APPENDIX 29

High Voltage Transmission Facilities for Eagle Gold Mine – Project Description

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Stantec

EAGLE GOLD PROJECT

High Voltage Transmission Facilities

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1 SCOPE OF PROJECT

1.1 Principal Project

The Victoria Gold Corporation is proposing to develop the Eagle Gold Project – a gold mine situated at the Dublin Gulch property. Dublin Gulch is located approximately 85 km northeast of the town of Mayo in the Yukon Territory. It has been estimated that the power requirements for Project will be:

- Average seasonal load: 11.0 MW
- Total connected load of 16.8 MW.

The total annual consumption of electric energy on the mine site is estimated to be 94,800 MWh (Scott Wilson 2010).

1.2 High Voltage Transmission Facilities for Eagle Gold Mine

The high voltage power system to supply energy to the Eagle Gold Project will involve diesel generators on the mine site, a 69/13.8 kV substation, and a 69 kV overhead transmission line.

Before mine production, the new substation and overhead transmission line will be put in service and the supply of power will be switched over to the Yukon Energy electric grid. The new transmission line will be connected to the existing Mayo to Keno 69 kV transmission line at Silver Trail road and will follow the South McQuesten Road to the crossing of the South McQuesten River; and then along the Haggart Creek Road to the new substation at the mine site. The Main 69/13.8 kV substation will be located within Eagle Gold Mine clearing boundary, between the lay down area and the new access road. In the event of a power failure, three emergency diesel generation sets will be provided. Each unit will be rated at 1,500 kW, 575 V with a 575 V/13.8 kV transformer.

The conceptual overview diagram of high voltage transmission facilities for Eagle Gold Project and connection to Yukon Energy electrical grid is shown in Figure 1.2-1.

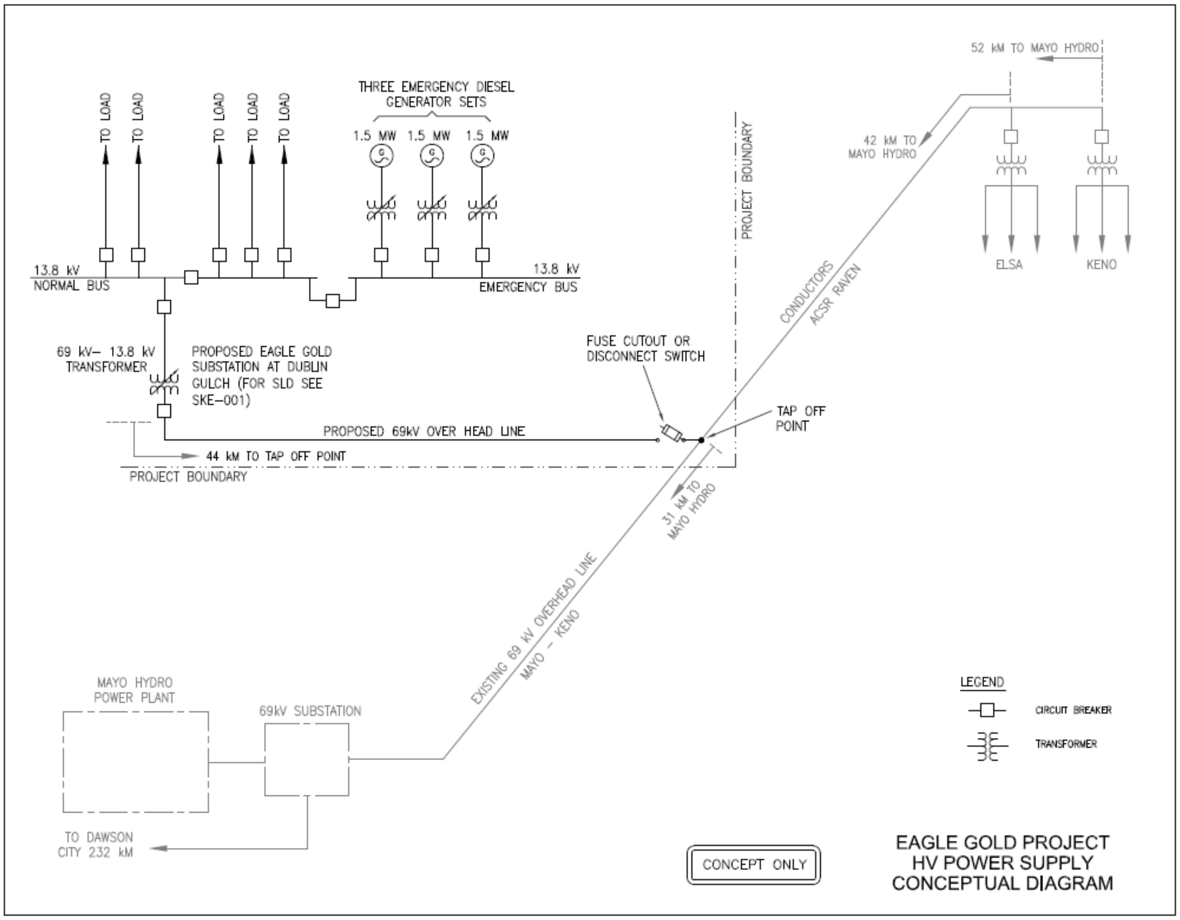


Figure 1.2-1: HV Power Supply Conceptual Diagram

2 PROPOSED POWER TRANSMISSION TECHNOLOGIES

The proposed technology is similar to technologies utilized for the previous transmission projects in Mayo area. The proposed 69 kV line will be of similar design to the 69 kV transmission lines connecting the Mayo Hydro power plant to Keno and Dawson City. The materials to be used shall be per Canadian Standards Association (CSA) standards and suitable for conditions in the Yukon Territory north of Mayo and in the vicinity of Eagle Gold Project area. The design shall be in accordance with CAN/CSA-C22.3 No. 1-06 standards, Alberta Electrical Utility Code, Yukon Energy's requirements, and the industry practices in North America.

Throughout the Project execution period, standard environmental protection practices as found in Yukon Energy's Environmental Management System (EMS) will be applied to design, construction, operation, maintenance and decommissioning of the transmission facilities.

3 PROJECT STAGES AND SCHEDULING

The schedule of the 69 kV transmission line and substation will be coordinated with the schedule of the Eagle Gold Project. The construction phase of the Eagle Gold Project will commence in the first quarter of 2012 and be completed by August 2013, at which time the operations phase of the project will begin. Power for the Project for operation, decommissioning, closure and post closure phases is assumed to be available from the Yukon Energy transmission grid. Therefore, the new 69 kV transmission line and substation will have to be commissioned before the end of 2012. Figure 3-1 provides the anticipated schedule for the design, procurement, construction and commissioning of the new 69 kV transmission line and substation.

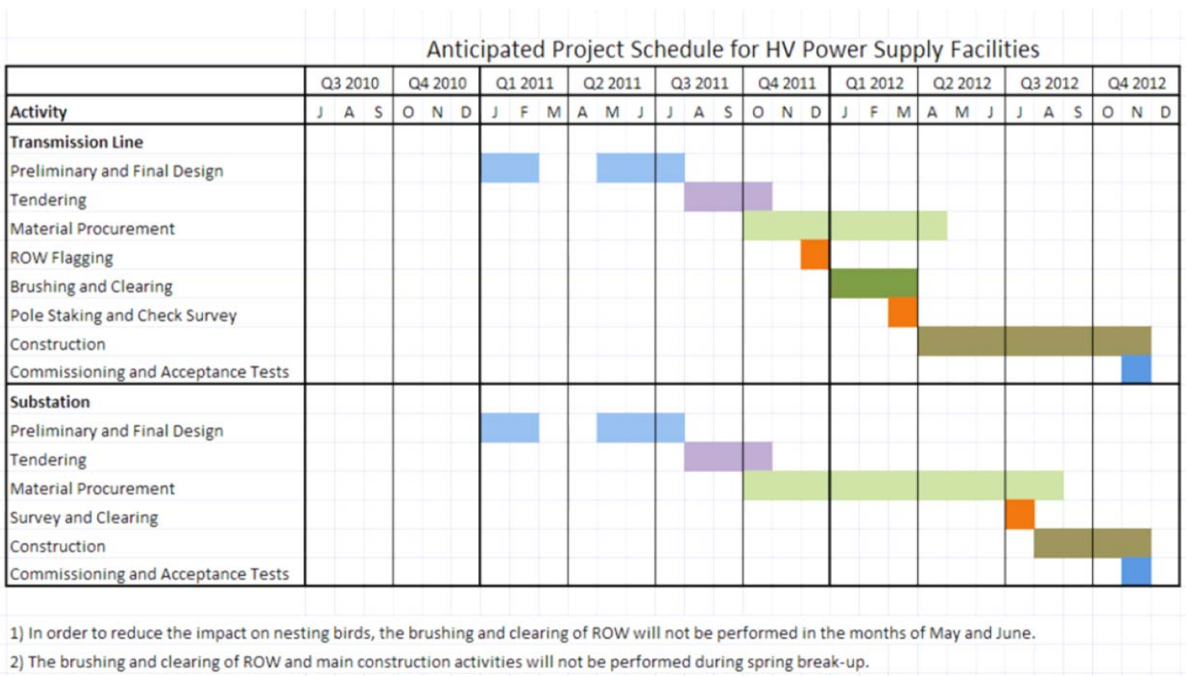


Figure 3-1: Project Stages and Schedule

4 TRANSMISSION LINE PLANNING AND PRELIMINARY ENGINEERING

In order to proceed with the transmission line route selection a design concept for the transmission line conductors, insulators, structures, and foundation has been developed (see Section 4.4). By combining aerial photos that have been digitized and triangulated with control survey points, a digital terrain model has been generated for the expected corridor of the transmission line. This model was used as input into PLS-CADD, a transmission line design and drafting software, and used to generate transmission line longitudinal profiles for the spotting of structures and line conductor clearances.

4.1 Criteria for Conceptual Route Design for 69 kV Overhead Transmission Line

The following assumptions and criteria have been adopted during the conceptual overhead transmission line route selection process:

1. The 69 kV wood pole transmission line will generally be located along the existing and the new road alignment. The parts of the transmission line right-of-way (ROW) may overlap with the portions of road’s ROW.
2. The transmission line route shall be designed so that the best combination of safety, environmental protection, site access, and economic cost is achieved.
3. The transmission line poles shall be placed outside the Desirable Clear Zone (DCZ), as defined by *Roadside Design Guide* issued by Alberta Infrastructure and Transportation. For road design speeds below 90 km/h and Average Annual Daily traffic fewer than 750 vehicles, the minimum distances from the edge of the driving lane to the pole will be in the range of 2.5 m to 5.5m. The DCZ shall be increased at outside road curves.
4. The minimum vertical clearances between road surface and bottom conductors of the 69 kV transmission line shall be 9 m. This clearance is based on the measurement of Mayo – Keno 69 kV line height above Silver Trail highway. If the mine owner determines that the higher vehicles and loads will be present, the road crossing clearances shall be increased by the amount that the vehicles and loads’ height exceeds 5.3 m.
5. The minimum vertical clearances alongside roads and in areas unlikely to be travelled by road vehicles shall be 6.1 m.
6. In accordance with Yukon Energy practice the width of ROW for the 69 kV transmission line will be 60 m
7. The clearing width within the 69 kV transmission line ROW will normally be 30 m (i.e., 15 m from centerline). Danger trees outside the clearing width will be removed as well.
8. The transmission line ROW will not cross cultural or archaeological sites.
9. Zones of permafrost, steep slopes and wetlands shall be avoided if possible.

10. Terrains of limited stability (e.g. permafrost, steep slopes, or wetlands) will be given special attention. Where possible, longer spans and special foundations will be used.

Key measures to protect fish and fish habitat applicable to the conceptual design stage include:

1. Locate the transmission line alignment to avoid or minimize the number of watercourse crossings required. Avoid running the alignment parallel to a watercourse.
2. Locate the transmission line to minimize the complete removal of riparian vegetation within 30 m of top of bank or high water mark (HWM).
3. A minimum distance of 15 m from the transmission line structures to the HWM or top of bank of any watercourse shall be maintained.
4. Design and construct approaches so that they are perpendicular to the watercourse wherever possible to minimize loss or disturbance to riparian vegetation.
5. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains, unstable slopes, or any other area that is inherently unstable and may result in erosion and scouring of the stream bed.
6. Locate all temporary or permanent structures, such as poles, sufficiently above the HWM to prevent erosion.
7. If necessary, special structures will be designed and placed so that any watercourse will be crossed with a single span.

4.2 Proposed Line Route

The Line Segment from Silver Trail to the South McQuesten River Crossing

The proposed line route starts near the junction of South McQuesten Road and Silver Trail. The line then crosses the two roads and runs north-west to join the South McQuesten Road near kilometer 1.02. From this point line route follows closely the existing road. This line segment is located on relatively flat or slightly undulated ground with occasional wet and swampy zones. It has been estimated that there is about 20% permafrost in this route segment. Where possible, the line ROW overlaps a part of the road ROW so that tree clearing is minimized.

The Line Segment from the South McQuesten River Crossing to Dublin Gulch

The part of the route near the South McQuesten River Bridge is swampy. The river crossing will need a long span to keep the structures out of the flood plain. The rest of the line is located close to the road and generally away from Haggart Creek which runs parallel to the line. The modifications and realignments of the road have been taken into account in the line route proposal. Bedrock near the ground surface has been observed in many spots close to creek area. There are signs of permafrost in the section of the line route approaching the mine site.

The approximate length of the proposed line route is 44 km.

4.3 ROW Requirements

The ROW width has been determined to ensure that there is a safe clearance between vegetation and manmade objects and the transmission line. The clearances between the live parts of transmission line and other objects shall be maintained under still air conditions and when conductors are in position of swing under 230 Pa wind pressure. The typical clearing width and ROW cross section for the 69 kV transmission line is shown in the Figure 4.3-1.

Before the installation of the transmission line, a 30 m wide strip inside of ROW will be cleared of all shrubs and trees. Danger trees within ROW shall also be cut. No tree shall hit or come within flashover distance of any part of the transmission line. The ROW shall be kept cleared during the service life of the transmission line.

The safe limits of approach distances from the transmission line shall be as specified in the Alberta Electrical Utility Code.

In order to minimize tree cutting, it is proposed where possible, the overhead transmission line is located within the right-of-way of the road. Therefore in some sections the ROW of the transmission line overlaps with the tree-clearing zone of the road.

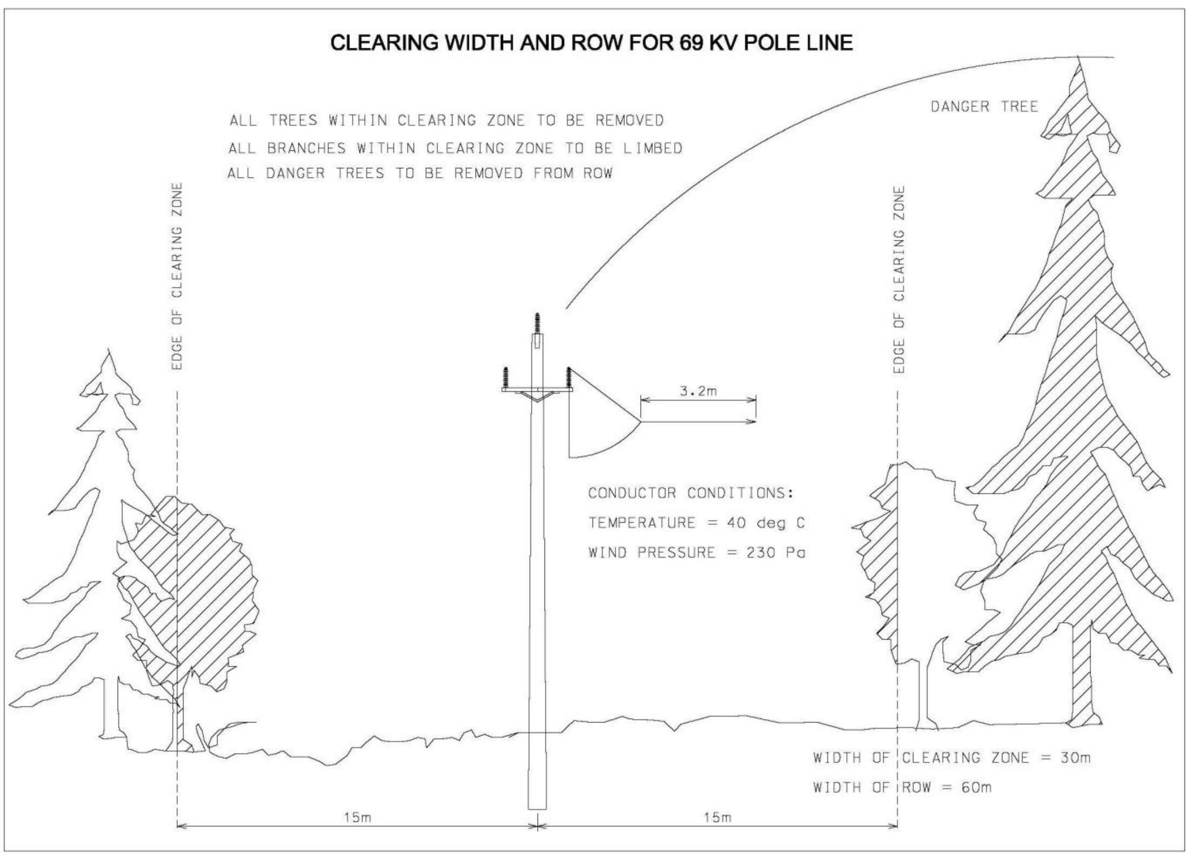


Figure 4.3-1: Typical Clearing Width

4.4 Design of Transmission Line Components

Design Criteria Used in Conceptual Design

A concise overview of the criteria adopted for the conceptual design of 69 kV Transmission Line and its components are presented as follows:

- The minimum design requirements that are most important to the: a) safety of persons; b) continuity of service; and c) protection of property shall be as specified in CSA C22.3 No. 1-06 Overhead systems.
- Design life of the line for reliability considerations is 50 years.
- Design life of the line for calculation of power losses is 8 years.
- The line will be a single circuit, three-phase overhead transmission line.
- The approximate length of the transmission line is 44 km.
- Maximum power to be transmitted is 16.8MW.
- The rated capacity of the conductors shall be calculated for conditions specified in Clause 3 of CSA C22.3 No. 1-06 Overhead systems. The conductor elevation above sea level is assumed to be 700 m.
- Lightning performance— Several 69 kV lines in the area operate satisfactory without shield wire. No shield wire is required for the new line.
- Conductor galloping has not been observed on existing lines in the area and will not be considered in the design of the new line.
- Insulator leakage distance shall be determined based on IEC 60815—Guide for the Selection of Insulators in respect to polluted conditions. Pollution level Light shall be selected for the complete line length. It will be determined during detail design if the higher pollution level has to be adopted for Dublin Gulch area.
- Weather loads and assumed loads according to deterministic design methods shall be as specified in CSA C22.3 No. 1-06 Overhead systems. The loading conditions for combined wind and ice shall be for a Heavy Loading Area, as specified in Table 30 of the standard. The loading case of extreme wind and the loading case of extreme ice shall be considered in accordance with Yukon Energy practice in the area. The minimum temperature for the line design is assumed to be -65^{o}C.
- The load factors for the structures shall be as specified in CSA C22.3 No. 1 -06, Table 31 ‘Minimum load factors for non-linear analysis of structures’. The Construction Grade 2 shall be adopted for the complete transmission line length.
- The load factors for the line components other than structures shall be as specified in CSA C22.3 No. 1-06.
- The minimum clearances will not be less than those specified in CSA C22.3 No. 1-06 and in the Alberta Electrical Utility Code. The clearances shall be increased as required by Yukon Energy specifications.

- Normal soil conditions prevail along the proposed line route; there are smaller swampy zones, slopes, outcrop rocks and zones of localized permafrost. Geotechnical information will be available at a later stage.
- The applicable codes and standards to be used in the design of particular line components have been referenced in relative sections of this document.

Conductors

The transmission line overhead bare conductors will be concentric-lay-stranded aluminum conductor steel reinforced (ACSR). The applicable standards are:

- CSA C61089:03—Round wire concentric lay overhead electrical stranded conductors
- CSA C60888:03—Zinc-coated steel wire for stranded conductors
- CSA C60889:03—Hard-drawn aluminum wire for overhead line conductors.

For the transmission line from Silver Trail to Dublin Gulch a 266.8 kcmil ACSR conductor code name “Partridge” is proposed. The conductor on the existing Mayo to Keno 69 kV line is ACSR 1/0 code name “Raven” and has smaller current carrying capacity then ACSR “Partridge”.

Voltage drop in the transmission line has been estimated assuming that a maximum of 16.8 MW power is transmitted to Dublin Gulch and a total of 3MW power is transmitted to Elsa and Keno. Taking into account the resistance of the conductor and estimated reactance of the transmission line, preliminary calculations show that under normal operating conditions voltage drop on the transmission line to Dublin Gulch will be around 10%. Detailed calculations including consideration of reactive power control will be done at a later stage of the project.

The corona discharge, radio, and audible noise during line operation will be well below allowable limits. The proposed conductor is of sufficient mechanical strength to withstand the assumed weather loadings. It is not likely that the conductor vibration dampers will be necessary. A proper consideration of wind induced conductor oscillations will be done during the detailed design stage.

Insulators and Fittings

The following types of insulators shall be used:

- Composite vertical line-post insulators or porcelain vertical line-post insulator or porcelain pin type insulators will be used on tangent pole type TP3 and light angle pole type TP15. These insulators will also be used as the conductor jumper supports at dead end poles.
- Composite suspension insulators will be used to dead-end the conductors on pole types FD45, VD90 and FD90. These insulators shall also be used as running angle insulators on pole type VS45. As an alternative to these insulators, the strings of five disks of porcelain or glass insulators can be used.
- Glass suspension insulators can be used to support outer phases. This will ease the line maintenance in areas where vehicle access is difficult.

The arrangement of insulators on various pole types is given in Drawing 149-T-DD-SK1 Sheets 1 to 5 (at end of report).

The standard fittings for connecting conductors to insulators, insulators to structures, and conductors to conductor shall be selected so that electrical and mechanical requirements for the safe operation of the transmission line are satisfied.

The applicable standards are:

- CSA C411.1-M89 – AC Suspension Insulators
- CSA C411.4-98 – Composite Suspension Insulators for Transmission Applications.
- CSA C83-96 – Communication and Power line Hardware
- CSA-C57 – 98 (R2006) – Electric Power Connectors for Use in Overhead Line Conductors
- NEMA ANSI C29.6:1996 (R2002) – Wet-Process Porcelain Insulators-High-Voltage Pin Type
- NEMA ANSI C29.7:1996 (R2002) – Porcelain Insulators-High Voltage Line-Post Type
- NEMA ANSI C29.17:2002 – Insulators – composite-line post type

Transmission Line Structures

The 69 kV structures will consist of single wood poles. Pole types are outlined in Drawing 149-T-DD-SK1 Sheet 1 to 5. Photo 4.4-1 shows a typical tangent pole and Photo 4.4-2 shows a typical running angle pole. If long crossing spans are required, double wood pole H frames can be used. All wood pole types except tangent pole type TP3 shall be guyed. Pole type TP3 shall also be guyed, if set in crib foundation on permafrost.

The material, manufacturing and class dimensional requirements of wood poles shall meet the requirements of CSA O15-05 Wood Utility Poles and Reinforcing Stubs. The preservative treatment of poles by pressure processes shall be in accordance with the CSA O80 series of standards.

Either or both laminated wood and steel crossarms will be used. Steel “V” braces shall be used to stabilize horizontal position of crossarms. The details of pole hardware will be determined during final design stage. Pole guy wires shall meet the requirements of CAN/CSA-G12-92 (R2007) Zinc-Coated Steel Wire Strand. Guy markers shall be installed as per requirements of CSA C22.3 No 1-06 Overhead Systems. All guys will be equipped with guy guards as per Yukon Energy’s EMS manual.

Average span between two poles will be about 95 meters. However, longer spans will be required at crossings of wetlands and rivers. The pole height above ground will typically vary between 9 m and 14m for tangent pole type TP3. The poles with vertical configuration of conductors will be higher and for example, the height of pole type VS45 can vary between 13 m and 19 m. The estimated height above ground for each pole type is given in Drawing 149-T-DD-SK1 Sheet 1 to 5.

Pole Foundations and Guy Anchors

The design of pole embedment methods and pole foundations will be selected in accordance with the soil conditions and the applied loads. Typical foundation outlines are given in the drawings 149-T-DD-SK1 Sheets 6 to 9.

The standard embedment method for good bearing soils is to set the pole into an augered hole or a backhoe excavation with compacted backfill. The standard embedment depth is 10% of the pole length plus 2 ft.

Pole foundations in poor soil will include installation of corrugated steel pipe in the top soil layer and gravel backfill. For pole foundation in marshy soil, a drum filled with stones or concrete will be installed at the bottom of the hole and the top will be filled with crushed rock.

Special attention will be given to pole setting in permafrost zones. Any unnecessary disturbance of permafrost shall be avoided. Where practical a slurried pile foundation shall be installed. Three to four layers of polyethylene film will be wrapped around the pile in the active layer to break the adfreeze bond between the pile and the permafrost. Where drilling is impractical or the active layer is too deep, pole crib foundations can be used. Such foundations normally require that the pole be anchored with at least two side guys. Regular adjustment of a pole verticality is required as part of maintenance operations.

Generally, two types of guy anchors will be used. Wood log type anchors will be placed against the undisturbed side of an excavated hole and connected to an anchor rod. The hole shall be backfilled and compacted. Minimum depth of log placing shall not be less than 1.5 m and will be determined depending on the soil type and the loadings on anchor. Cross plate anchors will be installed in holes drilled by power diggers. The hole can be drilled by the same auger that is used to drill the pole holes. The hole is undercut so that the cross plate anchor can be placed at a right angle to the guy. An anchor rod slot is drilled with a small auger or cut with a trenching tool. After installation of the anchor and the anchor rod, the main hole and the anchor rod slot are backfilled and tamped. Typical guy anchor outlines are given in Drawing 149-T-DD-SK1 Sheet 10.

Photo 4.4-1: Typical Tangent Pole

Photo 4.4-2: Typical Running Angle Pole

4.5 Access and Transportation

Transportation of transmission line materials and equipment from Mayo to lay down areas will be by Silver Trail Road, South McQuesten Road and the road along Haggart Creek. The ROW of the transmission line is very close to the road and it will be possible to reach many pole locations using existing trails and cleared ROW. Where access is not available, new access trails will be made to reach the ROW between difficult slopes or between stream crossings. It will be necessary that vehicles with rubber tires, crawler tractors, and truck mounted construction equipment will have access to most of the pole locations. An all-weather road and drainage will be built as a permanent access to the substation.

5 SUBSTATION PLANNING AND PRELIMINARY DESIGN

Substation design will be in accordance with generally accepted and approved design standards such as established by the Canadian Standards Association, the Institute of Electrical and

Electronics Engineers Standards Association (IEEE) and the Alberta Electrical Utility Code, which are consistent with current industry practice in North America.

A substation preliminary design is included as part of the electrical engineering work. The substation will include the following main equipment and related components:

- Deadend structure designed to terminate the 69kV transmission line slack span
- 69kV main disconnect switch
- Station lightning arrester
- 69 kV Trans-Rupter for transformer protection
- Power transformer 12/15MVA, 69/13.8 kV
- Miscellaneous protection equipment, cables, connectors and associated hardware.

