Public Services and Procurement Canada

Services publics et Approvisionnement Canada

Real Property Services Branch
Professional and Technical Services
Pacific Region

Alaska Highway, B.C.

BUCKINGHORSE RIVER BRIDGE
BRIDGE BARRIER REPLACEMENT

km 277.6

British Columbia

PROJECT No. R.017173.202

AUGUST 2017

Public Services and Procurement Canada / Services publics et Approvisionnement Canada
REAL PROPERTY SERVICES BRANCH AND TECHNICAL SERVICES
Pacific Region
SERVICES IMMOBILIERS ET SERVICES TECHNIQUE
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J.K. DONIEC
33738
11 Aug 2017

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Project title/Titre du projet
BRITISH COLUMBIA
ALASKA HIGHWAY km 277.6

BUCKINGHORSE RIVER BRIDGE
BRIDGE BARRIER REPLACEMENT

Consultant Signature Only

Designed by/Concept par
J. DONIEC

Drawn by/Dessiné par
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PSPC Project Manager/Administrateur de Projets SPAC

PSPC Regional Manager, Architectural and Engineering Services
Gestionnaire régional, Services d'architecture et de génie, SPAC

Drawing title/Titre du dessin
COVER PAGE

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R.017173.202	S01 OF 5	0

PSPC – A1 – 841X594

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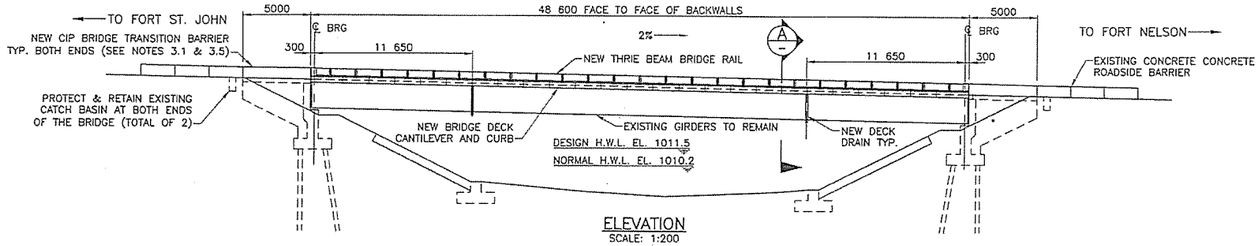

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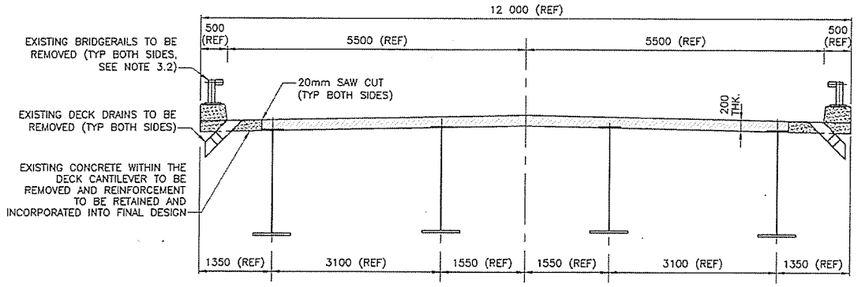

EXISTING BRIDGE SECTION
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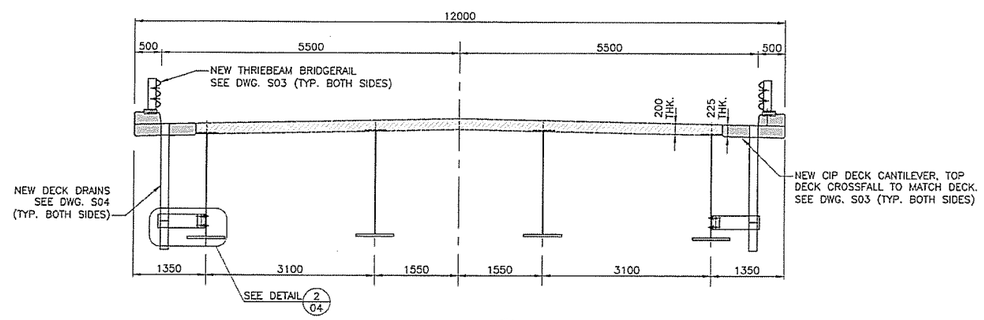

SECTION A
SCALE 1:50

1. GENERAL

1.1 THE METRIC SYSTEM OF MEASUREMENT IS USED ON ALL DRAWINGS. ELEVATIONS AND STATIONS WHERE SHOWN ARE IN METERS AND ALL OTHER DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE (U.N.O.).

