General Conformance of Construction

2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1 Phone: 250-614-7291

Date:	March 25, 2025	Project Number:	2401823
Attention:	Neal Damgaard, P.Eng.	Project Description:	Bosworth Creek Abutment Repairs
Company:	Imperial Oil Resources (IOR)	File Number:	500
Email:	neal.r.damgaard@esso.ca	From:	Don Williams, P.Eng.
Copy To:	File		

RE: Completion of the Bosworth Creek Abutment Repairs (Alternate Design)

This document will serve as professional confirmation of general conformance to the alternate design drawings for completion of the Bosworth Creek abutment repairs.

1 DESCRIPTION OF WORK

Repairing the Bosworth Creek Bridge east abutment sheet pile wall retaining structure. The Bosworth Creek Bridge is located on Canol Drive (also known as the Bypass Road) in Norman Wells, Northwest Territories (Latitude: 65.290317° and Longitude: -126.874806°). The east abutment sheet pile wall is supported by a tieback structure that consists of driven piles, a waler beam, and threadbars.

The construction of the abutment repairs was completed in general conformance with Allnorth drawings (2401823-000-1960-200 Rev0 IFC – October 3, 2024).

The work generally consisted of:

- Excavation of the approach to expose the existing tieback structure.
- Installation of two (2) new HP310x79 driven piles for the existing dead man wall.
- Installation of four (4) new HP310x79 driven piles for the new dead man wall.
- Resupporting the existing sheet pile wall waler beam with steel plates connected to the top and bottom flanges (not included in the design drawings).
- Installation of reinforced steel plates along the front of the new and existing dead man wall piles.
- Cutting and realigning the existing sheet pile wall waler to best fit with the displaced sheets.
- Placing and compacting fill up to the dead man wall waler and threadbar elevation.
- Installation of a new HP310x79 waler along the back of the new dead man wall piles.
- Reinstallation of the existing HP310x79 waler along the back of the existing dead man wall piles.
- Reinforcing the ends of the existing dead man wall waler with steel plates.
- Installation of twelve (12) new #8 (25Ø) Dywidag threadbars between the existing sheet pile wall and existing dead man wall c/w washer plates, DSI bevelled washers, and DSI hexnuts.
- Installation of six (6) new #8 (25Ø) Dywidag threadbars between the existing sheet pile wall and new dead man wall c/w washer plates, DSI bevelled washers, and DSI hexnuts.
- Placing fill above the new tieback structure.
- Reestablishing the approach.
- Installation of new class C-D rip rap scour protection in front of the sheet pile wall.

Allnorth was not on site to witness construction. The information and photos in this document were provided by the contractor.

2 STATEMENT OF GENERAL CONFORMANCE

In my capacity as a Professional Engineer, registered in the Northwest Territories, and employed by Allnorth Consultants Limited, I hereby state that the above described works were carried out and completed in general conformance with the approved drawings and specifications except for those noted below; that there were sufficient Field Reviews by myself or by qualified persons working under my direct supervision to demonstrate conformance to the approved drawings and specifications; and that any changes from the approved drawings and specifications were necessitated by on-site conditions and will provide a structure having a level of strength and durability at least equal to that expected from a structure built in complete accordance with the approved drawings and specifications.

3 CHANGES FROM APPROVED DRAWINGS AND SPECIFICATIONS

- Resupporting the existing sheet pile wall waler beam with steel plates connected to the top and bottom flanges (not included in the design drawings).
- The steel plates along the front of the new and existing dead man wall piles were reinforced with W150x12 beams instead of the W150x14 beams specified in the design.

4 ITEMS OUTSTANDING AT DATE OF FINAL INSPECTION

- None

Yours truly,

ALLNORTH CONSULTANTS LIMITED

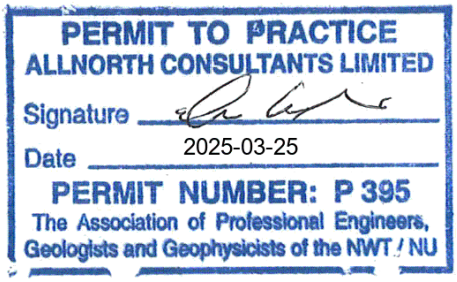
Prepared by:

Noah Williams, EIT
Civil Engineer-in-Training

Reviewed by:

2025-03-25

Don Williams, P.Eng.
Vice President Operations



Appendix A IFC Drawings

2401823-000-1960-200 Rev0 IFC – October 3, 2024

UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

PERMIT TO PRACTICE
ALLNORTH CONSULTANTS LIMITED
Signature
Date 2024-10-03
PERMIT NUMBER: P 395
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

DRAWING LIST		
DRAWING NO	**DRAWING TITLE**	**REVISION**
2401823-000-1960-201	GENERAL NOTES AND SPECIFICATIONS	0
2401823-000-1960-202	EXISTING ABUTMENT APPROACH AND CREEK	0
2401823-000-1960-203	REPAIRED ABUTMENT SHEET PILE WALL AND CREEK IMPROVEMENTS	0
2401823-000-1960-204	EXISTING ABUTMENT GENERAL ARRANGEMENT	0
2401823-000-1960-205	ABUTMENT REPAIR GENERAL ARRANGEMENT	0
2401823-000-1960-206	ABUTMENT REPAIR DETAILS SHEET 1	0
2401823-000-1960-207	ABUTMENT REPAIR DETAILS SHEET 2	0

DESCRIPTION: ISSUED FOR CONSTRUCTION
ISSUE DATE: 24/10/03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/16
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

DWG NO: **2401823-000-1960-200** REV: **0**

DESIGN LOADS:

1. DEAD LOAD - UNIT WEIGHTS AND MATERIALS ARE AS FOLLOWS:
   STRUCTURAL STEEL = 77 kN/m^3
   SOIL (ASSUMED SOIL FRICTION ANGLE = 34°) = 22 kN/m^3
2. LIVE LOAD SURCHARGE ON WALL = 6.2 kPa.

DESIGN SPECIFICATIONS:

1. DESIGN IN ACCORDANCE WITH CAN/CSA-S6-19.

STEEL NOTES:

1. ALL STEEL (INCLUDING PLATE) SHALL BE IN ACCORDANCE WITH CSA G40.21 GRADE 300W.
2. SHEET PILES ASSUMED TO BE GRADE 230 MPa STEEL.
3. THREADBAR, NUTS, AND BEVELED WASHERS TO BE DYWIDAG-SYSTEMS INTERNATIONAL GRADE 690 OR BETTER.
4. WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W-59. WELDING ELECTRODES TO BE COMPATIBLE WITH BASE METAL. ALL WELDS TO BE 6mm UNLESS OTHERWISE NOTED ON DRAWINGS.
5. FABRICATORS RESPONSIBLE FOR WELDED CONSTRUCTION MUST BE CERTIFIED FOR DIVISION 1 OR DIVISION 2 OF C.S.A. STANDARD W47.1 - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES. CERTIFICATION TO BE IN EFFECT THROUGHOUT THE PERIOD OF MANUFACTURE.
6. ALL SHOP AND FIELD WELDS SHALL BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH CSA W59 WITH THE EXCEPTION THAT THE CANADIAN WELDING BUREAU (CWB) CERTIFIED "WELDING SUPERVISOR" IN THE FABRICATION SHOP OR ON THE CONSTRUCTION SITE CAN PERFORM THE VISUAL INSPECTIONS. VISUAL INSPECTIONS TO BE DOCUMENTED BY THE "WELDING SUPERVISOR" MARKING THE WORK AFTER IT HAS BEEN INSPECTED AND ACCEPTED.

EARTH WORKS:

1. EXISTING BACKFILL AND RIPRAP WITHIN THE ESTIMATED EXCAVATION EXTENTS (AS SHOWN ON DRAWING 102) TO BE STOCK PILED FOR RE-USE.
2. BACK FILL OF EAST APPROACH SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 305mm THICK, WELL COMPACTED USING A MINIMUM 1000lbs VIBRATORY PLATE COMPACTOR. MATERIAL SHALL BE RE-USED EXISTING BACKFILL OR NEW CLEAN, FREE DRAINING, WELL GRADED GRANULAR FILL OF 75mm MAXIMUM SIZE OR APPROVED EQUIVALENT.
3. RIPRAP TO BE WELL GRADED BLEND BETWEEN MINIMUM CLASS "C" (0.3m AVERAGE DIMENSION) AND MAXIMUM CLASS "D" (1.0m AVERAGE DIMENSION) DURABLE ROCK. CLASS "C" AND "D" SPECIFICATIONS PROVIDED BY IMPERIAL.

DESIGN LIFE:

1. WALL REPAIR DESIGN LIFE IS ESTIMATED TO BE 10 TO 15 YEARS AND IS LIMITED BY THE REMAINING EXISTING BRIDGE SERVICE LIFE.

MAINTENANCE:

1. RIPRAP TO BE MONITORED AND MAINTAINED TO ENSURE WALL HAS ADEQUATE SUPPORT.

HYDROLOGY:

1. THE IMPACT OF INTRODUCING RIPRAP TO THE HYDROLOGY OF THE CREEK AND CROSSING HAS NOT BEEN ASSESSED.

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

PERMIT TO PRACTICE:

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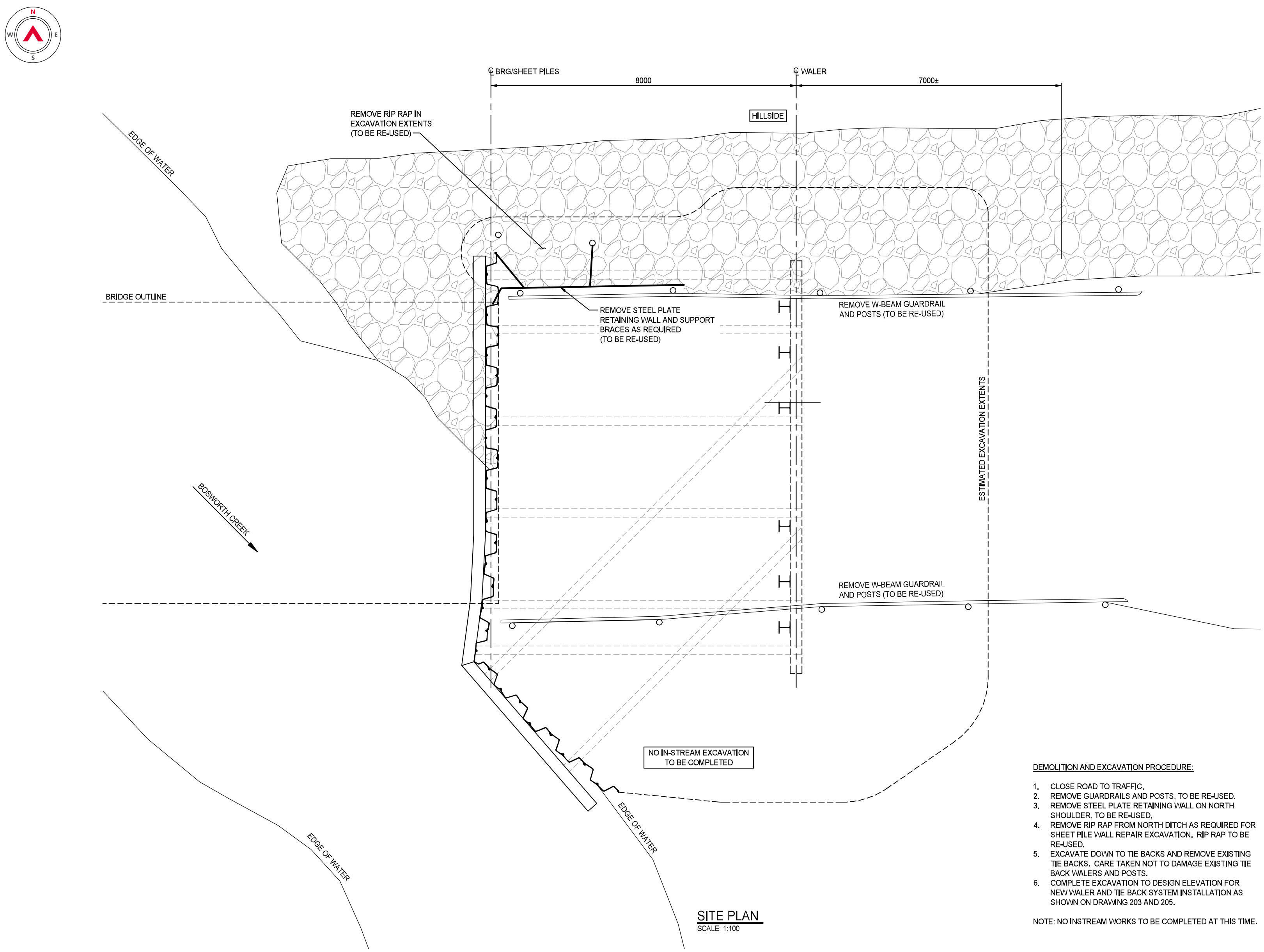
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

GENERAL NOTES AND SPECIFICATIONS

DWG NO: **2401823-000-1960-201** REV: **0**



SITE PLAN
SCALE: 1:100

DEMOLITION AND EXCAVATION PROCEDURE:

1. CLOSE ROAD TO TRAFFIC.
2. REMOVE GUARDRAILS AND POSTS, TO BE RE-USED.
3. REMOVE STEEL PLATE RETAINING WALL ON NORTH SHOULDER, TO BE RE-USED.
4. REMOVE RIP RAP FROM NORTH DITCH AS REQUIRED FOR SHEET PILE WALL REPAIR EXCAVATION. RIP RAP TO BE RE-USED.
5. EXCAVATE DOWN TO TIE BACKS AND REMOVE EXISTING TIE BACKS. CARE TAKEN NOT TO DAMAGE EXISTING TIE BACK WALERS AND POSTS.
6. COMPLETE EXCAVATION TO DESIGN ELEVATION FOR NEW WALER AND TIE BACK SYSTEM INSTALLATION AS SHOWN ON DRAWING 203 AND 205.

NOTE: NO INSTREAM WORKS TO BE COMPLETED AT THIS TIME.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. RECORD DRAWINGS AND 3D SCAN INFORMATION UTILIZED TO CREATE THE EAST ABUTMENT ARRANGEMENT.
2. ALL DIMENSIONS ASSUMED ± AND ARE TO BE FIELD CONFIRMED.

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DRAWING SIZE: ANSI "B"	CHKD: DDW	DATE: 24/09/23	
SCALE: AS NOTED	APVD: DDW	DATE: 24/09/23	

PROJECT:

UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

TITLE:

EXISTING ABUTMENT
APPROACH AND CREEK

DWG NO: **2401823-000-1960-202** REV: **0**

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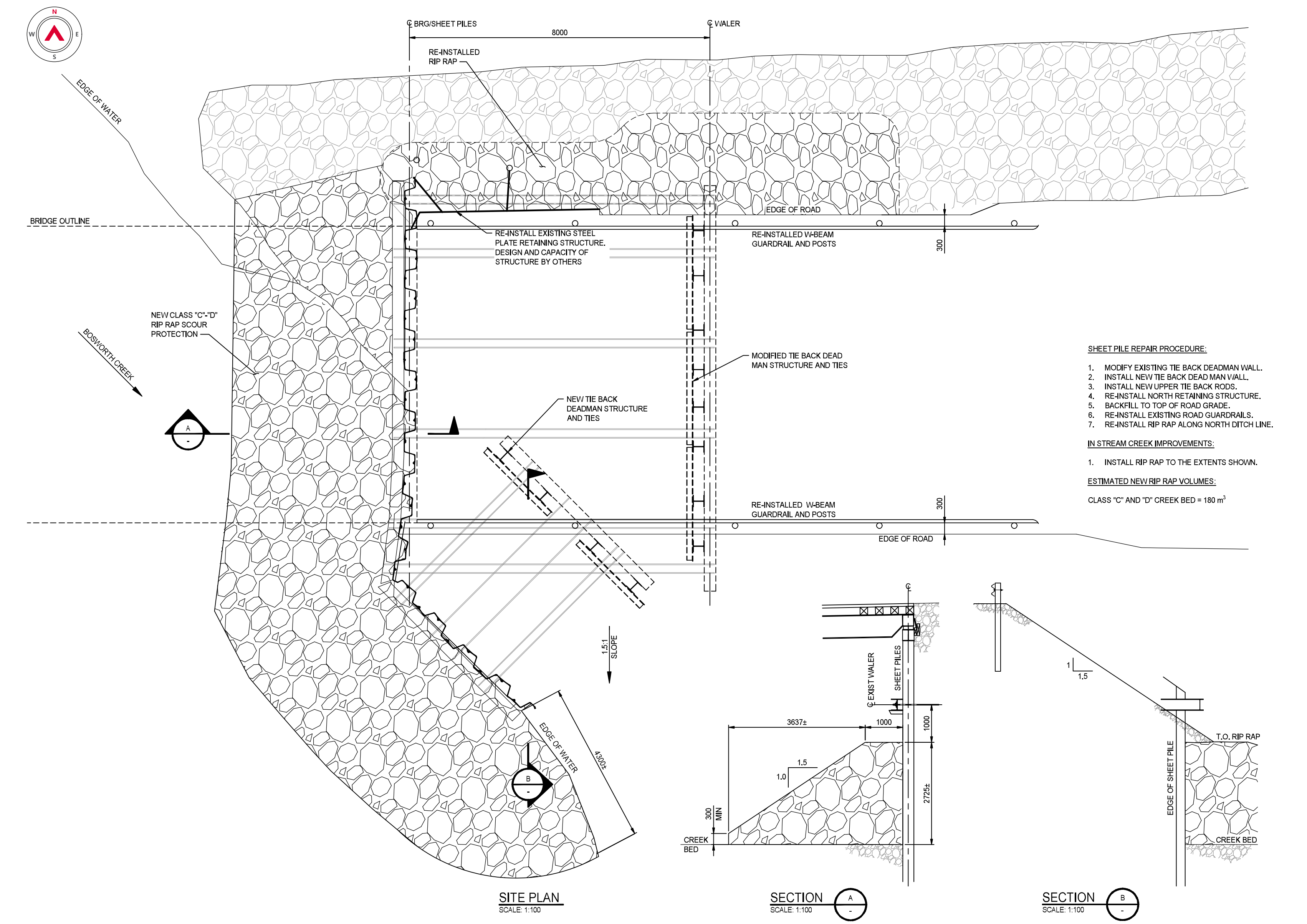

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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NOTES:

1. RECORD DRAWINGS AND 3D SCAN INFORMATION UTILIZED TO CREATE THE EAST ABUTMENT ARRANGEMENT.
2. ALL DIMENSIONS ASSUMED ± AND ARE TO BE FIELD CONFIRMED.

SHEET PILE REPAIR PROCEDURE:

1. MODIFY EXISTING TIE BACK DEADMAN WALL.
2. INSTALL NEW TIE BACK DEAD MAN WALL.
3. INSTALL NEW UPPER TIE BACK RODS.
4. RE-INSTALL NORTH RETAINING STRUCTURE.
5. BACKFILL TO TOP OF ROAD GRADE.
6. RE-INSTALL EXISTING ROAD GUARDRAILS.
7. RE-INSTALL RIP RAP ALONG NORTH DITCH LINE.

IN STREAM CREEK IMPROVEMENTS:

1. INSTALL RIP RAP TO THE EXTENTS SHOWN.

ESTIMATED NEW RIP RAP VOLUMES:

CLASS "C" AND "D" CREEK BED = 180 m^3

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PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

REPAIRED ABUTMENT SHEET PILE WALL AND CREEK IMPROVEMENTS

DWG NO: **2401823-000-1960-203** REV: **0**

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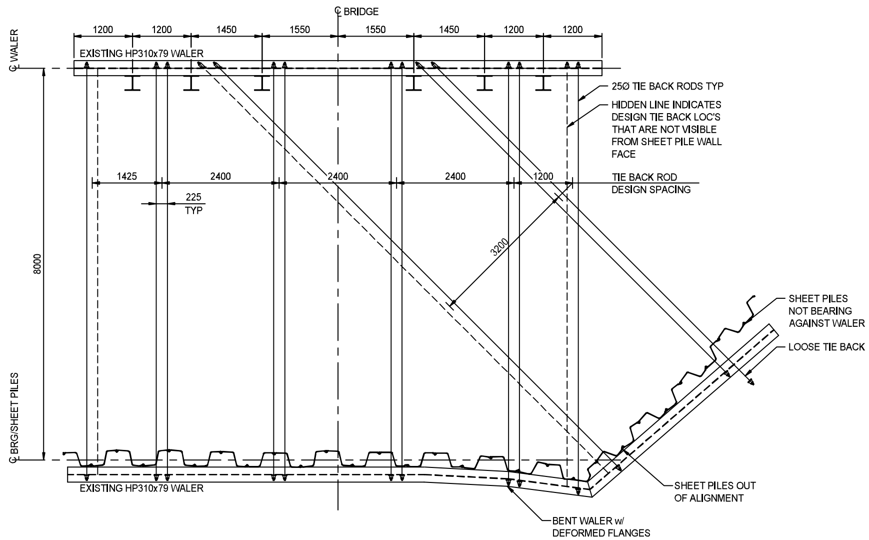

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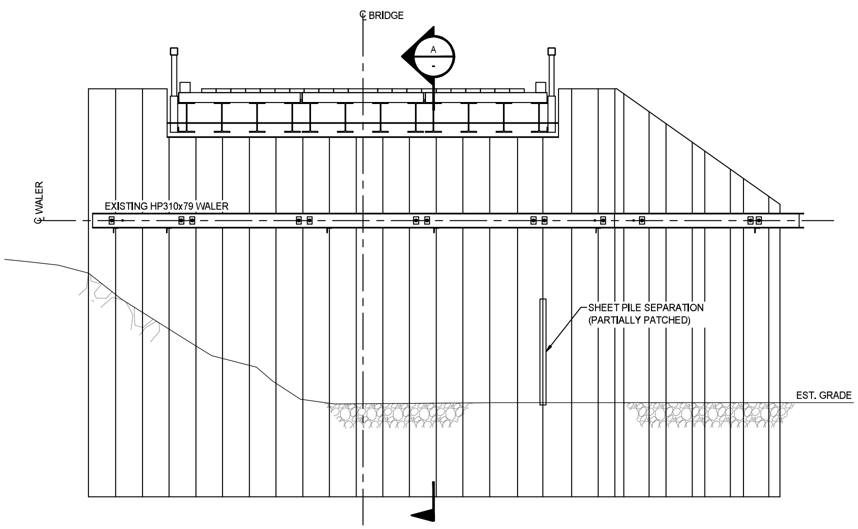

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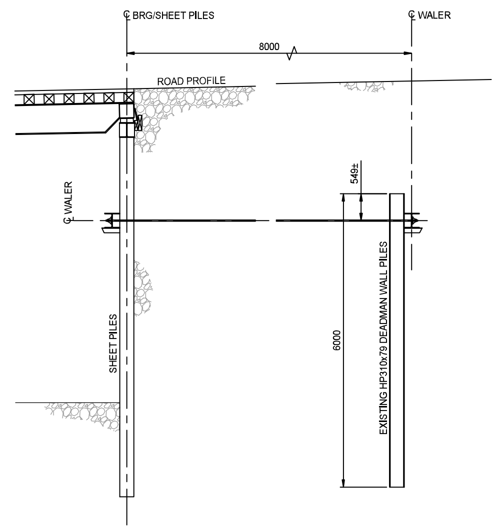

SECTION A -
SCALE: 1:100

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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PROJECT:

UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

TITLE:

EXISTING ABUTMENT
GENERAL ARRANGEMENT

DWG NO: **2401823-000-1960-204** REV: **0**

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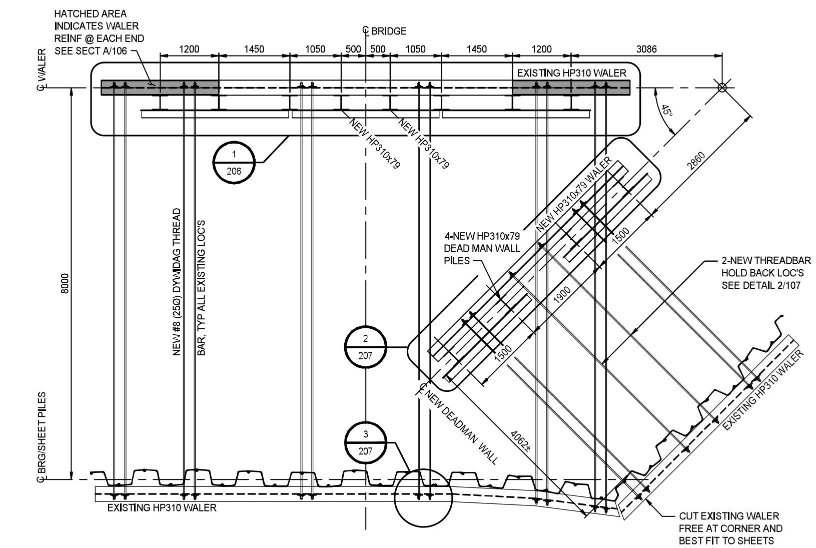

WALER PLAN

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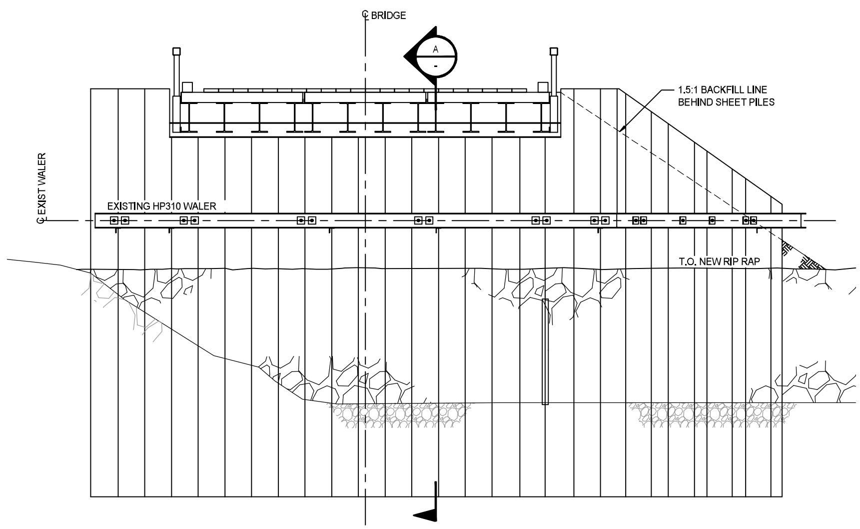

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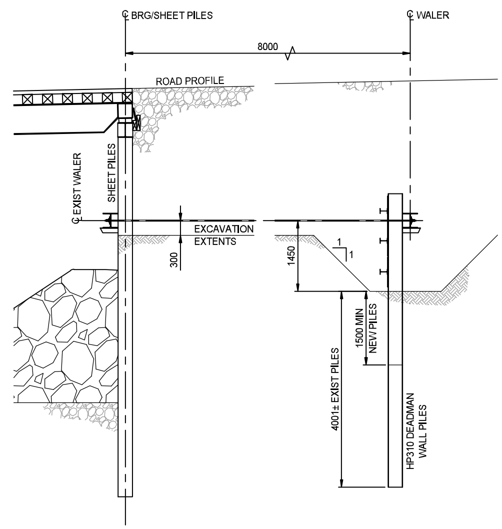

SECTION A/-

SCALE: 1:100

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS.
2. SEE DRAWING 2401823-000-1960-204 FOR EXISTING MATERIALS AND GEOMETRY NOT SHOWN.

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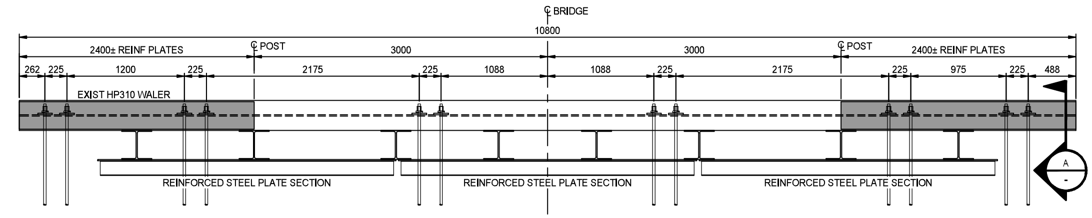
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR GENERAL ARRANGEMENT

DWG NO: **2401823-000-1960-205** REV: **0**



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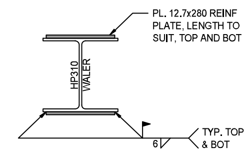

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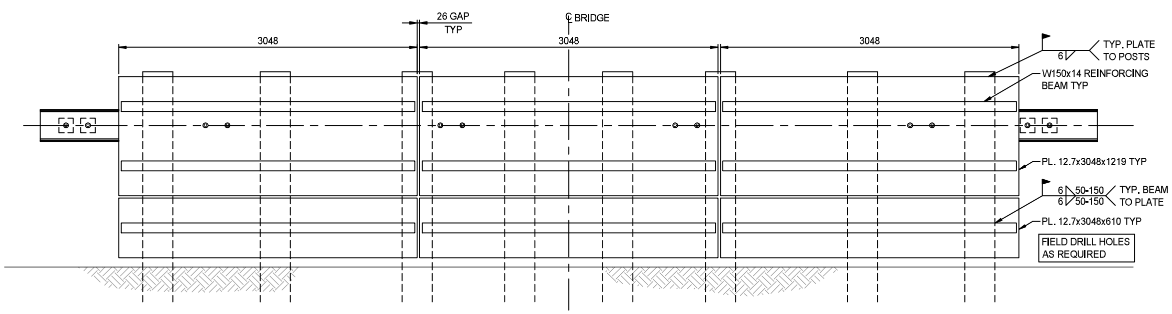

ELEVATION

DETAIL 1 / 203
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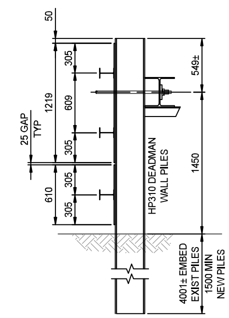

SECTION

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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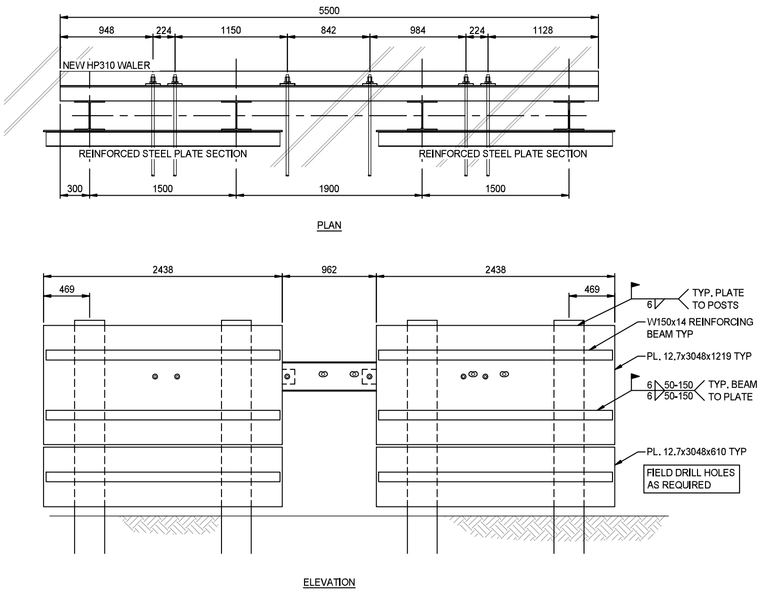
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 1

DWG NO: **2401823-000-1960-206** REV: **0**



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SCALE: 1:50
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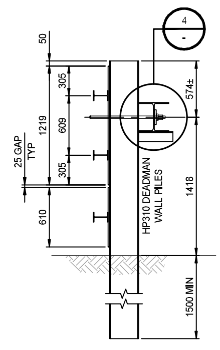

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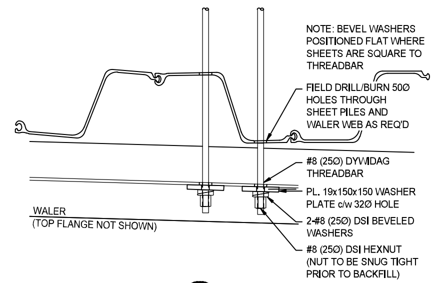

