SITE C CLEAN ENERGY PROJECT

Component Application Package – Peace River Temporary Access Bridge Crossings for Western Reservoir Clearing

Crossing WR2

Application for Approval

For Canadian Navigable Waters Act

April 28, 2021

Submitted to:

Transport Canada
Suite 620 - 800 Burrard Street
Vancouver BC V6Z 2J8

Submitted by:

BC Hydro and Power Authority
Site C Clean Energy Project
PO Box 49260
Vancouver BC V7X 1V5

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1 INTRODUCTION

The Canadian Navigable Waters Act (CNWA) came in to force on August 28, 2019. The CNWA includes a Schedule of navigable waters requiring regulatory approval for works that risk a substantial interference with navigation.

The Peace River is named in the schedule of navigable waters. Works required for construction and operation of the Site C Clean Energy Project (the Project) that occur on, over, under or through navigable waterways, as defined by the CNWA, must be submitted to Transport Canada for review.

This application is being submitted for the construction of one temporary bridge across a side channel of the Peace River, to facilitate clearing of the western segment of the Site C reservoir. The crossing is identified as WR2.

2 PEACE RIVER TEMPORARY CROSSINGS – WESTERN RESERVOIR CLEARING

Clearing during the 2021/2022 season within the western reservoir will be conducted along the south bank of the Peace River, under two contracts:

1. Halfway River to Farrell Creek Phase 2, and
2. Farrell Creek to Peace Canyon Dam

In order to allow machine access for clearing along the south bank of the Peace River as well as Peace River islands, a series of temporary crossings are proposed. New access roads will also be constructed. The crossings will be situated along the south bank of the Peace River and cross various tributaries and side channels. The locations of these crossings and access roads for the Farrell Creek to Peace Canyon Dam segment are shown on the overview map in Attachment A.

This application is specific to the crossing labelled as WR2. Separate applications will be submitted for each subsequent crossing within the western reservoir clearing area.

2.1 Design of Crossing WR2

A map showing the location of crossing WR2 is included in Attachment A. The general arrangement, dimensions and specifications for the crossing is provided in Attachment B.

The proposed crossing is a temporary steel twin girder/timber deck bridge approximately 30 m in length. The bridge has been designed to a flow of 2,100 m^3/s, which is in excess of the Peace River total discharge of 1,980 m^3/s that occurs when both upstream BC Hydro facilities (W.A.C Bennett and Peace Canyon dams) are generating at 100% capacity.

The bridge approaches would be constructed from local river bed materials and supplemented with imported granular material and riprap rock. Riprap specifications have been developed using the estimated flows level and associated scour potential. The riprap specification for the crossing is provided in the drawings in Attachment B.

2.2 Location and Land Description

The WR2 crossing is located across a side channel of the Peace River, approximately 11 km downstream, of the Peace Canyon Dam. The crossing spans portions of the Peace River that are Crown Land and are within the following Occupant Licence to Cut (OLTC) area held by BC Hydro: OLTC#20A; Licence #L51499.

The location coordinates and land description for the crossing is listed in Table 1.

Table 1. Location and Land Description of Crossing WR2

ID	Longitude	Latitude	Land Description
WR2	56.042962	-121.871938	Part of Island No.3 Section 29 Township 81 Range 25 West of The 6th Meridian Peace River District

3 CONSTRUCTION SEQUENCE AND SCHEDULE

Construction of crossing WR2 is scheduled to begin in October 2021. Crossings will be constructed simultaneously in the Halfway River to Farrell Creek Phase 2 and Farrell Creek to Peace Canyon contracts with construction scheduled to commence in mid August and mid September respectively.

Minor changes to location and bridge sizing may be required to field fit each crossing to site conditions that exist during construction.

Decommission of crossing WR2 will involve removal of bridge modules, steel superstructure, abutments and lock-blocks. The granular material and riprap used for the bridge approaches will remain in place and be inundated by the future Site C reservoir.

