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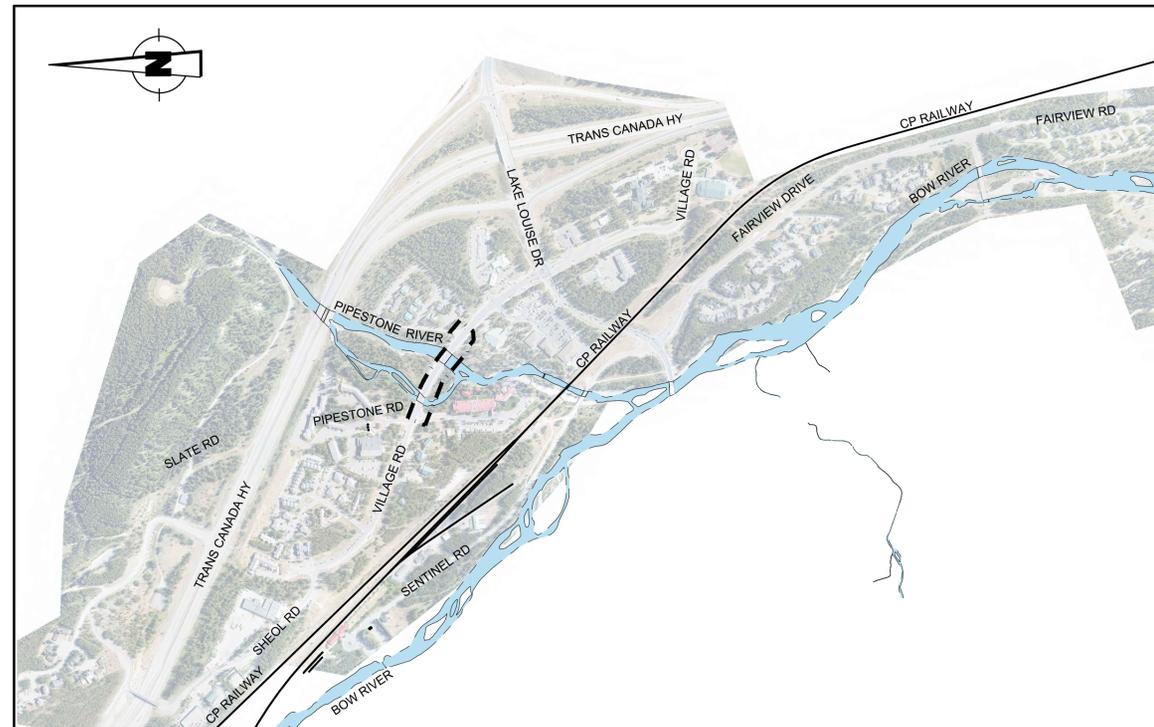
# Canada

## LAKE LOUISE TOWNSITE PHASE 3 2018 WATER & SEWER UPGRADES

BANFF NATIONAL PARK

CONSULTANT PROJECT No. 181-13597-14

DATE: 2020AUG18



SITE LOCATION PLAN

SCALE 1:7500

CIVIL DRAWING INDEX	
DWG No.	DRAWING TITLE
C100	TITLE SHEET & INDEX
C101	OVERALL SITE LOCATION PLAN
C102	PIPESTONE RIVER BRIDGE CROSSING SITE PLAN
DETAILS & ADDITIONAL INFORMATION	
DWG No.	DRAWING TITLE
C103	UNDERGROUND DETAILS (TYPICAL)
C104	SLIDE TYPE CASING SUPPORT DETAILS
C105	ABOVE GROUND & PRE-INSULATED PIPE DETAILS
C106	SURFACE DETAILS (TYPICAL)
C107	BOREHOLE LOCATION PLAN & BOREHOLE LOGS

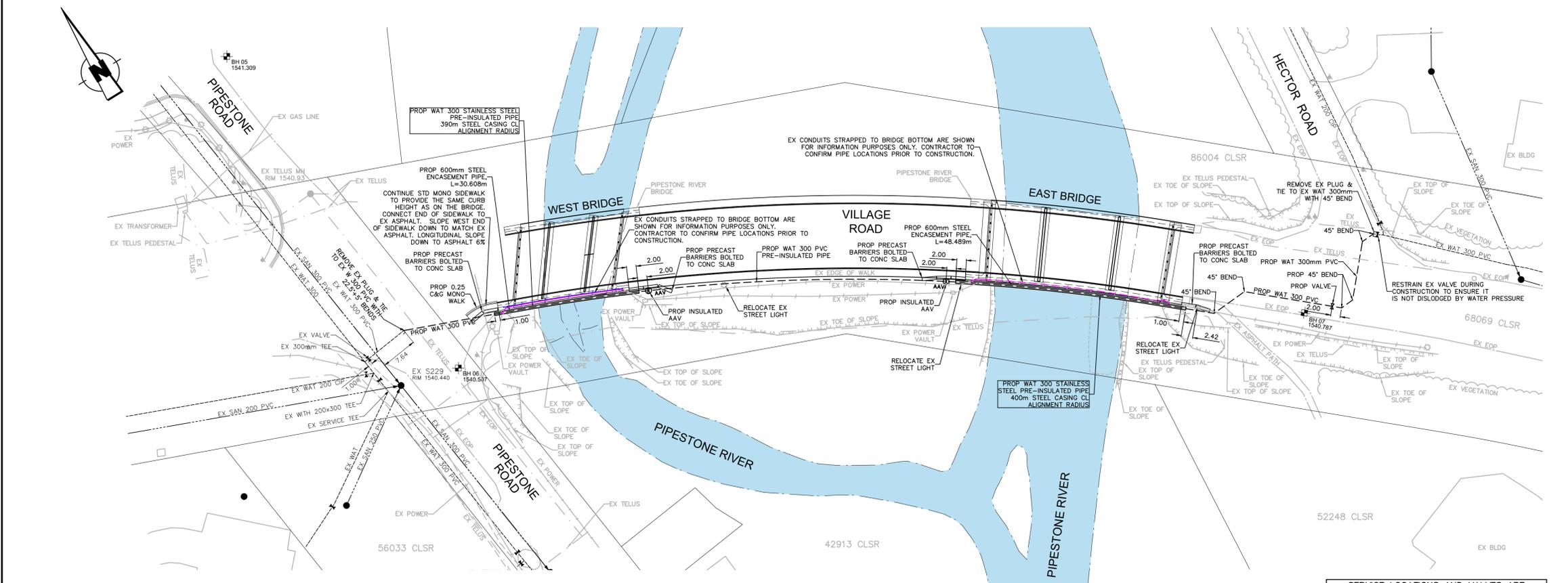
STRUCTURAL DRAWING INDEX	
DWG No.	DRAWING TITLE
S101	PIPESTONE RIVER BRIDGES PROPOSED WORK GENERAL ARRANGEMENT
S102	PIPESTONE RIVER BRIDGES PROPOSED WORK STEEL DETAILS
S103	PIPESTONE RIVER BRIDGES PROPOSED WORK LAYOUT AND ANCHOR DETAILS

ELECTRICAL DRAWING INDEX	
DWG No.	DRAWING TITLE
E101	ELECTRICAL SITE PLAN



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**LEGEND**

-C100-	BLOCK PROFILE DRAWING NUMBER
---	CONSTRUCTION BOUNDARY
---	EXISTING PROPERTY LINE
---	EXISTING WATERMAIN & VALVE
---	PROPOSED WATERMAIN & VALVE
---	PROPOSED WATERMAIN REPLACEMENT VIA PIPE BURSTING
---	EXISTING SANITARY SEWER & 5A MH
---	PROPOSED SANITARY SEWER & 5A MH
---	PROPOSED SANITARY SEWER REPLACEMENT VIA PIPE BURSTING
---	EXISTING POWER - UNDERGROUND
---	EXISTING POWER - OVERHEAD
---	EXISTING TELUS
---	EXISTING GAS LINE
---	EXISTING POWER POLE w/ GUY WIRE
---	EXISTING STREET LIGHT
---	EXISTING HYDRANT
---	EXISTING WATER MANHOLE
---	SENDING & RECEIVING PITS
---	BOREHOLE LOCATION
---	BOREHOLE NUMBER & ELEVATION
---	SEE DWG No. C107 FOR BOREHOLE LOG