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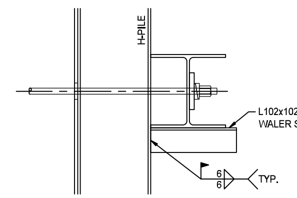

DETAIL 4
SCALE: 1:20
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REFERENCE DRAWINGS

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NWT/NU
2024-10-03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT:

Imperial

Allnorth

CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 2

DWG NO: **2401823-000-1960-207**
REV: **0**

Date: 2024/10/03 4:53 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dsgn\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 207 | Paper Size: 431.8mm x 279.4mm

Appendix B Contractor Photo Reports

241023-Bosworth Creek-Contractor Photo Report
241026-Bosworth Creek-Contractor Photo Report
241027-Bosworth Creek-Contractor Photo Report
241029-Bosworth Creek-Contractor Photo Report
241031-Bosworth Creek-Contractor Photo Report
241104-Bosworth Creek-Contractor Photo Report
241110-Bosworth Creek-Contractor Photo Report
241116-Bosworth Creek-Contractor Photo Report
250221-Bosworth Creek-Contractor Photo Report

Photo 1 – Existing Tieback Structure

Photo 2 – Existing Tieback Structure

Photo 3 – Existing Tieback Structure

Photo 4 – Existing Tieback Structure

Photo 5 – Link Belt Pile Driver

Photo 6 – Existing Tieback Structure

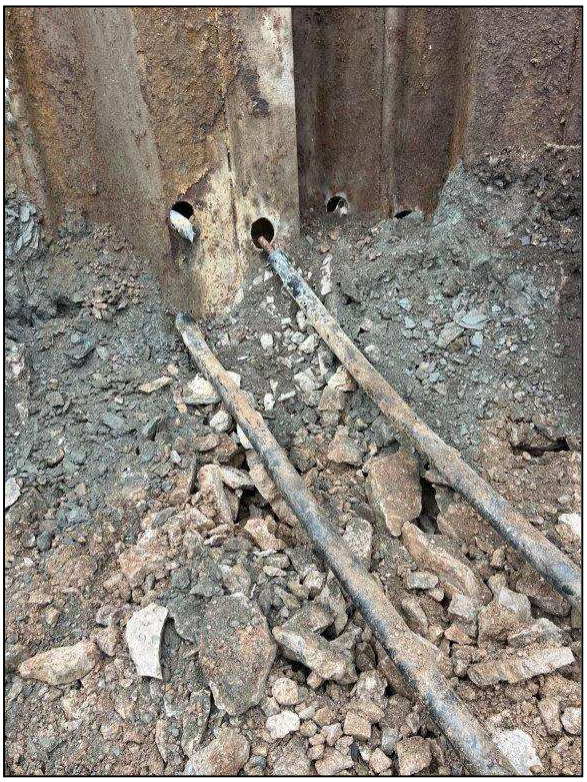


Photo 7 – Existing Tieback Structure Broken Threadbar

Photo 1 – Driving New Piles for Existing Dead Man Wall

Photo 2 – Driving Piles for New Dead Man Wall

Photo 3 – New Piles for Existing Dead Man Wall

Photo 4 – New Dead Man Wall Piles

Photo 5 – Existing Dead Man Wall Piles

Photo 1 – Existing Sheet Pile Wall Waler Top Flange Connection (Typical)

Photo 2 – Existing Sheet Pile Wall Waler Bottom Flange Connection (Typical)

Photo 3 – Existing Sheet Pile Wall Waler

Photo 4 – Existing Sheet Pile Wall Waler

Photo 5 – Dead Man Wall Piles

Photo 1 – Installing New Dead Man Wall Reinforced Plates

Photo 2 – New Dead Man Wall Reinforced Plates

Photo 3 – New Dead Man Wall Reinforced Plates

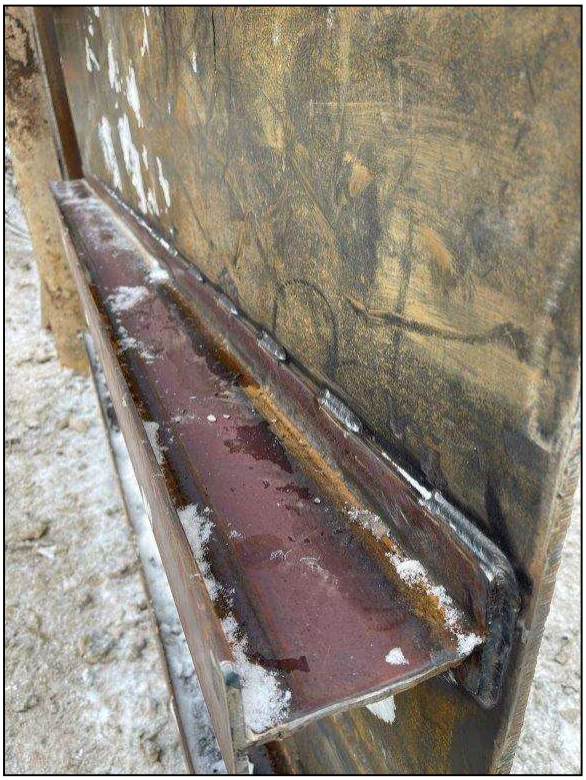


Photo 4 – New Dead Man Wall Reinforced Plate Top Stitch Welds (Typical)

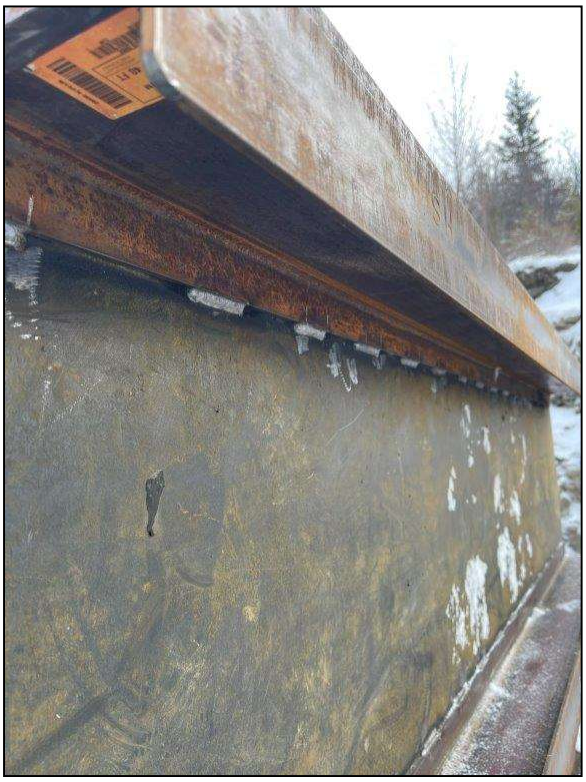


Photo 5 – New Dead Man Wall Reinforced Plate Bottom Stitch Welds (Typical)

Photo 1 – Existing Dead Man Wall Reinforced Plates

Photo 2 – Existing Dead Man Wall Reinforced Plates

Photo 3 – New and Existing Dead Man Wall Reinforced Plates

Photo 4 – New and Existing Dead Man Wall Reinforced Plates

Photo 5 – Existing Dead Man Wall Reinforced Plate Bottom Stitch Welds (Typical)

Photo 6 – Existing Dead Man Wall Reinforced Plate Top Stitch Welds (Typical)

Photo 7 – Adjusting Existing Sheet Pile Wall Waler

Photo 1 – Dead Man Walls Prior to Backfilling

Photo 2 – Compacting Fill

Photo 3 – Compacted Fill

Photo 4 – Compacted Fill

Photo 5 – Adjusted Existing Sheet Pile Wall Waler

Photo 1 – New Dead Man Wall

Photo 2 – Installing New Dead Man Wall Waler

Photo 3 – Compacted Fill

Photo 4 – Compacted Fill

Photo 5 – New Tieback Structure Threadbars

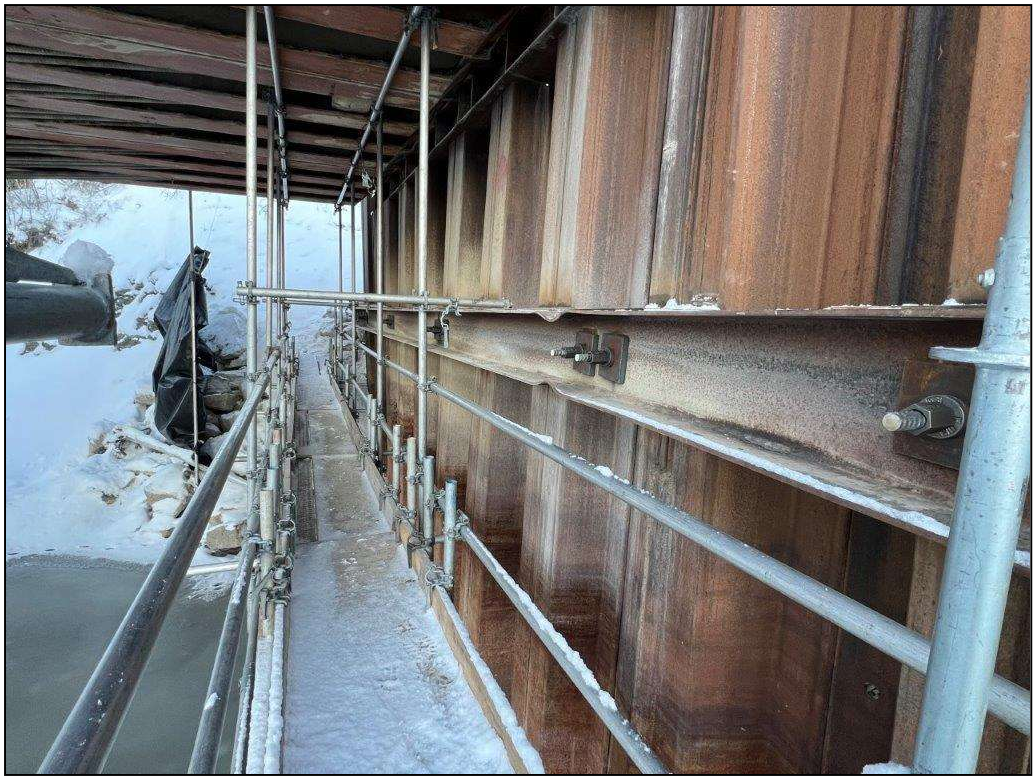


Photo 6 – Existing Sheet Pile Wall Waler

Photo 7 – Existing Sheet Pile Wall Waler

Photo 8 – New Dead Man Wall Waler and Threadbars

Photo 9 – Existing Sheet Pile Wall Waler Cut at Corner

Photo 10 – Threadbar Washers and Nut (Typical)

Photo 11 – New Tieback Structure Threadbars

Photo 1 – Approach Fill

Photo 2 – Approach Fill

Photo 3 – Rip Rap Along North Edge of Approach

Photo 4 – Rip Rap Along North Edge of Approach

Photo 5 – Approach Fill

Photo 6 – Reestablishing Approach

Photo 7 – Final Grade Layer

Photo 8 – Reestablished Approach

Photo 9 – Reestablished Approach

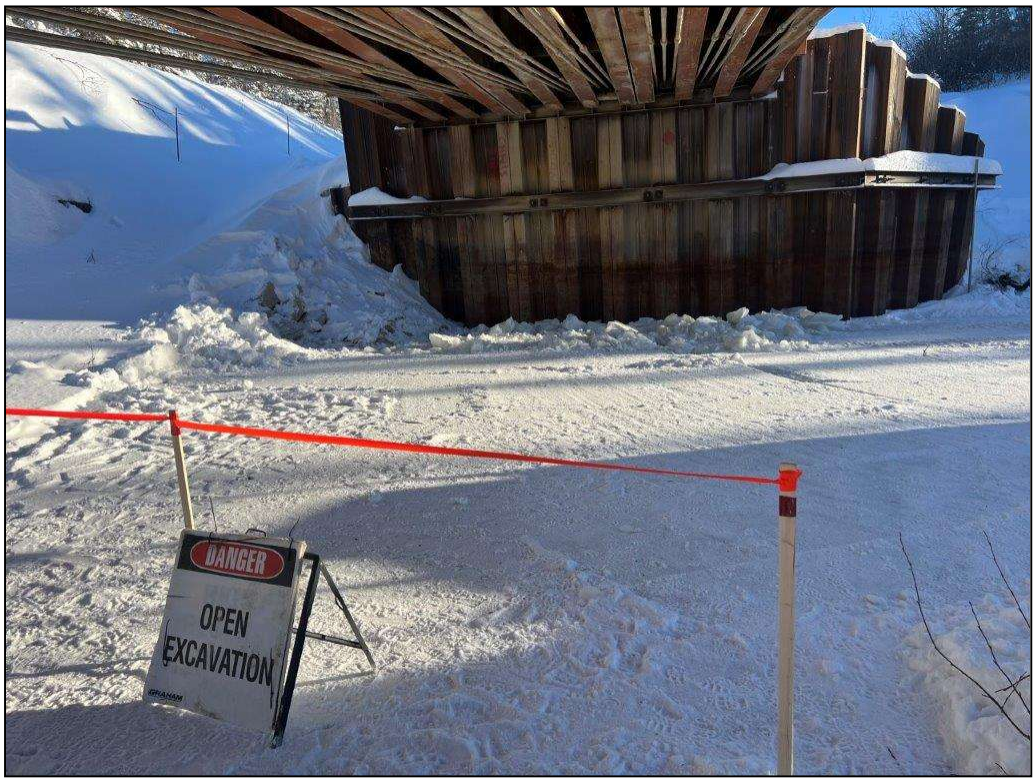


Photo 1 – Sheet Pile Wall Without Rip Rap

Photo 2 – Preparation for Rip Rap Installation

Photo 3 – Preparation for Rip Rap Installation

Photo 4 – Preparation for Rip Rap Installation

Photo 5 – Rip Rap Installation

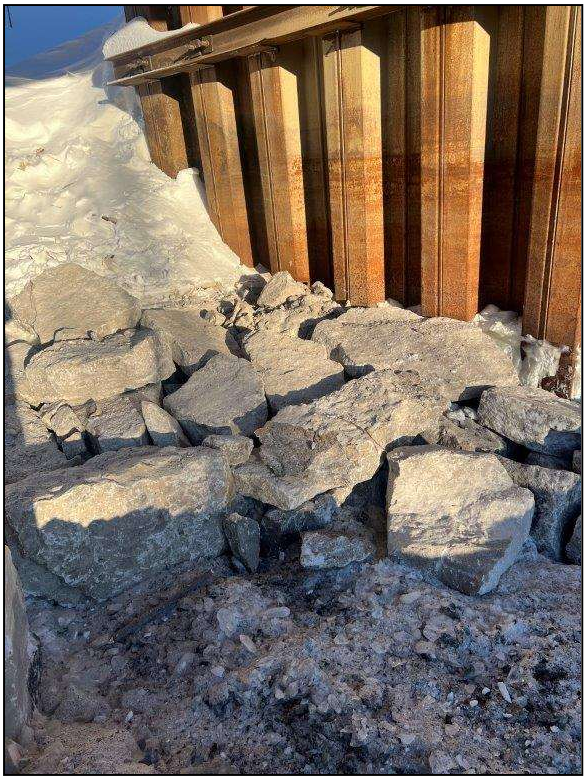


Photo 6 – Rip Rap Installation

Photo 7 – Rip Rap Installation

Photo 8 – Rip Rap Installation

Photo 9 – Rip Rap Installation

Photo 10 – Rip Rap Installation

Photo 11 – Rip Rap Installation

Photo 12 – Rip Rap Installation

Photo 13 – Rip Rap Installation

Photo 14 – Sheet Pile Wall With Rip Rap

Photo 15 – Sheet Pile Wall With Rip Rap

Photo 16 – Sheet Pile Wall With Rip Rap

Appendix C Pile Driving Report

S31_62_00.01 Pile Driving Report (provided by contractor)

GRAHAM

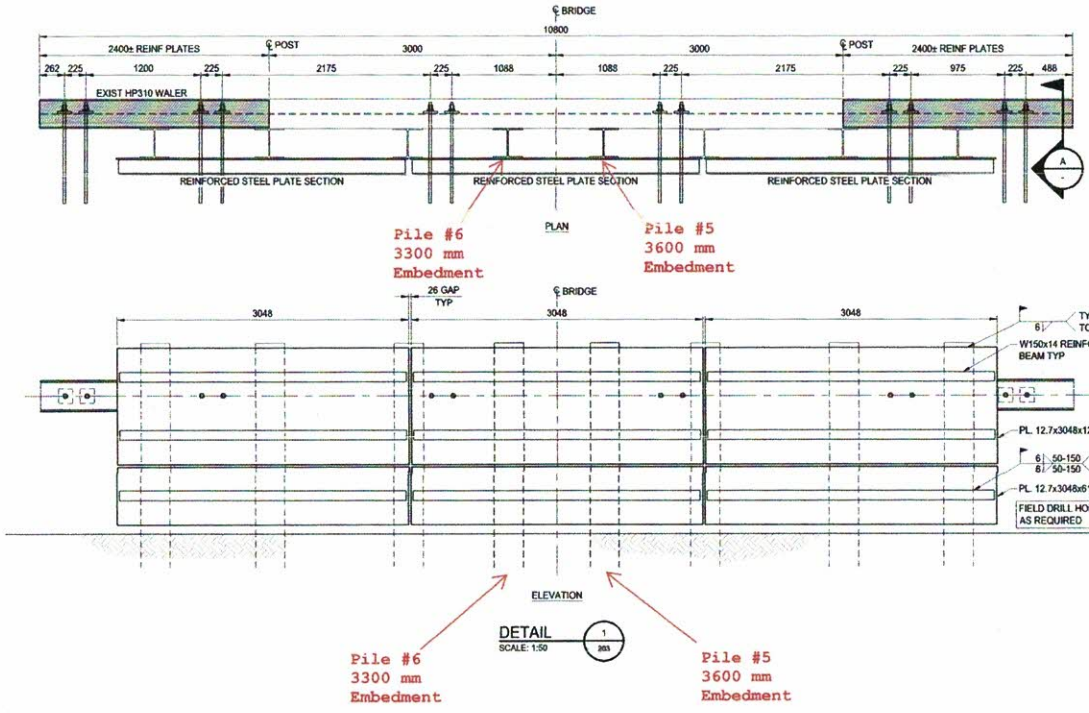
PILE DRIVING REPORT

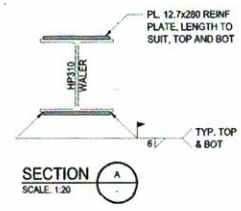
S31_62_00.01

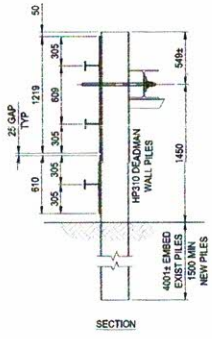
JOB NUMBER: 4261-420000.	PROJECT: Upper Bosworth Creek Sheet Pile Wall Repair		DATE (MM/DD/YY): 10/26/24
OWNER: Imerial Oil	OWNER'S JOB NUMBER: 2401823 WO# 90071740		LOCATION (LSD): Norman Wells
DWG NUMBER:2401823-000-1960-206 & 207	DRIVING FORMULA: Pump setting #2	WEIGHT OF HAMMER: 10,503 Lbs	DROP: 28,035 ft.lbs.

PILE NUMBER	PILE LENGTH	PILE DIAMETER	REQUIRED DEPTH	DRIVEN DEPTH	DEPTH AT REFUSAL	NO. BLOWS LAST 6"	NO. BLOWS LAST 1"	PLUMB YES/NO	ACCEPT	REJECT	PREDRILLED		DATE DRIVEN	COMMENTS:
											Y	N	(MM/DD/YY)	
1	20'	12" H-Beam	Min 1550mm Embed	3500 mm	3500 mm	N/A	N/A	yes	yes			N	10/24/24	
2	20'	12" H-Beam	Min 1550mm Embed	3200 mm	3200 mm	N/A	N/A	yes	yes			N	10/24/24	
3	20'	12" H-Beam	Min 1550mm Embed	3700 mm	3700 mm	N/A	N/A	yes	yes			N	10/24/24	
4	20'	12" H-Beam	Min 1550mm Embed	3800 mm	3800 mm	N/A	N/A	yes	yes			N	10/25/24	
5	20'	12" H-Beam	Min 1550mm Embed	3600 mm	3600 mm	N/A	N/A	yes	yes			N	10/25/24	
6	20'	12" H-Beam	Min 1550mm Embed	3300 mm	3300 mm	N/A	N/A	yes	yes			N	10/25/24	

QUALITY REPRESENTATIVE	DATE (MM/DD/YY)	SIGNATURE
Pascal Bousquet	10/26/24	
OWNER'S REPRESENTATIVE	**DATE (MM/DD/YY)**	**SIGNATURE**
Travis Warren	10/26/24	
SUPERINTENDENT	**DATE (MM/DD/YY)**	**SIGNATURE**
Stephen Pearson	10/26/24	







REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
		1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS..

PERMIT TO PRACTICE:

PERMIT TO PRACTICE
ALLNORTH CONSULTANTS LIMITED
Signature
Date 2024-10-03
PERMIT NUMBER: P 395
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

ENGINEER SEAL:

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT:

Imperial

Allnorth

CLIENT NO:		DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/19
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

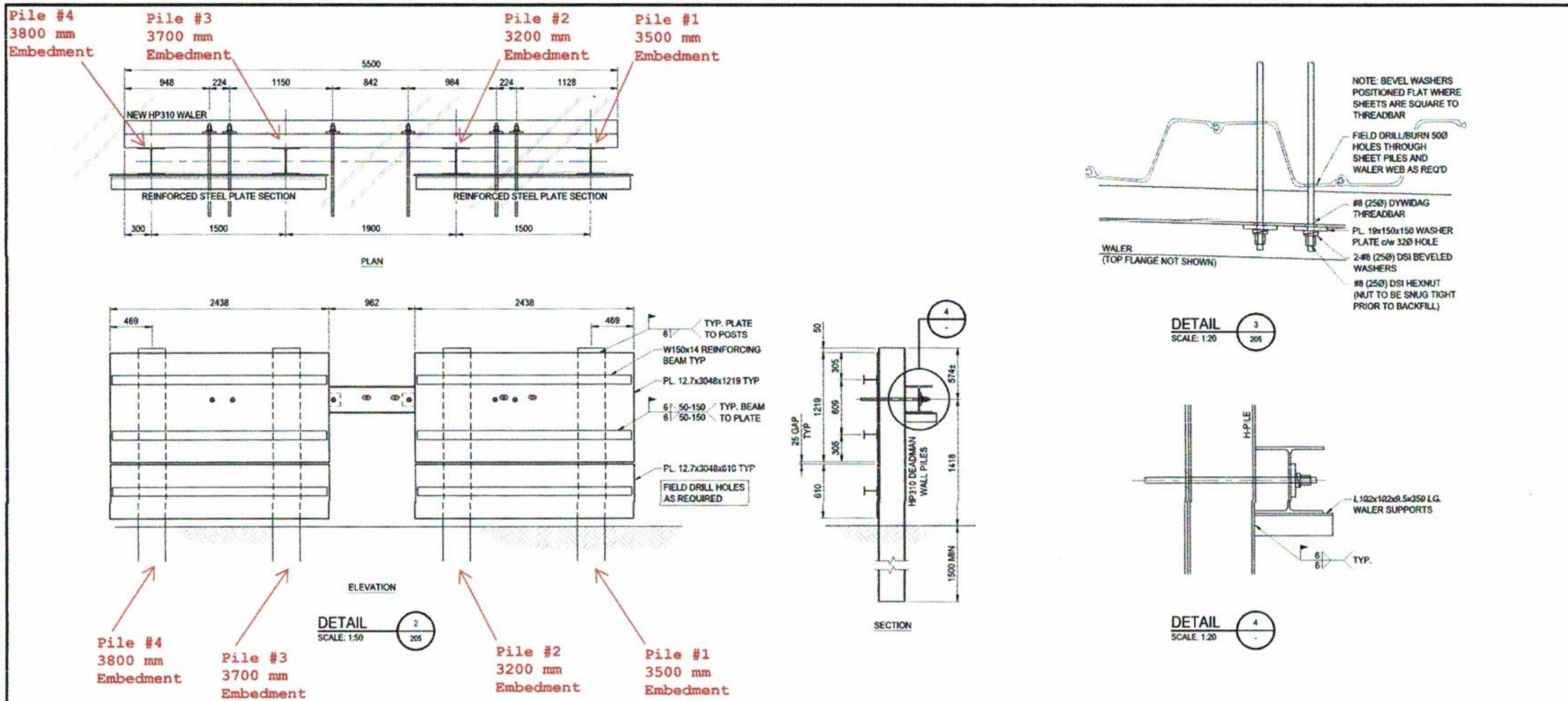
PROJECT:

UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR
DETAILS SHEET 1

DWG NO: **2401823-000-1960-206** REV: **0**



REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
		1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS.

PERMIT TO PRACTICE:

PERMIT TO PRACTICE
ALLNORTH CONSULTANTS LIMITED
Signature
Date 2024-10-03
PERMIT NUMBER: P 395
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

ENGINEER SEAL:

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT:

Imperial

Allnorth

CLIENT NO:		DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 2

DWG NO: 2401823-000-1960-207

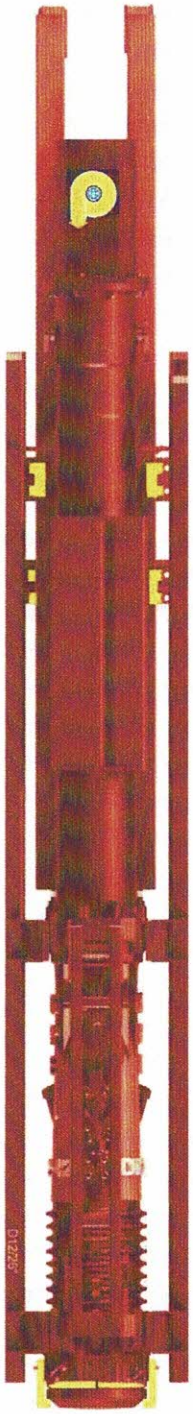
REV: 0

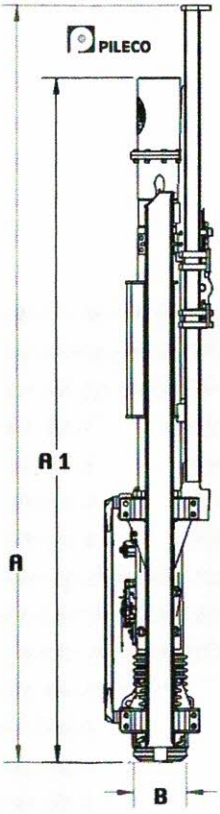
PILECO INC.

936.494.4200 *tel*
Sales@Pileco.com
www.Pileco.com

491 Conroe Park W. Dr. • Conroe, TX 77303

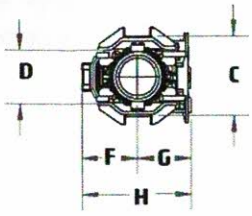
Specifications: D 19-42 Diesel Pile Hammer





Dimensions approx:

Length of Hammer:	A1	5086 mm	16' 8" ft
Hammer length w/starter guides:	A	5586 mm	18' 4" ft
Outer diameter of impact block:	B	440 mm	1' 5" ft
Min. Guiding Width:	C	533 mm	21" in
Width of hammer:	D	485 mm	19" in
Hammer Center to Pump Guard:	F	345 mm	1' 2" ft
Hammer Center to Trip:	G	280 mm	11" in
Hammer Depth:	H	665 mm	2' 2" ft



VIEW PARTS MANUAL HERE

Pump Setting 1	29.2 kNm	21,463 ft.lbs.
Pump Setting 2	38.0 kNm	28,035 ft.lbs.
Pump Setting 3	47.8 kNm	35,260 ft.lbs.
Pump Setting 4	57.6 kNm	42,410 ft.lbs.

Weights approx:

Weight of diesel pile hammer approx.:	5.25 US tons	10,503 lbs
Weight of piston approx.:	1820 kg	4,012.4 lbs
Impact block approx.:	354 kg	780 lbs
Tripping device approx.:	160 kg	352.74 lbs
Tool box approx.:	75 kg	165.35 lbs

Energy per blow

Max:	57.6 kNm	42,410 ft lbf
Min:	29.2 kNm	21,463 ft lbf
Number of blows:		37–52 min

Batter Info

Max. gradient of batter pile driven:	1:3/1:1

Consumption

Diesel fuel:	7.5 L hr.	1.98 gph
Lubrication oil:	.6 L hr.	.16 gph

Volume

Diesel oil tank:	71 L	18.8 gal
Lube tank:	20 L	5.3 gal

Appendix D Construction Correspondence

241011 Construction RFI
241017 Upper Bosworth Bridge Photos
241024 Upper Bosworth Bridge Repair Updates
241026 Project Updates and Photos
241029 Upper Bosworth Bridge Updates
241031 Upper Bosworth Bridge Progress Photos
241104 Progress Photos and Updates
241110 Upper Bosworth Bridge Progress Photos and Updates
250213 Bosworth As-Built Info

Noah Williams

From: Alex Childs
Sent: Friday, October 11, 2024 8:29 AM
To: Pascal Bousquet
Cc: Project Email Archival; Don Williams; Damgaard, Neal R
Subject: RE: 2401823 Construction RFI

Hi Pascal,

Just to follow up on our call this morning, Allnorth is aware of the coating on the original tie back rods, however you are not required to re-apply a coating prior to burying them as part of this scope.

Please let us know if you have any further questions as you work through the repair.

Thank you,

Alex

Alex Childs, P.Eng. | Project Manager
Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 778-693-3455 Fax: +1 888-839-3114
Mobile: +1 250-961-9081
Email: achilds@allnorth.com
allnorth.com

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Wednesday, October 9, 2024 7:30 AM
To: Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>
Cc: Project Email Archival <projects@allnorth.com>; Don Williams <dwilliams@allnorth.com>
Subject: RE: 2401823 As-Built Requirements

Will do

Pascal Bousquet
Site Manager, NWT
C: 780.956.4447
Pascal.bousquet@integrated-constructors.com
61317 PO Box 143 | Norman Wells | NT | X0E 0V0
INTEGRATED CONSTRUCTORS

From: Alex Childs <achilds@allnorth.com>
Sent: October 7, 2024 4:23 PM
To: Damgaard, Neal R <neal.r.damgaard@esso.ca>

Cc: Project Email Archival <projects@allnorth.com>; Don Williams <dwilliams@allnorth.com>
Subject: 2401823 As-Built Requirements

Hi Neal,

Following up on our call, if Allnorth is not on site to witness the construction of the east abutment repair, the contractor would need to provide the following in order for us to produce as-built drawings:

- Daily construction reports
- Daily site photos
- Redlined drawing markups
- RFI's for any design changes/questions
- Material certs

Please note we would also add wording to the drawing detailing that we were not on site to witness the construction, and that the information was provided by the contractor.

Thank you,

Alex

Alex Childs, P.Eng. | Project Manager
Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 778-693-3455 Fax: +1 888-839-3114
Mobile: +1 250-961-9081
Email: achilds@allnorth.com
allnorth.com

Noah Williams

From: Don Williams
Sent: Thursday, October 17, 2024 8:56 AM
To: Lega, Jason; Pascal Bousquet; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Small, Anthony; Project Email Archival
Subject: RE: Upper Bosworth Bridge photos 2401823

Jason,

Thanks for the update.

Don Williams, P.Eng. | Vice President Operations
Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 250-277-1902 Fax: +1 888-839-3114
Mobile: +1 250-981-6003
allnorth.com

From: Lega, Jason <jason.lega1@esso.ca>
Sent: Wednesday, October 16, 2024 4:41 PM
To: Don Williams <dwilliams@allnorth.com>; Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>; Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Small, Anthony <anthony.small@esso.ca>; Project Email Archival <projects@allnorth.com>
Subject: RE: Upper Bosworth Bridge photos 2401823

Hi Don, Pascal is away from site getting some much-needed time off before coming back for an extended shift. He will be back onsite the afternoon of Tuesday Oct 22nd and should be able to provide you some updates at that time.

