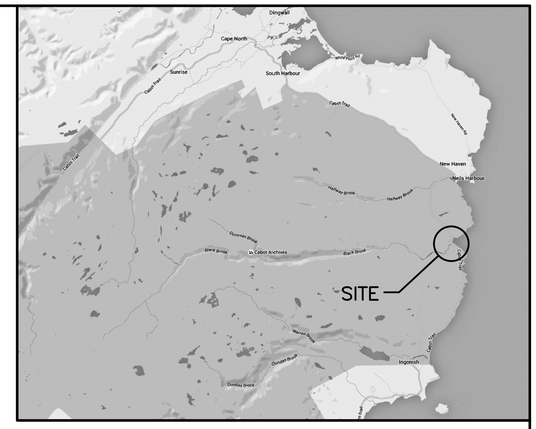
Parcs Canada

Parks Canada



BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL, CAPE BRETON

NOVA SCOTIA

PROJECT NO. 321

HARBOURSIDE
Engineering Consultants

DRAWING LIST

CIVIL

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C02	PROPOSED CONDITIONS PLAN
C03	PROFILES, SECTIONS AND DETAILS
C04	SECTIONS AND DETAILS
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BRIDGE REPLACEMENT

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S10	BOX GIRDER CAMBER PROFILES
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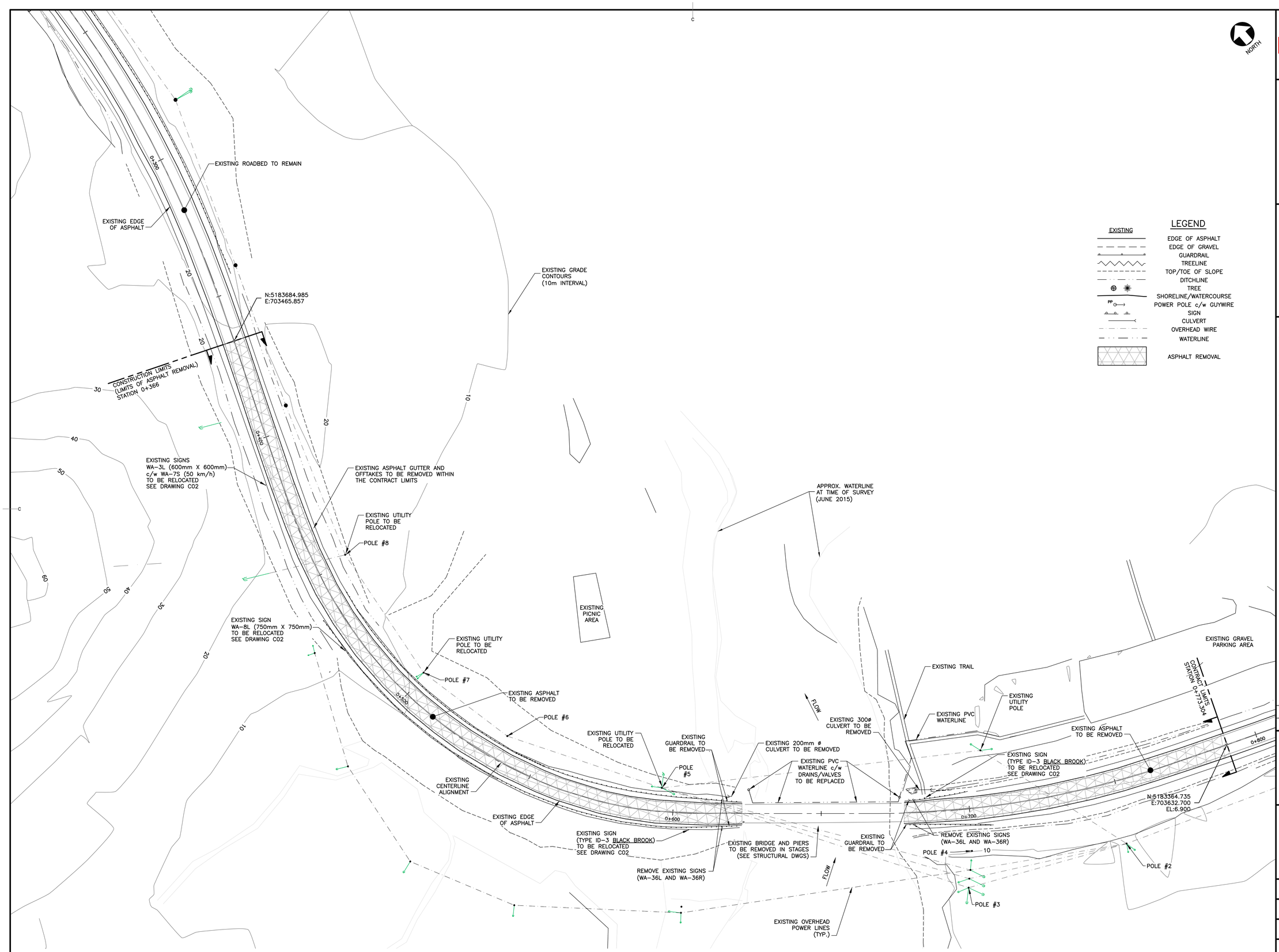
EX1	EXISTING CONDITIONS GENERAL ARRANGEMENT PLANS AND ELEVATIONS
EX2	EXISTING CONDITIONS GENERAL ARRANGEMENT SECTIONS AND DETAILS

Canada



PLAN – EXISTING CONDITIONS AND REMOVALS

SCALE: 1:500

0m 10m 20m 30m 40m 50m

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PWGSC B1 (2004)

LEGEND

EXISTING	
	EDGE OF ASPHALT
	EDGE OF GRAVEL
	GUARDRAIL
	TREELINE
	TOP/TOE OF SLOPE
	DITCHLINE
	TREE
	SHORELINE/WATERCOURSE
PP	POWER POLE c/w GUYWIRE
	SIGN
	CULVERT
	OVERHEAD WIRE
	WATERLINE
	ASPHALT REMOVAL

GENERAL NOTES:

1. ALL ELEVATIONS ARE IN METRES AND REFERENCED TO NSCM #214303 (ORTHOMETRIC CGVD28) HAVING AN ELEVATION OF 9.868m.
2. COORDINATES ARE GRID DERIVED FROM NAD83 ELLIPSOID USING THE MAPPING PROJECTION OF UNIVERSAL TRANSVERSE MERCATOR ZONE 20 HAVING A COMBINED GRID SCALE FACTOR OF 1.000115
3. TOPOGRAPHIC SURVEY COMPLETED BY DESIGN POINT ENGINEERING AND SURVEYING.
4. CONTOUR INTERVAL IS 10 METRE.
5. FOR GEOTECHNICAL INFORMATION SEE REPORT BY EXP DATED MARCH 2015.

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

REGISTERED PROFESSIONAL ENGINEER 28 OCT DATE 2015 M.S. MACDONALD 7299 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/28 2015

project / projet

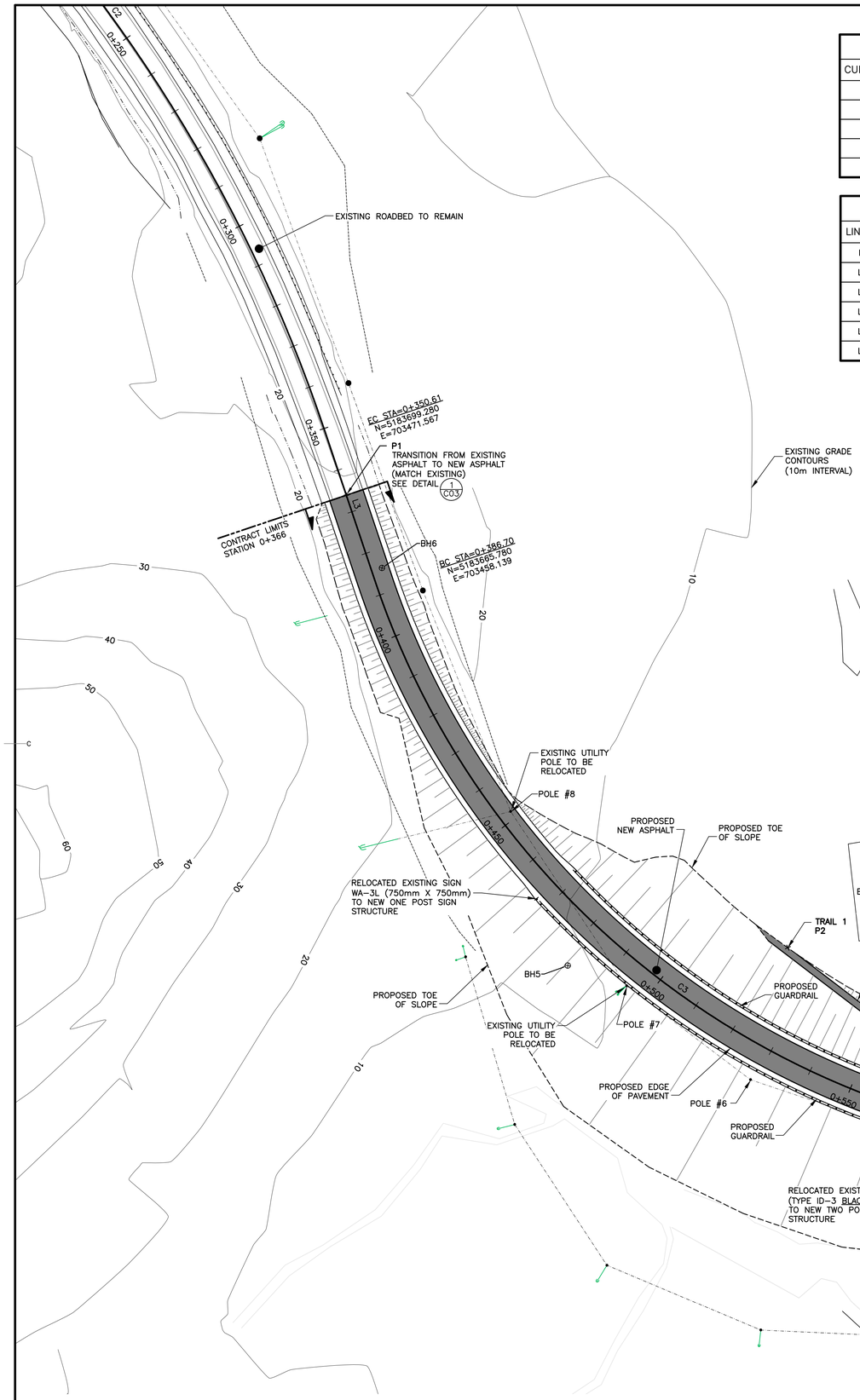
BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing / dessin

EXISTING CONDITIONS AND REMOVALS PLAN

designed	MICHAEL S. MACDONALD	concu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number	321	no. du projet
drawing no.	C01	no. du dessin



ALIGNMENT CURVE DATA

CURVE #	LENGTH	RADIUS	TANGENT	DELTA	START	Station	END	Station
C1	29.44	5000.00	14.718	000.34	(N=5183996.102, E=703467.208)	0+047.534	(N=5183967.450, E=703473.957)	0+076.970
C2	213.36	350.00	110.113	034.93	(N=5183908.742, E=703487.604)	0+137.243	(N=5183699.280, E=703471.567)	0+350.607
C3	237.06	190.00	136.751	071.49	(N=5183665.780, E=703458.139)	0+386.698	(N=5183450.298, E=703511.474)	0+623.762
C4	84.17	250.00	42.486	019.29	(N=5183406.684, E=703562.805)	0+691.121	(N=5183363.904, E=703634.828)	0+775.288
C5	116.52	600.00	58.442	011.13	(N=5183353.222, E=703662.564)	0+805.009	(N=5183301.083, E=703766.558)	0+921.525

ALIGNMENT LINE DATA

LINE #	LENGTH	BEARING	START	END
L1	47.53	S13° 25' 23.67"E	(N=5184042.337, E=703456.174)	(N=5183996.102, E=703467.208)
L2	60.27	S13° 05' 09.35"E	(N=5183967.450, E=703473.957)	(N=5183908.742, E=703487.604)
L3	36.09	S21° 50' 31.85"W	(N=5183699.280, E=703471.567)	(N=5183665.780, E=703458.139)
L4	67.36	S49° 38' 46.48"E	(N=5183450.298, E=703511.474)	(N=5183406.684, E=703562.805)
L5	29.72	S68° 56' 09.29"E	(N=5183363.904, E=703634.828)	(N=5183353.222, E=703662.564)
L6	29.57	S57° 48' 34.23"E	(N=5183301.083, E=703766.558)	(N=5183285.333, E=703791.579)

LEGEND

EXISTING / PROPOSED

- EDGE OF ASPHALT
- EDGE OF GRAVEL
- GUARDRAIL
- TREELINE
- TOP/TOE OF SLOPE
- TREE
- SHORELINE/WATERCOURSE
- POWER POLE c/w GUYWIRE
- SIGN
- CULVERT
- OVERHEAD WIRE
- WATERLINE
- ASPHALT

NORTH

BOREHOLE TABLE

Point #	Raw Description	Elevation	Northing	Easting
1084	BH5	11.079	5183570.664	703434.897
1082	BH3	5.092	5183462.504	703477.813
1080	BH4	1.871	5183476.040	703485.708
1078	BH2	4.798	5183415.979	703540.147
1076	BH1A	7.977	5183334.509	703711.849
1074	BH1	7.275	5183359.099	703653.445
1072	BH7	21.349	5183953.658	703469.977
1070	BH6	18.971	5183667.090	703461.303

POINT LAYOUT TABLE

Point #	Description	Elevation	Northing	Easting
P1	STA. 0+366	EXISTING	5183684.985	703465.857
P2	TRAIL 1	2.310	5183541.336	703475.710
P3	TRAIL 1	7.895	5183487.432	703486.700
P4	TRAIL 2	6.545	5183426.451	703563.278
P5	TRAIL 2	5.760	5183420.258	703557.949
P6	STA. 0+773.304	EXISTING	5183364.735	703632.700

WORKPOINT LAYOUT TABLE

Point #	Description	Elevation	Northing	Easting
WP1	STA. 0+601.629	7.471	5183465.622	703495.525
WP2	STA. 0+662.129	6.254	5183425.472	703540.725

PLAN – PROPOSED CONDITIONS

SCALE: 1:500

0m 10m 20m 30m 40m 50m

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PWGSC B1 (2004)

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

GENERAL NOTES:

1. FOR GENERAL NOTES SEE DRAWING C01.
2. INSTALL 100mm WIDE–DOUBLE YELLOW CENTERLINE AND 100mm WIDE–WHITE EDGE LINES ON ALL NEW ASPHALT SURFACES.
3. PROPOSED DESIGN MEETS NSTIR REQUIREMENTS FOR 70km/hr SPEED RATING.
4. ASPHALT CONCRETE GUTTER c/w OFFTAKE GUTTERS TO BE INSTALLED AS PER NSTIR DETAIL 023 ON NORTHERN (LOWER) ROAD SHOULDER FROM STATION 0+400 TO 0+550.
5. RUMBLE STRIPS TO BE INSTALLED ON THE APPROACH TO THE PROJECT SITE. EXACT LOCATIONS TO BE DETERMINED ON SITE. DETAILS NOTED IN THE SPECIFICATIONS.

REGISTERED PROFESSIONAL ENGINEER
DATE Oct 28 2015
MICHAEL S. MACDONALD
7259
PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/28 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing / dessin

PROPOSED CONDITIONS PLAN

designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
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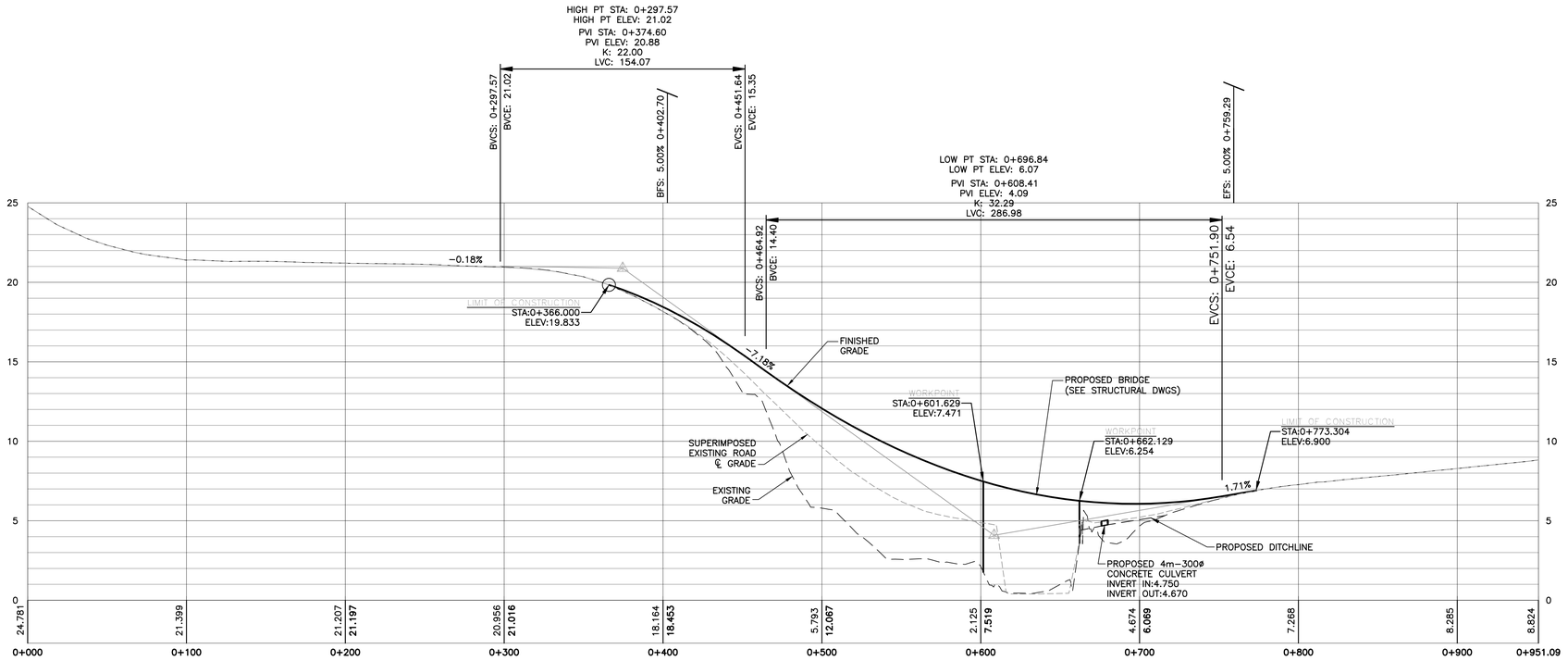
drawing no.		no. du dessin

C02



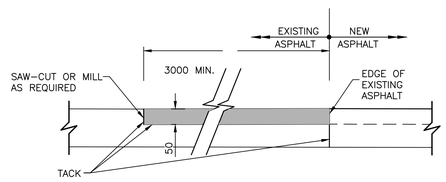
PROFILE – PROPOSED ROAD ALIGNMENT

HORIZONTAL SCALE : 1:1500

0m 50m 100m 150m

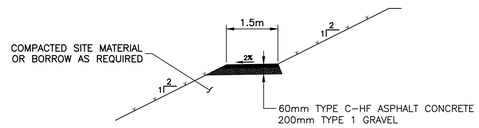
VERTICAL SCALE : 1:150

0m 5m 10m 15m



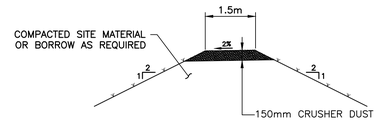
TYPICAL DETAIL – ASPHALT TRANSITION 1/C02

SCALE : N.T.S.



DETAIL – WALKING TRAIL 1 (PAVED) 2/C02

SCALE : N.T.S.



DETAIL – WALKING TRAIL 2 (GRAVEL) 3/C02

SCALE : N.T.S.

NOVA SCOTIA TRANSPORTATION AND INFRASTRUCTURE RENEWAL STANDARD DETAILS

016	– GUIDELINES FOR BENCHING OF EARTH SLOPES
018	– SWAMP TREATMENT UNDER EMBANKMENT HS201
022	– JERSEY BARRIER HS529
023	– ASPHALT CONCRETE GUTTER HS403
051	– BEDDING FOR CONCRETE PIPE HS506
132	– SEDIMENT CONTROL FENCE FOR SHEET FLOW HS702
071	– GUARD RAIL AND POST DETAILS HS518
073	– ROADSIDE BARRIER AT CONCRETE BRIDGE APPROACH HS521
100	– WOODEN SIGN STRUCTURE ASSEMBLY DETAILS
101	– WOODEN SIGN STRUCTURE POST SPACING CHART
144	– FOUNDATION EXCAVATION LIMITS FOR CULVERTS HS528
300	– HIGHWAY PAVEMENT MARKINGS – PATTERN OF LINES
301	– HIGHWAY PAVEMENT MARKINGS – DIRECTIONAL ARROW SYMBOLS

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

GENERAL NOTES:

1. FOR GENERAL NOTES SEE DRAWING C01.

REGISTERED PROFESSIONAL ENGINEER
DATE 28 OCT 2015
MICHAEL S. MACDONALD
7299
PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/28 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing / dessin

PROFILES, SECTIONS AND DETAILS

designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet

drawing no. / no. du dessin

C03

PWGSC B1 (2004)

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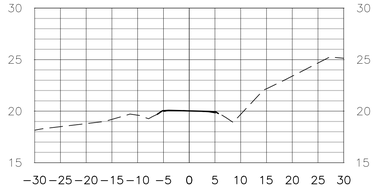
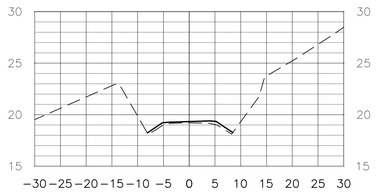
XS 0+360.00



XS 0+380.00



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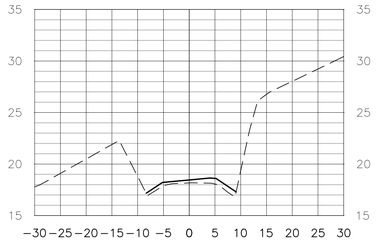

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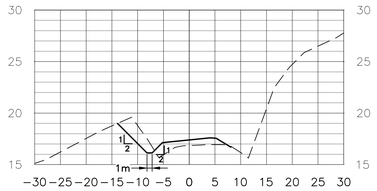
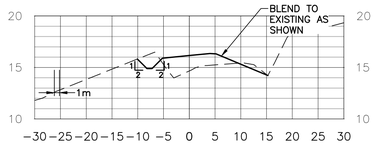


XS 0+440.00



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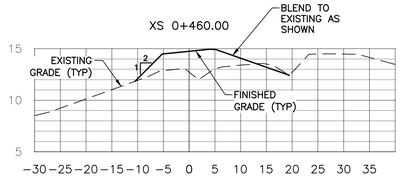

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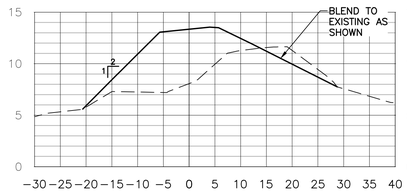
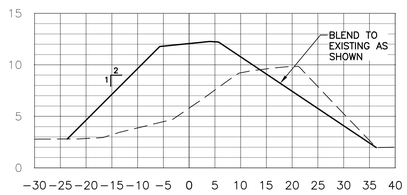


XS 0+500.00



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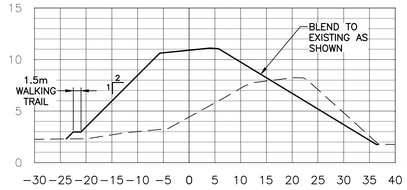

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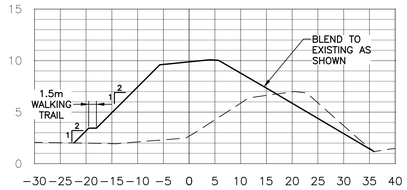

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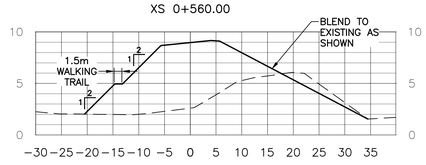

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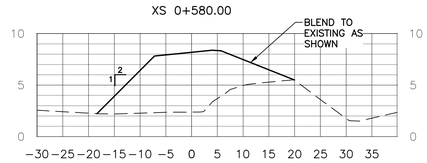

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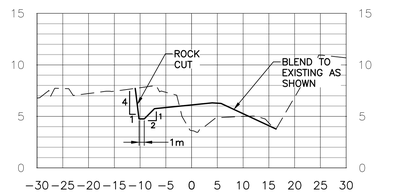

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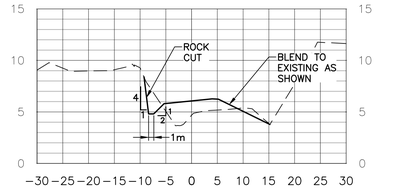

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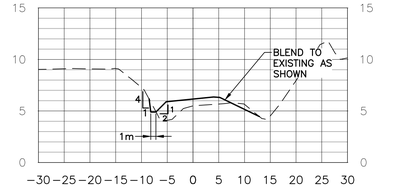

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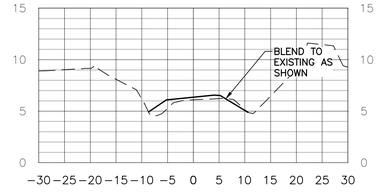

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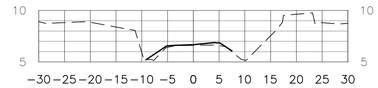


SECTIONS

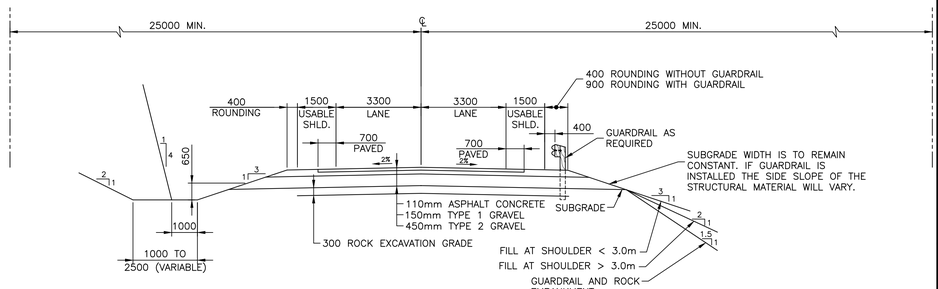
HORIZONTAL SCALE: 1:500

0m 10m 20m 30m 40m 50m

VERTICAL SCALE: 1:250

0m 5m 10m 15m 20m 25m

******* **NOTE:** ALL FILL SIDESLOPES TO BE 3H:1V UNLESS OTHERWISE NOTED. *******



DETAIL – REVISED MINOR COLLECTOR TYPE 'F'

2

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
DATE 28 OCT 2015
MICHAEL S. MACDONALD
7299

0	ISSUED FOR TENDER	10/28 2015
revisions		date

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing / dessin

SECTIONS AND DETAILS

designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet

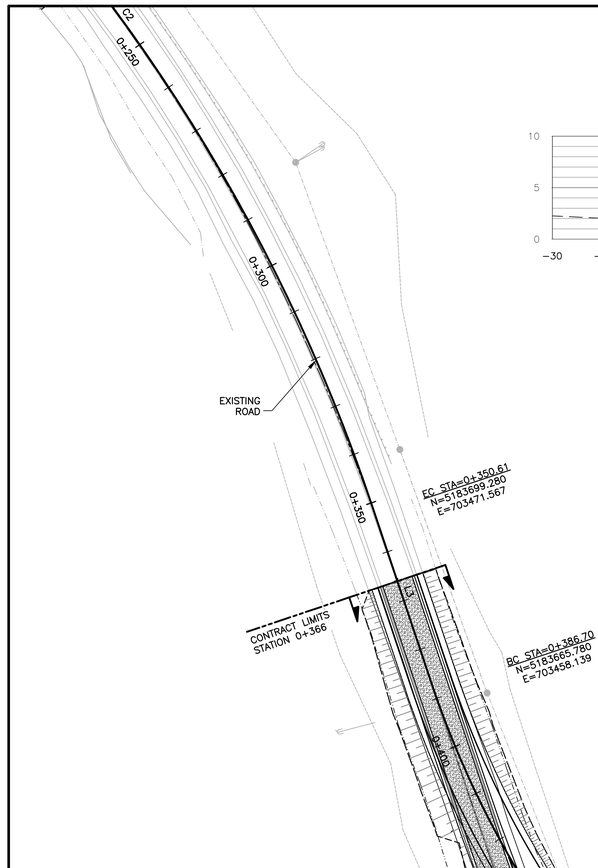
drawing no. / no. du dessin: C04

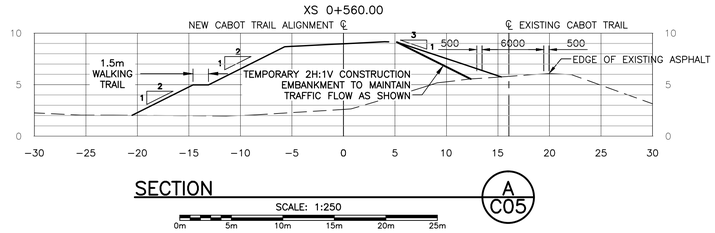
GENERAL NOTES:

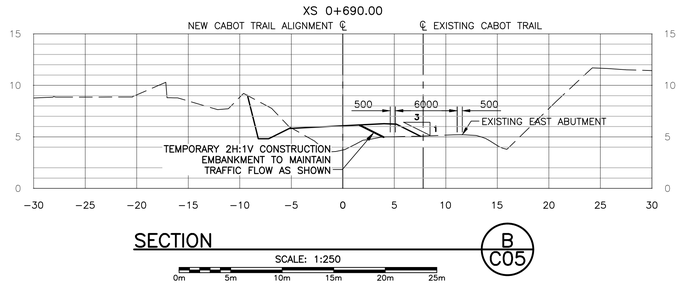
1. FOR GENERAL NOTES SEE DRAWING C01.

PWGSC B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm







PLAN – TEMPORARY CONDITIONS

SCALE: 1:500

0m 10m 20m 30m 40m 50m

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

GENERAL NOTES:

1. FOR GENERAL NOTES SEE DRAWING C01.
2. CONTRACTOR TO PROVIDE TEMPORARY TRAFFIC CONTROL PLAN WHICH ADHERES TO THE REQUIREMENTS OF NOVA SCOTIA DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE RENEWAL.

REGISTERED PROFESSIONAL ENGINEER 2015 DATE Oct 5 MICHAEL S. MACDONALD 7299 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/28/2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

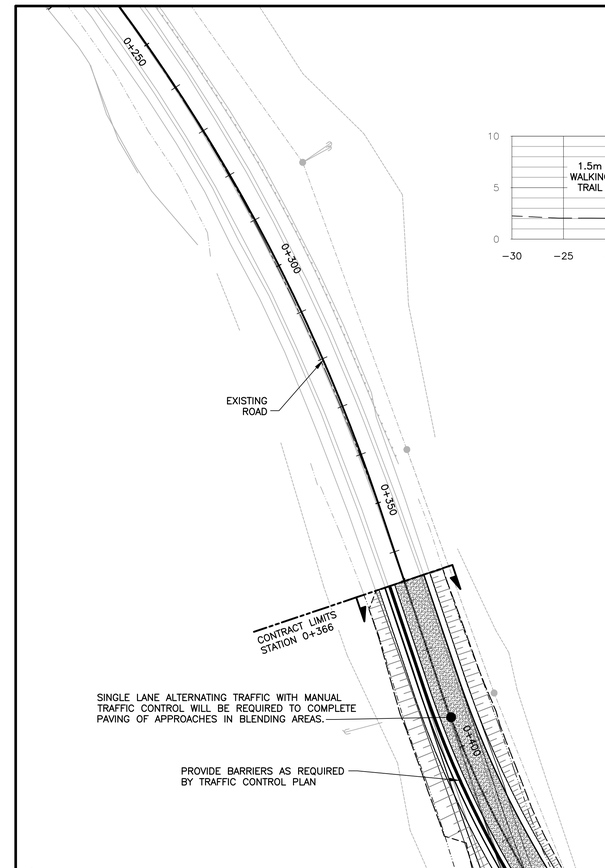
drawing / dessin

TEMPORARY CONDITIONS PLAN PHASE 1

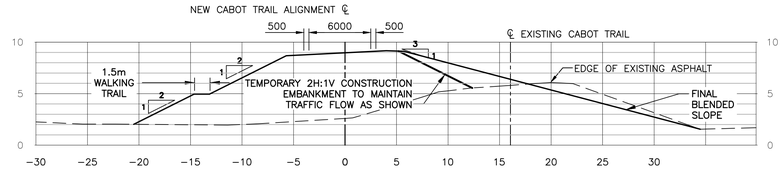
designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet
drawing no.	C05	no. du dessin

PWGSC B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



XS 0+560.00

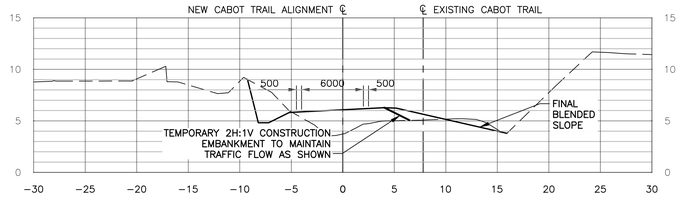


SECTION A C06

SCALE: 1:250

0m 5m 10m 15m 20m 25m

XS 0+690.00



SECTION B C06

SCALE: 1:250

0m 5m 10m 15m 20m 25m

PLAN — TEMPORARY CONDITIONS

SCALE: 1:500

0m 10m 20m 30m 40m 50m

NORTH

GENERAL NOTES:

1. FOR GENERAL NOTES SEE DRAWING C01.
2. CONTRACTOR TO PROVIDE TEMPORARY TRAFFIC CONTROL PLAN WHICH ADHERES TO THE REQUIREMENTS OF NOVA SCOTIA DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE RENEWAL.

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA DATE Dec 5 MICHAEL S. MACDONALD 7299

revisions		date
0	ISSUED FOR TENDER	10/28 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing / dessin

TEMPORARY CONDITIONS PLAN PHASE 2

designed / conçu	MICHAEL S. MACDONALD	
date	AUG 2015	
drawn / dessiné	CRAIG SIEGFRIEDT	
date	AUG 2015	
approved / approuvé	MARK PERTUS	
date	AUG 2015	
Tender / Soumission		
PCA Project Manager / Administrateur de projets APC		
project number / no. du projet		

drawing no. / no. du dessin

C06

PWGSC B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

NORTH

Parcs Canada Parks Canada

HARBOURSIDE Transportation Consultants

EXISTING EDGE OF ASPHALT

EXISTING GRADE CONTOURS (10m INTERVAL)

APPROX. WATERLINE AT TIME OF SURVEY (JUNE 2015)

EXISTING UTILITY POLE TO BE RELOCATED

POLE #8

PROPOSED TOE OF SLOPE

EXISTING PICNIC AREA

EXISTING UTILITY POLE TO BE RELOCATED

PROPOSED EDGE OF ASPHALT

POLE #7

EXISTING TOE OF SLOPE

PROPOSED PAVED WALKING TRAIL

PROPOSED CENTERLINE ALIGNMENT

EXISTING GRAVEL PARKING AREA

EXISTING TRAIL

EXISTING UTILITY POLE

EXISTING PVC WATERLINE

FLOW

PROPOSED BRIDGE

EXISTING TOE OF SLOPE

POLE #6

EXISTING UTILITY POLE TO BE RELOCATED

POLE #5

EXISTING CENTERLINE ALIGNMENT

EXISTING EDGE OF ASPHALT

EXISTING UTILITY POLE TO BE RELOCATED

PROPOSED TOE OF SLOPE

EXISTING BRIDGE

FLOW

POLE #4

PROPOSED TOE OF SLOPE

POLE #2

POLE #3

EXISTING OVERHEAD POWER LINES (TYP.)

0+250 0+300 0+350 0+400 0+450 0+500 0+550 0+600 0+650 0+700 0+750 0+800

PLAN – EXISTING AND PROPOSED CONDITIONS

SCALE: 1:500

0m 10m 20m 30m 40m 50m

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PWGSC B1 (2004)

GENERAL NOTES:

1. ALL ELEVATIONS ARE IN METRES AND REFERENCED TO NSCM #214303 (ORTHOMETRIC CGVD28) HAVING AN ELEVATION OF 9.868m.
2. COORDINATES ARE GRID DERIVED FROM NAD83 ELLIPSOID USING THE MAPPING PROJECTION OF UNIVERSAL TRANSVERSE MERCATOR ZONE 20 HAVING A COMBINED GRID SCALE FACTOR OF 1.000115
3. TOPOGRAPHIC SURVEY COMPLETED BY DESIGN POINT ENGINEERING AND SURVEYING.
4. CONTOUR INTERVAL IS 10 METRE.
5. FOR GEOTECHNICAL INFORMATION SEE REPORT BY EXP DATED MARCH 2015.

