

# BRIDGE REHABILITATION

## JASPER NATIONAL PARK, ALBERTA

# KM 157.7 - HIGHWAY 93N

# POBOKTAN CREEK BRIDGE

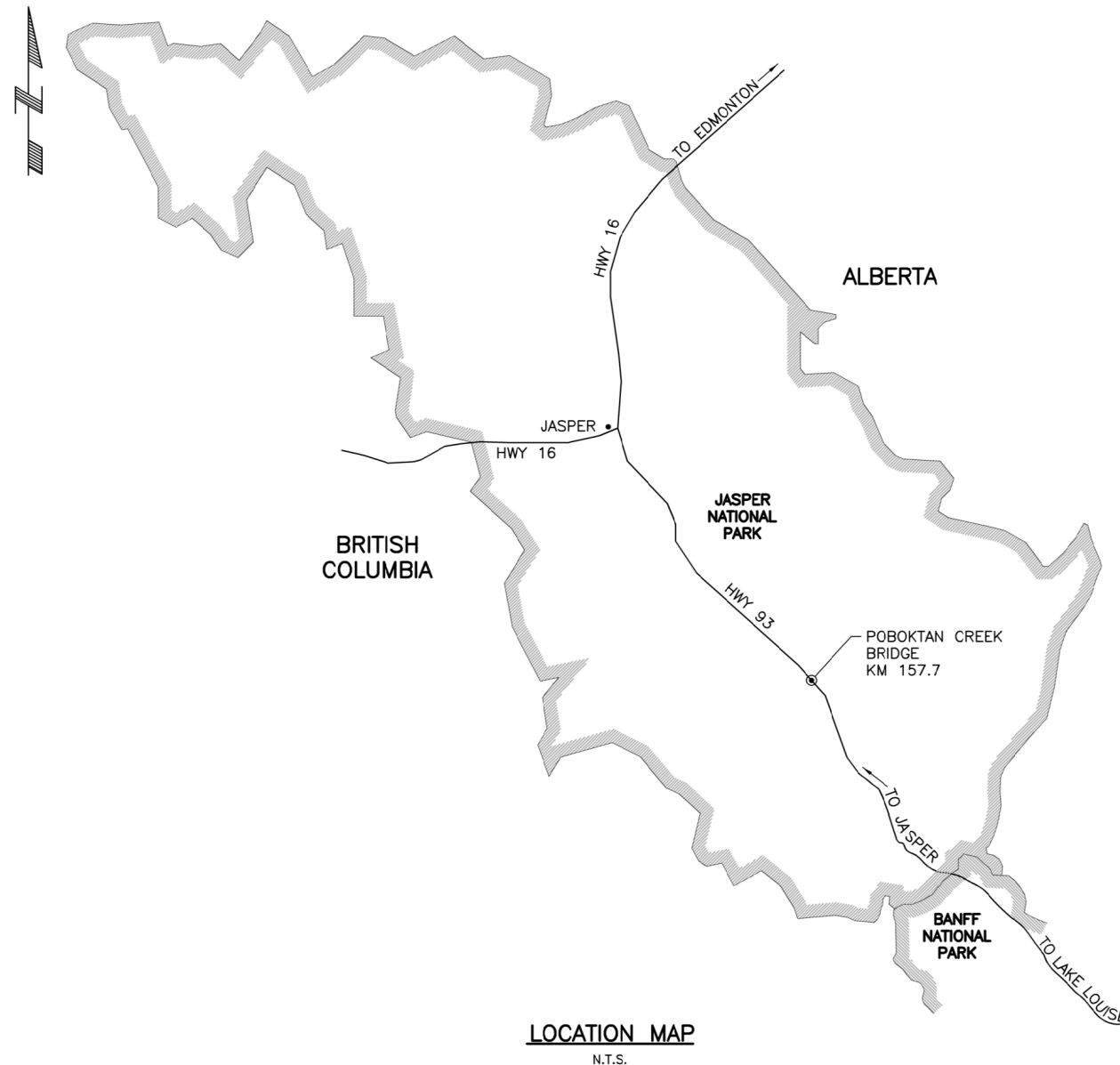
**DRAWING LIST:**

- 227904-001 COVER SHEET, DRAWING LIST AND LOCATION MAP
- 227904-002 GENERAL ARRANGEMENT - EXISTING CONDITION
- 227904-003 GENERAL ARRANGEMENT - FINAL CONDITION
- 227904-004 EXISTING STRUCTURE - REMOVALS
- 227904-005 EXCAVATION AND BACKFILL
- 227904-006 ABUTMENT MODIFICATION - SHEET 1 OF 2
- 227904-007 ABUTMENT MODIFICATION - SHEET 2 OF 2
- 227904-008 PIER MODIFICATION
- 227904-009 RETAINING WALL - OUTLINE AND REINFORCEMENT
- 227904-010 SLC GIRDER - DETAILS
- 227904-011 DECK - LAYOUT AND REINFORCEMENT
- 227904-012 DIAPHRAGMS - OUTLINE AND REINFORCEMENT
- 227904-013 APPROACH SLAB - OUTLINE AND REINFORCEMENT
- 227904-014 CAST-IN-PLACE BARRIER - OUTLINE AND REINFORCEMENT
- 227904-015 BICYCLE RAILING
- 227904-016 SUGGESTED CONSTRUCTION SEQUENCE

ROADWAY DRAWINGS: SEE SPECIFICATIONS

**REFERENCE DRAWINGS:**

SEE SPECIFICATIONS



**LOCATION MAP**  
N.T.S.

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**NOT FOR CONSTRUCTION**



**DO NOT SCALE DRAWINGS**


Revision/	Description/Description	Date/Date
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Project title/Titre du projet  
**BRIDGE REHABILITATION**  
**JASPER NATIONAL PARK, ALBERTA**

**KM 157.7 HIGHWAY 93N**  
**POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par  
DPG

Designed by/Concept par  
AMHG

Drawn by/Dessiné par  
MICH

PWGC Project Manager/Administrateur de Projets TPSGC

PWGC, Architectural and Engineering Resources Manager/  
Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client  
PCA

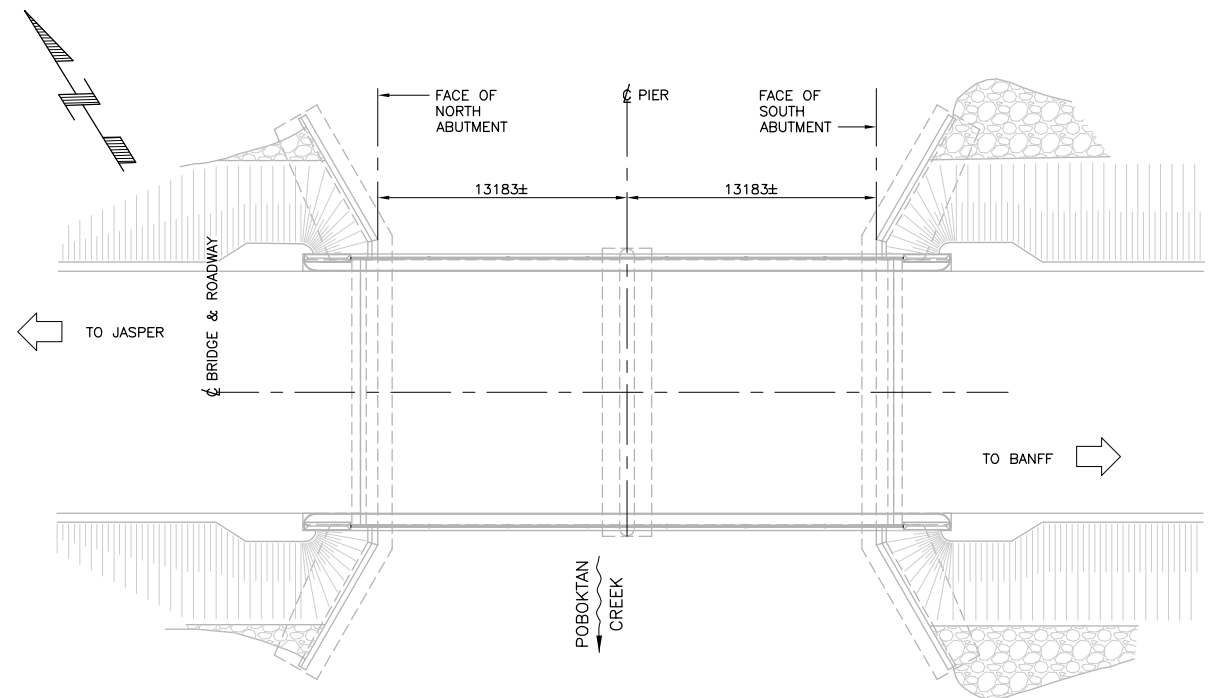
Drawing title/Titre du dessin  
**COVER SHEET**  
**DRAWING LIST AND**  
**LOCATION MAP**

Project No./No. du projet 227904	Sheet/Fauille 001 OF 016	Revision no./ La Révision no. A
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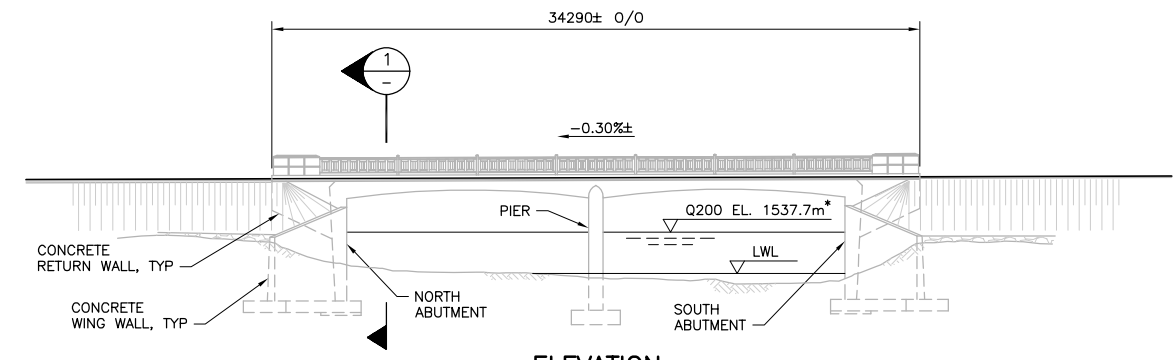
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**PLAN**  
1:200



**ELEVATION**  
1:200  
\*VERTICAL DATUM FOR THIS ELEVATION IS CGVD28-HT2.

**NOTES:**

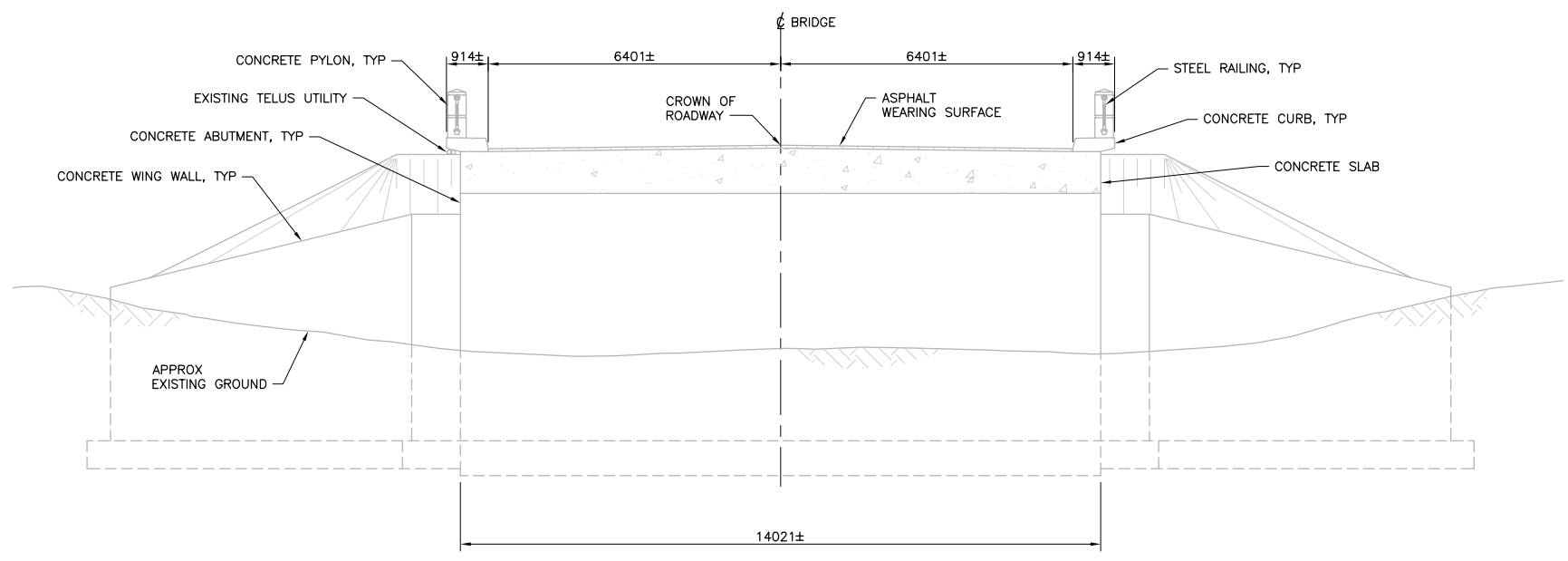
- DIMENSIONS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ACCURACY OF SUCH INFORMATION BY FIELD MEASUREMENT.
- DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.
- CONSTRUCTION TO BE COMPLETED IN TWO STAGES IN ACCORDANCE WITH SPECIFICATIONS.

**SCOPE OF WORK:**

- REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURBS, CONCRETE PYLONS, APPROACH BARRIERS, AND STEEL RAILINGS.
- REMOVAL AND DISPOSAL OF ASPHALT ON BRIDGE DECK.
- DESIGN, SUPPLY, FABRICATION, AND INSTALLATION OF TEMPORARY SOIL RETAINING SYSTEM(S) TO ALLOW STAGED CONSTRUCTION.
- REMOVAL AND DISPOSAL OF EXISTING CONCRETE SLAB AND CONCRETE RETURN WALLS.
- SUPPLY, FABRICATION, AND INSTALLATION OF TIEBACKS THROUGH EXISTING ABUTMENTS, INCLUDING TIEBACKS AND LOCK-BLOCKS.
- MODIFICATIONS TO TOP OF EXISTING ABUTMENTS AND PIER.
- SUPPLY AND CONSTRUCTION OF NEW RETAINING WALLS.
- SUPPLY AND INSTALLATION OF NEW BACKFILL BEHIND ABUTMENTS.
- SUPPLY, FABRICATION AND INSTALLATION OF NEW PRECAST CONCRETE GIRDERS.
- SUPPLY AND CONSTRUCTION OF NEW CONCRETE DIAPHRAGMS, NEW CONCRETE DECK AND OVERHANGS, AND NEW APPROACH SLABS.
- SUPPLY AND CONSTRUCTION OF NEW CAST-IN-PLACE CONCRETE BARRIERS
- SUPPLY, FABRICATION, AND INSTALLATION OF NEW STEEL BICYCLE RAILINGS.
- PARTIAL DEPTH CONCRETE REPAIRS ON SUBSTRUCTURE WHEN AUTHORIZED BY DEPARTMENTAL REPRESENTATIVE.

**ROADWAY WORKS (SEE ROADWAY DRAWINGS FOR DETAILS):**

- CLEARING, GRUBBING, AND STRIPPING.
- REMOVAL AND DISPOSAL OF EXISTING ASPHALT ON APPROACHES.
- EXCAVATION AND DISPOSAL OF EXCAVATED MATERIAL.
- SUPPLY AND INSTALLATION OF CORRUGATED STEEL PIPE CULVERTS/EXTENSIONS.
- SUPPLY, LOAD, HAUL, AND PLACE BASE COURSE MATERIAL.
- SUPPLY, LOAD, HAUL, AND PLACE ASPHALT CONCRETE PAVEMENT.
- PLACEMENT OF TOPSOIL AND HYDROSEEDING.
- SUPPLY AND INSTALLATION OF PRECAST CONCRETE BARRIERS.
- APPLICATION OF TEMPORARY AND PERMANENT LANE MARKINGS.
- SUPPLY AND INSTALLATION OF SIGNAGE.



**SECTION 1**  
1:75

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**BRIDGE REHABILITATION**  
**JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N**  
**POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par  
DPG

Designed by/Concept par  
AMHG

Drawn by/Dessiné par  
MJCH

PWGSC Project Manager/Administrateur de Projets TP5GC

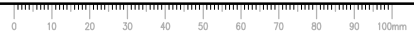
PWGSC, Architectural and Engineering Resources Manager/  
Ressources Architectural et de Directeur d'Ingénierie, TP5GC

Client/Client  
PCA

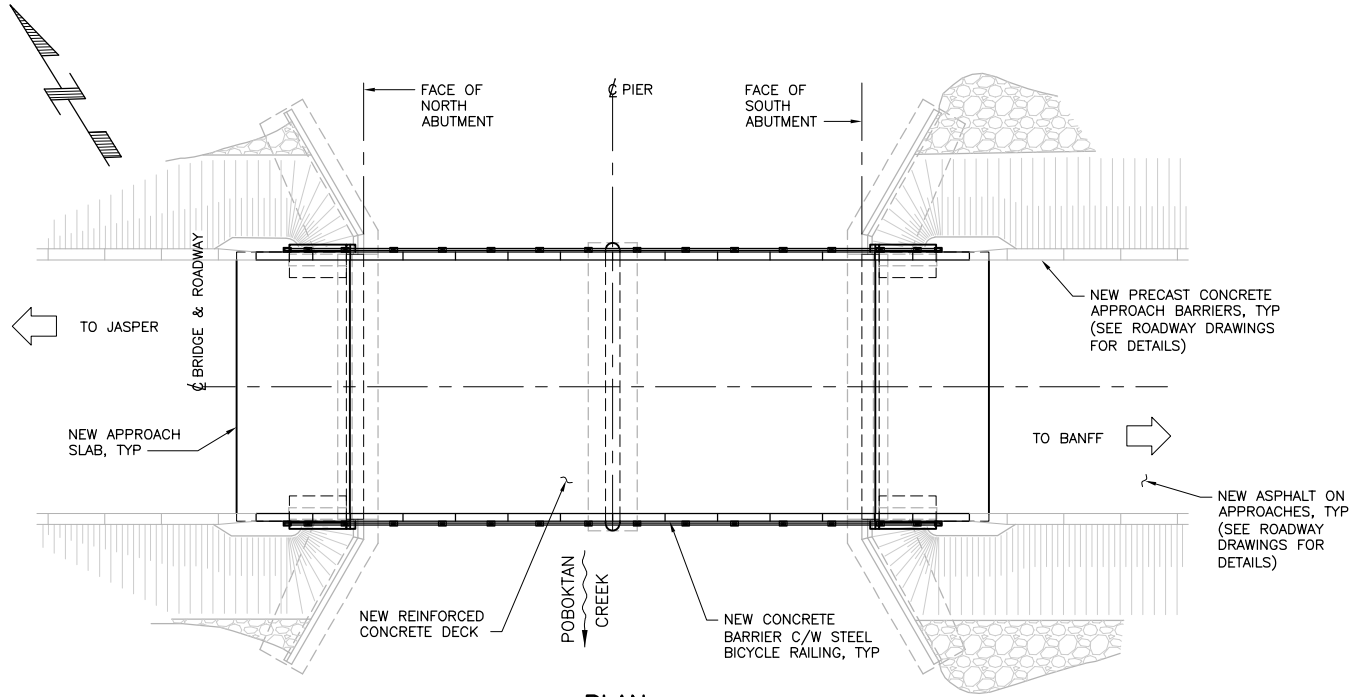
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**GENERAL ARRANGEMENT**  
**EXISTING CONDITION**

Project No./No. du projet 227904	Sheet/Fauille 002 OF 016	Revision no./ Lo Révision no. A
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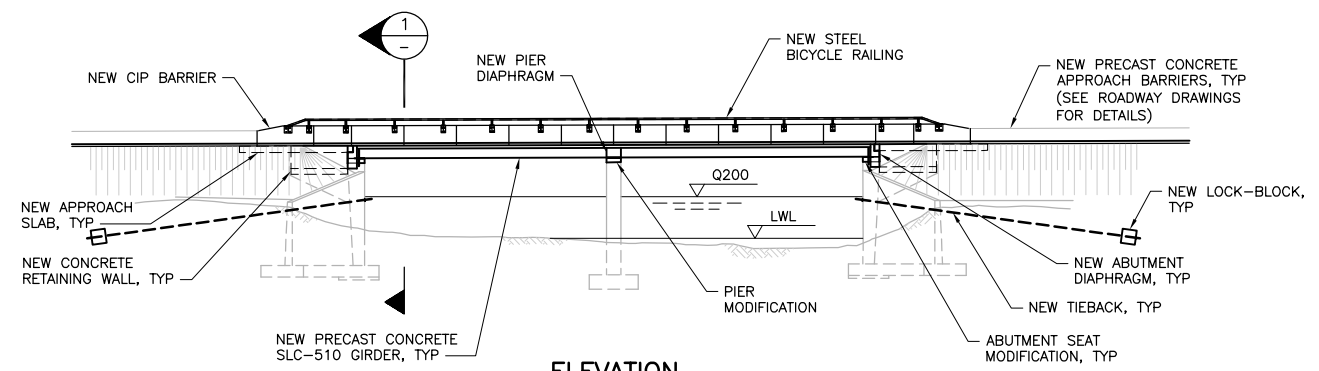
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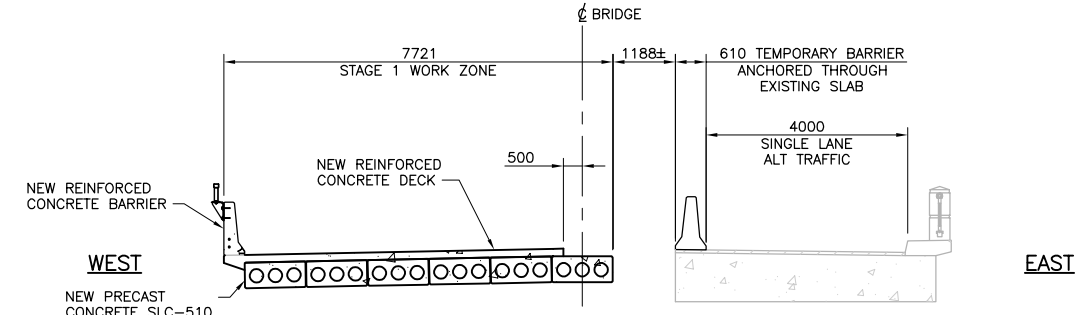
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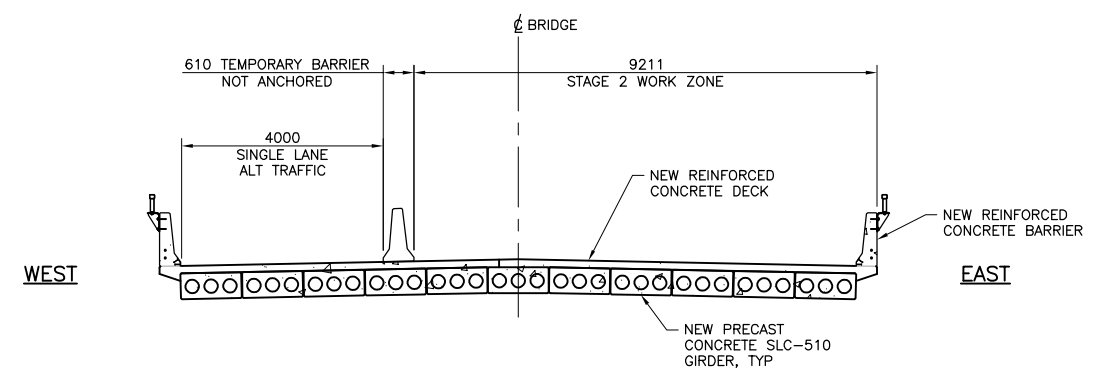
**PLAN**  
1:200