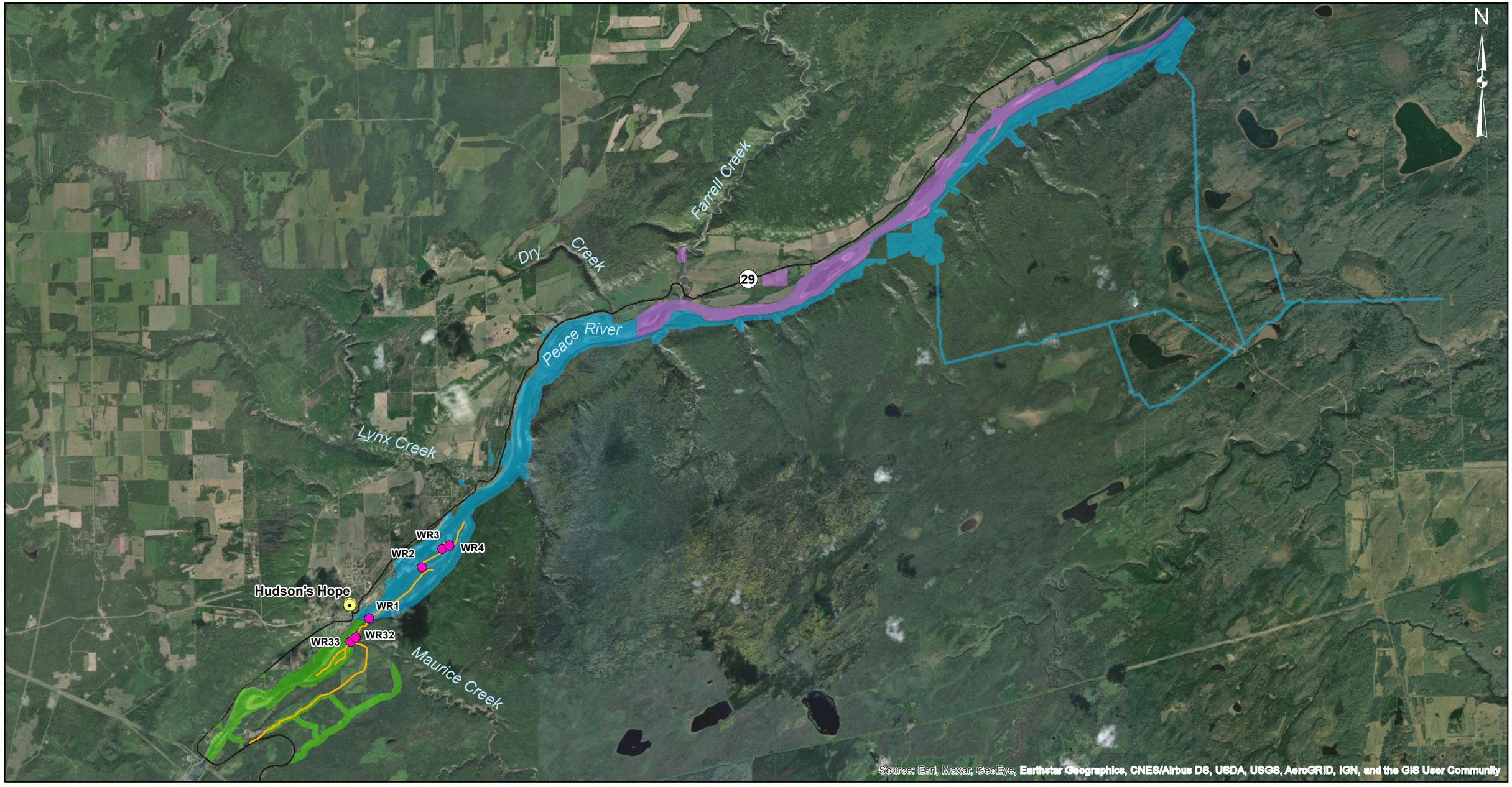
4 CONSULTATION

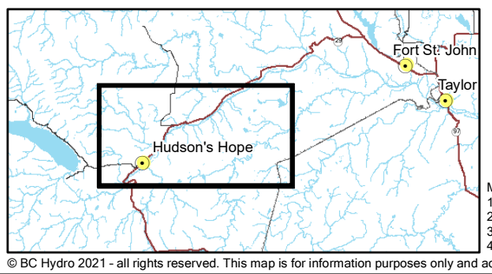
The western reservoir clearing plans, including access routes and side channel crossings were presented as part of the permit bundle to local indigenous groups at the Site C Permitting Forum #11 held February 14, 2019.

Attachment A – Maps

Overview Map of Western Reservoir Clearing Crossings – Farrell Creek to Peace Canyon Dam

Map of WR2 Crossing





Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Base Data: Province of B.C.
4. Imagery: ESRI Online Basemapping.

Legend

- Crossings
- OLTC 20A
- OLTC 20B
- OLTC 21
- Roads
- Existing Highway

1:120,000 0 5 km

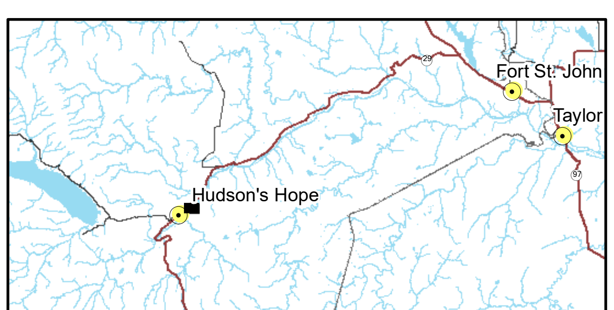
BC Hydro

Site C Western Reservoir
Farrell Creek to Peace Canyon Dam
Clearing Crossings
CNWA Approval Application
Overview Map

Date	Apr 22, 2021	DWG NO	1016-N11-01109-1	R 0

Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

Path: X:\ArcGIS\Projects\Permitting\Federal_Permits\NavProtActWR_FC_PCN_Crossings\WesternReservoir_FC_to_PCN_Crossings_Ovrvw_1016_N11_01109-1.mxd



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Base Data: Province of B.C.
4. Imagery: ESRI Online Basemapping.

Legend

- Crossings
- Roads
- OLTC 20A
- Existing Highway
- OLTC 20B
- OLTC 21

1:5,000

0 200 m

BC Hydro

Site C Western Reservoir
Farrell Creek to Peace Canyon Dam
Clearing Crossings
CNWA Approval Application
Crossing WR 2