Thanks,

Jason Lega
Field Operations Supervisor
Norman Wells Operations
jason.lega1@esso.ca **C** 780.812.0825
imperialoil.ca | **Twitter** | **YouTube**
Core Strengths **HUB** | MVS: 40-34–26 Performance-Process-People | CS: **RGB**
Imperial

From: Don Williams <dwilliams@allnorth.com>
Sent: Wednesday, October 16, 2024 2:52 PM
To: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>; Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>; Project Email Archival

<projects@allnorth.com>
Subject: RE: Upper Bosworth Bridge photos 2401823

Pascal,

Are you able to send daily reports including photos so we can track how the repairs are going?

Don Williams, P.Eng. | Vice President Operations
Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 250-277-1902 Fax: +1 888-839-3114
Mobile: +1 250-981-6003
allnorth.com

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Saturday, October 12, 2024 2:19 PM
To: Don Williams <dwilliams@allnorth.com>; Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>; Project Email Archival <projects@allnorth.com>
Subject: RE: Upper Bosworth Bridge photos 2401823

Thank you

Pascal Bousquet
Site Manager, NWT
C: 780.956.4447
Pascal.bousquet@integrated-constructors.com
61317 PO Box 143 | Norman Wells | NT | X0E 0V0
INTEGRATED CONSTRUCTORS

From: Don Williams <dwilliams@allnorth.com>
Sent: October 12, 2024 3:18 PM
To: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>; Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>; Project Email Archival <projects@allnorth.com>
Subject: Re: Upper Bosworth Bridge photos 2401823

W150x12 is acceptable.

Don Williams, P.Eng.
Vice President Operations
Allnorth Consultants Limited

Cell (250) 981-6003

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Saturday, October 12, 2024 12:38 PM
To: Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>; Don Williams <dwilliams@allnorth.com>; Project Email Archival <projects@allnorth.com>
Subject: RE: Upper Bosworth Bridge photos 2401823

CAUTION: This email originated from outside of the organization. Do not click links, open attachments or reply, unless you recognize the sender's email address and know the content is safe.

Afternoon, Alex

Can W150x12 acceptable for the reinforcing beams as this material is easily available to us in Norman Wells ?

Pascal Bousquet
Site Manager, NWT
C: 780.956.4447
Pascal.bousquet@integrated-constructors.com
61317 PO Box 143 | Norman Wells | NT | X0E 0V0

-----Original Message-----
From: Alex Childs <achilds@allnorth.com>
Sent: October 11, 2024 4:39 PM
To: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>; Don Williams <dwilliams@allnorth.com>; Project Email Archival <projects@allnorth.com>
Subject: RE: Upper Bosworth Bridge photos 2401823

CAUTION: External email.

Hi Pascal,

RFI:
Drawing 2401823-000-1960-206 shows the existing waler to be 549mm +/- to top of pilings, the actual is 1150mm from center of original waler location, Please advise if we are to continue with the current design using 549mm benchmark or to field fit the new W150x14 beams and PL 12.7x3048x1219 to match the actual 1150mm center of existing waler to top of piles ?

Response:
The elevation of the top of the tieback wall is to be kept to 549mm+- from the tie back/waler elevation. If we can get it within 50mm of this then we are good.

Please let me know if you have any questions.

Thanks,

Alex

Alex Childs, P.Eng. | Project Manager
Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 778-693-3455 Fax: +1 888-839-3114
Mobile: +1 250-961-9081
Email: achilds@allnorth.com
allnorth.com

-----Original Message-----
From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Friday, October 11, 2024 1:32 PM
To: Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>; Alex Childs <achilds@allnorth.com>
Cc: Lega, Jason <jason.lega1@esso.ca>; Small, Anthony <anthony.small@esso.ca>
Subject: Upper Bosworth Bridge photos

CAUTION: This email originated from outside of the organization. Do not click links, open attachments or reply, unless you recognize the sender's email address and know the content is safe.

Good afternoon, All

Please see attached project progress photos, So far, we have exposed half of the structures below grade and found the existing waler to be detached from the pilings and some tie back rods rotted and detached from either the bridge sheet pilings and/or the U/G waler itself, the plan once we have exposed all of the below grade structures is to reattached the existing waler to its original location as the waler beam itself isn't in bad condition, once that is completed we can than proceed with new piling installation and the modification/reinforcement of the existing dead man wall and the installation of the new dead man wall, Scaffolding to access the existing sheet pile waler under the bridge to commence tomorrow October 12, Drawing 2401823-000-1960-206 shows the existing waler to be 549mm +/- to top of pilings, the actual is 1150mm from center of original waler location, Please advise if we are to continue with the current design using 549mm benchmark or to field fit the new W150x14 beams and PL 12.7x3048x1219 to match the actual 1150mm center of existing waler to top of piles ?

Any question please call

Your message is ready to be sent with the following file or link attachments:

Detached waler from existing piles
Showing Bridge tie back rod hex nuts with only few threads Showing Bridge tie back rods Showing detached tie back rods from waler Showing detached waler (overview) Showing detached waler Showing existing rotted tie back rods from bridge sheet piling Showing Existing Waler detached from pilings and dropped Showing rotted tie back rods detached from exsiting waler Showing some tie back rods still attached to exsiting Waler Showing waler detached from piles and dropped Below Grade Waler as found detached and dropped 5 inches Bridge excavation approximetaly 5 feet in depth Bridge Exisitng tie back rods, showing hex nut oly a few threads on Bridge Existing tie back rods, not sheet piling rods showing hex nuts barely on

this email. If you are not the intended recipient, you are hereby notified that any review, retransmission, dissemination or other use of, or taking any action in reliance upon this information is strictly prohibited. If you have received this email in error, kindly notify the sender by reply email and delete the original message from your system. Thank You.

Disclaimer: The information contained in this email, including any attachments, is confidential and may be privileged. It is intended only for the person or entity to which it is addressed and no waiver is intended by sending this email. If you are not the intended recipient, you are hereby notified that any review, retransmission, dissemination or other use of, or taking any action in reliance upon this information is strictly prohibited. If you have received this email in error, kindly notify the sender by reply email and delete the original message from your system. Thank You.

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Noah Williams

From: Don Williams
Sent: Thursday, October 24, 2024 1:37 PM
To: Pascal Bousquet; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Baron, Blaine D; Small, Anthony; Project Email Archival
Subject: RE: Upper bosworth bridge repair updates

2401823

Thank you for the photos and update.

Don Williams, P.Eng. | Vice President Operations Allnorth
2011 PG Pulpmill Road, PO Box 968, Prince George, BC V2L 4V1
Main: +1 250-614-7291 Direct: +1 250-277-1902 Fax: +1 888-839-3114
Mobile: +1 250-981-6003
allnorth.com

-----Original Message-----
From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Wednesday, October 23, 2024 3:44 PM
To: Don Williams <dwilliams@allnorth.com>; Alex Childs <achilds@allnorth.com>; Damgaard, Neal R <neal.r.damgaard@esso.ca>; Fraser, Benjamin C <benjamin.fraser@esso.ca>
Cc: Baron, Blaine D <blaine.d.baron@exxonmobil.com>; Small, Anthony <anthony.small@esso.ca>; Project Email Archival <projects@allnorth.com>
Subject: Upper bosworth bridge repair updates

Good afternoon, All

Please see below project updates,

- Link Belt pile driver mobilized to location and piling installation to commence tomorrow
- Attached are photos of as-found underground structures and the extremely old pile driver
- Delays on material delivery, some of the plates as arrived but most of the shipment was bumped for more urgent items needed for plant operation, All material is expected by Friday October 26th.
- Welder is pre-cutting reinforcing plates for the waler extensions and dead man wall plates and shims for the existing waler and sheet piling wall under bridge.

Your message is ready to be sent with the following file or link attachments:

10-23-24 exposed threadbar.
10-23-24 exposed threadbars

10-23-24 Exposed underground structure overview.
10-23-24 Link Belt Piple Driver
10-23-24 showing 1971 Link belt pile driver
10-23-24 showing as-flound existing waler
10-23-24 Showing sheared existing Threadbar
10-23-24 exposed uderground structures overview

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Saturday, October 26, 2024 3:20 PM
To: Don Williams; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Baron, Blaine D; Small, Anthony; Project Email Archival; Warren, Travis; Macdonald, Corey Ross
Subject: Project updates and photos
Attachments: 10-26-25 Showing installation of new pilings.jpg; 10-26-24 additional piles for existing dead man wall complete.jpg; 10-26-24 New Dead man wall piles completed.jpg; 10-26-24 new piles for exsting dead man piles.jpg; 10-26-24 Showing additional piles for existing dead man wall.jpg; 2401823-000-1960-200 Rev0.pdf

Good afternoon,

Please see attached project photos and below updates.

- delayed material as arrived today and being received
- piling for new and existing dead man wall completed, see attached red lone drawing with embedment depth, full report will be included in QAQC package
- Pile driving equipment as demobilized from site
- welder continued with modification of existing waler reinforcement and relevelling damaged waler under bridge
- excavating additional 2 feet around pilings for the installation of the lower dead man wall section
- prefabrication of both dead man wall to commence tomorrow

Your message is ready to be sent with the following file or link attachments:

10-26-25 Showing installation of new pilings
10-26-24 additional piles for existing dead man wall complete
10-26-24 New Dead man wall piles completed
10-26-24 new piles for exsting dead man piles
10-26-24 Showing additional piles for existing dead man wall

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Tuesday, October 29, 2024 4:40 PM
To: Don Williams; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Baron, Blaine D; Warren, Travis; Lega, Jason; Macdonald, Corey Ross; Small, Anthony
Subject: Upper bosworth Bridge updates
Attachments: 10-29-24 Showing stitch wellds on new dead man wall beams.jpg; 10-29-24 Showing overview of new dead man wall back side.jpg; 10-29-24 Showing back side of new dead man wall.jpg; 10-29-24 Showing new dead man progress 4.jpg; 10-29-24 Showing new dead man wall progress 1.jpg; 10-29-24 Showing new dead man wall progress 2.jpg; 10-29-24 Showing new dead man wall progress.jpg; 10-29-24 Showing new dead wall progress.jpg; 10-29-24 Showing stitch welds on new dead man wall beam 1.jpg; 10-29-24 Showing stitch welds under side on deam man wall beams.jpg

Good afternoon, All

Please see attached progress photos and below updates.

- Prefabrication of new dead man walls continuing, completion by October 30
- Started installation of prefabricated dead man walls, completion by November 02
- Installation of new waler to commence Friday November 01
- Reinstalling existing and extensions to Commence Sunday November 03
- Backfilling and compaction to commence Sunday November 03 (up to new thread bar level)
- Installation of new Thread bar to Commence Wednesday November 06

Your message is ready to be sent with the following file or link attachments:

10-29-24 Showing stitch wellds on new dead man wall beams
10-29-24 Showing overview of new dead man wall back side
10-29-24 Showing back side of new dead man wall
10-29-24 Showing new dead man progress 4
10-29-24 Showing new dead man wall progress 1
10-29-24 Showing new dead man wall progress 2
10-29-24 Showing new dead man wall progress
10-29-24 Showing new dead wall progress
10-29-24 Showing stitch welds on new dead man wall beam 1
10-29-24 Showing stitch welds under side on deam man wall beams

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Thursday, October 31, 2024 4:23 PM
To: Don Williams; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Baron, Blaine D; Warren, Travis; Small, Anthony; Macdonald, Corey Ross; Lega, Jason
Subject: upper bosworth bridge progress photos
Attachments: 10-31-24 showing preheat prioe welding.jpg; 10-31-24 Showing stitch welding on dead man wall beams.jpg; 10-31-24 Stitching on dead man wall beams 2.jpg; 10-31-24 stitching on dead man wall beams.jpg; 10-31-24 Back side of triple and double dead man wall overview 1.jpg; 10-31-24 New double and triple dead man wall overview.jpg; 10-31-24 New triple dead man wall overview 1.jpg; 10-31-24 New triple dead man wall overview 2.jpg; 10-31-24 New twin dead man wall overview 1.jpg; 10-31-24 New twin dead man wall overview 2.jpg; 10-31-24 New twin dead man wall overview 3.jpg; 10-31-24 overview dounble and triple dead man wall back side.jpg; 10-31-24 Showing Beam underside stitch welding.jpg; 10-31-24 Showing existing waler being modified.jpg

Good afternoon,

Please see attached progress photos, updates are the same as the last email.

Your message is ready to be sent with the following file or link attachments:

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Monday, November 4, 2024 4:14 PM
To: Don Williams; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Hiemstra, Wendy L; Macdonald, Corey Ross; Warren, Travis; Baron, Blaine D; Lega, Jason; Small, Anthony
Subject: Progress photos and updates
Attachments: 11-04-24 using removed materila and compaction with excavator.jpg; 11-04-24 air compressor being used to clear snow prior backfilling.jpg; 11-04-24 compaction 1.jpg; 11-04-24 Compaction 2.jpg; 11-04-24 Compaction 3.jpg; 11-04-24 copaction around dead man walls.jpg; 11-04-24 plate temper used for first layer around base of dead man walls.jpg; 11-04-24 Showing compaction around dead man walls.jpg; 11-04-24 Showing completed dead man walls prior backfilling commence.jpg; 11-04-24 Showing reinforcement plated on exizting waler, side sheet pilings.jpg; 11-04-24 Showing separation between both existing waler.jpg

Good afternoon, All

Please see attached progress photos and below updates.

- Dead man walls prefabrication and installation completed
- Reinforcement plates on existing sheet piling waler in progress
- Separation of sheet piling waler completed
- Installation of underground walers scheduled for November 06
- Installation of Dywidag thread bars scheduled to start Thursday November 07
- Backfilling and compaction are ongoing

Delays
- Pile driver break down (twice), 1 day delay
- late material arrival, causing 3 days delay on dead man wall prefabrication and installation
- Excavator relieve valve failure, not able to operate temper, swap excavator, 1 day delay

Your message is ready to be sent with the following file or link attachments:

11-04-24 using removed materila and compaction with excavator
11-04-24 air compressor being used to clear snow prior backfilling
11-04-24 compaction 1
11-04-24 Compaction 2
11-04-24 Compaction 3
11-04-24 copaction around dead man walls
11-04-24 plate temper used for first layer around base of dead man walls
11-04-24 Showing compaction around dead man walls
11-04-24 Showing completed dead man walls prior backfilling commence
11-04-24 Showing reinforcement plated on exizting waler, side sheet pilings
11-04-24 Showing separation between both existing waler

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Sunday, November 10, 2024 3:43 PM
To: Don Williams; Alex Childs; Damgaard, Neal R; Fraser, Benjamin C
Cc: Warren, Travis; Small, Anthony; Macdonald, Corey Ross; Hiemstra, Wendy L; Lega, Jason; Pawlowski, Jarred
Subject: Upper Bosworth Bridge progress photos and updates
Attachments: 11-10-24 Showing existing waler separation.jpg; 11-10-24 Showing Dywidag thread bar 1.jpg; 11-10-24 Showing Dywidag Thread bar on back side of new waler 1.jpg; 11-10-24 Showing Dywidag thread bar on new waler and dead man wall.jpg; 11-10-24 Showing Dywidag thread bar, washers and nuts into place.jpg; 11-10-24 Showing Plate washers, bevelled washers and nuts arrangement.jpg; 11-10-24 Showing protective sleeves where thread bars cross.jpg; 11-10-24 Existing waler overview side sheet piling and separation.jpg; 11-10-24 layered ground compaction.jpg; 11-10-24 modified and reinforced existing waler.jpg; 11-10-24 Showing compaction being completed around dead man walls.jpg; 11-10-24 Showing dead man wall completion, backfilling and compaction.jpg; 11-10-24 Showing ground compaction being completed.jpg; 11-10-24 Showing new dead man wall and waler.jpg; 11-10-24 Site overview prior installing Dywidag thread bar 1.jpg; 11-10-24 Site overview prior installing Dywidag thread bar 2.jpg; 11-10-24 Prior new waler installation.jpg; 11-10-24 Compaction around new dead man wall.jpg; 11-10-24 Showing Dywidag thread bar on bridge waler side 1.jpg; 11-10-24 Showing Dywidag thread bar on bridge waler side 2.jpg; 11-10-24 Showing Dywidag thread bar and waler on bridge side 1.jpg; 11-10-24 Showing Dywidag thread bar, washers and nuts in place 1.jpg; 11-10-24 Showing exsiting waler under bridge 1.jpg

Good afternoon, All

Please see attached progress photos and below updates for the Upper Bosworth Bridge repairs

- Dead man walls fabrication and installation as been completed
- Reinforcement and modification of existing waler as been completed
- Existing side plate wall support and pile as been completed
- Guard rail piling which was cut to ease excavation are being rewelded and scheduled to be completed tomorrow November 11
- Backfilling and compaction have been completed to top of new dead men walls
- 84" roller packer mobilizing tomorrow November 11 to assists with reinstating access road to bridge
- Project completion scheduled by November 17 / 18

Cheers

Your message is ready to be sent with the following file or link attachments:

11-10-24 Showing existing waler separation
11-10-24 Showing Dywidag thread bar 1
11-10-24 Showing Dywidag Thread bar on back side of new waler 1
11-10-24 Showing Dywidag thread bar on new waler and dead man wall
11-10-24 Showing Dywidag thread bar, washers and nuts into place
11-10-24 Showing Plate washers, bevelled washers and nuts arrangement
11-10-24 Showing protective sleeves where thread bars cross
11-10-24 Existing waler overview side sheet piling and separation
11-10-24 layered ground compaction
11-10-24 modified and reinforced existing waler
11-10-24 Showing compaction being completed around dead man walls
11-10-24 Showing dead man wall completion, backfilling and compaction
11-10-24 Showing ground compaction being completed
11-10-24 Showing new dead man wall and waler
11-10-24 Site overview prior installing Dywidag thread bar 1
11-10-24 Site overview prior installing Dywidag thread bar 2

11-10-24 Prior new waler installation
11-10-24 Compaction around new dead man wall
11-10-24 Showing Dywidag thread bar on bridge waler side 1
11-10-24 Showing Dywidag thread bar on bridge waler side 2
11-10-24 Showing Dywidag thread bar and waler on bridge side 1
11-10-24 Showing Dywidag thread bar, washers and nuts in place 1
11-10-24 Showing exsiting waler under bridge 1

Noah Williams

From: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Sent: Thursday, February 13, 2025 6:47 AM
To: Alex Childs
Cc: Project Email Archival
Subject: RE: Bosworth As-Built Info 2401823

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1) Yes, they were reinforced with 12.7mm plate at both ends of both
2) W150x12 is correct and was approved to use by Don William
3) I will look at what we have and send to you

Pascal Bousquet
Site Manager, NWT
C: 780.956.4447
Pascal.bousquet@integrated-constructors.com
61317 PO Box 143 | Norman Wells | NT | X0E 0V0

-----Original Message-----
From: Alex Childs <achilds@allnorth.com>
Sent: February 12, 2025 6:38 PM
To: Pascal Bousquet <Pascal.Bousquet@integrated-constructors.com>
Cc: Project Email Archival <projects@allnorth.com>
Subject: Bosworth As-Built Info 2401823

CAUTION: External email.

_____

Hi Pascal,

I apologize for the delay. We have gone through the items and are just missing the following confirmations. Can you please respond to the following:

1) Was the HP310x79 waler along the back of the existing dead man wall piles reinforced with 12.7mm thick plate on the top and bottom flanges at both ends?
2) The red line drawings provided by Graham show that the steel plates along the front of the new and existing dead man wall piles were reinforced with W150x12 beams instead of the W150x14 beams specified in the design. However, the material requisition form provided by Graham shows that W6x12 beams (metric equivalent = W150x18) were ordered. We assume that this is just a typo on the red line drawings, but can you confirm which type of beam was used to reinforce the steel plates?
3) Can you provide photos of the completed construction?
    a) Allnorth has not received photos of the fill being placed and compacted above the tieback structure
    b) Allnorth has not received photos of the reestablished east approach.
    c) Allnorth has not received photos of the rip rap work (new and reinstalled material).

Let me know if you have any questions or need any clarifications.

Thank you,

Alex

Appendix E Quality Control Documentation

S01 45 13.07 Rev.0 Turnover Guideline (provided by contractor)
01 45.00.03-GMSL Contract Review Verification (provided by contractor)
S_01_45_00.100 ITP (CSA W59) Structural Steel (provided by contractor)
WJ00615 19 11 Ground Disturbance Form (provided by contractor)
Bosworth Creek Bridge Repair_Canol Rd (provided by contractor)
S00_42_63.01 Material Requisition DYWIDAG Canada Ltd. (provided by contractor)
S00_42_63.01 Material Requisition Pipe and Piling Supplies (provided by contractor)
S00_42_63.01 Material Requisition Sureway Metal (provided by contractor)
01 43 19.14 Welder's Declaration – Orientation Record – WPS (provided by contractor)

The following is an instruction to complete ASME project turnover documentation generally applicable to all work. The list of quality control records contained within the template reflects the minimum documentation that is to be maintained, made available during the work and provided to the Owner after work is complete. **Additional documentation may be required to meet the specific scope of work or as required by Owner's specification or contract.**

The guideline instructions below and the accompanying template is to be used as the basis for creating the Table of Contents for the project's Turnover Package.

Guideline:

1. All construction projects require a Turnover Package be completed and a copy forwarded to the Owner/Owner's Rep upon project completion
   a. Turnovers must be submitted within a timeframe acceptable to the Owner/Owner's Rep.
2. The Inspection and Test Plan is the document that is to be used as the tool to determine each project's requirement for turnover documentation. Complete a project quality review by using the "Internal Audit Report" checklist to ensure your project is in compliance with the Quality Program requirements.
3. Turnovers are to be organized as agreed to during Prejob Review or early in the project. A mockup may be used to demonstrate to the Owner/Owner's Rep. The format and content of the Turnover.
   a. Requirement may be to organize by Area, System or Subsystem
   b. Boiler and Vessel repair/alteration work must be separated into its own Turnover binder(s)
      i. One turnover binder per vessel
4. Use the Table of Contents format provided as a template for Turnover
   a. Delete the comments, but keep the document references
   b. Add any additional items and documents as required for the applicable scope of work
5. Each Volume (binder) shall include the project info indicated as a title at the top of the Table of Contents

Imperial Oil

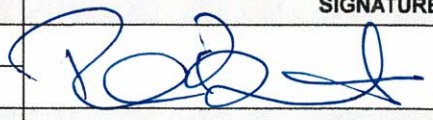
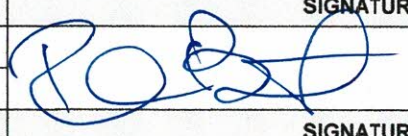
Upper Bosworth Creek East Abutment
Sheet Pile Wall Repair

QA/QC TURNOVER PACKAGE

TABLE OF CONTENTS

PROJECT END

- Turnover to Owner Documented (00 62 11.01 maybe used)

Turnover Table of Contents Agreement		
The signatures below certify that the Turnover Table of Contents is adequate to meet all project requirements.		
OWNER / OWNER'S REPRESENTATIVE	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME: TRAVIS WARREN	10/04/24	
TITLE: OPERATION SPECIALIST		
PROJECT MANAGER	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME: PASCAL BOUSQUET	10/04/24	
TITLE: SITE MANAGER		
QUALITY REPRESENTATIVE	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME: PASCAL BOUSQUET	10/04/24	
TITLE: SITE MANAGER		
OTHER (SPECIFY)	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME:	/ /	
TITLE:		

GRAHAM

CONTRACT REVIEW VERIFICATION

01 45 00.03 - GMSL - REV 00

JOB NUMBER: 4261.420000.	DATE (mm/dd/yy): 10/03/24	PROJECT: Upper Bosworth Bridge Repair
OWNER: Imperial Oil	OWNER'S JOB NUMBER: 90071740	CONTRACT NUMBER: 4502903134

It is a requirement of CSA B51 (the governing Boiler, Pressure Vessel & Pressure Piping Code in Canada) that a manufacturer shall demonstrate to the regulatory authority (i.e. ABSA, TSBC, TSASK, ITSM, etc.) that a satisfactory quality control system is in operation. If the Owner assumes any of these responsibilities (i.e. material control, welding, NDE, heat treatment, pressure testing, etc.) the requirements of CSA B51 also apply to them.

***Note:** Design Registration is required if the piping system is greater than: 0.5m3 - Alberta & Manitoba; 17ft3 - Saskatchewan; and British Columbia Regulations do not have a stated volume exemption so the Owner's design engineer must confirm this with the Jurisdiction prior to start of work.*

Responsibility for Quality System Activities

Activity	Company (Check off Responsibility)	Owner (Check off Responsibility)	Additional Responsibilities	Company (Initials & Date)	Owner (Initials & Date)
Material Receiving Inspection, Identification & Traceability	☒	☐		PB 10/04/24	10/04/24 T.V
Welding	☒	☐		PB 10/04/24	10/04/24 T.V
Heat Treatment	☐	☐	N/A	N/A	N/A
NDE	☐	☐	N/A	N/A	N/A
Bolt Torquing	☐	☐	N/A	N/A	N/A
Pressure Testing	☐	☐	N/A	N/A	N/A

Responsibility for Supply

Activity	Company (Check off Responsibility)	Owner (Check off Responsibility)	Additional Responsibilities	Company (Initials & Date)	Owner (Initials & Date)
Materials	☒	☐		PB 10/04/24	10/04/24 T.V
Design Registration with Jurisdiction	☐	☒		PB 10/04/24	10/04/24 T.V
Drawings & Specifications	☐	☒		PB 10/04/24	10/04/24 T.V
NDE	☐	☐	N/A	N/A	N/A
Heat Treatment	☐	☐	N/A	N/A	N/A

Contract Review Agreement Checklist	Reference Agreement Document (i.e. RFI, Email, Approved T.O.C, etc.)	Company (Initials & Date)	Owner (Initials & Date)
Scope(s) of Work and Code(s) of Construction requirements have been clearly defined by the Owner.	General Note DWG# 2401823-000-1960-201	PB 10/04/24	10/04/24 T.V
Owner specifications and basic practices are clearly defined.	General Note DWG# 2401823-000-1960-201	PB 10/04/24	10/04/24 T.V
Lot Sizes (ASME B31.3) have been agreed upon between Company and Owner. **Lot Size(s):** _____	N/A	N/A	N/A
Certification of construction using the Pressure Piping Construction Data Report has been agreed upon with Owner. **Responsible Person:** _____	N/A	N/A	N/A
Responsibility for certifying the installation using the Completion of Construction Declaration has been agreed upon with Owner. **Responsible Person: Travis Warren**	Doc# 00 65 19.05 Declaration of Completion	PB 10/04/24	10/04/24 T.V
Requirements for turnover including contents and turnover completion timeline agreed upon with the Owner. *Note: Unless otherwise agreed upon in approved TOC, as a minimum, turnover documents required will be indicated in approved ITP.* *Note: The Company requires the Owner's turnover review to be complete within 3 weeks (unless otherwise specified in the contract) from the turnover submission date.*	Doc# 01 45 13.07 Turnover Guideline	PB 10/04/24	T.V 10/04/24
Inspection & Test Plan(s) has been agreed upon, outlining all of Owner's additional requirements.	S 01 45.00.100 ITP	PB 10/04/24	T.V 10/04/24
If the Owner is responsible for NDE, agreement has been made to ensure NDE completion is no more than one day (unless otherwise agreed upon) behind production welding, at any given time.	N/A	N/A	N/A

PROJECT MANAGER	DATE (MM/DD/YY)	SIGNATURE
Pascal Bousquet	10/04/24	
OWNER'S REPRESENTATIVE	**DATE (MM/DD/YY)**	**SIGNATURE**
Travis Warren	10/04/24	

IT JOB NUMBER: 4261.420000.	**PROJECT NAME: Upper Bosworth Creek Abutment**	**DATE (mm/dd/yy): 10/04/24**	**ITP REV: 0**
DISTRICT OFFICE: Norman Wells	**QUALITY REP: Pascal Bousquet**	**OWNER'S REP: Travis Warren**	
STANDARD OF CONSTRUCTION: (CHECK ALL THAT APPLY TO SCOPE)	☒ CSA W47.1 & CSA W59 ☐ CSA W 59 ONLY	**SHOP:** ☐ **FIELD:** ☒	
		OTHER (SPECIFY) :	

INSTRUCTIONS: **This ITP is the general quality plan for Structural Steel Construction. Project specific requirements shall be addressed within this ITP when the scope of work is larger and/or the Owner requires a greater number of activities or records to be maintained.** This ITP Agreement section gives confirmation that this ITP represents the required quality activities and associated documentation to be provided by the company for turnover. Additional requirements shall be identified under the heading 'ADDITIONAL PROJECT SPECIFIC REQUIREMENTS'. Completed activities shall be initialed and dated by the company Representative once they are completed. When an 'H' is indicated in the 'HOLD' column the quality activity needs to be completed before the company can proceed. 'Owner's Spec' is referenced throughout the ITP checklist under the column 'REFERENCE DOCUMENTS'. The actual specification number shall be inserted in place of 'Owner's Spec' when applicable. If the Owner is responsible for the activity insert 'N/A' beside the activity. The Owner's Review column should be modified to be project specific, the activities included in this template are the recommended minimums.

LEGEND:	**H** – HOLD Activity/Record to be approved by the Owner's Rep before proceeding.	**R** – RECORD REVIEW Owner Rep's signature required on project record.	**S** – SURVEILLANCE Owner's Rep checking activities or records.	**W** – WITNESS Owner's Rep is present for an activity.	**N/A** – NOT APPLICABLE Not applicable to the project.

