



South Carolina Department of Transportation

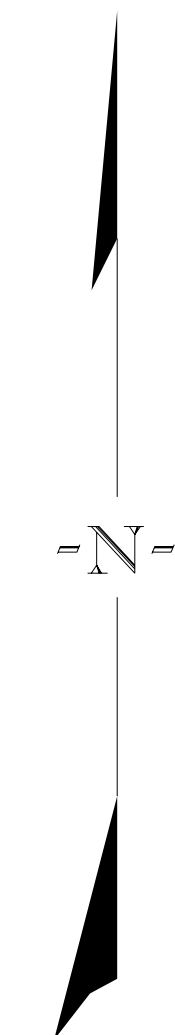
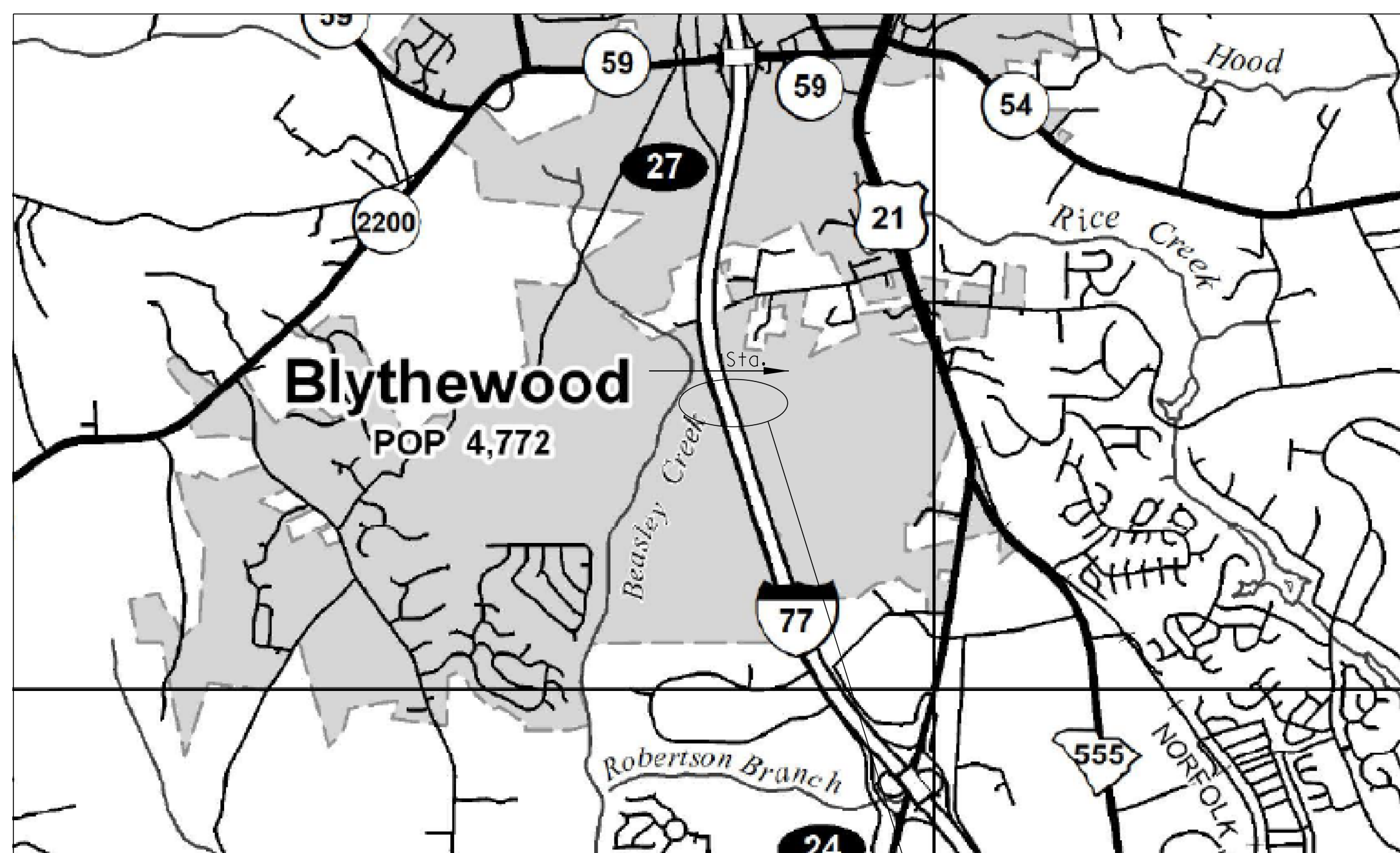
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PROPOSED PLANS FOR

RICHLAND COUNTY PROJECT ID P042443

I-77 INTERCHANGE EXIT 26 AND CONNECTION ROADS CONSTRUCT BRIDGE ON CONNECTOR ROAD OVER I-77 AND COMMUNITY ROAD



Approximate Location of Bridge is

Latitude 34° 11' - 27.9" N

Longitude 80° 59' - 2.01" W

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 TBD

TRAFFIC DATA			
2026	ADT	14,900	V.P.D.
2046	ADT	22,800	V.P.D.
	TRUCKS	11	%

LAYOUT

SITE LOCATION

NET LENGTH OF ROADWAY	1.252	MILES
NET LENGTH OF BRIDGES	0.086	MILES
NET LENGTH OF PROJECT	1.338	MILES
LENGTH OF EXCEPTIONS	0.000	MILES
GROSS LENGTH OF PROJECT	1.338	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 LETTING.

ENGINEER OF RECORD

CONCEPTUAL PLANS

NOT FOR CONSTRUCTION

FOR CONSTRUCTION: _____ DATE _____

REVIEWED	DR.	TRL	NSC	12-23	DATE
		VAS	CHK		
		BY			

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.

WATER ELEVATIONS

The water elevations shown in the plans are for information only and the actual water elevation during construction may vary depending on weather conditions and seasonal fluctuations.

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 as noted on Reinforcing Bending Details sheet. 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. All cost of performing this work is considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for concrete in slab is based on theoretical plan quantity. No adjustment is made for variation in camber.

Chamfer all exposed edges 3/4" unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is 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. All costs for performing, evaluating, and submitting the surveys are considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for grinding and texturing concrete bridge decks at the junction of new and existing bridge deck slabs is determined in accordance with Subsection 702.6 of the Standard Specifications. No payment is made for grinding and texturing of new bridge decks to correct irregularities and excessive deviations.

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.

For instantaneous and long-time dead load deflection, use a camber of 1/8" for concrete flat slab spans 22 feet in length, 3/16" for concrete flat slab spans 30 feet in length, and 3/8" for concrete flat slab spans 40 feet in length, unless otherwise directed by the RCE. Adjust these cambers as necessary to allow for falsework deflection, falsework settlement, and vertical curve ordinates.

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.

Where prestressed concrete piles are to be driven through fill, install piles in pre-bored holes extending to the original ground. For square prestressed concrete piles, bore holes having a minimum diameter of 1.25 times the nominal pile size. Include all cost of pre-boring fills for pile installation in the unit price bid for the piles.

EXCAVATION FOR END BENTS

Include all cost of excavation necessary to construct end bents and to remove material under superstructure to an elevation twelve inches below tops of end bent caps, in the unit price bid for class of concrete specified in the Plans.

If a concrete footing is used for the end bent, the excavation below that included for the cap and berm in the above paragraph is paid for at the unit price bid for excavation. Include excavation above this in the unit price bid for class of concrete specified in the Plans.

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 7/8" dia. ASTM F3125, Grade A325 bolts unless otherwise indicated.

Generally, holes for 7/8" dia. bolts shall be 15/16" dia. However, for straight girder spans, oversized holes, 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. No additional payment is made for the costs associated with the use of oversize holes and furnishing additional hardened washers as necessary.

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.

Include all cost of furnishing and installing steel bearing assembly components in the lump sum price bid for structural steel if a bid item for structural steel is included in the project. Otherwise, include the cost in the unit price bid for prestressed beams.

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. Include all costs of furnishing and installing anchor bolt assemblies in the unit price bid 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 walls; 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.
 - D) No final surface finish required.
- All Units Designated Units:

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 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 _{0s} (FEE):	0.32 g
S _{0l} (FEE):	0.06 g
PGA (SEE):	0.41 g
S _{0s} (SEE):	0.77 g
S _{0l} (SEE):	0.16 g

FEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.200	0.51	0.111	
0.01	0.221	0.67	0.084	
0.01	0.241	0.84	0.067	
0.02	0.262	1.01	0.056	
0.02	0.283	1.17	0.048	
0.03	0.304	1.34	0.042	
T ₀	0.03	0.324	1.50	0.038
0.05	0.324	1.67	0.034	
0.06	0.324	1.84	0.031	
0.07	0.324	2.00	0.028	
0.08	0.324	2.17	0.026	
0.09	0.324	2.34	0.024	
0.10	0.324	2.50	0.023	
0.12	0.324	2.67	0.021	
0.13	0.324	2.83	0.020	
0.14	0.324	3.00	0.019	
0.15	0.324			
0.16	0.324			
T _s	0.17	0.324		
0.34	0.166			

SEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.409	0.54	0.298	
0.01	0.469	0.70	0.228	
0.01	0.533	0.86	0.185	
0.02	0.590	1.03	0.155	
0.03	0.650	1.19	0.134	
0.03	0.710	1.36	0.118	
T ₀	0.04	0.771	1.52	0.105
0.06	0.771	1.69	0.095	
0.07	0.771	1.85	0.086	
0.08	0.771	2.01	0.079	
0.10	0.771	2.18	0.073	
0.11	0.771	2.34	0.068	
0.12	0.771	2.51	0.064	
0.14	0.771	2.67	0.060	
0.15	0.771	2.84	0.056	
0.17	0.771	3.00	0.053	
0.18	0.771			
0.19	0.771			
T _s	0.21	0.771		
0.37	0.430			

Values determined from: Three-Point Method

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

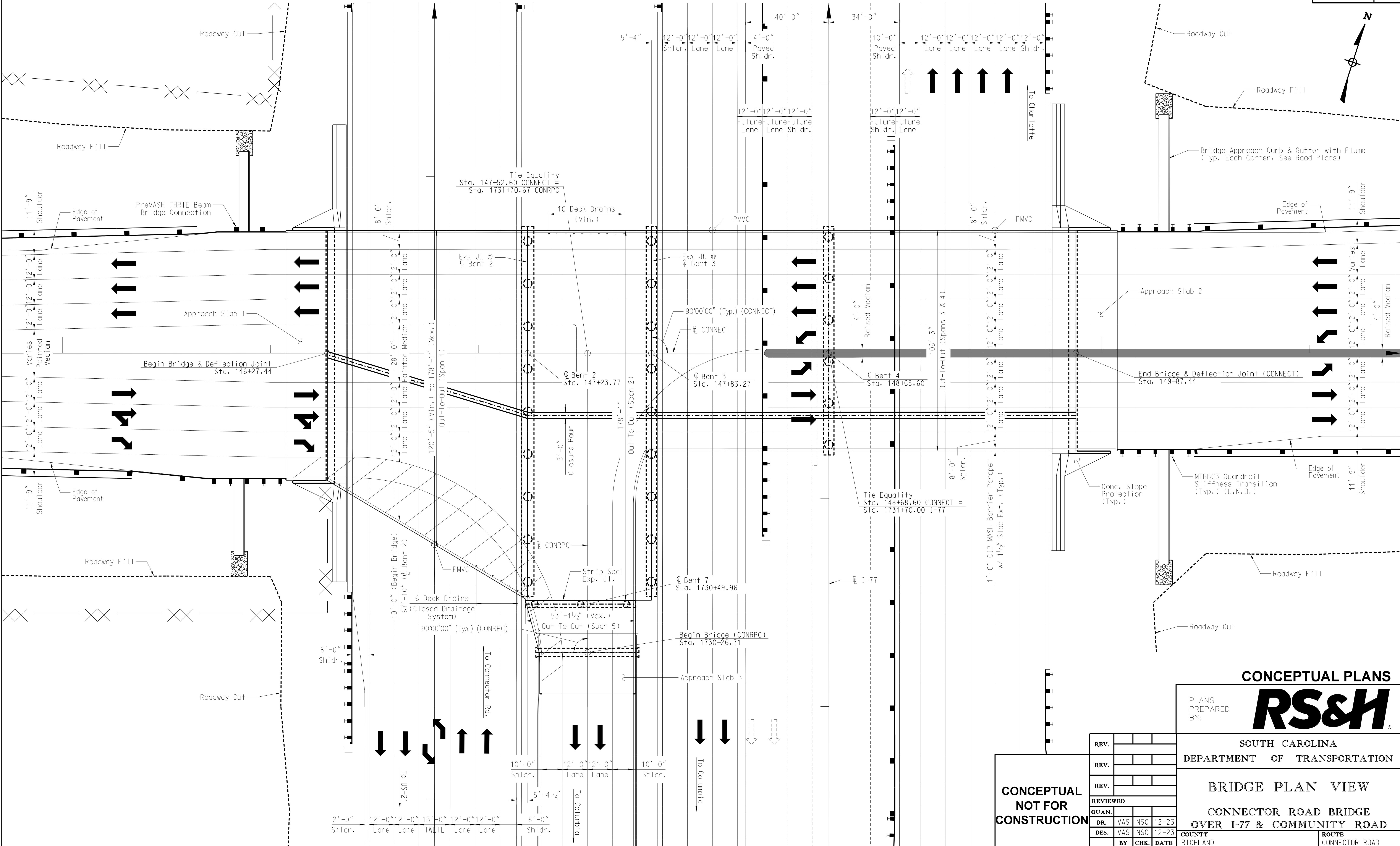
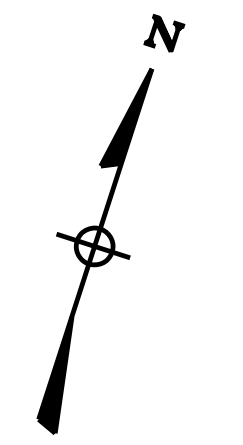
GENERAL NOTES

CONNECTOR ROAD BRIDGE OVER I-77 & COMMUNITY ROAD

COUNTY: RICHLAND ROUTE: CONNECTOR ROAD

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DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	




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DES.	VAS	NSC	12-23
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CONCEPTUAL PLANS

PLANS PREPARED BY:

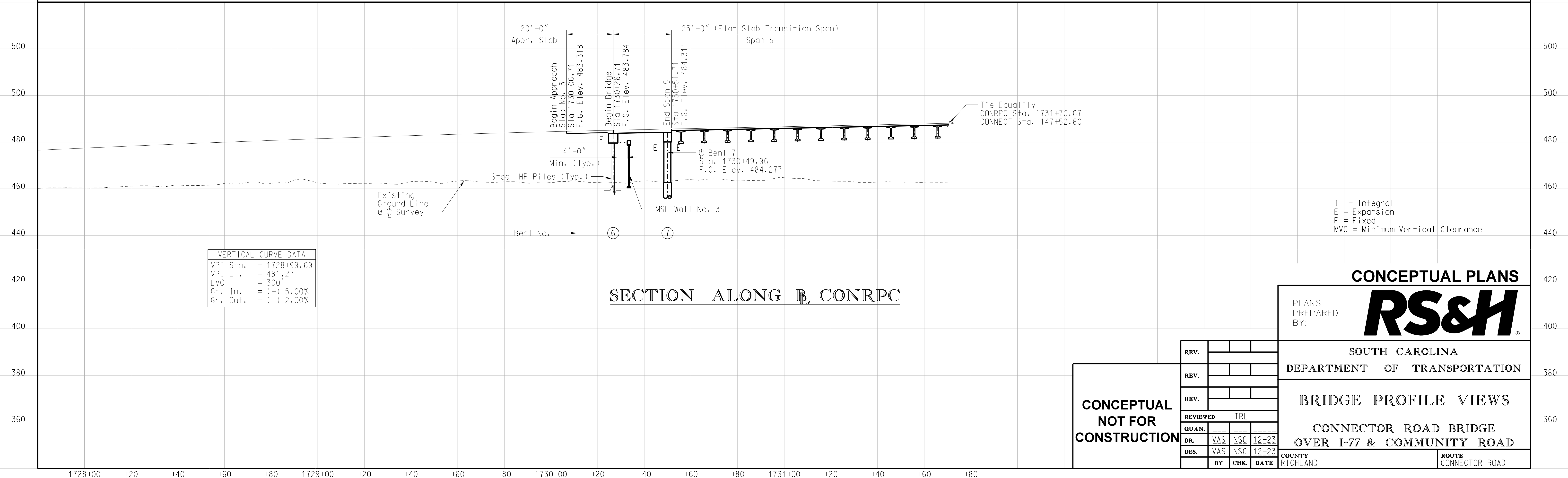
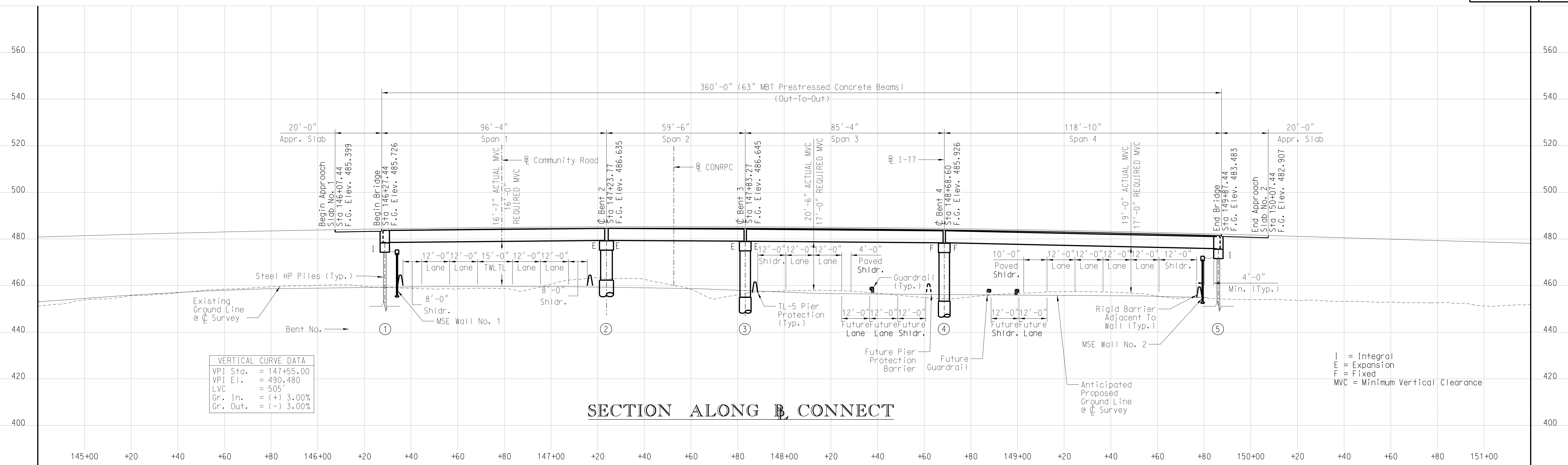


SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN VIEW

**CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD**

COUNTY	ROUTE
RICHLAND	CONNECTOR ROAD



CONCEPTUAL NOT FOR CONSTRUCTION

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DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL PLANS

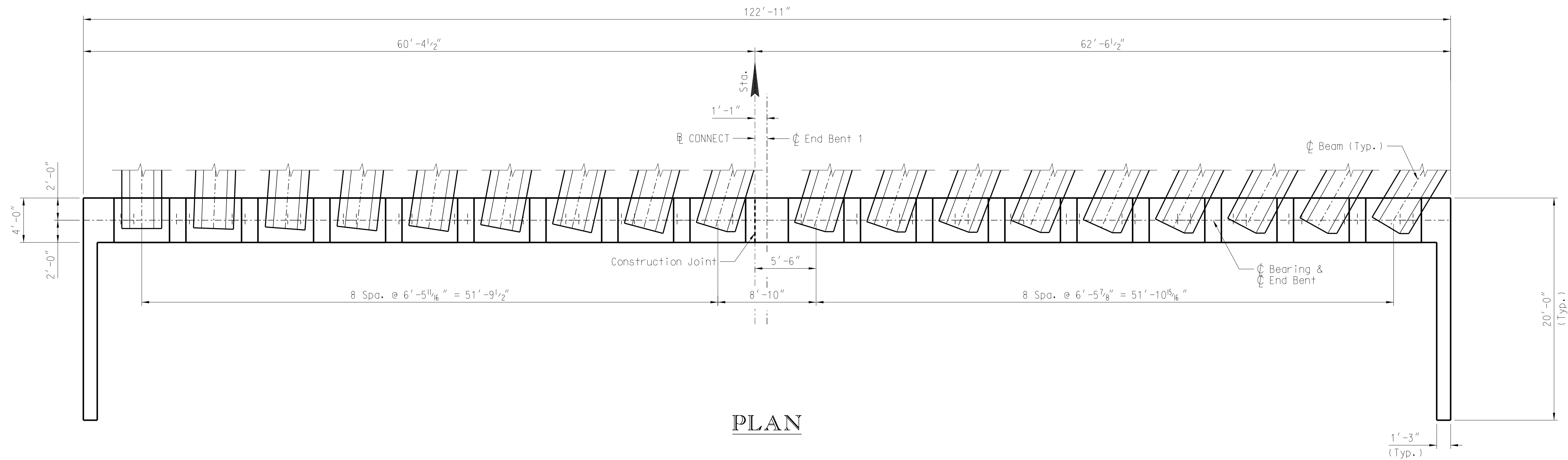
PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

