

REVIEWED	R. SPENCE			
DR.	BFS	WRS	10-21	
	BY	CHK	DATE	

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6/23/2022

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3 DAYS BEFORE DIGGING IN
SOUTH CAROLINA
CALL 811
SOUTH CAROLINA 811 (SC811)
WWW.SC811.COM
ALL UTILITIES MAY NOT BE A MEMBER OF SC811

ASSET ID 10739

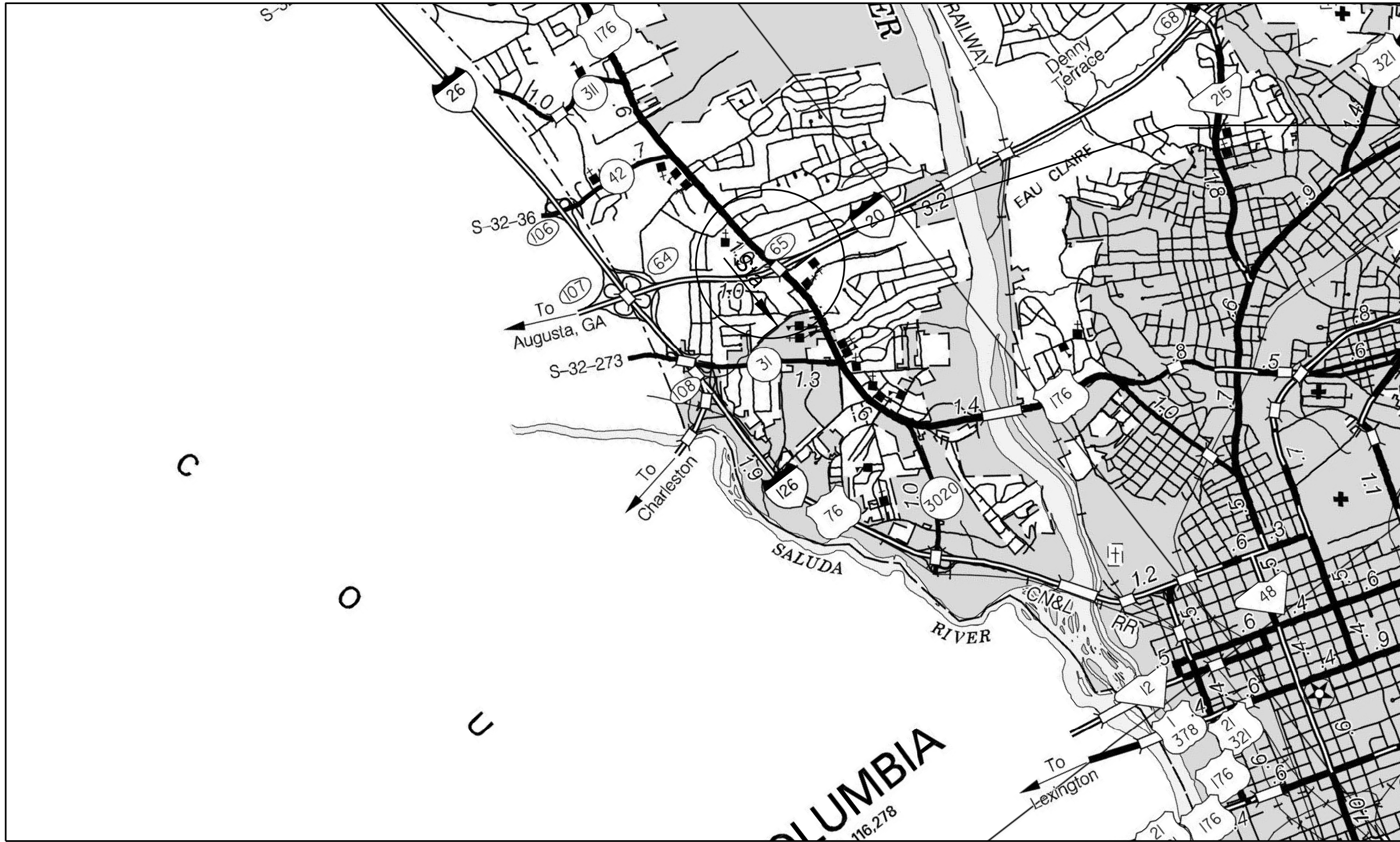
TRAFFIC DATA			
2020	ADT	15,900	V.P.D.
2040	ADT	19,100	V.P.D.
TRUCKS	8	%	



South Carolina Department of Transportation



PROPOSED PLANS
FOR
RICHLAND COUNTY
PROJECT ID P039719
US 176 EB (BROAD RIVER ROAD)
BRIDGE OVER I-20



SITE LOCATION

Submit Shop Plans to:

Infrastructure Consulting & Engineering
110 Midlands Court
West Columbia, SC 29169

Telephone: (803) 822-0333

Approximate Location of Bridge is
Latitude 34°02'22" N
Longitude 81°05'36" W

LAYOUT

NET LENGTH OF ROADWAY	0.000	MILES
NET LENGTH OF BRIDGES	0.041	MILES
NET LENGTH OF PROJECT	0.041	MILES
LENGTH OF EXCEPTIONS	0.000	MILES
GROSS LENGTH OF PROJECT	0.041	MILES

NOTE: EXCEPT AS MAY OTHERWISE BE SPECIFIED ON THE PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIALS AND WORKMANSHIP ON THIS PROJECT SHALL CONFORM TO THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2007 EDITION) AND THE STANDARD DRAWINGS FOR ROAD CONSTRUCTION IN EFFECT AT THE TIME OF THE RELEASE OF THE FINAL RFP.

PLANS PREPARED BY:

IE INFRASTRUCTURE
CONSULTING & ENGINEERING

110 MIDLANDS COURT
WEST COLUMBIA, SC 29169
Telephone: (803) 822-0333

ENGINEER OF RECORD

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 29080
W. RAY SPENCE

SOUTH CAROLINA
INFRASTRUCTURE CONSULTING & ENGINEERING, PLLC
No. 4470
CERTIFICATE OF AUTHORIZATION

FOR CONSTRUCTION : _____ 6/23/2022
DATE

Z:\Projects\20-81CCR Ph 2\Structures\02-New Bridges\Bridge 42b\04_FinalPlans\02_BRIDGE 42b_SUMMARY OF ESTIMATED QUANTITIES.dgn
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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	2

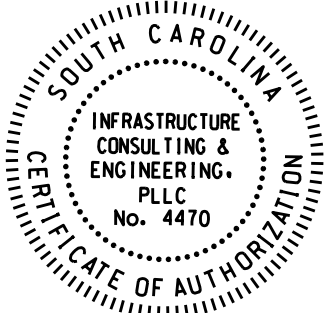
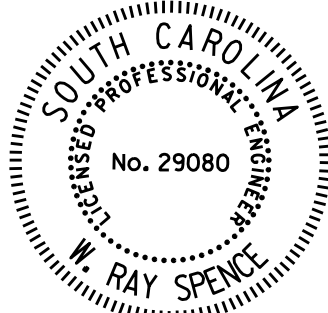
TABULATION OF ESTIMATED QUANTITIES																	
LOCATION ITEM	NO.	STRUCTURE EXCAVATION FOR RETAINING WALL	WET & DRY EXCAVATION FOR BRIDGES	2.0" SCHEDULE 80 PVC CONDUIT	CONCRETE FOR STRUCTURES CLASS 4000	GROOVED SURFACE FINISH	REINFORCING STEEL FOR STRUCTURES (BRIDGE)	HOOP REINF. STEEL FOR STRUCTURES (BRIDGE)	GALVANIZED REINFORCING STEEL FOR STRUCTURES (BRIDGE)	PRESTRESSED CONCRETE BEAM (TYPE IV)	42" MASH CONCRETE BARRIER PARAPET/RAILING WALL	DYNAMIC PILE ANALYZER TEST SET-UP	PILE DRIVING SET-UP	STEEL H BEARING PILING (HP14x73)	STEEL H BEARING INDEX PILING (HP14x73)	STEEL H BEARING PILING (HP14x89)	STEEL H BEARING INDEX PILING (HP14x89)
		CY	CY	LF	CY	SY	LBS.	LBS.	LBS.	LF	LF	EACH	EACH	LF	LF	LF	LF
SUPERSTRUCTURE	1	--	--	866.0	808.8	2,017	15,644	--	145,801	2,348.2	433.0	--	--	--	--	--	--
END BENT 1	1	--	--	--	62.6	--	11,682	--	--	--	--	2	11	--	--	779	177
END BENT 3	1	--	--	--	73.3	--	13,868	--	--	--	--	2	13	--	--	847	158
INTERIOR BENT 2	1	--	425	--	217.1	--	44,514	3,426	--	--	--	2	40	1,798	99	--	--
APPROACH SLAB NO. 1	1	--	--	72.6	66.3	--	20,118	--	2,411	--	37.3	--	--	--	--	--	--
APPROACH SLAB NO. 2	1	--	--	68.2	79.9	--	23,548	--	2,357	--	35.1	--	--	--	--	--	--
SLEEPER SLAB NO.1, NO. 2, & NO. 3	3	--	--	--	1.8	--	321	--	---	--	--	--	--	--	--	--	--
MSE WALL NO. 1	1	1,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MSE WALL NO. 2	1	880	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTALS		2,380	425	1,006.8	1,309.8	2,017	129,695	3,426	150,569	2,348.2	505.4	6	64	1,798	99	1,626	335

TABULATION OF ESTIMATED QUANTITIES								
LOCATION ITEM	NO.	MECH. STAB. EARTH RETAINING WALL BACKFILL (STONE)	MECH. STAB. EARTH RETAINING WALL (PANEL FACING) BRIDGE	COPING FOR MSE RETAINING WALL (BRIDGE)	ELASTOMERIC BEARING	AGGREGATE UNDERDRAIN #789 W/4" PERF. PIPE FOR STRUCTURES	SLOPE PROTECTION 4" CONC. (FIBER REINFORCED)	WATERPROOFING SUBSTRUCTURE (SECOND- METHOD)
		CY	SF	LF	EACH	TON	SY	SY
SUPERSTRUCTURE	1	--	--	--	--	--	--	--
END BENT 1	1	--	--	--	11	213	--	24.7
END BENT 3	1	--	--	--	11	261	--	29.0
INTERIOR BENT 2	1	--	--	--	22	--	--	--
APPROACH SLAB NO. 1	1	--	--	--	--	--	--	--
APPROACH SLAB NO. 2	1	--	--	--	--	--	--	--
SLEEPER SLAB NO.1, NO. 2, & NO. 3	3	--	--	--	--	--	--	--
MSE WALL NO. 1	1	1,930	2,820	166	--	--	100	--
MSE WALL NO. 2	1	1,945	2,848	168	--	--	110	--
TOTALS		3,875	5,668	334	44	474	210	53.7

NOTE:

STEEL H BEARING PILING SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.

SUMMARY OF ESTIMATED QUANTITIES			
ITEM NO.	BID ITEM	UNIT	QUANTITY
2041005	STRUCTURE EXCAVATION FOR RETAINING WALL	CY	2,380
2043500	WET & DRY EXCAVATION FOR BRIDGES	CY	425
6750278	2.0" SCHEDULE 80 PVC CONDUIT	LF	1,006.8
7011400	CONCRETE FOR STRUCTURES - CLASS 4000	CY	1,309.8
7023200	GROOVED SURFACE FINISH	SY	2,017
7031200	REINF. STEEL FOR STRUCTURES (BRIDGE)	LBS.	129,695
7031220	HOOP REINF. STEEL FOR STRUCTURES (BRIDGE)	LBS.	3,426
7031400	GALVANIZED REINF. STEEL FOR STRUCTURES (BRIDGE)	LBS.	150,569
7044000	PRESTRESSED CONCRETE BEAM (TYPE IV)	LF	2,348.2
7051050	42" MASH CONCRETE BARRIER PARAPET/RAILING WALL	LF	505.4
7110001	DYNAMIC PILE ANALYZER TEST SET-UP	EACH	6
7110010	PILE DRIVING SET-UP	EACH	64
7112220	STEEL H BEARING PILING (HP14 X 73)	LF	1,798
7112222	STEEL H BEARING INDEX PILING (HP14 X 73)	LF	99
7112230	STEEL H BEARING PILING (HP14 X 89)	LF	1,626
7112232	STEEL H BEARING INDEX PILING (HP14 X 89)	LF	335
7137007	MECH. STAB. EARTH RETAINING WALL BACKFILL (STONE)	CY	3,875
7137230	MECH. STAB. EARTH RETAINING WALL (PANEL FACING) BRIDGE	SF	5,668
7137290	COPING FOR MSE RETAINING WALL (BRIDGE)	LF	334
7243100	ELASTOMERIC BEARING	EACH	44
8011210	AGGREGATE UNDERDRAIN #789 W/4" PERF. PIPE FOR STRUCTURES	TON	474
8047041	SLOPE PROTECTION - 4" CONCRETE (FIBER REINFORCED)	SY	210
8142100	WATERPROOFING (SUBSTRUCTURE-SECOND METHOD)	SY	53.7



REV. 0	WRS	06-23-22
	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	WRS 04-22
DES.		
	BY	CHK. DATE



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
SUMMARY OF ESTIMATED QUANTITIES	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

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MATERIAL & WORKMANSHIP

Provide all material and workmanship in accordance with the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction, unless otherwise specified on the Plans or in the Special Provisions.

COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

Generally, in case of discrepancy, this General Notes sheet governs over the Standard Specifications but the remainder of the plans govern over notes on this sheet and Special Provisions govern over all. See Subsection 105.4 of the Standard Specifications.

COMPLETION DATES

On inside face of right side barrier parapet/railing at beginning of bridge and on left side barrier parapet/railing at end of bridge, place year of completion adjacent to guardrail attachment. Place this completion date so that it will not be covered by the guardrail connector when it is installed. Recess numbers in the concrete using numbers fabricated from reusable/durable material that is approved by the RCE. Provide numbers in accordance with SCDOT Standard Drawing No. 702-305-00.

REINFORCING STEEL

Fabricate reinforcing bars in accordance with the current C.R.S.I. Manual of Standard Practice except for ties, stirrups, and welded hoops.

Provide all ties and stirrups with 135° hooks that have extensions no less than the larger of ten bar diameters or six inches. This 135° hook requirement does not apply to stirrups extending from prestressed concrete beams.

The fabrication tolerance for out-to-out dimension of welded hoop diameter is $\pm \frac{1}{2}$ inch.

Do not use lap splices in column and shaft reinforcing steel.

PRESTRESSED CONCRETE BEAMS

Beam lengths given are based on horizontal span only. Increase lengths to correct for concrete shrinkage, concrete shortening when the strands are cut, and for beams being on a grade.

All overhang brackets in the top flange of exterior beams shall be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as appropriate and shall be detailed accordingly in the shop plans.

CONCRETE

Provide the class of concrete as noted in the contract documents. For cast-in-place structural elements, use Class 4000 concrete where the class of concrete is not specified in the contract documents.

When holes are cast in beams to accommodate falsework, fill the holes with a non-shrink structural grout suitable for overhead repairs after falsework is removed.

After erection of the beams and prior to the erection of the deck slab falsework, measure beam cambers. Compare the measured beam cambers to the values shown on the Plans to aid in determining if field adjustments are needed. Submit beam camber measurements and any proposed field adjustments to the RCE for approval.

Chamfer all exposed edges $\frac{3}{4}$ " unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is $\frac{1}{2}$ " less than the plan dimensions when required by reinforcing bar fabrication tolerances.

Cast build-ups and shear keys on bent caps monolithic with the cap unless indicated otherwise in these plans. Construct the top of each build-up level.

GRINDING & TEXTURING CONCRETE DECKS

For bridge stage construction projects, grind and texture the bridge decks as necessary near the stage longitudinal construction joints in order to meet the longitudinal and transverse rideability and rolling straightedge requirements of the Contract.

Prior to casting any closure pour, grinding, or texturing, make profile line surveys (2 to 6 as determined by the RCE) of each stage of the bridge decks. Make one of these profile line surveys for each stage along the edge of the deck adjacent to the closure pour. Compare the surveys within each stage and compare the surveys of each stage to surveys of the adjacent stage to aid in determining the amount of grinding and texturing needed to meet the rideability and rolling straightedge requirements. Submit all grinding and texturing procedures, plotted survey profiles, and proposed grinding depths to the RCE for approval. Maintain a final cover of 2" minimum over the bridge deck reinforcing steel.

Follow the above procedures for all stages of the work. For all surveys performed on the same bridge, use identical stations for survey shots in order to facilitate survey comparisons.

ALLOWANCE FOR DEAD LOAD

DEFLECTION & SETTLEMENT

In setting forms for structural steel or prestressed concrete beam spans, apply an allowance to the design finished grade to compensate for computed dead load deflections.

Prior to making deck pours on any stage construction work, and bridge widening projects, consider and make adjustments as necessary for partially loaded beams adjacent to closure pour areas. Verify that any proposed adjustment on partially loaded beams does not create a change in the deck thickness or a reduction in the concrete cover over the reinforcing steel. Welded studs on steel beams and reinforcing steel extending up out of prestressed beams shall meet the requirements for a composite section (extend up into the deck past the bottom mat of reinforcing steel) regardless of any adjustments.

In setting falsework for reinforced concrete spans, make an allowance for the deflection of the falsework, for any settlement of the falsework, for the instantaneous dead load deflection of the span, and for the long-time dead load deflection of the span such that on removal of the falsework the top of the structure shall conform to theoretical finished grade plus the allowance for long-time deflection.

PERMANENT STEEL BRIDGE DECK FORMS

Permanent stay-in-place steel bridge deck forms for concrete deck slabs may be used at the Contractor's option.

Notify the Department and the Fabricator of the beams if using this option so that shop plans can be properly detailed.

DRIVEN PILE FOUNDATIONS

Where piles occur in fill, place fill before driving piles except in the vicinity of MSE walls. See MSE wall sheets for more details.

STRUCTURAL STEEL

Layout dimensions and standard lengths of beams shown are horizontal dimensions which must be increased when bridge is on grade.

When holes are placed in webs to accommodate falsework, install high strength bolts in the holes after falsework is removed.

Notify the Department of the name and address of the Fabricator of the structural steel as soon as the Fabricator has been given the contract to fabricate so that the inspection procedure can be set up.

Do not field or shop weld erection hardware to the structural steel members.

Make all bolted connections with $\frac{7}{8}$ " dia. ASTM F3125, Grade A325 bolts unless otherwise indicated.

Generally, holes for $\frac{7}{8}$ " dia. bolts shall be $\frac{15}{16}$ " dia. However, for straight girder spans, oversized holes, $\frac{3}{16}$ " larger than bolt dia. may be used in diaphragms and/or crossframes and their connection plates provided hardened washers are installed over oversize holes in the outer ply of the material gripped. Hardened washers are required under DTIs on oversized holes. In every case install a hardened washer under the element turned for each bolt of a bolted connection. Indicate on the Shop Plans which holes are to be oversize and where hardened washers are required.

PAINT FOR STRUCTURAL STEEL

Paint structural steel in accordance with Section 710 of the Standard Specifications.

BEARING ASSEMBLIES

If bearing assemblies support weathering steel beams or girders, fabricate bearing assembly components from weathering steel and paint them using the NS2 Paint System. Galvanize all other bearing assemblies in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as applicable.

After the required field welding of painted bearing assemblies, field repair the weld areas and/or any damaged areas to the paint in accordance with Subsection 710.4.2 of the Standard Specifications. After the required field welding of galvanized bearing assemblies, field repair the weld areas and/or damaged areas of the galvanized coating in accordance with ASTM A 780.

ANCHOR BOLTS

Galvanize all components of anchor bolt assemblies in accordance with AASHTO M 232 or ASTM F 2329 as applicable. The weight of anchor bolt assemblies is included in the bent quantities for reinforcing steel.

ORIENTATION IN RELATION TO STATIONING

Left and right sides, where referred to in these plans, are in relation to direction of stationing.

FINAL FINISH OF EXPOSED CONCRETE SURFACES

Apply the final surface finish on the bridge(s) only to the following checked and designated bridge areas:

- ☒ A) Entire surface of all barrier rails, parapet walls, approach slab curbs, concrete utility supports, and wing wall; outside vertical edge of bridge deck slabs and sidewalks.
- ☒ B) Outside face of exterior prestressed girders.
- ☒ C) Entire surface of designated substructure units, except top of bent caps and piers.
- ☐ All Units ☐ Designated Units:
- ☐ D) No final surface finish required.

An Anti-Graffiti Coating shall be applied to precast panels and coping of MSE walls per RFP. See Special Provision on page 141 of Exhibit 5 of the RFP. Apply final surface finish and anti-graffiti coatings at rates specified by manufacturer.

SPECIFICATIONS

AASHTO 2017 LRFD Bridge Design Specifications, 8th Edition.

ANSI/AASHTO/AWS D1.5 Bridge Welding Code (Latest Edition) with additions and revisions as stated in the Standard Specifications.

DESIGN DATA

Load and Resistance Factor Design (LRFD) Method

Live Load: AASHTO HL-93 Loading

The top $\frac{1}{4}$ " of all concrete slabs is considered as a wearing surface and is not included in the slab depth used for the calculation of section properties.

All bolted connections, except for steel diaphragm members used with prestressed concrete beams, are designed as slip-critical connections having Class "B" contact surfaces.

An extra dead load of 0.016 KSF is incorporated into the design of this structure to accommodate the use of steel stay-in-place forms.

An extra dead load of 0.015 KSF is incorporated into the design of this structure as an allowance for a future wearing surface.

Seismic Design is in accordance with the 2008 SCDOT "Seismic Design Specifications for Highway Bridges", Version 2.0, with the following parameters:

Seismic Design Category: A

Analysis Method: No Detailed Analysis

Operational Classification: II

Design Acceleration Coefficients:

PGA (FEE): 0.20 g
S_{DS} (FEE): 0.36 g
S₀₁ (FEE): 0.10 g
PGA (SEE): 0.39 g
S_{DS} (SEE): 0.82 g
S₀₁ (SEE): 0.28 g

FEE Acceleration Design Response Spectrum Data			
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)
0.00	0.204	0.60	0.168
0.01	0.230	0.76	0.132
0.02	0.256	0.92	0.109
0.03	0.282	1.08	0.093
0.04	0.308	1.24	0.081
0.05	0.334	1.40	0.072
0.06	0.360	1.56	0.064
0.07	0.360	1.72	0.058
0.09	0.360	1.88	0.053
0.11	0.360	2.04	0.049
0.13	0.360	2.20	0.046
0.15	0.360	2.36	0.043
0.17	0.360	2.52	0.040
0.19	0.360	2.68	0.037
0.20	0.360	2.84	0.035
0.22	0.360	3.00	0.033
0.24	0.360		
0.26	0.360		
0.28	0.360		
0.44	0.229		

SEE Acceleration Design Response Spectrum Data			
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)
0.00	0.393	0.66	0.429
0.01	0.464	0.81	0.347
0.02	0.535	0.97	0.291
0.03	0.607	1.12	0.250
0.05	0.678	1.28	0.220
0.06	0.749	1.44	0.196
0.07	0.820	1.59	0.177
0.09	0.820	1.75	0.161
0.11	0.820	1.91	0.148
0.14	0.820	2.06	0.137
0.16	0.820	2.22	0.127
0.18	0.820	2.37	0.119
0.21	0.820	2.53	0.111
0.23	0.820	2.69	0.105
0.25	0.820	2.84	0.099
0.27	0.820	3.00	0.094
0.30	0.820		
0.32	0.820		
0.34	0.820		
0.50	0.564		

Values determined from: Three-Point Method

ARCHER
UNITED

JOINT VENTURE

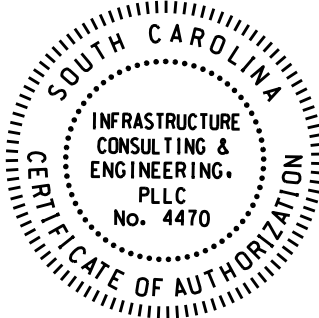
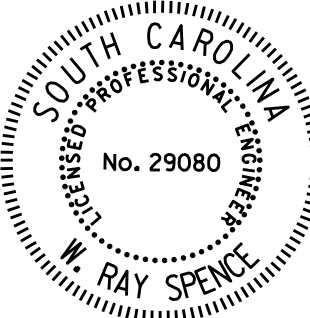
INFRASTRUCTURE
CONSULTING & ENGINEERING

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLANDROUTE US 176



REV. 0	WRS	06-23-22
	RFC	PLANS
REV.	BFS	WRS 03-22
	P039719-B42b	
REV.	PCW	HL 09-20
	ASTM F3125	
REVIEWED	PLC	04-22
QUAN.		
DR.	GFD	SAN 08-07
DES.		
	BY	CHK. DATE



Provide steel for the armor plates that conforms to the latest AASHTO M 270 Grade 50W (ASTM A 709 Gr. 50W) steel and neither the plates nor the anchor studs need to be painted.

Holes, $\frac{9}{16}$ " dia., spaced approximately 2'-0" on center may be provided in the lower portion of the plates to bolt the plates to the forms.



BLOCK-OUT DETAIL



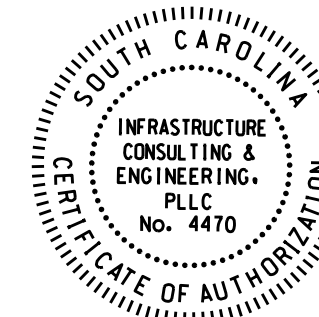
BAR SUPPORT DETAIL

ADHESIVELY BONDED DOWEL DETAIL

STEEL H-PILE ANCHORAGE DETAIL

CONST. JT. DETAIL

A circular professional engineer seal for the State of South Carolina. The outer ring contains the text "SOUTH CAROLINA" at the top and "LICENSED PROFESSIONAL ENGINEER" at the bottom. In the center, the license number "No. 29080" is displayed above the name "W. RAY SPENCE".



REV.	WRS	06-23-22	
0	RFC PLANS		
REV.	BFS	WRS	03-22-22
	P039719-B42b		
REV.	PCW	LEM	9-17-21
	Bar Support Det		
REVIEWED	PLC 04-22		
QUAN.			
DR.	SRM	GFD	8-07
	PNP	SAN	
DES.			



INFRASTRUCTURE
CONSULTING & ENGINEERING

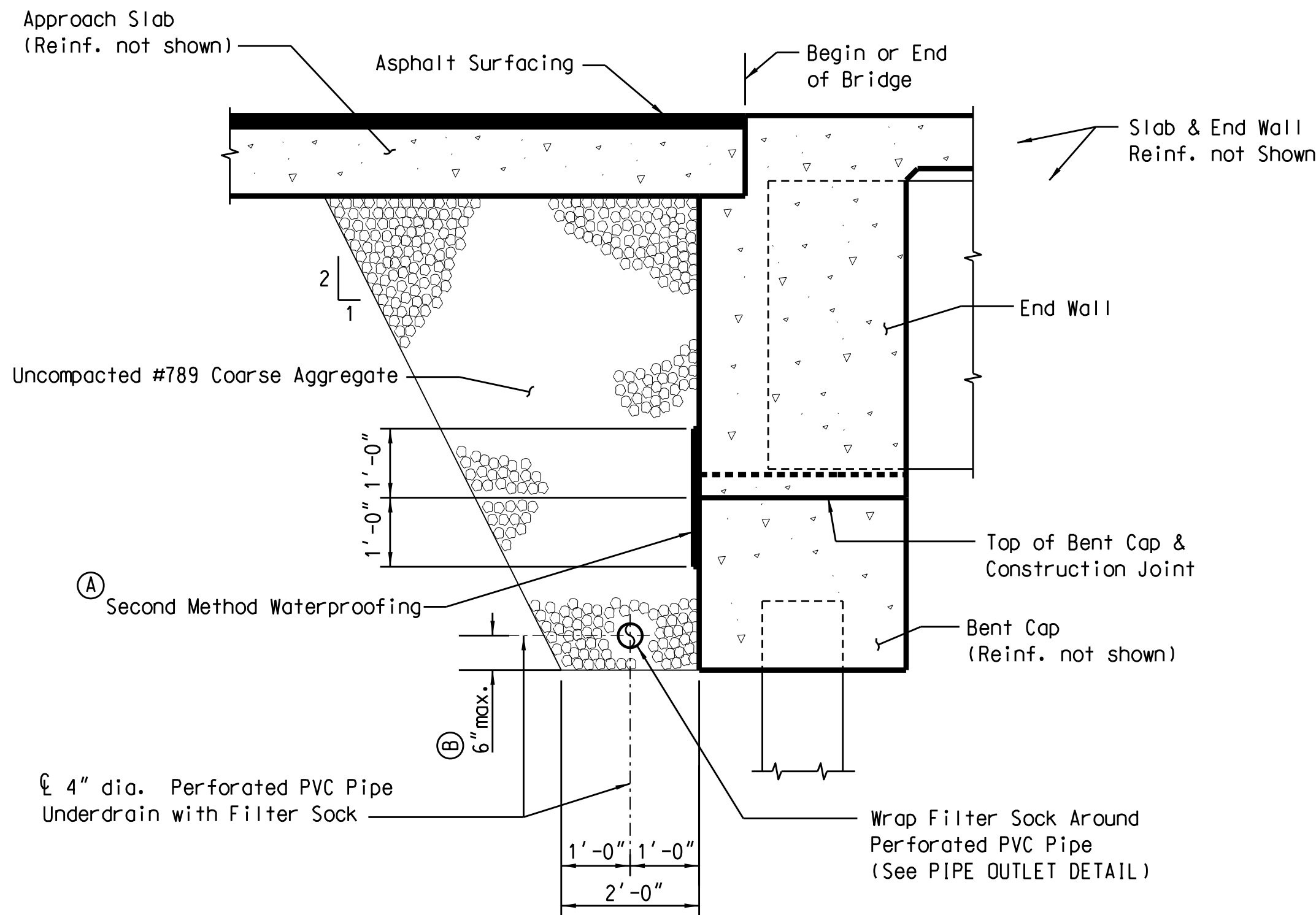
GENERAL DETAILS

COUNTY RICHLAND

ROUTE US 176

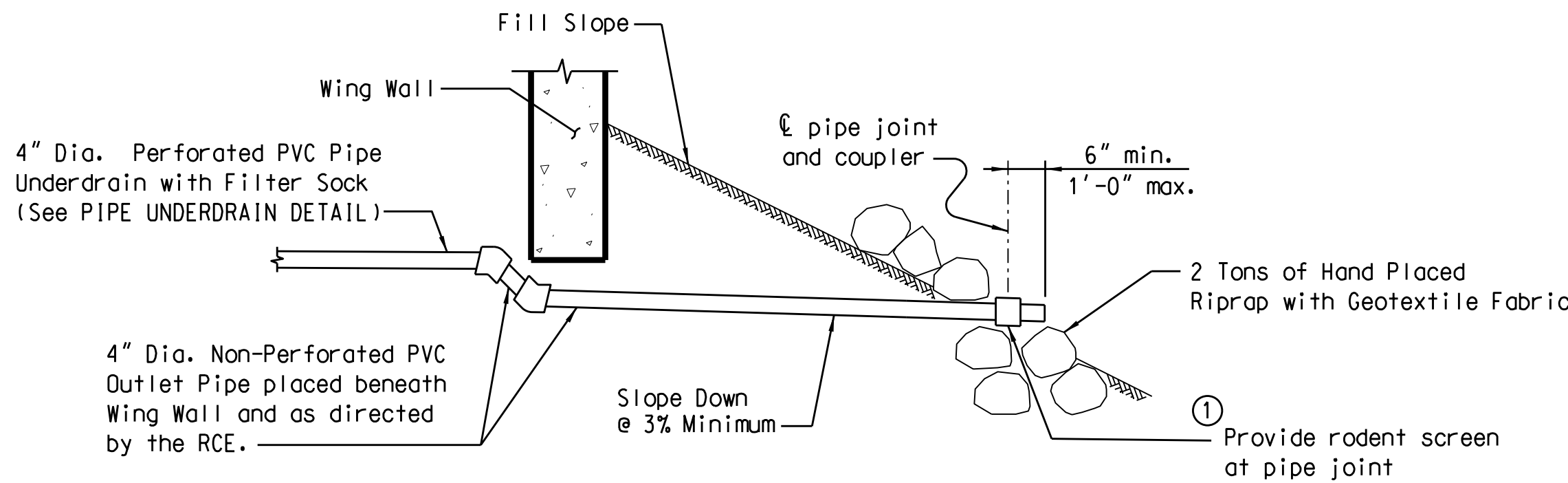
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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	5



PIPE UNDERDRAIN DETAIL

- (A) Extend Second Method Waterproofing the full length of the End Wall and Wing Walls. See Section 814 of the Standard Specifications.
- (B) Slope Pipe a minimum of 0.5% to drain.

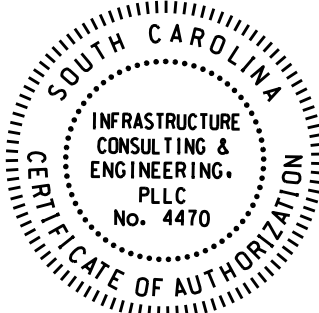
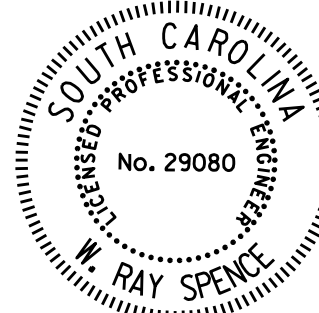


PIPE OUTLET DETAIL

Notes:

Install 4" Dia. Perforated Pipe Underdrain in accordance with Section 802 of the Standard Specifications. Use Uncompacted #789 Coarse Aggregate in accordance with Section 701 of the Standard Specifications. Use Geotextile for Drainage Filtration, Class 1 Fabric (Protected) for the Filter Sock in accordance with the Special Provisions.

- ① Construct the pipe outlet with a pipe joint that is a minimum of 6" and a maximum of 1'-0" from the outlet end of the pipe. Provide rodent screen manufactured from T304 stainless steel or galvanized steel with a minimum wire diameter of 0.050". Provide a rodent screen with a minimum of 2 openings per inch and a maximum of 4 openings per inch.



REV.	WRS	06-23-22
0	RFC	PLANS
REV.	BFS	WRS 03-22
	P039719-B42b	
REV.	PCW	HL 4-19
	22x36	Border
REVIEWED	PLC	04-22
QUAN.		
DR.	SRM	
	PNE	SAN 2-08
DES.		
	BY	CHK. DATE

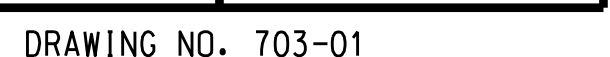


SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

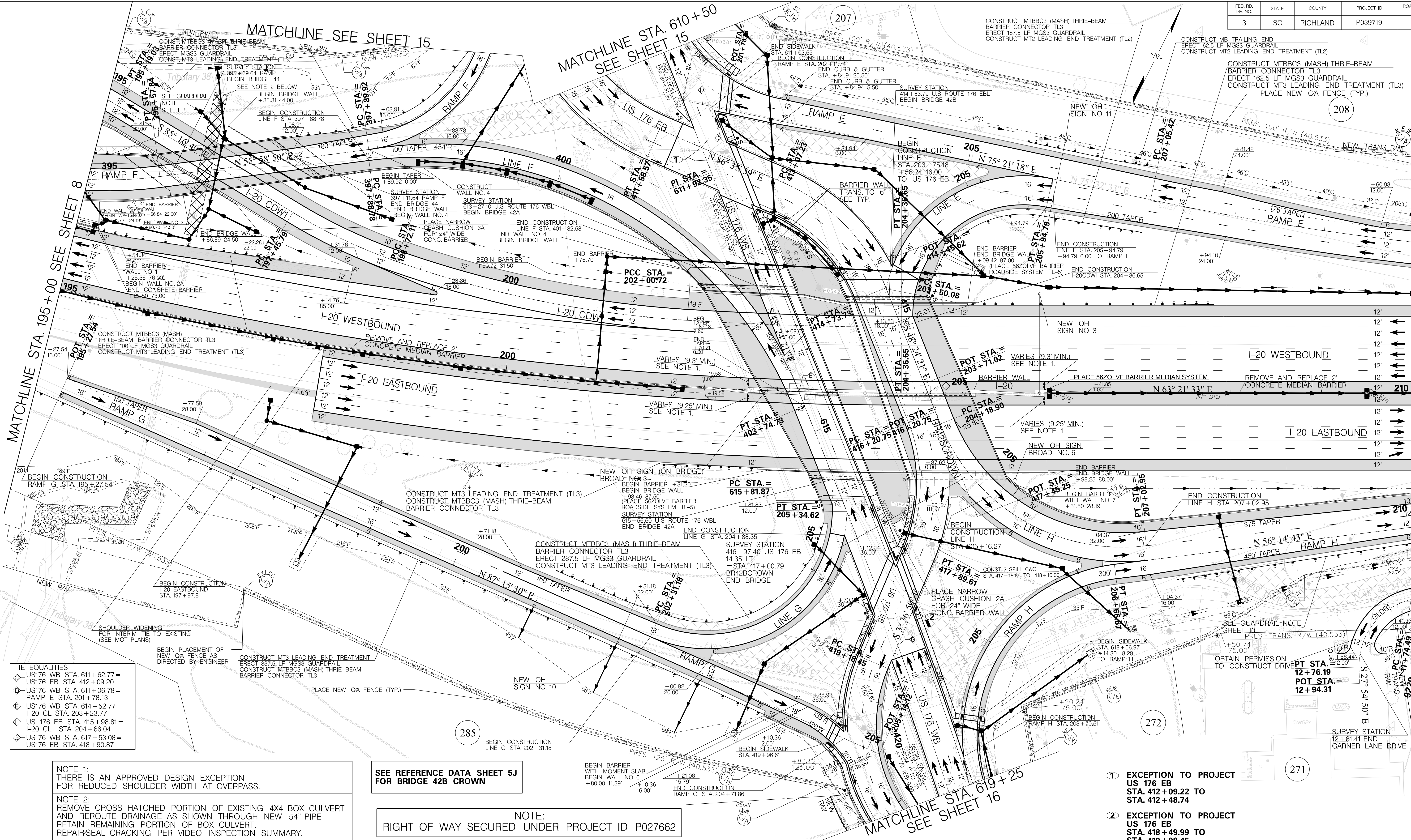
COUNTY RICHLAND ROUTE US 176



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6/10/2022

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	7



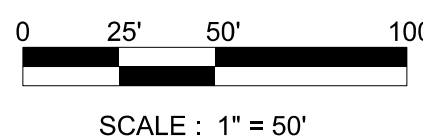
TIE EQUALITIES	
US176 WB STA. 611+62.77=	US176 EB STA. 412+09.20
US176 WB STA. 611+06.78=	RAMP E STA. 201+78.13
US176 WB STA. 614+52.77=	I-20 CL STA. 203+23.77
US 176 EB STA. 415+98.81=	I-20 CL STA. 204+66.04
US176 WB STA. 617+53.08=	US176 EB STA. 418+90.87

NOTE 1:
THERE IS AN APPROVED DESIGN EXCEPTION
FOR REDUCED SHOULDER WIDTH AT OVERPASS.

NOTE 2:
REMOVE CROSS HATCHED PORTION OF EXISTING 4X4 BOX CULVERT
AND REROUTE DRAINAGE AS SHOWN THROUGH NEW 54" PIPE
RETAIN REMAINING PORTION OF BOX CULVERT.
REPAIR/SEAL CRACKING PER VIDEO INSPECTION SUMMARY.

SEE REFERENCE DATA SHEET 5J
FOR BRIDGE 42B CROWN

NOTE:
RIGHT OF WAY SECURED UNDER PROJECT ID P027662



INFORMATION ONLY

ALIGNMENT CONTROL CAN BE FOUND ON
REFERENCE DATA SHEET



FINAL PLANS FOR REVIEW

SCALE: 1" = 50'

REV. NO.	BY	DATE	DESCRIPTION OF REVISION
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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

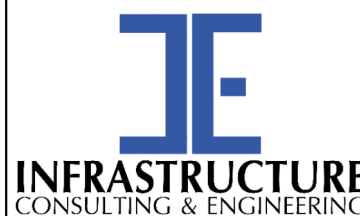
CAROLINA CROSSROADS PHASE 2

PLAN SHEET

- ① EXCEPTION TO PROJECT
US 176 EB
STA. 412+09.22 TO
STA. 412+48.74
- ② EXCEPTION TO PROJECT
US 176 EB
STA. 418+49.99 TO
STA. 419+08.45

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6/10/2022

INFORMATION ONLY



FINAL PLANS
FOR REVIEW

SCALE: 1" = 50' HORIZONTAL 1" = 10' VERTICAL

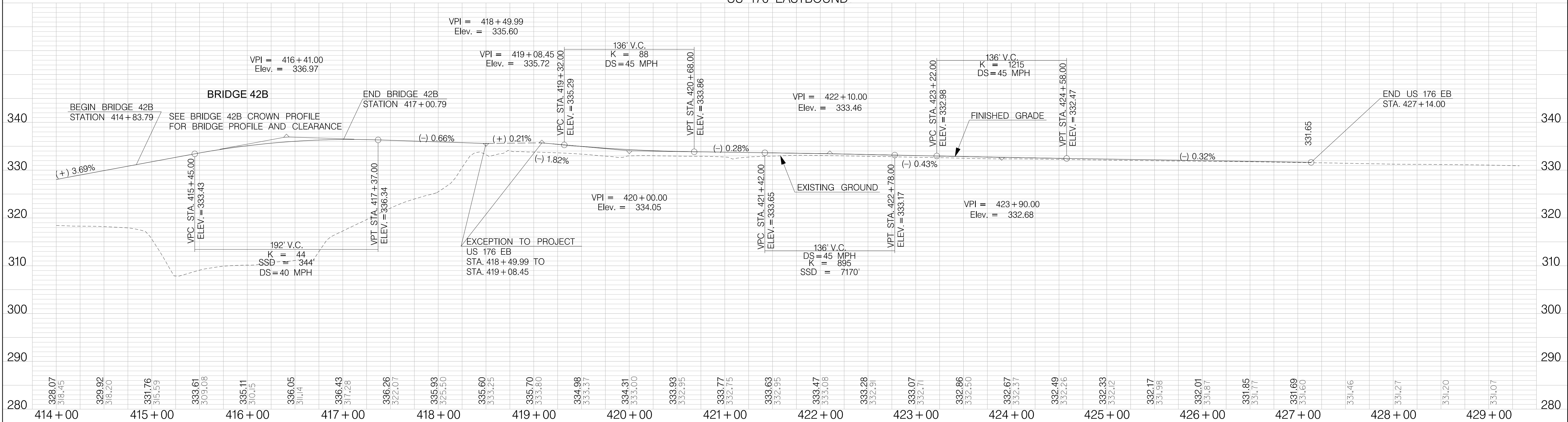
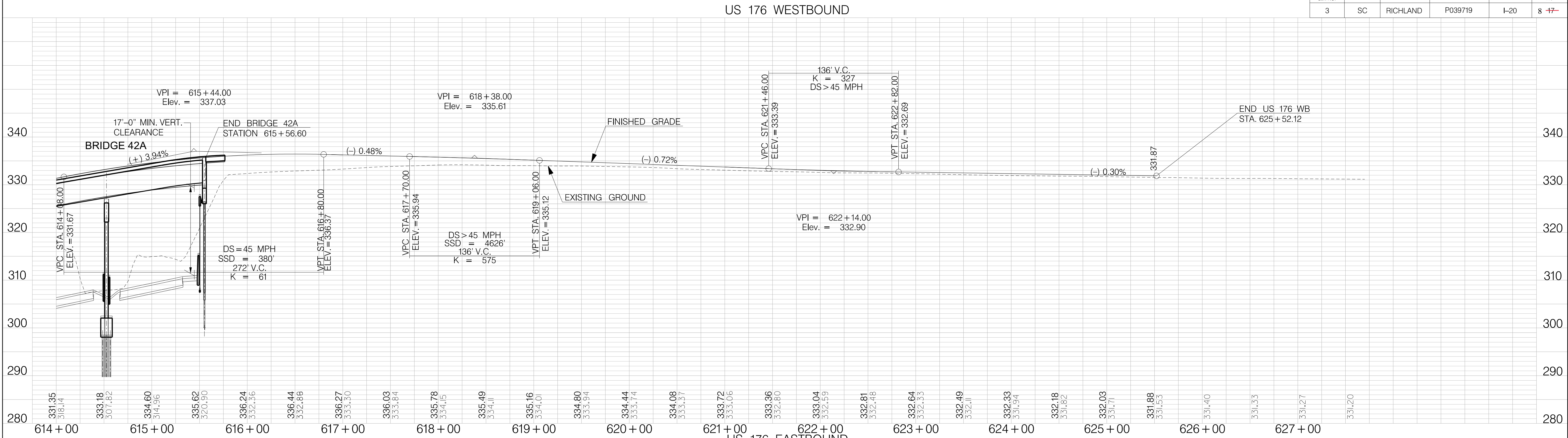
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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAROLINA CROSSROADS PHASE 2

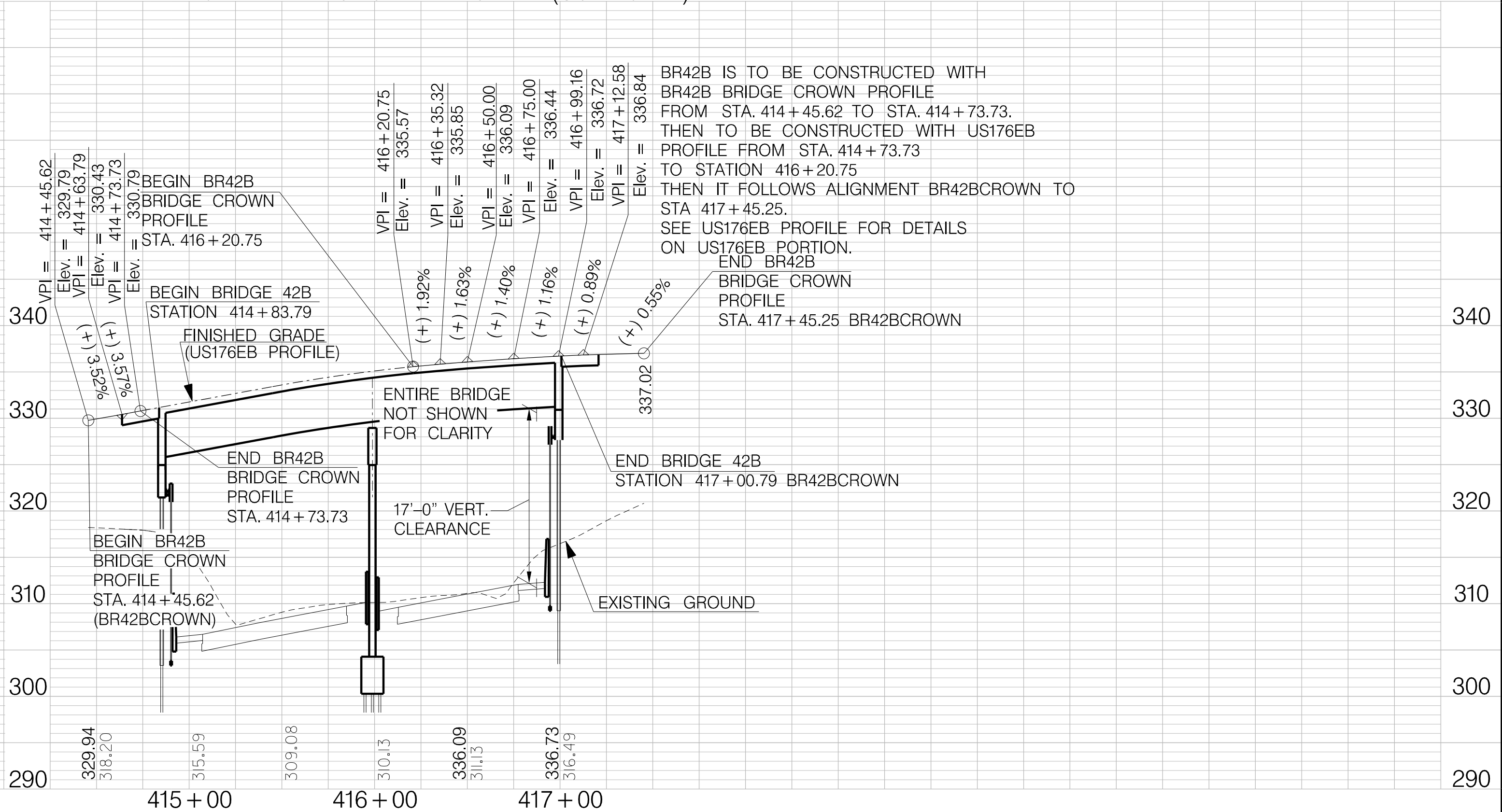
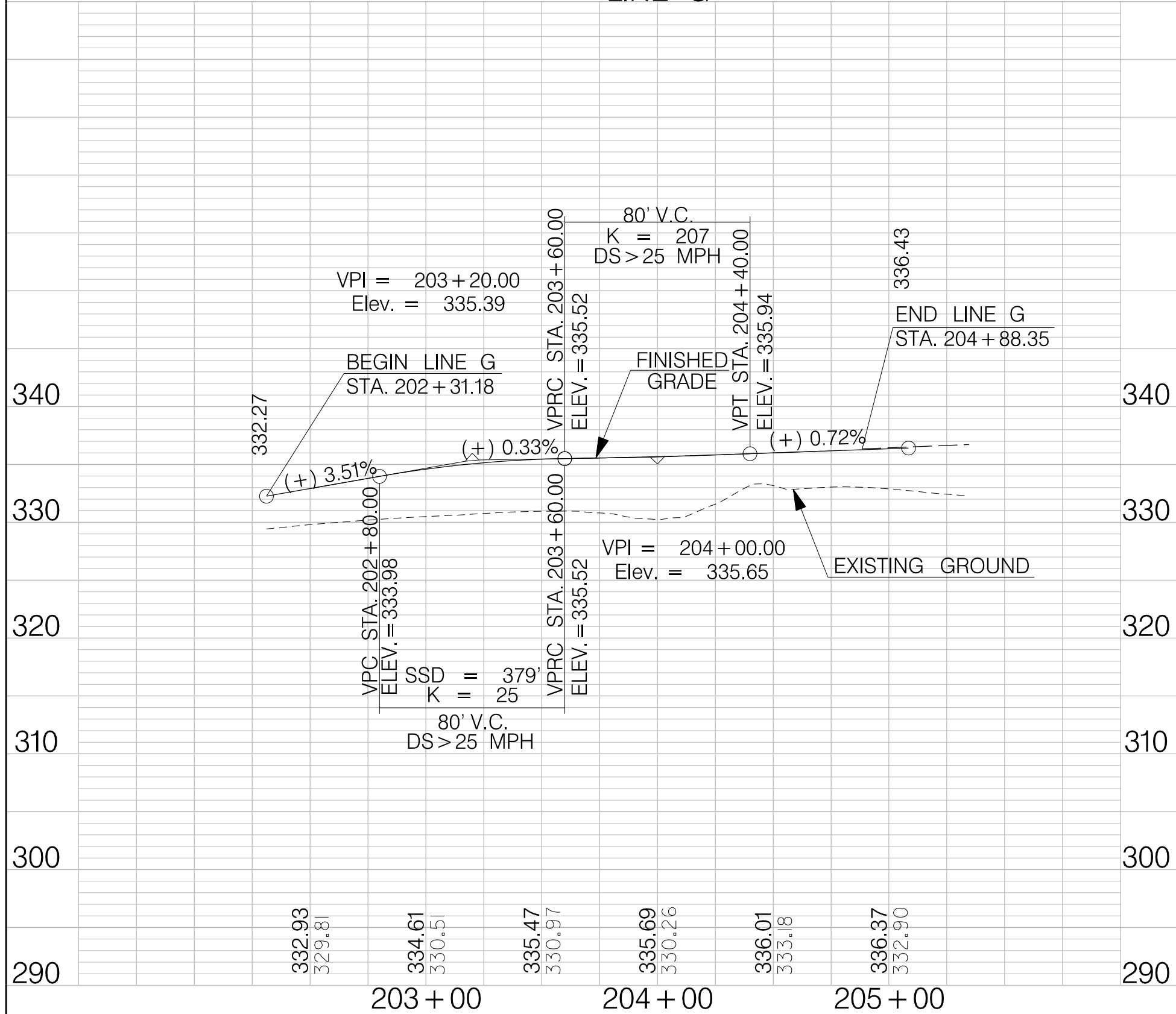
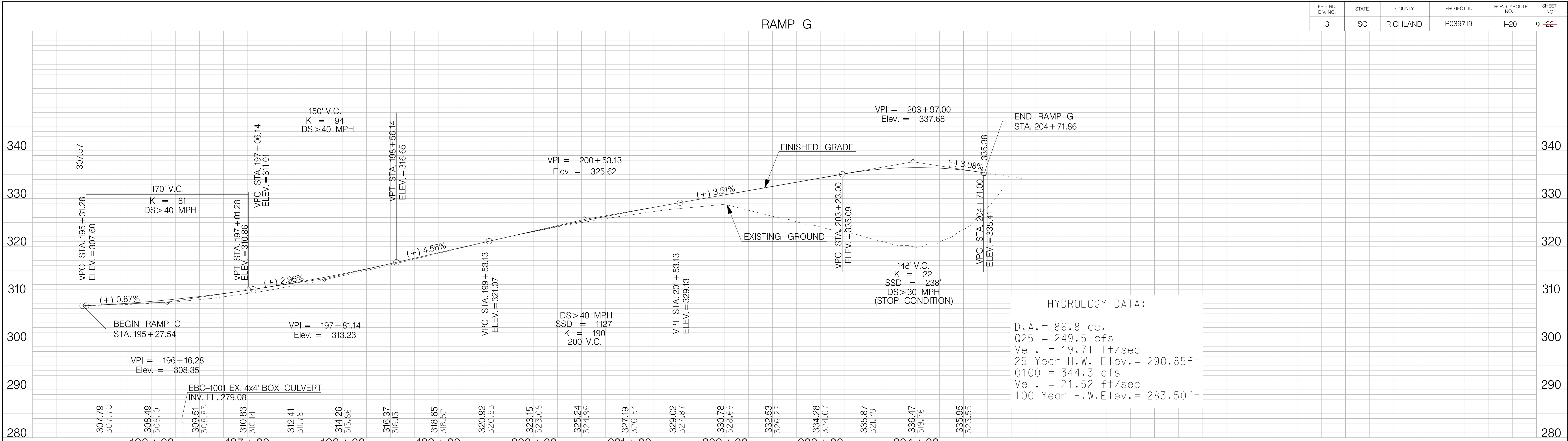
PROFILE SHEET

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	8 17

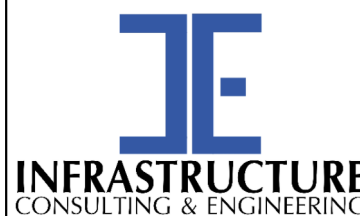


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6/10/2022

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	9 -22-



INFORMATION ONLY



FINAL PLANS
FOR REVIEW

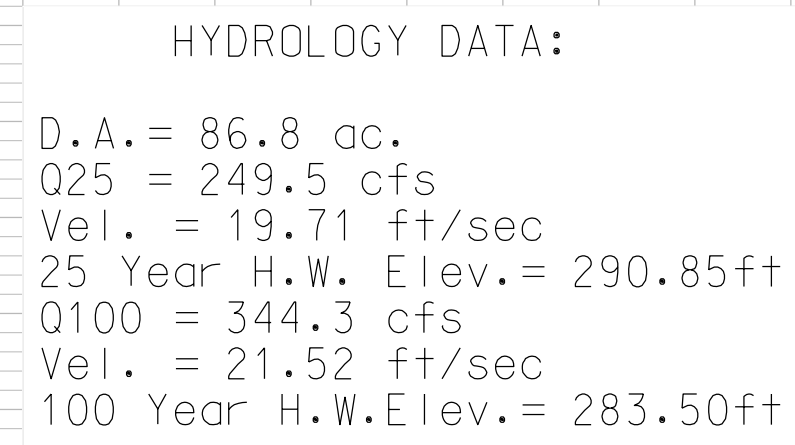
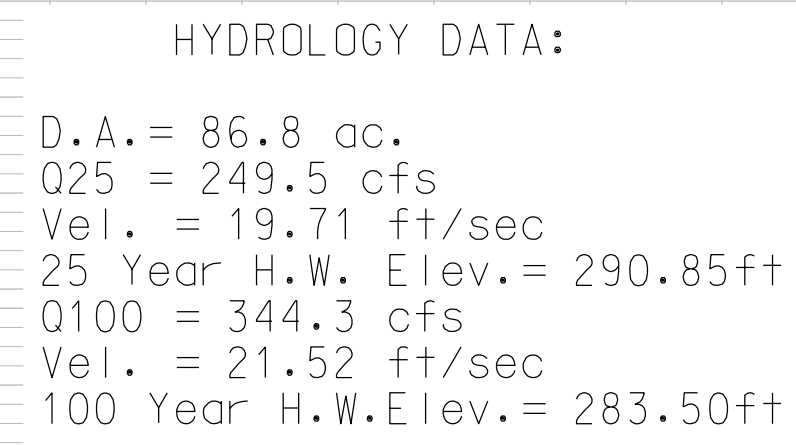
SCALE: 1" = 50' HORIZONTAL 1" = 10' VERTICAL

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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAROLINA CROSSROADS PHASE 2

PROFILE SHEET



ARCHER **UNITED**
JOINT VENTURE  **UNITED**
INFRASTRUCTURE GROUP

FINAL PLANS

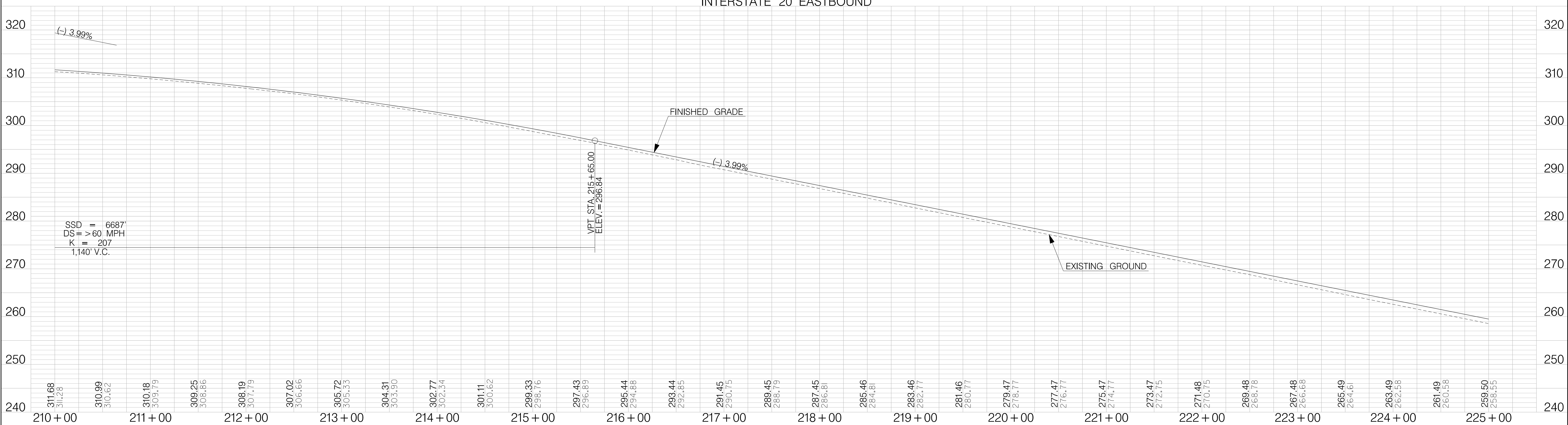
FOR REVIEW

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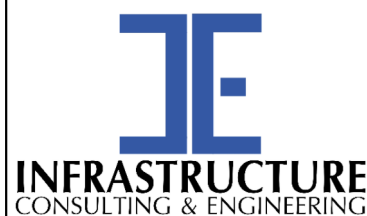
PROFILE SHEET

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6/10/2022

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	11



INFORMATION ONLY



FINAL PLANS
FOR REVIEW

SCALE: 1" = 50' HORIZONTAL 1" = 10' VERTICAL

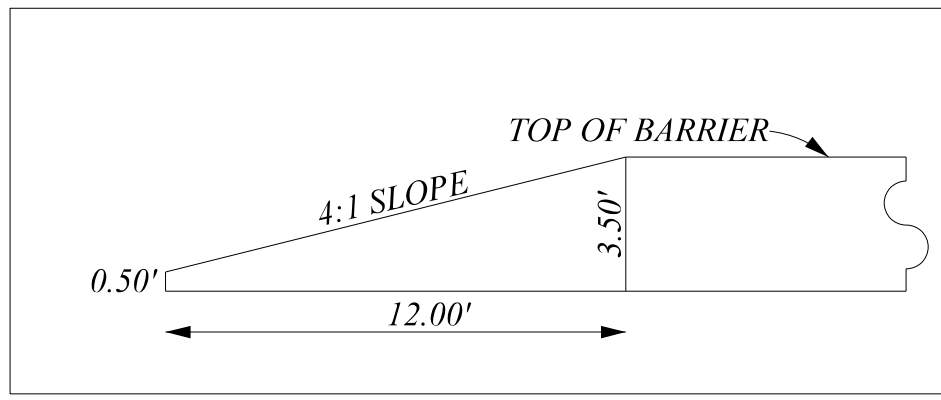
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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAROLINA CROSSROADS PHASE 2

PROFILE SHEET

TYPICAL SECTION OF IMPROVEMENT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
COLUMBIA, S.C.



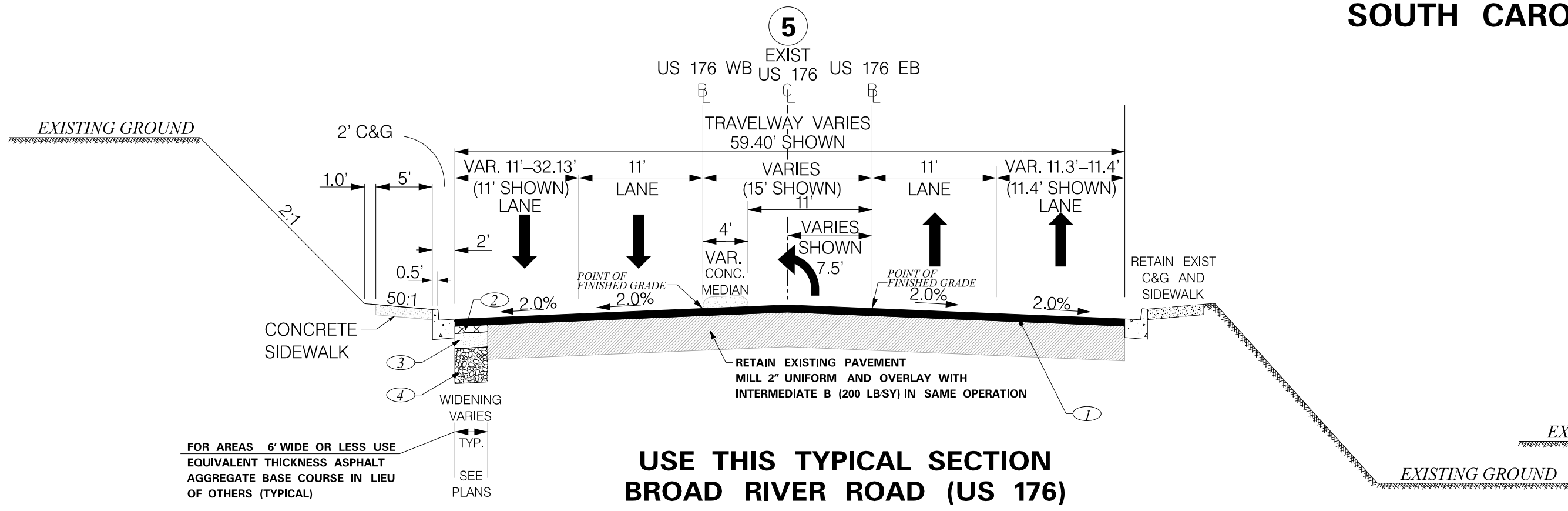
** DETAIL OF BARRIER TRANSITION AT DDI
SEE PLAN SHEETS FOR LOCATIONS
SEE ROADWAY STRUCTURE SHEETS
FOR DETAILS AND REINFORCING

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	12-38

NOTE:
CURB RAMP ARE TO BE CONSTRUCTED IN
ACCORDANCE WITH THE SCDOT STANDARD DRAWINGS.

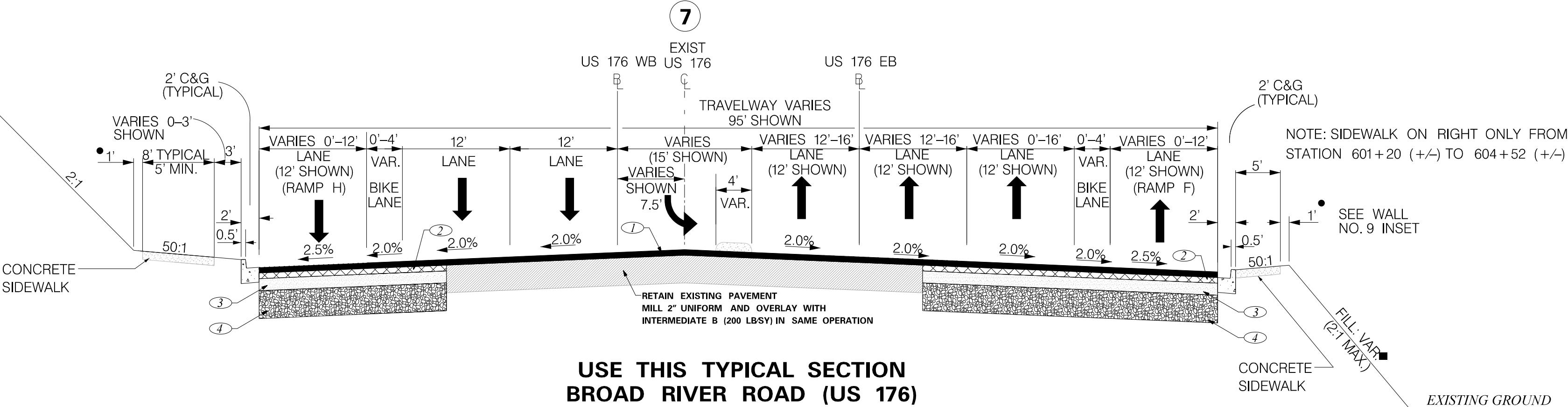
- USE 6:1 SLOPE (0' - 5')
- 4:1 SLOPE (5' - 10')
- 2:1 SLOPE (10' - OVER)
- 2:1 SLOPE (WETLAND AREAS)

- ADD 3.25' WHERE GUARDRAIL IS ERECTED
EXCEPT IN AREAS WITH COMPRESSED
SHOULDER



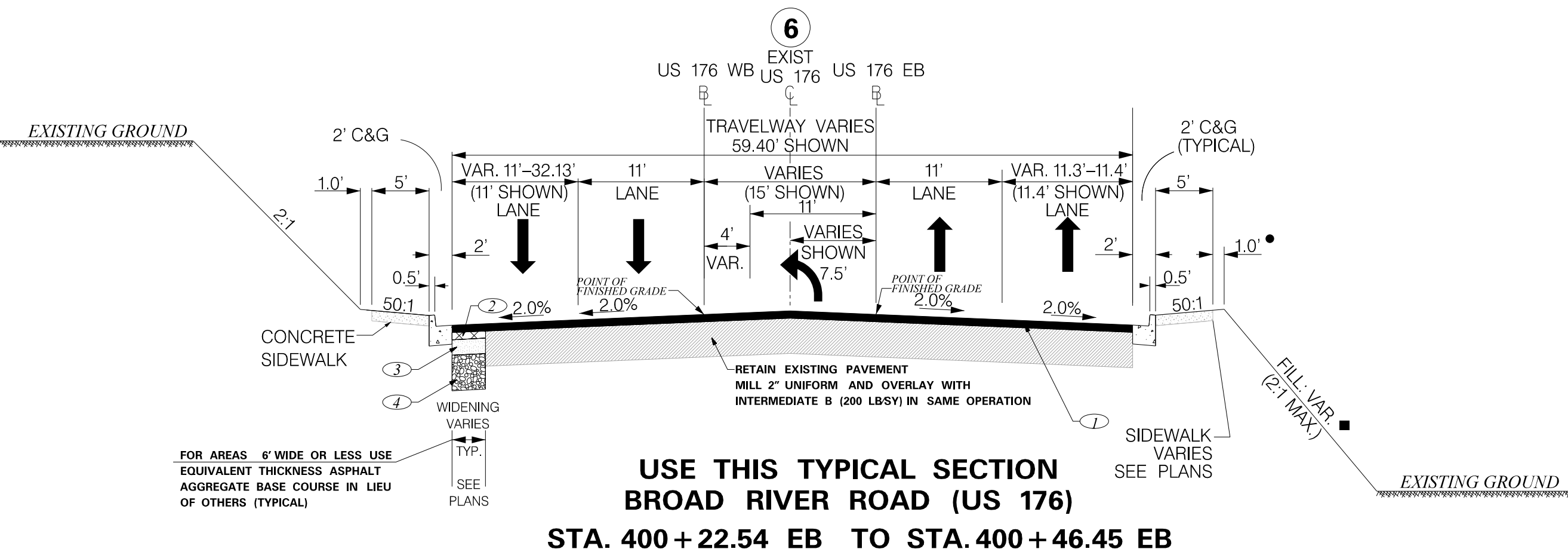
USE THIS TYPICAL SECTION
BROAD RIVER ROAD (US 176)

STA. 598+99.00 WB TO STA. 600+50.29 WB
STA. 399+00.05 EB TO STA. 400+22.54 EB



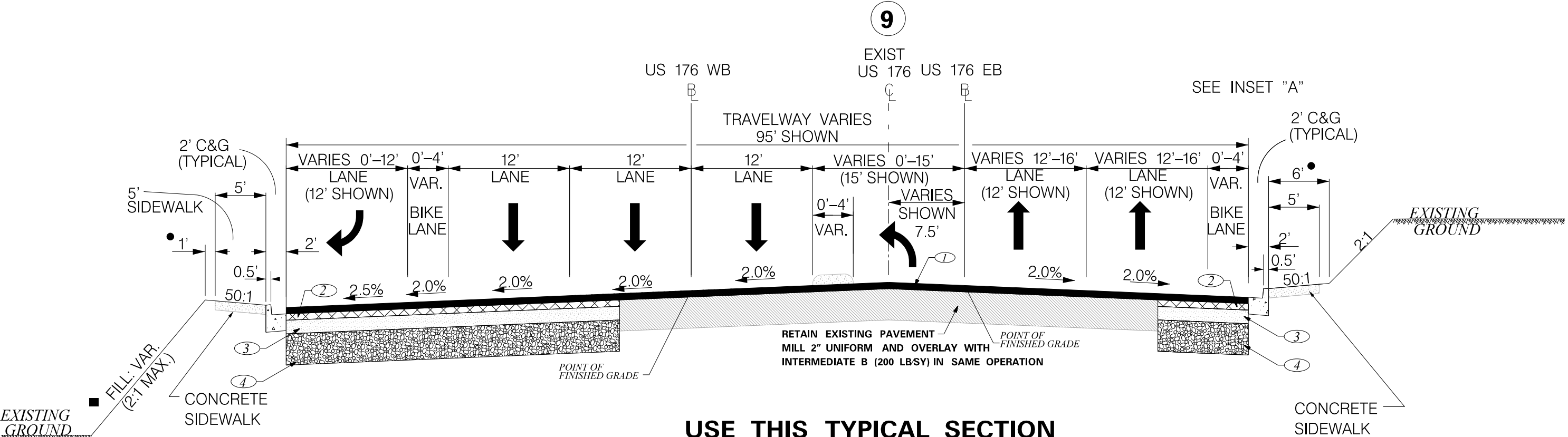
USE THIS TYPICAL SECTION
BROAD RIVER ROAD (US 176)

STA. 600+50.29 WB TO STA. 611+62.77 WB
STA. 400+46.45 EB TO STA. 412+09.20 EB
STA. 617+15.53 WB TO STA. 620+09.12 WB
STA. 418+52.46 EB TO STA. 421+79.69 EB



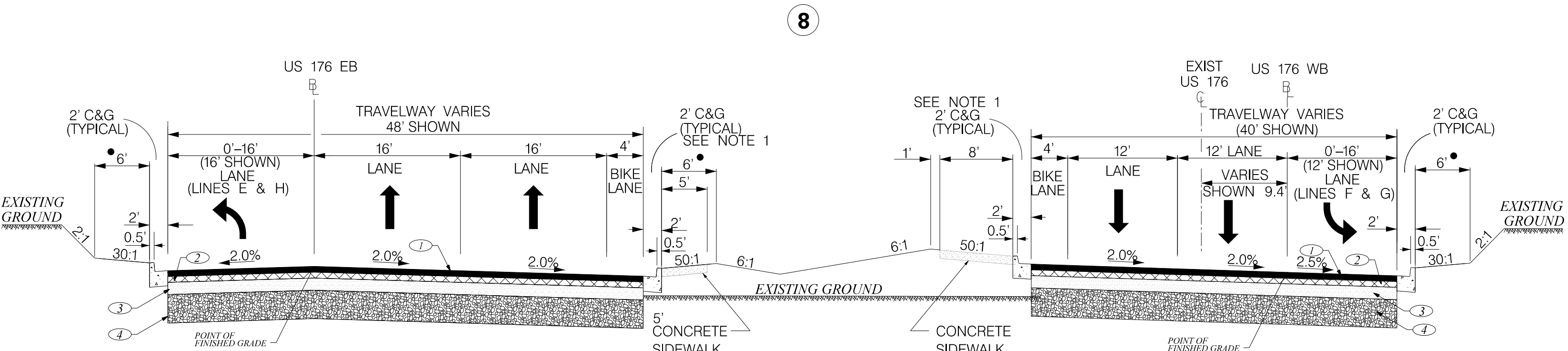
USE THIS TYPICAL SECTION
BROAD RIVER ROAD (US 176)

STA. 400+22.54 EB TO STA. 400+46.45 EB



USE THIS TYPICAL SECTION
BROAD RIVER ROAD (US 176)

STA. 620+09.12 WB TO STA. 625+52.12 WB
STA. 421+79.69 EB TO STA. 427+14.00 EB



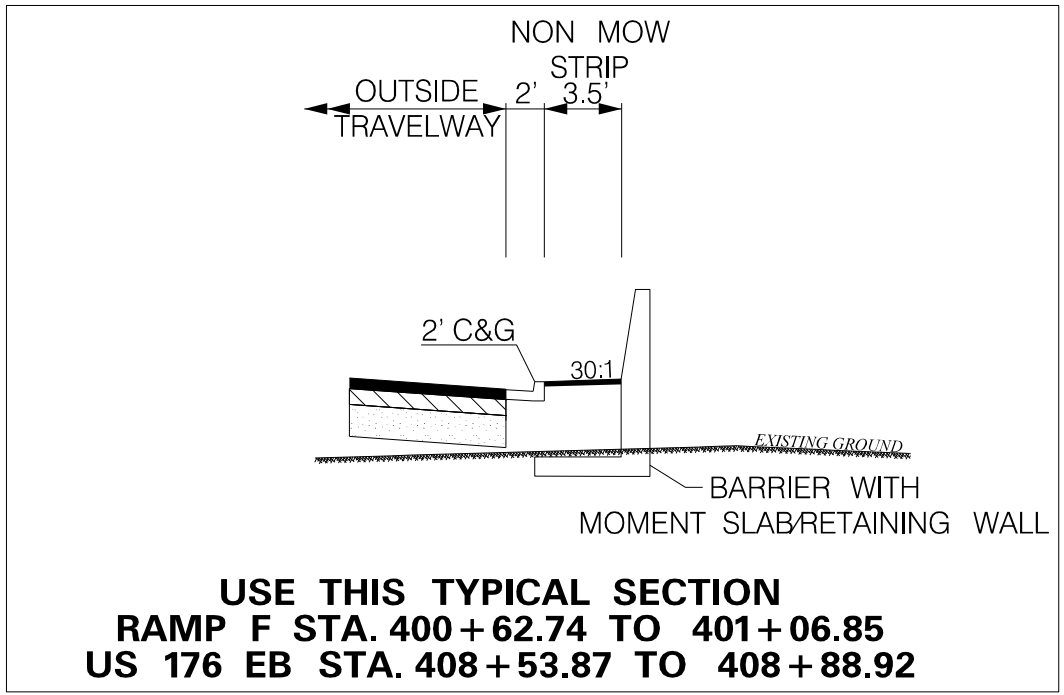
USE THIS TYPICAL SECTION
BROAD RIVER ROAD (US 176)

STA. 611+62.77 WB TO STA. 617+15.53 WB
STA. 412+09.20 EB TO STA. 418+52.46 EB

SEE PLANS FOR BEGIN /END BRIDGES

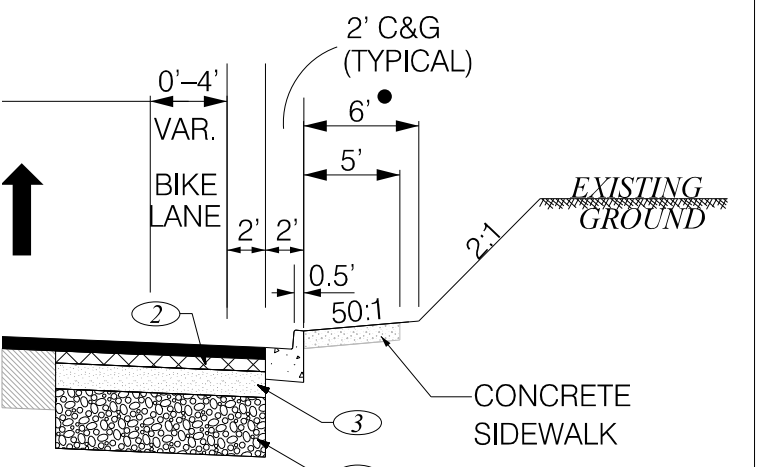
NOTE 1:
USE SPILL CURB IN LIEU OF C&G
EB STA. 417+18.85 TO STA. 418+10.00
WB STA. 606+02.00 TO STA. 611+31.80
WB STA. 612+16.46 TO STA. 612+98.77

WALL NO. 9 INSET



USE THIS TYPICAL SECTION
RAMP F STA. 400+62.74 TO 401+06.85
US 176 EB STA. 408+53.87 TO 408+88.92

INSET "A"



USE INSET "A"
BROAD RIVER ROAD (US 176)
FOR ADDITIONAL 2' PAVING
BEYOND BIKE LANE
STA. 422+62.11 EB TO
STA. 424+61.57 EB

FUNCTIONAL CLASSIFICATION:
URBAN PRINCIPAL ARTERIAL

SEE TABLES ON SHEET 3G FOR
PAVEMENT DESIGN OPTIONS

RTE. US 176 WB	DESIGN SPEED	
	MPH	FROM STA. TO STA.
US 176 EB	45	598+99.00 625+52.12
	45	398+99.00 427+14.00
EXCEPTIONS TO DESIGN SPEED		



FINAL PLANS
FOR REVIEW

N.T.S.

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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAROLINA CROSSROADS PHASE 2

TYPICAL SECTION
SHEET

TYPICAL SECTION OF IMPROVEMENT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
COLUMBIA, S.C.

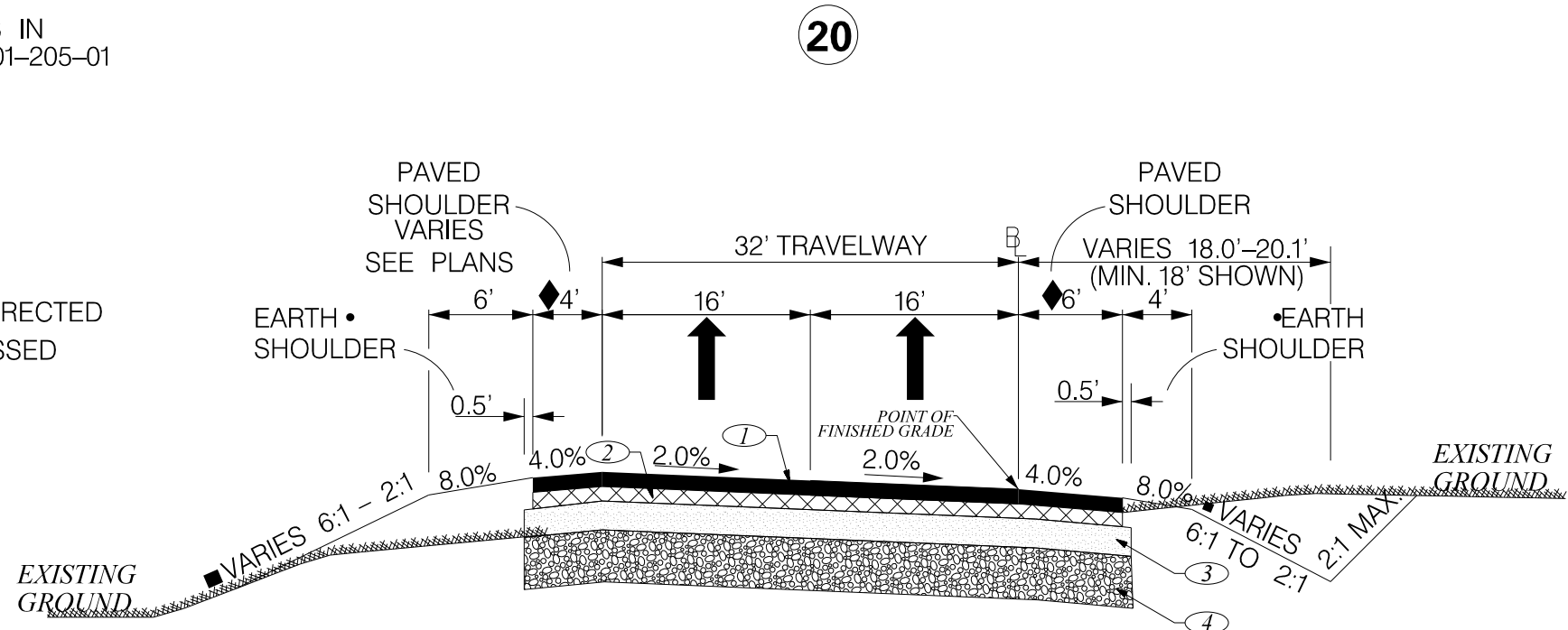
FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	13-3E

* PLACE MILLED IN RUMBLE STRIPS IN ACCORDANCE WITH STD. DWGS. 401-205-01 AND 401-205-02

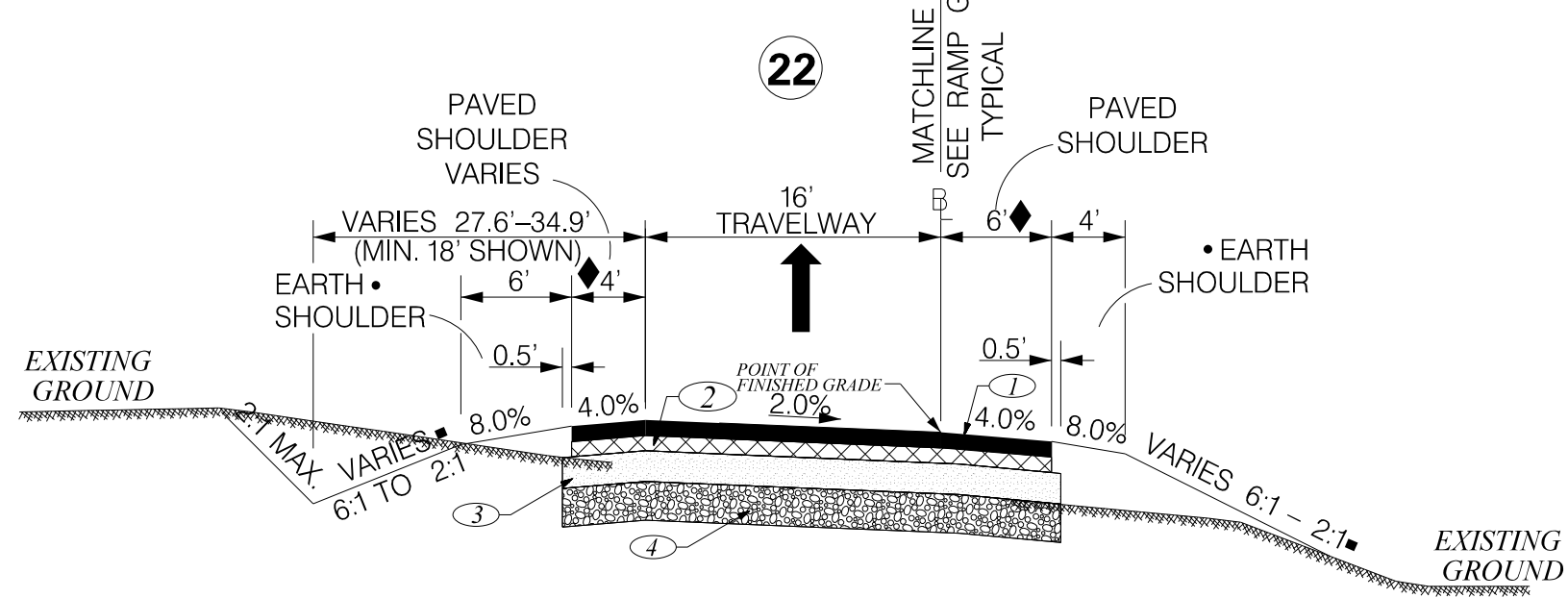
■ USE 6:1 SLOPE (0' - 5')
4:1 SLOPE (5' - 10')
2:1 SLOPE (10' - OVER)

• ADD 3.75' WHERE GUARDRAIL IS ERECTED EXCEPT IN AREAS WITH COMPRESSED SHOULDER STD. DWG. 805-215-00

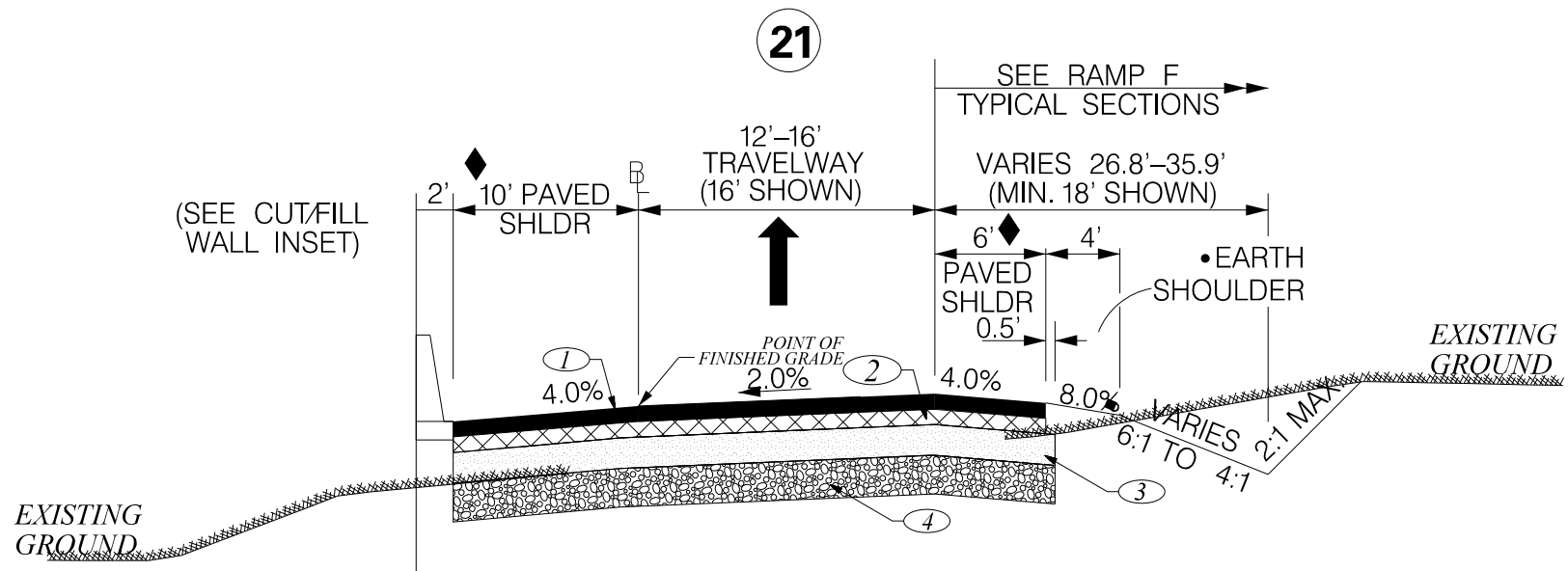
✂ SEE "S" SHEETS FOR DETAIL OF VERTICAL FACE BARRIER AND CUT/FILL WALLS.



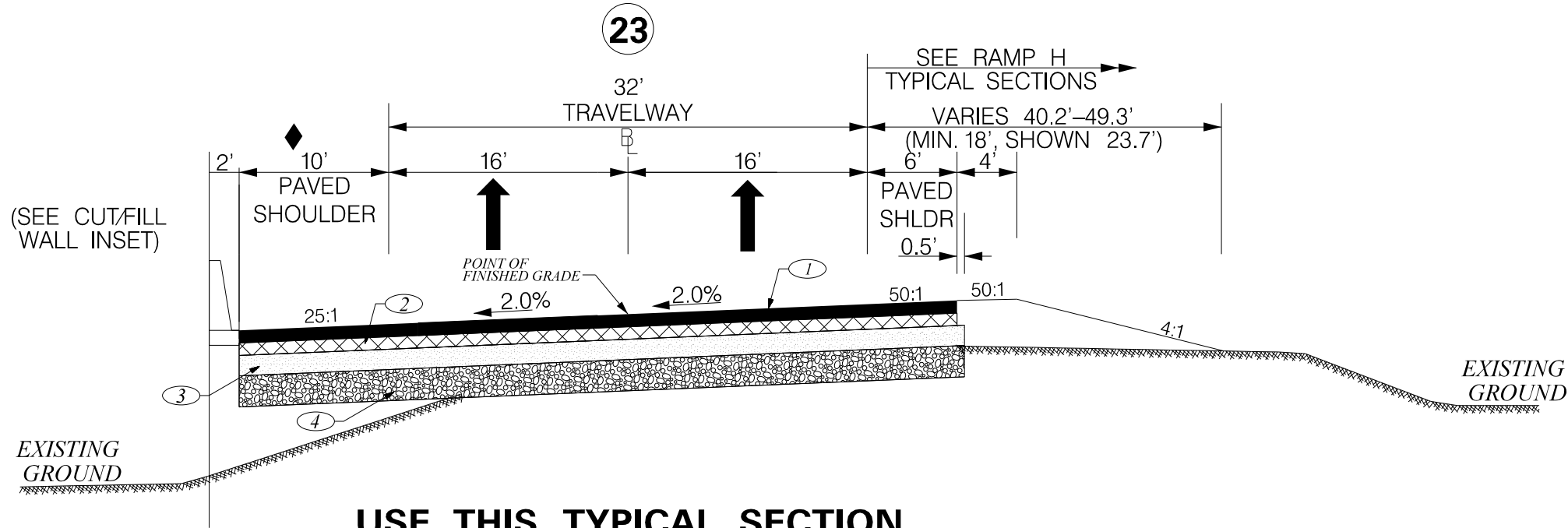
USE THIS TYPICAL SECTION
LINE E STA. 203+75.18 TO STA. 205+94.79



USE THIS TYPICAL SECTION
LINE G STA. 202+31.18 TO STA. 204+88.35

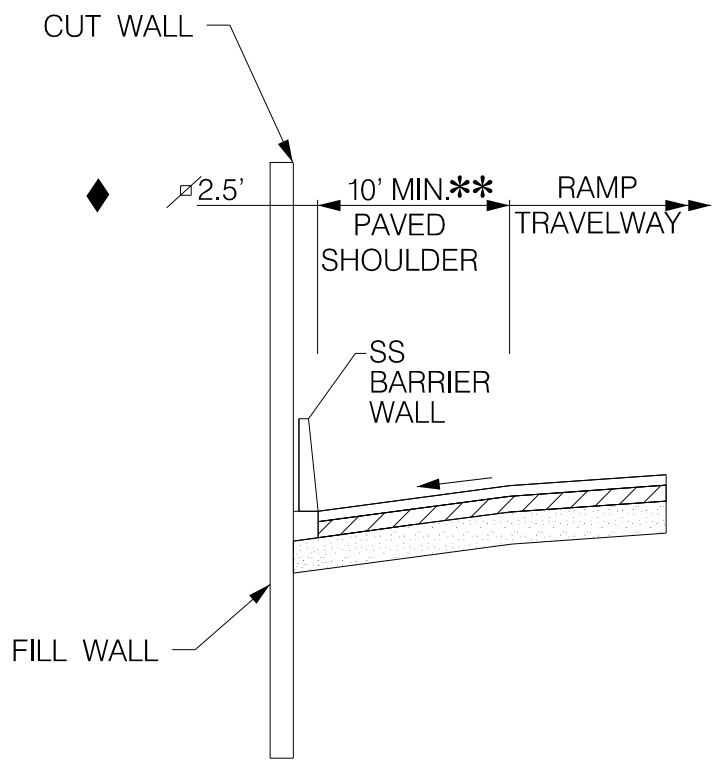


USE THIS TYPICAL SECTION
LINE F STA. 397+88.78 TO STA. 401+82.58



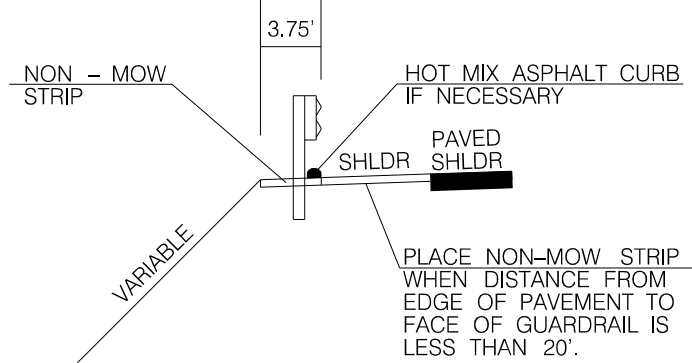
USE THIS TYPICAL SECTION
LINE H STA. 205+16.27 TO STA. 207+02.95

CUT/FILL WALL INSET



** MATCH PAVEMENT DESIGN OF RAMP & PAVE TO THE FACE OF BARRIER WALL. 10' MINIMUM PAVED SHOULDER WIDTH. SOME SHOULDER WIDTHS MAY BE GREATER THAN 10' FOR SIGHT DISTANCE. SEE PLAN VIEW AND CROSS SECTIONS FOR WALL LOCATIONS AND WIDTHS.