The substation details and interconnections to 13.8 kV switchgear and diesel generators are shown on attached electrical Drawing 10, SKE-001.

A preliminary footprint of the Eagle Gold Mine substation is estimated to be 25 m by 20 m and will be fenced, gated and locked. The substation will have a layer of crush stone. The proposed substation Plot Plan and Elevations are included in Drawing 10, SKS-01 and SKS-02.

6 CONSTRUCTION PHASE

6.1 Transmission line Construction

Yukon Energy's best practices, as outlined in their EMS Manual, will be applied by experienced contractors in the construction of the transmission line. Construction will also follow an Environmental Protection Plan (EPP) specific to this Project and developed after receipt of environmental approvals; and conditions specified in the Land Use Permit. All waterways will be avoided by wheeled and tracked vehicles and all sites will have spill kits on hand.

Construction inspectors will be on site throughout the construction process to ensure conformity to specifications and specific mitigation measures. Throughout the construction phase, project monitors will ensure conformity with the approved route alignment; and ensure no disturbance can occur to identified archaeological or heritage resources.

6.2 Survey and Clearing of Right-of-Way

The final routing design and final pole spotting design will be done using PLSCADD software and will be based on a LIDAR survey or high accuracy digitized mapping. The designer shall provide a route map and plan and profile drawings with the coordinates for each pole location. A survey crew will flag the edges of ROW for clearing widths before the commencement of the brushing and tree clearing work. Clearing of trees allows transmission line construction to proceed. In order to ensure safe and reliable operation of the line, the cleared width of ROW shall be maintained during the entire service life of the line. Regular brushing, clearing, and danger tree removal will also minimize the risk of wildfires. Brushing and clearing will be carried out as specified in Yukon Energy EMS Manual best practices.

Tree clearing and brushing will typically be done by mechanized equipment. A mechanical feller buncher is mounted on crawler tractors to cut trees up to 20 cm in diameter. If the work is done during the frozen ground period, this method will cause minimal ground disturbance. Chainsaws and skidders will be used to remove salvageable timber in dense forest zones. Further clearing can be done by bulldozers and excavators. Hand clearing with chainsaws will be employed in rugged terrain and near the rivers and streams in riparian areas.

Branches and other residue left on after the clearing work will normally be piled and burned inside the ROW. Salvage of merchantable timber may be available through the Department of Forestry.

6.3 Foundation and Structure Erection, and Stringing of Conductors

The survey crew will stake the pole locations and guy positions before the start of foundation excavation works. The contractor will transport poles, hardware, fittings, insulators, conductors and construction materials from the marshalling area to the identified pole locations on the line ROW. Trucks with a loading crane are normally used for transport of line materials to site and tandem axle truck and trailers are used for hauling of poles. The pole structures are assembled on site.

Typical transportation tools and equipment used between the marshalling area and the pole locations include:

- Tandem axle trucks and trailers for transportation of wood poles
- Fork lifts
- Trucks 6 x 6 with loading crane
- Pickup trucks and crew cabs for crew and tools
- Crawler tractor
- Helicopter (if required).

Foundation holes are excavated using small backhoe excavators or diggers with an auger. The pole structure is lifted and set down in the hole using a crane or backhoe. Before backfilling the hole, the pole is checked for proper verticality and alignment. The poles at angles, junctions, and terminal locations shall be set and raked against the strain so that the conductors are in line. Pole backfill is thoroughly compacted in full depth. Guy anchors and guys are then installed for the angle and dead-end poles.

Typical tools and equipment used during foundation construction and structure erection includes:

- Backhoe 4 x 4 on rubber tires
- Small excavator
- Auger truck

- Hand drills and compressor
- Diggers with auger
- Truck with crane
- Small tools.

Following the erection of the structures, specialized linemen crews perform the conductor stringing. Large diameter pulleys (conductor sheaves) are attached to the pole crossarms or suspension insulators along the entire stringing section. Conductor reels are mounted on reel stands, loaded onto a trailer, and the conductor is pulled from the reels and fed through the sheaves along the stringing section. The sagging operation can start after all the conductors are strung in one section.

Using a sagging winch, the individual conductors are pulled up to the proper design tension. The conductors will be sagged in accordance to a sag chart which considers the conductor type, the length of span, and the prevailing temperature. After the conductor is sagged correctly it is tied to the insulators or fixed into the insulator clamps as per construction drawings.

Typical tools and equipment used in conductor stringing and sagging include:

- Bull wheel puller and bull wheel tensioner
- Sagging winch
- Reel stands
- Reel stand trailer
- Line truck with manlift
- Pulleys and Sheaves
- Conductor cutting tools
- Conductor press and compressor
- Running ground
- Ropes, blocks and tackles, pull-lifts, hand winches (tirfor)
- Pulling socks and come-along clamps
- Small tools.

During the final inspection, the inspectors shall ensure that all debris has been removed and that the transmission line has been constructed in accordance with the approved drawings and specifications.

6.4 Flagging of ROW

The flagging of ROW will require approximately two weeks which includes contingency for weather delays. It is estimated that one crew can mark the ROW at a rate of 5 km/day. A flagging crew will consist of a skilled GPS operator and three helpers. The accuracy of GPS units will be (+/-) 0.5 m. The GPS operator will be able to locate the line route using given coordinates and maps.

6.5 Clearing of ROW and Access

It is estimated that two clearing crews can complete the work in two months. If time becomes a constraint, more crews can be mobilized. Where mechanical clearing of the growth is feasible, each crew will include a bulldozer, excavator, or skidder operator; a feller buncher operator; and three laborers. Where hand clearing is required (e.g. slopes, permafrost zones, wetlands), a larger workforce will be employed. The potential workforce requirement is given in Table 6.5-1. Actual brushing and clearing workforce will be determined by the responsible contractor.

Table 6.5-1: Brushing and Clearing Workforce Requirements

Job Position	Activity	Worker/Crew	Duration	Total Workers
Feller buncher operator	Tree clearing	1	2 months	2
Bulldozer, excavator, or skidder operator	Brushing	1	2 months	2
Chainsaw operator	Brushing	2	2 months	4
Labourer (fellers and swampers)	Brushing	2	2 months	4
Truck driver	Brushing	1	2 months	2

Source: Modified from IC and AGC (2006)

6.6 Line Construction

One survey crew including a surveyor and three helpers can perform check surveys and stake about 15 poles per day. It is expected that pole staking can be completed within one and half months. A construction manager and two workers for materials handling will be based in an office at the contractor's storage yard.

A crew of 30 to 40 labourers, equipment operators, and linemen is required for foundation works, structure framing, structure erection, and conductor stringing. This work is estimated to last about four months.

Final inspection testing and commissioning of the transmission line can be completed within a two-week period. The decision on actual workforce requirements will be made by the contractor responsible to complete the work.

The profile of workforce required for line construction is outlined in Table 6.6-1.

Table 6.6-1: Line Construction Workforce

Work Activity	Required Qualifications and Skills
Storage, Material handling, Local Transport	▪ Long haul truck drivers ▪ Truck drivers experienced at driving in rough terrain and operating hydraulic cranes and handling poles. Must be experienced in the placing of material to the advantage of the installation crews ▪ Labourers experienced in line hardware
Access and site preparation	▪ Surveyor, acting as sub-foreman, familiar with soils, transmission line structure staking and general line construction requirements ▪ Heavy equipment operator, experienced in the requirements for providing access on a overhead line project ▪ General labourer
Wood pole structure framing	▪ Lineman Supervisor, Journeyman ▪ Lineman, Journeyman ▪ Lineman, Apprentice ▪ Equipment operator (backhoe, auger, crane, etc.) ▪ General labourers
Wood pole and guy anchor installation	▪ Equipment operator (backhoe, auger, crane, compressor etc.) ▪ General labourers
Wood pole setting/structure erection	▪ Lineman Supervisor, Journeyman ▪ Lineman, Journeyman ▪ Lineman, Apprentice ▪ Equipment operator (backhoe, auger, crane, etc.) ▪ General labourers
Conductor installation	▪ Lineman Supervisor, Journeyman ▪ Lineman, Journeyman ▪ Lineman, Apprentice ▪ Equipment operator (tractor, manlift, backhoe, crane, winches, conductor press etc.) ▪ General labourers
Final Clean-up	▪ Equipment operator (backhoe or crawler tractor) ▪ General labourer
Testing and commissioning	▪ Lineman, Journeyman ▪ Technicians

Source: IC and AGC (2006)

7 OPERATION AND MAINTENANCE

7.1 Inspection and Maintenance of Facilities

The Eagle Gold Mine transmission line and substation will be operated and maintained according to Yukon Energy's EMS Manual from the end of construction throughout the service life.

Normally transmission line inspections are performed once a year. Most pole locations for the Eagle Gold Transmission Line are close to the road and can be easily accessed by a vehicle. Ground inspection can be undertaken using light trucks, all terrain vehicles and snowmobiles. Some pole locations not accessible by vehicle may be located within the walking distance from the road. Helicopter inspections will only be required in urgent situations. Line inspection includes checking for the following conditions:

- Movement of structures
- Clearances violations
- Broken insulators
- Vandalism
- Other damage to the line.

Conditions to the transmission line, such as damage that will affect the reliability of the transmission line or create potential safety hazards, will be repaired immediately. Other conditions that are not considered critical may be delayed and scheduled for repair during the summer and fall. If extreme weather conditions occur such as ice loadings or extra high winds, or if unexpected repairs to the line are required, non-scheduled patrols by air or ground may be conducted. Re-tightening of the hardware will be completed after the first year of operation.

Vegetation management along the cleared ROW will be required for the life of the transmission line. The frequency of clearing will depend on the rate of tree growth and the likelihood danger trees will come in contact with the conductors. Clearing and brushing maintenance will likely reoccur every seven to ten years. Preventative substation maintenance will be performed on an annual basis and additional monthly inspections are often performed on an as-needed basis.

7.2 Operation Work Force Requirements

Transmission lines and substations are designed to operate continuously. Operation and maintenance of the lines and substations may generally be handled within Yukon Energy's present capabilities.

7.3 Project-related Effects

Audible Noise

Construction Noise—Most of any anticipated noise will be generated during the ROW clearing and the line construction works. This noise will be the same as the noise produced by similar construction works and activities such as road clearing and construction, woodcutting, general traffic, the operation of excavators, all terrain vehicles, snowmobiles etc. Any construction noise will be limited to working hours.

Corona Noise - Small audible noise levels can be produced by corona on energized parts of the transmission lines and the substations. The audible noise level from a transmission line will decrease by approximately three to four dBA for each doubling of the distance from the line (Wuskwatim, 2003). According to Alberta Utilities Commission Rule No. 012, the permissible noise levels for rural sites with 1 – 8 dwellings are 40 dBA during the nighttime and 50 dBA during the daytime. The actual corona noise level of 69 kV lines is much lower and should be rarely heard in an outdoor setting.

Substation Noise—There will be noise generated by the transformers, switches, and circuit breakers. Given that the locations of the substation and 69kV line are remote from noise-sensitive areas such as residential developments and areas of human activities, the expected noise levels should not be a concern.

Radio Noise

Radio and television frequency interference from overhead transmission lines is caused by two physical processes: partial electrical discharges (corona) and complete electrical discharges across small gaps called micro-sparks. Corona may occur on conductors and insulator hardware and is prevented by proper design of conductors, hardware and line spacing. Micro-sparks occur at polluted insulators and defective hardware and are prevented by correct design, installation and adequate maintenance. Canadian standard CSA C108.3.1-M84, 'Limits and Measurement Methods of Electromagnetic Noise from AC Power Systems 0.15 – 30 MHz', specifies that the fair weather noise field strength, at 0.5 MHz and 15 m away from the outmost conductor of the transmission line shall not exceed the limits specified in Table 7.3-1.

Table 7.3-1: Limits of Electromagnetic Noise

Nominal Phase to Phase Voltage, kV	Electromagnetic noise field strength, dB above 1 microV/m
Below 70	43
70 – 200	49

Electromagnetic Field Effects

An electric field is produced by electrically charged particles. Electric field exists around electrically charged conductors regardless if electric current flows or not. If there is a voltage there is an electric field. A magnetic field is produced when electrically charged particles move. Magnetic field will exist if a current flows in a conductor. Its intensity is proportional to the magnitude of the current.

Transmission lines are designed so that potential effects of electric and magnetic fields are eliminated or minimized. Electric fields are the cause of electric charge that may appear on vehicles and large objects under a transmission line. CSA standard C22.3 No. 1-06 stipulates the minimum line to ground clearances for electric overhead lines so that this charge is practically below a person's perception threshold. The variable AC magnetic fields induce voltages and currents in long objects such as fences and pipelines. These effects can be predicted by calculation so that efficient mitigation measures are easily implemented.

The health effects from exposure to power transmissions line frequency electric and magnetic fields have been studied since the 1980s. Most of the organizations involved agree that there is no conclusive scientific evidence on adverse health effects for people living in the vicinity of high voltage lines. Nevertheless, this remains a controversial issue and there is no general consensus between experts and within the general population. Therefore, we present hereafter several quotations from documents issued by organizations who are directing and coordinating authorities for health issues for electromagnetic fields.

World Health Organization (WHO)

Excerpts from the document: Electromagnetic fields (EMF) – Summary of health effects:

http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html

"Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However, some gaps in knowledge about biological effects exist and need further research".

International Agency for Research on Cancer

Excerpts from the document: World Cancer Report 2008 – Chapter 12.2:

http://www.iarc.fr/en/publications/pdfs-online/wcr/index.php

"Extremely low frequency electromagnetic fields generated by electrical power transmission have been associated with an increased risk of childhood leukemia, but the findings are not conclusive. Even if this association is real, the number of excess cases is likely to be very small."

"To date there is no convincing biological or biophysical support for a possible association between exposure to ELF fields and the risk of leukemia or any other cancer."

International Exposure Guidelines

International Commission on Non-Ionizing Radiation Protection (ICNIRP) has issued 'Guidelines for Limiting Exposure to Time-varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)'. The values in Table 7.3-2 are reference levels for low frequency electromagnetic fields that should not be exceeded.

Table 7.3-2: Reference Levels for Exposure to Time-varying Electric and Magnetic Fields (unperturbed rms values)

Exposure	Frequency	Electric Field [kV/m]	Magnetic Field [μ T]
Occupational	Up to 1Hz	–	$2*10^5$
Occupational	60 Hz	8.33	416.66
General Public	Up to 1Hz	–	$4*10^4$
General Public	60 Hz	4.166	83.3

IEEE Std C95.6-2002, 'Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz' recommends slightly higher permissible levels of exposure.

The electric and magnetic fields produced by the proposed 69 kV transmission line at 1 m above ground will be well below the reference levels recommended by ICNIRP.

8 DECOMMISSIONING/ABONDONMENT/ RECLEMATION PHASE

Currently it is estimated that existing reserves will facilitate and economic mine operation of about 10 years. The design life of the line is assumed to be 50 years. The anticipated decommissioning activities for High Voltage Transmission Facilities for Eagle Gold Mine are outlined below.

Decommissioning shall include safe dismantling and the removal from the site and salvage or disposal of all line components.

Possible environmental concerns and regulatory requirements resulting from the decommissioning of poles/towers and ROW involves the following:

- Disposal of waste material
- Disposal of hazardous material
- Remediation of contaminated soils
- Proliferation of noxious weeds in ROW
- Maintenance of public safety
- Alteration of habitat.

To ensure that the ROW is left in a state that will allow for future land use or natural re-growth of the indigenous vegetation the transmission line decommissioning will be done in accordance with the following procedure:

- The line will be de-energized and grounded in accordance with the safety rules.
- Crossing of power lines, roads, and other objects shall be secured.

- The conductors will be disconnected from the insulators, winded on conductor reels and transported to designated storage.
- The structures will be removed from the foundations and disassembled.
- Crossarms, conductor fittings, insulators, pole hardware, and guys shall be dismantled, sorted, counted and packed separately.
- All guy anchors, the structure foundations grounding wires and grounding rods will be removed from the ground.
- The foundation and anchor holes shall be backfilled. In agricultural land, at least 0.3 m of topsoil shall be spread on any excavation site.
- All materials shall be removed from site. Materials that cannot be salvaged shall be transported to an approved landfill site.
- The ROW shall be inspected to ensure that the site is cleared of all transmission line materials.

9 DRAWINGS

The following drawings are part of this report:

Transmission Line Drawings

149-T-DD-SK1 Sht 1	Wood Pole Structure Type TP3 and TP15
149-T-DD-SK1 Sht 2	Wood Pole Structure Type FD45
149-T-DD-SK1 Sht 3	Wood Pole Structure Type VS45 and VD90
149-T-DD-SK1 Sht 4	Wood Pole Structure Type FD90
149-T-DD-SK1 Sht 5	Wood Pole Foundations, Standard Embedment Method
149-T-DD-Sk1 Sht 6	Wood Pole Foundations, Embedment in Poor Soil
149-T-DD-SK1 Sht 7	Wood Pole Foundations in Marshy Ground
149-T-DD-SK1 Sht 8	Wood Pole Foundations in Permafrost with Shallow Active Layer
149-T-DD-SK1 Sht 9	Wood Pole Foundations on Permafrost
149-T-DD-SK1 Sht 10	Wood Pole Foundations in Swampy Area
149-PP-SK001 Sht 1 To 32	Plan and Profile Drawing

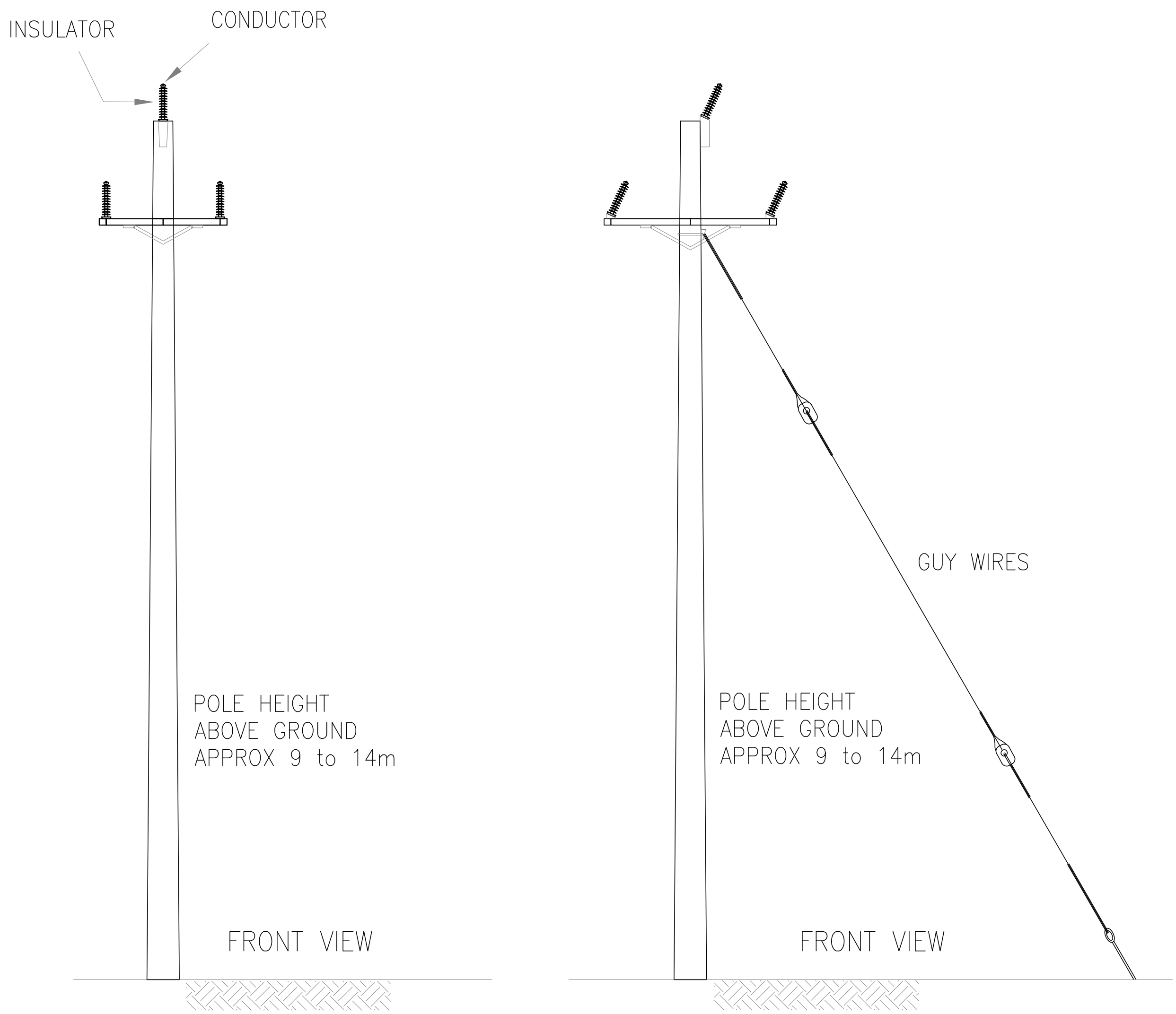
Substation Drawings

SKE-001	Single Line Diagram
SKS-01	69kv Substation Plot Plan
SKE-02	69kv Substation Plan and Elevation

10 REFERENCE LIST

Scott Wilson Roscoe Postle Associates Inc (Scott Wilson). 2010. *Pre-Feasibility Study on the Eagle Gold Project.* Prepared for Victoria Gold Corporation

Intergroup Consultants (IC) and Access Consulting Group (ACG). 2006. *Carmacks-Stewart/Minto Spur Transmission Project Proposal Submission.* Prepared for Yukon Energy Corporation.



TANGENT POLE (0°–3°)

TYPE TP3

LIGHT ANGLE POLE (3°–15°)

TYPE TP15

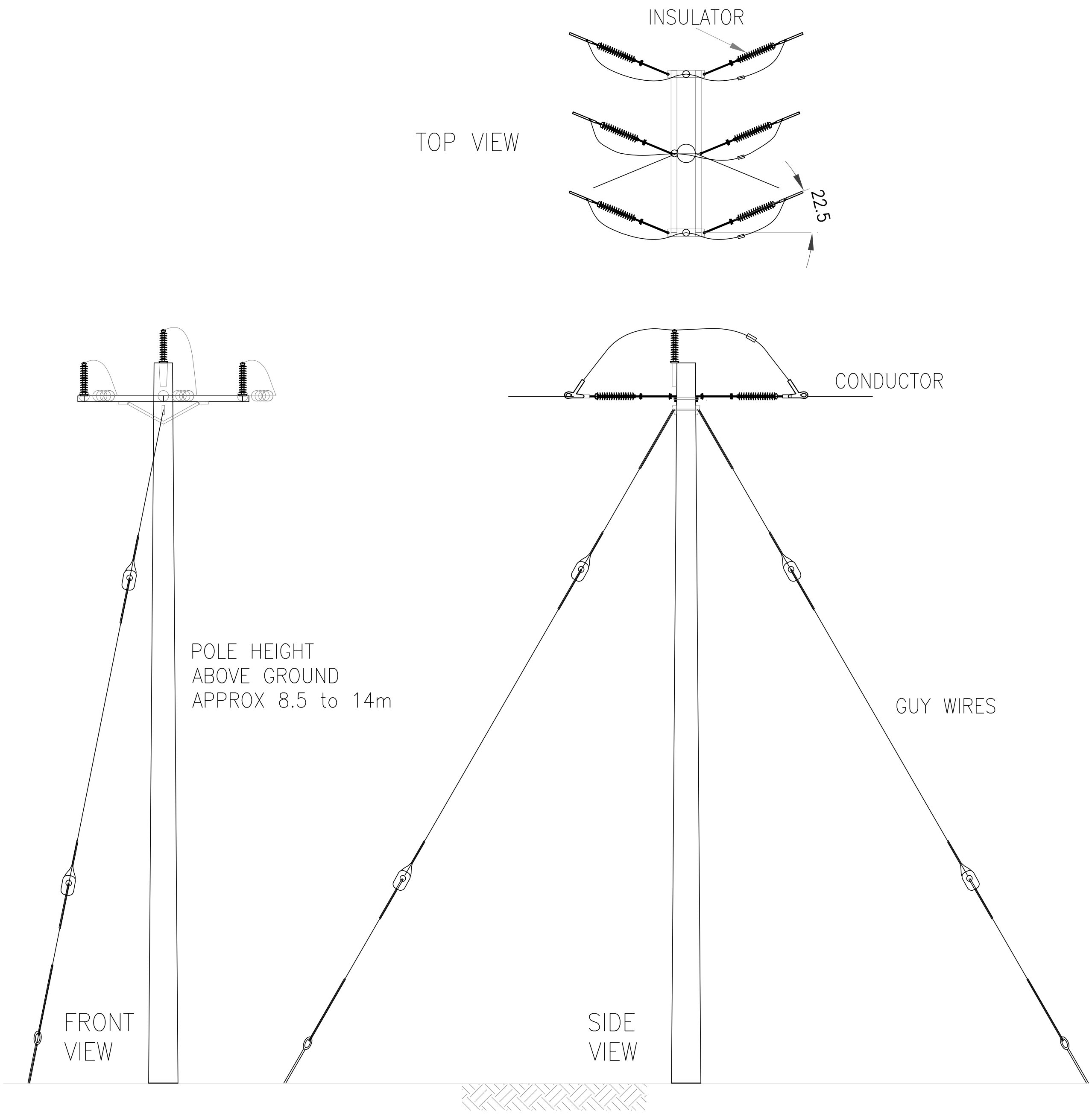
CONCEPT ONLY

Stantec

Victoria GOLD CORP

EAGLE GOLD 69kV OVERHEAD LINE
WOOD POLE
STRUCTURE TYPES

DRAWN BY J. ONG	PROJECT NO. 118200149
CHECKED BY M. SILIC	DRAWING NO 149–T–DD–SK1
DATE 31 AUG 2010	SHT NO 1



MEDIUM ANGLE POLE (0°–45°)

