

SITE C CLEAN ENERGY PROJECT

Component Application Package – Peace River Temporary Access Bridge Crossings for Western Reservoir Clearing Crossing WR4

**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 WR4.

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 WR4. Separate applications will be submitted for each subsequent crossing within the western reservoir clearing area.

2.1 Design of Crossing WR4

A map showing the location of crossing WR4 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 m³/s, which is in excess of the Peace River total discharge of 1,980 m³/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.

Site C Clean Energy Project – Peace River Crossing WR4

2.2 Location and Land Description

The WR4 crossing is located across a side channel of the Peace River, approximately 12.5 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 WR4

ID	Longitude	Latitude	Land Description
WR4	56.049128	-121.857485	Part of Island No.2 Section 28 Township 81 Range 25 West of The 6th Meridian Peace River District

3 CONSTRUCTION SEQUENCE AND SCHEDULE

Construction of crossing WR4 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 WR4 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

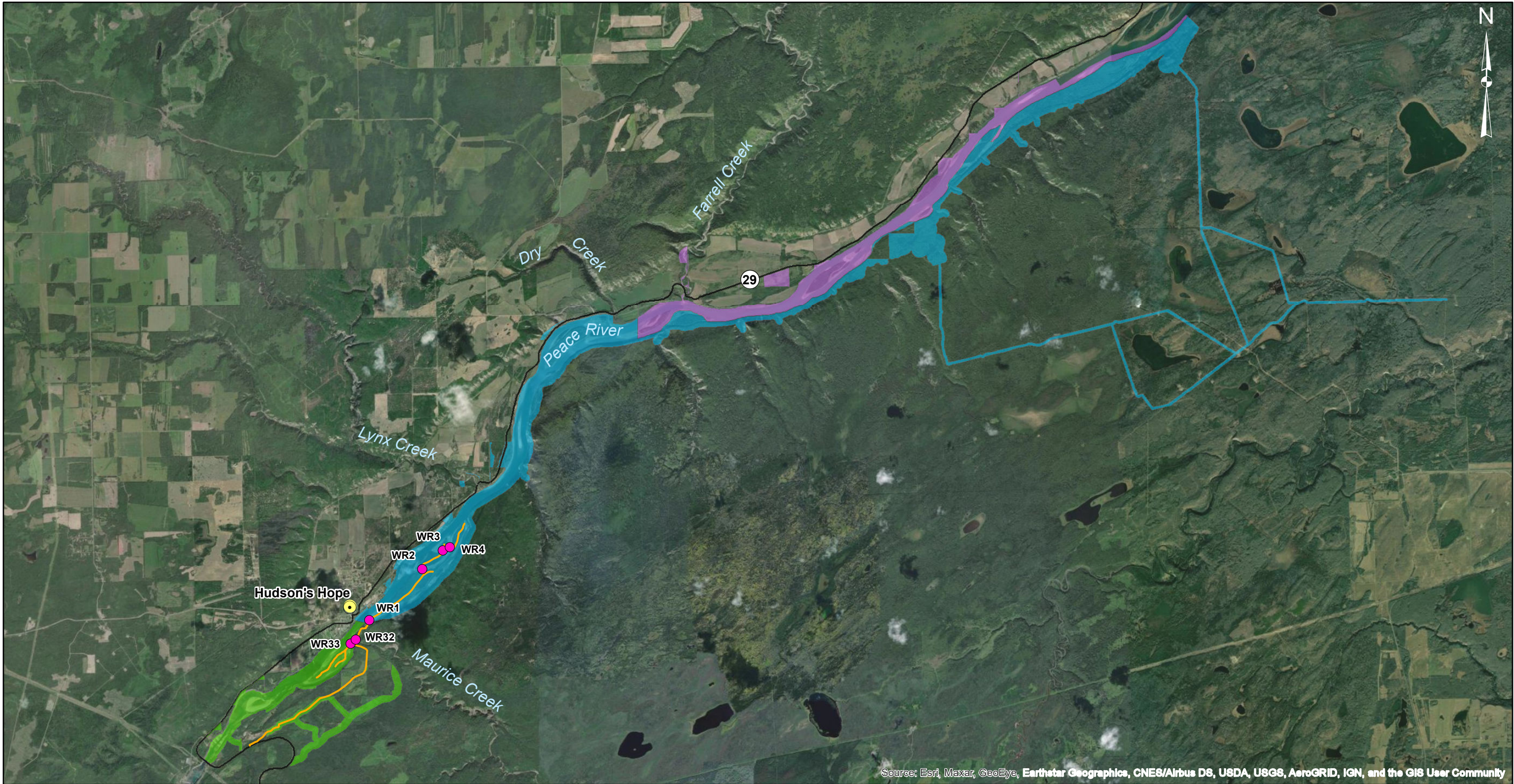
The western reservoir clearing plans, including access routes and side channel crossings were presented as part of the permit bundle to local indigenous groups at the Site C Permitting Forum #11 held February 14, 2019.

