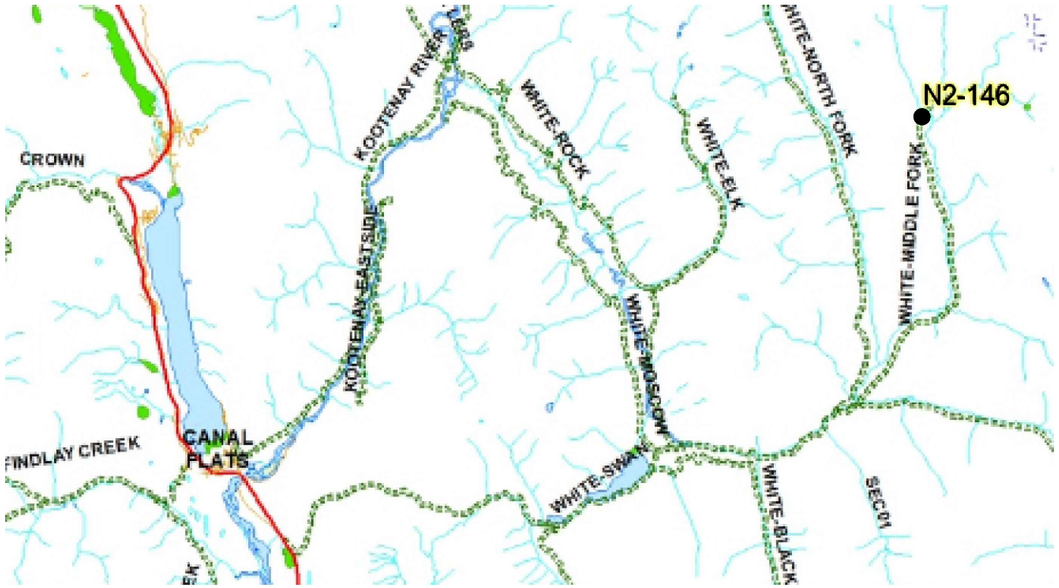
BRITISH COLUMBIA

Ministry of Forests, Lands and Natural Resource Operations



KEY PLAN

REPLACEMENT OF SEETA CREEK BRIDGE

REGION: **KOOTENAY** DISTRICT: **ROCKY MOUNTAIN**

SITE #: **N2-146** STRUCTURE #: **N2-146A**

MINISTRY km.: USER km.: **65.7**

F.S.R. #: F.S.R.: **WHITE-MIDDLEFORK**

UTM E: **626749** N: **5577591** ZONE: **11U**

DRAWING SCHEDULE			
DRAWING No. / MODEL TYPE	DESCRIPTION	REV.	DATE
SHEET 1	GENERAL NOTES	0	JANUARY 27, 2017
SHEET 2	GENERAL NOTES	0	JANUARY 27, 2017
SHEET 3	GENERAL ARRANGEMENT PLAN AND RIPRAP DETAILS	0	JANUARY 27, 2017
SHEET 4	BRIDGE ELEVATION DETAILS	0	JANUARY 27, 2017
SHEET 5	BRIDGE LAYOUT	0	JANUARY 27, 2017
SHEET 6	WHEEL TRACKING TO WOODS	0	JANUARY 27, 2017
SHEET 7	WHEEL TRACKING TO TOWN	0	JANUARY 27, 2017
SHEET 8	LONG ROAD AND CREEK PROFILES	0	JANUARY 27, 2017
SHEET 9	EXISTING CONDITIONS SITE PLAN	0	JANUARY 27, 2017
SHEET 10	SITE PHOTOGRAPHS	0	JANUARY 27, 2017

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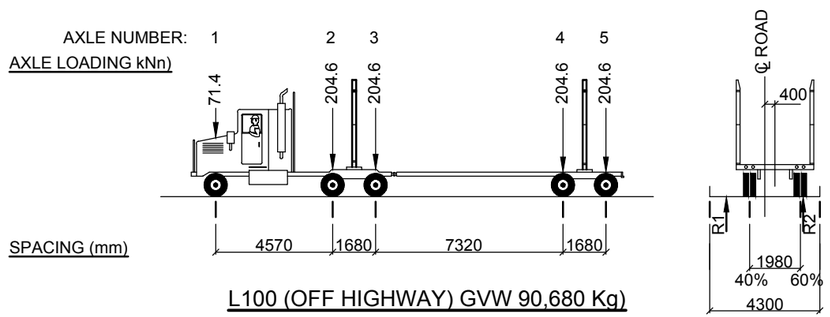
MCSL FILE # 2441-00468-00

GENERAL

1. McELHANNEY CONSULTING SERVICES LTD. (MCSL) ASSUMES NO RESPONSIBILITY FOR THE RELIANCE UPON THIS DOCUMENT OR ANY OF ITS CONTENTS BY ANY PARTY OTHER THAN THE CLIENT FOR WHOM THE DOCUMENT WAS PREPARED. THE CONTENTS OF THIS DOCUMENT ARE NOT TO BE RELIED UPON OR USED, IN WHOLE OR IN PART, BY OR FOR THE BENEFIT OF OTHERS, WITHOUT SPECIFIC WRITTEN AUTHORIZATION FROM McELHANNEY CONSULTING SERVICES LTD.
2. THIS SET OF DRAWINGS HAS BEEN PREPARED BY McELHANNEY CONSULTING SERVICES LTD. IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING AND GEOSCIENCES' PRACTICES AND IS INTENDED FOR THE EXCLUSIVE USE AND BENEFIT OF THE CLIENT FOR WHOM IT WAS PREPARED AND FOR THE PARTICULAR PURPOSE FOR WHICH IT WAS PREPARED. NO OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE.
3. THESE DRAWINGS REPRESENT A CONCEPTUAL DESIGN FOR THE SUBJECT CROSSING AND GIVES A GENERAL ARRANGEMENT OF THE STRUCTURE COMPONENTS BASED ON THE SITE SURVEY AND SPECIFIC CONSTRAINTS OF THE SITE. THE DETAILED DESIGN OF THE STRUCTURAL COMPONENTS AND THE STRUCTURE INSTALLATION IS DESIGNED, REVIEWED AND APPROVED BY OTHERS AND IS CONSIDERED BEYOND THE SCOPE OF THESE CONCEPTUAL DRAWINGS. THE DETAILED DESIGN BY OTHERS INCLUDES COMPONENTS SUCH AS FOOTINGS, PILES, POSTS, CAP BEAM, GIRDERS, DECK PANELS, BALLAST WALL, CURB RAILS, AND CORRUGATED STEEL SECTIONS.
4. THE DIMENSIONS OF THE STRUCTURE COMPONENTS SHOWN ON THESE DRAWINGS ARE ESTIMATED. THE CONTRACTOR SHALL REFER TO THE STRUCTURE COMPONENT SHOP DRAWINGS FOR ACTUAL DIMENSIONS FOR LAYOUT AND CONSTRUCTION.
5. THE DESIGN OF THE STRUCTURAL COMPONENTS SHALL BE PREFORMED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF BC IN ACCORDANCE WITH THE LATEST CODE REQUIREMENTS TAKING INTO ACCOUNT GENERALLY ACCEPTED VARIATIONS TO ACCOUNT FOR SINGLE LANE RESOURCE ROAD BRIDGES.
6. THE EXPECTED LIFE OF THE STRUCTURE IN PLACE IS TO BE 45 YEARS.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE. LAYOUT AND ROAD STATIONING ARE IN METERS.
8. HORIZONTAL ALIGNMENT TRACKING VEHICLE = WB-19 LOWBED AND TRAILER
9. THE DESIGN VEHICLE: L100 (CSA-S6)

