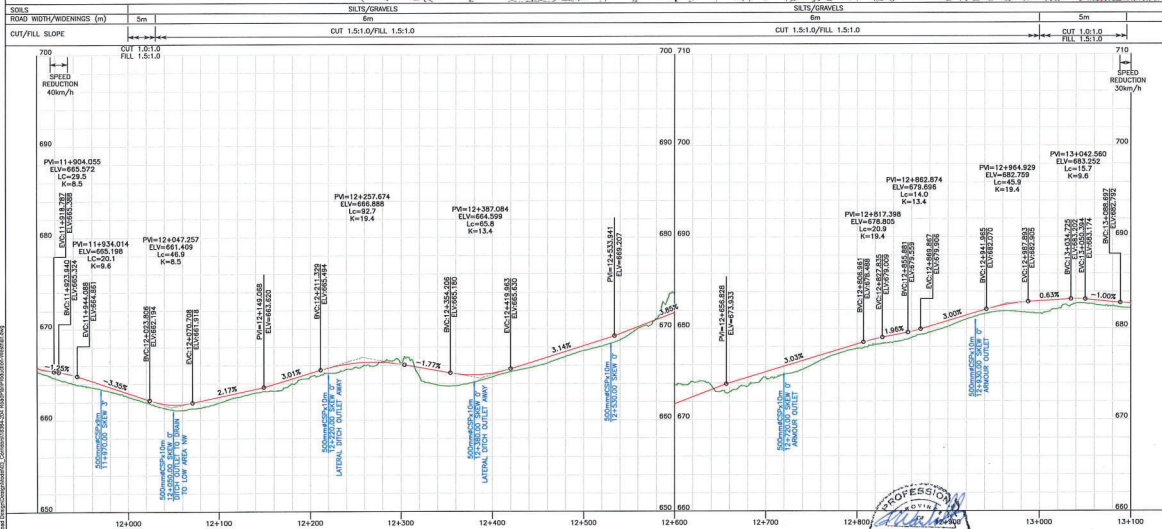
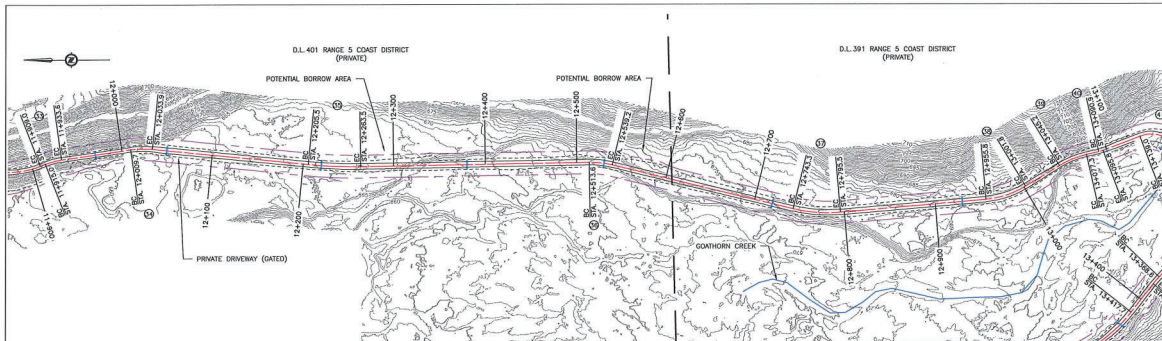




- NOTES:**
1. CONTOUR ELEVATIONS ARE PRESENTED AT 1.0m INTERVALS.
 2. DESIGN SPEED 50km/h.
 3. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.
 4. PROPOSED RANGE FENCELINE IS 1.0m INSIDE PROPOSED R.O.W. FOR RANGE FENCE SPECIFICATIONS & SECTION SEE DRAWINGS 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-M16.
 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 DESIGNER: G. T. WAMBOLT			DESIGNED: 2019-05-24 QUALITY ASSURANCE: 2019-05-24 DRAWN: 2019-05-24		
REV	DATE	DESCRIPTION	BY	CHECKED	DATE
1	APR 18	ISSUED FOR REVIEW	JMK	MD	TM
2	MAY 18	ISSUED FOR CONSTRUCTION	JMK	MD	TM

TELKWA COAL LIMITED

TENAS HAUL ROAD

STA. 12+000 TO 13+000

PLAN & PROFILE 13

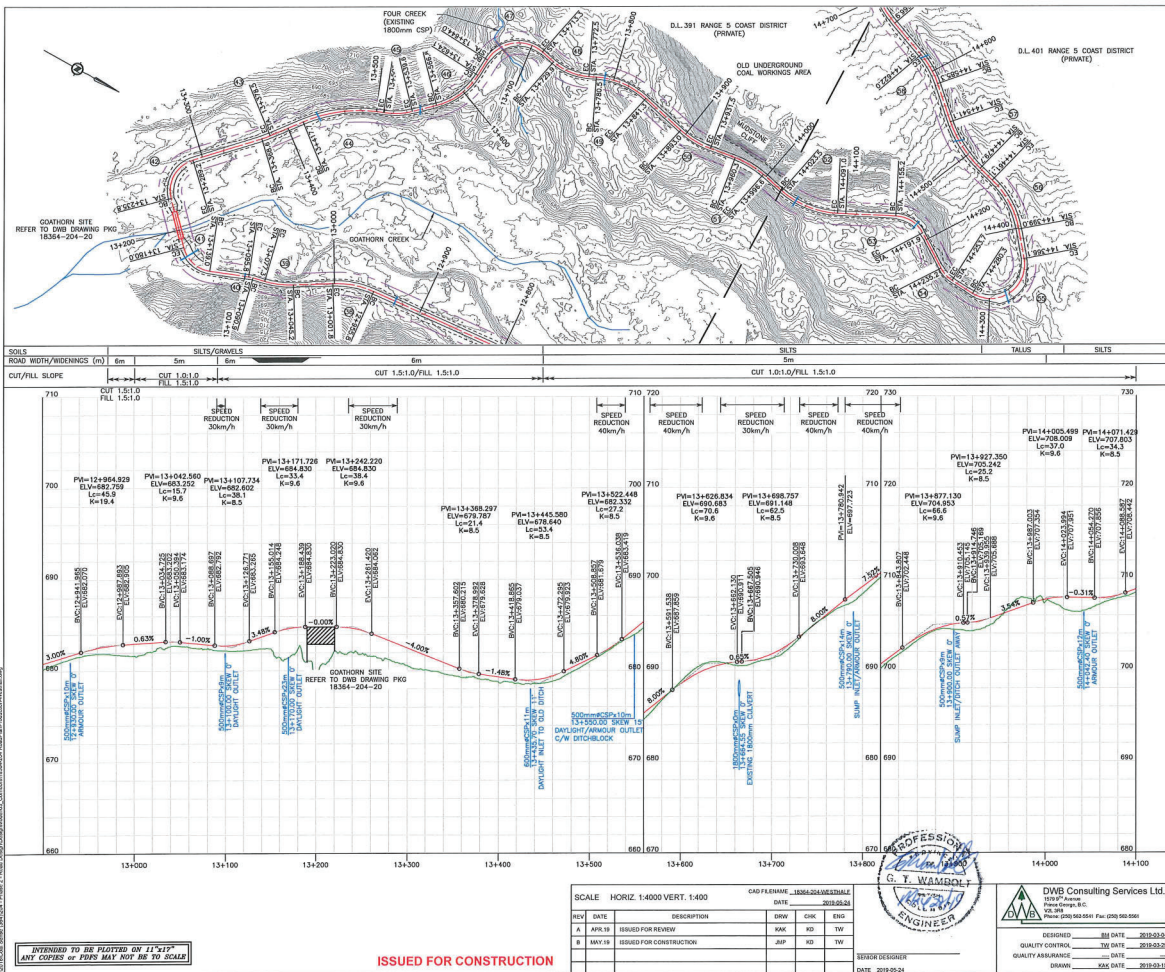
LATITUDE: 54° 38' 11.60" N LONGITUDE: 127° 0' 3.90" W

PROJECT NO: 18364-204-P13

DATE: 2019-05-24

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

ISSUED FOR CONSTRUCTION



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

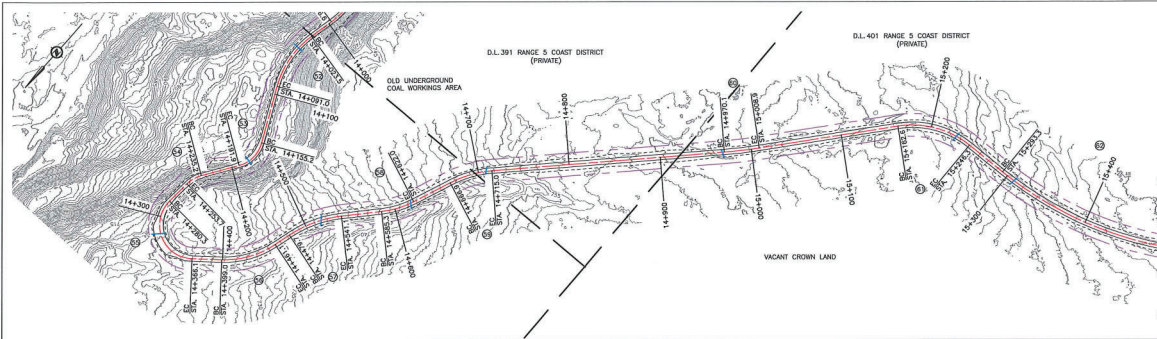
PROFESSIONAL ENGINEER
G. Y. WAMPOL
18364-204-P14

DWB Consulting Services Ltd.
18364-204-P14

PLAN & PROFILE 14
TENAS HAUL ROAD
STA. 13+000 TO 14+000

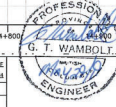
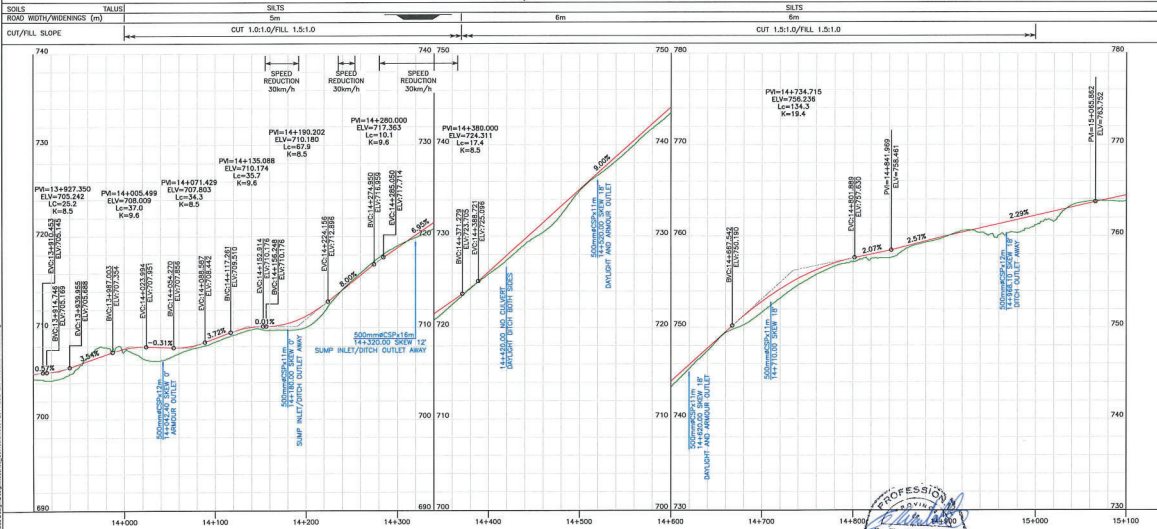
REV	DATE	DESCRIPTION	BY	CHK	APP
1	2019-05-24	ISSUED FOR CONSTRUCTION	AW	MD	AW

ISSUED FOR CONSTRUCTION



- 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.
 - PRIVATE LAND
 - ROAD/UTILITY R.O.W.
 - GRADING PERMIT



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

REV	DATE	DESCRIPTION	BY	CHK	APP
1	APR 18	ISSUED FOR REVIEW	WSE	ED	WV
2	MAY 18	ISSUED FOR CONSTRUCTION	JAP	ED	WV

DATE: 2018-05-24

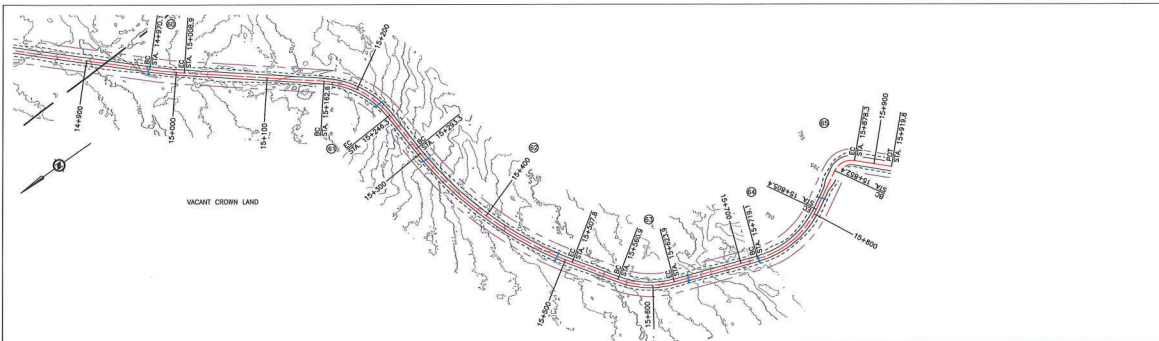
DWB Consulting Services Ltd. 214 P. Adams 214 P. Adams Phone: (204) 960-0041 Fax: (204) 960-0041	
DESIGNED	2018-05-24
QUALITY CONTROL	2018-05-24
QUALITY ASSURANCE	2018-05-24
DRAWN	2018-05-24

TELKWA COAL LIMITED
TENAS HAUL ROAD
 STA. 14+000 to 15+000

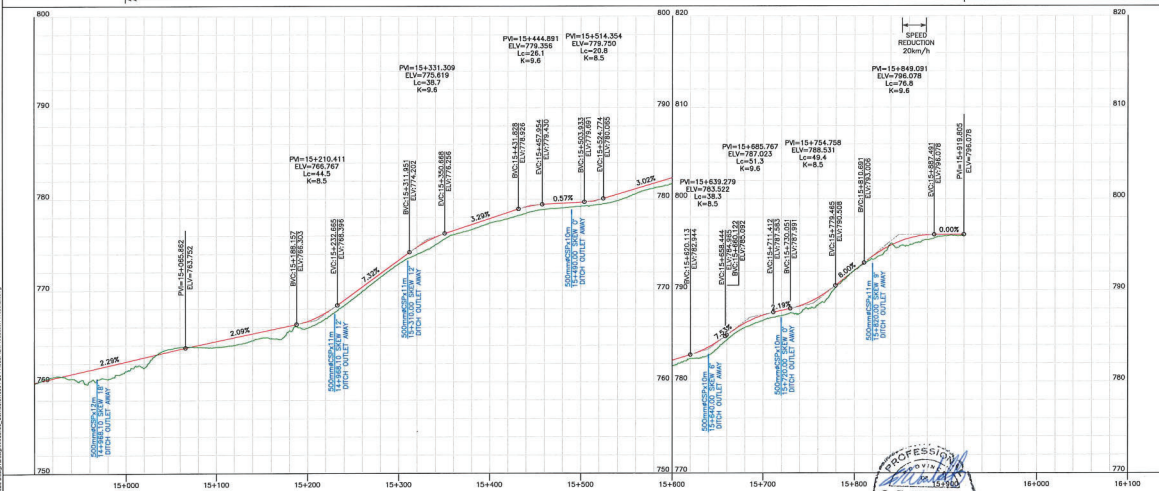
PLAN & PROFILE 15	
LATITUDE: 54° 38' 11.00"	NAD83
LONGITUDE: 127° 0' 2.90"	W
EASTING: 639538	NORTHING: 6550306
DRAWING NUMBER: 18364-204-P15	