TYPE FD45

CONCEPT ONLY

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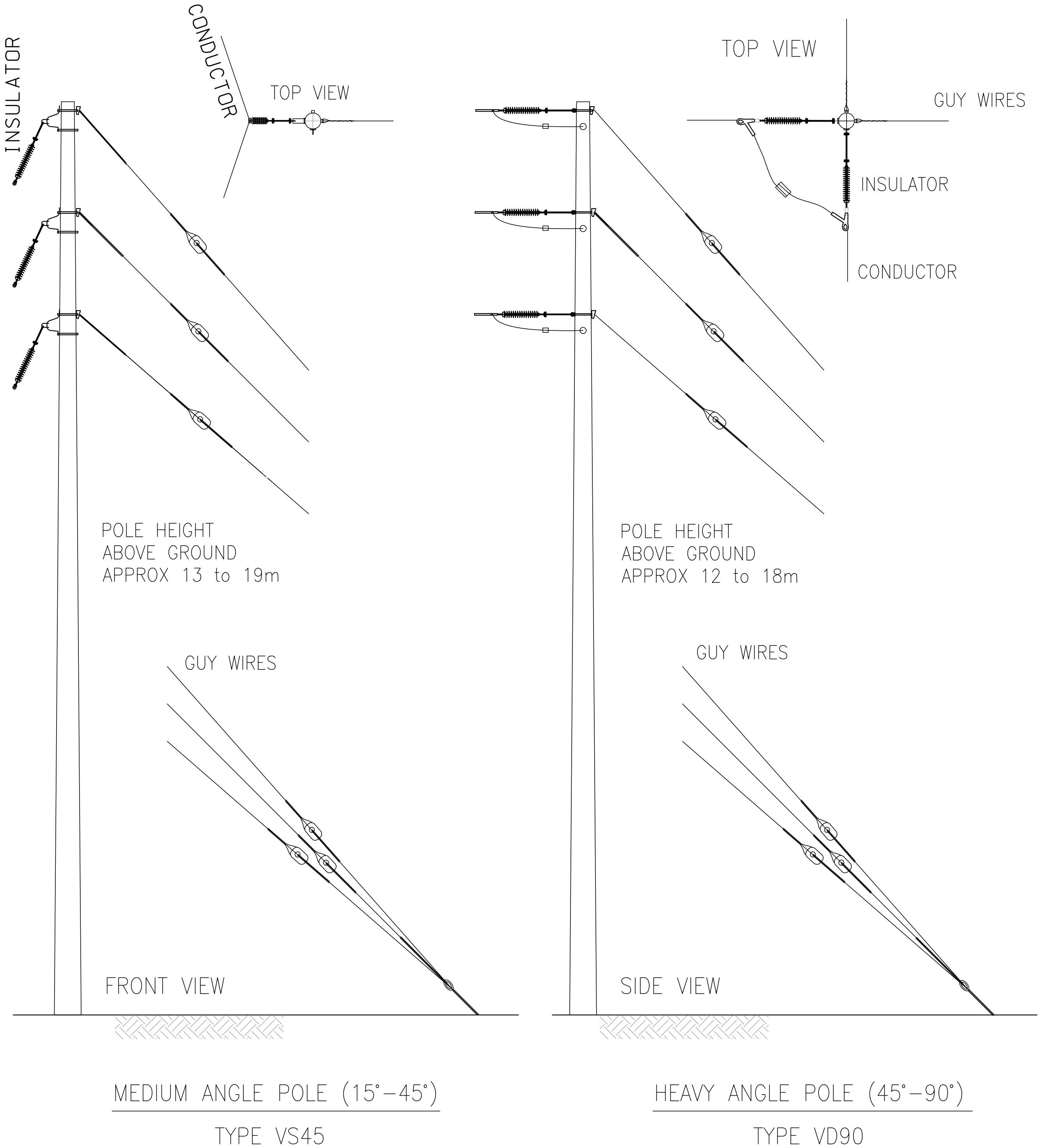
			CHECKED BY M. SILIC	DRAWING NO 149–T–DD–SK1
			DATE 31 AUG 2010	SHT NO 2



CONCEPT ONLY

Stantec | Victoria GOLD CORP

EAGLE GOLD 69kV OVERHEAD LINE
WOOD POLE
STRUCTURE TYPES

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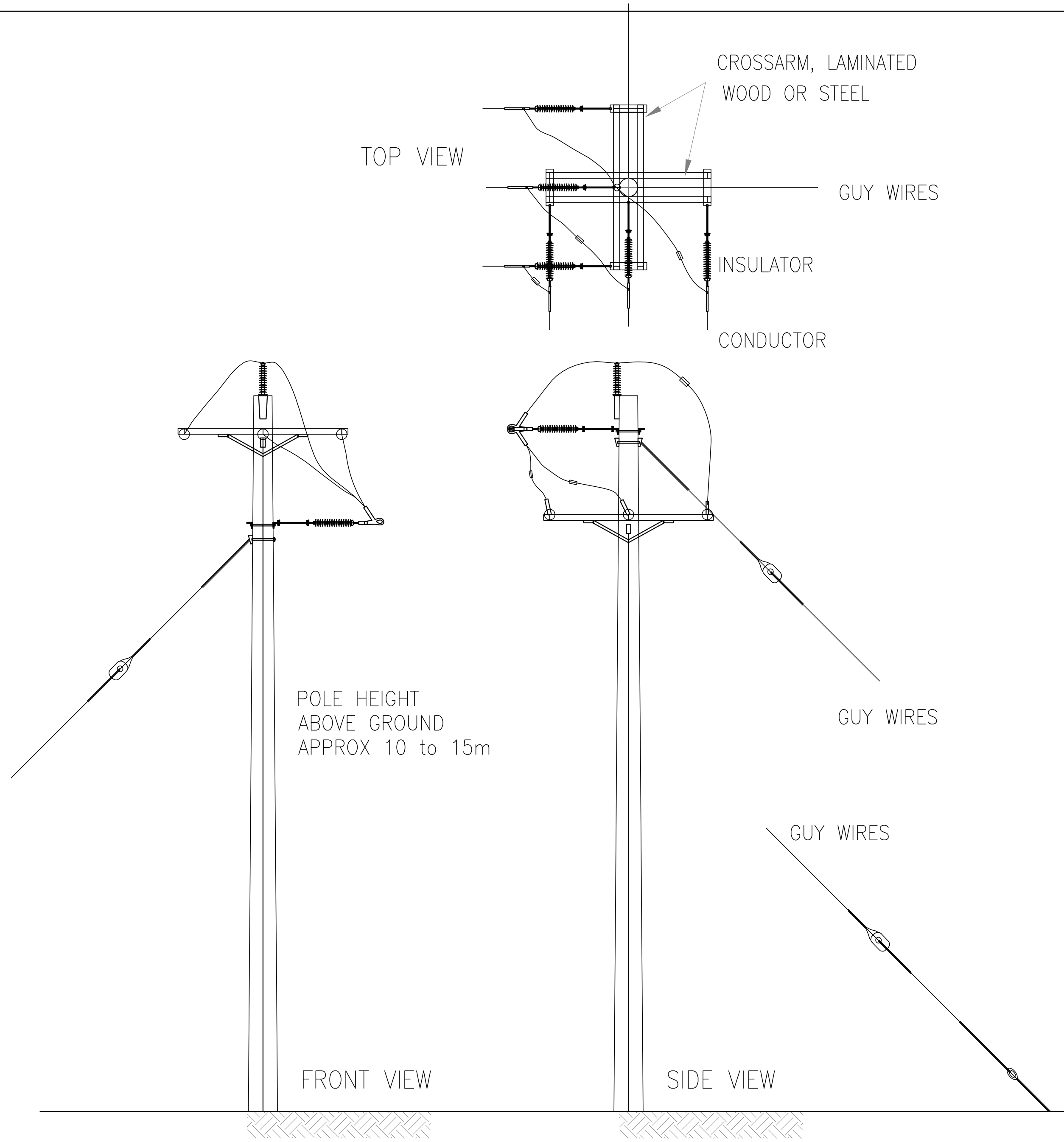
CHECKED BY M. SILIC	DRAWING NO 149-T-DD-SK1
DATE 31 AUG 2010	SHT NO 3



TERMINAL AND HEAVY ANGLE POLE (45°–90°)

TYPE FD90

CONCEPT ONLY

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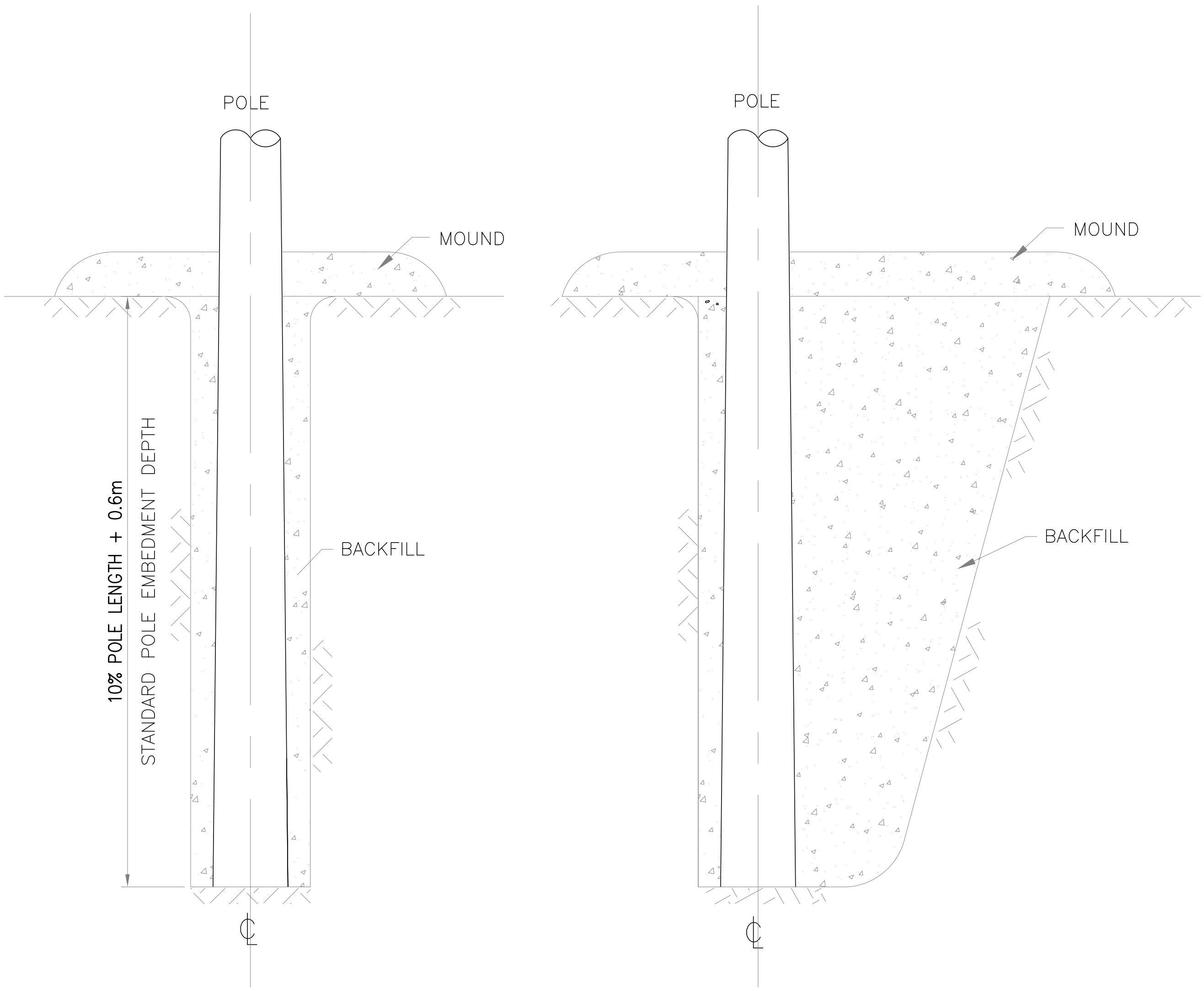

AUGURED HOLE

BACK HOE EXCAVATION

CONCEPT ONLY

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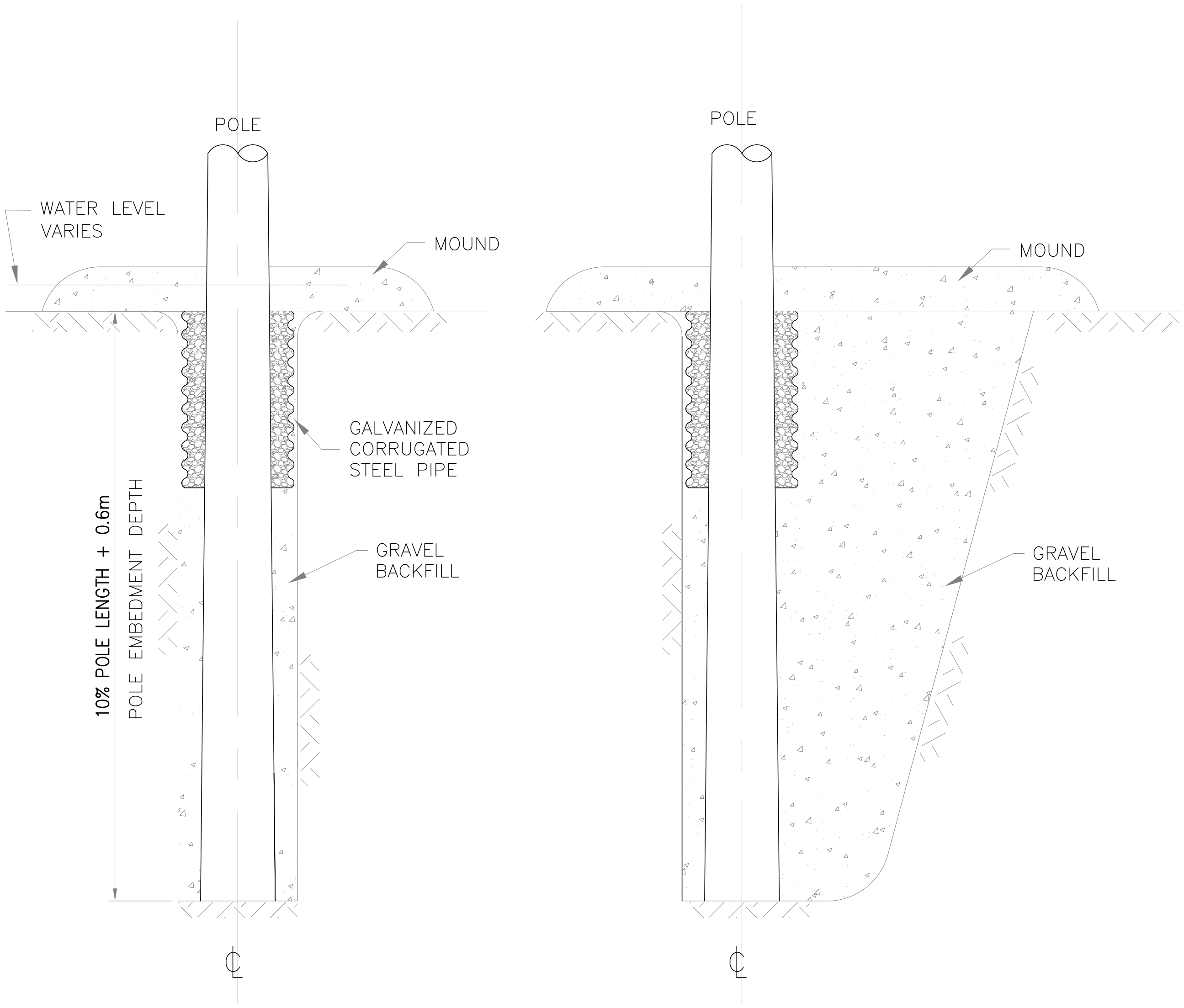

AUGURED HOLE

BACK HOE EXCAVATION

CONCEPT ONLY

EAGLE GOLD 69kV OVERHEAD LINE
POLE FOUNDATIONS
EMBEDMENT IN POOR SOIL

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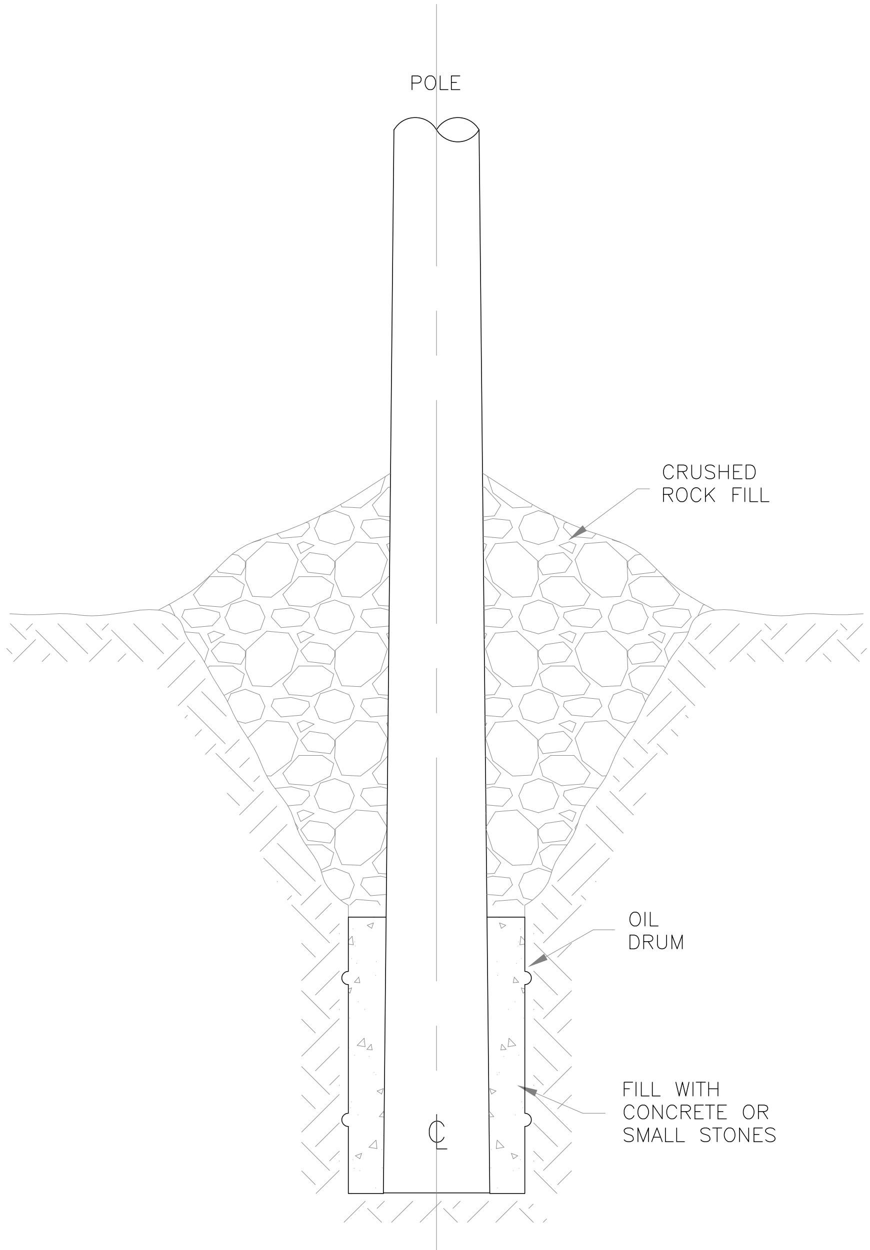
CHECKED BY M. SILIC	DRAWING NO 149-T-DD-SK1
DATE 31 AUG 2010	SHT NO 6



POLE FOUNDATION IN MARSHY GROUND

CONCEPT ONLY

Stantec

Victoria GOLD CORP

EAGLE GOLD 69kV OVERHEAD LINE
POLE FOUNDATIONS
IN MARSHY GROUND

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CHECKED BY M. SILIC	DRAWING NO 149-T-DD-SK1
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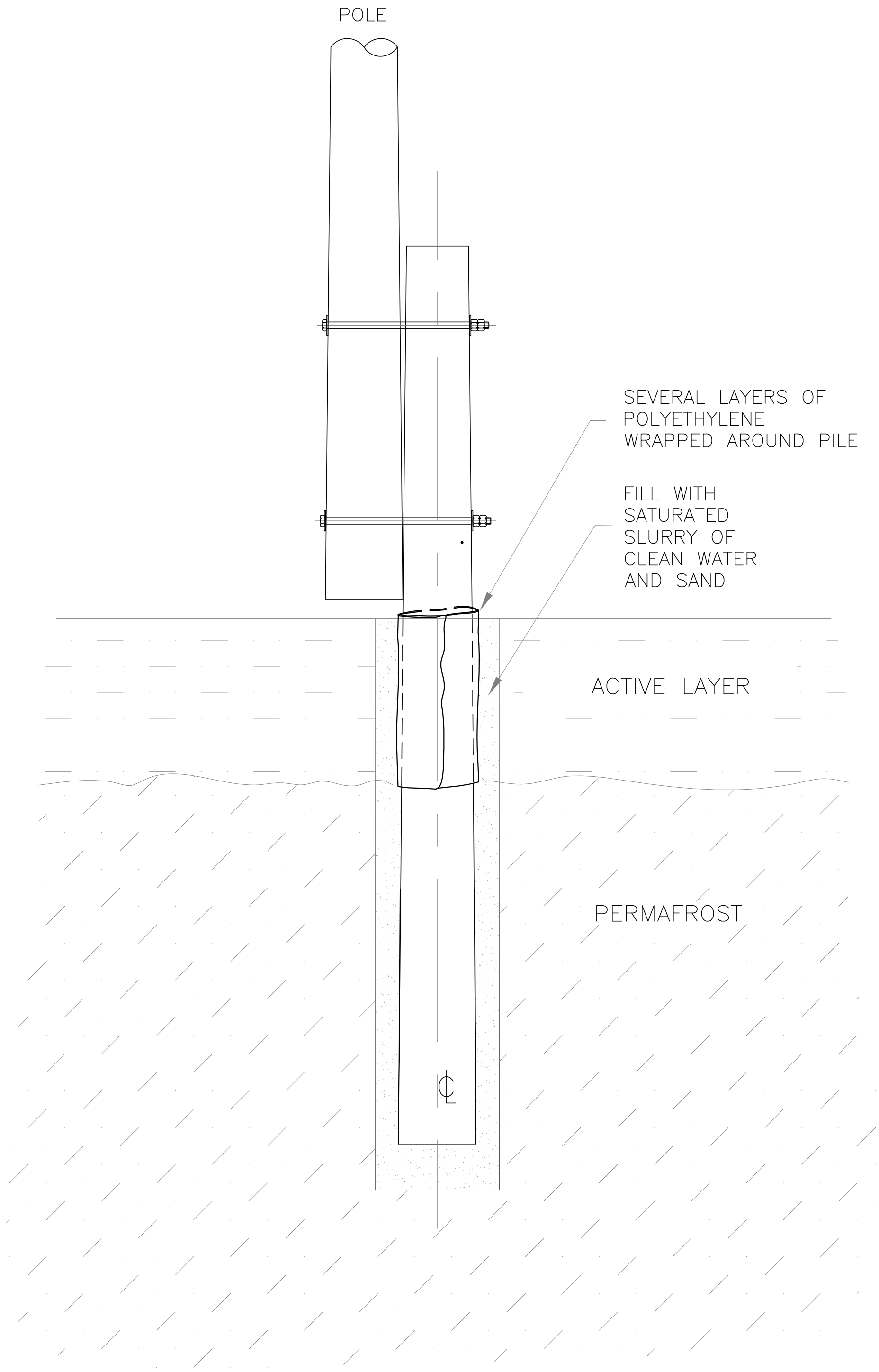

SLURRIED PILE FOUNDATION

CONCEPT ONLY

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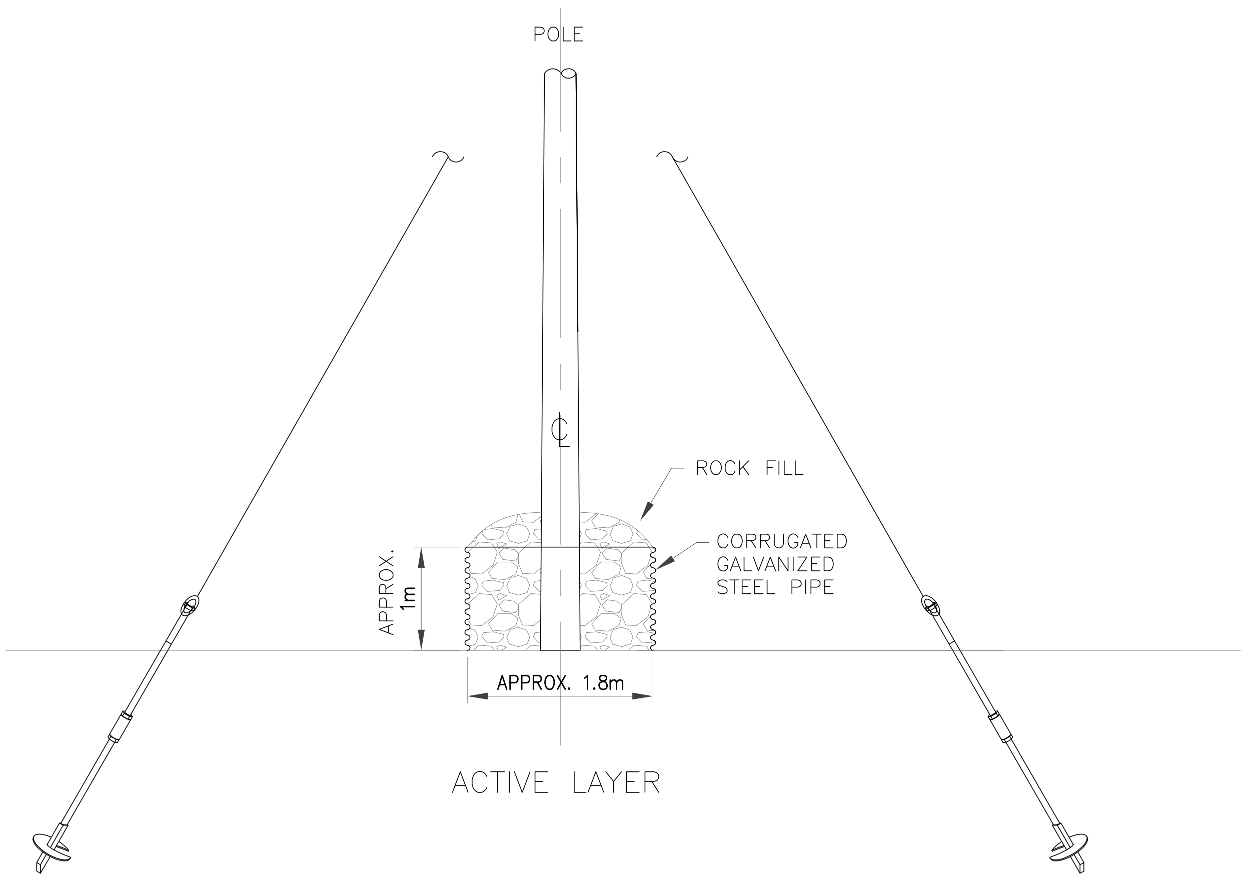

