PROPOSED PERMANENT 24.384m [80'] O/A LENGTH STEEL GIRDER WITH CONCRETE COMPOSITE DECK BRIDGE
FOR: MORICE FSR AT 7.5km
SITE: R5-147

(54° 21' 37" N , 126° 47' 32" W)

N

NOT TO SCALE

DWG No:
182-71-2-R5-147 MORICE FSR 7.5KM- 001

SHEET: 1 OF 11

PREPARED FOR:

BRITISH COLUMBIA
Ministry of Forests, Lands Natural Resource Operations and Rural Development
NORTHERN INTERIOR REGION

PREPARED BY:

ONSITE ENGINEERING LTD.

NORTHERN OPERATIONS
3661 15TH AVENUE
PRINCE GEORGE, BC V2N 1A3
PH.: 250-562-2252 FAX: 866-235-6943
www.onsite-engineering.ca

DESIGN BY: TYLER MANN, EIT
DESIGN DATE: FEBRUARY 19, 2021
REVIEWED BY: PAUL MYSAK, P.ENG.
DRAWN BY: CHAZEL SOLAMO, FIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 7, 2019
FILE NAME: R5-147 MORICE FSR 7.5km.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

DRAWING INDEX:

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SHEET 11 OF 11 - SITE PHOTOS

NOTES:

1. COORDINATING REGISTERED PROFESSIONAL: STEVE ROOKE, RFT

2. DURATION:

2.1. FOR THE PURPOSES OF THIS DESIGN THE TERM PERMANENT AS IT REFERS TO DURATION OF THIS INSTALLATION MEANS FORTY-FIVE (45) YEARS OR LESS.

3. DESIGN LIVE LOAD:

3.1. DESIGN VEHICLE: BCFS L-100 AS PER MOFLNRORD (STD-EC-000-001 TO 002).

4. STRUCTURE:

4.1. SUPERSTRUCTURE TO BE PROVIDED BY OTHERS. SUPERSTRUCTURE DESIGN TO BE IN ACCORDANCE WITH CAN/CSA-S6 (MODIFIED AS PER MOFLNRORD INTERIM BRIDGE DESIGN GUIDELINES JULY 23-2010) AND IS TO TAKE INTO ACCOUNT LOGGING TRUCKS WITH UNBALANCED LOADS AND OFF-CENTER DRIVING.

4.2. EXCEPT AS NOTED, SPECIFICATIONS TO BE AS PER MOFLNRORD STANDARD DRAWINGS FOR:

4.2.1. PERMANENT STRUCTURE: CONCRETE COMPOSITE BRIDGES (STD-EC-030-01 TO 09), CONCRETE BALLAST WALLS (STD-EC-050-01 TO 04), STEEL ABUTMENT CAP AND BEARING ASSEMBLY (STD-EC-050-01 AND 09), HSS RAIL CL-3 (STD-EC-010-03REV3), AND NO POST BARRIERS/GUIDE LOGS (STD-E-010-05).

4.2.2. TEMPORARY STRUCTURE: ALL STEEL PORTABLE BRIDGES (STD-E-090-01 TO 02) AND NO POST BARRIERS/GUIDE LOGS (STD-E-010-05).

4.1. OEL IS TO REVIEW FABRICATION DRAWINGS PRIOR TO FABRICATION OF SUPERSTRUCTURE FOR COMPLIANCE WITH THIS DESIGN.

4.2. CHECK REQUIRED BEARING TO BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION OF THE ABUTMENTS. BOTTOM OF GIRDER ELEVATIONS TO GOVERN.

4.3. GENERAL ARRANGEMENT DRAWING. SOME SUPERSTRUCTURE COMPONENTS NOT SHOWN. REFER TO FABRICATION DRAWINGS.

5. DESIGN OF ROAD APPROACHES AND DECK WIDTH:

5.1. HORIZONTAL ALIGNMENT AND ROAD WIDTHS TO PERMIT W-19 TRUCKS WITH 0.5m CLEARANCE INSIDE CURBS.

5.2. DESIGN ROAD WIDTH:MATCHES EXISTING ROAD WIDTH.

6. CREEK NOTES:

6.1. STREAM RIPARIAN CLASS IS S3 BASED ON STREAM WIDTH AND FISH PRESENCE/ACCESS (MOFLNRORD).

6.2. STREAM BED MATERIAL CONSISTS OF SAND, GRAVEL, AND COBBLES.

THE DESIGN FLOOD IS EXPECTED TO BE: ☐ CLEARWATER FLOOD ■ DEBRIS FLOOD ☐ DEBRIS FLOW
NOTE THAT THE STRUCTURE IS NOT DESIGNED TO PASS A DEBRIS FLOOD OR DEBRIS FLOW WITHOUT DAMAGE DUE TO UNKNOWN MAGNITUDE OF SUCH AN EVENT.

6.3. DESIGN FLOOD: Q100 = 25m³/s @ 2m/s. THE PEAK FLOW FOR DESIGN PURPOSES WAS DETERMINED BASED ON REVIEW OF CHANNEL CHARACTERISTICS, PREVIOUS HIGH FLOW EVIDENCE, AND REVIEW OF THE RESULTS OF PEAK FLOW EMPIRICAL MODELS SUCH AS THE RATIONAL METHOD AND A REGIONAL ANALYSIS. WATERSHED CHARACTERISTICS, AND OTHER RELEVANT INFORMATION ARE ALSO USED TO ESTIMATE PEAK FLOW.

6.4. MODERATE LIKELIHOOD OF WOODY DEBRIS MOVEMENT.

6.5. CLIMATE CHANGE: CLIMATE CHANGE WAS CONSIDERED IN THE Q100 FLOOD ASSESSMENT. LIKELY CHANGES TO INTENSITY-DURATION-FREQUENCY CURVES UNDER CLIMATE CHANGE (IDF-CCTool-https://idf-cc-uwo.ca) DEVELOPED BY WESTERN UNIVERSITY, CANADA AND LIKELY CHANGES TO CLIMATE VARIABLES NOTED IN PLAN2ADAPT BY THE PACIFIC CLIMATE IMPACTS CONSORTIUM (https://pacificclimate.org/) WERE USED TO ESTIMATE THE LIKELY INCREASE IN THE DESIGN FLOOD OVER THE PLANNED LIFE SPAN OF THE STRUCTURE.

