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WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON NOVA SCOTIA

PROJECT NO. 322A

DRAWING LIST

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- C2 PROPOSED CONDITIONS PLAN
- C3 PROFILES, SECTIONS AND DETAILS
- C4 SECTIONS AND DETAILS
- C5 PAVEMENT MARKINGS AND SIGNAGE PLAN
- C6 TEMPORARY CONDITIONS PLAN PHASE 1
- C7 TEMPORARY CONDITIONS PLAN PHASE 2

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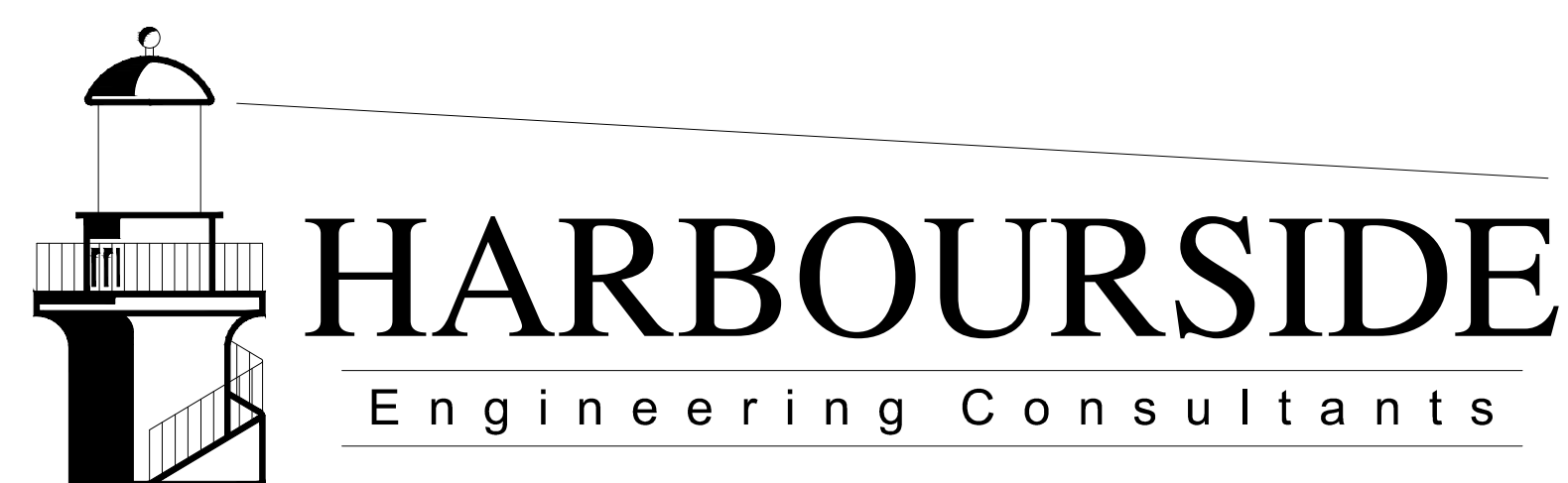
- PH1 PHASING GENERAL ARRANGEMENT
- PH2 TEMPORARY RETAINING WALLS GENERAL ARRANGEMENT
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EXISTING STRUCTURE

- EX1 EXISTING STRUCTURE PLAN, ELEVATION, SECTION AND DETAILS

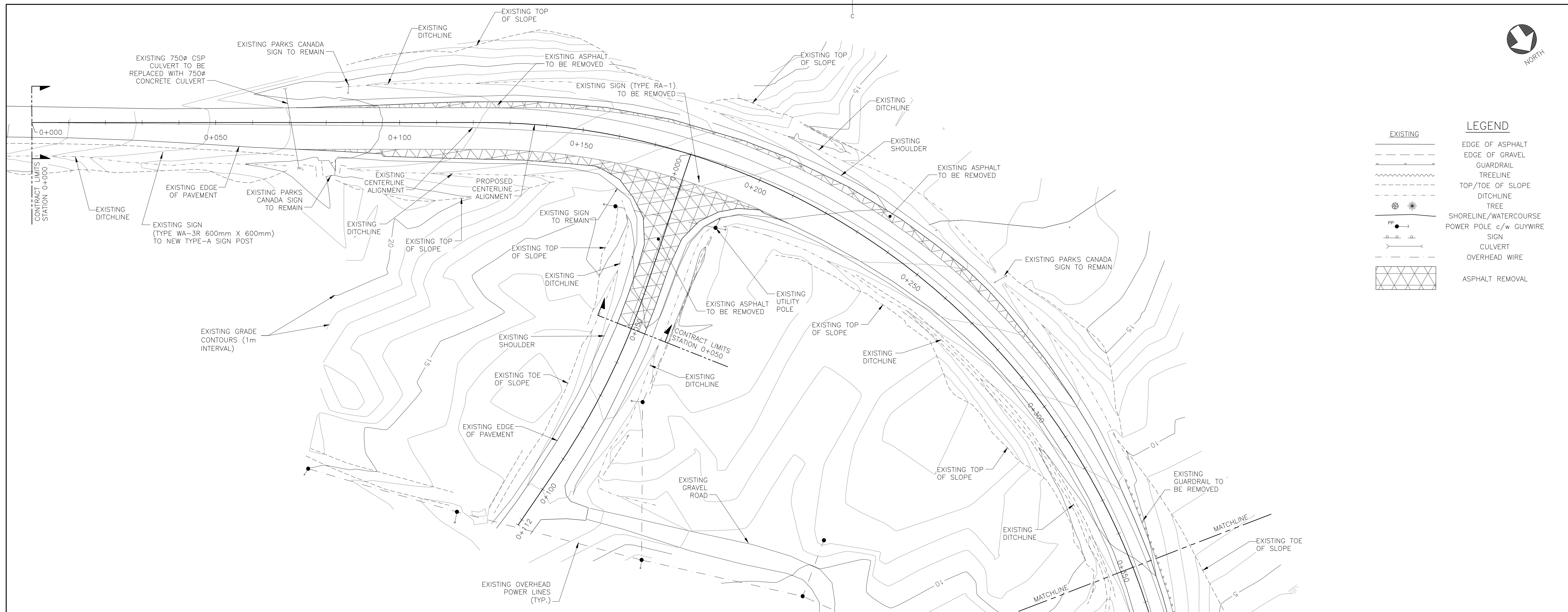


Canada



LEGEND

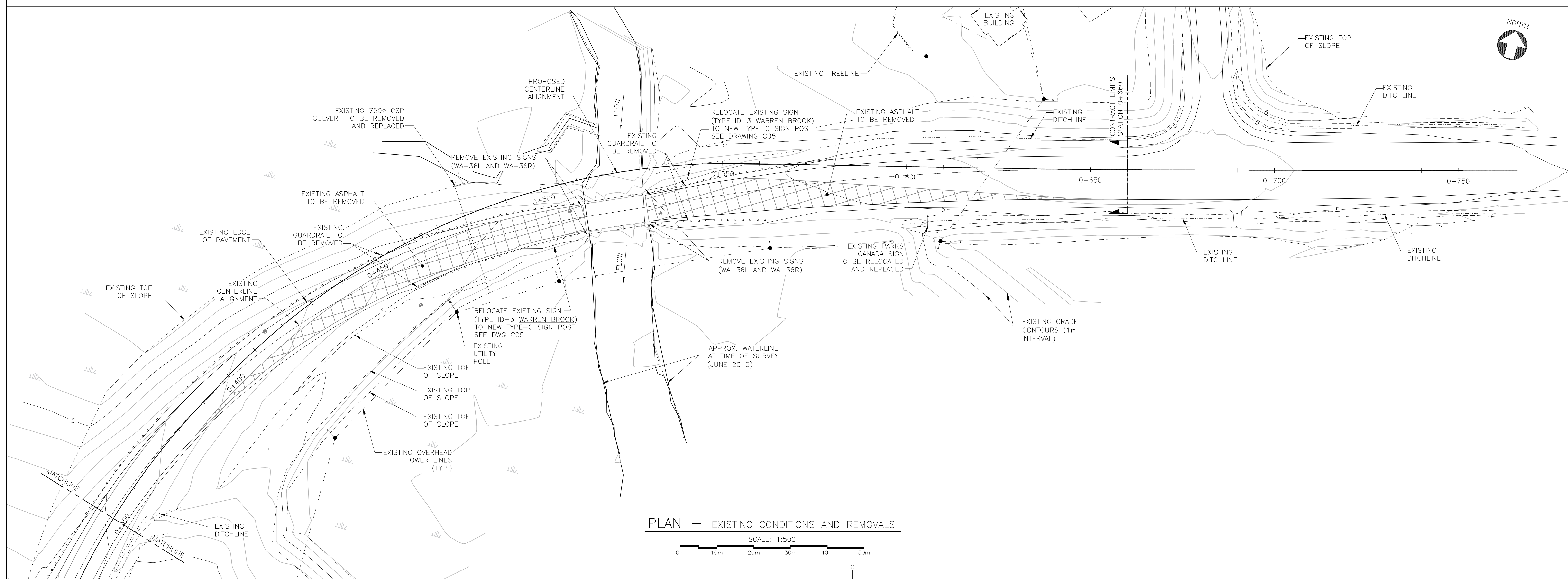
	EXISTING
	EDGE OF ASPHALT
	EDGE OF GRAVEL
	GUARDRAIL
	TREELINE
	TOP/TOE OF SLOPE
	DITCHLINE
	TREE
	SHORELINE/WATERCOURSE
	POWER POLE c/w GUYWIRE
	CULVERT
	OVERHEAD WIRE
	ASPHALT REMOVAL



PLAN — EXISTING CONDITIONS AND REMOVALS



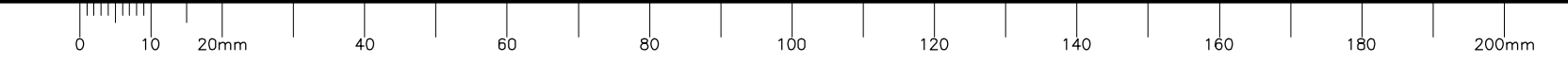
- GENERAL NOTES:**
- ALL ELEVATIONS ARE IN METERS AND REFERENCED TO NATURAL RESOURCES CANADA FIRST ORDER STATION #86N187 PUBLISHED 1987 (CGVD28) WITH AN ELEVATION OF 4.642m LOCATED ON THE SOUTHWEST END OF WARREN BROOK BRIDGE.
 - COORDINATES ARE GRID DERIVED FROM NAD83 ELLIPSOID USING THE MAPPING PROJECTION OF UNIVERSAL TRANSVERSE MERCATOR ZONE 20 HAVING A COMBINED GRID SCALE FACTOR OF 1.000091
 - TOPOGRAPHIC SURVEY COMPLETED BY DESIGN POINT ENGINEERING AND SURVEYING.
 - CONTOUR INTERVAL IS 1 METER.
 - FOR GEOTECHNICAL INFORMATION SEE REPORT BY STANTEC DATED JULY 20, 2015.



PLAN — EXISTING CONDITIONS AND REMOVALS

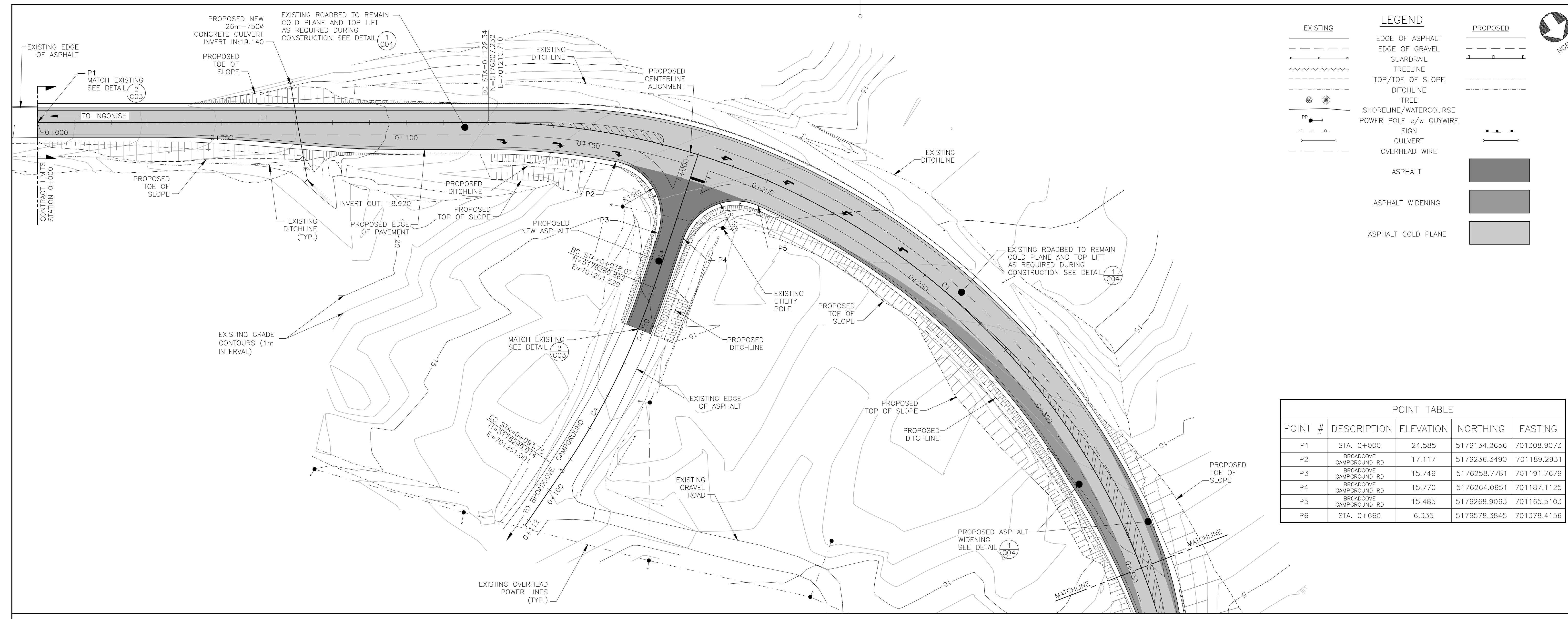


0	ISSUED FOR TENDER	010/05 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	EXISTING CONDITIONS AND REMOVALS PLAN	
designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender	<i>John Blotz</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	C01	no. du dessin



EXISTING		LEGEND		PROPOSED	
	EDGE OF ASPHALT		EDGE OF ASPHALT		EDGE OF ASPHALT
	EDGE OF GRAVEL		EDGE OF GRAVEL		EDGE OF GRAVEL
	GUARDRAIL		GUARDRAIL		GUARDRAIL
	TREE		TREE		TREE
	TOP/TOE OF SLOPE		TOP/TOE OF SLOPE		TOP/TOE OF SLOPE
	DITCHLINE		DITCHLINE		DITCHLINE
	SHORELINE/WATERCOURSE		SHORELINE/WATERCOURSE		SHORELINE/WATERCOURSE
	POWER POLE c/w GUYWIRE		POWER POLE c/w GUYWIRE		POWER POLE c/w GUYWIRE
	SIGN		SIGN		SIGN
	CULVERT		CULVERT		CULVERT
	OVERHEAD WIRE		OVERHEAD WIRE		OVERHEAD WIRE
	ASPHALT		ASPHALT		ASPHALT
	ASPHALT WIDENING		ASPHALT WIDENING		ASPHALT WIDENING
	ASPHALT COLD PLANE		ASPHALT COLD PLANE		ASPHALT COLD PLANE

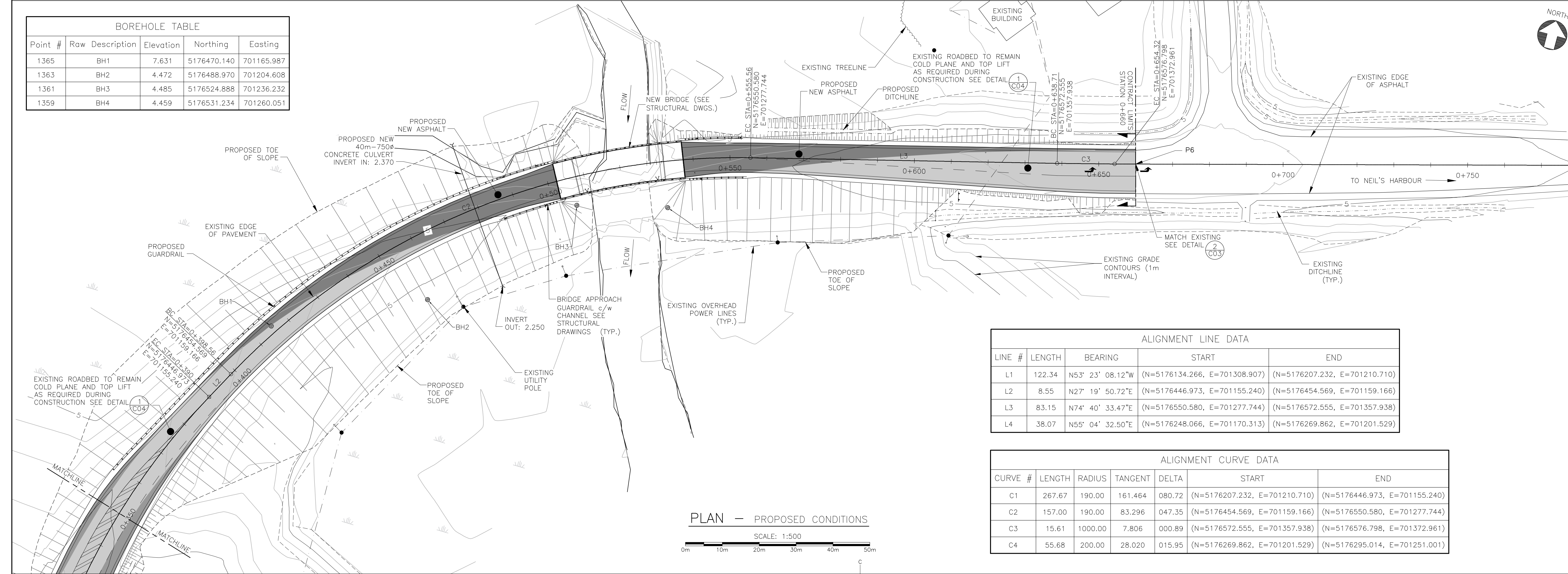
- GENERAL NOTES:
- FOR GENERAL NOTES SEE DRAWING C01.
 - FOR PAVEMENT MARKINGS AND SIGNAGE DETAILS SEE DRAWING C05.
 - PROPOSED DESIGN MEETS NSTIR REQUIREMENTS FOR 70km/hr SPEED RATING.
 - ASPHALT CONCRETE GUTTER c/w OFFTAKE GUTTERS TO BE INSTALLED AS PER NSTIR DETAIL 023 ON NORTHERN (LOWER) ROAD SHOULDER FROM STATION 0+200 TO 0+500 AND FROM STATION 0+550 TO 0+650.



POINT TABLE				
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
P1	STA. 0+000	24.585	5176134.2656	701308.9073
P2	BROADCOVE CAMPGROUND RD	17.117	5176236.3490	701189.2931
P3	BROADCOVE CAMPGROUND RD	15.746	5176258.7781	701191.7679
P4	BROADCOVE CAMPGROUND RD	15.770	5176264.0651	701187.1125
P5	BROADCOVE CAMPGROUND RD	15.485	5176268.9063	701165.5103
P6	STA. 0+660	6.335	5176578.3845	701378.4156

PLAN — PROPOSED CONDITIONS
SCALE: 1:500

BOREHOLE TABLE				
Point #	Raw Description	Elevation	Northing	Easting
1365	BH1	7.631	5176470.140	701165.987
1363	BH2	4.472	5176488.970	701204.608
1361	BH3	4.485	5176524.888	701236.232
1359	BH4	4.459	5176531.234	701260.051

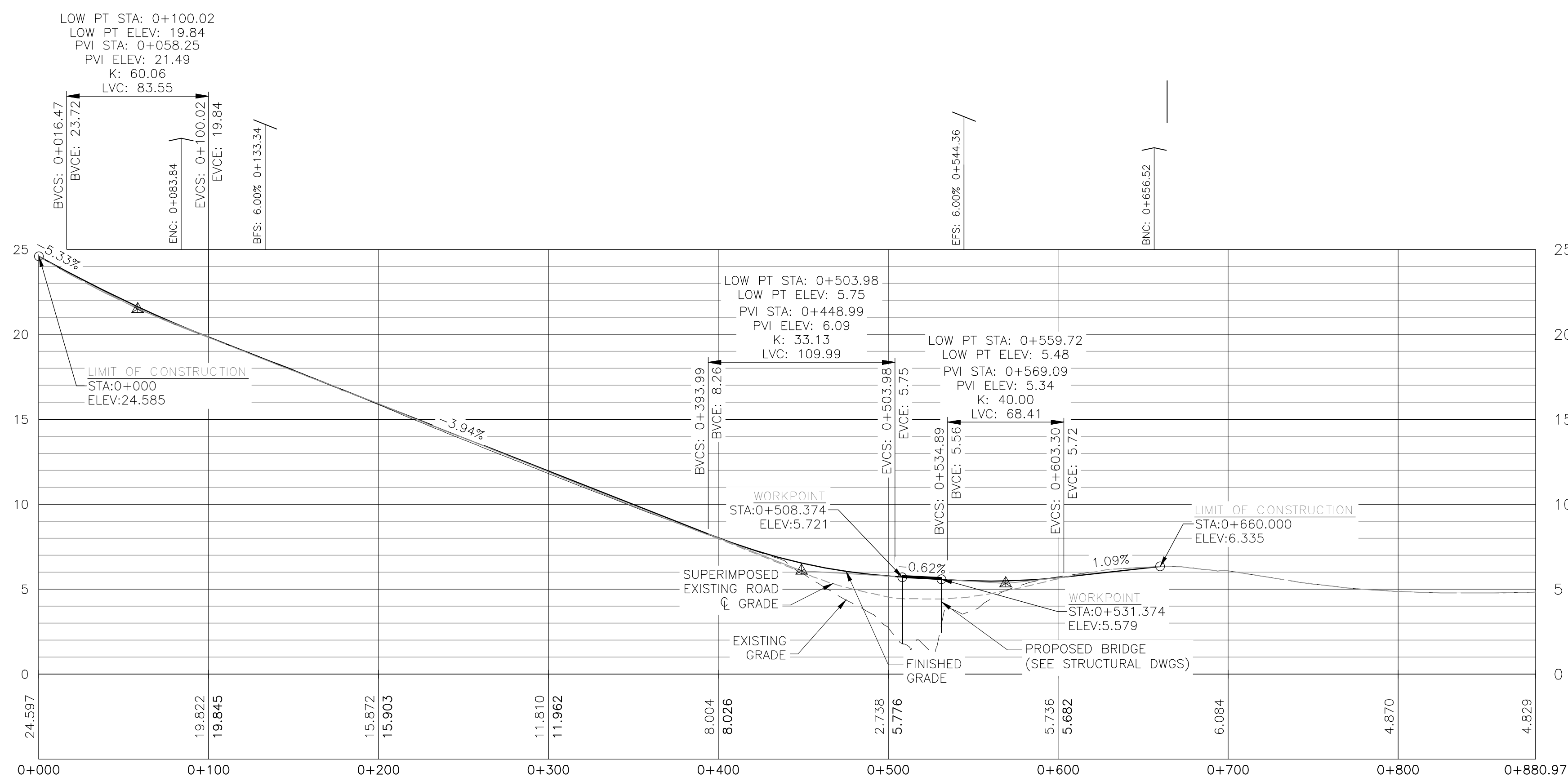


ALIGNMENT LINE DATA				
LINE #	LENGTH	BEARING	START	END
L1	122.34	N53° 23' 08.12"W	(N=5176134.266, E=701308.907)	(N=5176207.232, E=701210.710)
L2	8.55	N27° 19' 50.72"E	(N=5176446.973, E=701155.240)	(N=5176454.569, E=701159.166)
L3	83.15	N74° 40' 33.47"E	(N=5176550.580, E=701277.744)	(N=5176572.555, E=701357.938)
L4	38.07	N55° 04' 32.50"E	(N=5176248.066, E=701170.313)	(N=5176269.862, E=701201.529)

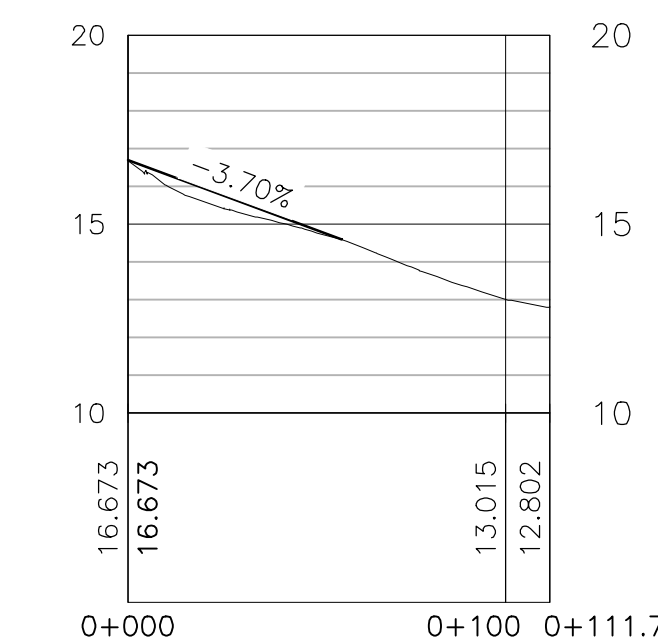
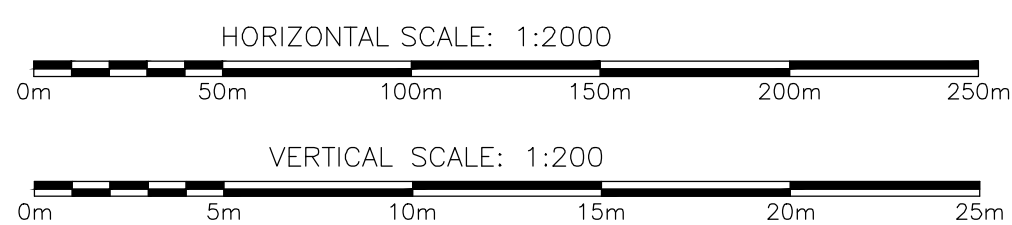
ALIGNMENT CURVE DATA						
CURVE #	LENGTH	RADIUS	TANGENT	DELTA	START	END
C1	267.67	190.00	161.464	080.72	(N=5176207.232, E=701210.710)	(N=5176446.973, E=701155.240)
C2	157.00	190.00	83.296	047.35	(N=5176454.569, E=701159.166)	(N=5176550.580, E=701277.744)
C3	15.61	1000.00	7.806	000.89	(N=5176572.555, E=701357.938)	(N=5176576.798, E=701372.961)
C4	55.68	200.00	28.020	015.95	(N=5176269.862, E=701201.529)	(N=5176295.014, E=701251.001)

PLAN — PROPOSED CONDITIONS
SCALE: 1:500

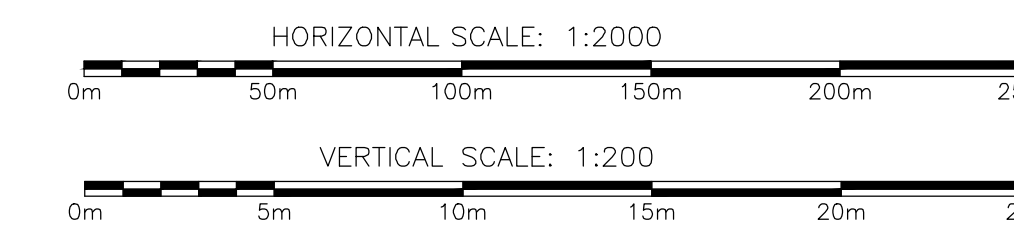
0	ISSUED FOR TENDER	010/05/2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	project
drawing	PROPOSED CONDITIONS PLAN	design
designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender	<i>John Blotz</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	C02	no. du dessin



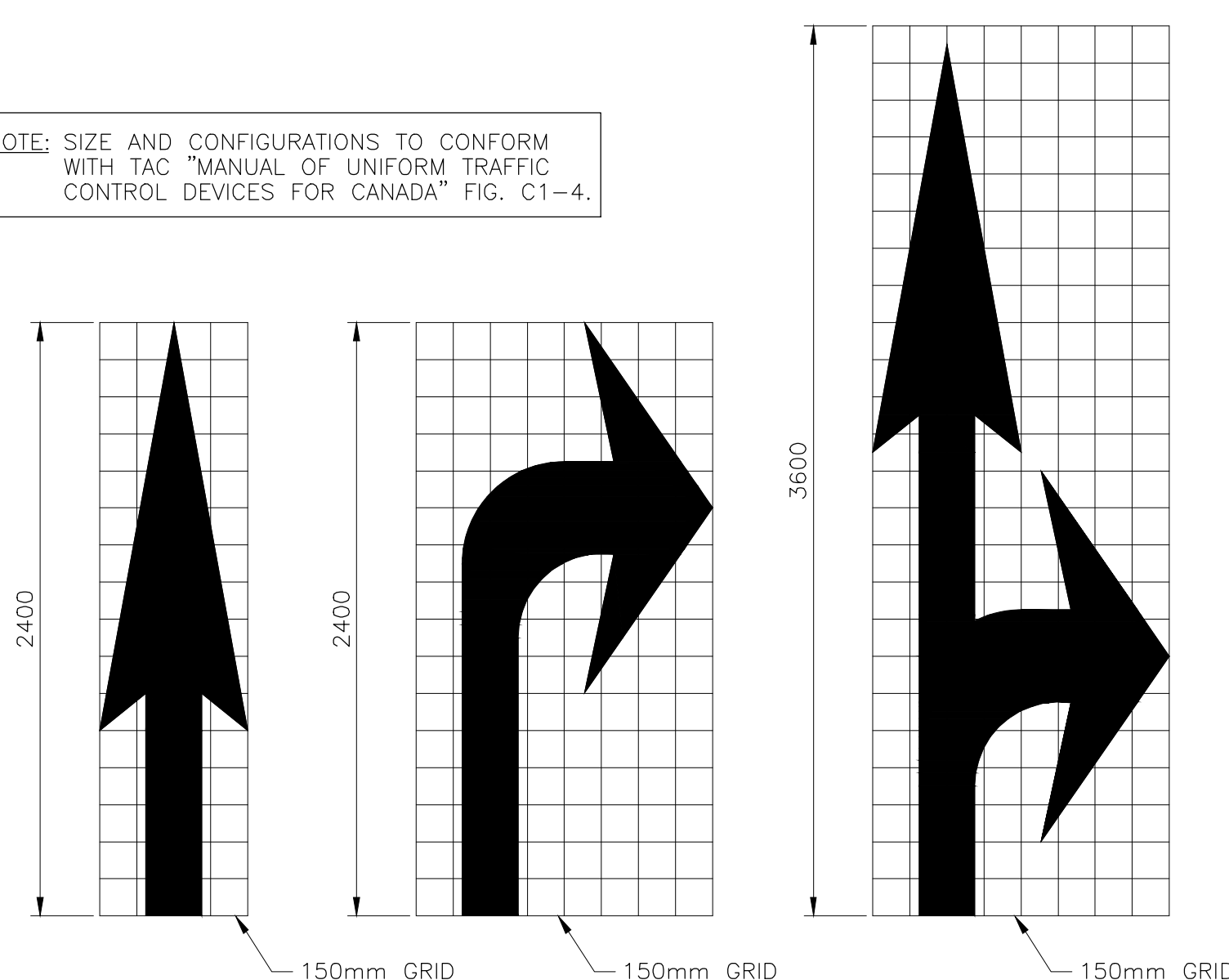
PROFILE — PROPOSED ROAD ALIGNMENT



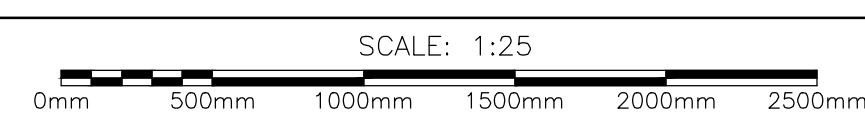
PROFILE — PROPOSED BROADCOVE CAMPGROUND ROAD



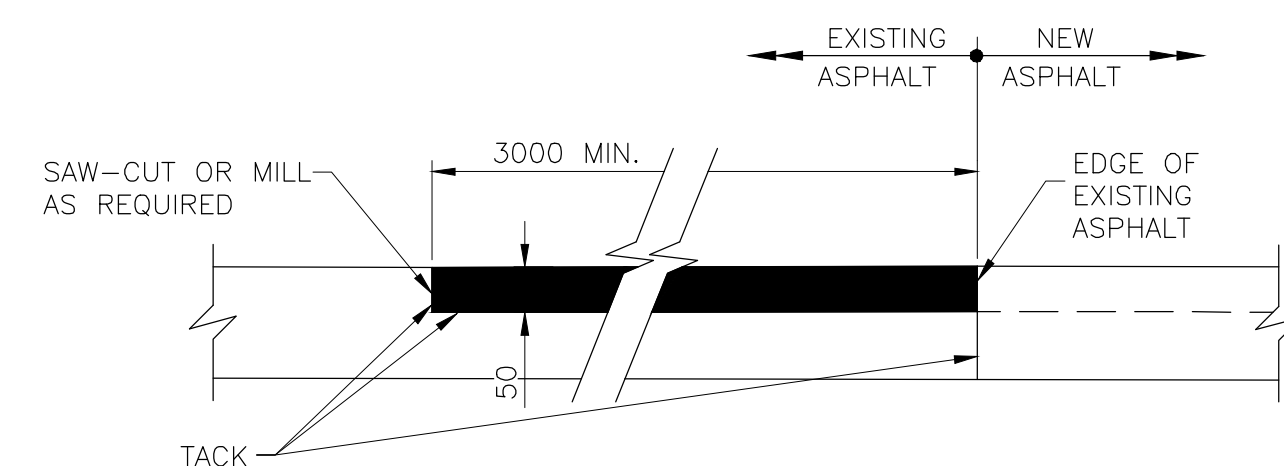
NOTE: SIZE AND CONFIGURATIONS TO CONFORM WITH TAC "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CANADA" FIG. C1-4.



DETAIL — PAVEMENT MARKINGS



1
C05



TYPICAL DETAIL — ASPHALT TRANSITION

SCALE: N.T.S.

2
C02

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

GENERAL NOTES:
1. FOR GENERAL NOTES SEE DRAWING C01.

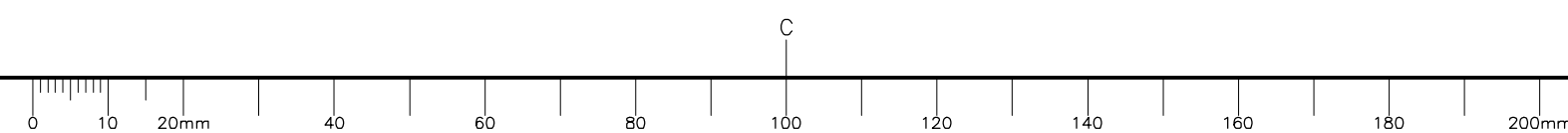
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revisions		date

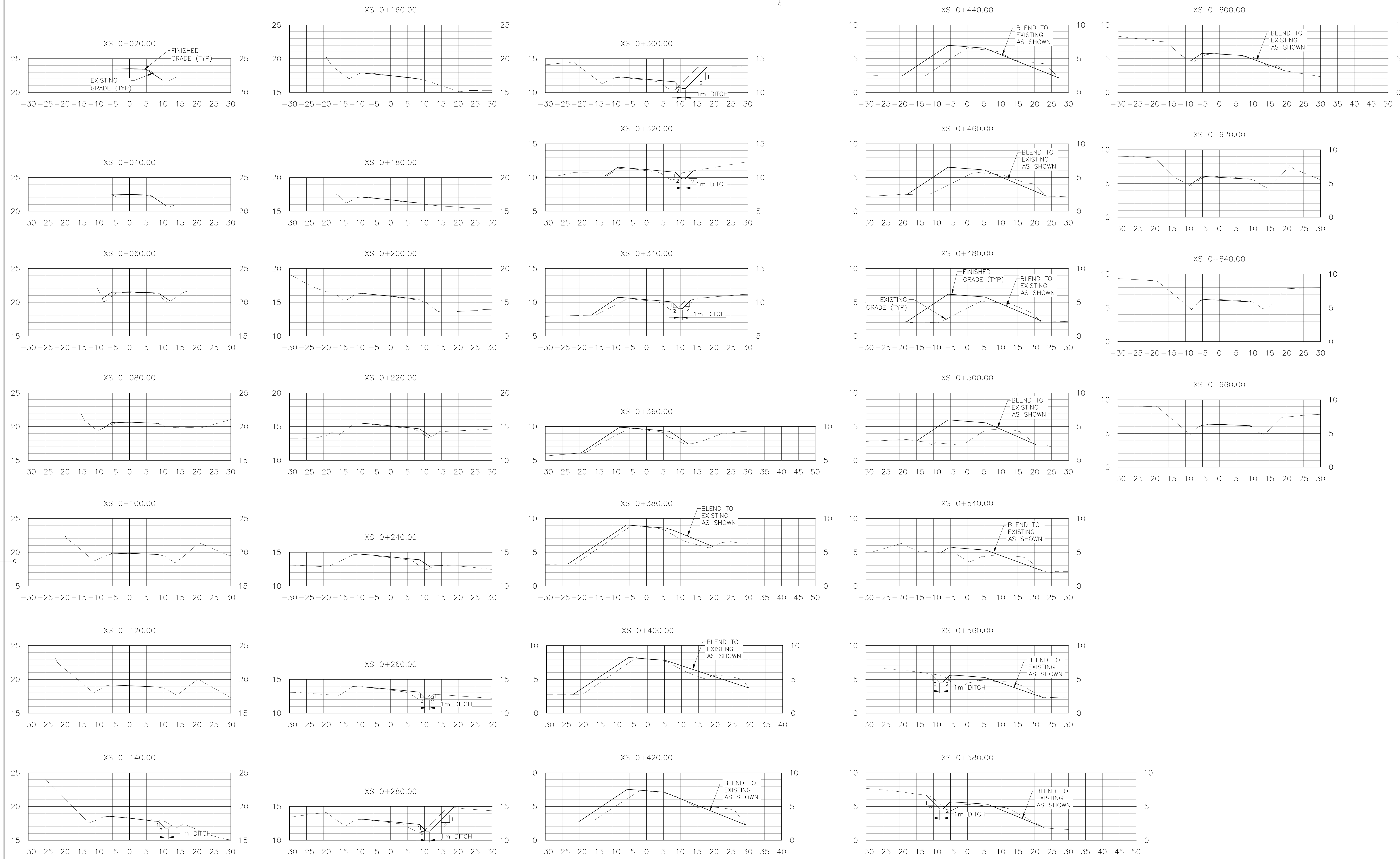
project
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

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	<i>Debra Cebely</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	C03	no. du dessin





GENERAL NOTES:
1. FOR GENERAL NOTES SEE DRAWING C01.

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revisions		date

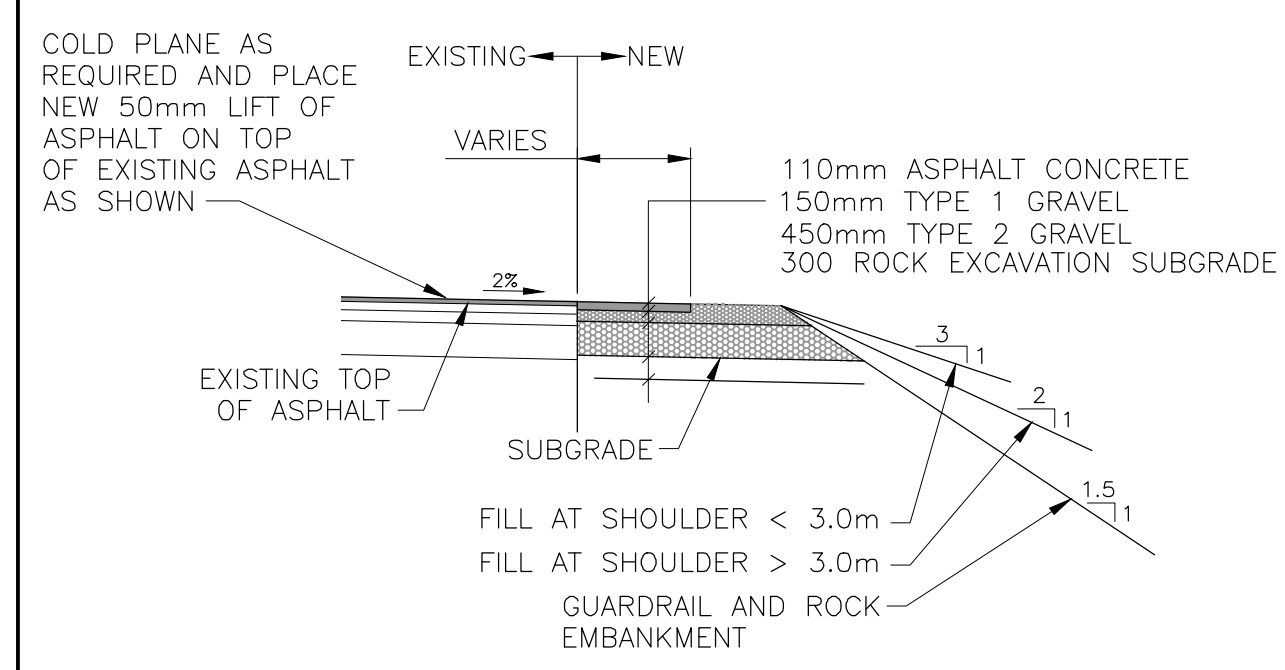
project
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

drawing
dessin

SECTIONS AND DETAILS

designed	MICHAEL S. MACDONALD	corrigé
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender	<i>John Kelly</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

322A
drawing no. no. du dessin
C04

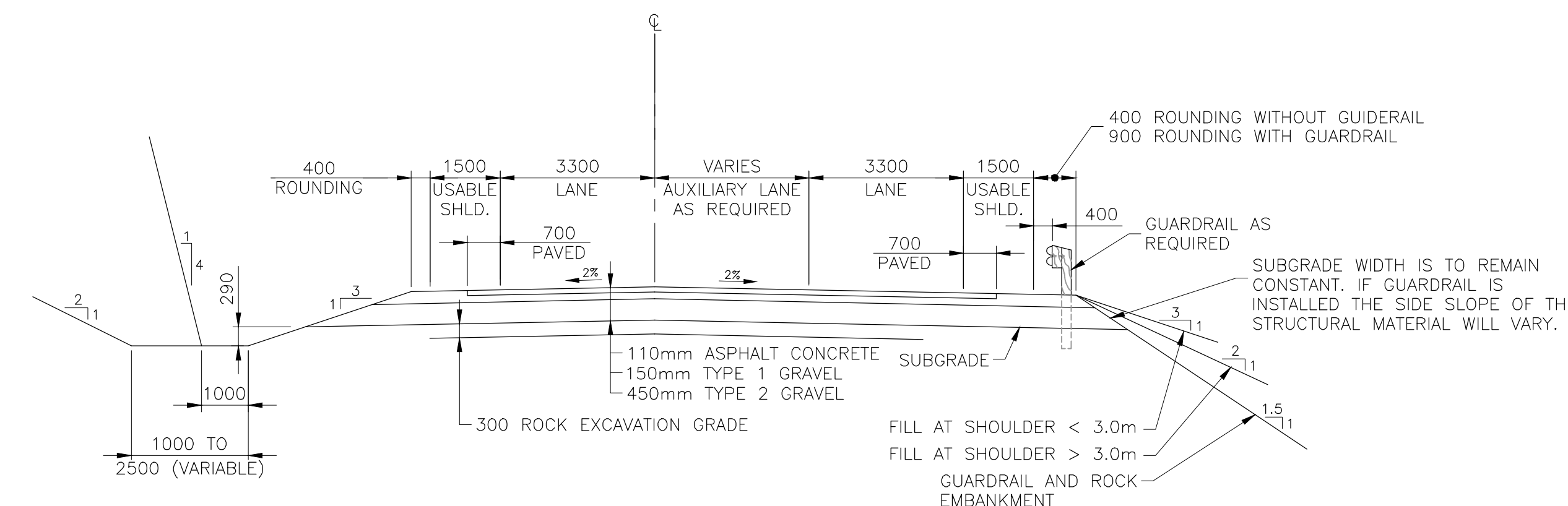
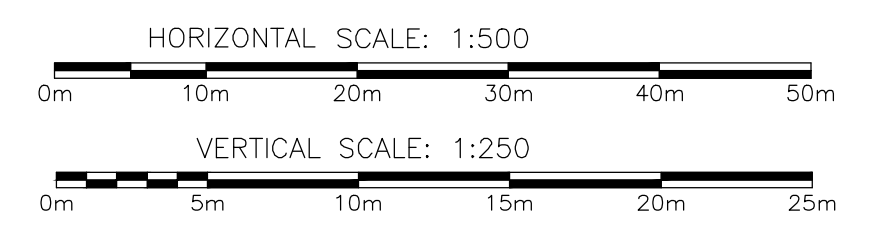


DETAIL - EXISTING ASPHALT WIDENING/BLENDING



1
C02

SECTIONS

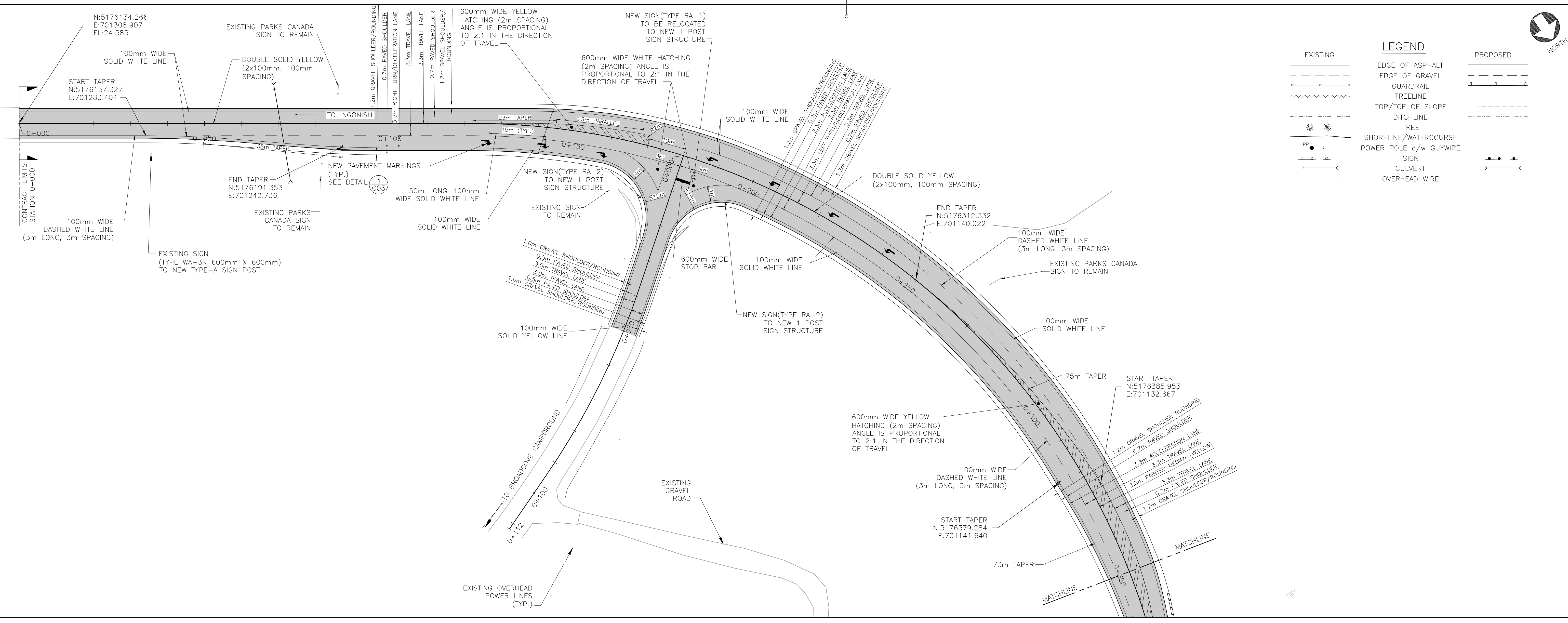


DETAIL - REVISED MINOR COLLECTOR TYPE 'F'

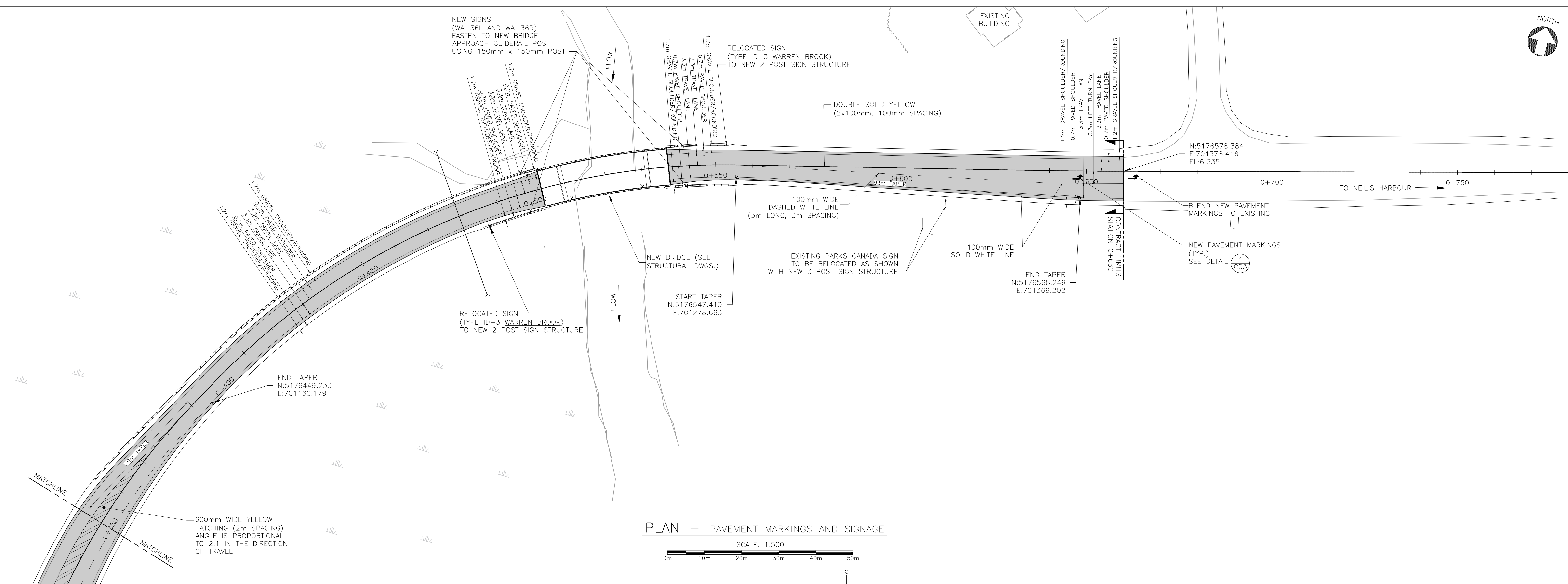
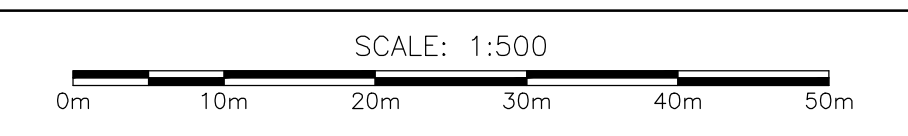


2
C02

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



PLAN — PAVEMENT MARKINGS AND SIGNAGE



PLAN — PAVEMENT MARKINGS AND SIGNAGE



- GENERAL NOTES:
- FOR GENERAL NOTES SEE DRAWING C01.
 - ALL SIGN POSTS TO BE INSTALLED AS PER NOVA SCOTIA TRANSPORTATION AND INFRASTRUCTURE RENEWAL DETAILS. SEE DRAWING C03 FOR THE LIST OF THESE SIGN POST INSTALLATION DETAILS.

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project	WARREN BROOK BRIDGE REPLACEMENT	
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	design	
	PAVEMENT MARKINGS AND SIGNAGE PLAN	
designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIEDT	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender	<i>John Blotz</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	
drawing no.	C05	

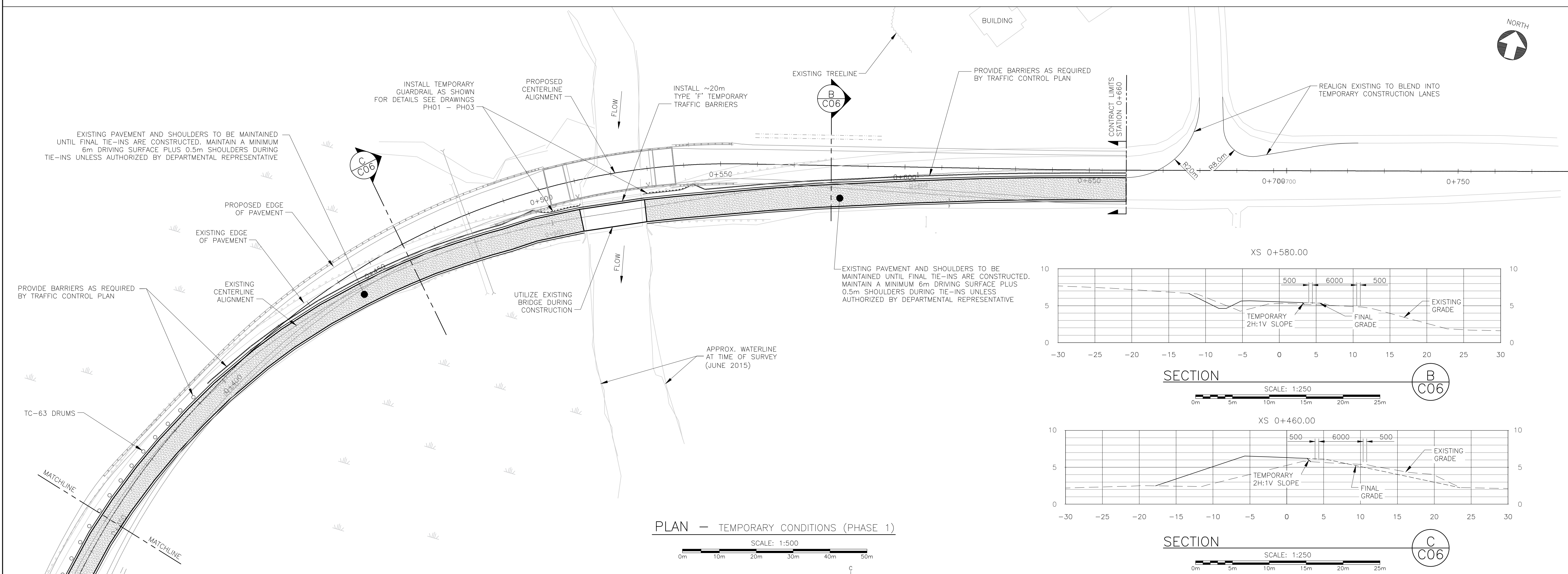
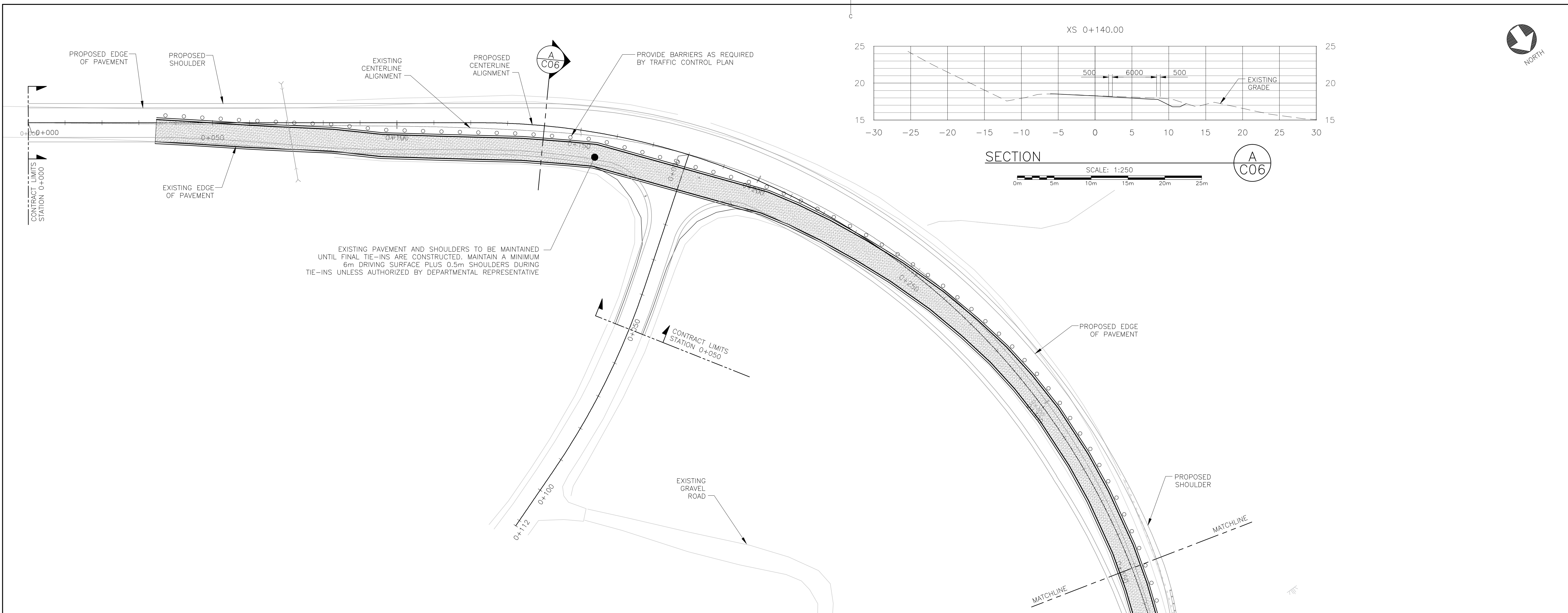
GENERAL NOTES:
1. FOR GENERAL NOTES SEE DRAWING C01.

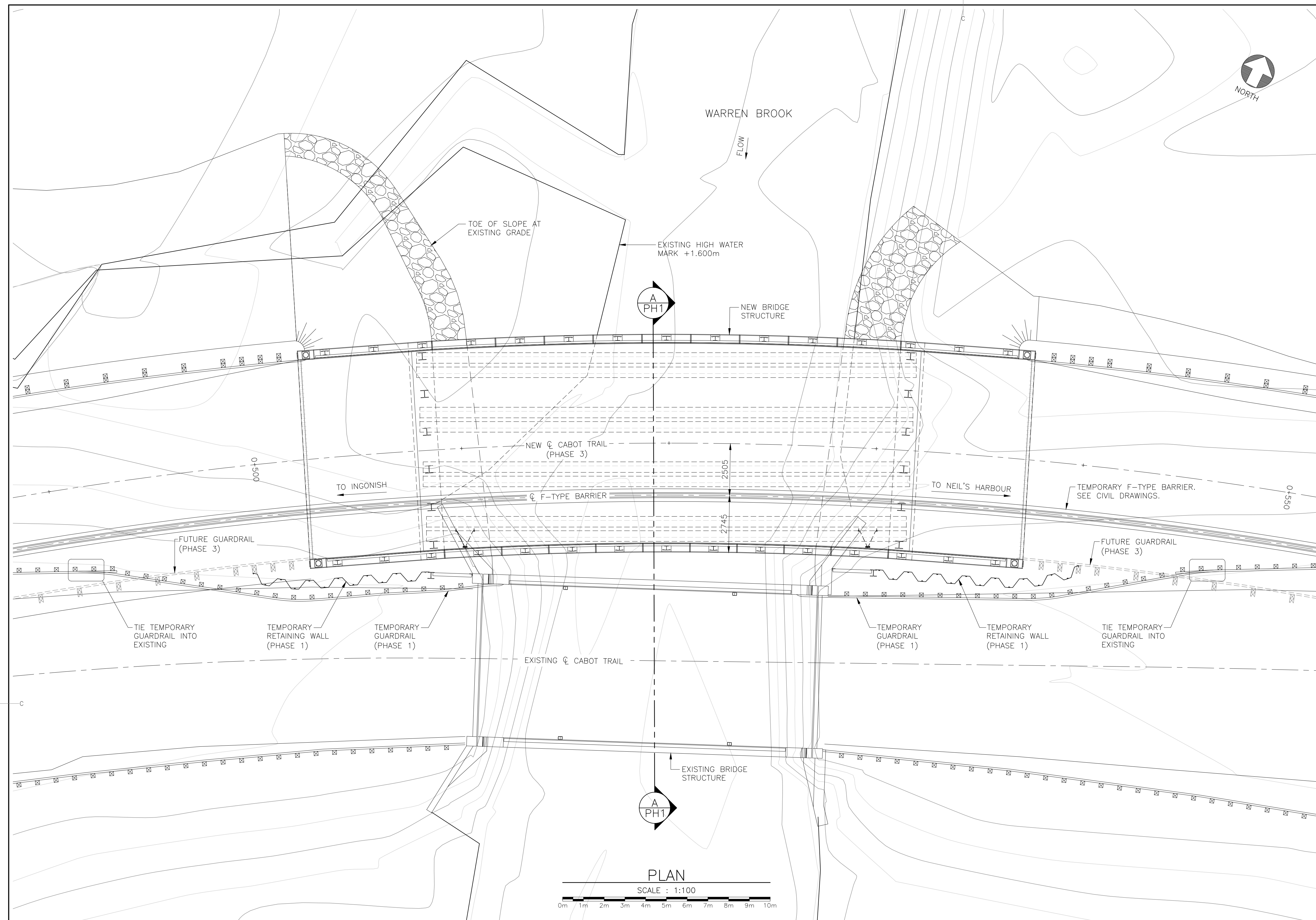


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project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	projet

TEMPORARY CONDITIONS
PLAN
PHASE 1

designed	MICHAEL S. MACDONALD	conçu
date	AUG 2015	
drawn	CRAIG SIEGFRIED	dessiné
date	AUG 2015	
approved	MARK PERTUS	approuvé
date	AUG 2015	
Tender	<i>John Blissett</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
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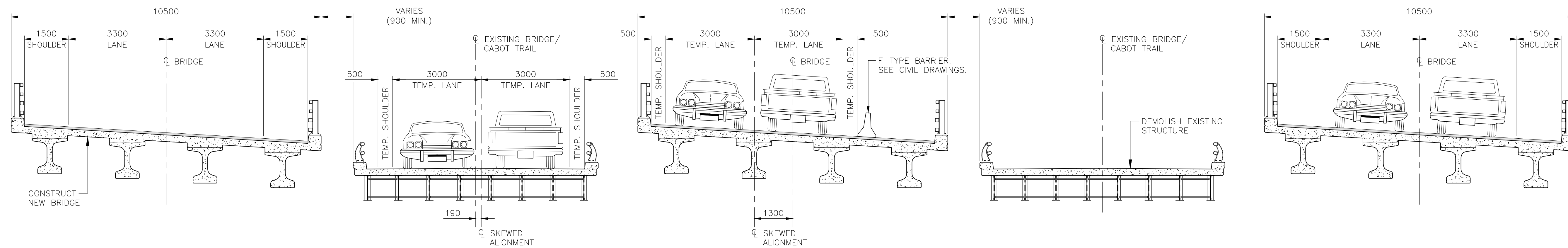




GENERAL WORK PROCEDURE:

1. SEE CIVIL DRAWINGS FOR APPROACH CONSTRUCTION PHASING.
2. INSTALL ENVIRONMENTAL CONTROL MEASURES AS REQUIRED BY CONTRACT DOCUMENTS.
3. INSTALL TEMPORARY BARRIERS AS NOTED ON CONTRACT DOCUMENTS SKEWING TRAFFIC TO THE SOUTH OF THE EXISTING CABOT TRAIL ALIGNMENT (PHASE 1).
4. INSTALL TEMPORARY RETAINING WALLS AT EAST AND WEST ABUTMENTS AS NOTED ON CONTRACT DRAWINGS. SEE RETAINING WALL DRAWINGS FOR SPECIFICS AS TO WALL INSTALLATION.
5. EXCAVATE FOR NEW BRIDGE ABUTMENTS AS NOTED ON CONTRACT DRAWINGS. COMPLETED PARTIAL REMOVALS OF EXISTING WINGWALLS AS NOTED ON RETAINING WALL DRAWINGS DURING EXCAVATION.
6. INSTALL EAST AND WEST ABUTMENT PILES AS NOTED ON CONTRACT DRAWINGS.
7. CAST INTEGRAL ABUTMENT PILE CAP AND WINGWALLS UP TO BEAM SEAT ELEVATION.
8. AFTER ABUTMENT CONCRETE REACHES DESIGN STRENGTH, ERECT PRE-CAST CONCRETE GIRDERS.
9. PERMANENTLY SET BEARINGS OF EACH GIRDER.
10. FORM AND CAST THE CONCRETE DECK ON THE GIRDERS, LEAVING 3 METER STRIP AT EACH END OF THE DECK (ADJACENT TO THE INTEGRAL ABUTMENTS). COMPLETE THE INTEGRAL ABUTMENTS, WINGWALLS AND 3 METER DECK STRIP ONCE ALL DECK CONCRETE (EXCLUDING CURBS) HAS BEEN PLACED.
11. COMPLETE BACKFILLING AROUND ABUTMENTS WITH FAS IN ACCORDANCE WITH THE CONTRACT DRAWINGS. BACKFILLING AT EACH ABUTMENT TO BE COMPLETED IN A BALANCED MANNER SO AS NOT TO RACK THE STRUCTURE.
12. FORM AND CAST CONCRETE APPROACH SLABS.
13. FORM AND CAST CONCRETE CURB AND END CRASH BLOCKS.
14. INSTALL STEEL TRAFFIC BARRIER ON TOP OF CURBS AND WINGWALLS.
15. APPLY WATERPROOFING MEMBRANE AND ASPHALT WEARING SURFACE ON BRIDGE DECK AND APPROACH SLABS.
16. DRESS NORTH SLOPES COMPLETE WITH RIP-RAP (NOTE THAT RIP RAP MAY BE INSTALLED LATER WITH REMAINING RIP RAP - SEE STEP 21)
17. INSTALL TEMPORARY BARRIERS AS NOTED ON CONTRACT DRAWINGS SKEWING TRAFFIC TO THE NORTH OF THE NEW CABOT TRAIL ALIGNMENT (PHASE 2).
18. TRANSFER TRAFFIC ONTO NEW STRUCTURE (SKEWED NORTH).
19. REMOVE TEMPORARY RETAINING WALLS FROM EAST AND WEST ABUTMENTS. ALL COMPONENTS TO BE REMOVED TO 1000mm BELOW FINISHED GRADE.
20. COMPLETE DEMOLITION OF EXISTING STRUCTURE TO 300mm BELOW NEW FINISHED GRADE.
21. DRESS ALL SLOPES AND INSTALL RIP-RAP AS PER CONTRACT DOCUMENTS.
22. REMOVE TEMPORARY BARRIERS ALLOWING FREE FLOWING TRAFFIC ON NEW CABOT TRAIL ALIGNMENT (PHASE 3).
23. REMOVE ENVIRONMENTAL CONTROLS AFTER APPROVAL FROM DEPARTMENTAL REPRESENTATIVE.