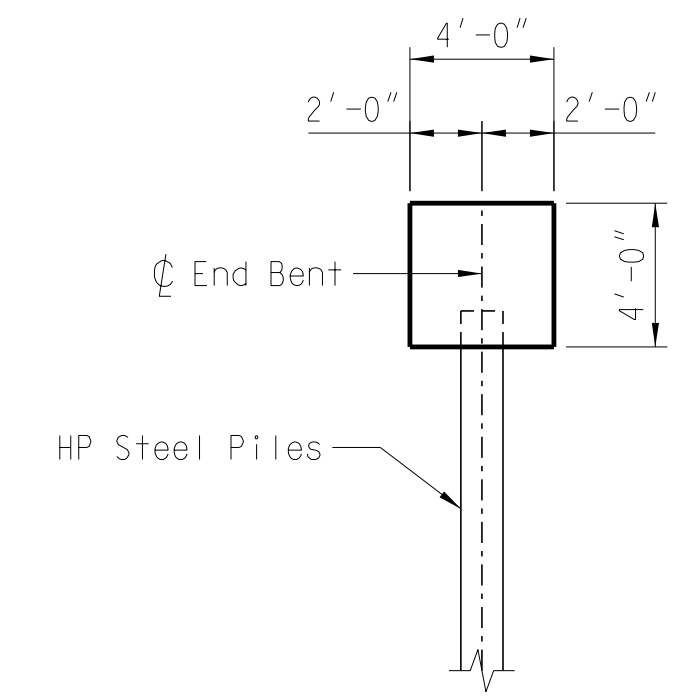
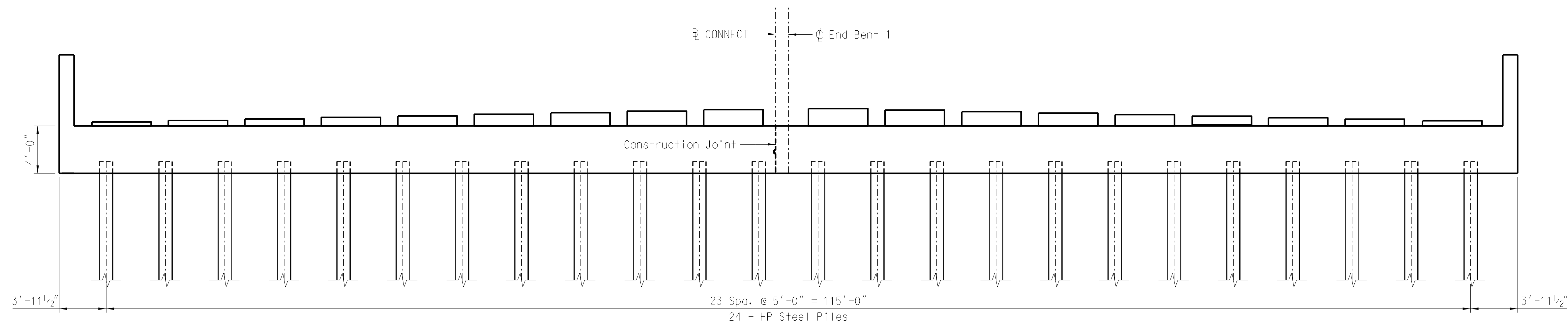
BRIDGE PROFILE VIEWS

CONNECTOR ROAD BRIDGE OVER I-77 & COMMUNITY ROAD

COUNTY: RICHLAND ROUTE: CONNECTOR ROAD



Note:
 Anchor Bolts, Bearing Plates, and Elastomeric Bearing Pads not shown for clarity.



CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

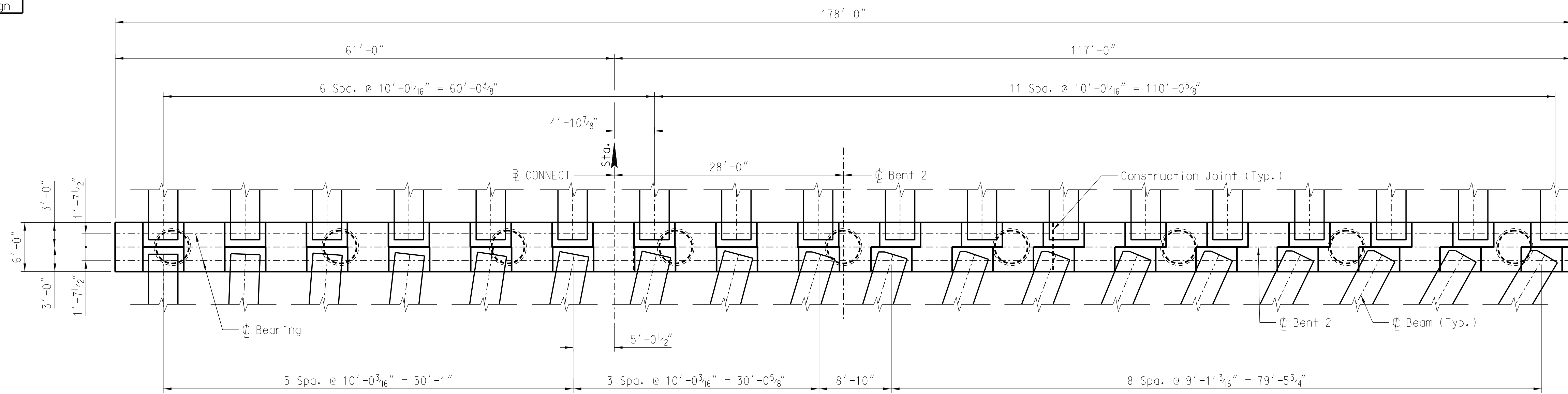
SOUTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

**PLAN AND ELEVATION
 END BENT 1
 CONNECTOR ROAD BRIDGE
 OVER I-77 & COMMUNITY ROAD**

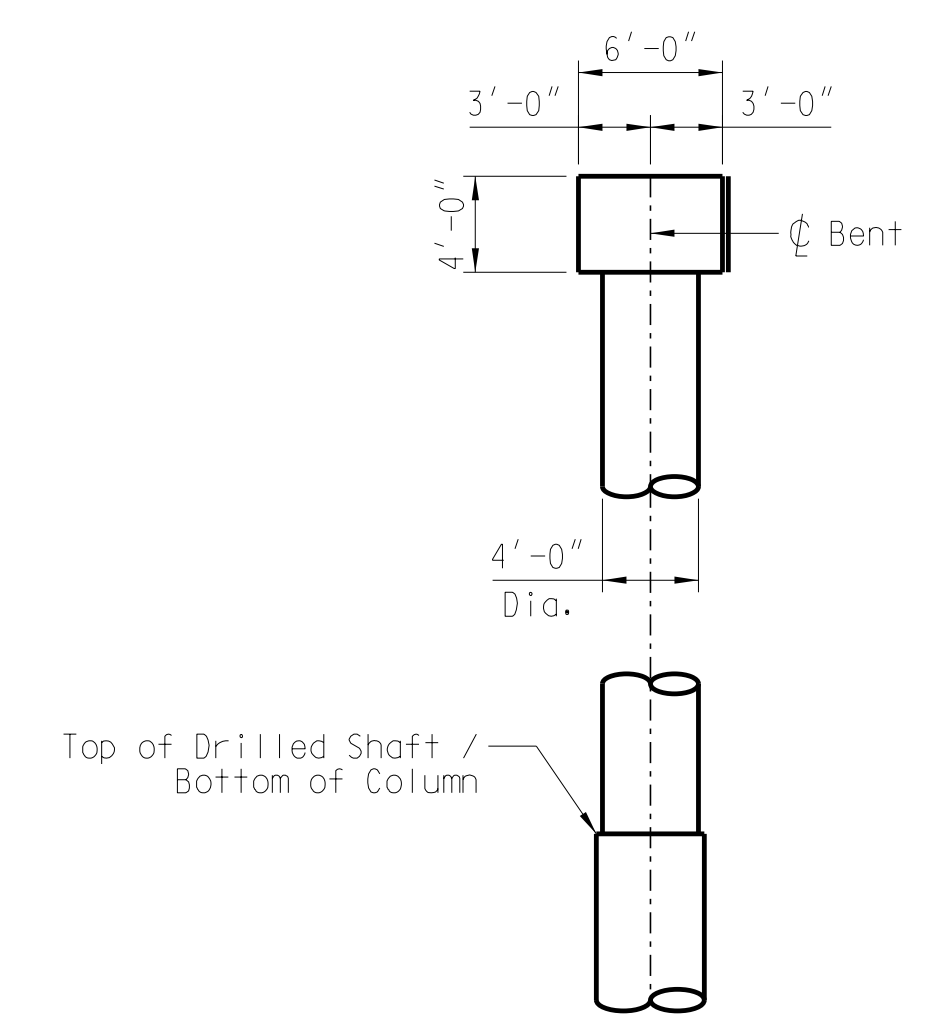
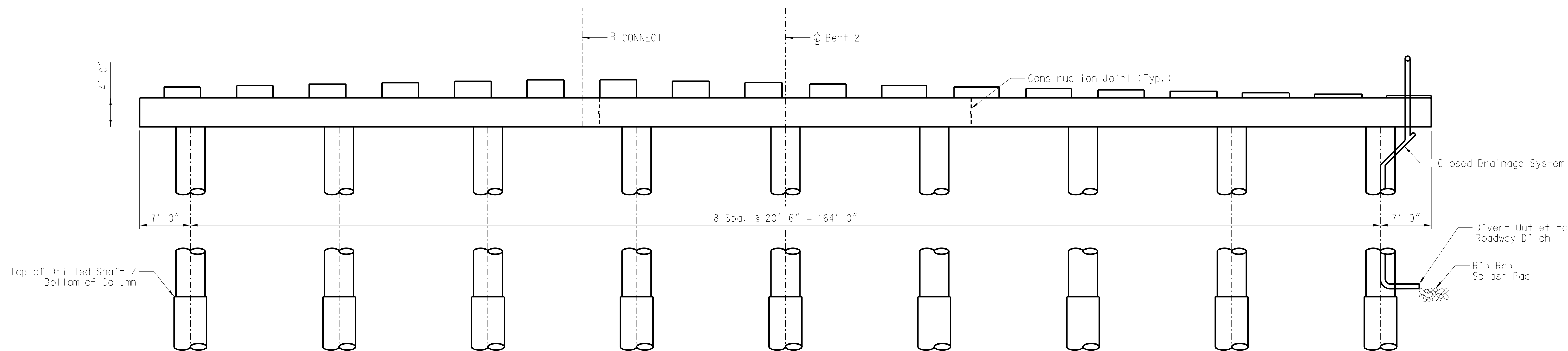
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COUNTY	ROUTE
RICHLAND	CONNECTOR ROAD



Note:
 Anchor Bolts, Bearing Plates, and Elastomeric Bearing Pads not shown for clarity.



CONCEPTUAL PLANS

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SOUTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

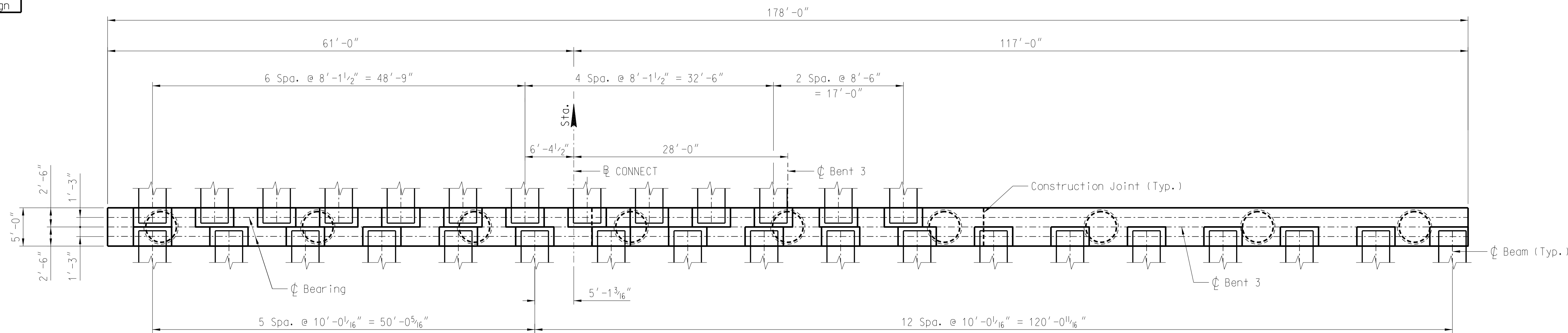
**PLAN AND ELEVATION
 BENT 2**

**CONNECTOR ROAD BRIDGE
 OVER I-77 & COMMUNITY ROAD**

COUNTY		ROUTE	
RICHLAND		CONNECTOR ROAD	

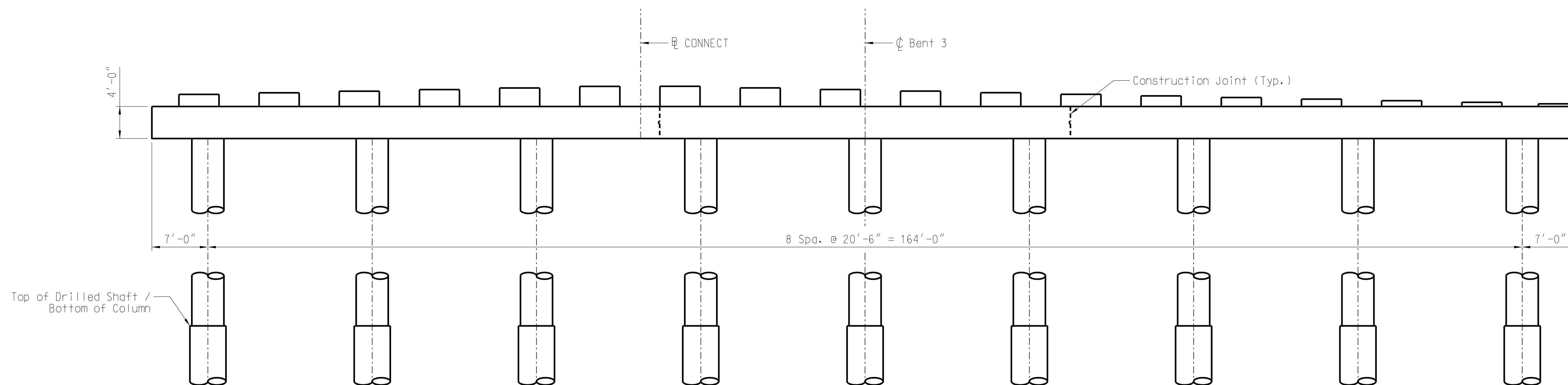
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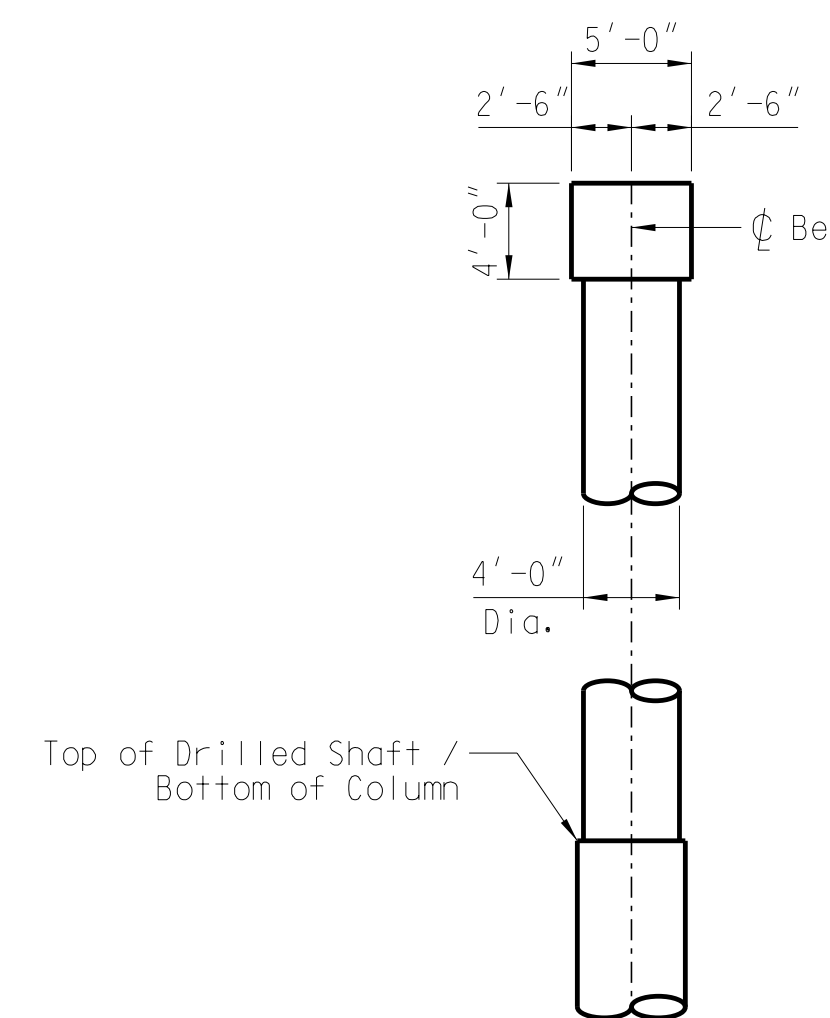


PLAN

Note:
Anchor Bolts, Bearing Plates, and Elastomeric Bearing Pads not shown for clarity.