5				
4				
3	2020AUG18	ISSUED FOR TENDER	PVD	LK
2	2020JUL03	ISSUED FOR 90% SUBMISSION	AD	LK
1	2020MAR30	ISSUED FOR 50% SUBMISSION	PVD	JW
No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé

Revision / Revision

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Western and Northern Region  
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Project title/Titre du projet

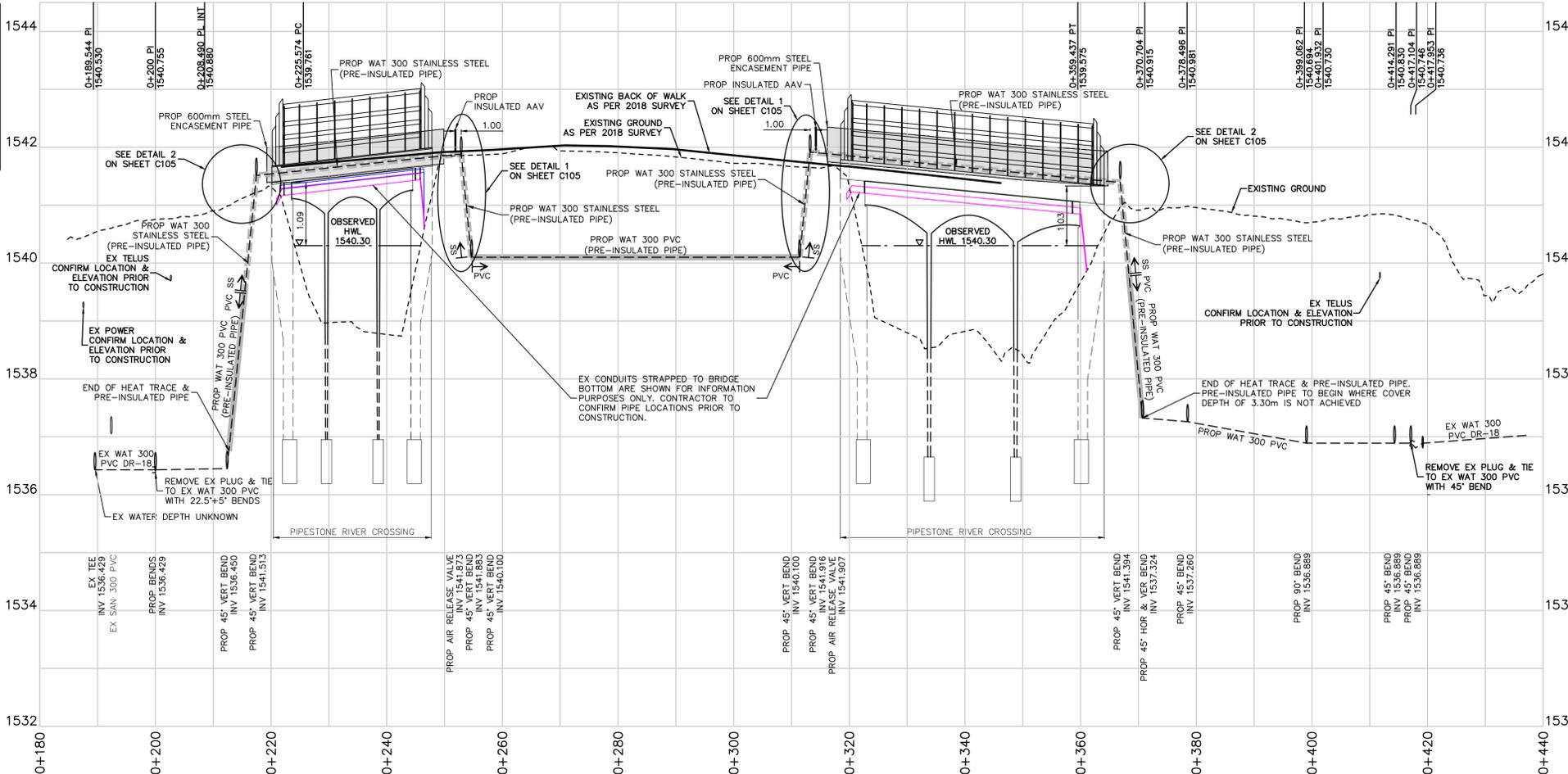
**LAKE LOUISE TOWNSITE  
PHASE 3 - 2018 WATER  
& SEWER UPGRADES  
BANFF NATIONAL PARK**

Drawing title/Titre du dessin

**PIPESTONE RIVER  
BRIDGE CROSSING  
SITE PLAN**

Surveyed by/Arpenté par WSP GEOMATICS	Drawn by/Dessiné par PVD	Date/Date 2020MAR18
Designed by/Concept par DP	Reviewed by/Revisé par LK	Scale/Échelle 1:500
PWGSC Project Manager/Administrateur de Projets TPSSC KD		
Client Acceptance/Acceptation du client Approved by/Approuvé par		
Park Responsible Officer/Agent Responsable		PWGSC Project Manager/Administrateur de Projets TPSSC
Project No./No. du projet 181-13597-14	Asset No./No. du bien -	Sheet No./No. de la feuille 3
Drawing Reference No./No. de référence du dessin C102		8

- NOTES**
- CONTRACTOR IS TO SUPPLY ANY REQUIRED POTABLE WATER BYPASSES FOR THE WORK.
  - PIPE RESTRAINTS TO BE TO THE PIPE PRESSURE RATING 150 PSI.
  - INSTALLED WATERMAIN TESTS ARE AS PER SPECIFICATION.
  - PRECAST BARRIERS SHALL BE PRECAST 'F' SHAPE BARRIER NCHRP 350 TEST LEVEL 3 AS DETAILED ON ALBERTA TRANSPORTATION DRAWING No. CB6 4.2 M 16. FOR INSULATED PIPE:
  - 5.1. STAINLESS STEEL PIPING TO HAVE TWO HEAT TRACE CABLES.
  - 5.2. PVC PIPING TO HAVE ONE HEAT TRACE CABLE.



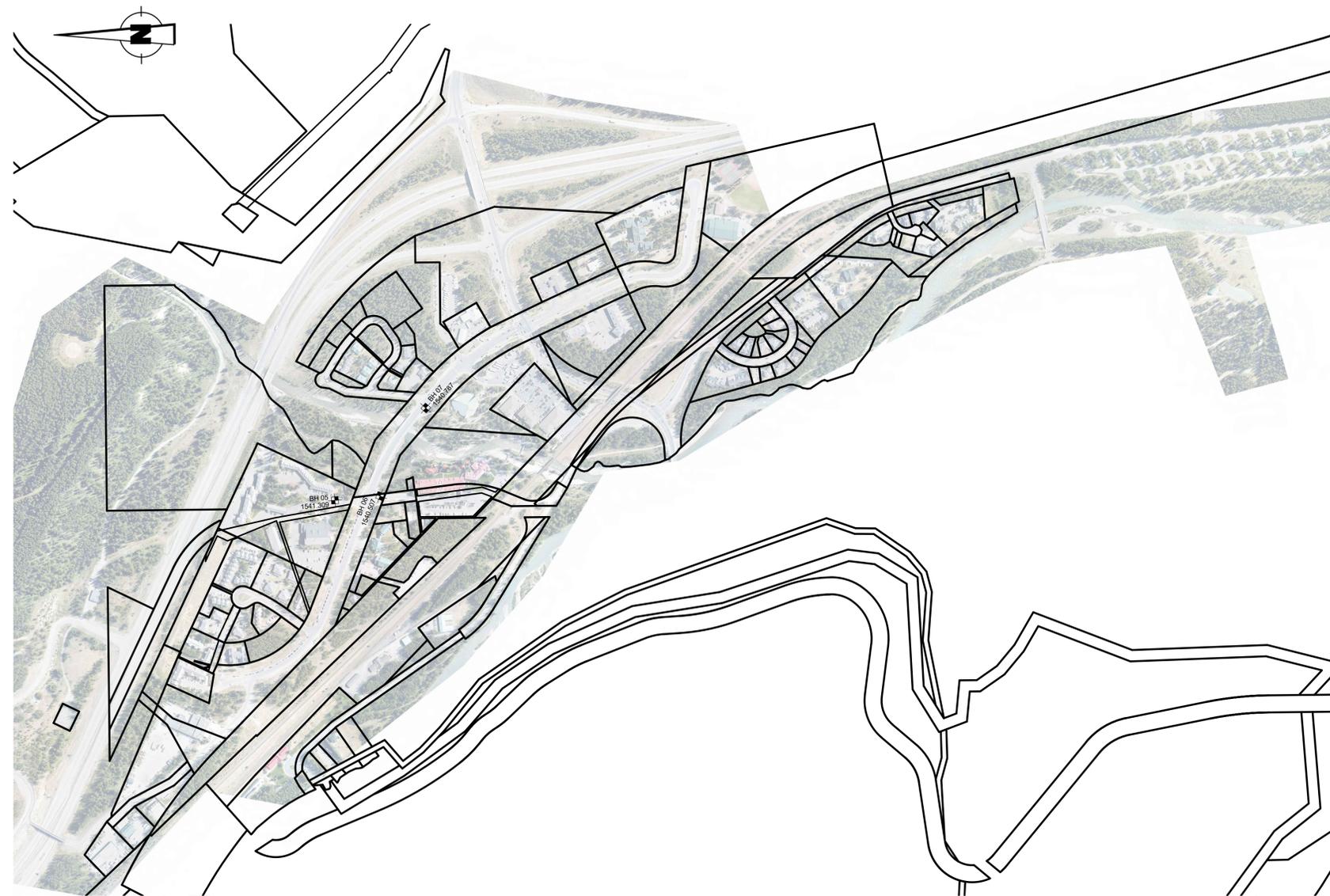
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LOCATION PLAN  
SCALE - 1:5000