1.2 SPECIFIC STRUCTURAL DRAWING NOTES SUPERSEDE GENERAL NOTES WHERE THERE ARE DIFFERENCES.

1.3 CONSTRUCTION OF THE WORKS TO COMPLY WITH THE PROJECT SPECIFICATION.

1.4 EXISTING BRIDGE DETAILS ARE BASED ON 1968 PSPC STRUCTURES (BRIDGES) DIVISION RECORD DRAWINGS. THE ACCURACY OF THE INFORMATION HAS NOT BEEN VERIFIED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM ALL NECESSARY DIMENSIONS SUCH THAT THE WORK CAN BE CONSTRUCTED AS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL INFORM THE DEPARTMENTAL REPRESENTATIVE OF ANY DISCREPANCY IDENTIFIED BETWEEN 1968 AND THE CONTRACT DRAWINGS.

1.5 REFERENCE DRAWING LIST:

SELECTED DRAWINGS FROM THE 1968 RECORD DRAWINGS

DRAWING NUMBER	TITLE
035480-2	GENERAL LAYOUT
035480-3	ABUTMENT CONCRETE
035480-4	ABUTMENT REINFORCEMENT
035480-8	DECK CONCRETE & RAILING LAYOUT
035480-9	DECK REINFORCEMENT
035480-12	RAILINGS 1 OF 2
035480-13	RAILINGS 2 OF 2

2. DESIGN DATA

2.1 DESIGN OF ALL COMPONENTS BASED ON CAN/CSA-S6-14.

2.2 DESIGN LIVE LOAD BCL-625.

2.3 BARRIER TEST LEVEL WAS ESTABLISHED IN ACCORDANCE WITH CAN/CSA S6-14 SECTION 12 AND TRAFFIC COUNT DATA PROVIDED BY THE PSPC.

2.4 BARRIER TEST LEVEL DESIGN DATA:
AADT = 611
POSTED SPEED = 100 KM/HR
TRUCK PROPORTION = 40% (MAXIMUM ALLOWED)

2.5 THE DESIGN OF BRIDGERAIL POSTS, ANCHORAGE AND MODIFICATIONS TO BRIDGE DECK CANTILEVER WAS BASED ON THE CAN/CSA S6-14 BARRIER IMPACT FORCES CORRESPONDING TO BARRIER TEST LEVEL TL-2.

3. SCOPE OF WORK

3.1 REMOVE AND DISPOSE OF EXISTING BRIDGERAILS, CONCRETE CURBS FROM THE BRIDGE DECK AND ABUTMENT WINGWALLS.

3.2 REMOVE EXISTING DECK CANTILEVER AND DECK DRAINS (SALVAGING EXISTING DECK REINFORCING IN THE DECK CANTILEVERS).

3.3 RECONSTRUCT CONCRETE DECK CANTILEVER WITH NEW DECK DRAINS.

3.4 CONSTRUCT NEW CURBS, CIP BRIDGE RAIL POSTS AND NEW THRIEBEAM BRIDGERAIL BARRIER ON THE BRIDGE.

3.5 CONSTRUCT NEW CIP BRIDGE TRANSITION BARRIER ON TOP OF EXISTING ABUTMENT WINGWALLS.

4. CAST IN PLACE CONCRETE

4.1 ALL CONCRETE SHALL BE IN ACCORDANCE WITH THE SPECIFICATION SECTION 03 30 00 – CAST-IN-PLACE CONCRETE.

4.2 ALL CONCRETE SHALL BE CLASS HPC (fc' = 45 MPa).

4.3 DO NOT USE ADD MIXTURES THAT CONTAIN CALCIUM CHLORIDE.

4.4 CONCRETE COVER FOR NEW AND RECONSTRUCTED ELEMENTS SHALL BE 50 mm U.N.O.

4.5 CURING OF ALL CONCRETE SHALL BE IN STRICT COMPLIANCE WITH THE SPECIFICATION.

4.6 ALL EXPOSED CORNERS SHALL HAVE A 20mm CHAMFER U.N.O.

5. REINFORCING STEEL

5.1 ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE SPECIFICATION SECTION 03 20 00 – CONCRETE REINFORCING.

5.2 SUBMIT CHECKED SHOP DRAWINGS AND DETAILS OF ALL REINFORCEMENT TO DEPARTMENTAL REPRESENTATIVE FOR REVIEW PRIOR TO FABRICATION.

