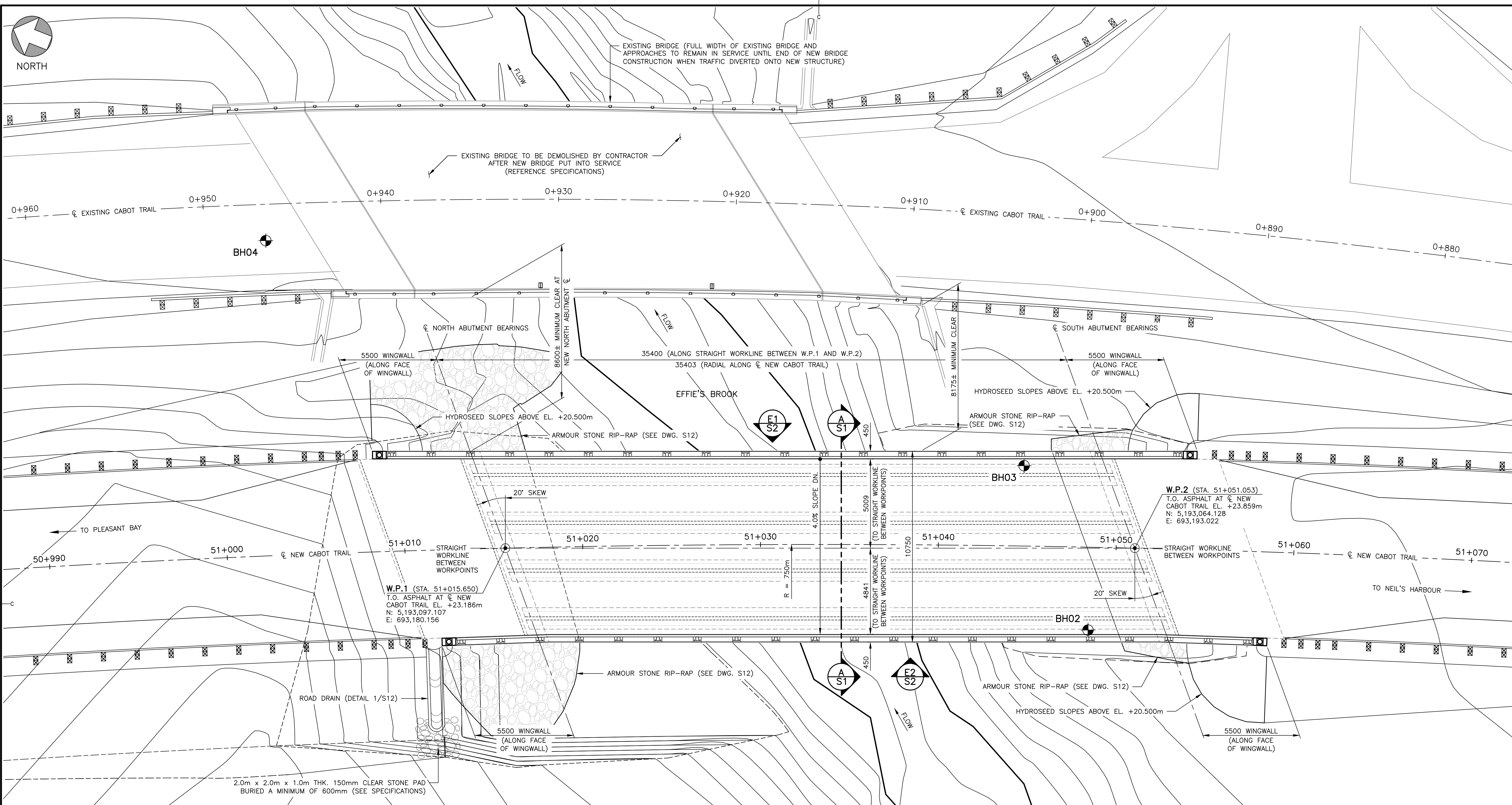


NORTH

EXISTING BRIDGE (FULL WIDTH OF EXISTING BRIDGE AND APPROACHES TO REMAIN IN SERVICE UNTIL END OF NEW BRIDGE CONSTRUCTION WHEN TRAFFIC DIVERTED ONTO NEW STRUCTURE)

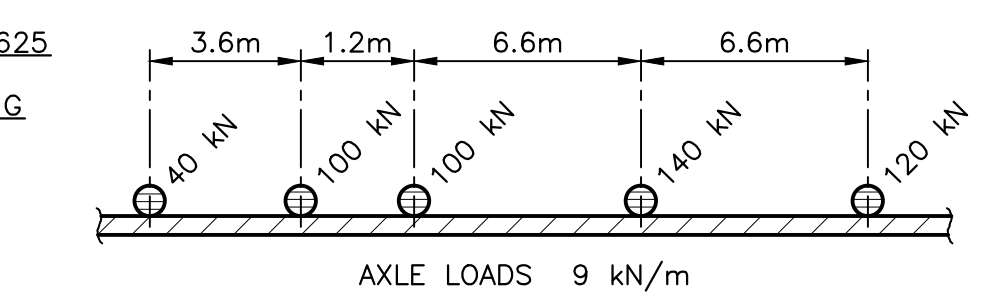
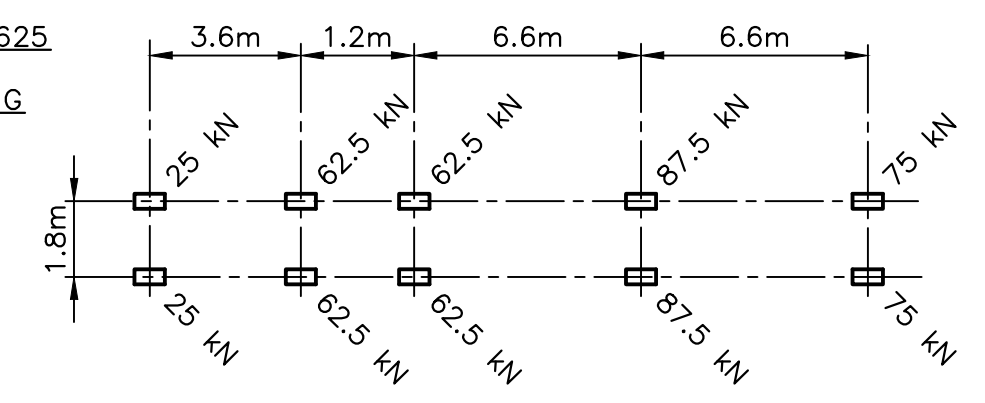
EXISTING BRIDGE TO BE DEMOLISHED BY CONTRACTOR AFTER NEW BRIDGE PUT INTO SERVICE (REFERENCE SPECIFICATIONS)



PLAN - GENERAL ARRANGEMENT

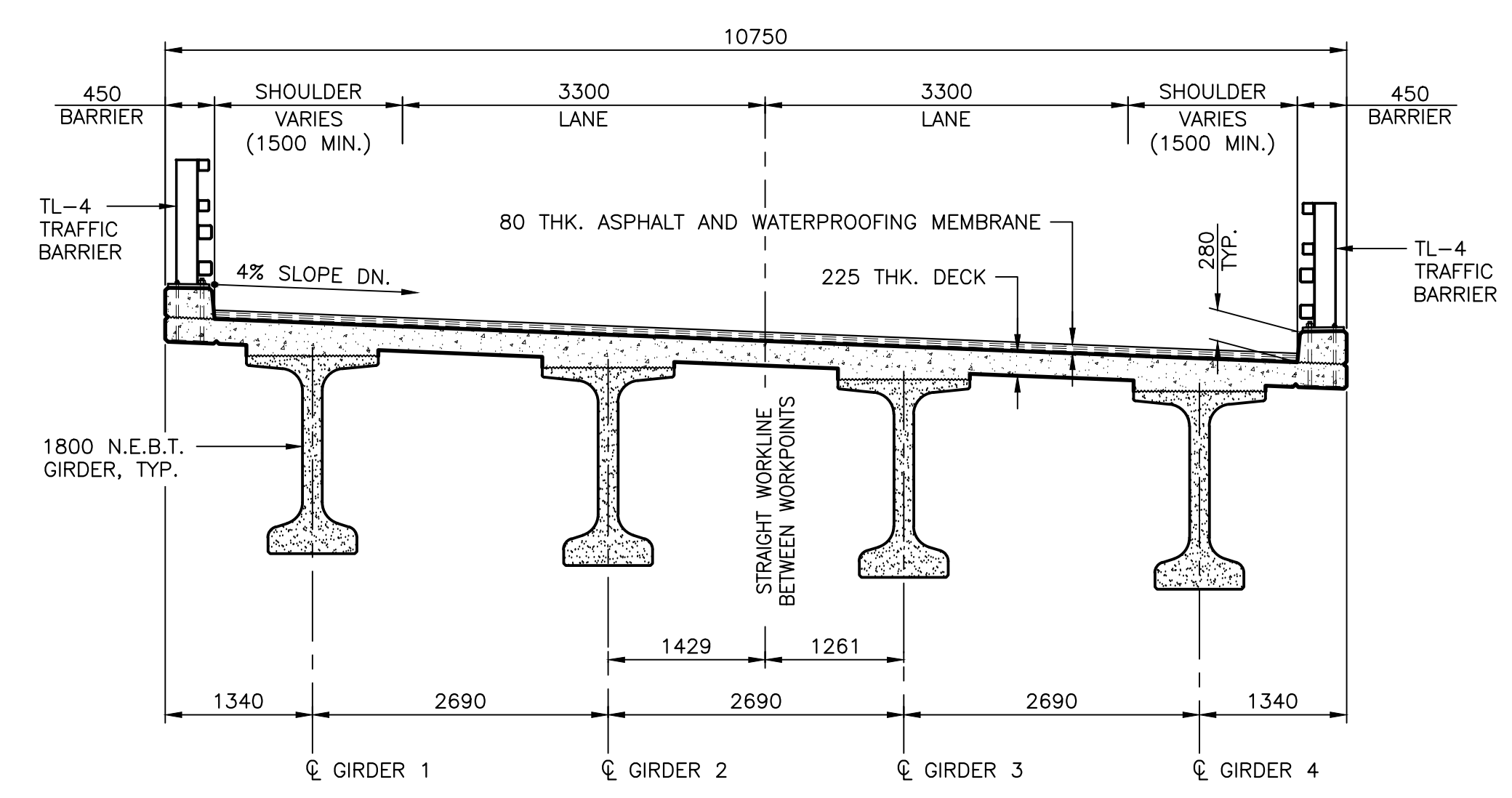
SCALE : 1:100

- 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.
 - CONCRETE MATERIALS AND METHODS OF CONSTRUCTION TO CAN/CSA-A23.1 AND METHODS OF TEST FOR CONCRETE TO CAN/CSA-A23.2.
 - REFERENCE DRAWING S3 FOR C.I.P. CONCRETE AND REINFORCING NOTES.
 - REFERENCE DRAWING S3 FOR PILE NOTES.
 - REFERENCE DRAWING S7 FOR PRECAST GIRDER NOTES.
 - REFERENCE DRAWING S10 FOR MISCELLANEOUS METALS NOTES.



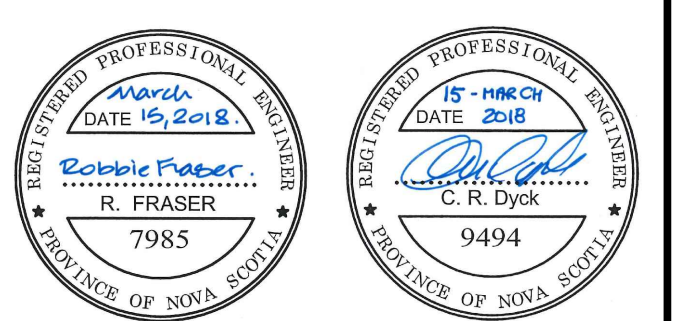
- ALL DIMENSIONS SHOWN IN MILLIMETERS (mm), ELEVATIONS IN METERS (m).
- ALL STANDARDS AND SPECIFICATION NOTES TO REFLECT THE "LATEST EDITION" AT TIME OF TENDER.
- FOUNDATION DESIGN BASED ON INFORMATION PROVIDED IN HARBOURSIDE GEOTECHNICAL CONSULTANTS (H.G.C.) GEOTECHNICAL REPORT FILE No. 173056, DATED OCTOBER 13, 2017.
- ALIGNMENT INFORMATION AS PER HARBOURSIDE TRANSPORTATION CONSULTANTS (H.T.C.) ALIGNMENT DESIGN DRAWINGS, SURVEY INFORMATION PROVIDED BY DESIGN POINT ENGINEERING AND SURVEYING:
 - SURVEY IS REFERENCED HORIZONTALLY TO UTM ZONE 20 NORTH NAD 83 (CSRS).
 - SURVEY IS VERTICALLY REFERENCED TO CGVD28 (HTV2.0 GEOID MODEL).
 - CONTROL IS DERIVED FROM MULTIPLE STATIC GPS OBSERVATION ON NAIL 1 HAVING COORDINATES OF N = 5,193,088.530, E = 693,220.183 AND ELEV. = 22.170m.
 - RAW GPS DATA PROCESSED USING NATURAL RESOURCES CANADA PRECISE POINT POSITIONING SOFTWARE.
 - FIELD SURVEYS WERE CARRIED OUT FROM JULY 12 TO JULY 14, 2017.
 - COORDINATES ARE GRID. APPLY COMBINED SCALE FACTOR OF 1/1,000,000 TO CALCULATE GROUND DISTANCES.
- WATER ELEVATIONS INDICATED BASED ON DESIGN POINT HYDROLOGY REPORT DATED FEBRUARY 23, 2018.
- ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION.
- 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 (REFERENCE HTC DRAWINGS & SPECIFICATIONS FOR APPROACH QUANTITIES):
 - LONGITUDINALLY: MEASURED FROM END OF WINGWALL TO END OF WINGWALL (EXCEPT EXCAVATION & FILL QUANTITIES, REFERENCE DRAWINGS S11, S12 & PROJECT SPECIFICATIONS).
 - TRANSVERSELY: MEASURED FROM TOE OF FINISHED SIDE SLOPE TO TOE OF FINISHED SIDE SLOPE OF NEW BRIDGE (QUANTITIES EXCLUDE THOSE REQUIRED TO COMPLETE REMOVAL OF EXISTING BRIDGE & DRESS SLOPES LOCALLY, REFERENCE PROJECT SPECIFICATIONS).
- 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).
- CONTRACTOR TO PROVIDE EROSION AND SEDIMENTATION CONTROL PLAN TO THE DEPARTMENTAL REPRESENTATIVE AT THE START OF THE PROJECT FOR ALL PHASES OF WORK AND MAINTAIN CONTROLS THROUGHOUT CONSTRUCTION.
- EACH PHASE OF WORK TO BE INSPECTED AND APPROVED BY DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING TO NEXT PHASE.
- DEMOLITION OF EXISTING BRIDGE TO BE UNDERTAKEN AFTER TRAFFIC IS DIVERTED ONTO FULLY CONSTRUCTED NEW BRIDGE AND WRITTEN APPROVAL TO PROCEED IS PROVIDED BY DEPARTMENTAL REPRESENTATIVE. CONTRACTOR IS RESPONSIBLE FOR BRIDGE DEMOLITION DESIGN (REFERENCE PROJECT SPECIFICATIONS FOR REQUIREMENTS). ALL EXISTING FOUNDATIONS TO BE REMOVED TO 1 METER MINIMUM BELOW FINISHED GRADE. CONTRACTOR TO COORDINATE AND OBTAIN APPROVAL OF DEMOLITION PLAN FROM DEPARTMENTAL REPRESENTATIVE AND PRIOR TO INITIATING DEMOLITION ACTIVITIES. AS STATED IN NOTE 12, CONTRACTOR RESPONSIBLE FOR THE DESIGN, INSTALLATION AND MAINTENANCE OF ALL REQUIRED WATER CONTROL STRUCTURES NECESSARY TO COMPLETE WORK DELINEATED FROM WATER COURSE.
- FOR ROCK EXCAVATION BOUNDARIES REFER TO PLAN AND SECTIONS SHOWN ON DRAWINGS S1 AND S11.
- BRIDGE CONSIDERED AS A MAJOR ROUTE BRIDGE FOR THE PURPOSE OF SEISMIC ANALYSIS AS PER CAN/CSA-S6-14.



TYPICAL DECK SECTION

SCALE : 1:50



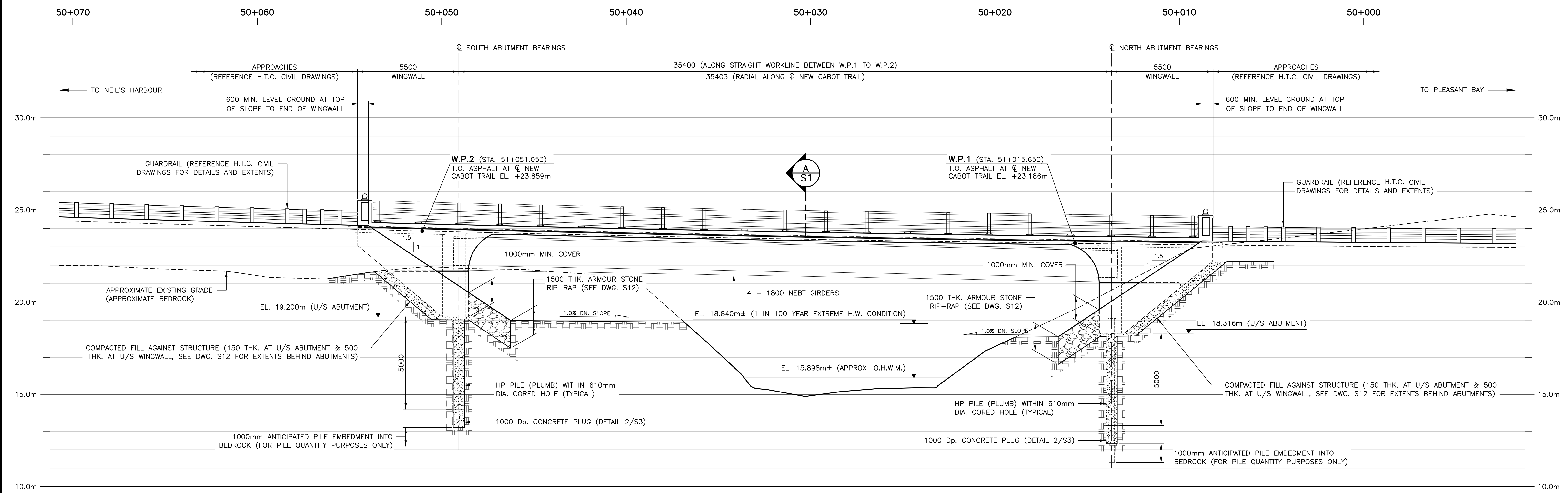
0	ISSUED FOR TENDER	MAR. 15 2018
revisions	date	date

project **EFFIE'S BROOK BRIDGE REPLACEMENT**

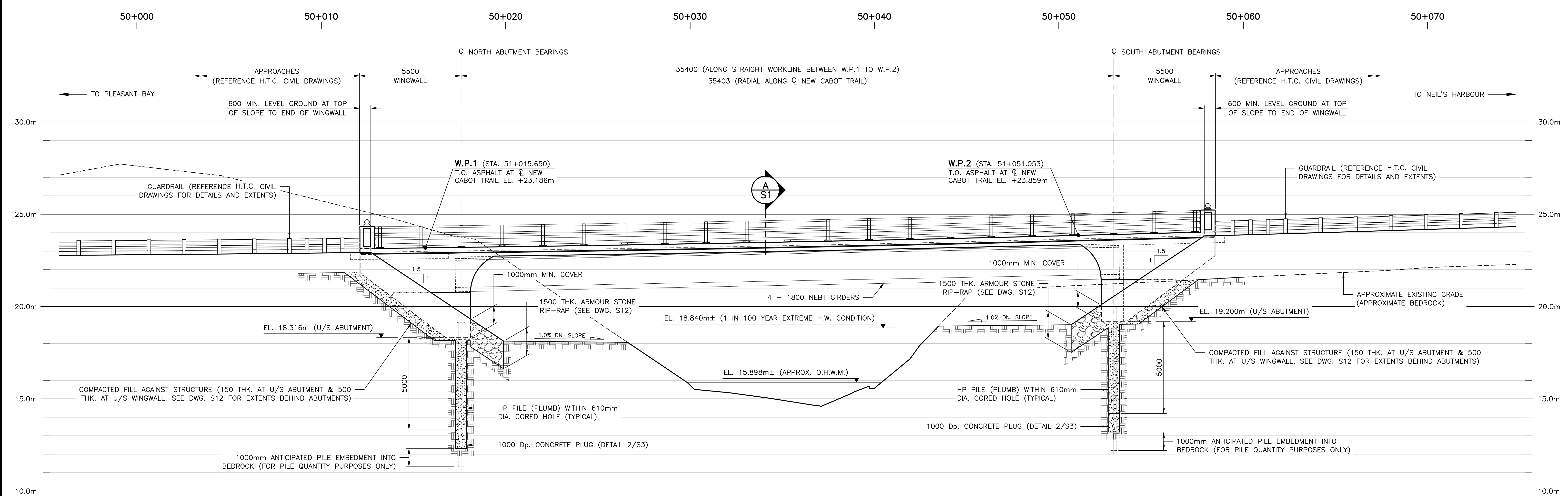
project **HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA**

drawing **GENERAL ARRANGEMENT PLAN AND SECTION**

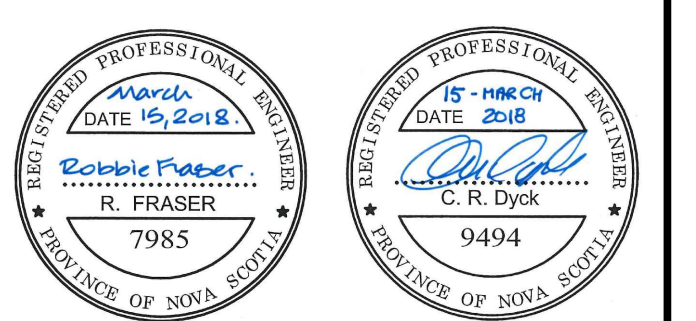
designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	date
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	date
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	date
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	1812	
drawing no.		no. du dessin
	S1	



EAST ELEVATION
SCALE : 1:100
E1
S1



WEST ELEVATION
SCALE : 1:100
E2
S1



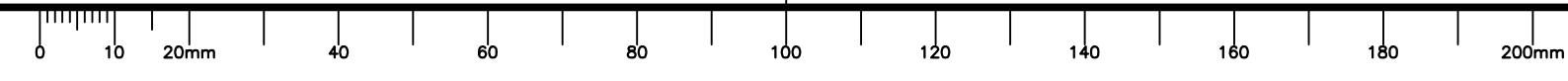
0	ISSUED FOR TENDER	MAR. 15 2018
revisions		date

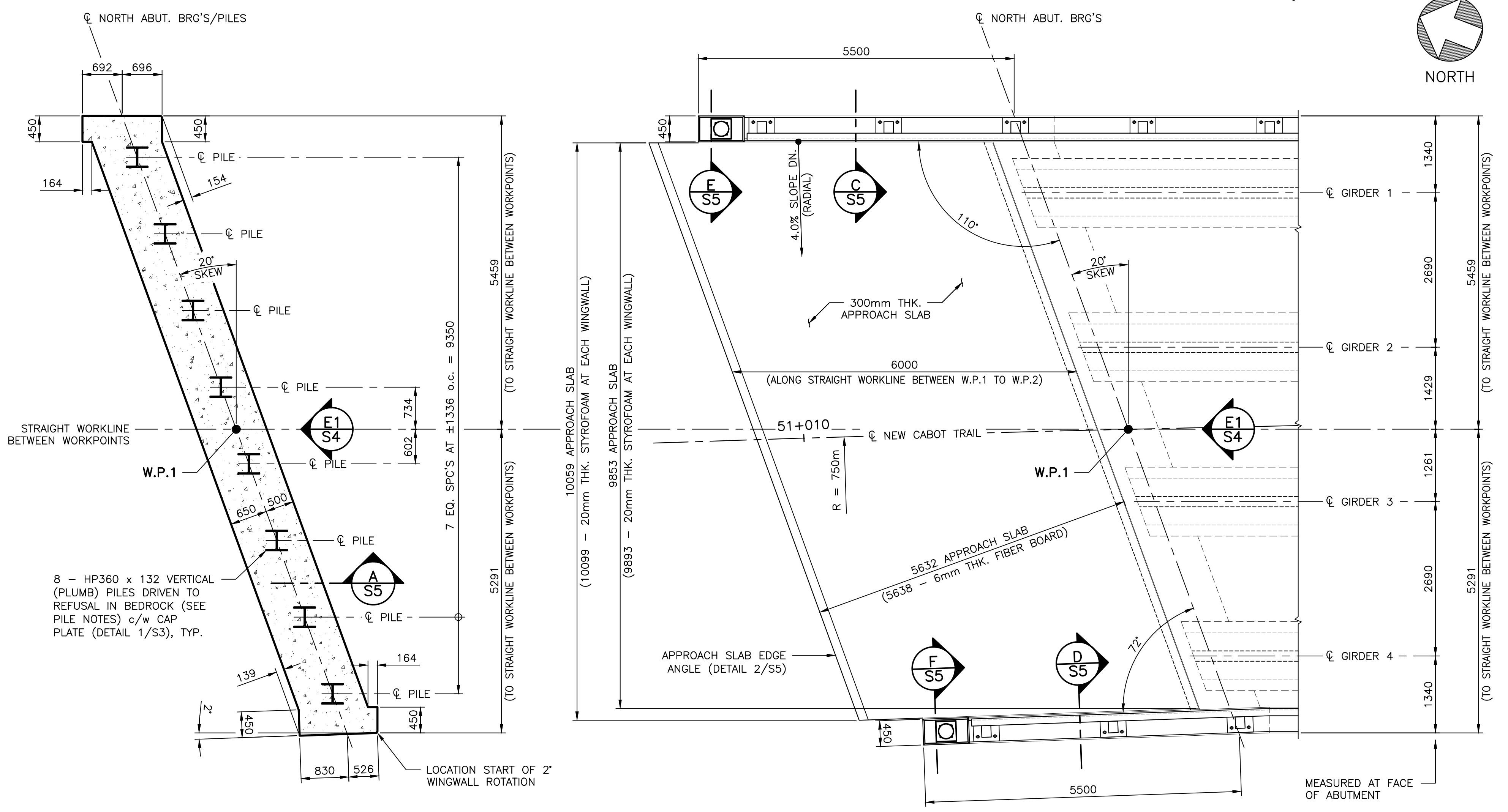
project
EFFIE'S BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

drawing
GENERAL ARRANGEMENT ELEVATIONS
design

designed	CHRIS DYCK	conçu
date	JUNE 2017	
drawn	RICHARD BUNGAY	dessiné
date	JUNE 2017	
approved	ROBBIE FRASER	approuvé
date	JUNE 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

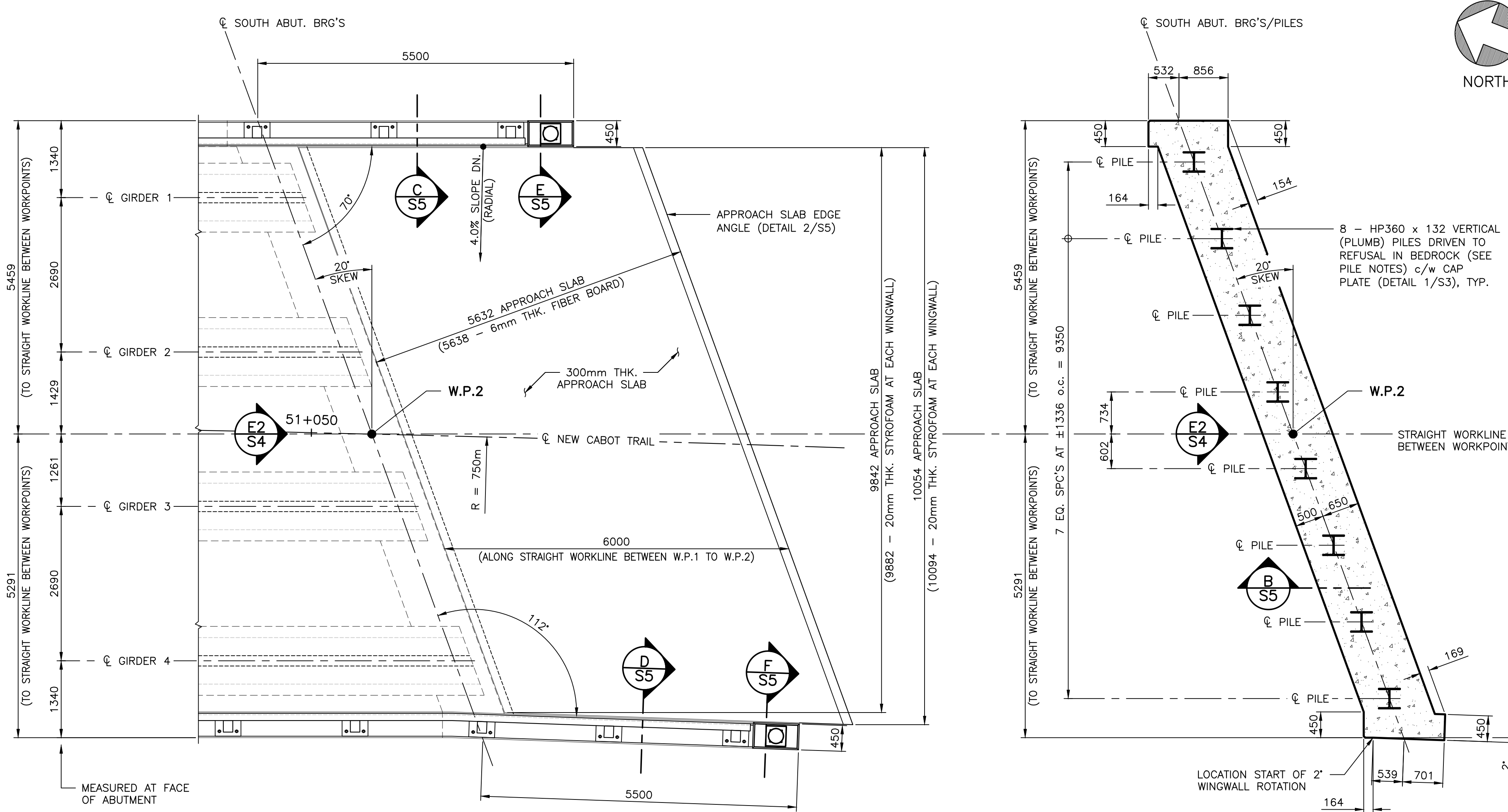
1812
drawing no. no. du dessin
S2





NORTH ABUTMENT PILE LAYOUT PLAN
SCALE : 1:50

NORTH ABUTMENT TOP PLAN
SCALE : 1:50

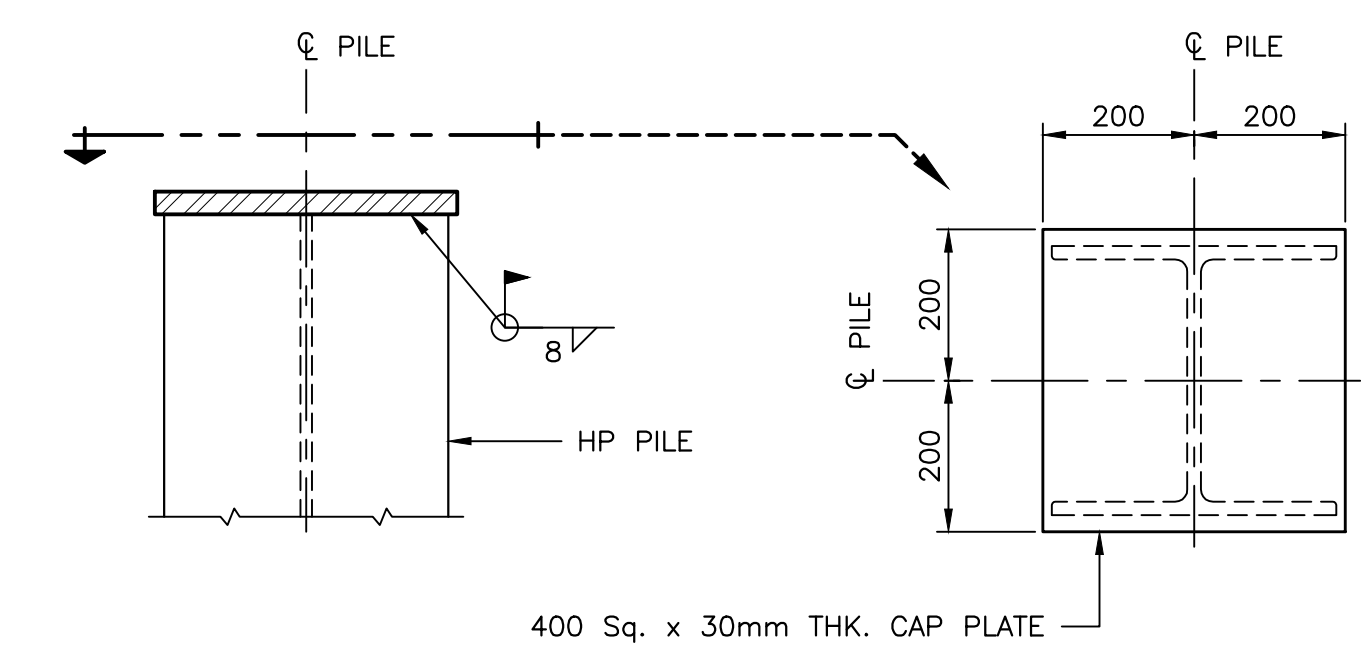


SOUTH ABUTMENT TOP PLAN
SCALE : 1:50

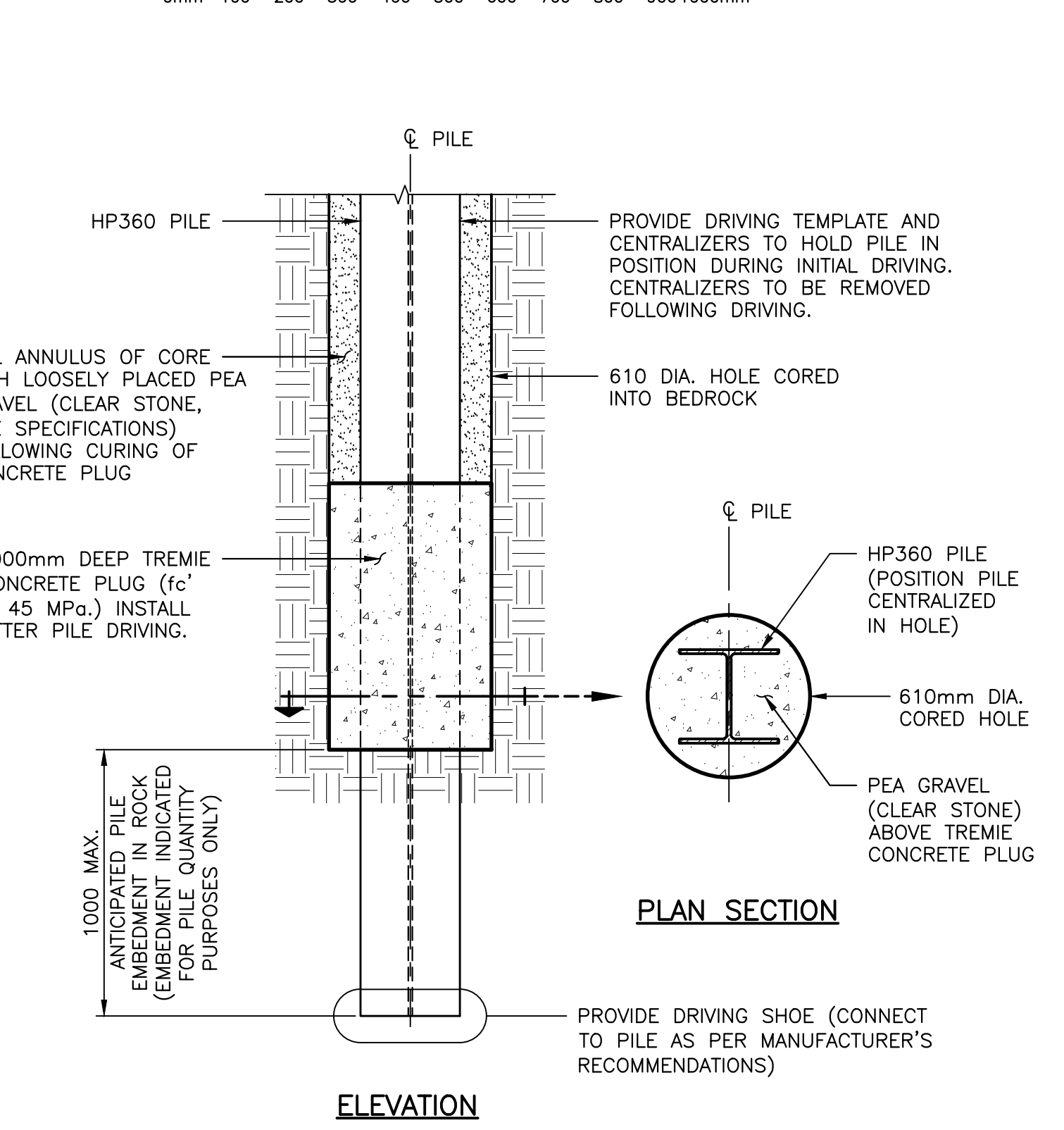
SOUTH ABUTMENT PILE LAYOUT PLAN
SCALE : 1:50

- C.I.P. CONCRETE AND REINFORCING 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
 - 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.
 - 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 MAXIMUM DRY 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. SURCHARGING FROM CONSTRUCTION EQUIPMENT TO BE AVOIDED UNLESS OTHERWISE APPROVED BY DEPARTMENTAL REPRESENTATIVE IN WRITING.
 - 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 DEPARTMENTAL REPRESENTATIVE PRIOR TO PROCEEDING TO THE NEXT PHASE OF WORK.
 - BACKFILL IMMEDIATELY BEHIND ABUTMENTS TO BE "FILL AGAINST STRUCTURE" MATERIAL AS PER PROJECT SPECIFICATIONS.

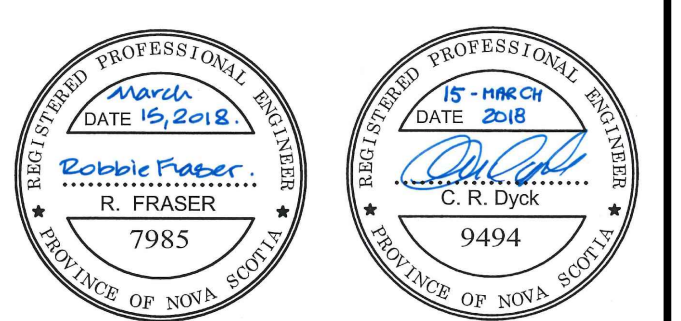
- PILE NOTES:**
- PILE MATERIAL
 - STEEL H-PILES IN ABUTMENT, HP360 x 132, $F_y = 350$ MPa (MIN.)
 - ALL PILE SPLICES, IF REQUIRED AND AT THE APPROVAL OF THE ENGINEER, SHALL BE FULL STRENGTH WELDED CONNECTIONS (LIMIT 1 SPLICE PER PILE)
 - CAP PLATE, $F_y = 350$ MPa MINIMUM
 - WELDING MATERIAL TO CSA G40.1 - LATEST EDITION
 - WELDING TO BE IN ACCORDANCE TO CSA W59 - LATEST EDITION
 - PILE SET CRITERIA AS PER HARBORSIDE GEOTECHNICAL CONSULTANTS (H.G.C.) GEOTECHNICAL REPORT, FILE No. 173056 DATED OCTOBER 13, 2017.
 - RATED HAMMER ENERGY OF 300 J/cm² OF STEEL CROSS SECTION-SECTIONAL AREA
 - PRACTICAL REFUSAL TAKEN AS PILE PENETRATION OF LESS THAN 25mm FOR 15 BLOWS AT THE RATED ENERGY FOR FOUR CONSECUTIVE 25mm INCREMENTS
 - AFTER 610 DIA. CORED HOLE AT EACH PILE COMPLETED, ALL PILES SHALL BE DRIVEN THROUGH CORED HOLE TO REFUSAL IN BEDROCK AT BOTTOM OF HOLE 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. DO NOT PLACE PEA GRAVEL IN CORED HOLE UNTIL PILE DRIVING OPERATIONS ARE COMPLETED AND TREMIE CONCRETE HAS SET.
 - RE-STRIKING OF 2 PILES PER ABUTMENT SHALL BE UNDERTAKEN NO SOONER THAN 24 HOURS AFTER ACHIEVING THE REFUSAL CRITERIA, IF RELAXATIONS OCCURS, ALL PILES SHALL BE RE-DRIVEN TO THE REFUSAL CRITERIA AND THE CYCLE REPEATED UNTIL THE REFUSAL CRITERIA IS MAINTAINED DURING SUBSEQUENT RE-TAPS (REFERENCE H.G.C. GEOTECHNICAL REPORT).
 - DESIGN PILE CAPACITIES AT ULS: HP360 x 132 PILES 1260 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.
 - CONTRACTOR SHALL PROVIDE FULL DETAILS ON INSTALLATION METHOD AND EQUIPMENT TO GEOTECHNICAL ENGINEER FOR REVIEW PRIOR TO STARTING WORK.



