

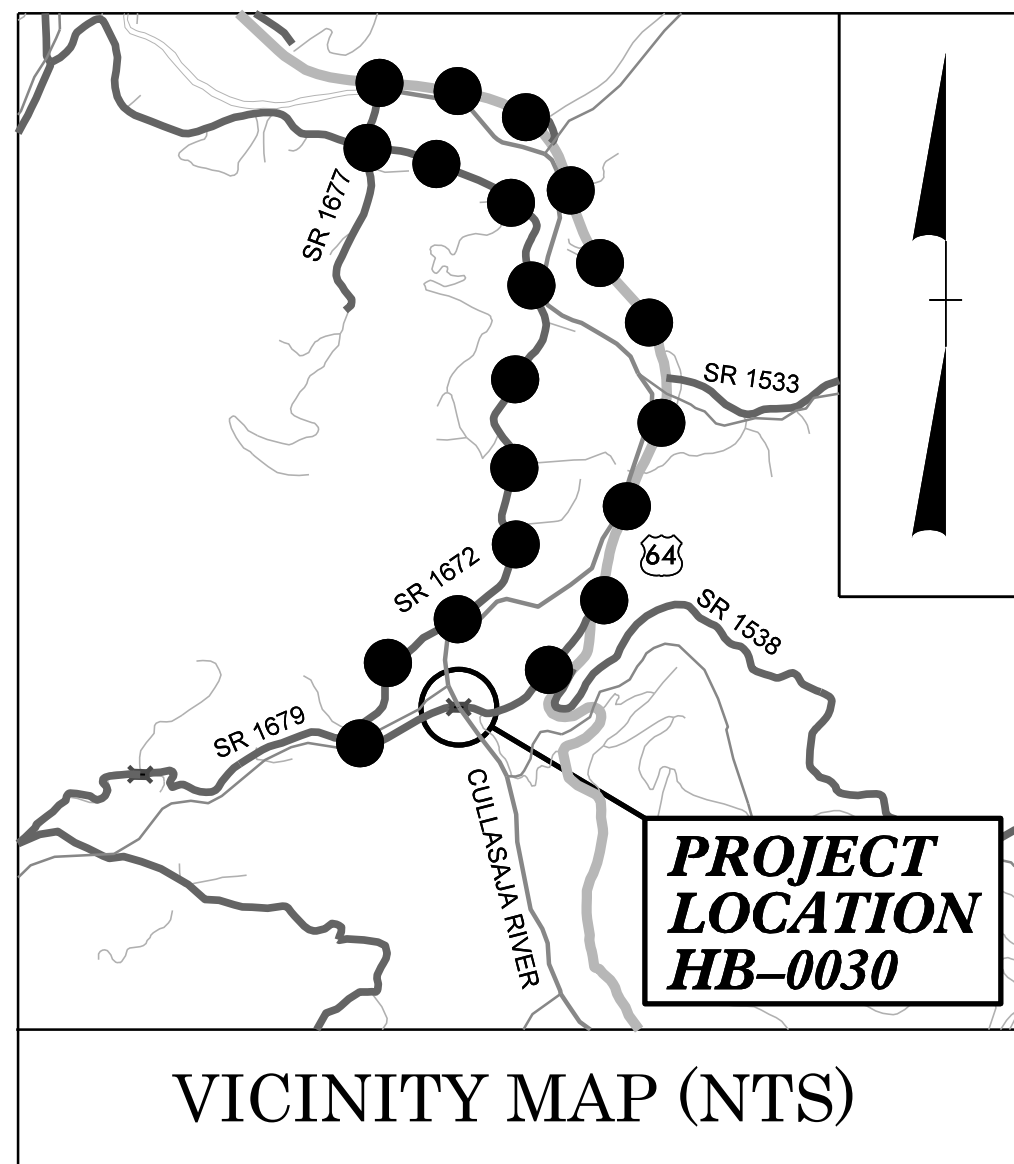
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CONTRACT: TIP PROJECT: HB-0030

See Sheet 1A For Index of Sheets



100% PLANS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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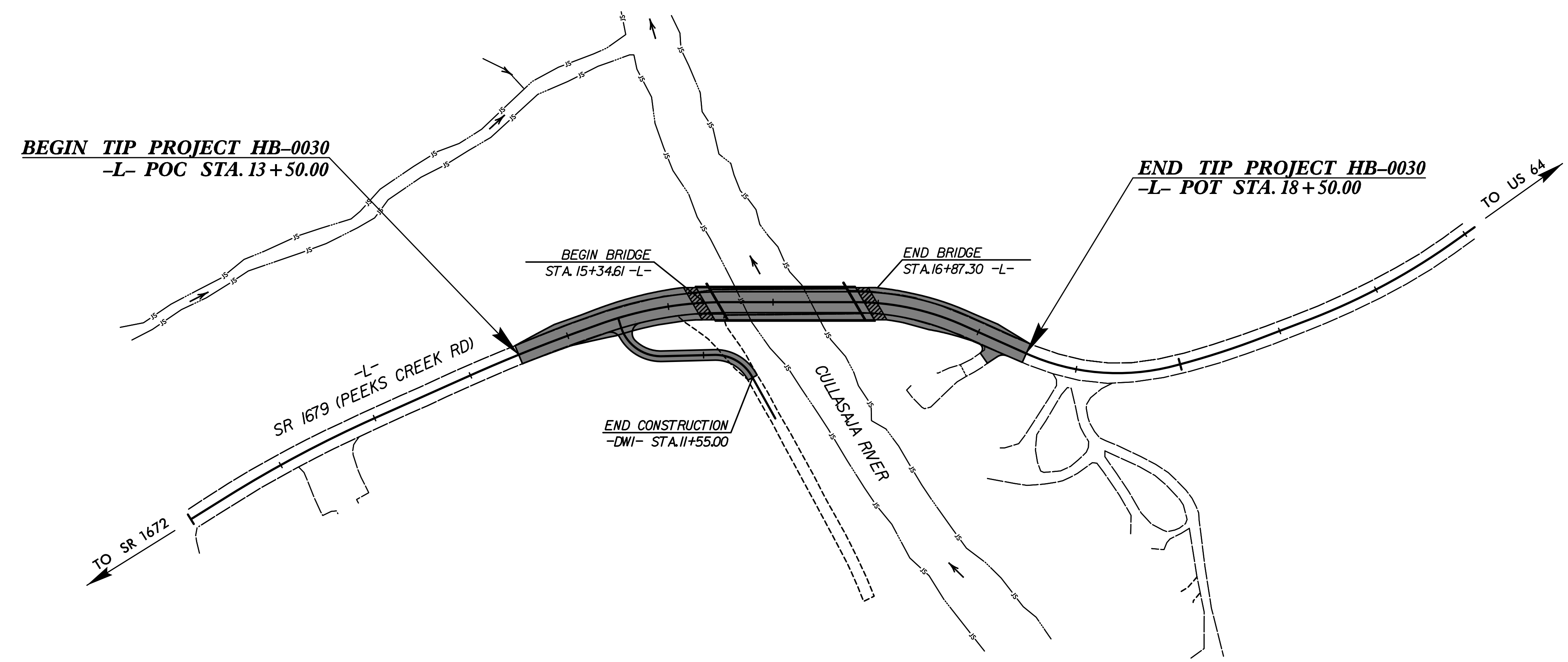
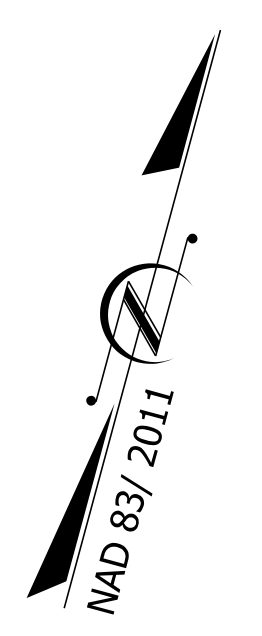
**MACON COUNTY**

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LOCATION: *REPLACE BRIDGE NO. 550055 ON SR 1679 (PEEKS CREEK RD)  
OVER CULLASAJA RIVER*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0030	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
50647.1.1	N/A	P.E.	
50647.2.1	N/A	R/W	
50647.2.2	N/A	UTIL	
50647.3.1	N/A	CONST	



# STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**DESIGN DATA**

ADT 2025 =	174
ADT 2045 =	289
K =	%
D =	%
T =	% *
V =	40 MPH
* TTST =	DUAL
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT HB-0030	0.066 MI
LENGTH STRUCTURE TIP PROJECT HB-0030	0.029 MI
TOTAL LENGTH OF TIP PROJECT HB-0030	0.095 MI

PLANS PREPARED BY:

**FOR**  
**NCDOT HIGHWAY DIVISION 14**

2024 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
OCTOBER 11, 2024

**LETTING DATE:**  
DECEMBER 9, 2025

**LOGAN C. YARBROUGH, PE**  
PROJECT ENGINEER

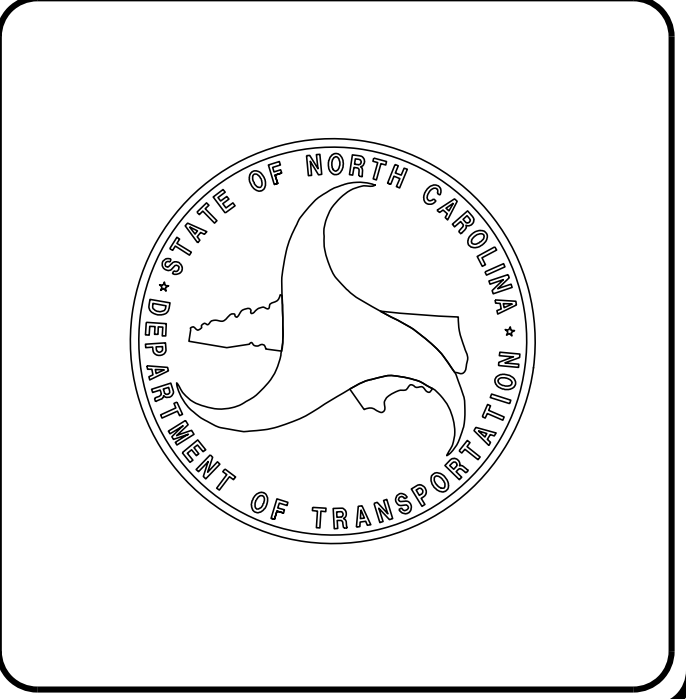
**DWIGHT LOFLIN, PE**  
PROJECT DESIGN ENGINEER

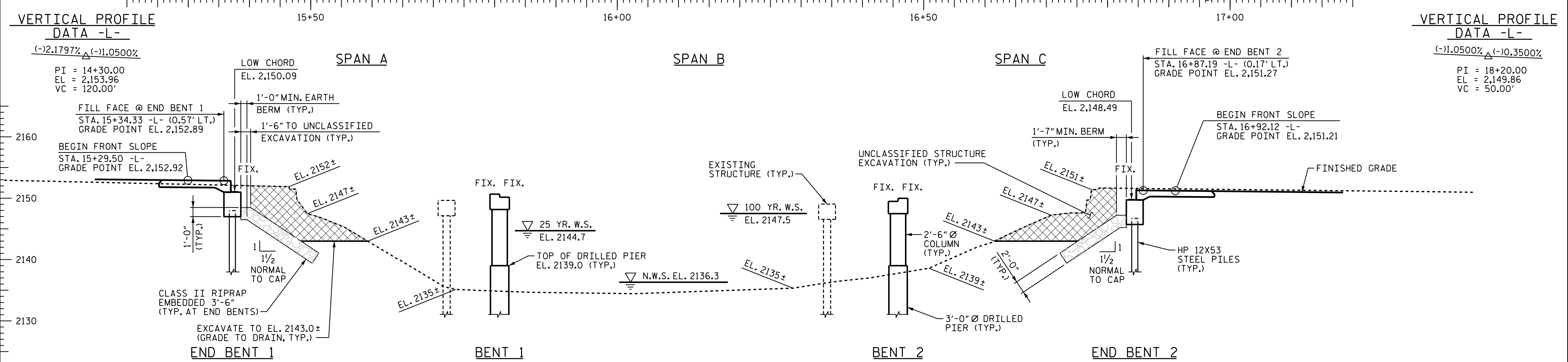
**JARED M. BOND, PE**  
NCDOT PROJECT MANAGER

**STRUCTURES ENGINEER**

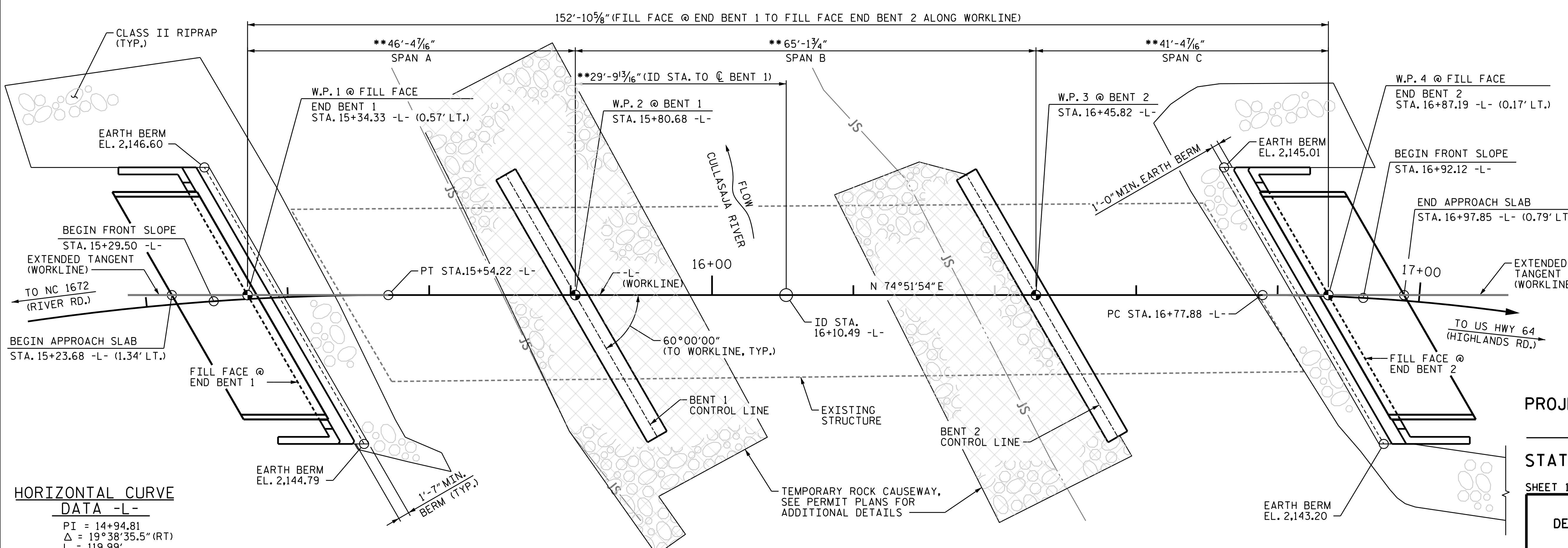
Signed by: *Logan Yarbrough*  
SIGNATURE: \_\_\_\_\_

9/29/2025  
P.E.