Attachment A – Maps

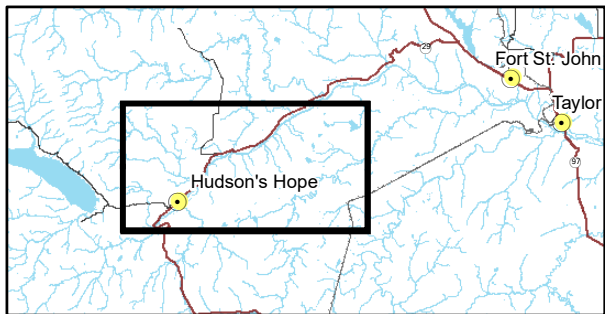
**Overview Map of Western Reservoir Clearing Crossings –
Farrell Creek to Peace Canyon Dam**

Map of WR4 Crossing

Path: X:\ArcGIS\Projects\Permitting\Federal_Permitting\NavPro\Act\WR_FC_PCN_Crossings\WesternReservoir_FC_PCN_Crossings\Overview_1016-N11-01109-1.mxd



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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

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

1:120,000 0 5 km

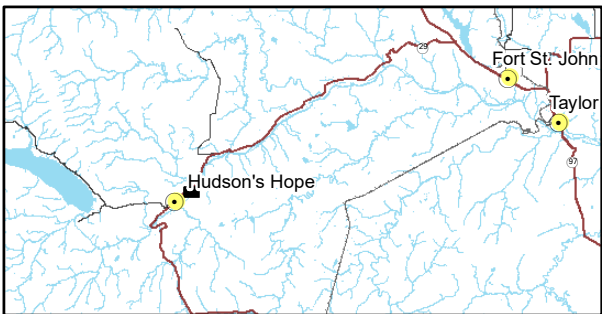
BC Hydro				
Site C Western Reservoir Farrell Creek to Peace Canyon Dam Clearing Crossings CNWA Approval Application Overview Map				
Date	Apr 22, 2021	DWG NO	1016-N11-01109-1	R 0

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

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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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

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Legend

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

1:5,000 0 200 m



Site C Western Reservoir
Farrell Creek to Peace Canyon Dam
Clearing Crossings
CNWA Approval Application
Crossing WR 4

