

Appendix 13.4-C Project Summary Report – Tenas Access Corridor Feasibility Design



DWB Consulting Services Ltd.

Project Summary Report- Tenas Access Corridor Feasibility Design

Engineering | Environmental | Forestry



TELKWA COAL
LIMITED

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OQM | Organizational Quality
Management Program

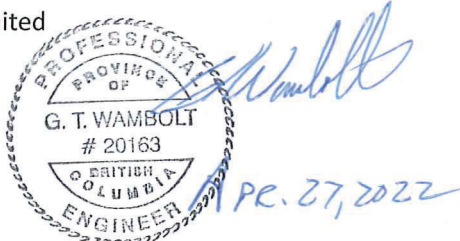
Signature Page

DWB Consulting Services Ltd. is pleased to submit this report for your review. This report has been prepared using sound technical and professional judgement, based on our knowledge and experience, applicable regulatory framework, industry best management practices, and current understanding of project conditions, design, and project setting.

Report Title: Project Summary Report – Tenas Access Corridor Feasibility Design

Prepared For: Telkwa Coal Limited

Revision: 4



Prepared By: PPN 1000169

Todd Wambolt, P.Eng

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¹ Editorial Review: Reviewed for formatting, grammar, spelling, etc.

Professional Review: Reviewed for content and professional signoff

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Peer Review: Reviewed for content and errors by peer

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1.0 INTRODUCTION

DWB Consulting Services Ltd. (DWB) was commissioned by Telkwa Coal Limited (TCL) to provide engineering services for the Tenas Project (Project) located near the village of Telkwa, British Columbia. These services include the following main tasks:

1. Feasibility level (+/-10%) engineering design of the access corridor road running from the proposed plant site to the rail load-out loop (approx. 16 km). The proposed road runs through the Goathorn Creek valley, across Goathorn Creek, and crosses Lawson Road and two powerline right of ways controlled by BC Hydro, namely a 138 kV line and 500 kV line,
2. Feasibility level design of a permanent bridge for the Goathorn Creek crossing identified and surveyed by DWB in the fall of 2017,
3. Feasibility level construction cost estimate for the proposed road and Goathorn Creek crossing,
4. Specifications and estimated costs for range fencing along the proposed haul road where grazing licenses exist, and
5. Schedule of construction for the proposed works.

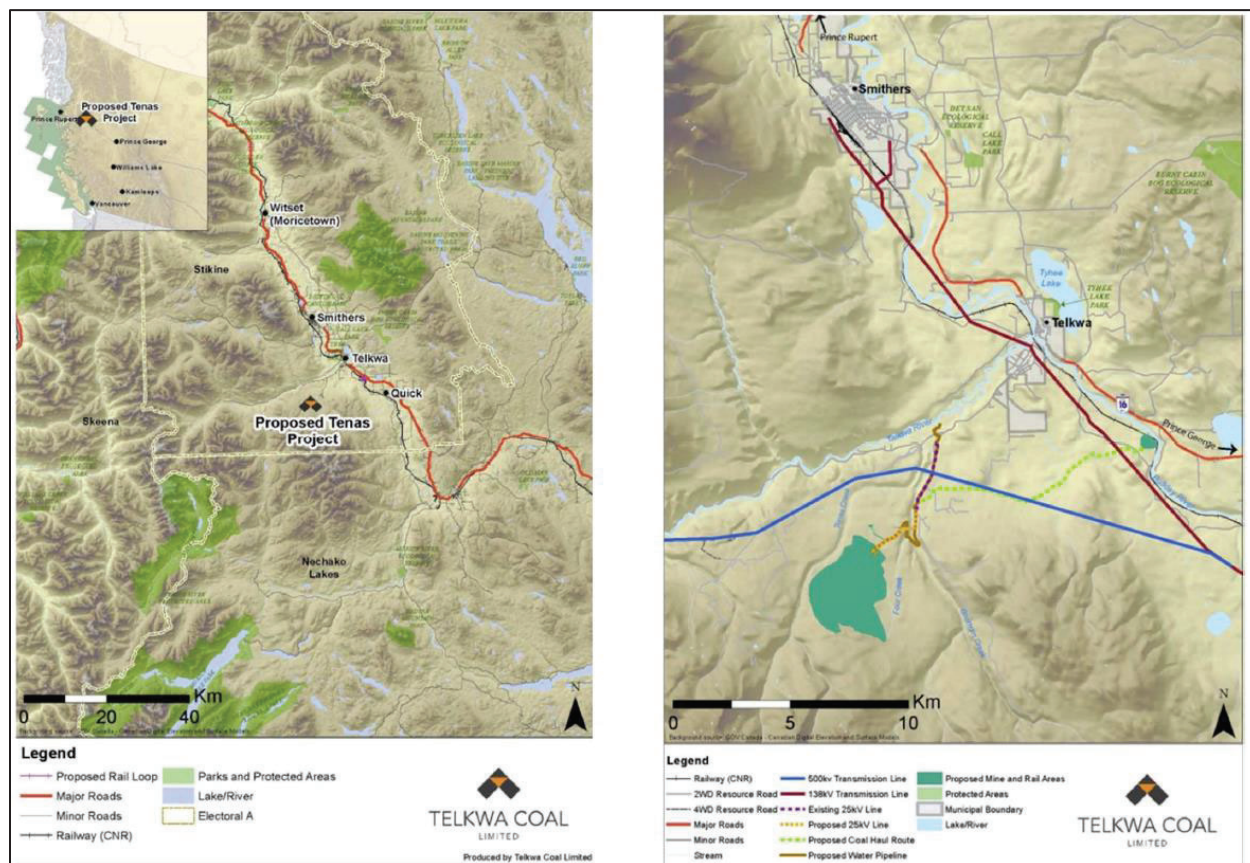
This report provides a summary of items noted above.

2.0 PROJECT DESCRIPTION

The property is located in the Bulkley Nechako region, 20km south of Smithers and 10km southwest of Telkwa, BC, Figure 1. Annual production for this mine will be approximately 750,000 metric tonnes of metallurgical coal over an estimated 20 year period.

It is proposed that coal would be transported from the plant site to the rail load-out via B-Train type trucks with a 110 metric tonne GVW. Coal transportation would take place 24 hours per day, 7 days per week, 350 days per year.

FIGURE 1: TELKWA COAL PROJECT - SITE LOCATION



3.0 DESIGN CRITERIA

Design criteria were established and confirmed with TCL upon commencement of the Project and are provided in the document; *Design Basis Memo - Phase 2 Feasibility Road Rev. 5* including applicable design codes. A summary of design criteria is provided in Table 1 below.

TABLE 1: SUMMARY OF DESIGN CRITERIA

Item	Applicable Design Criteria
Design Life	25 years
Design vehicle	B train truck, 70 tonne payload
Design loading	110 metric tonne GVW
Loading frequency	31 loads/day
Design speed	50km/h (max)
Earthquake loading	As per: 1) Canadian Highway Bridge Design Code CAN/CSA-S6 2) National Building Code of Canada (2015 Edition)
Geotechnical cut/fills	2:1 horizontal to vertical for fills and variable slopes for cuts from 1.5:1 to 2:1 depending on soil materials Ditching side slopes vary from 1:1 to 2:1 horizontal to vertical depending on soil material
Road width	1) 6.0 m running width – Single lane with turnouts from plant site to rail load-out. 2) 10.0 m running width – Double lane at plant site and rail load-out.
Turnouts	One on each side of Goathorn Creek valley, one at each bridge crossing, and a minimum of one every 4 km 4.0m wide, 30.0m long plus 10.0m tapers
Maximum grades	10.0% favorable, 8.0% adverse including road resistance
Road Resistance	2.0 to 3.0% due to gravel surface proposed
Road drainage control	2.0% crown or cross slope
Ditching	V-notch, 0.75m deep, side slopes vary from 1:1 to 2:1 horizontal to vertical depending on material. Rock check dams will be included where required to reduce water velocity.
Cross drains	500-600mm (min) CSP, spacing 100 to 350m depending on grade, soil type and topography as per Forest Road Engineering Guidebook to control run off from the road
Design flow	200 year return period design flow - Q_{200}

4.0 TENAS ACCESS CORRIDOR

The proposed Tenas Access Corridor (TAC) is approximately 16km in length running from the proposed rail load out facility (Sta 0+000) located off Lawson Road in Telkwa, BC in a south-westerly direction to the

proposed plant site (Sta 15+920). The alignment uses pre-existing roads where practicable in order to reduce cut and fill volumes (earthwork movement), construction costs and amount of disturbance. An overview of the alignment is provided in Figure 2. A reduced version (due to file size) of the detailed design drawings are provided in Appendix A. Refer to the DWB drawing package 18364-204-10 for the complete set.

Notable features of the proposed alignment are as follows:

1. It intersects and crosses Lawson Road at Sta. 0+940,
2. It crosses the BC Hydro 138kV power line at Sta. 1+800,
3. It crosses the PNG gas line at Sta. 4+465,
4. It crosses the BC Hydro 500kV power line at Sta. 6+255 and runs parallel to the power line for about 2000m,
5. It intersects a private driveway at Sta. 10+535, due to the skew the driveway will need to be re-aligned at the time of construction,
6. It intersects and crosses the Telkwa Coalmine Road at Sta. 11+430. Telkwa Coalmine Road intersection will require re-alignment upon construction of the TAC and therefore the intersection will move and intersect the TAC near Sta. 11+510,
7. It crosses Goathorn Creek at Sta. 13+210,
8. It terminates at the proposed plant site at Sta. 15+920, and
9. Other major stream crossings are located at Stations 5+635, 6+324, 6+503, 6+659, 7+032, 7+212, 8+054, 8+540, and 13+665.

The design is based on the *Transportation Association of Canada, Geometric Design Guide for Canadian Roads, 2017 Edition* and the *BC Supplement to TAC Geometric Design Guide, 2007 Edition*.

Detailed geotechnical information for the proposed road and stream crossings was not available at the time of this report. Findings of work currently being completed could potentially impact the designs and costs.

4.1 FOUR CREEK RE-ALIGNMENT OPTION

An alternate road alignment over Four Creek (located at 13+664 as shown on the DWB drawing package 18364-204-10) was evaluated. Four Creek is an S3 stream and the current design utilizes the existing alignment and existing 1800mm culvert.

The re-alignment option would diverge from the feasibility design alignment at about 13+540, cross Four Creek with a bridge downstream of the 1800mm culvert and tie back into the feasibility design alignment at about 13+890. The feasibility road design would remain unchanged before and after the optional re-alignment.

Design drawings, 18364-204-70 and construction cost estimate are provided in Appendices D and E respectively.

5.0 GOATHORN CREEK CROSSING

The Goathorn Creek crossing is a 30m long x 4.8m wide, single span, steel girder/concrete composite deck bridge with steel pipe pile substructures. The bridge is designed as a permanent crossing with a load rating of 110 tonnes.

The design is based on the *Canadian Highway Bridge Design Code CAN/CSA-S6* and incorporated clearance requirements for the 200 year design flow (Q_{200}). Design drawings (18364-204-20) for the Goathorn Creek Bridge are provided in Appendix B.

6.0 WATER MANAGEMENT

The water management plan for the TAC follows standard procedures for forestry service roads in the region and a specific plan developed by SRK Consulting Inc (SRK) including among other works detailed prescriptions for water management for the Goathorn Creek area (*Tenas Project – Water Management Design Technical Report, SRK, July 2021*). The main goal of water management in the design and construction of roads is to maintain surface drainage patterns by keeping water in its own drainage area unless it is more desirable in moving it to another area to avoid unstable or sensitive soils.

Water management for the TAC comprises three main components; bridges, culverts, and road side ditching. Culverts are further classified as major culverts (>2000mm in diameter, placed in defined channels, and require engineered design), culverts (<2000mm in diameter, placed in defined channels, and are sized based on channel characteristics), and cross drains (typically <1000mm in diameter, sizing is based on road design criteria). Each are discussed in more detail as follows:

1) Clear Span Bridges will be designed for existing water courses that have been determined to be fish bearing. Assessments of these drainages have been completed by DWB (*Stream Assessment Report, Feasibility Road Design Phase 2 Telkwa Metallurgical Coal Project, DWB Consulting, Sept. 14, 2020*) and detailed surveying which will allow for the design of these drainage structures. Refer to DWB drawing package 18364-204-10 for proposed bridge locations. Table 2 below provides the design criteria used for clear span bridges:

TABLE 2: SUMMARY OF DESIGN CRITERIA FOR CLEAR SPAN BRIDGES

Parameter	Value	Justification
Design Flood	1 in 200-year event including a climate change allowance.	Specific client request. Typically, 1:100-year event for permanent structures.
Height of Bridge bottom above design flood	1.0 m minimum above the 1 in 200-year event	Based on stream hydraulics
Deck Width	Min. 4.3m minimum	4.3m is standard single lane bridge width.

2) Road side channels (ditching) will be incorporated along the TAC in cut slopes to collect runoff and seepage from upslope areas and the road surface. The ditching will convey runoff via cross drains to the natural environment. Road side ditching geometry is based on maximum cross drain size and required cover depths. As described in Section 3, typical channels will have a V-notch shape, 0.75m deep, and have side slopes ranging from 1H:1V to 2H:1V depending on material. Refer to DWB drawing package 18364-204-10 for ditch layout and cross sections.