NON-MOW STRIP AND
ASPHALT FLUME
UNDER GUARDRAIL DETAIL



• MINIMUM 3.75' WHERE GUARDRAIL IS ERECTED EXCEPT IN AREAS WITH COMPRESSED SHOULDER (SEE STD. DWG. 805-215-00). PROVIDE NON-MOW STRIP UNDER GUARDRAIL. PROVIDE 6 INCH ASPHALT CURB (SEE STD. DWG. 805-525-01) ON THE LOW SIDES OF THE ROADWAY WHERE FILL SLOPES ARE GREATER THAN 10' IN HEIGHT AND ARE STEEPER THAN 3:1. USE CURB DETAIL (5) AND PLACEMENT DETAIL (2) FROM SCDOT STD. DWG. 803-105-00.

NOTE: TYPICAL SECTIONS ARE LOOKING IN DIRECTION OF TRAFFIC AND NOT NECESSARILY IN DIRECTION OF SURVEY.

INFORMATION ONLY

FUNCTIONAL CLASSIFICATION:
URBAN PRINCIPAL ARTERIAL

SEE TABLES ON SHEET 3G FOR
PAVEMENT DESIGN OPTIONS

RTE. DESIGN SPEED

MPH LINE
25 E, F, G, H

EXCEPTIONS TO DESIGN SPEED



FINAL PLANS
FOR REVIEW

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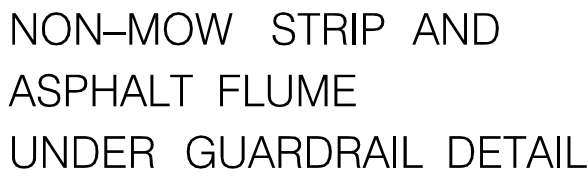
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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAROLINA CROSSROADS PHASE 2

TYPICAL SECTION
SHEET

FED. RD. DIV. NO.	STATE	COUNTY	PROJECT ID	ROAD / ROUTE NO.	SHEET NO.
3	SC	RICHLAND	P039719	I-20	14 9



3.75'

NON - MOW STRIP

HOT MIX ASPHALT CURB IF NECESSARY

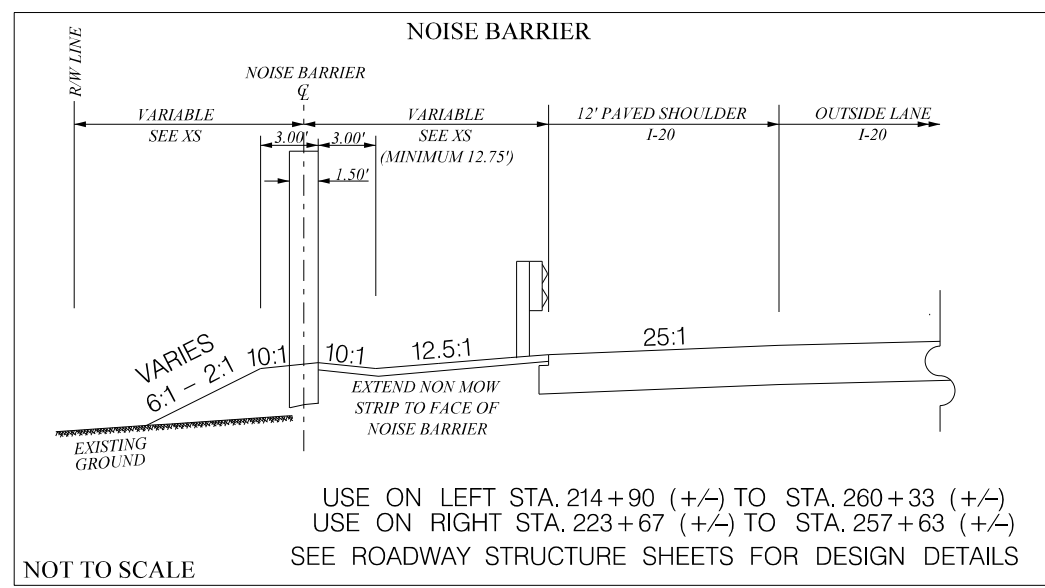
PAVED SHOULDER

VARIABLE

PLACE NON-MOW STRIP BEGIN DISTANCE FROM EDGE OF PAVEMENT TO FACE OF GUARDRAIL IS LESS THAN 20'.

- MINIMUM 3.75' WHERE GUARDRAIL IS ERECTED EXCEPT IN AREAS WITH COMPRESSED SHOULDER. (SEE STD. DWG. 805-215-00). PROVIDE NON-MOW STRIP UNDER GUARDRAIL. PROVIDE 6 INCH ASPHALT CURB (SEE STD. DWG. 805-525-01) ON THE LOW SIDES OF THE ROADWAY WHERE FILL SLOPES ARE GREATER THAN 10' IN HEIGHT AND ARE STEEPER THAN 3:1. USE CURB DETAIL (5) AND PLACEMENT DETAIL (2) FROM SCDOT STD. DWG. 803-105-00.

PAVING DETAIL FOR USE WHEN BARRIER IS NOT DIRECTLY ADJACENT TO SHOULDER



NOTE:
THERE IS AN APPROVED DESIGN EXCEPTION FOR SUBSTANDARD INSIDE SHOULDER WIDTHS ON I-20
AT THE US 176 OVERPASS. THE INSIDE SHOULDER AT BRIDGE COLUMNS IS ALLOWED TO BE REDUCED
FROM 12' TO 9.25'.

INFORMATION ONLY

TE.	I-20	DESIGN SPEED
-----	------	--------------

E.	I-20	DESIGN	SPEED
	MPH	FROM STA.	TO STA.
	60	170 + 34.70	264 + 97.26
	I-20 CD: 45	170 + 60.75	204 + 36.65
	EXCEPTIONS TO DESIGN SPEED		



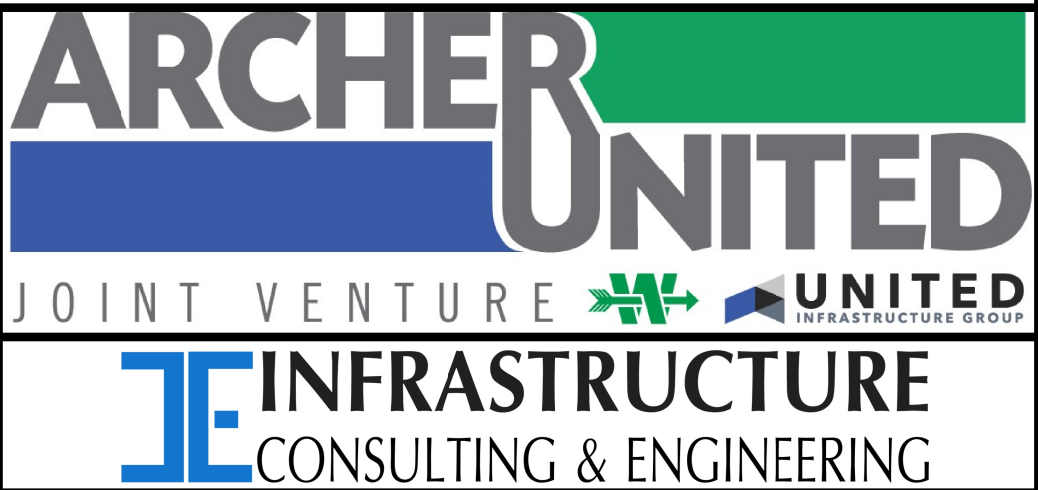
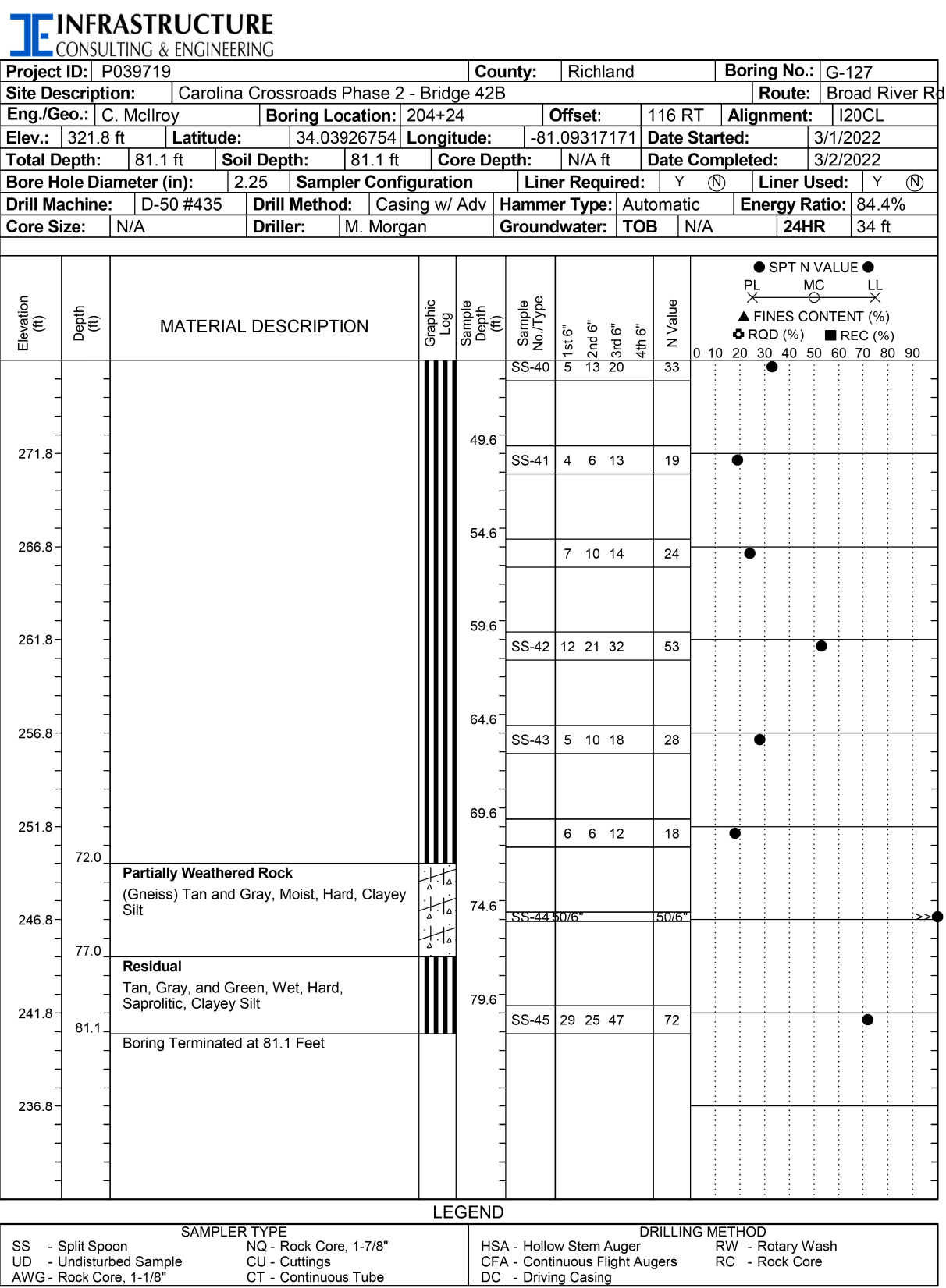
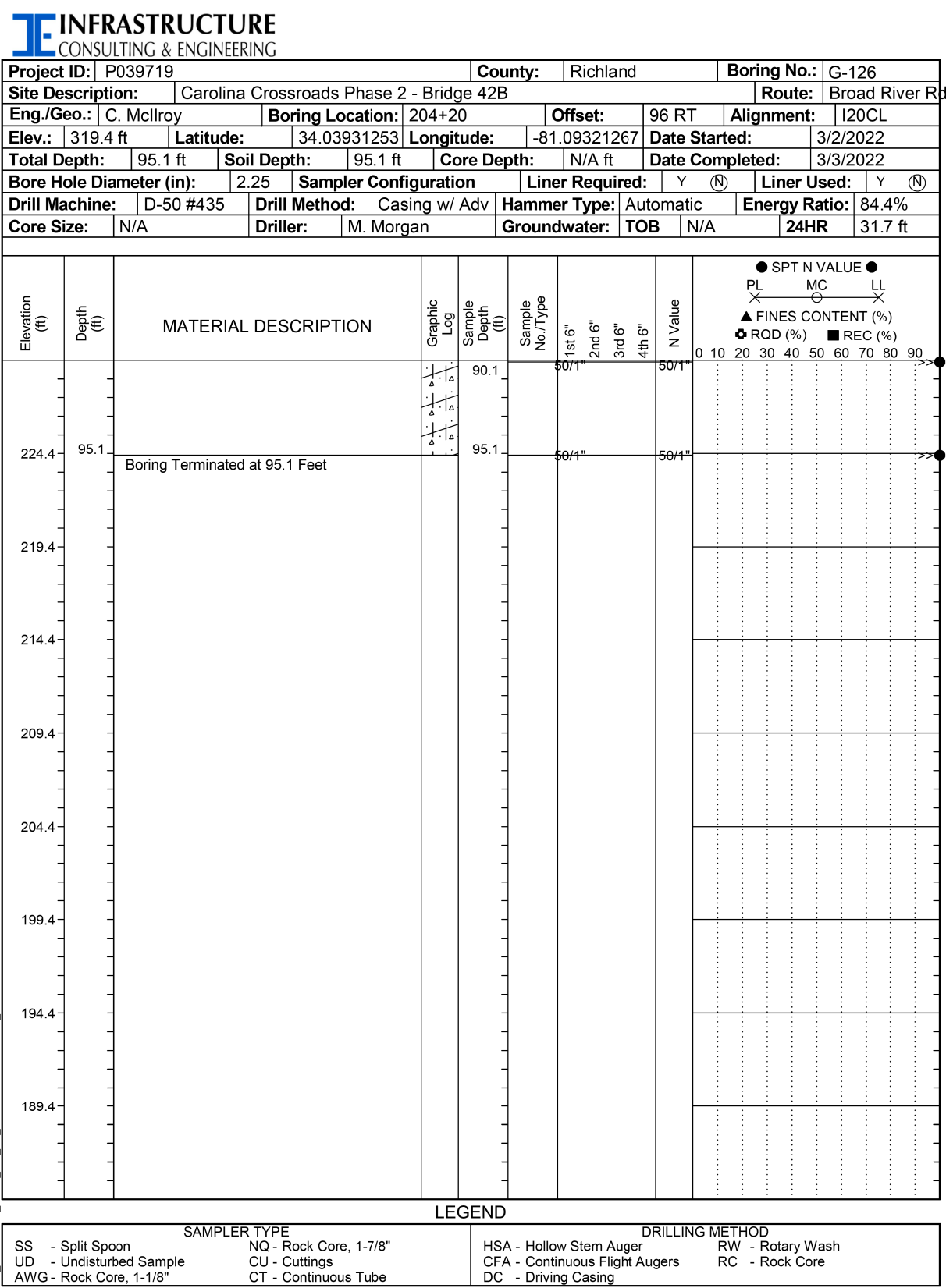
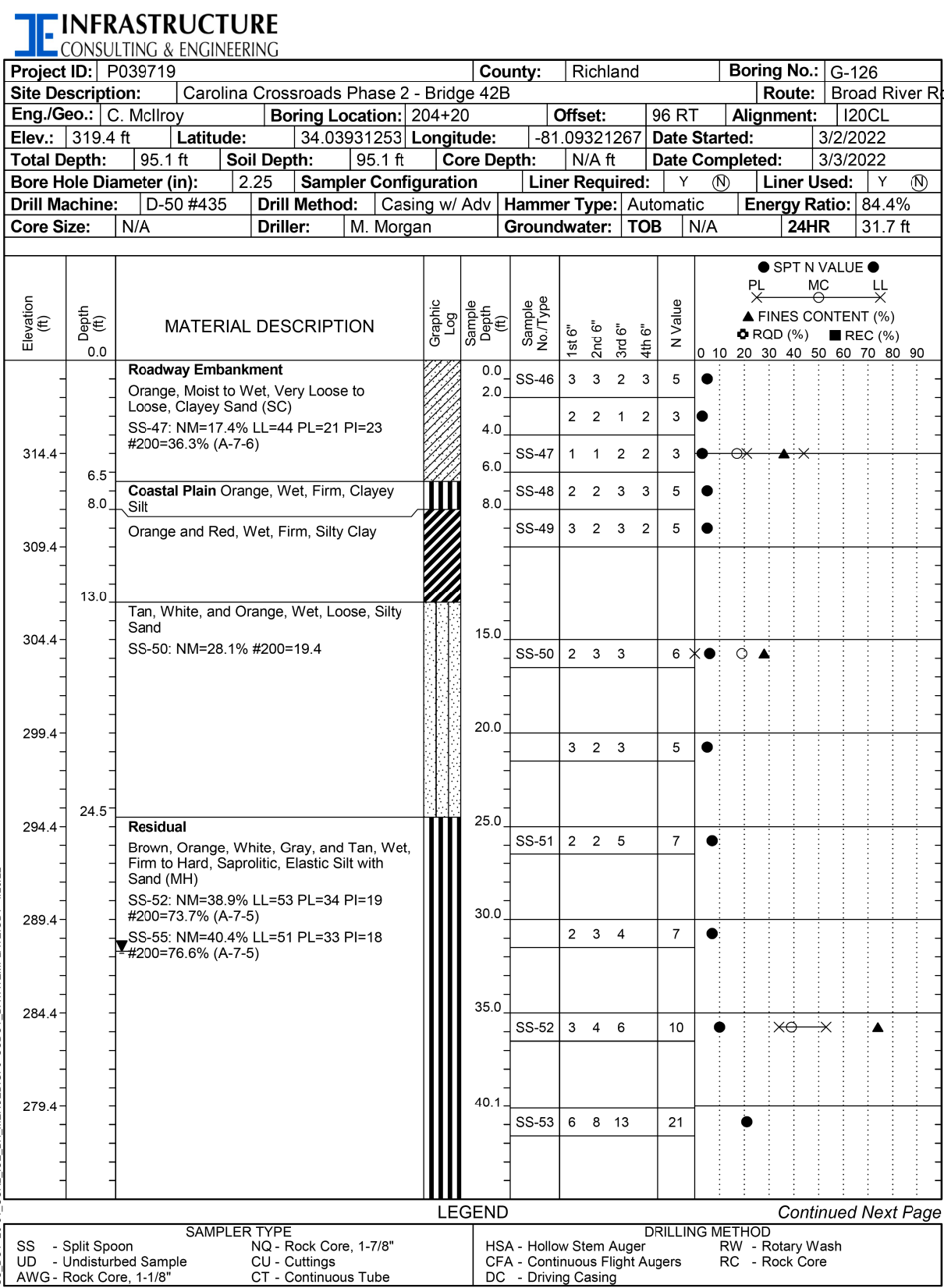
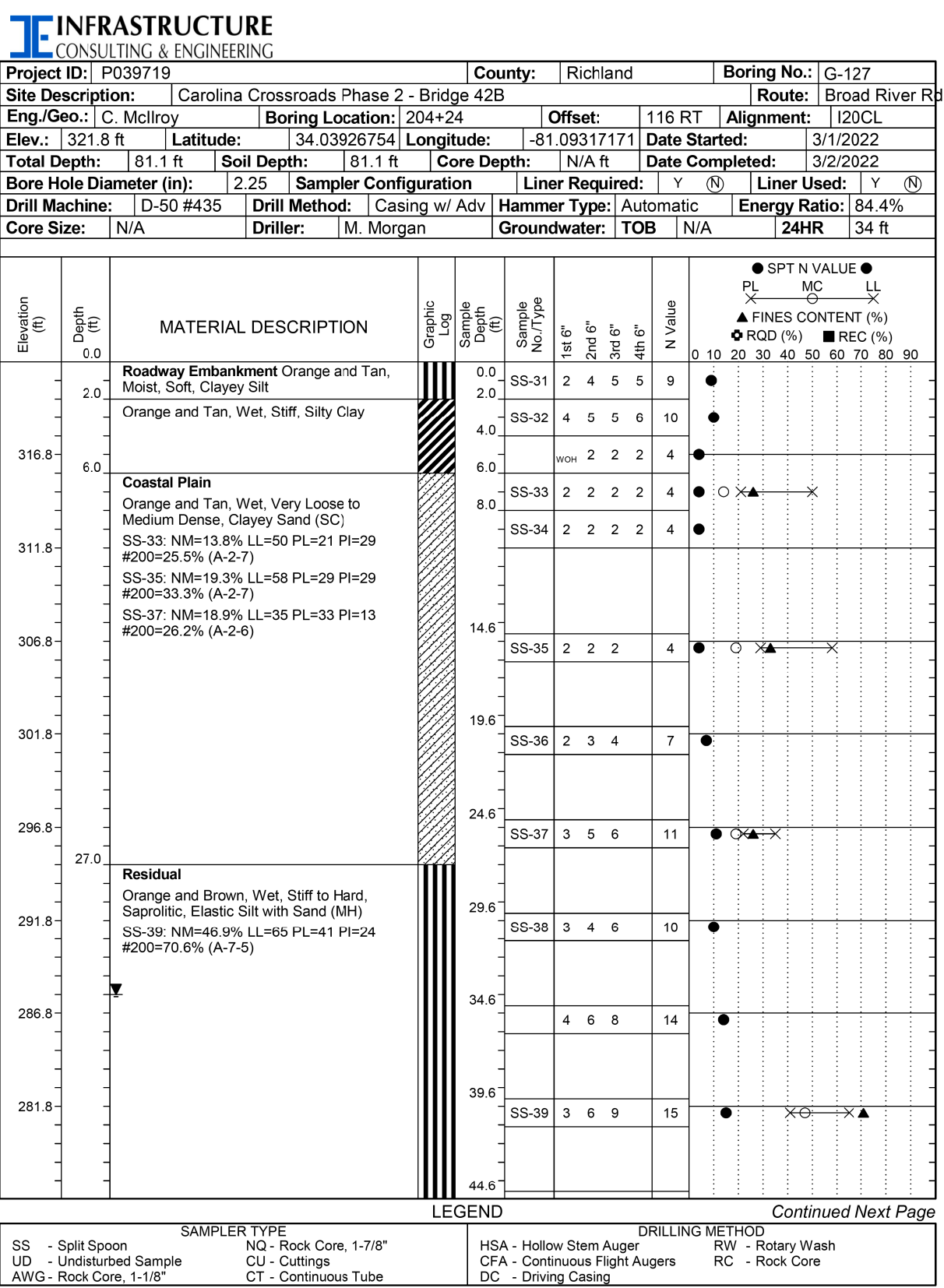
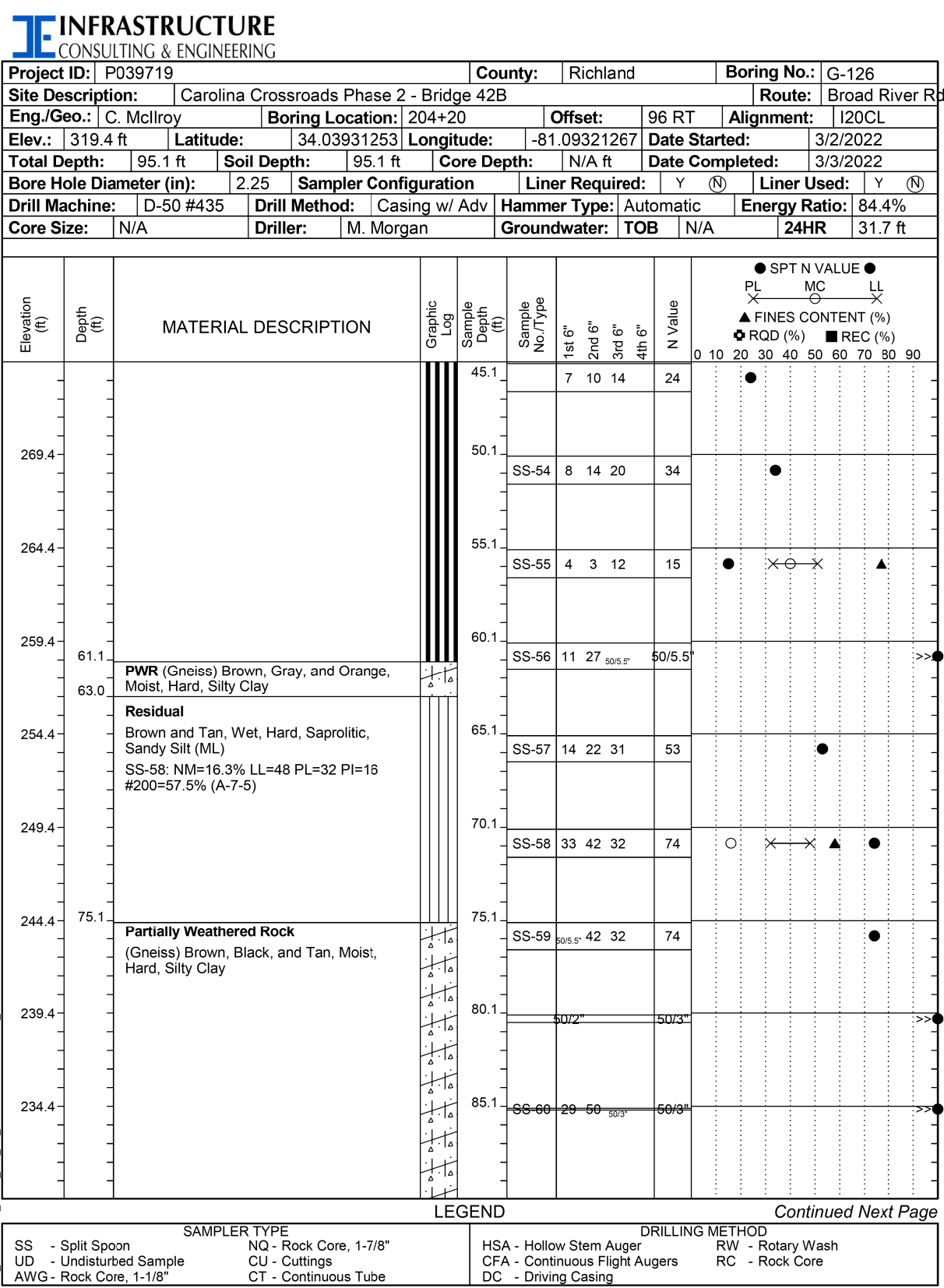
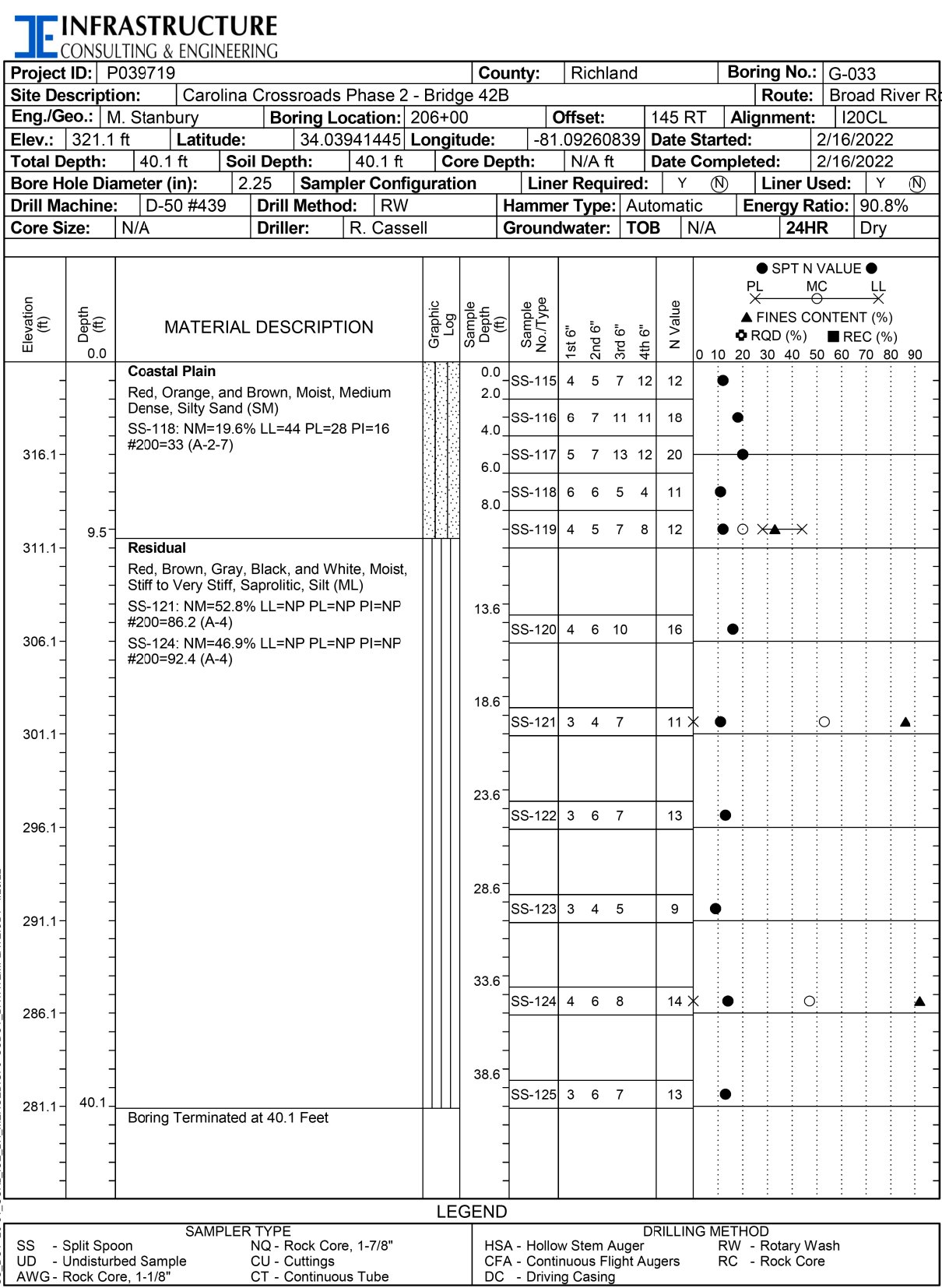
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REV.NO.	BY	DATE	DESCRIPTION OF REVISION

TYPICAL SECTION SHEET

**SEE TABLES ON SHEET 3G FOR
PAVEMENT DESIGN OPTIONS**

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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

BORING LOGS (1)

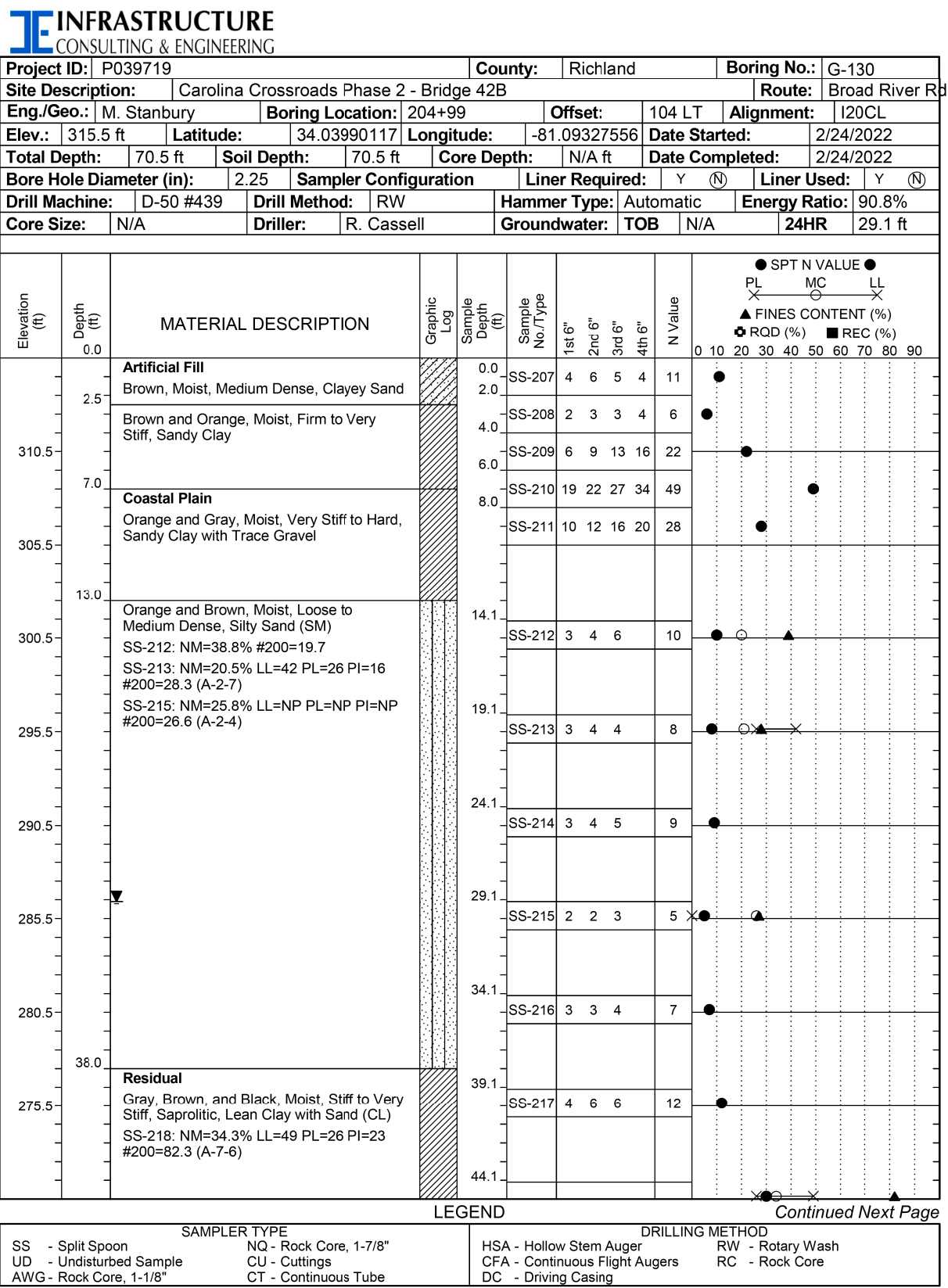
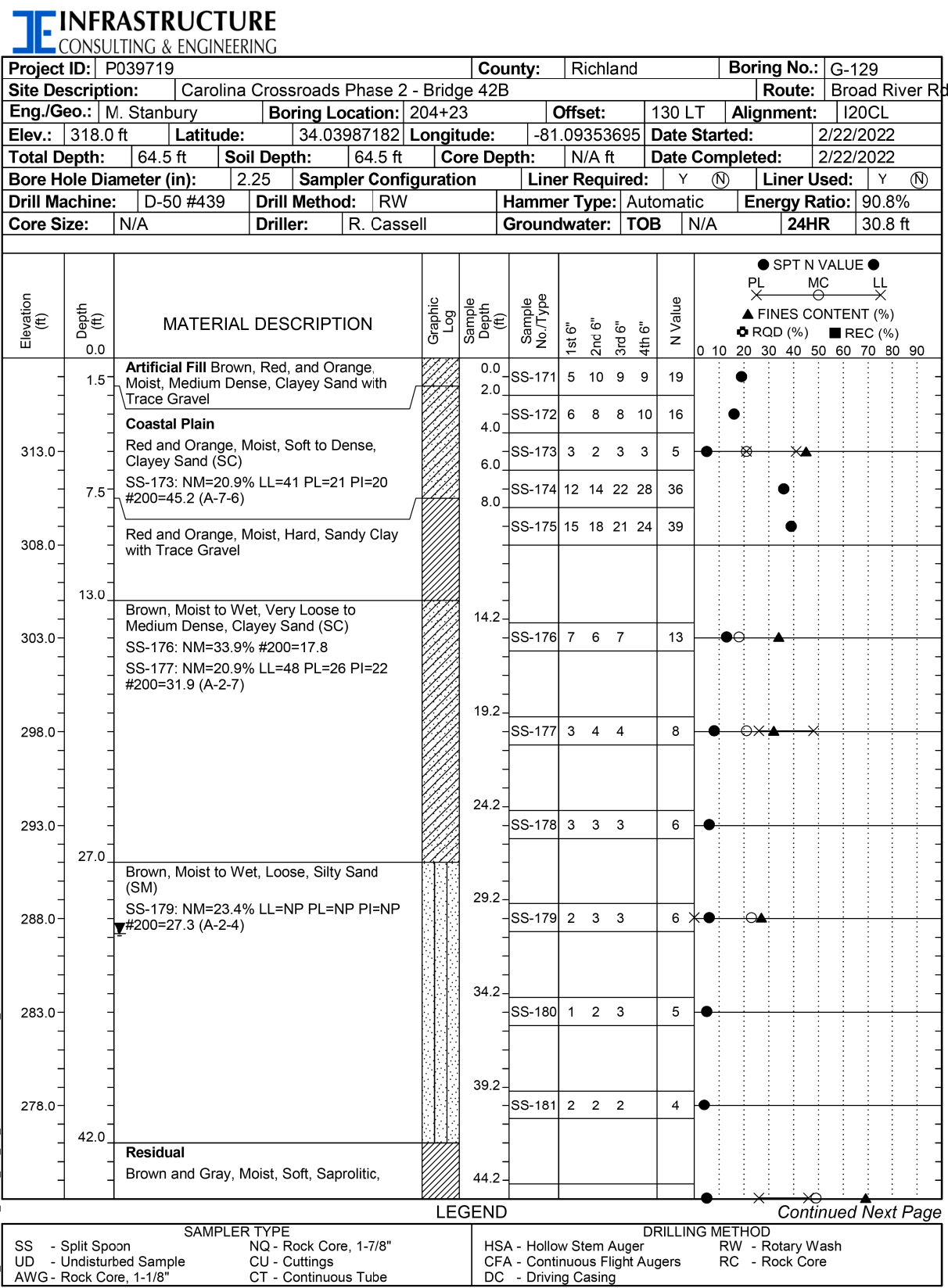
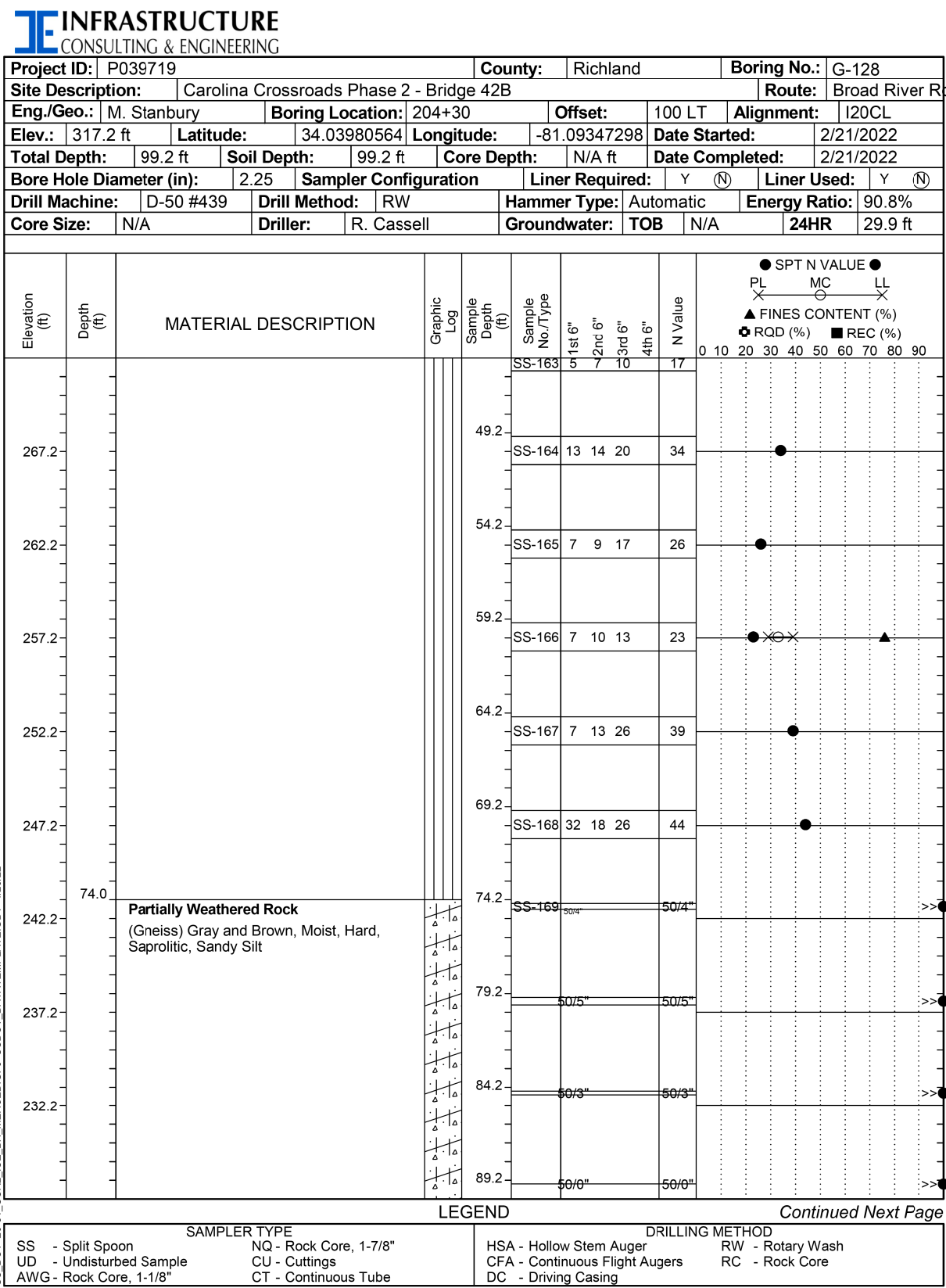
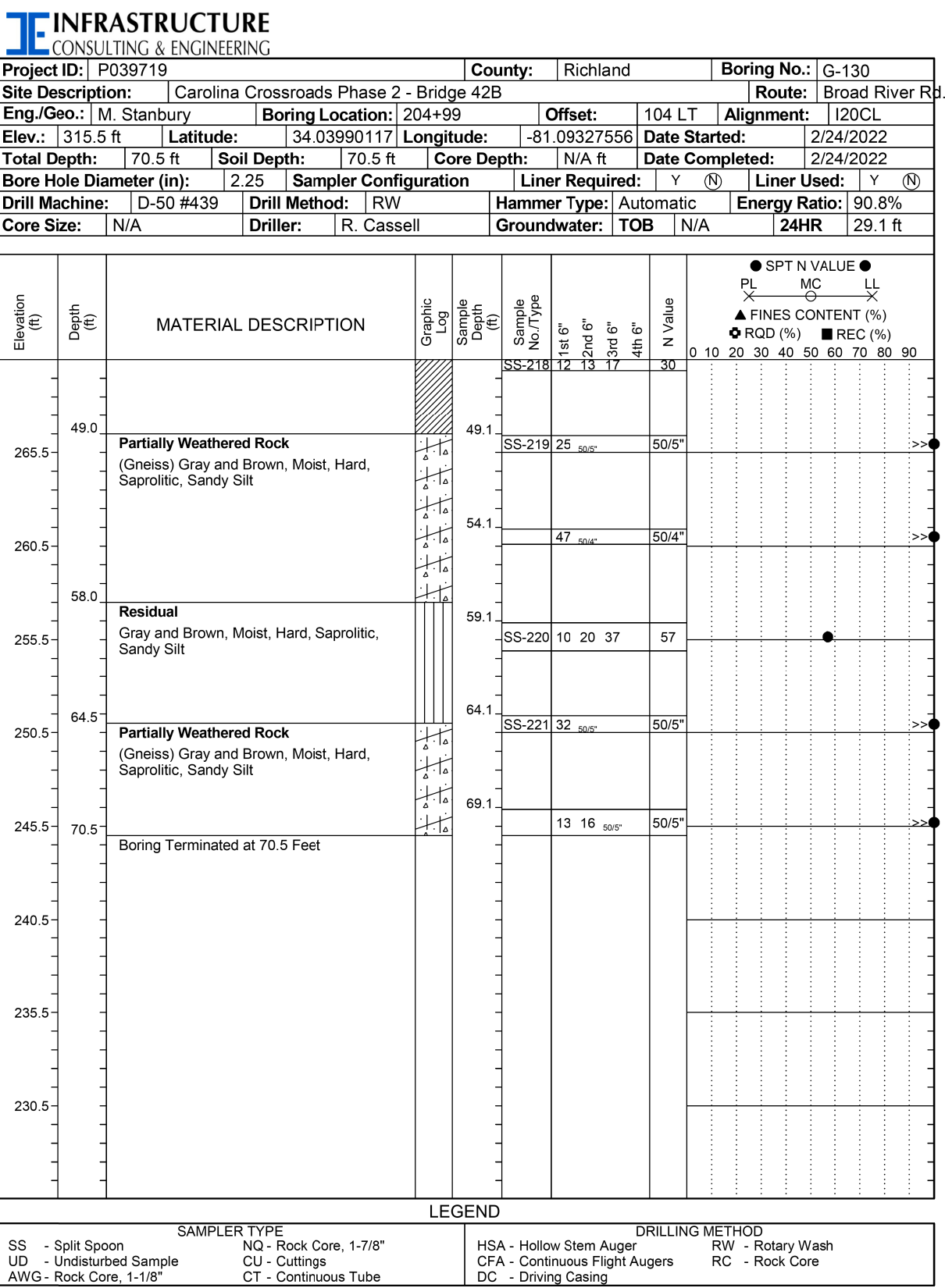
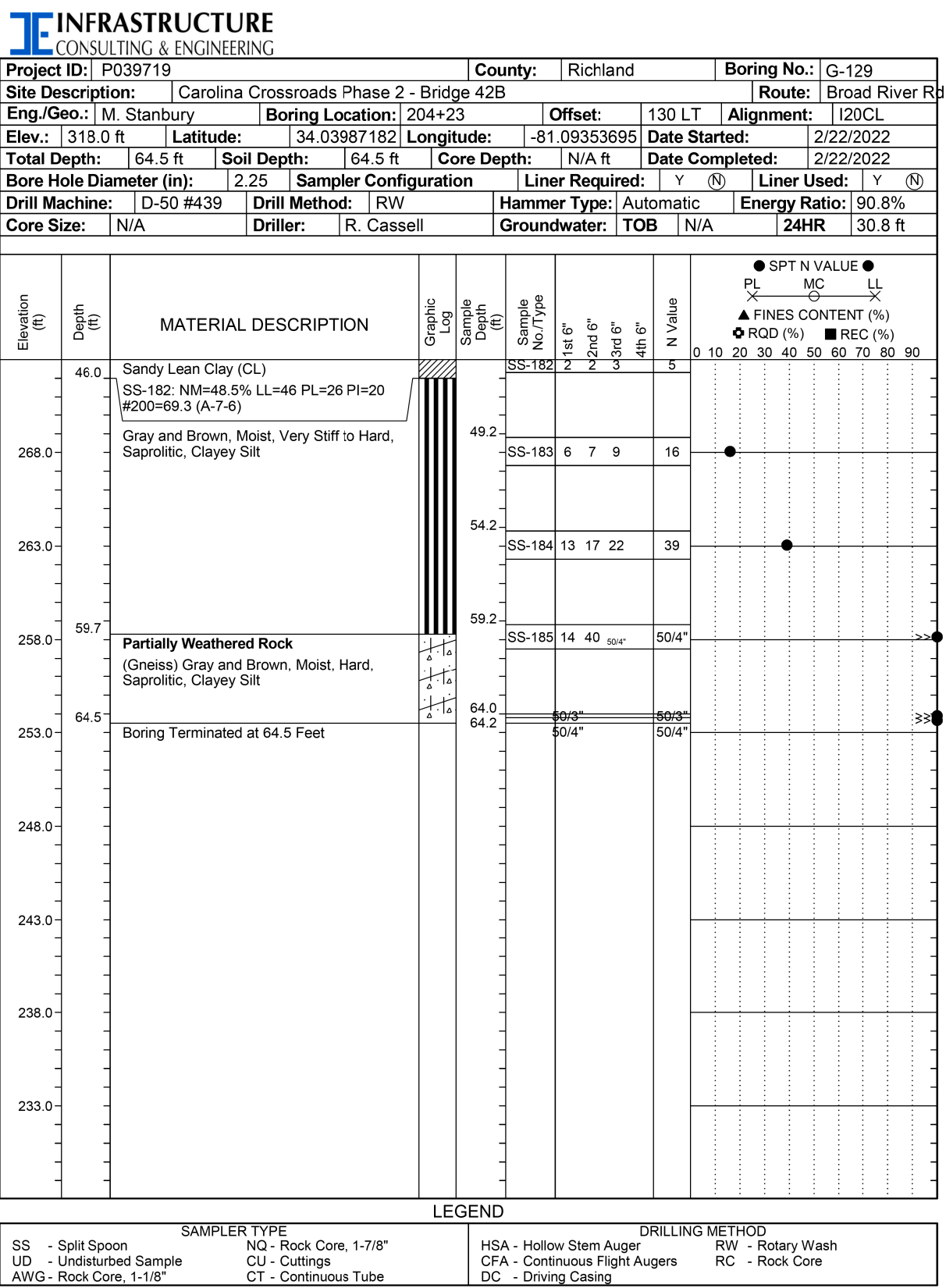
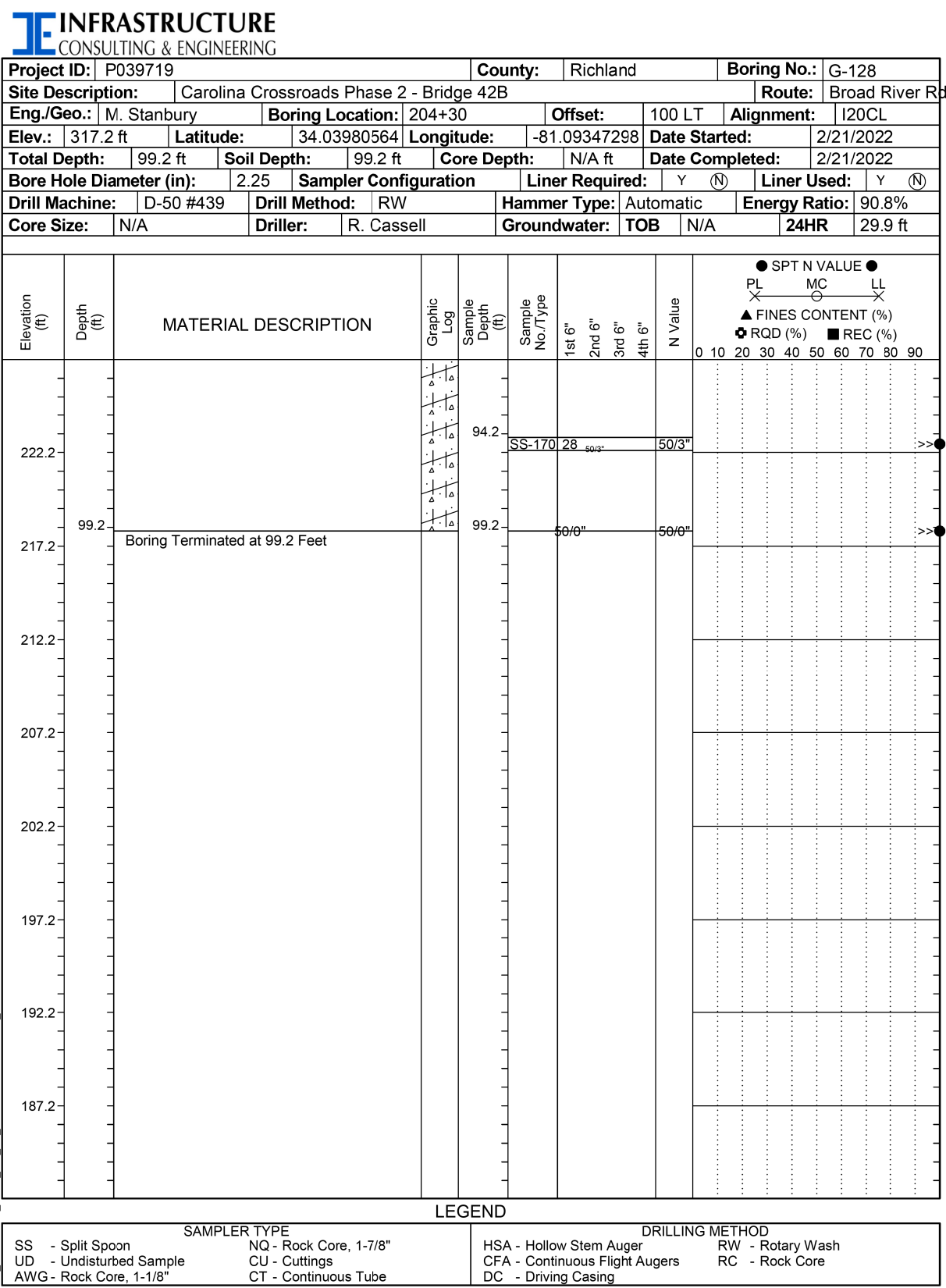
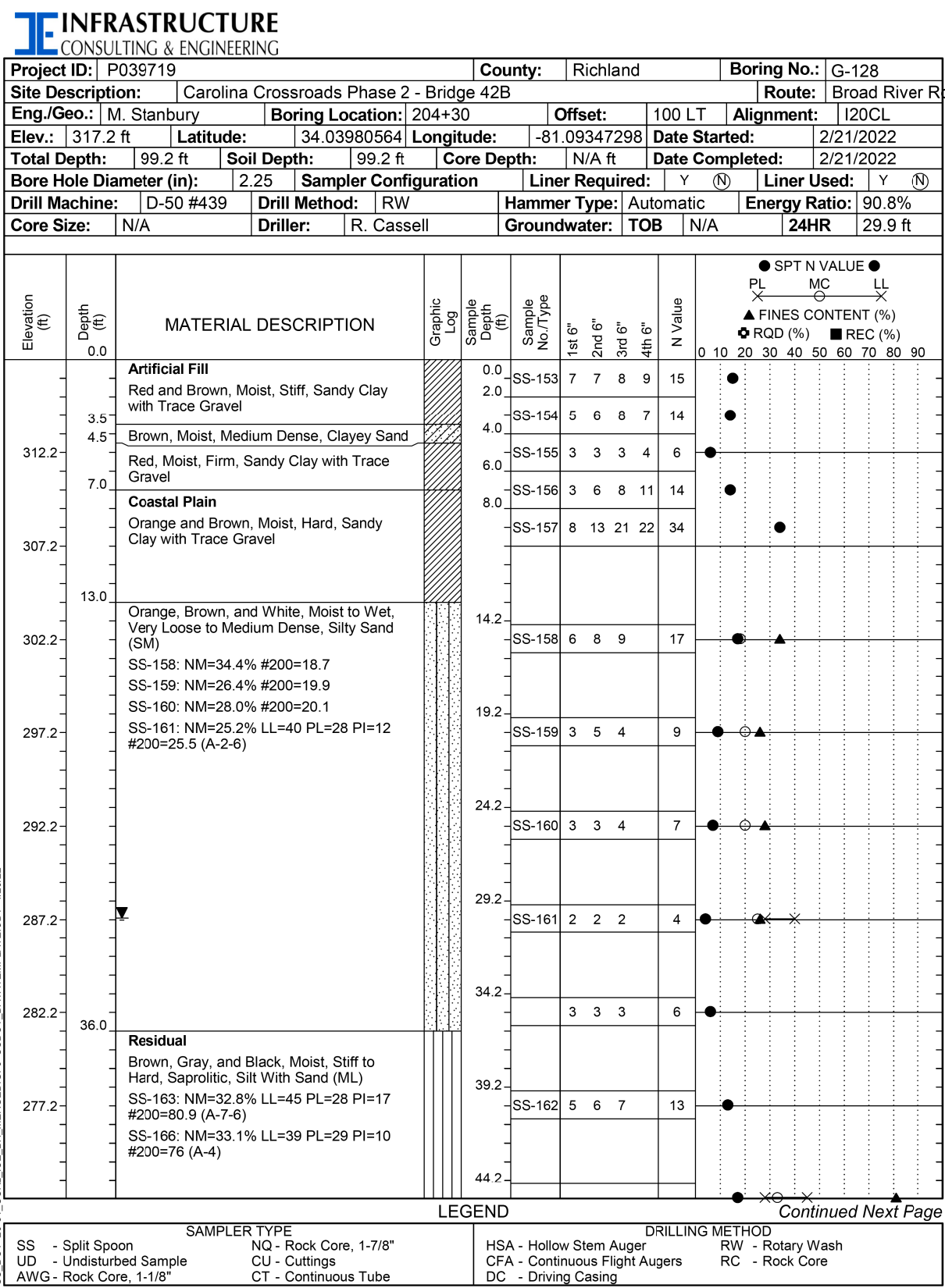
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY: RICHLAND ROUTE: US 176

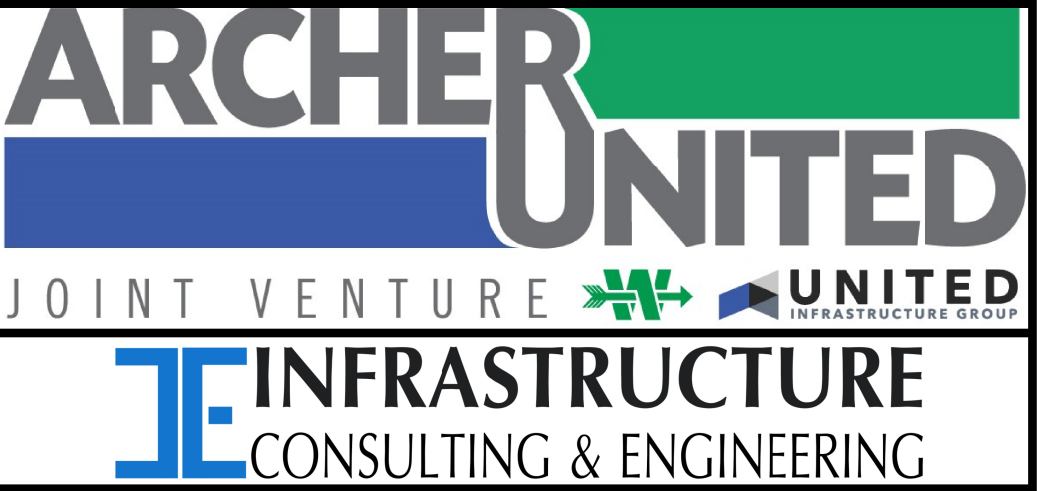
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DR.	BFS	WRS 04-22
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BY	CHK.	DATE

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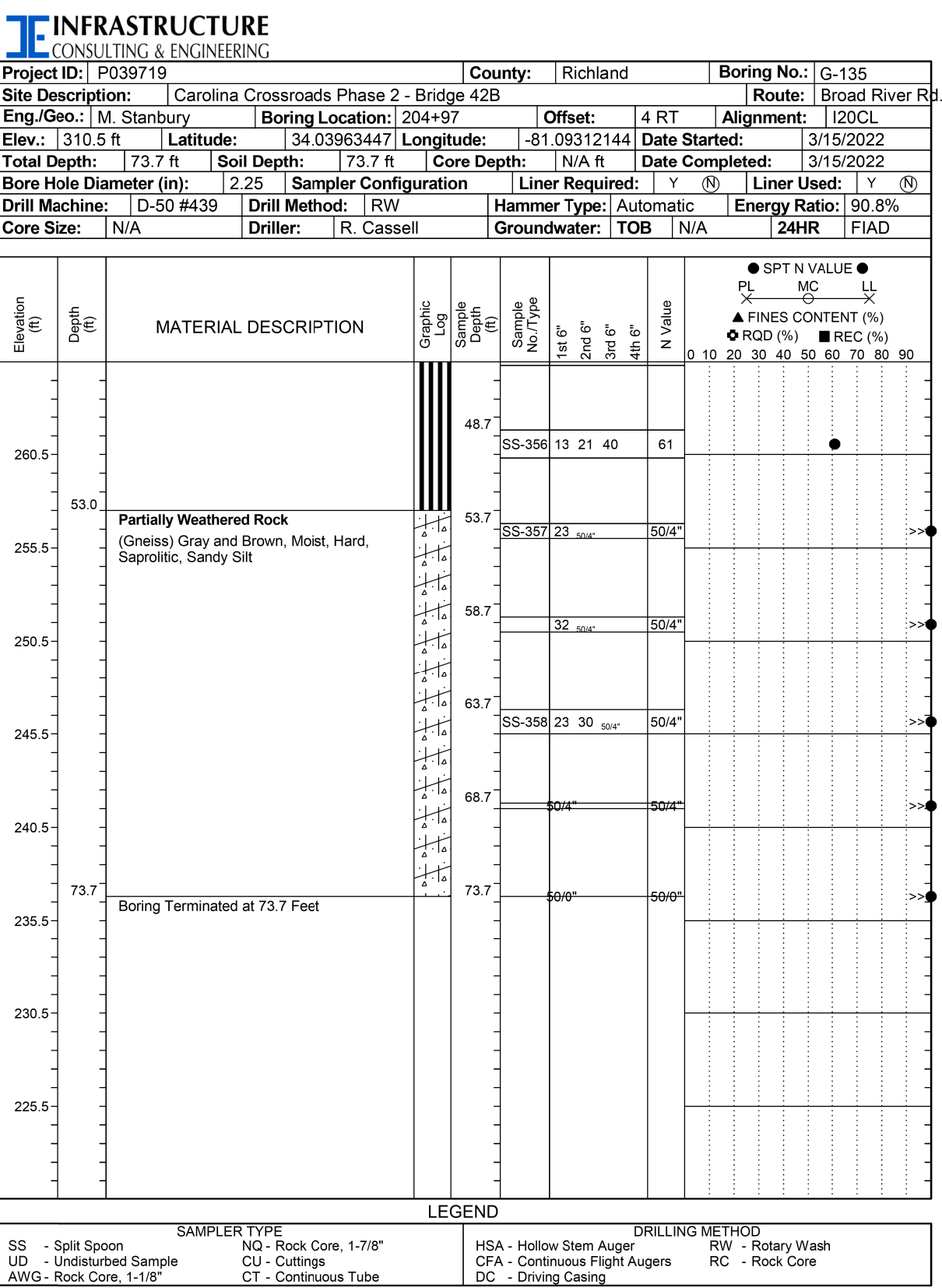
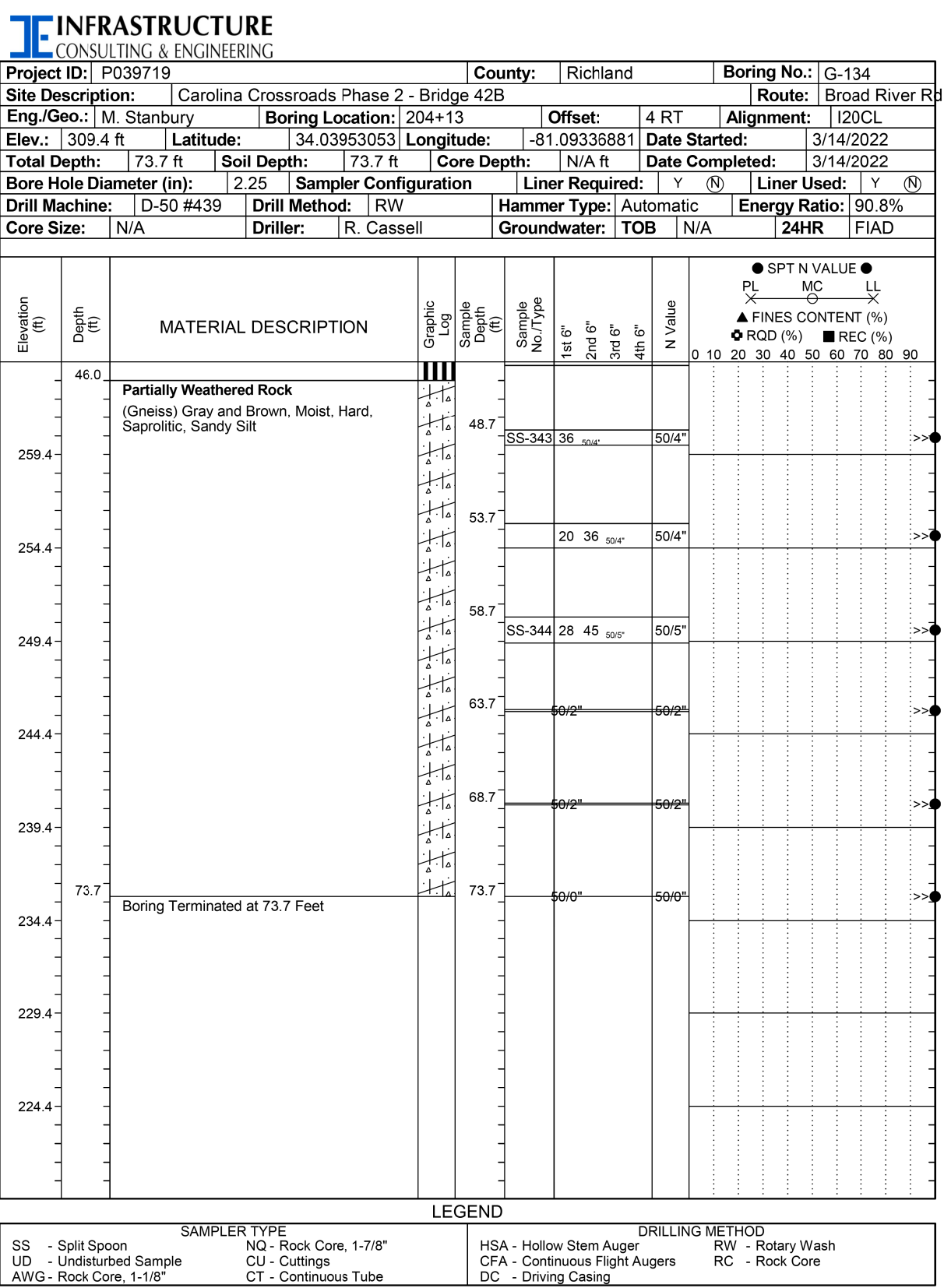
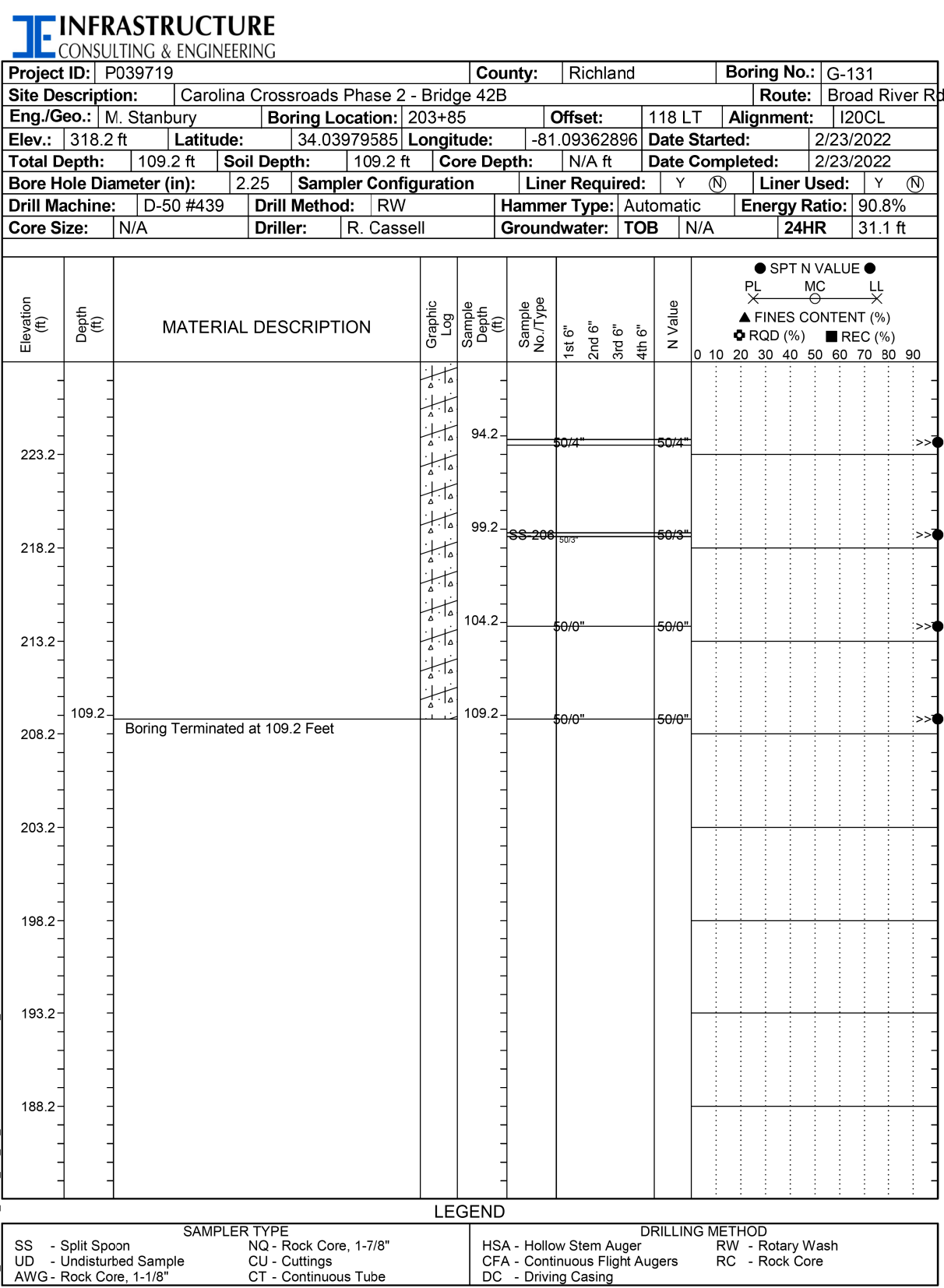
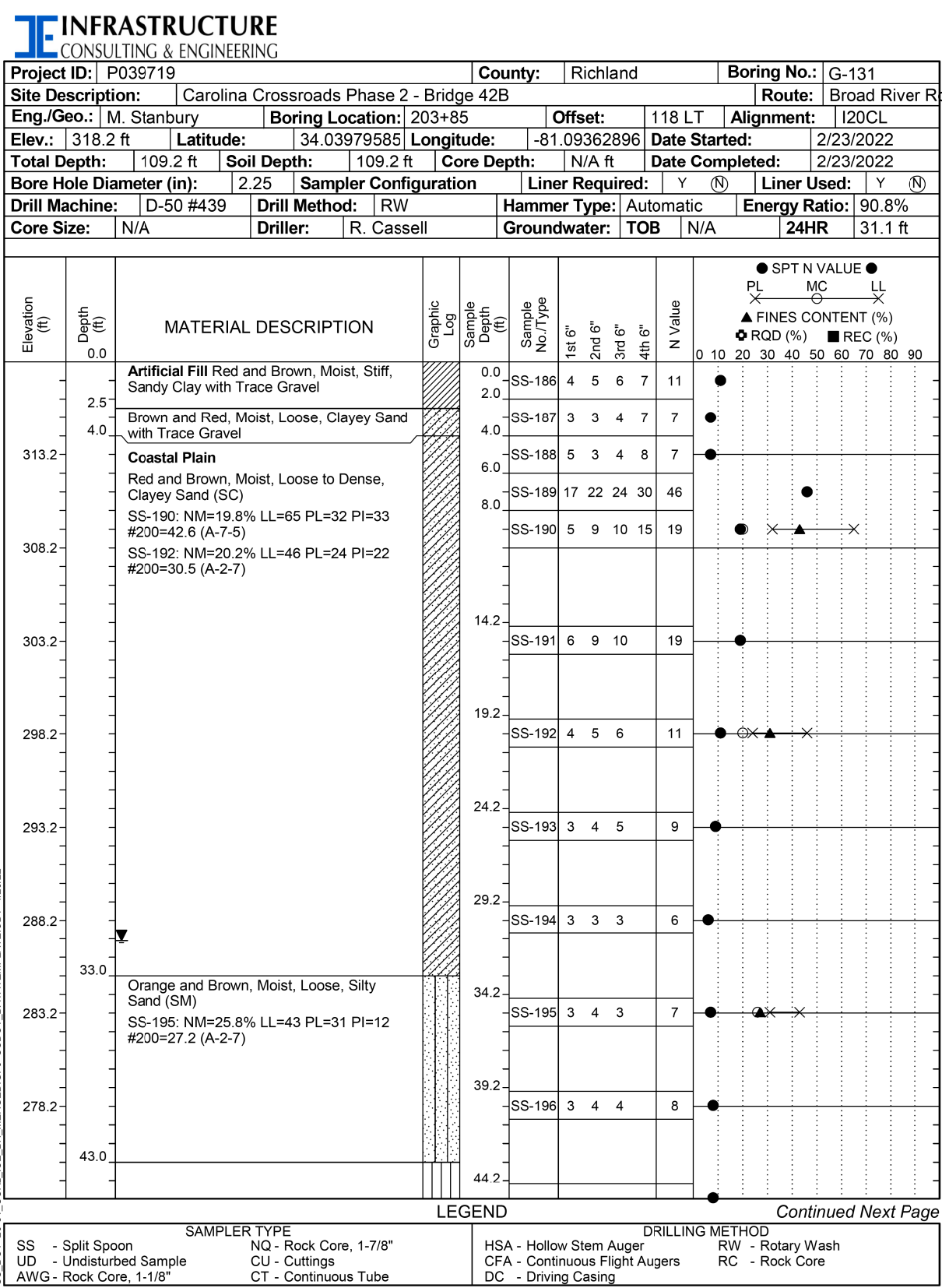


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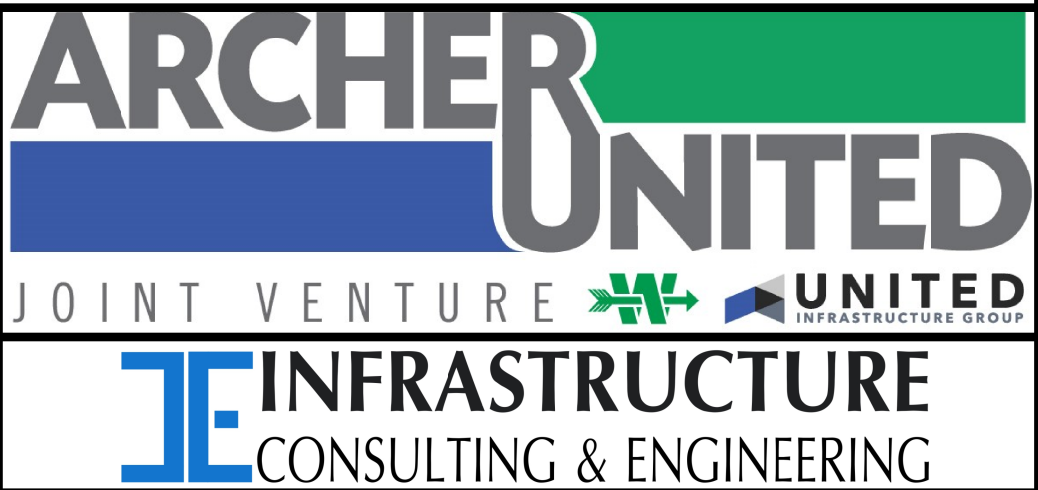
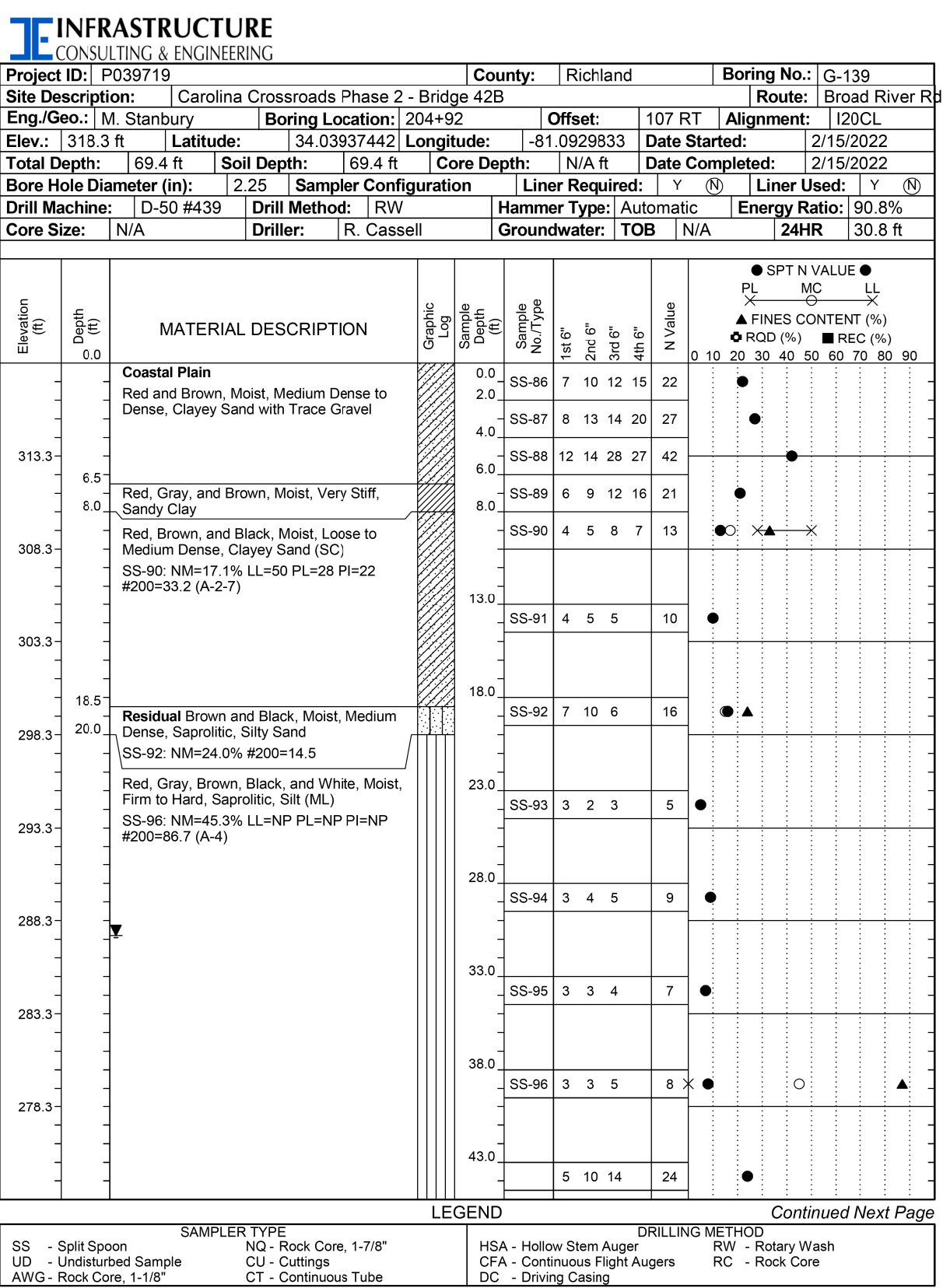
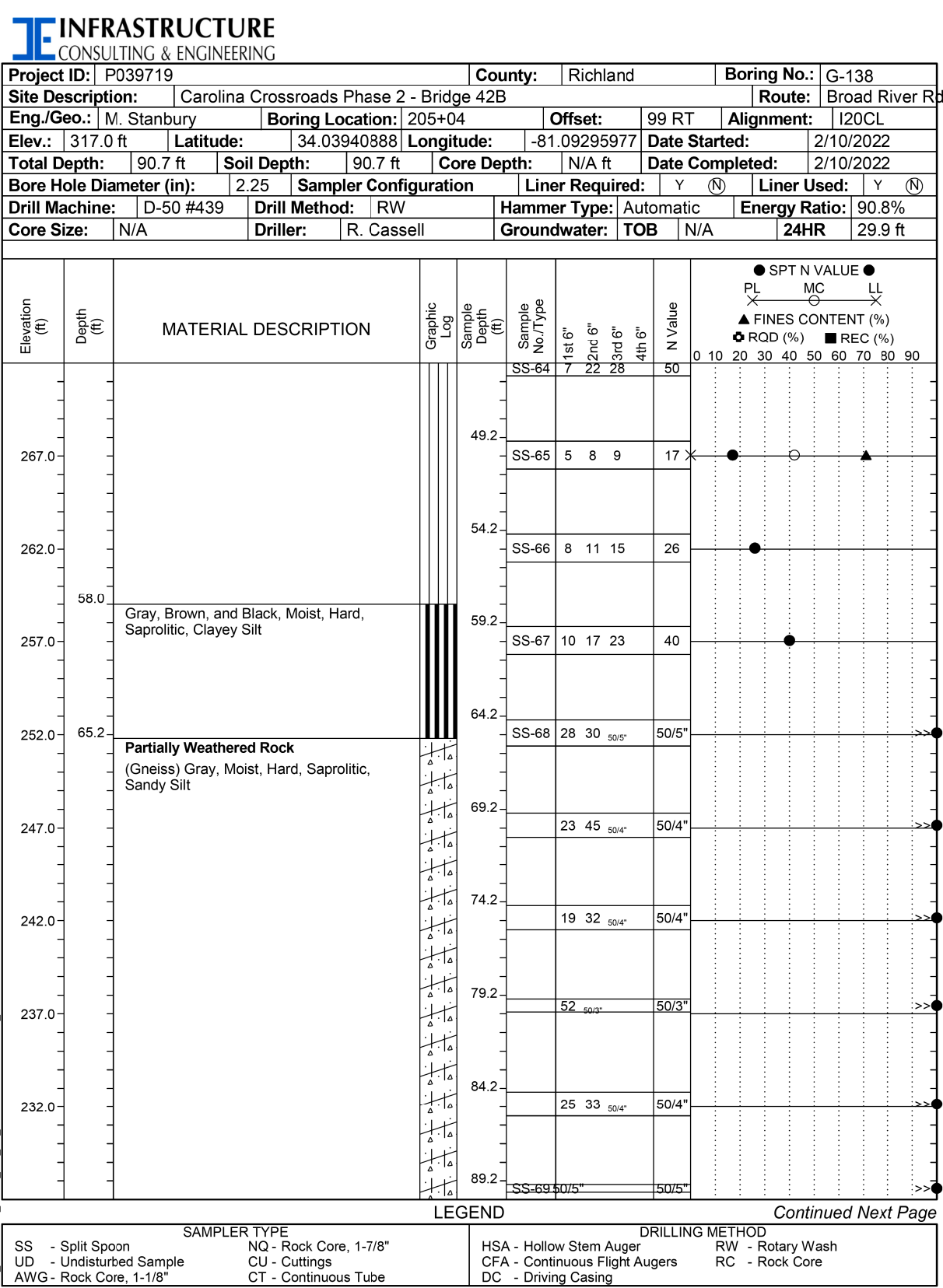
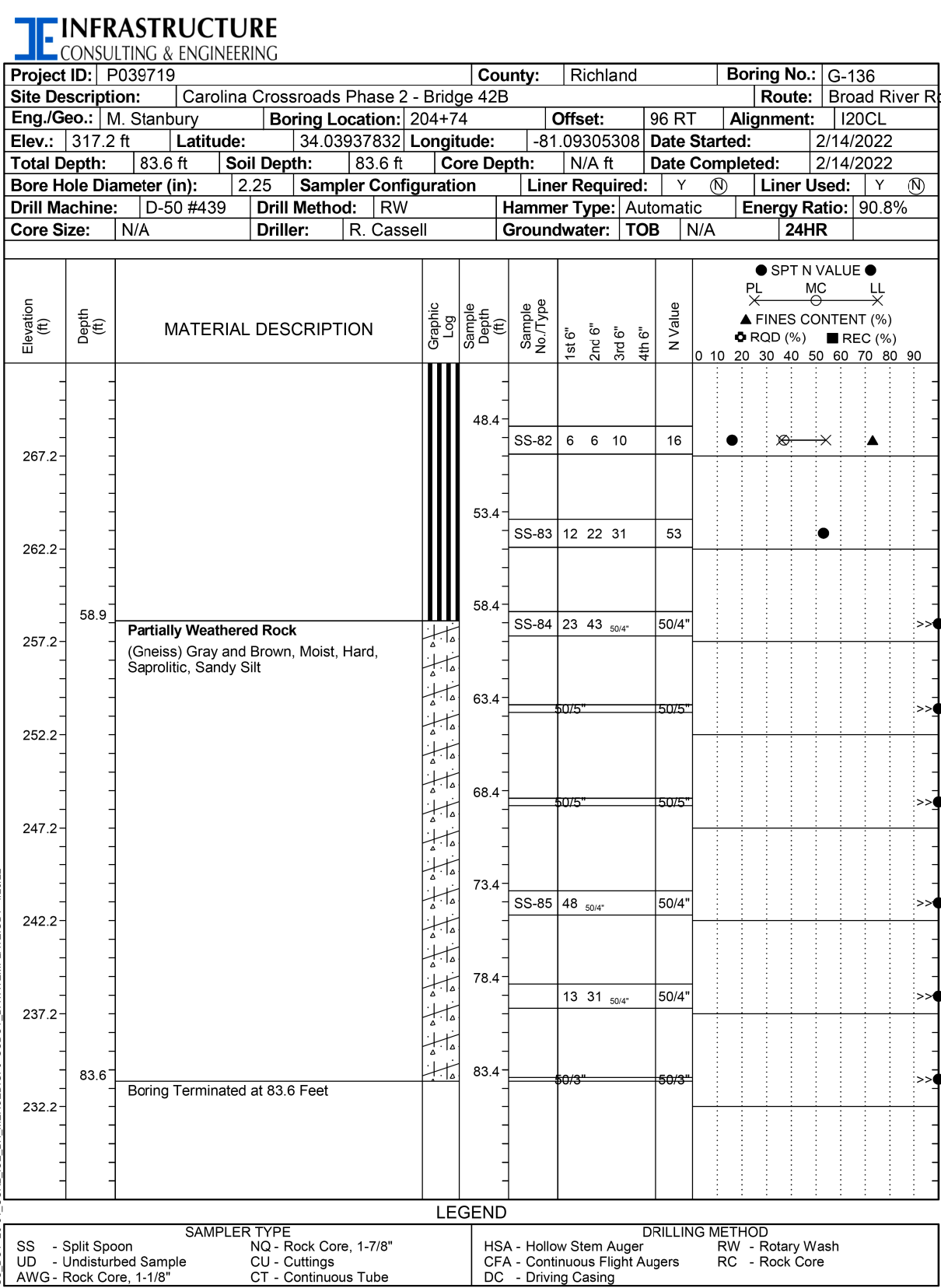
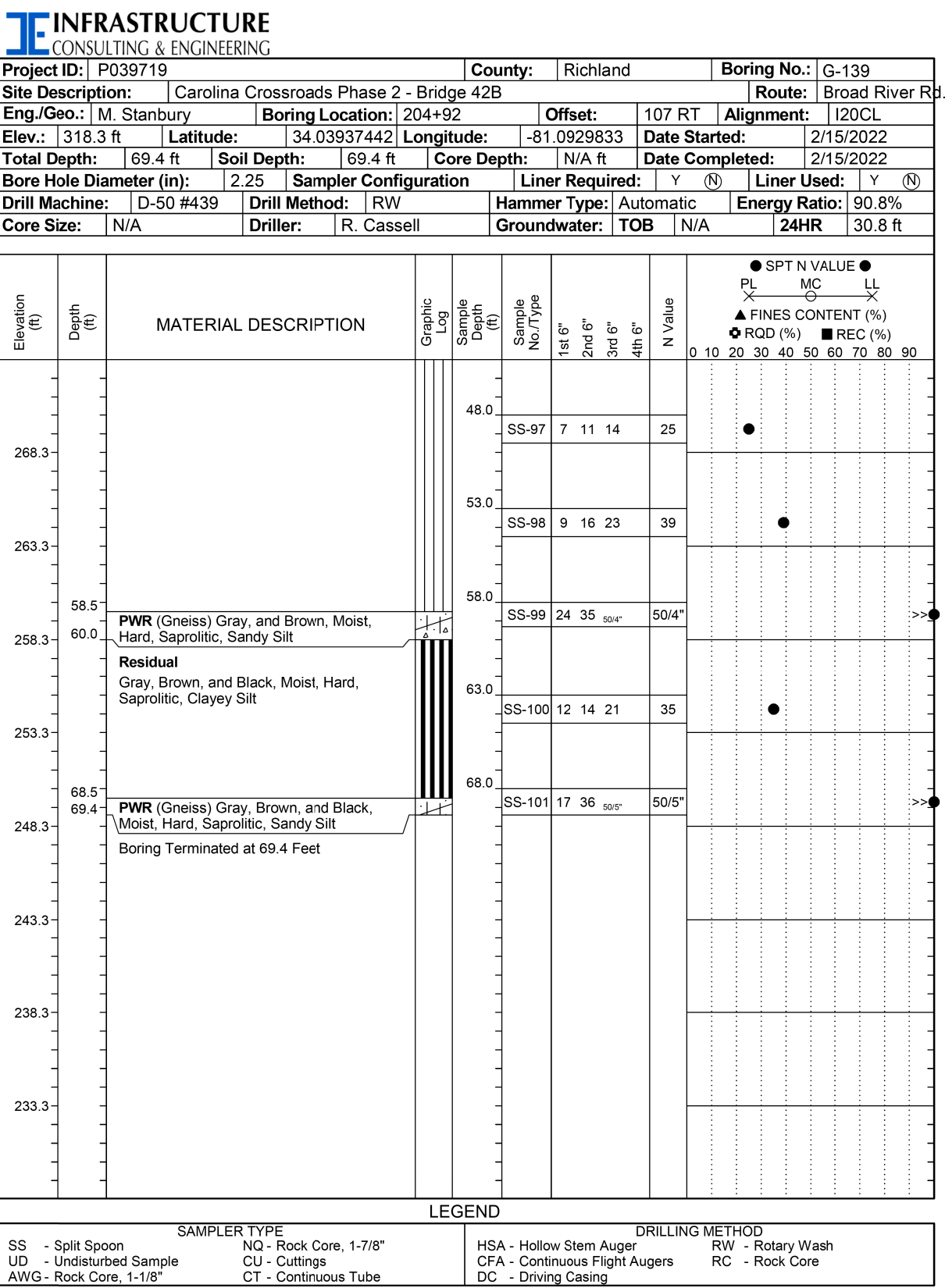
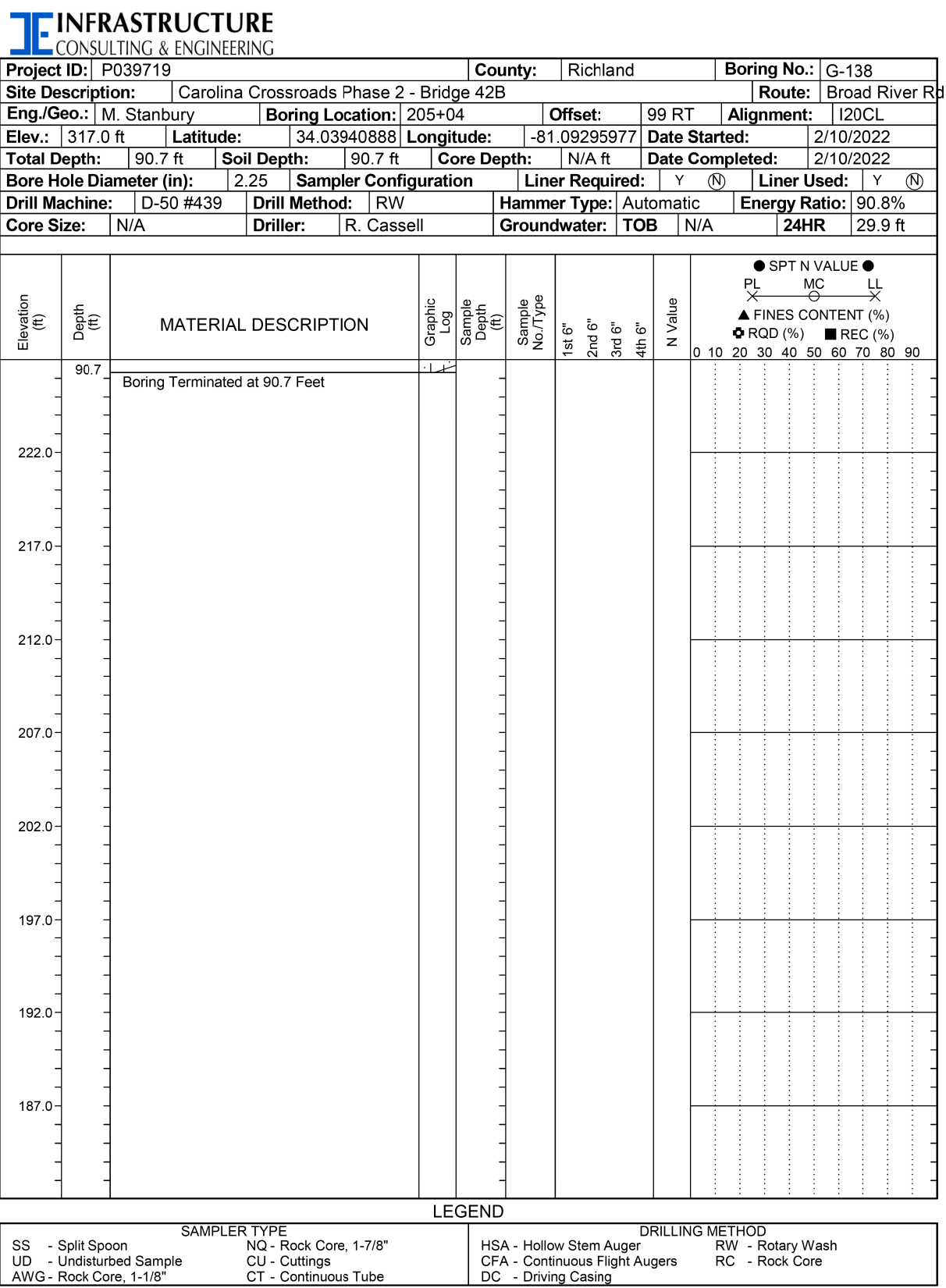
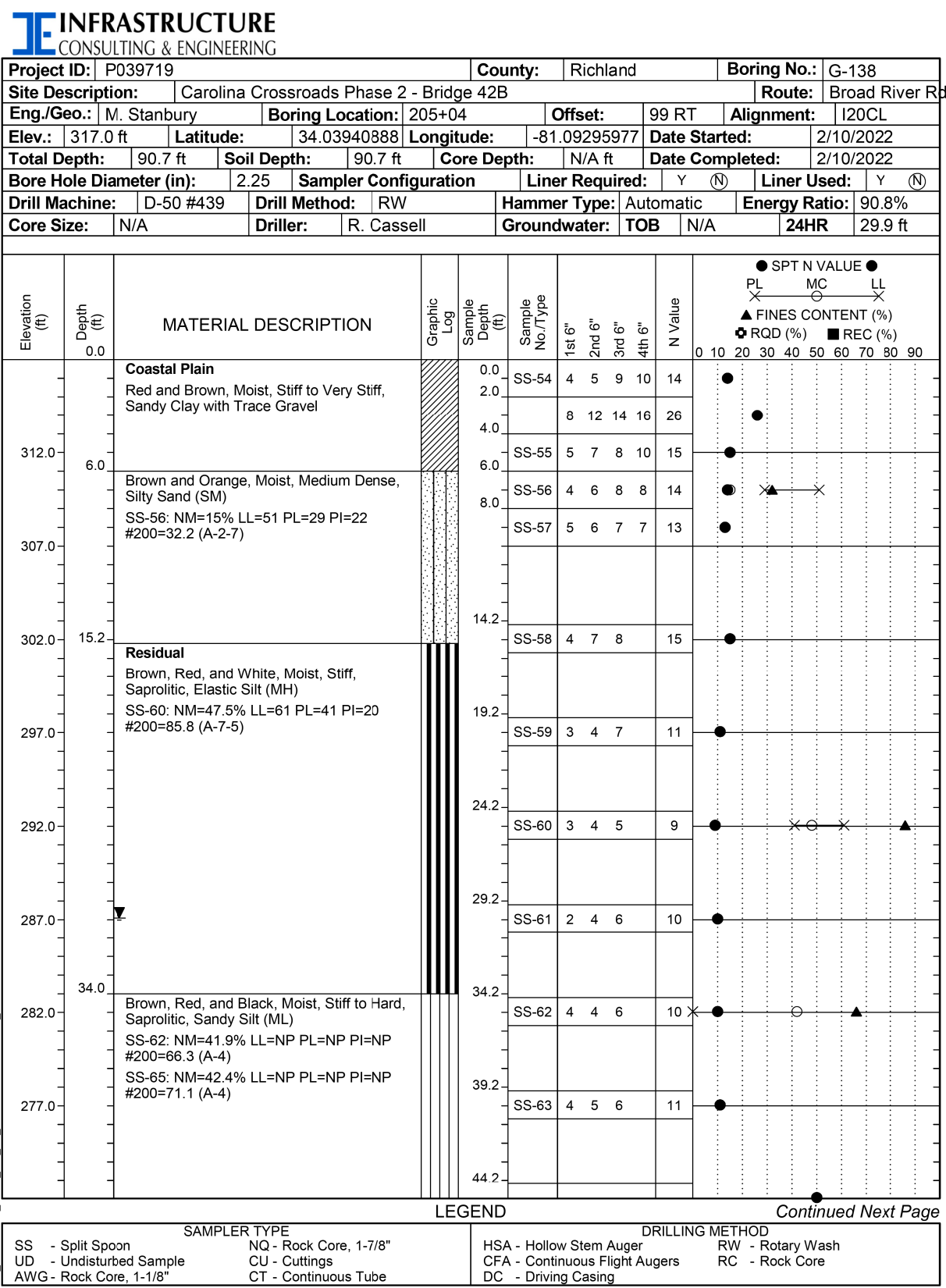
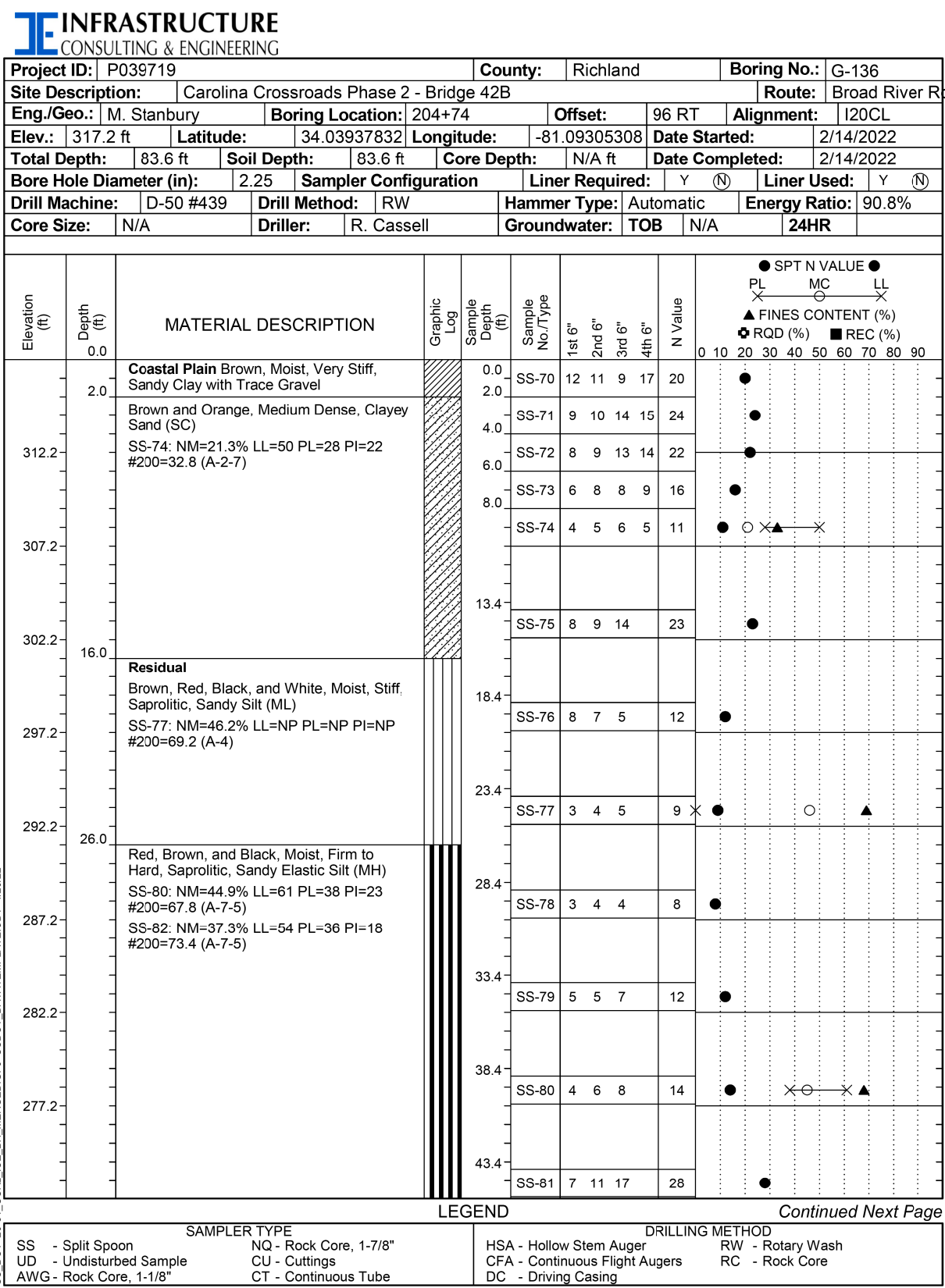