**SECTION ALONG -L-**  
 (SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES)



**HORIZONTAL CURVE DATA -L-**

PI = 17+31.98  
 $\Delta = 24^\circ 08' 25.0''$  (RT)  
 L = 106.90'  
 T = 54.10'  
 R = 253.00'  
 SE = 0.04

**HORIZONTAL CURVE DATA -L-**

PI = 14+94.81  
 $\Delta = 19^\circ 38' 35.5''$  (RT)  
 L = 119.99'  
 T = 60.59'  
 R = 350.00'  
 SE = 0.04

PROJECT NO. HB-0030  
 MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 1 OF 7 REPLACES BRIDGE NO. 550055

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

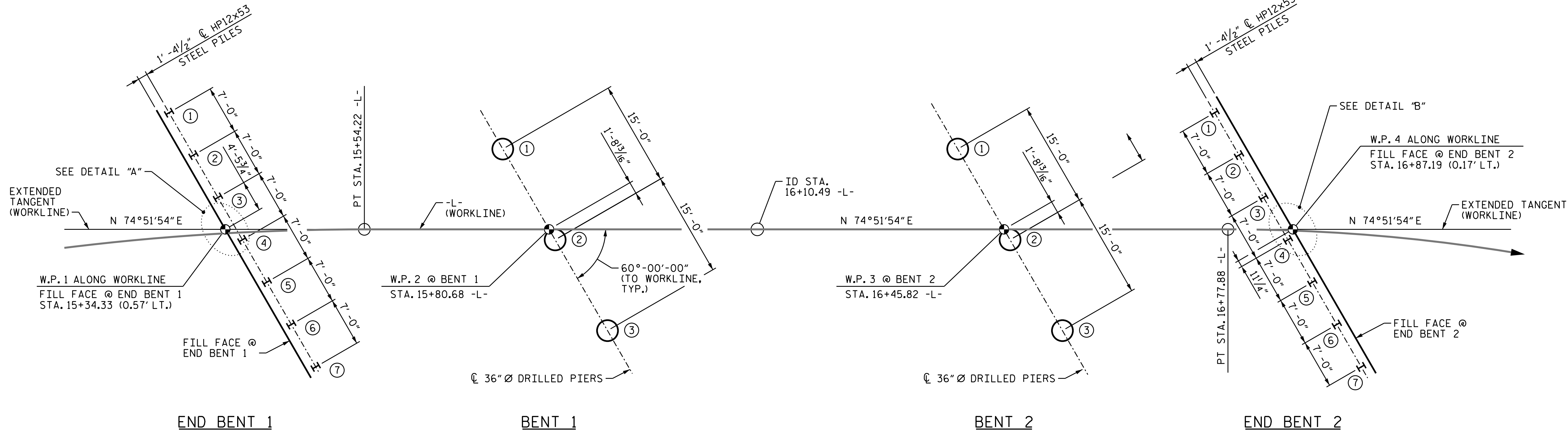
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1679 (PEEK CREEK RD.) BETWEEN SR 1672 AND US 64 OVER CULLASAJA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			26

**DRMP**  
 8210 UNIVERSITY EXECUTIVE  
 PARK DRIVE SUITE 220,  
 CHARLOTTE, NC 28262  
 (704) 549-4260  
 NC LICENSE NO. F-1524  
 9/29/2025  
 DRMP JOB NUMBER: 20-0464.031

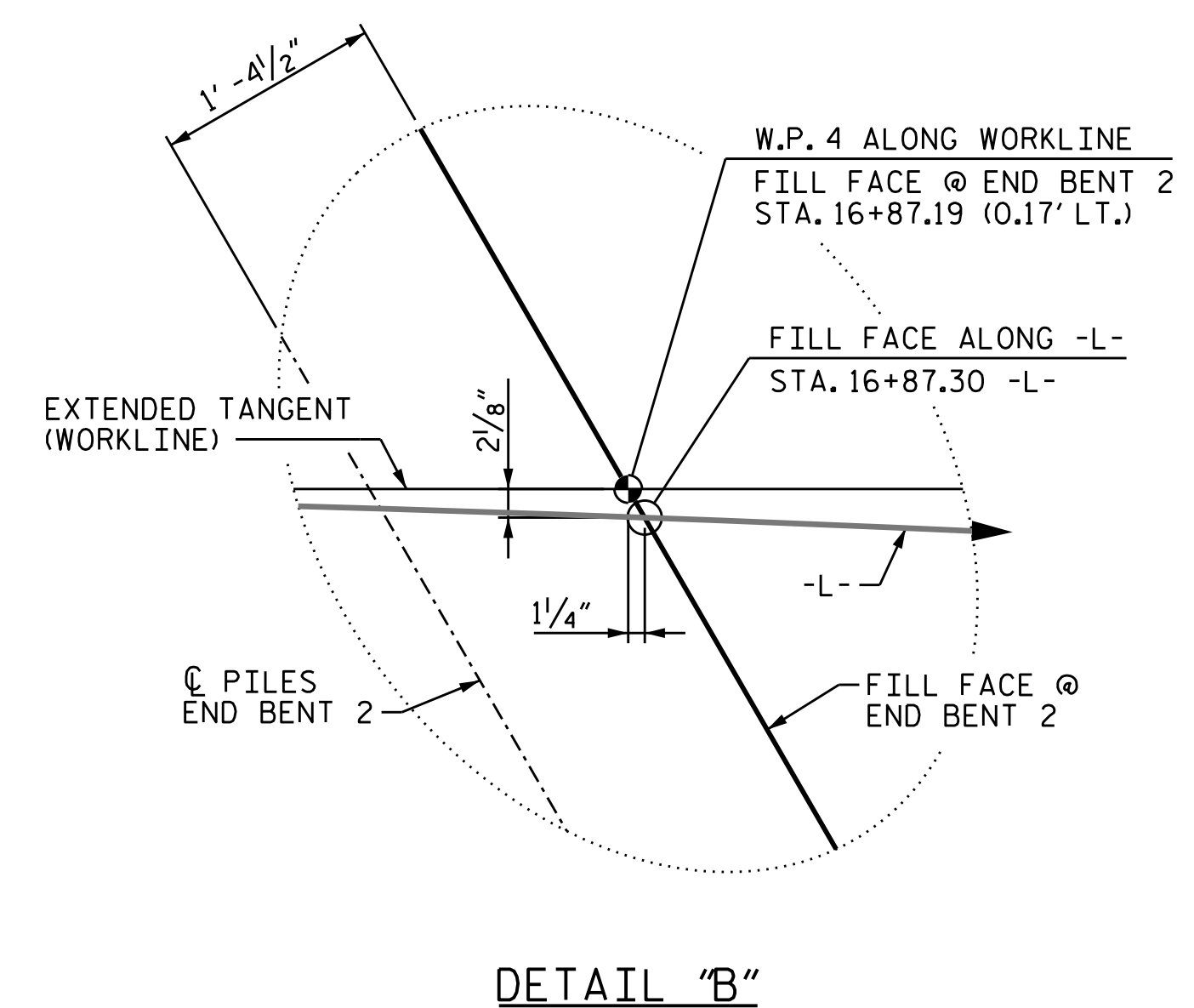
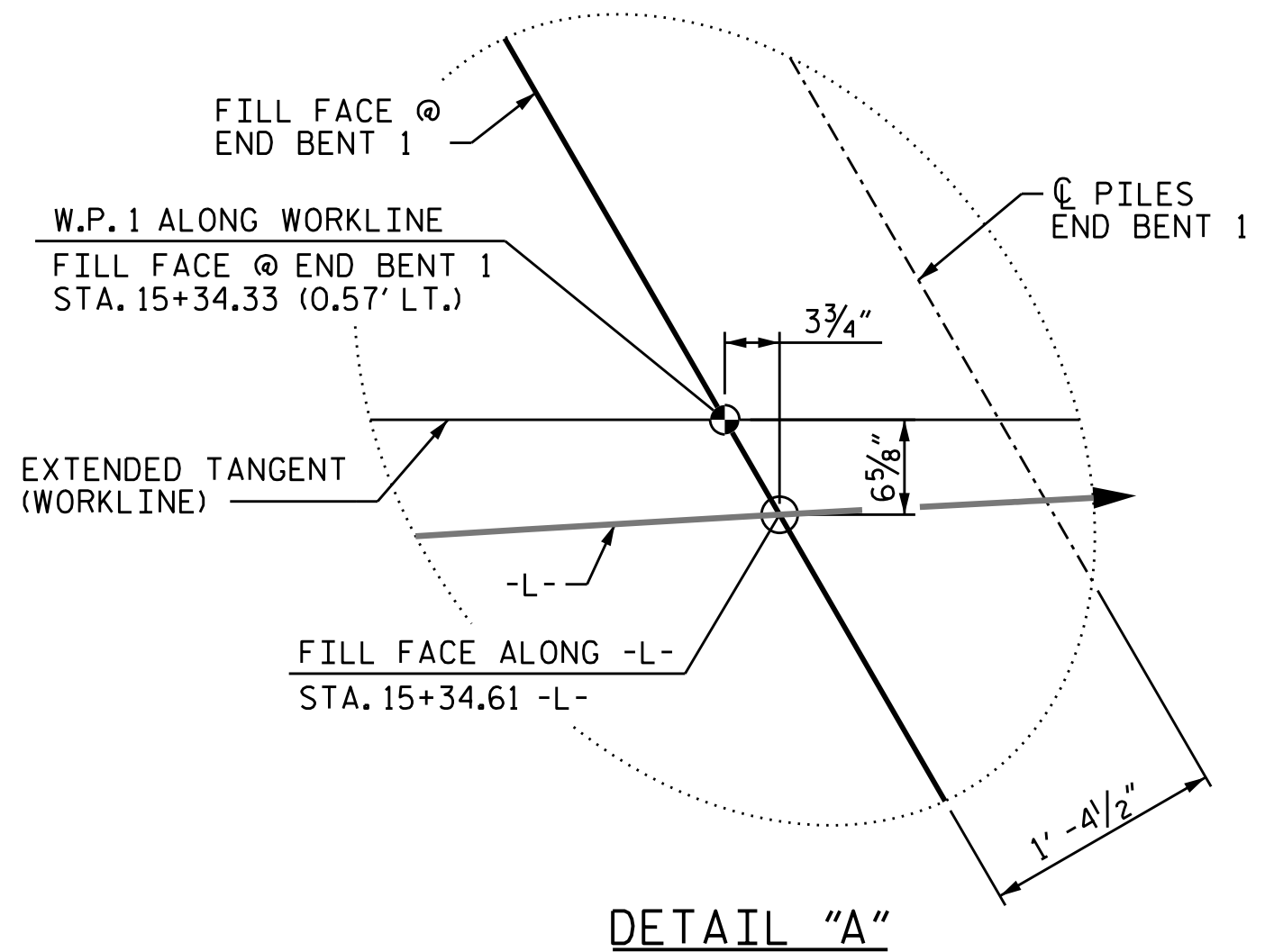
DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**



### FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES)



### FOUNDATION NOTES

1. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
2. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
3. POLYMER SLURRY CONSTRUCTION IS REQUIRED FOR THE CONSTRUCTION OF BENT NO. 1 AND BENT NO. 2.