7. GEOTECHNICAL:

7.1. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION ENGINEERING MANUAL. SUBSURFACE INFORMATION HAS BEEN INFERRED FROM SITE OBSERVATIONS OF SOIL EXPOSURES IN ROAD CUTS AND ALONG STREAMBANKS AND FROM SHALLOW HAND DUG TEST PITS AND PROBES (SEE DESCRIPTION ON SHEET 4). NO DETAILED SUBSURFACE FIELD INVESTIGATION WAS CONDUCTED (LARGE TEST PITS OR BORE HOLES). FIELD CONDITIONS MAY VARY FROM THOSE INFERRED. IF, UPON EXCAVATION, FIELD CONDITIONS VARY FROM THOSE INFERRED, THEN CHANGES TO THE FOUNDATION DESIGN OR INSTALLATION MAY BE REQUIRED.

7.2. FOOTING DESIGN BASED ON ASSUMED SOIL BEARING CAPACITY OF 200kPa.

8. FIELD REVIEWS:

8.1. A PROFESSIONAL ENGINEER OR THEIR DESIGNATE IS REQUIRED TO INSPECT THE FOLLOWING ACTIVITIES PRIOR TO PROVIDING RECORD DRAWINGS AND A CROSSING ASSURANCE STATEMENT:

- LAYOUT OF RIPRAP/ABUTMENT LOCATION PRIOR TO INITIAL EXCAVATION
- FOUNDATION SOILS FOLLOWING EXCAVATION
- PILE DRIVING
- FIELD WELDS
- RIPRAP AND ABUTMENT
- CONSTRUCTION SAMPLING AND POURING OF DECK GROUT
- GROUT SAMPLES TO BE TESTED FOR STRENGTH
- BACKFILL MATERIAL AND TECHNIQUE
- OTHER SITE INSPECTIONS AT THE DISCRETION OF THE PROFESSIONAL

9. INSTALLATION NOTES:

9.1. RIPRAP SOURCE HAS NOT BEEN IDENTIFIED, BUT EXPECTED WITHIN 5km OF THE SITE.

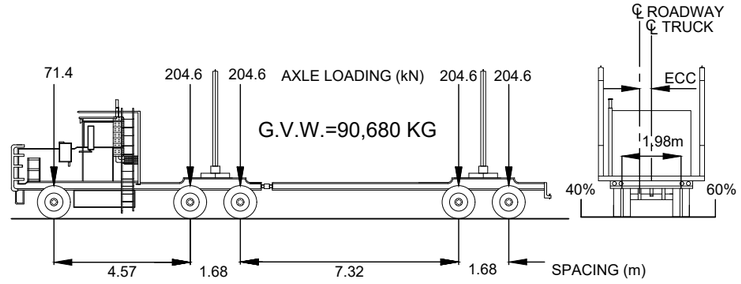
9.2. NOTE THAT WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH WORKSAFEBC REGULATIONS, WORKSAFEBC REGULATIONS ARE TO GOVERN.

9.3. PLAN TO DEWATER FOOTING AREAS.

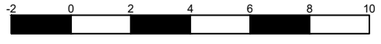
ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND BCMOECCS CONDITIONS NOTED AT THE WEB SITE: http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html THE BCMOECCS REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENT OR IS CLASSIFIED AS S1 THROUGH S4.
2. A SEDIMENT MANAGEMENT PLAN WITH SPECIFIC MITIGATION MEASURES TO MINIMIZE SILTATION MUST BE ON SITE. MACHINE CROSSINGS MUST BE LIMITED TO 2 UNLESS OTHERWISE INCREASED OR DECREASED BY A QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP).
3. ALTERATION TO STREAM BANKS AND IN-STREAM WORK (EXPECTED) SHOULD BE SUPERVISED BY AN ENVIRONMENTAL MONITOR.
4. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. VEGETATE DISTURBED SLOPES AS SOON AS PRACTICABLE.
5. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA.
6. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

OVERHEAD POWER LINES PRESENT AT SITE. ADHERE TO BC HYDRO LIMITS OF APPROACH REQUIREMENTS.



BCFS L-100 OFF HIGHWAY LOADING DIAGRAM
SCALE 1:200



PARTIAL MATERIALS LIST - PERMANENT STRUCTURE	
QTY	ITEM DESCRIPTION
2	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
2	CONCRETE BALLAST WALLS
2	DOUBLE STEEL CAP BEAMS
4	SETS OF CONCRETE NO-POST APPROACH BARRIERS: 690-CRB-H, CTB-1E, CBN-H
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX
	RIPRAP: SEE SPECIFICATIONS ON SHEET 5.

PARTIAL MATERIALS LIST - TEMPORARY STRUCTURE	
QTY	ITEM DESCRIPTION
7m³	LEVELING COURSE (SANDY GRAVEL OR 19mm CLEAR CRUSH) - CRUSH RECOMMENDED WHERE WATER EXPECTED IN FOOTING AREA
1	ROLL NON-WOVEN GEOTEXTILE: MIRAFI 180N OR EQUIVALENT
2	TIMBER SILLS 0.2m X 0.4m X 4.9m (16') LENGTH
8	LAG BOLTS: 19mmØ (¾") X 200mm LENGTH TO ATTACH STRUCTURE TO TIMBER SILL
4	TIMBER BALLAST WALLS: 0.15m X 0.25m X 9m LENGTH
4	GUIDE LOGS: 0.6mØ X 6m LENGTH (TYP)
4	W-054 SERIES DELINEATORS (2 LEFT, 2 RIGHT)
2	W-051 SERIES NARROW STRUCTURE SIGNS
2	POSTS FOR NARROW STRUCTURE SIGNS: 0.2m X 4.0m LENGTH LOG POSTS OR 0.1m X 0.1m X 3.0m LENGTH TREATED TIMBERS
1	BAG ROADSIDE GRASS SEED MIX

PERMANENT STRUCTURE APPROXIMATE EARTHWORK VOLUME TABLE (COMPACTED m³)	
SURFACING FILL	100m³
ROAD BASE FILL	50m³
CUT	2300m³