	Quality Control Activity	Hold	Acceptance Criteria (Reference Documents)	Owner's Review Required	ITP Review / Verification			
					Mid Project Review		Final Project Review	
					Quality Rep Initial	Owner's Rep Initial	Quality Rep Initial	Owner's Rep Initial
SECTION 1: PRE-JOB REVIEW								
1.	Construction Manager and Project Manager accept responsibility to ensure contract quality deliverables are met and the Company's Quality Program is implemented for all work activities including the requirements of the applicable Jurisdiction, Owner and Code/Standard. Note: Acknowledgment for this activity is required by both the Construction and Project Managers.	H	Quality Manual 01 31 01.06 Sections 2.4.5	N/A	**Construction Manager's Acknowledgement:** (Initial & Date) T.W 10/06/24 **Project Manager's Acknowledgment:** (Initial & Date) PB 10/04/24			
2.	Ensure this project ITP is approved by signing the ITP Agreement at the end of S01 45 00.100.	H	Quality Manual 01 31 01.06 Section 5 S 01 45 00.100 -Inspection and Test Plan (CSA W59) – Structural Steel	W, R	PB 10/22/24	T.W 10/28/24	PB 11/19/24	T.W 11/23/24
3.	Ensure Project Organization is complete and documented using 01 45 00.02 Signature Log.		01 45 00.02 - Project Organization & Signature Log	W, R	N/A	N/A	N/A	N/A
4.	Ensure all drawings and scopes of work are approved for construction.	H	*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section 3.1	S	PB 10/22/24	T.W 10/28/24	PB 11/19/24	T.W 11/23/24
5.	Owner and Company documents and responsibilities identified, agreed to for the Construction Scope of Work, this shall be documented using 01 45 00.03	H	Quality Manual Sections 01 31 01.06 Section 3.5 01 45 00.03- Contract Review Verification	R	PB 10/22/04	T.W 10/28/24	PB 11/19/24	T.W 11/23/24

	Quality Control Activity	Hold	Acceptance Criteria (Reference Documents)	Owner's Review Required	ITP Review / Verification			
					Mid Project Review		Final Project Review	
					Quality Rep Initial	Owner's Rep Initial	Quality Rep Initial	Owner's Rep Initial
SECTION 1: PRE-JOB REVIEW (Cont.)								
6.	Latest revisions of documents and forms obtained from the Company's Intranet and accessible or available at site. Note: As a minimum Company forms/records shall be used for documentation. If Client forms/records are required to be utilized, ensure the Company's requirements are met.		Quality Manual 01 31 01.06 Section 3.2	S	PB 10-22-24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
7.	Ensure all drawings (regardless of volume) and scope of work are approved for construction. Drawings may be distributed using 00 62 11.01 Note: Logs & registers are for controlling/managing filed records and they are suggested tools to be used but may not be required.		Quality Manual 01 31 01.06 Sections 3.4 00 62 11.01 - Document Transmittal	S	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
8.	Ensure Weld Procedures have been approved in writing by Owner. This may be documented on S 01 43 19.13.	H	*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section 7.1 S01 43 19.13 - Welding Procedure Selection & Approval	W, R	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
9.	Owner has been notified that construction has commenced.	H	*Owner's Spec (Insert Number)* Quality Manual Section 01 31 01.06 Section 3.5	S	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
10.	Ensure the Company's Welding Specialist is notified of the work to delegate/assign a CWB Supervisor, and the correct CWB Letter of Validation is received and on file. *Note: The Welding Specialist is to be given notification of project completion, or if there are any changes to project's CWB Welding Supervisor status (i.e. leaves project), during project duration.*	H	Quality Manual 01 31 01.06 Section 7	S	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
11.	Construction photo requirements determined. Photos in CD format and sorted by construction component. VIA EMAIL PB		*Owner's Spec (Insert Number)*	S	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24
SECTION 2: PURCHASING								
12.	Material Requisition preparation and verification confirmed using 00 42 63.01 (or similar record) for subsidiary company purchases or by filing the Owner's purchase order. PO/Requisition required confirming and cross reference materials ordered when receiving. **FREQUENCY:** 00 42 63.01 – FOR ALL COMPANY PURCHASES		Quality Manual Section 01 31 01.06 Section 4.3 18.4 00 42 63.01- Material Requisition Form Copy of Owner's Purchase Order	S	PB 10/22/24	T.L 10-28-24	PB 11/19/24	T.L 11/23/24

	Quality Control Activity	Hold	Acceptance Criteria (Reference Documents)	Owner's Review Required	ITP Review / Verification			
					Mid Project Review		Final Project Review	
					Quality Rep Initial	Owner's Rep Initial	Quality Rep Initial	Owner's Rep Initial
SECTION 3: RECEIVING								
13.	Ensure material & equipment received meets the requirements of the PO, requisition, drawings, code, specifications and checked for damage. Documented on 00 42 63.01, Owner's Purchase Order or using 01 45 01.02 Receiving Report . Note: Logs & registers are for controlling/managing filed records and they are suggested tools to be used but may not be required. **FREQUENCY:** 01 45 01.02 – FOR EACH LOAD RECEIVED		*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section 4.4 01 45 01.02 - Material Receiving and Inspection Report Copy of Owner's Purchase Order	S	PB 10/26/24	T.L 10/28/24	PB 11/19/24	T.L 11/23/24
14.	Mill Test Reports (MTRs) checked against material for grade & heat number and signed-off.		*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section 4.7	S	PB 10/26/24	T.L 10/28/24	PB 11/19/24	T.L 11/23/24
15.	Inspect modules upon receipt for visual damage Verify all documentations received Verify correct laydown Verify all components have been received		*Receiving Documentation and P.O.* 01 45 01.02 - Material Receiving and Inspection Report		N/A	N/A	N/A	N/A
SECTION 4: WELDING CONTROL								
16.	Ensure welders are qualified and copies of their PQ Cards / CWB Tickets, and Trade certification are on file. Trade certification is required to ensure compliance to provincial legislation.	H	Quality Manual Section 01 31 01.06 Section 7.2 Welder Certifications	S	PB 10/22/24	T.L 10/28/24	PB 11/19/24	T.L 11/23/24
17.	Welder's qualifications are logged using 01 43 19.09.		Quality Manual Section 01 31 01.06 Section 7.2 01 43 19.09 - Welders Log Structural	S	N/A	N/A	N/A	N/A
18.	Instruction to welders by CWB welding supervisor if CSA W47.1 Certified Company is required. If CSA W47.1 Certification is not required QC Rep to give Instruction, including specific Owner requirements if applicable and welders given unique symbols, may be documented on 01 43 19.14.	H	Quality Manual Section 01 43 19.14 - Welder's Declaration-Orientation Record	S	PB 10/22/24	T.L 10/28/24	PB 11/19/24	T.L 11/23/24
19.	Welding checked for compliance to WPS and Owner's requirements including preheat, fit-up, electrodes, etc.		*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section 7.2	S, R	PB 10/29/24		PB 11/19/24	T.L 11/23/24
20.	Visual Inspection of all welds completed and documented as acceptable on IFC Drawings or by other means acceptable to Owner / Owner's Representative.	H	*Owner's Spec (Insert Number)* Quality Manual Section 01 31 01.06 Section 5 CSA W59	S,R	PB 10/29/24		PB 11/19/24	T.L 11/23/24
SECTION 5: BOLT UP CONNECTIONS								
21.	Verify torqueing or snugness of all bolted structural connections as required by CSA S16-01, IFC Drawings and / or Owner's Specifications.	H	*Owner's Spec (Insert Number)* CSA S16-01 Clause 23.9.1 IFC Drawings 05 12 23.05 – Bolt Tensioning – Structural Steel	S	N/A	N/A	N/A	N/A

	Quality Control Activity	Hold	Acceptance Criteria (Reference Documents)	Owner's Review Required	ITP Review / Verification			
					Mid Project Review		Final Project Review	
					Quality Rep Initial	Owner's Rep Initial	Quality Rep Initial	Owner's Rep Initial
SECTION 6: NDE								
22.	Ensure a pre-qualified NDE Contractor is used. Ensure the NDE examiners are qualified for type of NDE required (CGSB Level II minimum). Copies of examiners tickets and vision tests filed.	H	*Owner's Spec (Insert Number)* Quality Manual Section 01 31 01.06 Section 9	S	N/A	N/A	N/A	N/A
23.	Ensure NDE examiners are properly instructed of the project and Owner's requirements. This may be documented using 01 45 02.01.		*Owner's Spec (Insert Number)* Quality Manual Section 9 01 45 02.01 - Instruction to NDE Contractor	S	N/A	N/A	N/A	N/A
24.	Monitor & frequently check the quality of NDE reports and radiographs; ensure reports are filed.		*Owner's Spec (Insert Number)* Quality Manual 01 31 01.06 Section	S, R	N/A	N/A	N/A	N/A
SECTION 8: NONCONFORMANCES								
25.	NCRs identified and properly documented utilizing 01 43 01.05		Quality Manual Section 01 31 01.06 Section 11 01 43 01.05 – Nonconformance Report	S, R	N/A	N/A	N/A	N/A
26.	Nonconformance's logged on 01 43 01.01 Note: Logs & registers are for controlling/managing filed records and they are suggested tools to be used but may not be required.		01 43 01.01 – Nonconformance Log	S	N/A	N/A	N/A	N/A
SECTION 9: PROJECT END								
27.	All work initiated by a Request for Information (RFI) or Owner document/process (i.e. TDN, DCN, FCN, etc.) verified as complete.		*Owner's Spec (Insert Number)*	S, R	N/A	N/A	N/A	N/A
28.	As Built Drawings, Signed and Dated. By ALL NORTH		*Owner's Spec (Insert Number)*	S, R	OTHERS	OTHERS	OTHERS	OTHERS
29.	All deficiencies recorded and/or complete to the satisfaction of the Owner after final inspection and system walk down.		*Owner's Spec (Insert Number)* 01 78 13.03 – Deficiency report	W	PB 10/29/24		PB 11/19/24	T.L 11/23/24
30.	Photos of Construction completed and documented as per project requirements.		*Owner's Spec (Insert Number)*	S	PB 10/29/24		PB 11/19/24	T.L 11/23/24
31.	Check that all of the required quality control activities for this ITP are completed and signed off at the end of the project.		Quality Manual Section 01 31 01.06 Section 5.0	S, R	PB 10/29/24		PB 11/19/24	T.L 11/23/24
32.	Project quality documentation checked for completeness prior to copying and turnover to Owner, 00 65 19.05 utilized to document turnover. A copy to be retained in the Company' files. 00 62 11.01 used to ensure client receives turnover.		*Owner's Spec (Insert Number)* 00 62 11.01 - Document Transmittal	S, R	N/A	N/A	N/A	N/A
33.	Final Acceptance for this ITP signed to confirm the Owner's acceptance of the project documentation (turnover package).		Quality Manual 01 31 01.06 Section 5.0	S, R	PB 10/29/24		PB 11/19/24	T.L 11/23/24
SECTION 10: ADDITIONAL PROJECT REQUIREMENTS								
34.								
35.								

If more spaces are required for Additional Project Specific Requirements attach pages to the end of this ITP Checklist and note above that they are attached.

ITP AGREEMENT

The signatures below indicate that the activities in this ITP reflect applicable code / standard(s), the Company's quality management system and contractual requirements. It is the intention that this ITP meet all contract requirements.

QUALITY REPRESENTATIVE	DATE (MM/DD/YY):	SIGNATURE	OWNER / OWNER'S REPRESENTATIVE	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME: PASCAL BOUSQUET	10/04/24		PRINT/ TYPE NAME: TRAVIS WARREN	10/04/24	
TITLE: SITE MANAGER			TITLE: Operations Specialist		
PROJECT MANAGER	**DATE (MM/DD/YY):**	**SIGNATURE**	**OTHER (SPECIFY)**	**DATE (MM/DD/YY):**	**SIGNATURE**
PRINT/ TYPE NAME: PASCAL BOUSQUET	10/04/24		PRINT/ TYPE NAME:	/ /	
TITLE: SITE MANAGER			TITLE:		

ITP REVIEW

If ITP requirements are not met, action items shall be documented using the applicable record following the Nonconformance, Corrective & Preventative Action Procedure in the Quality Manual. Note the record number(s) in the comments section below.

MID PROJECT REVIEW	FINAL PROJECT REVIEW
PROPOSED MID PROJECT ITP REVIEW DATE (MM/DD/YY): ~~10/25/24~~ 10/22/24	PROPOSED FINAL PROJECT ITP REVIEW DATE (MM/DD/YY): 11/12/24
ACTUAL MID PROJECT ITP REVIEW DATE (MM/DD/YY): 10/22/24	ACTUAL FINAL PROJECT ITP REVIEW DATE (MM/DD/YY): 11/19/24
COMMENTS (REFERENCE OR ATTACH ADDITIONAL INFORMATION AS REQUIRED):	COMMENTS (REFERENCE OR ATTACH ADDITIONAL INFORMATION AS REQUIRED):

RECORD ANY INTERNAL / EXTERNAL AUDITS PERFORMED:

~~INTERNAL AUDITS~~			~~EXTERNAL (OWNER) AUDITS~~		
~~AUDIT REPORT NUMBER:~~	~~PERFORMED BY:~~	~~DATE (MM/DD/YY):~~	~~AUDIT REPORT NUMBER:~~	~~PERFORMED BY:~~	~~DATE (MM/DD/YY):~~
		/ /			/ /
		/ /			/ /

FINAL ITP ACCEPTANCE

The signature below certifies that the project applicable to this ITP was constructed in accordance with the requirements of both the applicable ASME Code and the Owners Specifications.

OWNER / OWNER'S REPRESENTATIVE	DATE (MM/DD/YY):	SIGNATURE
PRINT/ TYPE NAME: TRAVIS WARREN	11 / 23 / 24	
TITLE: Field supervisor		

Ground disturbance form

Location Upper Bosworth Bridge U/G Structure repairs Date 10/07/2024

Training

	Yes	No	
Imperial supervisor or designate - ABCGA 201 or equivalent	X		Name Tony Small
Equipment operator - ABCGA 101 or equivalent	X		Name Mike Hodgson
Line locator - CAPULC or equivalent	X		Name Lee Hyrwin
Is this registered buried facility?		X	If yes, complete section 1 below
Is this an Imperial privately owned buried facility?	X		If yes, complete section 2 below

Section 1: Registered buried facilty

	Yes	No
1. ~~Has the Imperial supervisor or designate notified the buried facility owner at least two days before digging?~~		
2. ~~Has the Imperial supervisor or designate obtained written approval from the owner before digging?~~		
3. ~~Has the owner completed locates?~~		
4. ~~Does the Imperial supervisors or designate have a copy of the survey (locates)?~~		
~~If working within the controlled area (30 m) of pipeline~~		
5. ~~If necessary, has temporary fencing been installed to restrict heavy equipment from operating with zone or over pipeline?~~		
6. ~~If required, is a crossing agreement in place?~~		
~~If digging within five meters of pipeline~~		
7. ~~If digging with machinery within five meters of the pipeline, has the owner been requested to attend?~~		
8. ~~Has the pipeline been exposed (soft digging methods) in several areas to confirm location and orientation?~~		
9. ~~Has the backfilling report been completed?~~		

~~* Expose pipeline in several areas within the proposed dig area to confirm its location and orientation~~
~~* No mechanical excavation with five metres of provincially regulated pipeline until soft digging method exposed pipeline~~
~~* No mechanical excavation with three metres of federally regulated pipeline until soft digging method exposed pipeline~~

	Yes	No
~~If digging within 60 cm of pipeline or disturbance underneath~~		
10. ~~If machinery digging within 60 cm of pipeline or disturbance underneath, is the owner present?~~		
11. ~~Before backfilling, was the owner given one business days notice?~~		
12. ~~Has the backfilling report been completed?~~		

Section 2: Privately owned buried facilty

	Yes	No
1. If registered buried facilities exist on lease, are their locations known and will the ground disturbance be at a minimum of 30 m away?		X
2. Has the Imperial supervisor or designate marked out the proposed dig area (white flags or paint)?		X
3. Has the Imperial supervisor or designate discussed the proposed dig area with the line locator?	X	
4. Has the Imperial supervisor or designate reduced the scan area to dig area plus 3 meters in all directions?		X
5. Has the line locator determine what equipment would be optimal for the utility and ground conditions?		X
6. Has the line locator staked all utilities, pipes and anomalies within the zone?	X	
7. Has the line locator provided a facility locate plot plan indicating all discovered scan results?	X	
8. If any utility, pipe or anomaly crosses the proposed dig area, have they been exposed using soft digging methods and is the Imperial supervisor or designate present?		X
9. If a utility or pipe exists within the dig area, if possible, has it be de-energized and locked out?		X
10. If an underground power utility has been identified in the scan area, has Power Disturbution been notified and has a permit been issued?		X

Refer to the SMS for boring / drilling / pushing, if facilities exist next to the dig area or if exposing electrical lines.

If any section above is answered no, stop work and consult the sites senior safety advisor.

If the scope of work changes, or if required to dig outside of the dig zone, stop and restart the process.

The Imperial ground disturbance supervisor or designate is in charge of scope of work.

AccuTech GROUND DISTURBANCE LTD.
Calgary - Innisfail - Whitecourt
phone: 866.283.tech fax: 403.227.1398
email: info@accutechcanada.ca
website: www.accutechcanada.ca

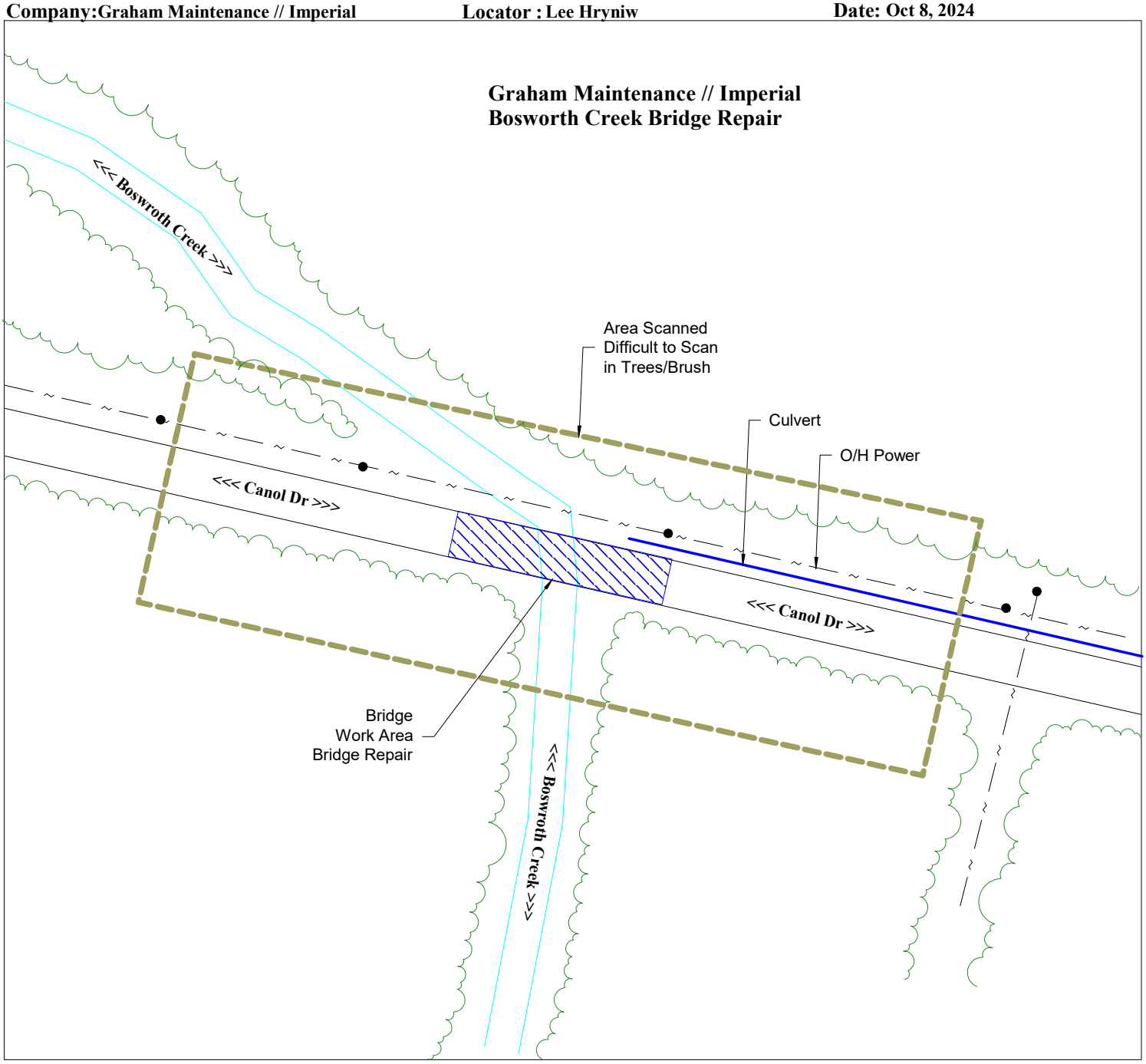
= Scanned R.O.W.

= Scanned Area

* Fuji PLU 960 Used *

ACCUTECH GROUND DISTURBANCE LTD. FIELD DIAGRAM

Company:Graham Maintenance // Imperial **Locator : Lee Hryniw** **Date: Oct 8, 2024**



Legend :

* Drawing not to scale *

Buried Gas Lines :
Buried Oil Lines :
Buried Water Lines :
Buried Gas Co-Op Lines :
Buried LPG Lines :
Buried Electrical Cables :
Buried Cathodic Cables :
Buried Telus Lines :
Buried Unknown Lines :
Fence Lines :
O/H Power Lines :

Caution :

Every effort has been made to ensure this drawing accurately reflects the location of ALL lines at time of locate.

Disclaimer :

* A best effort has been made to accurately locate any facilities shown or not shown on this diagram. AccuTech Ground Disturbance Ltd cannot be held responsible to any damage or loss due to inaccurate locate.

Form:	MATERIALS REQUISITION RECORD				
Disc:	ADMINISTRATION	Rev No.:	00	Doc. No.:	S00_42_63.01

Owner:	Imperial Oil	Project/WO No:	90071740	Date:	September 27, 2024
Req. No.:	001	Supplier:	DYWIDAG Canada Ltd.		
PO No.:	Credit Card	Attention:	BJ Reinhard		
Date Required:	Click to add a Date	Ship Via:	BBE Logistic		
Note:	1. All fittings registered with jurisdictional authority & valid CRN included for every line number on packing slip. 2. When purchasing material for ASME Code work the *Purchase Order Requirements by Product Form (01 32 43.01)* must be complete and attached to the material requisition				

Procurement and Receiving:

Procurement			Receiving			
Item No.	**Qty.**	**Description**	**MTR**	**B/O**	**Comment**	**Heat No.**
1.	14	25MM #8 GR75 Threadbar Cut @ 9 meter long	☐	☐	☐	N/A
2.	6	25MM #8 GR75 Threadbar Cut @ 6 meter long	☐	☐	☐	N/A
3.	12	#8 Cast Coupler GR75 FL	☐	☐	☐	N/A
4.	72	#8 Round Bevel Washers	☐	☐	☐	N/A
5.	36	#8 Cast Steel Hex Nuts	☐	☐	☐	N/A
6.	36	#8 SQ Bear Plate 6 x 6 x .875 C/W 31mm Center hole	☐	☐	☐	N/A
7.			☐	☐	☐	
8.			☐	☐	☐	
9.			☐	☐	☐	
10.			☐	☐	☐	
11.			☐	☐	☐	
12.			☐	☐	☐	
13.			☐	☐	☐	
14.			☐	☐	☐	
15.			☐	☐	☐	
16.			☐	☐	☐	
17.			☐	☐	☐	
18.			☐	☐	☐	
19.			☐	☐	☐	

Comments:

Accepted By:	Name	Signature	Date
Graham Representative:	Pascal Bousquet		September 27, 2024
Project Manager:	Pascal Bousquet		September 27, 2024
Client Representative	Travis Warren		September 27, 2024

GRAHAM

Form:	RECEIVING REPORT				
Disc.:	MATERIAL	Rev. No.:	00	Doc. No.:	01 45 01.02

Project No.:	4261.420000.	Project Name:	Upper Bosworth Creek Abutment		
Contract No.:	4502903134	Contractor:	Dawidag	RR No.:	001

Information

Transporter:	BBE Logistic	Date received:	10/25/2024

Activity			Initial	Date
MATERIAL				
1.	Material inspected for visible damage.	N/A ☐	PB	10/25/24
2.	Material verified to packing slip.	N/A ☐	PB	10/25/24
3.	Material verified to P.O. No.:	N/A ☒		
4.	Packing slip attached.	N/A ☐	PB	10/25/24
5.	MTRs attached.	N/A ☒		
6.	MTRs verified to materials.	N/A ☒		
7.	Markings / Coding applied to acceptable materials.	N/A ☒		

	QTY.	DESCRIPTION (WHEN NO PACKING SLIP ATTACHED.)
1.	14	25MM #8 GR75 THREADBAR CUT @ 9 METER LONG
2.	6	25MM #8 GR75 THREADBAR CUT @ 6 METER LONG
3.	12	#8 CAST COUPLER GR75 FL
4.	72	#8 ROUND BEVEL WASHERS
5.	36	#8 CAST STEEL HEX NUTS
6.	36	#8 SQ BEAR PLATE 6 X 6 X .875 C/W 31MM CENTER HOLE
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		

Comments:

Inspected by:	Name	Signature	Date
Contractor	GRAHAM / PASCAL BOUSQUET		10/25/2024
Engineer	N/A		
Owner	TRAVIS WARREN		10/28/2024

DYWIDAG
SAFER. STRONGER. SMARTER.

DYWIDAG Canada Ltd.
DYWIDAG Canada Ltd.
Western Division
19433 96th Avenue
Suite 103
Surrey, BC V4N 4C4
Phone No: 604-888-8818
Fax No.: 604-888-5008
E-Mail: sales.ca@dywidag.com
www.dywidag.com

Graham Industrial
Vendor # 122300
Robert Barrigan
8404 McIntyre Road
APinvoices@graham.ca
Edmonton, AB T6E 6V3
Canada

Phone No: 780.288.8411
Fax No.: 780-485-3888

Job No.	J064215 #8 Soil Nails OL Upper Bosworth Creek
Department	
Shipping Method	FOB DSI Surrey
Shipping Agent	
Location	CW DYWIDAG Canada Ltd.

Quote

No.	**CQ072414**
Customer No.	C000902
Salesperson	Taku Wan
Person Resp.	BJ Reinhard
Date	09/05/24
Page No.	1

Any offer is subject to the exclusive application of our General Terms and Conditions of Sale, which can be viewed at https://t1p.de/bt1l

Line	Quantity	Unit	Description	Item No.	Unit Price	Amount
20	14	pieces	25MM #8 GR75 THREADBAR® CUT 14 pcs. @ 9 meter long	B08K CUT	134.60	1,884.40
40	6	pieces	25MM #8 GR75 THREADBAR® CUT 6 pcs. @ 6 meter long	B08K CUT	90.85	545.10
45	12	pieces	#8 CAST COUPLER GR75 FL	B08K31110	9.50	114.00
50	72	pieces	#8 ROUND BEVEL WASHER	B08U93300	2.50	180.00
60	36	pieces	#8 CAST STEEL HEX NUT	B08W27751	7.60	273.60
70	36	pieces	#8 SQ BEAR PLATE 6 X 6 X .875 31mm ø center hole	B08K21210	27.75	999.00

Lead time: 2 weeks
All material supplied black (non coated)
Shipping wt: 1,900 lbs.
F.O.B. DYWIDAG Surrey, B.C

Amount	CAD	**3,996.10**
GST/HST (5%)		199.81
PST (0%)		0.00
Total Amount	CAD	**4,195.91**

GST #774214522 **TVQ #1223806917**

OCT 25 2024

DYWIDAG
SAFER. STRONGER. SMARTER.

Quote No. **CQ072414**
Date 09/05/24
Page No. 2

Ship To Address
Graham Industrial
Vendor # 122300
Robert Barrigan
8404 McIntyre Road
APinvoices@graham.ca
Edmonton, AB T6E 6V3
Canada

Delivery dates as indicated reflect availability at time of Quote preparation. Final delivery dates can only be confirmed upon receipt of order.

F.O.B. DYWIDAG plant exclusive of federal, state or local taxes

Please refer to this quote number at the time of ordering material.

EXCLUDED: All Items not listed above.

All sales are subject to DYWIDAG standard terms and conditions of sale and service which are attached hereto or printed on the reverse side, or are otherwise available for review at https://t1p.de/sohl. No other terms shall apply unless agreed to in writing by DYWIDAG USA, Inc. and Buyer prior to processing of Order.

ESCALATION / EXPIRATION: This Quotation may be terminated by Seller at any time prior to receipt of written acceptance from Buyer and automatically terminates in 30 days. The prices quoted are binding for orders received within 30 days from Quotation Date, and for deliveries within 45 days from Order Date. DYWIDAG reserves the right to adjust its material prices for deliveries beyond that binding period. All dates for shipment of certain quantities of material are subject to availability of raw material and merchandise from our suppliers.

EXCLUDED: All Items not listed above.

All sales are subject to DYWIDAG standard terms and conditions of sale and service which are attached hereto or printed

DYWIDAG

SAFER. STRONGER. SMARTER.

on the reverse side. No other terms shall apply unless agreed to in writing by DYWIDAG Canada, Ltd. and Buyer prior to processing of Order.

ESCALATION / EXPIRATION: This Quotation may be terminated by Seller at any time prior to receipt of written acceptance from Buyer and automatically terminates in 5 days. During this time of unprecedented steel price volatility, the prices quoted are binding for orders received within 5 days from Quotation Date, and for deliveries within 45 days from Order Date. DYWIDAG reserves the right to adjust its material prices for deliveries beyond that binding period. All dates for shipment of certain quantities of material are subject to availability of raw material and merchandise from our suppliers at time of purchase.

Payment Terms NET 30 DAYS

Form:	MATERIALS REQUISITION RECORD				
Disc:	ADMINISTRATION	Rev No.:	00	Doc. No.:	S00_42_63.01

Owner:	Imperial Oil	Project/WO No:	90071740	Date:	September 25, 2024
Req. No.:	002	Supplier:	Pipe & Piling Supplies Ltd.		
PO No.:	Credit Card	Attention:	Jeff Wagman		
Date Required:	Click to add a Date	Ship Via:	BBE Logistic		
Note:	1. All fittings registered with jurisdictional authority & valid CRN included for every line number on packing slip. 2. When purchasing material for ASME Code work the *Purchase Order Requirements by Product Form (01 32 43.01)* must be complete and attached to the material requisition				

Procurement and Receiving:

Procurement			Receiving			
Item No.	**Qty.**	**Description**	**MTR**	**B/O**	**Comment**	**Heat No.**
1.	180ft	HP12 x 53lb (310 x 79) Supplied as 9pcs x 20ft	☒	☐	☐	B037314
2.			☐	☐	☐	
3.			☐	☐	☐	
4.			☐	☐	☐	
5.			☐	☐	☐	
6.			☐	☐	☐	
7.			☐	☐	☐	
8.			☐	☐	☐	
9.			☐	☐	☐	
10.			☐	☐	☐	
11.			☐	☐	☐	
12.			☐	☐	☐	
13.			☐	☐	☐	
14.			☐	☐	☐	
15.			☐	☐	☐	
16.			☐	☐	☐	
17.			☐	☐	☐	
18.			☐	☐	☐	
19.			☐	☐	☐	

Comments:

Accepted By:	Name	Signature	Date
Graham Representative:	Pascal Bousquet		September 25, 2024
Project Manager:	Pascal Bousquet		September 25, 2024
Client Representative	Travis Warren		September 25, 2024

GRAHAM

Form:	RECEIVING REPORT				
Disc.:	MATERIAL	Rev. No.:	00	Doc. No.:	01 45 01.02

Project No.:	4261.420000.	Project Name:	Upper Bosworth Creek Abutment		
Contract No.:	4502903134	Contractor:	Pipe & Piling Supplies	RR No.:	002

Information

Transporter:	BBE Logistic	Date received:	6/10/2024

Activity			Initial	Date
MATERIAL				
1.	Material inspected for visible damage.	N/A ☐	PP	06/10/24
2.	Material verified to packing slip.	N/A ☐	PP	06/10/24
3.	Material verified to P.O. No.:	N/A ☒		
4.	Packing slip attached.	N/A ☐	PP	06/10/24
5.	MTRs attached.	N/A ☐	PP	06/10/24
6.	MTRs verified to materials.	N/A ☐	PP	06/10/24
7.	Markings / Coding applied to acceptable materials.	N/A ☒		

	QTY.	DESCRIPTION (WHEN NO PACKING SLIP ATTACHED.)
1.	180FT	HP12 X 53LB (310 X 79) SUPPLIED AS 9PCS X 20FT
2.		
3.		
4.		
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23.		
24.		

Comments:

Inspected by:	Name	Signature	Date
Contractor	GRAHAM / PASCAL BOUSQUET		10/06/24
Engineer	N/A		
Owner	TRAVIS WARREN		10/06/24

PIPE & PILING SUPPLIES WESTERN LTD.

– SINCE 1958 –

Pipe & Piling Supplies Western Ltd.	Sales Quote

5515 - 40th Street S.E.	**Quote Date**	Sept 25/24
Calgary, AB T2C 2A8	**Quote #**	6521
Phone: (403) 236-1332	**Price valid for:**	7 days
Prepared by: Jeff Wagman	**Price FOB**	Calgary, AB
Email: jwagman@pipe-piling.com	**Terms:**	N30

Quote to:	Ship to:
Pascal Bousquet Pascal.bousquet@integrated-constructors.com 61317 PO Box 143 | Norman Wells | NT | X0E 0V0 780.956.4447	Priced FOB our yard Calgary, AB

Description	Quantity	Unit	Price	Amount
HP 12 x 53lb (310 x 79) - Supplied as 9 pcs x 20ft (price includes cutting)	180.00	FT	$41.77	$7,518.60
Pricing is FOB our yard, Calgary, AB				
Allow 5 - 7 days notice for cutting				
Payment terms are N30 days				
Pricing is valid for 7 days				
			Subtotal	$7,518.60
			PST	
			GST	$375.93
				$7,894.53

Additional Comments:

Pipe and Piling Supplies (Western) Ltd.
5515, 40th Street S.E. , Calgary, AB, T2C 2A8
403-236-1332

COMBINATION SHORT FORM OF STRAIGHT BILL OF LADING - EXPRESS SHIPPING CONTRACT ADOPTED BY RAIL FREIGHT AND EXPRESS CARRIERS SUBJECT TO THE JURISDICTION OF THE CANADIAN TRANSPORT COMMISSION ISSUED AT SHIPPER S REQUEST

RECEIVED subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading or, RECEIVED subject to the Rules of the Carriage of Express and Non-Carload Freight traffic and tariffs in effect on the date of issue of the original Shipping Contract (bill of landing) goods described below, in op-parent good order, except as noted (contents and conditions of contents of packages unknown) marked consigned and destinted as indicated below which said Company agrees to carry to its usual place of delivery of said destination if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said goods over all or any portion of said route to destination and as to each party at any time interested in all or any of said goods, that every service to be performed hereunder shall be subject to all the terms and conditions (which are hereby incorporated by reference and have the same force and effect as if the same were severally fully and specifically set forth herein). 1 approved by the Canadian Transport Commission for Canada by General Order No T 5 dated February 1, 1965 set forth in the Canadian Freight Classification and also available at all Railway agency stations and freight offices upon request when said goods are carried by a rail carrier or 2 of the bill of landing of the water carrier as provided in its tariffs of Rules and Regulations when said goods are carried by water carrier or 3 of the bill of landing set forth in or prescribed by the relevant tariffs, classification, statutes and regulations pertaining to motor carrier s services when said goods are carried by a motor carrier, or 4 of the bill of landing form R.T. 200, approved by the Quebec Transportation Board on August 5, 1960 when the said goods originating in Quebec are to be carried by a motor carrier; 5 or approved by the Canadian Transport Commission for Canada by General Order No 1 43 set forth in the Rules for the Carriage of Express and Non-Carload Freight Traffic and also available at all express and railway agency stations and express and freight officers upon request when said goods are carried by a rail carrier and which are agreed to by the shipper and accepted for himself and his assigns.