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 2 OF 7

DRAWN BY : LOGAN C. YARBROUGH DATE : 07-2025  
 CHECKED BY : G. DWIGHT LOFLIN DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
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**DRMP**  
 8210 UNIVERSITY EXECUTIVE  
 PARK DRIVE SUITE 220,  
 CHARLOTTE, NC 28262  
 (704) 549-4260  
 NC LICENSE NO. F-1524



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### FOUNDATION LAYOUT

FOR BRIDGE ON SR 1679 (PEEK'S CREEK RD.) BETWEEN SR 1672 AND US 64 OVER CULLASAJA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			26

### SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-3	3	134	2148	15			225							
End Bent 1, Piles 4-7	4	134	2148	30			225							
End Bent 2, Piles 1-7	7	122	2147	12			205							
<b>TOTAL QUANTITY:</b>														

\* RDR =  $\frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Drag Load Resistance} + \text{Nominal Resistance from Scourable Material}$

\*\* Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

### PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-7	134			0.6		
End Bent 2, Piles 1-7	122			0.6		

\* Factored Dead Load is factored weight of pile above the ground line.

### SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not in Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Piers 1-3	3	850	2090	40	2120			23	26	Yes	2122	17
Bent 2, Piers 1-3	3	850	2090	40	2126			19	30	Yes	2128	11
<b>TOTAL QUANTITY:</b>								126	168			84

\* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "\_\_\_ Dia. Drilled Piers" or "\_\_\_ Dia. Drilled Piers Not in Soil" and "\_\_\_ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "\_\_\_ Dia. Drilled Piers in Soil."

\*\* Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for \_\_\_ Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

### SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Sonic Caliper Testing (SCT) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-3	3	1	3	1	
Bent 2, Piers 1-3	3	1	3	1	
<b>TOTAL QUANTITY:</b>	6	2	6	2	

**NOTES:**

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Joshua M. Jenkins, #050329) on 06-17-2025.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPS, CSL Testing, SID Inspections and PITs when necessary.

PROJECT NO. HB-0030

MACON COUNTY

STATION: 16+10.49 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PILE AND  
DRILLED PIER  
FOUNDATION  
TABLES

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
						S-03
1			3			TOTAL SHEETS
2			4			26



8210 UNIVERSITY EXECUTIVE  
PARK DRIVE SUITE 220,  
CHARLOTTE, NC 28262  
(704) 549-4260

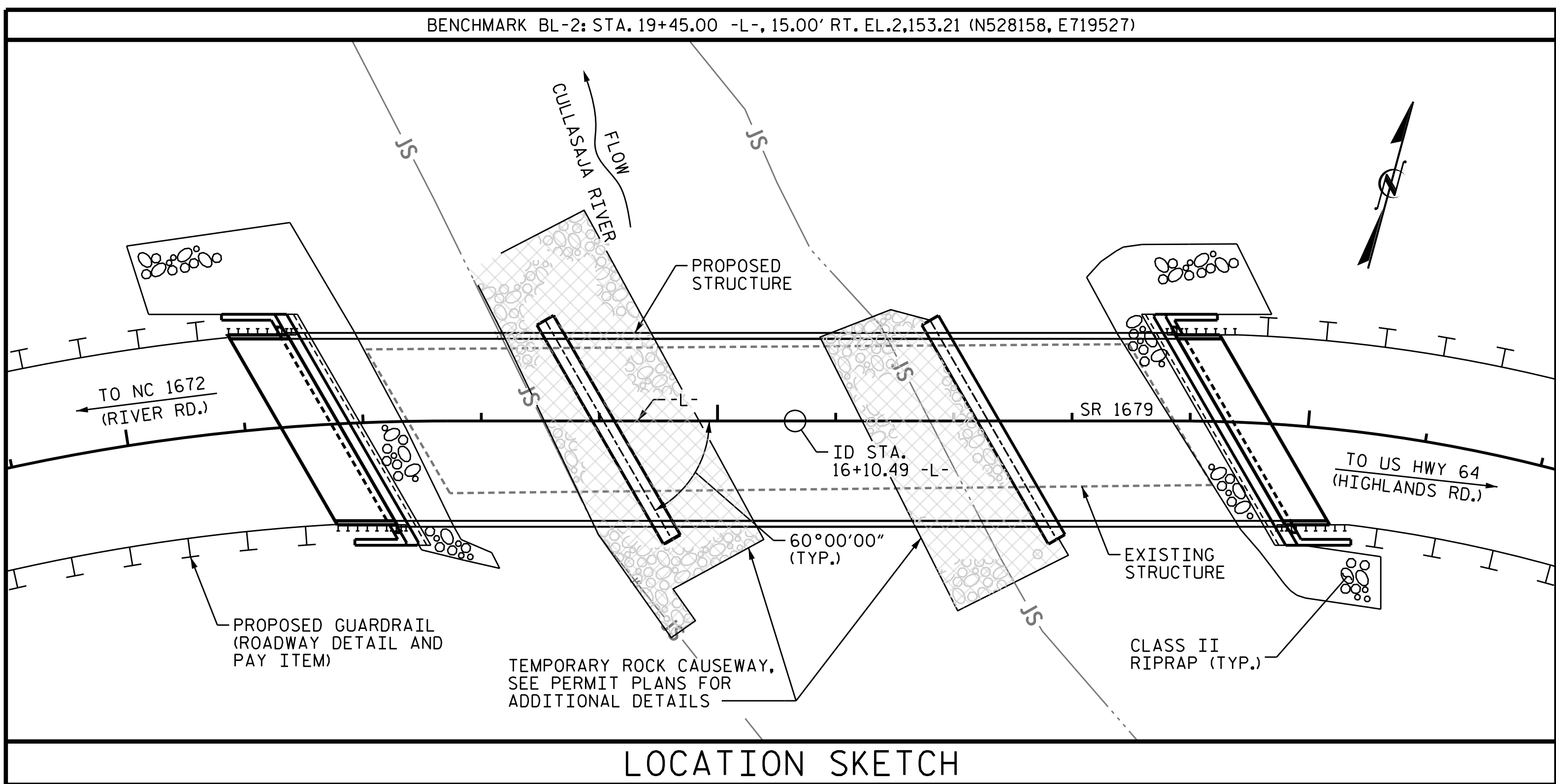
NC LICENSE NO. F-1524



DRMP JOB NUMBER: 20-0464.031

DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



FOR UTILITY INFORMATION, SEE UTILITY PLANS & SPECIAL PROVISIONS.

**GENERAL NOTES:**

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE EXISTING STRUCTURE CONSISTING OF 3 SPANS AT 25'-7", 62'-1", AND 43'-6" WITH TIMBER DECK ON STEEL I-BEAMS ON REINFORCED CONCRETE END BENTS AND INTERIOR BENTS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE" AT STATION 16+10.49.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES.
- THE SCOUR CRITICAL ELEVATIONS FOR BENT NO. 1 AND BENT NO. 2 ARE EL. 2120 AND EL. 2126, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- FOR CORED SLAB AND BOX BEAM POST-TENSIONING, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
- AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA. 16+10.49.

**TOTAL BILL OF MATERIAL**

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS @ STA. 16+10.49 -L-	REMOVAL OF EXISTING STRUCTURE @ STA. 16+10.49 -L-	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12x53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	
	LUMP SUM	LUMP SUM	LUMP SUM	LINE. FT.	LINE. FT.	LINE. FT.	EA.	EA.	EA.	LUMP SUM	CU. YD.	LUMP SUM	LBS.	LBS.	EA.	NO.	LINE. FT.	LINE. FT.	TONS
SUPERSTRUCTURE																		300.87	
END BENT 1																			
BENT 1				78.0	69.0	51.0	1	3	1		24.1		2,923		7	7	165		95
BENT 2				90.0	57.0	33.0	1	3	1		20.4		14,953	3,696					
END BENT 2															7	7	105		87
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	168.0	126.0	84.0	2	6	2	LUMP SUM	88.6	LUMP SUM	35,647	7,330	14	14	270	300.87	182

**TOTAL BILL OF MATERIAL**

	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	SONIC CALIPER TESTING
	SQ. YDS.	LUMP SUM	NO.	LINE. FT.	EA.
SUPERSTRUCTURE			22	935.00	11
END BENT 1	106				
BENT 1					3
BENT 2					3
END BENT 2	97				
TOTAL	203	LUMP SUM	22	935.00	11

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE: 11,500 CFS  
 FREQUENCY OF OVERTOPPING FLOOD: 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION: 2150.0' \*  
 \* OVERTOPPING ON ROADWAY EAST OF BRIDGE (ROADWAY @ STA. 18+50.0 -L-)  
 WS EL. TAKEN @ RIVER STATION 54728.71

**HYDRAULIC DATA**

DESIGN DISCHARGE: 5,800 CFS  
 FREQUENCY OF DESIGN FLOOD: 25 YRS.  
 DESIGN HIGH WATER ELEVATION: 2,144.7'  
 DRAINAGE AREA: 47.2 SQ. MI.  
 BASE DISCHARGE @1000: 8,260 CFS  
 BASE HIGH WATER ELEVATION: 2,147.5'

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1679 (PEEK CREEK RD.) BETWEEN SR 1672 AND US 64 OVER CULLASAJA RIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
2			4			26

**DRMP**  
 8210 UNIVERSITY EXECUTIVE PARK DRIVE SUITE 220, CHARLOTTE, NC 28262 (704) 549-4260  
 NC LICENSE NO. F-1524  
 DRMP JOB NUMBER: 20-0464.031

DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING Ⓝ	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	Ⓛ1	1.249	-	1.75	0.248	1.61	45'	EL	21.92	0.658	1.37	45'	EL	8.77	0.80	0.248	1.25	45'	EL	21.92		
	HL-93 (OPERATING)	N/A		1.772	-	1.35	0.248	2.08	45'	EL	21.92	0.658	1.77	45'	EL	8.77	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	Ⓛ2	1.532	55.166	1.75	0.248	1.97	45'	EL	21.92	0.658	1.58	45'	EL	8.77	0.80	0.248	1.53	45'	EL	21.92		
	HS-20 (OPERATING)	36.000		2.044	73.602	1.35	0.248	2.56	45'	EL	21.92	0.658	2.04	45'	EL	8.77	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		2.990	40.368	1.40	0.248	4.81	45'	EL	21.92	0.658	4.17	45'	EL	8.77	0.80	0.248	2.99	45'	EL	21.92		
		SNGARBS2		2.416	48.323	1.40	0.248	3.89	45'	EL	26.31	0.658	3.12	45'	EL	8.77	0.80	0.248	2.42	45'	EL	26.31		
		SNAGRIS2		2.377	52.290	1.40	0.248	3.76	45'	EL	26.31	0.658	2.96	45'	EL	8.77	0.80	0.248	2.38	45'	EL	26.31		
		SNCOTTS3		1.493	40.685	1.40	0.248	2.40	45'	EL	21.92	0.658	2.09	45'	EL	8.77	0.80	0.248	1.49	45'	EL	21.92		
		SNAGGRS4		1.318	46.039	1.40	0.248	2.12	45'	EL	21.92	0.658	1.85	45'	EL	8.77	0.80	0.248	1.32	45'	EL	21.92		
		SNS5A		1.284	45.648	1.40	0.248	2.06	45'	EL	21.92	0.658	1.94	45'	EL	8.77	0.80	0.248	1.28	45'	EL	21.92		
		SNS6A		1.210	48.334	1.40	0.248	1.95	45'	EL	21.92	0.658	1.82	45'	EL	8.77	0.80	0.248	1.21	45'	EL	21.92		
	SNS7B		Ⓛ3	1.153	48.442	1.40	0.248	1.85	45'	EL	21.92	0.658	1.86	45'	EL	8.77	0.80	0.248	1.15	45'	EL	21.92		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3			1.485	49.007	1.40	0.248	2.39	45'	EL	21.92	0.658	2.12	45'	EL	8.77	0.80	0.248	1.48	45'	EL	21.92	
		TNT4A			1.501	49.636	1.40	0.248	2.41	45'	EL	21.92	0.658	2.01	45'	EL	8.77	0.80	0.248	1.50	45'	EL	21.92	
		TNT6A			1.260	52.409	1.40	0.248	2.03	45'	EL	21.92	0.658	1.98	45'	EL	8.77	0.80	0.248	1.26	45'	EL	21.92	
		TNT7A			1.284	53.943	1.40	0.248	2.07	45'	EL	21.92	0.658	1.84	45'	EL	8.77	0.80	0.248	1.28	45'	EL	21.92	
		TNT7B			1.337	56.156	1.40	0.248	2.15	45'	EL	21.92	0.658	1.76	45'	EL	8.77	0.80	0.248	1.34	45'	EL	21.92	
		TNAGRIT4			1.274	54.766	1.40	0.248	2.05	45'	EL	21.92	0.658	1.69	45'	EL	8.77	0.80	0.248	1.27	45'	EL	21.92	
TNAGT5A				1.185	53.323	1.40	0.248	1.91	45'	EL	21.92	0.658	1.76	45'	EL	8.77	0.80	0.248	1.18	45'	EL	21.92		
TNAGT5B			1.157	52.058	1.40	0.248	1.86	45'	EL	21.92	0.658	1.60	45'	EL	8.77	0.80	0.248	1.16	45'	EL	21.92			
EMERGENCY VEHICLE (EV)	EV2			1.733	49.823	1.30	0.248	2.99	45'	EL	21.92	0.658	2.37	45'	EL	8.77	0.80	0.248	1.73	45'	EL	21.92		
	EV3		Ⓛ4	1.114	47.887	1.30	0.248	1.93	45'	EL	21.92	0.658	1.61	45'	EL	8.77	0.80	0.248	1.11	45'	EL	21.92		

**LOAD FACTORS:**

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

**NOTES:**  
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

**COMMENTS:**

- 1.
- 2.
- 3.
- 4.

