible if there was a significant cost increase, so that approval could be obtained from Deloitte and Touche. It was agreed that at the end of the day we do not want to be left with a slope that is in worse shape than the present conditions.

4.0 Other Issues to be Raised/Co-ordinated

- Layout blasting holes and make revised estimate of length of trim holes required, as per meeting above.

5.0 Photographs Taken

Roll 2-6 to 2-10 . Notes are in field book.

6.0 Other Notes

Work today is covered under lump sum pay items in contract.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Thursday February 15, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, becoming partly cloudy in afternoon. AM –24° C, high –14° C, PM –20° C.

2.0 Work Done and Progress

- Cat D9N was repaired this morning and used by Dana Haggar on another contract to replace a culvert in the mine access road.
- The 235 B backhoe was used to load the rock truck at the rip rap quarry until 3:00 PM. Each truck load was estimated to contain about 20 cu.m of rock. Fifteen truckloads (approx. 300 cu. m) were hauled to the stockpile area today. The stockpile is located on the haul road, south of the Grum Pit.
- After 3:00 PM, the Golden Hill crew from the rip rap quarry was requested by Dana Haggar to carry out other contract work at another location.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Co-ordinated

Blaster is supposed to arrive tomorrow (Friday). We will layout blast holes and get revised quantity for trim holes required.

5.0 Photographs Taken

Roll 2-11 to 2-13 . Notes are in field book.

6.0 Other Notes

Work today is covered under lump sum pay items in contract.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Friday February 16, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, becoming partly cloudy in afternoon. AM –27° C, high –15° C, PM –20° C.

2.0 Work Done and Progress

- Cat D9N was used by Dana Haggar in the morning on another contract to replace a culvert in the mine access road. Pat Magnuson also used the Cat to open an alternate access road to the work site to cut down on the daily commuting time from Faro.
- There was no flume contract related work undertaken by Golden Hill until after 1:00 PM due to the prior work commitments on other contracts started yesterday. The 235 B backhoe was also used for the culvert work and was returned to the rip rap stockpile area at 2:00 PM..
- H. Hartmaier laid out a preliminary blast hole pattern on the top of the rock cut at Zone 1 and reviewed this layout with Pete Hildebrand, blaster for Golden Hill who arrived this afternoon. The drill pattern requires about 95 l.m of hole. Additional holes likely to be added as precaution along a preshear line to ensure a clean trim line. Hole depths to be verified when pattern is marked out on the ground tomorrow.
- In the afternoon, the 235 B backhoe, rock truck and dozer returned to the rip rap quarry. Rock was hauled to the stockpile from about 2:45 until 5:30 PM. Eleven loads were hauled today, bringing the estimated total in the stockpile to 26 truck loads or about 520 cu.m., based on truck counts.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Co-ordinated

Peter Hildebrand, Blaster for Golden Hill arrived today. We reviewed the preliminary blast layout for Zone 1 area and will finalize hole depths and numbers tomorrow. At this time it appears that the 300 l.m in the contract should be sufficient.

5.0 Photographs Taken

No photographs taken today.

6.0 Other Notes

Work today is covered under lump sum pay items in contract.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Saturday February 17, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, becoming partly cloudy in afternoon. AM –25° C, high –12° C, PM –20° C.

2.0 Work Done and Progress

- Golden Hill obtained permission from Dana Haggar to open a short cut route from the Faro mine road to the Grum-Vangorda haul road. This was in operation today and significantly cuts down on commuting time to the site. Both Pat Magnuson and myself check in at the main gate once a day to let the mine staff know how many people are on site.
- A three man crew was working all day at the rip rap quarry (Pat Magnuson, Tom Fisher and Scott Thompson). The Cat D9N was used by Golden Hill at the rip rap quarry all day to rip the blasted material and push to the backhoe for loading into the rock truck. The final tally was 60 rock truck loads taken to the stockpile at the end of the day. The Cat was used to trim up the rip rap stockpile so that a volume could be measured.
- The estimated volume of the stockpile was 1204 cu. m and is located on the mine haul road, on the south side of the Grum Pit. This completes the rip rap portion of the work.
- H. Hartmaier and Peter Hildebrand drilled off a nominal 126 l.m. of blast hole at the Zone 1 location. This consisted of 24 pre-shear holes with a nominal spacing of 0.5 m and a depth of 1.5 m, and 36 production holes with a nominal spacing of 1 m. The production holes comprised 24 holes 2 m deep and 12 holes 3 m deep all drilled vertically. Two holes inclined at 15 degrees to the vertical were drilled 3 m deep along the crest to help lift the slab of rock along the exposed foliation plane. The actual depth of drilling in Zone 1 based on measured depths was 132 l. m.
- The drill was moved over to the Zone 4 area in the late afternoon and 1 hole 2.8 m long was drilled. It is estimated that the drilling at Zone 4 will be about 132 l.m. Therefore the original estimate of 300 l.m should be sufficient to cover the drilling at both sites.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Co-ordinated