REGISTERED PROFESSIONAL ENGINEER 26 OCT DATE 2015 MICHAEL S. MACDONALD 7299 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/28 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

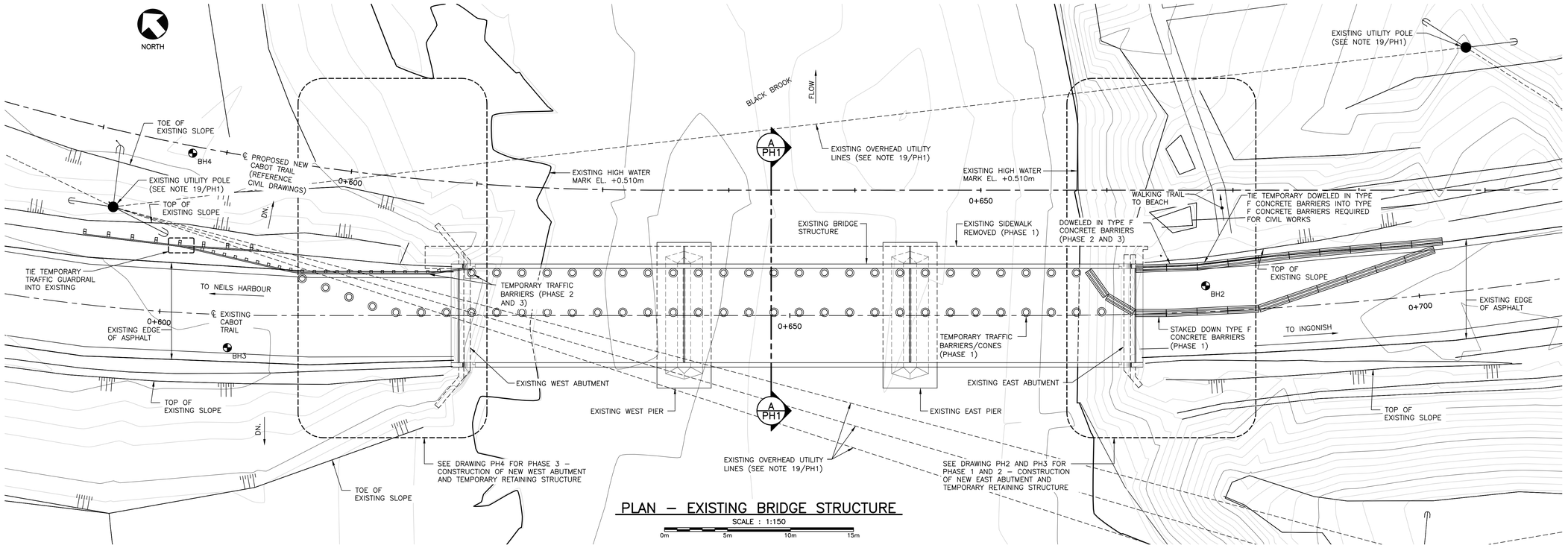
drawing / dessin

EXISTING AND PROPOSED BRIDGES AND ALIGNMENTS

designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: C07



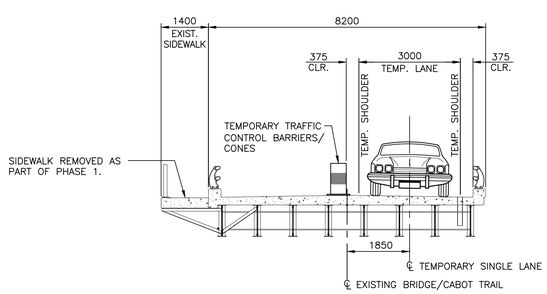
PLAN – EXISTING BRIDGE STRUCTURE

SCALE : 1:150

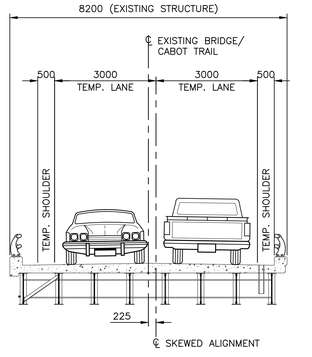
0m 5m 10m 15m

GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH NOVA SCOTIA OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.
2. DESIGN AND CONSTRUCTION OF TEMPORARY RETAINING STRUCTURES AS PER THE REQUIREMENTS OF CAN/CSA–S6–14, LATEST EDITION AND REVISIONS.
3. ALL DIMENSIONS ARE IN MILLIMETRES. ALL ELEVATIONS ARE IN METRES.
4. ALL LAYOUT INFORMATION BASED ON SURVEY PROVIDED BY DESIGNPOINT ENGINEERING, DATED MAY 19, 2015. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL DIMENSIONS GIVEN PRIOR TO INITIATING CONSTRUCTION OF TEMPORARY WORKS.
5. EXISTING ABUTMENT/WINGWALL DIMENSIONS BELOW GRADE ARE UNKNOWN. GEOMETRY SHOWN HAS BEEN ASSUMED BASED ON INFORMATION OBTAINED FROM STRUCTURES OF SIMILAR AGE AND PURPOSE IN THE AREA. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL DIMENSIONS FOR EXISTING ABUTMENT/WINGWALLS. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION AND IMMEDIATELY UPON DISCOVERY.
6. RETAINING WALL DESIGN ASSUMES THAT THE LOCAL GROUNDWATER TABLE FLUCTUATES WITH THE ELEVATION OF BLACK BROOK AND THAT EXCAVATION IS KEPT DRY AT ALL TIMES. DESIGN INCLUDES NO ALLOWANCE FOR DIFFERENTIAL HYDROSTATIC PRESSURE ON THE WALL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPORT PERCHED WATER TABLE CONDITIONS TO THE DEPARTMENTAL REPRESENTATIVE IF PRESENT.
7. ALL STRUCTURAL STEEL SHALL BE NEW STOCK AND CONFORM TO THE FOLLOWING GRADES AND STANDARDS:
   a. HP SECTIONS, ANGLES, PLATE, CHANNELS, AND SSP SECTIONS TO CAN/CSA–G40.21–92 TYPE 350W.
8. ALL STRUCTURAL STEEL TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH CAN/CSA–S6–14, LATEST EDITION AND REVISION.
9. ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA W59–M1989 BY A FABRICATOR FULLY APPROVED UNDER CSA W47.12–1983, DIVISION No.1 OR No.2.
10. NO HOLES SHALL BE CUT IN THE STRUCTURAL STEEL WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
11. METHOD OF STEEL SHEET PILE AND H–PILE INSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR.
12. METHOD OF CONNECTION BETWEEN THE SOLDIER PILE AND SSP, OTHER THAN THAT SHOWN ON THE CONTRACT DRAWINGS SHALL NOT BE PERMITTED UNLESS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH THE WORK.
13. ALL STEEL SHEET PILES AND SOLDIER PILES SHALL BE DRIVEN TO REFUSAL. REFUSAL ELEVATIONS SHALL BE REPORTED TO THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH THE WORK.
14. ALL PILES ARE TO BE INSTALLED PLUMB AND IN LINE AS SHOWN ON THE DRAWINGS.
15. ALL LAGGING SHALL BE ROUGH SAWN LUMBER WITH A MINIMUM F_B = 9.6 MPa AND F_V = 1.2 MPa AS PER CAN/CSA–S6–14, LATEST EDITION AND REVISION.
16. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION AND IMMEDIATELY UPON DISCOVERY.
17. EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH DESIGN DRAWINGS AND THE GEOTECHNICAL REPORT (REPORT NO. HFX–00224995–A0), DATED SEPTEMBER 22, 2015, BY EXP SERVICES INC. ALL EXCAVATIONS SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
18. H–PILE LOCATION FOR LAGGING WALL IS BASED ON ASSUMED EXISTING ABUTMENT FOOTING GEOMETRY. PILE SHALL BE DRIVEN IN EXPLORATORY FASHION AT LOCATION NOTED. SHOULD PILE TIP BE OBSTRUCTED BY EXISTING FOOTING, PILE TO BE WITHDRAWN, INSPECTED FOR DAMAGE (AND REPLACED IF DAMAGED) AND REDRIVEN 500mm FURTHER BEHIND EXISTING ABUTMENT. SHOULD THIS PILE BE OBSTRUCTED BY THE EXISTING FOOTING, CONTACT THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH WORK.
19. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE RELOCATION OF EXISTING OVERHEAD UTILITY LINES WITH THE UTILITY PROVIDER AND THE DEPARTMENTAL REPRESENTATIVE PRIOR TO CONSTRUCTION START.
20. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A TRAFFIC CONTROL PLAN TO THE DEPARTMENTAL REPRESENTATIVE FOR APPROVAL PRIOR TO INITIATING CONSTRUCTION.
21. TEMPORARY TRAFFIC BARRIERS AND GUARD RAIL SHALL BE AS SHOWN ON THE PHASING DRAWINGS. TEMPORARY TRAFFIC MARKERS REQUIRED ON THE EXISTING BRIDGE DECK SHALL BE TRAFFIC BARRELS OR CONES.
22. REFERENCE STRUCTURAL DRAWINGS FOR DESIGN OF NEW BRIDGE STRUCTURE. REFER TO PH10 FOR BACKFILL RECOMMENDATIONS FOR ABUTMENTS AND WINGWALLS.
23. REFERENCE CIVIL DRAWINGS FOR:
   a. TEMPORARY RELOCATION/REALIGNMENT OF EXISTING ROADWAY OUTSIDE OF EXTENTS OF BRIDGE CONSTRUCTION.
   b. GRADING OF NEW HIGHWAY SLOPES OUTSIDE OF EXTENTS OF BRIDGE CONSTRUCTION.
   c. TEMPORARY GUARDRAIL SPECIFICATIONS OUTSIDE OF EXTENTS OF BRIDGE CONSTRUCTION.
24. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:
   a. RETAINING STRUCTURE (EAST ABUTMENT) 45 MPa.
   b. DEADMAN (WEST ABUTMENT)
      45 MPa WITH 20mm MAX. AGGREGATE SIZE AND 6% ± 1% AIR ENTRAINMENT (AIR VOID SPECIFICATIONS AS PER PROJECT SPECIFICATIONS), MAX. WATER– CEMENT RATIO 0.35.
25. CONCRETE COVER TO REINFORCING STEEL AS NOTED ON DRAWINGS.
26. REINFORCING STEEL TO BE GRADE 400W DEFORMED BARS WITH MINIMUM YIELD STRENGTH OF 400 MPa (WELDABLE).



PHASE 1 – SINGLE LANE CLOSURE



PHASE 2 AND 3 – SKEW TRAFFIC SOUTH

SECTION – TRAFFIC PHASING

A PH1

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

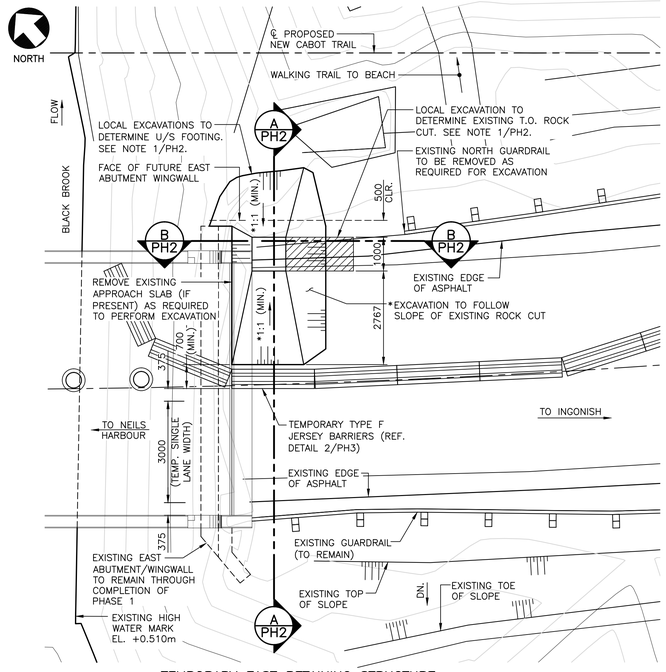
CONSTRUCTION PHASING

GENERAL ARRANGEMENT

designed / conçu	JAMIE STUART	
date	JULY 2015	
drawn / dessiné	GR MATHESON	
date	JULY 2015	
approved / approuvé	PAUL BURKE	
date	JULY 2015	
Tender / Soumission		
PCA Project Manager / Administrateur de projets APC		
project number / no. du projet	321	
drawing no. / no. du dessin	PH1	

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

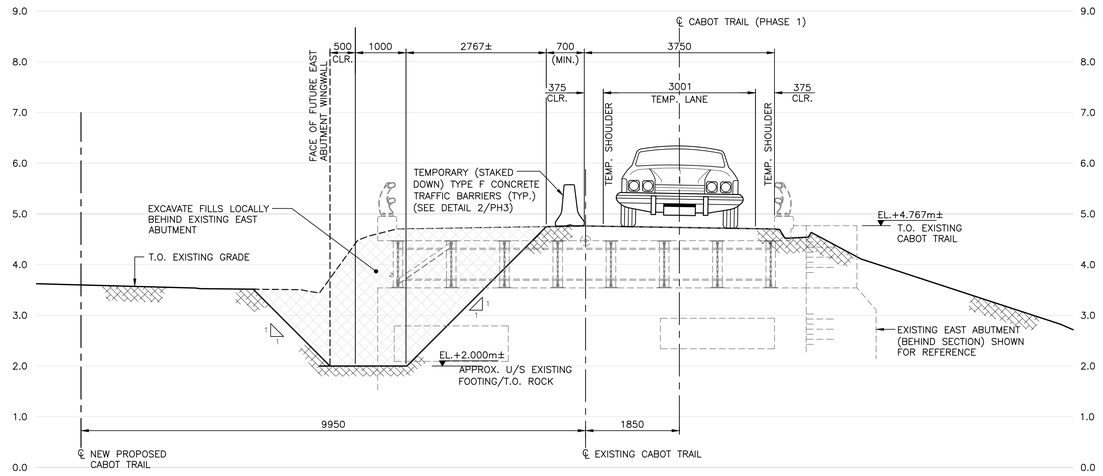


TEMPORARY EAST RETAINING STRUCTURE

PLAN – PHASE 1

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



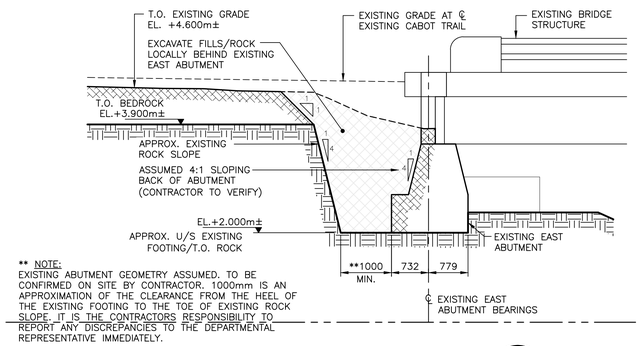
EXCAVATION FOR TEMPORARY EAST RETAINING STRUCTURE

SECTION – PHASE 1A (A PH2)

SCALE: 1:50

0m 1m 2m 3m 4m 5m

* NOTE:
WHERE EXCAVATION OF EXISTING FILLS IS REQUIRED, THE MINIMUM SLOPE OF EXCAVATION IN THROUGH EXISTING FILLS IS 1H:1V. THE MINIMUM SLOPE OF EXCAVATION THROUGH BEDROCK IS 1H:4V.

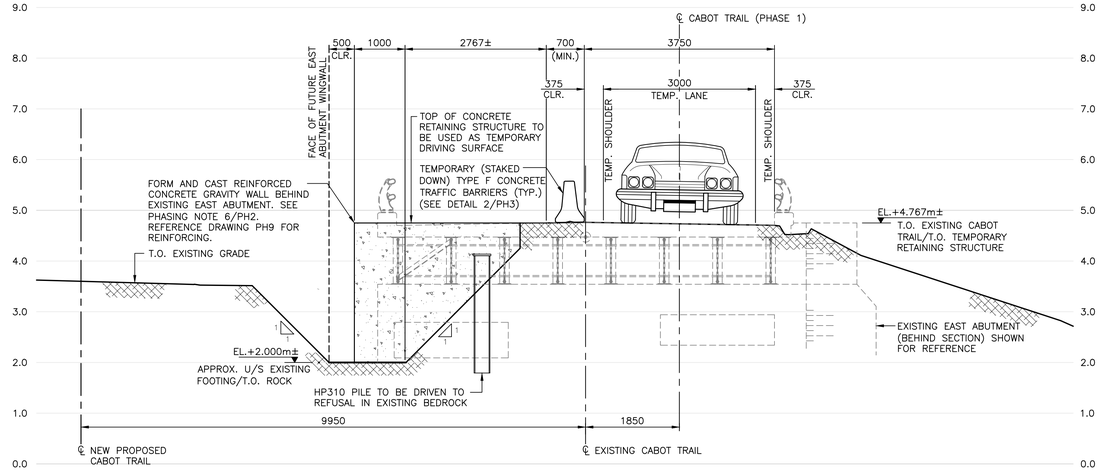


** NOTE:
EXISTING ABUTMENT GEOMETRY ASSUMED. TO BE CONFIRMED ON SITE BY CONTRACTOR. 1000mm IS AN APPROXIMATION OF THE CLEARANCE FROM THE HEEL OF THE EXISTING FOOTING TO THE TOE OF EXISTING ROCK SLOPE. IT IS THE CONTRACTORS RESPONSIBILITY TO REPORT ANY DISCREPANCIES TO THE DEPARTMENTAL REPRESENTATIVE IMMEDIATELY.

SECTION – EAST ABUTMENT (B PH2)

SCALE: 1:50

0m 1m 2m 3m 4m 5m



CONSTRUCTION OF TEMPORARY EAST RETAINING STRUCTURE

SECTION – PHASE 1B (A PH2)

SCALE: 1:50

0m 1m 2m 3m 4m 5m

GENERAL WORK PROCEDURE – PHASE 1:

1. IMMEDIATELY UPON MOBILIZING SITE, CONTRACTOR TO COMPLETE LOCAL EXPLORATORY EXCAVATIONS AT LOCATIONS NOTED ON THIS SHEET. CONTRACTOR TO REPORT BEDROCK ELEVATION AND U/S ABUTMENT ELEVATION AS NOTED TO DEPARTMENTAL REPRESENTATIVE. DO NOT UNDERMINE FOUNDATION DURING EXCAVATION. THIS IS TO BE CARRIED OUT AT LEAST 2 WEEKS PRIOR TO THE START OF EXCAVATION FOR EAST RETAINING SYSTEM. CONTRACTOR TO IMMEDIATELY REINSTATE FILLS/ROADWAY UPON COMPLETION OF LOCAL EXCAVATIONS.
2. RELOCATE EXISTING OVERHEAD UTILITY LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE RELOCATION OF EXISTING OVERHEAD UTILITY LINES WITH THE UTILITY PROVIDER AND THE DEPARTMENTAL REPRESENTATIVE PRIOR TO CONSTRUCTION START.
3. INSTALL ENVIRONMENTAL CONTROL MEASURES AS REQUIRED BY CONTRACT.
4. REMOVE SIDEWALK ALONG NORTH SIDE OF EXISTING BRIDGE.
5. INSTALL TEMPORARY BARRIERS AND SIGNAGE FOR TEMPORARY CLOSURE OF THE EXISTING NORTH LANE OF THE CABOT TRAIL. REFERENCE SECTION A/PH1 – PHASE 1 FOR TEMPORARY SINGLE LANE DIMENSIONS.
6. EXCAVATE LOCALLY BEHIND THE NORTH SIDE OF THE EXISTING EAST ABUTMENT AS SHOWN. MINIMUM TEMPORARY SLOPES OF 1H:1V SHALL BE MAINTAINED WHERE COMPETENT EXISTING BACKFILLS ARE ENCOUNTERED. MINIMUM TEMPORARY SLOPES OF 4V:1H SHALL BE MAINTAINED WHERE BEDROCK IS ENCOUNTERED.
7. FORM AND CAST TEMPORARY, REINFORCED CONCRETE RETAINING WALL AS SHOWN IN SECTION A – PHASE 1B. CASTING OF CONCRETE RETAINING STRUCTURE SHALL BE PERFORMED IN TWO LAYERS. REFERENCE PH9 FOR COLD JOINT LOCATION.
8. END OF PHASE 1.

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PCA B1 (2004)

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

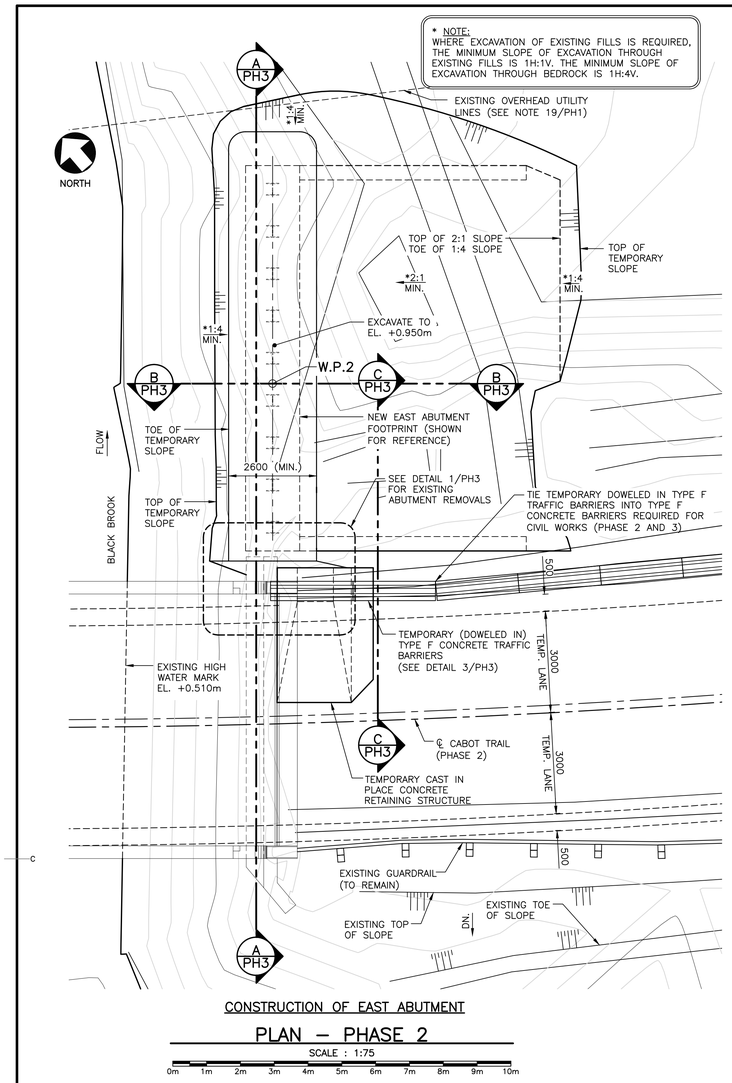
CONSTRUCTION PHASING

PHASE 1 EAST ABUTMENT

designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

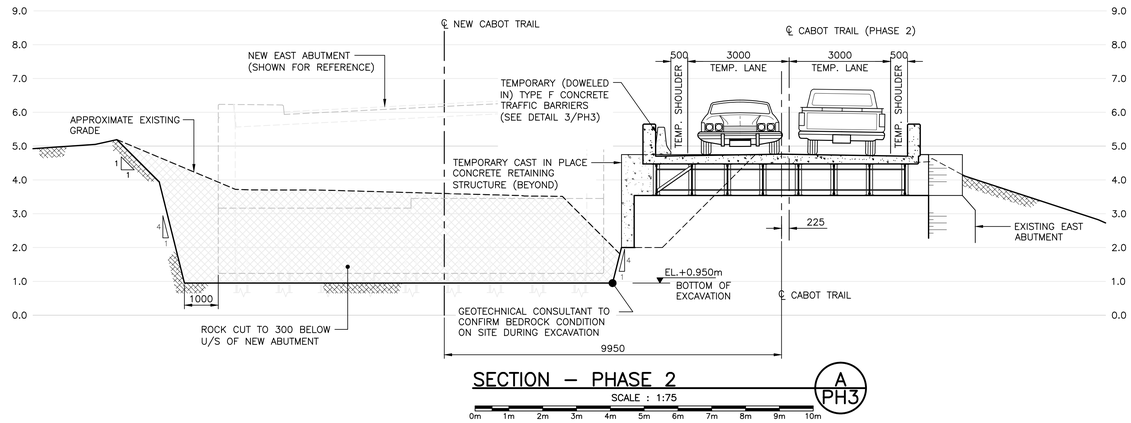
drawing no. / no. du dessin: PH2



CONSTRUCTION OF EAST ABUTMENT

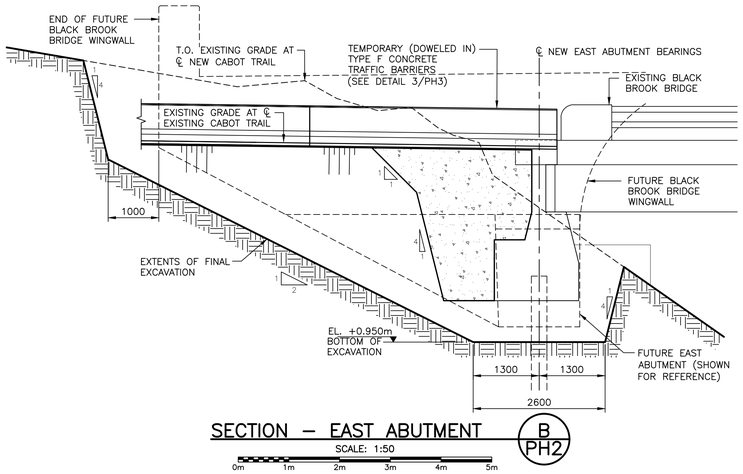
PLAN – PHASE 2

SCALE : 1:75



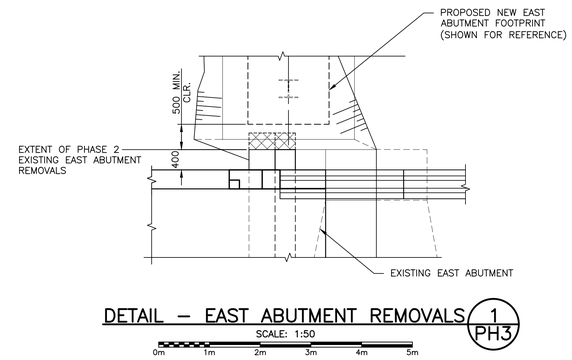
SECTION – PHASE 2

SCALE : 1:75



SECTION – EAST ABUTMENT

SCALE: 1:50

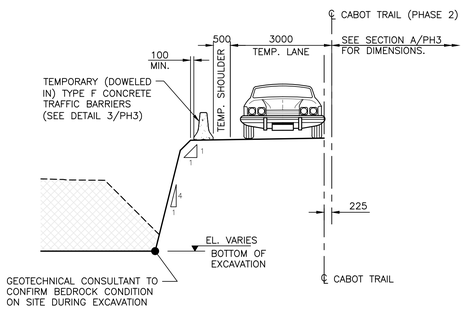


DETAIL – EAST ABUTMENT REMOVALS

SCALE: 1:50

GENERAL WORK PROCEDURE – PHASE 2:

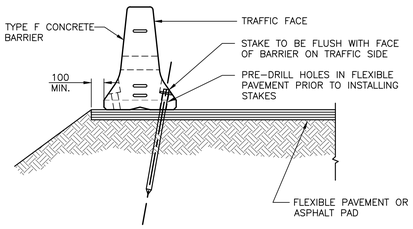
1. INSTALL TEMPORARY CONCRETE BARRIERS AND TRAFFIC GUARDRAIL ALONG NORTH EDGE OF TEMPORARY (PHASE 2) TRAFFIC LANES AS SHOWN ON DRAWING PH1. REMOVE EXISTING PHASE 1 TRAFFIC BARRIERS.
2. PERFORM EXCAVATION REQUIRED FOR CONSTRUCTION OF NEW EAST ABUTMENT AND WINGWALLS.
3. REMOVE REQUIRED PORTION OF EAST ABUTMENT. SEE DETAIL 1/PH3 FOR DETAILS.
4. INSTALL EAST ABUTMENT PILES AS NOTED ON CONTRACT DRAWINGS.
5. CAST NEW EAST INTEGRAL ABUTMENT PILE CAP AND WINGWALLS UP TO BEAM SEAT ELEVATION. REFERENCE STRUCTURAL DRAWINGS FOR DETAILS.
6. END OF PHASE 2.



SECTION – PHASE 2

SCALE : 1:75

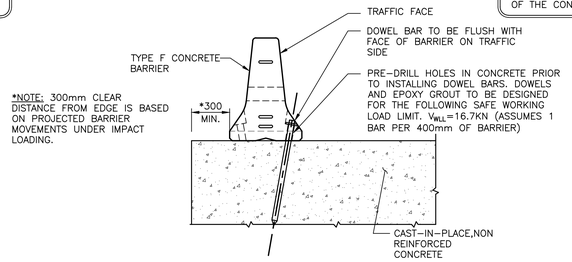
THIS DETAIL IS PROVIDED FOR REFERENCE ONLY. DESIGN AND SELECTION OF AN ACCEPTABLE STAKED DOWN TYPE F CONCRETE BARRIER IS THE RESPONSIBILITY OF THE CONTRACTOR.



DETAIL – TYPICAL TYPE F CONCRETE BARRIER

SCALE : 1:20

THIS DETAIL IS PROVIDED FOR REFERENCE ONLY. DESIGN AND SELECTION OF AN ACCEPTABLE STAKED DOWN TYPE F CONCRETE BARRIER IS THE RESPONSIBILITY OF THE CONTRACTOR.



DETAIL – (PHASE 2) TYPE F CONCRETE BARRIER

SCALE : 1:20

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PROFESSIONAL ENGINEER – PROVINCE OF NOVA SCOTIA – P.J. Burke – 9692 – Oct 27 DATE 2015

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

CONSTRUCTION PHASING

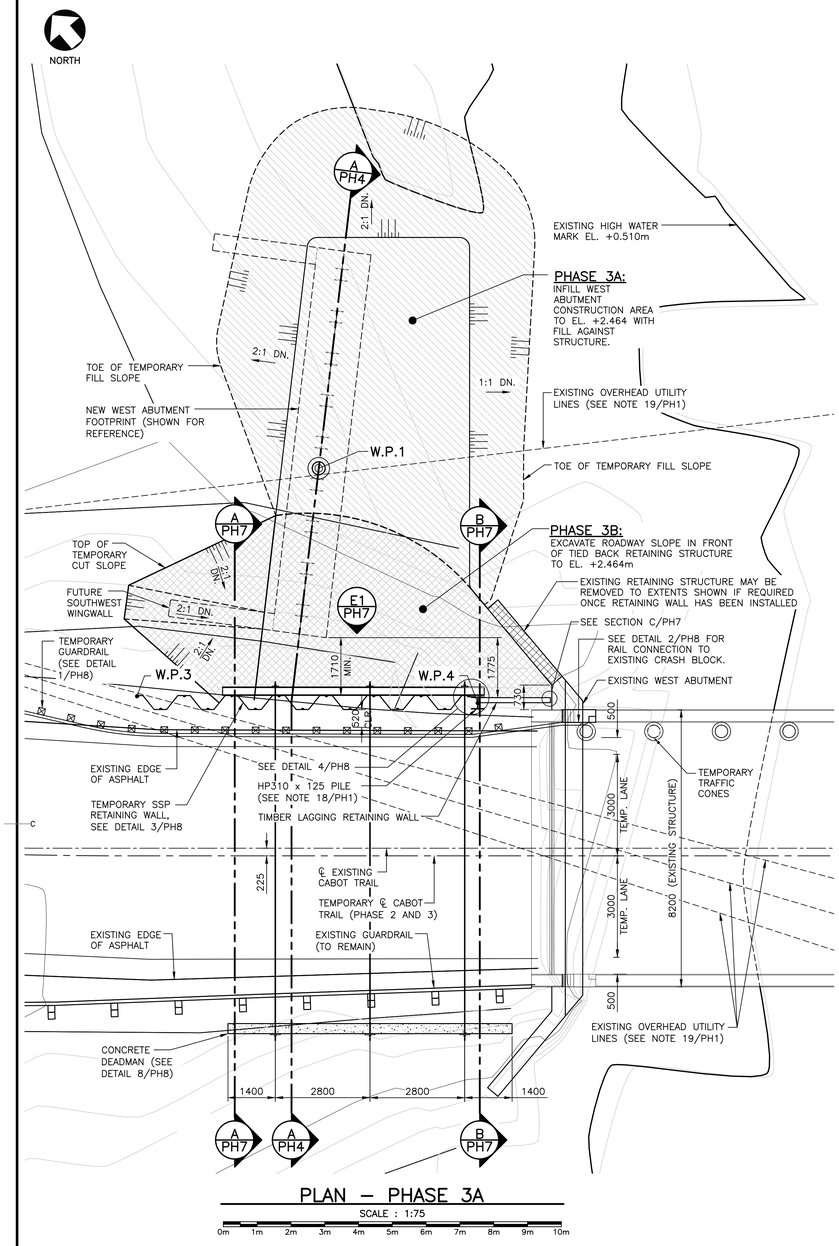
PHASE 2 EAST ABUTMENT

designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: **321**

drawing no. / no. du dessin: **PH3**

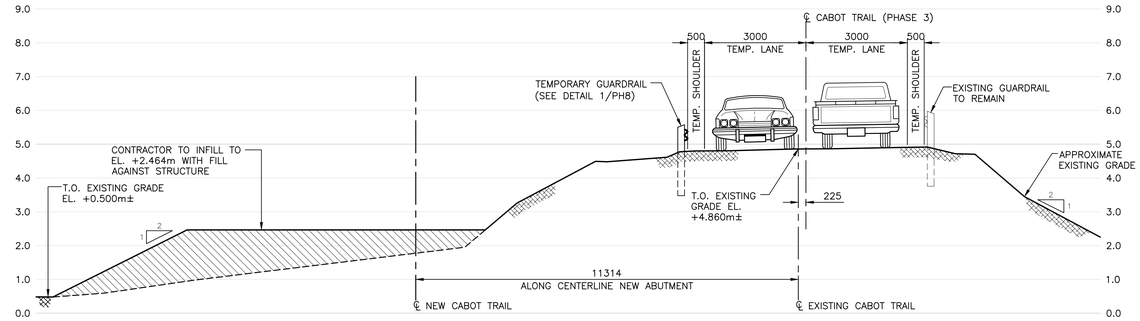
PCA B1 (2004)



PLAN – PHASE 3A

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

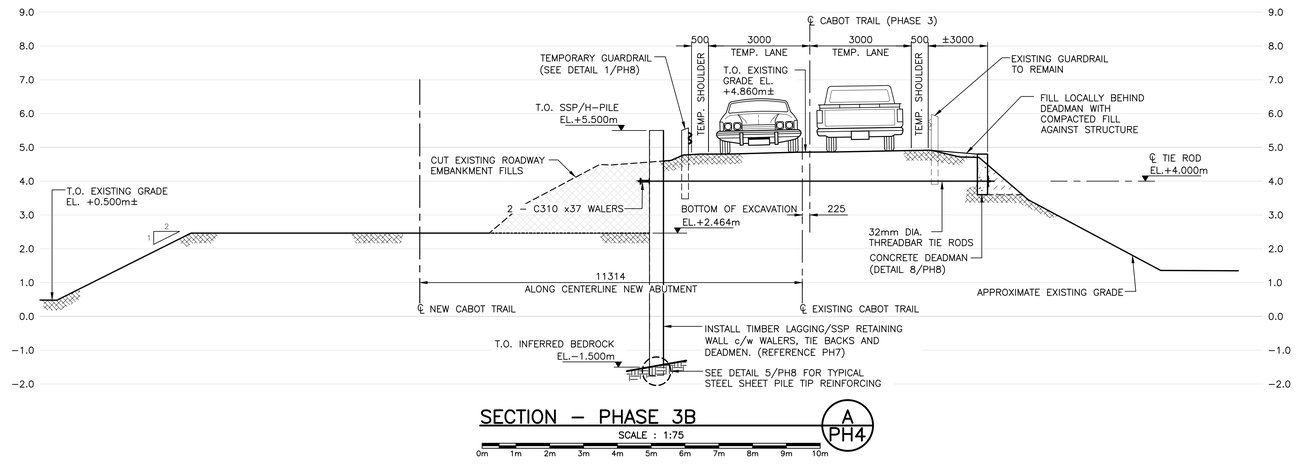


SECTION – PHASE 3A

SCALE : 1:75

A PH4

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



SECTION – PHASE 3B

SCALE : 1:75

A PH4

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

WORK POINT COORDINATES			
WORK POINT	WORK POINT DESCRIPTION	NORTHINGS	EASTINGS
W.P.3	START OF WEST RETAINING WALL	5183463.9218	703487.0202
W.P.4	CENTER OF HP310 PILE (WEST RETAINING WALL)	5183457.2442	703494.5662

GENERAL WORK PROCEDURE – PHASE 3:

NOTE: PHASE 3 MAY BE COMPLETED PRIOR TO OR SIMULTANEOUSLY WITH PHASE 1 AND 2. HOWEVER, STEPS 1 THROUGH 3 OF PHASE 1 AND APPROPRIATE TRAFFIC CONTROL FROM PHASE 1 AND 2 MUST BE COMPLETE PRIOR TO INITIATING PHASE 3.

1. INFILL NORTH OF EXISTING WEST ABUTMENT AS SHOWN ON PHASE 3 PLAN WITH FILL AGAINST STRUCTURE. MINIMUM TEMPORARY INFILL SLOPES OF 1:1 TO BE MAINTAINED.
2. INSTALL SSP WALL/TIMBER LAGGING WALL AS SHOWN.
3. EXCAVATE TO ELEVATION +3.800m IN FRONT OF RETAINING WALL.
4. INSTALL TIE RODS FOR TIED BACK RETAINING STRUCTURE.
5. EXCAVATE AND CAST REINFORCED CONCRETE DEADMAN AS PER DETAIL 8/PH8.
6. INFILL AS REQUIRED BEHIND DEADMAN WITH COMPACTED FILL AGAINST STRUCTURE.
7. EXCAVATE ROADWAY SLOPE IN FRONT OF TIED BACK RETAINING WALL TO ELEVATION +2.464m AS SHOWN. CONSTRUCT TIMBER LAGGING WALL AS EXCAVATION PROGRESSES. REFERENCE PH7 FOR TIMBER LAGGING WALL DETAILS.
8. INSTALL WEST ABUTMENT PILES AS NOTED ON CONTRACT DRAWINGS.
9. CAST NEW WEST INTEGRAL ABUTMENT PILE CAP AND WINGWALLS UP TO BEAM SEAT ELEVATION. REFERENCE STRUCTURAL DRAWINGS FOR DETAILS.
10. AFTER ABUTMENT CONCRETE REACHES DESIGN STRENGTH, ERECT STEEL BOX GIRDERS.
11. PERMANENTLY SET BEARINGS FOR EACH GIRDER AT BOTH EAST AND WEST ABUTMENT.
12. FORM AND CAST THE CONCRETE DECK ON THE GIRDERS, LEAVING A 3 METRE STRIP AT EACH END OF THE DECK (ADJACENT TO THE INTEGRAL ABUTMENTS). COMPLETE THE INTEGRAL ABUTMENTS, WINGWALLS AND 3 METRE DECK STRIP ONCE ALL DECK CONCRETE (EXCLUDING CURBS) HAS BEEN PLACED.
13. COMPLETE BACKFILLING AROUND ABUTMENTS WITH FILL AGAINST STRUCTURE IN ACCORDANCE WITH THE CONTRACT DRAWINGS. BACKFILLING AT EACH ABUTMENT TO BE COMPLETED IN A BALANCED MANNER SO AS NOT TO RACK THE STRUCTURE.
14. FORM AND CAST CONCRETE APPROACH SLABS.
15. FORM AND CAST CONCRETE CURB AND END CRASH BLOCKS.
16. INSTALL STEEL TRAFFIC BARRIER ON TOP OF CURBS AND WINGWALLS.
17. APPLY WATERPROOFING MEMBRANE AND ASPHALT WEARING SURFACE ON BRIDGE DECK AND APPROACH SLABS.
18. COMPLETE GRADING OF NEW HIGHWAY ON EACH END OF BRIDGE.
19. END OF PHASE 3.

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DATE Oct 27 2015
P.J. Burke
9692

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project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

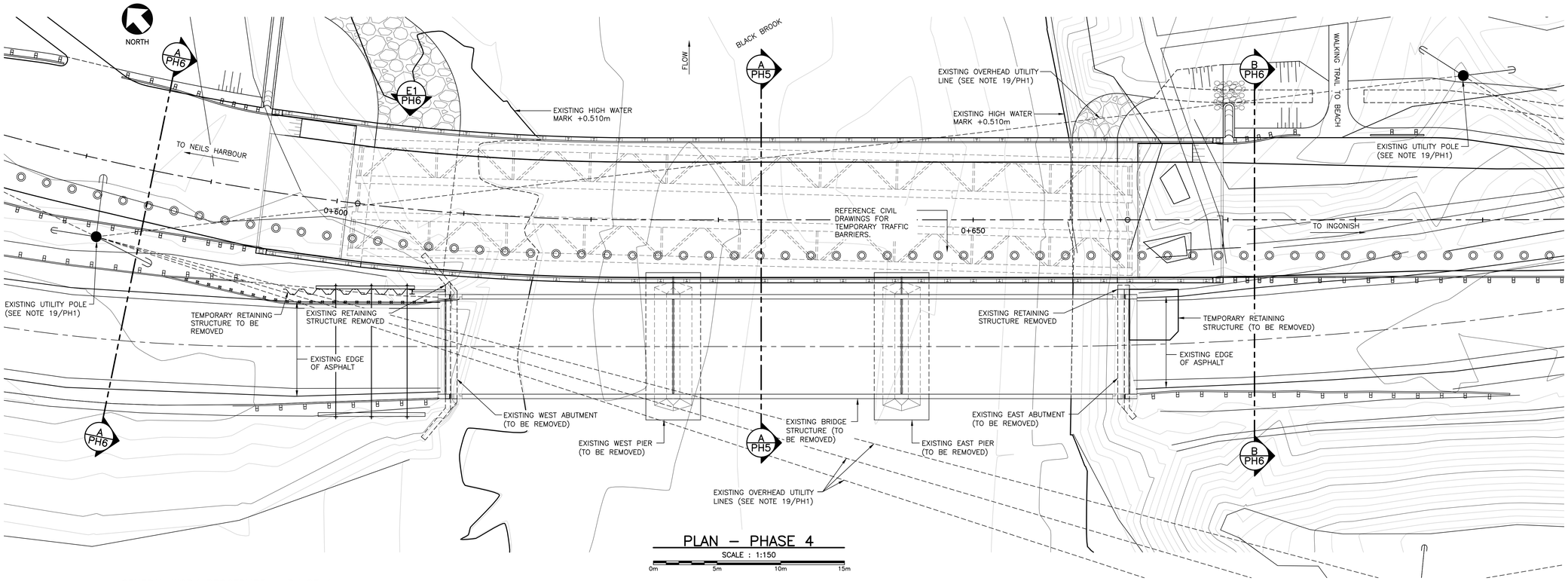
CONSTRUCTION PHASING

PHASE 3
WEST ABUTMENT

designed JAMIE STUART / conçu
date JULY 2015
drawn GR MATHESON / dessiné
date JULY 2015
approved PAUL BURKE / approuvé
date JULY 2015
Tender / Soumission
PCA Project Manager / Administrateur de projets APC
project number / no. du projet
321
drawing no. / no. du dessin
PH4

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



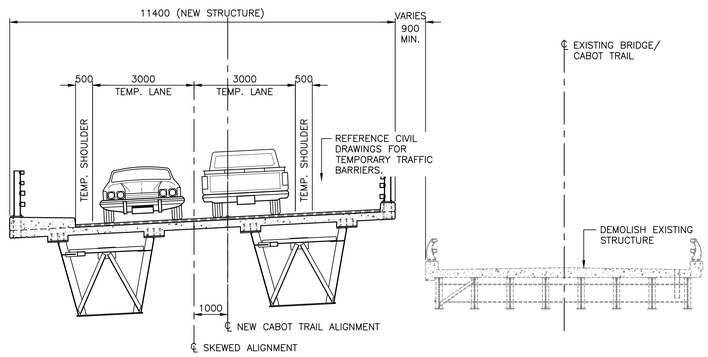
PLAN – PHASE 4

SCALE : 1:150

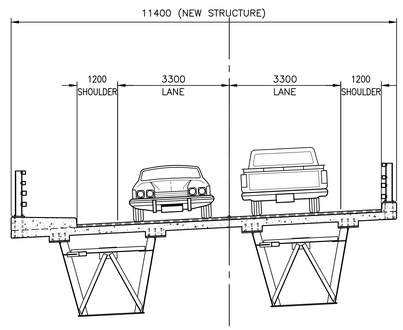
0m 5m 10m 15m

GENERAL WORK PROCEDURE – PHASE 4:

1. TRANSFER TRAFFIC TO NEW BRIDGE STRUCTURE (SKEWED NORTH). REFERENCE SECTION A/PH5 – PHASE 4 FOR TEMPORARY TRAFFIC LANE DIMENSIONS.
2. DEMOLISH EXISTING BLACK BROOK BRIDGE AND REMOVE ALL TEMPORARY RETAINING STRUCTURES. ALL COMPONENTS TO BE REMOVED TO 1000mm BELOW FINISHED GRADE. MAINTAIN MINIMUM 1:1 TEMPORARY SLOPES.
3. DRESS ALL SLOPES AND INSTALL ARMOUR RIP–RAP AS PER CONTRACT DOCUMENTS.
4. DRESS FINAL HIGHWAY SLOPES AS SHOWN ON DRAWING PH6 AND IN THE CIVIL DRAWINGS.
5. COMPLETE FINAL PAVING OPERATIONS AS PER CIVIL DRAWINGS.
6. REMOVE TEMPORARY TRAFFIC BARRIERS ALLOWING FREE FLOWING TRAFFIC ON NEW CABOT TRAIL ALIGNMENT.
7. REMOVE ENVIRONMENTAL CONTROLS AFTER APPROVAL FROM DEPARTMENTAL REPRESENTATIVE.
8. END OF PHASE 4.