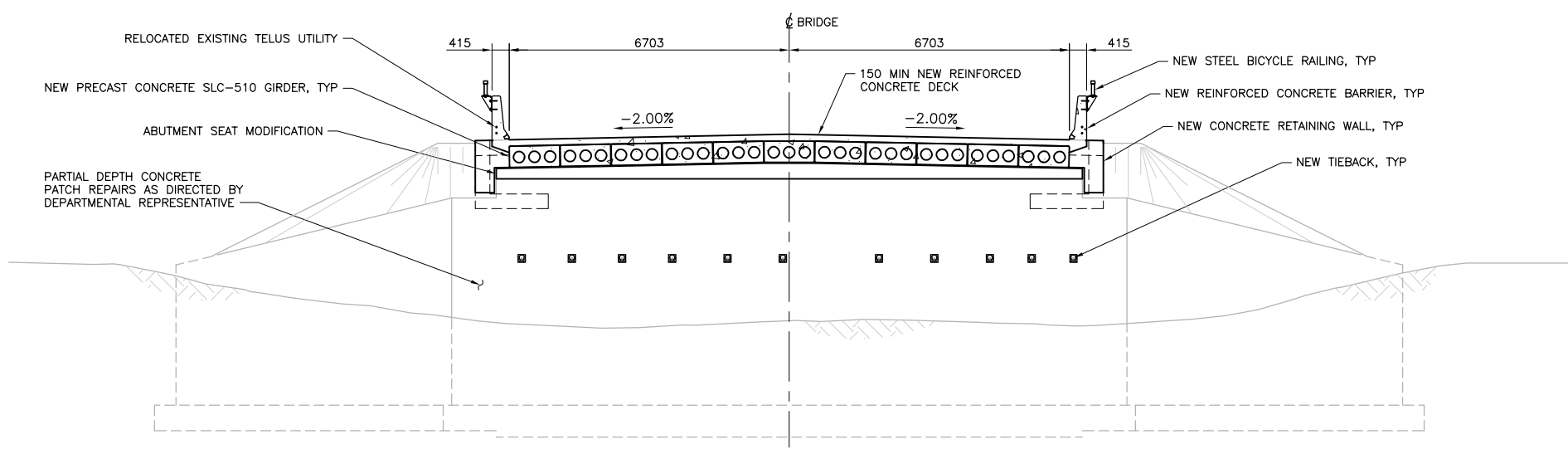
**ELEVATION**  
1:200



**SUGGESTED CONSTRUCTION SEQUENCE - STAGE 1**  
1:75



**SUGGESTED CONSTRUCTION SEQUENCE - STAGE 2**  
1:75



**SECTION 1**  
1:75

**DESIGN DATA:**

- DESIGN STANDARDS: CSA S6:19.
- DESIGN LIFE: 50 YEARS
- DESIGN LOADS:
  - UNIT MATERIAL WEIGHTS:
    - REINFORCED CONCRETE 24.0 kN/m<sup>3</sup>
    - PRESTRESSED CONCRETE 24.5 kN/m<sup>3</sup>
  - LIVE LOADS:
    - CL-625 TRUCK, LANE LOADING AND DYNAMIC LOAD ALLOWANCE AS PER CSA S6:19.
  - TEMPERATURE DATA:
    - EFFECTIVE CONSTRUCTION TEMPERATURE: 15°C
    - MAXIMUM MEAN DAILY TEMPERATURE: 26°C
    - MINIMUM MEAN DAILY TEMPERATURE: -42°C
    - ANNUAL MEAN RELATIVE HUMIDITY: 70%
  - TRAFFIC BARRIER: TL-4

**NOTES:**

- DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.
- FINISHED REINFORCED CONCRETE DECK PROFILE ELEVATIONS WILL BE PROVIDED BY DEPARTMENTAL REPRESENTATIVE BASED ON TOP OF GIRDER SURVEYED ELEVATION.
- CONSTRUCTION TO BE COMPLETED IN TWO STAGES IN ACCORDANCE WITH SPECIFICATIONS. SEE SHEET 016 FOR CONSTRUCTION SEQUENCE DETAILS.
- SINGLE LANE ALTERNATING TRAFFIC TO BE MAINTAINED. SHORT TERM FULL TRAFFIC CLOSURES WILL BE PERMITTED IN ACCORDANCE WITH THE SPECIFICATIONS, ONLY FOR REMOVAL OF EXISTING SLAB AND FOR NEW GIRDER INSTALLATION.

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AMHG

Drawn by/Dessiné par  
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PWGSC Project Manager/Administrateur de Projets TP5GC

PWGSC, Architectural and Engineering Resources Manager/  
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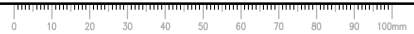
Client/client  
PCA

Drawing title/Titre du dessin

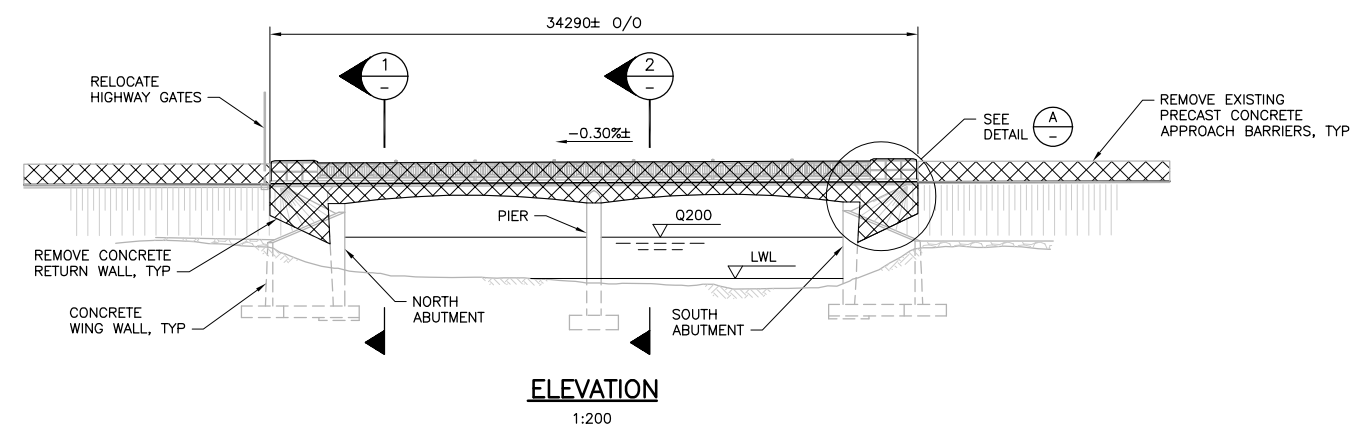
**GENERAL ARRANGEMENT  
FINAL CONDITION**

Project No./No. du projet	Sheet/Fauille	Revision no./Lo Révision no.
227904	003 OF 016	A

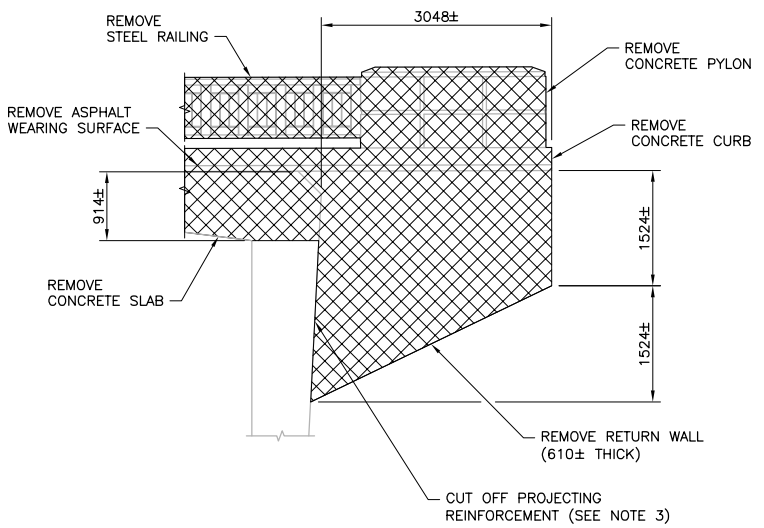
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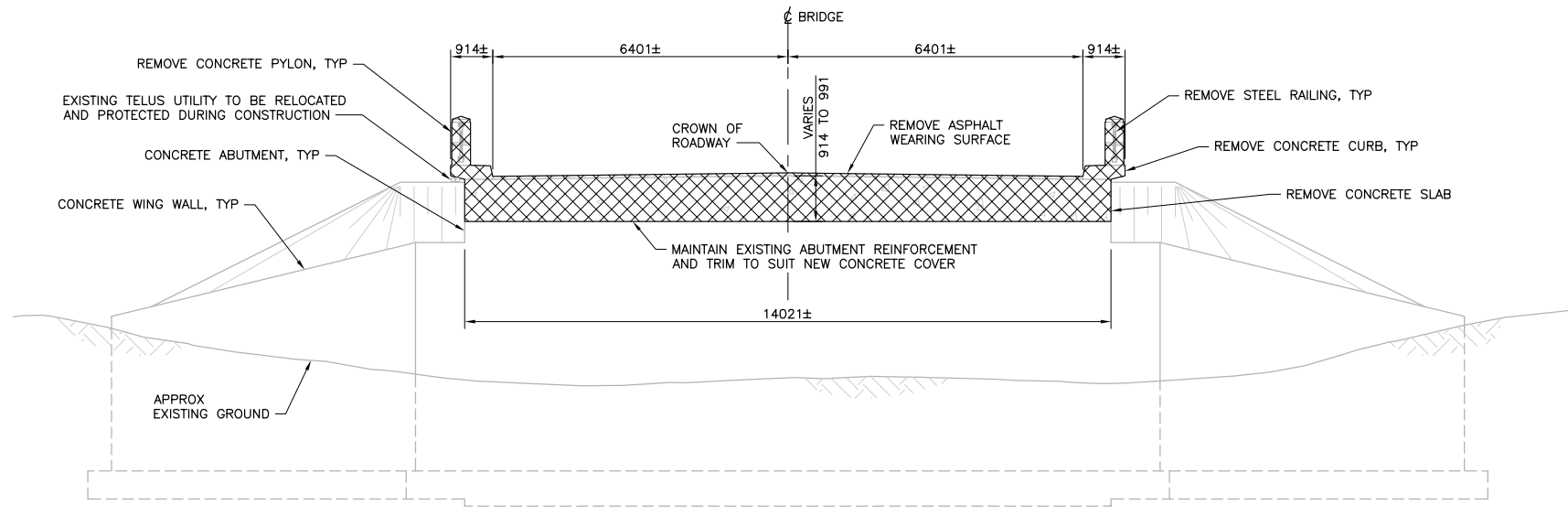
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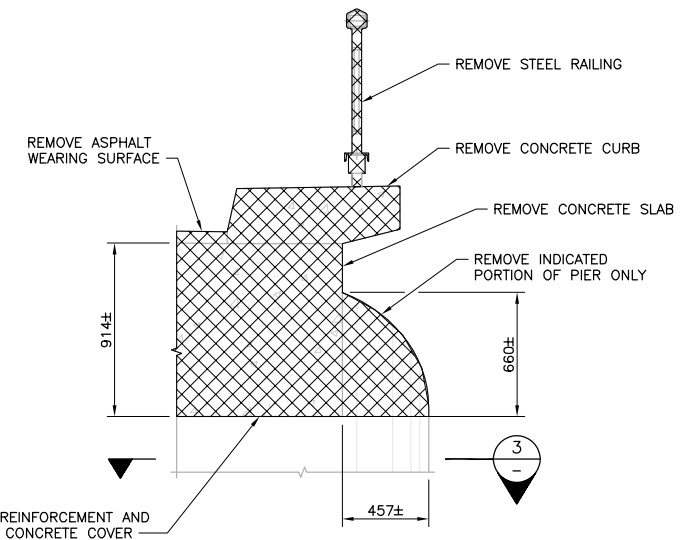
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1:200



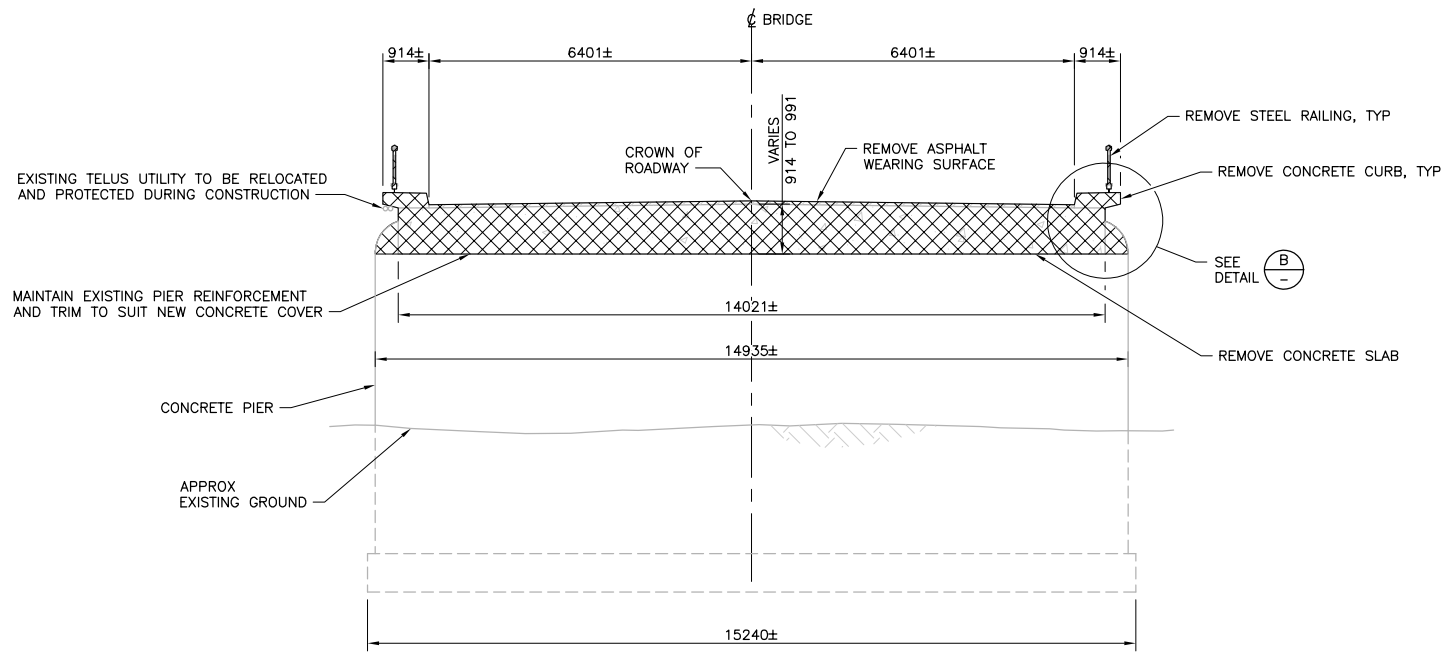
**DETAIL A**  
1:50



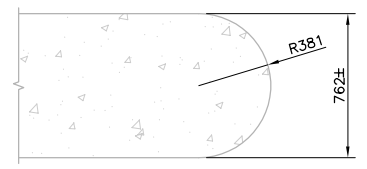
**SECTION 1**  
1:75



**DETAIL B**  
1:20



**SECTION 2**  
1:75



**SECTION 3**  
1:20

**LEGEND:**

- REMOVALS

**NOTES:**

- DIMENSIONS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ACCURACY OF SUCH INFORMATION BY FIELD MEASUREMENT.
- REMOVALS TO BE COMPLETED IN TWO STAGES. SEE SHEET 003 AND 016 FOR SUGGESTED CONSTRUCTION SEQUENCE. SEE SHEET 005 FOR RESTRICTIONS RELATED TO SEQUENCING OF EXCAVATION, REMOVALS, AND BACKFILLING.
- CUT OFF PROJECTING RETURN WALL REINFORCEMENT 50MM INTO ABUTMENT AND PATCH WITH SIKAGRout 212 OR APPROVED EQUIVALENT.

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JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par: DPG

Designed by/Concept par: AMHG

Drawn by/Dessiné par: MJCH

PWOSC Project Manager/Administrateur de Projets TP5GC

PWOSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie, TP5GC

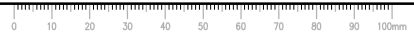
Client/client: PCA

Drawing title/Titre du dessin:

**EXISTING STRUCTURE  
REMOVALS**

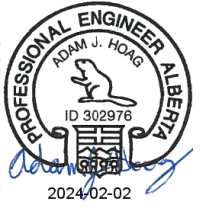
Project No./No. du projet: 227904	Sheet/Fauille: 004 OF 016	Revision no./Lo Révision no.: A
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**LEGEND:**

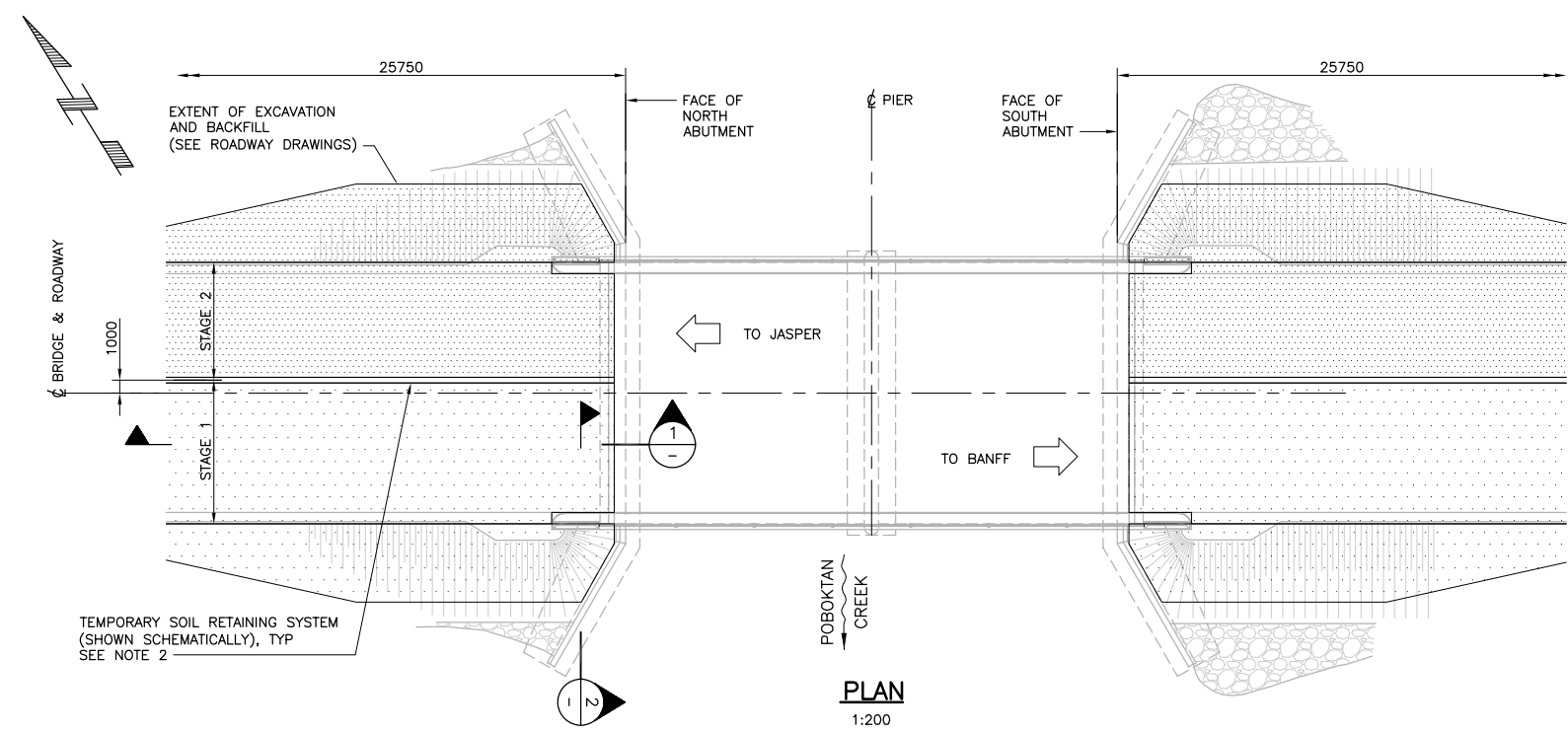
- REMOVALS
- BACKFILL PART 1
- BACKFILL PART 2
- BACKFILL PART 3
- EXCAVATION AND BACKFILL - STAGE 1
- EXCAVATION AND BACKFILL - STAGE 2

**NOTES:**

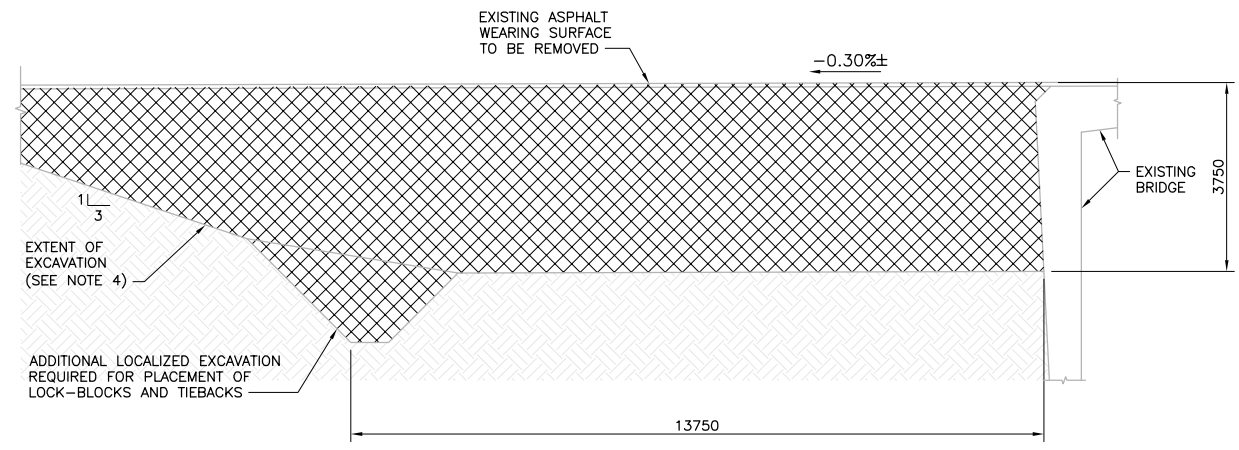
1. WORK TO BE COMPLETED IN TWO STAGES. SEE SHEET 003 AND 016 FOR SUGGESTED CONSTRUCTION SEQUENCE.
2. TEMPORARY SOIL RETAINING SYSTEM WILL BE REQUIRED TO ALLOW FOR SINGLE LANE ALTERNATING TRAFFIC WHICH IS TO BE MAINTAINED AT ALL TIMES. RETAINING SYSTEM SHOWN SCHEMATICALLY ONLY. CONTRACTOR TO PROVIDE DETAILED DESIGN FOR TEMPORARY RETAINING WALL(S) (REQUIRED TO ALLOW STAGED CONSTRUCTION) IN ACCORDANCE WITH SPECIFICATIONS.
3. BACKFILL: ALBERTA MINISTRY OF TRANSPORTATION DES 2 CLASS 25.
4. EXCAVATION MAY NEED TO BE COMPLETED IN TWO PARTS TO ALLOW FOR CONSTRUCTION EQUIPMENT ACCESS. SEE SHEET 016 FOR SUGGESTED CONSTRUCTION SEQUENCE.