PLAN
SCALE : 1:100

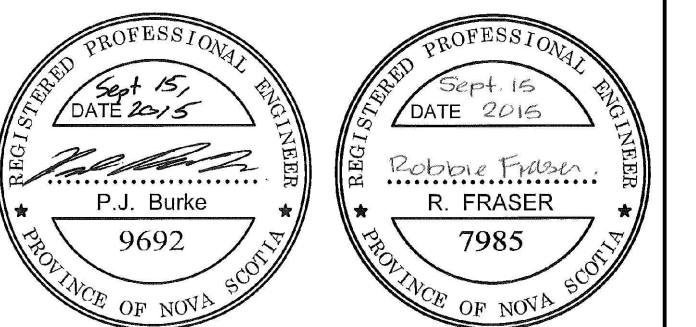


PHASE 1 - SKEW TRAFFIC SOUTH

PHASE 2 - SKEW TRAFFIC NORTH DURING BRIDGE CONSTRUCTION

PHASE 3 - FINAL ALIGNMENT

SECTION - TRAFFIC PHASING
SCALE : 1:75

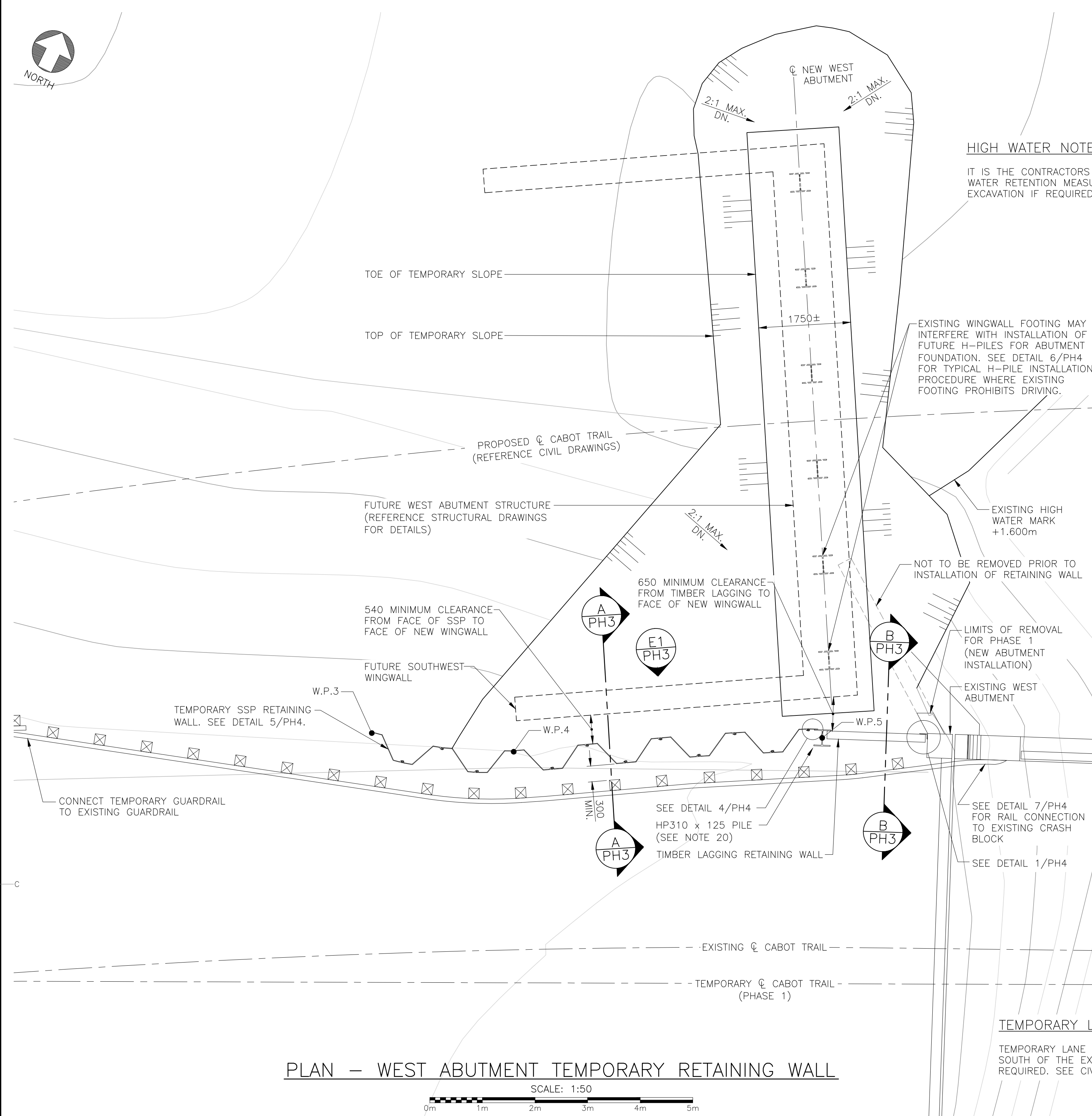


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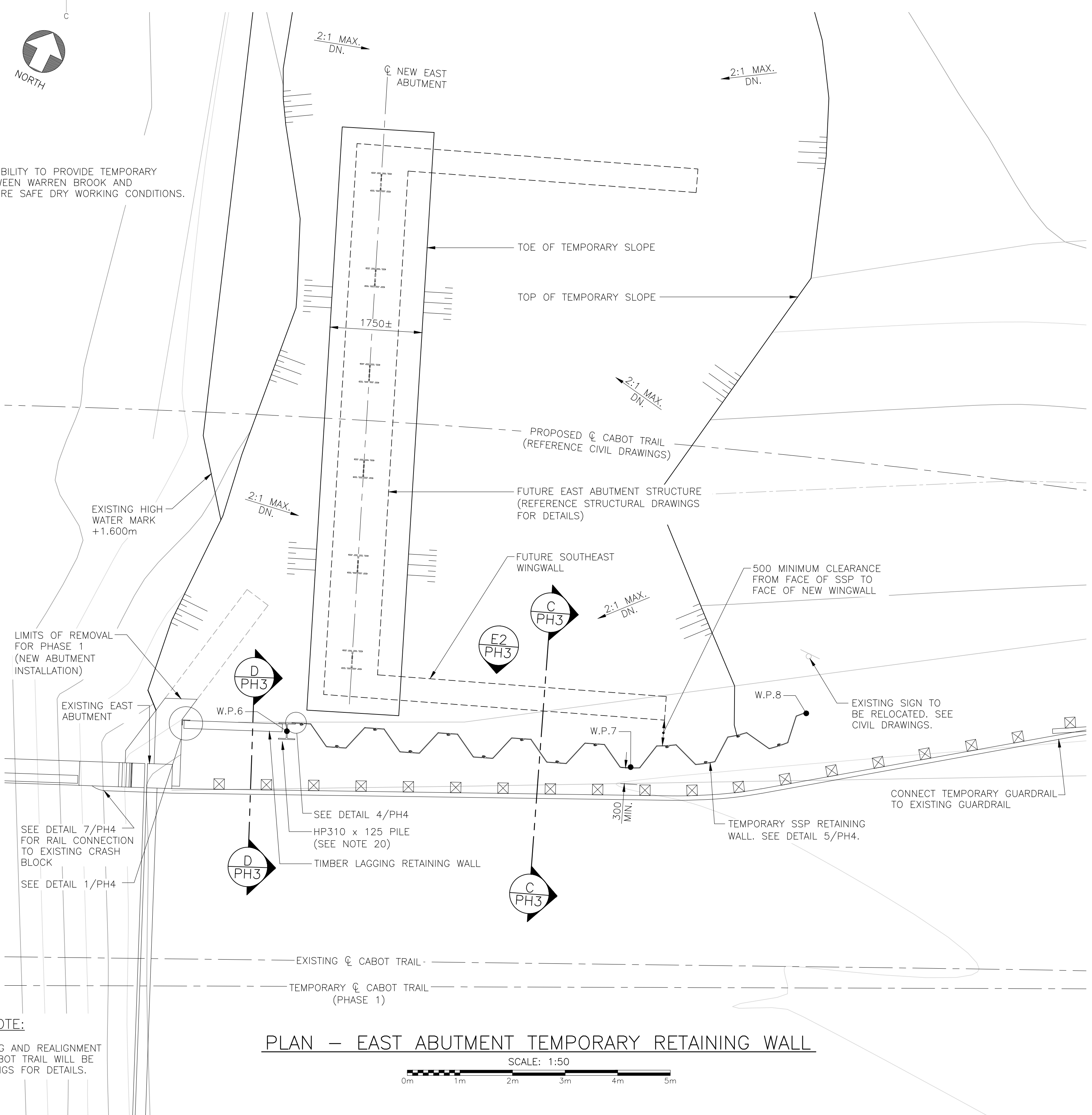
WARREN BROOK
BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

PHASING
GENERAL ARRANGEMENT

designed JAMIE STUART	conçu
date JULY 2015	
drawn JEFF CLARK	dessiné
date JULY 2015	
approved PAUL BURKE	approuvé
date JULY 2015	
Tender	Submission
PCA Project Manager <i>Debra Clouty</i>	Administrateur de projets APC
project number	no. du projet
322A	
drawing no.	no. du dessin
PH1	



PLAN - WEST ABUTMENT TEMPORARY RETAINING WALL

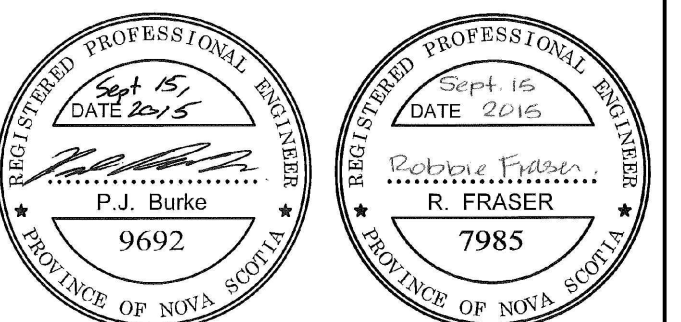


PLAN - EAST ABUTMENT TEMPORARY RETAINING WALL

- GENERAL NOTES:**
- DESIGN AND CONSTRUCTION AS PER THE REQUIREMENTS OF CAN/CSA-S16-14 LATEST EDITION AND REVISIONS.
 - ALL WORK SHALL BE IN ACCORDANCE WITH NOVA SCOTIA OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.
 - ALL DIMENSIONS ARE IN MILLIMETERS. ALL ELEVATIONS ARE IN METERS.
 - 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.
 - 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.
 - RETAINING WALL DESIGN ASSUMES THAT THE LOCAL GROUNDWATER TABLE FLUCTUATES WITH THE ELEVATION OF WARREN BROOK AND THAT EXCAVATION IS KEPT DRY AT ALL TIMES. DESIGN INCLUDES NO ALLOWANCE FOR DIFFERENTIAL HYDROSTATIC PRESSURE ON THE WALL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPORT PERCHED WATER TABLE CONDITIONS TO THE DEPARTMENTAL REPRESENTATIVE IF PRESENT.
 - ALL STRUCTURAL STEEL SHALL BE NEW STOCK AND CONFORM TO THE FOLLOWING GRADES AND STANDARDS.
 - A) HP SECTIONS, ANGLES AND SSP SECTIONS TO CAN/CSA-G40.21-92 TYPE 350W.
 - ALL STRUCTURAL STEEL TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH CAN/CSA-S6-14.
 - 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.
 - NO HOLES SHALL BE CUT IN STRUCTURAL STEEL WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
 - METHOD OF STEEL SHEET PILE AND H-PILE INSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR.
 - METHOD OF CONNECTION BETWEEN THE SOLDIER PILE AND SSP, OTHER THAN THAT SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED UNLESS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
 - 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.
 - ALL PILES ARE TO BE INSTALLED PLUMB AND IN LINE AS SHOWN ON THE DRAWINGS.
 - ALL LAGGING SHALL BE ROUGH SAWN LUMBER WITH A MINIMUM $F_b = 9.6 \text{ MPa}$ AND $F_v = 1.2 \text{ MPa}$ AS PER CAN/CSA-S6-14 (LATEST REVISION).
 - 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.
 - REFERENCE STRUCTURAL DRAWINGS FOR DESIGN OF NEW BRIDGE STRUCTURE AND BACKFILL RECOMMENDATIONS FOR ABUTMENTS AND WINGWALLS.
 - REFERENCE CIVIL DRAWINGS FOR:
 - A) TEMPORARY RELOCATION/REALIGNMENT OF EXISTING ROADWAY DURING CONSTRUCTION.
 - B) GRADING OF NEW HIGHWAY SLOPES ALONG APPROACHES TO NEW BRIDGE STRUCTURE.
 - EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH DESIGN DRAWINGS AND THE GEOTECHNICAL REPORT (REPORT NO. 121618331), DATED JULY 20, 2015, BY STANTEC. ALL EXCAVATIONS SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
 - 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.

WORK POINT COORDINATES			
WORK POINT	WORK POINT DESCRIPTION	NORTHINGS	EASTINGS
W.P.3	WEST END OF WEST RETAINING WALL	5176523.5863	701229.2945
W.P.4	START OF CURVE IN WEST RETAINING WALL	5176524.4539	701231.8739
W.P.5	CENTER OF HP310 PILE (WEST RETAINING WALL)	5176527.2699	701237.0265
W.P.6	CENTER OF HP310 PILE (EAST RETAINING WALL)	5176536.7478	701256.1265
W.P.7	START OF CURVE IN EAST RETAINING WALL	5176539.0094	701262.2981
W.P.8	EAST END OF EAST RETAINING WALL	5176541.3965	701264.8479

NOTE:
W.P.3 THROUGH W.P.8 ARE FOR CONSTRUCTION OF TEMPORARY RETAINING WALLS ONLY AND DO NOT CORRELATE IN ANY MANNER WITH W.P.1 AND W.P.2 DEFINED ON S1 FOR BRIDGE LAYOUT.

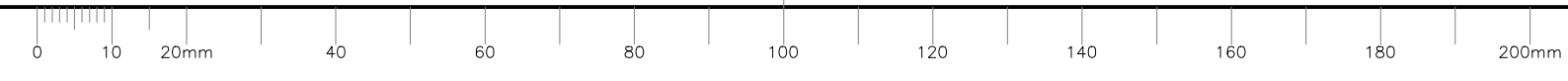


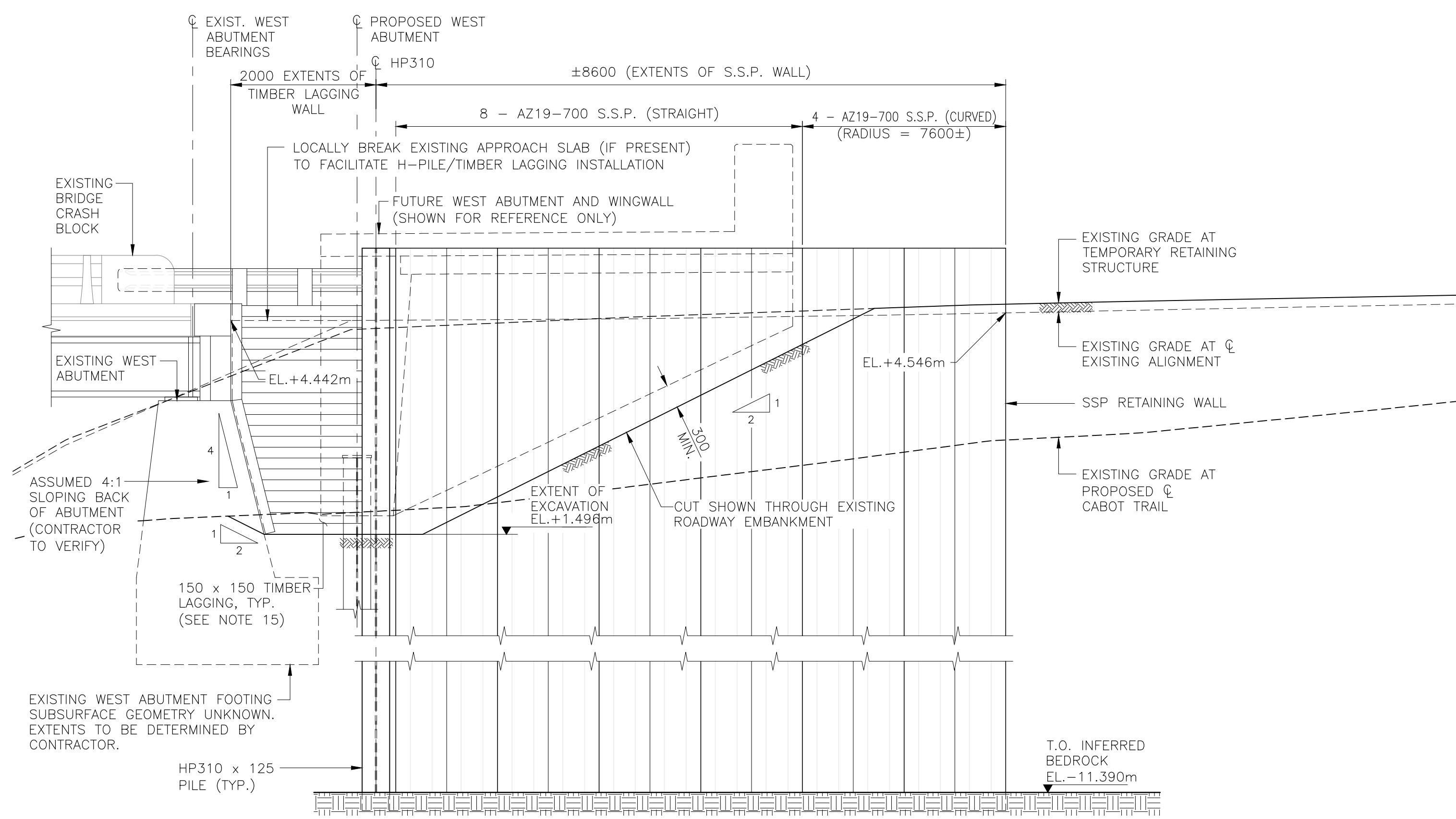
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WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

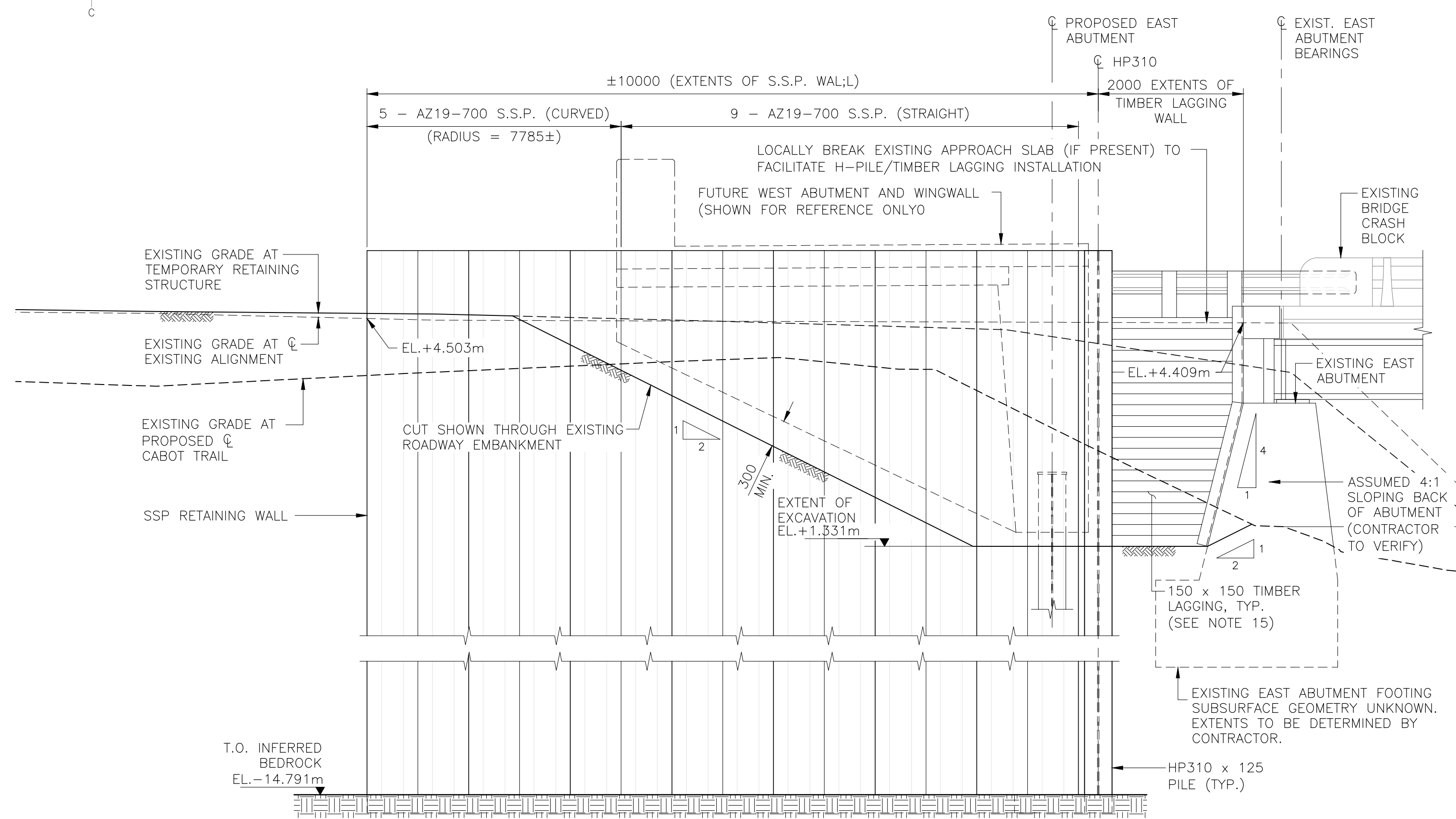
TEMPORARY RETAINING WALLS GENERAL ARRANGEMENT

designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	PAUL BURKE	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	PH2	no. du dessin

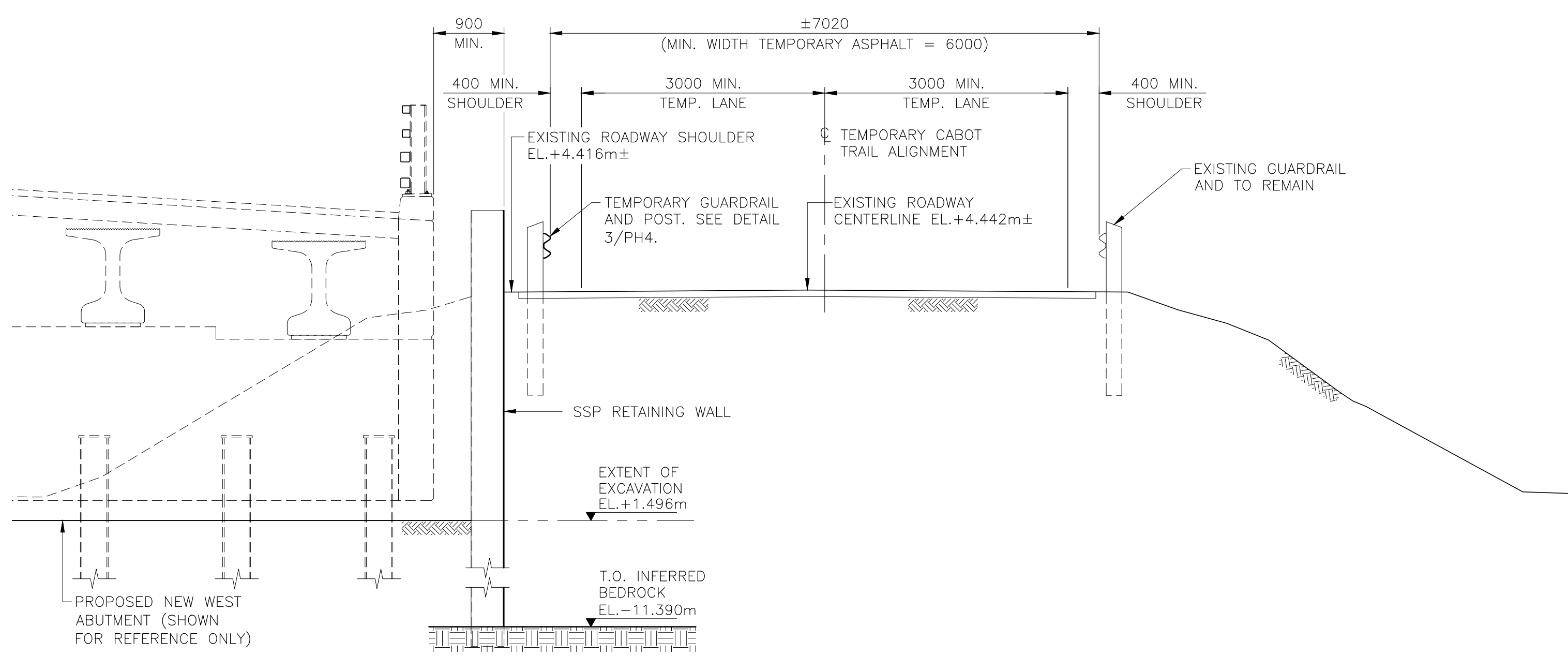




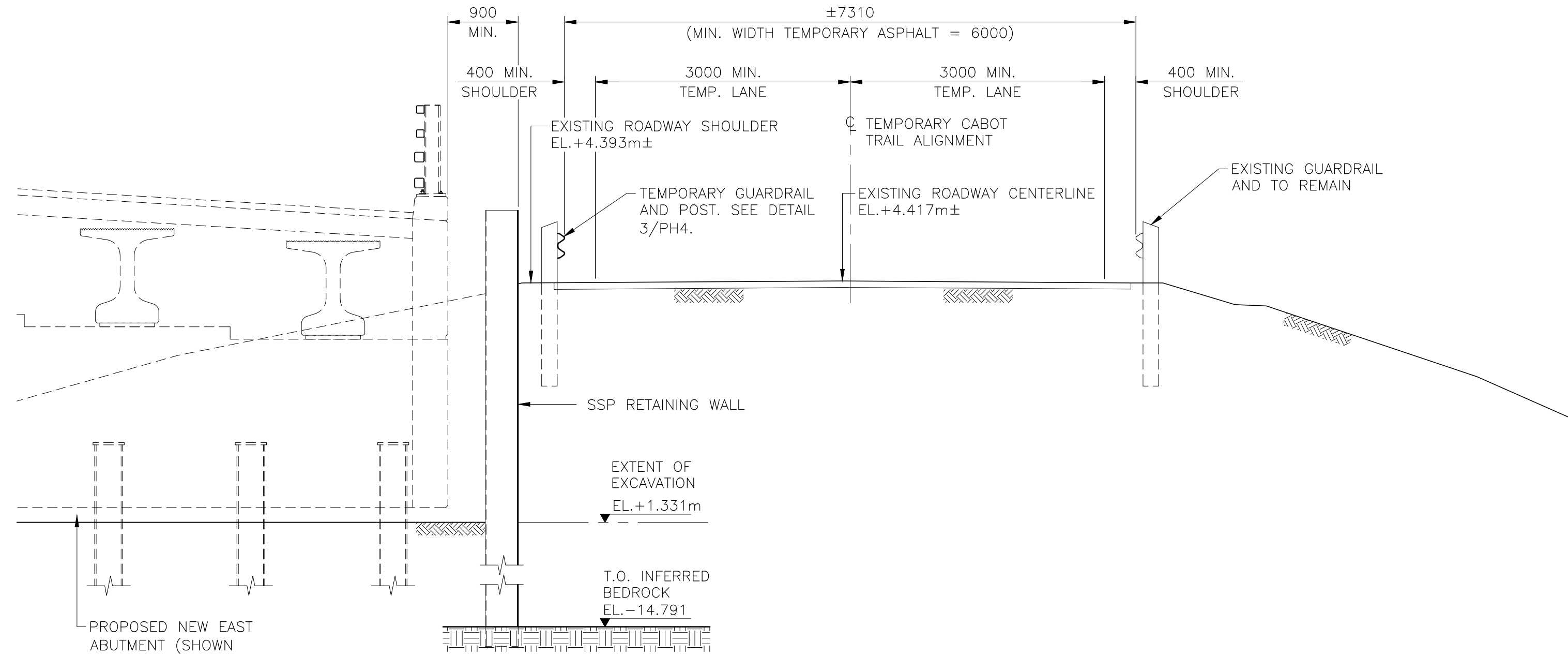
ELEVATION - WEST TEMPORARY RETAINING WALL (E1) PH2
SCALE: 1:50



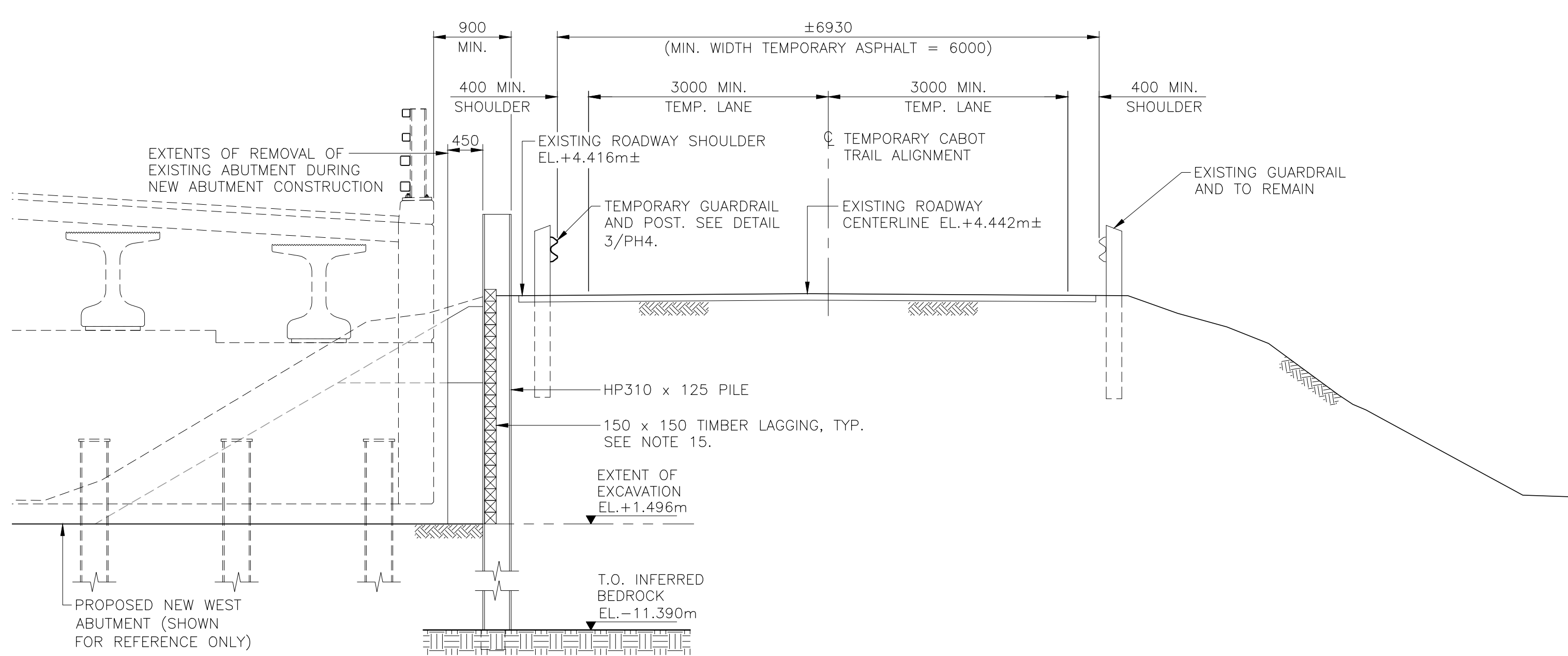
ELEVATION - EAST TEMPORARY RETAINING WALL (E2) PH2
SCALE: 1:50



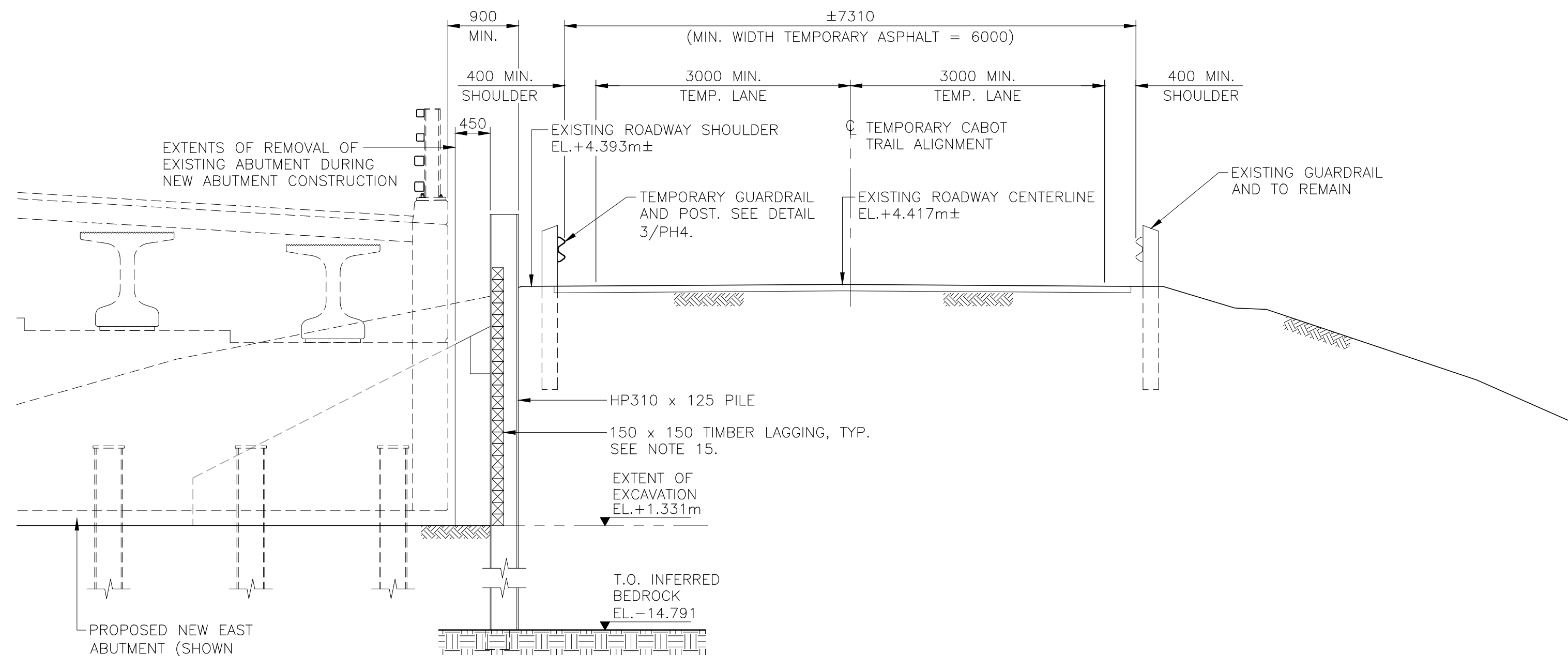
SECTION - WEST S.S.P. WALL (A) PH2
SCALE: 1:50



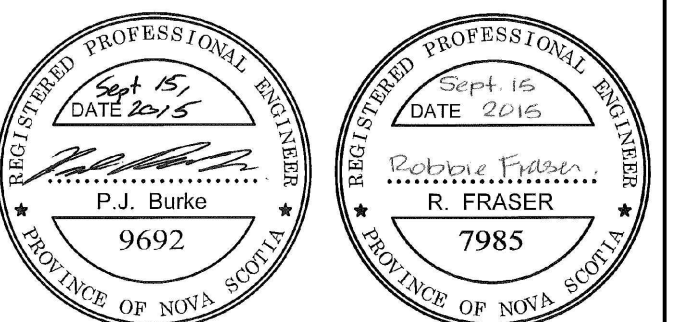
SECTION - EAST S.S.P. WALL (C) PH2
SCALE: 1:50



SECTION - WEST TIMBER LAGGING WALL (B) PH2
SCALE: 1:50



SECTION - EAST TIMBER LAGGING WALL (D) PH2
SCALE: 1:50



0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date

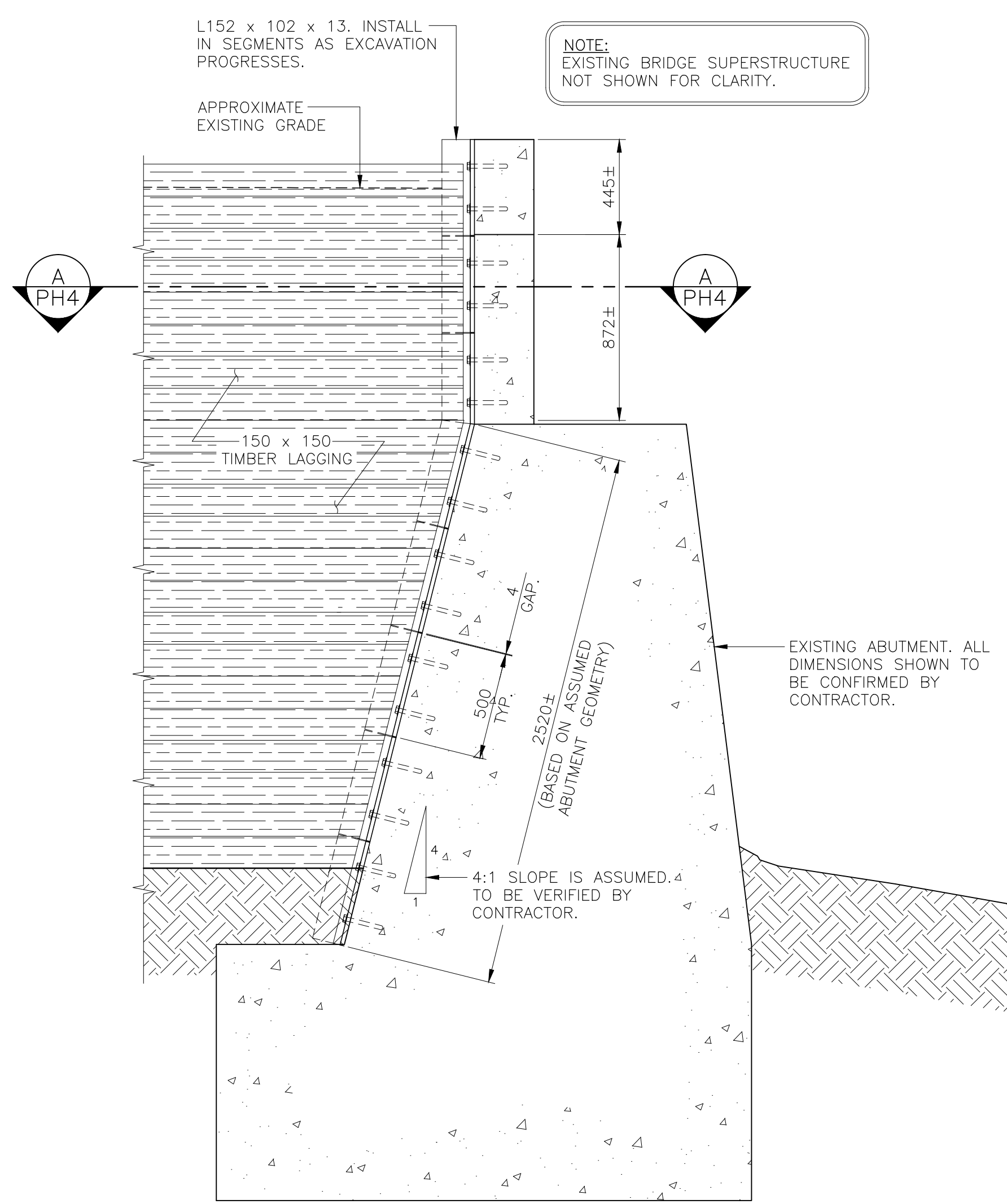
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

TEMPORARY RETAINING WALLS ELEVATIONS AND SECTIONS

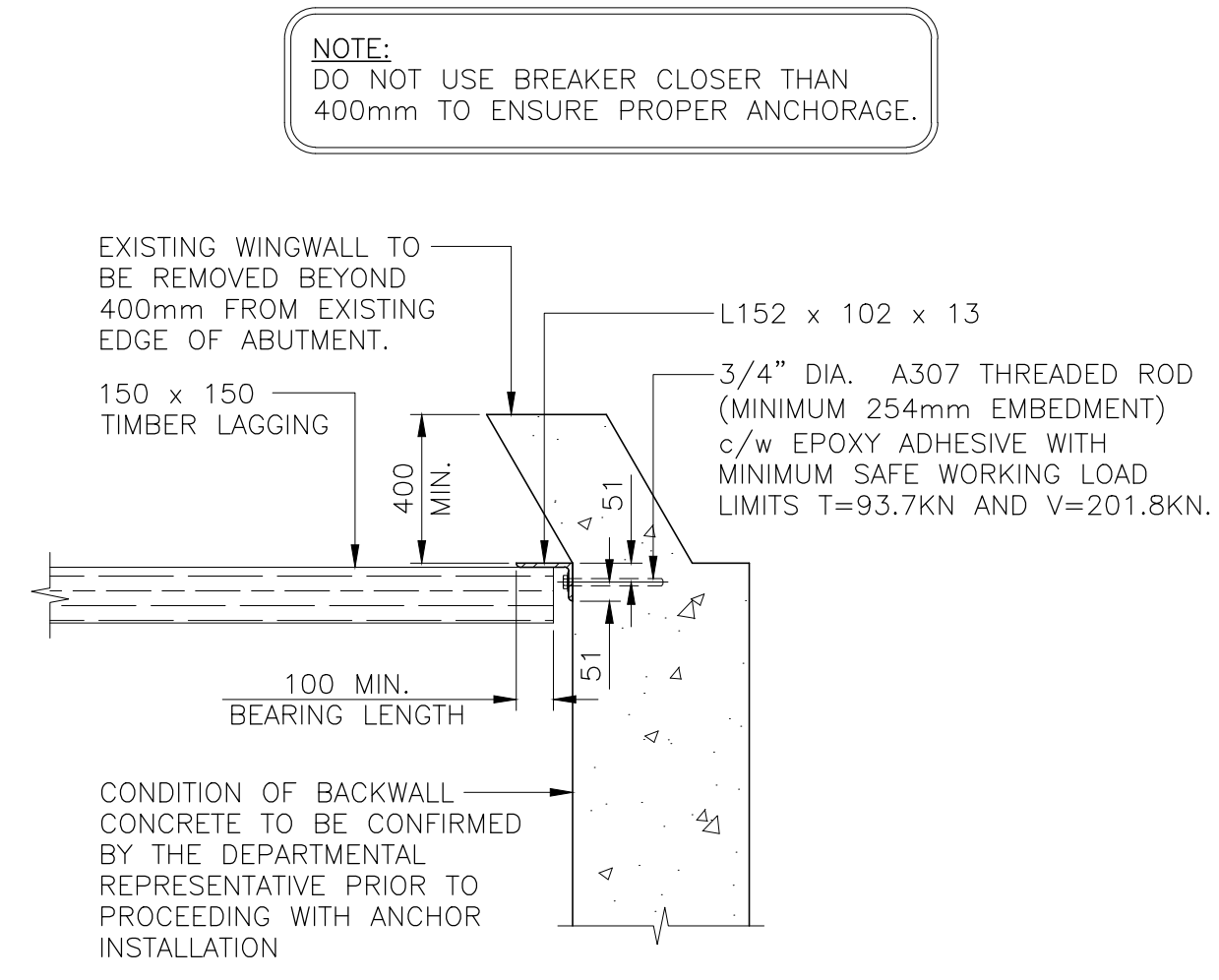
designed JAMIE STUART	conçu
date JULY 2015	
drawn JEFF CLARK	dessiné
date JULY 2015	
approved PAUL BURKE	approuvé
date JULY 2015	
Tender	Submission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet

322A

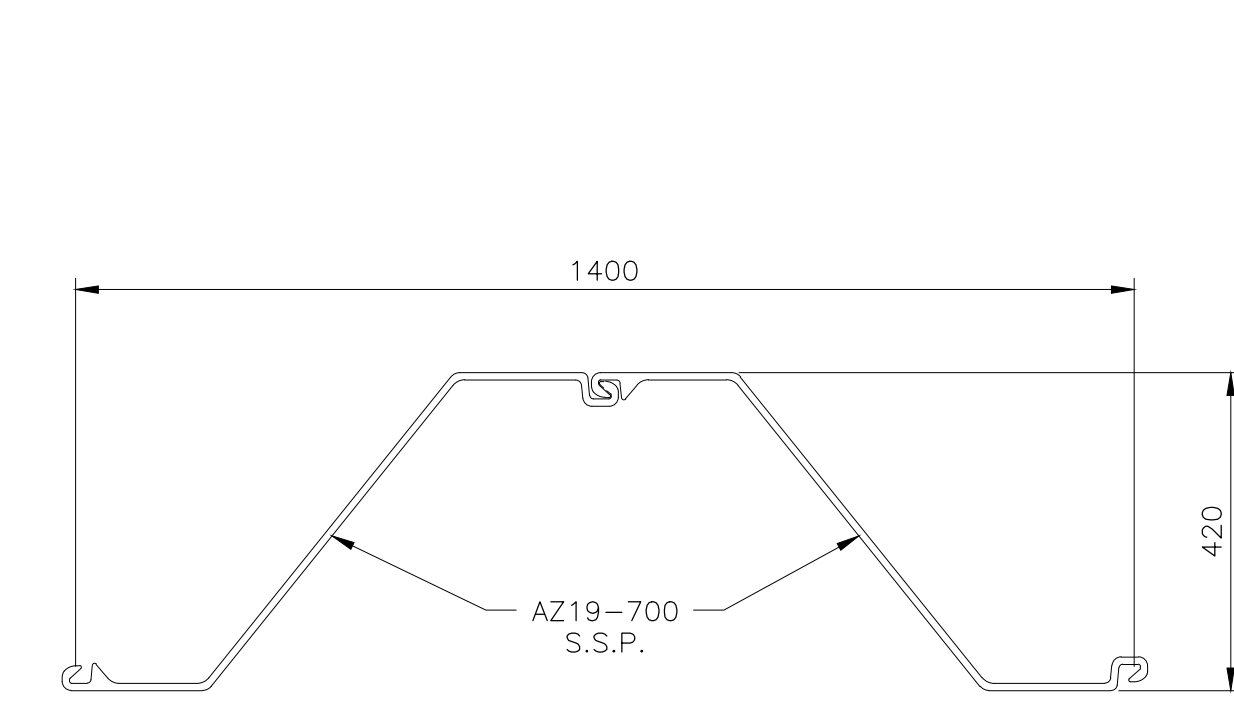
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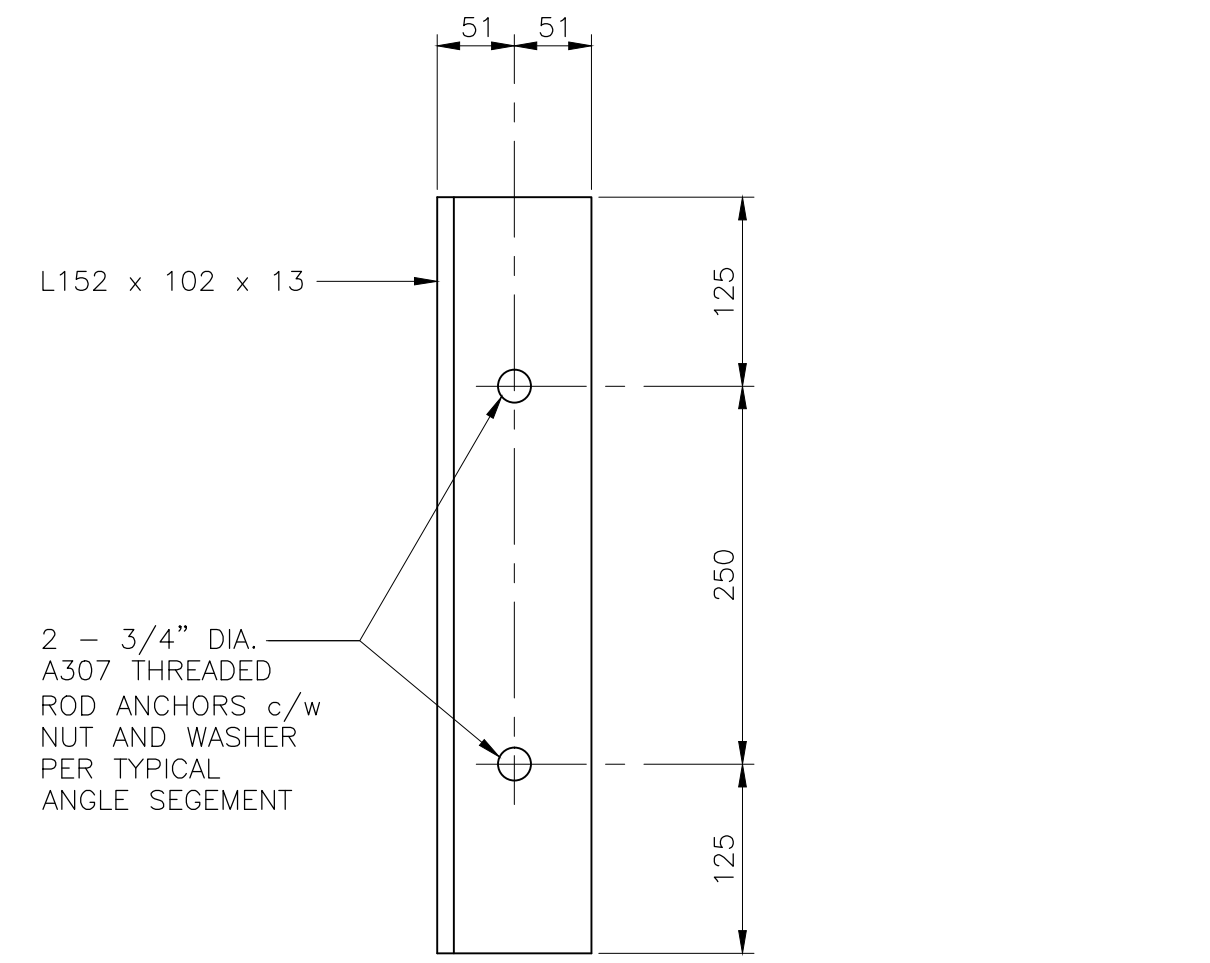
DETAIL - ABUTMENT CONNECTION 1 PH2



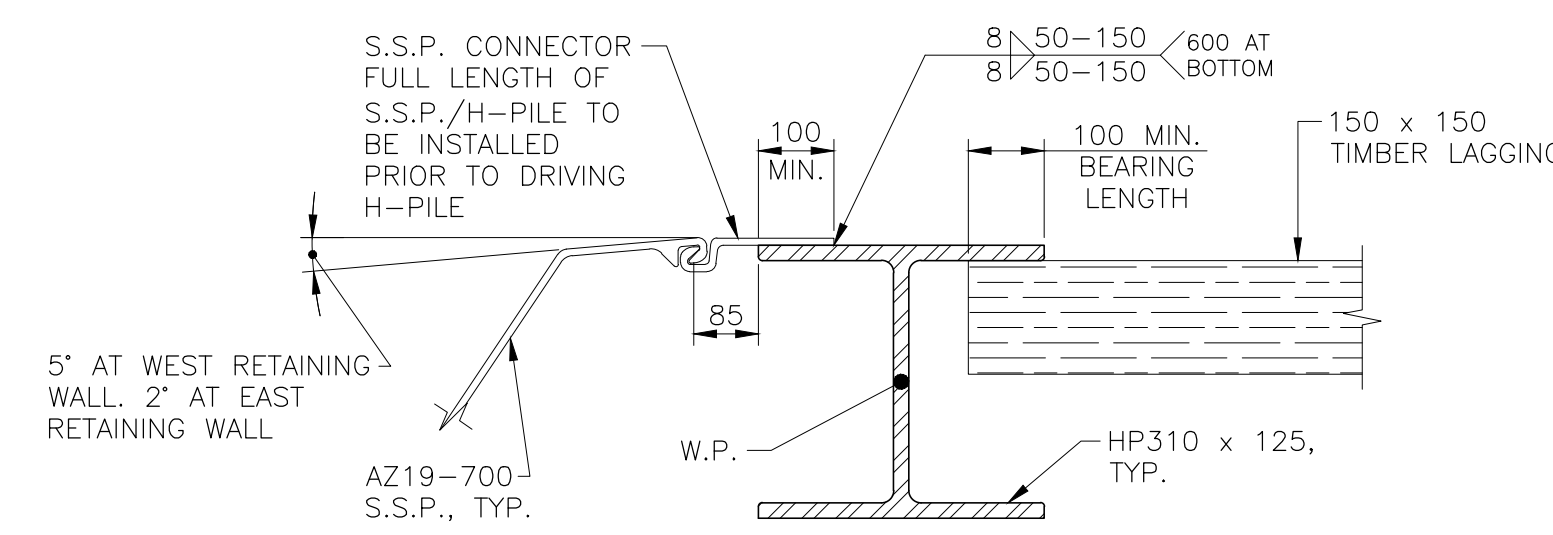
DETAIL - TEMPORARY GUARDRAIL POST 3 PH3



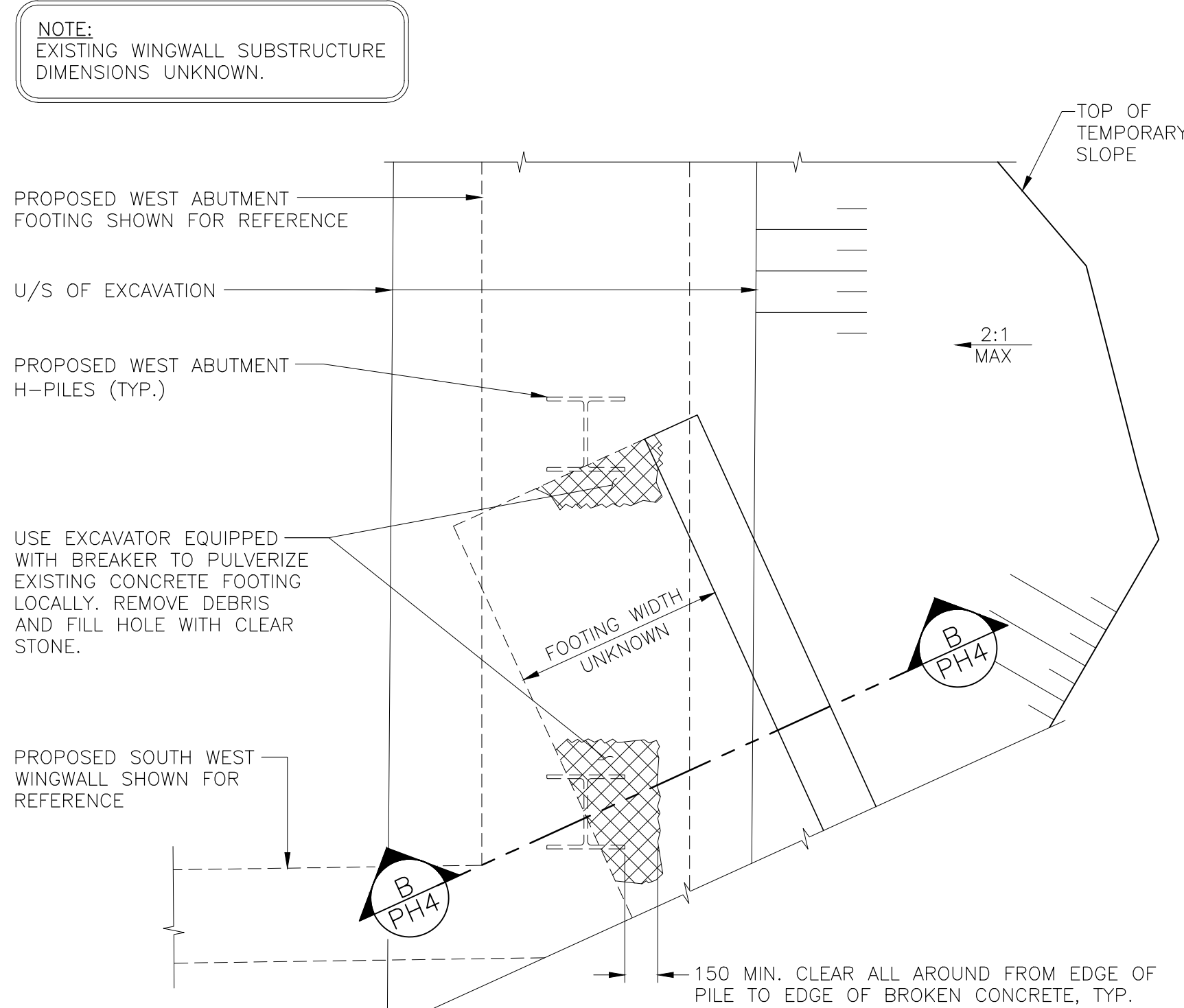
DETAIL - TYPICAL STEEL SHEET PILE SECTION 5 PH2



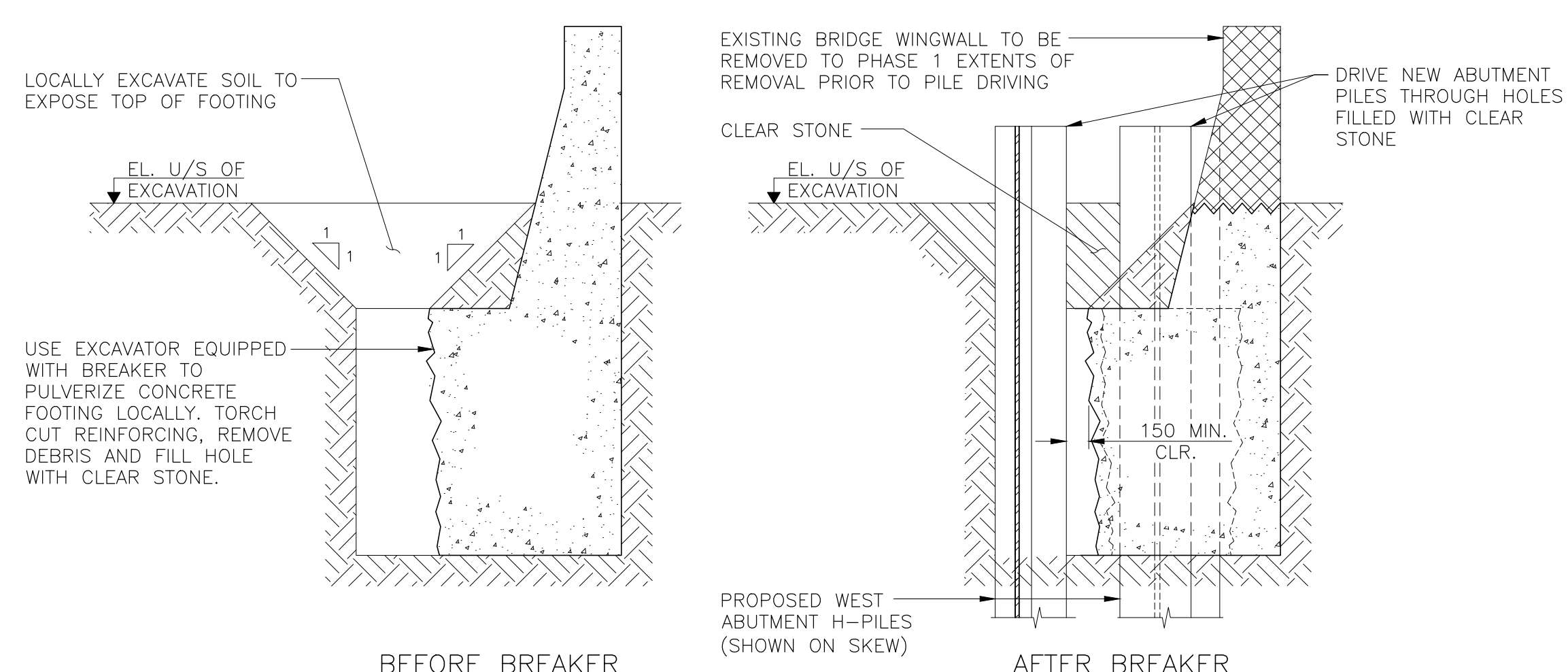
DETAIL - TYPICAL ANGLE SEGMENT 2 PH4



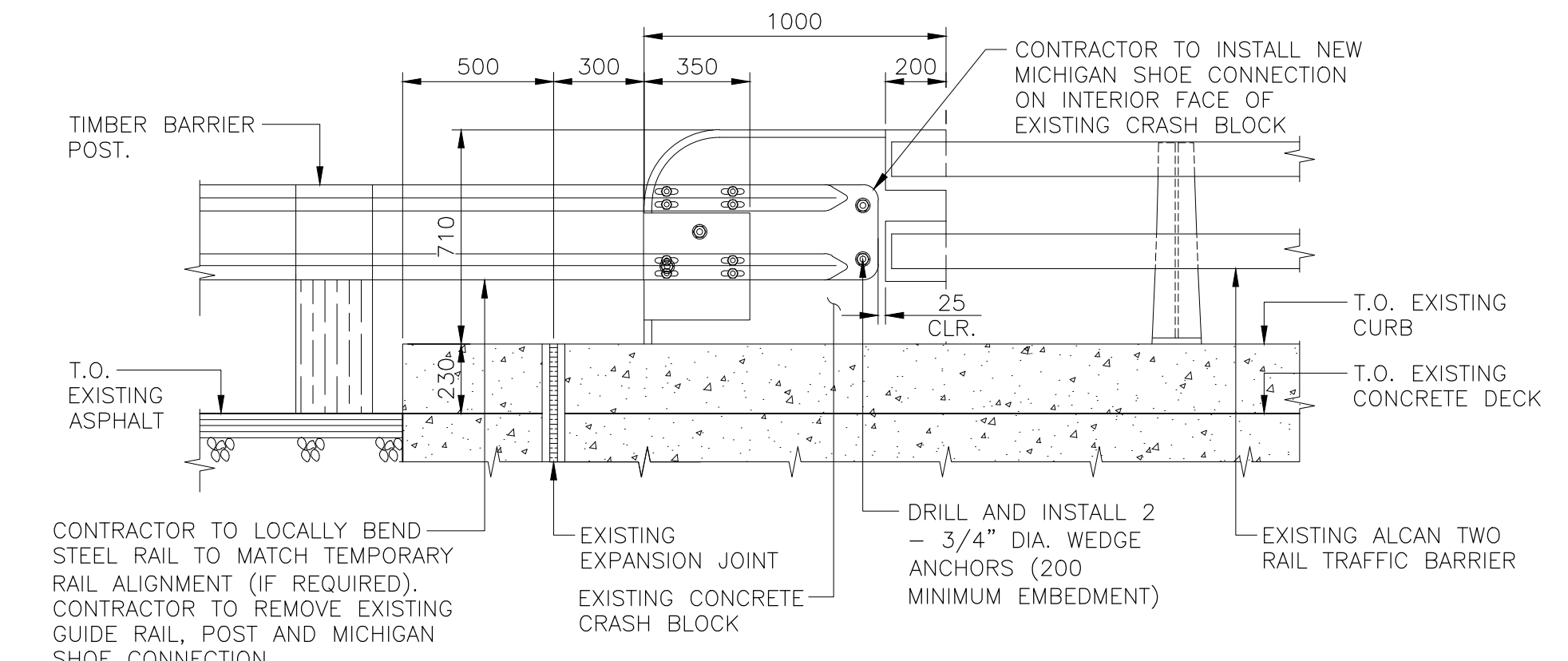
DETAIL 4 PH2



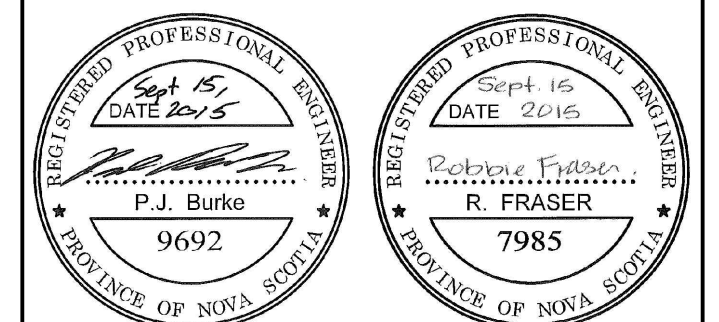
DETAIL - PROPOSED ABUTMENT PILE INSTALLATION 6 PH2



SECTION - PROPOSED ABUTMENT PILE INSTALLATION B PH4



DETAIL - GUARDRAIL CONNECTION 7 PH2



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revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	design	