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

ISSUED FOR CONSTRUCTION



SOILS	SOILS	SOILS
ROAD WIDTH/WIDENINGS (m)	6m	10m
CUT/FILL SLOPE	CUT 1.5:1.0/FILL 1.5:1.0	CUT 1.5:1.0/FILL 1.5:1.0



- 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

INTENDED TO BE PLOTTED ON 11"x17" ANY COPIES OR PDPS MAY NOT BE TO SCALE			SCALE: HORIZ. 1:4000 VERT. 1:400 DATE: 2019-05-24 ISSUED FOR CONSTRUCTION			CAD FILE NAME: 1806-004-001.DWG DATE: 2019-05-24 DESIGNER: _____ DATE: 2019-05-24			G. T. WAMBOLT  ENGINEER			 DWB Consulting Services Ltd. 100-1111 10th Ave. S.E. Calgary, Alberta T2C 1P9 Phone: (403) 940-0001 Fax: (403) 940-0001		
REV. DATE DESCRIPTION BY CHK APP			1 APR 18 ISSUED FOR REVIEW DMK TD TW			2 MAY 18 ISSUED FOR CONSTRUCTION JAP MD TW			DESIGN ASSURANCE: QUALITY CONTROL: _____ DATE: 2019-05-24 BY: _____ QUALITY ASSURANCE: _____ DATE: 2019-05-24 BY: _____					

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

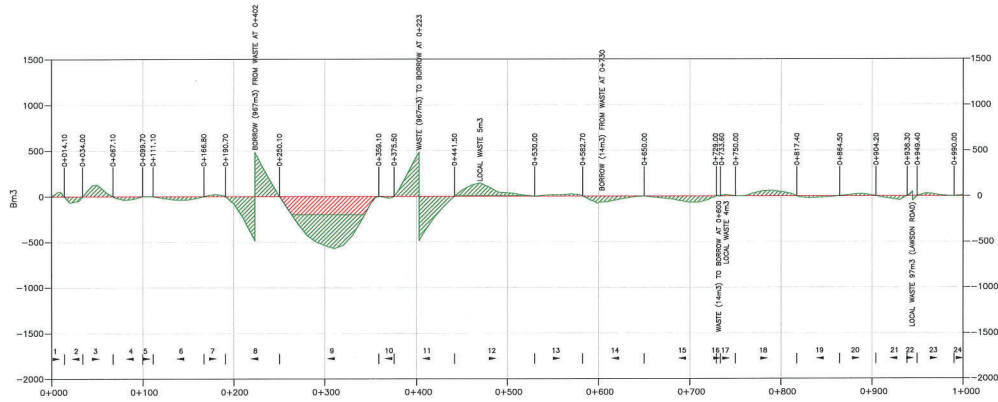
ISSUED FOR CONSTRUCTION

BALANCE POINT VOLUME SUMMARY

Movement	From Station	To Station	Stripping (bm ³)	OM Cut (bm ³)	Fill (bm ³ equiv)	Borrow Waste (bm ³)	Surfacing (cm ³)	Mass Direction	Comment	
1	0+0	141	68.6	63.3	63.3	0.0	0.0	67.7	<	
2	141	240	86.0	105.3	105.3	0.0	0.0	86.5	<	
3	240	671	165.2	163.1	163.1	0.0	0.0	171.8	>	
4	671	897	173.2	64.7	64.7	0.0	0.0	184.8	<	
5	897	1111	60.7	20.9	20.9	0.0	0.0	64.6	>	
6	1111	166.8	286.1	88.9	88.9	0.0	0.0	316.2	<	
7	166.8	180.7	125.0	46.5	46.5	0.0	0.0	133.1	>	
8	180.7	250.1	251.4	2.0	969.4	867.4	0.0	246.7	<	Borrow supplied by Waste at 0+402
9	250.1	359.1	774.7	1892.5	1892.5	0.0	0.0	377.3	<	
10	359.1	375.3	88.4	83.6	83.6	0.0	0.0	49.3	<	
11	375.3	441.5	285.1	977.4	10.0	0.0	867.4	189.2	<	Waste to Borrow at 0+223
12	441.5	530.0	343.8	235.8	230.9	0.0	4.7	785.9	>	Local Waste
13	530.0	549.7	217.1	109.1	109.1	0.0	0.0	158.4	>	
14	549.7	650.0	272.7	135.3	148.7	13.5	0.0	202.1	<	Borrow supplied by Waste at 0+731
15	650.0	729.0	319.9	159.1	159.1	0.0	0.0	237.4	<	
16	729.0	733.6	181	18.2	4.7	0.0	13.5	13.8	>	Waste to Borrow at 0+600
17	733.6	750.0	46.2	46.2	42.7	0.0	3.6	49.1	>	Local Waste
18	750.0	817.4	277.1	148.4	148.4	0.0	0.0	202.4	>	
19	817.4	864.3	205.3	92.6	97.5	0.0	0.0	164.1	<	
20	864.3	904.2	249.3	95.7	95.7	0.0	0.0	244.3	<	
21	904.2	938.3	173.4	109.0	109.0	0.0	0.0	185.6	<	
22	938.3	949.4	31	100.1	2.9	0.0	97.2	54.6	>	Paper Waste Only (Lowson Road Crossing vots)
23	949.4	980.0	229.2	111.0	111.0	0.0	0.0	213.7	>	
24	980.0	1012.4	127.5	50.6	50.6	0.0	0.0	119.5	>	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



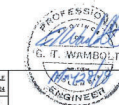
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL (<60m)
- OVERHAUL (>60m)

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

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	BY	CHK	APP
1	18/10	ISSUED FOR REVIEW	AKK	TD	TD
2	18/10	ISSUED FOR CONSTRUCTION	AKK	TD	TD



DESIGNED	BY DATE	2019-05-24
QUALITY ASSURANCE	BY DATE	2019-05-24
DRAWN	BY DATE	2019-05-24

MASS HAUL 1	STATION	0+000 TO 1+000
DESIGNED	BY DATE	2019-05-24
QUALITY ASSURANCE	BY DATE	2019-05-24
DRAWN	BY DATE	2019-05-24

TELKWA COAL LIMITED
TENAS HAUL ROAD
STA. 0+000 TO 1+000

DESIGNED	BY DATE	2019-05-24
QUALITY ASSURANCE	BY DATE	2019-05-24
DRAWN	BY DATE	2019-05-24

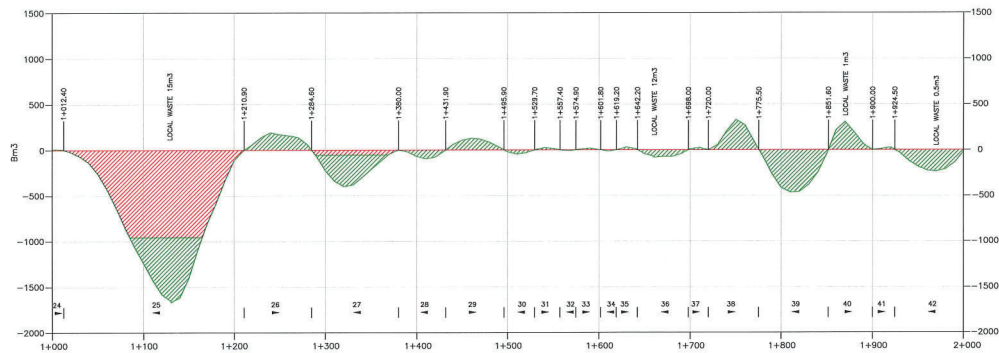
MASS HAUL 1	STATION	0+000 TO 1+000
DESIGNED	BY DATE	2019-05-24
QUALITY ASSURANCE	BY DATE	2019-05-24
DRAWN	BY DATE	2019-05-24

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm3)	GM Cut (bm3)	Fill (bm3 equiv)	Borrow (bm3)	Waste (bm3)	Surfacing (cm3)	Mass Direction	Comment
24	990.0	1012.4	127.5	50.6	90.6	0.0	0.0	119.5	>	
25	1012.4	1210.9	1073.5	1810.9	1795.7	0.0	15.2	754.3	<	Local Waste
26	1210.9	1284.6	380.5	456.3	456.3	0.0	0.0	221.2	>	
27	1284.6	1380.0	416.2	464.2	464.2	0.0	0.0	286.8	<	
28	1380.0	1431.9	217.4	176.4	176.4	0.0	0.0	155.9	<	
29	1431.9	1495.9	305.0	328.7	328.7	0.0	0.0	192.3	>	
30	1495.9	1529.7	160.3	143.1	143.1	0.0	0.0	101.8	<	
31	1529.7	1557.4	113.8	65.9	65.9	0.0	0.0	83.1	>	
32	1557.4	1574.9	71.8	36.6	36.6	0.0	0.0	52.6	<	
33	1574.9	1601.8	119.7	67.1	67.1	0.0	0.0	93.2	>	
34	1601.8	1619.2	35.2	74.6	74.6	0.0	0.0	83.4	<	
35	1619.2	1642.2	120.3	90.4	90.4	0.0	0.0	97.5	>	
36	1642.2	1698.0	298.0	366.8	366.8	0.0	11.7	167.7	<	Local Waste
37	1698.0	1720.0	123.7	132.6	132.6	0.0	0.0	66.0	>	
38	1720.0	1775.5	402.6	639.7	639.7	0.0	0.0	166.8	>	
39	1775.5	1851.5	453.9	692.4	692.4	0.0	0.0	228.4	<	
40	1851.5	1860.0	771.8	439.6	439.6	0.0	0.6	145.5	>	Local Waste
41	1860.0	1924.5	120.9	128.8	128.8	0.0	0.0	73.5	>	
42	1924.5	2001.4	367.2	402.1	402.1	0.0	0.0	231.0	<	Local Borrow

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.

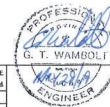


LEGEND:
 BALANCE LINE
 NET MASS LINE
 1 2
 MOVEMENT DIRECTION
 FREE HAUL (<80m)
 OVERHAUL (>80m)

INTENDED TO BE PLOTTED ON 11"X17"
 ANY COPIES OR PRINTS MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	DATE
1	2018-05-24	ISSUED FOR CONSTRUCTION	2018-05-24	2018-05-24



SCALE	HORIZ. 1:4000	VERT. 1:400	CAD FILE NAME	18364-204-02A.DWG
DESIGNED	BY DATE	2018-05-24	QUALITY ASSURANCE	DATE
DRAWN	DATE	2018-05-24	DATE	2018-05-24

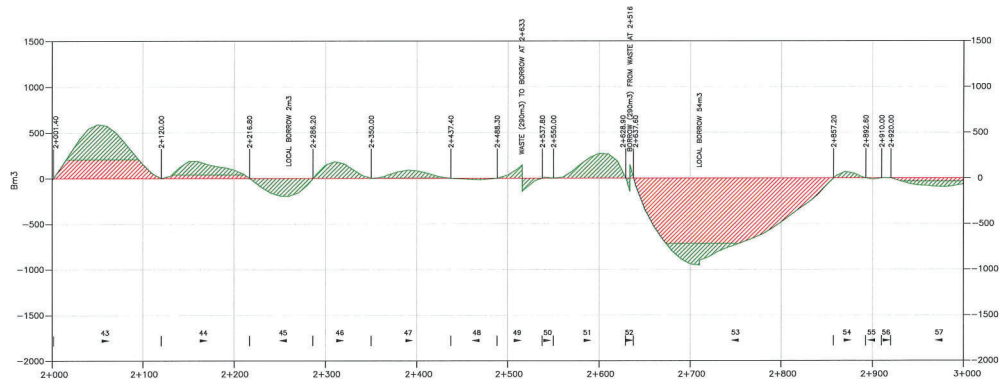
QUALITY ASSURANCE	DATE	2018-05-24	DATE	2018-05-24
DESIGNED	BY DATE	2018-05-24	QUALITY ASSURANCE	DATE
DRAWN	DATE	2018-05-24	DATE	2018-05-24

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

MASS HAUL 2

QUALITY ASSURANCE	DATE	2018-05-24	DATE	2018-05-24
DESIGNED	BY DATE	2018-05-24	QUALITY ASSURANCE	DATE
DRAWN	DATE	2018-05-24	DATE	2018-05-24

FAIR PLAY WASTE SUMMARY									
Waste#	From Station	To Striping (ft)	On Cut (ft)	Borrow (ft)	Waste (ft)	Surfacing (ft)	Mass Direction	Comment	
43	2001	4120.0	508.2	0.451	0.0	0.0	258.4		
43	2100	2218.8	397.9	306.3	0.0	0.0	258.4		
45	2218.8	2286.2	284.4	235.5	237.9	21.4	208.6		Local Borrow
45	2286.2	2360.0	217.3	227.3	217.3	0.0	181.4		
47	2300.0	2437.4	358.8	209.7	209.7	0.0	282.5		
48	2437.4	2488.5	200.6	100.6	100.6	0.0	152.6		
48	2488.5	2537.8	225.5	0.0	225.5	0.0	225.5		Waste to Borrow at 2433
50	2537.8	2550.0	50.4	28.4	28.4	0.0	38.8		
51	2550.0	2628.9	346.3	301.4	301.4	0.0	237.0		
51	2628.9	2817.4	264.0	0.0	264.0	0.0	264.0		
51	2817.4	2857.2	99.0	93.5	88.3	53.7	659.8		Borrow supplied by Waste at 2515
52	2857.2	2892.5	146.0	0.0	146.0	0.0	106.1		
55	2892.5	2910.0	71.6	37.4	37.4	0.0	52.1		
56	2910.0	2920.0	41.1	23.2	23.2	0.0	30.2		
56	2920.0	3011.1	418.7	222.2	222.2	0.0	30.9		



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

SCALE		HORIZ: 1:4000		VERT: 1:400		CAD FILENAME: 18364.004.EASTWIND	
						DATE: 2018-05-21	
REV	DATE	DESCRIPTION	DRWN	CHK	ENG		
A	FEB.19	ISSUED FOR REVIEW	KAK	KD	TW		
B	MAY.19	ISSUED FOR CONSTRUCTION	JAP	KD	TW		


DWB Consulting Services Ltd.
 1579 9th Avenue
 Prince George, B.C.
 V2L 3R5
 Phone: (250) 562-6941 Fax: (250) 562-5561

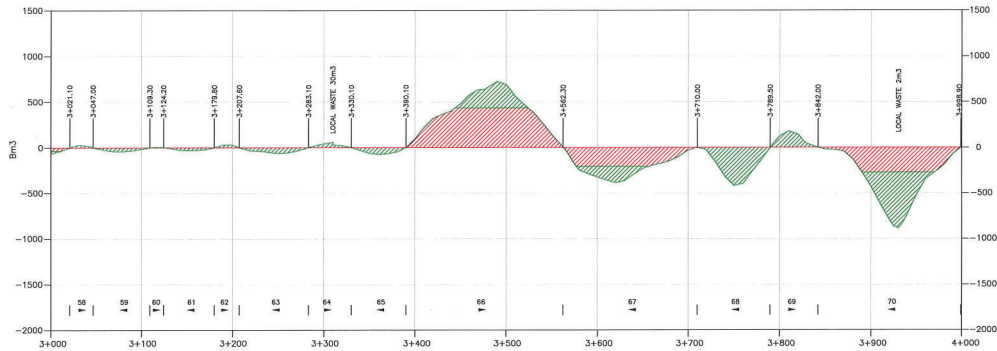
MASS HAUL 3				
LATITUDE:	54° 38' 11.62"	NAD83	NORTHING:	6056036
LONGITUDE:	123° 5' 3.99"	99	EASTING:	623533
DRAWING NUMBER				REV
18364-204-M3				B

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm3)	GM Cut (bm3)	Fill (bm3 equiv)	Borrow (bm3)	Waste (bm3)	Surfacing (bm3)	Mass Direction	Comment
58	3021.1	3047.0	109.0	63.3	63.3	0.0	0.0	78.0	>	
59	3047.0	3109.3	256.2	124.5	124.5	0.0	0.0	187.1	<	
60	3109.3	3124.2	61.8	30.7	30.7	0.0	0.0	44.8	>	
61	3124.2	3179.8	223.0	103.4	103.4	0.0	0.0	166.9	<	
62	3179.8	3207.6	143.4	85.6	85.6	0.0	0.0	124.3	>	
63	3207.6	3283.1	339.1	179.7	179.7	0.0	0.0	298.0	<	
64	3283.1	3330.1	194.5	101.4	71.5	0.0	28.9	141.2	>	Local Waste
65	3330.1	3390.1	249.8	149.8	149.8	0.0	0.0	180.3	<	
66	3390.1	3562.3	726.6	844.7	844.7	0.0	0.0	517.4	>	
67	3562.3	3710.0	632.9	511.2	511.2	0.0	0.0	443.6	<	
68	3710.0	3789.5	409.0	589.5	589.5	0.0	0.0	238.9	<	
69	3789.5	3842.0	233.1	254.3	254.3	0.0	0.0	157.8	>	
70	3842.0	3998.0	698.0	1078.0	1078.0	0.0	1.9	471.4	<	Local Waste

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



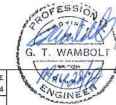
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL (<80m)
- OVERHAUL (>80m)