POLE CRIB FOUNDATION

CONCEPT ONLY

Stantec

Victoria GOLD CORP

EAGLE GOLD 69kV OVERHEAD LINE
POLE FOUNDATIONS
ON PERMAFROST

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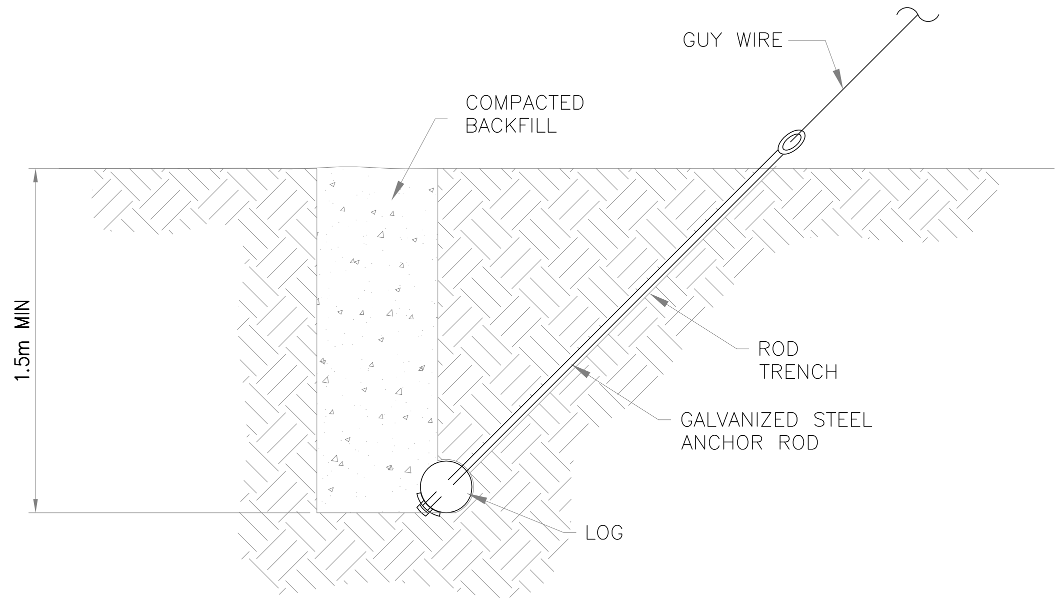
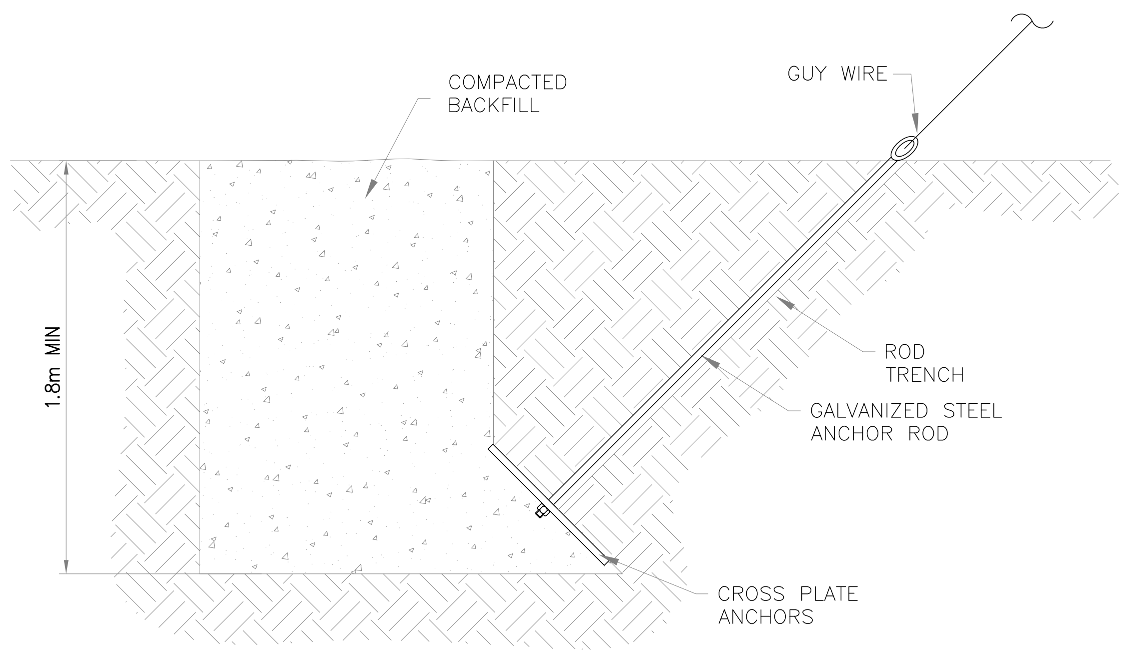
CHECKED BY M. SILIC	DRAWING NO 149-T-DD-SK1
DATE 31 AUG 2010	SHT NO 9



LOG ANCHOR



STEEL CROSS PLATE ANCHOR

CONCEPT ONLY

EAGLE GOLD 69kV OVERHEAD LINE
GUY ANCHORS

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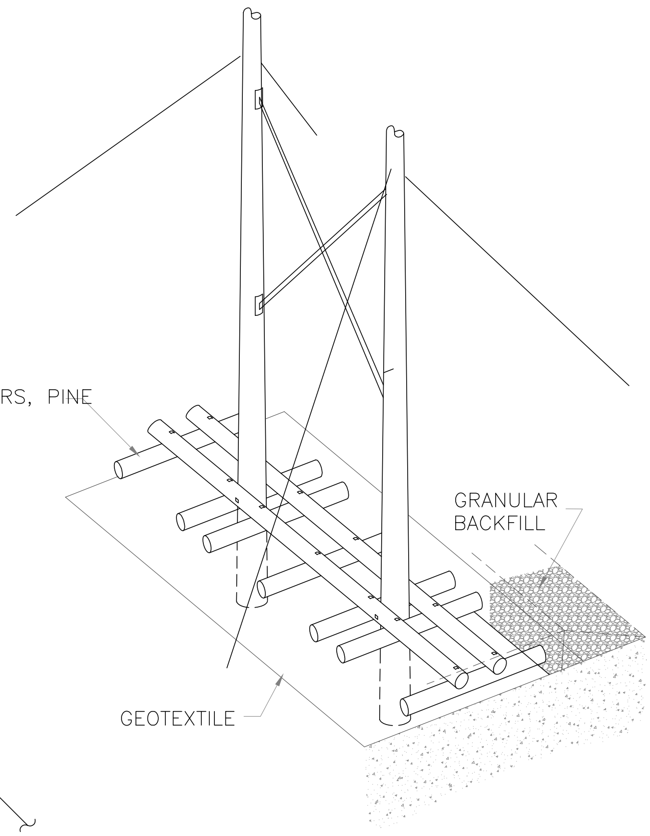
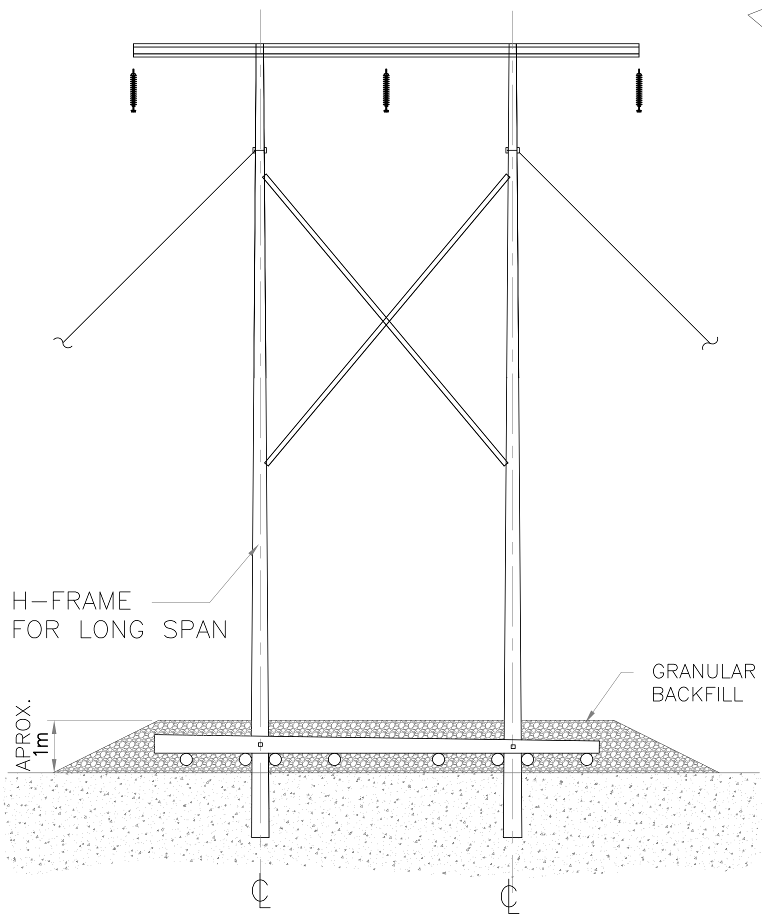
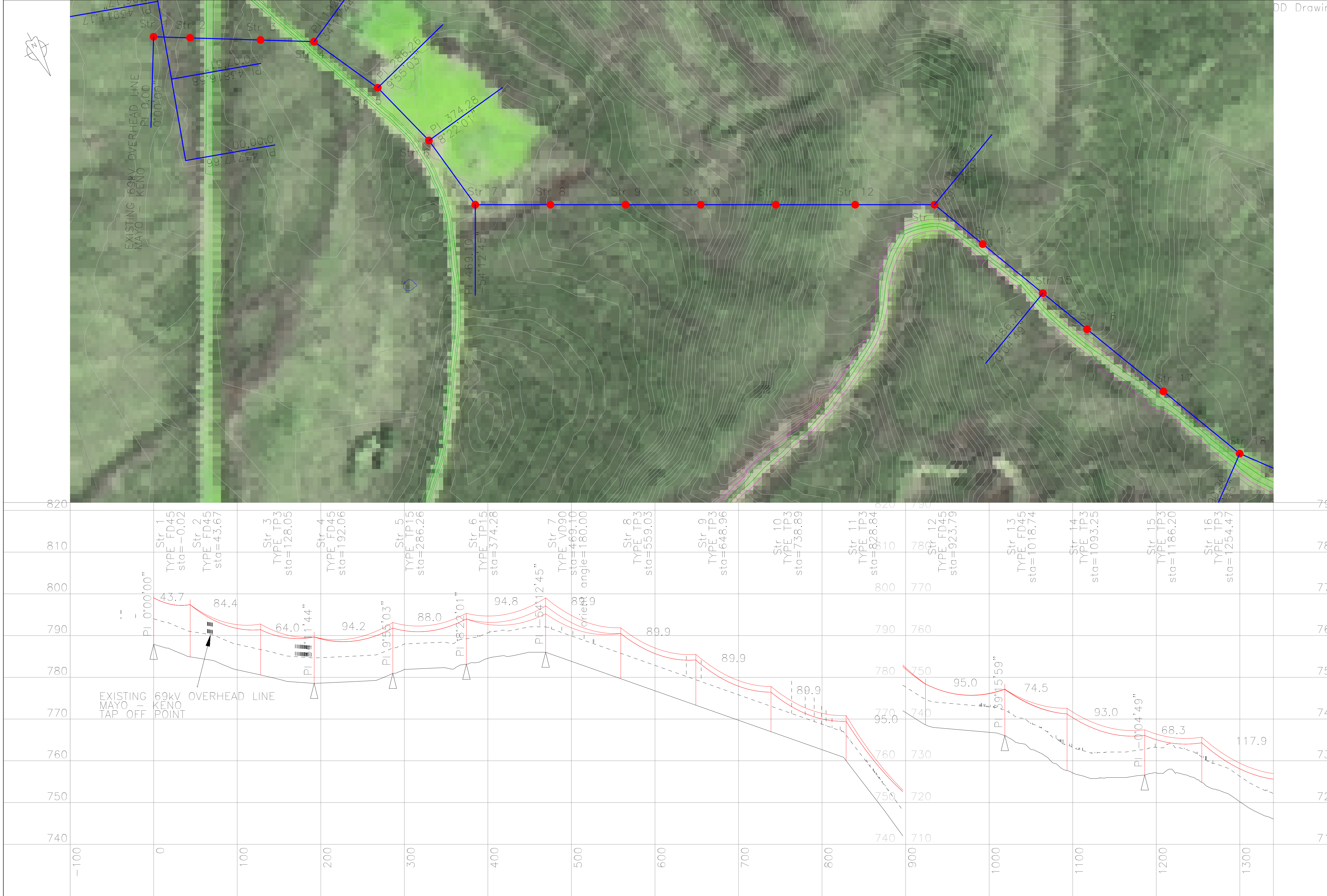
CHECKED BY M. SILIC	DRAWING NO 149-T-DD-SK1
DATE 31 AUG 2010	SHT NO 10





CONCEPT ONLY

Stantec	Victoria GOLD CORP	EAGLE GOLD 69kV OVERHEAD LINE POLE FOUNDATIONS IN SWAMPY AREA	DRAWN BY J. ONG CHECKED BY M. SILIC DATE 31 AUG 2010	PROJECT NO. 118200149 DRAWING NO 149-T-DD-SK1 SHT NO 11



NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
3. COORDINATE SYSTEM INDICATED ARE UTM NAD 83 ZONE 8N.
4. CONDUCTOR (PARTRIDGE ACSR) SAG DISPLAYED AT 100 Deg C.
5. CONDUCTOR PROPERTIES IS TAKEN FROM PLS LIBRARY, NEEDS CONFIRMATION FROM SUPPLIER.

60.0 m Horiz. Scale

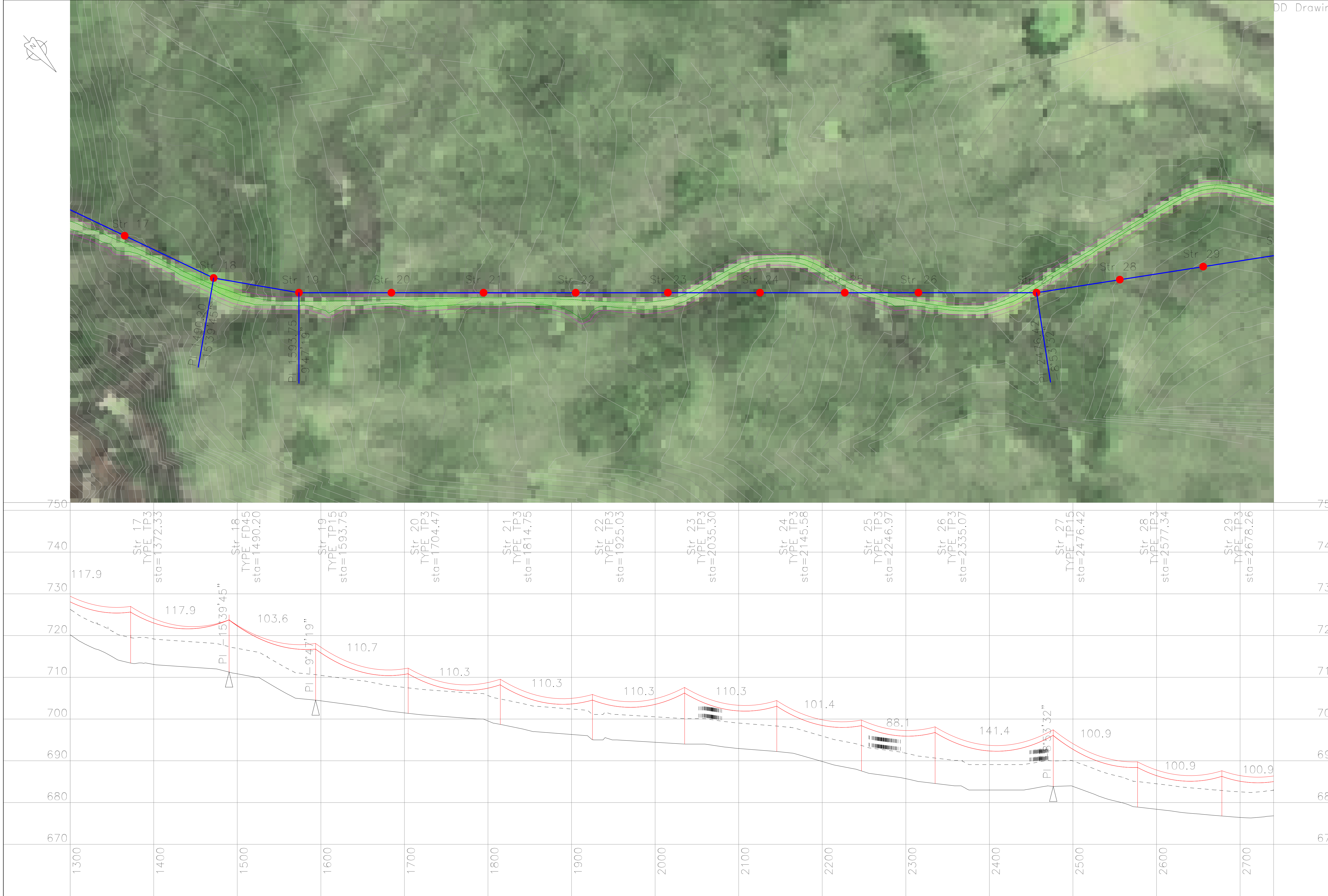
12.0 m Vert. Scale

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 1 of 32



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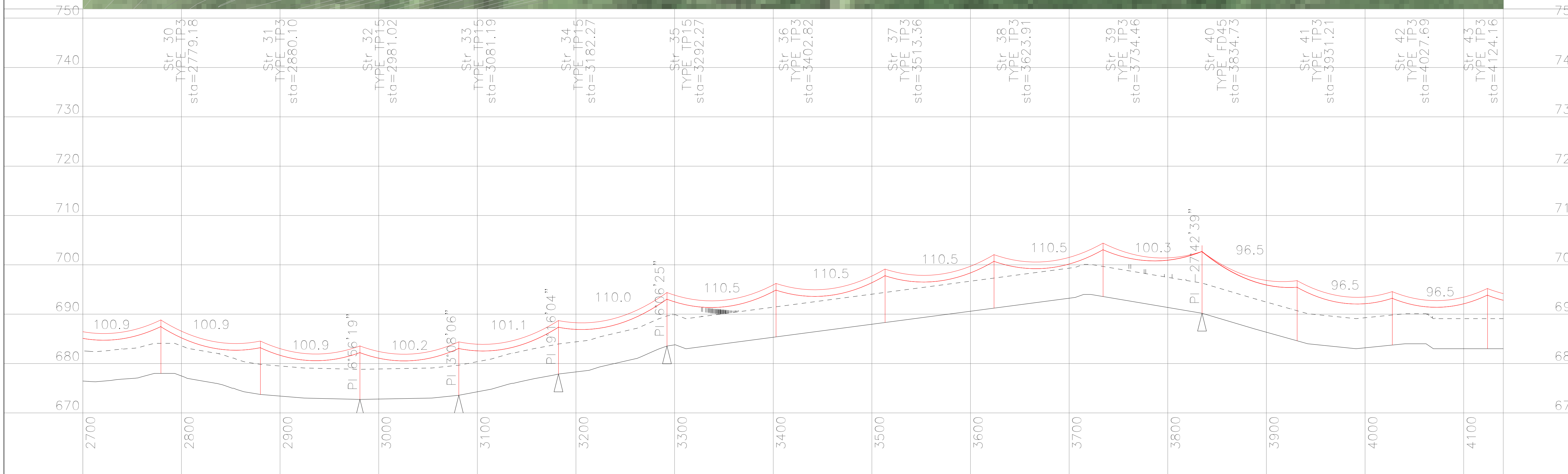
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 2 of 32



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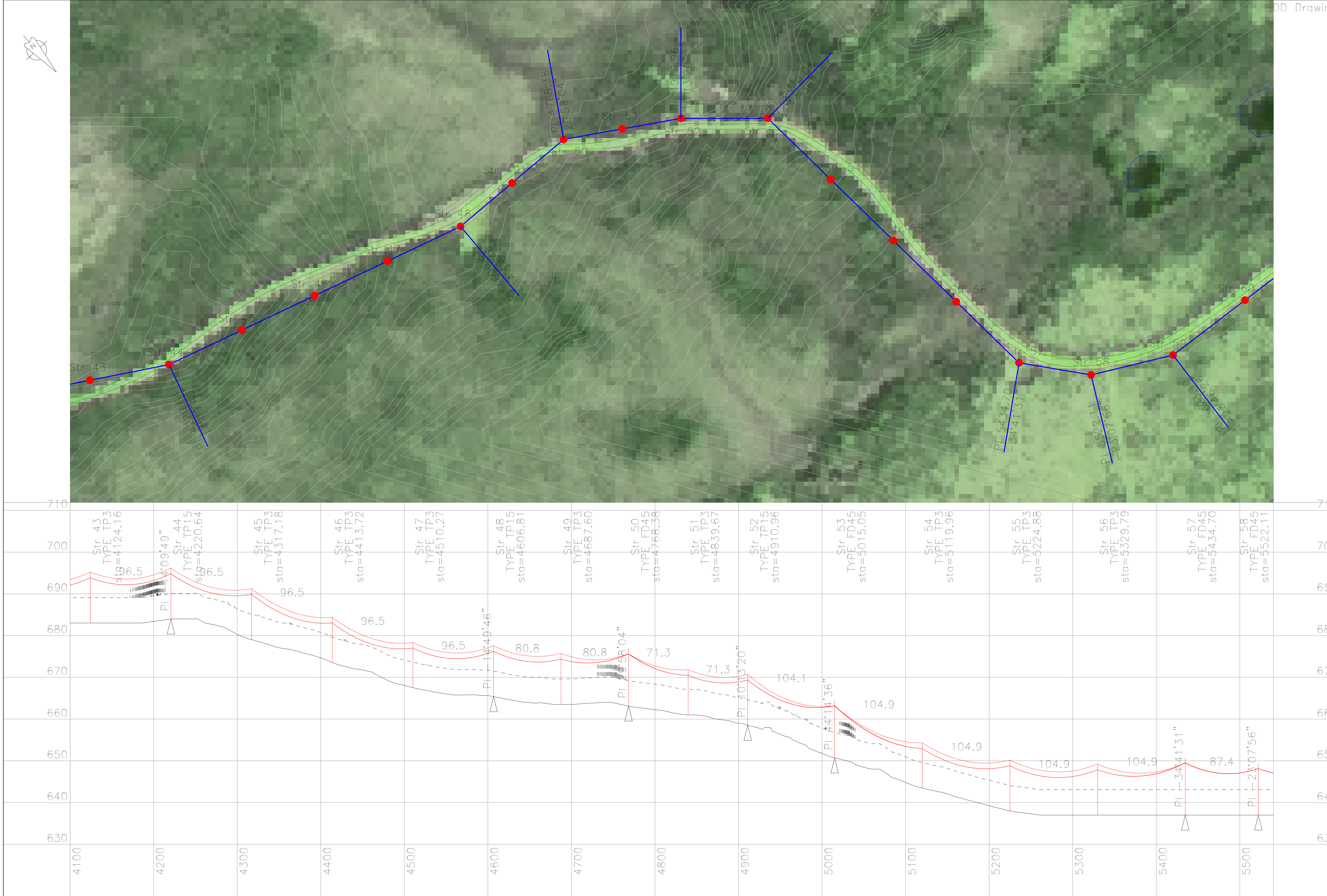
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 3 of 32



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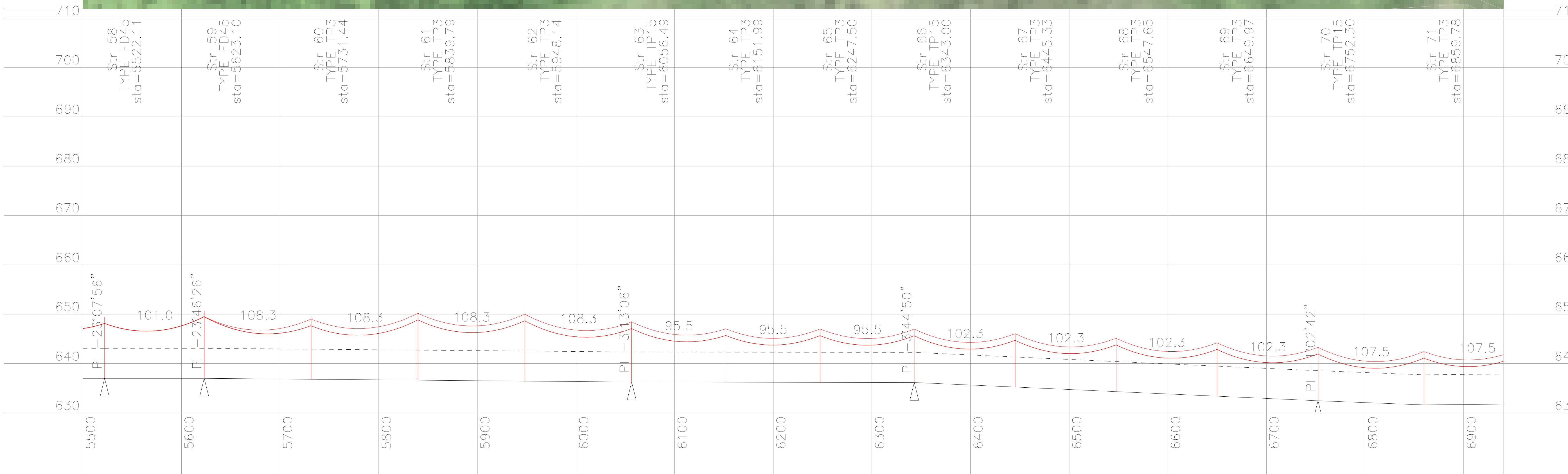
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 4 of 32



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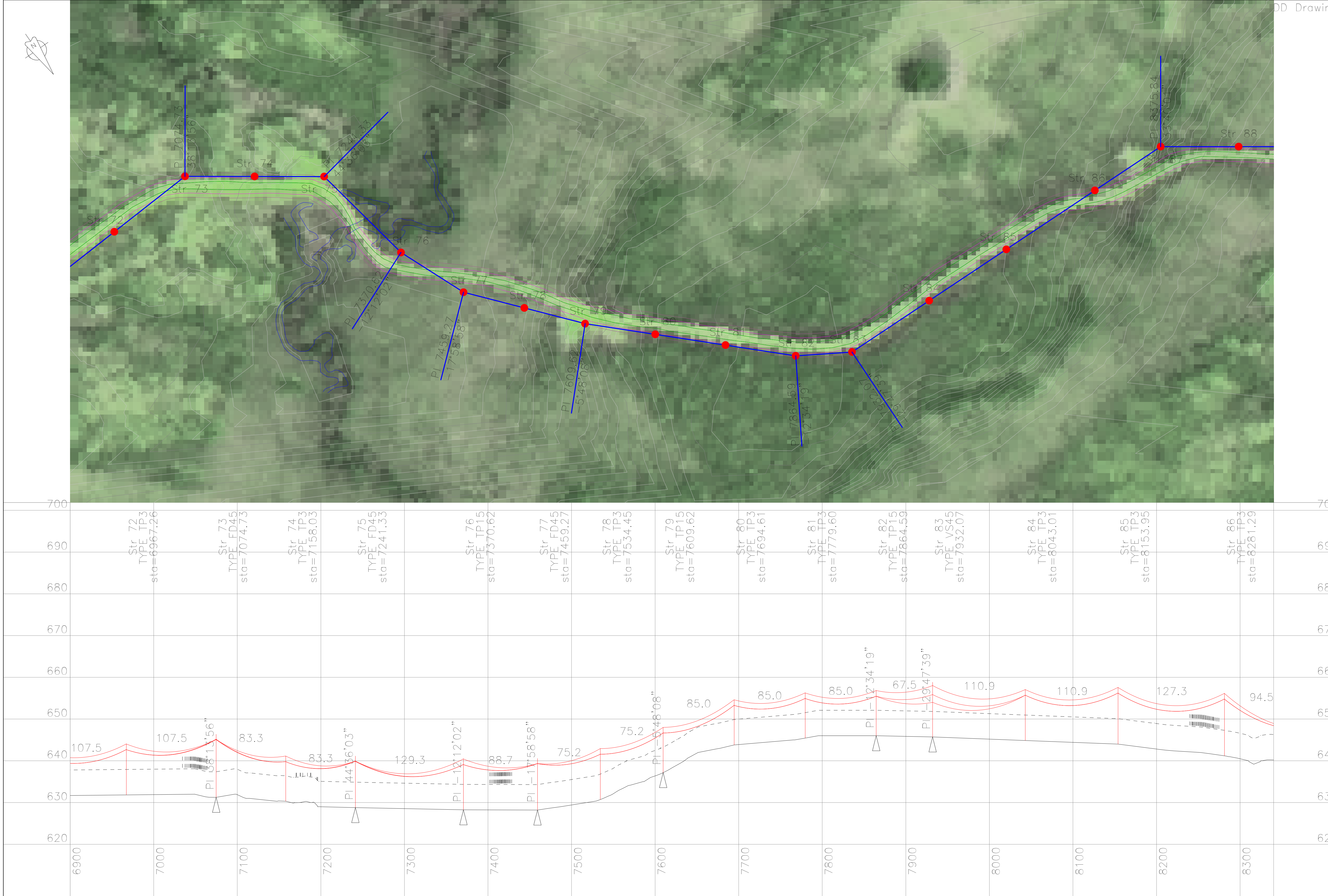
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 5 of 32