Verify total drilling depth for Zone 4 tomorrow based on layout.

5.0 Photographs Taken

Roll 2-14- 2-16. Descriptive notes are in field book.

6.0 Other Notes

Work at quarry is complete. Drilled a total of 134.8 m of trim holes today, or about 45 % of the contract quantity.

Correction to note: In my report of February 13, 2001, the name of Tom Thompson of Golden Hill should be corrected to Tom Fisher.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Sunday February 18, 2001

To: Jim Cassie, BGC Engineering (403) 250-5330
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, becoming partly cloudy in afternoon. AM –28° C, high –12° C, PM –20° C.

2.0 Work Done and Progress

- the rip rap stockpile volume was checked this morning by H.Hartmaier and Pat Magnuson jointly using a hand level and tape. The volume was estimated to be 1204 cu. m. Additional rip rap material is still available in the quarry, as a large quantity had been previously blasted.
- H. Hartmaier and Peter Hildebrand drilled off a nominal 128 l.m. of blast hole at the Zone 4 location (this includes the 2.8 m drilled in yesterday's report). This consisted of 20 holes with a nominal depth of 3 m, 19 holes with a nominal depth of 2 m and 20 holes with a nominal depth of 1.5 m. All holes were production holes spaced at 1 m c-c, there were no pre-shear holes. All holes were drilled at an inclination of 15 degrees to the vertical. The actual depth of drilling in Zone 4 based on measured depths was 134 l. m. Therefore the total footage drilled in Zone 1 and Zone 4 to-date is 266 l.m out of a contract amount of 300 l.m.
- Pete will be ordering the explosives tomorrow and the blast is planned for Tuesday. Blasting will be done using ANFO with stick primers. The pre-shear holes will be lightly loaded.
- The Cat 235 backhoe, D9N Cat and low-boy trailer were used all day to place flume protection in front of Zone 1. Three truck canopies were placed and four more were brought in. The most downstream canopy was covered with spoil to allow hoe access to the downstream end of Zone 1 for scaling

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

None today.

5.0 Photographs Taken

Roll 2-17 to end, Roll 3-1 to 3-17. Descriptive notes are in field book.

6.0 Other Notes

There are 34 l.m of trim drilling left in the budget. The rip rap lump sum item is completed. The flume protection work is covered under a lump sum item.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Monday, February 19, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, all day AM –25° C, high –12° C, PM -18° C.

2.0 Work Done and Progress

- The Cat 235 backhoe and Cat D9N dozer were used all day to place flume protection.
- six truck canopies have now been placed over the flume at Zone 1, two canopies are in place at Zone 4
- The backhoe spent 2 hours scaling at the downstream end of Zone 1 at the end of the day.
- Explosives have been ordered from Whitehorse. They will arrive early tomorrow morning.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

The blasting will be done in two stages. First Zone 1, then after mucking, the flume protection will be moved to Zone 4. Zone 4 loading will take place while Zone 1 is being mucked out.

5.0 Photographs Taken

Roll 3-18 to 3-21. Descriptive notes are in field book.

6.0 Other Notes

The flume protection work is covered under a lump sum pay item. 2 hours of hoe time was used in scaling.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Tuesday February 20, 2001

To: Jim Cassie, BGC Engineering (403) 250-5330
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, all day AM –26° C, high –14° C, PM -15° C.