LEGEND

BH 05 1541.200 BOREHOLE LOCATION  
c/w BOREHOLE NUMBER & ELEVATION

NOTES

1. THE CONTRACTOR SHOULD ASSESS THE SUITABILITY AND THE ANTICIPATED DIFFICULTY LEVEL OF THE PROPOSED TRENCHLESS INSTALLATION METHOD BASED ON OVERALL SITE CONDITIONS, EXPERIENCE IN SIMILAR WORK CONDITIONS, AND SUBSURFACE INFORMATION AVAILABLE FROM THE BOREHOLES PROVIDED IN THE GEOTECH REPORT PROVIDED BY WSP, SEPTEMBER 04, 2019.
2. AS BOREHOLES ARE A LOCALIZED REPRESENTATION OF THE TOTAL STUDY AREA, SUBSURFACE CONDITIONS MAY VARY BETWEEN AND/OR BEYOND THE BOREHOLE LOCATIONS. IF CONDITIONS ENCOUNTERED AT THE SITE VARY SIGNIFICANTLY FROM THAT REPORTED IN THE GEOTECHNICAL REPORT, WSP SHOULD BE NOTIFIED IMMEDIATELY SO THAT OUR INTERPRETATION AND RECOMMENDATIONS CAN BE REVIEWED AND REVISED IF NECESSARY.

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3	2020AUG18	ISSUED FOR TENDER	PVD	LK
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Revision / Revision

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Consultant's Name  
Nom de l'expert-conseil

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LAKE LOUISE TOWNSITE  
PHASE 3 - 2018 WATER  
& SEWER UPGRADES  
BANFF NATIONAL PARK

Drawing title/Titre du dessin

BOREHOLE LOCATION PLAN  
& BOREHOLE LOGS

Surveyed by/Arpenté par  
WSP  
GEOMATICS

Drawn by/Dessiné par  
PVD

Date/Date  
2020JUL30

Designed by/Concept par  
DP

Reviewed by/Revisé par  
LK

Scale/Échelle  
AS SHOWN

PWGSC Project Manager/Administrateur de Projets TPSSC  
KD

Client Acceptance/Acceptation du client  
Approved by/Approuvé par

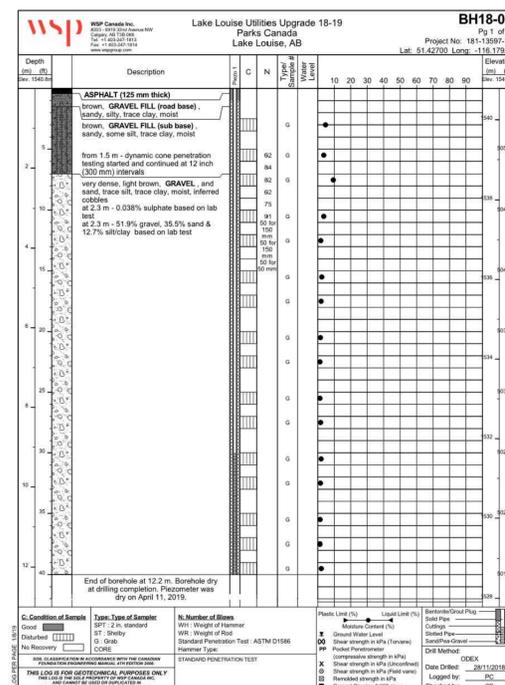
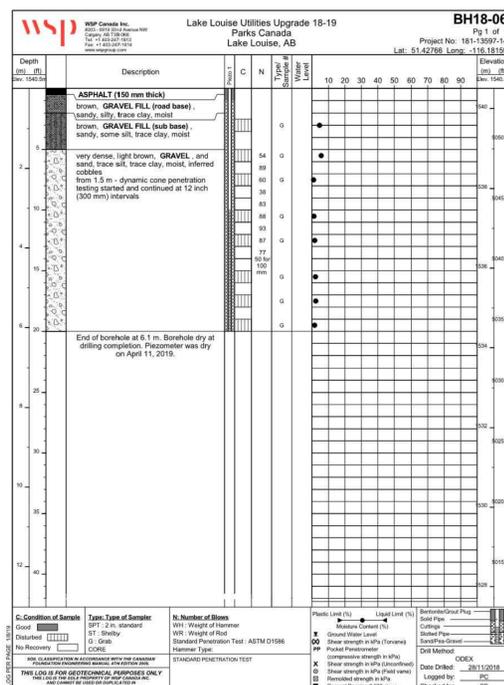
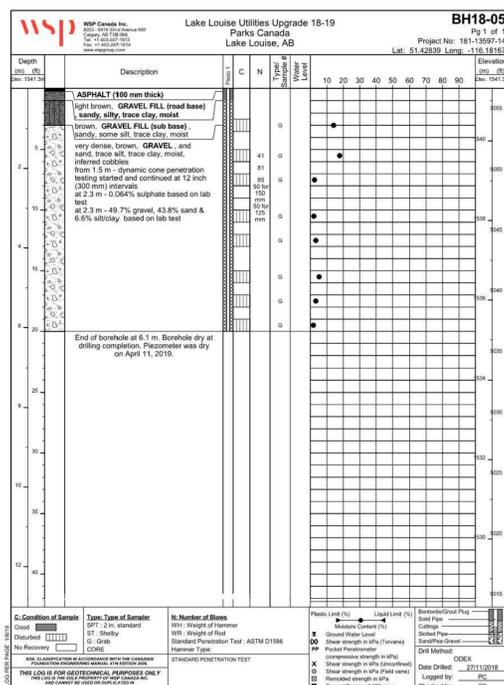
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PWGSC Project Manager/Administrateur de Projets TPSSC