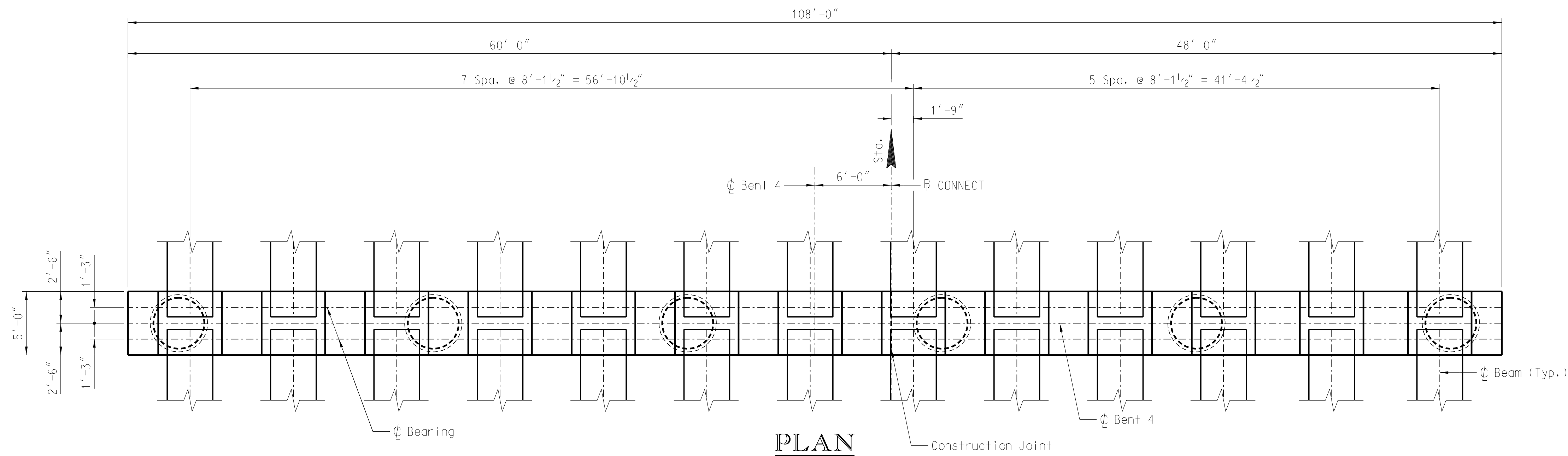


ELEVATION

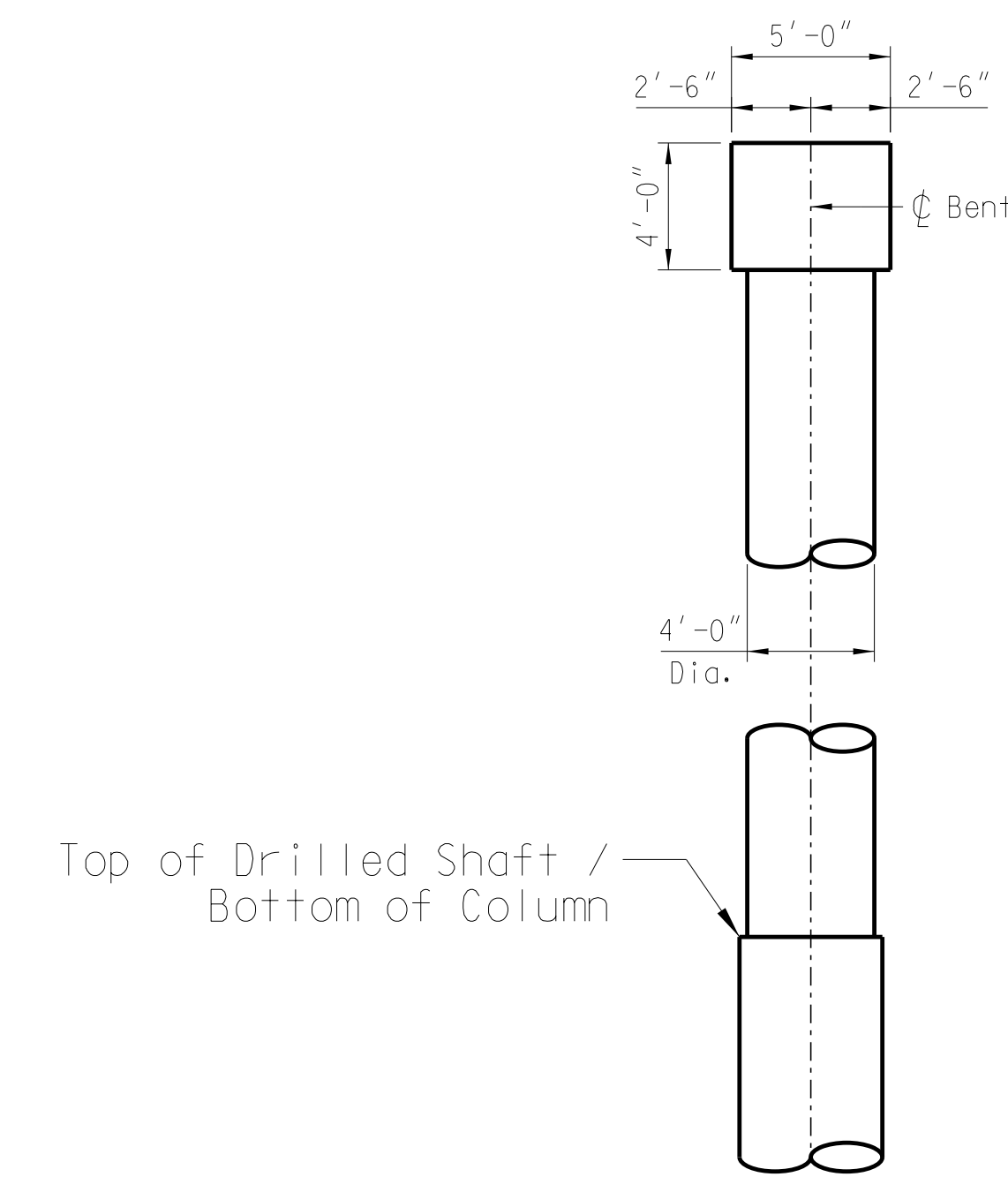
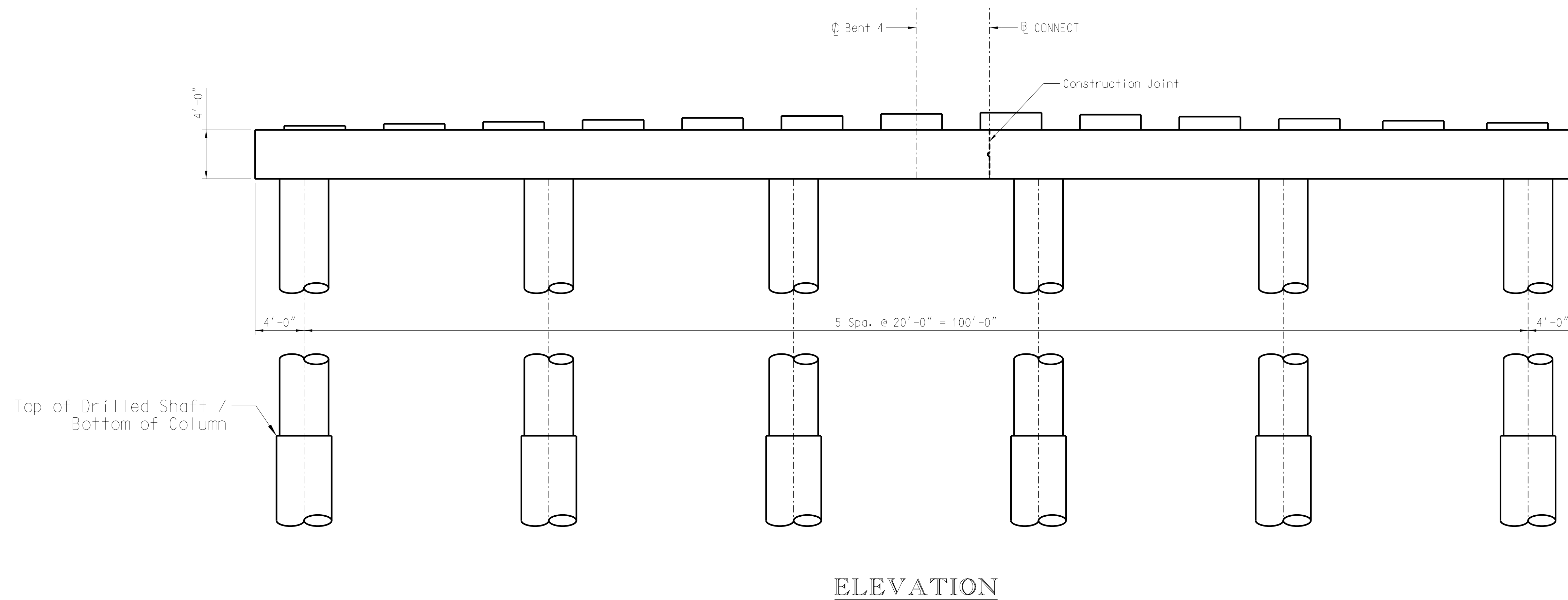


END ELEVATION

CONCEPTUAL NOT FOR CONSTRUCTION	REV.				CONCEPTUAL PLANS PLANS PREPARED BY: RS&H SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION PLAN AND ELEVATION BENT 3 CONNECTOR ROAD BRIDGE OVER I-77 & COMMUNITY ROAD COUNTY: RICHLAND ROUTE: CONNECTOR ROAD
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BY	CHK.	DATE			



Note:
Anchor Bolts, Bearing Plates, and Elastomeric Bearing Pads not shown for clarity.

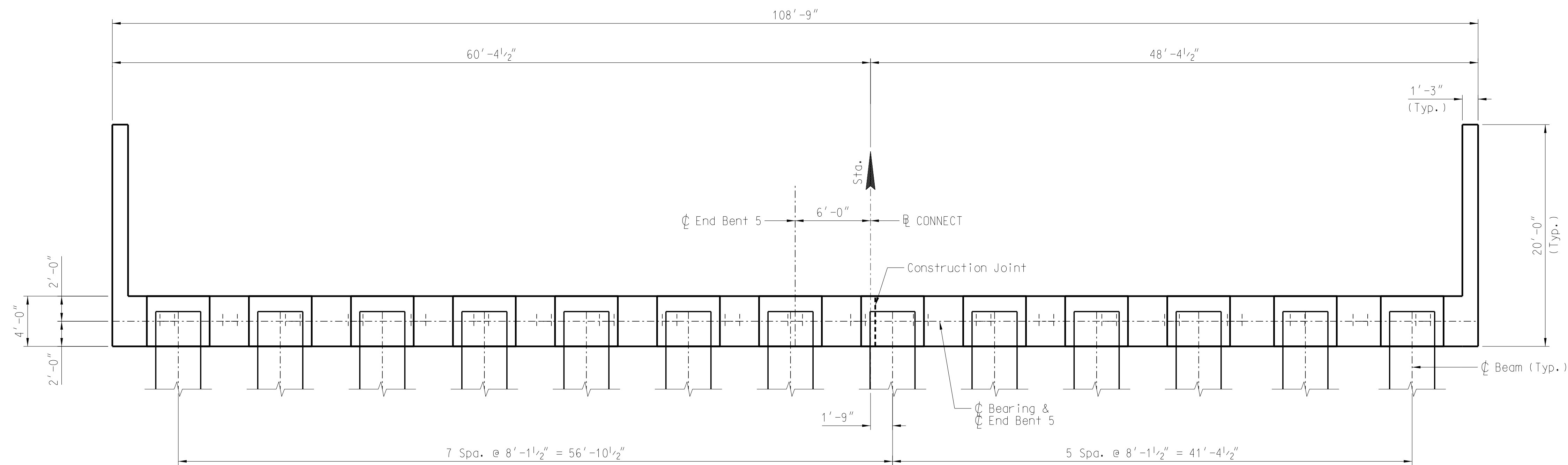


CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

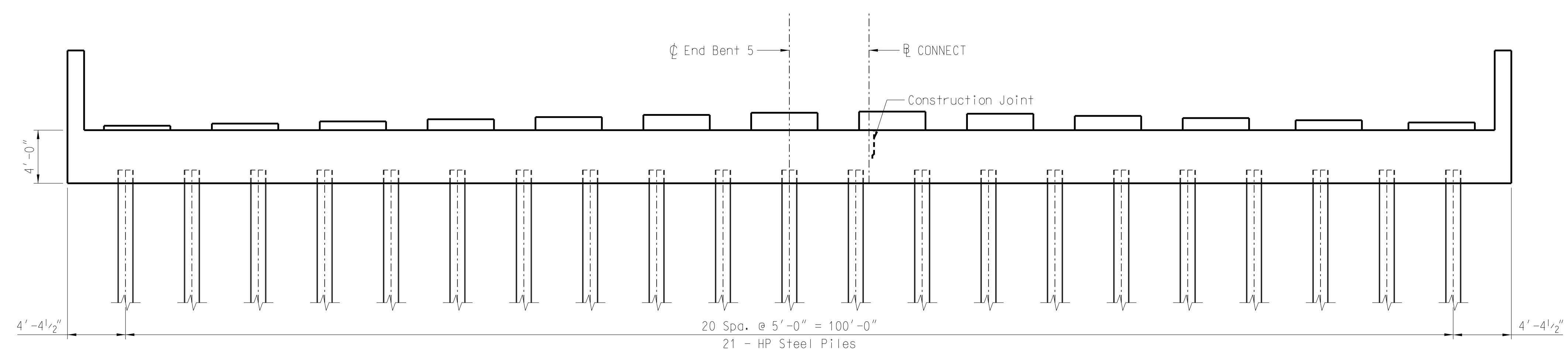
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION
**PLAN AND ELEVATION
BENT 4**
CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD
COUNTY: RICHLAND ROUTE: CONNECTOR ROAD

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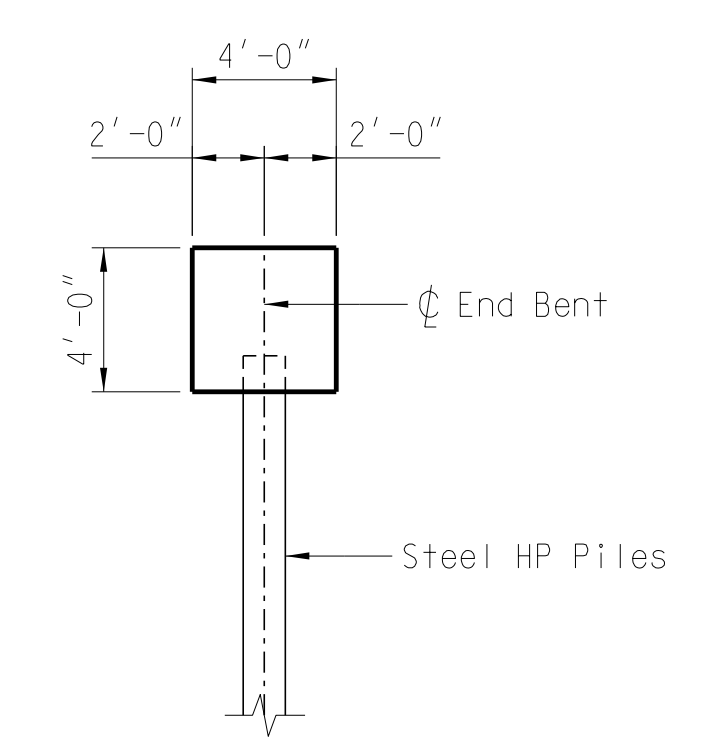


PLAN

Note:
Anchor Bolts, Bearing Plates, and Elastomeric Bearing Pads not shown for clarity.



ELEVATION



END ELEVATION

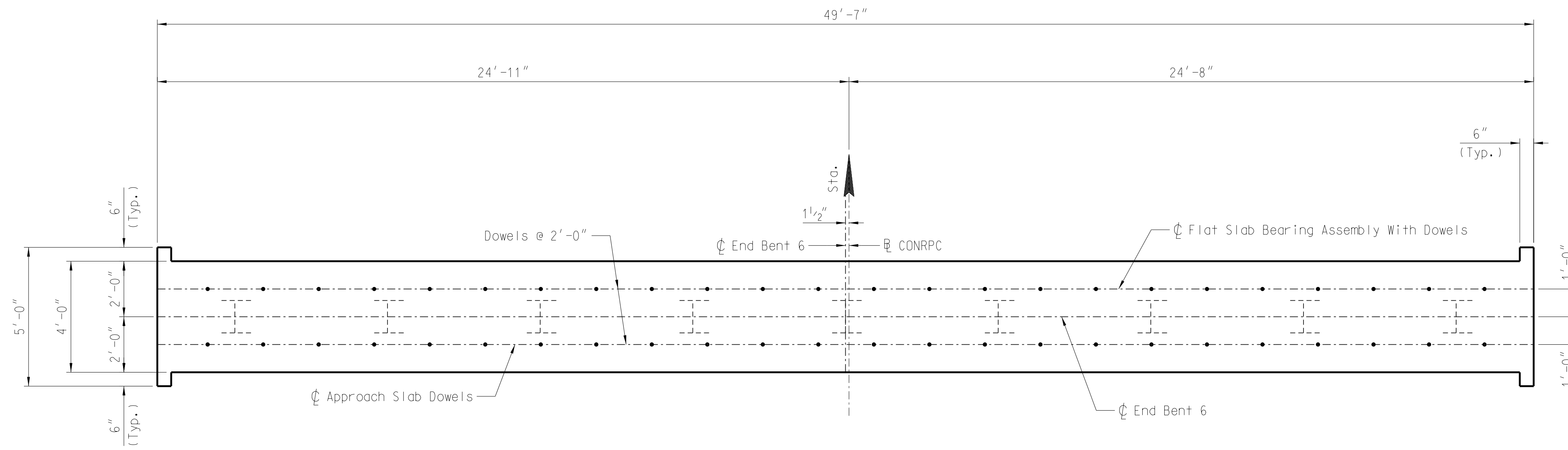
CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

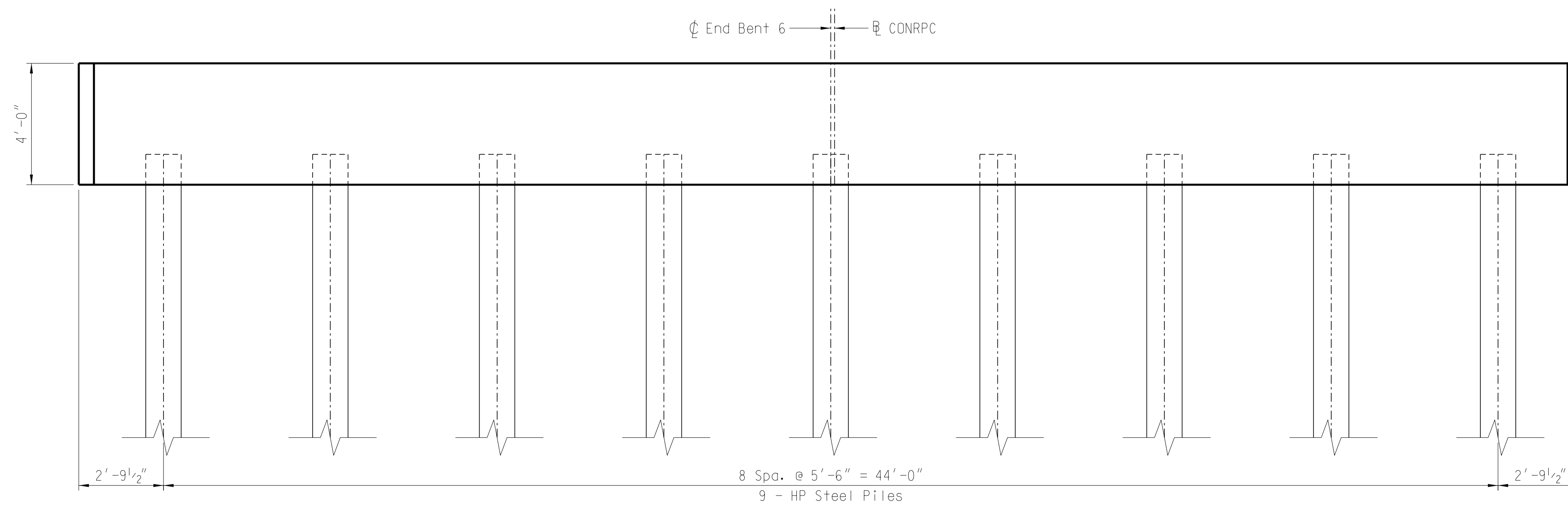
**PLAN AND ELEVATION
END BENT 5
CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD**

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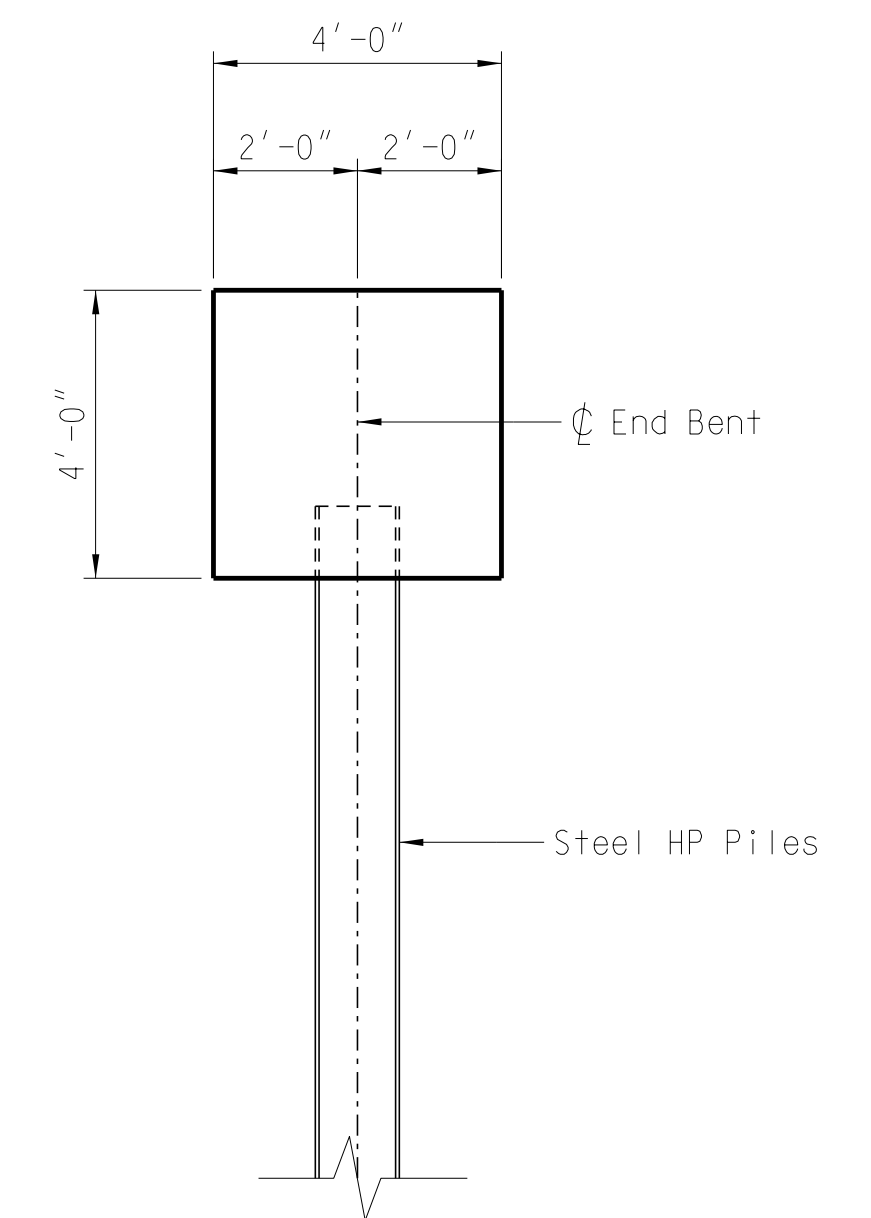


PLAN

Note:
Elastomeric Flat Slab Bearing Assembly not shown for clarity.