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DES.		
BY	CHK. DATE	
COUNTY		RICHLAND
ROUTE		US 176

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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

BORING LOGS (4)

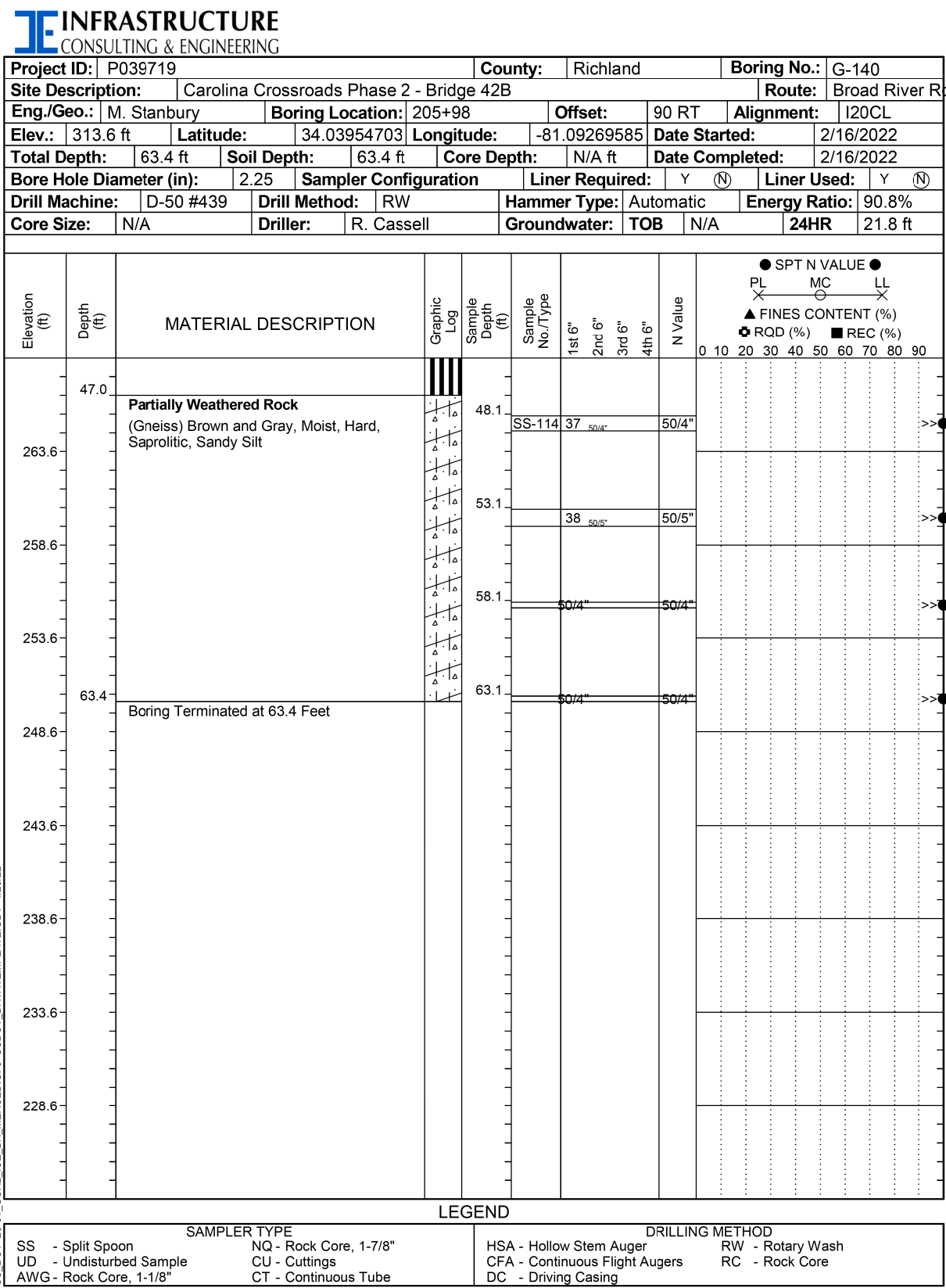
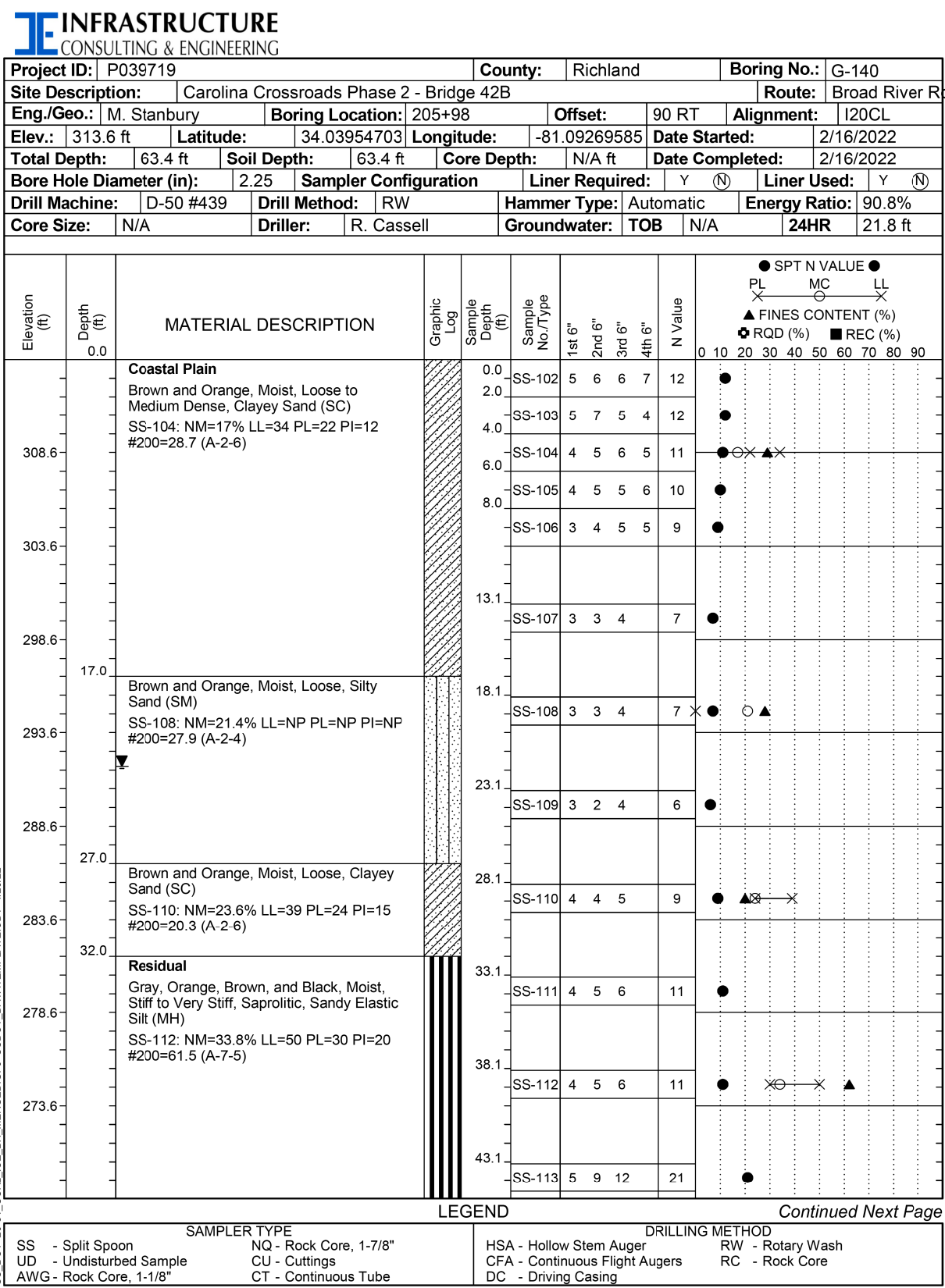
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY: RICHLAND ROUTE: US 176

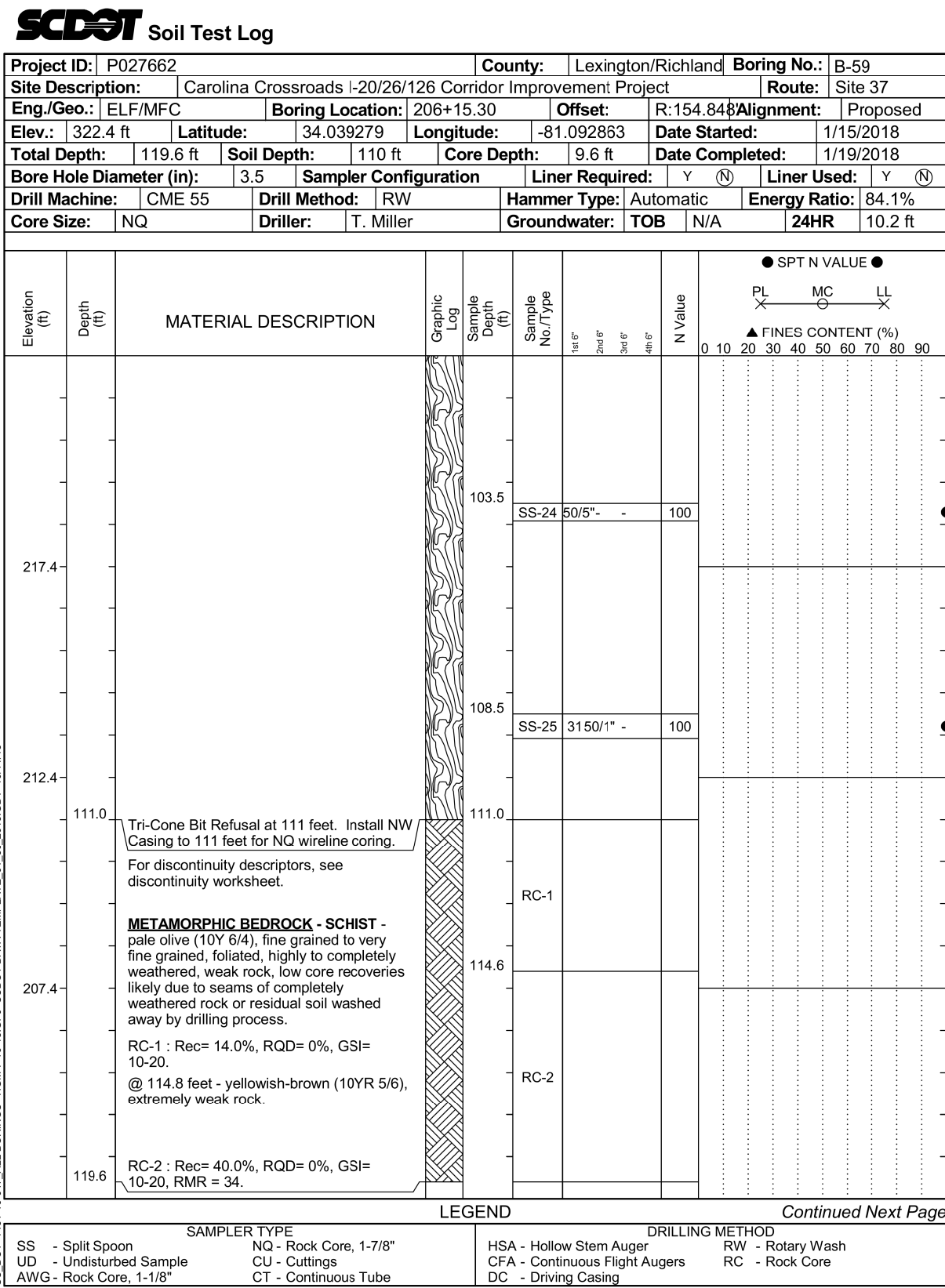
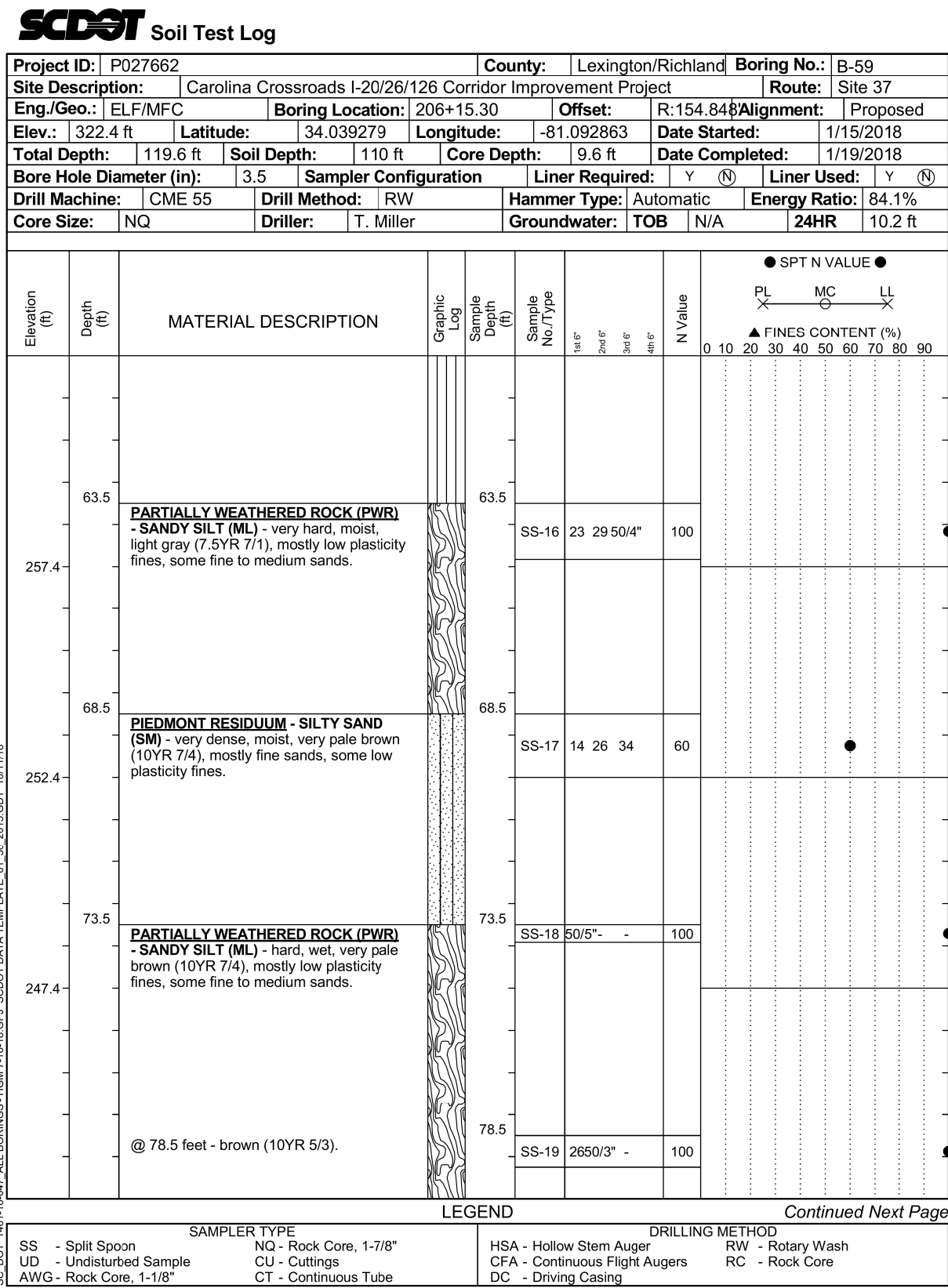
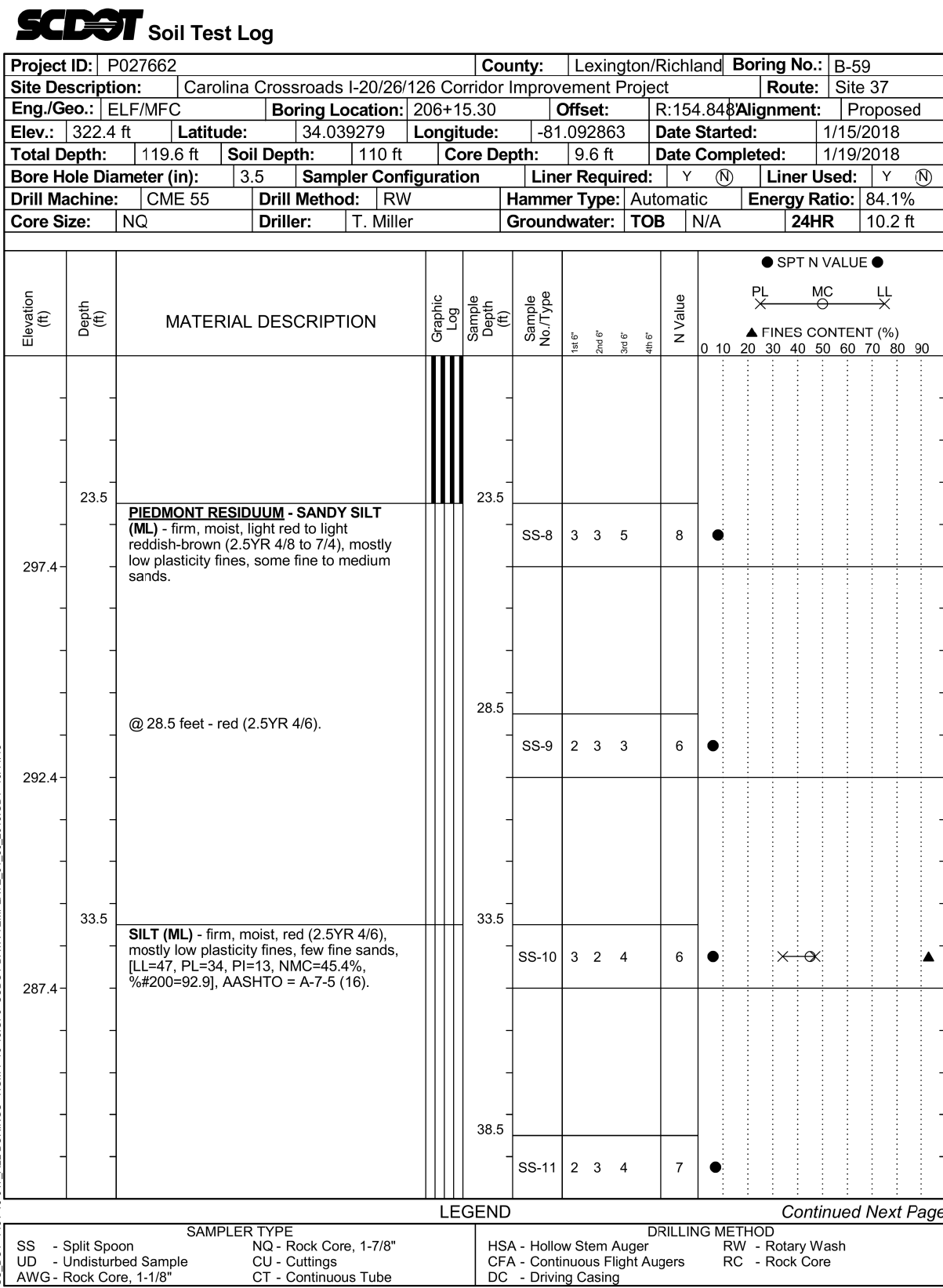
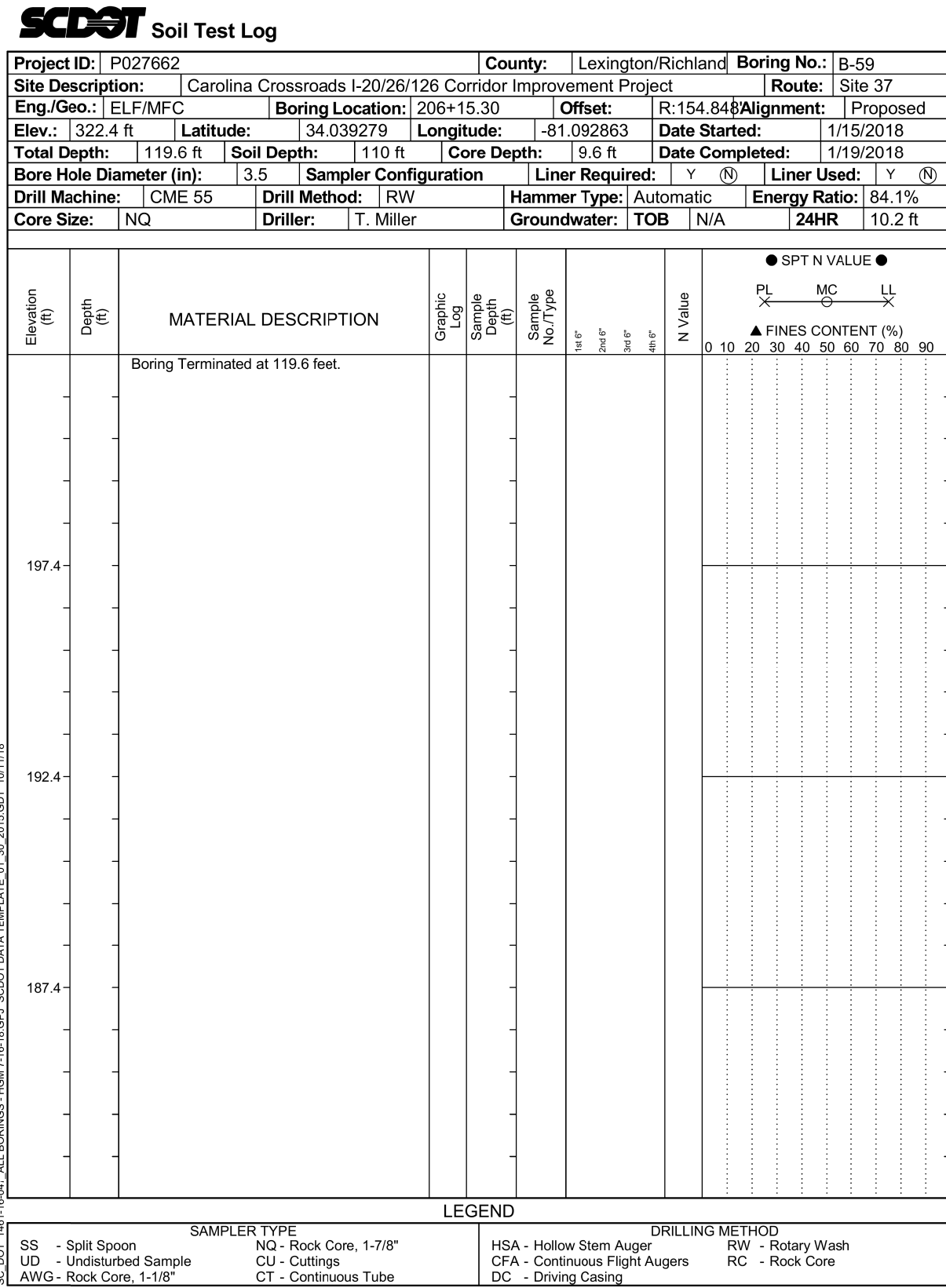
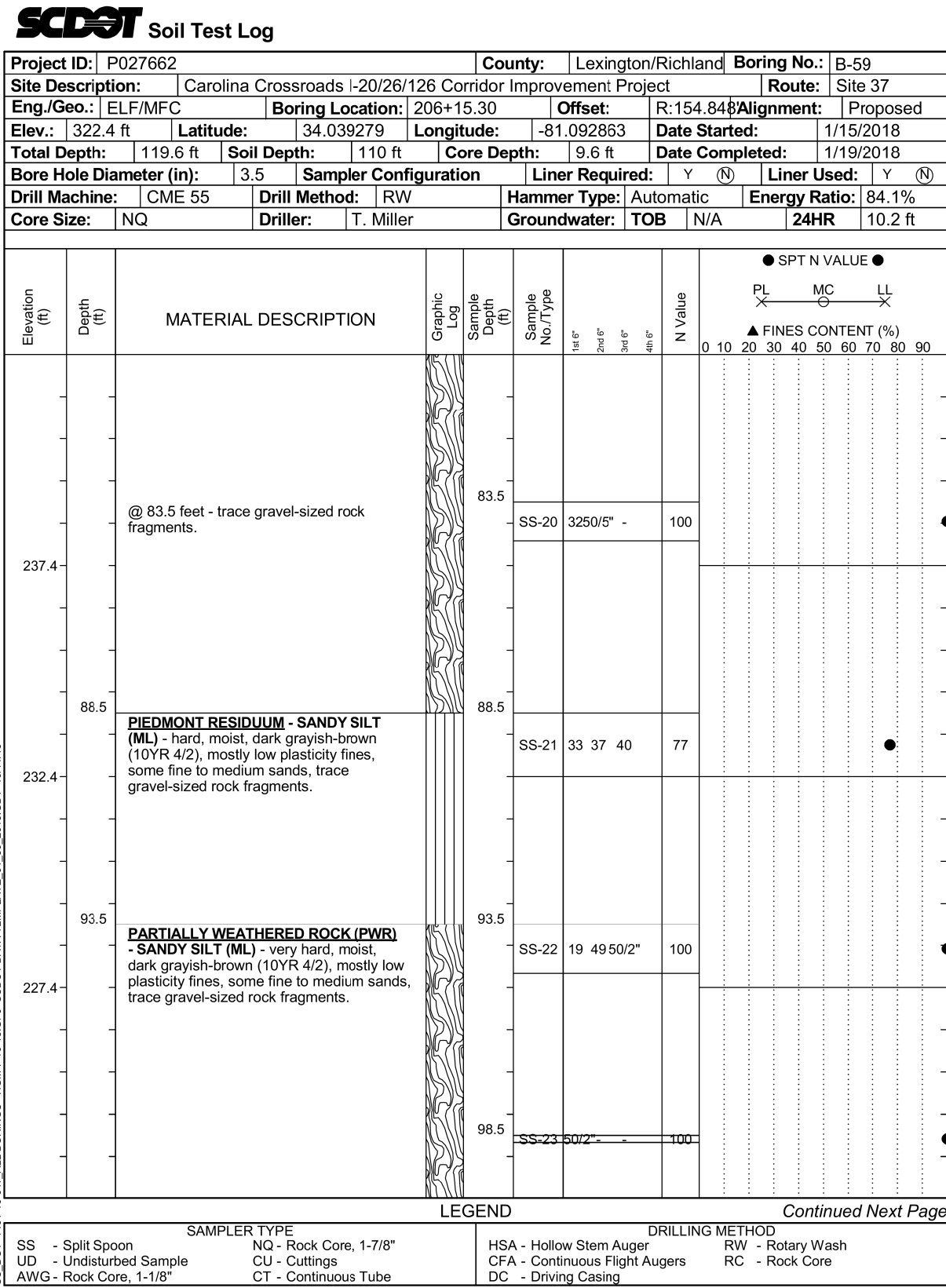
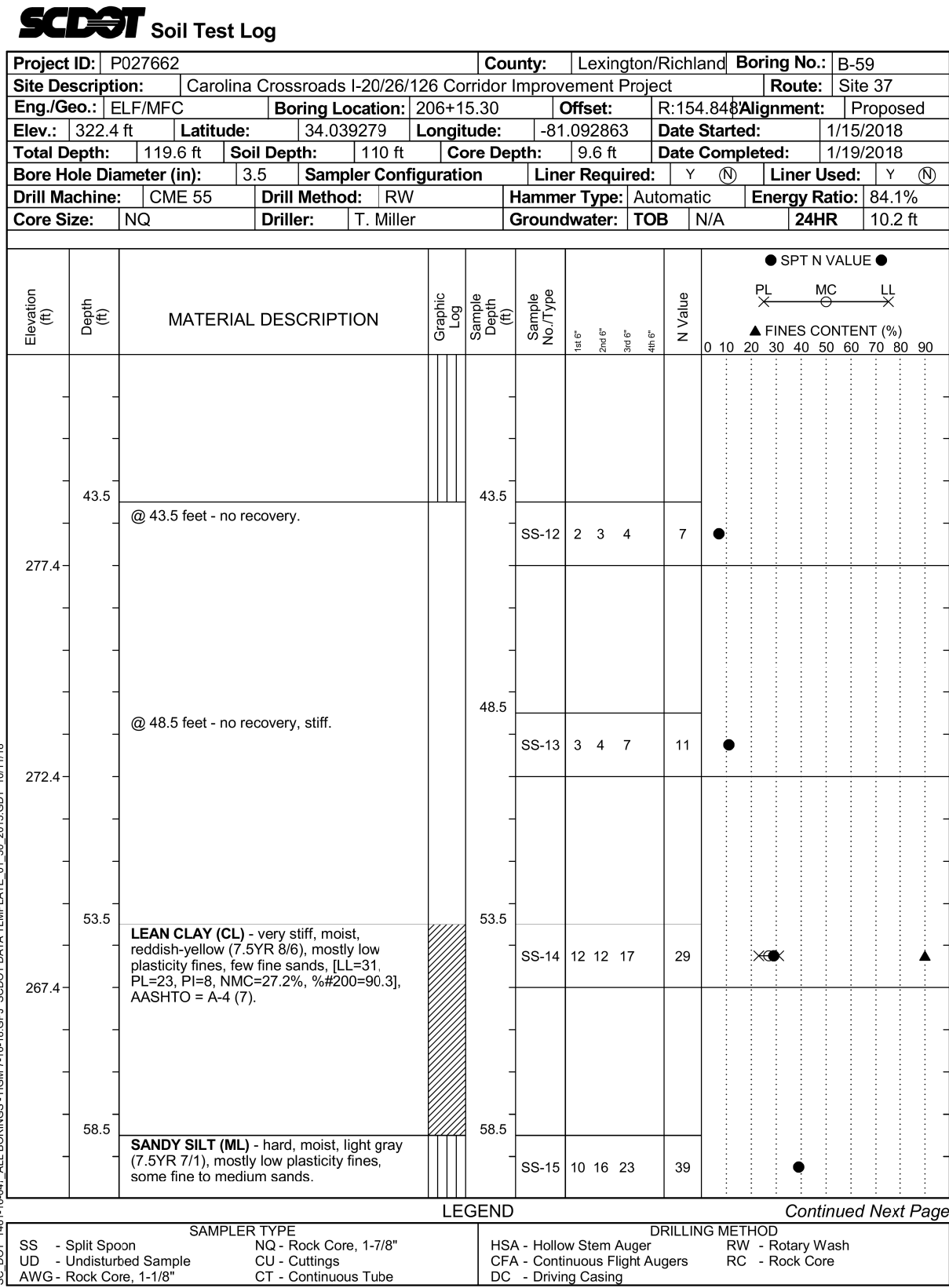
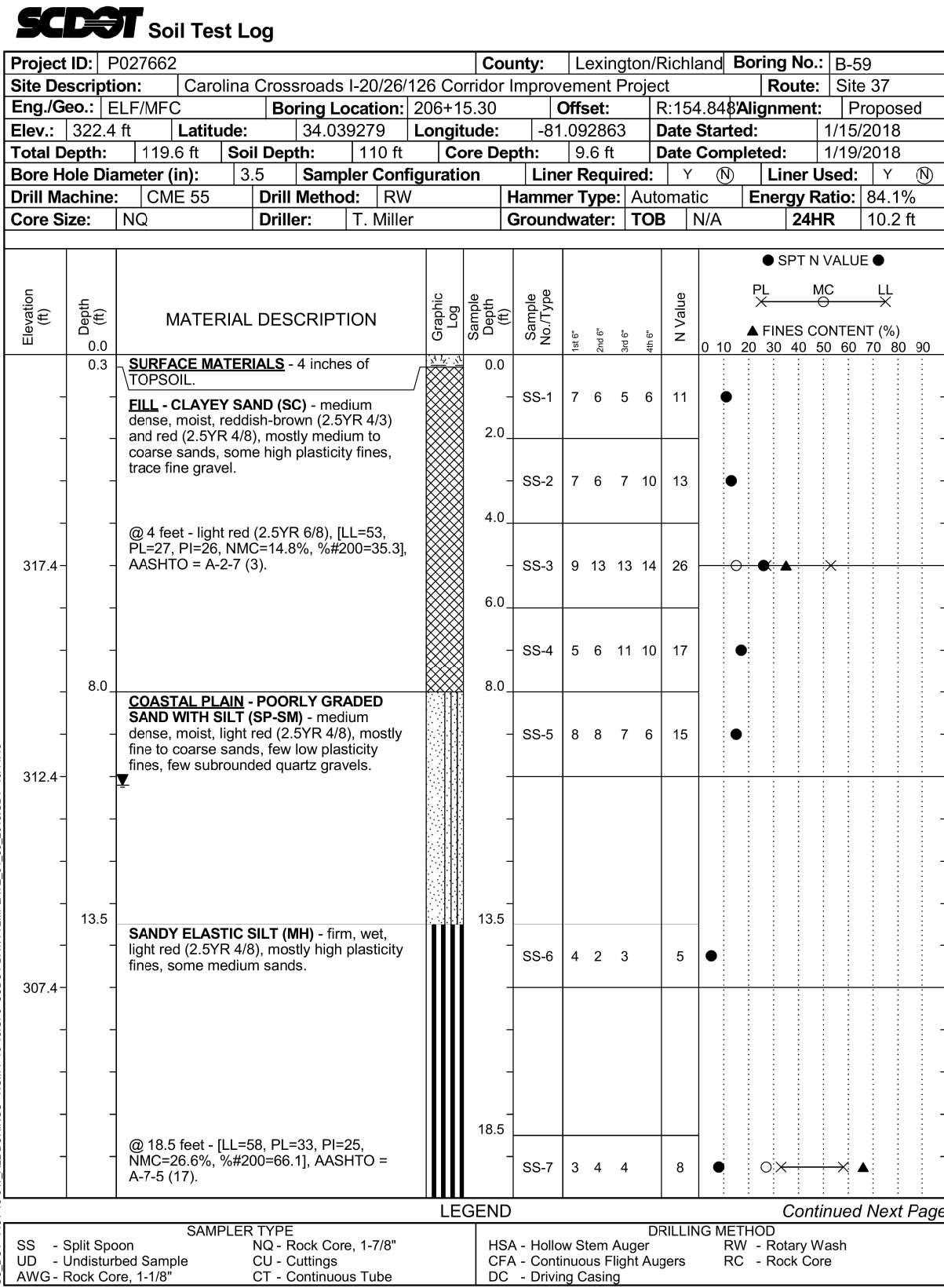
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DES.	
BY	CHK. DATE

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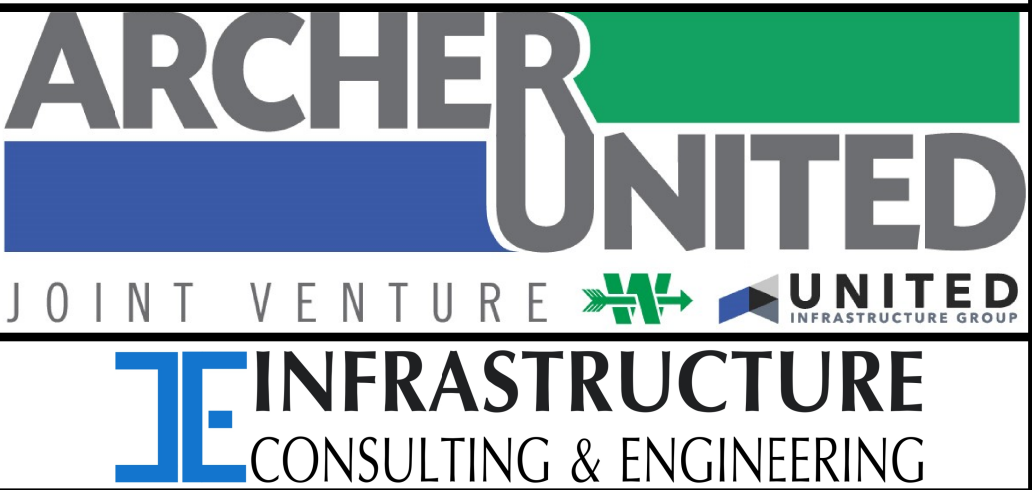


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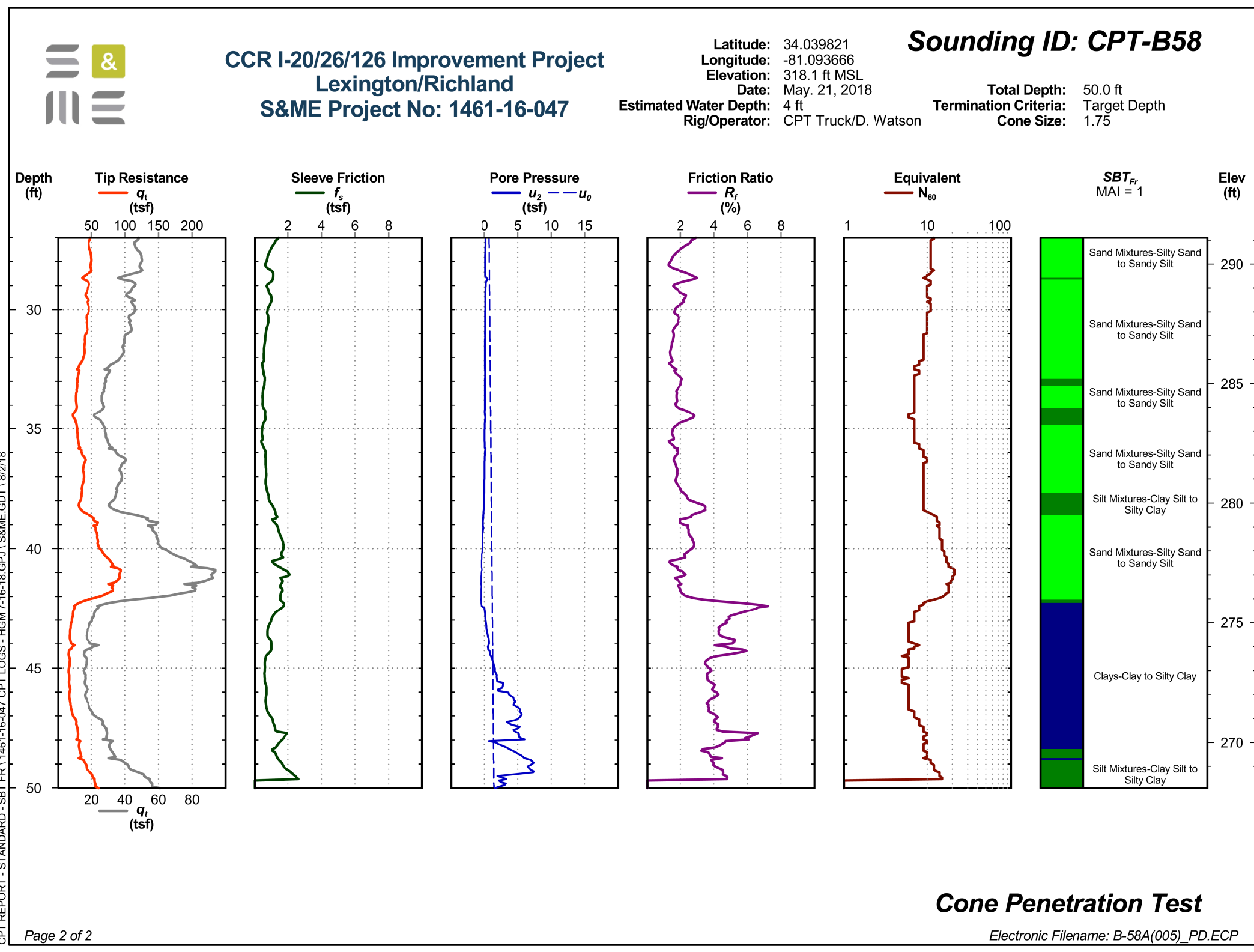
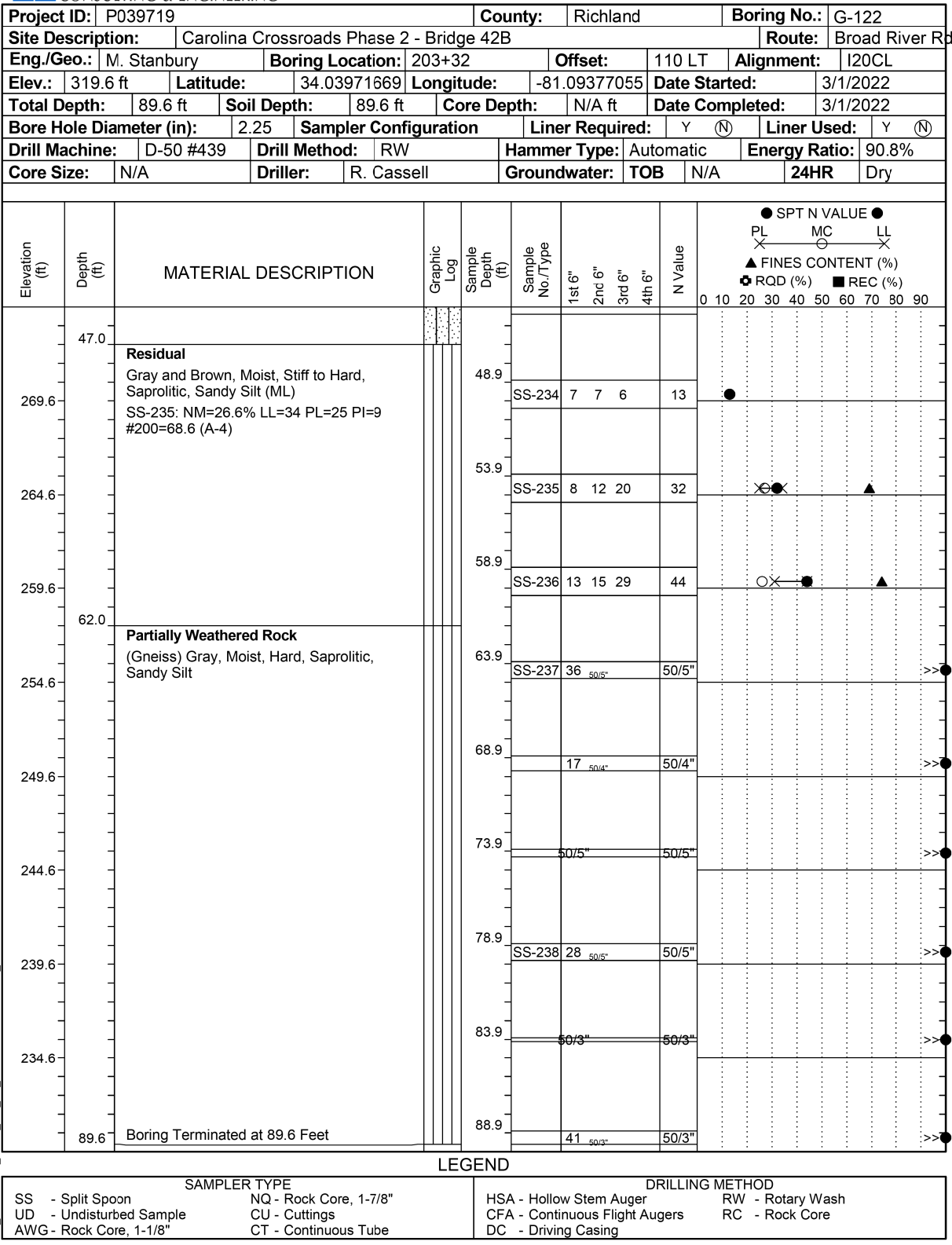
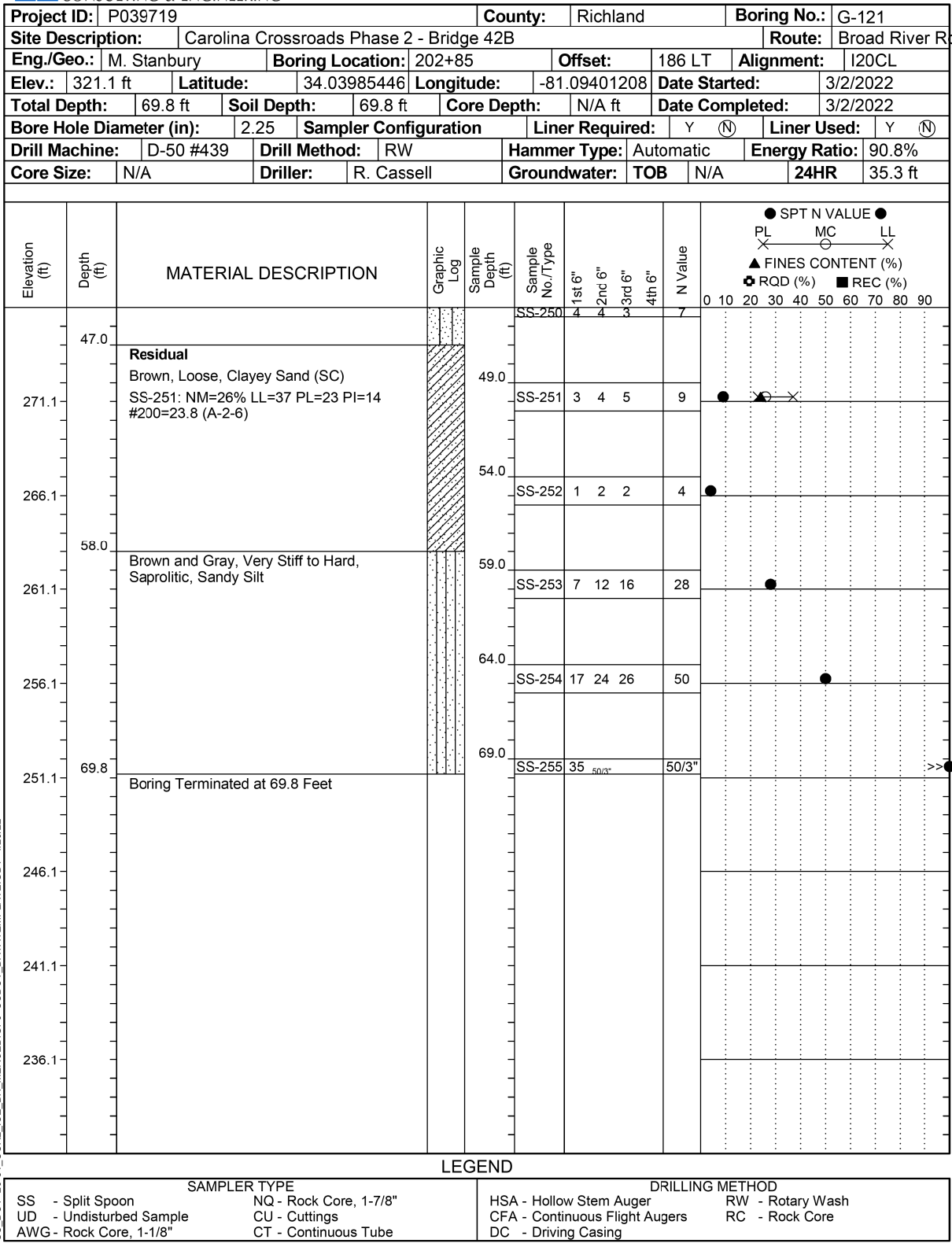
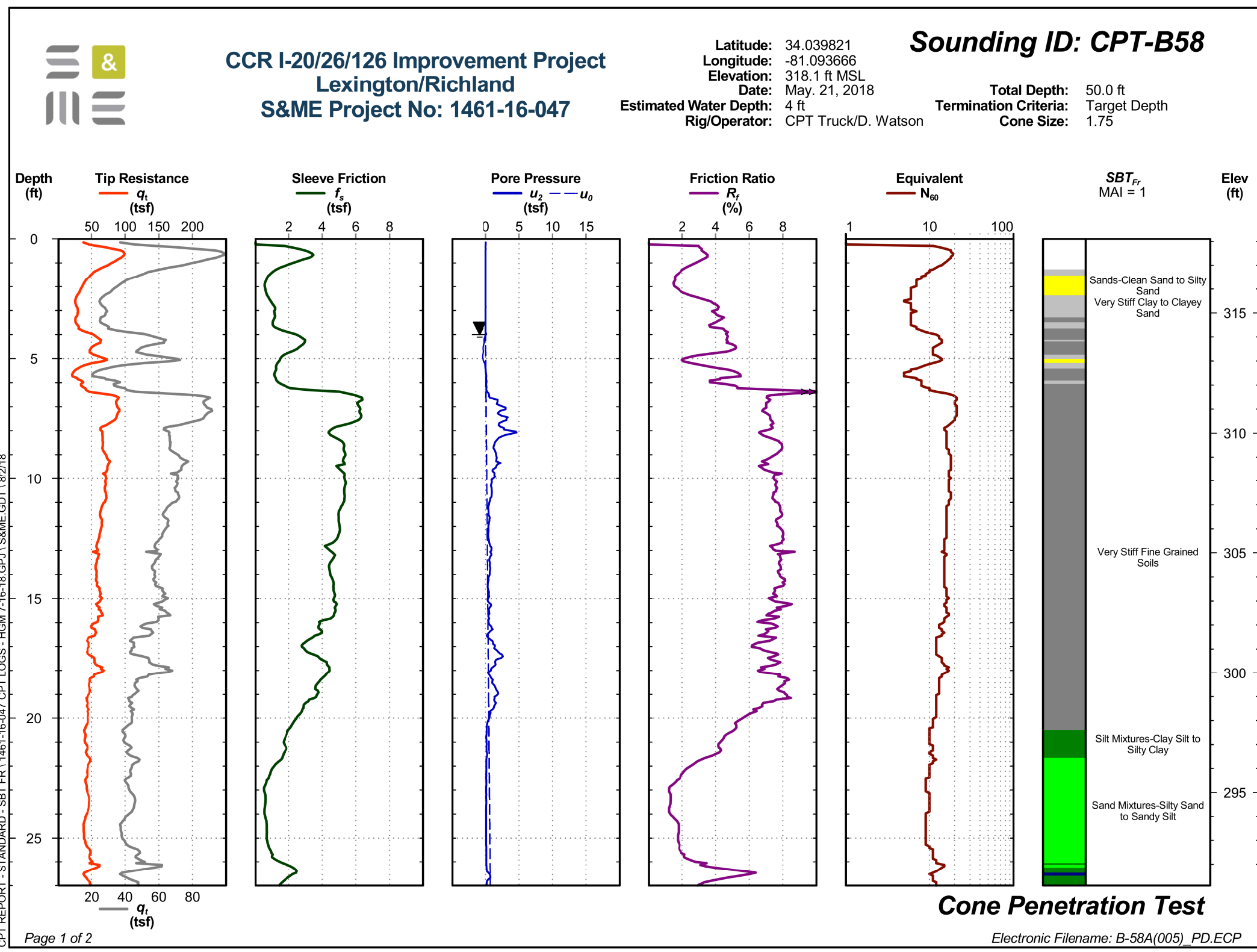
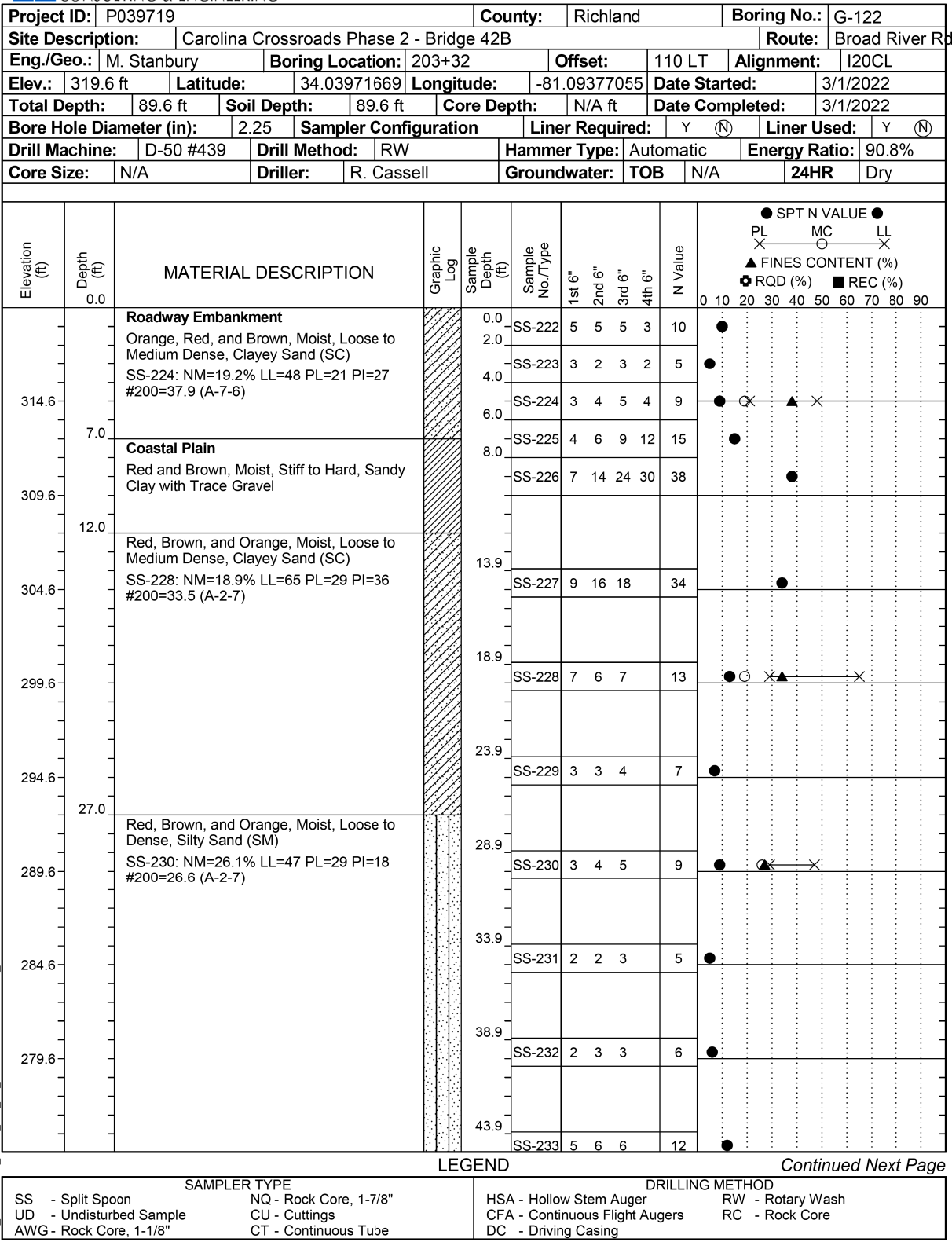
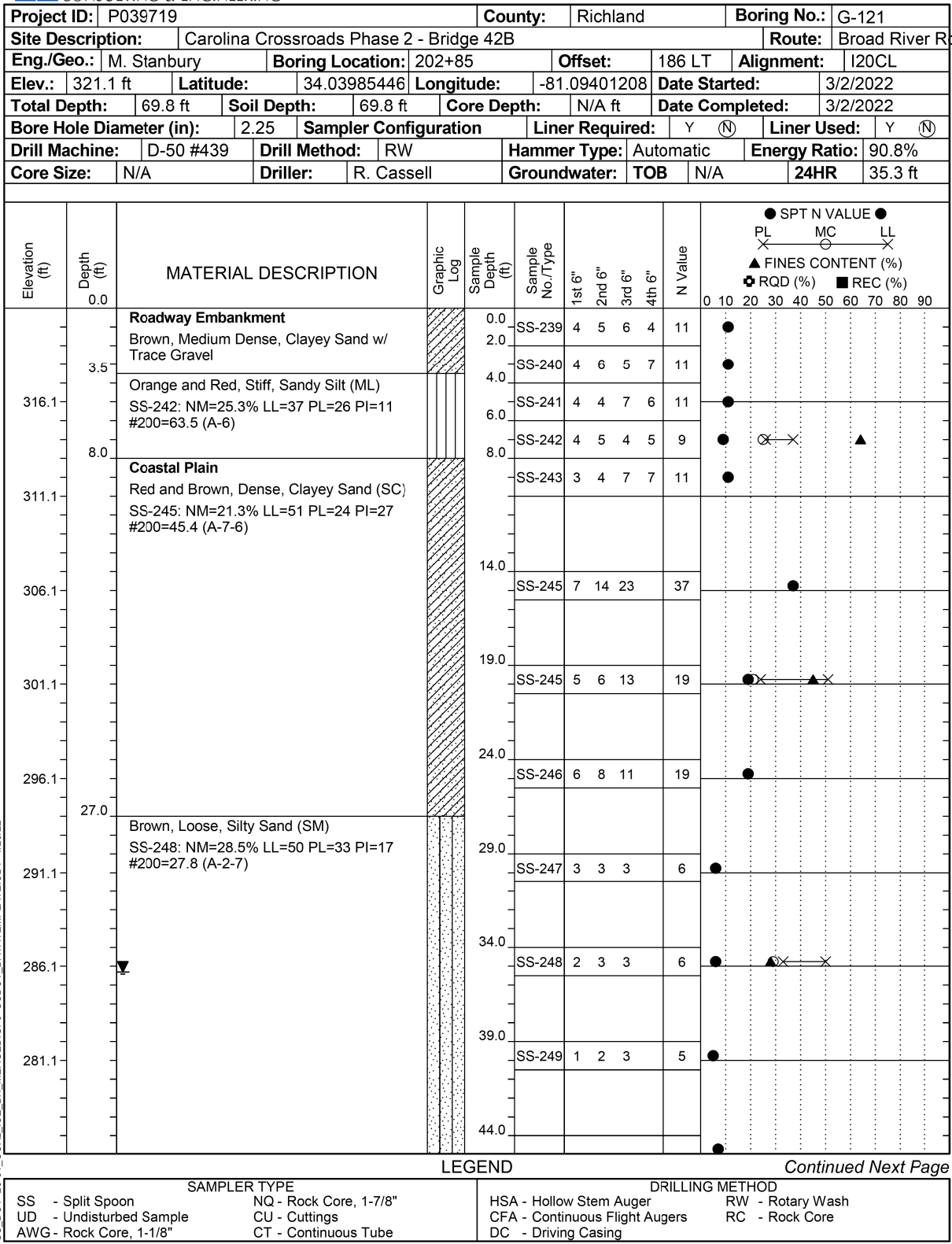
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QUAN.	BFS	WRS
DES.		
BY	CHK.	DATE



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
BORING LOGS (6)	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

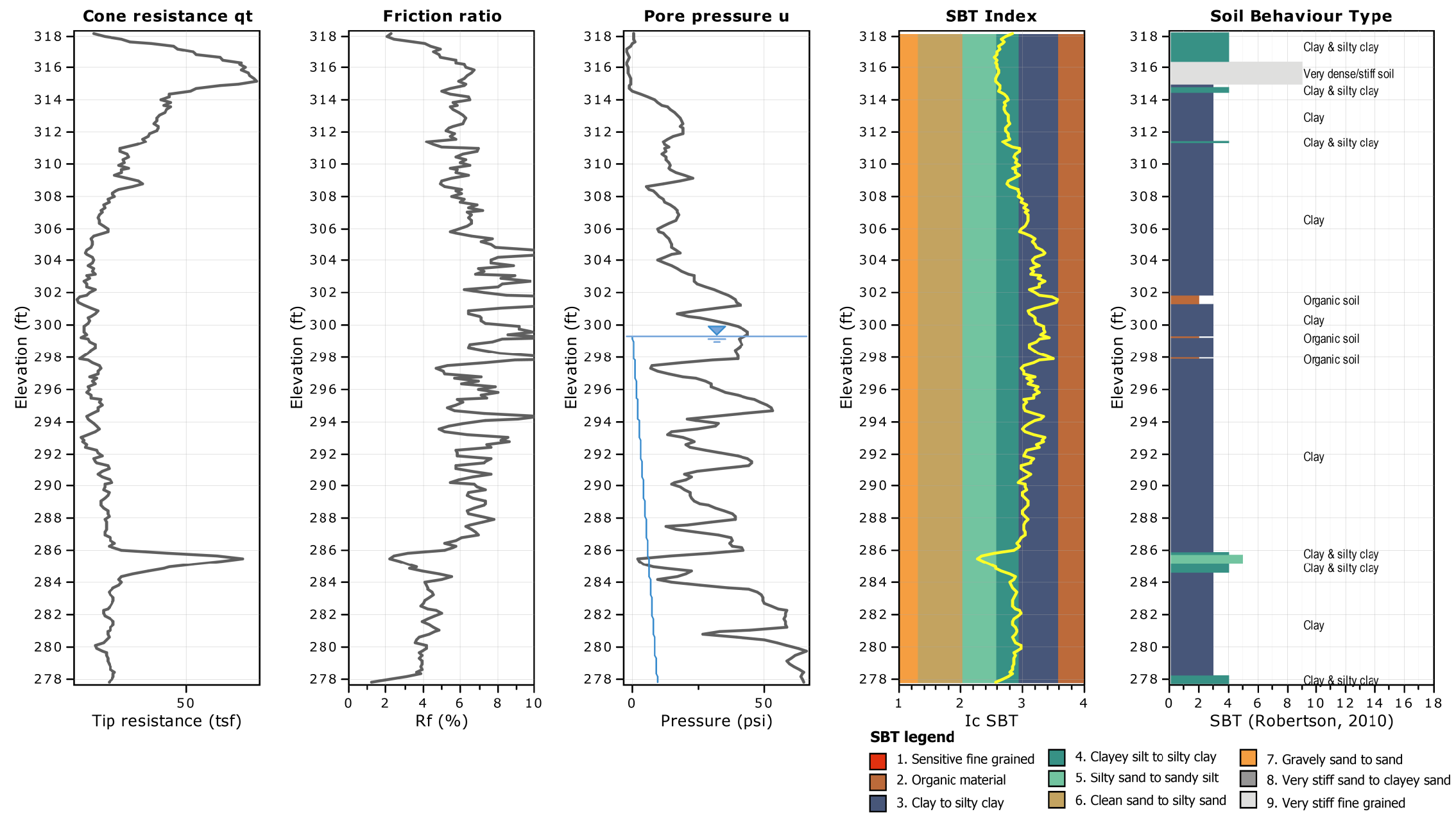
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Project: Carolina Crossroads Phase 2
Location: Richland County, SC

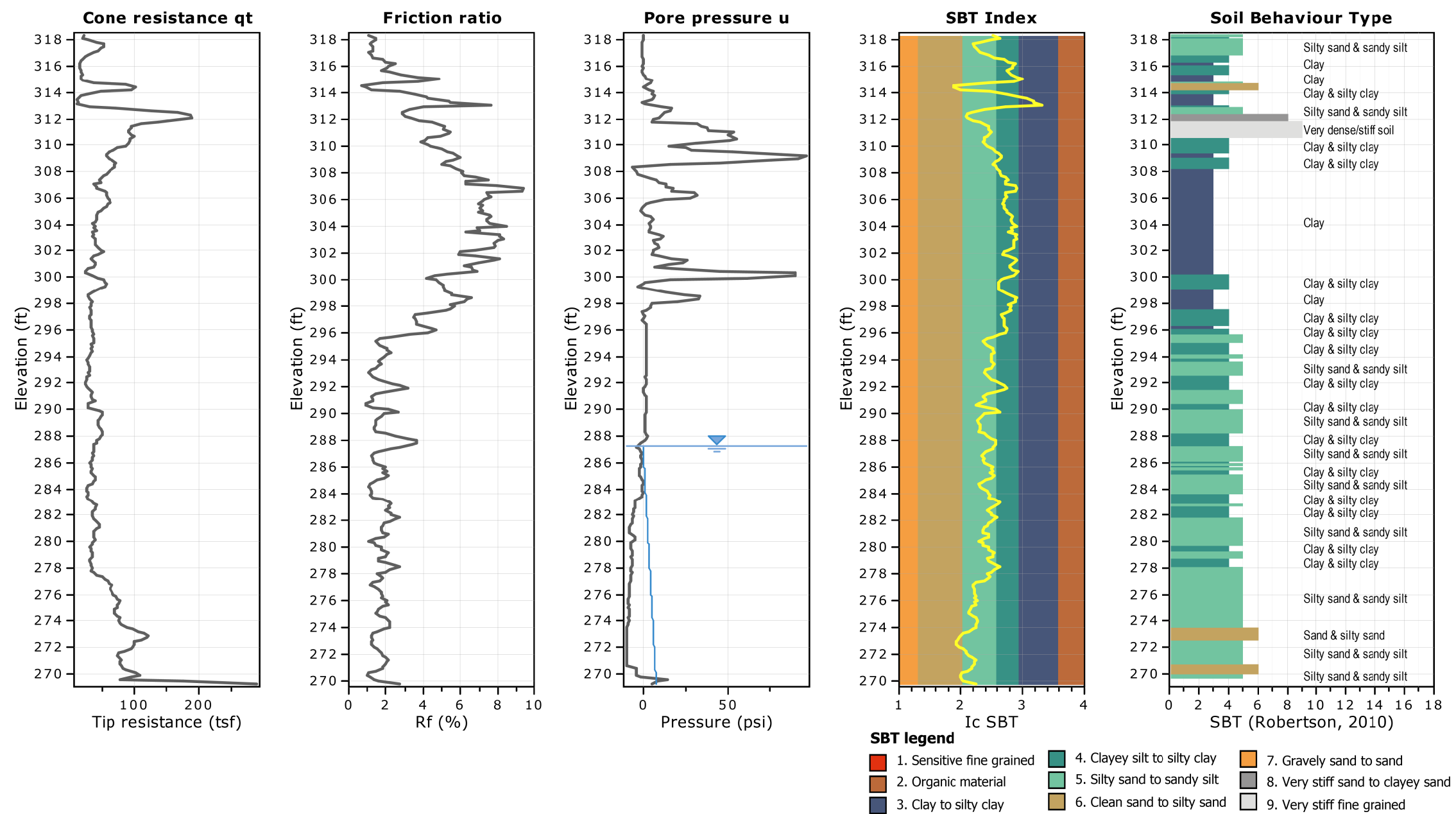
CPT: G-032
Total depth: 40.52 ft, Date: 2/22/2022
Surface Elevation: 318.30 ft
Coords: N 802673.7, E 1971935.7
Cone Operator: CATLIN



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Project: Carolina Crossroads Phase 2
Location: Richland County, SC

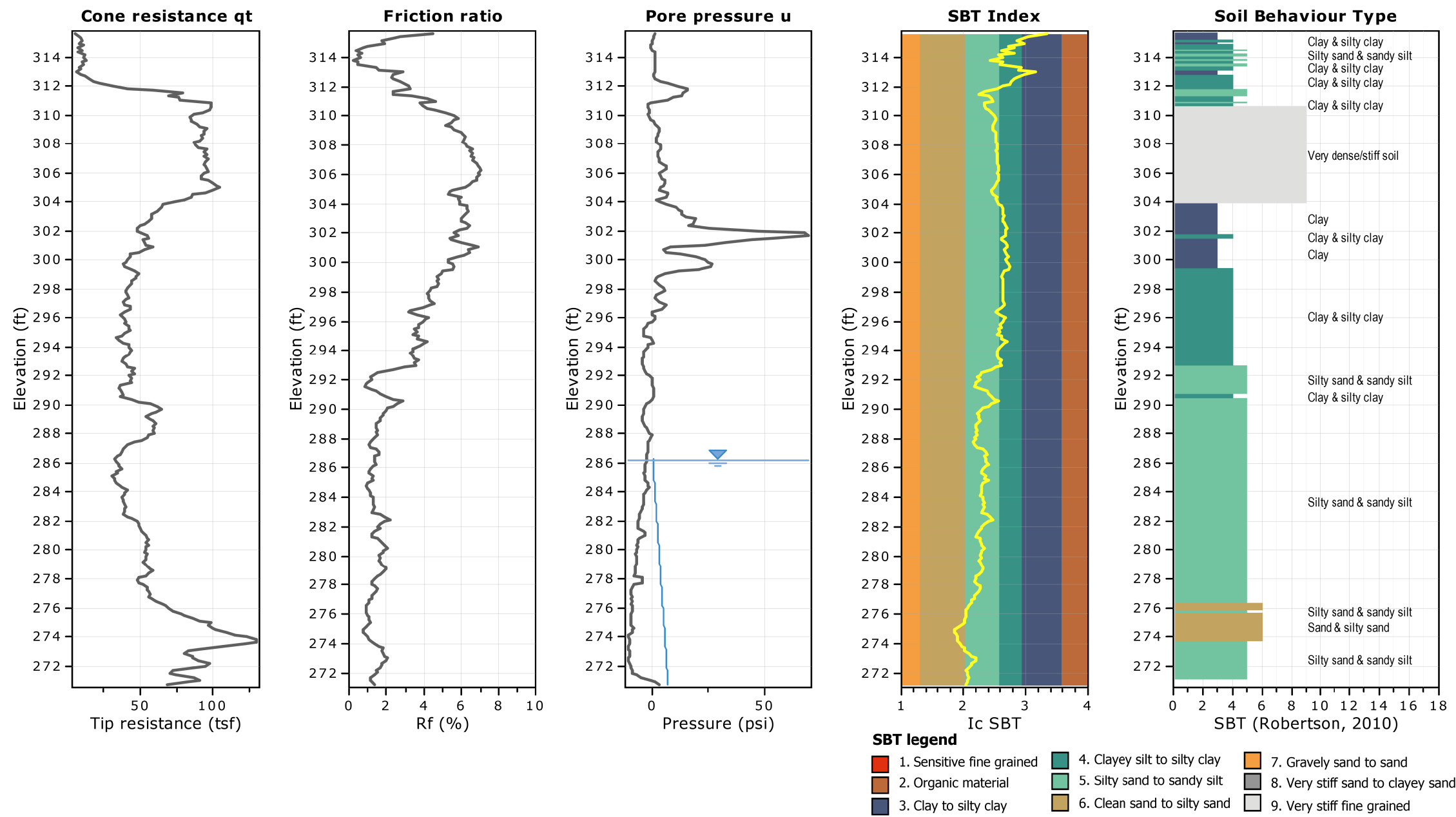
CPT: G-132
Total depth: 49.24 ft, Date: 2/23/2022
Surface Elevation: 318.50 ft
Coords: N 802813.4, E 1971613.3
Cone Operator: CATLIN



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Project: Carolina Crossroads Phase 2
Location: Richland County, SC

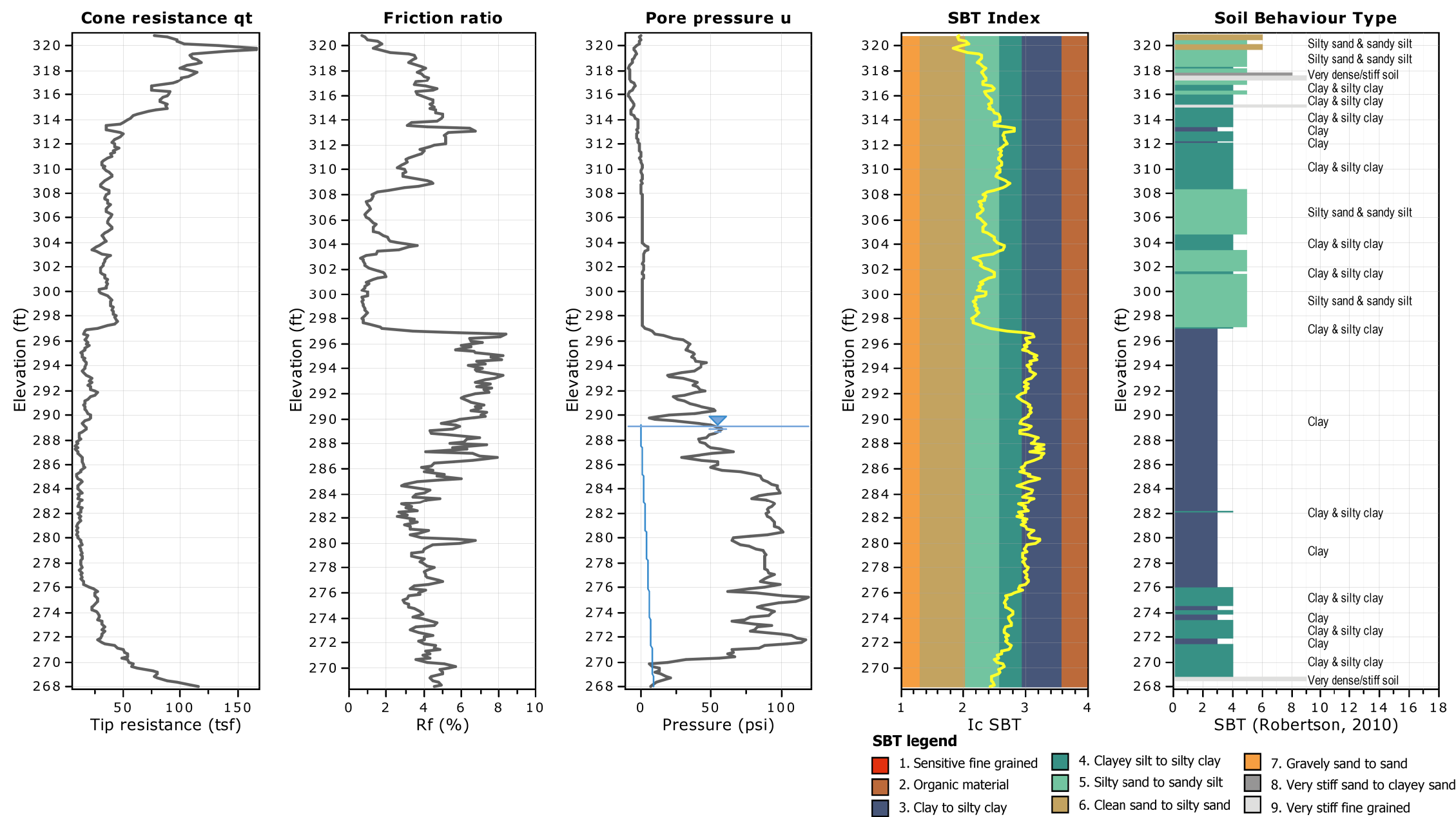
CPT: G-133
Total depth: 45.11 ft, Date: 2/23/2022
Surface Elevation: 315.80 ft
Coords: N 802856.8, E 1971732.0
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Project: Carolina Crossroads Phase 2
Location: Richland County, SC

CPT: G-137
Total depth: 52.99 ft, Date: 2/22/2022
Surface Elevation: 321.00 ft
Coords: N 802604.7, E 1971818.0
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DR.	BFS	WRS 04-22
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BY	CHK.	DATE



ICE of Carolinas, PLLC
CONSULTING & ENGINEERING

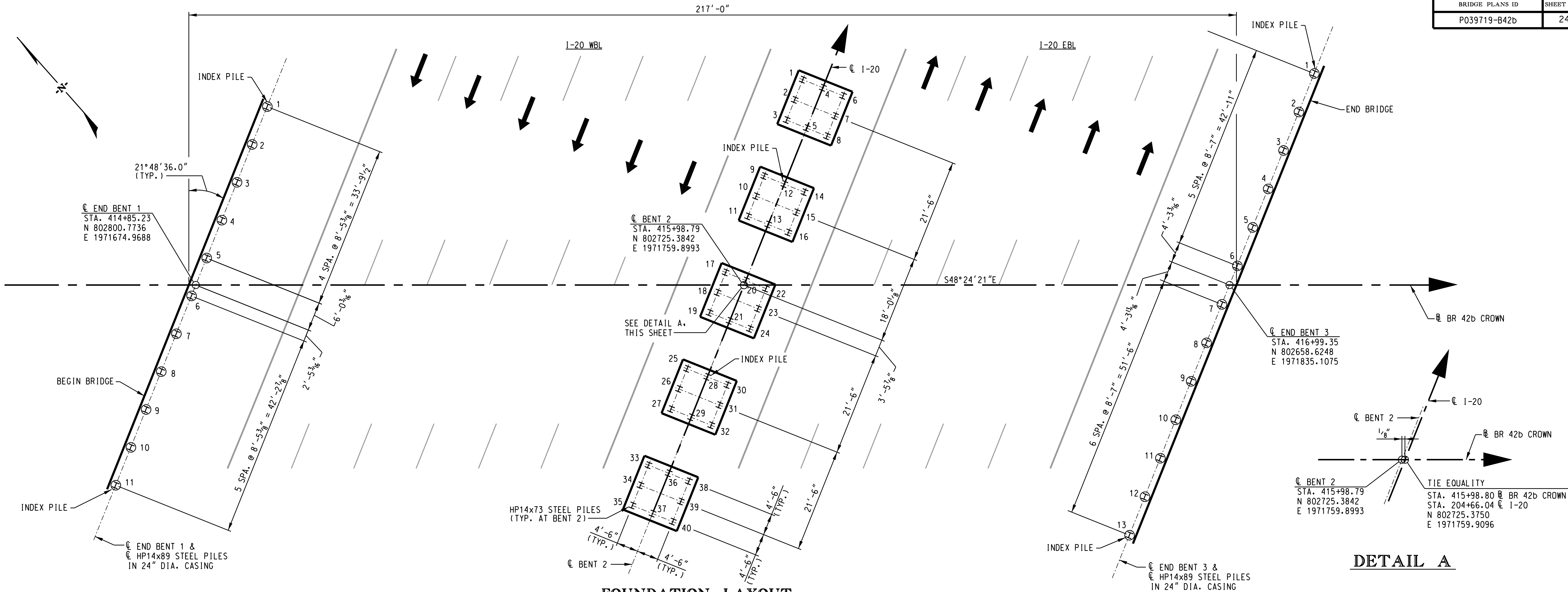
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BORING LOGS (8)
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	24



FOUNDATION LAYOUT

PILE BEARING TABLE			
BENT I.D.	E.B.1	I.B.2	E.B.3
PILE SECTION	HP 14X89	HP 14X73	HP 14x89
FACTORED DESIGN LOAD (TONS)	185	110	185
GEOTECHNICAL RESISTANCE FACTOR	0.65	0.65	0.65
NOMINAL RESISTANCE (TONS)	285	170	285
SETTLEMENT INDUCED UNFACTORED DOWNDRAG (TONS)	0	0	0
SETTLEMENT INDUCED FACTORED DOWNDRAG (TONS)	0	0	0
LIQUEFACTION INDUCED DOWNDRAG (TONS)	0	0	0
REQUIRED DRIVING RESISTANCE (TONS)	285	170	285
REQUIRED MINIMUM TIP ELEVATION TO ACHIEVE LATERAL STABILITY (FEET MSL)	280	270	280
ESTIMATED PILE TIP ELEVATION (FEET MSL)	235	255	250

Initially drive End Bent 1 and End Bent 3 piles to at least the required minimum tip elevation and no deeper than tip elevation 265 before MSE wall and bridge embankment construction.

Settlement monitoring is required at End Bent 1 and End Bent 3 during MSE wall and bridge embankment construction. Final End Bent pile driving to the required driving resistance shall begin at the direction of the Geotechnical Engineer of Record after sufficient foundation soil settlement has completed.

Method of controlling installation of piles and verifying their capacity: Capacity will be verified by Pile Driving Analyzer and CAPWAP analysis of index piles. A Pile Installation Chart developed from the analysis will be used to verify the capacity of production piles.

Perform Pile Driving Analyzer (PDA) testing on six (6) index piles. An index pile shall be the first production pile driven at each bent. Include an additional two feet of pile length in order to accommodate the initial PDA testing. If a CAPWAP analysis determines that capacity has not been achieved, restrike one of the production piles. Perform the restrike on the production pile exhibiting the least blows per foot. On initial drive, piles shall be stopped at the highest allowable finished grade on the plans to accommodate a restrike while remaining within an allowable plan finished grade elevation. Perform PDA testing during the restrike. The Geotechnical Engineer of Record will determine the time between initial driving and any required restrikes.

Each pile is to be installed in one continuous operation. Include details of any anticipated temporary driving discontinuances including anticipated time intervals in the Pile Installation Plan.

The top of partially weathered rock elevation may vary across each bent and result in varying pile lengths. Practical refusal of a pile is defined as 20 blows per inch.

Reference the Standard Specifications for Highway Construction for Driven Pile Foundations, Section 711. Notes included in these plans are in addition to the requirements of the Standard Specifications.

The following estimated parameters were used for performing a drivability analysis for End Bent 1, Interior Bent 2, & End Bent 3:

DRIVABILITY ANALYSIS			
BENT I.D.	E.B.1	I.B.2	E.B.3
Skin Quake (QS)	0.10 in	0.10 in	0.10 in
Toe Quake (QT)	0.10 in	0.10 in	0.10 in
Skin Damping (SD)	0.15 s/ft	0.15 s/ft	0.15 s/ft
Toe Damping (TD)	0.15 s/ft	0.15 s/ft	0.15 s/ft
% Skin Friction	30%	50%	30%
Distribution Shape Number	0	0	0
Pile Installation Chart	Proportional	Proportional	Proportional
Pile Penetration	60%	75%	60%
Hammer Energy Range	50-80 kip-ft	30-60 kip-ft	50-80 kip-ft

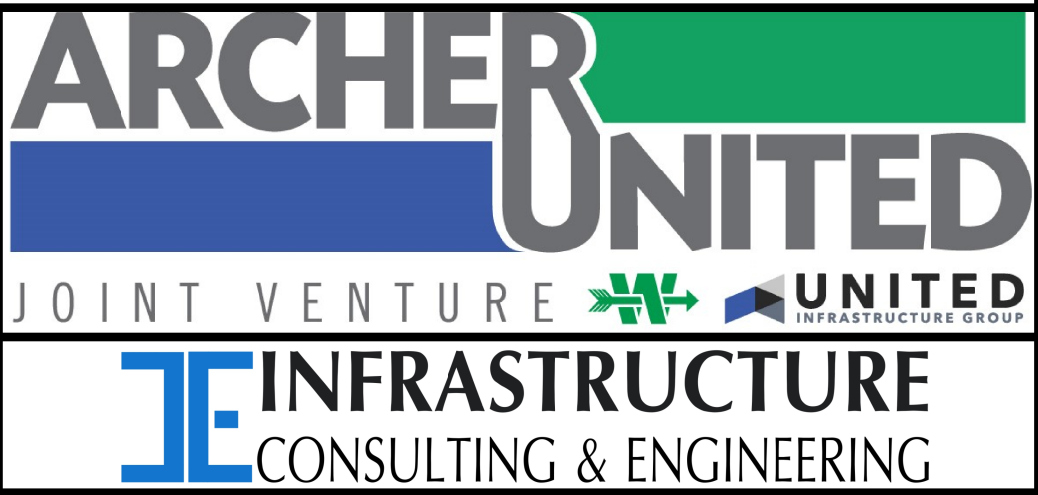
Note: GRLWEAP 2010-7 WAS USED TO PERFORM THE WAVE EQUATION ANALYSIS.

A pile hammer having the rated energy as indicated above is considered suitable for driven pile installation. However, final hammer approval is based on a wave equation analysis that accurately reflects the Contractor's proposed driving system.

The Contractor shall retain a geotechnical engineering firm to perform the pre-construction condition assessment and Earth-borne Vibration Monitoring in accordance with the Request for Proposals.

SCDOT Supplemental Technical Specification SC-M-713 (01/19) shall apply to the project.

DETAIL A



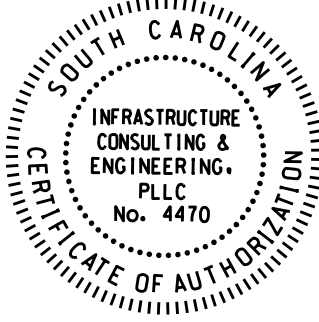
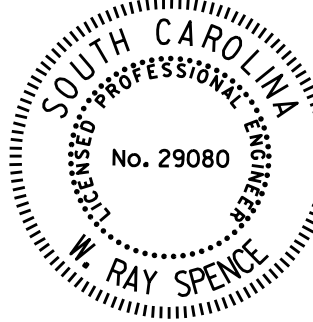
**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

FOUNDATION LAYOUT

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

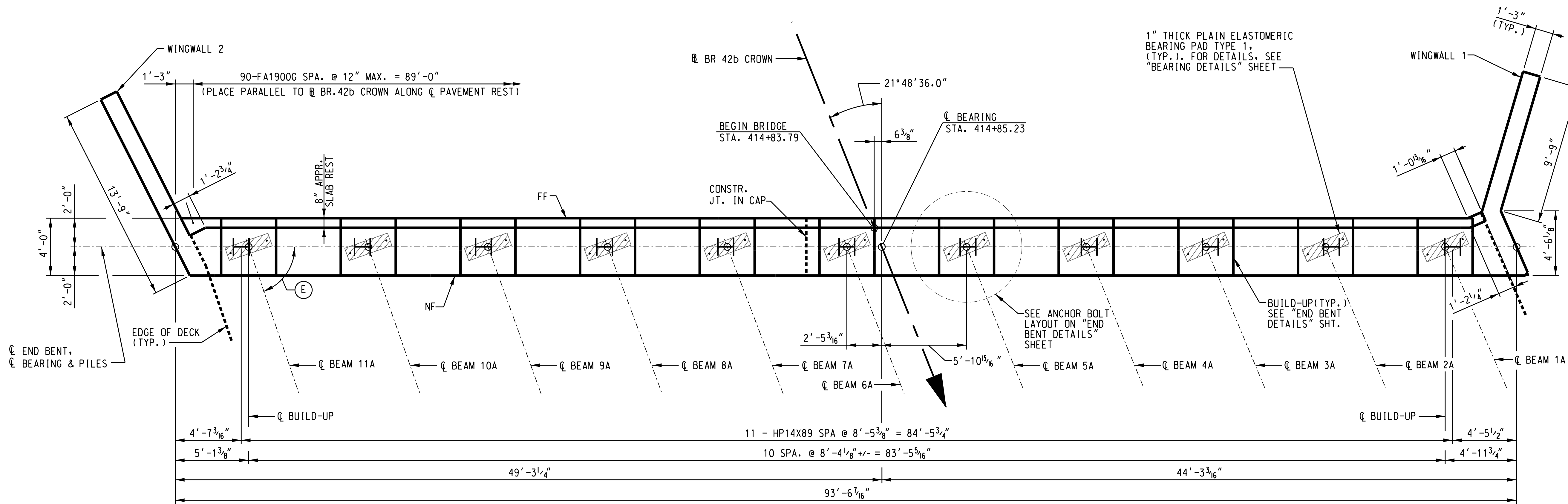
COUNTY RICHLAND ROUTE US 176

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QUAN.		
DR.	RMH	WRS 03-22
DES.	WRS	ALP 03-22
BY	CHK.	DATE

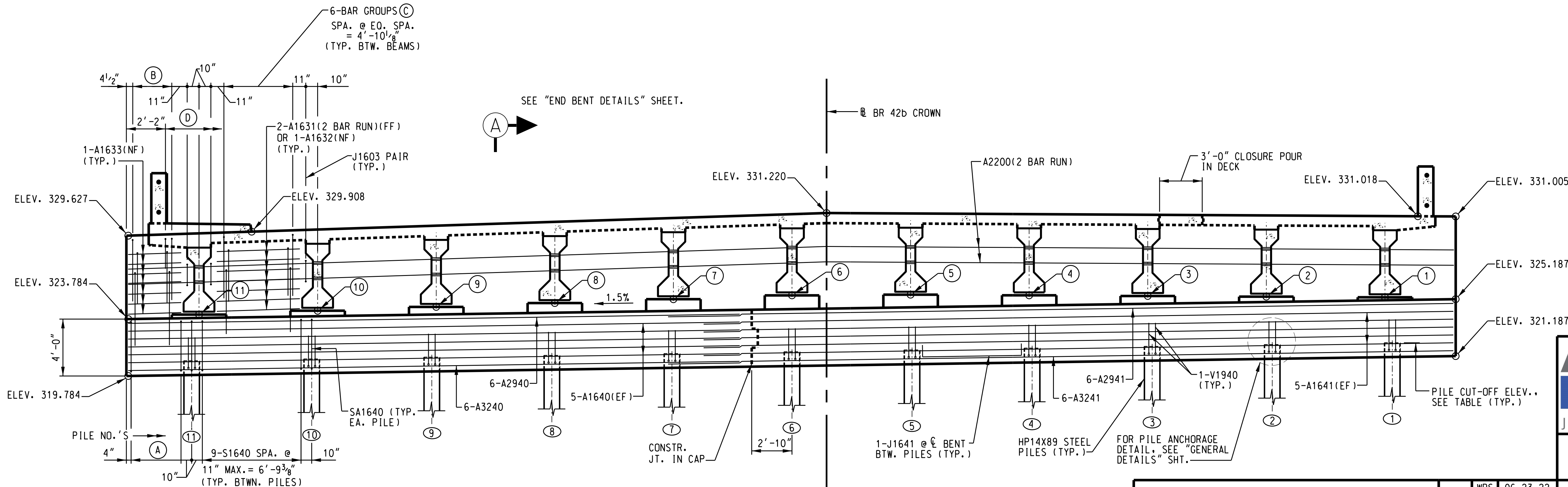


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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	25



PLAN



SECTION ALONG CL END BENT

(LOOKING BACK ON STATIONING)

NOTES:

FOR PILE CAPACITY, PILE DRIVABILITY, AND PILE TIP ELEVATIONS, SEE "FOUNDATION LAYOUT" SHEET.