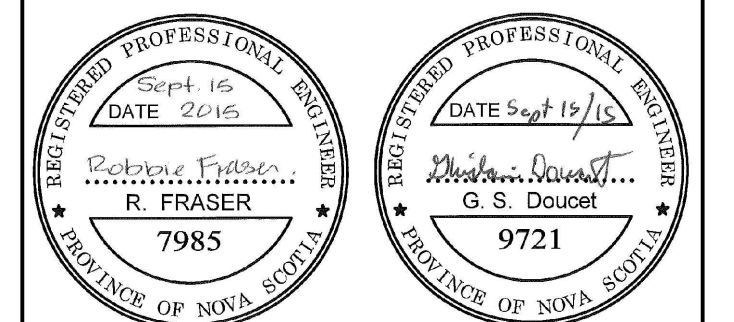
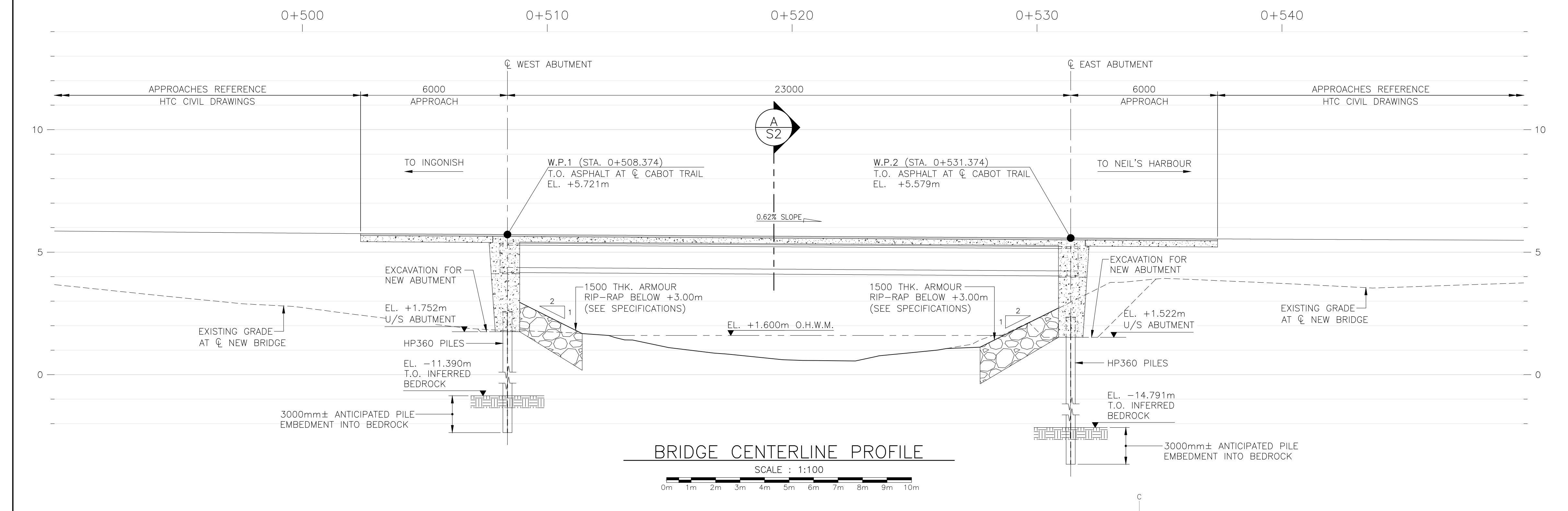
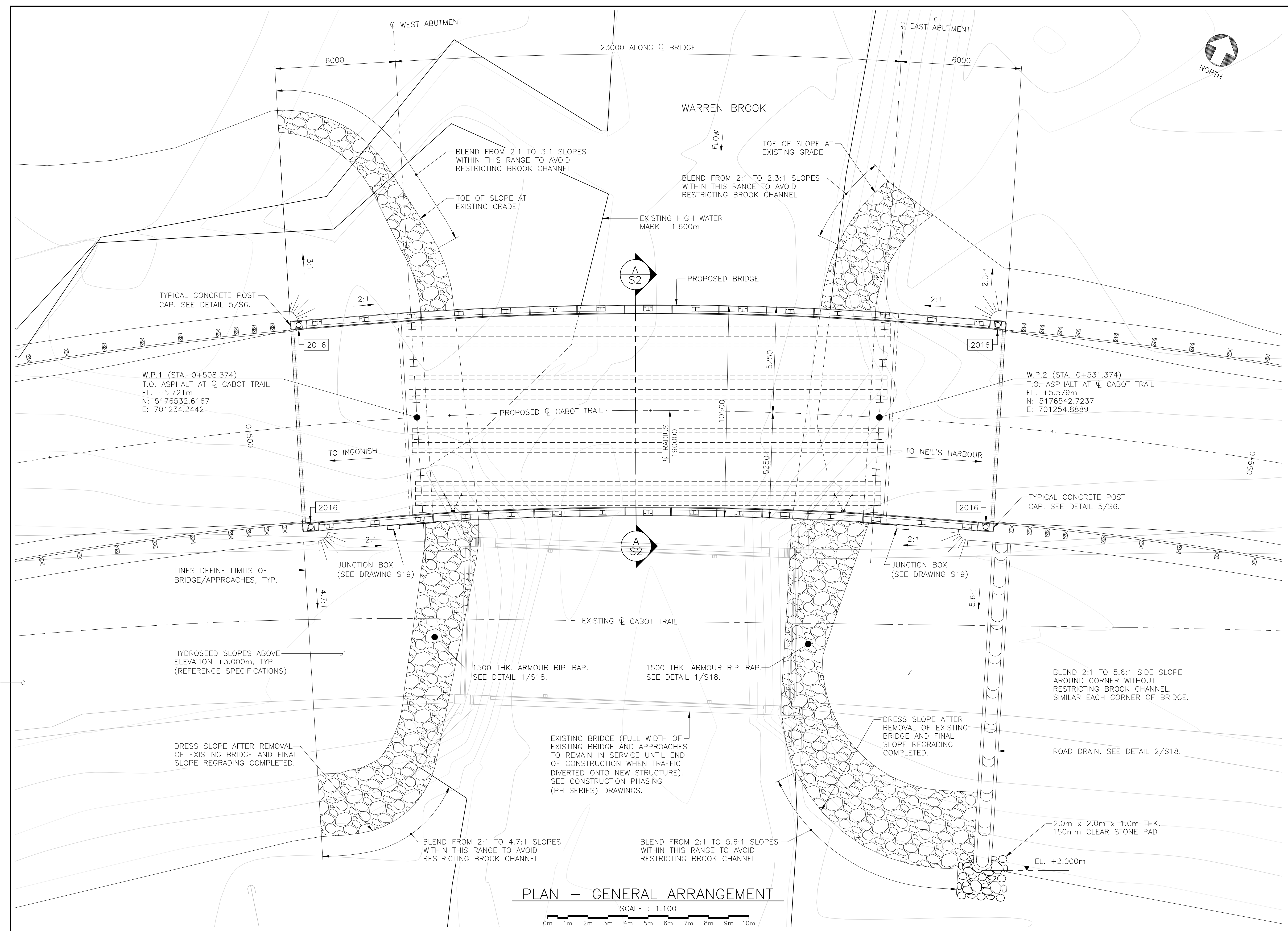
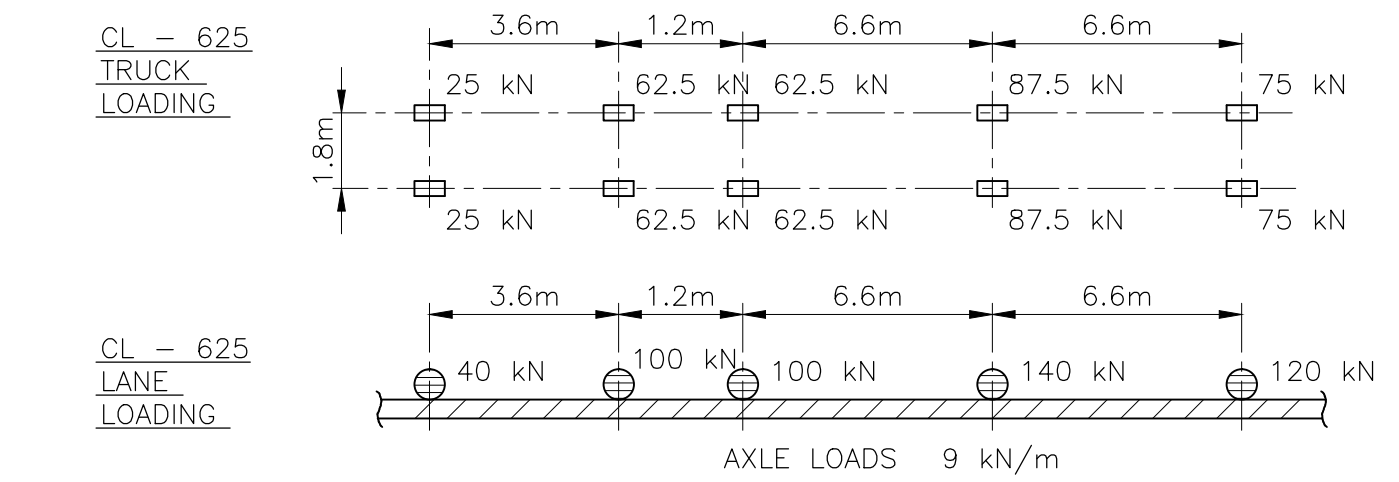
TEMPORARY RETAINING WALLS DETAILS

designed	JAMIE STUART	conq
date	JULY 2015	
drawn	JEFF CLARK	dessin
date	JULY 2015	
approved	PAUL BURKE	approuv
date	JULY 2015	
Tender	<i>Adna Clouty</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	PH4	no. du dessin

GENERAL NOTES:

- GENERAL REQUIREMENTS GOVERNING DESIGN, MATERIALS, AND CONSTRUCTION ARE AS FOLLOWS:
 - LOADING AND GENERAL DESIGN TO CAN/CSA - S6 - 14, WITH LATEST REVISIONS, LIVE LOAD CL-625.
- ALL DIMENSIONS SHOWN IN MILLIMETRES (mm).
- ALL STANDARDS AND SPECIFICATION NOTES TO REFLECT THE "LATEST EDITION" AT TIME OF TENDER.
- FOUNDATION DESIGN BASED ON INFORMATION PROVIDED IN STANTEC GEOTECHNICAL REPORT No. 121618331, DATED JULY 20, 2015.
- ALIGNMENT INFORMATION AS PER HTC ALIGNMENT DESIGN DRAWINGS. SURVEY INFORMATION PROVIDED BY DESIGN POINT ENGINEERING AND SURVEYING. COORDINATES ARE BASED ON THE UTM NAD83 COORDINATE SYSTEM AND ELEVATIONS ARE TO CANADIAN GEODETIC DATUM.
- ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION.
- REFERENCE CIVIL DRAWINGS FOR ROAD ALIGNMENT AND DEMOLITION OF EXISTING STRUCTURE.
- CONSTRUCTION SHALL BE CARRIED OUT AS PER CAN/CSA-S6-14.
- BRIDGE BARRIERS AND ANCHORAGES CONFORM TO TL-4 CRASH TEST REQUIREMENTS AS PER CAN/CSA-S6-14.
- 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
- FULL WIDTH OF EXISTING STRUCTURE AND APPROACHES TO REMAIN IN-SERVICE UNTIL THE END OF CONSTRUCTION WHEN TRAFFIC DIVERTED ONTO THE NEW STRUCTURE (REFERENCE PROJECT SPECIFICATIONS).



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revisions		date

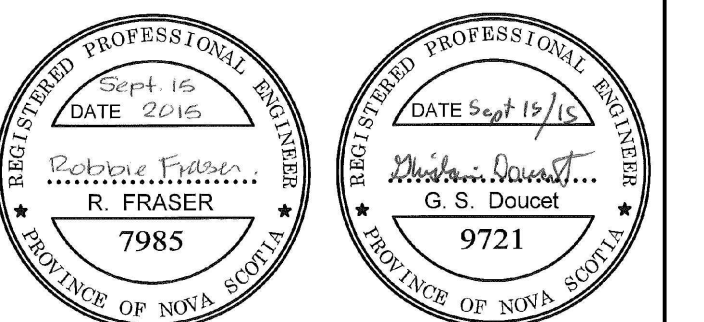
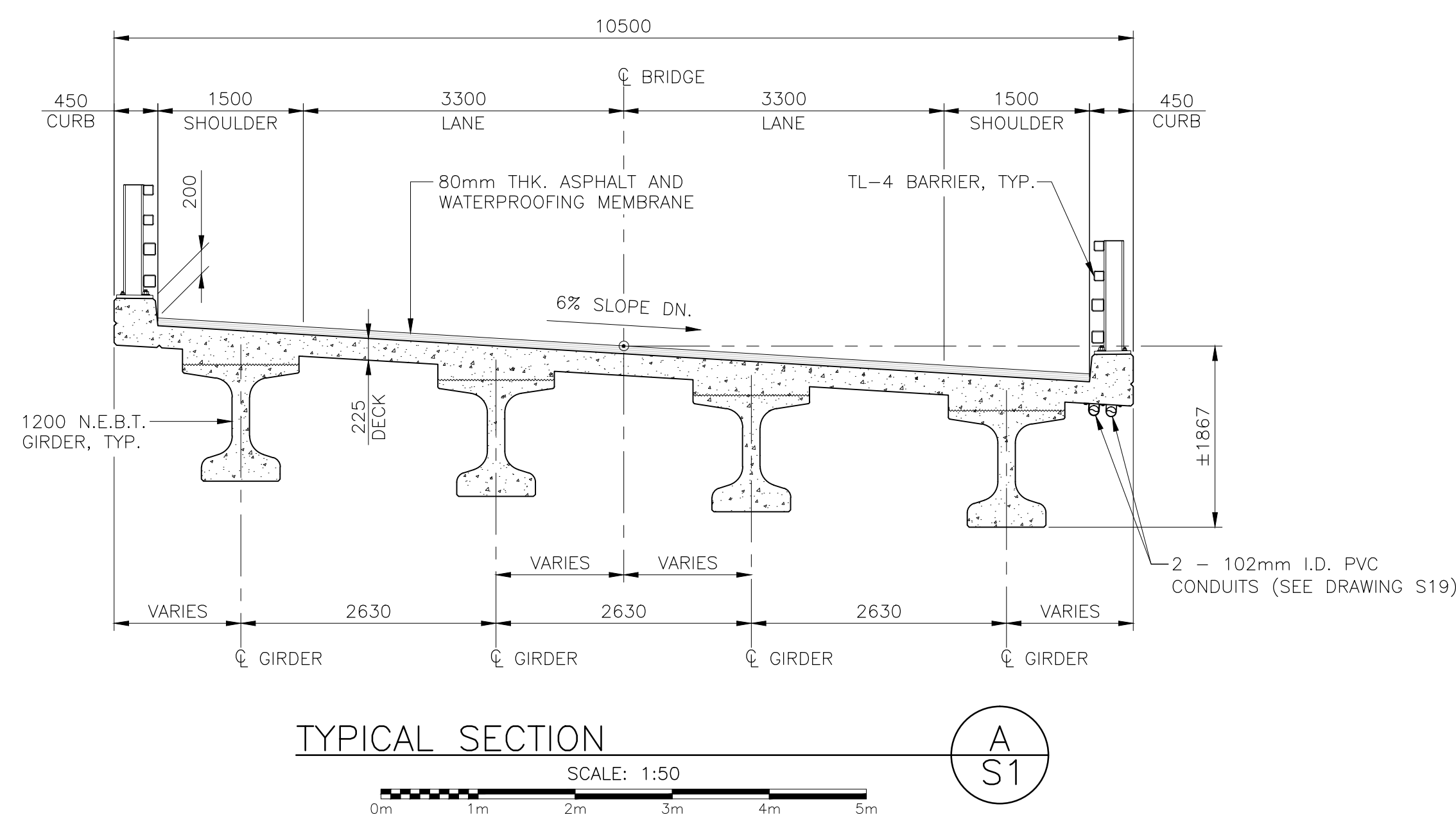
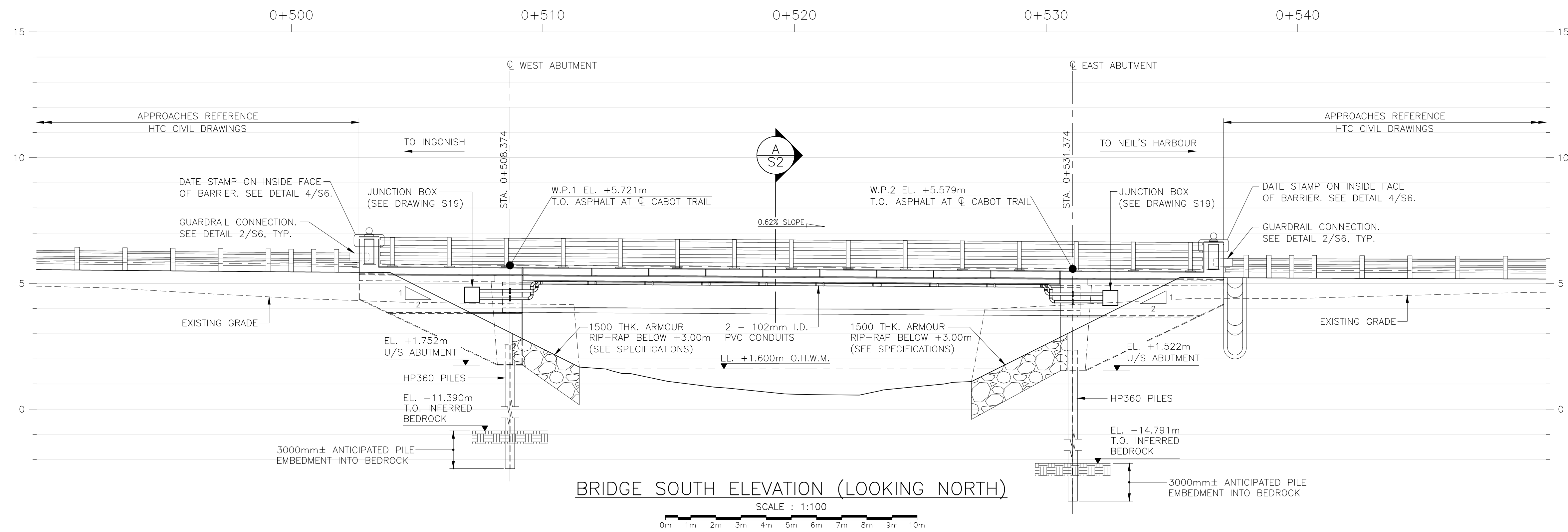
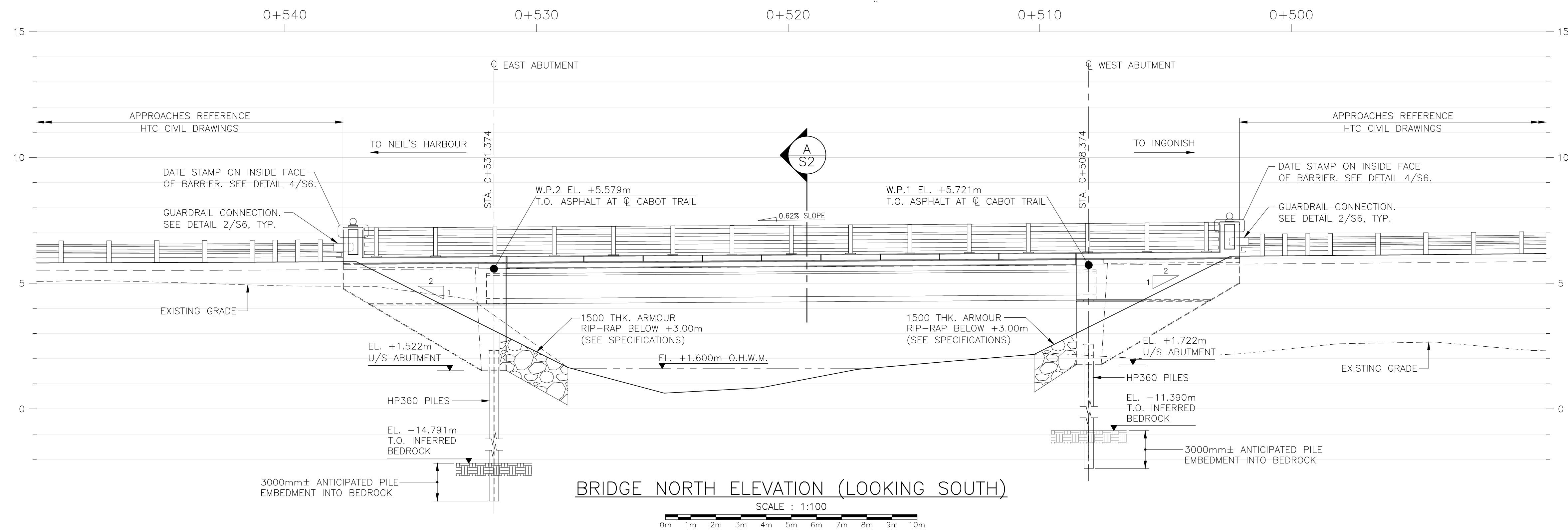
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

GENERAL ARRANGEMENT

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

322A

S1



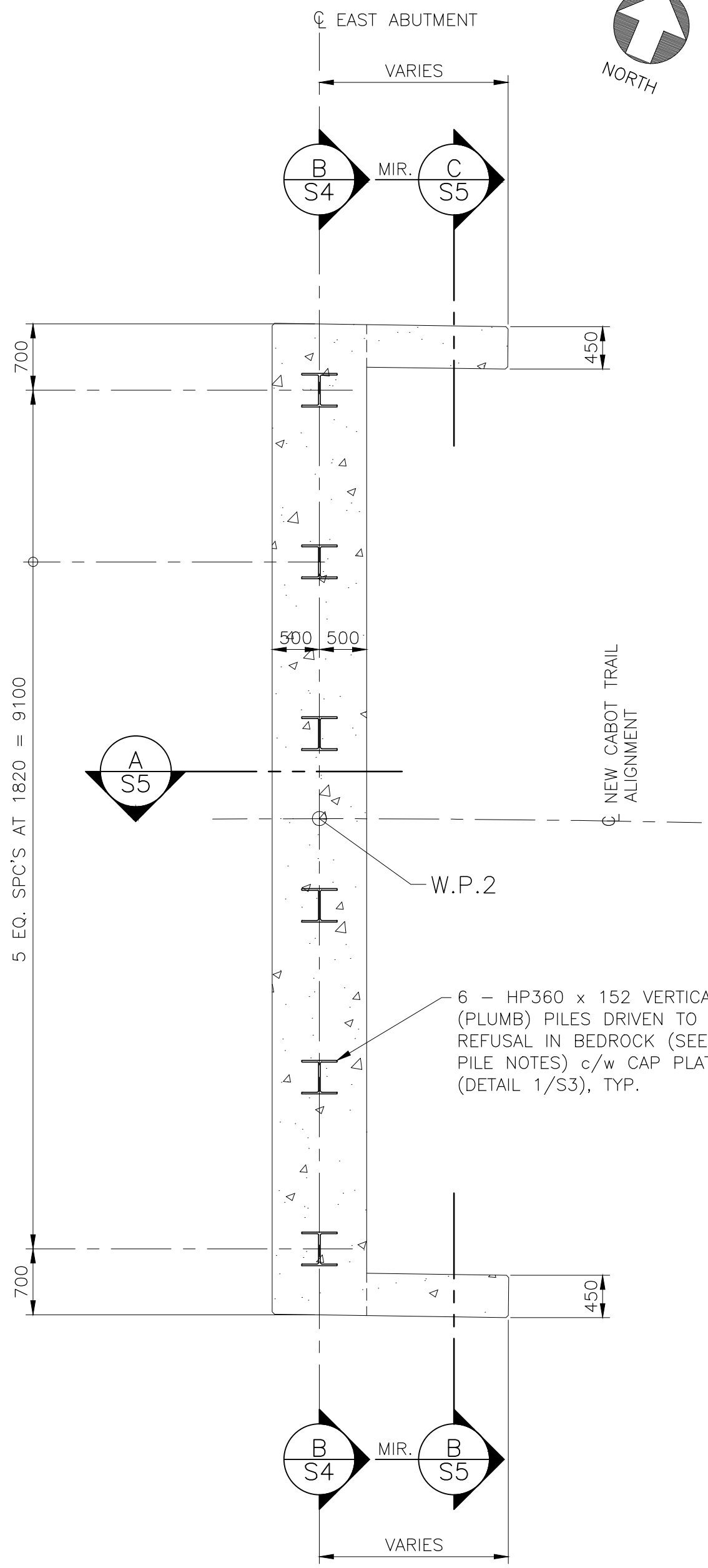
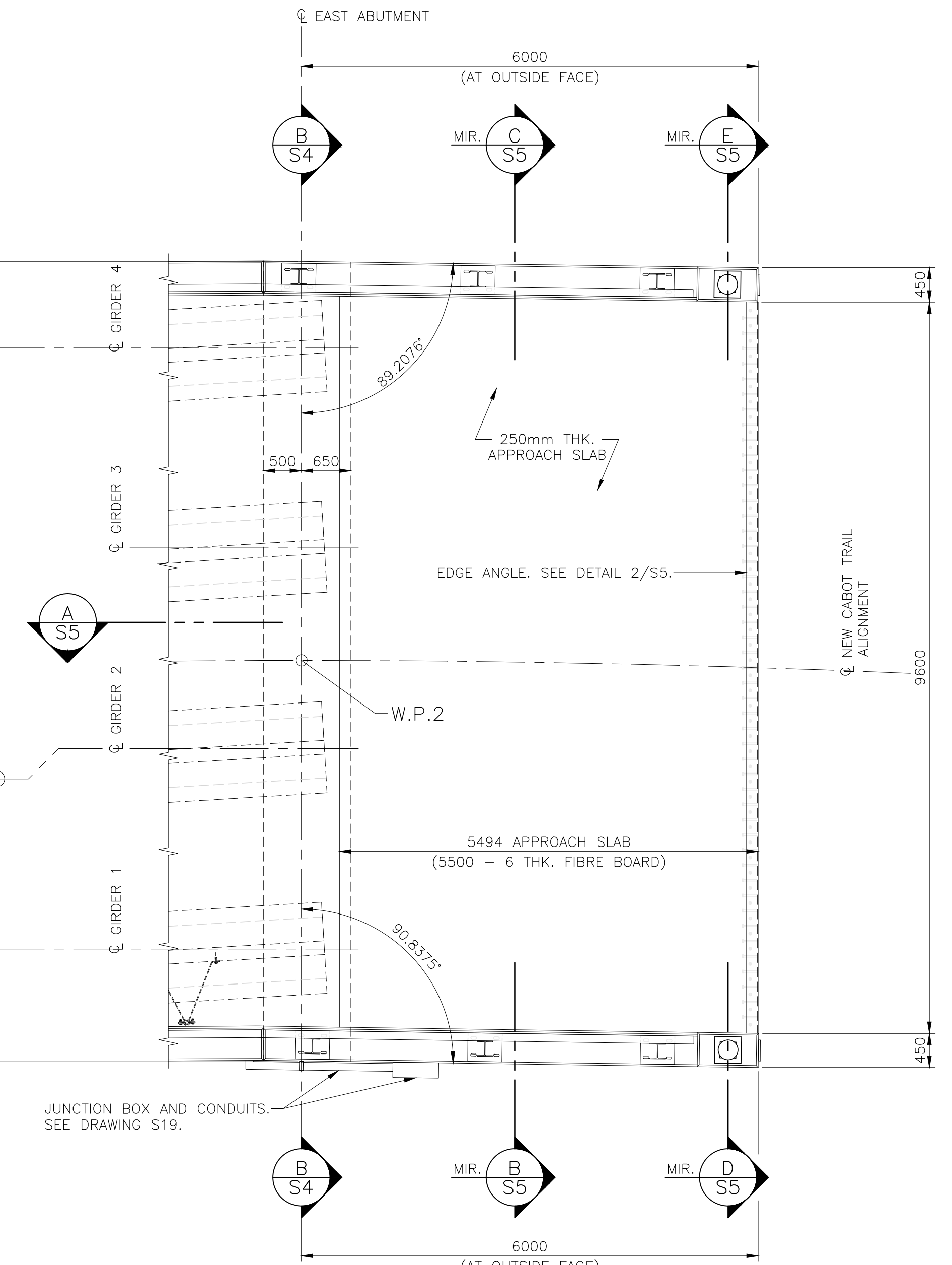
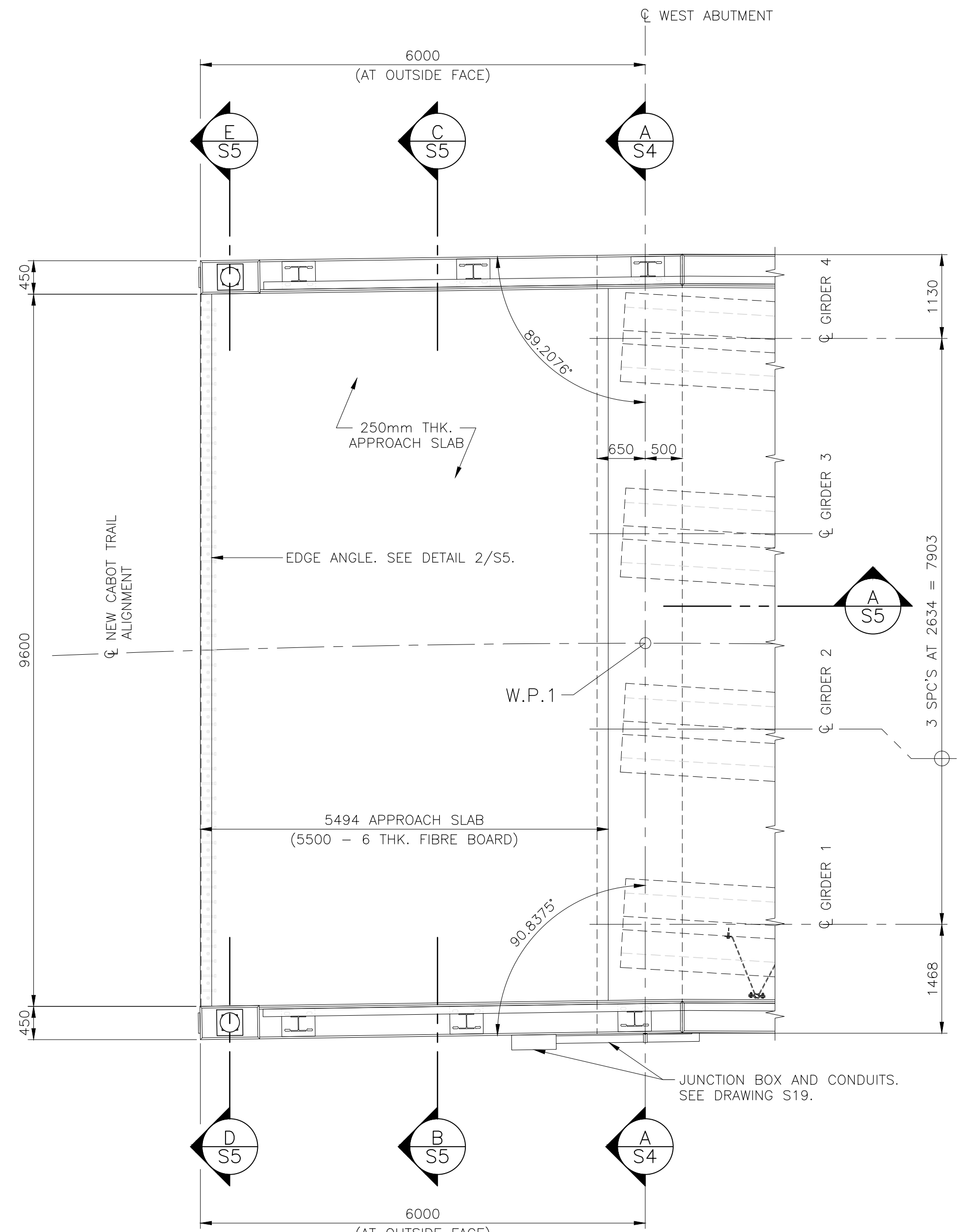
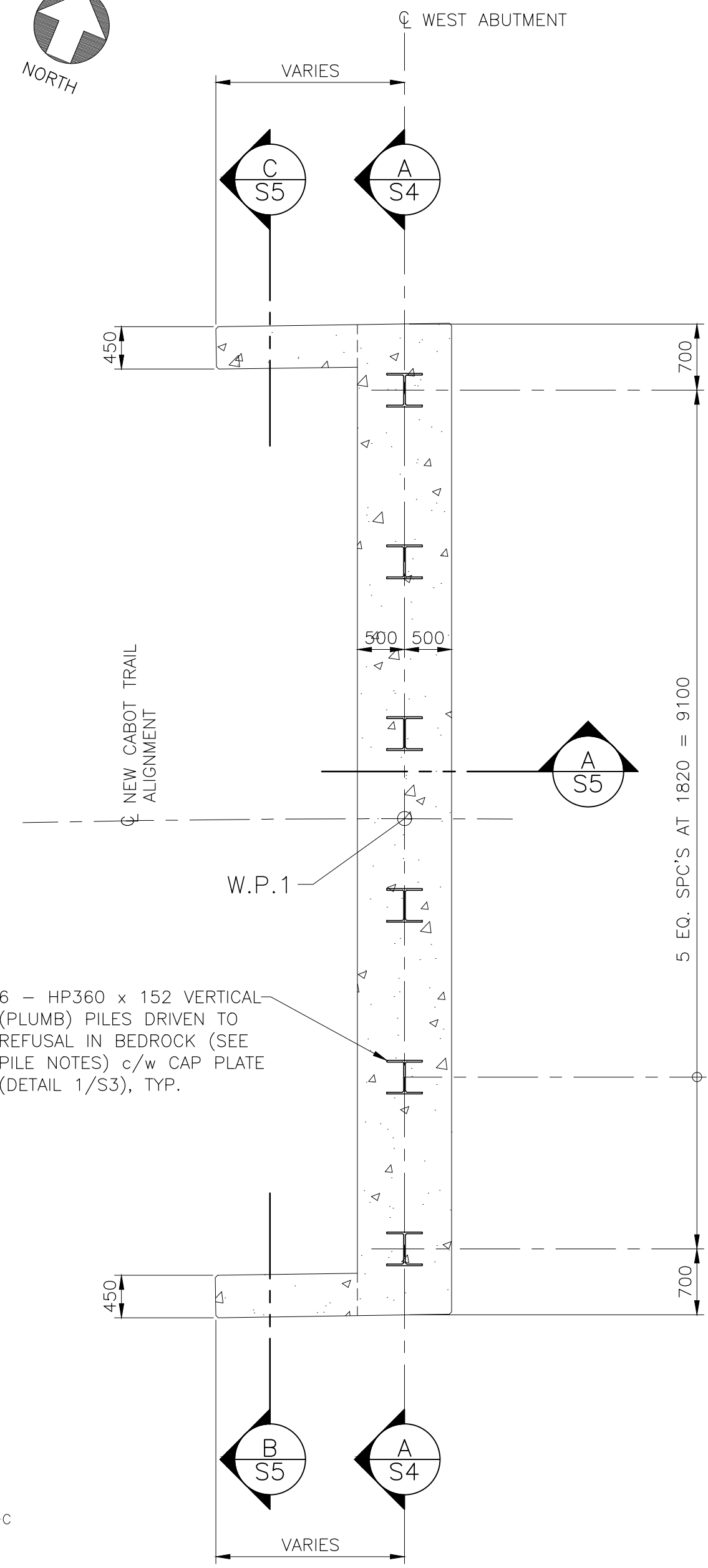
0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date

project
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

GENERAL ARRANGEMENT ELEVATIONS AND SECTION

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

322A
drawing no. no. du dessin
S2

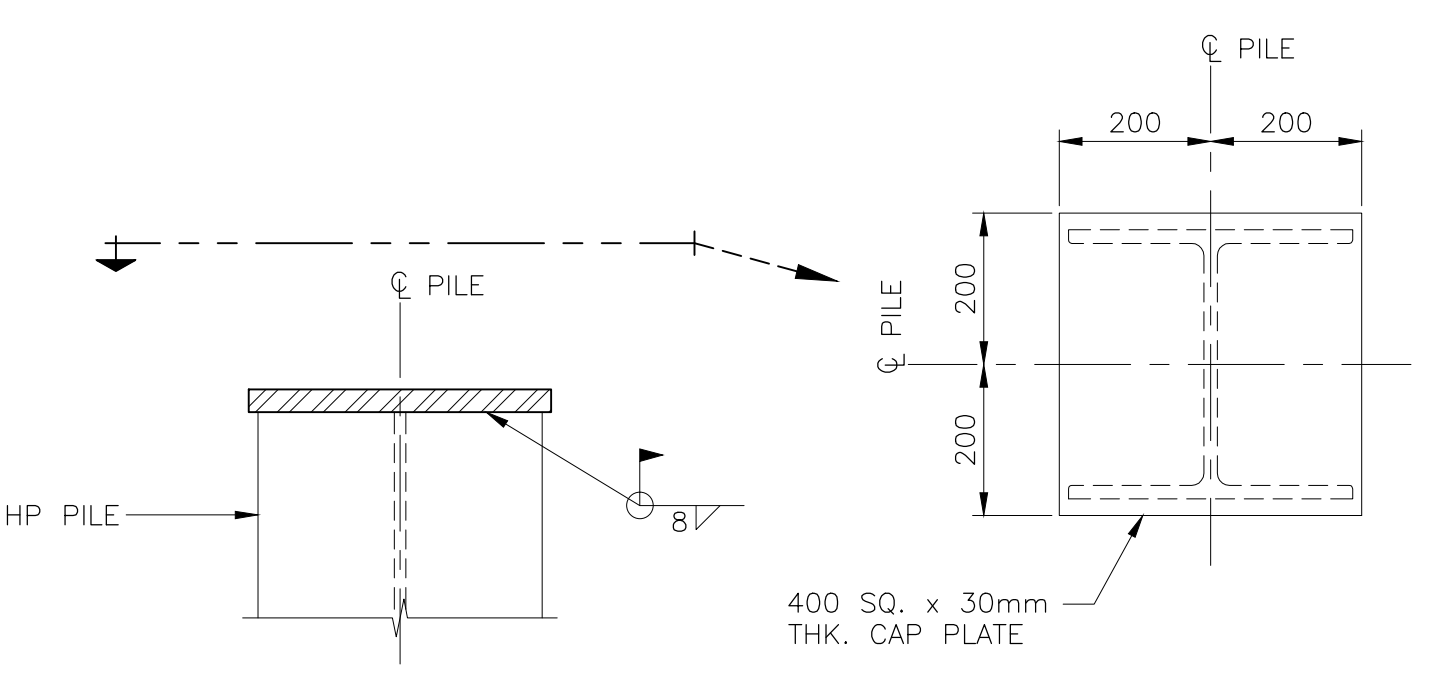


WEST ABUTMENT - PILE LAYOUT PLAN

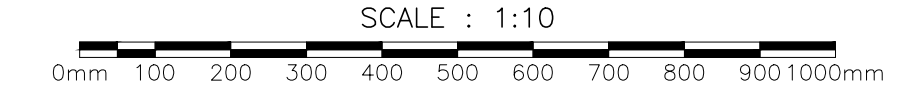
WEST ABUTMENT - TOP PLAN

EAST ABUTMENT - TOP PLAN

EAST ABUTMENT - PILE LAYOUT PLAN



DETAIL - PILE CAP



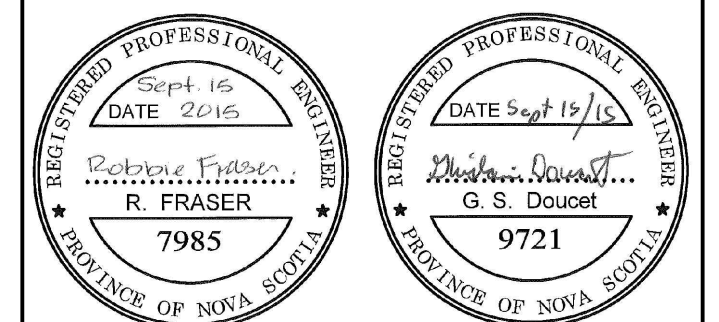
1/S3

C.I.P. CONCRETE NOTES

- ALL EXPOSED CORNERS OF CONCRETE TO HAVE 25mm CHAMFERS.
- LOCATION OF CONSTRUCTION JOINTS AND SEQUENCE OF CONCRETE PLACEMENT TO BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
- CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:
 - 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
 - SLOPE DRAINS; 32 MPa, NON-REINFORCED, AS PER PROJECT SPECIFICATIONS.
- CONCRETE COVER TO REINFORCING STEEL AS NOTED ON DRAWINGS.
- REINFORCING STEEL WHERE INDICATED 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.
- GFRP REINFORCING SHALL MEET THE MINIMUM DESIGN REQUIREMENT SPECIFIED ON DRAWINGS S13, S14 AND S15.
- ALL REINFORCEMENT TO BE INSPECTED BY THE DEPARTMENTAL REPRESENTATIVE PRIOR TO CLOSING FORMWORK OR PLACING CONCRETE.
- 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.
- FOR BENT STEEL 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.).
- EACH PHASE OF WORK TO BE INSPECTED BY THE DEPARTMENT REPRESENTATIVE PRIOR TO PROCEEDING TO THE NEXT PHASE OF WORK.
- BACKFILL IMMEDIATELY BEHIND ABUTMENTS TO BE "FILL AGAINST STRUCTURE" MATERIAL AS PER PROJECT SPECIFICATIONS.

PILE NOTES

- PILE MATERIAL
 - STEEL H-PILES IN ABUTMENT, HP360 x 152, $F_y = 350$ MPa (MIN.)
 - ALL PILE SPLICES, IF REQUIRED AND AT THE APPROVAL OF THE ENGINEER, SHALL BE FULL STRENGTH WELDED CONNECTIONS (LIMIT 1 SPlice PER PILE)
 - CAP PLATE, $F_y = 350$ MPa MINIMUM
 - WELDING MATERIAL TO CSA G40.1 - LATEST EDITION
 - WELDING TO BE IN ACCORDANCE TO CSA W59 - LATEST EDITION
- PILE SET CRITERIA AS PER STANTEC REPORT No. 121618331 DATED JULY 20 2015.
 - RATED HAMMER ENERGY OF 400 J/cm² OF STEEL CROSS SECTION-SECTIONAL AREA
 - PRACTICAL REFUSAL TAKEN AS PILE PENETRATION OF LESS THAN 25mm FOR 15 BLOWS
 - ALL PILES SHALL BE DRIVEN WITH A PROTECTIVE H-PILE DRIVING SHOE. ALL POINTS SHALL MATCH PILE SIZE AND SHALL BE WELDED TO PILE TIP AS PER MANUFACTURERS RECOMMENDATIONS. PILE TIP DETAILS SHALL BE FORWARDED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO DRIVING PILES.
 - RE-STRIKING OF 2 PILES PER ABUTMENT SHALL BE UNDERTAKEN NO SOONER THAN 24 HOURS AFTER ACHIEVING THE REFUSAL CRITERIA AND SUFFICIENTLY DRIVEN TO RE-ESTABLISH THE REFUSAL CRITERIA AS PER GEOTECHNICAL ENGINEER RECOMMENDATIONS (REFERENCE STANTEC PROJECT GEOTECHNICAL REPORT).
 - DESIGN PILE CAPACITIES AT ULS: HP360 x 152 PILES 970 kN(C)
 - FULL TIME INSPECTION SHALL BE UNDERTAKEN DURING PILE DRIVING AND COMPLETE DRIVING RECORDS SHALL BE KEPT.
 - PILE CAPACITIES TO BE CONFIRMED BY PDA TESTING, REFERENCE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR PDA TESTING REQUIREMENTS.

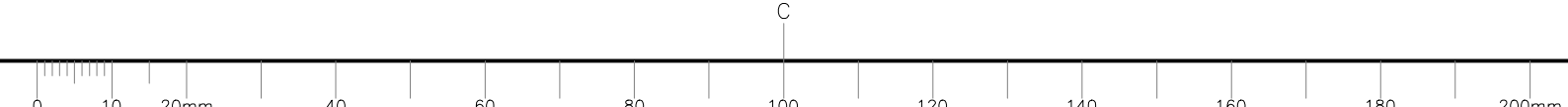


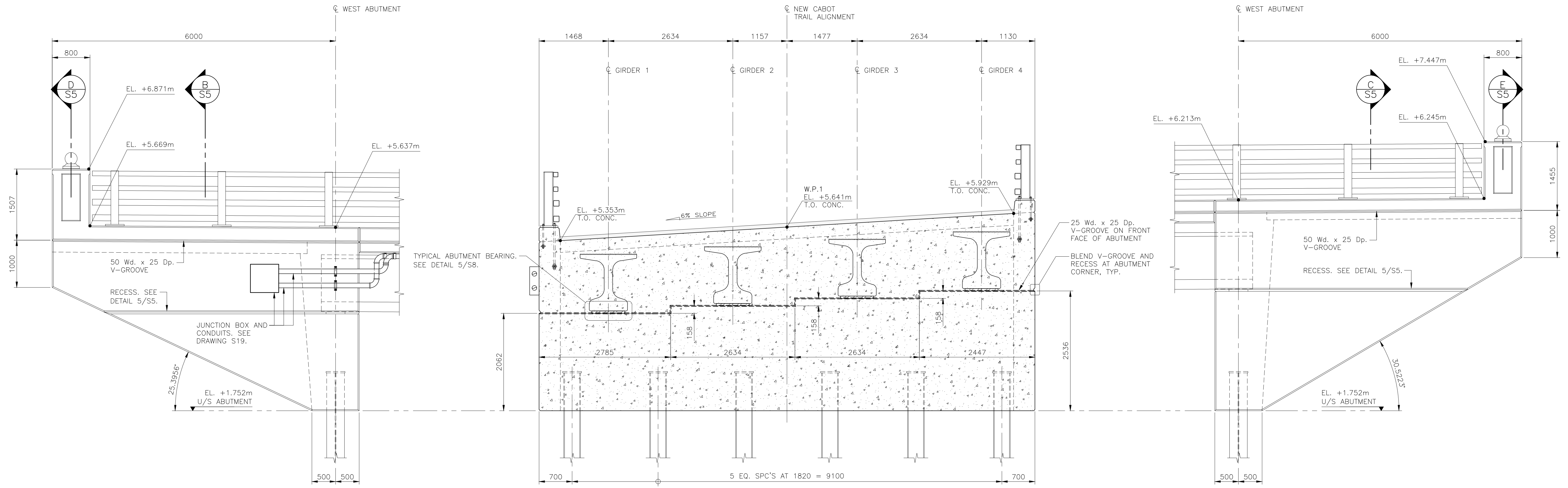
0	ISSUED FOR TENDER	01.5.2015
revisions		date

WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

ABUTMENT PLANS

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	322A	
drawing no.		no. du dessin
	S3	



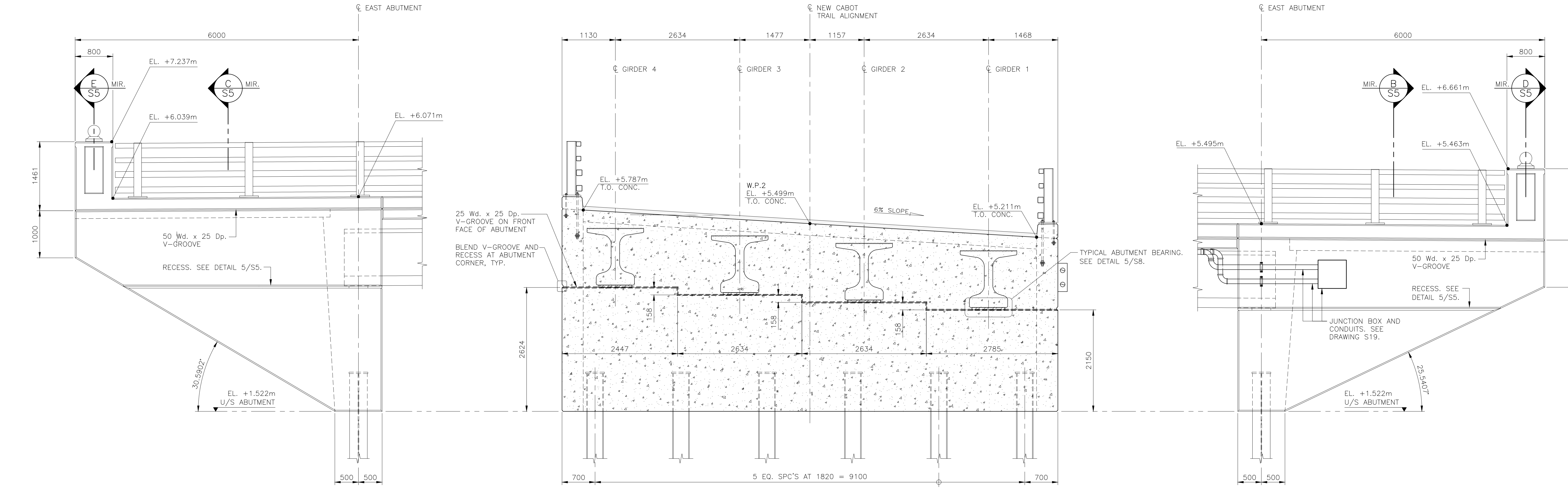


SOUTH WEST WINGWALL ELEVATION

SECTION THROUGH CENTERLINE WEST ABUTMENT

NORTH WEST WINGWALL ELEVATION

SECTION - WEST ABUTMENT
SCALE: 1:40

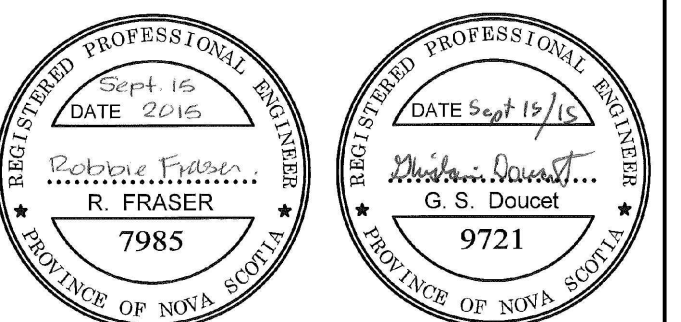


NORTH EAST WINGWALL ELEVATION

SECTION THROUGH CENTERLINE EAST ABUTMENT

SOUTH EAST WINGWALL ELEVATION

SECTION - EAST ABUTMENT
SCALE: 1:40



0	ISSUED FOR TENDER	07.5.2015
revisions	date	date

WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

ABUTMENT AND WINGWALL ELEVATIONS

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	date
drawn	JEFF CLARK	dessiné
date	JULY 2015	date
approved	ROBBIE FRASER	approuvé
date	JULY 2015	date

Tender Submission
PCA Project Manager Administrateur de projets APC

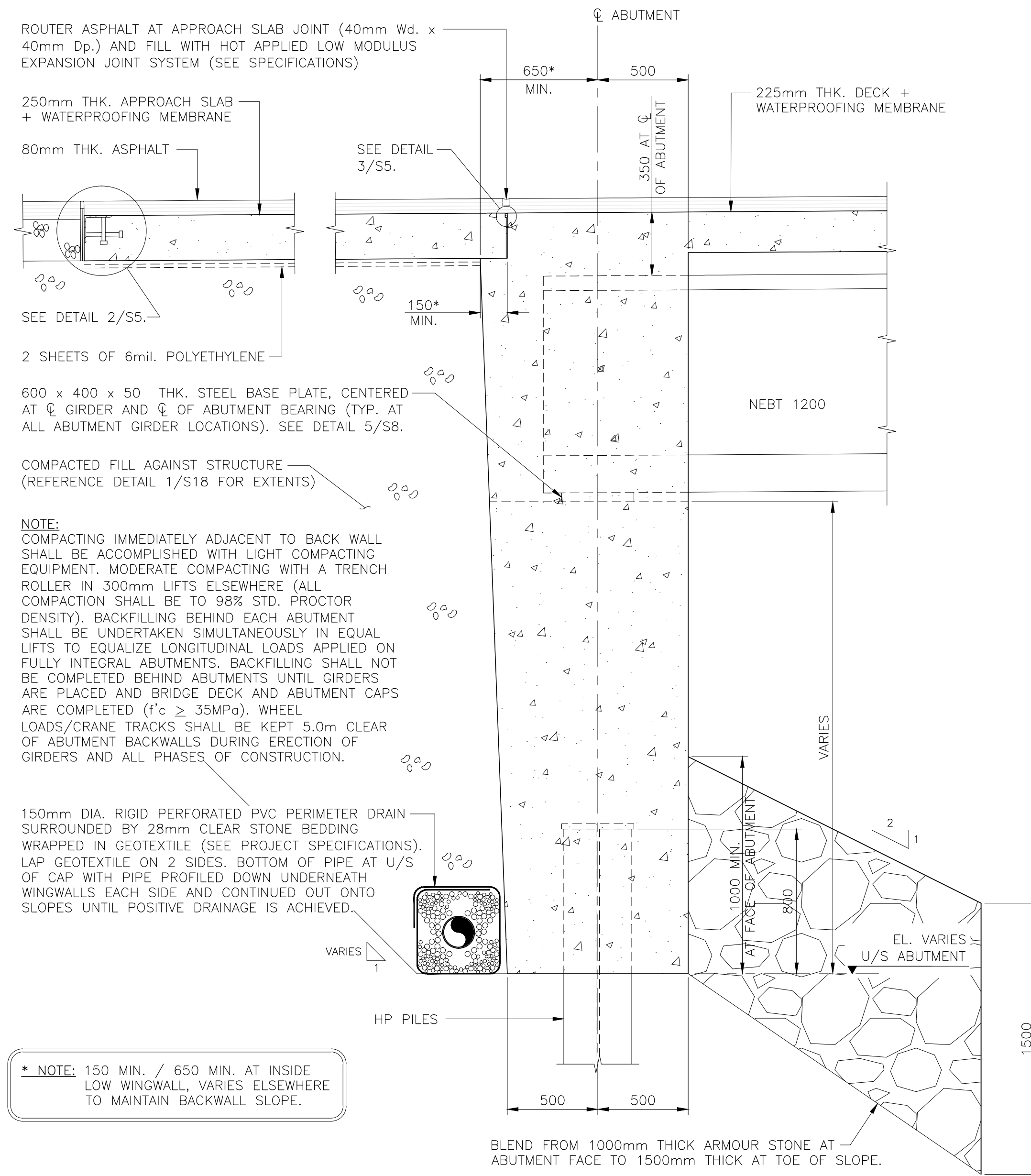
322A

drawing no. no. du dessin
S4

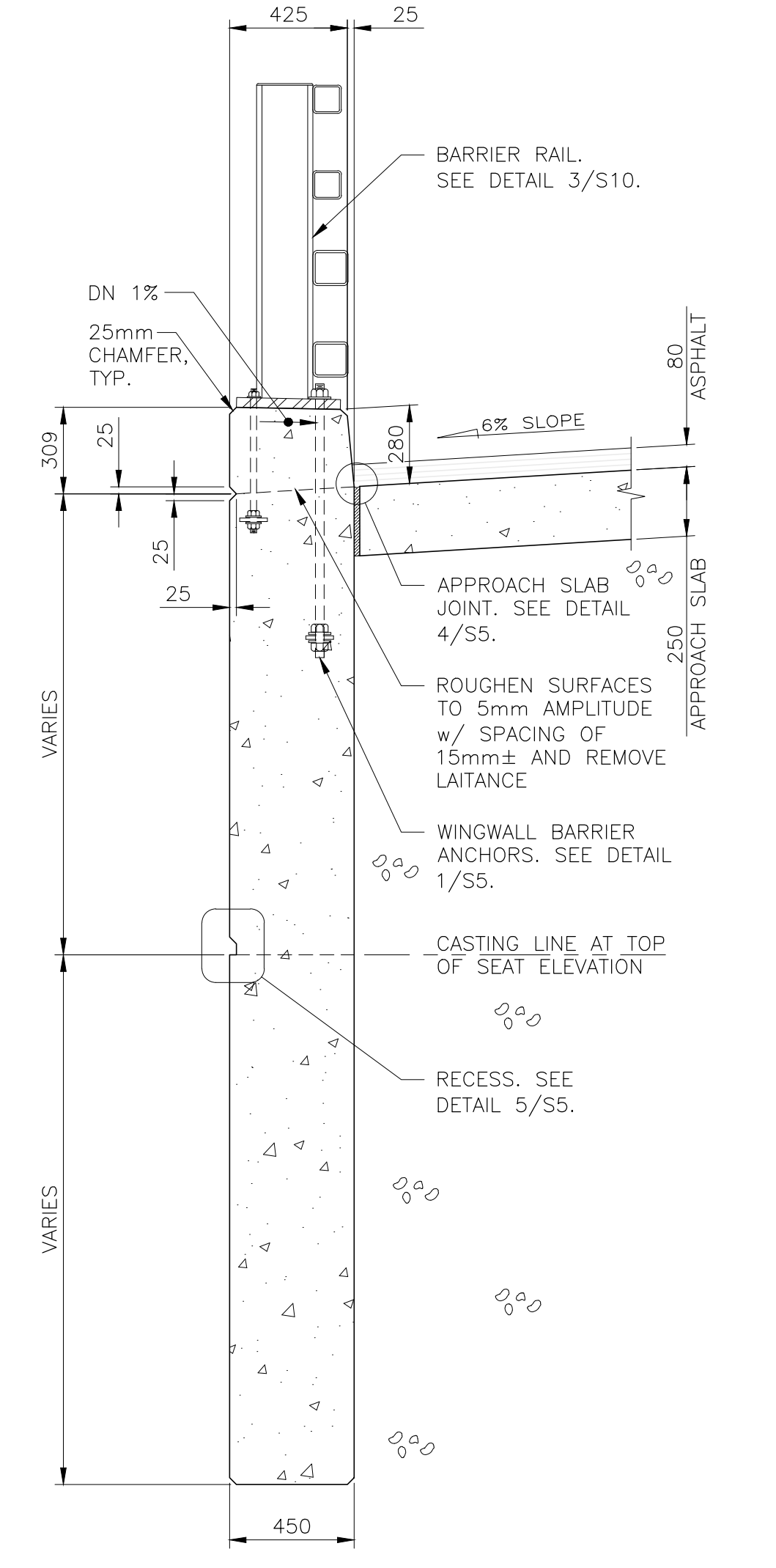
0	ISSUED FOR TENDER	07.5.2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	

ABUTMENT SECTIONS AND DETAILS

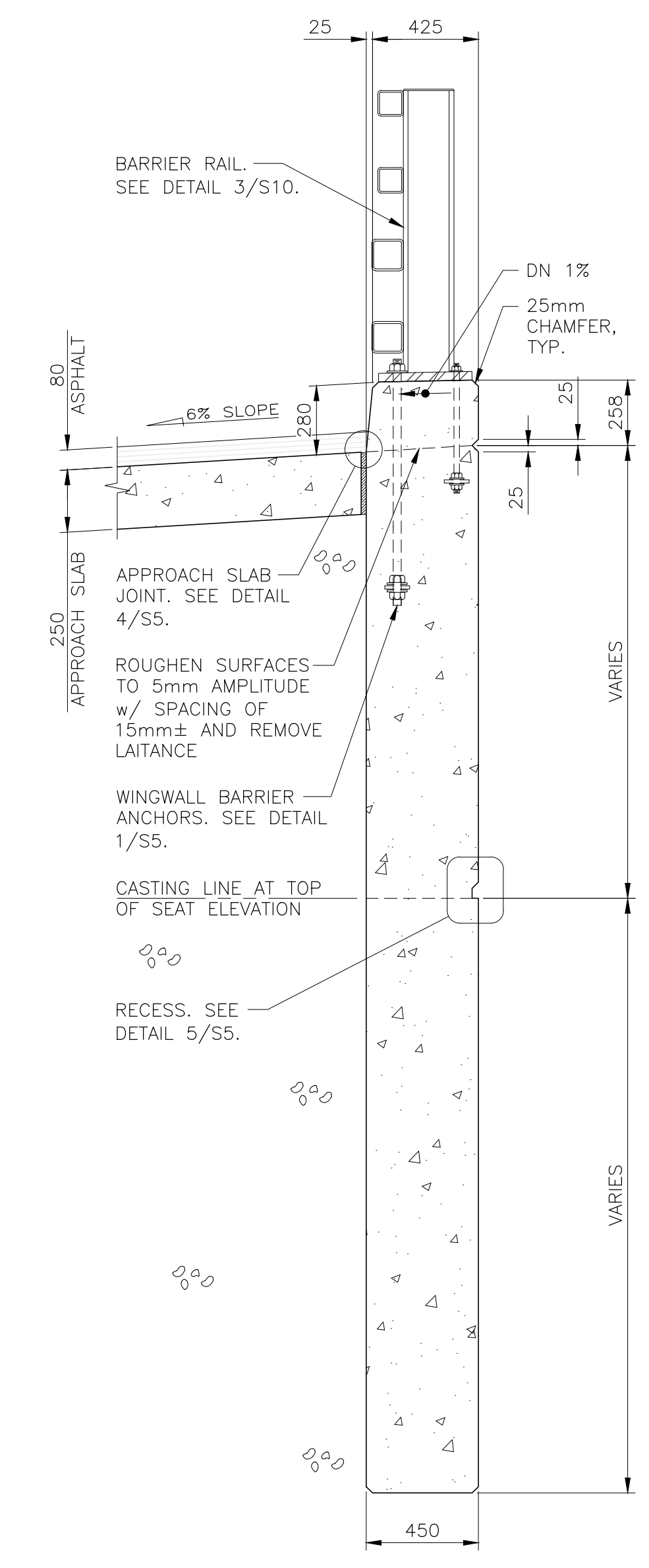
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Soumission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	S5	no. du dessin