**EXCAVATION AND BACKFILL RESTRICTIONS IN EACH OF STAGE 1 AND STAGE 2:**

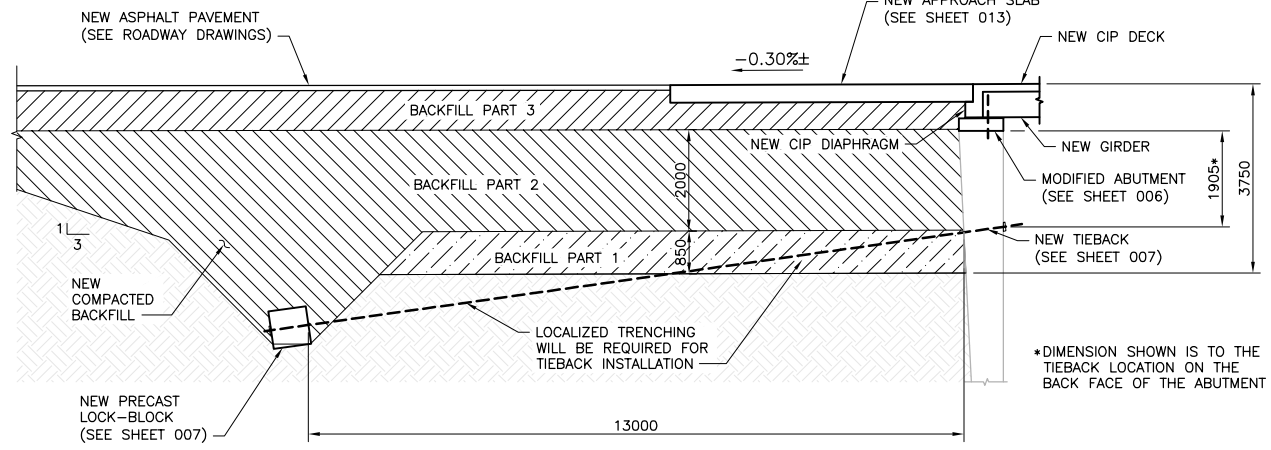
1. CONSTRUCTION LIVE LOADS (FROM CRANES, PUMP TRUCKS, OR OTHER CONSTRUCTION VEHICLES) TO BE RESTRICTED DURING CONSTRUCTION:
  - 1.1. NO LIVE LOADS PERMITTED WITHIN A THEORETICAL LINE EXTENDING AT 1:1 FROM THE BASE OF THE EXISTING WALL WHERE IT MEETS THE FOOTING, PRIOR TO TIEBACK INSTALLATION AND STRESSING.
  - 1.2. NO LIVE LOADS PERMITTED WITHIN 3.25 m FROM THE BACK OF ABUTMENT WALL, PRIOR TO INSTALLATION OF APPROACH SLAB.
2. EXCAVATE A MINIMUM DEPTH OF 3.75 m AT THE BACK FACE OF ABUTMENTS PRIOR TO REMOVALS OF EXISTING SUPERSTRUCTURE.
3. IF DEPTH OF EXCAVATION EXTENDS MORE THAN THE 3.75 m INDICATED, PLACE BACKFILL TO 3.75 m BELOW TOP OF DECK. COMPACT.
4. MAXIMUM UNEQUAL BACKFILL HEIGHT OF 2 m BETWEEN NORTH AND SOUTH ABUTMENTS TO BE MAINTAINED AT ALL TIMES.
5. COMPLETE THE FOLLOWING PRIOR TO PLACING BACKFILL PART 1:
  - SUPERSTRUCTURE REMOVALS
  - ABUTMENT AND PIER TOP MODIFICATIONS
  - INSTALL NEW BEARINGS, GIRDERS, AND BEARING DOWELS
  - POUR PIER DIAPHRAGM TO UNDERSIDE OF CONCRETE DECK AND ALLOW TO CURE AT LEAST 7 DAYS.
6. PLACE BACKFILL PART 1 PRIOR TO INSTALLING TIEBACKS.
7. INSTALL TIEBACKS (SNUG TIGHT) PRIOR TO PLACING BACKFILL PART 2.
8. COMPLETE THE FOLLOWING PRIOR TO TENSIONING OF TIEBACKS:
  - PLACE BACKFILL PART 2
  - CONSTRUCT RETAINING WALL.
9. TENSION TIEBACKS PRIOR TO INSTALLING DECK.



**PLAN**  
1:200

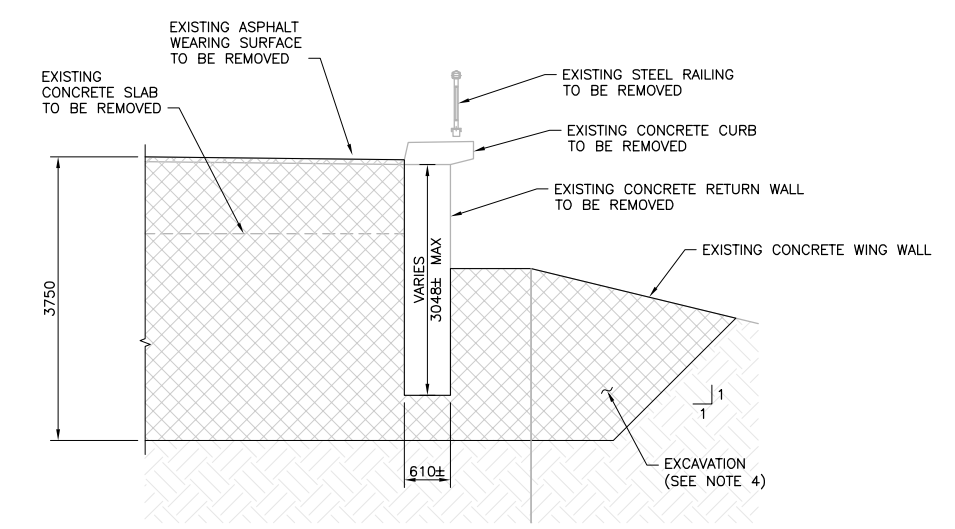


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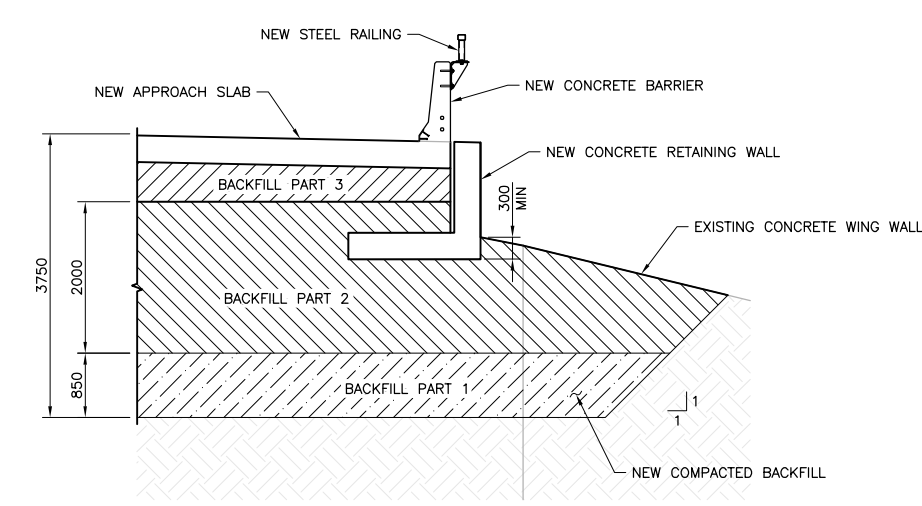


**FINAL**

**SECTION 1**  
1:50



**EXISTING**



**FINAL**

**SECTION 2**  
1:50

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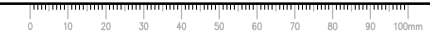
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Ressources Architectural et de Directeur d'Ingénierie, TPSGC

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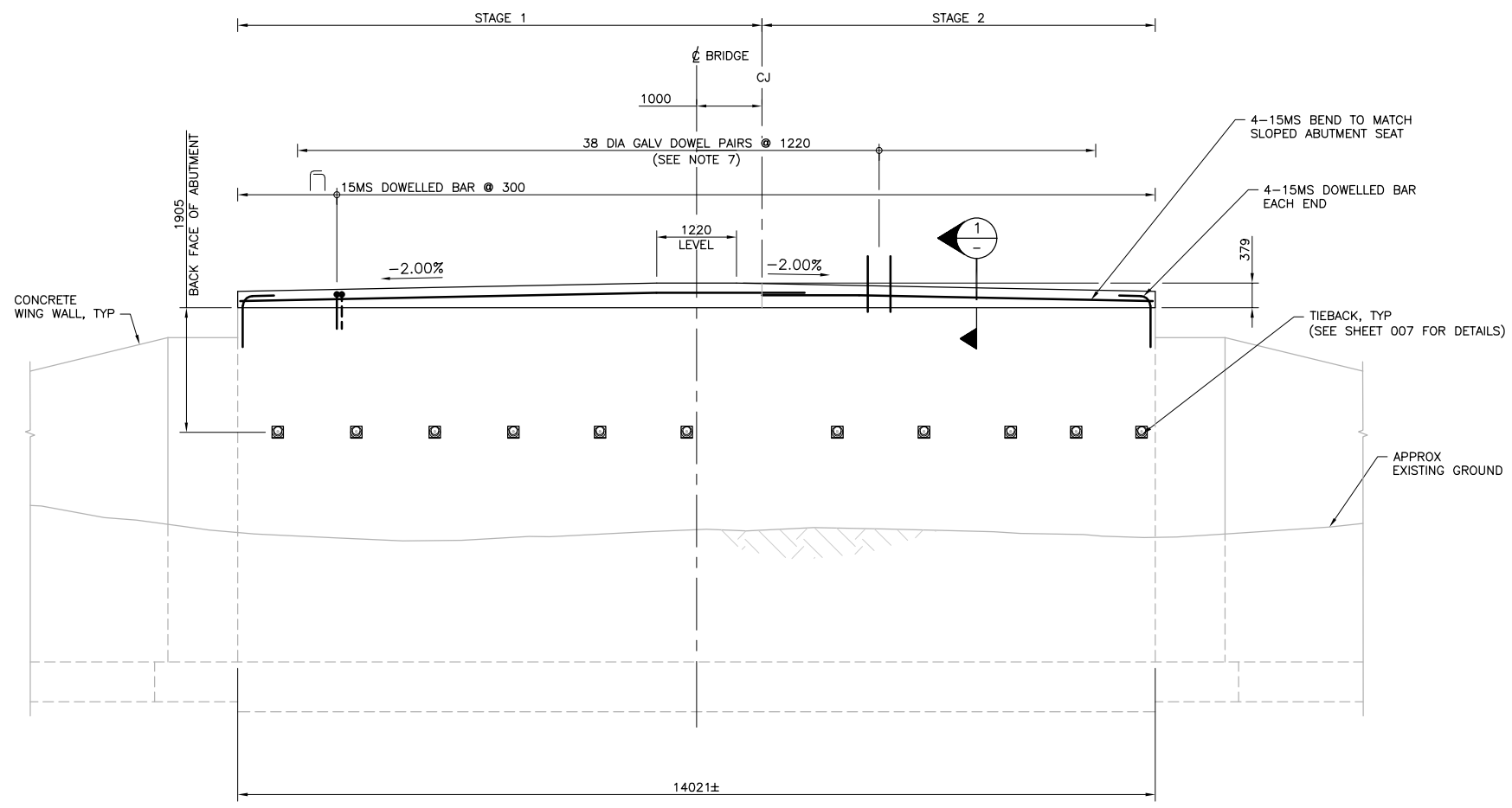
Drawing title/Titre du dessin  
**EXCAVATION AND BACKFILL**

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227904	005 OF 016	A

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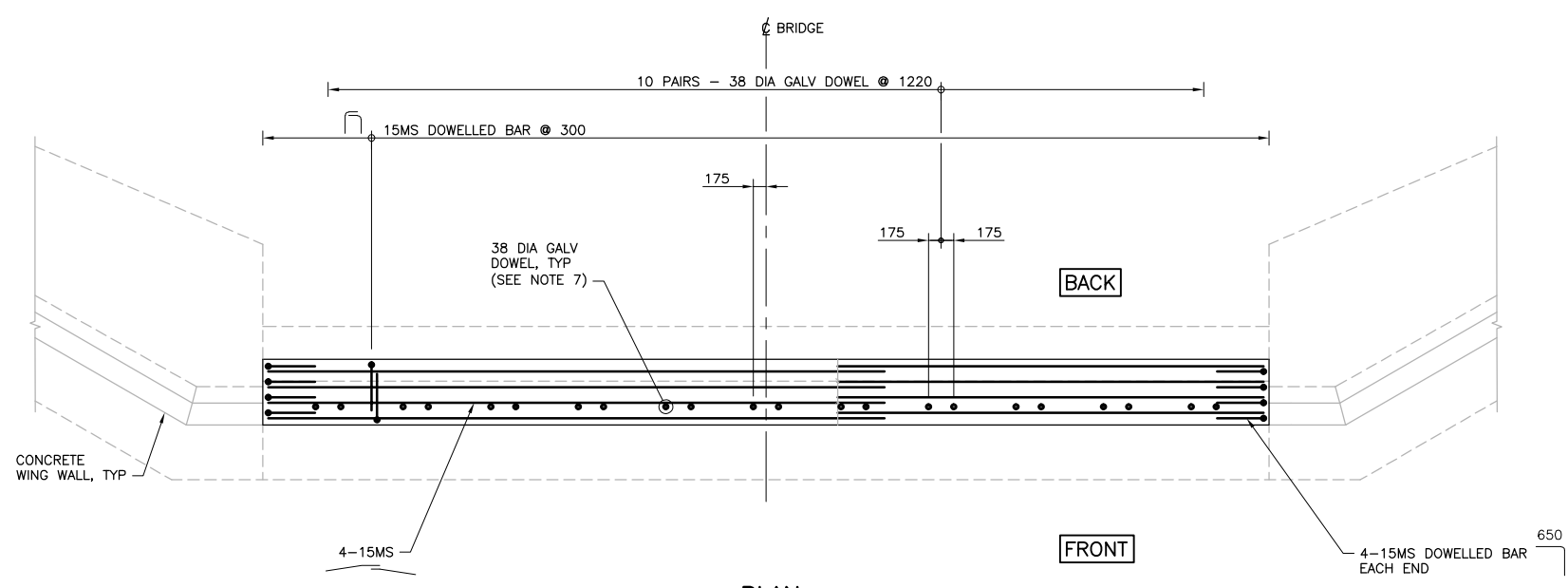


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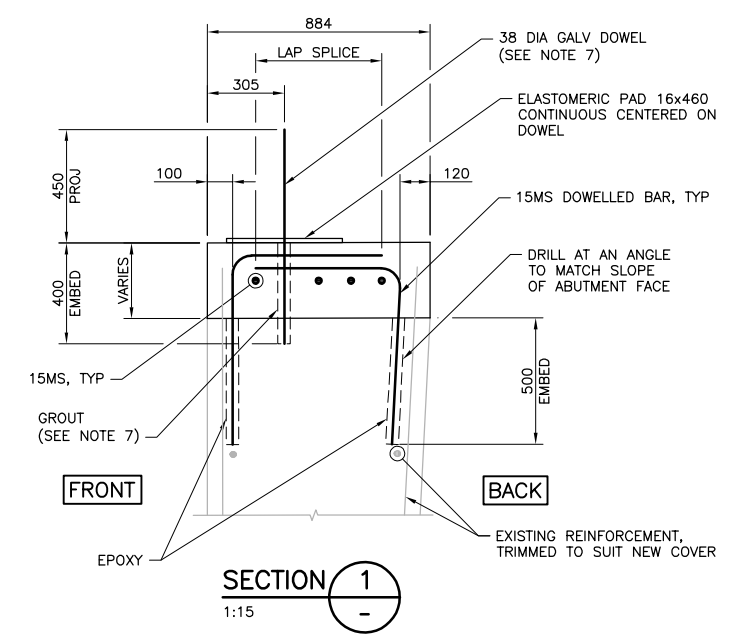
**ELEVATION**

1:50  
(NORTH ABUTMENT SHOWN, SOUTH ABUTMENT SIMILAR)

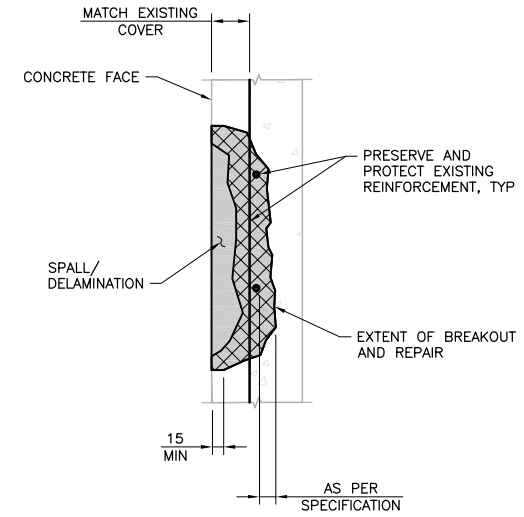


**PLAN**

1:50  
(NORTH ABUTMENT SHOWN, SOUTH ABUTMENT SIMILAR)



**SECTION 1**  
1:15



**PIERS AND ABUTMENTS  
PARTIAL DEPTH CONCRETE  
PATCH REPAIR DETAIL**  
NTS

**CONCRETE REPAIRS:**

- PARTIAL DEPTH CONCRETE PATCH REPAIRS AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE IN ACCORDANCE WITH SPECIFICATIONS.
- CONCRETE REPAIRS SHALL BE MOIST CURED FOR A MINIMUM 7 DAYS.
- BONDING SURFACE BETWEEN NEW AND PREVIOUSLY POURED CONCRETE SHALL BE SATURATED SURFACE DRY.

**NOTES:**

- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 35MPA AT 28 DAYS.
- CHAMFER EXPOSED EDGES 20.
- REINFORCEMENT MARKED MS: ASTM A276-10 AND A955M-11 GRADE 420.
- GIRDER DOWELS SHALL BE FABRICATED FROM SMOOTH ROUND BAR STOCK CONFORMING TO AISI 4140.
- GALVANIZING SHALL CONFORM TO THE CURRENT ASTM A123/A123M. GALVANIZE AFTER FABRICATION.
- JOINTS BETWEEN NEW AND EXISTING CONCRETE TO BE CLEAN, FREE OF LAITANCE, AND ROUGHENED TO A FULL AMPLITUDE OF ABOUT 5mm AND SPACING OF 15mm.
- FOR 38mm DIA DOWELS: PROVIDE 50mm DIA X 400 DEEP HOLES FOR THE DOWELS. HOLES SHALL BE DRILLED IN THE ABUTMENT SEAT AFTER THE GIRDERS HAVE BEEN ERECTED. SET DOWELS IN ABUTMENT SEAT WITH SIKA 212 FLOWABLE GROUT OR APPROVED EQUIVALENT. DRILL HOLES AND INSTALL DOWELS PERPENDICULAR TO ABUTMENT SEAT.
- EPOXY: HILTI HIT-RE 500 V3 OR APPROVED EQUIVALENT.
- MINIMUM COVER: 50 U.N.O.
- MINIMUM LAP: 650 U.N.O.
- ELASTOMERIC PAD: VIRGIN NATURAL RUBBER (POLYISOPRENE), WITH SHEAR MODULUS IN ACCORDANCE WITH TABLE 11.5 OF CSA S6:19 INCLUDING ADDITIONAL REQUIREMENTS FOR MINIMUM MEAN DAILY TEMPERATURE OF -44°C.