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60.0 m Horiz. Scale

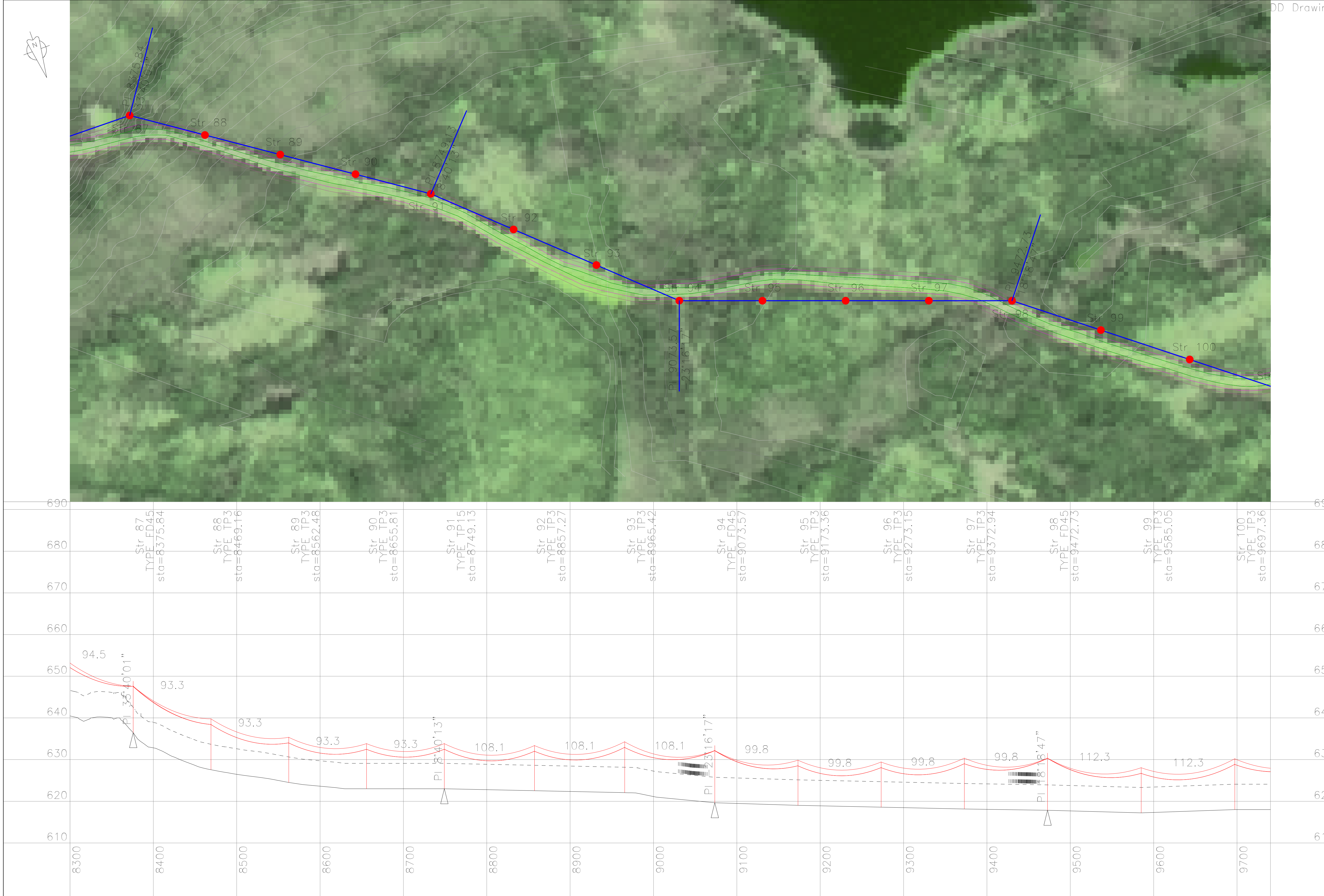
12.0 m Vert. Scale

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 6 of 32



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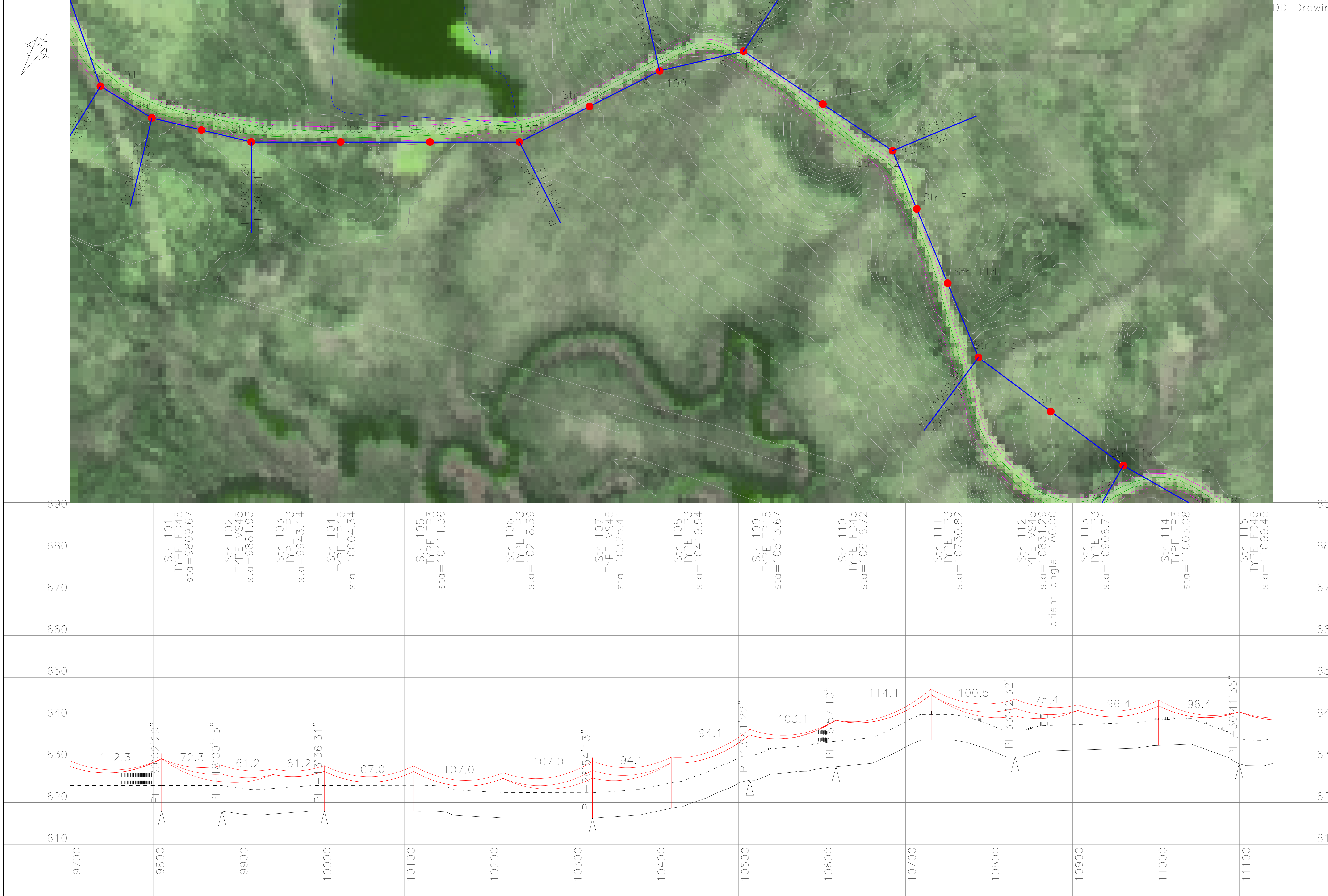
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 7 of 32



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60.0 m Horiz. Scale

12.0 m Vert. Scale

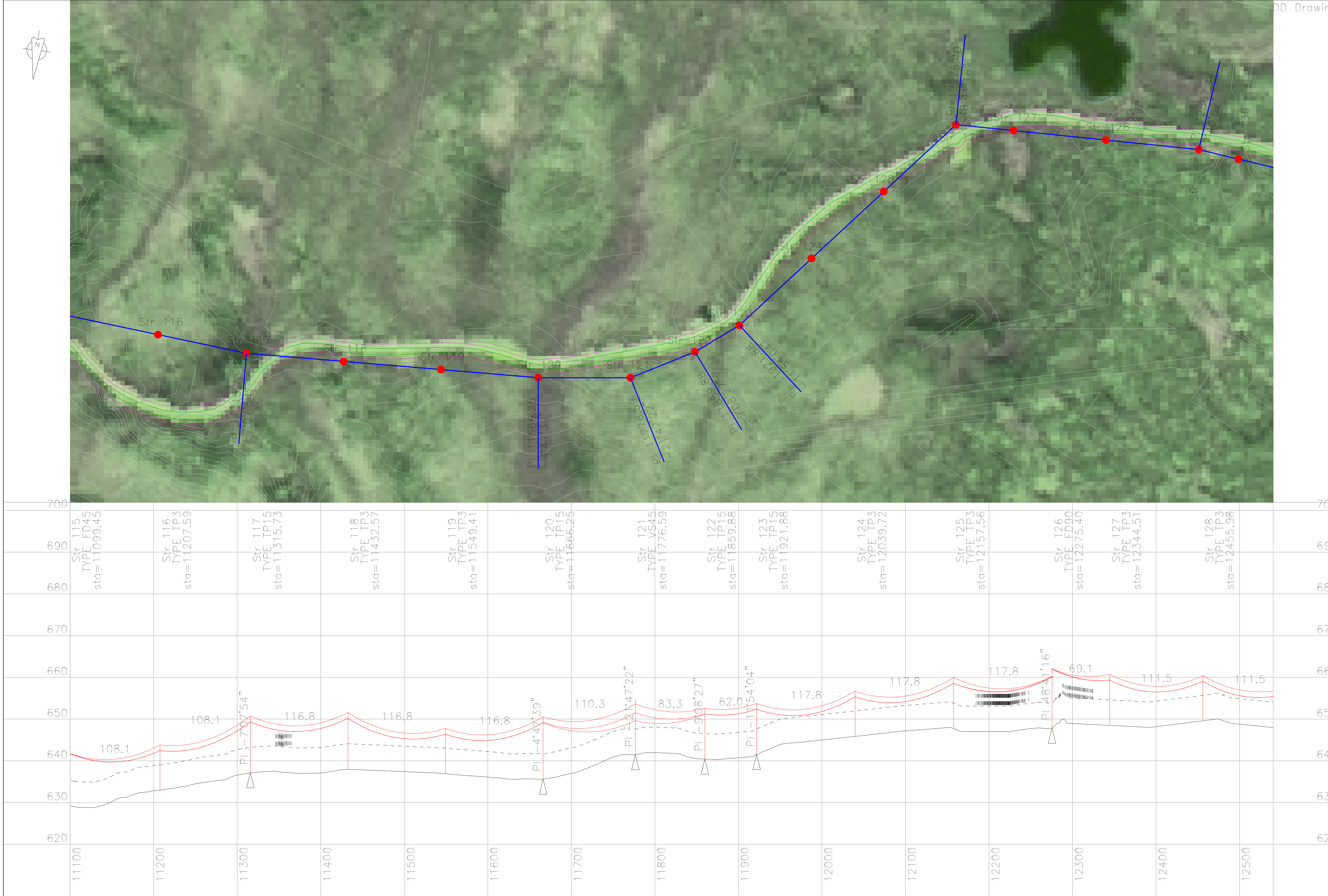
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 8 of 32

DD Drawing



60.0 m Horiz. Scale

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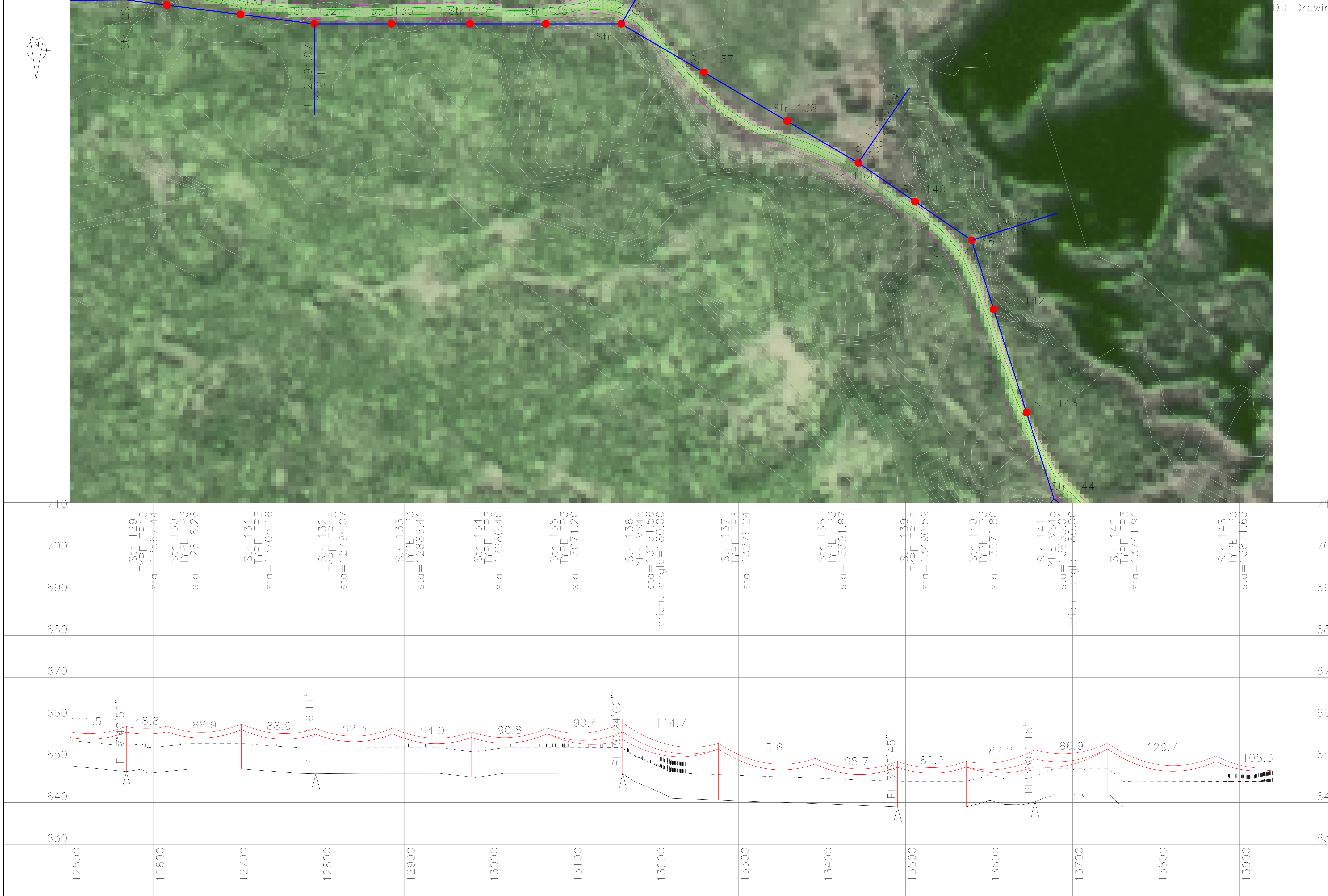
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 9 of 32



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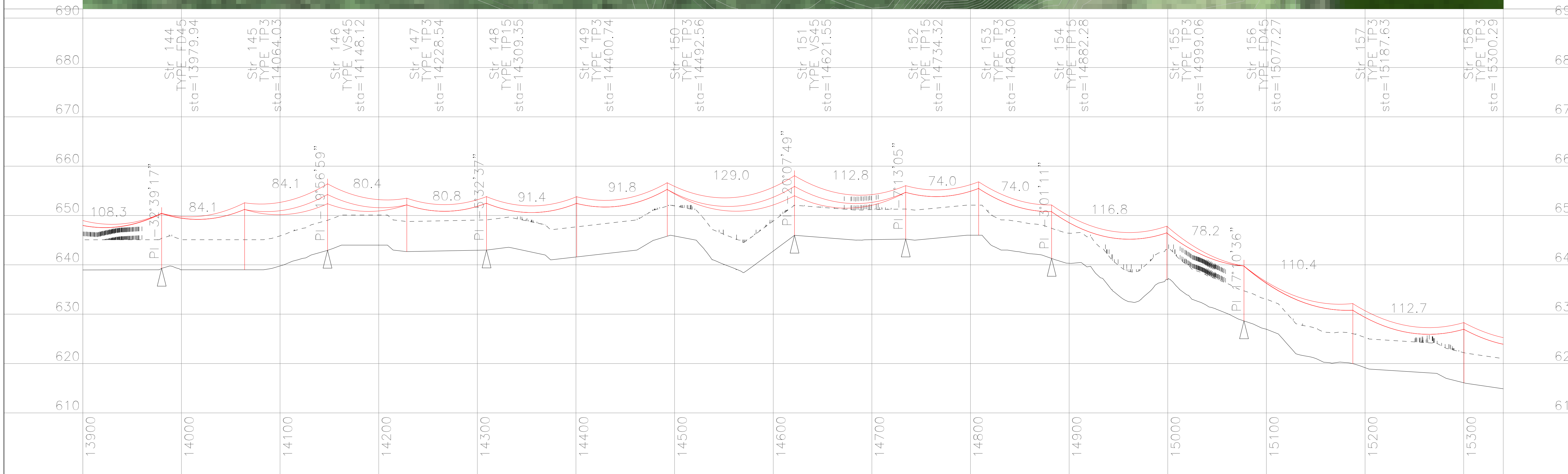
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 10 of 32

DD Drawing



60.0 m Horiz. Scale

12.0 m Vert. Scale

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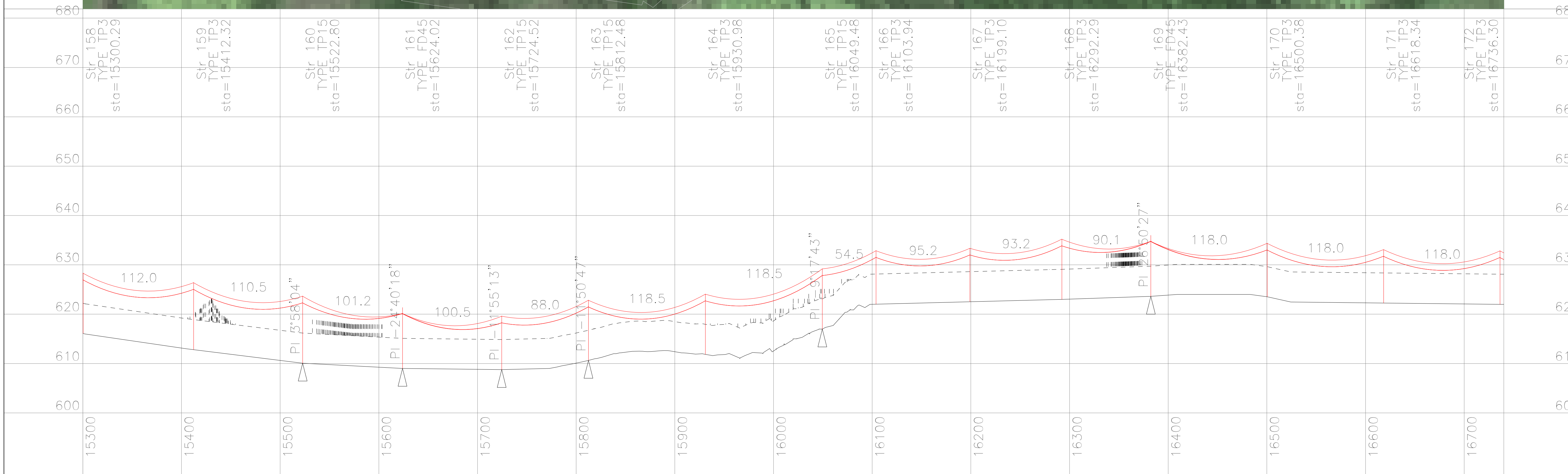
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 11 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

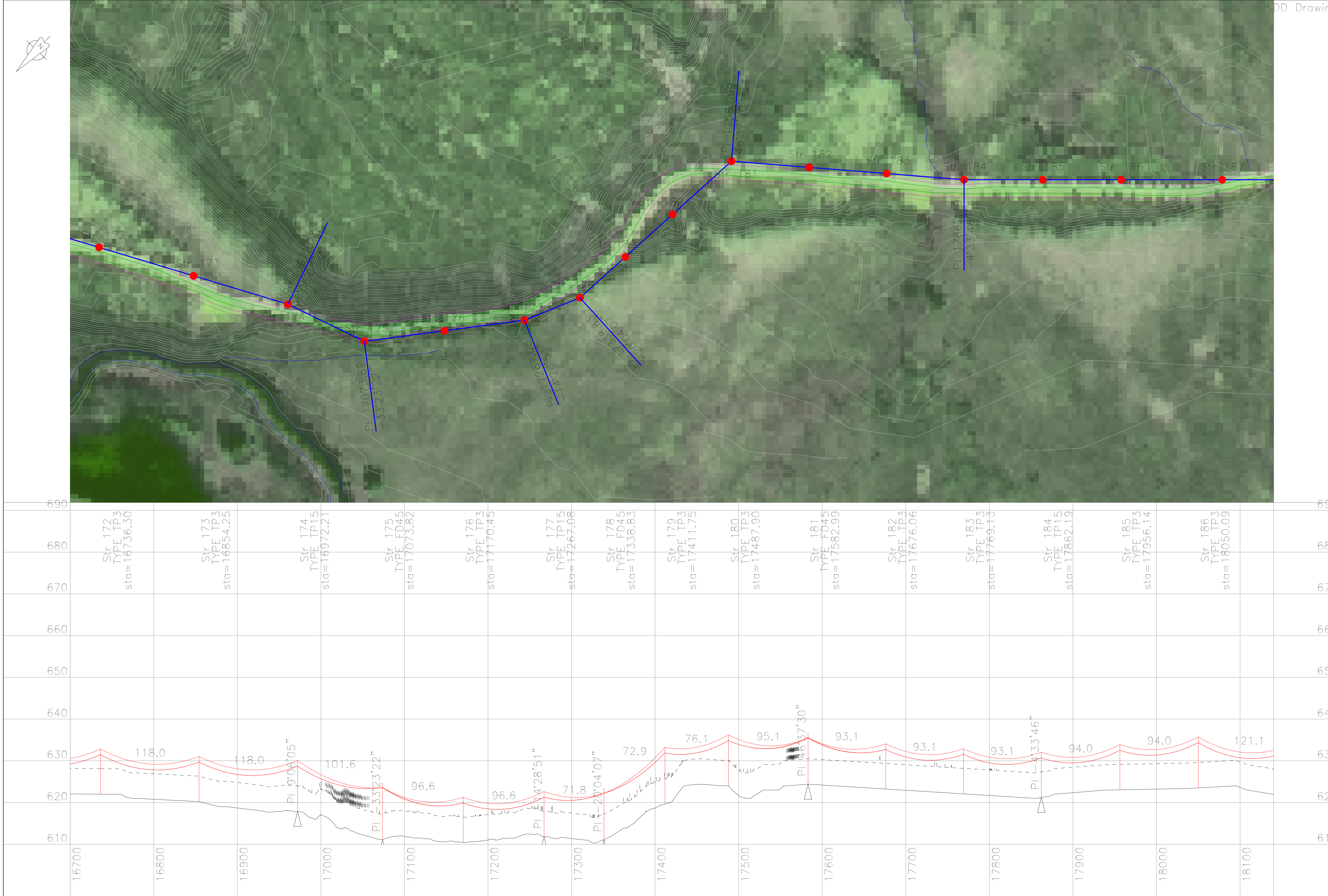
NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
3. COORDINATE SYSTEM INDICATED ARE UTM NAD 83 ZONE 8N.
4. CONDUCTOR (PARTRIDGE ACSR) SAG DISPLAYED AT 100 Deg C.
5. CONDUCTOR PROPERTIES IS TAKEN FROM PLS LIBRARY, NEEDS CONFIRMATION FROM SUPPLIER.