LOADING DIAGRAM: L100



L100 (OFF HIGHWAY) GVW 90,680 Kg)

10. STEEL GIRDER ANALYSIS IS TO BE IN CONFORMANCE WITH CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES AND CANADIAN HIGHWAY DESIGN BRIDGE CODE CAN/CSA S6 AND THE FOREST SERVICE BRIDGE DESIGN AND CONSTRUCTION MANUAL.
11. FATIGUE CATEGORY: 500,000 CYCLES IN ACCORDANCE WITH CAN/CSA-S6-06 (DYNAMIC LOAD ALLOWANCE INCLUDED)
12. ANY DESIGN CHANGES PROPOSED DURING CONSTRUCTION SHALL REQUIRE WRITTEN APPROVAL FROM McELHANNEY CONSULTING SERVICES LTD. UNAUTHORIZED CHANGES MAY RESULT IN A REDUCTION OF LOAD RATING AND/OR QUALIFICATION OF THE CONSTRUCTION CONFORMANCE STATEMENT.

HYDROLOGY DESIGN PARAMETERS

1. DRAINAGE CATCHMENT AREA = 22.5 SQ. KM.
2. BOTTOM WIDTH = 11.25 m
3. STREAMBED MATERIAL = ROUNDED COBBLES/GRAVEL
4. OVERALL CHANNEL GRADIENT AT CROSSING: 2.85 %
5. Q_2 INSTANTANEOUS FLOW: 4.11 m^3/s
6. V_2 ESTIMATED LOCAL MAXIMUM VELOCITY: 1.0 m/s
7. Q_2 ESTIMATED CHANNEL DEPTH: 0.5 m
8. Q_{100} INSTANTANEOUS FLOW: 13.09 m^3/s
9. V_{100} ESTIMATED LOCAL MAXIMUM VELOCITY: 1.27 m/s
10. Q_{100} ESTIMATED CHANNEL DEPTH: 1.1 m
11. FREEBOARD: 1.0 m AT UPSTREAM FACE OF BRIDGE (AS MEASURED ABOVE Q_{100}LEVEL)
12. THE FREEBOARD ALLOWANCE TAKES INTO ACCOUNT THE REASONABLE LIKELIHOOD OF FLOATING DEBRIS BEING MOBILIZED BY HIGH-WATER FLOWS. IT MAY NOT ACCOMMODATE DEBRIS FLOW EVENTS AND DAMAGE OR FAILURE OF THE STRUCTURE MAY OCCUR. TERRAIN STABILITY RISK ASSESSMENT IS OUTSIDE THE SCOPE OF THIS DESIGN

GEOTECHNICAL DESIGN PARAMETERS

1. GEOTECHNICAL ENGINEERING IS NOT WITHIN THE SCOPE OF SERVICES PROVIDED BY McELHANNEY CONSULTING SERVICES LTD. UNLESS SPECIFICALLY STATED ON THE DESIGN DRAWINGS. THE FOUNDATIONS HAVE BEEN SPECIFIED USING ASSUMED GROUND CONDITIONS WITH NATIVE ALLOWABLE SOIL BEARING CAPACITY AT LEAST 200 kPa. GROUND CONDITIONS MAY VARY AND THE CONCEPTUAL DESIGN MAY REQUIRE MODIFICATION. McELHANNEY CONSULTING SERVICES LTD. IS NOT RESPONSIBLE FOR ANY INCURRED COSTS DUE TO CHANGING SOIL CONDITIONS AND MODIFICATION TO THE FOUNDATION DESIGN.

DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON

January 27, 2017

PROFESSIONAL SEAL

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MCSL FILE # 2441-00468-00

Designed	Brandon Bolen	Date:	JANUARY 27, 2017
Checked	Brad Nelson, P.Eng	Date:	JANUARY 27, 2017
Drawn	Brandon Bolen	Date:	JANUARY 27, 2017

Rev.	Date	DESCRIPTION	Init.
0	01/27/17	ISSUED FOR CONSTRUCTION	BN

REVISIONS

BRITISH COLUMBIA — Ministry of Forests, Lands and Natural Resource Operations

REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE: GENERAL NOTES

DESIGNED BY:	APPROVED BY:
BRANDON BOLEN	BRAD NELSON, P.ENG
PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No:	DRAWING No:
EN17DRM009	SHEET 1

MATERIALS

1. ALL MATERIALS SHALL BE NEW AND IN ACCORDANCE WITH MFLNRO NOTES DRAWING - STD-EC-030-02 - SECTION 3 - "MATERIALS AND FABRICATION".

2. HANDLING OF MATERIALS SHALL BE IN CONFORMANCE WITH WORK SAFE BC REQUIREMENTS. CARE SHALL BE EXERCISED TO ENSURE NO DAMAGE IS INCURRED TO ANY COMPONENTS WHILE UNLOADING, STORING, OR INSTALLING THE STRUCTURE COMPONENTS. THE CERTIFYING ENGINEER SHALL BE NOTIFIED OF ANY DAMAGE TO THE COMPONENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS FOR REPAIRS OR REPLACEMENT AS DETERMINED BY THE ENGINEER WHILE IN POSSESSION OF THE MATERIALS.

3. STRUCTURAL STEEL SHALL CONFORM TO CSA G40.21M AND THE FOLLOWING GRADES:

   3.1. STEEL GIRDER FLANGES AND WEB PLATES - GRADE 350AT CATEGORY 3.

   3.2. ALL OTHER STEEL PLATE - 350A

   3.3. BRACING (DIAPHRAGMS AND PLAN BRACING) - GRADE 350A

   3.4. ANY REQUIRED VARIATIONS REQUIRE MFLNRO APPROVAL. IF NON-WEATHERING STEEL IS APPROVED BY MFLNRO, A CORROSION PROTECTION SYSTEM WILL BE REQUIRED.

   3.5. HSS (POST AND RAILS) - 350W (COATED) OR 350A (UNCOATED) - TO BE DETERMINED BY PROJECT SPECIFICATIONS.

4. STEEL PIPE IS TO CONFORM TO ASTM A252 GRADE 2 AND BE NON-SPIRAL PIPE.

5. STRUCTURAL BOLTS ARE TO CONFORM TO ASTM A325 TYPE 3

6. CURB ANCHORS AND CONNECTION BOLTS: ASTM A-307 GALVANIZED COMPLETE WITH GALVANIZED NUTS AND WASHERS.

7. ALL REINFORCING IS TO CONFORM TO CAN/CSA G30.18M GRADE 400R.

8. CAST IN PLACE CONCRETE IS TO CONFORM TO CSA A23.1 - EXPOSURE CLASS C1 - STRENGTH (F'c) = 35 MPa AT 28 DAYS.

9. PRECAST CONCRETE IS TO CONFORM TO CSA A23.1 - EXPOSURE CLASS C1 - STRENGTH = 35 MPa AT 28 DAYS. PRECAST CONCRETE TO BE FABRICATED IN ACCORDANCE WITH CSA-A23.4 BY A CSA CERTIFIED PLANT.