**Ⓝ CONTROLLING LOAD RATING**

Ⓛ1 DESIGN LOAD RATING (HL-93)

Ⓛ2 DESIGN LOAD RATING (HS-20)

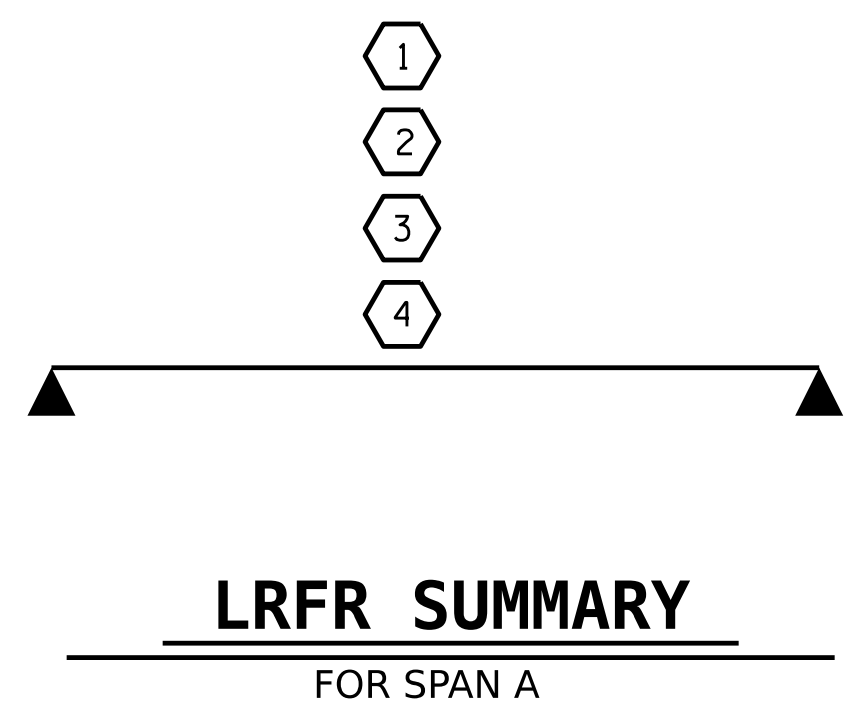
Ⓛ3 LEGAL LOAD RATING \*\*

Ⓛ4 EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

**GIRDER LOCATION**

I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



PROJECT NO. HB-0030  
MACON COUNTY  
STATION: 16+10.49 -L-  
SHEET 5 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SPAN A  
LRFR SUMMARY FOR  
45' CORED SLAB UNIT  
60° SKEW  
(NON-INTERSTATE TRAFFIC)

**DRMP**  
8210 UNIVERSITY EXECUTIVE  
PARK DRIVE SUITE 220,  
CHARLOTTE, NC 28262  
(704) 549-4260  
NC LICENSE NO. F-1524



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.013	--	1.75	0.248	1.16	65'	EL	31.923	0.652	1.01	65'	EL	6.385	0.80	0.248	1.12	65'	EL	31.923		
	HL-93 (OPERATING)	N/A		1.313	--	1.35	0.248	1.50	65'	EL	31.923	0.652	1.31	65'	EL	6.385	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.246	44.865	1.75	0.248	1.48	65'	EL	31.923	0.652	1.25	65'	EL	6.385	0.80	0.248	1.44	65'	EL	31.923		
	HS-20 (OPERATING)	36.000		1.616	58.159	1.35	0.248	1.92	65'	EL	31.923	0.652	1.62	65'	EL	6.385	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.163	42.696	1.4	0.248	4.07	65'	EL	31.923	0.652	3.64	65'	EL	6.385	0.80	0.248	3.16	65'	EL	31.923		
		SNGARBS2	20.000		2.395	47.893	1.4	0.248	3.08	65'	EL	31.923	0.652	2.61	65'	EL	6.385	0.80	0.248	2.39	65'	EL	31.923	
		SNAGRIS2	22.000		2.284	50.247	1.4	0.248	2.94	65'	EL	31.923	0.652	2.43	65'	EL	6.385	0.80	0.248	2.28	65'	EL	31.923	
		SNCOTTS3	27.250		1.575	42.917	1.4	0.248	2.03	65'	EL	31.923	0.652	1.82	65'	EL	6.385	0.80	0.248	1.57	65'	EL	31.923	
		SNAGGRS4	34.925		1.331	46.469	1.4	0.248	1.71	65'	EL	31.923	0.652	1.53	65'	EL	6.385	0.80	0.248	1.33	65'	EL	31.923	
		SNS5A	35.550		1.300	46.220	1.4	0.248	1.67	65'	EL	31.923	0.652	1.55	65'	EL	6.385	0.80	0.248	1.30	65'	EL	31.923	
		SNS6A	39.950		1.199	47.899	1.4	0.248	1.54	65'	EL	31.923	0.652	1.42	65'	EL	6.385	0.80	0.248	1.20	65'	EL	31.923	
	SNS7B	42.000		1.142	47.965	1.4	0.248	1.47	65'	EL	31.923	0.652	1.40	65'	EL	6.385	0.80	0.248	1.14	65'	EL	31.923		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.464	48.309	1.4	0.248	1.89	65'	EL	31.923	0.652	1.69	65'	EL	6.385	0.80	0.248	1.46	65'	EL	31.923	
		TNT4A	33.075		1.472	48.688	1.4	0.248	1.90	65'	EL	31.923	0.652	1.64	65'	EL	6.385	0.80	0.248	1.47	65'	EL	31.923	
		TNT6A	41.600		1.209	50.315	1.4	0.248	1.56	65'	EL	31.923	0.652	1.51	65'	EL	6.385	0.80	0.248	1.21	65'	EL	31.923	
		TNT7A	42.000		1.219	51.186	1.4	0.248	1.57	65'	EL	31.923	0.652	1.46	65'	EL	6.385	0.80	0.248	1.22	65'	EL	31.923	
		TNT7B	42.000		1.269	53.286	1.4	0.248	1.63	65'	EL	31.923	0.652	1.37	65'	EL	6.385	0.80	0.248	1.27	65'	EL	31.923	
		TNAGRIT4	43.000		1.201	51.645	1.4	0.248	1.55	65'	EL	31.923	0.652	1.32	65'	EL	6.385	0.80	0.248	1.20	65'	EL	31.923	
TNAGT5A		45.000		1.130	50.836	1.4	0.248	1.45	65'	EL	31.923	0.652	1.32	65'	EL	6.385	0.80	0.248	1.13	65'	EL	31.923		
TNAGT5B	45.000	3	1.114	50.113	1.4	0.248	1.43	65'	EL	31.923	0.652	1.25	65'	EL	6.385	0.80	0.248	1.11	65'	EL	31.923			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.876	53.935	1.3	0.248	2.34	65'	EL	31.923	0.652	1.96	65'	EL	6.385	0.80	0.248	1.87	65'	EL	31.923		
	EV3	43.000	4	1.224	52.637	1.3	0.248	1.53	65'	EL	31.923	0.652	1.33	65'	EL	6.385	0.80	0.248	1.22	65'	EL	31.923		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

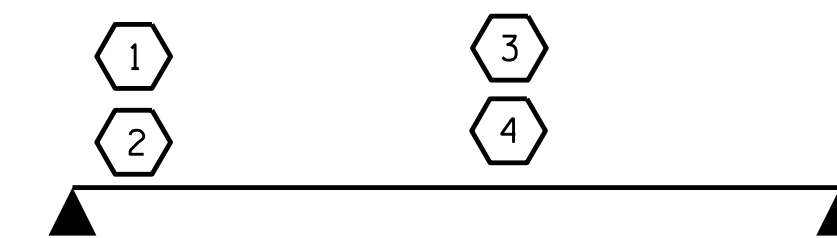
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 
- 
- 
- 

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
4	EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER	
EL - EXTERIOR LEFT GIRDER	
ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY  
FOR SPAN B

PROJECT NO. HB-0030

MACON COUNTY

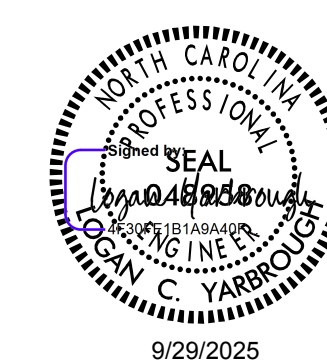
STATION: 16+10.49 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SPAN B  
LRFR SUMMARY FOR  
65' CORED SLAB UNIT  
60° SKEW  
(NON-INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					26

**DRMP**  
8210 UNIVERSITY EXECUTIVE  
PARK DRIVE SUITE 220,  
CHARLOTTE, NC 28262  
(704) 549-4260  
NC LICENSE NO. F-1524



DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING Ⓝ	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						MOMENT					SHEAR					MOMENT							
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD	HL-93 (INVENTORY)	N/A	Ⓝ1	1.352	-	1.75	0.252	1.95	40'	EL	19.423	0.653	1.35	40'	EL	7.769	0.80	0.252	1.72	40'	EL	19.423	
	HL-93 (OPERATING)	N/A		1.753	-	1.35	0.252	2.52	40'	EL	19.423	0.653	1.75	40'	EL	7.769	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	Ⓝ2	1.544	55.583	1.75	0.252	2.45	40'	EL	19.423	0.653	1.54	40'	EL	7.769	0.80	0.252	2.14	40'	EL	19.423	
	HS-20 (OPERATING)	36.000		2.001	72.053	1.35	0.252	3.17	40'	EL	19.423	0.653	2.00	40'	EL	7.769	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.929	53.037	1.4	0.252	5.64	40'	EL	19.423	0.653	3.93	40'	EL	7.769	0.80	0.252	3.99	40'	EL	19.423	
		SNGARBS2	20.000		2.985	59.708	1.4	0.252	4.63	40'	EL	15.538	0.653	2.99	40'	EL	7.769	0.80	0.252	3.28	40'	EL	19.423
		SNAGRIS2	22.000		2.852	62.746	1.4	0.252	4.53	40'	EL	15.538	0.653	2.85	40'	EL	7.769	0.80	0.252	3.23	40'	EL	15.538
		SNCOTTS3	27.250		1.980	53.947	1.4	0.252	2.82	40'	EL	19.423	0.653	1.98	40'	EL	7.769	0.80	0.252	1.99	40'	EL	19.423
		SNAGGRS4	34.925		1.782	62.222	1.4	0.252	2.54	40'	EL	19.423	0.653	1.78	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423
		SNS5A	35.550		1.746	62.059	1.4	0.252	2.47	40'	EL	19.423	0.653	1.89	40'	EL	7.769	0.80	0.252	1.75	40'	EL	19.423
		SNS6A	39.950		1.662	66.381	1.4	0.252	2.35	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423
	SNS7B	42.000		1.585	66.556	1.4	0.252	2.24	40'	EL	19.423	0.653	1.86	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.045	67.476	1.4	0.252	2.89	40'	EL	19.423	0.653	2.07	40'	EL	7.769	0.80	0.252	2.04	40'	EL	19.423
		TNT4A	33.075		1.951	64.520	1.4	0.252	2.93	40'	EL	19.423	0.653	1.95	40'	EL	7.769	0.80	0.252	2.07	40'	EL	19.423
		TNT6A	41.600		1.757	73.106	1.4	0.252	2.49	40'	EL	19.423	0.653	1.91	40'	EL	7.769	0.80	0.252	1.76	40'	EL	19.423
		TNT7A	42.000		1.795	75.386	1.4	0.252	2.55	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.80	40'	EL	19.423
		TNT7B	42.000		1.729	72.638	1.4	0.252	2.61	40'	EL	19.423	0.653	1.73	40'	EL	7.769	0.80	0.252	1.84	40'	EL	19.423
		TNAGRIT4	43.000		1.661	71.441	1.4	0.252	2.53	40'	EL	15.538	0.653	1.66	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423
TNAGT5A		45.000		1.659	74.644	1.4	0.252	2.35	40'	EL	19.423	0.653	1.77	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
TNAGT5B	45.000	Ⓝ3	1.568	70.561	1.4	0.252	2.28	40'	EL	19.423	0.653	1.57	40'	EL	7.769	0.80	0.252	1.61	40'	EL	19.423		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.266	65.134	1.3	0.252	3.56	40'	EL	15.538	0.653	2.27	40'	EL	7.769	0.80	0.252	2.38	40'	EL	15.538	
	EV3	43.000	Ⓝ4	1.532	65.869	1.3	0.252	2.32	40'	EL	19.423	0.653	1.55	40'	EL	7.769	0.80	0.252	1.53	40'	EL	19.423	

**LOAD FACTORS:**

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

**NOTES:**  
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

**COMMENTS:**

- 1.
- 2.
- 3.
- 4.