2.0 Work Done and Progress

- The Zone 1 area was blasted at 2:30 PM today. The blast involved about 213 kg of ANFO initiated by detonating cord and half stick primers of dynamite in each hole. The back shear line was loaded every other hole. The rock broke to the foliation plane, close to a 1:1 slope at the crest. Backhoe scaling will be required to remove a zone of rock which could not be drilled off along the upstream side of Zone 1.
- Some blasted rock was cast into the flume on the downstream side of the flume protection and will have to be removed.
- The Cat 235 backhoe was scaling in the Zone 1 area for about 4.5 hours this morning, then used to remove blasted muck from the flume protection to allow the truck canopies to be moved to Zone 4.
- two truck canopies were moved from Zone 1 to Zone 4. There are now 5 canopies in place at Zone 4.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

The blasted material in the flume needs to be cleaned out as it is backing up the flow.

5.0 Photographs Taken

Roll 3-22 to end. Roll 4-1 to 4-15. Descriptive notes are in field book.

6.0 Other Notes

The flume protection work is covered under a lump sum pay item. 4.5 hours of hoe time was used in scaling, bringing the total to date to 6.5.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Wednesday, February 21, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Cloudy all day AM –22° C, high –11° C, PM -15° C. Light snow flurries in late afternoon.

2.0 Work Done and Progress

- One of the truck canopies was moved from Zone 1 to Zone 4 to provide flume protection. Six truck canopies were in place at Zone 4 prior to blasting.
- The Zone 4 area was successfully blasted at 10:50 AM. The blast involved about 288 kg of ANFO initiated by detonating cord and half stick primers of dynamite in each hole. Some holes used full sticks (16") to use up remaining explosives. All 59 holes were loaded, there was no shear line. Most of the loose, weathered rock in the overhang shattered into small fragments. A bed of massive pyrite up to 1 m thick was also encountered, which broke up into angular blocks. The overall trim blasting resulted in a 1:1 slope along the crest of the slope.
- A minor amount of flyrock was cast into the flume on the upstream end of the truck canopies placed at Zone 4
- The blasted rock which was cast into the flume at Zone 1 was cleared out.
- Around 1:00 PM Golden Hill brought in a second Cat 235B backhoe that was available from the mine to help in scaling and mucking. This hoe was used primarily for clearing out the accumulated talus and scaling debris along the toe of the slope at the downstream end of Zone 1 and started scaling the Zone 1 blast area.
- The Golden Hill Ventures Cat 235 backhoe was used for scaling and mucking in the Zone 4 area and for removing and placing flume protection.
- The Cat D9N dozer was used to push the blasted rock ,excavated by the hoe, into the Vangorda Pit.
- Golden Hill had five people on site – Pat Magnuson, Scott Thompson, Tom Fisher, Pete Hidebrand and Jason Thompson. Jason arrived yesterday and delivered the explosives. Jason helped Pete, the blaster for the Zone 1 and 4 blasts. Pete and Jason were demobilized back to Whitehorse around noon.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

The scaling and muck removal work are essentially being carried out as one operation, except for the separate scaling required at the downstream end of Zone 1. Scaling is paid separately. The mucking activities also overlap considerably with removal of the flume protection which is a lump sum item. It is recommended that the total hoe hours used be recorded until all the work is completed, then paid for under the lump sum item for flume protection, the estimated volume of rock removed by blasting, with the balance covered under the scaling item.

5.0 Photographs Taken

Roll 3-22 to end. Roll 4-1 to 4-24 (End). Descriptive notes are in field book.

6.0 Other Notes

The flume protection work is covered under a lump sum pay item. 5 hours of hoe time for each hoe was used in scaling and mucking related work (mostly scaling), bringing the total to date to 16.5. The mucking work is covered in the pay item for lineal metres of trim hole blasting (See above note).

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Thursday, February 22, 2001

To: Jim Cassie, BGC Engineering (403) 250-5330
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Scattered clouds in early morning, becoming clear later in morning. AM -15^{o} C, high -11^{o} C, PM -15^{o} C.