PHASE 4 – SKEW TRAFFIC NORTH DURING BRIDGE DEMOLITION



FINAL ALIGNMENT

SECTION – TRAFFIC PHASING

A PH5

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

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REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
Oct 27 DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

CONSTRUCTION PHASING
PHASE 4
DEMOLITION OF EXISTING
BRIDGE / DRESSING
OF SLOPES

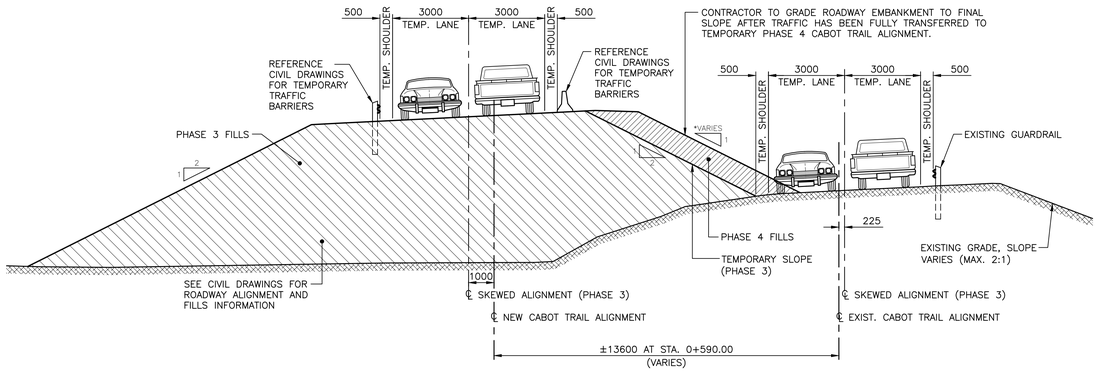
designed / conçu	JAMIE STUART	
date	JULY 2015	
drawn / dessiné	GR MATHESON	
date	JULY 2015	
approved / approuvé	PAUL BURKE	
date	JULY 2015	
Tender / Soumission		
PCA Project Manager / Administrateur de projets APC		

project number / no. du projet: 321

drawing no. / no. du dessin: PH5

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

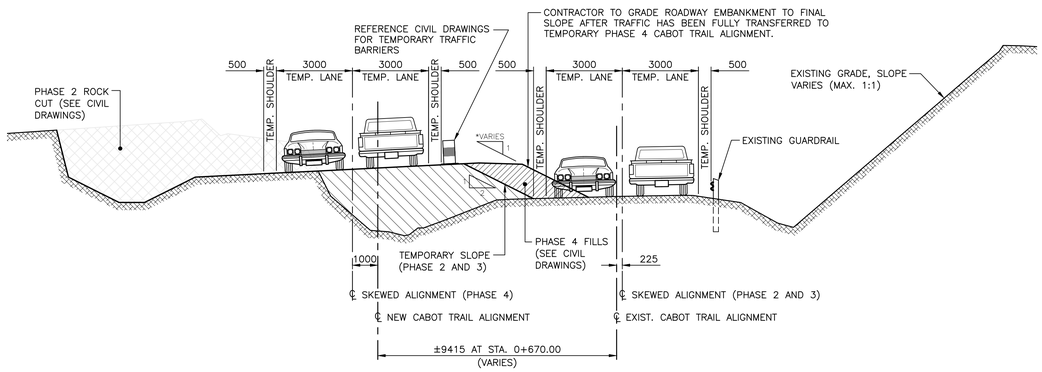


*NOTE: FINAL SLOPES FOR ROADWAY EMBANKMENT VARIES ALONG CHAINAGE. REFERENCE CIVIL DRAWINGS FOR DETAILS REGARDING FINAL SLOPES.

SECTION – WEST APPROACH — A PH5

SCALE : 1:100

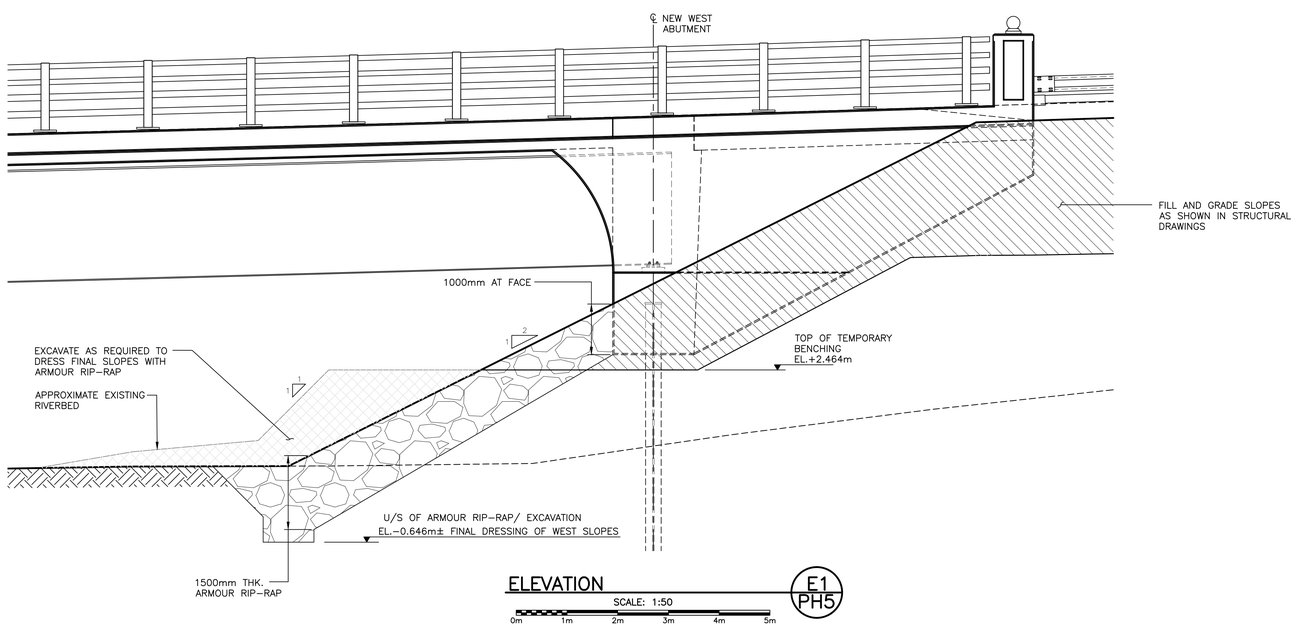
0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



SECTION – EAST APPROACH — B PH5

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



ELEVATION — E1 PH5

SCALE: 1:50

0m 1m 2m 3m 4m 5m

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REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — P.J. Burke — 9692 — DATE Oct 27, 2015

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

CONSTRUCTION PHASING

PHASE 4 SECTIONS AND DETAILS

designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	

Tender — Soumission

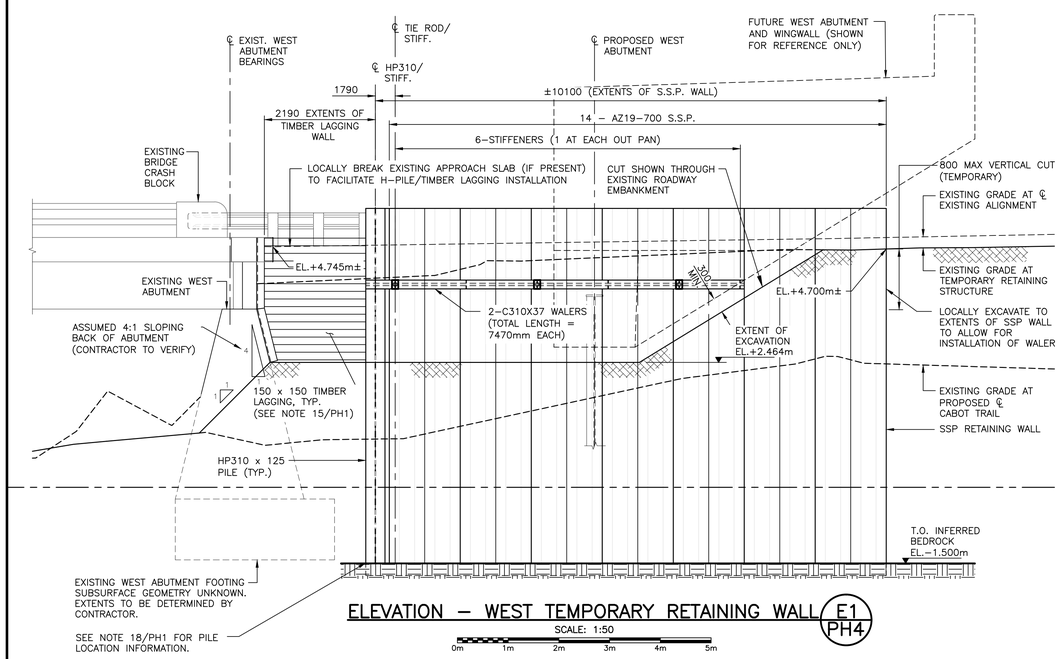
PCA Project Manager — Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: PH6

PCA B1 (2004)

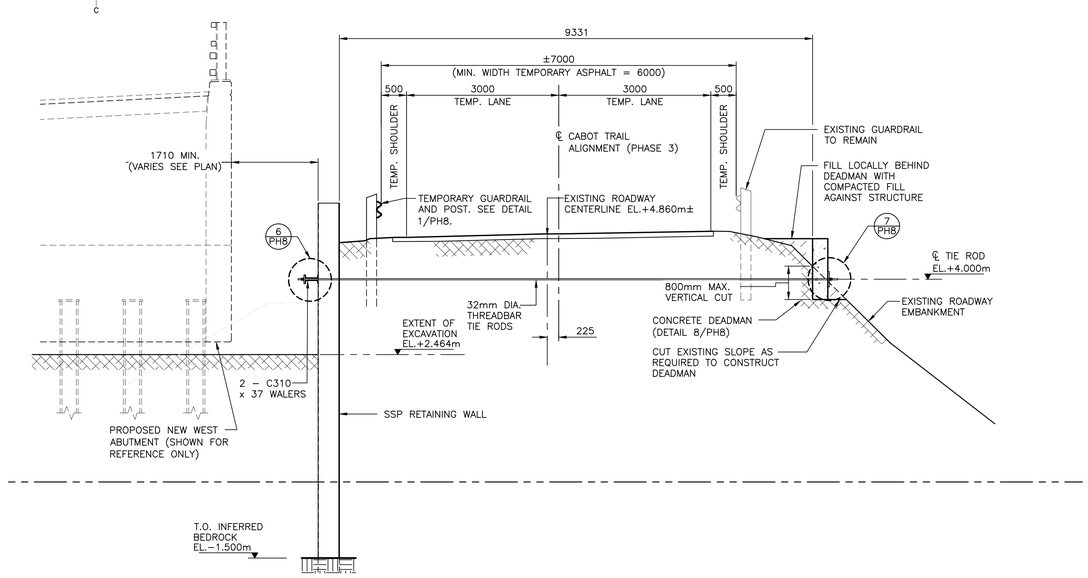
0 10 20mm 40 60 80 100 120 140 160 180 200mm



ELEVATION – WEST TEMPORARY RETAINING WALL (E1 / PH4)

SCALE: 1:50

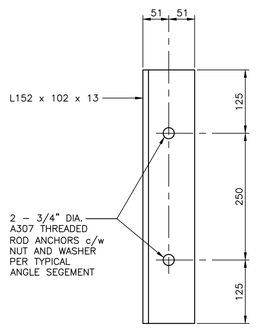
0m 1m 2m 3m 4m 5m



SECTION – WEST S.S.P. WALL (A / PH4)

SCALE: 1:50

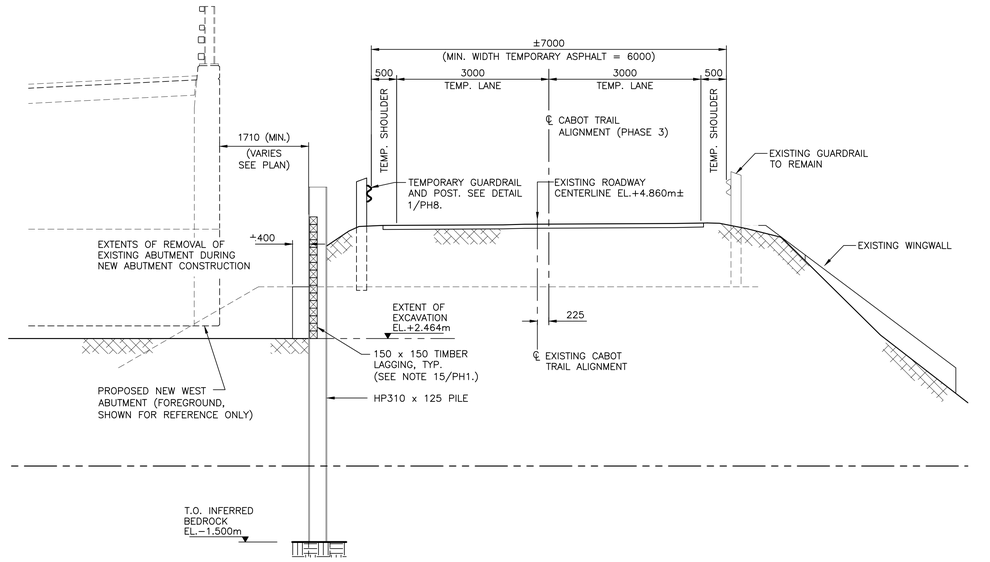
0m 1m 2m 3m 4m 5m



DETAIL – TYPICAL ANGLE SEGMENT (2 / PH7)

SCALE: 1:5

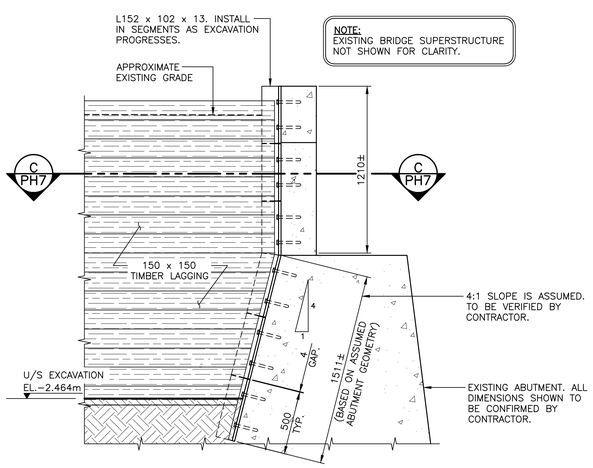
0mm 100mm 200mm 300mm 400mm 500mm



SECTION – WEST TIMBER LAGGING WALL (B / PH4)

SCALE: 1:50

0m 1m 2m 3m 4m 5m

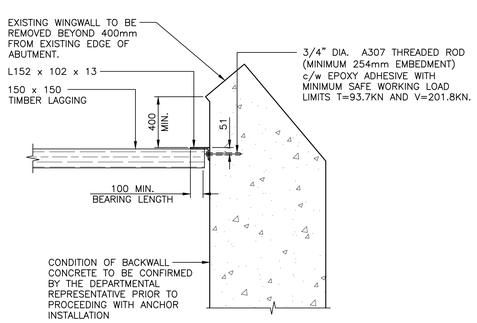


DETAIL – ABUTMENT CONNECTION (1 / PH7)

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

NOTE: DO NOT USE BREAKER CLOSER THAN 400mm TO ENSURE PROPER ANCHORAGE.



SECTION (C / PH4)

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

0 10 20mm 40 60 80 100 120 140 160 180 200mm

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REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
P.J. Burke
9692
DATE 2015

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project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

WEST RETAINING WALL SECTIONS AND DETAILS

designed / conçu	JAMIE STUART	
date	JULY 2015	
drawn / dessiné	GR MATHESON	
date	JULY 2015	
approved / approuvé	PAUL BURKE	
date	JULY 2015	

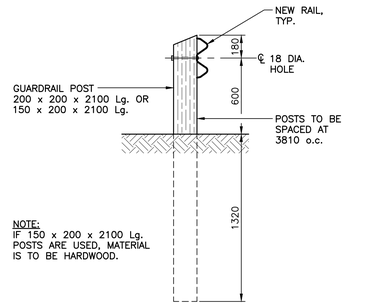
Tender / Soumission

PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: PH7

PCA B1 (2004)

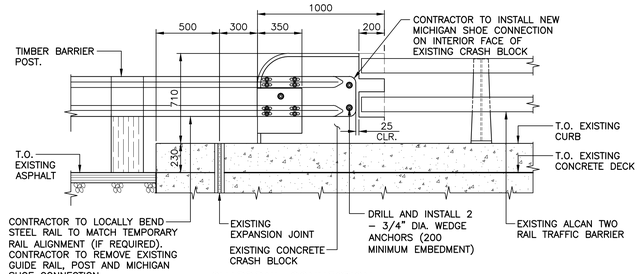


TEMPORARY GUARDRAIL POST

DETAIL 1 PH4

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

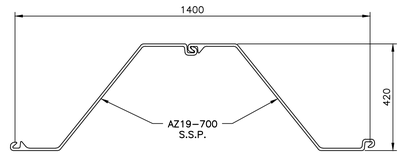


GUARDRAIL CONNECTION

DETAIL 2 PH4

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

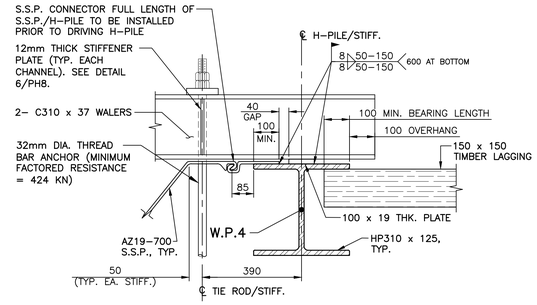


TYPICAL STEEL SHEET PILE SECTION

DETAIL 3 PH4

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL 4 PH4

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

DETAIL – PILE TIP REINFORCING 5 PH4

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

TYPICAL TIE ROD TO WALER CONNECTION 6 PH7

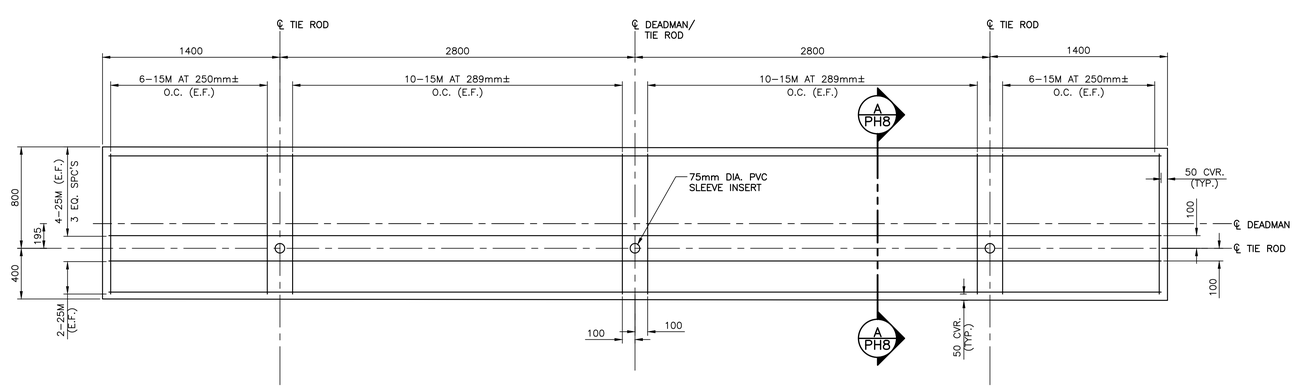
SCALE: 1:5

0mm 100mm 200mm 300mm 400mm 500mm

DETAIL – DEADMAN THREAD BAR ANCHOR CONNECTION 7 PH7

SCALE : 1:10

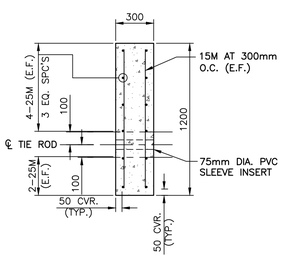
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – DEADMAN REINFORCING 8 PH4

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – DEADMAN REINFORCING A PH8

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

C

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PCA B1 (2004)

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HARBOURSIDE Engineering Consultants

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9692

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project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

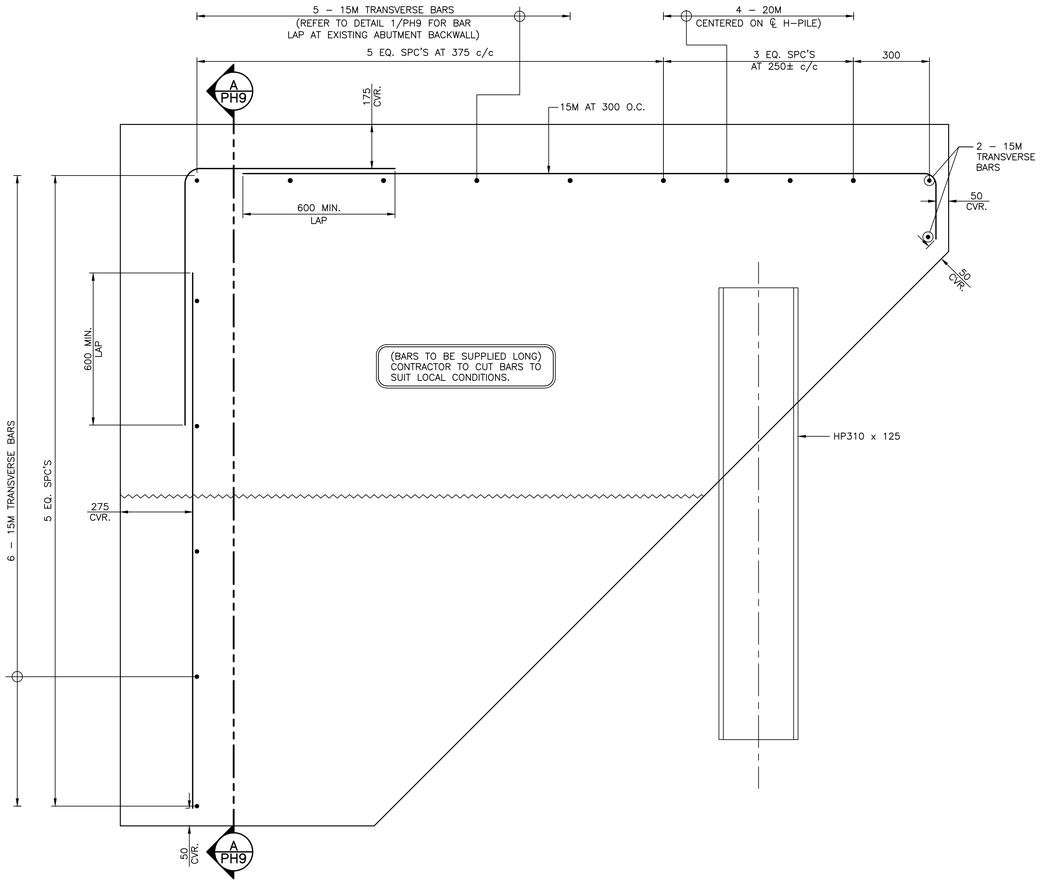
CONSTRUCTION PHASING

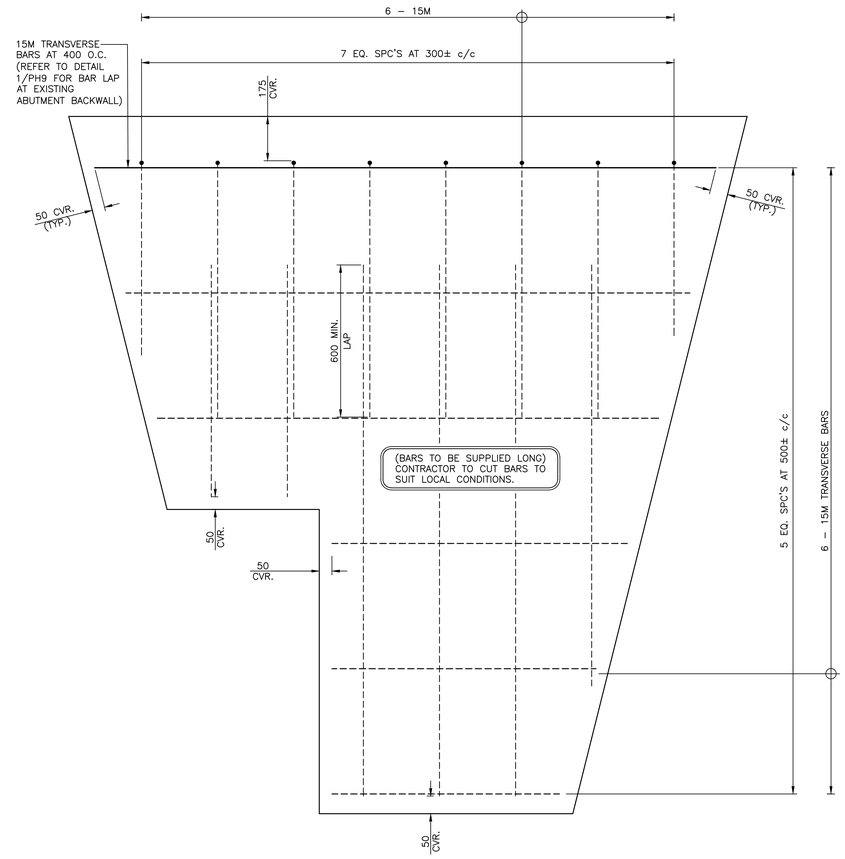
MISCELLANEOUS DETAILS

designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: PH8





EAST RETAINING WALL REINFORCING

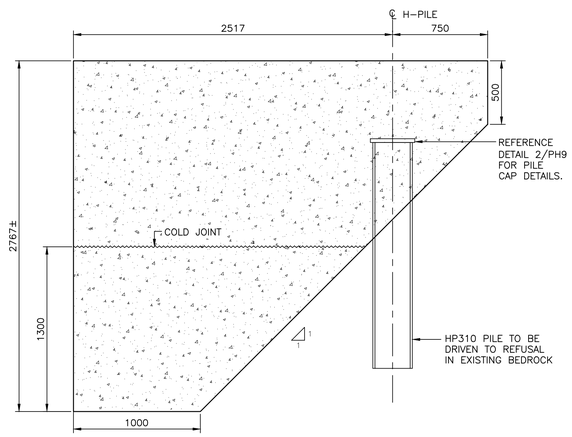
SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

SECTION A PH9

SCALE : 1:10

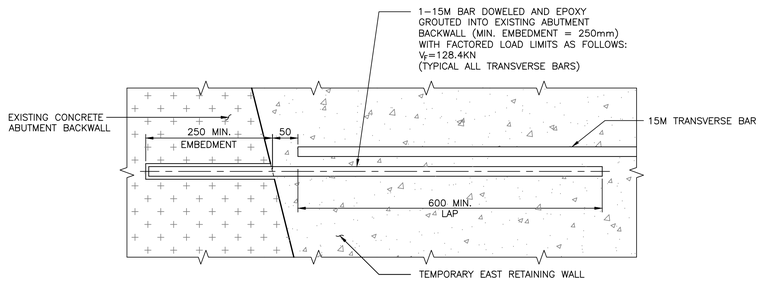
0mm 100 200 300 400 500 600 700 800 900 1000mm



EAST RETAINING WALL

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

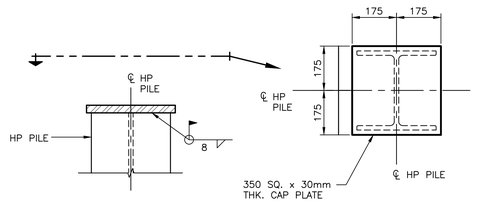


DETAIL – DOWELED IN CONNECTION 1 PH9

(TYPICAL EACH TRANSVERSE 15M BAR)

SCALE: 1:5

0mm 100mm 200mm 300mm 400mm 500mm



DETAIL – PILE CAP 2 PH9

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
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P.J. Burke 9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

EAST RETAINING WALL REINFORCING

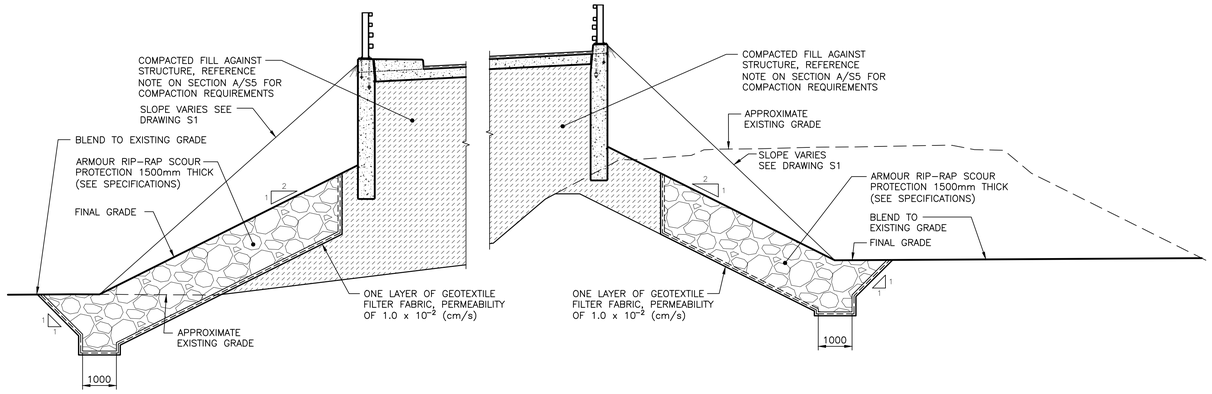
designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

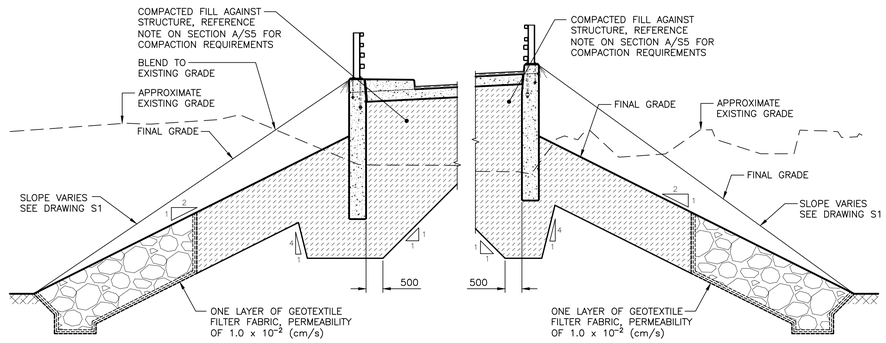
drawing no. / no. du dessin: PH9

PCA B1 (2004)

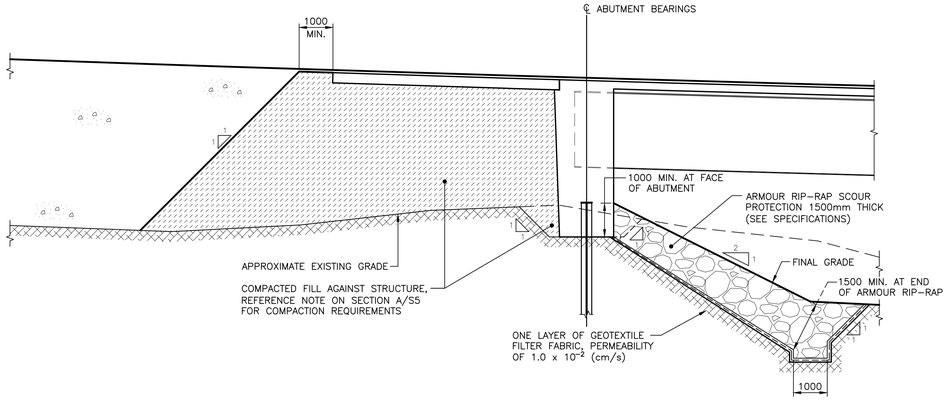
0 10 20mm 40 60 80 100 120 140 160 180 200mm



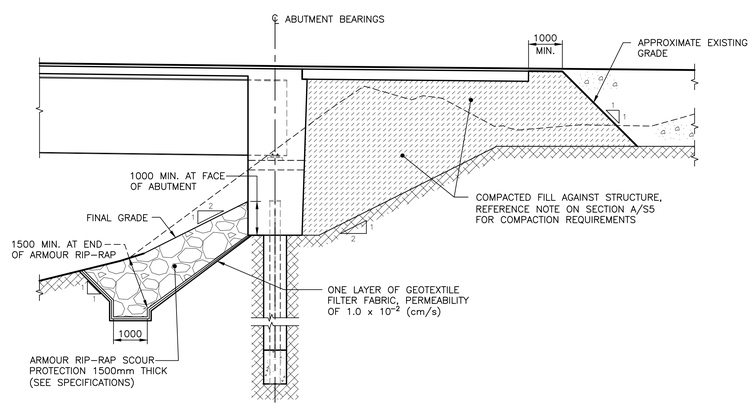
THROUGH WEST ABUTMENT



THROUGH EAST ABUTMENT WINGWALLS



THROUGH WEST ABUTMENT WINGWALLS



THROUGH EAST ABUTMENT

DETAIL – FILL AGAINST STRUCTURE/ RIP RAP DIAGRAMS (1 / S1)

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

EXCAVATION AND FILL QUANITY DIAGRAMS AND DETAILS

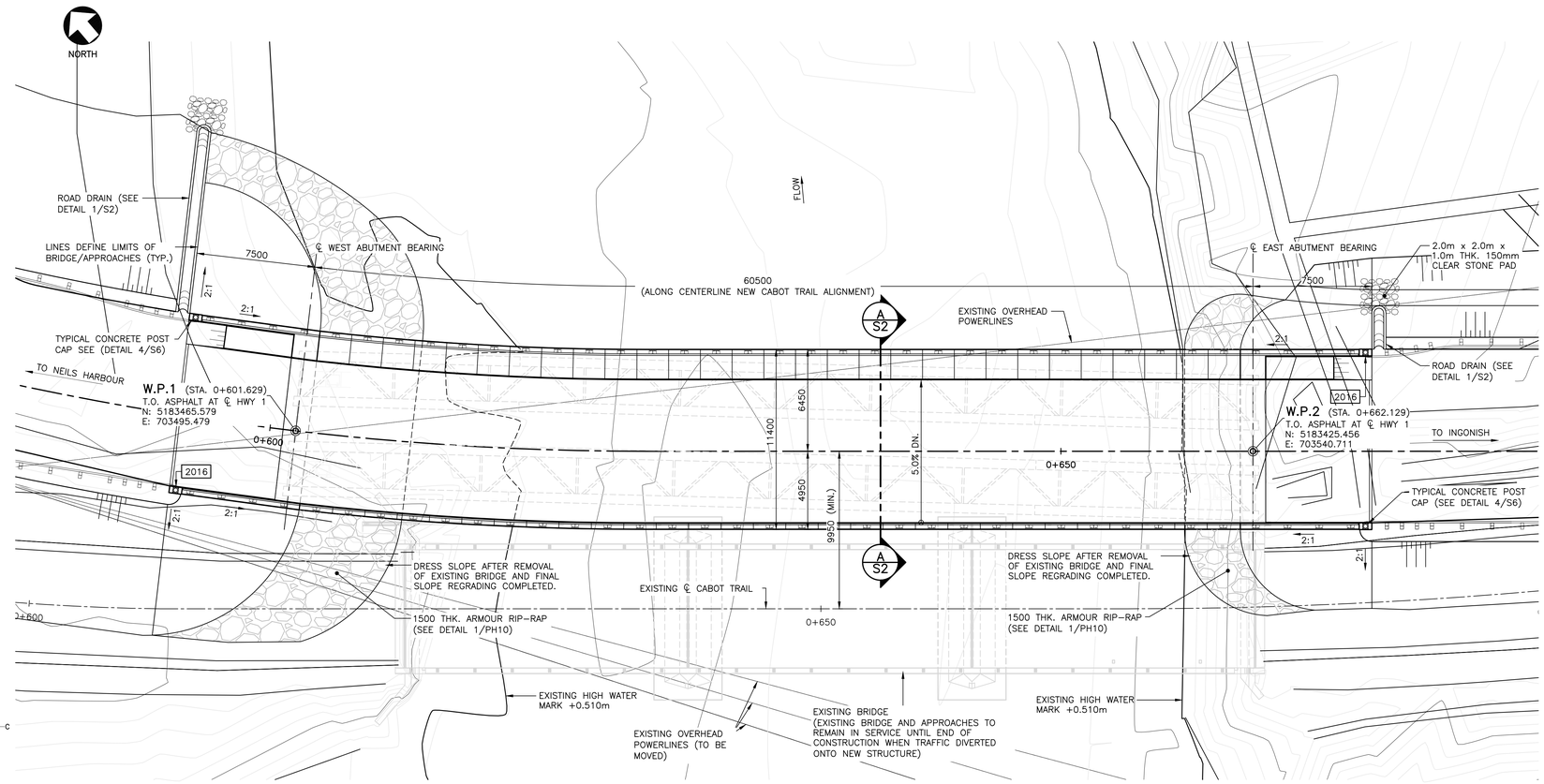
designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: PH10

PCA B1 (2004)

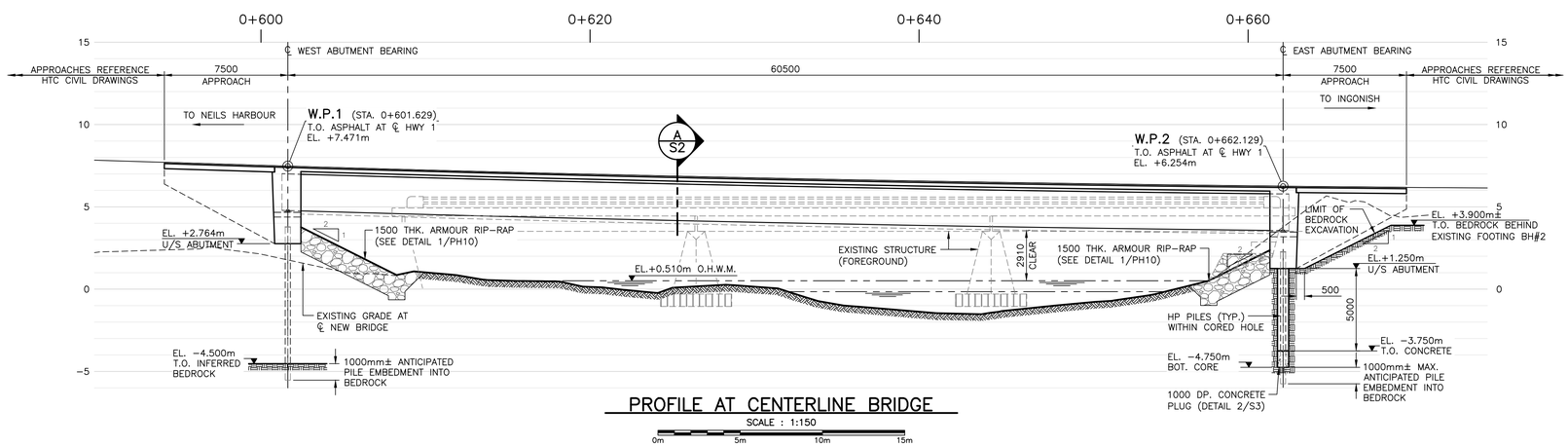
0 10 20mm 40 60 80 100 120 140 160 180 200mm



PLAN – GENERAL ARRANGEMENT

SCALE : 1:150

0m 5m 10m 15m



PROFILE AT CENTERLINE BRIDGE

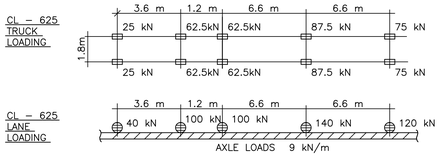
SCALE : 1:150

0m 5m 10m 15m

GENERAL NOTES:

1. GENERAL REQUIREMENTS GOVERNING DESIGN, MATERIALS, AND CONSTRUCTION ARE AS FOLLOWS:

   A) LOADING AND GENERAL DESIGN TO CAN/CSA – S6 – 14, WITH LATEST REVISIONS, LIVE LOAD CL–625.



   B) CONCRETE MATERIALS AND METHODS OF CONSTRUCTION TO CAN/CSA–A23.1 AND METHODS OF TEST FOR CONCRETE TO CAN/CSA–A23.2.