3) Culverts

3.1) Major culverts – No major culverts are proposed for the TAC.

3.2) Culverts – There are several corrugated steel pipe culverts ranging in size from 800 mm to 1800mm proposed for this project. All culverts are associated with non-classified drainages (NCDs) as determined from the DWB Stream Assessment work. Refer to DWB drawing package 18364-204-10 for proposed culvert locations. Culvert sizing is determined from stream characteristic data collected in the field during the stream assessment work and includes stream bottom width, top of bank width, and stream depth as per the requirements of the Forest Road Engineering Guidebook.

3.3) Cross drains for this project will consist of 500 to 600mm corrugated steel pipes, spaced from 100 to 350m depending on road grade, soil type and topography as per the Forest Road Engineering Guidebook. The DWB drawing package 18364-204-10 shows the proposed location of cross drains along the TAC.

Protection measures including ditch blocks, check dams, sumps and rock armouring are considered in the design process and included where applicable.

Where possible cut/fill slopes will be constructed to 2H:1V to accommodate reclamation activities. The reclamation activities will incorporate erosion control practices on these slopes to minimize sediment release from these activities such as hydro seeding and coconut matting. As part of annual maintenance activities all water management features including culverts will be inspected to ensure they are functioning correctly and if any repairs are required.

Specific water management plans for the Goathorn Creek area have been developed by SRK. The SRK report proposes two small sedimentation ponds on the east and west sides of Goathorn Creek both of which will receive water from TAC as this is the area where the steepest sustained grades are encountered by TAC. Both sedimentation ponds are two celled features and will discharge treated water to Goathorn Creek. Details on the sedimentation pond for TAC Sedimentation Ponds 1 and 2 are provided in Section 1.17.1.1.2 of the SRK report.

Additionally, prior to the construction of the TAC a detailed construction level erosion and control plan will be developed for the TAC which will involve temporary sumps, diversion and collection channels and portable sediment control sea containers as required to ensure TSS levels are achieved. These items will have specified erosion control features such as rip rap or turf mat reinforcement incorporated into their construction to avoid sediment mobilization.

7.0 ESTIMATED CONSTRUCTION COSTS

A summary of estimated construction costs for the TAC and Goathorn Creek crossing are provided in Table 3. A detailed breakdown of costs is provided in Appendix C. These costs are based on the assumption that construction will be completed by the end of 2021.

TABLE 3: SUMMARY OF CONSTRUCTION COSTS¹

Item	Cost	Comment
Engineering Services	\$84,600	Survey, traffic control, bridge certifications
Environmental	\$663,000	Permitting, sediment and erosion control, environmental monitoring
Materials	\$4,783,594	Bridges, culverts and cross drains, geotextiles, road aggregates, and fencing
Bridge Installations	\$700,000	
Roadway Construction	\$1,039,314	
Transportation and Freight	\$368,025	Mob/demob, crew transport and LOA
Construction Services	\$850,139	Project management, construction supervision, QA/QC
Contingency	\$857,867	Allowance for LiDAR based volumes and conceptual bridge designs
Total	\$9,436,539	

1) Not including taxes

The following pertain to the estimated construction costs in Table 2 and Appendix C:

1. Construction is assumed to be conducted using conventional equipment including Cat 329 excavators, 730C rock trucks, D6 and D8 bulldozers, and CS533E compactors,
2. Hourly rates for construction equipment are based on *2018-2019 Equipment Rental Rate Guide, BC Road Builders and Heavy Construction Association*,
3. Costs for bridges other than for Goathorn Creek are based on conceptual design using provided LiDAR data,
4. Costs for the haul, supply and placement of road aggregates and clearing and grubbing, and top soil salvage were provided by Telkwa Coal Ltd., and
5. Contingencies were included to allowance for uncertainty in conceptual bridge designs and accuracy of provided LiDAR data for construction volumes.

8.0 RISKS AND OPPORTUNITIES

During the course of completing the design for the TAC Bypass Road and Goathorn Creek crossing, risks and opportunities were identified as outlined in Table 4. Completion of recommended future work during the next phase of the Project may include the following:

TABLE 4: SUMMARY OF RISKS AND OPPORTUNITIES

Risk/Opportunity	Comment	Recommended Future Work
Road alignment	Based on LiDAR data – sparse in places.	Conduct ground based confirmation survey.
Road cut/fill volumes		
Geotechnical data	Minimal data to confirm road cut/fill properties. Geotechnical report not available at time of design.	1. Further testing of proposed road fills and subgrade. 2. Re-confirm road section design 3. Update design based on geotechnical recommendations if required.
Stream crossings	There are 9 stream crossings on which the structure type and length is based on LiDAR data, concept design only.	1. Detailed surveys and structure designs .
Goathorn Crossing	Access to the west side of Goathorn Creek via road access or a work bridge will be required to install the permanent bridge and/or construct roadway.	1. Construct work bridge for access and construction of permanent bridge.
Rock / aggregate sources	Limited rock / aggregate source investigation and extrapolation to date from identified source areas using only LIDAR.	1. Further office/field investigations, confirmation drill sampling, and lab analysis. 2. Design / layout of quarry boundary and pit access route.
Stream assessment cross checks	Defaulted fish streams could be fully assessed (electro-fished) during freshet and in fall 2019 and <u>possibly</u> downgraded to non- fish-bearing status, thus reducing the quantity of fish-bearing structures needed.	1. Augment (2 nd year of sampling) the 2018 fish assessments on streams at 6+334, 6+511, 6+667, 7+057, 8+075, and 8+561 to see if they may be downgraded to non-fish bearing.
Ancillary Infrastructure along road route	Lidar has been the basis for all evaluations of public roadways, powerline, and gas line crossings.	1. Provide recommended ground based confirmation survey. 2. Detailed survey work on all public roadway including gas line and power line crossings constructability / permitting.

Archaeological Investigation	Assess road for Archaeological conflicts.	1. Walk through shovel survey along road and within any aggregate / borrow/waste source areas.
Slash Disposal	Likely local concern about log debris being a fire or insect breeding hazard so leaving unburied slash may not be an option.	1. Consider or evaluate the possibility of salvaging material or winter burning of piles after logging or a burn barrel system concurrent with logging.
Geotechnical data	Minimal data to confirm road fill properties. Geotechnical report not available at time of design.	1. Update design based on geotechnical recommendations if required. 2. Determine if further testing of proposed road fills and subgrade is required. 3. Re-confirm road section design.
Stream crossings	There are 9 stream crossings on which the structure type and length is based on LiDAR data, concept design only.	1. Detailed surveys and structure designs . 2. Augment (2 nd year of sampling) current fish assessment on streams at 6+334, 6+511, 6+667, 7+057, 8+075, and 8+561 to see if they may downgrade to non-fish bearing.
Rock / aggregate sources	Limited rock / aggregate source investigation and extrapolation from identified source areas using only LIDAR.	1. Further office/field investigations, confirmation drill sampling, and lab analysis.

9.0 INSPECTION AND MAINTENANCE PROGRAM

Inspection and maintenance of roads and associated structures is necessary to maintain the safety of the road users, the service life of the road, the owner's economic investment, and environmental protection.

A road and structure inspection and maintenance program for the TAC and associated stream crossing structures should be developed. An inspection and maintenance program will:

1. Help identify priorities for road and structure maintenance;
2. Ensure development and efficient allocation of maintenance budgets; and
3. Reduce owner liability as a result of a maintenance program based on a documented maintenance inspection and engineering risk analysis of the road and structures.

Inspection and maintenance involves the following activities:

- Assigning priorities and conducting inspections of roads, bridges and major culverts based on risk analysis and a consistent schedule;
- Maintenance of the road prism and subgrade;
- Clearing width maintenance;
- Ditch and culvert maintenance;
- Traffic control signage;
- Maintenance of major structures; and
- Road surface maintenance.

Maintenance requirements should be determined from information collected and documented during formal inspections, and from information and incidents provided by road users. This information should be used to develop a maintenance plan to correct any identified deficiencies.

9.1 ROAD INSPECTION PROGRAM

An engineering risk analysis should be developed by TCL and inspection priorities assigned according the level of risk and elements at risk. Usually, road elements with the highest risk would receive the highest inspection priority. An inspection schedule, based on risk level should be developed and reviewed and updated on an annual basis if required. It is recommended that roads should be inspected at least twice per year. Inspections should also be conducted following severe weather events and before winter, and following spring freshet. Additionally, inspections should be conducted as soon as possible following vehicle accidents, especially where injury or death has occurred, earth movement, slide activities, or failures.

Hazards within the road right-of-way should be identified to assist in establishing inspection priorities. These may include:

- Cut and fill slope failures and shoulder slumps;
- Washouts;
- Poor running surface;
- Encroachment of brush into the road corridor;
- Ineffective drainage systems;
- Blocked ditches or culverts;
- Debris build up in channels or ditches;
- Recurring beaver activities or fish passage issues on drainage systems and culverts;
- Soil erosion and sedimentation; and
- Flooding.

9.1.1 Road Inspection Reports

Inspection reports should cover key elements of the road and assess those hazards noted above and note any observed deficiencies. Photos should accompany reports related to any major deficiencies. A suitable road inspection and maintenance report form should be developed and reports should include the following:

- Date of inspection;
- Name of person conducting inspection;
- Purpose of inspections (scheduled, post weather event, post-accident, etc.)

- Weather conditions at time of inspection which may be important to explain road surface conditions;
- Current or revised road risk ranking;
- Location of identified problems and all relevant details and description of problem; and
- Photographs of identified problems;
- Recommended actions;
- Timeline for next inspection.

Retain inspection reports to document that inspections have been conducted and to aid in development of future maintenance programs.

9.1.2 Remedial Road Works

Upon completion of the road inspection a road maintenance work plan should be developed and works prioritized according to the risks identified. Remedial works should be completed by the earliest of the following:

- A time period based on the risk of the road, users, and the environment;
- As specified in the inspection report; or
- As determined by the person having authority for the road.

9.2 BRIDGE AND MAJOR CULVERT INSPECTION PROGRAM

There are two types of inspections for bridges and culverts; routine condition inspections and close proximity inspections.

Routine condition inspections involve visual and non-destructive physical testing of bridge and culvert components. These inspections can be carried out by inspectors considered qualified by having adequate training and experience in conducting these inspections and being able to interpret results. Inspectors should be able to determine whether structural deficiencies can be rectified by prescribing suitable repairs or if they require evaluation by a professional engineer.

Close proximity inspections would generally be carried out on larger more complex structures (Goathorn Creek bridge) where deficiencies have been noted in routine conditions inspections. These inspections require a higher level of experience and expertise and would must be conducted by a professional engineer or someone under the direct supervision of a professional engineer.

9.2.1 Bridge and Major Culvert Inspection Frequency

Bridges and major culverts composed of steel, concrete and treated timber, riprap and endfills, must be inspected at least once every three years unless specified otherwise by a professional engineer. If there are untreated structural wood components the structure must be inspected every two years. It is also recommended to inspect structure following severe storm events.

9.2.2 Bridge and Major Culvert Inspection Reports

The inspection record of a bridge or major culvert should contain the following:

- Date of inspection;
- Assessment of condition of each component;
- Photographs;
- Recommended repairs and schedule for such;

- Date of next inspection;
- Length of time bridge has been at its current location;
- Design life; and
- Inspector's and professional engineer's signature and date.

9.2.3 Bridge and Major Culvert Maintenance Works

Upon completion of the inspection, remedial works should be planned and completed by the earliest of the following:

- A time period based on the risk of the road, users, and the environment;
- As specified in the inspection report; or
- As determined by the person having authority for the road.

10.0 CONCLUSIONS

The proposed Telkwa Coal Project is located near the town of Telkwa, BC. It is proposed that coal would be transported from the plant site to the rail load-out via B-Train type trucks. Coal transportation would take place 24 hours per day, 7 days per week, and 350 days per year.

The proposed TAC is approximately 16km in length running from the proposed rail load out facility (Sta 0+000) located off Lawson Road in a south-westerly direction to the proposed plant site (Sta 15+920). The alignment uses pre-existing roads where practicable in order to reduce cut and fill volumes, construction costs and amount of disturbance.

The proposed road crosses nine (9) major streams, the largest being Goathorn Creek at Sta. 13+120. The design for the proposed Goathorn Creek Bridge is a permanent, 30.480m steel girder and concrete composite deck bridge founded on steel piles with a load rating of 110 tonnes.

The estimated construction cost of the proposed road and all related infrastructure is \$9.4 million based on construction being completed by the end of 2021.

Detailed geotechnical information for the proposed road and stream crossings was not available at the time of this report. Findings of work currently being completed could potentially impact the designs.

Risks and opportunities for the design and construction of the proposed road and related infrastructure have been considered and discussed in detail in Section 7 of this report. It is recommended that TCL give these due consideration as they could potentially affect both construction costs and design impacts.