TEMPORARY STRUCTURE APPROXIMATE EARTHWORK VOLUME TABLE (COMPACTED m³)	
FILL	200m³
CUT	850m³
STRIPPING	450m³

182-71-2-R5-147 MORICE FSR 7.5KM- 002

SHEET: 2 OF 11

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DESIGN BY: TYLER MANN, EIT
DESIGN DATE: FEBRUARY 19, 2021
REVIEWED BY: PAUL MYSAK, P.ENG.
DRAWN BY: CHAZEL SOLAMO, FIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 7, 2019
FILE NAME: R5-147 MORICE FSR 7.5km.DWG
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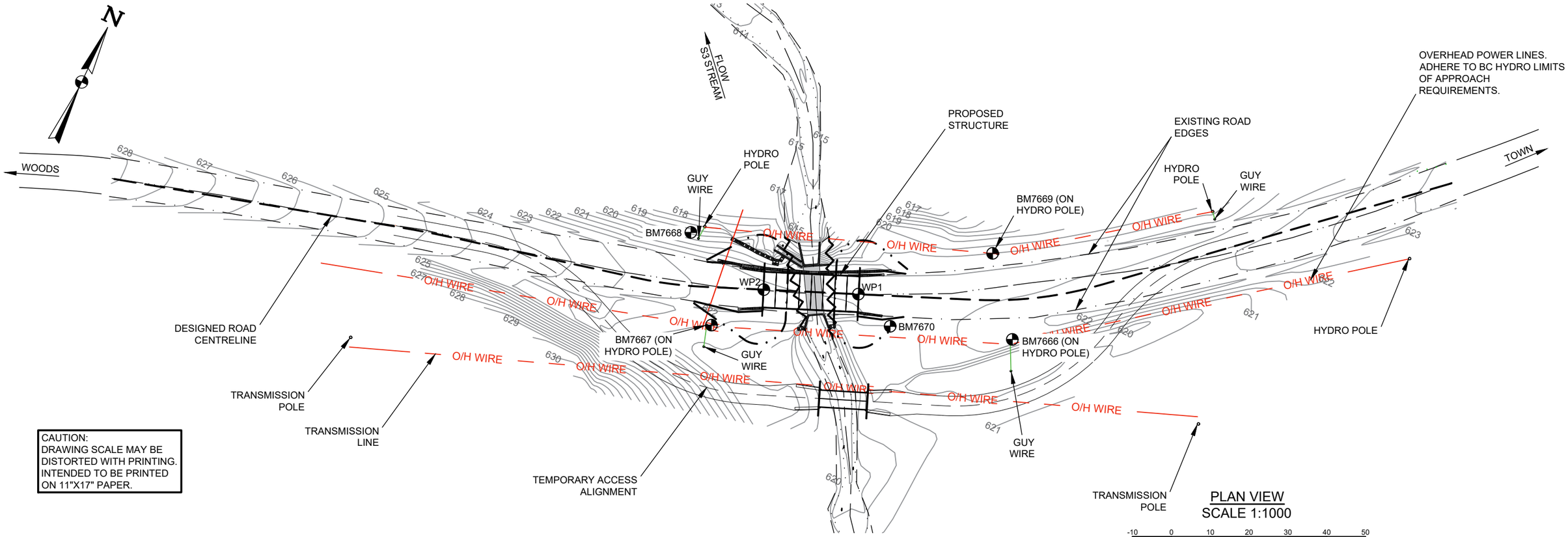
SEAL OF B.C. P.ENG.

2021-02-19



182-71-2-R5-147 MORICE FSR 7.5KM- 003

SHEET: 3 OF 11

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DESIGNED ROAD EDGES	———	HIGH WATER LEVEL	— — —	BENCH MARK	BM1
DESIGNED ROAD CENTRELINE	— — —	STREAM THALWEG	— – —	RECONSTRUCTED STREAM BANK	
APPROXIMATE EXTENT OF CUT/FILL SLOPE	— • —	PRESENT WATER LEVEL	. . . . .	TRANSMISSION / POWER LINES	— O/H WIRE —
EXISTING ROAD EDGES	— · — · —	WORKPOINT	WP1	GUY WIRE	

SEAL OF B.C. P.ENG.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — PAUL MYSAK — 38715

2021-02-19

RECONSTRUCTED STREAM EDGES. EXTENT OF STREAM BANKS AND CHANNEL RECONSTRUCTION TO BE REVIEWED AND APPROVED BY A QUALIFIED ENVIRONMENTAL PROFESSIONAL AT THE TIME OF CONSTRUCTION.

OVERHEAD POWER LINES. ADHERE TO BC HYDRO LIMITS OF APPROACH REQUIREMENTS.

HYDRO POLE

GUY WIRE

EXISTING ROAD EDGES

WOODS

BM7667

HYDRO POLE

GUY WIRE

TRANSMISSION LINE

EXISTING CULVERT AND CONCRETE COMPONENTS TO BE REMOVED

TEMPORARY ACCESS BRIDGE ALIGNMENT

APPROXIMATE EXTENT OF CUT/FILL SLOPE

FLOW
S3 STREAM

PRECAST CONCRETE ROADSIDE BARRIER 690mm

TOWN

DESIGNED ROAD CENTRELINE

WP1

BM7670

WP2

OVERHEAD POWER LINES. ADHERE TO BC HYDRO LIMITS OF APPROACH REQUIREMENTS.

TEMPORARY ACCESS STRUCTURE

O/H WIRE

DETAILED PLAN VIEW
SCALE 1:250

-2.5 0 2.5 5.0 7.5 10.0 12.5

N

WORKPOINTS ARE LOCATED AT UNDERSIDE ENDS OF STEEL GIRDERS.

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

RIPRAP NOT SHOWN FOR CLARITY. SEE SHEET 5 FOR DETAILS.

PERMANENT STRUCTURE WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R	HD
			(deg ' ")	(m)
1	BM7666	BM7667	13°39'34"	41.33
	BM7667	BM7668	90°37'27"	38.66
	BM7668	BM7669	16° 16'12"	45.98
	BM7669	BM7666	86°00'18"	36.13
2	BM7666	BM7667	8°36'41"	65.28
	BM7667	BM7668	68°21'52"	16.29
	BM7668	BM7669	34°08'38"	23.87
	BM7669	BM7666	93°54'48"	59.66

WP	N	E	ELEV
WP1	6025894.33	643476.15	620.42
WP2	6025884.91	643453.66	620.66
BM7666	6025900.89	643516.95	622.30
BM7667	6025870.85	643445.43	621.48
BM7668	6025890.12	643430.36	619.93
BM7669	6025918.71	643502.82	620.65
BM7670	6025890.39	643487.11	623.59

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182-71-2-R5-147 MORICE FSR 7.5KM- 004