   C) REFERENCE DRAWING S3 FOR CONCRETE AND REINFORCING NOTES.

   D) REFERENCE DRAWING S3 FOR PILE NOTES.

   E) REFERENCE DRAWING S8 FOR STRUCTURAL STEEL NOTES.

   F) REFERENCE DRAWINGS PH1 TO PH10 FOR CONSTRUCTION PHASING, TEMPORARY APPROACH RETAINING REQUIREMENTS, AND FILL/EXCAVATION REQUIREMENTS SURROUNDING EACH ABUTMENT.

2. ALL DIMENSIONS SHOWN IN MILLIMETRES (mm).
3. ALL STANDARDS AND SPECIFICATION NOTES TO REFLECT THE "LATEST EDITION" AT TIME OF TENDER.
4. FOUNDATION DESIGN BASED ON INFORMATION PROVIDED IN EXP GEOTECHNICAL REPORT No. HFX–00224995–A0, DATED SEPTEMBER 22, 2015.
5. ALIGNMENT INFORMATION AS PER HTC ALIGNMENT DESIGN DRAWINGS. SURVEY INFORMATION PROVIDED BY DESIGNPOINT:
   - BEARINGS ARE GRID DERIVED FROM GPS OBSERVATION REFERENCED TO THE UNIVERSAL TRANSVERSE MERCATOR (NAD83 CSRS 2010) COORDINATE SYSTEM (N.S.C.M. #214303 N 5187186.97, E 704566.309) AND ARE REFERENCED TO MERIDIAN 63° W.
   - COORDINATES ARE GRID DERIVED FROM NAD 83 ELLIPSOID USING THE MAPPING PROJECTION OF UNIVERSAL TRANSVERSE MERCATOR ZONE 20 HAVING A COMBINED GRID SCALE FACTOR OF 1.000115
   - ELEVATIONS ARE REFERENCED TO NSCM #214303 (ORTHOMETRIC CGVD28) HAVING AN ELEVATION OF 9.868m.
6. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION.
7. REFERENCE CIVIL DRAWINGS FOR ROAD ALIGNMENT OVER BRIDGE STRUCTURE AND CONSTRUCTION PHASING TO TRANSITION TRAFFIC TO NEW STRUCTURE, FOLLOWED BY DEMOLITION OF EXISTING STRUCTURE.
8. CONSTRUCTION SHALL BE CARRIED OUT AS PER CAN/CSA–S6–14.
9. BRIDGE CLASSIFIED AS A "MAJOR–ROUTE BRIDGE" FOR THE PURPOSE OF SEISMIC ANALYSIS AS PER CAN/CSA–S6–14.
10. BRIDGE BARRIERS AND ANCHORAGES CONFORM TO TL–4 CRASH TEST REQUIREMENTS AS PER CAN/CSA–S6–14.
11. REFER TO PROJECT SPECIFICATIONS FOR APPROVED ALTERNATE METHODS TO ACHIEVE PILE FLEXIBILITY.
12. BRIDGE QUANTITIES IN SPECIFICATIONS ARE BASED ON THE FOLLOWING EXTENTS:

    LONGITUDINALLY : MEASURED FROM END OF WINGWALL TO END OF WINGWALL
    TRANSVERSELY : MEASURED FROM TOE OF FINISHED SIDE SLOPE TO TOE OF FINISHED SIDE SLOPE

13. FULL WIDTH OF EXISTING STRUCTURE WITH SIDEWALK REMOVED TO REMAIN IN–SERVICE UNTIL THE END OF CONSTRUCTION WHEN TRAFFIC DIVERTED ONTO NEW STRUCTURE. PARTIAL WIDTH APPROACHES (2 LANES) TO REMAIN IN SERVICE UNTIL THE END OF CONSTRUCTION WHEN TRAFFIC DIVERTED ONTO NEW STRUCTURE (REFERENCE PROJECT SPECIFICATIONS).

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA DATE 2015 P.J. Burke 9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

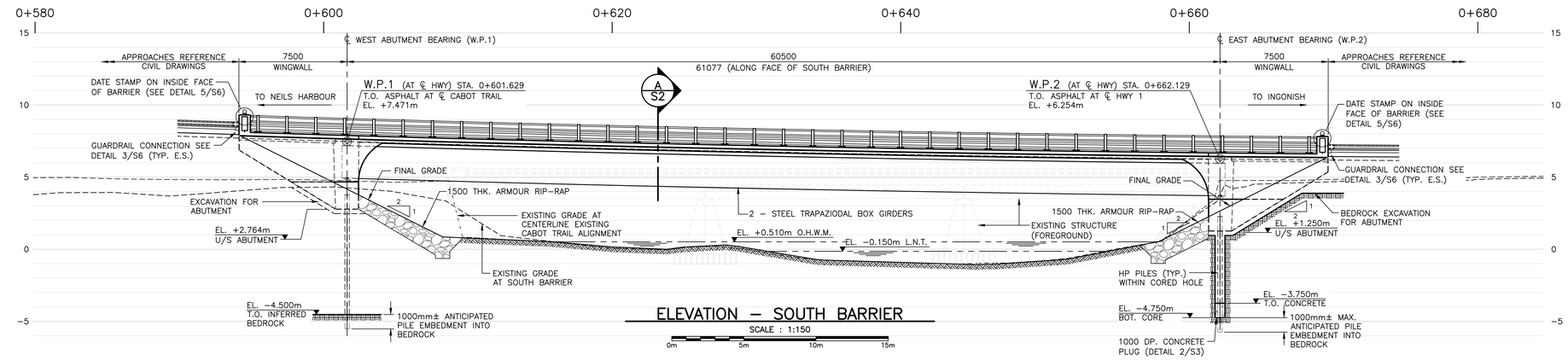
drawing / dessin

GENERAL ARRANGEMENT PLAN AND PROFILE

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet
	321	
drawing no.		no. du dessin
	S1	

PCA B1 (2004)

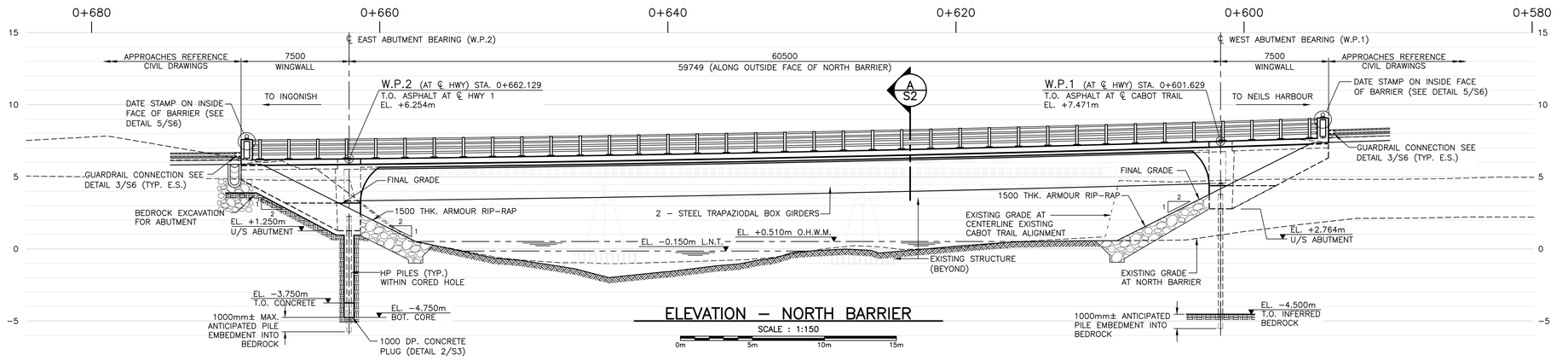
0 10 20mm 40 60 80 100 120 140 160 180 200mm



ELEVATION – SOUTH BARRIER

SCALE : 1:150

0m 5m 10m 15m



ELEVATION – NORTH BARRIER

SCALE : 1:150

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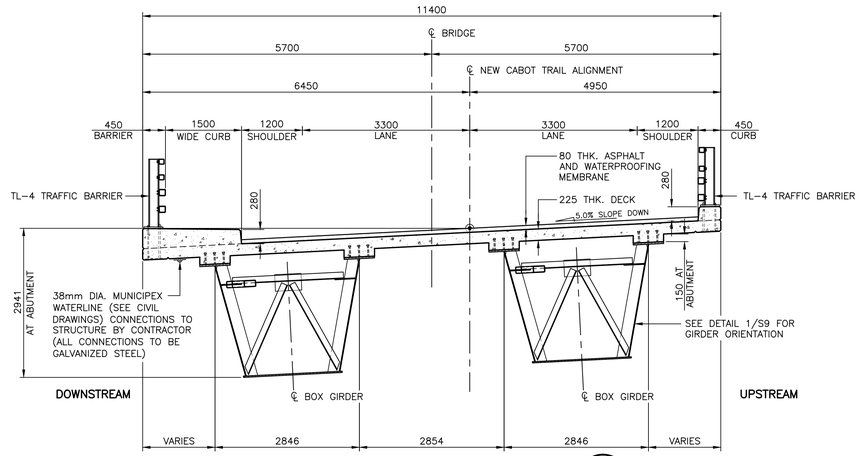
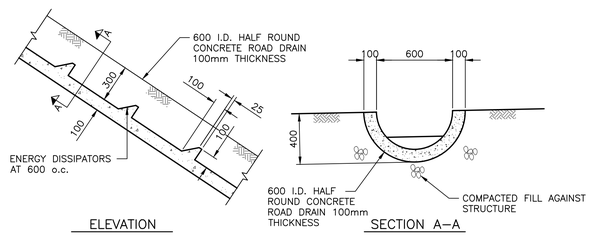


TYPICAL SECTION

A S1

SCALE: 1:50

0m 1m 2m 3m 4m 5m



DETAIL – ROAD DRAIN

1 S1

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
OCT 27 DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

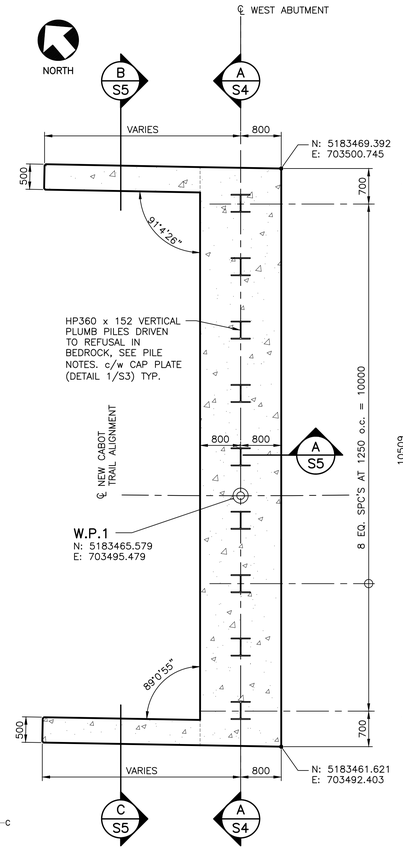
drawing / dessin

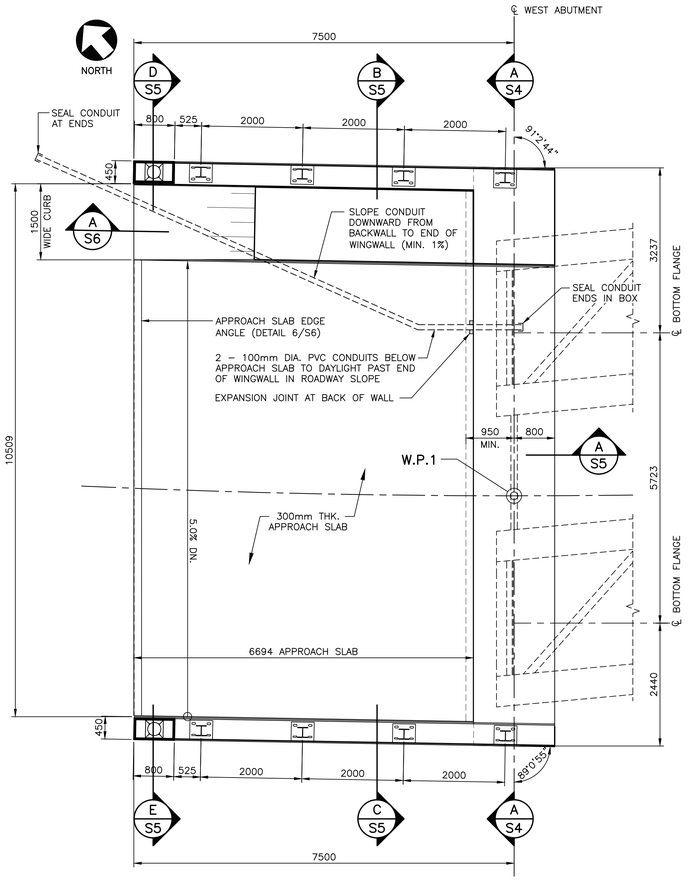
GENERAL ARRANGEMENT
ELEVATIONS AND SECTION

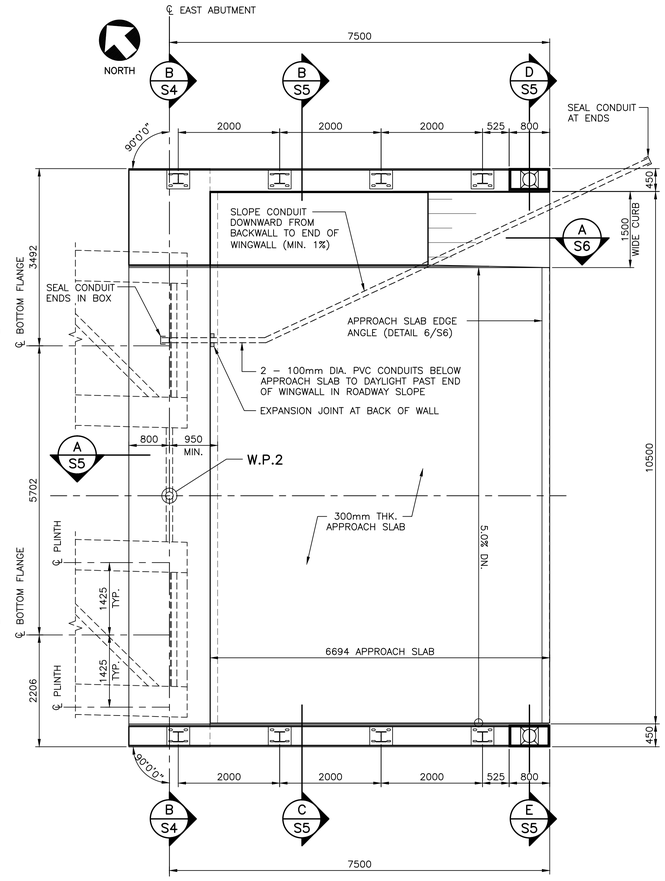
designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

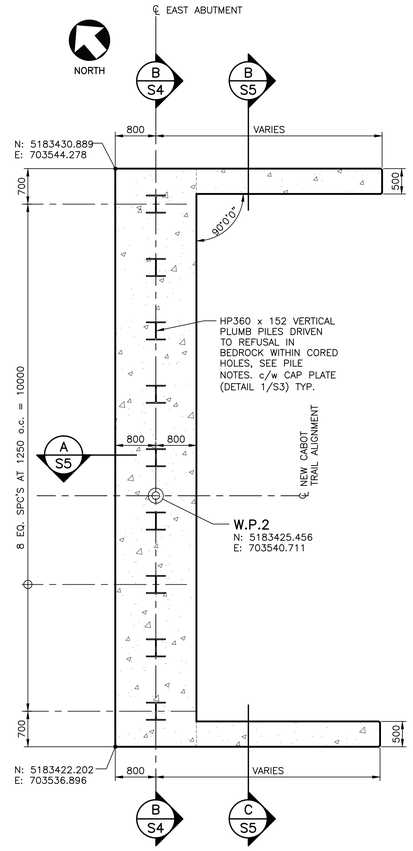
project number / no. du projet: 321

drawing no. / no. du dessin: S2









WEST ABUTMENT – PILE LAYOUT PLAN

SCALE: 1:50

0m 1m 2m 3m 4m 5m

WEST ABUTMENT – TOP PLAN

SCALE: 1:50

0m 1m 2m 3m 4m 5m

EAST ABUTMENT – TOP PLAN

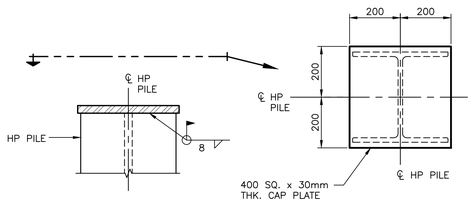
SCALE: 1:50

0m 1m 2m 3m 4m 5m

EAST ABUTMENT – PILE LAYOUT PLAN

SCALE: 1:50

0m 1m 2m 3m 4m 5m

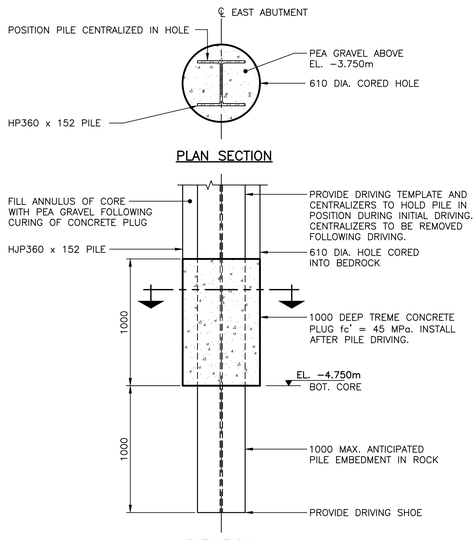


DETAIL – PILE CAP

1 S3

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – EAST ABUTMENT PILE TIP

2 S2

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

C.I.P. CONCRETE NOTES

1. ALL EXPOSED CORNERS OF CONCRETE TO HAVE 25mm CHAMFERS.
2. LOCATION OF CONSTRUCTION JOINTS AND SEQUENCE OF CONCRETE PLACEMENT TO BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
3. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:
   - A) ABUTMENTS, WINGWALLS, APPROACH SLABS, CONCRETE DECK AND CURBS 45 MPa WITH 20mm MAX. AGGREGATE SIZE AND 6% ± 1% AIR ENTRAINMENT (AIR VOID SPACING REQUIREMENTS AS PER PROJECT SPECIFICATIONS), MAX. WATER–CEMENT RATIO 0.35
   - B) SLOPE DRAINS; 32 MPa, NON–REINFORCED, AS PER PROJECT SPECIFICATIONS.
4. CONCRETE COVER TO REINFORCING STEEL AS NOTED ON DRAWINGS.
5. REINFORCING STEEL TO BE GRADE 400W DEFORMED BARS AS PER PROJECT SPECIFICATIONS WITH YIELD STRENGTH OF 400 MPa (WELDABLE). ALL REINFORCING TO BE GALVANIZED IN ACCORDANCE WITH PROJECT SPECIFICATIONS. BEND DIAMETERS PRIOR TO GALVANIZING AS PER PROJECT SPECIFICATIONS, FIELD BENDING OF GALVANIZED BARS IS NOT PERMITTED.
6. ALL REINFORCEMENT TO BE INSPECTED BY THE DEPARTMENTAL REPRESENTATIVE PRIOR TO CLOSING FORMWORK OR PLACING CONCRETE.
7. COMPACTING IMMEDIATELY ADJACENT TO BACK WALL SHALL BE ACCOMPLISHED WITH LIGHT COMPACTING EQUIPMENT. MODERATE COMPACTING WITH A TRENCH ROLLER IN 300mm LIFTS ELSEWHERE (ALL COMPACTION SHALL BE TO 98% STD. PROCTOR DENSITY). BACKFILLING SHALL NOT BE UNDERTAKEN UNTIL GIRDERS ARE ERECTED AND SLAB AND ABUTMENT CAPS ARE COMPLETED ($f'c \geq 35$ MPa) AND SHALL BE ACCOMPLISHED IN EQUAL/BALANCED LIFTS BEHIND EACH ABUTMENT. WHEEL LOADS SHALL BE KEPT 5.0m MINIMUM CLEAR OF ABUTMENTS UNTIL CONCRETE REACHES DESIGN STRENGTH AND BACKFILLING IS COMPLETED BEHIND BOTH ABUTMENTS.
8. FOR BENT REINFORCING BAR TYPES REFER TO R.S.I.C. REINFORCING MANUAL OF STANDARD PRACTICE TYPICAL BAR BENDS EXCEPT BAR BEND DIAMETERS AS PER PROJECT SPECIFICATIONS (U.N.O.).
9. EACH PHASE OF WORK TO BE INSPECTED BY THE DEPARTMENT REPRESENTATIVE PRIOR TO PROCEEDING TO THE NEXT PHASE OF WORK.
10. BACKFILL IMMEDIATELY BEHIND ABUTMENTS TO BE "FILL AGAINST STRUCTURE" MATERIAL AS PER PROJECT SPECIFICATIONS.

PILE NOTES

1. PILE MATERIAL
   - A) STEEL H–PILES IN ABUTMENT, HP360 x 152, Fy = 350 MPa (MIN.)
   - B) ALL PILE SPLICES, IF REQUIRED AND AT THE APPROVAL OF THE DEPARTMENTAL REPRESENTATIVE, SHALL BE FULL STRENGTH WELDED CONNECTIONS (LIMIT 1 SPLICE PER PILE)
   - C) CAP PLATE, Fy = 350 MPa MINIMUM
   - D) WELDING MATERIAL TO CSA G40.1 – LATEST EDITION
   - E) WELDING TO BE IN ACCORDANCE TO CSA W59 – LATEST EDITION
2. PILE INSTALLATION CRITERIA AS PER EXP REPORT No. HFX–00224995–A0 DATED SEPTEMBER 22, 2015.
3. SEE PROJECT SPECIFICATION FOR PILE SET CRITERIA.
4. ALL PILES SHALL BE DRIVEN WITH A PROTECTIVE H–PILE DRIVING SHOE. ALL POINTS SHALL MATCH PILE SIZE AND SHALL BE WELDED TO PILE TIPS AS PER MANUFACTURER'S RECOMMENDATIONS. PILE TIP DETAILS SHALL BE FORWARDED TO THE DEPARTMENTAL REPRESENTATIVE FOR REVIEW AND ACCEPTANCE PRIOR TO DRIVING.
5. FULL TIME INSPECTION SHALL BE UNDERTAKEN DURING PILE DRIVING AND COMPLETE DRIVING RECORDS SHALL BE KEPT.
6. PILE CAPACITIES OF AT LEAST TWO PILES PER ABUTMENT SHALL BE CONFIRMED BY PDA TESTING WITH ADDITIONAL PDA TESTING TO BE COMPLETED AT THE DISCRETION OF THE DEPARTMENTAL REPRESENTATIVE.
7. DESIGN PILE CAPACITY AT ULS:
   - HP360 x 152 PILES ---------- 1500 kN (COMPRESSION)

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER – P.J. Burke – 9692 – PROVINCE OF NOVA SCOTIA – Oct 27 DATE 2015

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

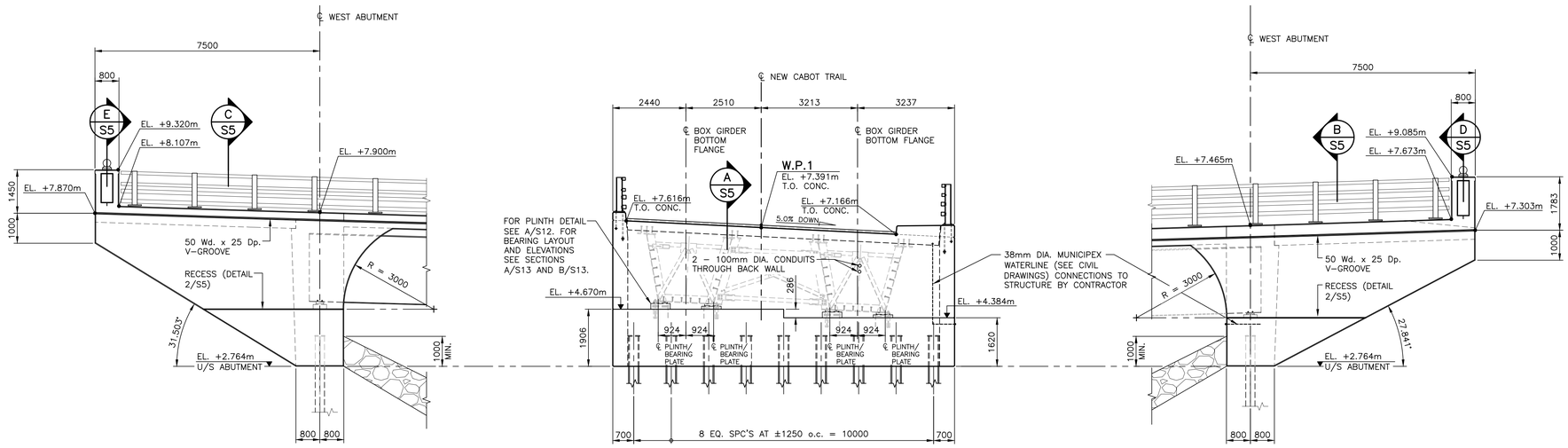
drawing / dessin

ABUTMENT PLANS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet
	321	
drawing no.		no. du dessin
	S3	

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



ELEVATION – SOUTHWEST WINGWALL

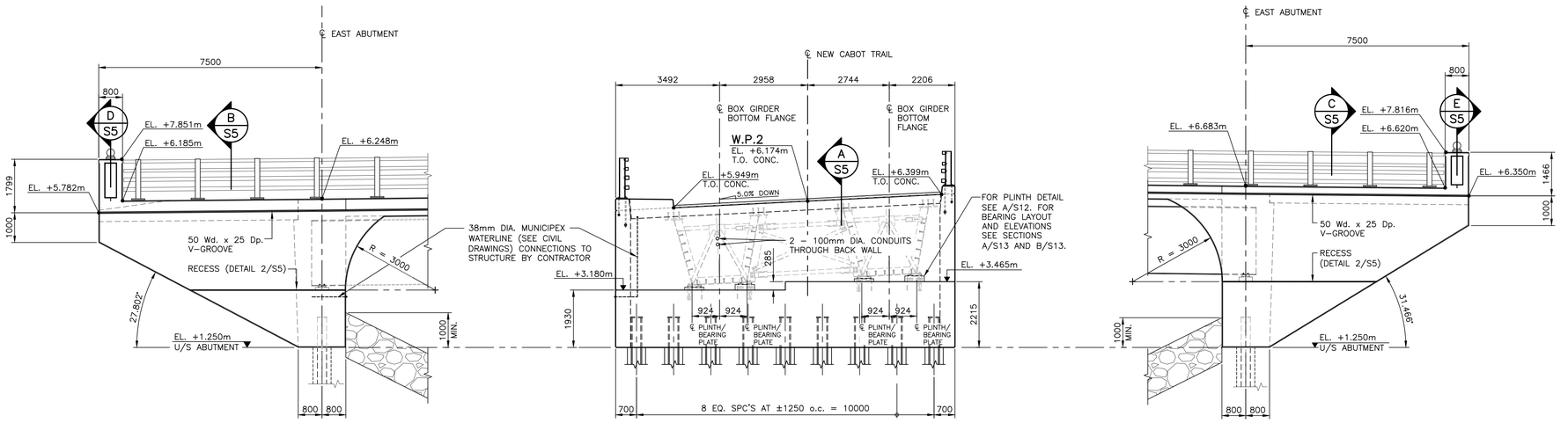
SECTION THROUGH CENTERLINE WEST ABUTMENT

ELEVATION – NORTHWEST WINGWALL

SECTION – WEST ABUTMENT A/S3

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



ELEVATION – NORTHEAST WINGWALL

SECTION THROUGH CENTERLINE EAST ABUTMENT

ELEVATION – SOUTHEAST WINGWALL

SECTION – EAST ABUTMENT B/S3

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PCA B1 (2004)

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
DATE Oct 27 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

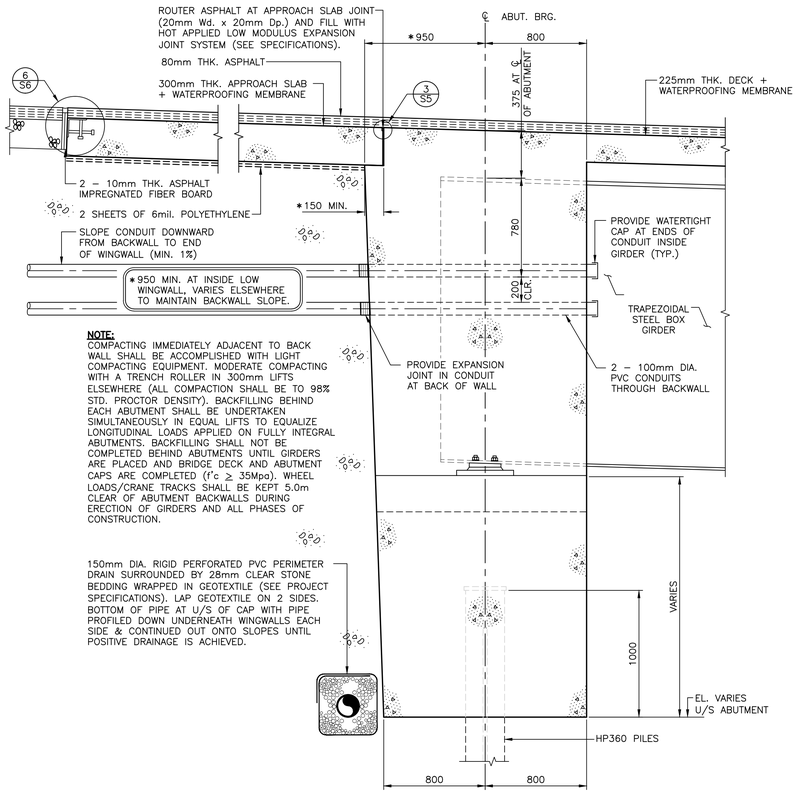
drawing / dessin

ABUTMENT AND WINGWALL ELEVATIONS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

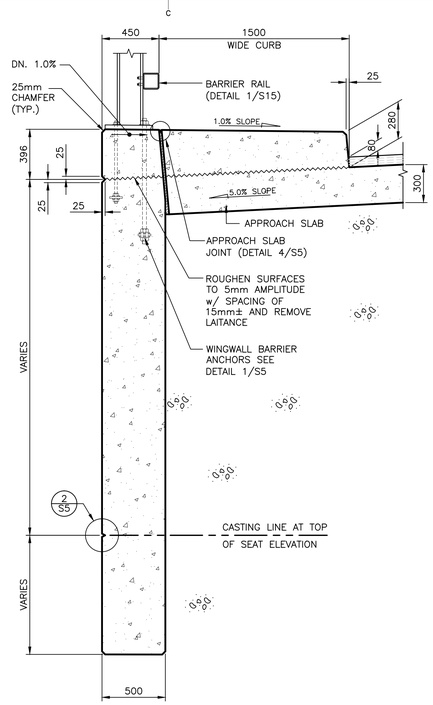
drawing no. / no. du dessin: S4



SECTION – TYPICAL ABUTMENT A S3

SCALE : 1:20

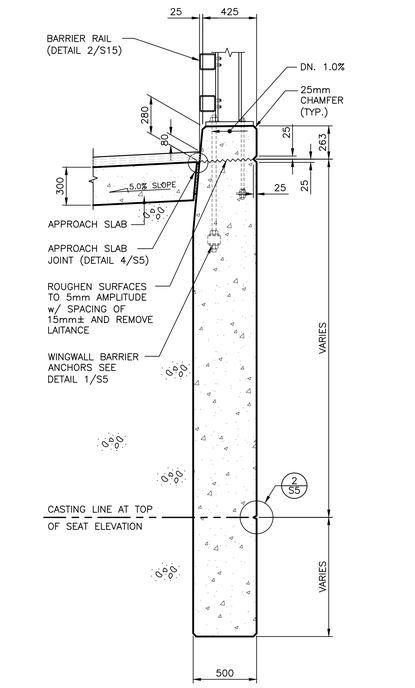
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – NORTH WINGWALL AND BARRIER B S3

SCALE : 1:20

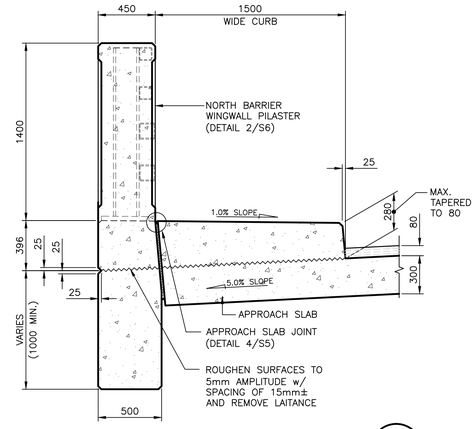
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – SOUTH WINGWALL AND BARRIER C S3

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – NORTH CRASH BLOCK D S3

SCALE : 1:20

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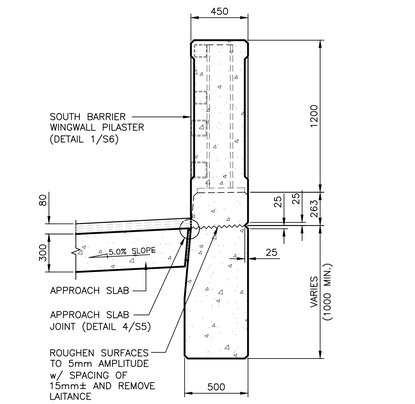

SECTION – SOUTH CRASH BLOCK E S3

SCALE : 1:20

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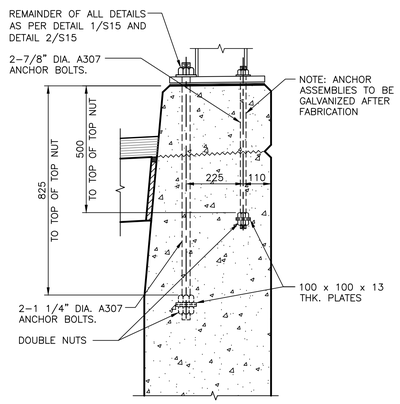

DETAIL – WINGWALL BARRIER POST ANCHORS 1 S5

SCALE : 1:10

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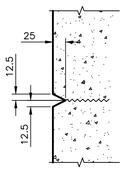

DETAIL – RECESS 2 S4

SCALE: 1:5

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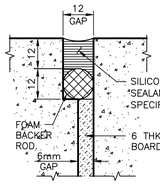
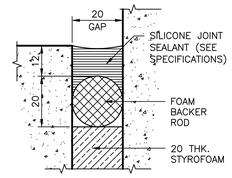


DETAIL – EXPANSION JOINT TYPE A 3 S5

SCALE : 1:1

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



DETAIL – EXPANSION JOINT TYPE B 4 S5

SCALE : 1:1

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

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
DATE Oct 27, 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

ABUTMENT SECTIONS AND DETAILS

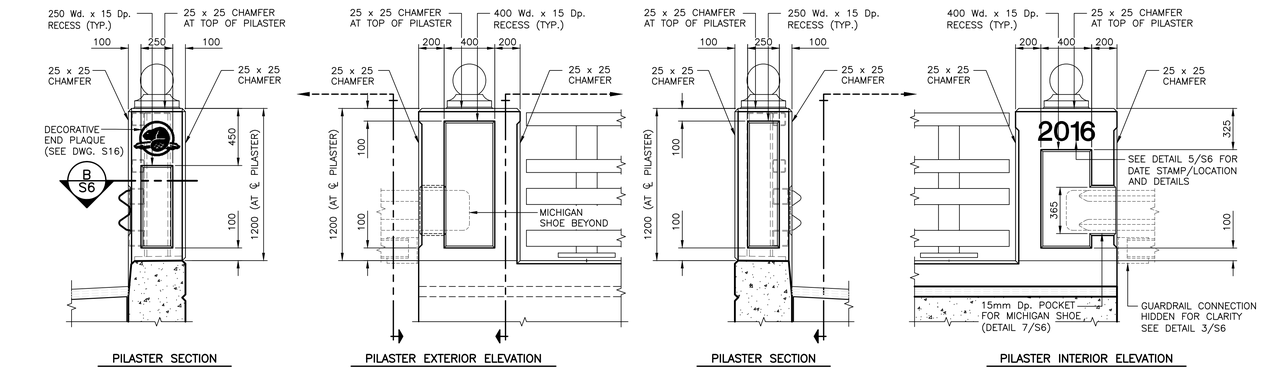
designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	

Tender / Soumission

PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S5



PILASTER SECTION | PILASTER EXTERIOR ELEVATION | PILASTER SECTION | PILASTER INTERIOR ELEVATION

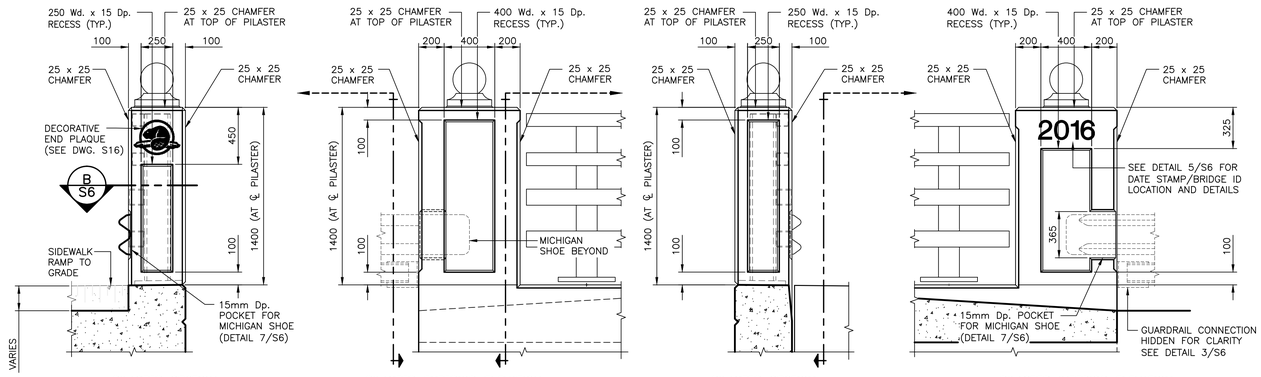
SOUTH WEST WINGWALL PILASTER SHOWN, SOUTH EAST WINGWALL PILASTER SIMILAR

NOTE:
1. ALL PILASTERS TO BE VERTICAL (PLUMB) IN BOTH DIRECTIONS.
2. RECESS SECTION SIMILAR AS PER SECTION B/S6.
3. REFER TO DRAWING S16 FOR DECORATIVE END PLAQUE DETAILS AND LOCATION ON PILASTER.

DETAIL – SOUTH BARRIER PILASTER 1/S5

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



PILASTER SECTION | PILASTER EXTERIOR ELEVATION | PILASTER SECTION | PILASTER INTERIOR ELEVATION

NORTH EAST WINGWALL PILASTER SHOWN, NORTH WEST WINGWALL PILASTER SIMILAR

NOTE:
1. ALL PILASTERS TO BE VERTICAL (PLUMB) IN BOTH DIRECTIONS.
2. RECESS SECTION SIMILAR AS PER SECTION B/S6.
3. REFER TO DRAWING S16 FOR DECORATIVE END PLAQUE DETAILS AND LOCATION ON PILASTER.

DETAIL – NORTH BARRIER PILASTER 2/S5

SCALE : 1:20

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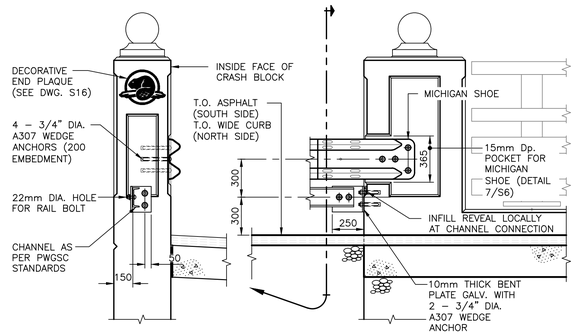

DETAIL – TYPICAL GUARDRAIL CONNECTION 3/S2

SCALE : 1:20

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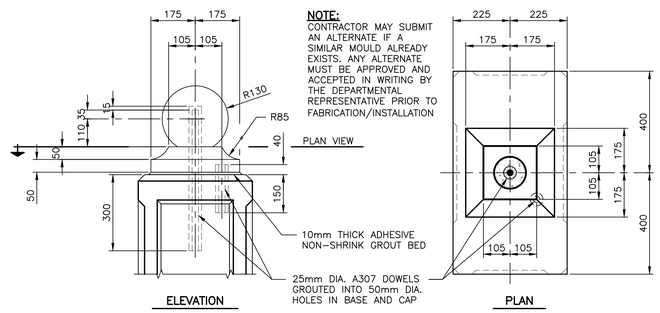
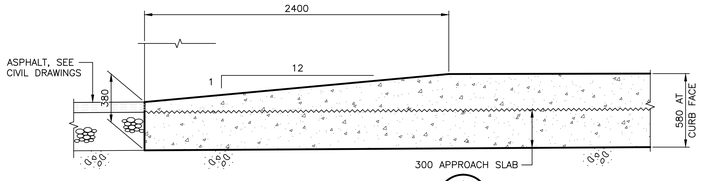


NOTE:
CONTRACTOR MAY SUBMIT AN ALTERNATE IF A SIMILAR MOULD ALREADY EXISTS. ANY ALTERNATE MUST BE APPROVED AND ACCEPTED IN WRITING BY THE DEPARTMENTAL REPRESENTATIVE PRIOR TO FABRICATION/INSTALLATION

DETAIL – TYPICAL CONCRETE POST CAP 4/S1

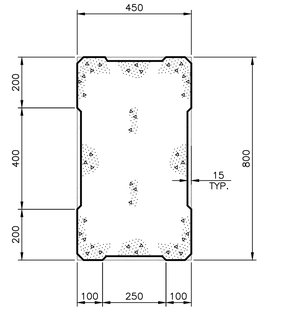
SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION A/S3

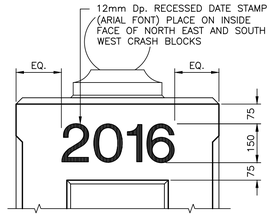
SCALE : N.T.S.