APPENDIX A – DETAILED ROAD DESIGN DRAWINGS

(DOES NOT INCLUDE CROSS SECTION DRAWINGS DUE TO SIZE, PLEASE REFER TO DWB DRAWING PACKAGE 18364-204
FOR COMPLETE SET)

TELKWA COAL
LIMITED
TENAS HAUL ROAD

Lat. 54° 38' 11.65" Long. 127° 5' 3.99"

Sheet Number	Sheet Title
18364-204-01	Typical Sections, General Notes & Specifications
18364-204-02	Horizontal Curve Table & Section
18364-204-S1	Traffic Signs - Sheet 1
18364-204-S2	Traffic Signs - Sheet 2
18364-204-S3	Traffic Signs - Sheet 3
18364-204-S4	Traffic Signs - Sheet 4
18364-204-S5	Traffic Signs - Sheet 5
18364-204-S6	Traffic Signs - Sheet 6
18364-204-P1	Plan & Profile 1 STA. 0+000 TO 1+000
18364-204-P2	Plan & Profile 2 STA. 1+000 TO 2+000
18364-204-P3	Plan & Profile 3 STA. 2+000 TO 3+000
18364-204-P4	Plan & Profile 4 STA. 3+000 TO 4+000
18364-204-P5	Plan & Profile 5 STA. 4+000 TO 5+000
18364-204-P6	Plan & Profile 6 STA. 5+000 TO 6+000
18364-204-P7	Plan & Profile 7 STA. 6+000 TO 7+000
18364-204-P8	Plan & Profile 8 STA. 7+000 TO 8+000
18364-204-P9	Plan & Profile 9 STA. 8+000 TO 9+000
18364-204-P10	Plan & Profile 10 STA. 9+000 TO 10+000
18364-204-P11	Plan & Profile 11 STA. 10+000 TO 11+000
18364-204-P12	Plan & Profile 12 STA. 11+000 TO 12+000
18364-204-P13	Plan & Profile 13 STA. 12+000 TO 13+000
18364-204-P14	Plan & Profile 14 STA. 13+000 TO 14+000
18364-204-P15	Plan & Profile 15 STA. 14+000 TO 15+000
18364-204-P16	Plan & Profile 16 STA. 15+000 TO 15+919.8
18364-204-M1	Mass Haul 1 STA. 0+000 TO 1+000
18364-204-M2	Mass Haul 2 STA. 1+000 TO 2+000
18364-204-M3	Mass Haul 3 STA. 2+000 TO 3+000
18364-204-M4	Mass Haul 4 STA. 3+000 TO 4+000
18364-204-M5	Mass Haul 5 STA. 4+000 TO 5+000
18364-204-M6	Mass Haul 6 STA. 5+000 TO 6+000
18364-204-M7	Mass Haul 7 STA. 6+000 TO 7+000
18364-204-M8	Mass Haul 8 STA. 7+000 TO 8+000
18364-204-M9	Mass Haul 9 STA. 8+000 TO 9+000
18364-204-M10	Mass Haul 10 STA. 9+000 TO 10+000
18364-204-M11	Mass Haul 11 STA. 10+000 TO 11+000

Sheet Number	Sheet Title
18364-204-M12	Mass Haul 12 STA. 11+000 TO 12+000
18364-204-M13	Mass Haul 13 STA. 12+000 TO 13+000
18364-204-M14	Mass Haul 14 STA. 13+000 TO 14+000
18364-204-M15	Mass Haul 15 STA. 14+000 TO 15+000
18364-204-M16	Mass Haul 16 STA. 15+000 TO 16+000
18364-204-X1	Cross Sections 1 STA. 0+000 TO 0+150
18364-204-X2	Cross Sections 2 STA. 0+150 TO 0+350
18364-204-X3	Cross Sections 3 STA. 0+350 TO 0+490
18364-204-X4	Cross Sections 4 STA. 0+500 TO 0+690
18364-204-X5	Cross Sections 5 STA. 0+700 TO 0+870
18364-204-X6	Cross Sections 6 STA. 0+875 TO 1+010
18364-204-X7	Cross Sections 7 STA. 1+020 TO 1+210
18364-204-X8	Cross Sections 8 STA. 1+220 TO 1+410
18364-204-X9	Cross Sections 9 STA. 1+420 TO 1+610
18364-204-X10	Cross Sections 10 STA. 1+620 TO 1+810
18364-204-X11	Cross Sections 11 STA. 1+820 TO 2+010
18364-204-X12	Cross Sections 12 STA. 2+020 TO 2+210
18364-204-X13	Cross Sections 13 STA. 2+210 TO 2+410
18364-204-X14	Cross Sections 14 STA. 2+420 TO 2+610
18364-204-X15	Cross Sections 15 STA. 2+620 TO 2+800
18364-204-X16	Cross Sections 16 STA. 2+810 TO 3+000
18364-204-X17	Cross Sections 17 STA. 3+010 TO 3+200
18364-204-X18	Cross Sections 18 STA. 3+210 TO 3+390
18364-204-X19	Cross Sections 19 STA. 3+400 TO 3+590
18364-204-X20	Cross Sections 20 STA. 3+590 TO 3+780
18364-204-X21	Cross Sections 21 STA. 3+790 TO 3+980
18364-204-X22	Cross Sections 22 STA. 3+990 TO 4+180
18364-204-X23	Cross Sections 23 STA. 4+040 TO 4+330
18364-204-X24	Cross Sections 24 STA. 4+175 TO 4+320
18364-204-X25	Cross Sections 25 STA. 4+330 TO 4+485
18364-204-X26	Cross Sections 26 STA. 4+470 TO 4+600
18364-204-X27	Cross Sections 27 STA. 4+605 TO 4+770
18364-204-X28	Cross Sections 28 STA. 4+775 TO 4+905
18364-204-X29	Cross Sections 29 STA. 4+910 TO 5+060
18364-204-X30	Cross Sections 30 STA. 5+070 TO 5+200

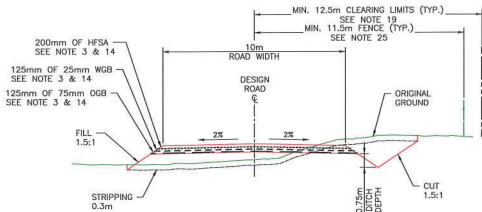
Sheet Number	Sheet Title
18364-204-X31	Cross Sections 31 STA. 5+210 TO 5+365
18364-204-X32	Cross Sections 32 STA. 5+370 TO 5+520
18364-204-X33	Cross Sections 33 STA. 5+530 TO 5+630
18364-204-X34	Cross Sections 34 STA. 5+634 TO 5+780
18364-204-X35	Cross Sections 35 STA. 5+790 TO 5+930
18364-204-X36	Cross Sections 36 STA. 5+940 TO 6+100
18364-204-X37	Cross Sections 37 STA. 6+110 TO 6+255
18364-204-X38	Cross Sections 38 STA. 6+260 TO 6+430
18364-204-X39	Cross Sections 39 STA. 6+434.5 TO 6+490
18364-204-X40	Cross Sections 40 STA. 6+494 TO 6+610
18364-204-X41	Cross Sections 41 STA. 6+619.5 TO 6+720
18364-204-X42	Cross Sections 42 STA. 6+730 TO 6+870
18364-204-X43	Cross Sections 43 STA. 6+880 TO 7+018
18364-204-X44	Cross Sections 44 STA. 7+020 TO 7+160
18364-204-X45	Cross Sections 45 STA. 7+161.9 TO 7+260
18364-204-X46	Cross Sections 46 STA. 7+265.9 TO 7+390
18364-204-X47	Cross Sections 47 STA. 7+400 TO 7+530
18364-204-X48	Cross Sections 48 STA. 7+540 TO 7+690
18364-204-X49	Cross Sections 49 STA. 7+695.5 TO 7+850
18364-204-X50	Cross Sections 50 STA. 7+860 TO 8+000
18364-204-X51	Cross Sections 51 STA. 8+002 TO 8+150
18364-204-X52	Cross Sections 52 STA. 8+140 TO 8+300
18364-204-X53	Cross Sections 53 STA. 8+310 TO 8+490
18364-204-X54	Cross Sections 54 STA. 8+499.6 TO 8+620
18364-204-X55	Cross Sections 55 STA. 8+630 TO 8+820
18364-204-X56	Cross Sections 56 STA. 8+830 TO 9+020
18364-204-X57	Cross Sections 57 STA. 9+030 TO 9+220
18364-204-X58	Cross Sections 58 STA. 9+230 TO 9+420
18364-204-X59	Cross Sections 59 STA. 9+430 TO 9+620
18364-204-X60	Cross Sections 60 STA. 9+625 TO 9+805.4
18364-204-X61	Cross Sections 61 STA. 9+810 TO 10+000
18364-204-X62	Cross Sections 62 STA. 10+010 TO 10+190
18364-204-X63	Cross Sections 63 STA. 10+200 TO 10+390
18364-204-X64	Cross Sections 64 STA. 10+400 TO 10+580
18364-204-X65	Cross Sections 65 STA. 10+590 TO 10+751.7

Sheet Number	Sheet Title
18364-204-X66	Cross Sections 66 STA. 10+754.4 TO 10+930
18364-204-X67	Cross Sections 67 STA. 10+940 TO 11+120
18364-204-X68	Cross Sections 68 STA. 11+130 TO 11+320
18364-204-X69	Cross Sections 69 STA. 11+330 TO 11+480
18364-204-X70	Cross Sections 70 STA. 11+490 TO 11+670
18364-204-X71	Cross Sections 71 STA. 11+680 TO 11+940
18364-204-X72	Cross Sections 72 STA. 12+010 TO 12+190
18364-204-X73	Cross Sections 73 STA. 12+200 TO 12+190
18364-204-X74	Cross Sections 74 STA. 12+200 TO 12+370
18364-204-X75	Cross Sections 75 STA. 12+380 TO 12+560
18364-204-X76	Cross Sections 76 STA. 12+570 TO 12+740
18364-204-X77	Cross Sections 77 STA. 12+750 TO 12+930
18364-204-X78	Cross Sections 78 STA. 12+935 TO 13+080
18364-204-X79	Cross Sections 79 STA. 13+090 TO 13+220.9
18364-204-X80	Cross Sections 80 STA. 13+228.4 TO 13+400
18364-204-X81	Cross Sections 81 STA. 13+410 TO 13+560
18364-204-X82	Cross Sections 82 STA. 13+570 TO 13+710
18364-204-X83	Cross Sections 83 STA. 13+715 TO 13+880
18364-204-X84	Cross Sections 84 STA. 13+888.2 TO 14+060
18364-204-X85	Cross Sections 85 STA. 14+070 TO 14+250
18364-204-X86	Cross Sections 86 STA. 14+260 TO 14+440
18364-204-X87	Cross Sections 87 STA. 14+450 TO 14+640
18364-204-X88	Cross Sections 88 STA. 14+650 TO 14+830
18364-204-X89	Cross Sections 89 STA. 14+840 TO 15+030
18364-204-X90	Cross Sections 90 STA. 15+040 TO 15+230
18364-204-X91	Cross Sections 91 STA. 15+240 TO 15+430
18364-204-X92	Cross Sections 92 STA. 15+440 TO 15+630
18364-204-X93	Cross Sections 93 STA. 15+640 TO 15+830
18364-204-X94	Cross Sections 94 STA. 15+840 TO 15+919.8

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ANY COPIES OF PDS MAY NOT BE TO SCALE

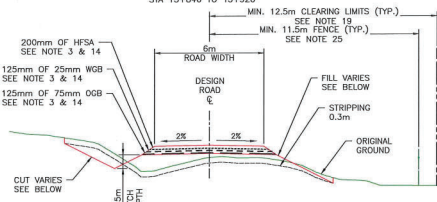
 DWB Consulting Services Ltd. 1075 7 th Ave. S. V1X 9H6 Phone (250) 552-0541 Fax (250) 552-0581	
CLIENT PROJECT CODE ----	DATE 2019-05-24
DESIGNED NUMBER 18364-204-00	REV A

ISSUED FOR CONSTRUCTION



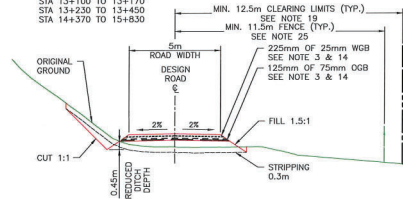
TYPICAL ROAD SECTION 10m WITH V-DITCH

STA 0+000 TO 0+220
STA 15+840 TO 15+920



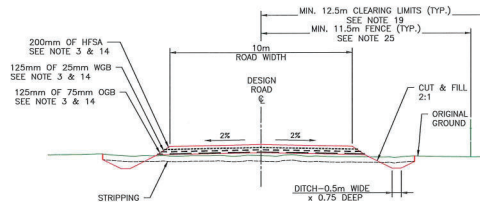
TYPICAL ROAD SECTION 6m WITH V-DITCH

CUT/FILL 1.5:1
STA 0+220 TO 0+470
STA 11+220 TO 11+440
STA 12+030 TO 13+000
STA 13+100 TO 13+170
STA 13+230 TO 13+450
STA 14+370 TO 15+830



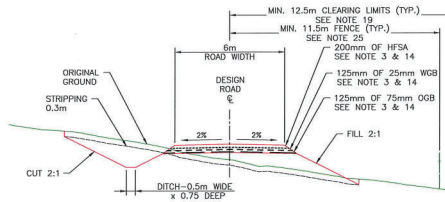
TYPICAL ROAD SECTION 5m WITH V-DITCH

STA 11+450 TO 12+020
STA 13+010 TO 13+090
STA 13+460 TO 14+360



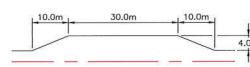
TYPICAL ROAD SECTION 10m WITH FLAT DITCH