**LEGEND:**

- NEW STRUCTURE
- EXISTING STRUCTURE

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AMHG

Drawn by/Dessiné par  
MJCH

PWGC Project Manager/Administrateur de Projets TP5GC

PWGC, Architectural and Engineering Resources Manager/  
Ressources Architectural et de Directeur d'Ingénierie, TP5GC

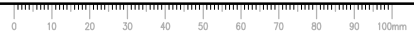
Client/client  
PCA

Drawing title/Titre du dessin

**ABUTMENT MODIFICATIONS  
SHEET 1 OF 2**

Project No./No. du projet	Sheet/Fauille	Revision no./Lo Révision no.
227904	006 OF 016	A

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**NOT FOR CONSTRUCTION**



**DO NOT SCALE DRAWINGS**

Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client  
Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet  
**BRIDGE REHABILITATION  
JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par  
DPG  
Designed by/Concepté par  
AMHG

Drawn by/Dessiné par  
MJCH  
PWGSC Project Manager/Administrateur de Projets TP5GC

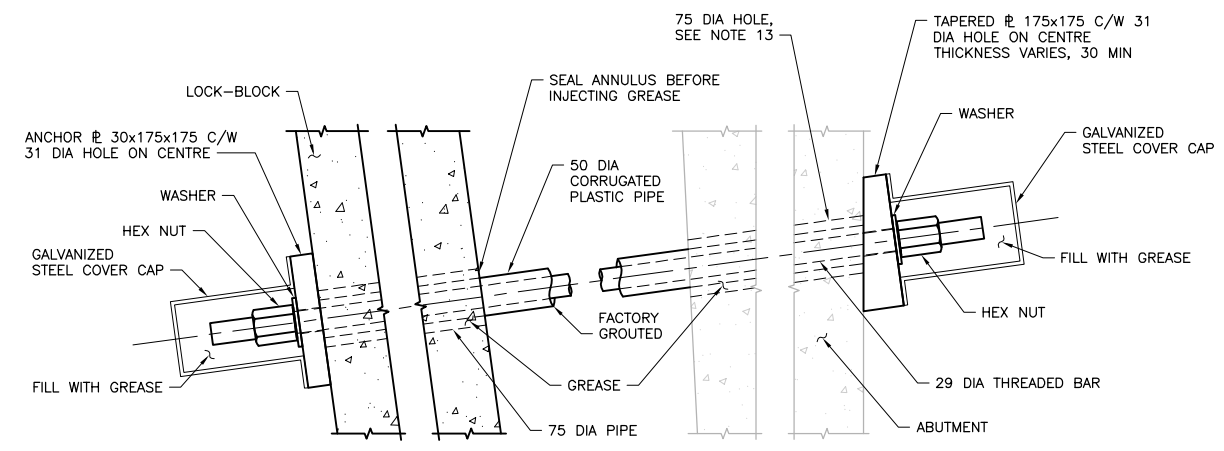
PWGSC, Architectural and Engineering Resources Manager/  
Ressources Architecturales et de Directeur d'Ingénierie, TP5GC

Client/client  
PCA

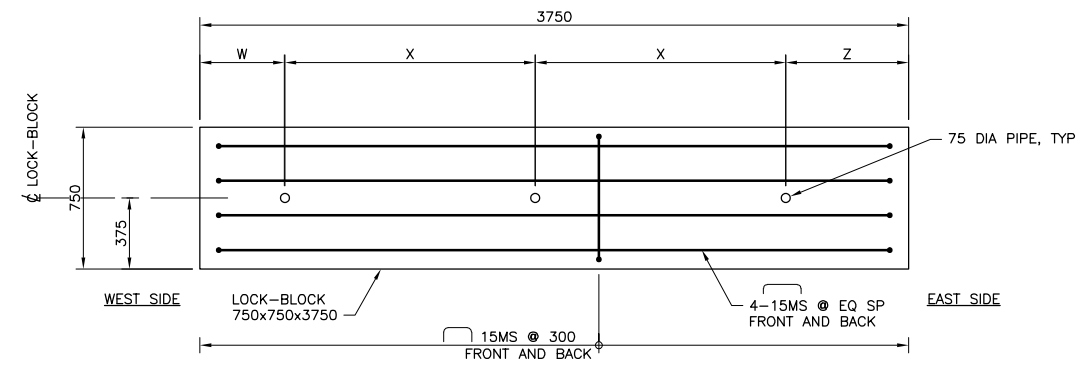
Drawing title/Titre du dessin

**ABUTMENT MODIFICATIONS  
SHEET 2 OF 2**

Project No./No. du projet: 227904  
Sheet/Fauille: 007 OF 016  
Revision no./Lo Révision no.: A

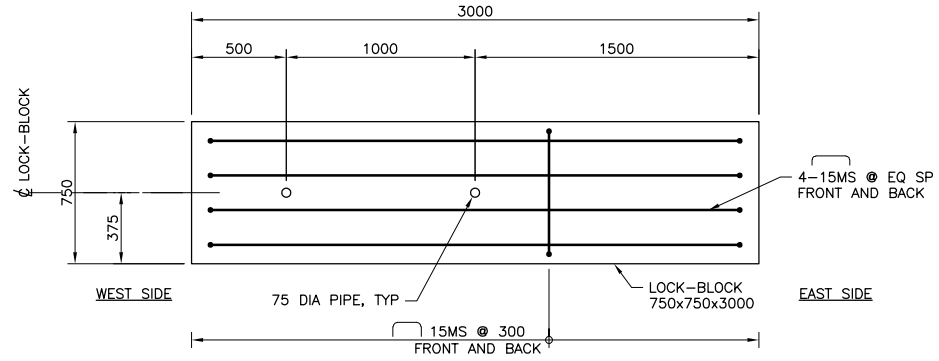


**DETAIL A TIEBACK**  
1:5

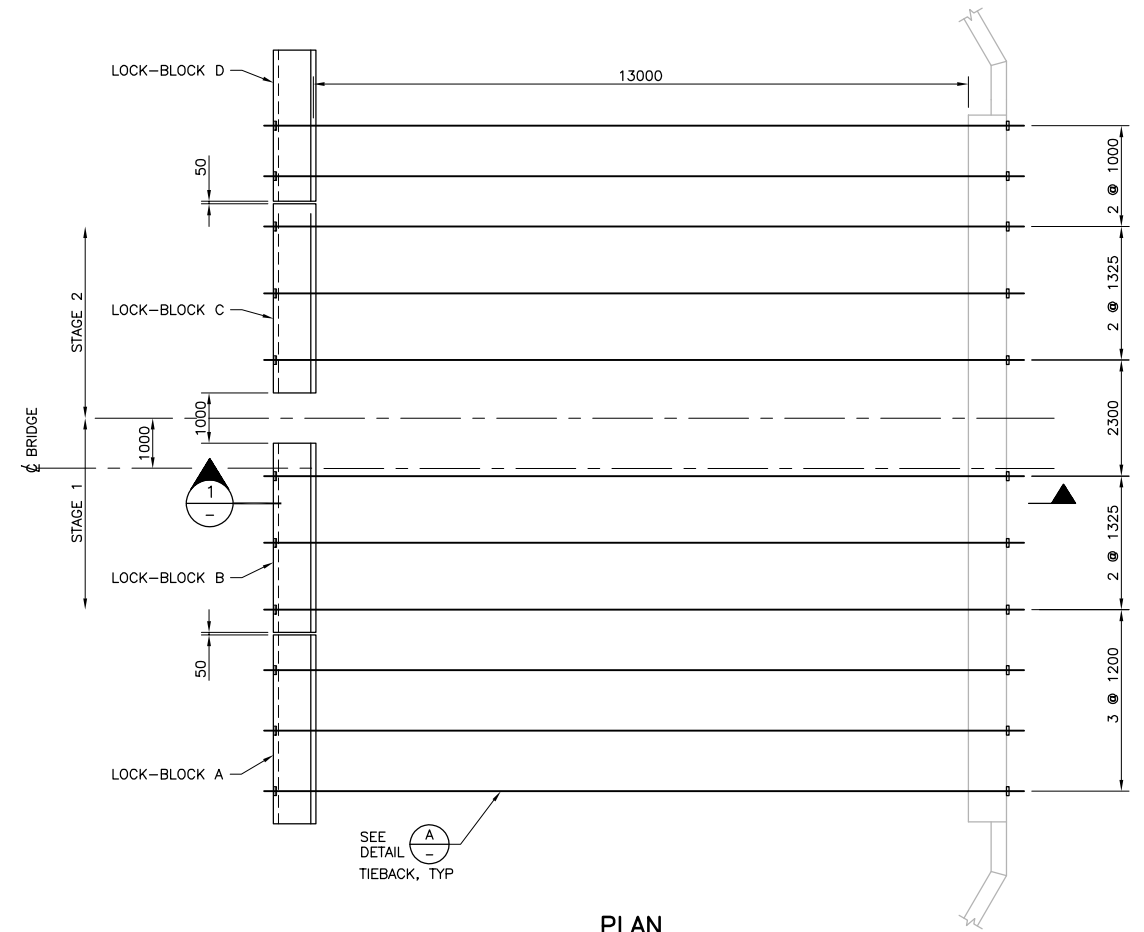


**LOCK BLOCKS A B C**  
1:20

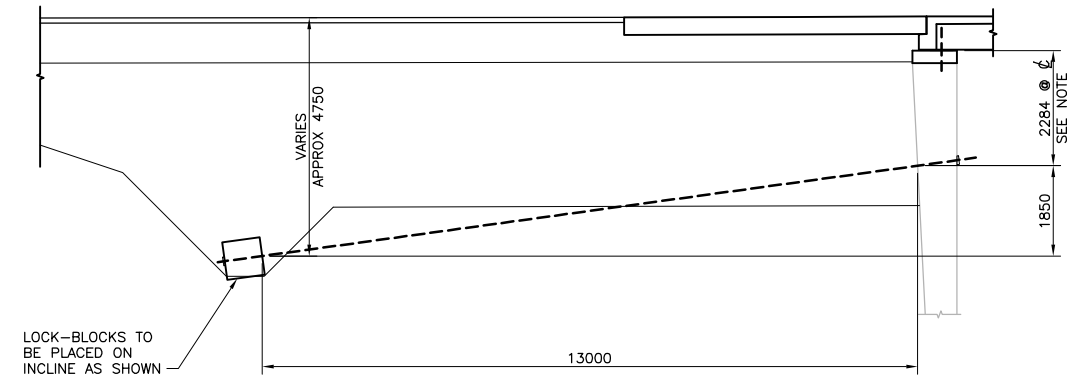
LOCK-BLOCK	W (mm)	X (mm)	Z (mm)
A	650	1200	700
B	450	1325	650
C	650	1325	450



**LOCK-BLOCK D**  
1:20



**PLAN**  
1:75  
(NORTH ABUTMENT SHOWN, SOUTH ABUTMENT SIMILAR)



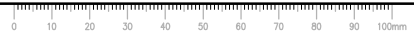
**SECTION 1**  
1:75

**NOTE:**  
DIMENSION PROVIDED IS FROM TOP OF ABUTMENT SEAT AT BRIDGE  $\phi$  TO TIE BACK AT ABUTMENT BACK FACE. ALL TIE BACKS TO BE INSTALLED AT SAME ELEVATION; DISTANCE FROM TOP OF ABUTMENT SEAT WILL VARY.

**NOTES:**

- MINIMUM COMPRESSIVE STRENGTH OF LOCK-BLOCK CONCRETE: 20MPa AT 28 DAYS.
- CHAMFER EXPOSED EDGES 50.
- REINFORCEMENT MARKED MS: ASTM A276-10 AND A955M-11 GRADE 420.
- MINIMUM COVER: 75 UNO
- STEEL PLATE: CSA G40.21, GRADE 300W.
- THREADED BARS: HOT ROLLED THREADED BARS CONFORMING TO CSA G30.18. MINIMUM YIELD STRENGTH = 690 MPa. DWIDAG THREADBAR WITH DOUBLE CORROSION PROTECTION OR APPROVED EQUIVALENT.
- GALVANIZE ALL STEEL WORK TO ASTM A123M.
- WELDING IN ACCORDANCE WITH CSA W59.
- INSTALL TIEBACKS WITH HEX NUTS SNUG TIGHT PRIOR TO BACKFILLING PART 2. SEE SHEET 016 FOR DETAILS OF CONSTRUCTION SEQUENCE.
- PRETENSION EACH TIEBACK WITH 130 kN FORCE AFTER INSTALLATION OF NEW SUPERSTRUCTURE AND BACKFILL PART 2.
- RE-TENSION EACH TIEBACK TO 135 kN AT THE END OF THE PROJECT, AT LEAST 3 WEEKS AFTER INITIAL TENSIONING.
- ENSURE ANCHOR PLATES BEAR EVENLY ON THE ABUTMENT WALL. GROUT PAD MAY BE REQUIRED.
- ALL EXISTING REINFORCEMENT MUST BE FIELD LOCATED USING A SUITABLE RADAR SCANNER PRIOR TO DRILLING INTO THE ABUTMENT WALL. DRILL TEST HOLES USING HAMMER DRILL. IF REINFORCEMENT IS ENCOUNTERED, REPOSITION AND REDRILL. NOTIFY DEPARTMENTAL REPRESENTATIVE IMMEDIATELY IF REINFORCEMENT IS HIT OR DAMAGED. HOLES TO BE DRILLED ON AN INCLINE TO ALIGN WITH THE LOCK-BLOCKS.

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Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

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Project title/Titre du projet  
**BRIDGE REHABILITATION**  
**JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N**  
**POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par  
DPG

Designed by/Concept par  
AMHG

Drawn by/Dessiné par  
MICH

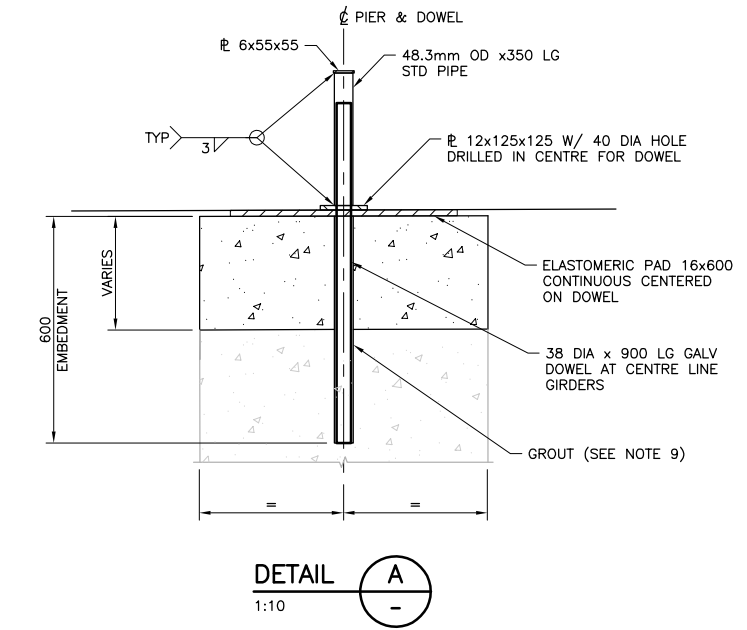
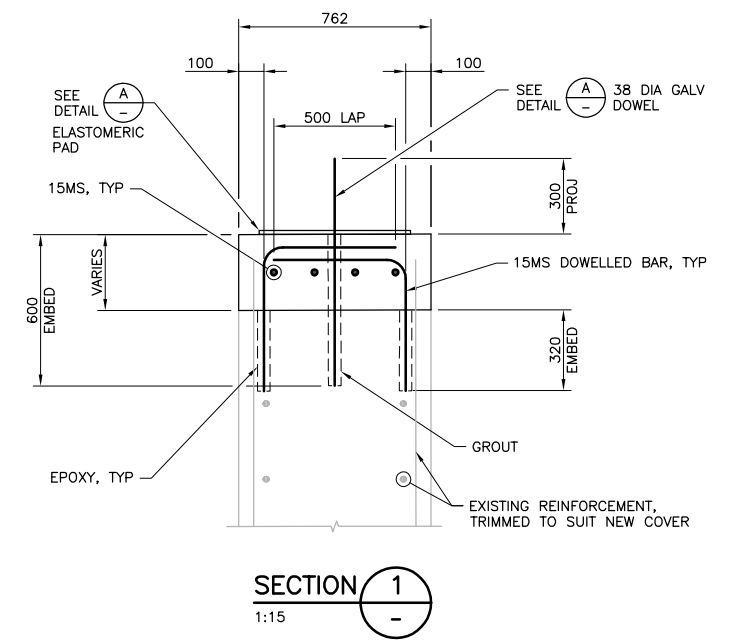
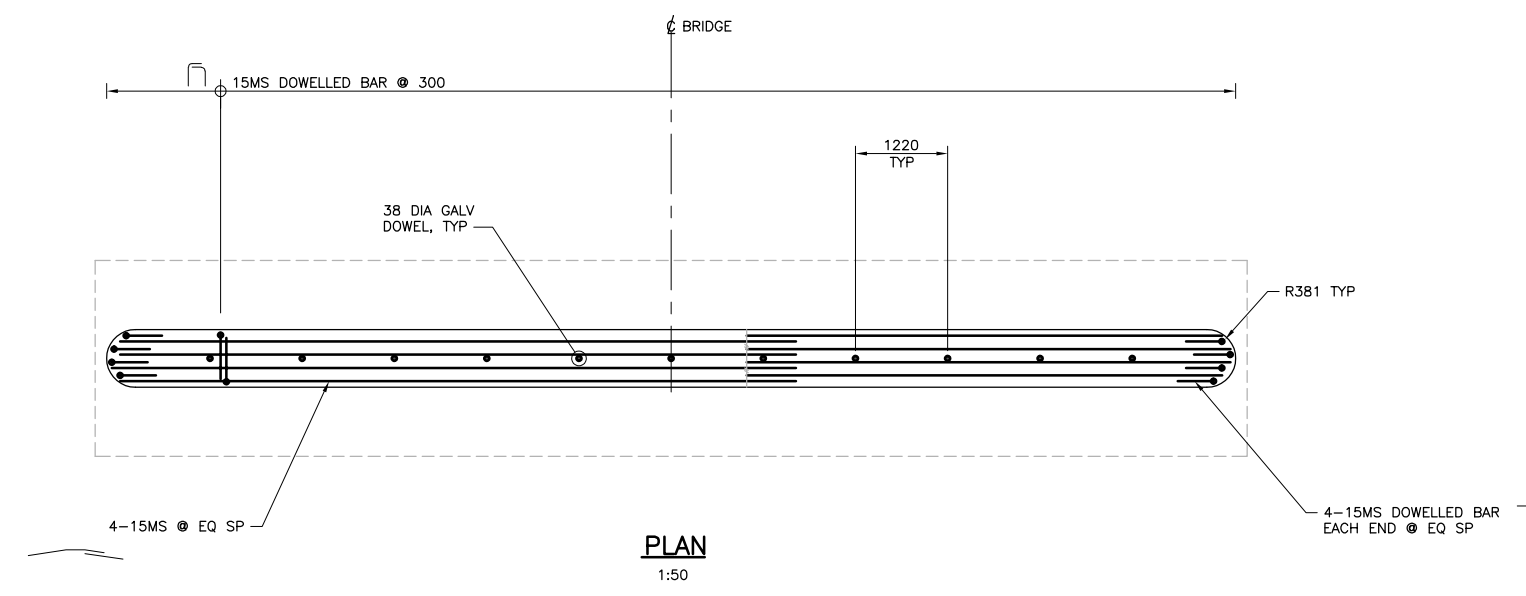
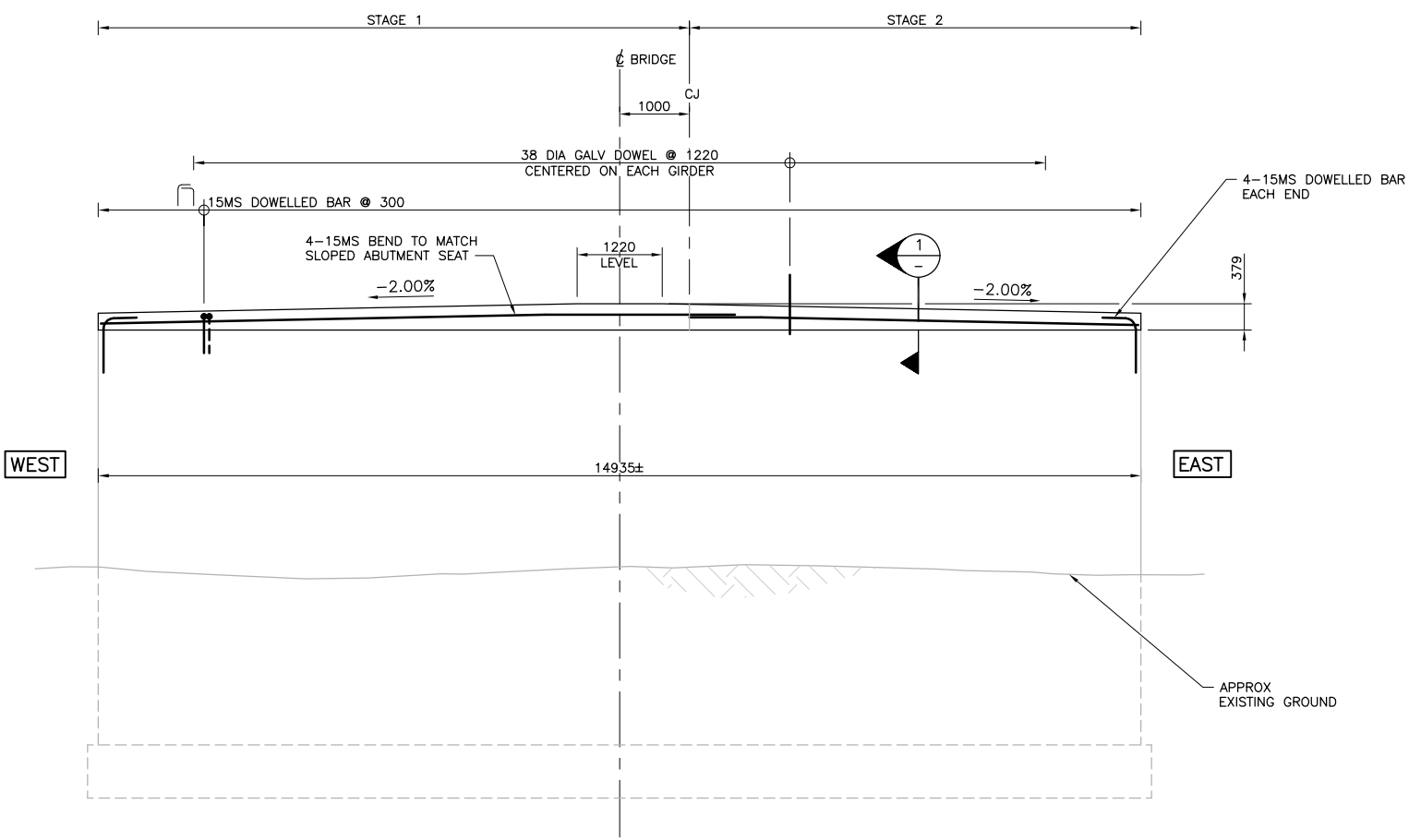
PWSC Project Manager/Administrateur de Projets TPSGC

PWSC, Architectural and Engineering Resources Manager / Ressources Architectural et de Directeur d'Ingénierie, TPSGC

Client/client  
PCA

Drawing title/Titre du dessin  
**PIER MODIFICATION**

Project No./No. du projet 227904	Sheet/Fauille 008 OF 016	Revision no./ Lo Révision no. A
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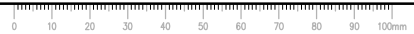
**NOTES:**

- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 35MP<sub>a</sub> AT 28 DAYS.
- CHAMFER EXPOSED EDGES 20.
- REINFORCEMENT MARKED MS: ASTM A276-10 AND A955M-11 GRADE 420.
- GIRDER DOWELS SHALL BE FABRICATED FROM SMOOTH ROUND BAR STOCK CONFORMING TO AISI 4140.
- STEEL PLATE: CSA G40.21, GRADE 300W.
- STD PIPES: ASTM A53, GRADE B, MINIMUM YIELD STRENGTH = 240MP<sub>a</sub>
- BEARING DOWELS AND BEARING DOWEL ASSEMBLIES (INCLUDING PLATES AND PIPES) TO BE GALVANIZED. GALVANIZING SHALL CONFORM TO THE CURRENT ASTM A123/A123M. GALVANIZE AFTER FABRICATION.
- JOINTS BETWEEN NEW AND EXISTING CONCRETE TO BE CLEAN, FREE OF LAITANCE, AND ROUGHENED TO A FULL AMPLITUDE OF ABOUT 5mm AND SPACING OF 15mm.
- FOR 38mm DIA DOWELS: PROVIDE 50mm DIA X 600 DEEP HOLES FOR THE DOWELS. SET DOWELS IN PIER SEAT WITH SIKA 212 FLOWABLE GROUT OR APPROVED EQUIVALENT.
- EPOXY: HILTI HIT-RE 500 V3 OR APPROVED EQUIVALENT.
- MINIMUM COVER: 50 U.N.O.
- MINIMUM LAP: 650 U.N.O.
- WELDING IN ACCORDANCE WITH CSA W59.
- ELASTOMERIC PAD: VIRGIN NATURAL RUBBER (POLYISOPRENE), WITH SHEAR MODULUS IN ACCORDANCE WITH TABLE 11.5 OF CSA S6:19 INCLUDING ADDITIONAL REQUIREMENTS FOR MINIMUM MEAN DAILY TEMPERATURE OF -44°C.