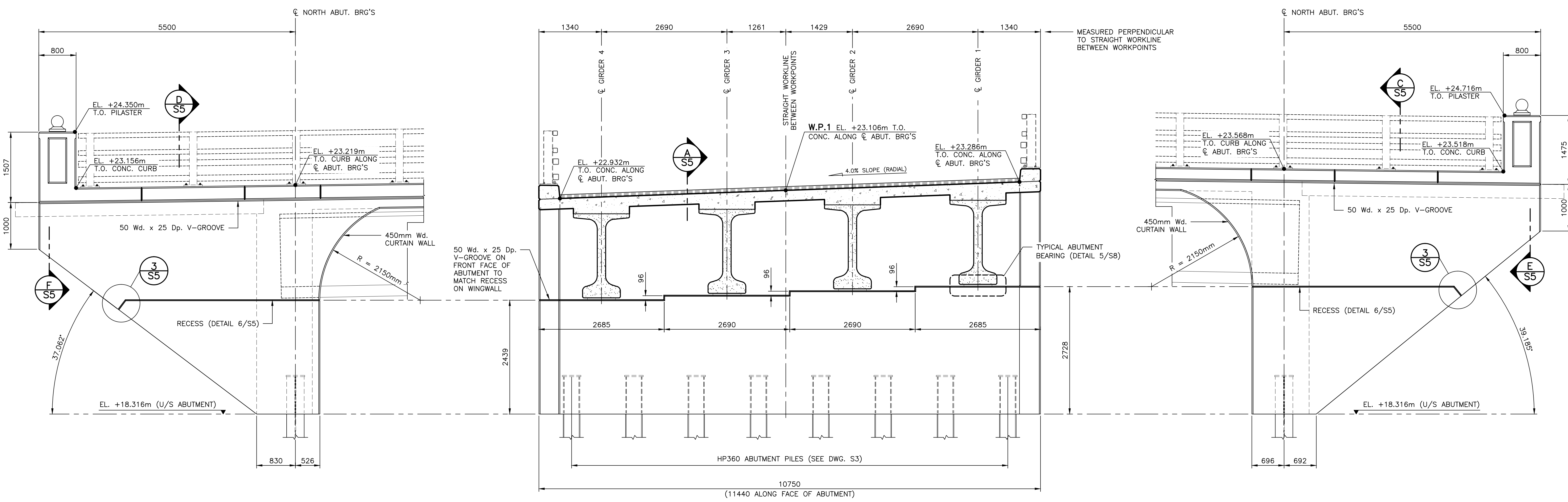
DETAIL - PILE CAP
SCALE : 1:10



DETAIL - TYPICAL ABUTMENT PILE TIPS
SCALE : 1:20



0	ISSUED FOR TENDER	MAR. 15 2018
revisions	date	date
project	EFFIE'S BROOK BRIDGE REPLACEMENT	
project	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing	ABUTMENT PLANS	
design	designed CHRIS DYCK	
conçu	date NOVEMBER 2017	
drawn	drawn RICHARD BUNGAY	
dessiné	date NOVEMBER 2017	
approved	approved ROBBIE FRASER	
approuvé	date NOVEMBER 2017	
Tender	Soumission	
PCA Project Manager	Administrateur de projets APC	
project number	1812	
drawing no.	S3	

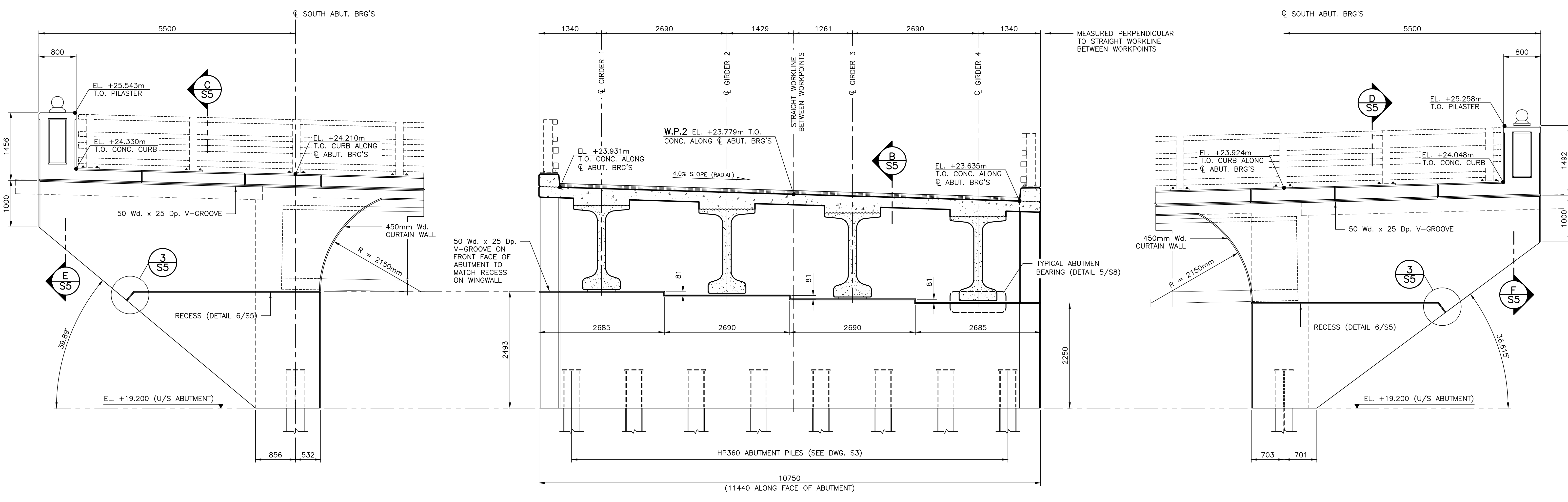


NORTHWEST WINGWALL ELEVATION

NORTH ABUTMENT ELEVATION (PARALLEL TO STRAIGHT WORKLINE BETWEEN WORKPOINTS)

NORTHEAST WINGWALL ELEVATION

ELEVATION - NORTH ABUTMENT/WINGWALLS (E1/S3)
SCALE: 1:40

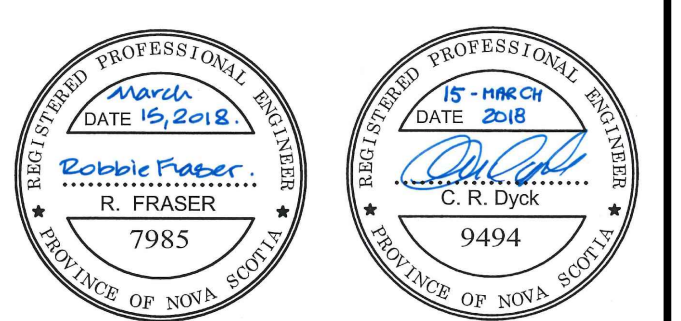
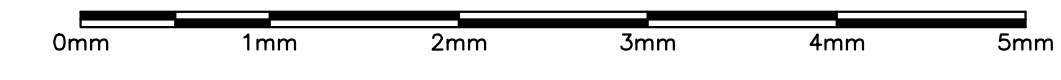


SOUTHEAST WINGWALL ELEVATION

SOUTH ABUTMENT ELEVATION (PARALLEL TO STRAIGHT WORKLINE BETWEEN WORKPOINTS)

SOUTHWEST WINGWALL ELEVATION

ELEVATION - SOUTH ABUTMENT/WINGWALLS (E2/S3)
SCALE: 1:40



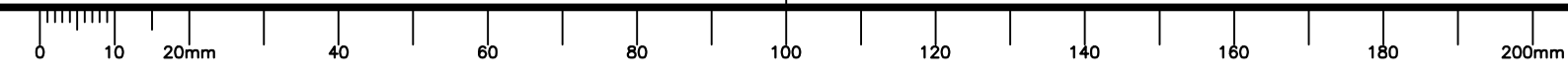
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revisions		date

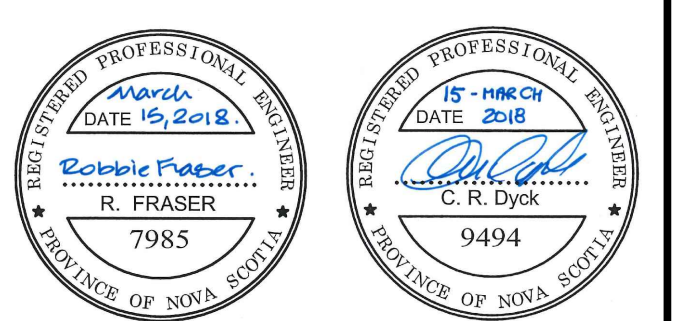
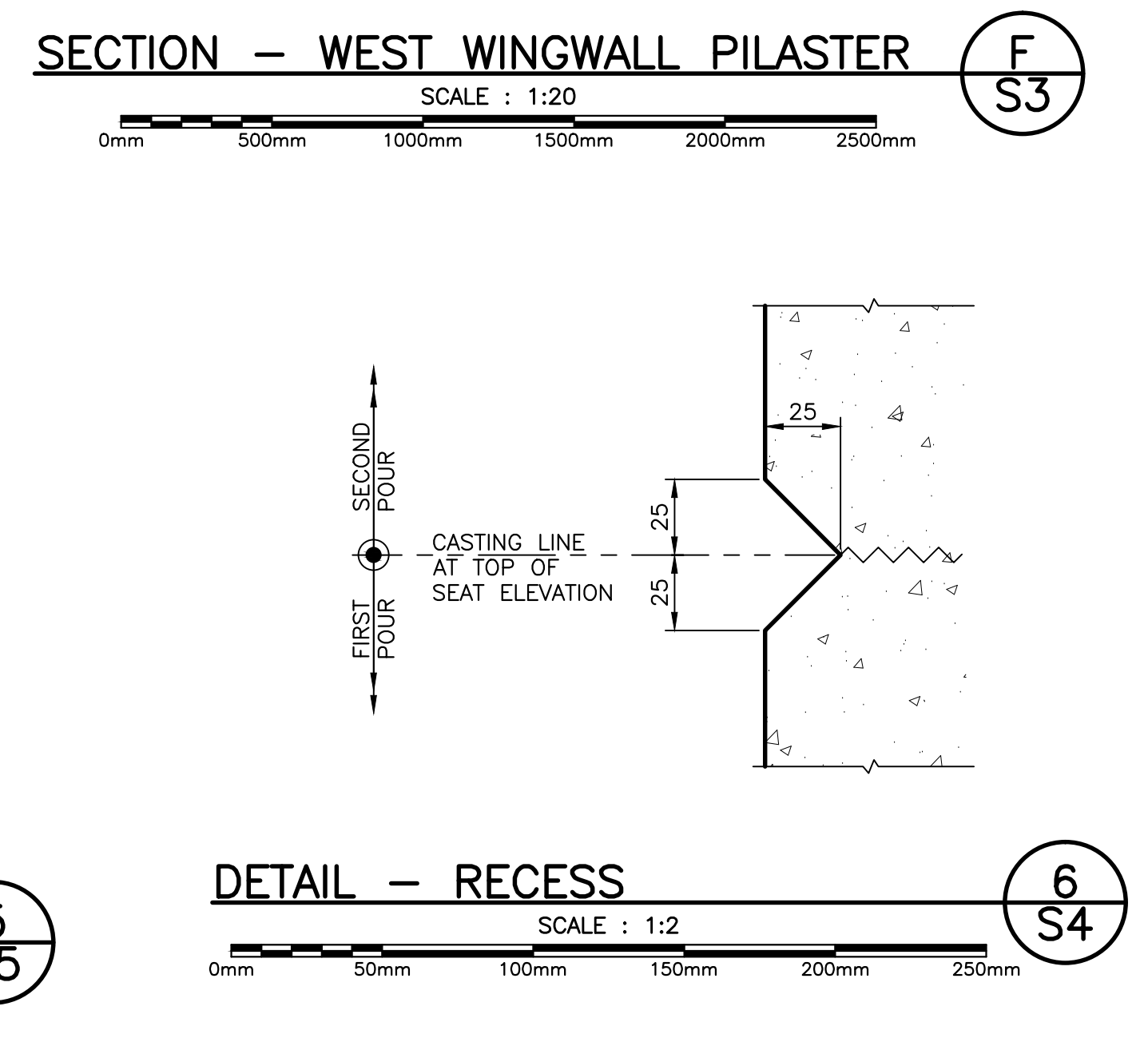
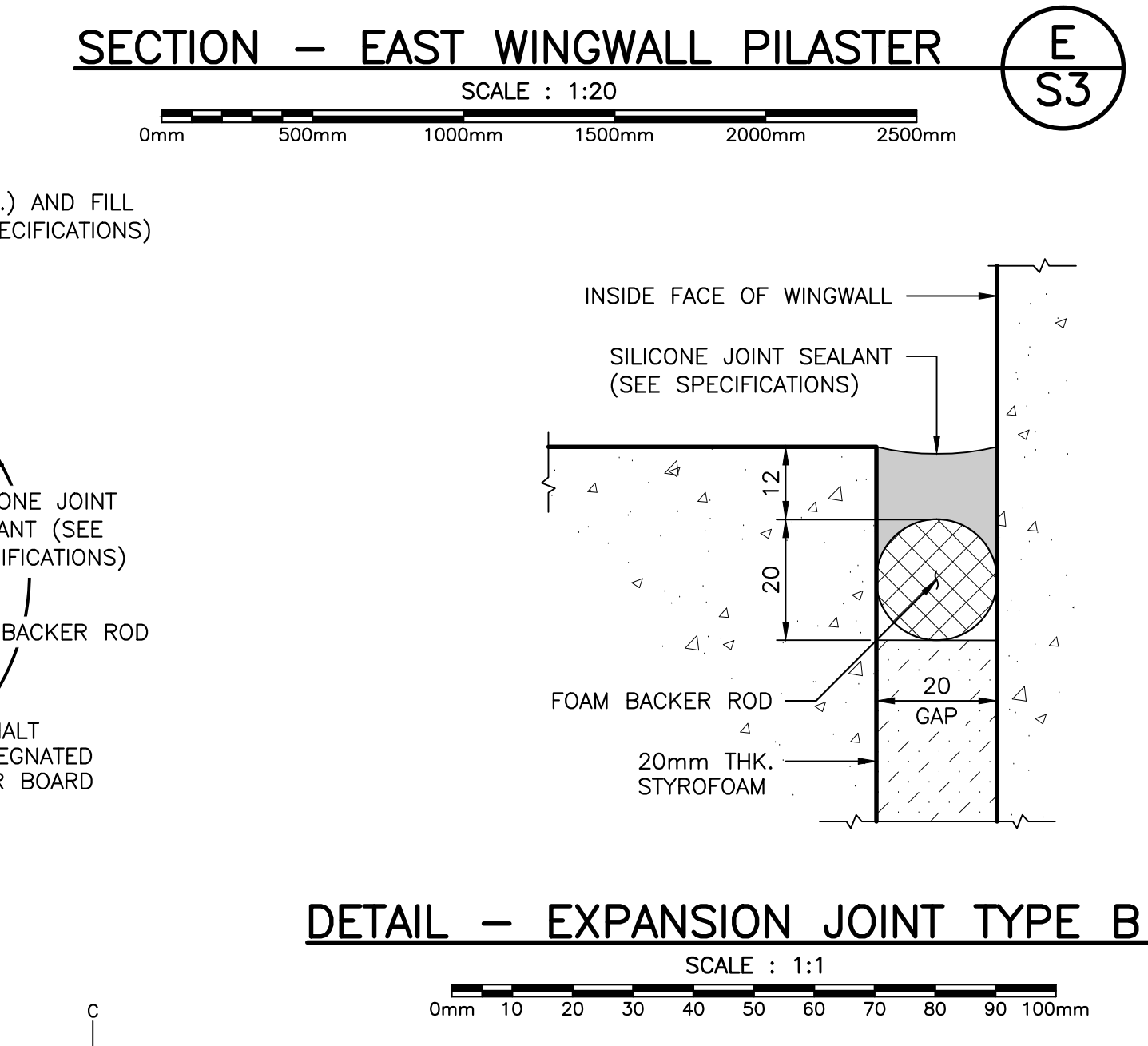
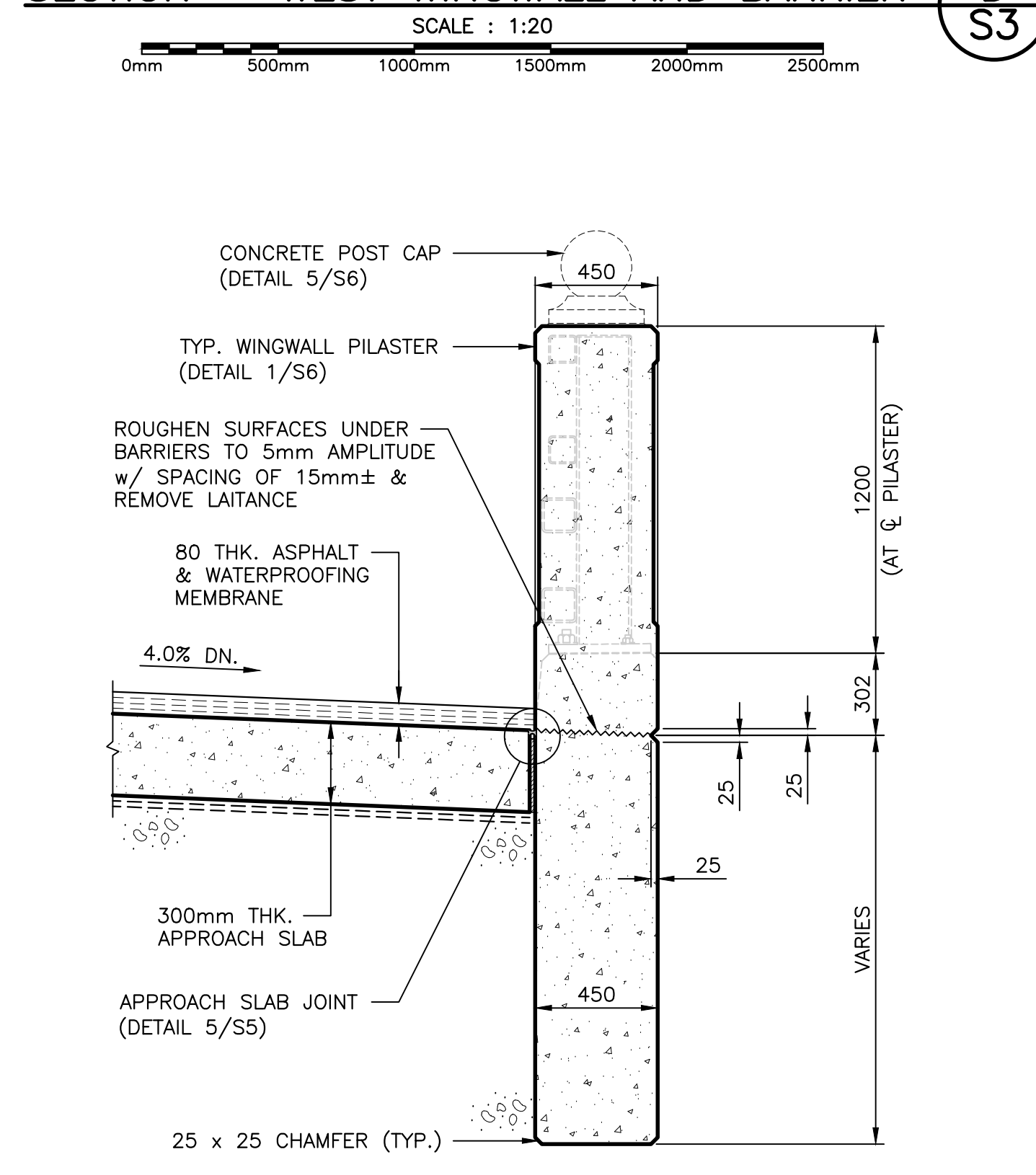
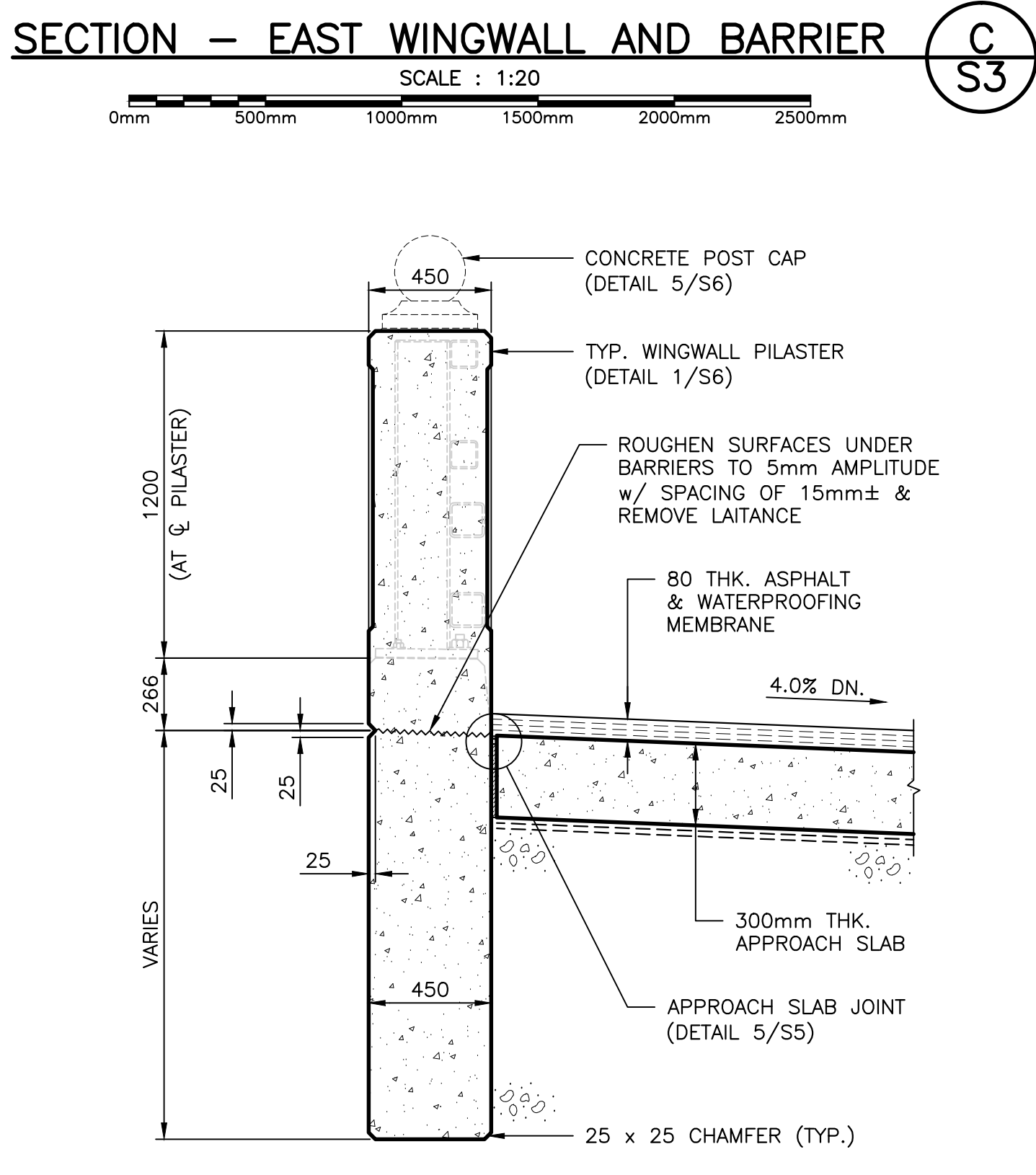
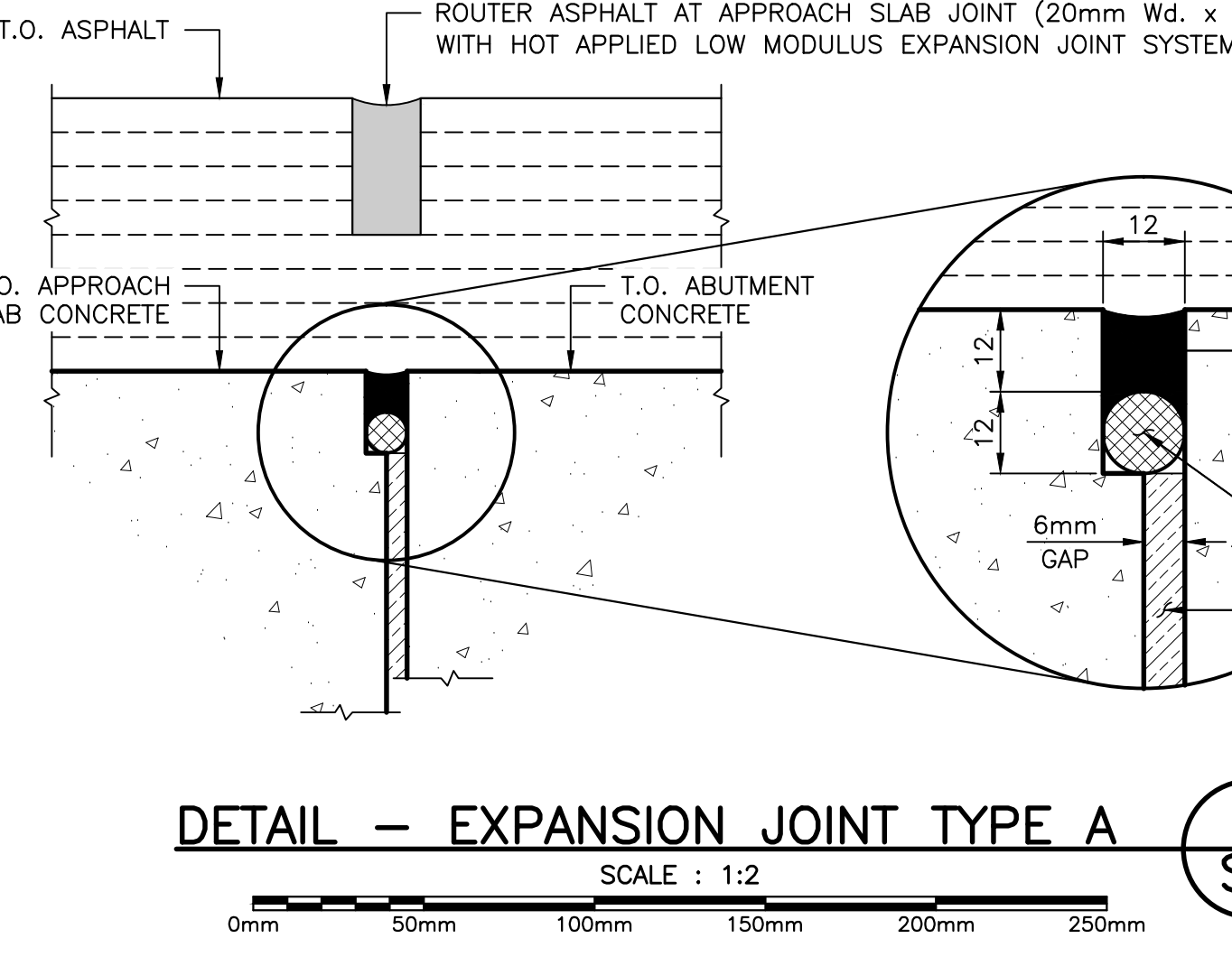
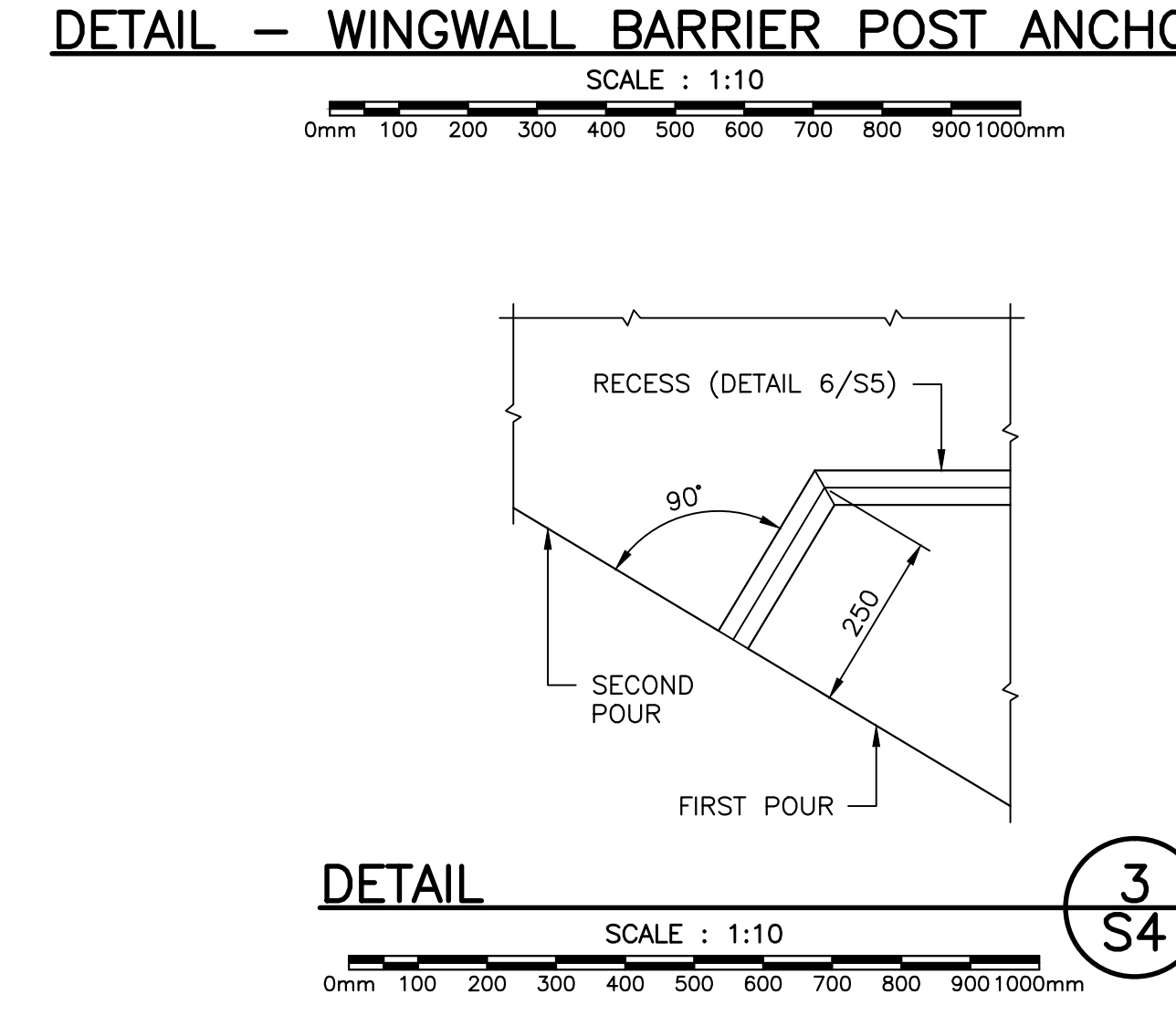
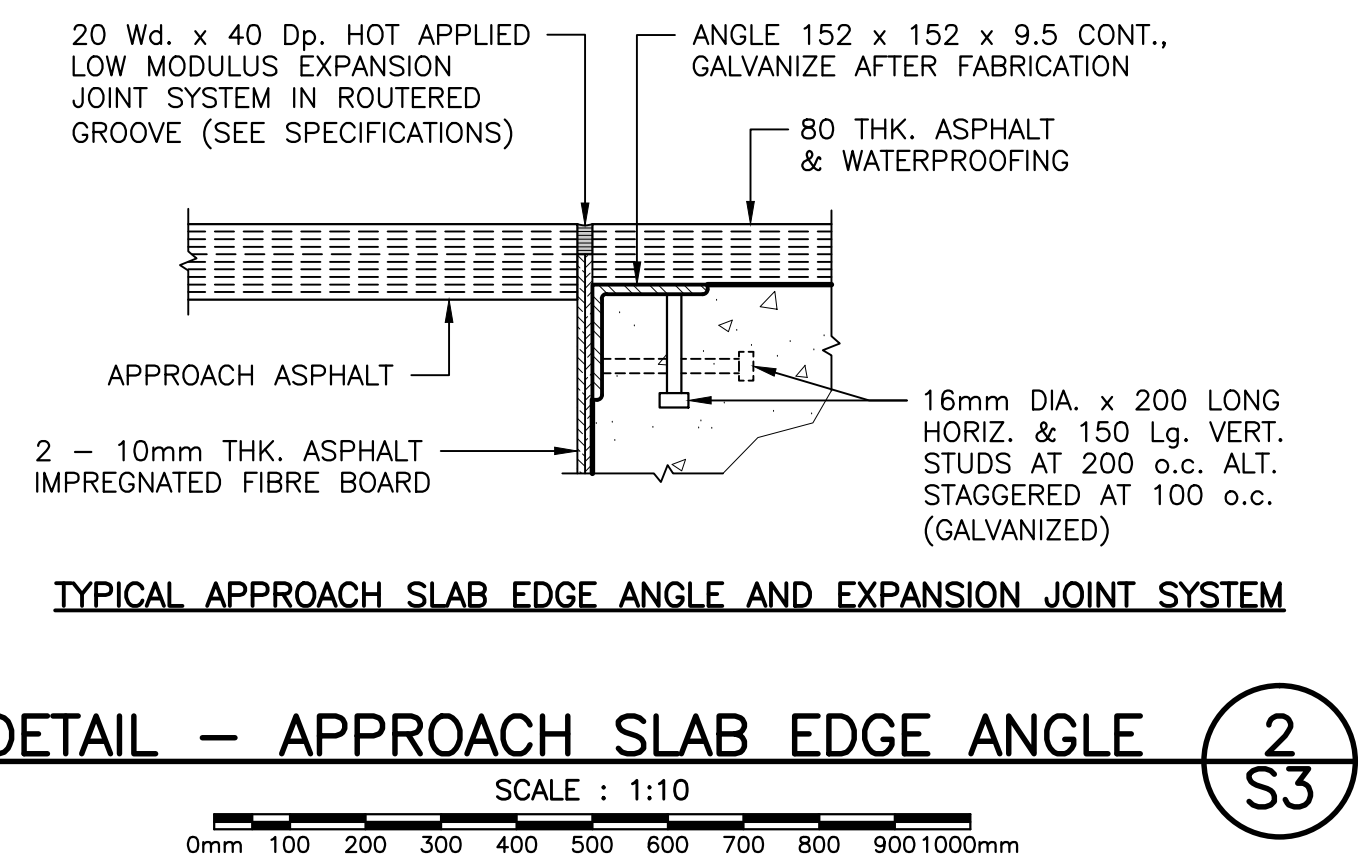
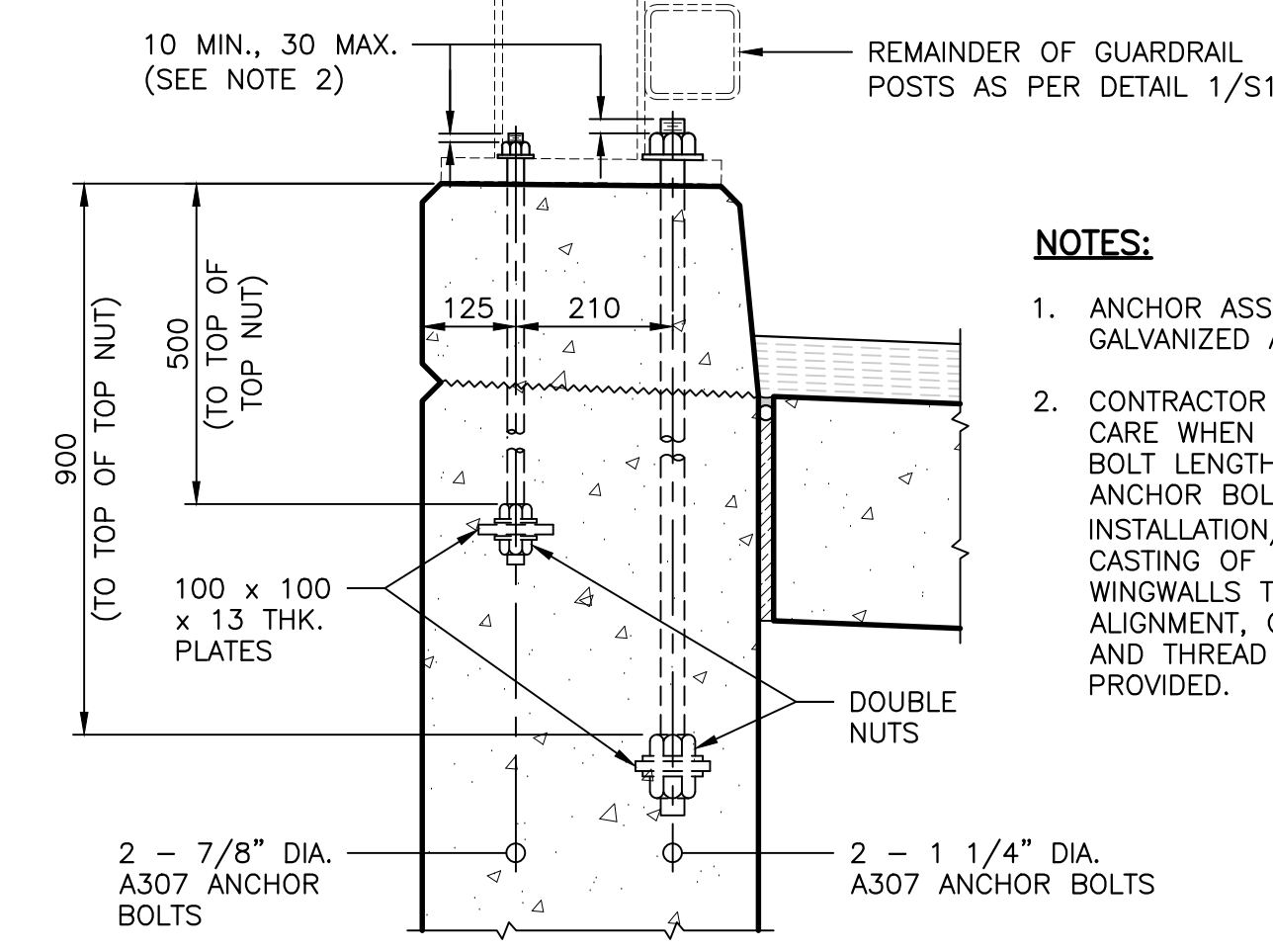
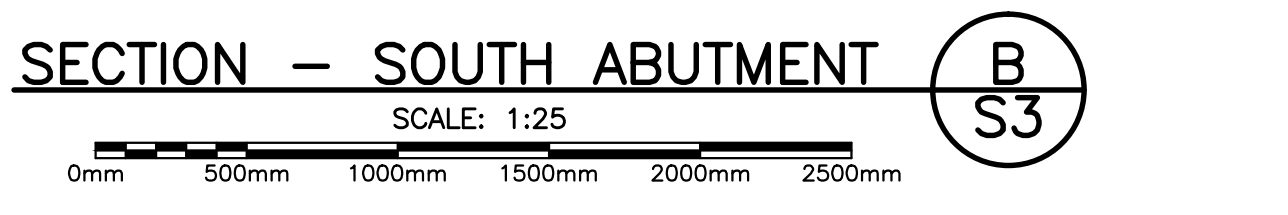
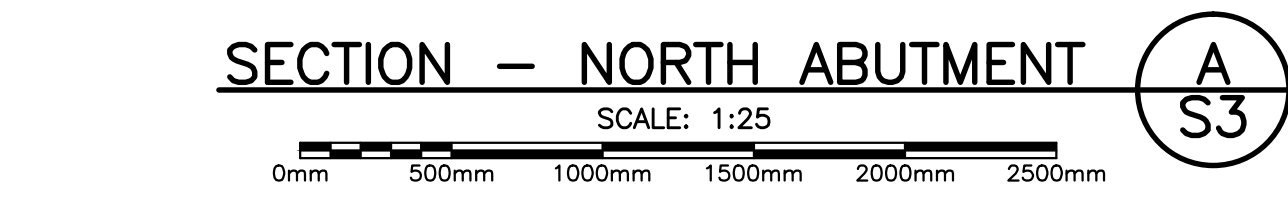
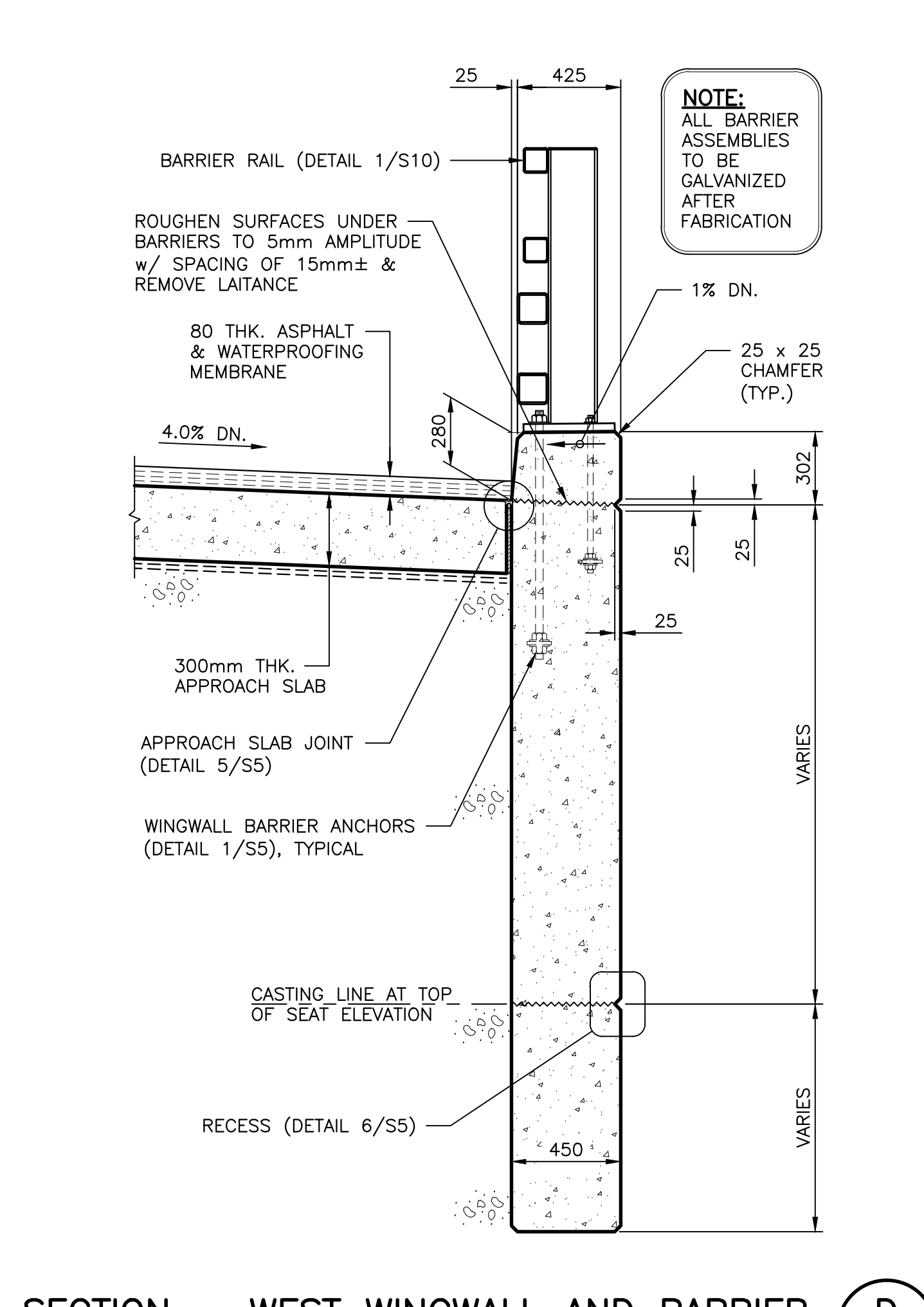
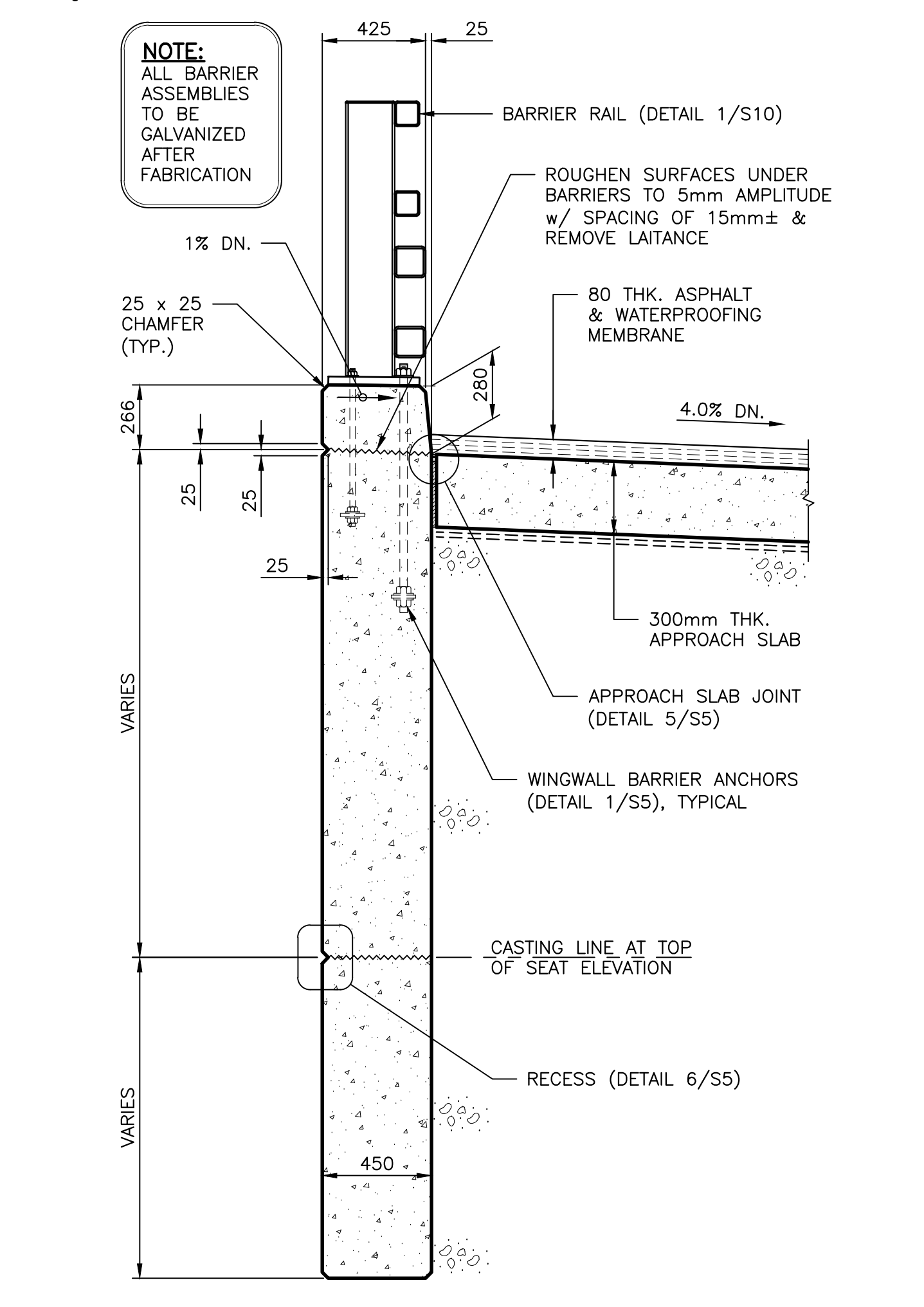
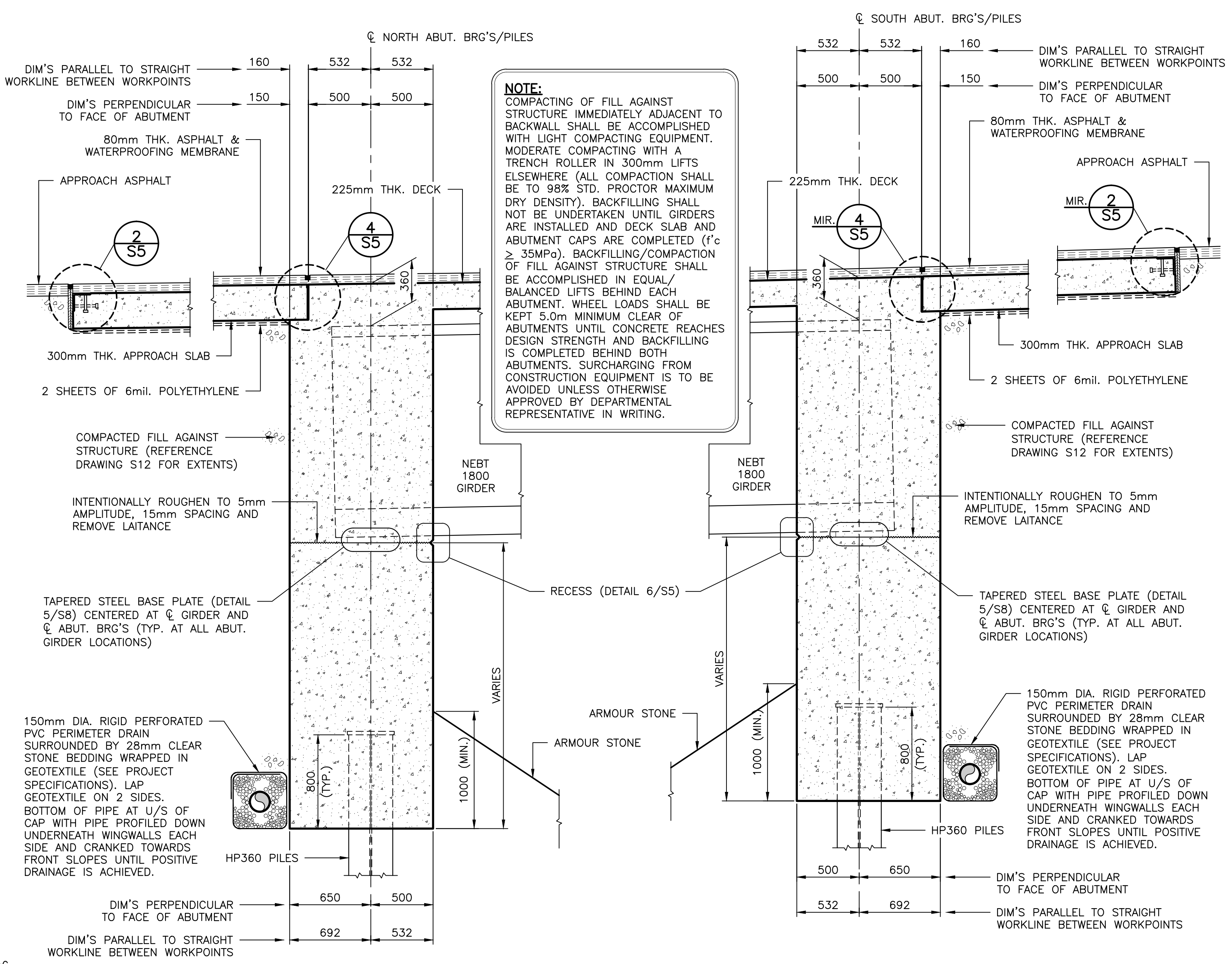
project
EFFIE'S BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