STA 0+850 TO 1+080



TYPICAL ROAD SECTION 6m WITH FLAT DITCH

STA 0+480 TO 0+850
STA 1+080 TO 1+658.492
STA 10+890 TO 11+210



ROAD TURNOUT DETAIL

LEGEND:

- EXISTING GROUND
- STRIPPING
- PROPOSED ROAD
- TENSAR TX130S GEOTEXTILE SEE NOTE 17
- TENSAR TX7 GEOTEXTILE SEE NOTE 17
- NON-WOVEN GEOTEXTILE SEE NOTE 16

GENERAL NOTES:

1. ORIGINAL GROUND INFORMATION OBTAINED FROM LIDAR(2017) PROVIDED BY CLIENT. EXISTING GROUND PROFILE, STRIPPING AND SOIL DEPTHS MAY VARY. CONSTRUCTION SURVEY EQUIPMENT IS RECOMMENDED TO CONFIRM ACTUAL CROSS SECTIONS TO BE CONSTRUCTED.
2. NO GEOTECHNICAL INFORMATION AVAILABLE AT TIME OF DESIGN. ROAD CROSS SECTION DESIGN BASED ON TYPICAL SOIL PROPERTIES FROM AASHTO 1993 GUIDE FOR DESIGN OF PAVEMENT STRUCTURES, VAN TILL et al., NCHRP 128, AND MAY CHANGE BASED ON FURTHER TESTING.
3. LOCAL CUT MATERIAL IS ASSUMED SUITABLE FOR SUBGRADE FILLS UNLESS NOTED OTHERWISE.
 - SUBGRADE CONSTRUCTION SHALL BE COMPACTED TO 95% SPD.
 - HESA SHALL BE COMPACTED TO 98% SPD.
 - WGB & OGB SHALL BE COMPACTED TO 98% SPD.
4. CULVERT LENGTHS ARE ASSUMED MINIMUMS ONLY, ADJUST AS REQUIRED FOR CONSTRUCTED CROSS SECTIONS.
5. EXCAVATION OF BELL HOLES AND CUT SLOPE ARMOURING MAY BE REQUIRED AT PROPOSED CULVERT LOCATIONS.
6. CULVERTS ON EXISTING DRAINAGE TO MATCH DRAINAGE PATH. IF DRAINAGE PATH IS GREATER THAN 5% ARMOUR OUTLET POOL.
7. AT A MINIMUM, CONSTRUCTION PRACTICES SHALL COMPLY WITH THE MFLAND ENGINEERING MANUAL, DECEMBER 13, 2018.
8. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BENCHMARKS & ANY UTILITIES.
10. PROPERTY & RIGHT-OF-WAY BOUNDARIES SHOWN ON PLAN & PROFILE PAGES ARE APPROXIMATE ONLY.

ROAD SPECIFICATION NOTES:

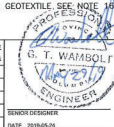
11. DESIGN SPEED 50km/h.
12. FINISHED ROAD SURFACE VARIES, SEE TYPICAL SECTIONS AND STATION RANGES.
13. RIGHT OF WAY TO MAINTAIN MINIMUM OF 3m FROM CUT/FILL SLOPES, OR 12.5% OFFSET, WHICHEVER IS GREATER.
14. SPECIFICATIONS FOR HESA, WGB & OGB TO BE AS PER MoT SS202 TABLE 202-C.
15. TOTAL AGGREGATE DEPTH TO BE 450mm, EXCEPT THROUGH THE GOATHORN VALLEY WHERE WIDTH RESTRICTIONS EXIST, TOTAL DEPTH TO BE 350mm.
16. NON-WOVEN GEOTEXTILE TO BE ARMED 250 OR APPROVED EQUIVALENT.
17. GEOTEXTILE TO BE TENSAR TX130S & TENSAR TX7, OR APPROVED EQUIVALENTS. INSTALL ACCORDING TO MANUFACTURERS REQUIREMENTS & CONFIRM UPON FURTHER TESTING.
18. TYPICAL SECTIONS MAY CHANGE BASED ON FINAL ROAD DESIGN REQUIREMENTS.
19. CLEARING LIMITS TO BE A MINIMUM OF 12.5m FROM ROAD CENTERLINE OR 3.0m BEYOND CUT/FILL LIMITS.

RANGE FENCE SPECIFICATION NOTES

20. POSTS
 - LINE POSTS SHALL BE 2.1m IN LENGTH, 75-100mm IN DIAMETER, PRESSURE TREATED, POINTED AND DOMED, AND DRIVEN TO A MINIMUM DEPTH OF 750mm.
 - BRACE POSTS SHALL BE 2.4m IN LENGTH, 100-125mm IN DIAMETER, PRESSURE TREATED, AND DOMED, AND BE DRIVEN TO A MINIMUM DEPTH OF 1050mm.
21. BARBED WIRE SHALL BE 121/2 GAUGE TWISTED DOUBLE STRAND BARBED WIRE THAT HAS CLASS 1 GALVANIZING. BARBED WIRE SHALL HAVE A BREAKING STRENGTH OF 340kg(950lbs) AND SHALL BE PRETENSIONED TO 275kg(600lbs) AND STAPLED AT 115-135kg(250-300lbs). SMOOTH WIRE SHALL BE 121/2 GAUGE WITH A MINIMUM BREAKING STRENGTH 340kg(950lbs).
22. DROPPERS SHALL BE 35mm DIAMETER WOOD OR EQUIVALENT AND SHALL BE WIRE TIED TO THE FENCE WIRES WITH LOW TENSILE STEEL WIRE.
23. STAPLES SHALL BE 13/4"(35mm) AT A MINIMUM, SLASH POINT, AND HOT TIP GALVANIZED.
24. ALL SPECIFICATIONS BASED ON THE B.C. AGRICULTURAL FENCING HANDBOOK-COMPLETE GUIDE (DECEMBER 2015).
25. FENCE LOCATION TO BE MINIMUM OF 11.5m FROM ROAD CENTERLINE OR 2.0m BEYOND CUT/FILL LIMITS.

TELKWA COAL
LIMITED
TENAS HAUL ROAD

SCALE	AS NOTED	DATE	DESCRIPTION	DRW	CHK	ENG
A	APR 19	2019	ISSUED FOR REVIEW	KAK	KD	TW
B	MAY 19	2019	ISSUED FOR CONSTRUCTION	JAP	KD	TW



DESIGNED	CHK	DATE	2019-01-31
QUALITY CONTROL	CHK	DATE	2019-03-28
QUALITY ASSURANCE	CHK	DATE	2019-03-28
DRAWN	CHK	DATE	2019-03-28

TYPICAL SECTIONS, GENERAL NOTES & SPECIFICATIONS					
54° 38' 11.68"		NAD83	NORTHING:	6056036	DRAWING NUMBER
121° 5' 3.99"		9U	EASTING:	623633	18364-204-01
					KEY
					B

INTENDED TO BE PLOTTED ON 11"x17"
ANY COPIES OF PLOTTED MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

HORIZONTAL CURVE INFORMATION					
Curve #	Radius	Length	IC	B.C.	E.C.
1	48.00	145.08	173.1812 °	0+057.07	0+202.15
2	100.00	38.88	22.2777 °	0+231.98	0+270.87
3	300.00	28.21	5.3881 °	0+762.71	0+790.93
4	30.00	58.19	111.1296 °	0+865.04	0+923.23
5	75.00	115.92	88.5585 °	0+958.04	1+073.96
6	250.00	238.05	54.5572 °	1+209.32	1+447.37
7	300.00	34.95	6.6751 °	1+563.92	1+598.88
8	300.00	86.18	16.4587 °	1+677.29	1+763.47
9	300.00	85.09	16.2507 °	1+867.35	1+952.44
10	300.00	14.09	2.6904 °	2+267.36	2+281.45
11	300.00	108.43	20.7082 °	3+286.62	3+395.05
12	300.00	96.10	18.3545 °	3+781.82	3+877.92
13	300.00	24.49	4.6766 °	4+270.46	4+294.95
14	300.00	53.28	10.1757 °	4+586.71	4+639.99
15	300.00	50.15	9.5787 °	4+768.47	4+818.63
16	300.00	22.69	4.3344 °	5+099.52	5+122.22
17	300.00	40.50	7.7345 °	5+679.60	5+720.09
18	200.00	61.75	17.6907 °	5+950.81	6+012.57
19	280.00	191.27	39.1388 °	6+238.13	6+429.40
20	300.00	7.50	1.4331 °	7+161.23	7+168.73
21	300.00	9.35	1.7865 °	7+345.47	7+354.82
22	00.00	00.00	0.3809 °	7+760.25	7+760.25
23	300.00	61.65	11.7737 °	8+323.80	8+385.44
24	4000.00	416.75	5.9696 °	8+672.36	9+089.12
25	375.00	297.67	45.4789 °	10+398.86	10+696.52
26	160.00	106.83	38.2540 °	11+243.06	11+349.88
27	65.00	70.66	62.2841 °	11+436.13	11+506.79
28	110.00	73.37	38.2181 °	11+529.68	11+603.05
29	30.00	39.75	75.9172 °	11+636.04	11+675.79
30	65.00	38.37	33.8249 °	11+693.72	11+732.10
31	50.00	53.09	60.8373 °	11+763.55	11+816.64
32	100.00	51.40	29.4475 °	11+857.57	11+908.97
33	80.00	18.54	13.2757 °	11+915.04	11+933.58
34	100.00	24.19	13.8607 °	12+009.72	12+033.91
35	500.00	58.06	6.6535 °	12+205.45	12+263.52
36	100.00	25.60	14.6683 °	12+513.63	12+539.23
37	160.00	52.17	18.6805 °	12+743.33	12+795.50
38	100.00	46.07	26.3959 °	12+955.76	13+001.83
39	100.00	32.17	18.4305 °	13+045.17	13+077.33
40	35.00	4.90	8.0260 °	13+090.90	13+095.81
41	35.00	41.01	67.1341 °	13+139.04	13+180.05
42	35.00	53.45	87.5008 °	13+235.76	13+289.21
43	100.00	9.92	5.6816 °	13+368.57	13+378.49
44	160.00	90.00	32.2299 °	13+417.72	13+507.73
45	75.00	30.90	23.6058 °	13+508.68	13+539.58
46	75.00	57.32	43.7917 °	13+566.79	13+624.11
47	40.00	69.31	99.2732 °	13+643.98	13+713.28
48	65.00	42.60	37.5492 °	13+729.88	13+772.48
49	90.00	60.77	38.6869 °	13+780.55	13+841.31

SPEED REDUCTION
20km/h
SPEED REDUCTION
40km/h

SPEED REDUCTION
40km/h

SPEED REDUCTION
20km/h
SPEED REDUCTION
30km/h

SPEED REDUCTION
40km/h

SPEED REDUCTION
40km/h

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40km/h

SPEED REDUCTION
40km/h

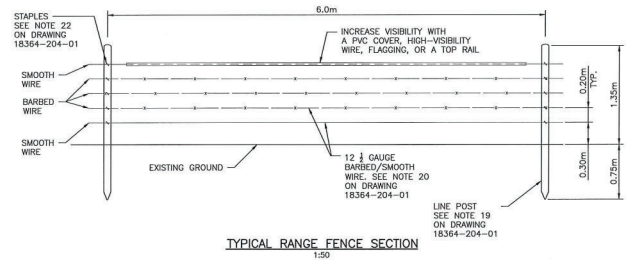
Curve #	Radius	Length	IC	B.C.	E.C.
50	100.00	38.44	22.0266 °	13+893.03	13+931.47
51	100.00	36.27	20.7810 °	13+960.30	13+996.57
52	100.00	67.46	38.6507 °	14+023.54	14+091.00
53	35.00	36.64	59.9836 °	14+155.22	14+191.86
54	35.00	18.48	30.2545 °	14+235.17	14+253.65
55	37.00	85.79	132.8540 °	14+280.29	14+366.08
56	100.00	62.16	35.6165 °	14+398.98	14+461.14
57	130.00	61.44	27.0796 °	14+479.70	14+541.14
58	100.00	36.76	21.0636 °	14+585.26	14+622.02
59	120.00	48.09	22.9625 °	14+666.91	14+715.00
60	500.00	38.72	4.4368 °	14+970.15	15+008.87
61	100.00	83.68	47.9428 °	15+162.64	15+246.31
62	400.00	214.51	30.7269 °	15+293.27	15+507.78
63	100.00	62.92	36.0508 °	15+560.94	15+623.86
64	100.00	86.38	49.4943 °	15+719.06	15+805.45
65	20.00	25.88	74.1323 °	15+852.42	15+878.30

SPEED REDUCTION
20km/h
SPEED REDUCTION
30km/h

SPEED REDUCTION
20km/h

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS, & TYPICAL SECTIONS SEE DRAWING 18364-204-01.
2. FOR PLAN & PROFILE SEE DRAWINGS 18364-204-P1 TO 18364-204-P16.
3. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
4. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X94.