**Ⓝ CONTROLLING LOAD RATING**

Ⓝ1 DESIGN LOAD RATING (HL-93)

Ⓝ2 DESIGN LOAD RATING (HS-20)

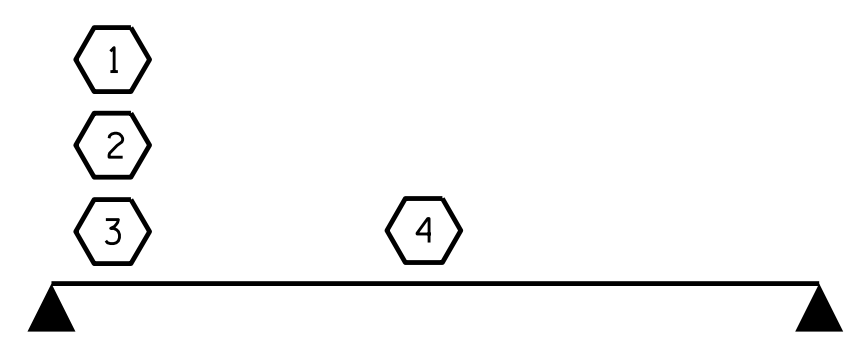
Ⓝ3 LEGAL LOAD RATING \*\*

Ⓝ4 EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

**GIRDER LOCATION**

I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



**LRFR SUMMARY**  
FOR SPAN C

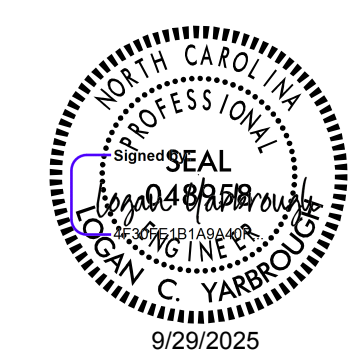
PROJECT NO. HB-0030  
MACON COUNTY  
STATION: 16+10.49 -L-  
SHEET 7 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SPAN C  
LRFR SUMMARY FOR  
40' CORED SLAB UNIT  
60° SKEW  
(NON-INTERSTATE TRAFFIC)

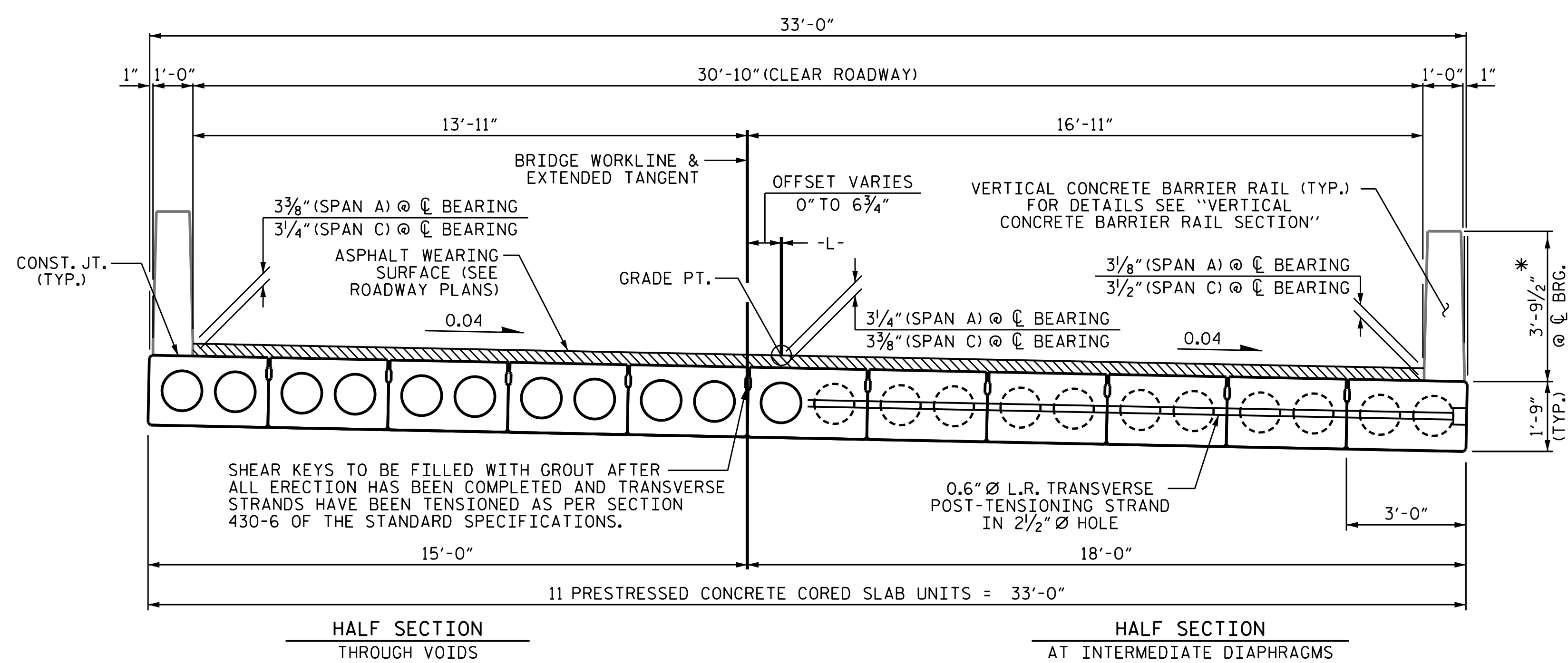
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
1			3			TOTAL SHEETS
2			4			26

**DRMP**  
8210 UNIVERSITY EXECUTIVE  
PARK DRIVE SUITE 220,  
CHARLOTTE, NC 28262  
(704) 549-4260  
NC LICENSE NO. F-1524



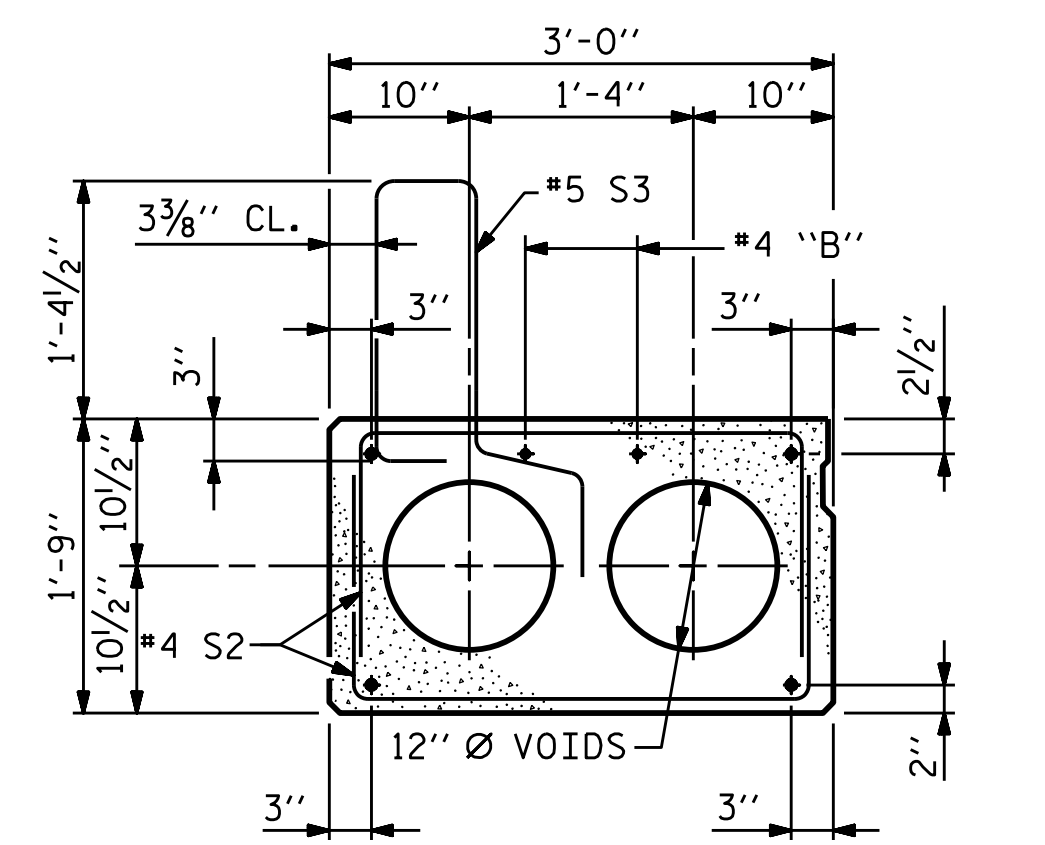
DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



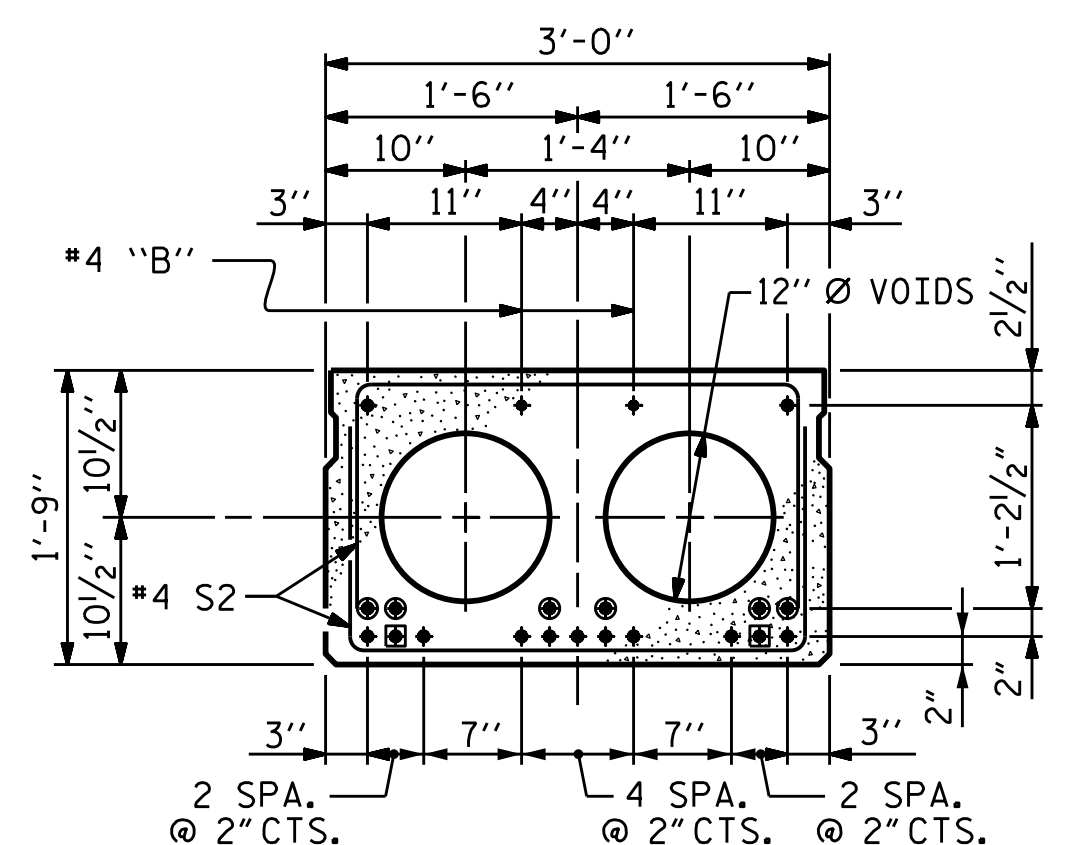
**TYPICAL SECTION**

\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



**EXT. SLAB SECTION**

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



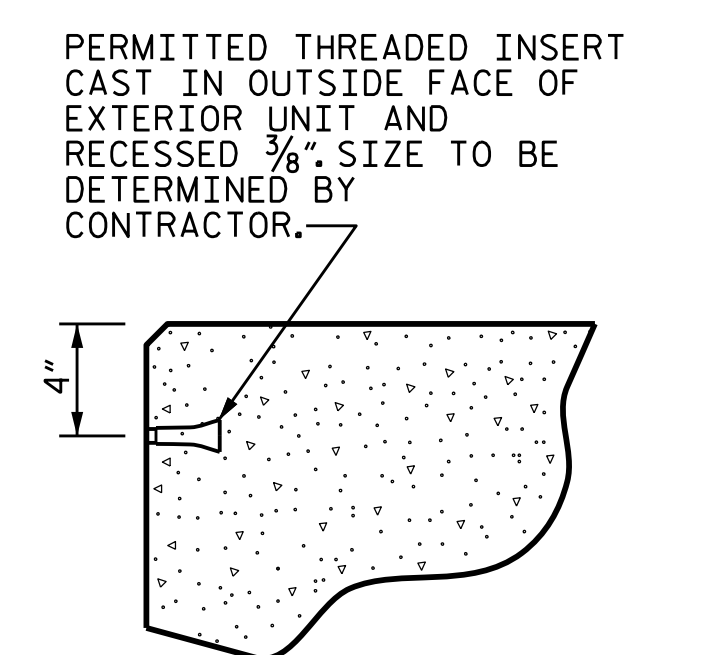
**INTERIOR SLAB SECTION**

(40' & 45' UNIT)  
(13 STRANDS REQUIRED)