SECTION B/S6

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

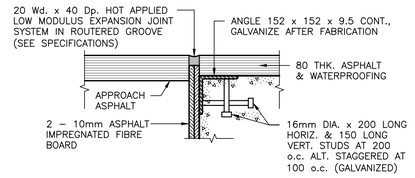


DATE STAMP

DETAIL – TYPICAL PILASTER REVEAL 5/S2

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

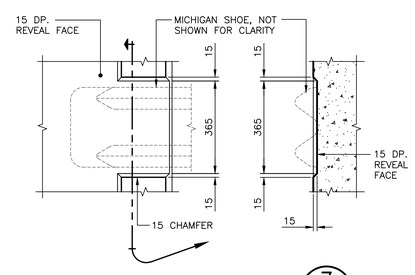


TYPICAL APPROACH SLAB EDGE ANGLE AND EXPANSION JOINT SYSTEM

DETAIL – APPROACH SLAB EDGE ANGLE 6/S3

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – MICHIGAN SHOE POCKET 7/S6

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

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DATE Oct 27 2015
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0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

WINGWALL PILASTERS SECTIONS AND DETAILS

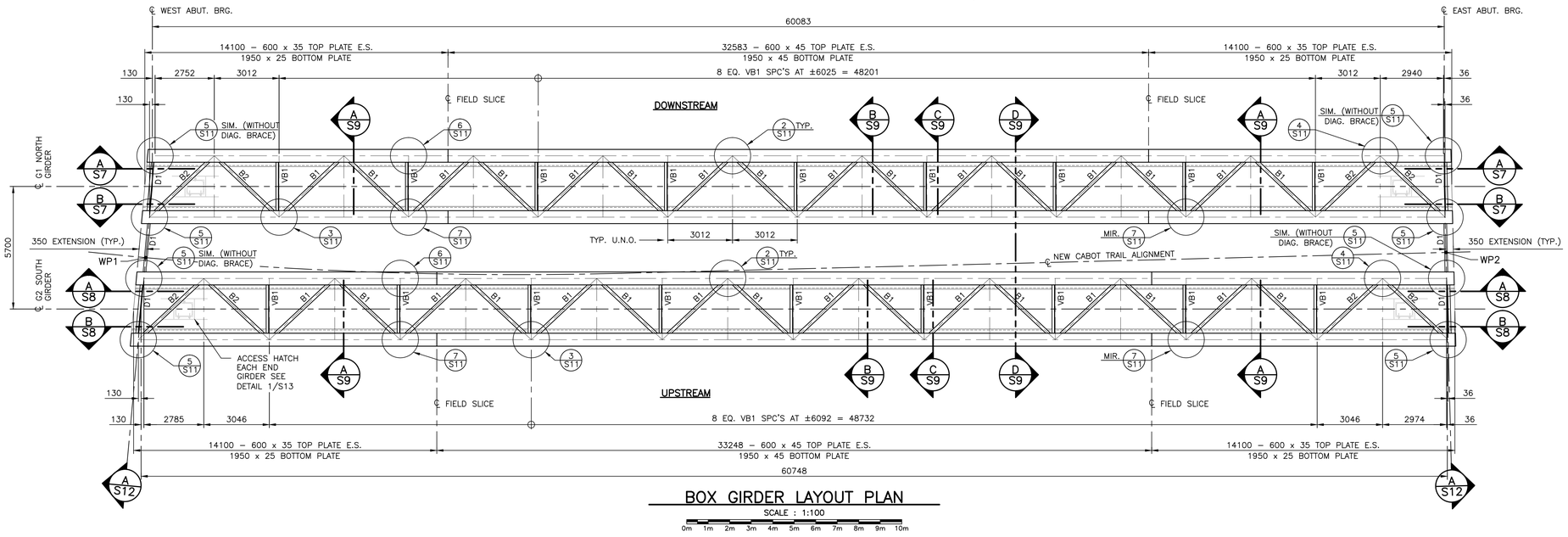
designed / conçu	PAUL BURKE	
date	JULY 2015	
drawn / dessiné	GR MATHESON	
date	JULY 2015	
approved / approuvé	ROBBIE FRASER	
date	JULY 2015	

Tender / Soumission
PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S6

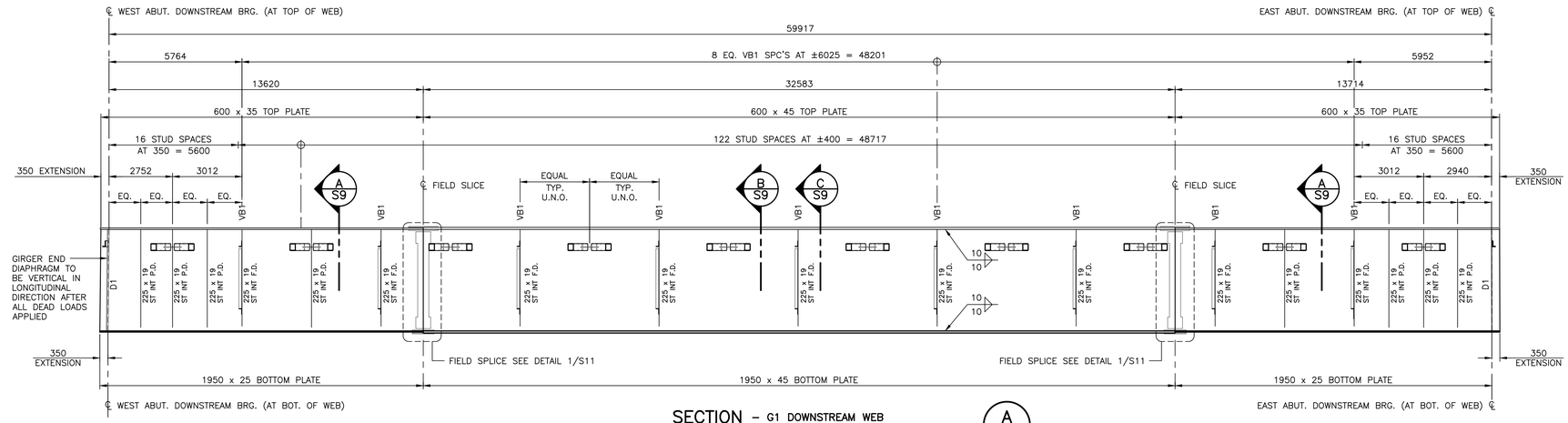
PCA B1 (2004)



BOX GIRDER LAYOUT PLAN

SCALE : 1:100

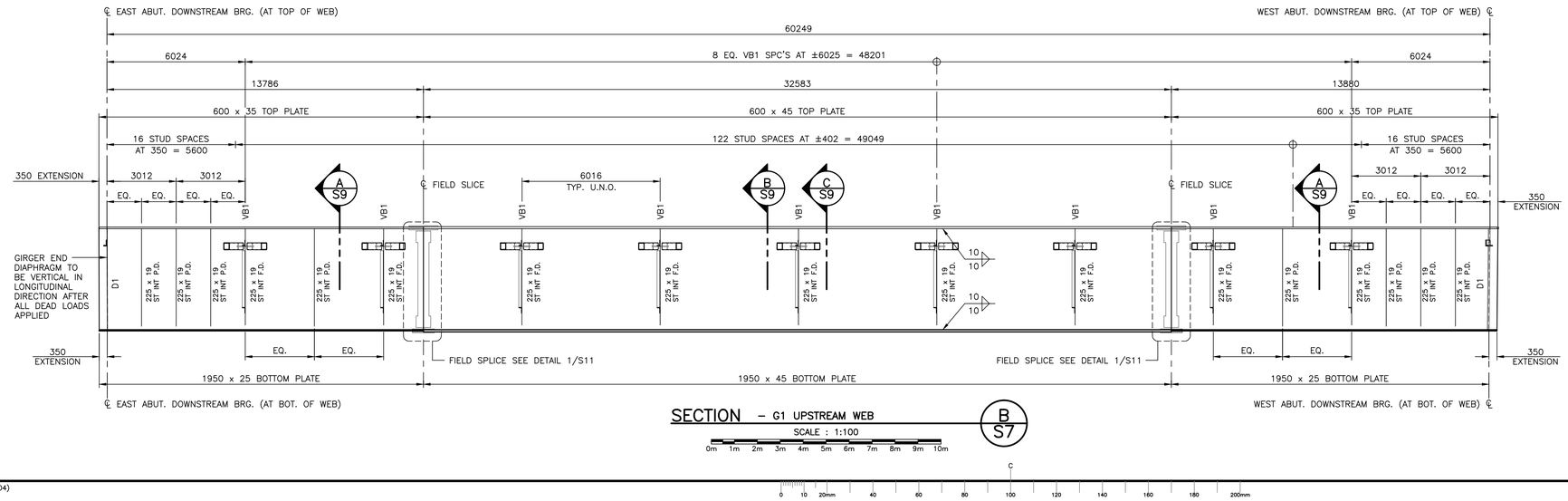
0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



SECTION – G1 DOWNSTREAM WEB (A S7)

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



SECTION – G1 UPSTREAM WEB (B S7)

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

- D1 ------ TYPICAL ABUTMENT DIAPHRAGM (SECTION A/S12)
- VB1 ------ TYPICAL INTERIOR DIAPHRAGM (SECTION C/S9)
- B1 ------- HSS 127 x 127 x 9.5 BRACING
- B2 ------- HSS 127 x 127 x 13 BRACING
- ST INT FD -- STIFFENER INTERIOR – FULL DEPTH (DETAIL 3/S9 AND 4/S9)
- ST INT PD -- STIFFENER INTERIOR – PARTIAL DEPTH (DETAIL 3/S9 AND 5/S9)

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER – PROVINCE OF NOVA SCOTIA – P.J. Burke – 9692 – DATE Oct 27 2015

revisions		date
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project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

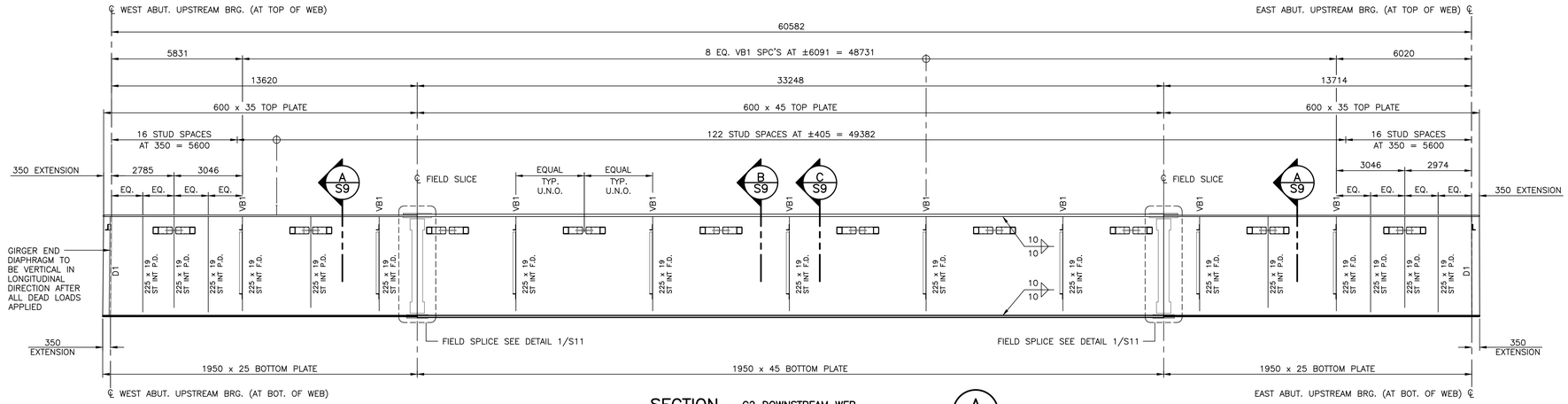
BOX GIRDER LAYOUT PLAN AND SECTIONS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S7

PCA B1 (2004)



SECTION – G2 DOWNSTREAM WEB (A S7)

SCALE : 1:100

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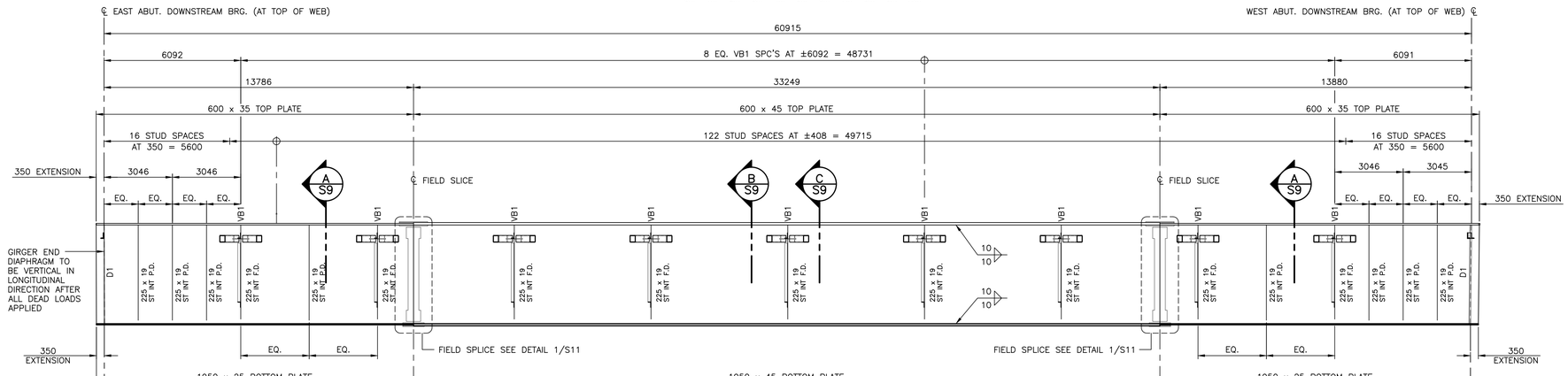

SECTION – G2 UPSTREAM WEB (B S7)

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

- D1 ------ TYPICAL ABUTMENT DIAPHRAGM (SECTION A/S12)
- VB1 ------ TYPICAL INTERIOR DIAPHRAGM (SECTION C/S9)
- B1 ------- HSS 127 x 127 x 9.5 BRACING
- B2 ------- HSS 127 x 127 x 13 BRACING
- ST INT FD -- STIFFENER INTERIOR – FULL DEPTH (DETAIL 3/S9 AND 4/S9)
- ST INT PD -- STIFFENER INTERIOR – PARTIAL DEPTH (DETAIL 3/S9 AND 5/S9)

STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING C.S.A. STANDARDS AND A.S.T.M. STANDARDS:
   - A) BOX GIRDERS: WEBS, FLANGE PLATES, STIFFENERS, SPLICE PLATES, ABUTMENT DIAPHRAGMS TO G40.21M – 350WT CAT 2.
   - B) ANGLES, WIDE FLANGE BARRIER POSTS, AND MISC. PLATES TO G40.21M – 350W OR EQUIVALENT.
   - C) HSS RAILS & BRACES: ASTM A500 GRADE C.
   - D) HIGH STRENGTH BOLTS ASTM A325 TYPE 1, THREADS TO BE EXCLUDED FROM ALL SHEAR PLANES (U.N.O.).
   - E) BEARING PLATE ANCHOR BOLTS ASTM A307.
2. ALL WELDING SHALL BE IN ACCORDANCE WITH C.S.A. STANDARD W59, LATEST EDITION.
3. SHEAR STUD CONNECTORS SHALL BE MANUFACTURED FROM COLD DRAWN STEEL CONFORMING TO ASTM A29, GRADES 1010 TO 1020.
4. FABRICATE, DELIVER TO SITE AND ERECT STEELWORK IN ACCORDANCE WITH CAN/CSA-S6-14.
5. COAT ALL STEEL IN ACCORDANCE WITH PROJECT SPECIFICATIONS. PRIMER COAT ONLY ON ALL INSIDE SURFACES OF BOX. NO PAINT ON TOP SURFACES OF TOP FLANGES. DRILLED HOLES IN GIRDER WEBS AND BOTTOM FLANGE PLATES FOR INTEGRAL ABUTMENT REINFORCING SHALL BE FULLY COATED TO ENSURE ISOLATION BETWEEN GIRDER AND GALVANIZED ABUTMENT REINFORCING STEEL TO AVOID POTENTIAL OF GALVANIC REACTION. BOX GIRDER DRAIN HOLES SHALL ALSO BE FULLY COATED. CONFIRM TOP COAT COLOR WITH DEPARTMENTAL REPRESENTATIVE PRIOR TO FABRICATION.
6. GRIND ALL BEARING STIFFENERS AT ABUTMENTS TO BEAR AT BOTTOM, THEN WELD.
7. ALL FAYING SURFACES AT BOLTED CONNECTIONS SHALL BE CLASS B, OR BETTER. ALL BOLTS BROUGHT TO SLIP CRITICAL CONDITION BY TURN OF NUT METHOD.
8. CONTRACTOR RESPONSIBLE FOR LIFTING & STABILITY OF GIRDERS DURING ALL PHASES OF CONSTRUCTION.
9. D1 DIAPHRAGMS TO BE VERTICAL IN THE LONGITUDINAL DIRECTION AFTER ALL DEAD LOAD DEFLECTIONS OCCUR WITH BEARING STIFFENERS ORIENTED PERPENDICULAR TO 5% CROSS FALL IN TRANSVERSE DIRECTION. ALL OTHER STIFFENERS (INCLUDING VB1 LOCATIONS) TO BE PERPENDICULAR TO FLANGES.
10. STUD HEIGHTS VARY ALONG SPAN AND ARE DEPENDENT ON AS-BUILT GIRDER ELEVATIONS AND CAMBERS. THEORETICAL STUD HEIGHTS CAN BE DETERMINED USING DETAIL 6/S9 (MAX. AND MIN. PROJECTION INTO DECK), ALONG WITH THEORETICAL HAUNCH DEPTHS ALONG SPAN. THEORETICAL HAUNCH DEPTHS CAN BE DETERMINED AT EACH SCREED STATION USING FINAL GIRDER ELEVATIONS AT EACH ABUTMENT, THE THEORETICAL CAMBER PROFILE AND THE TOP OF DECK FINAL ELEVATIONS INDICATED ON S14.
11. BOTTOM BEARING POINT OF SLAB OVERHANG BRACKET SHALL BE ORIENTATED NO HIGHER THAN 25mm ABOVE EXTERIOR GIRDER BOTTOM FLANGE/WEB INTERFACE DURING DECK CASTING. CONTRACTOR SHALL ENSURE STABILITY OF GIRDERS DURING ALL PHASES OF CONSTRUCTION.
12. BOX GIRDERS ARE FRACTURE CRITICAL MEMBERS AS PER SECTION 12 OF CSA W59-13 AND SECTION 10 OF CSA S6-14. SPECIFICALLY, THE BOTTOM FLANGE AND THE LOWER 1800mm PORTION OF GIRDER WEB ALONG THE ENTIRE SPAN, ALONG WITH THE BOTTOM FLANGE AND WEB SPLICE PLATES, SHALL ALL BE CONSIDERED FRACTURE CRITICAL COMPONENTS OF THE STRUCTURE.

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REGISTERED PROFESSIONAL ENGINEER – PROVINCE OF NOVA SCOTIA – P.J. Burke 9692 – DATE Oct 27, 2015

revisions		date
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project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

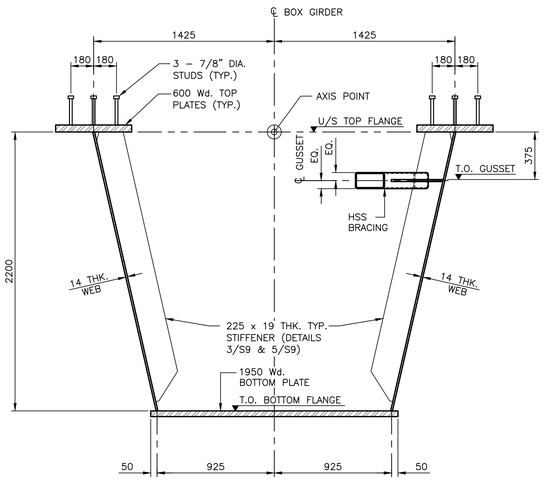
drawing / dessin

BOX GIRDER SECTIONS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number	321	no. du projet
drawing no.	S8	no. du dessin

PCA B1 (2004)

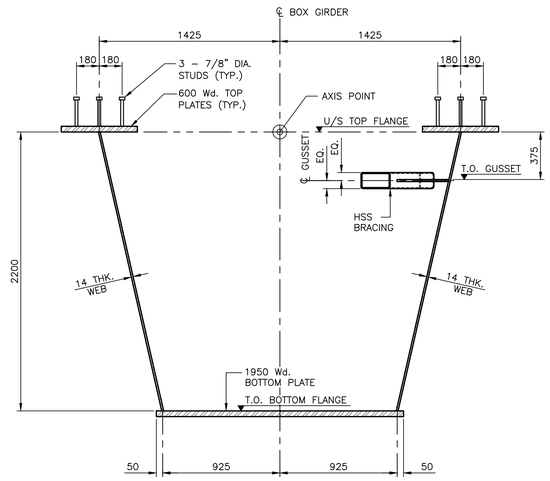
0 10 20mm 40 60 80 100 120 140 160 180 200mm



SECTION A S7

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION B S7

SCALE : 1:20

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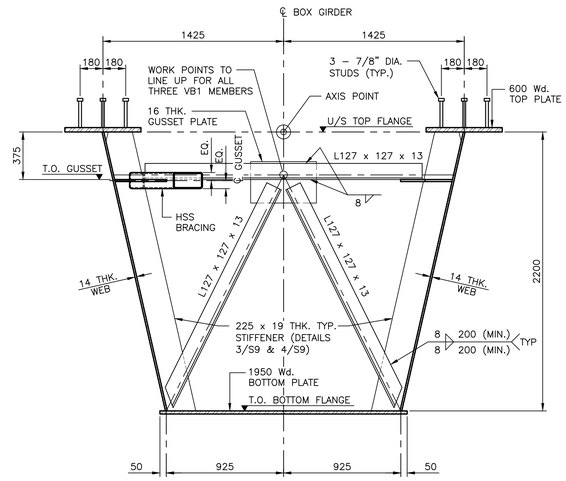

SECTION – TYPICAL VB1 INTERIOR DIAPHRAGM C S7

SCALE : 1:20

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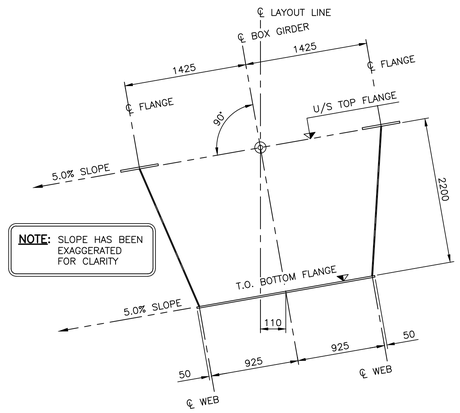
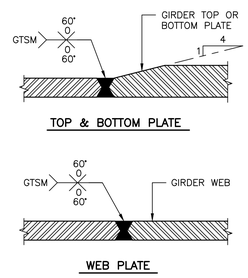


TYPICAL BOX GIRDER DESIGN CRITERIA 1 S2

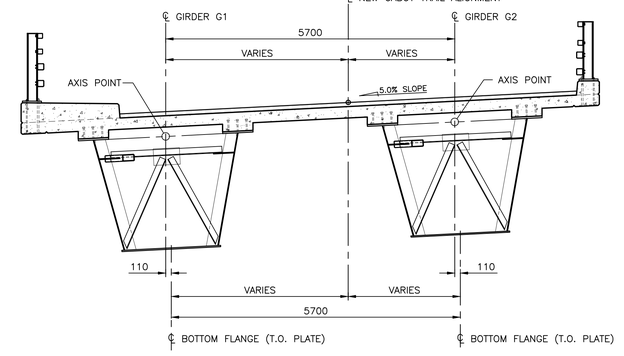
SCALE: N.T.S.



DETAIL – OPTIONAL SHOP SPLICE 2 S9

SCALE : 1:10

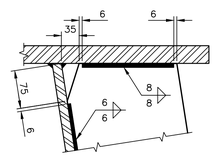
0mm 100 200 300 400 500 600 700 800 900 1000mm



TYPICAL SECTION D S7

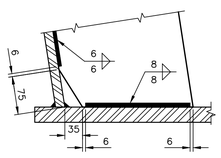
SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m



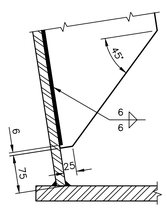
DETAIL 3 S7

SCALE: N.T.S.



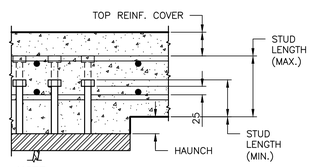
DETAIL 4 S7

SCALE: N.T.S.



DETAIL 5 S7

SCALE: N.T.S.



NOTE:
CONTRACTOR RESPONSIBLE FOR ACTUAL STUD LENGTHS BASED ON AS-BUILT CAMBERS AND AS-BUILT BEARING ELEVATIONS.

DETAIL – TYPICAL STUD LENGTHS 6 S8

SCALE : N.T.S.

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
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project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

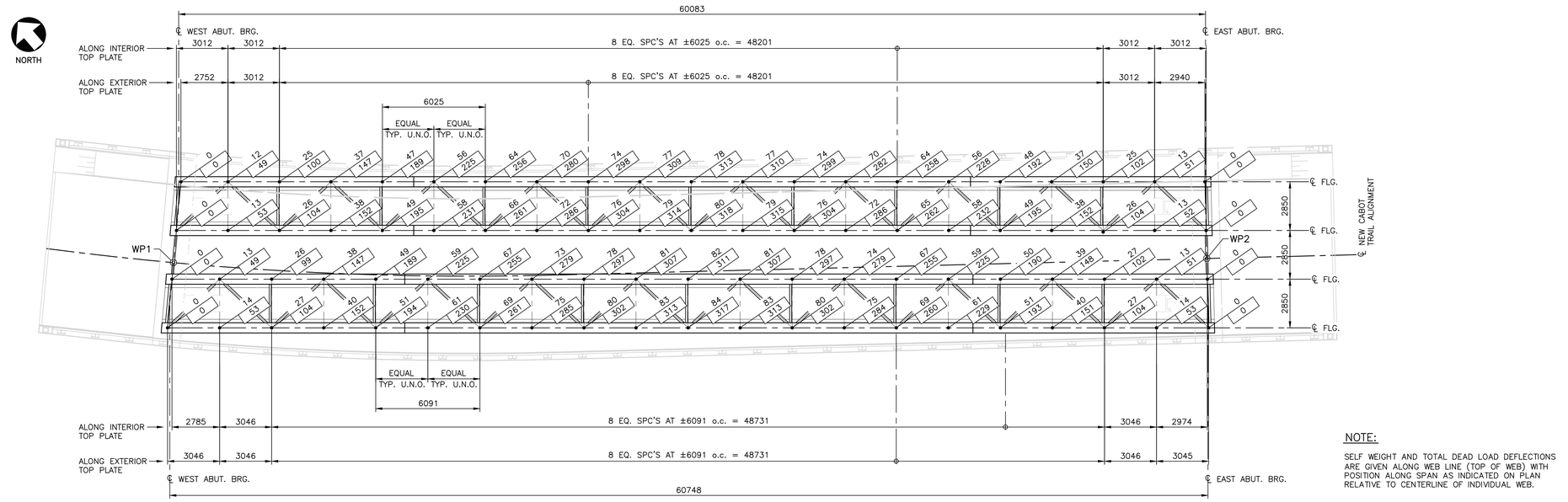
drawing / dessin

BOX GIRDER
SECTIONS AND DETAILS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S9



DEAD LOAD DEFLECTION DIAGRAM

SCALE : 1:125

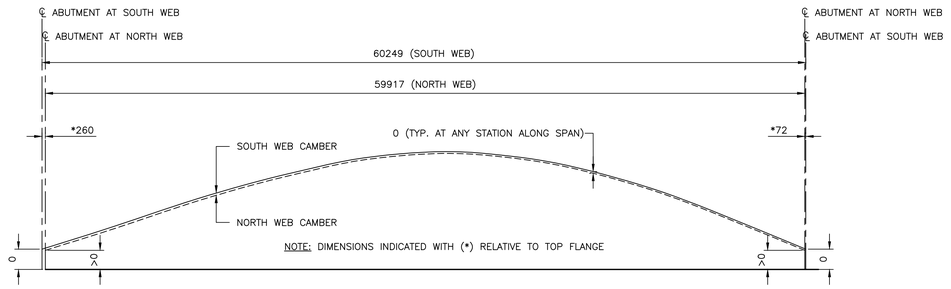
0m 1 2 3 4 5 6 7 8 9 10m

NOTE:

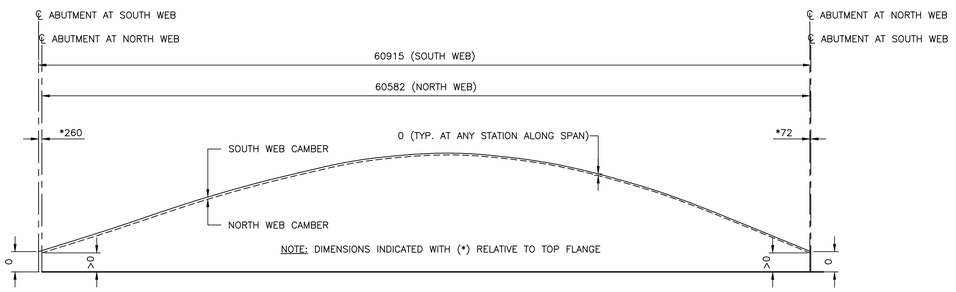
SELF WEIGHT AND TOTAL DEAD LOAD DEFLECTIONS ARE GIVEN ALONG WEB LINE (TOP OF WEB) WITH POSITION ALONG SPAN AS INDICATED ON PLAN RELATIVE TO CENTERLINE OF INDIVIDUAL WEB.

XX ← BARE STEEL DEFLECTION (mm)

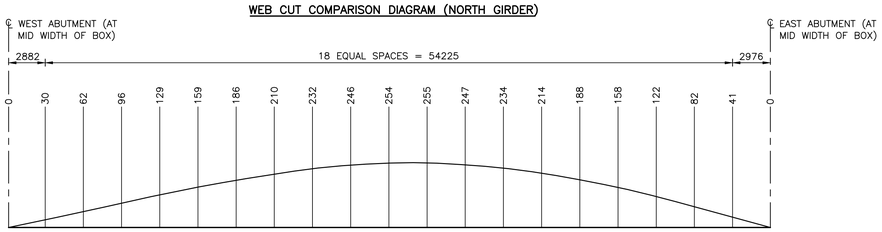
XX ← TOTAL DEAD LOAD DEFLECTION (mm)



WEB CUT COMPARISON DIAGRAM (NORTH GIRDER)

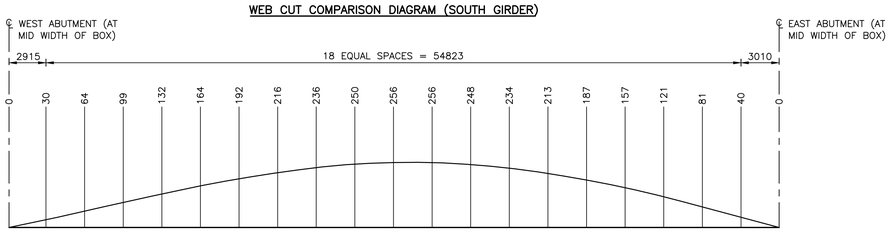


WEB CUT COMPARISON DIAGRAM (SOUTH GIRDER)



BOX GIRDER WEB CUTS (NORTH GIRDER)

NOTE: WEB CUT DIAGRAMS ARE RELATIVE TO CENTERLINE BOX WITH WEBS CAMBERED BY SAME AMOUNT AT EACH LOCATION (STATION) ALONG SPAN TO ENSURE FIT-UP OF BOTTOM PLATE TO U/S WEBS (REFER TO WEB CUT COMPARISON DIAGRAM).



BOX GIRDER WEB CUTS (SOUTH GIRDER)

NOTE: WEB CUT DIAGRAMS ARE RELATIVE TO CENTERLINE BOX WITH WEBS CAMBERED BY SAME AMOUNT AT EACH LOCATION (STATION) ALONG SPAN TO ENSURE FIT-UP OF BOTTOM PLATE TO U/S WEBS (REFER TO WEB CUT COMPARISON DIAGRAM).

CAMBER /WEB CUT DIAGRAMS

SCALE: 1:200

0m 5m 10m 15m 20m 25m

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

Parcs Canada Parks Canada

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PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
Oct 27 DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

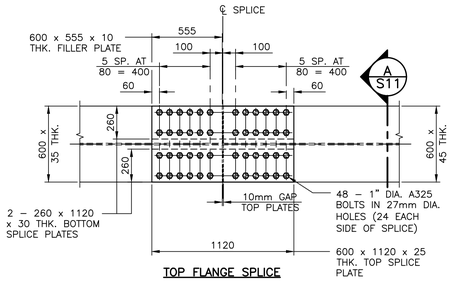
BOX GIRDER
CAMBER PROFILES

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

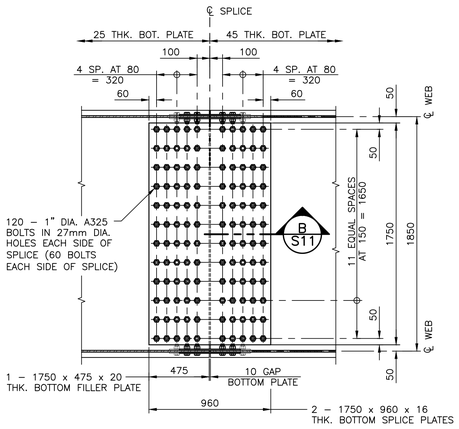
project number / no. du projet: 321

drawing no. / no. du dessin: S10

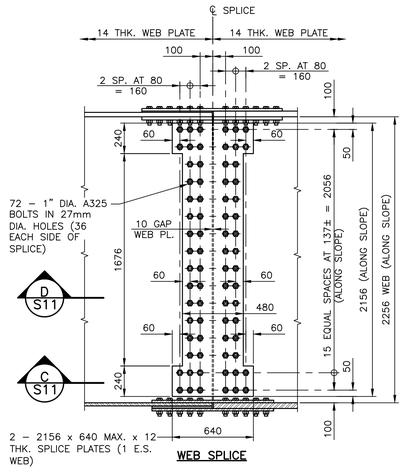
PCA B1 (2004)



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE



WEB SPLICE

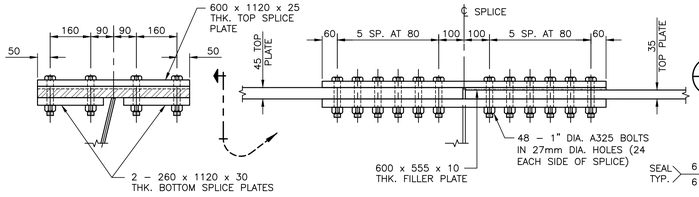
DETAIL – TYPICAL GIRDER SPLICE 1 S7

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

FIELD SPLICE INSTALLATION NOTES:

1. ALL BOLTS BROUGHT TO SLIP CRITICAL CONDITION BY TURN–OF–NUT METHOD.
2. ALL THREADS EXCLUDED FROM SHEAR PLANES
3. ALL FAYING SURFACES TO BE CLASS B SLIP SURFACE OR BETTER.
4. ALL BOLT HOLES TO BE DRILLED RATHER THAN PUNCHED.
5. ALL BOLTS SHALL BE ASTM A325 TYPE 1.
6. SPLICES DESIGNED FOR IN–SERVICE CONDITION ONLY. CONTRACTOR MUST VERIFY CAPACITY OF ALL FIELD SPLICES BASED ON METHOD OF GIRDER ERECTION, DURING DECK CASTING, AND ALL OTHER STAGES OF CONSTRUCTION.
7. TOP FLANGE STUDS INTERSECTED BY TOP FLANGE SPLICE PLATES TO BE REPLACED WITH AN EQUIVALANT NUMBER OF STUDS WELDED DIRECTLY TO TOP OF SPLICE PLATE.