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 12 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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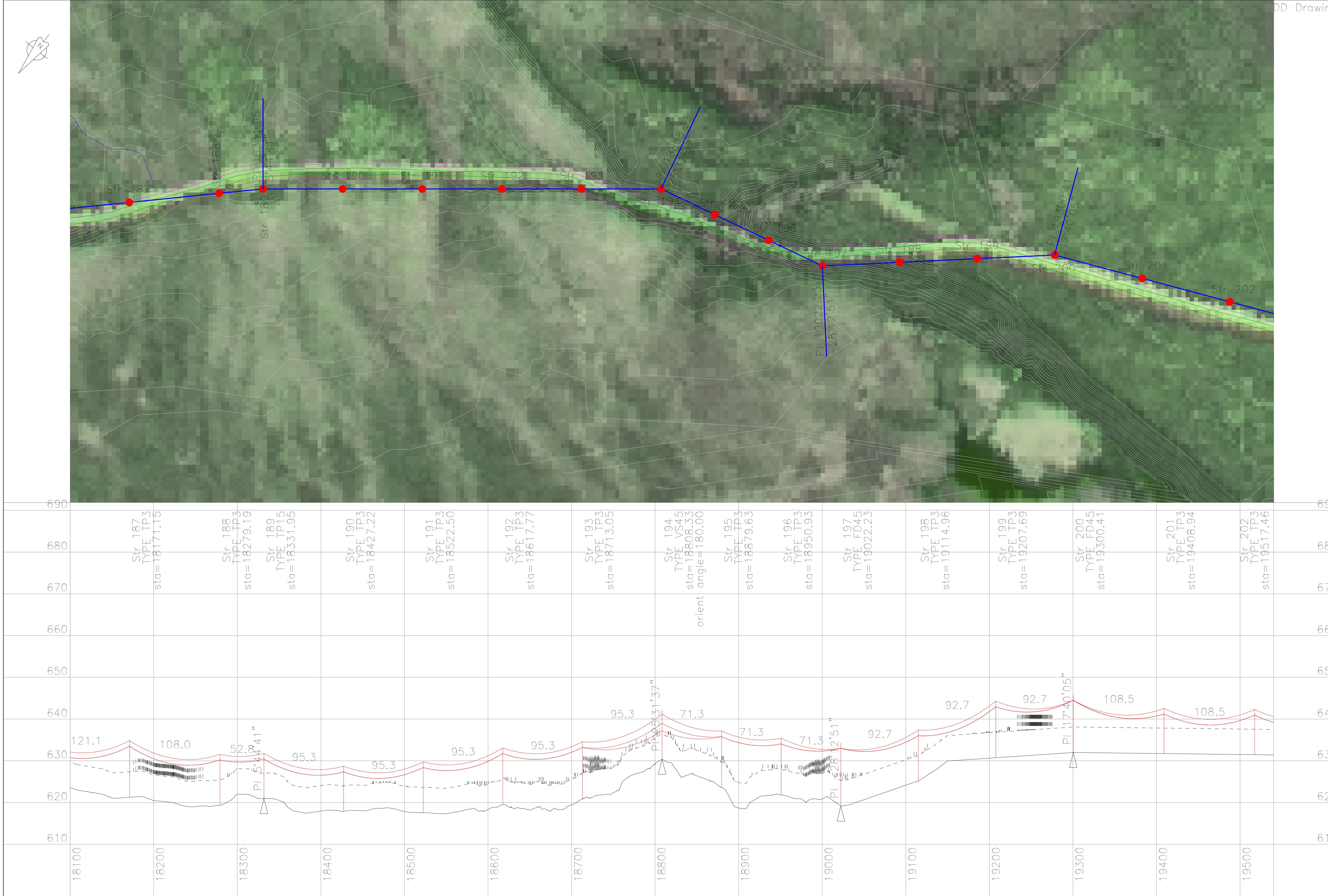
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 13 of 32



NOTES
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60.0 m Horiz. Scale

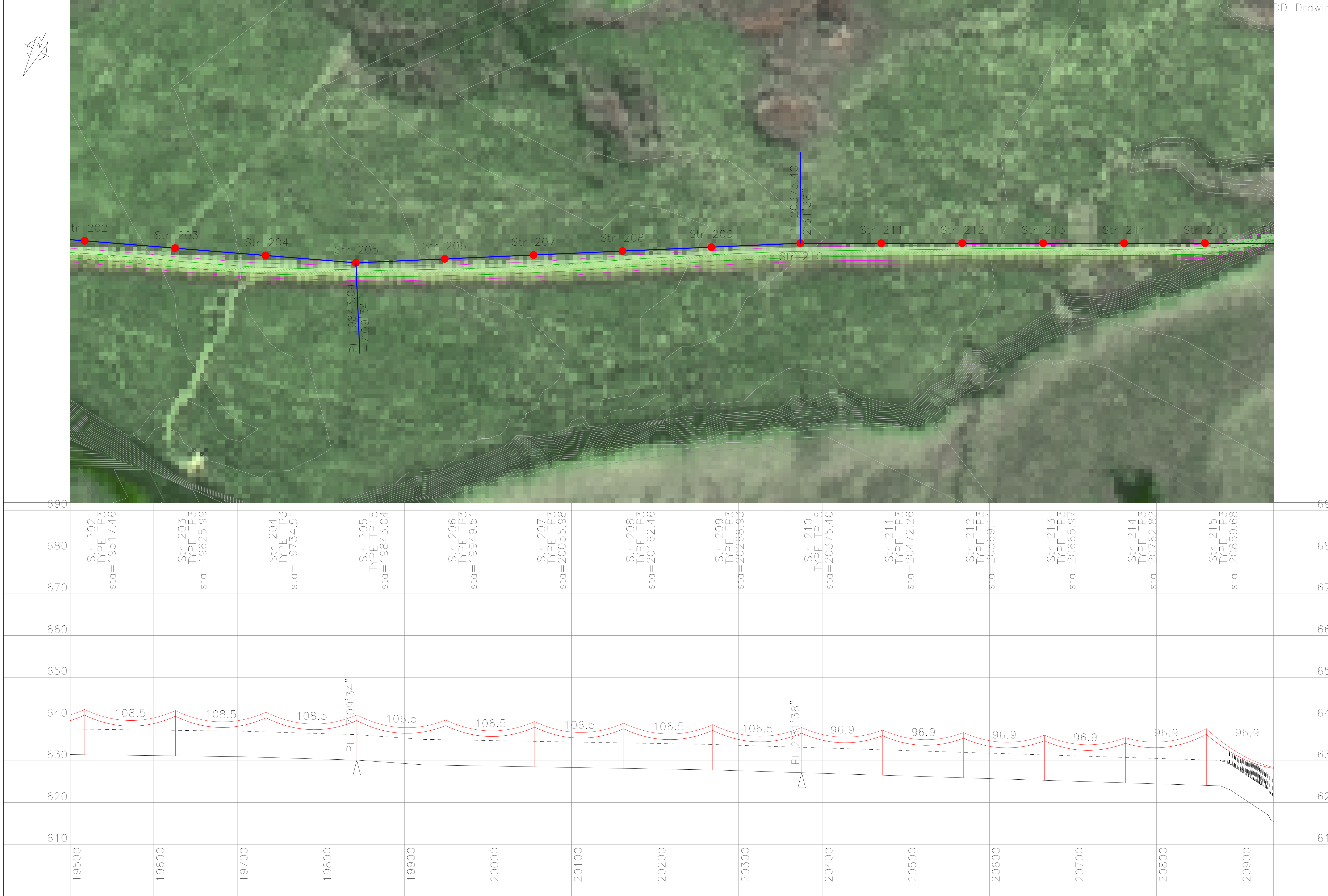
12.0 m Vert. Scale

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 14 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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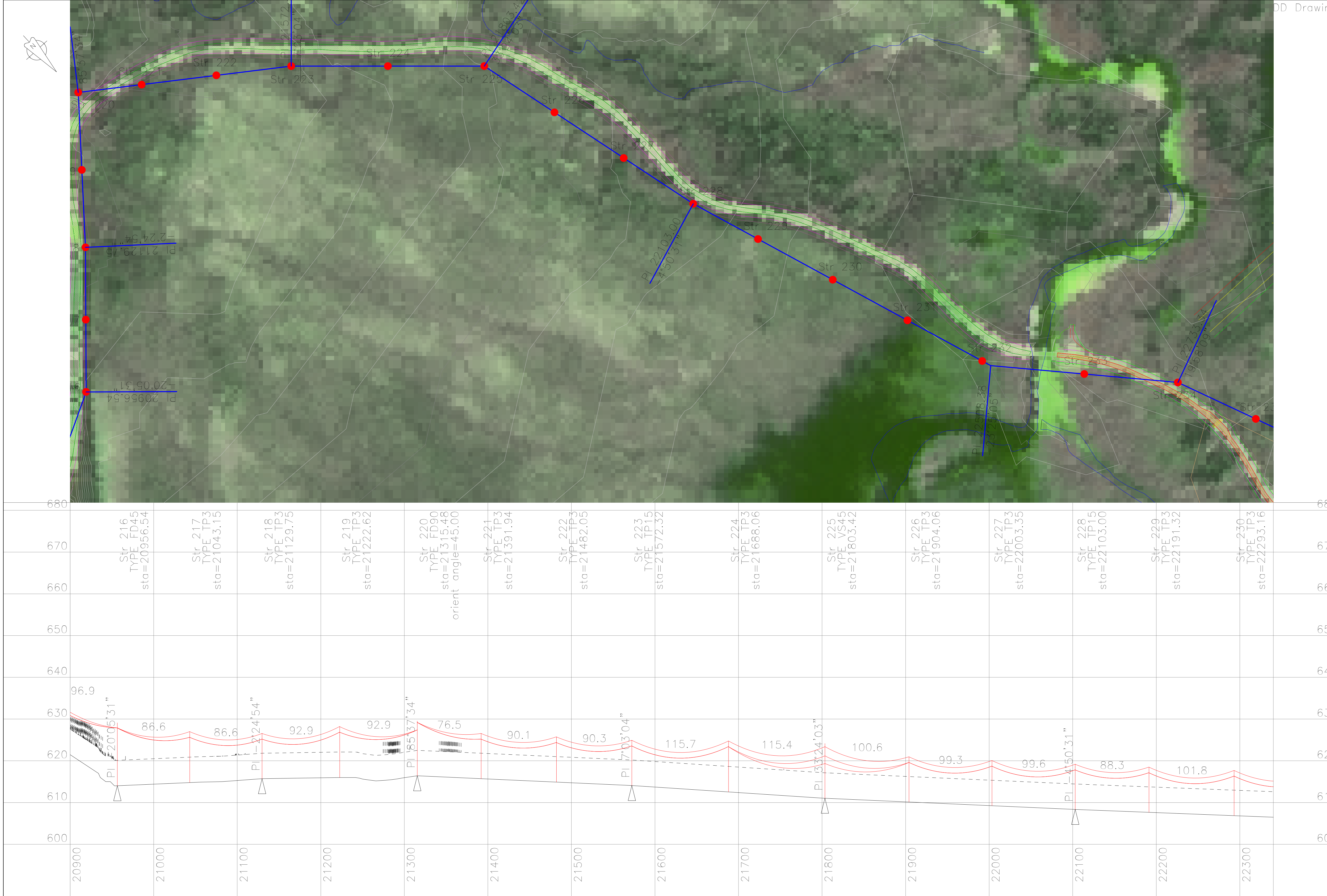
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 15 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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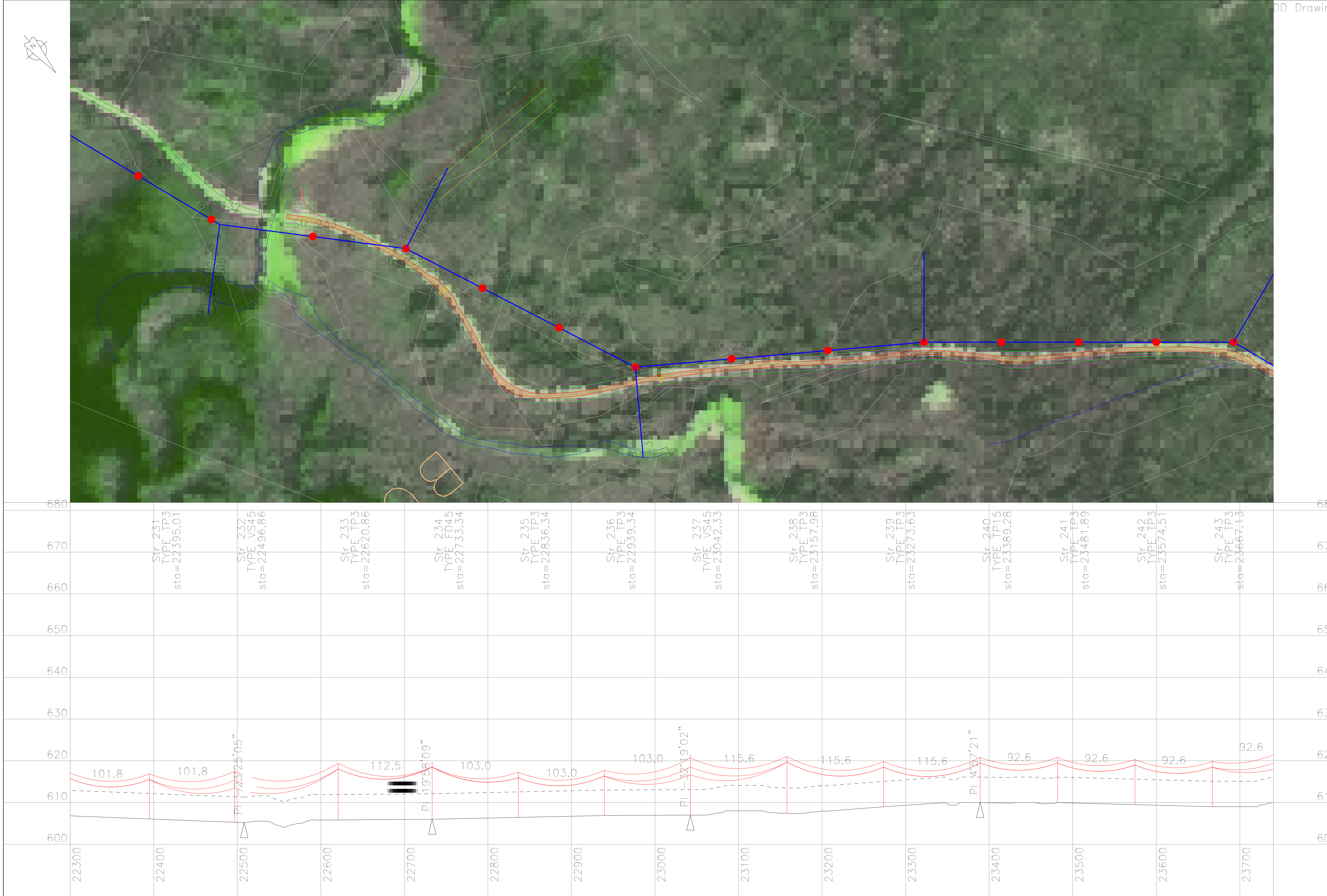
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 16 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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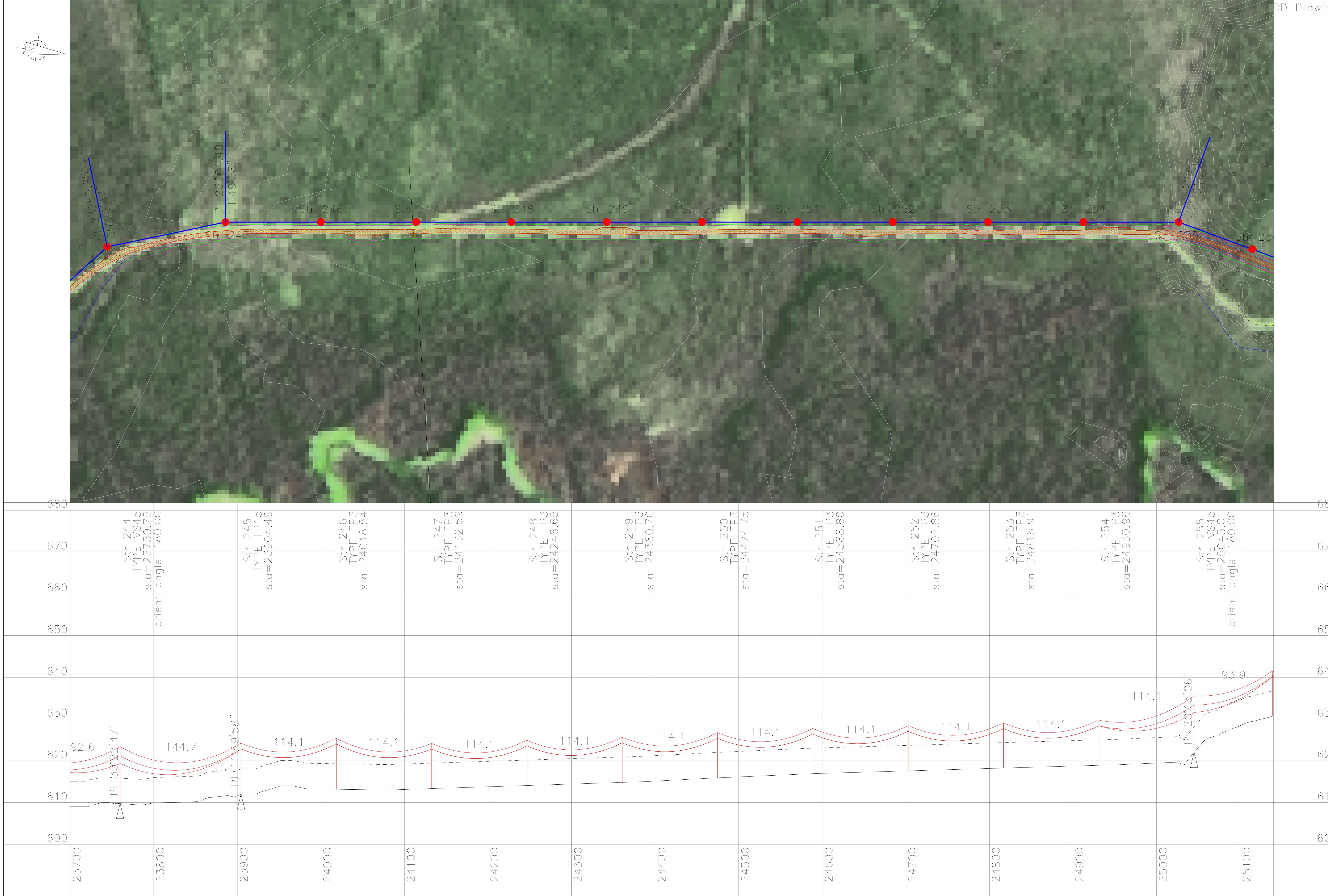
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 17 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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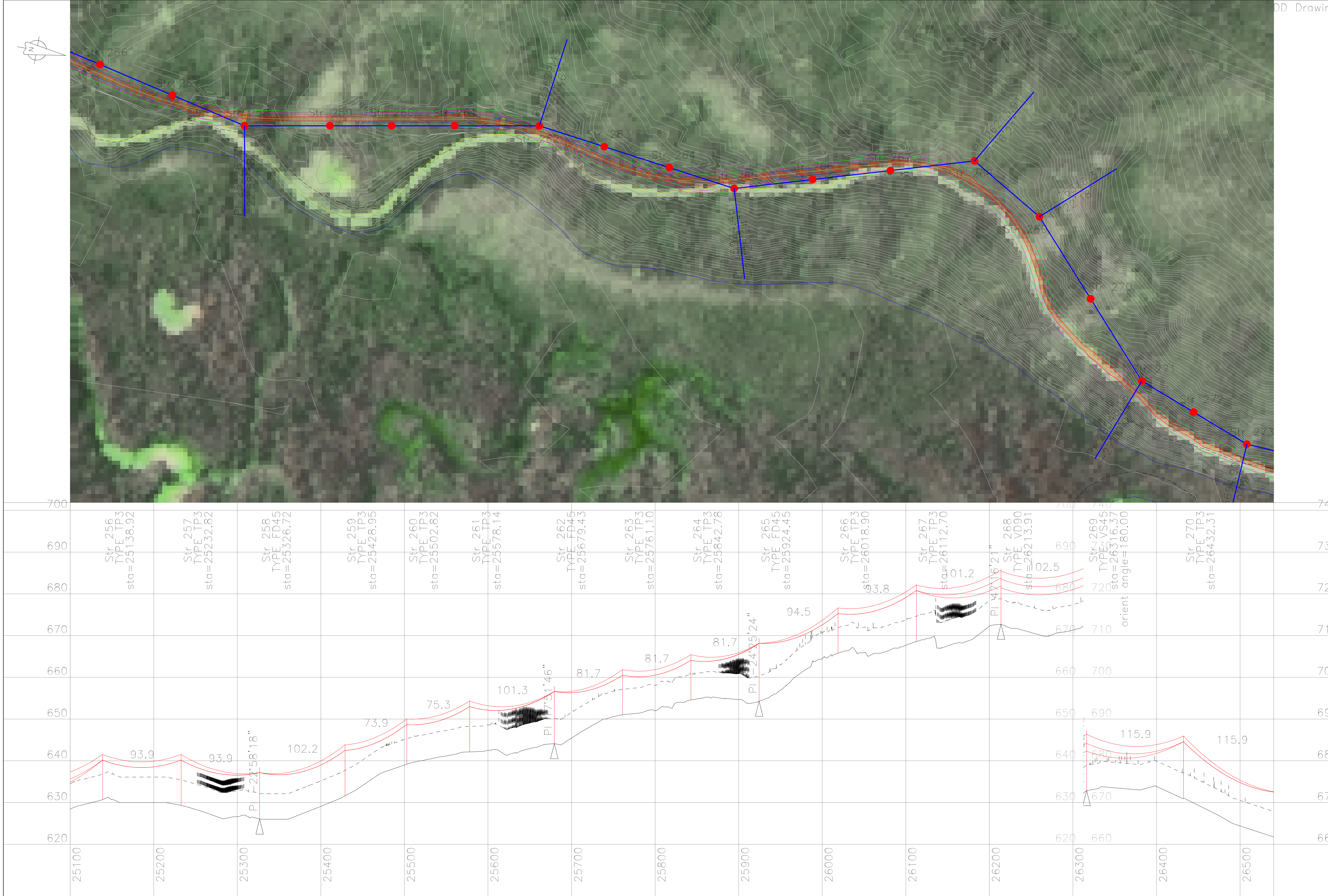
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 18 of 32



NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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60.0 m Horiz. Scale

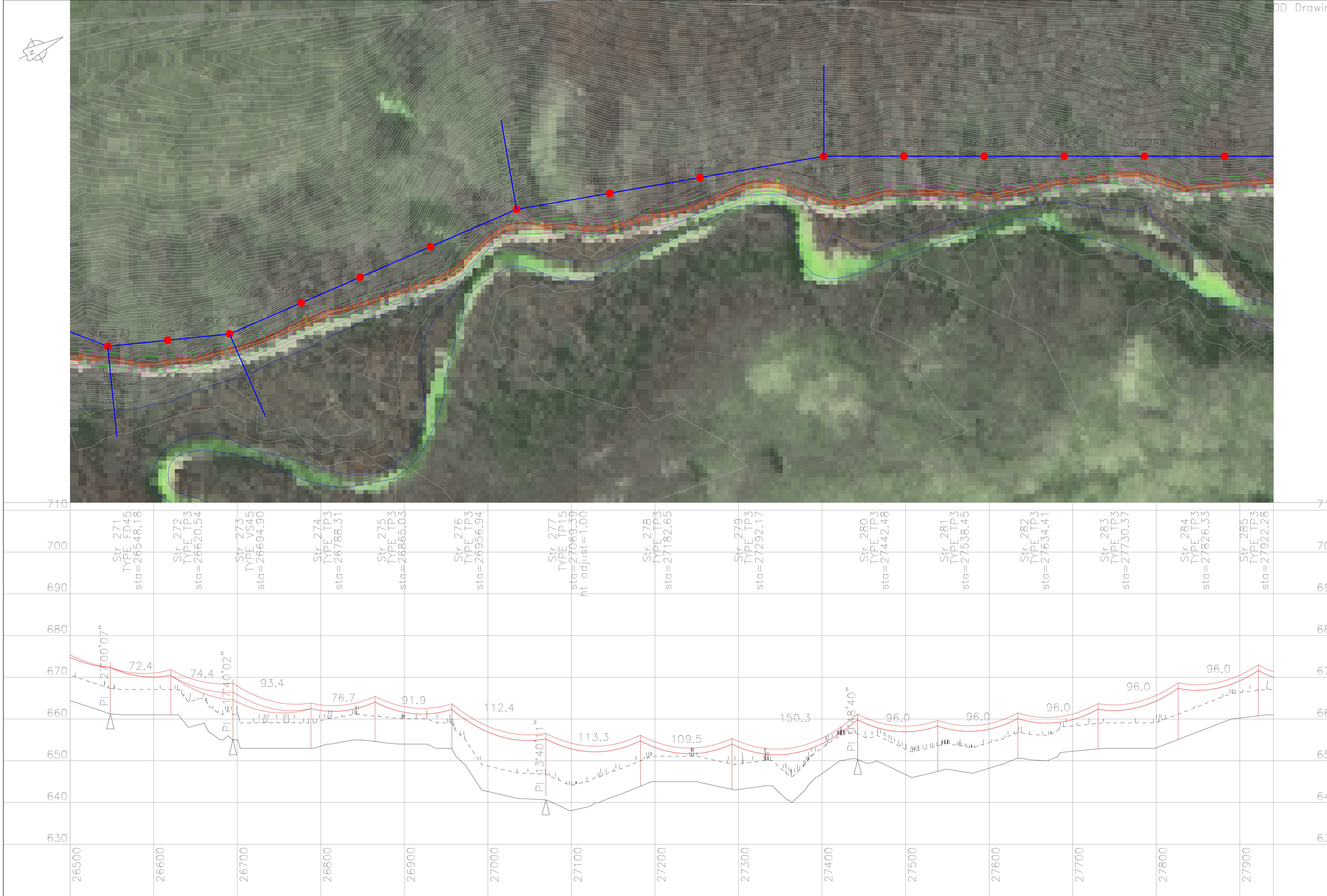
12.0 m Vert. Scale

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 19 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
3. COORDINATE SYSTEM INDICATED ARE UTM NAD 83 ZONE 8N.
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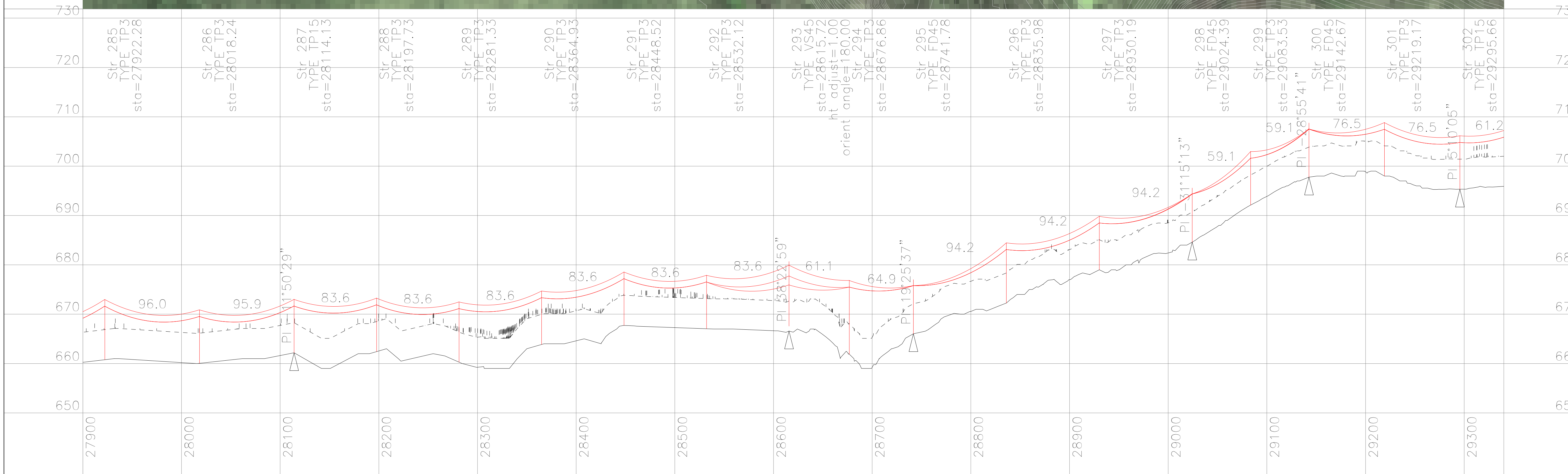
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 20 of 32