Date	Apr 23, 2021	DWG NO	1016-N11-01109-4	R 0

Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

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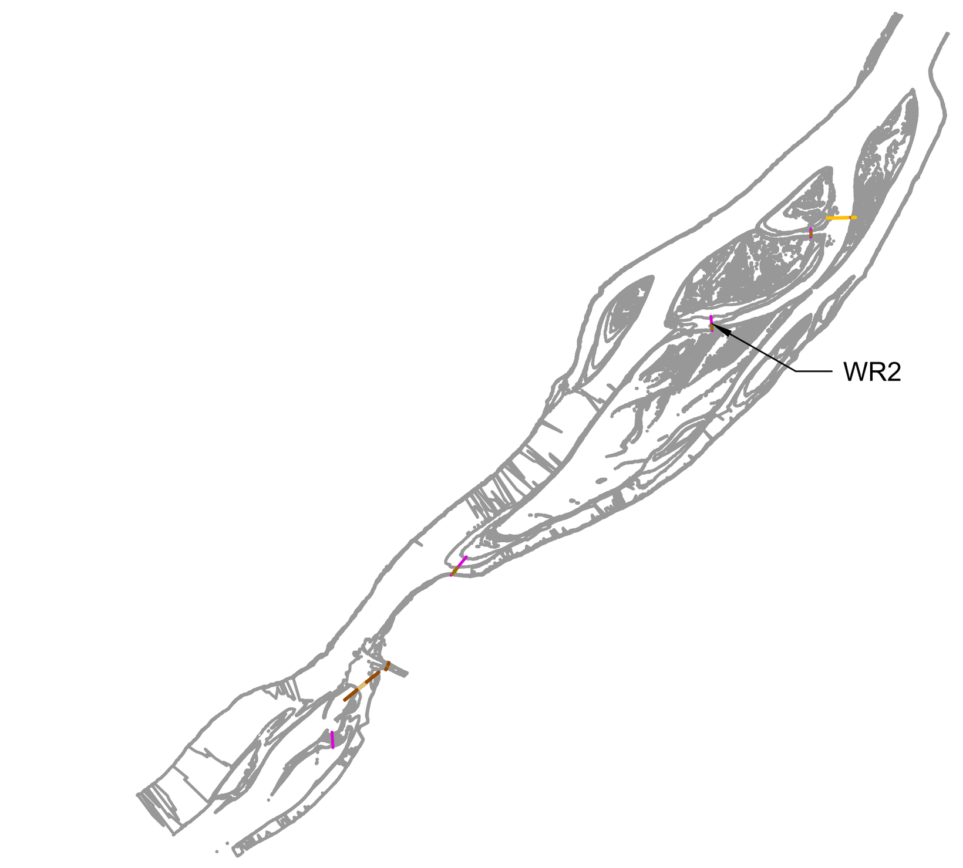
Attachment B

Design Drawing, Plan and Profile View of WR2 Crossing

WESTERN RESERVOIR
OLTC 20A - CROSSING WR2
STREAM CLASS = S1



KEYPLAN
NTS

BC Hydro
Power smart

30.48m TEMPORARY CROSSINGS (MIN. BCL-625)

DRAWING LIST	
DRAWING NUMBER	DESCRIPTION
1016-C14-03111	COVER SHEET
1016-C14-03112	GENERAL NOTES AND DESIGN SPECIFICATIONS
1016-C14-03113	EXISTING CONDITIONS - PLAN AND PROFILE
1016-C14-03114	PROPOSED CROSSING - PLAN AND SECTIONS

BC Hydro Contract No ....

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By.. Date ....
Hydro's Representative

NO	REMARKS
0	ISSUED FOR INFORMATION

REVISIONS

REFERENCE DRAWINGS

DESIGN NUMBER		DSGN	
WORK ORDER NUMBER		INDEP CHK	
CSA S250 ACCURACY NAD - UTM		DFTG	AZ
		DFTG CHK	TCJ
BASE ACCURACY LEVEL:		INSP	
		REV	
ASB ACCURACY LEVEL:		ACPT	

BC Hydro

SITE C

WESTERN RESERVOIR
WR2 CROSSING
COVER SHEET

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIGURE NUMBER	SIZE	REV
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Drawing Unit = Metric (4)
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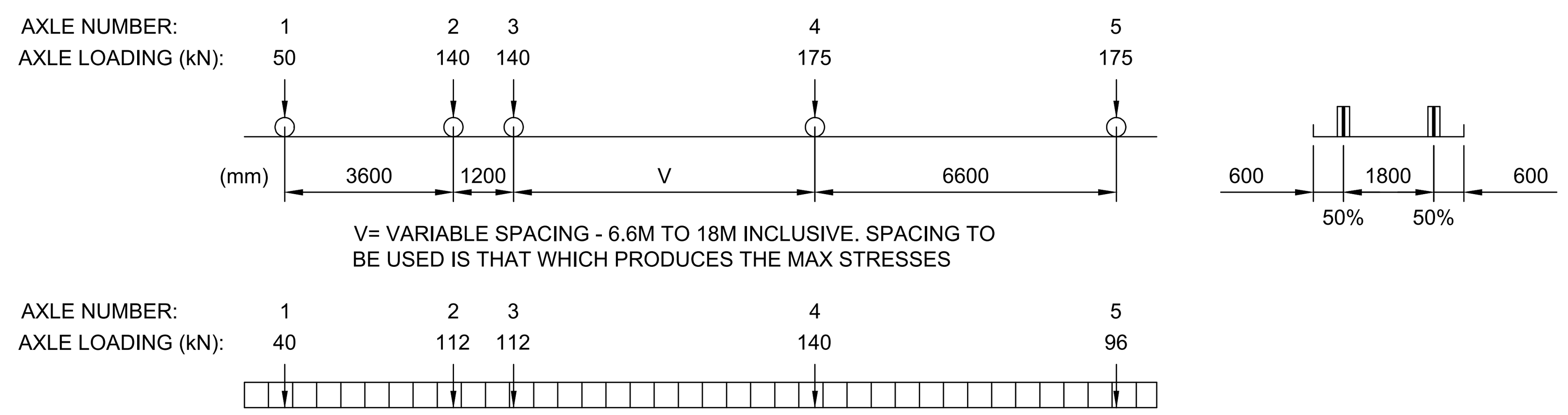
4/27/2021 11:44 AM

DESIGN SPECIFICATIONS:

DESIGN CODE: CAN/CSA-S6-14/19 MODIFIED IN ACCORDANCE WITH THE MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS "ENGINEERING MANUAL", AND OTHER MINISTRY BRIDGE DESIGN GUIDELINES.