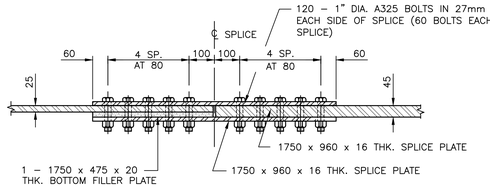


SECTION – TOP FLANGE A S11

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

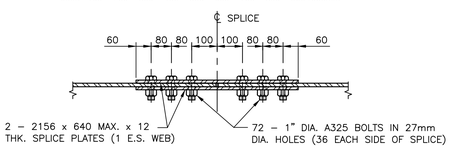
NOTE:
TOP FLANGE STUDS INTERSECTED BY TOP FLANGE SPLICE PLATES TO BE REPLACED WITH AN EQUIVALENT NUMBER OF STUDS WELDED DIRECTLY TO TOP OF SPLICE PLATE (STUD HEIGHTS ON SPLICE PLATES TO BE DETERMINED BY FABRICATOR BASED ON AS BUILT CAMBERS)



SECTION – BOTTOM PLATE B S11

SCALE : 1:10

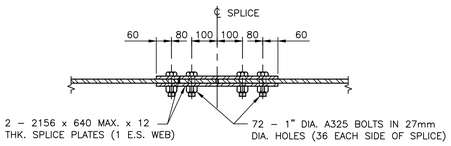
0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION – WEB PLATE C S11

SCALE : 1:10

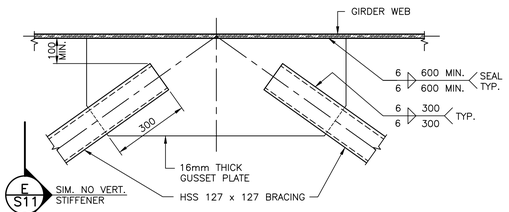
0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION – WEB PLATE D S11

SCALE : 1:10

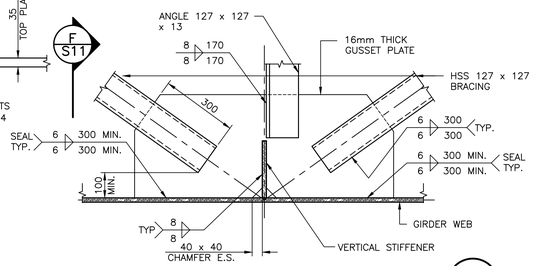
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – GUSSET PLATE 2 S7

SCALE : 1:10

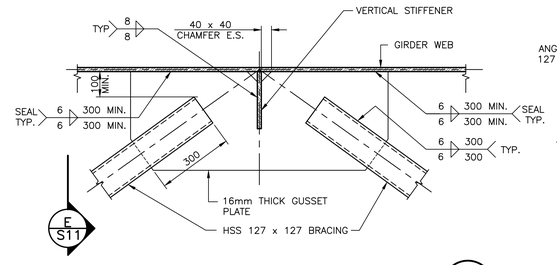
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – GUSSET PLATE 3 S7

SCALE : 1:10

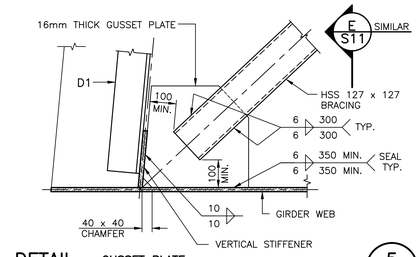
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – GUSSET PLATE 4 S7

SCALE : 1:10

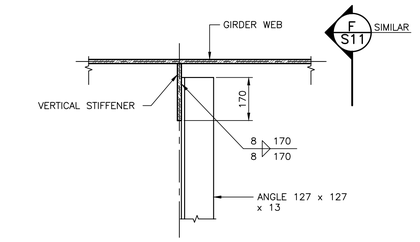
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – GUSSET PLATE 5 S7

SCALE : 1:10

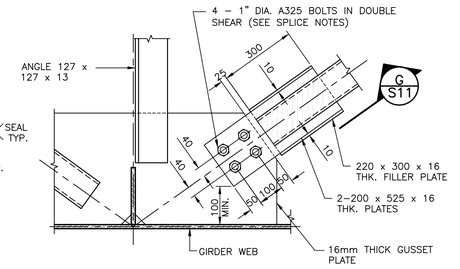
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – STIFFENER CONNECTION 6 S7

SCALE : 1:10

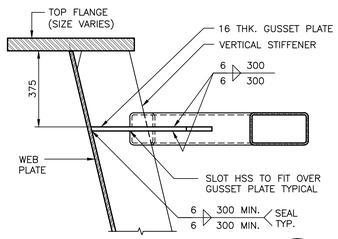
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – B1 FIELD CONNECTION 7 S7

SCALE : 1:10

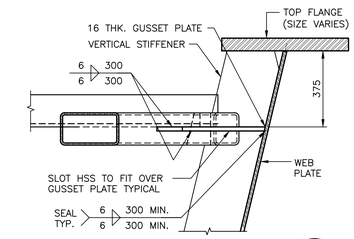
0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION E S11

SCALE : 1:10

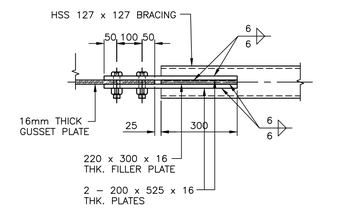
0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION F S11

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION G S11

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
Oct 27 DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

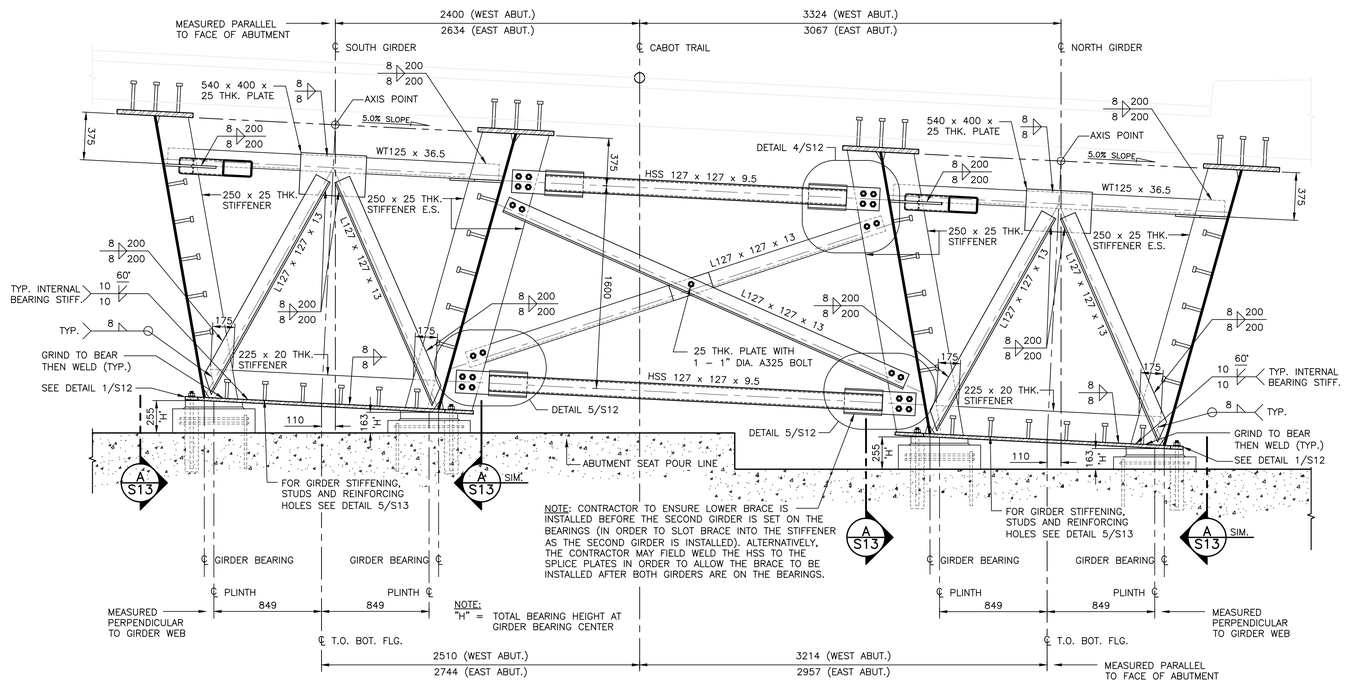
drawing / dessin

BOX GIRDER
DETAILS

designed PAUL BURKE conçu
date JULY 2015
drawn GR MATHESON dessiné
date JULY 2015
approved ROBBIE FRASER approuvé
date JULY 2015
Tender Soumission
PCA Project Manager Administrateur de projets APC

project number / no. du projet
321

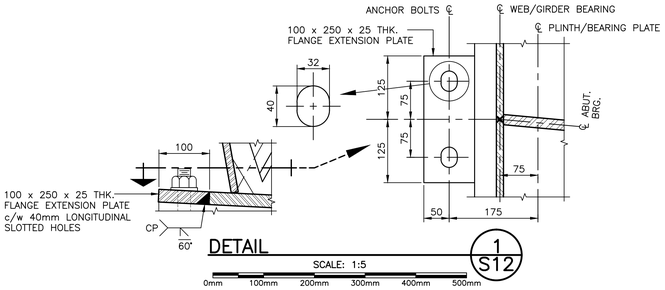
drawing no. / no. du dessin
S11



SECTION – DIAPHRAGM D1 WEST ABUTMENT EAST ABUTMENT MIRRORED (A S4)

SCALE : 1:20

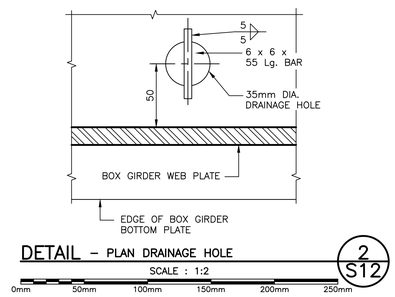
0mm 500mm 1000mm 1500mm 2000mm 2500mm



DETAIL (1 S12)

SCALE: 1:5

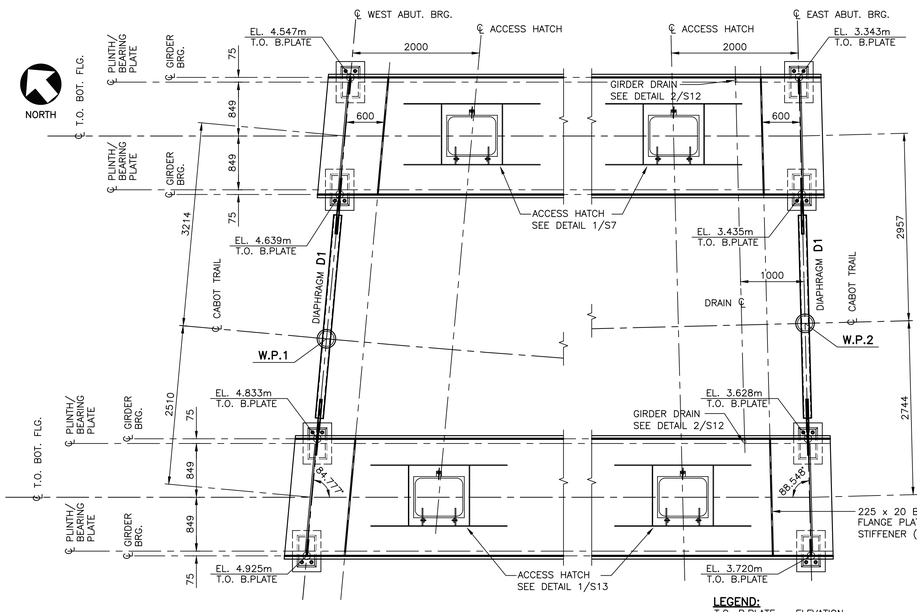
0mm 100mm 200mm 300mm 400mm 500mm



DETAIL – PLAN DRAINAGE HOLE (2 S12)

SCALE : 1:2

0mm 50mm 100mm 150mm 200mm 250mm

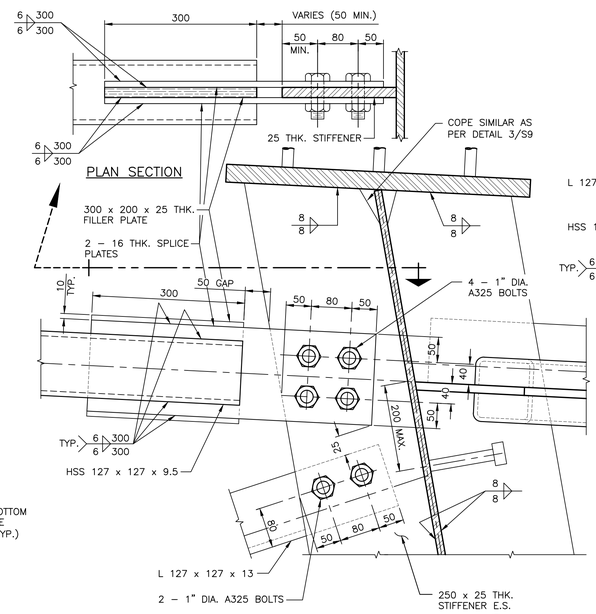


DETAIL – BEARING LAYOUT PLAN AND ELEVATIONS – HATCH AND DRAIN LOCATION PLAN (3 S4)

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm

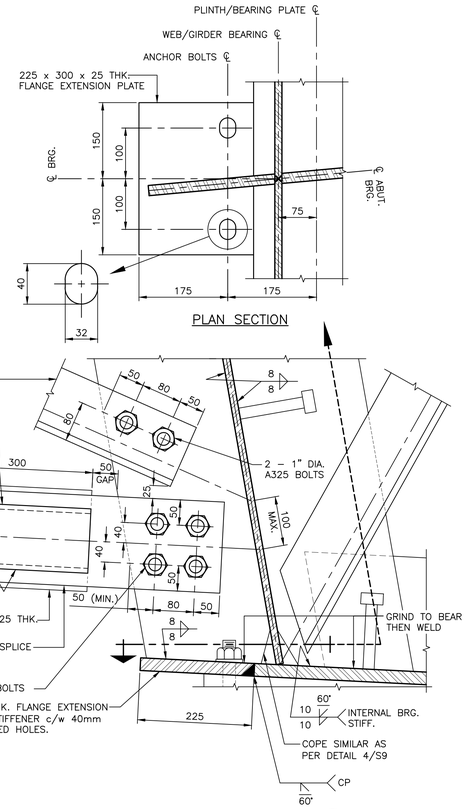
LEGEND:
T.O. B.PLATE = ELEVATION TOP OF BEARING PLATE AT CENTER OF GIRDER BEARING.



DETAIL (4 S12)

SCALE: 1:5

0mm 100mm 200mm 300mm 400mm 500mm



DETAIL (5 S12)

SCALE: 1:5

0mm 100mm 200mm 300mm 400mm 500mm

PCA B1 (2004)

0	ISSUED FOR TENDER	10/27 2015
revisions		date

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

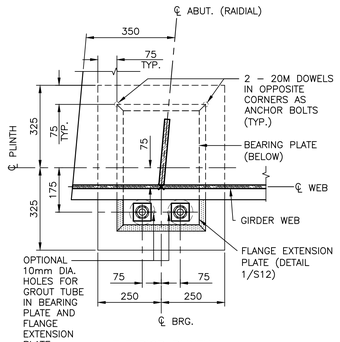
drawing / dessin

DIAPHRAGM D1 SECTION AND DETAILS

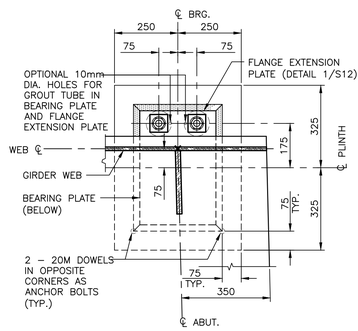
designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S12



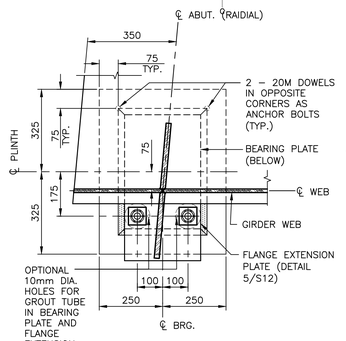
EXTERIOR PLINTH GEOMETRY AT WEST ABUTMENT



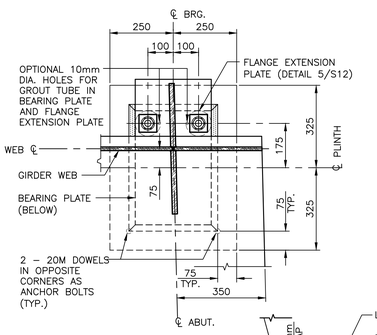
EXTERIOR PLINTH GEOMETRY AT EAST ABUTMENT

BEARING NOTES:

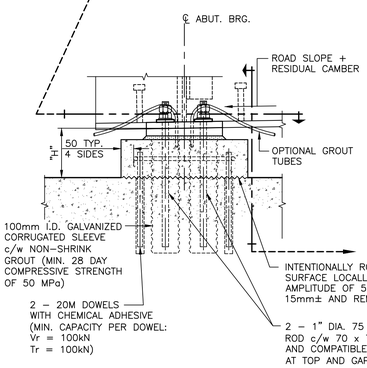
1. CORRUGATED SLEEVES PROVIDE A FIT–UP TOLERANCE OF ±35mm BETWEEN THE BOX GIRDER BOTTOM FLANGE AND THE ANCHOR BOLTS.
2. CAREFUL COORDINATION IS REQUIRED BETWEEN GENERAL CONTRACTOR AND STEEL FABRICATOR TO ENSURE CORRECT FIT–UP OF BOX GIRDER WITH AS–BUILT ABUTMENT GEOMETRY.
3. FOR 'H' > 250mm USE 2 – 15M CLOSED TIES. 50mm CLEAR FROM ABUTMENT SEAT TO BOTTOM TIE. FOR 'H' < 250mm USE 1 – 15M CLOSED TIE.



INTERIOR PLINTH GEOMETRY AT WEST ABUTMENT



INTERIOR PLINTH GEOMETRY AT EAST ABUTMENT

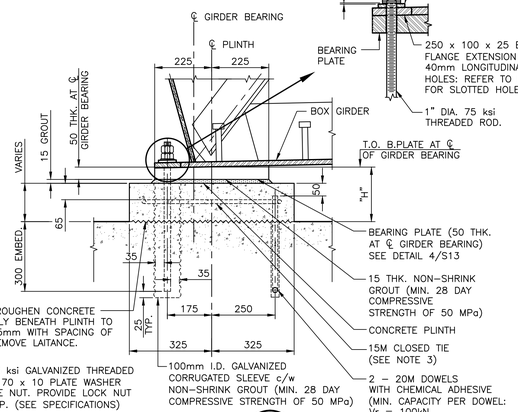


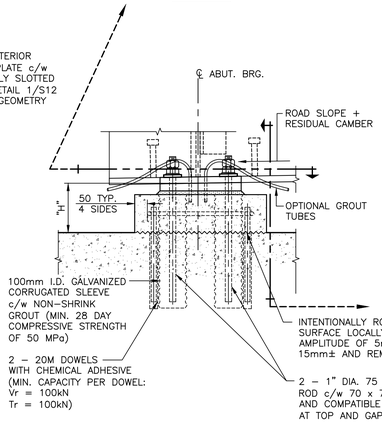
SECTION – EXTERIOR GIRDER BEARING

A / S4

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



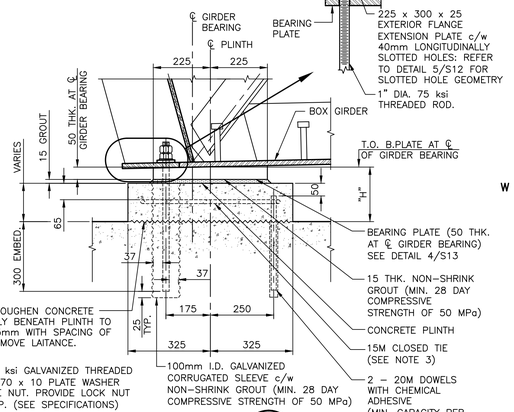


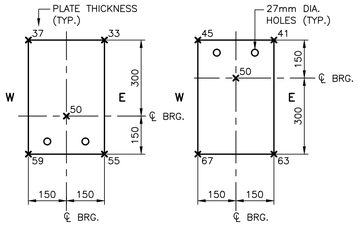
SECTION – INTERIOR GIRDER BEARING

B / S4

SCALE : 1:10

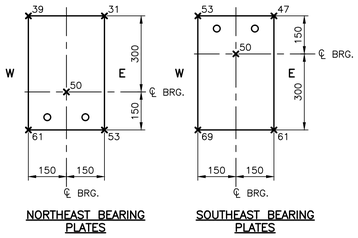
0mm 100 200 300 400 500 600 700 800 900 1000mm





NORTHWEST BEARING PLATES

SOUTHWEST BEARING PLATES



NORTHEAST BEARING PLATES

SOUTHEAST BEARING PLATES

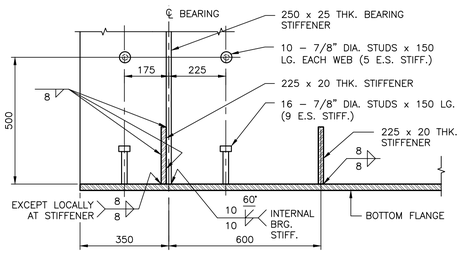
NOTE:
BEARING PLATE, INCLUDING BOLT HOLES SHALL BE COATED TO ENSURE GALVANIC ISOLATION BETWEEN ANCHOR BOLTS AND PLATE.

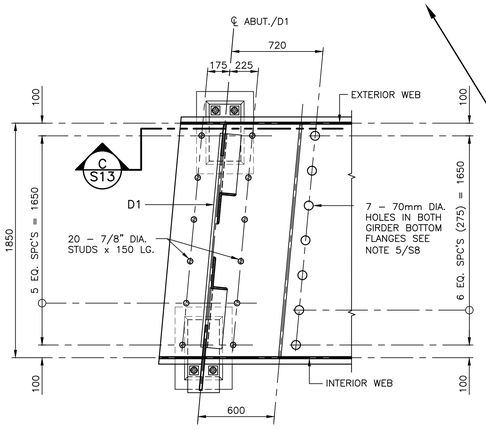
DETAIL – BEARING PLATE

4 / S13

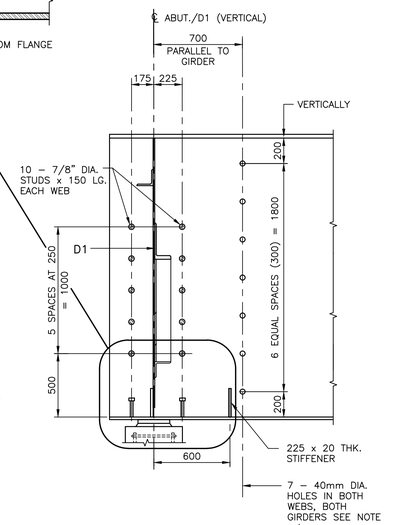
SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm





PLAN – GIRDER BOTTOM FLANGE



DETAIL – REINFORCING HOLES / STUDS

5 / S12

SCALE : 1:20

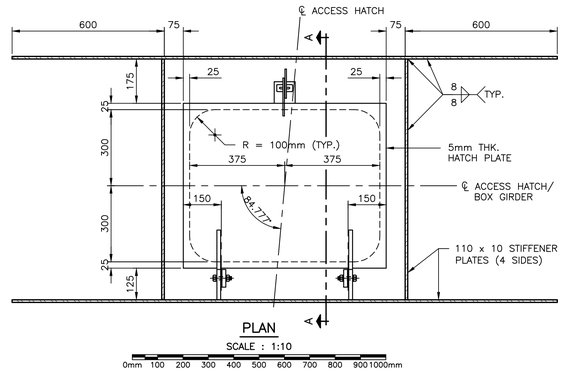
0mm 500mm 1000mm 1500mm 2000mm 2500mm

SECTION – REINFORCING HOLES / STUDS

C / S13

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

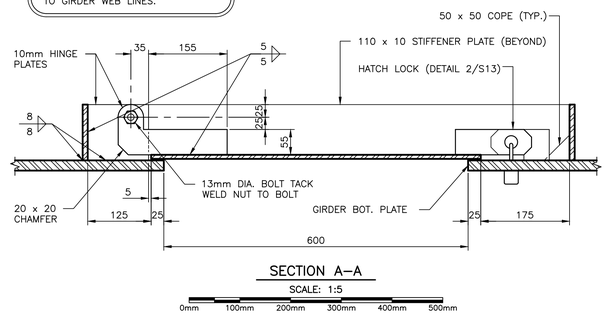


PLAN

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

NOTE:
HATCH TO BE INSTALLED PARALLEL TO GIRDER WEB LINES.



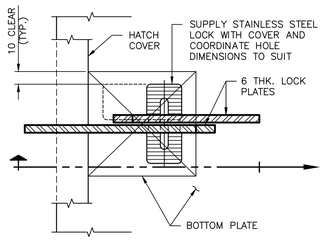
SECTION A–A

SCALE: 1:5

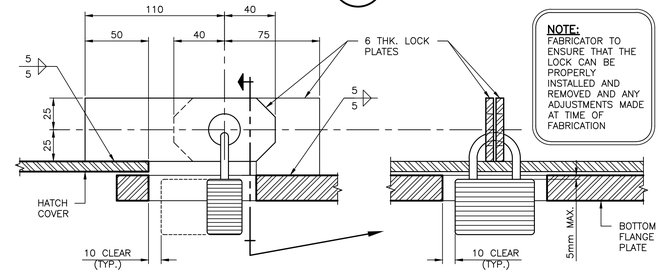
0mm 100mm 200mm 300mm 400mm 500mm

DETAIL – TYPICAL BOX GIRDER ACCESS HATCH

1 / S7



PLAN



SECTION

SECTION

DETAIL – ACCESS HATCH LOCK

2 / S13

SCALE : 1:2

0mm 50mm 100mm 150mm 200mm 250mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — REGISTERED — DATE Oct 27 2015 — P.J. Burke — 9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

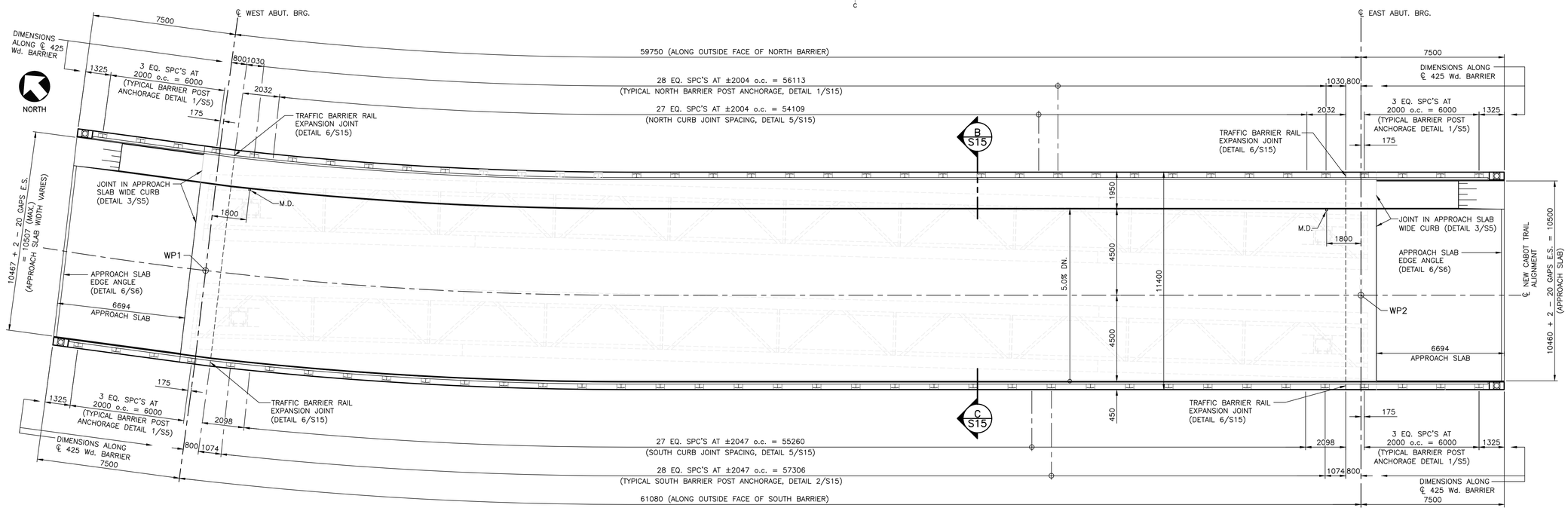
drawing / dessin

BOX GIRDER HATCH AND BEARING DETAILS

designed / conçu	PAUL BURKE
date	JULY 2015
drawn / dessiné	GR MATHESON
date	JULY 2015
approved / approuvé	ROBBIE FRASER
date	JULY 2015
Tender / Soumission	PCA Project Manager / Administrateur de projets APC
project number / no. du projet	321
drawing no. / no. du dessin	S13

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



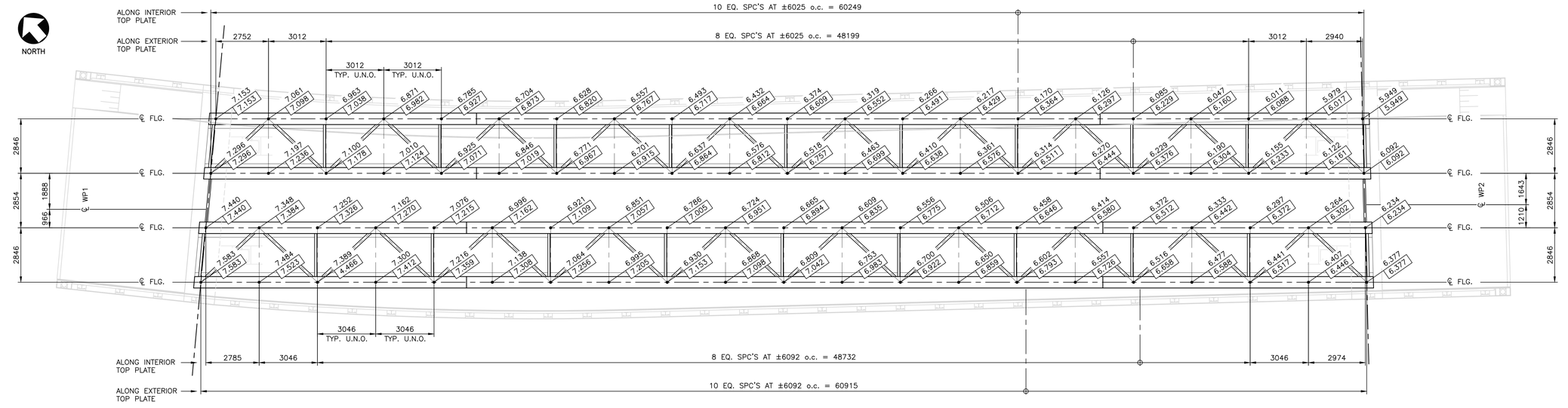
BRIDGE DECK PLAN

SCALE : 1:100

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

LEGEND:

M.D. --- MEMBRANE DRAIN (DETAIL 3/S15)

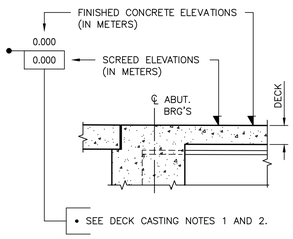


DECK SCREED ELEVATIONS

SCALE : 1:100

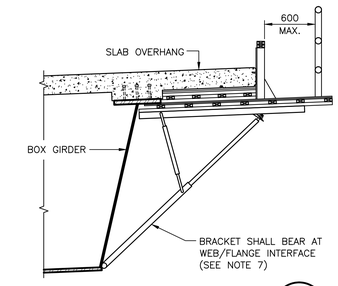
0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

DECK ELEVATION LEGEND:



DECK CONCRETE CASTING NOTES:

1. SCREED ELEVATIONS ARE BASED ON THE DECK PROFILE ELEVATIONS PRIOR TO PLACING CONCRETE DECK, BARRIERS, HAUNCHES AND ASPHALT SURFACE.
2. IT IS ASSUMED THAT THE ENTIRE DECK IS CAST MONOLITHICALLY. IF DECK IS POURED IN SEGMENTS, THE GIVEN SCREED ELEVATIONS MAY NOT BE VALID AND THE CONTRACTOR MUST REVISE THE SCREED ELEVATIONS ACCORDINGLY.
3. IT IS ALSO ASSUMED THAT ENTIRE DECK IS CAST AND REACHES 35 MPa PRIOR TO CASTING BARRIERS, CURBS, AND WATERPROOFING AND PAVING DECK.
4. CASTING SEQUENCE DURING MONOLITHIC DECK CASTING OPERATION: PLACE CONCRETE IN ALL AREAS OF DECK PRIOR TO CASTING INTEGRAL ABUTMENTS. TO ACHIEVE THIS, LEAVE 3m OF DECK AT EACH END OF BRIDGE/ADJACENT TO ABUTMENTS UNTIL CONCRETE IS PLACED IN REMAINDER OF DECK.



DETAIL – TYPICAL OVERHANG SUPPORT 1/S14

SCALE : N.T.S.

OVERHANG NOTES:

1. ALL DECK FORMWORK SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN NOVA SCOTIA.
2. THE OVERHANG BRACKETS SHALL BE ORIENTED AS INDICATED UNLESS AN ALTERNATE DETAIL IS ACCEPTED IN WRITING BY THE DEPARTMENTAL REPRESENTATIVE.
3. OVERHANG BRACKET SPACING SHALL BE LESS THAN OR EQUAL TO 1200mm o.c.
4. MAXIMUM FACTORED SCREED LOAD PER SIDE OF BRIDGE ASSUMED TO BE 15kN.
5. DECK CASTING SHALL PROGRESS IN A BALANCED FASHION BY ESSENTIALLY BALANCING THE WET CONCRETE WEIGHT ON EACH SIDE OF THE GIRDERS. TO ACCOMPLISH THIS, CASTING SHALL PROGRESS ACROSS THE FULL WIDTH OF THE BRIDGE DECK WITH CASTING ADVANCING A MAXIMUM OF 3.0m± ON ONE SIDE OF A GIRDER VERSUS THE OTHER SIDE OF THE SAME GIRDER. THIS BALANCED PROCEDURE IS ESSENTIAL TO PREVENT EXCESSIVE UNBALANCED LOADS/TORSIONS IN GIRDERS.
6. CONTRACTOR TO ENSURE GIRDER STABILITY DURING ALL PHASES OF CONSTRUCTION.
7. AS INDICATED IN DETAIL 1/S14 AND NOTE 11 ON S8, THE BOTTOM BEARING POINT OF THE SLAB OVERHANG BRACKET SHALL BE ORIENTATED NO HIGHER THAN 25mm ABOVE THE EXTERIOR GIRDER BOTTOM FLANGE/WEB INTERFACE DURING DECK CASTING.

0 10 20mm 40 60 80 100 120 140 160 180 200mm

PCA B1 (2004)

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER P.J. Burke 9692 DATE Oct 27, 2015 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

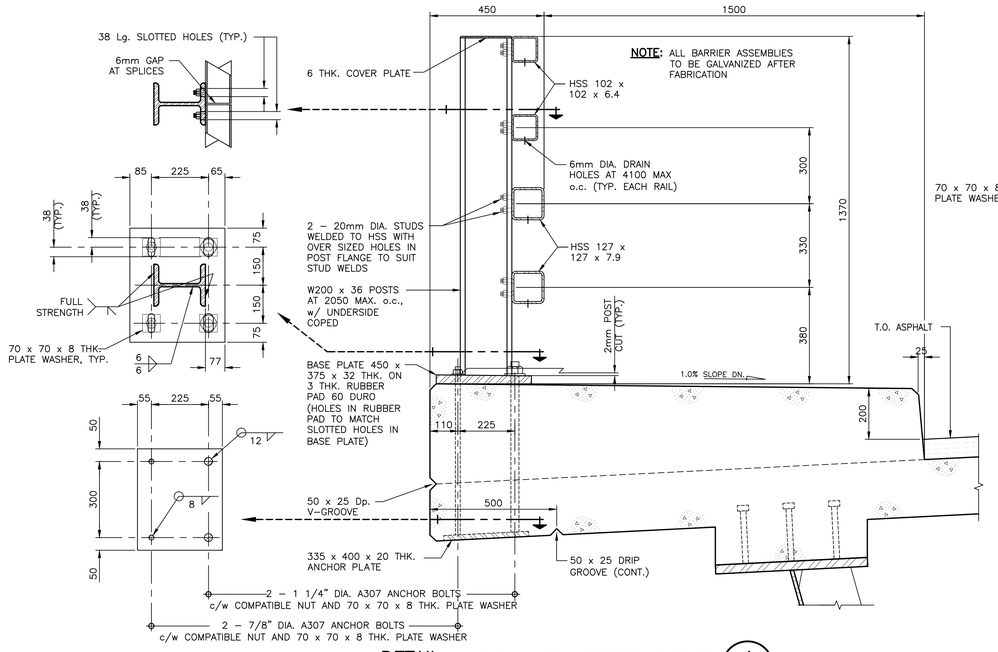
drawing / dessin

DECK PLAN AND SCREED ELEVATIONS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: **321**

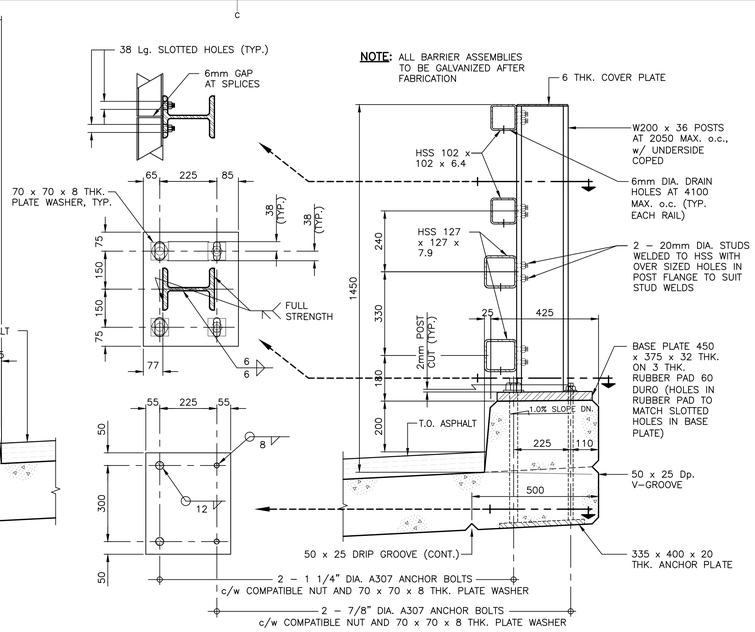
drawing no. / no. du dessin: **S14**



DETAIL 1/S5 – TYPICAL NORTH SIDE TRAFFIC BARRIER

SCALE : 1:10

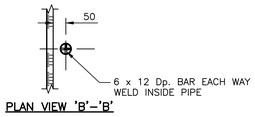
0mm 100 200 300 400 500 600 700 800 900 1000mm



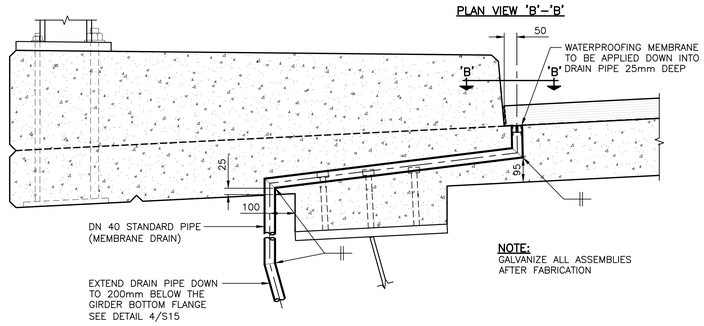
DETAIL 2/S5 – TYPICAL SOUTH SIDE TRAFFIC BARRIER

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



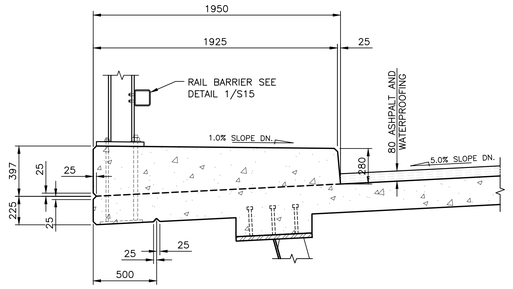
PLAN VIEW 'B'–'B'



SECTION 3/S14 – MEMBRANE DRAIN

SCALE : 1:10

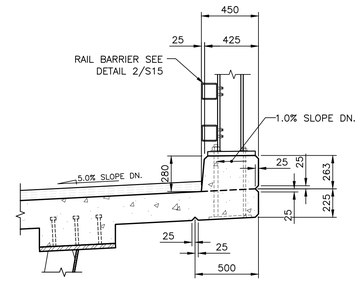
0mm 100 200 300 400 500 600 700 800 900 1000mm



SECTION B/S14 – NORTH SIDEWALK

SCALE : 1:20

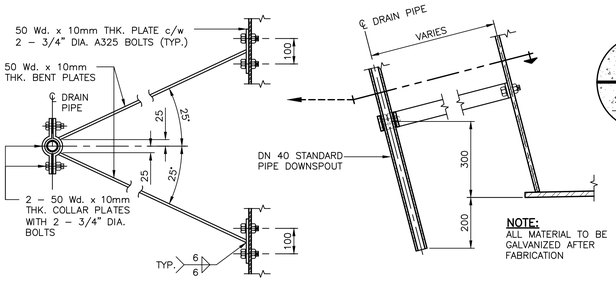
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION C/S14 – SOUTH CURB

SCALE : 1:20

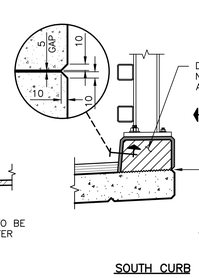
0mm 500mm 1000mm 1500mm 2000mm 2500mm



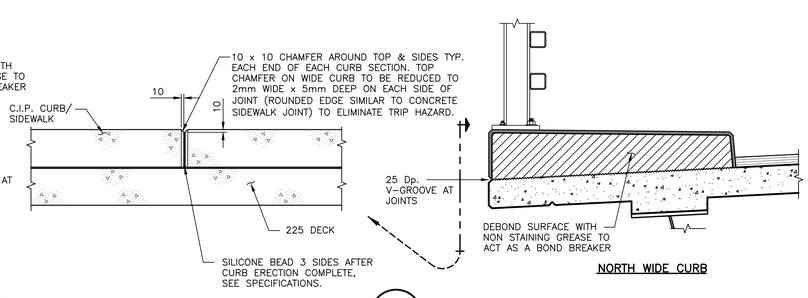
DETAIL 4/S15 – MEMBRANE DRAIN TO GIRDER CONNECTION

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



SOUTH CURB

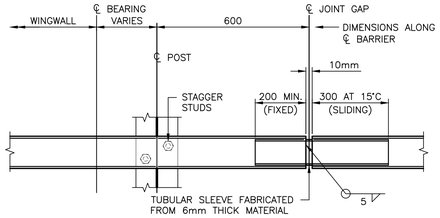


NORTH WIDE CURB

DETAIL 5/S14 – TYPICAL NORTH/SOUTH BARRIER CONTROL JOINT

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



NOTE: PROVIDED BETWEEN POSTS AT BOTH EAST & WEST ABUT., E.S. OF BRIDGE

DETAIL 6/S14 – TYPICAL RAIL EXPANSION JOINT – MIN. 2 AT EACH ABUTMENT

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER P.J. Burke 9692 PROVINCE OF NOVA SCOTIA DATE 2015

revisions		date
0	ISSUED FOR TENDER	10/27/2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

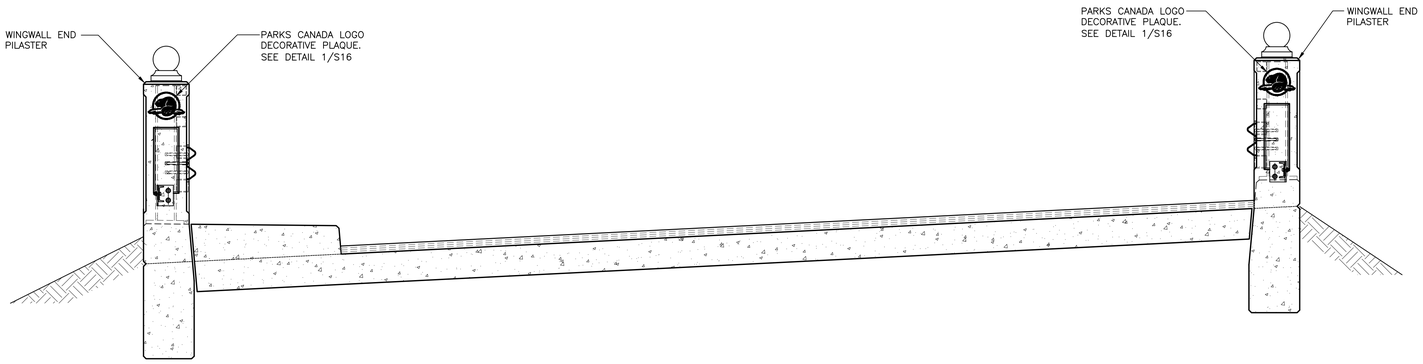
DECK CURB AND RAILING DETAILS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager	Debra Colley	Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S15

PCA B1 (2004)



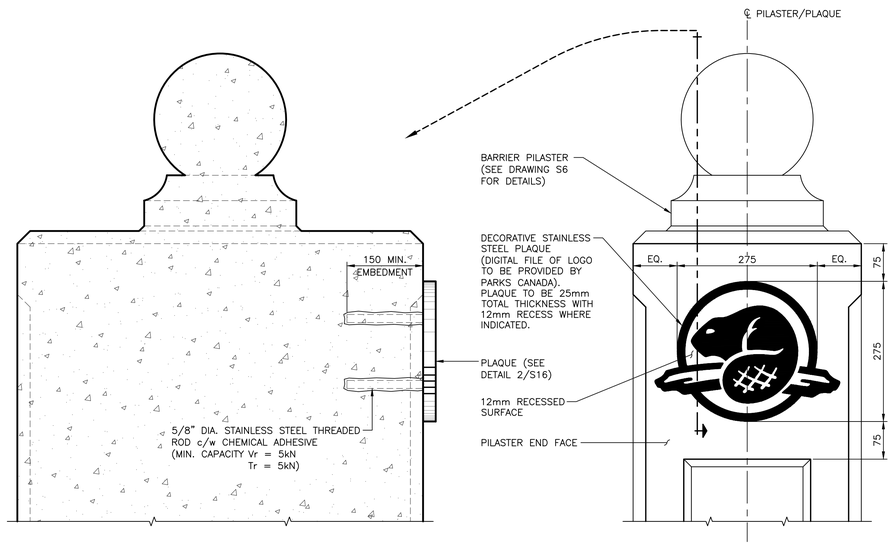
SECTION A S16

SCALE: 1:25

0mm 500mm 1000mm 1500mm 2000mm 2500mm

PLAQUE NOTES:

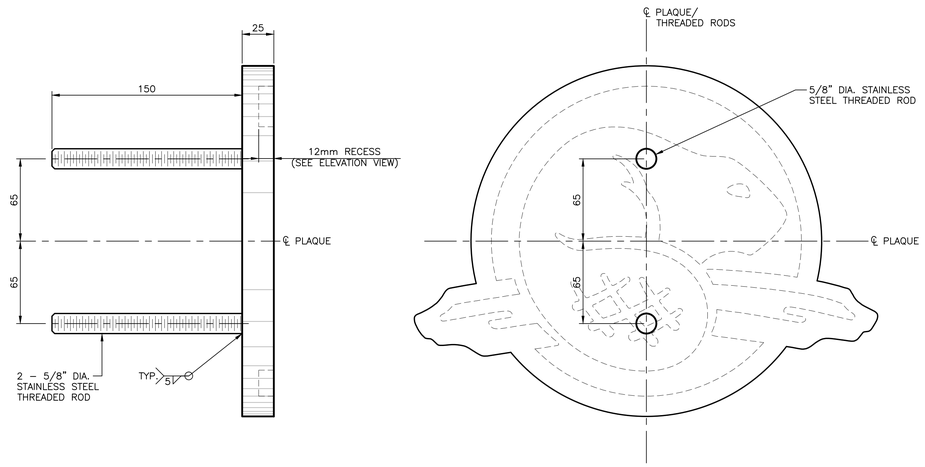
1. DIGITAL FILE OF LOGO TO BE PROVIDED BY PARKS CANADA.
2. PLAQUE TO BE FABRICATED FROM STAINLESS STEEL PLATE TO ASTM A240 – TYPE 316L.
3. STAINLESS STEEL THREADED RODS TO ASTM F593 – TYPE 316L.
4. ALL WELDING IN ACCORDANCE WITH CSA STANDARD W59 LATEST EDITION.
5. HOLES IN PILASTER FOR THREADED ROD ANCHORS SHALL BE DRILLED AND CLEANED AS PER THE CHEMICAL ADHESIVE MANUFACTURER'S RECOMMENDATIONS.
6. CARE SHALL BE TAKEN WHEN DRILLING HOLES IN PILASTER TO ENSURE THE HOLE LOCATIONS ON THE PILASTER MATCH THE AS–BUILT PLAQUE THREADED RODS TO ENSURE CONNECTED PLAQUE IS ORIENTATED ON PILASTER AS SHOWN IN DETAIL 1/S16.
7. PROVIDE CLEAR CAULKING AROUND PERIMETER OF PLAQUE AFTER INSTALLATION.