5.3 SUPPLY SUPPORT BARS TO SUPPORT MAIN REINFORCEMENT AS REQUIRED.

5.4 LAP SPLICE SCHEDULE

BAR SIZE	LAP LENGTH
10M	500
15M	700
20M	850

A. LAP SPLICE SCHEDULE IS FOR CLASS B SPLICE.
B. LAP SPLICES TO BE MULTPLIED BY 1.3 FOR HORIZONTAL REINFORCEMENT WITH MORE THAN 300mm OF FRESH CONCRETE BELOW THE LAP.
C. APPLIES TO REINFORCEMENT SPLICES NOT OTHERWISE DETAILED.

5.5 PRIOR TO CONCRETE POUR THE DEPARTMENTAL REPRESENTATIVE SHALL INSPECT NEW REINFORCEMENT HAS BEEN PLACED IN ACCORDANCE WITH THE CONTRACT DRAWINGS.

6. MISCELLANEOUS STEEL

6.1 ALL MISCELLANEOUS STEEL SHALL BE IN ACCORDANCE WITH THE SPECIFICATION SECTION 05 51 30.

6.2 MISCELLANEOUS STEEL TO CONFORM TO CAN/CSA-G40.21 300W.

6.3 ALL GALVANIZING SHALL MEET ASTM A123/A123M OR A153/A153M AS APPLICABLE.

6.4 BOLTS SHALL CONFORM TO TO ASTM A325 U.N.O.

6.5 ALL NEW STEEL MEMBERS AND INSERTS CAST INTO CONCRETE TO BE GALVANIZED AND ISOLATED FROM ALL BLACK STEEL INCLUDING TIES.

7. CONCRETE DEMOLITION

7.1 ALL DEMOLITION TO BE DONE IN ACCORDANCE WITH THE SPECIFICATION SECTION 02 22 30.

7.2 THE CONTRACTOR AND THE DEPARTMENTAL REPRESENTATIVE SHALL VERIFY AND MARK OUT ALL AREAS TO BE REPAIRED PRIOR TO COMMENCING CONCRETE DEMOLITION.

7.3 CONTRACTOR TO TAKE EXTRA CARE NOT TO DAMAGE EXISTING REINFORCEMENT.

7.4 SEVERELY CORRODED REINFORCEMENT (WITH MORE THAN 20% OF THE SECTION LOSS AS DETERMINED BY THE DEPARTMENTAL REPRESENTATIVE) SHALL BE EITHER REPLACED OR SUPPLEMENTED WITH NEW REINFORCEMENT OF THE SAME DIAMETER. SUPPLEMENTAL BARS SHALL OVERLAP WITH THE CORRODED BAR BY THE MINIMUM LAP LENGTH EACH SIDE OF THE SEVERELY CORRODED SECTION. MINIMUM LENGTH OF ANY REINFORCEMENT SHALL NOT BE LESS THAN 1000mm

7.5 FOLLOWING CONCRETE REMOVAL WORK, THE DEPARTMENTAL REPRESENTATIVE SHALL INSPECT THE EXISTING REINFORCEMENT AND RECOMMEND ANY SUPPLEMENTAL REINFORCING STEEL NOT IDENTIFIED ON DRAWING.

7.6 REPAIRED CONCRETE SURFACES SHALL BE RESTORED TO THEIR ORIGINAL DIMENSIONS U.N.O.

8. CURB PLATE INSTALLATION PROCEDURE

8.1 BOLTED CURB PLATES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. ALL OTHER METAL PARTS EXCEPT ERECTION ANGLES AND STAINLESS STEEL BOLTS SHALL BE HOT DIPPED GALVANIZED OR ZINC METALIZED AFTER FABRICATION.

8.2 CURB PLATES SHALL BE ASSEMBLED AND TRANSPORTED WITH ERECTION ANGLES ATTACHED.

8.3 SECURE CURB PLATES TO THE CURB. THE ATTACHEMENT SHALL BE STRONG ENOUGH TO MAINTAIN THE CORRECT GAP AND ALIGNMENT OF THE PLATES UNTIL AFTER CONCRETE PLACEMENT.

8.4 AFTER CURB PLATES ARE SECURELY ATTACHED, LOOSEN BOLTS IN SLOTTED HOLES IN THE ERECTION ANGLE SUFFICIENTLY TO ALLOW TEMPERATURE MOVEMENT WITHOUT DAMAGING BRIDGE COMPONENTS. OBSERVE THAT CLAMPED PARTS DO NOT DEFORM WHEN BOLTS ARE LOOSENED.