drawing
ABUTMENT AND WINGWALL ELEVATIONS

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	

project number
1812
drawing no.
S4

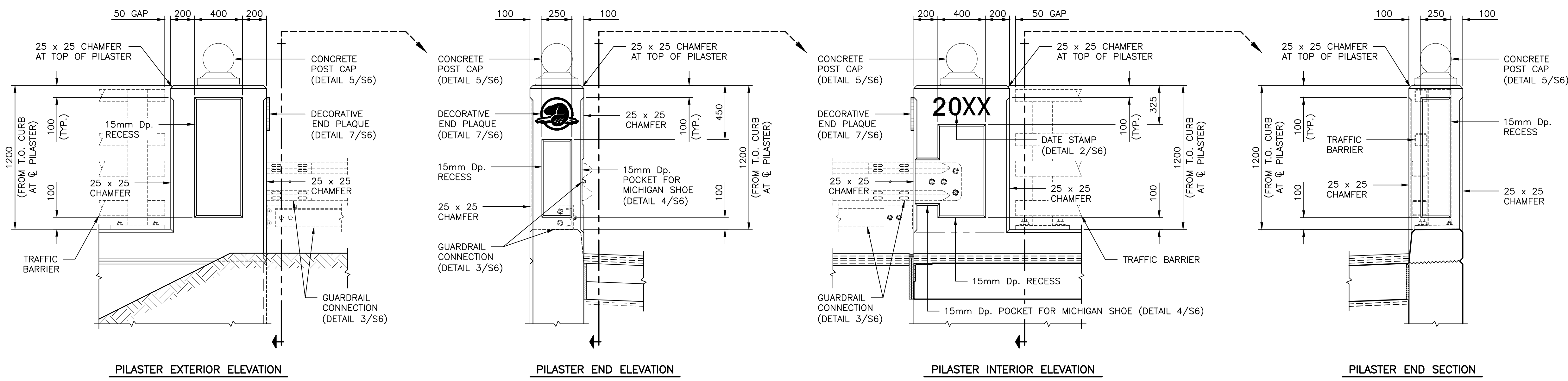




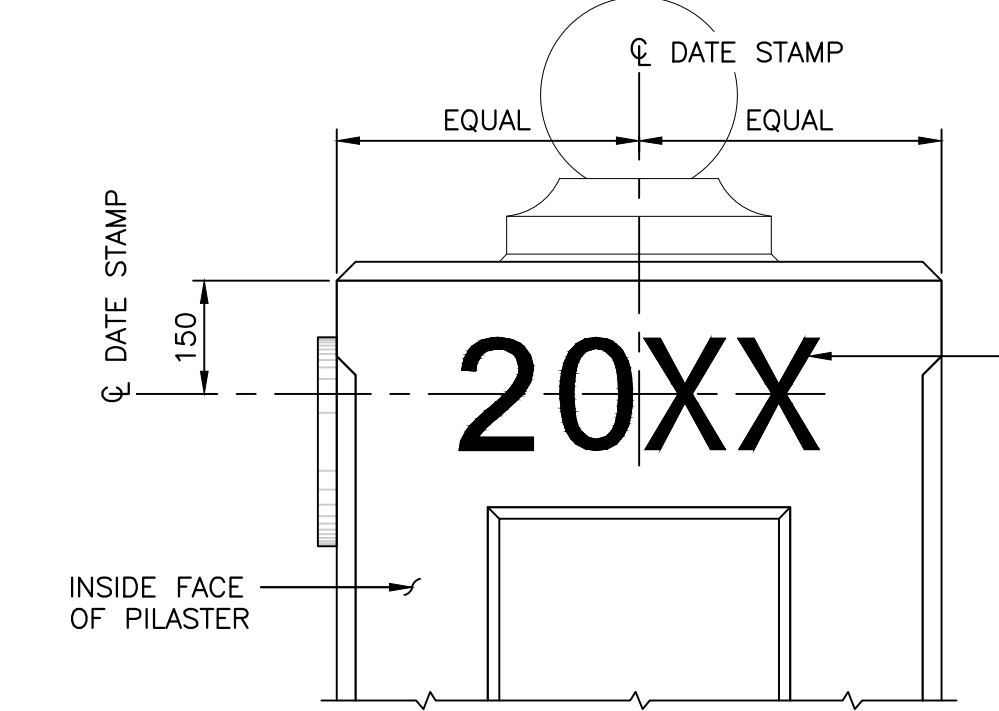
0	ISSUED FOR TENDER	MAR 15 2018
revisions	date	
project	EFFIE'S BROOK BRIDGE REPLACEMENT	
project	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	

ABUTMENT AND WINGWALL SECTIONS AND DETAILS

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S5	no. du dessin



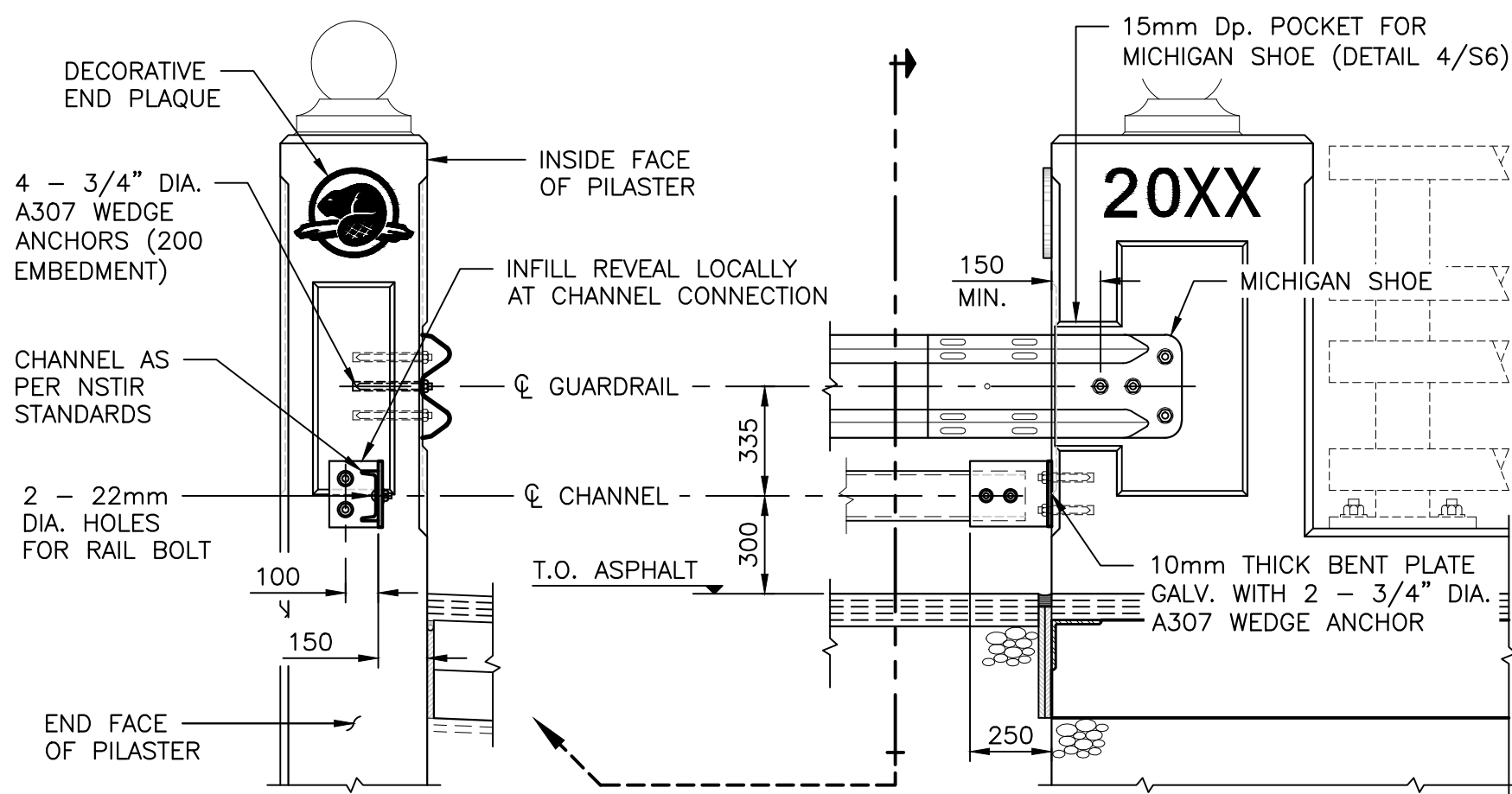
12mm Dp. x 150mm HIGH RECESSED DATE STAMP (HELVETICA NEUE 75 BOLD) PLACE ON INSIDE FACE OF ALL 4 BARRIER PILASTERS. DATE TO BE COORDINATED WITH DEPARTMENTAL REPRESENTATIVE PRIOR TO CASTING PILASTERS.



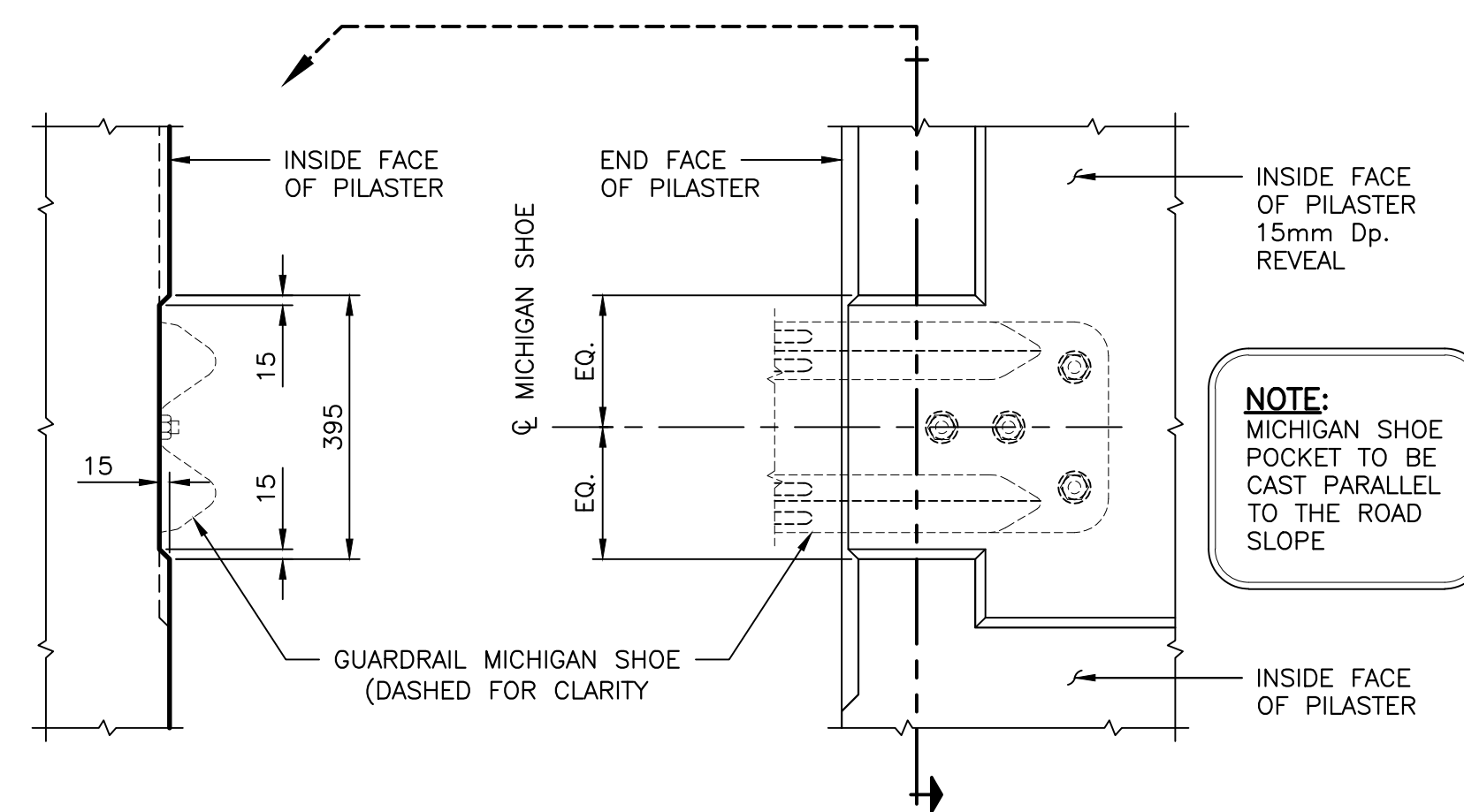
DETAIL - DATE STAMP
SCALE: 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm

NOTE: ALL PILASTERS TO BE VERTICAL (PLUMB) IN BOTH DIRECTIONS

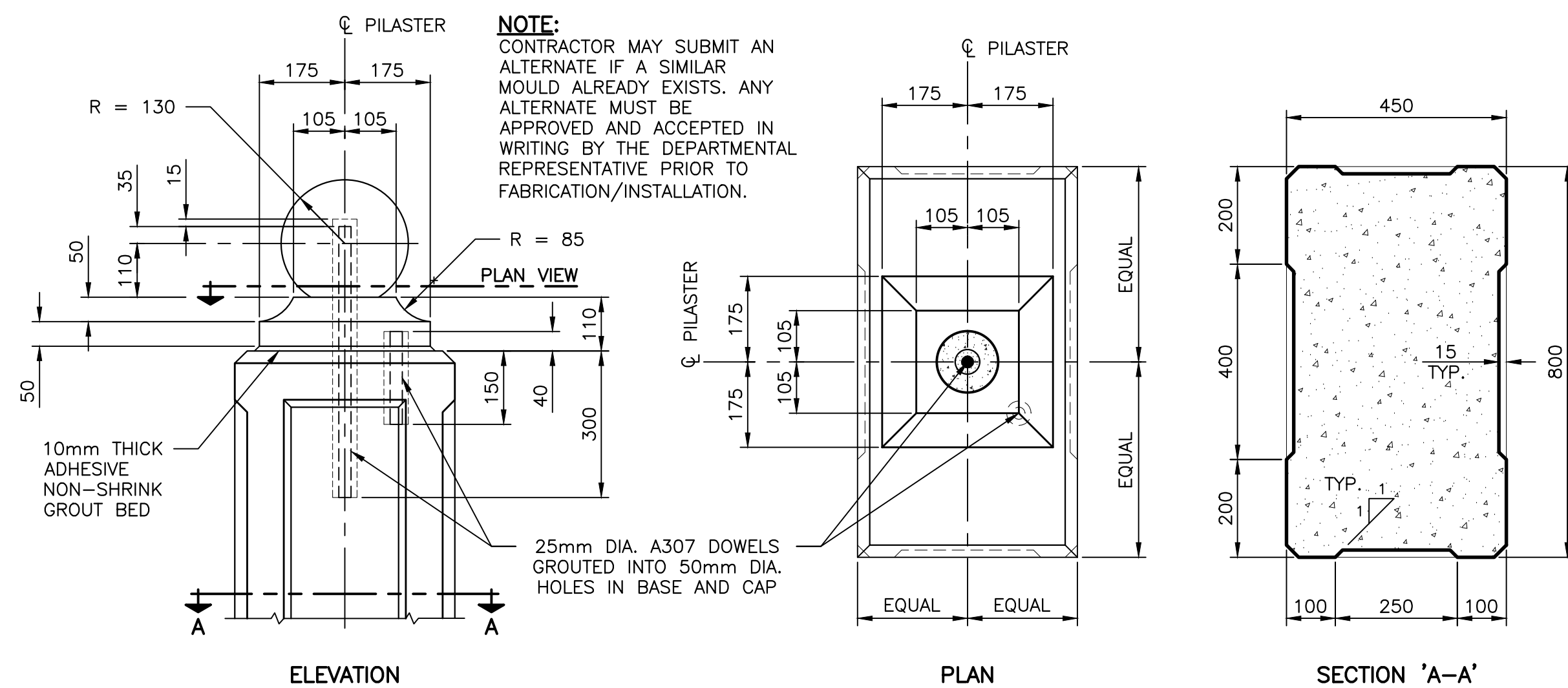
DETAIL - TYPICAL BARRIER PILASTER
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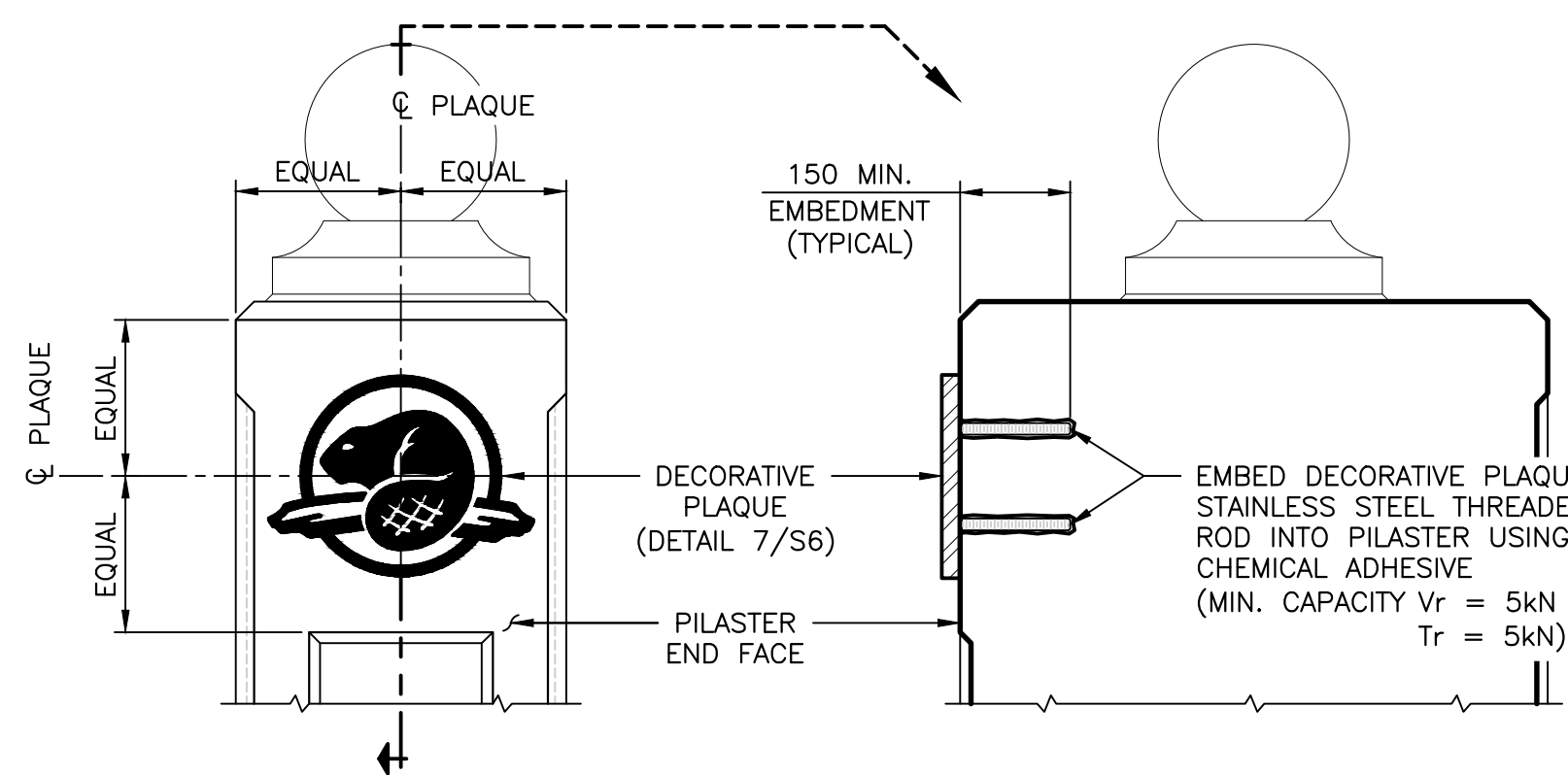
DETAIL - TYPICAL GUARDRAIL CONNECTION
SCALE: 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



DETAIL - MICHIGAN SHOE POCKET
SCALE: 1:10
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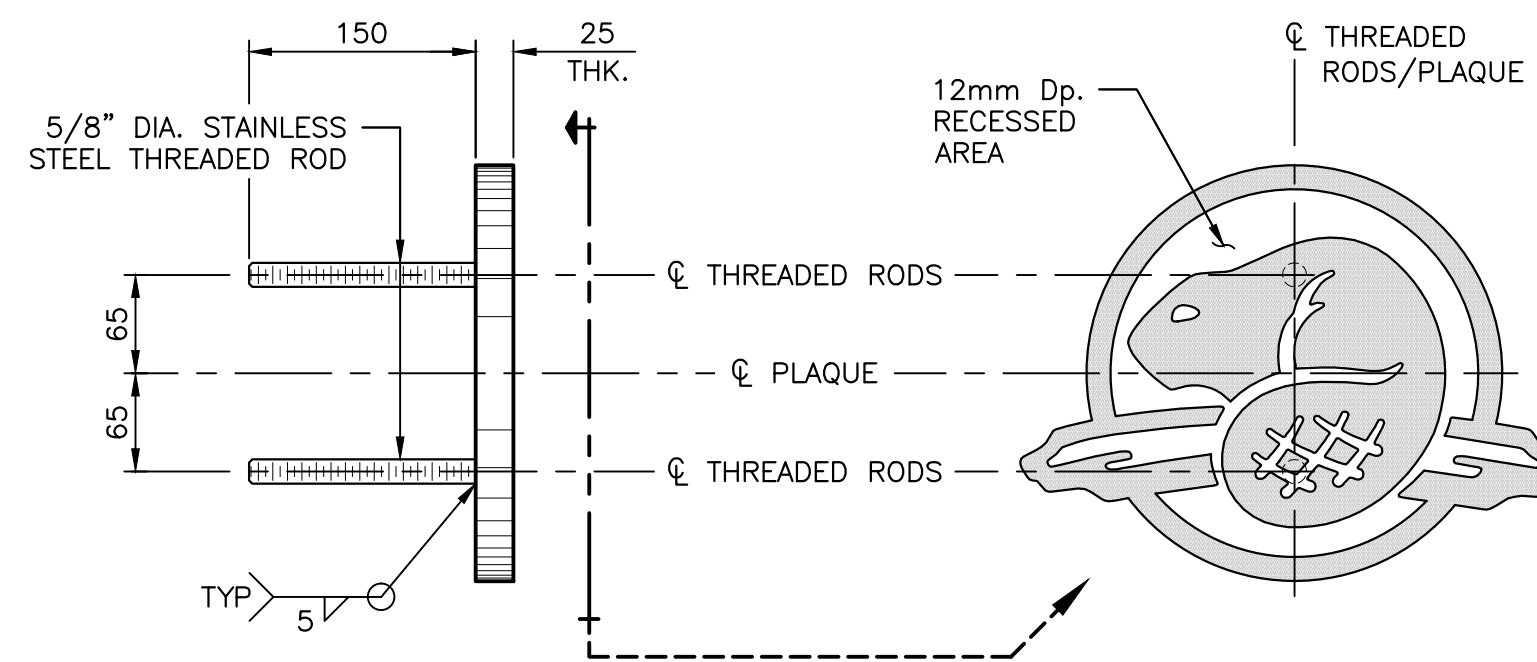
DETAIL - CONCRETE POST CAP
SCALE: 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm



DETAIL - DECORATIVE PLAQUE INSTALLATION
SCALE: 1:10
0mm 100 200 300 400 500 600 700 800 900 1000mm

PLAQUE INSTALLATION NOTES:

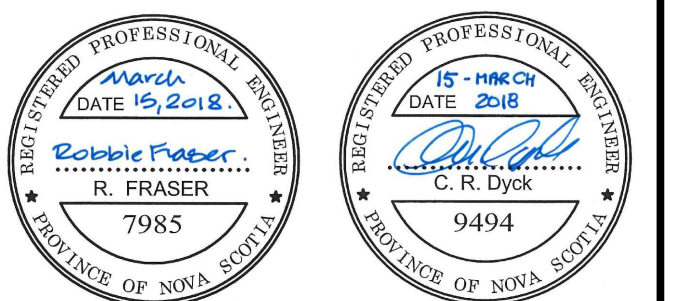
- Holes in pilaster for threaded rod anchors shall be drilled and cleaned as per the chemical adhesive manufacturer's recommendations.
- Care shall be taken when drilling holes in pilaster to ensure the hole locations on the pilaster match the as-built plaque threaded rods to ensure connected plaque is orientated on pilaster as shown in detail 6/S6.
- Provide clear caulking around perimeter of plaque after installation.



DETAIL - DECORATIVE PLAQUE
SCALE: 1:5
0mm 100mm 200mm 300mm 400mm 500mm

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.
- See detail 6/S6 for installation.

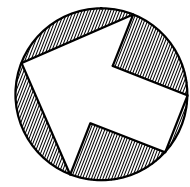


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revisions		date

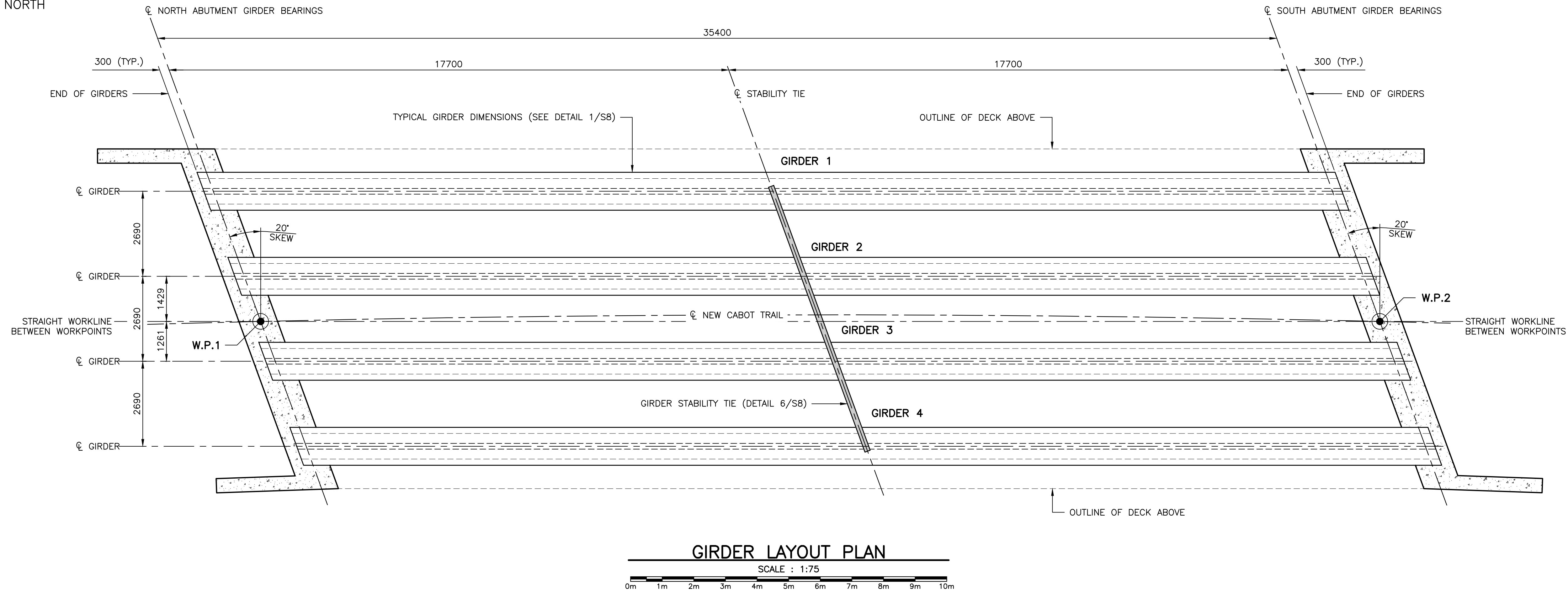
project
EFFIE'S BROOK BRIDGE REPLACEMENT
project
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing
WINGWALL PILASTERS SECTIONS AND DETAILS
design

designed	CHRIS DYCK	conçu
drawn	RICHARD BUNGAY	dessiné
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S6	no. du dessin

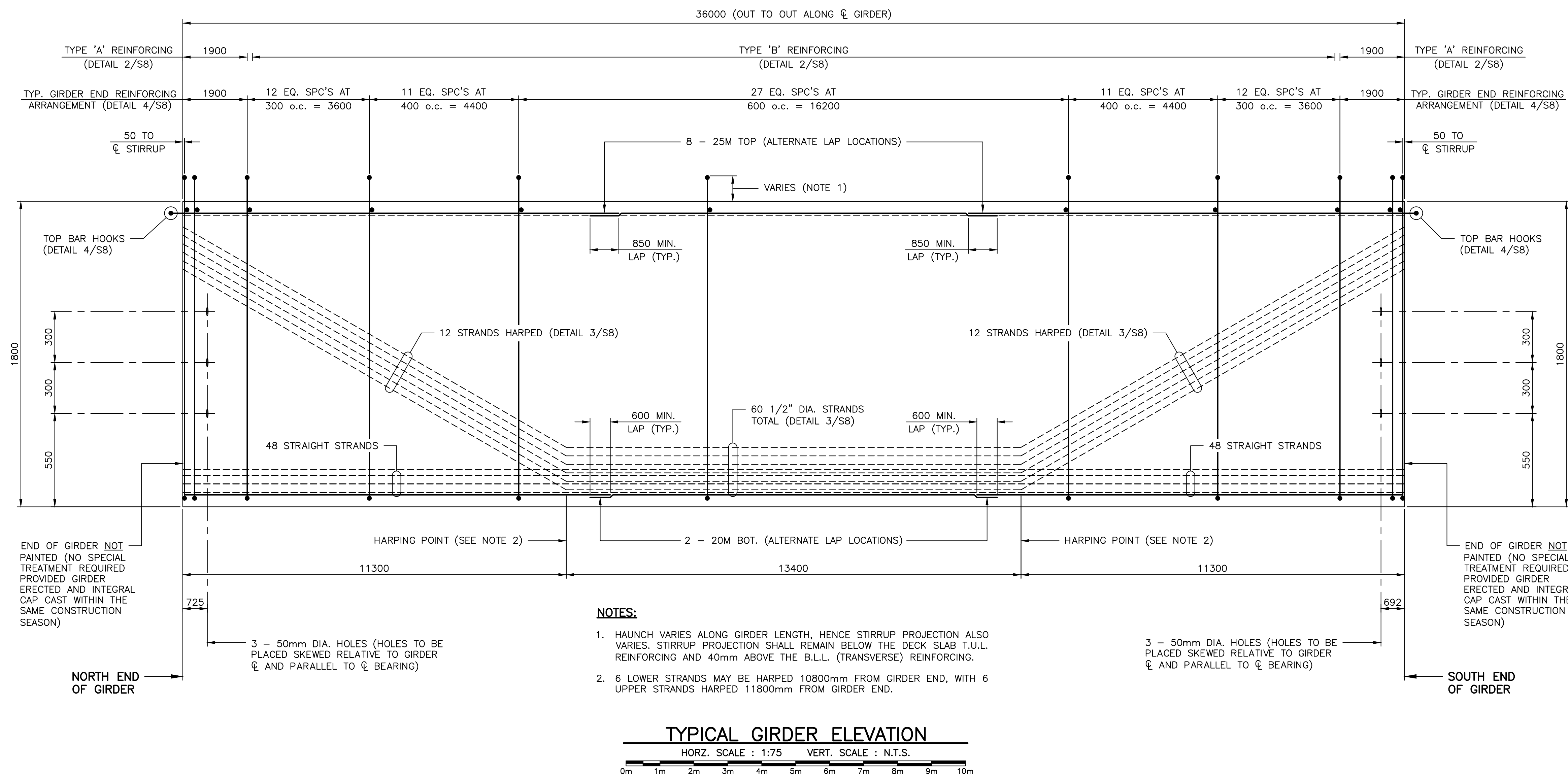


NORTH



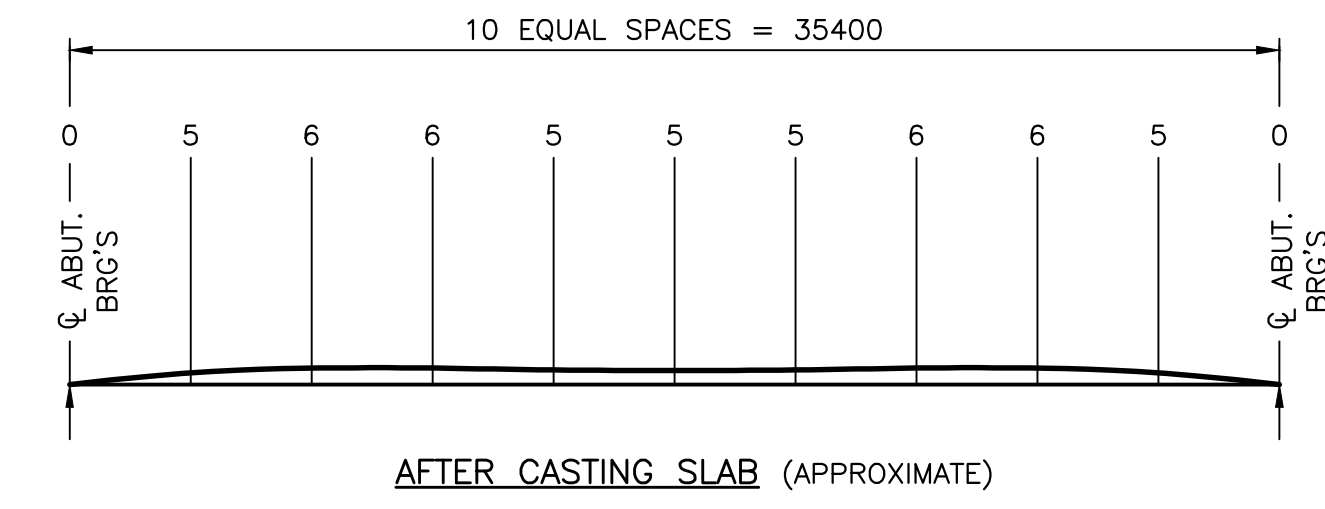
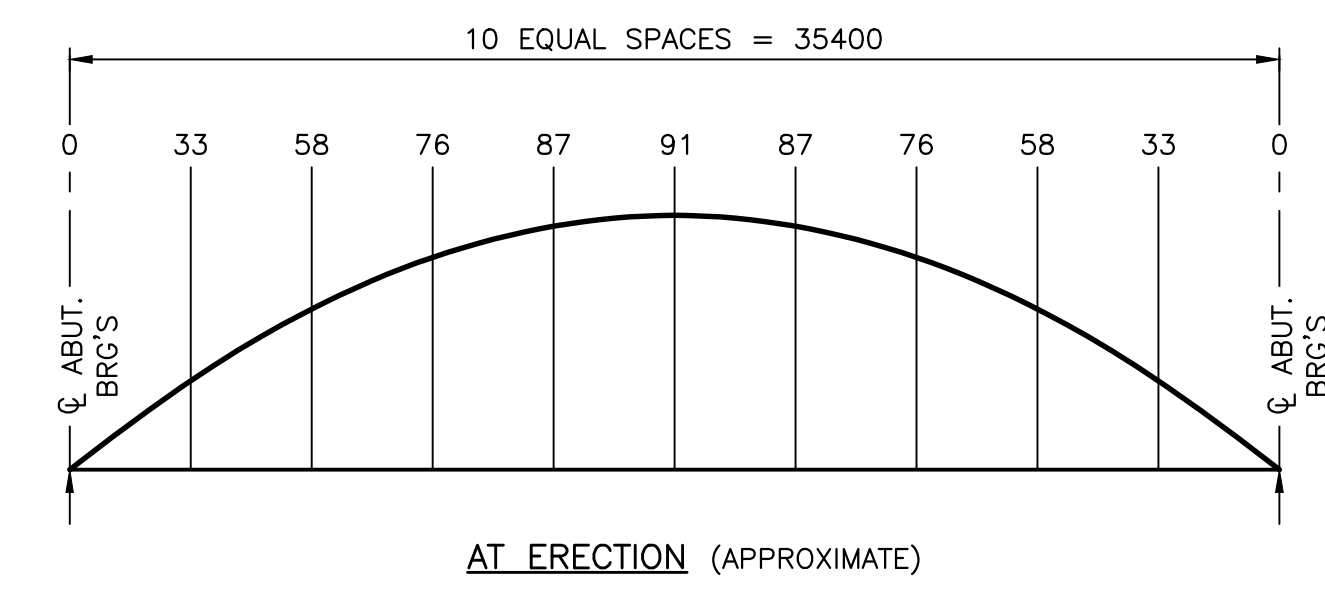
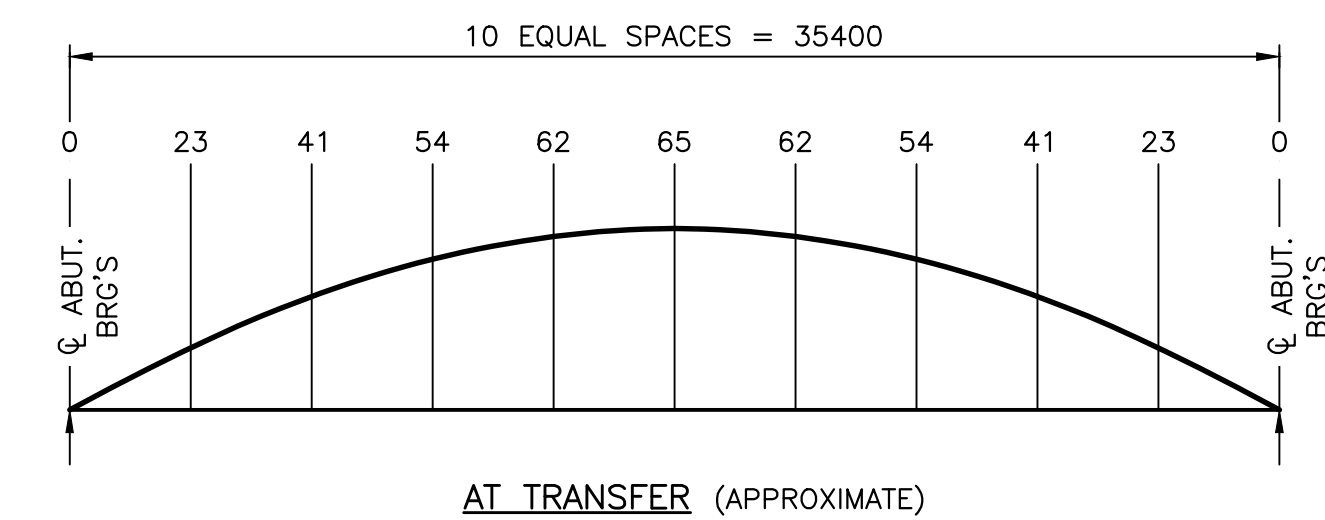
PRECAST GIRDER NOTES:

- ALL GIRDERS TO BE NEW ENGLAND BULB TEE (N.E.B.T.) 1800 STANDARD SECTIONS.
- CONCRETE COMPRESSIVE STRENGTH:
 - AT 28 DAYS ----- 60 MPa
 - AT TIME OF PRE-STRESS TRANSFER -- 40 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:
 - AT JACKING (0.78 FPU) ----- 144 kN
 - IMMEDIATELY AFTER RELEASE ---- 128 kN
 - AFTER ALL LOSSES ----- 109 kN
- ESTIMATED PRESTRESS LOSSES:
 - IMMEDIATELY AFTER RELEASE ---- 159 MPa
 - AFTER TRANSFER (AFTER TRANSFER ONLY) ----- 195 MPa
- TRANSFER OF PRESTRESS RELEASE SEQUENCE:
 - DEFLECTED STRANDS
 - HOLD DOWN DEVICES
 - 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.