**LEGEND:**

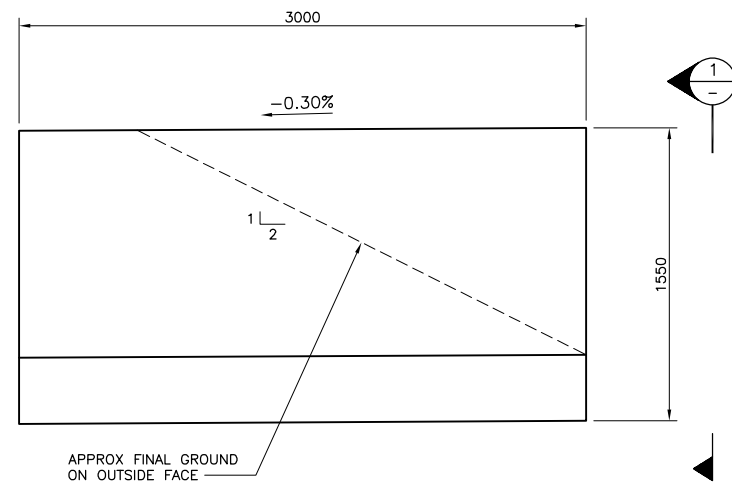
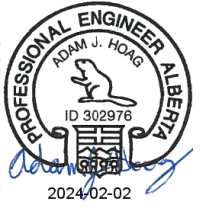
- NEW STRUCTURE
- EXISTING STRUCTURE

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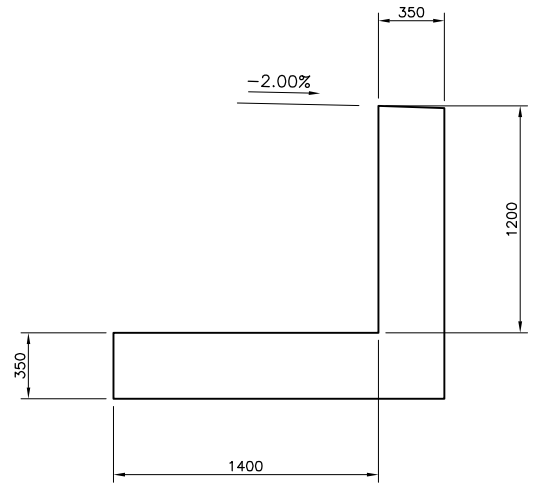




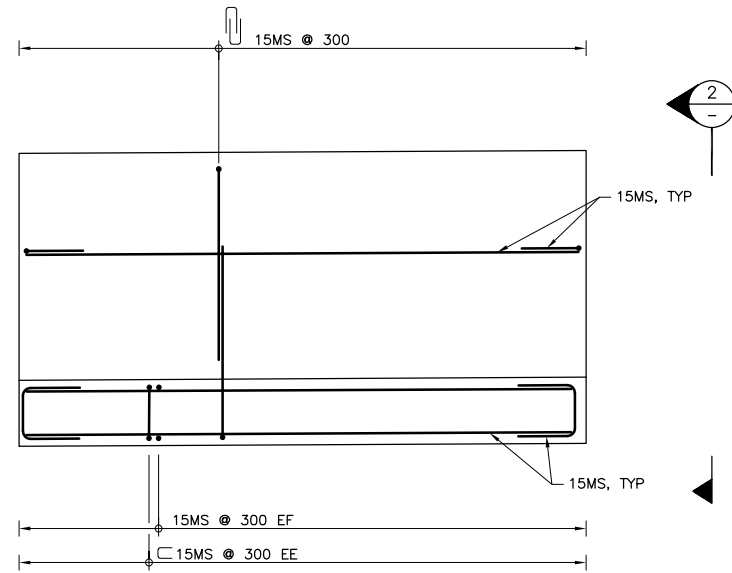
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**NOT FOR CONSTRUCTION**



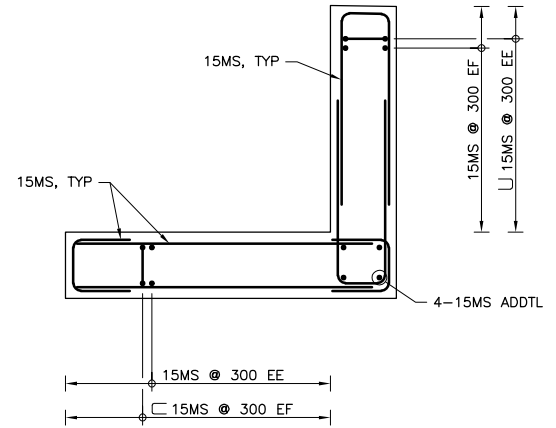
**ELEVATION – RETAINING WALL OUTLINE**  
1:20  
(NORTHEAST SHOWN, OTHERS SIMILAR)



**SECTION 1**  
1:20



**ELEVATION – RETAINING WALL REINFORCEMENT**  
1:20  
(NORTHEAST SHOWN, OTHERS SIMILAR)



**SECTION 2**  
1:20

**NOTES:**

1. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 35MPa AT 28 DAYS.
2. CHAMFER EXPOSED EDGES 20.
3. REINFORCEMENT MARKED MS: ASTM A276-10 AND A955M-11 GRADE 420.
4. MINIMUM COVER:
  - 100 BOTTOM FACE
  - 70 ALL OTHER
5. STAGGER LAPS. MINIMUM LAP: 650 U.N.O.

**DO NOT SCALE DRAWINGS**

Revision/Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client

Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet  
**BRIDGE REHABILITATION  
JASPER NATIONAL PARK, ALBERTA**

**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par  
DPG

Designed by/Concept par  
AMHG

Drawn by/Dessiné par  
MJCH

PWOSC Project Manager/Administrateur de Projets TP5GC

PWOSC, Architectural and Engineering Resources Manager/  
Ressources Architectural et de Directeur d'Ingénierie, TP5GC

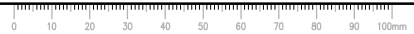
Client/client  
PCA

Drawing title/Titre du dessin

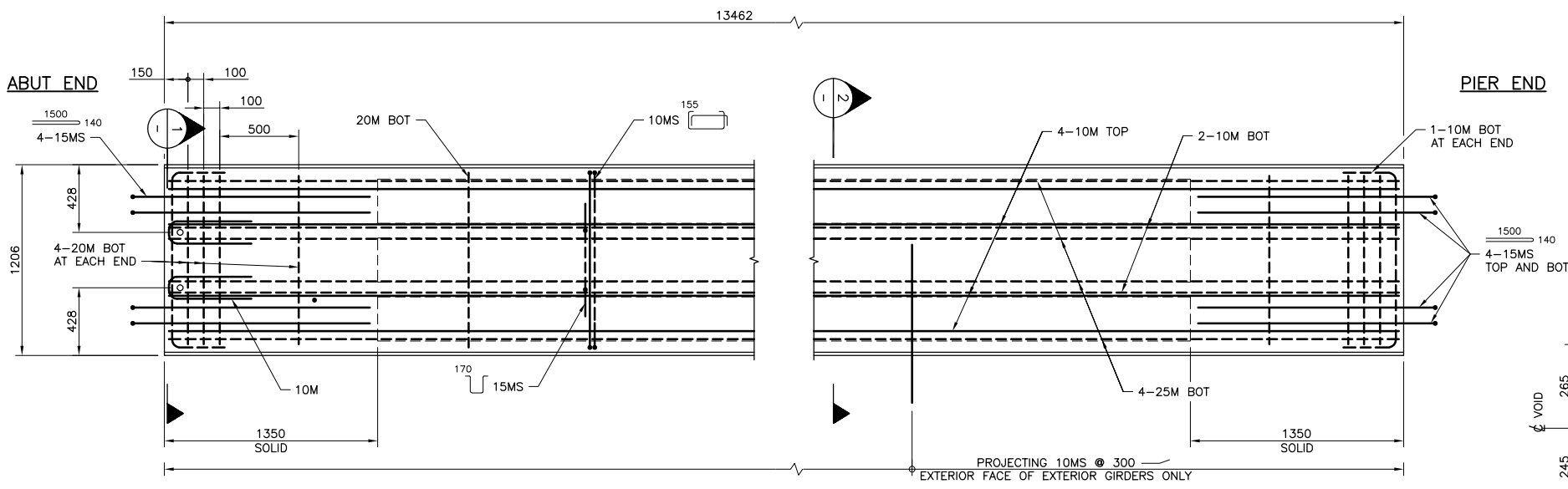
**RETAINING WALL  
OUTLINE AND REINFORCEMENT**

Project No./No. du projet	Sheet/Fauille	Revision no./Lo Révision no.
227904	009 OF 016	A

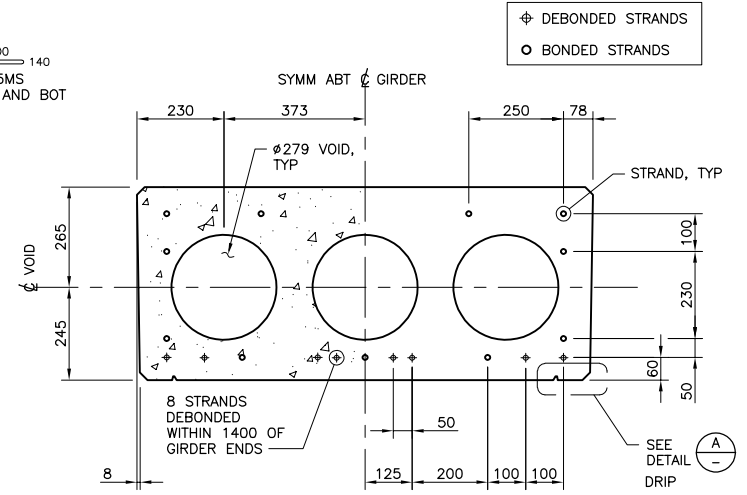
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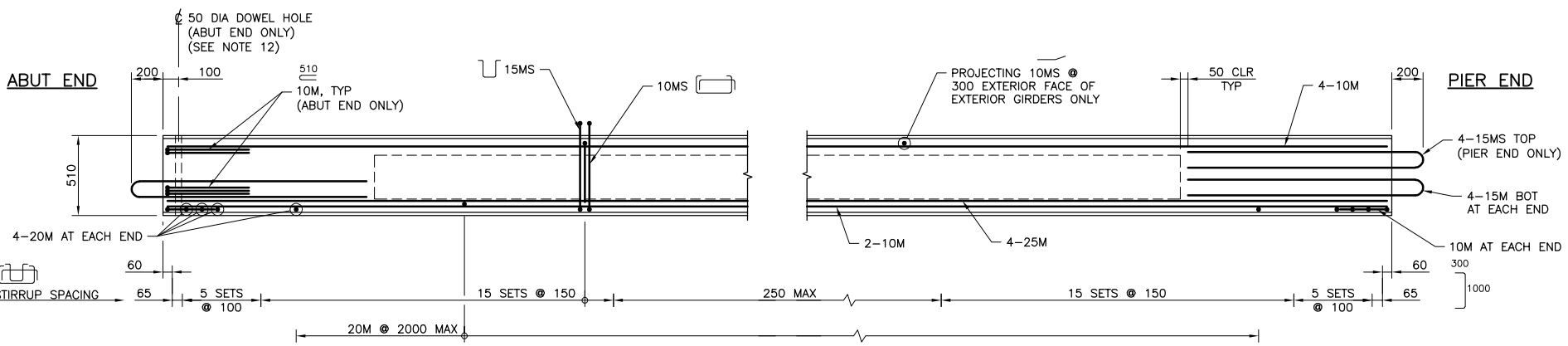
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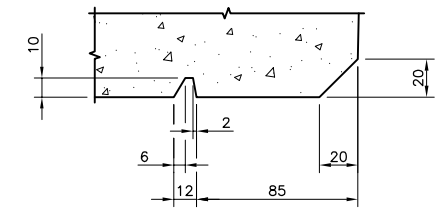
**PLAN**  
1:20



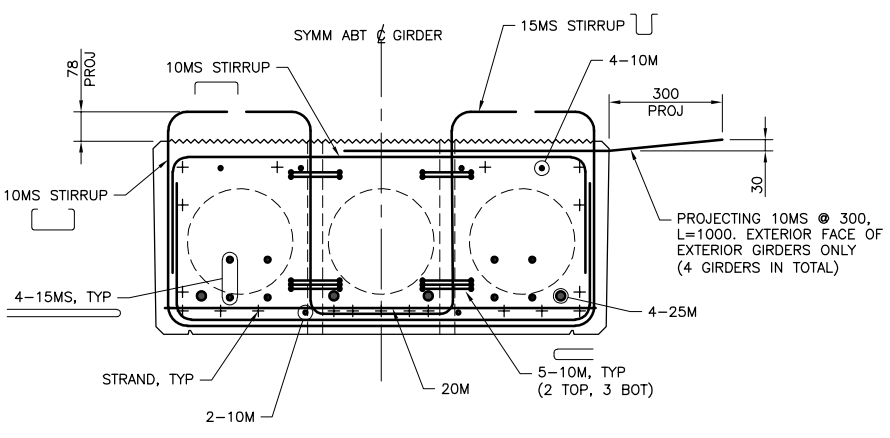
**SECTION 2 GIRDER OUTLINE AND STRAND ARRANGEMENT**  
1:10



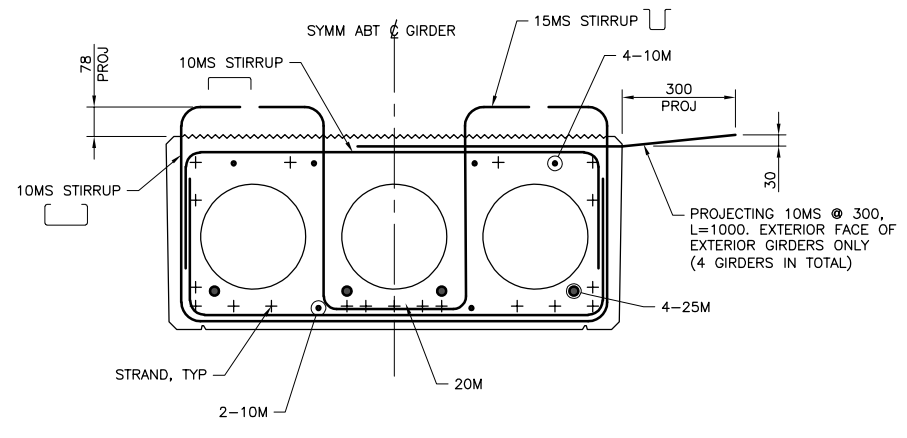
**ELEVATION**  
1:20



**DETAIL A**  
1:10



**SECTION 1 REINFORCEMENT**  
1:10



**SECTION 2 REINFORCEMENT**  
1:10

**NOTES:**

- DESIGN IN ACCORDANCE WITH CSA S6:19.
- DESIGN LOAD: CL-625.
- PRESTRESSING STRAND:
  - 15 DIA 7-WIRE UNCOATED LOW-RELAXATION ASTM A416M (GRADE 1860)
  - MINIMUM ULTIMATE TENSILE STRENGTH = 260 kN
  - STRAND TENSION IMMEDIATELY PRIOR TO TRANSFER = 182 kN
- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE:
  - 30 MPa AT TRANSFER
  - 50 MPa AT 28 DAYS
- REINFORCING STEEL MARKED M: CAN/CSA G30.18 - GRADE 400W.
- REINFORCING STEEL MARKED MS: ASTM A276 AND ASTM A955M - GRADE 420.
- MINIMUM CLEAR CONCRETE COVER:
  - 40 TO REINFORCING STEEL UNO.
  - 50 TO PRESTRESSING STRANDS
- CHAMFER EXPOSED CORNERS 20.
- LIFTING HOOKS TO BE PROVIDED. LIFTING FORCE AT EACH HOOK MUST BE MORE THAN 60 DEG TO HORIZONTAL AT ALL TIMES.
- LIFTING HOOKS TO BE PROVIDED WITHIN 1000mm OF GIRDER ENDS. PROVIDE RECESSES SO THAT THE LIFTING HOOKS CAN BE CUT FLUSH AND PATCHED WITH NON SHRINK GROUT TO PROVIDE MINIMUM SPECIFIED COVER.
- CONCRETE FINISH:
  - SANDBLAST ROUGHENING ON ALL GIRDER ENDS AND TOP 150mm OF EXTERIOR FACE OF EXTERIOR GIRDERS.
  - TOP OF GIRDER TO BE CLEAN AND FREE OF LAITANCE, AND INTENTIONALLY ROUGHENED TO FULL AMPLITUDE OF 5mm AND SPACING OF ABOUT 15mm.
  - SMOOTH FORM FINISH ALL OTHERS
- FILL WITH SIKA 212 FLOWABLE GROUT OR APPROVED EQUIVALENT AFTER INSTALLATION OF BEARING DOWELS.

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Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client: Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet  
**BRIDGE REHABILITATION  
JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par: DPG

Designed by/Concept par: AMHG

Drawn by/Dessiné par: MJCH

PWGSC Project Manager/Administrateur de Projets TP5GC

PWGSC, Architectural and Engineering Resources Manager / Ressources Architectural et de Directeur d'Ingénierie, TP5GC

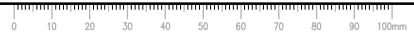
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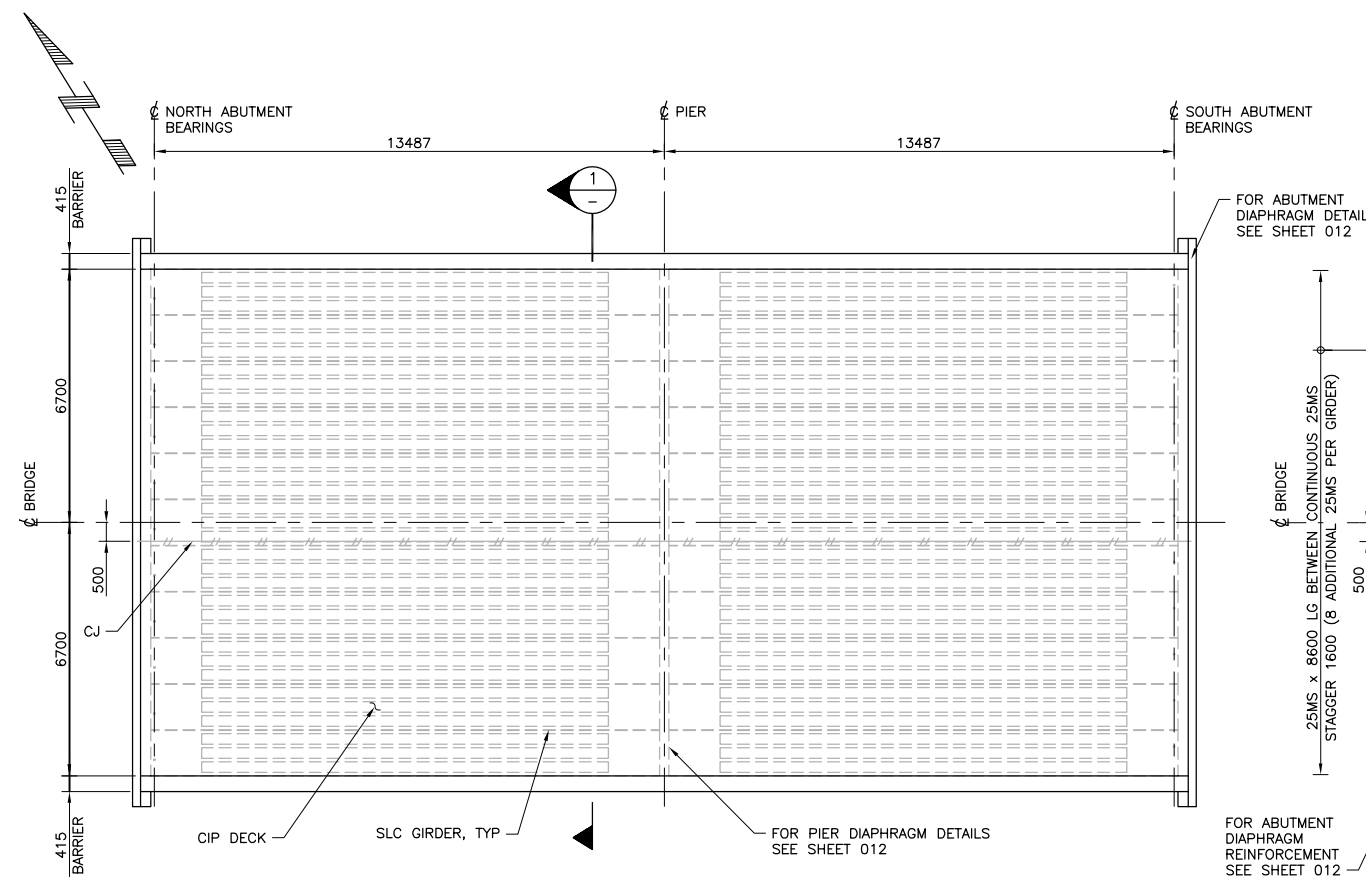
**SLC GIRDER  
DETAILS**

Project No./No. du projet	Sheet/Fauille	Revision no./Lo Révision no.
227904	010 OF 016	A