LIVE LOAD: BCL-625



UNIFORMLY DISTRIBUTED LOAD 9 kN/m

MATERIAL SPECIFICATIONS:

STEEL: STRUCTURAL STEEL FOR GIRDERS SHALL BE IN ACCORDANCE WITH CSA G40.21 GRADE 350AT, CATEGORY 3. ALL OTHER STEEL SHALL COMPLY TO GRADE 350A. ALL NON-WEATHER STEEL SECTIONS ARE TO BE PAINTED USING AN EPOXY PRIMER AND POLYURETHANE TOP COAT.

PLATE TO PLATE OR PLATE TO SECTION CONNECTION FAYING SURFACES TO BE CLASS B ACCORDING TO CSA-S16-14.

FABRICATION SPECIFICATIONS:

GIRDERS ARE DESIGNED AS FRACTURE CRITICAL MEMBERS

SPICE COMPONENTS AND ASSEMBLY ARE TO BE COMPLETED TO BRIDGE OWNER'S SPECIFICATIONS. NO REAMING OR MODIFICATION OF SPLICE SECTIONS WILL BE PERMITTED WITHOUT ENGINEER APPROVAL.

SUPERSTRUCTURE IDENTIFICATION:

THE BRIDGE SUPERSTRUCTURE SHALL HAVE ITS STRUCTURE NUMBER, LOAD RATING, DATE OF MANUFACTURE, AND MANUFACTURER'S NAME CLEARLY STAMPED ON PERMANENTLY MARKED ON AT LEAST ONE SIDE OF THE STRUCTURE.

CERTIFICATIONS AND QUALITY CONTROL (CONTRACTOR TO PROVIDE):

PROVIDE MILL CERTIFICATES FOR ALL STEEL INCORPORATED INTO THE STRUCTURE.

PROVIDE SUPERSTRUCTURE DRAWINGS AND DOCUMENTATION OF LOAD CAPACITY FOR REVIEW PRIOR TO INSTALLATION

VOLUME NOTES:

RIPRAP SHALL BE HARD, DURABLE, ANGULAR ROCK AND IN ACCORDANCE WITH BRITISH COLUMBIA MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE.

AVERAGE SIZE ROCK CLASS 50KG RIPRAP.

MINIMUM RIPRAP VOLUME: 740 m^3

ESTIMATED CUT AND FILL VOLUMES:

COMPACTED BACKFILL:	360 m^3
EXCAVATION:	20 m^3
NET FILL:	1080 m^3

BACKFILL AND GRANULAR FILL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300MM IN LOOSE THICKNESS AND EACH LAYER SHALL BE COMPACTED TO THE CLIENTS ROAD SPECIFICATIONS WITH A PLATE TAMPER EVENLY ACROSS THE ENTIRE SURFACE TO THE DESIRED ELEVATION.

ENDFILL:

ENDFILL SHALL BE COMPLETED WITH WELL GRADED, SELECT, GRANULAR MATERIAL (<75MM), FREE OF UNSUITABLE MATERIALS, IN LIFTS OF 300 AND COMPACTED TO 95% STANDARD PROCTOR DENSITY OVER THE ENTIRE SURFACE.

TEMPORARY SUBSTRUCTURE:

MATS MUST BE 3-PLY BOLTED OAK, OR HYBRID STYLE AND MUST BE OF NEW CONDITION WITH NO BROKEN COMPONENTS

MATS SHALL BE PLACED ON LEVELLED GROUND AND ANY FILL OR NATIVE SOIL MUST BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY OVER THE ENTIRE SURFACE.

HYDRAULIC DATA:

COMPLETED BY OTHERS

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN METERS AND ALL ELEVATIONS AND STATIONS ARE IN METERS.
2. FENDER SYSTEMS AND HAZARD MARKERS SHALL BE INSTALLED AT EACH END OF THE BRIDGE.
3. ALL PERMITS AND REGULATORY APPROVALS ARE TO BE IN PLACE PRIOR TO COMMENCING WORK.
4. ENVIRONMENTAL MANAGEMENT PLAN IS TO BE PREPARED FOR THE PROJECT BY OTHERS.
5. LIMIT OF 1 VEHICLE ON BRIDGE CROSSING AT ANY GIVEN TIME.
6. FISH HABITAT ASSESSMENT AND STREAM CLASSIFICATION TO BE PREPARED FOR THE PROJECT BY OTHERS.
7. LOAD RATING SIGNAGE MUST BE POSTED AT EACH END OF THE BRIDGE AND MUST CLEARLY INDICATE MAX GVW AND VARIOUS AXEL CONFIGURATIONS.
8. ROAD DESIGN AND ALIGNMENT TO BE PREPARED FOR THE PROJECT BY OTHERS.
9. INSTALLATION CONSTRUCTION PROCEDURE IS THE RESPONSIBILITY OF THE PRIME CONTRACTOR AND BC HYDRO OR SUPERVISING DELEGATE.
10. TOPOGRAPHIC SURVEY DEVELOPED BASED OFF JUNE 2015 LIDAR DATA PROVIDED BY MAPLE LEAF FORESTRY.
11. COORDINATE SYSTEM NAD83, GEOID CGG2013.
12. GEOTECHNICAL INFORMATION FROM "FIRTH COLIN RESOURCE SCIENCE CORP" REPORT DATED JAN 4, 2021.
13. SUPERSTRUCTURE AND SUBSTRUCTURE TO BE CERTIFIED AT A MINIMUM OF BCL-625 LOADING.
14. BRIDGES DESIGNED FOR A 2100 M /S FLOW + 0.8M OF WATER CLEARANCE.
15. BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE TO BE CERTIFIED BY A PROFESSIONAL ENGINEER AND AN AS-BUILT PLAN PRODUCED AFTER CONSTRUCTION.
16. WATER DEPTH ESTIMATED AT 1.0M AT CROSSING LOCATION.
17. HYDROLOGICAL INFORMATION FROM "SNC LAVALIN" REPORT DATED APRIL 8, 2021.
18. BRIDGE CONFIGURATION HAS BEEN CHOSEN BY BC HYDRO.