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 FILE NAME	18364-204-01.dwg	DATE 2018-05-24
REV	DATE	DESCRIPTION
1	2018-05-24	ISSUED FOR CONSTRUCTION
2	2018-05-24	ISSUED FOR CONSTRUCTION
3	2018-05-24	ISSUED FOR CONSTRUCTION
4	2018-05-24	ISSUED FOR CONSTRUCTION
5	2018-05-24	ISSUED FOR CONSTRUCTION
6	2018-05-24	ISSUED FOR CONSTRUCTION
7	2018-05-24	ISSUED FOR CONSTRUCTION
8	2018-05-24	ISSUED FOR CONSTRUCTION
9	2018-05-24	ISSUED FOR CONSTRUCTION
10	2018-05-24	ISSUED FOR CONSTRUCTION



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

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

MASS HAUL 4

DESIGNED BY	DATE 2018-05-24	DATE 2018-05-24	DATE 2018-05-24
QUALITY ASSURANCE	DATE 2018-05-24	DATE 2018-05-24	DATE 2018-05-24
DRAWN BY	DATE 2018-05-24	DATE 2018-05-24	DATE 2018-05-24

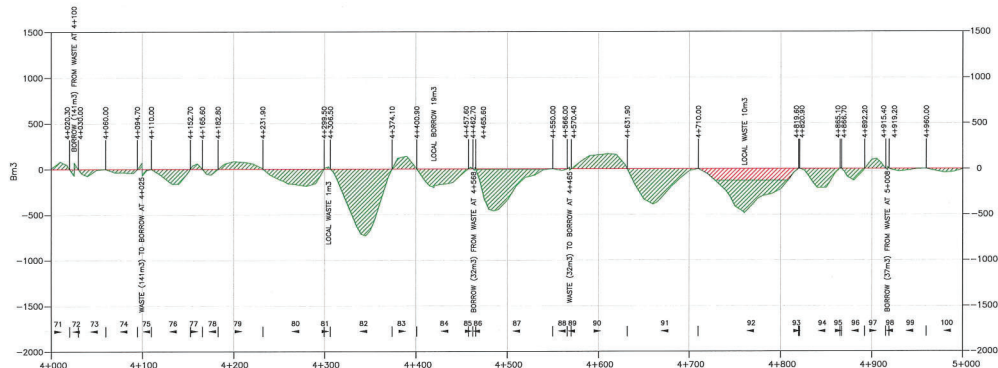
LATITUDE	54° 38' 11.87"	NAD83	NORTHING	699008
LONGITUDE	127° 12' 2.89"	W	EASTING	620033
PROJECT	18364-204-M4		REVISION	B

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm3)	GM Out (bm3)	Fill (bm3 equiv)	Borrow (bm3)	Waste (bm3)	Surfacing (cm3)	Mass Direction	Comment
71	3998.9	4020.3	14.6	116.7	116.7	0.0	0.0	84.2	>	
72	4020.3	4030.0	35.6	0.0	140.9	140.9	0.0	29.0	<	Borrow supplied by Waste at 4+100
73	4030.0	4060.0	134.5	145.9	145.9	0.0	0.0	80.1	<	
74	4060.0	4094.7	146.7	113.3	113.3	0.0	0.0	104.2	<	
75	4094.7	4110.0	70.7	150.8	10.0	0.0	140.9	45.9	<	Waste to Borrow at 4+025
76	4110.0	4152.7	177.4	200.7	200.7	0.0	0.0	128.2	<	
77	4152.7	4165.6	60.1	82.5	82.5	0.0	0.0	38.9	>	
78	4165.6	4182.8	69.8	79.1	79.1	0.0	0.0	31.8	<	
79	4182.8	4231.9	200.2	159.6	159.6	0.0	0.0	147.3	>	
80	4231.9	4299.5	303.8	346.8	346.8	0.0	0.0	203.3	<	
81	4299.5	4306.5	37.4	63.4	62.2	0.0	1.3	20.9	>	Local Waste
82	4306.5	4374.1	381.9	876.8	876.8	0.0	0.0	203.1	<	
83	4374.1	4400.9	114.6	182.3	182.4	0.0	0.0	80.5	>	Local Borrow
84	4400.9	4457.0	763.4	268.7	281.1	15.3	0.0	170.4	<	
85	4457.0	4482.7	22.8	27.5	27.5	0.0	0.0	15.2	>	
86	4482.7	4485.8	12.7	5.0	37.7	32.1	0.0	8.8	<	Borrow supplied by Waste at 4+568
87	4485.8	4500.0	44.0	800.0	800.0	0.0	0.0	253.6	<	
88	4500.0	4566.0	68.5	55.3	55.3	0.0	0.0	48.0	<	
89	4566.0	4570.4	22.3	33.5	1.4	0.0	32.1	13.4	<	Waste to Borrow at 4+465
90	4570.4	4631.9	316.2	360.3	360.3	0.0	0.0	184.5	<	
91	4631.9	4710.0	364.8	476.1	476.1	0.0	0.0	234.7	<	
92	4710.0	4819.6	509.5	721.0	711.0	0.0	10.0	329.1	<	Local Waste
93	4819.6	4820.3	6.1	6.9	6.9	0.0	0.0	4.1	>	
94	4820.3	4855.1	198.5	293.2	293.2	0.0	0.0	132.6	<	
95	4855.1	4866.7	7.6	11.9	11.9	0.0	0.0	4.9	>	
96	4866.7	4892.2	116.6	153.8	153.8	0.0	0.0	76.7	<	
97	4892.2	4915.4	112.3	152.0	152.0	0.0	0.0	69.7	>	
98	4915.4	4919.2	14.8	0.7	37.9	36.9	0.0	11.4	<	Borrow supplied by Waste at 5+008
99	4919.2	4960.0	170.7	112.8	112.8	0.0	0.0	122.4	<	
100	4960.0	5002.1	178.0	121.3	121.3	0.0	0.0	126.4	<	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



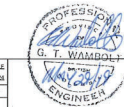
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL (<80m)
- OVERHAUL (>80m)

INTENDED TO BE PLOTTED ON 11"X17" ANY COPIES OR PRINTS MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	CHK	APP
1	2019-05-24	DESIGNED FOR REVIEW			
2	2019-05-24	DESIGNED FOR CONSTRUCTION			



DESIGNER
DATE: 2019-05-24

REV	DATE	DESCRIPTION	DATE	CHK	APP
1	2019-05-24	DESIGNED FOR REVIEW			
2	2019-05-24	DESIGNED FOR CONSTRUCTION			

DESIGNER
DATE: 2019-05-24

REV	DATE	DESCRIPTION	DATE	CHK	APP
1	2019-05-24	DESIGNED FOR REVIEW			
2	2019-05-24	DESIGNED FOR CONSTRUCTION			

DESIGNER
DATE: 2019-05-24



TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 4+000 TO 5+000

MASS HAUL 5

REV	DATE	DESCRIPTION	DATE	CHK	APP
1	2019-05-24	DESIGNED FOR REVIEW			
2	2019-05-24	DESIGNED FOR CONSTRUCTION			

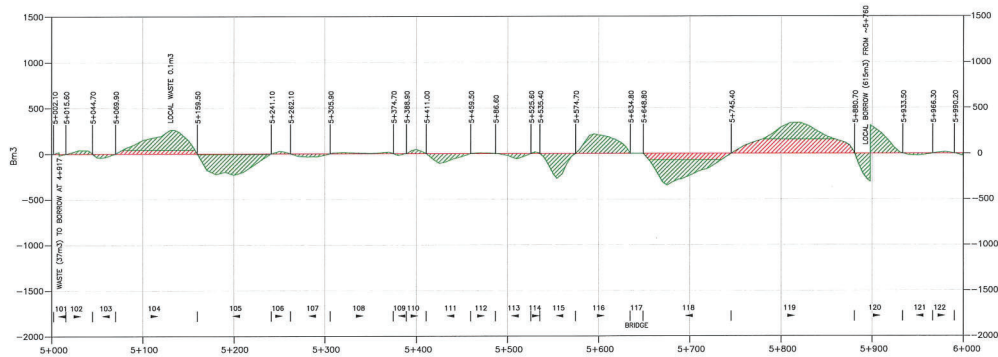
DESIGNER
DATE: 2019-05-24

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm3)	Old Cut (bm3)	Fill (bm3)	Borrow Waste (bm3)	Surfacing (cm3)	Mass Direction	Comment
101	5002.1	5015.6	59.0	49.2	12.2	0.0	36.9	<	Waste To Borrow at 4+917
102	5015.6	5044.7	118.2	72.2	72.2	0.0	0.0	>	
103	5044.7	5069.9	108.1	78.1	18.1	0.0	0.0	<	
104	5069.9	5159.5	367.9	331.6	331.5	0.0	0.1	>	Local Waste
105	5159.5	5241.1	358.0	346.4	346.4	0.0	0.0	<	
106	5241.1	5262.1	86.0	51.0	51.0	0.0	0.0	>	
107	5262.1	5305.9	179.7	121.0	121.0	0.0	0.0	<	
108	5305.9	5374.7	281.5	158.8	158.8	0.0	0.0	>	
109	5374.7	5488.6	58.7	45.3	45.3	0.0	0.0	<	
110	5488.6	5411.0	63.1	74.5	74.5	0.0	0.0	>	
111	5411.0	5459.3	191.6	143.3	143.3	0.0	0.0	<	
112	5459.3	5488.6	106.1	45.5	45.5	0.0	0.0	>	
113	5488.6	5525.6	161.2	123.0	123.0	0.0	0.0	<	
114	5525.6	5535.4	41.4	40.4	40.4	0.0	0.0	>	
115	5535.4	5574.7	175.5	303.4	303.4	0.0	0.0	<	
116	5574.7	5634.8	381.4	309.2	309.2	0.0	0.0	>	
117	5634.8	5648.6	0.0	0.0	0.0	0.0	0.1	n/a	BRIDGE CROSSING
118	5648.6	5745.4	564.8	420.6	420.6	0.0	0.0	<	
119	5745.4	5880.7	755.5	434.0	434.0	0.0	0.0	>	
120	5880.7	5933.5	270.5	21.0	635.7	614.7	0.0	>	Local Borrow from ~5+760 area
121	5933.5	5966.3	184.0	76.2	76.2	0.0	0.0	<	
122	5966.3	5990.2	131.6	51.6	51.6	0.0	0.0	>	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



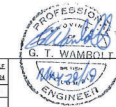
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL, (<80m)
- OVERHAUL, (>80m)

INTENDED TO BE PLOTTED ON 11"X17" DAY COVER - PLOT MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

SCALE HORIZ: 1:4000 VERT: 1:400			CAD FILENAME: 18364.004 EASTVIEW		
			DATE: 2019.05.24		
REV	DATE	DESCRIPTION	DRW	CHK	ENG
A	FEB.19	ISSUED FOR REVIEW	KAK	KD	TW
B	MAY.19	ISSUED FOR CONSTRUCTION	JMP	KD	TW



	DWB Consulting Services Ltd. 1579 9 th Avenue Prince George, B.C. V2L 3K5 Phone: (250) 562-0541 Fax: (250) 562-0561
DESIGNED _____	BY DATE 2019-01-11
QUALITY CONTROL _____	BY DATE 2019-02-05
QUALITY ASSURANCE _____	DATE _____
DRAWN _____	KAK DATE 2019-02-11

TENAS HAUL ROAD				
STA. 5+000 to 6+000				
MASS HAUL 6				
LATITUDE:	54° 38' 11.85"	NAD83	NORTHING:	6099936
LONGITUDE:	127° 5' 3.99"	96	EASTING:	623633
DRAWING NUMBER				REV
18364-204-M6				B

TELKWA COAL LIMITED

TENAS HAUL ROAD
STA. 5+000 TO 6+000

MASS HAUL 6

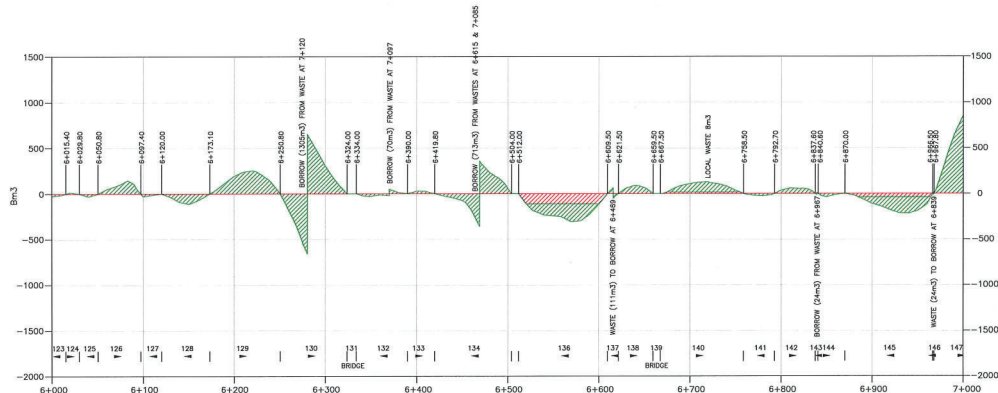
DRAWING NUMBER 18364-204-M6

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (m³)	GM Cut (m³)	Fill (m³ equiv)	Borrow (m³)	Waste (m³)	Surfacing (m³)	Mass Direction	Comment
123	5990.2	6015.4	136.3	68.1	68.1	0.0	0.0	75.7	<	
124	6015.4	6029.8	78.0	40.3	40.3	0.0	0.0	43.3	>	
125	6029.8	6050.8	102.4	56.8	56.8	0.0	0.0	63.0	<	
126	6050.8	6097.4	203.9	208.9	208.9	0.0	0.0	139.9	>	
127	6097.4	6120.0	94.0	80.3	80.3	0.0	0.0	68.0	<	
128	6120.0	6173.1	79.8	151.2	151.2	0.0	0.0	159.6	<	
129	6173.1	6250.8	335.2	301.2	301.2	0.0	0.0	233.2	>	
130	6250.8	6324.0	352.2	21.5	1306.3	1304.8	0.0	296.8	>	Borrow supplied by Waste at 7+120
131	6324.0	6334.0	0.0	0.0	0.0	0.0	0.0	n/a	>	BRIDGE CROSSING
132	6334.0	6390.0	242.0	158.1	228.5	70.4	0.0	181.8	<	Borrow supplied by Waste at 7+097
133	6390.0	6419.8	124.9	69.8	69.8	0.0	0.0	89.5	>	
134	6419.8	6504.0	375.0	37.8	750.9	713.3	0.0	332.3	<	Borrow mostly supplied by Waste at 6+615 & 7+085
135	6504.0	6512.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	BRIDGE CROSSING
136	6512.0	6609.5	412.8	390.5	390.5	0.0	0.0	308.3	<	
137	6609.5	6621.5	62.6	111.4	0.0	0.0	111.4	48.8	<	Waste To Borrow at 6+469
138	6621.5	6659.5	192.5	114.5	114.5	0.0	0.0	180.3	>	
139	6659.5	6667.5	0.0	0.0	0.0	0.0	0.0	0.0	n/a	BRIDGE CROSSING
140	6667.5	6738.5	359.2	172.1	184.5	0.0	7.6	289.9	>	Local Waste
141	6738.5	6792.7	143.9	75.3	75.3	0.0	0.0	102.7	<	
142	6792.7	6837.6	203.6	116.5	116.5	0.0	0.0	134.8	>	
143	6837.6	6840.6	15.8	0.2	24.6	24.4	0.0	8.2	<	Borrow supplied by Waste at 6+567
144	6840.6	6870.0	129.0	75.1	75.1	0.0	0.0	88.2	<	
145	6870.0	6966.5	419.0	346.9	346.9	0.0	0.0	289.8	<	
146	6966.5	6967.6	7.5	24.4	0.0	0.0	24.4	4.0	<	Waste To Borrow at 6+839
147	6967.6	7033.0	477.6	1085.1	1085.1	0.0	0.0	274.4	>	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



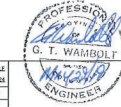
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL (<80m)
- OVERHAUL (>80m)

INTENDED TO BE PLOTTED ON 11"X17" DAY COVERED BY TOP MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DESIGNED	CHECKED	DATE
1	2019.03.15	ISSUED FOR REVIEW	WAK	WAK	2019.03.15
2	2019.03.18	ISSUED FOR CONSTRUCTION	JAP	WAK	2019.03.18



DESIGNER
DATE: 2019.03.15

DWB Consulting Services Ltd.	
DESIGNED	2019.03.15
QUALITY ASSURANCE	2019.03.15
ERRATA	2019.03.15