SCALE AS NOTED		DATE 2019-05-24	
REV	DATE	DESCRIPTION	BY
1	APR 18	DESIGNED FOR REVIEW	DMK
2	MAY 18	DESIGNED FOR CONSTRUCTION	JAP

DATE 2019-05-24

DWB Consulting Services Ltd.		DATE 2019-05-24	
REV	DATE	DESCRIPTION	BY
1	APR 18	DESIGNED FOR REVIEW	DMK
2	MAY 18	DESIGNED FOR CONSTRUCTION	JAP

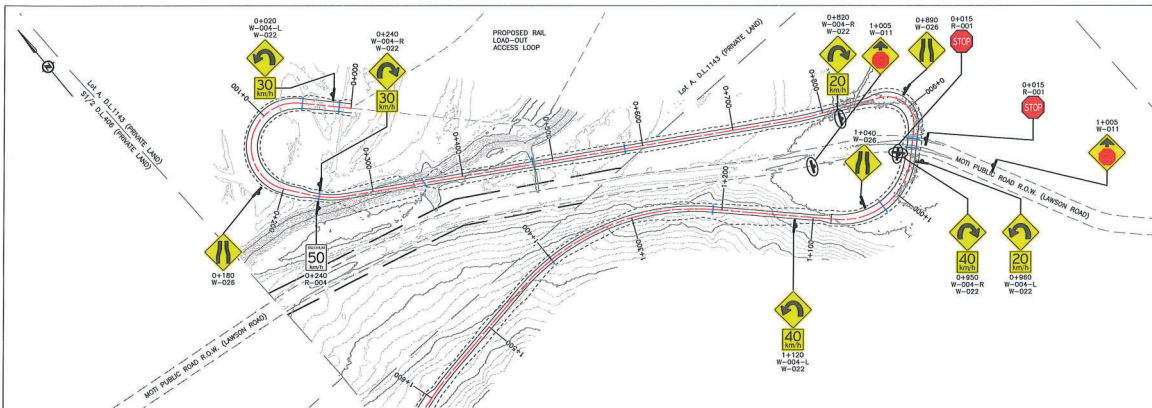
TELKWA COAL LIMITED		DATE 2019-05-24	
REV	DATE	DESCRIPTION	BY
1	APR 18	DESIGNED FOR REVIEW	DMK
2	MAY 18	DESIGNED FOR CONSTRUCTION	JAP

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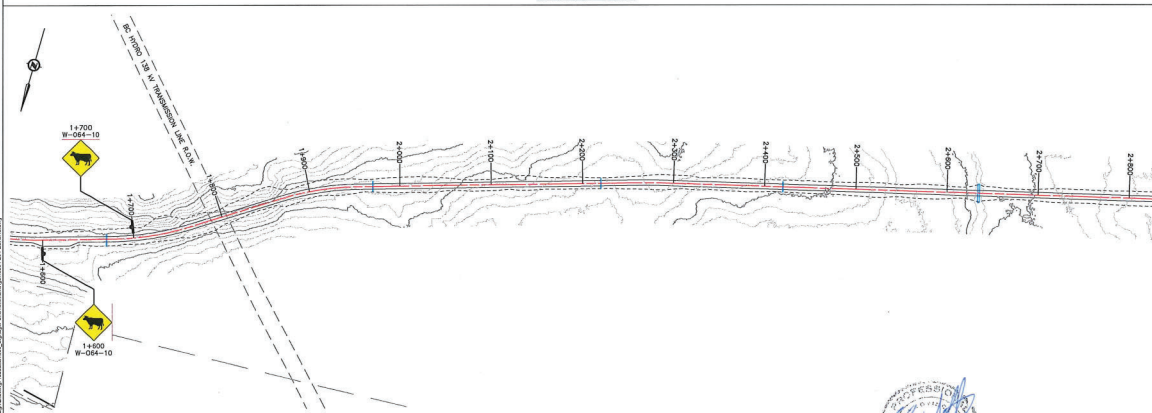
ISSUED FOR CONSTRUCTION

TELKWA COAL
LIMITED
TENAS HAUL ROAD

HORIZONTAL CURVE TABLE & SECTION		DATE 2019-05-24	
REV	DATE	DESCRIPTION	BY
1	APR 18	DESIGNED FOR REVIEW	DMK
2	MAY 18	DESIGNED FOR CONSTRUCTION	JAP



0+000 TO 1+600



1+600 TO 2+800

- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. ALL SIGNS SHALL MEET MINIMUM REQUIREMENTS OF THE "Manual of Standard Traffic Signs & Pavement Markings", 6th Edn, SEPT. 2005.

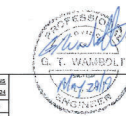
LEGEND:

- PROPOSED ROAD
- CUT/FILL LIMITS
- NEW CULVERT
- PRIVATE LAND
- ROAD/UTILITY R.O.W.
- GRAZING PERMIT

INTENDED TO BE PLOTTED ON 11"X17"
ANY COPIES - FOR MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

SCALE 1:4000			CAD FILE NAME 18364-204-S1.DWG		
NO.	DATE	DESCRIPTION	DATE	CHK	APP
1	18/01/18	ISSUED FOR REVIEW	18/01/18	HS	TW
2	18/01/18	ISSUED FOR CONSTRUCTION	18/01/18	JAP	HS



DWB Consulting Services Ltd.		
DESIGNED	BY DATE	2018-01-18
QUALITY CHECKED	BY DATE	2018-01-18
QUALITY ASSURANCE	BY DATE	2018-01-18
DRAWN	BY DATE	2018-01-18

TELKWA COAL
LIMITED

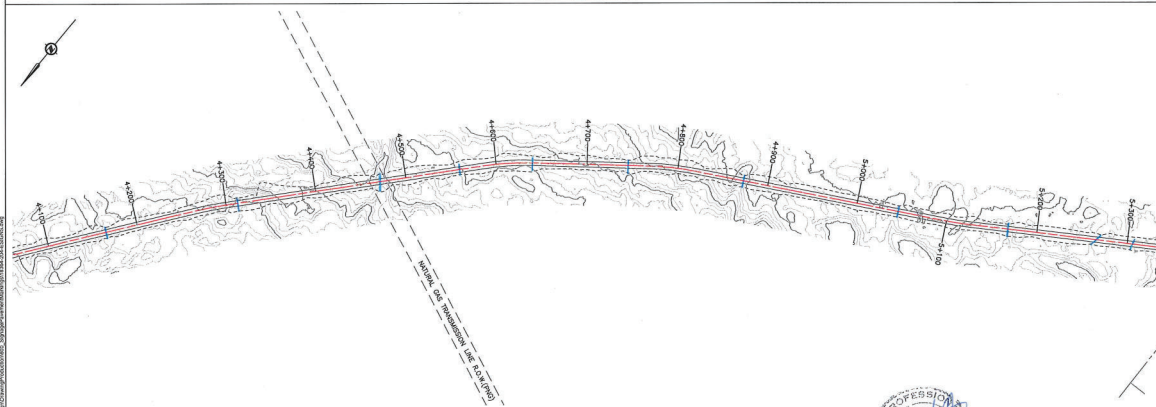
TENAS HAUL ROAD
STA. 0+000 TO 2+800

Traffic Signs - Sheet 1

LATITUDE	54° 38' 11.63"	RANOS	NORTHINGS	6000038	DESIGNED NUMBER	18364-204-S1	REV
LONGITUDE	127° 0' 3.97"	BU	EASTINGS	622633			B



2+800 TO 4+100



4+100 TO 5+300

- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. ALL SIGNS SHALL MEET MINIMUM REQUIREMENTS OF THE "Manual of Standard Traffic Signs & Pavement Markings", BC MoT, SEPT. 2020.

LEGEND:

- PROPOSED ROAD
- CUT/FILL LIMITS
- NEW CULVERT
- PRIVATE LAND
- ROAD/UTILITY R.O.W.
- GRAZING PERMIT

TELKWA COAL
LIMITED

TENAS HAUL ROAD
STA. 2+800 TO 5+300

Traffic Signs - Sheet 2

INTENDED TO BE PLOTTED ON 11"x17"
ANY COPIES OF THIS MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

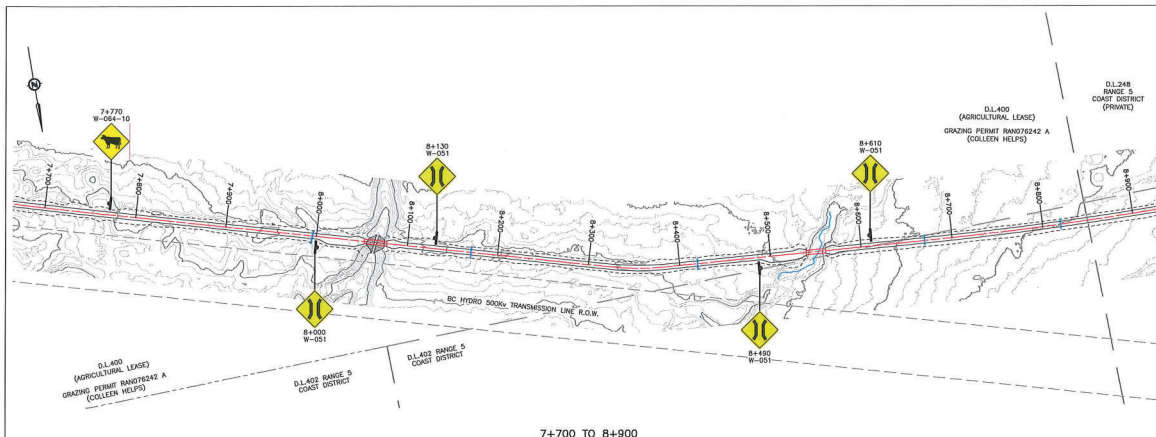
SCALE 1:4000		CAD FILENAME 18364-204-SS2.dwg	
REV DATE DESCRIPTION		DATE	
1	MAY 18	ISSUED FOR REVIEW	2018-05-18
2	MAY 18	ISSUED FOR CONSTRUCTION	2018-05-18



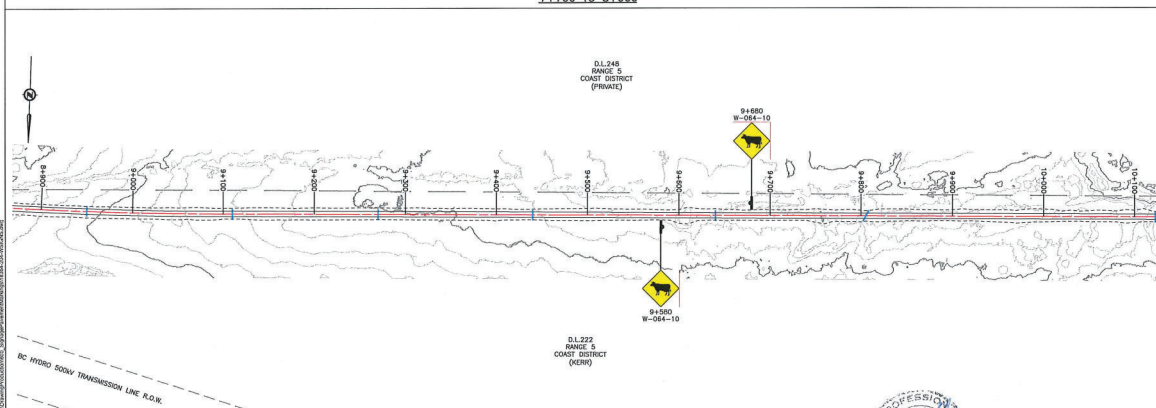
SENIOR DESIGNER
DATE 2018-05-18

DESIGNED BY DATE 2018-05-18	
QUALITY ASSURANCE BY DATE 2018-05-18	
DRAWN BY DATE 2018-05-18	

LATITUDE	54° 38' 11.88"	NAD83	NORTHING	6050108	REV
LONGITUDE	127° 0' 3.96"	83	EASTING	620313	18364-204-S2



7+700 TO 8+900



8+900 TO 10+100

NOTES:

1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
2. DESIGN SPEED 50km/h.
3. ALL SIGNS SHALL MEET MINIMUM REQUIREMENTS OF THE "Manual of Standard Traffic Signs & Pavement Markings", BC M35, SEPT. 2000.