10. ALL WELDING IS TO BE IN CONFORMANCE WITH CSA W-59. WELDING ELECTRODES TO BE COMPATIBLE WITH BASE MATERIAL.

11. FIELD WELDING IS TO BE IN CONFORMANCE WITH CSA W47.1 DIVISION 3 OR BETTER.

12. BEARING PADS ARE TO CONFORM TO NATURAL RUBBER, GRADE 3, 60 DUROMETER HARDNESS.

13. GROUT: STUD POCKETS SHALL BE FILLED WITH TARGET TRAFFIC PATCH COURSE OR APPROVED EQUIVALENT. DECK JOINTS SHALL BE FILLED WITH TARGET TRAFFIC PATCH FINE OR APPROVED EQUIVALENT

RIP RAP

1. ROCK SHAPE SHALL BE BLOCKY AND ANGULAR RATHER THAN SMOOTH, ROUND OR ELONGATED. NOT MORE THAN 25% OF THE ROCK SHALL HAVE A LENGTH EXCEEDING 2.5 TIMES ITS THICKNESS AND NO ROCK SHALL HAVE A LENGTH EXCEEDING 3.0 TIMES ITS THICKNESS.

2. ROCK SHALL BE OF A DURABLE QUALITY AND NOT EASILY FRACTURED.

3. THE GRADATION SHALL BE AS SHOWN ON THE DRAWINGS.

4. RIP RAP BLANKET THICKNESS SHALL NOT BE LESS THAN 1.2 TIMES THE LARGEST ROCK SIZE.

5. ALL RIP RAP SHALL BE UNDERLAIN WITH NON-WOVEN GEOTEXTILE MATERIAL WITH A MINIMUM TENSILE STRENGTH OF 0.9KN.

CONSTRUCTION

1. CONSTRUCTION SHALL CONFORM TO THE "FOREST SERVICE BRIDGE DESIGN & CONSTRUCTION MANUAL"..

2. EXCAVATIONS FOR ALL FOOTINGS SHALL BE KEPT FREE OF WATER DURING CONSTRUCTION. SHOULD SOIL BEARING CONDITIONS AND EXCAVATION MATERIALS BE DIFFERENT THAN EXPECTED, THEN NOTIFY THE CO-COORDINATING REGISTERED PROFESSIONAL IMMEDIATELY FOR FURTHER DIRECTION.

3. END FILLS SHALL BE PLACED IN GENERAL CONFORMANCE WITH THE DRAWINGS AND SHALL BE WELL DRAINED, GRANULAR, FROST FREE MATERIAL. EXCAVATED MATERIAL IS ASSUMED TO BE SUITABLE FOR BACKFILL. BACKFILL TO BE COMPACTED IN 300mm LIFTS TO 95% STANDARD PROCTOR DENSITY, TYP.

4. END FILLS MUST BE GRADED AT A MINIMUM 2% CROWN TO THE GRADE AND WIDTH SHOWN ON THE DRAWINGS.

5. SPOIL AREAS WILL BE DESIGNATED BY THE MFLNRO REPRESENTATIVE.

6. ALL GROUT POCKETS AND JOINTS SHALL BE CLEANED AND FREE OF ANY DEBRIS PRIOR TO PLACEMENT OF THE GROUT.

7. VERTICAL CONSTRUCTION TOLERANCE FOR POSTS SHALL BE WITHIN 0.5% OF HORIZON DISTANCE. ELEVATION TOLERANCE BETWEEN BEARINGS SHALL BE 10mm.

8. A DELINEATOR SHALL BE MOUNTED AT EACH CORNER OF THE BRIDGE WITH MINIMUM REFLECTIVE SURFACE AREA OF 0.18m2.

9. TWO BRIDGE AHEAD SIGNS SHALL BE INSTALLED APPROX. 50m FROM EACH BRIDGE END. CLEAN UP OF THE SITE MUST BE COMPLETED IMMEDIATELY FOLLOWING CONSTRUCTION. THIS SHALL INCLUDE THE REMOVAL OF ALL EQUIPMENT, MATERIALS, AND WASTE.

10. ALL FORMWORK SHALL BE REMOVED FROM THE BRIDGE. DECKS, GIRDERS AND BEARING AREAS SHALL BE SWEPT CLEAN OF DEBRIS.

11. GROUTING IN COLD WEATHER MUST BE ACCORDING TO A SPECIFIC APPROVED PROCEDURE FOR PREHEATING AND HOARDING FOR THIS PROJECT.

DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON 39404

January 27, 2017

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MCSL FILE # 2441-00468-00

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Drawn	Brandon Bolen	Date: JANUARY 27, 2017

Rev.	Date	DESCRIPTION	Init.
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REVISIONS