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Hydro's Representative

NO	REMARKS
0	ISSUED FOR INFORMATION

REFERENCE DRAWINGS

REVISIONS

DESIGN NUMBER		DSGN	
WORK ORDER NUMBER		INDEP CHK	
CSA S250 ACCURACY NAD - UTM		DFTG	AZ
		DFTG CHK	TCJ
BASE ACCURACY LEVEL:		INSP	
		REV	
ASB ACCURACY LEVEL:		ACPT	

BC Hydro

SITE C

WESTERN RESERVOIR
WR2 CROSSING
GENERAL NOTES & DESIGN SPECIFICATIONS

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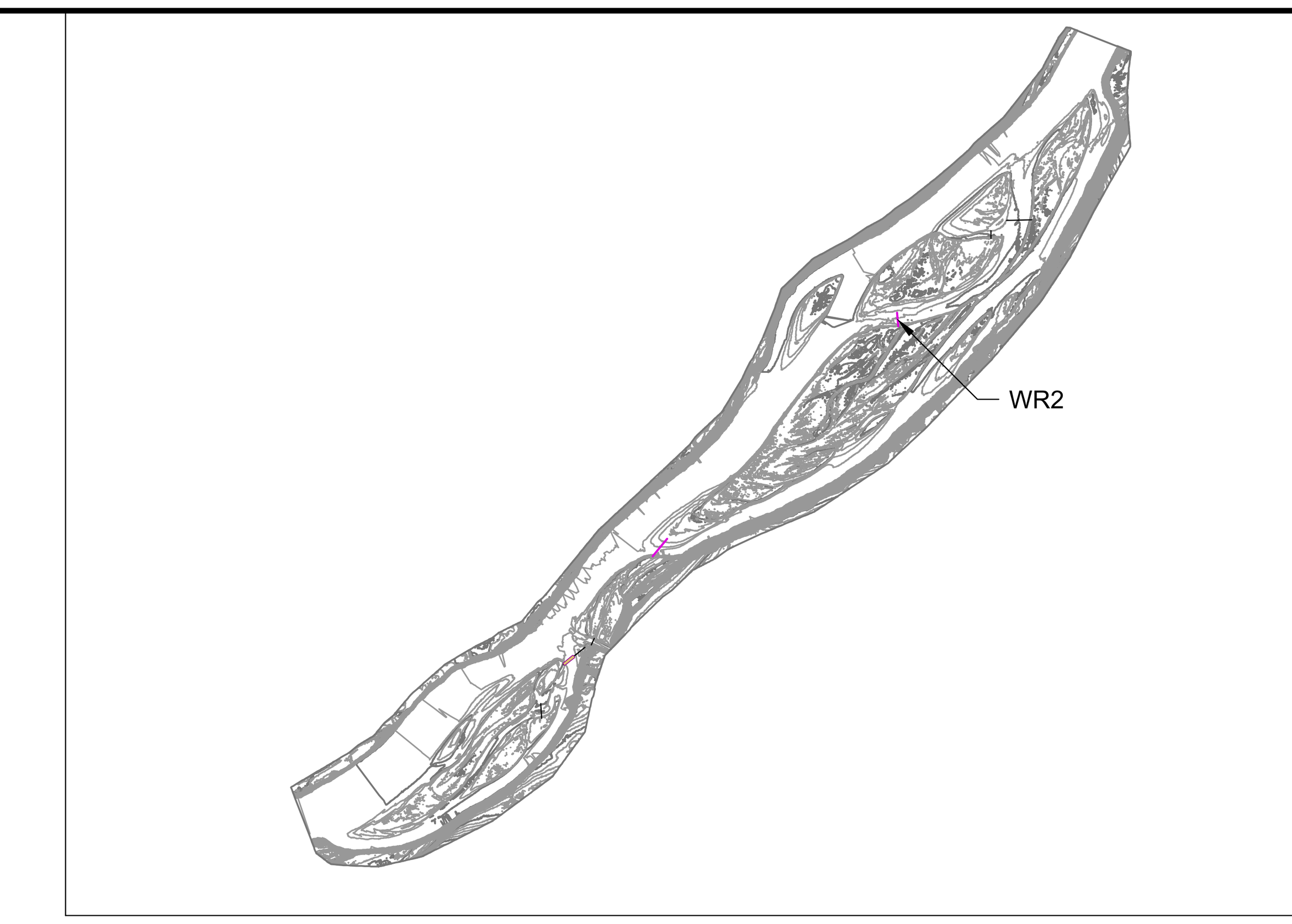
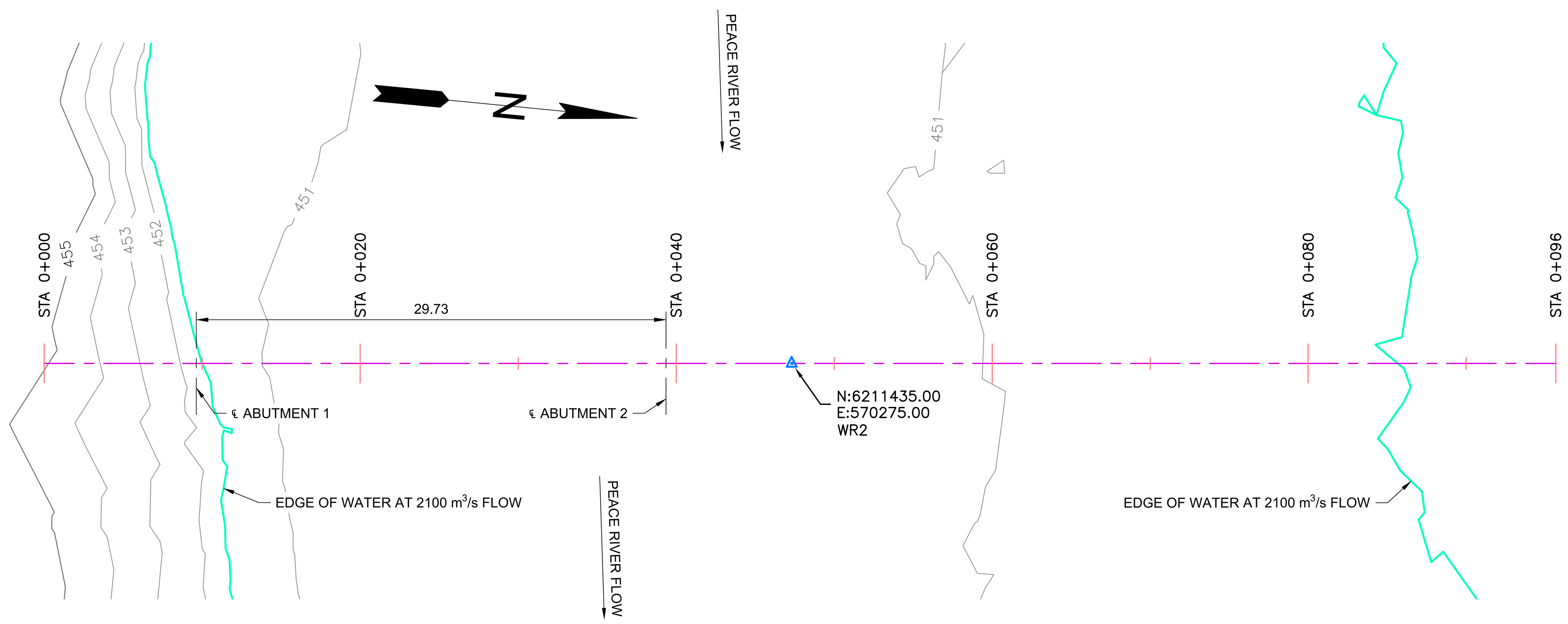