LEGEND:

- PROPOSED ROAD
- CUT/FILL LIMITS
- NEW CULVERT
- PRIVATE LAND
- ROAD/UTILITY R.O.W.
- GRAZING PERMIT

TELKWA COAL
LIMITED

TENAS HAUL ROAD
STA. 7+700 TO 10+100

Traffic Signs - Sheet 4

INTENDED TO BE PLOTTED ON 11"x17"
ANY COPIES OF THIS MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

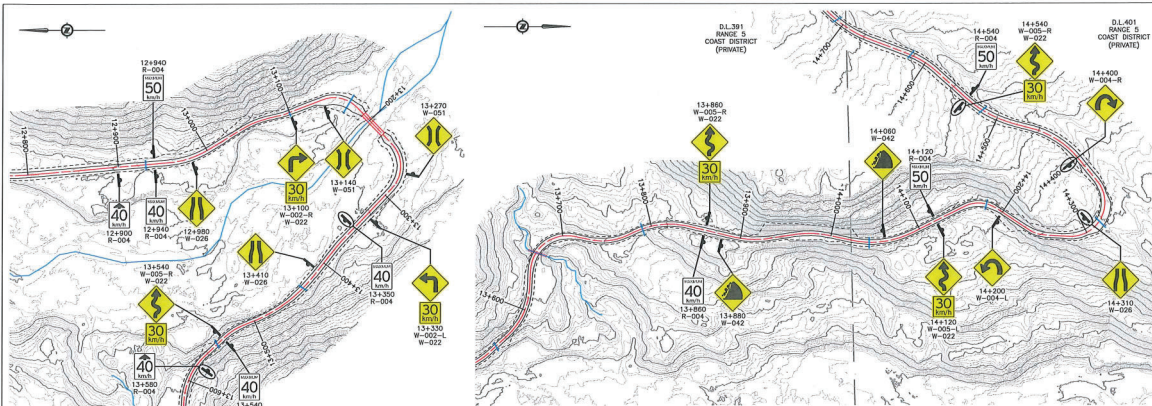
SCALE 1:4000		CAD FILENAME 18364-204-WD102			
		DATE 2018-05-2			
REV	DATE	DESCRIPTION	DRW	CHK	ENG
A	MAY 19	ISSUED FOR REVIEW	WG	RD	TW
B	MAY 19	ISSUED FOR CONSTRUCTION	JAP	RD	TW



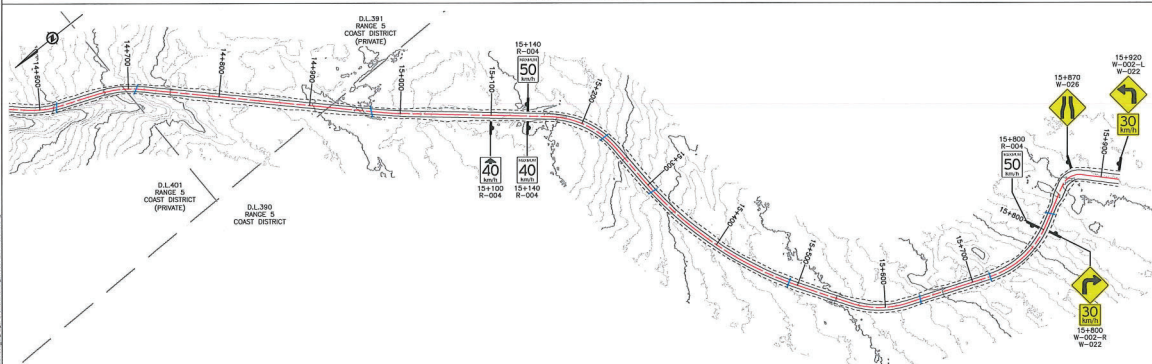
DESIGNER
DATE: 2018-05-24

DWB Consulting Services Ltd.	
11111 11th Ave. S.E.	Winnipeg, R3B 3Y9
Phone: (204) 944-0001	Fax: (204) 944-0001
DESIGNED	WJS DATE: 2018-05-24
QUALITY CONTROL	WJS DATE: 2018-05-24
QUALITY ASSURANCE	WJS DATE: 2018-05-24
DRWING	WJS DATE: 2018-05-24

LATITUDE		NAD83		NORTHING		Easting		UTM	
49° 38' 11.88"	107° 0' 2.88"	6000000	6000000	18364-204-S4	B				



12+800 TO 14+700

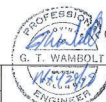


14+600 TO 15+920

- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. ALL SIGNS SHALL MEET MINIMUM REQUIREMENTS OF THE "Manual of Standard Traffic Signs & Pavement Markings", 60th Edn, SEPT. 2000.

LEGEND:

- PROPOSED ROAD
- CUT/FILL LIMITS
- NEW CULVERT
- PRIVATE LAND
- ROAD/UTILITY R.O.W.
- GRAZING PERMIT



DWB Consulting Services Ltd.
11111 111th Ave.
Edmonton, AB T6E 0K1
Phone (780) 443-0001 Fax (780) 443-0001

DESIGNED BY DATE 2019-03-04
QUALITY CHECKED BY DATE 2019-03-04
DRAWN BY DATE 2019-03-04

TELKWA COAL
LIMITED

TENAS HAUL ROAD
STA. 12+800 TO 15+920

Traffic Signs - Sheet 6

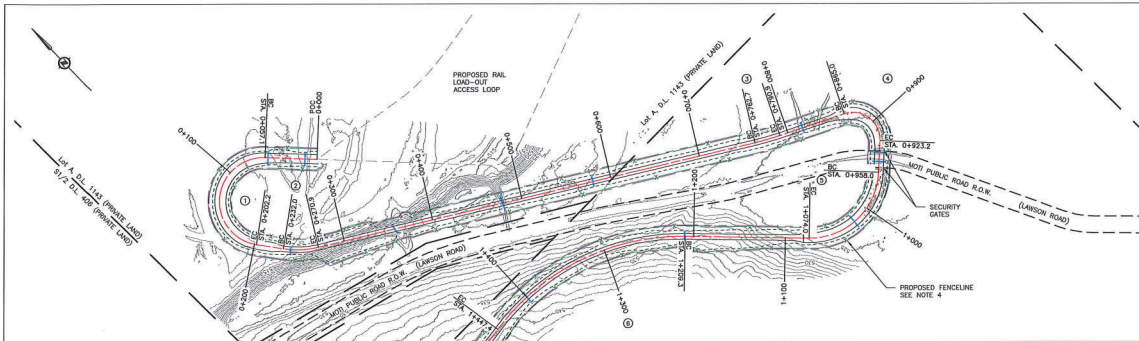
Latitude: 54° 38' 11.80" N Longitude: 107° 0' 3.90" W
Easting: 623633 Northing: 6999008
Sheet: 18364-204-S6

INTENDED TO BE PLOTTED ON 11"x17"
ANY COPIES OF THIS MAY NOT BE TO SCALE

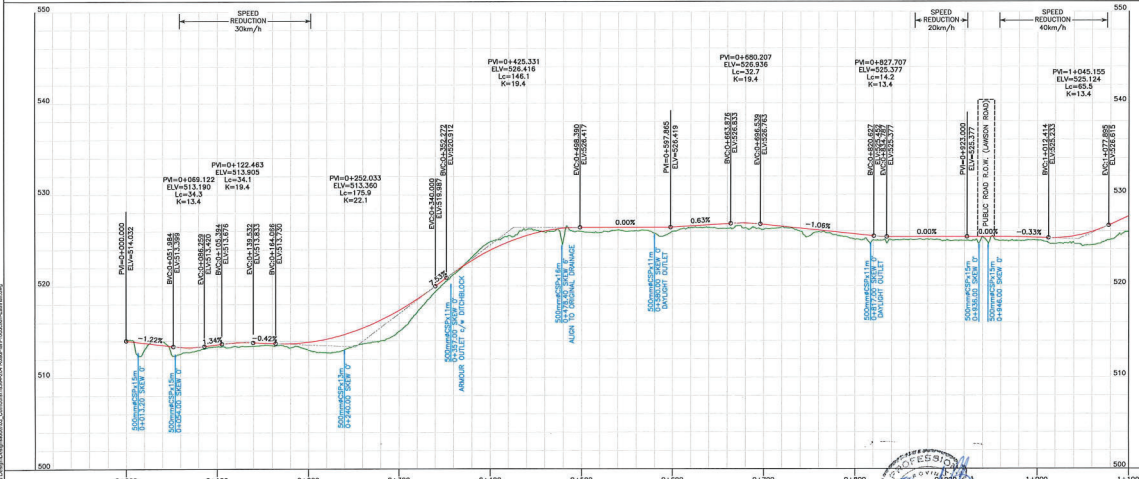
ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	BY	CHK	APP
1	MAY 15	ISSUED FOR REVIEW	YES	NO	NO
2	MAY 15	ISSUED FOR CONSTRUCTION	APP	NO	NO

DATE: 2019-05-24



SOILS	ROAD WIDTH/WIDENINGS (m)	CUT/FILL SLOPE
10m	10m	1:1
6m	6m	1:1
10m	10m	1:1



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCE LINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PROPOSED FENCELINE
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

SCALE HORIZ 1:4000 VERT 1:400

DATE 2019-05-24

DESIGNED 2019-05-24

DRAWN 2019-05-24

CHECKED 2019-05-24

APPROVED 2019-05-24

PROJECT TELKWA COAL LIMITED

STATION STA 0+000 TO 1+000

PLAN & PROFILE 1

DATE 2019-05-24

DESIGNED 2019-05-24

DRAWN 2019-05-24

CHECKED 2019-05-24

APPROVED 2019-05-24

ISSUED FOR CONSTRUCTION

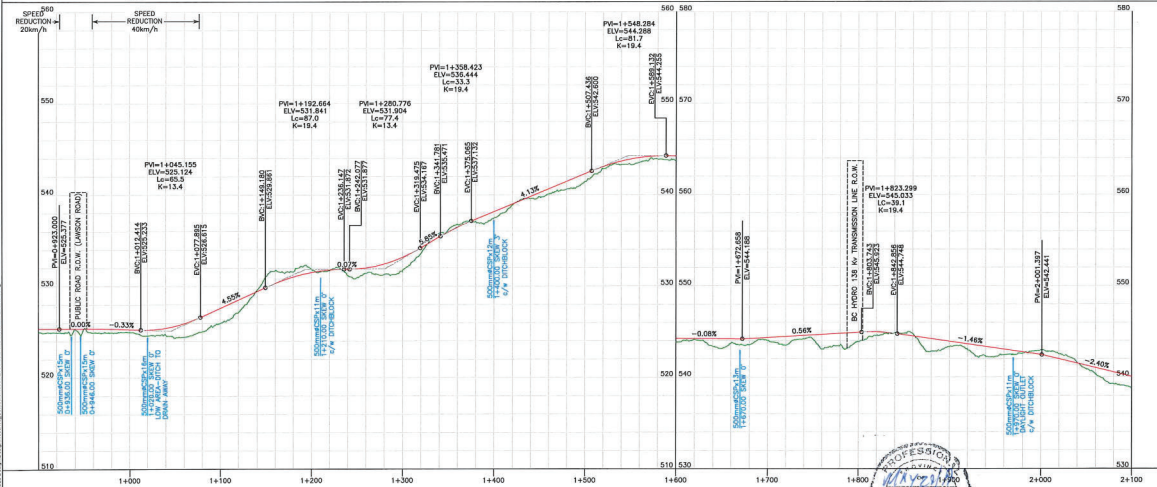
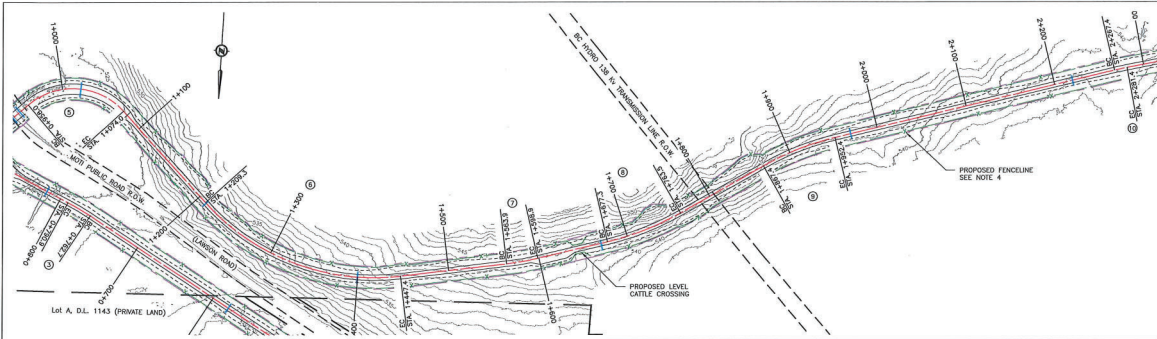
DATE 2019-05-24

DESIGNED 2019-05-24

DRAWN 2019-05-24

CHECKED 2019-05-24

APPROVED 2019-05-24



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 1+000 TO 2+000

INTENDED TO BE PLOTTED ON 11"X17"
ANY COPIES OF THIS MAY NOT BE TO SCALE

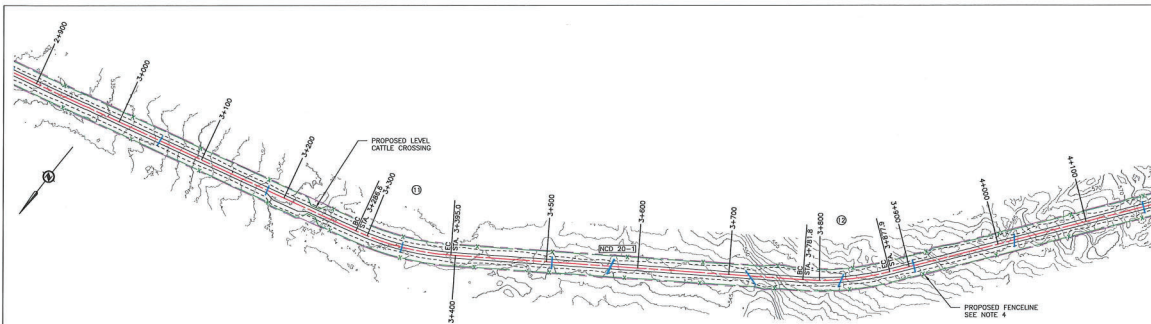
ISSUED FOR CONSTRUCTION

SCALE		HORIZ. 1:4000 VERT. 1:400		CAD FILENAME: 18364-204-02A.dwg		DATE: 2019-05-24	
REV	DATE	DESCRIPTION	BY	CHK	APP	DATE	
1	APR 18	DESIGNED FOR REVIEW	DMV	MD	MD		
2	MAY 18	DESIGNED FOR CONSTRUCTION	JAP	MD	MD		