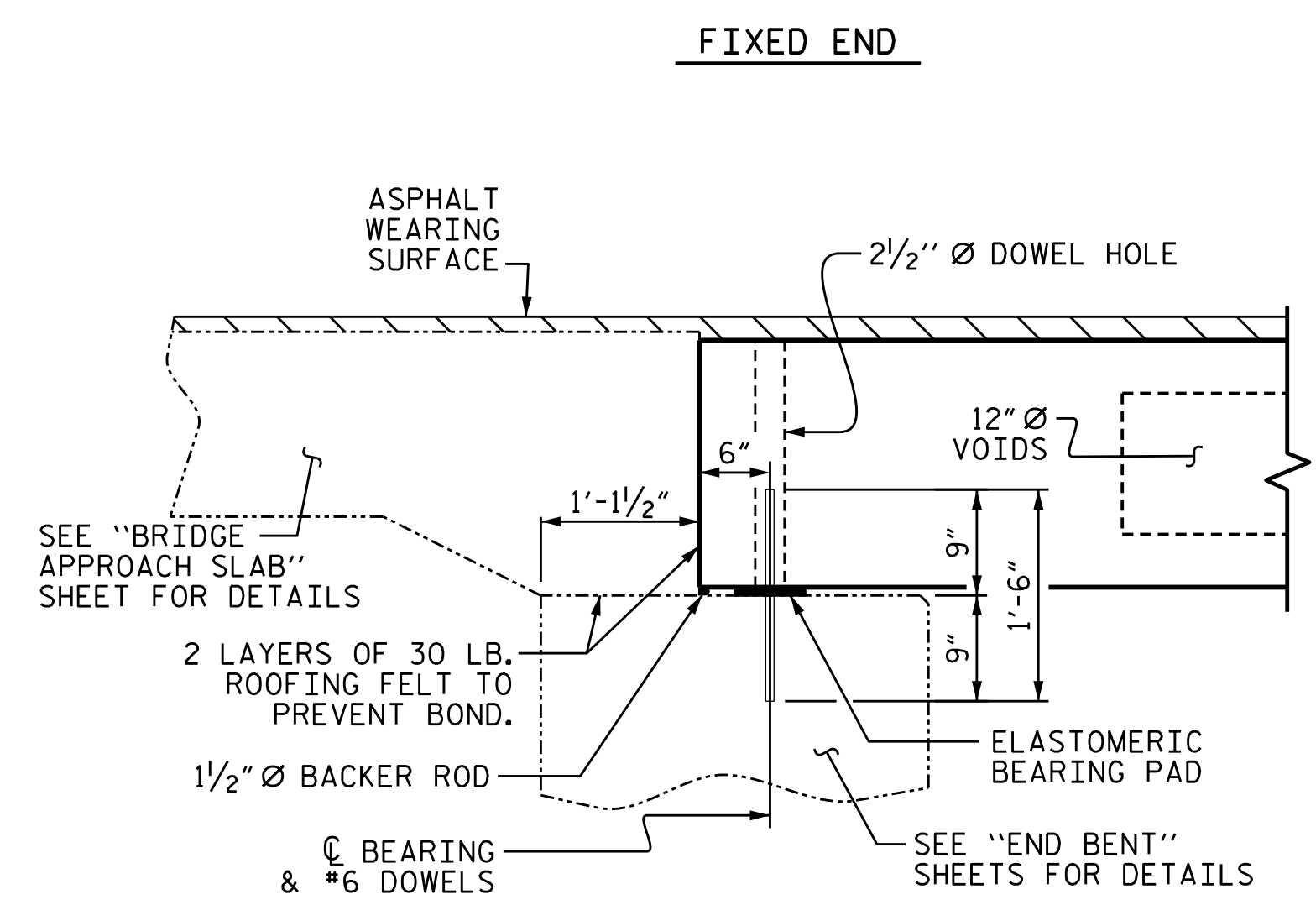
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

- ☑ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ⊙ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

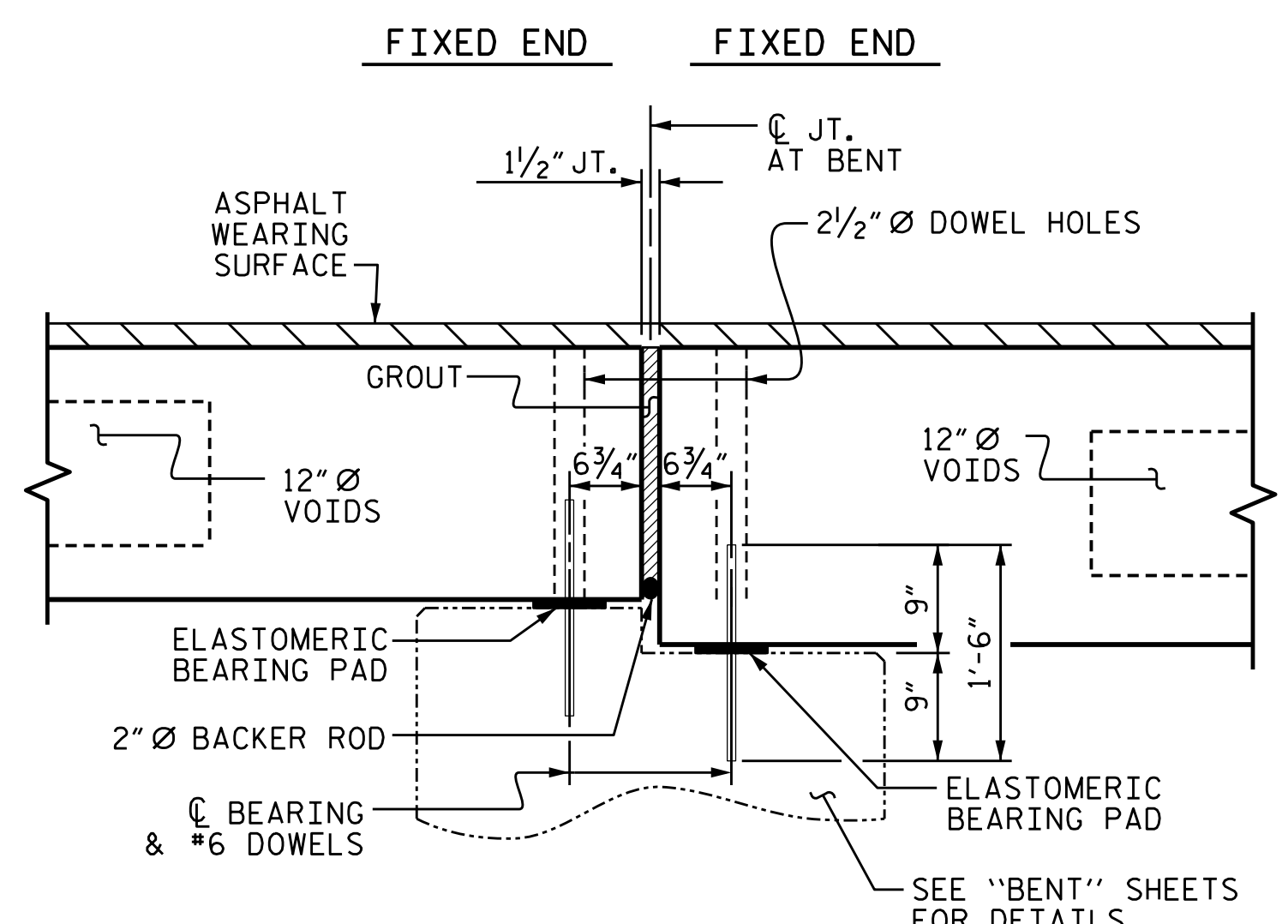
**DEBONDING LEGEND**



THREADED INSERT DETAIL

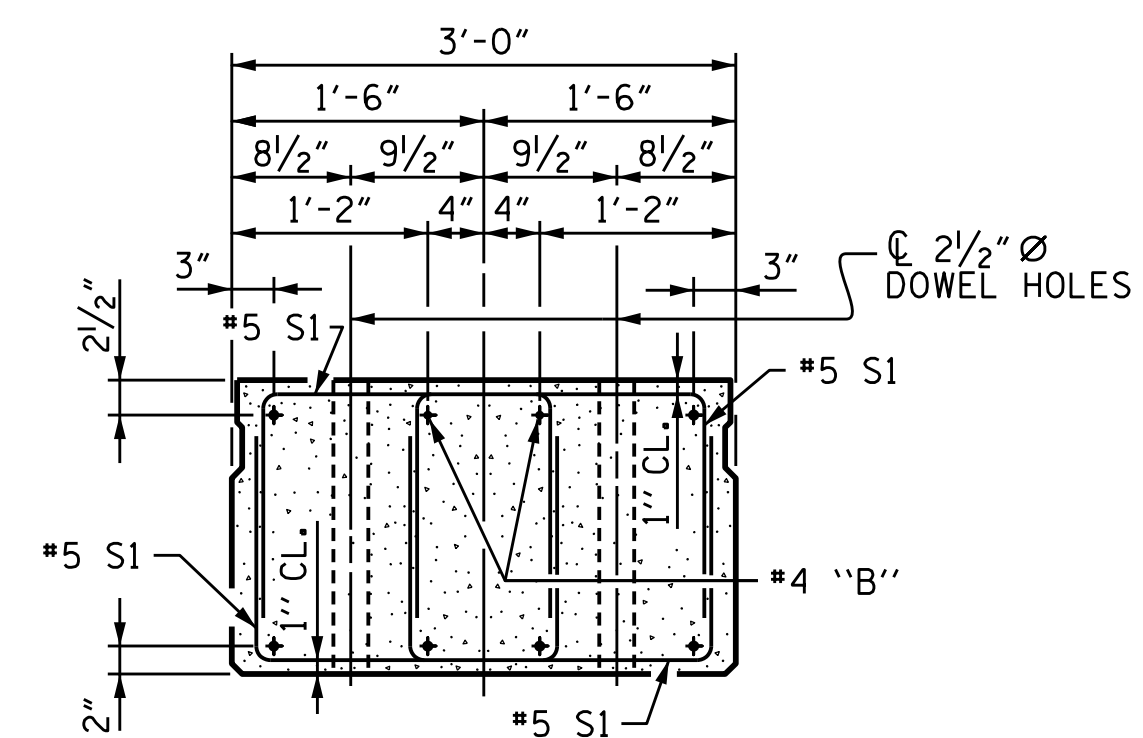


**SECTION AT END BENT**



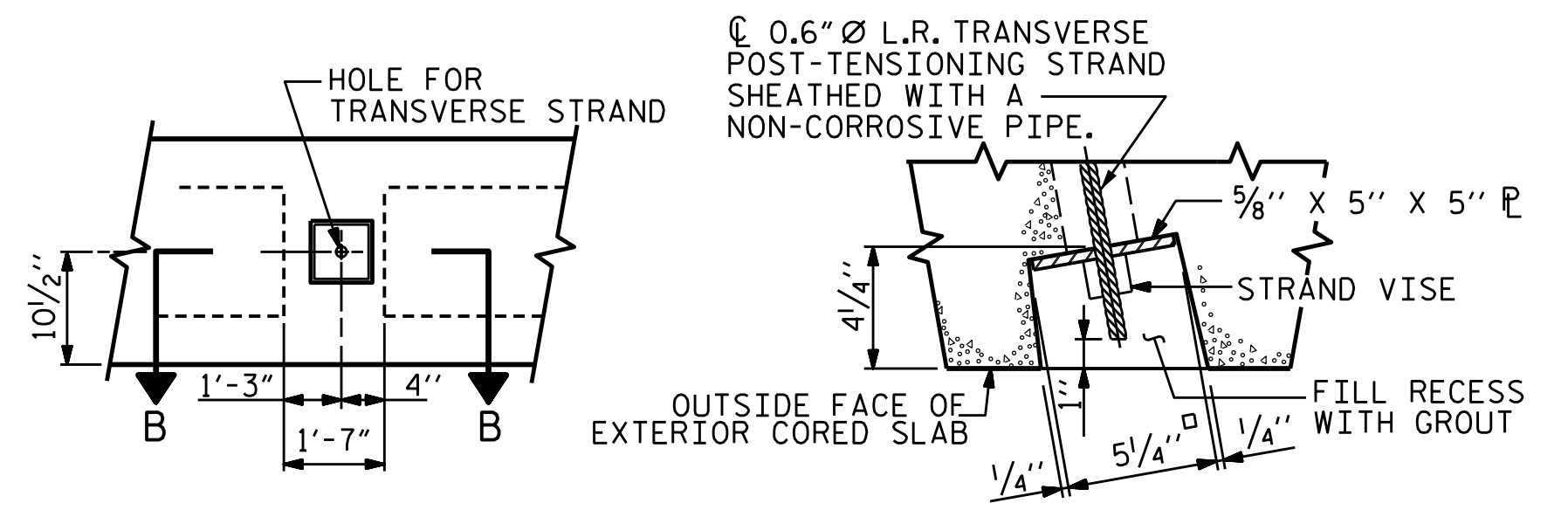
**SECTION AT BENT**

(SPAN A SHOWN, SPAN C MIRRORED)



**END ELEVATION**

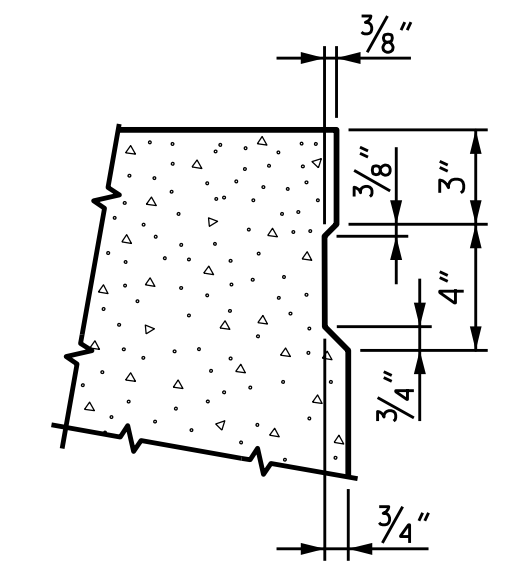
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