STEEL PILING SHALL HAVE MINIMUM YIELD STRENGTH OF 50 KSI.

ALL ELEVATIONS & DIMENSIONS ARE ALONG CL END BENT.

PILE CUT-OFF ELEVATION IS BASED ON 1'-0" PILE EMBEDMENT.

(FF) - DENOTES FAR FACE

(EF) - DENOTES EACH FACE

(NF) - DENOTES NEAR FACE

PLACE BAR GROUP (C), J1603 AND C1901G PARALLEL TO BEAMS.

BAR GROUP (C) CONSISTS OF 3-B1640, 1-J1604 AND 1-N1600.

(A) 5-"S16" BARS (TYP. EACH OVERHANG) SEE CORNER DETAILS ON "END BENT DETAILS" SHEET.

(B) 3-BAR GROUPS (C) @ E.O. SPA. (TYP. EA. OVERHANG)

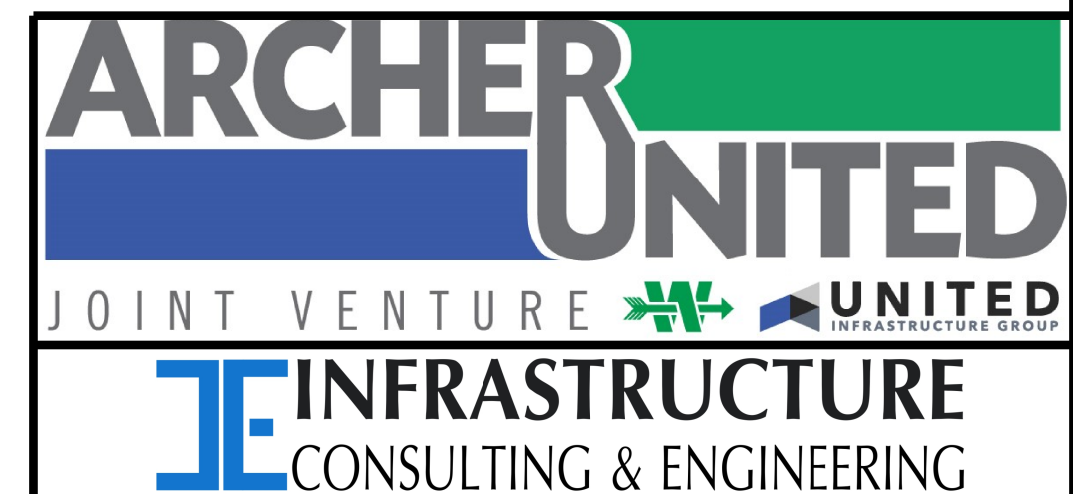
(D) 62-C1901G SPA. WITH BAR GROUP (C)

PILE CASING NOT SHOWN FOR CLARITY.

BUILD-UP ELEVATIONS	
LOCATION	ELEVATION
(1)	325.321
(2)	325.362
(3)	325.402
(4)	325.443
(5)	325.483
(6)	325.433
(7)	325.164
(8)	324.895
(9)	324.625
(10)	324.347
(11)	324.081

TABLE OF BEAM ANGLES	
BEAM	(E)
1A	66°24'47.3"
2A	66°51'44.8"
3A	67°18'53.4"
4A	67°46'12.8"
5A	68°13'43.0"
6A	68°41'23.8"
7A	69°09'15.0"
8A	69°37'16.7"
9A	70°05'28.6"
10A	70°33'50.6"
11A	71°02'22.6"

PILE CUT-OFF ELEVATIONS			
PILE	ELEVATION	PILE	ELEVATION
(1)	322.120	(7)	321.360
(2)	321.993	(8)	321.233
(3)	321.867	(9)	321.106
(4)	321.740	(10)	320.980
(5)	321.613	(11)	320.853
(6)	321.487		

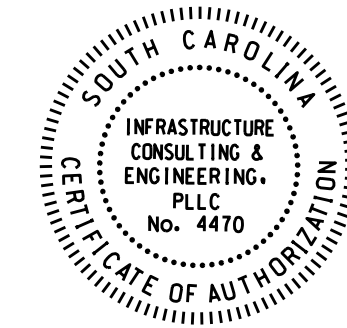
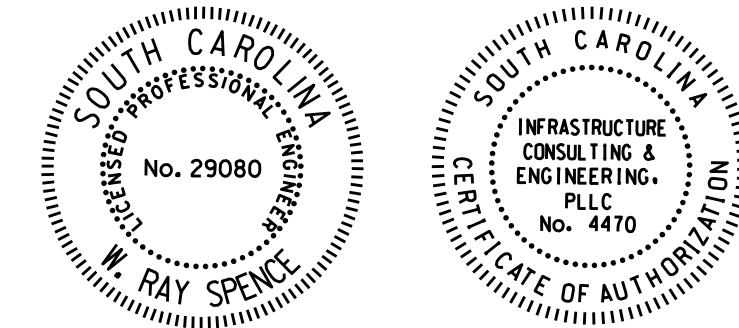


SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

END BENT 1

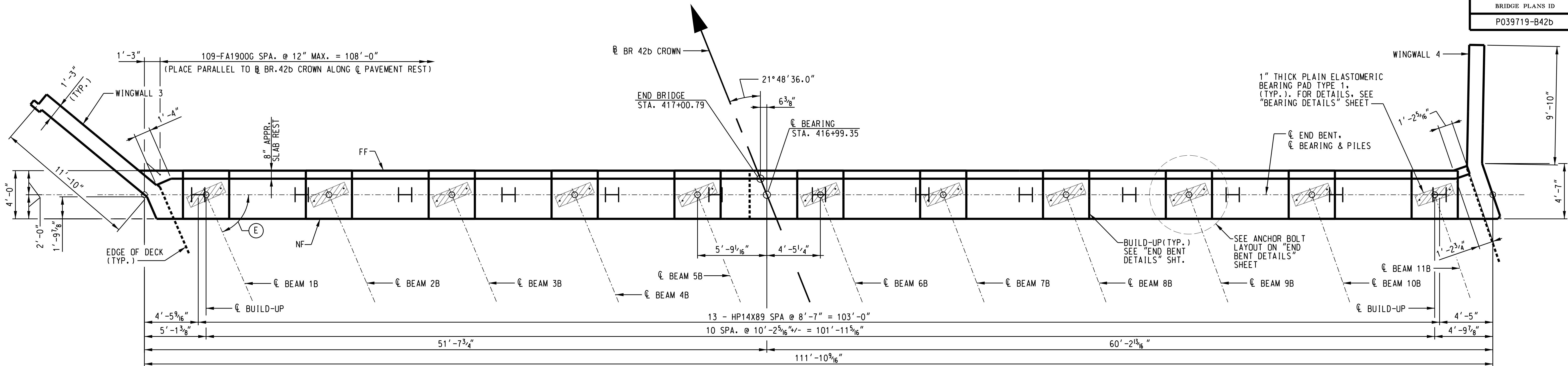
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

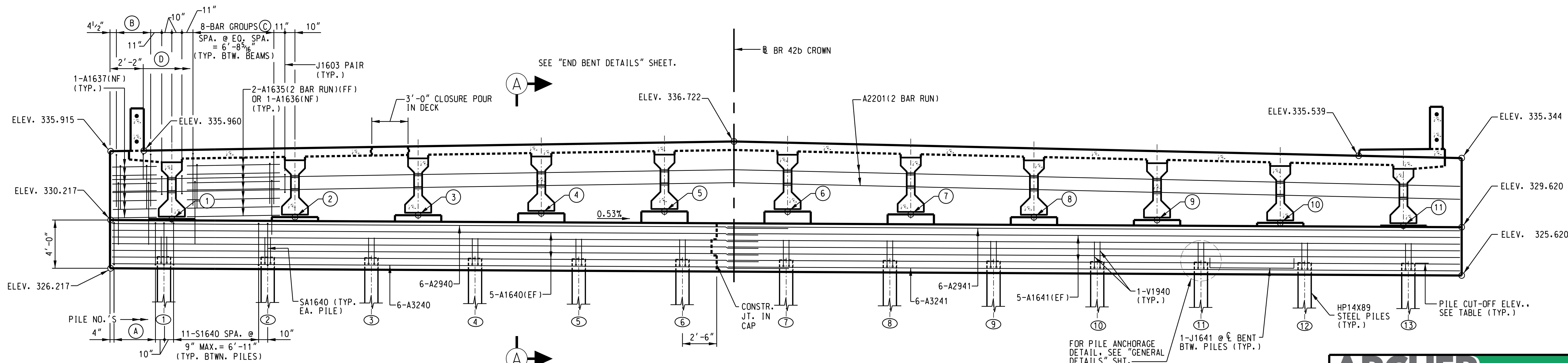


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DES.	ALP	WRS 03-22
BY	CHK.	DATE

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PLAN



SECTION ALONG CL END BENT

(LOOKING AHEAD ON STATIONING)

BUILD-UP ELEVATIONS

LOCATION	ELEVATION
1	330.290
2	330.458
3	330.614
4	330.770
5	330.926
6	330.913
7	330.679
8	330.446
9	330.213
10	329.980
11	329.746

TABLE OF BEAM ANGLES

BEAM	(E)
1B	66°24'47.3"
2B	66°51'44.8"
3B	67°18'53.4"
4B	67°46'12.8"
5B	68°13'43.0"
6B	68°41'23.8"
7B	69°09'15.0"
8B	69°37'16.7"
9B	70°05'28.6"
10B	70°33'50.6"
11B	71°02'22.6"

PILE CUT-OFF ELEVATIONS

PILE	ELEVATION	PILE	ELEVATION
1	327.193	7	326.919
2	327.147	8	326.873
3	327.102	9	326.827
4	327.056	10	326.781
5	327.010	11	326.736
6	326.964	12	326.690
		13	326.644

NOTES:

FOR PILE CAPACITY, PILE DRIVABILITY, AND PILE TIP ELEVATIONS, SEE "FOUNDATION LAYOUT" SHEET.

STEEL PILING SHALL HAVE MINIMUM YIELD STRENGTH OF 50 KSI.

ALL ELEVATIONS & DIMENSIONS ARE ALONG CL END BENT.

PILE CUT-OFF ELEVATION IS BASED ON 1'-0" PILE EMBEDMENT.

(FF) - DENOTES FAR FACE

(EF) - DENOTES EACH FACE

(NF) - DENOTES NEAR FACE

PLACE BAR GROUP (C), J1603 AND C1901G PARALLEL TO BEAMS.

BAR GROUP (C) CONSISTS OF 3-B1640, 1-J1604 AND 1-N1600.

(A) 5-"S16" BARS (TYP. EACH OVERHANG) SEE CORNER DETAILS ON "END BENT DETAILS" SHEET.

(B) 3-BAR GROUPS (C) @ EQ. SPA. (TYP. EA. OVERHANG)

(D) 82-C1901G SPA. WITH BAR GROUP (C)

PILE CASING NOT SHOWN FOR CLARITY.

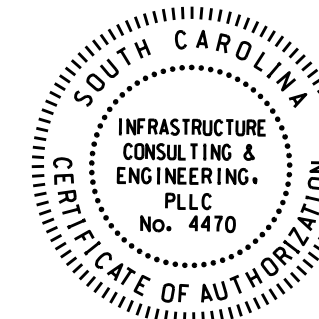
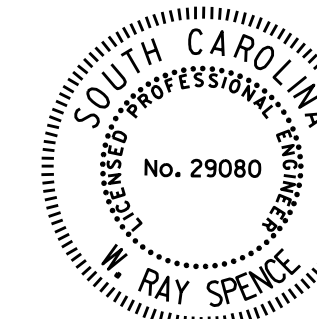
SPLICE LENGTHS:

#16 = 2'-7" MIN.

#22 = 3'-7" MIN.

#29 = 5'-1" MIN.

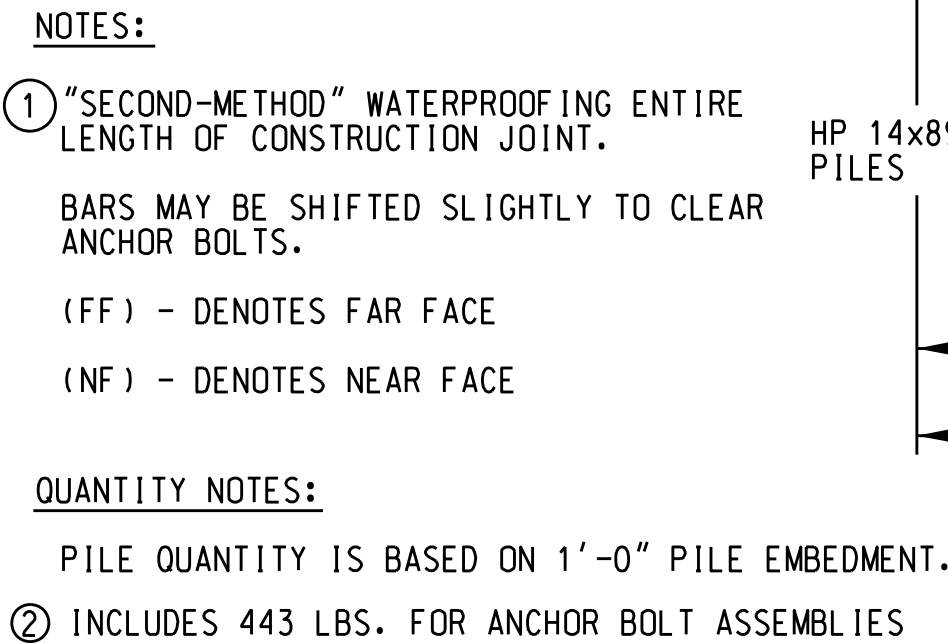
#32 = 6'-3" MIN.



REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	RMH	WRS 04-22
DES.	ALP	WRS 03-22
BY	CHK.	DATE



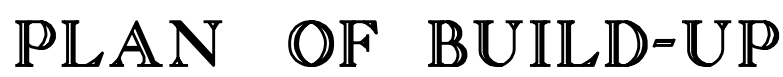
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
END BENT 3	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176



ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		END BENT 1	END BENT 3
CONCRETE FOR STRUCTURES - CLASS 4000	CY	62.6	73.3
REINFORCING STEEL FOR STRUCTURES (BRIDGE) ②	LBS.	11,682	13,868
DYNAMIC PILE ANALYZER TEST SET-UP	EACH	2	2
PILE DRIVING SET - UP	EACH	11	13
STEEL H BEARING PILING (HP14x89)	LF	779	847
STEEL H BEARING INDEX PILING (HP14x89)	LF	177	158
ELASTOMERIC BEARING	EACH	11	11
AGG. UNDERDRAIN #789 W/4" PERF. PIPE FOR STRUCTURES	TON	213	261
WATERPROOFING(SUBSTRUCTURE SECOND METHOD)	SY	24.7	29.0



BEAM	ANGLE (A)	DIM. (B)	DIM. (C)
1A & 1B	23°35'12.7"	1'-2 $\frac{1}{2}$ " ₁₆	6 $\frac{3}{8}$ "
2A & 2B	23°08'15.2"	1'-2 $\frac{1}{2}$ " ₁₆	6 $\frac{5}{8}$ "
3A & 3B	22°41'06.6"	1'-2 $\frac{3}{4}$ "	6 $\frac{3}{16}$ "
4A & 4B	22°13'47.2"	1'-2 $\frac{1}{2}$ " ₁₆	6 $\frac{1}{16}$ "
5A & 5B	21°46'17.0"	1'-2' $\frac{1}{2}$ "	5 $\frac{5}{8}$ "
6A & 6B	21°18'36.2"	1'-2' $\frac{1}{2}$ "	5 $\frac{1}{8}$ "
7A & 7B	20°50'45.0"	1'-2 $\frac{1}{2}$ " ₁₆	5 $\frac{1}{16}$ "
8A & 8B	20°22'43.3"	1'-3'	5 $\frac{9}{16}$ "
9A & 9B	19°54'31.4"	1'-3' $\frac{1}{16}$ "	5 $\frac{1}{16}$ "
10A & 10B	19°26'09.4"	1'-3' $\frac{1}{16}$ "	5 $\frac{1}{16}$ "
11A & 11B	18°57'37.4"	1'-3' $\frac{1}{8}$ "	5 $\frac{1}{16}$ "



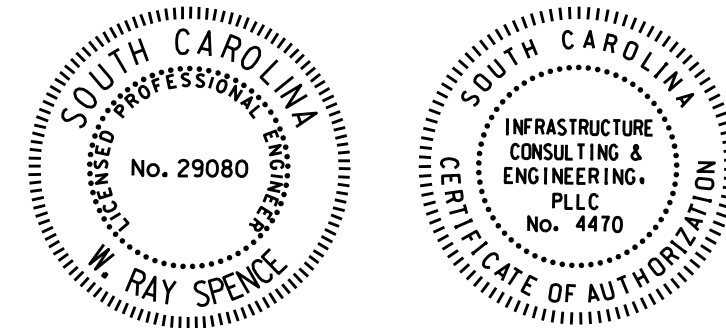
(OMIT BUILD-UP REINFORCEMENT AT BEAM LINES 1 & 11 AT END BENT 1)
(OMIT BUILD-UP REINFORCEMENT AT BEAM LINES 1, 10 & 11 AT END BENT 3)



(FOR ADDITIONAL DIMENSIONS AND ANGLES, SEE WINGWALL DETAILS)



(FOR ADDITIONAL DIMENSIONS AND ANGLES, SEE WINGWALL DETAILS)



REV. 0	WRS	06-23-22	
	RFC PLANS		
REV.			
REV.			
REVIEWED		PLC 04-22	
QUAN.	RMH	WRS	04-22
DR.	RMH	WRS	04-22
DES.	ALP	WRS	03-22
	BY	CHK.	DATE

The block contains two logos. The top logo is for Archer United, featuring the word "ARCHER" in large, bold, grey letters, followed by a green rectangle, and then the word "UNITED" in large, bold, grey letters. Below this, the words "JOINT VENTURE" are written in a smaller, grey, sans-serif font, followed by a green logo consisting of three stylized, interconnected shapes, and then the word "UNITED" in a bold, grey, sans-serif font, with "INFRASTRUCTURE GROUP" in a smaller, grey, sans-serif font below it. The bottom logo is for JE Infrastructure Consulting & Engineering, featuring the letters "JE" in a large, bold, blue, sans-serif font, followed by the word "INFRASTRUCTURE" in a large, bold, black, sans-serif font, and then the words "CONSULTING & ENGINEERING" in a smaller, black, sans-serif font below it.

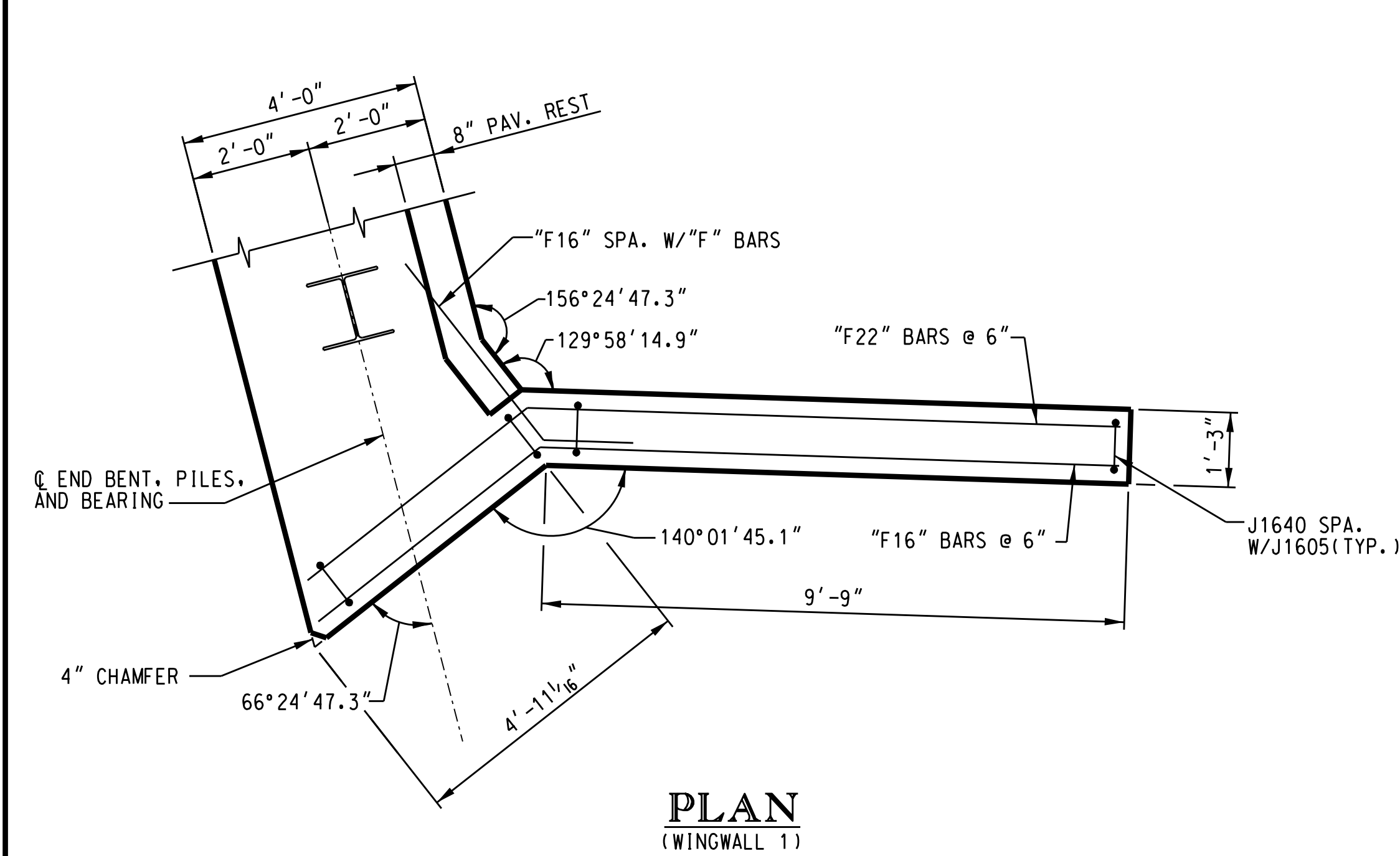
**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

END BENT DETAILS

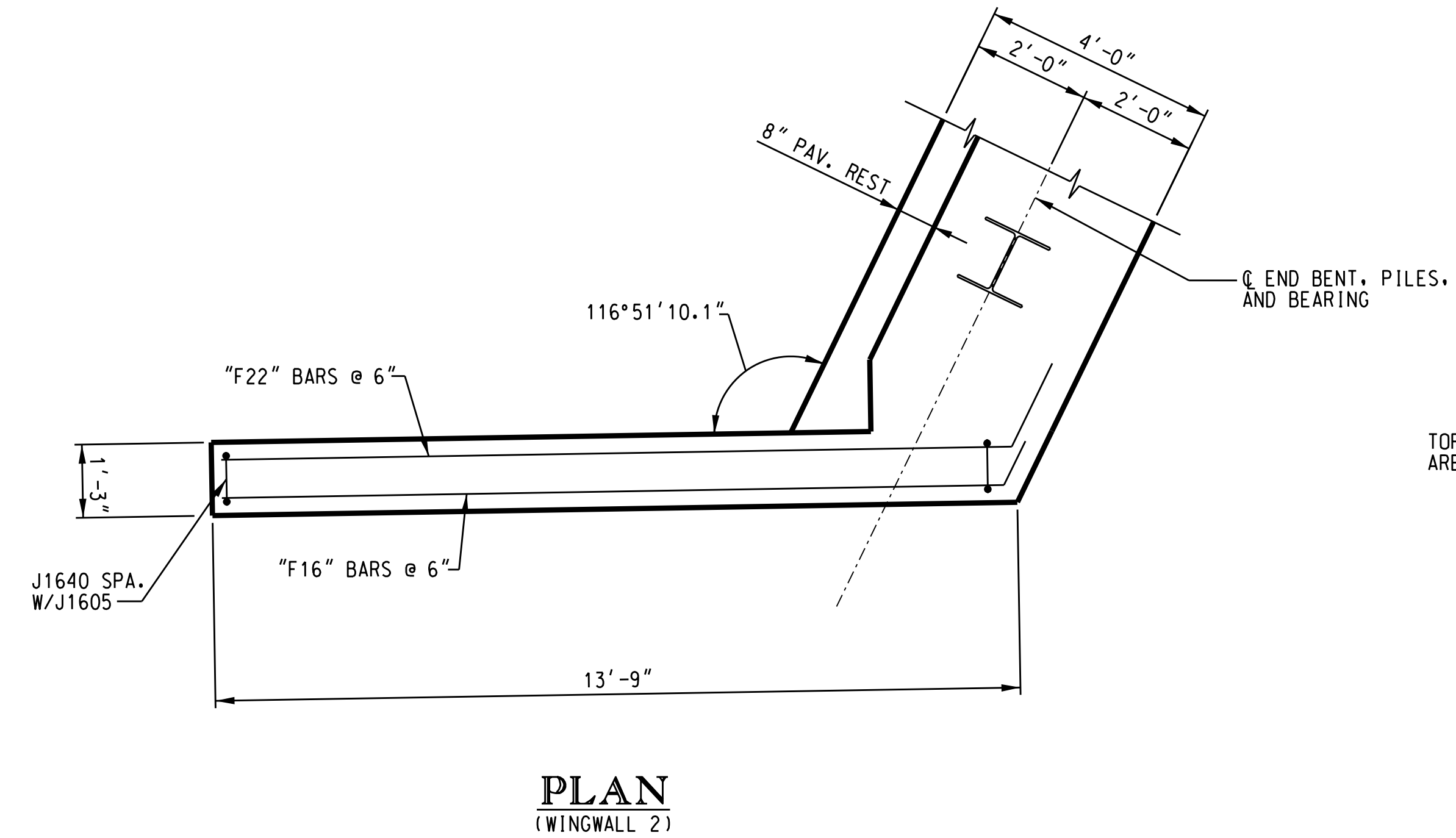
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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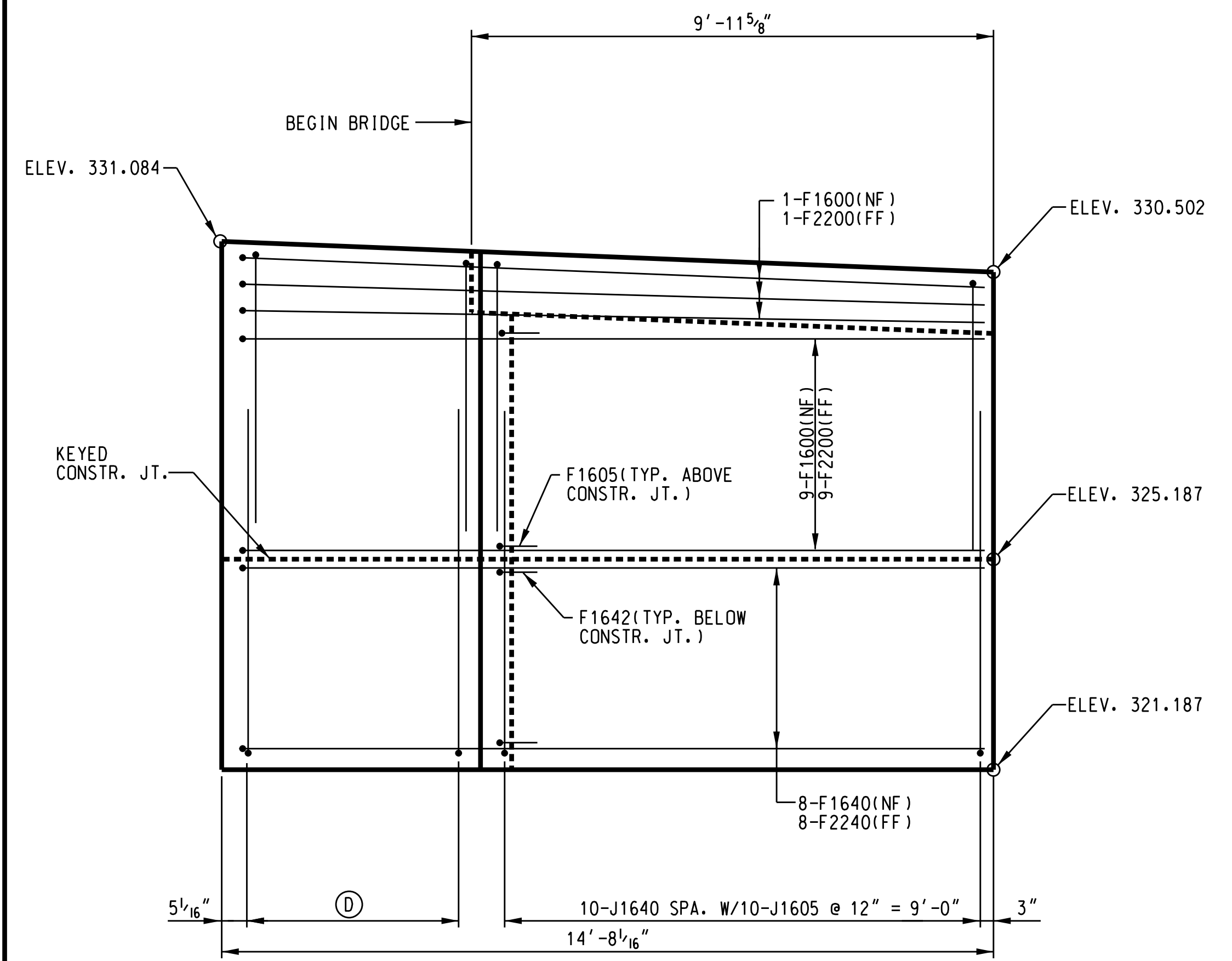
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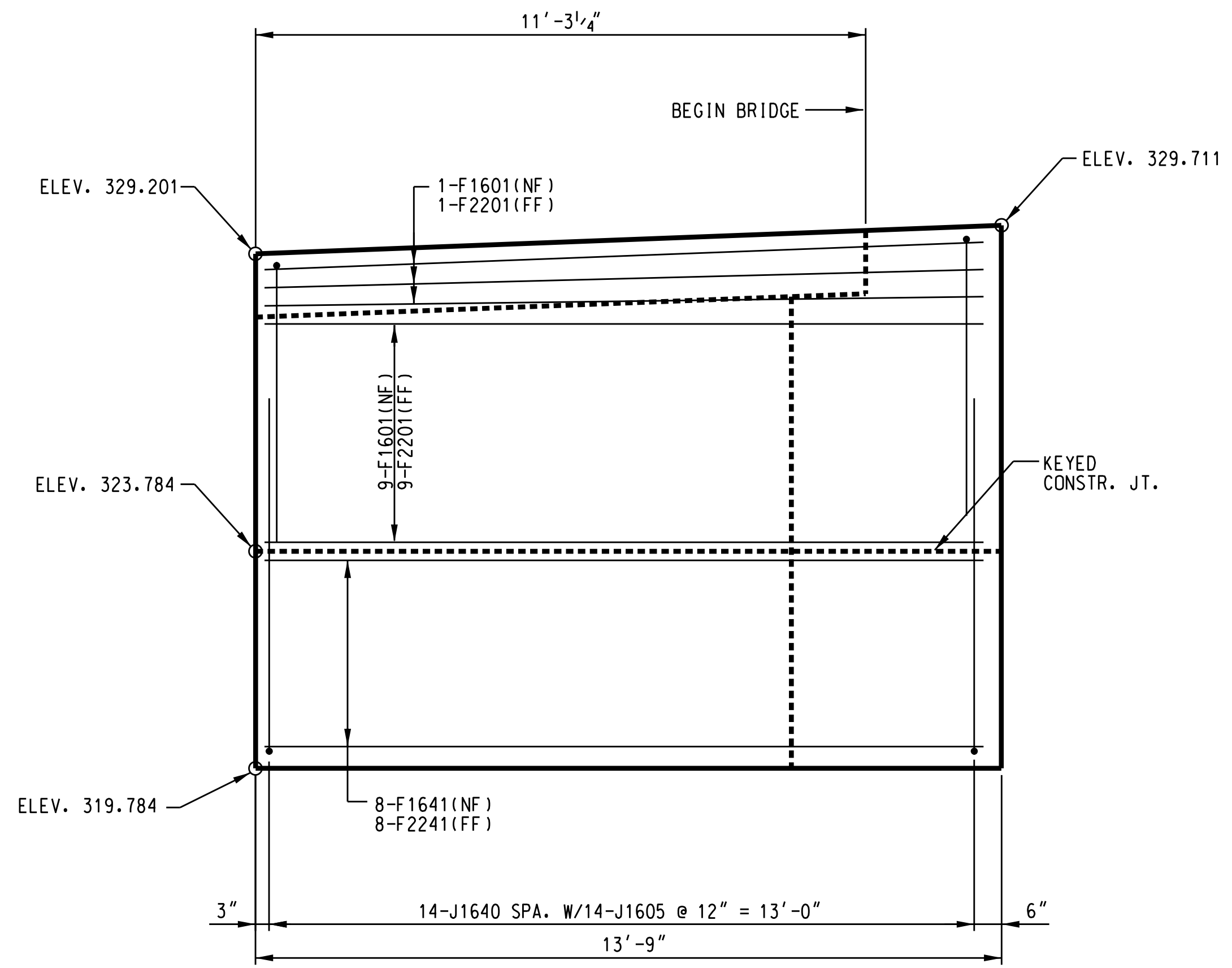
PLAN
(WINGWALL 1)



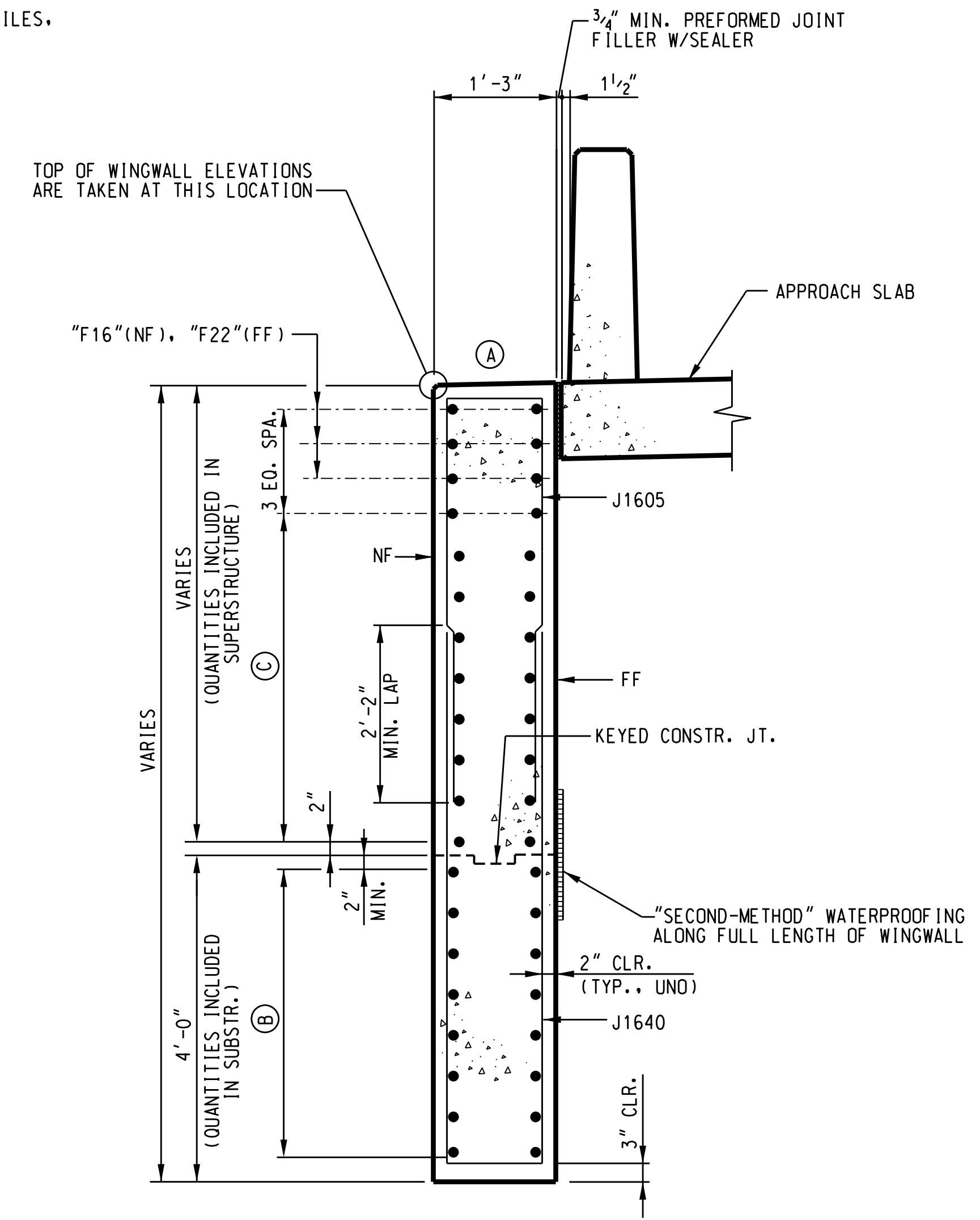
PLAN
(WINGWALL 2)



DEVELOPED ELEVATION
(WINGWALL 1)

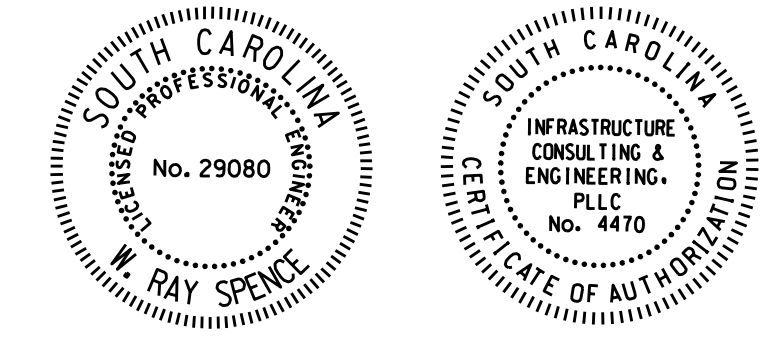


ELEVATION
(WINGWALL 2)

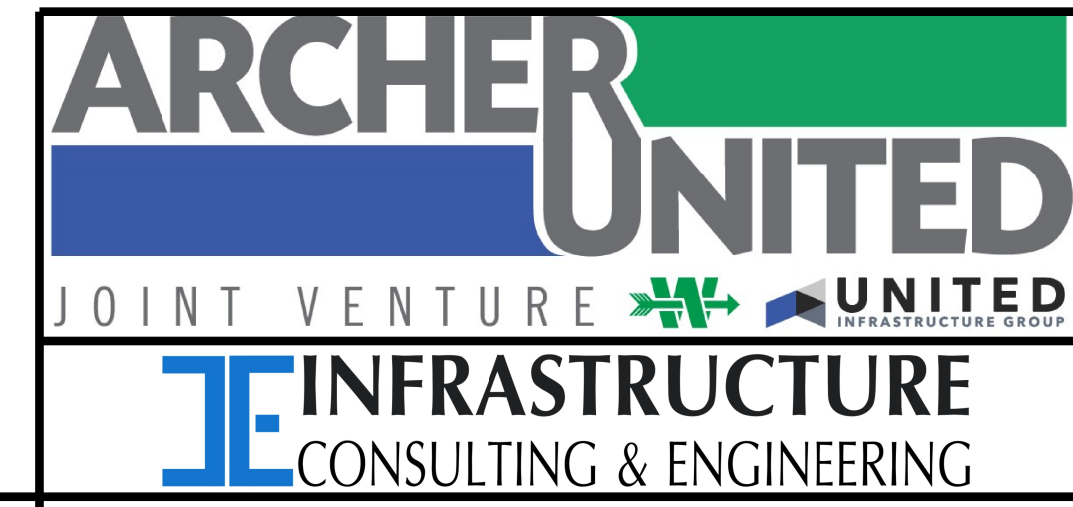


TYPICAL SECTION
THRU WINGWALLS
(SIDEWALK NOT SHOWN)

- (A) SLOPE AT 2% AWAY FROM APPROACH SLAB.
- (B) 8-"F16"(NF) AND 8-"F22"(FF) SPA. @ 6" MAX.
- (C) 9-"F16"(NF) AND 9-"F22"(FF) SPA. @ 6" = 4'-0"
- (D) 5-J1640 SPA. W/5-J1605 @ 12" = 4'-0"



REV.	0	WRS	06-23-22
		RFC	PLANS
REV.			
REV.			
REVIEWED	PLC	04-22	
QUAN.			
DR.	RMH	WRS	03-22
DES.	ALP	WRS	03-22
BY	CHK.	DATE	

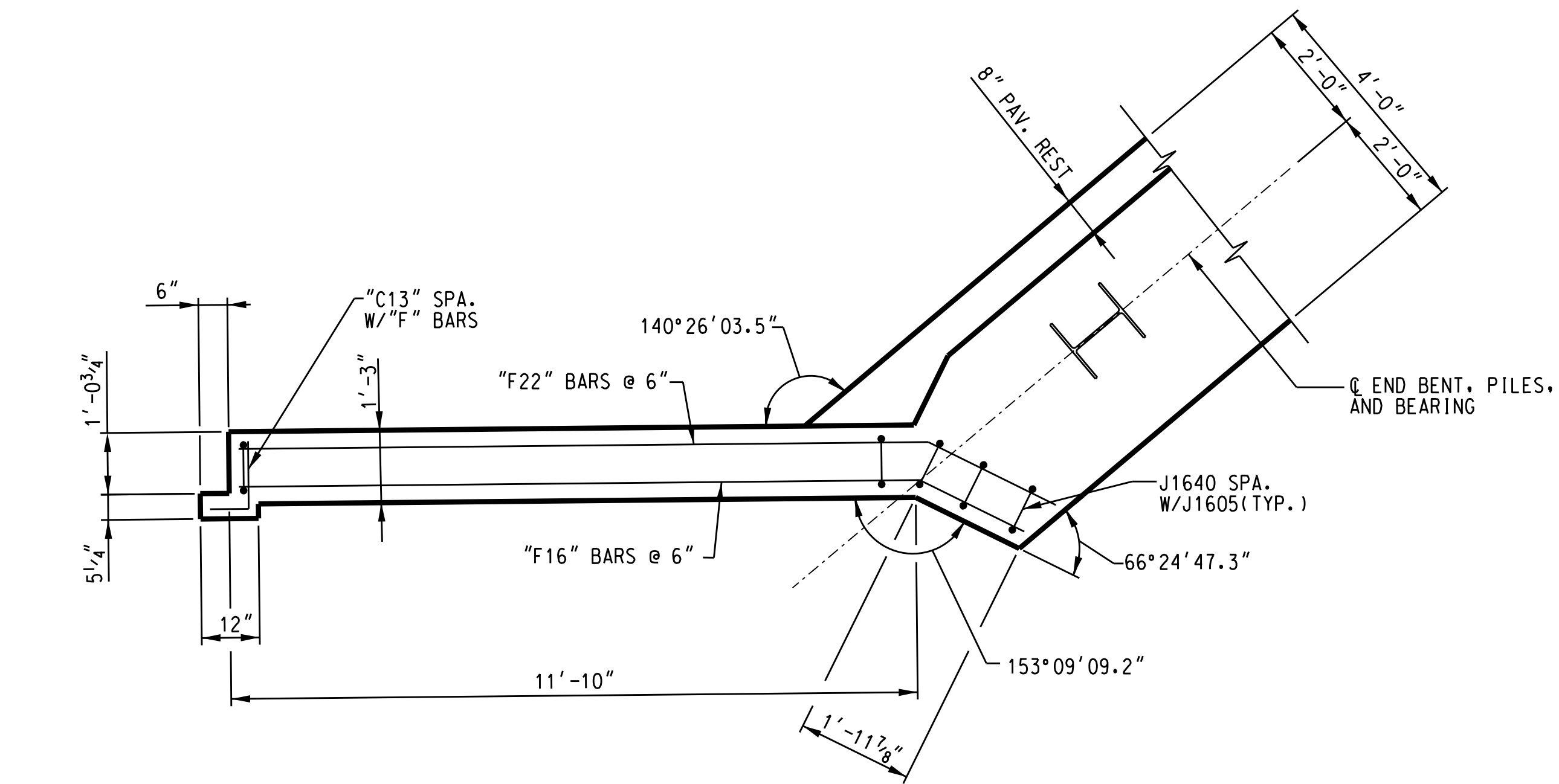


SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
WINGWALL DETAILS (1)	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY RICHLAND	ROUTE US 176

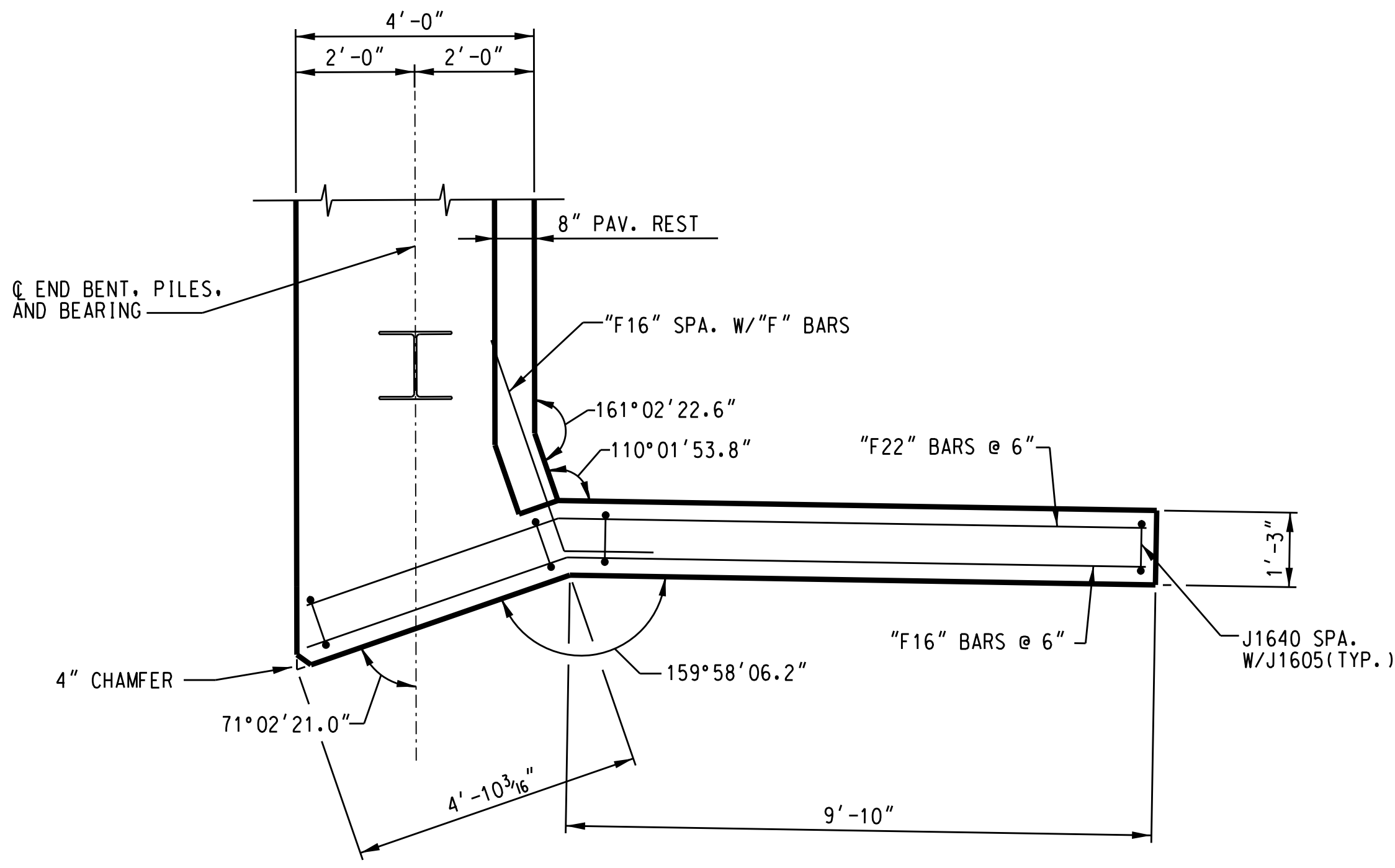
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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	29

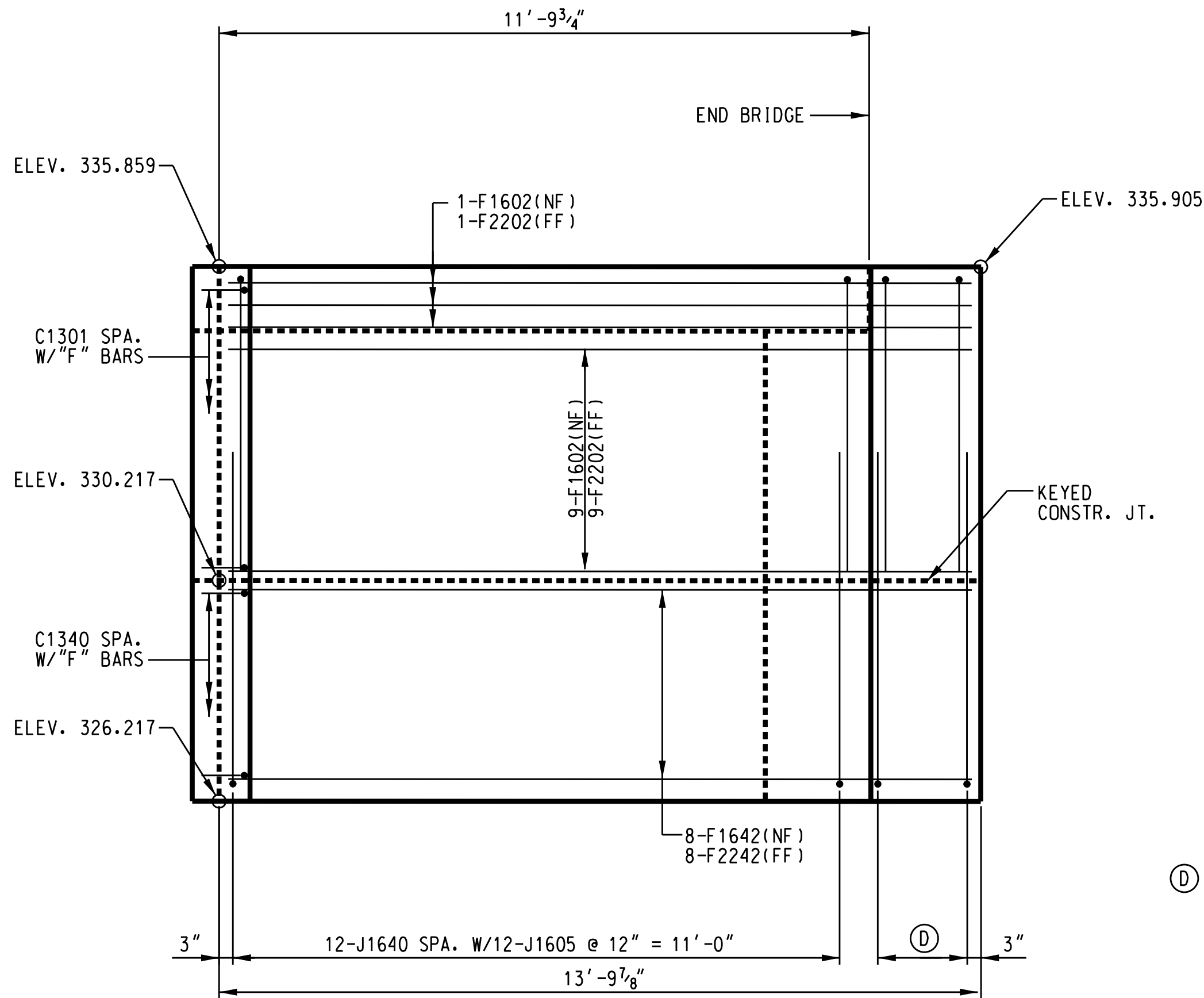
NOTES:
SEE "WINGWALL DETAILS (1)" FOR
TYPICAL SECTION THRU WINGWALLS.



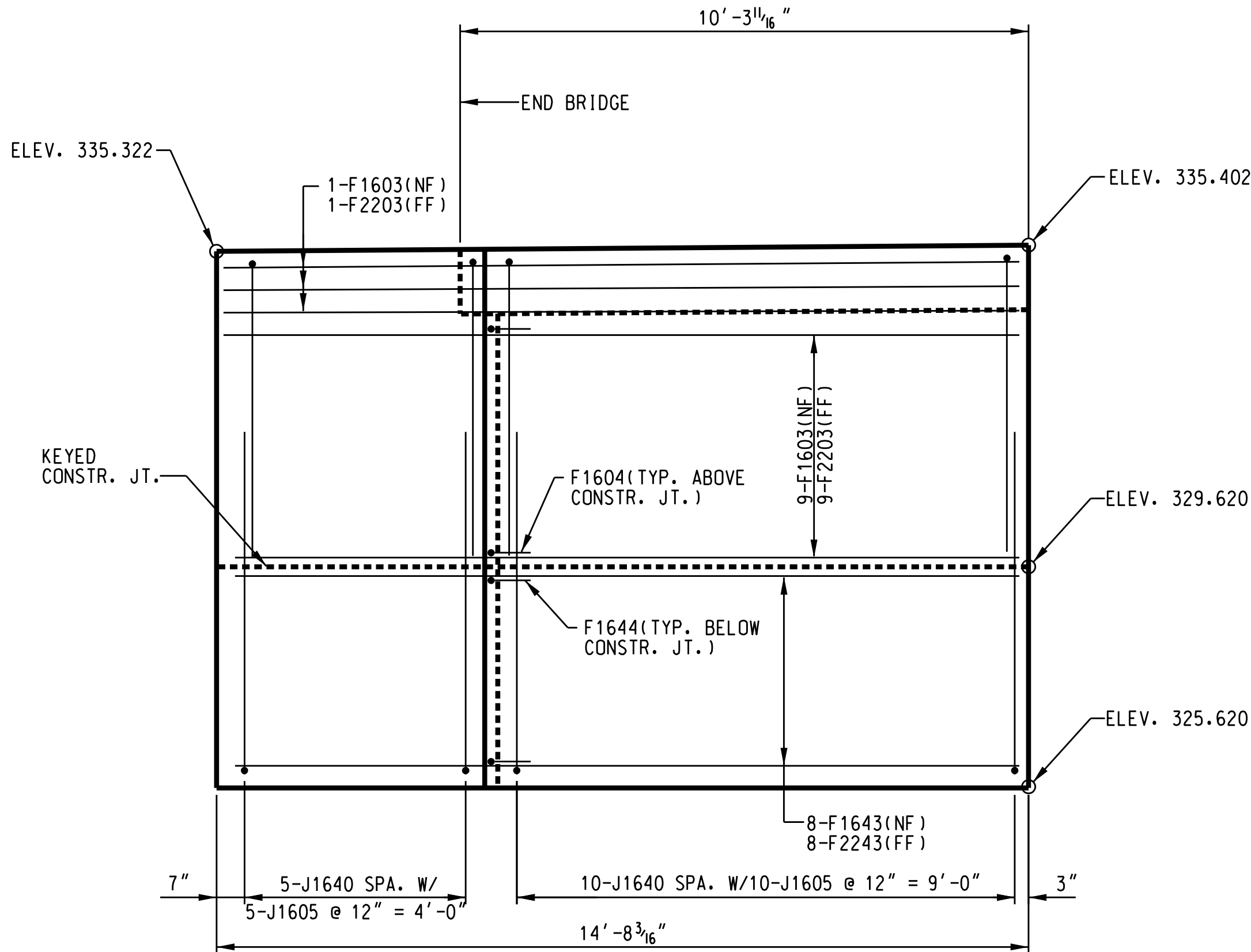
PLAN
(WINGWALL 3)



PLAN
(WINGWALL 4)

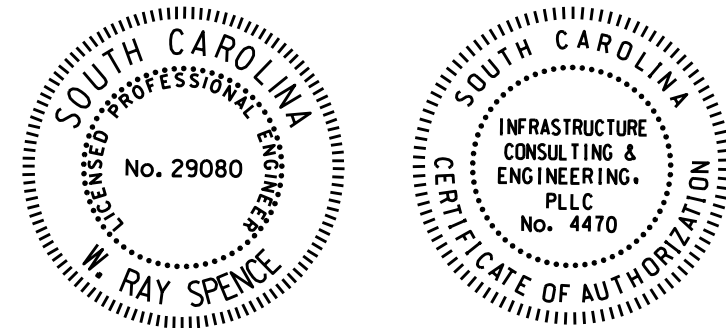


DEVELOPED ELEVATION
(WINGWALL 3)

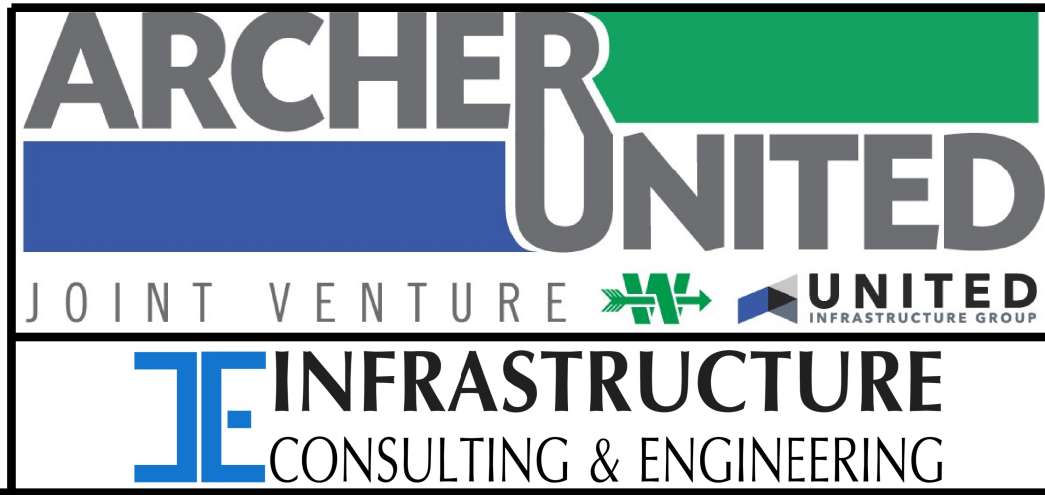


DEVELOPED ELEVATION
(WINGWALL 4)

① 3-J1640 SPA. W/3-J1605 @ EQ. SPA.



REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	RMH	WRS 03-22
DES.	ALP	WRS 03-22
BY	CHK.	DATE



SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

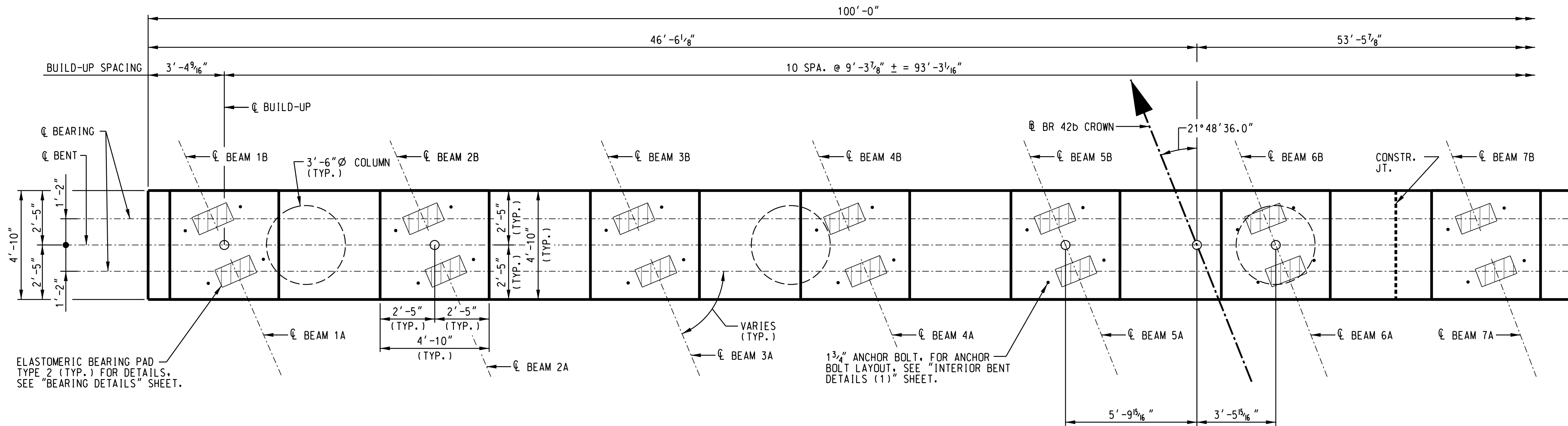
WINGWALL DETAILS (2)

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

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6/23/2022 5:23:02 PM

BRIDGE PLANS ID	SHEET NO.
P039719-B42b	30



MATCH LINE SEE "INTERIOR BENT 2 (2)" SHEET

NOTES:

EF - DENOTES EACH FACE

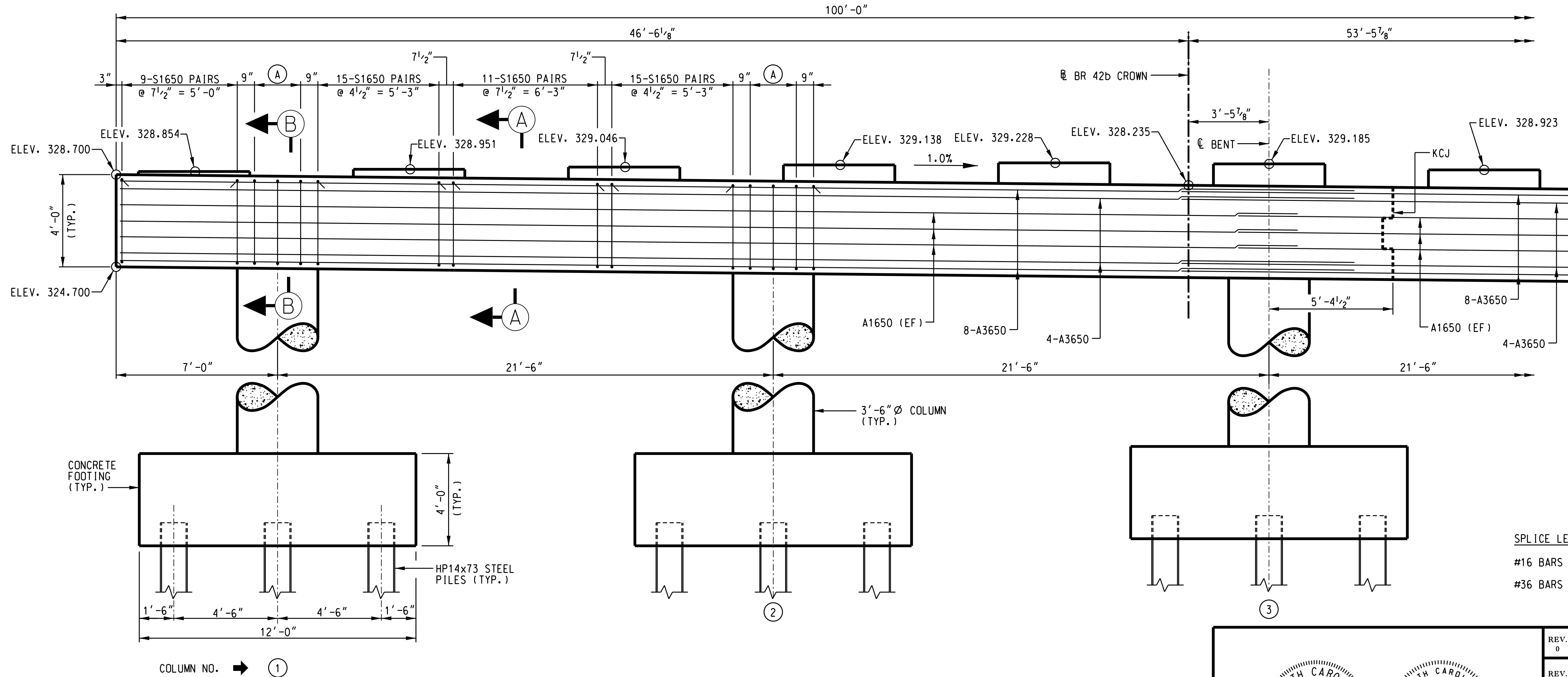
KCJ - DENOTES KEYED CONSTRUCTION JOINT. SHIFT S1650 BARS AS NECESSARY TO PROVIDE 2" CLR. TO KCJ.

BARS MAY BE SHIFTED SLIGHTLY TO CLEAR COLUMN BARS.

FOR SECTIONS A-A AND B-B, SEE "INTERIOR BENT DETAILS (1)" SHEET.

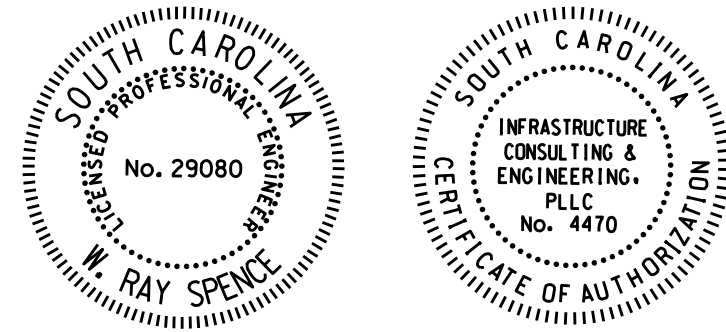
FOR BUILD-UP DETAILS, SEE "INTERIOR BENT DETAILS (1)" SHEET.

(A) 3-J1650 PAIRS @ 12" = 2'-0"

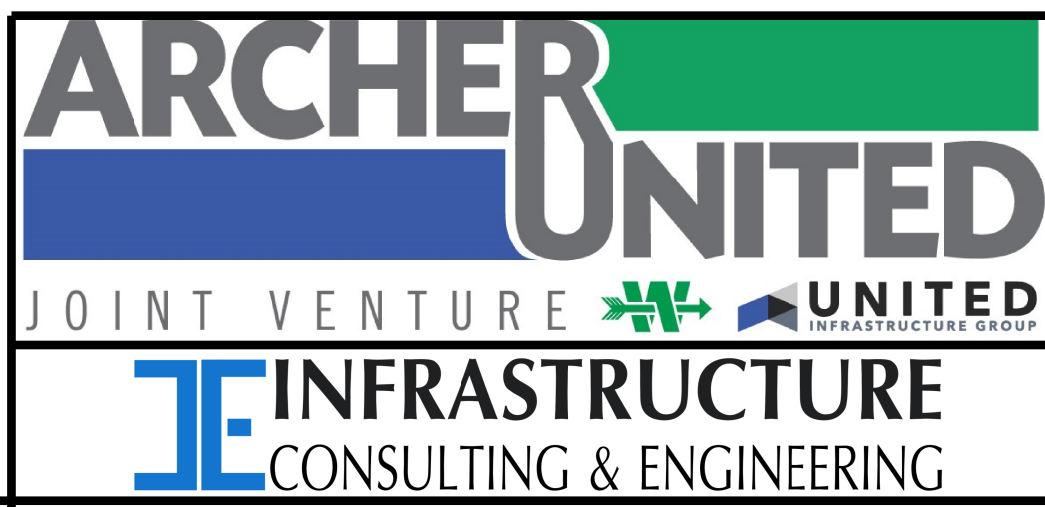


MATCH LINE SEE "INTERIOR BENT 2 (2)" SHEET

ELEVATION
(LOOKING IN DIRECTION OF STATIONING)



REV.	0	WRS	06-23-22
		RFC	PLANS
REV.			
REV.			
REVIEWED	PLC	04-22	
QUAN.			
DR.	BFS	WRS	03-22
DES.	ALP	WRS	03-22
BY		CHK.	DATE

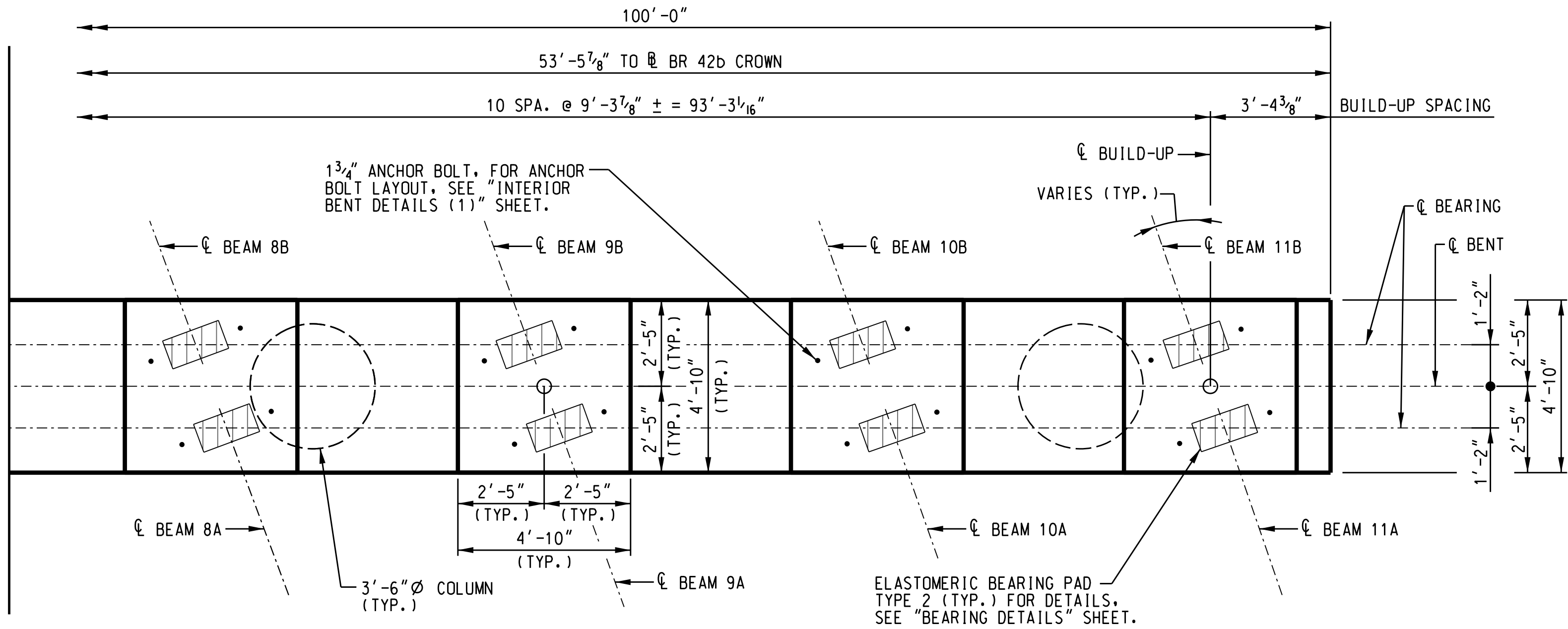


SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
INTERIOR BENT 2 (1)	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

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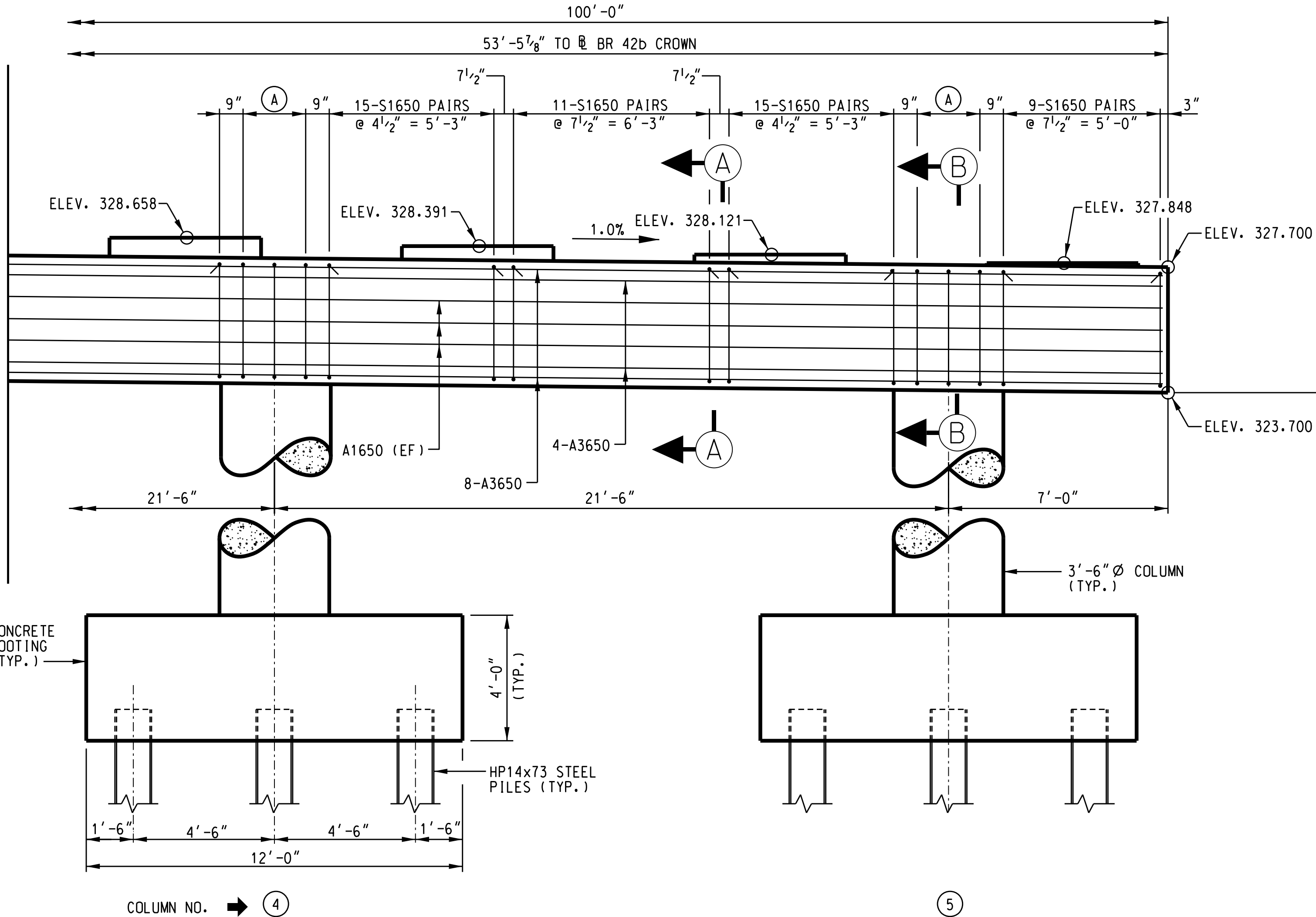
BRIDGE PLANS ID	SHEET NO.
P039719-B42b	31

MATCH LINE SEE "INTERIOR BENT 2 (1)" SHEET



PLAN

MATCH LINE SEE "INTERIOR BENT 2 (1)" SHEET



ELEVATION

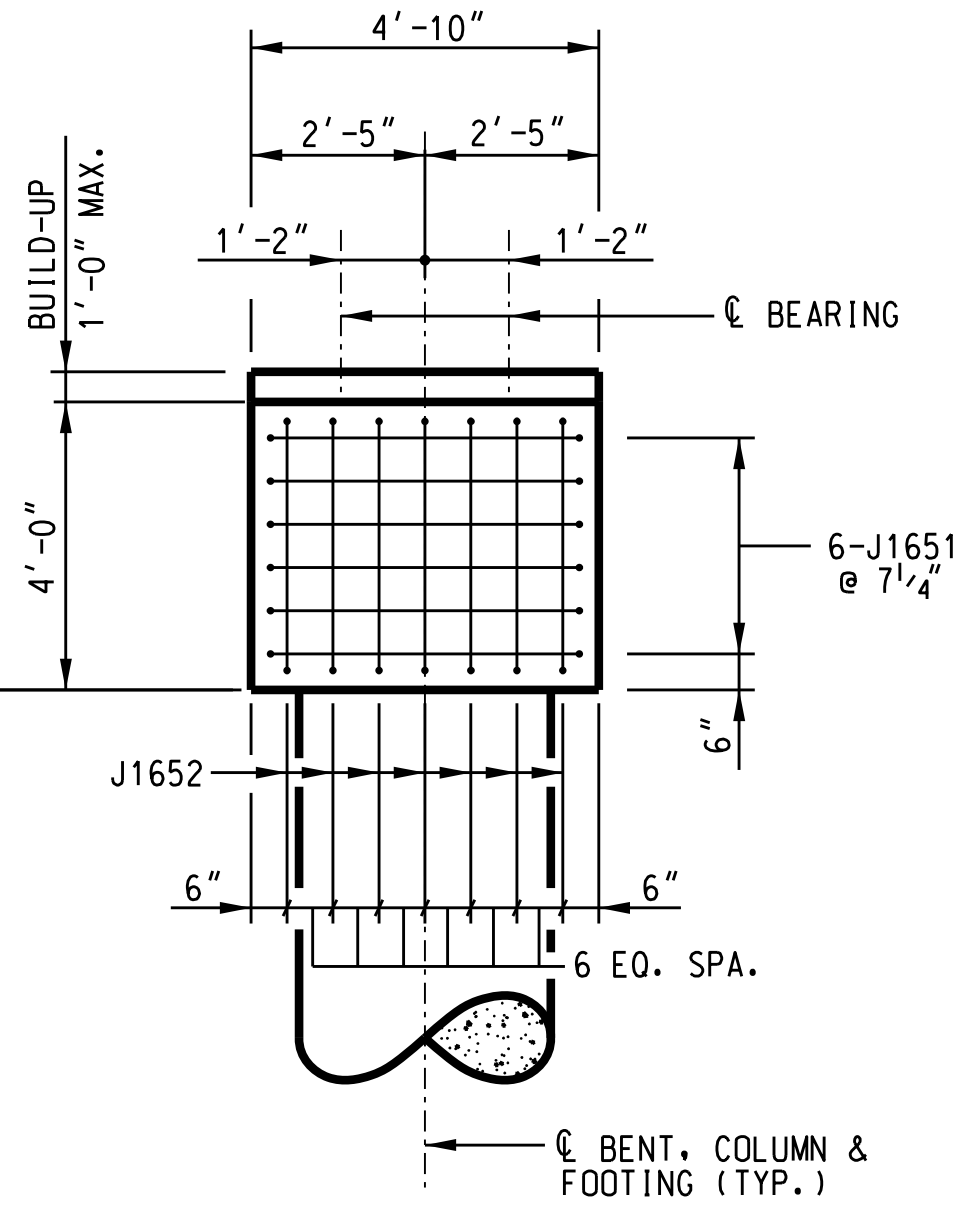
(LOOKING IN DIRECTION OF STATIONING)

SPLICE LENGTHS:

#16 BARS = 2'-7"

#36 BARS = 7'-6"

END ELEVATION



NOTES:

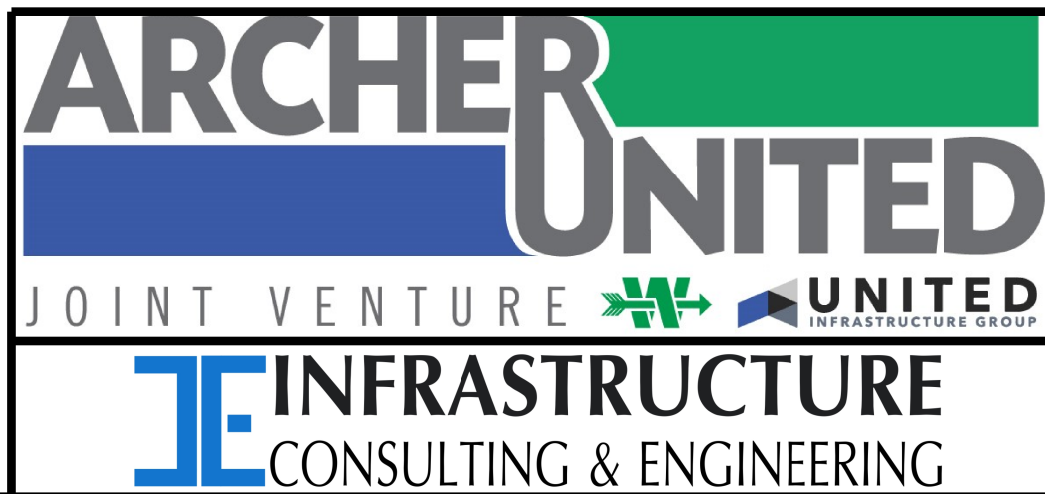
EF - DENOTES EACH FACE

BARS MAY BE SHIFTED SLIGHTLY TO CLEAR COLUMN BARS.

FOR SECTIONS A-A AND B-B, SEE "INTERIOR BENT DETAILS (1)" SHEET.

FOR BUILD-UP DETAILS, SEE "INTERIOR BENT DETAILS (1)" SHEET.

3-J1650 PAIRS @ 12" = 2'-0"

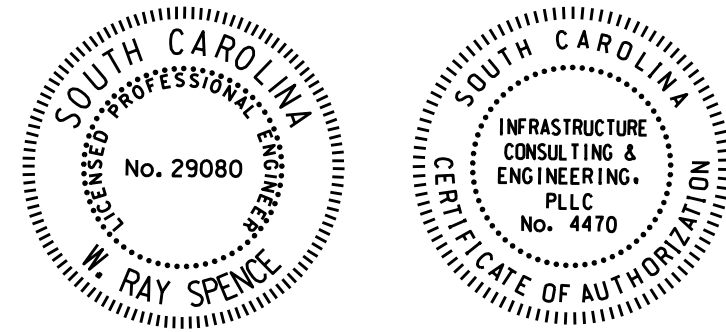


SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

INTERIOR BENT 2 (2)

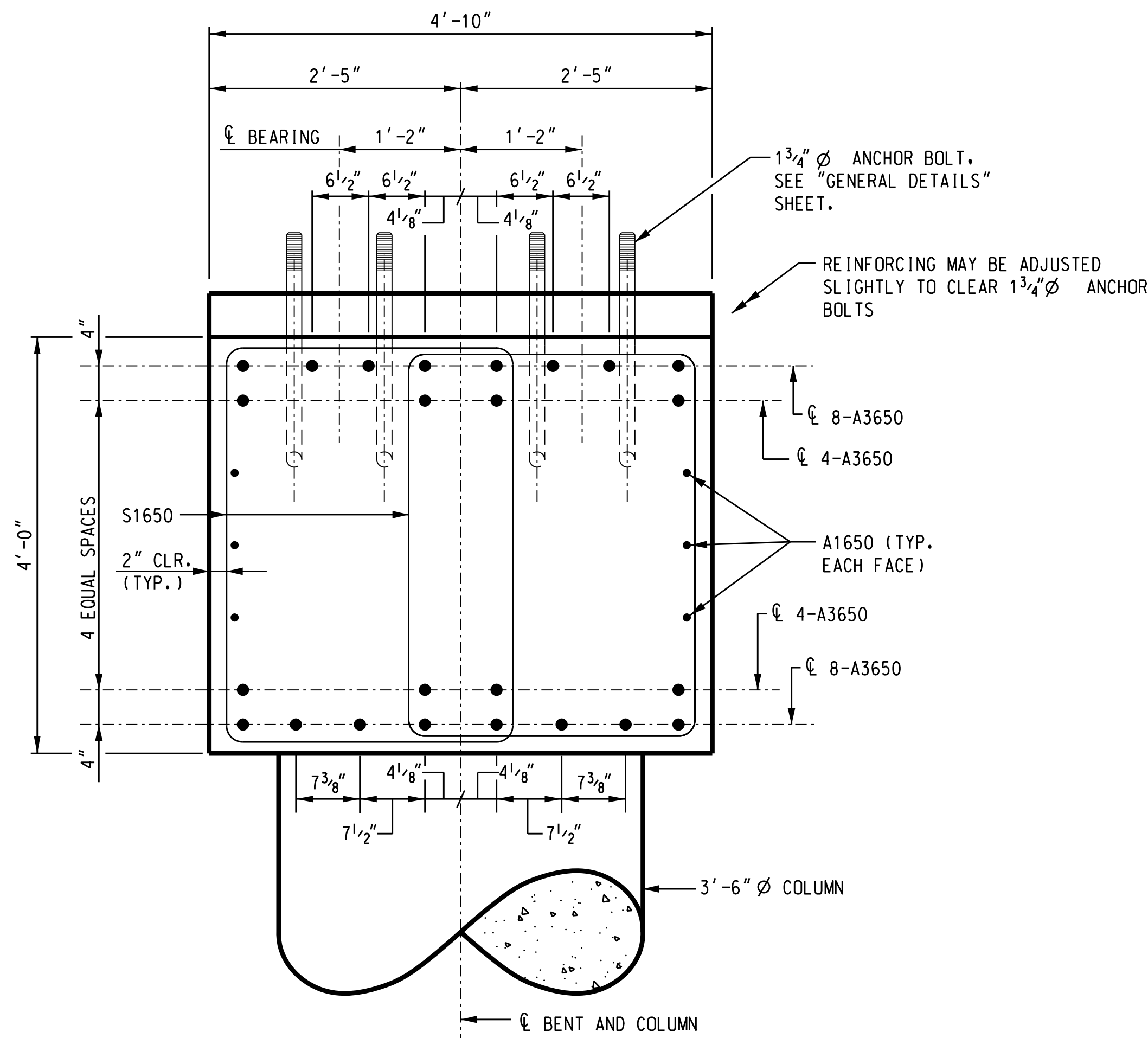
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

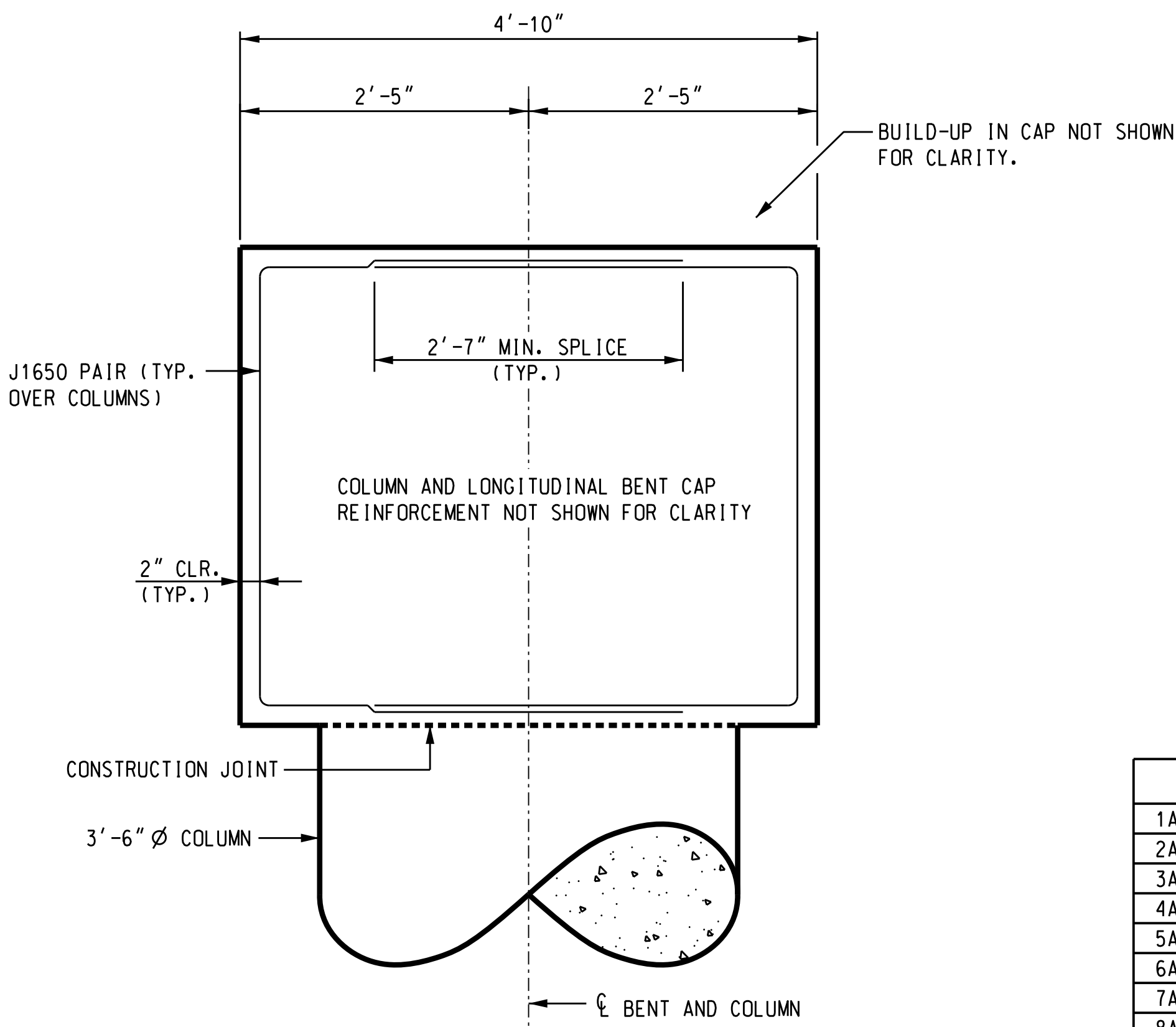


REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
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REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	WRS 03-22
DES.	ALP	WRS 03-22
BY	CHK.	DATE

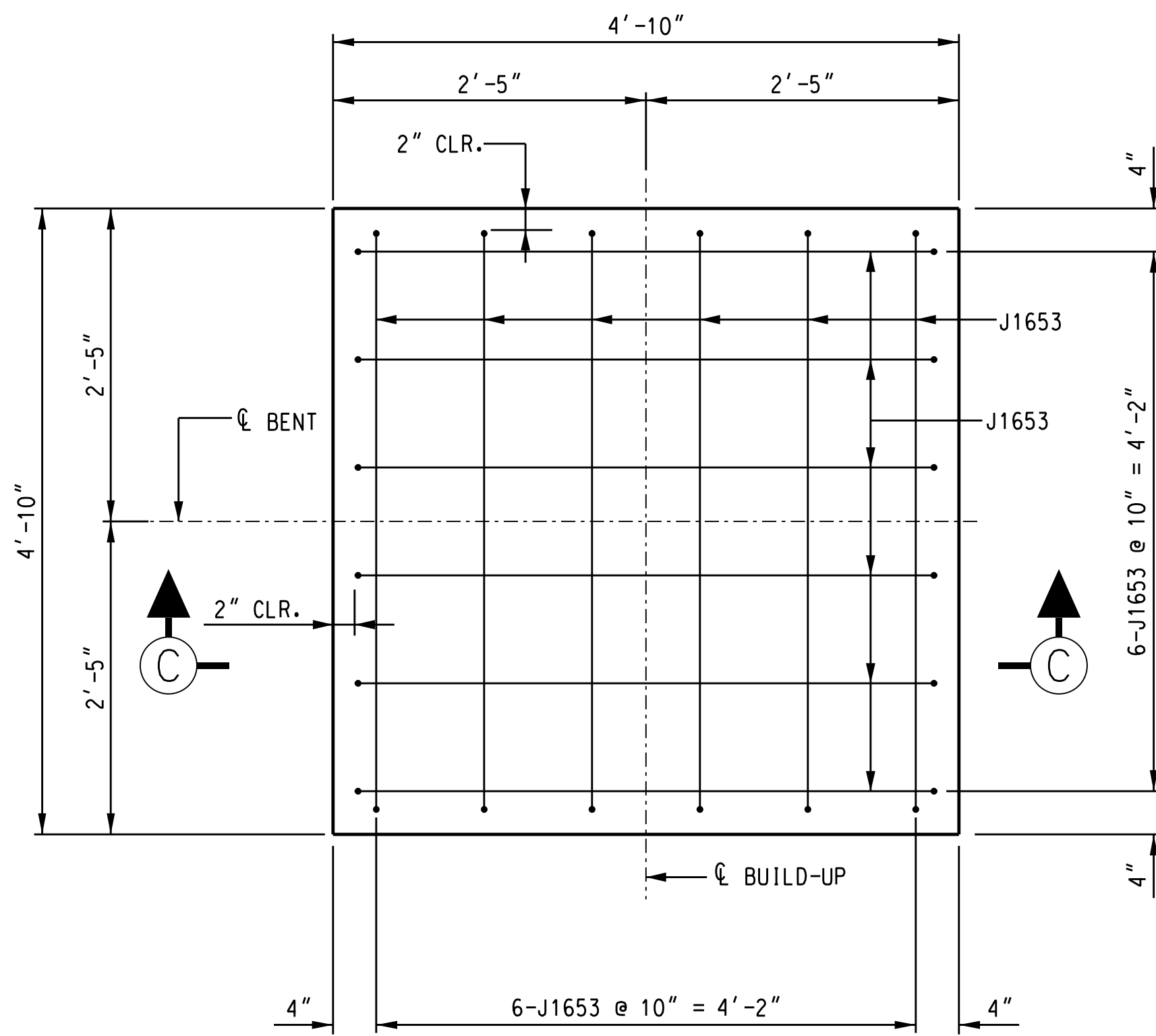
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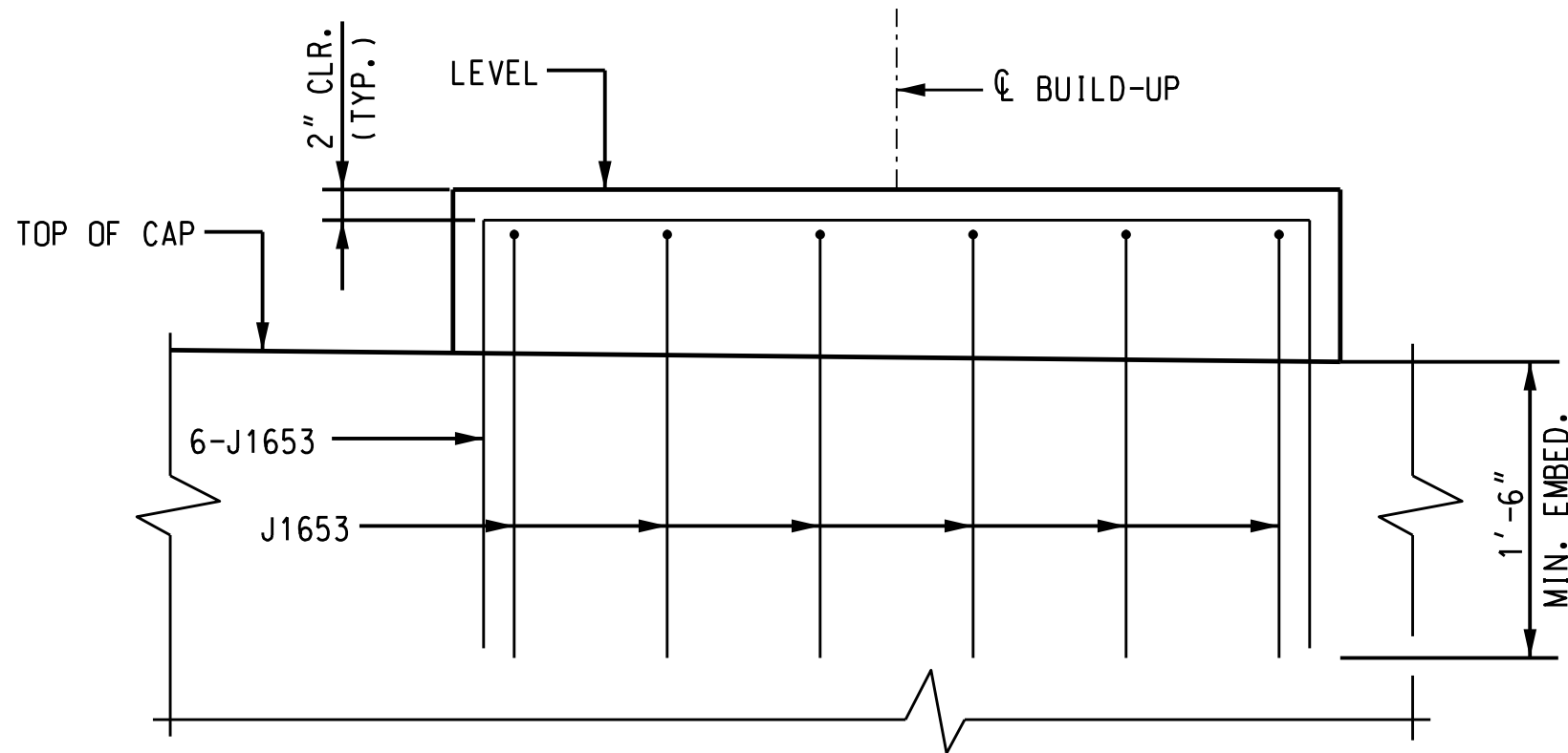
SECTION A-A



SECTION B-B



PLAN OF BUILD-UP



SECTION C-C

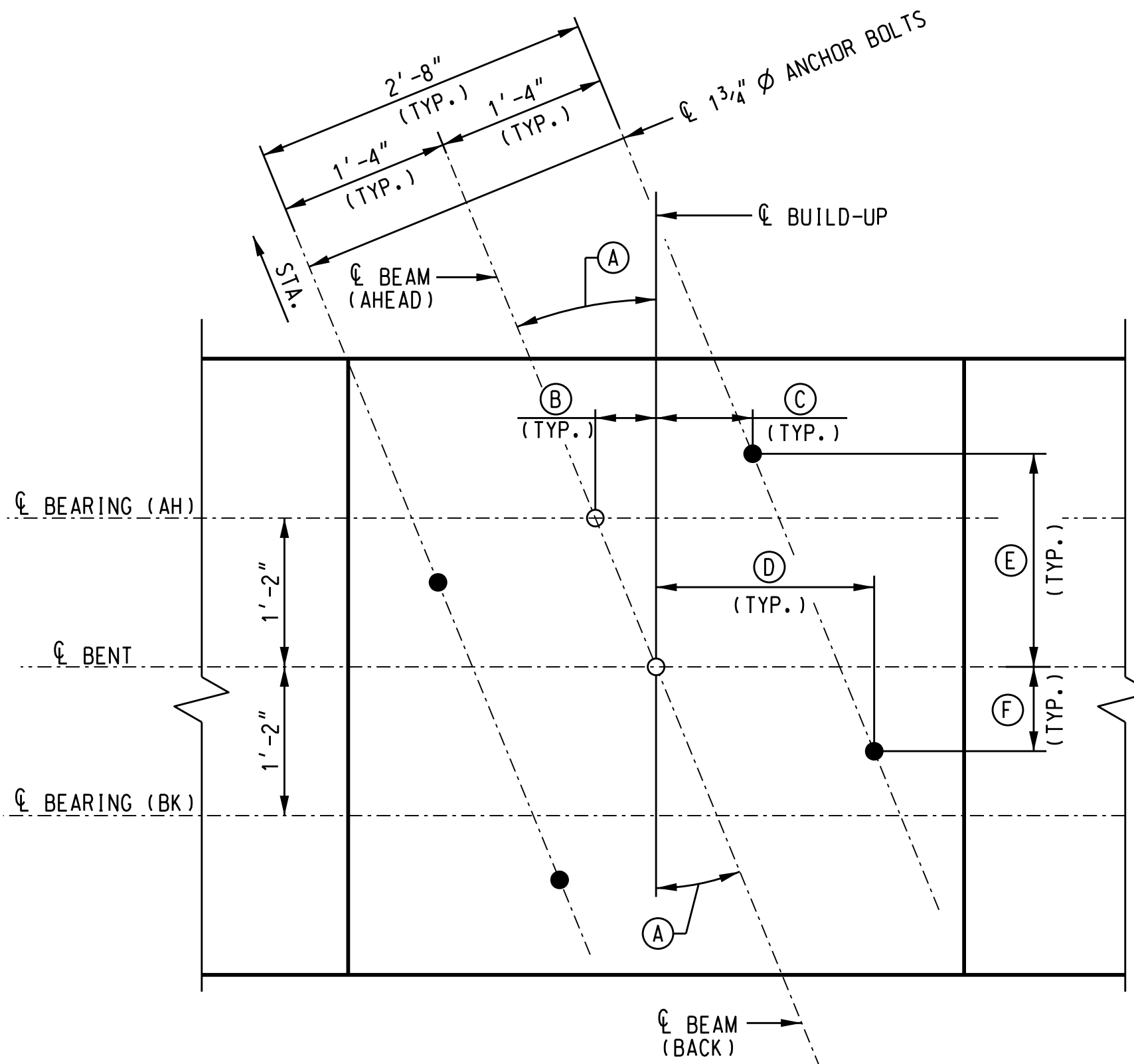
BUILD-UP DETAILS

(OMIT BUILD-UP REINFORCEMENT AT BEAM LINES 1, 10 & 11)

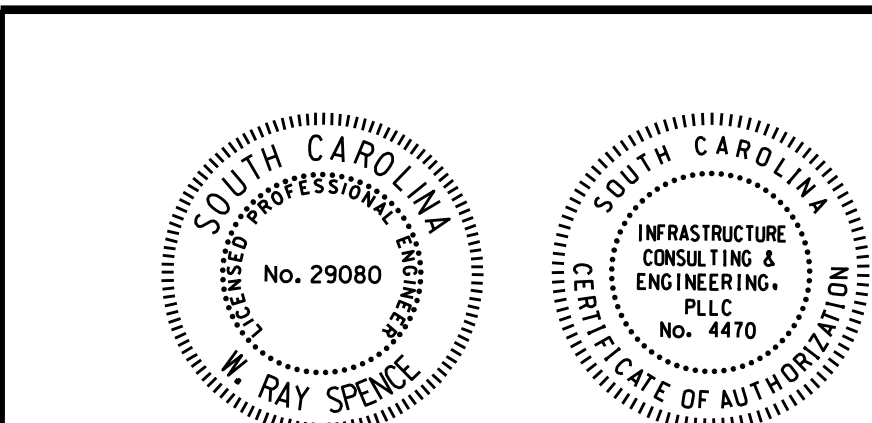
BEAM	ANGLE (A)	DIM. (B)	DIM. (C)	DIM. (D)	DIM. (E)	DIM. (F)
1A (BK), 1B (AH)	23°35'12.7"	6 1/8"	8 3/16"	1'-8 3/4"	1'-8 3/8"	7 5/8"
2A (BK), 2B (AH)	23°08'15.2"	6"	8 3/4"	1'-8 11/16"	1'-8 5/16"	7 11/16"
3A (BK), 3B (AH)	22°41'06.6"	5 7/8"	8 5/16"	1'-8 3/8"	1'-8 3/16"	7 13/16"
4A (BK), 4B (AH)	22°13'47.2"	5 3/4"	9 1/16"	1'-8 3/16"	1'-8 1/16"	7 5/16"
5A (BK), 5B (AH)	21°46'17.0"	5 9/16"	9 1/4"	1'-8 1/16"	1'-7 15/16"	8 1/16"
6A (BK), 6B (AH)	21°18'36.2"	5 1/16"	9 1/16"	1'-8 3/8"	1'-7 13/16"	8 3/16"
7A (BK), 7B (AH)	20°50'45.0"	5 5/16"	9 5/8"	1'-8 5/16"	1'-7 11/16"	8 5/16"
8A (BK), 8B (AH)	20°22'43.3"	5 3/16"	9 13/16"	1'-8 3/16"	1'-7 9/16"	8 1/16"
9A (BK), 9B (AH)	19°54'31.4"	5 1/16"	10"	1'-8 1/8"	1'-7 1/16"	8 9/16"
10A (BK), 10B (AH)	19°26'09.4"	4 15/16"	10 1/8"	1'-8"	1'-7 5/16"	8 11/16"
11A (BK), 11B (AH)	18°57'37.4"	4 13/16"	10 3/16"	1'-7 5/16"	1'-7 3/16"	8 13/16"

ESTIMATED QUANTITIES - INTERIOR BENT 2		
ITEM	UNIT	QTY.
WET & DRY EXCAVATION FOR BRIDGES	CY	425
CONCRETE FOR STRUCTURES, CLASS 4000	CY	217.1
REINFORCING STEEL FOR STRUCTURES (BRIDGE) (1)	LBS.	44,514
HOOP REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS.	3,426
DYNAMIC PILE ANALYZER TEST SET-UP	EACH	2
PILE DRIVING SET - UP	EACH	40
STEEL H BEARING PILING (HP14X73)	LF	1,798
STEEL H BEARING INDEX PILING (HP14X73)	LF	99
ELASTOMERIC BEARING	EACH	22

(1) INCLUDES 909 LBS. FOR ANCHOR BOLT ASSEMBLIES.
PILE QUANTITY IS BASED ON 1'-0" PILE EMBEDMENT.