BRITISH COLUMBIA — Ministry of Forests, Lands and Natural Resource Operations

REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A

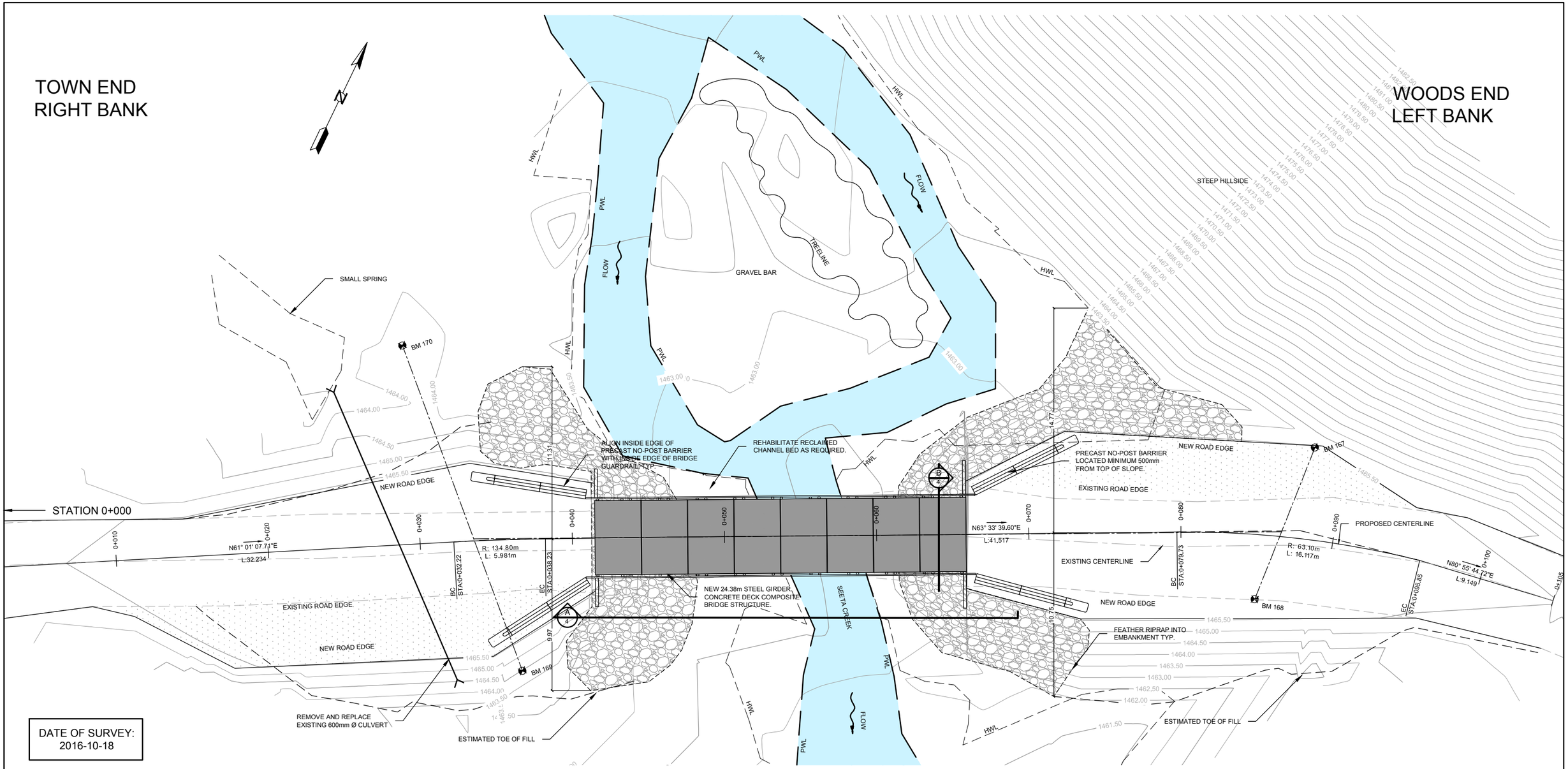
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE: GENERAL NOTES

DESIGNED BY:	APPROVED BY:
BRANDON BOLEN	BRAD NELSON, P.ENG
PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No: EN17DRM009	DRAWING No: SHEET 2

TOWN END
RIGHT BANK

WOODS END
LEFT BANK



DATE OF SURVEY:
2016-10-18

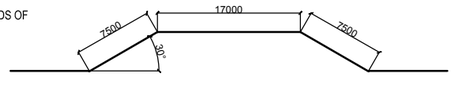
EXTENT OF RIPRAP

TOWN END - UPSTREAM SIDE	11.50m
TOWN END - DOWNSTREAM SIDE	10.00m
WOODS END - UPSTREAM SIDE	14.50m
WOODS END - DOWNSTREAM SIDE	10.50m

MEASURED UPSTREAM OR DOWNSTREAM FROM ROAD CENTERLINE. (ALL DISTANCES ARE HORIZONTAL)

TYPICAL PULLOUT DETAIL

NOTE: PULLOUTS SHALL BE PROVIDED AT ENDS OF BRIDGE TO SUIT ROAD DESIGN.



RIPRAP TABLE

CLASS OF RIPRAP (kg)	NOMINAL THICKNESS OF RIPRAP (mm)	ROCK GRADATION: PERCENT LARGER THAN GIVEN ROCK MASS					
		85%		50%		15%	
300	1050	35 kg	300mm	300 kg	610mm	900 kg	850mm

ESTIMATED RIPRAP VOLUME

TOWN END	180 m^3
WOODS END	235 m^3

DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA B. R. NELSON ENGINEER

January 27, 2017
PROFESSIONAL SEAL

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REPLACEMENT OF SEETA CREEK BRIDGE

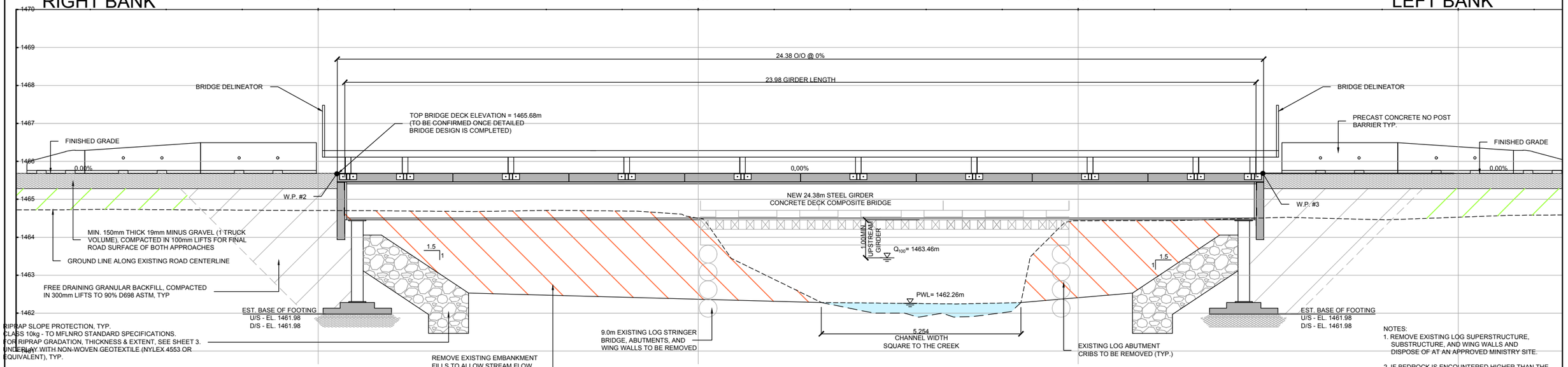
SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE:
GENERAL ARRANGEMENT PLAN AND RIPRAP DETAILS

DESIGNED BY:	APPROVED BY:
BRANDON BOLEN	BRAD NELSON, P.ENG
PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No:	DRAWING No:
EN17DRM009	SHEET 3