KEYPLAN
NTS



PLAN
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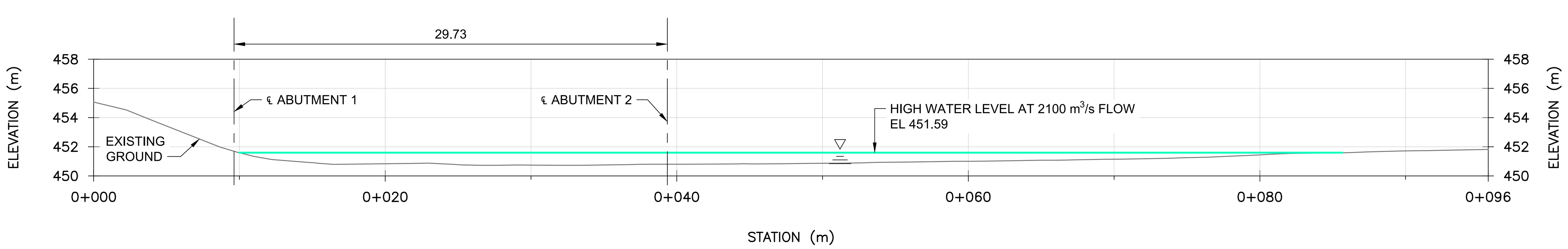

PROFILE VIEW
SCALE: A

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SCALE: A 0 10m
1:250

ALL DIMENSIONS ARE IN METRES, UNLESS OTHERWISE SHOWN

NO	DRAWING NUMBER	DRAWING TITLE

REFERENCE DRAWINGS

NO	REMARKS
0	ISSUED FOR INFORMATION

REVISIONS

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BASE ACCURACY LEVEL:
ASB ACCURACY LEVEL:

DSGN
INDEP CHK
DFTG ACZ
DFTG CHK
INSP
REV
ACPT

BC Hydro

SITE C

WESTERN RESERVOIR
WR2 CROSSING
EXISITNG CONDITIONS
PLAN AND PROFILE

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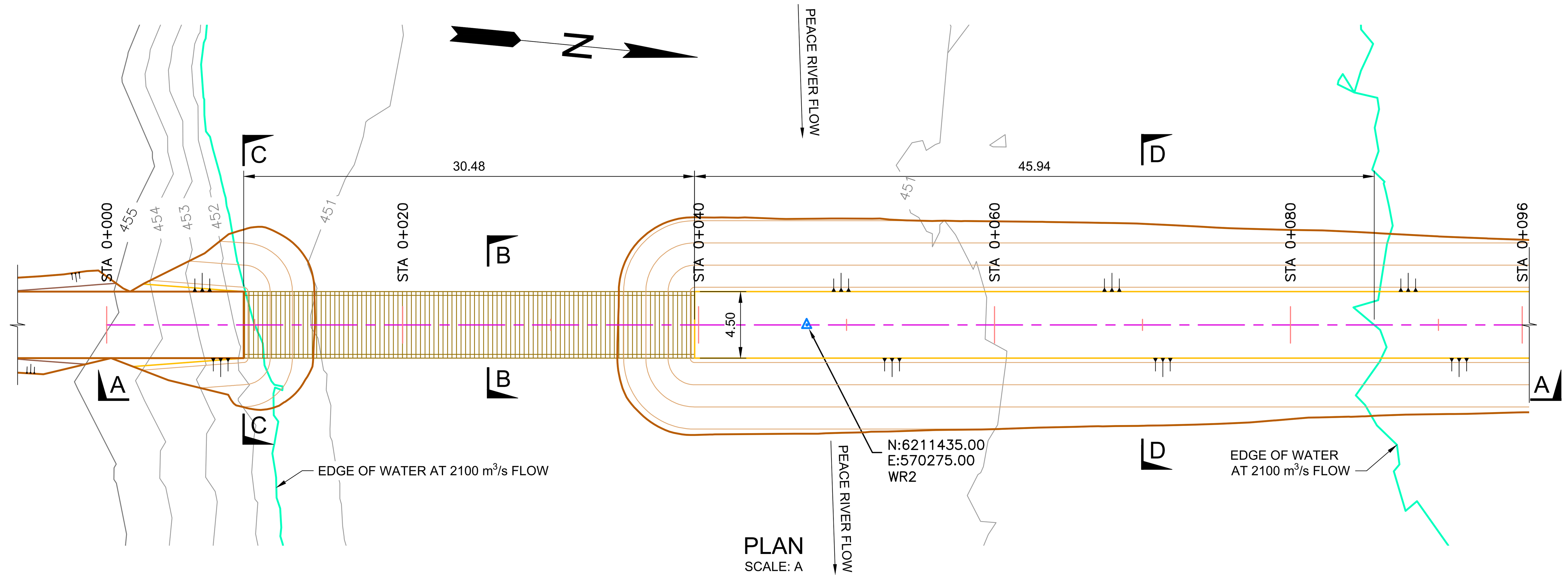

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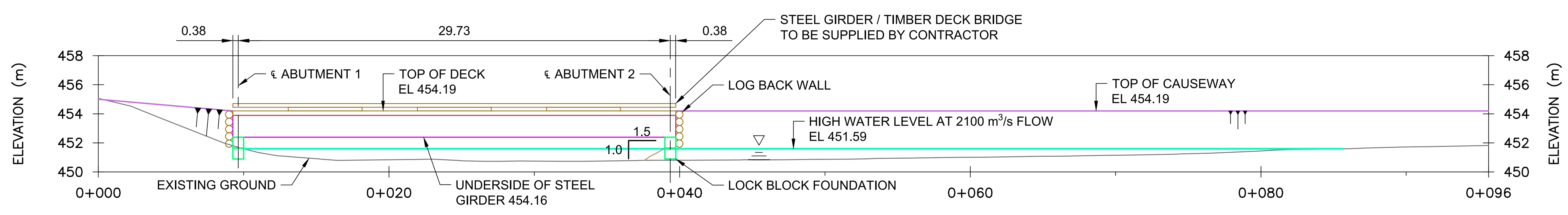

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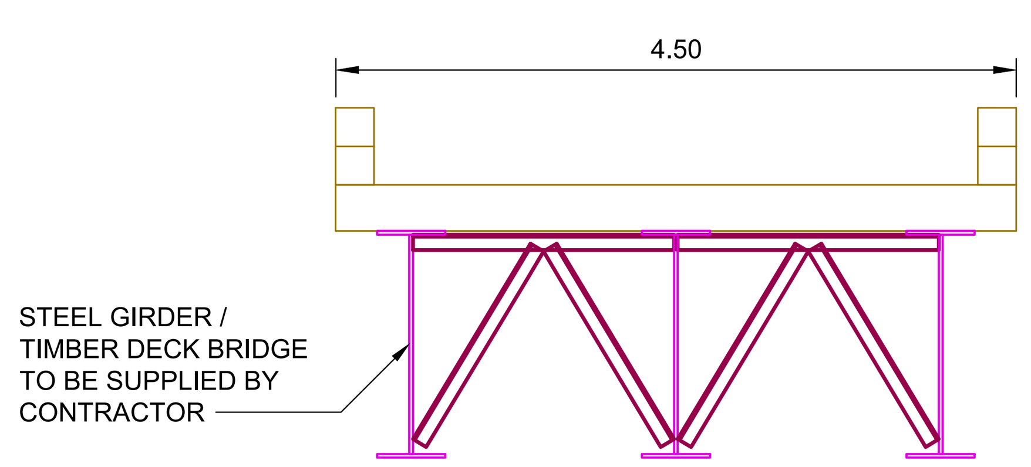