ELEVATION



END ELEVATION

CONCEPTUAL PLANS

PLANS PREPARED BY:



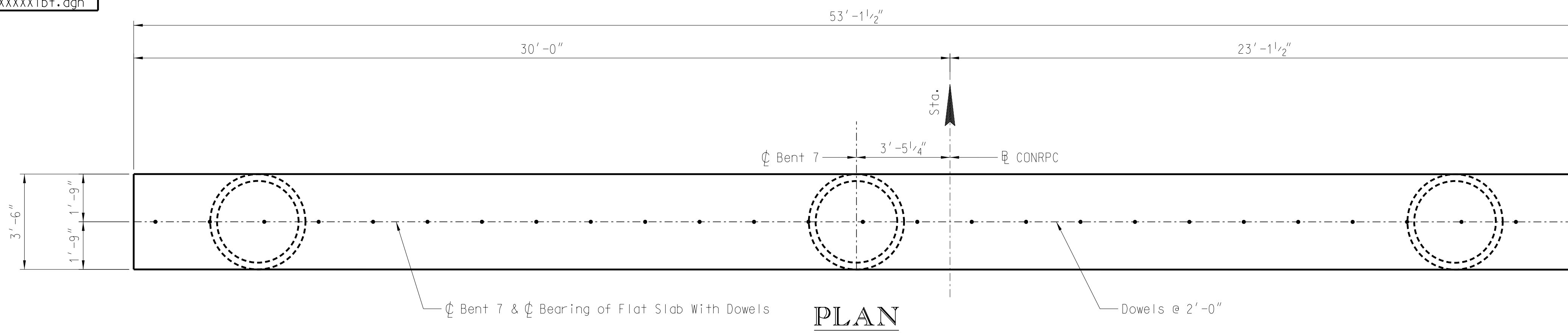
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN AND ELEVATION
END BENT 6

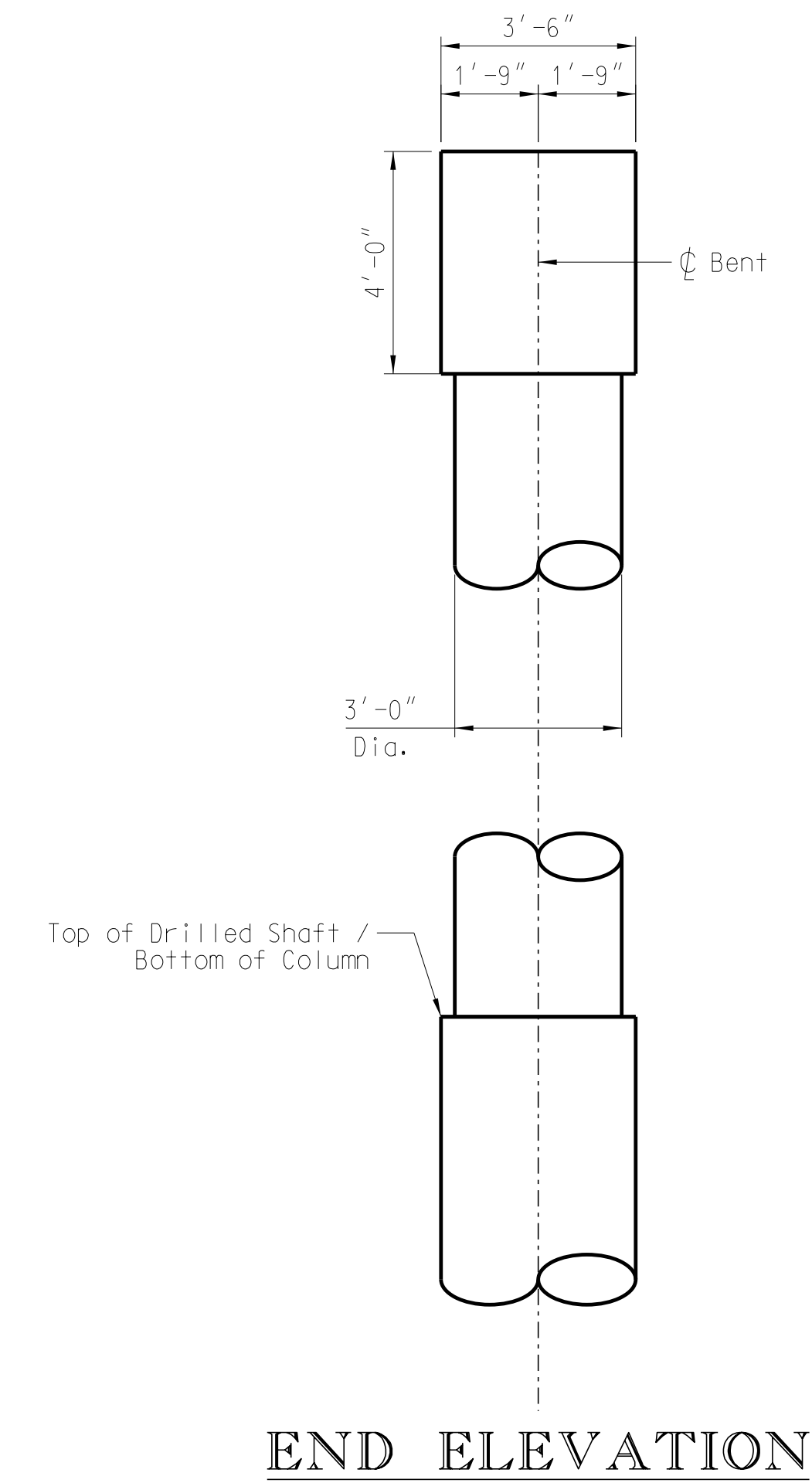
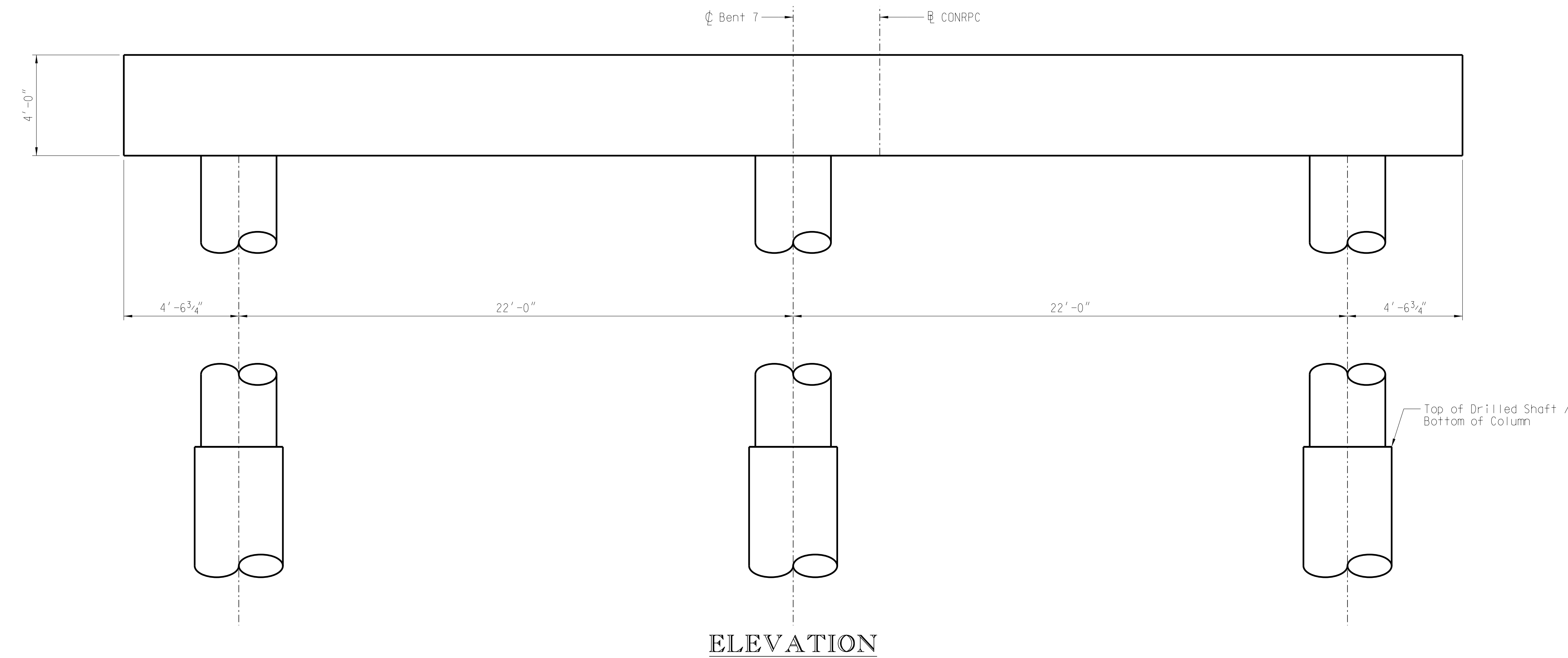
CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD

COUNTY	ROUTE
RICHLAND	CONNECTOR ROAD

CONCEPTUAL NOT FOR CONSTRUCTION	REV.			
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	DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23	
BY	CHK.	DATE		



Note:
Elastomeric Flat Slab Bearing Assembly not shown for clarity.



CONCEPTUAL PLANS

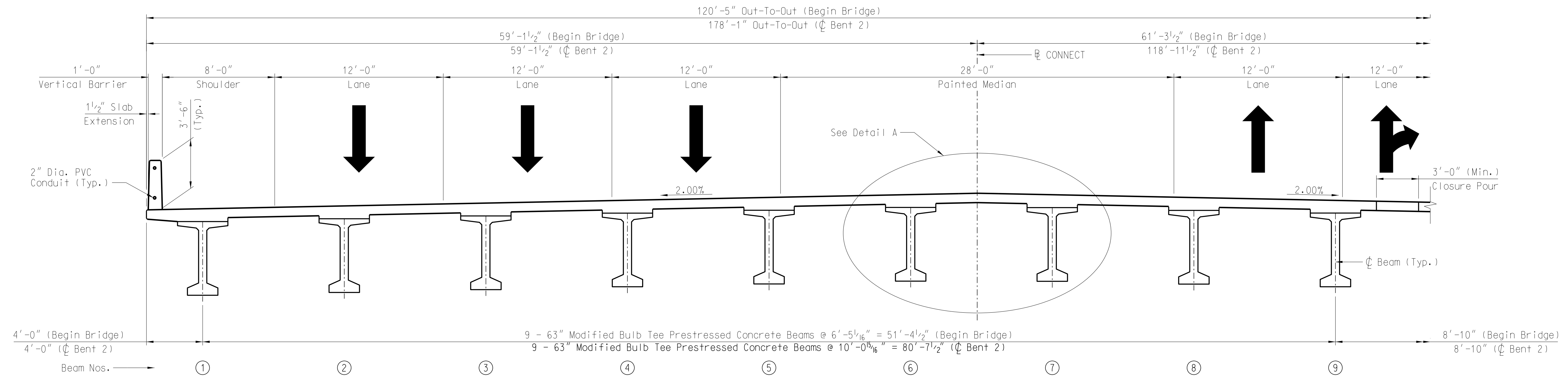
PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

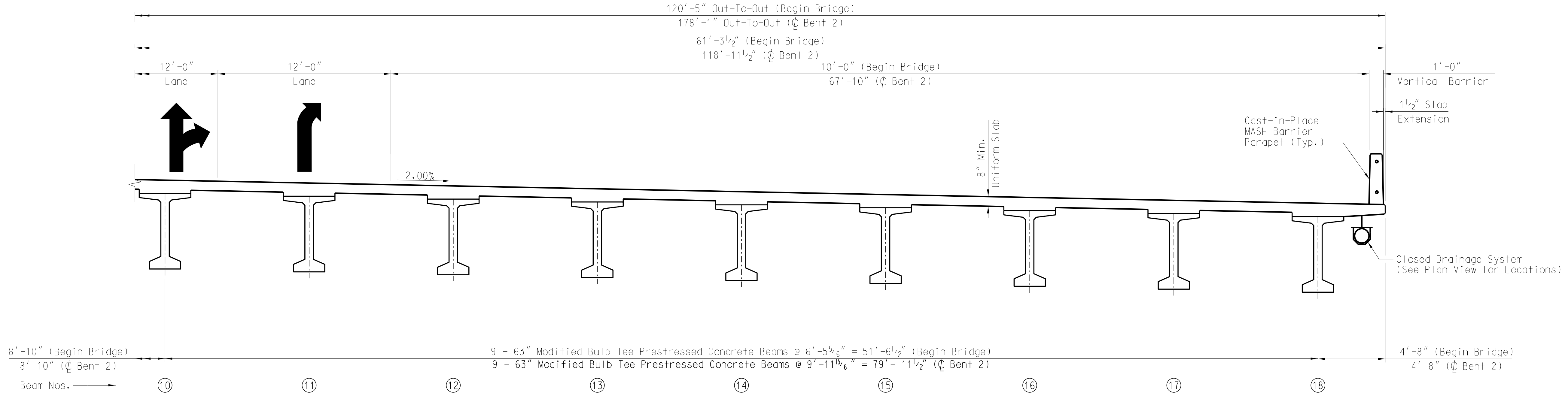
**PLAN AND ELEVATION
BENT 7**

CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD

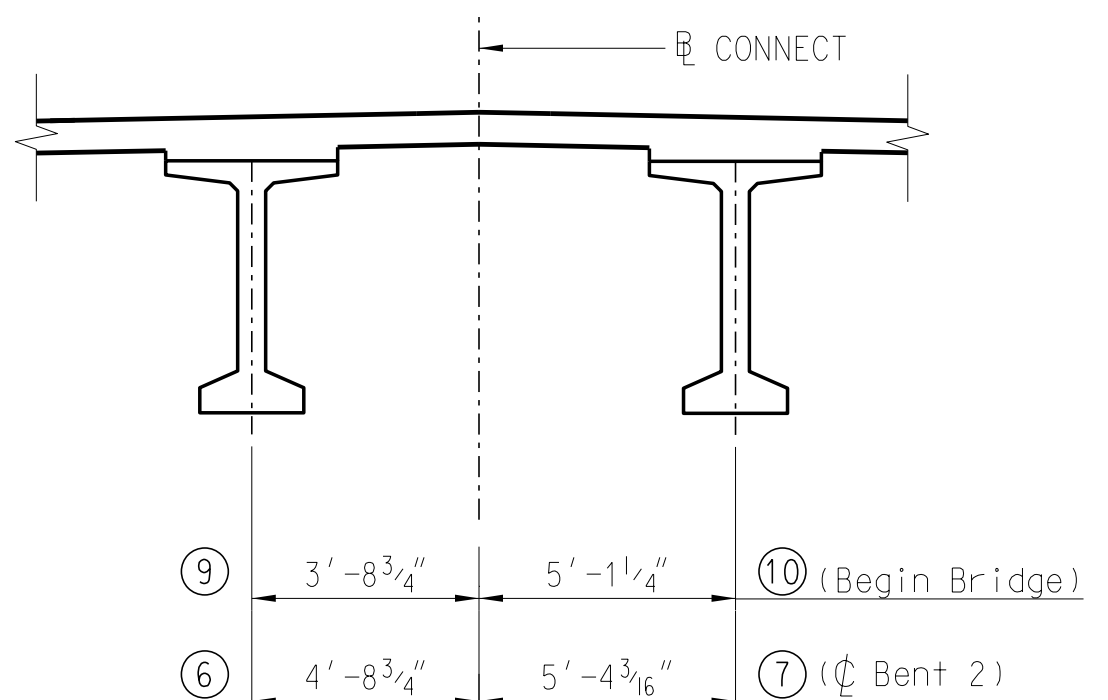
CONCEPTUAL NOT FOR CONSTRUCTION	REV.			
	REV.			
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	REVIEWED			
QUAN.				
DR.	VAS	NSC	12-23	
DES.	VAS	NSC	12-23	
BY	CHK.	DATE	COUNTY	
			RICHLAND	
			ROUTE	
			CONNECTOR ROAD	



TYPICAL SECTION
(Looking in the Direction of Stationing)



TYPICAL SECTION
(Looking in the Direction of Stationing)



DETAIL A

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

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DEPARTMENT OF TRANSPORTATION