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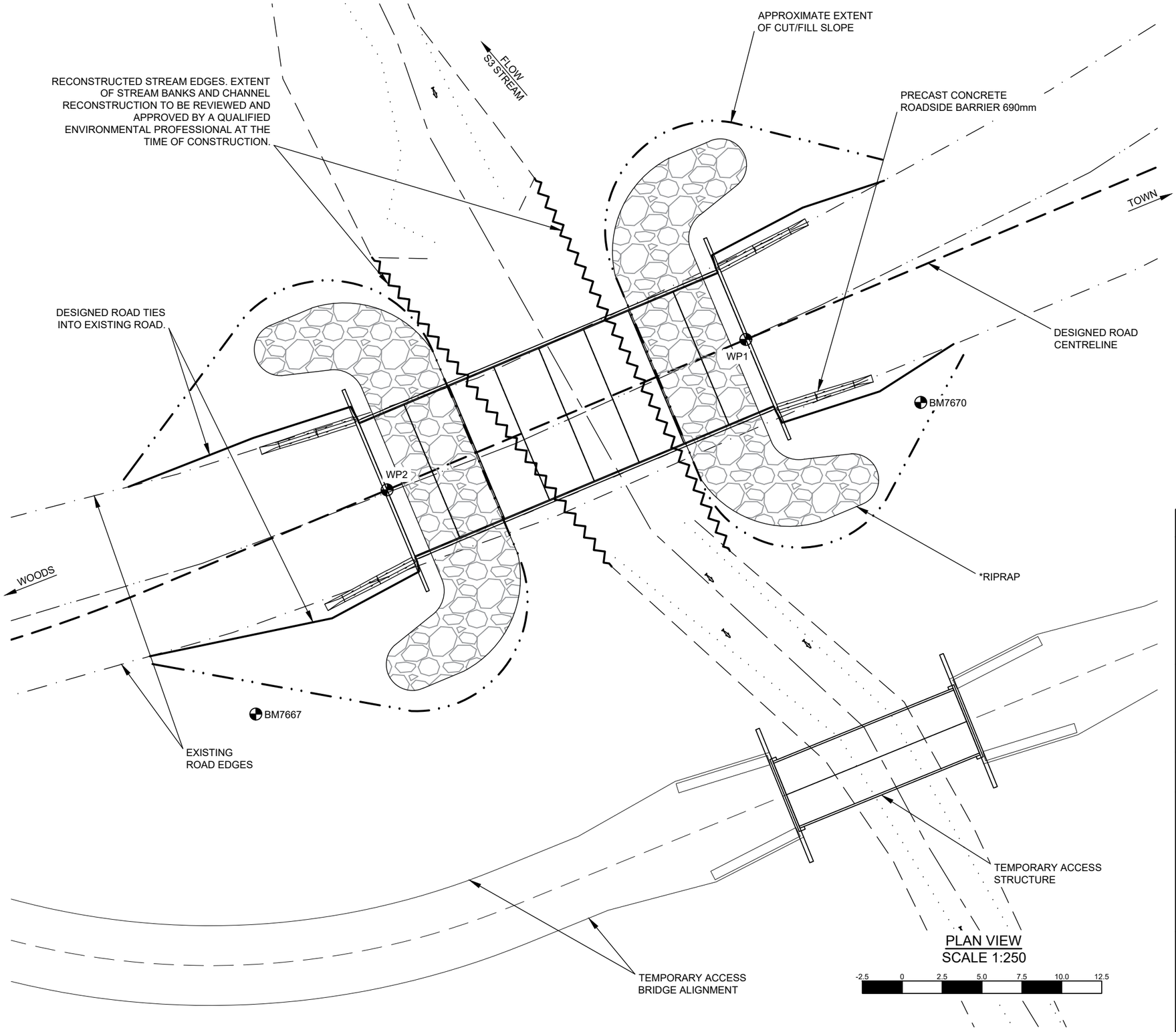
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
PAUL MYSAK
31078

2021-02-19

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



*RIPRAP: CLEAN ANGULAR ROCK

CLASS 250kg RIPRAP
ROCK GRADATION
PERCENT SMALLER THAN GIVEN ROCK MASS kg(mm)

15%	25(260)
50%	250(565)
85%	750(815)

NOMINAL THICKNESS OF RIPRAP 1000mm

ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES. ALL ROCK TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. APPROXIMATELY 300m³ OF RIPRAP REQUIRED.

EXISTING STRUCTURES NOT SHOWN FOR CLARITY. SEE SHEET 4 FOR DETAILS.

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182-71-2-R5-147 MORICE FSR 7.5KM- 005

SHEET: 5 OF 11

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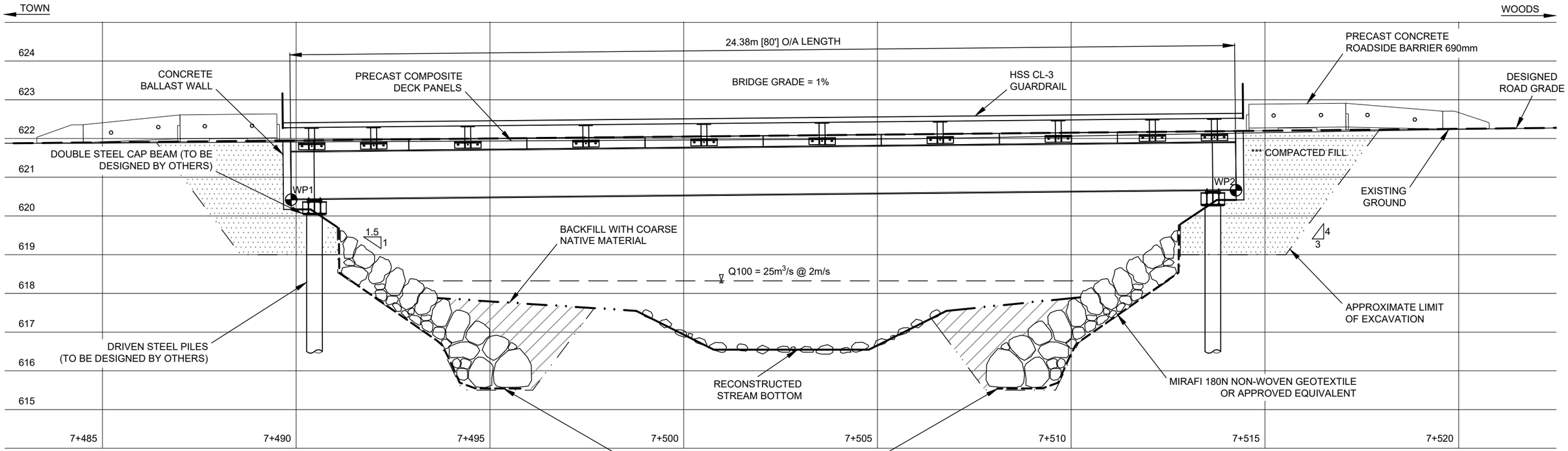
DESIGNED ROAD EDGES		HIGH WATER LEVEL	
DESIGNED ROAD CENTRELINE		STREAM THALWEG	
APPROXIMATE EXTENT OF CUT/FILL SLOPE		PRESENT WATER LEVEL	
EXISTING ROAD EDGES		RECONSTRUCTED STREAM BANK	
BENCH MARK	BM1	WORKPOINT	WP1



ELEVATION VIEW - PERMANENT STRUCTURE
SCALE 1:100

-1 0 1 2 3 4 5

*RIPRAP. SEE SHEET 5 FOR DETAILS. KEY *RIPRAP TO ELEVATION SHOWN. RIPRAP TO SERVE AS PROTECTION OF FOUNDATION FROM EROSION. ALL RIPRAP TO BE UNDERLAIN WITH MIRAFI 180N OR APPROVED EQUIVALENT NON-WOVEN GEOTEXTILE. FOR APPROXIMATE RIPRAP SIZES USE GRADATION TABLE ON THIS SHEET.