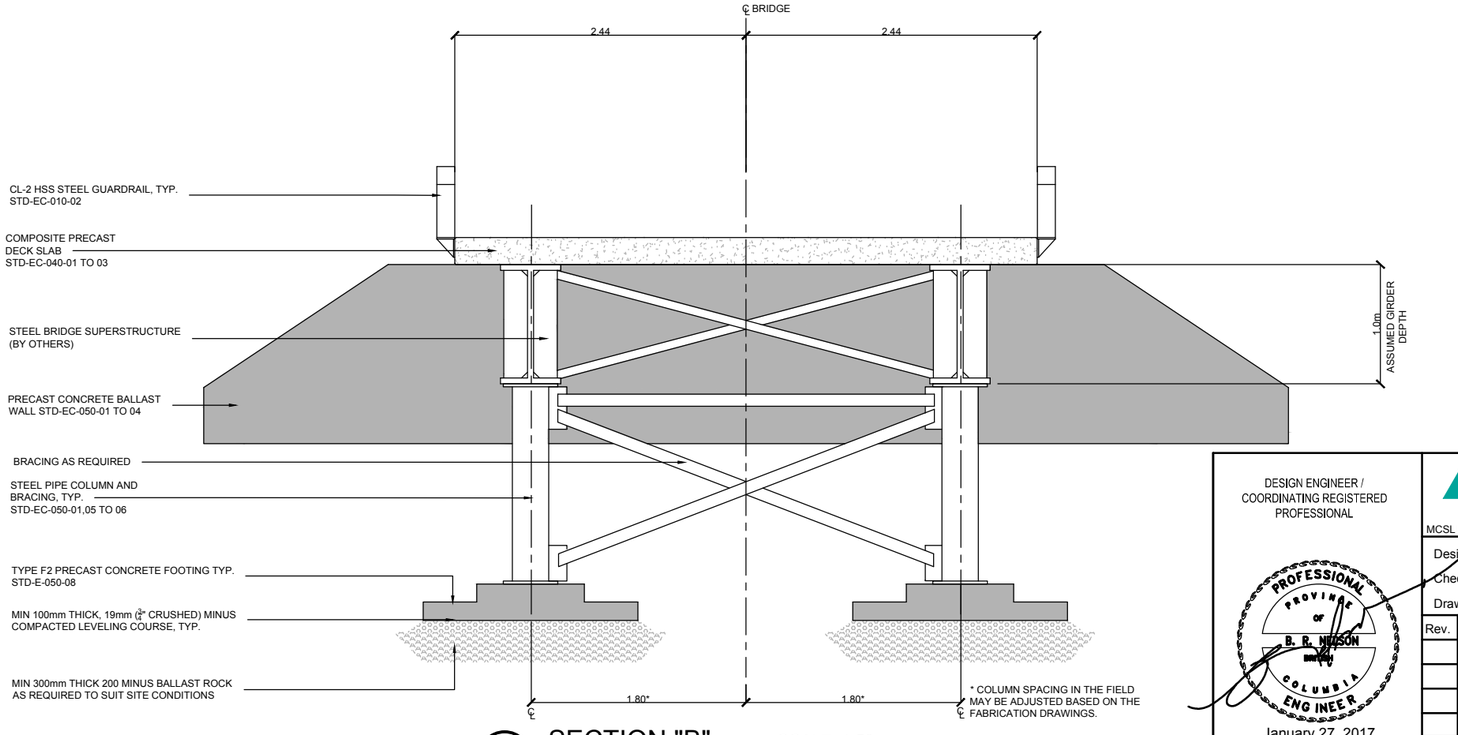
TOWN END
RIGHT BANK

WOODS END
LEFT BANK

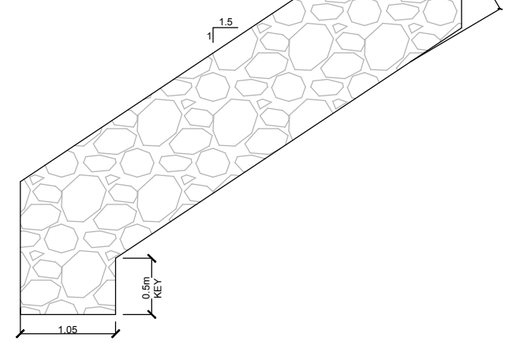


A/4 **SECTION "A"** SCALE: 1:100
DOWNSTREAM FACE OF BRIDGE
(LOOKING UPSTREAM)

NOTES:
1. REMOVE EXISTING LOG SUPERSTRUCTURE, SUBSTRUCTURE, AND WING WALLS AND DISPOSE OF AT AN APPROVED MINISTRY SITE.
2. IF BEDROCK IS ENCOUNTERED HIGHER THAN THE BOTTOM OF FOOTING ELEVATION, A CAST IN PLACE CONCRETE FOOTING PAD MAY BE REQUIRED, AS SPECIFIED BY THE PROFESSIONAL ENGINEER RESPONSIBLE FOR THE CONSTRUCTION.



B/4 **SECTION "B"** SCALE: 1:50
WOODS/LEFT ABUTMENT SHOWN
TOWN/RIGHT ABUTMENT MIRRORED



1/4 **RIPRAP DETAIL** SCALE: NTS
DOWNSTREAM FACE OF BRIDGE
(LOOKING UPSTREAM)

DESIGN ENGINEER /
COORDINATING REGISTERED
PROFESSIONAL

PROFESSIONAL OF RECORD
B. R. NELSON
BRITISH COLUMBIA
ENGINEER

January 27, 2017

PROFESSIONAL SEAL

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SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE:
BRIDGE ELEVATION DETAILS

DESIGNED BY:	APPROVED BY:
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PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
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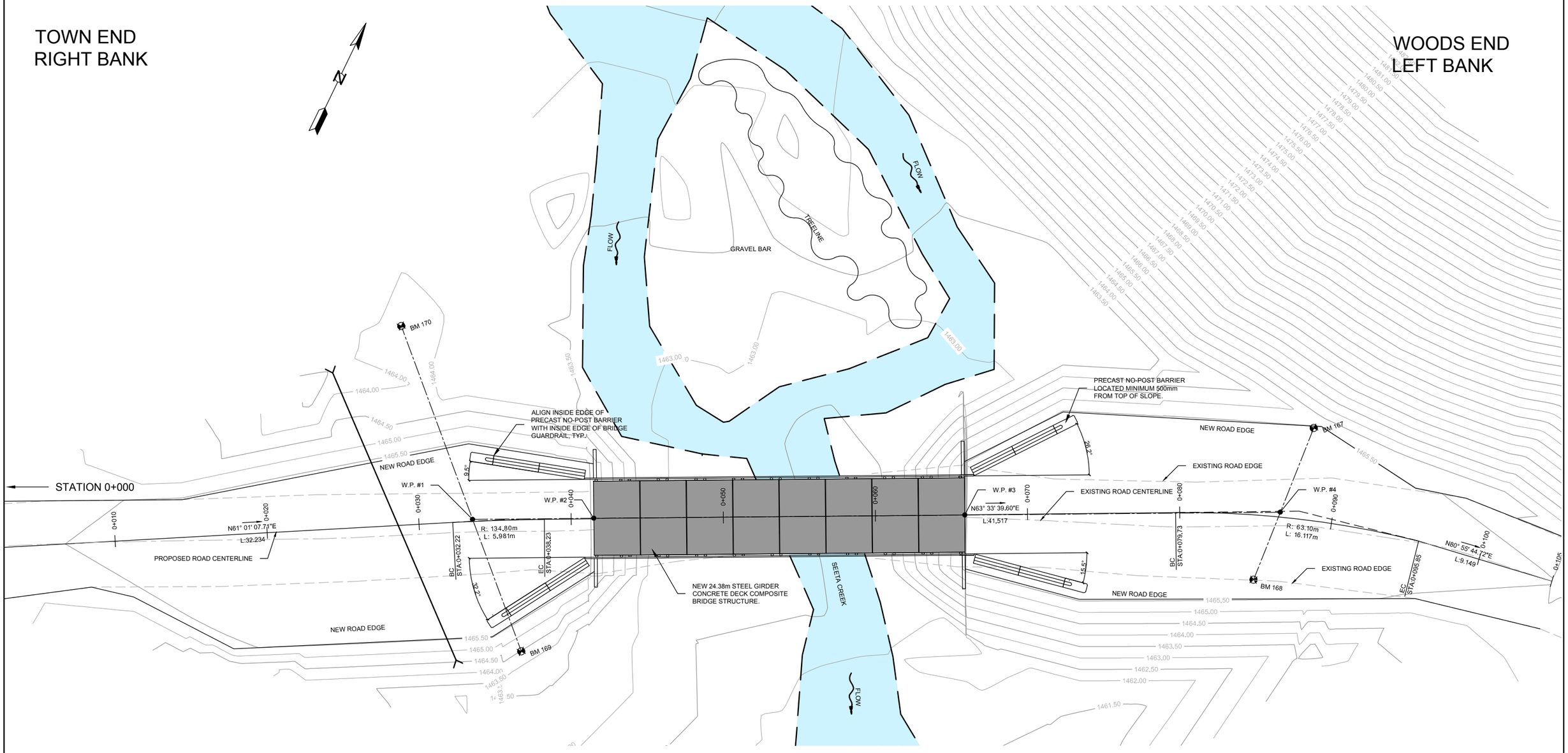
FILE No:	DRAWING No:
EN17DRM009	SHEET 4