TELKWA COAL LIMITED
TENAS HAUL ROAD
STA. 6+000 TO 7+000

MASS HAUL 7

QUALITY ASSURANCE	DATE	DESIGNED	DATE	DESIGNED	DATE
2019.03.15	2019.03.15	2019.03.15	2019.03.15	2019.03.15	2019.03.15

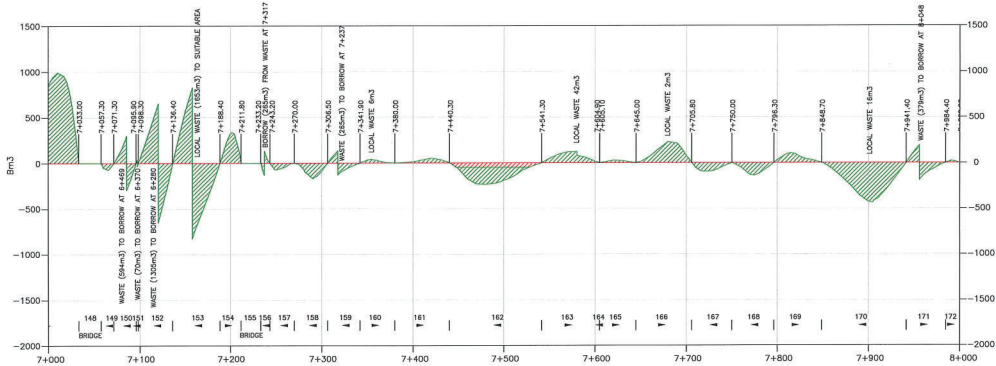
QUALITY ASSURANCE	DATE	DESIGNED	DATE	DESIGNED	DATE
2019.03.15	2019.03.15	2019.03.15	2019.03.15	2019.03.15	2019.03.15

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (m ³)	DM Cut (m ³)	Fill (m ³ eq _W)	Borrow (m ³)	Waste (m ³)	Surfacing (m ³)	Mass Direction	Comment
148	7033.0	7057.3	0.0	0.0	0.0	0.0	0.0	0.0	n/a	BRIDGE CROSSING
149	7057.3	7071.3	76.5	126.1	126.1	0.0	0.0	55.2	<	
150	7071.3	7095.9	169.3	601.4	7.1	0.0	584.2	74.3	<	Waste To Borrow at 6+469
151	7095.9	7098.3	16.7	70.4	0.0	0.0	70.4	7.1	<	Waste To Borrow at 6+370
152	7098.3	7136.4	251.0	1304.8	0.0	0.0	1304.8	114.3	<	Waste To Borrow at 6+280
153	7136.4	7188.4	353.0	1652.6	0.0	0.0	1652.6	194.9	<	Waste to suitable waste area
154	7188.4	7211.8	202.6	437.6	0.0	0.0	0.0	110.4	>	
155	7211.8	7233.2	0.0	0.0	0.0	0.0	0.0	n/a		BRIDGE CROSSING
156	7233.2	7243.2	0.0	6.6	271.4	264.8	0.0	39.2	<	Borrow supplied by Waste at 7+317
157	7243.2	7270.0	137.9	174.0	174.0	0.0	0.0	85.0	<	
158	7270.0	7306.5	186.7	195.4	195.4	0.0	0.0	109.9	<	
159	7306.5	7341.9	172.6	274.3	9.5	0.0	264.8	106.2	<	Waste To Borrow at 7+237
160	7341.9	7380.0	159.7	100.9	95.4	0.0	5.5	114.4	>	Local Waste
161	7380.0	7440.3	548.3	136.0	136.0	0.0	0.0	101.2	>	
162	7440.3	7541.3	418.4	299.5	299.5	0.0	0.0	353.2	<	
163	7541.3	7604.9	268.4	157.0	115.3	0.0	41.7	191.3	>	Local Waste
164	7604.9	7605.1	0.6	0.3	0.3	0.0	0.0	0.5	<	
165	7605.1	7645.0	154.3	61.7	61.7	0.0	0.0	119.9	>	
166	7645.0	7705.0	257.8	262.4	260.8	0.0	1.7	162.5	>	Local Waste
167	7705.0	7750.0	179.3	104.2	104.2	0.0	0.0	132.9	<	
168	7750.0	7796.1	201.3	157.5	157.5	0.0	0.0	136.6	<	
169	7796.1	7864.3	215.2	126.8	126.8	0.0	0.0	157.6	>	
170	7864.3	7941.4	384.6	425.9	441.9	16.0	0.0	278.4	<	
171	7941.4	7984.4	192.0	380.7	1.5	0.0	379.2	128.9	>	Waste To Borrow at 8+048
172	7984.4	8000.0	62.0	30.8	30.8	0.0	0.0	46.8	>	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.

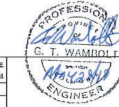


LEGEND:
 — BALANCE LINE
 - - - NET MASS LINE
 1 2 MOVEMENT DIRECTION
 FREE HAUL (<80m)
 OVERHAUL (>80m)

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

ISSUED FOR CONSTRUCTION

SCALE	HORIZ. 1:4000 VERT. 1:400	CAD FILE NAME	18364-204-01.dwg	DATE	2018-05-24
REV	DATE	DESCRIPTION	DRW	CPL	END
1	10/18/18	ISSUED FOR REVIEW	AKK	RD	YH
2	04/19/19	ISSUED FOR CONSTRUCTION	JAP	RD	YH



DESIGNER
 DATE 2018-05-24

DWB Consulting Services Ltd. 21111 10th Avenue Suite 200 Edmonton, Alberta T6E 6K6 Phone (780) 962-0501 Fax (780) 962-0501	
DESIGNED	BY DATE 2018-05-14
QUALITY ASSURANCE	BY DATE 2018-05-16
DRAWN	BY DATE 2018-05-14

LATITUDE 54° 38' 11.89"		NAD83	NORTHING 6000306	DRAWING NUMBER 18364-204-M5	REV B
LONGITUDE 107° 0' 2.89"		30	EASTING 620033		

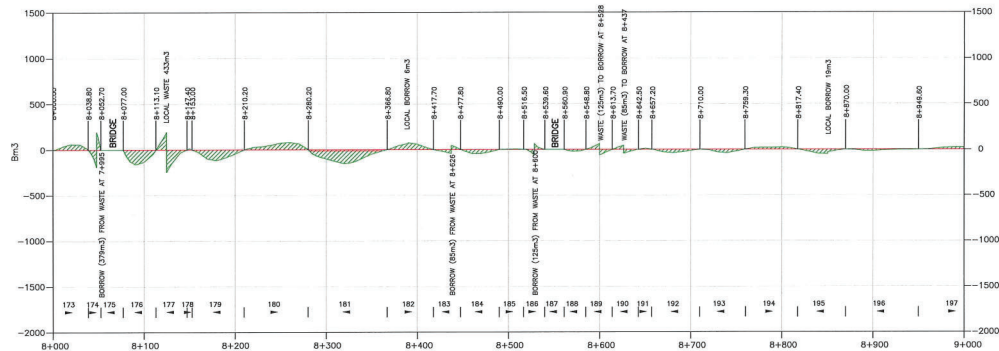
TELKWA COAL
 LIMITED
 TENAS HAUL ROAD
 STA. 7+000 to 8+000

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (m³)	OM Cut (m³)	Fill (m³)	Borrow (m³)	Waste (m³)	Surfacing (m³)	Mass Direction	Comment
173	8000.0	8038.0	200.0	110.2	110.2	0.0	0.0	173.4	>	
174	8038.0	8052.7	78.8	1.4	380.6	379.2	0.0	64.2	>	Borrow supplied by Waste at 7+955
175	8052.7	8077.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	BRIDGE CROSSING
176	8077.0	8113.1	167.4	169.3	169.3	0.0	0.0	121.8	<	
178	8147.4	8153.0	20.7	15.3	15.3	0.0	0.0	16.8	>	Haul waste to suitable disposal area
179	8153.0	8210.2	215.2	134.5	134.5	0.0	0.0	171.8	<	
180	8210.2	8280.2	256.9	116.5	116.5	0.0	0.0	210.5	>	
181	8280.2	8366.6	309.1	180.2	180.2	0.0	0.0	260.1	<	
182	8366.6	8417.7	207.4	142.5	149.0	8.4	0.0	152.7	>	Local Borrow
183	8417.7	8447.8	112.3	41.7	127.0	85.4	0.0	80.6	<	Borrow supplied by Waste at 8+626
184	8447.8	8490.0	159.2	74.4	74.4	0.0	0.0	127.0	<	
185	8490.0	8516.5	134.0	66.8	66.8	0.0	0.0	119.2	>	
186	8516.5	8539.6	142.4	58.7	181.6	124.9	0.0	108.6	>	Borrow supplied by Waste at 8+600
187	8539.6	8560.9	0.0	0.0	0.0	0.0	0.0	0.0	n/a	BRIDGE CROSSING
188	8560.9	8594.8	106.5	54.7	54.7	0.0	0.0	85.3	<	
189	8594.8	8613.7	123.5	79.3	1.4	0.0	124.9	86.7	<	
190	8613.7	8642.5	118.8	84.0	8.6	0.0	85.4	86.4	<	Waste to Borrow at 8+528
191	8642.5	8657.2	56.7	25.4	25.4	0.0	0.0	44.5	>	Waste to Borrow at 8+437
192	8657.2	8710.0	200.7	89.1	89.1	0.0	0.0	158.5	<	
193	8710.0	8758.3	187.9	86.5	86.5	0.0	0.0	148.0	<	
194	8758.3	8817.4	225.5	115.9	115.9	0.0	0.0	174.7	>	
195	8817.4	8870.0	201.2	89.7	108.2	18.6	0.0	158.0	<	Local Borrow
196	8870.0	8949.6	305.3	135.9	135.9	0.0	0.0	238.1	<	
197	8949.6	8957.6	296.1	114.4	112.4	0.0	2.0	234.8	>	Local Waste

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



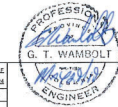
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL (<80m)
- OVERHAUL (>80m)

INTENDED TO BE PLOTTED ON 11"X17" ANY COVER or PAPER MAY NOT BE TO SCALE

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	CHK	APP
1	2018.05.10	DESIGNED FOR REVIEW	2018.05.10	MD	TW
2	2018.05.10	DESIGNED FOR CONSTRUCTION	2018.05.10	JAP	MD



DESIGNER: DATE: 2018.05.10

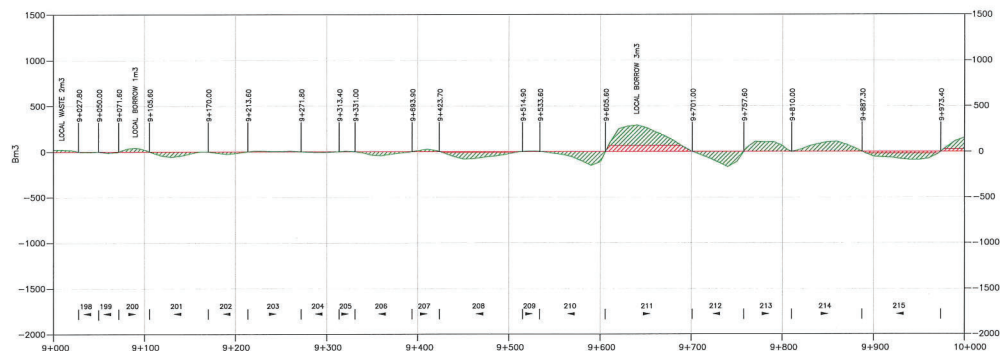
DWB Consulting Services Ltd. 2111 P. Street Suite 200 Dallas, Texas 75201 Phone (214) 960-0841 Fax (214) 960-0841	DESIGNED: 2018.05.10 QUALITY CONTROL: 2018.05.10 QUALITY ASSURANCE: 2018.05.10
--	--

TELKWA COAL LIMITED
TENAS HAUL ROAD
 STA. 8+000 to 9+000

MASS HAUL 9 NORTHING: 656030 EASTING: 420353	LATITUDE: 34° 38' 11.68" N LONGITUDE: 122° 0' 3.98" W	DRAWING NO: 18364-204-M9 SHEET: 1 OF 1
--	--	---

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE
DRAWING 18364-204-01 & 18364-204-02.



LEGEND:

— BALANCE LINE
— NET MASS LINE

1 | 2
MOVEMENT DIRECTION

FREE HAUL (<80m)
OVERHAUL (>80m)

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

ISSUED FOR CONSTRUCTION



DWB Consulting Services Ltd.
 1579 9th Avenue
 Prince George, B.C.
 V2L 3R8
 Phone: (250) 562-5541 Fax: (250) 562-5561



TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 9+000 to 10+000

MASS HAUL 10

DESIGNED BAI DATE 2019-01-11
 QUALITY CONTROL TW DATE 2019-02-08
 QUALITY ASSURANCE --- DATE ---
 DRAWN KAK DATE 2019-02-11

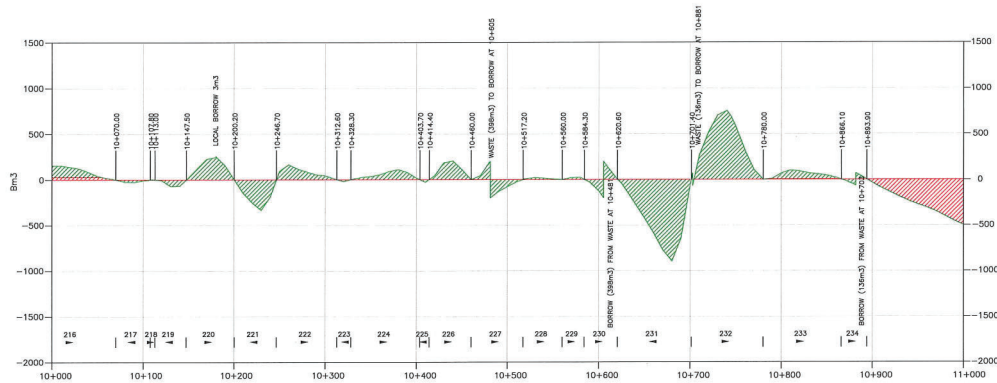
MASS HAUL 10				
LATITUDE:	54° 38' 11.69"	NAD83	NORTHING:	6060636
LONGITUDE:	127° 5' 3.99"	94	EASTING:	623633
DRAWING NUMBER				REV
18364-204-M10				B

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm ³)	GM Cut (bm ³)	Fill (bm ³ equiv)	Borrow (bm ³)	Waste (bm ³)	Surfacing (cm ³)	Mass Direction	Comment
216	9973.4	10070.0	372.4	260.2	260.2	0.0	0.0	260.1	>	
217	10070.0	10107.8	150.7	84.1	84.1	0.0	0.0	113.4	<	
218	10107.8	10113.0	2.1	15.9	15.9	0.0	0.0	15.9	>	
219	10113.0	10147.5	134.1	146.0	146.0	0.0	0.0	103.3	<	
220	10147.5	10200.2	213.4	280.8	280.8	0.0	0.0	158.6	<	Local Borrow
221	10200.2	10246.7	186.5	384.6	384.6	0.0	0.0	139.5	<	
222	10246.7	10312.6	260.8	262.5	262.5	0.0	0.0	197.9	>	
223	10312.6	10328.3	61.2	33.4	33.4	0.0	0.0	47.1	<	
224	10328.3	10403.7	258.3	203.4	203.4	0.0	0.0	226.5	>	
225	10403.7	10414.0	41.1	45.6	45.6	0.0	0.0	31.2	<	
226	10414.0	10460.0	184.6	260.2	260.2	0.0	0.0	136.0	<	
227	10460.0	10517.2	254.1	486.6	486.6	0.0	0.0	397.8	>	Waste To Borrow at 10+605
228	10517.2	10560.0	166.9	86.9	86.9	0.0	0.0	126.5	>	
229	10560.0	10584.3	32.5	46.1	46.1	0.0	0.0	27.9	>	
230	10584.3	10620.6	177.0	2.0	399.6	397.8	0.0	109.3	>	Borrow supplied by Waste at 10+481
231	10620.6	10701.4	371.2	952.0	952.0	0.0	0.0	242.7	<	
232	10701.4	10780.0	364.2	845.7	801.1	0.0	135.6	236.0	>	Waste To Borrow at 10+881
233	10780.0	10866.1	323.3	187.9	187.9	0.0	0.0	258.5	>	
234	10866.1	10883.8	101.6	8.1	143.6	135.6	0.0	83.6	>	Borrow supplied by Waste at 10+703

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



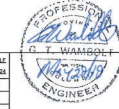
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL, (<80m)
- OVERHAUL, (>80m)

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 FILE NAME: 18364-204-02-01.DWG	
REV	DATE	DESCRIPTION	DATE
1	2018-05-24	ISSUED FOR CONSTRUCTION	2018-05-24
2	2018-05-24	ISSUED FOR CONSTRUCTION	2018-05-24



DWB Consulting Services Ltd.	
214 P. Street, Prince George, B.C. V2L 2G9	
Phone: (250) 960-0841 Fax: (250) 960-0841	
DESIGNED BY	2018-05-24
QUALITY ASSURANCE	2018-05-24
DRAWN BY	2018-05-24