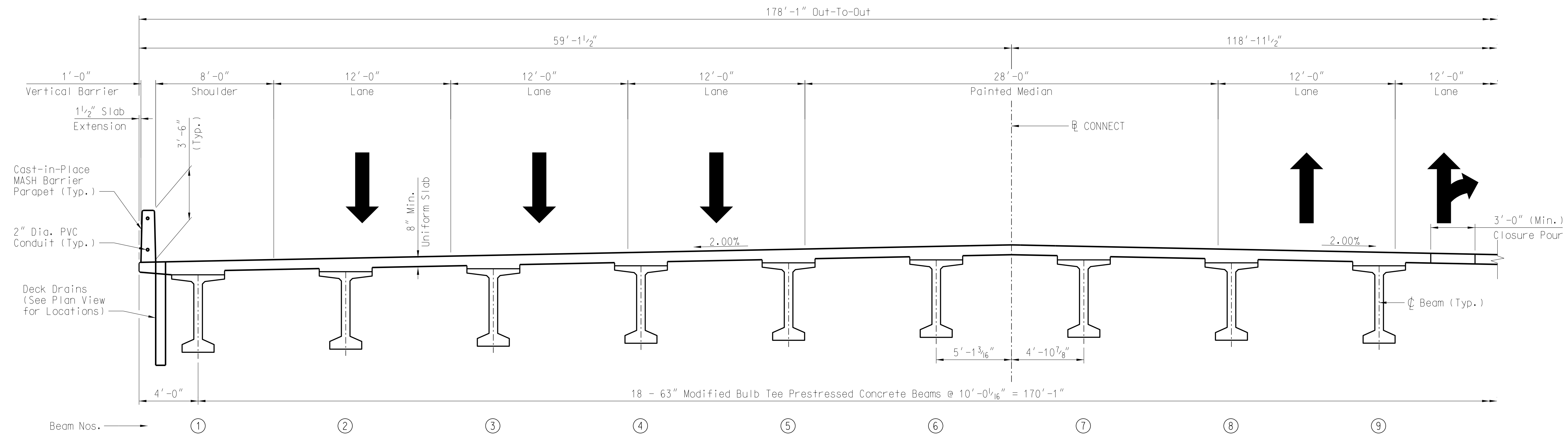
**TYPICAL SECTION
SPAN 1**

**CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD**

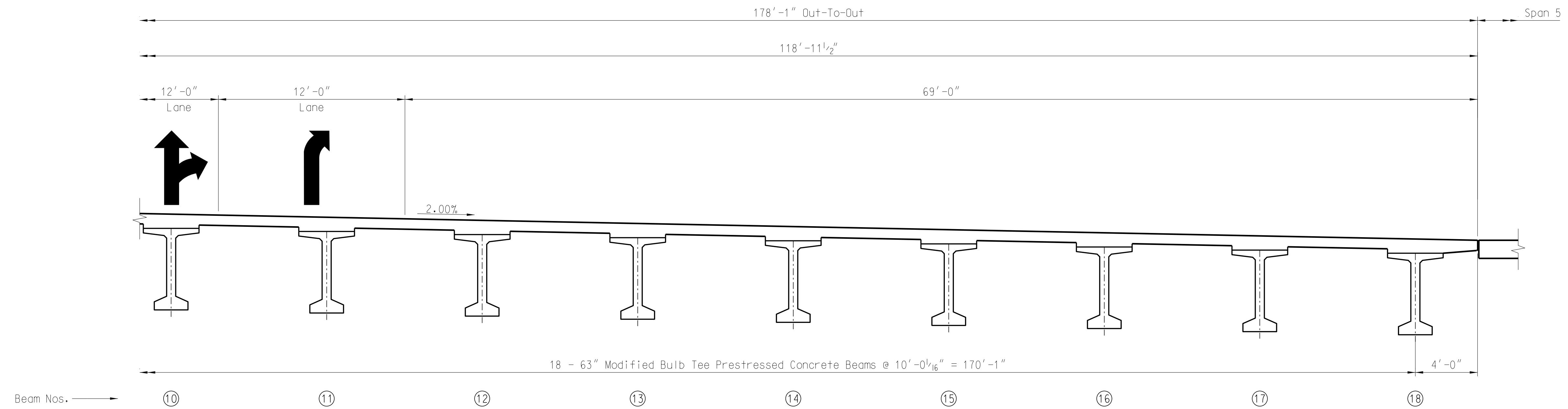
COUNTY		ROUTE	
RICHLAND		CONNECTOR ROAD	

REV.			
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REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL NOT FOR CONSTRUCTION



TYPICAL SECTION
(Looking in the Direction of Stationing)



TYPICAL SECTION
(Looking in the Direction of Stationing)

CONCEPTUAL PLANS

PLANS PREPARED BY:



SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

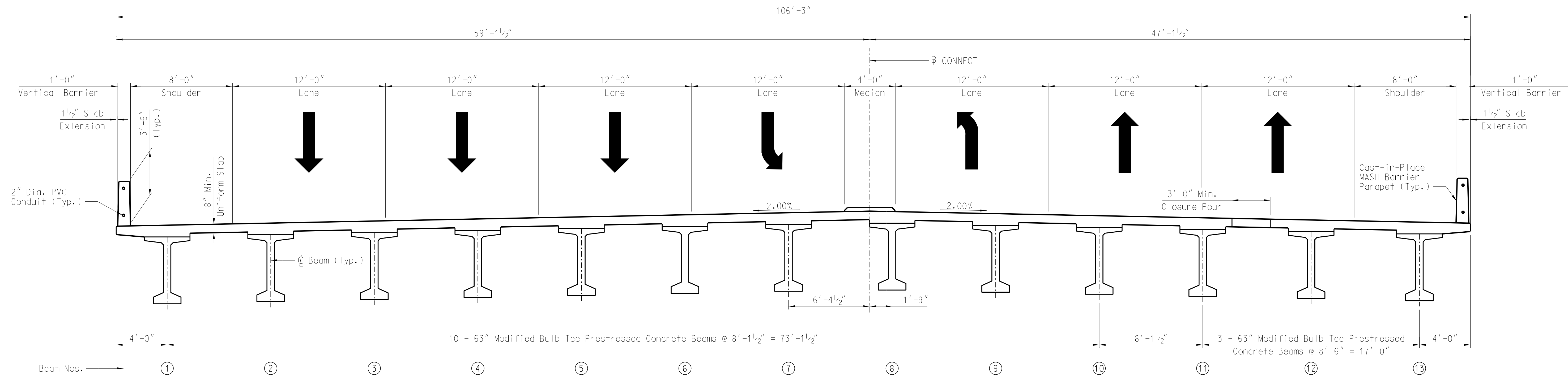
TYPICAL SECTION
SPAN 2

CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD

COUNTY	ROUTE
RICHLAND	CONNECTOR ROAD

REV.			
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REV.			
REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL NOT FOR CONSTRUCTION



TYPICAL SECTION
(Looking in the Direction of Stationing)

NOTE:
Steel Intermediate Diaphragm Not Shown.

CONCEPTUAL PLANS

PLANS
PREPARED
BY:



SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

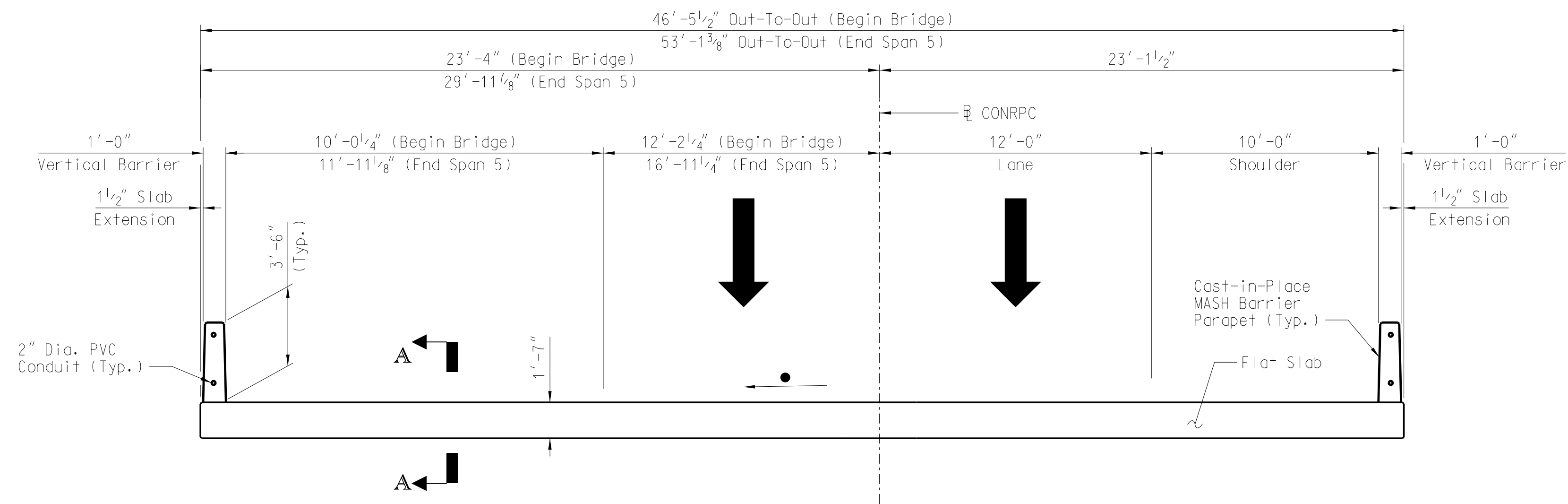
TYPICAL SECTION
SPANS 3 & 4

CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD

COUNTY: RICHLAND ROUTE: CONNECTOR ROAD

REV.			
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REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

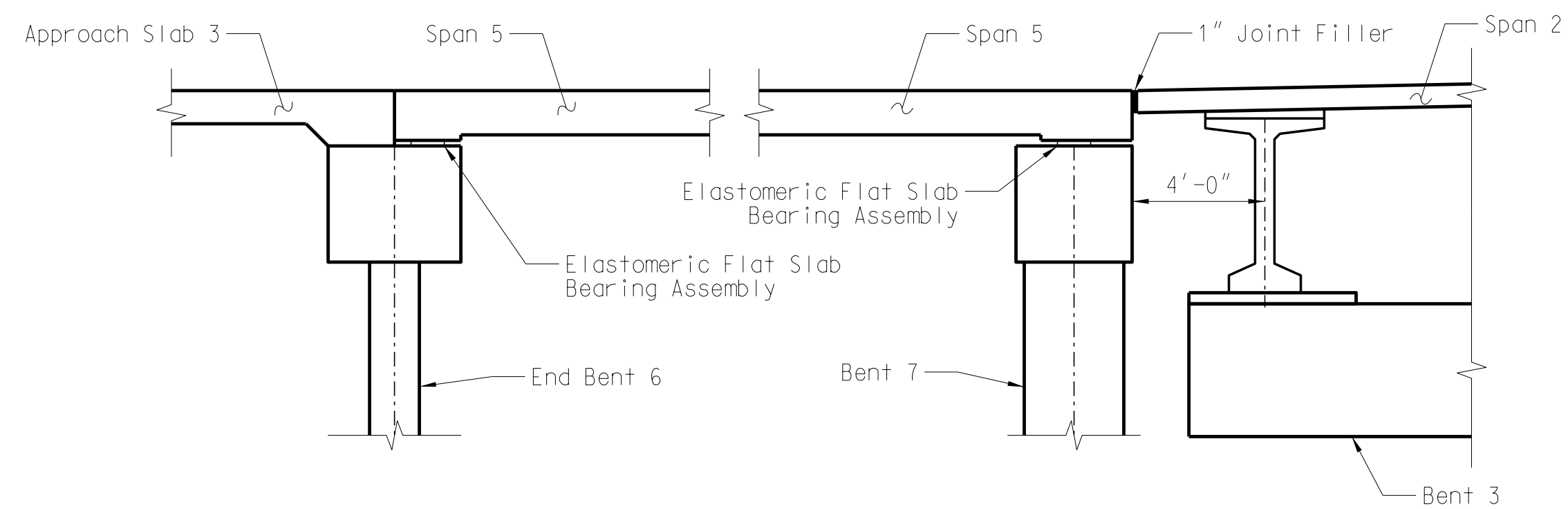
CONCEPTUAL
NOT FOR
CONSTRUCTION



TYPICAL SECTION

(Looking in the Direction of Stationing)

- The superelevation will be set to match the transverse edge of the bridge deck in Span 2.



Section A-A

CONCEPTUAL PLANS

PLANS PREPARED BY:



SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

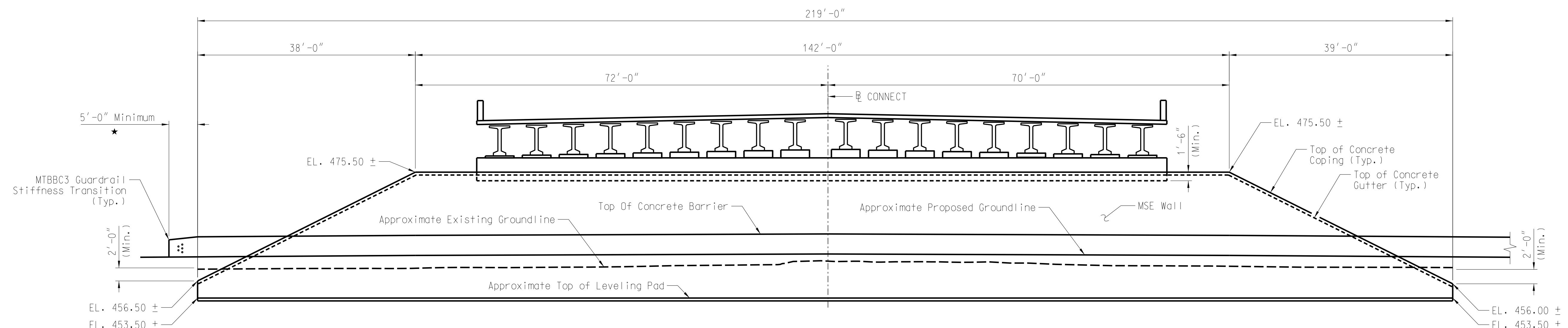
TYPICAL SECTION SPAN 5

CONNECTOR ROAD BRIDGE OVER I-77 & COMMUNITY ROAD

COUNTY RICHLAND ROUTE CONNECTOR ROAD

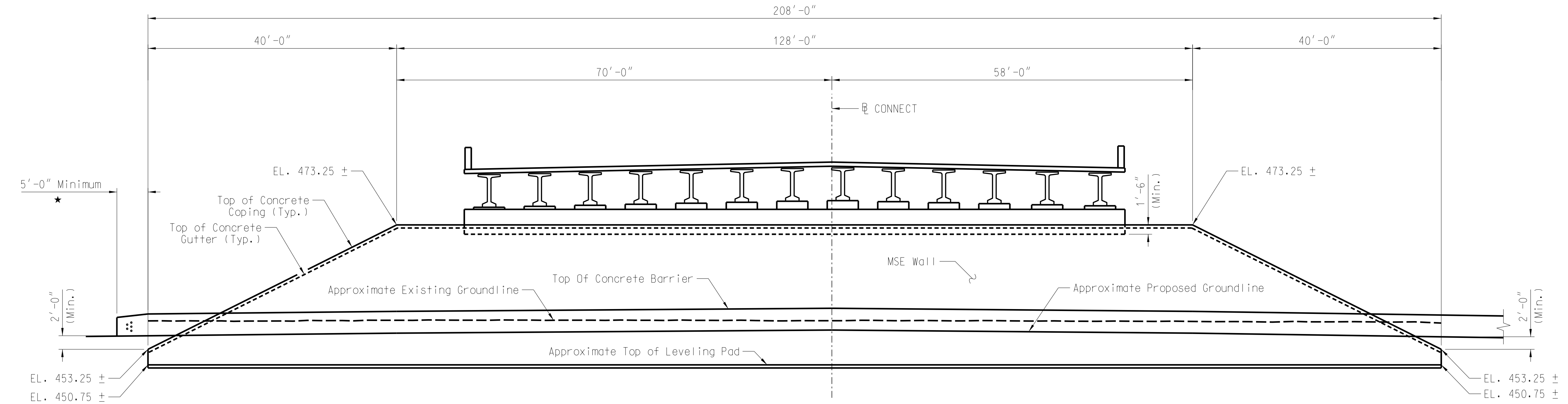
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REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL NOT FOR CONSTRUCTION



MSE WALL NO.1
ELEVATION ALONG LAYOUT LINE
 (Looking Opposite of Stationing)

* Actual Dimensions as Required by Design to Avoid Conflict Between Guardrail Connection and MSE Wall Coping (Typ.)



MSE WALL NO.2
ELEVATION ALONG LAYOUT LINE
 (Looking Ahead of Stationing)

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

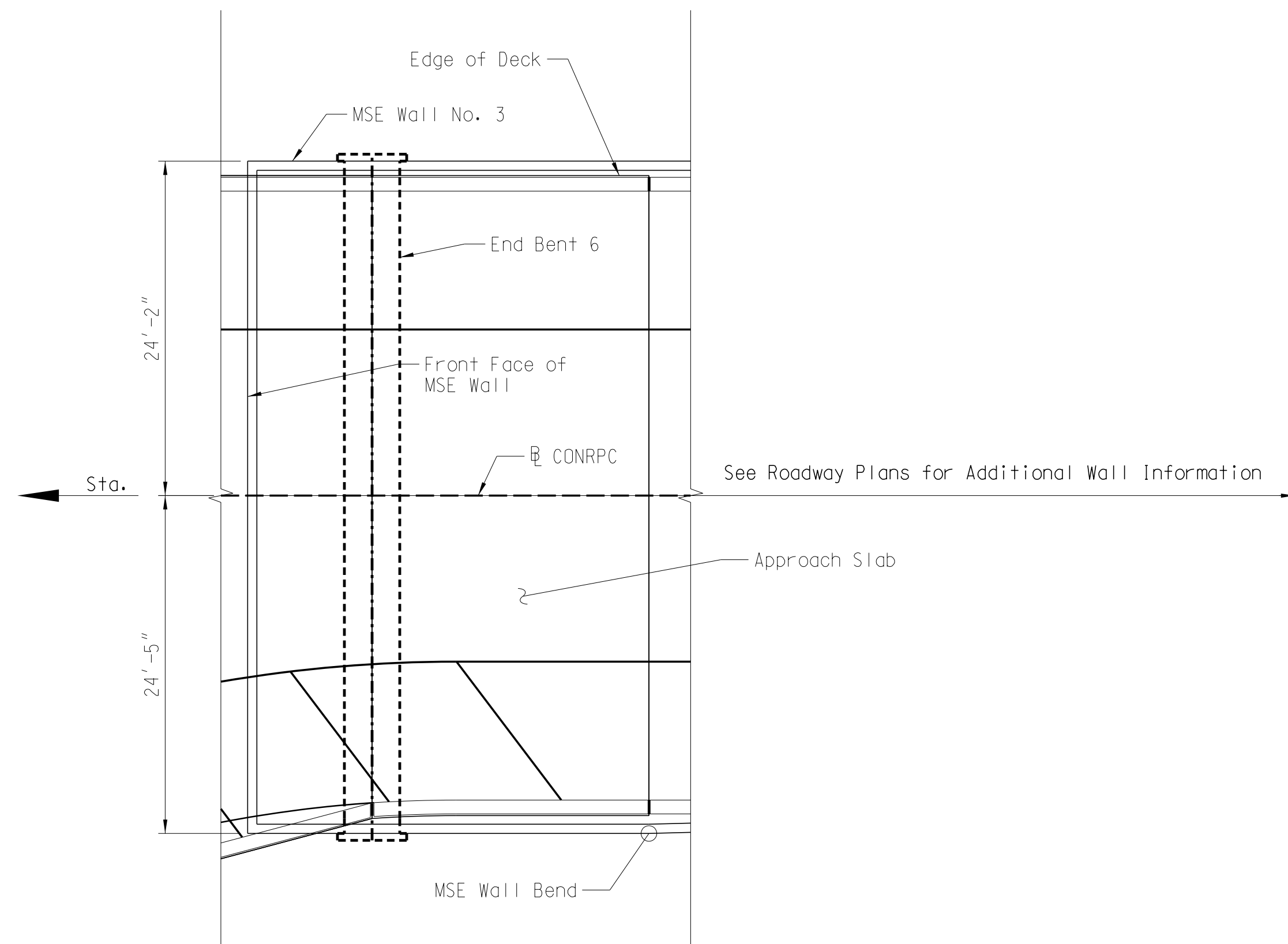
MSE WALLS (1 OF 2)

CONNECTOR ROAD BRIDGE OVER I-77 & COMMUNITY ROAD

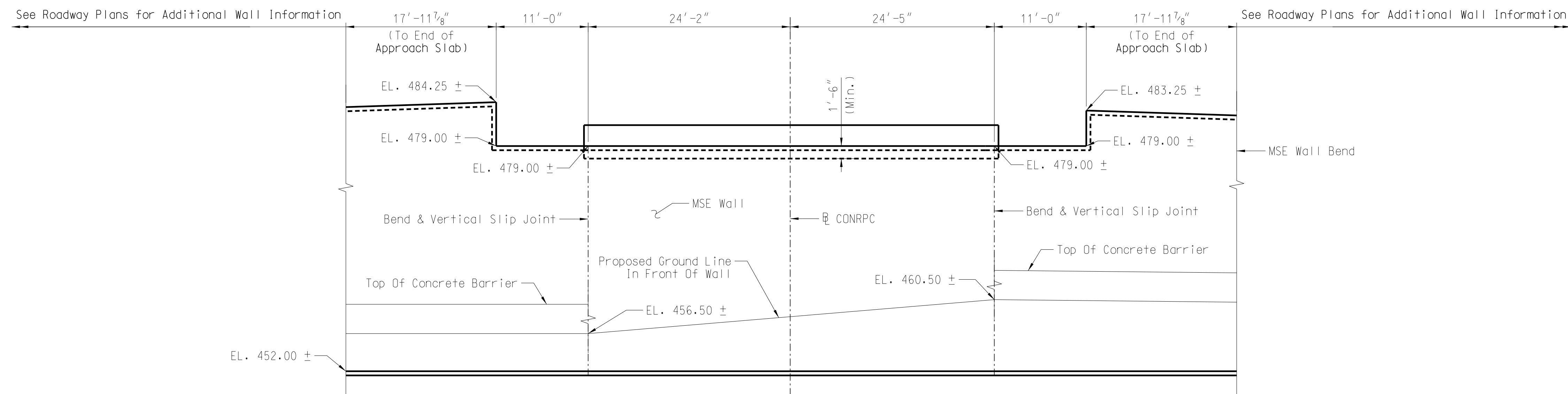
COUNTY: RICHLAND ROUTE: CONNECTOR ROAD

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL NOT FOR CONSTRUCTION



MSE WALL NO. 3
PLAN VIEW



MSE WALL NO. 3
ELEVATION VIEW
(Looking Opposite of Stationing)