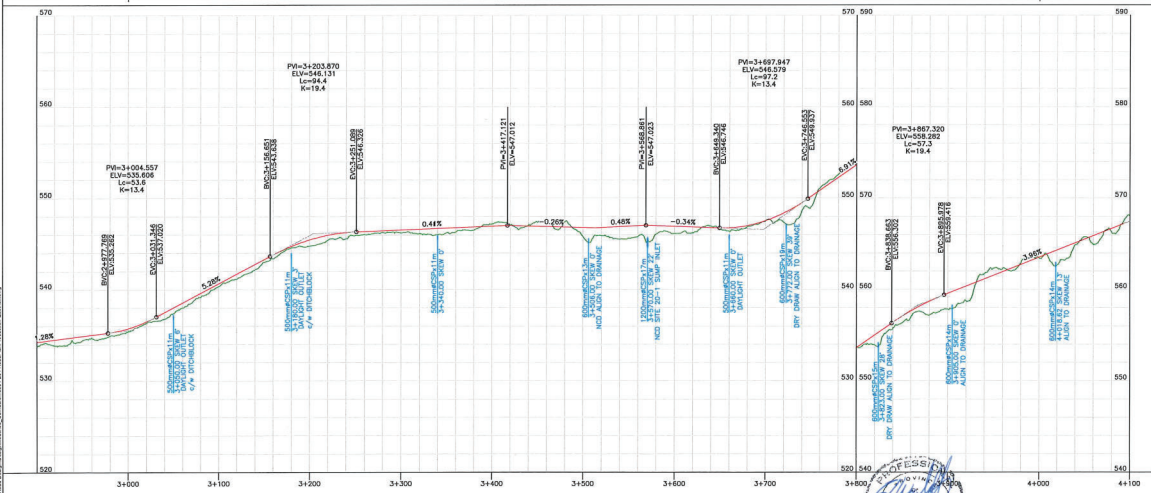
DESIGNED BY
G. T. WAMBOLD
ENGINEER

DWB Consulting Services Ltd.		DATE: 2019-05-24	
DESIGNED	BY	DATE	2019-05-14
QUALITY ASSURANCE	BY	DATE	2019-05-28
DRAWN	BY	DATE	2019-05-11

PLAN & PROFILE 2			
LATITUDE	54° 38' 11.68"	NAD83	NORTHING: 690908
LONGITUDE	127° 17' 3.98"	W	EASTING: 629633
18364-204-P2			B



SOILS	SILTS/CLAYS
ROAD WIDTH/WIDENINGS (m)	6m
CUT/FILL SLOPE	CUT 2:0.1.0/ FILL 2:0.1.0



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PROPOSED FENCELINE
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 3+000 TO 4+000

INTENDED TO BE PRINTED ON 11"x17"
ANY COPIES OF THIS MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRW	CHK	APP
1	APR 15	DESIGNED FOR REVIEW	DRW	OK	TW
2	MAY 18	REVISED FOR CONSTRUCTION	APP	NO	TW

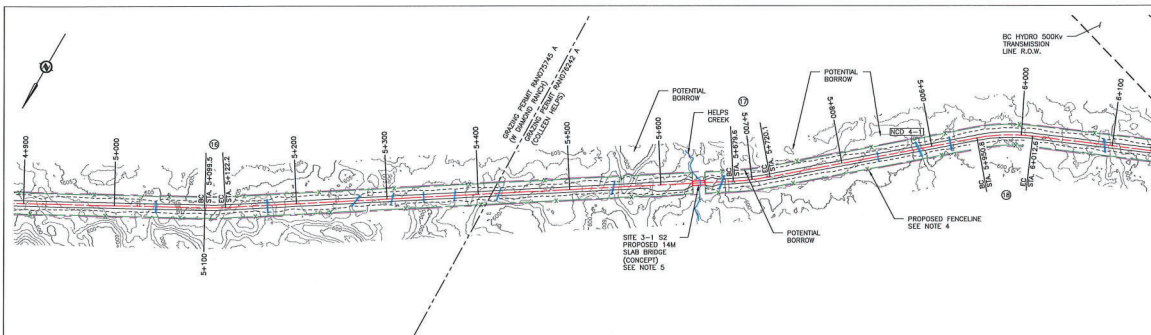
DATE: 2019-05-24
DESIGNER: [Signature]
ENGINEER: [Signature]

DWB Consulting Services Ltd.
P.O. Box 1000
Edmonton, Alberta T6C 2E1
Phone (780) 562-0501 Fax (780) 562-0501

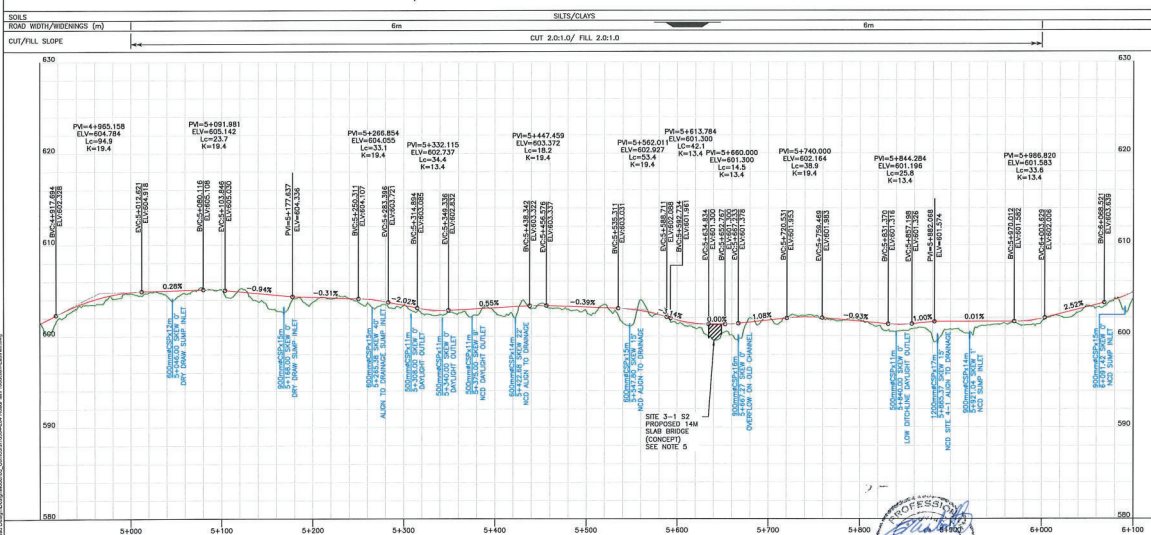
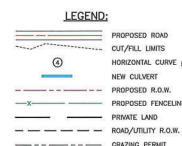
DESIGNED: [Signature] DATE: 2018-03-14
QUALITY CONTROL: [Signature] DATE: 2018-03-14
DRAWN: [Signature] DATE: 2018-03-14

PLAN & PROFILE 4			
DESIGNED: [Signature]	DATE: 2018-03-14	DESIGNED: [Signature]	DATE: 2018-03-14
QUALITY CONTROL: [Signature]	DATE: 2018-03-14	QUALITY CONTROL: [Signature]	DATE: 2018-03-14
DRAWN: [Signature]	DATE: 2018-03-14	DRAWN: [Signature]	DATE: 2018-03-14

LATITUDE: 54° 38' 11.68"	NAD83	NORTHING: 690008	REV
LONGITUDE: 127° 0' 2.98"	W	EASTING: 629033	18364-204-P4



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.



INTENDED TO BE PLOTTED ON 11"X17"
ANY OTHER SIZE THAN MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	BY	CHK	APP
1	APR 18	ISSUED FOR REVIEW	AKK	NO	NO
2	MAY 18	ISSUED FOR CONSTRUCTION	AKK	NO	NO

SCALE	HORIZ	VERT
1:4000	1:400	1:400

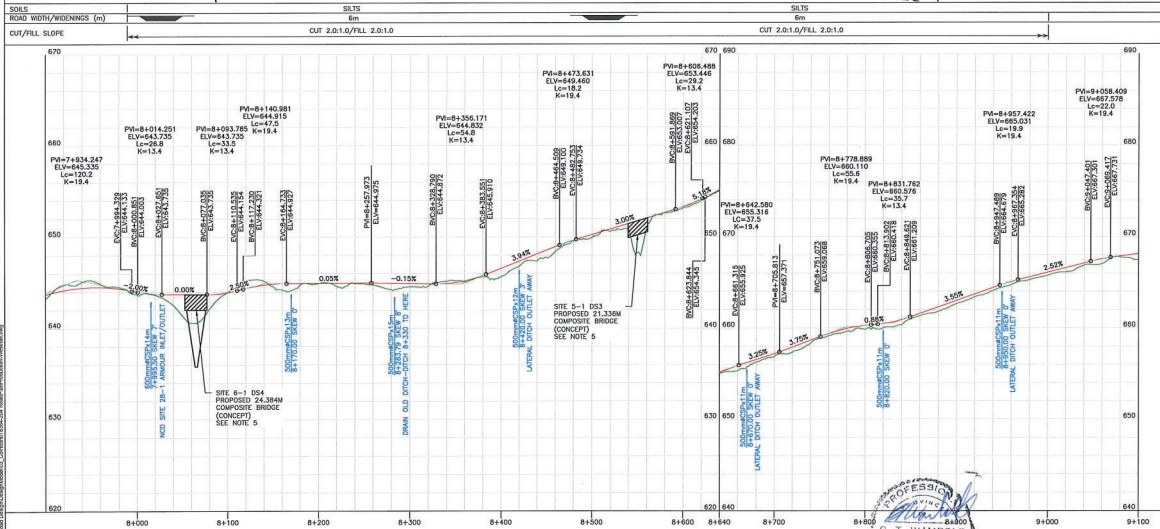
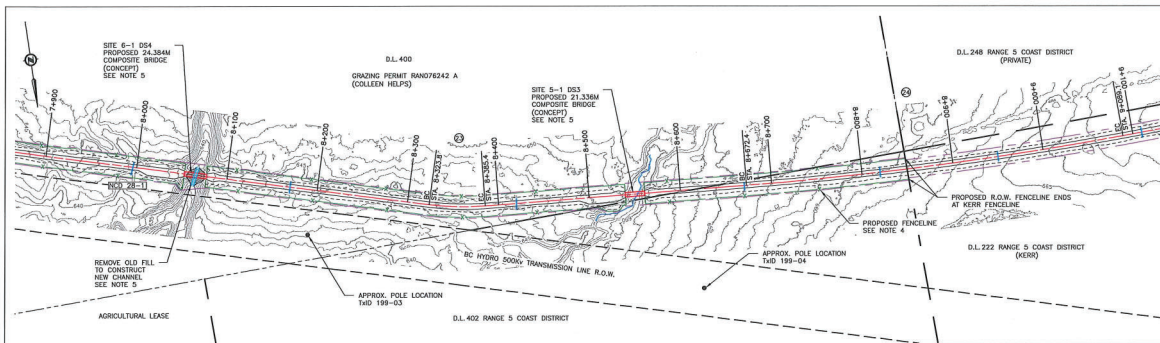
DESIGNED	DATE	2018-03-15
QUALITY CHECKED	DATE	2018-03-15
DRAWN	DATE	2018-03-15

DESIGNED	DATE	2018-03-15
QUALITY CHECKED	DATE	2018-03-15
DRAWN	DATE	2018-03-15

TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 5+000 TO 6+000

PLAN & PROFILE 6

LATITUDE	54° 38' 11.80"	NAD83	EASTING	608000	REV	18364-204-P6
LONGITUDE	127° 0' 3.90"	W	EASTING	623631	REV	B



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X94.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PROPOSED FENCELINE
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

SCALE: HORIZ. 1:4000 VERT. 1:400

DATE: 2018-05-24

DESIGNED FOR: ISSUED FOR CONSTRUCTION

DATE: 2018-05-24

PROFESSIONAL ENGINEER

G. T. WAMBOLT

REGISTERED PROFESSIONAL ENGINEER

STATE OF TEXAS

NO. 12345

DWB Consulting Services Ltd.