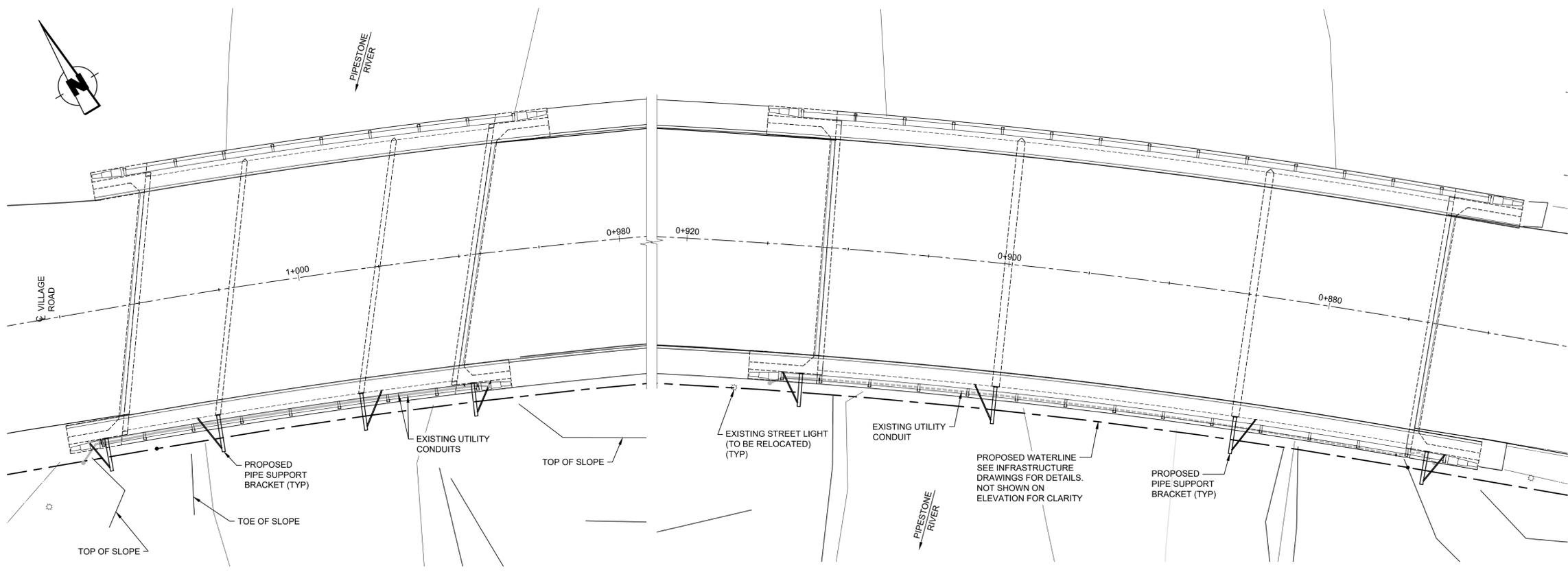
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181-13597-14

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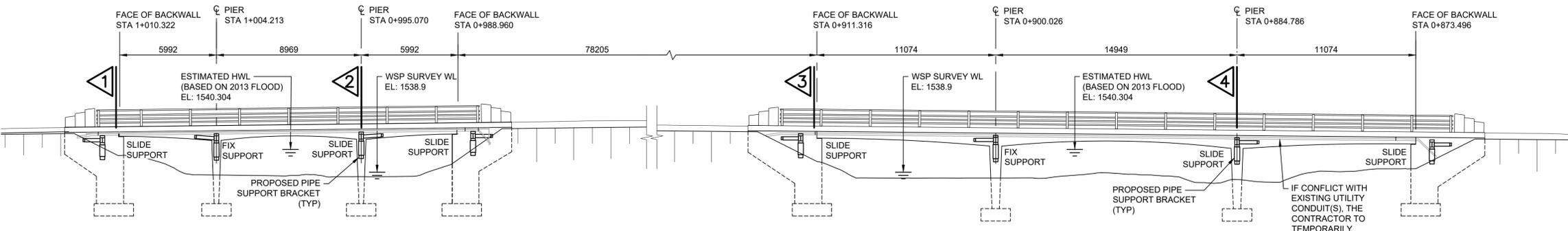
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Drawing Reference No./No. de référence du dessin  
C107



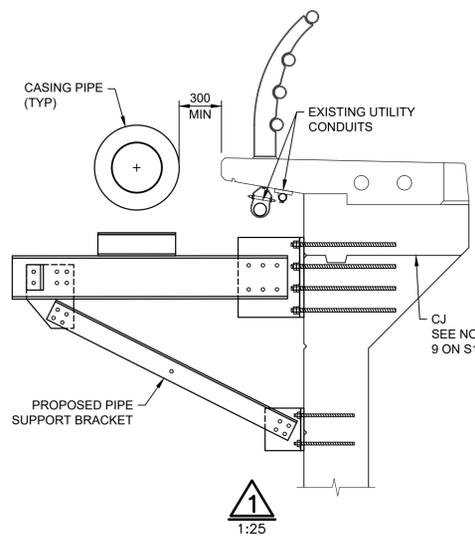


PLAN VIEW  
1:150

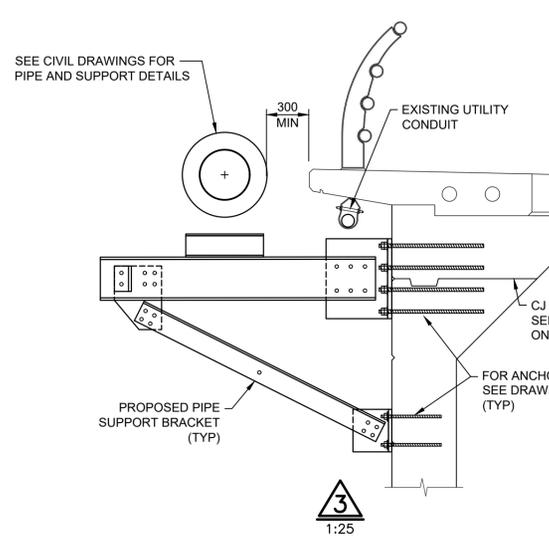
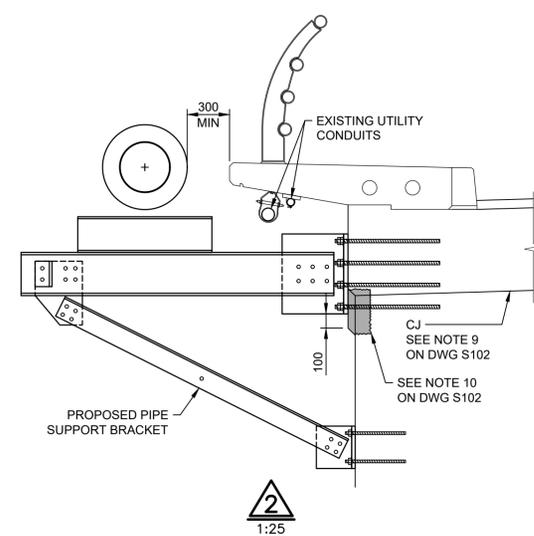


ELEVATION ALONG SOUTH EDGE OF DECK  
1:150

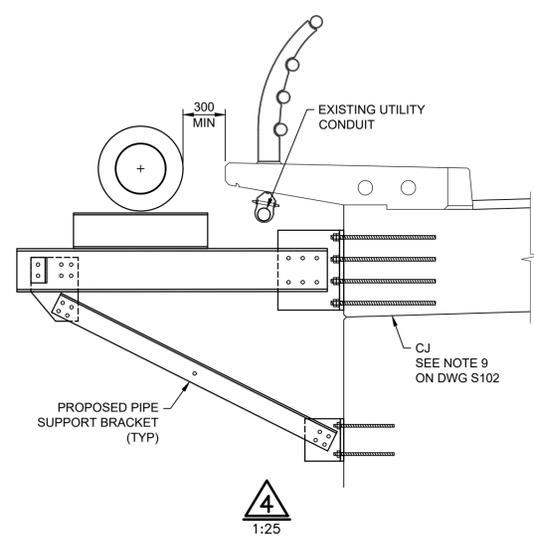
NOTE:  
ELEVATIONS AND SPAN LENGTHS ARE ALONG SOUTH EDGE OF DECK  
STATIONING ALONG EXISTING CONTROL LINE



WEST BRIDGE SECTIONS  
1:25



EAST BRIDGE SECTIONS  
1:25



SEE DRAWING S102 FOR GENERAL NOTES

5				
4				
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1	2020AUG18	ISSUED FOR TENDER	JM	DN
No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé