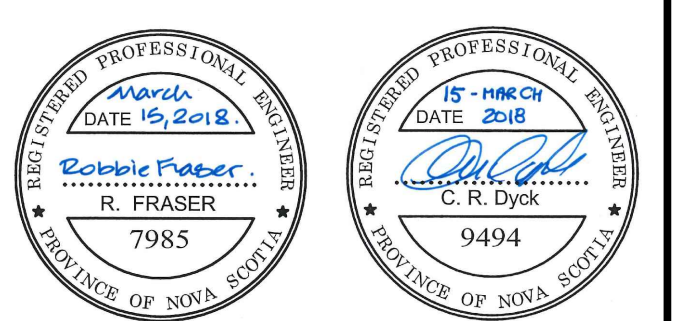
NOTES:

- HAUNCH VARIES ALONG GIRDER LENGTH, HENCE STIRRUP PROJECTION ALSO VARIES. STIRRUP PROJECTION SHALL REMAIN BELOW THE DECK SLAB T.U.L. REINFORCING AND 40mm ABOVE THE B.L.L. (TRANSVERSE) REINFORCING.
- 6 LOWER STRANDS MAY BE HARPED 10800mm FROM GIRDER END, WITH 6 UPPER STRANDS HARPED 11800mm FROM GIRDER END.



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.

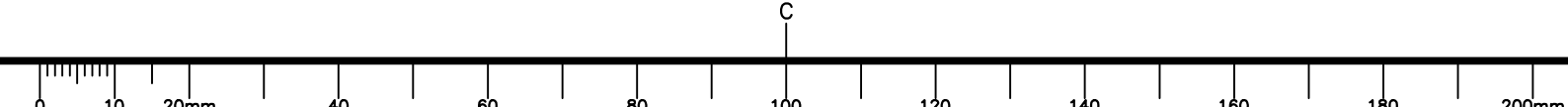


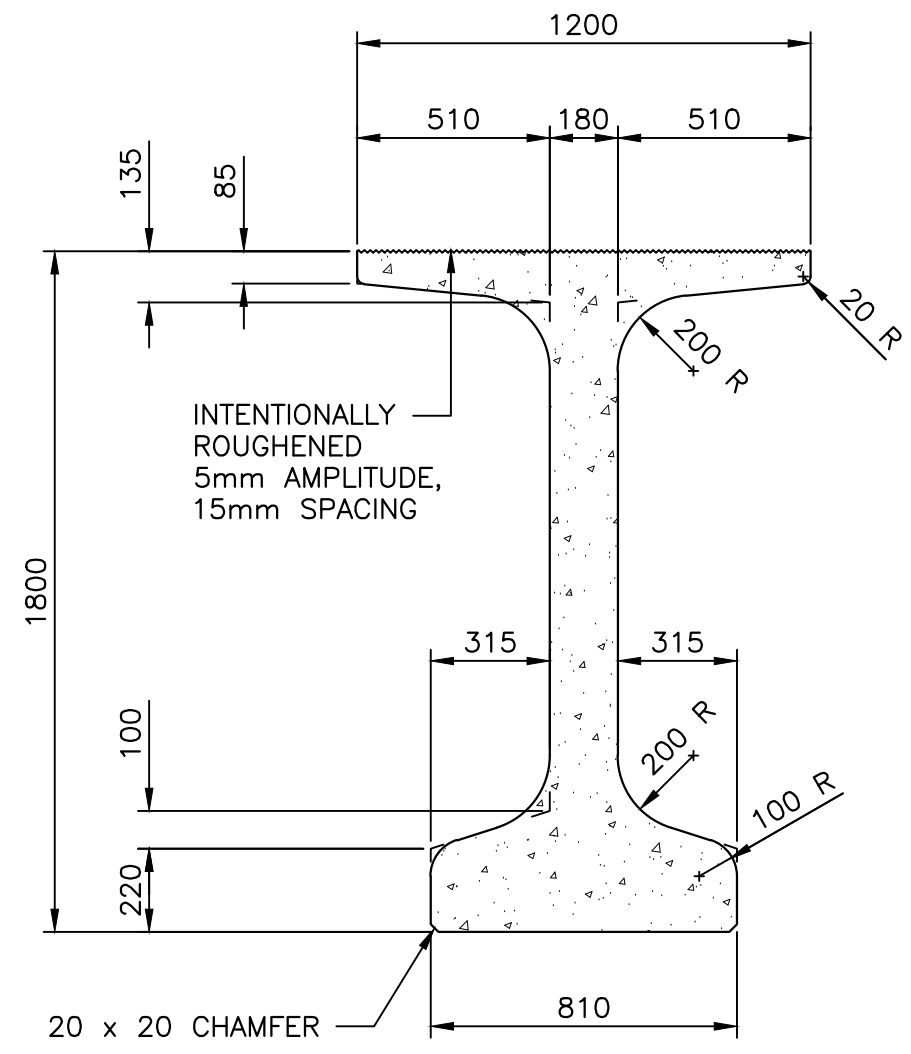
0	ISSUED FOR TENDER	MAR 15 2018
revisions		date

project **EFFIE'S BROOK BRIDGE REPLACEMENT** project
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

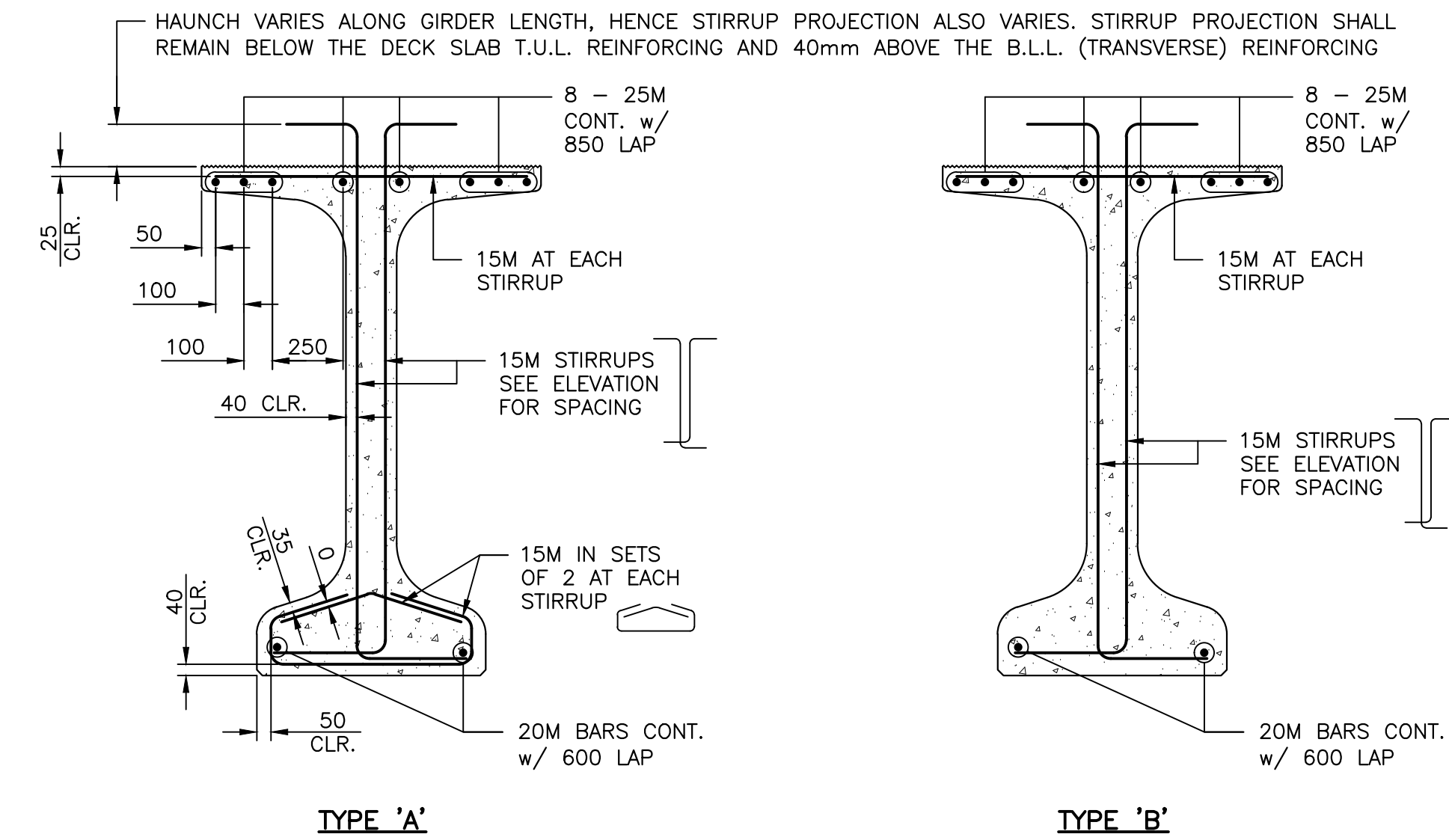
GIRDER LAYOUT PLAN, ELEVATION AND CAMBER PROFILES

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drown	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet
	1812	
drawing no.		no. du dessin
	S7	

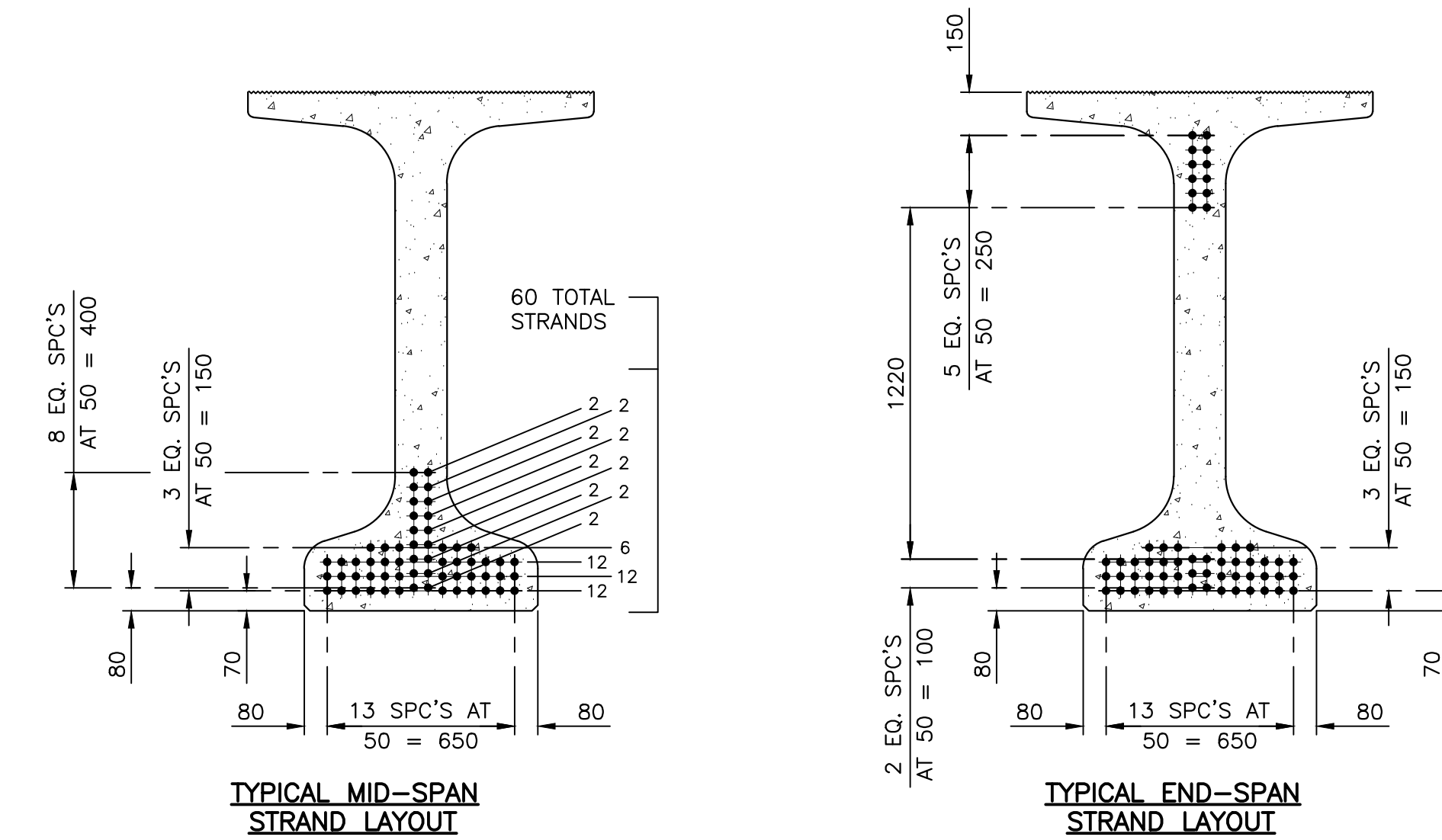




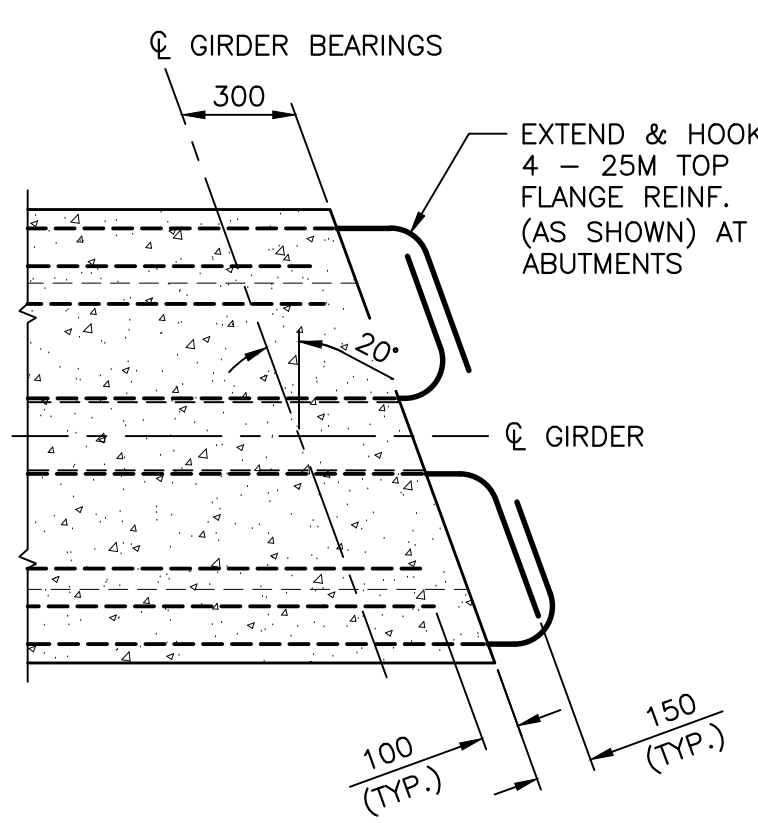
DETAIL - TYPICAL GIRDER DIMENSIONS (1) S7



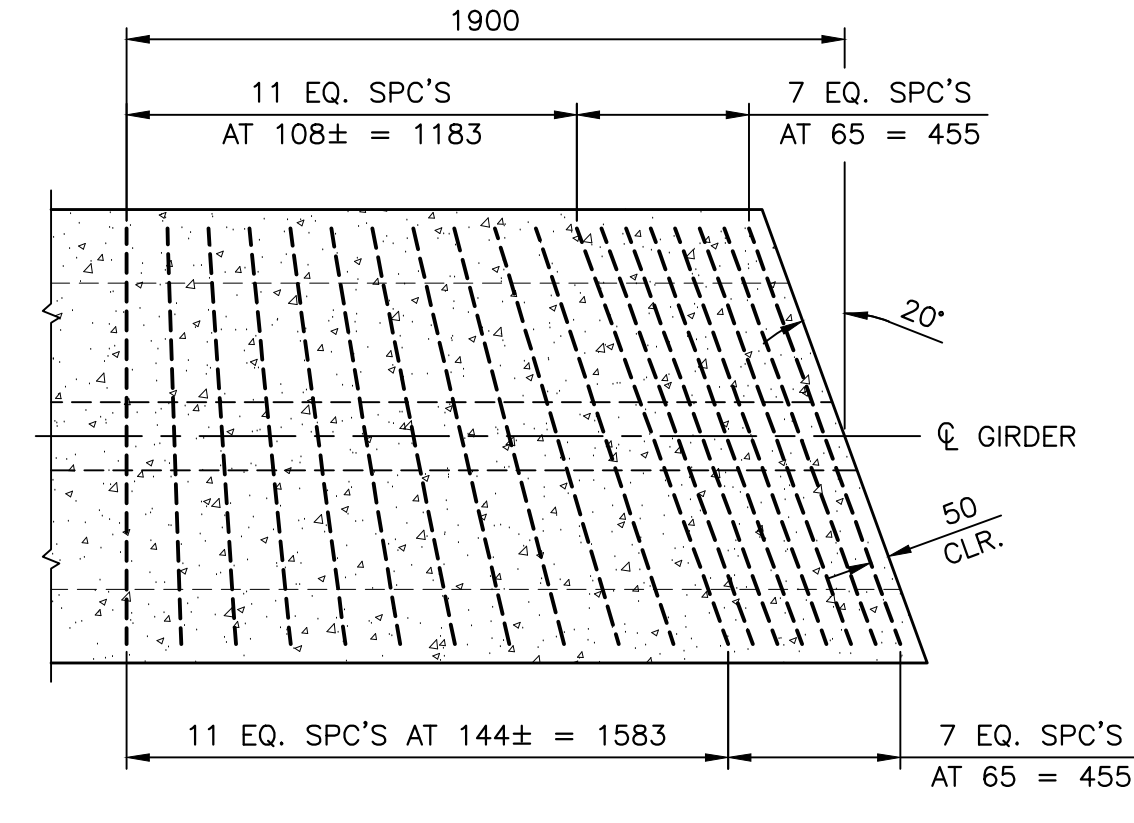
DETAIL - GIRDER STIRRUP REINFORCING (2) S7



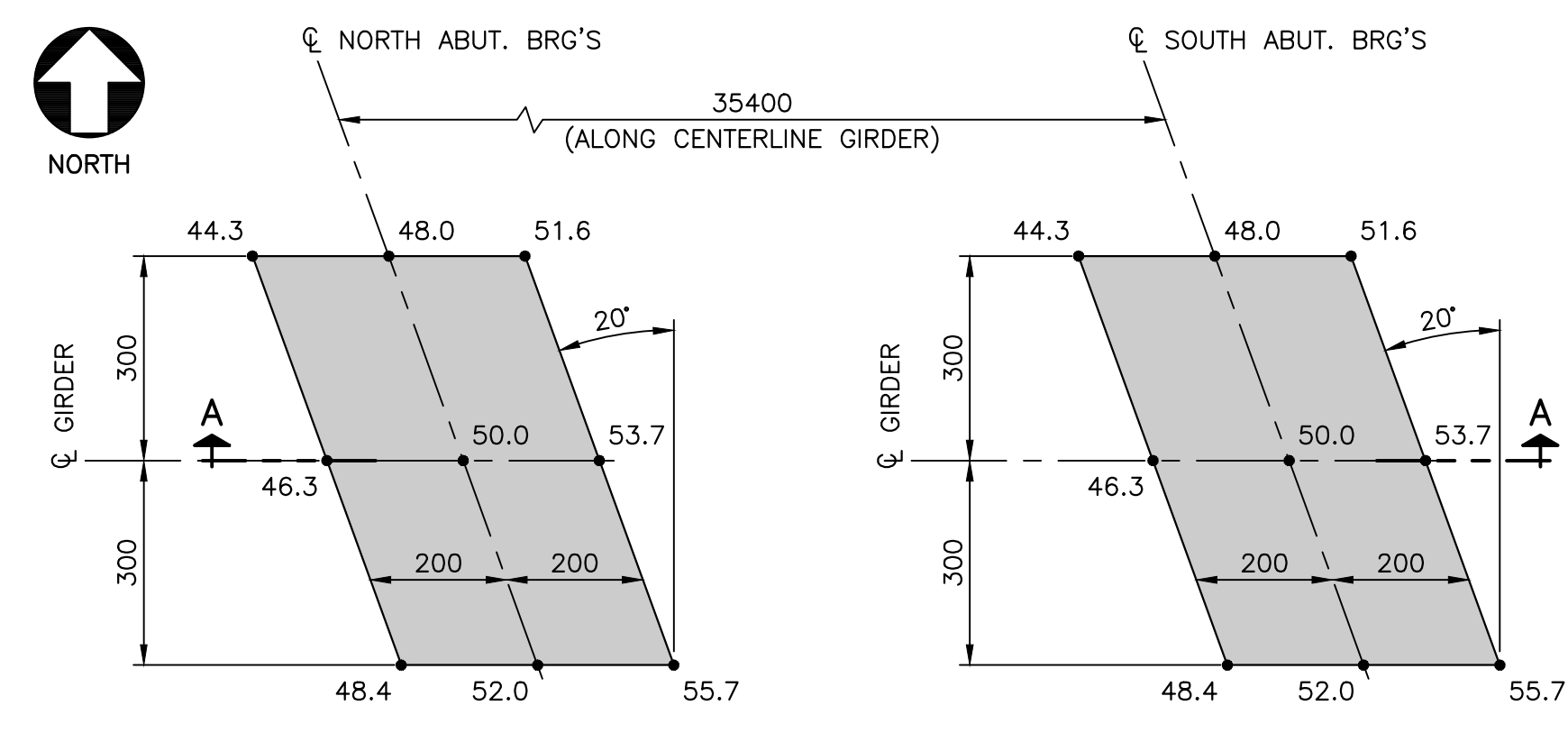
DETAIL - GIRDER STRAND LAYOUT (3) S7



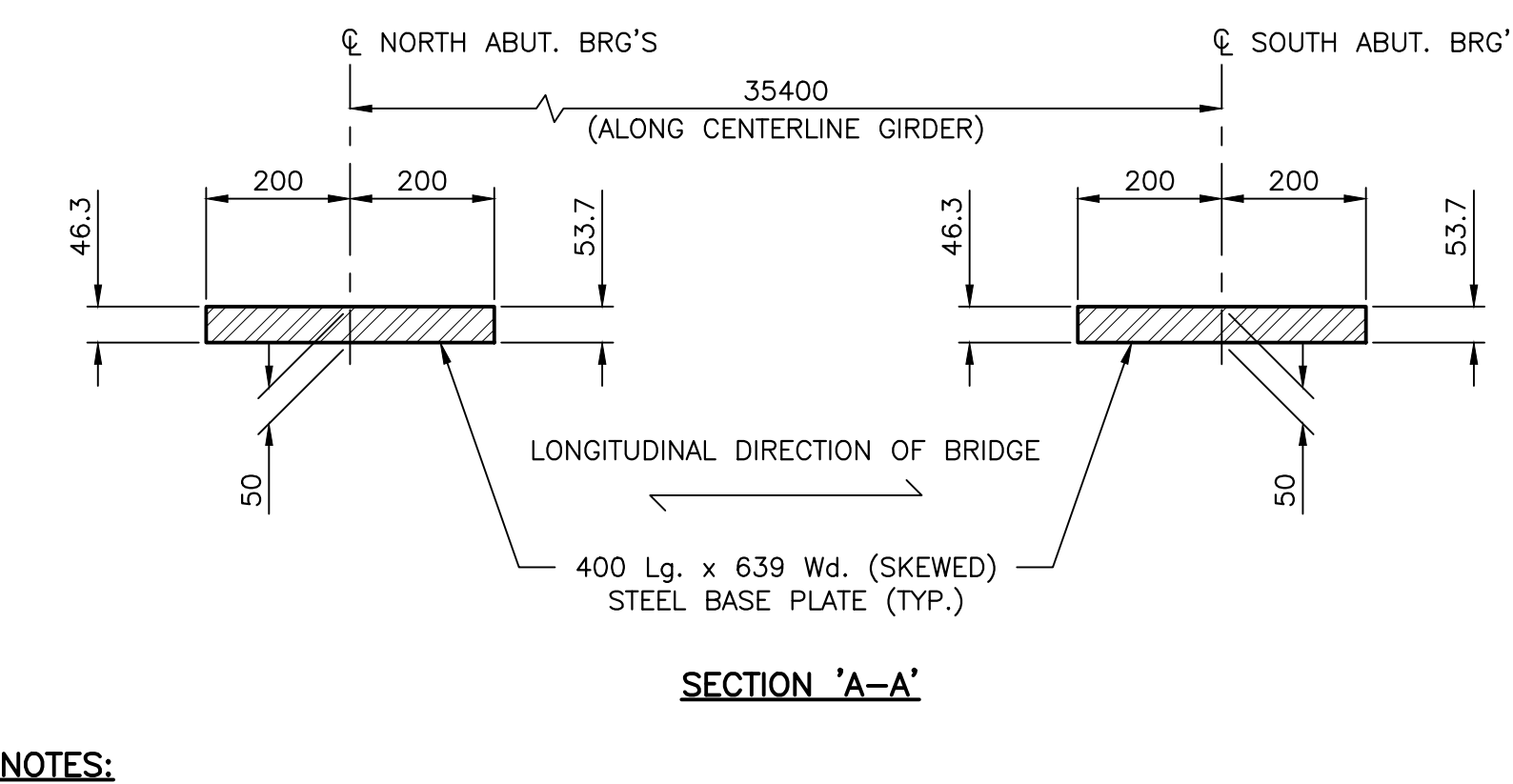
GIRDER END LONGITUDINAL REINFORCING (TOP FLANGE ONLY)



GIRDER END REINFORCING TIE ARRANGEMENT (BOTTOM FLANGE - SIMILAR)



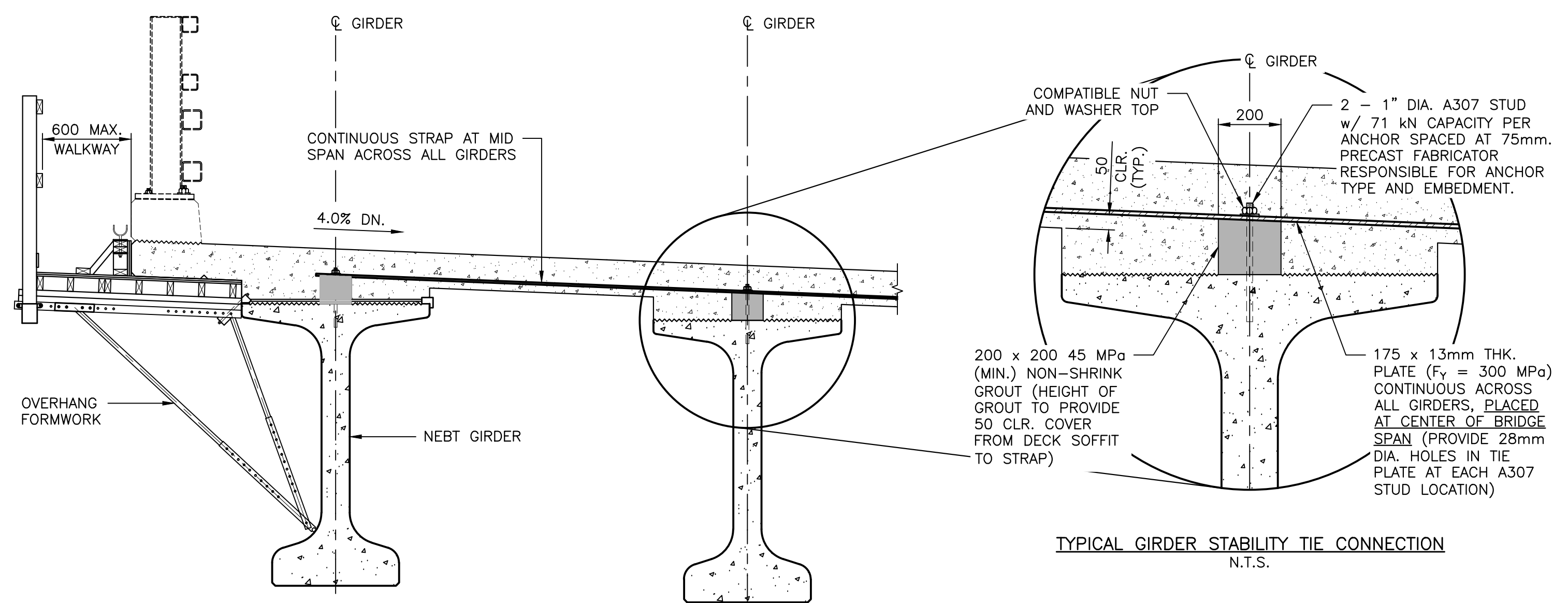
PLAN



- NOTES:
- BEARING PLATE TO BE HOT-DIP GALVANIZED AS PER SPECIFICATIONS AFTER FABRICATION.
 - ENSURE UNIFORM BEARING BENEATH PLATE TO ABUTMENT BEAM SEAT SURFACE AND BETWEEN TOP OF PLATE AND U/S GIRDER AFTER GIRDER ERECTION/PRIOR TO CASTING DECK. SHIM OR GROUT DETAILS TO ACCOMMODATE AS-BUILT CONDITIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR REVIEW AND APPROVAL TO DEPARTMENTAL REPRESENTATIVE PRIOR TO IMPLEMENTING.

DETAIL - TYPICAL GIRDER END REINFORCING LAYOUT (4) S7

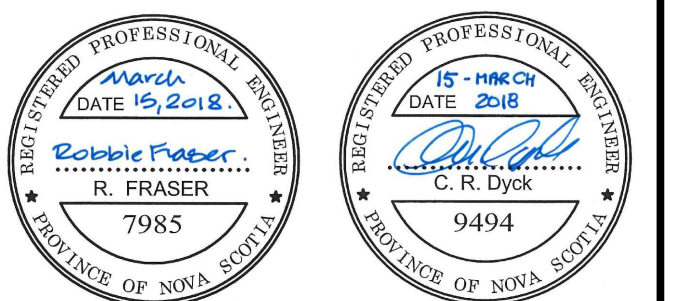
DETAIL - GIRDER ABUTMENT BEARING PLATES (5) S4



TYPICAL GIRDER STABILITY TIE CONNECTION N.T.S.

- NOTES:
- ALL DECK FORMWORK SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN NOVA SCOTIA.
 - THE OVERHANG BRACKETS SHALL BE ORIENTED AS INDICATED UNLESS AN ALTERNATE DETAIL IS ACCEPTED IN WRITING BY THE ENGINEER.
 - OVERHANG BRACKET SPACING SHALL BE LESS THAN OR EQUAL TO 1200mm o.c.
 - TOP FLANGE LATERAL TIES SHALL BE FULLY INSTALLED AS SHOWN PRIOR TO CASTING ANY DECK CONCRETE.
 - MAXIMUM FACTORED SCREED LOAD PER SIDE OF BRIDGE ASSUMED TO BE 15kN.
 - 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.
 - 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.
 - ALL STABILITY TIE ASSEMBLIES TO BE GALVANIZED TO PROJECT SPECIFICATIONS AFTER FABRICATION.

DETAIL - TYPICAL BRIDGE OVERHANG FORMWORK AND STABILITY TIES (6) S7



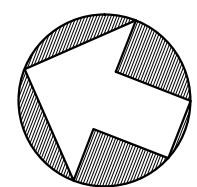
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revisions		date

project EFFIE'S BROOK BRIDGE REPLACEMENT
 HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

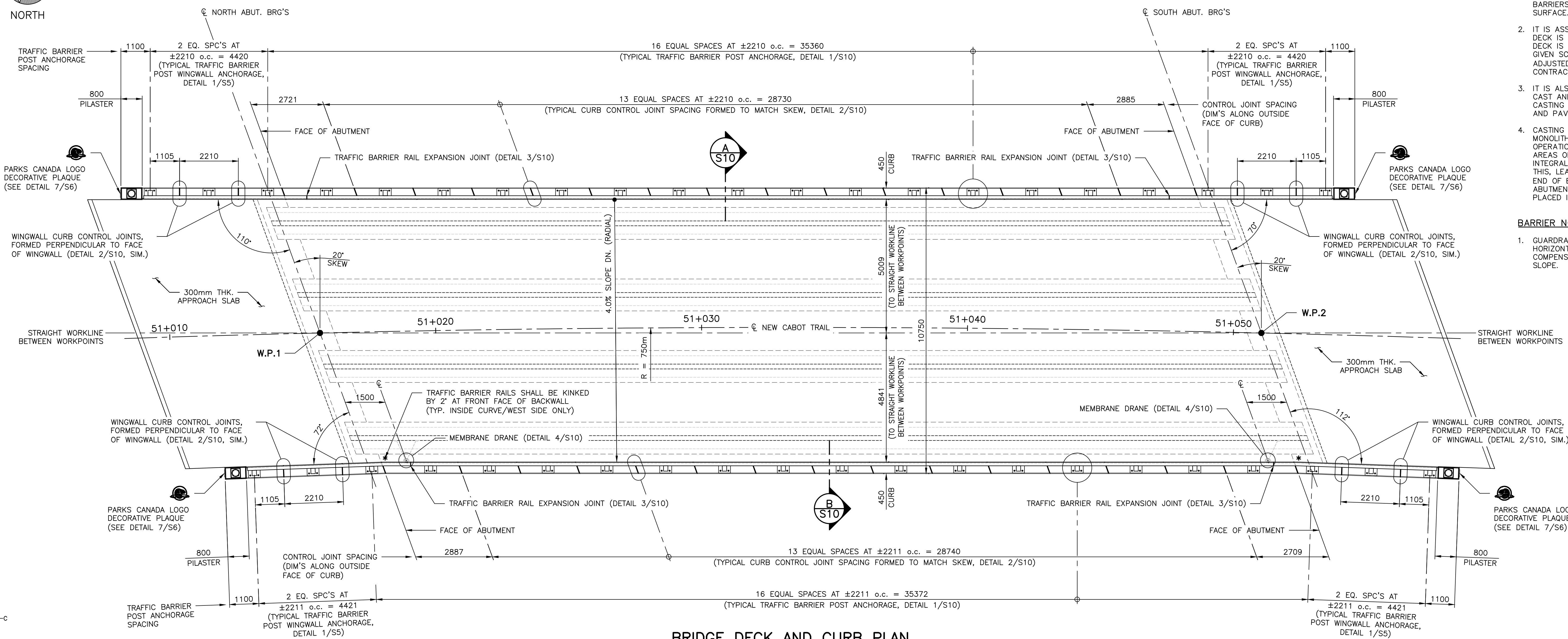
drawing no. 1812
 design GIRDERS DETAILS

designed CHRIS DYCK	conçu
date NOVEMBER 2017	
drawn RICHARD BUNGAY	dessiné
date NOVEMBER 2017	
approved ROBBIE FRASER	approuvé
date NOVEMBER 2017	
Tender	Soumission
PCA Project Manager	Administrateur de projets APC
project number 1812	no. du projet

drawing no. 1812
 design S8

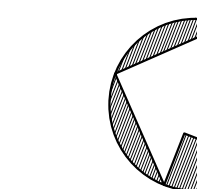
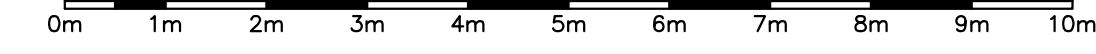


NORTH

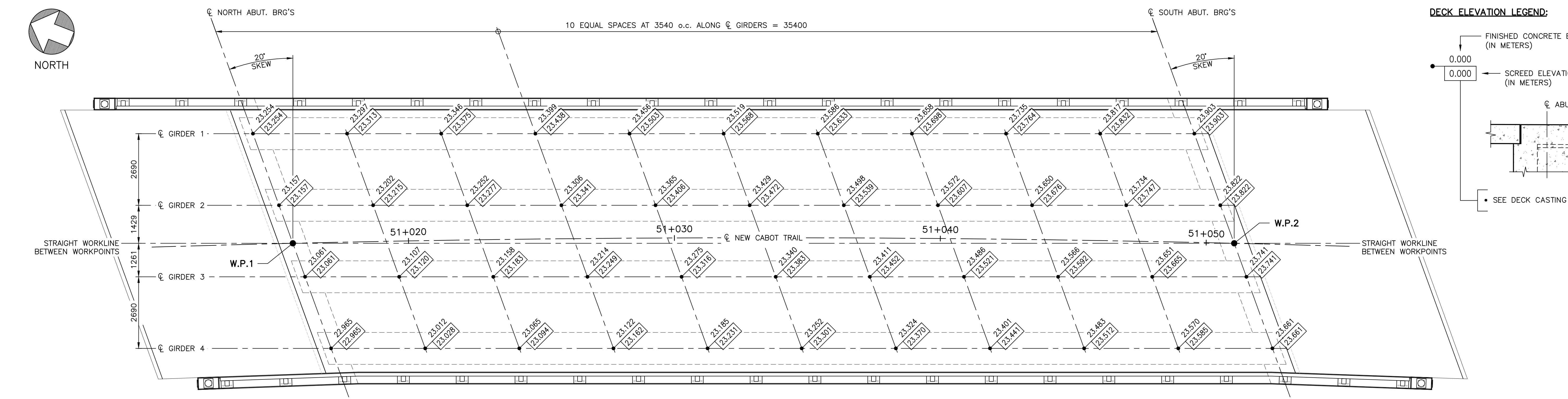


BRIDGE DECK AND CURB PLAN

SCALE : 1:75

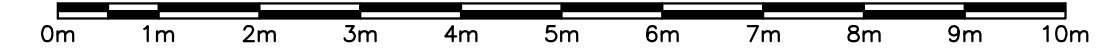


NORTH



DECK SCREED ELEVATIONS PLAN

SCALE : 1:75



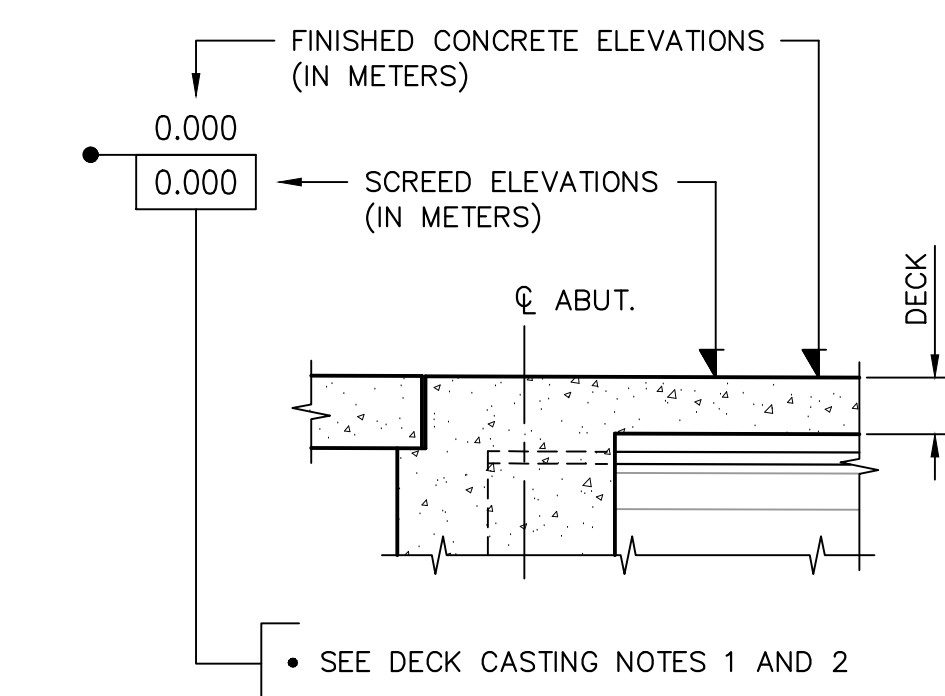
DECK CASTING NOTES:

1. SCREED ELEVATIONS ARE BASED ON THE DECK PROFILE ELEVATIONS PRIOR TO PLACING CONCRETE DECK, CURBS, 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 MUST BE ADJUSTED/CORRECTED BY CONTRACTOR.
3. IT IS ALSO ASSUMED ENTIRE DECK IS CAST AND REACHES 35MPa PRIOR TO CASTING 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.