8.5 CHECK CURB PLATE BEARING, PROCEED WITH CONCRETE PLACEMENT AFTER APPROVAL BY THE DEPARTMENTAL REPRESENTATIVE.

8.6 REMOVE ERECTION ANGLE IMMEDIATELY AFTER CONCRETE IS PLACED.

8.7 REMOVE ALL FORMWORK, CLEAN EXCESS CONCRETE AND DEBRIS.

8.8 TORQUE CURB PLATE BOLTS TO PROPER VALUE.

9. BRIDGERAIL NOTES

9.1 ALL ANCHOR RODS SHALL CONFORM TO THE REQUIREMENTS OD ASTM A193 GRADE B7 (Fy = 725 MPa; Fu = 860 MPa) ALL NUTS AND WASHERS TO SHALL CONFORM TO A325. GALVANIZING SHALL STRICTLY FOLLOW THE FOLLOWING PROCEDURE WITH THE PRESENCE OF THE CONSULTANT:
-BRUSH BLAST ANCHOR RODS TO REMOVE MILL SCALE AND OIL AFTER THREADING ENDS.
-FLASH PICKLING NOT TO EXCEED 5 MINUTES.
-QUICK DRY PRIOR TO HOT-DIP GALVANIZING (DO NOT STORE IN FLUX OR ACID RINSE)

9.2 THRIE BEAM GUARDRAIL SHALL HAVE A MINIMUM YIELD STRENGTH OF 345 MPa.

9.3 THE BOTTOM SURFACE OF THE BASEPLATES SHALL BE COATED WITH AN APPROVED COATING SYSTEM SUITABLE FOR APPLICATION ON GALVANIZED STEEL TO PREVENT CONTACT BETWEEN THE ZINC AND THE GROUT. THE COLOUR SHALL BE MEDIUM GREY.

9.4 BRIDGERAIL ANCHOR BOLTS SHALL BE TIGHTENED AN ADDITIONAL ½ TURN OF THE NUT PAST THE "SNUG TIGHT" CONDITION.

9.5 ALL DIMENSIONS ARE MEASURED PARALLEL TO TOP OF BRIDGE DECK AND ALONG THE CENTRELINE OF ANCHOR ROD ASSEMBLY.

9.6 LINE AND ELEVATION OF RAIL SHALL HAVE A TOLERANCE OF 6mm.

9.7 ALL NON-STANDARD GUARDRAIL LENGTHS SHALL BE CUT TO SUIT AND ALL NON-STANDARD HOLES SHALL BE DRILLED. FLAME CUTTING OF GUARDRAIL SHALL NOT BE ALLOWED. APPLY TWO COATS OF ZINC RICH PAINT ON AREAS DAMAGED BY SAW CUTTING OR DRILLING.

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0 10 20 30 40 50 60 70 80 90 100mm

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J. K. DONIEC
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ALASKA HIGHWAY km 277.6

BUCKINGHORSE RIVER BRIDGE BRIDGE BARRIER REPLACEMENT

Consultant Signature Only

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J. DONIEC

Drawn by/Dessine par
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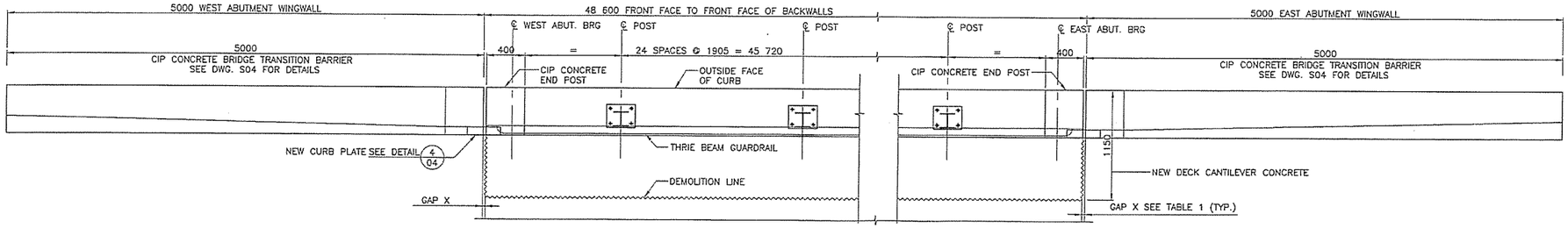
PWGSC Project Manager/Administrateur de Projets TPSGC