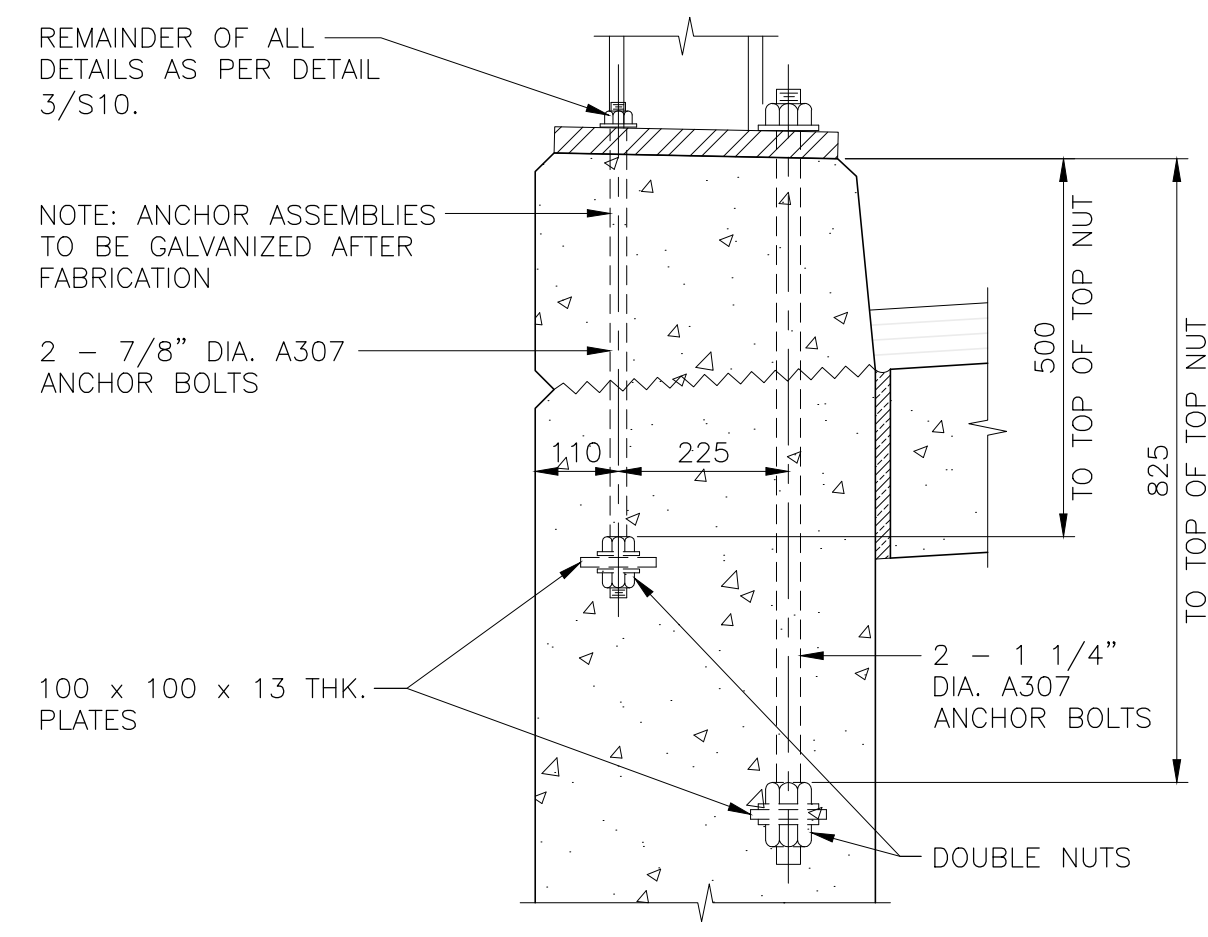
SECTION - TYPICAL ABUTMENT (A/S3)
SCALE: 1:20



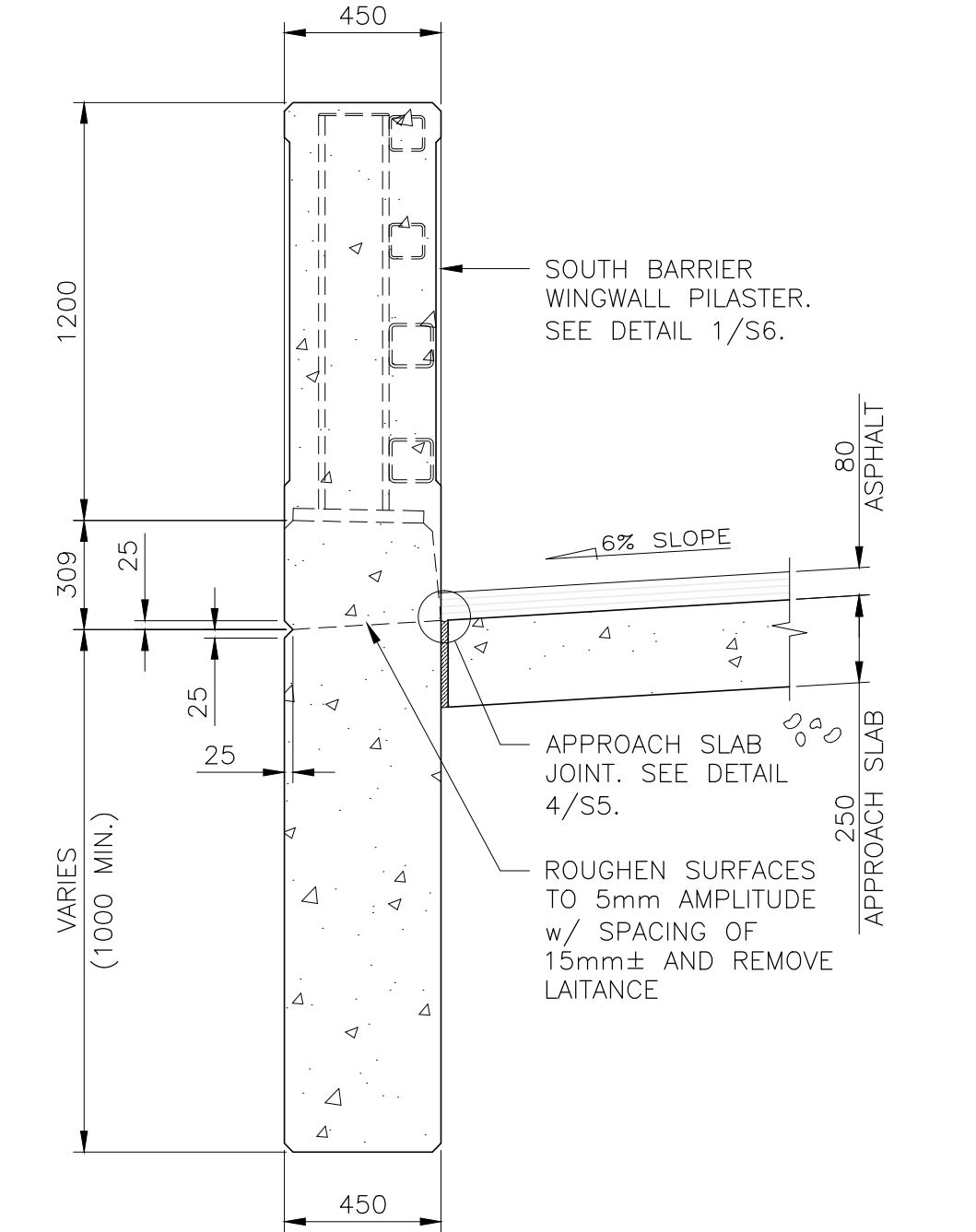
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SCALE: 1:20



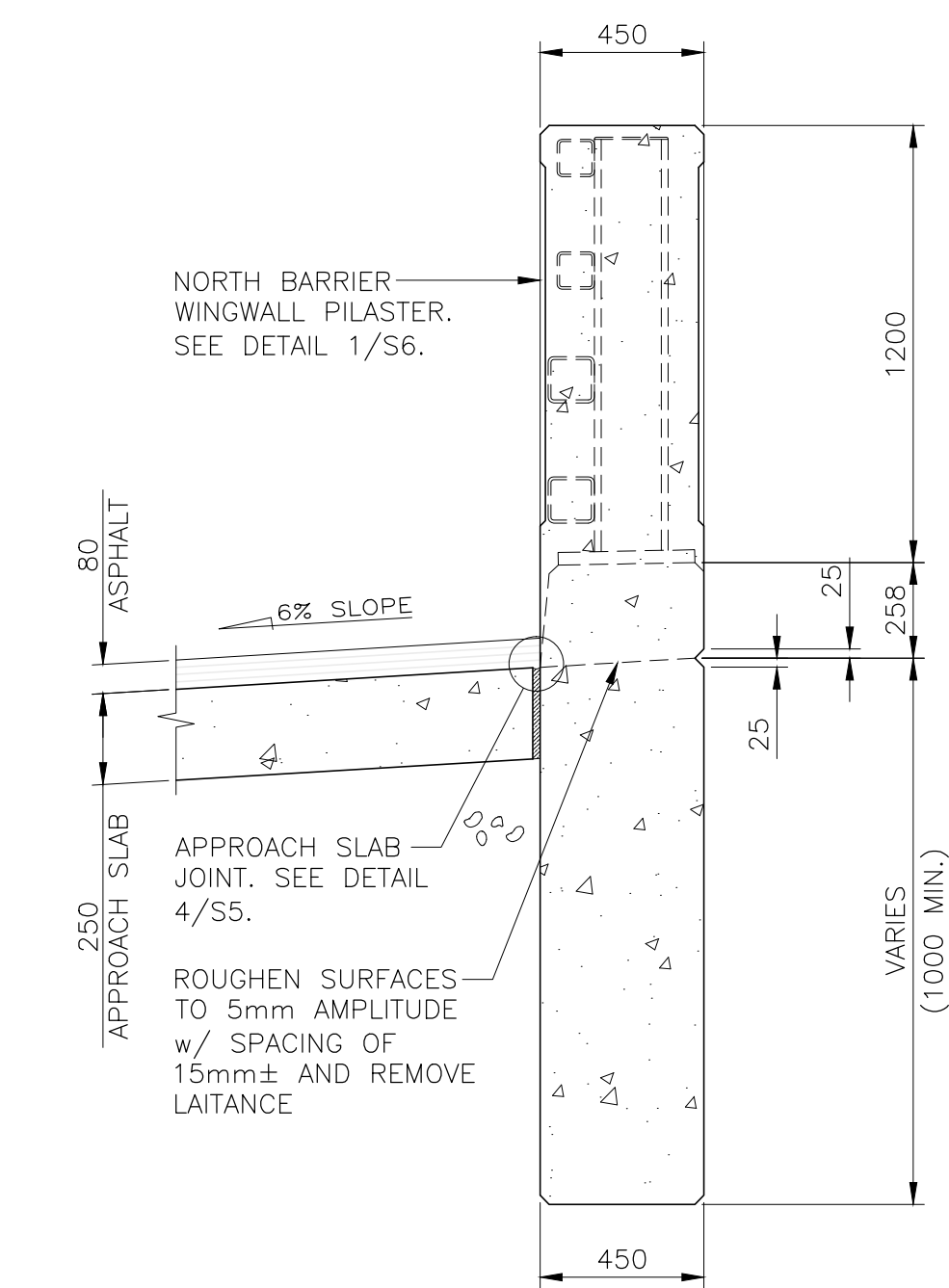
SECTION - NORTH WINGWALL AND BARRIER (C/S3)
SCALE: 1:20



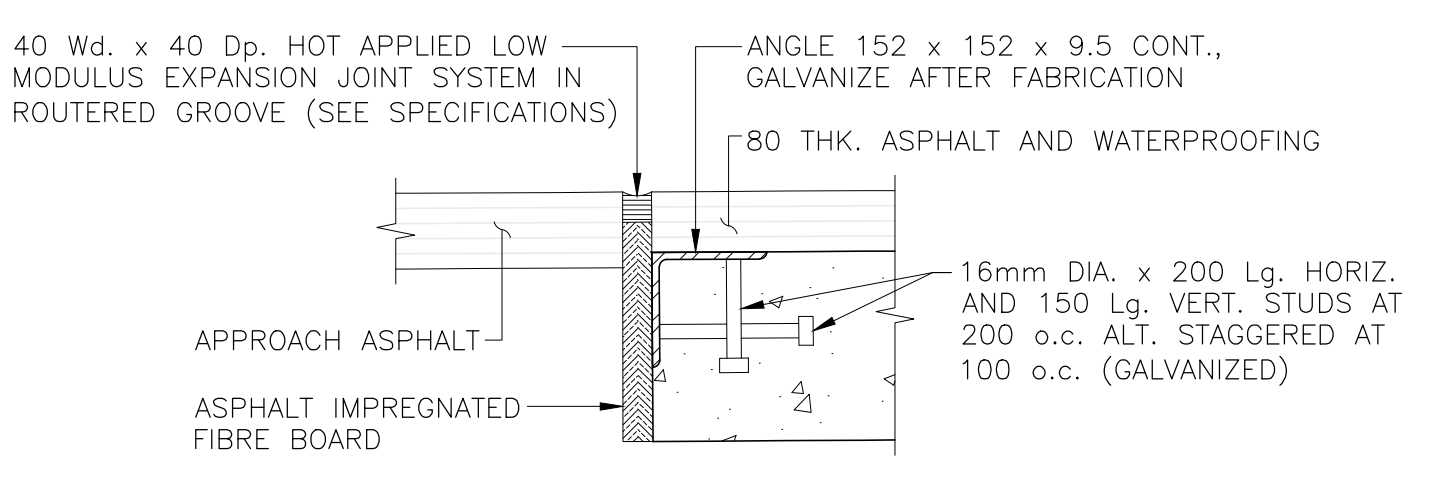
DETAIL - WINGWALL BARRIER POST ANCHORS (1/S5)
SCALE: 1:10



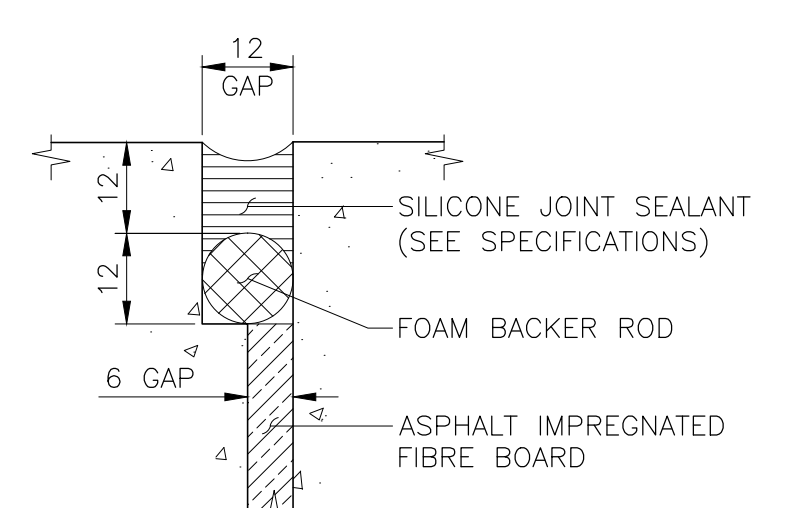
SECTION - SOUTH PILASTER (D/S3)
SCALE: 1:20



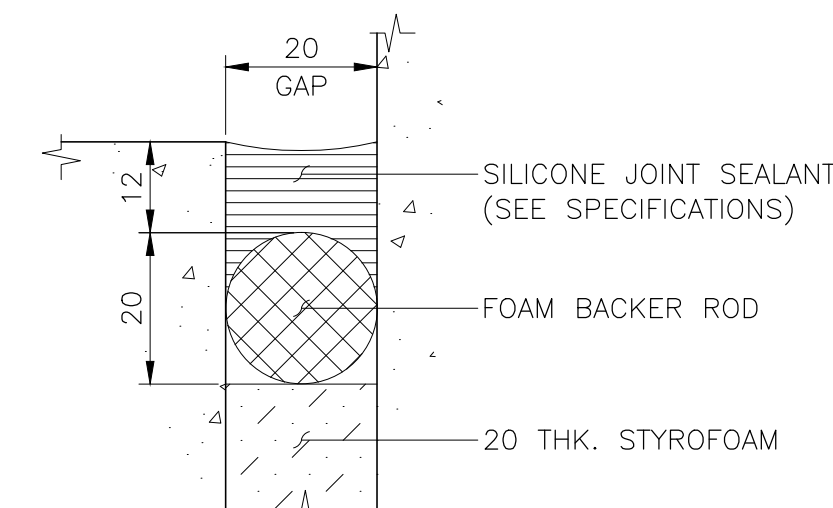
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SCALE: 1:20



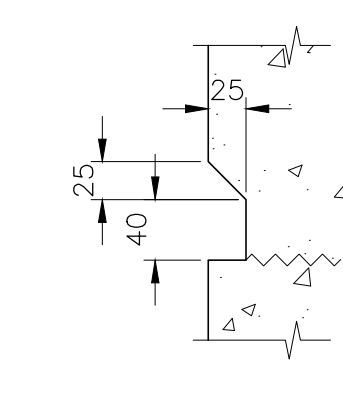
DETAIL - APPROACH SLAB EDGE ANGLE (2/S3)
SCALE: 1:10



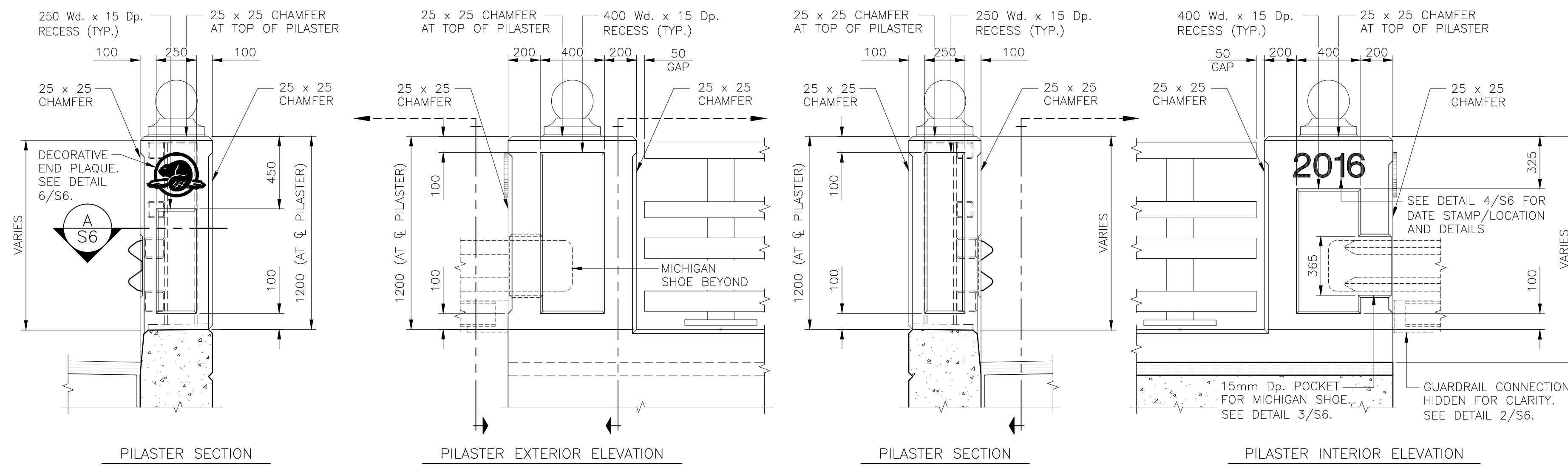
DETAIL - EXPANSION JOINT TYPE A (3/S5)
SCALE: 1:1



DETAIL - EXPANSION JOINT TYPE B (4/S5)
SCALE: 1:1

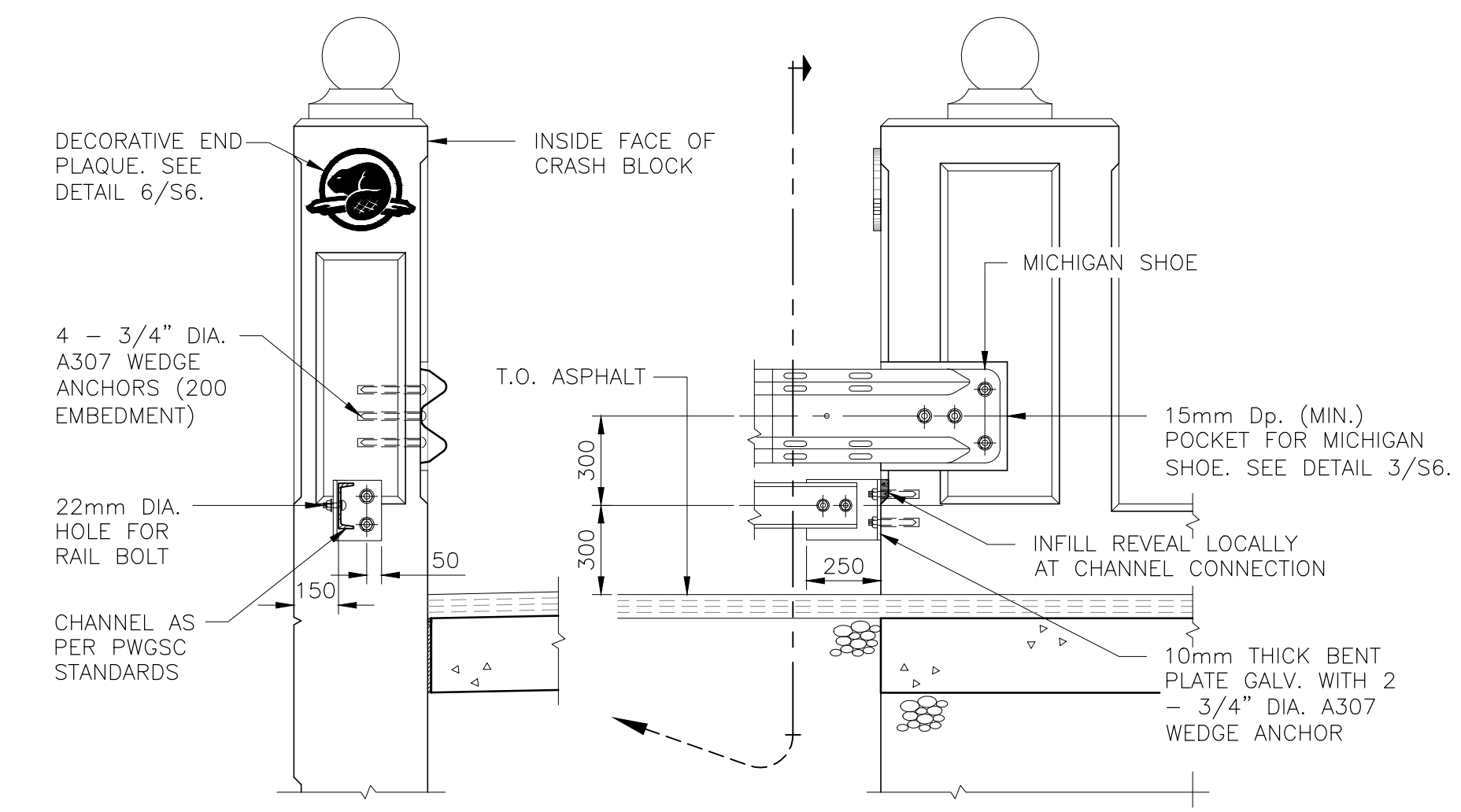


DETAIL - RECESS (5/S4)
SCALE: 1:5

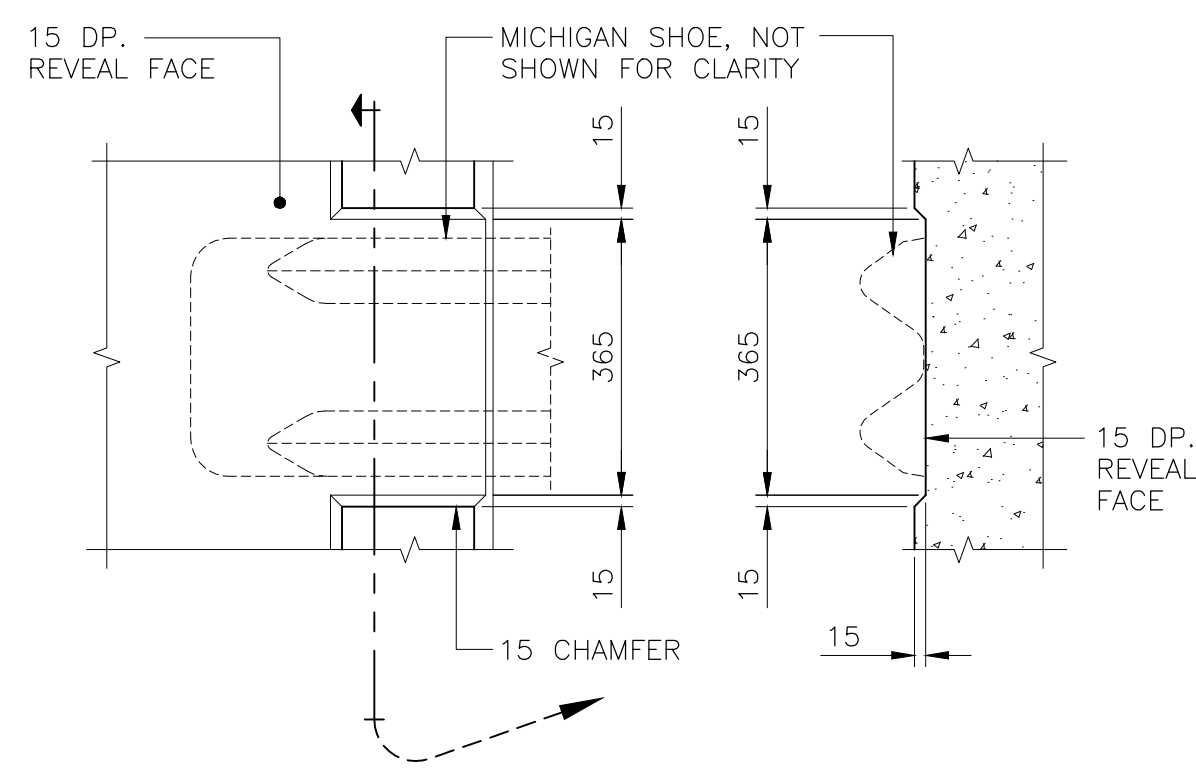


NOTE:
1. ALL PILASTERS TO BE VERTICAL (PLUMB) IN BOTH DIRECTIONS.
2. REFER TO DETAIL 6/56 FOR DECORATIVE END PLAQUE DETAILS AND LOCATION ON PILASTER.

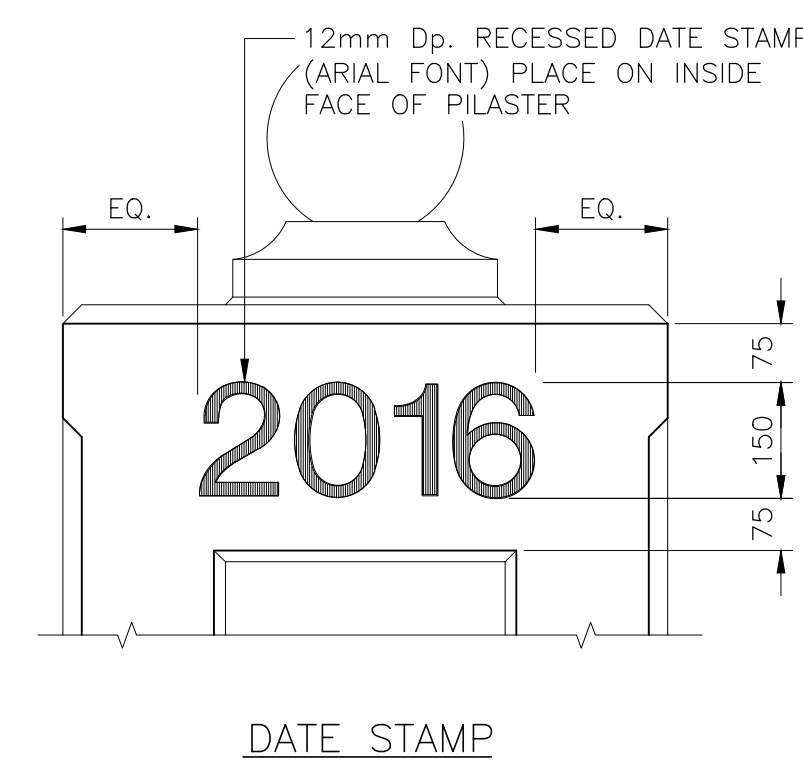
DETAIL – TYPICAL BARRIER PILASTER 1 S5
SCALE : 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



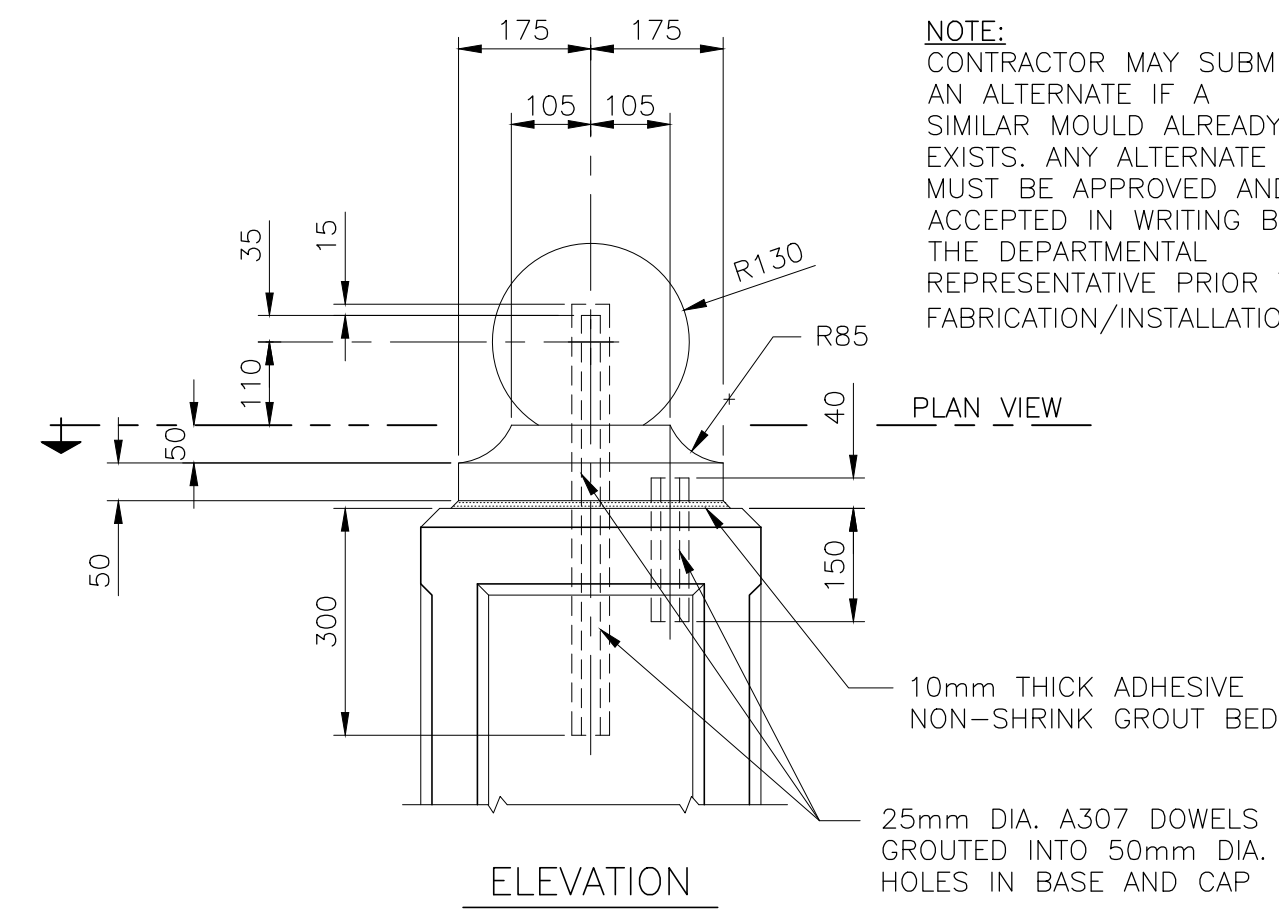
DETAIL – TYPICAL GUARDRAIL CONNECTION 2 S2
SCALE : 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



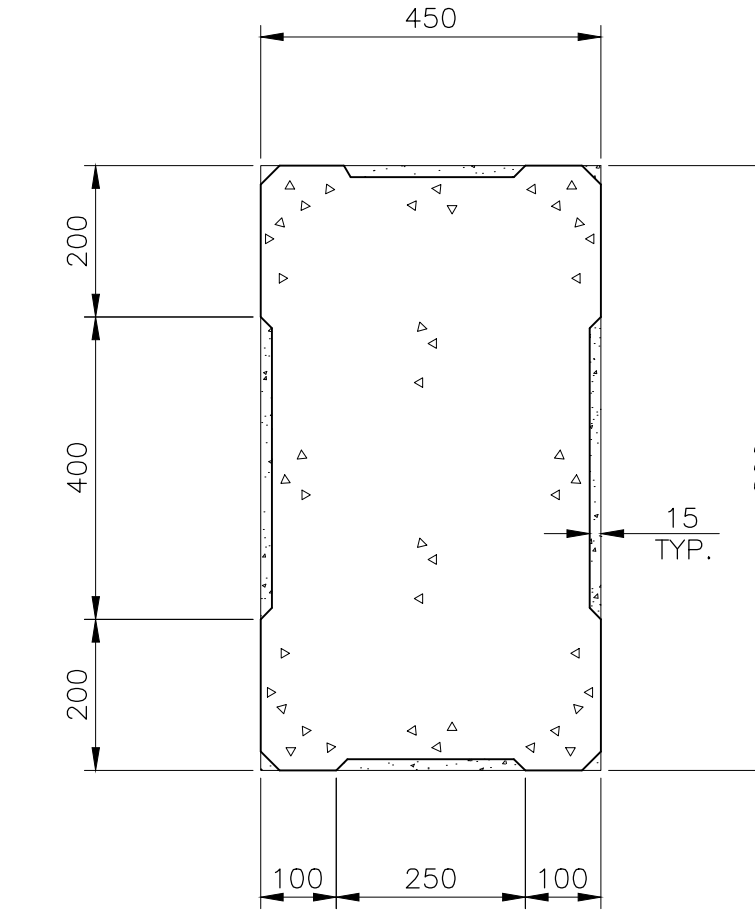
DETAIL – MICHIGAN SHOE POCKET 3 S6
SCALE : 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL – TYPICAL PILASTER REVEAL 4 S2
SCALE : 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm



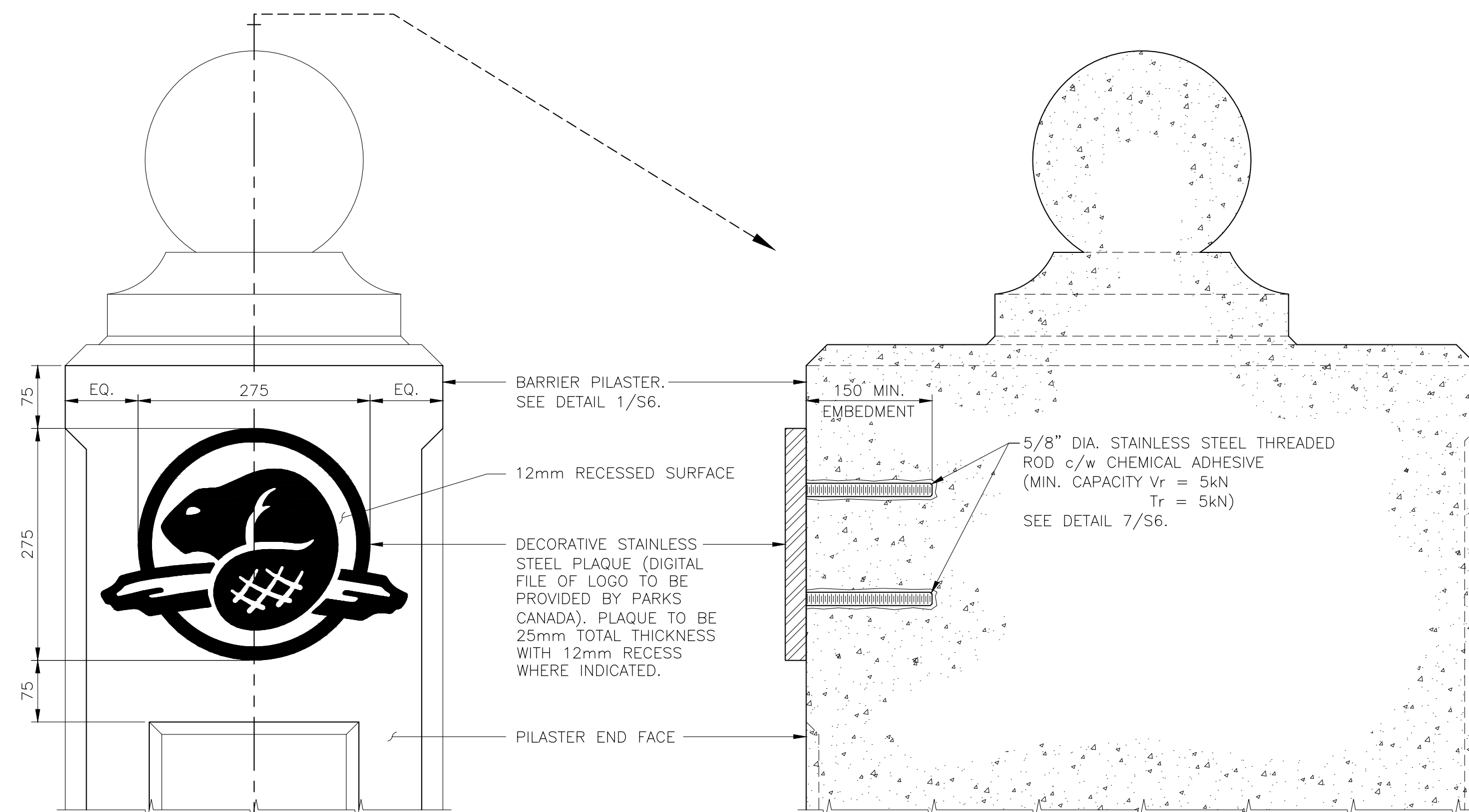
DETAIL – CONCRETE POST CAP 5 S1
SCALE : 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm



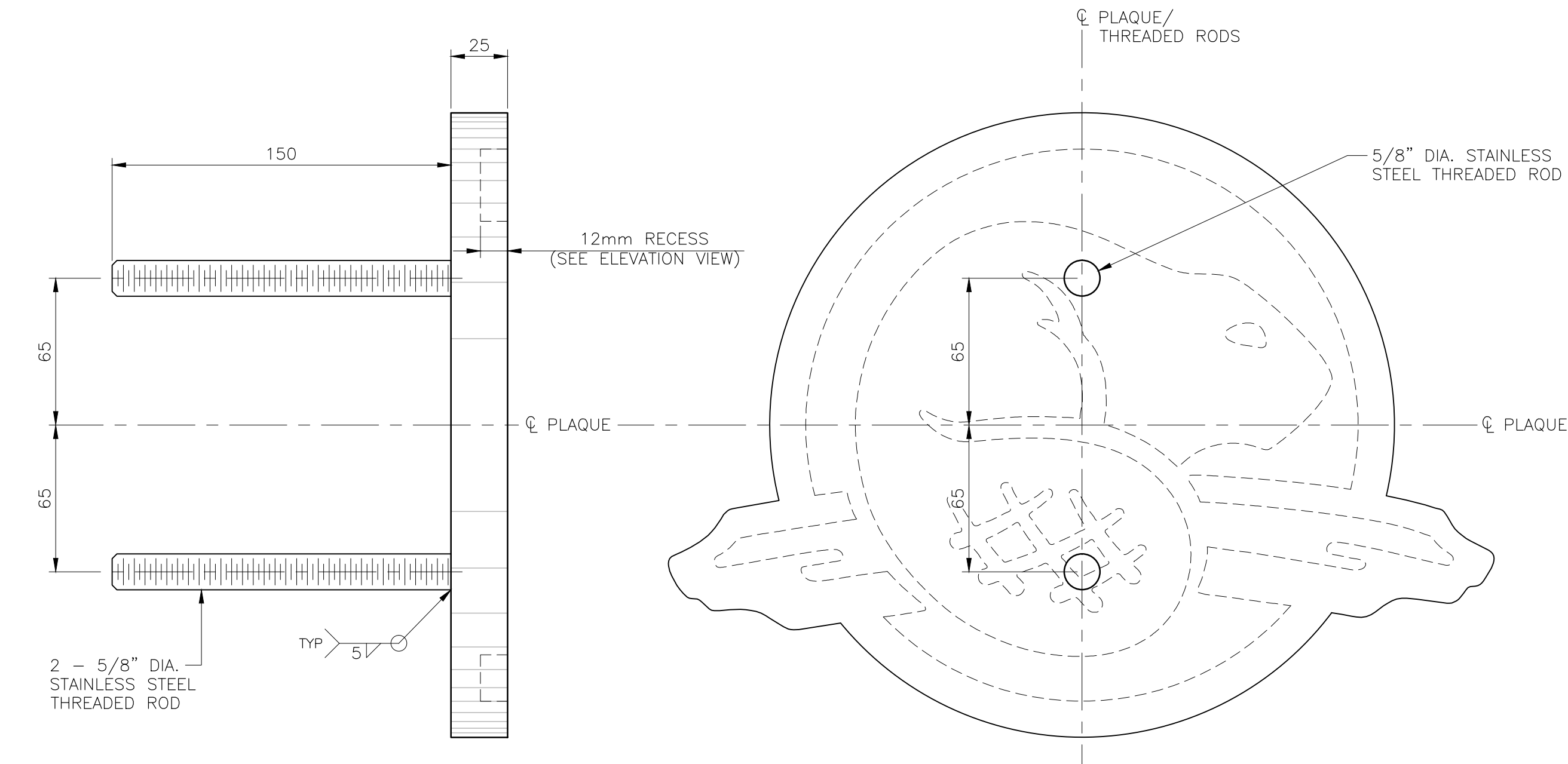
SECTION A S6
SCALE : 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm

PLAQUE NOTES:

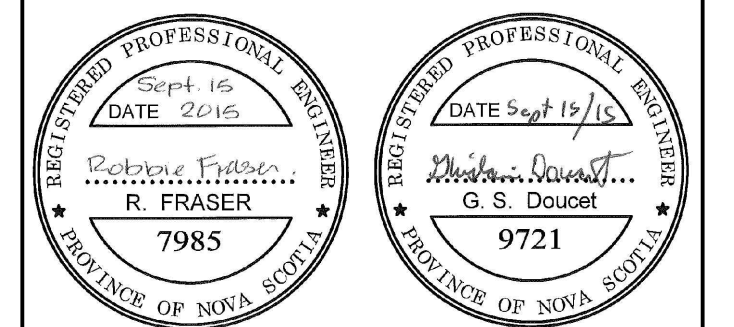
- DIGITAL FILE OF LOGO TO BE PROVIDED BY PARKS CANADA.
- PLAQUE TO BE FABRICATED FROM STAINLESS STEEL PLATE TO ASTM A240 - TYPE 316L.
- STAINLESS STEEL THREADED RODS TO ASTM F593 - TYPE 316L.
- ALL WELDING IN ACCORDANCE WITH CSA STANDARD W59 LATEST EDITION.
- HOLES IN PILASTER FOR THREADED ROD ANCHORS SHALL BE DRILLED AND CLEANED AS PER THE CHEMICAL ADHESIVE MANUFACTURER'S RECOMMENDATIONS.
- 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 6/56.
- PROVIDE CLEAR CAULKING AROUND PERIMETER OF PLAQUE AFTER INSTALLATION.



DETAIL – DECORATIVE PLAQUE 6 S6
SCALE : 1:5
0mm 100mm 200mm 300mm 400mm 500mm



DETAIL – THREADED ROD CONNECTION 7 S6
SCALE : 1:2
0mm 50mm 100mm 150mm 200mm 250mm

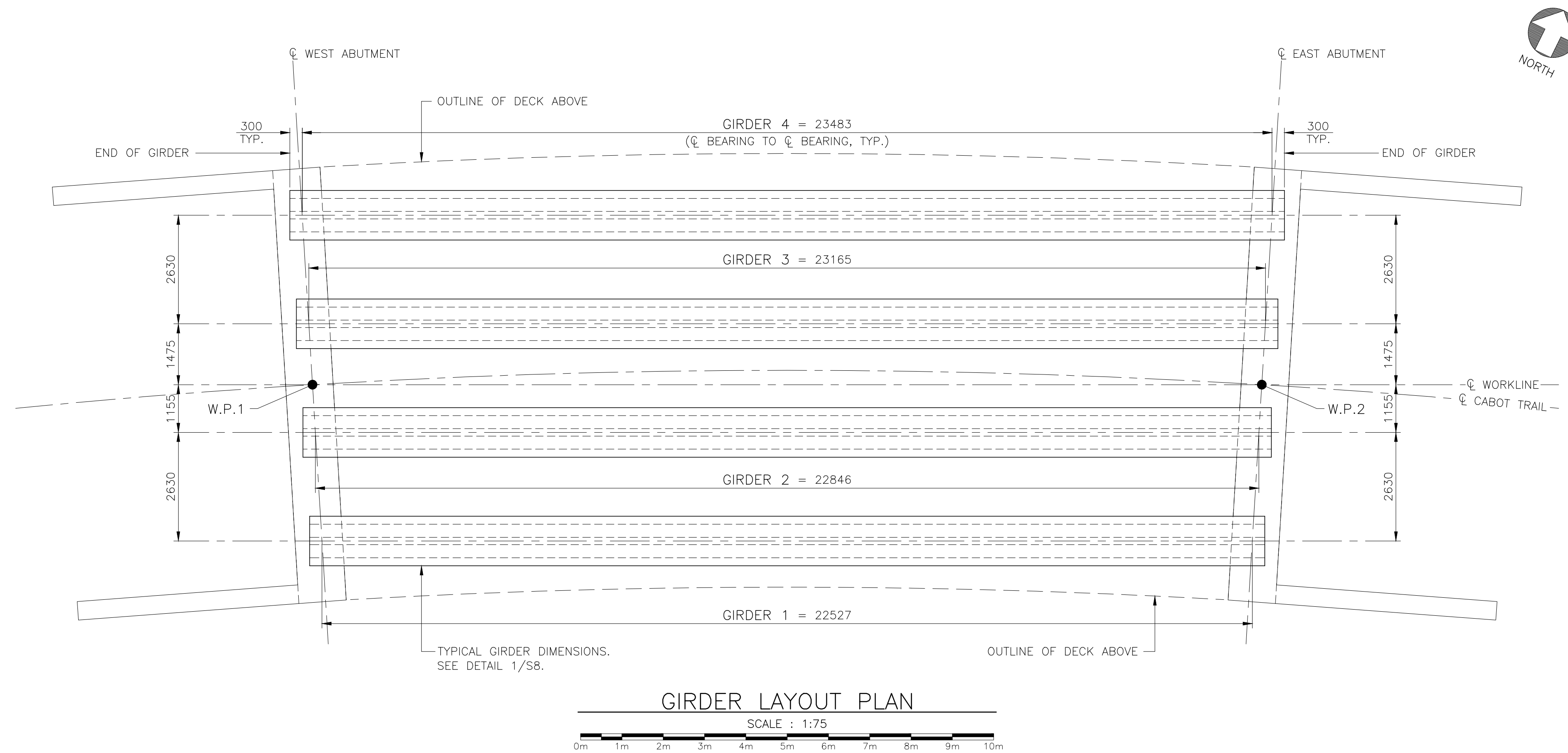


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project WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing WINGWALL PILASTERS SECTIONS AND DETAILS

designed GHISLAIN DOUCET	conçu
date JULY 2015	
drawn JEFF CLARK	dessiné
date JULY 2015	
approved ROBBIE FRASER	approuvé
date JULY 2015	
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PCA Project Manager	Administrateur de projets APC
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322A	
drawing no.	no. du dessin
S6	



PRECAST GIRDER NOTES:

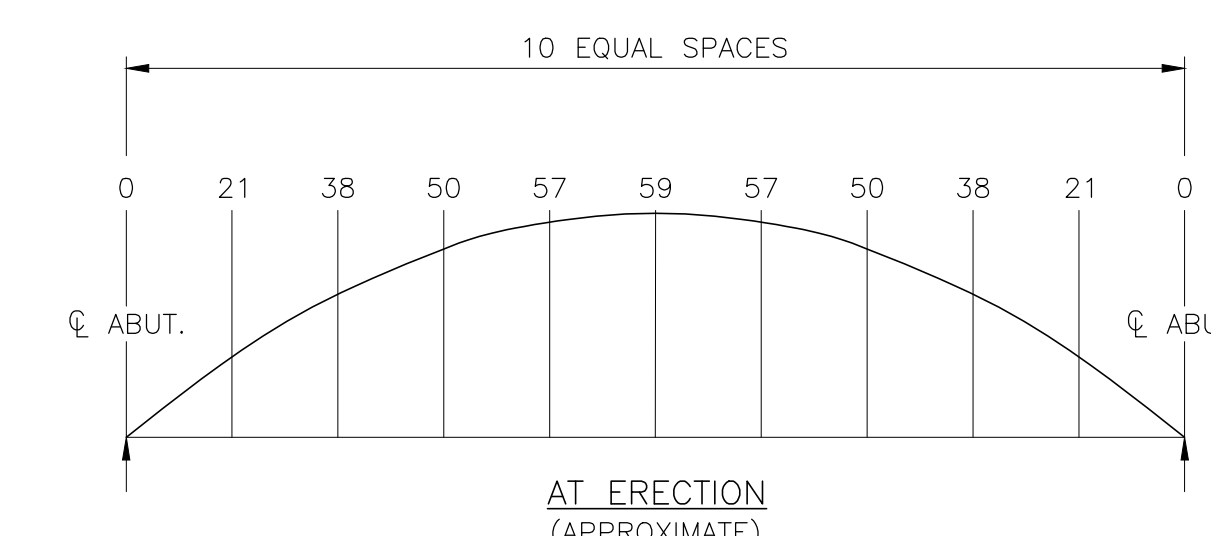
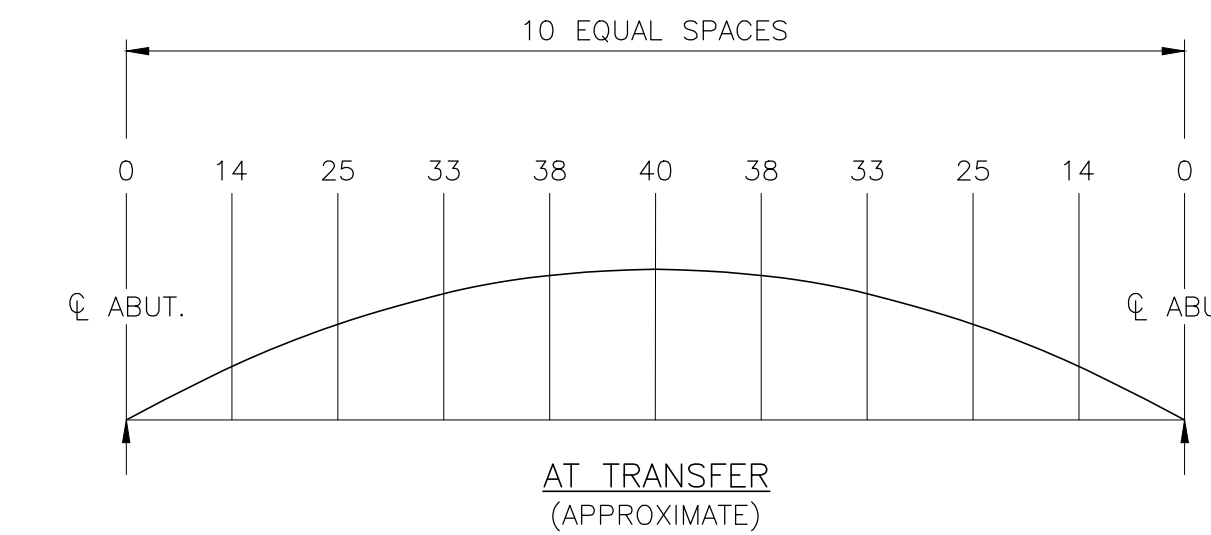
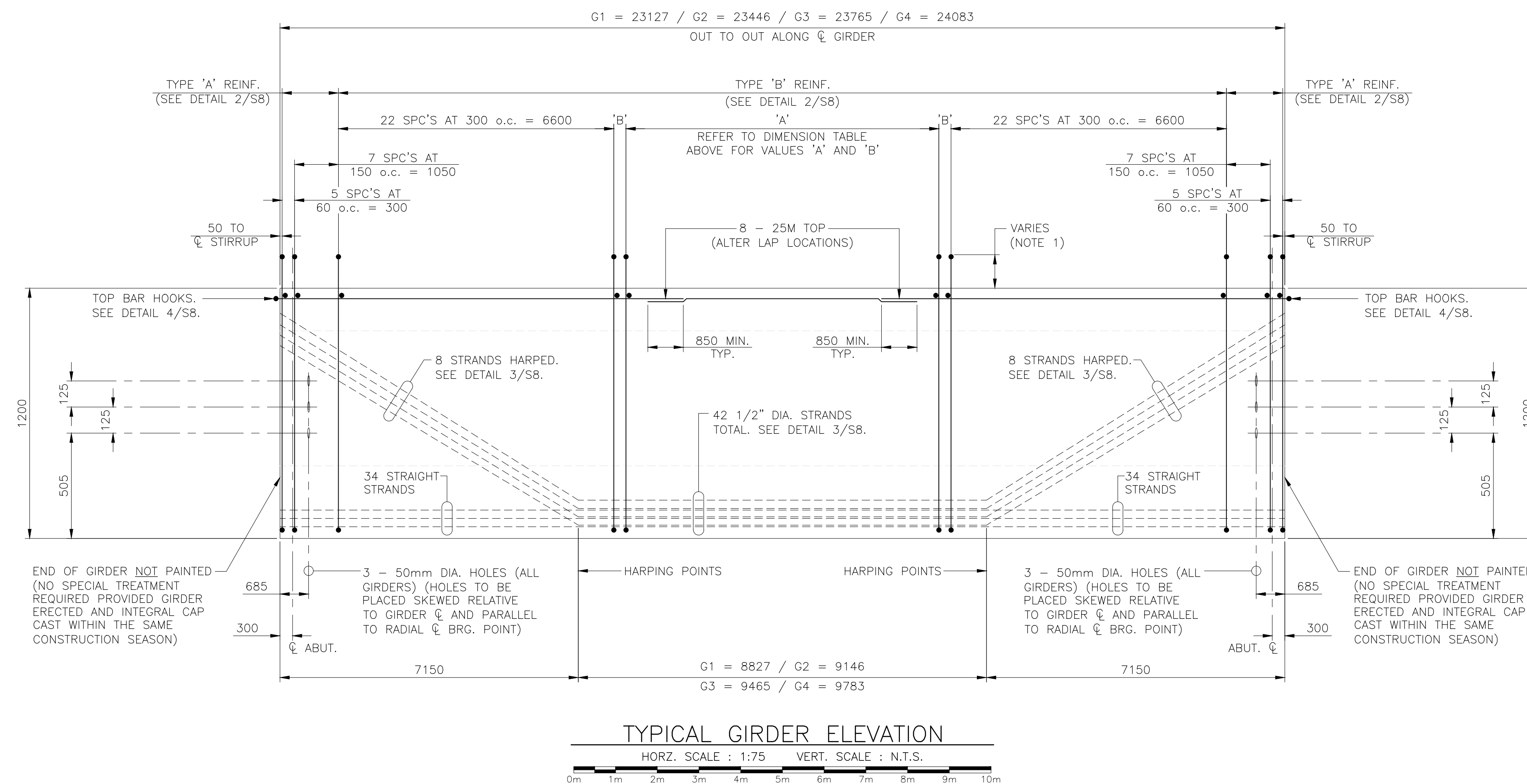
- ALL GIRDERS TO BE NEW ENGLAND BULB TEE (N.E.B.T.) 1200 STANDARD SECTIONS.
- CONCRETE COMPRESSIVE STRENGTH:
 - A) AT 28 DAYS ----- 50 MPa
 - B) AT TIME OF PRESTRESS TRANSFER -- 38 MPa
- PRE-STRESSING STEEL: SEVEN WIRE LOW RELAXATION STRANDS (GRADE 1860), SIZE 13 WITH ULTIMATE STRENGTH OF 1860 MPa. STRANDS TO CONFORM TO A.S.T.M. A416.
- REINFORCING STEEL IN GIRDERS TO PROJECT SPECIFICATIONS WITH YIELD STRENGTH OF 400 MPa (WELDABLE). REINFORCING IN GIRDERS TO BE UNCOATED/BLACK STEEL.
- STRAND FORCES:
 - A) AT JACKING (0.78 FPU) ----- 144 kN
 - B) IMMEDIATELY AFTER RELEASE ---- 142 kN
 - C) AFTER ALL LOSSES ----- 107 kN
- ESTIMATED PRESTRESS LOSSES:
 - A) IMMEDIATELY AFTER RELEASE ---- 153 MPa
 - B) AFTER TRANSFER (AFTER TRANSFER ONLY) ----- 218 MPa
- TRANSFER OF PRESTRESS RELEASE SEQUENCE:
 - A) DEFLECTED STRANDS
 - B) HOLD DOWN DEVICES
 - C) STRAIGHT STRANDS
- LIFTING DEVICES TO BE LOCATED AT THE GIRDER BEARING POINTS AND SHALL MEET WITH ENGINEERS APPROVAL.
- CONCRETE COVER TO STIRRUPS AS SHOWN ON DRAWING S8.
- ROUGHEN TOP OF GIRDER WHERE IT WILL CONTACT HAUNCH TO 5mm AMPLITUDE, SPACING OF 15mm± & REMOVE LAITANCE PRIOR TO CASTING DECK AND HAUNCHES.
- CONTRACTOR TO ENSURE GIRDER STABILITY DURING ALL PHASES OF CONSTRUCTION.

NOTES:

- HAUNCH VARIES ALONG GIRDER LENGTH, HENCE STIRRUP PROJECTION ALSO VARIES. STIRRUP PROJECTION SHALL REMAIN BELOW THE DECK SLAB T.U.L. REINF. AND 40mm ABOVE THE B.L.L. (TRANSVERSE) REINF.
- HARP POINTS FOR 4 LOWER STRANDS MAY BE SPACED 6650 FROM GIRDER ENDS WITH 4 UPPER STRANDS HARPED 7650 FROM GIRDER ENDS.

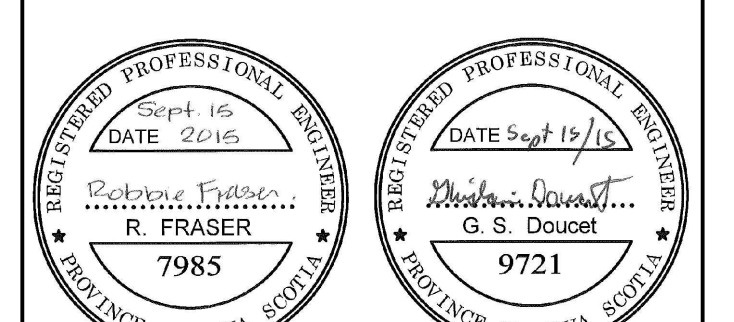
DIMENSION TABLE:

	'A'	'B'
GIRDER 1	13 EQ. SPC'S AT ±500 o.c. = 6500	1 SPC AT ±314
GIRDER 2	13 EQ. SPC'S AT ±500 o.c. = 6500	1 SPC AT ±473
GIRDER 3	14 EQ. SPC'S AT ±500 o.c. = 7000	1 SPC AT ±383
GIRDER 4	15 EQ. SPC'S AT ±500 o.c. = 7500	1 SPC AT ±292



NOTE: VALUES SHOWN ARE FOR GUIDANCE ONLY. CONTRACTOR SHALL MAKE HIS OWN CALCULATIONS/ESTIMATES OF GIRDER CAMBER AND DETERMINE THE REQUIRED STIRRUP PROJECTIONS ABOVE THE TOP SURFACE OF THE GIRDER.

CAMBER PROFILES
SCALE : N.T.S.