DETAIL – DECORATIVE PLAQUE 1 S16

SCALE: 1:5

0mm 100mm 200mm 300mm 400mm 500mm



DETAIL – THREADED ROD CONNECTION 2 S16

SCALE : 1:2

0mm 50mm 100mm 150mm 200mm 250mm

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HARBOURSIDE Engineering Consultants

PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA Oct 27 DATE 2015 P.J. Burke 9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

DECORATIVE DETAILS

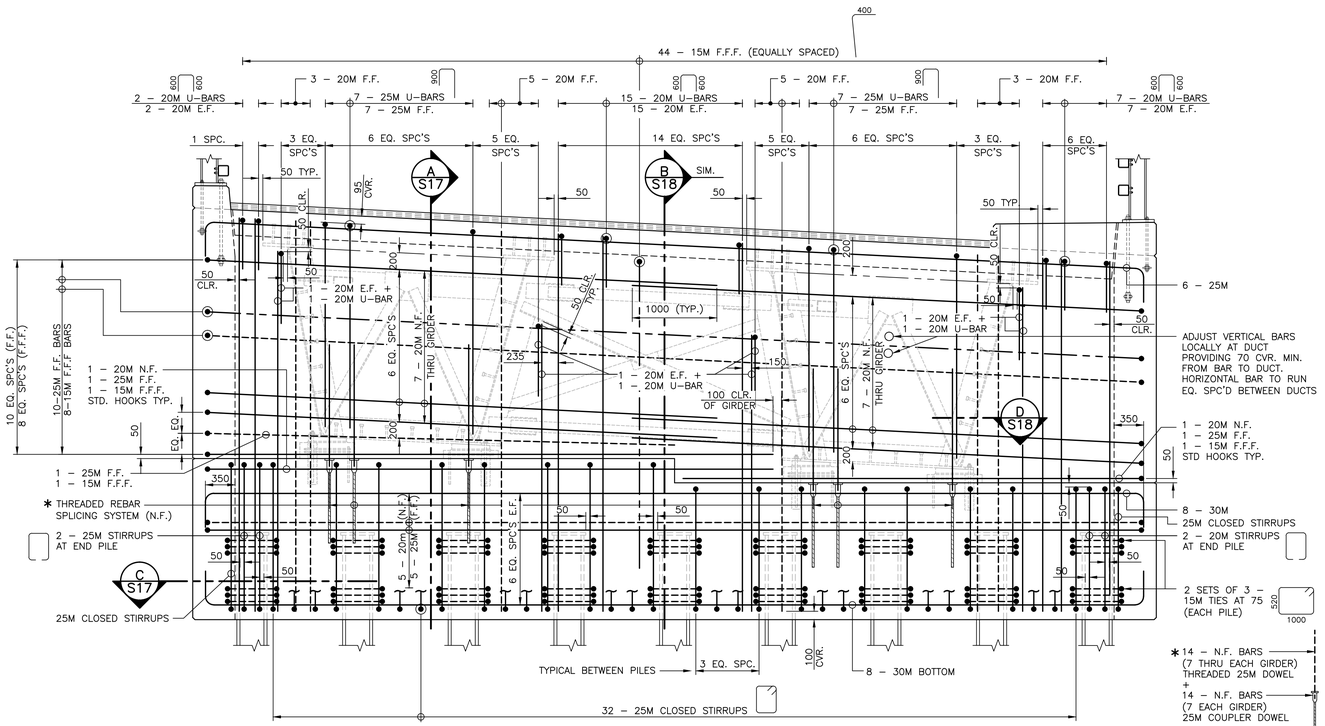
designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S16

PCA B1 (2004)

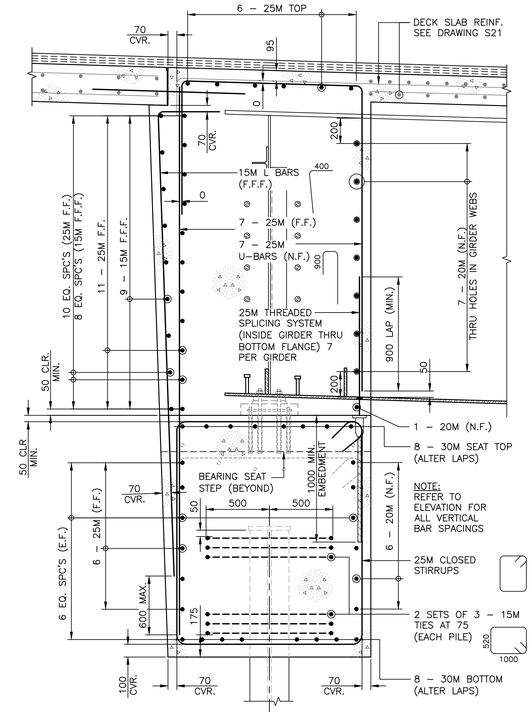
0 10 20mm 40 60 80 100 120 140 160 180 200mm



WEST ABUTMENT REINFORCING ELEVATION

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm

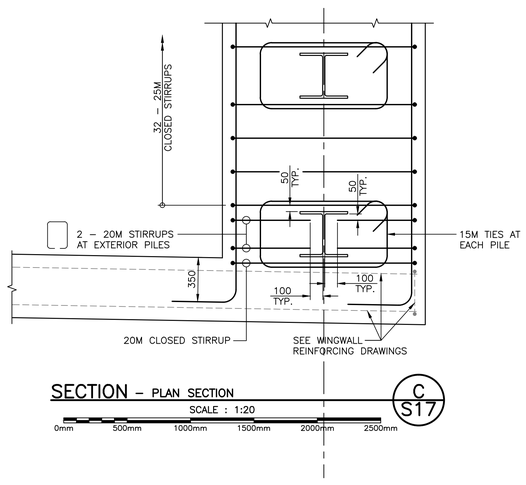


SECTION – INSIDE GIRDER

SCALE : 1:20

A S17

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – PLAN SECTION

SCALE : 1:20

C S17

0mm 500mm 1000mm 1500mm 2000mm 2500mm

NOTES:

1. ALL HORIZONTAL BARS TO HAVE STANDARD HOOKS EACH WINGWALL. TURN ALL HOOKED HORIZONTAL BARS INTO WINGWALLS IN SUCH A MANNER AS TO MAINTAIN ALL COVERS AND AVOID CLASH WITH WINGWALL REINFORCING.
2. HORIZONTAL BAR LAPS: (U.N.O.)
   15M BARS – 600mm
   20M BARS – 800mm
   25M BARS – 1200mm
3. VERTICAL BAR LAPS: (U.N.O.)
   15M BARS – 700mm
   20M BARS – 700mm
   25M BARS – 1000mm
4. VERTICAL BAR LAPS INCLUDE ADDITIONAL 100mm OF LAP TO ACCOUNT FOR POTENTIAL ADJUSTMENTS/ALTERATIONS IN DECK DUE TO AS–BUILT CONDITIONS.

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

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HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEERS PROVINCE OF NOVA SCOTIA
Oct 27 DATE 2015
P.J. Burke 9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

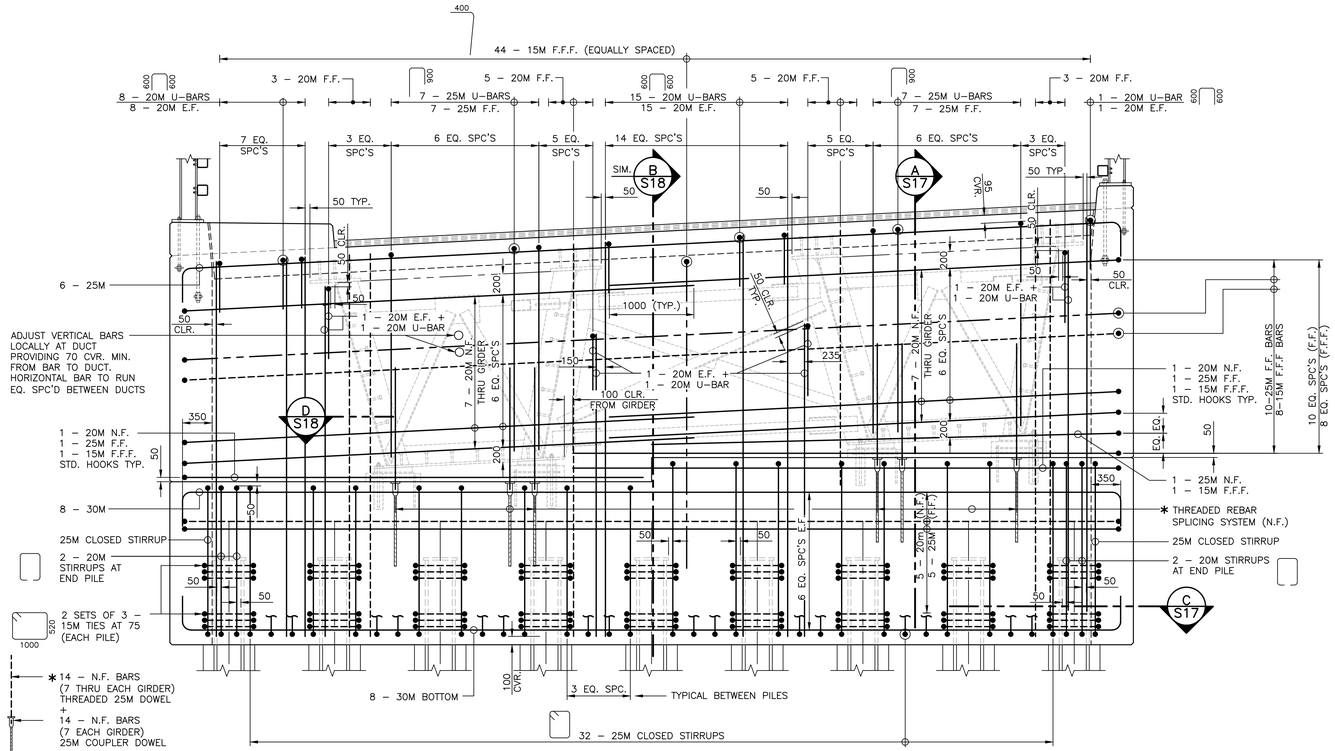
ABUTMENT REINFORCING (SHEET 1 OF 2)

designed PAUL BURKE — conçu
date JULY 2015
drawn GR MATHESON — dessiné
date JULY 2015
approved ROBBIE FRASER — approuvé
date JULY 2015
Tender — Soumission
PCA Project Manager — Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S17

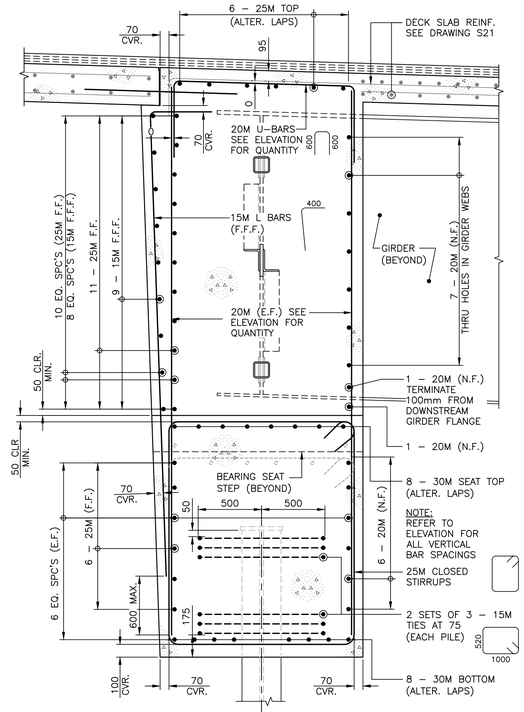
PCA B1 (2004)



EAST ABUTMENT REINFORCING ELEVATION

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm

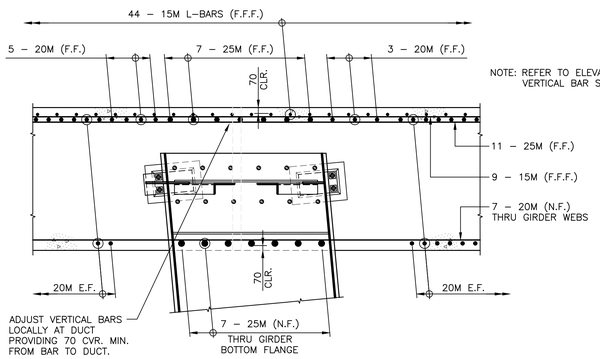


SECTION – INSIDE GIRDER

B S17

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION – THRU GIRDER SECTION

D S17

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm

NOTES:

1. ALL HORIZONTAL BARS TO HAVE STANDARD HOOKS EACH WINGWALL. TURN ALL HOOKED HORIZONTAL BARS INTO WINGWALLS IN SUCH A MANNER AS TO MAINTAIN ALL COVERS AND AVOID CLASH WITH WINGWALL REINFORCING.
2. HORIZONTAL BAR LAPS: (U.N.O.)
   15M BARS – 600mm
   20M BARS – 800mm
   25M BARS – 1200mm
3. VERTICAL BAR LAPS: (U.N.O.)
   15M BARS – 700mm
   20M BARS – 700mm
   25M BARS – 1000mm
4. VERTICAL BAR LAPS INCLUDE ADDITIONAL 100mm OF LAP TO ACCOUNT FOR POTENTIAL ADJUSTMENTS/ALTERATIONS IN DECK DUE TO AS–BUILT CONDITIONS.

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

APPROVED PROFESSIONAL ENGINEERS DATE Oct 27 2015 P.J. Burke 9692 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

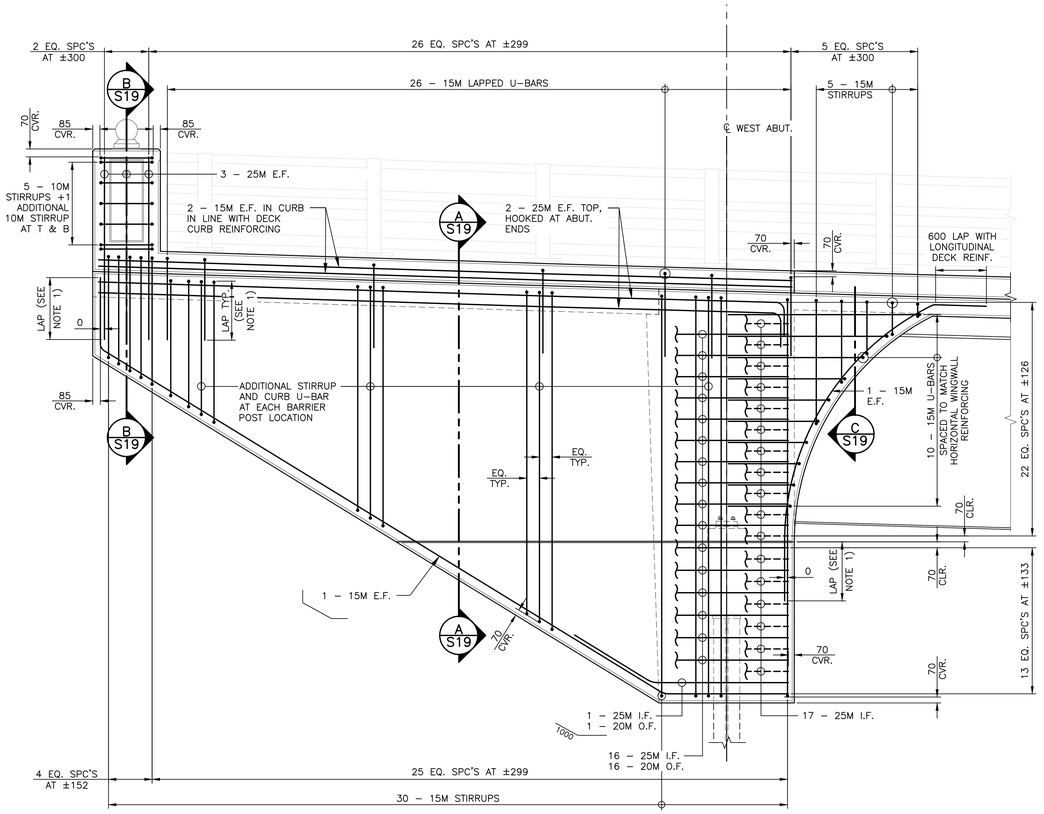
ABUTMENT REINFORCING
(SHEET 2 OF 2)

designed PAUL BURKE — conçu
date JULY 2015
drawn GR MATHESON — dessiné
date JULY 2015
approved ROBBIE FRASER — approuvé
date JULY 2015
Tender — Soumission
PCA Project Manager — Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S18

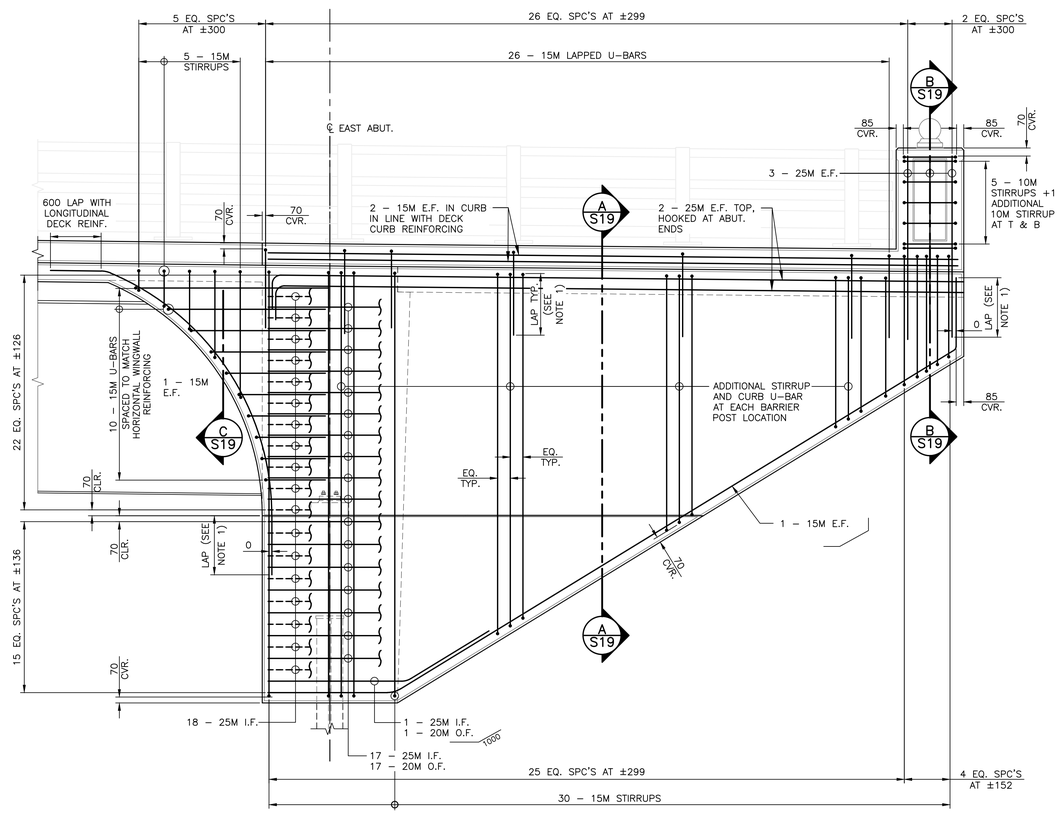
PCA B1 (2004)



SOUTHWEST WINGWALL REINFORCING

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm



SOUTHEAST WINGWALL REINFORCING

SCALE : 1:30

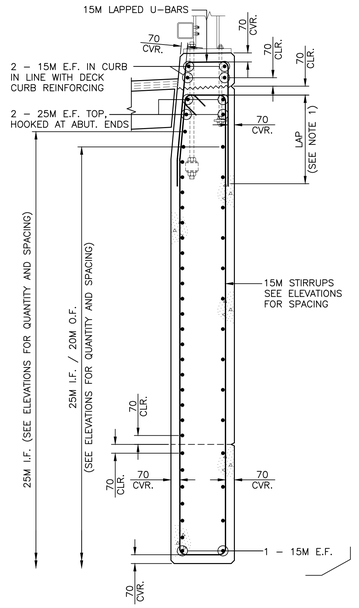
0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm

NOTES:

1. FOR STIRRUP AND U–BARS, ADDITIONAL 100mm LAP TO BE PROVIDED (700 vs 600) TO ENSURE MINIMUM 600mm LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS–BUILT CONDITIONS.
2. IT IS ACCEPTABLE TO SUBSTITUTE CLOSED STIRRUPS WITH 2 – LAPPED U–BARS PROVIDED LAPS ARE DETAILED & CONSTRUCTED AS INDICATED IN NOTE 1.
3. REFER TO NOTE 2, DRAWING S17 FOR HORIZONTAL BAR LAPS.

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

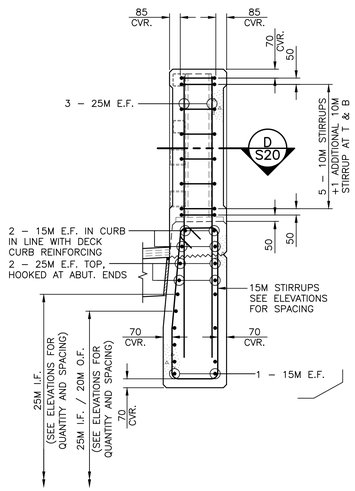


SECTION – SOUTH WINGWALL AND BARRIER

A S19

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

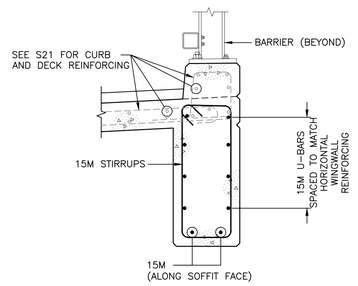


SECTION – SOUTH PILASTER

B S19

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION

C S19

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER OF NOVA SCOTIA
Oct 27 DATE 2015
P.J. Burke
9692

revisions		date
0	ISSUED FOR TENDER	10/27 2015

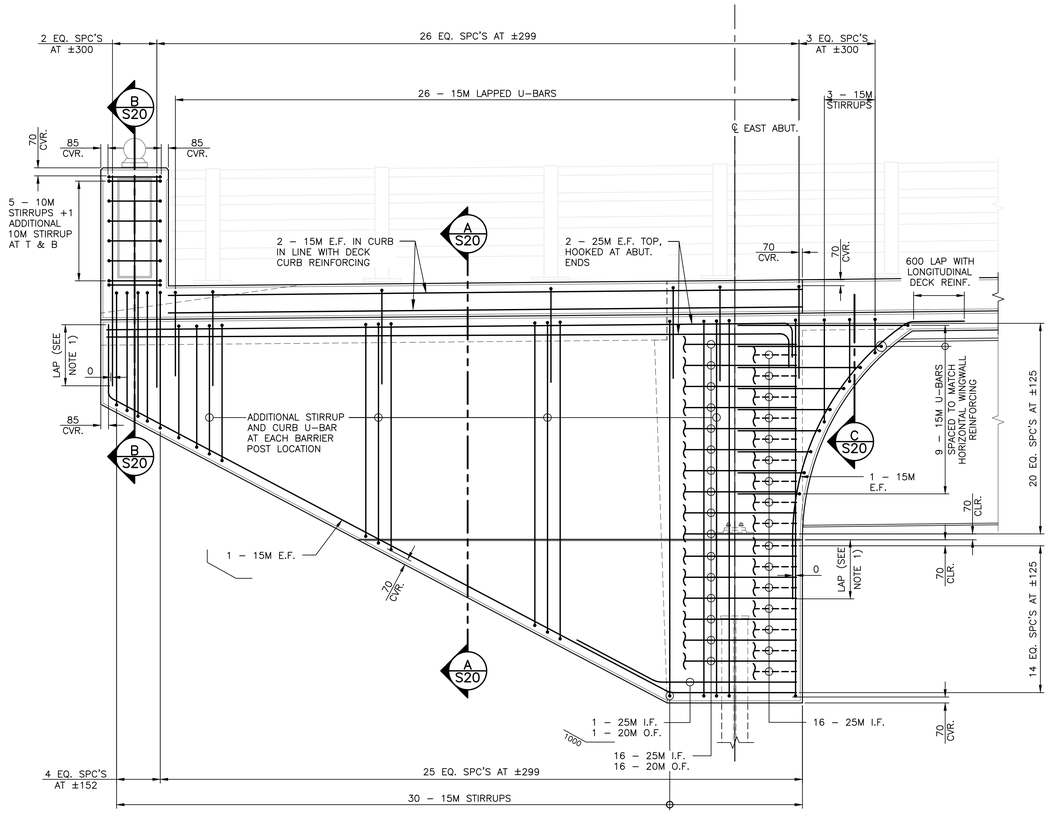
project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

SOUTH BARRIER WINGWALL REINFORCING

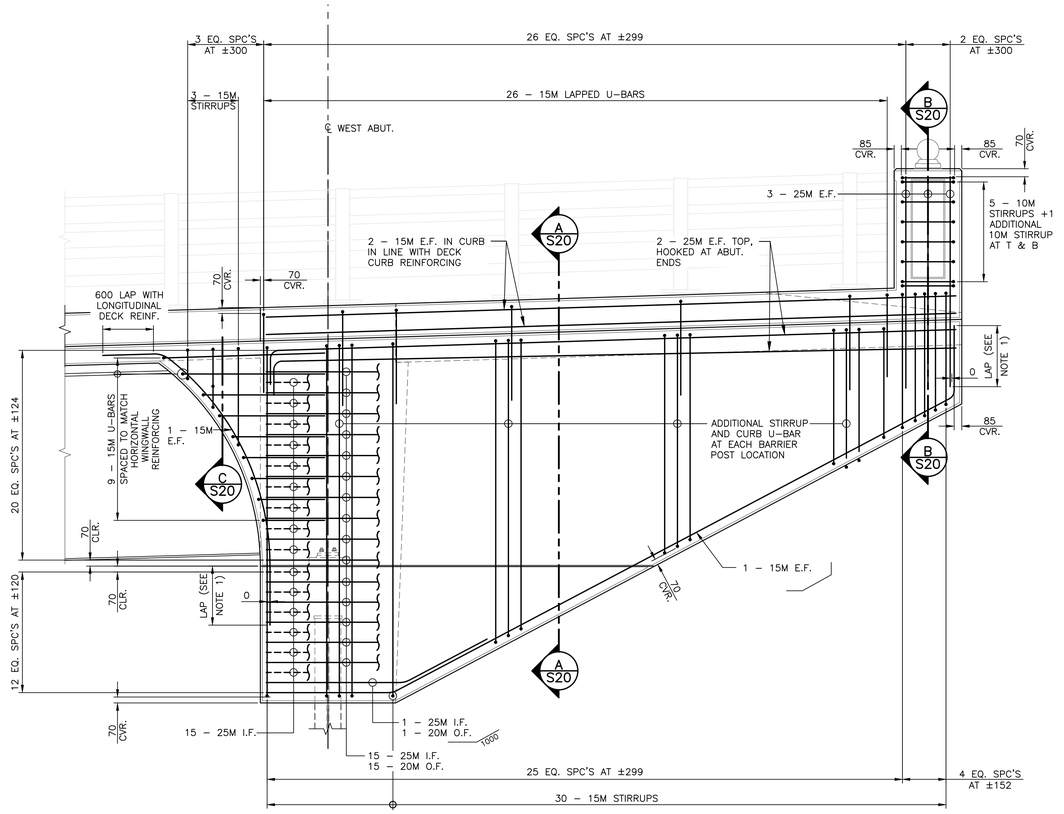
designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number	321	no. du projet
drawing no.	S19	no. du dessin



NORTHEAST WINGWALL REINFORCING

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm



NORTHWEST WINGWALL REINFORCING

SCALE : 1:30

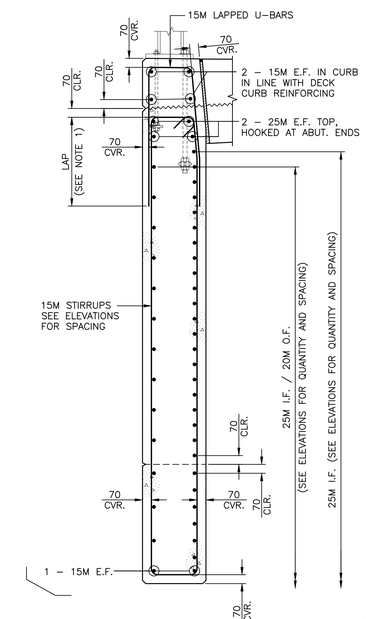
0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm

NOTES:

1. FOR STIRRUP AND U–BARS, ADDITIONAL 100mm LAP TO BE PROVIDED (700 vs 600) TO ENSURE MINIMUM 600mm LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS–BUILT CONDITIONS.
2. IT IS ACCEPTABLE TO SUBSTITUTE CLOSED STIRRUPS WITH 2 – LAPPED U–BARS PROVIDED LAPS ARE DETAILED & CONSTRUCTED AS INDICATED IN NOTE 1.
3. REFER TO NOTE 2, DRAWING S17 FOR HORIZONTAL BAR LAPS.

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

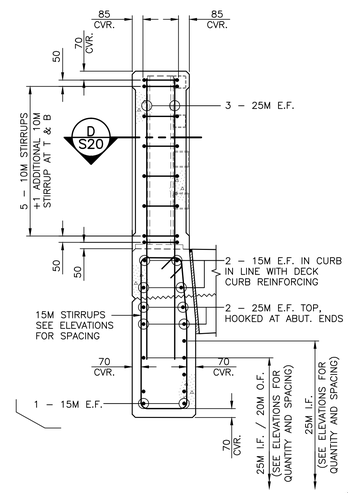


SECTION – NORTH WINGWALL AND BARRIER

A S20

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

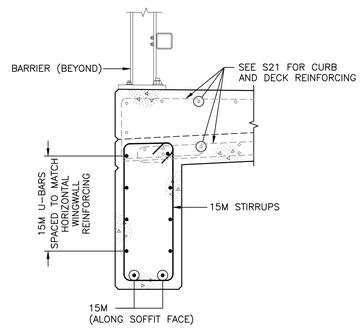


SECTION – NORTH PILASTER

B S20

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

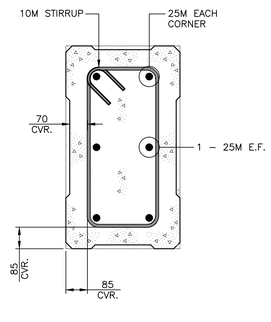


SECTION

C S20

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION

D S19 S20

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER OCT 24 DATE 2015 P.J. Burke 9692 PROVINCE OF NOVA SCOTIA

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

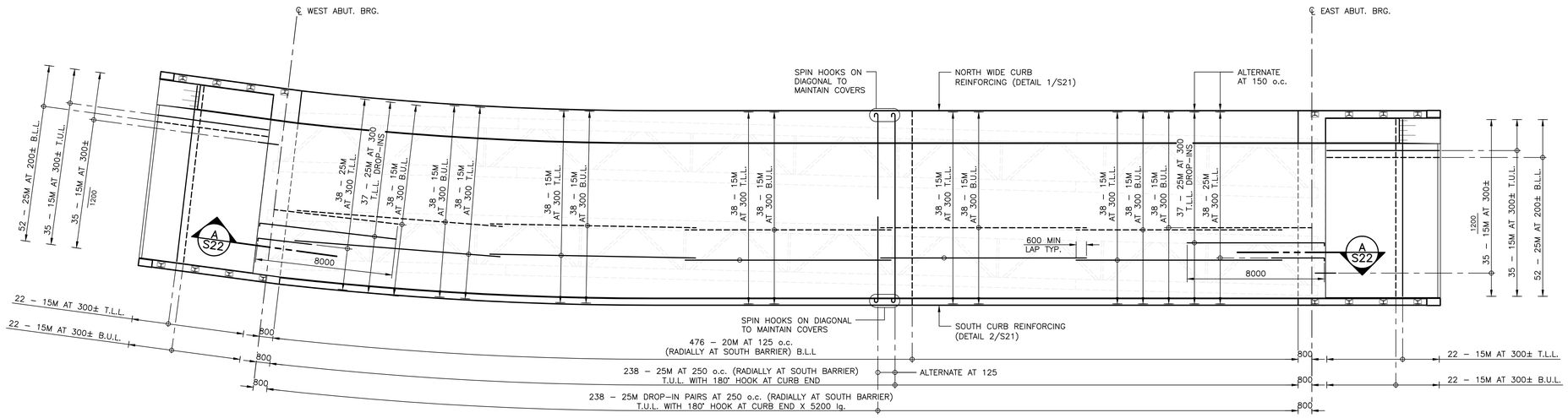
NORTH BARRIER WINGWALL REINFORCING

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PCA Project Manager		Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S20

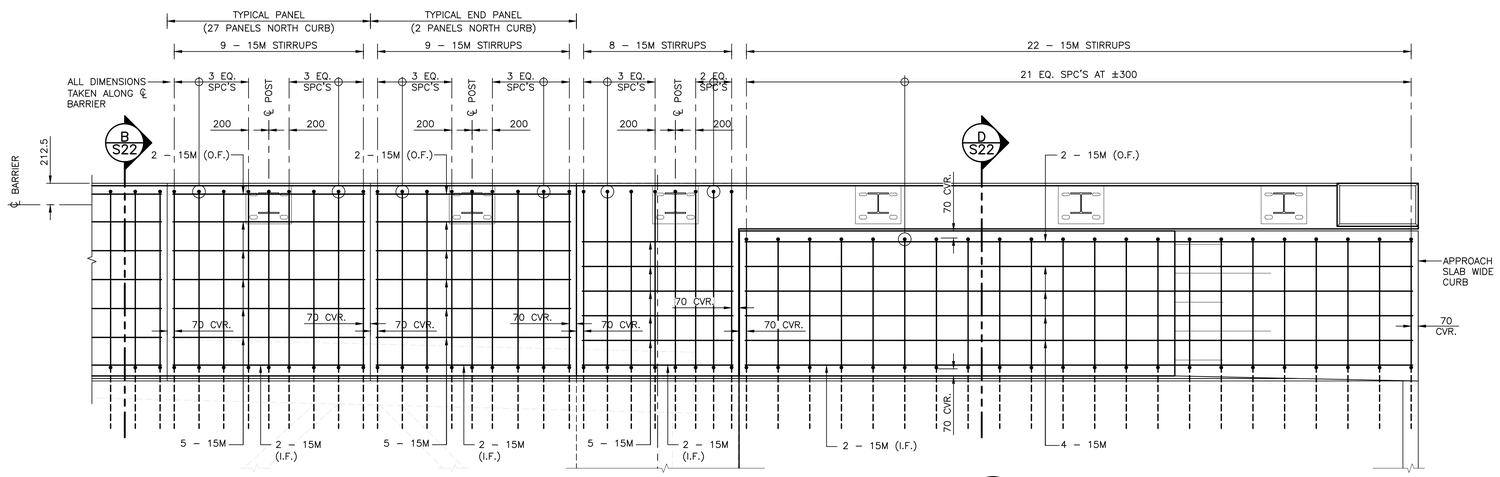
PCA B1 (2004)



BRIDGE / APPROACH SLAB REINFORCING

SCALE : 1:125

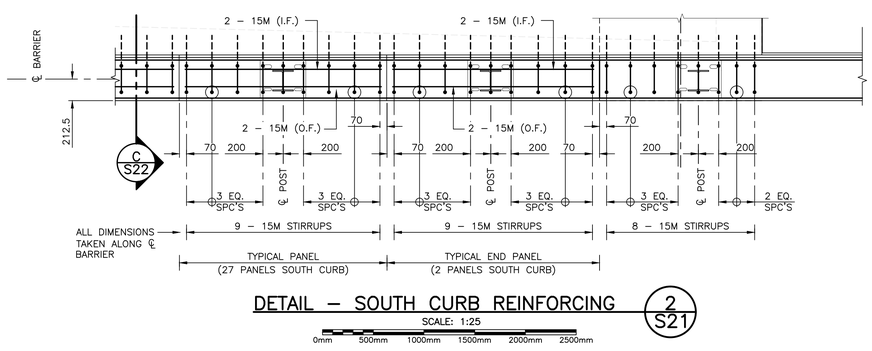
0m 1 2 3 4 5 6 7 8 9 10m



DETAIL – NORTH WIDE CURB REINFORCING 1/S21

SCALE: 1:25

0mm 500mm 1000mm 1500mm 2000mm 2500mm



DETAIL – SOUTH CURB REINFORCING 2/S21

SCALE: 1:25

0mm 500mm 1000mm 1500mm 2000mm 2500mm

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF NOVA SCOTIA
DATE 2015
P.J. Burke
9692