NAME OF CARRIER :	POINT OF ORIGIN: SHIP DATE:	SHIPPER S NO.
Customer Pickup	AB Sept 30, 2024	1072336
CONSIGNEE:	**FROM:**	CUSTOMER PO #
Graham Maintenance Services LP	**Pipe and Piling Supplies Ltd.**	**Cash Sale**
10840 - 27 Street SE	**5515, 40th Street S.E.**	P&P ORDER #
Calgary, AB , T2Z 3R6	**Calgary, AB, T2C 2A8**	**CAL40924**
Canada	**Canada**	LOAD # 00001

ROUTE	JOB NAME	CARRIER BOL	SHIPPING TERM	REF #
	Pascal		Collect / Customer Pick-Up	

SPECIAL INSTRUCTIONS-

Drivers are responsible for ensuring their vehicles are properly loaded and their loads are safely secured in accordance with all transport regulations.

QUANTITY				MATERIAL DESCRIPTION	ITEM #
PCS	LENGTH		WEIGHT (lbs)		
3	180.00	FT	9,540	12.000 x 53.00# Bearing Pile Beam - 60 Ft - A572 - cut to 9 x 20ft	1
1	-	-	-	Credit Card Transaction Merchant Fee of 3%	3
3	180.00		9,540		

AGENT PER

1 ORIGINAL - NOT NEGOTIABLE (THIS BILL OF LANDING - EXPRESS SHIPPING CONTRACT IS TO BE SIGNED BY SHIPPER AND CARRIER)

OCT 0 5 2024

bbe

BBE BILL OF LADING #	CARRIER NAME
N0056201	Day & Ross

DATE (MM DD YYYY) :	10	1	24
CARRIER VEHICLE TYPE			
CARRIER VEHICLE REG#			

SHIPPER NAME	Pile & Piling Supplies Ltd.
STREET ADDRESS	5515 – 40th Street S.E.
CITY/PROVINCE/POSTAL	Calgary, AB, T2C2A8
CONTACT NAME:	403-236-1332
CONTACT PHONE:	Jeff Wagman
SHIPPER REFERENCE	4502903134
BILL SHIPPING TO SHIPPER	

N0056201 ?

?

DELIVER TO	Buffalo Air Express
STREET ADDRESS	15204 131 Ave NW
CITY/PROVINCE/POSTAL	Edmonton, AB, T5V0A1
CONTACT NAME:	Recieving
CONTACT PHONE:	780-455-9283
FURTHERANCE TO SITE LOCATION	For Furtherance to Imperial Oil Norman Wells
BILL SHIPPING TO DELIVER TO	

THIRD PARTY FREIGHT BILLING INSTRUCTIONS

CARRIER QUOTE#

COMPANY TO BILL	BBE Supply Chain CO.
ACCOUNT NUMBER TO BILL	

				Volume				Weight			
QTY.	UOM	D.G.	DESCRIPTION	UOM | L |W |H	cbf	cbm	RT	LB	KG	RT	Item ID#
9	PCS		Beam	240x12x12in Each				1060 Each			
9					0	0.000	0.000	9540Total	0	0.000	
QTY					cbf	cbm	RT	LB	KG	RT	

DG PLACARDS REQUIRED:	N/A	DG NOTES:	CANUTEC 1-613-996-6666
TYPE:			Shippers 24 hour emergency phone number

DECLARED VALUATION

$0.00

In the event of any loss or damage whatsoever, unless a declared valuation is noted, the carrier shall be liable for the lesser of: (i) $2.00 per pound of the weight of the shipment or, (ii) the actual value of the goods.

NOTES:

For Furtherance to Imperial Oil Norman Wells

BBE CONTACT PERSON NAME: Zac Stiles	BBE CONTACT PERSON PHONE: 780-890-6893

SHIPPER:		CARRIER:		CONSIGNEE:	
Company	Pile & Piling Supplies Ltd.	Company	Day & Ross	Company	Buffalo Air
Name Printed		Name Printed		Name Printed	
Signature		Signature		Signature	
Date Picked Up		Date Shipped		Date delivered	

OCT 05 2024

CERTIFIED MILL TEST REPORT

Date: 10 / 26 / 2007

Steel Dynamics, Inc.®
Structural and Rail Division • Columbia City, Indiana

Ship to:
Pipe & Piling (Frt-Collect)
c/o Bates Equip. (Station 8200
5515 40th St. S.E.
Calgary AB, T2C2A8 CANADA

Customer # 000162

Bill to:
PIPE & PILING SUPPLIES LTD
5025 Ramsay
Calgary AB, T2C2A8 CANADA
Attn: Inder Bhatia

Quaility Steel 100% Melted and Manufactured in the USA

GENERAL INFORMATION

Product H-Piling
Size HP 12 x 53
HP 310 x 79
Heat Number B037314
Condition(s) As-Rolled
Fully Killed

SPECIFICATIONS

Standards	Grades
» ASTM A572/A572M - 06	A572 gr50/gr345
CSA G40.21-04	50W/350W
AASHTO M270M/M270 - 05	M270M/M270 g345
ASTM A709/A709M - 06a	A709 gr50/gr345

SHIPMENT DETAILS

BOL # 0000127734

Bundle / ASN #	Length	pcs	Customer PO
020976068	50' 0"	4	7983
020976070	50' 0"	4	7983
020976077	50' 0"	4	7983
020976078	50' 0"	4	7983
020976080	50' 0"	4	7983
020976087	60' 0"	4	7983
020976092	60' 0"	4	7983

CHEMICAL ANALYSIS (weight percent)

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	V	Nb/Cb	N	B	*C1	*C2	*PC	*I	Analysis Type
.06	1.04	.016	.031	.22	.28	.10	.07	.018	.012	.033	.002	.0096	.0004	.28	.32	.14	5.47	Heat

MECHANICAL TESTING

Test	Yield (fy) Strength ksi / MPa	Tensile (fu) Strength ksi / MPa	fy / fu ratio	% Elong. {8" gage}
1	58 / 399	72 / 497	.80	27
2	59 / 410	73 / 502	.82	28
3				
4				
5				
6				
7				

Charpy Impact Tests (available only when specified at time of order)

Temp F / C	Absorbed Energy ft-lbf / J Specimen 1	Specimen 2	Specimen 3	Average	Minimum

Notes: *Calculated Chemistry Values: Carbon Equivalents (C1, C2, PC), Corrosion Index (I)

CE1 {IIW}=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 **CE2** {AWS}=C+(Mn+Si)/6+(Cr+Mo+V)/5+(Ni+Cu)/15 **Pcm** {AWS} = C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+mo/15+V/10+5B

I {ASTM G101}= 26.01(Cu)+3.88(Ni)+1.20(Cr)+1.49(Si)+17.29(P)-7.29(Cu)(Ni)-9.10(Ni)(P)-33.39(Cu^2)

I hereby certify that the content of this report are accurate and correct. All tests and operations performed by this material manufacturer are in compliance with the requirements of the material specifications and applicable purchaser designated requirements.

Signed: *Doug Rees-Evans*
Manager of Technical Services

FormF-6100-002-054

State of Indiana, County of Whitley Sworn to and subscribed before me this _____ day of _____

Signed: _____ My commission expires: _____
Notary Public

ASTM A6 - 14.6: A signature is not required on the test report; however, the document shall clearly identify the organization submitting the report. Notwithstanding the absence of a signature, the organization submitting the report is responsible for the content of the report

OCT 05 2024

契約番號
Contract No
注文者
Customer PLATINUM GROVER
信用狀番號
L/C No.
購買番號
P/O No 4C2009046007
品名
Commodity WIDE FLANGE BEAM AND BEARING PILE
規格
Specification ASTM A36/A572 G50/A992/350W

檢査證明書
INSPECTION CERTIFICATE

현대제철주식회사
HYUNDAI STEEL COMPANY
본 사:인천광역시 동구 송현동 1번지
Head Office : Song Hyun-Dong, Dong Ku, Incheon, Korea

證明書 番號
Certificate No. IH20090504549 - 1
船級證明書 番號
Class Cert. No.
發行日字
Date of Issue 2009-05-31

寸數 Dimensions & Length	製鋼番號 Heat No.	數量 (PCS) 重量 (KGS)	化學成分(%) Chemical Composition C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu / Ni ×100	Mo / Cr ×100	Al / V ×1000	Nb ×1000			引張試驗 Tensile Test 引張强度 T.S N/mm2	降伏點 Y.P N/mm2	延伸率 El (2) %	屈曲試驗 Bend Test (°)	衝擊試驗 Impact Test AVG °C	1	2	3 V-Notch	備考 Remarks (3)
12X12X53 40.00 FT	E 136430	59 / 56,699	16	22	63	16	9	30 / 8	2 / 9	2	20			537.4 / 533.5	438.4 / 435.4	25.0 / 25.5						
12X12X53 40.00 FT	E 136431	64 / 61,504	16	24	61	25	14	30 / 8	2 / 11	1	18			546.2 / 541.3	430.5 / 426.6	25.0 / 25.5						
12X12X53 40.00 FT	E 136433	9 / 8,649	17	24	62	27	14	33 / 9	3 / 10	5	22			543.3 / 539.4	436.4 / 431.5	24.0 / 24.5						
12X12X53 40.00 FT	E 136434	81 / 77,841	17	21	62	35	15	32 / 9	3 / 17	6	23			548.2 / 544.3	425.6 / 421.7	25.5 / 26.0						
12X12X53 60.00 FT	E 136430	21 / 30,262	16	22	63	16	9	30 / 8	2 / 9	2	20			537.4 / 533.5	438.4 / 435.4	25.0 / 25.5						
12X12X53 60.00 FT	E 136431	29 / 41,613	16	24	61	25	14	30 / 8	2 / 11	[illegible]	18			546.2 / [illegible]	430.5 / 426.6	25.0 / 25.5						
12X12X53 60.00 FT	E 136433	15 / 21,630	17	24	62	27	14	33 / 9	3 / 10	[illegible]	22			543.3 / [illegible]	436.4 / [illegible]	24.0 / 24.5						
12X12X53 60.00 FT	E 136434	47 / 67,774	17	21	62	35	15	32 / 9	3 / 17	[illegible]	23			[illegible]	425.6 / [illegible]	25.5 / 26.0						
12X12X74 40.00 FT	E 136455	24 / 32,205	16	20	61	16	8	31 / 10	3 / 11	5	16			513.9 / 517.8	387.4 / 390.3	26.5 / 26.0						
SUB TOTAL		349 / 398,405																				

(註) (1) Ceq:
Note : (2) Gauge length : 200mm (3) Impact Specimen Size

상기의 제품은 검사의 결과 지정된 규격에 합격한 것을 증명합니다

WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR THE ABOVE ORDER

K. S. Shim

品質保證 Team 長
MGR of Q.A Team

監督官
Witnessed by

양식 HMS I 112(4)-3a

2008014 A4(210×297)

Form:	MATERIALS REQUISITION RECORD				
Disc:	ADMINISTRATION	Rev No.:	00	Doc. No.:	S00_42_63.01

Owner:	Imperial Oil	Project/WO No:	90071740	Date:	October 1, 2024
Req. No.:	003	Supplier:	Sureway Metal		
PO No.:	MNTCA24156	Attention:	Dylan Martin		
Date Required:	October 22, 2024	Ship Via:	BBE Logistic		
Note:	1. All fittings registered with jurisdictional authority & valid CRN included for every line number on packing slip. 2. When purchasing material for ASME Code work the *Purchase Order Requirements by Product Form (01 32 43.01)* must be complete and attached to the material requisition				

Procurement and Receiving:

Procurement			Receiving			
Item No.	**Qty.**	**Description**	**MTR**	**B/O**	**Comment**	**Heat No.**
1.	9	½ 44W Plate 4' x 10'	☒	☐	☐	548498 550552
2.	8	W6 x 12 lbs/ft Beam 20' long	☒	☐	☐	4H0467
3.	2	½ 44W Plate 11" Wide x 20' Long	☒	☐	☐	428982
4.			☐	☐	☐	
5.			☐	☐	☐	
6.			☐	☐	☐	
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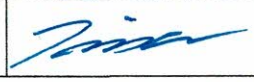
17.			☐	☐	☐	
18.			☐	☐	☐	
19.			☐	☐	☐	

Comments:

Accepted By:	Name	Signature	Date
Graham Representative:	Pascal Bousquet		October 1, 2024
Project Manager:	Pascal Bousquet		October 1, 2024
Client Representative	Travis Warren		October 1, 2024

GRAHAM

Form: Disc.:	RECEIVING REPORT				
	MATERIAL	Rev. No.:	00	Doc. No.:	01 45 01.02

Project No.:	4261.420000.	Project Name:	Upper Bosworth Creek Abutment		
Contract No.:	4502903134	Contractor:	Sureway Metal	RR No.:	003

Information

Transporter:	BBE Logistic	Date received:	10/25/24

Activity			Initial	Date
MATERIAL				
1.	Material inspected for visible damage.	N/A ☐	PB	10/25/24
2.	Material verified to packing slip.	N/A ☐	PB	10/25/24
3.	Material verified to P.O. No.:	N/A ☒		
4.	Packing slip attached.	N/A ☐	PB	10/25/24
5.	MTRs attached.	N/A ☒		
6.	MTRs verified to materials.	N/A ☒		
7.	Markings / Coding applied to acceptable materials.	N/A ☒		

	QTY.	DESCRIPTION (WHEN NO PACKING SLIP ATTACHED.)
1.	9	½ 44W PLATE 4' X 10'
2.	8	W6 X 12 LBS/FT BEAM 20' LONG
3.	2	½ 44W Plate 11" Wide x 20' Long
4.		
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22.		
23.		
24.		

Comments:

Inspected by:	Name	Signature	Date
Contractor	GRAHAM / PASCAL BOUSQUET		10/25/24
Engineer	N/A		
Owner	TRAVIS WARREN		10/28/24

Sureway Group of Companies

QUOTATION

285120 Duff Drive SE
Rocky View, Alberta T1X 0K1

www.surewaymetal.com
Phone: 403-287-2742
Fax: 403-243-6457
Prepared by: Dylan Martin

QUOTE #:	100261
DATE:	2024-10-01
TERMS:	NET 30
FOB:	Sureway
VALID UNTIL:	2024-10-08

CUSTOMER

Pascal Bousquet
Graham Maintenance Services LP
61317 PO Box 143
Norman Wells, NT
(780) 956-4447
Pascal.Bousquet@integrated-constructors.com

Supply
Processing
Fabrication
Galvanizing

DESCRIPTION	QTY	UNIT PRICE	AMOUNT
1/2" 44W Plate 4' x 10'	9	650.00	5,850.00
W6X12 lbs/ft Beam 20' long	8	250.00	2,000.00
1/2" 44W Plate 11" wide x 20' long	2	580.00	1,160.00
			-
			-
Lead time 1 week to 1-1/2 weeks			-
			-
			-
			-
			-
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			-
			-
			-
			-

Subtotal	$	9,010.00
Tax rate		5.000%
Tax due	$	450.50
Other	$	-
TOTAL	**$**	**9,460.50**

TERMS AND CONDITIONS

1.Prices and charges are subject to change, please confirm at time of placing order.
2. Prices are subject to change if the quantity is changed on the final order.
3. All sales, use, excise or other applicable taxes shall be paid by the Purchaser, even if not included on quote.
4. Delivery dates are Vendors best estimate only and subject to delays beyond Vendor's reasonable control.
5. Our normal terms of sales are net 30 days, subject to credit approval. Interest at the rate of 1 ½% per month will be charged on all overdue accounts.

If you have any questions about this price quote, please contact:
Dylan Martin - 403-287-2742 - d.martin@surewaymetal.com

Thank You For Your Business!

Purchase Order: MNTCA24156

Date Printed: 10/01/24

Trans Currency: CAD

Order To: SUREWAY METAL SYSTEMS LTD 100400
285120 DUFF DRIVE S E
ROCKY VIEW COUNTY, AB T1X 0K1
Canada

Ship To: GRAHAM MAINTENANCE SERVICES LP
61317 BOX 143
Integrated Constructors (Graham Partner)
Norman Wells, NT X0E 0V0
Canada

Order Date	Buyer	Terms	FOB	Sales Order	Ship Via	Deliver To
10/01/202	Moscaluk, Natalia N	NET 30			Vendor Truck	NormanWellsPascalBousquet

Line	Item/Description	Rev	Due Date	Desired Date	U/M	Order Quantity	Net Unit Cost	Extended Cost
	C O N F I R M A T I O N Quote No: 100261 THIS ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKING LISTS, CARTONS AND CORRESPONDENCE ENSURE WAYBILL HAS BOTH MATERIAL ORDER PO NUMBER AND FREIGHT PO NUMBER REFERENCED ON THE WAYBILL, IF FREIGHT PO NUMBER IS PROVIDED GRAHAM EXPRESSLY REJECTS ALL TERMS AND CONDITIONS SET OUT IN OR ATTACHED TO ANY QUOTES PRESENTED BY YOU. ALL WORK PERFORMED UNDER THIS PURCHASE ORDER SHALL BE ON THE BASIS OF THE ATTACHED TERMS AND CONDITIONS OR ON THOSE TERMS AND CONDITIONS SET OUT IN AN EXISTING MASTER SERVICES AGREEMENT BETWEEN THE PARTIES REFERENCED ON THIS DOCUMENT. THE COMMENCEMENT OF WORK BY YOU UNDER THIS PURCHASE ORDER SHALL BE DEEMED CONCLUSIVELY TO CONSTITUTE ACCEPTANCE OF ALL TERMS AND CONDITIONS ATTACHED HERETO							
1	G_FABSTEEL_STRUCTURAL STEEL FABRICATED 1/2" 44W Plate 4' x 10' **Req:** CANRQ18664 Prime Contract #: A2585966 AOP:500-34-102 C.15.12569 4261.M.100.B.1000000.00.420000		10/08/24	10/08/24	EA	9	650.00 **Tax:**	$5,850.00 $292.50 $6,142.50
2	G_FABSTEEL_STRUCTURAL STEEL FABRICATED W6X12 lbs/ft Beam 20' long **Req:** CANRQ18664 Prime Contract #: A2585966 AOP:500-34-102 C.15.12569 4261.M.100.B.1000000.00.420000		10/08/24	10/08/24	EA	8	250.00 **Tax:**	$2,000.00 $100.00 $2,100.00
3	G_FABSTEEL_STRUCTURAL STEEL FABRICATED 1/2" 44W Plate 11" wide x 20' long **Req:** CANRQ18664 Prime Contract #: A2585966 AOP:500-34-102 C.15.12569 4261.M.100.B.1000000.00.420000		10/08/24	10/08/24	EA	2	580.00 **Tax:**	$1,160.00 $58.00 $1,218.00
	Bill To: GRAHAM MAINTENANCE SERVICES LP Norman Wells, Email Invoices To: MNT-RainbowAP@grahambuilds.com 8404 McIntyre Rd NW Edmonton, AB T6E 6V3 Canada						**PO Total Tax:** **PO Total Amount:**	$450.50 $9,460.50

Purchase Order: MNTCA24156

Date Printed: 10/01/24

Trans Currency: CAD

Order To: SUREWAY METAL SYSTEMS LTD 100400
285120 DUFF DRIVE S E
ROCKY VIEW COUNTY, AB T1X 0K1
Canada

Ship To: GRAHAM MAINTENANCE SERVICES LP
61317 BOX 143
Integrated Constructors (Graham Partner)
Norman Wells, NT X0E 0V0
Canada

Order Date	Buyer	Terms	FOB	Sales Order	Ship Via	Deliver To
10/01/202	Moscaluk, Natalia N	NET 30			Vendor Truck	NormanWellsPascalBousquet

Line	Item/Description	Rev	Due Date	Desired Date	U/M	Order Quantity	Net Unit Cost	Extended Cost

Sureway Group of Companies

SUREWAY METAL SYSTEMS LIMITED

285120 Duff Drive S.E
Rockyview District, Alberta T1X 0K1
Phone: (403)287-2742 Fax: (403)243-6457

SHIPPING TICKET

YOUR ONE STOP STEEL SERVICE CENTRE

CUSTOM SHEARING AND FORMING, PLASMA ARC BURNING, MULTI-PUNCHING, SAW CUTTING PLAIN MATERIAL SALES

SHIP TO: GRAHAM MAINTENANCE SERVICES LP
10840 27TH ST SE

CALGARY, ALBERTA

T2Z 3R6

Sales Order
204781

Ship Date
10/10/24

Customer: AECPRO
Customer PO: MNTCA24156

Salesperson: DYLAN MARTIN
Date Ordered 10/01/24

Ship Via PICK UP
GST #: 105092902

Ship	Qty B/O	Conf	Unit	Description	Wt.	Price per	Unit	Amount
0.0		1.0	EA	SUPPLY CUT	0	9010.000	EA	0.00

JOB # 00116915

9 PCS - 1/2" 44W PLATE 4' X 10'

8 PCS - W6 X 12 LBS/FT 20' LONG

2 PCS - 1/2" 44W 11" X 240"

SIGNATURE

PRINT NAME: PASCAL BOUSQUET

DATE: 10/25/24

OCT 25 2024

Total Wt: 0

TOTAL ITEMS	0.00
TOTAL FREIGHT	0.00
TOTAL GST	0.00
GRAND TOTAL	0.00

OFFICE COPY

Customer Name: VARSTEEL LTD. - CALGARY (INTERCOMPANY)
Customer PO#: CY-1104910
Shipper No: 25808
Heat Number: 548498

EVRAZ | EVRAZ INC. NA

Test Certificate

100 Armour Road, RM of Sherwood, SK, Canada S4K 0A8

Form TC1: Revision 2: Date 13 Feb 2017

Customer P.O. No.: CTL-1084	Mill Order No.: 41-260786-04	Shipping Manifest : RT154311	
Product Description: CSA G40.21(2018)44/300/38W;ASTM A36(19) A709(18)36/ASME SA36(01ED) CSA G40.21(2018)260W	Ship Date: 20 Dec 23 Cert Date: 20 Dec 23	Cert No: 071137624 (Page 1 of 1)	
Size (Min): 0.490 X 48.00 X COIL (IN)			

Tested Pieces				Tensiles							Charpy Impact Tests													
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in	Elong % 8in	Tst Dir	Average Hardness	Abs. Energy(FTLB) 1	2	3	Avg	% Shear 1	2	3	Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp	%Shr	

Chemical Analysis

Heat Id	C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	Melted in
548498	.05	.61	.007	.004	.14	.038	.29	.15	.12	.04	.010	.001	.002	.0003	.0100	CAN
548499	.05	.64	.007	.007	.15	.039	.29	.16	.13	.05	.011	.001	.002	.0003	.0096	CAN

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED
DURING THE MANUFACTURE OF THIS PRODUCT
HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY.
COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY.
BALANCE OF CHEMISTRY IS IRON (FE)
MELTED AND POURED IN CANADA

548499	A0066	PCES:	1, WGT:	49450	548499	A0063	PCES:	1, WGT:	49540
548499	A0064	PCES:	1, WGT:	49540	548499	A0065	PCES:	1, WGT:	49440
548498	A0061	PCES:	1, WGT:	49500					

OCT 2 - 2024

(1) Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

Customer Name: SUREWAY METAL SYSTEMS LIMITED
Customer PO#: 62873
S.: 2218814
Heat Number: 548498

OCT 25 2024

Customer Name	Customer PO#	S.	Heat Number
SUREWAY METAL SYSTEMS LIMITED	62873	2218814	548498

900 Inland Drive
RM of Sherwood, SK S4K 0A5
Phone: 403-320-1953 Fax: 403-329-0805
Website: www.varsteel.ca

Certificate of Analysis and Testing

Customer:

PO Number:CY-1104910
Order Number: 25808

Weight	Description		Heat Number
5,717.60	1/2" LASER QUALITY STRETCH LEVELED PLATE	ASTM A36/CSA 44W Stretch Leveled	548498

Tag#	Pcs	Width	Length	Heat	Weight
331570	7	48"	120"	548498	5717.60

Analysis

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V
0.0500	0.6100	0.0070	0.0040	0.1400	0.2900	0.1500	0.1200	0.0400		0.0380	0.0010

Cb	N	B	Zr	Ti	Ca
0.0100	0.0100	0.0003		0.0020	

Mechanical Properties

Tensile PSI	Yield PSI	Elongation % 2 Inches	Reduction of Area	Rockwell B Scale	Grain Size
75,854.00	58,595.00	37.00000	0.00000	0.00000	0.00000

Testing Procedures

Coils Tested - A0060, A0062, A0059, A0057, A0061, Made in Canada. Material meetsA36/SA36/44W/38W G40.21 as per the attached mill coil certificate. May meet API.

We hereby certify that the forgoing data is a true copy of the data furnished to us by our supplier or resulting from tests performed in a recognized laboratory.

OCT 2 - 2024

OCT 2 5 2024

Customer Name	Customer PO#	Shipper No	Heat Number
SUREWAY METAL SYSTEMS LIMITED	62873	2218814	550552

Customer Name	Customer PO#	Shipper No	Heat Number
	CY-1108528	26770	550552

EVRAZ | EVRAZ INC. NA

Test Certificate

100 Armour Road, RM of Sherwood, SK, Canada S4K 0A8

Form TC1: Revision 2: Date 13 Feb 2017

Customer P.O. No.: CTL-1140 | Mill Order No.: 41-261381-03 | Shipping Manifest : RT161819

Product Description: CSA G40.21(2018)44/300/38W;ASTM A36(19)
A709(18)36/ASME SA36(01ED)
CSA G40.21(2018)260W

Ship Date: 22 Jul 24
Cert Date: 22 Jul 24

Cert No: 071146317
(Page 1 of 1)

Size (Min): 0.490 X 48.00 X COIL (IN)

Tested Pieces				Tensiles						Charpy Impact Tests									
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in	Elong % 8in	Tst Dir	Average Hardness	Abs. Energy(FTLB) 1	2	3	Avg	% Shear 1	2	3	Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp	BDWTT %Shr
550552																							

Heat Id	Chemical Analysis C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	Melted In
550552	.06	.64	.020	.002	.16	.027	.37	.19	.20	.06	.011	.002	.004	.0003	.0088	CAN
550552	.06	.65	.020	.008	.15	.031	.37	.19	.21	.06	.010	.001	.002	.0003	.0085	CAN

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED
DURING THE MANUFACTURE OF THIS PRODUCT
HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY.
COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY.
BALANCE OF CHEMISTRY IS IRON (FE)
MELTED AND POURED IN CANADA
550552 A0041 PCES: 1, WGT: 49360

OCT 2 - 2024

(D) Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

OCT 25 2024

Customer Name	Customer PO#	Shipper No	Heat Number
SUREWAY METAL SYSTEMS LIMITED	62873	2218814	550552

900 Inland Drive
RM of Sherwood, SK S4K 0A5
Phone: 403-320-1953 Fax: 403-329-0805
Website: www.varsteel.ca

Certificate of Analysis and Testing

Customer:

PO Number:CY-1108528
Order Number: 26770

Weight	Description	Heat Number
5,717.60	1/2" LASER QUALITY STRETCH LEVELED PLATE ASTM A36/CSA 44W Stretch Leveled	550552

Tag#	Pcs	Width	Length	Heat	Weight
343410	7	48"	120"	550552	5717.60

Analysis

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V
0.0500	0.6500	0.0190	0.0080	0.1400	0.3700	0.1800	0.2100	0.0600		0.0330	0.0010

Cb	N	B	Zr	Ti	Ca
0.0100	0.0085	0.0003		0.0010	

Mechanical Properties

Tensile PSI	Yield PSI	Elongation % 2 Inches	Reduction of Area	Rockwell B Scale	Grain Size
78,320.00	69,182.00	34.00000	0.00000	0.00000	0.00000

Testing Procedures

Coils Tested: A0041, Made in Canada. Material meets A36/SA36/44W/38W G40.21 as per the attached mill coil certificate. May meet API.

We hereby certify that the forgoing data is a true copy of the data furnished to us by our supplier or resulting from tests performed in a recognized laboratory.

OCT 2 - 2024

OCT 2 5 2024

Heat Number
428982

Customer Name
SUREWAY METAL SYSTEMS LIMITED

Test Certificate

EVRAZ EVRAZ INC. NA
100 Armour Road, RM of Sherwood, SK, Canada S4K 0A8

Form TC1: Revision 2: Date 13 Feb 2017

Customer P.O. No.: CTL-1077 | Mill Order No.: 41-260694-23 | Shipping Manifest : RT153518

Product Description: CSA G40.21(2018)44/300/38W;ASTM A36(19)
A709(18)36/ASME SA36(01ED)
CSA G40.21(2018)260W

Ship Date: 30 Nov 23
Cert Date: 30 Nov 23

Cert No: 071136752
(Page 1 of 1)

Size (Min): 0.490 X 72.00 X COIL (IN)

Tested Pieces				Tensiles						Charpy Impact Tests									
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in	Elong % 8in	Tst Dir	Average Hardness	Abs. Energy(FTLB) 1	2	3	Avg	% Shear 1	2	3	Avg	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp	BDWTT %Shr

Heat Id	Chemical Analysis C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	Melted in
428982	.04	.55	.009	.002	.13	.041	.45	.17	.14	.04	.021	.001	.001	.0002	.0066	CAN
548230	.05	.63	.012	.002	.14	.029	.34	.13	.13	.03	.011	.001	.001	.0002	.0099	CAN

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED
DURING THE MANUFACTURE OF THIS PRODUCT
HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY.
COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY.
BALANCE OF CHEMISTRY IS IRON (FE)
MELTED AND POURED IN CANADA

428982	B0018	PCES:	1,	WGT:	73880	428982	B0019	PCES: 1, WGT: 73980
428982	B0020	PCES:	1,	WGT:	73780	548230	B0049	PCES: 1, WGT: 61860

(D) Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

OCT 25 2024

Customer Name

SUREWAY METAL SYSTEMS LIMITED

Heat Number

428982

Certificate of Analysis and Testing

Weight	Description	Heat Number
26,464.32	1/2" LASER QUALITY STRETCH LEVELED PLATE ASTM A36/CSA 44W Stretch Leveled	428982

Tag#	Pcs	Width	Length	Heat	Weight
326244	3	72"	288"	428982	8821.44
326245	3	72"	288"	428982	8821.44
326246	3	72"	288"	428982	8821.44

Analysis

C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V
0.0400	0.5500	0.0090	0.0020	0.1300	0.4500	0.1700	0.1400	0.0400		0.0410	0.0010

Cb	N	B	Zr	Ti	Ca
0.0210	0.0066	0.0002		0.0010	

Mechanical Properties

Tensile PSI	Yield PSI	Elongation % 2 Inches	Reduction of Area	Rockwell B Scale	Grain Size
76,869.00	62,656.00	38.00000	0.00000	0.00000	0.00000

Testing Procedures

Coils Tested - B0017, B0018 Made in Canada.
Material meets A36/SA36/44W/38W G40.21 as per the attached mill coil certificate. May meet API.

We hereby certify that the forgoing data is a true copy of the data furnished to us by our supplier or resulting from tests performed in a recognized laboratory.