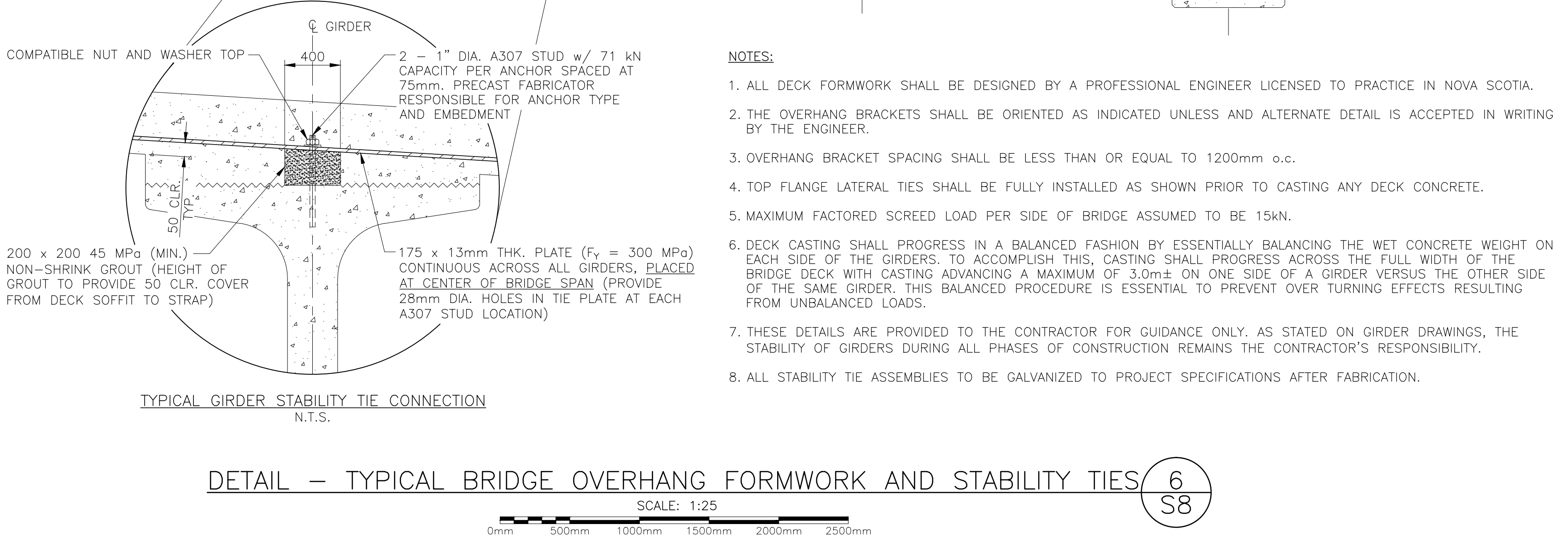
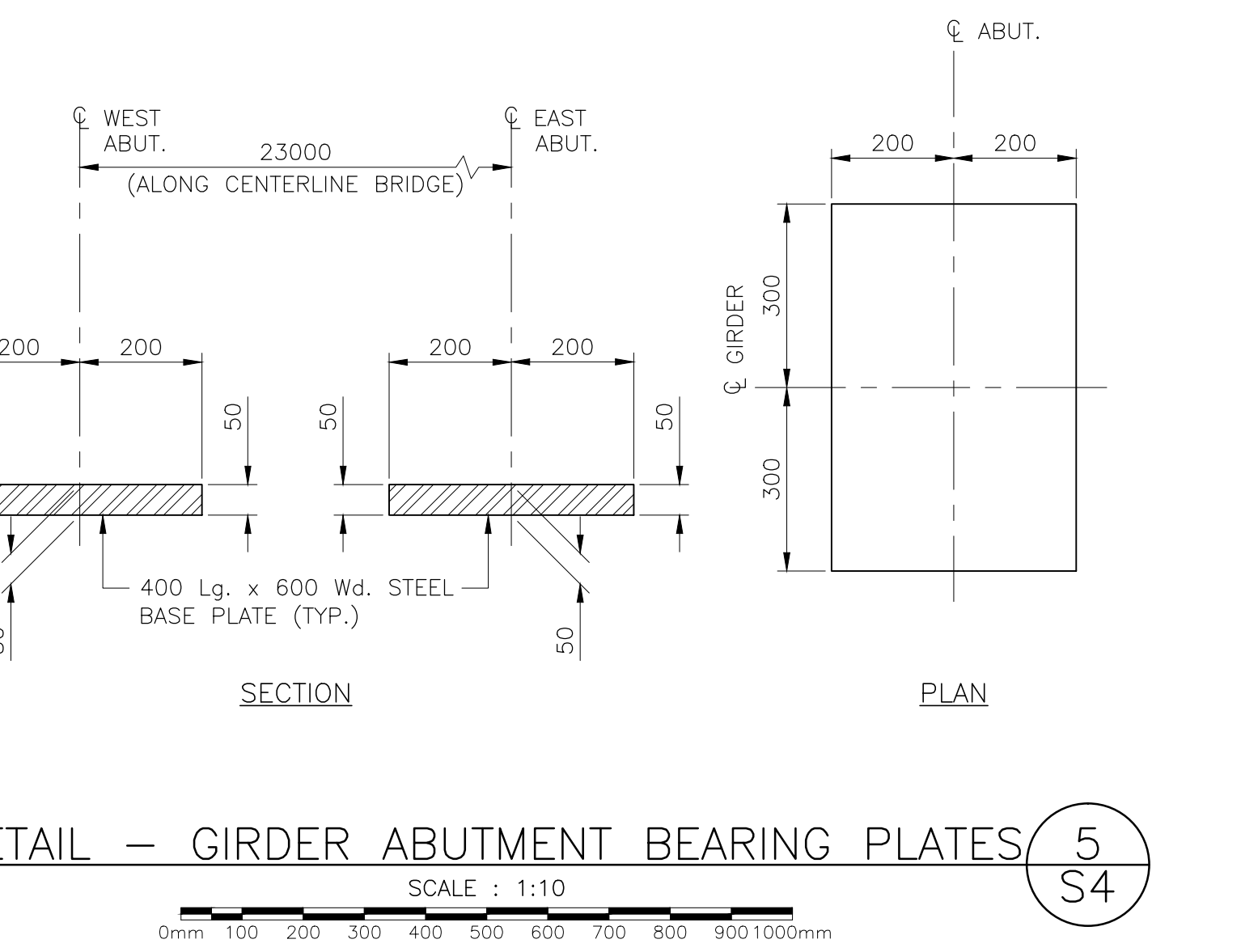
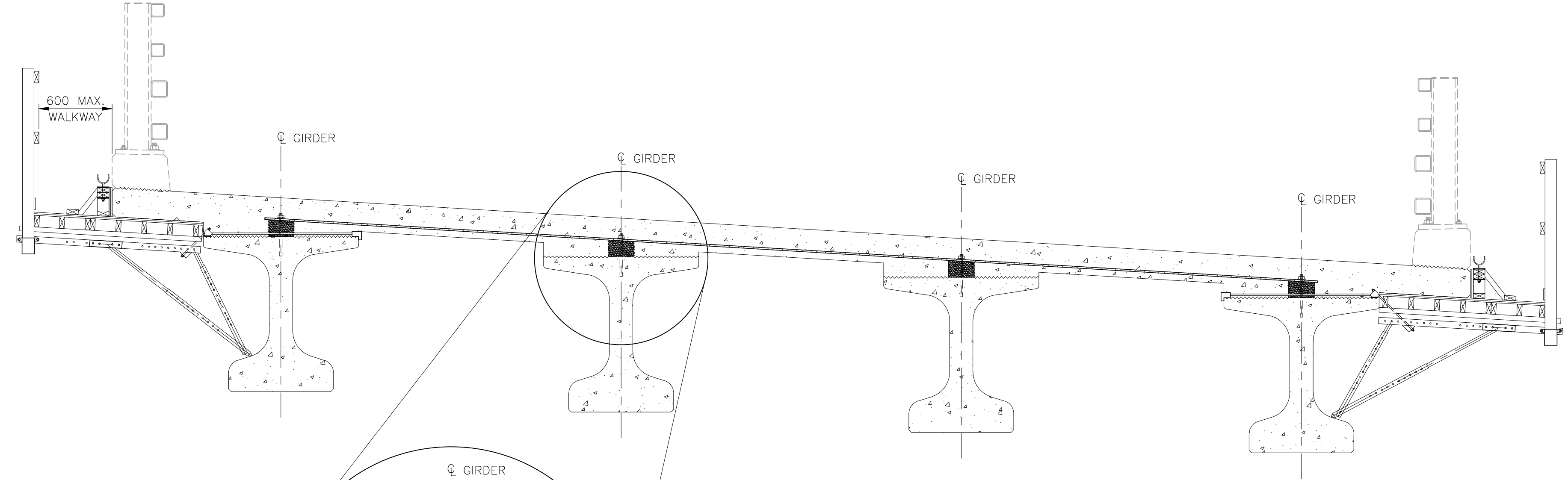
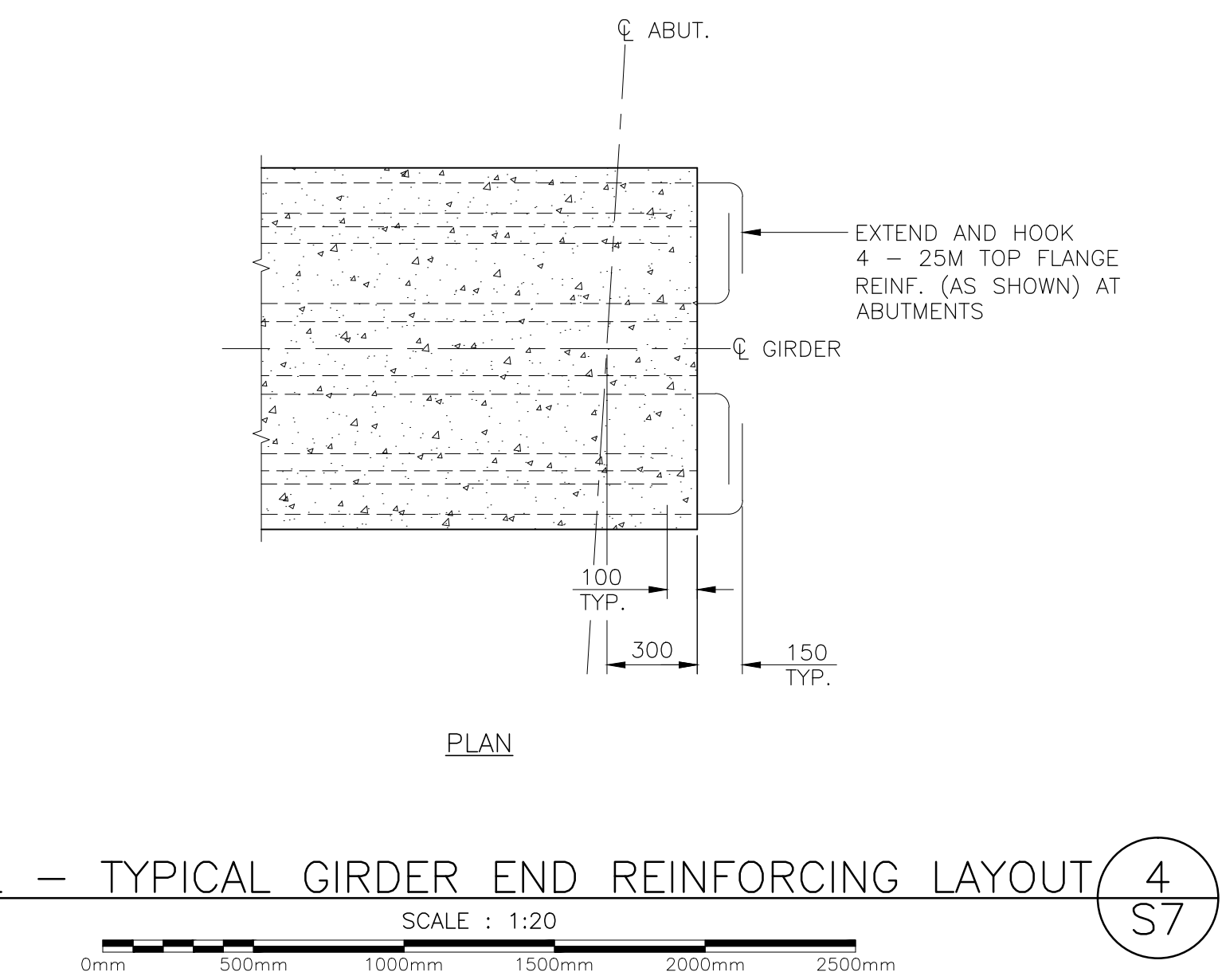
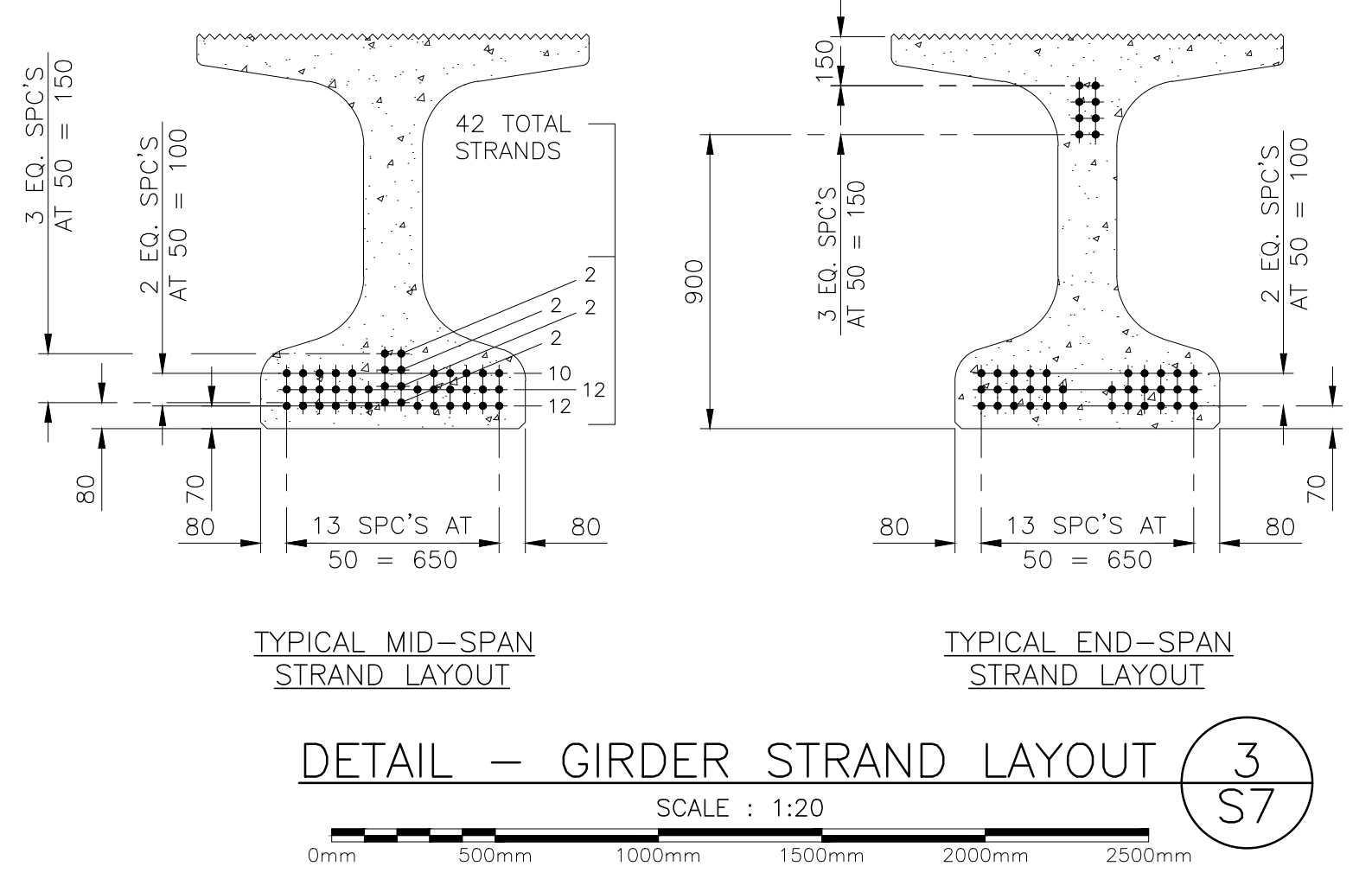
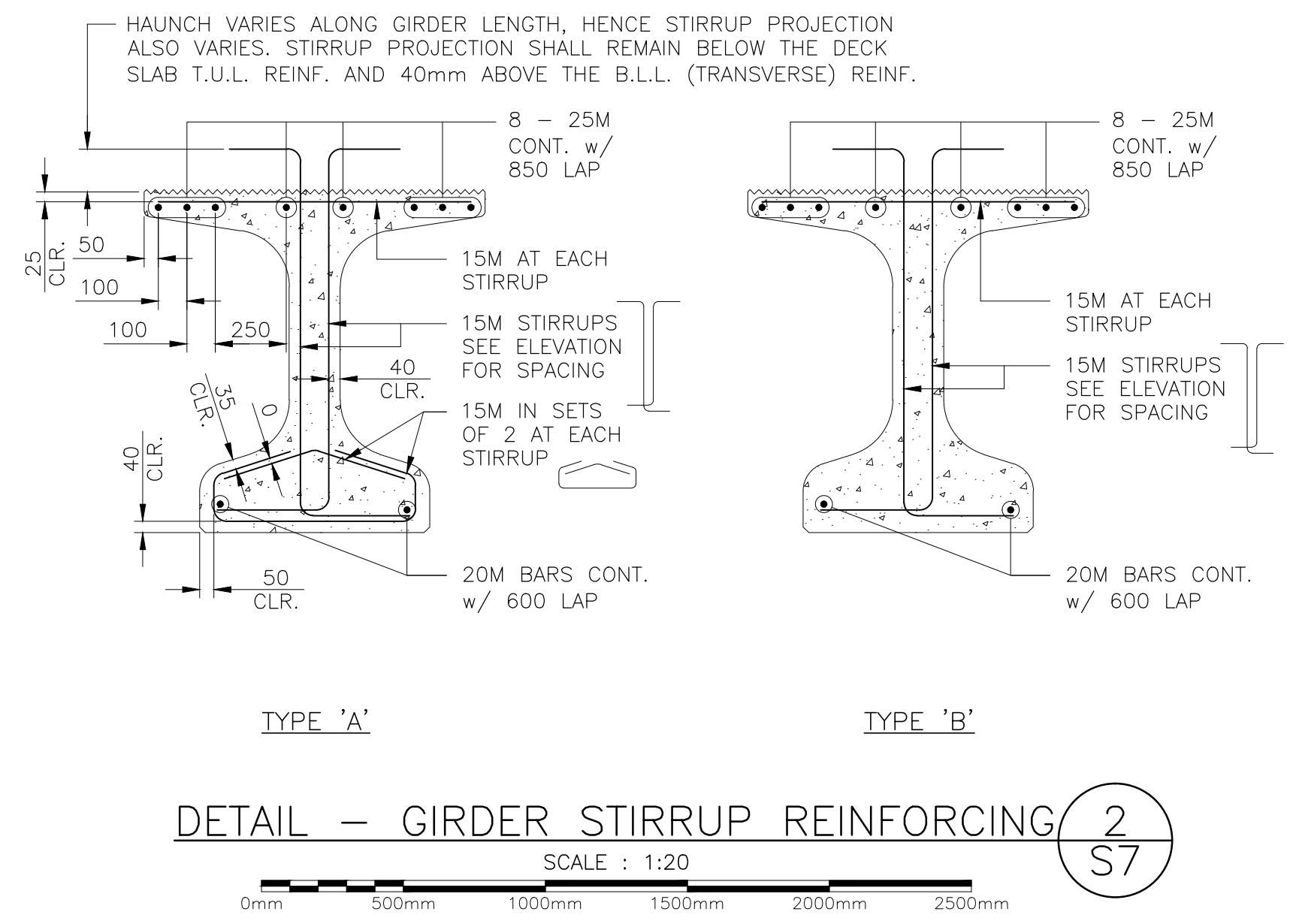
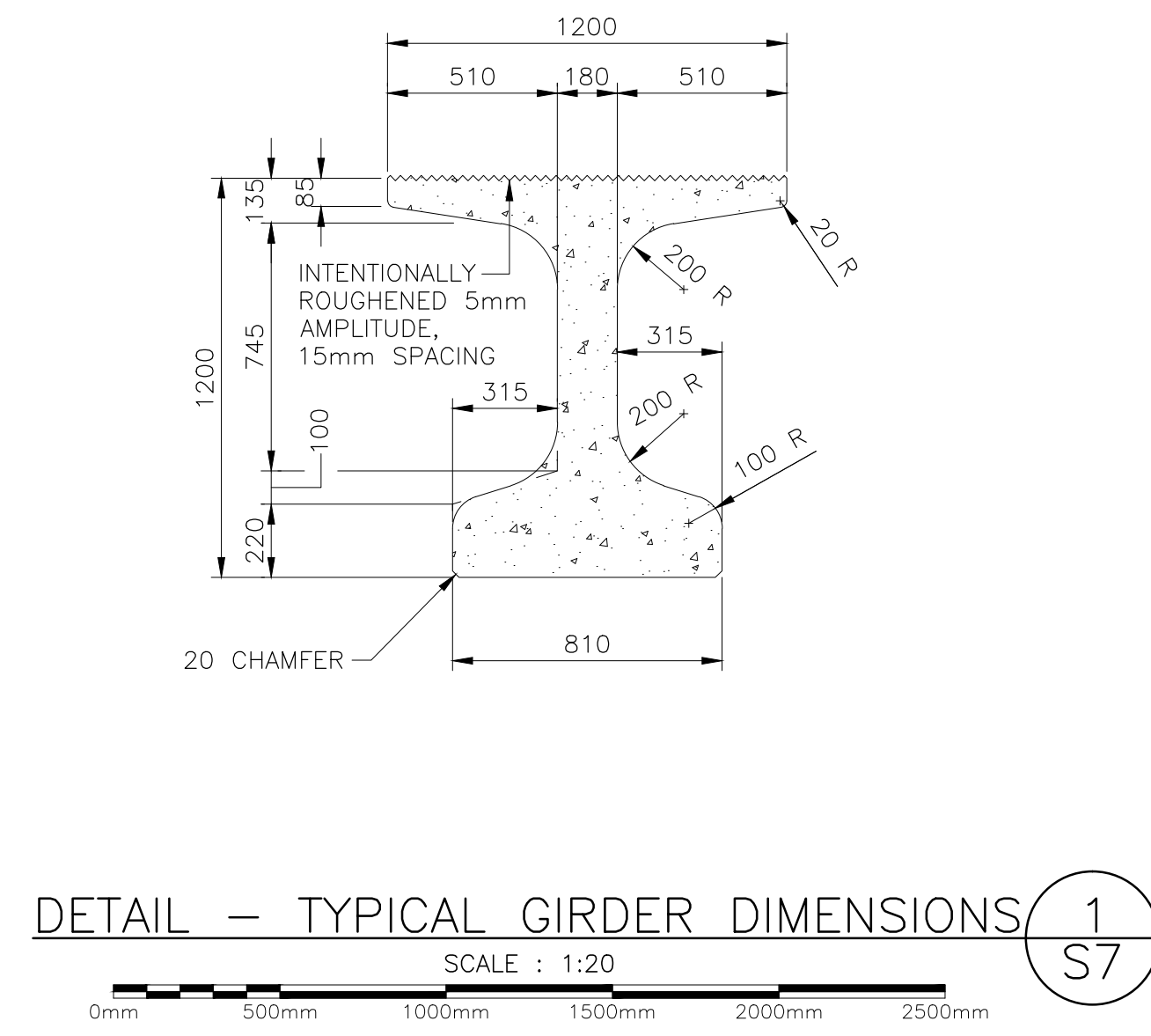


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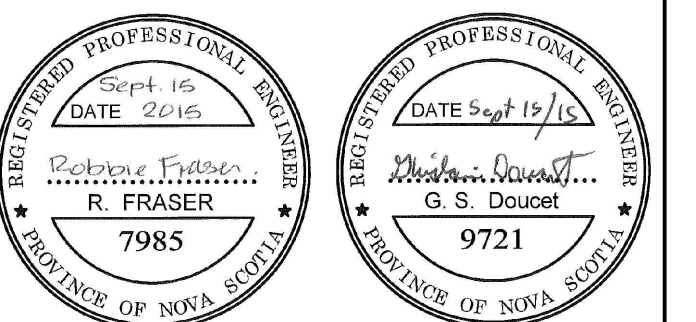
WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

GIRDER LAYOUT PLAN,
ELEVATION AND
CAMBER PROFILES

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender		Submission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	322A	
drawing no.		no. du dessin
	S7	

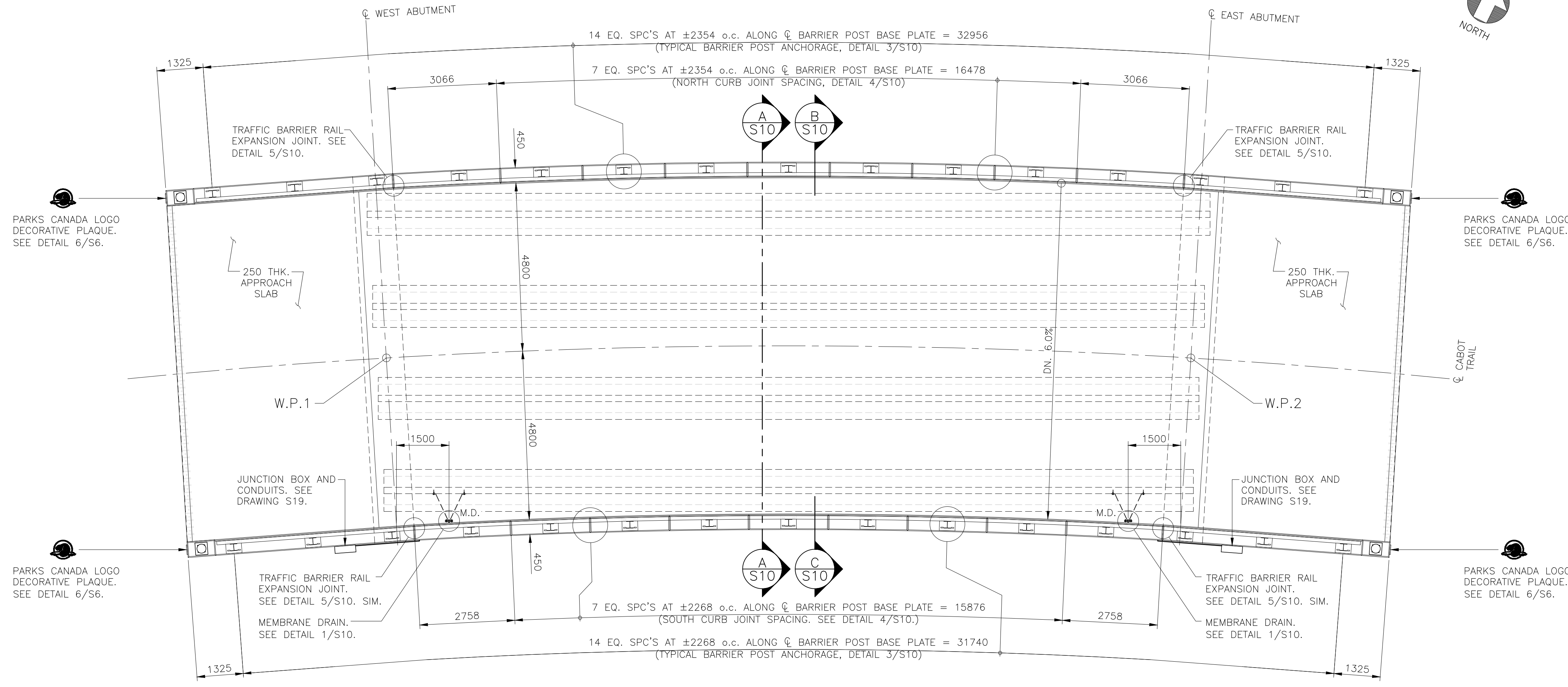


- NOTES:**
1. ALL DECK FORMWORK SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN NOVA SCOTIA.
 2. THE OVERHANG BRACKETS SHALL BE ORIENTED AS INDICATED UNLESS AND ALTERNATE DETAIL IS ACCEPTED IN WRITING BY THE ENGINEER.
 3. OVERHANG BRACKET SPACING SHALL BE LESS THAN OR EQUAL TO 1200mm o.c.
 4. TOP FLANGE LATERAL TIES SHALL BE FULLY INSTALLED AS SHOWN PRIOR TO CASTING ANY DECK CONCRETE.
 5. MAXIMUM FACTORED SCREED LOAD PER SIDE OF BRIDGE ASSUMED TO BE 15kN.
 6. 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 OVER TURNING EFFECTS RESULTING FROM UNBALANCED LOADS.
 7. THESE DETAILS ARE PROVIDED TO THE CONTRACTOR FOR GUIDANCE ONLY, AS STATED ON GIRDER DRAWINGS, THE STABILITY OF GIRDERS DURING ALL PHASES OF CONSTRUCTION REMAINS THE CONTRACTOR'S RESPONSIBILITY.
 8. ALL STABILITY TIE ASSEMBLIES TO BE GALVANIZED TO PROJECT SPECIFICATIONS AFTER FABRICATION.

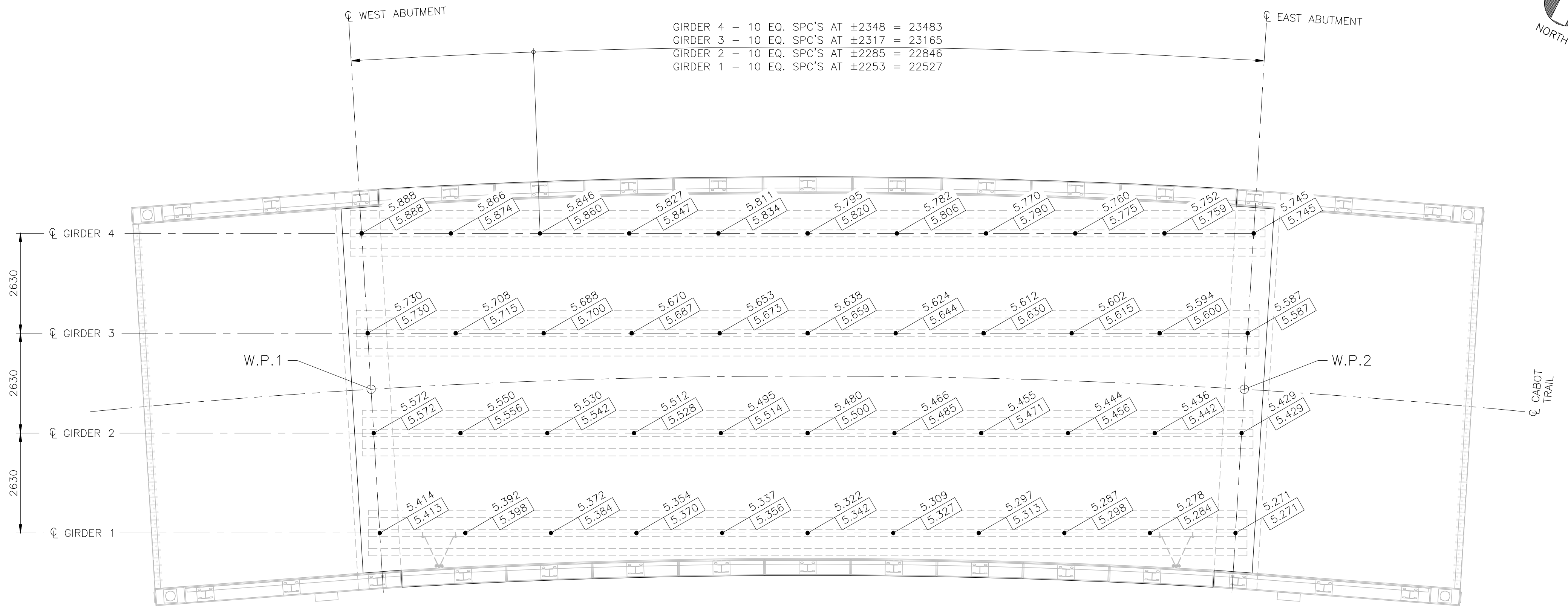


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	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	

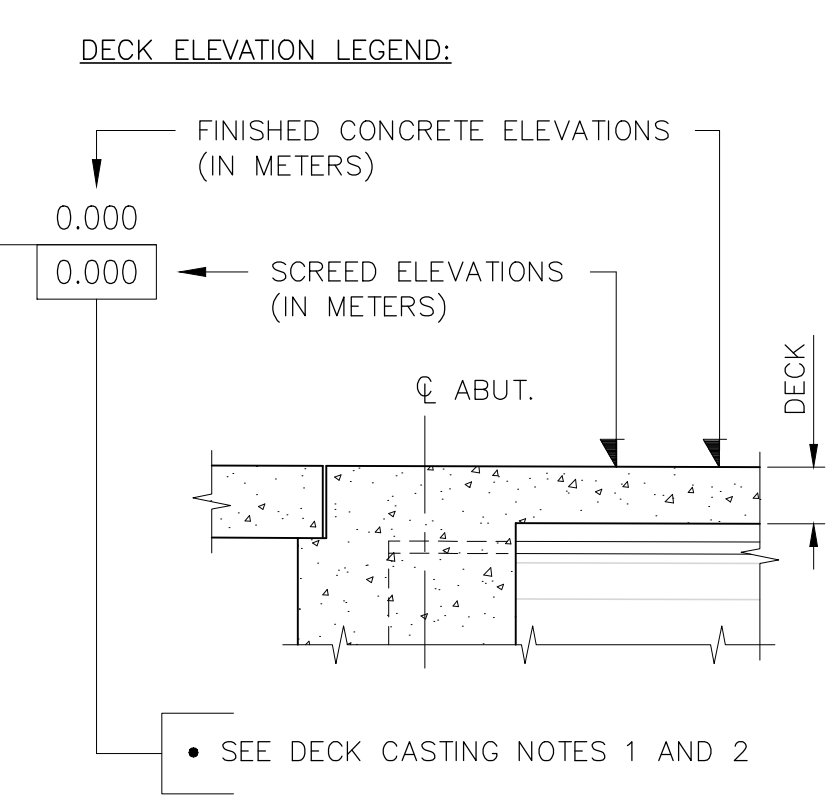
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designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
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Tender	Soumission	
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project number	no. du projet	
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drawing no.	no. du dessin	
	S8	



BRIDGE DECK AND CURB PLAN
SCALE : 1:75

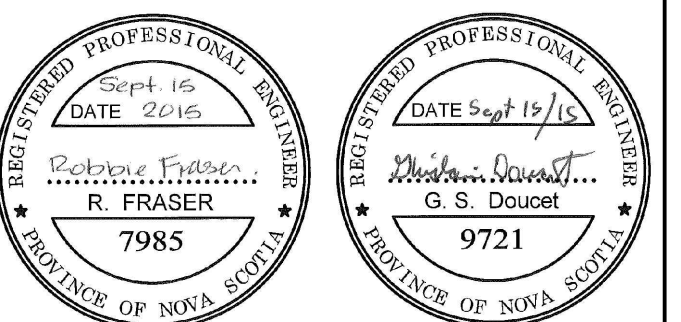


DECK SCREED ELEVATIONS PLAN
SCALE : 1:75



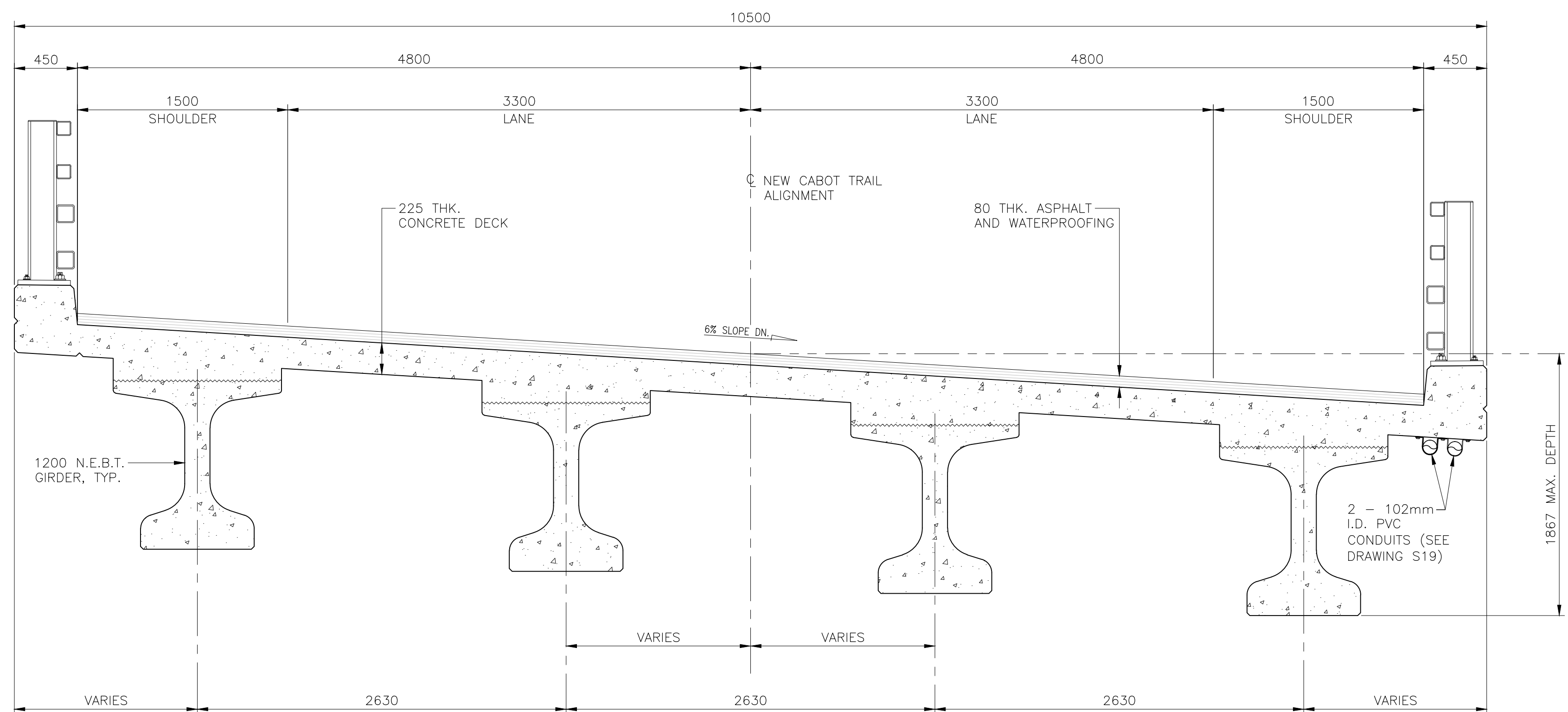
- DECK CONCRETE NOTES:**
- SCREED ELEVATIONS ARE BASED ON THE DECK PROFILE ELEVATIONS PRIOR TO PLACING CONCRETE DECK, BARRIERS, HAUNCHES AND ASPHALT SURFACE.
 - IT IS ASSUMED THAT THE ENTIRE DECK IS CAST MONOLITHICALLY. IF DECK IS POURED IN SEGMENTS, THE GIVEN SCREED ELEVATIONS MAY NOT BE VALID AND THE CONTRACTOR MUST REVISE THE SCREED ELEVATIONS ACCORDINGLY.
 - IT IS ALSO ASSUMED ENTIRE DECK IS CAST AND REACHES 35MPa PRIOR TO CASTING CURBS AND WATERPROOFING AND PAVING DECK.
 - 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.

- LEGEND:**
- M.D. = MEMBRANE DRAIN, SEE DETAIL 1/S10
- BARRIER NOTES:**
- GUARDRAIL POST SPACINGS ARE HORIZONTAL, FABRICATOR TO COMPENSATE LENGTHS FOR ROAD SLOPE.

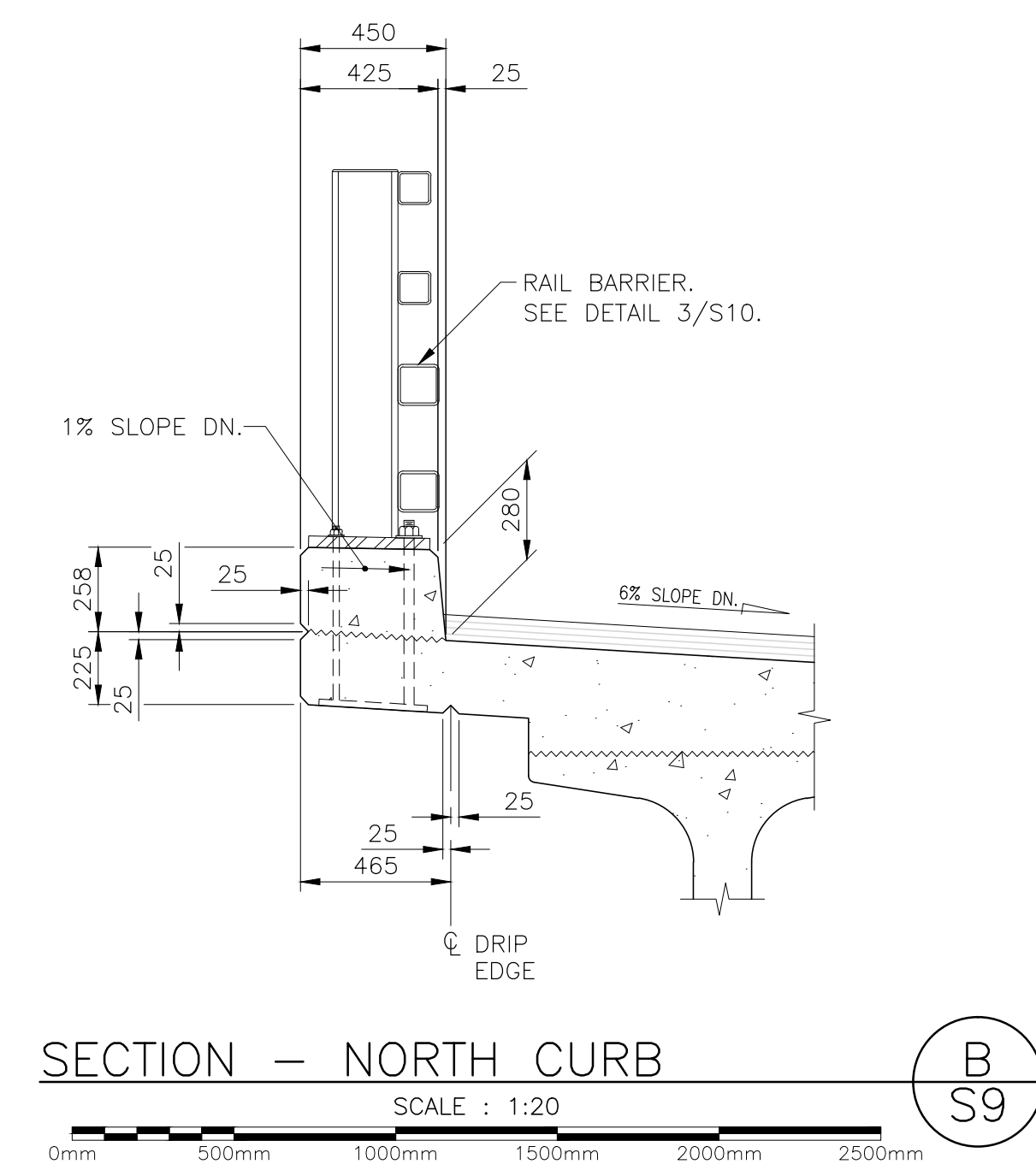


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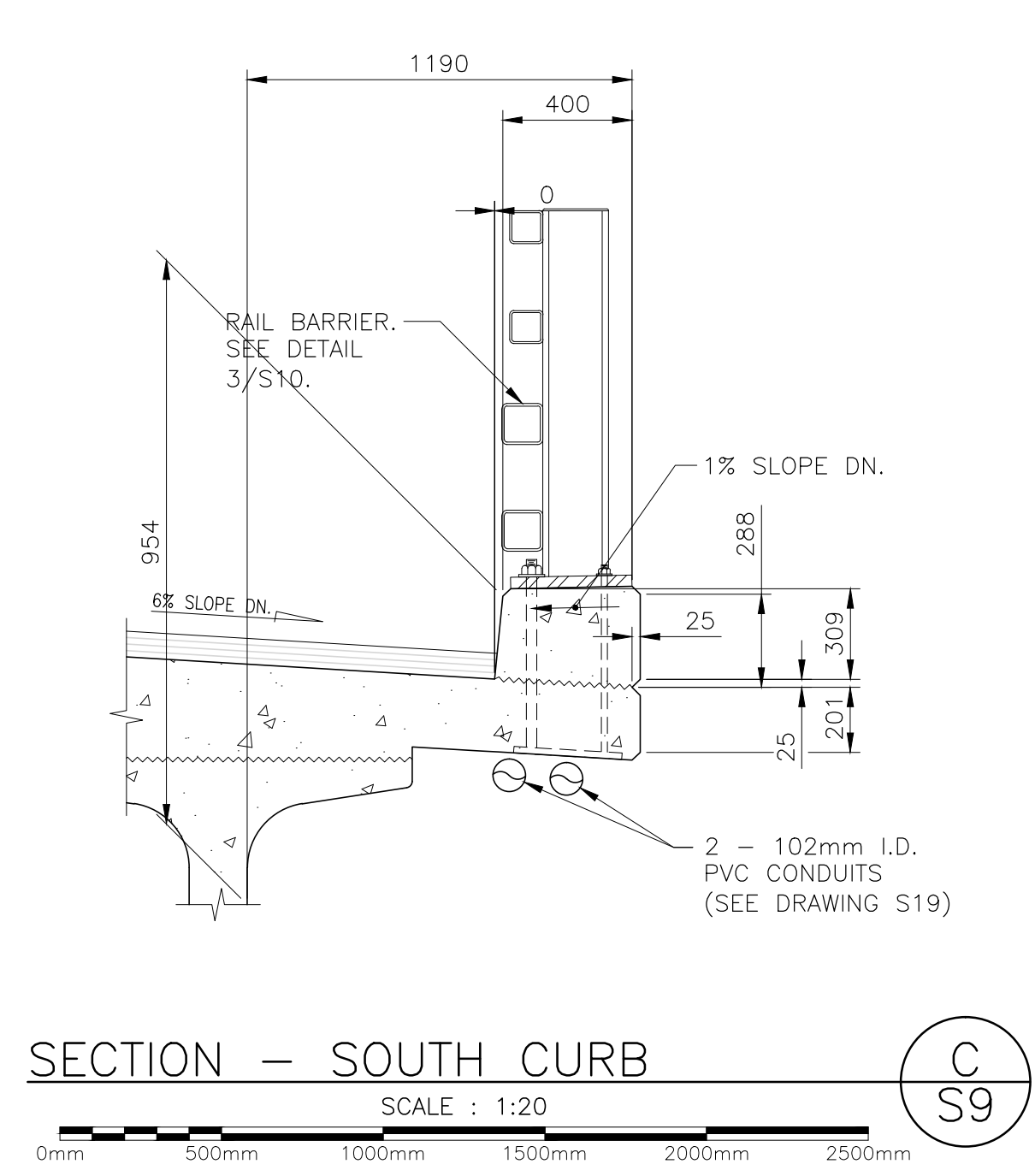
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DECK PLAN AND SCREED ELEVATIONS		
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
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PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	S9	no. du dessin



SECTION - TYPICAL DECK (A S9)
SCALE: 1:25



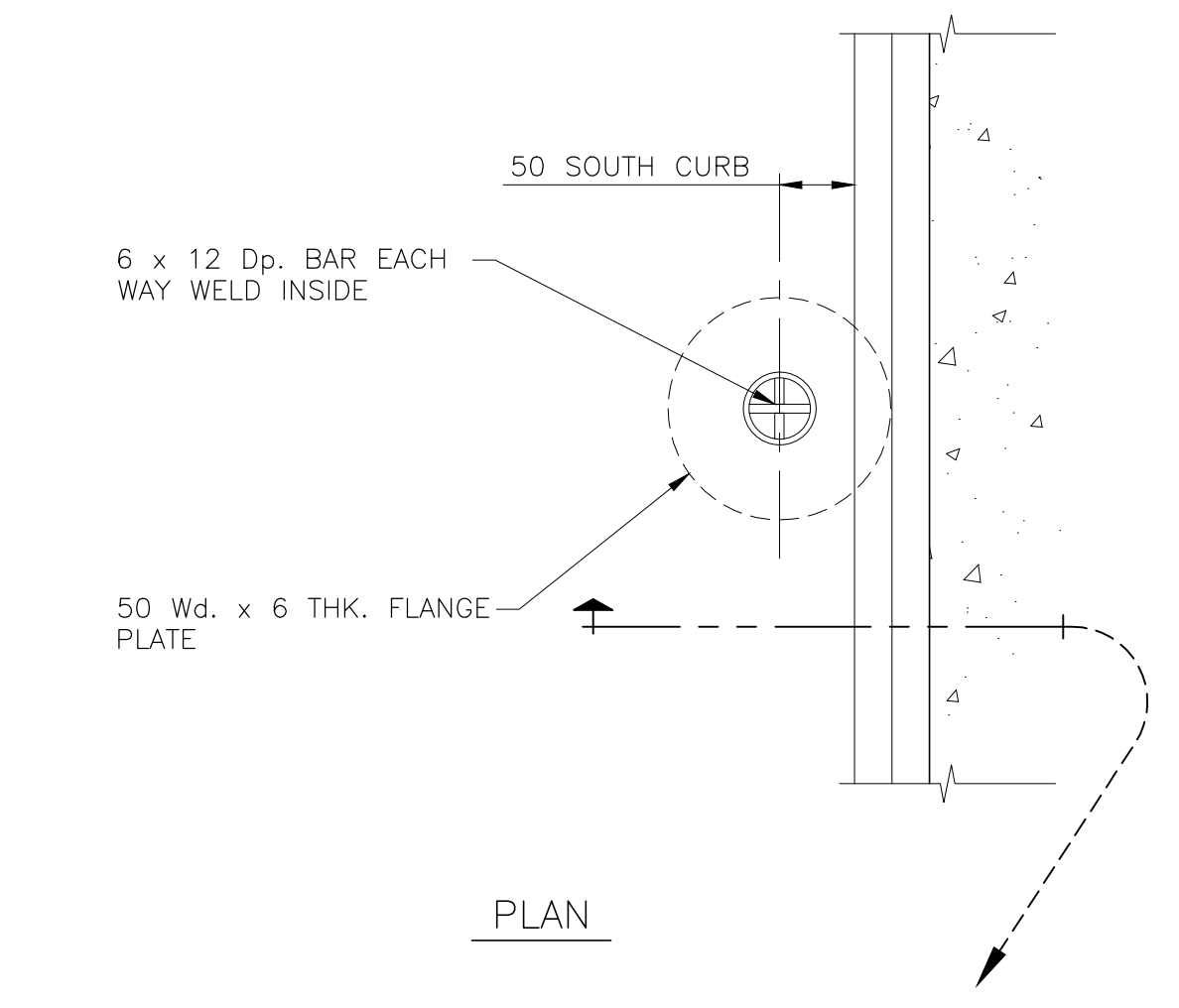
SECTION - NORTH CURB (B S9)
SCALE: 1:20



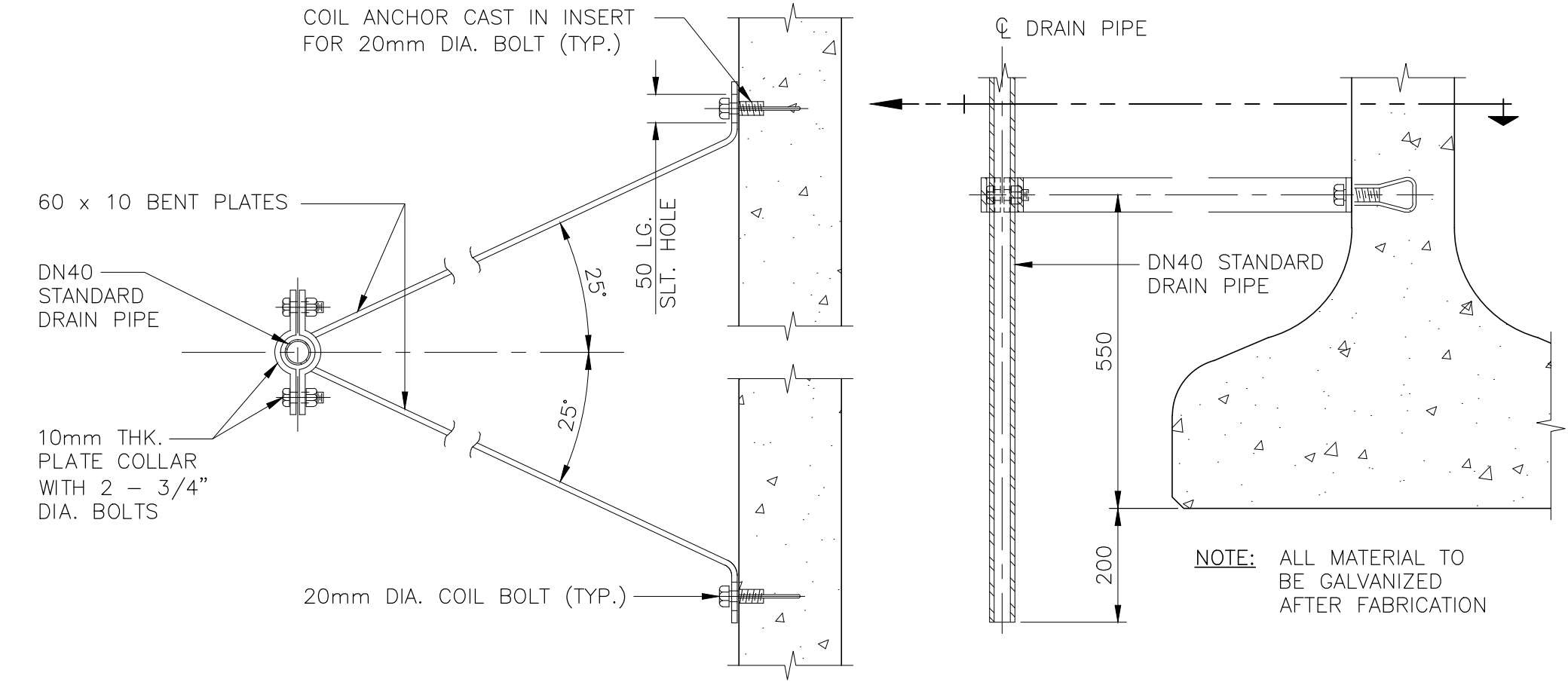
SECTION - SOUTH CURB (C S9)
SCALE: 1:20

MISCELLANEOUS METALS:

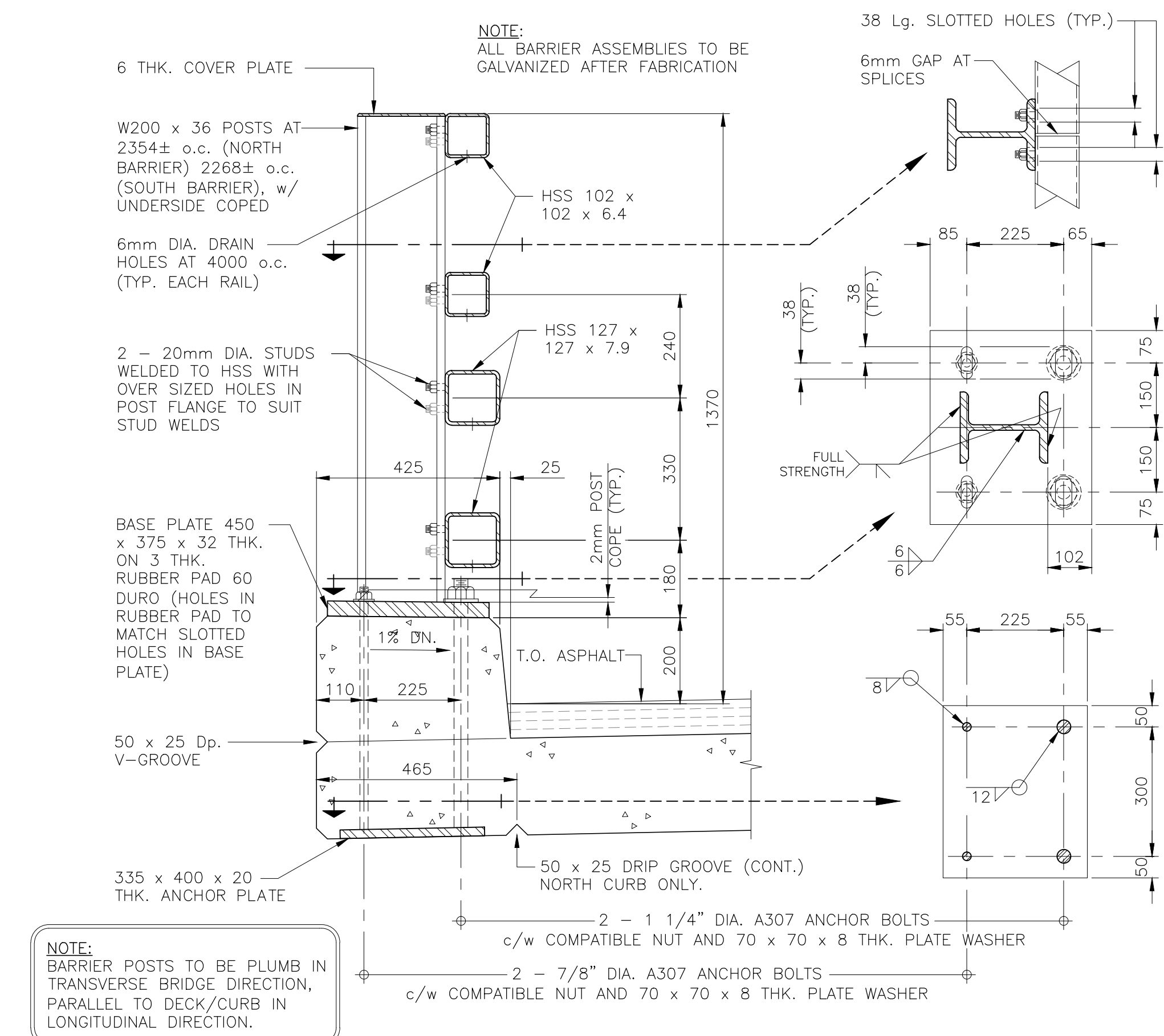
1. ALL PLATE SHALL CONFORM TO CAN/CSA-G40.21-350W.
2. ALL ROLLED ANGLE SECTIONS SHALL CONFORM TO CAN/CSA-G40.21-300W (MIN.). HSS TO A500 GRADE C.
3. ALL WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W59 (LATEST EDITION WITH REVISIONS).
4. COAT STEEL AS NOTED AND AS PER PROJECT SPECIFICATIONS.
5. HIGH STRENGTH BOLTS AS NOTED ON DRAWINGS.