2.0 Work Done and Progress

- the Cat 235B hoe from the mine was used to reinstate the access road bench above Zone 4. It was then walked over to Zone 1 to carry out scaling and mucking on the blasted slope for the rest of the day. Estimated time allocated to scaling – 6.5 hours. Rest of time should be considered part of lump sum items.
- the Golden Hill 235B backhoe spent all day excavating truck canopies from the Zone 4 flume area. Two canopies were taken off site by tractor trailer, two canopies were moved from Zone 4 to Zone 1 to protect the flume during scaling operations. The work done by the Golden Hill backhoe is covered under the lump sum item for flume protection and trimming.
- the Cat D9N was used periodically to push excavated material from Zone 4 into the Vangorda Pit.
- The Golden Hill Ventures Cat 235 backhoe was used for scaling and mucking in the Zone 4 area and for removing and placing flume protection.
- The Cat D9N dozer was used to push the blasted rock ,excavated by the hoe, into the Vangorda Pit.
- Golden Hill had three people on site – Pat Magnuson, Scott Thompson and Tom Fisher.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

Nothing today.

5.0 Photographs Taken

Roll 5-1 to 5-6. Descriptive notes are in field book.

6.0 Other Notes

The flume protection work and mucking is covered under lump sum pay items. 6.5 hours of hoe time for scaling related work was carried out, bringing the total to date to 23.0 hours.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Friday, February 23, 2001

To: Jim Cassie, BGC Engineering (403) 250-5330
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Cloudy all day, light snow in afternoon. AM –21° C, high –15° C, PM -15° C.

2.0 Work Done and Progress

- both backhoes were working at Zone 1 all day. 2.5 hours of scaling was carried out. A small zone of loose rock remains at the upstream edge of Zone 1. This area cannot be reached by the hoe and is possibly too dangerous to access on foot for hand scaling under winter conditions. It is expected that much of the material may come down over time and land on the catch bench beside the flume. Otherwise scaling should be done later when the snow is off the ground.
- the D9N cat was used to bulldoze the excavated spoil into the Vangorda Pit.
- in the course of cleaning up the spoil from the blast and scaling operations, Golden Hill have also cleaned off the talus debris that covered the lower portion of the rock cuts adjacent to the flume in Zones 1 and 4. This has increased the total volume of material removed under the contract. Prior agreement was obtained for this work from Dana Haggar.
- Golden Hill had two people on site today – Pat Magnuson and Scott Thompson.

3.0 Meetings Held and Decisions Made

Holger Hartmaier met with Mike Bryson after lunch to visit the fresh water supply dam and tailings dams. The purpose of this visit was to get familiar with the locations of these structures for future work.

4.0 Other Issues to be Raised/Coordinated

Under the flume protection work item, Golden Hill has been requested to clean out the flume at Zones 1 and 4 using the sand bucket available from the mine. This work will be done tomorrow after the remaining canopies at Zone 1 are removed.

5.0 Photographs Taken

Roll 5-7 to 5-13. Descriptive notes are in field book.

6.0 Other Notes

The flume protection work and mucking is covered under lump sum pay items. 2.5 hours of hoe time for scaling related work was carried out today, bringing the total to date to 25.5 hours. The scaling work is largely completed now. The only work remaining on the contract is excavation and removal of the six truck canopies at Zone 1 and cleaning of the flume with the sand bucket. These items are covered under the lump sum pay items.

Prepared By;

Holger Hartmaier, P.Eng
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Saturday, February 24, 2001

To: **Jim Cassie, BGC Engineering (403) 250-5330**
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, mild northeast wind. AM –31° C, high –18° C, PM -23° C.

2.0 Work Done and Progress

- the Golden Hill Cat 235B backhoe was used all day to remove the remaining six canopies in Zone 1.
- the D9N dozer was used to blade the excavated spoil into the Vangorda pit.
- the Cat 773B rock truck and Atlas Copco drill were moved from the flume area and taken to the mine gate for demobilization.
- Golden Hill had two people on site today – Pat Magnuson and Scott Thompson.

3.0 Meetings Held and Decisions Made

None today.

4.0 Other Issues to be Raised/Coordinated

Golden Hill obtained the sand bucket from the mine and will clean out the flume tomorrow at Zones 1 and 4.

5.0 Photographs Taken

Roll 5-14 to 5-15. Descriptive notes are in field book.

6.0 Other Notes

All work today is covered under lump sum pay items for flume protection and demobilization.

Prepared By;

Holger Hartmaier, P.Eng.
BGC Engineering Inc.