10000 Main Street, Suite 100, Dallas, TX 75201

PHONE: (214) 960-0001 FAX: (214) 960-0001

DESIGNED BY: JG DATE: 2018-05-24

QUALITY CONTROL: JG DATE: 2018-05-24

QUALITY ASSURANCE: JG DATE: 2018-05-24

DRAWN BY: JG DATE: 2018-05-24

INTENDED TO BE PLOTTED ON 11"X17"

ANY COPIES OF THIS MAY NOT BE TO SCALE

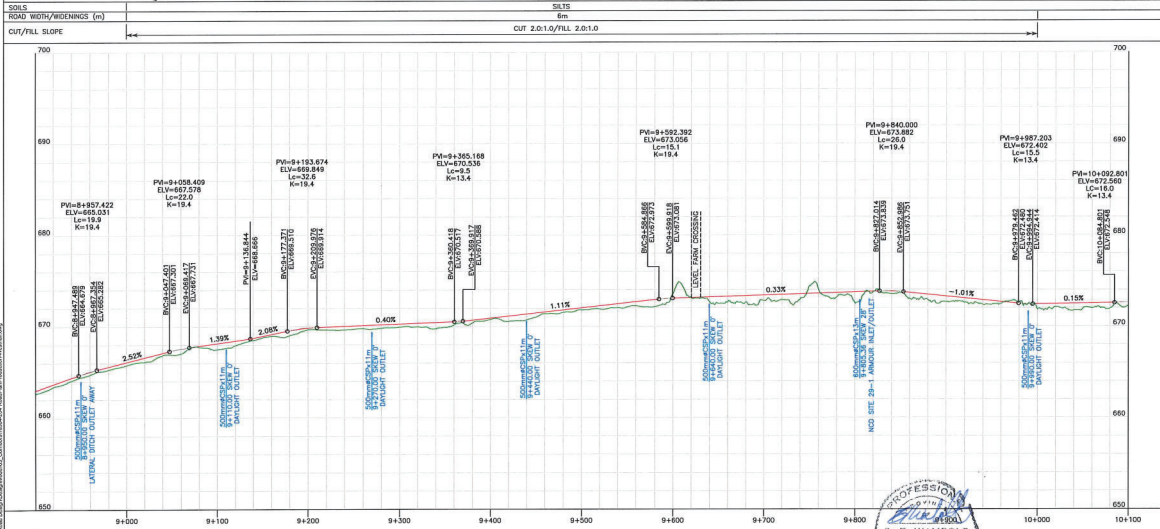
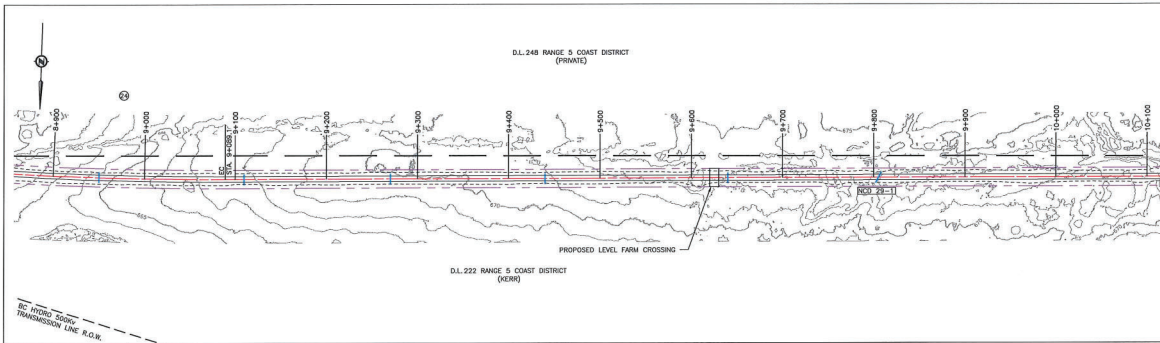
ISSUED FOR CONSTRUCTION

PLAN & PROFILE 9

STA. 8+000 TO 9+000

LATITUDE: 34° 38' 11.87" **NAD83** **EASTING:** 620036 **NORTHING:** 620036 **DRAWING NUMBER:** 18364-204-P9 **REV:** 1

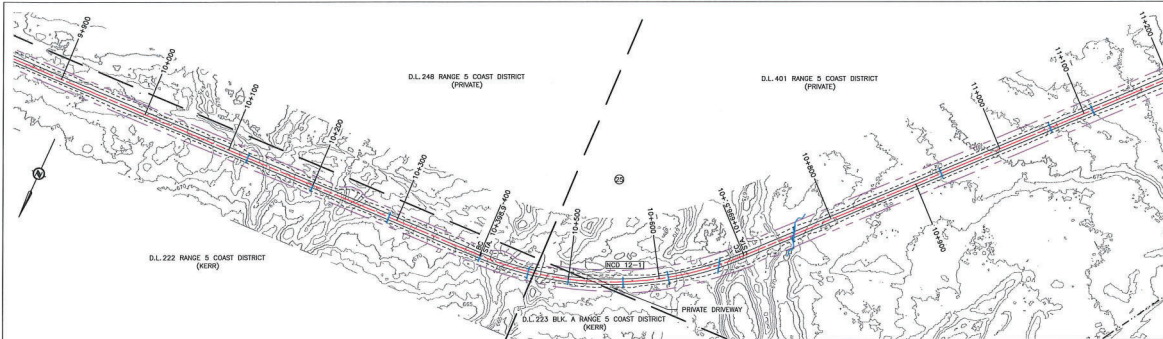
LONGITUDE: 121° 12' 3.97" **W** **EASTING:** 620033



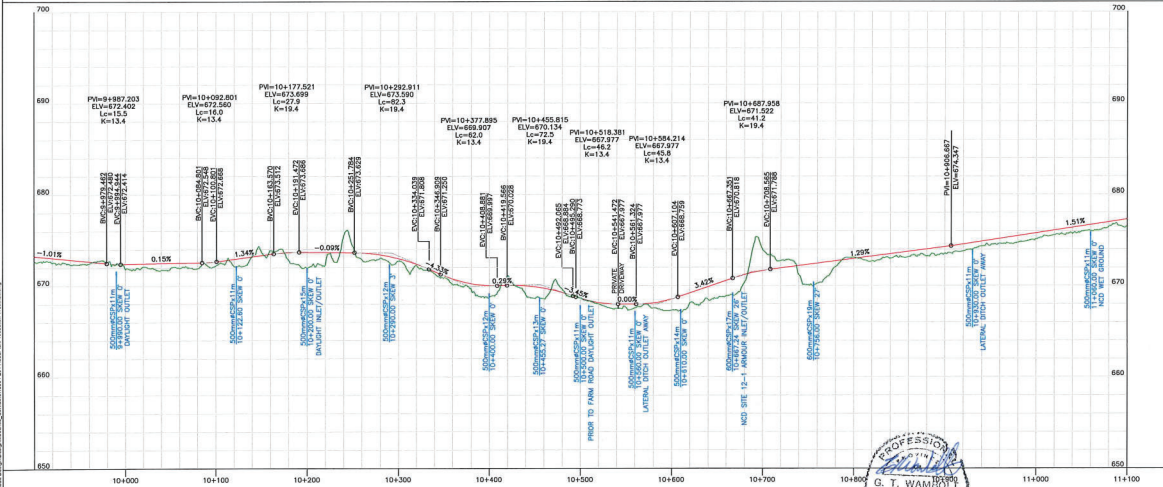
- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

SCALE: HORIZ. 1:4000 VERT. 1:400 CAD/FERMANH: 13364-204-01-02-03-04-05-06-07-08-09-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-121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SOILS	6m
ROAD WIDTH/WIDTHS (m)	CUT 2.0/1.0 FILL 2.0/1.0
CUT/FILL SLOPE	



SCALE: HORIZ. 1:4000 VERT. 1:400		CAD FILE NAME: 18364-204-X11.DWG		DATE: 2018-05-24	
REV	DATE	DESCRIPTION	BY	CHECKED	DATE
1	APR 18	ISSUED FOR REVIEW	AW	NO	2018-05-24
2	MAY 18	ISSUED FOR CONSTRUCTION	AW	NO	2018-05-24

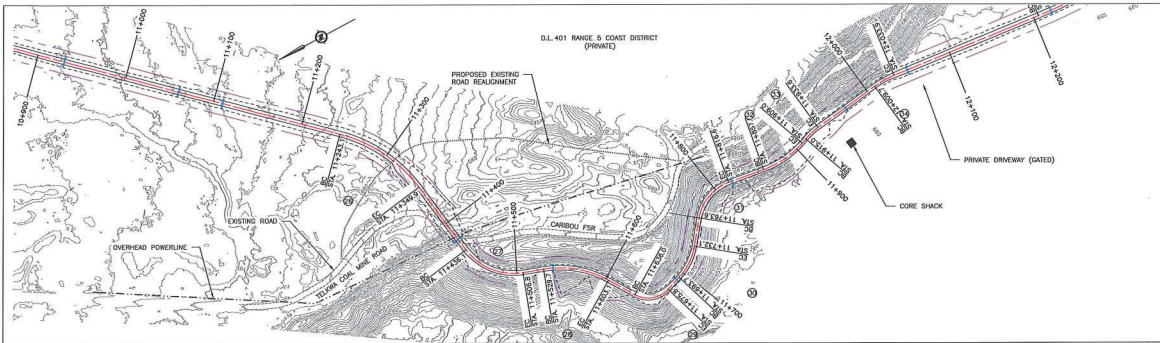
- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PROPOSED FENCELINE
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

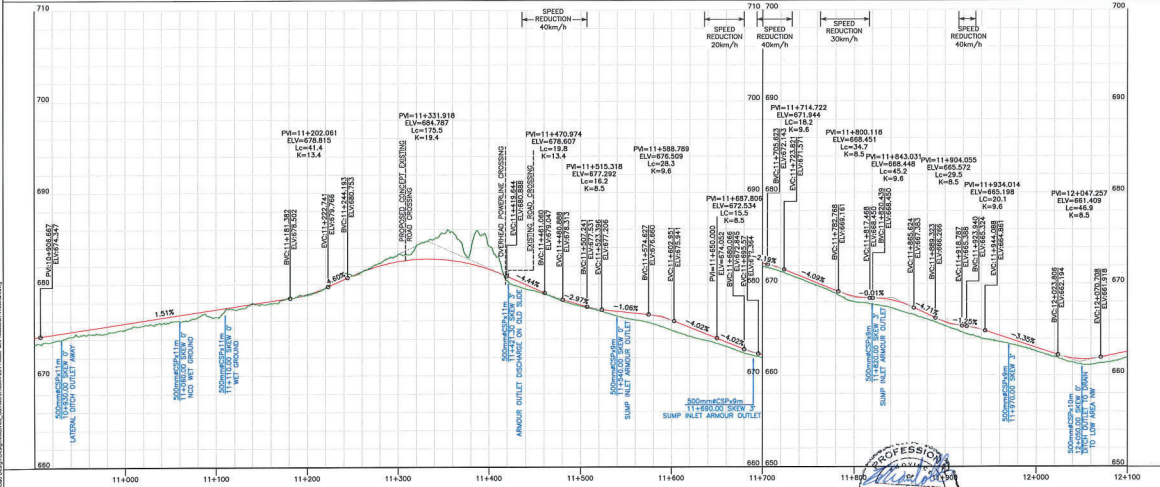
TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 10+000 TO 11+000

DWB Consulting Services Ltd.	
DESIGNED	2018-05-24
QUALITY CONTROL	2018-05-24
QUALITY ASSURANCE	2018-05-24
DRAWN	2018-05-24

PLAN & PROFILE 11	
LATITUDE: 54° 38' 11.68"	NAD83
LONGITUDE: 127° 2' 3.98"	20
EASTING: 620323	
NORTHING: 6566104	
DRAWING NUMBER: 18364-204-P11	REV: B



SOILS	SILTS	6m	SILTS	6m
CUT/FILL SLOPE	CUT 2.0:1.0/FILL 2.0:1.0	CUT 1.5:1.0/FILL 1.5:1.0	CUT 1.0:1.0/FILL 1.5:1.0	6m



- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 18364-204-01 & 18364-204-02.
 5. PROPOSED BRIDGE CROSSINGS WILL REQUIRE A SITE PLAN SURVEY & DESIGN.
 6. FOR HORIZONTAL CURVE INFORMATION SEE DRAWING 18364-204-02.
 7. FOR MASS HAUL SEE DRAWINGS 18364-204-M1 TO 18364-204-M16.
 8. FOR CROSS SECTIONS SEE DRAWINGS 18364-204-X1 TO 18364-204-X34.

- LEGEND:**
- PROPOSED ROAD
 - CUT/FILL LIMITS
 - HORIZONTAL CURVE #
 - NEW CULVERT
 - PROPOSED R.O.W.
 - PROPOSED FENCELINE
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRAZING PERMIT

INTENDED TO BE PLOTTED ON 11"X17"
ANY COVER OR FOLD MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

SCALE: HORIZ. 1:4000 VERT. 1:400		CAD FILE NAME: 18364-204-01.DWG				
		DATE: 2019-05-24				
REV	DATE	DESCRIPTION	DWG	CHK	ENG	ENGINEER
A	APR.19	ISSUED FOR REVIEW	KAK	RD	TW	
B	MAY.19	ISSUED FOR CONSTRUCTION	JAP	RD	TW	
			SENIOR DESIGNER			
			DATE: 2019-05-24			

PROFESSIONAL ENGINEER
G. T. WAMBOL

DWB Consulting Services Ltd.
111-111-111-111
111-111-111-111
111-111-111-111

DESIGNED: SD DATE: 2019-05-24
QUALITY ASSURANCE: SD DATE: 2019-05-24
DRAWN: SD DATE: 2019-05-24

TELKWA COAL LIMITED
TENAS HAUL ROAD
STA. 11+000 TO 12+000

PLAN & PROFILE 12

LATITUDE: 54° 38' 11.67" N LONGITUDE: 127° 0' 3.94" W

DATE: 2019-05-24

18364-204-P12