**ELEVATION VIEW**

**SECTION B-B**

**GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS**



**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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8210 UNIVERSITY EXECUTIVE  
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 CHARLOTTE, NC 28262  
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NC LICENSE NO. F-1524



PROJECT NO. HB-0030

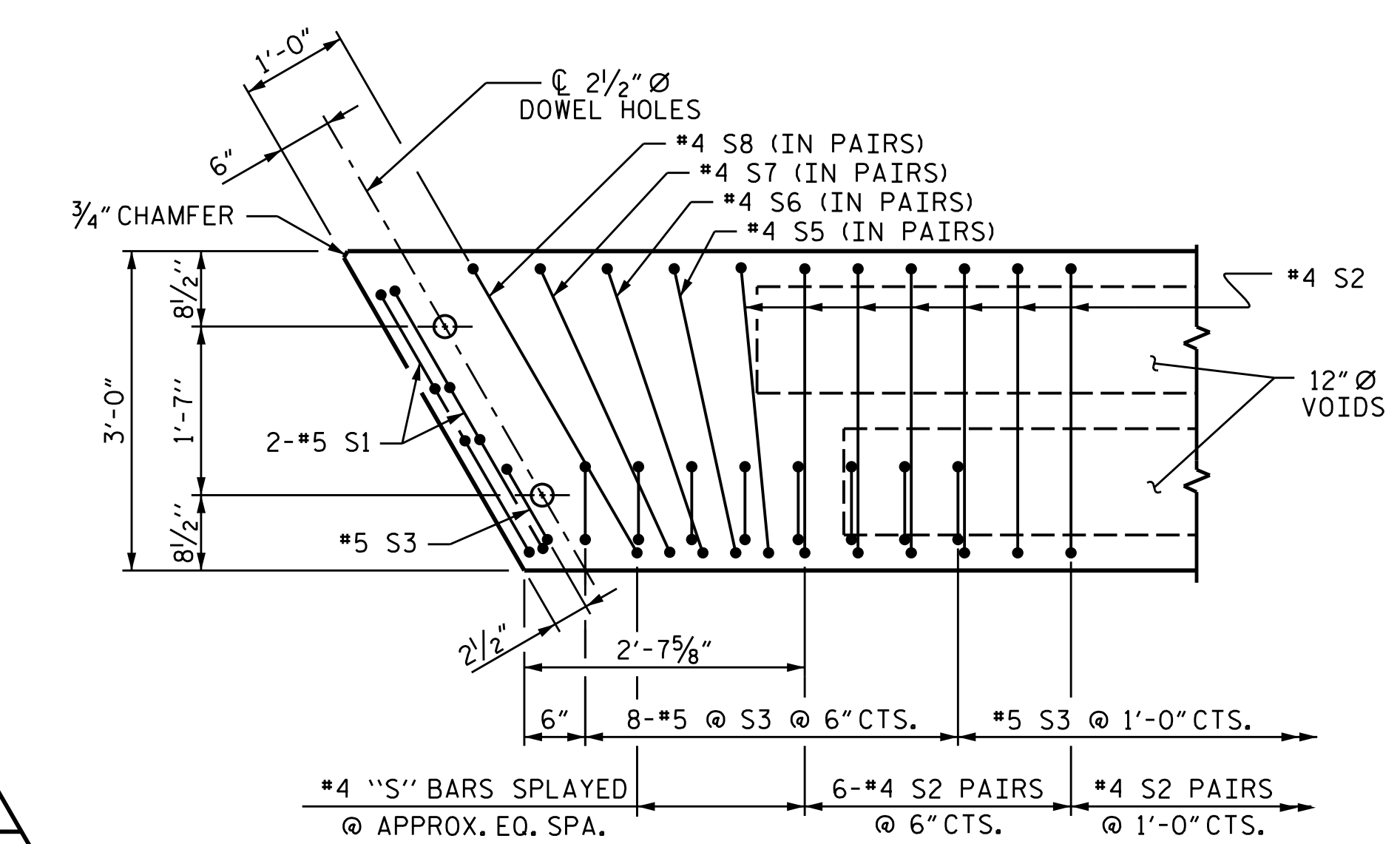
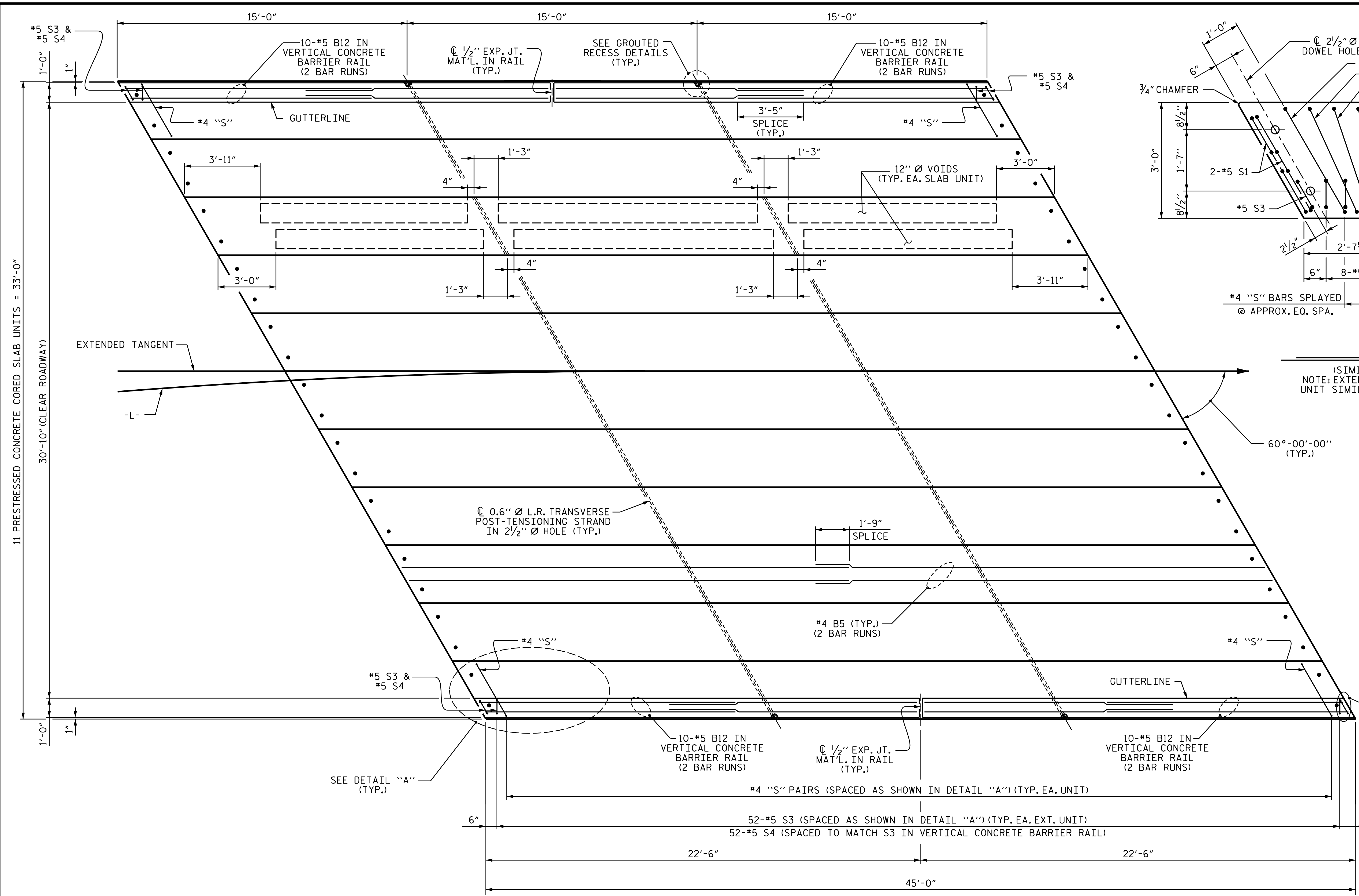
MACON COUNTY

STATION: 16+10.49 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SPANS A & C  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 60° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-08	
1			3			TOTAL SHEETS 26	
2			4				



**DETAIL "A"**  
 (SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF UNIT**

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SPAN A  
 PLAN OF 45'-0" UNIT  
 30'-10" CLEAR ROADWAY  
 60° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09	
1			3			TOTAL SHEETS	
2			4			26	

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

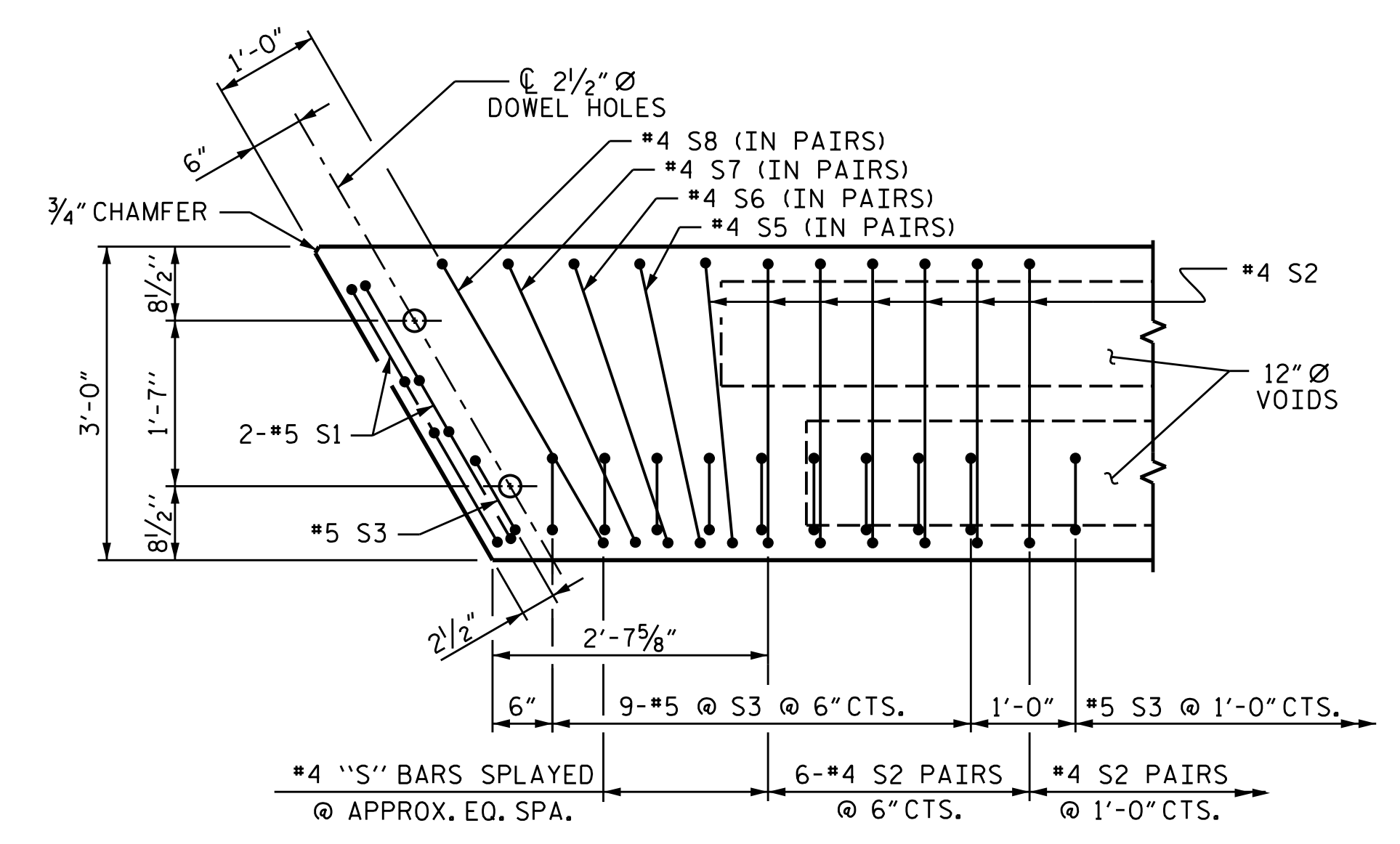
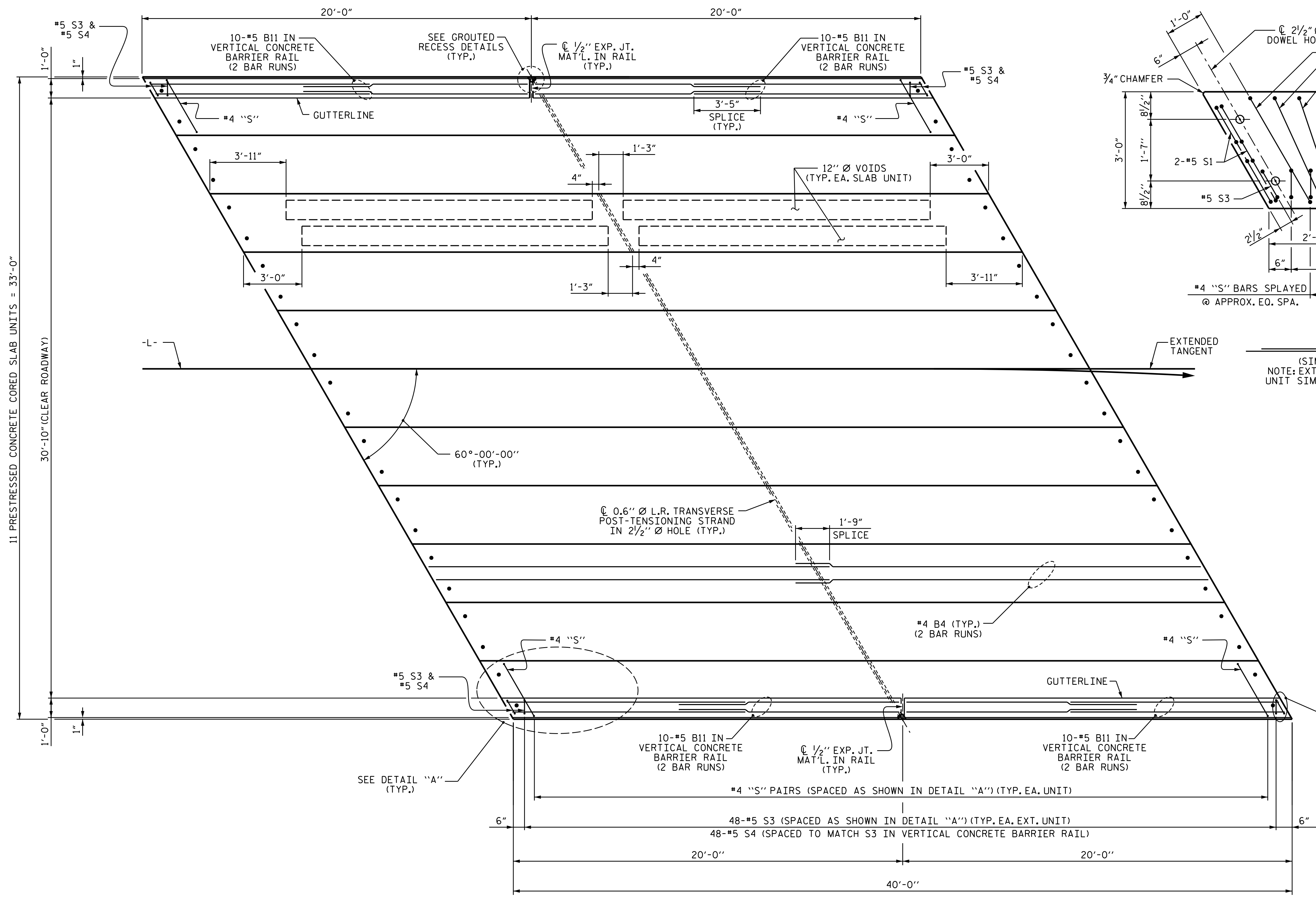
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NC LICENSE NO. F-1524