TENAS HAUL ROAD
STA. 10+000 to 11+000

MASS HAUL 11

LATITUDE	54° 38' 11.87"	NAD83	NORTHING	6566008
LONGITUDE	127° 0' 9.89"	W	EASTING	629633

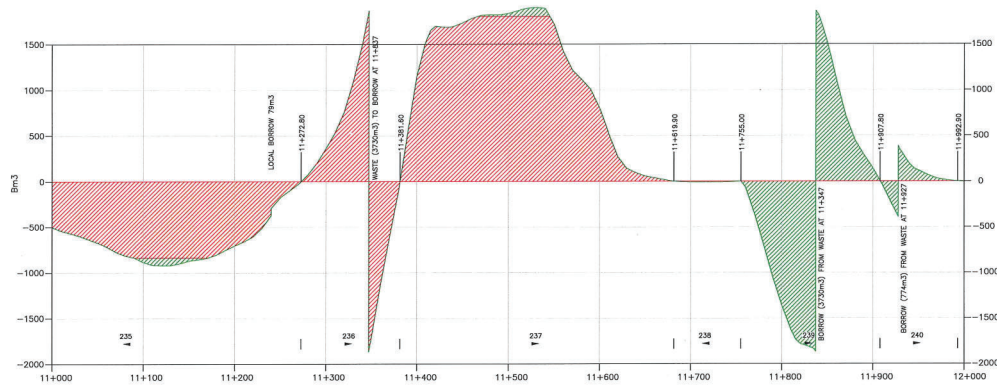
18364-204-M11 | B

BALANCE POINT VOLUME SUMMARY

Movement	From Station	To Station	Stripping (m³)	OM Cut (m³)	Fill (m³)	Borrow (m³)	Waste (m³)	Surfacing (m³)	Mass Direction	Comment
235	10983.8	11272.8	1770.0	1068.3	1147.0	78.8	0.0	1138.1	<	Local Borrow
236	11272.8	11381.6	204.2	3730.0	0.0	0.0	3730.0	399.1	>	Waste to Borrow at 11+837
237	11381.6	11681.9	447.5	2004.1	2094.1	0.0	0.0	694.1	>	
238	11681.9	11755.0	65.4	45.4	45.4	0.0	0.0	145.4	<	
239	11755.0	11807.8	322.6	35.9	3785.9	3730.0	0.0	308.7	>	Borrow supplied by Waste at 11+347
240	11807.8	11892.8	112.1	8.5	782.1	773.6	0.0	384.4	>	Borrow supplied by Waste at 12+577

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



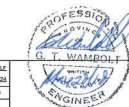
LEGEND:

- BALANCE LINE
- NET MASS LINE
- MOVEMENT DIRECTION
- FREE HAUL, (<90m)
- OVERHAUL, (>90m)

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

ISSUED FOR CONSTRUCTION

SCALE: HORIZ. 1"=400' VERT. 1"=40'		CAD FILE NAME: 18364-204-02.dwg	
DATE: 2018-05-24	DATE: 2018-05-24	DATE: 2018-05-24	DATE: 2018-05-24
NOV 16	NOV 16	NOV 16	NOV 16
DESIGNED FOR REVIEW	DESIGNED FOR REVIEW	DESIGNED FOR REVIEW	DESIGNED FOR REVIEW
NOV 19	NOV 19	NOV 19	NOV 19
ISSUED FOR CONSTRUCTION	ISSUED FOR CONSTRUCTION	ISSUED FOR CONSTRUCTION	ISSUED FOR CONSTRUCTION
DATE: 2018-05-24	DATE: 2018-05-24	DATE: 2018-05-24	DATE: 2018-05-24



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

TELKWA COAL LIMITED		TENAS HAUL ROAD	
STA. 11+000 to 12+000		MASS HAUL 12	
DESIGNED: 2018-05-24	DATE: 2018-05-24	LATITUDE: 34° 38' 11.88"	NAD83
QUALITY ASSURANCE: 2018-05-24	DATE: 2018-05-24	NORTHING: 606030	EASTING: 403013
DRAWN: 2018-05-24	DATE: 2018-05-24	LONGITUDE: 121° 0' 3.95"	W

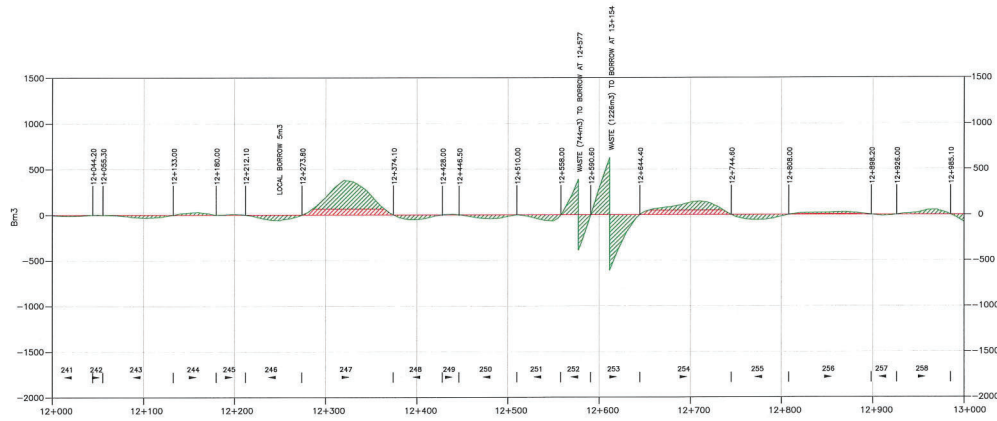
18364-204-M12 | B

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (bm ³)	IM Out (bm ³)	Fill (bm ³)	Waste (bm ³)	Surfacing (bm ³)	Mass Direction	Comment
241	11992.0	12044.2	46.7	14.5	32.2	0.0	0.0	<	
242	12044.2	12055.3	11.0	14.6	14.6	0.0	0.0	>	
243	12055.3	12133.0	77.7	124.8	124.8	0.0	0.0	<	
244	12133.0	12180.0	46.7	81.6	81.6	0.0	0.0	<	
245	12180.0	12212.1	32.1	48.1	48.1	0.0	0.0	<	
246	12212.1	12273.8	61.7	88.9	88.9	0.0	0.0	<	
247	12273.8	12374.1	100.3	540.1	540.1	0.0	0.0	<	Local Borrow
248	12374.1	12428.0	53.9	72.5	72.5	0.0	0.0	<	
249	12428.0	12446.3	18.3	25.0	25.0	0.0	0.0	<	
250	12446.3	12510.0	63.7	126.3	126.3	0.0	0.0	<	
251	12510.0	12558.0	48.0	117.1	117.1	0.0	0.0	<	
252	12558.0	12580.6	22.6	77.5	77.5	0.0	0.0	<	Waste to Borrow at 11+927
253	12580.6	12644.4	63.8	123.3	6.4	0.0	1225.9	>	Waste to Borrow at 13+169
254	12644.4	12744.0	99.6	361.9	361.9	0.0	0.0	<	
255	12744.0	12808.0	64.0	102.5	102.5	0.0	0.0	<	
256	12808.0	12898.7	90.7	153.8	153.8	0.0	0.0	<	
257	12898.7	12926.0	27.3	45.5	45.5	0.0	0.0	<	
258	12926.0	12985.1	59.1	172.5	172.5	0.0	0.0	<	

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



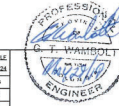
LEGEND:

- BALANCE LINE
- NET MASS LINE
- 1 2 3
- MOVEMENT DIRECTION
- FREE HAUL, (<80m)
- OVERHAUL, (>80m)

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 FILE NAME: 18364-204-01.DWG		DATE: 2019-05-24	
REV	DATE	DESCRIPTION	BY	CHK	APP
1	19-05-19	ISSUED FOR REVIEW	AK	TD	TD
2	19-05-19	ISSUED FOR CONSTRUCTION	JAP	TD	TD



DWB Consulting Services Ltd.		DESIGNED: JED DATE: 2019-05-14	
QUALITY ASSURANCE: JED DATE: 2019-05-14		LATITUDE: 54° 38' 11.88"	
DRAWN: JED DATE: 2019-05-14		LONGITUDE: 127° 0' 3.98"	



TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 12+000 TO 13+000

MASS HAUL 13

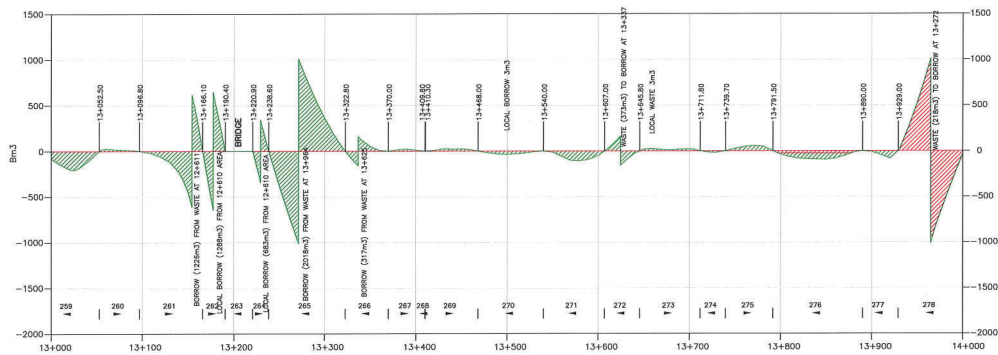
QUALITY ASSURANCE: JED DATE: 2019-05-14	MASS: 18364-204-M13	REV: B
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BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (m ³)	CU Cut (m ³)	Fill (m ³)	Borrow (m ³)	Waste (m ³)	Surfacing (m ³)	Mass Direction	Comment
259	12985.0	13052.4	74.3	288.5	288.5	0.0	0.0	158.6	<	
260	13052.4	13096.8	44.1	73.2	73.2	0.0	0.0	87.7	>	Borrow supplied by Waste at 12+611
261	13096.8	13166.1	188.0	8.9	1234.8	1235.9	0.0	270.3	>	Local Borrow (Endhaul) from 12+610 area
262	13166.1	13190.4	150.7	0.0	1287.6	1287.6	0.0	118.5	>	BRIDGE CROSSING
263	13190.4	13220.8	0.0	0.0	0.0	0.0	0.0	n/a	>	Local Borrow (Endhaul) from 12+610 area
264	13220.8	13338.6	90.5	0.0	883.2	883.2	0.0	57.4	>	Borrow supplied by Waste at 13+984
265	13338.6	13322.8	220.4	0.0	2017.8	2017.8	0.0	274.6	<	Borrow supplied by Waste at 13+984
266	13322.8	13370.0	52.1	20.9	337.4	316.8	0.0	141.7	<	Borrow supplied by Waste at 13+624
267	13370.0	13409.8	44.2	58.1	58.1	0.0	0.0	118.6	>	
268	13409.8	13410.3	0.5	0.5	0.5	0.0	0.0	1.5	<	
269	13410.3	13468.0	59.6	64.7	64.7	0.0	0.0	159.4	>	Local Borrow
270	13468.0	13540.0	59.6	55.9	58.5	2.6	0.0	141.3	<	
271	13540.0	13607.0	63.4	117.0	117.0	0.0	0.0	132.2	<	Waste To Borrow at 13+337
272	13607.0	13645.4	62.8	316.6	0.0	0.0	316.6	77.4	<	Local Waste
273	13645.4	13711.8	62.5	84.0	61.4	0.0	2.6	155.3	>	
274	13711.8	13738.3	22.0	22.3	22.3	0.0	0.0	58.4	>	
275	13738.3	13791.5	46.0	64.8	64.8	0.0	0.0	103.7	>	
276	13791.5	13890.0	92.1	121.0	121.0	0.0	0.0	191.0	<	
277	13890.0	13929.0	39.0	130.3	130.3	0.0	0.0	78.5	<	
278	13929.0	14001.4	129.9	2121.0	103.2	0.0	2017.8	146.0	<	Waste To Borrow at 13+271

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



LEGEND:

- BALANCE LINE
- NET MASS LINE
- Movement Direction
- Free Haul, (<80m)
- Overhaul, (>80m)

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 FILE NAME 1826A-204-EASTSIDE			G. T. WAMBOLT		
			DATE 2019-05-24			May 19, 2019		
REV	DATE	DESCRIPTION	DRAW	CHK	ENG			
A	FEB.19	ISSUED FOR REVIEW	KAC	PD	TW			
B	MAY.19	ISSUED FOR CONSTRUCTION	JAP	PD	TW			
						SENDER DESIGNER		
						SCHEMATIC DESIGNER		

DWB Consulting Services Ltd.	
1001 P. St.	
New Brunswick, N.B.	
A1A 1B9	
Phone (506) 881-5541 Fax (506) 881-5541	
DESIGNED	BY DATE 2018-03-14
QUALITY CONTROL	BY DATE 2018-03-20
QUALITY ASSURANCE	BY DATE 2018-03-20
DRAWN	BY DATE 2018-03-13

TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 13+000 to 14+000

MASS HAUL 14

LATITUDE 54° 38' 11.67" NAD83 NORTHING 655000
LONGITUDE 107° 0' 9.99" W EASTING 63933

DRAWING NUMBER 18364-204-M14

NOTES:
1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE
DRAWING 18364-204-01 & 18364-204-02.



ISSUED FOR CONSTRUCTION


TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 14+000 to 15+000

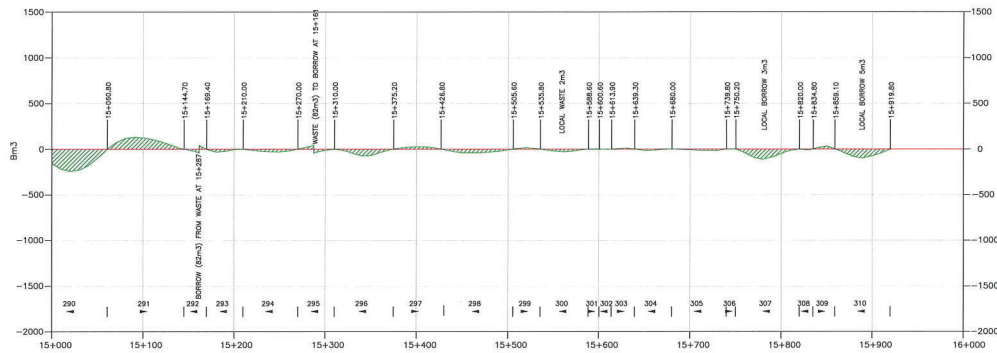
MASS HAUL 15				
LATITUDE:	54° 28' 11.65"	NAD83	NORTHING:	6056036
			DRAWING NUMBER	REV
LONGITUDE:	127° 12' 3.96"	983	EASTING:	673333
			18364-204-M15	B

BALANCE POINT VOLUME SUMMARY

Movement Number	From Station	To Station	Stripping (m³)	GM Cut (m³)	Fill (m³)	Borrow (m³)	Waste (m³)	Surfacing (m³)	Mass Direction	Comment
290	14980.75	15060.8	65.3	284.1	284.1	0.0	0.0	234.6	<	
291	15060.8	15144.7	100.6	180.4	180.4	0.0	0.0	252.1	>	
292	15144.7	15169.4	26.0	26.0	107.9	81.9	0.0	74.3	<	
293	15169.4	15210.0	47.1	101.9	101.9	0.0	0.0	121.8	<	
294	15210.0	15270.0	71.7	96.9	96.9	0.0	0.0	180.2	<	
295	15270.0	15310.0	59.8	111.6	23.7	0.0	81.9	120.2	<	
296	15310.0	15375.2	80.8	167.2	167.2	0.0	0.0	185.9	<	
297	15375.2	15428.8	61.9	60.7	60.7	0.0	0.0	154.9	>	
298	15428.8	15526.6	95.1	130.8	130.8	0.0	0.0	236.7	<	
299	15526.6	15535.8	35.9	44.5	44.5	0.0	0.0	50.7	>	
300	15535.8	15588.6	13.8	89.5	87.7	0.0	1.8	156.8	<	Local Waste
301	15588.6	15600.6	14.5	22.7	22.7	0.0	0.0	35.9	>	
302	15600.6	15613.8	15.8	22.2	22.2	0.0	0.0	40.0	<	
303	15613.8	15639.3	30.3	46.6	46.6	0.0	0.0	76.4	>	
304	15639.3	15680.0	50.4	81.4	81.4	0.0	0.0	122.2	<	
305	15680.0	15719.8	72.0	102.1	102.1	0.0	0.0	179.8	<	
306	15719.8	15750.2	15.0	26.5	26.5	0.0	0.0	31.1	>	
307	15750.2	15820.0	235.4	137.8	140.5	2.8	0.0	209.8	<	Local Borrow
308	15820.0	15834.8	14.2	29.2	29.2	0.0	0.0	48.7	<	
309	15834.8	15855.1	112.9	73.3	73.3	0.0	0.0	113.0	>	
310	15855.1	15919.8	290.1	159.0	163.7	4.7	0.0	292.9	<	Local Borrow