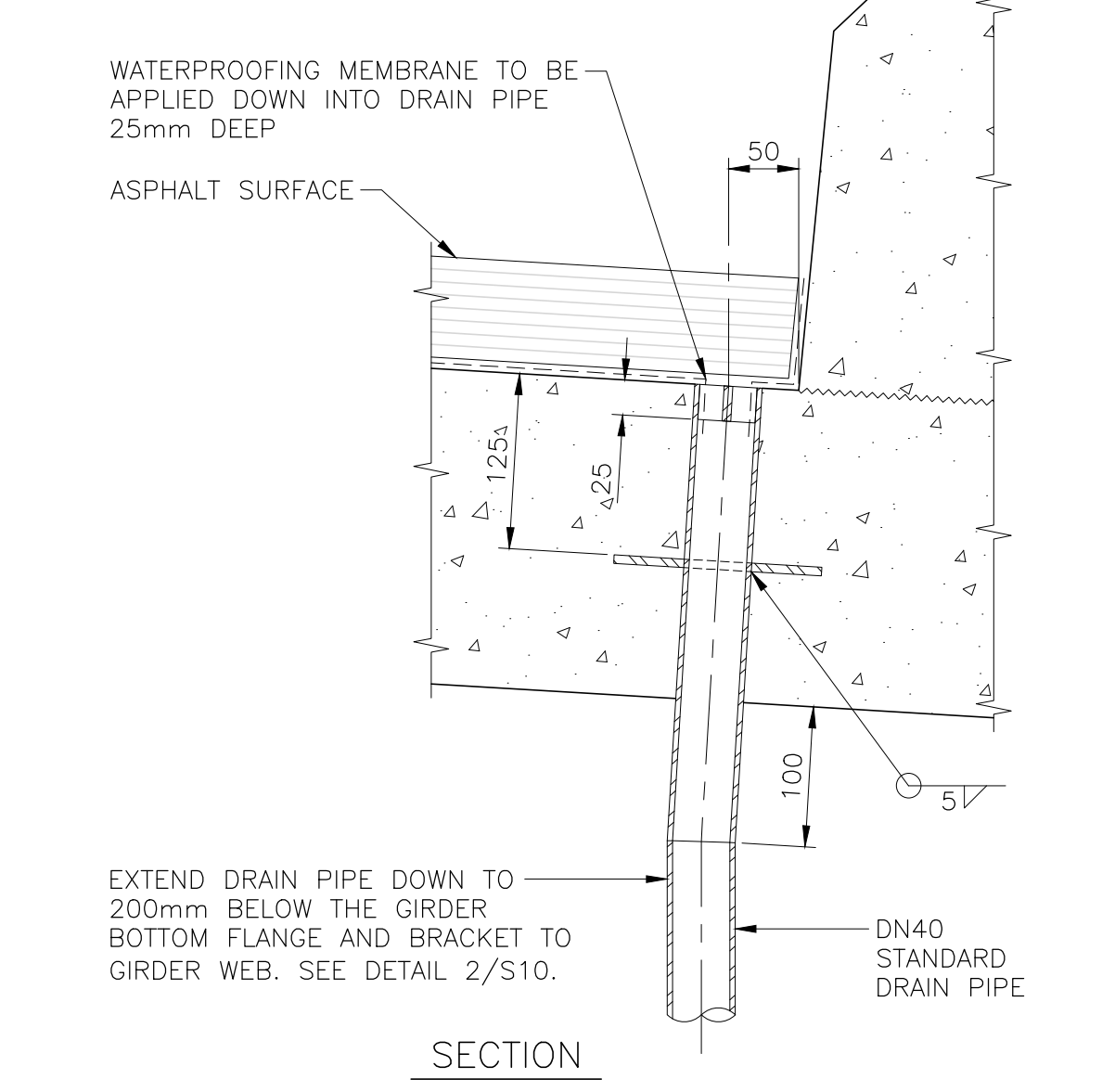
PLAN



DETAIL - DRAIN TO GIRDER CONNECTION (2 S10)
SCALE: 1:10

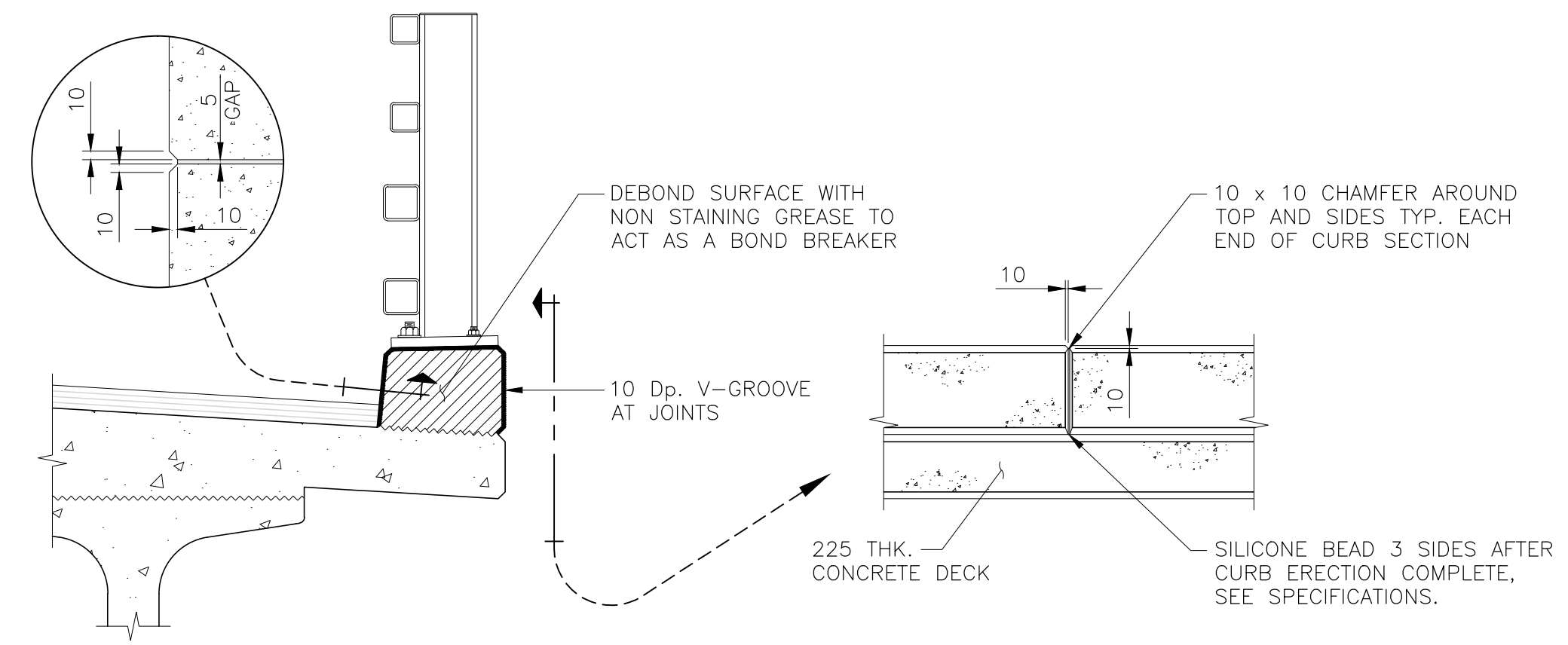


DETAIL - TYPICAL TRAFFIC BARRIER (3 S5)
SCALE: 1:10

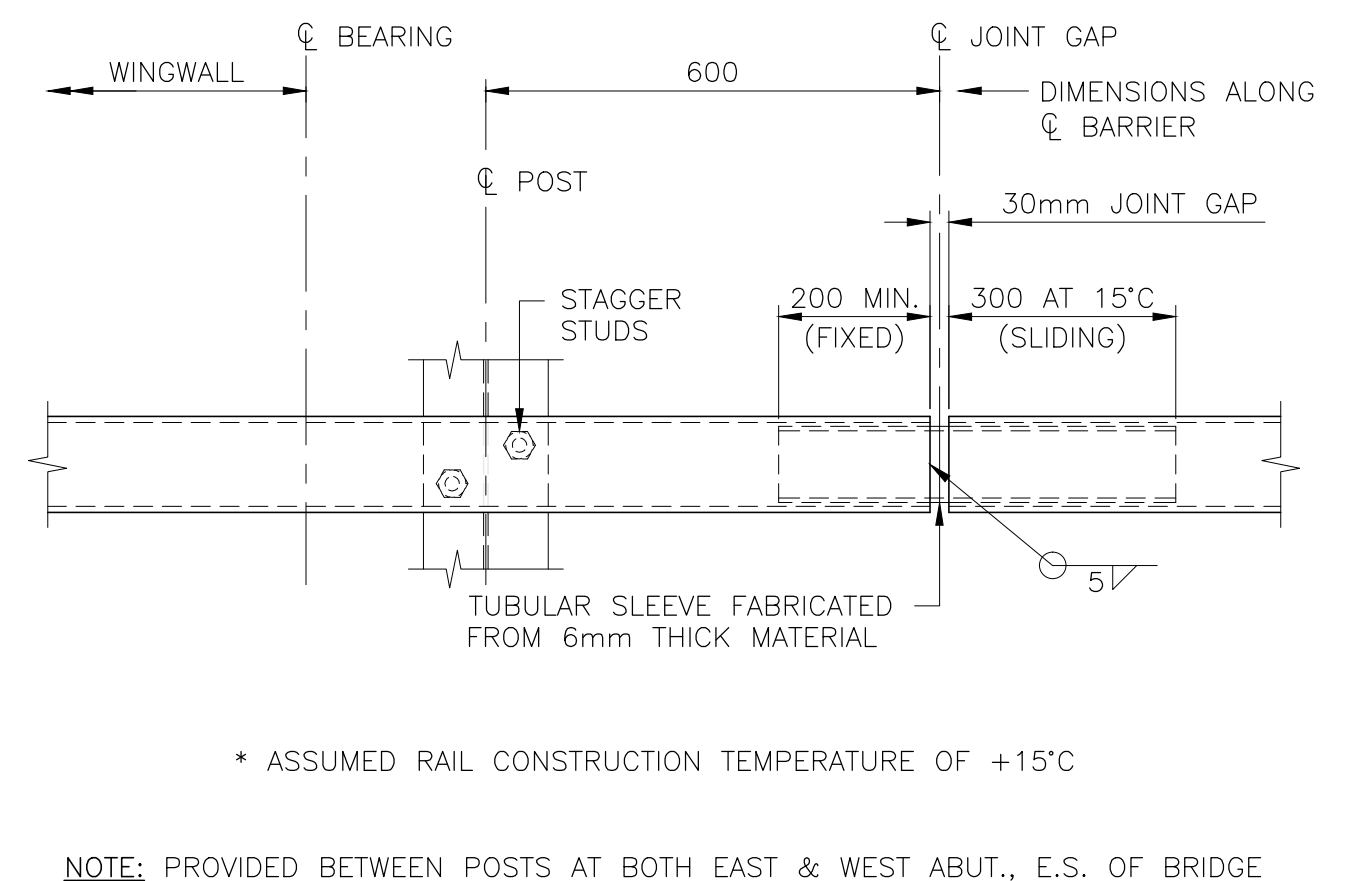


SECTION

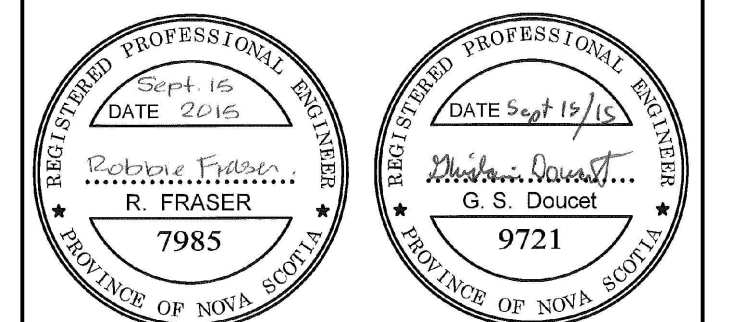
DETAIL - MEMBRANE DRAIN (1 S9)
SCALE: 1:5



DETAIL - TYPICAL BARRIER CONTROL JOINT (4 S9)
SCALE: 1:20



DETAIL - TYPICAL RAIL EXPANSION JOINT (5 S9)
SCALE: 1:10

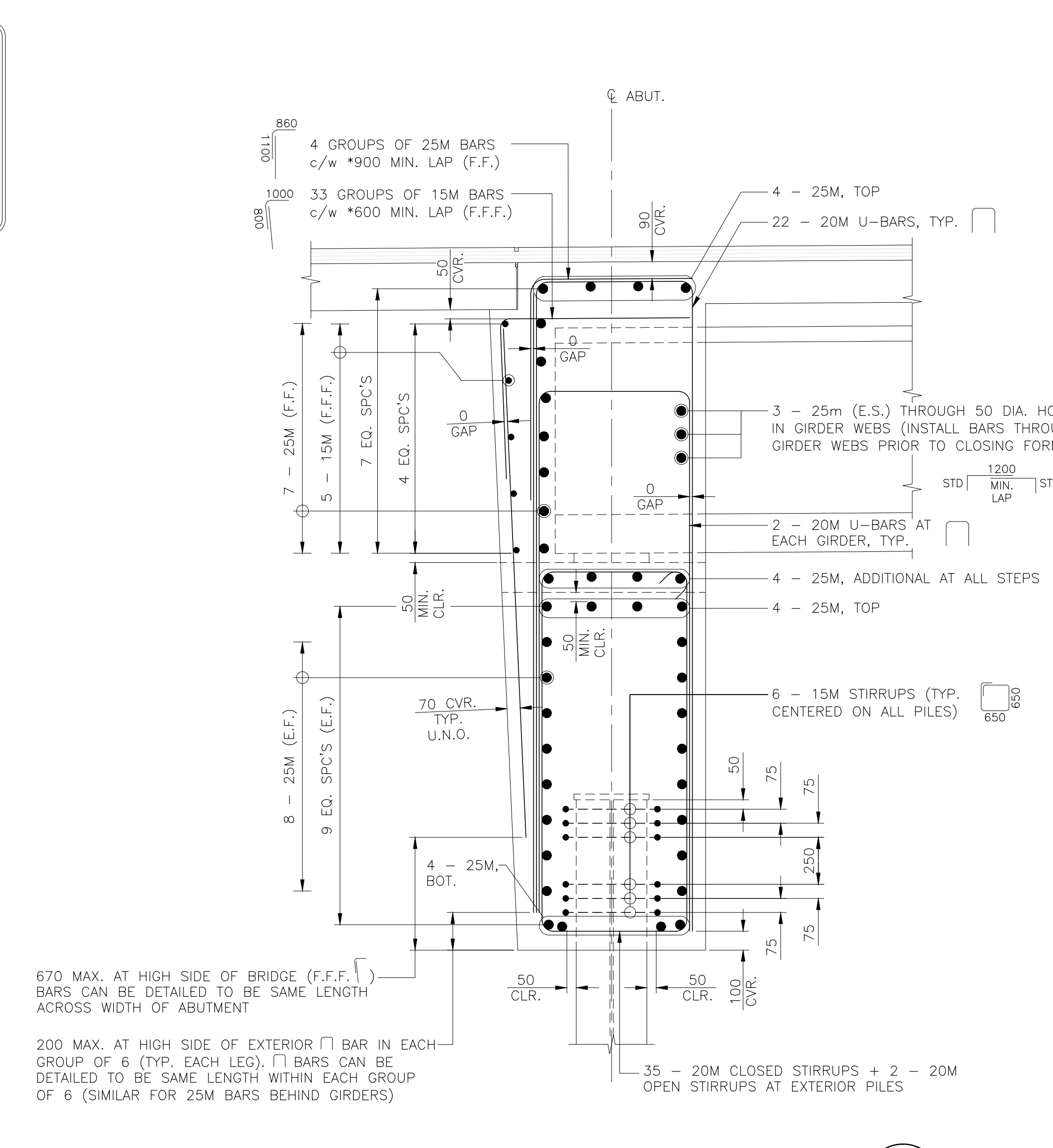
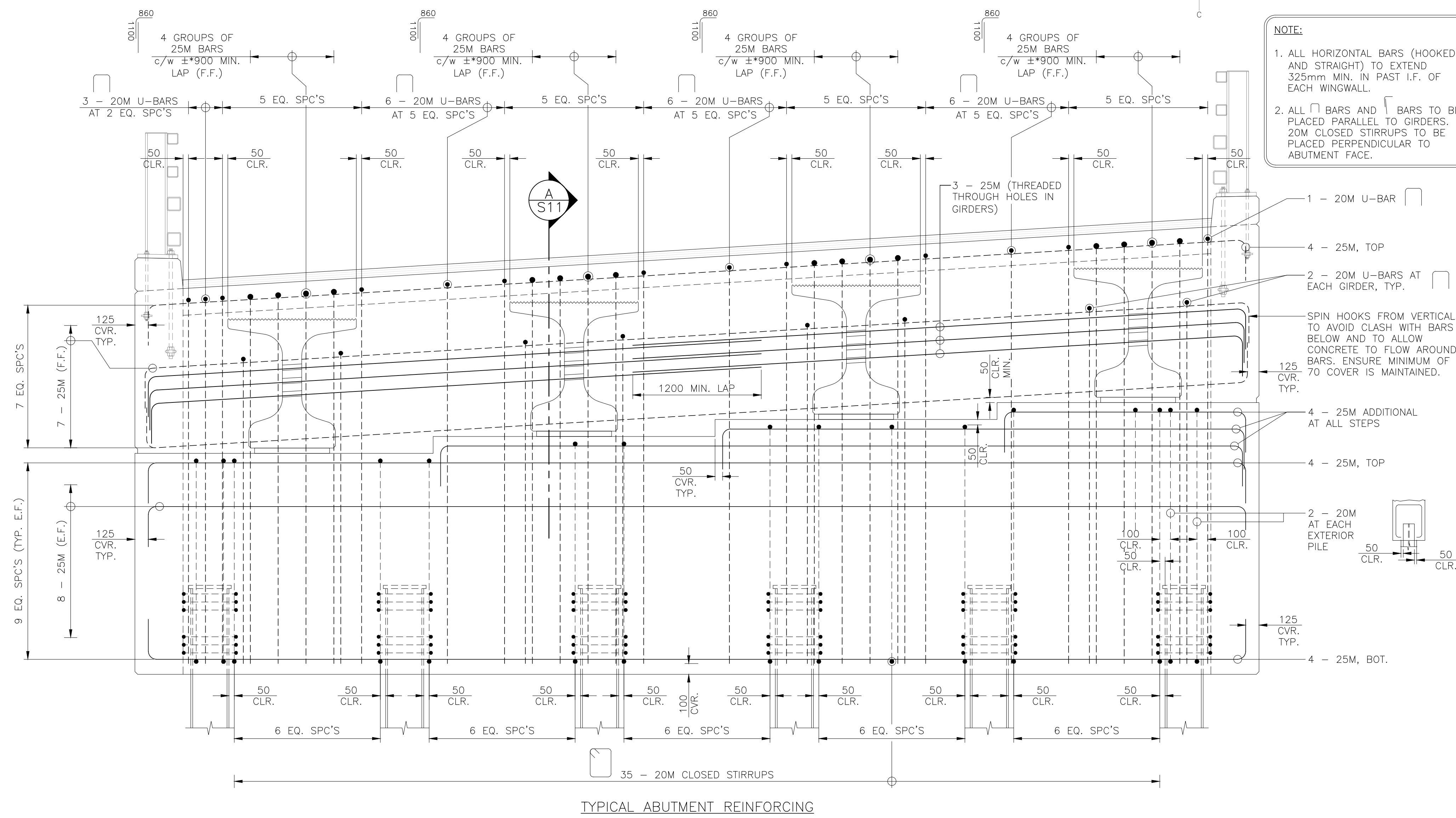


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WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

DECK, CURB AND RAILING SECTIONS AND DETAILS

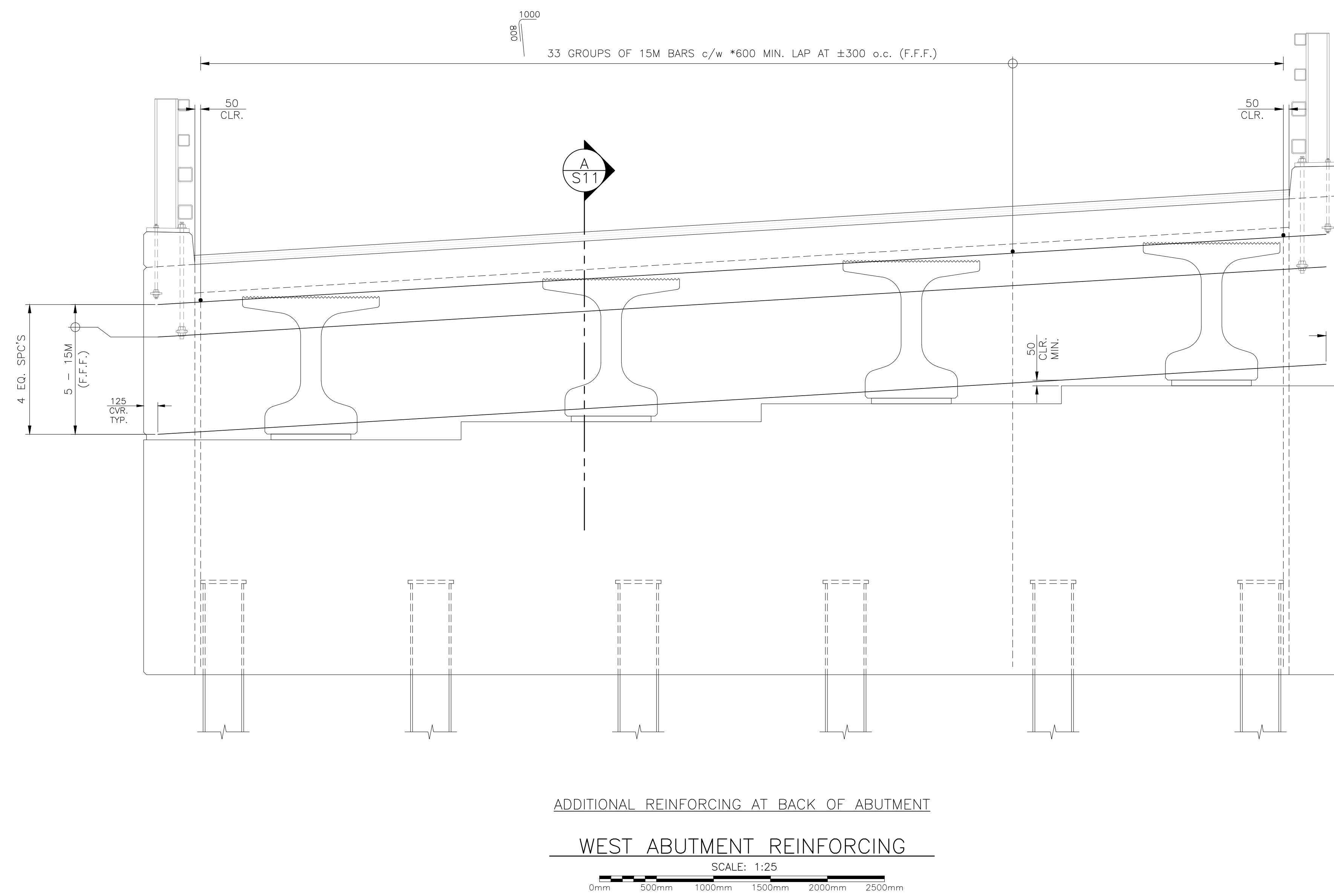
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Debra Clouty</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	S10	no. du dessin



670 MAX. AT HIGH SIDE OF BRIDGE (F.F.F.) BARS CAN BE DETAILED TO BE SAME LENGTH ACROSS WIDTH OF ABUTMENT

200 MAX. AT HIGH SIDE OF EXTERIOR U BAR IN EACH GROUP OF 6 (TYP. EACH LEG). U BARS CAN BE DETAILED TO BE SAME LENGTH WITHIN EACH GROUP OF 6 (SIMILAR FOR 25M BARS BEHIND GIRDERS)

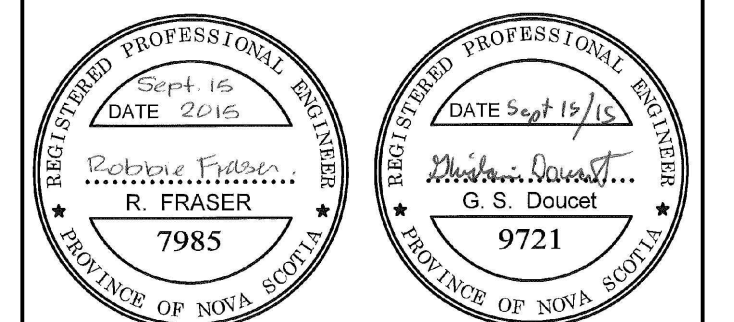
* ADDITIONAL 100mm LAP TO BE PROVIDED (ie. 700 vs 600) TO ENSURE MINIMUM LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS BUILT CONDITIONS.



NOTE:
 ALL ABUTMENT REINFORCING TO BE GALVANIZED DEFORMED STEEL REINFORCING TO CSA G30.18-09 AND PROJECT SPECIFICATIONS. (REFERENCE CONCRETE NOTES ON S3 AND PROJECT SPECIFICATIONS).

REINFORCING LEGEND:

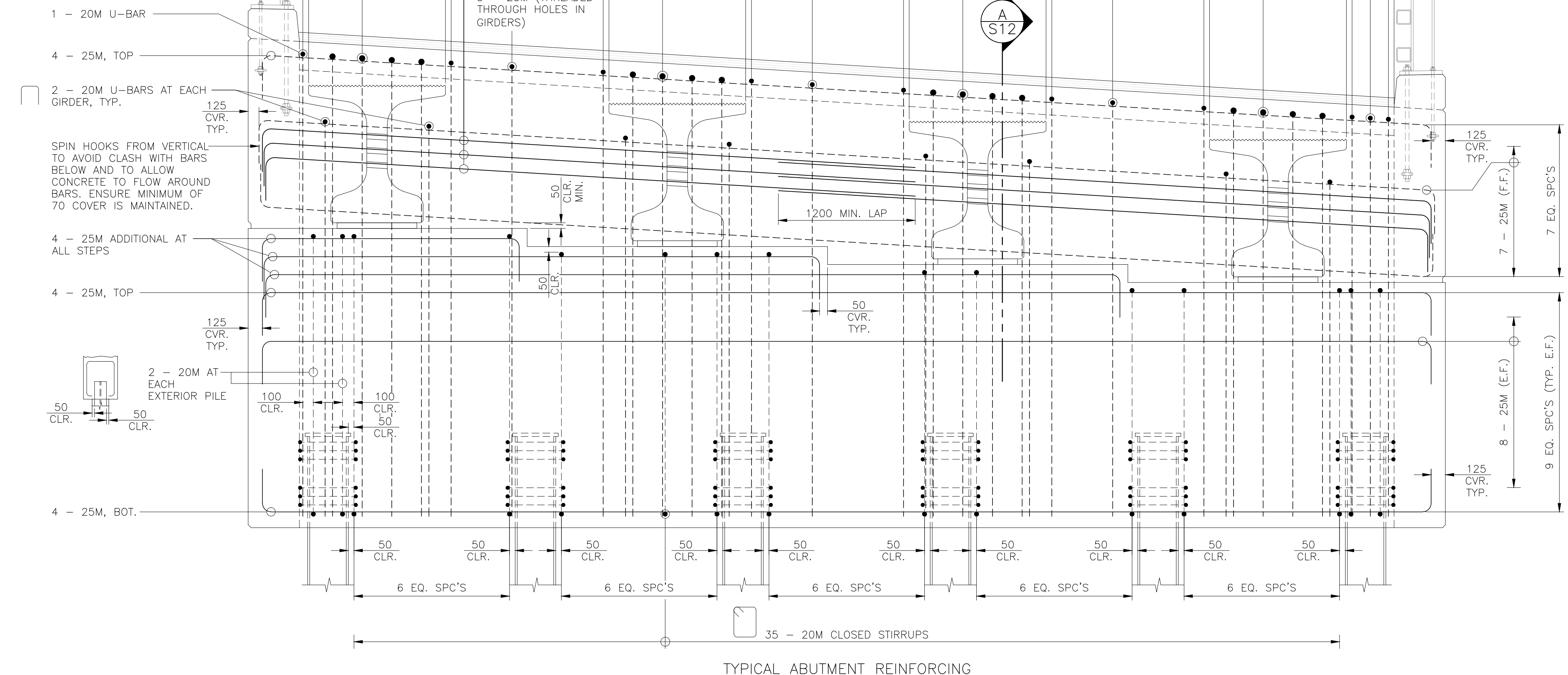
N.F. — NEAR FACE	I.C. — IN CENTER	N.W. — NORTH WEST WINGWALL
F.F. — FAR FACE	T.U.L. — TOP UPPER LAYER	S.E. — SOUTH EAST WINGWALL
N.F.F. — NEAR FAR FACE	T.L.L. — TOP LOWER LAYER	S.W. — SOUTH WEST WINGWALL
F.F.F. — FAR FAR FACE	B.U.L. — BOTTOM UPPER LAYER	N.C. — NORTH CURB
E.F. — EACH FACE	B.L.L. — BOTTOM 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	



0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	

drawing	design	WEST ABUTMENT REINFORCING
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	Submission	
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	322A	
drawing no.		no. du dessin
	S11	

NOTE:
 1. ALL HORIZONTAL BARS (HOOKED AND STRAIGHT) TO EXTEND 325mm MIN. IN PAST I.F. OF EACH WINGWALL.
 2. ALL \square BARS AND \square BARS TO BE PLACED PARALLEL TO GIRDERS. 20M CLOSED STIRRUPS TO BE PLACED PERPENDICULAR TO ABUTMENT FACE.

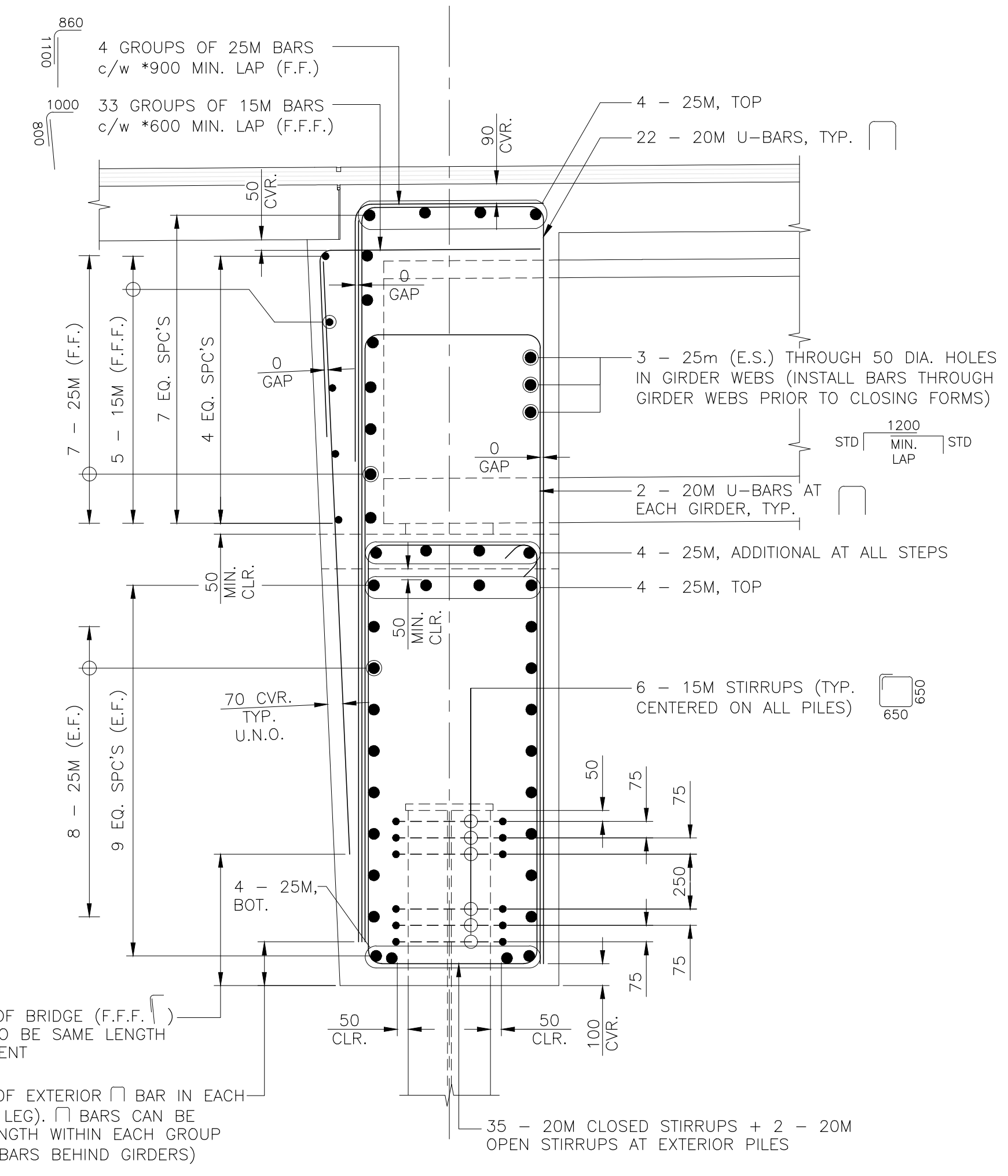


TYPICAL ABUTMENT REINFORCING

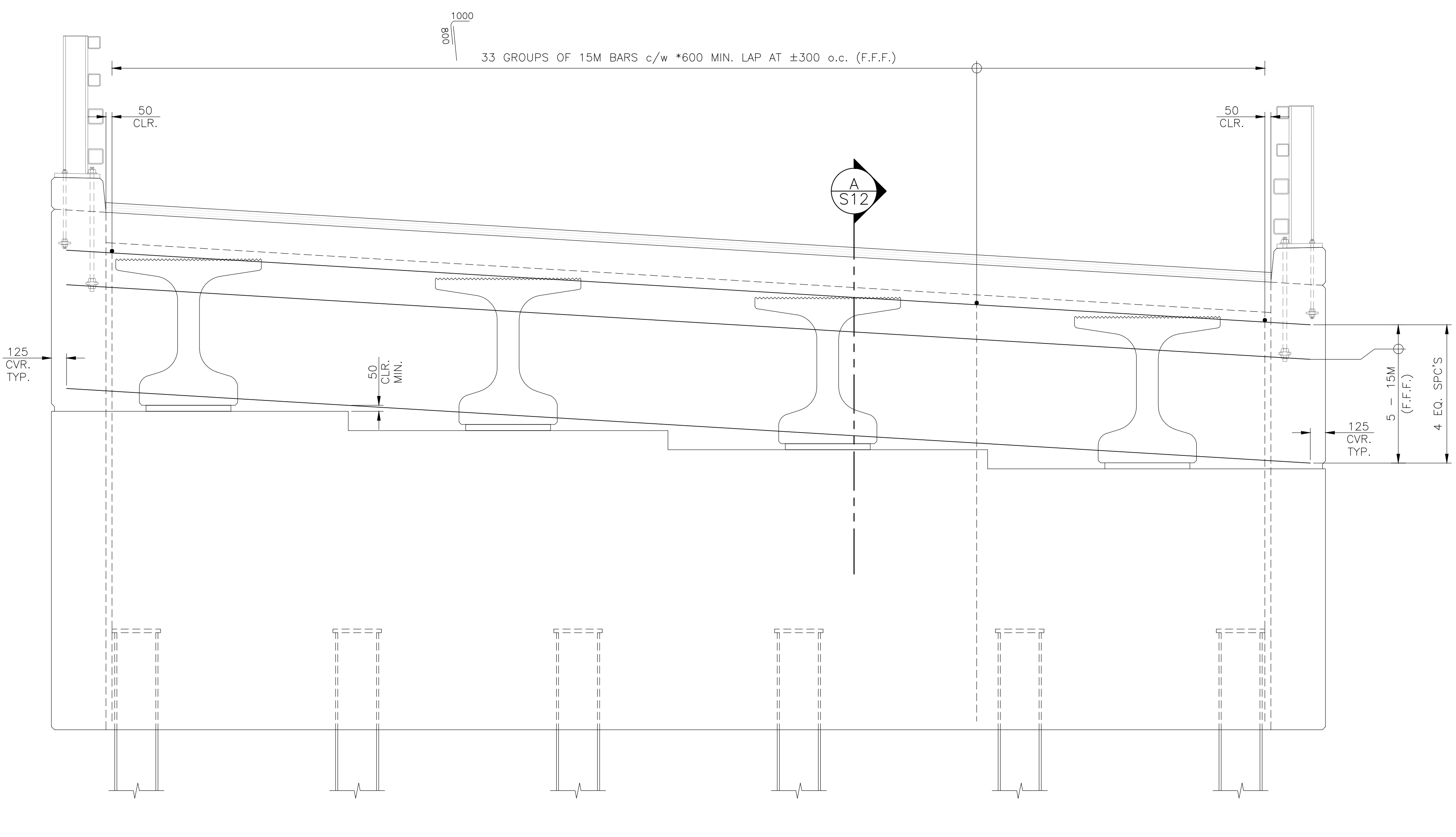
* ADDITIONAL 100mm LAP TO BE PROVIDED (i.e. 700 vs 600) TO ENSURE MINIMUM LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS BUILT CONDITIONS.

670 MAX. AT HIGH SIDE OF BRIDGE (F.F.F.) BARS CAN BE DETAILED TO BE SAME LENGTH ACROSS WIDTH OF ABUTMENT

200 MAX. AT HIGH SIDE OF EXTERIOR \square BAR IN EACH GROUP OF 6 (TYP. EACH LEG). \square BARS CAN BE DETAILED TO BE SAME LENGTH WITHIN EACH GROUP OF 6 (SIMILAR FOR 25M BARS BEHIND GIRDERS)



SECTION A-S12
 SCALE: 1:20
 0mm 500mm 1000mm 1500mm 2000mm 2500mm



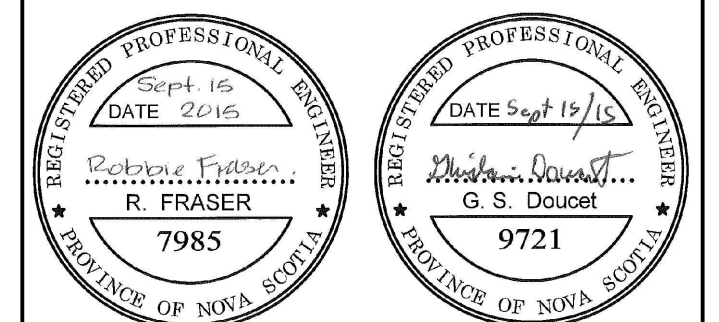
ADDITIONAL REINFORCING AT BACK OF ABUTMENT
 EAST ABUTMENT REINFORCING

SCALE: 1:25
 0mm 500mm 1000mm 1500mm 2000mm 2500mm

NOTE:
 ALL ABUTMENT REINFORCING TO BE GALVANIZED DEFORMED STEEL REINFORCING TO CSA G30.18-09 AND PROJECT SPECIFICATIONS. (REFERENCE CONCRETE NOTES ON S3 AND PROJECT SPECIFICATIONS).

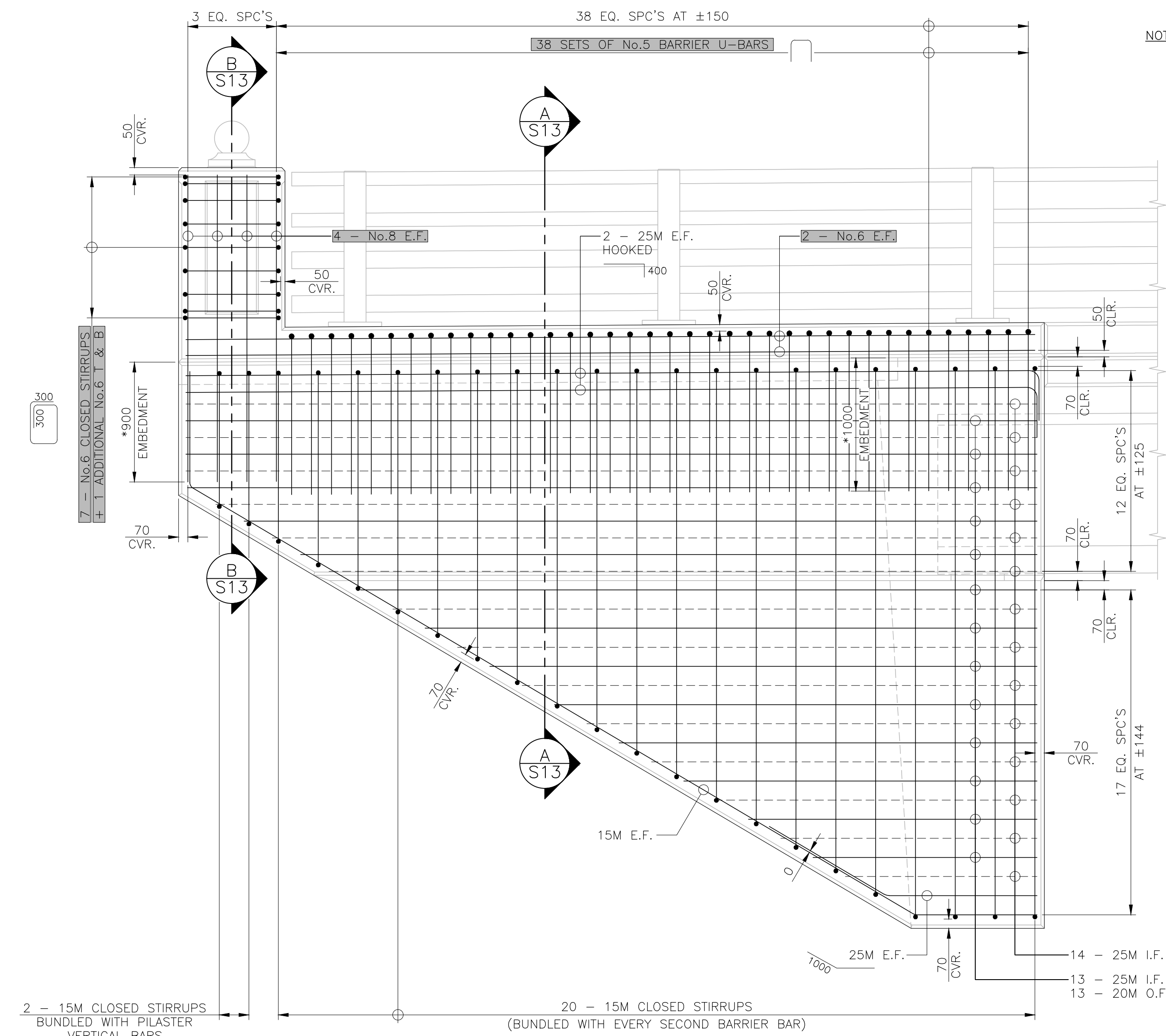
REINFORCING LEGEND:

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	



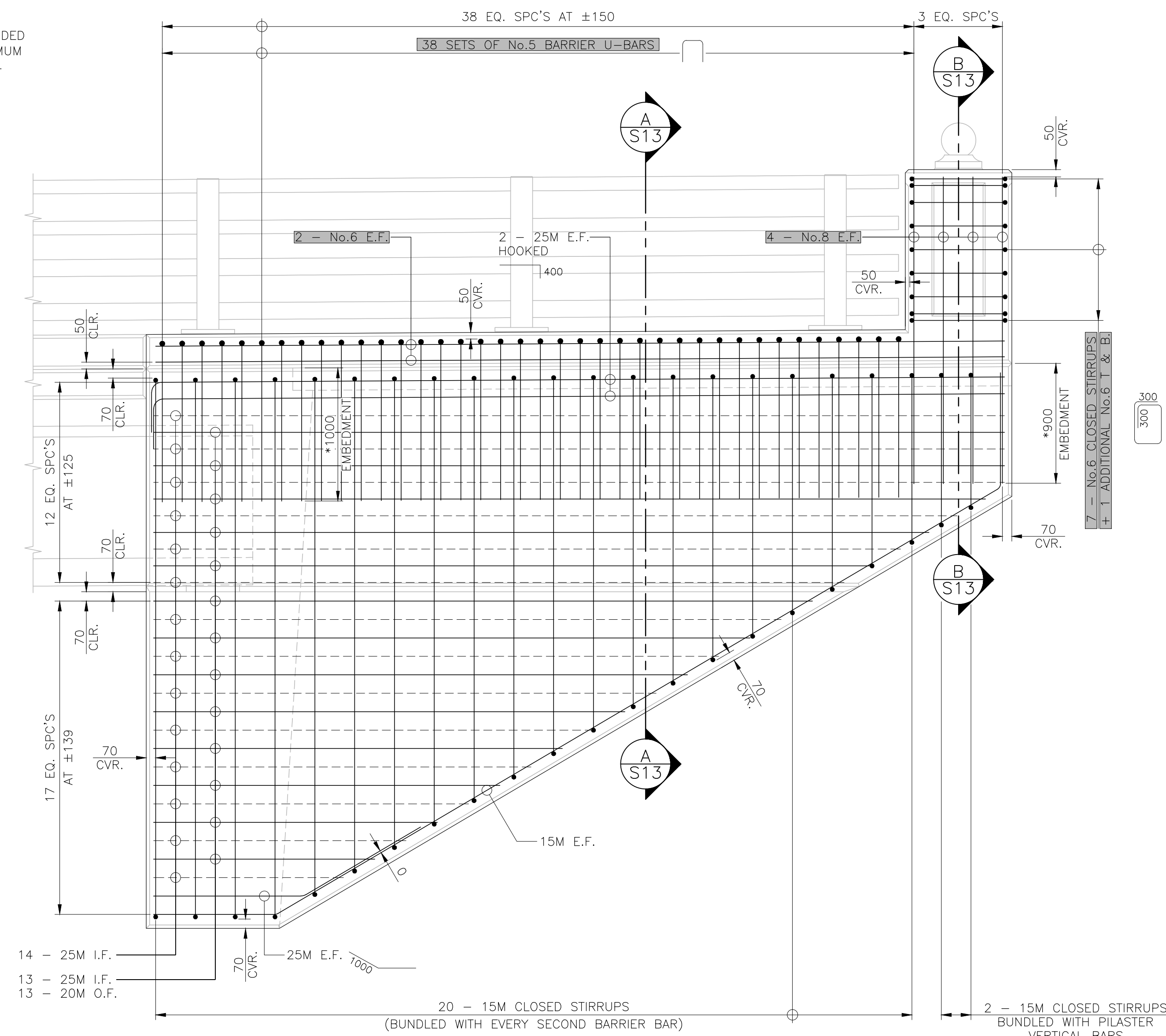
0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	

drawing	design	EAST ABUTMENT REINFORCING	
designed	GHISLAIN DOUCET	conçu	
date	JULY 2015	date	
drawn	JEFF CLARK	dessiné	
date	JULY 2015	date	
approved	ROBBIE FRASER	approuvé	
date	JULY 2015	date	
Tender	Submission	no. du projet	322A
PCA Project Manager	Administrateur de projets APC	no. du dessin	S12

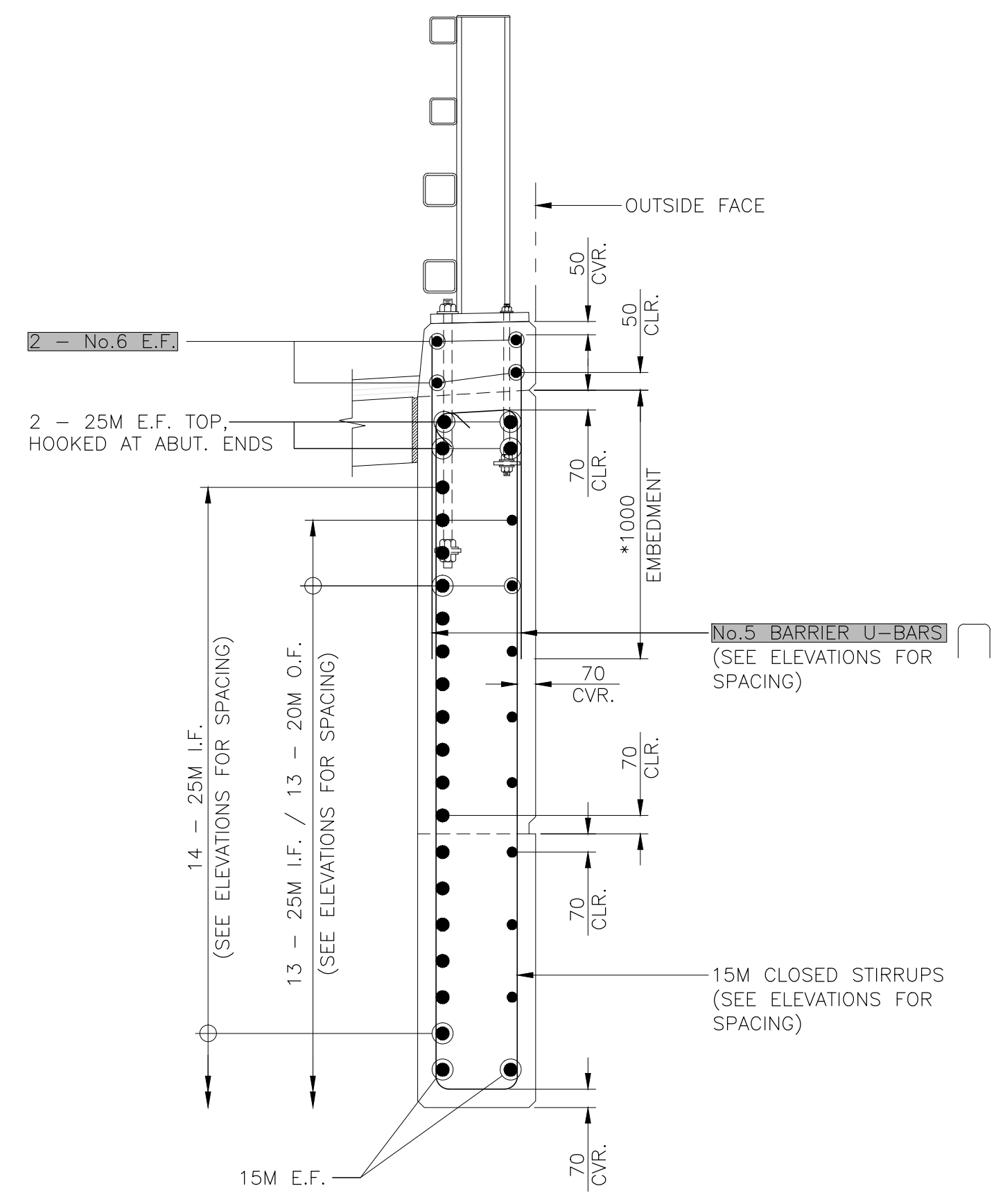


NORTHEAST WINGWALL REINFORCING
SCALE: 1:25
0mm 500mm 1000mm 1500mm 2000mm 2500mm

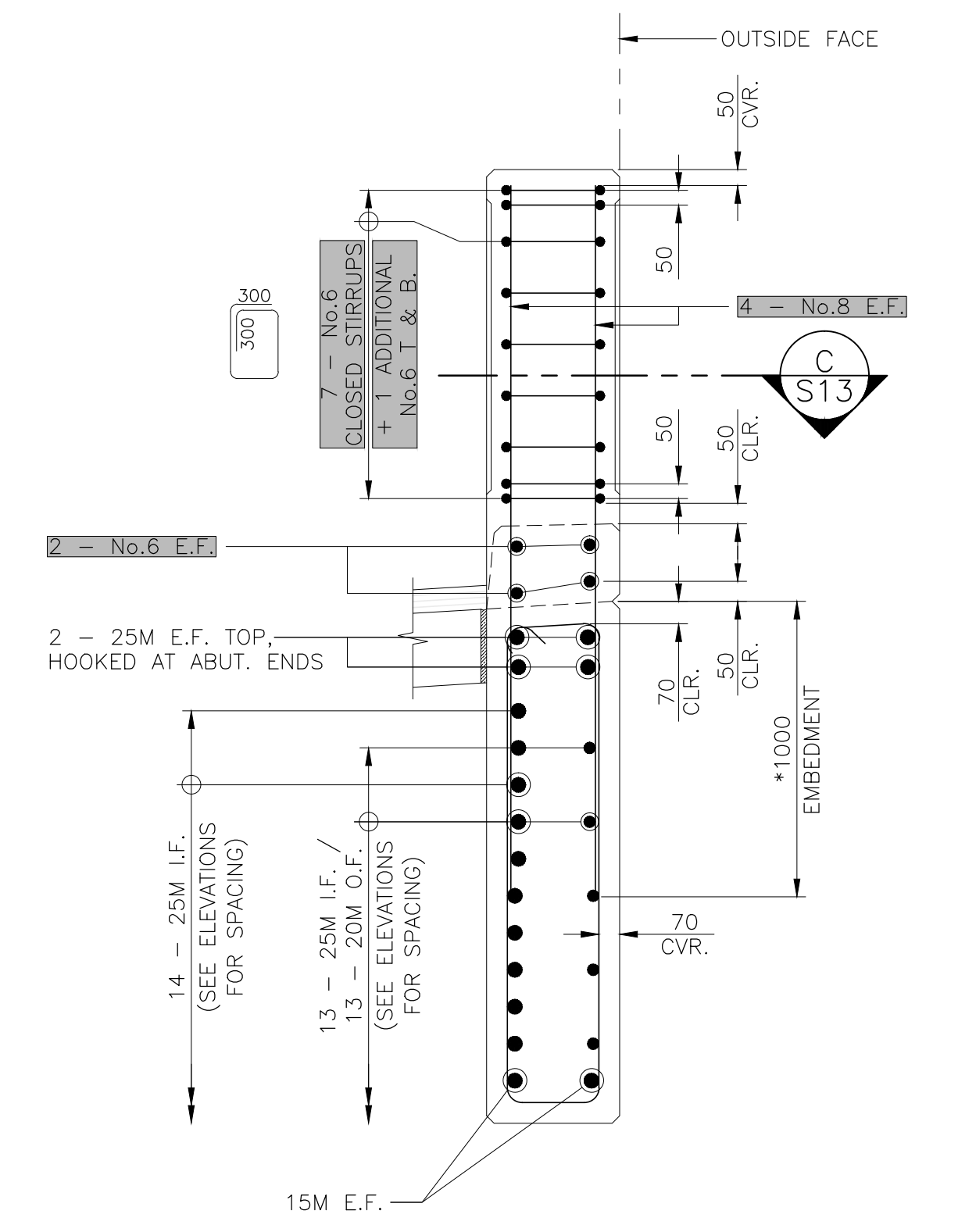
NOTE: *ADDITIONAL 100mm LAP TO BE PROVIDED (ie. 1100 vs 1000) TO ENSURE MINIMUM LAP PROVIDED IN EVENT OF MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS-BUILT CONDITIONS.



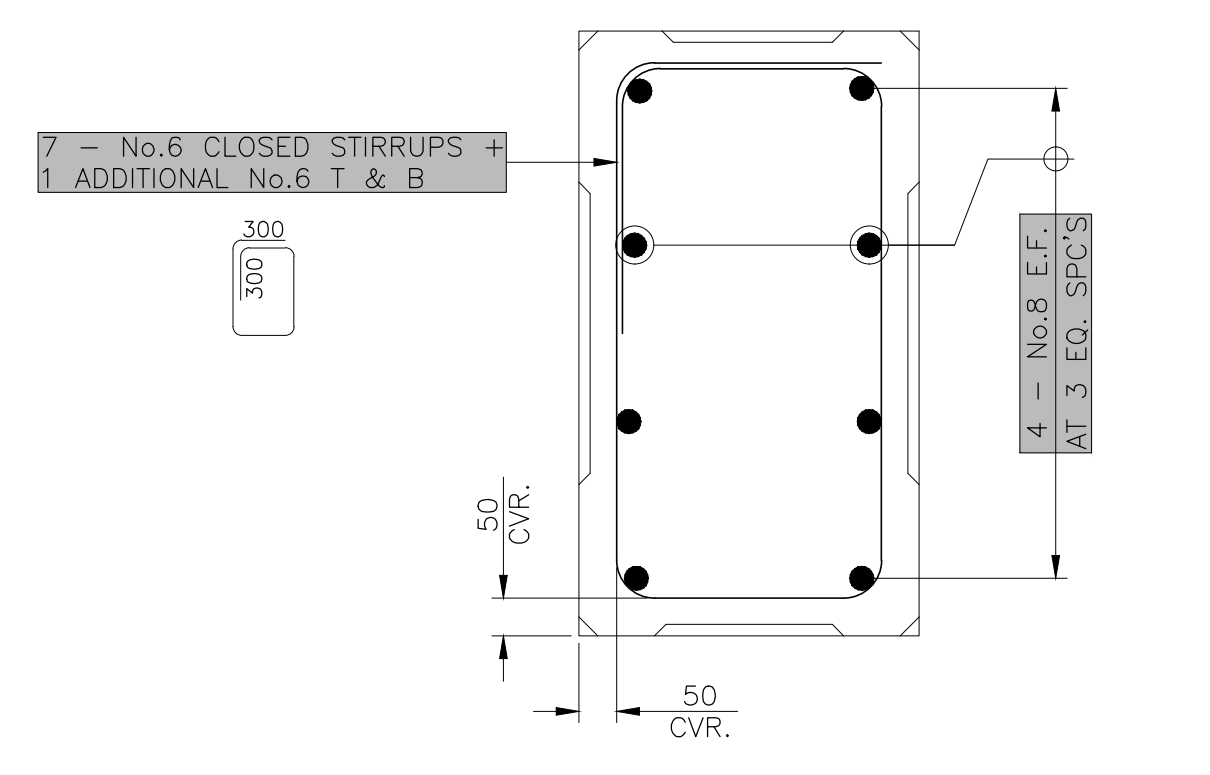
NORTHWEST WINGWALL REINFORCING
SCALE: 1:25
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION - NORTH WINGWALL AND BARRIER A S13
SCALE: 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION - NORTH PILASTER B S13
SCALE: 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION - TYPICAL PILASTER C S13
SCALE: 1:10
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NOTES:

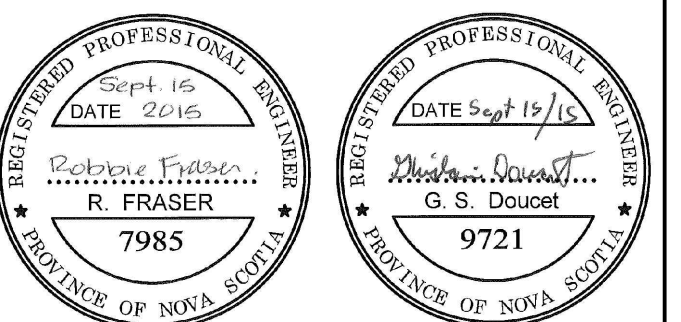
- GFRP BARS TO BE V.80 HM SERIES BARS WITH A MINIMUM TENSILE MODULUS OF 62,000 MPa (O.A.E.) & A MINIMUM TENSILE STRENGTH OF 1000 MPa.
- BAR DESIGNATIONS ARE AS FOLLOWS:
 - No.5 = 16mm DIA., 198mm² NOM. AREA
 - No.6 = 20mm DIA., 285mm² NOM. AREA
 - No.7 = 22mm DIA., 388mm² NOM. AREA
 - No.8 = 25mm DIA., 507mm² NOM. AREA
- ALL STRAIGHT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:

BAR No.	E _{GFRP} (MPa)	F _{GFRP STRAIGHT} (MPa)	F _{GFRP BENT} (MPa)
No.5	62000	1084	1084
No.6	62000	1105	1105
No.7	62000	1059	1059
No.8	62000	1000	1000
- ALL BENT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:

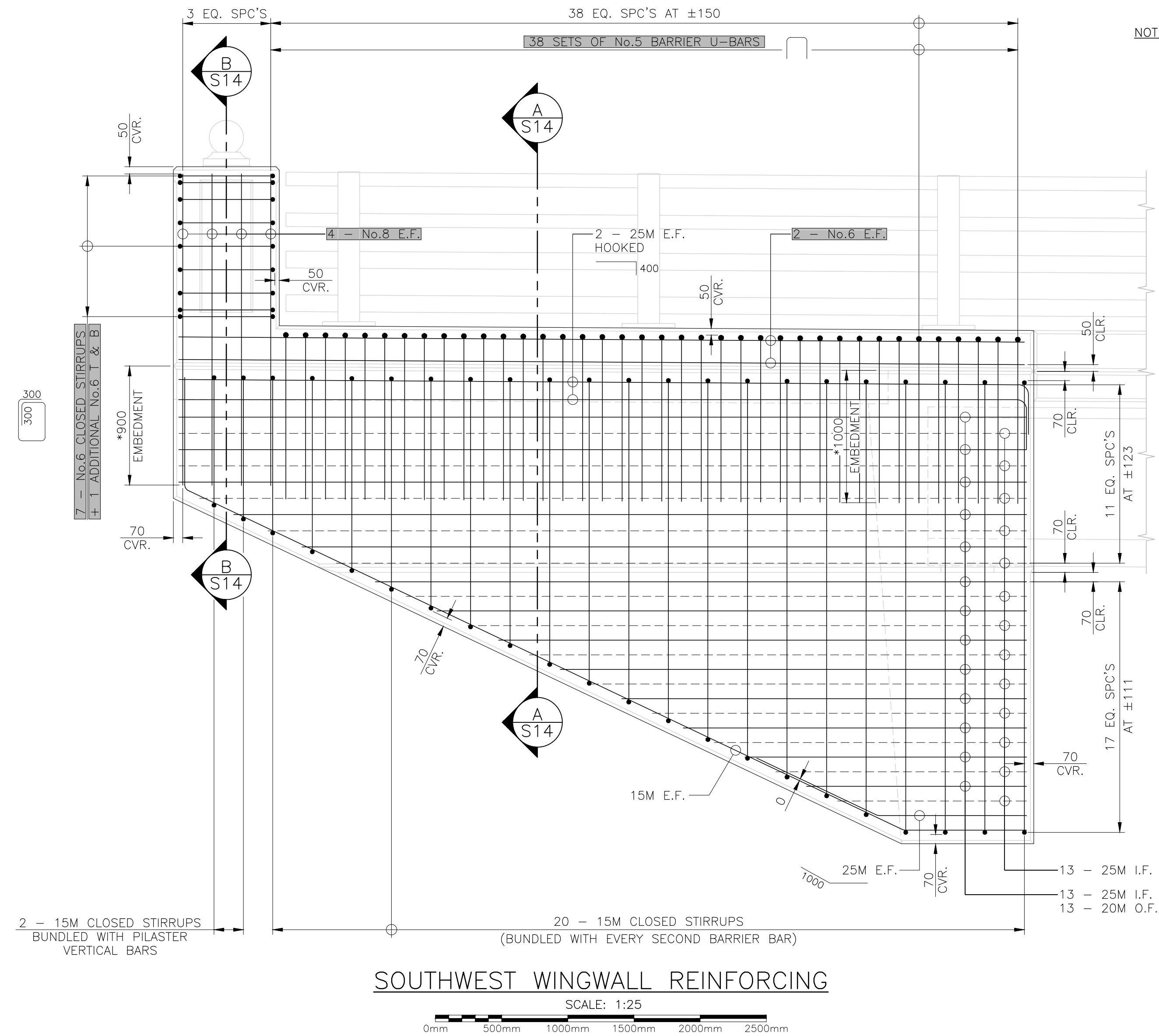
BAR No.	E _{GFRP} (MPa)	F _{GFRP STRAIGHT} (MPa)	F _{GFRP BENT} (MPa)
No.5	50000	1000	400
No.6	50000	1000	400

REINFORCING LEGEND:

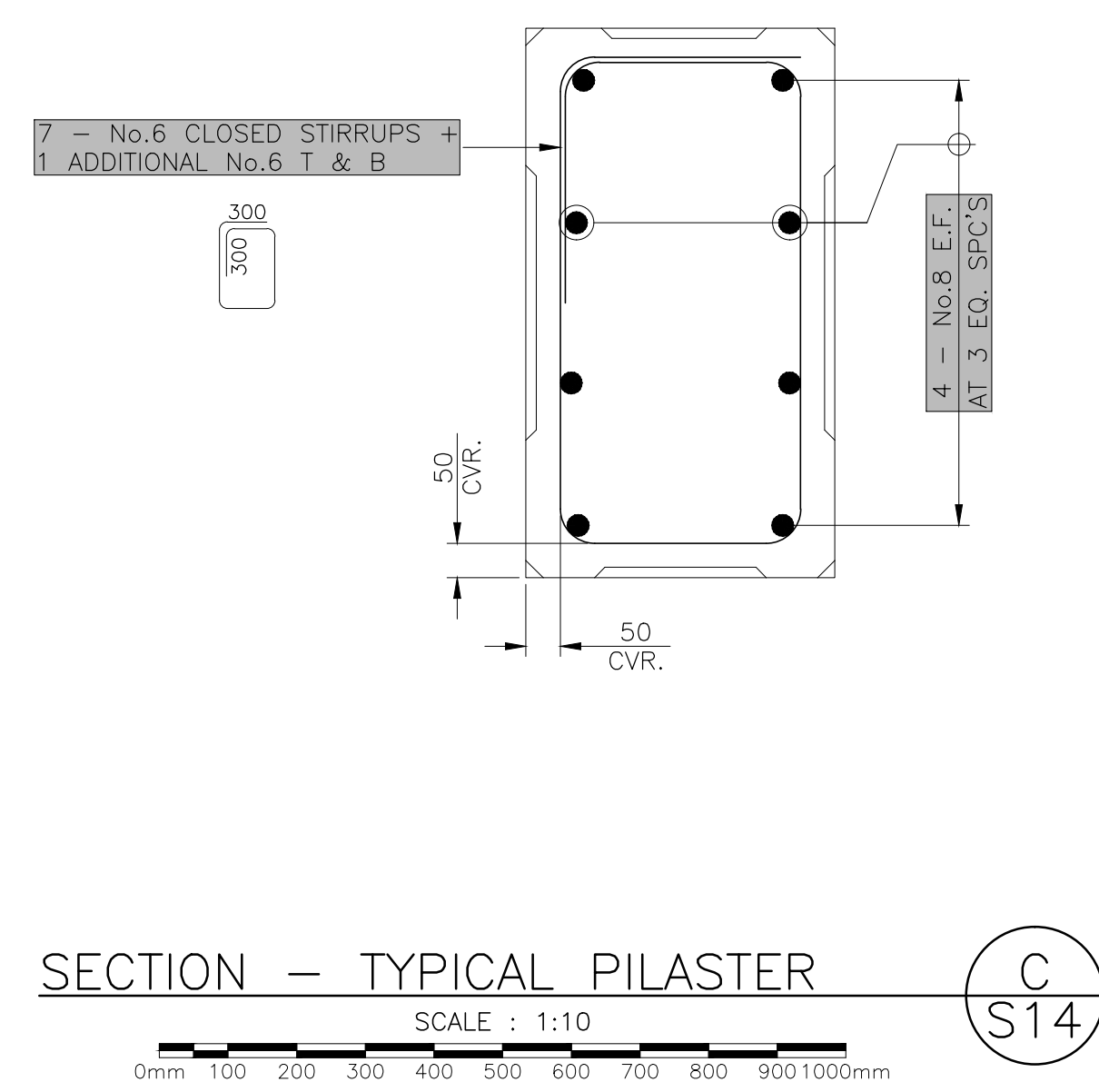
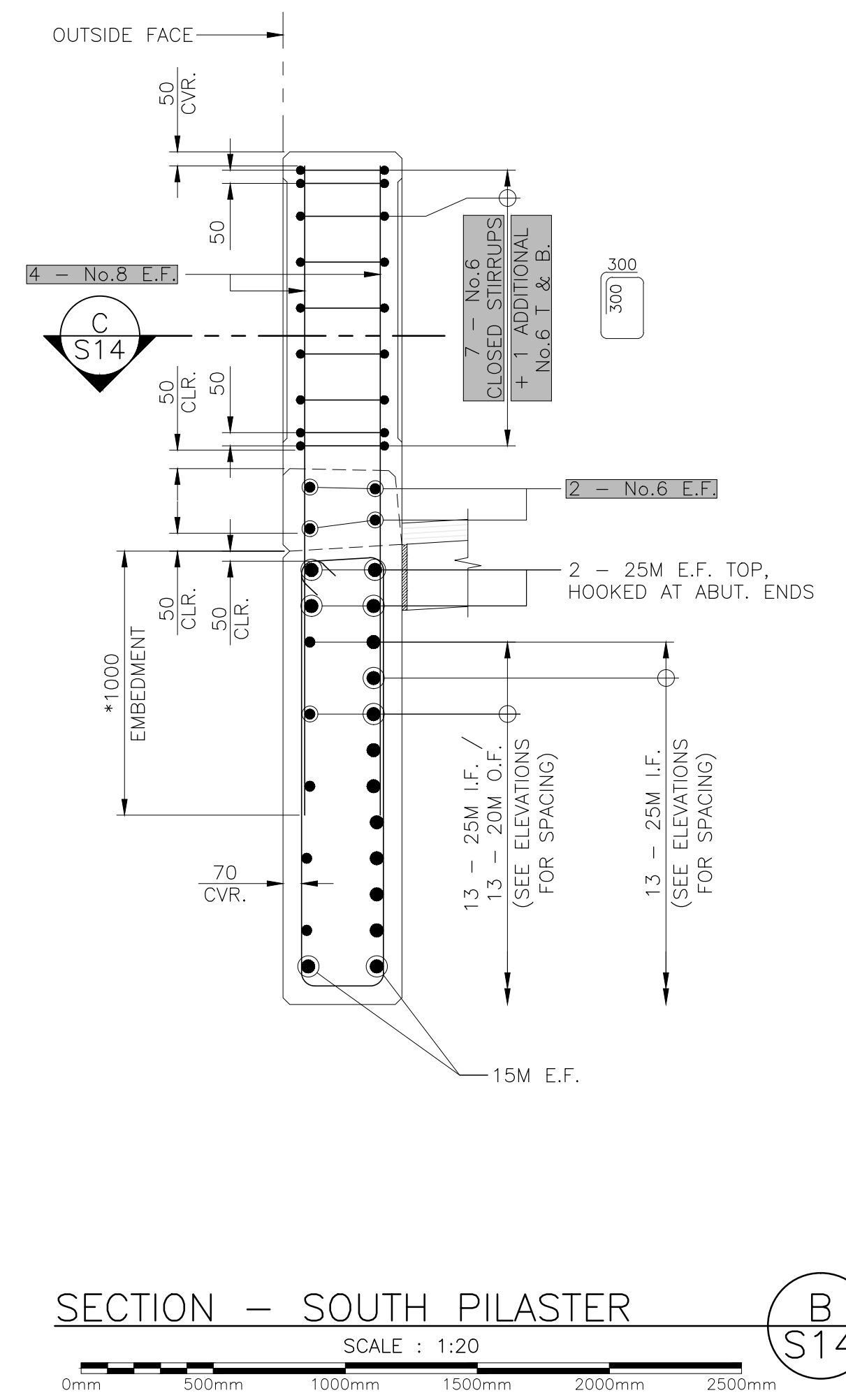
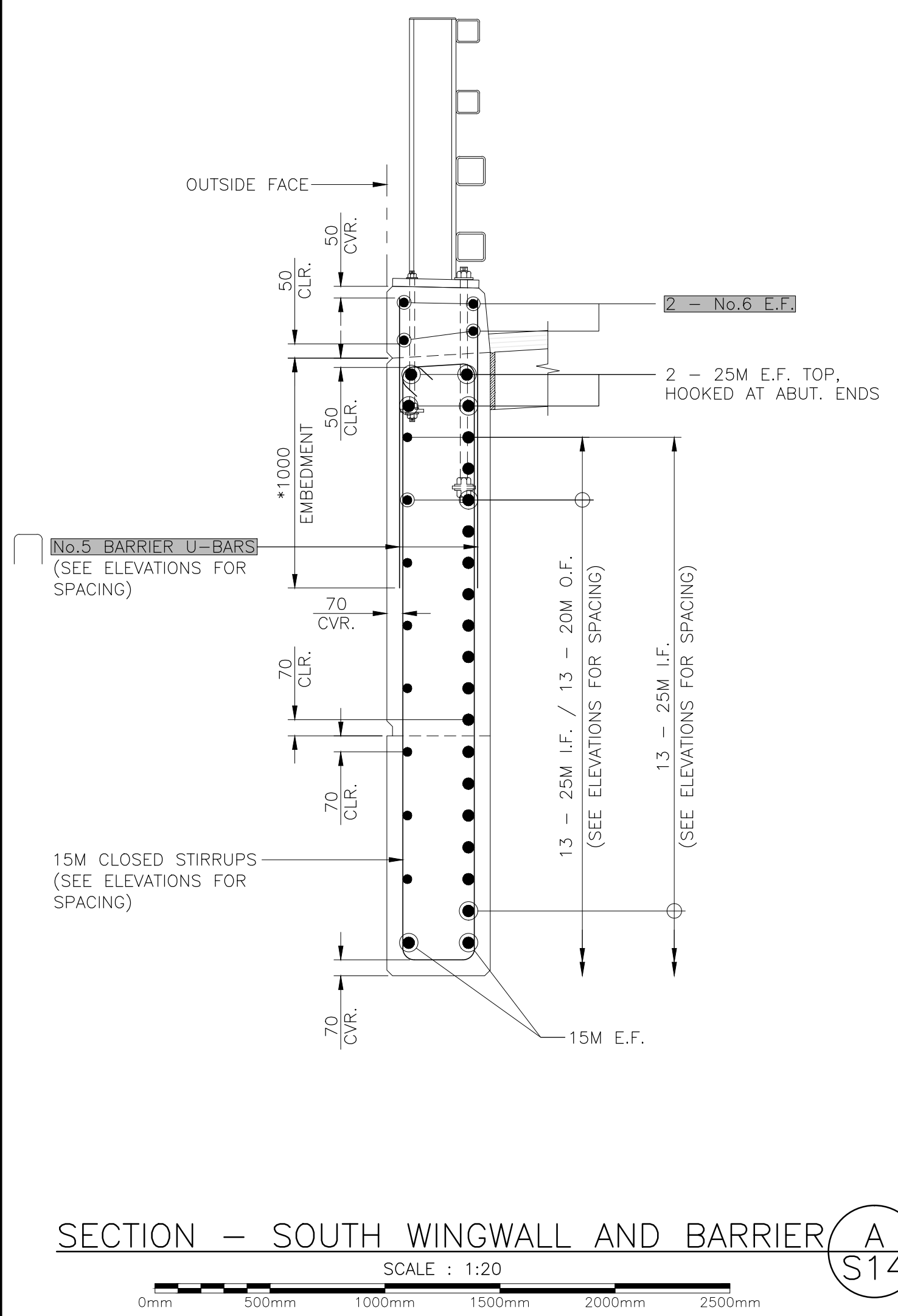
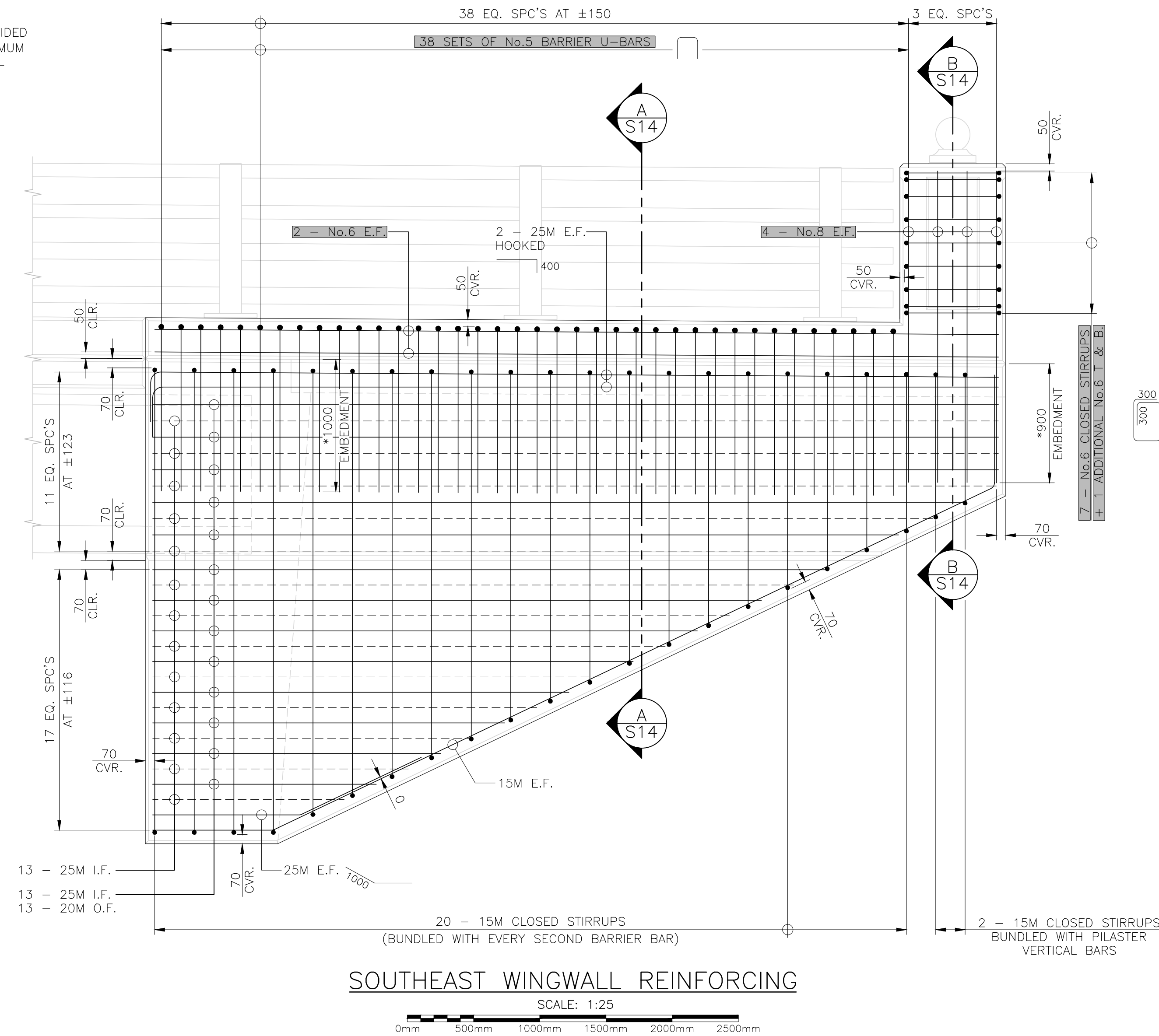
- | | | |
|------------------------|-----------------------------|----------------------------|
| N.F. — NEAR FACE | I.C. — IN CENTER | N.W. — NORTH WEST WINGWALL |
| F.F. — FAR FACE | T.U.L. — TOP UPPER LAYER | S.E. — SOUTH EAST WINGWALL |
| N.F.F. — NEAR FAR FACE | T.L.L. — TOP LOWER LAYER | S.W. — 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 | |



0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	design	
	NORTH ELEVATION WINGWALL REINFORCING	
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	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	
	322A	
drawing no.	no. du dessin	
	S13	



NOTE: *ADDITIONAL 100mm LAP TO BE PROVIDED (ie. 1100 vs 1000) TO ENSURE MINIMUM LAP PROVIDED IN EVENT OF MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS-BUILT CONDITIONS.