TOWN END
RIGHT BANK

WOODS END
LEFT BANK



COORDINATES & ELEVATIONS

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
BM 167	REBAR PIN	5577595.1470m	626772.7220m	1464.800m
BM 168	REBAR PIN	5577584.4490m	626773.5000m	1464.591m
BM 169	REBAR PIN	5577559.2600m	626732.2260m	1463.868m
BM 170	REBAR PIN	5577575.0700m	626715.8200m	1464.296m
W.P. #1	NEW BRIDGE CL	5577565.6753 m	626725.5689 m	1465.68 m
W.P. #2	NEW BRIDGE CL	5577569.2080 m	626732.7120 m	1465.68 m
W.P. #3	NEW BRIDGE CL	5577580.0197m	626754.5681m	1465.68 m
W.P. #4	NEW BRIDGE CL	5577589.2130m	626773.1535m	1465.64 m

LAYOUT SCHEDULE

BM 170 TO BM 169	22.78m
BM 170 TO WP #1	13.54m
BM 169 TO WP #1	9.25m
WP #1 TO WP #2	7.97m
WP #2 TO WP #3	24.38m
WP #3 TO WP #4	20.74m
BM 167 TO BM 168	10.73m
BM 167 TO WP #4	5.95m
BM 168 TO WP #4	4.78m

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON

January 27, 2017

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DRAWING TITLE: BRIDGE LAYOUT

DESIGNED BY:	APPROVED BY:
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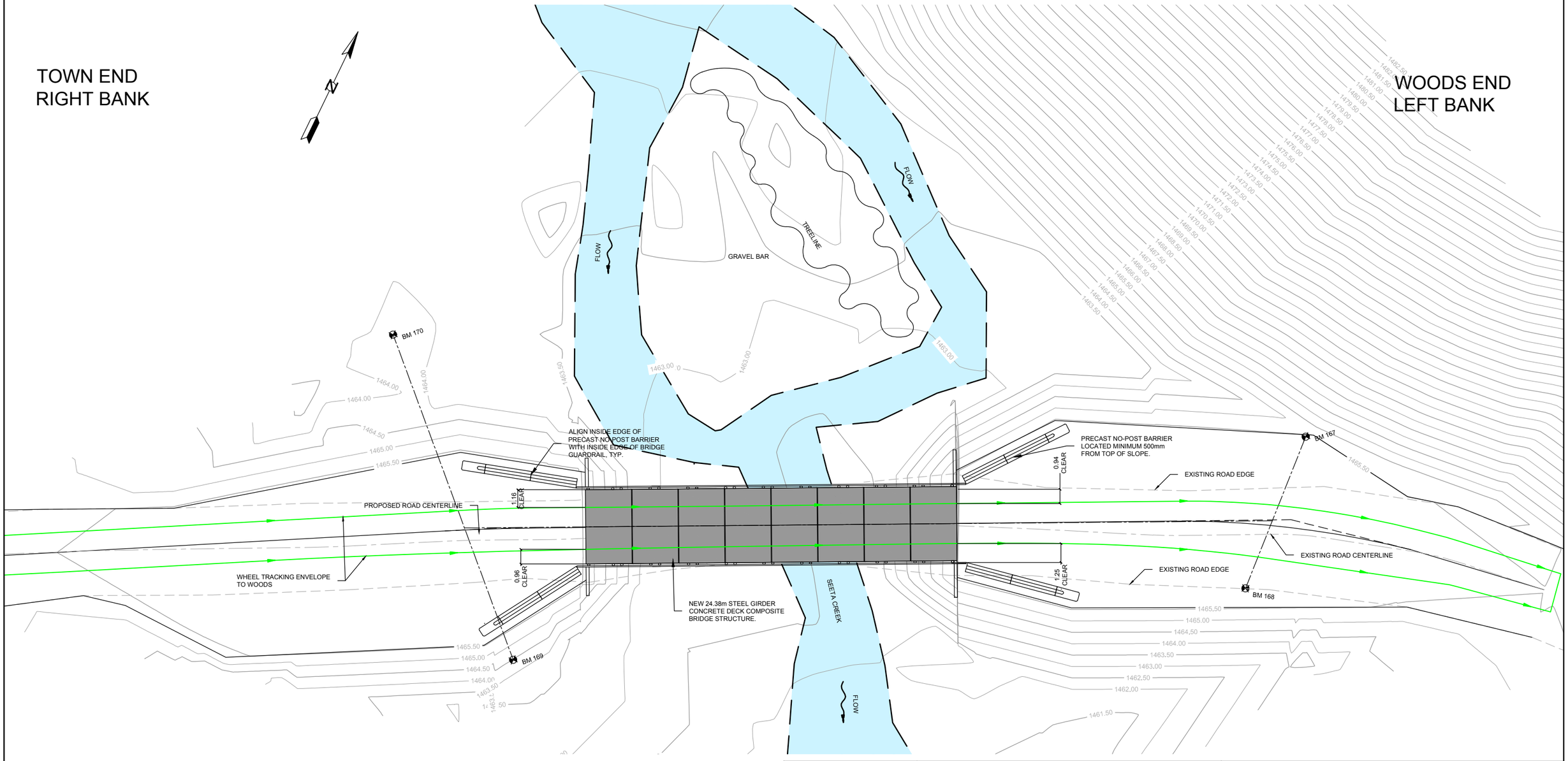
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No: EN17DRM009	DRAWING No: SHEET 5

TOWN END
RIGHT BANK

WOODS END
LEFT BANK



DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON 39764

January 27, 2017

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REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A