OCT 25 2024

Contract No.	Z231202851
Customer	
PO No.	F231200265
L/C No.	DE-1099033
Commodity	H-BEAM
Specification	ASTM A572 G50/A992/CSA G40.21-13 50WM(345WM)

INSPECTION CERTIFICATE

EN 10204(2004) TYPE 3.1

HYUNDAI STEEL

WWW.HYUNDAI-STEEL.COM PAGE: [1 / 1]

Factory	6363,Donghaean-ro,Nam-gu,Pohang-si,Gyeongsangbuk-do,S.Korea
Certificate No.	IH20240100052-1
Class certificate No.	
Issue date	2024-02-16

Heat Number 4H0468
Shipper No 2218815
Customer PO# 62873
Customer Name SUREWAY METAL SYSTEMS LIMITED

Dimensions	Length	Heat No.	Quantity (PCS)	Weight (kg)	Chemical Composition														Tensile Test			Yield Ratio	BEND TEST	Impact Test(J)				Remarks (Impact Specimen Size)	Country of Melt and Pour
					C	Si	Mn	P	S	Cu	Ni	Mo	Cr	Al	V	Nb	N	CEm	Tensile Strength	Yield Strength	Elongation (5")			V-Notch			℃		
					×100			×1000		×100					×1000		×1000	×100	N/mm2		%	-	-	AVG	1	2	3		
6X4X9	40.00 FT	4H0464	36	5,868	15	20	66	16	13	18	8	2	14	4	27	1	120	31	545 519	445 386	23.3 25.3	0.810 0.740							KOR
6X4X9	40.00 FT	4H0465	36	5,868	16	17	67	17	15	18	7	2	15	3	27	1	118	33	537 522	434 384	23.2 22.5	0.800 0.730							KOR
6X4X12	40.00 FT	4H0467	36	7,848	15	17	66	20	16	21	9	2	15	4	26	1	116	32	527 542	406 441	22.4 21.9	0.770 0.810							KOR
6X4X12	40.00 FT	4H0468	36	7,848	15	15	65	22	13	19	10	3	15	4	26	1	117	32	517 521	395 417	20.5 23.6	0.760 0.800							KOR
TOTAL			144	27,432	====== E N D ======																								

Conditions of supply As Rolled
(1) Ceq: (CE=C+(Cr+V+Mo)/5+(Cu+Ni)/15+Mn/6)
(2) Gauge length : 200 mm
(3) Y.R = Y.S/T.S

Note
Melted and Poured in Republic of Korea
Country of Produce and Process - Republic of Korea
HSCODE(H Section) . 7216.33

WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR THE ABOVE ORDER.

W. W. Jung

General Manager of Q.A Team

This test report can be verified the authenticity to scan the top-right QR code via 'Qreal" mobile app. 2024.02.16.09:02:12 2021430 HMS I 102(A)-3a A4(210x297)

OCT 2 - 2024

OCT 25 2024

GRAHAM

WELDER'S DECLARATION-ORIENTATION RECORD

01 43 19.14 - REV 00

JOB NUMBER: 4261.420000.	**PROJECT: UPPER BOSWOTH CREEK ABUTMENT**	**DATE (MM/DD/YY): 10/22/2024**
OWNER: IMPERIAL OIL	**OWNER'S JOB NUMBER: 90071740**	**LOCATION (LSD): NORMAN WELLS**
WELDER'S JURISDICTIONAL FILE NO.: CWB ID 12 023 519	**OTHER (SPECIFY):**	
WELDER'S NAME: MAKENZIE TERNIER-SMITH	**WELDER'S SYMBOL: M**	

WELDER ORIENTATION:

THIS WELDERS DECLARATION / ORIENTATION RECORD IS MANDATORY FOR ALL WELDERS. IT SHALL BE USED AS THE RECORD OF ORIENTATION FOR WELDING REQUIREMENTS BEFORE ANY WELDING COMMENCES ON THE PROJECT. IN ORDER TO SUPPORT THE REQUIREMENT OF POINT (E) BELOW, THE USE OF THIS RECORD MAY BE SUPPLEMENTED BY ADDITIONAL DOCUMENTATION DEVELOPED SPECIFICALLY FOR THE PROJECT THAT DETAILS PROJECT-SPECIFIC REQUIREMENTS FOR WELDING. IN ADDITION TO THIS RECORD THE **APPROVED WPS VARIABLES RECORD (W27)** SHALL BE COMPLETE (WHEN MORE THEN 3 WPS' ARE BEING USED), REVIEWED WITH THE WELDER AND ATTACHED TO THIS RECORD (W05). IF A WPS DATA SHEET OR WELDER INSTRUCTION SHEET (WIS) IS AVAILABLE THESE MAY BE ATTACHED TO W05 PROVIDING THE VARIABLES IN W27 ARE CIRCLED/HIGHLIGHTED ON THE DATA SHEET/WIS AND INITIALS ARE RECEIVED ON THE DOCUMENT FROM THE WELDER.

I DECLARE:

A. THAT I HAVE REVIEWED THE WELDING PROCEDURE SPECIFICATIONS (WPS) APPLICABLE TO THE WORK AS LISTED BELOW INCLUDING **BACK WELD POLICY.**

B. THAT I AM QUALIFIED TO WELD USING THE WPS' LISTED BELOW AND ONLY AS STATED ON MY WELDER PERFORMANCE QUALIFICATION CARD (PQ CARD). I HAVE UTILIZED THE WELDING PROCESS AS STATED ON MY PQ CARD IN THE PAST 6 MONTHS. THE WPS DOES NOT QUALIFY MY ABILITY TO WELD, MY PQ CARD DOES. I AM NOT PERMITTED TO WELD IN THE DOWNHAND PROGRESSION FOR ASME WELDING UNLESS QUALIFIED WITH A PQ CARD AND AGREED TO BY THE OWNERS REPRESENTATIVE.

C. WHEN USING EXTERNAL LINE-UP CLAMPS, I WILL NOT ROTATE OR REMOVE THE CLAMP UNTIL I HAVE DEPOSITED A CUMULATIVE LENGTH OF AT LEAST 50 % OF THE ROOT BEAD, SPACED UNIFORMLY AROUND THE CIRCUMFERENCE OF THE JOINT.

D. THAT I WILL FOLLOW THE INSTRUCTIONS OF THE DESIGNATED WPS FOR EACH JOINT THAT I WELD. (NOTE: ALL CELLULOUSE ELECTRODE OR SHORT CIRCUIT GMAW ROOT WELDING SHALL BE ONE PASS ONLY WITHOUT CLIENT APPROVAL. DEPOSITED THICKNESSES SHALL NOT EXCEED THE MAX THICKNESS SPECIFIED ON THE WPS AND PQ CARD.)

E. THAT I HAVE BEEN MADE AWARE OF ALL WELDING REQUIREMENTS SPECIFIC TO THIS PROJECT AND THE QUALITY MANUAL AND UPON REQUEST TO THE QUALITY REPRESENTATIVE, I HAVE ACCESS TO ALL DOCUMENTATION APPLICABLE TO THE WORK THAT I AM REQUIRED TO PERFORM.

F. THAT I WILL NOT PLACE WELDING CABLES ON TOP OF PIPE OR EQUIPMENT, TO PREVENT THE POTENTIAL FOR DAMAGE DUE TO ACCIDENTAL ARC-OUT OF CABLES.

G. THAT I WILL ENSURE CONSUMABLES USED ARE HANDLED AND STORED IN ACCORDANCE WITH CODE REQUIREMENTS AND MANUFACTURERS RECOMMENDATIONS. (NOTE: ONLY CONSUMABLES SUPPLIED BY THE COMPANY ARE PERMITTED FOR USE. YOUR CONSUMABLES ARE NOT ALLOWED ON THE JOBSITE.)

H. THAT EACH PASS IS BUFFED OR GROUND TO CLEAN METAL PRIOR TO THE START OF THE NEXT PASS. AFTER WELD COMPLETION, I WILL PERFORM A VISUAL EXAMINATION TO IDENTIFY EXTERNAL WELD DEFECTS (I.E. UNDERCUT, PIN HOLES, LOW CAP, SPATTER, ETC.).

I. FOR WIREFEED OPERATIONS, I WILL ENSURE NOT TO ALLOW THE NOZZLE OR CONTACT TIP TO ENTER THE WELD PUDDLE. IF CONTAMINATION OCCURS, I WILL NOTIFY A QUALITY REPRESENTATIVE IMMEDIATELY AND NOT ATTEMPT TO REMOVE THE CONTAMINATION WITHOUT APPROVAL.

J. THAT I AM AWARE OF THE EXPIRY DATES ON MY WELDING CERTIFICATES AND WILL RENEW ALL CERTIFICATIONS PRIOR TO THEM EXPIRING.

K. THAT IF I CAN NOT PROPERLY ACCESS A WELD JOINT OR WHERE THE ENVIRONMENT (IE. NO BACK PURGE ACCESS, LACK OF CLEANLINESS ETC.) POSES A RISK TO THE QUALITY OF THE WELD I SHALL NOT ATTEMPT TO WELD THE JOINT UNTIL AN ASSESSMENT HAS BEEN COMPLETED AND MITIGATION MEASURES HAVE BEEN DOCUMENTED AND APPROVED ON FORM W38 – *HIGH RISK WELD ASSESSMENT*. (NOTE: RED CARD PROGRAM MAY BE USED TO ADDRESS HIGH RISK WELDS)

L. THAT I SHALL NOT WELD IN INCLEMENT WEATHER CONDITIONS THAT MAY AFFECT THE QUALITY OF THE WELD (IE. WIND, RAIN, SNOW ETC.) WITHOUT PROPER CONTROLS IN PLACE.

M. I HAVE READ W29 – WELDING MANAGEMENT GUIDELINE, W39 WELDING CONSUMABLE CONTROL AND AGREE TO FOLLOW THE REQUIREMENTS OUTLINED THEREIN.

BACK WELD POLICY: ***UNAUTHORIZED BACK WELD REPAIRS ARE STRICTLY PROHIBITED. DOCUMENTED WRITTEN AUTHORIZATION BY THE QUALITY REPRESENTATIVE & OWNER / ONNER'S REPRESENTATIVE IS MANDATORY FOR ALL REPAIRS TO AN APPROVED BACK WELD REPAIR PROCEDURE.***

WELD PROCEDURE(S) & OWNER SPECIFICATION(S):

(WPS listed below have been approved in writing to be confirmed by the QC Rep's initials.)

APPROVED WPS LIST : (See Welder's Log and / or approved WPS Log)	**PREHEAT (°C):** (As Specified on WPS Approval)	**INTERPASS (°C):** (As Specified on WPS Approval)	**ADDITIONAL REQUIREMENTS/ OWNER'S SPECIFICATION(S):**
1. WPS SMAW-CS-01 Rev00	10°C	10°C	
2.			
3.			

WELDER	**DATE (mm/dd/yy)**	**SIGNATURE**
PRINT/ TYPE NAME: Makenzie Ternier-Smith	10/22/2024	
COMPANY NAME: Big Mack Welding		

QUALITY REPRESENTATIVE	**DATE (mm/dd/yy)**	**SIGNATURE**
PRINT/ TYPE NAME: Pascal Bousquet	10/22/2024	
TITLE: Site Manager		

cwbcertification

WELDER QUALIFICATION RECORD

This document is only valid subject to the conditions noted.

Date of Issue	**2023-04-18**	Expiry Date	**2025-04-06**
Individual Tested	**MAKENZIE J. TERNIER-SMITH**	Qualification Standard	**CSA W47.1**
Effective Date	**2023-04-18**	Type	**Transferable**

QUALIFICATION DETAILS

CWB ID	**12 023 519**	Effective Date	**2023-04-18**
Name	**MAKENZIE J. TERNIER-SMITH**	Expiry Date	**2025-04-06**
Test Facility	**Hoek Iron Ltd.**	Standard	**CSA W47.1**
Qual Type	**Welder**	Material	**Carbon Steel**
Type	**Transferable**	Galvanized	**No**
Classification	**S**		
Process	**SMAW**	Electrode	**F4**
Process Mode	**Manual**		
Thickness Range	**3mm and above**		
Class	**Flat, Horizontal, Vertical Up, Overhead**		

Conditions of Validity

- This record is only valid when the individual named is employed by a company certified by CWB Certification to the qualification standard noted.
- This record should not be construed as proof of certification of any organization to CSA W47.1, CSA W47.2, CSA W186 or CSA W55.3.

Any questions regarding the validity of this record may be directed to CWB Certification at 1-800-844-6790.

Notice to Certified Organizations

- If the individual noted on this record is employed by your certified organization, this document can be considered proof of qualification until the expiration date noted without further action on your part and will be acceptable as proof of qualification during any CWB audit.
- Upon employment of the individual, you must report this individual on your monthly report of welders.
- You may, at your option, request that this record be formally transferred to your organization. If you select this option, a qualification document (i.e., a plastic Welder Qualification Card) will be issued.

Notice to Building Officials, Inspectors, General Contractors, Engineers, Architects, and other Interested Parties

- This record only provides evidence that the named individual has met the testing requirements of the named qualification standard.
- This record is not a "welder certification" nor does it authorize the individual to undertake work where certification to CSA W47.1, W47.2, W186 or W55.3 is required, such as welded structural fabrication, installation, and repairs.
- Acceptable proof of certification to CSA W47.1, W47.2, W186 or W55.3 is a "Letter of Validation" supplied by a certified organization.
- For a list of organizations currently certified by CWB Certification, please visit www.cwbgroup.org or call 1-800-844-6790.

Form:	WELDING PROCEDURE SELECTION AND APPROVAL FORM				
Disc:	ADMINISTRATION	Rev No.:	00	Doc. No.:	S01_43_19.13

Owner:	Imperial Oil	Site / Project:	Upper Bosworth Bridge	Date:	October 6, 2024
Owner's Job No.:	90071740	Contract No.:	4502903134		

Welding Procedures for Review and Approval

WPS ID	Proposed Application	Approved *	Approved **	Rejected	Owner's Additional Requirements
SMAW-CS-01	Welding and related operations of steel structures and component which are fabricated in accordance with the term outlined in CSA Standards W47.1 and W59, Latest revision, Welding should be done manually using SMAW (shielded metal Arc Welding) Process	☒	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

* Proceed with fabrication as is
** Proceed with fabrication subject to additional requirements as stated

Comments:

Accepted By:	Name	Signature	Date
Graham Representative:	Pascal Bousquet		October 6, 2024
Owner's Representative:	Travis Warren		October 6, 2024
Other:			Click to add a Date

WELDING PROCEDURE SPECIFICATION
FOR
SHIELDED METAL ARC WELDING (SMAW)
CARBON STEEL

Graham Industrial Services Ltd.

Controlled from

875 - 57th St. East, Saskatoon SK, S7K 5Z2

OCT 10 2024

CWB Accepted October 10, 2023 12 PAGES	
CWB	ENGINEER'S STAMP

Prepared by:
Sherman Chan

Qualimet "Your source of Quality Materials Engineering."
8055 CORONET ROAD
EDMONTON, AB T6E 4N7
PHONE: (780) 469-5870 FAX: (780) 465-5829

OCT 10 2024

1 Scope

1.1 This Welding Procedure Specification covers welding and related operations of steel structures and components which are fabricated in accordance with the terms outlined in CSA Standards W47.1 and W59, latest revisions. Weld Procedure Data Sheet(s) referencing this WPS form an essential part of this specification.

1.2 A change in any of the essential variables contained in succeeding paragraphs or detailed on applicable Welding Procedure Data Sheet(s) shall require a new Welding Procedure Specification and/or a new Welding Procedure Data Sheet(s).

2 Welding Procedure

2.1 The welding shall be done manually using the SMAW (Shielded Metal Arc Welding) process.

2.2 Joints shall be made following the procedural stipulations indicated in CSA W59 and may consist of single or multiple passes in accordance with the accepted Weld Procedure Data Sheet(s) to which this specification refers.

3 Base Metal

The base metal shall conform to the specifications of steel groups 1, 2, 3 as per Table 11.1 or Table 12.1 of CSA W59. Other groups may be welded providing Weld Procedure Data Sheet(s) are accepted by the Canadian Welding Bureau.

4 Base Metal Thickness

Base metal thicknesses from 3 mm (1/8") to UNLIMITED THICKNESS inclusive may be welded under this specification providing the respective Weld Procedure Data Sheet(s) have been supplied and accepted for the appropriate weld size.

5 Filler Metal

The filler metal shall be certified by the Canadian Welding Bureau as conforming to CSA Standard W48.

6 Storage and Conditioning of Electrodes

6.1 Basic Electrodes

6.1.1 The storage and conditioning of electrodes shall be as per CSA Standard W59.

6.1.2 All basic electrodes shall be delivered in hermetically sealed containers that do not show evidence of damage. However, if such containers show evidence of damage, the following shall apply:

a) Carbon steel electrodes conforming to CSA Standard W48 shall be dried for at least 2 hour at a temperature between 230°C (450°F) and 260°C (500°F) before being used.

b) Low-alloy electrodes conforming to CSA Standard W48 shall be dried for at least 2 hours at a temperature between 370°C (700°F) and 430°C (800°F) before being used.

c) Alternative baking temperature for low-hydrogen electrodes may be used if such procedure have been developed and are recommended by the manufacturer; the use of these alternative procedure shall be approved by Engineer.

6.1.3 Immediately after being removed from hermetically sealed containers or from drying ovens, electrodes shall be stored in ovens held at a temperature of at least 120°C (250°F).

6.1.4 Basic electrodes of E49XX (E70XX) classification that are not used within 4 hours after removal from ovens shall be reconditioned in accordance with the requirements of Clause 5.2.2.4.1 of CSA W59.

6.1.5 Basic electrodes with strength levels above the E49X (E70XX) classifications that are not used within 2 hours after removal from ovens shall be redried between 370°C (700°F) and 430°C (800°F) for 1 hour before being used.

* *Shorter periods of exposure time shall be considered at high atmospheric humidity and temperature conditions.*

6.1.6 Basic electrodes shall be redried no more than once.

6.2 Other Than Basic Electrodes

6.2.1 All other than basic electrodes shall be stored in warm and dry conditions and kept free from oil, grease, and other deleterious matter once they have been removed from their containers and packages.

6.2.2 Electrodes that have been wet shall be discarded.

7 Position

The welding shall be done preferably in the flat position, but other positions such as horizontal, vertical and overhead are permissible as per prequalified joint details or where non-prequalified as detailed, on accepted Weld Procedure Data Sheet(s).

8 Preheat

8.1 The minimum preheat before welding will comply with Table 5.3, CSA W59. Minimum preheat to be maintained or exceeded during welding. A modified version of the table is shown in Table 1 below. Maximum Interpass shall be indicated on accepted Weld Procedure Data Sheet(s).

Table 1. Minimum preheat and interpass temperatures

		Temperatures indicated below are dependent on the Materials in Columns 2, 3, 4, and 5 from CSA W59 Table 5.3 and dictate the allowed usage of the following consumables.			
Thickness of thickest part at point of welding, mm (in)		Consumables with diffusible hydrogen designator			
		of ≤ H16 or non-low hydrogen	of ≤ H8		of ≤ H4
1		2	3	4	5
Up to 20 incl.	Up to 3/4 inclusive	None[1, 9.4]	None[1, 9.4]	10°C (50°F)	10°C (50°F)
Over 20 to 40	Over 3/4 to 1-1/2	65°C (150°F)	10°C (50°F)	65°C (150°F)	50°C (125°F)
Over 40 to 60	Over 1-1/2 to 2-1/2	110°C (225°F)	65°C (150°F)	110°C (225°F)	80°C (175°F)
Over 60	Over 2-1/2	150°C (300°F)	110°C (225°F)	150°C (300°F)	110°C (225°F)

i.e. For an E7018-1-H4 Electrode welding a 25 mm (1 in) thick connection with material specification and grade CSA G40.21 300W (44W) [which is listed under Column 3], the minimum preheat and interpass would be 10°C (50°F)

8.2 If welding is interrupted and a verification of the temperature of the base metal has fallen below the minimum preheat temperature, then arrangements will be made to preheat again prior to recommencing welding.

8.3 The weldment shall be allowed to cool to the ambient temperature without external quench media being supplied. In other words, do not cool using water or by immediate placement in frigid conditions which will cause a quick temperature change.

8.4 Welding shall not be done when the ambient temperature is lower than -18°C (0°F), except when following and documenting requirements of an Engineer approved Low Ambient Welding Procedure. (see Graham Document ID: GISL-CWB-LT)

[1] When the base metal temperature is below 0°C (32°F), the base metal shall be preheated to at least 10°C (50 °F) and this temperature maintained during welding.

9 Heat Treatment and Stress Relieving

This will not be applicable to structures welded under this specification, unless a specific Weld Procedure Data Sheet(s) showing all the parameters is submitted to the Canadian Welding Bureau and acceptance is obtained.

10 Electrical Characteristics

Welding equipment will be used having a drooping voltage characteristic. The welding current specified will be direct current reverse polarity. The current range will be as per electrode manufacturer's instructions or as shown on Weld Procedure Data Sheet(s).

11 Welding Technique

11.1 The correct amperage and voltage, speed of travel, thickness of layers, number of passes, position, material electrodes and any special instructions will be as per Weld Procedure Data Sheet(s).

11.2 Arc strikes outside of the area of welds should be avoided on any material. When they occur, notification shall be made to Weld Supervisor and Quality Control for approval on remedial action.

11.3 It is recommended practice that the arc be initiated and maintained as follows. However, this is not intended to limit the welder from any other technique that would produce an acceptable weld profile completed within the parameters set out in the data sheets:

1) EXX10-EXX11 Electrodes

a) Flat → Hold an arc of 3.2 mm (1/8") or less or touch the work lightly with the electrode tip. Move fast enough to stay ahead of the molten pool using a slight whipping technique.

b) Vertical → Vertical-down techniques are used by pipeliners and for single-pass welds on thin steel. Vertical up is used for most plate welding. Make the first vertical up pass with either a whipping technique for fillet welds, or with a circular motion for V-butt joints. Apply succeeding passes with a weave, pausing slightly at the edges to ensure penetration and proper wash-in.

c) Overhead and Horizontal Butt Welds → These welds are best made with a series of stringer beads, using a technique similar to those described for first-pass vertical-up welds.

2) EXX12-EXX13-EXX14 Electrodes

a) Flat → Use stringer beads for the first pass except when poor fit-up requires a slight weave. Touch the tip of the electrode to the work or hold an arc length of 3.2 mm (1/8") or less. Move as fast as possible consistent with desired bead size.

b) Vertical-Up → Use a triangular weave. Weld a shelf at the bottom of the joint and add layer upon layer. Do not whip or take the electrode out of the molten pool. Point the electrode slightly upward so that the arc force helps control the puddle. Travel slow enough to maintain the shelf without spilling.

c) Overhead → Make stringer beads using a whipping technique with a slight circular motion in the crater. Do not weave. Travel fast enough to avoid spilling.

3) EXX15, EXX16, EXX18 "Basic" Electrodes

a) Flat → Use low current on the first pass or whenever it is desirable to reduce admixture with a base metal of poor weldability. On succeeding passes, use currents that provide best operating characteristics. Drag the electrodes lightly or hold an arc of 3.2 mm (1/8") or less.

b) Do not use a long arc at any time, since EXX18 electrodes rely principally on molten slag for shielding. Stringer beads or small weave passes are preferred to wide weave passes. When starting a new electrode, strike the arc ahead of the crater, move back into the crater, and then proceed in the normal direction. On AC, use currents about 10% higher than those used with DC. Govern travel speed by the desired head size.

c) Vertical → Weld vertical-up. Use a triangular weave for heavy single-pass welds. For multiple welds, first deposit a stringer bead by using a slight weave. Deposit additional layers with a side-to-side weave, hesitating at the sides long enough to fuse out any small slag pockets and to minimize undercut. Weaving may be used up to 2-1/2 times the diameter of the electrode. Do not use a whip technique or take the electrode out of the molten pool as porosity results. Travel slowly enough to maintain the shelf without causing metal to spill.

d) Overhead → Deposit stringer beads by using a slight circular motion in the crater. Maintain a short arc. Motions should be slow and deliberate. Move fast enough to avoid spilling weld metal, but do not be alarmed if some slag spills.

4) EXX24 Electrodes

a) Flat → Use a drag (pull) technique: Tip the electrode 10 to 30 degrees in the direction of travel and make stringer beads. Weld with the electrode tip lightly dragging on the work so that molten metal is forced out from under the tip, thereby promoting penetration. Travel rapidly, but slow enough to maintain good slag coverage. Stay about 6 mm - 10 mm (1/4" - 3/8") ahead of the molten slag. If travel speed is too slow, a small ball of molten slag may form and roll ahead of the arc, causing spatter, poor penetration, and erratic bead shape.

b) Horizontal Fillets and Laps → Point the electrode into the joint at an angle of 45 degrees from the horizontal and use the "flat" technique described above. The tip of the electrode must touch both horizontal and vertical members of the joint. If the 45-degree angle between plates is not maintained, the fillet legs will be of different sizes. When two passes are needed, deposit the first bead mostly on the bottom plate. To weld the second pass, hold the electrode at about 45 degrees fusing into the vertical plate and the first bead. To make multiple-pass horizontal fillets, put the first bead in the corner with a fairly high current, disregarding undercut. Deposit the second bead on the horizontal plate, fusing into the first bead. Put the final bead against the vertical plate.

c) Deep-Groove Butt Welds → To hold the large pool of molten weld metal, either a backup plate, or a stringer bead made with a deeper-penetration electrode is required. Deposit beads with a stringer technique until a slight weave is required to obtain fusion of both plates. Split-weave welds are better than a wide weave near the top of the deep grooves. When welding the second last pass, leave enough room so that the last pass will not exceed a 1.6 mm (1/16") build-up. A slight undercut on all but the past pass creates no problems, because it is burned out with each succeeding pass.

5) EXX28 "Basic" Electrodes

Techniques for the EXX28 are the same as those for EXX24. Special care should be taken to clean the slag from every bead on multiple-pass welds to avoid slag inclusions.

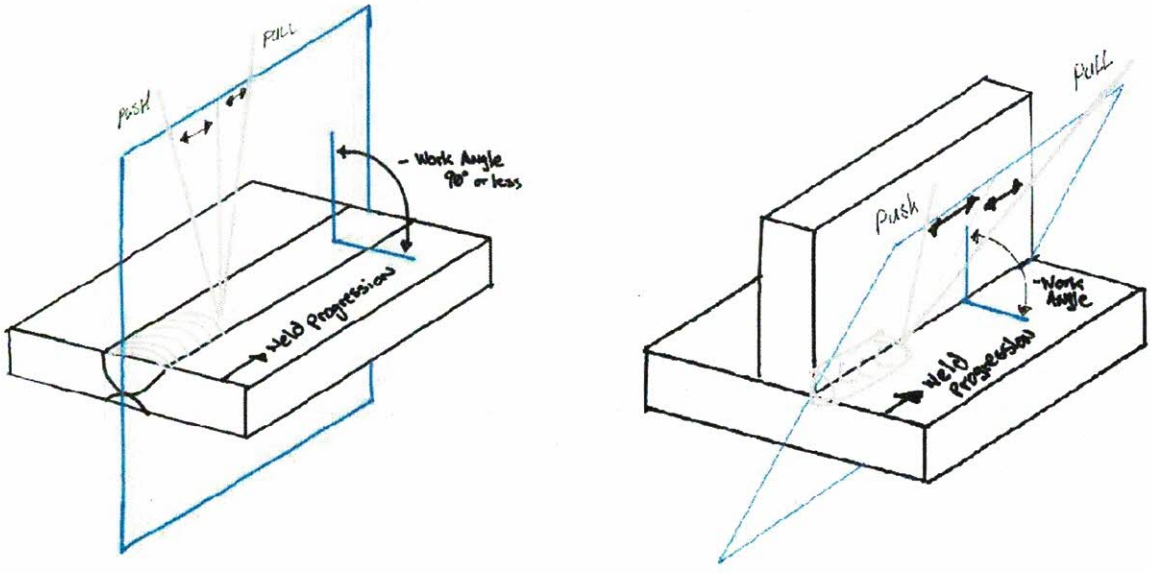


Figure 1. Diagram of Electrode Push, Pull and Work Angles (Groove and Fillet)

12 Preparation of Base Material

12.1 The edges or surfaces of parts to be joined by welding shall be prepared by any suitable method.

12.2 When thermal methods such as air carbon arc or oxy-fuel (except for quenched and tempered steels), plasma arc, or water jet are used, it is important to remove any surface contamination including slag and carbon deposits. Mechanical methods such as shearing, machining, chipping, or grinding may also be used.

12.3 Where hand cutting is involved, the edge will be ground to a smooth surface as per Clause 5.3.3 of CSA W59.

12.4 Surfaces at least 25 mm (1") away from the weld zone shall be cleaned free of any material contamination by grinding or buffing wheel to remove contaminants and oxidation to sound metal prior to welding.

12.5 All surfaces and edges shall be free from fins, tears, cracks, laminations or any other defects which would adversely affect the quality of the weld.

12.6 All loose or thick scale, rust, moisture, grease, paint, coatings, or other foreign material that would prevent proper welding or produce objectionable fumes shall be removed.

13 Quality

13.1 Cracks or blow holes that appear on the surface of any pass shall be removed before depositing the next covering pass.

13.2 The procedure and technique shall be such that undercutting of base metal or adjacent passes is minimized.

13.3 Fillet and groove welds shall meet the acceptable weld profiles shown in Figure 5.2 and 5.3, CSA W59.

13.4 The reinforcement in groove welds shall not exceed 3 mm (1/8") and shall have a gradual transition to the plane of the base metal surface. Undercut shall be limited to that described in 13.6 and 13.7 below. All welds shall be free from overlap.

13.5 In general, the weld quality will be such as to meet the requirements of Clause 11.5.4 or 12.5.4 of CSA W59.

13.6 Visual Examination Acceptance Criteria for Static Loaded Structures (W59 Clause 11.5.4)

A weld subject to visual inspection shall be considered acceptable if visual inspection shows:

a) no surface cracks;
b) no visible lack of fusion between welds and base metal;
c) no craters;
d) weld profiles in accordance with Clause 5.9 CSA W59;
e) that the sum of diameters of visible porosity does not exceed 10 mm (3/8 in) in any linear 25 mm.
f) (1 in) length of weld and does not exceed 20 mm (3/4 in) in any 300 mm (12 in) length of weld.
g) Any individual pore shall have a dimension not exceeding 2.5 mm (3/32 in); and
h) for material less than 25 mm (1 in) thick, undercut not exceeding 1 mm (1/32 in) for any length of weld, with the following exception: undercut shall not exceed 1.6 mm (1/16 in) for any accumulated length up to 50 mm (2 in) in any 300 mm (12 in). For material equal to or greater than 25 mm (1 in) thick, undercut shall not exceed 1.6 mm (1/16 in) for any length of weld.

13.7 Visual Examination Acceptance Criteria for Cyclically Loaded Structures (W59 Cl. 12.5.4)

A weld subject to visual inspection shall be considered acceptable if visual inspection shows:

a) no surface cracks;
b) no visible lack of fusion between welds and base metal;
c) no craters;
d) weld profiles in accordance with Clause 5.9 CSA W59. For welds designed in accordance with Clause 12.3.4.3, weld profiles shall be more restrictive. Such profiles shall be detailed in the contract documents;
e) that frequency of visible porosity in fillet welds does not exceed one in each 100 mm (4 in) of length and the maximum diameter does not exceed 2.5 mm (3/32 in);
f) for fillet welds connecting intermediate transverse stiffeners to the web, the sum of the diameters of visible porosity does not exceed 10 mm (3/8 in) in any linear 25 mm (1 in) of weld, nor 20 mm (3/4 in) in any 300 mm (12 in) length of weld;
g) that groove welds have no visible porosity; and
h) that undercut is not more than 0.25 mm (0.01 in) deep when its direction is transverse to the primary stress in the part that is undercut and is not more than 1 mm (1/32 in) deep when its direction is parallel to the primary stress in the part that is undercut. For members not carrying primary stresses, undercut in excess of the amounts stated shall be subject to approval by the Engineer.

14 Weld Metal Cleaning

Slag or flux remaining after a pass shall be removed before applying the next covering pass. Prior to painting, etc., all slag shall be removed, and the parts shall be free of loose scale, oil, and dirt.

15 Treatment of Underside of Welding Groove

Prior to depositing weld metal on the underside of a welding groove, the root shall be prepared as per Section 14, unless otherwise specified on applicable Weld Procedure Data Sheet(s).

16 Essential Variables

16.1 Essential variables for soundness and mechanical testing shall be as specified in Table 11 and Clause 11.4.3 as outlined below, in CSA W47.1:

16.2 The PQR essential variable changes requiring a requalification for the SMAW process shall be as follows:

1) a change in the base metal steel group (number) as defined in Table 17;
2) a change in welding process;
3) an increase in filler metal classification strength level*;
4) a change of thickness outside the range allowed by Table 13.