Regional Manager, Architectural and Engineering Services Gestionnaire régionale, Services d'architectural et de génie, TPSGC

Drawing title/Titre du dessin
GENERAL ARRANGEMENT

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.017173.202	S02 OF 5	0



PLAN – NEW BRIDGERAIL CONFIGURATION
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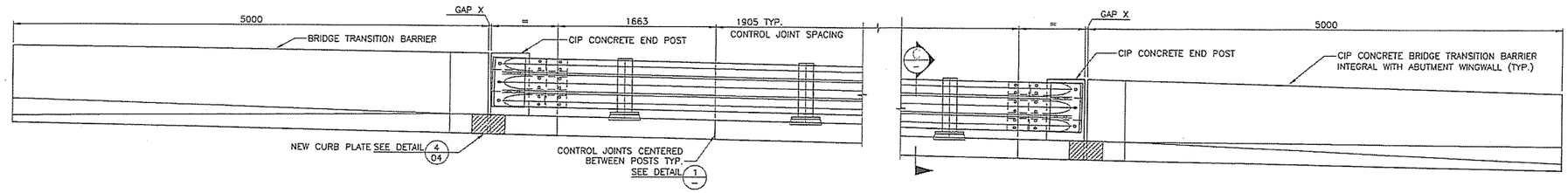

ELEVATION – NEW BRIDGERAIL CONFIGURATION
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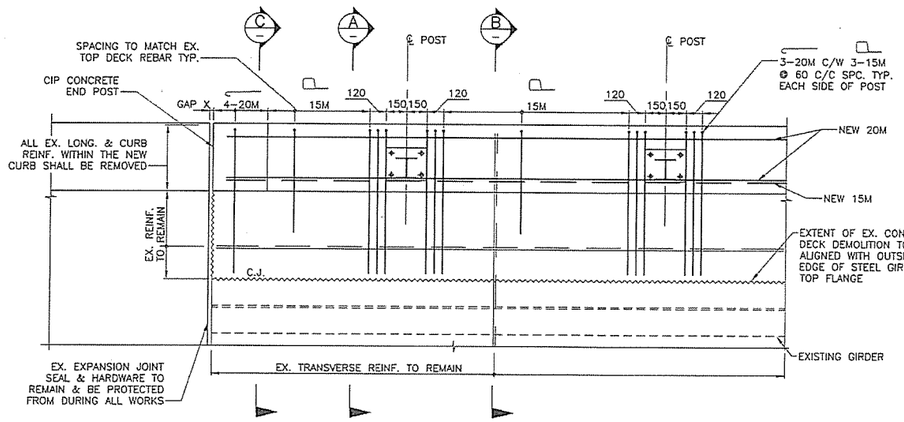

NEW DECK CANTILEVER REINFORCING PLAN
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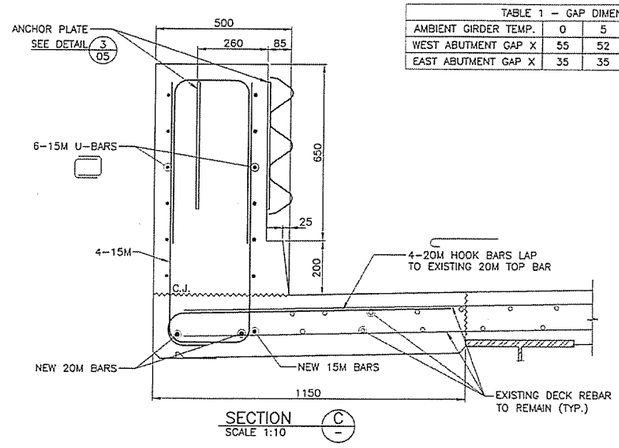
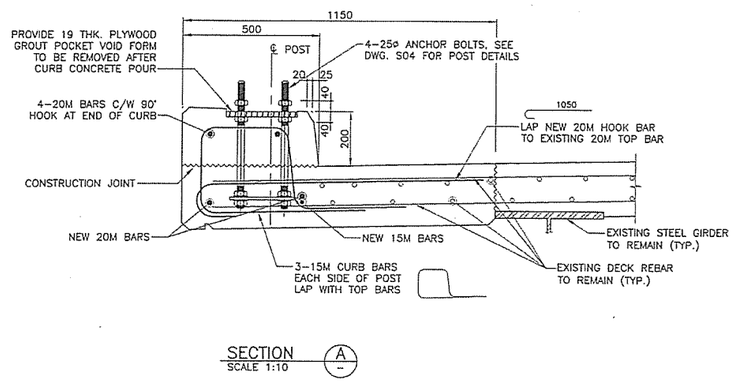