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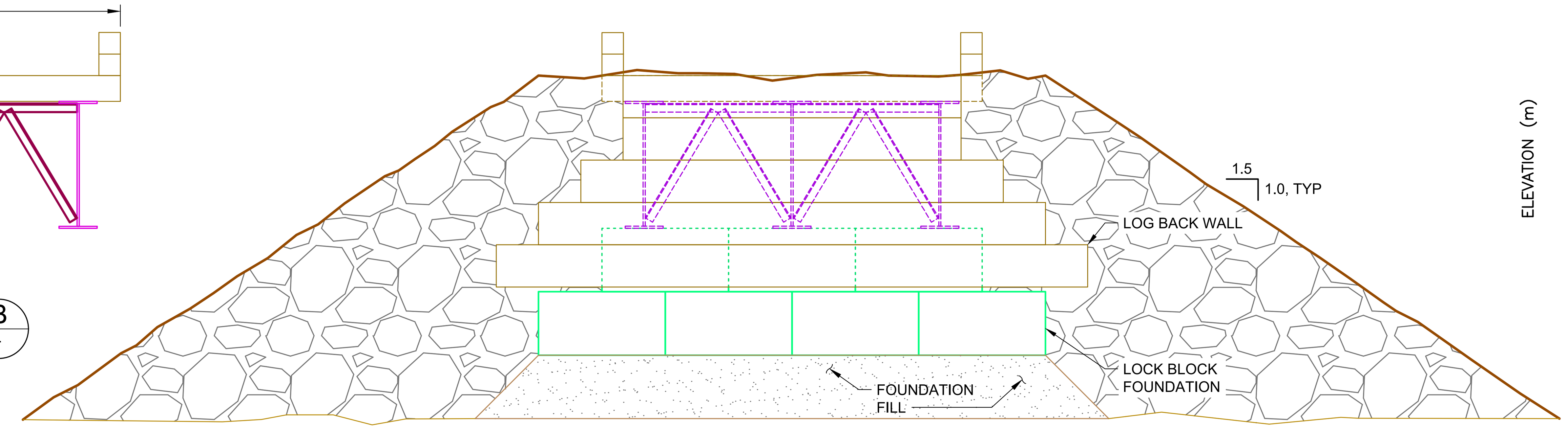
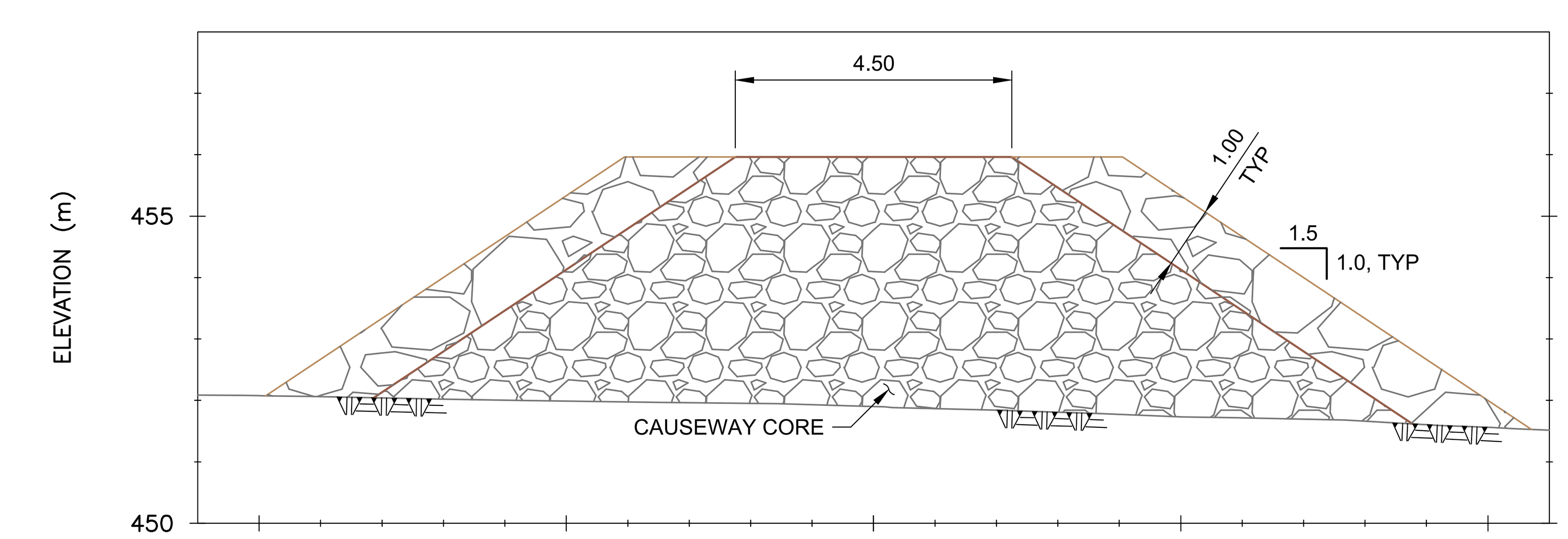
SCALE:B



SECTION C
SCALE:B



SECTION D
SCALE:C

LEGEND:

50kg RIPRAP

25kg RIPRAP

SCALE:C 1:100 0 5m

SCALE:B 1:50 0 2.5m

SCALE:A 1:250 0 10m

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NO	DRAWING NUMBER	DRAWING TITLE
	REFERENCE DRAWINGS	

NO	REMARKS
0	ISSUED FOR INFORMATION
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ASB ACCURACY LEVEL:

DSGN	
INDEP CHK	
DFTG	ACZ
DFTG CHK	
INSP	
REV	
ACPT	

BC Hydro

SITE C

WESTERN RESERVOIR
WR2 CROSSING
PROPOSED CROSSING
PLAN AND SECTIONS

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
		1016-C14-03114			D	0

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