Revision / Revision	
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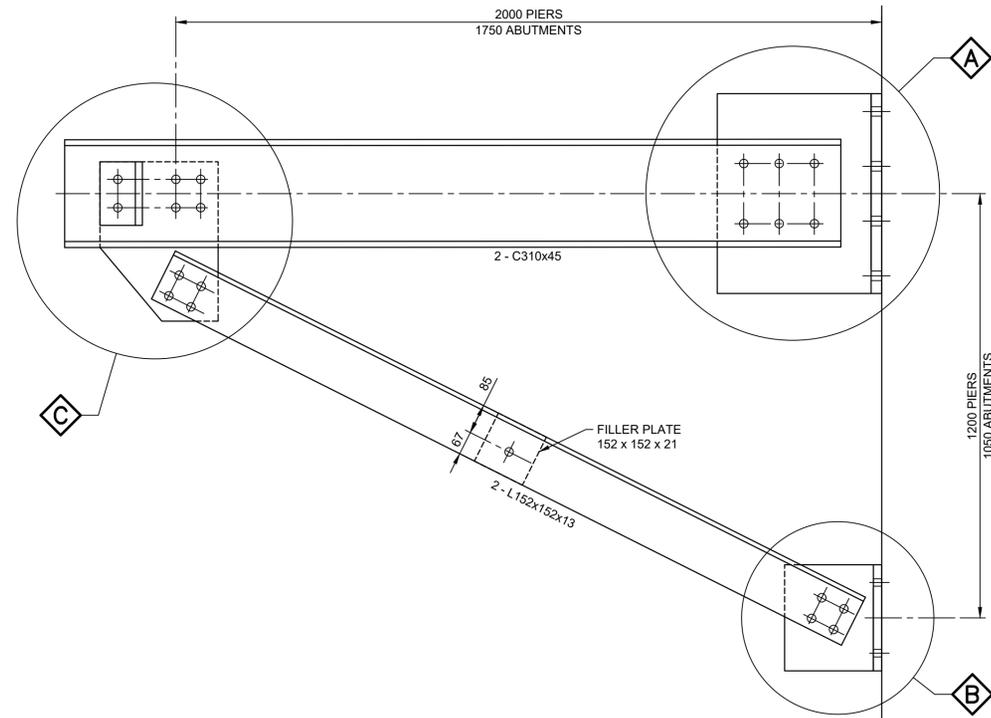
Client/client: Parks Canada Agency / L'Agence Parcs Canada  
Western and Northern Region / Ouest et Nord du Canada

Project title/Titre du projet: LAKE LOUISE TOWNSITE PHASE 2 – 2018 WATER & SEWER UPGRADES BANFF NATIONAL PARK

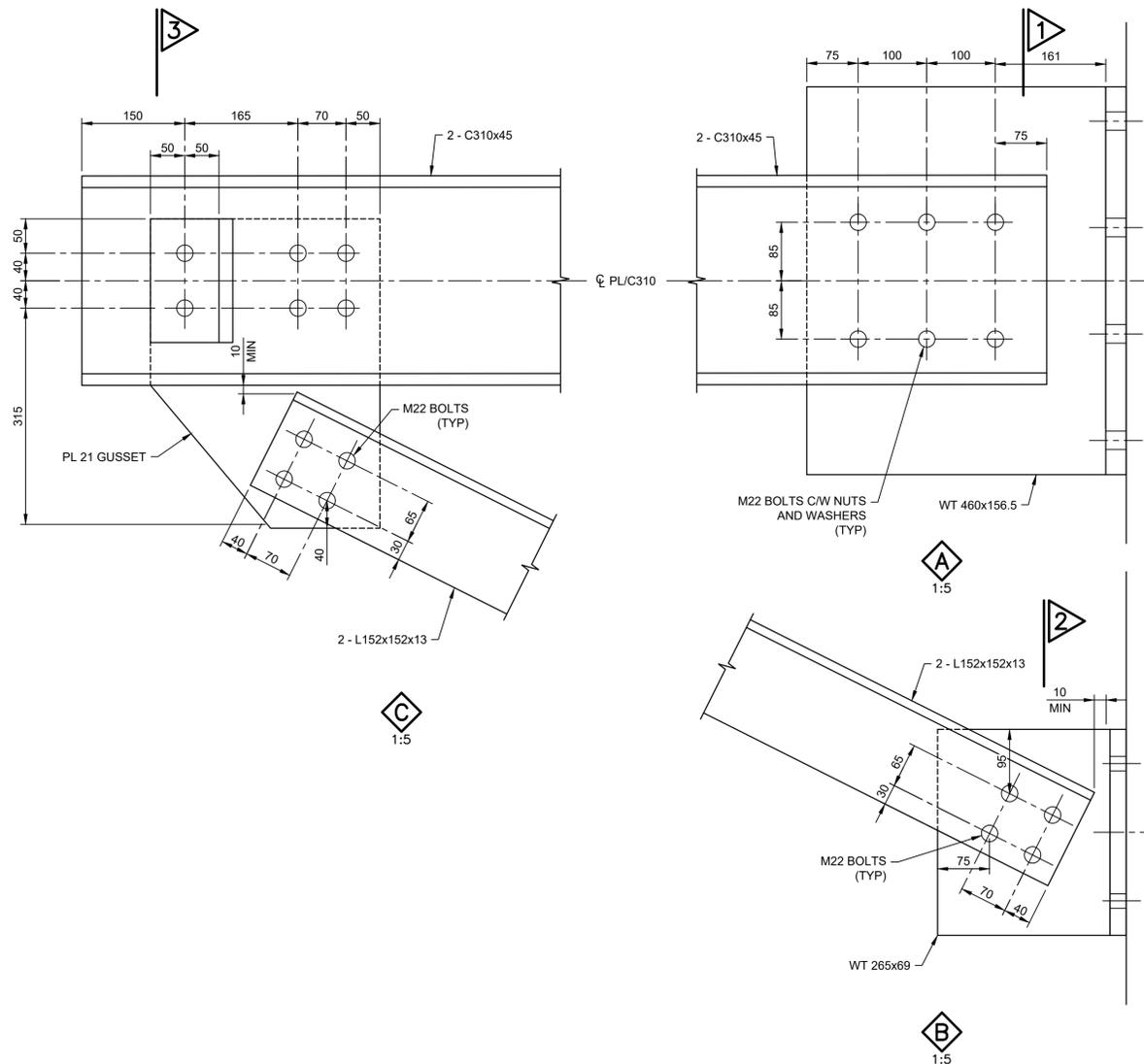
Drawing title/Titre du dessin: PIPESTONE RIVER BRIDGES PROPOSED WORK GENERAL ARRANGEMENT

Surveyed by/Arpenté par: WSP GEOMATICS	Drawn by/Dessiné par: JM	Date/Date: 2020JUN18
Designed by/Concept par: HAA	Reviewed by/Revisé par: HOA	Scale/Échelle: AS SHOWN
PWGSC Project Manager/Administrateur de Projets TPSSGC: KD		
Client Acceptance/Acceptation du client: Approved by/Approuvé par: [Blank]		
Park Responsible Officer/Agent Responsable: PWGSC Project Manager/Administrateur de Projets TPSSGC: [Blank]		
Project No./No. du projet: 181-13597-14	Asset No./No. du bien: -	Sheet No./No. de la feuille: 1 OF 3
Drawing Reference No./No. de référence du dessin: S101		

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STEEL SUPPORT DETAIL  
1:10



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO CAN/CSA-G40.20-13/G40.21-13 (R2018), STEEL GRADE SHALL BE 350AT CATEGORY 3.
3. ALL WELDING SHALL CONFORM TO CAN/CSA W59 WITH WELD SIZE SHOWN ON DRAWINGS.
4. STRUCTURAL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM SPECIFICATIONS F3125, GRADE A325/A325M, A563/A563M, AND F436/F436M, RESPECTIVELY. BOLTS, NUTS, AND WASHERS FOR CORROSION RESISTANT STEEL SHALL BE TYPE 3. BOLTS, NUTS, AND WASHERS FOR CONNECTING GALVANIZED COMPONENTS SHALL BE TYPE 1 AND SHALL BE GALVANIZED.
5. ALL BOLTS SHALL BE M22 WITH THREADS. STRUCTURAL BOLTS SHALL BE INSTALLED BY TURN-OF-NUT METHOD FROM A SNAG-TIGHT CONDITION.
6. CONTRACTOR SHALL VERIFY EXISTING STRUCTURES AND UTILITIES AND VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCY OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. ALL ANCHOR BOLTS SHALL BE STAINLESS STEEL PER ASTM F593 AND F594.
8. DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DRAWINGS (I.E. INFRASTRUCTURE, ETC.)
9. LOCATION OF CONSTRUCTION JOINTS (CJS) ARE TAKEN FROM AS-BUILT DRAWINGS AND IS TO BE FIELD-VERIFIED BY THE CONTRACTOR. ANCHORS SHOULD BE INSTALLED SUCH THAT THEY DO NOT CONFLICT WITH EXISTING CJS AND CJS BE AT THE MIDDLE OF TWO ANCHORS OR SUFFICIENTLY OUTSIDE THE ANCHORS.
10. EXISTING CONCRETE SHOULD BE REMOVED FOR A MINIMUM OF 25 mm BEHIND EXISTING REBARS, AND REPLACED WITH AN APPROVED ALBERTA TRANSPORTATION NON-SHRINK PATCHING MATERIAL BEFORE REMOVAL, SAWCUT 20 mm AROUND THE REMOVAL AREA.
11. ANY GALVANIZING REPAIR SHALL BE DONE BY APPROVED METALIZING PROCEDURE.