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MSE WALLS (2 OF 2)

CONNECTOR ROAD BRIDGE
OVER I-77 & COMMUNITY ROAD

COUNTY: RICHLAND ROUTE: CONNECTOR ROAD

REV.			
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REVIEWED			
QUAN.			
DR.	VAS	NSC	12-23
DES.	VAS	NSC	12-23
BY	CHK.	DATE	

CONCEPTUAL NOT FOR CONSTRUCTION



South Carolina Department of Transportation

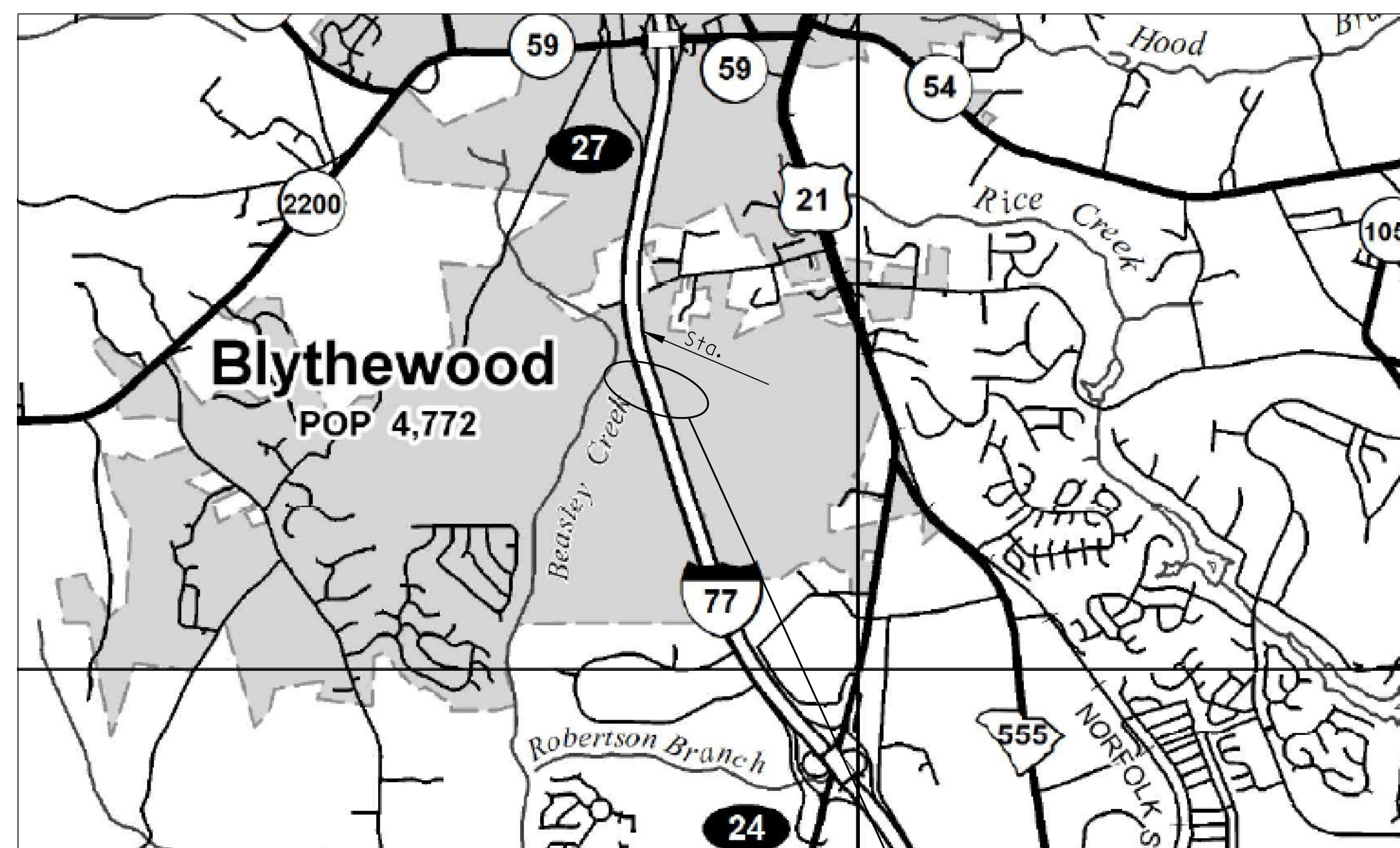
PROPOSED PLANS FOR

RICHLAND COUNTY PROJECT ID P042443

I-77 INTERCHANGE EXIT 26 AND CONNECTION ROADS CONSTRUCT BRIDGE ON RAMP BA OVER I-77

INDEX OF SHEETS

1. Title Sheet
2. General Notes
3. Bridge Plan and Profile
4. Plan and Elevation Bent 2
5. Typical Section
6. MSE Walls



Approximate Location of Bridge is
 Latitude 34°- 11' - 38.3" N
 Longitude 80°- 59' - 04.8" W

-N-

LAYOUT

SITE LOCATION

NET LENGTH OF ROADWAY	0.517	MILES
NET LENGTH OF BRIDGES	0.060	MILES
NET LENGTH OF PROJECT	0.577	MILES
LENGTH OF EXCEPTIONS	0.000	MILES
GROSS LENGTH OF PROJECT	0.577	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 LETTING.

PLANS PREPARED BY:



ENGINEER OF RECORD

CONCEPTUAL PLANS NOT FOR CONSTRUCTION

FOR CONSTRUCTION: _____ DATE _____

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 TBD

TRAFFIC DATA			
2026	ADT	10,000	V.P.D.
2046	ADT	15,000	V.P.D.
TRUCKS		7	%

REVIEWED	DR.	NSC	TRL	12-23	DATE
		BY	CHK		
			VAS		

CurryN
1/2/2024

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.

WATER ELEVATIONS

The water elevations shown in the plans are for information only and the actual water elevation during construction may vary depending on weather conditions and seasonal fluctuations.

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 as noted on Reinforcing Bending Details sheet. 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. All cost of performing this work is considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for concrete in slab is based on theoretical plan quantity. No adjustment is made for variation in camber.

Chamfer all exposed edges 3/4" unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is 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. All costs for performing, evaluating, and submitting the surveys are considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for grinding and texturing concrete bridge decks at the junction of new and existing bridge deck slabs is determined in accordance with Subsection 702.6 of the Standard Specifications. No payment is made for grinding and texturing of new bridge decks to correct irregularities and excessive deviations.

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.

For instantaneous and long-time dead load deflection, use a camber of 1/8" for concrete flat slab spans 22 feet in length, 3/16" for concrete flat slab spans 30 feet in length, and 3/8" for concrete flat slab spans 40 feet in length, unless otherwise directed by the RCE. Adjust these cambers as necessary to allow for falsework deflection, falsework settlement, and vertical curve ordinates.

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.

Where prestressed concrete piles are to be driven through fill, install piles in pre-bored holes extending to the original ground. For square prestressed concrete piles, bore holes having a minimum diameter of 1.25 times the nominal pile size. Include all cost of pre-boring fills for pile installation in the unit price bid for the piles.

EXCAVATION FOR END BENTS

Include all cost of excavation necessary to construct end bents and to remove material under superstructure to an elevation twelve inches below tops of end bent caps, in the unit price bid for class of concrete specified in the Plans.

If a concrete footing is used for the end bent, the excavation below that included for the cap and berm in the above paragraph is paid for at the unit price bid for excavation. Include excavation above this in the unit price bid for class of concrete specified in the Plans.

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 7/8" dia. ASTM F3125, Grade A325 bolts unless otherwise indicated.

Generally, holes for 7/8" dia. bolts shall be 15/16" dia. However, for straight girder spans, oversized holes, 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. No additional payment is made for the costs associated with the use of oversize holes and furnishing additional hardened washers as necessary.

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.

Include all cost of furnishing and installing steel bearing assembly components in the lump sum price bid for structural steel if a bid item for structural steel is included in the project. Otherwise, include the cost in the unit price bid for prestressed beams.

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. Include all costs of furnishing and installing anchor bolt assemblies in the unit price bid 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 walls; 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.
 - D) No final surface finish required.
- All Units Designated Units:

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 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 _{0s} (FEE):	0.32 g
S _{0l} (FEE):	0.06 g
PGA (SEE):	0.41 g
S _{0s} (SEE):	0.77 g
S _{0l} (SEE):	0.16 g

FEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.200	0.51	0.111	
0.01	0.221	0.67	0.084	
0.01	0.241	0.84	0.067	
0.02	0.262	1.01	0.056	
0.02	0.283	1.17	0.048	
0.03	0.304	1.34	0.042	
T ₀	0.03	0.324	1.50	0.038
0.05	0.324	1.67	0.034	
0.06	0.324	1.84	0.031	
0.07	0.324	2.00	0.028	
0.08	0.324	2.17	0.026	
0.09	0.324	2.34	0.024	
0.10	0.324	2.50	0.023	
0.12	0.324	2.67	0.021	
0.13	0.324	2.83	0.020	
0.14	0.324	3.00	0.019	
0.15	0.324			
0.16	0.324			
T _s	0.17	0.324		
0.34	0.166			

SEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.409	0.54	0.298	
0.01	0.469	0.70	0.228	
0.01	0.533	0.86	0.185	
0.02	0.590	1.03	0.155	
0.03	0.650	1.19	0.134	
0.03	0.710	1.36	0.118	
T ₀	0.04	0.771	1.52	0.105
0.06	0.771	1.69	0.095	
0.07	0.771	1.85	0.086	
0.08	0.771	2.01	0.079	
0.10	0.771	2.18	0.073	
0.11	0.771	2.34	0.068	
0.12	0.771	2.51	0.064	
0.14	0.771	2.67	0.060	
0.15	0.771	2.84	0.056	
0.17	0.771	3.00	0.053	
0.18	0.771			
0.19	0.771			
T _s	0.21	0.771		
0.37	0.430			

Values determined from: Three-Point Method

CONCEPTUAL PLANS

PLANS PREPARED BY:



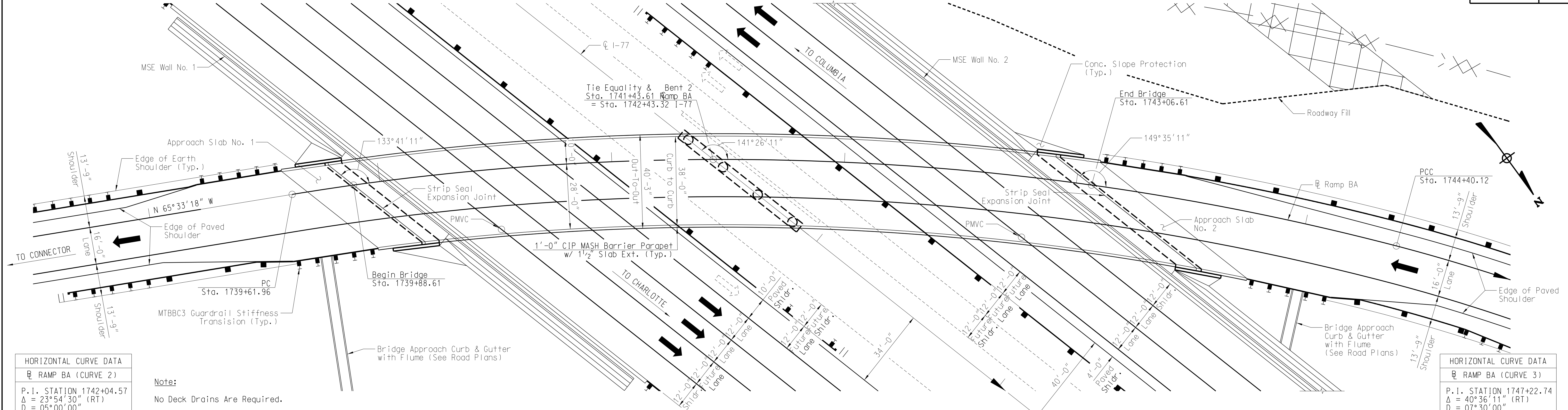
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

RAMP BA BRIDGE OVER I-77

COUNTY RICHLAND ROUTE RAMP BA

PRELIMINARY NOT FOR CONSTRUCTION	REV.			
	REV.	RCV	PCW	06-23
	REV.	PCW	HL	09-20
	REV.			ASTM F3125
	REVIEWED			
QUAN.				
DR.	NSC	VAS	12-23	
DES.	NSC	VAS	12-23	
BY	CHK.	DATE		



HORIZONTAL CURVE DATA
RAMP BA (CURVE 2)

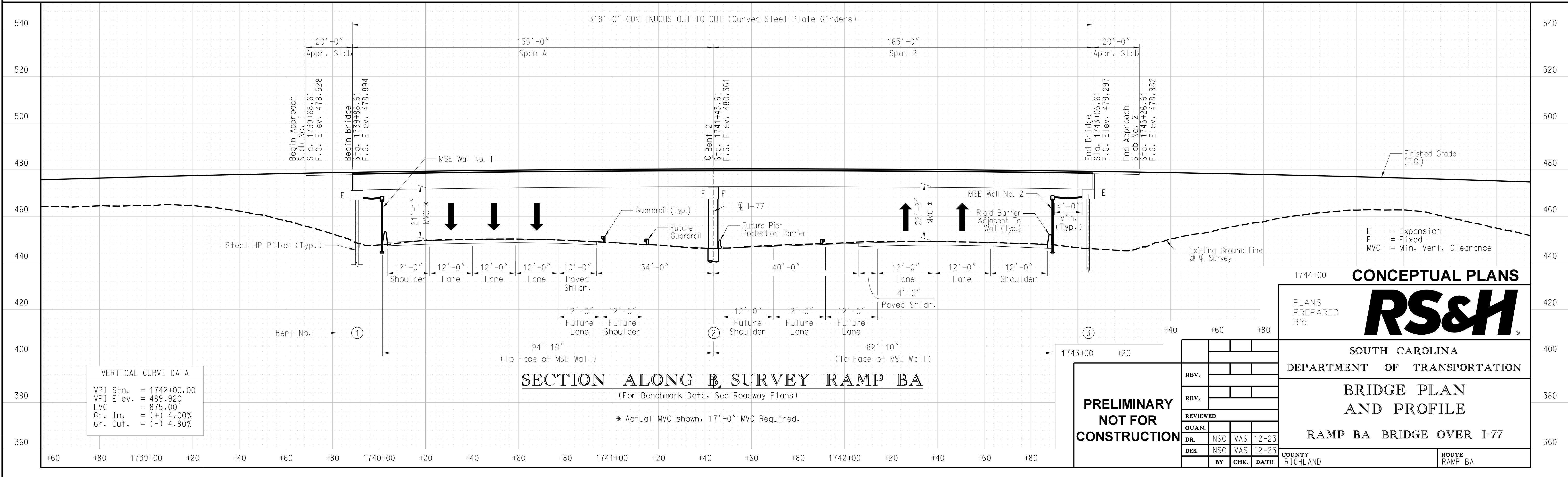
P.I. STATION 1742+04.57
 $\Delta = 23^\circ 54' 30''$ (RT)
 $D = 05^\circ 00' 00''$
 $T = 242.61'$
 $L = 478.17'$
 $R = 1,145.92'$
 $PC = 1739+61.96$
 $PCC = 1744+40.12$

Note:
No Deck Drains Are Required.

HORIZONTAL CURVE DATA
RAMP BA (CURVE 3)

P.I. STATION 1747+22.74
 $\Delta = 40^\circ 36' 11''$ (RT)
 $D = 07^\circ 30' 00''$
 $T = 282.62'$
 $L = 541.38'$
 $R = 763.94'$
 $PCC = 1744+40.12$
 $PT = 1749+81.50$

PLAN



VERTICAL CURVE DATA

VPI Sta. = 1742+00.00
VPI Elev. = 489.920
LVC = 875.00'
Gr. In. = (+) 4.00%
Gr. Out. = (-) 4.80%

SECTION ALONG SURVEY RAMP BA
(For Benchmark Data, See Roadway Plans)

* Actual MVC shown, 17'-0" MVC Required.

**PRELIMINARY
NOT FOR
CONSTRUCTION**

REV.			
REV.			
REVIEWED			
QUAN.			
DR.	NSC	VAS	12-23
DES.	NSC	VAS	12-23
BY	CHK.	DATE	

CONCEPTUAL PLANS
PLANS PREPARED BY: **RS&H**

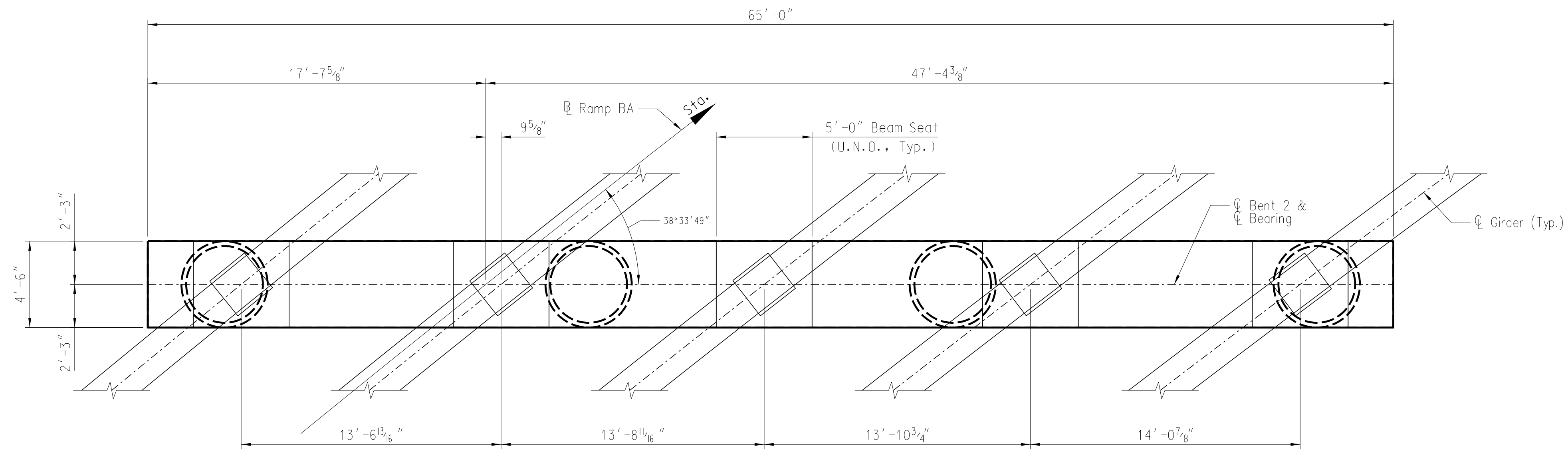
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN
AND PROFILE