NOTES:

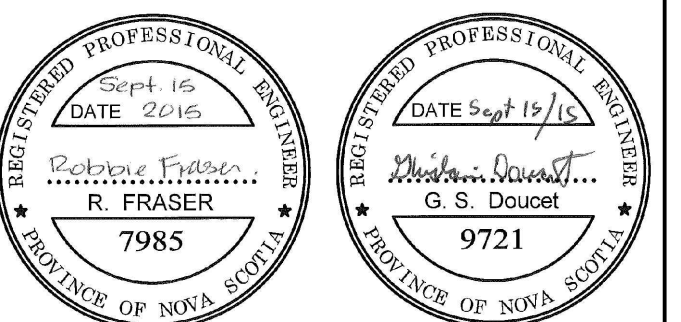
- GFRP BARS TO BE V.ROD HM SERIES BARS WITH A MINIMUM TENSILE MODULUS OF 62,000 MPa (O.A.E.) & A MINIMUM TENSILE STRENGTH OF 1000 MPa.
- BAR DESIGNATIONS ARE AS FOLLOWS:
 - No.5 = 16mm DIA., 198mm² NOM. AREA
 - No.6 = 20mm DIA., 285mm² NOM. AREA
 - No.7 = 22mm DIA., 388mm² NOM. AREA
 - No.8 = 25mm DIA., 507mm² NOM. AREA
- ALL STRAIGHT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:

BAR No.	E _{GFRP} (MPa)	F _{GFRP STRAIGHT} (MPa)	F _{GFRP BENT} (MPa)
No.5	50000	1000	400
No.6	50000	1000	400
- ALL BENT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:

BAR No.	E _{GFRP} (MPa)	F _{GFRP STRAIGHT} (MPa)	F _{GFRP BENT} (MPa)
No.5	62000	1084	
No.6	62000	1105	
No.7	62000	1059	
No.8	62000	1000	
- ALL WINGWALL REINFORCING TO BE GALVANIZED DEFORMED STEEL REINFORCING (WELDABLE) TO CSA G30.18-09 & THE PROJECT SPECIFICATIONS, EXCEPT FOR THE PILASTER & TOP PORTION OF WINGWALL REINFORCING SHALL BE GFRP BARS AS PER NOTES 1 THROUGH 4, INCLUSIVE, & AS INDICATED ON THIS DRAWING. GFRP BARS INDICATED BY [XXXX]

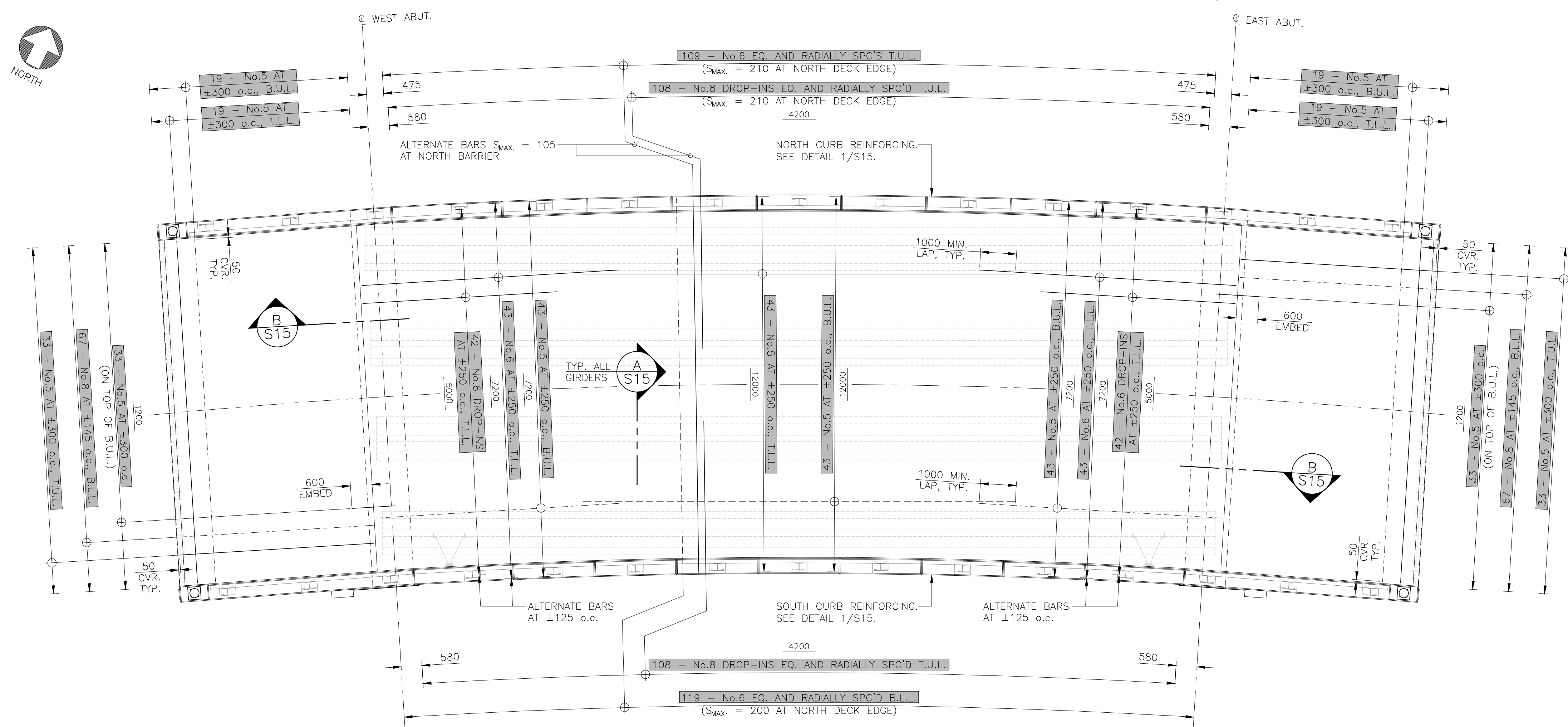
REINFORCING LEGEND:

- | | | |
|------------------------|-----------------------------|----------------------------|
| 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 | C.V.R. — COVER |
| I.F. — INSIDE FACE | E.A. — EAST ABUTMENT | CL.R. — CLEAR |
| O.F. — OUTSIDE FACE | N.E. — NORTH EAST WINGWALL | |



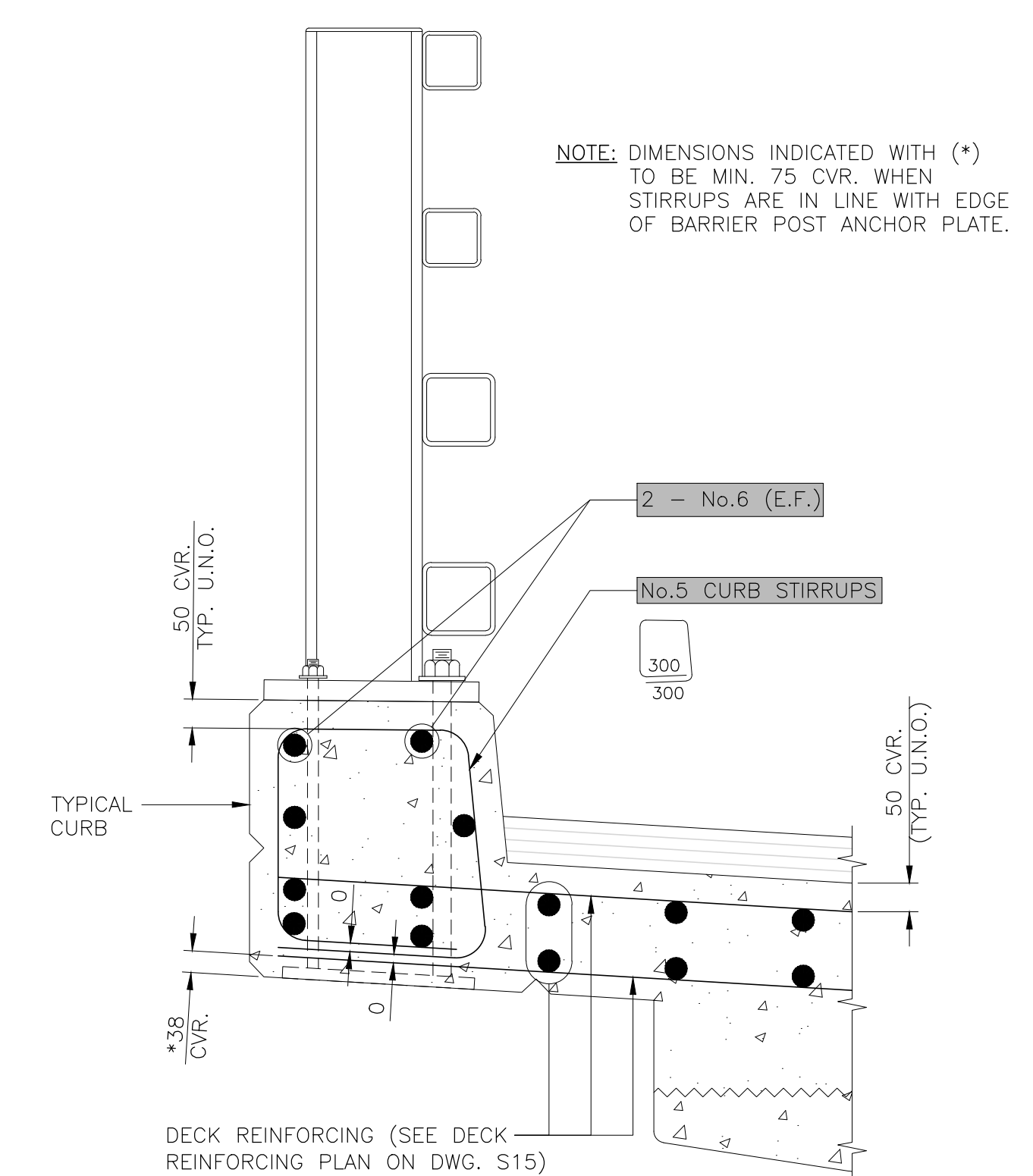
0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	
project	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	SOUTH ELEVATION WINGWALL REINFORCING	
design		

designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	Submission	
PCA Project Manager	Administrateur de projets APC	
project number	332A	no. du projet
drawing no.	S14	no. du dessin



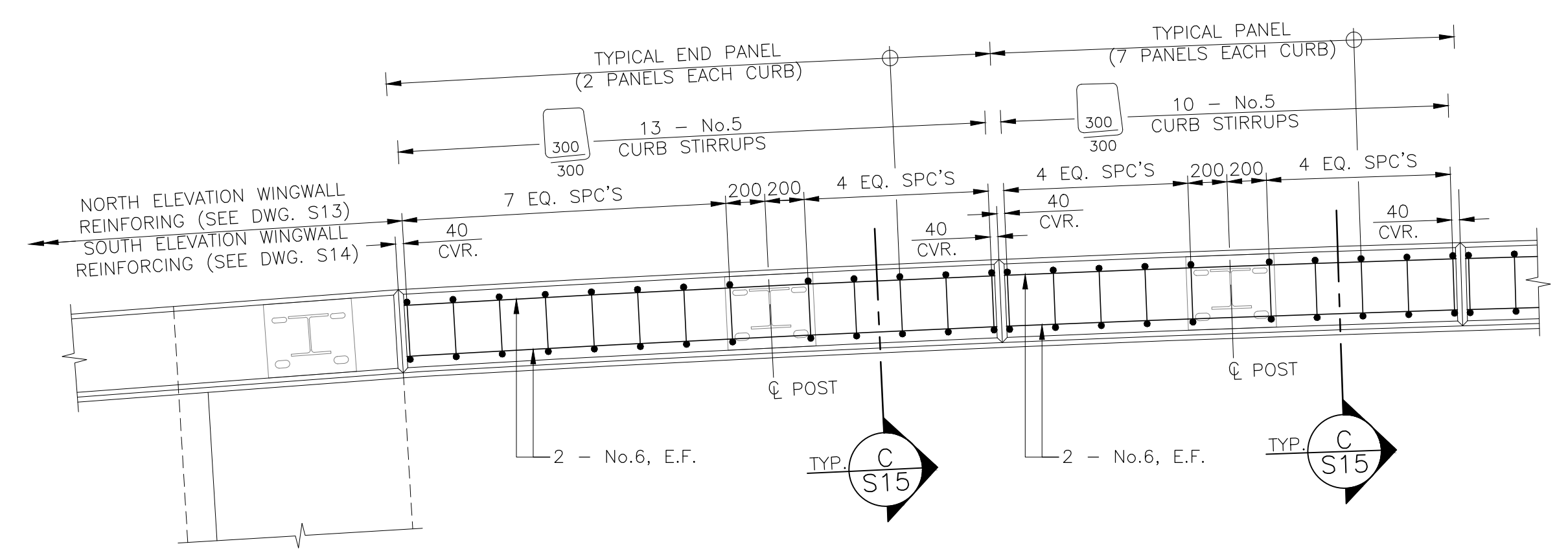
DECK / APPROACH SLAB REINFORCING PLAN

SCALE : 1:75



SECTION - TYPICAL BARRIER REINFORCING

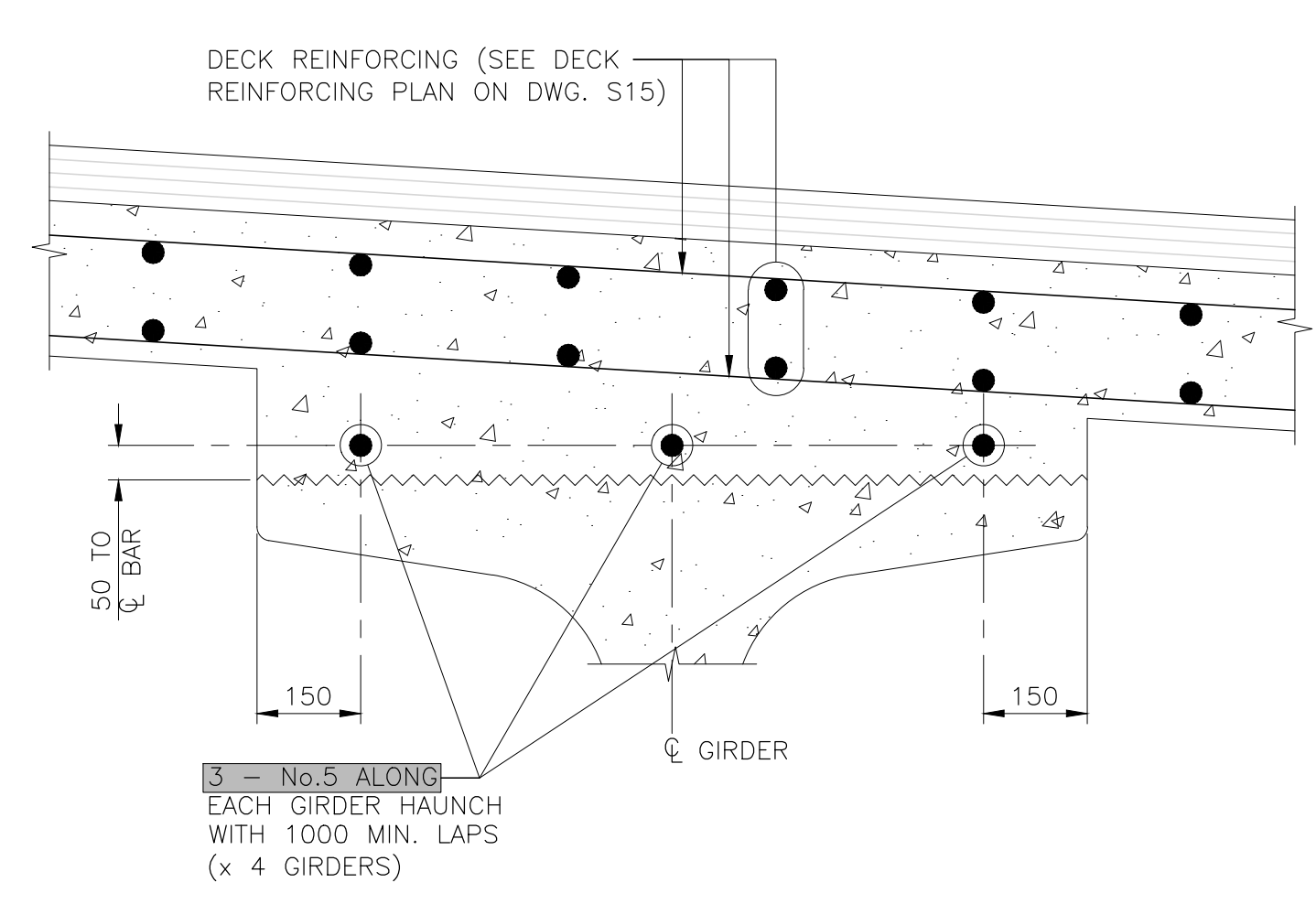
SCALE : 1:10



NORTH BARRIER CURB SHOWN (SOUTH BARRIER CURB SIM.)

DETAIL - TYPICAL CURB REINFORCING

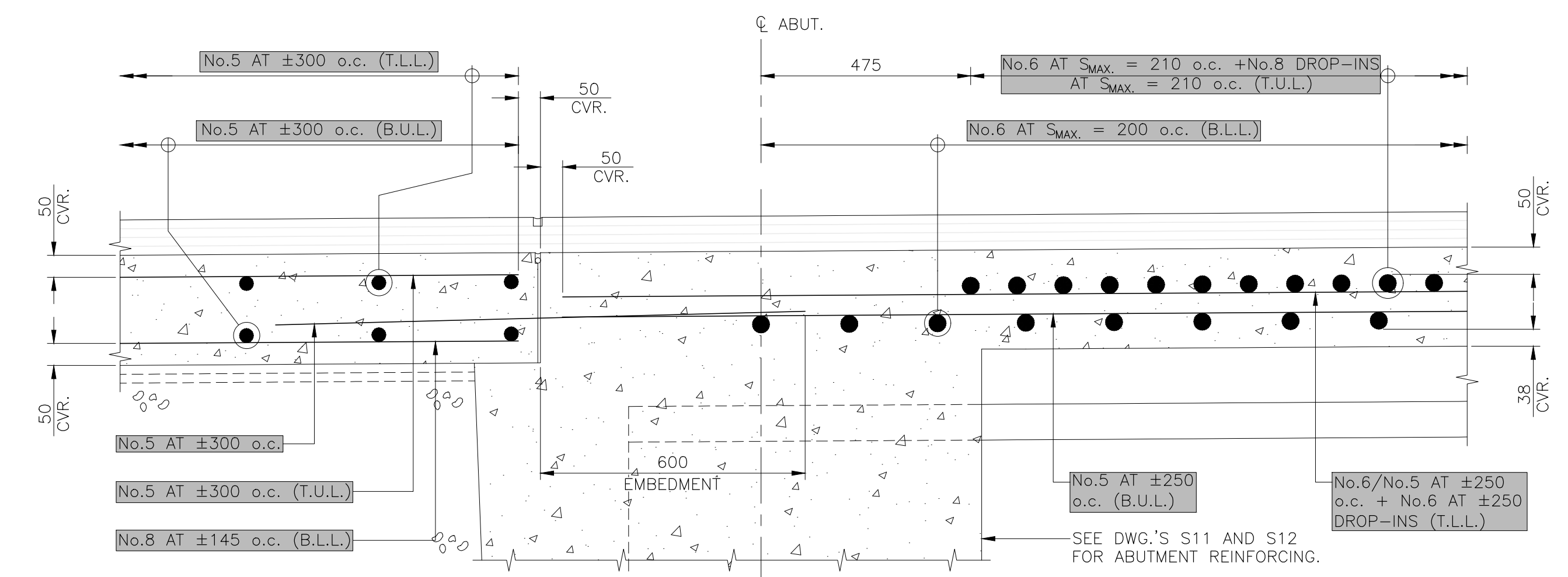
SCALE : 1:25



SECTION

SCALE : 1:10

A S15



SECTION

SCALE : 1:10

B S15

NOTES:

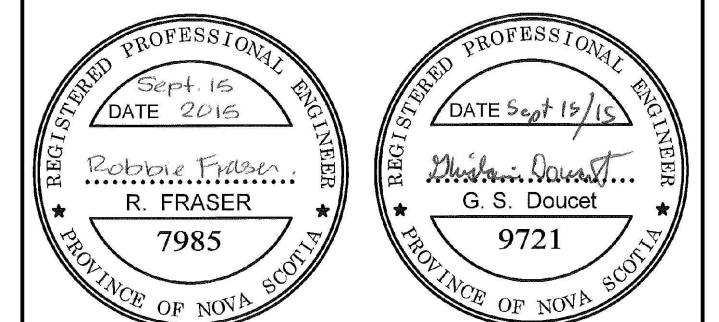
1. FRP BARS TO BE V-ROD HM SERIES BARS WITH A MINIMUM TENSILE MODULUS OF 62,000 MPa (O.A.E.) & A MINIMUM TENSILE STRENGTH OF 1000 MPa.
2. BAR DESIGNATIONS ARE AS FOLLOWS:
 - No.5 = 16mm DIA., 198mm² NOM. AREA
 - No.6 = 20mm DIA., 285mm² NOM. AREA
 - No.7 = 22mm DIA., 388mm² NOM. AREA
 - No.8 = 25mm DIA., 507mm² NOM. AREA
3. ALL STRAIGHT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:
4. ALL BENT BARS SHALL MEET THE FOLLOWING MINIMUM DESIGN REQUIREMENTS:

BAR No.	E _{GFRP} (MPa)	F _{GFRP STRAIGHT} (MPa)	F _{GFRP BENT} (MPa)
No.5	50000	1000	400
No.6	50000	1000	400

BAR No.	E _{GFRP} (MPa)	F _{GFRP} (MPa)
No.5	62000	1084
No.6	62000	1105
No.7	62000	1059
No.8	62000	1000

REINFORCING LEGEND:

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



revisions	date	project
0	ISSUED FOR TENDER	OCT. 5 2015

WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

DECK, APPROACH SLAB AND CURB REINFORCING

designed GHISLAIN DOUCET
date JULY 2015
drawn JEFF CLARK
date JULY 2015
approved ROBBIE FRASER
date JULY 2015
Tender
PCA Project Manager
project number
drawing no.

322A
S15



BOREHOLE PLAN
SCALE: 1:400

Page 1 of 1

Stantec BOREHOLE RECORD BH01

CLIENT: Harbourside Engineering Consultants PROJECT No. 121618331
 LOCATION: CAPE BRETON HIGHLANDS NATIONAL PARK, NOVA SCOTIA BHI SIZE: HW
 DATES: BORING: 2015/05/29 2015/05/29 WATER LEVEL: Not monitored DATUM: CGVD28

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLES		UNSATURATED SHEAR STRENGTH (kPa)
			TYPE	NUMBER	
0	7.63	ASPHALT			
0	7.48	FILL: brown to grey silty sand with gravel to well-graded gravel with sand	SS	1 380 33	
1			SS	2 300 30	
2			SS	3 50 40	
3			SS	4 360 38	
4			SS	5 250 29	
4	3.64	Dense brown and grey well-graded sand with silt and gravel TILL	SS	6 330 33	
5			SS	7 250 42	
6			SS	8 380 41	
7			SS	9 280 33	
8			SS	10 410 30	
8	-0.22	End of Borehole at 7.9 m depth - no standpipe installed			

App'd: *VCB* Jun 26 2015 14:42:19

Page 1 of 3

Stantec BOREHOLE RECORD BH02

CLIENT: Harbourside Engineering Consultants PROJECT No. 121618331
 LOCATION: CAPE BRETON HIGHLANDS NATIONAL PARK, NOVA SCOTIA BHI SIZE: HW
 DATES: BORING: 2015/05/27 2015/05/28 WATER LEVEL: 2015/05/30 DATUM: CGVD28

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLES		UNSATURATED SHEAR STRENGTH (kPa)
			TYPE	NUMBER	
0	4.47	SOD			
0	4.47	FILL: brown to grey silty sand with gravel to well-graded gravel with sand	SS	1 330 16	
1			SS	2 250 27	
2			SS	3 150 12	
3			SS	4 150 13	
4			SS	5 0 19	
5			SS	6 80 19	
6			SS	7 50 19	
7			SS	8 150 25	
8	-0.43	Very loose to compact reddish-brown SILTY SAND to well-graded SAND with silt and gravel - with occasional cobbles	SS	9 0 9	
9			SS	10 200 9	
10			SS	12 80 14	
11			SS	13 180 9	
12			SS	14 80 6	
13			SS	15 150 9	

App'd: *VCB* Jun 26 2015 14:42:21

Page 2 of 3

Stantec BOREHOLE RECORD BH02

CLIENT: Harbourside Engineering Consultants PROJECT No. 121618331
 LOCATION: CAPE BRETON HIGHLANDS NATIONAL PARK, NOVA SCOTIA BHI SIZE: HW
 DATES: BORING: 2015/05/27 2015/05/28 WATER LEVEL: 2015/05/30 DATUM: CGVD28

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLES		UNSATURATED SHEAR STRENGTH (kPa)
			TYPE	NUMBER	
10		Continued: Very loose to compact reddish-brown SILTY SAND to well-graded SAND with silt and gravel - with occasional cobbles	SS	16 200 5	
11			SS	17 180 3	
12			SS	18 100 10	
13			SS	19 230 19	
14			SS	20 180 90/230mm	
15	-11.68	Very dense grey well-graded sand with silt and gravel TILL	BS	21 200 N/A	
16			SS	22 50 Refusal	
17					
18					
19					
20	-15.29				

App'd: *VCB* Jun 26 2015 14:42:22

Page 3 of 3

Stantec BOREHOLE RECORD BH02

CLIENT: Harbourside Engineering Consultants PROJECT No. 121618331
 LOCATION: CAPE BRETON HIGHLANDS NATIONAL PARK, NOVA SCOTIA BHI SIZE: HW
 DATES: BORING: 2015/05/27 2015/05/28 WATER LEVEL: 2015/05/30 DATUM: CGVD28

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLES		UNSATURATED SHEAR STRENGTH (kPa)
			TYPE	NUMBER	
20		Weak, moderately weathered, fair to good quality CONGLOMERATE	RC	23 100% RQD 77%	
21			RC	24 92% 57%	
23	-18.34	End of Borehole at 22.8 m depth - 25 mm PVC standpipe installed			

App'd: *VCB* Jun 26 2015 14:42:22

0	ISSUED FOR TENDER	Oct. 5 2015
revisions		date

project WARREN BROOK BRIDGE REPLACEMENT
 HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

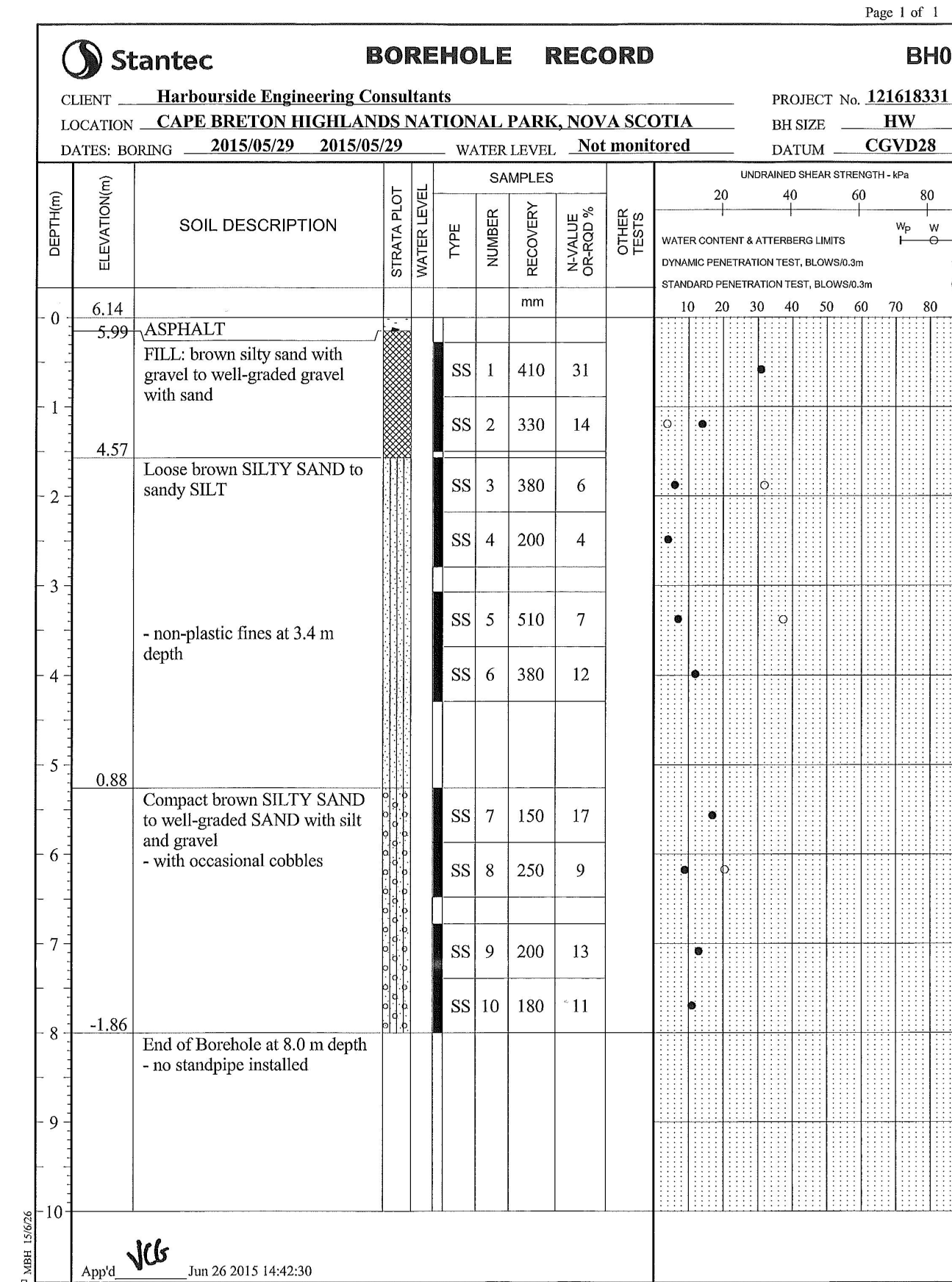
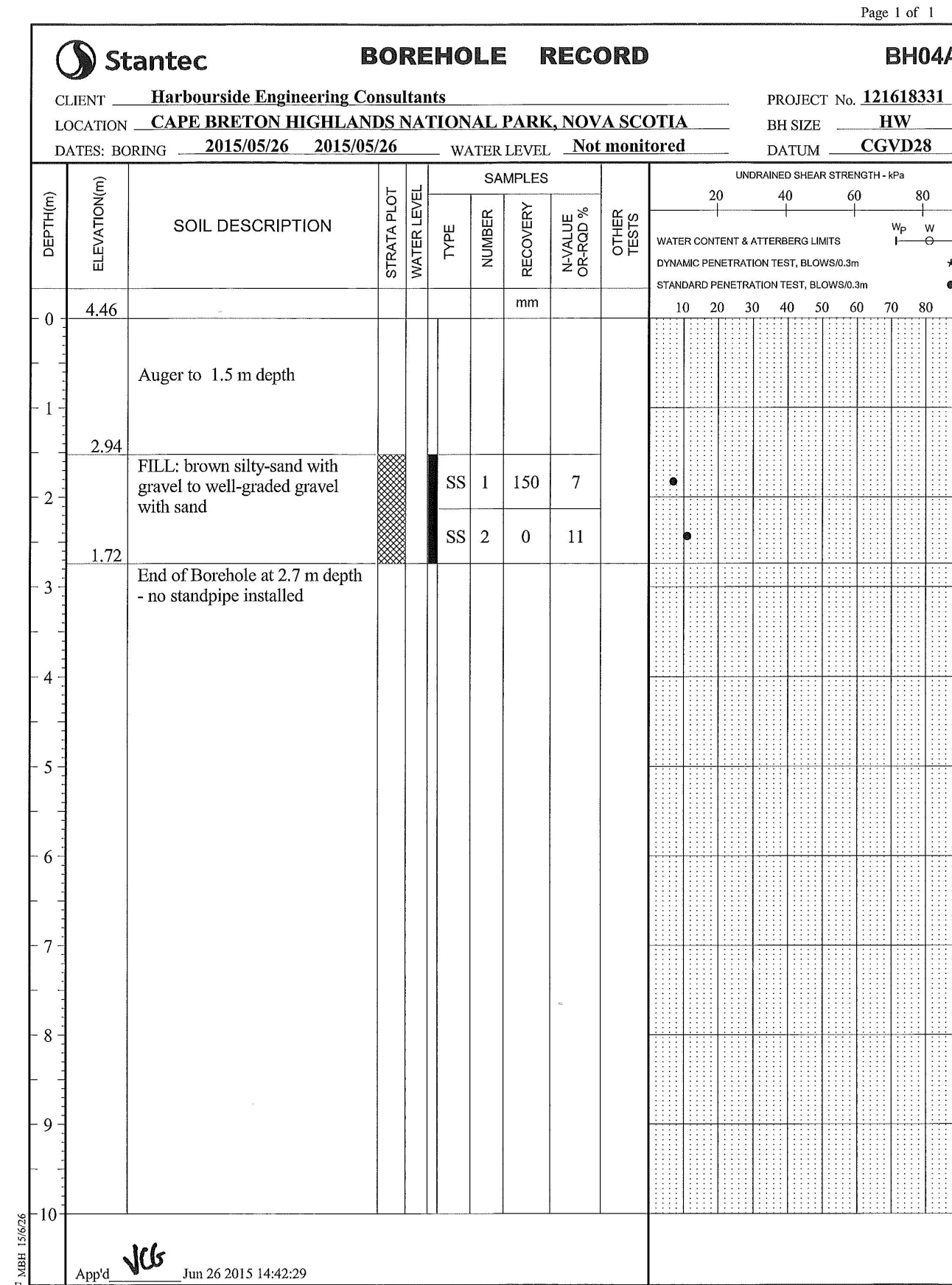
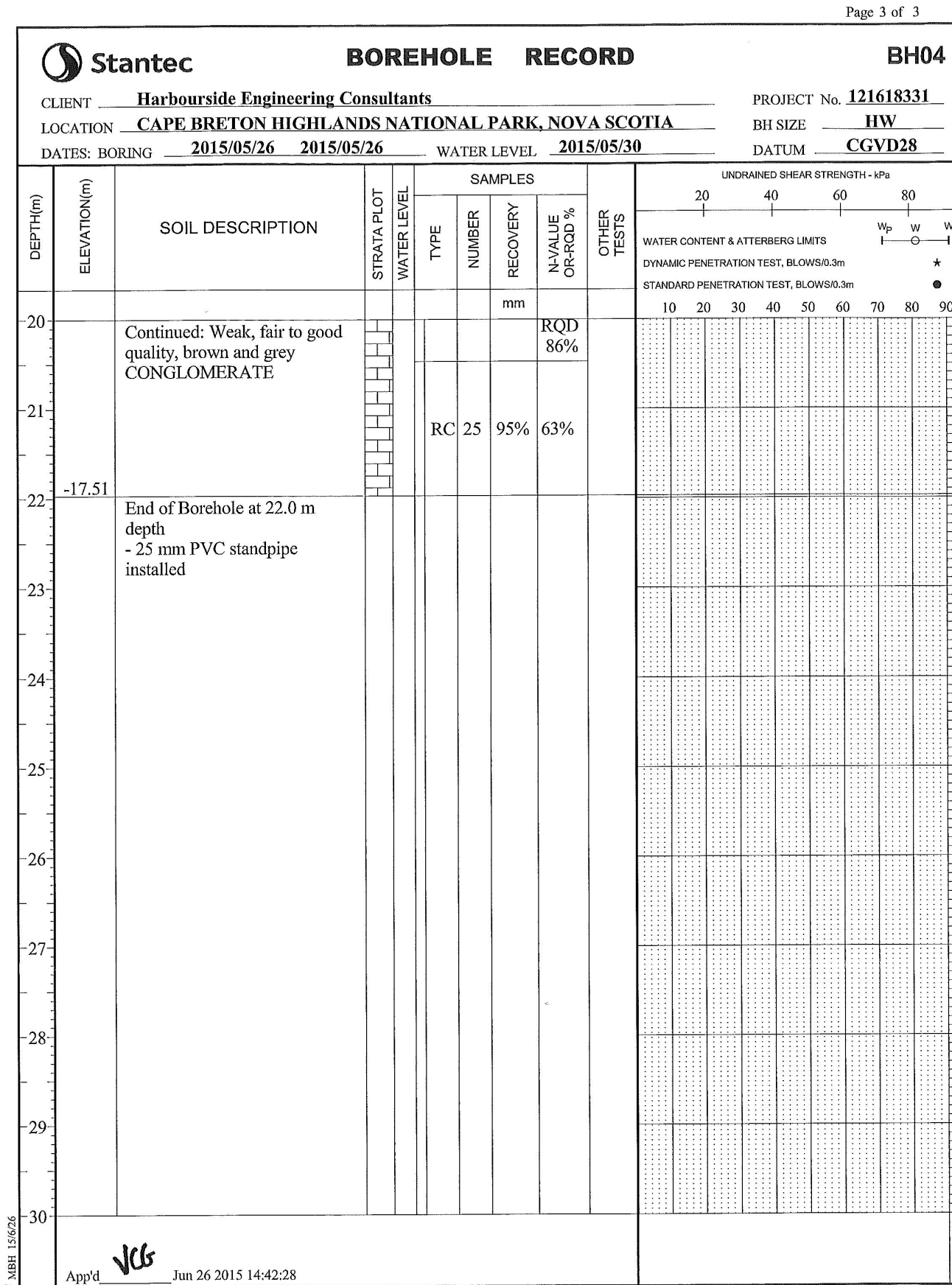
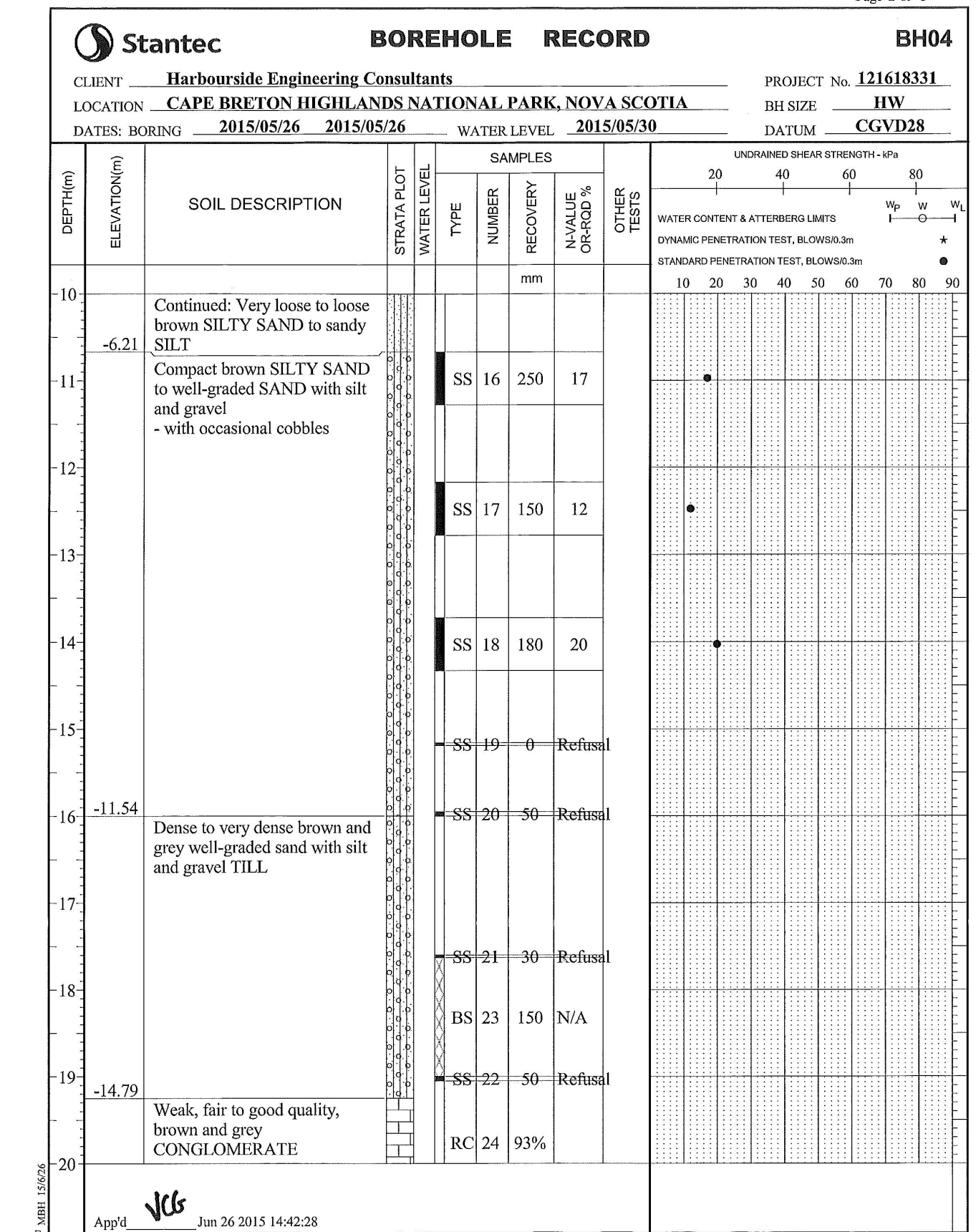
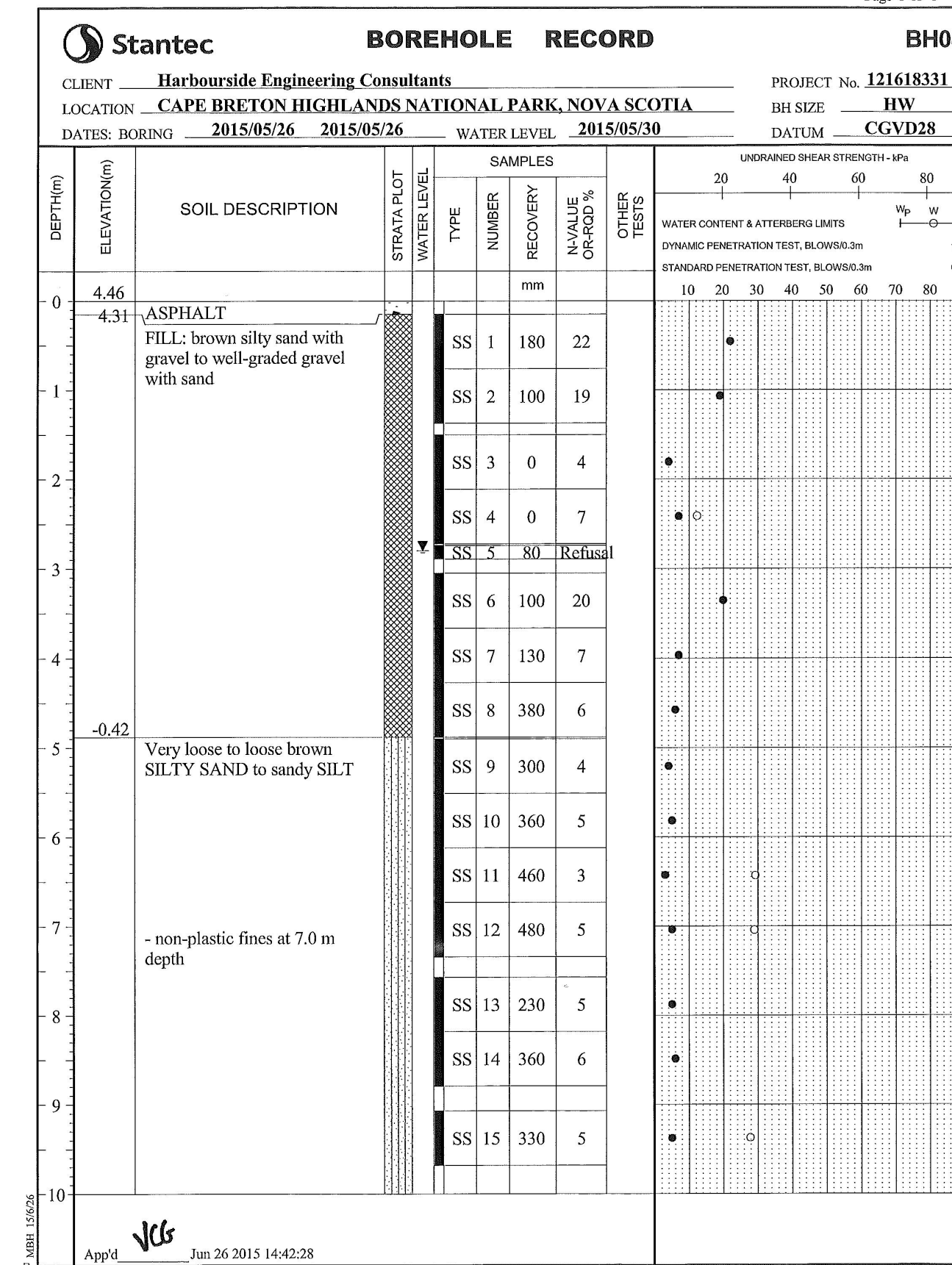
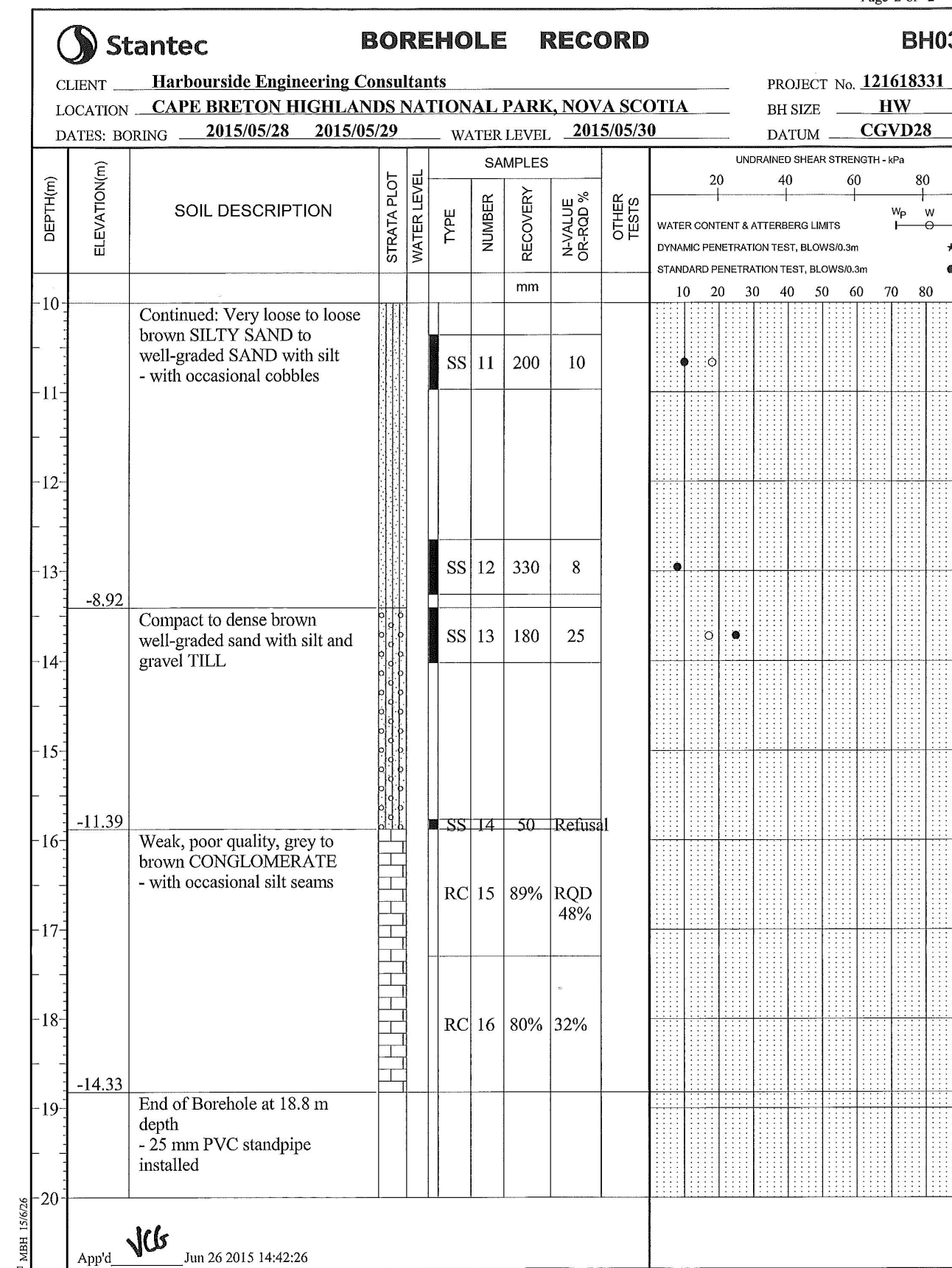
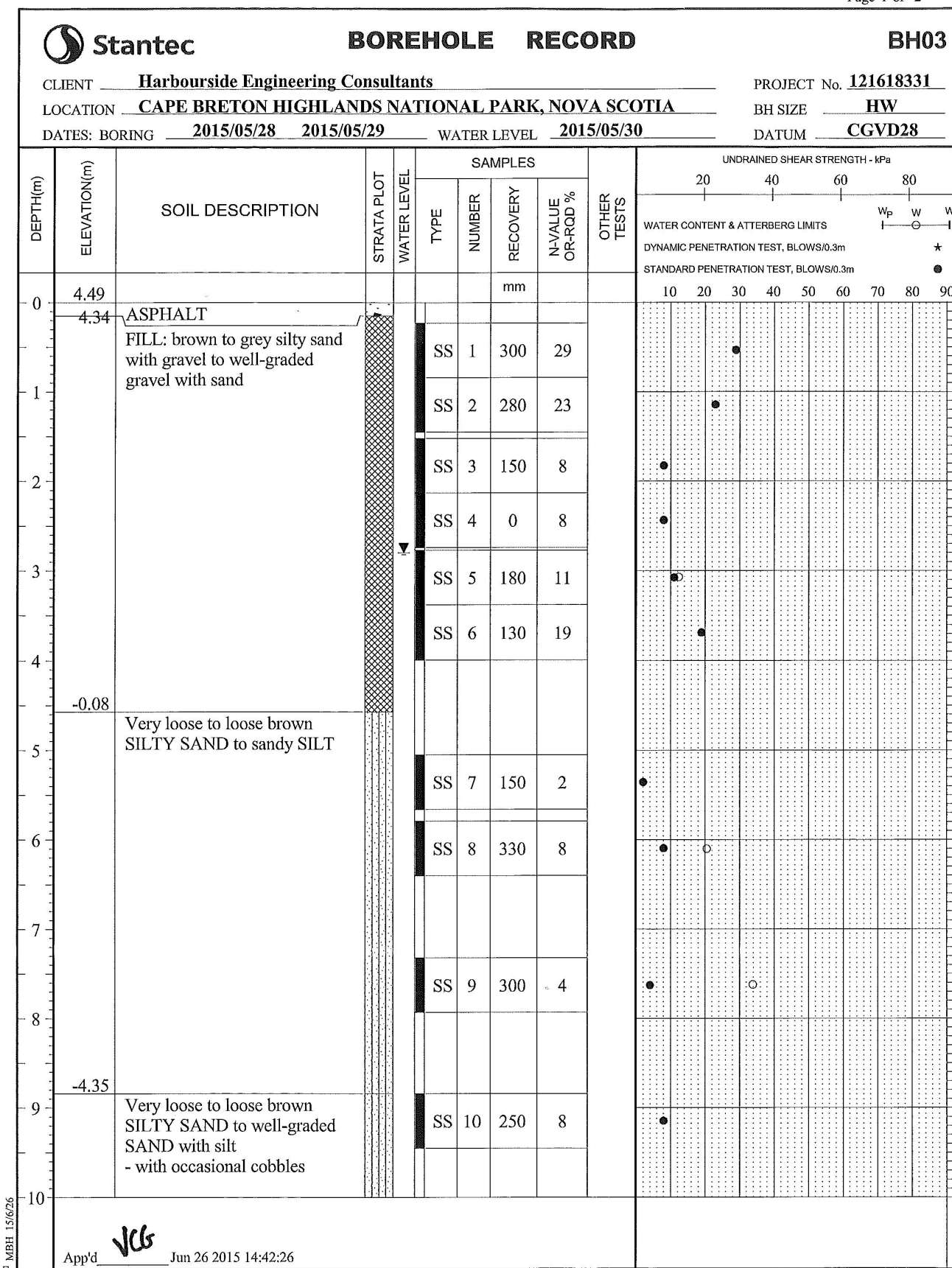
drawing BOREHOLE LOGS (SHEET 1 OF 2)

designed conq
 date
 drawn JEFF CLARK dessin
 date JULY 2015
 approved
 date

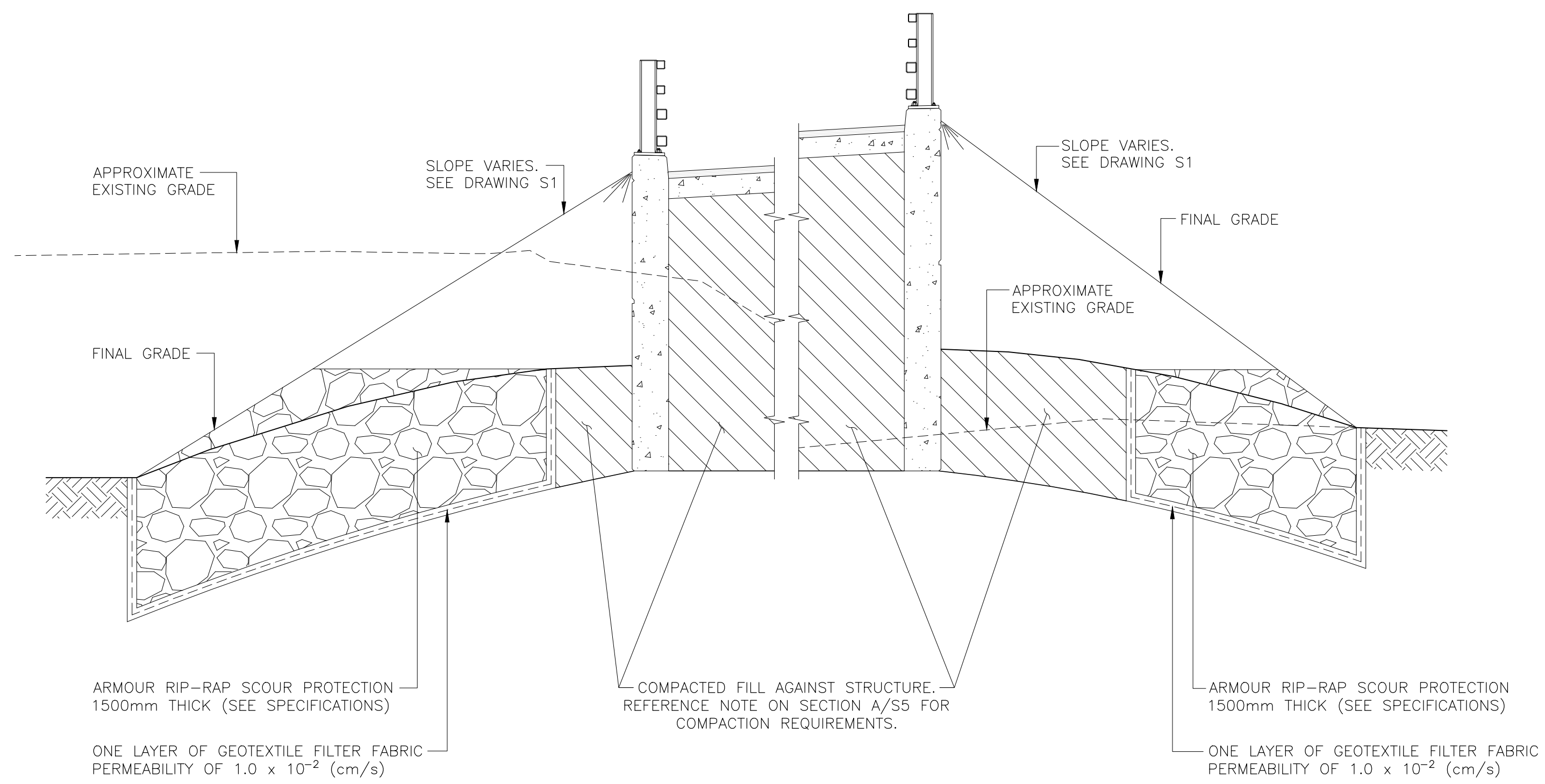
Tender Submission
 PCA Project Manager Administrateur de projets APC
 project number no. du projet