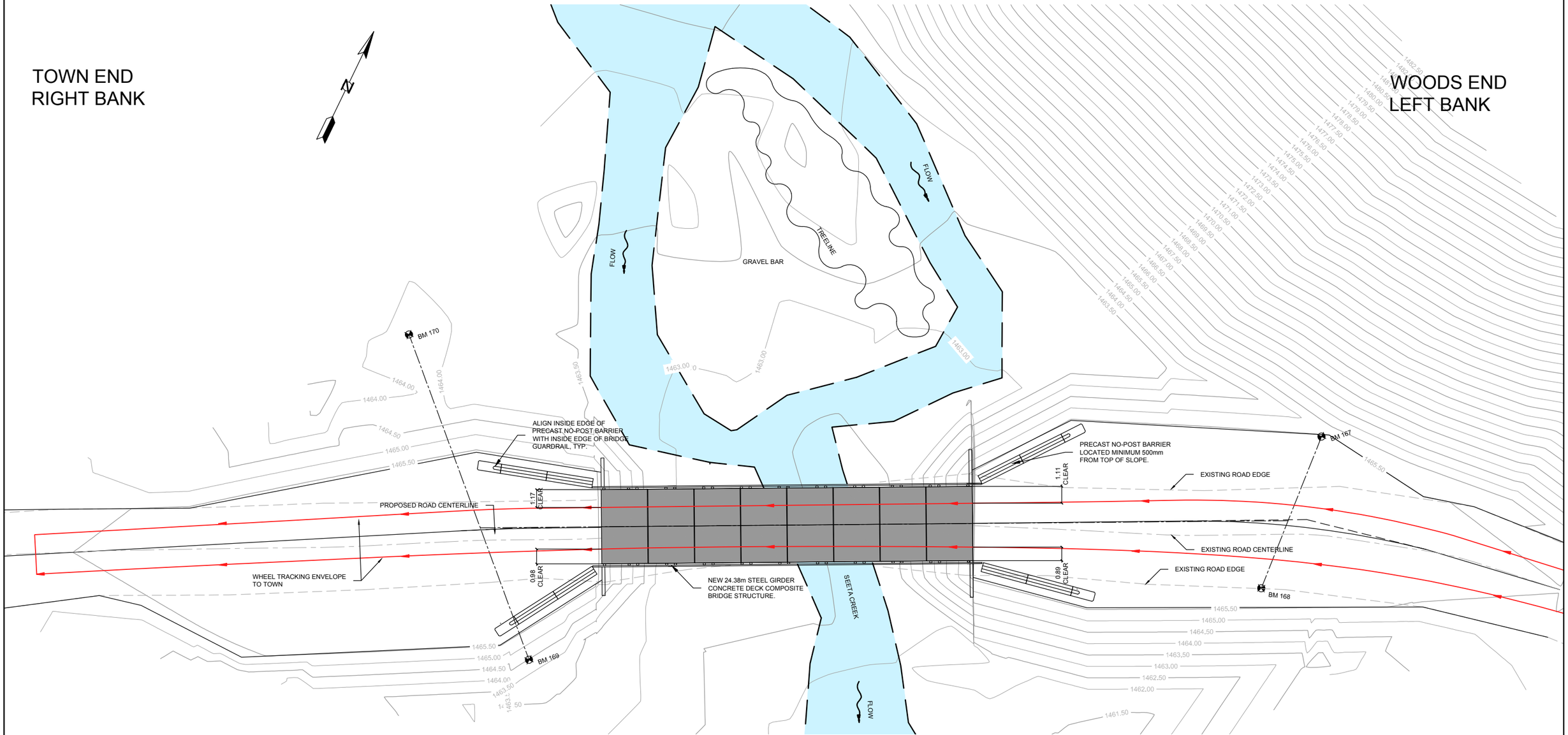
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE:
WHEEL TRACKING - TO WOODS

DESIGNED BY:	APPROVED BY:
BRANDON BOLEN	BRAD NELSON, P.ENG
PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No:	DRAWING No:
EN17DRM009	SHEET 6

TOWN END
RIGHT BANK

WOODS END
LEFT BANK



DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON

January 27, 2017

PROFESSIONAL SEAL

McElhanney
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MCSL FILE # 2441-00468-00

Designed	Brandon Bolen	Date: JANUARY 27, 2017
Checked	Brad Nelson, P.Eng	Date: JANUARY 27, 2017
Drawn	Brandon Bolen	Date: JANUARY 27, 2017

Rev.	Date	DESCRIPTION	Init.
0	01/27/17	ISSUED FOR CONSTRUCTION	BN

REVISIONS

Ministry of
Forests, Lands and
Natural Resource Operations

REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE:
WHEEL TRACKING - TO TOWN

DESIGNED BY:	APPROVED BY:
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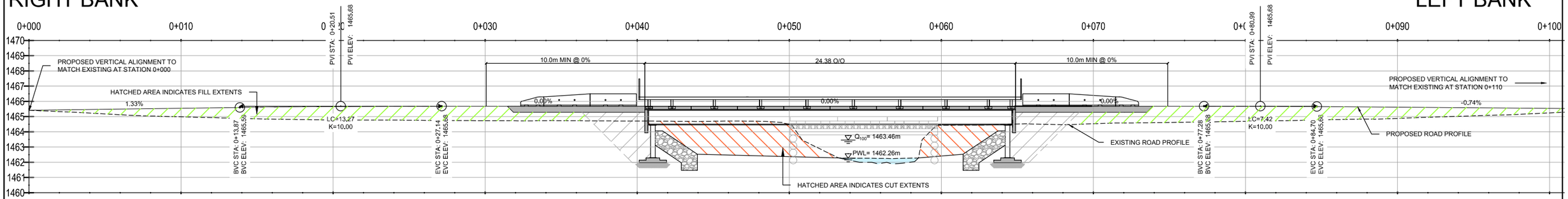
FILE No:	DRAWING No:
EN17DRM009	SHEET 7

TOWN END
RIGHT BANK

WOODS END
LEFT BANK

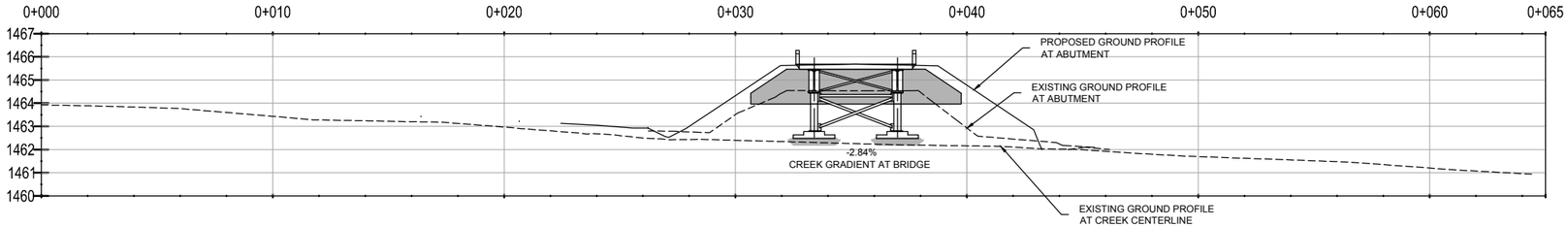


TOWN END CUT/FILL VOLUMES	
ESTIMATED CUT VOLUME	115 m^3
ESTIMATED FILL VOLUME	560 m^3
NET VOLUME	FILL 445 m^3
ALL VOLUMES ARE UNFACTORED AND ESTIMATED FOR TENDERING PURPOSES	