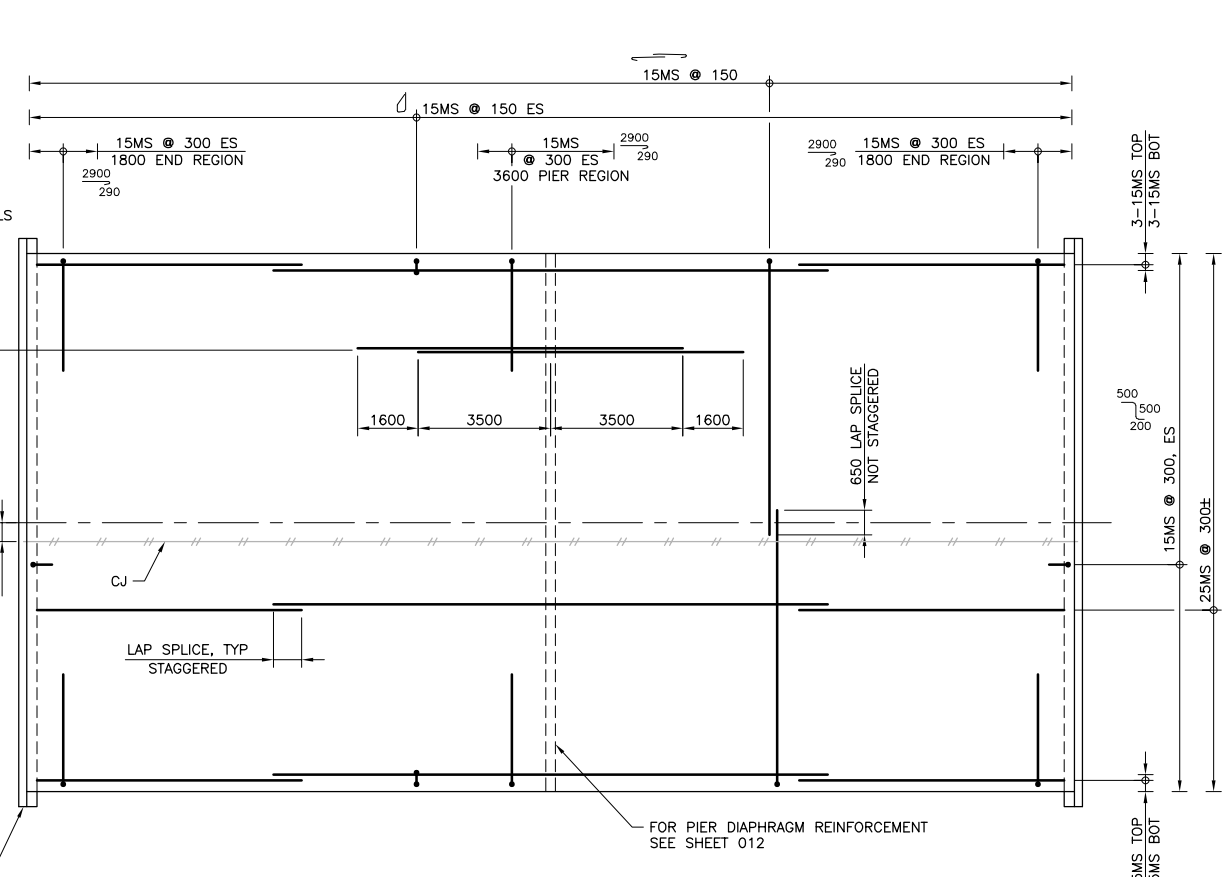
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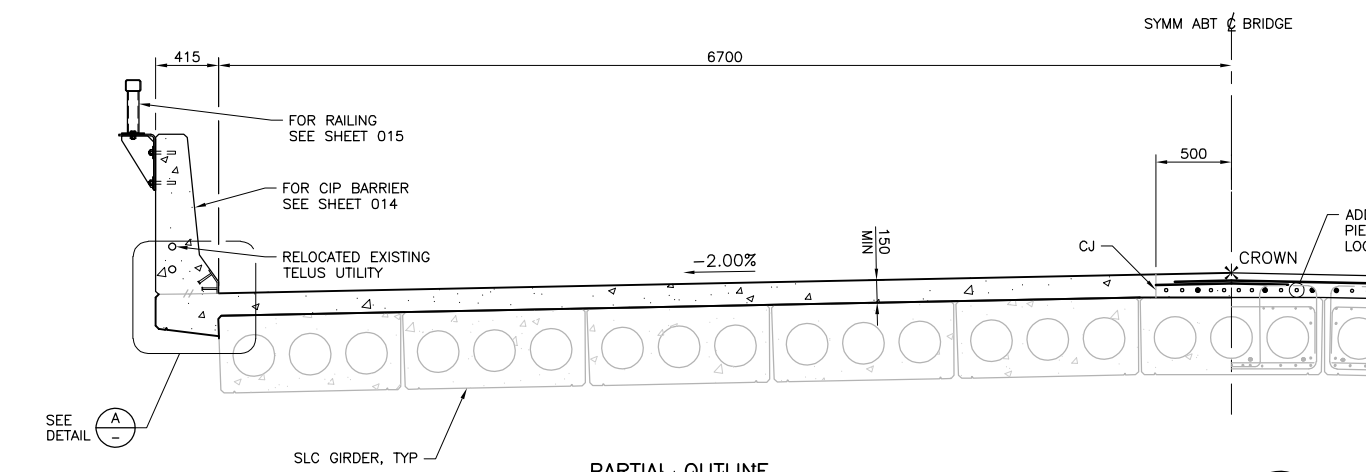
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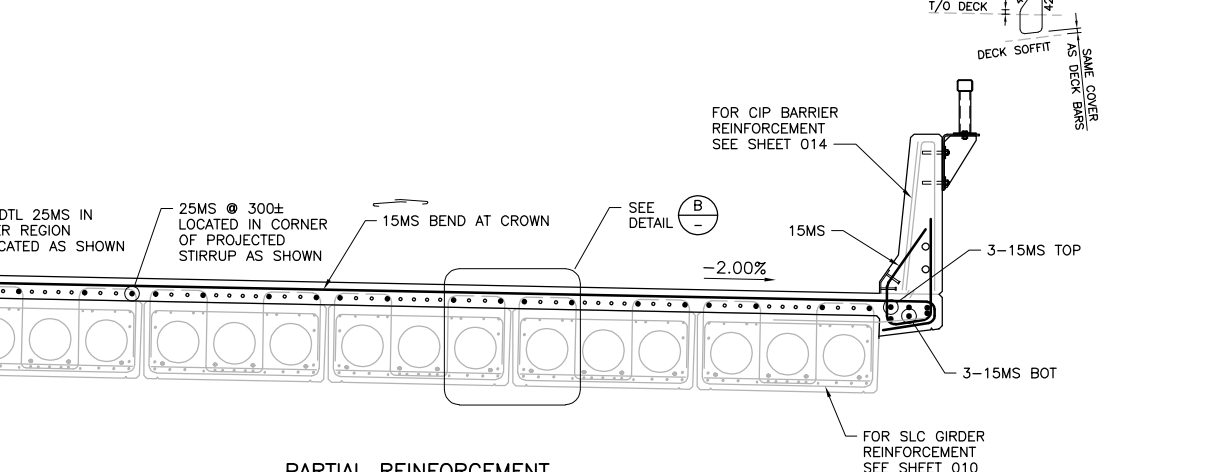
**PLAN - DECK OUTLINE**  
1:100



**PLAN - DECK REINFORCEMENT**  
1:100

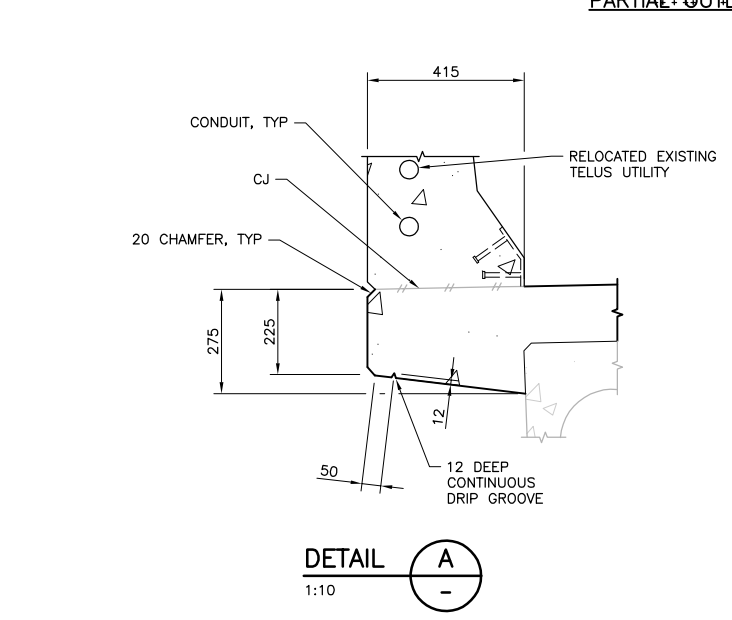


**PARTIAL OUTLINE**

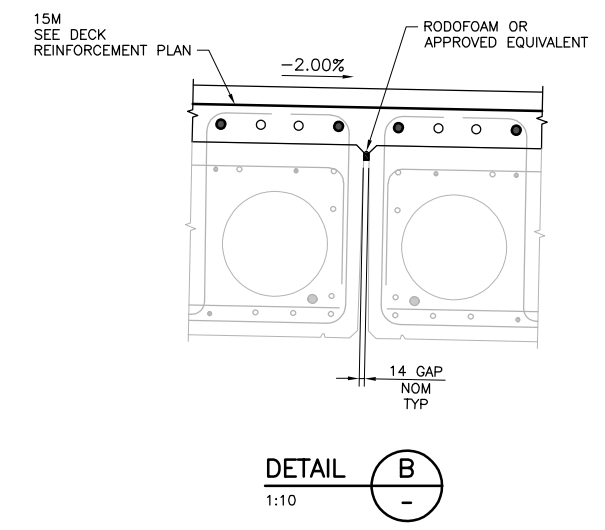


**PARTIAL REINFORCEMENT**

**SECTION 1**  
1:25



**DETAIL A**  
1:10



**DETAIL B**  
1:10

**NOTES:**

1. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 45 MPa AT 28 DAYS.
2. CHAMFER EXPOSED EDGES 20.
3. REINFORCING STEEL MARKED MS: ASTM A276 AND A955M GRADE 420.
4. MINIMUM COVER:  
70 - TOP OF SLAB  
50 - SOFFIT OF SLAB AT OVERHANG  
60 - ALL OTHER
5. STAGGER LAPS UNO. MINIMUM LAP LENGTH:  
15M - 650  
20M - 750  
25M - 1200

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Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

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Project title/Titre du projet  
**BRIDGE REHABILITATION  
JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approve par  
DPG  
Designed by/Concept par  
AMHG  
Drawn by/Dessine par  
MICH  
PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/  
Ressources Architectural et de Directeur d'Ingénierie, TPSGC  
Client/client  
PCA

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**DECK  
LAYOUT AND REINFORCEMENT**

Project No./No. du projet 227904	Sheet/Fauille <b>011</b> OF 016	Revision no./ Lo Révision no. <b>A</b>
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Project title/Titre du projet  
**BRIDGE REHABILITATION  
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**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

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PWGSC Project Manager/Administrateur de Projets TP5GC

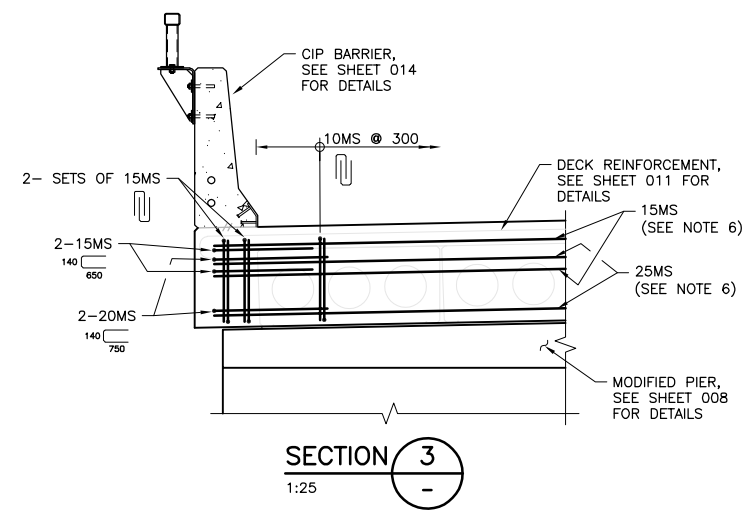
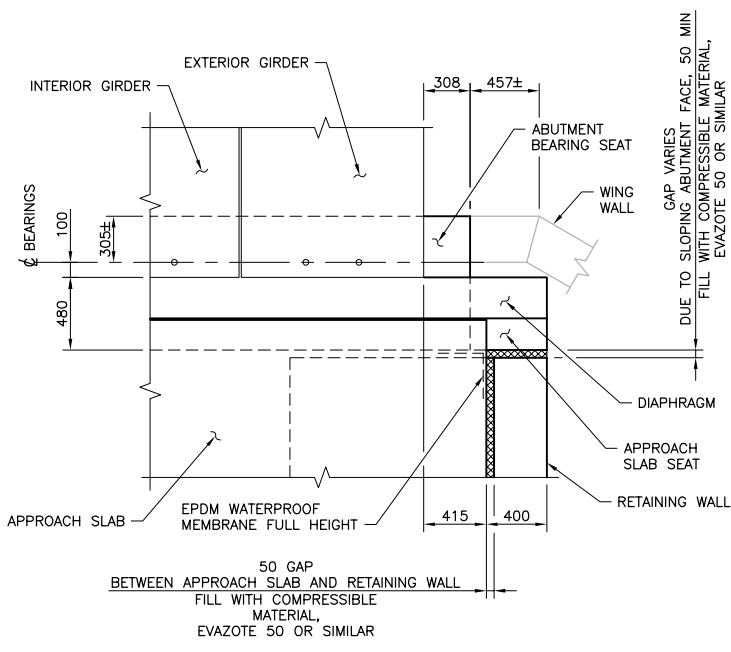
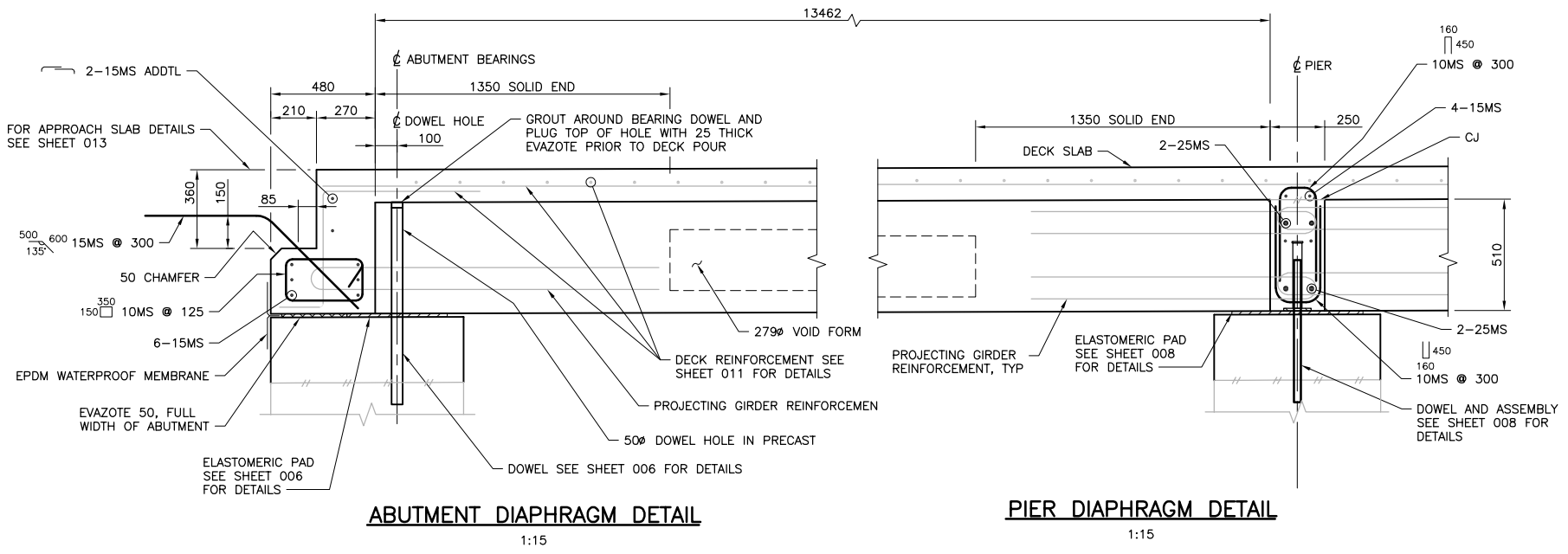
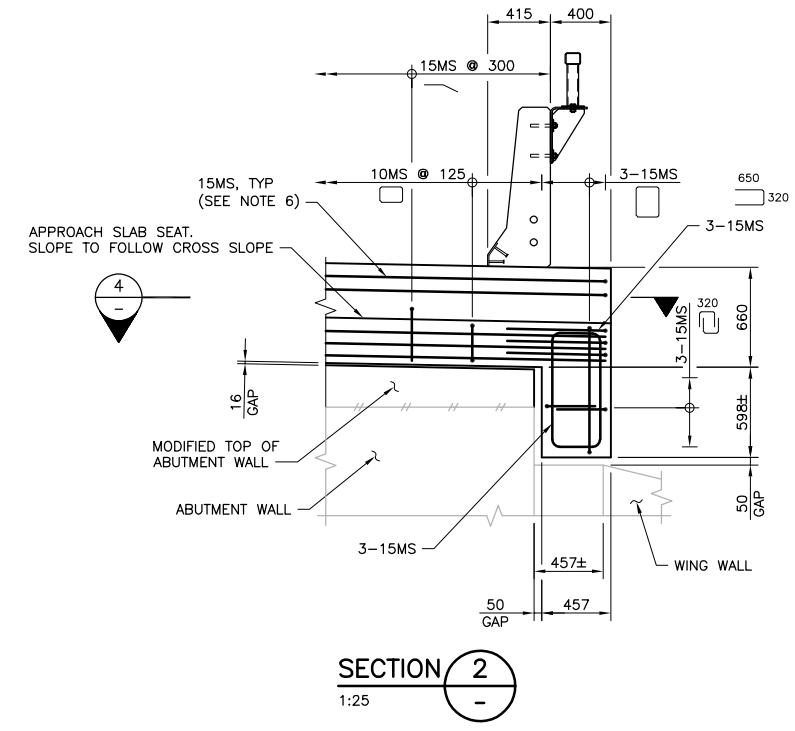
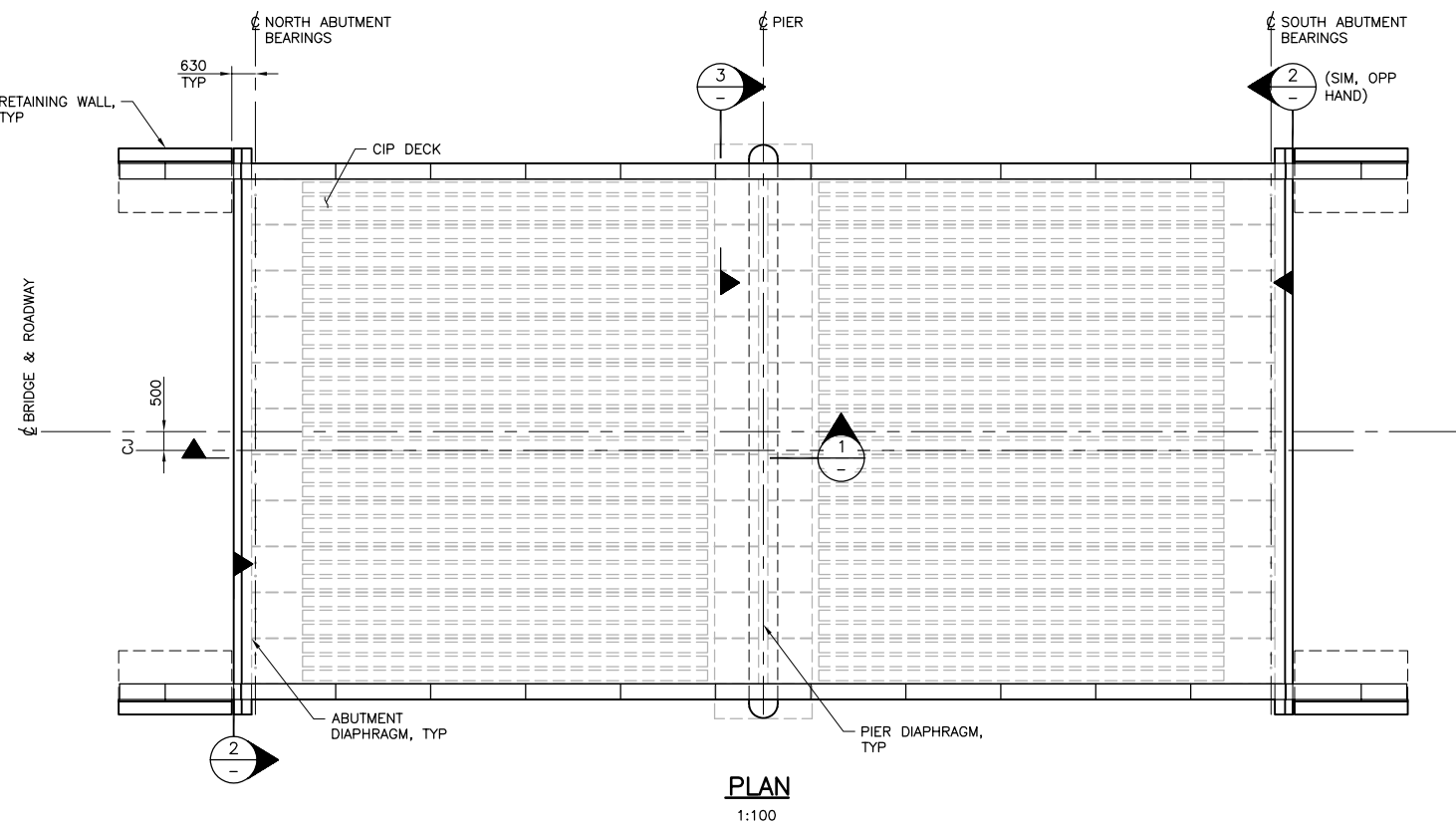
PWGSC, Architectural and Engineering Resources Manager / Ressources Architectural et de Directeur d'Ingénierie, TP5GC

Client/Client  
PCA

Drawing title/Titre du dessin

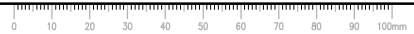
**DIAPHRAGMS  
OUTLINE AND REINFORCEMENT**

Project No./No. du projet	Sheet/Fauille	Revision no./Lo Révision no.
227904	012 OF 016	A



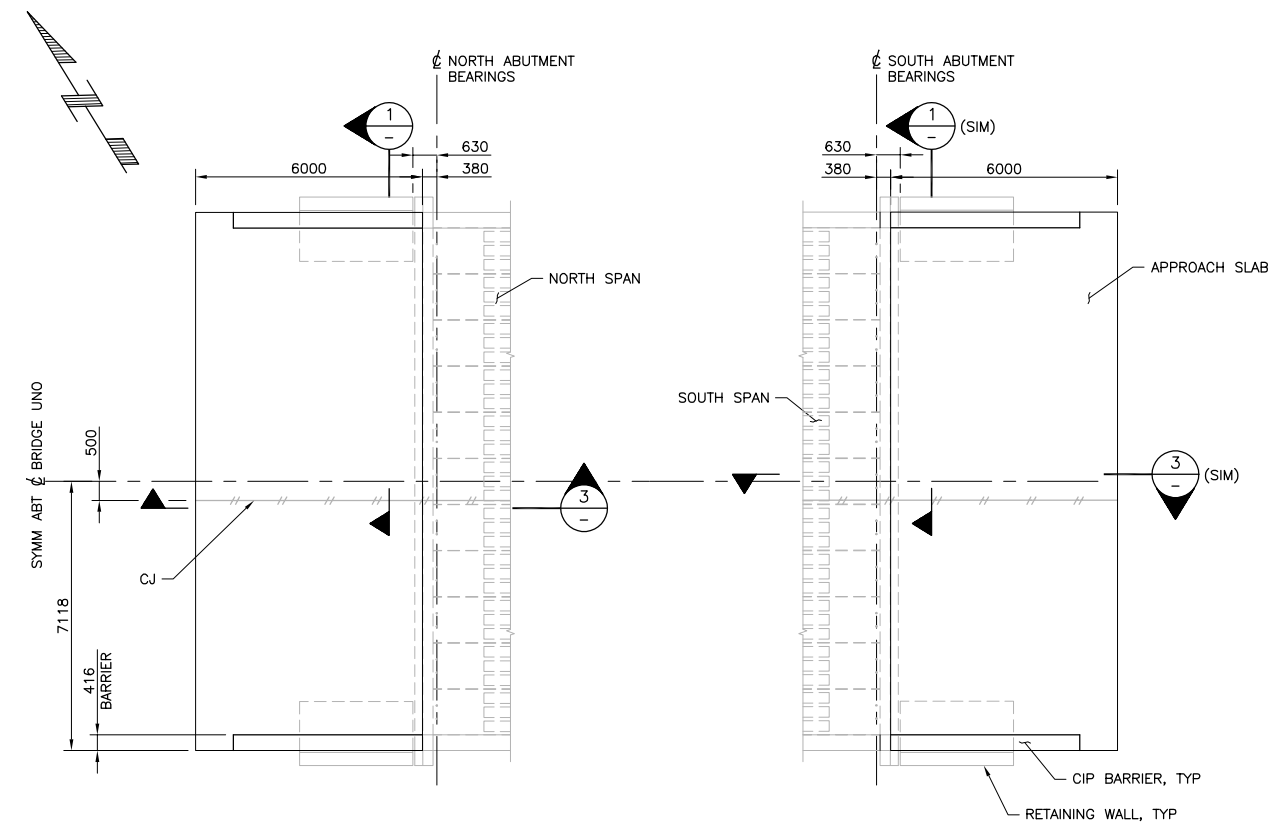
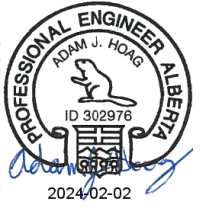
- NOTES:**
- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 45 MPa AT 28 DAYS.
  - CHAMFER EXPOSED EDGES 20.
  - REINFORCING STEEL MARKED MS: ASTM A276 AND A955M GRADE 420.
  - MINIMUM COVER:
    - 70 ALL FACES OF ABUTMENT DIAPHRAGM
    - 60 ALL OTHER
  - STAGGER LAPS UNO. MINIMUM LAP:
    - 10M - 450
    - 15M - 650
    - 20M - 750
    - 25M - 1200
  - PROJECT BARS AT CJ TO LAP WITH STAGE 2 REINFORCEMENT. STAGGERED LAP NOT REQUIRED.