PLACE RIPRAP ON STRIPPED AND EXCAVATED GROUND DIRECTLY IN FRONT OF THE PROPOSED ABUTMENT. PLACE ROCK ON GEOTEXTILE ON TOP OF MINERAL SOIL. EXPECT UNDERLYING SOILS TO BE ***LOOSE TO COMPACT* SANDY GRAVELS WITH SOME COBBLES. RIPRAP IS TO BE CAREFULLY PLACED (NOT DUMPED) TO CREATE AN INTERLOCKING SURFACE.

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

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.

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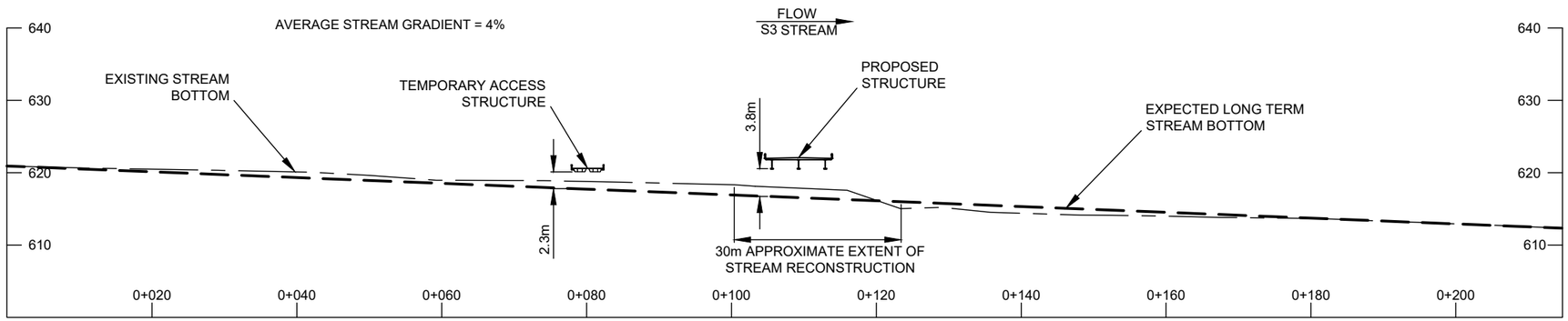

STREAM PROFILE VIEW
SCALE 1:750

-7.5 0 7.5 15 22.5 30 37.5

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182-71-2-R5-147 MORICE FSR 7.5KM- 006

SHEET: 6 OF 11

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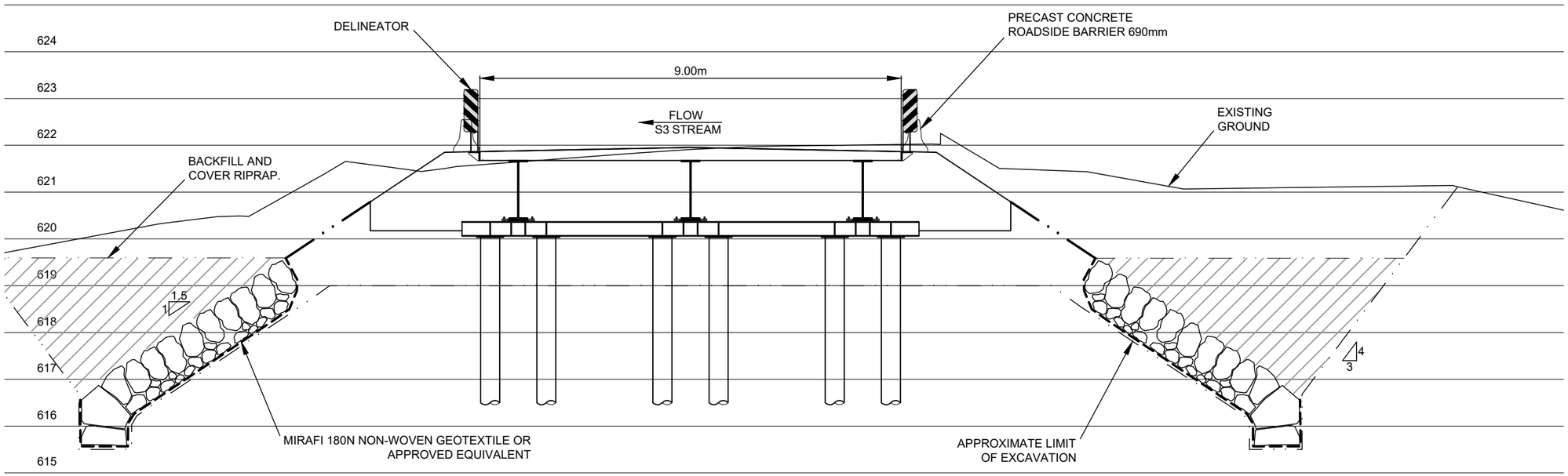
REVIEWED BY: PAUL MYSAK, P.ENG.
DRAWN BY: CHAZEL SOLAMO, FIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES: AUGUST 7, 2019
FILE NAME: R5-147 MORICE FSR 7.5km.DWG
SCALE: AS NOTED
REVISION NUMBER:
REVISION DATE:
ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.

SEAL OF B.C. P.ENG.
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
PAUL MYSAK
2021-02-19

DESIGNED ROAD GRADE
APPROXIMATE LIMIT OF FILL SLOPE
APPROXIMATE LIMIT OF EXCAVATION
HIGH WATER LEVEL
MIRAFI 180N GEOTEXTILE (OR APPROVED EQUIVALENT)
WORKPOINT WP1