322A

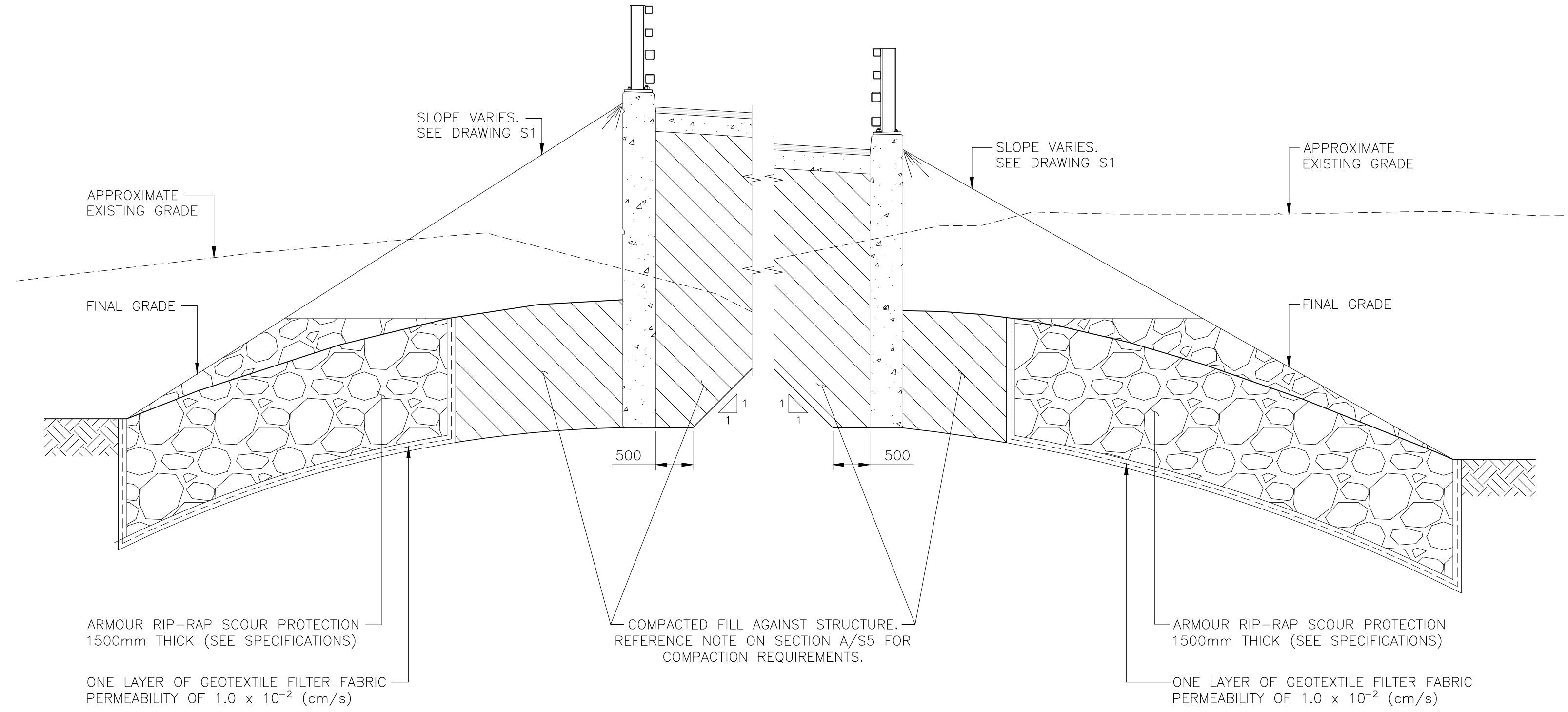
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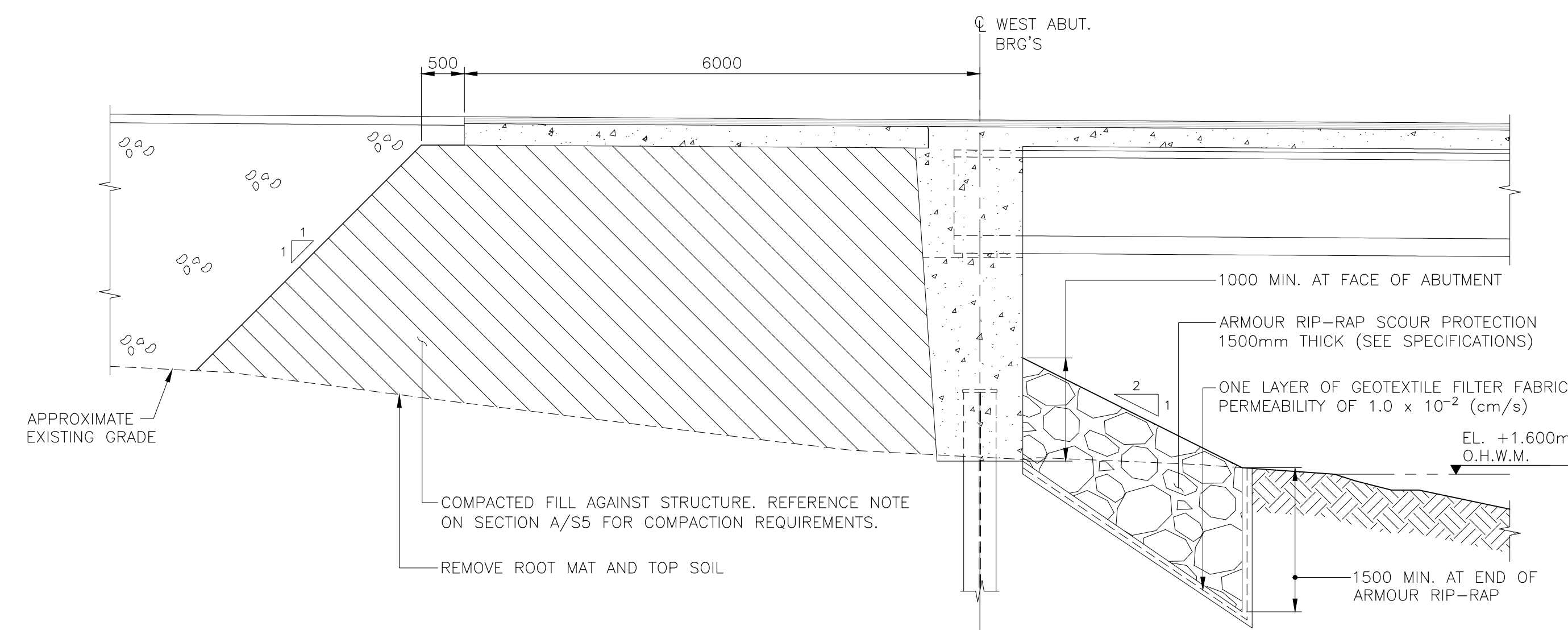
0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	project
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing		design
	BOREHOLE LOGS (SHEET 2 OF 2)	
designed		conq
date		
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved		approuvé
date		
Tender	[Signature]	Submission
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	S17	no. du dessin



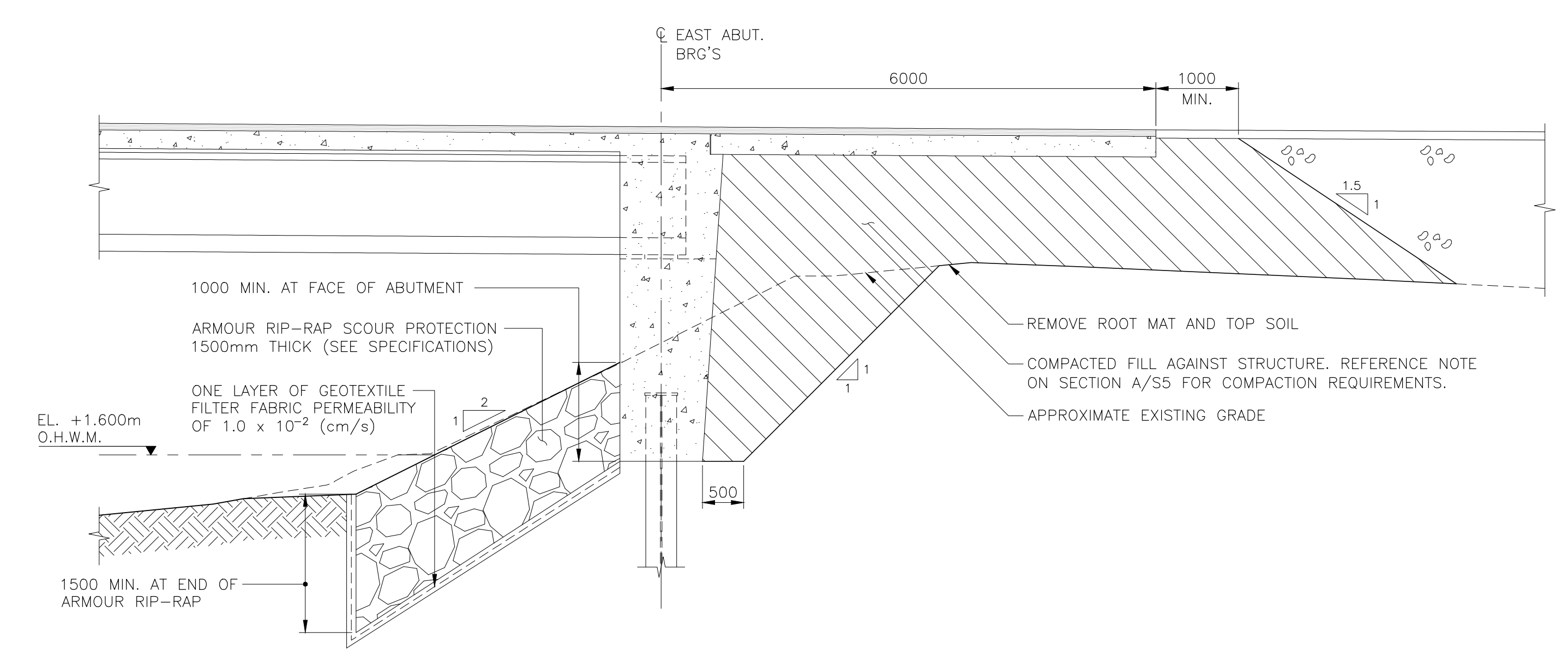
THROUGH WEST ABUTMENT WINGWALLS



THROUGH EAST ABUTMENT WINGWALLS

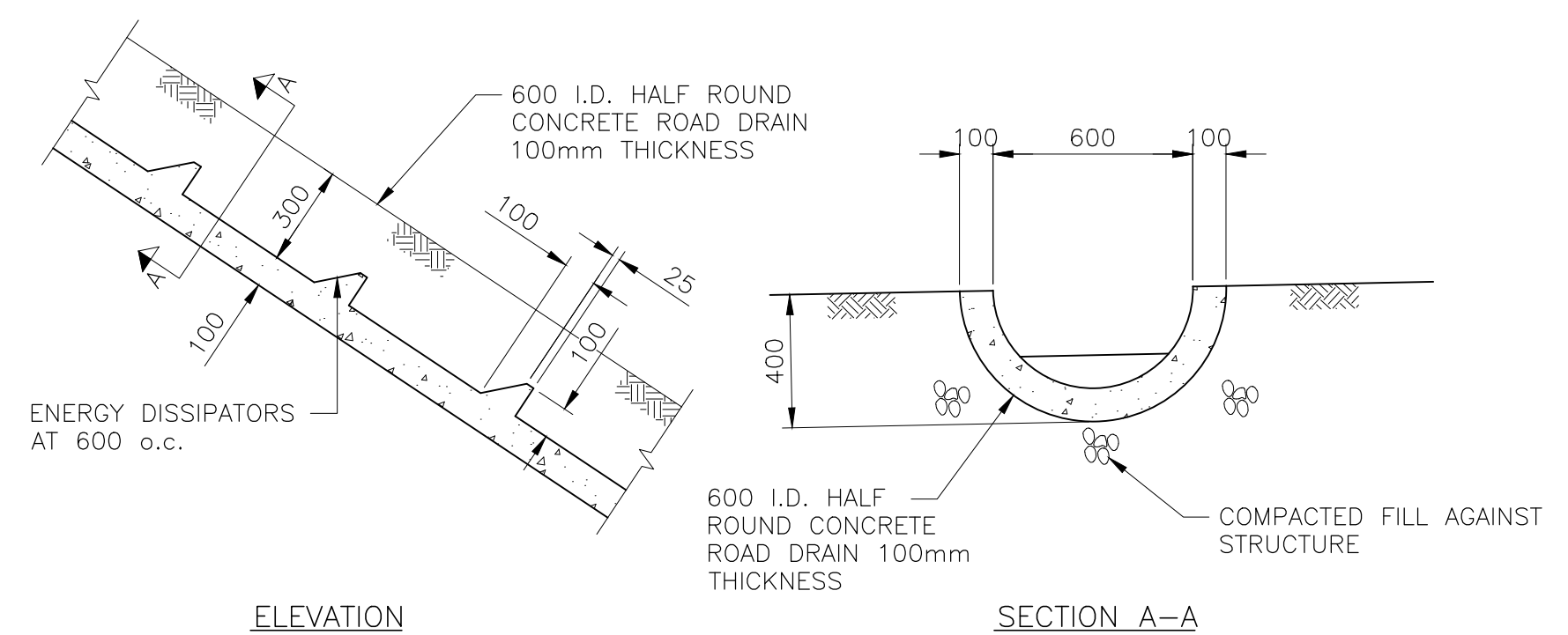


THROUGH WEST ABUTMENT

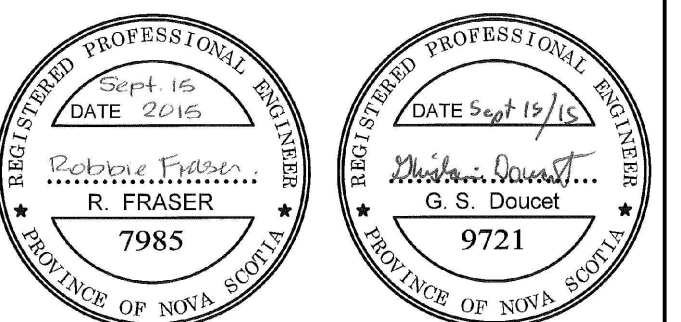
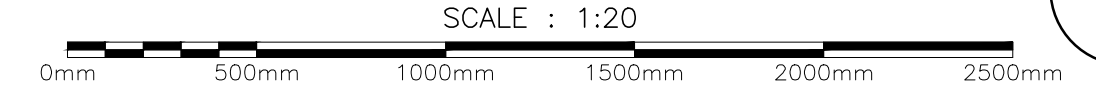


THROUGH EAST ABUTMENT

DETAIL - FILL AGAINST STRUCTURE/RIP-RAP DIAGRAMS 1 S1



DETAIL - ROAD DRAIN 2 S1

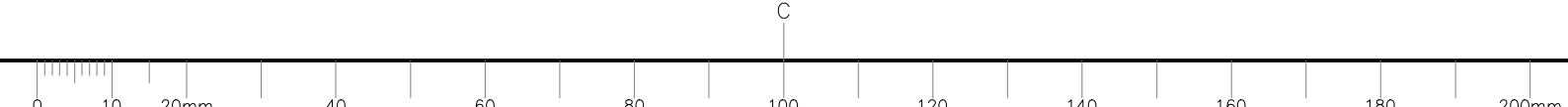


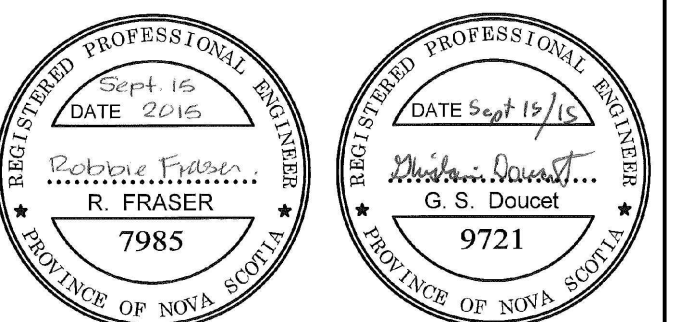
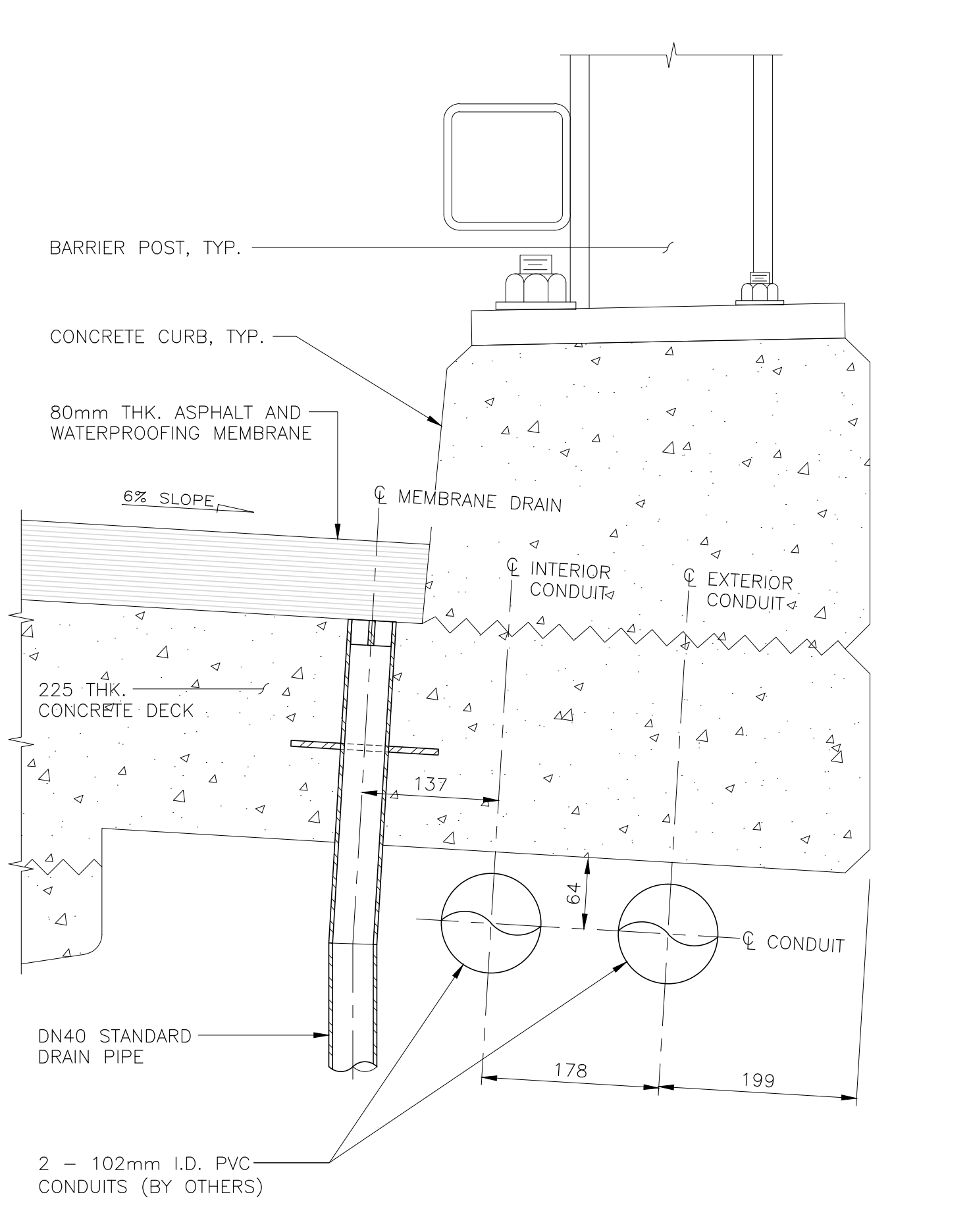
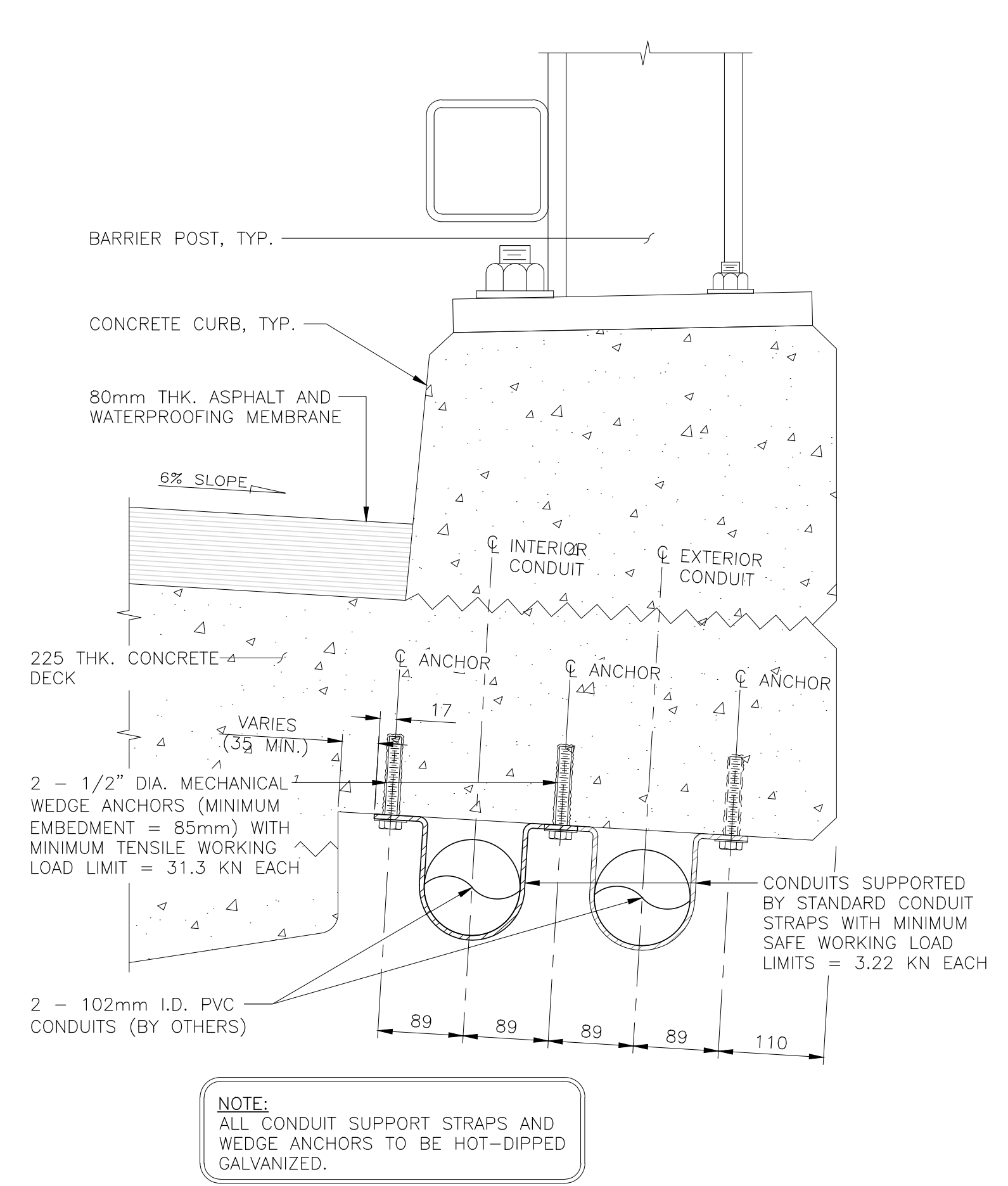
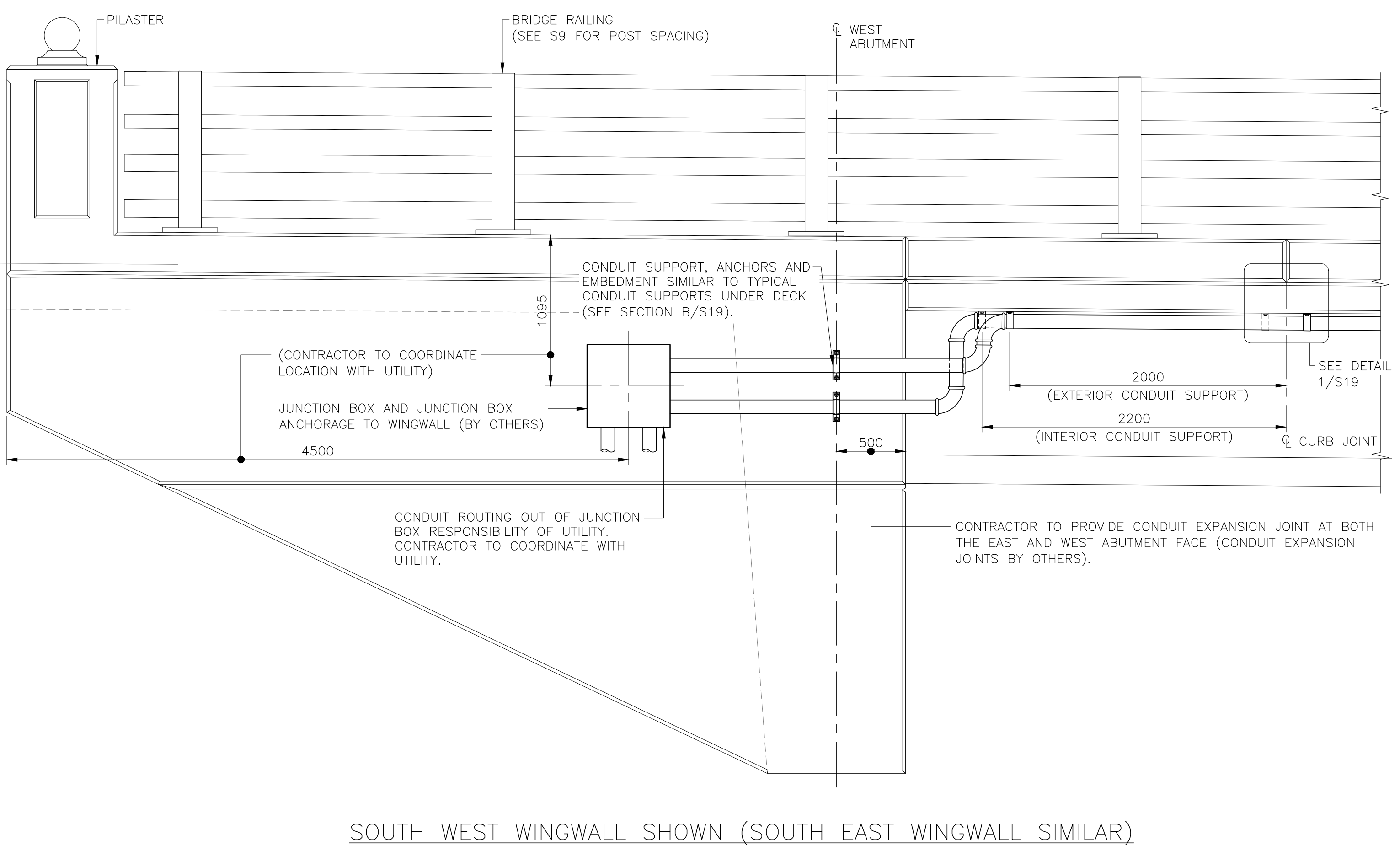
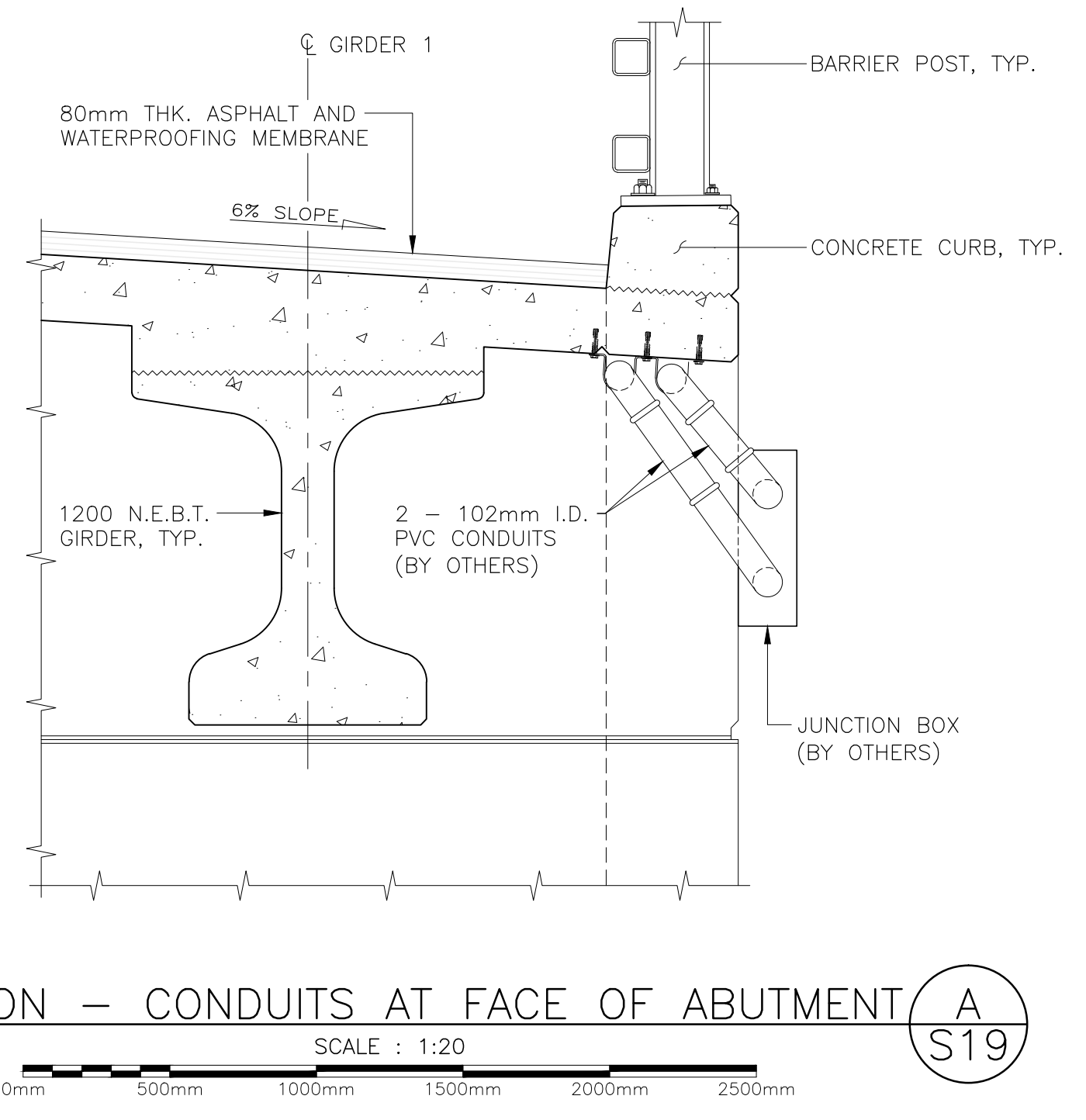
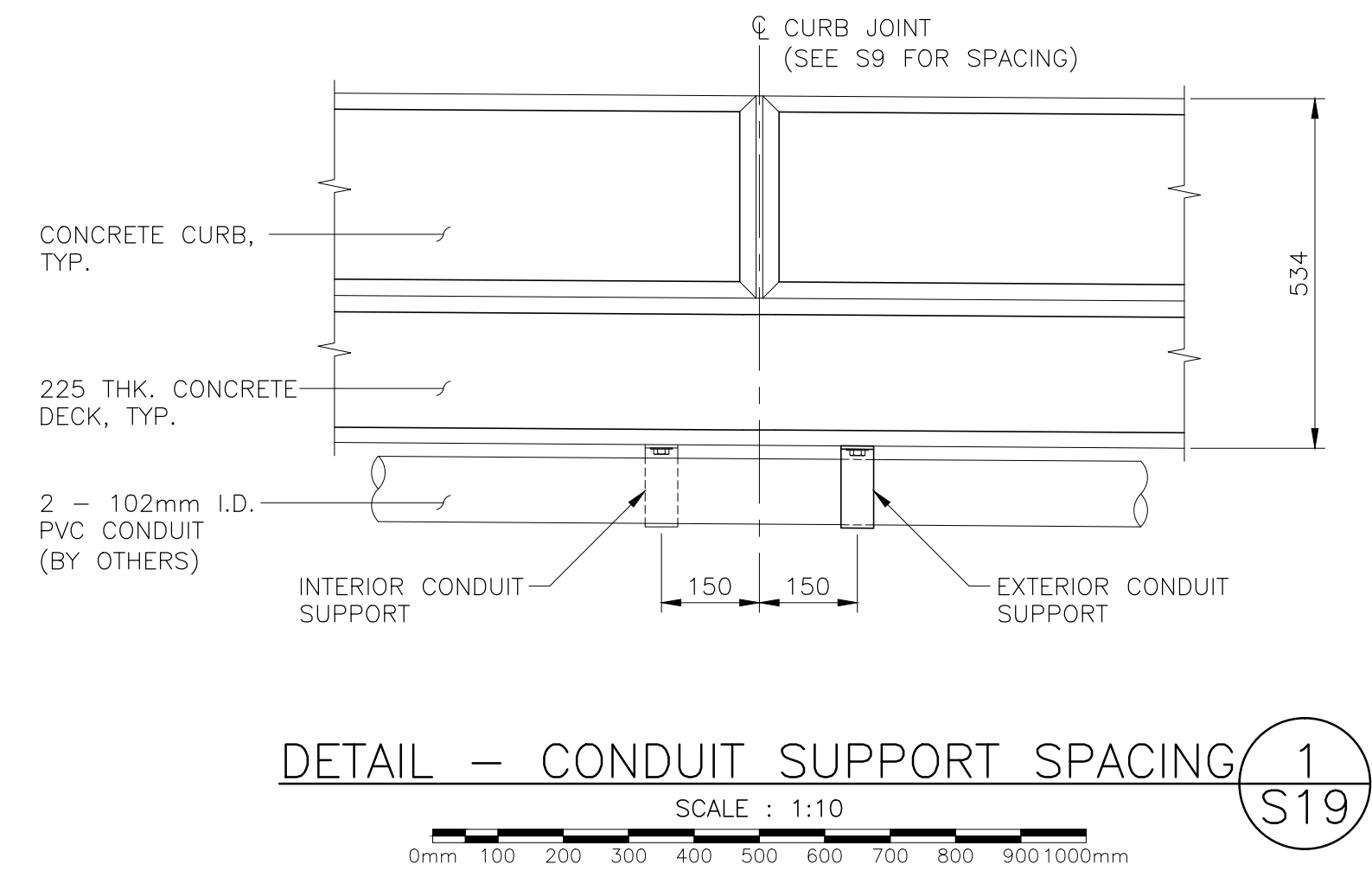
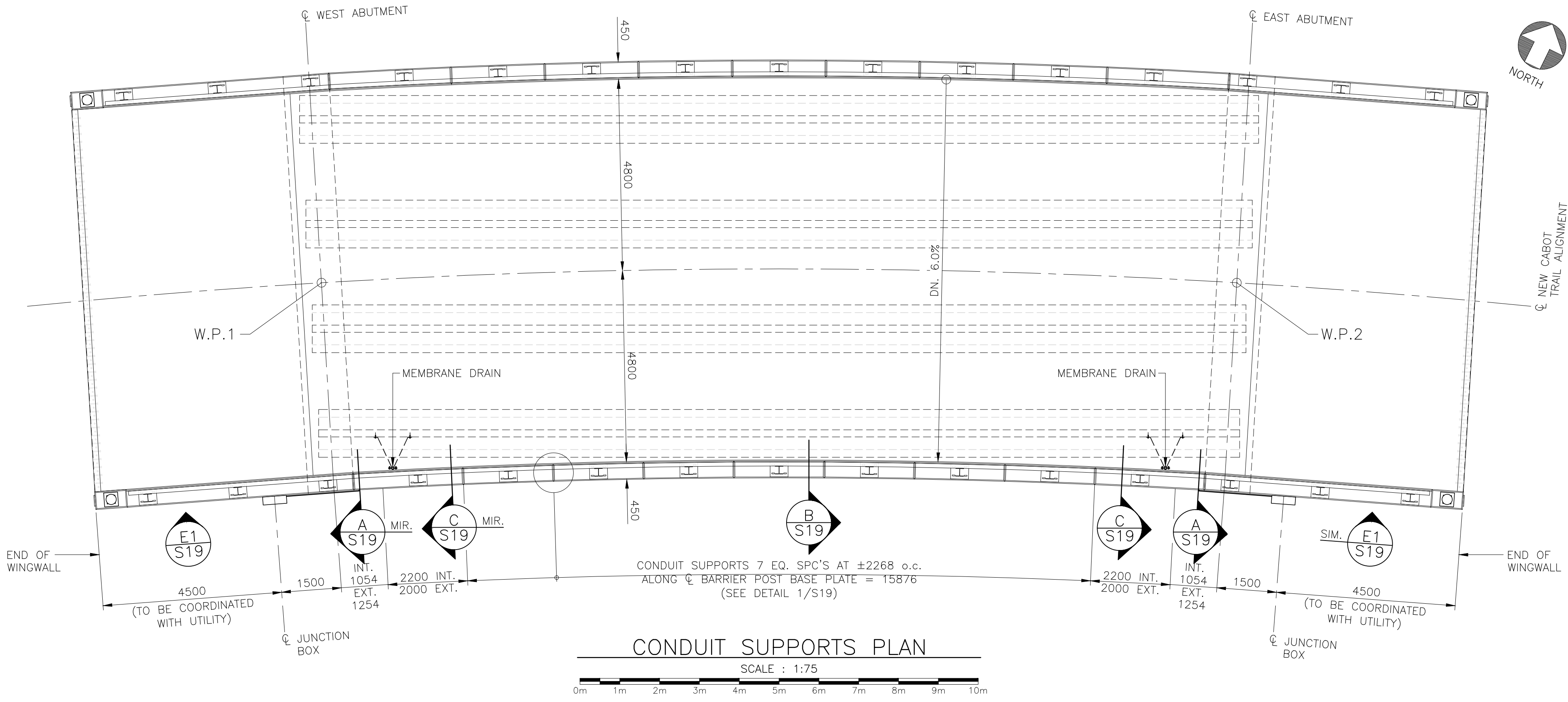
0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date

WARREN BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

EXCAVATION AND FILL QUANTITY DIAGRAMS AND DETAILS

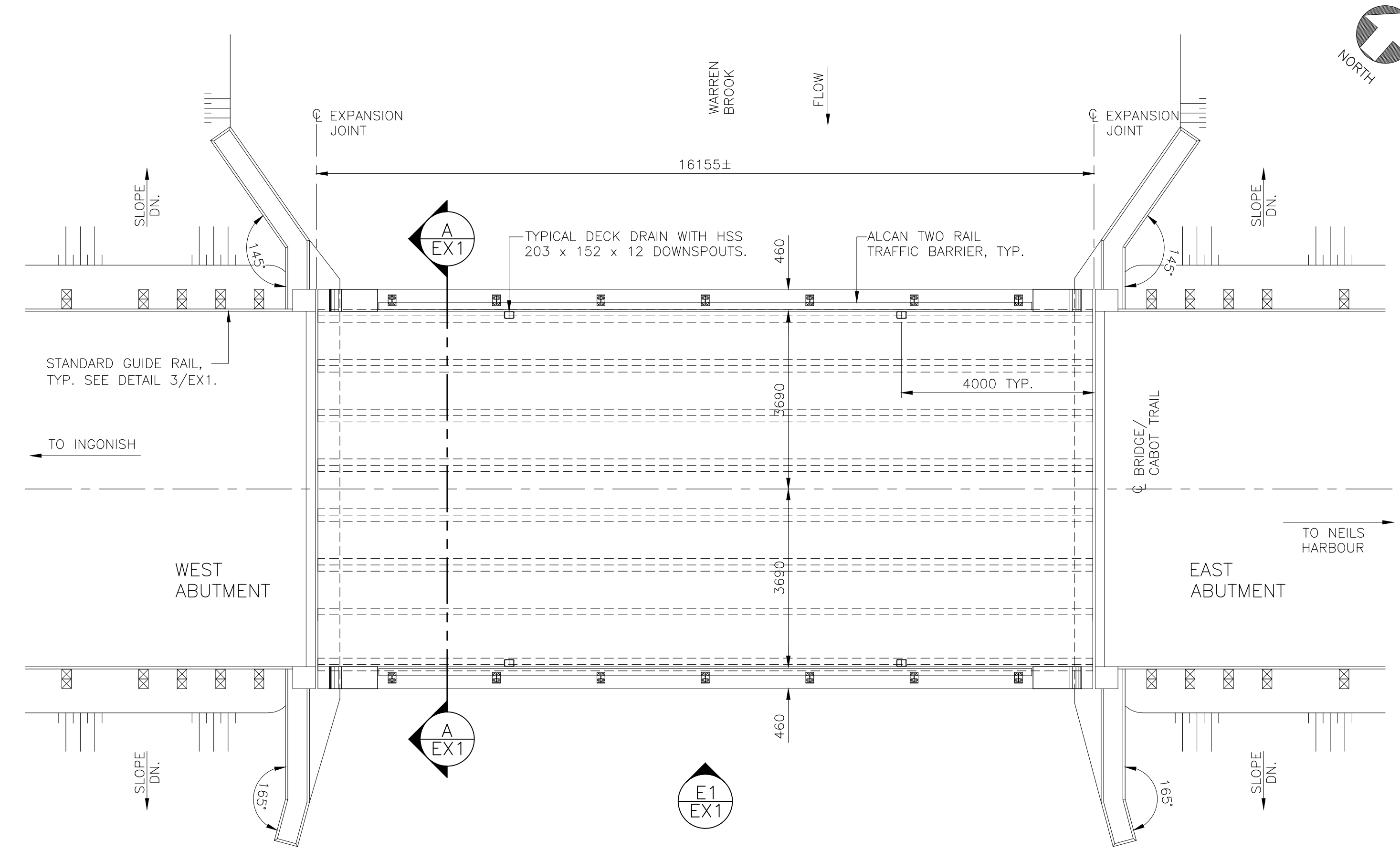
designed	GHISLAIN DOUCET	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	<i>Adria Celis</i>	Submission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	322A	
drawing no.		no. du dessin
	S18	



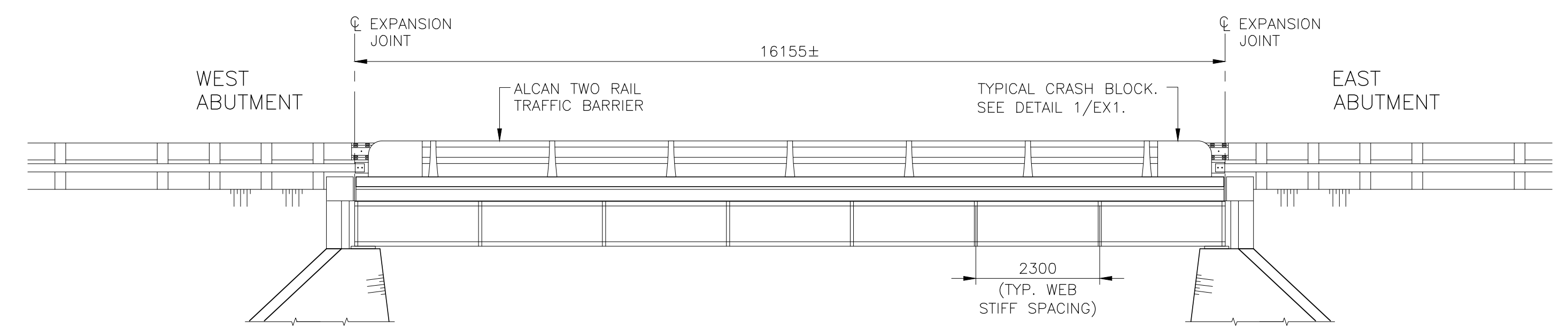


0	ISSUED FOR TENDER	OCT. 5 2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	designed	

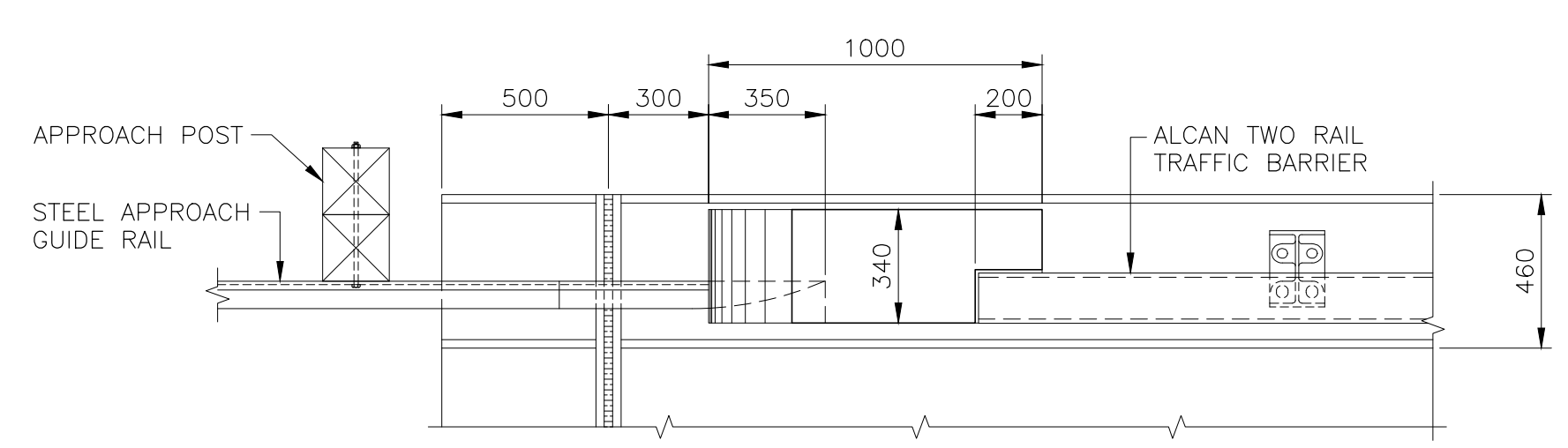
designed	JAMIE STUART	conçu
date	JULY 2015	
drawn	JEFF CLARK	dessiné
date	JULY 2015	
approved	ROBBIE FRASER	approuvé
date	JULY 2015	
Tender	Submission	
PCA Project Manager	Administrateur de projets APC	
project number	no. du projet	
	322A	
drawing no.	no. du dessin	
	S19	



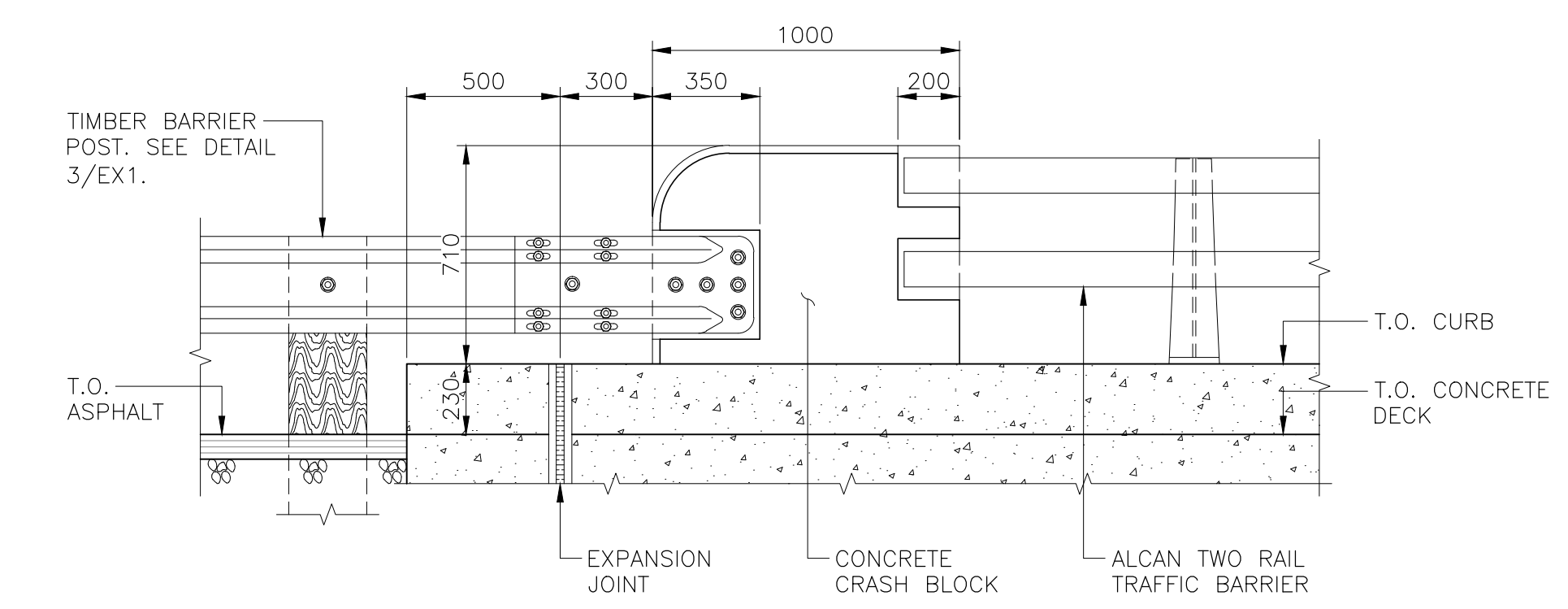
PLAN
SCALE: 1:75



ELEVATION - NORTH FACE (SOUTH FACE SIM.)
SCALE: 1:75



PLAN

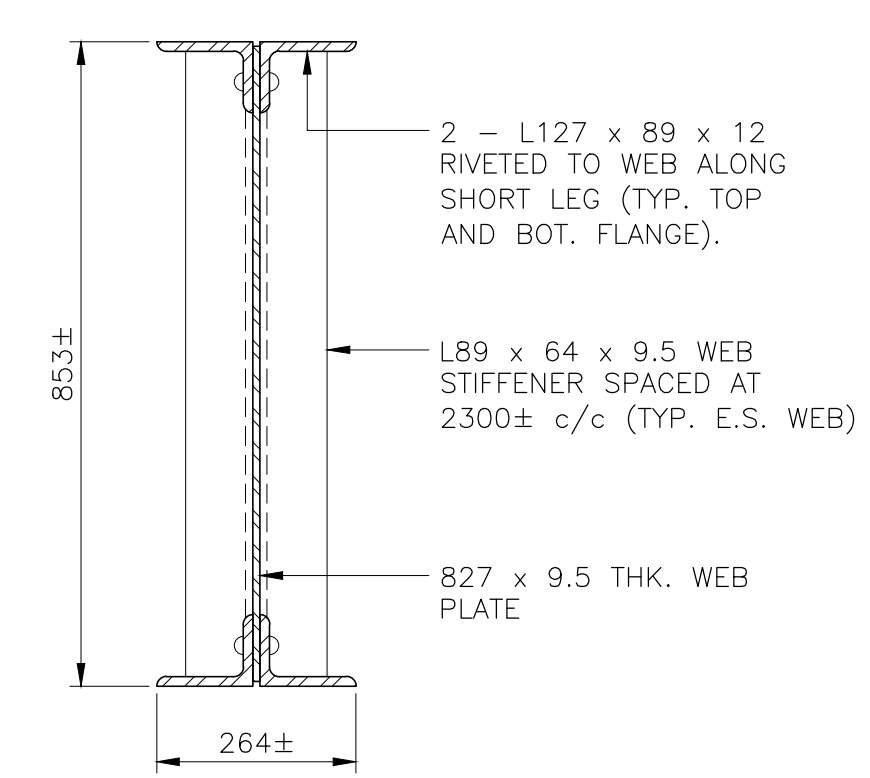


ELEVATION

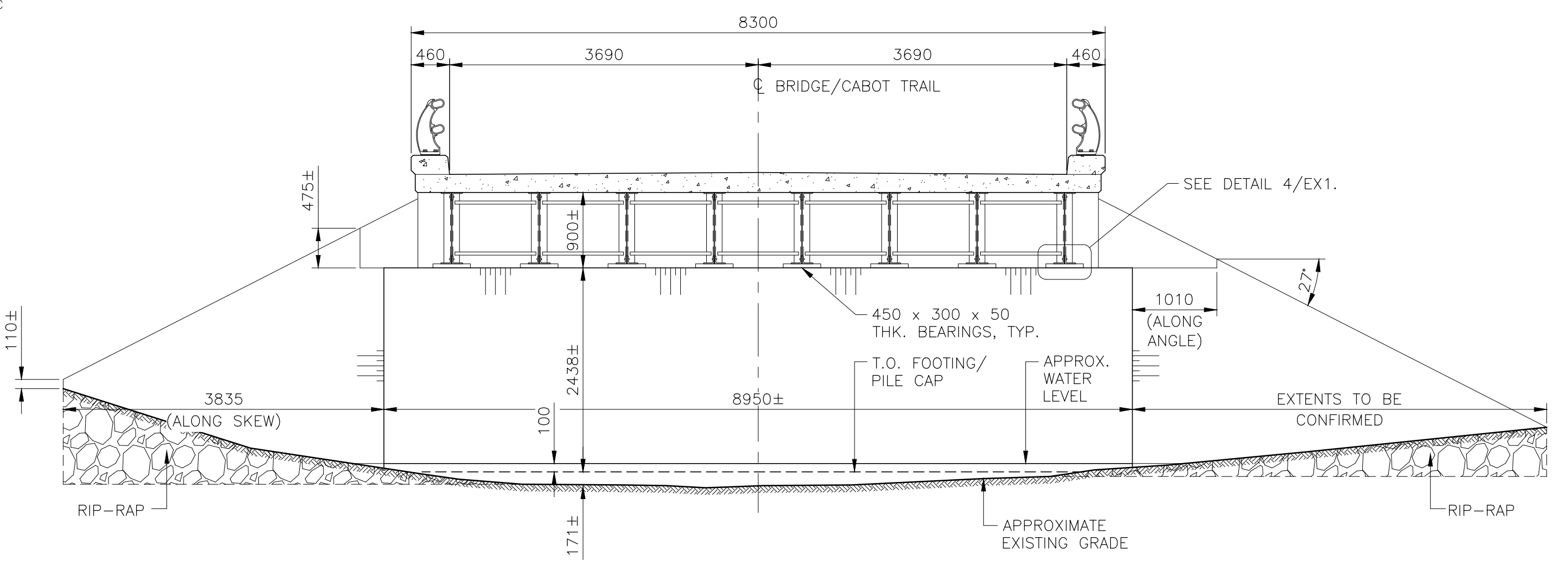
DETAIL - TYPICAL CRASH BLOCK
SCALE: 1:20

ALL DIMENSIONS ARE BASED ON MEASUREMENTS TAKEN DURING INITIAL SITE INSPECTION ON MARCH 11th, 2015. WEATHER CONDITIONS AT THE TIME OF INSPECTION WERE SUNNY; HOWEVER, SNOW DEPTHS AND ICE THICKNESSES INHIBITED EXACT MEASUREMENTS IN SOME AREAS ALONG THE WINGWALLS, THE INSIDE FACE OF THE CURB AND THE BASE OF EACH ABUTMENT.

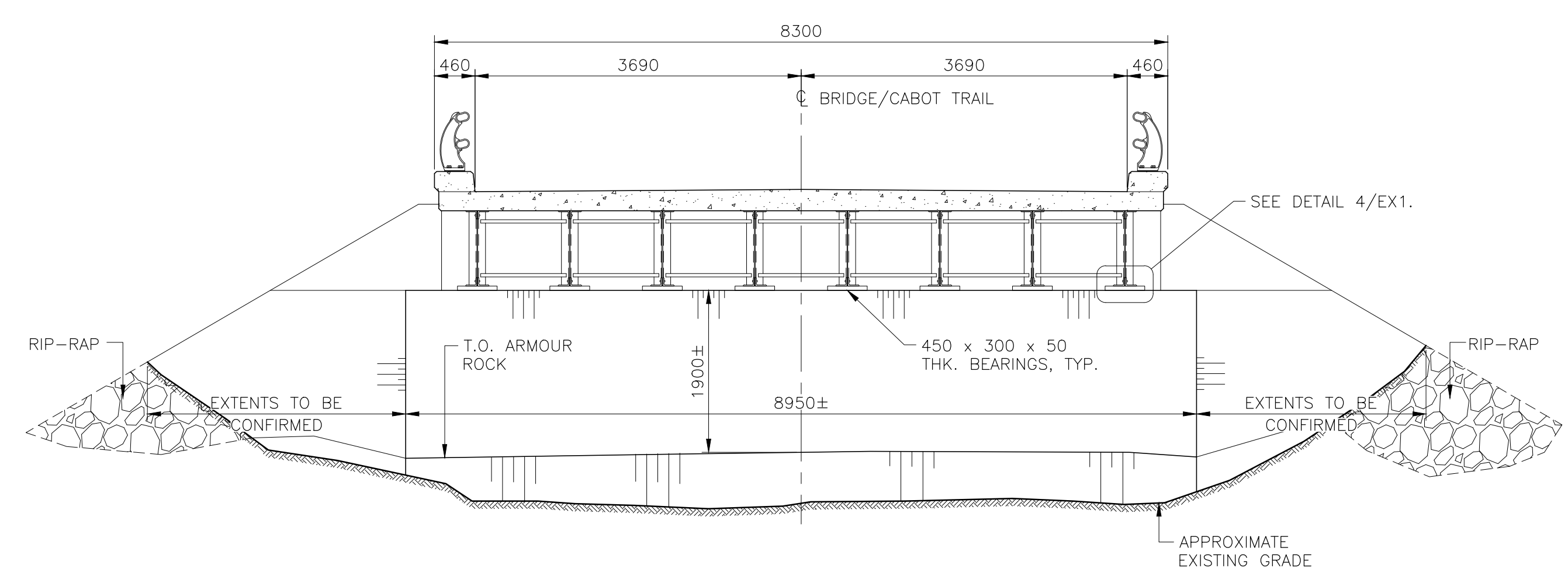
NOTE: INFORMATION ON THIS DRAWING IS FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE AS-BUILT CONDITIONS AND REQUIREMENTS AS IT PERTAINS TO THE EXISTING BRIDGE AND SURROUNDINGS.



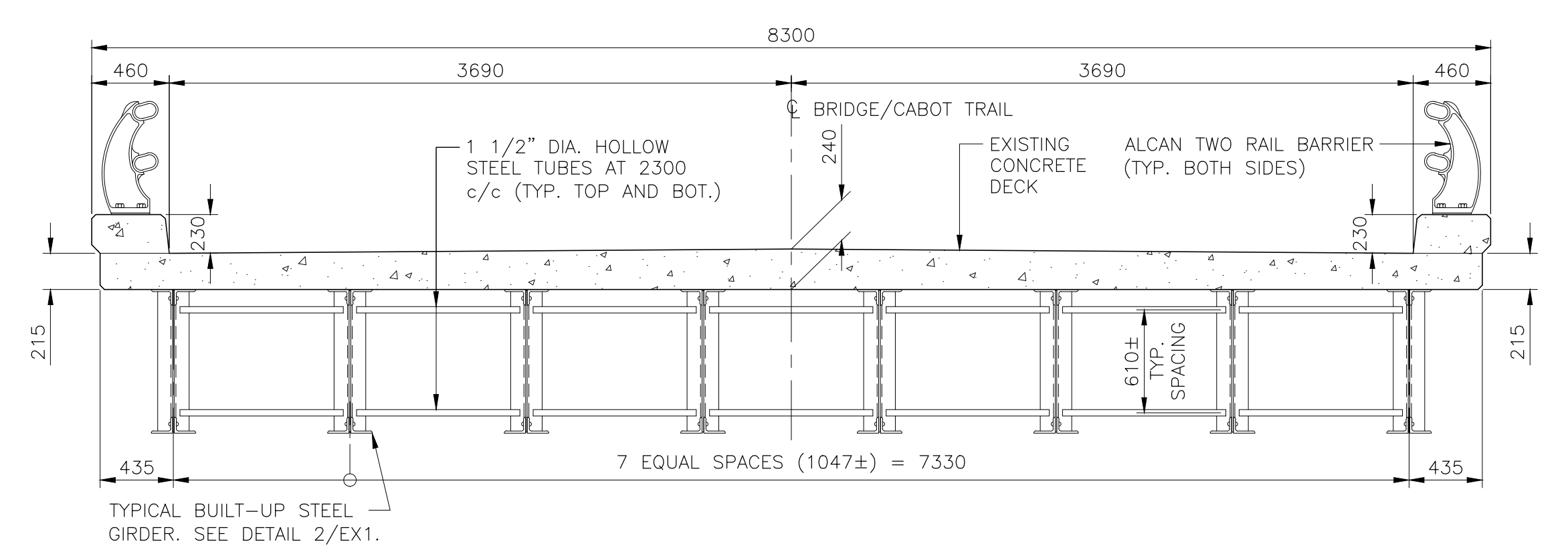
DETAIL - TYPICAL GIRDER
SCALE: 1:10



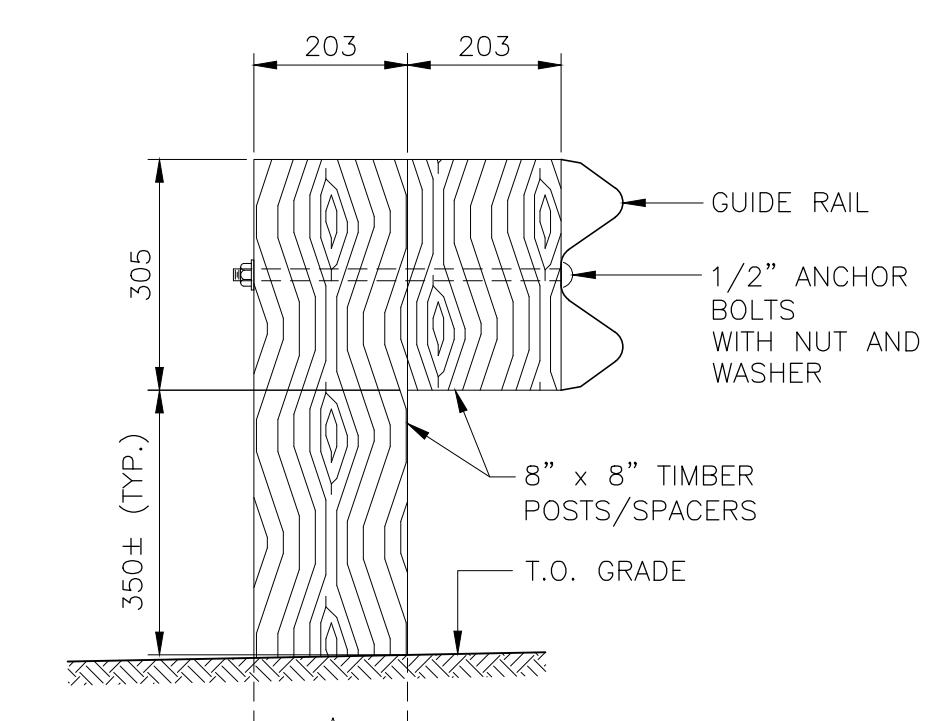
EAST ABUTMENT ELEVATION
SCALE: 1:50



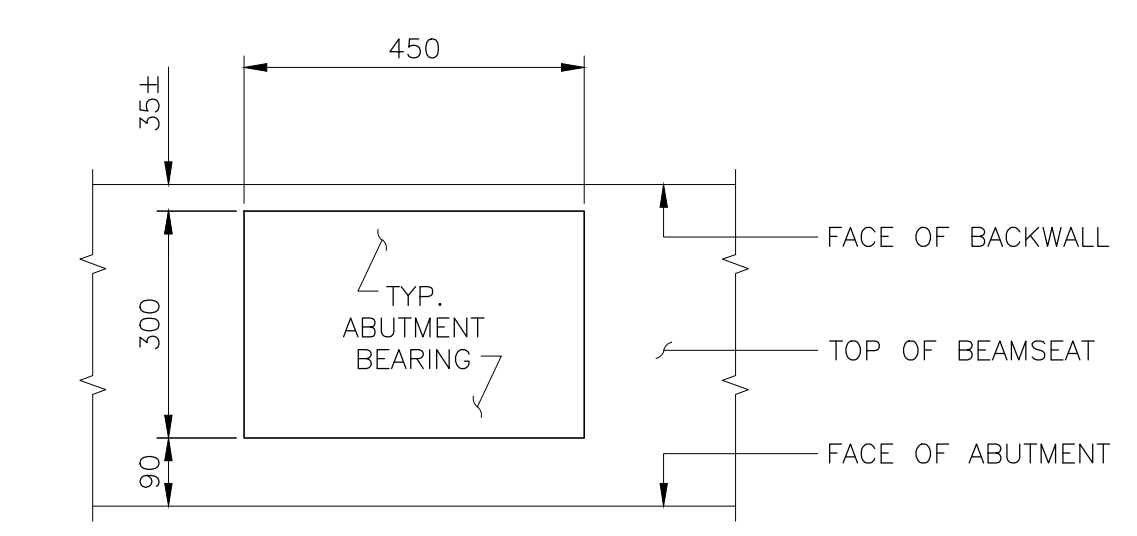
WEST ABUTMENT ELEVATION
SCALE: 1:50



SECTION - TYPICAL CROSS SECTION A
SCALE: 1:30



DETAIL - TYPICAL GUIDE RAIL
SCALE: 1:10



DETAIL - TYPICAL BEARINGS
SCALE: 1:10

0	ISSUED FOR TENDER	01.5.2015
revisions		date
project	WARREN BROOK BRIDGE REPLACEMENT	project
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing		design
	EXISTING STRUCTURE PLAN, ELEVATION, SECTION AND DETAILS	
designed		conq
date	JEFF CLARK	design
date	JULY 2015	
approved		approuv
date		
Tender	Submission	
PCA Project Manager	Administrateur de projets APC	
project number	322A	no. du projet
drawing no.	EX1	no. du dessin