ANCHOR BOLT LAYOUT



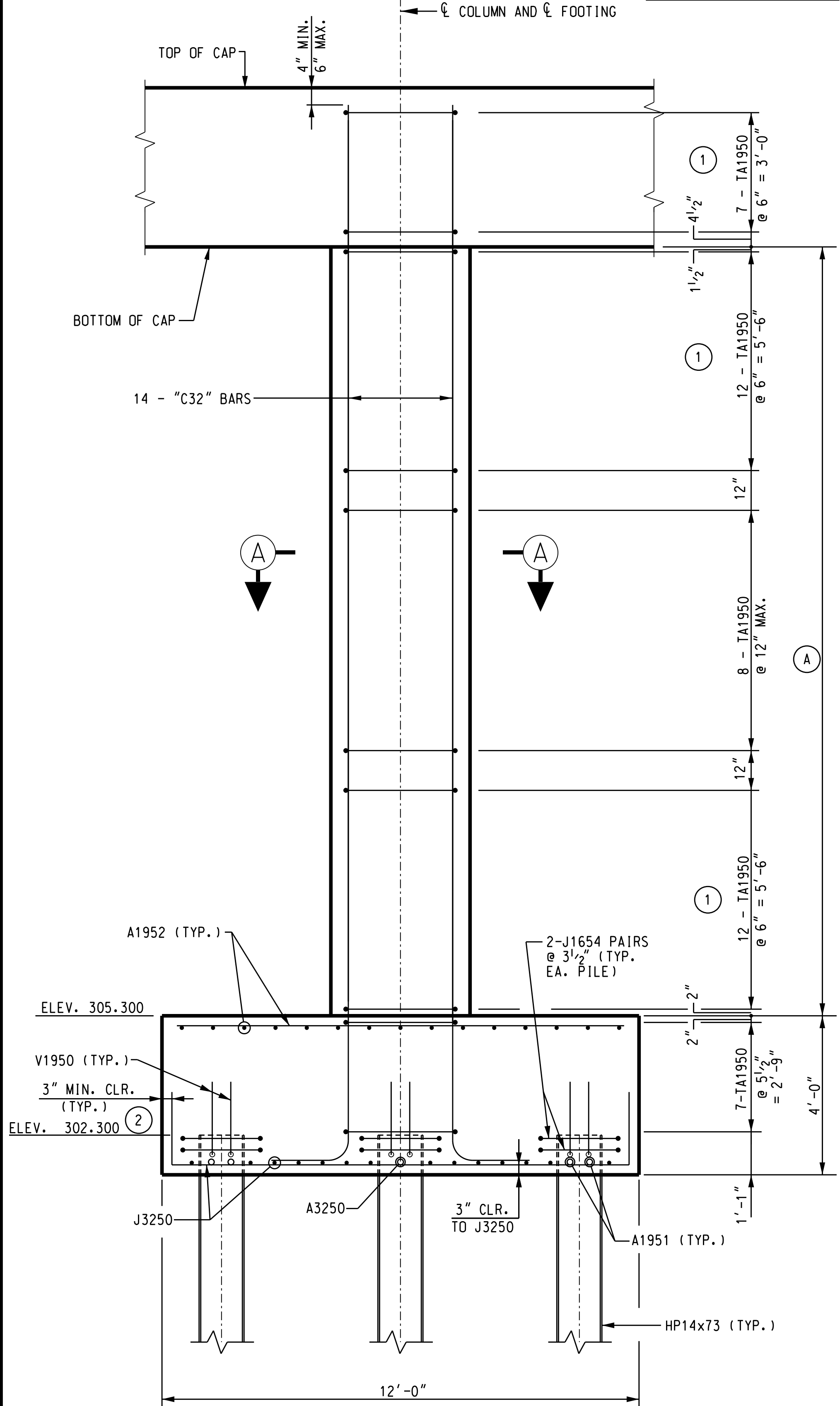
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REV. 1	RFC	PLANS
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REV. 86		
REV. 87		
REV. 88		
REV. 89		
REV. 90		
REV. 91		
REV. 92		
REV. 93		
REV. 94		
REV. 95		
REV. 96		
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REV. 99		
REV. 100		

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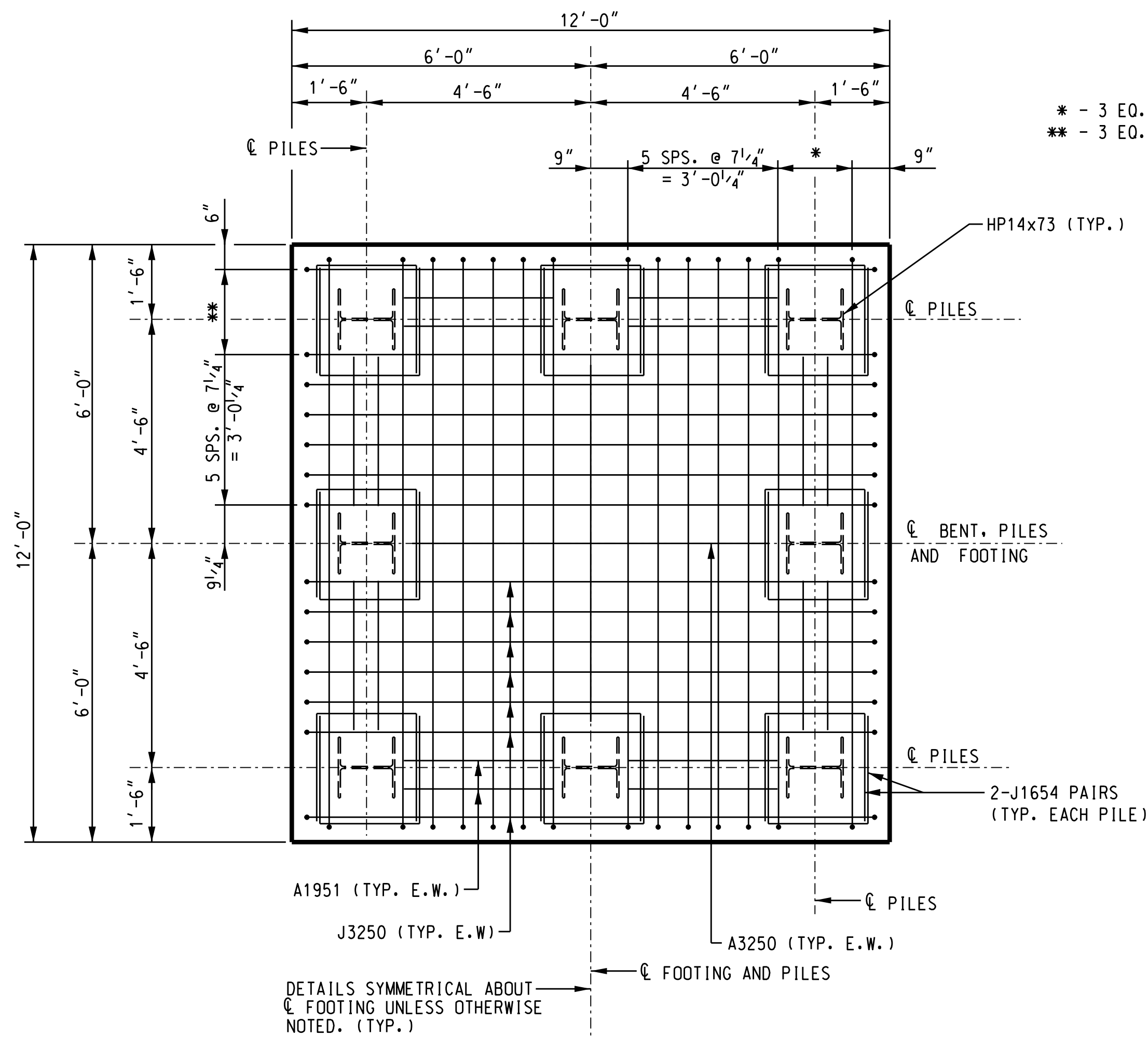
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
INTERIOR BENT DETAILS (1)
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20
COUNTY RICHLAND
ROUTE US 176

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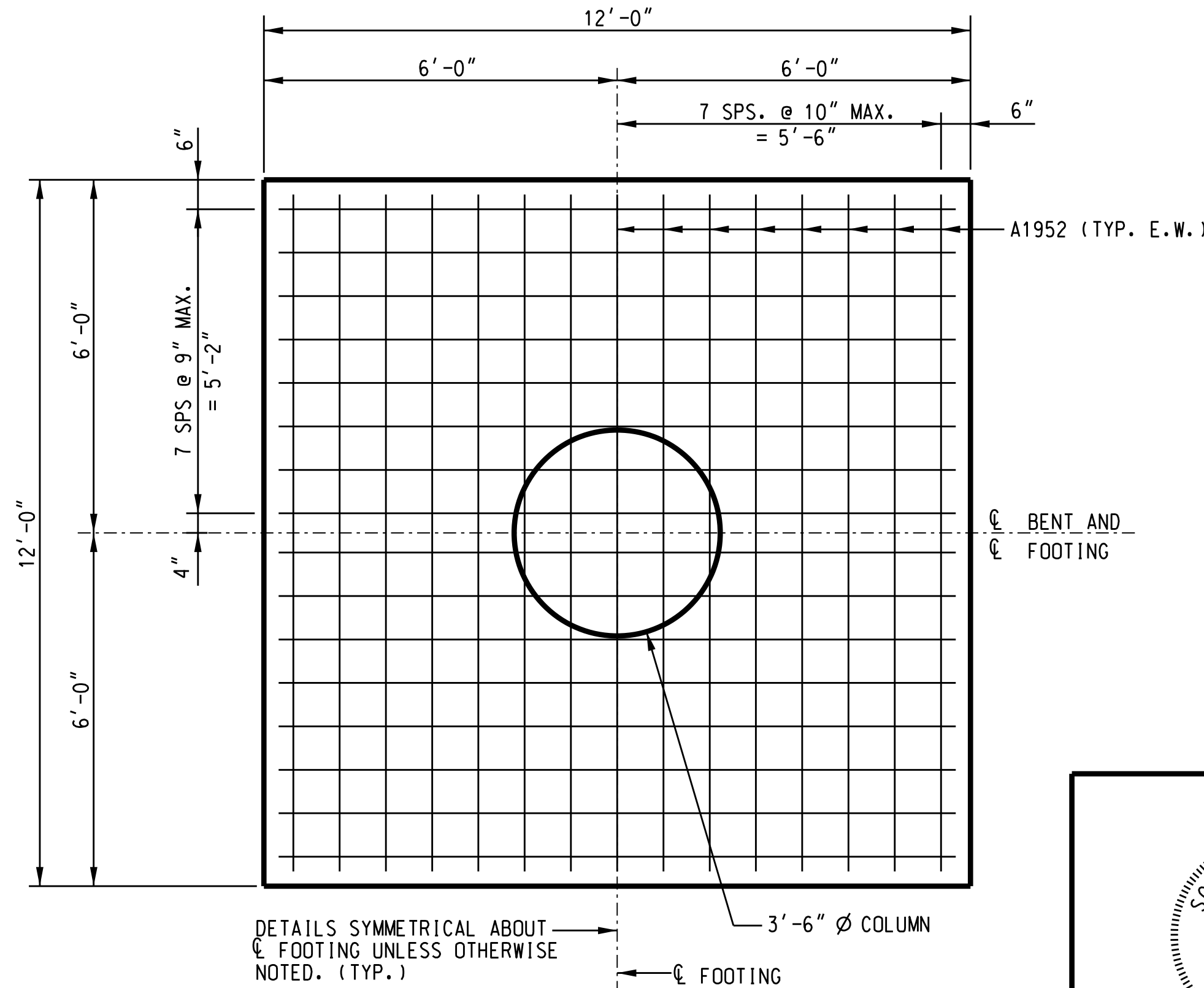
COLUMN NO.	Ⓐ DIM.
COLUMN 1	19'-3 ⁵ / ₁₆ "
COLUMN 2	19'-1 ³ / ₈ "
COLUMN 3	18'-10 ³ / ₁₆ "
COLUMN 4	18'-8 ¹ / ₄ "
COLUMN 5	18'-5 ⁵ / ₈ "



COLUMN AND FOOTING ELEVATION



FOOTING PLAN - BOTTOM MAT



FOOTING PLAN - TOP MAT

* - 3 EQ. SPS. = 1'-5³/₄"
** - 3 EQ. SPS. = 1'-8¹/₂"

NOTES:

THE LOCATION OF WELDED SPLICES ON ADJACENT HOOPS SHALL BE STAGGERED AROUND PERIMETER OF COLUMN BY A MINIMUM OF 1/2 OF THE HOOP CIRCUMFERENCE.

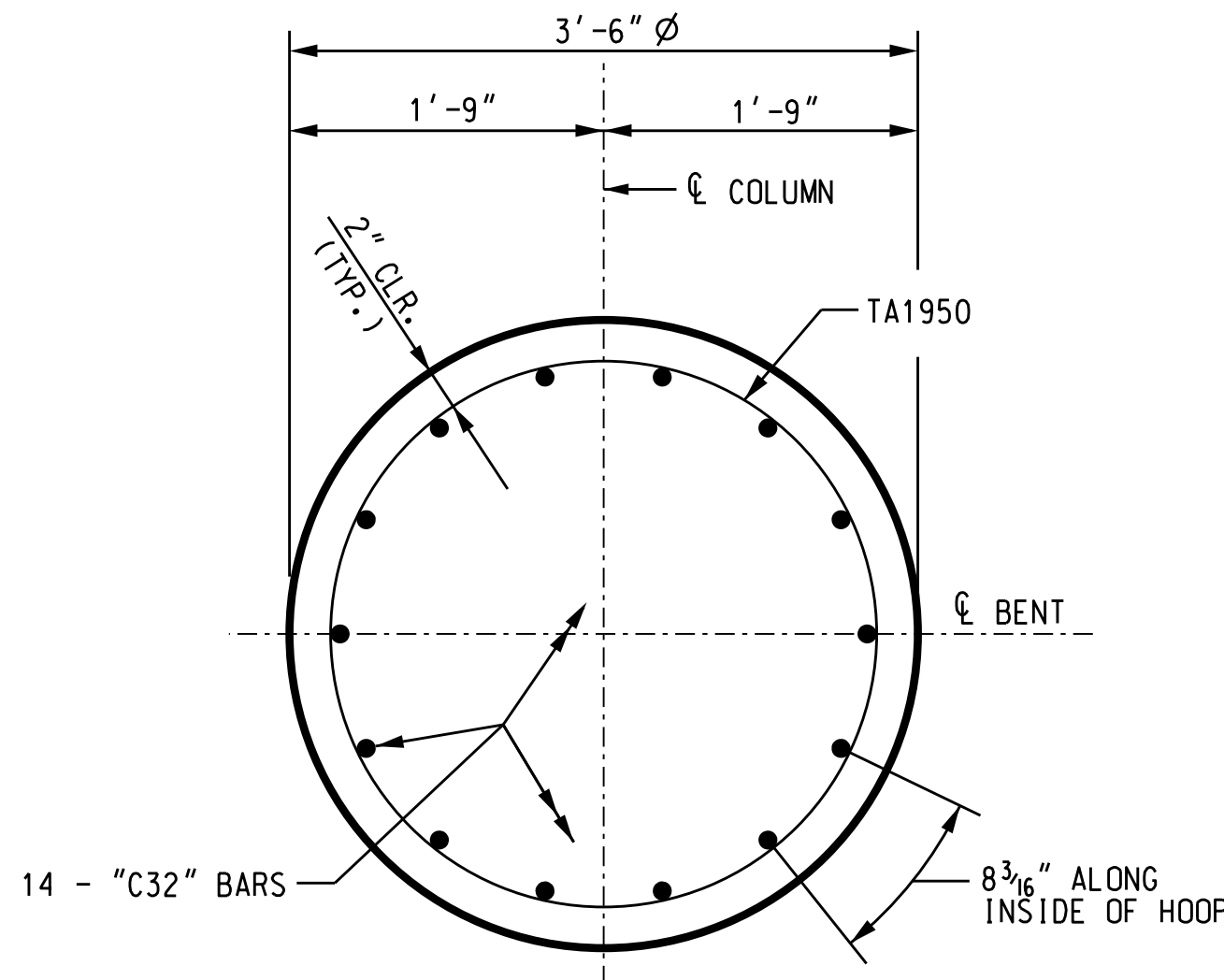
- NO SPLICE ALLOWED IN LONGITUDINAL REINFORCING STEEL.
- PILE EMBED = 1'-6" MAX., 1'-0" MIN.

SHIFT TA1950 BARS TO AVOID FOOTING REINFORCING.

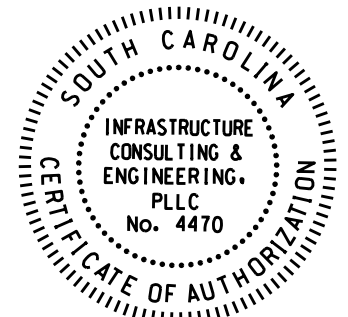
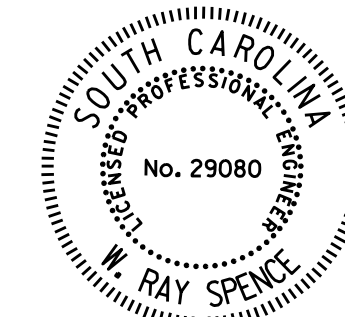
SHIFT A1952 BARS TO AVOID VERTICAL COLUMN REINFORCEMENT.

FOR STEEL H-PILE ANCHORAGE DETAIL, SEE "GENERAL DETAILS" SHEET.

E.W. - DENOTES EACH WAY



SECTION A-A



REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	WRS 03-22
DES.	ALP	WRS 03-22
BY	CHK.	DATE



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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

INTERIOR BENT DETAILS (2)

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND

ROUTE US 176

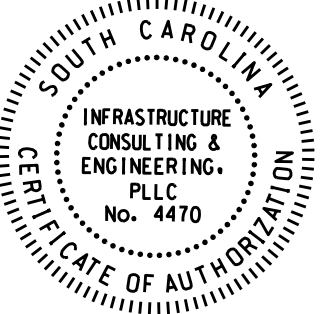
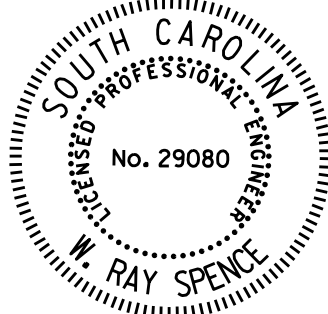
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END BENT 1								
REINFORCING STEEL SCHEDULE								
LOCATION	MARK	NO. REQ'D	DIMENSION					LENGTH
			"a"	"b"	"c"	"d"	"e"	
CAP	A1640	10	42'-8"	-----	-----	-----	-----	42'-8"
CAP	A1641	10	53'-3"	-----	-----	-----	-----	53'-3"
			-----	-----	-----	-----	-----	-----
CAP	A2940	6	42'-8"	-----	-----	-----	-----	42'-8"
CAP	A2941	6	55'-9"	-----	-----	-----	-----	55'-9"
			-----	-----	-----	-----	-----	-----
CAP	A3240	6	42'-8"	-----	-----	-----	-----	42'-8"
CAP	A3241	6	56'-11"	-----	-----	-----	-----	56'-11"
			-----	-----	-----	-----	-----	-----
CAP	B1640	198	6'-6"	0'-7"	-----	-----	-----	7'-1"
			-----	-----	-----	-----	-----	-----
WINGWALL 1	F1640	8	9'-8 1/4"	4'-8 1/4"	3'-7 3/8"	3'-0 3/8"	-----	14'-5"
WINGWALL 2	F1641	8	13'-4"	0'-10"	0'-4 1/2"	0'-9"	-----	14'-2"
WINGWALL 1	F1642	8	3'-9"	1'-6"	0'-11 1/2"	1'-1 3/4"	-----	5'-3"
			-----	-----	-----	-----	-----	-----
			-----	-----	-----	-----	-----	-----
WINGWALL 1	F2240	8	9'-11 1/8"	4'-8"	3'-7"	3'-0"	-----	14'-7"
WINGWALL 2	F2241	8	13'-6"	1'-7"	0'-8 1/2"	1'-5"	-----	15'-1"
			-----	-----	-----	-----	-----	-----
WINGWALLS	J1640	29	0'-11"	6'-10"	-----	-----	-----	14'-7"
CAP	J1641	10	6'-11"	0'-11"	-----	-----	-----	8'-9"
BUILD-UP	J1642	45	3'-8"	2'-4"	-----	-----	-----	8'-4"
BUILD-UP	J1643	45	3'-6"	2'-4"	-----	-----	-----	8'-2"
			-----	-----	-----	-----	-----	-----
CAP	S1640	93	3'-8"	3'-7"	0'-8"	-----	-----	15'-10"
CAP	S1641	2	3'-8 1/4"	3'-7"	0'-8"	-----	-----	15'-11"
CAP	S1642	2	3'-9"	3'-7"	0'-8"	-----	-----	16'-0"
CAP	S1643	2	3'-10 1/4"	3'-7"	0'-8"	-----	-----	16'-2"
CAP	S1644	2	4'-0"	3'-7"	0'-8"	-----	-----	16'-6"
			-----	-----	-----	-----	-----	-----
CAP	SA1640	11	3'-8"	3'-7"	0'-7"	-----	-----	12'-0"
			-----	-----	-----	-----	-----	-----
CAP	V1940	22	2'-2"	2'-2"	-----	-----	-----	4'-4"
			-----	-----	-----	-----	-----	-----
CAP	1 3/4" ANCHOR BOLT	22	-----	-----	-----	-----	-----	2'-5 1/4"

INTERIOR BENT 2								
REINFORCING STEEL SCHEDULE								
LOCATION	MARK	NO. REQ'D	DIMENSION					LENGTH
			"a"	"b"	"c"	"d"	"e"	
CAP	A1650	12	51'-2"	-----	-----	-----	-----	51'-2"
			-----	-----	-----	-----	-----	-----
FOOTING	A1951	80	3'-0"	-----	-----	-----	-----	3'-0"
FOOTING	A1952	155	11'-6"	-----	-----	-----	-----	11'-6"
			-----	-----	-----	-----	-----	-----
FOOTING	A3250	10	7'-2"	-----	-----	-----	-----	7'-2"
			-----	-----	-----	-----	-----	-----
CAP	A3650	48	53'-7"	-----	-----	-----	-----	53'-7"
			-----	-----	-----	-----	-----	-----
COLUMN 1	C3250	14	26'-5"	1'-10"	-----	-----	-----	28'-3"
COLUMN 2	C3251	14	26'-3"	1'-10"	-----	-----	-----	28'-1"
COLUMN 3	C3252	14	26'-0"	1'-10"	-----	-----	-----	27'-10"
COLUMN 4	C3253	14	25'-10"	1'-10"	-----	-----	-----	27'-8"
COLUMN 5	C3254	14	25'-7"	1'-10"	-----	-----	-----	27'-5"
			-----	-----	-----	-----	-----	-----
CAP	J1650	30	3'-8"	3'-7"	-----	-----	-----	10'-10"
CAP	J1651	12	4'-4 1/2"	2'-0"	-----	-----	-----	8'-5"
CAP	J1652	14	3'-6 1/2"	2'-0"	-----	-----	-----	7'-6"
BUILD-UP	J1653	96	4'-6"	2'-4"	-----	-----	-----	9'-2"
FOOTING	J1654	160	2'-0"	2'-2"	-----	-----	-----	6'-4"
			-----	-----	-----	-----	-----	-----
FOOTING	J3250	140	11'-6"	1'-10"	-----	-----	-----	15'-2"
			-----	-----	-----	-----	-----	-----
CAP	S1650	364	2'-9"	3'-8"	0'-8"	-----	-----	14'-2"
			-----	-----	-----	-----	-----	-----
COLUMN	TA1950	230	3'-2"	-----	-----	-----	-----	9'-11"
			-----	-----	-----	-----	-----	-----
FOOTING	V1950	80	2'-2"	2'-2"	-----	-----	-----	4'-4"
			-----	-----	-----	-----	-----	-----
			-----	-----	-----	-----	-----	-----
CAP	1 3/4" ANCHOR BOLT	44	-----	-----	-----	-----	-----	2'-6"

END BENT 3								
REINFORCING STEEL SCHEDULE								
LOCATION	MARK	NO. REQ'D	DIMENSION					LENGTH
			"a"	"b"	"c"	"d"	"e"	
CAP	A1640	10	53'-10"	-----	-----	-----	-----	53'-10"
CAP	A1641	10	60'-0"	-----	-----	-----	-----	60'-0"
			-----	-----	-----	-----	-----	-----
CAP	A2940	6	56'-4"	-----	-----	-----	-----	56'-4"
CAP	A2941	6	60'-0"	-----	-----	-----	-----	60'-0"
			-----	-----	-----	-----	-----	-----
CAP	A3240	6	57'-6"	-----	-----	-----	-----	57'-6"
CAP	A3241	6	60'-0"	-----	-----	-----	-----	60'-0"
			-----	-----	-----	-----	-----	-----
CAP	B1640	258	6'-6"	0'-7"	-----	-----	-----	7'-1"
			-----	-----	-----	-----	-----	-----
WINGWALL 3	C1340	8	1'-2"	0'-8"	-----	-----	-----	1'-10"
			-----	-----	-----	-----	-----	-----
WINGWALL 3	F1642	8	11'-8 7/8"	2'-0 1/8"	1'-9 1/2"	0'-10 7/8"	-----	13'-9"
WINGWALL 4	F1643	8	9'-8 1/4"	4'-7 3/8"	4'-4 1/8"	1'-7"	-----	14'-4"
WINGWALL 4	F1644	8	3'-9"	1'-6"	0'-6 1/8"	1'-5"	-----	5'-3"
			-----	-----	-----	-----	-----	-----
WINGWALL 3	F2242	8	11'-10 3/4"	2'-5 1/8"	2'-2 1/4"	1'-1 1/4"	-----	14'-4"
WINGWALL 4	F2243	8	9'-10 1/2"	4'-5 5/8"	4'-2 3/8"	1'-6 3/8"	-----	14'-4"
			-----	-----	-----	-----	-----	-----
WINGWALLS	J1640	30	0'-11"	6'-10"	-----	-----	-----	14'-7"
CAP	J1641	12	7'-1"	0'-11"	-----	-----	-----	8'-11"
BUILD-UP	J1642	40	3'-8"	2'-4"	-----	-----	-----	8'-4"
BUILD-UP	J1643	40	3'-6"	2'-4"	-----	-----	-----	8'-2"
			-----	-----	-----	-----	-----	-----
CAP	S1640	134	3'-8"	3'-7"	0'-8"	-----	-----	15'-10"
CAP	S1641	2	3'-8 1/4"	3'-7"	0'-8"	-----	-----	15'-11"
CAP	S1642	1	3'-9"	3'-7"	0'-8"	-----	-----	16'-0"
CAP	S1643	1	3'-10 1/4"	3'-7"	0'-8"	-----	-----	16'-2"
CAP	S1644	1	4'-0"	3'-7"	0'-8"	-----	-----	16'-6"
CAP	S1645	1	3'-8 3/4"	3'-7"	0'-8"	-----	-----	16'-0"
CAP	S1646	1	3'-9 1/2"	3'-7"	0'-8"	-----	-----	16'-1"
CAP	S1647	1	3'-10 1/2"	3'-7"	0'-8"	-----	-----	16'-3"
			-----	-----	-----	-----	-----	-----
CAP	SA1640	13	3'-8"	3'-7"	0'-7"	-----	-----	12'-0"
			-----	-----	-----	-----	-----	-----
CAP	V1940	26	2'-2"	2'-2"	-----	-----	-----	4'-4"
			-----	-----	-----	-----	-----	-----
CAP	1 3/4" ANCHOR	22	-----	-----	-----	-----	-----	2'-5 1/4"

BRIDGE PLANS ID	SHEET NO.
P039719-B42b	34



REV. 0	WRS	06-23-22
REV.		RFC PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	RMH	WRS 04-22
DES.		
	BY	CHK. DATE

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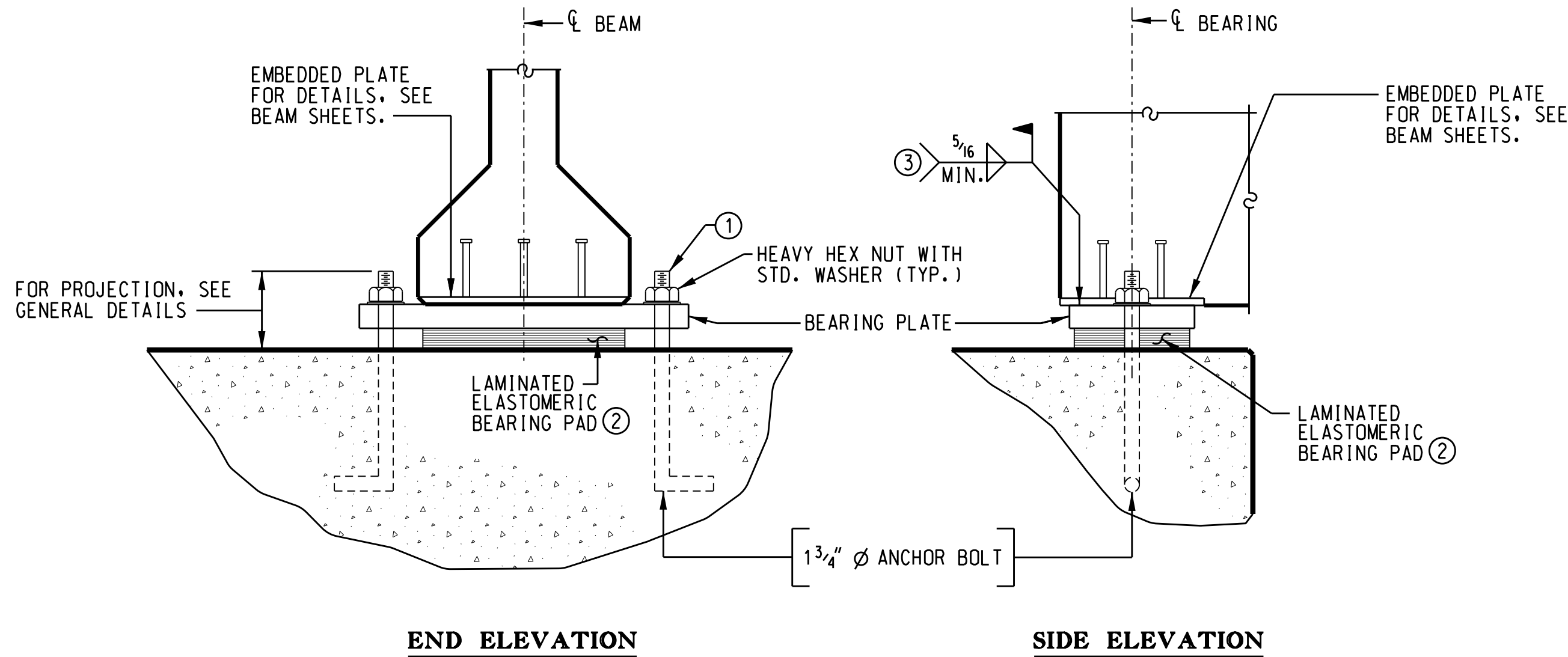
SUBSTRUCTURE
REINFORCEMENT SCHEDULE

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

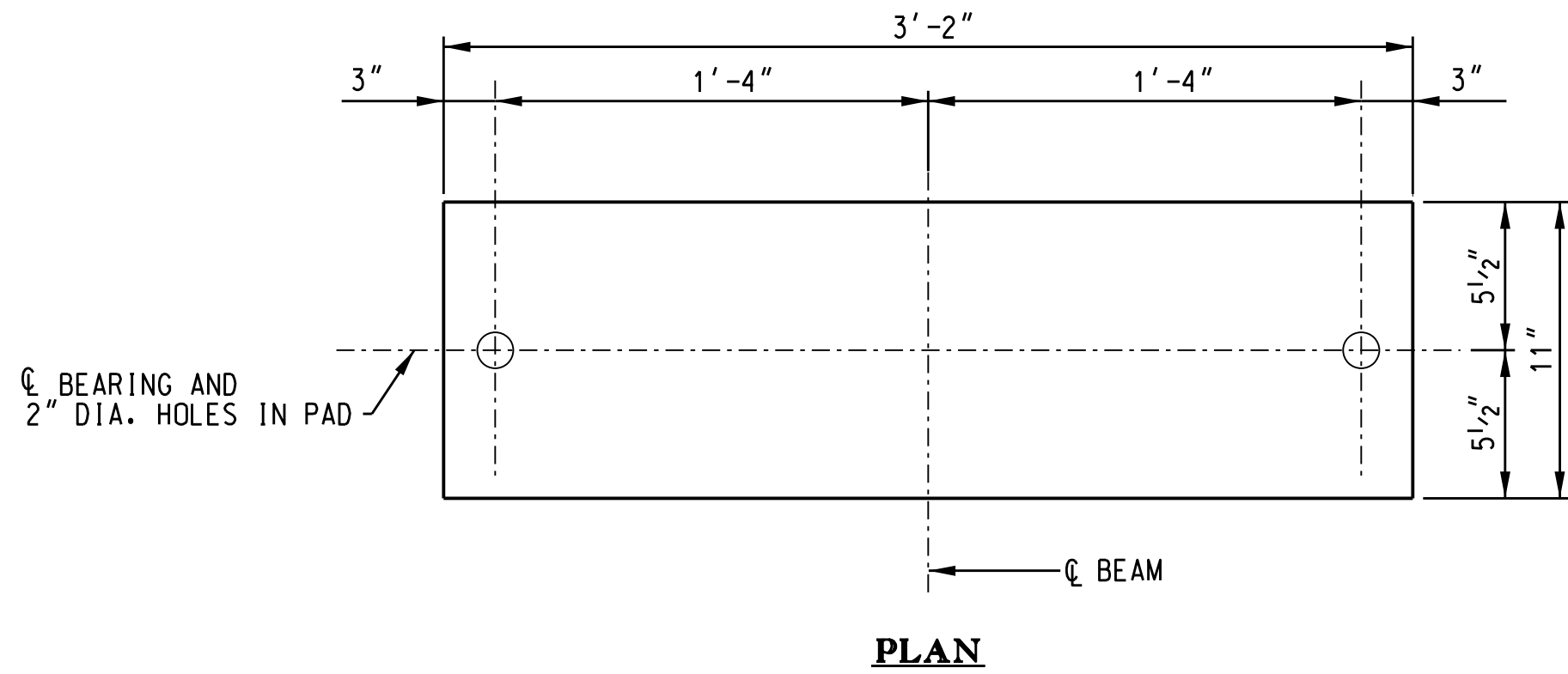
COUNTY
RICHLAND

ROUTE
US 176

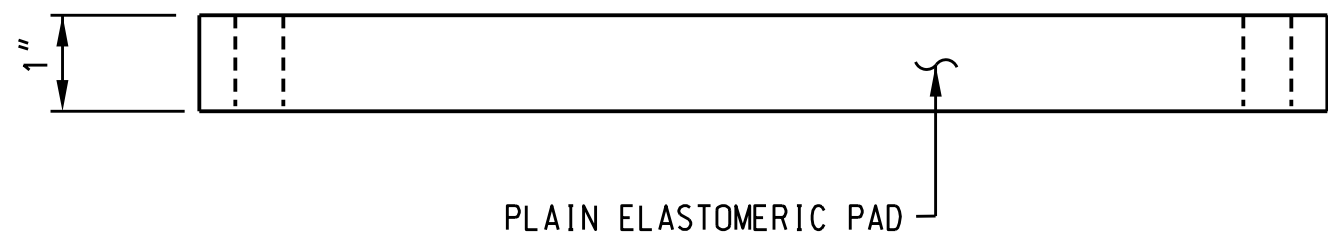
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BEARING ASSEMBLY
(INTERIOR BENT SHOWN, END BENT SIMILAR)

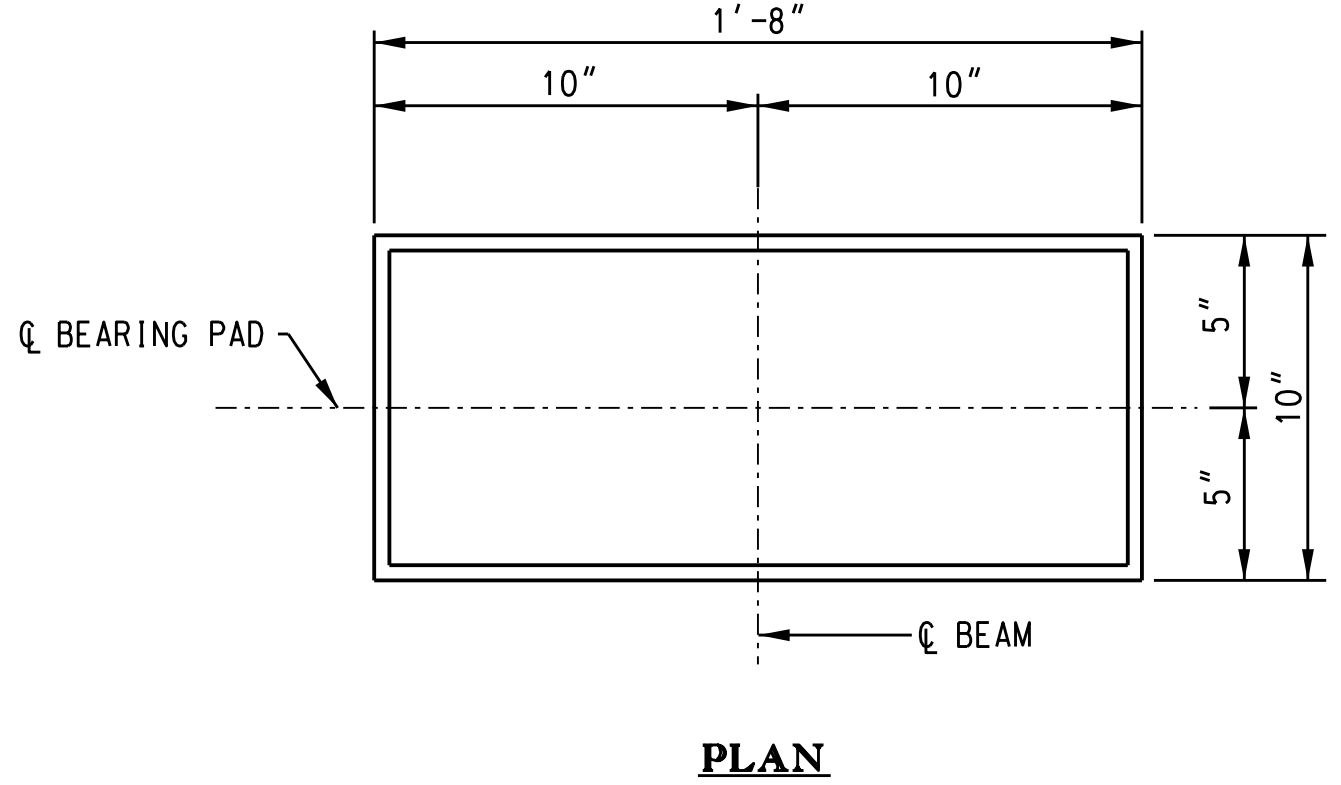


PLAN

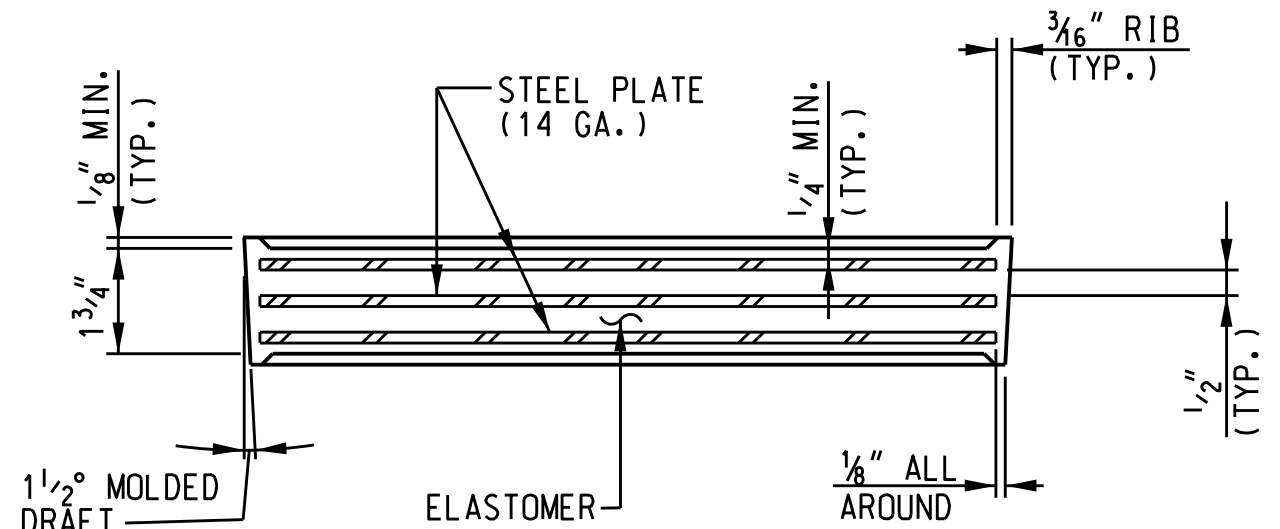


SECTION

BEARING PAD DETAILS - TYPE 1
(22 REQ'D)
END BENTS 1 & 3

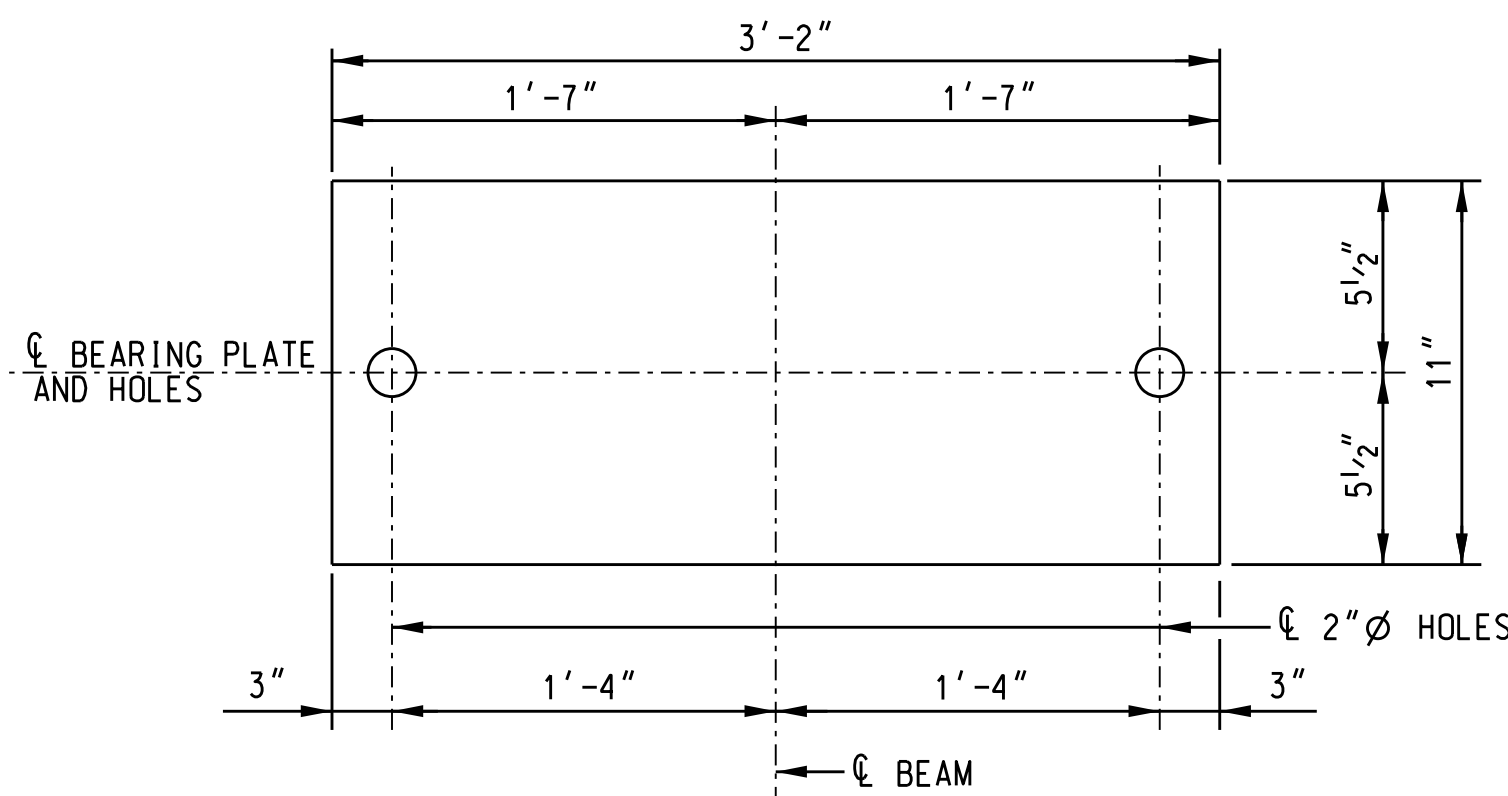


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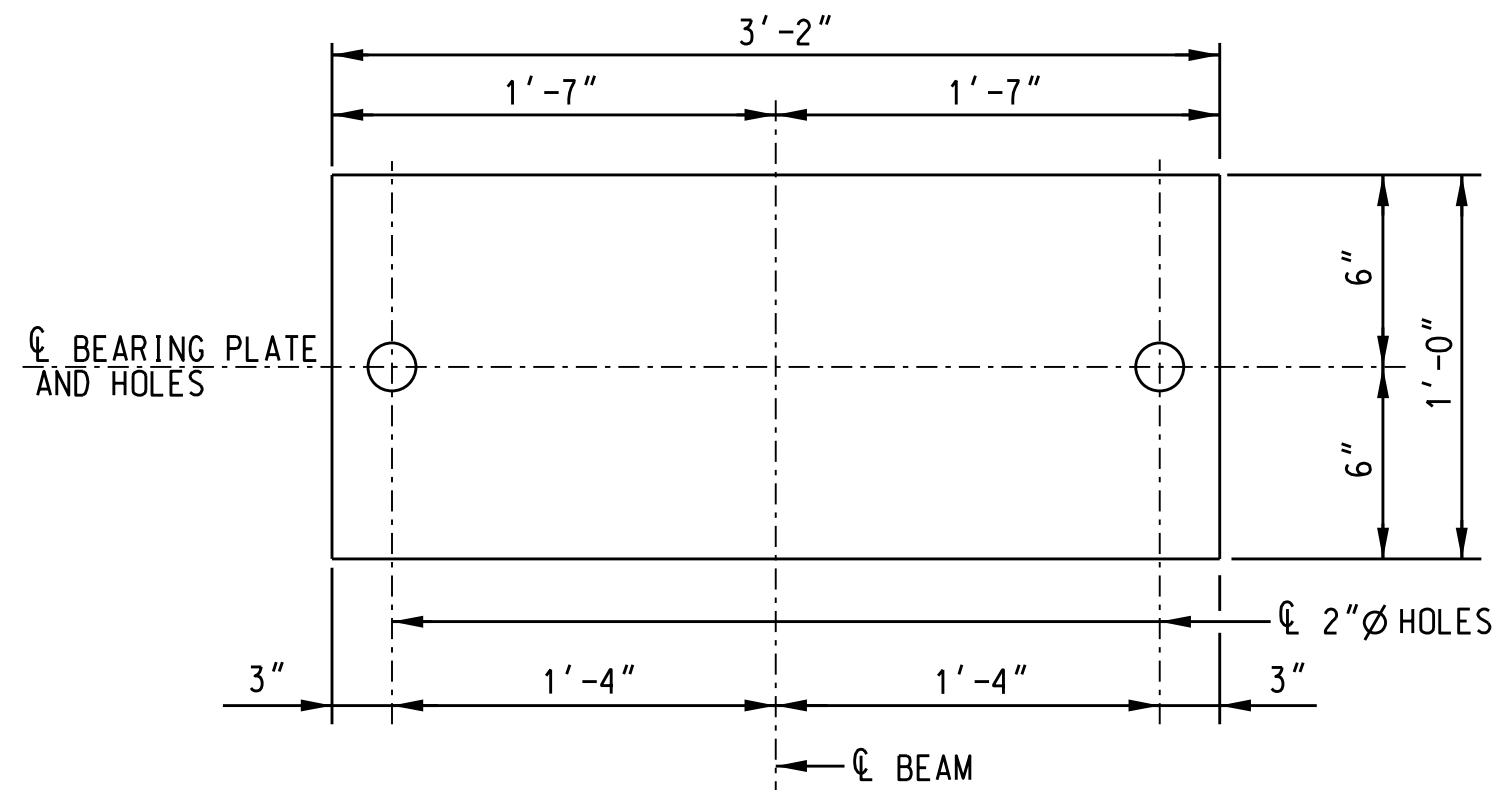


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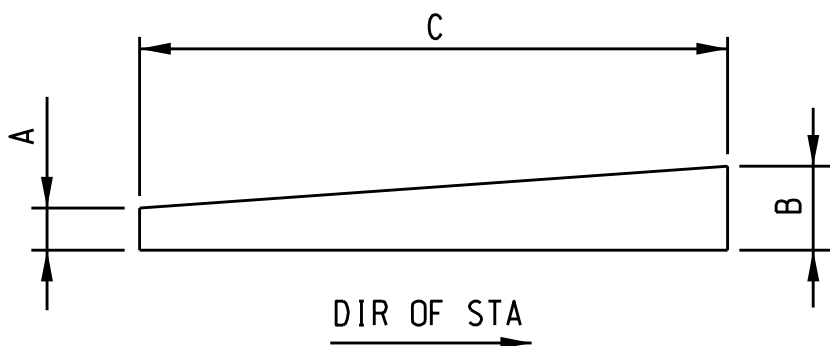
BEARING PAD DETAILS - TYPE 2
(22 REQ'D)
(INTERIOR BENT 2)



PLAN OF FIXED BEARING PLATE - TYPE 1
(22 REQ'D)
(END BENTS 1 & 3)

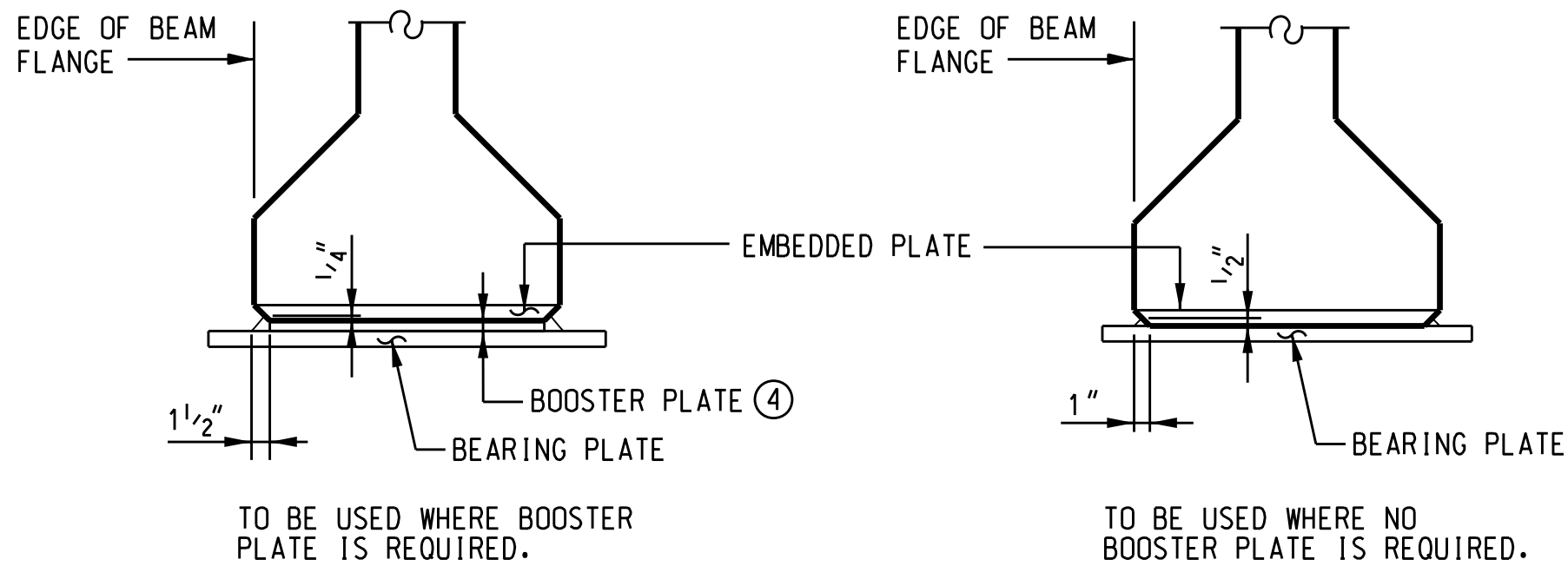


PLAN OF FIXED BEARING PLATE - TYPE 2
(22 REQ'D)
(INTERIOR BENT 2)



END ELEVATION

LOCATION	A	B	C
EB1	1 5/16"	1 11/16"	11"
IB2 BACK	1 5/16"	1 11/16"	1'-0"
IB2 AHEAD	1 3/8"	1 5/8"	1'-0"
EB3	1 1/16"	1 9/16"	11"



WELD DETAILS FOR CONCRETE BEAMS

NOTES:

- TIGHTEN NUTS FOR ANCHOR BOLTS FINGER TIGHT AND THEN BACK OFF 1/4 TURN. THE THREAD OF THE BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
- PIN GROOVES IN LAMINATED BEARINGS SHALL BE FILLED BY THE MANUFACTURER.
- CAUTION SHALL BE EXERCISED WHERE A FIELD WELD OR SHOP WELD WILL BE MADE WHILE ELASTOMER IS IN CONTACT WITH METAL. IN NO CASE SHALL THE ELASTOMER OR ELASTOMERIC BOND BE EXPOSED TO INSTANTANEOUS TEMPS. GREATER THAN 400° F OR ANY TEMPERATURE LIMIT SET BY THE FABRICATOR WHICHEVER IS LOWER. ANY DAMAGE TO ELASTOMERIC BEARING DUE TO WELDING WILL BE CAUSE FOR REJECTION. TEMPERATURE SHALL BE CONTROLLED BY USE OF HEAT CRAYONS FURNISHED BY THE CONTRACTOR.
- BOOSTER PLATES ARE REQUIRED. FOR LOCATION AND REQUIRED THICKNESS, SEE "FRAMING PLAN (SPAN B)" SHEET.

FOR ELASTOMERIC BEARING SPECIFICATIONS, SEE SCDOT STANDARD SPECIFICATIONS.

PADS WERE DESIGNED USING AASHTO METHOD A. PAD MATERIAL SHALL BE ELASTOMER GRADE 2.

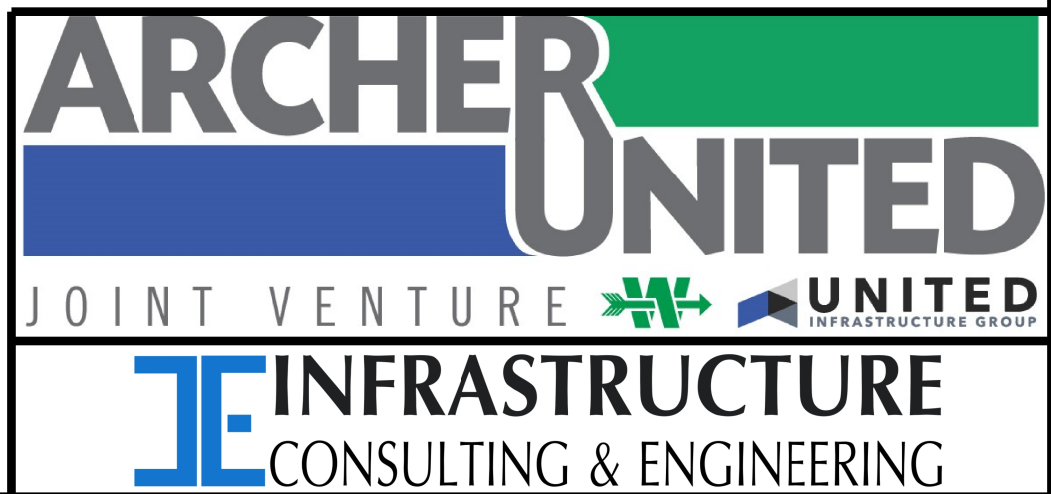
TYPE 1 AND TYPE 2 ELASTOMER SHALL BE GRADE 60 DUROMETER HARDNESS.

BEARING PLATES SHALL CONFORM TO AASHTO M270, GRADE 50.

ELASTOMERIC BEARING DESIGN LOAD

TYPE 1
MAX D.L. = 124.2k

TYPE 2
MAX D.L. + L.L. = 214.1k
MAX D.L. = 124.5k

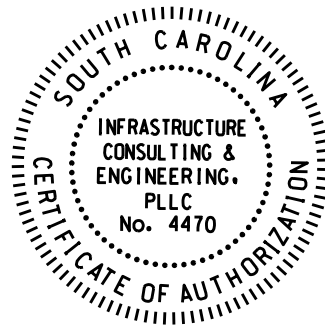
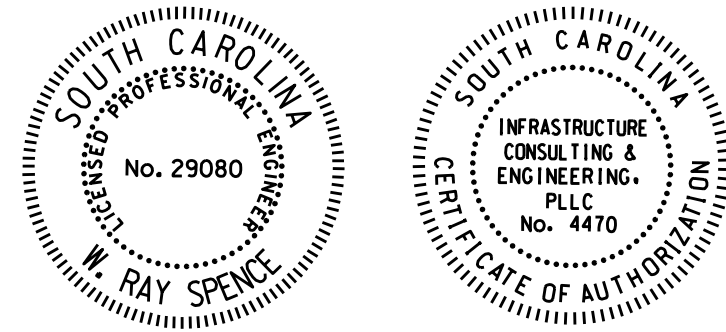


SOUTH CAROLINA
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BEARING DETAILS

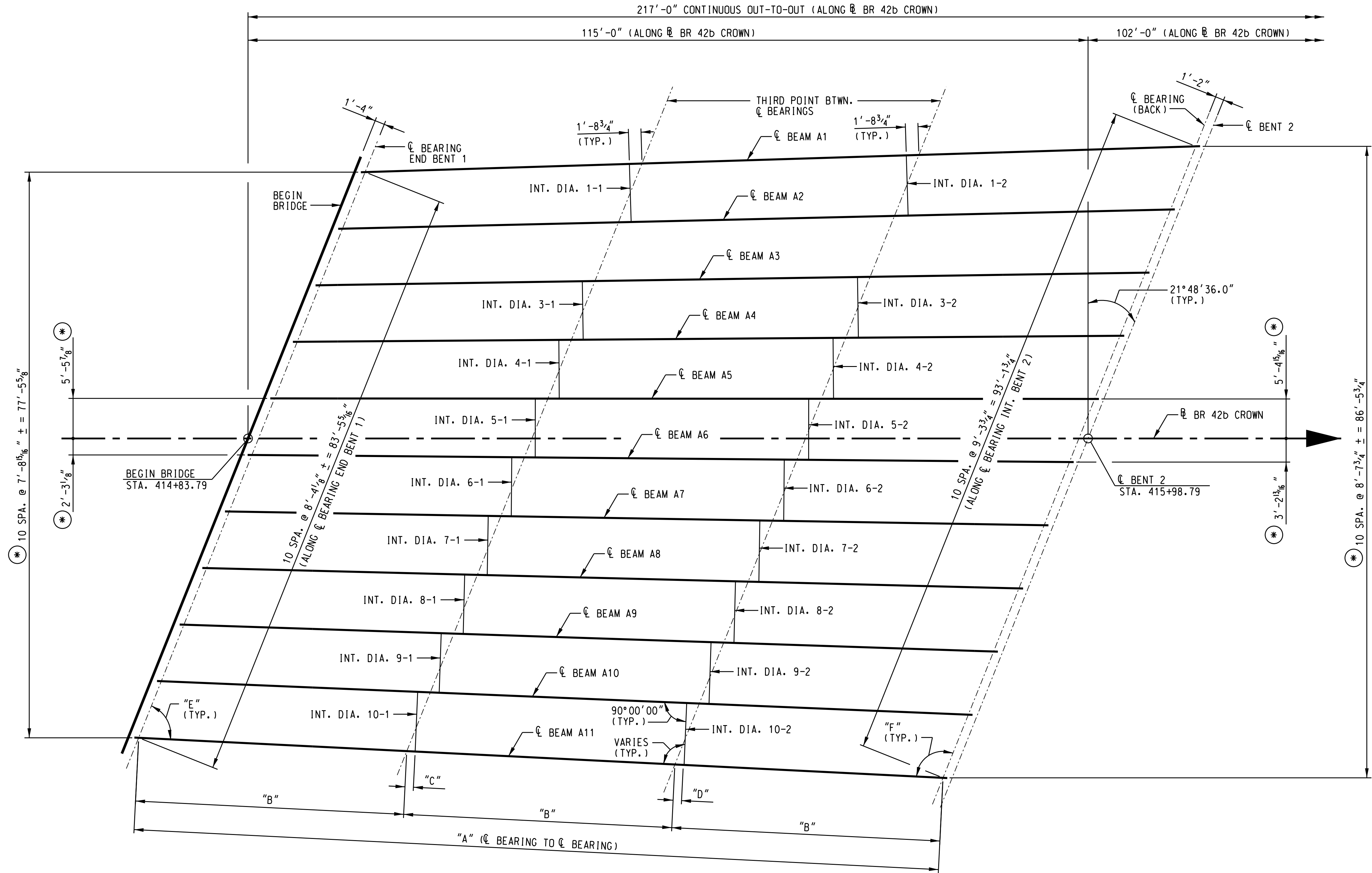
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176



REV.	WRS	06-23-22
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REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	WRS 03-22
DES.	WRS	ALP 03-22
BY	CHK.	DATE

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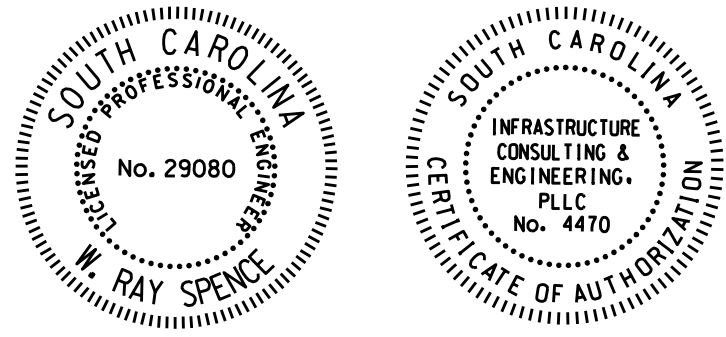


⊛ MEASURED PERPENDICULAR TO
BR 42b CROWN

FRAMING PLAN - SPAN A

TABLE OF DIMENSIONS - SPAN A						
BEAM	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	ANGLE "E"	ANGLE "F"
A1	113'-9 5/16"	37'-11 1/8"	---	---	66°24'47.27"	113°35'12.73"
A2	113'-4 1/16"	37'-9 3/16"	1'-8 7/8"	1'-10 1/16"	66°51'44.76"	113°08'15.24"
A3	113'-0 1/8"	37'-8 1/16"	---	---	67°18'53.38"	112°41'06.62"
A4	112'-7 1/16"	37'-6 3/16"	1'-7 3/8"	1'-8 7/8"	67°46'12.82"	112°13'47.18"
A5	112'-3 3/16"	37'-5 1/8"	1'-6 5/8"	1'-8 1/16"	68°13'42.99"	111°46'17.01"
A6	111'-11 1/16"	37'-3 1/16"	1'-5 13/16"	1'-7 1/4"	68°41'23.76"	111°18'36.24"
A7	111'-6 1/8"	37'-2 3/16"	1'-5 1/16"	1'-6 1/16"	69°09'15.04"	110°50'44.96"
A8	111'-2 3/4"	37'-0 5/16"	1'-4 1/4"	1'-5 5/8"	69°37'16.69"	110°22'43.31"
A9	110'-10 3/4"	36'-11 3/16"	1'-3 1/2"	1'-4 13/16"	70°05'28.59"	109°54'31.41"
A10	110'-6 1/16"	36'-10 1/4"	1'-2 1/16"	1'-4"	70°33'50.60"	109°26.09.40"
A11	110'-3"	36'-9"	1'-1 7/8"	1'-3 1/8"	71°02'22.58"	108°57'37.42"

NOTE: ALL DIMENSIONS ARE ALONG BEAM.



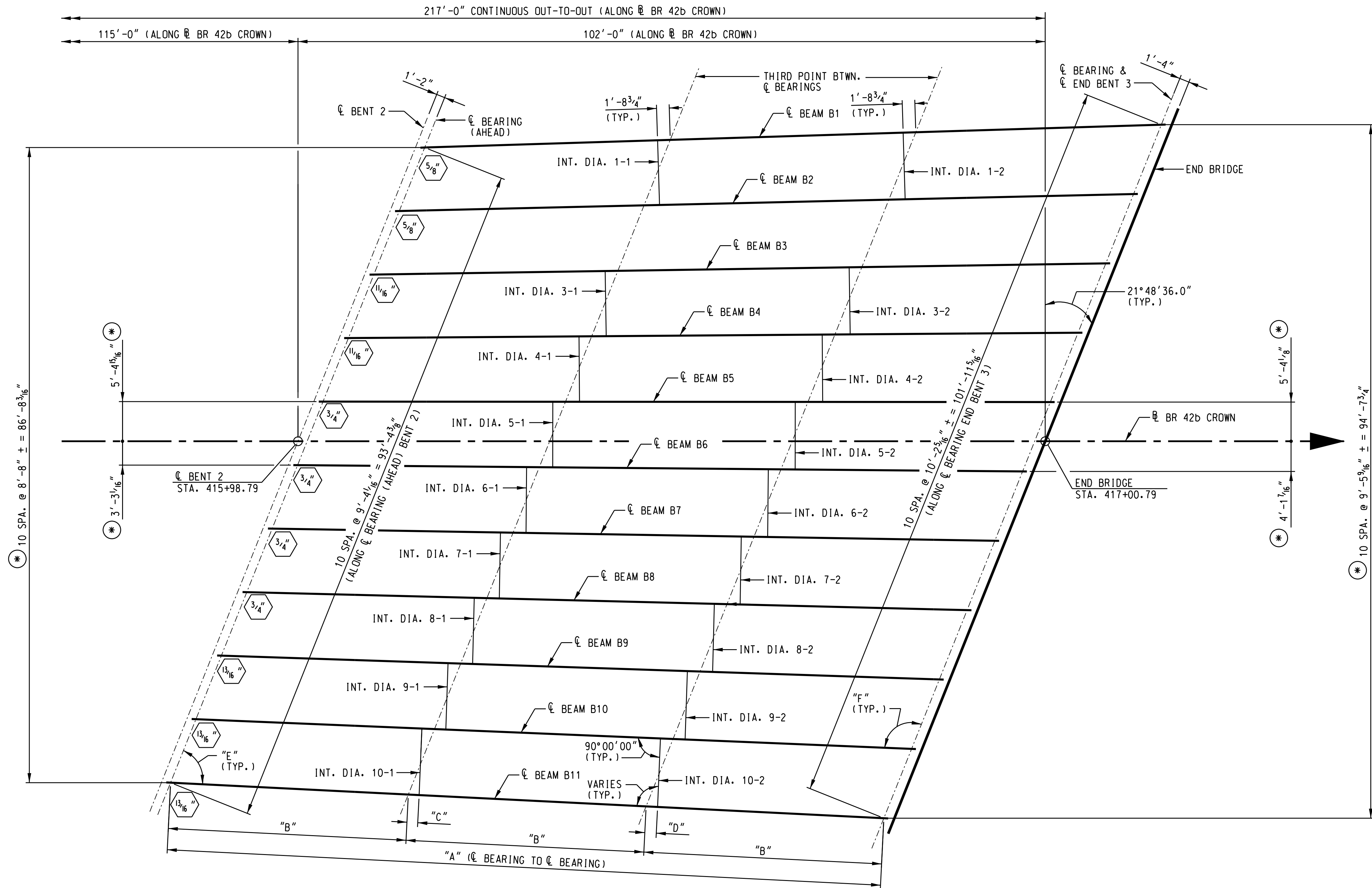
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REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	KLC 03-22
DES.	WRS	ALP 03-22
BY	CHK.	DATE

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SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FRAMING PLAN
(SPAN A)
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND
ROUTE US 176

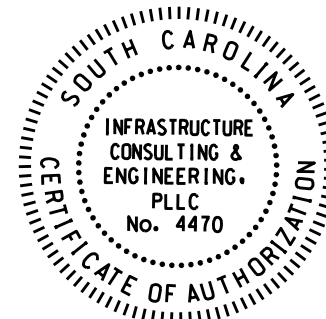
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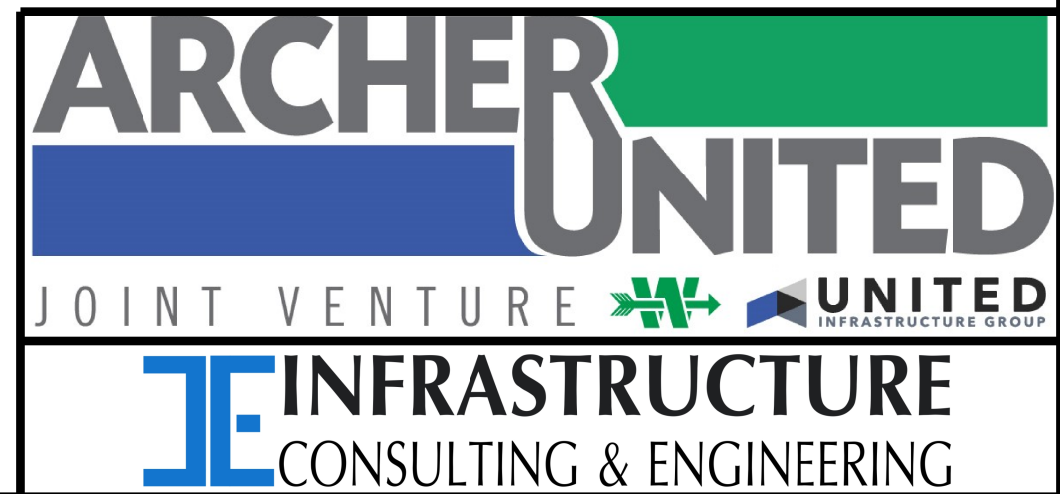
FRAMING PLAN - SPAN B

TABLE OF DIMENSIONS - SPAN B						
BEAM	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	ANGLE "E"	ANGLE "F"
B1	100'-7 1/4"	33'-6 1/16"	---	---	66°24'47.27"	113°35'12.73"
B2	100'-3 3/16"	33'-5 1/16"	2'-1 1/16"	2'-2 13/16"	66°51'44.76"	113°08'15.24"
B3	99'-11 3/16"	33'-3 3/4"	---	---	67°18'53.38"	112°41'06.62"
B4	99'-7 1/4"	33'-2 1/16"	1'-11 13/16"	2'-1 1/8"	67°46'12.82"	112°13'47.18"
B5	99'-3 3/8"	33'-1 1/8"	1'-10 5/16"	2'-0 1/4"	68°13'42.99"	111°46'17.01"
B6	98'-11 3/16"	32'-11 7/8"	1'-10 1/16"	1'-11 3/8"	68°41'23.76"	111°18'36.24"
B7	98'-7 1/8"	32'-10 5/8"	1'-9 3/16"	1'-10 1/16"	69°09'15.04"	110°50'44.96"
B8	98'-4 1/4"	32'-9 1/16"	1'-8 5/16"	1'-9 3/16"	69°37'16.69"	110°22'43.31"
B9	98'-0 1/16"	32'-8 1/4"	1'-7 1/16"	1'-8 5/8"	70°05'28.59"	109°54'31.41"
B10	97'-9 1/4"	32'-7 1/16"	1'-6 3/16"	1'-7 3/4"	70°33'50.60"	109°26'09.40"
B11	97'-5 7/8"	32'-5 5/16"	1'-5 1/16"	1'-6 13/16"	71°02'22.58"	108°57'37.42"

NOTE: ALL DIMENSIONS ARE ALONG BEAM.