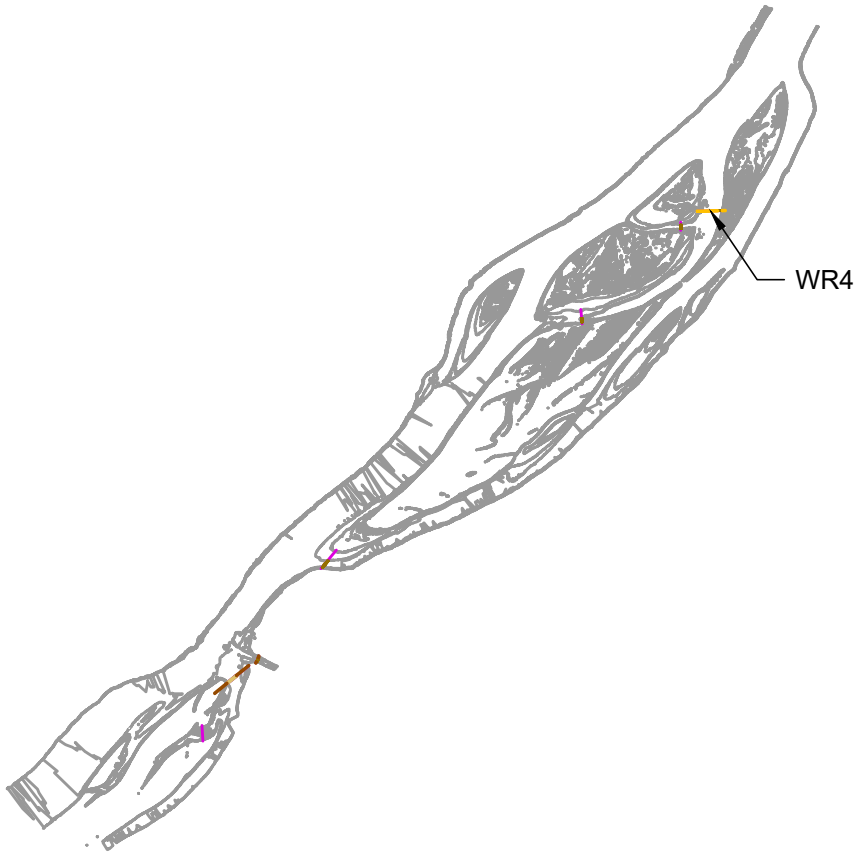
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

Attachment B

Design Drawing, Plan and Profile View of WR4 Crossing


WESTERN RESERVOIR
OLTC 20A - CROSSING WR4
STREAM CLASS = S1



KEYPLAN
NTS


30.48m TEMPORARY CROSSINGS (MIN. BCL-625)

DRAWING LIST	
DRAWING NUMBER	DESCRIPTION
1016-C14-03121	COVER SHEET
1016-C14-03122	GENERAL NOTES AND DESIGN SPECIFICATIONS
1016-C14-03123	EXISTING CONDITIONS - PLAN AND PROFILE
1016-C14-03124	PROPOSED CROSSING - PLAN AND SECTIONS

Contract No

ISSUED FOR INFORMATION ONLY

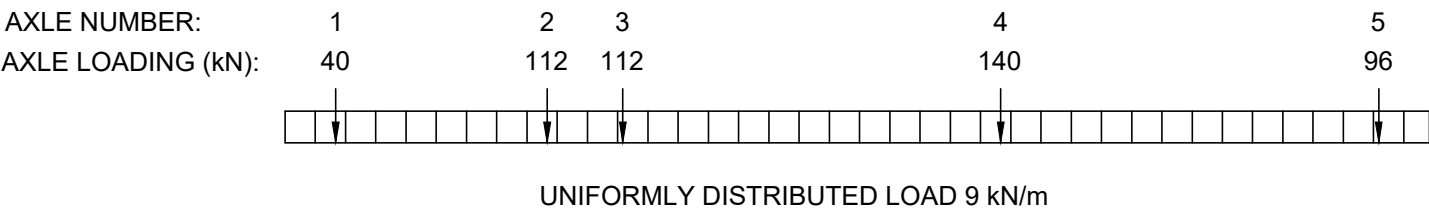
ByDate
Hydro's Representative

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				CSA S250 ACCURACY NAD - UTM		DFTG	AZ										
				BASE ACCURACY LEVEL:		DFTG CHK	TCJ										
				ASB ACCURACY LEVEL:		INSP											
				0 ISSUED FOR INFORMATION			REV			DATE	DIST	DRAWING NUMBER 1016-C14-03121	REPORT NUMBER	FIGURE NUMBER	SIZE D	REV 0	
				NO			ACPT										
				REVISIONS													
				REFERENCE DRAWINGS													

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.