SECTION C
SCALE 1:10

TABLE 1 – GAP DIMENSIONS					
AMBIENT GIRDER TEMP.	0	5	10	15	20
WEST ABUTMENT GAP X	55	52	49	46	43
EAST ABUTMENT GAP X	35	35	35	35	35



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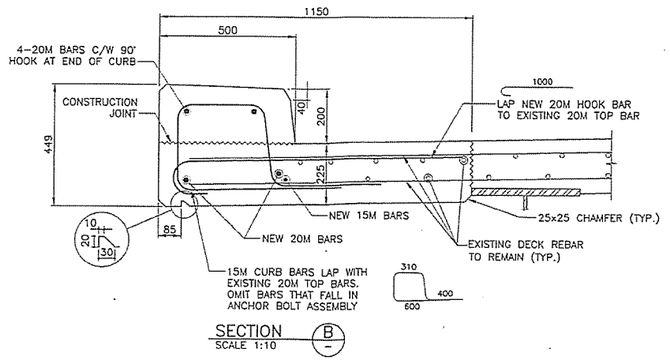

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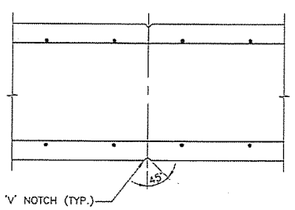

DETAIL 1
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DETAILS 1 OF 3

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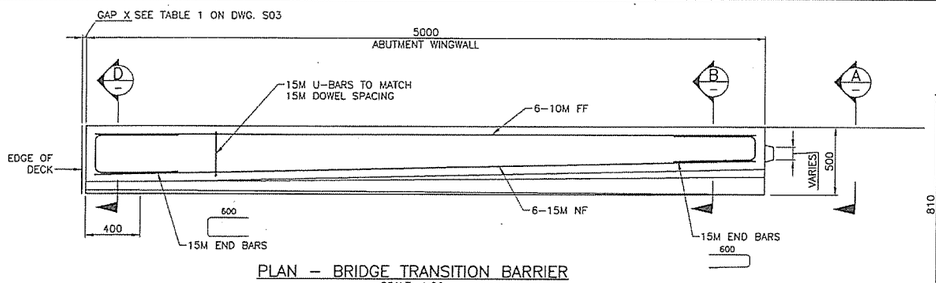

PLAN – BRIDGE TRANSITION BARRIER
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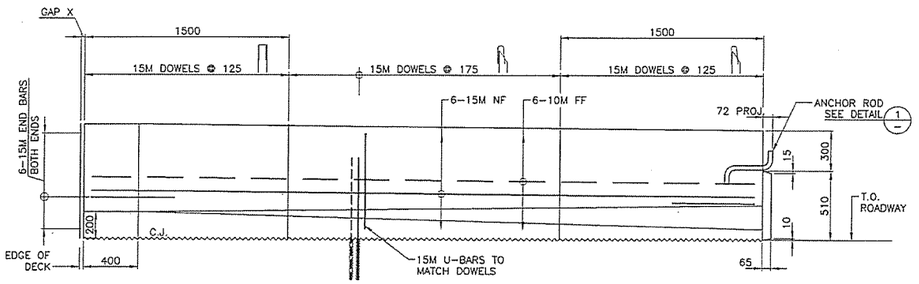

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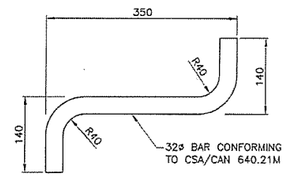

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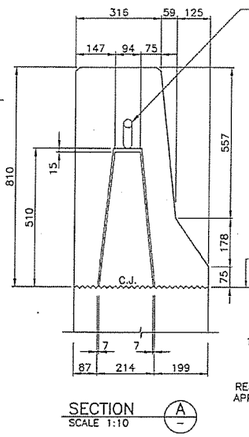