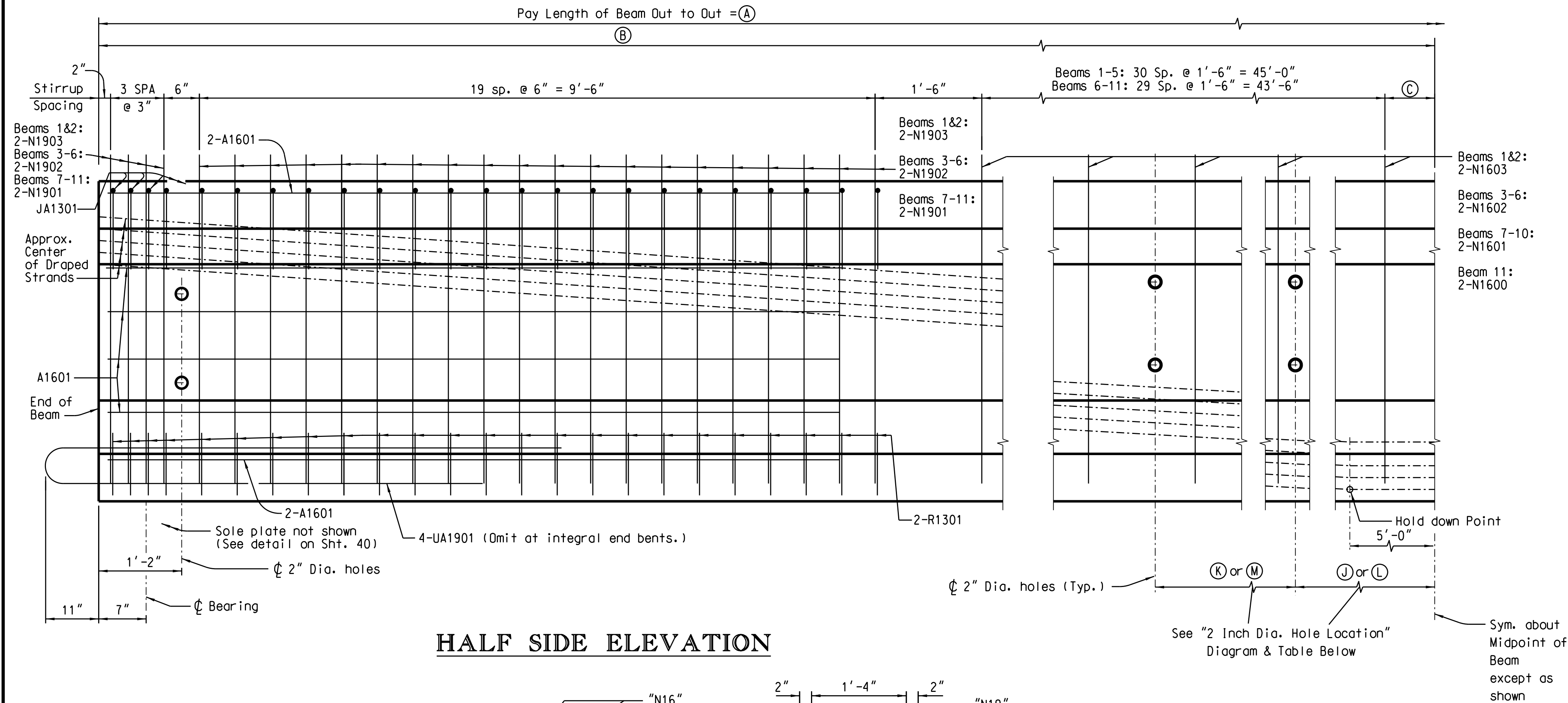


REV. 0	WRS	06-23-22
REV.	RFC	PLANS
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REVIEWED	PLC	04-22
QUAN.		
DR.	BFS	KLC 03-22
DES.	WRS	ALP 03-22
BY	CHK.	DATE

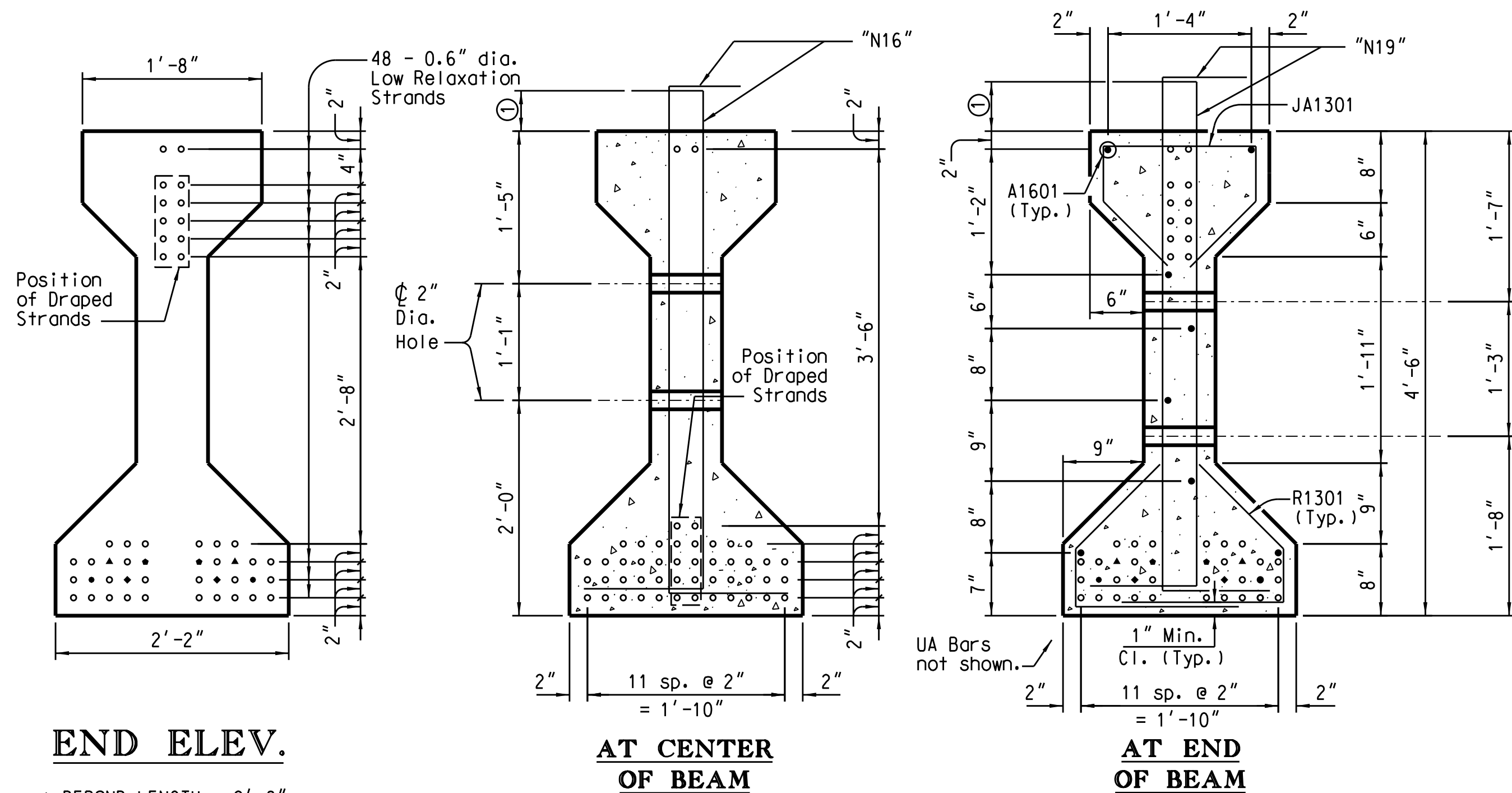


SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
FRAMING PLAN (SPAN B)	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

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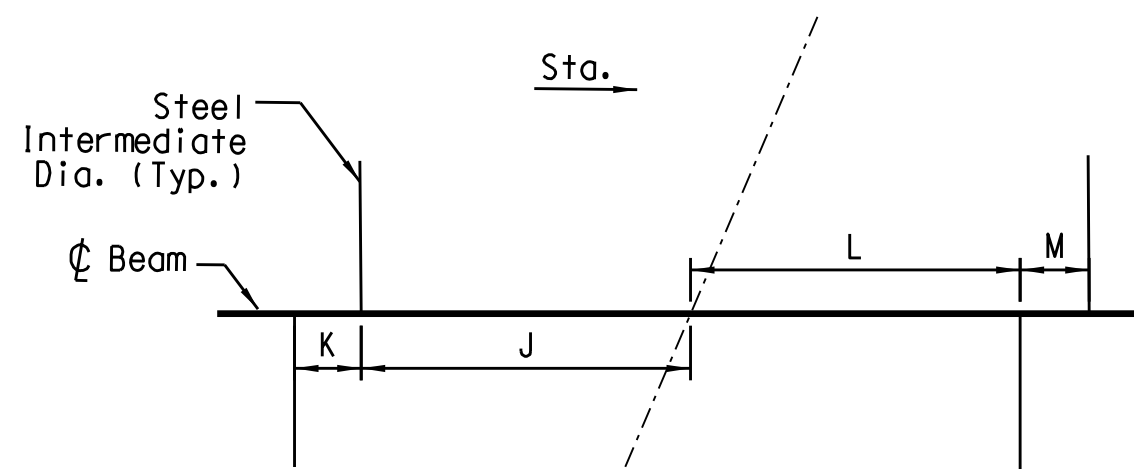
HALF SIDE ELEVATION



SECTIONS THRU BEAM

- ◆ DEBOND LENGTH = 2'-0"
- ◆ DEBOND LENGTH = 3'-0"
- ▲ DEBOND LENGTH = 4'-0"
- DEBOND LENGTH = 5'-0"

- ① N1600 = 6"
N1601 = 6 1/2"
N1602 = 7"
N1901 = 6 1/2"
N1902 = 7"



2" DIA. HOLE LOCATION DIAGRAM

Notes:

For additional notes, see "Prestressed Concrete Beam details AASHTO Type IV"

REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION				
		"a"	"b"	"c"	"d"	LENGTH
A1601	16	10'-3"	—	—	—	10'-3"
JA1301	48	1'-4"	6 1/2"	11"	7 3/4"	4'-3"
N1600	(AA)	10"	4'-9"	1'-2"	—	6'-9"
N1601	(BB)	10"	4'-9 1/2"	1'-2"	—	6'-9 1/2"
N1602	(CC)	10"	4'-10"	1'-2"	—	6'-10"
N1603	(DD)	10"	4'-10 1/2"	1'-2"	—	6'-10 1/2"
N1901	(EE)	1'-0"	4'-9 1/2"	1'-2"	—	6'-11 1/2"
N1902	(FF)	1'-0"	4'-10"	1'-2"	—	7'-0"
N1903	(GG)	1'-0"	4'-10 1/2"	1'-2"	—	7'-0 1/2"
R1301	96	1'-6"	6 1/2"	1'-3 1/2"	11"	3'-4"
UA1901	8	8'-6"	6"	7'-0"	—	15'-9"

QUANTITIES

ITEM	UNIT	ONE BEAM
Concrete, Class 10000	CY	(XX)
Reinforcing Steel	LB	(YY)
Prestressing Strands	LF	(ZZ)
Structural Steel	LB	As Necessary

BEAM DIMENSIONS, REINFORCING STEEL, & QUANTITIES TABLE

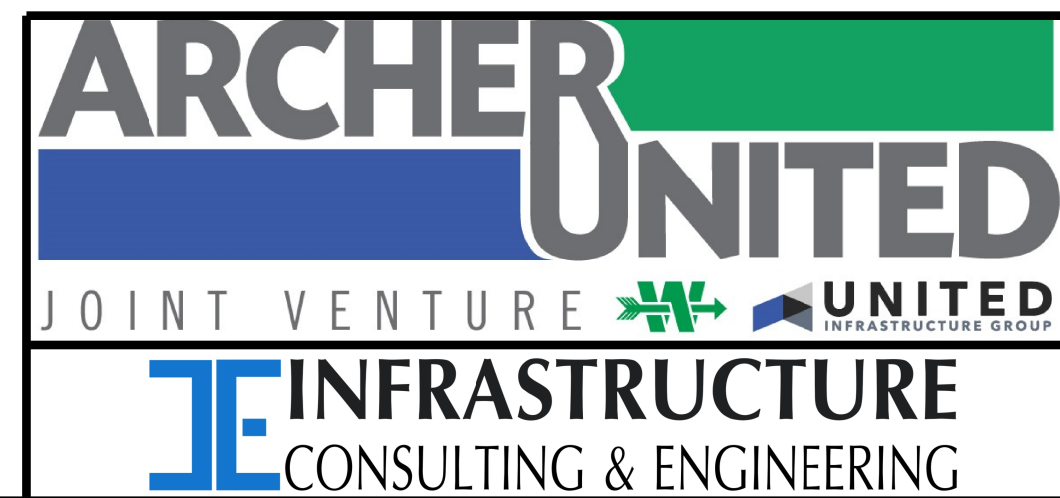
BEAM	(A)	(B)	(C)	(AA)	(BB)	(CC)	(DD)	(EE)	(FF)	(GG)	(XX)	(YY)	(ZZ)
1	114'-11 5/16"	57'-5 1/16"	2"	—	—	—	62	—	—	48	23.3	1.668	5.522
2	114'-6 1/16"	57'-3 3/16"	2"	—	—	—	62	—	—	48	23.3	1.668	5.503
3	114'-2 1/8"	57'-1 1/16"	2"	—	—	62	—	—	48	—	23.2	1.657	5.484
4	113'-9 1/16"	56'-10 1/8"	2"	—	—	62	—	—	48	—	23.1	1.657	5.466
5	113'-5 3/8"	56'-8 1/16"	2"	—	—	62	—	—	48	—	23.0	1.657	5.449
6	113'-1 1/16"	56'-6 3/16"	7 1/2"	—	—	60	—	—	48	—	23.0	1.643	5.432
7	112'-8 1/8"	56'-4 1/16"	5 1/2"	—	60	—	—	48	—	—	22.9	1.643	5.415
8	112'-4 3/4"	56'-2 3/8"	3 1/2"	—	60	—	—	48	—	—	22.8	1.643	5.400
9	112'-0 3/4"	56'-0 3/8"	2"	—	60	—	—	48	—	—	22.8	1.643	5.384
10	111'-8 1/8"	55'-10 1/16"	2"	—	60	—	—	48	—	—	22.7	1.643	5.369
11	111'-5"	55'-8 1/2"	2"	60	—	—	—	48	—	—	22.6	1.637	5.353

2" DIA. HOLE LOCATION TABLE

BEAM	(J)	(K)	(L)	(M)
1	—	20'-8 3/16" *	17'-2 13/16"	—
2	17'-1 1/8"	3'-5 5/8"	17'-2"	3'-7 3/16"
3	17'-1 1/8"	3'-4 1/8"	17'-1 1/4"	3'-6 3/8"
4	17'-1 1/8"	3'-4 1/8"	17'-0 1/2"	3'-5 5/8"
5	17'-1 1/8"	3'-3 3/8"	16'-11 13/16"	3'-4 13/16"
6	17'-2"	3'-2 3/16"	16'-11 1/8"	3'-4"
7	17'-2 1/8"	3'-1 13/16"	16'-10 3/8"	3'-3 3/16"
8	17'-2 3/16"	3'-1"	16'-9 11/16"	3'-2 3/8"
9	17'-2 5/16"	3'-0 3/16"	16'-9"	3'-1 3/16"
10	17'-2 1/16"	2'-11 1/16"	16'-8 3/8"	3'-0 3/4"
11	17'-2 1/16"	—	—	19'-7 5/8" *

Measurement is from the center of beam to the appropriate diaphragm as labeled on the framing plan

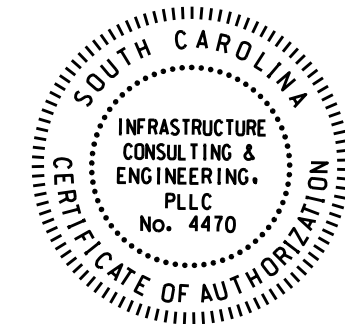
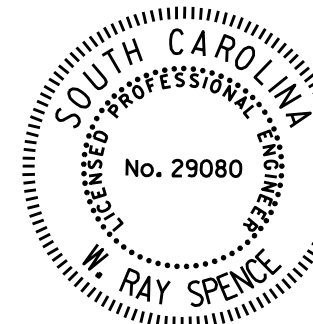
* Measured from midpoint of beam to center hole



SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PRESTRESSED CONCRETE BEAM
DETAILS AASHTO TYPE IV (SPAN A)
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20
COUNTY RICHLAND
ROUTE US 176

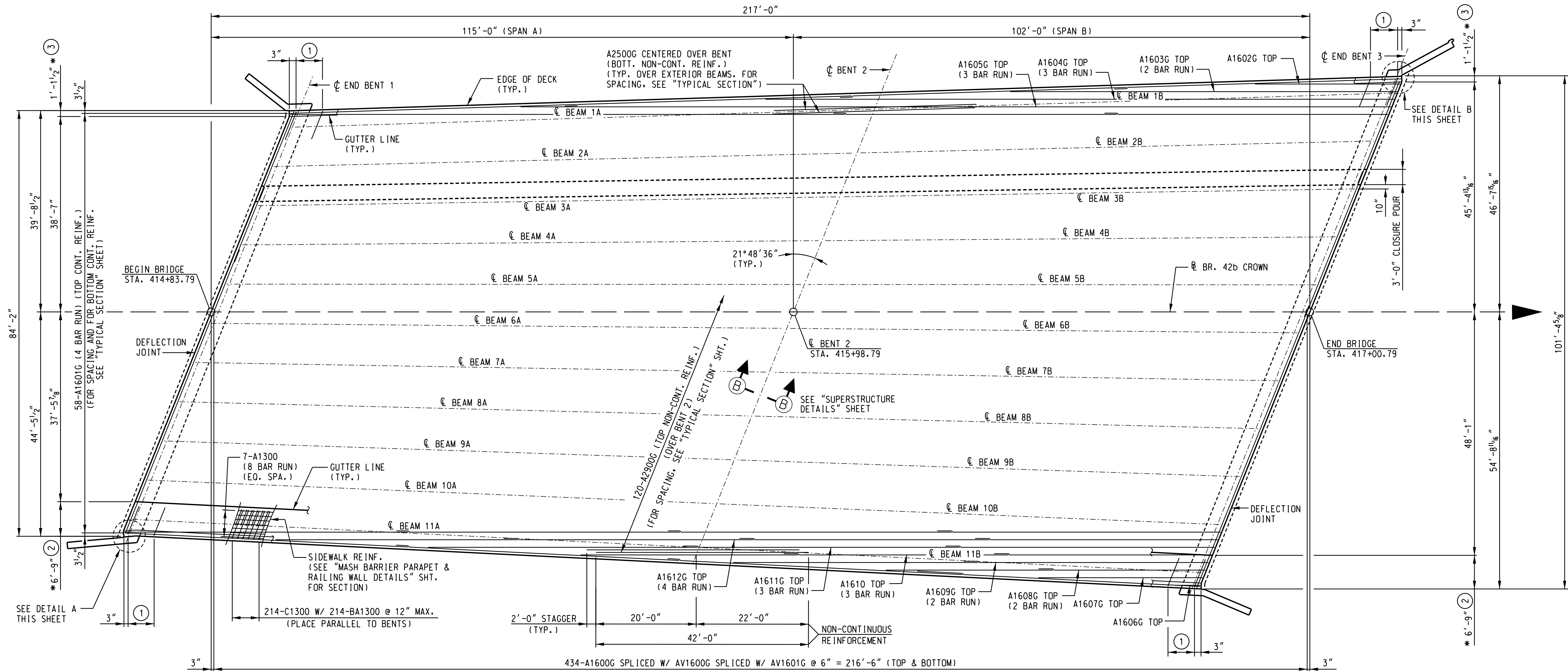
DESIGN DATA

Low Relaxation Strands
Tensile Strength (fpu) = 270 ksi
Initial Prestress (0.75 fpu) = 202.5 ksi
Class 10000 Concrete
f'c = 10 ksi
f'ci = 8.5 ksi



REV.	WRS	06-23-22
0	RFC	PLANS
REV.	ALP	KLC 04-22
	P039719-B42b	
REV.	PCW	HL 4-19
	Sole PL Detail	
REVIEWED	PLC	04-22
QUAN.		
DR.	PNP	SAN 3-08
DES.	ALP	WRS 03-22
BY	CHK.	DATE

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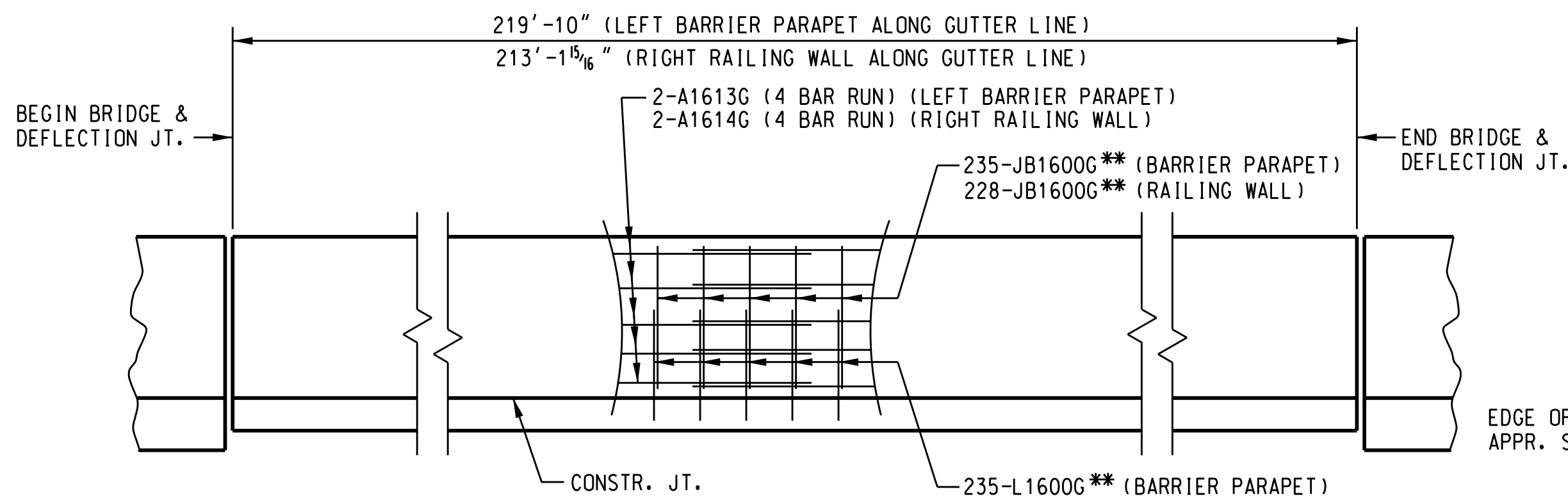


PLAN

(TRANSVERSE DIMENSIONS ARE MEASURED PERPENDICULAR TO
BR. 42b CROWN UNLESS NOTED OTHERWISE)

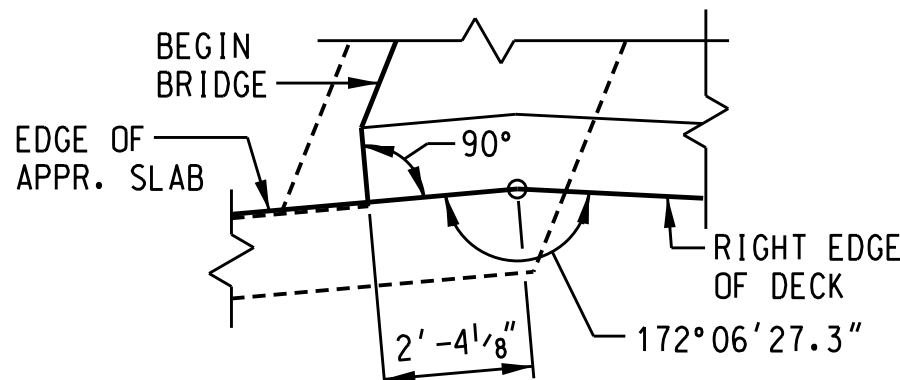
NOTES:

- ALL BENTS ARE PARALLEL.
- * MEASURED PERPENDICULAR TO GUTTER LINE.
- ** SEE MASH BARRIER/RAILING WALL SHEETS FOR SPACING.
- ① 13-B1600G @ 6" = 6'-0" TOP
- ② INCLUDES 5'-7" SIDEWALK, 1'-0" MASH RAILING WALL & 2" SLAB EXTENSION.
- ③ INCLUDES 1'-0" MASH BARRIER PARAPET & 1'-1/2" SLAB EXTENSION.

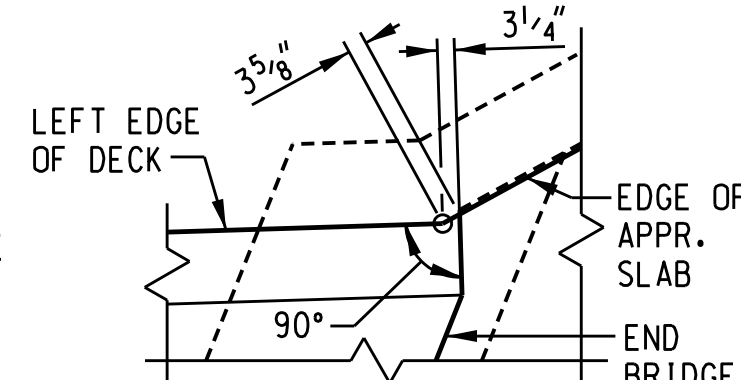


MASH BARRIER OR RAILING WALL ELEVATION

(MASH BARRIER PARAPET SHOWN, MASH RAILING WALL SIMILAR)



DETAIL A

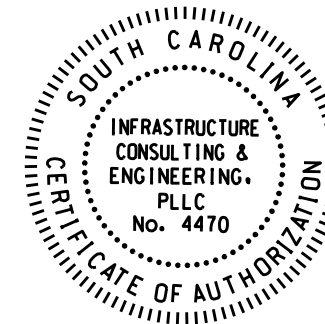
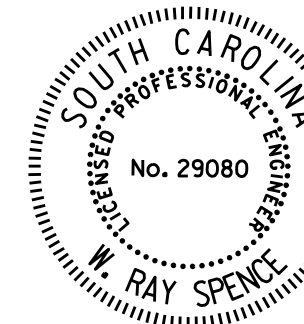


DETAIL B

ESTIMATED QUANTITIES - SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
2.0" SCHEDULE 80 PVC CONDUIT	LF	866.0
CONCRETE FOR STRUCTURES - CLASS 4000	CY	808.8
GROOVED SURFACE FINISH	SY	2.017
REINFORCING STEEL FOR STRUCTURES (BRIDGE) *	LBS.	15,644
GALVANIZED REINFORCING STEEL (BRIDGE)	LBS.	145,801
PRESTRESSED CONCRETE BEAM (TYPE IV)	LF	2,348.2
42" MASH CONCRETE BARRIER PARAPET/RAILING WALL	LF	433.0

* INCLUDES 1,595 LBS. FOR TIE ROD ASSEMBLIES



REV. 0	WRS	06-23-22	
	RFC PLANS		
REV.			
REV.			
REVIEWED PLC 04-22			
QUAN.	WRS	ALP	03-22
DR.	WRS	ALP	03-22
DES.	WRS	ALP	03-22
	BY	CHK.	DATE



INFRASTRUCTURE
CONSULTING & ENGINEERING

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

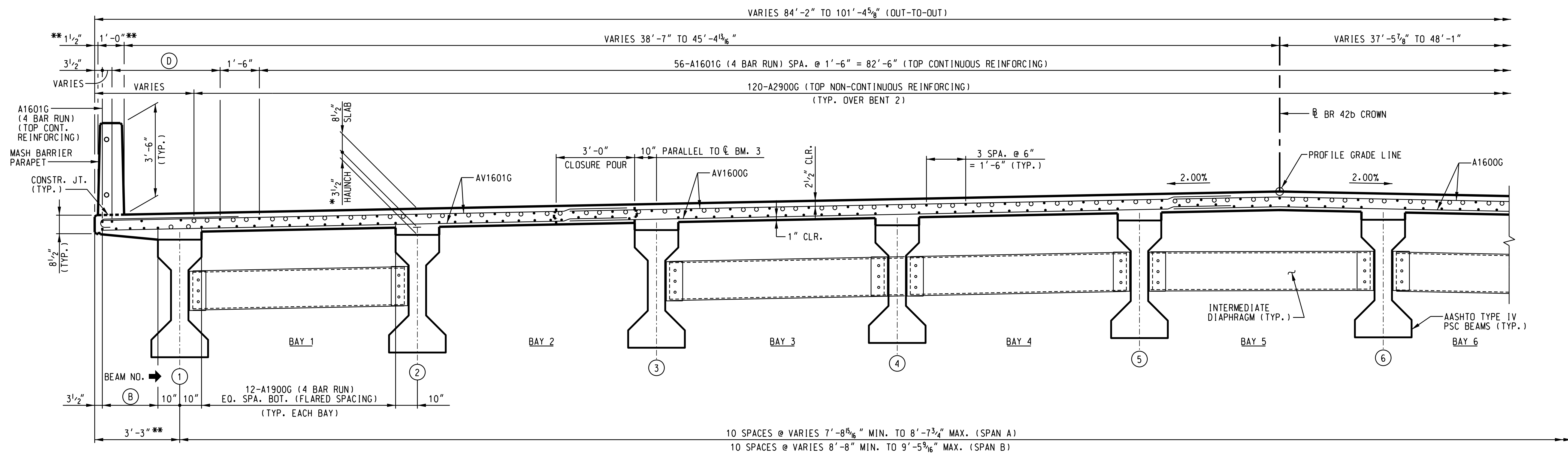
PLAN OF SPANS

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

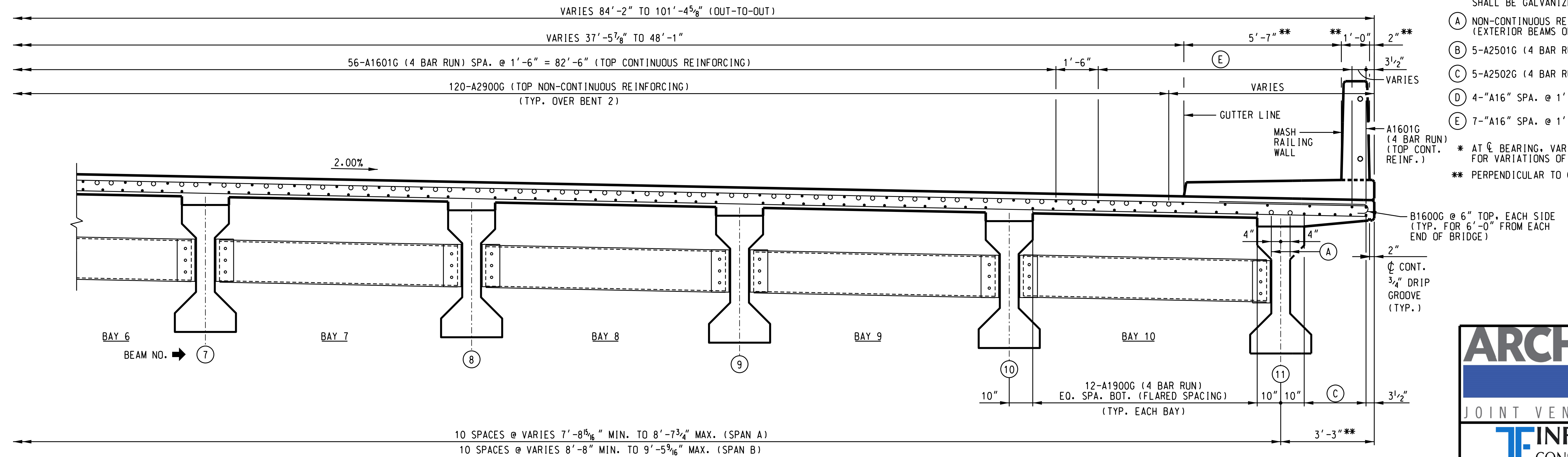
SPLICE LENGTHS:

- #4 1'-7" MIN. (SIDEWALK)
- #5 2'-4" MIN. (SLAB)
- #5 2'-7" MIN. (BARRIER PARAPET)
- #6 2'-6" MIN. (SLAB)
- #8 3'-11" MIN. (SLAB)



PARTIAL TYPICAL SECTION

(LOOKING IN DIRECTION OF STATIONING)



PARTIAL TYPICAL SECTION

(LOOKING IN DIRECTION OF STATIONING)

NOTES:

ALL DIMENSIONS MEASURED PERPENDICULAR TO ~~B~~ BR. 42b
CROWN UNLESS NOTED OTHERWISE.

DECK SLAB, SIDEWALK AND BARRIER REINFORCEMENT
SHALL BE GALVANIZED.

- (A) NON-CONTINUOUS REINFORCING OVER BENT 2
(EXTERIOR BEAMS ONLY)
- (B) 5-A2501G (4 BAR RUN) SPA. @ $6\frac{3}{8}" = 2'-1\frac{1}{2}"$
- (C) 5-A2502G (4 BAR RUN) SPA. @ $6\frac{3}{8}" = 2'-1\frac{1}{2}"$
- (D) 4-"A16" SPA. @ $1'-6" = 4'-6"$ (TOP CONT. REINF.)
- (E) 7-"A16" SPA. @ $1'-6" = 9'-0"$ (TOP CONT. REINF.)

- * AT C BEARING, VARIES IN SPAN TO COMPENSATE FOR VARIATIONS OF CAMBER AND VERTICAL ORDINATE
- ** PERPENDICULAR TO GUTTER LINE

— B1600G @ 6" TOP, EACH SIDE
(TYP. FOR 6'-0" FROM EACH
END OF BRIDGE)

♂ CONT.
 3/4" DRIP
 GROOVE
 (TYP.)



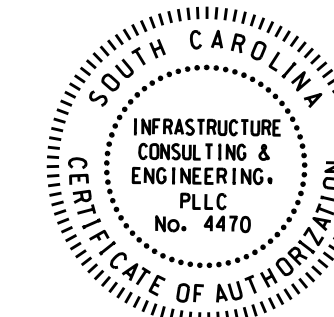
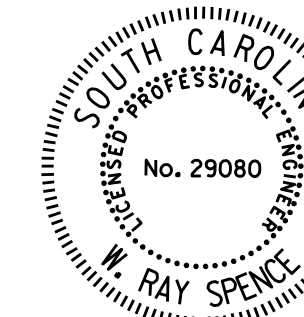
**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

TYPICAL SECTION

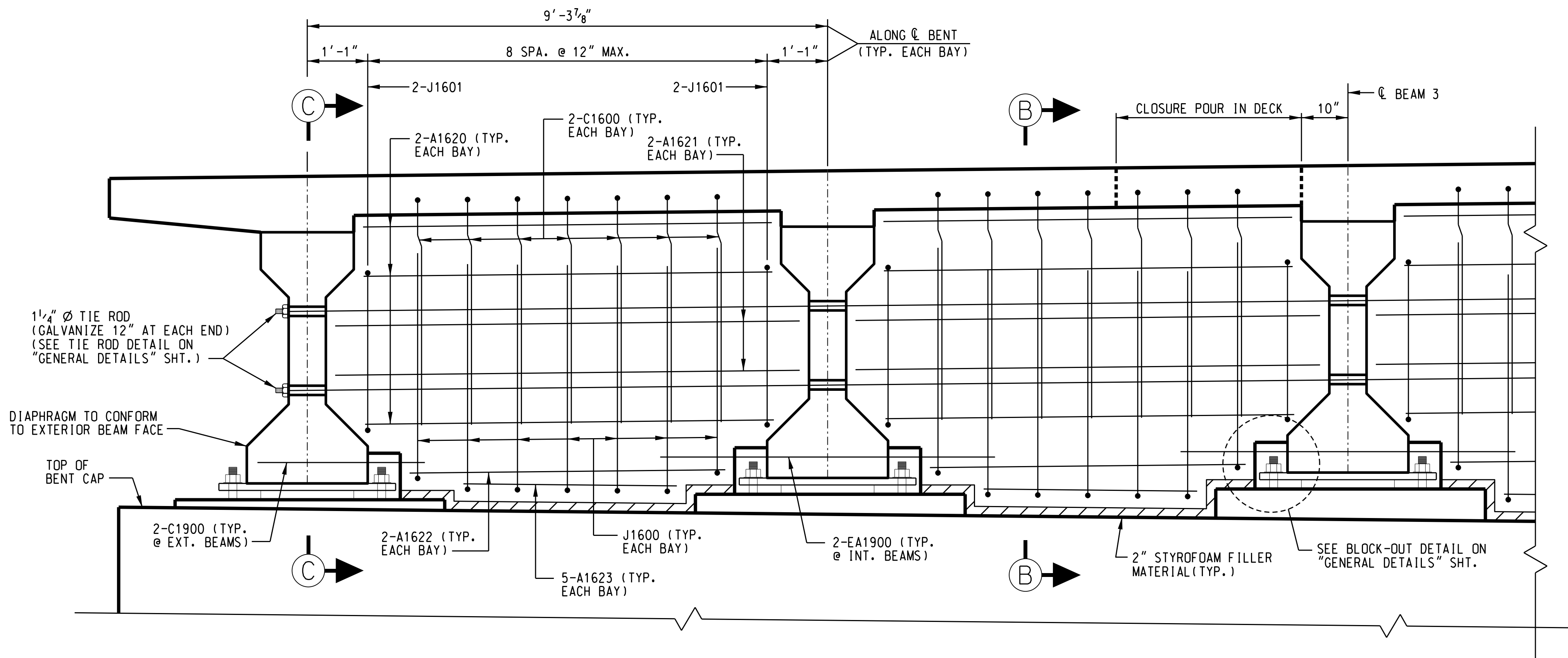
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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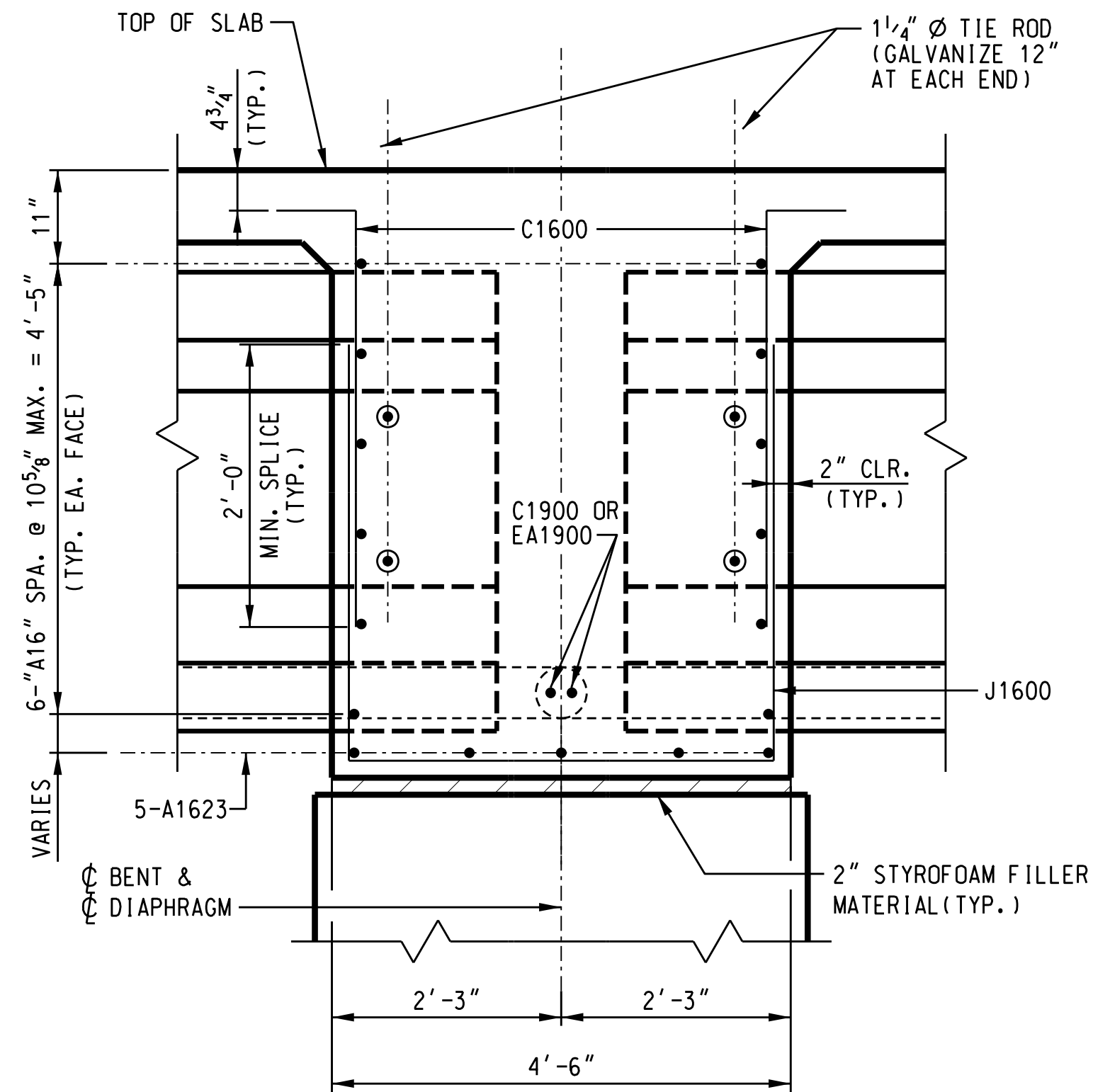
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REVIEWED		PLC 04-22	
QUAN.			
DR.	WRS	ALP	03-22
DES.	WRS	ALP	03-22
	BY	CHK.	DATE



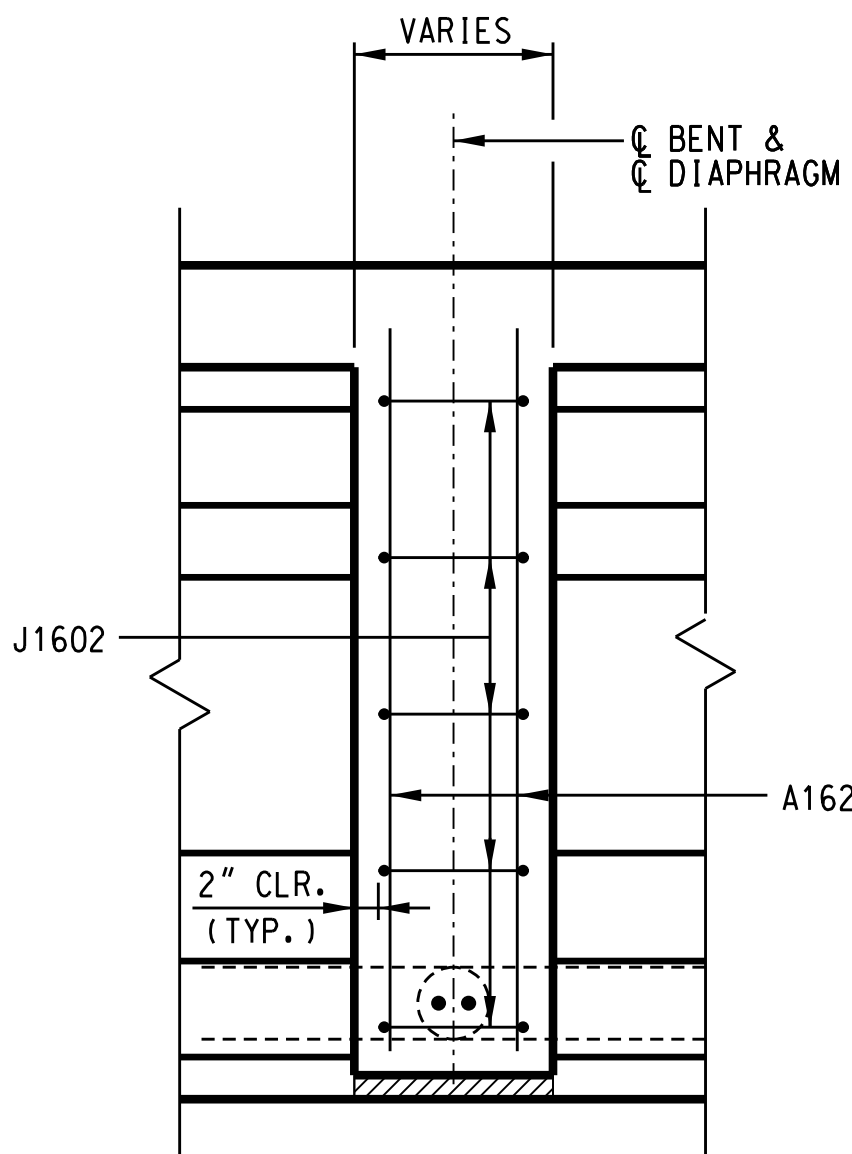
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PARTIAL ELEVATION OF INTERIOR BENT DIAPHRAGM



SECTION B-B
(NORMAL TO C BENT)

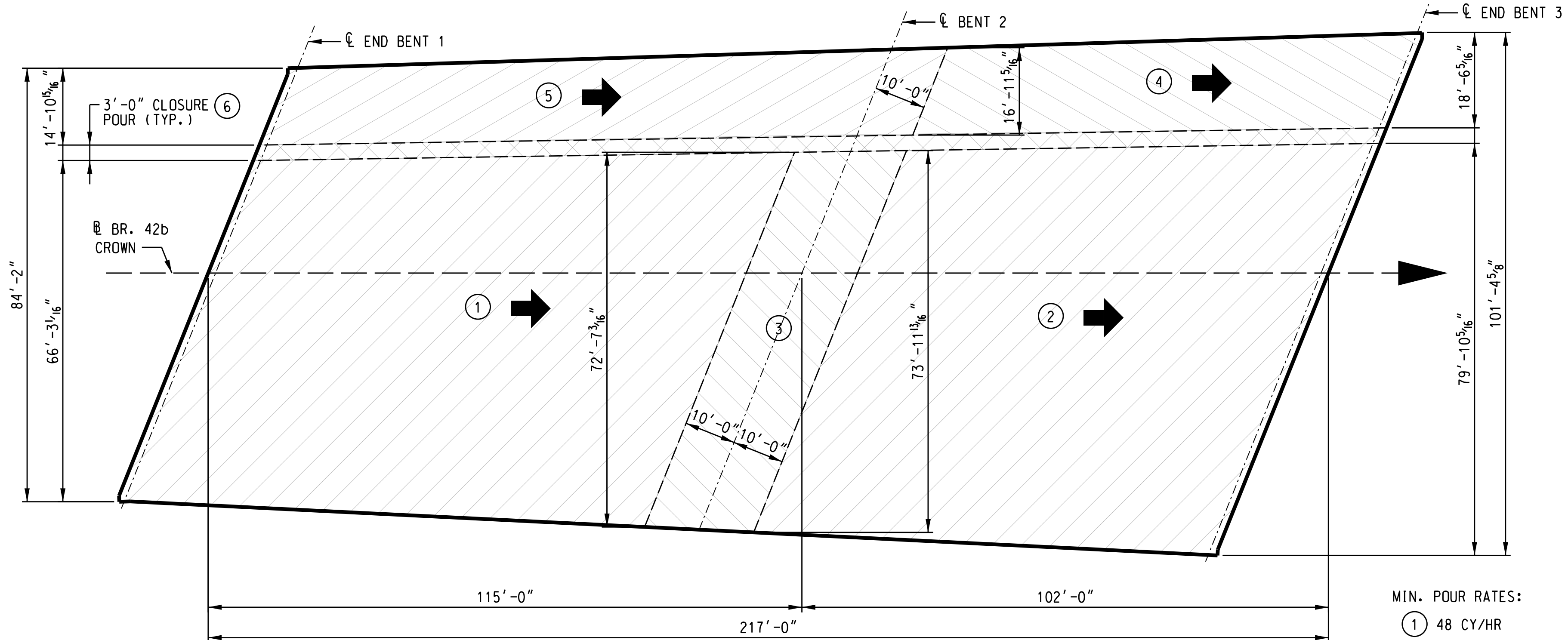


SECTION C-C
(NORMAL TO C BENT)

POURING SEQUENCE NOTES

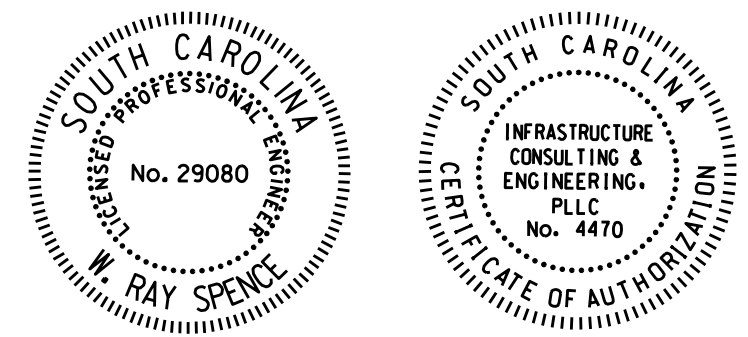
1. THE POURING SEQUENCE FOR THE SLAB SHALL BE IN THE NUMERICAL ORDER INDICATED, WITH EACH NUMBERED SECTION CONSTITUTING A SEPARATE POUR. MINIMUM POUR RATE SHALL BE 45 CY/HR UNLESS NOTED OTHERWISE.
2. BEFORE MAKING SUBSEQUENT POUR, WAIT EITHER A MINIMUM OF 96 HOURS AFTER PLACEMENT OF THE INITIAL POUR OR UNTIL THE INITIAL POUR CONCRETE HAS ATTAINED A MINIMUM OF 75% OF THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH AS VERIFIED BY TESTING EXTRA CYLINDERS.
3. NO PRESCRIBED ORDER FOR PARAPET POURS, HOWEVER, PARAPET SHALL NOT BE POURED UNTIL 5 DAYS AFTER ALL SLAB POURS HAVE BEEN MADE OR ALL SLAB POURS HAVE REACHED SPECIFIED 28-DAY COMPRESSIVE STRENGTH. STRIKE ALL SLAB FALSEWORK PRIOR TO PLACING BARRIER PARAPET PER SCDOT STANDARD SPECIFICATION 702.4.5 ITEM 4.
4. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISION DURING PLACEMENT OF SLAB TO PREVENT THE EXTERIOR BEAMS FROM TWISTING.
5. NO CONSTRUCTION JOINTS WILL BE ALLOWED AT CENTERLINE OF INTERIOR BENTS.

- # - INDICATES POUR NUMBER
- ← - INDICATES POUR DIRECTION (IF NOT SPECIFIED, POUR CAN BE MADE IN EITHER DIRECTION)

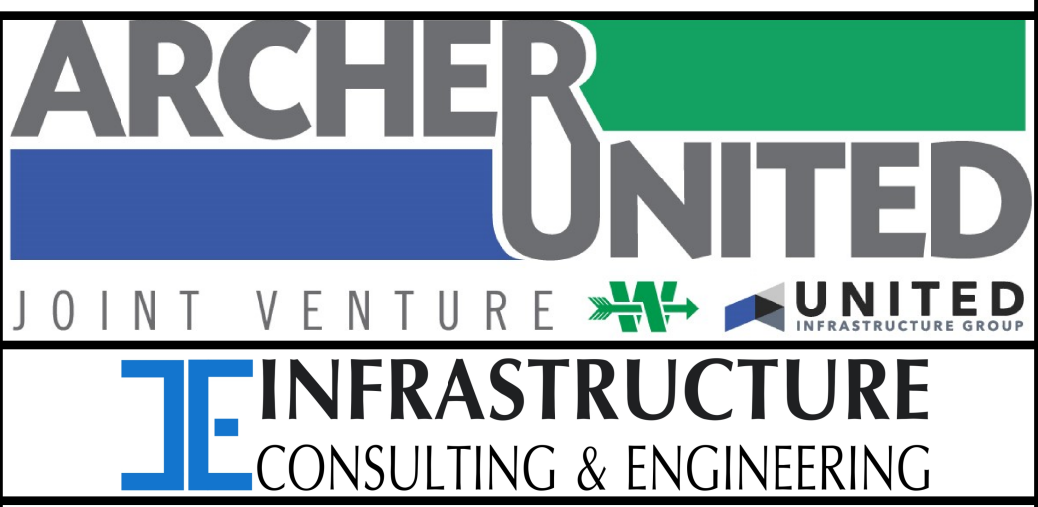


- MIN. POUR RATES:
- 1 48 CY/HR
 - 2 49 CY/HR
 - 3-6 45 CY/HR

POURING SEQUENCE SKETCH



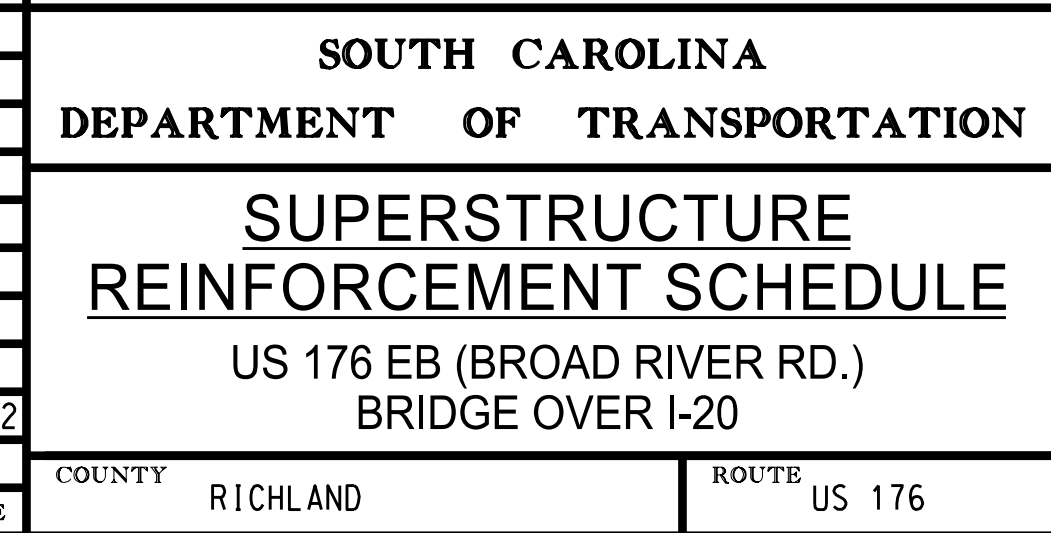
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REV.	RFC	PLANS
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REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	WRS	KLC 03-22
DES.	WRS	ALP 03-22
BY	CHK.	DATE



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
SUPERSTRUCTURE DETAILS	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY RICHLAND	ROUTE US 176

REINFORCING STEEL SCHEDULE

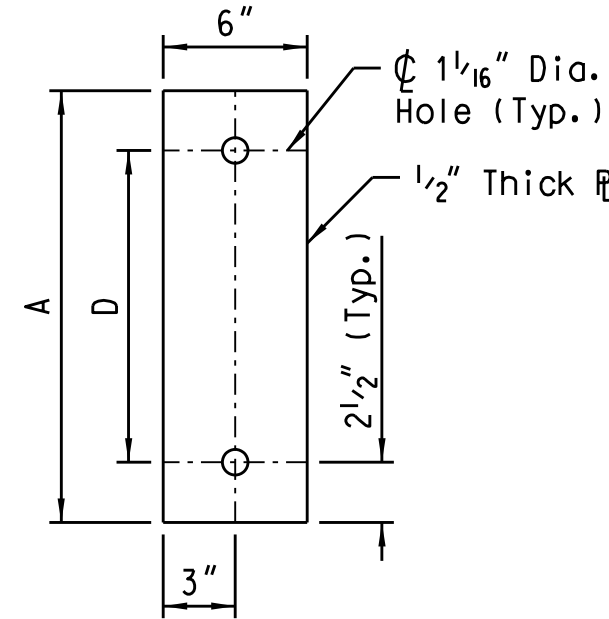
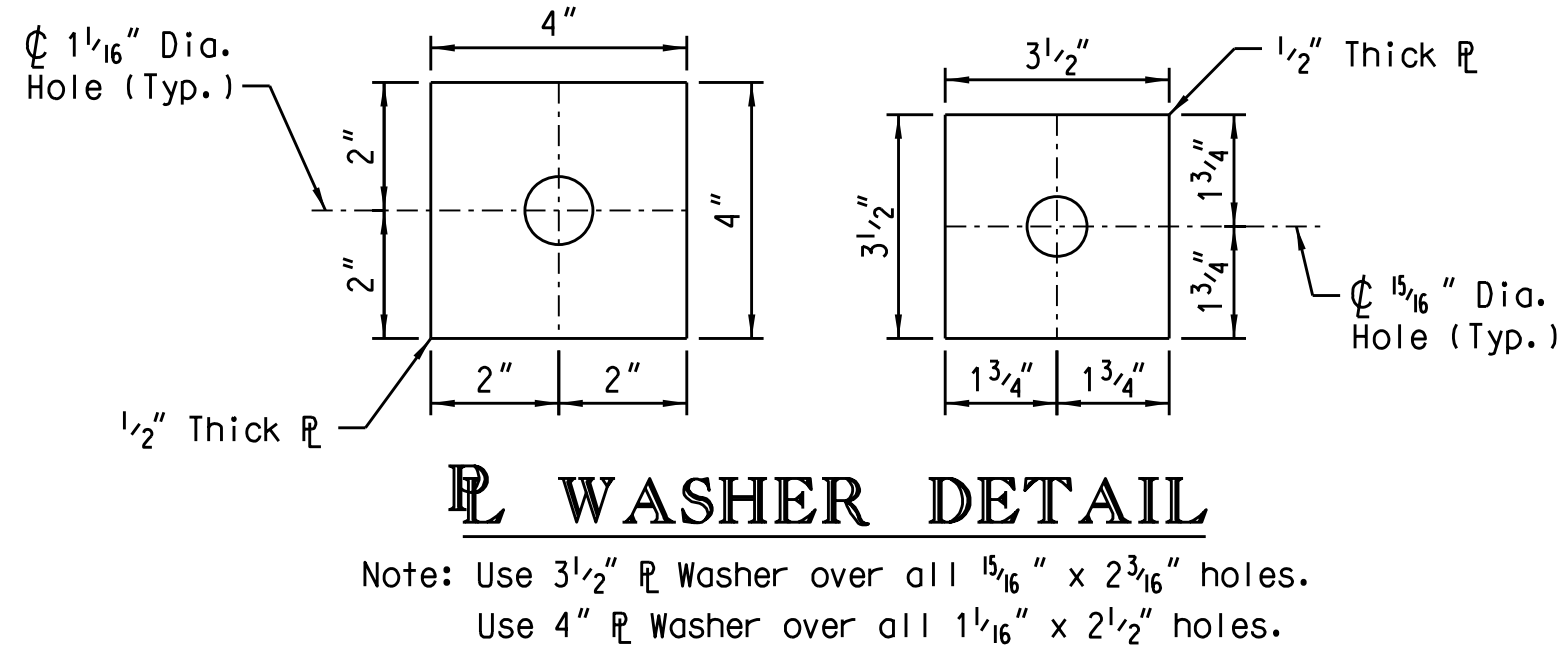
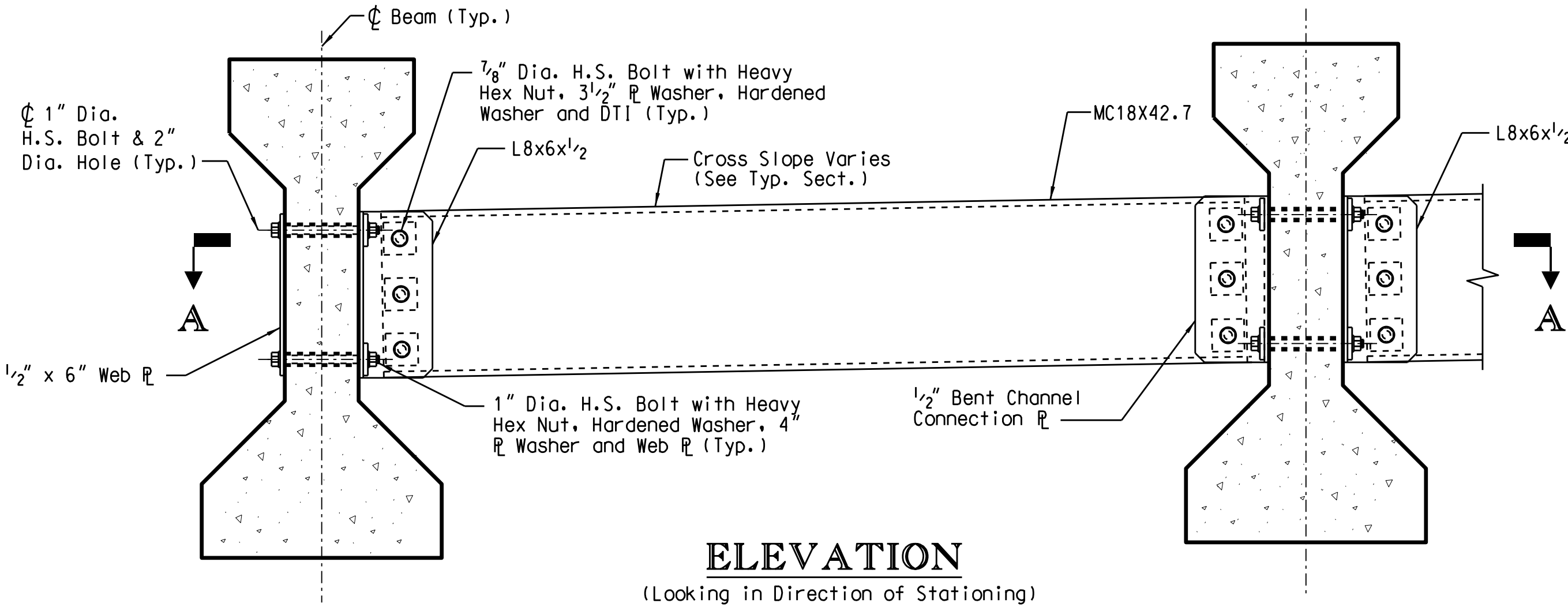
1 1/4" TIE ROD ASSEM. (BENT 2 DIAPHRAGM)	QTY. = 4	L = 94'-9"	WT. = 1,595 LBS
SBU 1" AS NECESSARY			
BBU 2 3/8" AS NECESSARY			
BBU (NEAR INT BENT) 1 7/8" AS NECESSARY			
BBU (NEAR INT BENT AT EXT. BEAMS) 1 5/8" AS NECESSARY			



REV. 0	WRS	06-23-22	
	RFC PLANS		
REV.			
REV.			
REVIEWED		PLC 04-22	
QUAN.			
DR.	BFS	WRS	04-2
DES.			
	BY	CHK.	DATE

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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	45



WEB PLATE DETAIL

Notes:

Provide structural steel sections, plates, and plate washers that conform to the requirements of AASHTO M 270, Grade 50. Galvanize all components of diaphragms including connection angle and plate washers in accordance with AASHTO M 111. Perform galvanizing after fabrication is completed. Roughen faying surfaces of bolted connections by means of hand-wire brushing. Power-wire brushing is not permitted.

Make all bolted diaphragm connections with 7/8 inch or 1 inch ASTM F3125, Grade A325 (Type 1) bolts. Mechanically galvanize bolts, heavy hex nuts, hardened washers, and direct tension indicators (DTI's) in accordance with ASTM B 695 Class 50. For the 1 inch bolt assemblies, galvanizing in accordance with AASHTO M 232 may be substituted for mechanical galvanizing.

Submit shop plans for steel intermediate diaphragms in accordance with the Standard Specifications.

After installation of steel diaphragms, repair all damaged areas of the galvanized finish in accordance with ASTM A 780. Use paint method to repair finish on hardware.

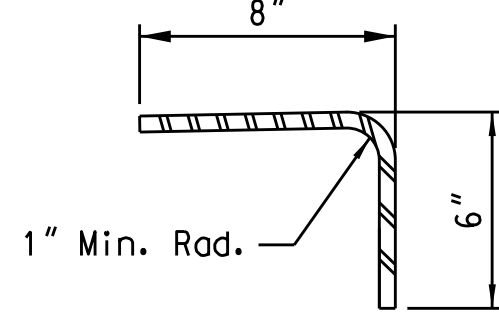
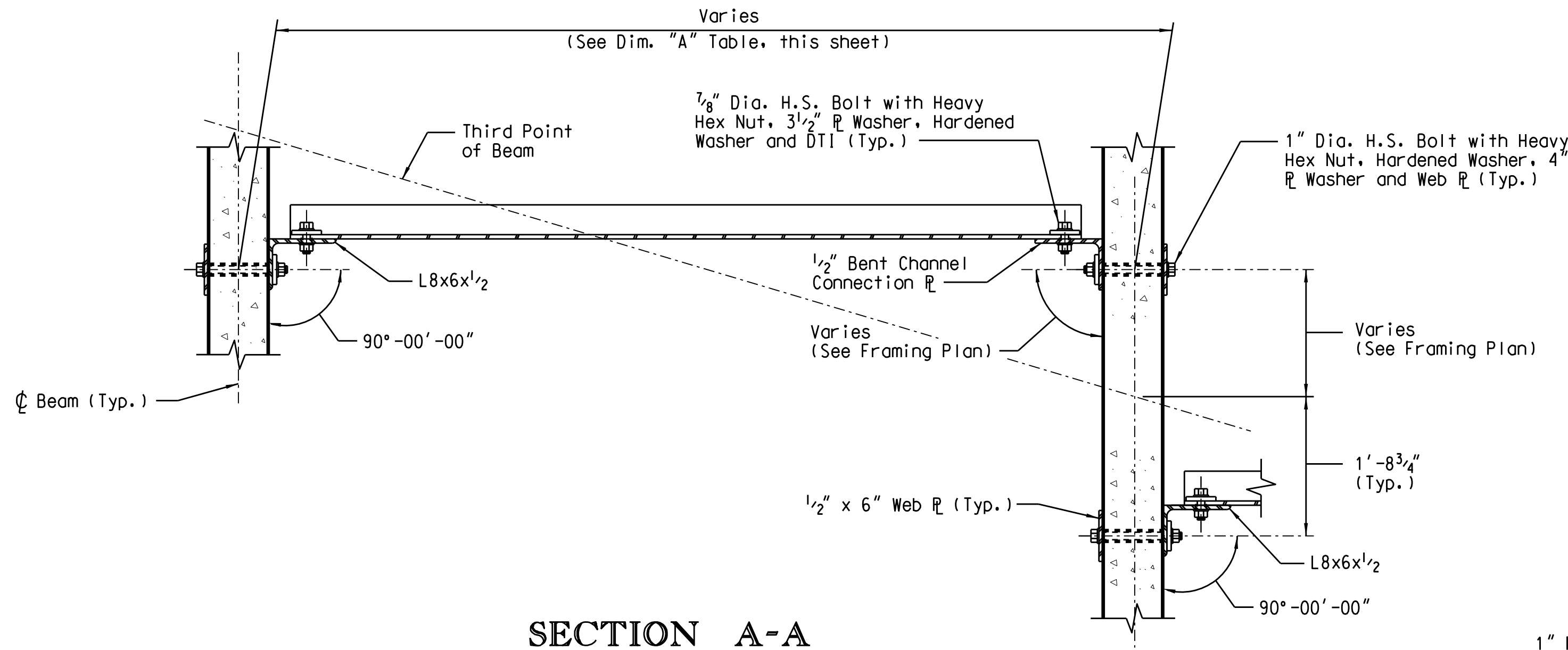
Form bolt holes in prestressed concrete beams using 2 inch inside diameter pipe and leave pipe in place after forms are removed.

Tension bolts through the beam web to be snug tight and then turn the bolts an additional 1/4 turn. Peen threads on all bolts installed through the beam web. Install all other bolts using a DTI and hardened washer with each bolt assembly to verify proper tensioning.

Do not place deck slab until all intermediate diaphragms are properly installed and tightened in each span where deck concrete will be placed during the pour.

Leave steel intermediate diaphragms in place as a permanent part of the completed structure.

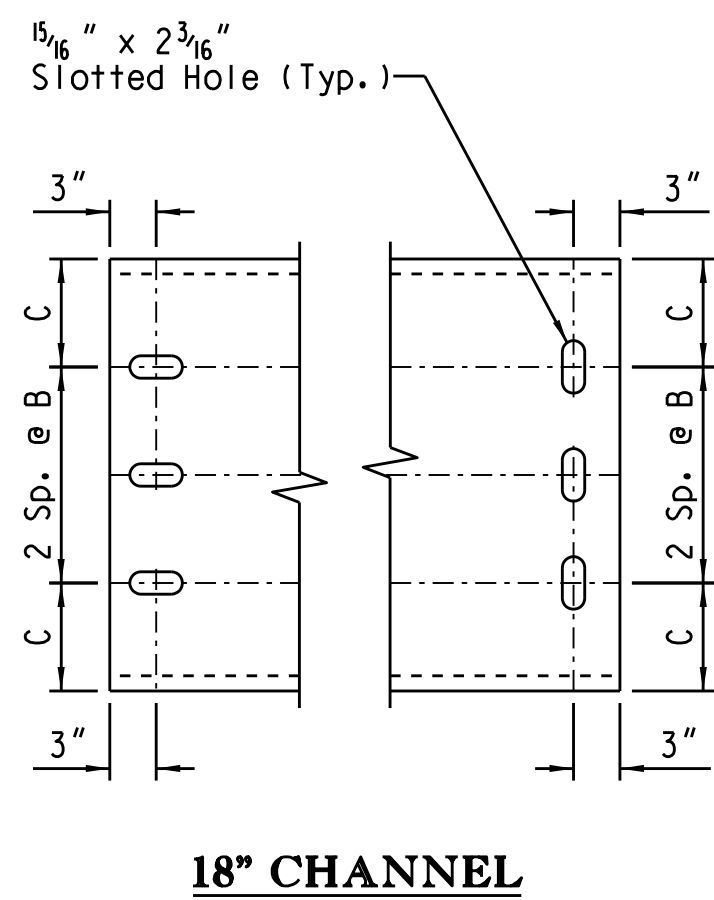
		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
TYPE IV	MC18X42.7	1'-6"	5"	4"	1'-1"



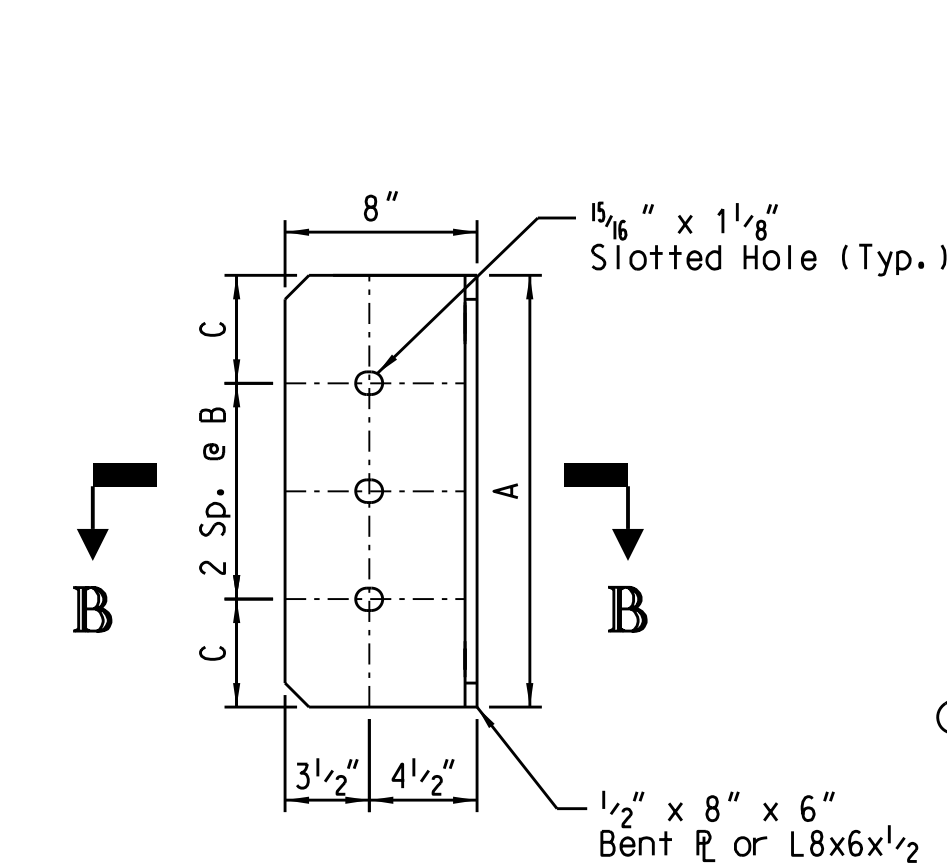
SECTION B-B (For Bent Channel Connection)

Dim. "A" Table of Dimensions		
Diaphragm	Span A	Span B
1-1	7'-11 1/2"	8'-10"
2-1	OMITTED	OMITTED
3-1	8'-0 1/8"	8'-10 3/4"
4-1	8'-0 1/16"	8'-11 1/16"
5-1	8'-0 3/4"	8'-11 1/16"
6-1	8'-1 1/16"	8'-11 3/4"
7-1	8'-1 5/16"	9'-0 1/16"
8-1	8'-1 5/8"	9'-0 3/8"
9-1	8'-1 15/16"	9'-0 3/4"
10-1	8'-2 3/16"	9'-1 1/16"
1-2	8'-3 1/16"	9'-1 3/16"
2-2	OMITTED	OMITTED
3-2	8'-3 1/16"	9'-1 7/8"
4-2	8'-4 1/16"	9'-2 1/4"
5-2	8'-4 3/8"	9'-2 5/8"
6-2	8'-4 1/16"	9'-2 15/16"
7-2	8'-5"	9'-3 3/16"
8-2	8'-5 1/4"	9'-3 5/8"
9-2	8'-5 3/16"	9'-3 15/16"
10-2	8'-5 1/8"	9'-4 1/4"

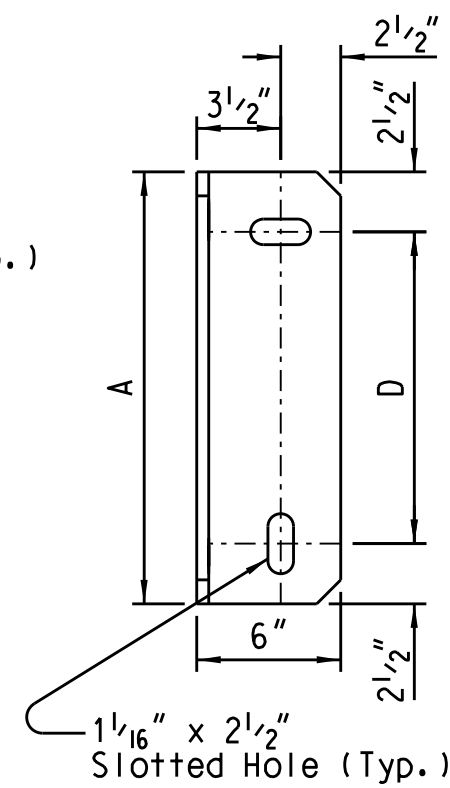
SECTION A-A



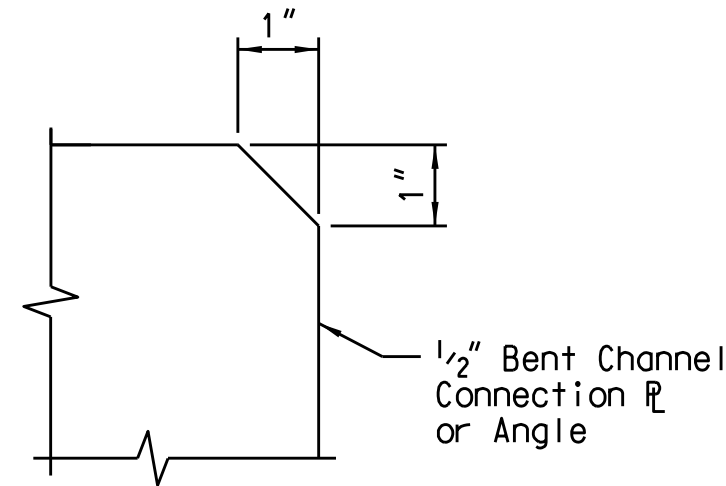
CHANNEL END DETAIL



DIAPHRAGM FACE (For 18" Channel)

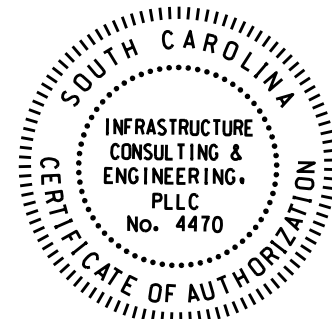
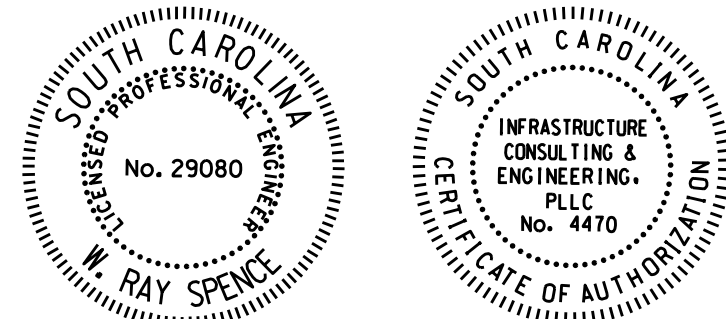


WEB FACE

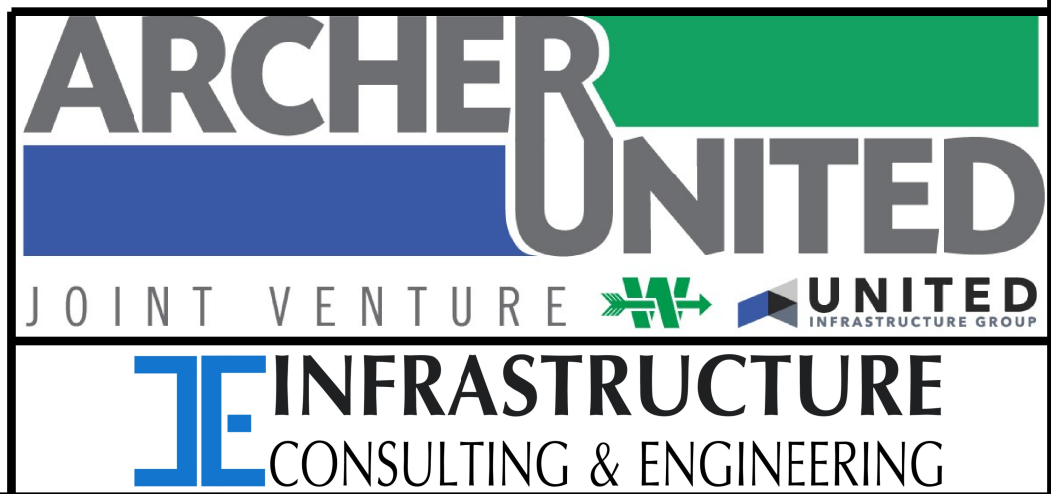


CORNER CLIP

CHANNEL CONNECTION PLATE DETAILS



REV. 0	WRS	06-23-22
	RFC	PLANS
REV. 1	WRS	ALP 03-22
	P039719-B02	
REV. 2	PCW	HL 09-20
	ASTM F3125	
REVIEWED	PLC	04-22
QUAN.		
DR. 1	WRS	SAN 12-11
DES. 2	WRS	ALP 03-22
BY	CHK.	DATE



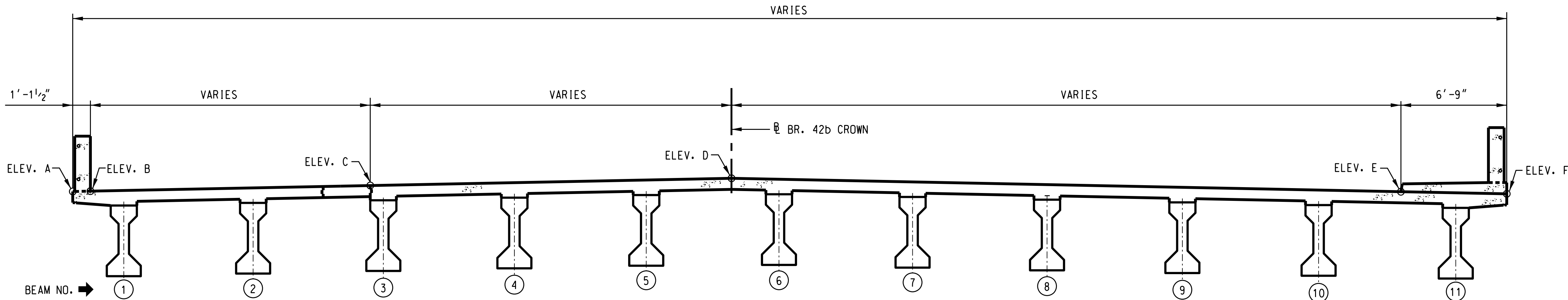
**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**STEEL INTERMEDIATE
DIAPHRAGM DETAILS**
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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DRAWING NO. 704-05b

Z:\Projects\20-8\CCR Ph 2\Structures\02-New Bridges\Bridge 42b\04_Final\Plans\46_BRIDGE 42b_TOP OF SLAB ELEVATIONS.dgn
6/23/2022 10:33:39 PM



TOP OF SLAB ELEVATIONS

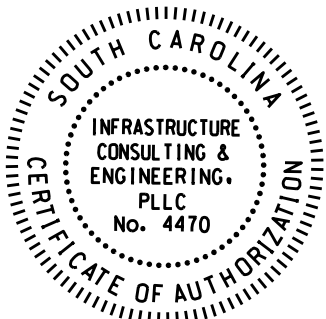
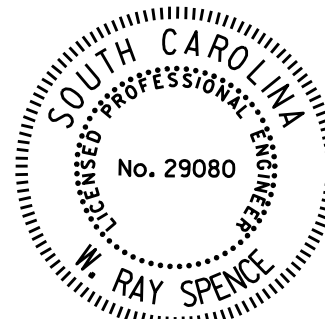
(LOOKING IN DIRECTION OF STATIONING)

TOP OF SLAB ELEVATIONS						
STATION	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F
414+70.00	—	—	—	—	329.902	329.766
414+75.00	—	—	—	—	330.084	329.949
414+80.00	—	—	—	—	330.264	330.129
414+83.79	—	—	—	331.165	330.399	330.265
414+85.00	—	—	—	331.209	330.443	330.308
414+90.00	—	—	—	331.394	330.623	330.488
414+95.00	—	—	331.142	331.578	330.802	330.667
415+00.00	330.968	330.971	331.325	331.763	330.982	330.847
415+05.00	331.150	331.152	331.508	331.947	331.161	331.026
415+10.00	331.331	331.334	331.691	332.132	331.341	331.206
415+15.00	331.512	331.515	331.873	332.316	331.521	331.385
415+20.00	331.694	331.696	332.056	332.501	331.700	331.565
415+25.00	331.875	331.878	332.239	332.685	331.880	331.744
415+30.00	332.057	332.059	332.422	332.870	332.059	331.924
415+35.00	332.238	332.240	332.605	333.054	332.239	332.103
415+40.00	332.419	332.422	332.788	333.239	332.418	332.283
415+45.00	332.605	332.608	332.976	333.428	332.602	332.467
415+50.00	332.784	332.786	333.156	333.609	332.779	332.643
415+55.00	332.956	332.959	333.330	333.785	332.950	332.814
415+60.00	333.124	333.126	333.499	333.956	333.115	332.980
415+65.00	333.285	333.288	333.662	334.120	333.275	333.139
415+70.00	333.441	333.444	333.820	334.279	333.429	333.294
415+75.00	333.591	333.594	333.971	334.433	333.577	333.442
415+80.00	333.736	333.739	334.118	334.580	333.720	333.585
415+85.00	333.875	333.877	334.258	334.722	333.857	333.722
415+90.00	334.008	334.011	334.393	334.859	333.988	333.853
415+95.00	334.136	334.138	334.522	334.989	334.114	333.979
415+98.80	334.229	334.231	334.616	335.085	334.205	334.070

STATIONS IN TABLE ARE ALONG BR 42B CROWN

TOP OF SLAB ELEVATIONS						
STATION	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F
416+00.00	334.258	334.260	334.646	335.114	334.365	334.099
416+05.00	334.374	334.376	334.763	335.234	334.348	334.213
416+10.00	334.485	334.487	334.876	335.347	334.457	334.322
416+15.00	334.590	334.592	334.982	335.456	334.560	334.425
416+20.00	334.689	334.691	335.083	335.558	334.658	334.522
416+25.00	334.779	334.782	335.175	335.652	334.746	334.611
416+30.00	334.872	334.875	335.270	335.748	334.837	334.702
416+35.00	334.965	334.968	335.364	335.844	334.928	334.793
416+40.00	335.045	335.047	335.445	335.926	335.006	334.871
416+45.00	335.123	335.126	335.525	336.008	335.083	334.947
416+50.00	335.202	335.205	335.606	336.090	335.160	335.025
416+55.00	335.269	335.272	335.674	336.160	335.225	335.090
416+60.00	335.336	335.339	335.743	336.230	335.290	335.155
416+65.00	335.403	335.405	335.811	336.300	335.355	335.220
416+70.00	335.470	335.472	335.880	336.370	335.420	335.285
416+75.00	335.537	335.539	335.948	336.440	335.485	335.350
416+80.00	335.592	335.594	336.005	336.498	335.538	—
416+85.00	335.647	335.649	336.061	336.556	—	—
416+90.00	335.701	335.704	336.118	336.614	—	—
416+95.00	335.756	335.759	336.174	336.672	—	—
417+00.00	335.809	335.811	336.228	336.727	—	—
417+00.79	335.815	335.818	336.235	336.735	—	—
417+05.00	335.850	335.853	336.271	—	—	—
417+10.00	335.892	335.894	336.314	—	—	—
417+15.00	335.925	335.928	—	—	—	—

STATIONS IN TABLE ARE ALONG BR 42B CROWN



REV. 0	WRS	06-23-22
	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	ALP	KLC 04-22
DES.		
BY	CHK.	DATE



INFRASTRUCTURE CONSULTING & ENGINEERING

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

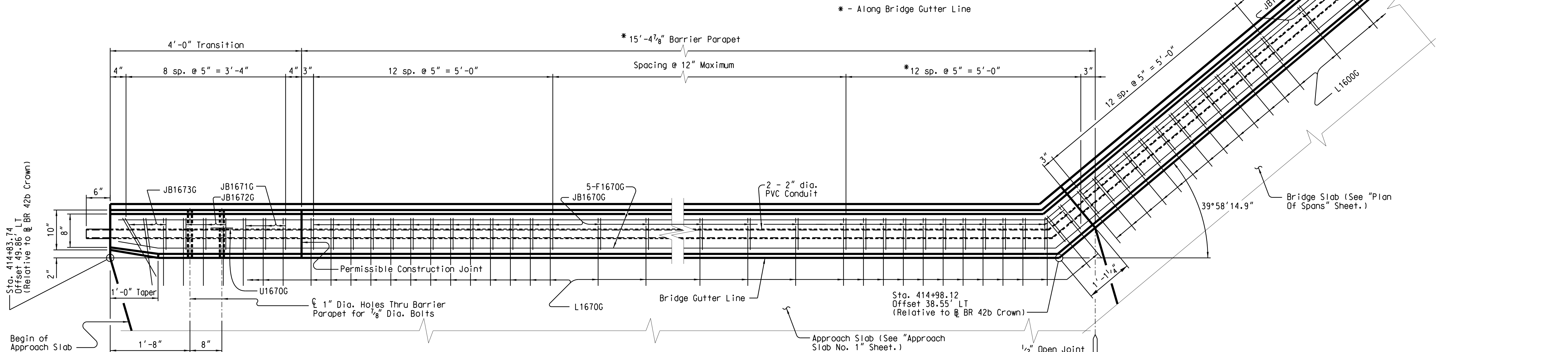
TOP OF SLAB ELEVATIONS

US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20

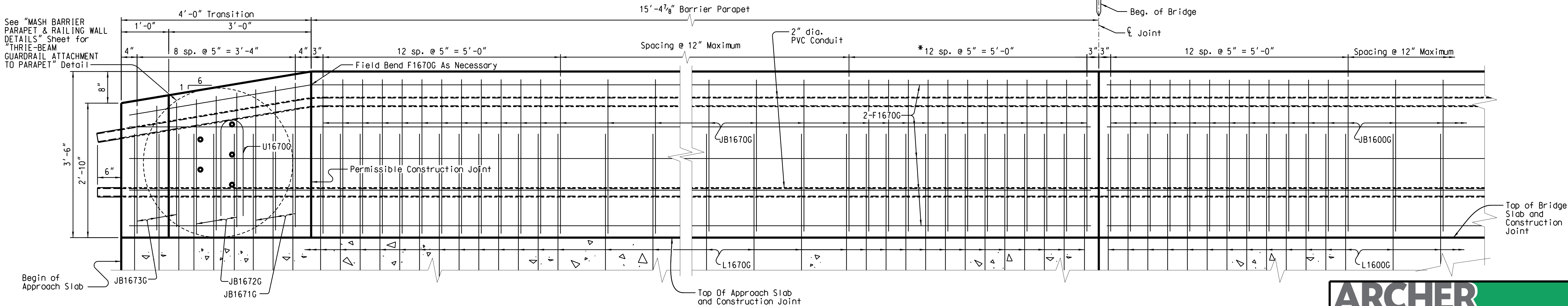
COUNTY RICHLAND ROUTE US 176

Z:\Projects\20-81CCR Ph 2\Structures\02.New Bridges\Bridge 42b\04.Final Plans\47.BRIDGE 42b_MASH BARRIER PARAPET (10F 2).dgn
6/23/2022 5:24:53 PM

BRIDGE PLANS ID	SHEET NO.
P039719-B42b	47



PLAN - LEFT BARRIER PARAPET AT BEGIN BRIDGE

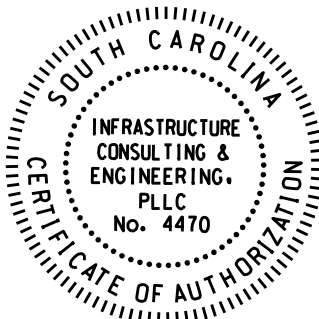


ELEVATION - LEFT BARRIER PARAPET AT BEGIN BRIDGE

(ALONG GUTTER LINE)

Note:

If Contractor elects to hand form barrier parapet instead of slip forming, cast a uniform 12" thick barrier parapet. Ensure that both faces of wall are cast vertical and parallel to one another. Perform this work at no additional expense to the Department.



REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	WLH	ALP 04-22
DR.	WLH	ALP 04-22
DES.	WRS	ALP 04-22
BY	CHK.	DATE



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DEPARTMENT OF TRANSPORTATION

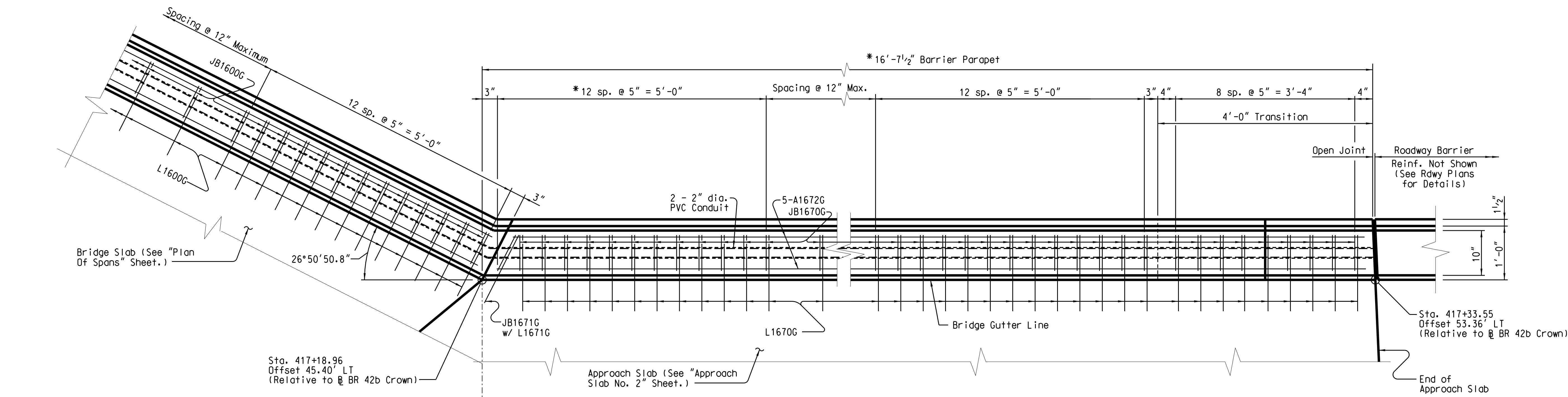
MASH BARRIER PARAPET
(1 OF 2)

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

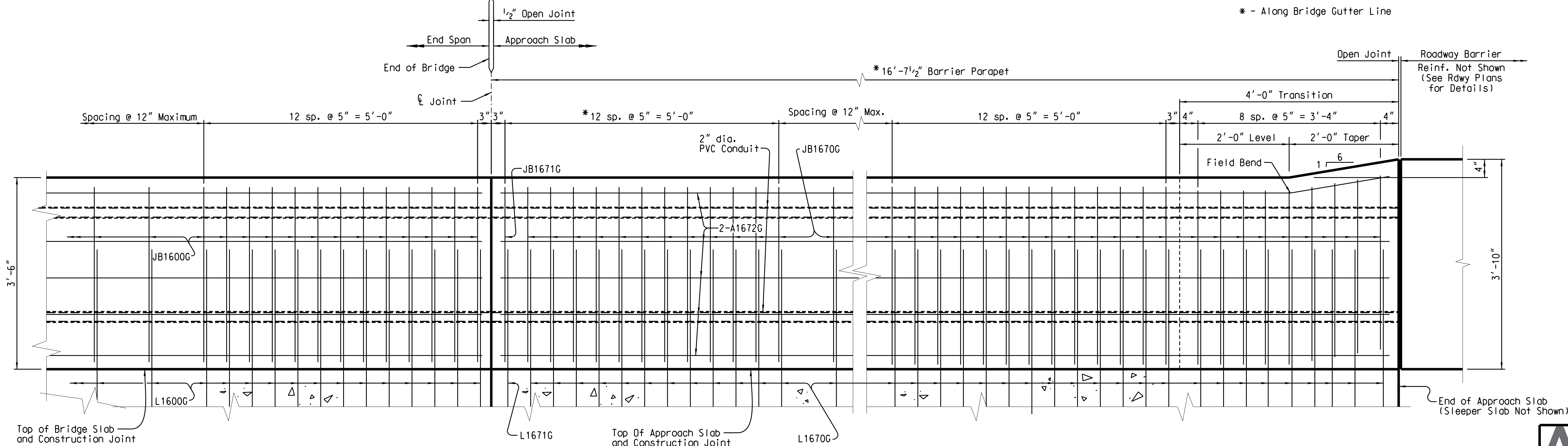
COUNTY	RICHLAND	ROUTE	US 176
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BRIDGE PLANS ID	SHEET NO.
P039719-B42b	48



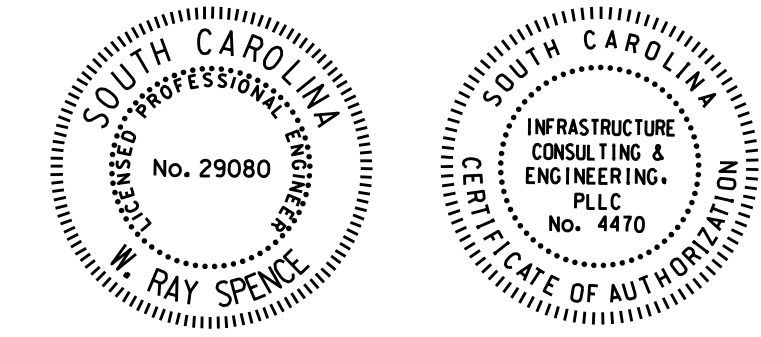
PLAN - LEFT BARRIER PARAPET AT END BRIDGE



ELEVATION - LEFT BARRIER PARAPET AT END BRIDGE

(ALONG GUTTER LINE)

Note:
If Contractor elects to hand form barrier parapet instead of slip forming, cast a uniform 12" thick barrier parapet. Ensure that both faces of wall are cast vertical and parallel to one another. Perform this work at no additional expense to the Department.



REV. 0	WRS	06-23-22
REV.		RFC PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	WLH	ALP 04-22
DR.	WLH	ALP 04-22
DES.	WRS	ALP 04-22
BY	CHK.	DATE



INFRASTRUCTURE CONSULTING & ENGINEERING

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

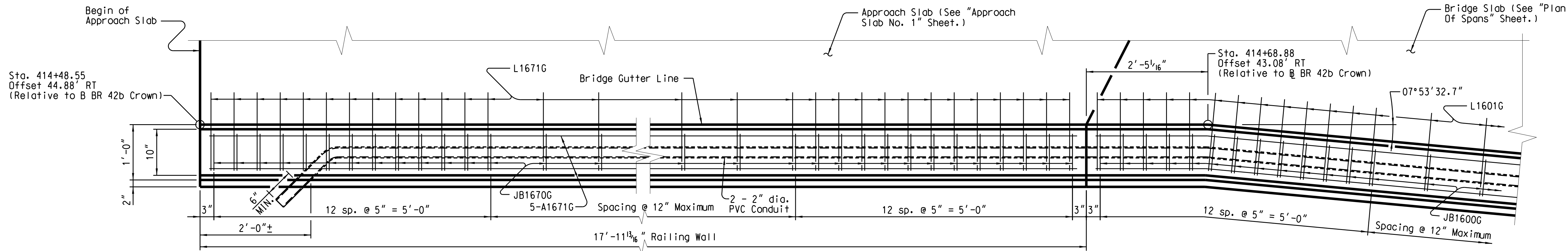
MASH BARRIER PARAPET (2 OF 2)

US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20

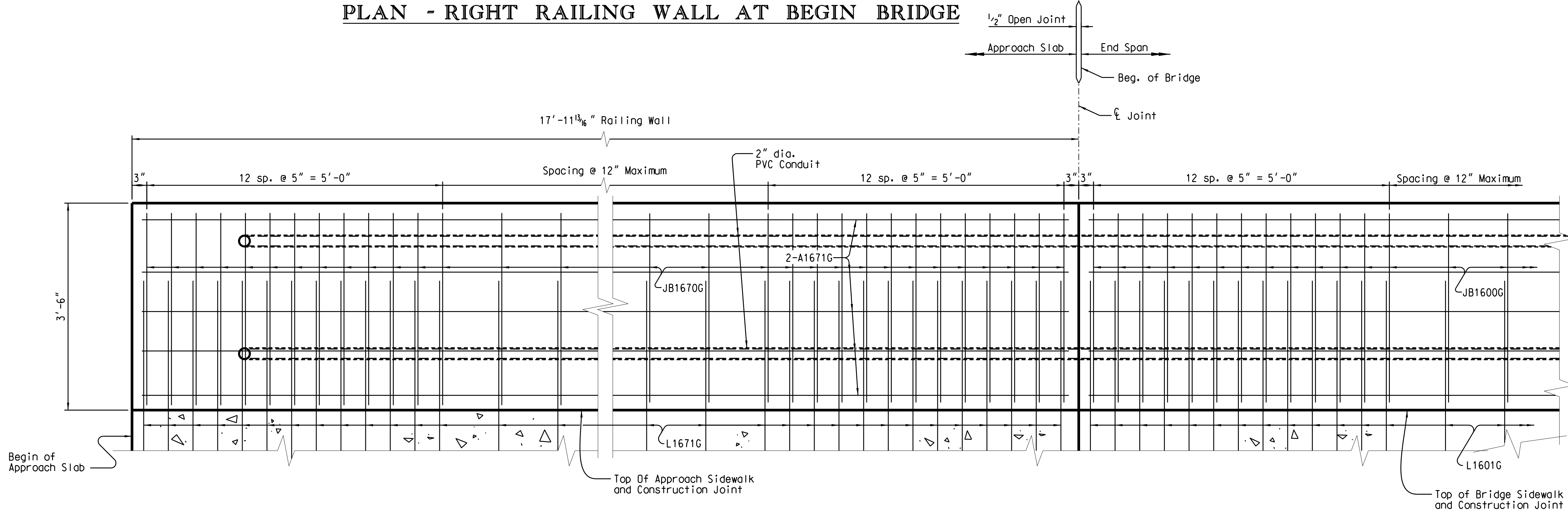
COUNTY	RICHLAND	ROUTE	US 176
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Z:\Projects\20-81CCR Ph 2\Structures\02.New Bridges\Bridge 42b\04_FinalPlans\49_BRIDGE 42b_MASH RAILING WALL (1 OF 2).dgn
6/23/2022 5:24:57 PM

BRIDGE PLANS ID	SHEET NO.
P039719-B42b	49



PLAN - RIGHT RAILING WALL AT BEGIN BRIDGE

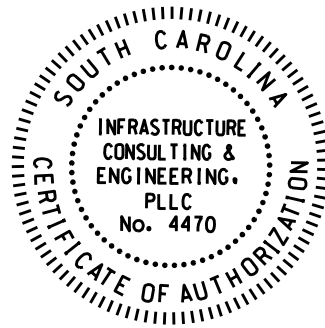
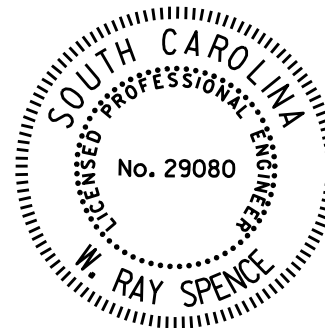


ELEVATION - RIGHT RAILING WALL AT BEGIN BRIDGE

(ALONG GUTTER LINE)

Note:

If Contractor elects to hand form barrier parapet/railing wall instead of slip forming, cast a uniform 12" thick barrier parapet/railing wall. Ensure that both faces of wall are cast vertical and parallel to one another. Perform this work at no additional expense to the Department.



REV. 0	WRS	06-23-22
REV.		RFC PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	WLH	ALP 04-22
DR.	WLH	ALP 04-22
DES.	WRS	ALP 04-22
BY	CHK.	DATE



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SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

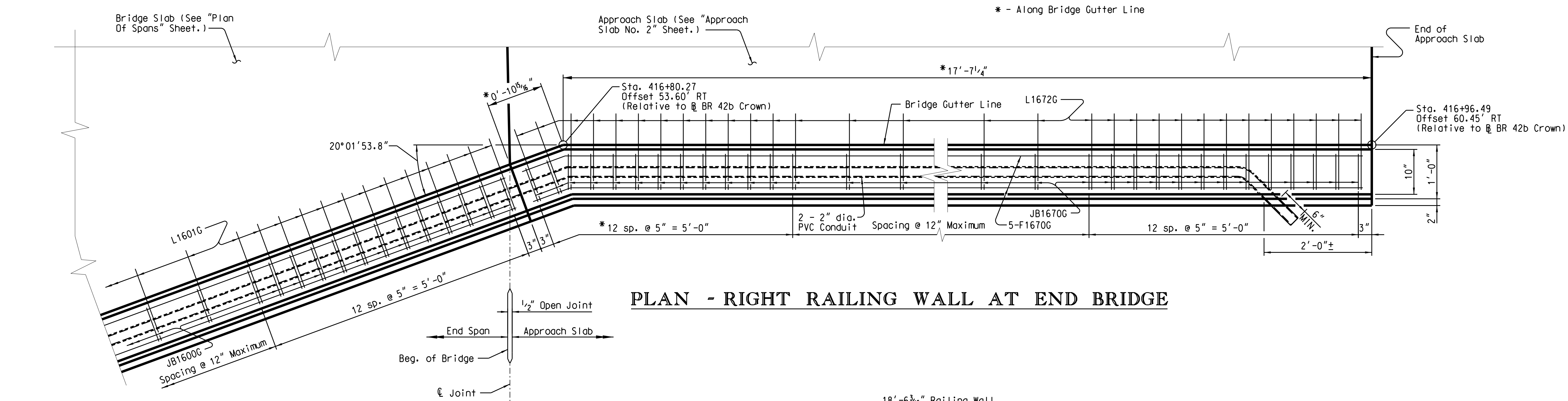
MASH RAILING WALL
(1 OF 2)

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

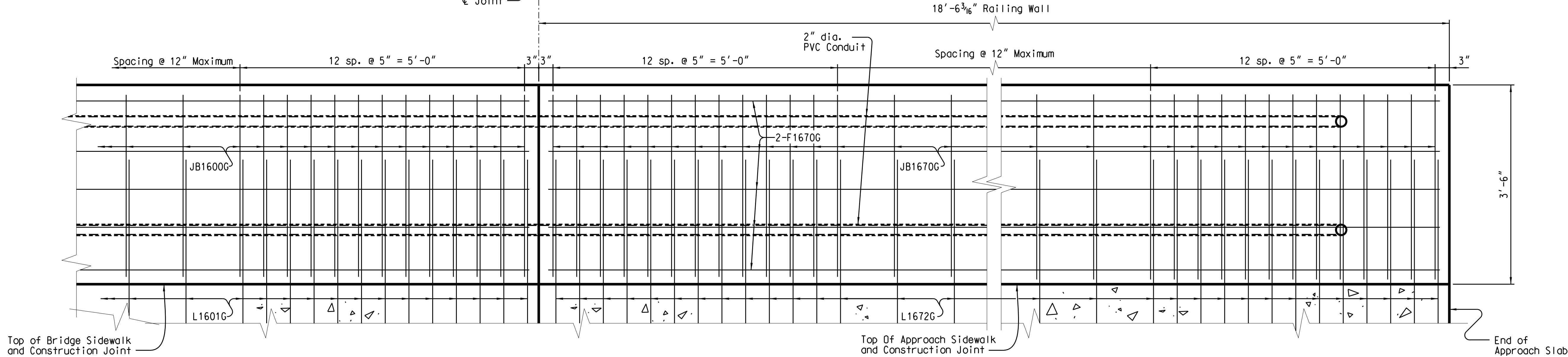
COUNTY	RICHLAND	ROUTE	US 176
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Z:\Projects\20-81CCR Ph 2\Structures\02.New Bridges\Bridge 42b\04_Final Plans\50_BRIDGE 42b_MASH RAILING WALL (2 OF 2).dgn
6/23/2022 5:24:59 PM

BRIDGE PLANS ID	SHEET NO.
P039719-B42b	50



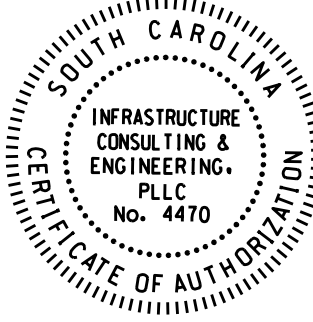
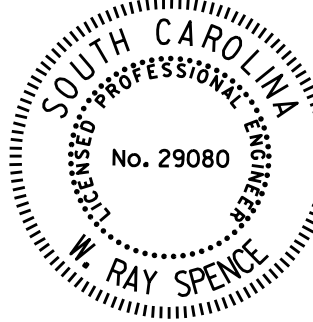
PLAN - RIGHT RAILING WALL AT END BRIDGE



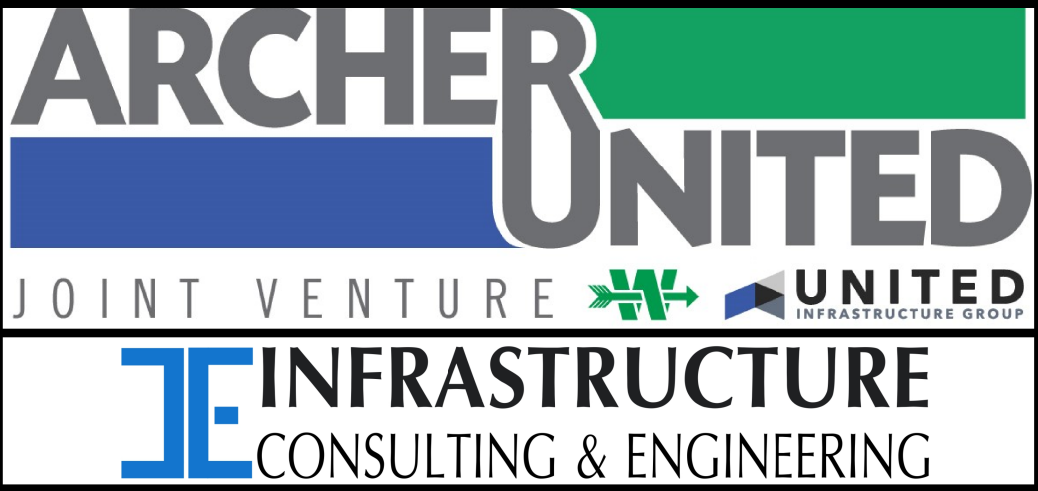
ELEVATION - RIGHT RAILING WALL AT END BRIDGE

(ALONG GUTTER LINE)

Note:
If Contractor elects to hand form barrier parapet/railing wall instead of slip forming, cast a uniform 12" thick barrier parapet/railing wall. Ensure that both faces of wall are cast vertical and parallel to one another. Perform this work at no additional expense to the Department.