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1	2020AUG18	ISSUED FOR TENDER	JM	DN
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Client/client: Parks Canada Agency / L'Agence Parcs Canada

Western and Northern Region / Ouest et Nord du Canada

Project title/Titre du projet: LAKE LOUISE TOWNSITE PHASE 2 - 2018 WATER & SEWER UPGRADES BANFF NATIONAL PARK

Drawing title/Titre du dessin: PIPESTONE RIVER BRIDGES PROPOSED WORK STEEL DETAILS

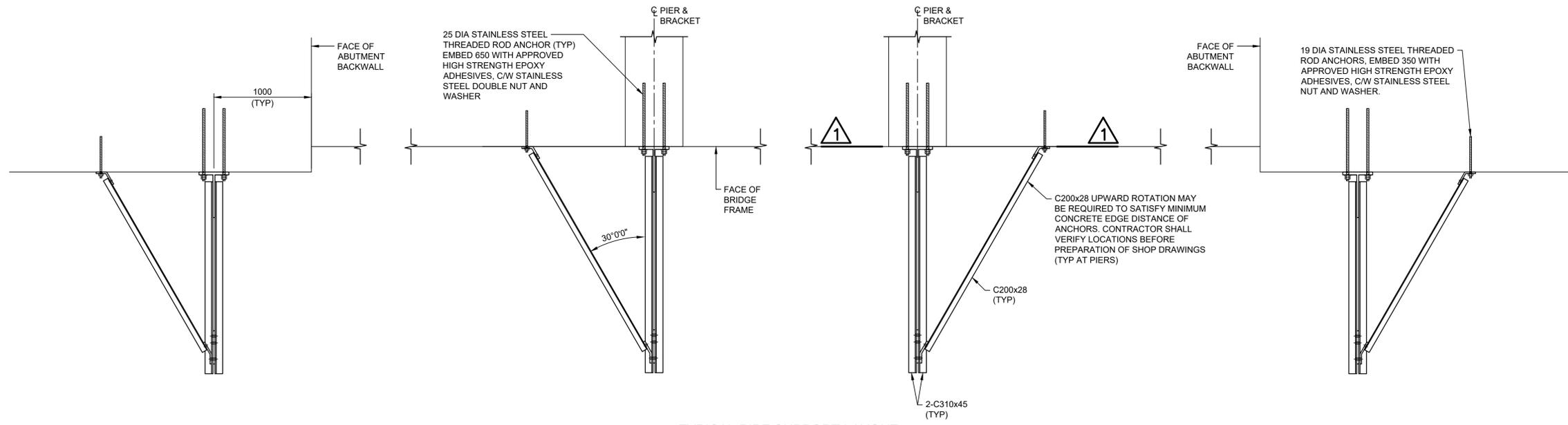
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Designed by/Concept par: HAA	Reviewed by/Revisé par: HOA	Scale/Échelle: AS SHOWN

PWOSC Project Manager/Administrateur de Projets TPSSC: KD

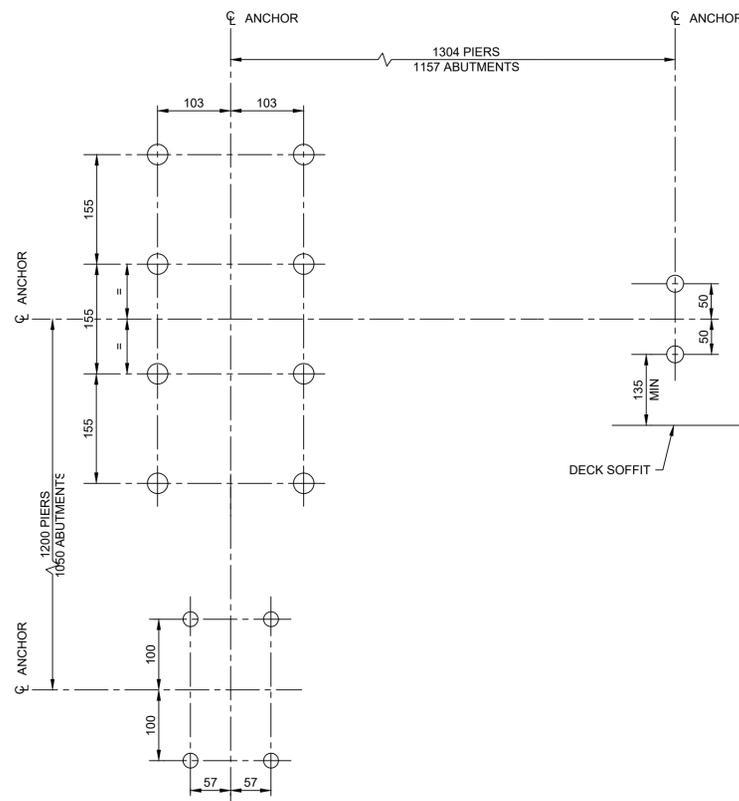
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Project No./No. du projet: 181-13597-14	Asset No./No. du bien: -	Sheet No./No. de la feuille: 2 OF 3
Drawing Reference No./No. de référence du dessin: S102		

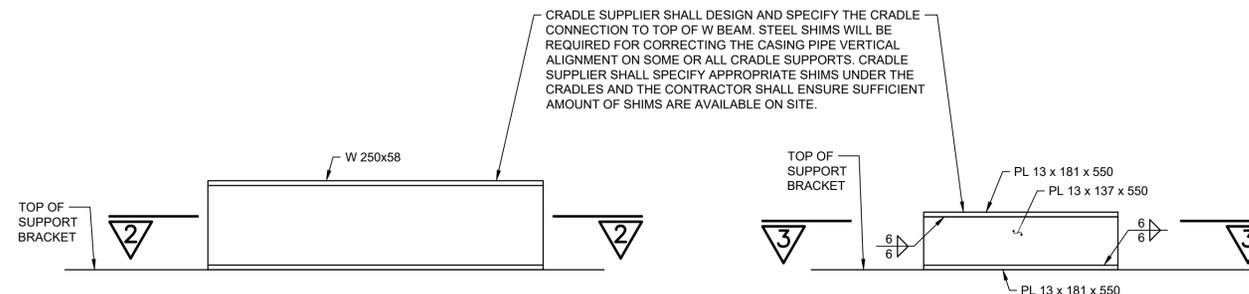
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TYPICAL PIPE SUPPORT LAYOUT  
1:25

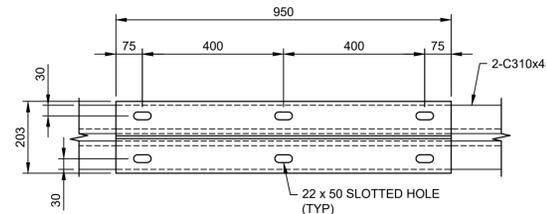


1 ANCHOR LAYOUT  
1:5

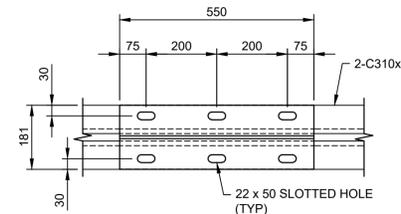


CASING FIX SUPPORT DETAILS  
1:10

CASING SLIDE SUPPORT DETAILS  
1:10



2  
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3  
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**ANCHOR INSTALLATION PROCEDURE:**