DD Drawing



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
3. COORDINATE SYSTEM INDICATED ARE UTM NAD 83 ZONE 8N.
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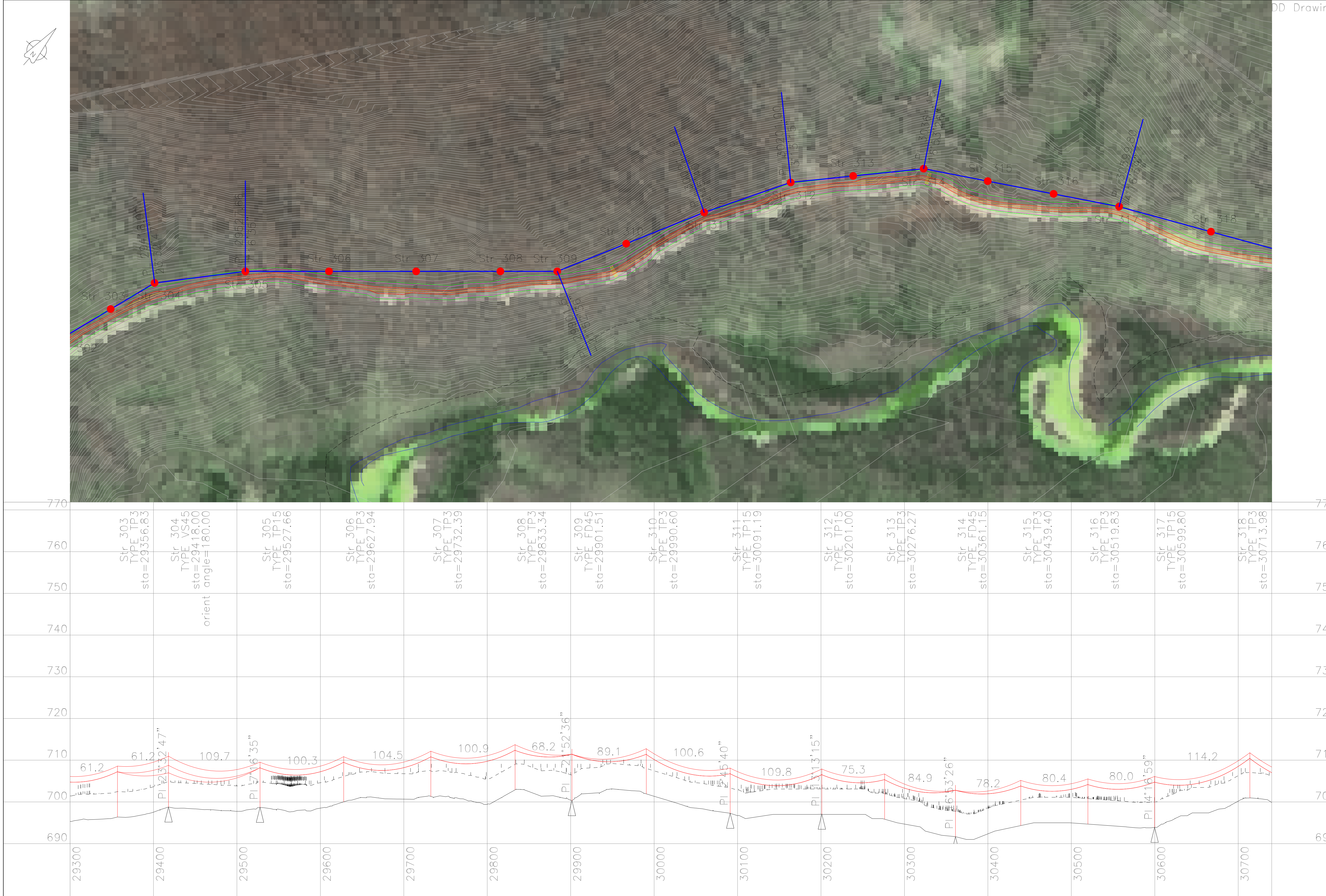
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 21 of 32



NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
3. COORDINATE SYSTEM INDICATED ARE UTM NAD 83 ZONE 8N.
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60.0 m Horiz. Scale

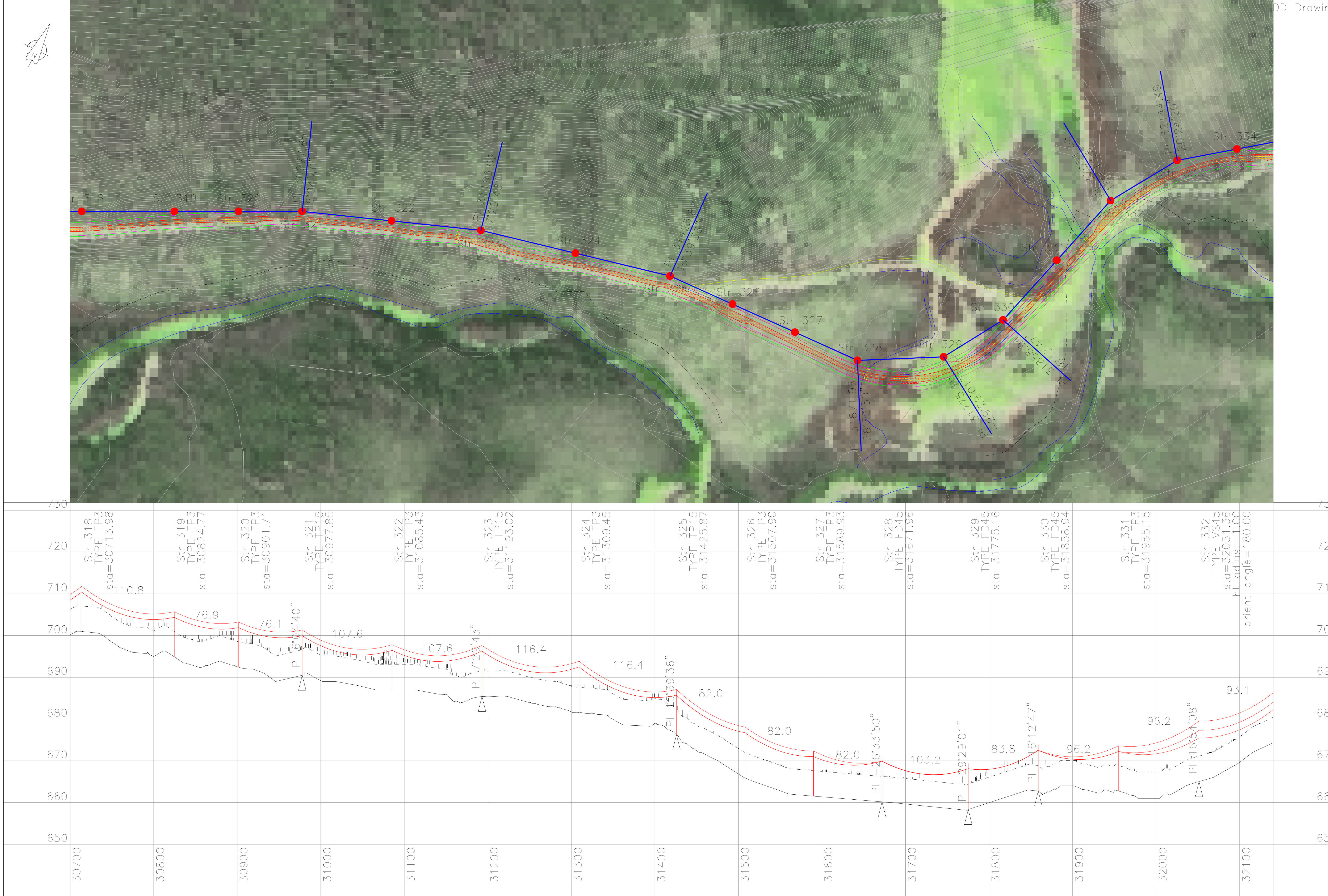
12.0 m Vert. Scale

PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 22 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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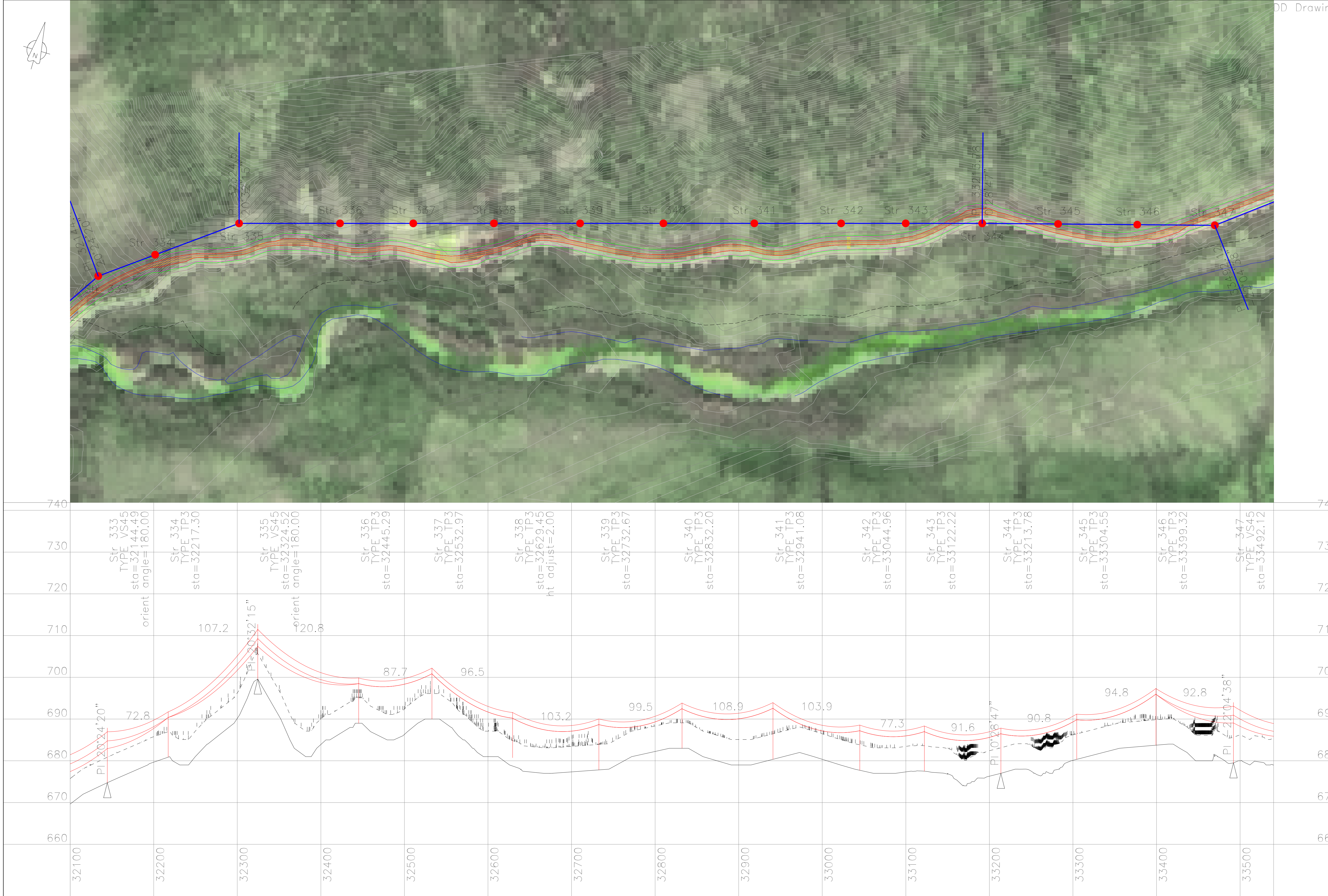
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 23 of 32

DD Drawing



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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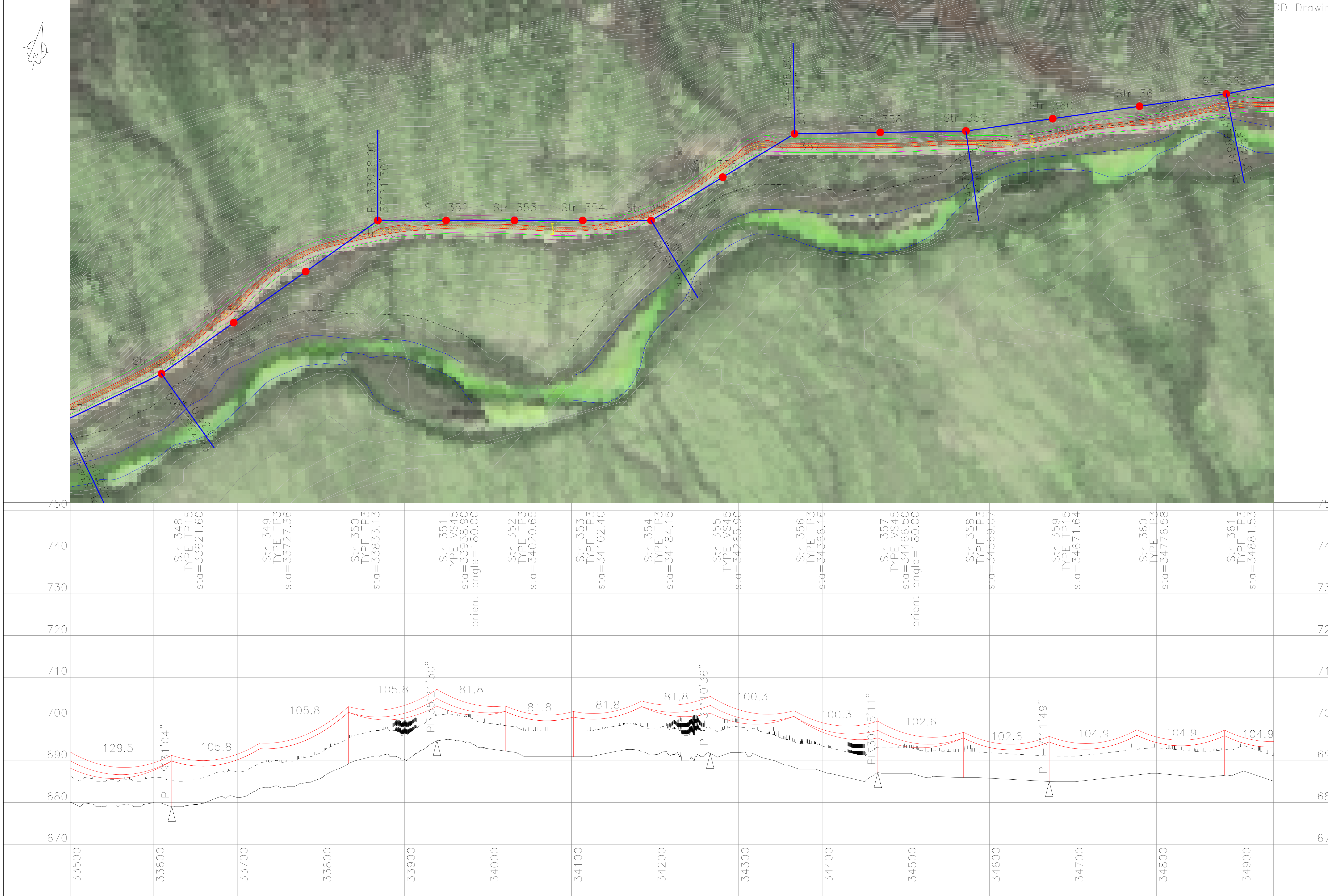
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 24 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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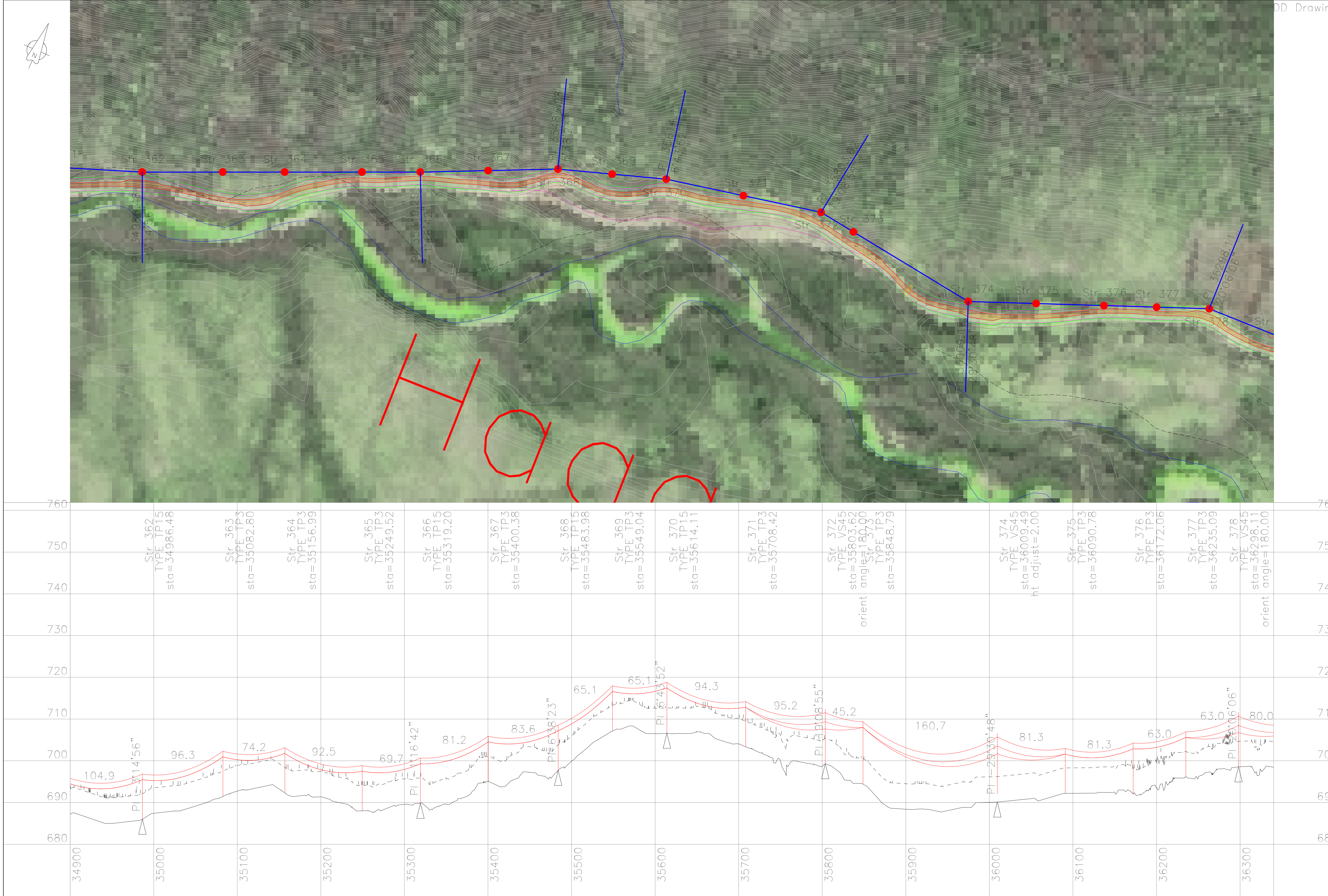
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 25 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
1. ALL DIMENSIONS ARE IN METERS.
2. THE TERRAIN FOR THIS LINE ROUTE IS BASED ON DRAWING (Eaglegold_RoadAlignment_DTM.dwg) RECEIVED ON 4th JULY 2010.
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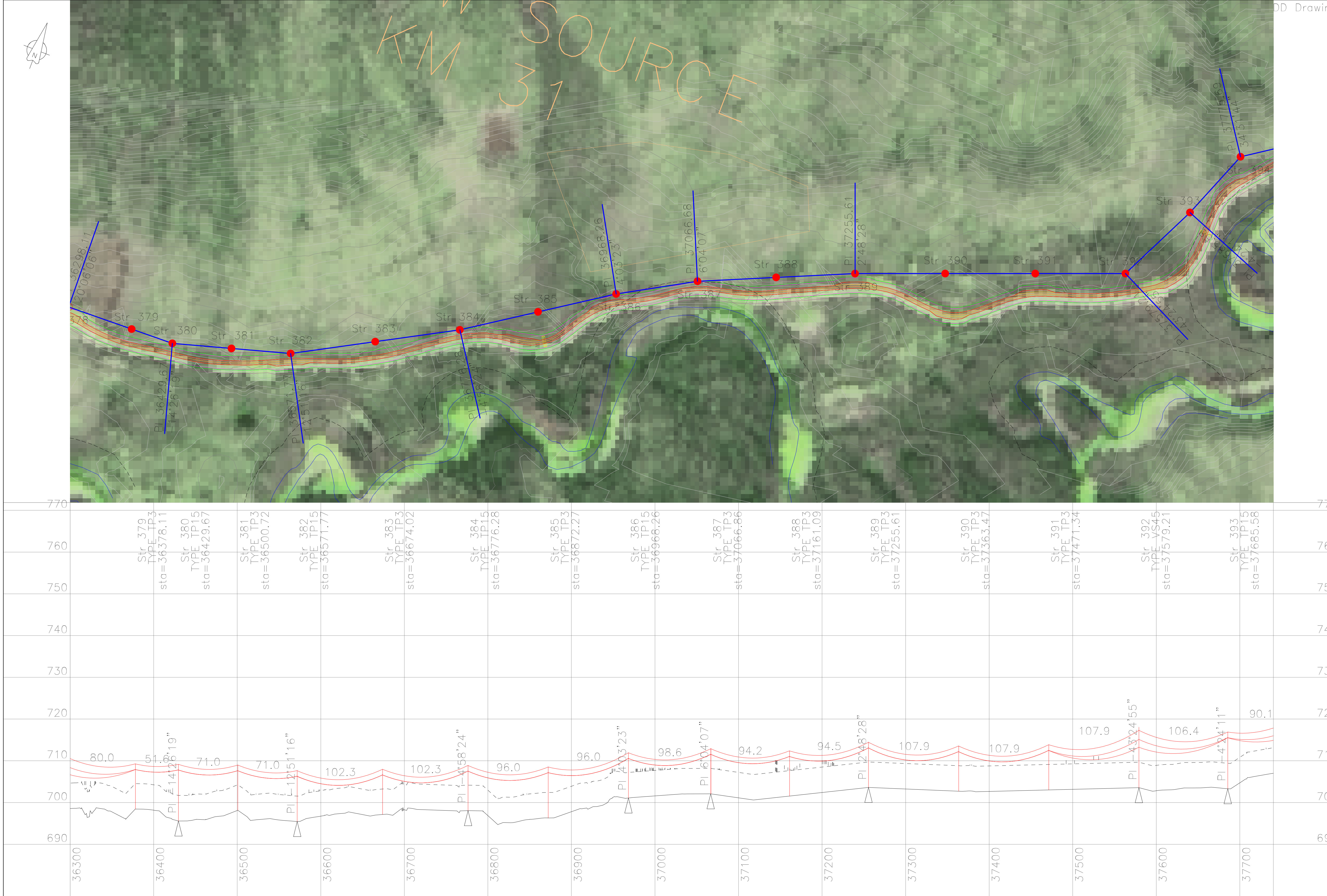
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 26 of 32

DD Drawing



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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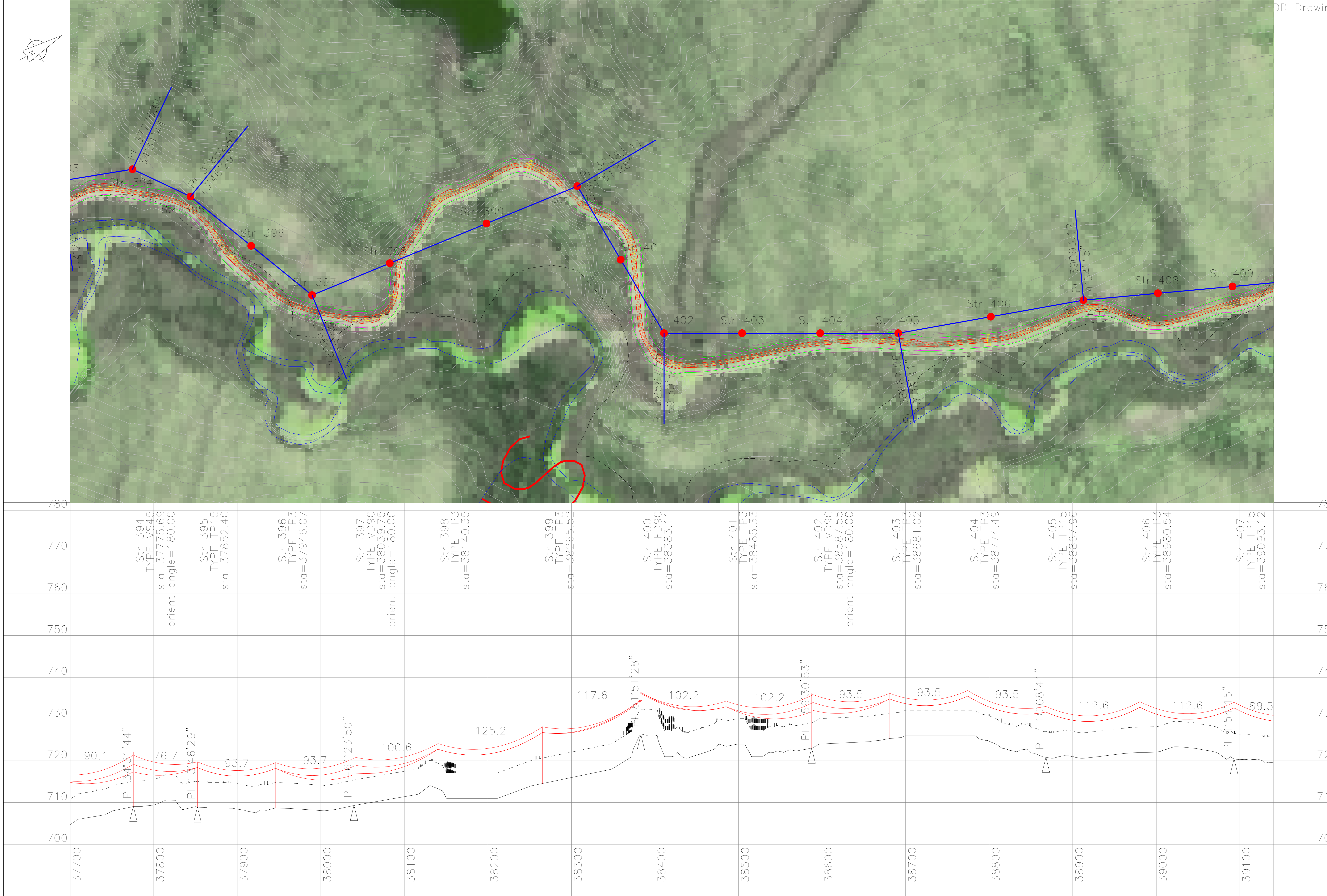
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 27 of 32



60.0 m Horiz. Scale

12.0 m Vert. Scale

NOTES
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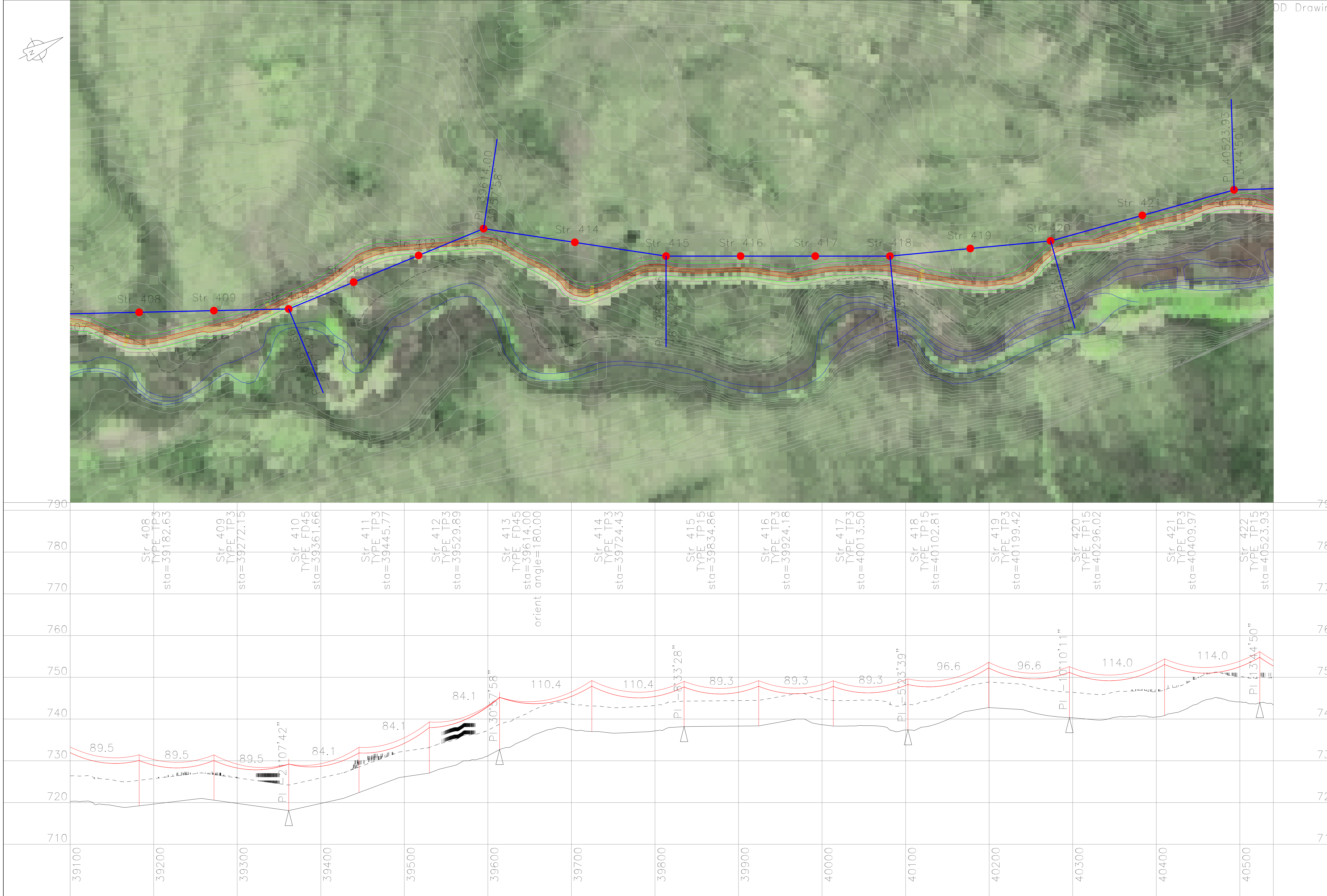
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 28 of 32