VANGORDA FLUME REHABILITATION-DAILY REPORT

For Sunday, February 25, 2001

To: Jim Cassie, BGC Engineering (403) 250-5330
Eric Denholme, Gartner-Lee (867) 873- 4453
Dana Haggar, Deloitte & Touche, (867) 994-3459
Doug Sedgewick, Deloitte & Touche (416) 601-6390

1.0 Weather Conditions

- Clear, windy (20 kph), drifting snow. AM –31° C, high –18° C, PM -23° C.

2.0 Work Done and Progress

- the bucket on the mine backhoe was switched to a sand bucket and used to clean up the debris in the flume at Zones 1 and 4 and regrade the slopes of the flume access road. The flume flow was unaffected by the debris which was trapped on the top of the snow cover. In most areas the material could be removed without disturbing the protective snow and ice covering over the water flowing in the flume. Where the water was exposed, slush and ice cover was rapidly re-established under the prevailing cold conditions.
- The remaining equipment was taken to the mine gate by Golden Hill for demobilization. This included the Cat D9N bulldozer, the Cat 235B backhoes (Golden Hill and mine) and the heater/generator unit.
- This completes the work on the flume rehabilitation under this contract.
- Golden Hill had two people on site today – Pat Magnuson and Scott Thompson.

3.0 Meetings Held and Decisions Made

Dana Haggar visited the site in the morning as Golden Hill was getting ready to clean up the flume. There were no further outstanding deficiencies to be addressed.

4.0 Other Issues to be Raised/Coordinated

It is recommended that when the snow and frost is gone, some additional cleaning be done at the base of Zone 1 in the area currently covered by a glacier, in order to provide additional catch bench area for any minor rockfalls/spalls at the upstream end of the blasted slope.

In Zone 4, the toe of the slope is composed of a very weak, black, graphitic unit which tends to under cut a more resistive caprock. The lower slope is currently draped with talus which serves to protect the weaker unit from erosion. The talus covering should be left in this area to prevent long term undercutting of the trimmed slope.

During the above activities, the overall condition of the lower slopes along the entire length of the flume should be assessed for clean up of talus debris, in consideration of the hydraulic section required for passing the design flood flows.

5.0 Photographs Taken

Roll 5-15 to 5-24 (End). Descriptive notes are in field book.

6.0 Other Notes

All work today is covered under lump sum pay items for flume protection and demobilization.

Estimated final contract quantities and costs:

1.) Scaling- Excavator Hours 25.5 @ $250.00/hour	$ 6,375.00
Man-hours- None Used	NIL
2.) Trimming- 266 lineal metres @$35.00/m	$ 9,310.00
3.) Flume Protection- Lump Sum	$20,000.00
4.)Mobilization/demobilization- Lump Sum	$16,000.00
TOTAL	**$51,685.00**

Provisional Item:

Rip Rap- 1200 cubic metres- Lump Sum	$35,000.00*

(* Adjusted lump sum price and quantity agreed between Golden Hill and Deloitte&Touche in recognition of already blasted condition of rock.)

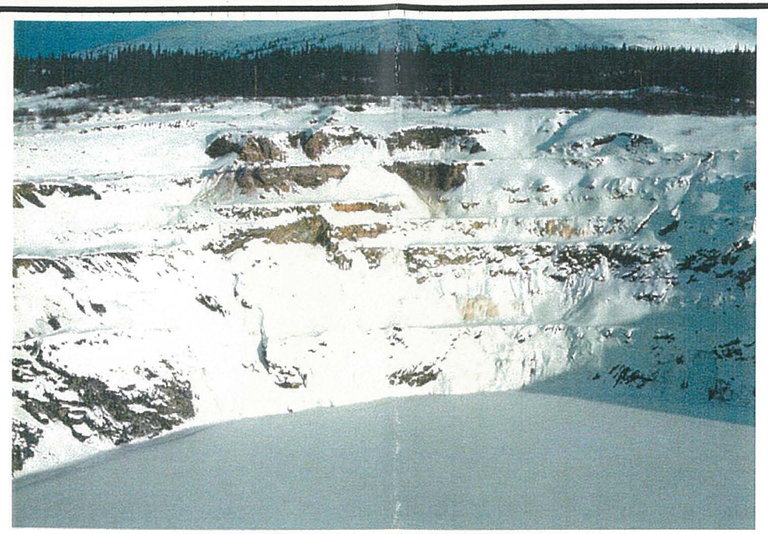
Prepared By;

Holger Hartmaier, P.Eng.
BGC Engineering Inc.