G:\1945\02-Drawings\Boboktan Creek (JSP\_93N\_157.7)\02-Drawings\227904-012.dwg 2/2/2024 9:26:28 AM by Michael Chui

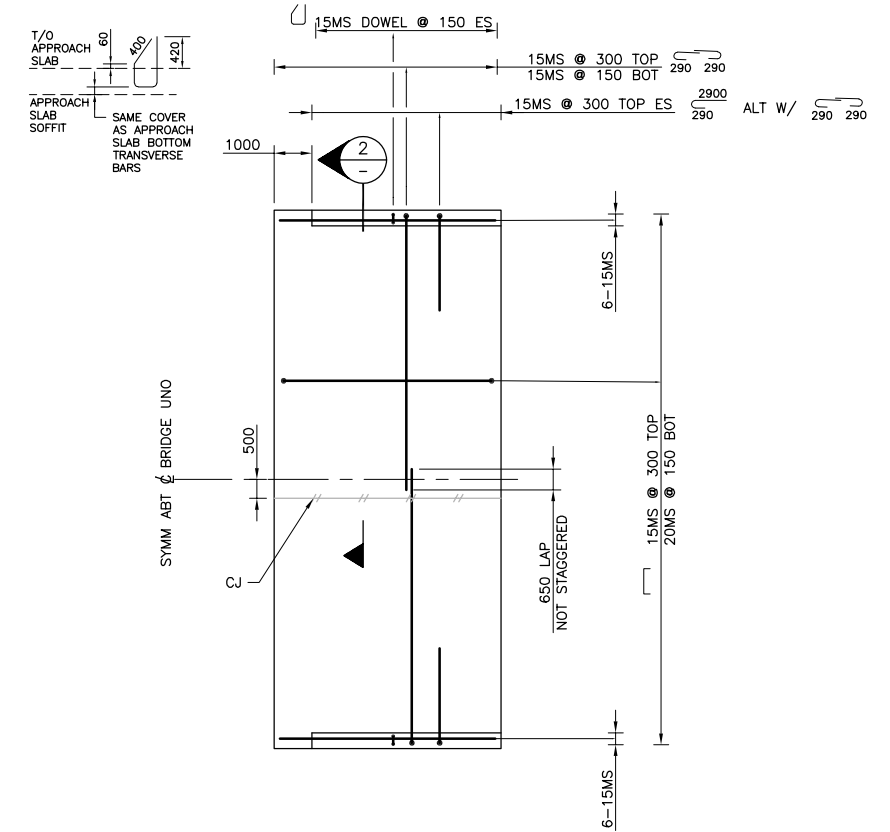




**ISSUED FOR TENDER**  
**NOT FOR CONSTRUCTION**

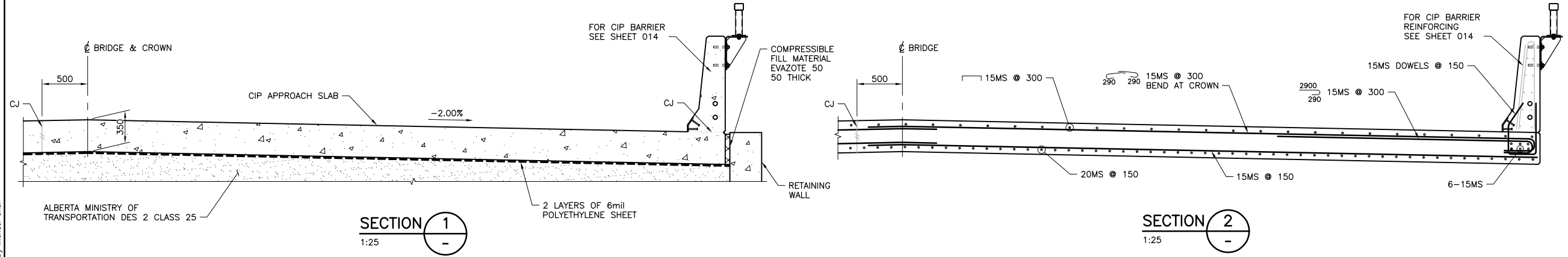


**PLAN**  
1:100



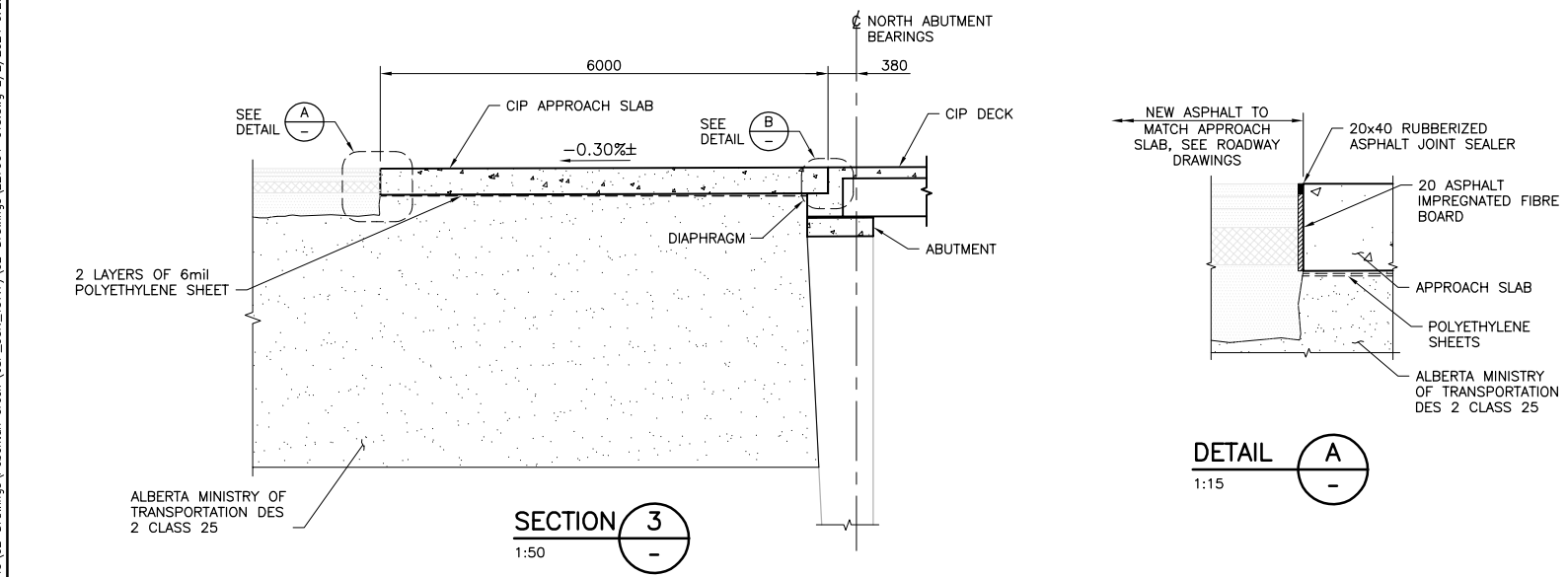
**APPROACH SLAB REINFORCEMENT**  
1:100

NOTE: NORTH APPROACH SLAB SHOWN, SOUTH APPROACH SLAB SIMILAR



**SECTION 1**  
1:25

**SECTION 2**  
1:25



**SECTION 3**  
1:50

**DETAIL A**  
1:15

**DETAIL B**  
1:15

**NOTES:**

- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 45MPa AT 28 DAYS.
- CHAMFER EXPOSED EDGES 20 UNO.
- REINFORCING STEEL MARKED MS: ASTM A276 AND ASTM A955M GRADE 420.
- MINIMUM COVER:
  - 70 TO TOP OF SLAB
  - 75 TO SOFFIT OF SLAB
  - 60 ALL OTHER
- MINIMUM LAP: 650. STAGGER LAPS UNO.
- ELASTOMER STRIP: VIRGIN NATURAL RUBBER (POLYISOPRENE) WITH SHEAR MODULUS IN ACCORDANCE WITH REQUIREMENTS OF TABLE 11.5 OF CSA S6:19 INCLUDING ADDITIONAL REQUIREMENTS FOR MINIMUM MEAN DAILY TEMPERATURE OF -44°C.

DO NOT SCALE DRAWINGS

Revision/Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/Client: Parks Canada Agency / L'Agence Parcs Canada



Project Title/Titre du projet:  
**BRIDGE REHABILITATION  
JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N  
POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par: DPG  
Designed by/Concept par: AMHG

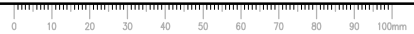
Drawn by/Dessiné par: MJCH  
PWSC Project Manager/Administrateur de Projets TP5GC

PWSC, Architectural and Engineering Resources Manager/Ressources Architectural et de Directeur d'Ingénierie, TP5GC  
Client/Client: PCA

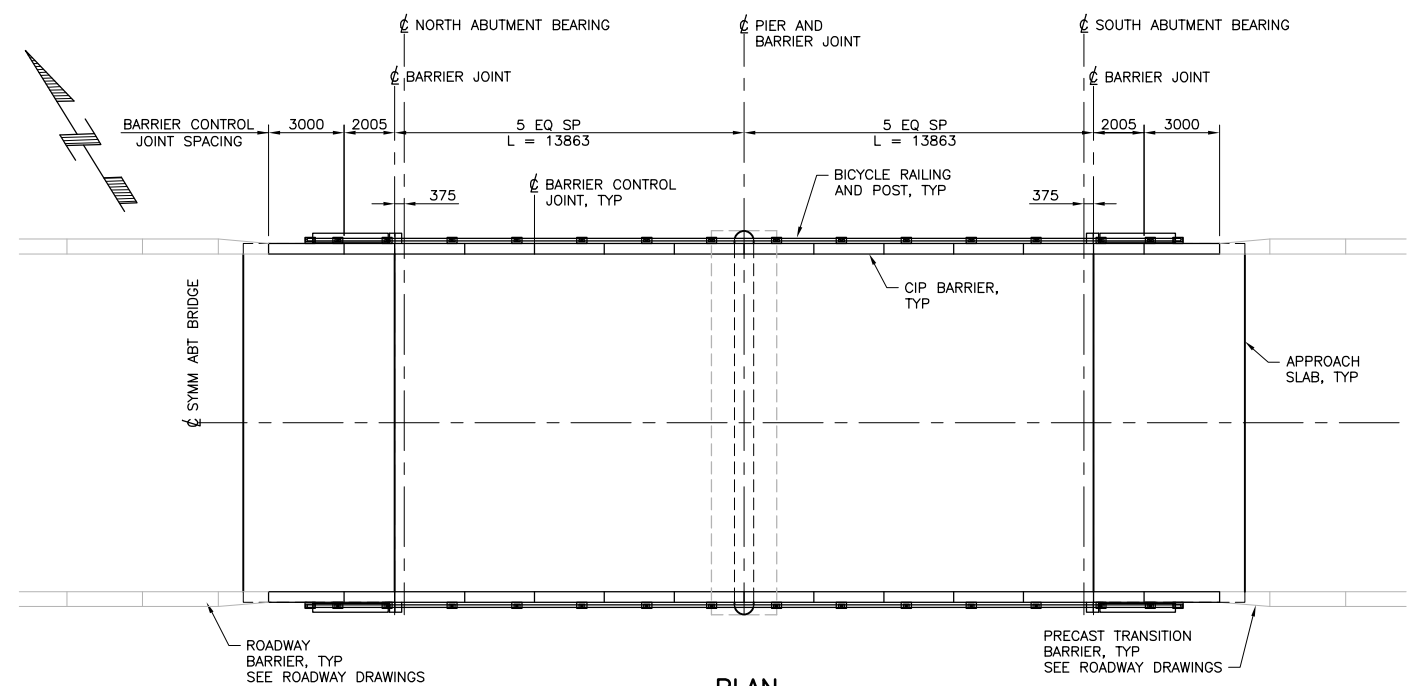
Drawing Title/Titre du dessin:  
**APPROACH SLAB  
OUTLINE & REINFORCEMENT**

Project No./No. du projet: 227904  
Sheet/Fauille: 013 OF 016  
Revision no./Lo Révision no.: A

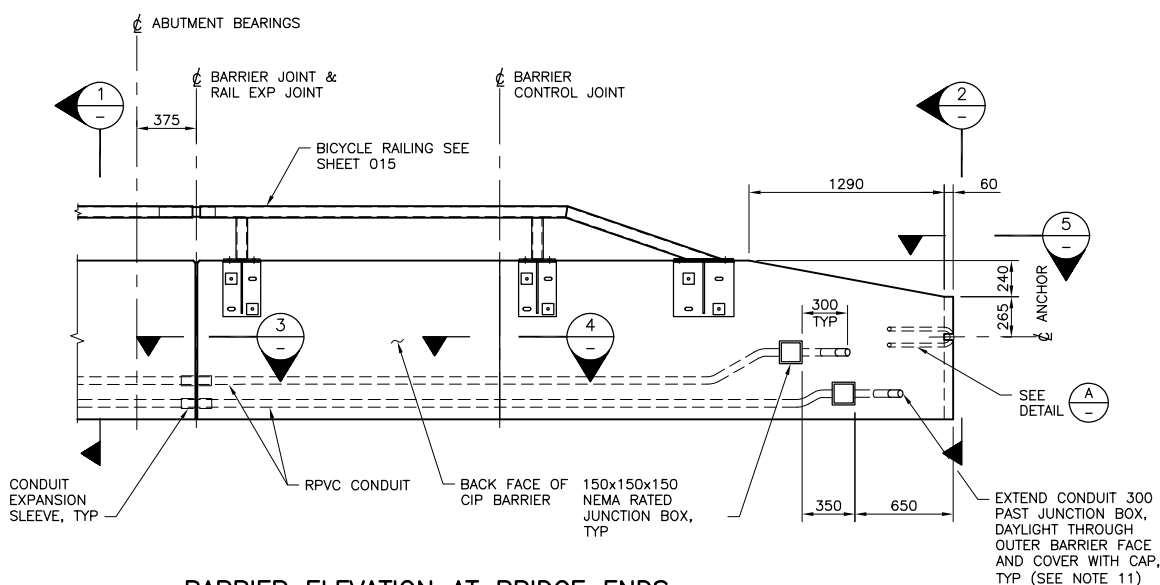
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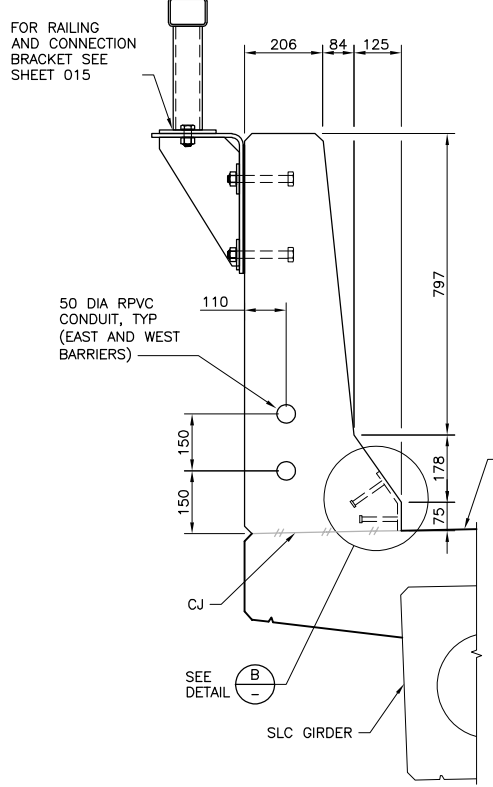
**ISSUED FOR TENDER**  
**NOT FOR CONSTRUCTION**



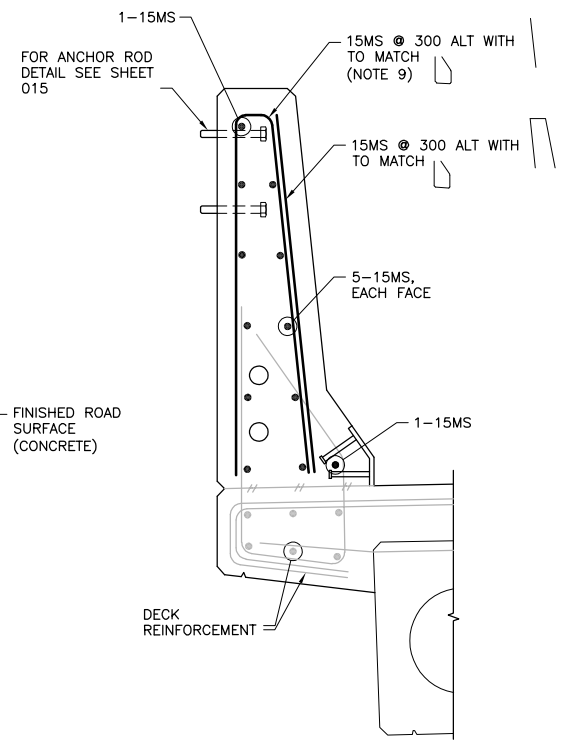
**PLAN**  
1:150



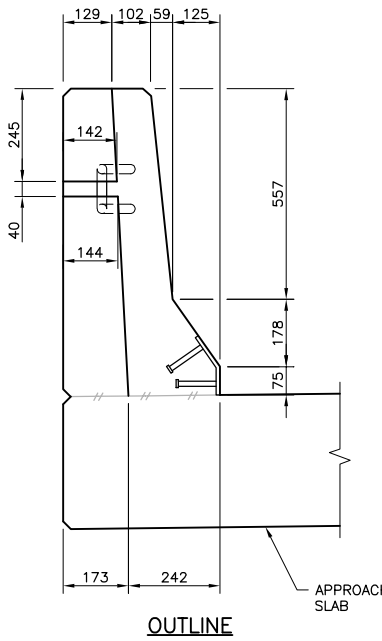
**BARRIER ELEVATION AT BRIDGE ENDS**  
1:25



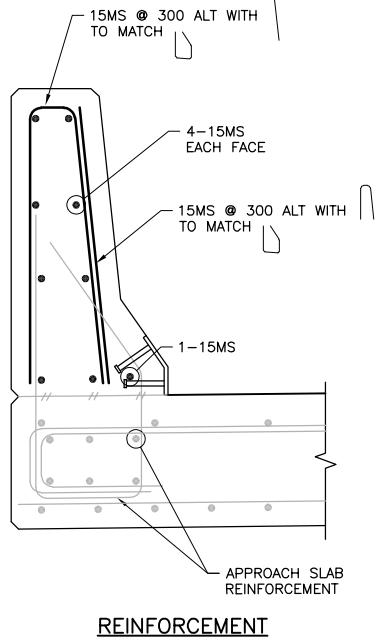
**OUTLINE**



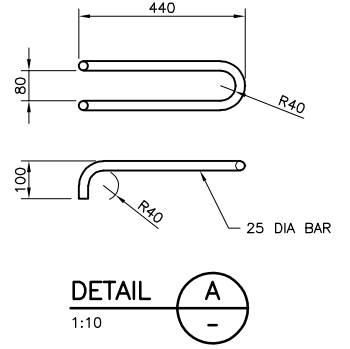
**REINFORCEMENT**



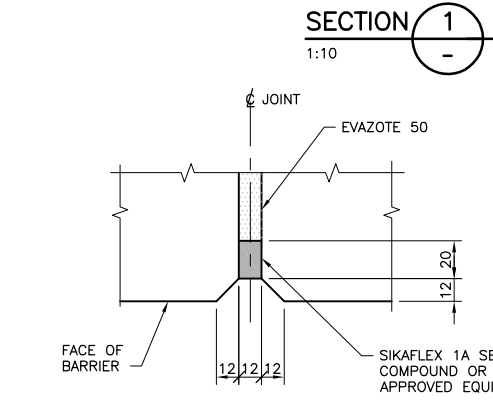
**OUTLINE**



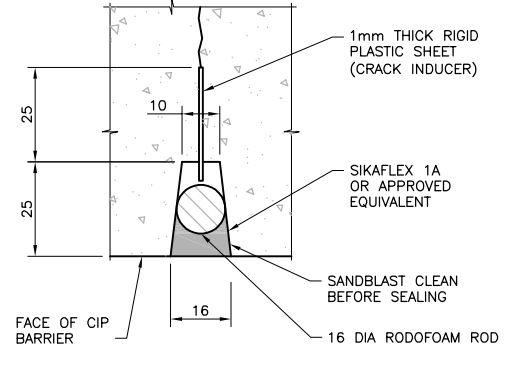
**REINFORCEMENT**



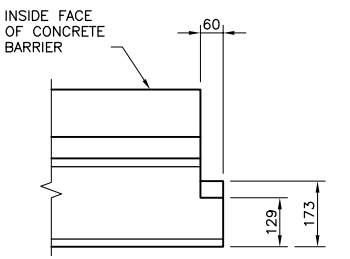
**DETAIL A**  
1:10



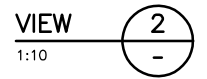
**SECTION 3**  
1:2



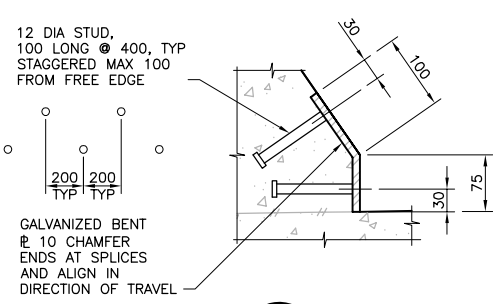
**SECTION 4**  
1:1



**VIEW 5**  
1:10



**VIEW 2**  
1:10



**DETAIL B**  
1:5

**NOTES:**

- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE: 45 MPa AT 28 DAYS.
- CHAMFER EXPOSED EDGES 20.
- REINFORCING STEEL MARKED MS: ASTM A276 AND ASTM A955M GRADE 420.
- MINIMUM COVER: 50 UNO.
- MINIMUM LAP: 650 UNO. STAGGER LAPS.
- STEEL: CAN/CSA G40.21M GRADE 300W, GALVANIZE AFTER FABRICATION.
- STUDS: CSA W59 ANNEX H, TYPE B, GALVANIZE AFTER FABRICATION.
- HOP DIP GALVANIZE TO ASTM A123/A123M.
- PROVIDE REDUCED BEND DIAMETER OF 81 (MEASURED ON THE INSIDE OF THE BAR) AND PLACE BAR ON SKEW TO SATISFY COVER REQUIREMENTS.
- REPLACE BARRIER REINFORCEMENT CUT FOR JUNCTION BOX WITH ADDITIONAL EQUIVALENT BARS ADJACENT TO THE BOX.
- CONDUIT ELBOWS NOT TO EXCEED 22.5 DEGREES. ENDS OF CONDUITS SHALL TERMINATE IN RADIAL SWEEPS OR 22.5 DEGREE ELBOWS.