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12.0 m Vert. Scale

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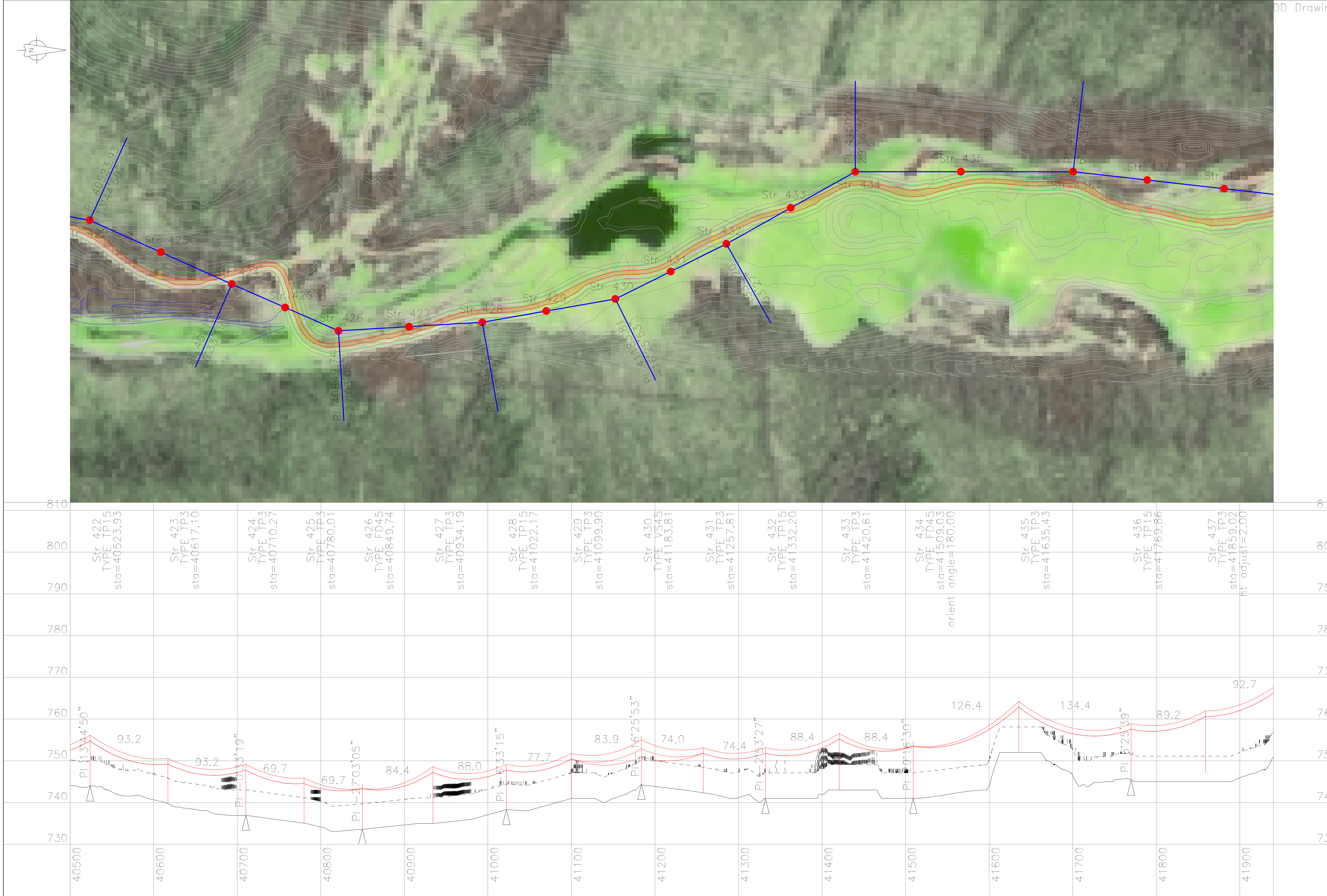
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 29 of 32



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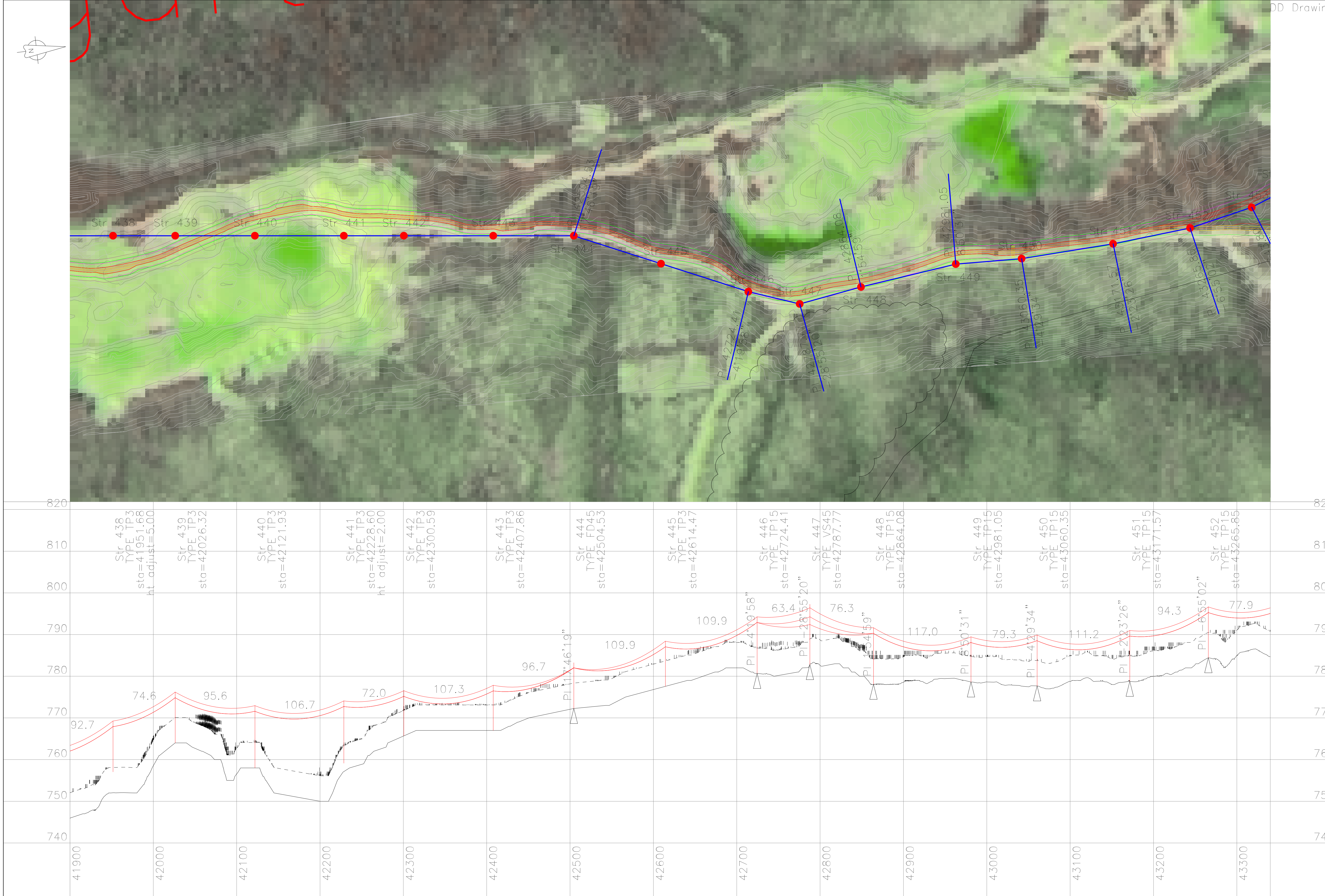
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 30 of 32



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12.0 m Vert. Scale

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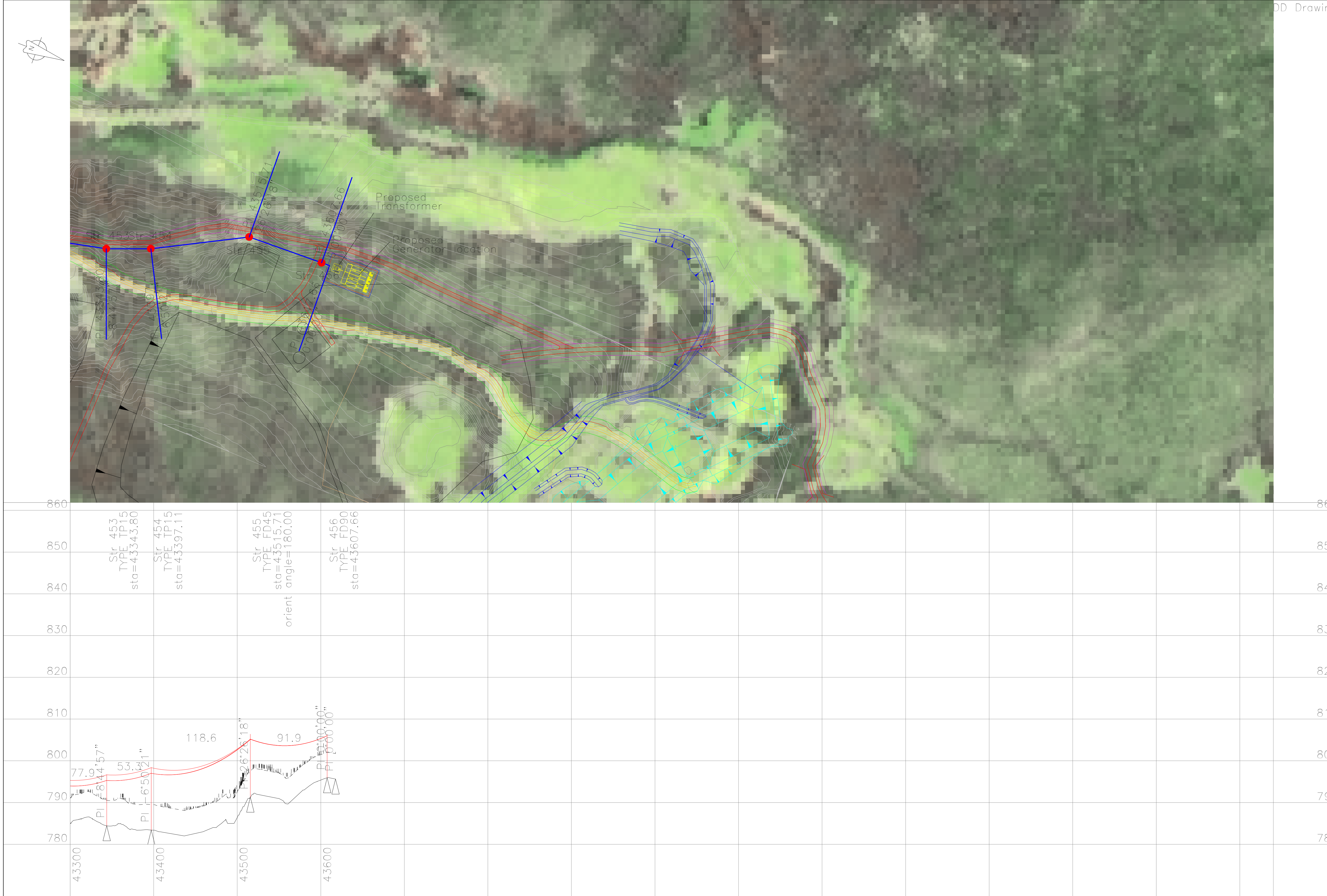
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 31 of 32



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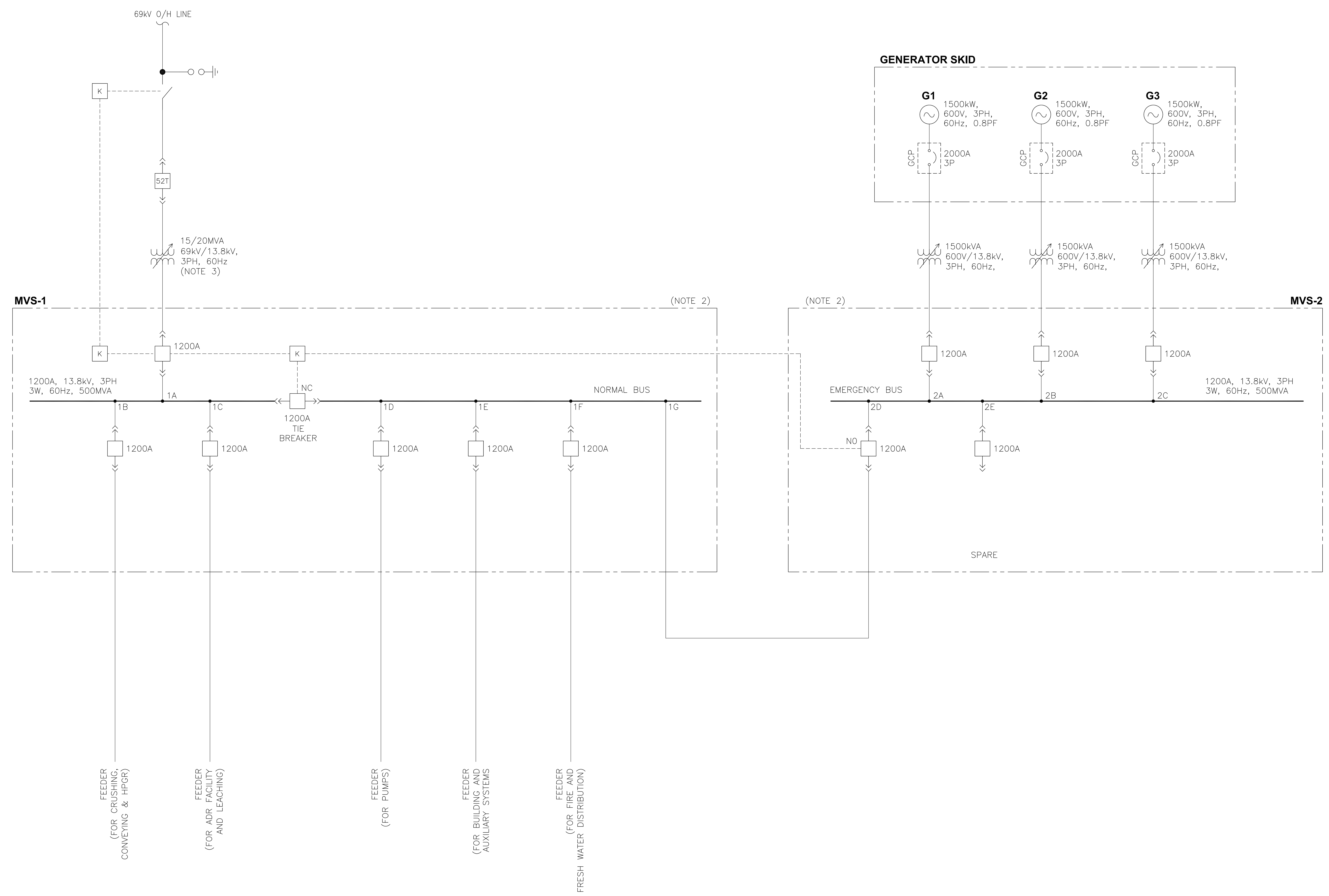
PRELIMINARY

EAGLE GOLD 69 kV OVERHEAD LINE

PLAN & PROFILE

Dwg No. 149-PP-SK001 Sht 32 of 32



NOTES:

1. GENERATOR SETS OF 3 x 1500kW WILL SERVICE ONLY THE CRITICAL LOADS SUCH AS PUMPS, CAMP, BLDGS. FIRE WATER, FRESH WATER DISTRIBUTION AND AUXILIARY SYSTEMS IN CASE OF POWER OUTAGE.
2. MODULAR SKID MOUNTED SWITCHGEAR.
3. TRANSFORMER CAPACITY TO BE CONFIRMED WHEN LOAD DEMAND IS FINALIZED.
4. TIE–BREAKER AND GENERATOR CONTROL LOGIC NOT SHOWN ON THIS DRAWING.

LEGEND:

- K – KEY TYPE INTERLOCK
- 52T – TRANS–RUPTER RATED 420A, 69kV, 31.5kA(IC)
- – POWER DISTRIBUTION TRANSFORMER WITH ON–LOAD TAP CHANGER
- – LIGHTNING ARRESTER

CONCEPT ONLY

DRAWING No.	DESCRIPTION

REFERENCE DRAWINGS

PERMIT STAMPS

NO.	DATE	DESCRIPTION	BY	CHK	ENG	APP
B		ISSUED FOR INFORMATION	WC	MC	MC	
A		ISSUED FOR PROJECT PROPOSAL	WC	MC	MC	

REVISIONS

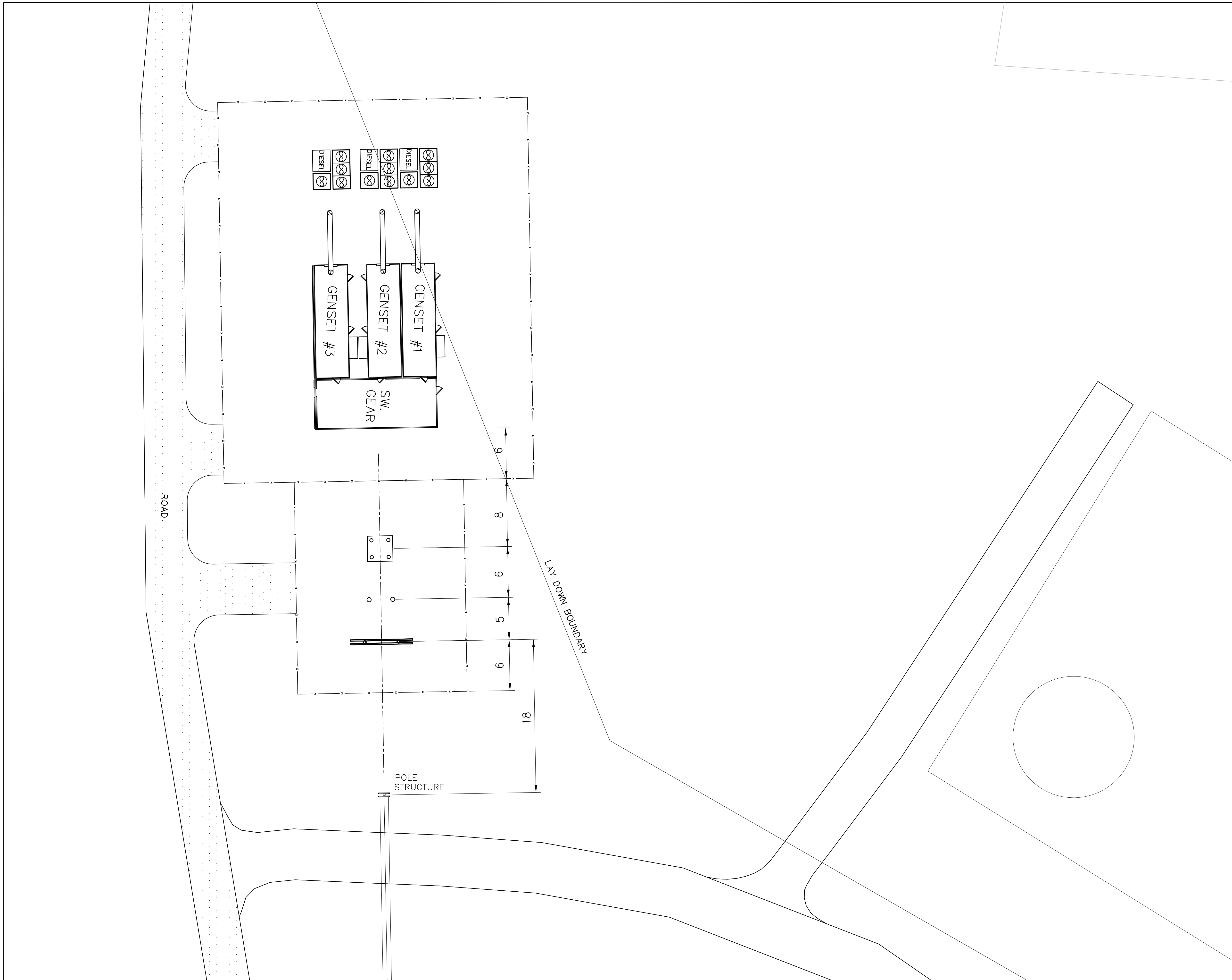
Stantec

Victoria GOLD CORP

TITLE: **EAGLE GOLD SINGLE LINE DIAGRAM**

DRAWN BY: WC	DESIGNED BY:	DATE: AUG. 16, 2010
CHECKED BY: MC	APPROVED BY:	SCALE: NTS
JOB No.: 118200149	DRAWING No.: SKE–001	REV. B

FILE NAME: EAGLE GOLD–SKE–0002.dwg



NOTES:

ALL DIMENSIONS ARE IN METERS.

LEGEND:

CONCEPT ONLY

DRAWING No.	DESCRIPTION
SKS-02	PLAN AND ELEVATIONS

REFERENCE DRAWINGS

PERMIT STAMPS

NO.	DATE	DESCRIPTION	BY	CHK	ENG	APP
B	2010/10/22	UPDATED NUMBER OF GENERATORS	JEH			
A	2010/08/27	ISSUED FOR PROJECT PROPOSAL	DAS	PW	PW	

REVISIONS

Stantec

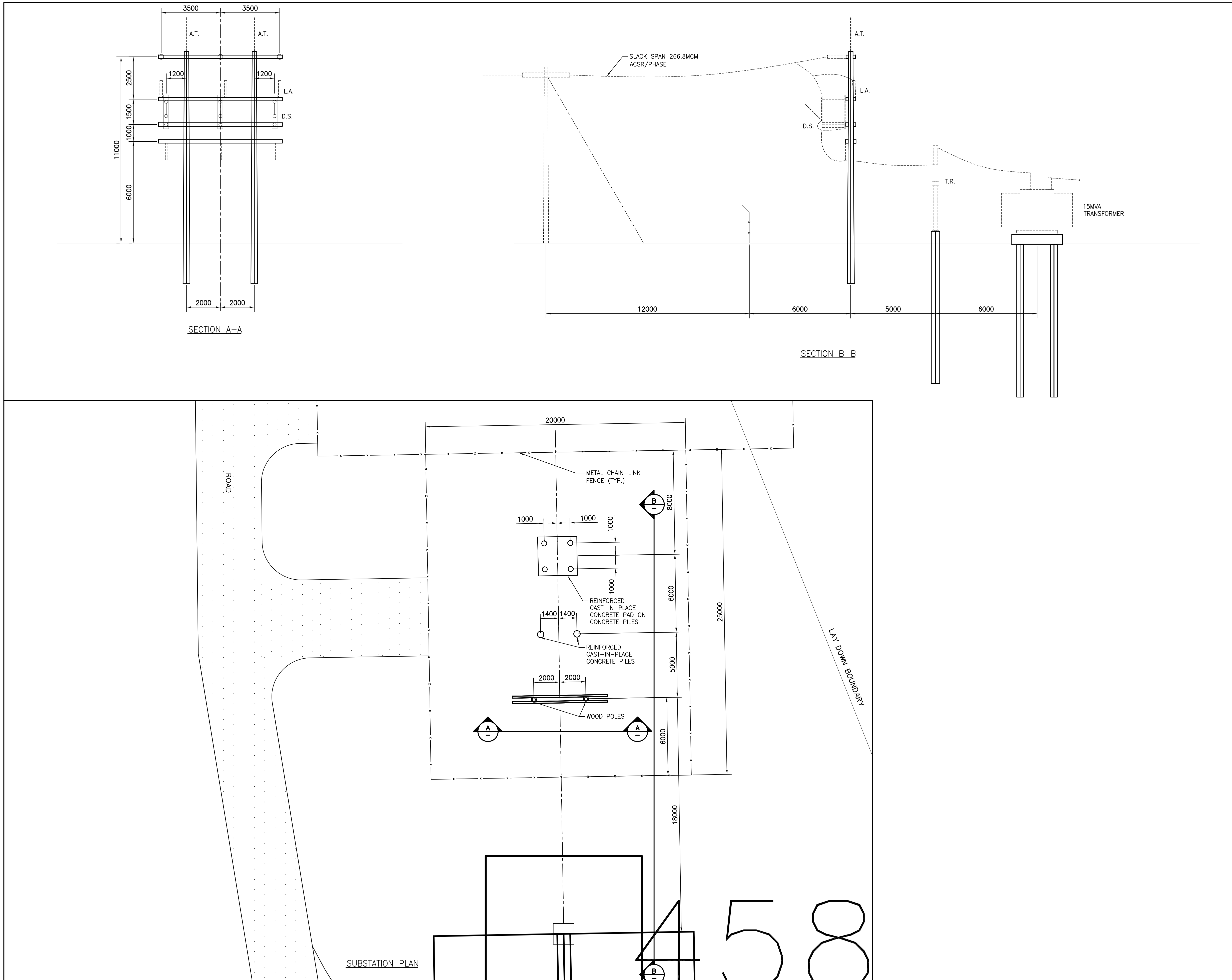
Victoria GOLD CORP

TITLE:

EAGLE GOLD
69kV SUBSTATION
PLOT PLAN

DRAWN BY: DAS	DESIGNED BY: PW	DATE: OCT. 22, 2010
CHECKED BY: PW	APPROVED BY:	SCALE: NTS
JOB No.: 118200149	DRAWING No.: SKS-01	REV.: B

FILE NAME: EAGLE GOLD-SKE-0002.dwg



NOTES:

LEGEND:

CONCEPT ONLY

DRAWING No.	DESCRIPTION
SKS-01	PLOT PLAN

REFERENCE DRAWINGS

PERMIT STAMPS

NO.	DATE	DESCRIPTION	BY	CHK	ENG	APP
A	2010/08/27	ISSUED FOR PROJECT PROPOSAL	DAS	PW	PW	

REVISIONS

Stantec

Victoria GOLD CORP

TITLE:

EAGLE GOLD
69kV SUBSTATION
PLAN AND ELEVATIONS

DRAWN BY: DAS	DESIGNED BY: PW	DATE: AUG. 27, 2010
CHECKED BY: PW	APPROVED BY: PW	SCALE: NTS
JOB No.: 118200149	DRAWING No.: SKS–02	REV. A

FILE NAME: EAGLE GOLD–SKE–0002.dwg