Appendix 3
Construction Photographs

MOBILIZATION

(February 12, 2001) Golden Hill Equipment at lay down area at Vangorda Flume



(February 12, 2001) View across Vangorda Pit at Zone 1 and Zone 4 area

(February 12, 2001) Atlas - Copco track mounted pneumatic drill rig for blast holes

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB Phone (403) 250-5185

CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Mobilization Construction Photos

PROJECT No.: 0257-003-03

FIGURE. No.: Appendix 3-1

REV.: 0.

ZONE 1 AREA

(February 12, 2001) Bedrock knob at downstream end of Zone 1, previously recommend for rock bolting. (Prior to start of work).

(February 12, 2001) Area to be excavated by trimming - prior to start of work.

(February 13, 2001) Excavating access road to top of Zone 1.

(February 13, 2001) Completed access to top of Zone 1 area ready for drilling.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB Phone (403) 250-5185

CLIENT: Deloitte & Touche

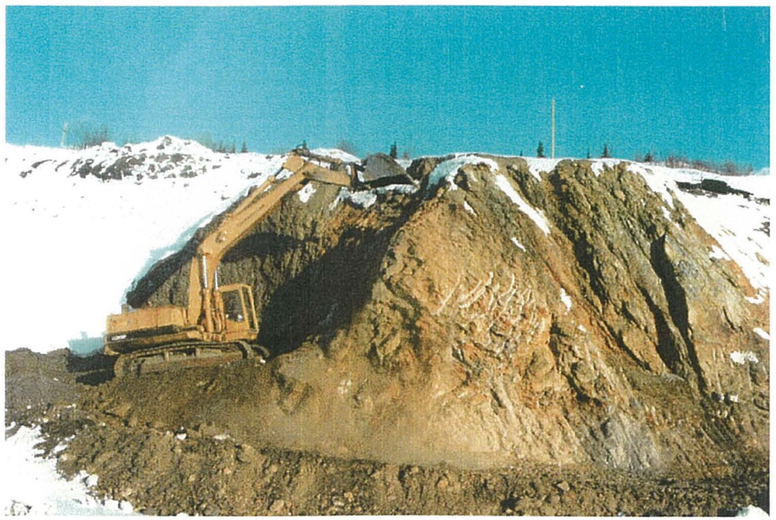
PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 1 Area Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-2A	0.

(February 13, 2001) Zone 1 area with access to top for drilling.

(February 17, 2001) Drilling blast holes in Zone 1.



(February 20, 2001) Scaling bedrock knob area at downstream end of Zone 1.

(February 20, 2001) Loading blast holes Zone 1.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE:	N/A
DATE:	March 2001
DRAWN:	SLF
DESIGNED:	HHH
CHECKED:	HHH
APPROVED:	HHH

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB Phone (403) 250-5185

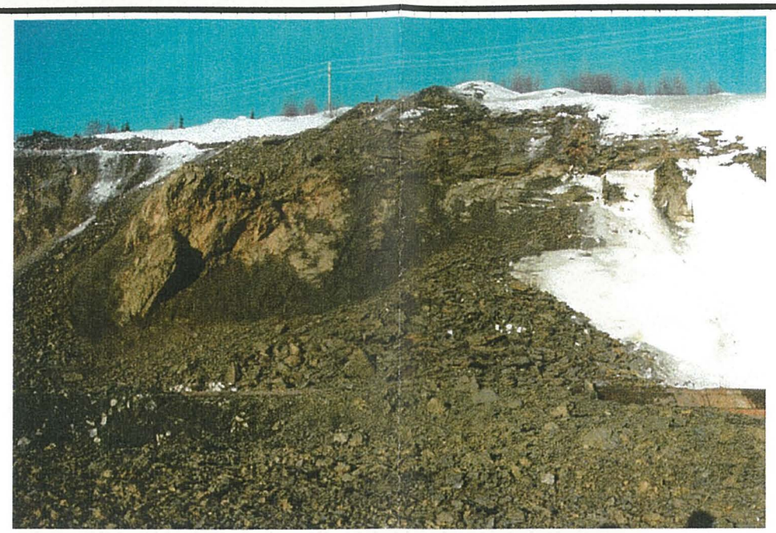
CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 1 Area Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-2B	0.