TOWN ABUTMENT CROSS SECTION - PERMANENT STRUCTURE
SCALE 1:100

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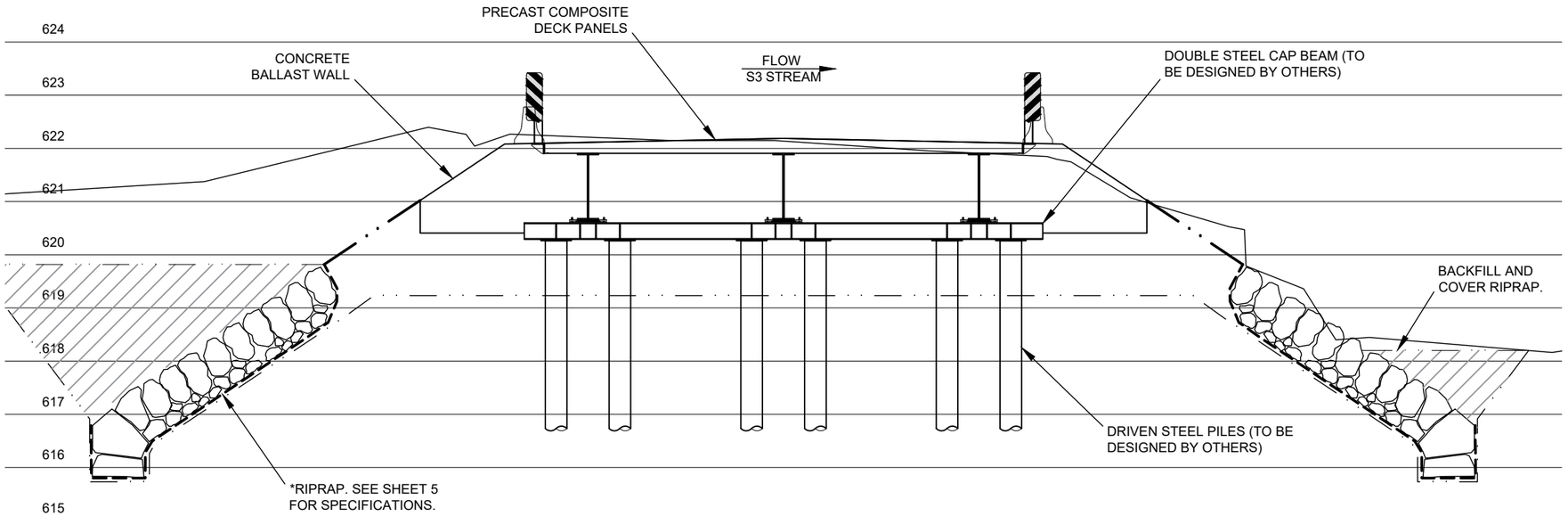

WOODS ABUTMENT CROSS SECTION - PERMANENT STRUCTURE
SCALE 1:100

-1 0 1 2 3 4 5

CAUTION:
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BRITISH COLUMBIA
Ministry of
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and Rural Development
NORTHERN INTERIOR REGION

PREPARED BY:

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NORTHERN OPERATIONS
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PRINCE GEORGE, BC V2N 1A3
PH.: 250-562-2252 FAX: 866-235-6943
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PROPOSED PERMANENT 24.384m [80'] O/A LENGTH STEEL GIRDER WITH CONCRETE COMPOSITE DECK BRIDGE FOR: MORICE FSR AT 7.5km SITE: R5-147

(54° 21' 37" N , 126° 47' 32" W)

182-71-2-R5-147 MORICE FSR 7.5KM- 007

SHEET: 7 OF 11

DESIGN BY: TYLER MANN, EIT
DESIGN DATE: FEBRUARY 19, 2021
REVIEWED BY: PAUL MYSAK, P.ENG.
DRAWN BY: CHAZEL SOLAMO, FIT
SITE VISIT: ONSITE ENGINEERING LTD.
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SEAL OF B.C. P.ENG.

2021-02-19

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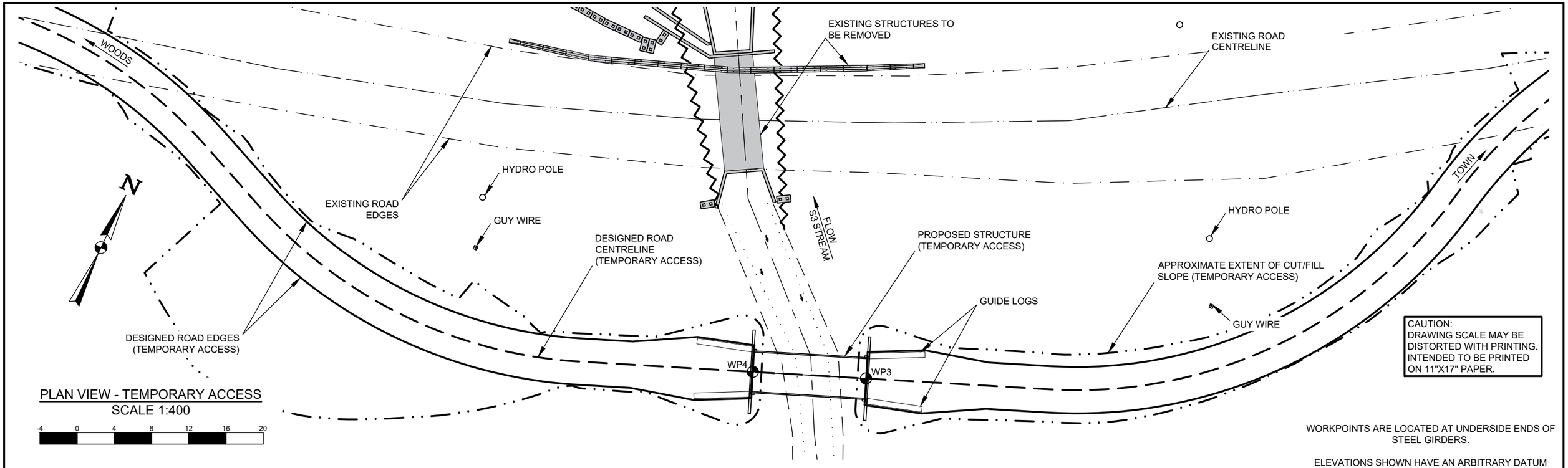

PLAN VIEW - TEMPORARY ACCESS
SCALE 1:400

-4 0 4 8 12 16 20

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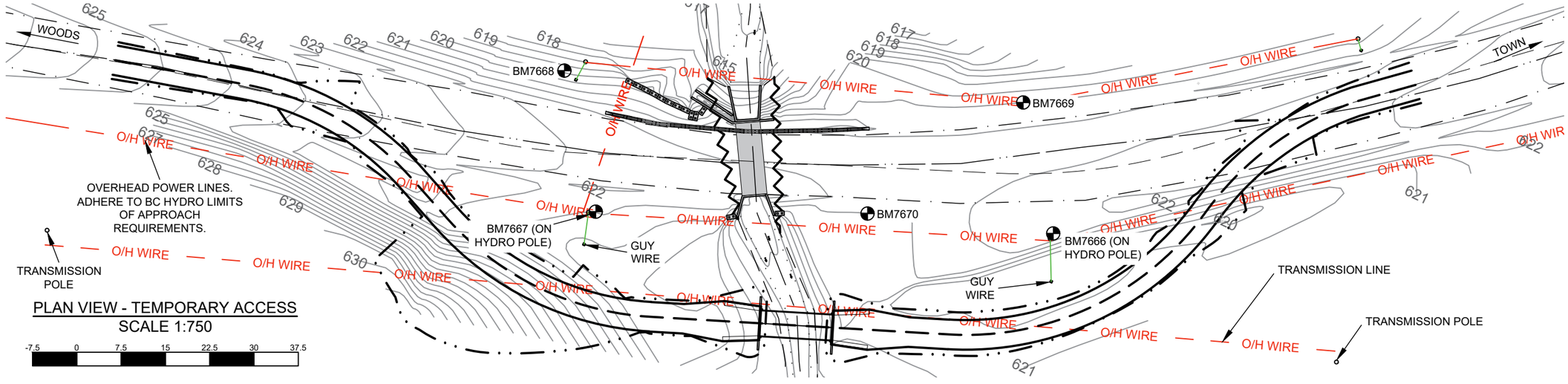
WORKPOINTS ARE LOCATED AT UNDERSIDE ENDS OF STEEL GIRDERS.