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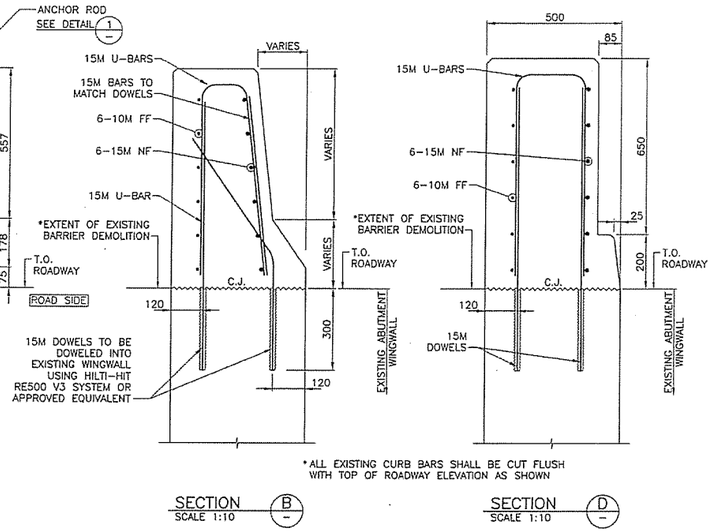
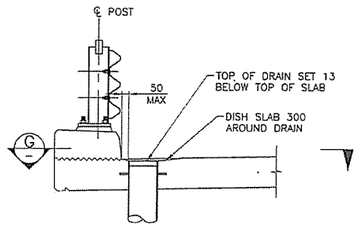


SECTION B
SCALE 1:10

SECTION D
SCALE 1:10

*ALL EXISTING CURB BARS SHALL BE CUT FLUSH
WITH TOP OF ROADWAY ELEVATION AS SHOWN



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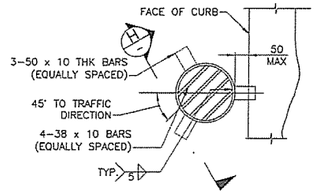

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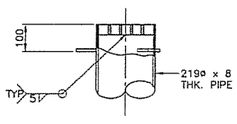

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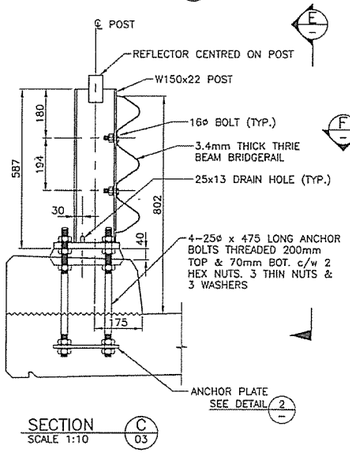

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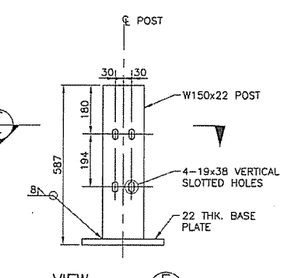

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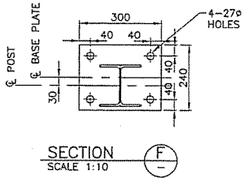

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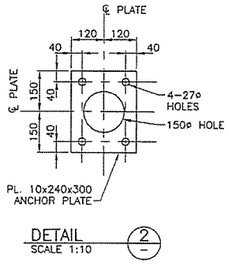

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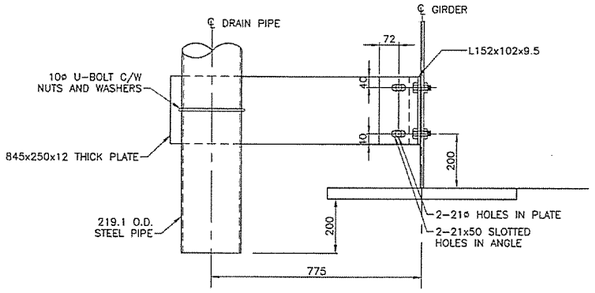

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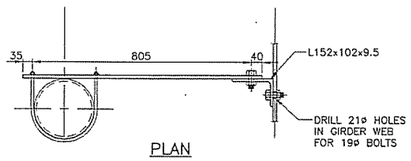

PLAN

DETAIL 2
SCALE 1:10
01

FOR LOCATION OF DECK DRAIN SEE DWG. S02

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0 10 20 30 40 50 60 70 80 90 100

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DETAILS 2 OF 3

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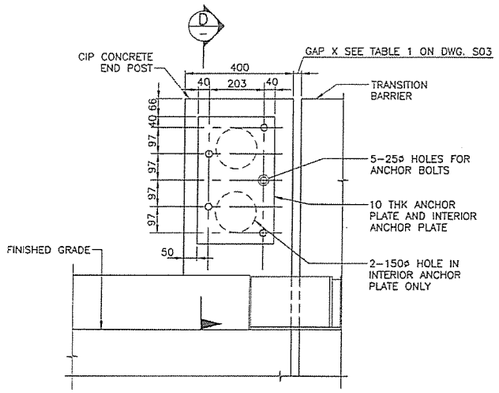