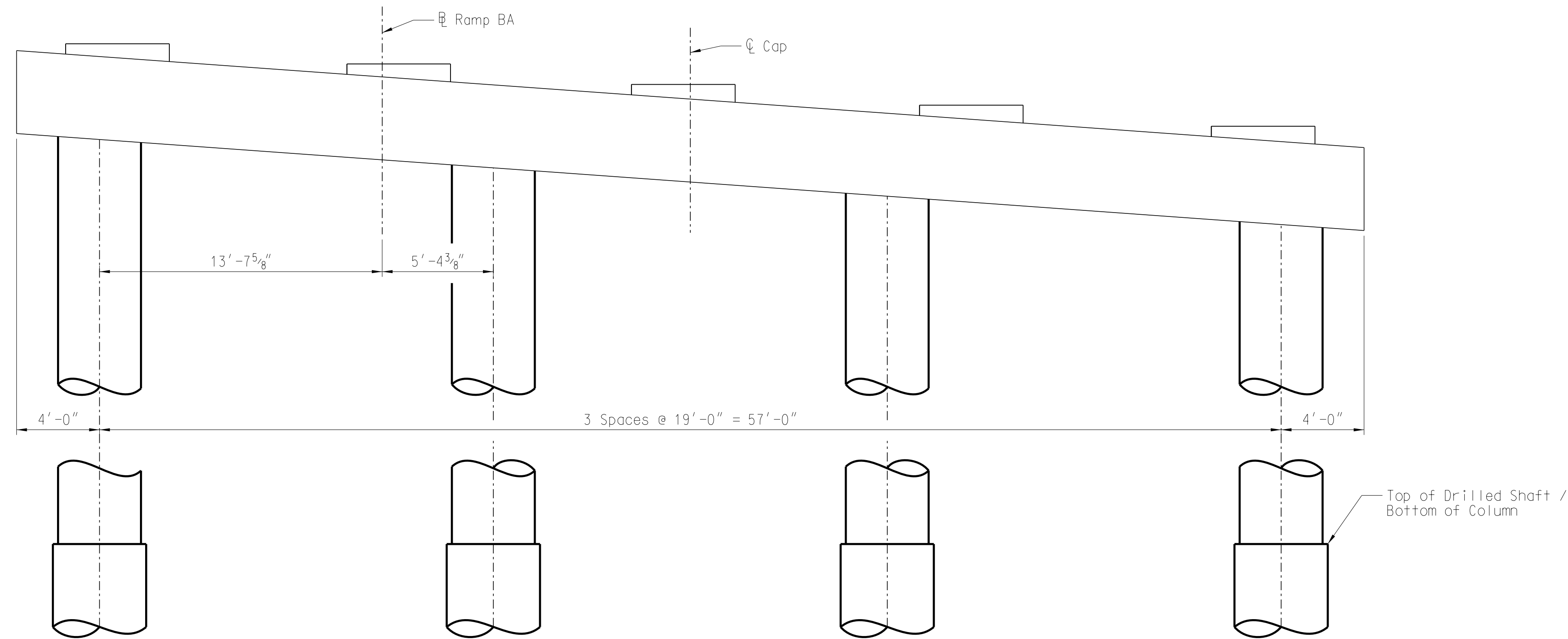
RAMP BA BRIDGE OVER I-77

COUNTY RICHLAND
ROUTE RAMP BA

1/18/2024
Border Sheet 6/08

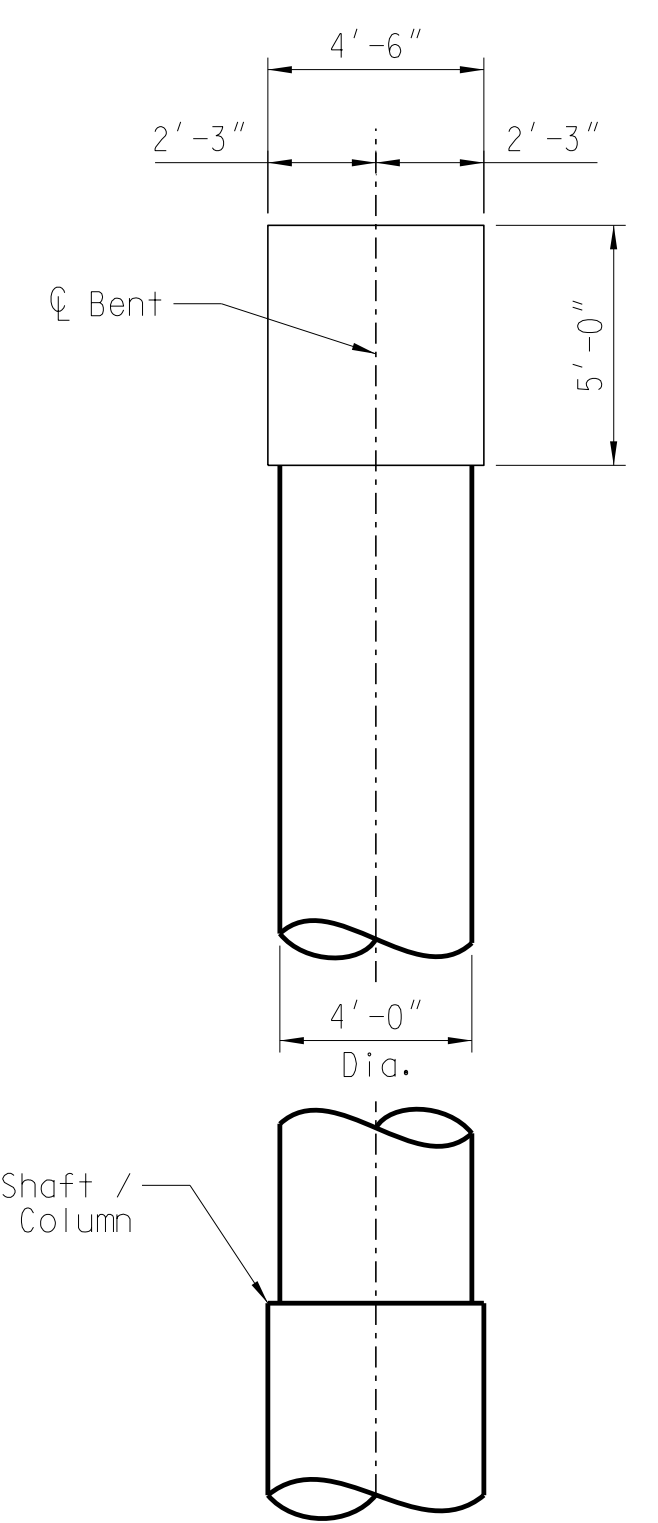


PLAN



ELEVATION

NOTE:
Anchor Bolts and Bearing Plates Not Shown For Clarity.



END ELEVATION

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

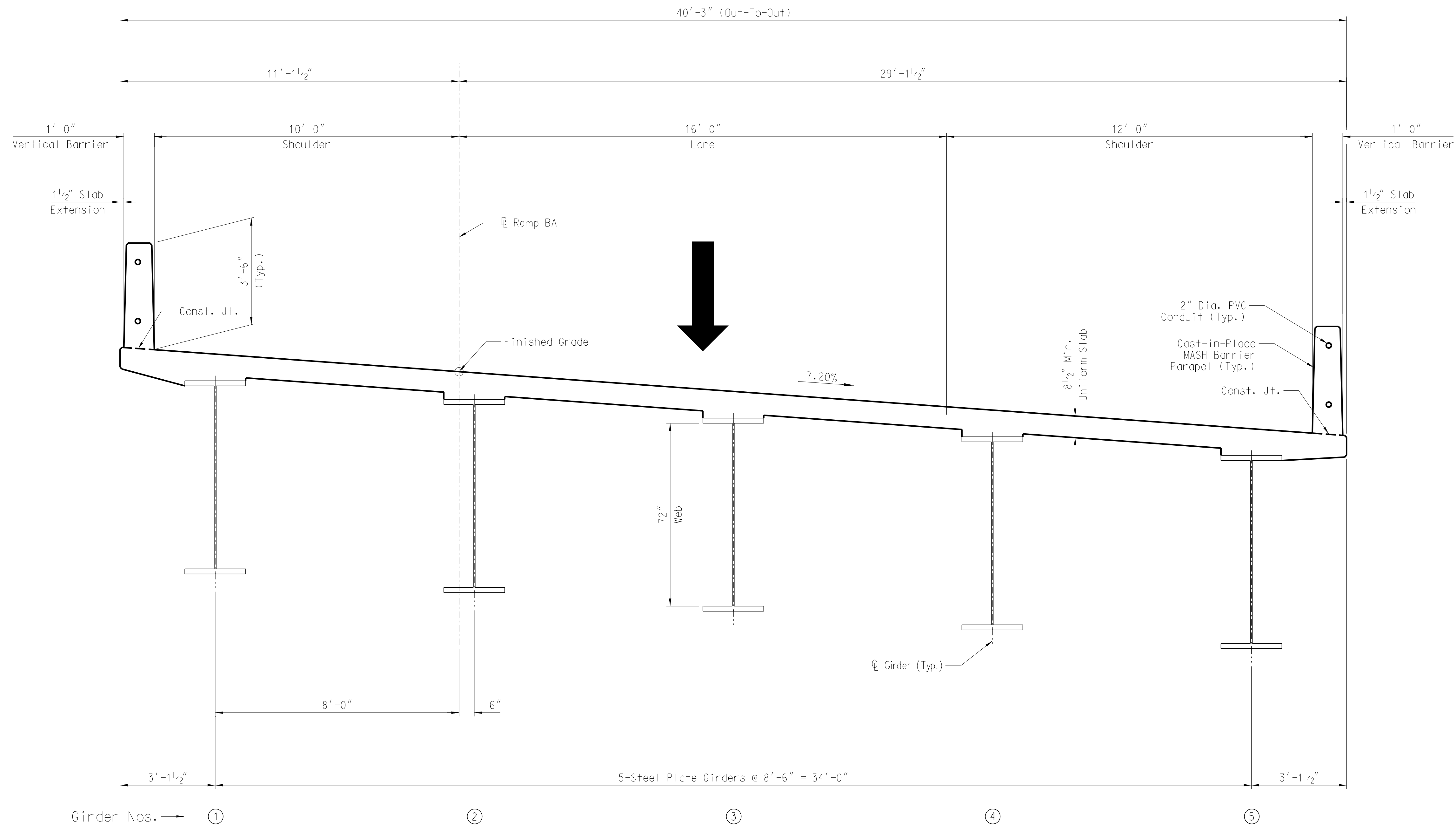
PLAN AND ELEVATION BENT 2

RAMP BA BRIDGE OVER I-77

COUNTY RICHLAND ROUTE RAMP BA

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	NSC	VAS	12-23
DES.	NSC	VAS	12-23
BY	CHK.	DATE	

PRELIMINARY NOT FOR CONSTRUCTION



TYPICAL SECTION
(Looking In The Direction Of Stationing)

NOTES:
Steel Intermediate Diaphragm Not Shown.
Dimensions Are Radial to \varnothing Ramp BA.

**PRELIMINARY
NOT FOR
CONSTRUCTION**

REV.			
REV.			
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DR.	NSC	VAS	12-23
DES.	NSC	VAS	12-23
BY	CHK.	DATE	

CONCEPTUAL PLANS

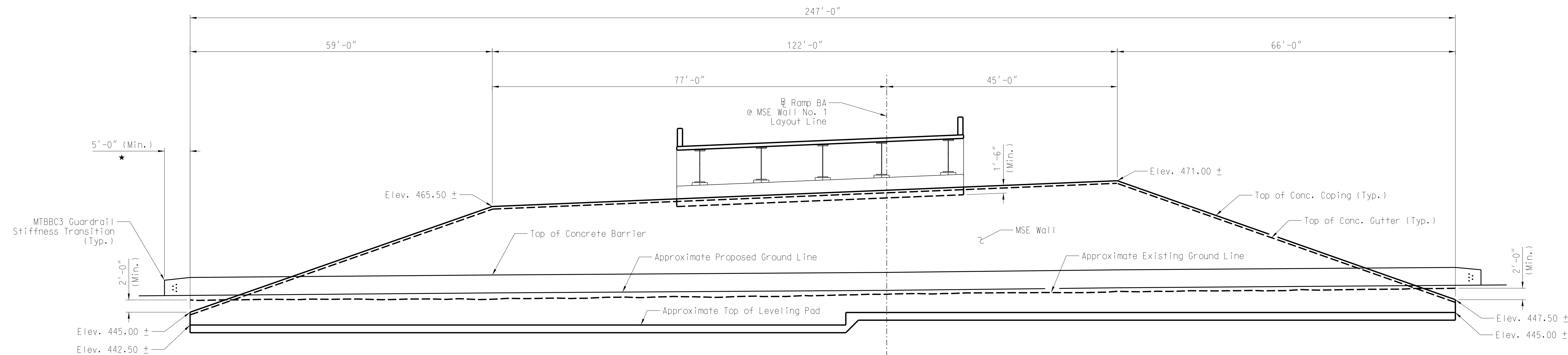
PLANS PREPARED BY: **RS&H**

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION

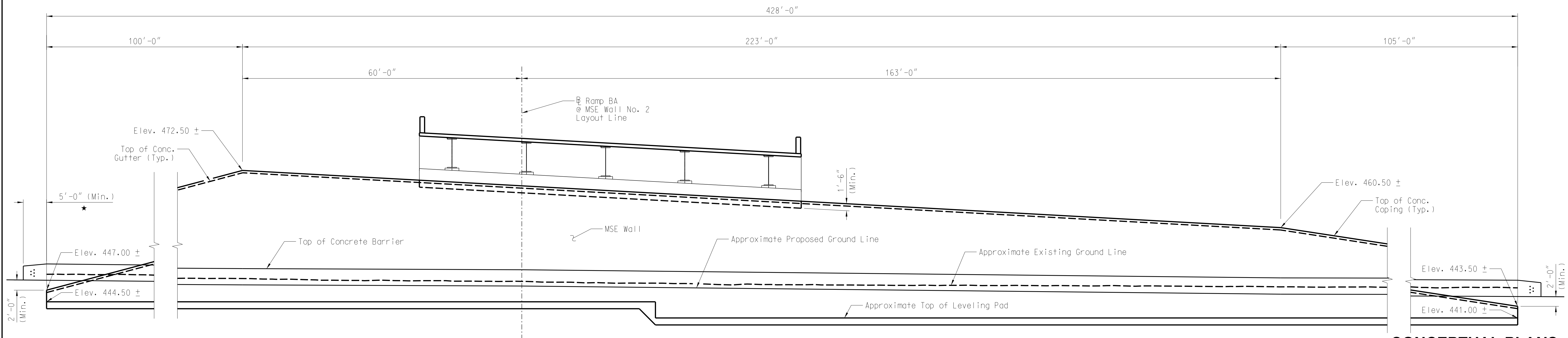
RAMP BA BRIDGE OVER I-77

COUNTY RICHLAND	ROUTE RAMP BA
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MSE WALL NO. 1
ELEVATION ALONG LAYOUT LINE
 (Looking Opposite of Stationing)

* Actual Dimensions as Required by Design to Avoid Conflict Between Guardrail Connection and MSE Wall Coping (Typ.)



MSE WALL NO. 2
ELEVATION ALONG LAYOUT LINE
 (Looking Ahead of Stationing)

CONCEPTUAL PLANS

PLANS PREPARED BY:
RS&H

SOUTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

MSE WALLS

RAMP BA BRIDGE OVER I-77

COUNTY RICHLAND ROUTE RAMP BA

PRELIMINARY NOT FOR CONSTRUCTION	REV.			
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DES.	NSC	VAS	12-23	
BY	CHK.	DATE		



South Carolina Department of Transportation

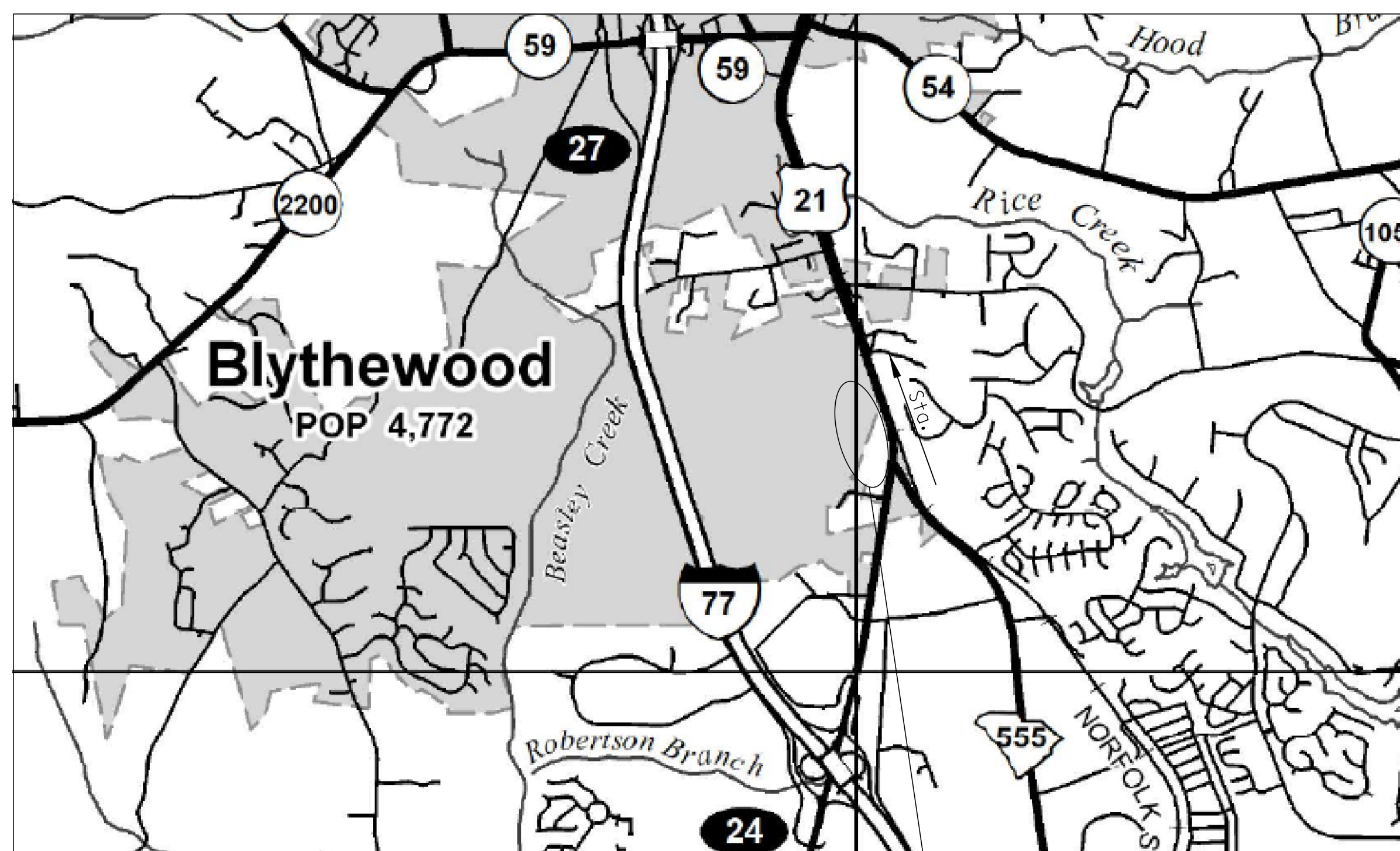
INDEX OF SHEETS

- 1. Title Sheet
- 2. General Notes
- 3. Bridge Plan and Profile
- 4. Typical Section
- 5. Future Typical Section
- 6. MSE Walls

PROPOSED PLANS FOR

RICHLAND COUNTY PROJECT ID P042443

I-77 INTERCHANGE EXIT 26 AND CONNECTION ROADS CONSTRUCT US-21 BRIDGE OVER PALMETTO RAILROAD/NSRR SPUR



Approximate Location of Bridge is
 Latitude 34°- 11' - 24.0" N
 Longitude 80°- 58' - 15.4" W

LAYOUT

SITE LOCATION

NET LENGTH OF ROADWAY	0.897	MILES
NET LENGTH OF BRIDGES	0.026	MILES
NET LENGTH OF PROJECT	0.923	MILES
LENGTH OF EXCEPTIONS	0.000	MILES
GROSS LENGTH OF PROJECT	0.923	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 LETTING.

PLANS PREPARED BY:



ENGINEER OF RECORD

CONCEPTUAL PLANS NOT FOR CONSTRUCTION

FOR CONSTRUCTION: _____ DATE _____

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 TBD

TRAFFIC DATA			
2026	ADT	17,900	V.P.D.
2046	ADT	21,500	V.P.D.
	TRUCKS	10	%

REVIEWED	DR.	NSC	MRA	CHK	DATE
					11-23

CurryN
1/9/2024

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.

WATER ELEVATIONS

The water elevations shown in the plans are for information only and the actual water elevation during construction may vary depending on weather conditions and seasonal fluctuations.

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 as noted on Reinforcing Bending Details sheet. 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. All cost of performing this work is considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for concrete in slab is based on theoretical plan quantity. No adjustment is made for variation in camber.

Chamfer all exposed edges 3/4" unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is 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. All costs for performing, evaluating, and submitting the surveys are considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for grinding and texturing concrete bridge decks at the junction of new and existing bridge deck slabs is determined in accordance with Subsection 702.6 of the Standard Specifications. No payment is made for grinding and texturing of new bridge decks to correct irregularities and excessive deviations.

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.

For instantaneous and long-time dead load deflection, use a camber of 1/8" for concrete flat slab spans 22 feet in length, 3/16" for concrete flat slab spans 30 feet in length, and 3/8" for concrete flat slab spans 40 feet in length, unless otherwise directed by the RCE. Adjust these cambers as necessary to allow for falsework deflection, falsework settlement, and vertical curve ordinates.