A/8 ROAD PROFILE (LOOKING UPSTREAM)

SCALE: 1:250

WOODS END CUT/FILL VOLUMES	
ESTIMATED CUT VOLUME	90m^3
ESTIMATED FILL VOLUME	650m^3
NET VOLUME	FILL 560 m^3
ALL VOLUMES ARE UNFACTORED AND ESTIMATED FOR TENDERING PURPOSES	



B/8 LONG CREEK PROFILE (LOOKING TOWARDS WOODS END, RIGHT BANK)

SCALE: 1:250

LEGEND	
BVC	BEGINNING OF VERTICAL CURVE
EVC	END OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
LC	LENGTH OF CURVE
K	K VALUE OF CURVE
	INDICATES FILL DEPTH EXTENTS CENTERLINE
	INDICATES CUT EXTENTS AT CENTERLINE

DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON 34740

January 27, 2017

PROFESSIONAL SEAL

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MCSL FILE # 2441-00468-00

Designed Brandon Bolen Date: JANUARY 27, 2017
Checked Brad Nelson, P.Eng Date: JANUARY 27, 2017
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BRITISH COLUMBIA
Ministry of Forests, Lands and Natural Resource Operations

REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE: LONG ROAD AND CREEK PROFILES

DESIGNED BY:	APPROVED BY:
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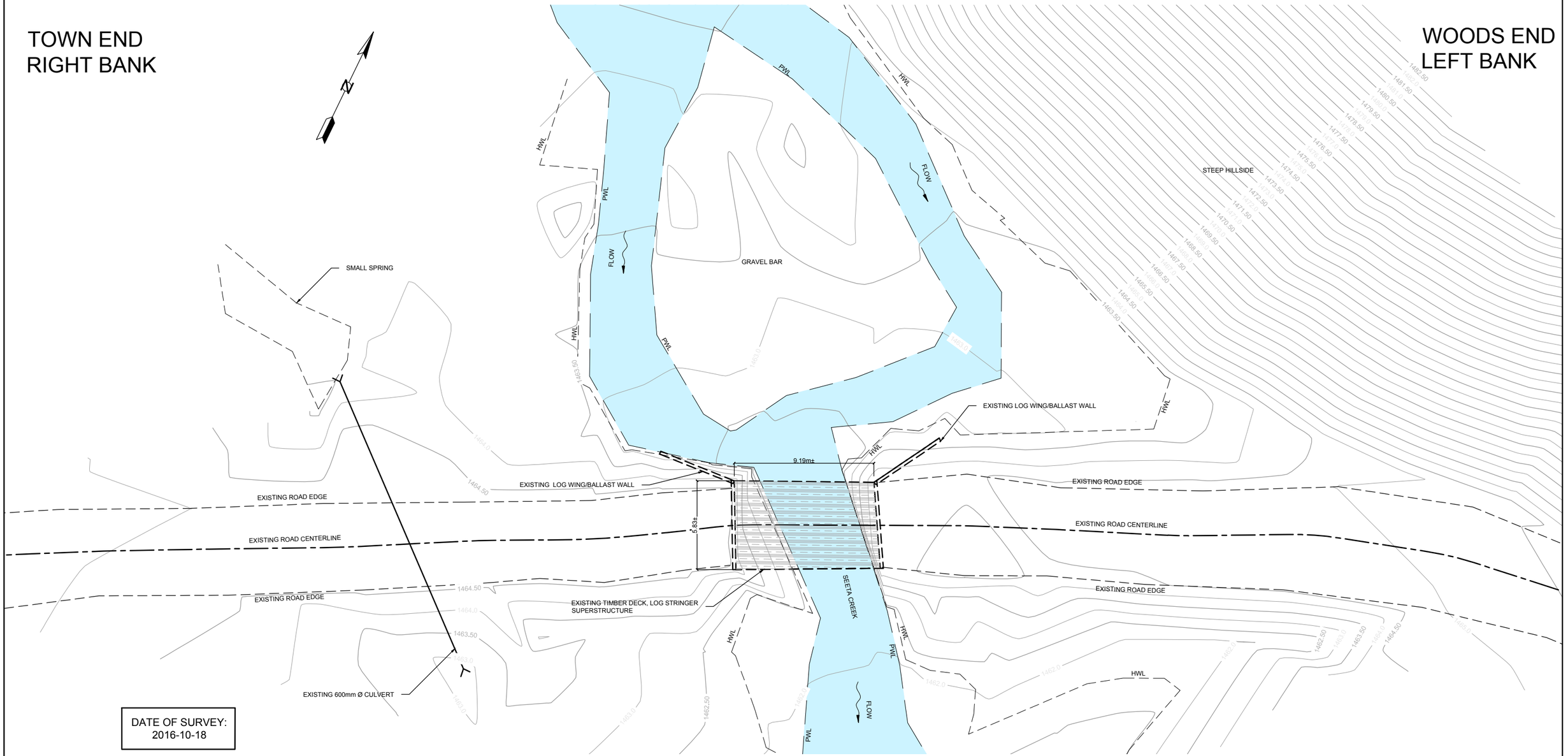
FILE No:	DRAWING No:
EN17DRM009	SHEET 8

TOWN END
RIGHT BANK

WOODS END
LEFT BANK



DATE OF SURVEY:
2016-10-18

DESIGN ENGINEER / COORDINATING REGISTERED PROFESSIONAL

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — B. R. NELSON

January 27, 2017

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REPLACEMENT OF SEETA CREEK BRIDGE

SITE #: N2-146 STRUCTURE #: N2-146A
FSR: WHITE - MIDDLEFORK MIN. km: __ USER km: 65.7

DRAWING TITLE:
EXISTING CONDITIONS PLAN

DESIGNED BY:	APPROVED BY:
BRANDON BOLEN	BRAD NELSON, P.ENG
PROFESSIONAL OF RECORD	MFLNRO ENGINEER:
BRAD NELSON, P.ENG	DREW ALWAY, P.ENG
FILE No:	DRAWING No:
EN17DRM009	SHEET 9

1/10 PHOTO 1 - SITE OVERVIEW

SCALE: NTS

2/10 PHOTO 2 - LOOKING DOWNSTREAM

SCALE: NTS

3/10 PHOTO 3 - LOOKING UPSTREAM

SCALE: NTS

4/10 PHOTO 4 - EXISTING BRIDGE FROM UPSTREAM

SCALE: NTS

5/10 PHOTO 5 - EXISTING BRIDGE FROM DOWNSTREAM

SCALE: NTS

6/10 PHOTO 6 - EXISTING ABUTMENTS

SCALE: NTS

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA B. R. NELSON

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DRAWING TITLE: SITE PHOTOGRAPHS

DESIGNED BY:	APPROVED BY:
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FILE No:	DRAWING No:
EN17DRM009	SHEET 10