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



PLAN VIEW - TEMPORARY ACCESS
SCALE 1:750

-7.5 0 7.5 15 22.5 30 37.5

TEMPORARY STRUCTURE WORKPOINT LOCATION TABLE

WP	OC	BS	ANG R (deg ' ")	HD (m)
3	BM7666	BM7667	334°15'48"	40.72
	BM7667	BM7668	128°37'32"	44.55
	BM7668	BM7669	39°50'45"	62.80
	BM7669	BM7666	53°17'55"	50.00
4	BM7666	BM7667	340°15'18'	51.92
	BM7667	BM7668	136°40'25"	33.64
	BM7668	BM7669	48°15'04"	54.10
	BM7669	BM7666	62°56'14"	58.15

WP	N	E	ELEV
WP3	6025870.38	643489.98	620.10
WP4	6025865.79	643478.69	620.10
BM7666	6025900.89	643516.95	622.30
BM7667	6025870.85	643445.43	621.48
BM7668	6025890.12	643430.36	619.93
BM7669	6025918.71	643502.82	620.65
BM7670	6025890.39	643487.11	623.59

182-71-2-R5-147 MORICE FSR 7.5KM- 008

SHEET: 8 OF 11

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(54° 21' 37" N , 126° 47' 32" W)

DESIGNED ROAD EDGES
DESIGNED ROAD CENTRELINE
APPROXIMATE EXTENT OF CUT/FILL SLOPE
EXISTING ROAD EDGES
HIGH WATER LEVEL
STREAM THALWEG
PRESENT WATER LEVEL
WORKPOINT WP1
BENCH MARK BM1
RECONSTRUCTED STREAM BANK
TRANSMISSION / POWER LINES
O/H WIRE
GUY WIRE

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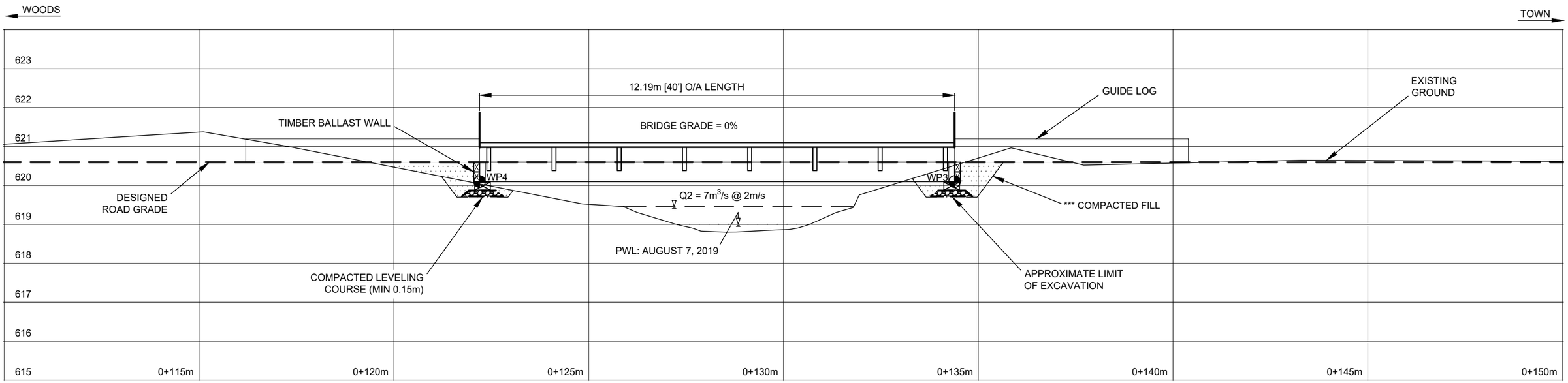
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA PAUL MYSAK 38278

2021-02-19

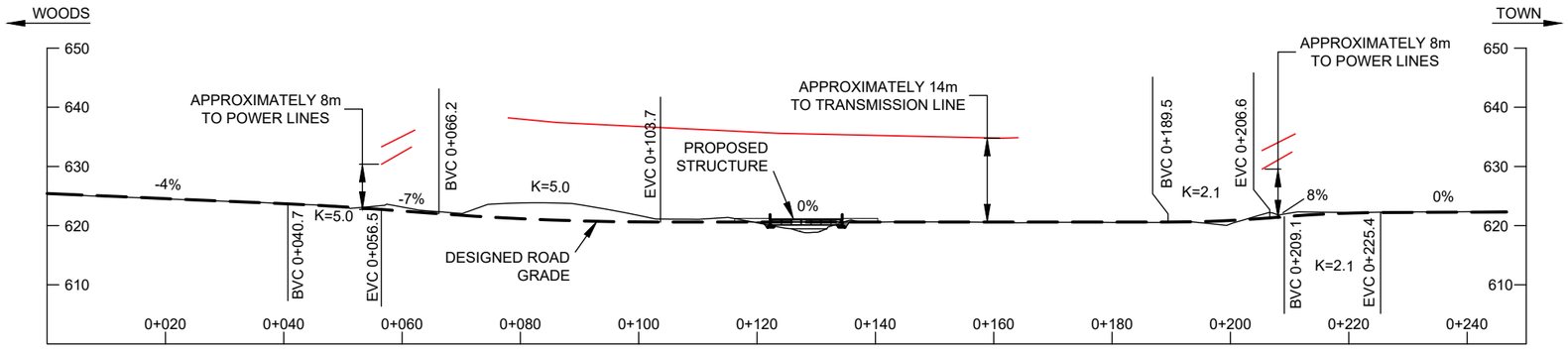


**SOIL DENSITY	
VERY LOOSE	EASILY EXCAVATED WITH A SPADE
LOOSE	SOME RESISTANCE TO SPADE
COMPACT	CONSIDERABLE RESISTANCE TO SPADE
DENSE	REQUIRES PICK FOR EXCAVATION
VERY DENSE	HIGH RESISTANCE TO PICK