BARRIER NOTES:

1. GUARDRAIL POST SPACINGS ARE HORIZONTAL, FABRICATOR TO COMPENSATE LENGTHS FOR ROAD SLOPE.

DECK ELEVATION LEGEND:



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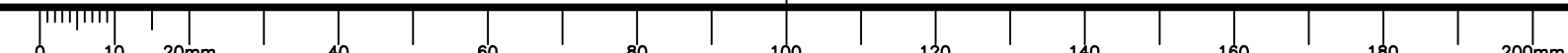
project
**EFFIE'S BROOK
BRIDGE REPLACEMENT**
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

drawing
**DECK AND BARRIER
PLAN AND SCREED
ELEVATIONS PLAN**
design

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

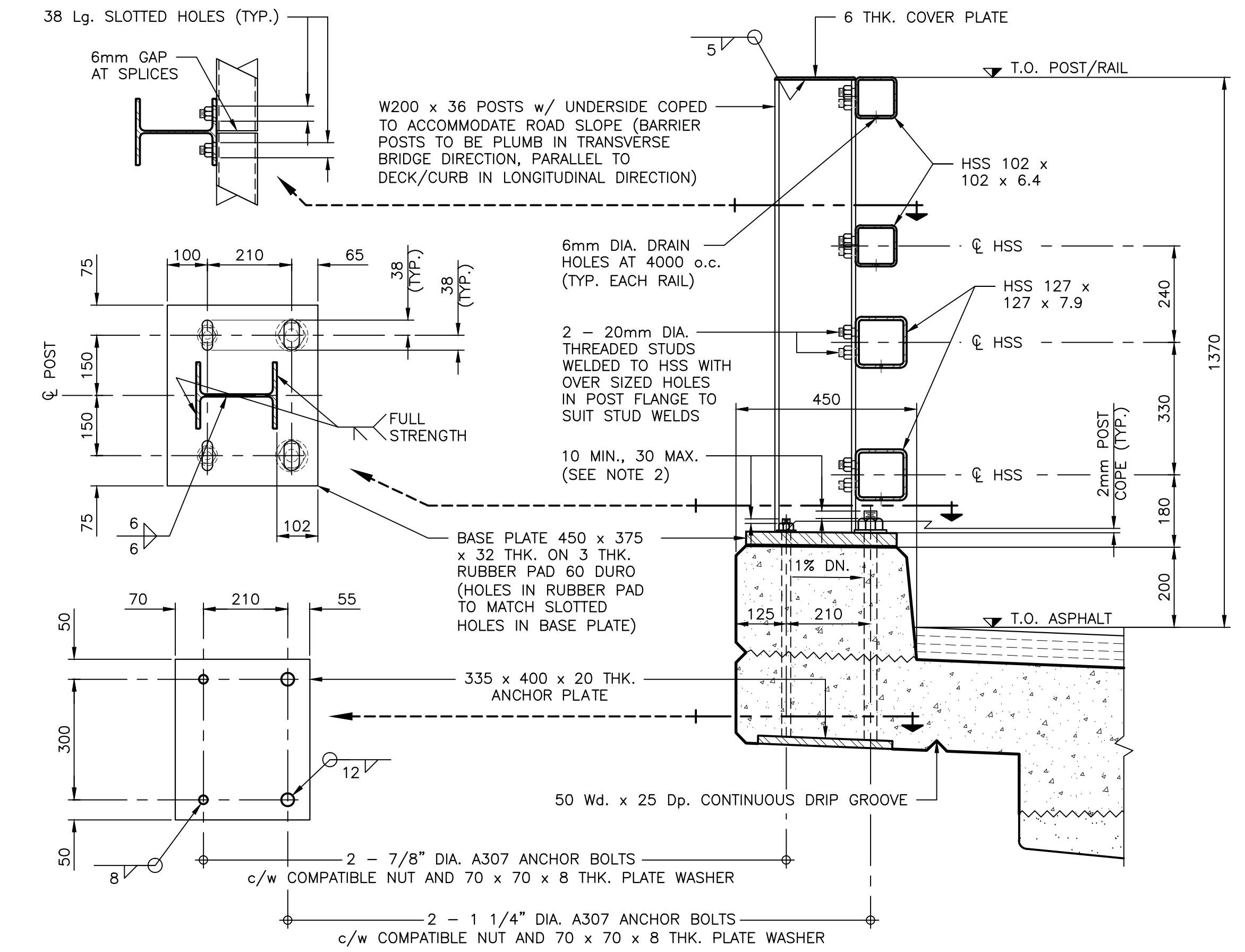
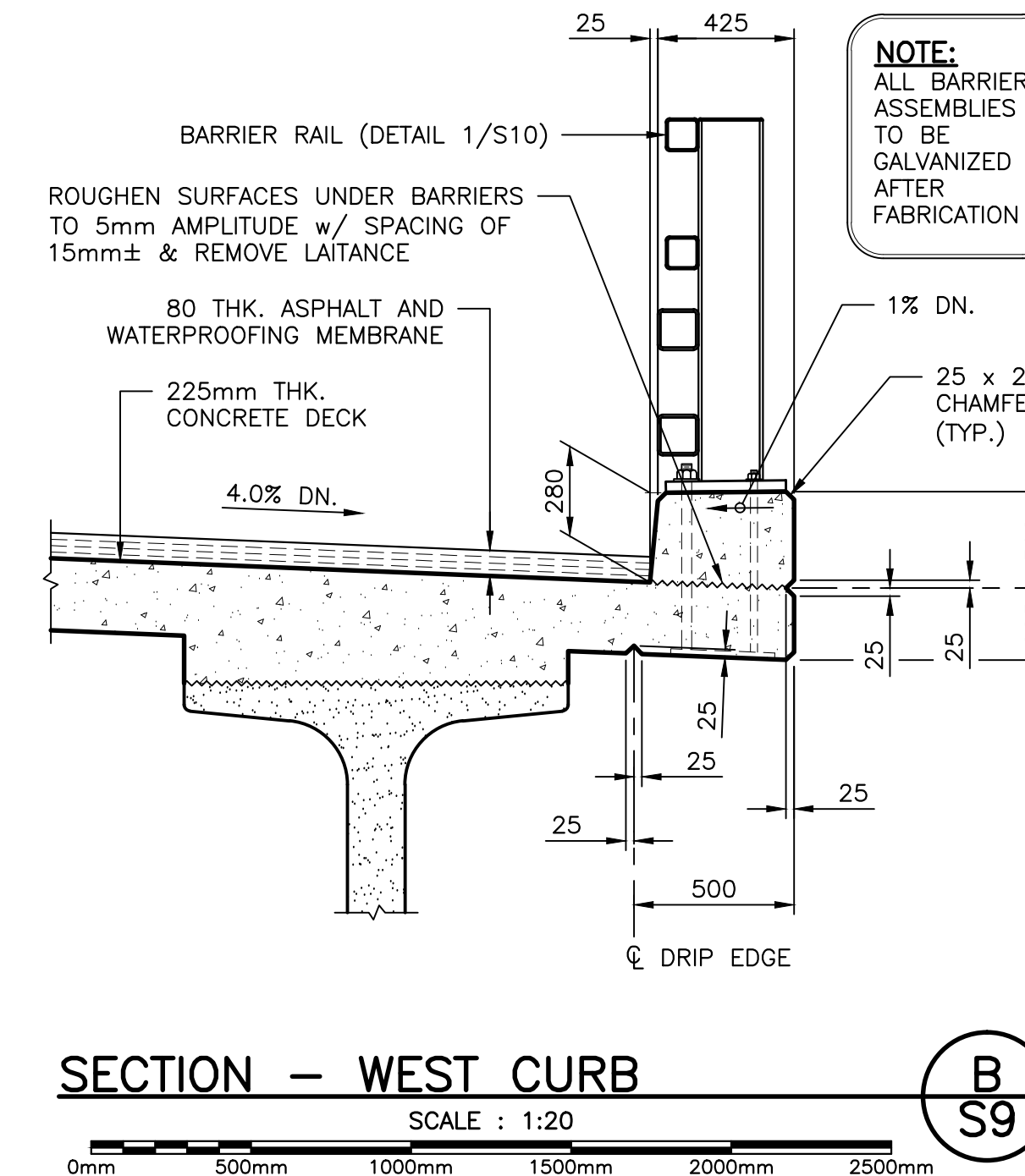
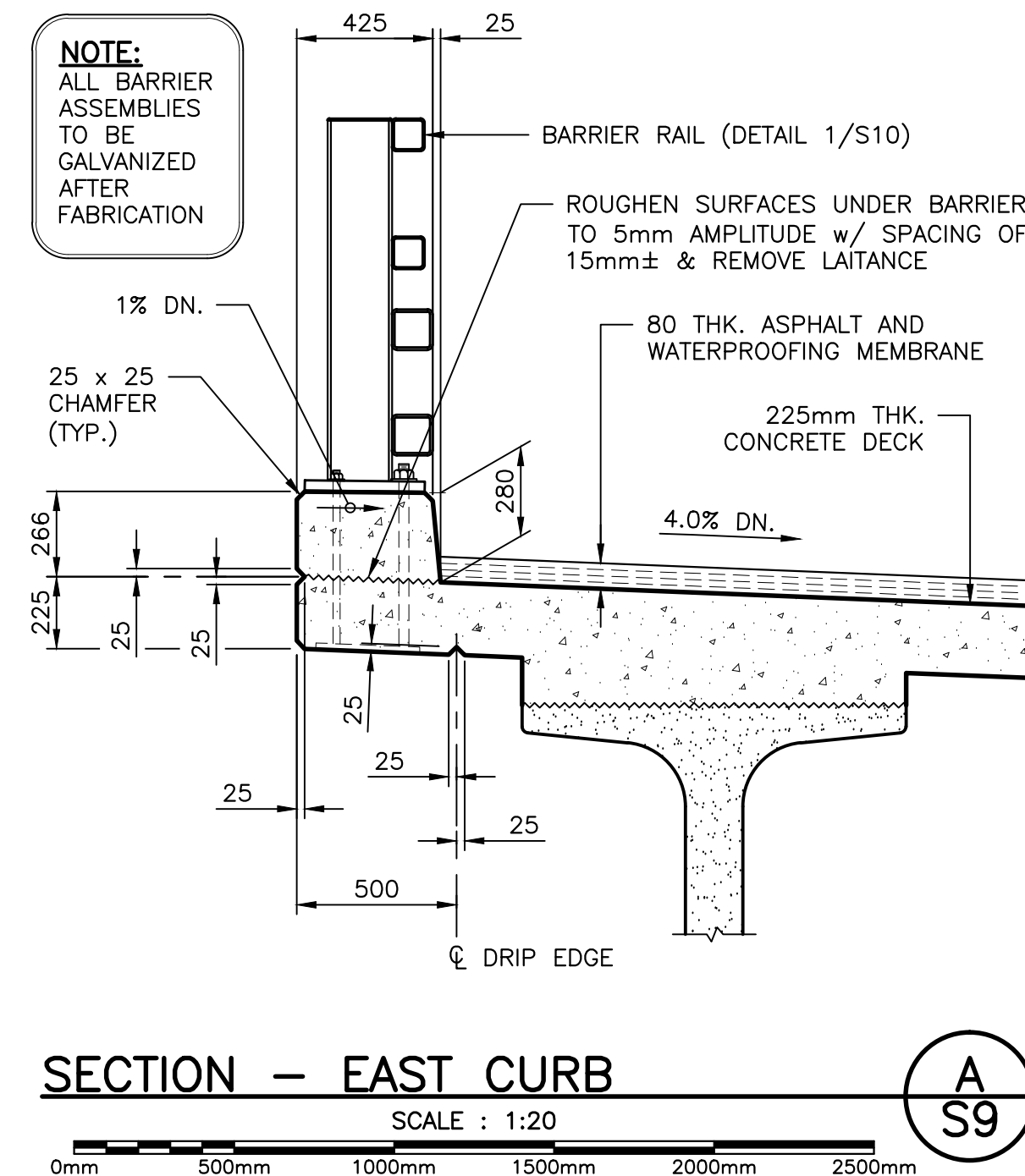
1812

drawing no. S9 no. du dessin

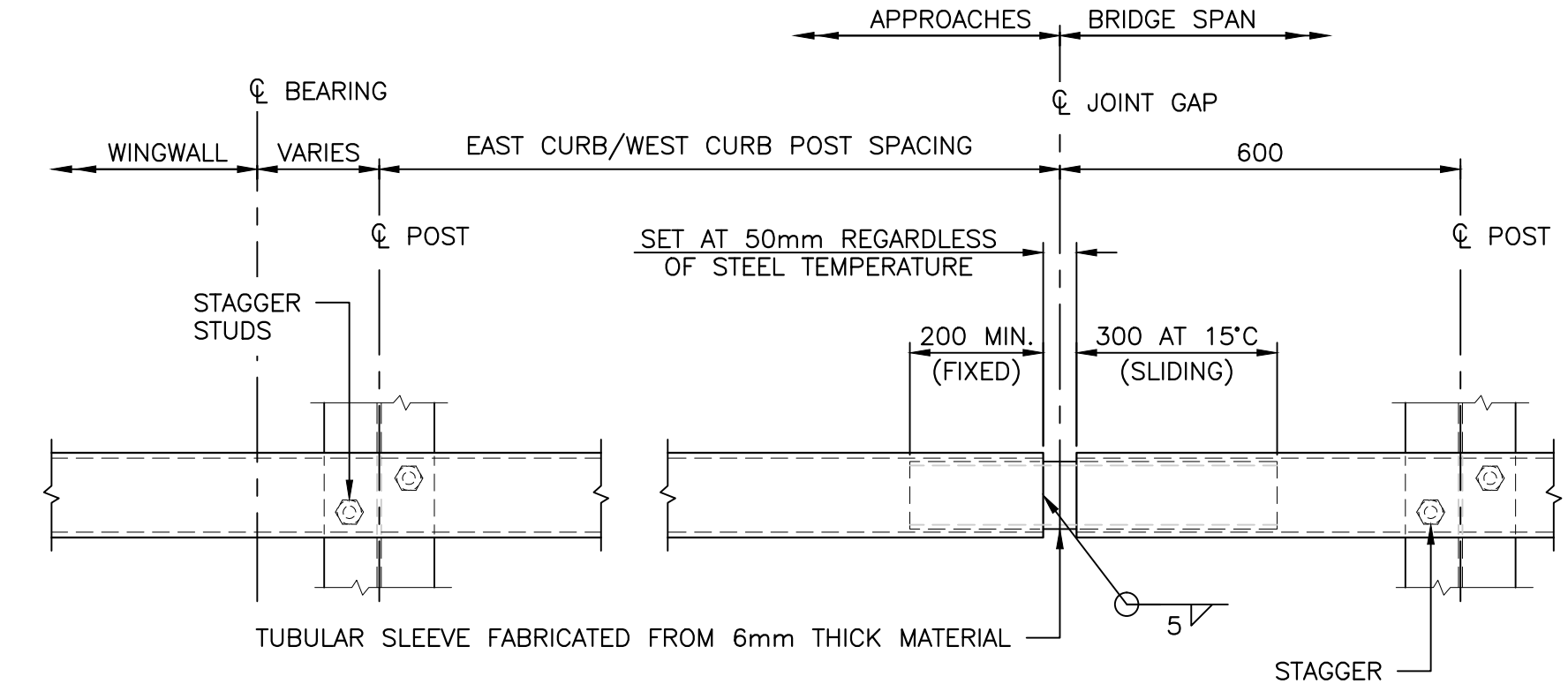
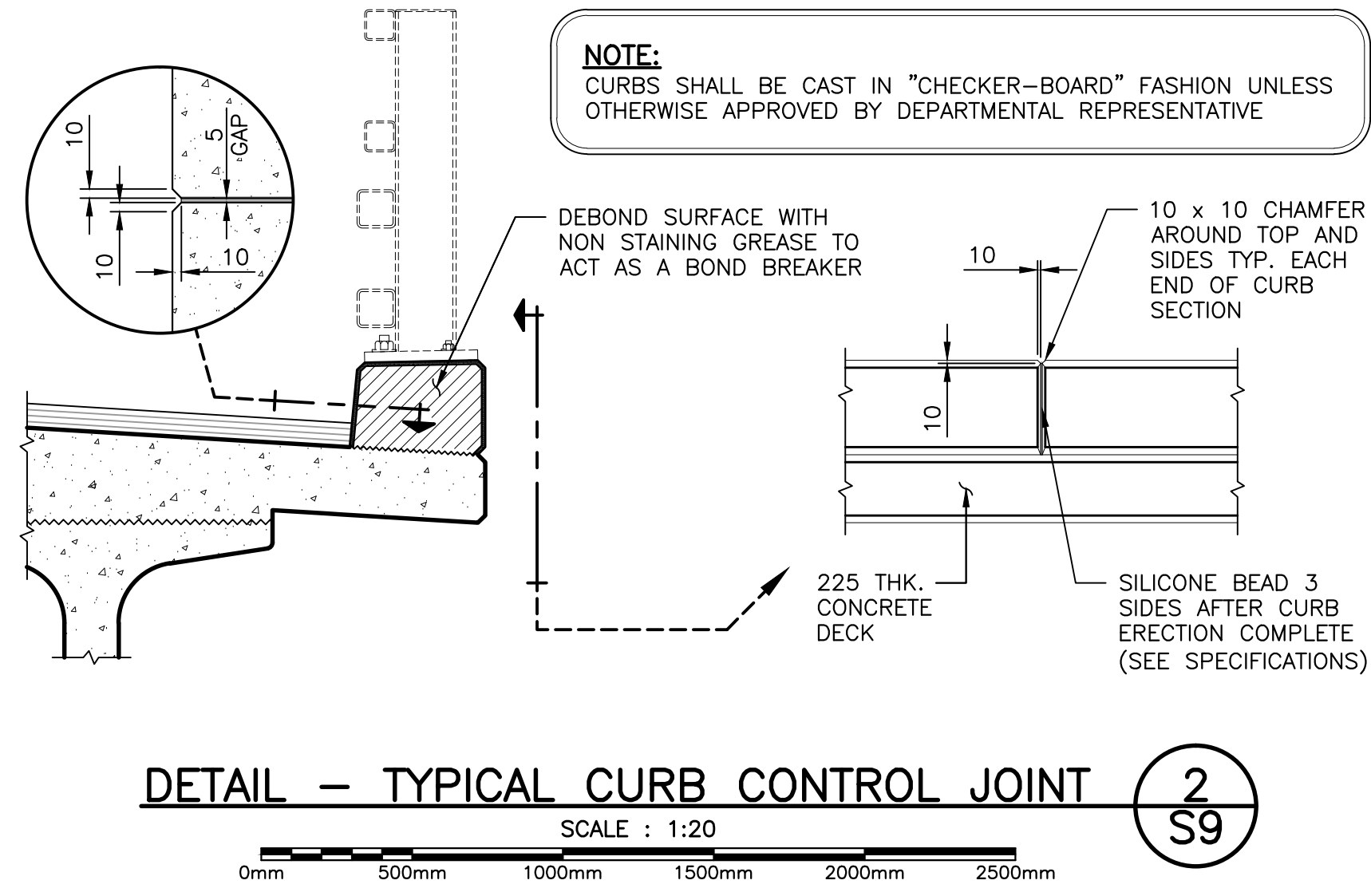


MISCELLANEOUS METALS NOTES:

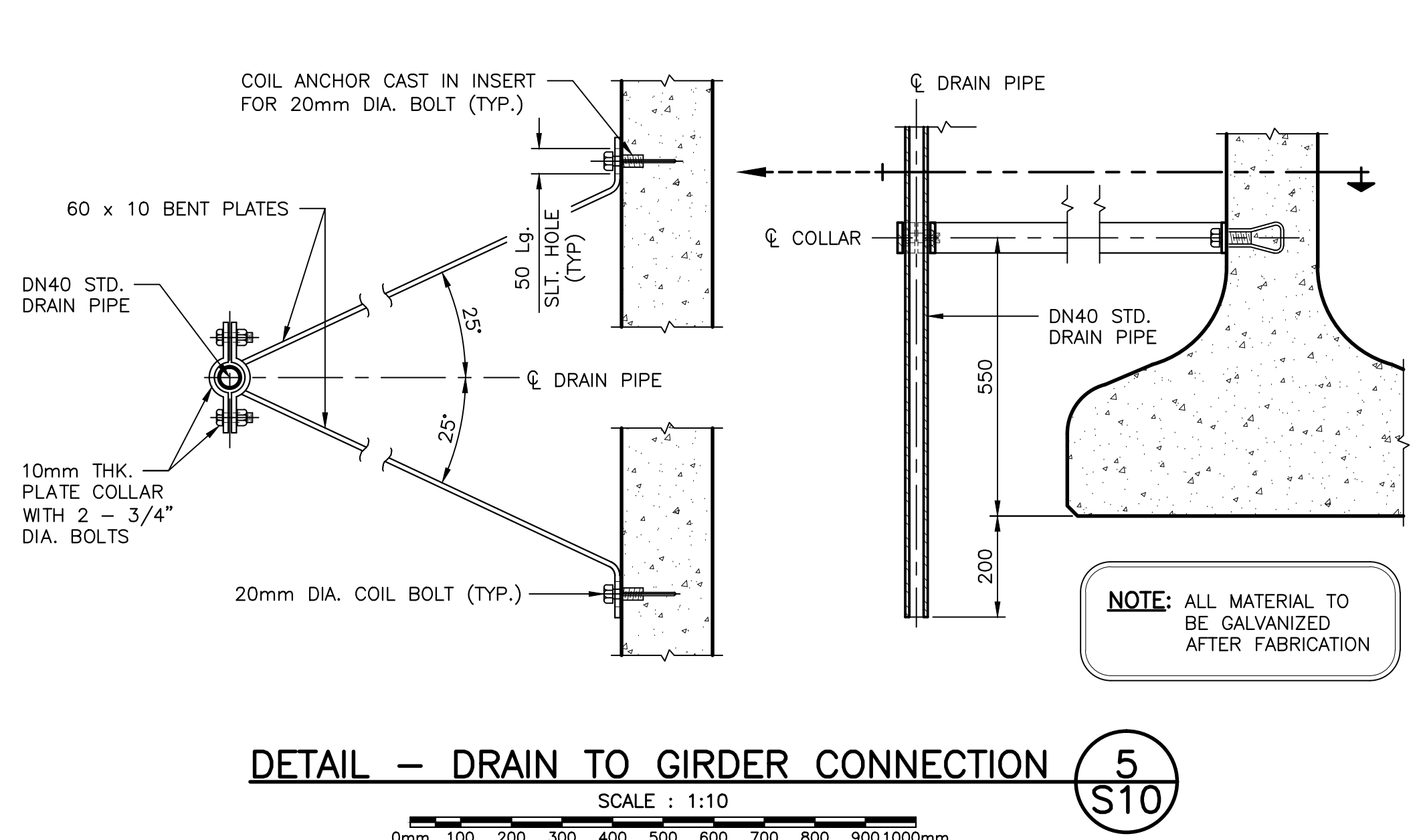
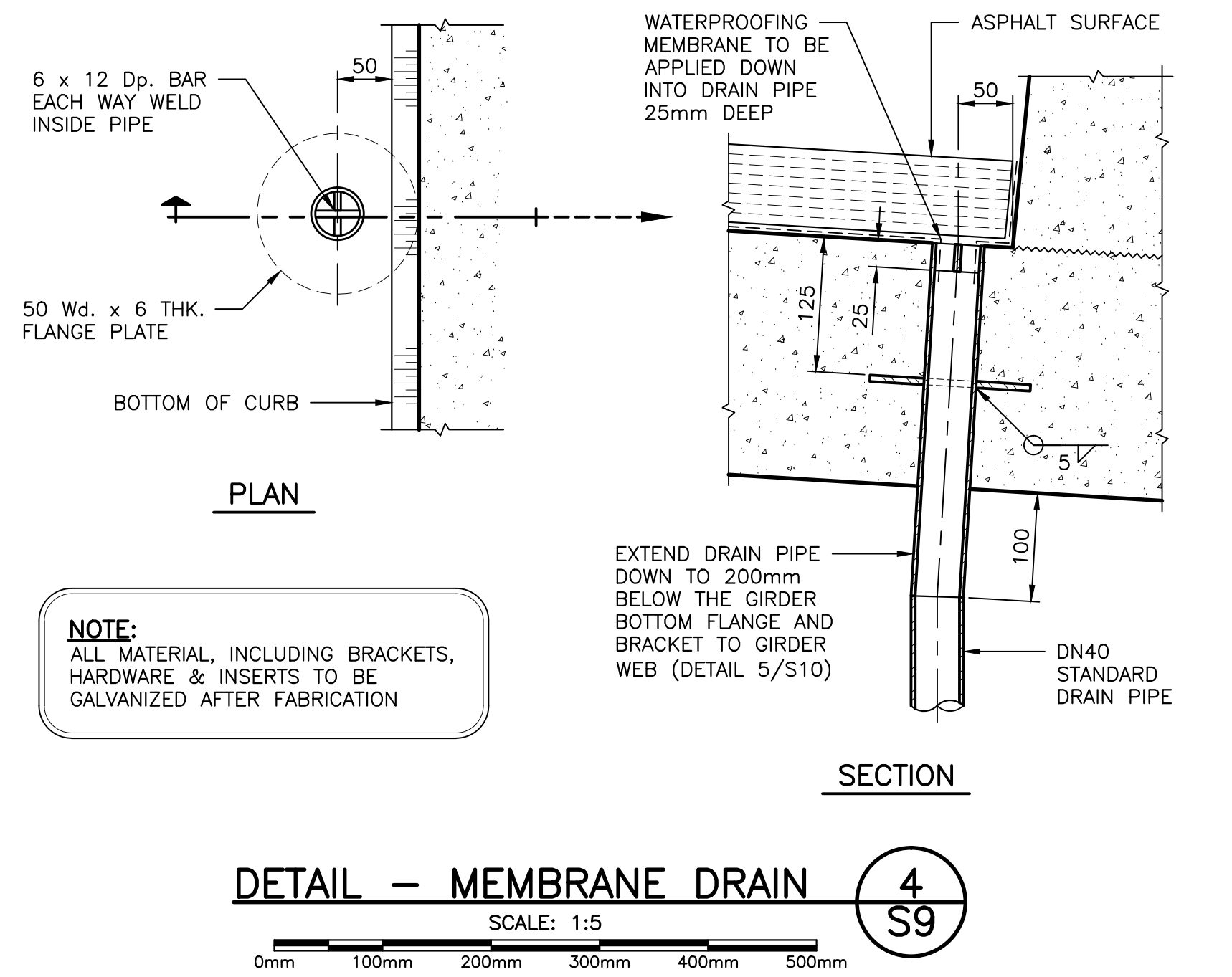
1. ALL PLATE SHALL CONFORM TO CAN/CSA-G40.21-350W.
2. ALL ROLLED ANGLE SECTIONS SHALL CONFORM TO CAN/CSA-G40.21-300W (MIN.). HSS TO A500 GRADE C.
3. ALL HSS RAILS TO ASTM A500 GRADE C, OR BETTER.
4. ALL WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W59 (LATEST EDITION WITH REVISIONS).
5. COAT STEEL AS NOTED AND AS PER DWG'S/PROJECT SPECIFICATIONS.
6. HIGH STRENGTH BOLTS AS NOTED ON DRAWINGS.
7. DRAIN PIPE TO ASTM A53 OR APPROVED ALTERNATE.
8. THREADED STUDS TO CONFORM TO ASTM-A29/A108.
9. STRUCTURAL WASHERS TO CONFORM TO ASTM F436.

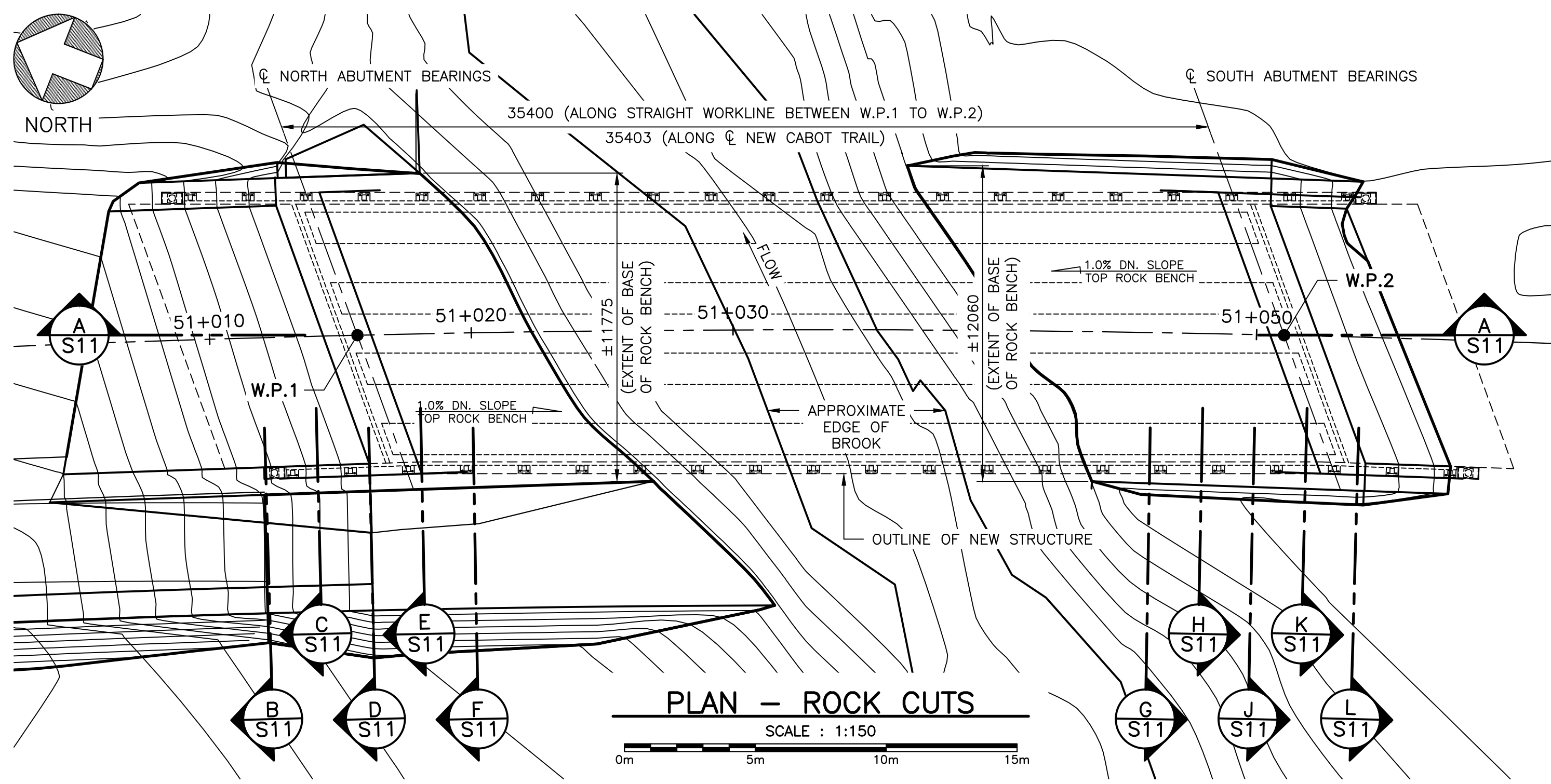


- NOTES:**
1. ALL BARRIER ASSEMBLIES TO BE GALVANIZED AFTER FABRICATION.
 2. CONTRACTOR TO TAKE EXTREME CARE WHEN DETAILING ANCHOR BOLT LENGTHS, FABRICATING ANCHOR BOLTS AND DURING INSTALLATION/CONCRETE CASTING OF ANCHOR BOLTS IN DECKS/CURBS TO ENSURE PROPER ALIGNMENT, COVER, EMBEDMENT AND THREAD EXTENSIONS PROVIDED.



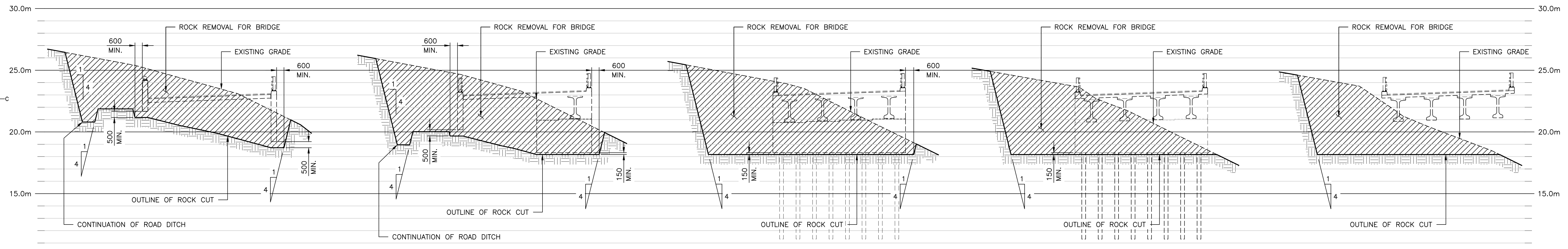
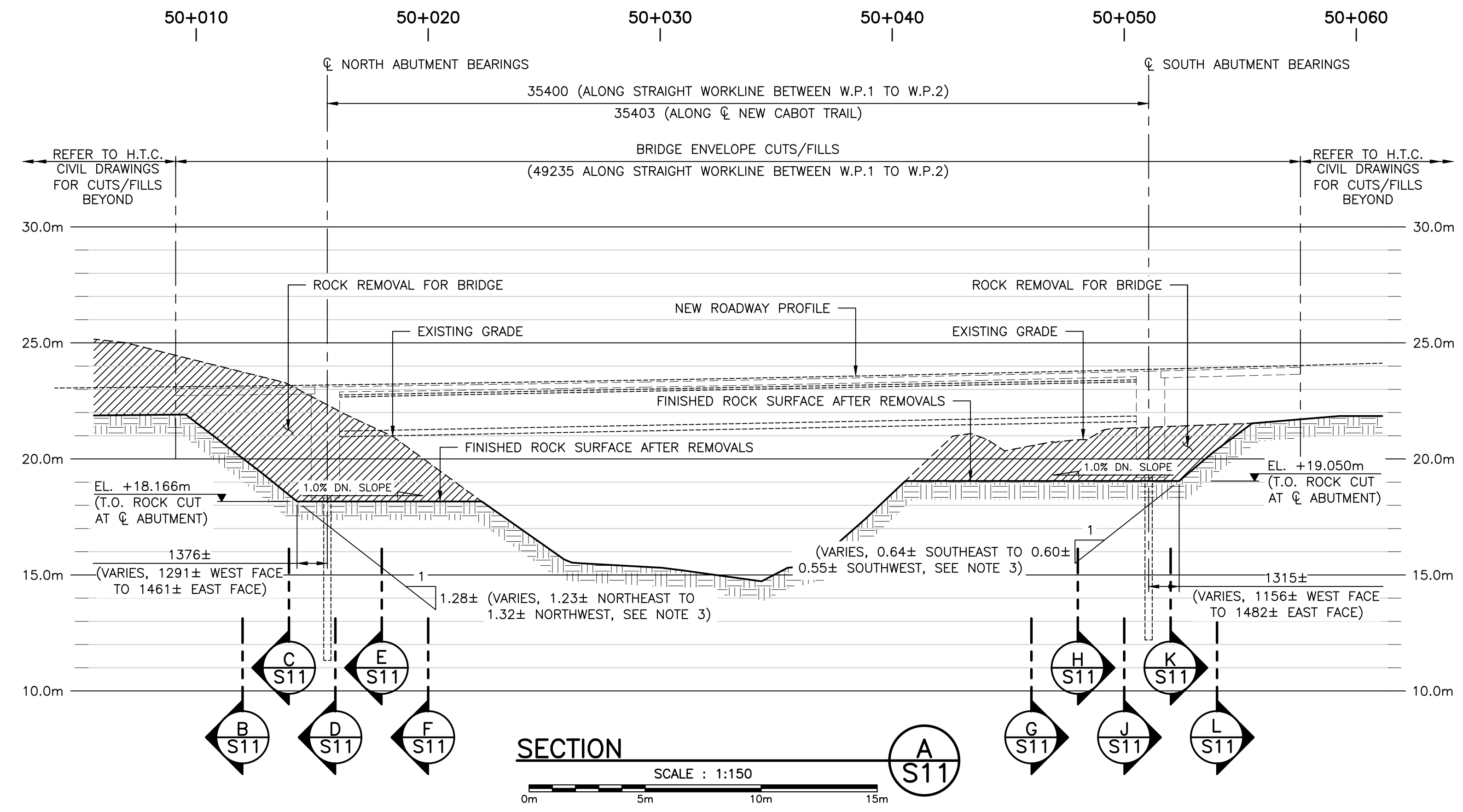
- NOTES:**
1. PROVIDED BETWEEN POSTS AT BOTH NORTH & SOUTH ABUTMENTS, E.S. OF BRIDGE.
 2. ENSURE FIXED END OF SLEEVE INSTALLED ON APPROACH SIDE OF JOINT.



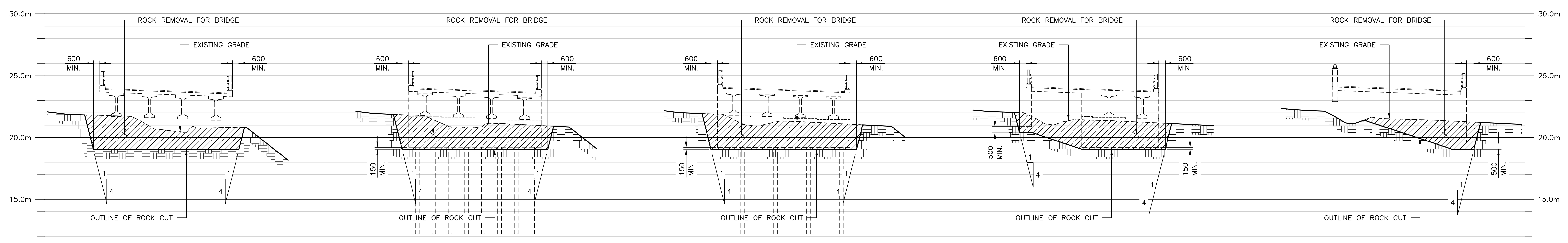


NOTES:

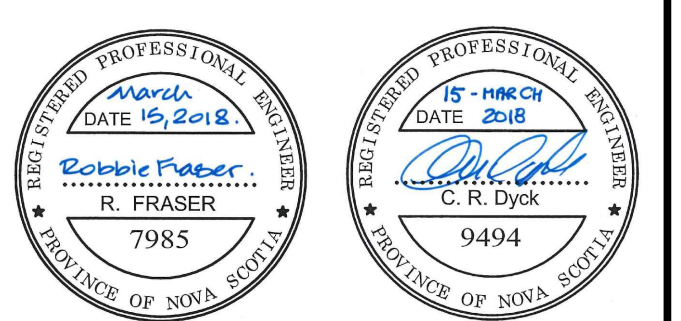
1. DETAILED ROCK REMOVAL PLAN TO BE SUBMITTED TO AND APPROVED BY THE DEPARTMENTAL REPRESENTATIVE FOR ANY PROPOSED REMOVAL METHODS OTHER THAN ROCK BREAKING WITH AN EXCAVATOR PER THE PROJECT SPECIFICATIONS PRIOR TO ANY ROCK REMOVAL ACTIVITIES BEING CARRIED OUT.
2. ROCK REMOVAL LIMITS SHOWN ON THIS DRAWING ARE APPROXIMATE. REFER TO GENERAL ARRANGEMENT SHEETS S1 AND S2 FOR GOVERNING ROCK REMOVAL CRITERIA.
3. APPROXIMATE SLOPES BETWEEN WINGWALLS ONLY. ADD 500mm CUT BELOW EACH WINGWALL AS SHOWN ON SHEET S2.