(February 20, 2001) Blast - Zone 1 area.



(February 20, 2001) Results of blast - Zone

(February 22, 2001) Scaling Zone 1 area after blast.

(February 25, 2001) Zone 1 area completed trimming and scaling.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB Phone (403) 250-5185

CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 1 Area Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-2C	0.

(February 25, 2001) Completed scaling of downstream end of Zone 1 area.

SCALE: As shown	DESIGNED: HHH	
DATE: March 2001	CHECKED: HHH	
DRAWN: SLF	APPROVED: HHH	

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Calgary, AB Phone (403) 250-5185

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 1 Area Construction Photos

CLIENT: Deloitte & Touche

PROJECT No.	DWG No.	REV.
0098-044	Appendix 3-2D	0.

ZONE 4 AREA

(February 12, 2001) Zone 4 area prior to start of work.

(February 13, 2001) Cutting access road to top of Zone 4 for drill.

(February 21, 2001) Loading drill holes Zone 4 area.

(February 21, 2001) Blast in Zone 4.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

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CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 4 Area Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-3A	0.

(February 21, 2001) Results of blast in Zone 4.

(February 25 2001) Final Slope after trimming and scaling in Zone 4.

SCALE: As shown	DESIGNED: HHH
DATE: March 2001	CHECKED: HHH
DRAWN: SLF	APPROVED: HHH

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PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Zone 4 Area Construction Photos

CLIENT: Deloitte & Touche

PROJECT No.	DWG No.	REV.
0098-044	Appendix 3-3B	0.

FLUME PROTECTION

(February 12, 2001) Old truck canopies to be used for flume projection at Vangorda Pit laydown area.

(February 14, 2001) Removing snow in front of Zone 1 for flume protection.

(February 18, 2001) Torch cutting holes in truck canopies for lifting eyes.

(February 18, 2001) Lifting truck canopies with Cat 235 backhoe.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

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TITLE: Flume Protection Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-4A	0.

(February 18, 2001) Placing truck canopies over flume in front of Zone 1.

(February 25, 2001) Completed scaling of downstream end of Zone 1 area.

SCALE: As shown	DESIGNED: HHH
DATE: March 2001	CHECKED: HHH
DRAWN: SLF	APPROVED: HHH

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PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Flume Protection Construction Photos

CLIENT: Deloitte & Touche

PROJECT No.	DWG No.	REV.
0098-044	Appendix 3-4B	0.

RIPRAP

(February 13, 2001) Cleaning snow from access road to riprap quarry.

(February 13, 2001) Cat 773B rock truck used to haul riprap.

(February 14, 2001) Blasted riprap in quarry. Largest dimension (hammer) is 1.2 m.

(February 14, 2001) Cat D9N ripping blasted riprap in quarry.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE: N/A
DATE: March 2001
DRAWN: SLF
DESIGNED: HHH
CHECKED: HHH
APPROVED: HHH

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CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Riprap Construction Photos

PROJECT No.: 0257-003-03

FIGURE. No.: Appendix 3-5A

REV.: 0.

(February 15, 2001) Excavating and hauling riprap at quarry.

(February 15, 2001) Typical size, gradation of riprap in stockpile.
Length of tape is 900 mm - maximum particle size specified.

(February 15, 2001) Dumping riprap into stockpile, next to Grum Pit, on Vangorda Haul road.

(February 18, 2001) Completed stockpile - 1204 m³ volume.

REV.	DATE	REVISION	DRAWN	CHECKED	APPROVED

SCALE:	N/A
DATE:	March 2001
DRAWN:	SLF
DESIGNED:	HHH
CHECKED:	HHH
APPROVED:	HHH

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CLIENT: Deloitte & Touche

PROJECT: Vangorda Diversion Flume Rock Slope Rehabilitation

TITLE: Riprap Construction Photos

PROJECT No.	FIGURE. No.	REV.
0257-003-03	Appendix 3-5B	0.