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.

Where prestressed concrete piles are to be driven through fill, install piles in pre-bored holes extending to the original ground. For square prestressed concrete piles, bore holes having a minimum diameter of 1.25 times the nominal pile size. Include all cost of pre-boring fills for pile installation in the unit price bid for the piles.

EXCAVATION FOR END BENTS

Include all cost of excavation necessary to construct end bents and to remove material under superstructure to an elevation twelve inches below tops of end bent caps, in the unit price bid for class of concrete specified in the Plans.

If a concrete footing is used for the end bent, the excavation below that included for the cap and berm in the above paragraph is paid for at the unit price bid for excavation. Include excavation above this in the unit price bid for class of concrete specified in the Plans.

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 7/8" dia. ASTM F3125, Grade A325 bolts unless otherwise indicated.

Generally, holes for 7/8" dia. bolts shall be 15/16" dia. However, for straight girder spans, oversized holes, 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. No additional payment is made for the costs associated with the use of oversize holes and furnishing additional hardened washers as necessary.

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.

Include all cost of furnishing and installing steel bearing assembly components in the lump sum price bid for structural steel if a bid item for structural steel is included in the project. Otherwise, include the cost in the unit price bid for prestressed beams.

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. Include all costs of furnishing and installing anchor bolt assemblies in the unit price bid 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 walls; 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.
 - D) No final surface finish required.
- All Units Designated Units:

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 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 _{0s} (FEE):	0.32 g
S _{0l} (FEE):	0.06 g
PGA (SEE):	0.41 g
S _{0s} (SEE):	0.77 g
S _{0l} (SEE):	0.16 g

FEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.200	0.51	0.111	
0.01	0.221	0.67	0.084	
0.01	0.241	0.84	0.067	
0.02	0.262	1.01	0.056	
0.02	0.283	1.17	0.048	
0.03	0.304	1.34	0.042	
T ₀	0.03	0.324	1.50	0.038
0.05	0.324	1.67	0.034	
0.06	0.324	1.84	0.031	
0.07	0.324	2.00	0.028	
0.08	0.324	2.17	0.026	
0.09	0.324	2.34	0.024	
0.10	0.324	2.50	0.023	
0.12	0.324	2.67	0.021	
0.13	0.324	2.83	0.020	
0.14	0.324	3.00	0.019	
0.15	0.324			
0.16	0.324			
T _s	0.17	0.324		
0.34	0.166			

SEE Acceleration Design Response Spectrum Data				
Period (Sec)	S _a (g)	Period (Sec)	S _a (g)	
0.00	0.409	0.54	0.298	
0.01	0.469	0.70	0.228	
0.01	0.533	0.86	0.185	
0.02	0.590	1.03	0.155	
0.03	0.650	1.19	0.134	
0.03	0.710	1.36	0.118	
T ₀	0.04	0.771	1.52	0.105
0.06	0.771	1.69	0.095	
0.07	0.771	1.85	0.086	
0.08	0.771	2.01	0.079	
0.10	0.771	2.18	0.073	
0.11	0.771	2.34	0.068	
0.12	0.771	2.51	0.064	
0.14	0.771	2.67	0.060	
0.15	0.771	2.84	0.056	
0.17	0.771	3.00	0.053	
0.18	0.771			
0.19	0.771			
T _s	0.21	0.771		
0.37	0.430			

Values determined from: Three-Point Method

CONCEPTUAL PLANS

PLANS PREPARED BY: **RS&H**

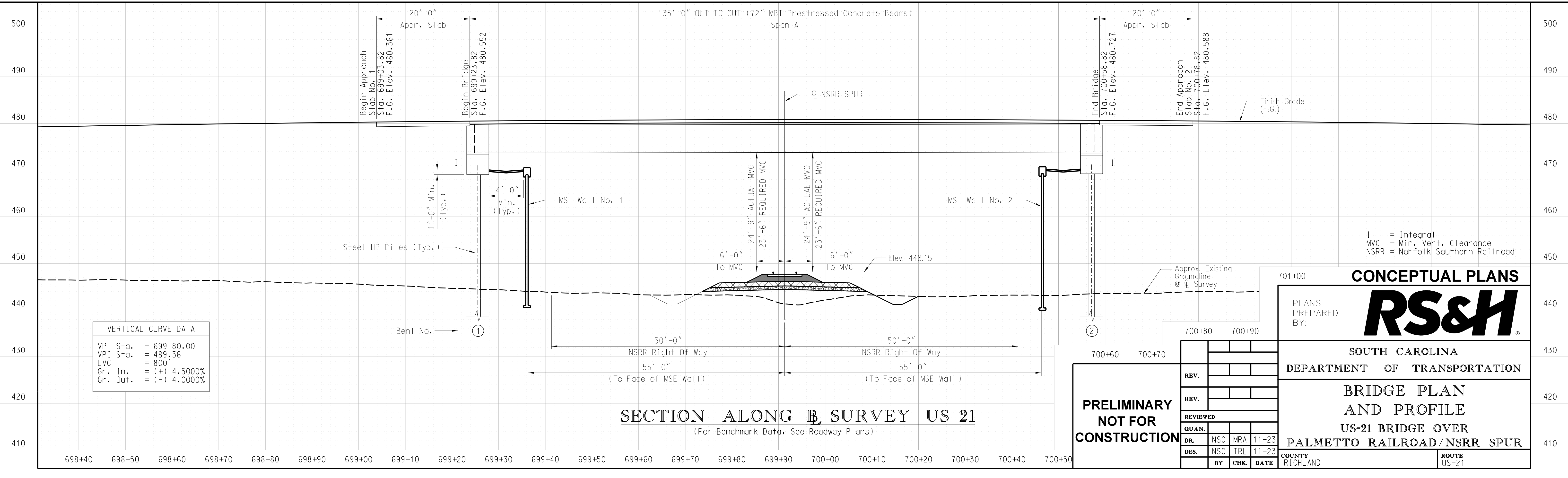
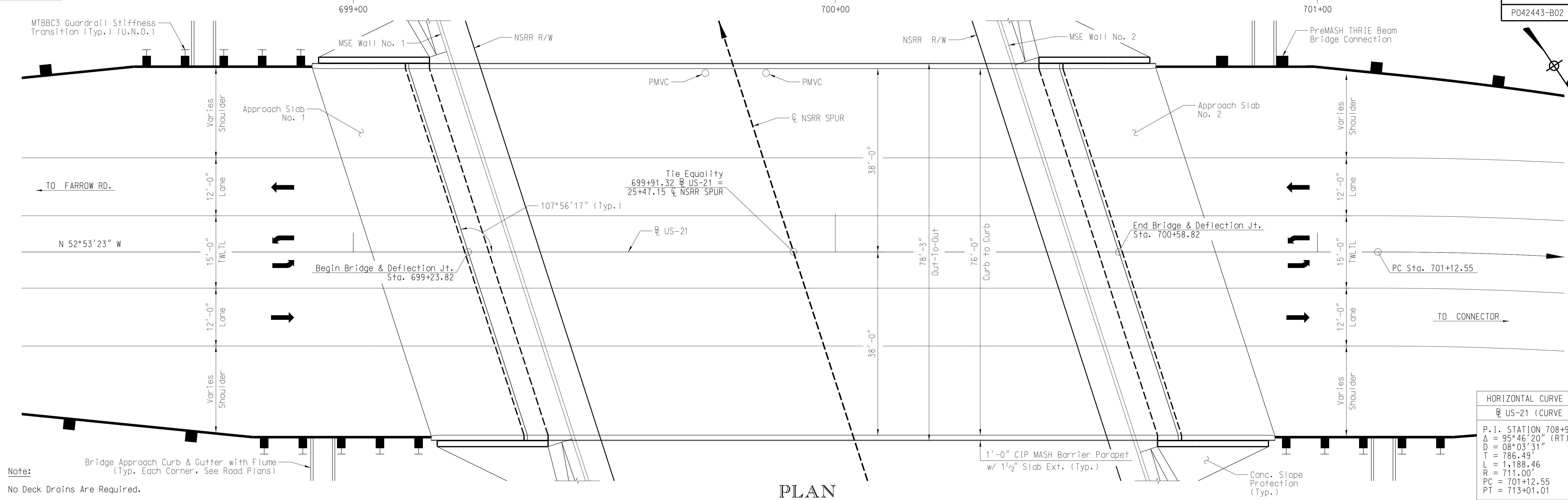
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

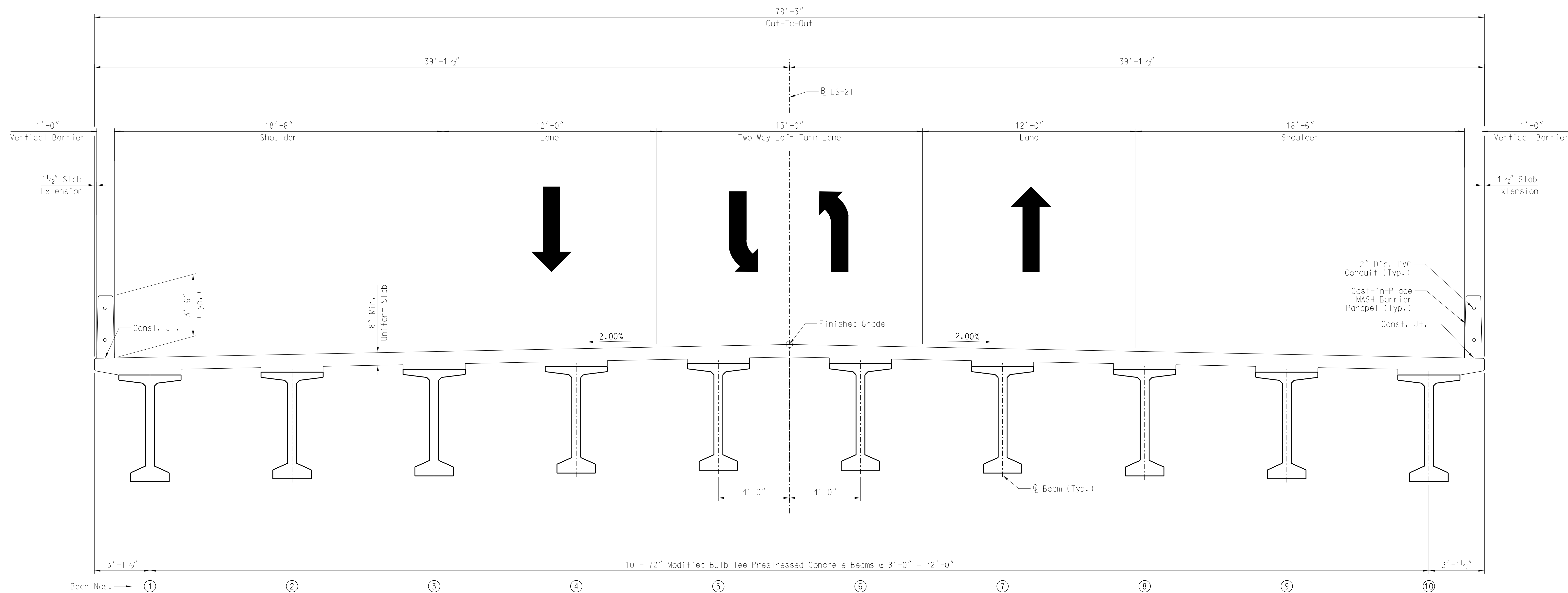
GENERAL NOTES

US-21 BRIDGE OVER PALMETTO RAILROAD/NSRR SPUR

COUNTY RICHLAND ROUTE US-21

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				DM0323
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				ASTM F3125
	REVIEWED			
QUAN.				
DR.	NSC	MRA	11-23	
DES.	NSC	TRL	11-23	
BY	CHK.	DATE		





TYPICAL SECTION
(Looking In The Direction Of Stationing)

NOTE:
Steel Intermediate Diaphragm Not Shown.
Protective Fencing Not Shown.

**PRELIMINARY
NOT FOR
CONSTRUCTION**

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DES.	NSC	TRL	11-23
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CONCEPTUAL PLANS

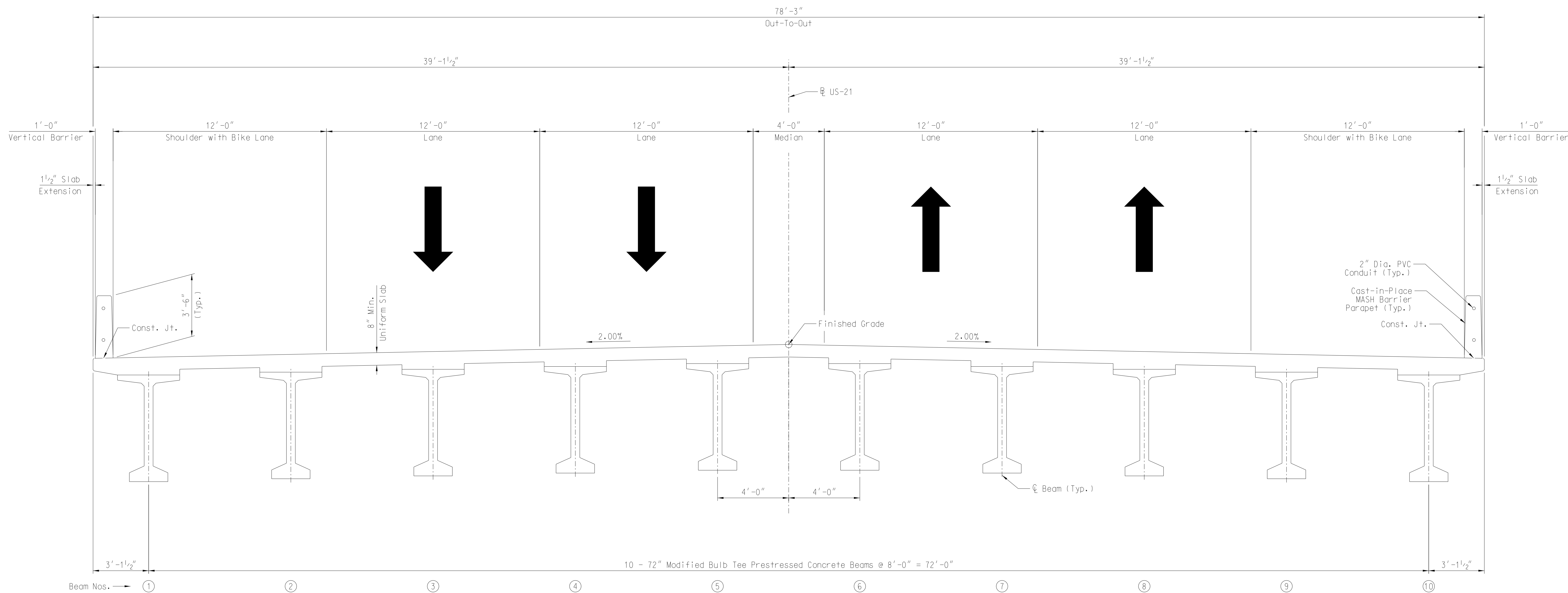
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SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION

US-21 BRIDGE OVER
PALMETTO RAILROAD/NSRR SPUR
COUNTY: RICHLAND ROUTE: US-21



FUTURE TYPICAL SECTION
(Looking In The Direction Of Stationing)

NOTE:
Steel Intermediate Diaphragm Not Shown.
Protective Fencing Not Shown.

**PRELIMINARY
NOT FOR
CONSTRUCTION**

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BY	CHK.	DATE	

CONCEPTUAL PLANS

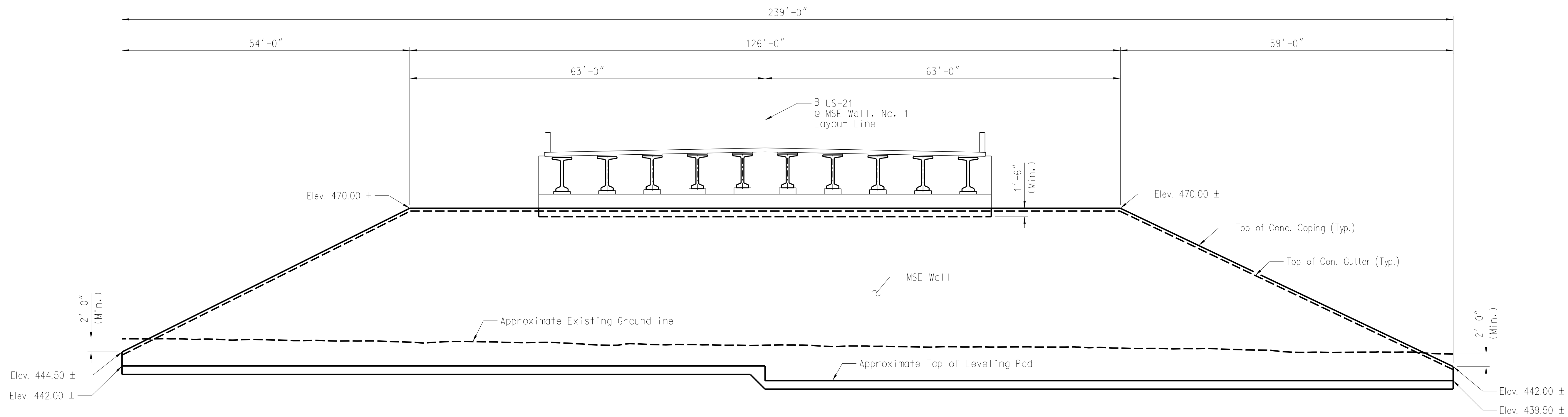
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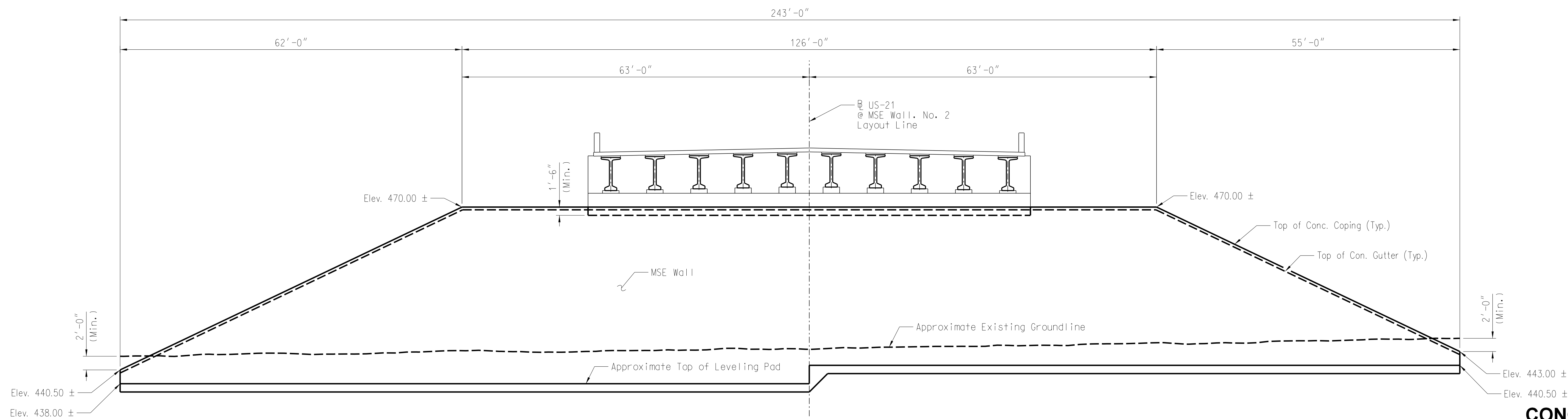
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

**FUTURE
TYPICAL SECTION**

US-21 BRIDGE OVER
PALMETTO RAILROAD/NSRR SPUR
COUNTY RICHLAND ROUTE US-21



MSE WALL NO. 1
ELEVATION ALONG LAYOUT LINE
 (Looking Opposite of Stationing)



MSE WALL NO. 2
ELEVATION ALONG LAYOUT LINE
 (Looking Ahead of Stationing)

CONCEPTUAL PLANS

PLANS
 PREPARED
 BY:



SOUTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

MSE WALLS

US-21 BRIDGE OVER
 PALMETTO RAILROAD/NSRR SPUR

COUNTY RICHLAND ROUTE US-21

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BY	CHK.	DATE		