NOTES:

1. FOR GENERAL NOTES, SPECIFICATIONS & TYPICAL SECTIONS SEE DRAWING 18364-204-01 & 18364-204-02.



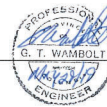
LEGEND:

- BALANCE LINE
- NET MASS LINE
- 1 2 3
- MOMENT DIRECTION
- FREE HAUL (<80m)
- OVERHAUL (>80m)

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

ISSUED FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	DATE
1	FEB-19	ISSUED FOR REVIEW	2019-02-21	
2	MAY-19	ISSUED FOR CONSTRUCTION	2019-05-24	



SCALE	HORIZ	VERT
1:400	1:400	1:400
DATE	2019-05-24	
DESIGNED	DATE	2019-01-14
QUALITY ASSURANCE	DATE	2019-02-21
DRAWN	DATE	2019-05-24

QUALITY ASSURANCE	DATE	2019-02-21
DRAWN	DATE	2019-05-24
DESIGNED	DATE	2019-01-14
QUALITY ASSURANCE	DATE	2019-02-21
DRAWN	DATE	2019-05-24

TELKWA COAL
LIMITED
TENAS HAUL ROAD
STA. 15+000 to 16+000

MASS HAUL 16	DATE	2019-05-24
QUALITY ASSURANCE	DATE	2019-02-21
DRAWN	DATE	2019-05-24
DESIGNED	DATE	2019-01-14
QUALITY ASSURANCE	DATE	2019-02-21
DRAWN	DATE	2019-05-24

18364-204-M16 | B

APPENDIX B – GOATHORN CREEK BRIDGE DESIGN

Sheet List Table	
Sheet Number	Sheet Title
18504-204-01	Site Plan
18504-204-23	Site Profile & Sections
18504-204-23	General Arrangement Plan
18504-204-24	General Arrangement Profile & Sections
18504-204-25	Specification Notes
18504-204-26	Steel Panel A Details
18504-204-27	Steel Elevation
18504-204-28	Steel Section & Cap Details
18504-204-29	Steel Splice Details
18504-204-30	Steel Beaming Details
18504-204-31	Deck Layout & Connection Details
18504-204-32	Concrete Deck Panel A Details
18504-204-33	Concrete Deck Panel B Details
18504-204-34	Ballast Wall Details
18504-204-35	Vehicle Tracking Analysis



GOATHORN CREEK CROSSING
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE
ON PILES (110 TONNES)
STA. 13+200 ON TELKWA COALMINE ROAD

Lat. 54° 37' 04.1" Long. 127° 08' 07.8"



DOWNSTREAM FROM CROSSING



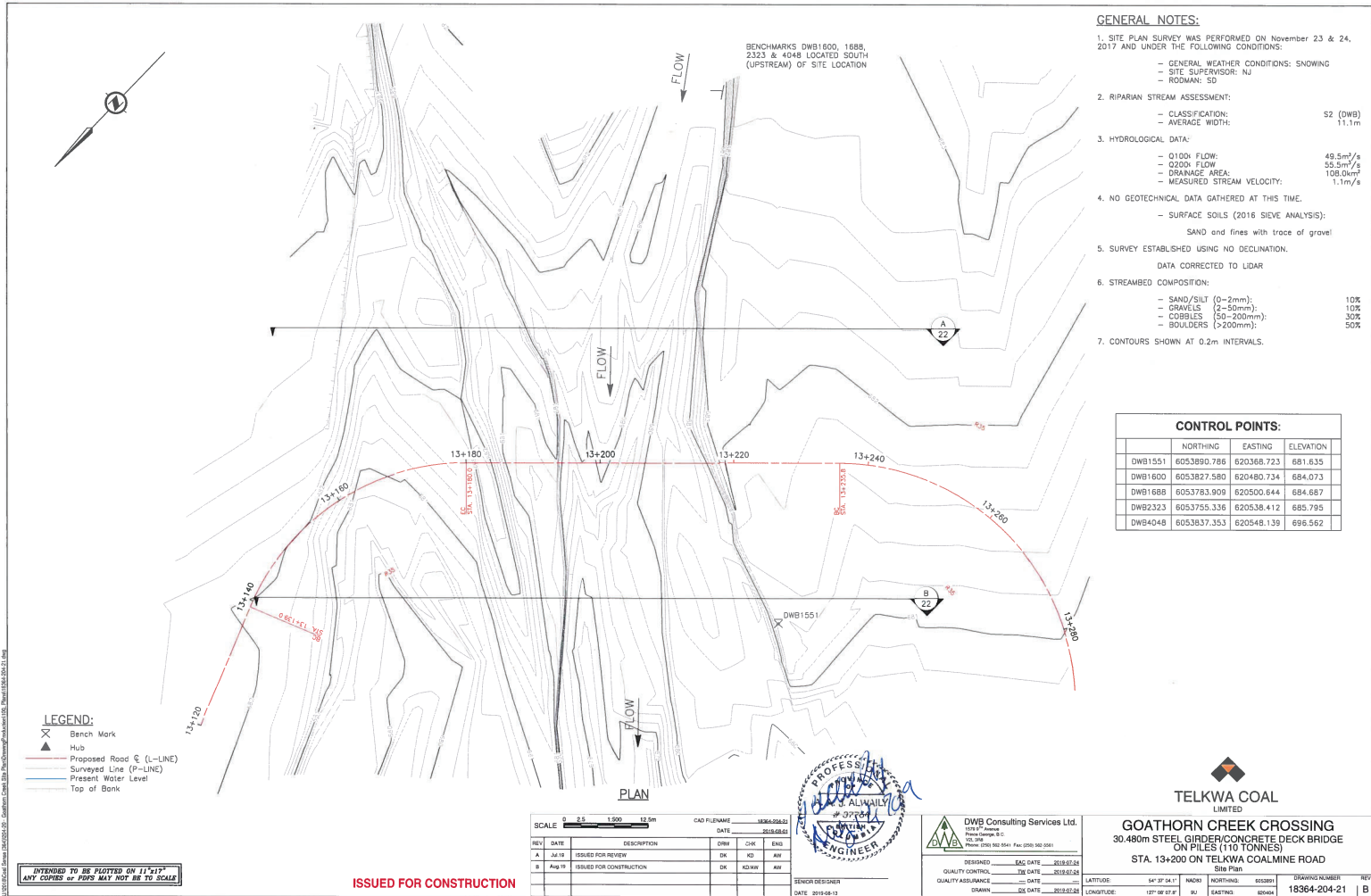
LOWCHAIN FROM CROSSING

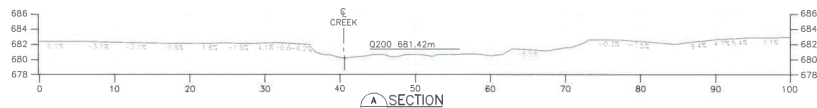
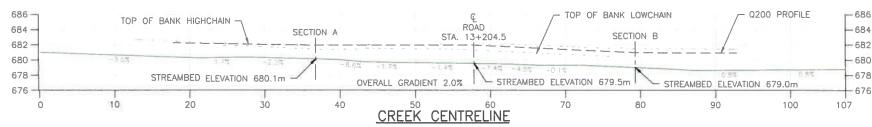
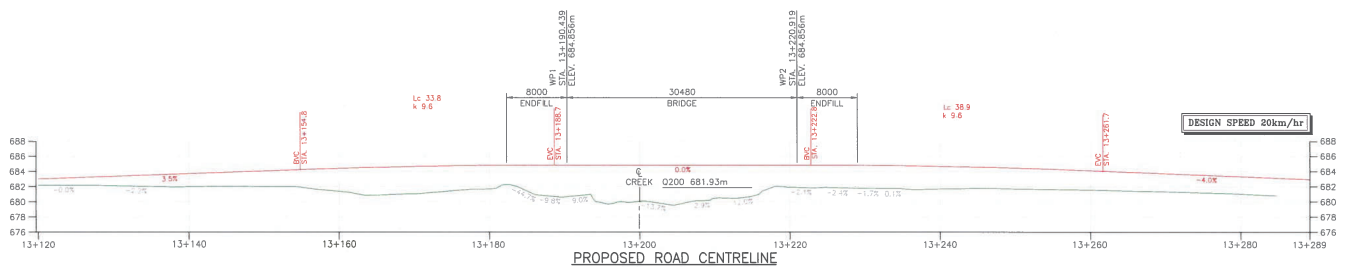


DWB Consulting Services Ltd.
1579 9th Avenue
Prince George, B.C.
V2L 3J8
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CLIENT PROJECT CODE	DATE	DRAWING NUMBER	REV
----	2019-08-13	18364-204-20	B





LEGEND:

- Road Design
- Existing Ground
- Present Water Level
- - - Top of Bank

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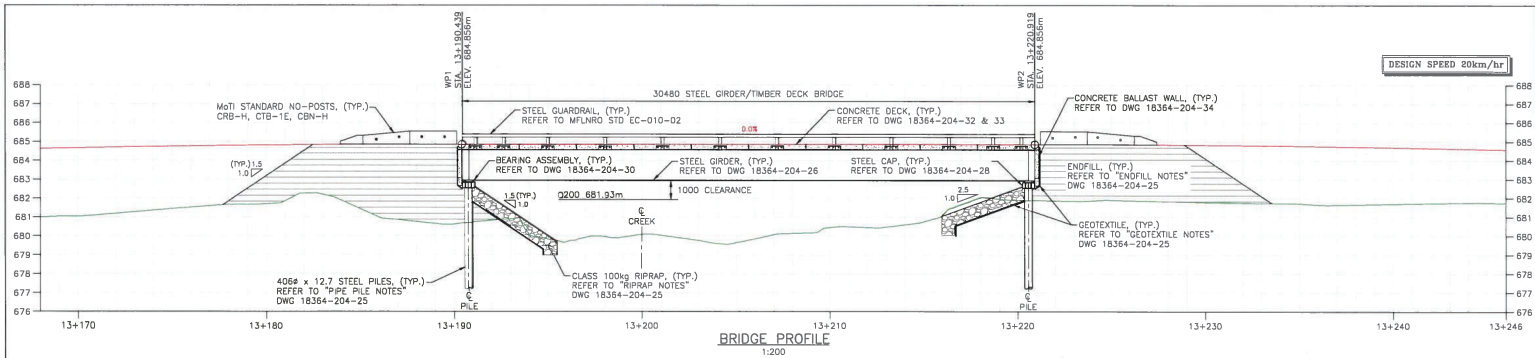
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			DATE 2018-08-01		
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B	Aug 19	ISSUED FOR CONSTRUCTION	OK	KD/AV	AW



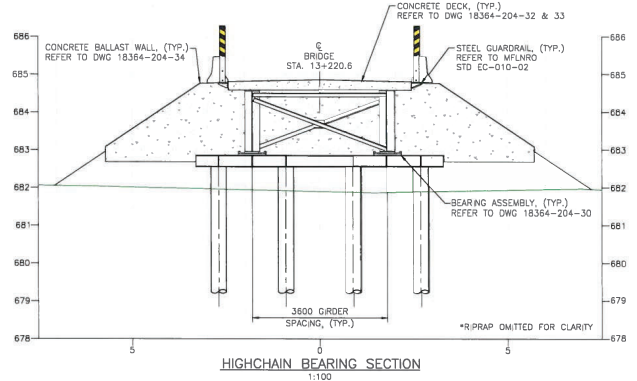
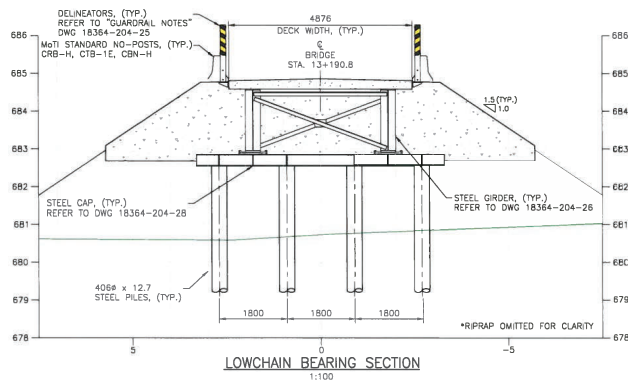
DWB Consulting Services Ltd.	
DESIGNED	DATE 2018-07-23
QUALITY CONTROL	DATE 2018-07-23
QUALITY ASSURANCE	DATE 2018-07-23
DRAWN	DATE 2018-07-23

GOATHORN CREEK CROSSING	
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE	
ON PILES (110 TONNES)	
STA. 13+200 ON TELKWA COALMINE ROAD	
Site Profile & Sections	
LATITUDE 54° 37' 04" N	NAD83
LONGITUDE 127° 08' 07" W	UTM
EASTING 620464	NORTHING 805091
DRAWING NUMBER 18364-204-22	REV B



CLEARANCE NOTE:

MINIMUM UNDERSIDE OF GIRDER ELEVATION 682.93m; DEPTH OF STEEL WITH DECK TO BE 1926mm. IF STEEL VARIES FROM THIS, WORKPOINT ELEVATIONS, BALLAST WALL LENGTHS & LAYOUT MAY NEED TO BE ADJUSTED. PRIOR TO CONSTRUCTION, VERIFICATION OF WORKPOINTS BY THE DESIGN ENGINEER MUST BE COMPLETED.

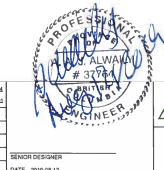


NOTES:
1. FOR SPECIFICATION NOTES REFER TO 18364-204-25.

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ISSUED FOR CONSTRUCTION

SCALE		As Noted		CAD FILENAME	
REV	DATE	DESCRIPTION	CHK	DATE	FILE
A	24/10	ISSUED FOR REVIEW	DK	2019-08-02	
B	Aug 18	ISSUED FOR CONSTRUCTION	DK	2019-08-02	



DESIGNED		DATE	
QUALITY CONTROL	DATE	2019-08-02	
QUALITY ASSURANCE	DATE	2019-08-02	
DRAWN	DATE	2019-08-02	

DWB Consulting Services Ltd.		10700 17 th Avenue	
P.O. Box 1000		Edmonton, Alberta T6C 2E1	
Phone: (780) 440-0041 Fax: (780) 440-0041			
GOATHORN CREEK CROSSING		30.480m STEEL GIRDER/CONCRETE DECK BRIDGE	
ON PILES (110 TONNES)		STA. 13+200 ON TELKWA COALMINE ROAD	
General Arrangement Profile & Sections			
QUALITY CONTROL	DATE	LATITUDE	NORTHING
QUALITY ASSURANCE	DATE	107° 18' 27.8" W	6008991
DRAWN	DATE	107° 18' 27.8" W	6008991
DATE	2019-08-02	LONGITUDE	EASTING
2019-08-02		107° 18' 27.8" W	6008991

DRAWING NUMBER
18364-204-24

REV
B

GENERAL NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE (U.N.D.).
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BENCHMARKS.
- REFER TO GEOTECHNICAL REVIEW REPORT.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING SAFETY IN & AROUND THE WORK SITE. PROPER & SAFE METHODS OF CONSTRUCTION SHALL BE USED AT ALL TIMES AS A MINIMUM, THE REQUIREMENTS OF THE LATEST EDITION OF WORK SAFE BC'S HEALTH & SAFETY REGULATIONS PUBLICATION, CANADIAN CONSTRUCTION SAFETY CODE & THE PROVINCIAL GOVERNMENT SHALL BE ADHERED TO, WHERE THERE ARE ANY DISCREPANCIES BETWEEN THE ABOVE, THE MOST STRINGENT SHALL APPLY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS IN THE FIELD TO SUIT EXISTING CONDITIONS. THE CONTRACTOR SHALL HAVE FIELD MEASUREMENTS & CONTROL PRODUCTION OF WORK ON SITE & ELSEWHERE TO FULFILL THE INTENT OF THE DRAWINGS.