0	ISSUED FOR TENDER	10/27/2015
revisions		date

project / projet

BLACK BROOK BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

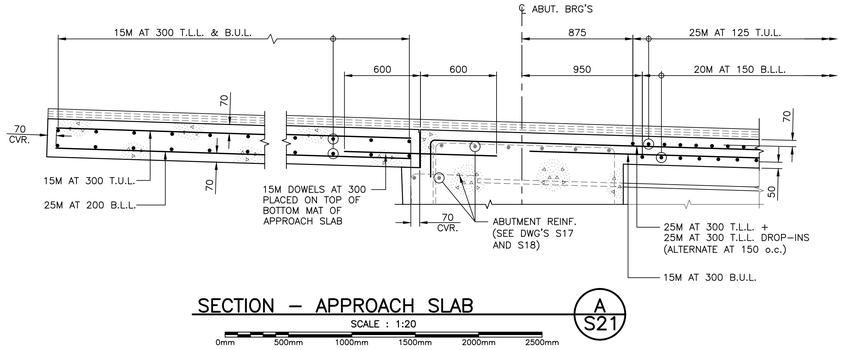
drawing / dessin

DECK REINFORCING PLAN AND DETAILS

designed / conçu	PAUL BURKE
date	JULY 2015
drawn / dessiné	GR MATHESON
date	JULY 2015
approved / approuvé	ROBBIE FRASER
date	JULY 2015
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number / no. du projet	321
drawing no. / no. du dessin	S21

PWGSC B1 (2004)

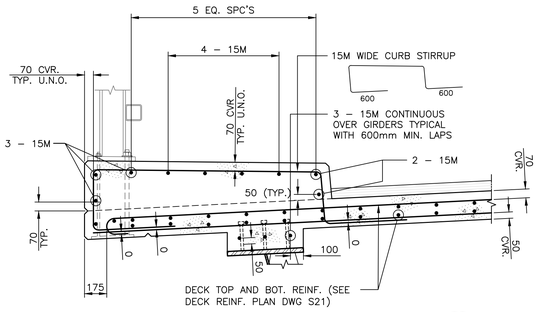
E–DRM/GDD–E:



SECTION – APPROACH SLAB — A S21

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION — B S21

SCALE : 1:20

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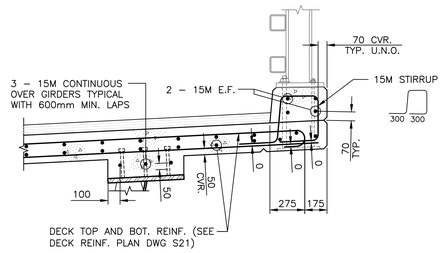
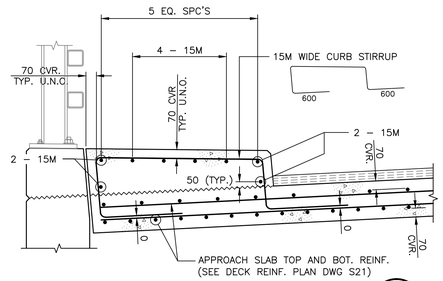


SECTION — C S21

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION — D S21

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

REINFORCING LEGEND:

N.F.	NEAR FACE	I.C.	IN CENTER	N.W.	NORTH WEST WINGWALL
F.F.	FAR FACE	T.U.L.	TOP UPPER LAYER	S.E.	SOUTH EAST WINGWALL
N.F.F.	NEAR FAR FACE	T.L.L.	TOP LOWER LAYER	S.W.	SOUTH WEST WINGWALL
F.F.F.	FAR FAR FACE	B.U.L.	BOTTOM UPPER LAYER	N.C.	NORTH CURB
E.F.	EACH FACE	B.L.L.	BOTTOM LOWER LAYER	S.C.	SOUTH CURB
E.W.	EACH WAY	W.A.	WEST ABUTMENT	CVR.	COVER
I.F.	INSIDE FACE	E.A.	EAST ABUTMENT	CLR.	CLEAR
O.F.	OUTSIDE FACE	N.E.	NORTH EAST WINGWALL		

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

REGISTERED PROFESSIONAL ENGINEER — P.J. Burke — 9692 — PROVINCE OF NOVA SCOTIA — DATE 10/27/2015

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

DECK REINFORCING SECTIONS

designed	PAUL BURKE	conçu
date	JULY 2015	
drawn	GR MATHESON	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Soumission
PWGSC Project Manager		Administrateur de projets TPSGC
project number		no. du projet
	321	
drawing no.		no. du dessin
	S22	

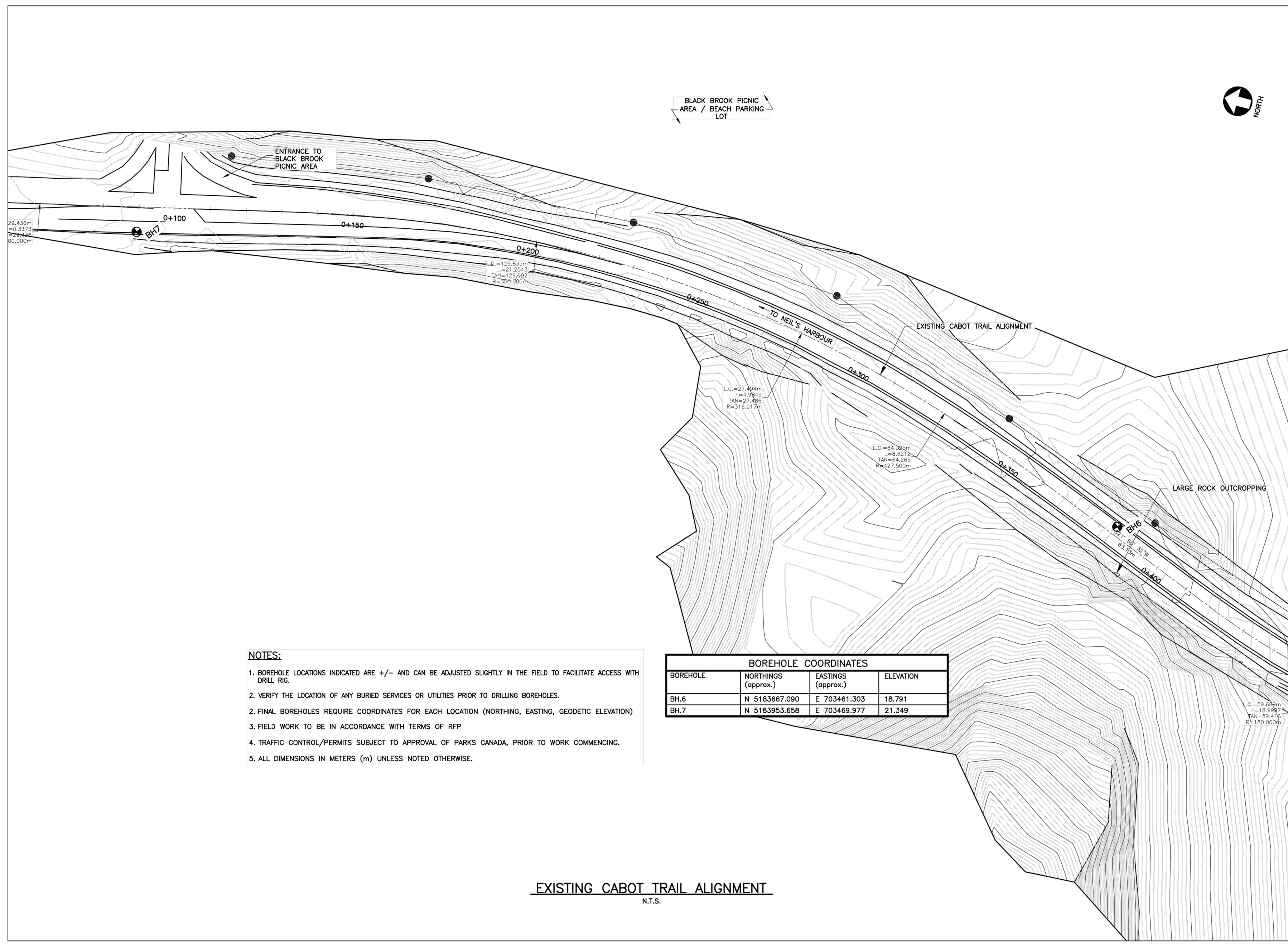
PWGSC B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

E-DRM/GDD-E:

Parcs Canada | Parks Canada

HARBOURSIDE
Engineering Consultants



NOTES:

1. BOREHOLE LOCATIONS INDICATED ARE +/- AND CAN BE ADJUSTED SLIGHTLY IN THE FIELD TO FACILITATE ACCESS WITH DRILL RIG.
2. VERIFY THE LOCATION OF ANY BURIED SERVICES OR UTILITIES PRIOR TO DRILLING BOREHOLES.
2. FINAL BOREHOLES REQUIRE COORDINATES FOR EACH LOCATION (NORTHING, EASTING, GEODETIC ELEVATION)
3. FIELD WORK TO BE IN ACCORDANCE WITH TERMS OF RFP
4. TRAFFIC CONTROL/PERMITS SUBJECT TO APPROVAL OF PARKS CANADA, PRIOR TO WORK COMMENCING.
5. ALL DIMENSIONS IN METERS (m) UNLESS NOTED OTHERWISE.

BOREHOLE COORDINATES

BOREHOLE	NORTHINGS (approx.)	EASTINGS (approx.)	ELEVATION
BH.6	N 5183667.090	E 703461.303	18.791
BH.7	N 5183953.658	E 703469.977	21.349

EXISTING CABOT TRAIL ALIGNMENT
N.T.S.

NOTE:
ALL PROPOSED BOREHOLE LOCATIONS ARE APPROXIMATE ONLY AND ARE TO BE COORDINATED ON SITE.

No.	DESCRIPTION	Date (mm/dd/yy)	By
A	ISSUED FOR INFORMATION	05/05/15	PJB

ISSUE or REVISION

Client: Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

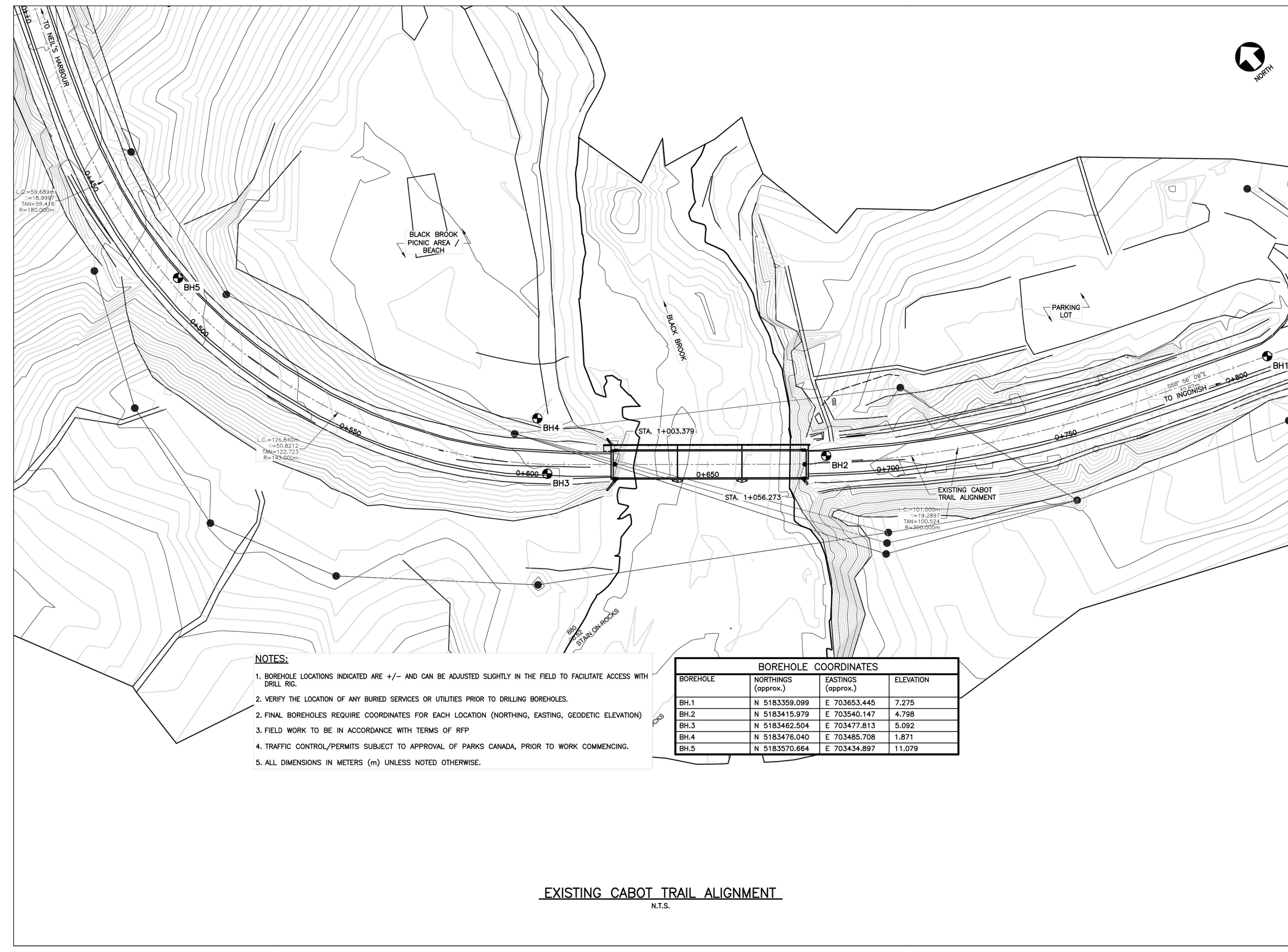
HARBOURSIDE Engineering Consultants

Project: BLACK BROOK BRIDGE HIGHLANDS NATIONAL PARK, CAPE BRETON, NOVA SCOTIA

EXISTING ALIGNMENT

Title: BOREHOLE LOCATION PLAN (SHEET 1)

Scale: AS NOTED | Date: MARCH 2015 | Drawn: KDM | Designed: MSM | Checked: PJB | Approved: REF | Contract No. 15013 | Drawing No. BH-1



NOTES:

1. BOREHOLE LOCATIONS INDICATED ARE +/- AND CAN BE ADJUSTED SLIGHTLY IN THE FIELD TO FACILITATE ACCESS WITH DRILL RIG.
2. VERIFY THE LOCATION OF ANY BURIED SERVICES OR UTILITIES PRIOR TO DRILLING BOREHOLES.
2. FINAL BOREHOLES REQUIRE COORDINATES FOR EACH LOCATION (NORTHING, EASTING, GEODETIC ELEVATION)
3. FIELD WORK TO BE IN ACCORDANCE WITH TERMS OF RFP
4. TRAFFIC CONTROL/PERMITS SUBJECT TO APPROVAL OF PARKS CANADA, PRIOR TO WORK COMMENCING.
5. ALL DIMENSIONS IN METERS (m) UNLESS NOTED OTHERWISE.

BOREHOLE COORDINATES

BOREHOLE	NORTHINGS (approx.)	EASTINGS (approx.)	ELEVATION
BH.1	N 5183359.099	E 703653.445	7.275
BH.2	N 5183415.979	E 703540.147	4.798
BH.3	N 5183462.504	E 703477.813	5.092
BH.4	N 5183476.040	E 703485.708	1.871
BH.5	N 5183570.664	E 703434.897	11.079

EXISTING CABOT TRAIL ALIGNMENT
N.T.S.

NOTE:
ALL PROPOSED BOREHOLE LOCATIONS ARE APPROXIMATE ONLY AND ARE TO BE COORDINATED ON SITE.

No.	DESCRIPTION	Date (mm/dd/yy)	By
A	ISSUED FOR INFORMATION	05/05/15	PJB

ISSUE or REVISION

Client: Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

HARBOURSIDE Engineering Consultants

Project: BLACK BROOK BRIDGE HIGHLANDS NATIONAL PARK, CAPE BRETON, NOVA SCOTIA

EXISTING ALIGNMENT

Title: BOREHOLE LOCATION PLAN (SHEET 2)

Scale: 1:500 | Date: MARCH 2015 | Designed: MSM | Checked: PJB | Approved: REF | Contract No. 15013 | Drawing No. BH-2

BOREHOLE RECORD

exp.

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-01
DATES of BORING May 22, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION
0	7.3	ASPHALT PAVEMENT
	7.0	FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, dense, moist, reddish brown to brown.
	6.4	Granite Cobbles/Boulders or Bedrock
	5.5	End of Borehole @ 1.8 m depth.

TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	OTHER TESTS
SS	1	460	33	WC SVE

Undrained Shear Strength, kPa: 20 40 60 80
Water Content & Atterberg Limits W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90

△ Unconfined Compression Test
□ Field Vane Test ■ Remoulded

t: +1.902.453.5555 | f: +1.902.453.6325
7071 Bayers Road, Suite 2002
Halifax, NS, B3L 2C2
Canada
http://www.exp.com

GEOTECHNICAL-ENVIRONMENTAL LOG Rev: 5/4/12 BH LOGS.GPJ DATA ENTRY.GDT 6/26/15 Printed by: walkerb

BOREHOLE RECORD

exp.

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-01A
DATES of BORING May 21, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION
0	8.0	ASPHALT PAVEMENT
	7.7	FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, dense, moist, brown to red brown.
	5.1	TILL Silty Sand with Gravel (SM), very dense, moist to wet, dark grey.
	4.0	Granite Cobbles/Boulders or Bedrock
	3.1	End of Borehole @ 4.9 m depth.

TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	OTHER TESTS
SS	1	460	42	
SS	2	510	25-47-43-50 for 3"	
SS	3	460	14-33-63 for 3"	WC SVE

△ Unconfined Compression Test
□ Field Vane Test ■ Remoulded

t: +1.902.453.5555 | f: +1.902.453.6325
7071 Bayers Road, Suite 2002
Halifax, NS, B3L 2C2
Canada
http://www.exp.com

GEOTECHNICAL-ENVIRONMENTAL LOG Rev: 5/4/12 BH LOGS.GPJ DATA ENTRY.GDT 6/26/15 Printed by: walkerb

BOREHOLE RECORD

exp.

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-02
DATES of BORING May 21, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION
0	4.8	ASPHALT PAVEMENT
	4.5	FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, dense, moist, brown.
	3.9	BEDROCK Granite Bedrock, strong, very poor improving to excellent quality with depth, very close to close fracture spacing oriented between 0° and 20° from the horizontal with occasional 45° breaks. UCS = 84.9 MPa @ 4.3 m depth.
	0.4	End of Borehole @ 4.4 m depth.

TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	OTHER TESTS
SS	1	360	30	
RC	2	39%	0	
SS	3	50	50 for 3"	
RC	4	89%	0	
RC	5	75%	0	
RC	6	100%	100	
RC	7	83%	83	UCS

△ Unconfined Compression Test
□ Field Vane Test ■ Remoulded

t: +1.902.453.5555 | f: +1.902.453.6325
7071 Bayers Road, Suite 2002
Halifax, NS, B3L 2C2
Canada
http://www.exp.com

GEOTECHNICAL-ENVIRONMENTAL LOG Rev: 5/4/12 BH LOGS.GPJ DATA ENTRY.GDT 6/26/15 Printed by: walkerb

BOREHOLE RECORD

exp.

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-03
DATES of BORING May 19, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION
0	5.1	ASPHALT PAVEMENT
	4.8	FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, loose to dense, moist to wet, reddish brown to brown.
	-0.2	ALLUVIAL DEPOSIT Poorly graded Sand with Silt and Gravel (SP-SM), dense, wet, reddish brown.
	-1.5	BEDROCK Granite Bedrock, strong, very poor to fair quality, very close to moderate fracture spacing oriented between 0° and 30° from the horizontal with occasional 45° breaks. UCS = 81.9 MPa @ 7.0 m depth.

TYPE	NUMBER	RECOVERY (mm)	N-VALUE OR RQD	OTHER TESTS
SS	1	380	45	
SS	2	120	28	
SS	3	50	7	
SS	4	50	9	
SS	5	50	11	
SS	6	100	18	
SS	7	380	14	
SS	8	150	31	
SS	9	400	12-17-50 for 6"	
RC	10	71%	52	UCS

△ Unconfined Compression Test
□ Field Vane Test ■ Remoulded

t: +1.902.453.5555 | f: +1.902.453.6325
7071 Bayers Road, Suite 2002
Halifax, NS, B3L 2C2
Canada
http://www.exp.com

GEOTECHNICAL-ENVIRONMENTAL LOG Rev: 5/4/12 BH LOGS.GPJ DATA ENTRY.GDT 6/26/15 Printed by: walkerb

0	ISSUED FOR TENDER	10/27 2015
revisions		date

project / projet: BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin: BOREHOLE LOGS (SHEET 1 OF 2)

designed / conçu
date
drawn / dessiné
date
approved / approuvé
date
Tender / Soumission
PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S23

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm

BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-03
DATES of BORING May 19, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
8	-2.9	BEDROCK Granite Bedrock, strong, very poor to fair quality, very close to moderate fracture spacing oriented between 0° and 30° from the horizontal with occasional 45° breaks. *(continued)*			RC	11	42%	15	
9					SS	12	100	43	
10					RC	13	28%	0	
11					RC	14	60%	27	
12					RC	15	40%	0	
13					RC	16	32%	27	
14									
15									
16									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
△ Unconfined Compression Test
☐ Field Vane Test ■ Remoulded

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http://www.exp.com

GEOTECHNICAL ENVIRONMENTAL LOG Rev. 5/4/12 BH LOGS.GPJ DATA ENTRY.GDT 6/26/15 Prepd by: aelkeih

BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-03
DATES of BORING May 19, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
16	-10.9	BEDROCK Granite Bedrock, strong, very poor to fair quality, very close to moderate fracture spacing oriented between 0° and 30° from the horizontal with occasional 45° breaks. *(continued)*			RC	17	90%	17	
17					RC	18	47%	20	
18					RC	19	60%	18	
19					RC	20	73%	57	
20					RC	21	63%	23	
21					RC	22	95%	42	
22									
23									
24									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-03
DATES of BORING May 19, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
24	-18.9	BEDROCK Granite Bedrock, strong, very poor to fair quality, very close to moderate fracture spacing oriented between 0° and 30° from the horizontal with occasional 45° breaks. *(continued)*			RC	23	87%	28	
25									
26	-20.8	End of Borehole @ 25.9 m depth.							
27									
28									
29									
30									
31									
32									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-04
DATES of BORING May 20, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
0	1.9	FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, compact to dense, moist to wet, brown.		▽	SS	1	300	14	
1					SS	2	200	53	
0.2		ALLUVIAL DEPOSIT							
2		Poorly graded Sand with Silt and Gravel (SP-SM), compact to dense, wet, reddish brown.			SS	3	200	16	
3									
4					SS	4	430	36	WC SVE
5									
6	-4.5				SS	5	330	18-52-50 for 0"	
7		BEDROCK Granite Bedrock, strong, very poor to poor quality, very close to close fracture spacing oriented between 0° and 20° from the horizontal with occasional 45° breaks.			RC	6	54%	38	
8					RC	7	83%	17	

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-04
DATES of BORING May 20, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
8	-6.1	BEDROCK Granite Bedrock, strong, very poor to poor quality, very close to close fracture spacing oriented between 0° and 20° from the horizontal with occasional 45° breaks. *(continued)*			RC	8	67%	17	
9					RC	9	79%	25	
10	-8.2				RC	10	89%	17	
11		End of Borehole @ 10.1 m depth.							
12									
13									
14									
15									
16									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-05
DATES of BORING May 22, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
0	11.1								
	10.8	ASPHALT PAVEMENT							
		FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, very dense, moist to wet, brown to reddish brown. Cobbles throughout, increasing in frequency with depth.		▽	SS	1	460	78-38-41-50 for 4"	
2					SS	2	100	25-29-50 for 3"	
4					SS	3	100	54	
	6.2	End of Borehole @ 4.9 m depth on suspected Bedrock.							
5									
6									
7									
8									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
△ Unconfined Compression Test
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-06
DATES of BORING May 21, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
0	19.0								
	18.8	ASPHALT PAVEMENT							
		FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, very dense, moist, brown.			SS	1	460	64	
1	18.1	BEDROCK Granite Bedrock, Gravel to Cobble sized, strong, very poor quality, very close fracture spacing.			RC	2	30%	0	
2									
3					RC	3	90%	0	
	15.5	End of Borehole @ 3.4 m depth.							
4									
5									
6									
7									
8									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
10 20 30 40 50 60 70 80 90
△ Unconfined Compression Test
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BOREHOLE RECORD

CLIENT Harbourside Engineering Consultants — PROJECT No. HFX-00224995-A0
LOCATION Black Brook Bridge, Nova Scotia — BOREHOLE No. BH-07
DATES of BORING May 21, 2015 — WATER LEVEL — DATUM BGS

DEPTH (m)	ELEV. (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	NUMBER	RECOVERY	N-VALUE OR RQD	OTHER TESTS
							mm		
0	21.4								
	21.0	ASPHALT PAVEMENT							
		FILL Well-graded Sand with Silt and Gravel (SW-SM) grading to Silty Sand with Gravel (SM) with depth, dense, moist to wet, brown. Trace cobbles.			SS	1	330	33	
1				▽					
2					SS	2	330	32	WC SVE
3					SS	3	130	30	
	17.4	BEDROCK Granite Bedrock, strong, fair quality, very close to close fracture spacing oriented between 0° and 20° from the horizontal with occasional 45° breaks.			RC	4	100%	69	
4	16.5	End of Borehole @ 4.9 m depth.							
5									
6									
7									
8									

Undrained Shear Strength, kPa (20 40 60 80)
Water Content & Atterberg Limit W_P W W_L
Dynamic Penetration Test, blows/0.3m ★
Standard Penetration Test, blows/0.3m ●
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Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

0	ISSUED FOR TENDER	10/27/2015
revisions		date

project / projet

BLACK BROOK BRIDGE REPLACEMENT CABOT TRAIL CAPE BRETON NOVA SCOTIA

drawing / dessin

BOREHOLE LOGS (SHEET 2 OF 2)

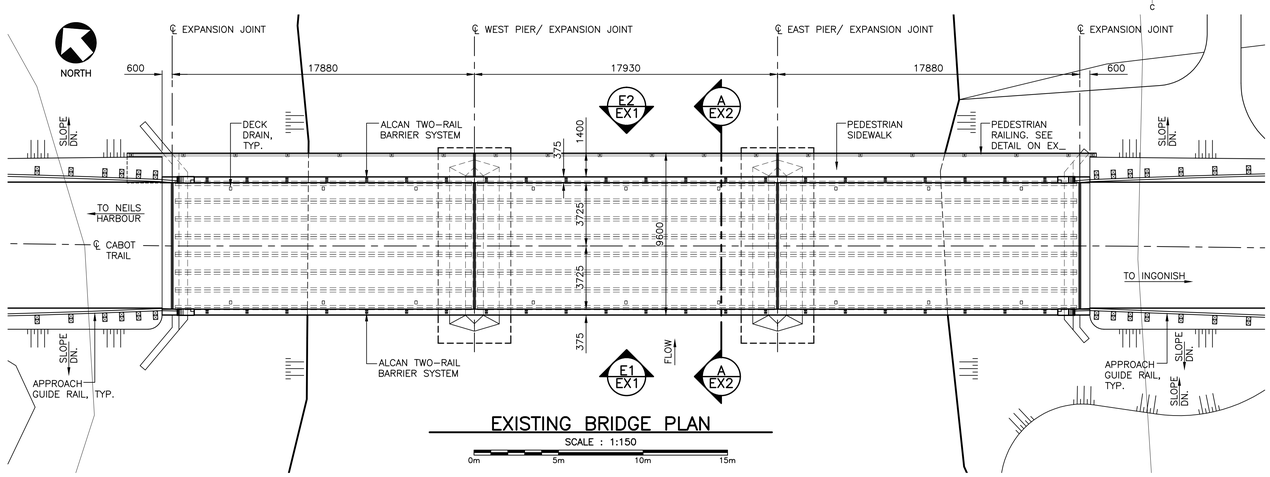
designed / conçu — date
drawn / dessiné — date
approved / approuvé — date
Tender / Soumission
PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: S24

PCA B1 (2004)

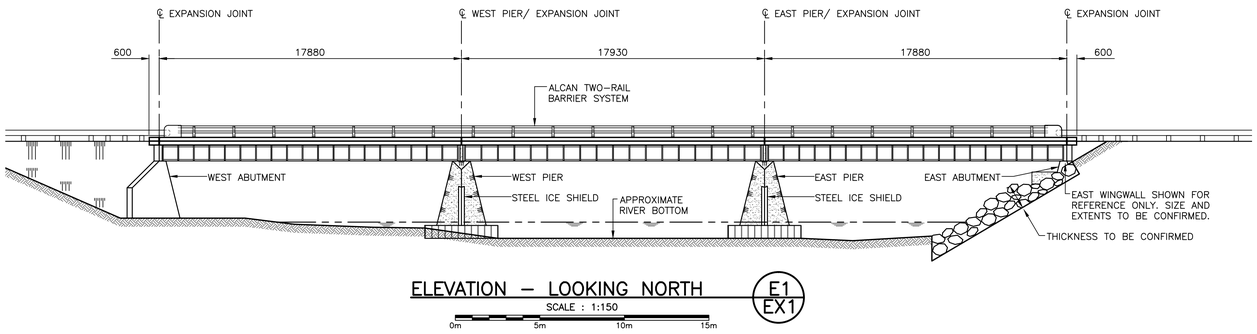
0 10 20mm 40 60 80 100 120 140 160 180 200mm



EXISTING BRIDGE PLAN

SCALE : 1:150

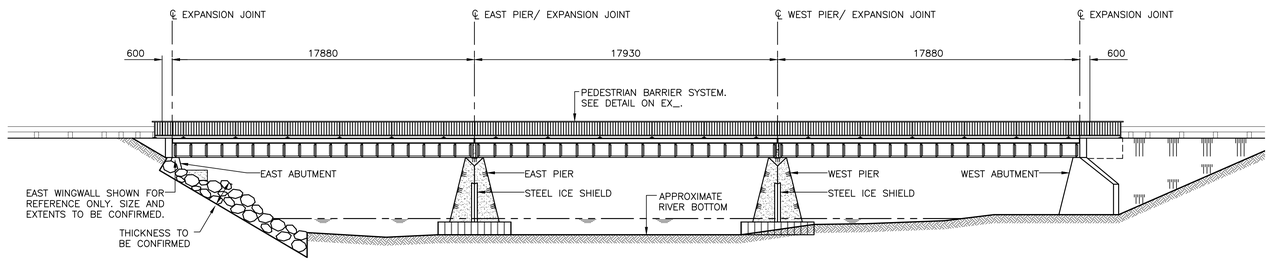
0m 5m 10m 15m



ELEVATION – LOOKING NORTH (E1 EX1)

SCALE : 1:150

0m 5m 10m 15m



ELEVATION – LOOKING SOUTH (E2 EX1)

SCALE : 1:150

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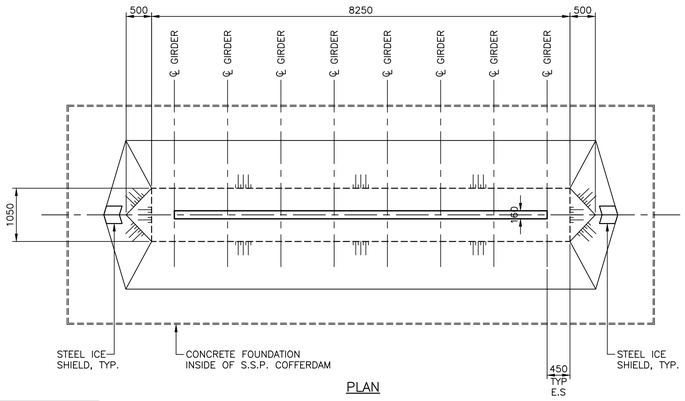
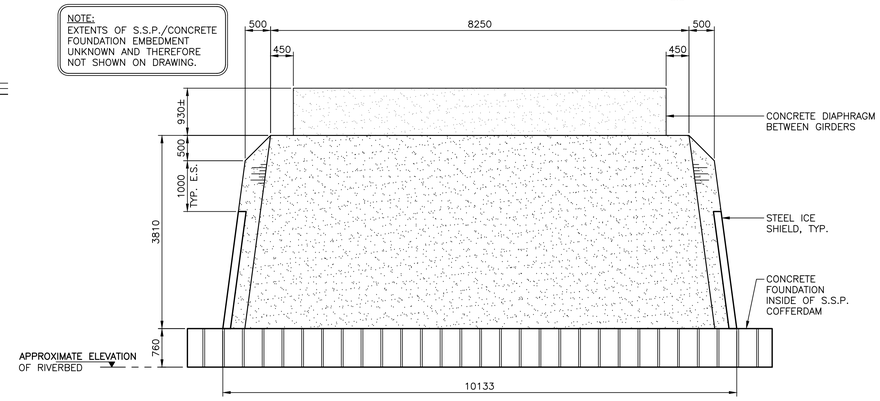


PLAN

NOTE:
EXTENTS OF S.S.P./CONCRETE FOUNDATION EMBEDMENT UNKNOWN AND THEREFORE NOT SHOWN ON DRAWING.



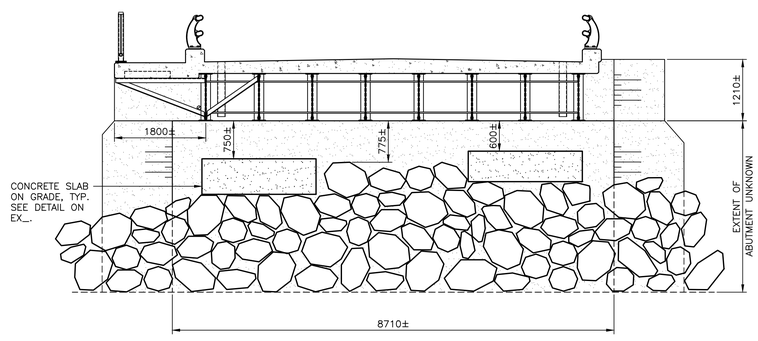
ELEVATION

DETAIL – WEST PIER (EAST PIER SIMILAR)

SCALE: 1:50

0m 1m 2m 3m 4m 5m

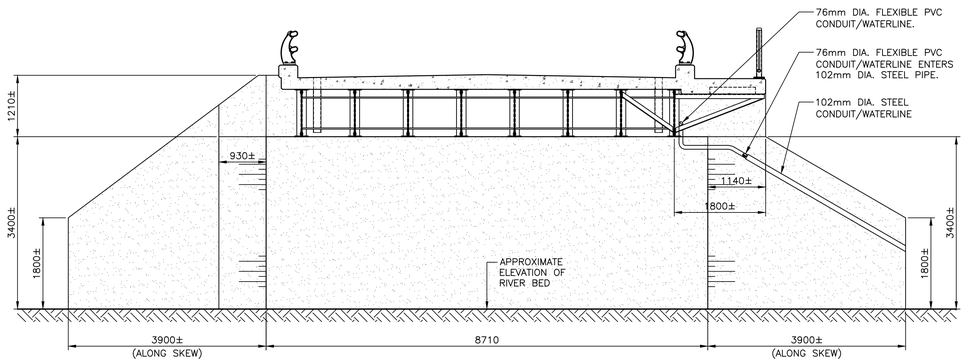
NOTE:
INFORMATION ON THIS DRAWING IS FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE AS-BUILT CONDITIONS AND REQUIREMENTS AS IT PERTAINS TO THE EXISTING BRIDGE AND SURROUNDINGS.



ELEVATION – EAST ABUTMENT

SCALE: 1:50

0m 1m 2m 3m 4m 5m



ELEVATION – WEST ABUTMENT

SCALE: 1:50

0m 1m 2m 3m 4m 5m

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

EXISTING CONDITIONS

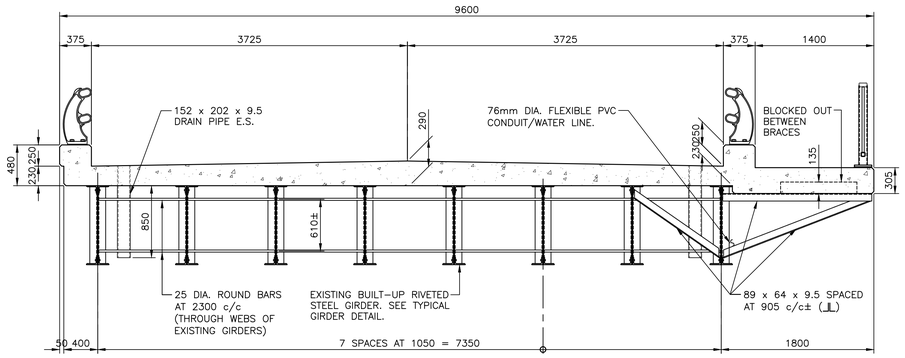
GENERAL ARRANGEMENT PLANS AND ELEVATIONS

designed / conçu
date
drawn / dessiné: GR MATHESON
date: JULY 2015
approved / approuvé
date
Tender / Soumission
PCA Project Manager / Administrateur de projets APC

project number / no. du projet: 321

drawing no. / no. du dessin: EX1

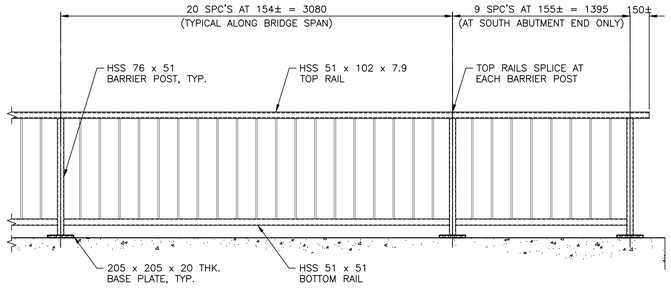
PCA B1 (2004)



SECTION A EX1

SCALE : 1:30

0mm 500mm 1000mm 1500mm 2000mm 2500mm 3000mm



TYPICAL PEDESTRIAN RAILING

SCALE : 1:20

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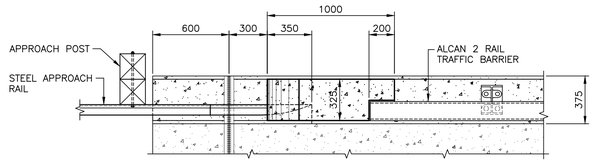
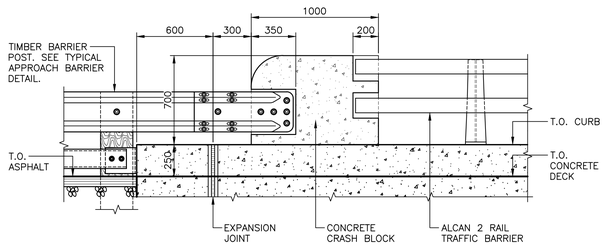


PLAN



ELEVATION

TYPICAL CRASH BLOCK

SCALE : 1:20

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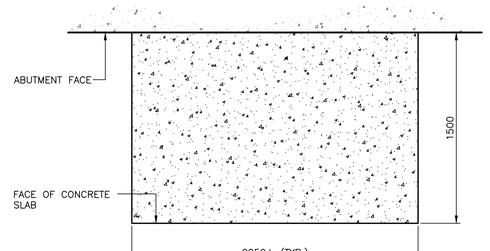
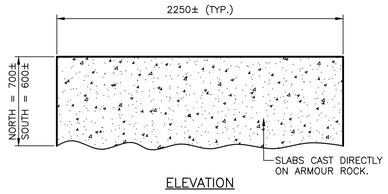


PLAN

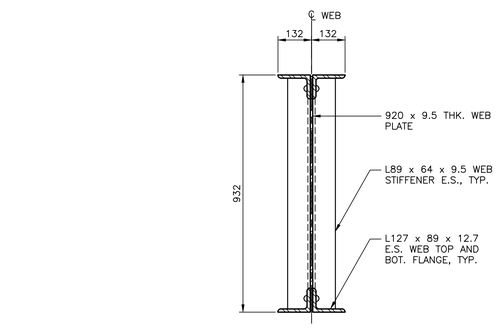


ELEVATION

CONCRETE SLAB ON GRADE – EAST ABUTMENT

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



TYPICAL GIRDER DETAIL

SCALE : 1:10

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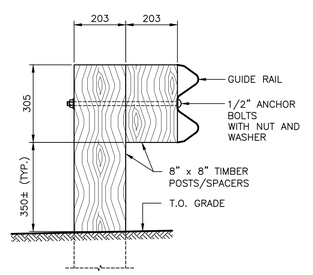

TYPICAL APPROACH BARRIER

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

Parcs Canada Parks Canada

HARBOURSIDE Engineering Consultants

revisions		date
0	ISSUED FOR TENDER	10/27 2015

project / projet

BLACK BROOK
BRIDGE REPLACEMENT
CABOT TRAIL
CAPE BRETON
NOVA SCOTIA

drawing / dessin

EXISTING CONDITIONS

GENERAL ARRANGEMENT
SECTIONS AND DETAILS

designed / conçu

date

drawn / dessiné GR MATHESON

date JULY 2015

approved / approuvé

date

Tender / Soumission

PCA Project Manager / Administrateur de projets APC

project number / no. du projet 321

drawing no. / no. du dessin EX2

PCA B1 (2004)

0 10 20mm 40 60 80 100 120 140 160 180 200mm