SECTION - 51+012 (B S11) SCALE: 1:150
 SECTION - 51+014 (C S11) SCALE: 1:150
 SECTION - 51+016 (D S11) SCALE: 1:150
 SECTION - 51+018 (E S11) SCALE: 1:150
 SECTION - 51+020 (F S11) SCALE: 1:150



SECTION - 51+046 (G S11) SCALE: 1:150
 SECTION - 51+048 (H S11) SCALE: 1:150
 SECTION - 51+050 (J S11) SCALE: 1:150
 SECTION - 51+052 (K S11) SCALE: 1:150
 SECTION - 51+054 (L S11) SCALE: 1:150



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revisions		date

project **EFFIE'S BROOK BRIDGE REPLACEMENT**
 HIGHLANDS NATIONAL PARK
 CAPE BRETON, NOVA SCOTIA

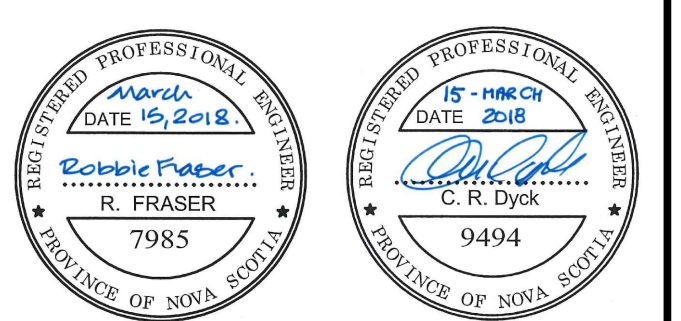
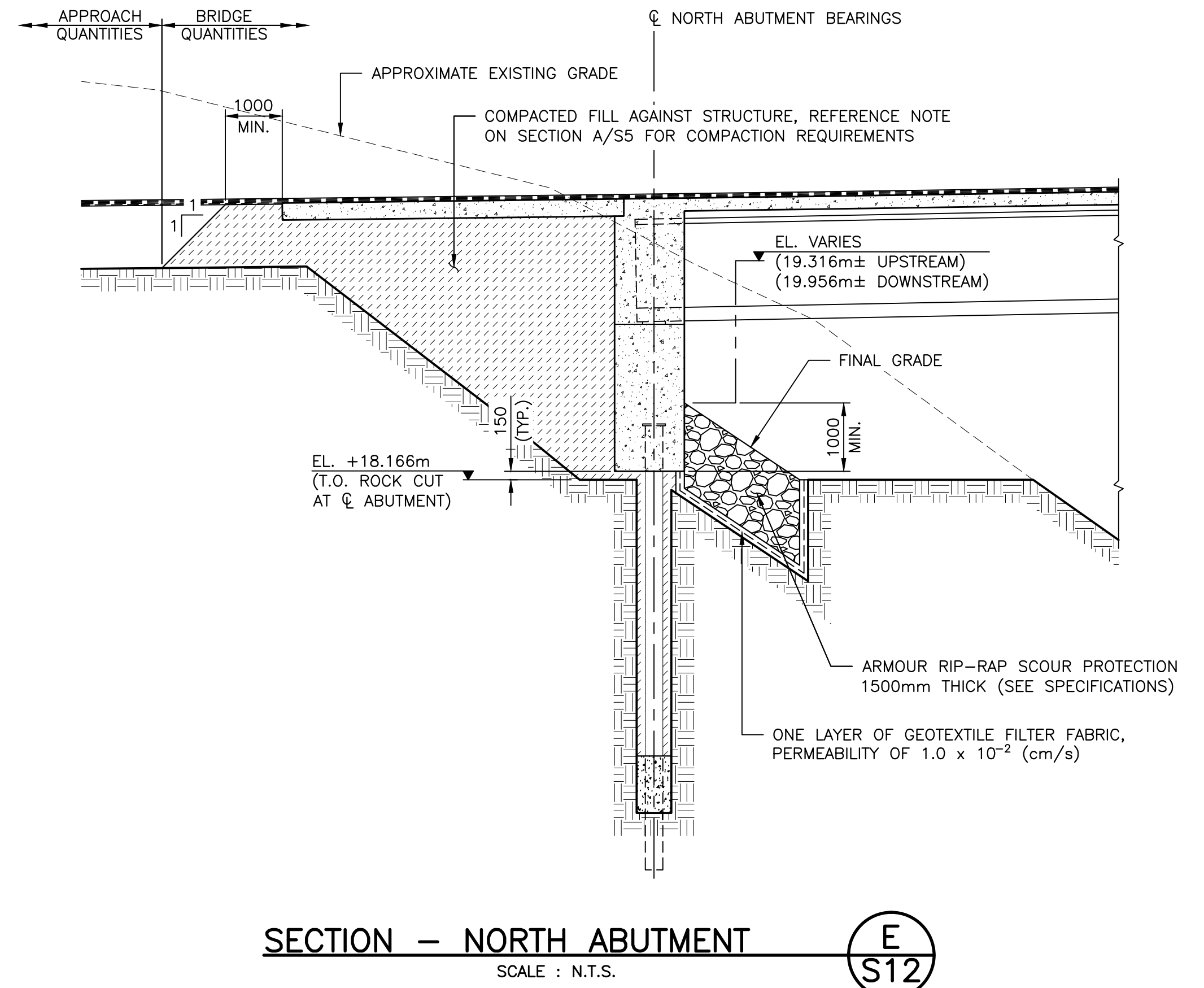
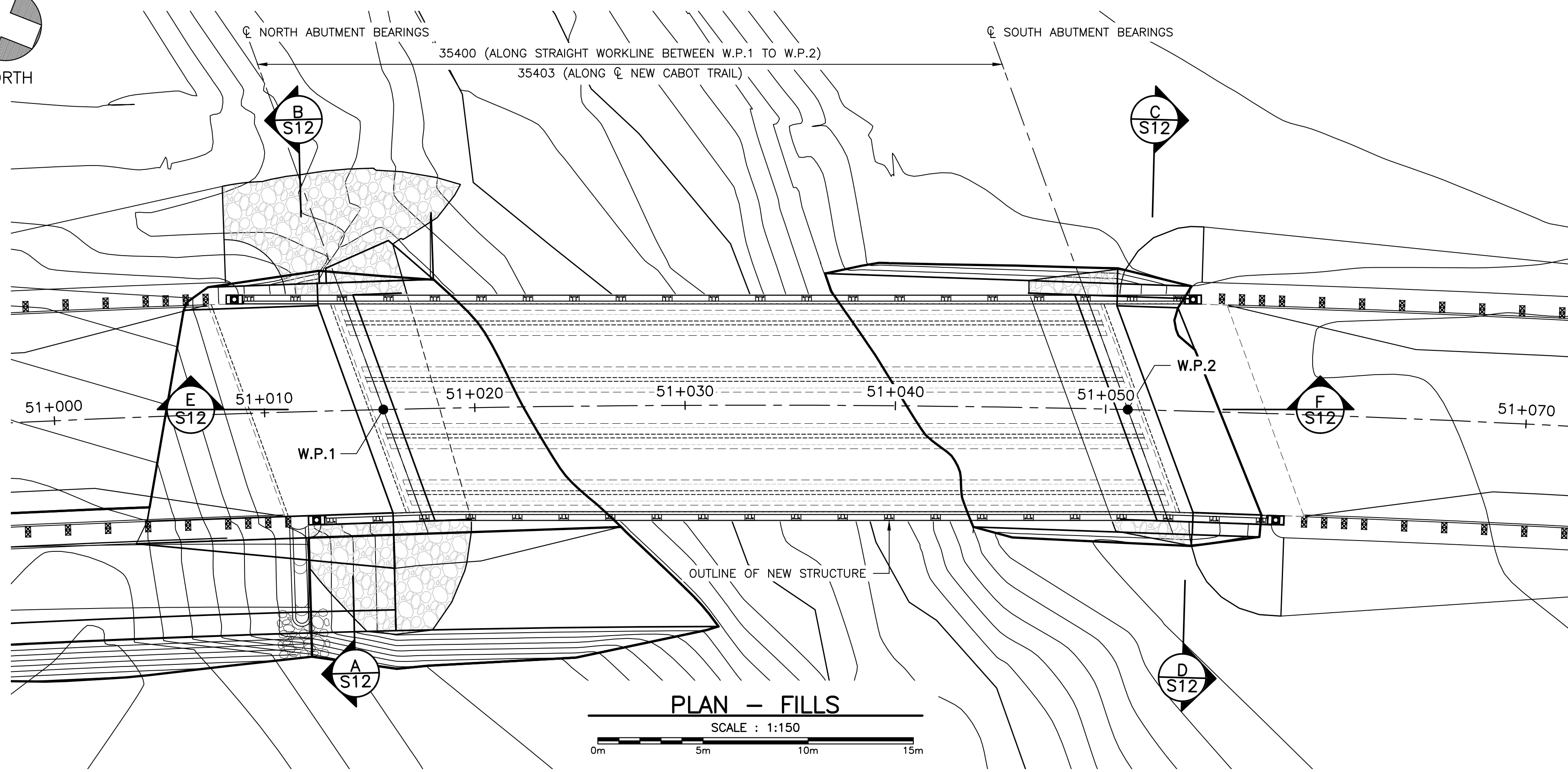
drawing **ROCK CUTS PLAN AND SECTIONS**

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender	<i>[Signature]</i>	Soumission
PCA Project Manager	Administrateur de projets APC	

project number **1812**
 drawing no. **S11**



NORTH



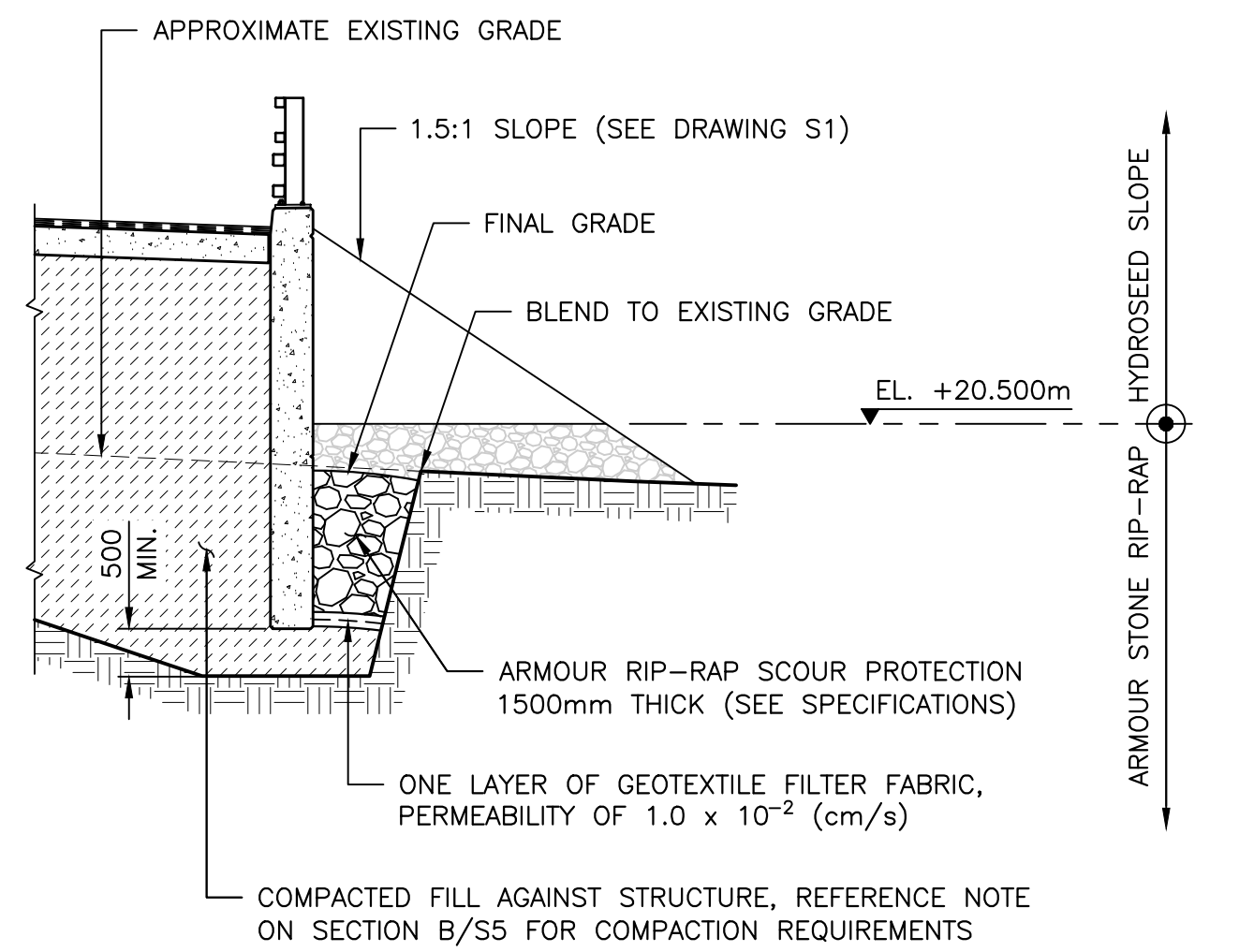
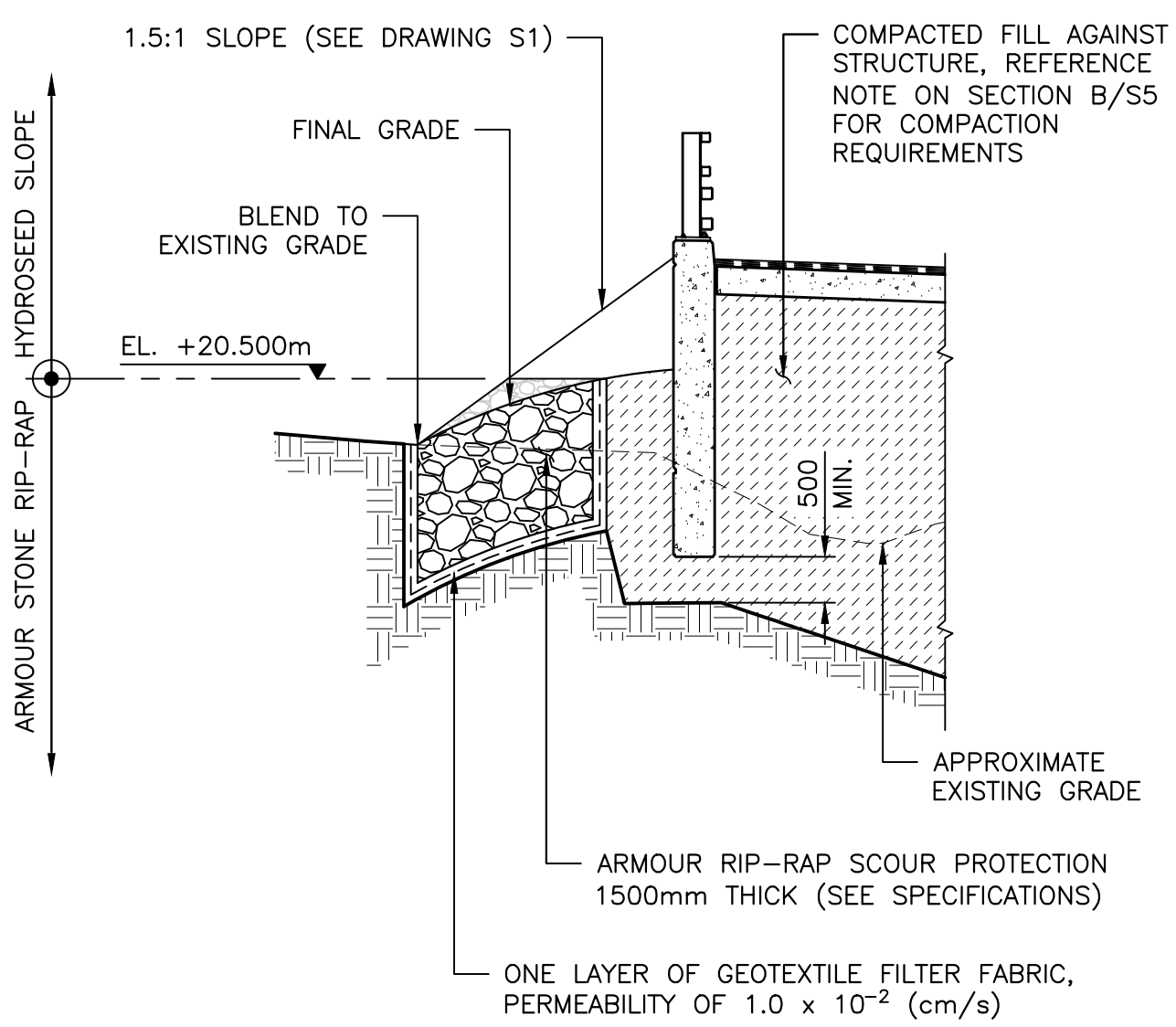
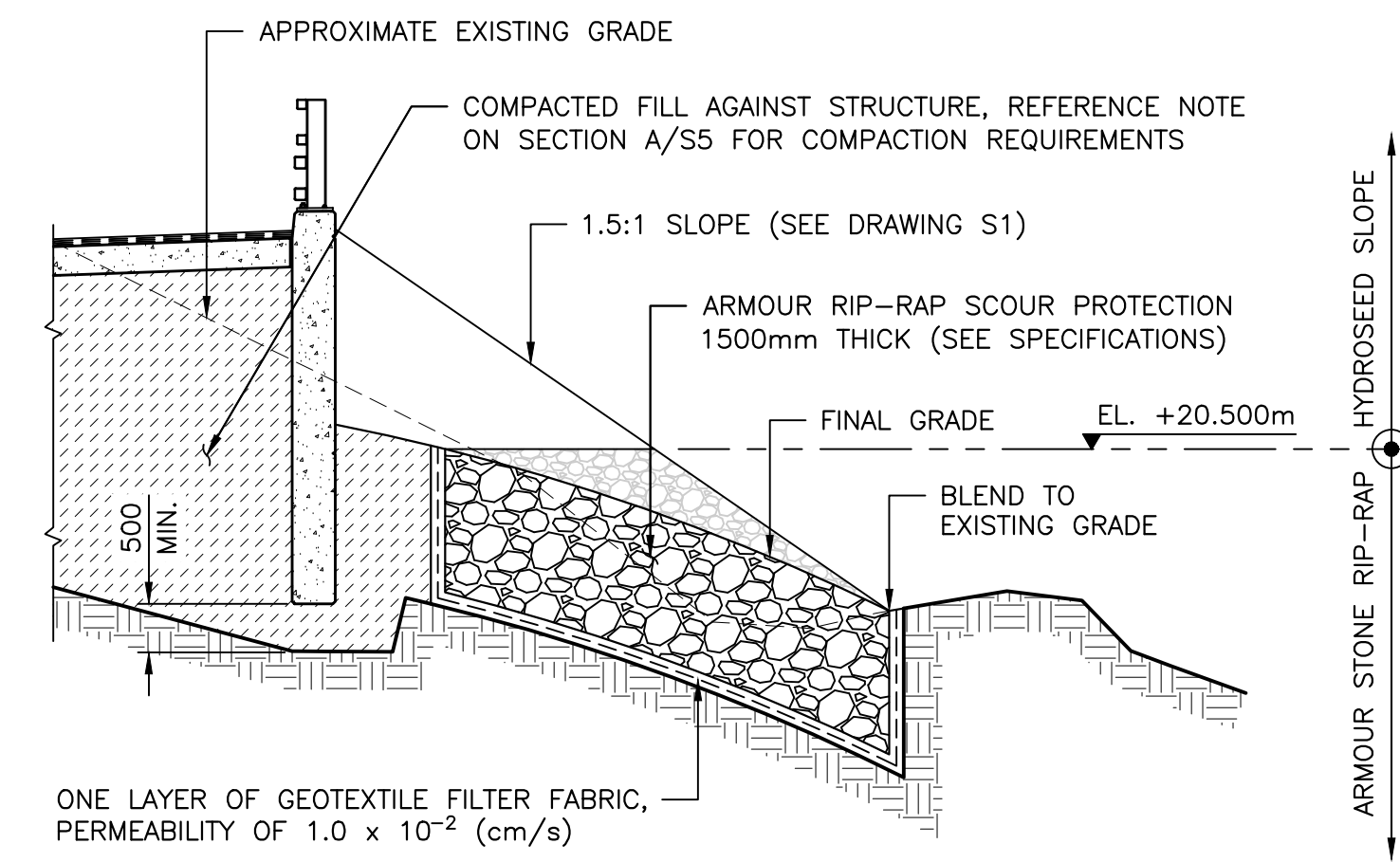
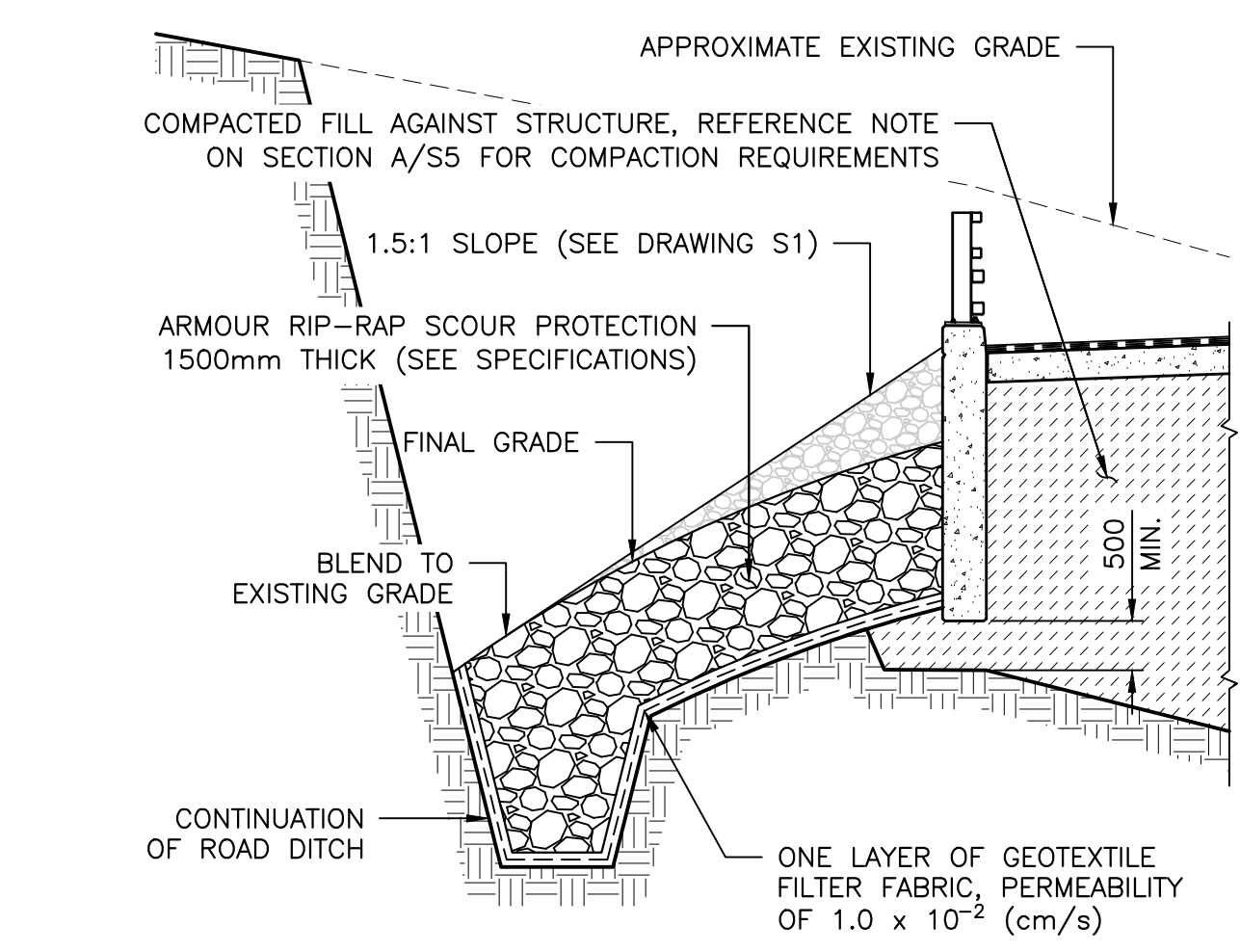
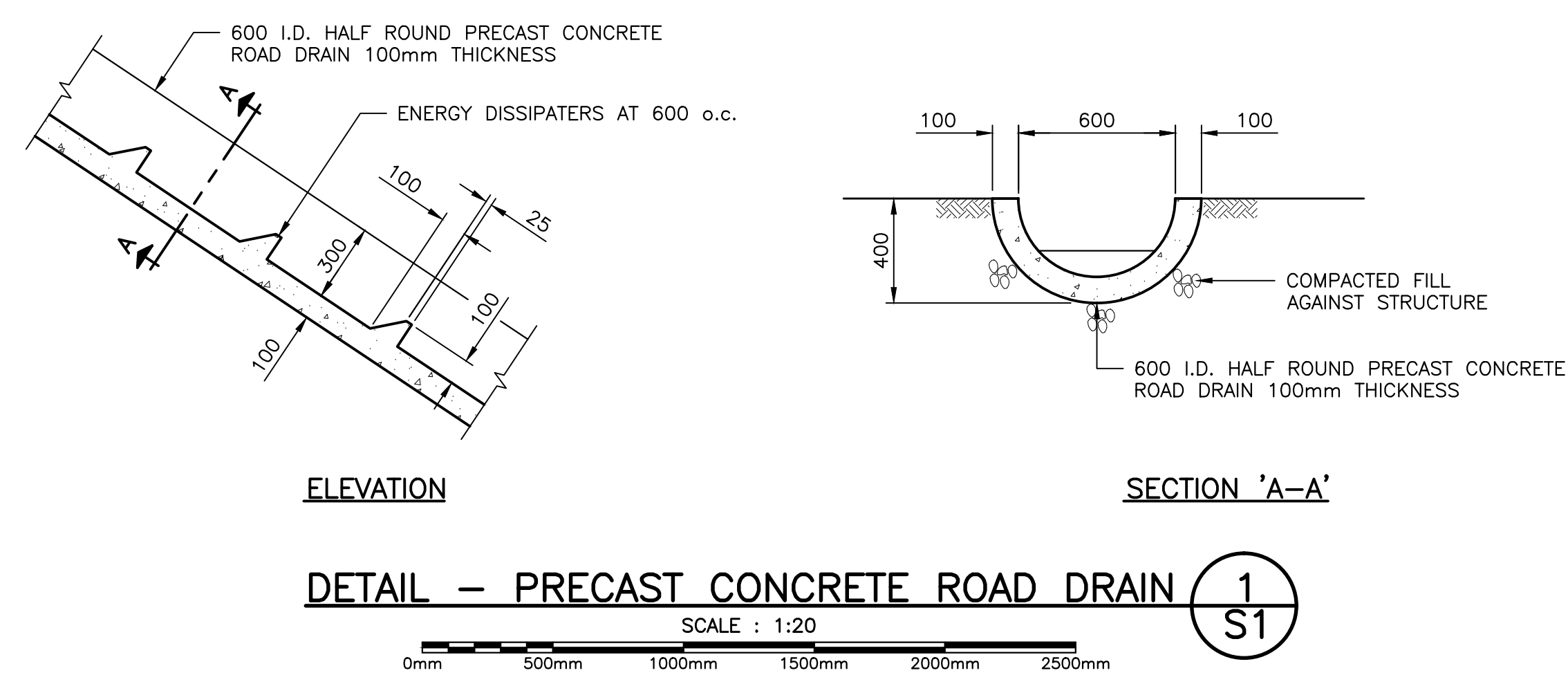
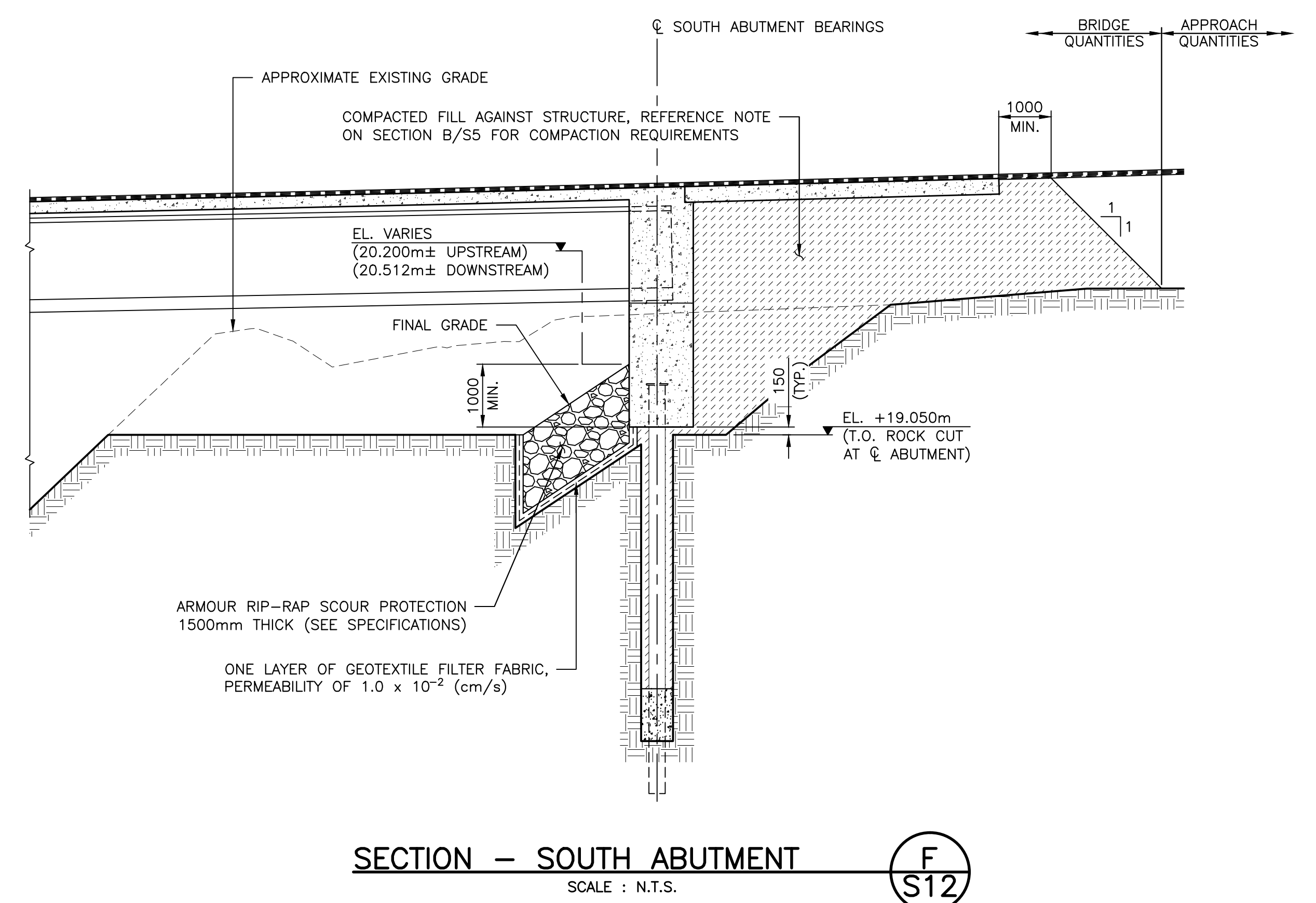
0	ISSUED FOR TENDER	MAR. 15 2018
revisions		date

project **EFFIE'S BROOK BRIDGE REPLACEMENT**

HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing **FILL QUANTITY DIAGRAMS** design

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender	<i>[Signature]</i>	Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S12	no. du dessin

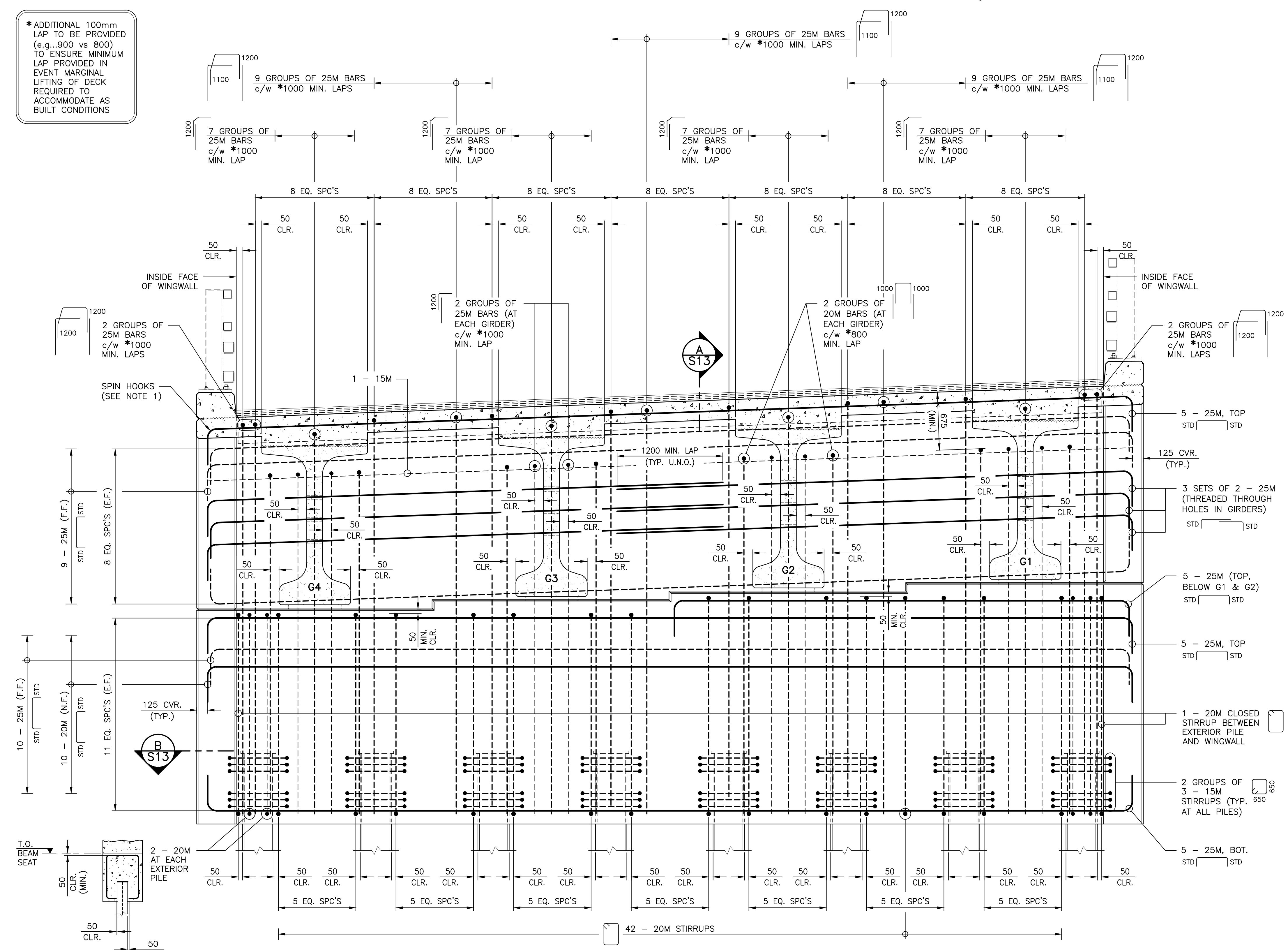


SECTION - SOUTHWEST WINGWALL D SCALE : N.T.S.

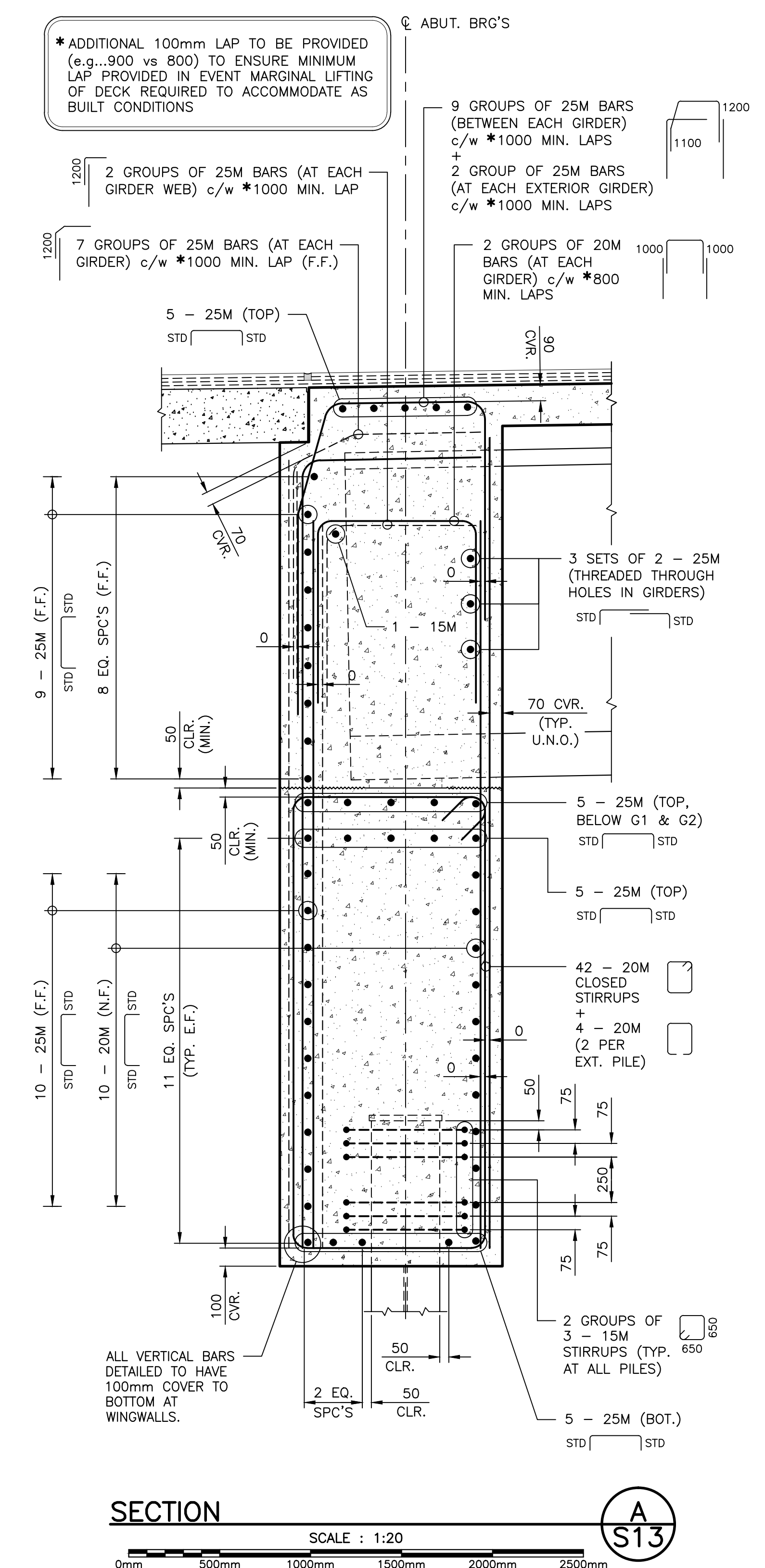
SECTION - SOUTHWEST WINGWALL D SCALE : N.T.S.

*ADDITIONAL 100mm LAP TO BE PROVIDED (e.g., 900 vs 800) TO ENSURE MINIMUM LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS BUILT CONDITIONS

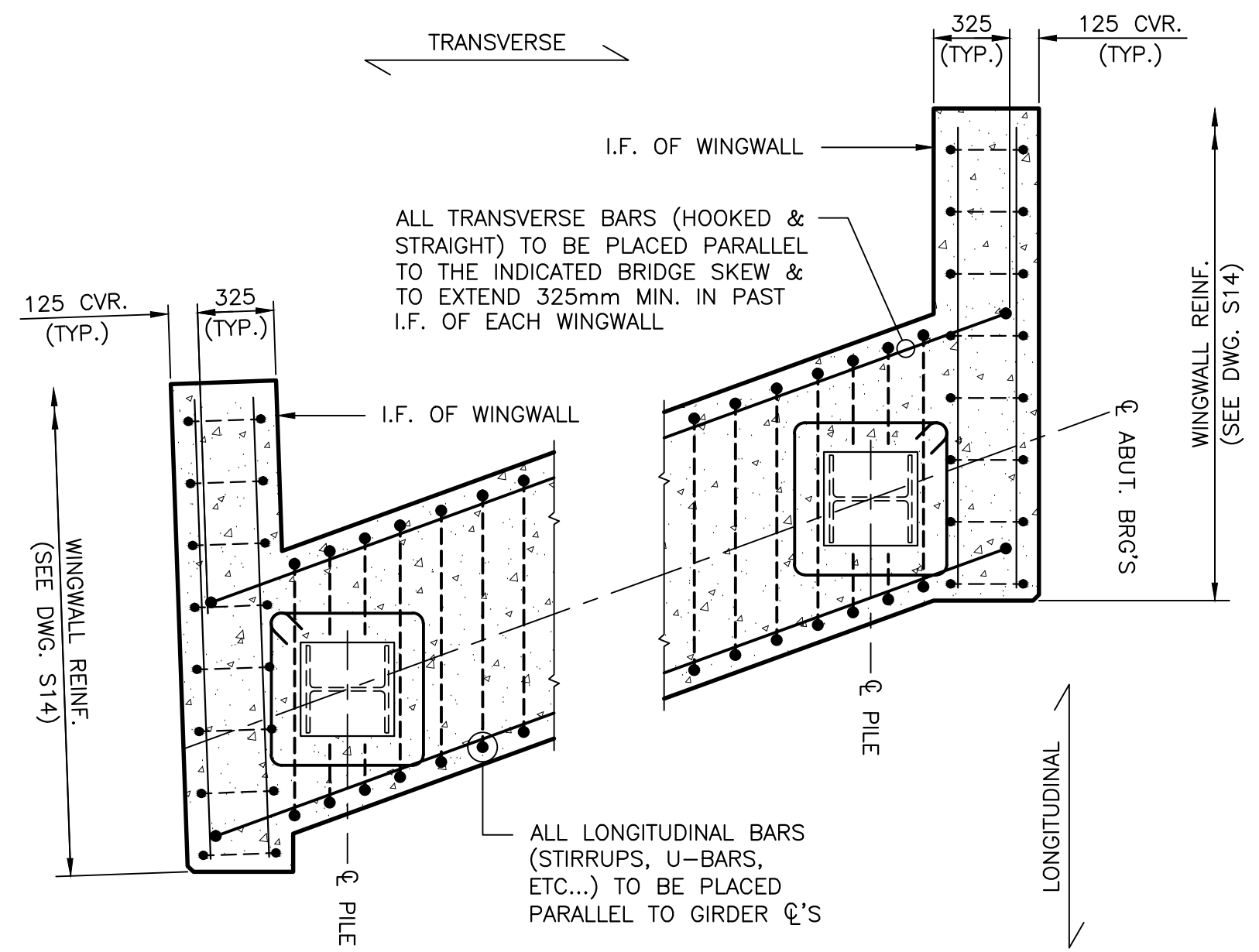
*ADDITIONAL 100mm LAP TO BE PROVIDED (e.g., 900 vs 800) TO ENSURE MINIMUM LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS BUILT CONDITIONS



TYPICAL ABUTMENT REINFORCING 1
SCALE: 1:25



SECTION A-S13
SCALE: 1:20

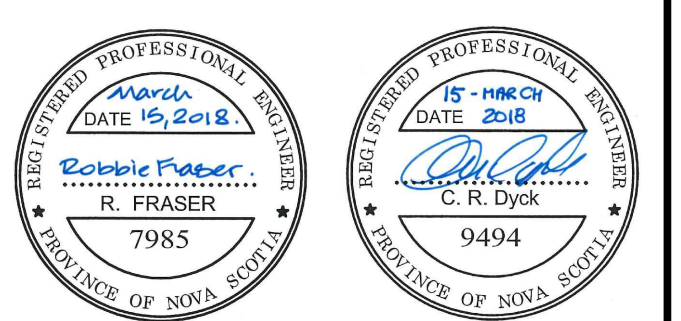


SECTION B-S13
SCALE: 1:25

- NOTES:**
- TURN ALL HOOKED HORIZONTAL BARS INTO WINGWALLS IN SUCH A MANNER AS TO MAINTAIN ALL COVERS AND AVOID CLASH WITH WINGWALL REINFORCING. REFERENCE PROJECT SPECIFICATIONS FOR REQUIRED BAR HOOK BEND DIAMETERS.
 - MINIMUM HORIZONTAL BAR LAPS: (U.N.O.)
15M BARS --- 600mm
25M BARS --- 1200mm
 - MINIMUM VERTICAL BAR LAPS: (U.N.O.)
20M BARS --- 600mm
25M BARS --- 900mm
 - ALL HORIZONTAL BARS TO EXTEND 325mm PAST I.F. OF WINGWALL.
 - ALL REINFORCING TO BE GALVANIZED AFTER FABRICATION. CARE SHALL BE TAKEN WHEN HANDLING GALVANIZED BARS NOT TO DAMAGE COATINGS.
 - A CLEAR SPACING OF 30mm MINIMUM SHALL BE PROVIDED BETWEEN ALL GALVANIZED AND BLACK STEEL COMPONENTS, OTHERWISE THE GALVANIZED BAR SHALL BE WRAPPED IN DENSO TAPE LOCALLY AT CONTACT POINT TO AVOID CONTACT BETWEEN DISSIMILAR METALS.