**A strength level greater than E49XX requires requalification.*

16.3 The range of thickness and/or diameter and/or fillet weld sizes required to qualify Weld Procedure Data Sheet(s) shall conform to Note 5 of Table 11 and to Table 13, 14, or 15 in CSA W47.1. Any other change outside of these ranges will require re-qualification.

17 Welding Procedure Data Sheet(s)

Weld Procedure Data Sheets referencing this WPS form part of this specification.

Appendix F Record Drawings

2401823-000-1960-200 Rev0 – Red Line Drawing (provided by contractor)
2401823-000-1960-200 Rev0 – Allnorth Record Drawings

UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

PERMIT TO PRACTICE
ALLNORTH CONSULTANTS LIMITED
Signature
Date 2024-10-03
PERMIT NUMBER: P 395
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

DRAWING LIST

DRAWING NO	DRAWING TITLE	REVISION
2401823-000-1960-201	GENERAL NOTES AND SPECIFICATIONS	0
2401823-000-1960-202	EXISTING ABUTMENT APPROACH AND CREEK	0
2401823-000-1960-203	REPAIRED ABUTMENT SHEET PILE WALL AND CREEK IMPROVEMENTS	0
2401823-000-1960-204	EXISTING ABUTMENT GENERAL ARRANGEMENT	0
2401823-000-1960-205	ABUTMENT REPAIR GENERAL ARRANGEMENT	0
2401823-000-1960-206	ABUTMENT REPAIR DETAILS SHEET 1	0
2401823-000-1960-207	ABUTMENT REPAIR DETAILS SHEET 2	0

DESCRIPTION: ISSUED FOR CONSTRUCTION
ISSUE DATE: 24/10/03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/16
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

DWG NO: **2401823-000-1960-200** REV: **0**

DESIGN LOADS:

1. DEAD LOAD - UNIT WEIGHTS AND MATERIALS ARE AS FOLLOWS:
   STRUCTURAL STEEL = 77 kN/m^3
   SOIL (ASSUMED SOIL FRICTION ANGLE = 34°) = 22 kN/m^3

2. LIVE LOAD SURCHARGE ON WALL = 6.2 kPa.

DESIGN SPECIFICATIONS:

1. DESIGN IN ACCORDANCE WITH CAN/CSA-S6-19.

STEEL NOTES:

1. ALL STEEL (INCLUDING PLATE) SHALL BE IN ACCORDANCE WITH CSA G40.21 GRADE 300W.

2. SHEET PILES ASSUMED TO BE GRADE 230 MPa STEEL.

3. THREADBAR, NUTS, AND BEVELED WASHERS TO BE DYWIDAG-SYSTEMS INTERNATIONAL GRADE 690 OR BETTER.

4. WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W-59. WELDING ELECTRODES TO BE COMPATIBLE WITH BASE METAL. ALL WELDS TO BE 6mm UNLESS OTHERWISE NOTED ON DRAWINGS.

5. FABRICATORS RESPONSIBLE FOR WELDED CONSTRUCTION MUST BE CERTIFIED FOR DIVISION 1 OR DIVISION 2 OF C.S.A. STANDARD W47.1 - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES. CERTIFICATION TO BE IN EFFECT THROUGHOUT THE PERIOD OF MANUFACTURE.

6. ALL SHOP AND FIELD WELDS SHALL BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH CSA W59 WITH THE EXCEPTION THAT THE CANADIAN WELDING BUREAU (CWB) CERTIFIED "WELDING SUPERVISOR" IN THE FABRICATION SHOP OR ON THE CONSTRUCTION SITE CAN PERFORM THE VISUAL INSPECTIONS. VISUAL INSPECTIONS TO BE DOCUMENTED BY THE "WELDING SUPERVISOR" MARKING THE WORK AFTER IT HAS BEEN INSPECTED AND ACCEPTED.

EARTH WORKS:

1. EXISTING BACKFILL AND RIPRAP WITHIN THE ESTIMATED EXCAVATION EXTENTS (AS SHOWN ON DRAWING 102) TO BE STOCK PILED FOR RE-USE.

2. BACK FILL OF EAST APPROACH SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 305mm THICK, WELL COMPACTED USING A MINIMUM 1000lbs VIBRATORY PLATE COMPACTOR. MATERIAL SHALL BE RE-USED EXISTING BACKFILL OR NEW CLEAN, FREE DRAINING, WELL GRADED GRANULAR FILL OF 75mm MAXIMUM SIZE OR APPROVED EQUIVALENT.

3. RIPRAP TO BE WELL GRADED BLEND BETWEEN MINIMUM CLASS "C" (0.3m AVERAGE DIMENSION) AND MAXIMUM CLASS "D" (1.0m AVERAGE DIMENSION) DURABLE ROCK. CLASS "C" AND "D" SPECIFICATIONS PROVIDED BY IMPERIAL.

DESIGN LIFE:

1. WALL REPAIR DESIGN LIFE IS ESTIMATED TO BE 10 TO 15 YEARS AND IS LIMITED BY THE REMAINING EXISTING BRIDGE SERVICE LIFE.

MAINTENANCE:

1. RIPRAP TO BE MONITORED AND MAINTAINED TO ENSURE WALL HAS ADEQUATE SUPPORT.

HYDROLOGY:

1. THE IMPACT OF INTRODUCING RIPRAP TO THE HYDROLOGY OF THE CREEK AND CROSSING HAS NOT BEEN ASSESSED.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

PERMIT TO PRACTICE:

PERMIT TO PRACTICE
ALLNORTH CONSULTANTS LIMITED
Signature
Date 2024-10-03
PERMIT NUMBER: P 395
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

ENGINEER SEAL:

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT: Imperial

Allnorth

CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/16
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

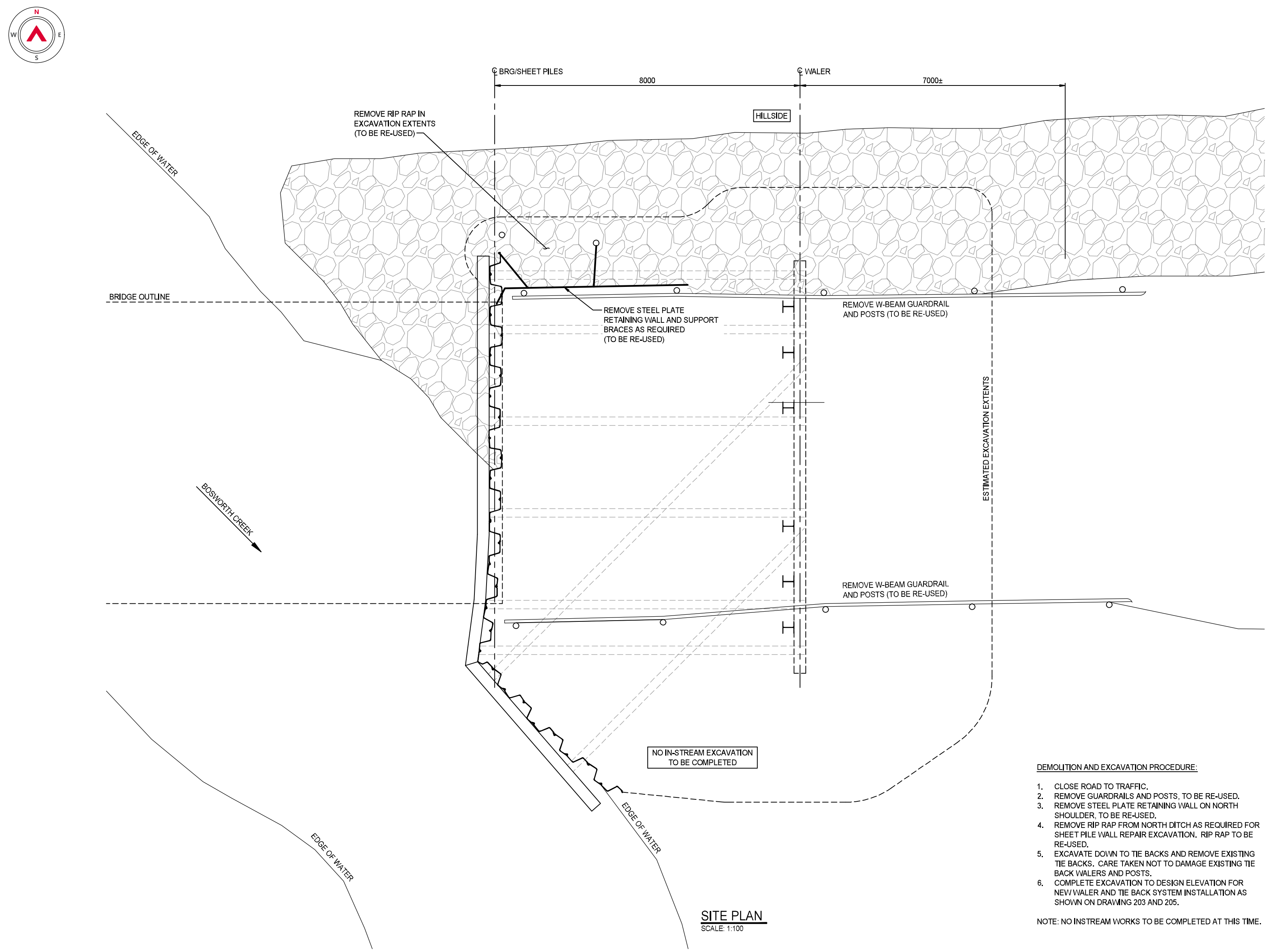
UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

GENERAL NOTES AND SPECIFICATIONS

DWG NO: **2401823-000-1960-201** REV: **0**

Date: 2024/10/03 4:52 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dwgs\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 201 | Paper Size: 431.8mm x 279.4mm



SITE PLAN
SCALE: 1:100

DEMOLITION AND EXCAVATION PROCEDURE:

1. CLOSE ROAD TO TRAFFIC.
2. REMOVE GUARDRAILS AND POSTS, TO BE RE-USED.
3. REMOVE STEEL PLATE RETAINING WALL ON NORTH SHOULDER, TO BE RE-USED.
4. REMOVE RIP RAP FROM NORTH DITCH AS REQUIRED FOR SHEET PILE WALL REPAIR EXCAVATION. RIP RAP TO BE RE-USED.
5. EXCAVATE DOWN TO TIE BACKS AND REMOVE EXISTING TIE BACKS. CARE TAKEN NOT TO DAMAGE EXISTING TIE BACK WALERS AND POSTS.
6. COMPLETE EXCAVATION TO DESIGN ELEVATION FOR NEW WALER AND TIE BACK SYSTEM INSTALLATION AS SHOWN ON DRAWING 203 AND 205.

NOTE: NO INSTREAM WORKS TO BE COMPLETED AT THIS TIME.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. RECORD DRAWINGS AND 3D SCAN INFORMATION UTILIZED TO CREATE THE EAST ABUTMENT ARRANGEMENT.
2. ALL DIMENSIONS ASSUMED ± AND ARE TO BE FIELD CONFIRMED.

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0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

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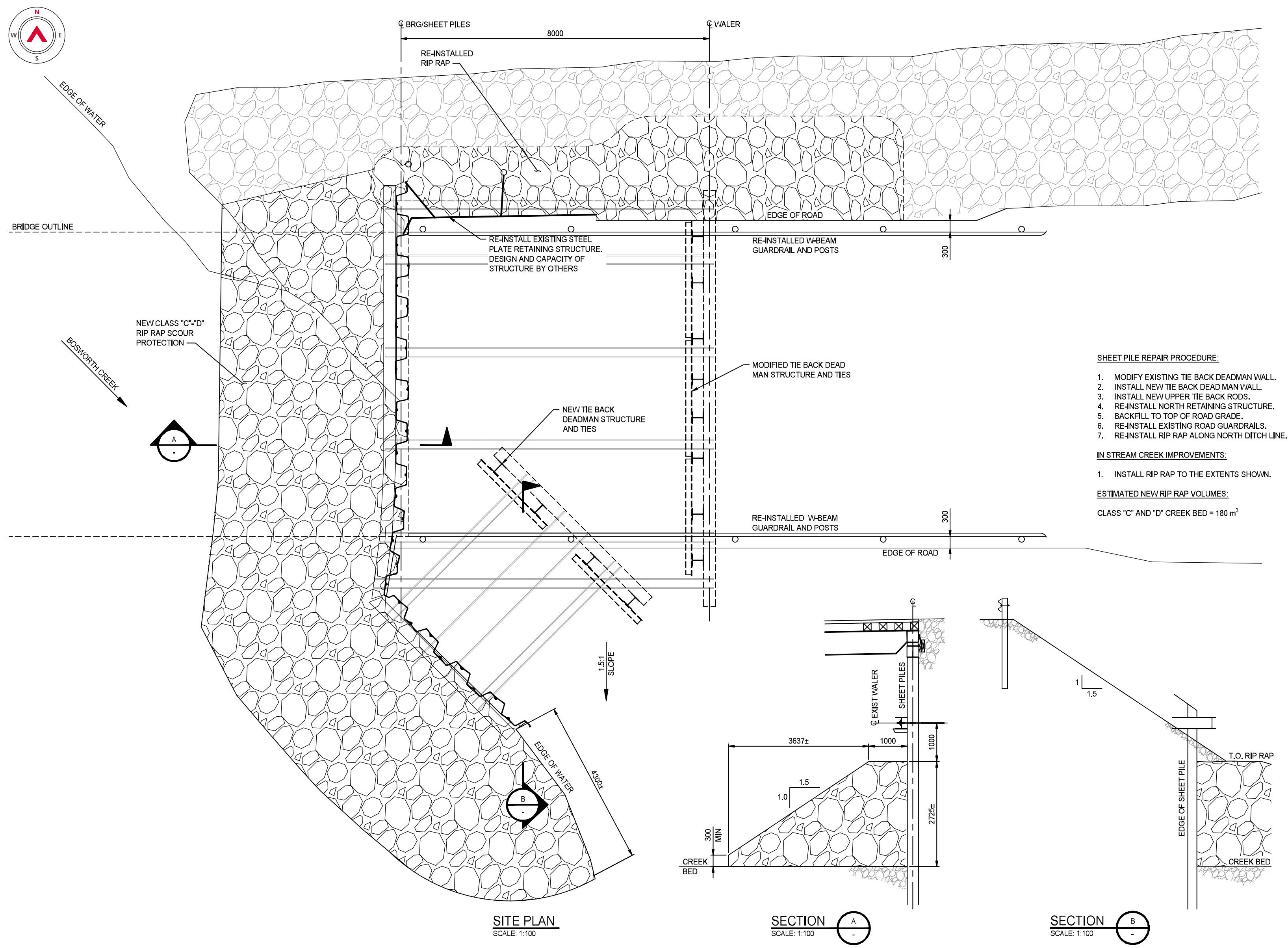
CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:
UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:
EXISTING ABUTMENT APPROACH AND CREEK

DWG NO: 2401823-000-1960-202
REV: 0

Date: 2024/10/03 4:52 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dvsp\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 202 | Paper Size: 431.8mm x 279.4mm



SHEET PILE REPAIR PROCEDURE:

1. MODIFY EXISTING TIE BACK DEADMAN WALL.
2. INSTALL NEW TIE BACK DEAD MAN WALL.
3. INSTALL NEW UPPER TIE BACK RODS.
4. RE-INSTALL NORTH RETAINING STRUCTURE.
5. BACKFILL TO TOP OF ROAD GRADE.
6. RE-INSTALL EXISTING ROAD GUARDRAILS.
7. RE-INSTALL RIP RAP ALONG NORTH DITCH LINE.

IN STREAM CREEK IMPROVEMENTS:

1. INSTALL RIP RAP TO THE EXTENTS SHOWN.

ESTIMATED NEW RIP RAP VOLUMES:

CLASS "C" AND "D" CREEK BED = 180 m^3

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

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CLIENT NO: -	DRWN: SAP	DATE: 24/09/17	
PROJECT NO: 2401823	DSGN: NRW	DATE: 24/09/16	
DRAWING SIZE: ANSI "B"	CHKD: DDW	DATE: 24/09/23	
SCALE: AS NOTED	APVD: DDW	DATE: 24/09/23	

PROJECT:

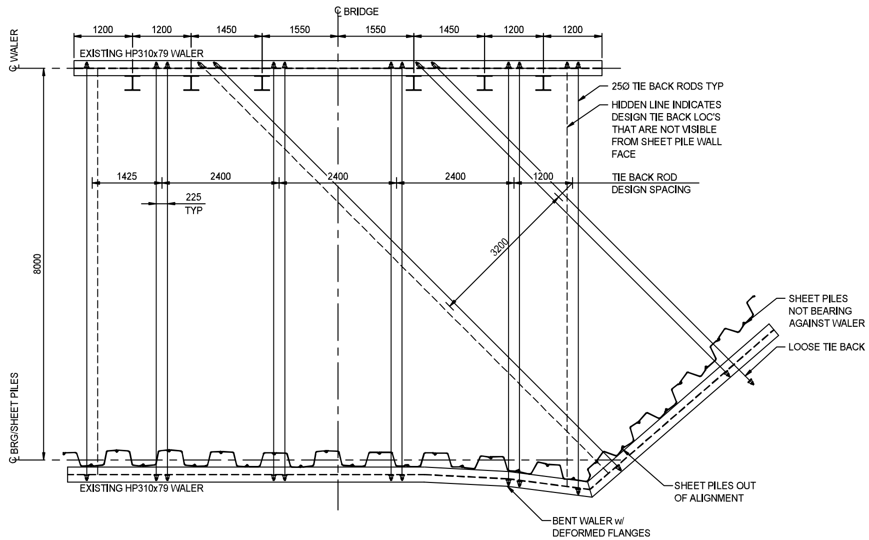
**UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR**

TITLE:

**REPAIRED ABUTMENT
SHEET PILE WALL AND
CREEK IMPROVEMENTS**

DWG NO: **2401823-000-1960-203** REV: **0**

Date: 2024/10/03 4:53 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dwgs\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 203 | Paper Size: 431.8mm x 279.4mm



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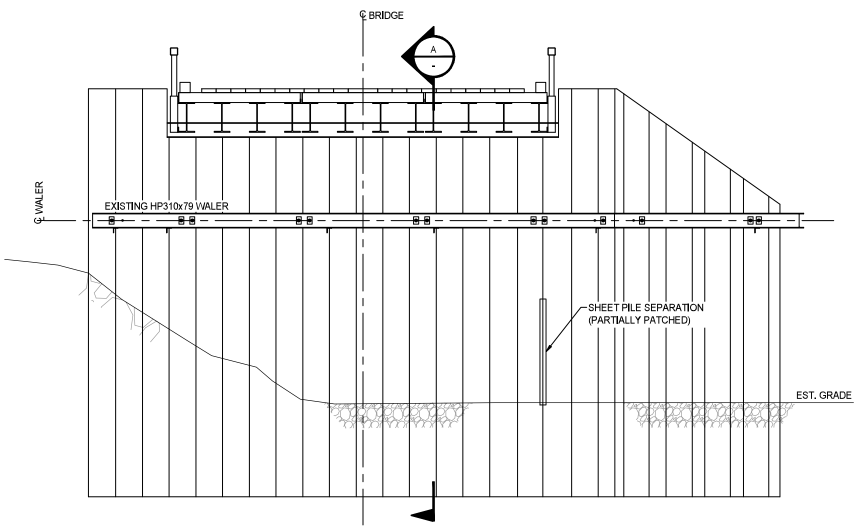
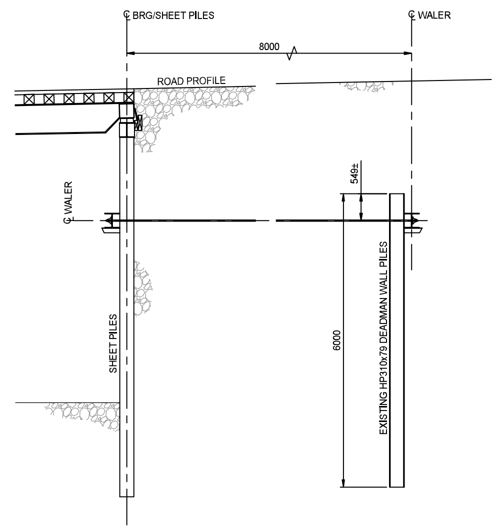


ELEVATION
SCALE: 1:100



SECTION A/-
SCALE: 1:100

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

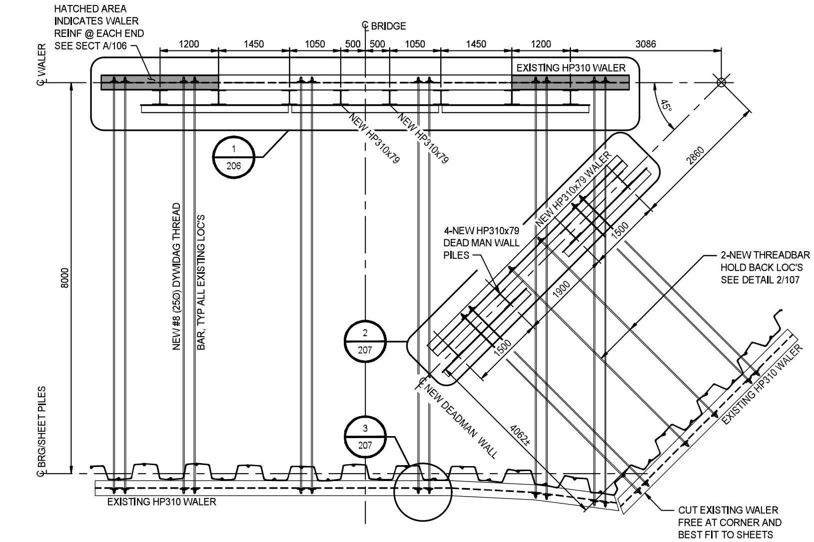
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

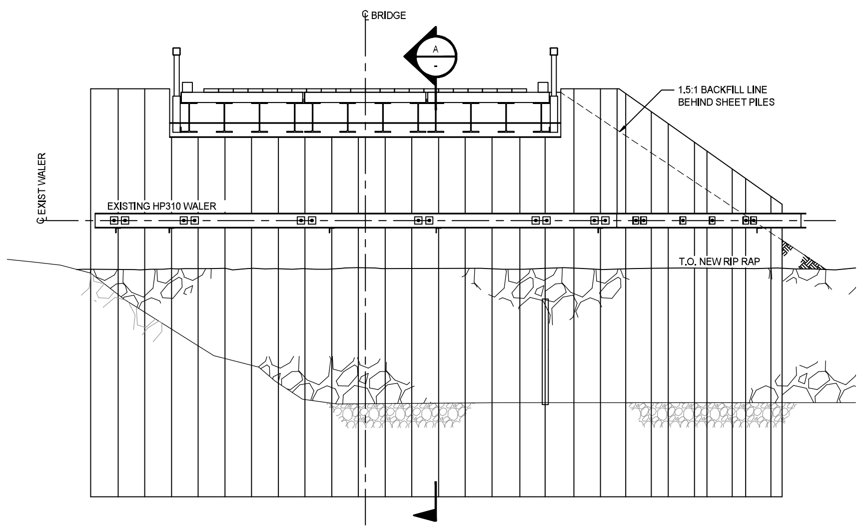
TITLE:

EXISTING ABUTMENT GENERAL ARRANGEMENT

DWG NO: **2401823-000-1960-204** REV: **0**



WALER PLAN
SCALE: 1:100



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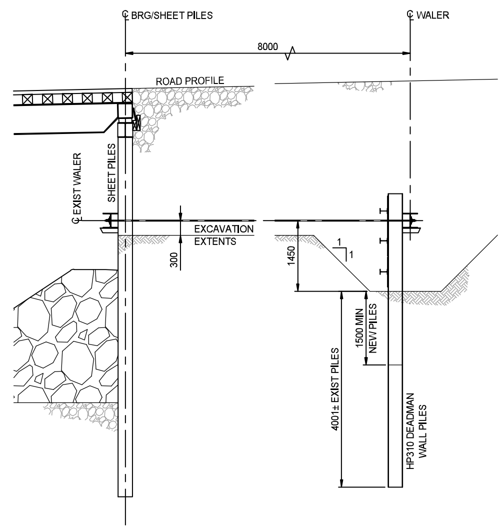
SCALE: 1:100



SECTION A/-
SCALE: 1:100

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS.
2. SEE DRAWING 2401823-000-1960-204 FOR EXISTING MATERIALS AND GEOMETRY NOT SHOWN.

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DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

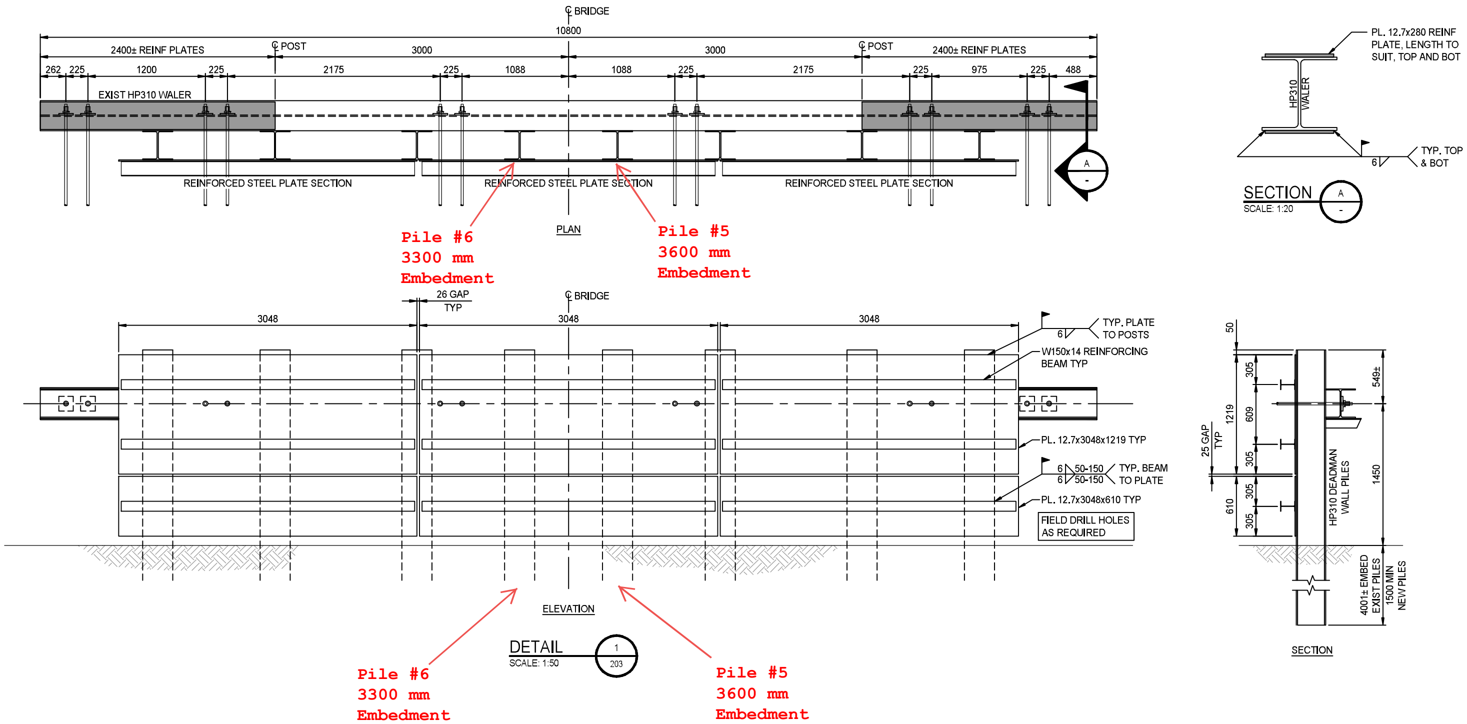
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR GENERAL ARRANGEMENT

DWG NO: **2401823-000-1960-205** REV: **0**



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

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DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

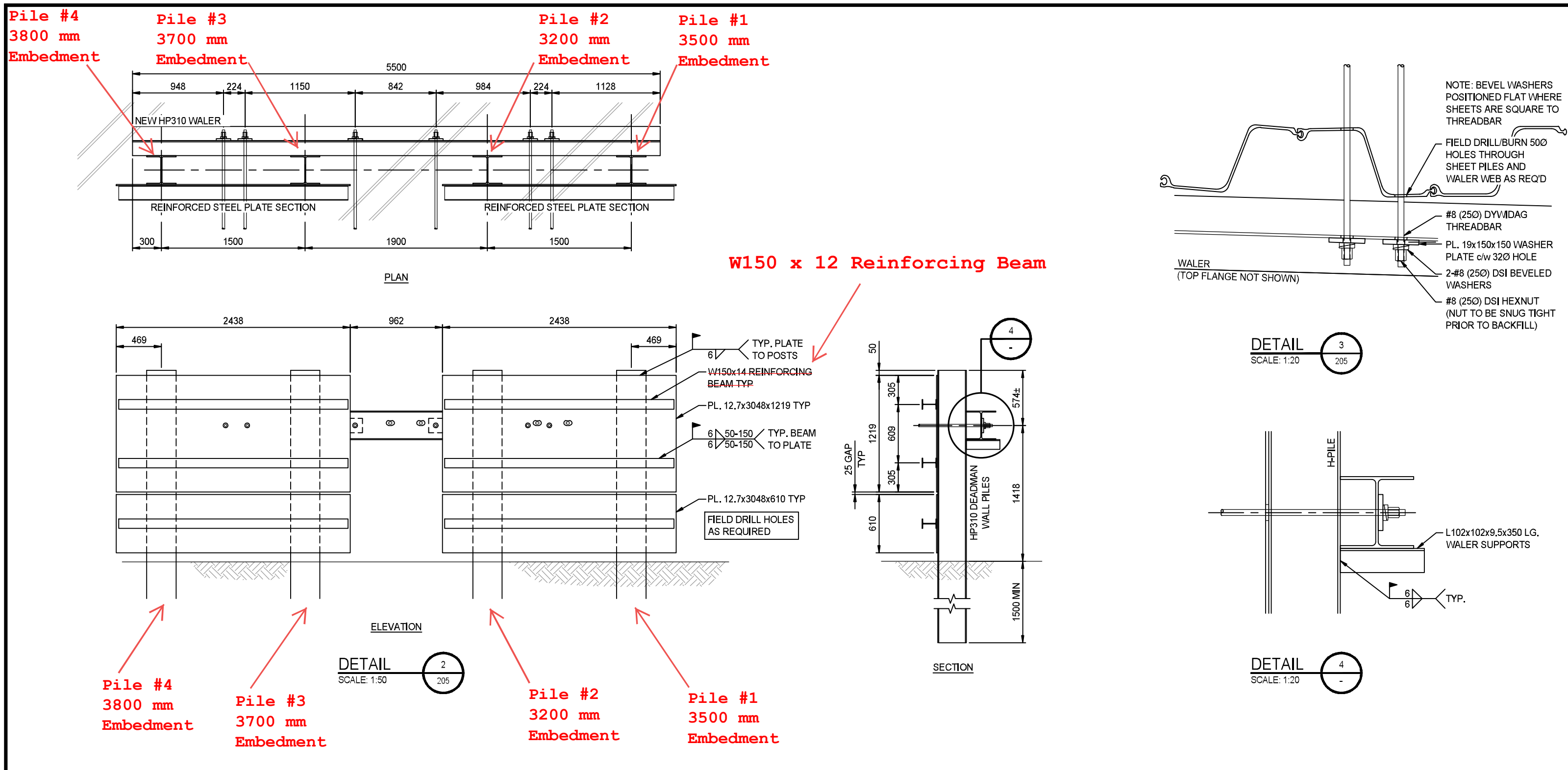
PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 1

DWG NO: 2401823-000-1960-206 REV: 0



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS..

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PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 2

DWG NO: 2401823-000-1960-207 REV: 0

RECORD DRAWING PREPARED BY
NOAH WILLIAMS (MARCH 24, 2025)

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UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

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ISSUE DATE: 24/10/03

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CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/16
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SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

DWG NO: **2401823-000-1960-200** REV: **0**

Date: 2024/10/03 4:52 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dwgs\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 200 | Paper Size: 431.8mm x 279.4mm

RECORD DRAWING PREPARED BY NOAH WILLIAMS (MARCH 24, 2025)

DESIGN LOADS:

1. DEAD LOAD - UNIT WEIGHTS AND MATERIALS ARE AS FOLLOWS:
   STRUCTURAL STEEL = 77 kN/m^3
   SOIL (ASSUMED SOIL FRICTION ANGLE = 34°) = 22 kN/m^3
2. LIVE LOAD SURCHARGE ON WALL = 6.2 kPa.