DESIGN SPECIFICATION:

- THIS PERMANENT BRIDGE HAS BEEN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN BRITISH COLUMBIA. THE BRIDGE HAS BEEN DESIGNED IN ACCORDANCE TO CAN/CSA-S6 & THE FOLLOWING LOAD DIAGRAM.
- REFER TO MFLR0 STD-CC-000-001 FOR ADDITIONAL INFORMATION.
- THEORETICAL ACTION:
MAXIMUM DAILY TEMPERATURE: +27°C
MINIMUM DAILY TEMPERATURE: -12°C
- WIND LOAD (DESIGN WIND PRESSURE Q10 = 370Pa):
ON STRUCTURE: 1.28kN/m²
ON LIVE LOAD: 0.75kN/m²
- CONSTRUCTION LIVE LOAD SHALL BE ACCORDING TO CAN/CSA-S6-14 SECTION 3.18.4.2.
- CONSTRUCTION LIVE LOAD: 0.5kPa
- DESIGN SPEED: 30km/hr

BEARING ASSEMBLIES:

- ALL BEARING PAD MATERIAL SHALL BE OZONE RESISTANT NATURAL RUBBER (NATURAL POLYISOPRENE) IN ACCORDANCE WITH CAN/CSA-S6-14 WITH A 3-DIMENSIONAL HARDNESS OF 90.
- ALL BEARING PAD STEEL SHALL BE ROLLED STEEL WITH A MINIMUM $F_y = 230MPa$.
- STEEL COMPONENTS OF BEARINGS SHALL CONFORM TO CSA G40.21-M, PLATE GRADE OF 350MPa OR GALVANIZED.
- MAXIMUM EXPANSION JOINT MOVEMENT IS 15mm.
- ALL BEARING PAD CERTIFICATES SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL.

PIPE PILE NOTES:

- STEEL PIPE FOR THE PILES SHALL CONFORM TO ASTM A252, GRADE 3 (11-31.0MPa MINIMUM). DIMETER & WALL THICKNESS AS INDICATED ON THE DRAWINGS. PILE CERTIFICATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO DRIVING PILES.
- PILES SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE DRAWINGS. MINIMUM TOLERANCE FROM LOCATIONS SHOWN ON THE DRAWINGS SHALL BE 75mm AT GROUND & 25mm AT CUT-OFF ELEVATIONS.
- PILES SHALL BE SPICED, IF NECESSARY, IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS. PILING SHALL BE ALIGNED SUCH THAT PILES ARE STRAIGHT FROM END TO END.
- ALL WELDING SHALL CONFORM TO QUALITY & WORKMANSHIP TO CURRENT CSA W59. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED FOR DIVISION 1 OR DIVISION 2 OF CSA W47.1 & APPROVED BY DWB Consulting Services Ltd. CERTIFICATION SHALL BE IN EFFECT THROUGHOUT THE CONSTRUCTION PERIOD.
- PILE DRIVING EQUIPMENT SPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF PILE DRIVING. PILES SHALL BE DRIVEN AS SHOWN IN THE FOLLOWING TABLE.

	ABUTMENTS
SERVICE LOAD (SL)	480kN
ULTIMATE LOAD (UL)	900kN
PILE DEPTH	20m
PILE END	OPEN

STRUCTURAL STEEL:

- SUPERSTRUCTURE MEMBERS SHALL BE GRADE 350AT. BRACING MEMBERS SHALL BE GRADE 350A.
- STRUCTURAL BOLTS SHALL BE ASTM A325, TYPE 3 422 U.N.D. INSTALLED IN ACCORDANCE WITH CAN/CSA-S6-14. ALL BOLTS SHALL BE PREVIOUSLY UNLINED. BOLTS SHALL HAVE SUFFICIENT LENGTH SUCH THAT THE FULL THREAD IS EXCLUDED FROM SHEAR PLANES BETWEEN CONNECTED PARTS.
- NELSON STUDS SHALL BE IN ACCORDANCE WITH ASTM A108, GRADE 1015, 1018, OR 1020. SHEAR STUDS SHALL MEET THE REQUIREMENTS OF CAN W99 APPENDIX 1 FOR TYPE A & B STUDS.
- NELSON STUDS SHALL BE 226x150mm U.N.D.

FABRICATION SPECIFICATIONS:

- ALL DIMENSIONS ARE CORRECT AT 15°C. GIRDER LENGTHS ARE MEASURED ALONG THE CENTRELINE OF GIRDERS.
- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION (MIN. TWO WEEK REVIEW PERIOD).
- ALL MATERIALS OR MATERIAL COMBINATIONS SHALL CONFORM TO APPLICABLE CSA IDENTIFICATION.
- GIRDER CAMBER SHALL BE 80mm.
- ALL WELDING SHALL CONFORM TO CURRENT CSA W59. WELDING ELECTRODES SHALL BE COMPATIBLE WITH BASE METALS. ALL WELDS SHALL BE 8mm U.N.D.
- THE FABRICATOR RESPONSIBLE FOR WELDED CONSTRUCTION SHALL BE CERTIFIED FOR DIVISION 1 OR 2 OF CSA W47.1-09 - CERTIFICATION OF COMPANIES FOR BRIDGE WELDING OF STEEL STRUCTURES. CERTIFICATION SHALL BE IN EFFECT THROUGHOUT THE MANUFACTURING PERIOD.
- FIELD WELDING SHALL BE COMPLETED BY A COMPANY CERTIFIED TO CSA W47.1 DIVISION 3 OR BETTER.
- ALL WELD SHALL BE VISUALLY INSPECTED.
- CONTACT THE ENGINEER FOR FABRICATION INSPECTIONS A MINIMUM OF TWO WEEKS PRIOR TO SHIPPING OF FABRICATED ITEMS.

CONCRETE NOTES:

- PRECAST CONCRETE SHALL CONFORM TO CSA A23.1 EXPOSURE CLASS C1, $f_{cm}=30MPa$ AT 28 DAYS. PRECAST CONCRETE SHALL BE FABRICATED IN ACCORDANCE WITH CSA A23.4 IF A PLANT CERTIFIED IN ACCORDANCE WITH CSA A23.4. FABRICATION TOLERANCES TO CSA A23.4 FINISH SHALL BE TRANSFERRED TO TOP OF DECK PANELS, OTHERWISE TO CSA A23.1 & A23.4. ALL CURBERS SHALL COME WITH 20x20 CHAMFER U.N.D. ON THE APPLICABLE DRAWINGS.
- THE CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO CASTING.
- THE ADDITION OF FLY ASH SHALL NOT EXCEED 15% BY MASS OF PORTLAND CEMENT IN SUBSTRUCTURE CONCRETE.
- ALL CONCRETE IN CONTACT WITH NATURAL SOIL SHALL BE MADE ACCORDING TO THE CSA SPECIFICATION FOR EXPOSURE CLASSIFICATION C-25. THIS WILL REQUIRE A 15% MIN COMPRESSIVE STRENGTH OF 35MPa. A WATER CEMENT RATIO NO HIGHER THAN 40, & THE USE OF TYPE HS OR HS/P PORTLAND CEMENT.

REINFORCING STEEL:

- ALL REINFORCING STEEL SHALL HAVE A MINIMUM GRADE OF $f_y=400MPa$.
- TOP MAT OF DECK SHALL BE EPOXY COATED STEEL (CAN/CSA-C30.18).
- REINFORCING SHALL CONFORM TO CAN/CSA C30.18M GRADE 400R. REINFORCING STEEL SHALL NOT BE WELDED/BACK WELDED.

GROUT NOTES:

- GROUT SHALL BE NON-SHINK PORTLAND CEMENT BASED WITH A MINIMUM COMPRESSIVE STRENGTH OF 35MPa AT 28 DAYS. INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. GROUT SHALL BE A MIXTURE OF FINE & COARSE GROUT DEPENDING ON APPLICATION. SEE DRAWINGS FOR DETAILS.
- FIELD SAMPLING OF GROUT PROCEDURES SHALL CONFORM WITH DESIGN REQUIREMENTS.

GUARDRAIL NOTES:

- STEEL RAILS SHALL BE CSA G40.21M GRADE 350W (POWDER COATED YELLOW) OR ASTM A550 GRADE C (POWDER COATED YELLOW).
- STEEL POSTS & PLATE SHALL BE CSA G40.21M GRADE 350W (POWDER COATED YELLOW).
- SHOP WELDING SHALL BE IN ACCORDANCE WITH CSA W59. FABRICATOR SHALL BE CERTIFIED FOR DIVISION 1, 2 OR 3 IN ACCORDANCE WITH CSA W47.1. FIELD WELDING (IF ANY) SHALL BE DONE BY COMPANY CERTIFIED TO CSA W47.1 DIVISIONS 1, 2 OR 3. MINIMUM 8mm FILLET WELD UNLESS NOTED OTHERWISE.
- INSERTS SHALL BE GALVANIZED TO CSA G164, MINIMUM 610g/m² AFTER FABRICATION.
- GUARDRAIL BRACKETS & POST SHALL BE GALVANIZED TO CSA G164, MINIMUM 610g/m² AFTER FABRICATION.
- DELIMITATORS REQUIRED AS PER MFLR0 STANDARD.

ERECTION SPECIFICATIONS:

- ERECTION PROCEDURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- GIRDERS SHALL BE SUPPORTED BY TEMPORARY BRACING TO PREVENT DAMAGE DURING TRANSPORTATION & ERECTION.
- ALL PRECAST COMPONENTS SHALL UTILIZE RECESSED LIFTING INSERTS AS LIFTING DEVICES. GROUT RECESSES AFTER INSTALLATION.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING GIRDERS IN CORRECT ALIGNMENT UNTIL THE DECK HAS BEEN GROUTED IN PLACE.

CERTIFICATION & QUALITY CONTROL:

- CONCRETE TEST RESULTS BY AN APPROVED TESTING LABORATORY FOR ALL PRECAST CONCRETE COMPONENTS & FIELD GROUTING SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
- WILL CERTIFICATES FOR ALL STEEL INCORPORATED INTO THE STRUCTURE SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
- CERTIFICATION TO CSA STANDARDS FOR THE STEEL & PRECAST CONCRETE MANUFACTURERS SHALL BE IN EFFECT AT THE TIME OF TENDER OPENING & THROUGHOUT THE MANUFACTURING PERIOD.
- IT IS UNDERSTOOD THAT THE OWNER WILL ARRANGE TO CARRY OUT FIELD REVIEWS BY A QUALIFIED PERSON TO CONFIRM CONFORMANCE TO DESIGN DRAWINGS.

ENDFILL NOTES:

- BRIDGE (ENDFILL) SHALL CONSIST OF WELL GRADED, SELECT GRANULAR MATERIAL (100mm³) FREE OF UNSUITABLE MATERIALS, FROZEN MATERIAL, & ORGANICS. BRIDGE (ENDFILL) SHALL BE CONSTRUCTED IN SUCCESSIVE HORIZONTAL LAYERS NOT EXCEEDING 200mm IN LOOSE THICKNESS. EACH LAYER SHALL BE COMPACTED TO A MINIMUM 90% STANDARD PROCTOR DRY DENSITY. THE FINAL TWO LAYERS OF ENDFILL SHALL BE COMPACTED TO 100% STANDARD PROCTOR DRY DENSITY.
- HEAVY EARTH COMPACTING EQUIPMENT OR OTHER HEAVY CONSTRUCTION EQUIPMENT SHALL NOT BE USED WITHIN 2.0m OF THE ABUTMENT & WALLS, WITH THE EXCEPTION OF A 10 TON WHEASTON ROLLER FOR BASE PREPARATION.

RIPRAP NOTES:

- CLASS 100kg RIPRAP SHALL BE HARD, DURABLE, ANGULAR ROCK AND IN ACCORDANCE TO THE "M41" STANDARD SPECIFICATIONS. APPROXIMATE AVERAGE DIMENSION OF SPECIFIED ROCK CLASS MASS (9g=2.640).
- | | DIAMETER |
|------------------------|----------|
| 15% AVERAGE DIMENSION | 185g |
| 50% AVERAGE DIMENSION | 415g |
| 85% AVERAGE DIMENSION | 655g |
| 100% AVERAGE DIMENSION | 715g |

GEOTEXTILE NOTES:

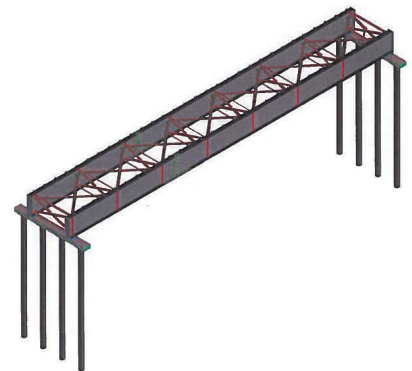
- LINE EXCAVATION & ROCK WITH NON-WOVEN GEOTEXTILE WITH THE FOLLOWING SPECIFICATIONS:
TENSILE STRENGTH: ASTM D4632 >2000N
PUNCTURE STRENGTH: ASTM D8241 >2000N

HYDROLOGY NOTES:

- HYDRAULIC DATA:
- G200 ELEVATION: 681.83m
- MINIMUM CLOSURE: 1.5m
- DESIGN VELOCITY: 3.67m/s
- DESIGN DISCHARGE: 55.5m³/s

ESTIMATED QUANTITIES:

- EXCAVATION: 130m³
GEOTEXTILE: 240m²
ENDFILL: 220m³
CLASS 100kg RIPRAP: 210m³



ISOMETRIC
1:250

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SCALE		AS NOTED	CAD FILE NAME			1806-20-03		
			DATE			2018-08		
REV	DATE	DESCRIPTION	DRW	CHK	ENG			
A	Jul 19	ISSUED FOR REVIEW	OK	KD	AW			
B	Aug 19	ISSUED FOR CONSTRUCTION	OK	KD/AN	AW			



SENIOR DESIGNER
DATE: 2018-08-13

DWB Consulting Services Ltd. 1000-1000 Vancouver, B.C. V6C 1A1 Phone: (604) 582-5841 Fax: (604) 582-5841	
DESIGNED: _____	DATE: 2018-08-20
QUALITY CONTROL: _____	DATE: 2018-08-20
QUALITY ASSURANCE: _____	DATE: 2018-08-20
DRAWN: _____	DATE: 2018-08-20

TELKWA COAL LIMITED	
GOATHORN CREEK CROSSING	
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE	
ON PILES (110 TONNES)	
STA. 13+200 ON TELKWA COALMINE ROAD	
Specification Notes	
DESIGNED: _____	DATE: 2018-08-20
QUALITY CONTROL: _____	DATE: 2018-08-20
QUALITY ASSURANCE: _____	DATE: 2018-08-20
DRAWN: _____	DATE: 2018-08-20

REV 8

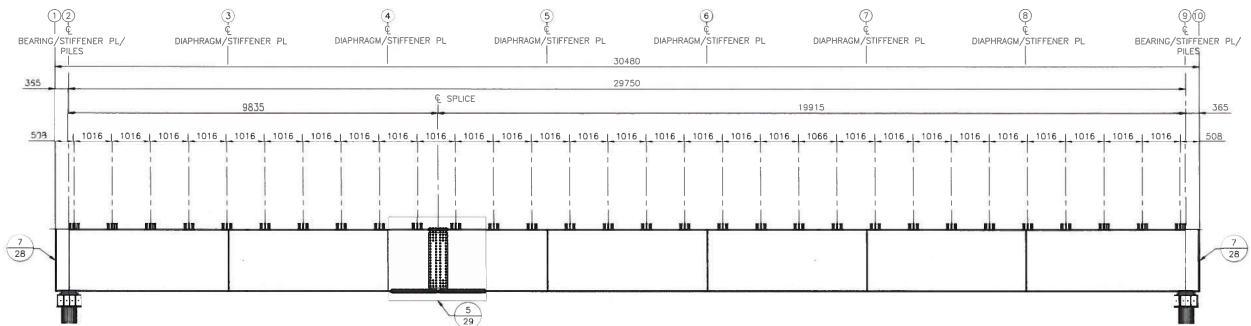


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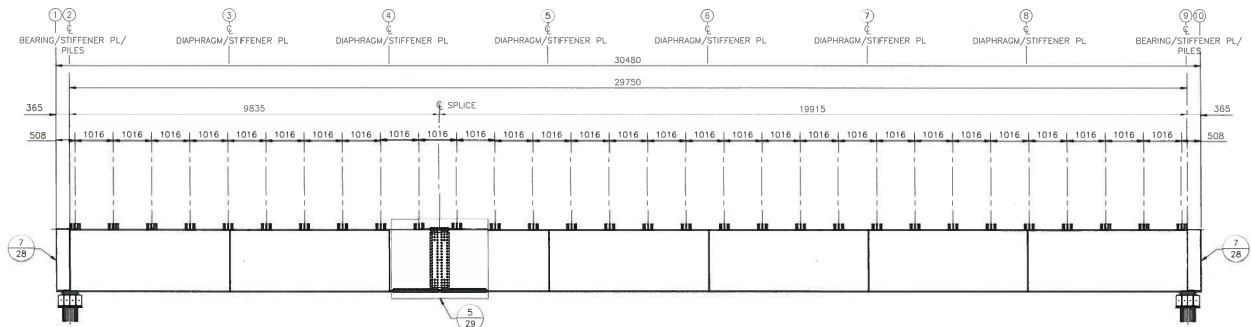
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NOTES:

1. FOR SPECIFICATION NOTES SEE DRAWING 18364-204-25.



ELEVATION AT GRIDLINE A



ELEVATION AT GRIDLINE B



GOATHORN CREEK CROSSING
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE
ON PILES (110 TONNES)
STA. 13+200 ON TELKWA COALMINE ROAD
Steel Elevation

REV	DATE	DESCRIPTION	DRW	CHK	ENG
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B	Aug 18	ISSUED FOR CONSTRUCTION	KD	KD/AV	AW

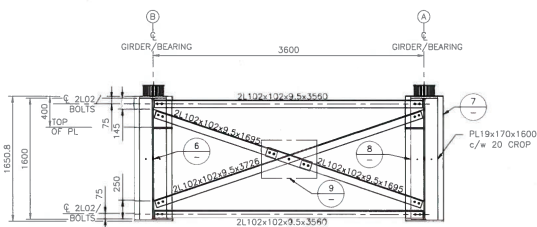
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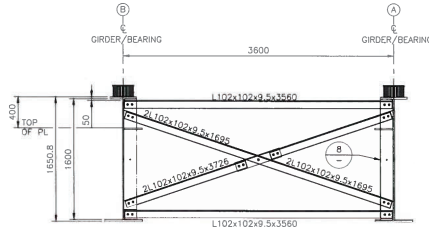
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LONGITUDE: 127° 48' 07.8"	WGS84	EASTING: 680381	NORTHING: 18364-204-27

INTENDED TO BE PLOTTED ON 11"x17"
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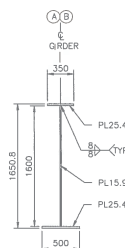
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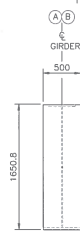
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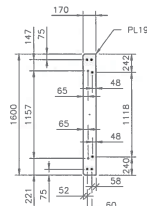
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DETAIL
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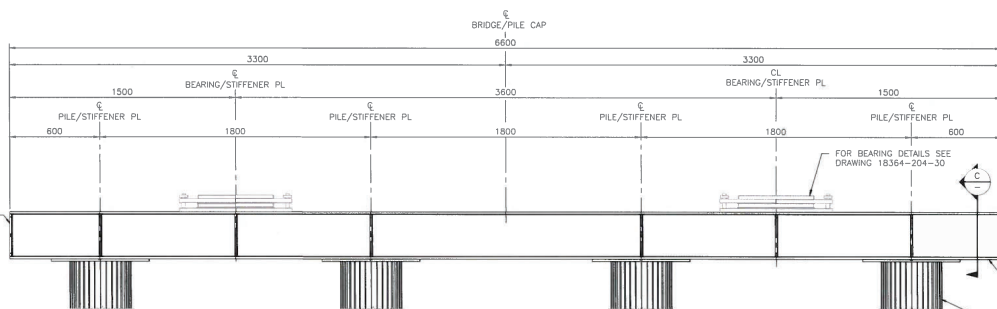
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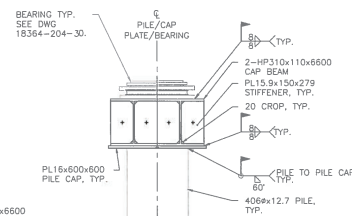
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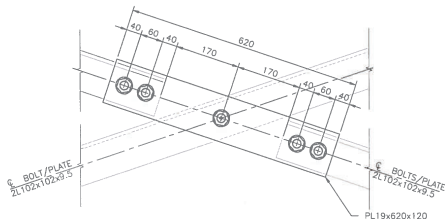
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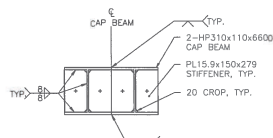
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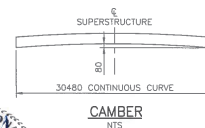
SECTION
C
1:25



DETAIL
9
1:10



PILE CAP WELDING DETAIL
1:25



CAMBER
NTS



REV	DATE	DESCRIPTION	BY	CHK	ENG
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B	Aug 18	ISSUED FOR CONSTRUCTION	ND	KDHW	AW

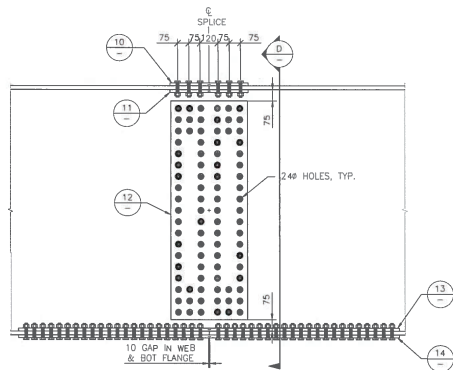
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DESIGNED	BY DATE	2018-07-28
QUALITY ASSURANCE	BY DATE	2018-08-08
DRAWN	BY DATE	2018-07-28

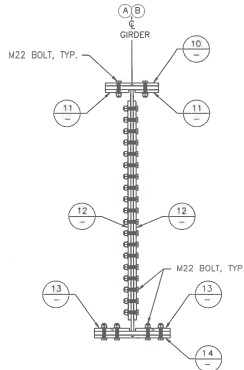
LIMITED					
GOATHORN CREEK CROSSING					
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE					
ON PILES (110 TONNES)					
STA. 13+200 ON TELKWA COALMINE ROAD					
Steel Sections & Cap Details					
LATITUDE: 54° 37' 24.11"		NAD83	NORTHING: 6053891	DRAWING NUMBER	18364-204-28
LONGITUDE: 127° 48' 17.81"		W	EASTING: 820464	REV	B

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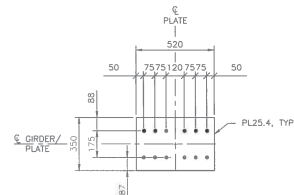
ISSUED FOR CONSTRUCTION



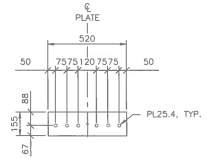
5
27
DETAIL
1:10



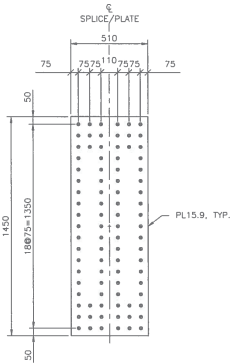
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SECTION
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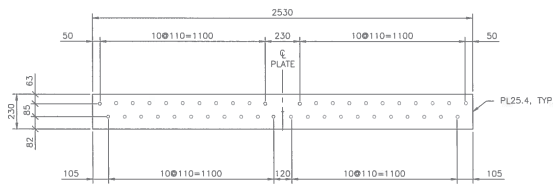
10
DETAIL
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(2 REQUIRED)



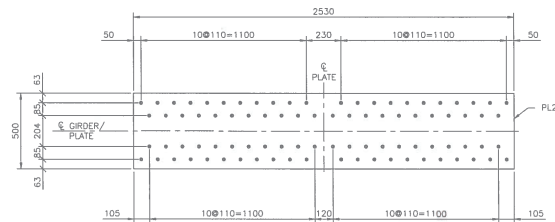
11
DETAIL
1:10
(4 REQUIRED)



12
DETAIL
1:10
(4 REQUIRED)



13
DETAIL
1:10
(4 REQUIRED)



14
DETAIL
1:10
(2 REQUIRED)

NOTES:

1. FOR SPECIFICATION NOTES SEE DRAWING 18364-204-25.

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ISSUED FOR CONSTRUCTION

SCALE		As Noted	CAD FILENAME			18364-204-25	
			DATE			2018-08-15	
REV	DATE	DESCRIPTION	DRW	CHK	ENG		
A	Jul 18	ISSUED FOR REVIEW	KD	AKHND	AW		
B	Aug 18	ISSUED FOR CONSTRUCTION	KD	KDRAH	AW		

DESIGNER
DATE: 2018-08-15

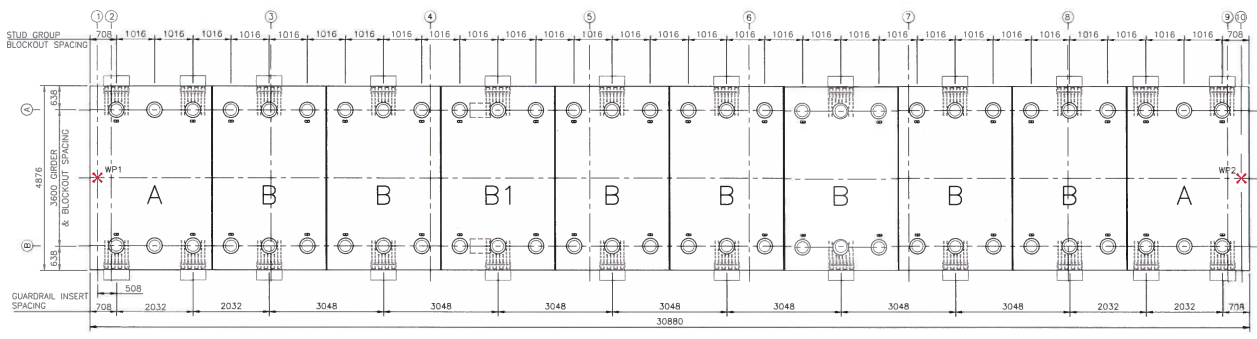


DWB Consulting Services Ltd.	
DESIGNED	2018-07-28
QUALITY ASSURANCE	2018-07-28
DRAWN	2018-07-28

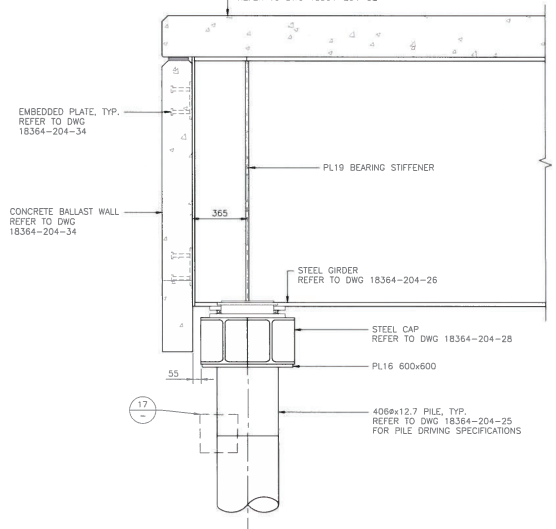
TELKWA COAL LIMITED	
GOATHORN CREEK CROSSING 30 480m STEEL GIRDER/CONCRETE DECK BRIDGE ON PILES (110 TONNES) STA: 13+200 ON TELKWA COALMINE ROAD Steel Splice Details	
LATITUDE	54° 37' 54.1"
LONGITUDE	127° 08' 07.8"
NAD83	6003891
EASTING	620404
PROJECT NUMBER	18364-204-29
REV	B



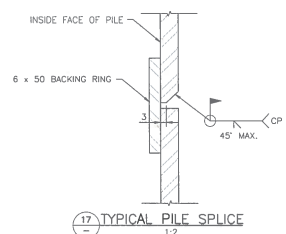
GOATHORN CREEK CROSSING 30.480m STEEL GIRDER/CONCRETE DECK BRIDGE ON PILES (110 TONNES) STA. 13+200 ON TELKWA COALMINE ROAD Steel Bearing Details				
LATITUDE:	54° 37' 04.1"	NAD83	NORTHING:	6053891
LONGITUDE:	123° 38' 02.8"	SU	EASTING:	0204564
			DRAWING NUMBER	18364-204-30



DECK PANEL LAYOUT
1:100



TYPICAL ABUTMENT DETAIL
1:25



17 TYPICAL PILE SPLICE
1:2

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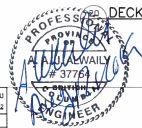
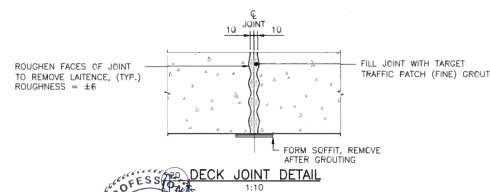
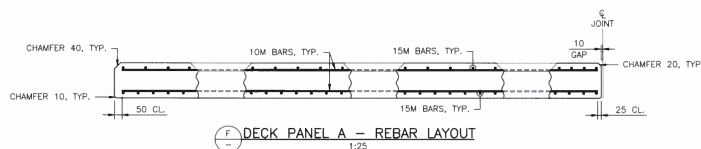
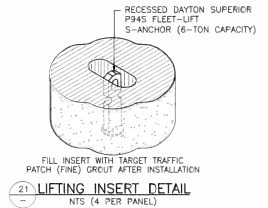
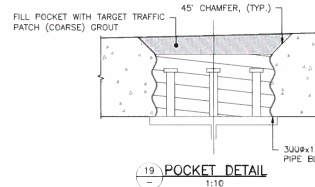
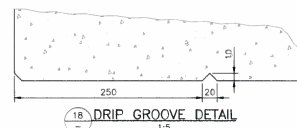
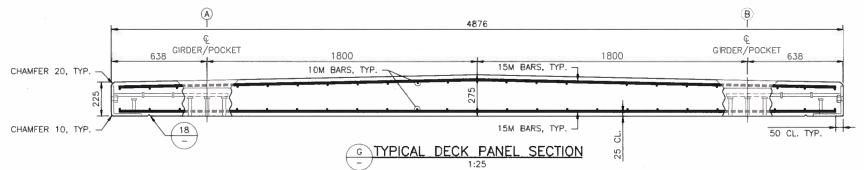
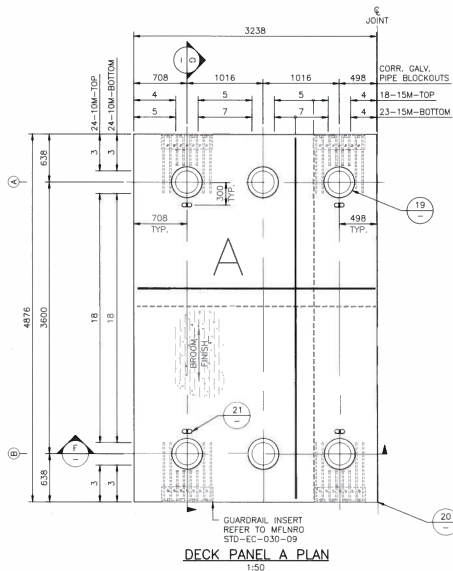
ISSUED FOR CONSTRUCTION

SCALE		As Noted		CAD FILE NAME	
REV	DATE	DESCRIPTION	CHK	CHK	DATE
A	Jul 18	ISSUED FOR REVIEW	DK	RD	AW
B	Aug 19	ISSUED FOR CONSTRUCTION	DK	KD/AR	AW



DWB Consulting Services Ltd.	
DESIGNED	AW DATE 2018-07-28
QUALITY CONTROL	SD DATE 2018-07-28
QUALITY ASSURANCE	SD DATE 2018-07-28
DRAWN	SD DATE 2018-07-28

TELKWA COAL LIMITED	
GOATHORN CREEK CROSSING	
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE	
ON PILES (110 TONNES)	
STA. 13+200 ON TELKWA COALMINE ROAD	
Deck Layout & Connection Details	
DESIGNED	AW DATE 2018-07-28
QUALITY CONTROL	SD DATE 2018-07-28
QUALITY ASSURANCE	SD DATE 2018-07-28
DRAWN	SD DATE 2018-07-28
LATITUDE	54° 37' 04.1"
LONGITUDE	127° 08' 07.8"
NAD83	NORTHING: 6052851
SD	EASTING: 620454
DRAWING NUMBER	18364-204-31
REV	B



GOATHORN CREEK CROSSING
30.480m STEEL GIRDER/CONCRETE DECK BRIDGE
ON PILES (110 TONNES)
STA. 13+200 ON TELKWA COALMINE ROAD
Concrete Deck Panel A Details

REV	DATE	DESCRIPTION	BY	CHK	APP
1	2018-08-13	ISSUED FOR CONSTRUCTION	DK	MDH	AW
2	2018-08-13	ISSUED FOR CONSTRUCTION	DK	MDH	AW

SENIOR DESIGNER
DATE: 2018-08-13

DESIGNED: AW DATE: 2018-07-26
QUALITY CONTROL: AW DATE: 2018-07-26
QUALITY ASSURANCE: AW DATE: 2018-07-26
DRAWN: BK DATE: 2018-07-26

LATITUDE: 54°37'04" N LONGITUDE: 127°08'07" W
NAD83 NORTHING: 6252851
UTM EASTING: 625464

DRAWING NUMBER: 18364-204-32
REV: B

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