AXLE NUMBER:

AXLE NUMBER:



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.

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.

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.

IFICATIONS 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

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: 2280 m³

ESTIMATED CUT AND FILL VOLUMES:

COMPACTED BACKFILL:	1140 m ³
EXCAVATION:	20 m ³
NET FILL:	3400 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 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.


PRIMARY SUBSTRUCTURE:

COMPONENTS

95% STANDARD PROCTOR DENSITY OVER THE ENTIRE SURFACE.

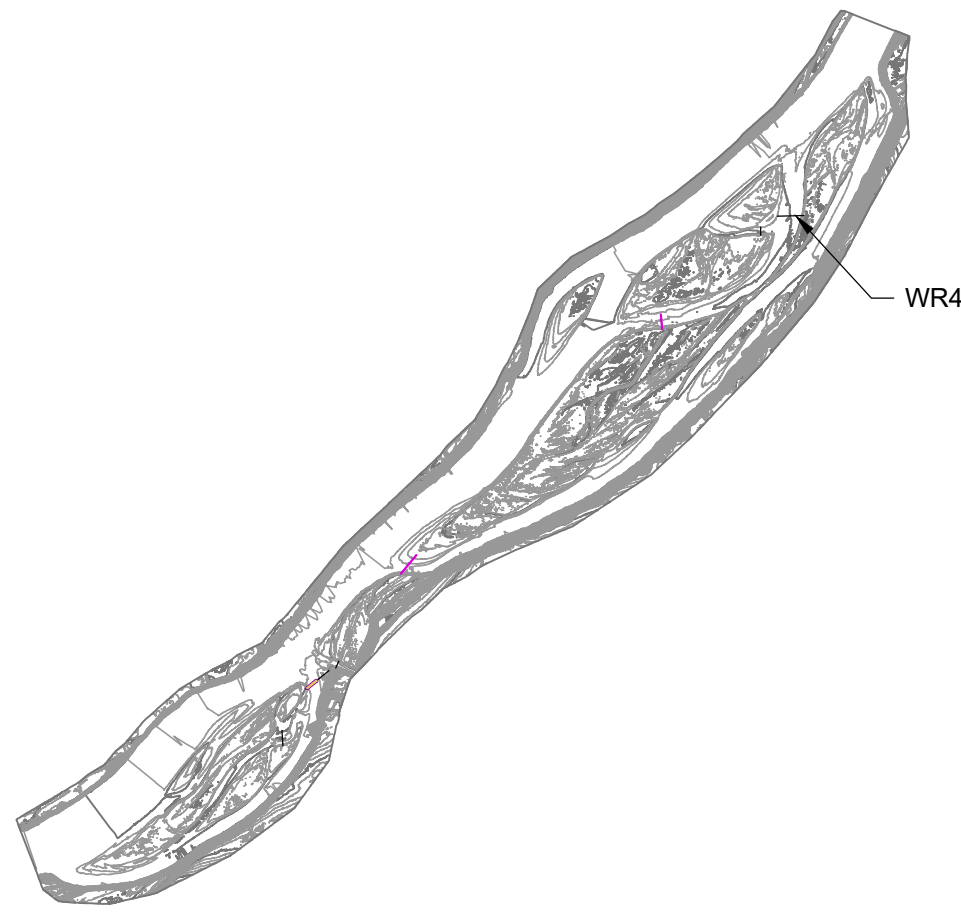
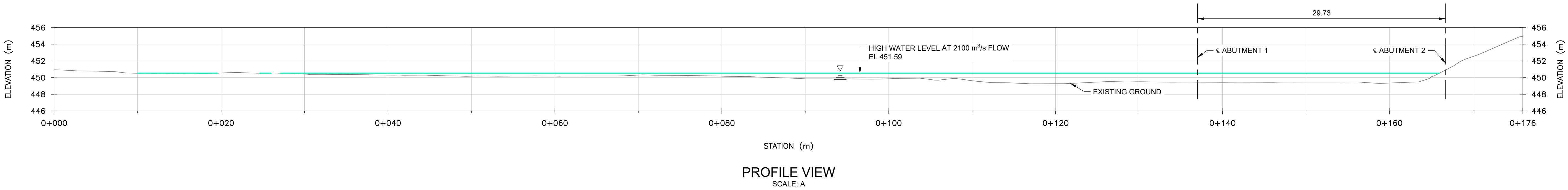
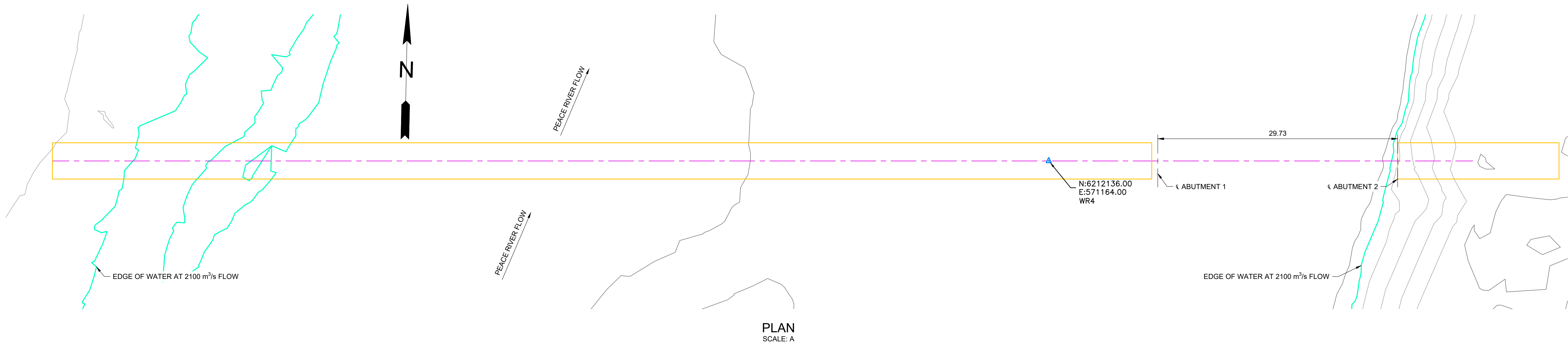
COMPLETED BY OTHERS