**DO NOT SCALE DRAWINGS**

Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client: Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet: **BRIDGE REHABILITATION JASPER NATIONAL PARK, ALBERTA**

**KM 157.7 HIGHWAY 93N POBOKTAN CREEK BRIDGE**

Approved by/Approve par: DPG  
Designed by/Concept par: AMHG

Drawn by/Dessine par: MICH  
PWSC Project Manager/Administrateur de Projets TP5GC

PWSC, Architectural and Engineering Resources Manager / Ressources Architectural et de Directeur d'Ingénierie, TP5GC  
Client/client: PCA

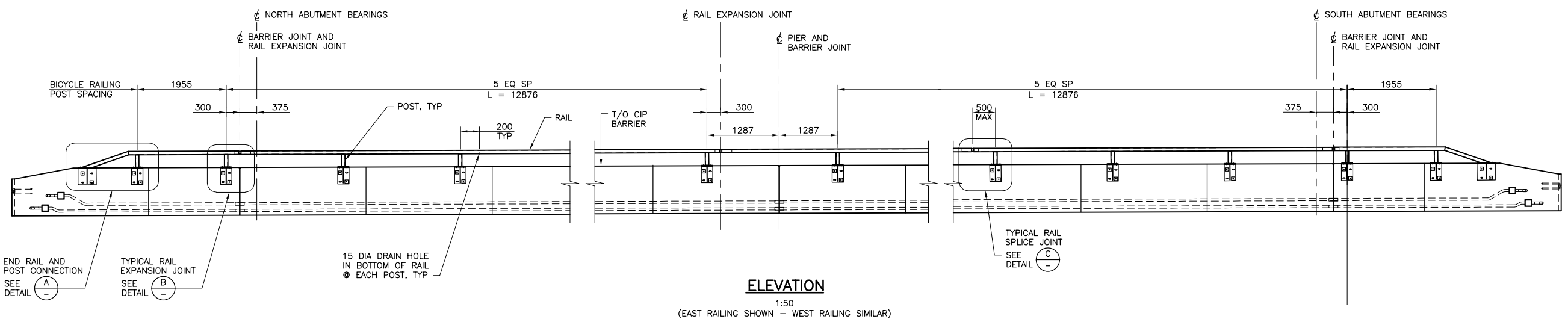
Drawing title/Titre du dessin: **CAST-IN-PLACE BARRIER OUTLINE AND REINFORCEMENT**

Project No./No. du projet: 227904	Sheet/Fauille no.: 014 OF 016	Revision no./Lo Révision no.: A
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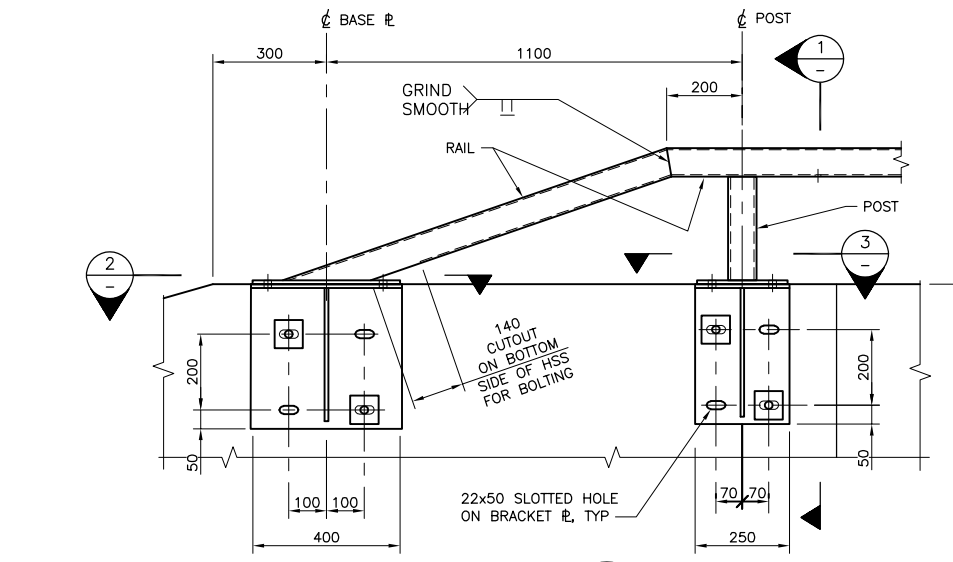
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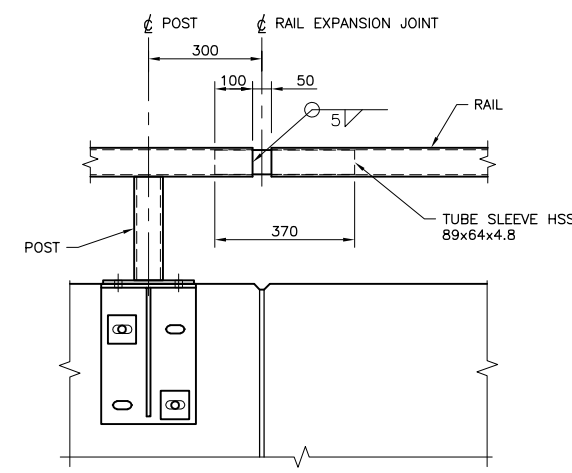
**ISSUED FOR TENDER**  
**NOT FOR CONSTRUCTION**



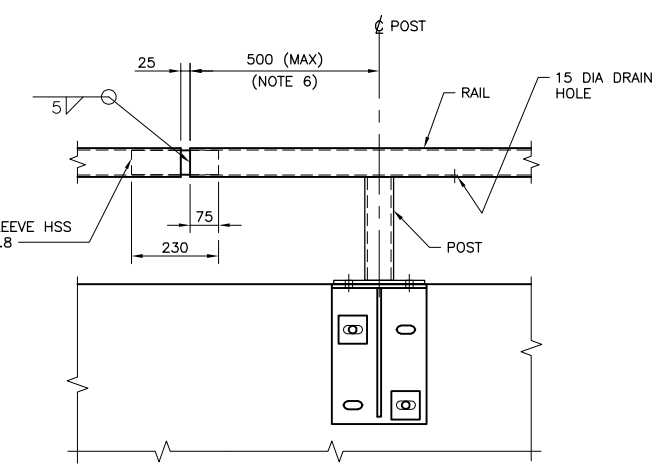
**ELEVATION**  
1:50  
(EAST RAILING SHOWN - WEST RAILING SIMILAR)



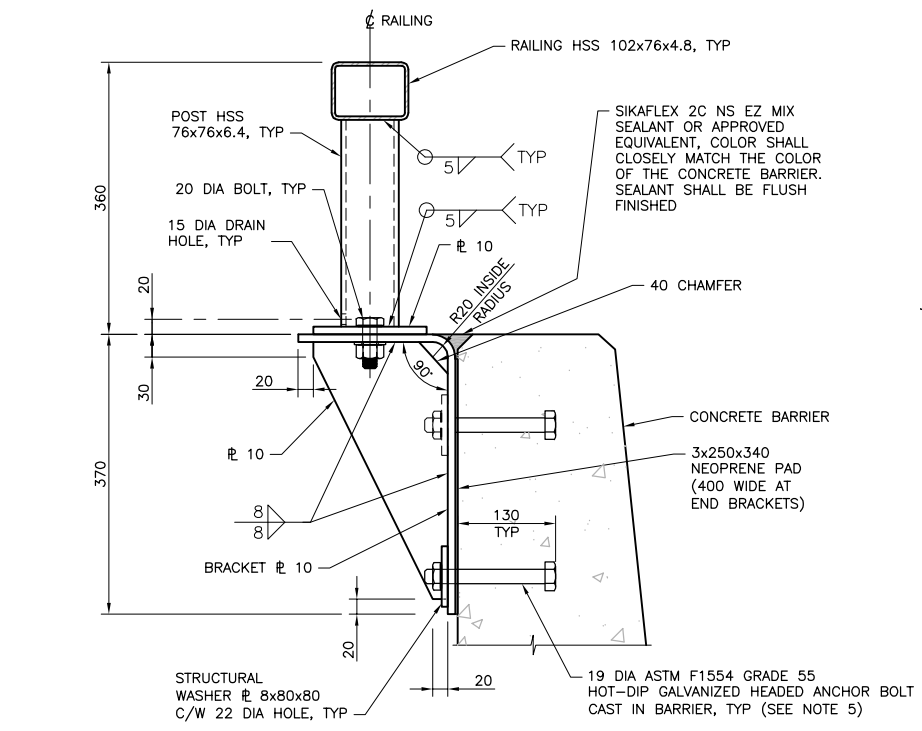
**DETAIL A**  
1:10



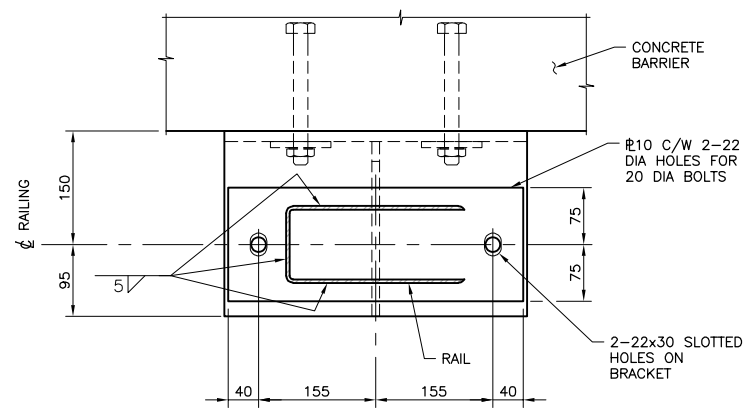
**DETAIL B**  
1:10



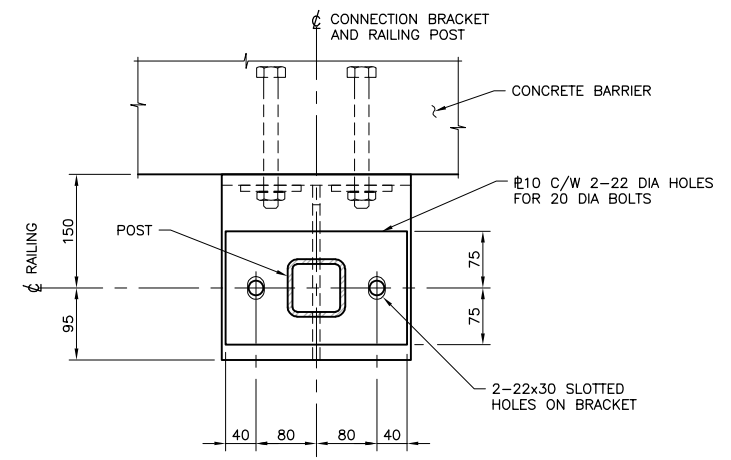
**DETAIL C**  
1:10



**SECTION 1**  
1:5



**SECTION 2**  
1:5



**SECTION 3**  
1:5

**NOTES:**

- STEEL:  
HSS: CAN/CSA-G40.21M GRADE 350W, CLASS C.  
OTHER: CAN/CSA-G40.21M GRADE 300W.  
HEADED ANCHOR BOLTS: ASTM F1554.  
ALL OTHER BOLTS: ASTM F3125M, GRADE A325M
- WELDING TO CAN/CSA W59.
- GALVANIZE ALL STEEL WORK AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
- NEOPRENE PAD 50 DUROMETER HARDNESS IN ACCORDANCE WITH ASTM D 2240
- TWO ANCHOR RODS REQUIRED AT EACH BRACKET, ONE TOP AND ONE BOTTOM, EITHER SIDE OF STIFFENER PLATE.
- NOT ALL SPLICE JOINTS SHOWN. RAIL SEGMENTS MUST SPAN 2 POSTS MINIMUM AND 3 POSTS WHERE POSSIBLE. RAIL SPLICES TO BE LOCATED 500 MAXIMUM FROM CL POST.

DO NOT SCALE DRAWINGS

Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client: Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet: BRIDGE REHABILITATION JASPER NATIONAL PARK, ALBERTA

KM 157.7 HIGHWAY 93N POBOKTAN CREEK BRIDGE

Approved by/Approve par: DPG

Designed by/Concept par: AMHG

Drawn by/Dessine par: MJCH

PWGSC Project Manager/Administrateur de Projets TP5GC

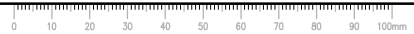
PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie, TP5GC

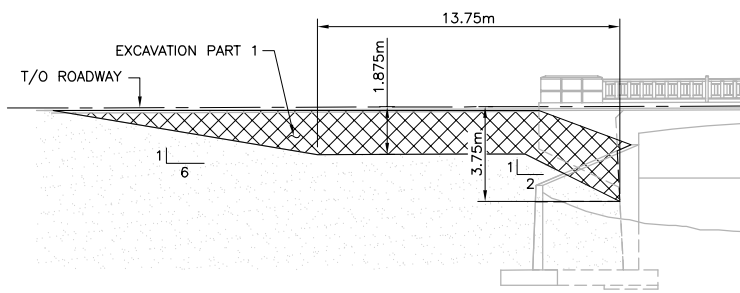
Client/client: PCA

Drawing title/Titre du dessin: BICYCLE RAILING

Project No./No. du projet: 227904	Sheet/Fauille: 015 OF 016	Revision no./Lo Révision no.: A
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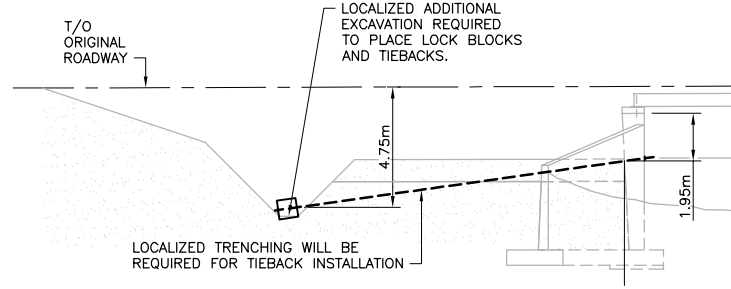




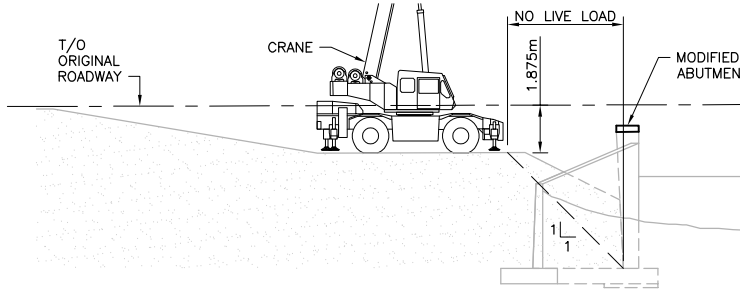
**STEP 1 – EXCAVATION PART 1 BEHIND ABUTMENTS**

- CONSTRUCT TEMPORARY RETAINING WALLS SO THAT WORK CAN BE COMPLETED IN TWO STAGES WHILE MAINTAINING SINGLE LANE OF TRAFFIC.
- IF EXCAVATION EXCEEDS 3.75m, PLACE BACKFILL TO 3.75m BELOW T/O DECK. COMPACT.

ONLY NORTH ABUTMENT SHOWN, HOWEVER WORK AT NORTH AND SOUTH ABUTMENTS TO OCCUR CONCURRENTLY. SEE SHEET 005 FOR DETAILS, INCLUDING MAXIMUM ALLOWABLE UNEQUAL BACKFILL HEIGHT AT THE TWO ABUTMENTS.

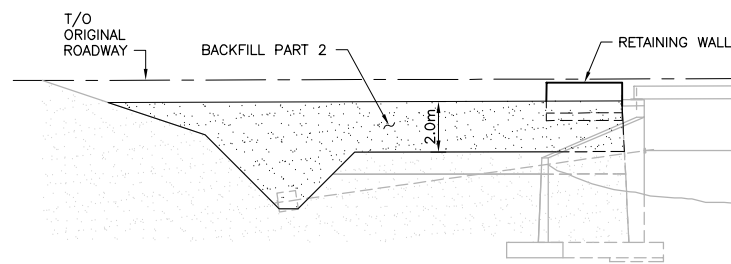


**STEP 6 – INSTALL TIEBACKS (SNUG TIGHT)**

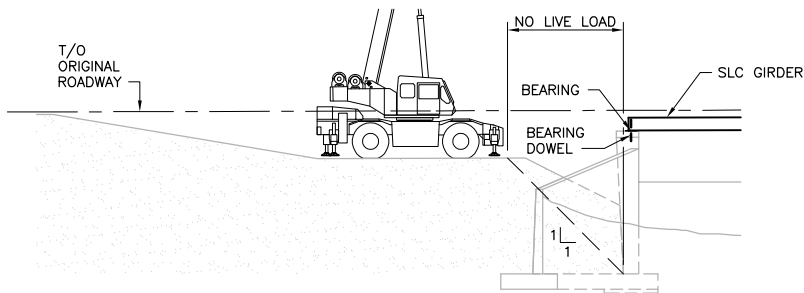


**STEP 2 – REMOVE EXISTING SUPERSTRUCTURE AND COMPLETE ABUTMENT AND PIER MODIFICATIONS**

- CRANE LOCATED IN EXCAVATED AREA BEHIND ABUTMENTS.
- CRANE AND PUMP TRUCK LOADING NOT PERMITTED WITHIN 1:1 SLOPE OF BASE OF WALL

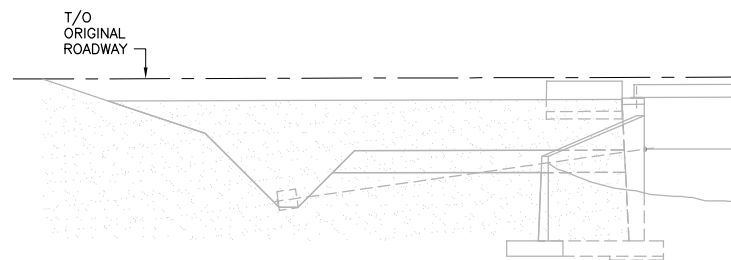


**STEP 7 – PLACE BACKFILL TO UNDERSIDE OF GIRDERS AND CONSTRUCT RETAINING WALL**

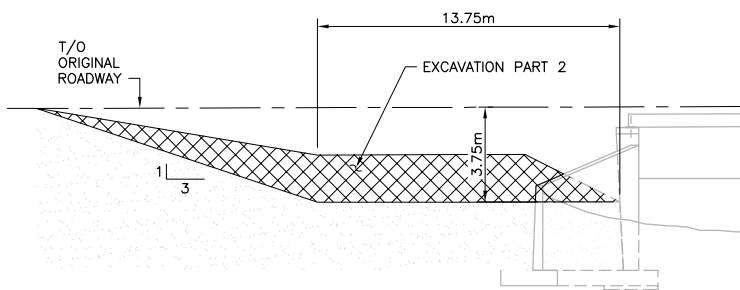


**STEP 3 – INSTALL NEW SUPERSTRUCTURE**

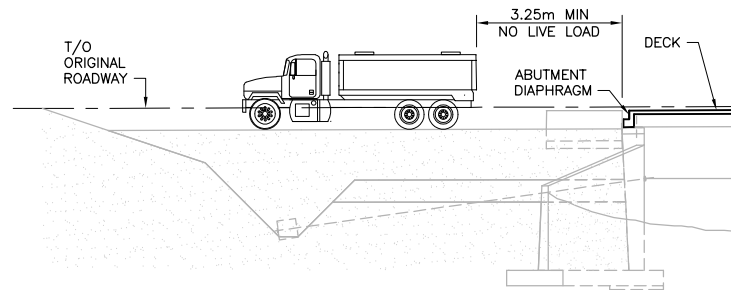
- INSTALL NEW BEARINGS, GIRDERS, AND BEARING DOWELS.
- CRANE LOCATED IN EXCAVATED AREA BEHIND ABUTMENTS.
- CAST PIER DIAPHRAGMS USING CONCRETE PUMP TRUCK POSITIONED IN EXCAVATED AREA.
- CRANE AND PUMP TRUCK LOADING NOT PERMITTED WITHIN 1:1 SLOPE OF BASE OF WALL



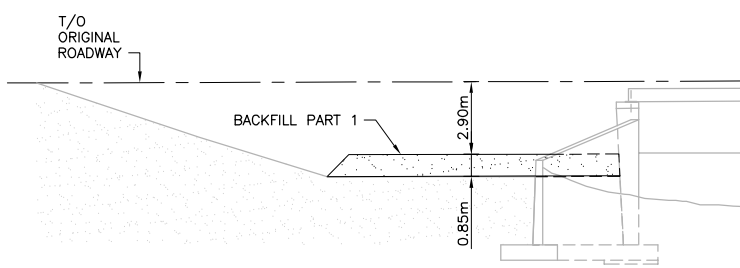
**STEP 8 – STRESS TIES**



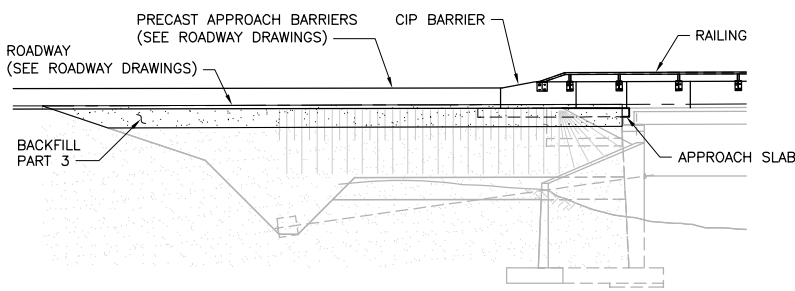
**STEP 4 – EXCAVATION PART 2 BEHIND ABUTMENTS**



**STEP 9 – CAST DECK AND ABUTMENT DIAPHRAGMS**



**STEP 5 – BACKFILL PART 1**

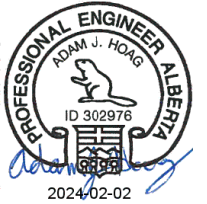


**STEP 10 – BACKFILL PART 3 & ROADWAY. APPROACH SLAB, BARRIERS, RAILING**

- RE-TENSION EACH TIEBACK AT THE END OF THE PROJECT, AT LEAST 3 WEEKS AFTER INITIAL TENSIONING.
- REPEAT STEPS 1 THROUGH 10 FOR STAGE 2

SUGGESTED CONSTRUCTION SEQUENCE ONLY. CONTRACTOR TO DEVELOP DETAILED SEQUENCE AND CONSTRUCT WORKS IN ACCORDANCE WITH DETAILS AND RESTRICTIONS DEFINED IN CONTRACT DOCUMENTS.

**ISSUED FOR TENDER**  
**NOT FOR CONSTRUCTION**



**DO NOT SCALE DRAWINGS**


Revision/	Description/Description	Date/Date
A	ISSUED FOR TENDER	2024/02/02

Client/client: Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet: **BRIDGE REHABILITATION JASPER NATIONAL PARK, ALBERTA**  
**KM 157.7 HIGHWAY 93N POBOKTAN CREEK BRIDGE**

Approved by/Approuvé par: DPG  
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Drawn by/Dessiné par: MJCH  
PWSC Project Manager/Administrateur de Projets TP5GC

PWSC, Architectural and Engineering Resources Manager/Ressources Architectural et de Directeur d'Ingénierie, TP5GC

Client/client: PCA  
Drawing title/Titre du dessin:

**SUGGESTED CONSTRUCTION SEQUENCE**

Project No./No. du projet: 227904	Sheet/Fauille: 016 OF 016	Revision no./Loi Révision no.: A
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