REINFORCING LEGEND:

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

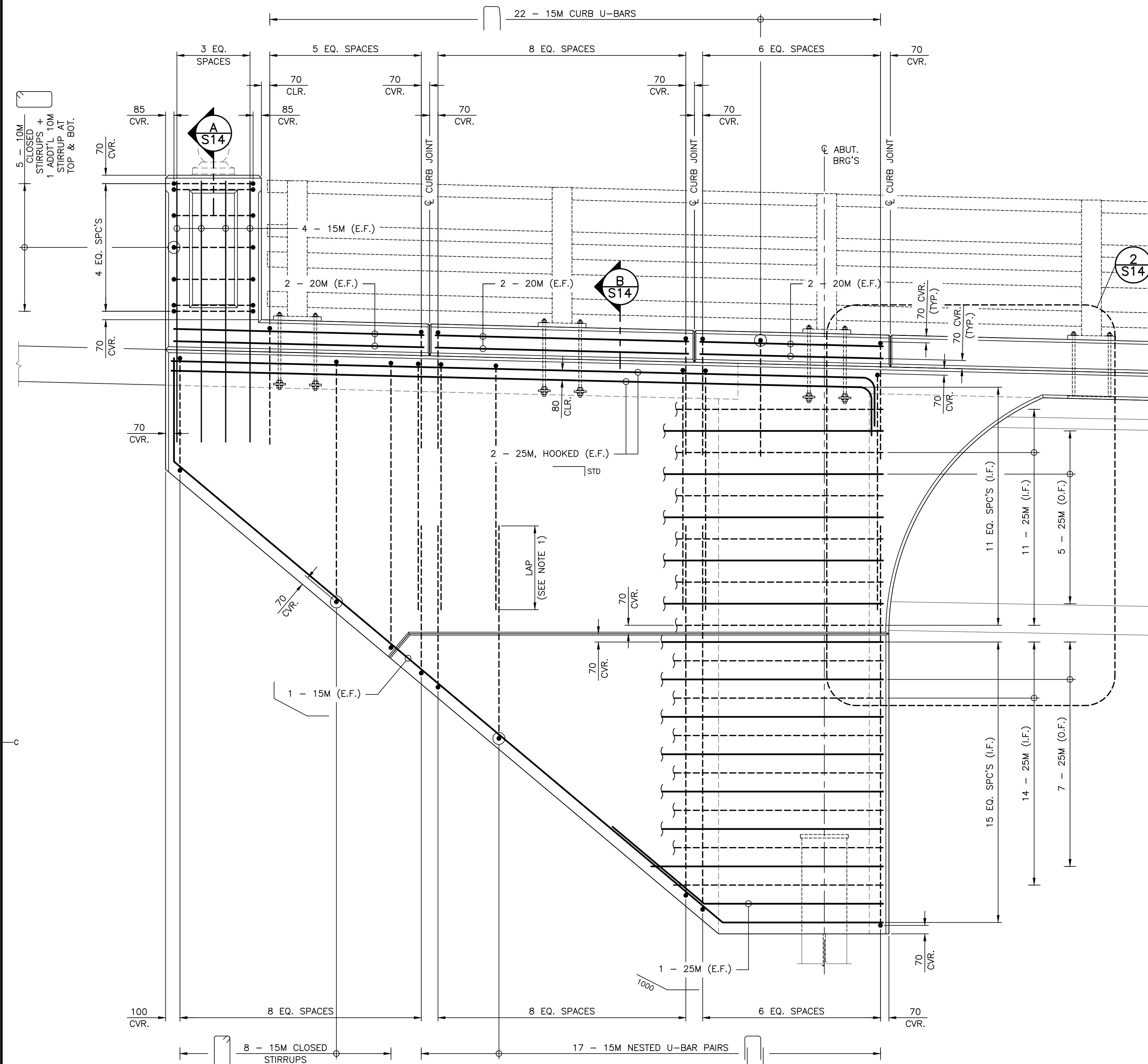


0	ISSUED FOR TENDER	MAR. 15 2018
revisions		date

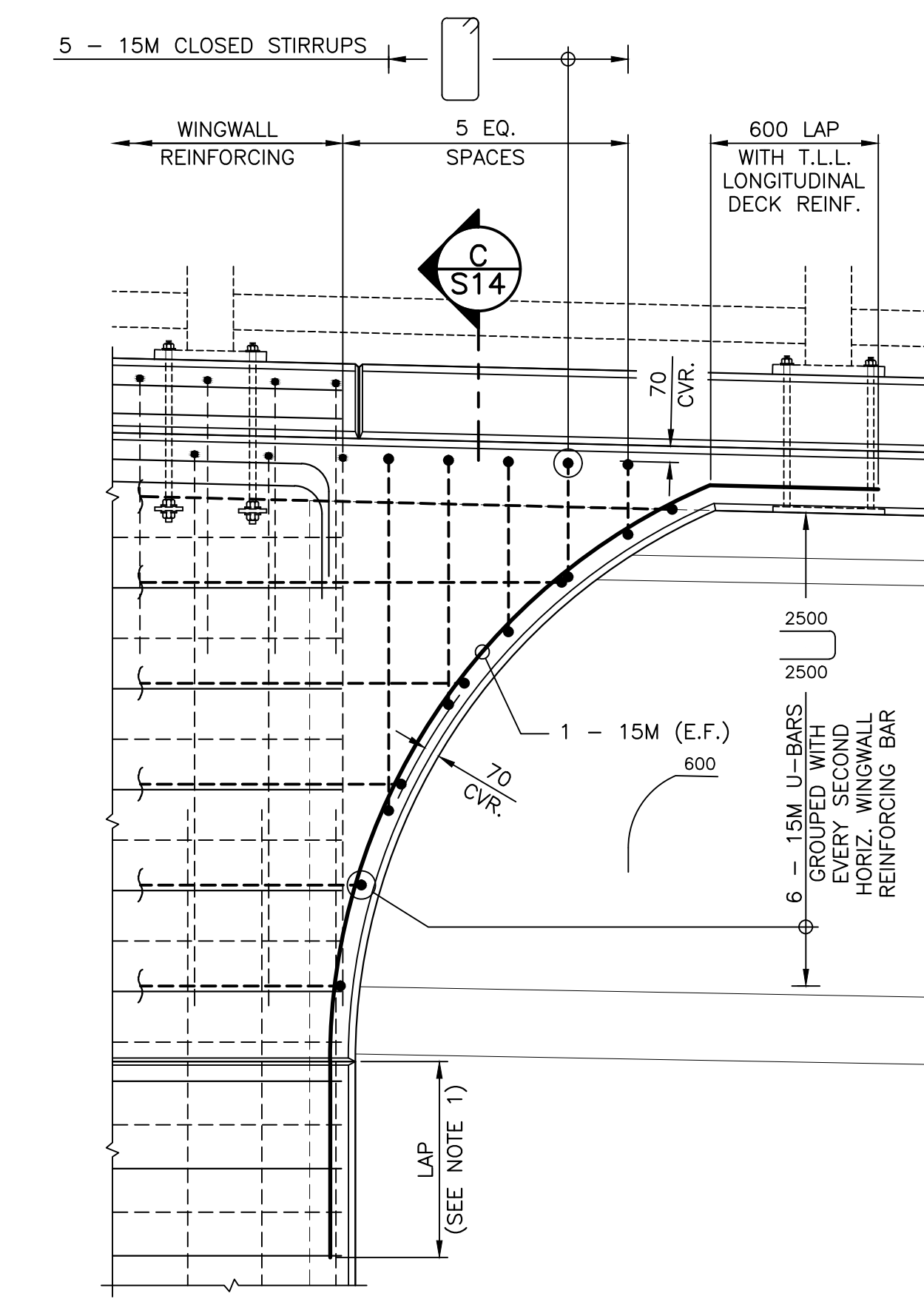
project
EFFIE'S BROOK BRIDGE REPLACEMENT
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

drawing
ABUTMENT REINFORCING
design

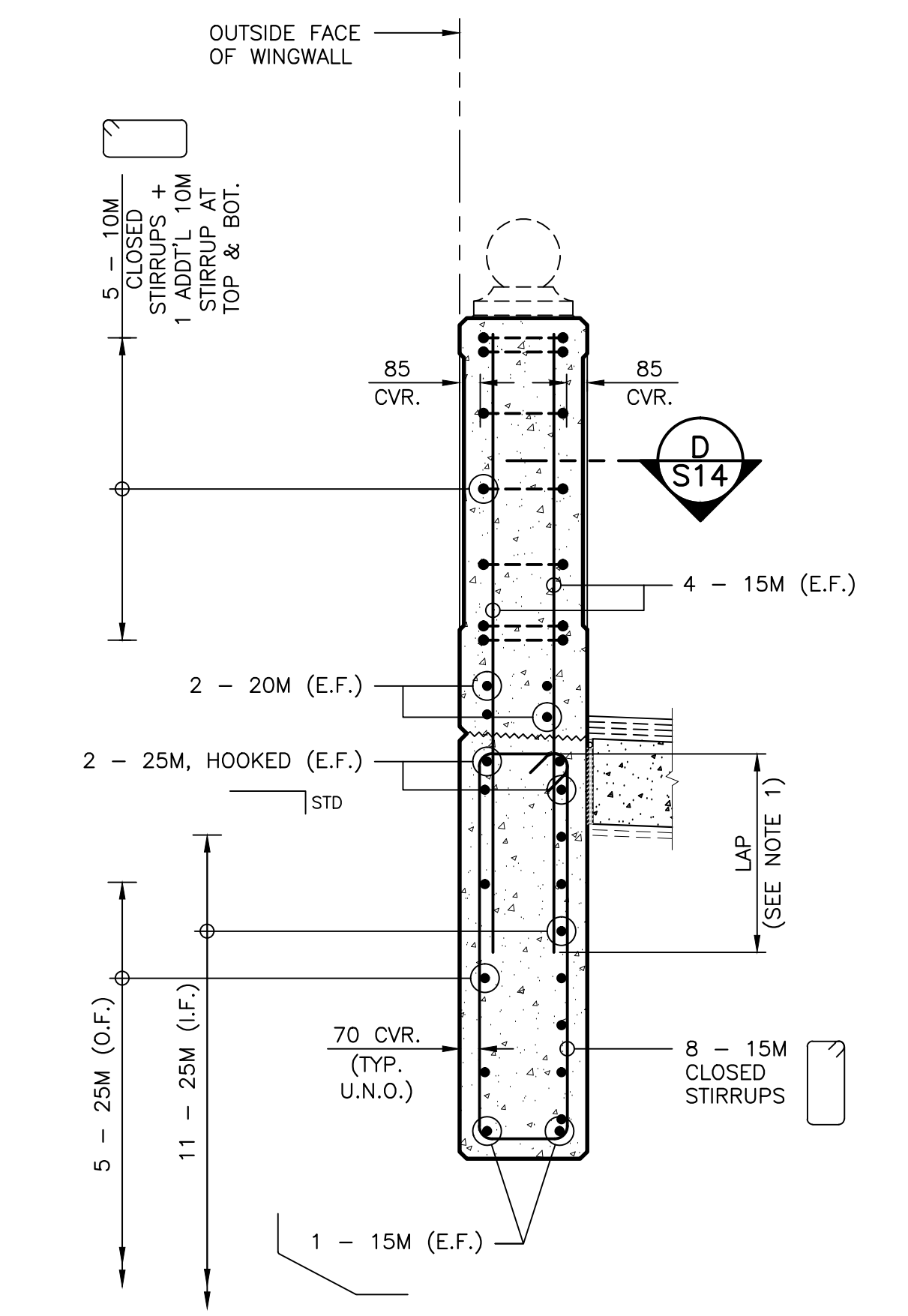
designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	date
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	date
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	date
Tender		Soumission
PCA Project Manager		Administrateur de projets APC
project number	1812	no. du projet
drawing no.	S13	no. du dessin



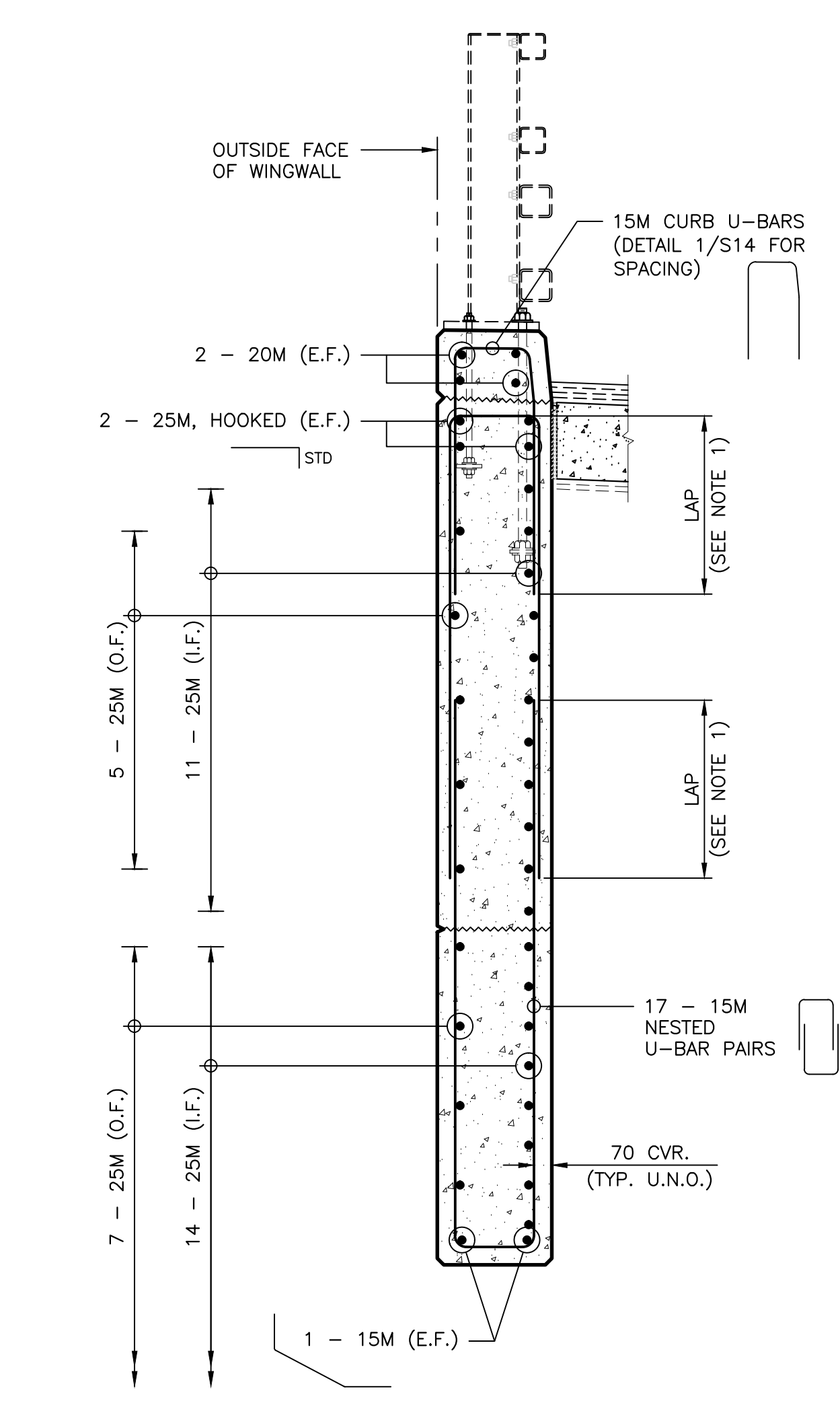
TYPICAL WINGWALL REINFORCING (1) S14
SCALE: 1:20



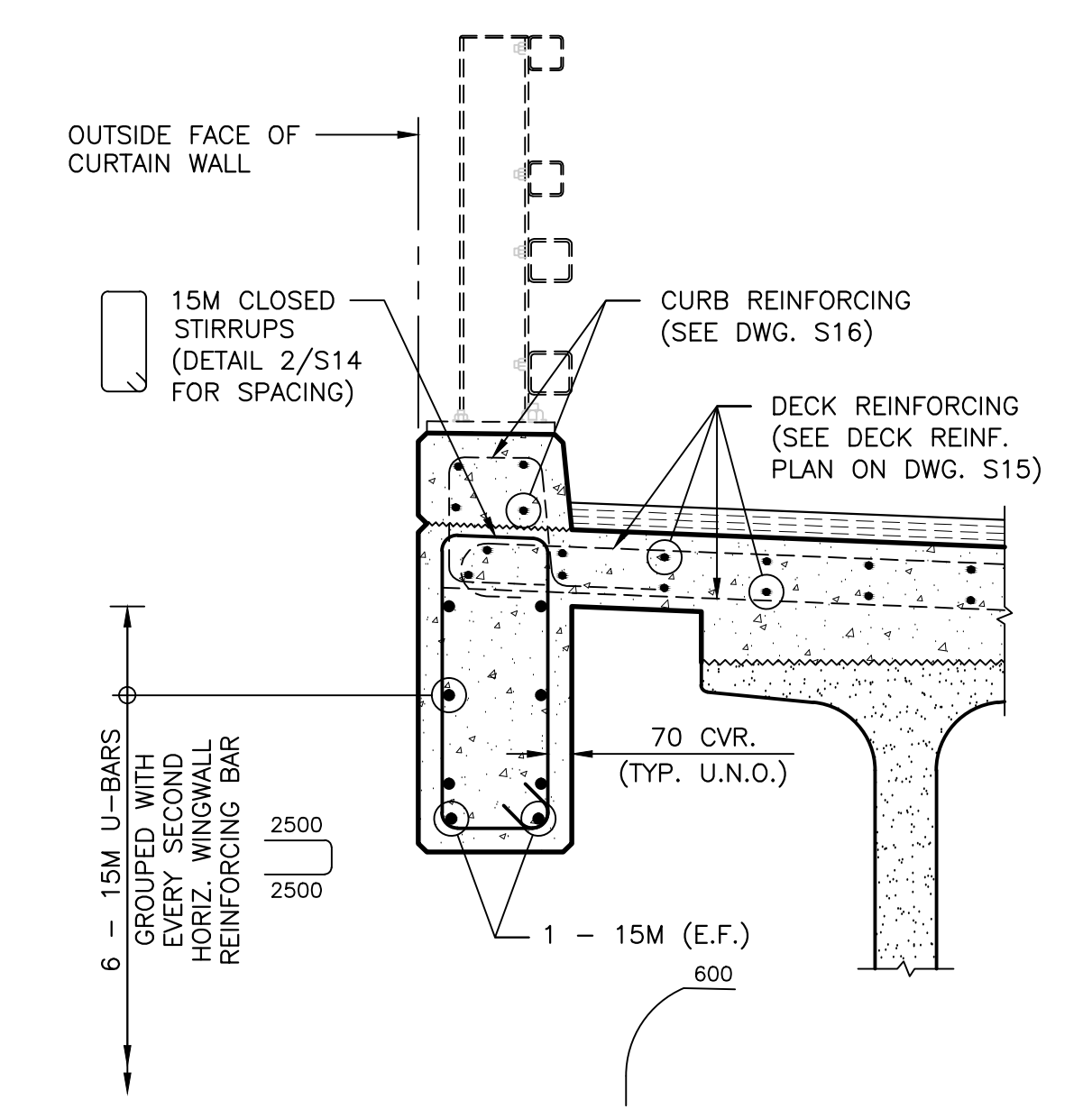
TYPICAL CURTAIN WALL REINFORCING (2) S14
SCALE: 1:20



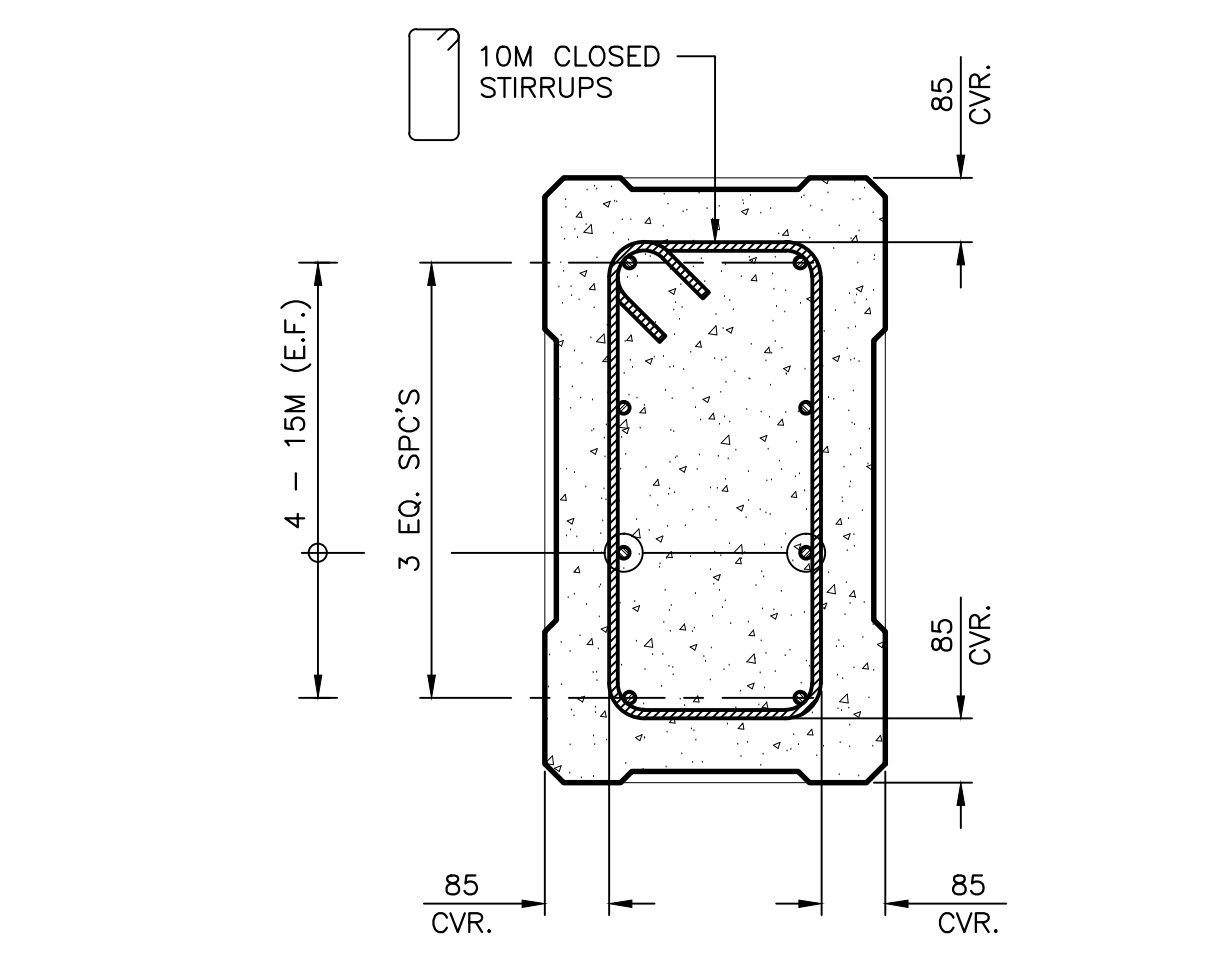
SECTION A S14
SCALE: 1:20



SECTION B S14
SCALE: 1:20



SECTION C S14
SCALE: 1:20

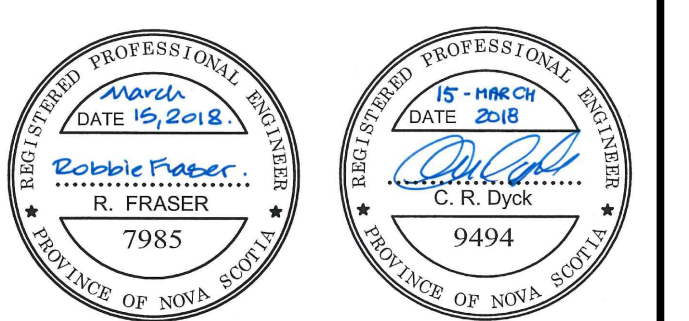


SECTION D S14
SCALE: 1:10

- NOTES:**
- FOR VERTICAL STIRRUP AND U-BARS, ADDITIONAL 100mm LAP TO BE PROVIDED (eg. 700 vs 600) TO ENSURE MINIMUM 600mm LAP PROVIDED IN EVENT MARGINAL LIFTING OF DECK REQUIRED TO ACCOMMODATE AS-BUILT CONDITIONS.
 - MINIMUM VERTICAL BAR LAPS: (U.N.O.)
15M BARS --- 600mm
 - IT IS ACCEPTABLE TO SUBSTITUTE 15M CLOSED STIRRUPS WITH 2 - LAPPED U-BARS PROVIDED LAPS ARE DETAILED & CONSTRUCTED AS INDICATED IN NOTE 1.
 - ALL REINFORCING TO BE GALVANIZED AFTER FABRICATION, CARE SHALL BE TAKEN WHEN HANDLING GALVANIZED BARS NOT TO DAMAGE COATINGS.
 - A CLEAR SPACING OF 30mm MINIMUM SHALL BE PROVIDED BETWEEN ALL GALVANIZED AND BLACK STEEL COMPONENTS, OTHERWISE THE GALVANIZED BAR SHALL BE WRAPPED IN DENSO TAPE LOCALLY AT CONTACT POINT TO AVOID CONTACT BETWEEN DISSIMILAR METALS.

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	E.C. — EAST CURB
E.F. — EACH FACE	B.L.L. — BOTTOM LOWER LAYER	W.C. — WEST CURB
E.W. — EACH WAY	N.A. — NORTH ABUTMENT	CVR. — COVER
I.F. — INSIDE FACE	S.A. — SOUTH ABUTMENT	CLR. — CLEAR
O.F. — OUTSIDE FACE	N.E. — NORTH EAST WINGWALL	

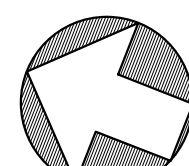


0	ISSUED FOR TENDER	MAR. 15 2018
revisions		date

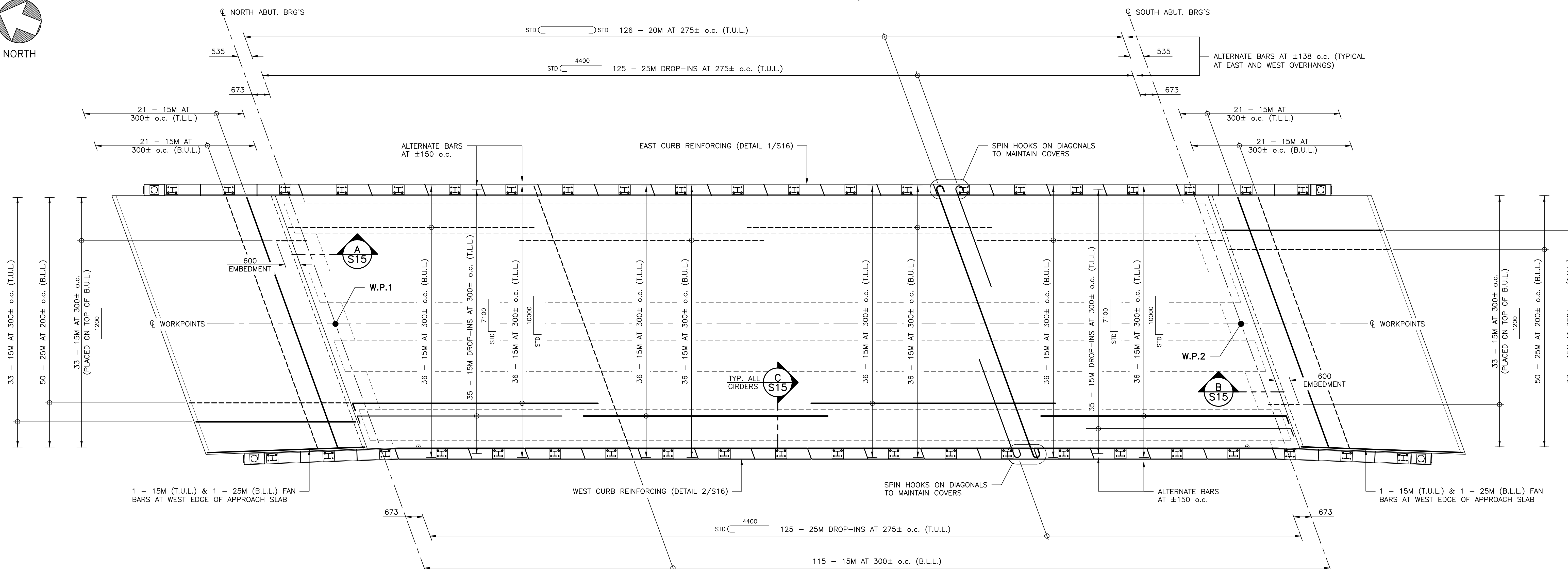
project **EFFIE'S BROOK BRIDGE REPLACEMENT** project
HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing **WINGWALL REINFORCING** design

designer	CHRIS DYCK	conçu
date	NOVEMBER 2017	date
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	date
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	date
Tender	<i>[Signature]</i>	Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S14	no. du dessin

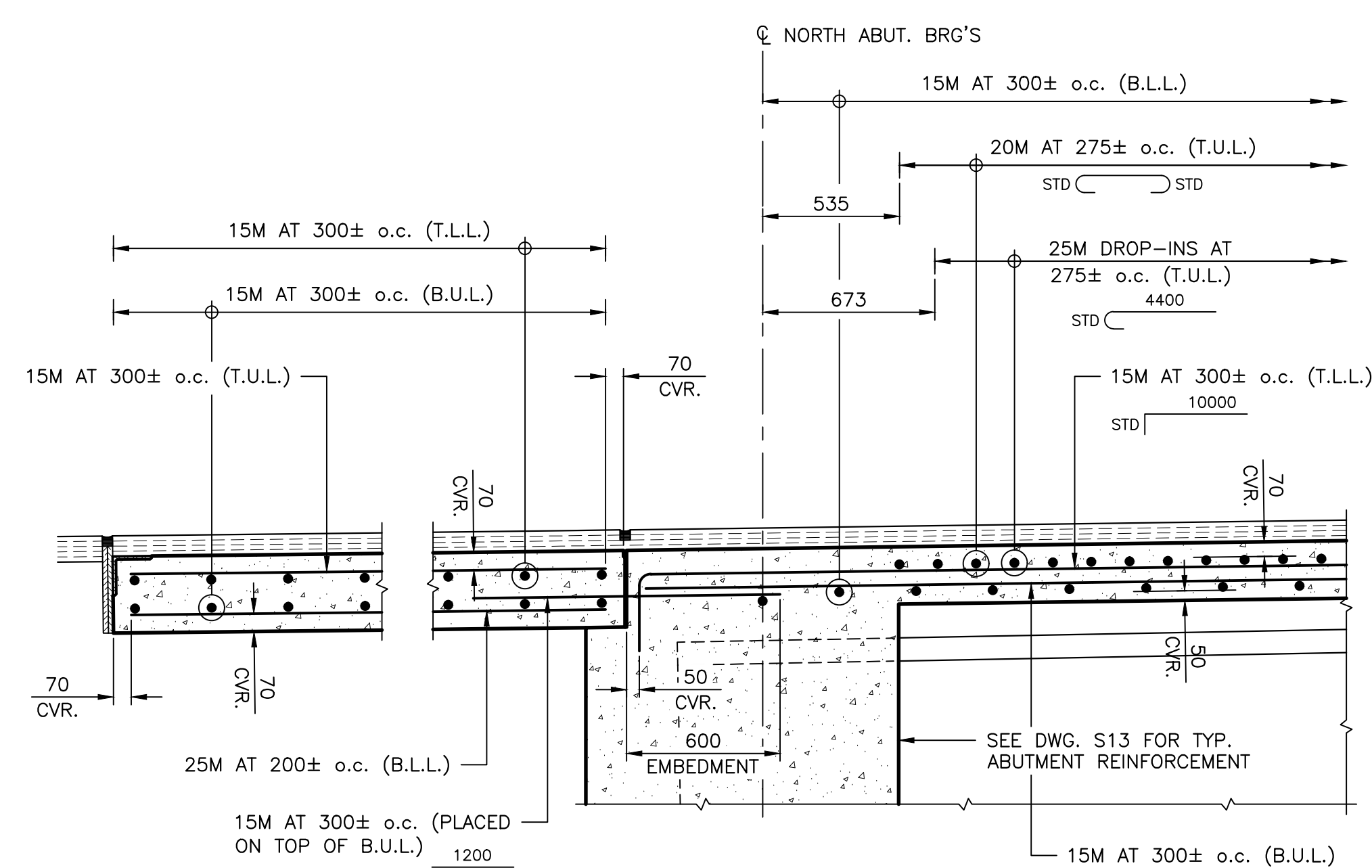
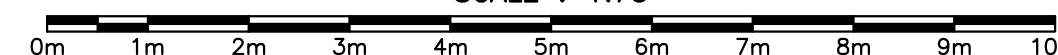


NORTH



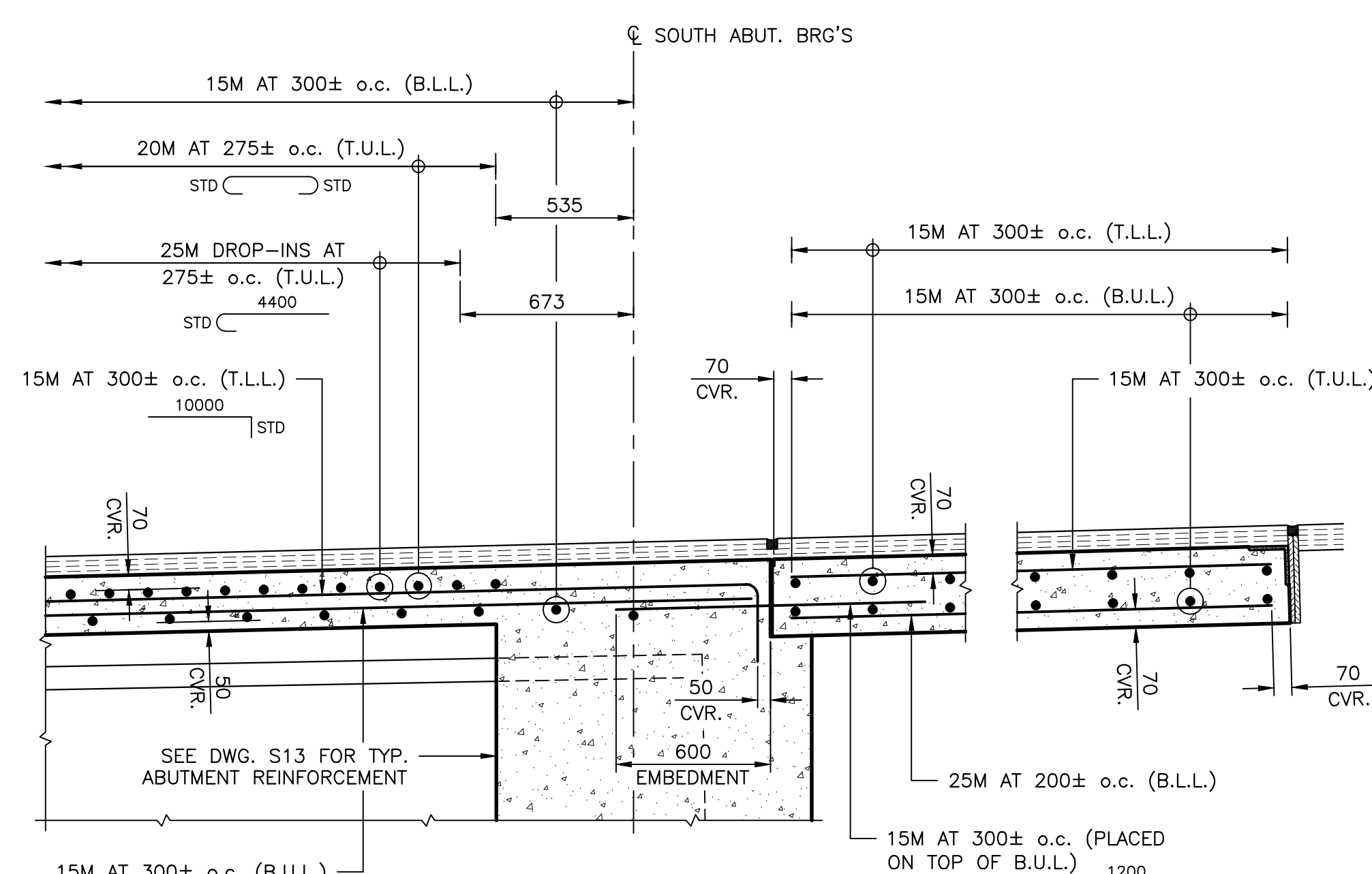
DECK AND APPROACH SLAB REINFORCING PLAN

SCALE : 1:75



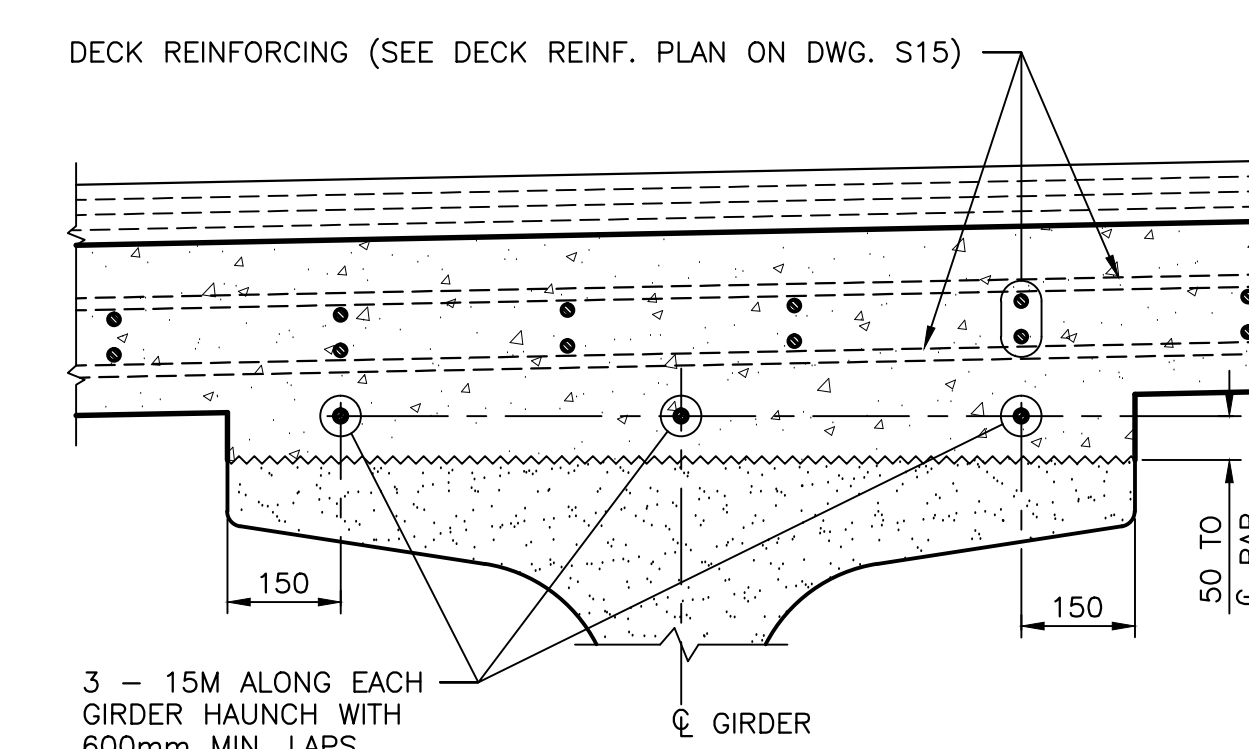
SECTION A

SCALE : 1:20



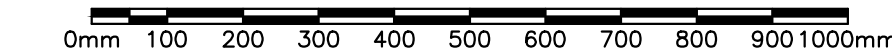
SECTION B

SCALE : 1:20



SECTION C

SCALE : 1:10

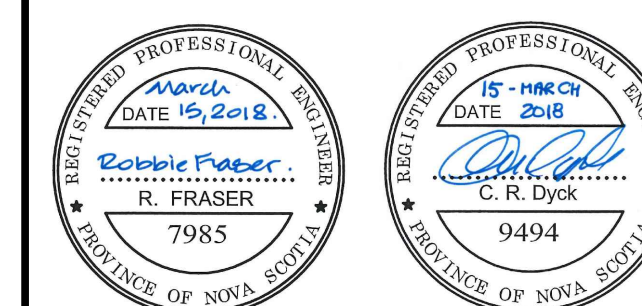


NOTES:

- MINIMUM HORIZONTAL BAR LAPS (UNLESS NOTED OTHERWISE):
 15M BARS --- 600mm
 20M BARS --- 800mm
 25M BARS --- 1200mm
- ALL REINFORCING TO BE GALVANIZED AFTER FABRICATION. CARE SHALL BE TAKEN WHEN HANDLING GALVANIZED BARS NOT TO DAMAGE COATINGS.
- A CLEAR SPACING OF 30mm MINIMUM SHALL BE PROVIDED BETWEEN ALL GALVANIZED AND BLACK STEEL COMPONENTS. OTHERWISE THE GALVANIZED BAR SHALL BE WRAPPED IN DENSO TAPE LOCALLY AT CONTACT POINT TO AVOID CONTACT BETWEEN DISSIMILAR METALS.