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 RESPONSIBILITY 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 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.

 BCHydro	Contract No
ISSUED FOR INFORMATION ONLY	
By	Date
Hydro's Representative	

				DESIGN NUMBER		DSGN			BC Hydro				
				WORK ORDER NUMBER		INDEP CHK			SITE C WESTERN RESERVOIR WR1 CROSSING GENERAL NOTES & DESIGN SPECIFICATIONS				
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				DFTG CHK		TCJ							
				BASE ACCURACY LEVEL:		INSP							
				ASB ACCURACY LEVEL:		REV							
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	REFERENCE DRAWINGS	NO	REMARKS			1016-C14-03101			D	0			
			REVISIONS										

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Contract No

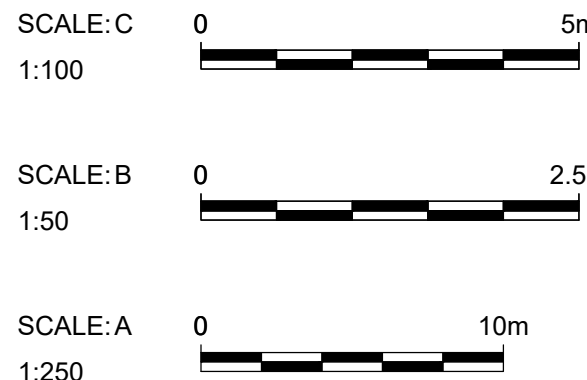
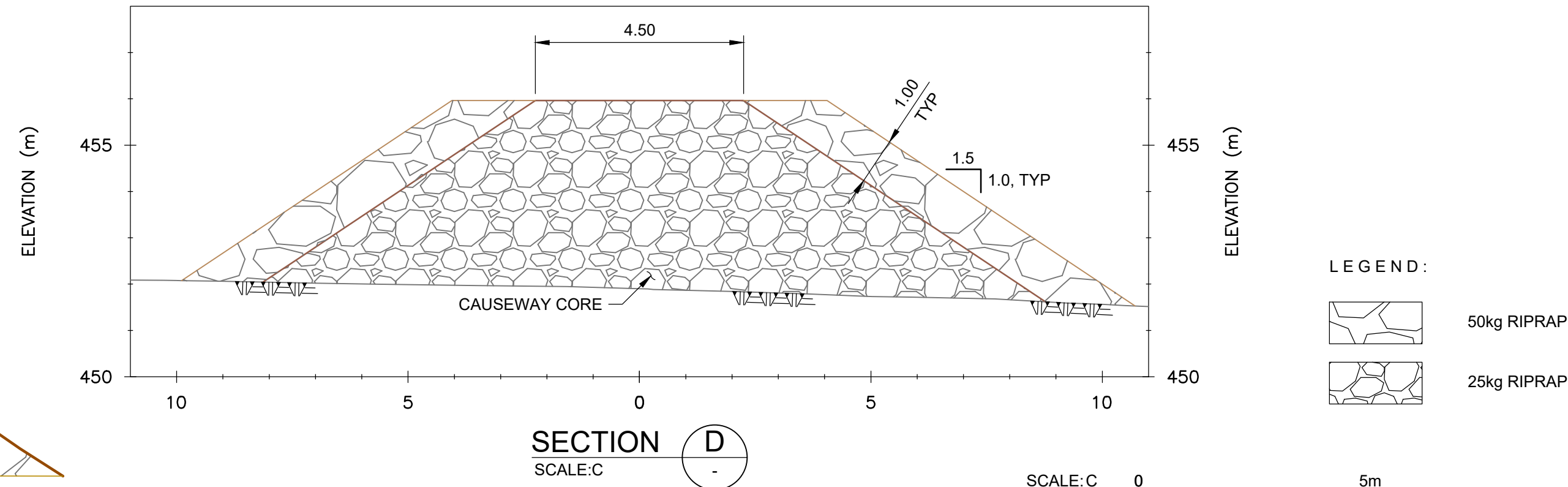
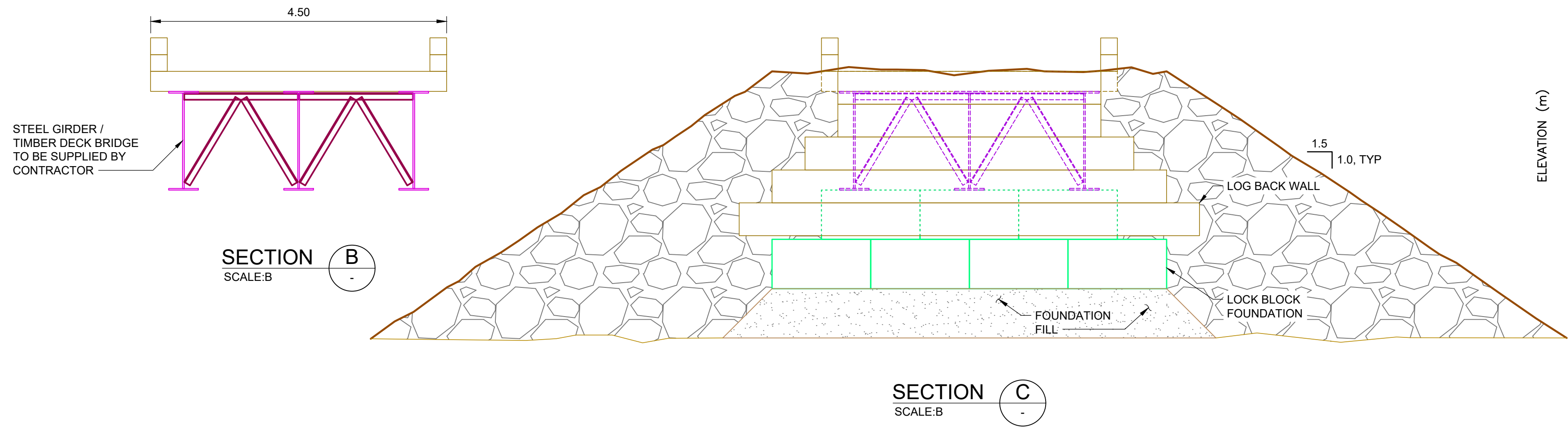
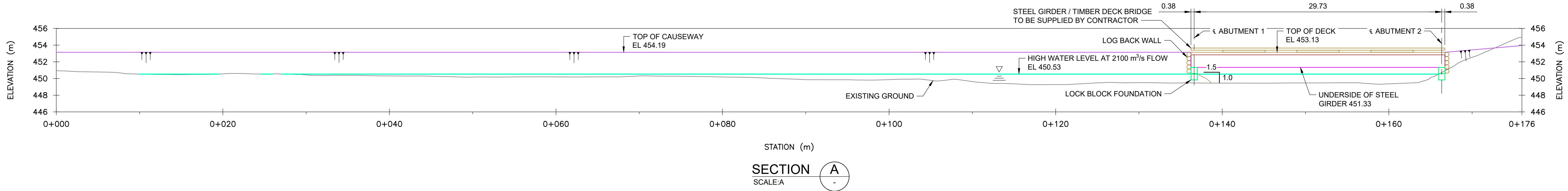
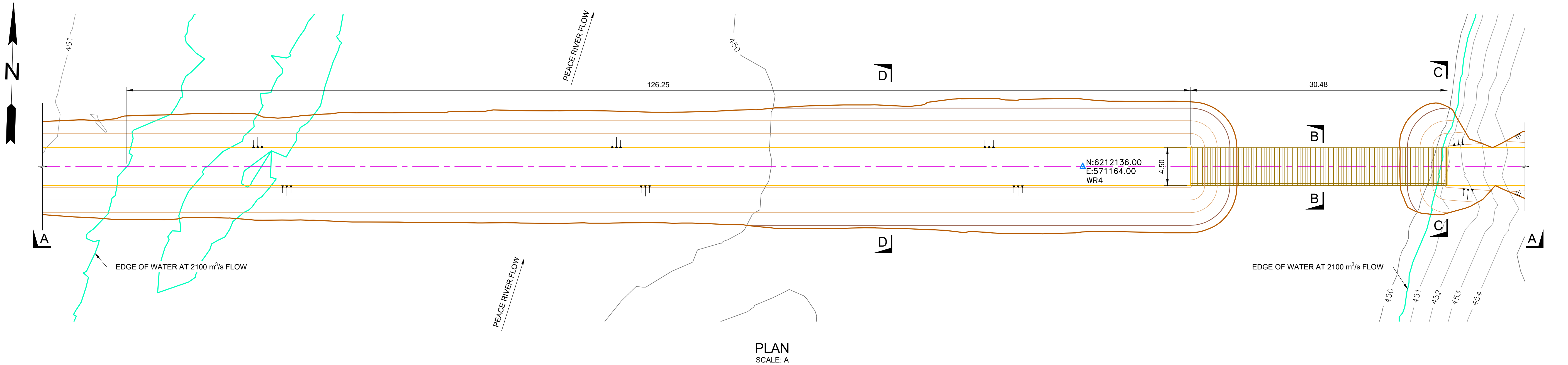
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ALL DIMENSIONS ARE IN METRES, UNLESS OTHERWISE SHOWN



SITE C

WESTERN RESERVOIR
WR4 CROSSING
PROPOSED CROSSING
PLAN AND SECTIONS

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
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WORK ORDER NUMBER		INDEP CHK	
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		ACPT	

NO	ISSUED FOR INFORMATION	REMARKS
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NO	REVISIONS

NO	DRAWING NUMBER	DRAWING TITLE
		REFERENCE DRAWINGS