REV. 0	WRS	06-23-22
REV.	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	WLH	ALP 04-22
DR.	WLH	ALP 04-22
DES.	WRS	ALP 04-22
BY	CHK.	DATE



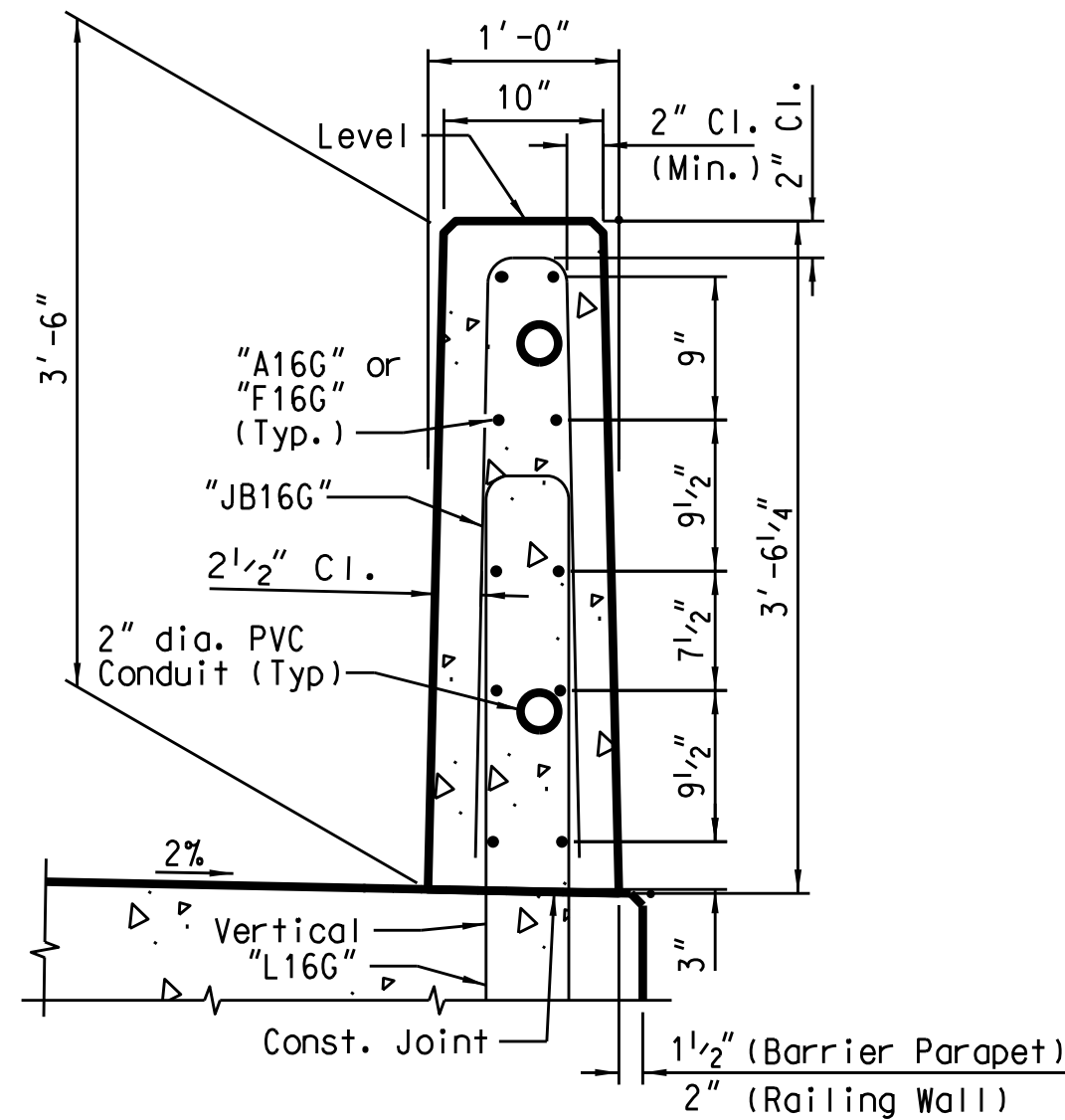
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MASH RAILING WALL
(2 OF 2)

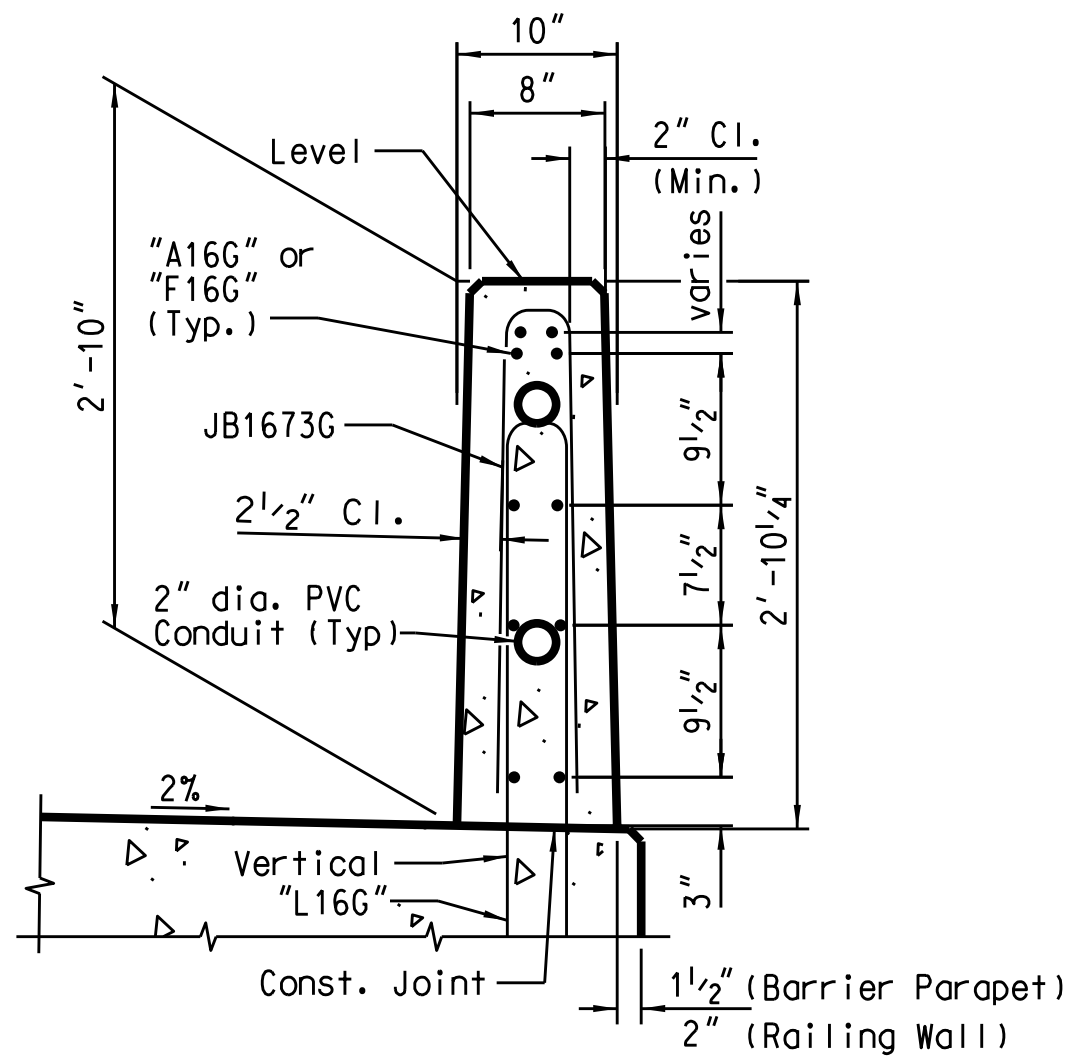
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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Z:\Projects\20-81CCR Ph 2\Structures\02_New Bridges\Bridge 42b\Plans\51.BRIDGE 42b.MASH BARRIER PARAPET & RAILING WALL DETAILS.dgn
6/23/2022 5:25:01PM

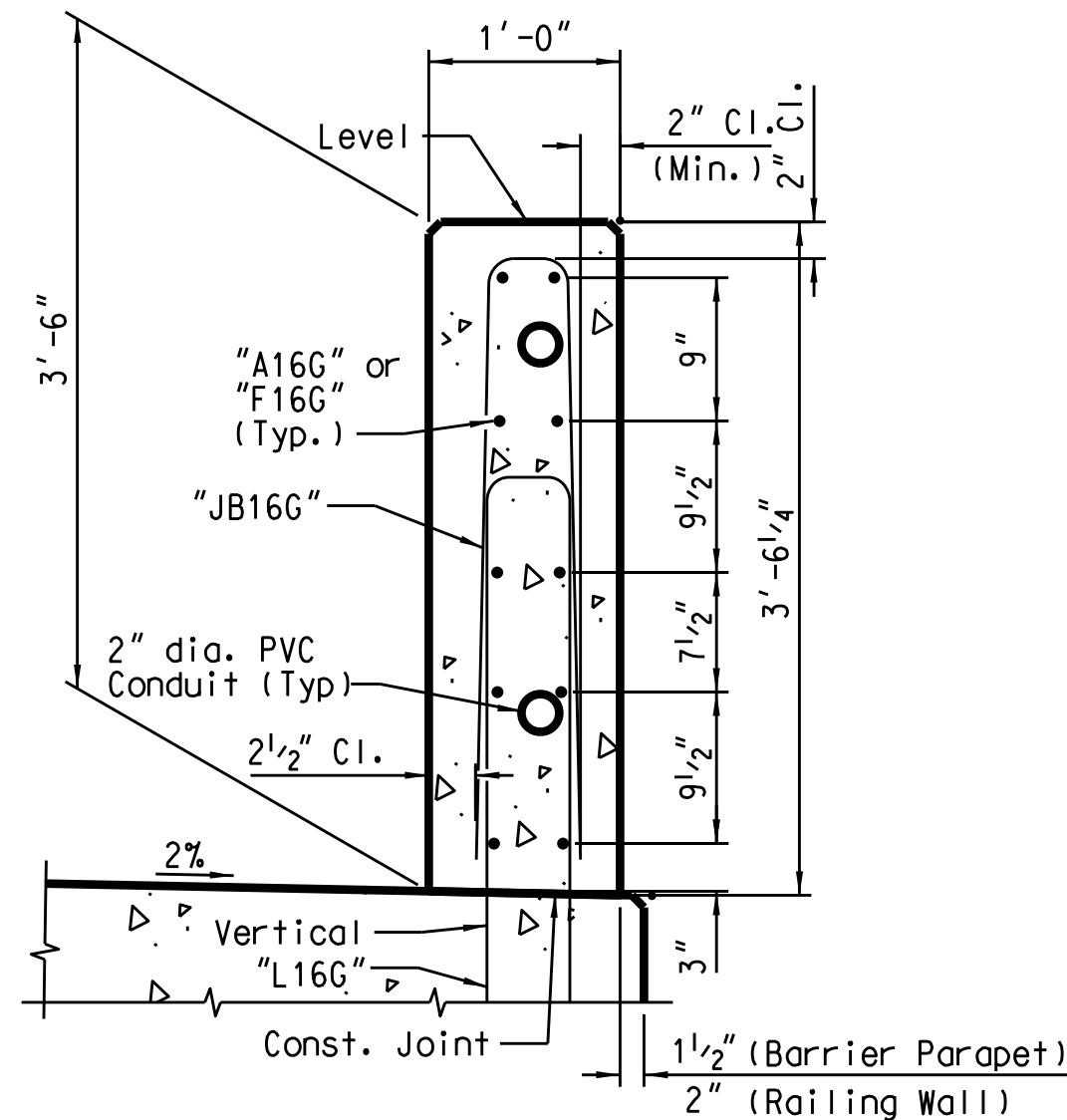


SECTION THRU BARRIER
(Slab Reinforcing and Asphalt Inlay not Shown)

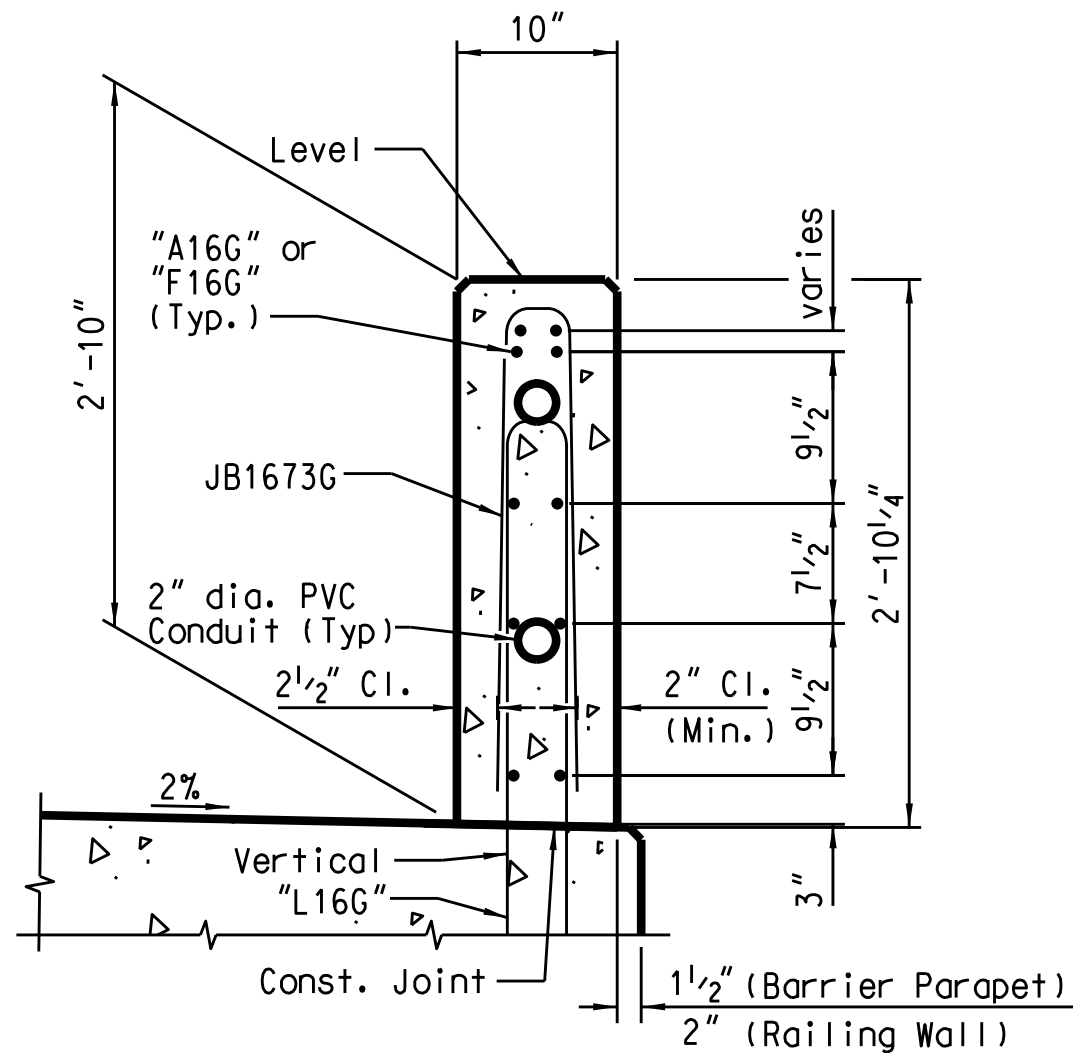


SECTION AT END
(Slab Reinforcing and Asphalt Inlay not Shown)

**SECTIONS USED FOR SLIP FORMING
BARRIER PARAPET / RAILING WALL**

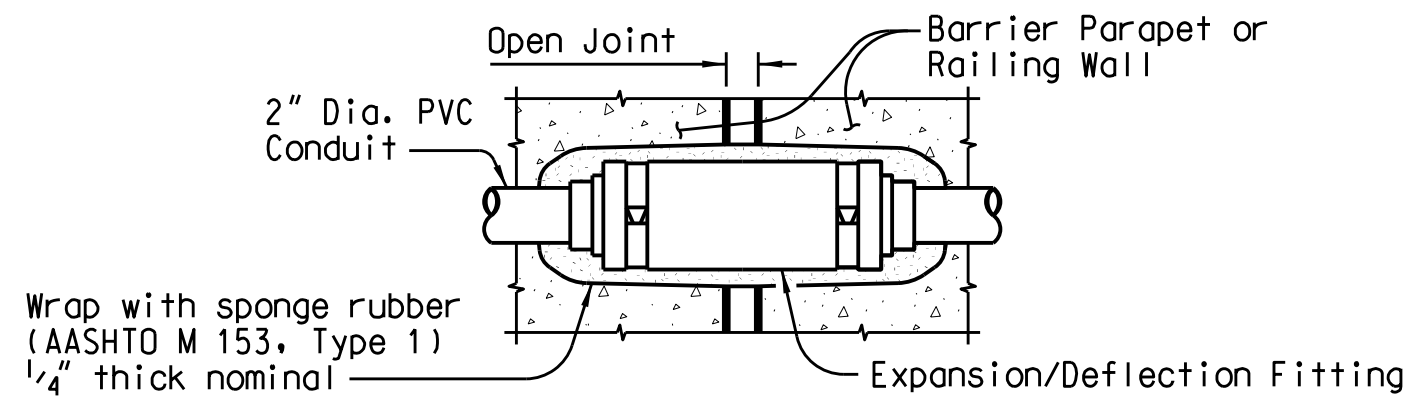


**SECTION THRU
VERTICAL BARRIER**
(Slab Reinforcing and Asphalt Inlay not Shown)

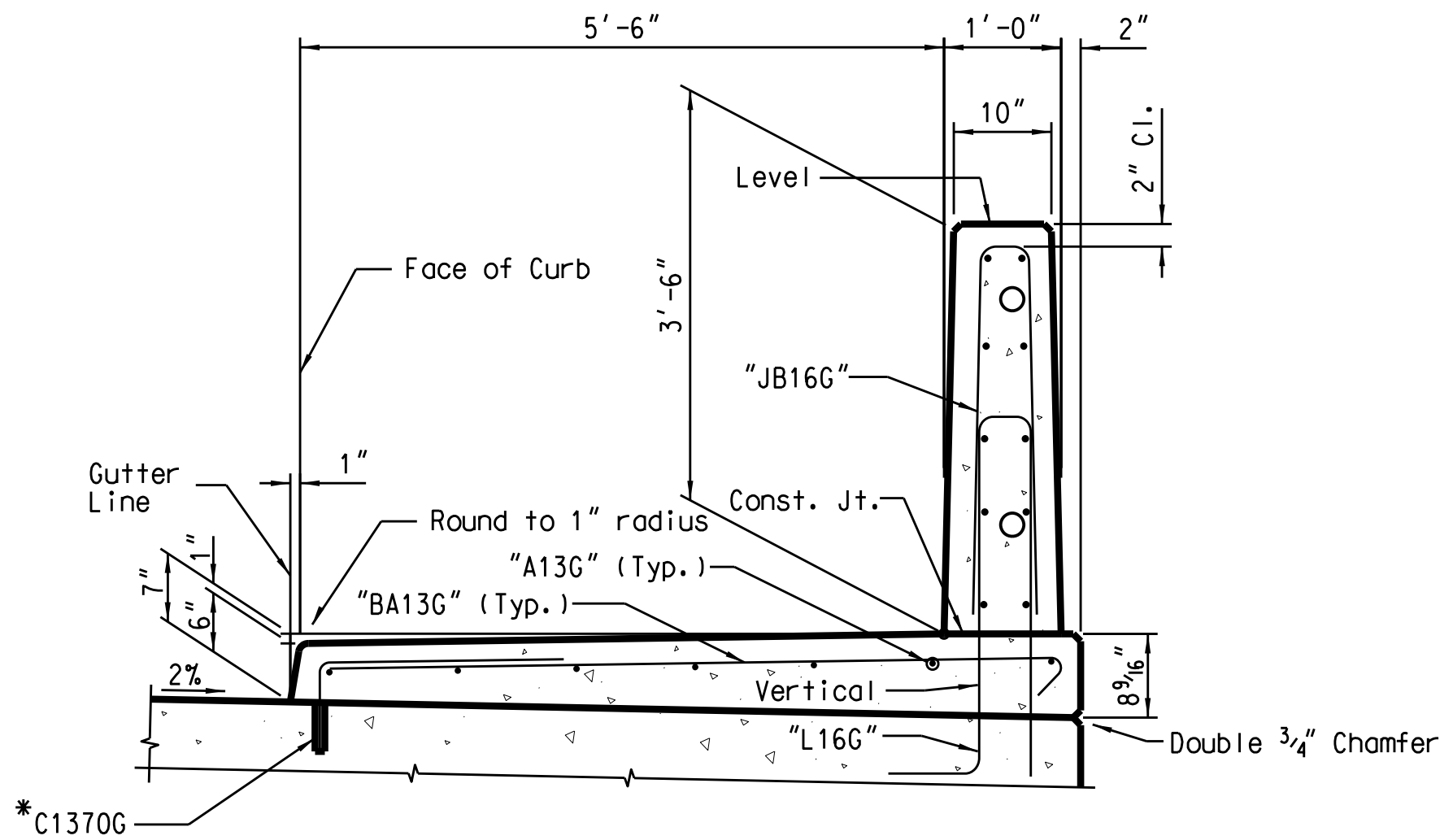


**SECTION AT END
VERTICAL BARRIER**
(Slab Reinforcing and Asphalt Inlay not Shown)

**SECTIONS USED FOR HAND FORMING
BARRIER PARAPET / RAILING WALL**

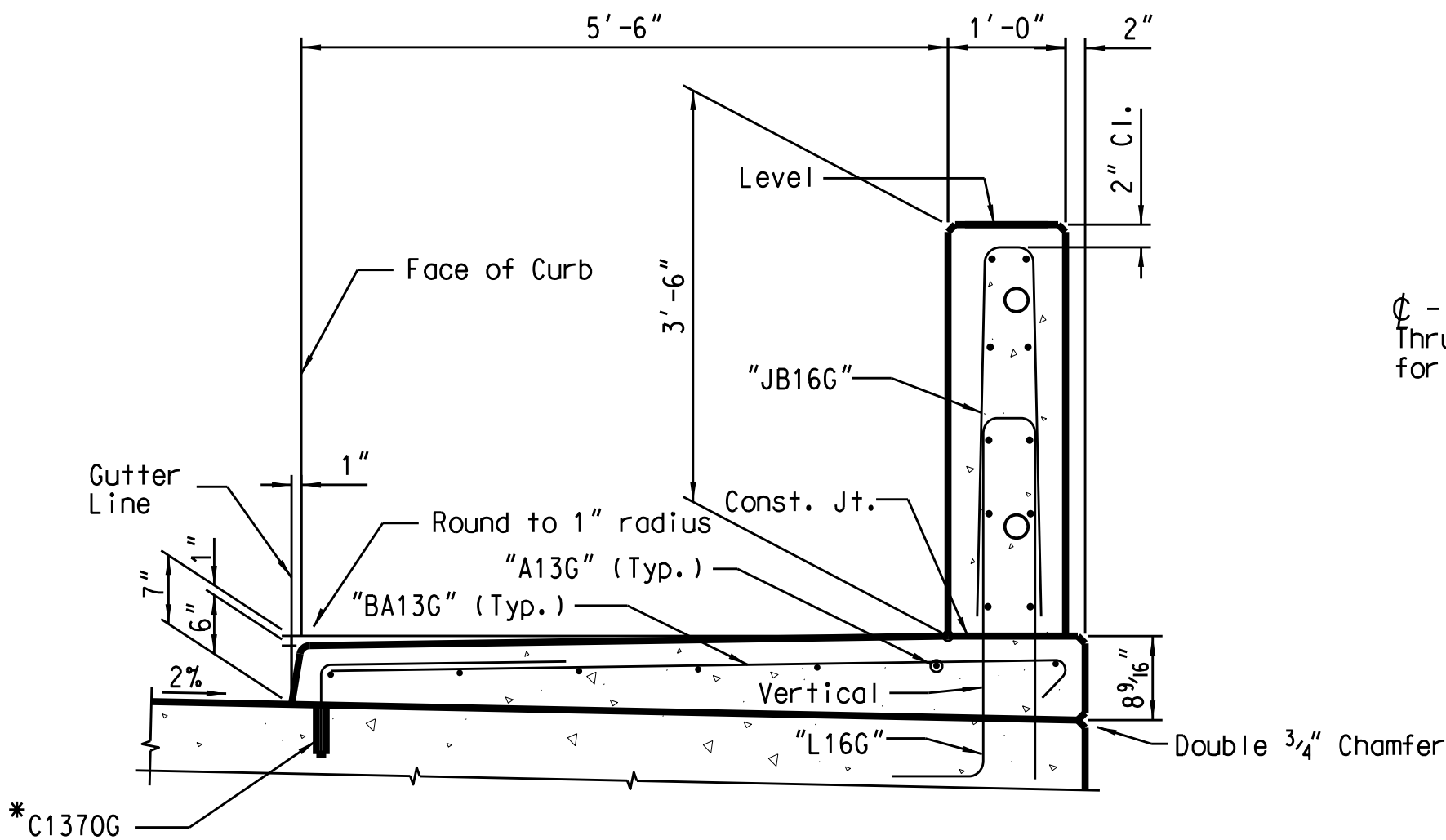


**EXPANSION / DEFLECTION
FITTING DETAIL**



**PEDESTRIAN RAILING WALL DETAILS
(SLIP FORMED)**
(Slab Reinforcing not Shown)

*Adhesively bonded dowel bars, conforming to the requirements of the Supplemental Specifications.



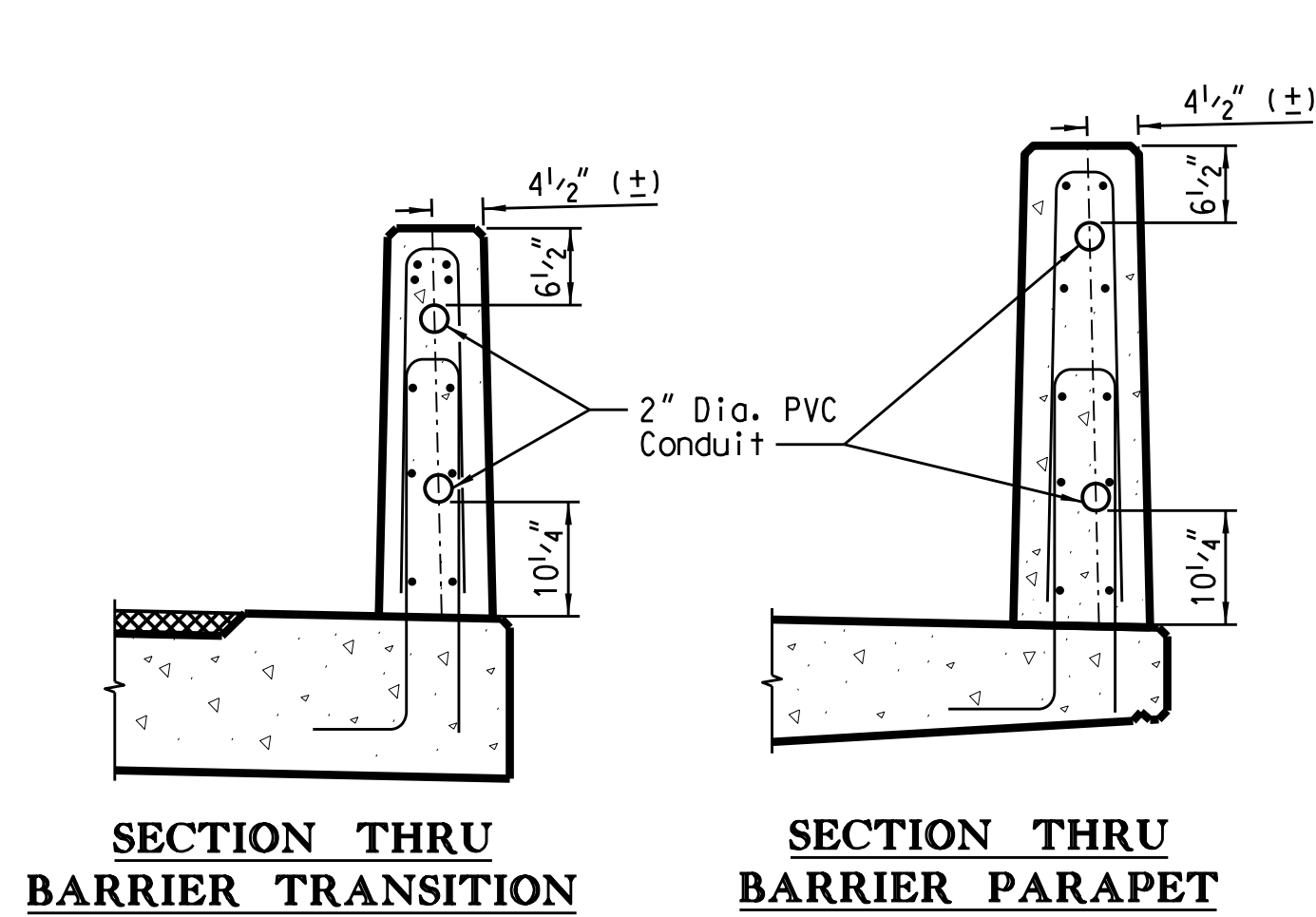
**PEDESTRIAN RAILING WALL DETAILS
(HAND FORMED)**
(Slab Reinforcing not Shown)

*Adhesively bonded dowel bars, conforming to the requirements of the Supplemental Specifications.

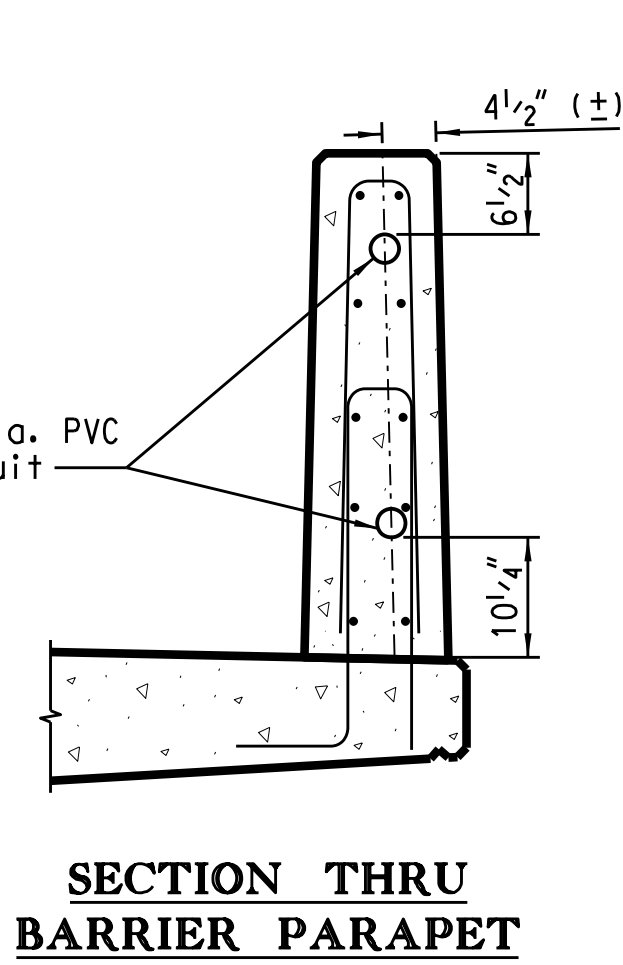
GENERAL CONDUIT NOTES

Furnish and install approved conduits and fittings in accordance with the National Electric Code (NEC) and as directed by the RCE.

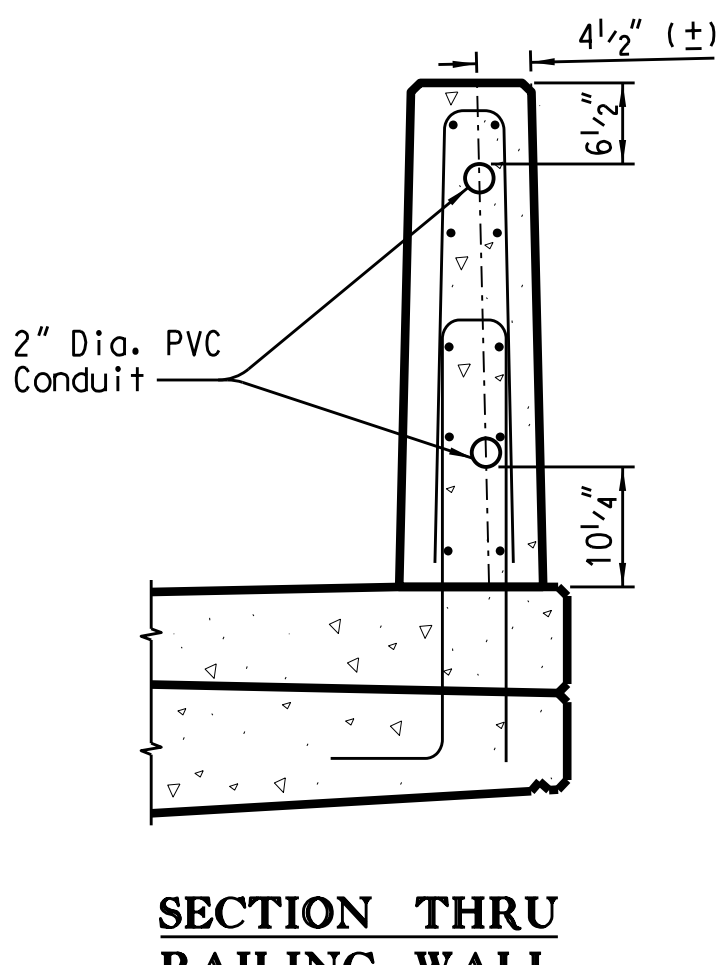
Furnish Schedule 80 PVC rigid nonmetallic conduits in accordance with NEMA TC-2 and UL Standard 651 and furnish fittings in accordance with NEMA TC-3 and UL Standard 514B. Furnish conduit and fittings with UL labels: conduit - on each 10 foot length; fittings - stamped or molded on each fitting. Connect conduit and fittings using solvent cement in accordance with manufacturer's recommendations.



**SECTION THRU
BARRIER TRANSITION**



**SECTION THRU
BARRIER PARAPET**



**SECTION THRU
RAILING WALL**

**DETAILS OF CONDUIT
IN BARRIER PARAPET**
(Typ. left side of bridge)

Use Schedule 80 PVC nonmetallic pipe for conduit.

Extend conduits 6" beyond each end of the barrier parapet or barrier parapet transition and cap with watertight covers.

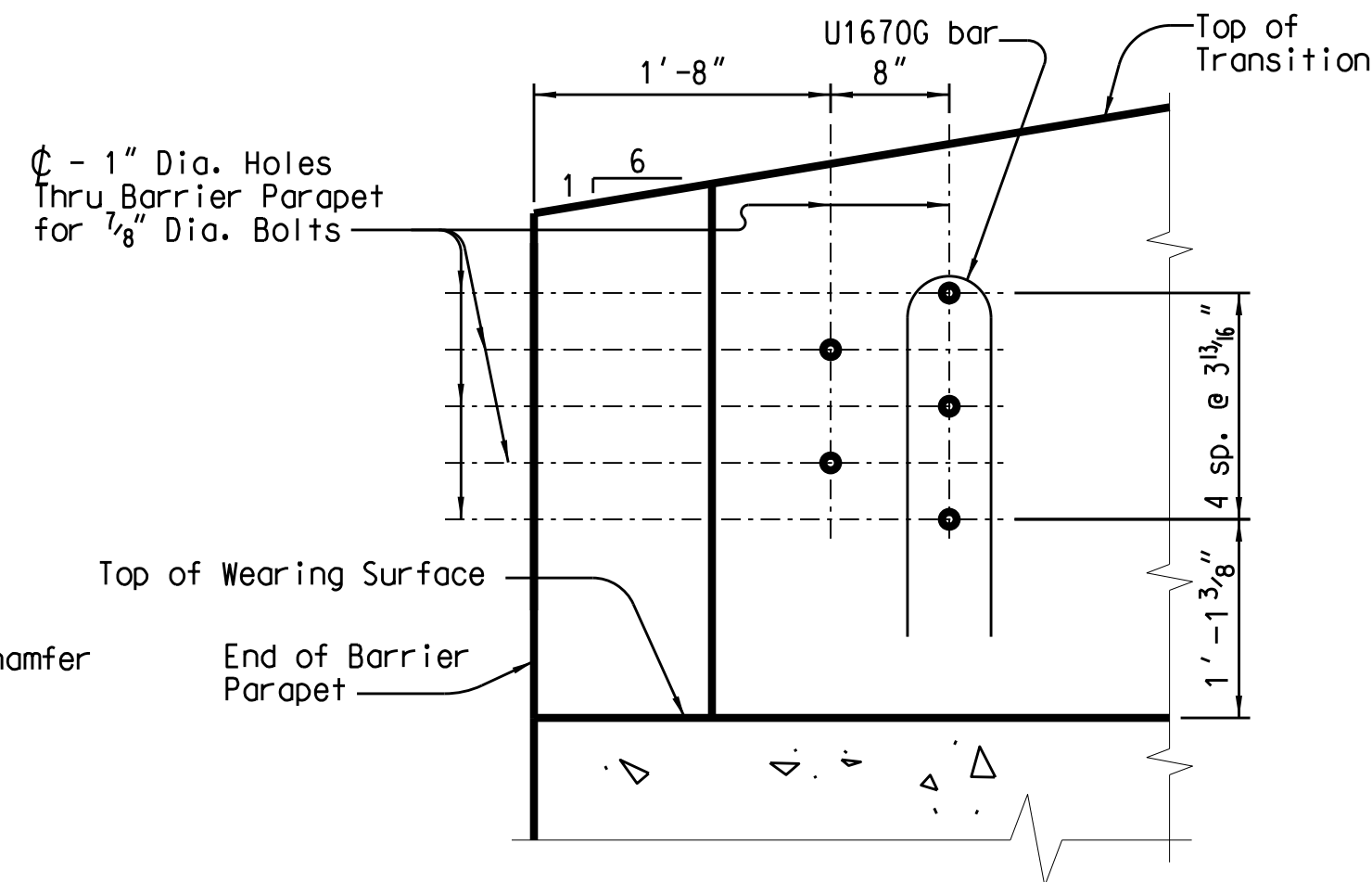
Provide expansion/deflection fittings at all open joints in the barrier parapet.

**DETAILS OF CONDUIT
IN RAILING WALL**
(Typ. right side of bridge)

Use Schedule 80 PVC nonmetallic pipe for conduit.

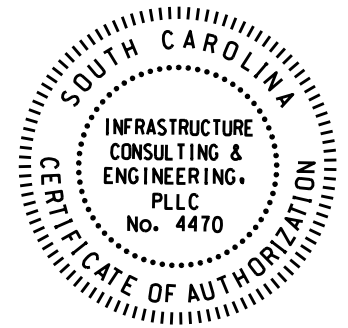
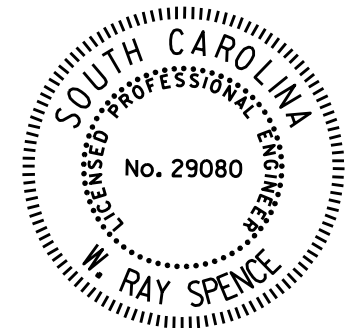
Extend conduits 6 inches beyond the backside of the railing wall (at begin and end bridge) and cap with watertight covers.

Provide expansion/deflection fittings at all open joints in the railing wall.



**THRIE-BEAM GUARDRAIL
ATTACHMENT TO PARAPET**

Form the 1" dia. holes with plastic pipe, PVC pipe, or galvanized standard weight steel pipe having an I.D. of 1". All pipe to remain in place when forms are removed. RCE to verify location of the holes to insure that the guardrail shoe will fit properly when installed.



REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.		
DR.	WRS	ALP 04-22
DES.	WRS	ALP 04-22
BY	CHK.	DATE



**INFRASTRUCTURE
CONSULTING & ENGINEERING**

**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**MASH BARRIER PARAPET &
RAILING WALL DETAILS**

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

APPROACH SLAB NO. 2

REINFORCING STEEL SCHEDULE

LOCATION	MARK	NO. REQ'D	DIMENSION					LENGTH
			"a"	"b"	"c"	"d"	"e"	
SIDEWALK	A1370G	8	18'-0"	-----	-----	-----	-----	18'-0"
SLAB	A1670	42	60'-0"	-----	-----	-----	-----	60'-0"
SLAB	A1671	42	30'-0"	-----	-----	-----	-----	30'-0"
BARRIER	A1672G	10	15'-11"	-----	-----	-----	-----	15'-11"
SLAB	A2270	99	19'-7"	-----	-----	-----	-----	19'-7"
SLAB	A2271G	4	17'-6"	-----	-----	-----	-----	17'-6"
SLAB	A2272G	4	15'-6"	-----	-----	-----	-----	15'-6"
SLAB	A2274	4	3'-0"	-----	-----	-----	-----	3'-0"
SLAB	A2970	197	19'-7"	-----	-----	-----	-----	19'-7"
SLAB	A2971G	4	17'-6"	-----	-----	-----	-----	17'-6"
SLAB	A2972G	4	15'-6"	-----	-----	-----	-----	15'-6"
SLAB	A2974	2	3'-0"	-----	-----	-----	-----	3'-0"
			-----	-----	-----	-----	-----	-----
SLAB	AV1671	24	29'-6"	24'-1"	35'-3"	1'-0"	-----	29'-6"
SLAB	AV1672	18	31'-9"	29'-3"	34'-11"	0'-9"	-----	31'-9"
SLAB	AV2270	5	10'-9"	5'-2"	16'-4"	2'-9"	-----	10'-9"
SLAB	AV2271	7	11'-1"	3'-8"	19'-0"	2'-6"	-----	11'-1"
SLAB	AV2970	10	11'-5"	5'-2"	17'-9"	1'-5"	-----	11'-5"
SLAB	AV2971	13	11'-1"	3'-8"	19'-0"	1'-3"	-----	11'-1"
			-----	-----	-----	-----	-----	-----
SIDEWALK	BA1370G	19	6'-3"	-----	-----	-----	-----	6'-3"
			-----	-----	-----	-----	-----	-----
SIDEWALK	C1370G	19	2'-3"	0'-10"	-----	-----	-----	3'-1"
			-----	-----	-----	-----	-----	-----
RAILING	F1670G	10	17'-3"	0'-7 1/2"	0'-6 7/8"	0'-2 1/2"	-----	17'-11"
			-----	-----	-----	-----	-----	-----
BARRIER/RAILING	JB1670G	71	0'-5 3/4"	3'-2"	0'-7 1/4"	-----	-----	6'-10"
BARRIER	JB1671G	1	0'-7"	3'-2"	0'-8 1/2"	-----	-----	6'-11"
			-----	-----	-----	-----	-----	-----
BARRIER	L1670G	37	1'-0"	2'-7"	0'-6 1/2"	2'-7"	-----	6'-9"
BARRIER	L1671G	1	1'-0"	2'-7"	0'-7 3/4"	2'-7"	-----	6'-10"
RAILING	L1672G	34	1'-0"	3'-3 1/2"	0'-6 1/2"	3'-3 1/2"	-----	8'-2"
			-----	-----	-----	-----	-----	-----

QUANTITIES

ITEM	UNIT	APPROACH SLAB
2.0" SCHEDULE 80 PVC CONDUIT	L.F.	68.2
CONCRETE FOR STRUCTURES - CLASS 4000	C.Y.	79.9
REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS.	23,548
GALVANIZED REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS.	2,357
42" MASH CONCRETE BARRIER PARAPET /RAILING WALL	L.F.	35.1

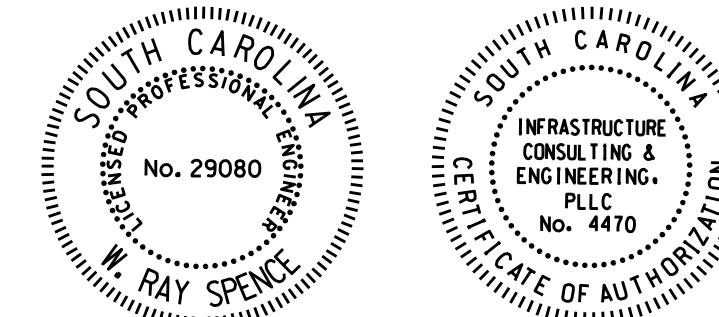


SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

APPROACH SLAB NO. 2

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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REV. 0	WRS		06-23-22
	RFC PLANS		
REV.			
REV.			
REVIEWED		PLC 04-22	
QUAN.	ALP	KLC	04-22
DR.	ALP	KLC	04-22
DES.	ALP	KLC	04-22
	BY	CHK	DATE

Notes:

Construct approach slabs to the grades and elevations shown on the Bridge Plan and Profile drawing. Construct approach slabs to the same crown as the bridge deck.

Support the bottom mat of reinforcing steel using concrete block or similar material. Provide a minimum concrete cover of 3" below the bottom reinforcing steel.

Space CHCU bolsters to provide adequate support for top reinforcing steel, approximately 2'-6" on center and parallel to centerline of approach slab. Weight of bar supports is not included in the reinforcing steel quantities.

For Deflection Joint Detail, Sections A-A & B-B,
See "Approach Slab Details"

For Sidewalk Section, See Sht. "Mash Barrier
Parapet & Railing Wall Details"

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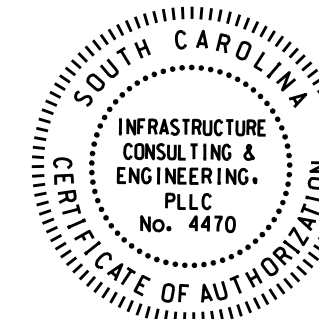
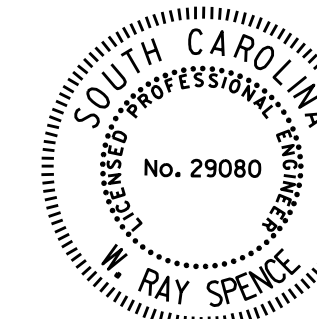
MARK	NO. REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A1900	10	5'-2"	_____	_____	_____	5'-2"
SC1300	6	2'-8"	7"	4 1/2"	_____	7'-3"
CHCU	4 1/2" HT.			As Necessary		

② LIMITS OF ROOFING FELT PAPER.

SLEEPER SLAB QUANTITIES (FOR ONE)		
ITEM	UNIT	SLEEPER SLAB QUANTITY
CONCRETE FOR STRUCTURES - CLASS 4000	C.Y.	0.6
REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS.	107



③ Set this dimension in accordance with the Manufacturer's recommendations.



REV. 0	WRS 06-23-22		
	RFC PLANS		
REV.			
REV.			
REVIEWED PLC 04-22			
QUAN.	ALP	KLC	04-22
DR.	ALP	KLC	04-22
DES.	ALP	KLC	04-22
	BY	CHK.	DATE

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JOINT VENTURE  **UNITED**
INFRASTRUCTURE GROUP

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DEPARTMENT OF TRANSPORTATION**

APPROACH SLAB DETAILS

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

2	COUNTY	RICHLAND	ROUTE	US 176
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Z:\Projects\20-8\CCR Ph 2\Structures\02-New Bridges\Bridge 42b\04_FinalPlans\55_BRIDGE 42b_FIBER REINF. SLOPE PROTECTION DETAILS (1).dgn
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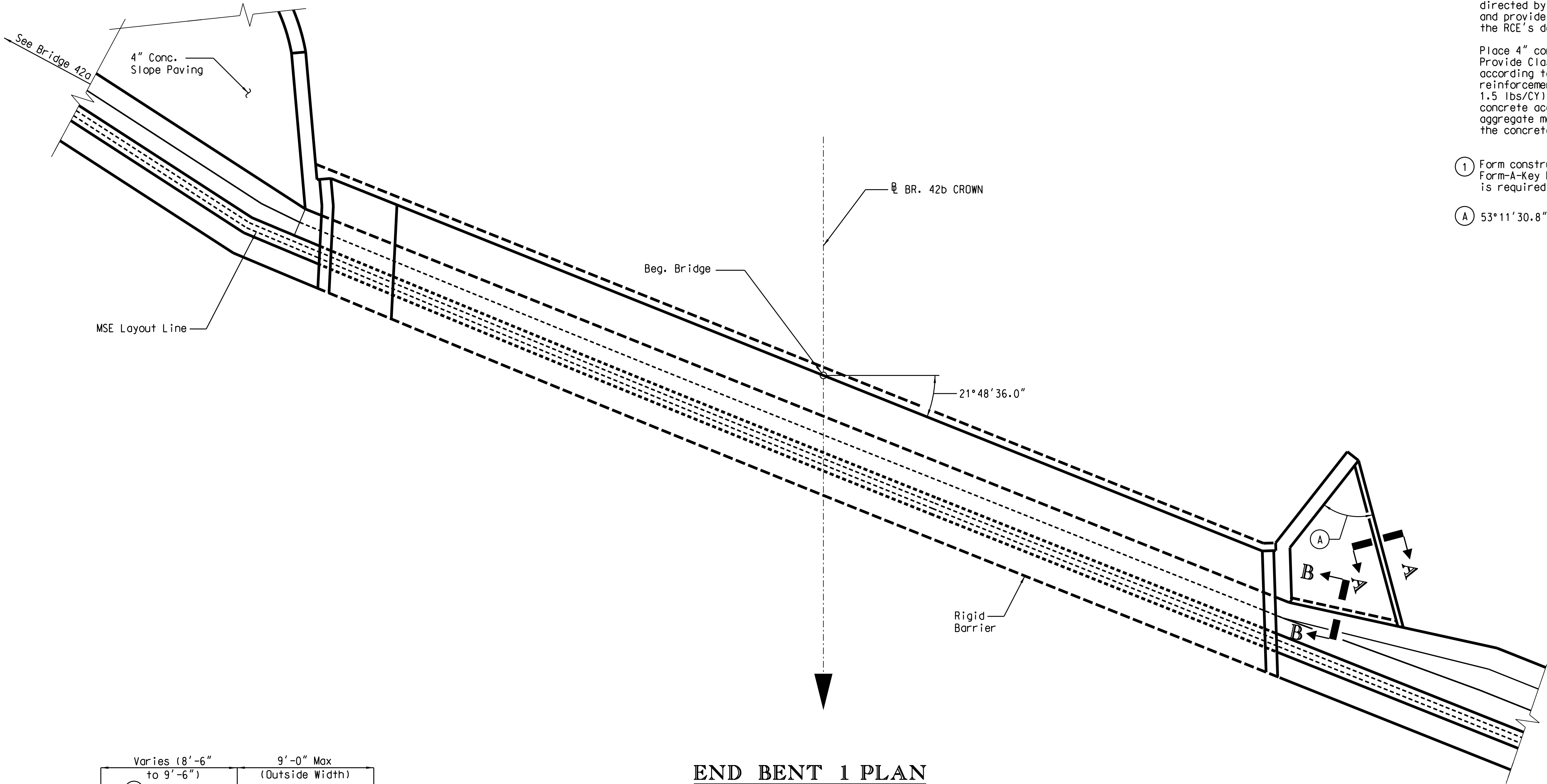
BRIDGE PLANS ID	SHEET NO.
P039719-B42b	55

Notes:

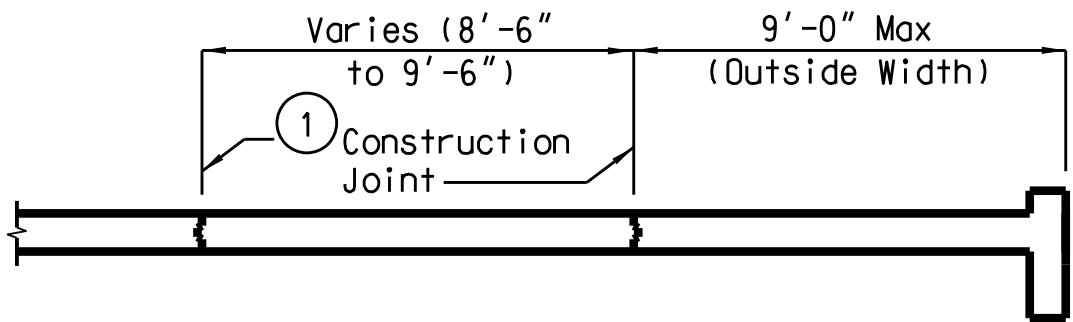
Shape and firmly compact the fill slopes immediately prior to placing the slope protection. Remove any organic material prior to placing concrete. Finish the surface of the paving in true planes where practical and as directed by the RCE. Select planes that result in minimum excavation and provide an aesthetically pleasing appearance. In case of any dispute, the RCE's decision is final.

Place 4" concrete slope protection on fill slopes at the ends of the bridge. Provide Class 2500 (Fiber Reinforced) concrete with 4" nominal thickness according to the details and limits shown on this drawing. Add the fiber reinforcement, in accordance with the approved submittals (minimum rate of 1.5 lbs/CY), directly to the concrete at the time of batching. Mix the concrete according to the fiber manufacturer's recommendations. Coarse aggregate meeting the requirements of Class 3000 concrete may be used in the concrete mix instead of that specified for Class 2500 concrete.

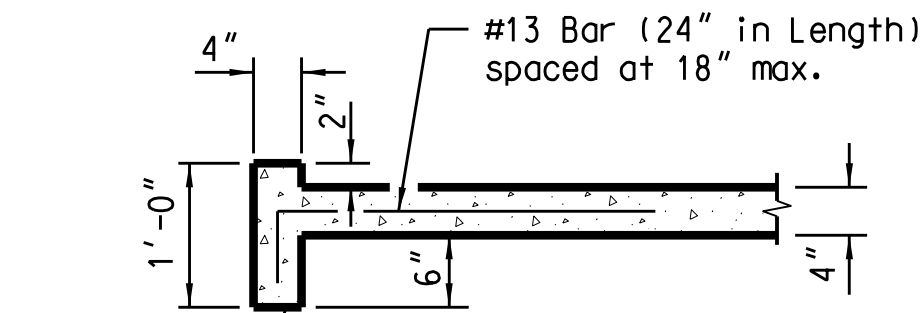
- 1 Form construction joints using Key-Loc Joint system as manufactured by Form-A-Key Products or approved equivalent. A Minimum 24 hour interval is required between adjacent pours.
- A 53°11'30.8"



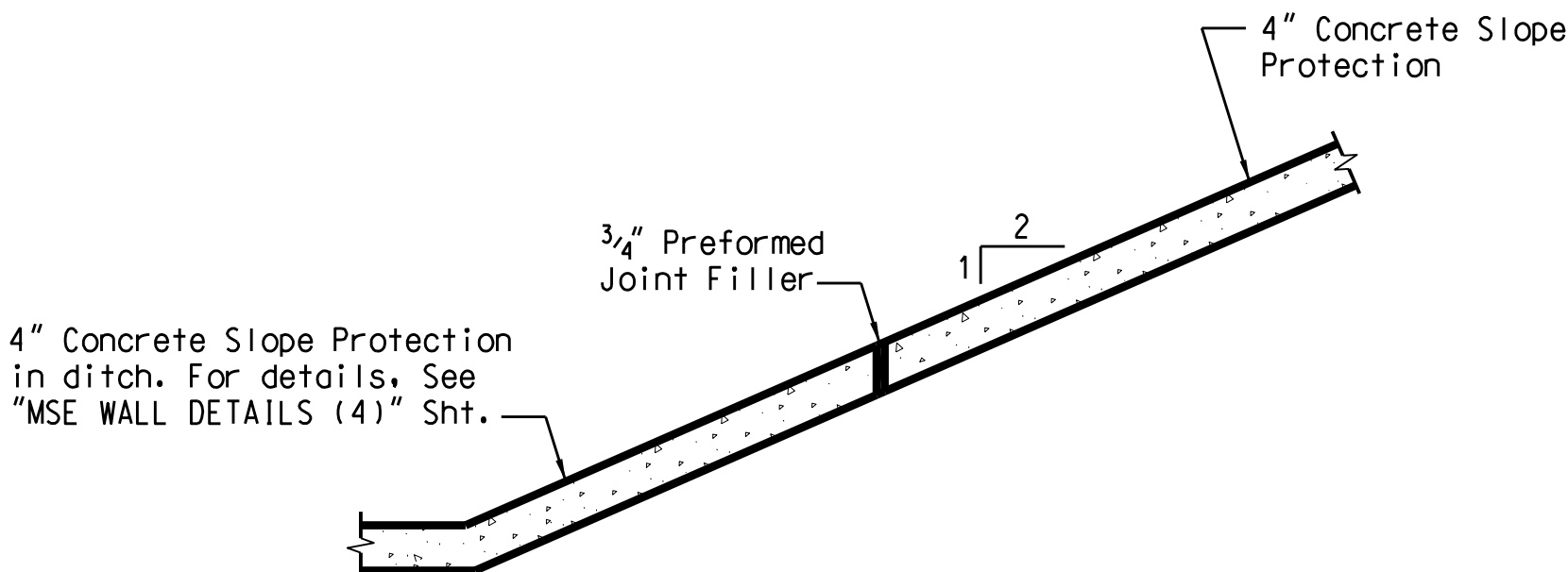
END BENT 1 PLAN
(LOOKING BACK ON STATIONING)



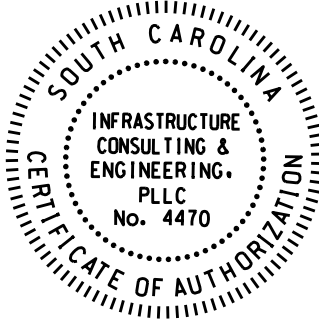
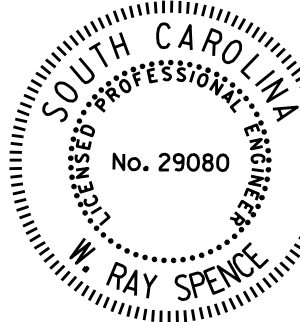
POURING DIAGRAM



SECTION A-A



SECTION B-B



REV.	WRS	06-23-22
0	RFC PLANS	
REV.	BFS	WRS 04-22
	P039719-B42b	
REV.	JXY	SAN 4-14
	New Border	
REVIEWED	PLC	04-22
QUAN.		
DR.	PNP	SAN 12-08
DES.		
BY	CHK.	DATE



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DEPARTMENT OF TRANSPORTATION

FIBER REINFORCED SLOPE
PROTECTION DETAILS (1)

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

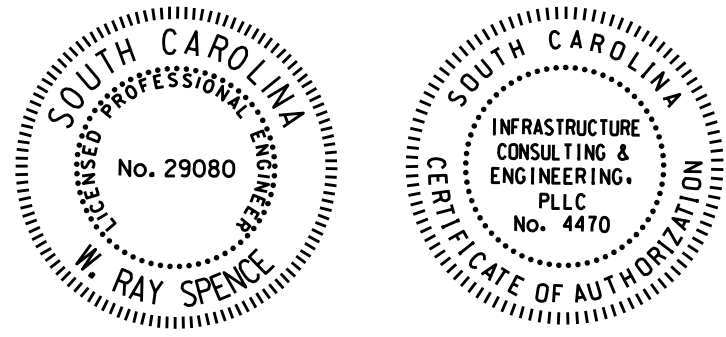
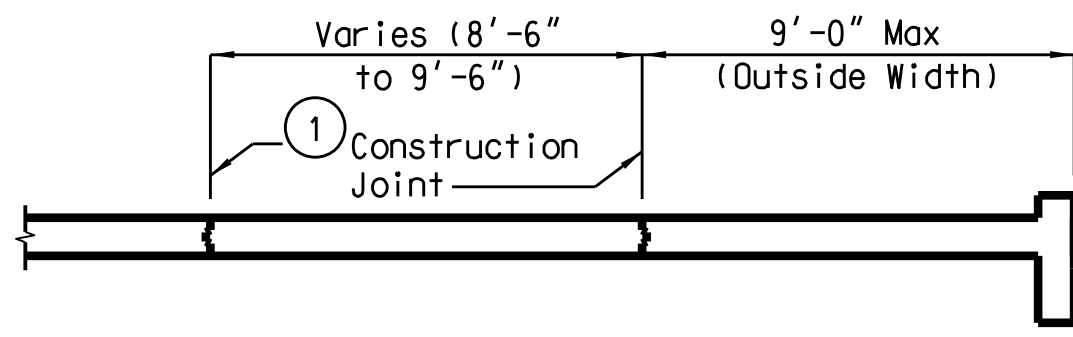
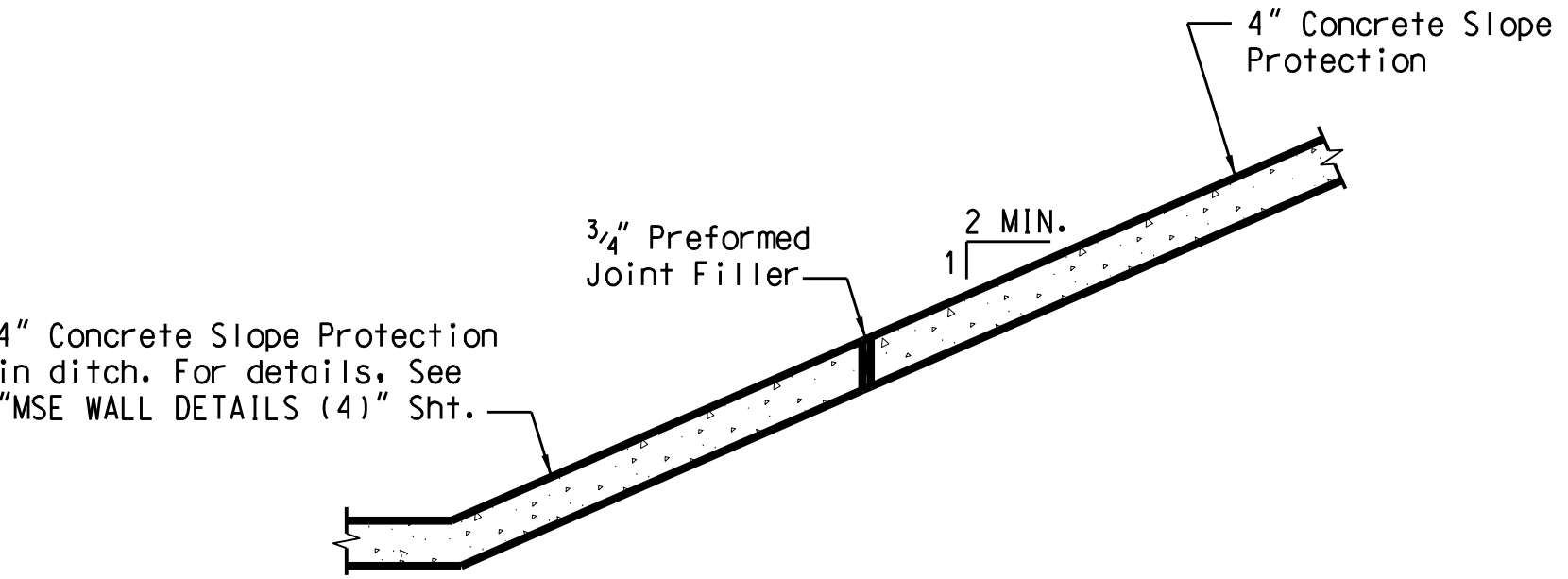
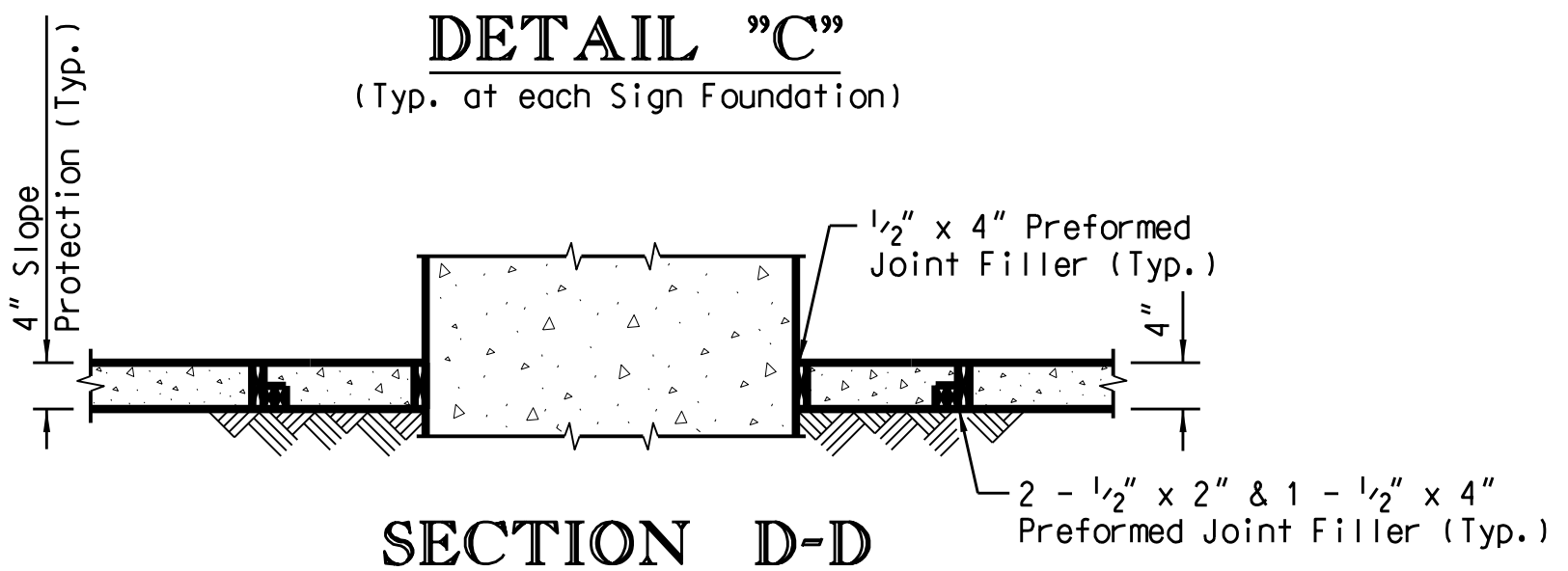
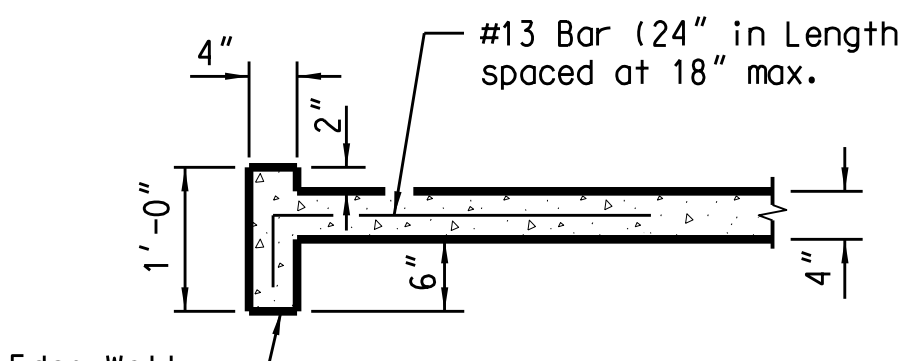
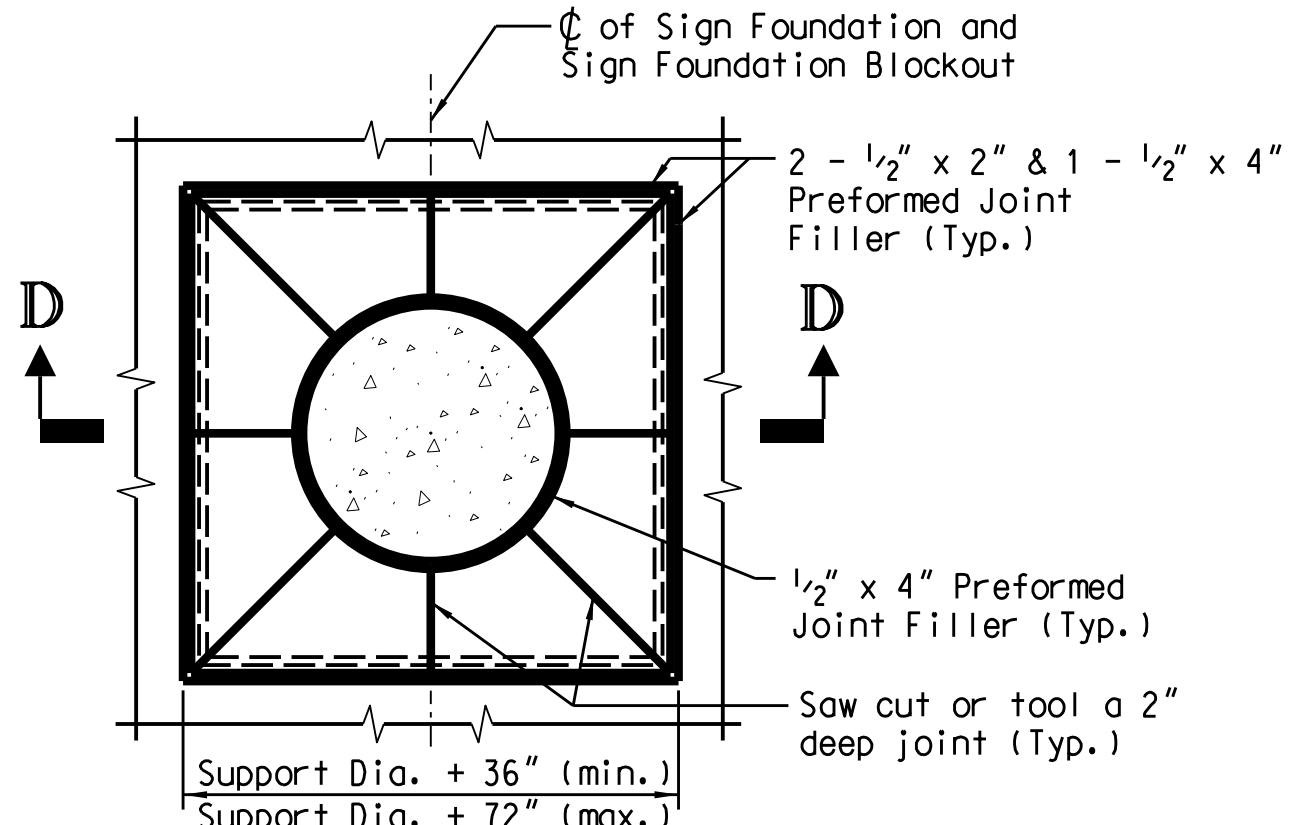
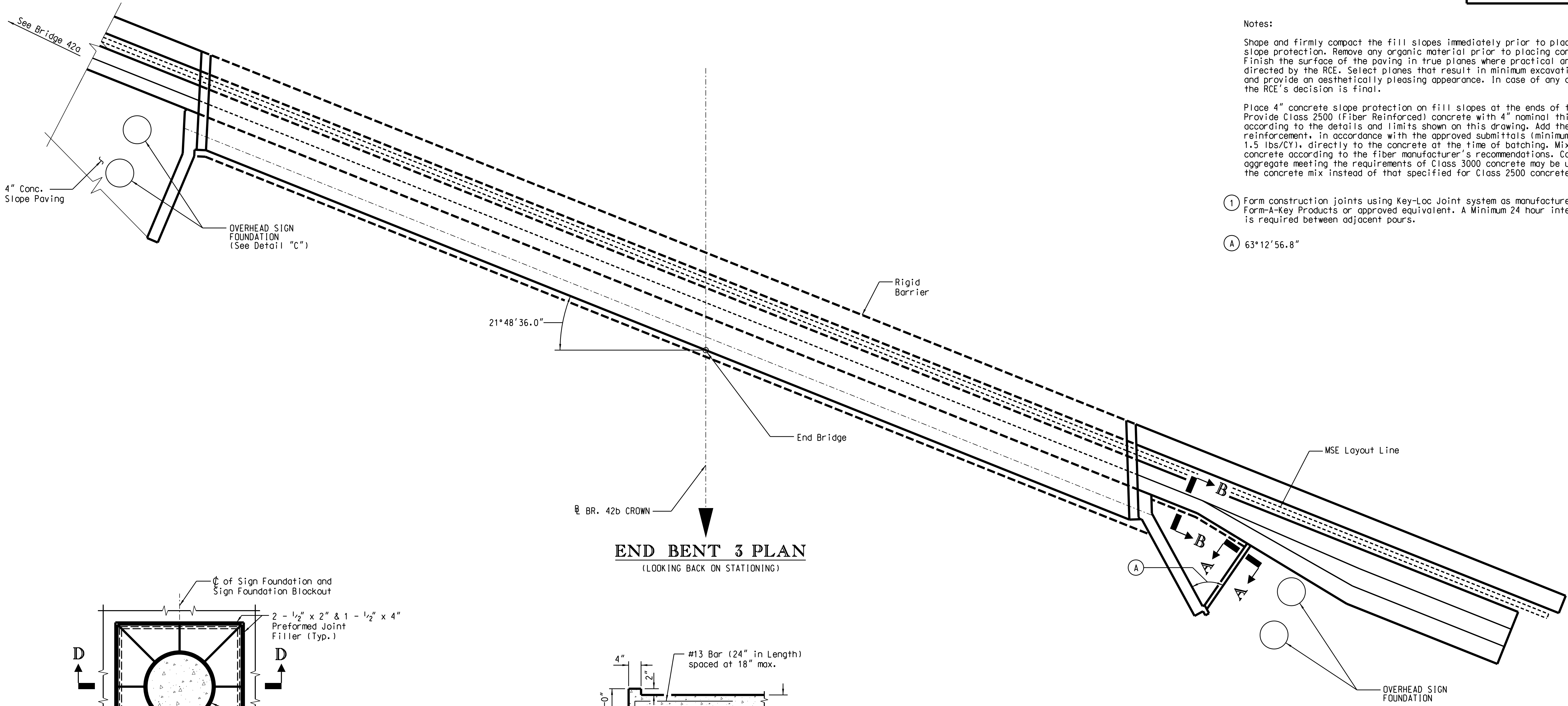
COUNTY RICHLAND ROUTE US 176

Notes:

Shape and firmly compact the fill slopes immediately prior to placing the slope protection. Remove any organic material prior to placing concrete. Finish the surface of the paving in true planes where practical and as directed by the RCE. Select planes that result in minimum excavation and provide an aesthetically pleasing appearance. In case of any dispute, the RCE's decision is final.

Place 4" concrete slope protection on fill slopes at the ends of the bridge. Provide Class 2500 (Fiber Reinforced) concrete with 4" nominal thickness according to the details and limits shown on this drawing. Add the fiber reinforcement, in accordance with the approved submittals (minimum rate of 1.5 lbs/CY), directly to the concrete at the time of batching. Mix the concrete according to the fiber manufacturer's recommendations. Coarse aggregate meeting the requirements of Class 3000 concrete may be used in the concrete mix instead of that specified for Class 2500 concrete.

- ① Form construction joints using Key-Loc Joint system as manufactured by Form-A-Key Products or approved equivalent. A Minimum 24 hour interval is required between adjacent pours.
- Ⓐ 63°12'56.8"



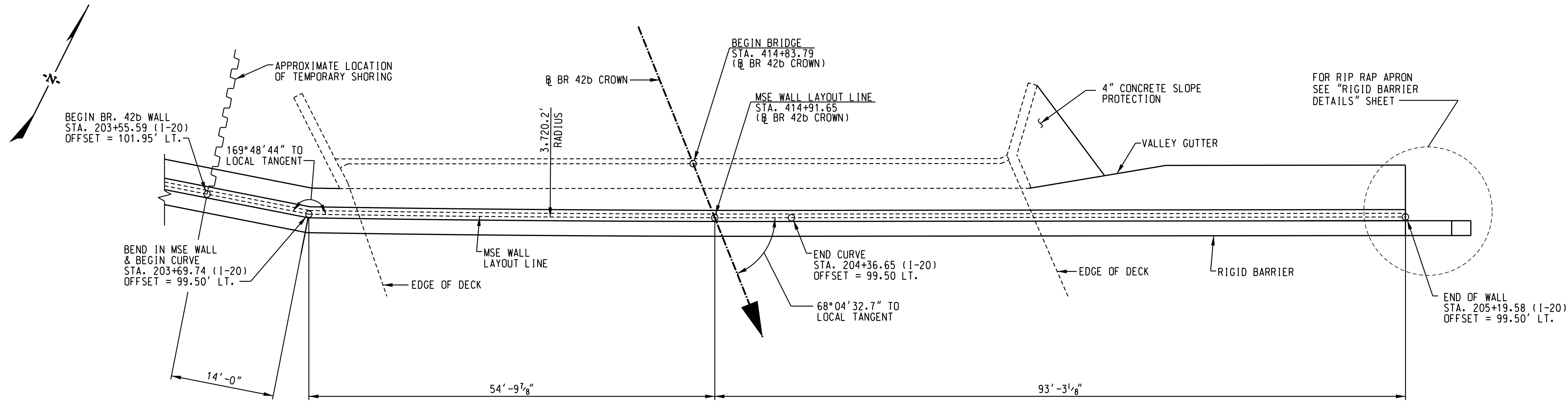
REV.	WRS	06-23-22
0	RFC PLANS	
REV.	BFS	WRS 04-22
	P039719-B42b	
REV.	JXY	SAN 4-14
	New Border	
REVIEWED	PLC	04-22
QUAN.		
DR.	PNP	SAN 12-08
DES.		
BY	CHK.	DATE

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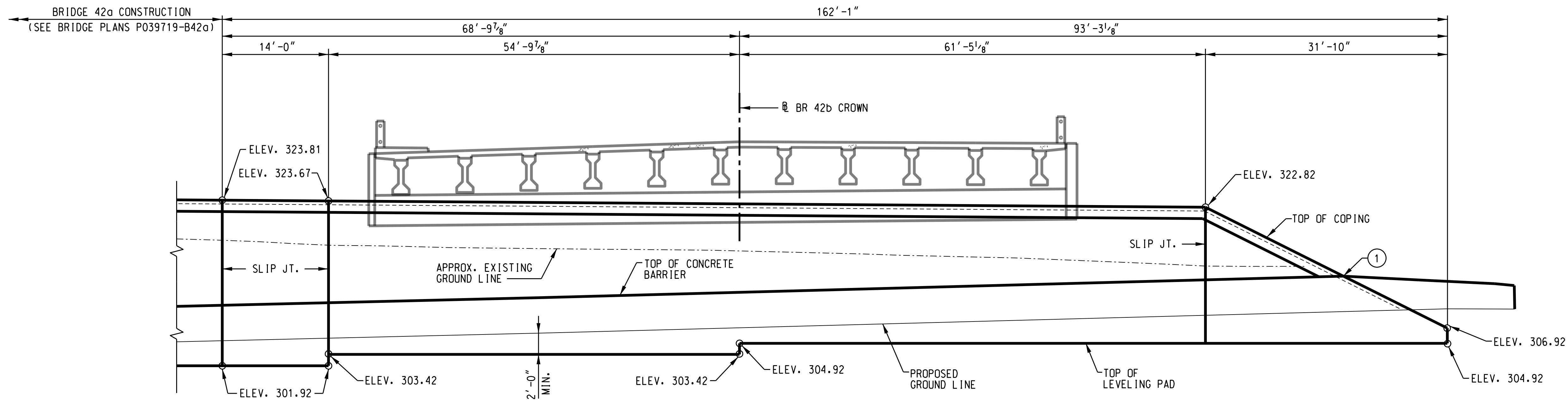
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FIBER REINFORCED SLOPE PROTECTION DETAILS (2)
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY	RICHLAND	ROUTE	US 176
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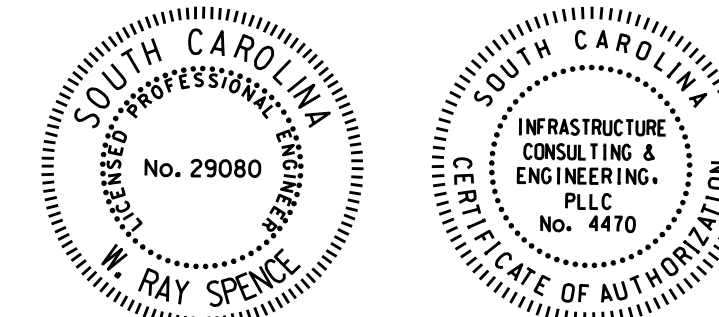


- NOTES:
- MSE WALL FACING SHALL BE A DEEP FRACTURED FIN FINISH IN ACCORDANCE WITH STANDARD DRAWING 701-950-01.
- ANTI-GRAFFITI COATING SHALL BE APPLIED TO ALL EXPOSED SURFACES OF MSE WALL PANELS AND COPING IN ACCORDANCE WITH THE RFP.
- ① FOR RIGID BARRIER AND COPING TERMINATION SEE "RIGID BARRIER DETAILS" SHEET.



ESTIMATED QUANTITIES - MSE WALL 1		
ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION FOR RETAINING WALL	CY	1,500
MSE RETAINING WALL BACKFILL (STONE)	CY	1,930
MSE RETAINING WALL (PANEL FACING) BRIDGE	SF	2,820
COPING FOR FOR MSE RETAINING WALL (BRIDGE)	LF	166
SLOPE PROTECTION 4" CONCRETE	SY	100*

*INCLUDES 65 SY FOR VALLEY GUTTER.

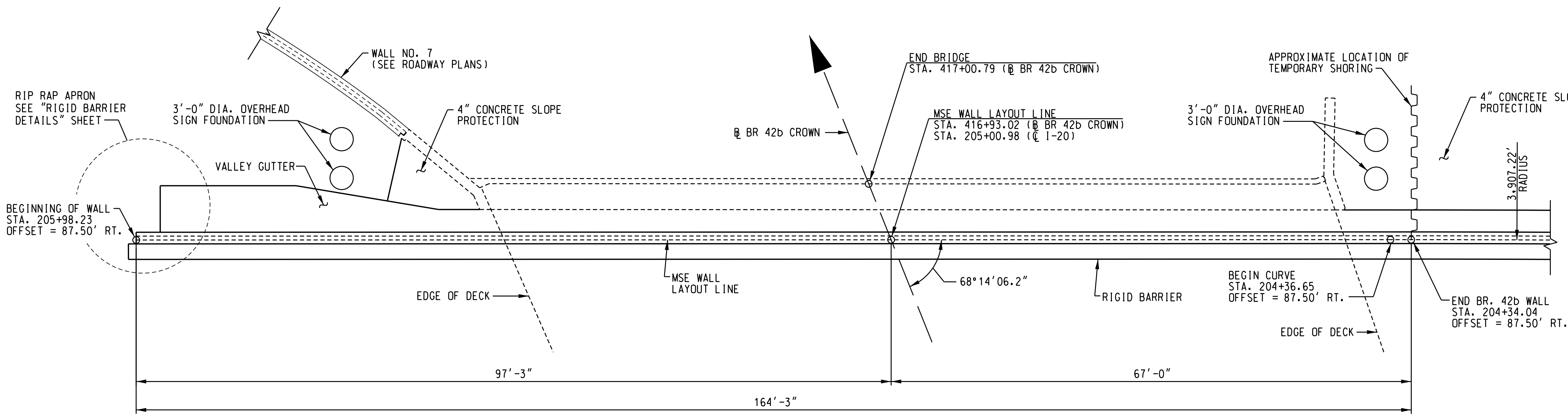


REV.	WRS	06-23-22
0	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	KLC	WRS 04-22
DR.	KLC	WRS 04-22
DES.	KLC	WRS 04-22
BY	CHK.	DATE



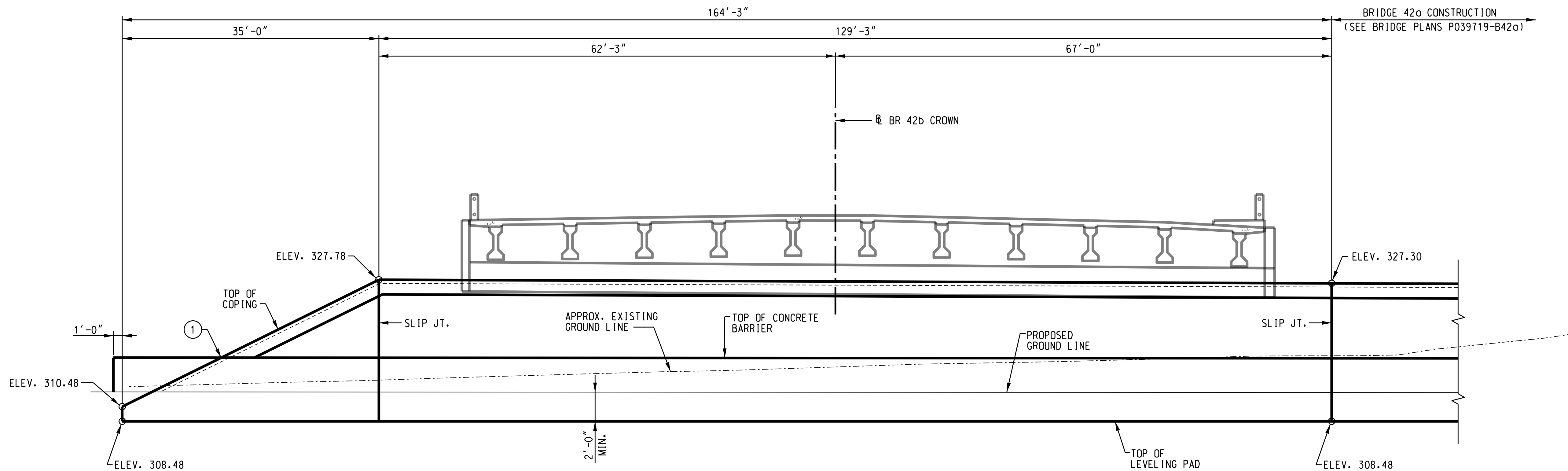
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MSE WALL NO.1 PLAN AND ELEVATION	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

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- NOTES:
- ALL STATIONING IS ALONG ℓ I-20 UNLESS NOTED OTHERWISE.
- MSE WALL FACING SHALL BE A DEEP FRACTURED FIN FINISH IN ACCORDANCE WITH STANDARD DRAWING 701-950-01.
- ANTI-GRAFFITI COATING SHALL BE APPLIED TO ALL EXPOSED SURFACES OF MSE WALL PANELS AND COPING IN ACCORDANCE WITH THE RFP.
- ① FOR RIGID BARRIER AND COPING TERMINATION SEE "RIGID BARRIER DETAILS" SHEET.

PLAN

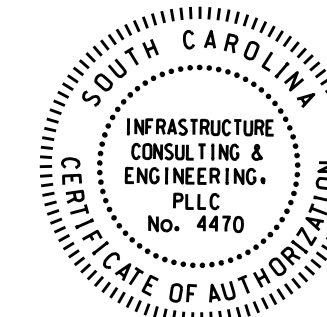
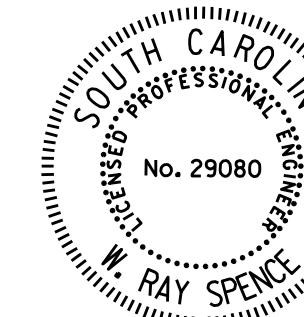


DEVELOPED ELEVATION ALONG LAYOUT LINE

(LOOKING IN DIRECTION OF STATIONING)

ESTIMATED QUANTITIES - MSE WALL 2		
ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION FOR RETAINING WALL	CY	880
MSE RETAINING WALL BACKFILL (STONE)	CY	1,945
MSE RETAINING WALL (PANEL FACING) BRIDGE	SF	2,848
COPING FOR FOR MSE RETAINING WALL (BRIDGE)	LF	168
SLOPE PROTECTION 4" CONCRETE	SY	110*

* INCLUDES 60 SY FOR VALLEY GUTTER.



REV. 0	WRS	06-23-22
REV.	RFC	PLANS
REV.		
REV.		
REVIEWED	PLC	04-22
QUAN.	JPF	WRS 04-22
DR.	JPF	WRS 04-22
DES.	JPF	WRS 04-22
BY	CHK.	DATE



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MSE WALL NO. 2 PLAN AND ELEVATION US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY RICHLAND	ROUTE US 176

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MSE Wall Notes:

Provide design in accordance with the SCDOT Supplemental Technical Specification for Mechanically Stabilized Earth (MSE) Walls (01/19) except as modified herein.

Design Methodology:
LRFD Design

Design Life:
Permanent structures = 100 years.
Temporary structures in service for 5 years or longer = 100 years.
Temporary structures in service for less than 5 years = 5 years.

Reinforced Backfill Material:
Stone Backfill:
Internal Friction Angle (deg) = 38
Total Unit Weight = 135 pcf

Foundation Soils:
Total - Internal Friction Angle (deg) 30
Total - Cohesion 0 psf
Effective - Internal Friction Angle (deg) 30
Effective - Cohesion 0 psf

End Bent 1:
Wall Height $H \geq 18.5$ ft.
Min. $B_{Req} = 1.3H$

Wall Height $10 \leq H < 18.5$ ft.
Min. $B_{Req} = 0.9H$

Wall Height $H < 10$ ft.
Min. $B_{Req} = 8$ ft.

End Bent 3:
Wall Height $H \geq 18$ ft.
Min. $B_{Req} = 1.4H$

Wall Height $10 \leq H < 18$ ft.
Min. $B_{Req} = 0.9H$

Wall Height $H < 10$ ft.
Min. $B_{Req} = 8$ ft.

External Stability Limit State Design:

1. Permanent MSE Walls have been evaluated to meet external stability for Strength, Service, and Extreme Event I limit states.

2. The external stability of the MSE walls, with appropriate load and resistance factors, is satisfied with the minimum base width required, B_{Req} .

MSE Wall Loadings:

1. Design MSE walls for live load surcharge (LS) located at the top of the MSE walls either perpendicular or parallel to the roadway. The live loads are modeled as uniform surcharge (LS), q_s , and are factored using load factors. The unfactored live load surcharge (LS) is 250 psf.

2. Design MSE walls for Long Term design using a uniform dead load vertical surcharge pressure, q_u , to account for the pavement section constructed on top of the MSE wall. In addition, use a minimum uniform dead load vertical surcharge pressure of 94 psf to account for future pavement overlay sections.

3. Design MSE walls to resist horizontal loadings resulting from live load uniform vertical surcharge (LS), dead load vertical surcharges, and active pressure backfill by multiplying the vertical surcharge pressures or effective overburden pressures times the active earth pressure coefficient, K_a , of 0.307 and the appropriate load factors, γ .