***COMPACTED FILL
GRANULAR FILL TO BE COMPACTED TO AT LEAST 95%
OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.

ELEVATION VIEW - TEMPORARY ACCESS
SCALE 1:100

-1 0 1 2 3 4 5



ROAD PROFILE VIEW - TEMPORARY ACCESS
SCALE 1:1000

-10 0 10 20 30 40 50

182-71-2-R5-147 MORICE FSR 7.5KM- 009

SHEET: 9 OF 11

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DRAWN BY: CHAZEL SOLAMO, FIT
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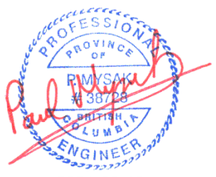
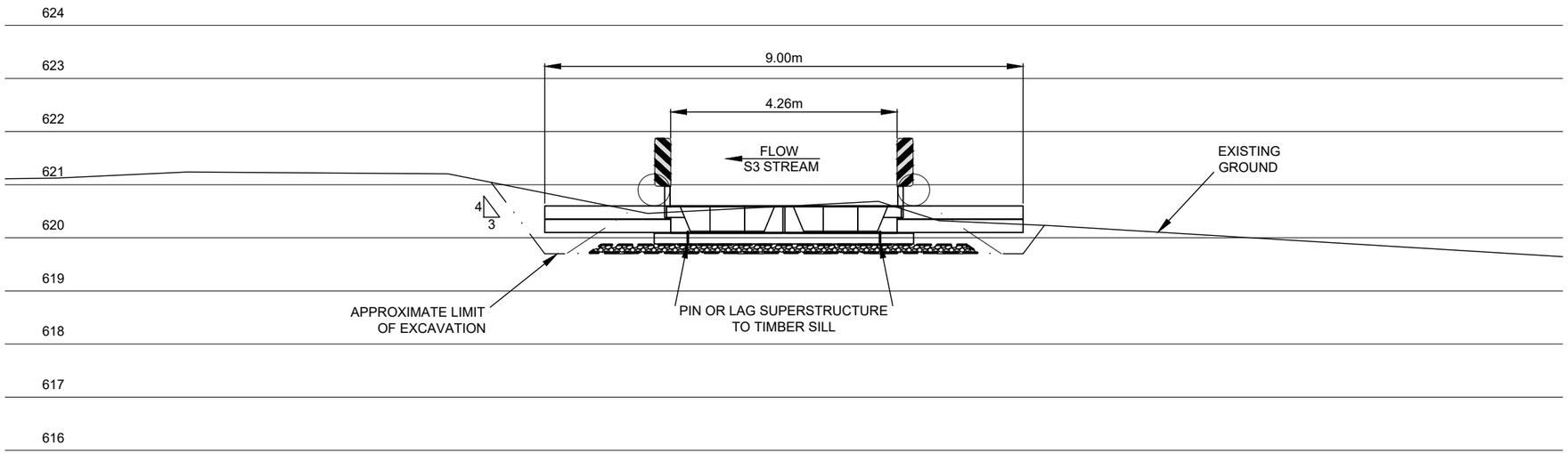
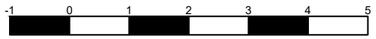


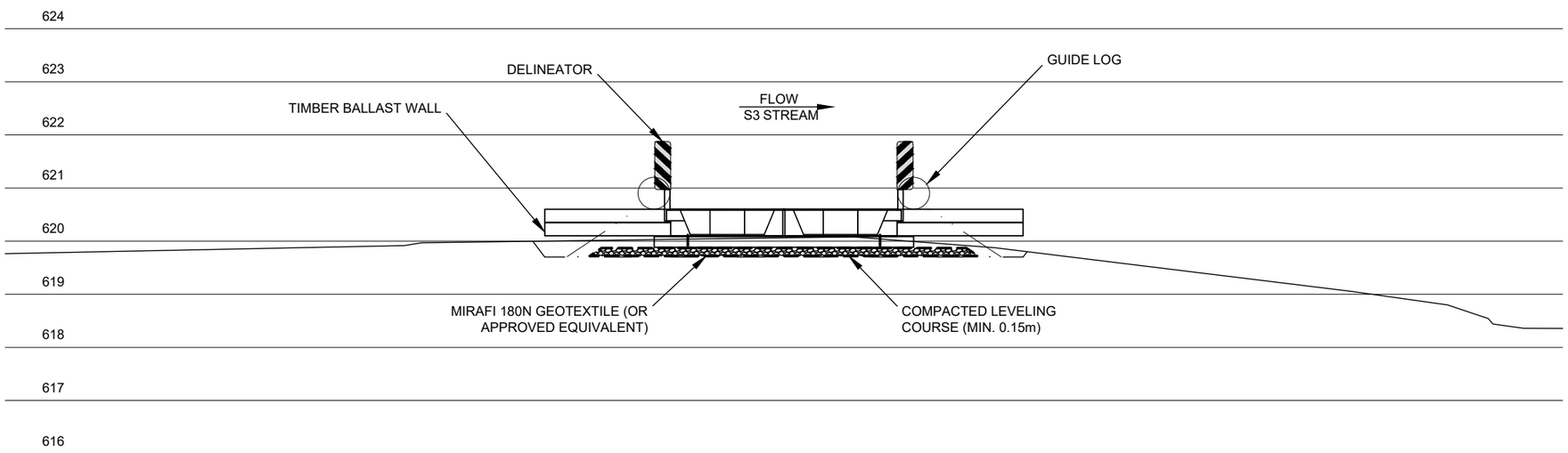
2021-02-19



TOWN ABUTMENT CROSS SECTION - TEMPORARY STRUCTURE

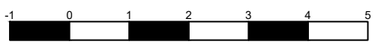
SCALE 1:100





WOODS ABUTMENT CROSS SECTION - TEMPORARY STRUCTURE

SCALE 1:100



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SITE: R5-147
(54° 21' 37" N , 126° 47' 32" W)

182-71-2-R5-147 MORICE FSR 7.5KM- 010

SHEET: 10 OF 11

DESIGN BY: TYLER MANN, EIT
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APPROXIMATE LIMIT OF FILL SLOPE
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PHOTO #1 - VIEW OF TOWN APPROACH

PHOTO #2 - VIEW OF TOWN SIDE TAKEN FROM SAME LOCATION AS PHOTO 1

PHOTO #3 - VIEW OF CULVERT INLET

PHOTO #4 - VIEW OF CULVERT OUTLET

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182-71-2-R5-147 MORICE FSR 7.5KM- 011

SHEET: 11 OF 11

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