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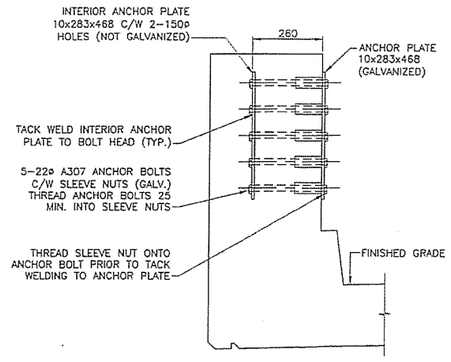

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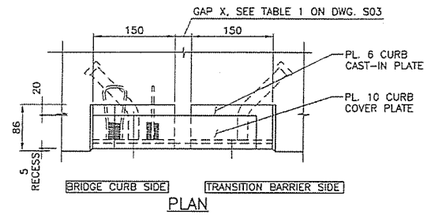

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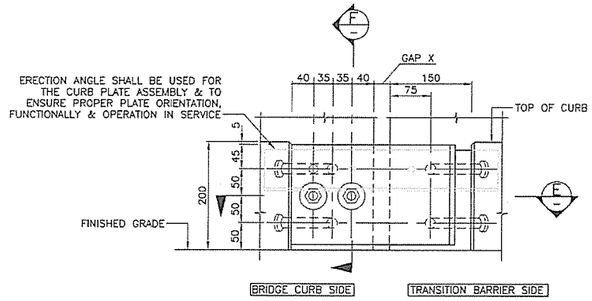
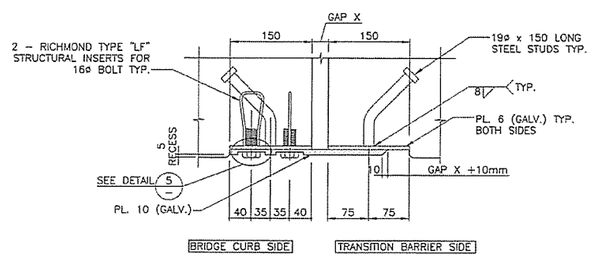
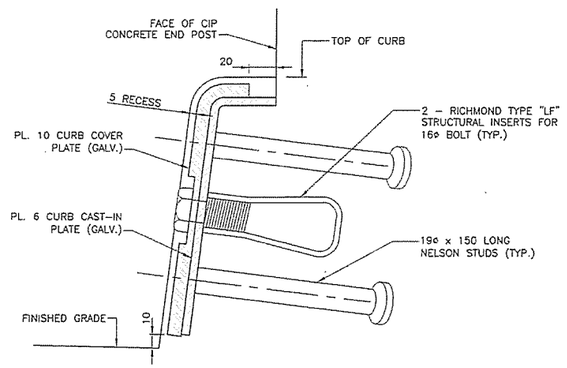


ELEVATION

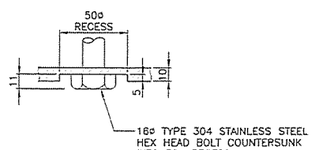


SECTION E SCALE 1:5

DETAIL 4 SCALE 1:5 CURB PLATE



SECTION F SCALE 1:2



DETAIL 2 SCALE 1:2

Public Services and Procurement Canada / Services publics et Approvisionnement Canada
REAL PROPERTY SERVICES BRANCH AND TECHNICAL SERVICES
Pacific Region
SERVICES IMMOBILIERS ET SERVICES TECHNIQUE
Région du Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. K. DONIEC
33738

0	DESIGN COMPLETION	11/08/17
Revision/ Revision	Description/Description	Date/Date

Client/client

wsp

Project title/Titre du projet
BRITISH COLUMBIA
ALASKA HIGHWAY km 277.6

BUCKINGHORSE RIVER BRIDGE
BRIDGE BARRIER REPLACEEMNT

Consultant Signature Only

Designed by/Concept par
J. DONIEC

Drawn by/Dessine par
P. LOWNEY

PWGSC Project Manager/Administrateur de Projets TPSGC

Regional Manager, Architectural and Engineering Services, Gestionnaire régionale, Services d'architecture et de génie, TPSGC

Drawing title/Titre du dessin
DETAILS 3 OF 3

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.017173.202	S05 OF 5	0

PSPC – A1 – 841X594

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