1. THE CONCRETE SURFACE WHERE ANCHOR PLATES WILL BE INSTALLED NEED TO BE HAMMER TESTED BY THE ENGINEER FOR ANY SIGNS OF DELAMINATION. IF ANY DELAMINATION IS PRESENT, THEN THE UNSOUND CONCRETE SHALL BE REMOVED UNTIL REACHING THE SOUND CONCRETE. THE CONCRETE SHALL BE REMOVED MINIMUM 25 mm BEHIND THE EXISTING REBAR. THE PROPER PATCHING MATERIAL FROM ALBERTA TRANSPORTATION APPROVED PRODUCTS SHALL BE USED TO REPLACE THE REMOVED CONCRETE. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PATCHING MATERIAL PLACING AND CURING.
2. LOCATE REINFORCING STEEL IN EXISTING CONCRETE BEFORE DRILLING.
3. LAYOUT ANCHOR LOCATIONS ACCORDING TO DRAWING AND TO AVOID EXISTING REINFORCING IF POSSIBLE WITH COORDINATION WITH THE ENGINEER. ENGINEER APPROVAL IS REQUIRED FOR THE ANCHOR LOCATIONS BEFORE START OF DRILLING. IF THE HOLE LOCATIONS INTERFERE WITH EXISTING REINFORCEMENT A REBAR CUTTER SHALL BE USED TO DRILL THROUGH EXISTING REINFORCEMENT.
4. ALL THE PERSONNEL DOING DRILLING OR INSTALLING THE ANCHORS SHALL HAVE REQUIRED TRAINING PER CSA STANDARDS AND SUBMIT THE WRITTEN CERTIFICATE TO ENGINEER BEFORE DRILLING.
5. UNUSED HOLES SHALL BE GROUTED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. A HOLLOW DRILL BIT ALONG WITH VACUUM SYSTEM SHALL BE USED TO DRILL THE HOLES AUTOMATICALLY REMOVING THE DUST AVOIDING THE NEED TO CLEAN THE HOLES AFTER DRILLING.
7. IN LOCATIONS WHERE THE EXISTING CONCRETE HAS BEEN CHIPPED BACK TO SOUND CONCRETE, LONGER ANCHORS SHALL BE USED TO PROVIDE THE MINIMUM EMBEDMENT DEPTH IN EXISTING CONCRETE.
8. ANCHORS SHALL BE INSTALLED IN ACCORDANCE TO THE MANUFACTURER'S RECOMMENDATIONS AS SPECIFIED IN THE DRAWINGS.
9. ADDITIONAL SAMPLE ANCHORS SHALL BE INSTALLED BY THE CONTRACTOR AT THE LOCATIONS TO BE SPECIFIED BY THE ENGINEER FOR TENSILE TESTING BY AN INDEPENDENT TESTING AGENCY AND WITNESSED BY THE ENGINEER. TENSILE TESTING SHALL CONFORM TO ASTM E488 AND MANUFACTURER'S RECOMMENDATION. TESTING WILL BE LIMITED TO 2 LONG ANCHORS AND 1 SHORT ANCHOR PER BRIDGE. SAMPLE TEST ANCHORS SHALL BE CUT FLUSH AFTER TESTING IS COMPLETE.
10. IF THE ANCHOR PLATE DOES NOT MATCH THE INSTALLED ANCHORS, REAMING OF HOLES UP TO 2 mm IS PERMITTED.

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**LAKE LOUISE TOWNSITE  
PHASE 2 – 2018 WATER  
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BANFF NATIONAL PARK**

Drawing title/Titre du dessin

**PIPESTONE RIVER BRIDGES  
PROPOSED WORK  
LAYOUT AND ANCHOR  
DETAILS**

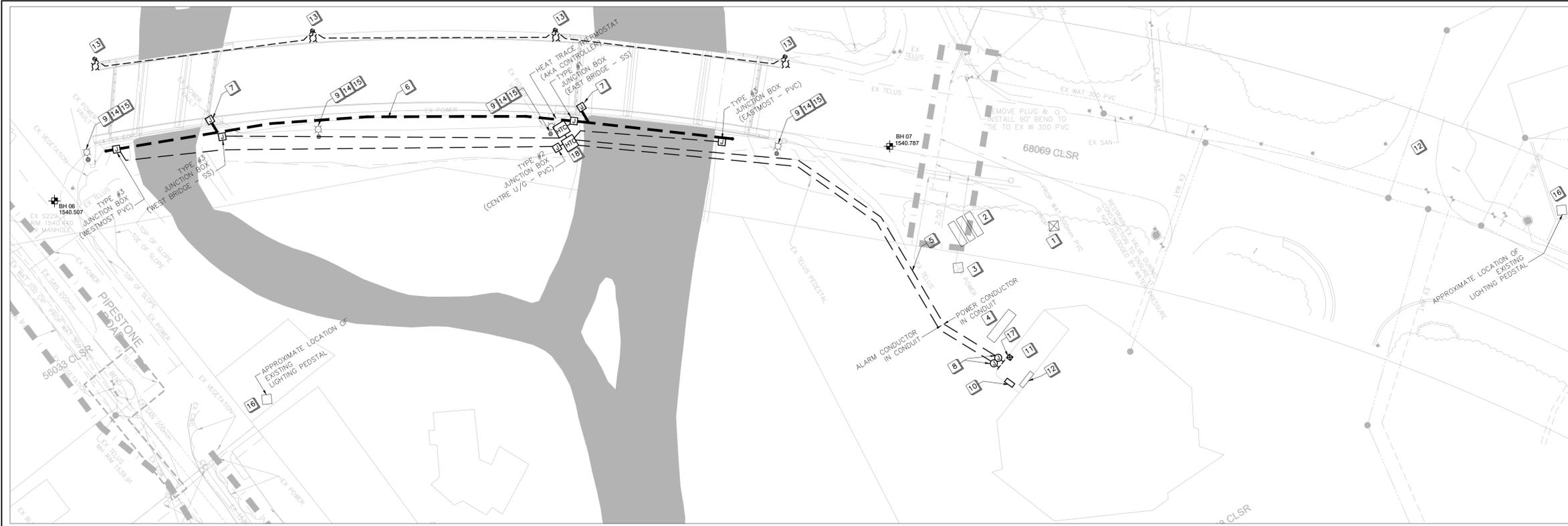
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Drawing Reference No./No. de référence du dessin S103		

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**LEGEND**

BH 05 1582.80 BOREHOLE LOCATION c/w BOREHOLE NUMBER & ELEVATION SEE DWG No. C402 & C403 FOR BOREHOLE LOGS

No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé
5				
4				
3	2020AUG18	ISSUED FOR TENDER	CM	KR
2	2020JUN18	ISSUED FOR 90% REVIEW	CM	KR
1	2020MAR26	ISSUED FOR 50% REVIEW	CM	KR

Revision / Revision

A	detail number	A
B	source drawing no.	B/C
C	detail on drawing no.	

Consultant's Name  
Nom de l'expert-conseil

Eng. Stamp  
Sceau de l'ingénieur

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Public Works and Government Services Canada  
Travaux publics et Services gouvernementaux Canada

Client Services Team Southern Alberta Operations Branch  
Le Client Entretien l'Équipe Alberta Méridionale Branche d'Opérations

**Canada**

Client/client  
Parks Canada Agency  
L'Agence Parcs Canada

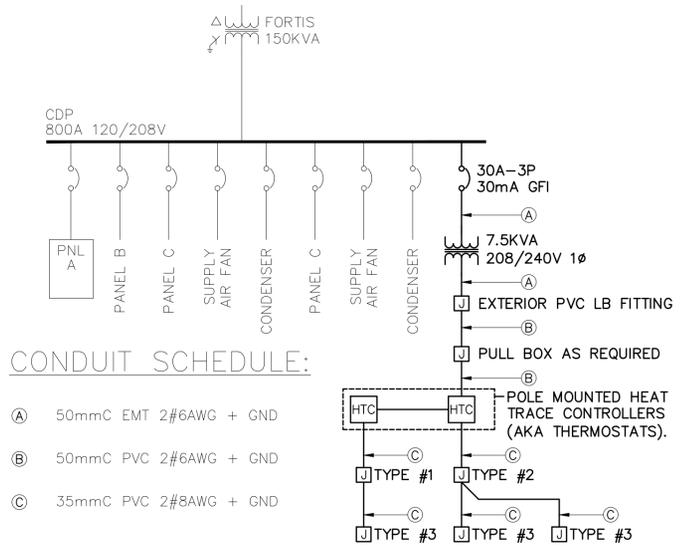
Western and Northern Region  
Ouest et Nord du Canada

Project title/Titre du projet  
**LAKE LOUISE TOWNSITE 2018 WATER AND SEWER UPGRADES BANFF NATIONAL PARK**

Drawing title/Titre du dessin  
**ELECTRICAL SITE PLAN**

Surveyed by/Arpenté par WSP GEOMATICS	Drawn by/Dessiné par CM	Date/Date 2020-03-17
Designed by/Concept par CM/KR	Reviewed by/Revisé par KR	Scale/Echelle AS SHOWN
PWGSC Project Manager/Administrateur de Projets TPSSGC KD		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Park Responsible Officer/Agent Responsable PWGSC Project Manager/Administrateur de Projets TPSSGC		
Project No./No. du projet 181-13597-14	Asset No./No. du bien -	Sheet No./No. de la feuille 1 OF 1
Drawing Reference No./No. de référence du dessin <b>E1.0</b>		