DESIGN SPECIFICATIONS:

1. DESIGN IN ACCORDANCE WITH CAN/CSA-S6-19.

STEEL NOTES:

1. ALL STEEL (INCLUDING PLATE) SHALL BE IN ACCORDANCE WITH CSA G40.21 GRADE 300W.
2. SHEET PILES ASSUMED TO BE GRADE 230 MPa STEEL.
3. THREADBAR, NUTS, AND BEVELED WASHERS TO BE DYWIDAG-SYSTEMS INTERNATIONAL GRADE 690 OR BETTER.
4. WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W-59. WELDING ELECTRODES TO BE COMPATIBLE WITH BASE METAL. ALL WELDS TO BE 6mm UNLESS OTHERWISE NOTED ON DRAWINGS.
5. FABRICATORS RESPONSIBLE FOR WELDED CONSTRUCTION MUST BE CERTIFIED FOR DIVISION 1 OR DIVISION 2 OF C.S.A. STANDARD W47.1 - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES. CERTIFICATION TO BE IN EFFECT THROUGHOUT THE PERIOD OF MANUFACTURE.
6. ALL SHOP AND FIELD WELDS SHALL BE 100% VISUALLY INSPECTED IN ACCORDANCE WITH CSA W59 WITH THE EXCEPTION THAT THE CANADIAN WELDING BUREAU (CWB) CERTIFIED "WELDING SUPERVISOR" IN THE FABRICATION SHOP OR ON THE CONSTRUCTION SITE CAN PERFORM THE VISUAL INSPECTIONS. VISUAL INSPECTIONS TO BE DOCUMENTED BY THE "WELDING SUPERVISOR" MARKING THE WORK AFTER IT HAS BEEN INSPECTED AND ACCEPTED.

EARTH WORKS:

1. EXISTING BACKFILL AND RIPRAP WITHIN THE ESTIMATED EXCAVATION EXTENTS (AS SHOWN ON DRAWING 102) TO BE STOCK PILED FOR RE-USE.
2. BACK FILL OF EAST APPROACH SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 305mm THICK, WELL COMPACTED USING A MINIMUM 1000lbs VIBRATORY PLATE COMPACTOR. MATERIAL SHALL BE RE-USED EXISTING BACKFILL OR NEW CLEAN, FREE DRAINING, WELL GRADED GRANULAR FILL OF 75mm MAXIMUM SIZE OR APPROVED EQUIVALENT.
3. RIPRAP TO BE WELL GRADED BLEND BETWEEN MINIMUM CLASS "C" (0.3m AVERAGE DIMENSION) AND MAXIMUM CLASS "D" (1.0m AVERAGE DIMENSION) DURABLE ROCK. CLASS "C" AND "D" SPECIFICATIONS PROVIDED BY IMPERIAL.

DESIGN LIFE:

1. WALL REPAIR DESIGN LIFE IS ESTIMATED TO BE 10 TO 15 YEARS AND IS LIMITED BY THE REMAINING EXISTING BRIDGE SERVICE LIFE.

MAINTENANCE:

1. RIPRAP TO BE MONITORED AND MAINTAINED TO ENSURE WALL HAS ADEQUATE SUPPORT.

HYDROLOGY:

1. THE IMPACT OF INTRODUCING RIPRAP TO THE HYDROLOGY OF THE CREEK AND CROSSING HAS NOT BEEN ASSESSED.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

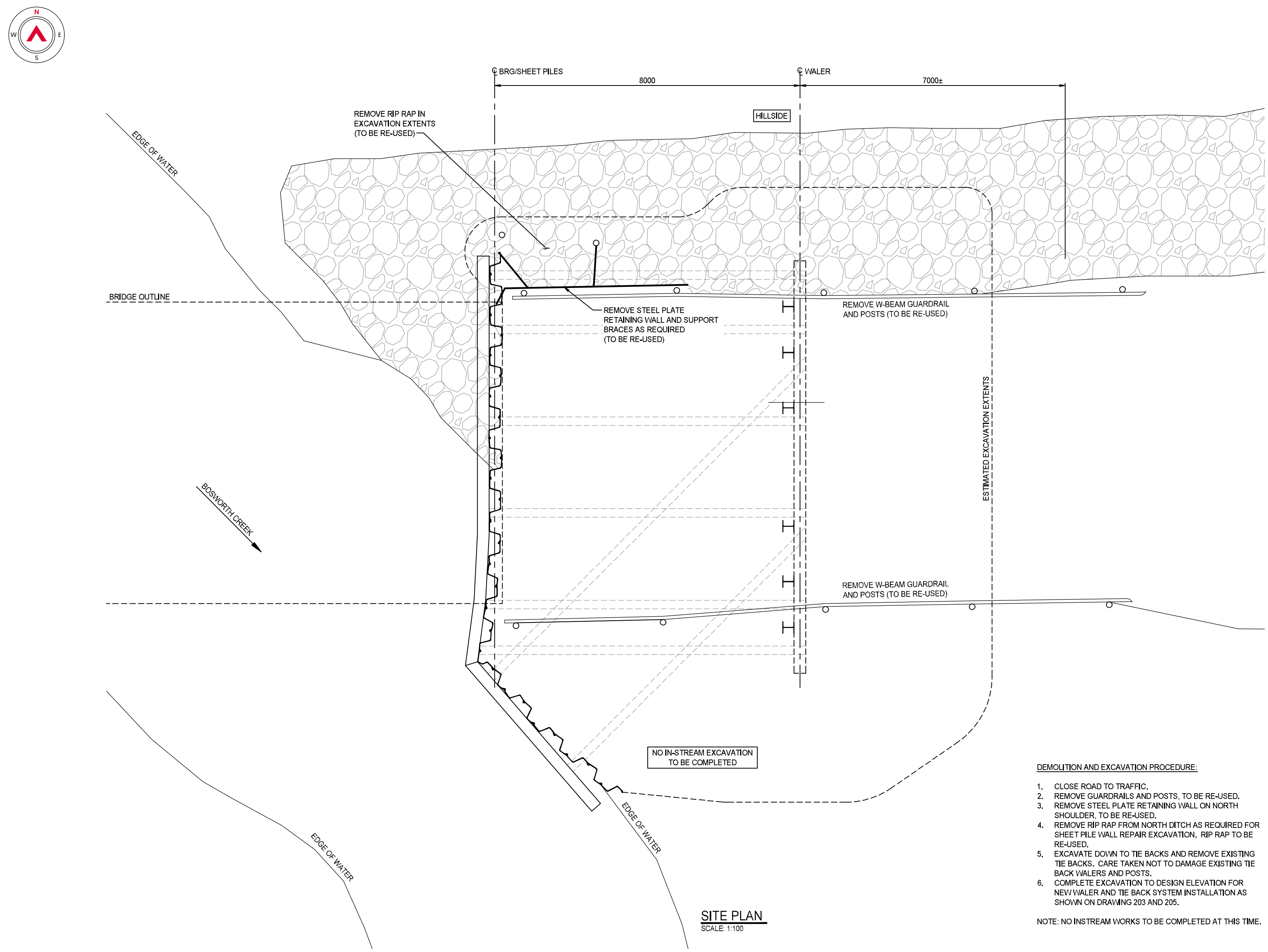
TITLE:

GENERAL NOTES AND SPECIFICATIONS

DWG NO: **2401823-000-1960-201** REV: **0**

Date: 2024/10/03 4:52 PM | User: Steve Pereira | File: P:\GP\2024\2401823 Bosworth Ck Abut Rprs\1000-Dwgs\1012-Struct\01-Production\2401823-000-1960-200 | Layout: 201 | Paper Size: 431.8mm x 279.4mm

RECORD DRAWING PREPARED BY NOAH WILLIAMS (MARCH 24, 2025)



SITE PLAN
SCALE: 1:100

DEMOLITION AND EXCAVATION PROCEDURE:

1. CLOSE ROAD TO TRAFFIC.
2. REMOVE GUARDRAILS AND POSTS, TO BE RE-USED.
3. REMOVE STEEL PLATE RETAINING WALL ON NORTH SHOULDER, TO BE RE-USED.
4. REMOVE RIP RAP FROM NORTH DITCH AS REQUIRED FOR SHEET PILE WALL REPAIR EXCAVATION. RIP RAP TO BE RE-USED.
5. EXCAVATE DOWN TO TIE BACKS AND REMOVE EXISTING TIE BACKS. CARE TAKEN NOT TO DAMAGE EXISTING TIE BACK WALERS AND POSTS.
6. COMPLETE EXCAVATION TO DESIGN ELEVATION FOR NEW WALER AND TIE BACK SYSTEM INSTALLATION AS SHOWN ON DRAWING 203 AND 205.

NOTE: NO INSTREAM WORKS TO BE COMPLETED AT THIS TIME.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

EXISTING ABUTMENT APPROACH AND CREEK

DWG NO: **2401823-000-1960-202** REV: **0**

RECORD DRAWING PREPARED BY
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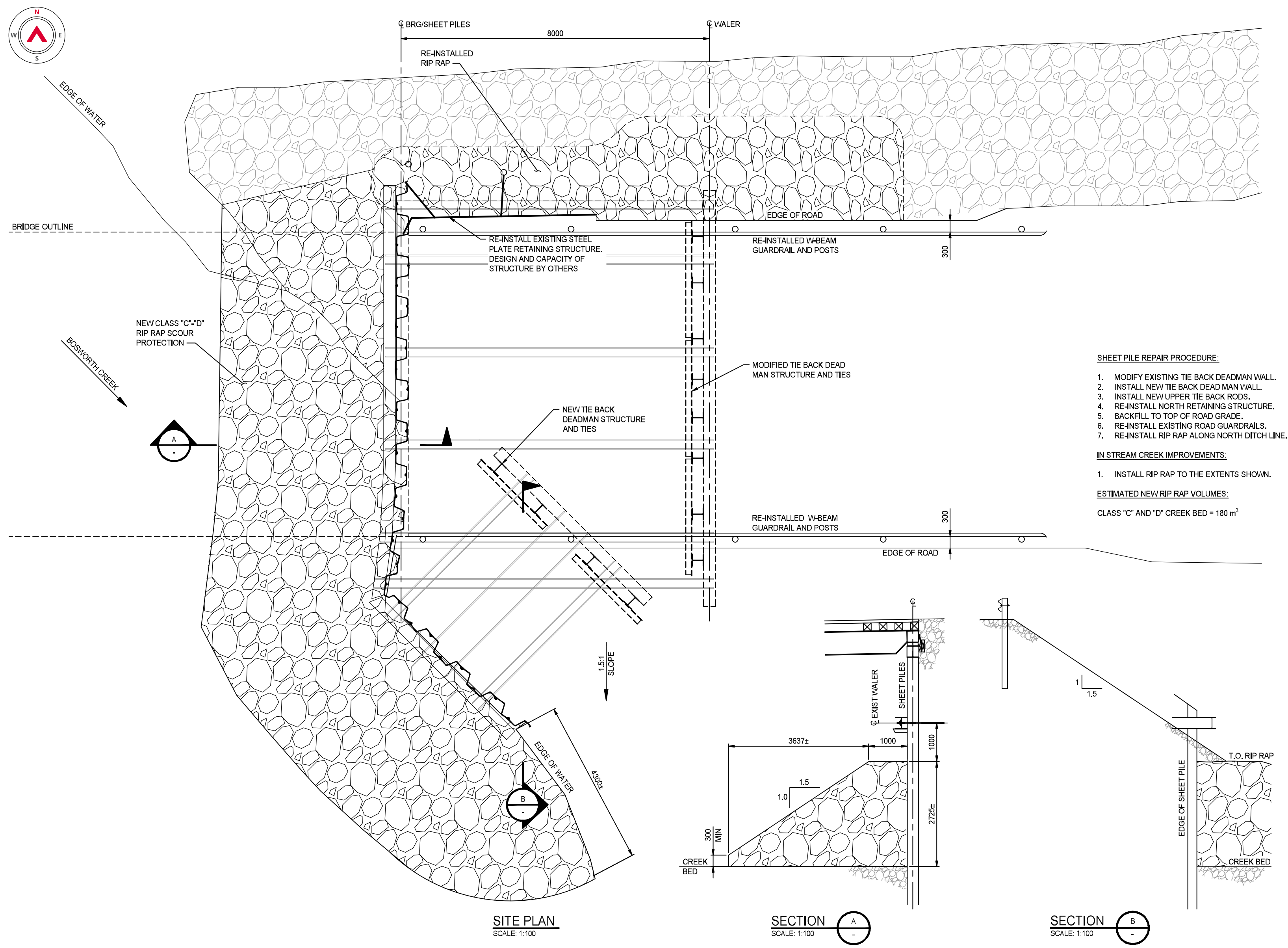

SHEET PILE REPAIR PROCEDURE:

1. MODIFY EXISTING TIE BACK DEADMAN WALL.
2. INSTALL NEW TIE BACK DEAD MAN WALL.
3. INSTALL NEW UPPER TIE BACK RODS.
4. RE-INSTALL NORTH RETAINING STRUCTURE.
5. BACKFILL TO TOP OF ROAD GRADE.
6. RE-INSTALL EXISTING ROAD GUARDRAILS.
7. RE-INSTALL RIP RAP ALONG NORTH DITCH LINE.

IN STREAM CREEK IMPROVEMENTS:

1. INSTALL RIP RAP TO THE EXTENTS SHOWN.

ESTIMATED NEW RIP RAP VOLUMES:

CLASS "C" AND "D" CREEK BED = 180 m^3

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

REPAIRED ABUTMENT SHEET PILE WALL AND CREEK IMPROVEMENTS

DWG NO: **2401823-000-1960-203** REV: **0**

Date: 2024/10/03 4:53 PM | User: Steve Pereira | Paper Size: 431.8mm x 279.4mm | Layout: 203

RECORD DRAWING PREPARED BY
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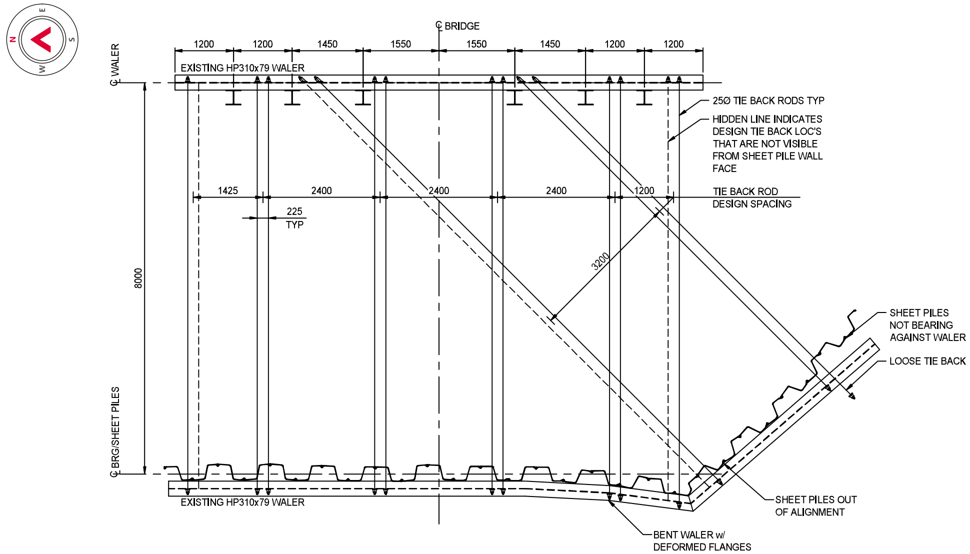

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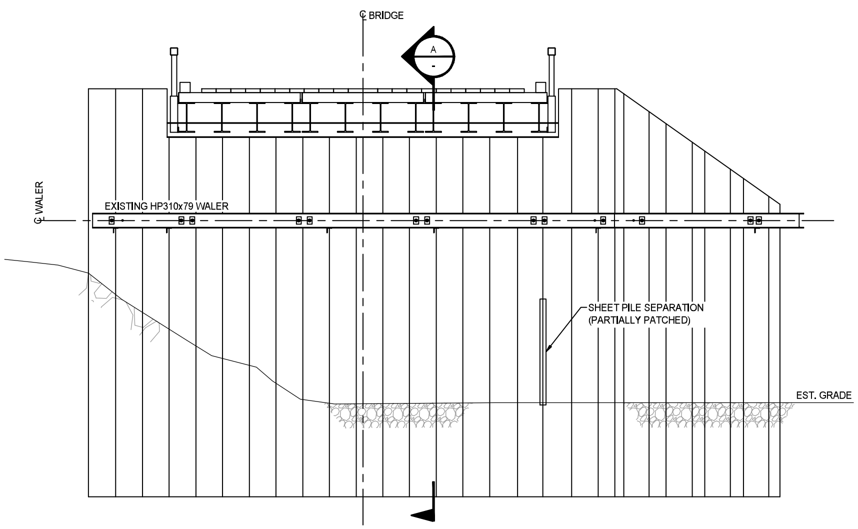

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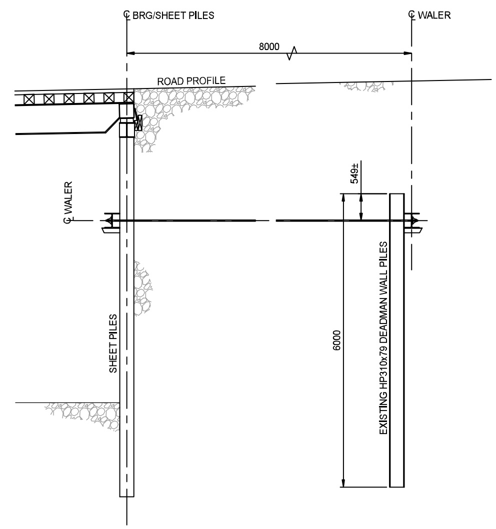

SECTION A -
SCALE: 1:100

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. RECORD DRAWINGS AND 3D SCAN INFORMATION UTILIZED TO CREATE THE EAST ABUTMENT ARRANGEMENT.
2. ALL DIMENSIONS ASSUMED ± AND ARE TO BE FIELD CONFIRMED.

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ENGINEER SEAL:

REGISTERED PROFESSIONAL ENGINEER
D.D. WILLIAMS
LICENSEE
NWT/NU
2024-10-03

REV	YY/MM/DD	DESCRIPTION	DRWN	CHKD	APVD
0	24/10/03	ISSUED FOR CONSTRUCTION	SAP	DDW	DDW
A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT:

Imperial

Allnorth

CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

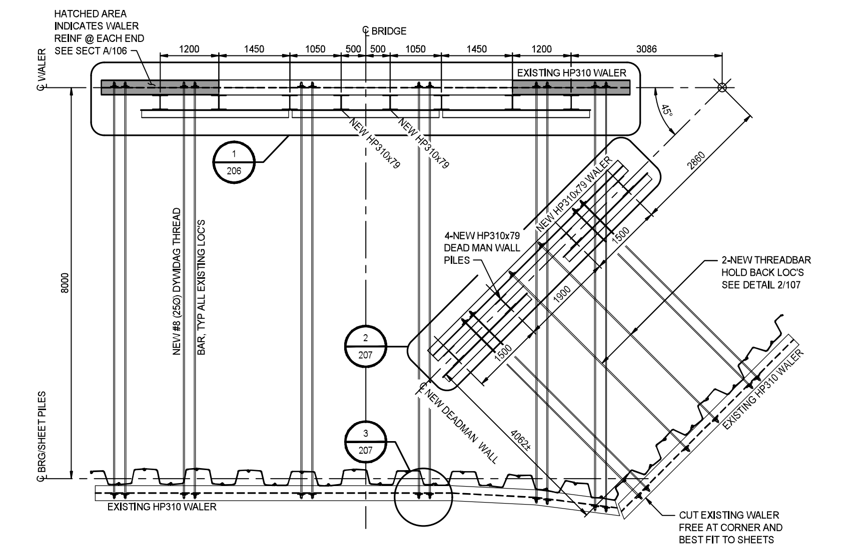
UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

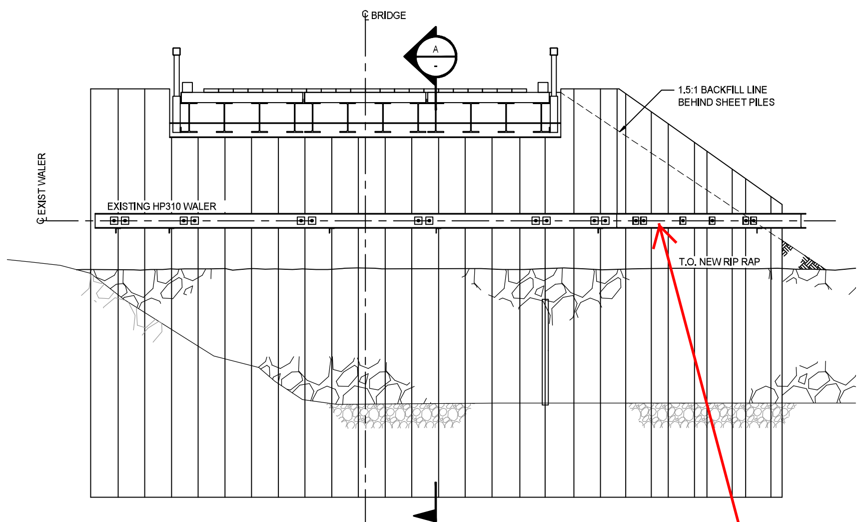
EXISTING ABUTMENT GENERAL ARRANGEMENT

DWG NO: 2401823-000-1960-204
REV: 0

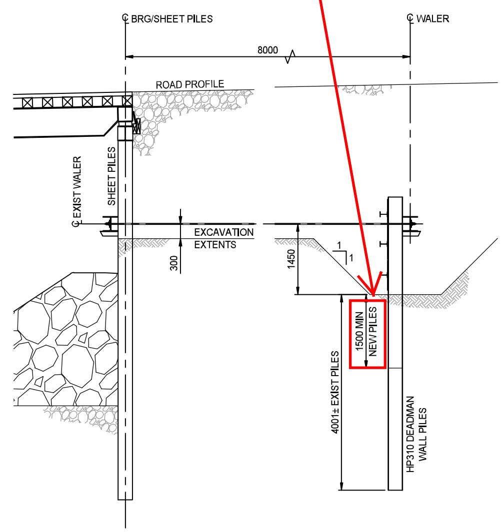
RECORD DRAWING PREPARED BY NOAH WILLIAMS (MARCH 24, 2025)



WALER PLAN
SCALE: 1:100



ELEVATION
SCALE: 1:100



SECTION A
SCALE: 1:100

PILE EMBEDMENT RANGES FROM 3200mm TO 3800mm

EXISTING SHEET PILE WALL WALER BEAM RESUPPORTED WITH STEEL PLATES CONNECTED TO THE TOP AND BOTTOM FLANGES

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS.
2. SEE DRAWING 2401823-000-1960-204 FOR EXISTING MATERIALS AND GEOMETRY NOT SHOWN.

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PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/16
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

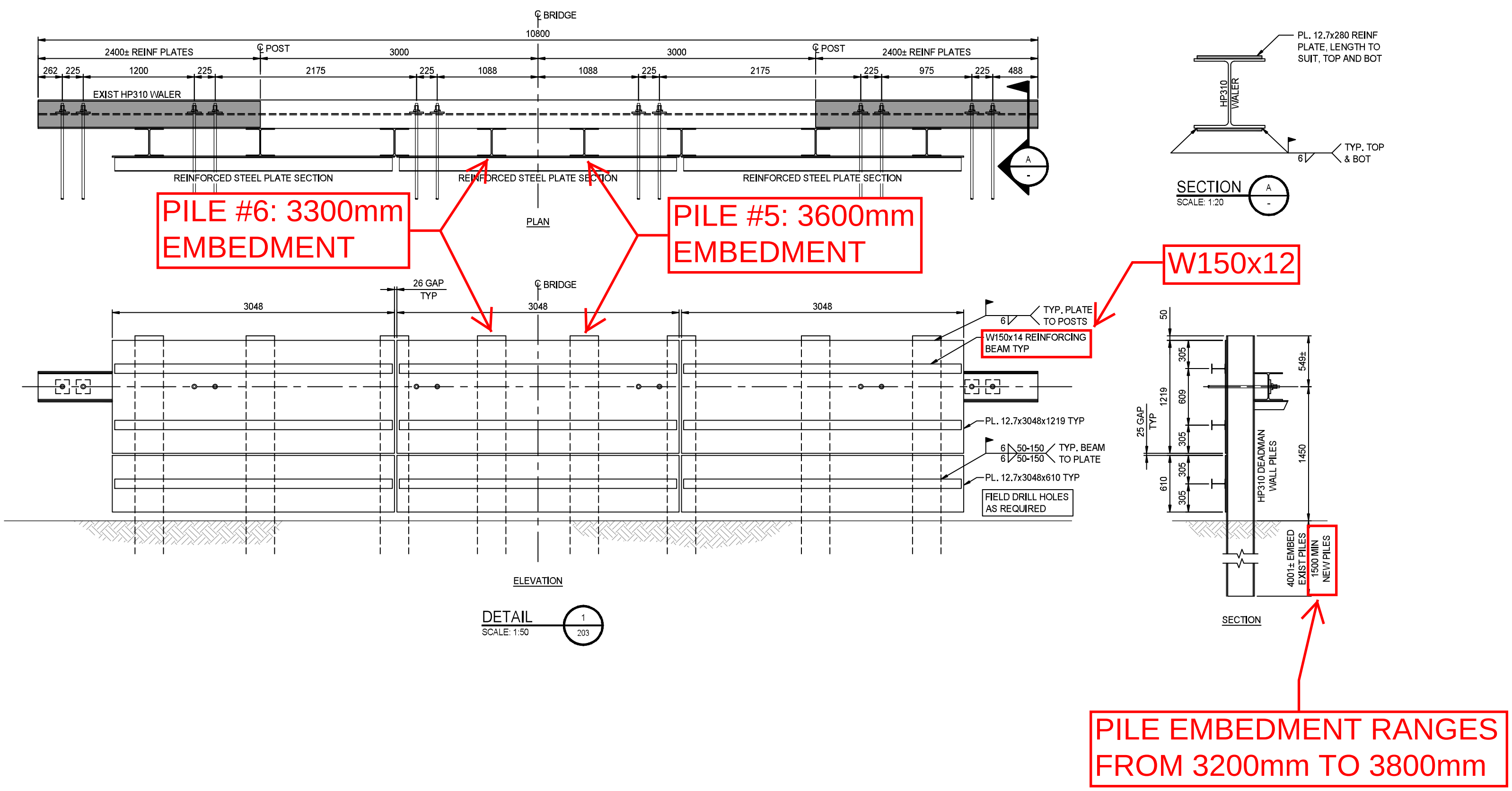
UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR
GENERAL ARRANGEMENT

DWG NO: 2401823-000-1960-205
REV: 0

RECORD DRAWING PREPARED BY
NOAH WILLIAMS (MARCH 24, 2025)



REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS..

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CLIENT NO:	-	DRWN:	SAP	DATE:	24/09/17
PROJECT NO:	2401823	DSGN:	NRW	DATE:	24/09/19
DRAWING SIZE:	ANSI "B"	CHKD:	DDW	DATE:	24/09/23
SCALE:	AS NOTED	APVD:	DDW	DATE:	24/09/23

PROJECT:

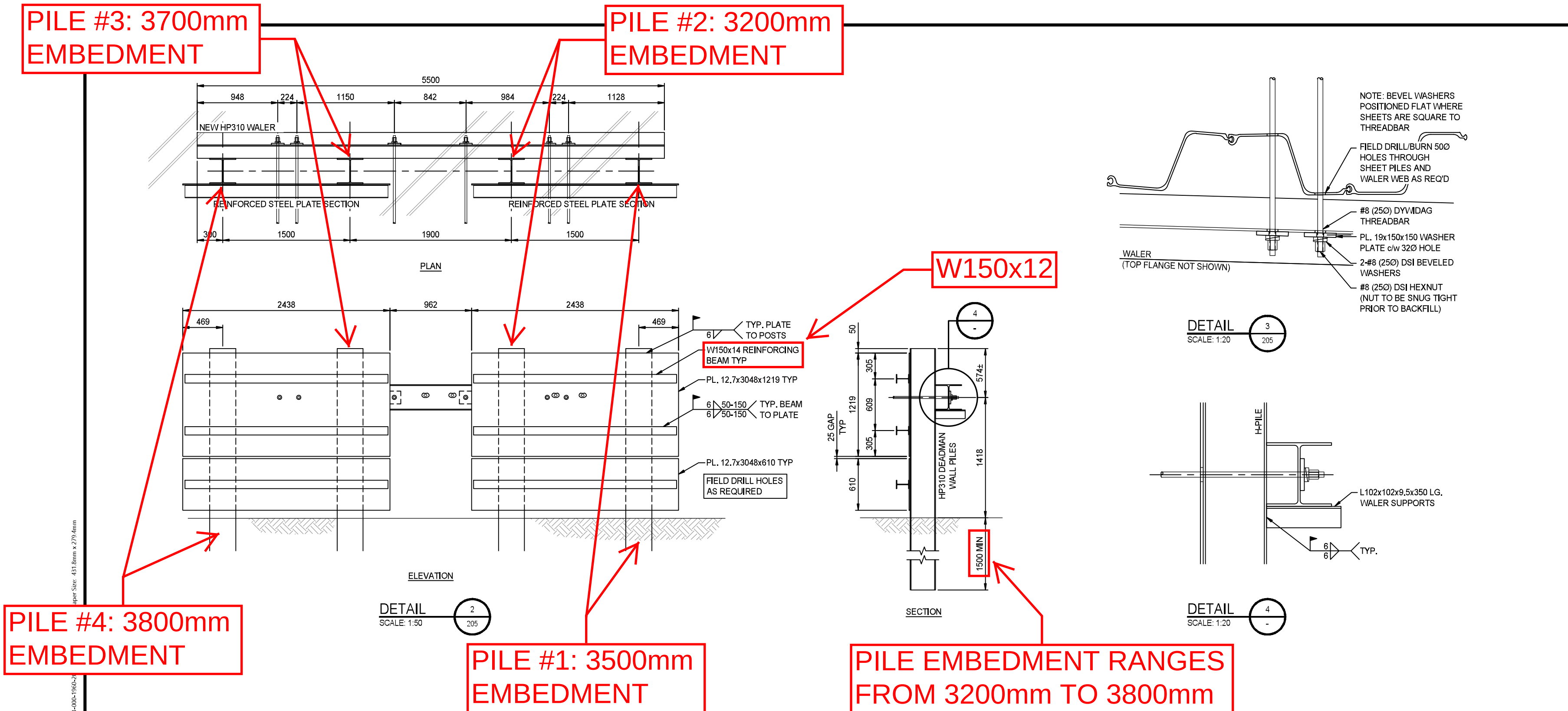
**UPPER BOSWORTH CREEK
EAST ABUTMENT
ALTERNATE
SHEET PILE WALL REPAIR**

TITLE:

**ABUTMENT REPAIR
DETAILS SHEET 1**

DWG NO: 2401823-000-1960-206 REV: 0

RECORD DRAWING PREPARED BY NOAH WILLIAMS (MARCH 24, 2025)



REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

NOTES:

1. SEE DRAWING 2401823-000-1960-201 FOR GENERAL NOTES AND SPECIFICATIONS..

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REGISTERED PROFESSIONAL ENGINEER D.D. WILLIAMS LICENSEE NWT/NU
2024-10-03

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A	24/09/23	ISSUED FOR REVIEW	SAP	DDW	DDW

CLIENT: Imperial

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CLIENT NO: -	DRWN: SAP	DATE: 24/09/17
PROJECT NO: 2401823	DSGN: NRW	DATE: 24/09/16
DRAWING SIZE: ANSI "B"	CHKD: DDW	DATE: 24/09/23
SCALE: AS NOTED	APVD: DDW	DATE: 24/09/23

PROJECT:

UPPER BOSWORTH CREEK EAST ABUTMENT ALTERNATE SHEET PILE WALL REPAIR

TITLE:

ABUTMENT REPAIR DETAILS SHEET 2

DWG NO: 2401823-000-1960-207 REV: 0