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 | E.C. — EAST CURB |
| E.F. — EACH FACE | B.L.L. — BOTTOM LOWER LAYER | W.C. — WEST CURB |
| E.W. — EACH WAY | N.A. — NORTH ABUTMENT | CVR. — COVER |
| I.F. — INSIDE FACE | S.A. — SOUTH ABUTMENT | CLR. — CLEAR |
| O.F. — OUTSIDE FACE | N.E. — NORTH EAST WINGWALL | |

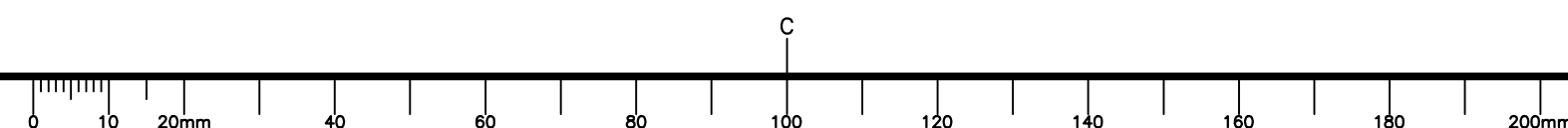


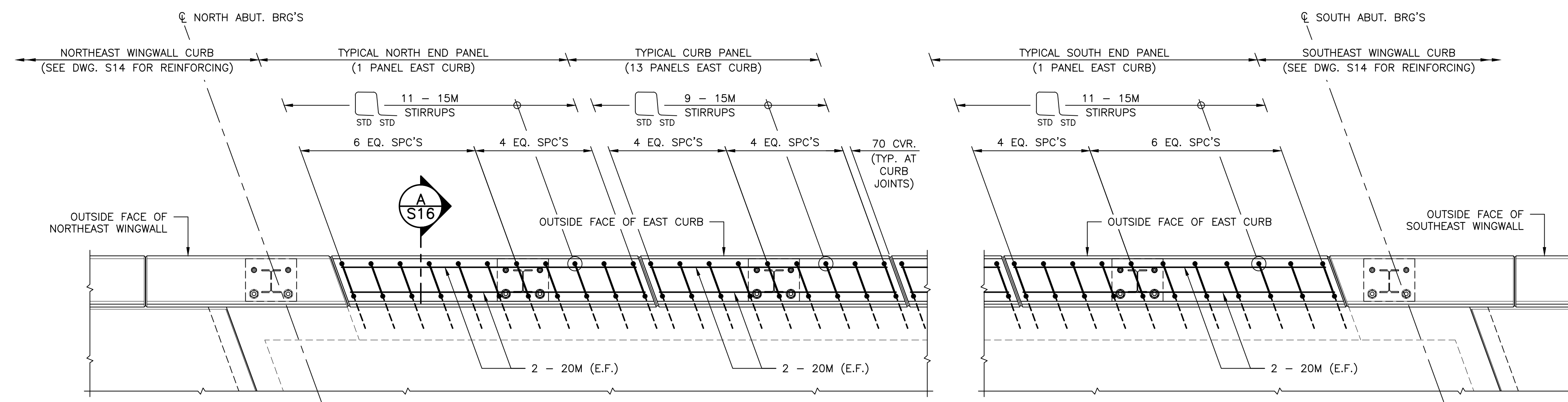
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project **EFFIE'S BROOK BRIDGE REPLACEMENT**
 Highlands National Park
 Cape Breton, Nova Scotia

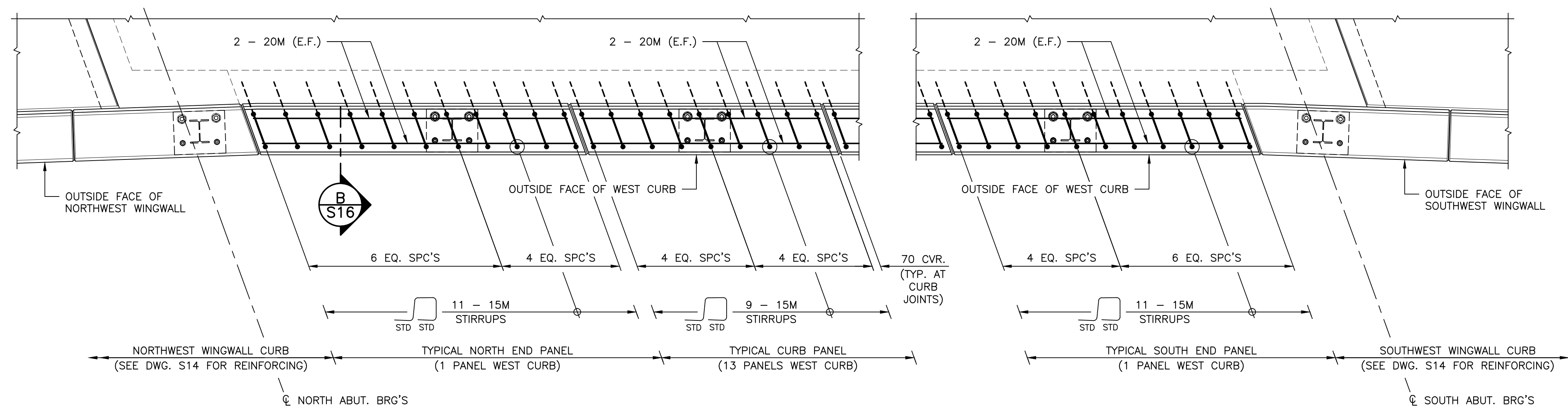
drawing **DECK REINFORCING**

designed CHRIS DYCK conq
 date NOVEMBER 2017
 drawn RICHARD BUNGAY dessiné
 date NOVEMBER 2017
 approved ROBBIE FRASER approuvé
 date NOVEMBER 2017
 Tender [Signature] soumission
 PCA Project Manager Administrateur de projets APC
 project number **1812**
 drawing no. **S15** no. du dessin





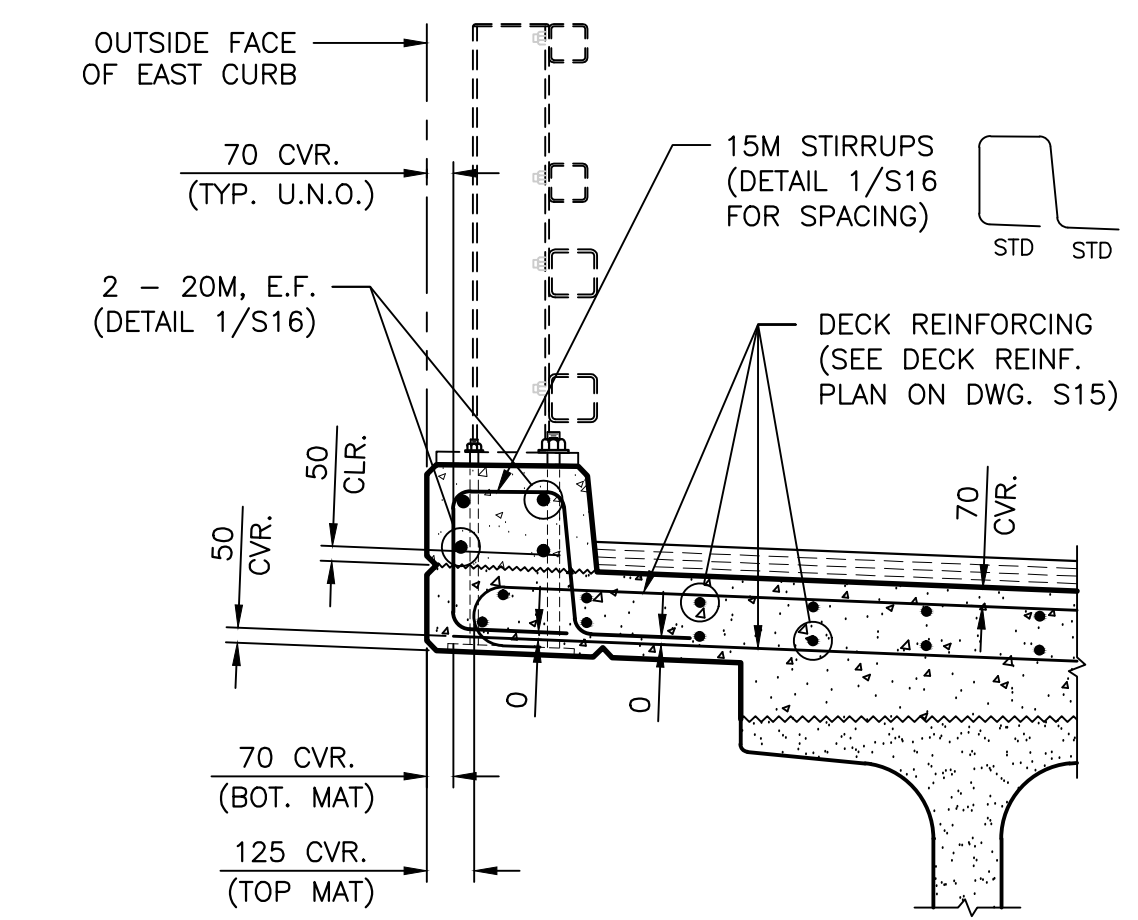
DETAIL - EAST CURB REINFORCING PLAN (1) S15
SCALE: 1:25
0mm 500mm 1000mm 1500mm 2000mm 2500mm



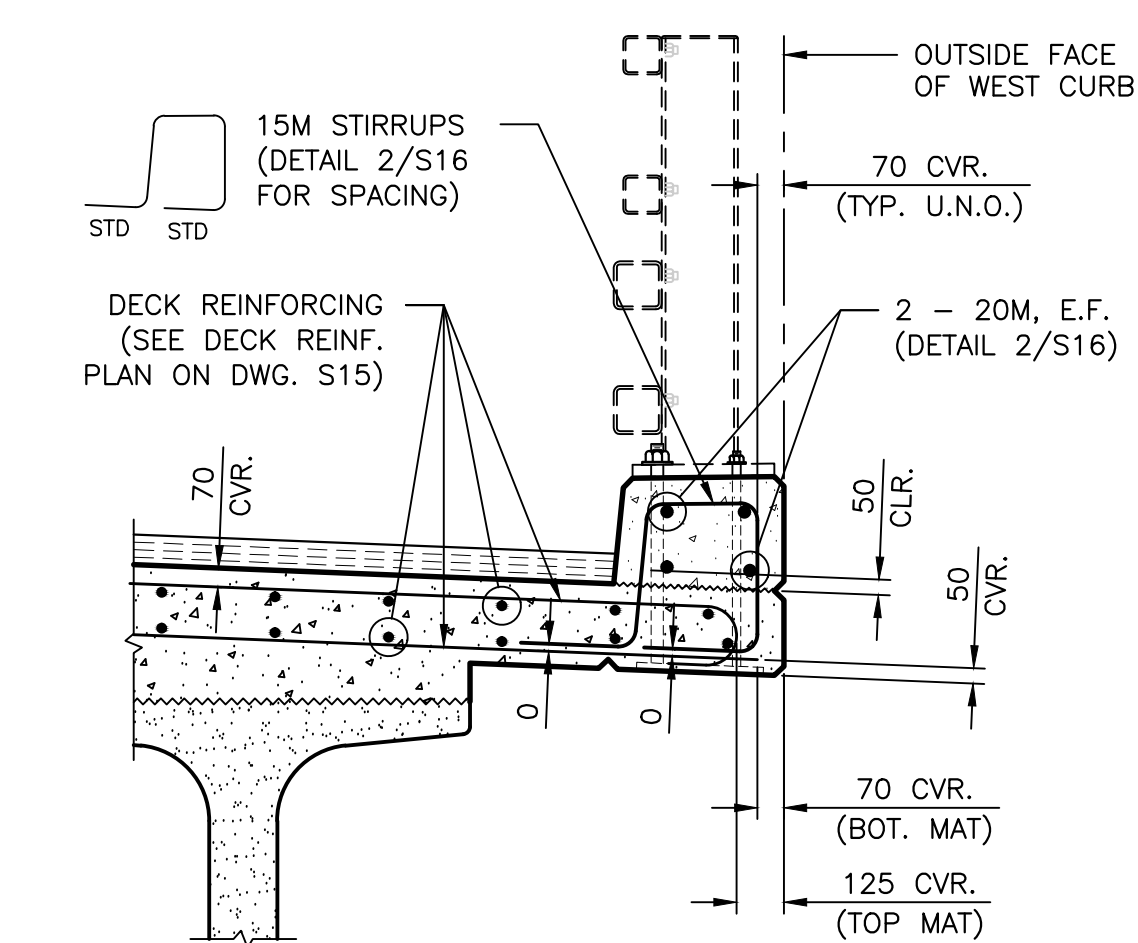
DETAIL - WEST CURB REINFORCING PLAN (2) S15
SCALE: 1:25
0mm 500mm 1000mm 1500mm 2000mm 2500mm

REINFORCING LEGEND:

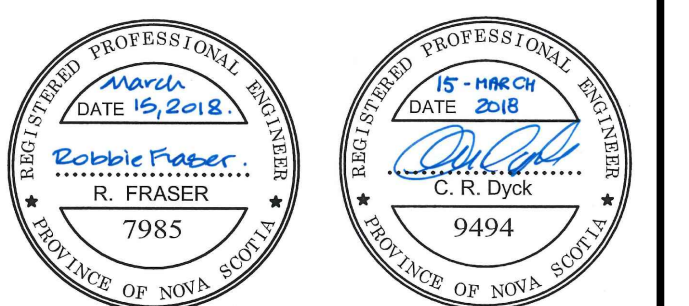
N.F. — NEAR FACE	I.C. — IN CENTER	N.W. — NORTH WEST WINGWALL
F.F. — FAR FACE	T.U.L. — TOP UPPER LAYER	S.E. — SOUTH EAST WINGWALL
N.F.F. — NEAR FAR FACE	T.L.L. — TOP LOWER LAYER	S.W. — SOUTH WEST WINGWALL
F.F.F. — FAR FAR FACE	B.U.L. — BOTTOM UPPER LAYER	E.C. — EAST CURB
E.F. — EACH FACE	B.L.L. — BOTTOM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



SECTION A S16
SCALE: 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm



SECTION B S16
SCALE: 1:20
0mm 500mm 1000mm 1500mm 2000mm 2500mm

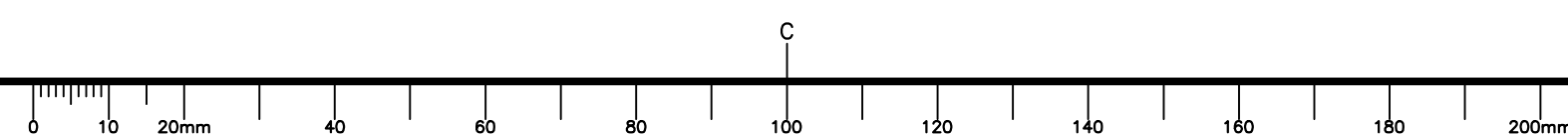


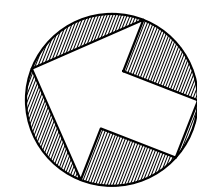
0	ISSUED FOR TENDER	MAR. 15 2018
revisions		date

project
**EFFIE'S BROOK
BRIDGE REPLACEMENT**
HIGHLANDS NATIONAL PARK
CAPE BRETON, NOVA SCOTIA

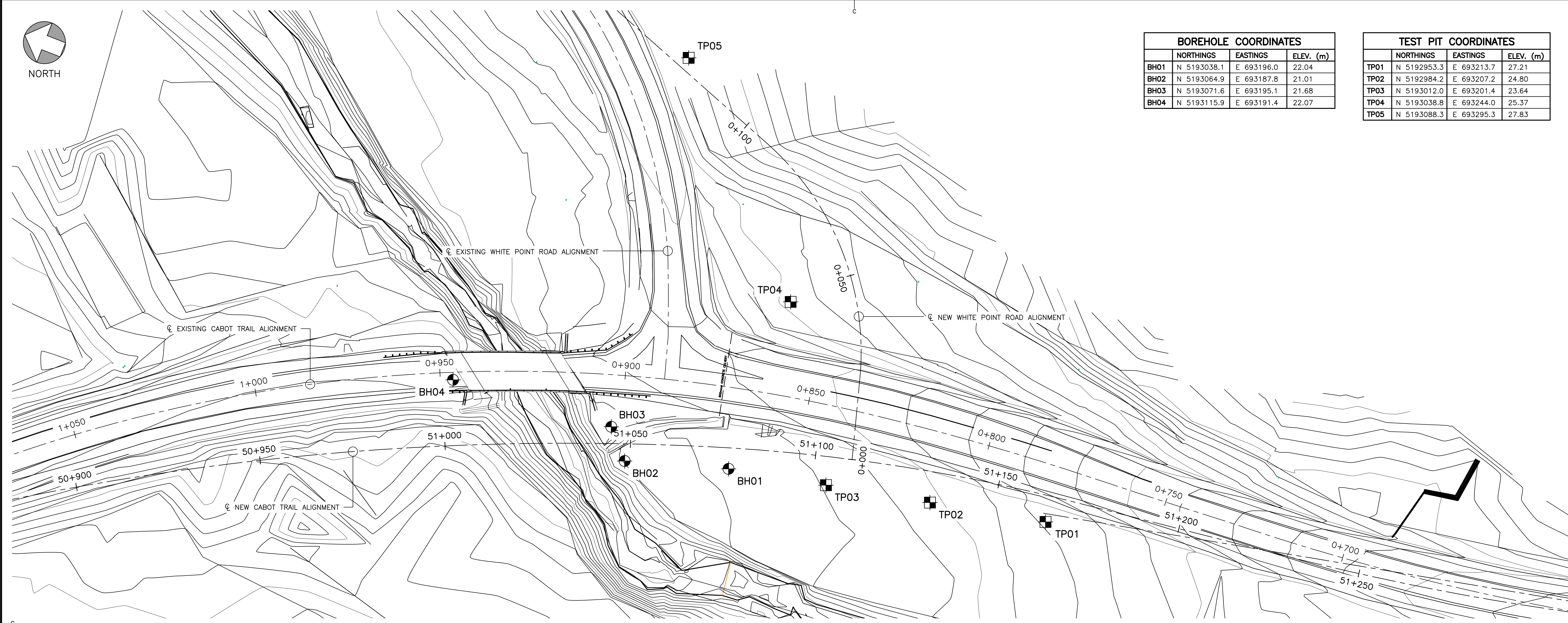
drawing
CURB REINFORCING

designed	CHRIS DYCK	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	ROBBIE FRASER	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S16	no. du dessin



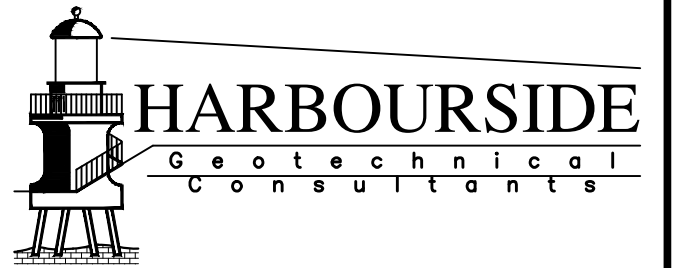


NORTH

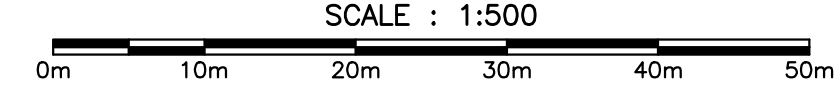


BOREHOLE COORDINATES			
	NORTHINGS	EASTINGS	ELEV. (m)
BH01	N 5193038.1	E 693196.0	22.04
BH02	N 5193064.9	E 693187.8	21.01
BH03	N 5193071.6	E 693195.1	21.68
BH04	N 5193115.9	E 693191.4	22.07

TEST PIT COORDINATES			
	NORTHINGS	EASTINGS	ELEV. (m)
TP01	N 5192953.3	E 693213.7	27.21
TP02	N 5192984.2	E 693207.2	24.80
TP03	N 5193012.0	E 693201.4	23.64
TP04	N 5193038.8	E 693244.0	25.37
TP05	N 5193088.3	E 693295.3	27.83



BOREHOLE AND TEST PIT LOCATION PLAN



BOREHOLE RECORD										BH01		
CLIENT: HARBOURSIDE ENGINEERING CONSULTANTS										PROJECT No. 173056		
LOCATION: EFFIE'S BROOK BRIDGE, HIGHLANDS NATIONAL PARK, NS										DATUM: CGVD28		
DATES: BORING 18/08/2017										WATER LEVEL 08/09/2017		
										BH SIZE: HW/HQ		
DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm)	REC. ROCK (mm)	BLOW COUNT (mm)	STANDARD PENETRATION TEST, BL/CSSG (mm)	OTHER TESTS	UNIFORMED BEARING STRENGTH - kPa
0	22.04	ROOT MAT/TOPSOIL										
0.5	21.74	Dense brown SAND with silt and gravel - with occasional roots, rootlets, and organic matter			SS	1	1-5-20-16 (31)					
1.5	20.88	Very poor to fair quality pink and grey SCHIST - slightly to moderately weathered - silt and sand infilling on some fractures			SS	2	4-19-20-52 (38)					
2.5	20.58				HQ	3	100%	0%				
3.5	19.27	End of borehole - 25-mm diameter standpipe installed			HQ	4	87%	70%				

BOREHOLE RECORD										BH02		
CLIENT: HARBOURSIDE ENGINEERING CONSULTANTS										PROJECT No. 173056		
LOCATION: EFFIE'S BROOK BRIDGE, HIGHLANDS NATIONAL PARK, NS										DATUM: CGVD28		
DATES: BORING 18/08/2017										WATER LEVEL 08/09/2017		
										BH SIZE: HW/HQ		
DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm)	REC. ROCK (mm)	BLOW COUNT (mm)	STANDARD PENETRATION TEST, BL/CSSG (mm)	OTHER TESTS	UNIFORMED BEARING STRENGTH - kPa
0	21.91	ROOT MAT/TOPSOIL										
0.5	20.73	Compact brown SAND with silt and gravel - with occasional roots, rootlets, and organic matter			SS	1	1-1-2-13 (3)					
1.5	20.20	Very poor to poor quality pink and grey SCHIST - slightly to moderately weathered - silt and sand infilling on some fractures			SS	2	25-50-775 mm					
2.5					HQ	3	95%	49%				
3.5					HQ	4	96%	33%				
4.5					HQ	5	93%	21%				
5.5					HQ	6	72%	0%				
6.5					HQ	7	96%	40%				
7.5	14.45	End of borehole - 25-mm diameter standpipe installed										

BOREHOLE RECORD										BH03		
CLIENT: HARBOURSIDE ENGINEERING CONSULTANTS										PROJECT No. 173056		
LOCATION: EFFIE'S BROOK BRIDGE, HIGHLANDS NATIONAL PARK, NS										DATUM: CGVD28		
DATES: BORING 18/08/2017										WATER LEVEL 19/08/2017		
										BH SIZE: HW/HQ		
DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm)	REC. ROCK (mm)	BLOW COUNT (mm)	STANDARD PENETRATION TEST, BL/CSSG (mm)	OTHER TESTS	UNIFORMED BEARING STRENGTH - kPa
0	21.88	FILL: brown sand with silt and gravel - with occasional wood (grubbings)			SS	1	175	4-4-5-4 (8)				
0.5					SS	2	25	6-4-5-5 (10)				
1.5	20.46	Dense to very dense brown SAND with silt and gravel - with occasional rootlets and organic matter			SS	3	225	13-14-30-30 (50)				
2.5					SS	4	200	42-47-50-100 mm				
3.5	19.39	Very poor to fair quality pink and grey SCHIST - slightly to moderately weathered - silt infilling on some fractures			HQ	5	92%	8%				
4.5					HQ	6	95%	42%				
5.5					HQ	7	100%	66%				
6.5												
7.5	15.28	End of borehole										



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revisions		date

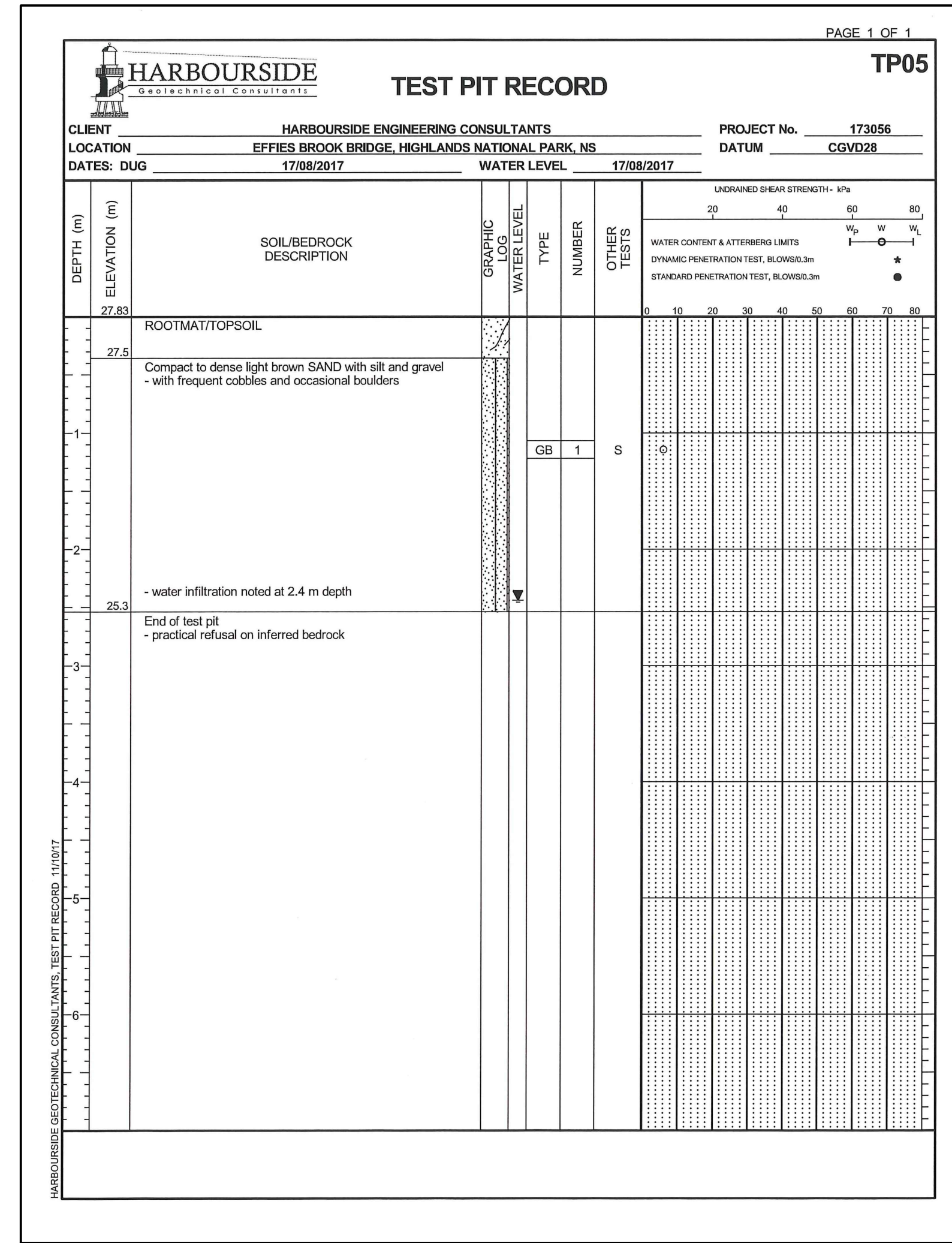
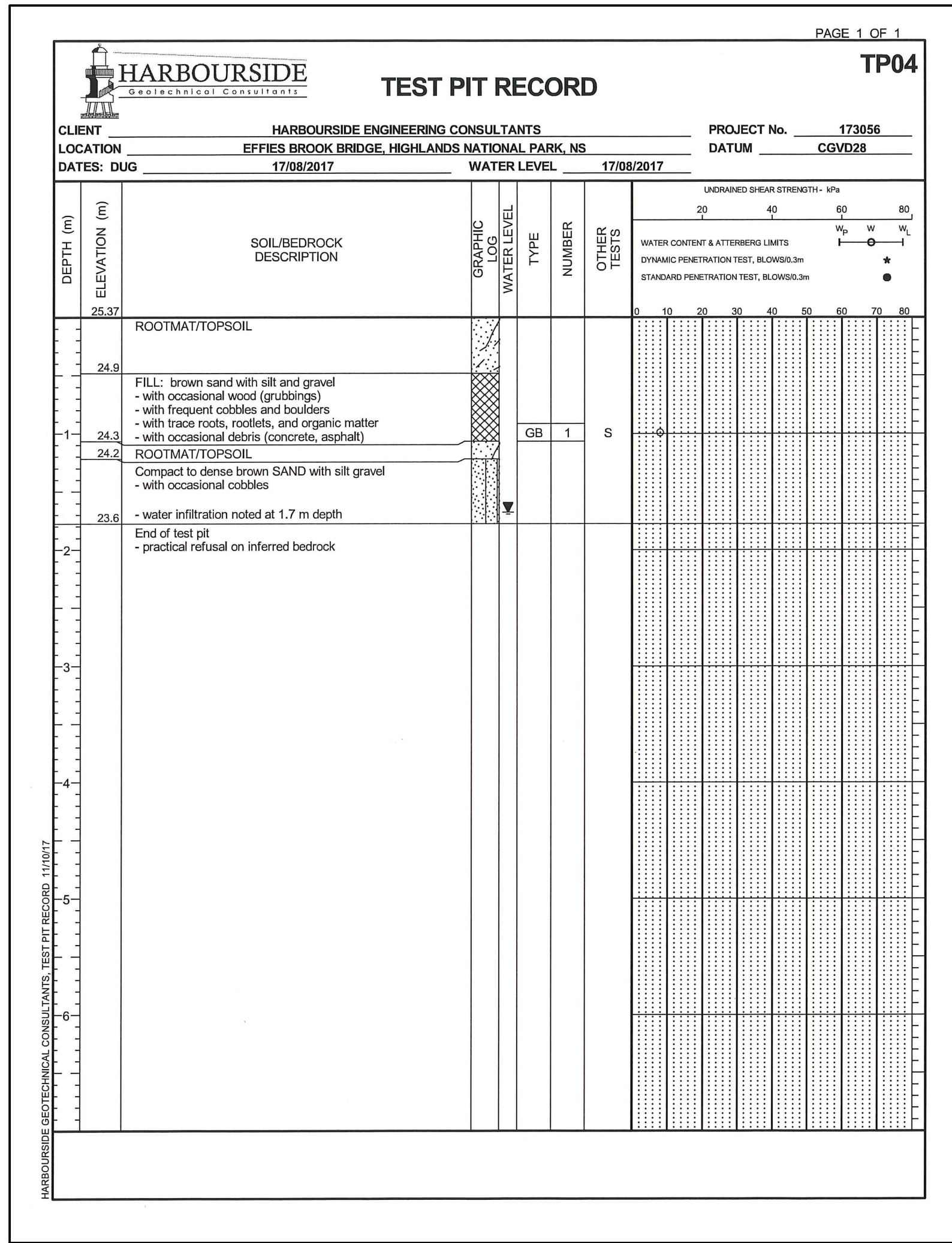
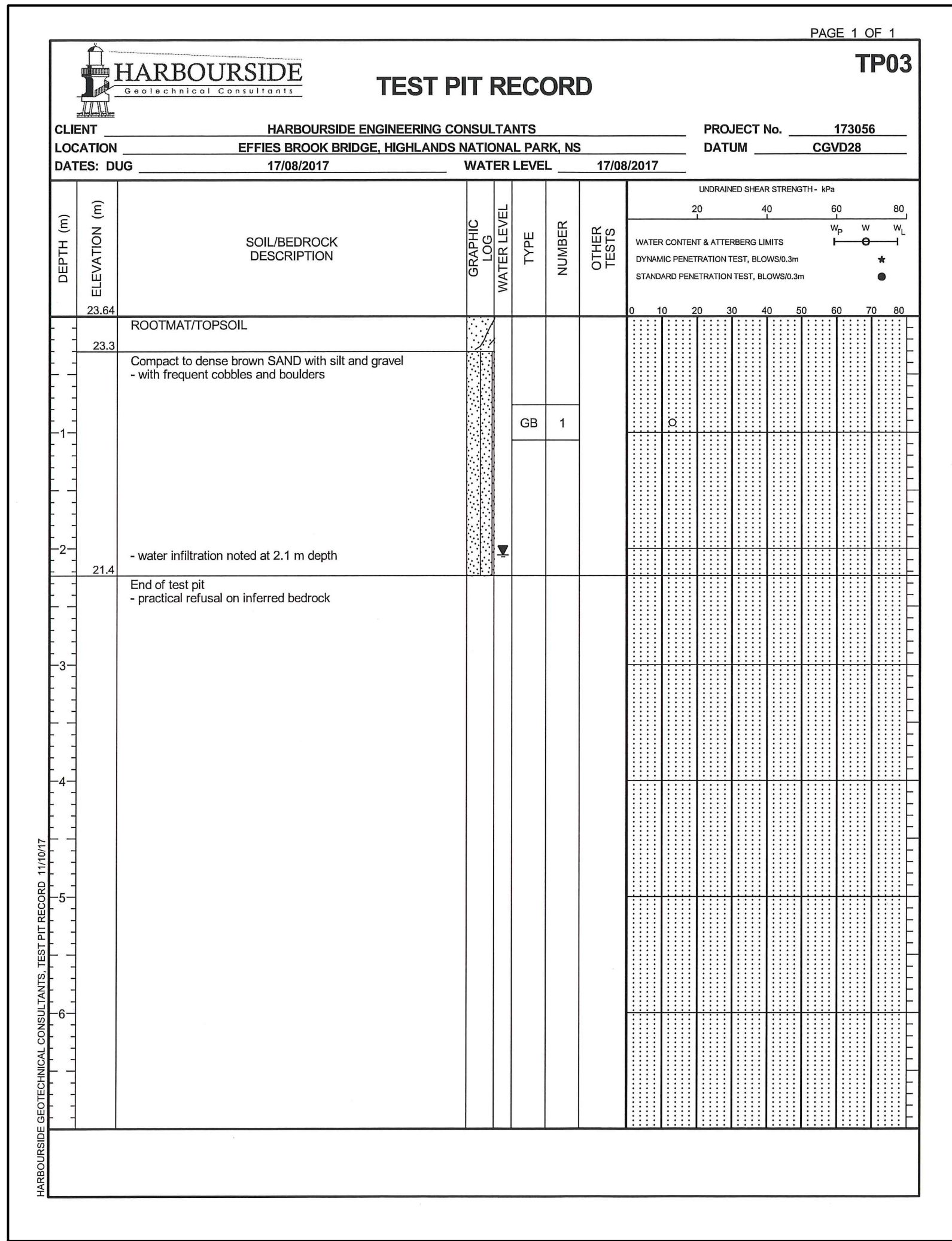
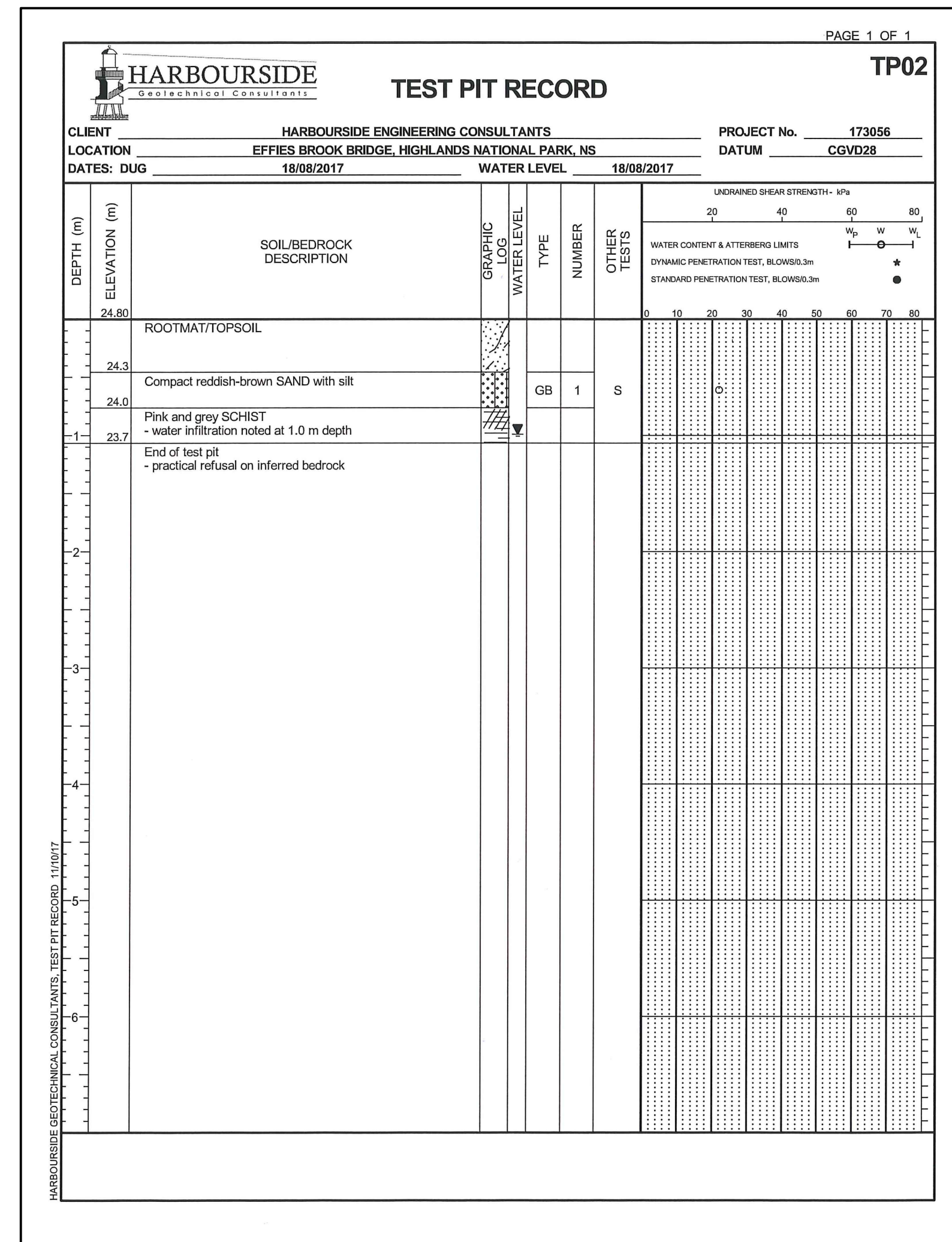
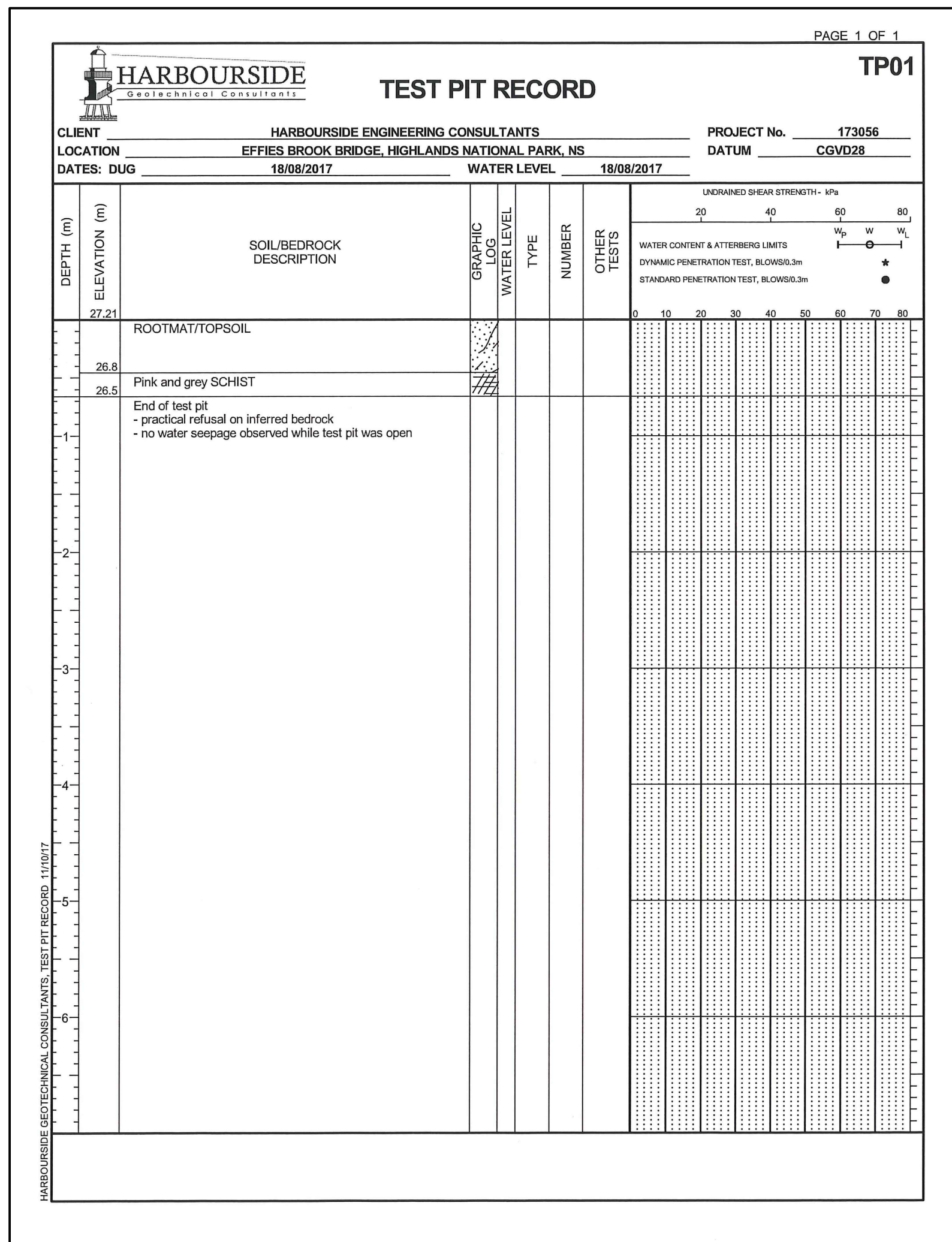
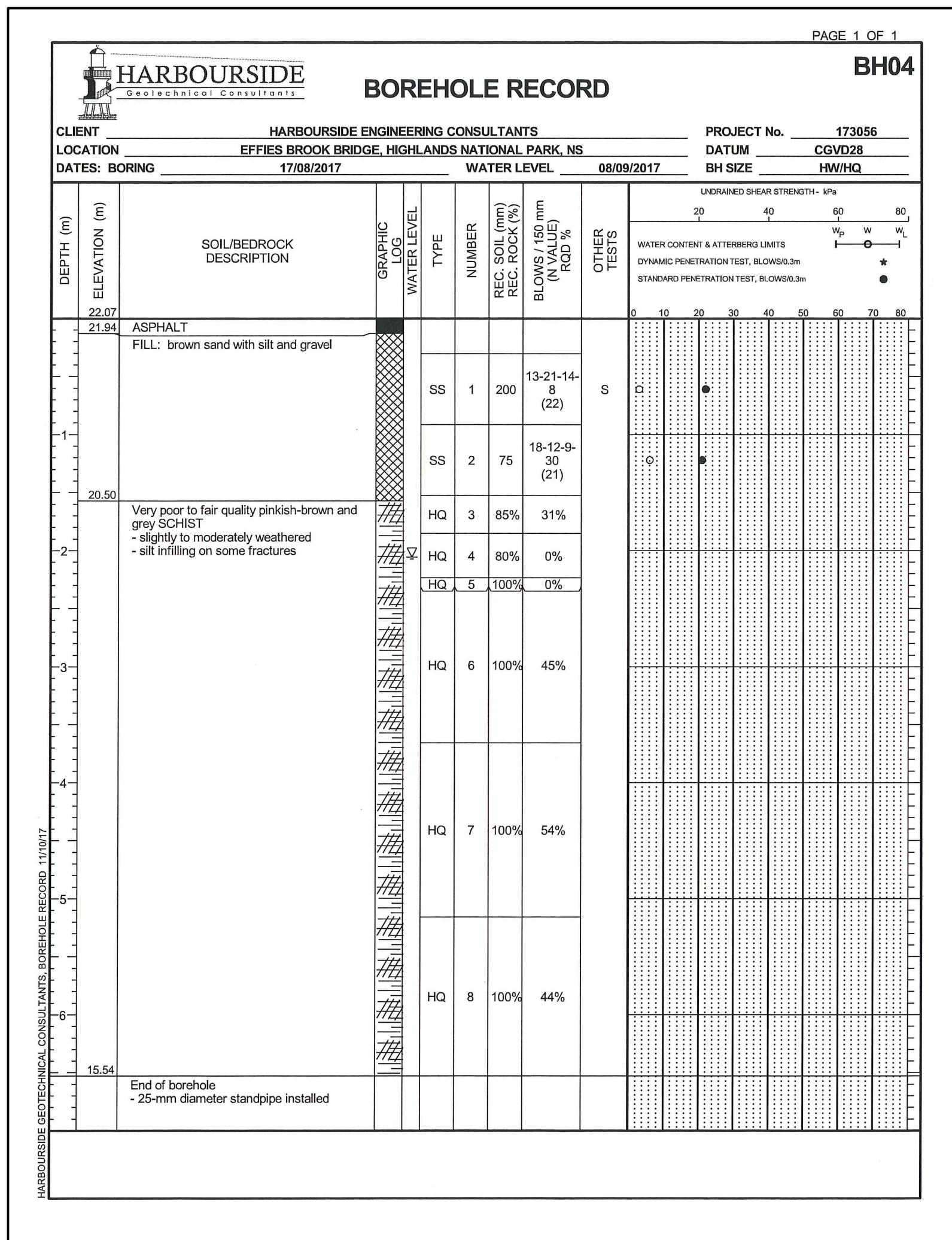
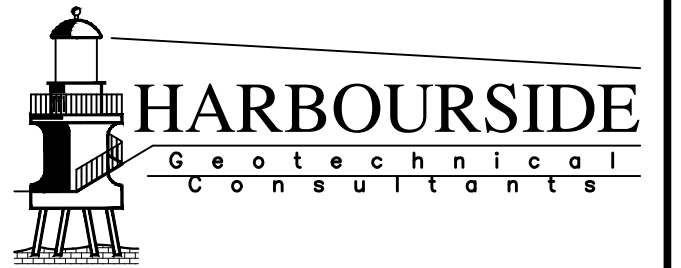
project: EFFIE'S BROOK BRIDGE REPLACEMENT
 HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA

drawing: BOREHOLES (SHEET 1 OF 2)
 design

designed	VINCE GOREHAM	conçu
date	NOVEMBER 2017	
drown	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	GREG MacNEILL	approuvé
date	NOVEMBER 2017	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number		no. du projet

1812

S17



0	ISSUED FOR TENDER	MAR 15 2018
revisions		date
project	EFFIE'S BROOK BRIDGE REPLACEMENT	project
	HIGHLANDS NATIONAL PARK CAPE BRETON, NOVA SCOTIA	
drawing		design
	BOREHOLES (SHEET 2 OF 2)	
designed	VINCE GOREHAM	conçu
date	NOVEMBER 2017	
drawn	RICHARD BUNGAY	dessiné
date	NOVEMBER 2017	
approved	GREG MacNEILL	approuvé
date	NOVEMBER 2017	
Tender	<i>Signature</i>	Soumission
PCA Project Manager	Administrateur de projets APC	
project number	1812	no. du projet
drawing no.	S18	no. du dessin