Extreme Event I Limit State: Two-Level Seismic Design

1. Project Location and Site Class

- Latitude: 34°02'22" N
- Longitude: 81°05'36" W

2. Design Earthquake:

- Functional Evaluation Earthquake (FEE) 15% Probability of Exceedance in 75 years
- Safety Evaluation Earthquake (SEE) 3% Probability of Exceedance in 75 years

3. Peak ground accelerations obtained from ADRS are presented in the table below.

Parameter	MSE Walls	
	FEE	SEE
PGA	0.20 g	0.39 g

Values determined from Three-Point Method

MSE Wall LRFD Design Criteria:

1. Design MSE Walls for the following limit states:

- Strength I Limit State
- Service I Limit State
- Extreme Event I Limit State
- Extreme Event II Limit State

2. MSE wall design criteria for each limit state are presented below in Tables 1-1, 1-2, 1-3, 1-4 and 1-5.

Table 1-1 MSE Wall Strength I Limit State Design Criteria

Design Parameter	Factor Type	Factor Value	
		Max.	Min.
DC: Dead Load of Components and Attachments (γ_D)	Load	1.25	0.90
LS: Live Load Surcharge (γ)	Load	1.75	
EH: Horizontal Earth Pressure - Active (γ_E)	Load	1.50	0.90
EV: Vertical Earth Pressure - MSE Walls (γ_E)	Load	1.35	1.00
ES: Earth Surcharge (γ_E)	Load	1.50	0.75
Limiting Eccentricity Due To Overturning (Φ)	Eccentricity	$B_{Req}/4$	
Soil Bearing Capacity (Φ Bearing)	Resistance	0.65	
Sliding Frictional Resistance (Soil - Soil) (Φ Sliding)	Resistance	1.0	
Sliding Frictional Resistance (Soil - Soil Reinforcement) (Φ Sliding)	Resistance	1.0	

Table 1-2 MSE Wall Service I Limit State Design Criteria

Design Parameter	Factor Type	Factor Value
DC: Dead Load of Components and Attachments (γ_D)	Load	1.00
LS: Live Load Surcharge (γ)	Load	1.00
EH: Horizontal Earth Pressure - Active (γ_E)	Load	1.00
EV: Vertical Earth Pressure - Overall Stability (γ_E)	Load	1.00
EV: Vertical Earth Pressure - MSE Walls (γ_E)	Load	1.00
ES: Earth Surcharge (γ_E)	Load	1.00
Lateral Displacement (Φ)	Resistance	1.00
Vertical Displacement (Φ)	Resistance	1.00
Global Stability (Fill Walls) (Φ Stability)	ROC = I, II	Resistance 0.65
	ROC = III	Resistance 0.75

Table 1-3 MSE Wall Extreme Event I Limit State Design Criteria

Design Parameter	Factor Type	Factor Value	
		MAX.	MIN.
DC: Dead Load of Components and Attachments (γ_D)	Load	1.00	
LS: Live Load Surcharge (γ)	Load	0.50	0.00
EH: Horizontal Earth Pressure - Active (γ_E)	Load	1.00	
EV: Vertical Earth Pressure - Overall Stability (γ_E)	Load	1.00	
EV: Vertical Earth Pressure - MSE Walls (γ_E)	Load	1.00	0.0
ES: Earth Surcharge (γ_E)	Load	1.00	0.0
EQ: Earthquake (γ)	Load	1.00	
Limiting Eccentricity Due To Overturning (Φ_{eq})	Eccentricity	$B_{Req}/3$	
Soil Bearing Capacity (Φ Bearing-eq)	Resistance	1.00	
Sliding Frictional Resistance (Soil - Soil) (Φ Sliding)	Resistance	0.95	
Sliding Frictional Resistance (Soil - Soil Reinforcement) (Φ Sliding-eq)	Resistance	1.00	
Lateral Displacement (Φ)	Resistance	1.00	
Vertical Displacement (Φ)	Resistance	1.00	
Global Stability (Fill Walls) (Φ Stability-eq)	FEE	Resistance 0.90	
	SEE	Resistance 1.00	

3. Assume responsibility for the design of the MSE wall internal stability. Internal stability load and resistance factors are presented in Tables 1-4 and 1-5. Load factors outlined in Table 1-4 are for Extreme Event II only. Load Factors used for internal stability analysis at other limit states are defined in Tables 1-1 through 1-3.

Table 1-4 MSE Wall Extreme Event II Limit State Design Criteria

Design Parameter	Factor Type	Factor Value	
		MAX.	MIN.
DC: Dead Load of Components and Attachments (γ_D)	Load	1.00	
LS: Live Load Surcharge (γ)	Load	0.50	
EH: Horizontal Earth Pressure - Active (γ_E)	Load	1.00	
EV: Vertical Earth Pressure - Overall Stability (γ_E)	Load	1.00	
EV: Vertical Earth Pressure - MSE Walls (γ_E)	Load	1.00	0.0
ES: Earth Surcharge (γ_E)	Load	1.00	0.0
CT: Vehicular Collision (γ)	Load	1.00	

Table 1-5 Internal Stability Resistance Factors

Performance Limit		Factor Value		
		Strength	Service	Extreme Event I and II
① Tensile Resistance of Metallic Reinforcement and Connectors	Strip Reinforcement	0.75	N/A	1.00
	② Grid Reinforcement	0.65		0.85
Tensile Resistance of Geosynthetic Reinforcement and Connectors		0.90	N/A	1.20
Pullout Resistance of Tensile Reinforcement		0.90	N/A	1.20

① Apply to gross cross-section less sacrificial area. For sections with holes, reduce the gross area and apply to net section less sacrificial area.

② Applies to grid reinforcements connected to a rigid facing element (concrete panel or block). For grid reinforcements connected to a flexible facing mat or which are continuous with the facing mat, use the resistance factor for strip reinforcements.

Additional Requirements:

1. For leveling pad, provide Class 2500 concrete.

2. For 4" concrete slope protection ditches, provide Class 2500 concrete.

3. Any portion of wall coping sloped at 2H:1V or steeper must be cast-in-place concrete and anchored with dowels.

4. Do not attach traffic barrier, pedestrian railing, or moment slab to MSE wall facing or wall coping.

5. Determine the location of all guardrail posts behind wall facing. Show guardrail post locations on the Shop Plans. Prior to placement of soil reinforcement, individual reinforcing strips/mesh may be skewed (15° Max.) to avoid post locations. No cutting of soil reinforcement is allowed. Repair any damage done to the soil reinforcement due to guardrail installation at no additional expense to the Department.

6. To ensure that the wall does not have a negative slope or batter (Slope outward from the face) after completion of construction, a batter is recommended. Monitor the actual movement of panels during the placement and compaction of each lift of backfill and adjust the amount of batter as needed according to field conditions. In accordance with Supplemental Technical Specification SC-M-713 (01/19), walls constructed with negative batter are not acceptable.

REV. 0

WRS

06-23-22

RFC PLANS

REV.

JPF

KLC

4-22

Updated for Bridge

REV.

JXY

SAN

3-14

New Border

REVIEWED

PLC

04-22

QUAN.

DR.

MRW

SAN

2-12

DES.

JPF

KLC

4-22

BY

CHK.

DATE

NO. 29080

W. RAY SPENCE

INFRAS

CONSULTING & ENGINEERING, PLLC

NO. 4470

SOUTH CAROLINA

ARCHER UNITED

JOINT VENTURE

INFRASTRUCTURE CONSULTING & ENGINEERING

UNITED INFRASTRUCTURE GROUP

SOUTH CAROLINA

DEPARTMENT OF TRANSPORTATION

MSE WALL DETAILS (1)

US 176 EB (BROAD RIVER RD.)

BRIDGE OVER I-20

COUNTY

RICHLAND

ROUTE

US 176

REV. 0

WRS

06-23-22

RFC PLANS

REV.

JPF

KLC

4-22

Updated for Bridge

REV.

JXY

SAN

3-14

New Border

REVIEWED

PLC

04-22

QUAN.

DR.

MRW

SAN

2-12

DES.

JPF

KLC

4-22

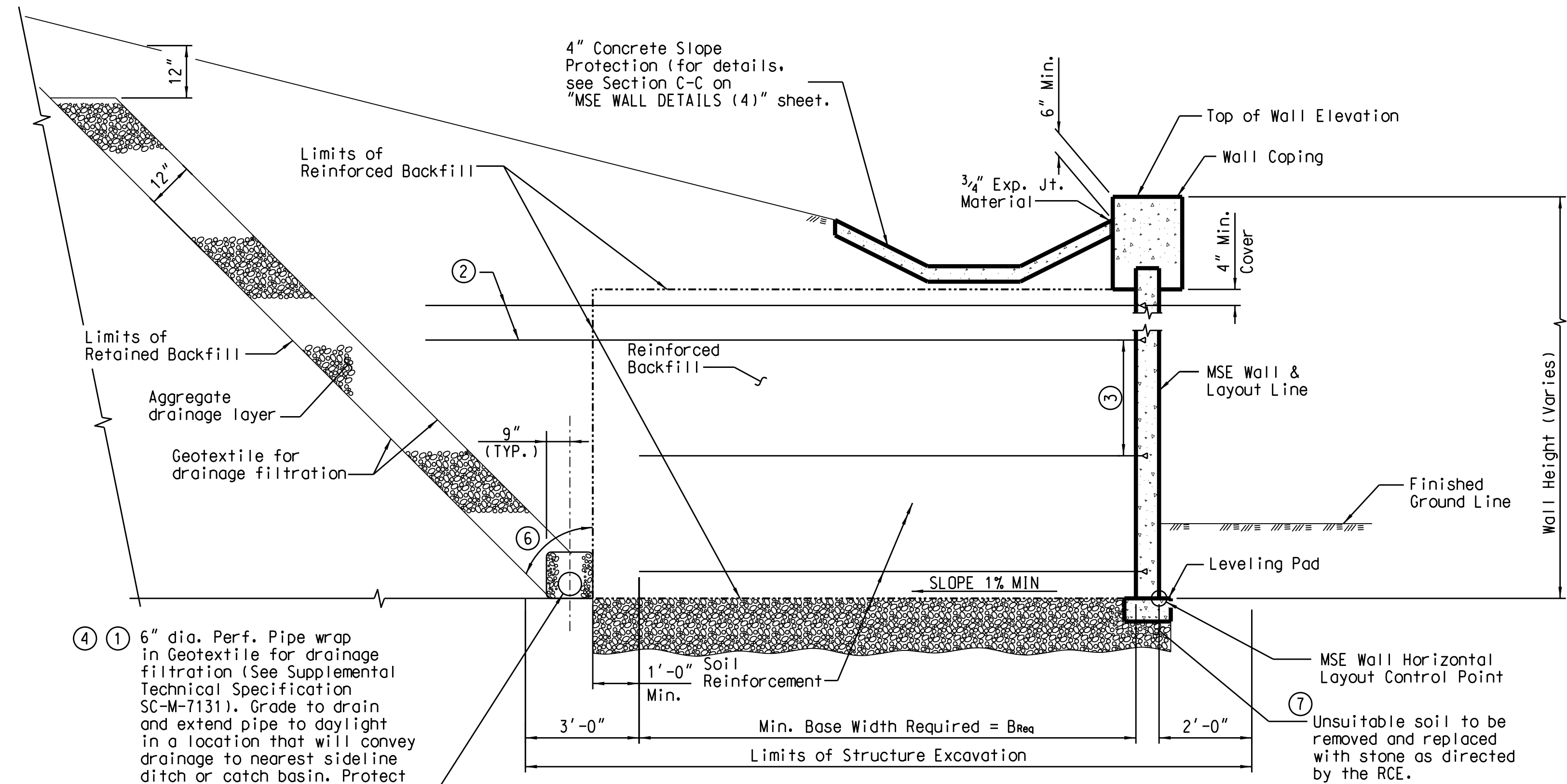
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CHK.

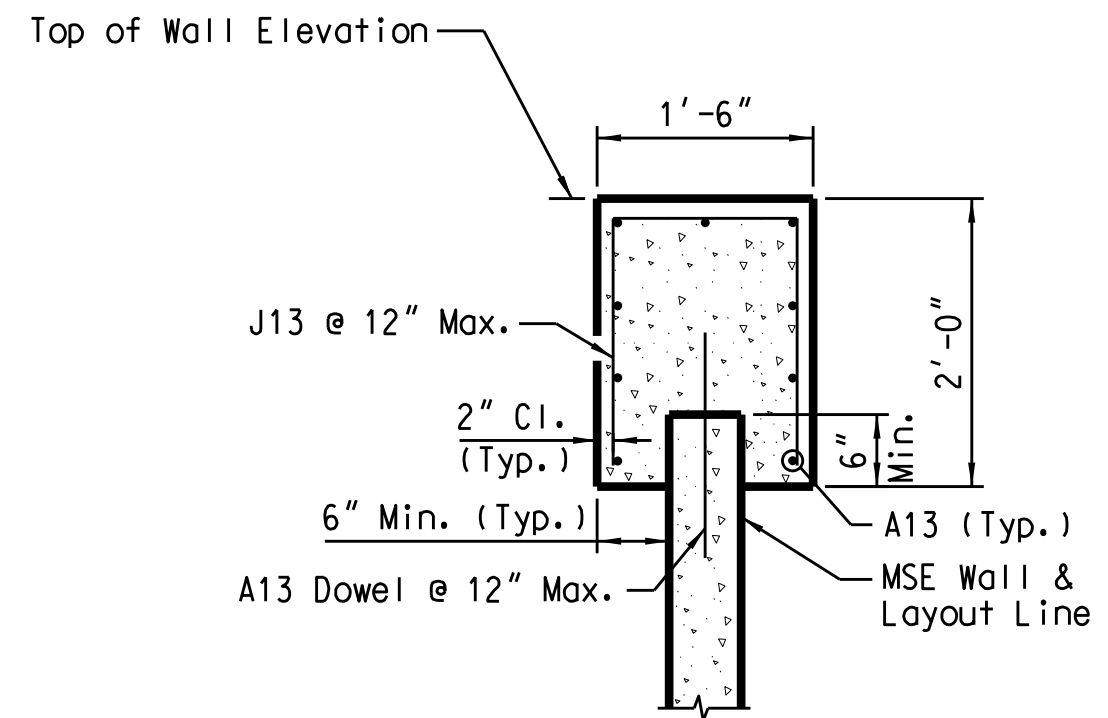
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DRAWING NO. 713-01a

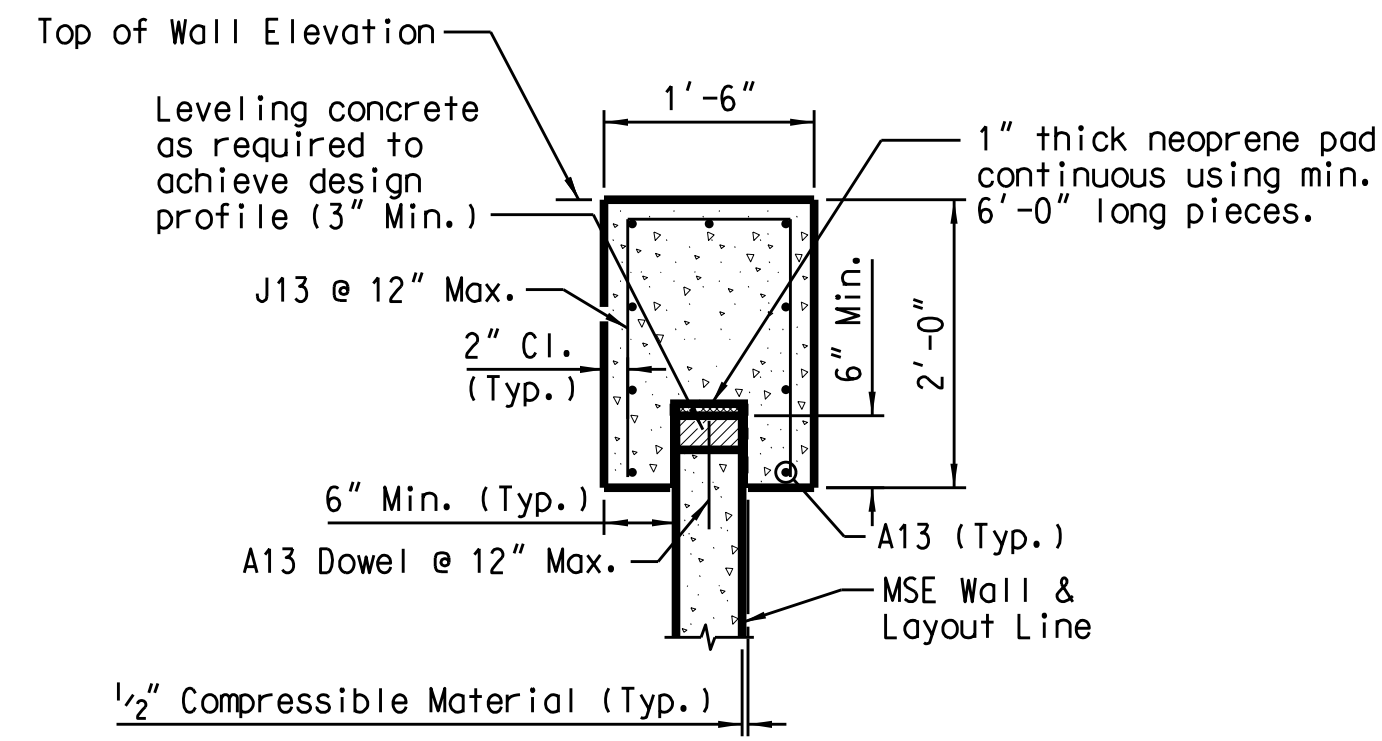
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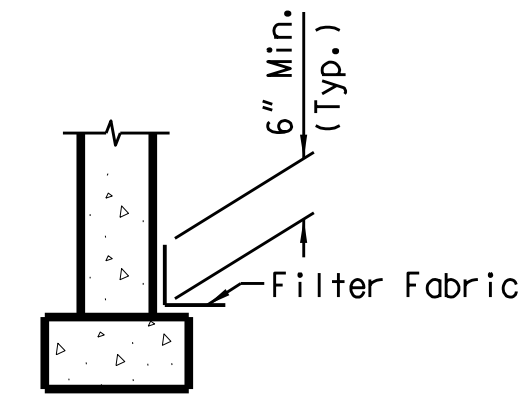
TYPICAL SECTION



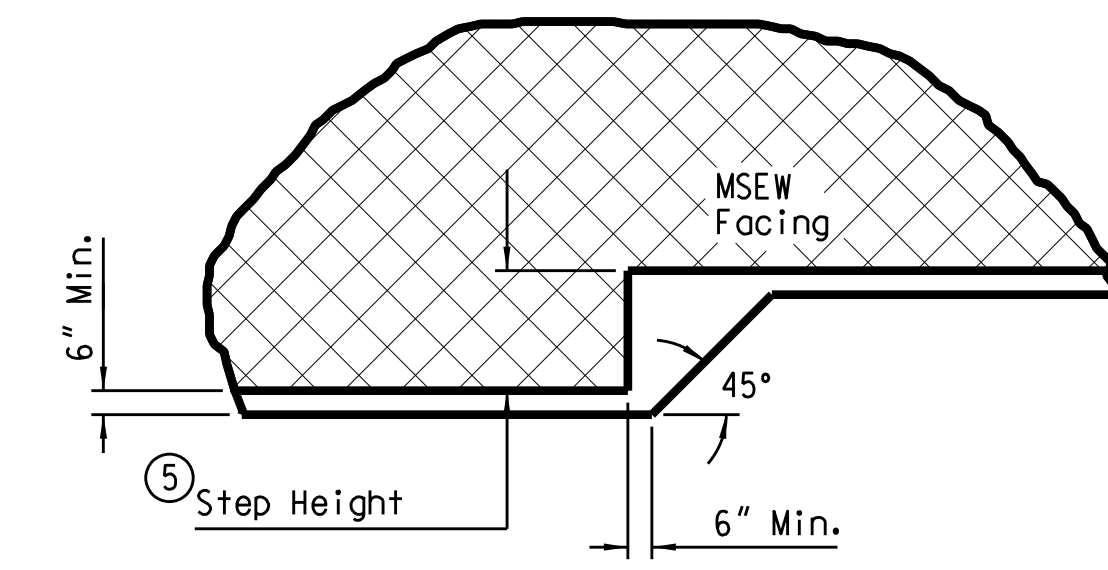
SECTION THRU CAST-IN-PLACE WALL COPING



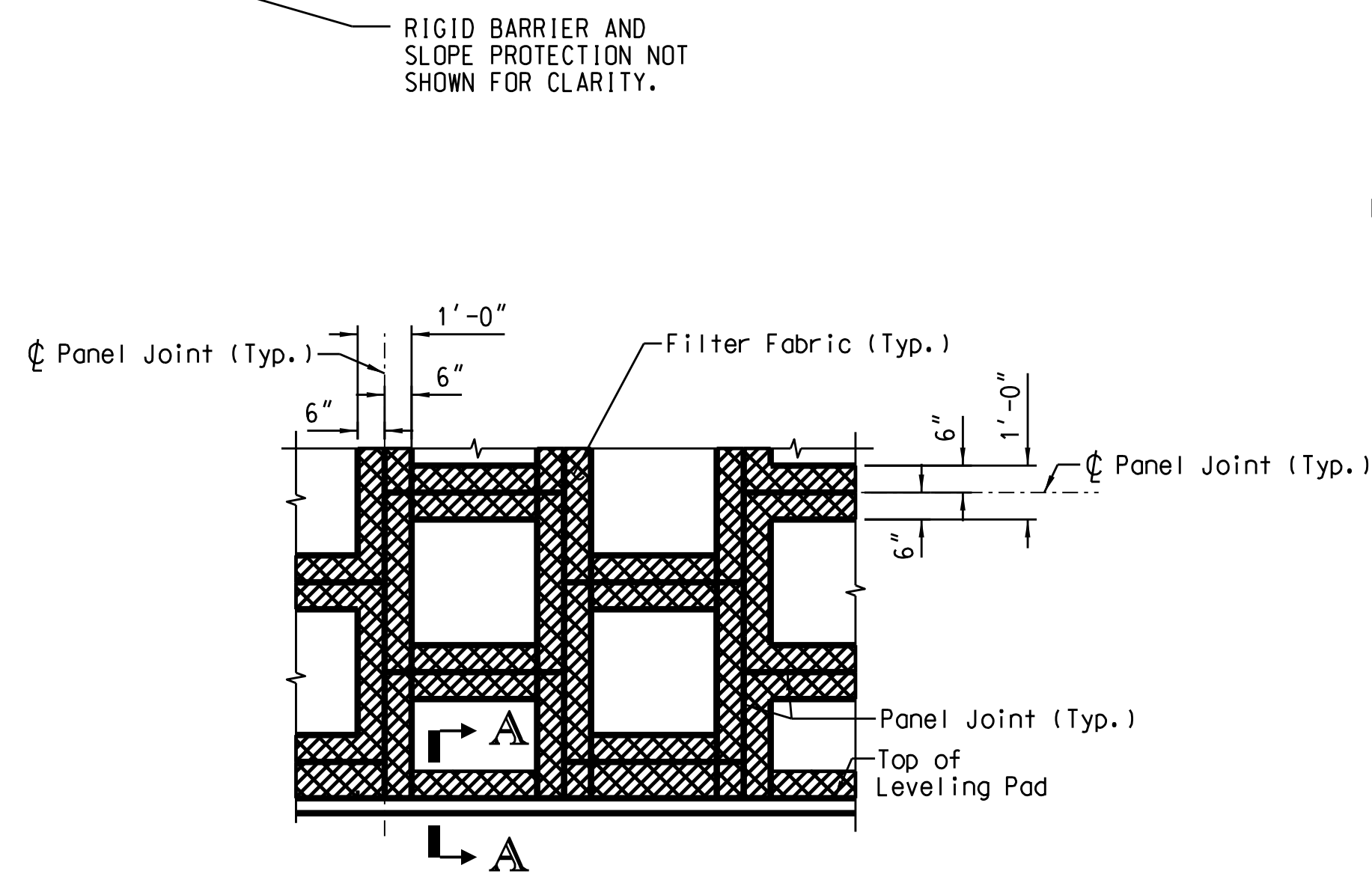
SECTION THRU PRECAST WALL COPING



SECTION A-A

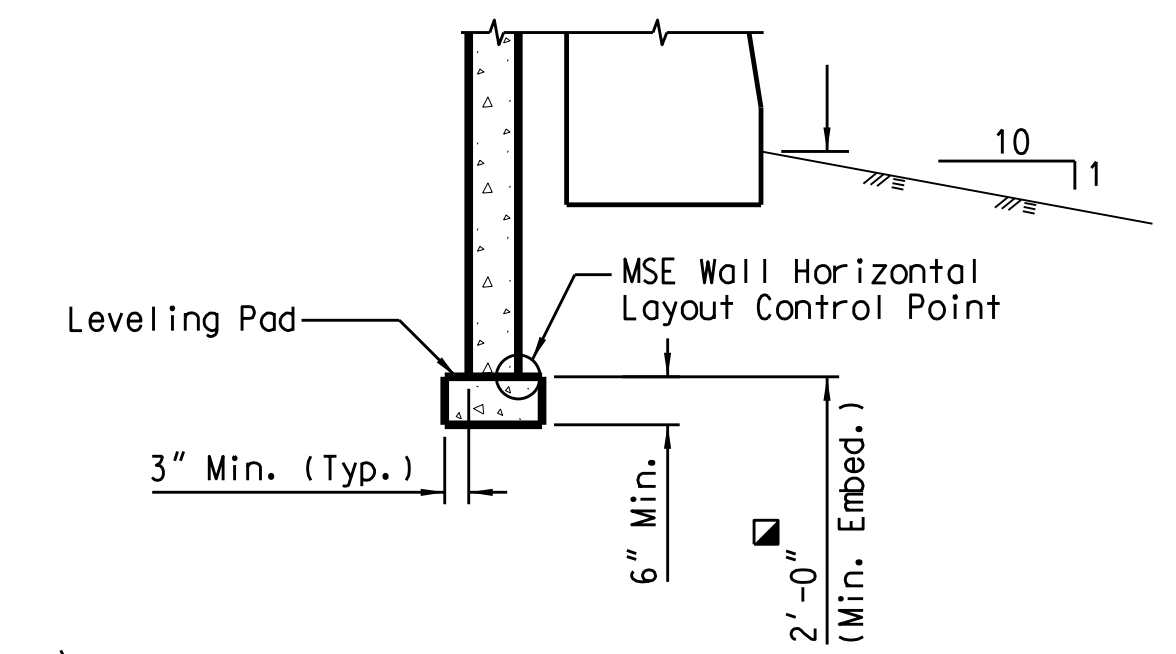


LEVELING PAD STEP DETAIL



LAYOUT OF FILTER FABRIC AT FILL FACE OF PANEL JOINTS

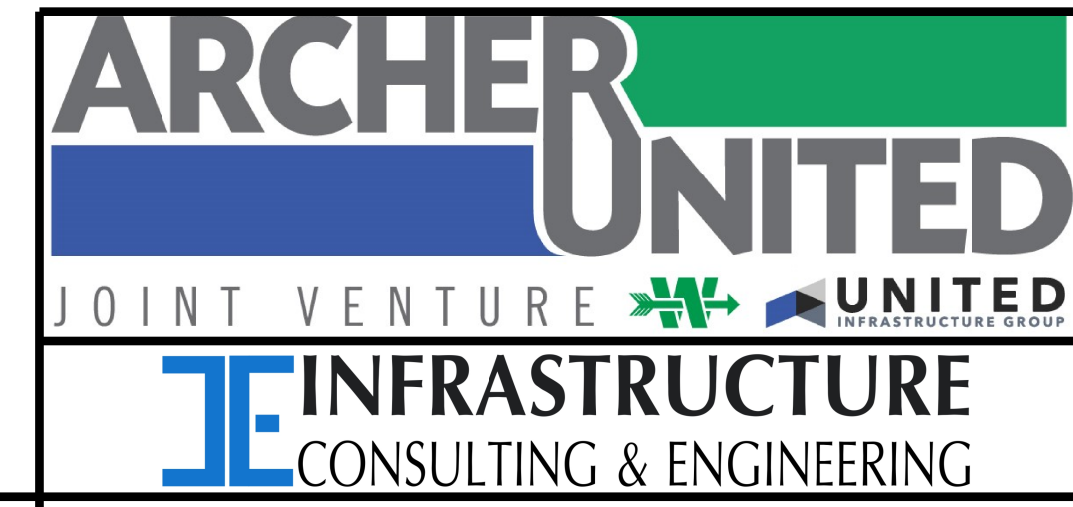
- ① Construct 1'-6" x 1'-6" aggregate drain using 6" dia. perforated pipe. Provide aggregate, other than Macadam, that meets the requirements for stone backfill in Supplemental Technical Specification SC-M-713. Wrap geotextile for drainage filtration (see Supplemental Technical Specification SC-M-713) completely around aggregate drain and overlap 1'-0". Design MSE Wall drainage system to drain the aggregate drain.
- ② Extend top two layers of soil reinforcement 5 feet beyond the end of the lower layers of soil reinforcement.
- ③ Maximum vertical spacing of soil reinforcement is 36".
- ④ Provide rodent screen manufactured from T304 stainless steel or galvanized steel with a minimum wire diameter of 0.050". Provide rodent screen with minimum of 2 openings per inch and a maximum of 4 openings per inch.
- ⑤ Limit step height for panel facing to 1/2 of the full panel height.
- ⑥ Angle to be determined by the Contractor based on site conditions and the method of construction used. Excavation and/or shoring of retained backfill to permit construction of the MSE wall is considered incidental to the MSE wall construction and is not paid for as a separate item.
- ⑦ Provide aggregate, other than Macadam, that meets the requirements for stone backfill in the Supplemental Technical Specification SC-M-713.



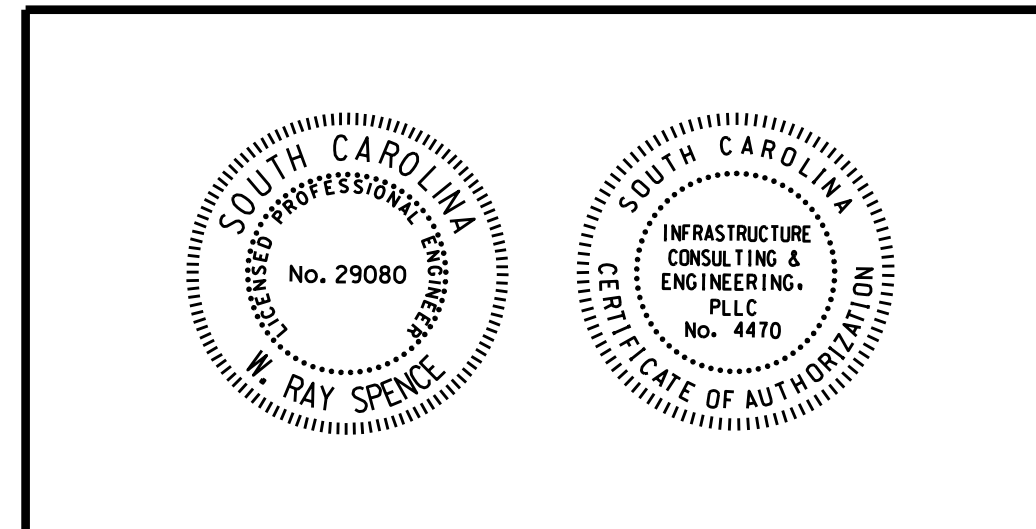
LEVELING PAD DETAIL

Minimum MSE Wall Embedment Depth	
Slope of Ground in front of Wall	Minimum Embedment Depth *
Horizontal** (Walls)	Wall Height/20
Horizontal** (Abutments)	Wall Height/10
3H:1V	Wall Height/10
2H:1V	Wall Height/7
1.5H:1V	Wall Height/5

* If table results in embedment depth less than 2'-0", use 2'-0".
** or slopes flatter than 3H:1V

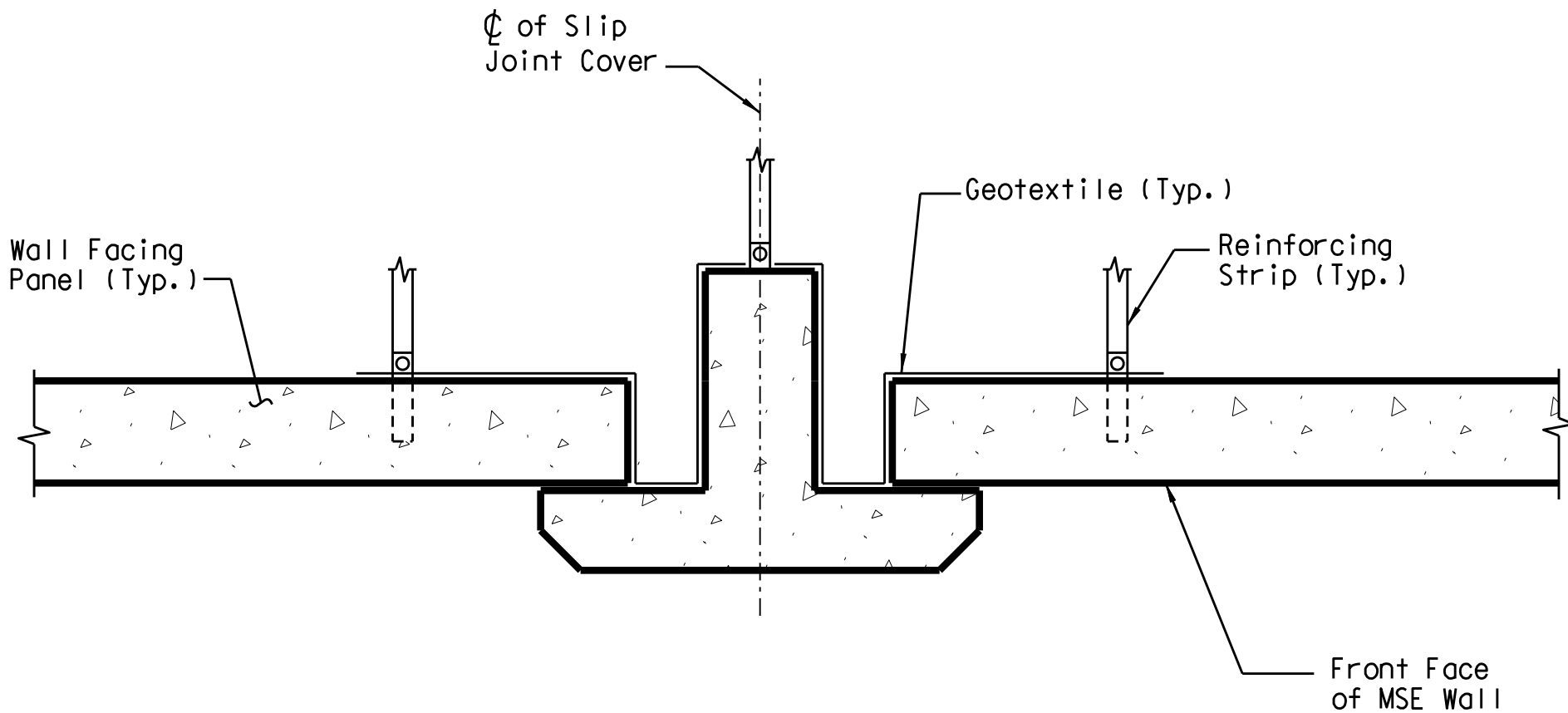


SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MSE WALL DETAILS (2)	
US 176 EB (BROAD RIVER RD.) BRIDGE OVER I-20	
COUNTY	RICHLAND
ROUTE	US 176

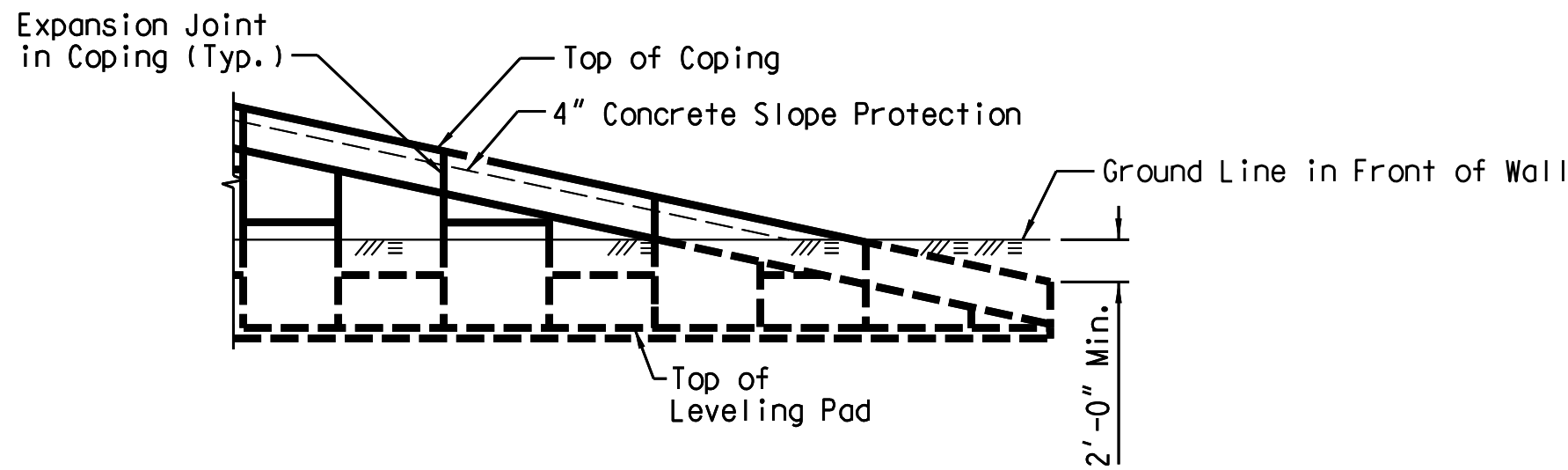


REV.	WRS	06-23-22
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REV.	JPF	KLC 4-22
		Updated for Bridge
REV.	JXY	SAN 3-14
		New Border
REVIEWED	PLC	04-22
QUAN.		
DR.	MRW	SAN 2-12
DES.	JPF	KLC 4-22
BY	CHK.	DATE

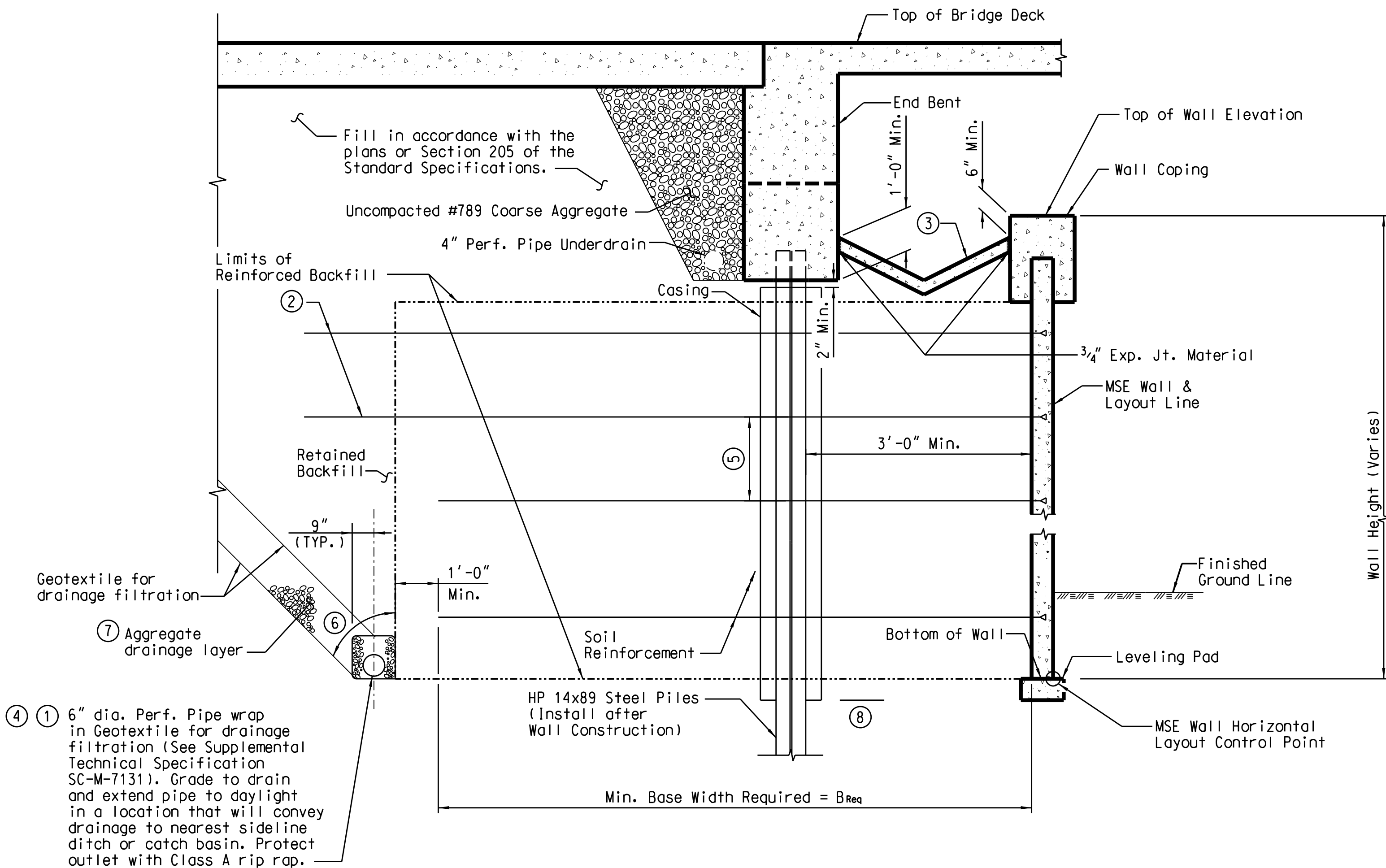
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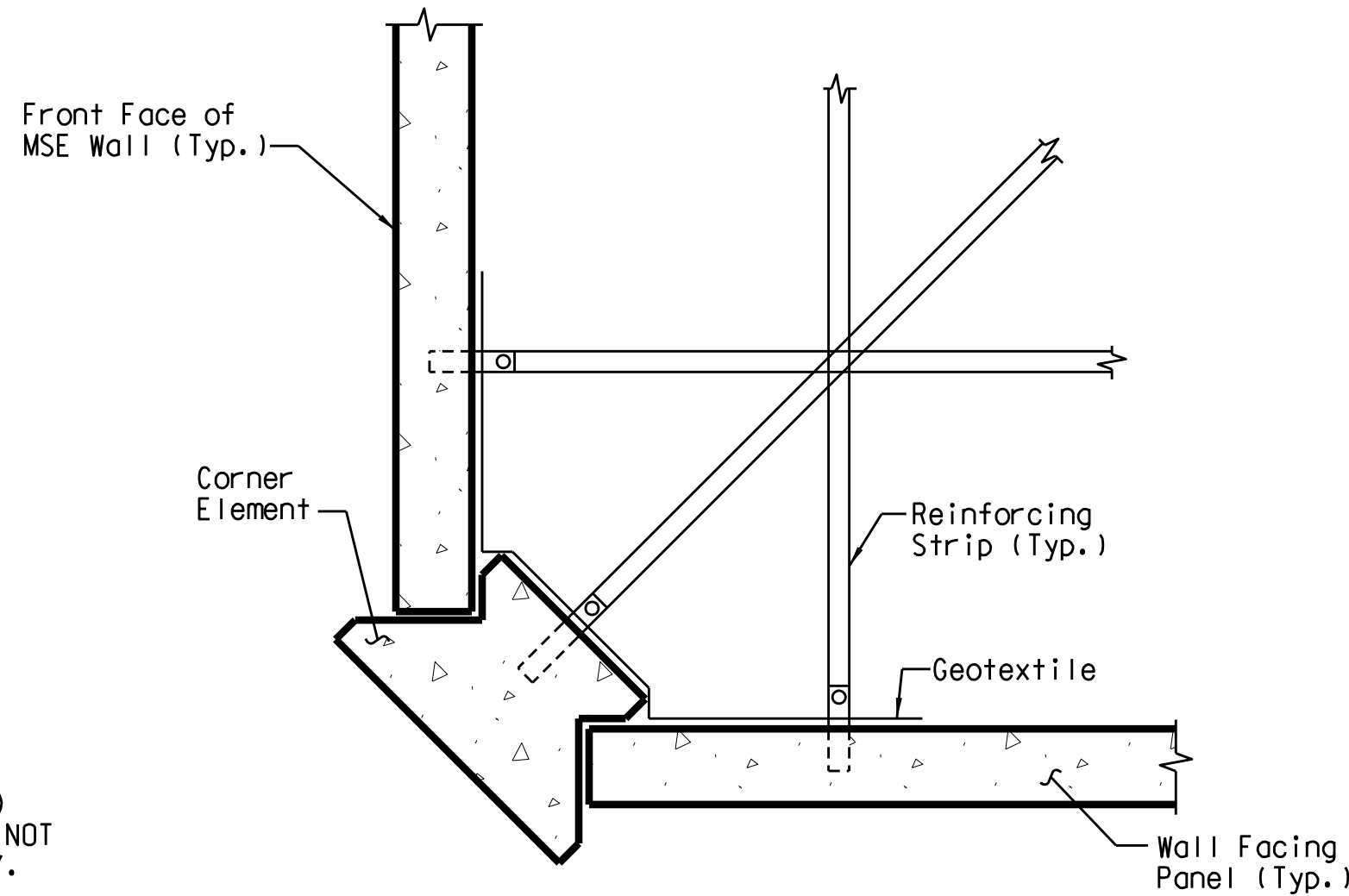
SLIP JOINT DETAIL - PRECAST PANELS



WALL TERMINATION DETAIL



TYPICAL SECTION AT END BENTS



OUTSIDE CORNER DETAIL

Acute angles less than 70° not permitted

Notes:

Do not attach soil reinforcement to end bent caps, end walls, wing walls, or other bridge elements.

Provide geotextile for drainage filtration (see Supplemental Technical Specification SC-M-713) at all horizontal and vertical joints.

For Wall Coping details, see "MSE Wall Details (2)" Sht.

For Leveling Pad details, see "MSE Wall Details (2)" Sht.

For Expansion Joint details, see "MSE Wall Details (4)" Sht.

For Concrete Slope Protection details, see "Fiber Reinforced Slope Protection Details" Sht.

- Construct 1'-6" x 1'-6" aggregate drain using 6" dia. perforated pipe. Provide aggregate, other than Macadam, that meets the requirements for stone backfill in Supplemental Technical Specification SC-M-713. Wrap geotextile for drainage filtration (see Supplemental Technical Specification SC-M-713) completely around aggregate drain and overlap 1'-0". Design MSE Wall drainage system to drain the aggregate drain.
- Extend top two layers of soil reinforcement 5 feet beyond the end of the lower layers of soil reinforcement.
- 4" Concrete Slope Protection in ditch. For details, see Section A-A on "MSE Wall Details (4)" Sht.
- Provide rodent screen manufactured from T304 stainless steel or galvanized steel with a minimum wire diameter of 0.050". Provide rodent screen with minimum of 2 openings per inch and a maximum of 4 openings per inch at end of pipe (daylight point).
- Maximum vertical spacing of soil reinforcement is 36".
- Angle to be determined by the Contractor based on site conditions and the method of construction used. Excavation and/or shoring of retained backfill to permit construction of the MSE wall is considered incidental to the MSE wall construction and is not paid for as a separate item.
- Provide aggregate, other than Macadam, that meets the requirements for stone backfill in Supplemental Technical Specification SC-M-713.
- Extend casing to bottom of leveling pad elevation.



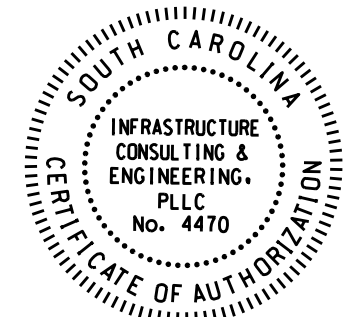
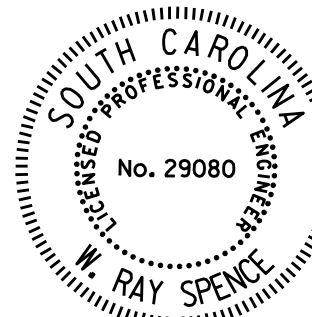
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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

MSE WALL DETAILS (3)

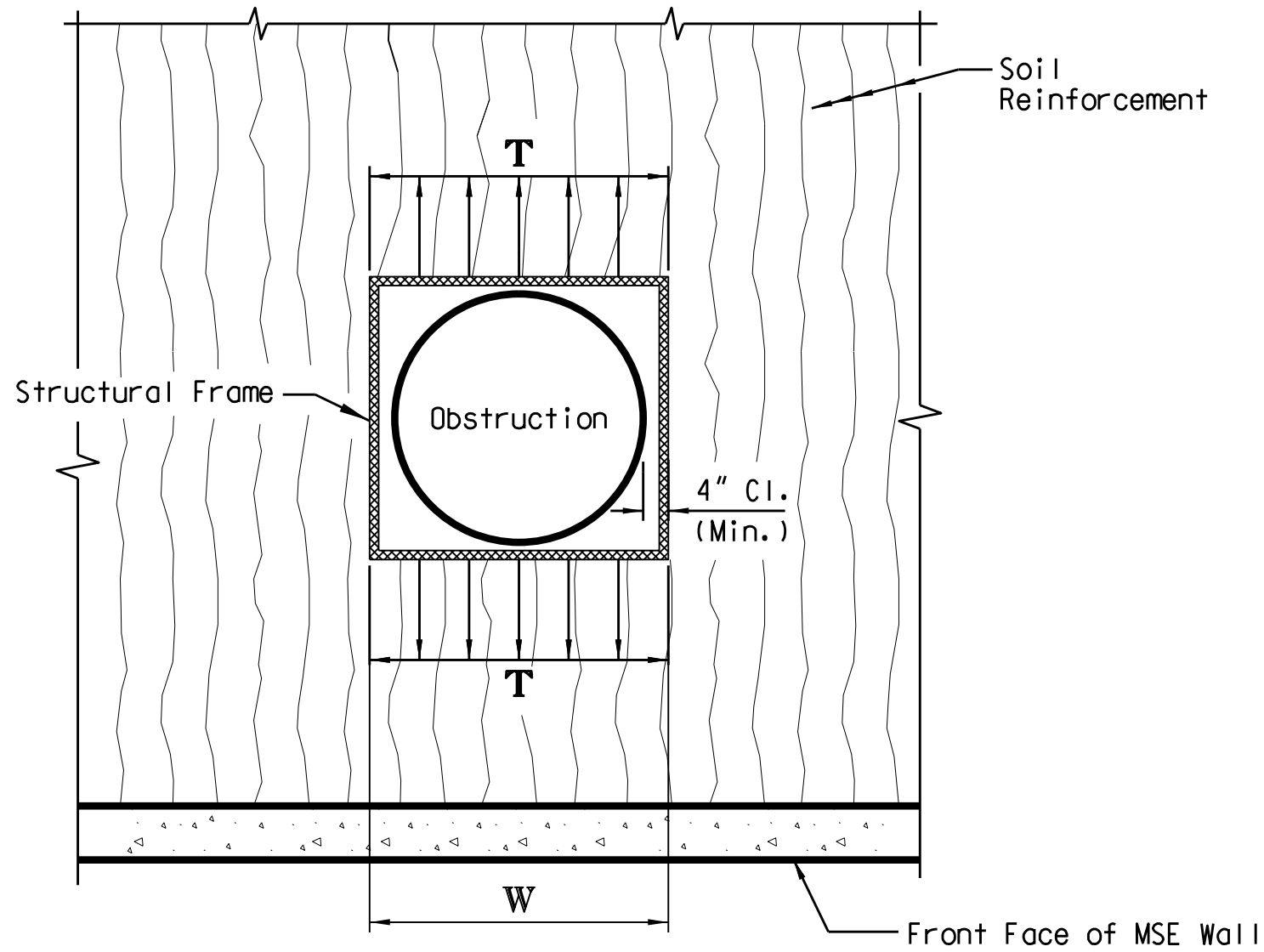
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176



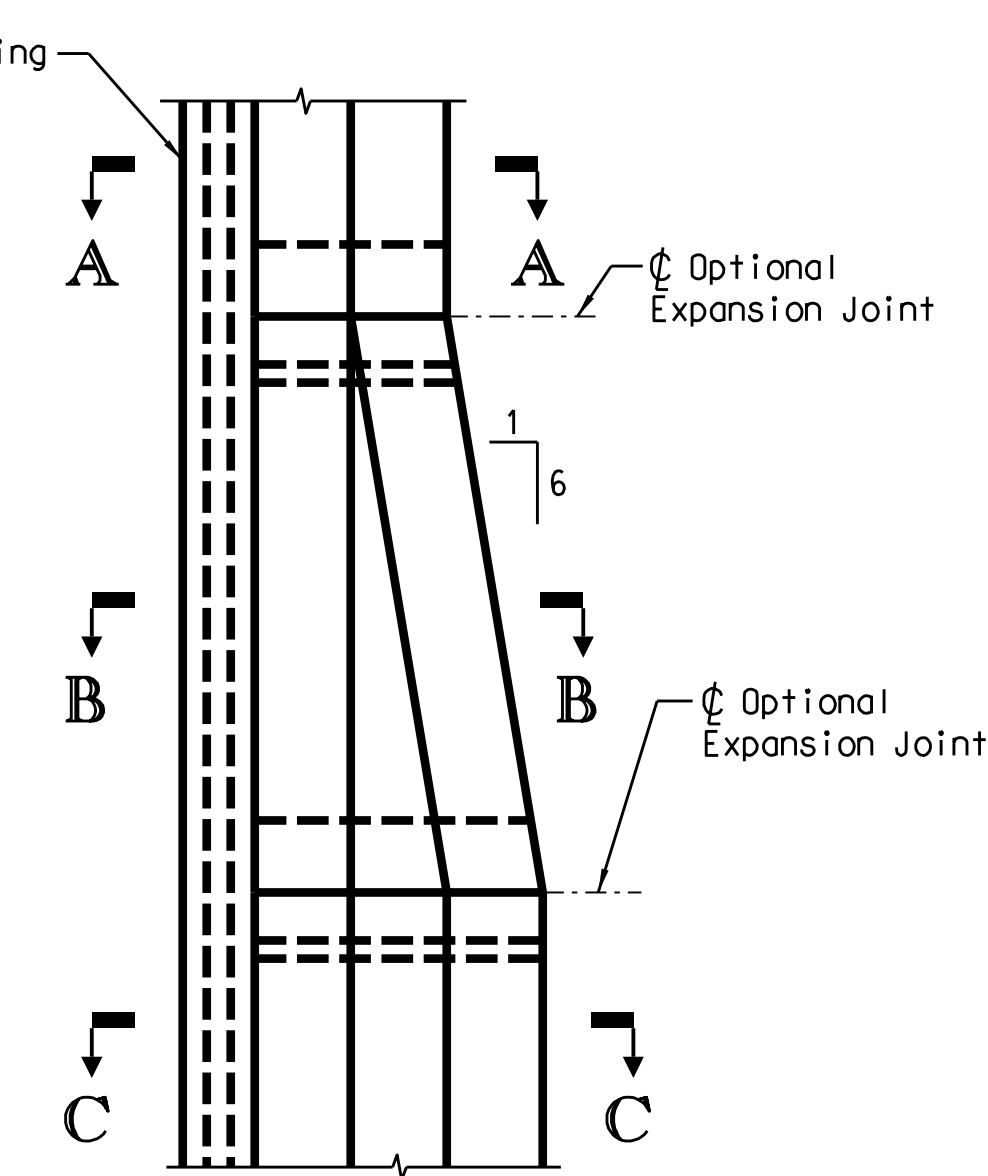
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REV.	JPF	KLC 4-22
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REV.	JXY	SAN 3-14
	New Border	
REVIEWED	PLC	04-22
QUAN.		
DR.	MRW	SAN 2-12
DES.	JPF	KLC 4-22
BY	CHK.	DATE

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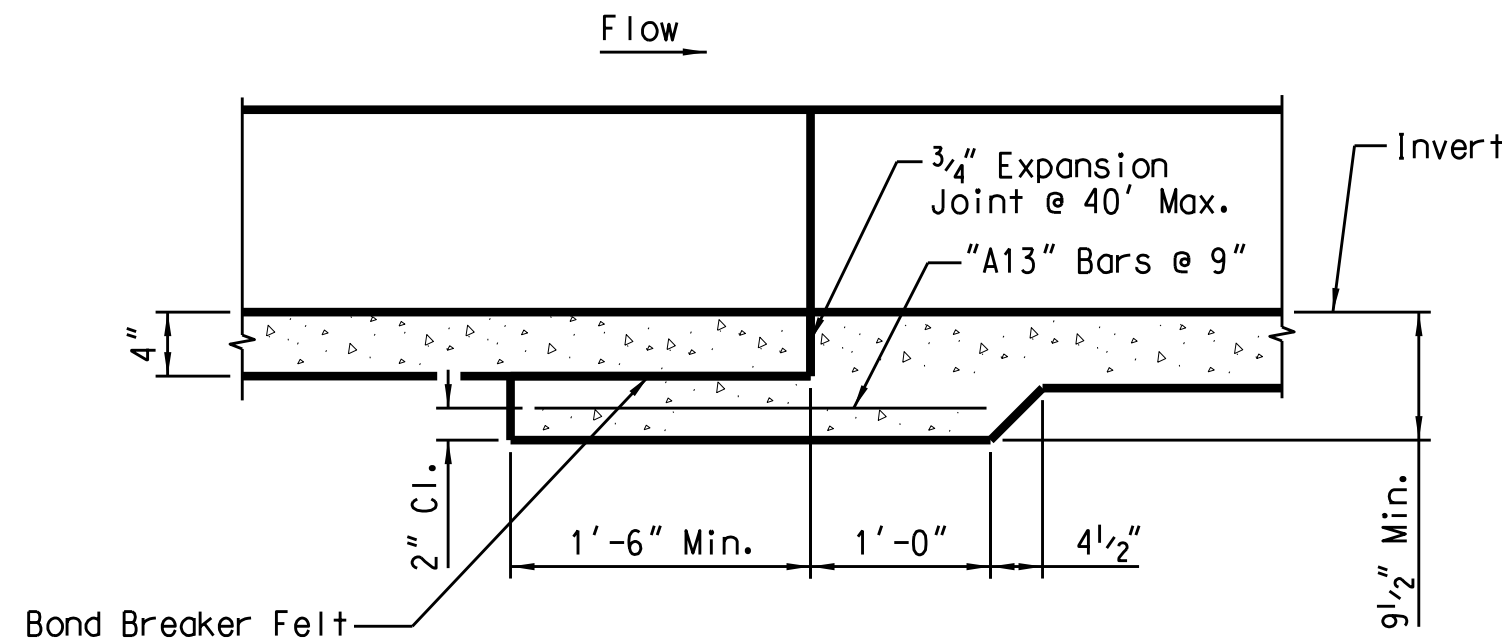


**MSE WALL OBSTRUCTION
(VERTICAL) WITH STRUCTURAL FRAME**^①
(Plan View)

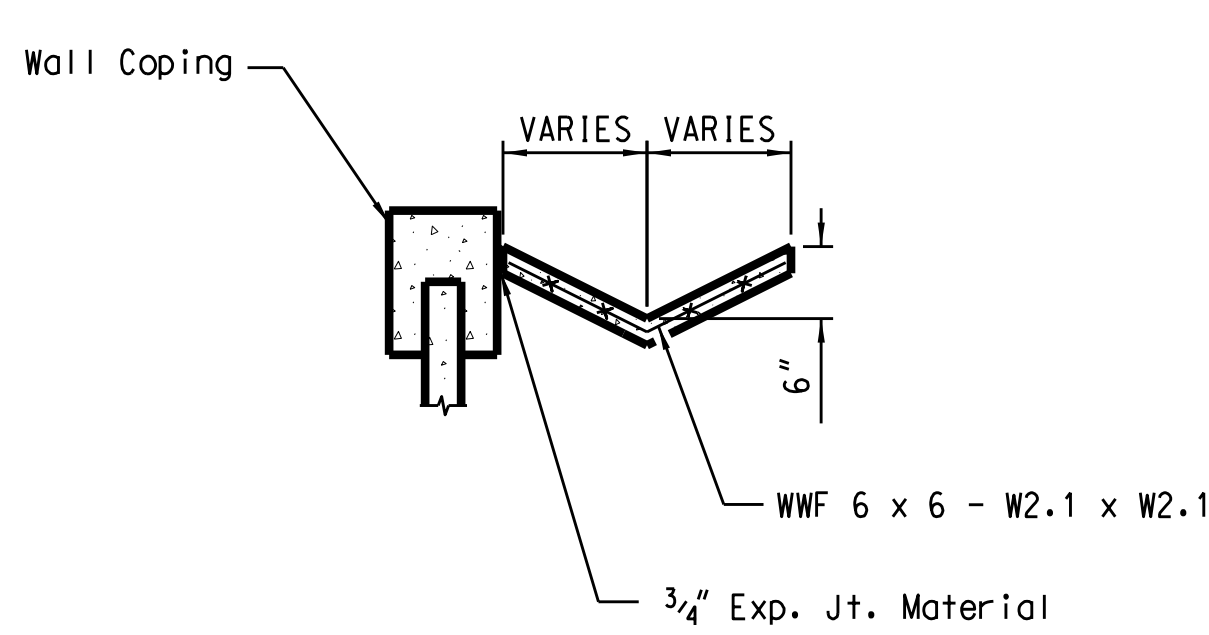
T = Total Load Which Structural Frame Must Carry = T_{max} X W
T_{max} = Max. Reinforcement Unit Tensile Load



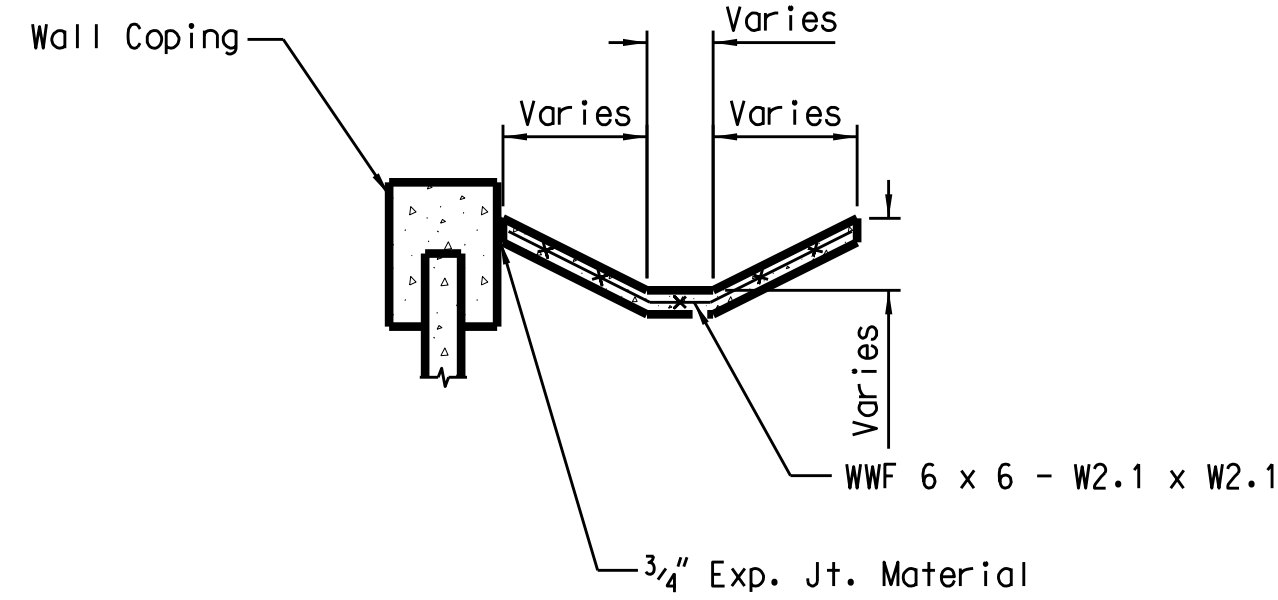
DITCH TRANSITION



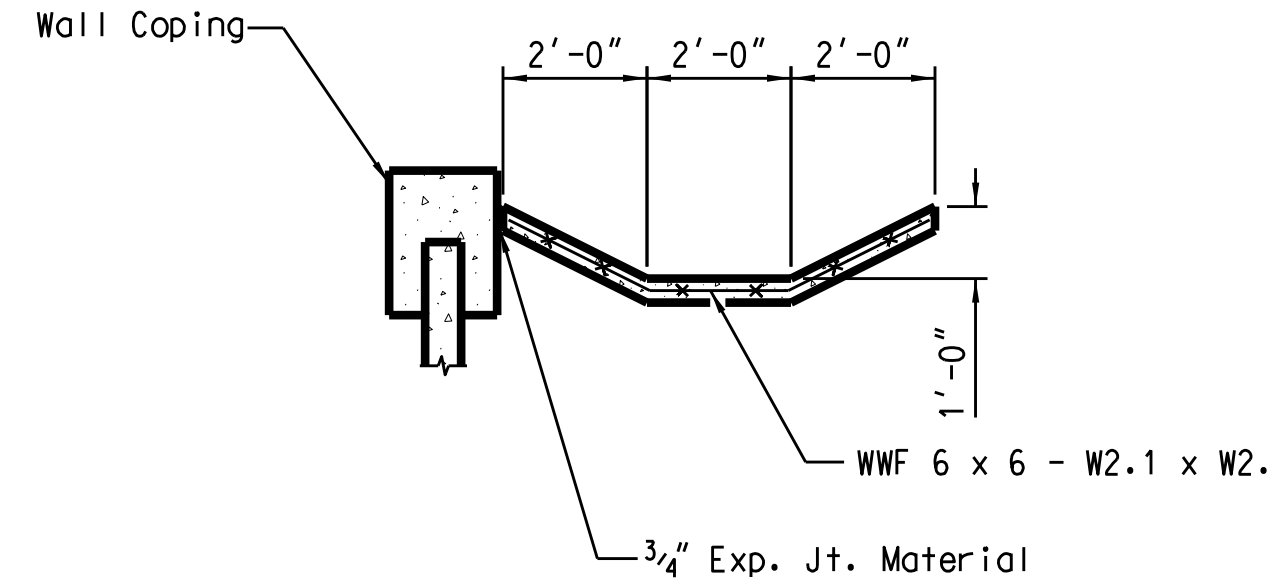
**SECTION THRU DITCH
AT EXPANSION JOINT**



SECTION A-A

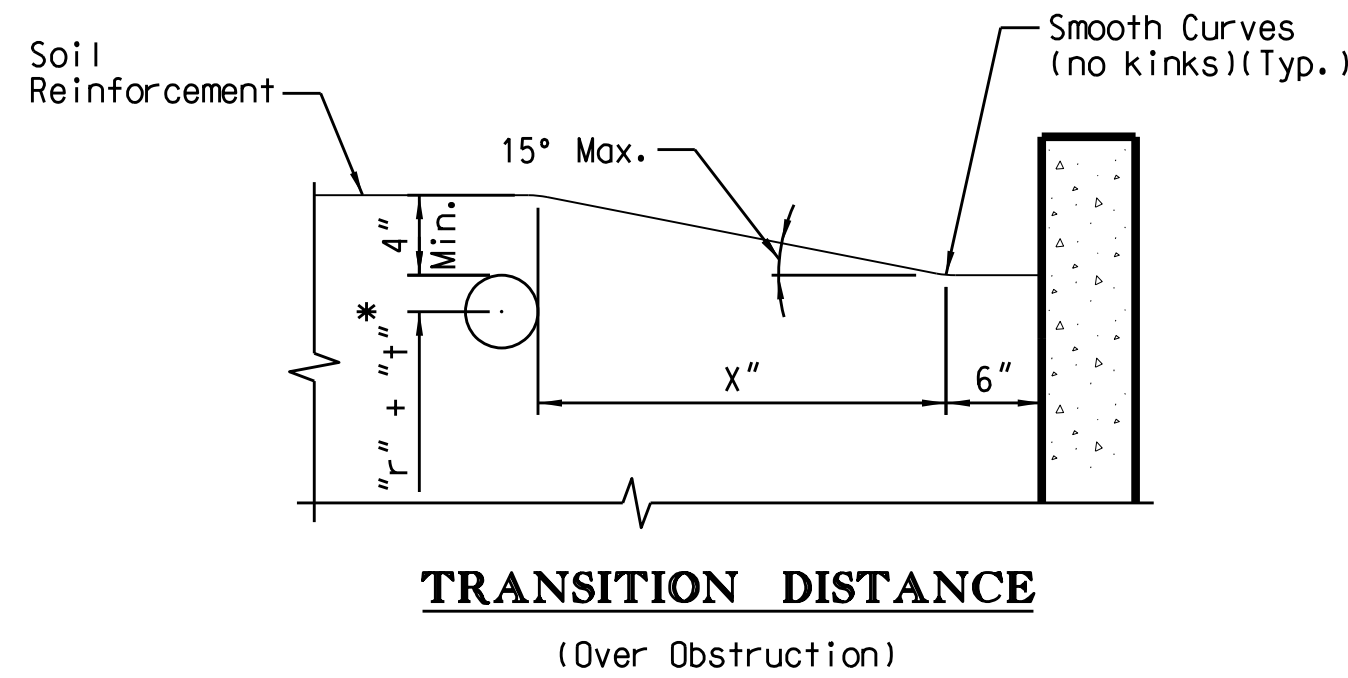
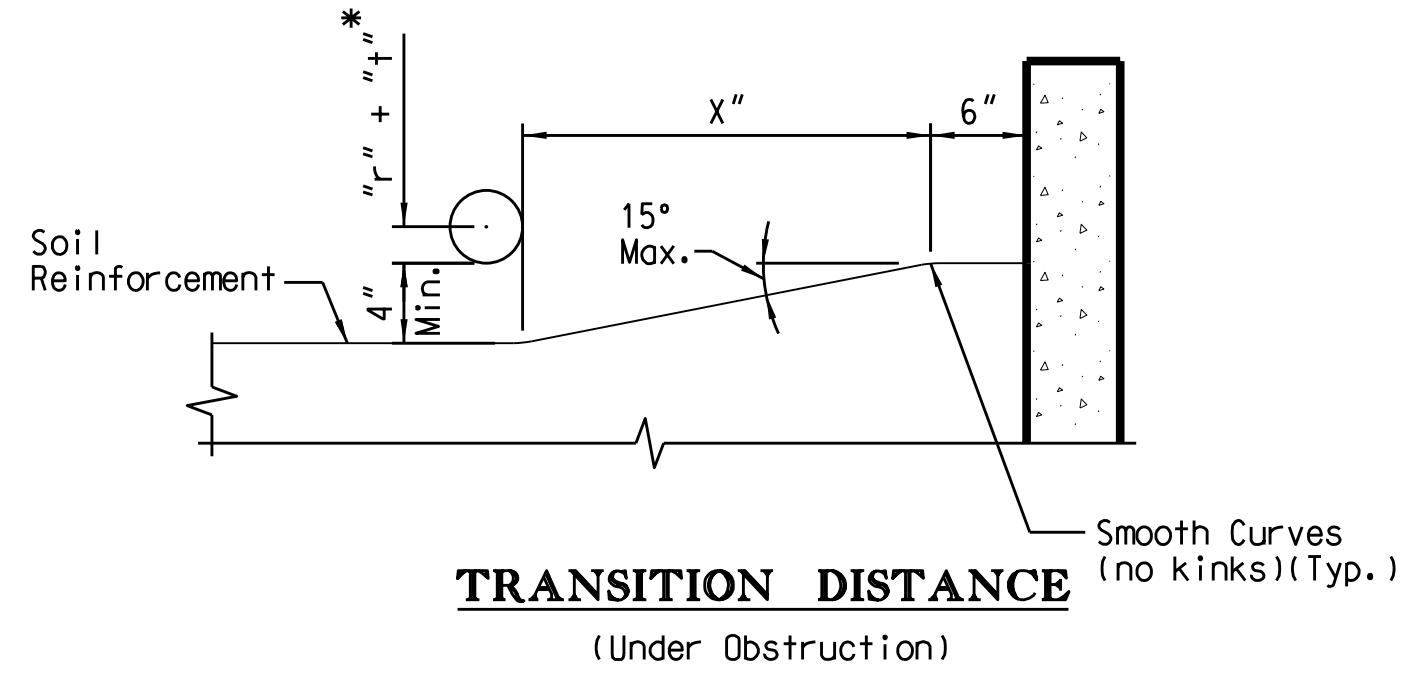


SECTION B-B



SECTION C-C

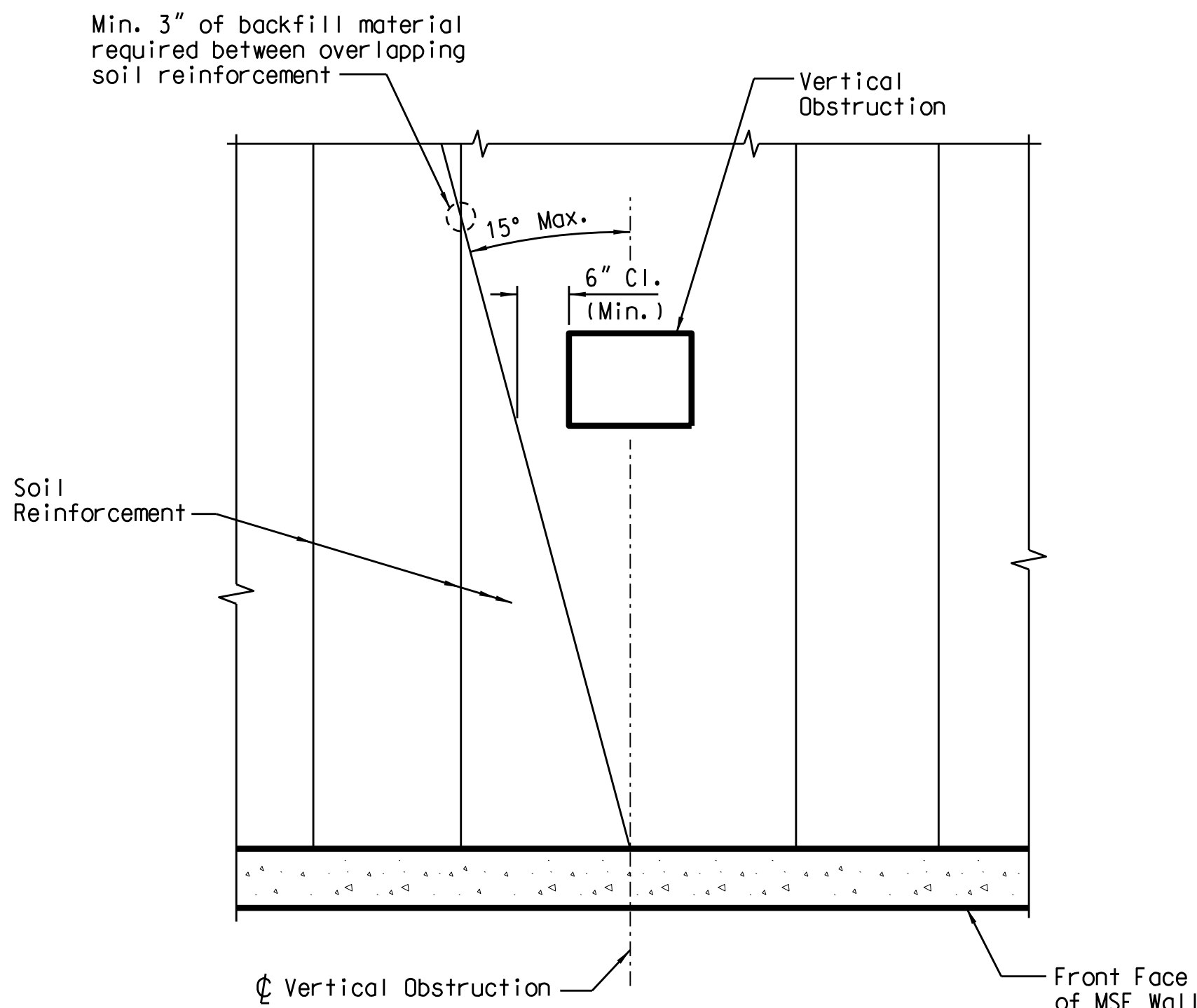
① Notes:
MSE Wall Supplier to design and provide additional soil reinforcement on each side of obstruction or a structural frame around the obstruction to transfer the load from the soil reinforcement on one side of the obstruction to the other. Design and detailing of either method is the MSE Wall Supplier's responsibility.



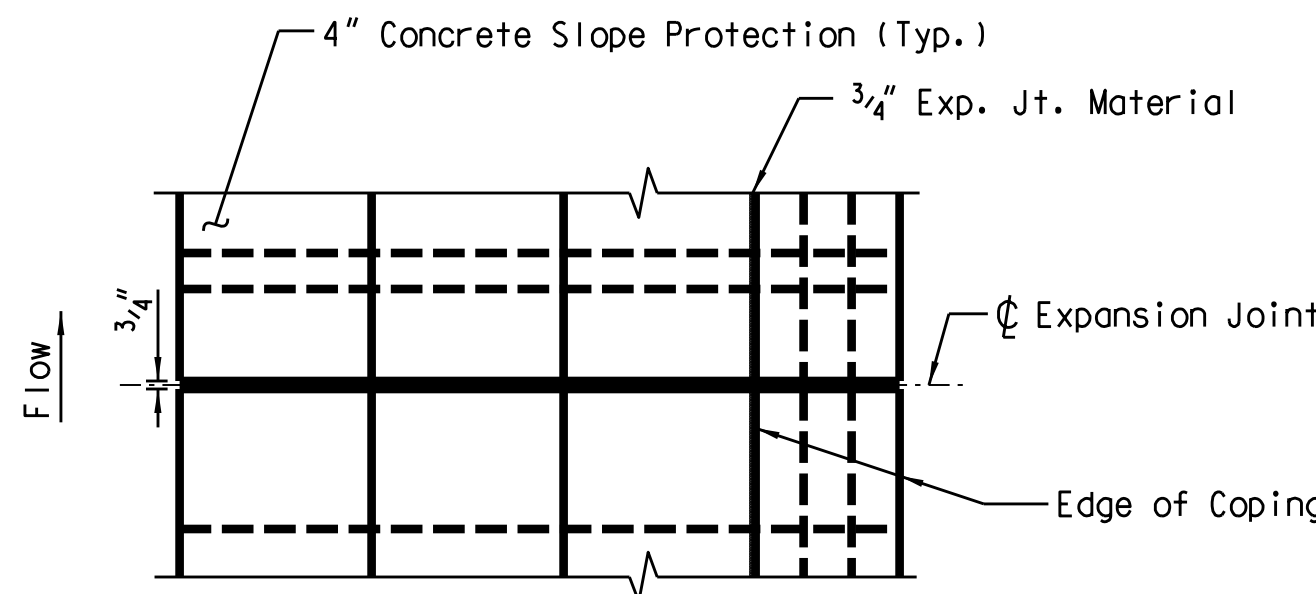
Pipe Inside Diameter	Pipe Radius "r"	"X" 1	"X" 2
6"	3"	27"	34"
12"	6"	38"	49"
18"	9"	49"	58"
24"	12"	60"	73"
30"	15"	71"	84"

* - "t" denotes pipe wall thickness
1 - Use for all pipe material except concrete
2 - Use for concrete pipe

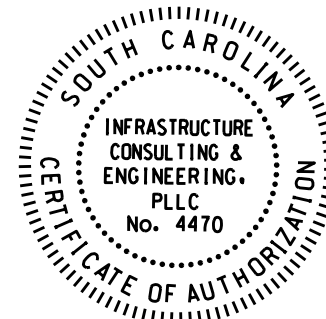
**MSE WALL OBSTRUCTION
(HORIZONTAL)**



MSE WALL OBSTRUCTION (VERTICAL)^①
(Plan View)



**PART. PLAN OF DITCH
AT EXPANSION JOINT**



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	RFC	PLANS
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	New	Border
REVIEWED	PLC	04-22
QUAN.		
DR.	MRW	SAN 2-12
DES.	JPF	KLC 4-22
BY	CHK.	DATE



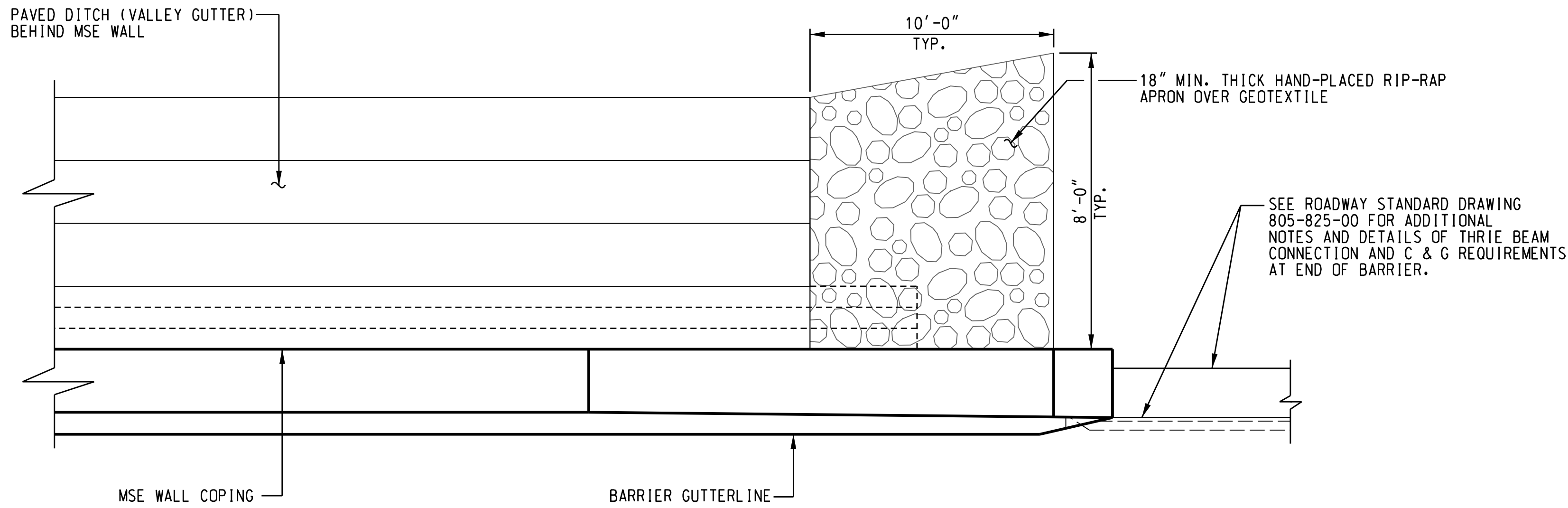
**SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

MSE WALL DETAILS (4)

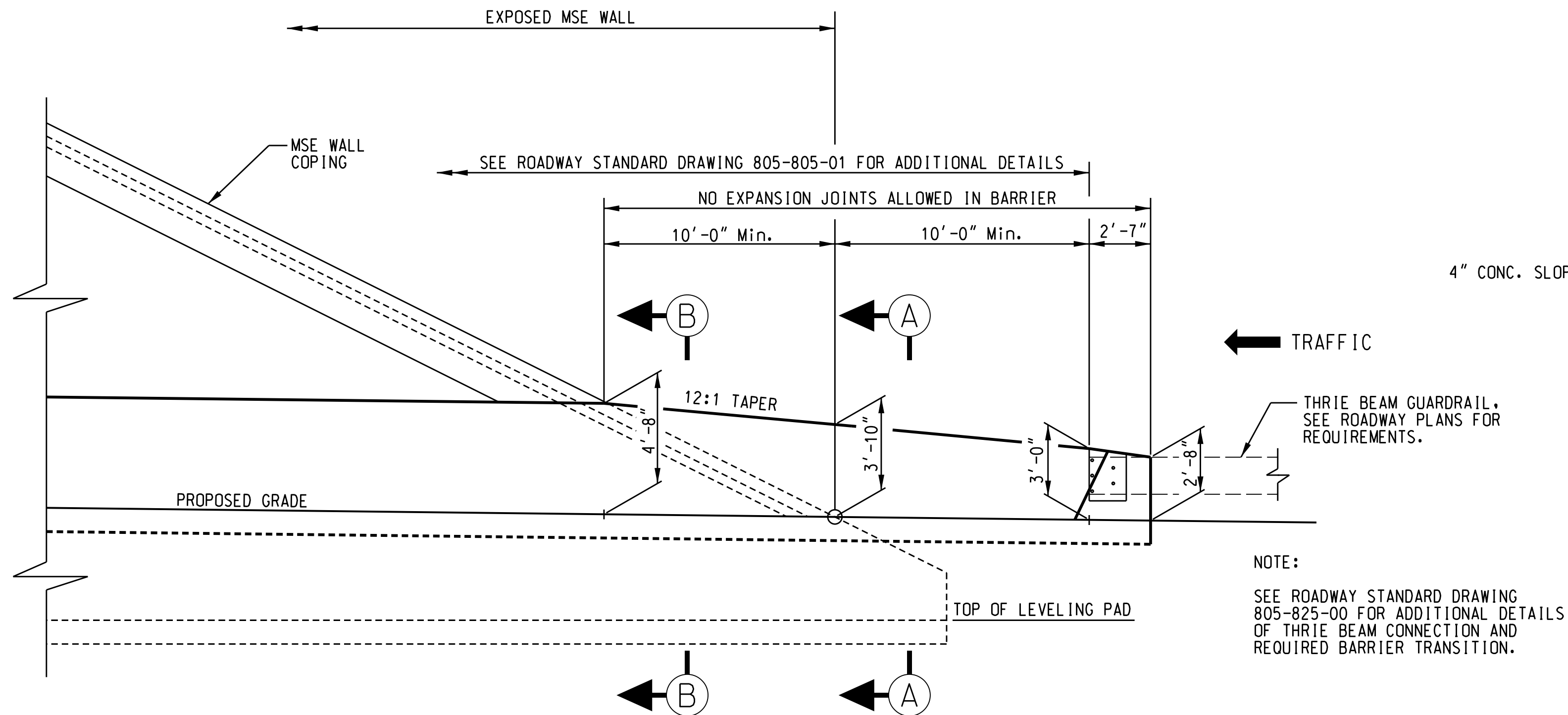
US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176

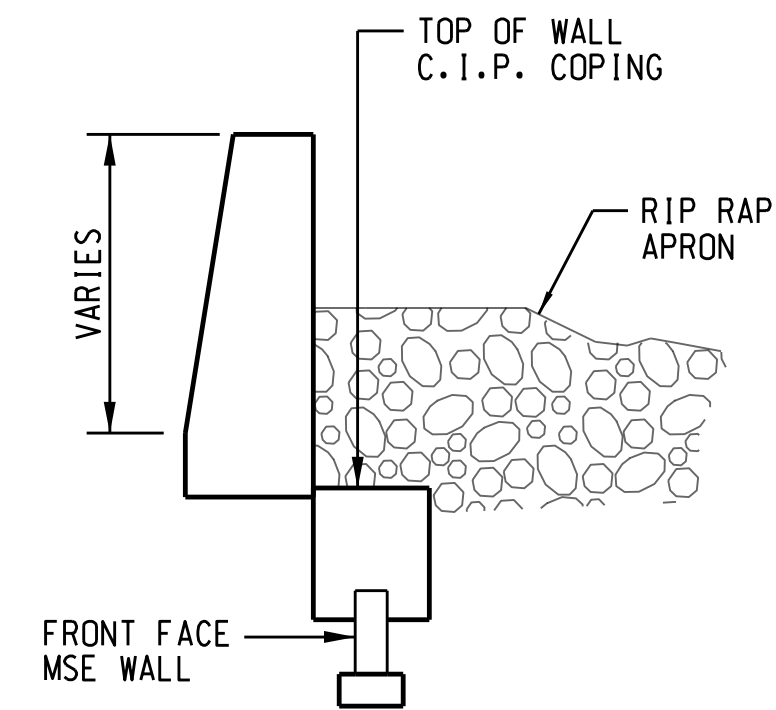
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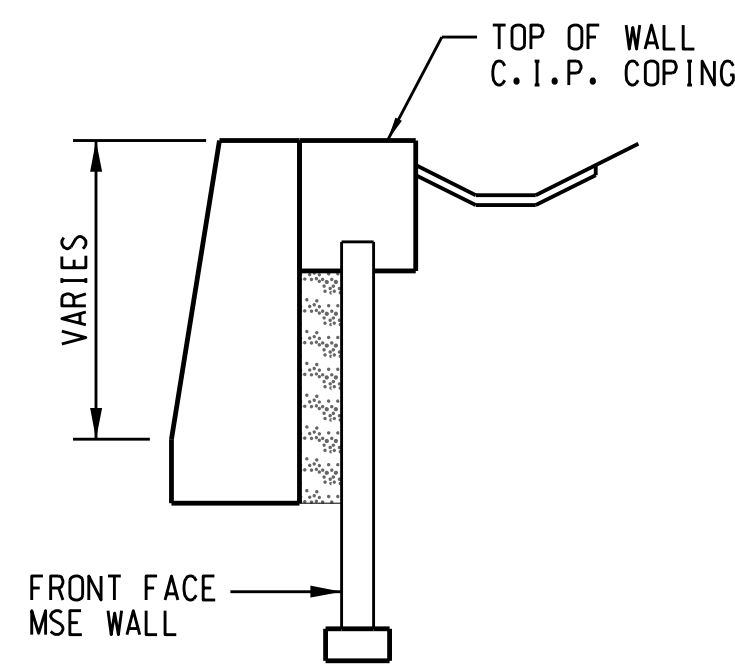
PARTIAL PLAN OF RIGID BARRIER - MSE WALL



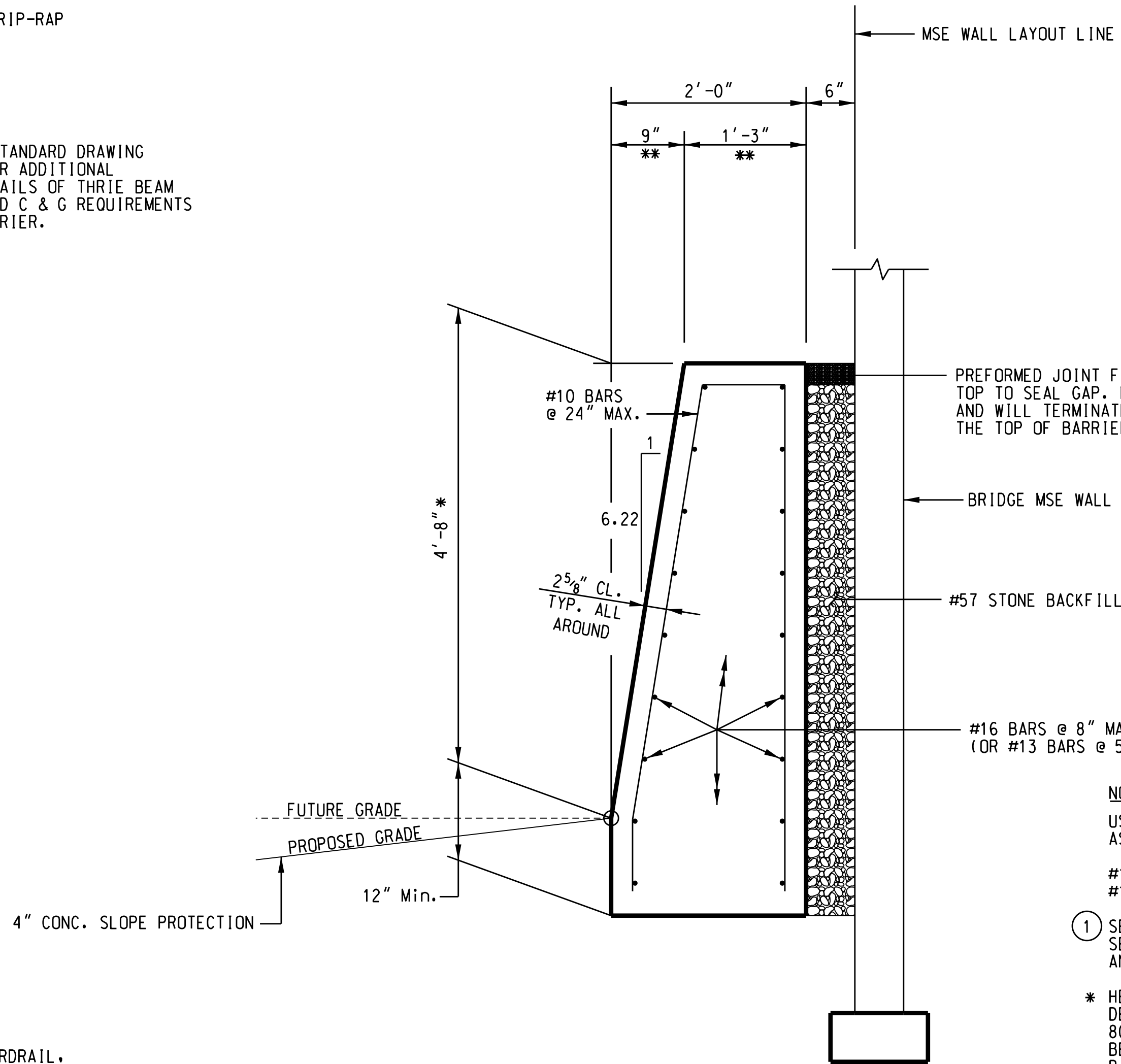
PARTIAL ELEVATION OF RIGID BARRIER



SECTION A-A



SECTION B-B



CONCRETE RIGID BARRIER SECTION
(PER RFP)

- NOTES:
- USE CLASS 6000 CONCRETE FOR RIGID BARRIER AS REQUIRED BY THE RFP AND STANDARD DRAWING.
 - #13 BARS - 2'-5" MIN. LAP SPLICE
 - #16 BARS - 3'-0" MIN. LAP SPLICE
 - SEE ROADWAY STANDARD DRAWINGS, SECTION 805-800 FOR ADDITIONAL NOTES AND DETAILS.
 - * HEIGHT OF BARRIER TRANSITIONS PER DETAILS SHOWN ON STANDARD DRAWINGS 805-805-01 & 805-825-00 FOR THRIE BEAM GUARDRAIL ATTACHMENT END OF BARRIER.
 - ** DIMENSIONS VARY AS HEIGHT REDUCES. SEE STANDARD DRAWINGS 805-805-01 & 805-825-00 FOR HEIGHT TRANSITION REQUIRED FOR THRIE BEAM CONNECTOR.
 - PROVIDE CONTRACTION AND EXPANSION JOINTS IN RIGID BARRIER PER NOTES AND DETAILS SHOWN ON STANDARD DRAWING 805-805-02.
 - FOR ADDITIONAL DETAILS AND LAYOUT OF RIGID BARRIER, SEE MSE WALL DETAIL SHEETS.

1



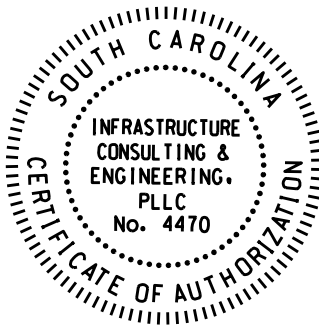
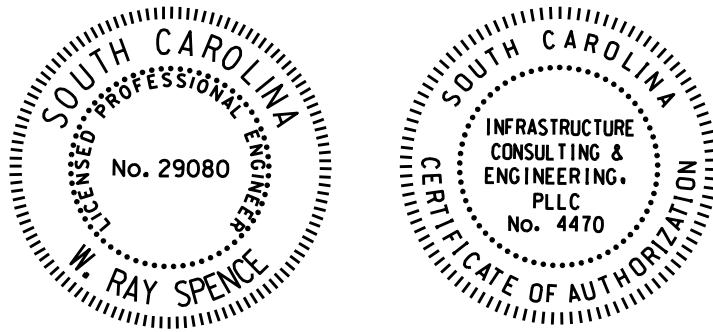
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RIGID BARRIER DETAILS

US 176 EB (BROAD RIVER RD.)
BRIDGE OVER I-20

COUNTY RICHLAND ROUTE US 176



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REV.		
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