1 ELECTRICAL SITE PLAN  
E1.0 1:500



**CONDUIT SCHEDULE:**

- (A) 50mmC EMT 2#6AWG + GND
- (B) 50mmC PVC 2#6AWG + GND
- (C) 35mmC PVC 2#8AWG + GND

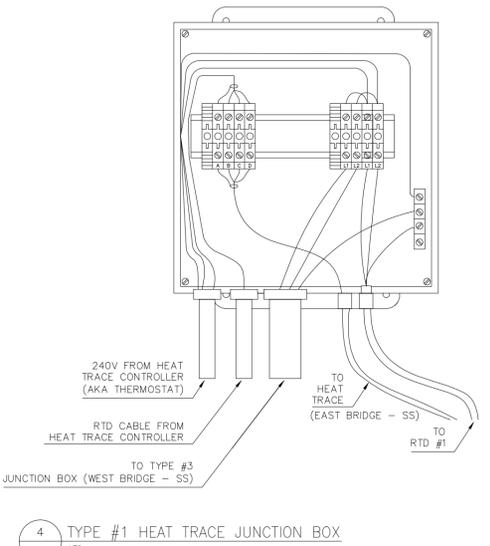
2 SINGLE LINE DIAGRAM  
E1.0 NTS

**GENERAL NOTES:**

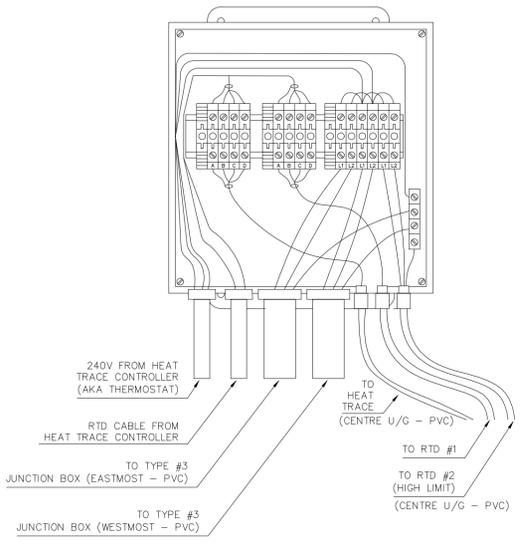
1. DRAWINGS SHOWN AS DIAGRAMMATIC ONLY.
2. THE SITE IS OPERATIONAL DURING CONSTRUCTION PHASING OF WORK SHALL BE REQUIRED TO ACCOMMODATE OPERATIONS. CONTRACTOR SHALL INSTALL CONDUIT AND BACKFILL IN SECTIONS TO PREVENT SITE WIDE DISRUPTION AND PROVIDE ACCESS TO THE SITE BY VEHICLE AND PEDESTRIAN TRAFFIC.
3. FOR SIZE OF CONDUITS AND CONDUCTORS REFER TO SINGLE LINE DIAGRAM.
4. CONTRACTOR SHALL CARRY COST TO VERIFY EXISTING SITE SERVICES SHOWN ON DRAWING.
5. CONTRACTOR SHALL CARRY COSTS FOR HYDROVACUING SERVICES DURING CONSTRUCTION OF SITE SERVICES SHOWN ON DRAWING.
6. REMOVAL OF EXCESS MATERIALS SHALL BE INCIDENTAL TO THE WORK. ALL SITE COST SHALL BE CARRIED BY THE CONTRACTOR.

**KEYNOTES:**

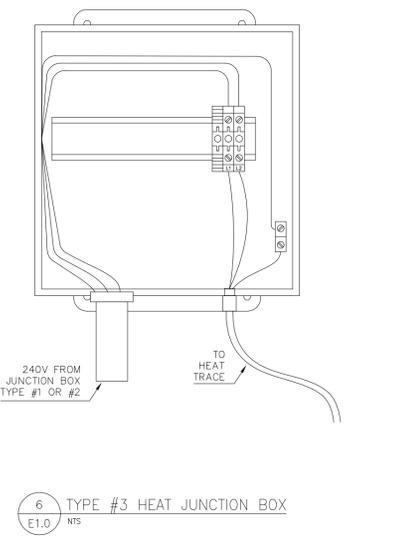
- 1 EXISTING 150KVA FORTIS TRANSFORMERS
- 2 EXISTING PROPANE TANKS
- 3 EXISTING PREHEAT PROPANE SYSTEM
- 4 EXISTING AIR HANDLING UNIT
- 5 NEW UNDERGROUND CONDUIT AND CONDUCTOR; 50mmC 3#8AWG + GND, + 2#10AWG + GND
- 6 NEW HEAT TRACE
- 7 FLUSH MOUNT JUNCTION BOX FOR RELIEF VALVE HEATER. HEAT TRACE SHALL ENTER JUNCTION BOX TO PREVENT FREEZING. CONFIRM ADEQUATE HEAT TRACE CABLE IS PRESENT AT TIME OF INSTALLATION.
- 8 CONTRACTOR TO CORE THROUGH EXISTING EXTERIOR BUILDING WALL, ROUTE CONDUIT WITH BEST RUN WITHIN BUILDING. STRUCTURAL ASSESSMENT TO BE COMPLETED PRIOR TO CORING. INSTALL TWO (2) PVC LB FITTINGS; ONE FOR POWER, ONE FOR CONTROLS.
- 9 ELECTRICAL CONTRACTOR TO COORDINATE WITH ENGINEER FOR REMOVAL AND REINSTALLATION OF POLE LIGHTS. NEW LIGHT POLE BASES, NEW CONDUIT AND NEW CONDUCTORS TO BE INSTALLED. RE-CONNECT TO EXISTING LIGHTING CIRCUITS.
- 10 PROPOSED INSTALLATION OF TWO (2) ALARMS; ONE (1) VISUAL AND ONE (1) AUDIBLE ALARMS FOR EACH OF THE 2 HEAT TRACE CONTROLLERS (FOR A TOTAL OF 4 SIGNALS). PROVIDE POWER C/W WITH INTERPOSING RELAYS, VISUAL AND AUDIBLE SIGNALS, 120V 15A CCT FOR SIGNALS, AND LAMICODS CLEARLY INDICATING PURPOSE.



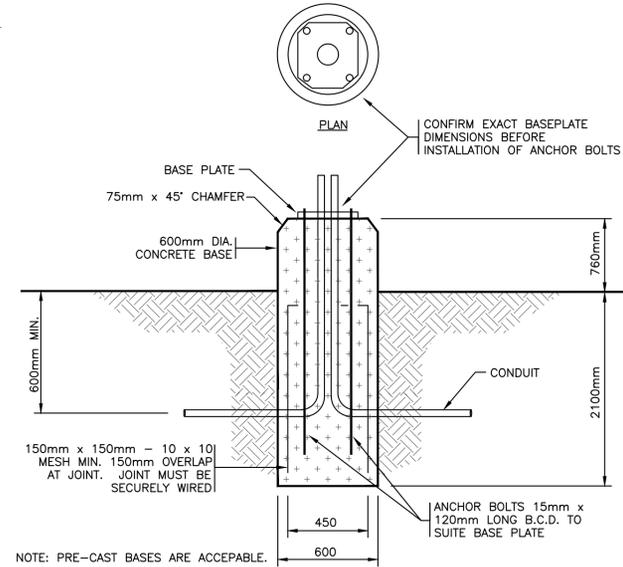
4 TYPE #1 HEAT TRACE JUNCTION BOX  
E1.0 NTS



5 TYPE #2 HEAT TRACE JUNCTION BOX  
E1.0 NTS



6 TYPE #3 HEAT JUNCTION BOX  
E1.0 NTS



3 LIGHT POLE BASE DETAIL  
E1.0 NTS

**LUMINAIRE SCHEDULE**

TYPE	MANUFACTURER	DESCRIPTION	CATALOGUE NO.	LAMP	MOUNTING	PICTURE	NOTES
PE	LUMISAVE	OUTDOOR LED FLOOD LIGHT	FL290-50W-MV-LT-W7-BH-H0	LED	POLE MOUNTED		ELECTRICAL CONTRACTOR TO CONFIRM MOUNTING LOCATION OF FLOODLIGHTS ON BRIDGE.

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 C:\Users\mcspry\Documents\Projects\181-13597-14 Lake Louise Infrastructure\3 - Elec & Mech\1.0 - Site Layout.dwg