**DETAIL "A"**  
 (SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF UNIT**

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SPAN C  
 PLAN OF 40'-0" UNIT  
 30'-10" CLEAR ROADWAY  
 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26

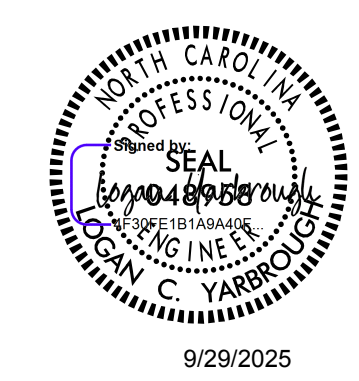
DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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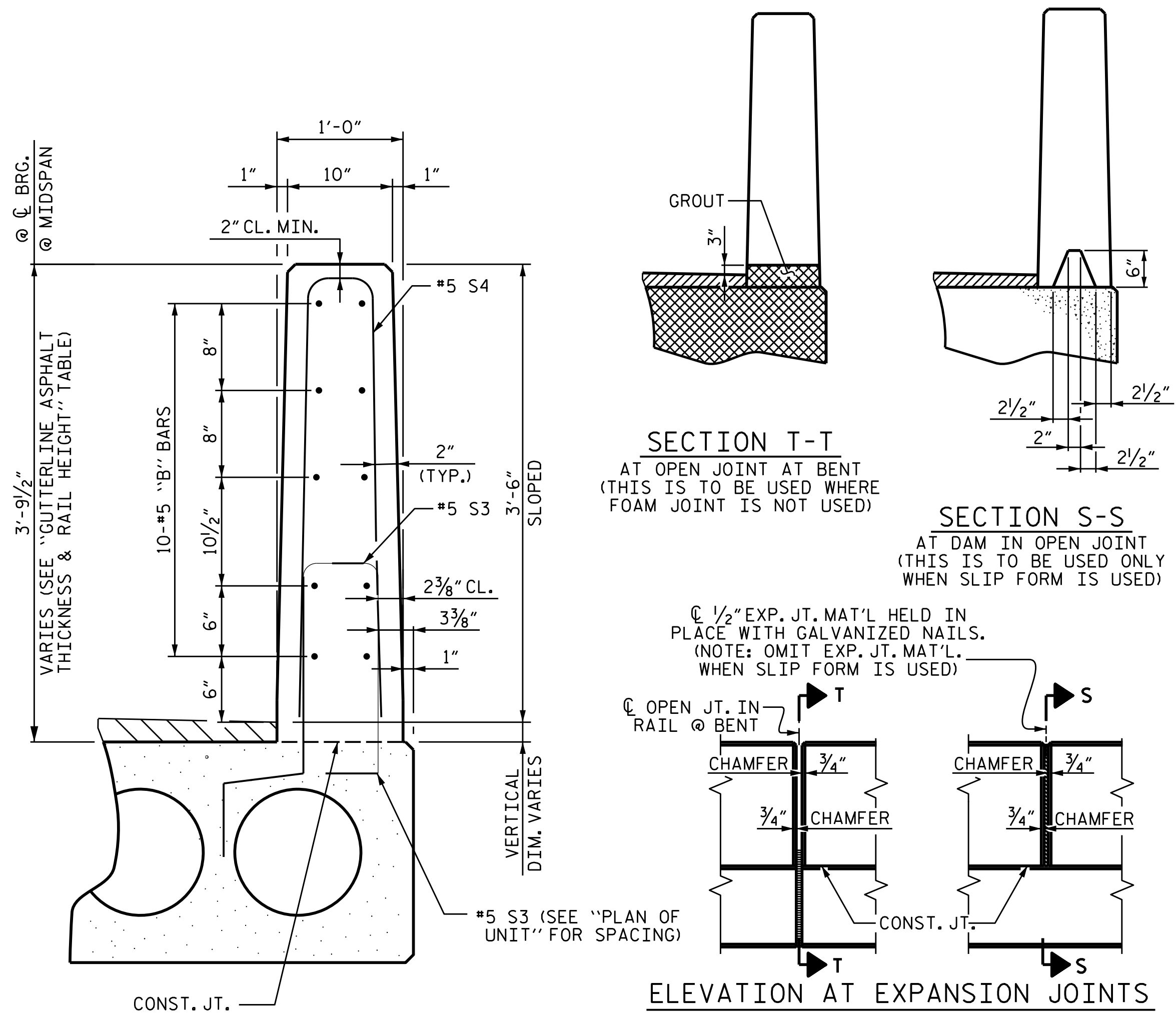


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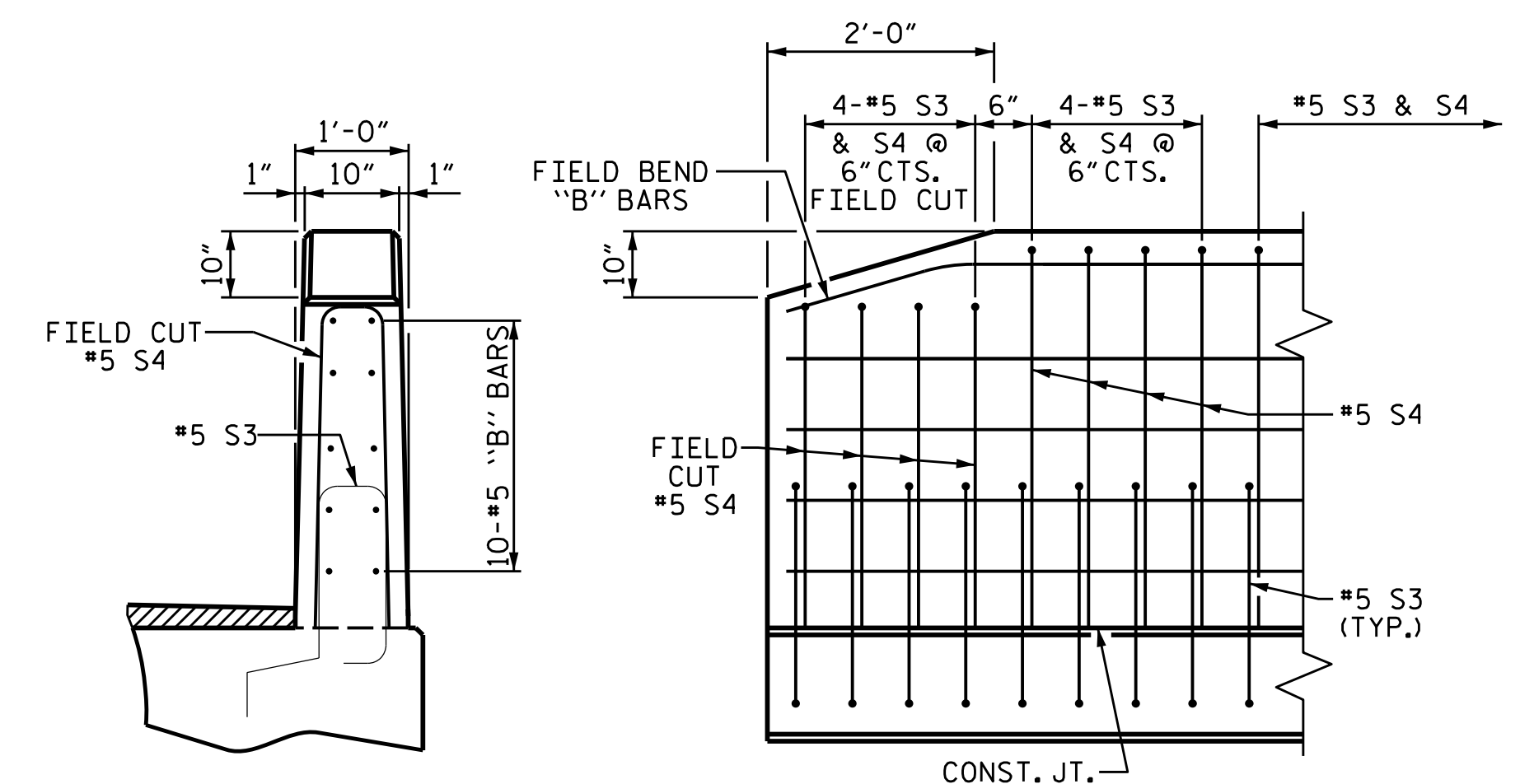


DRMP JOB NUMBER: 20-0464.031



**VERTICAL CONCRETE BARRIER RAIL SECTION**

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
SPAN A - 45' UNITS	2 5/8"	3'-8 5/8"
SPAN C - 40' UNITS	2 1/2"	3'-8 1/2"



**END OF RAIL DETAILS**

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 4 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SPANS A & C  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 60° SKEW

**DRMP**  
 8210 UNIVERSITY EXECUTIVE  
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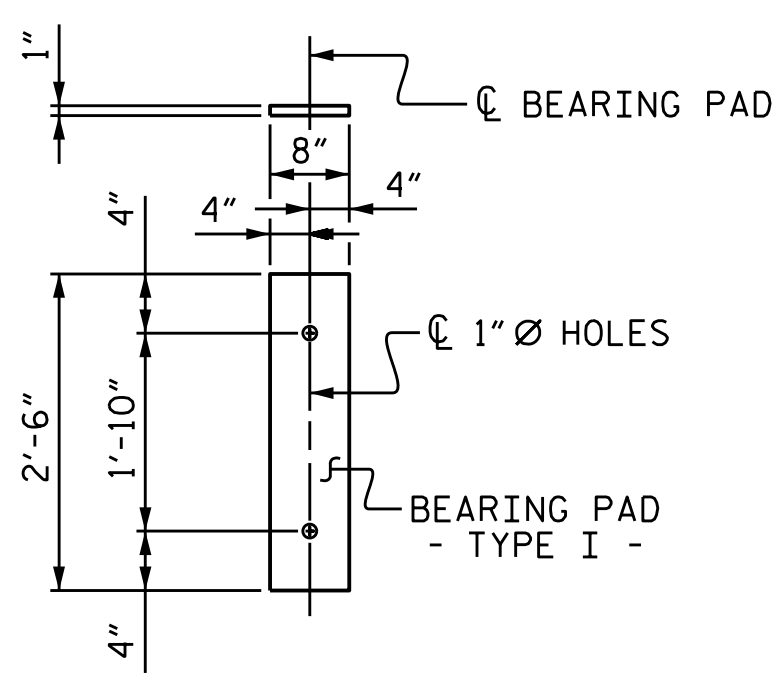
NC LICENSE NO. F-1524



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

**DOCUMENT NOT CONSIDERED FINAL  
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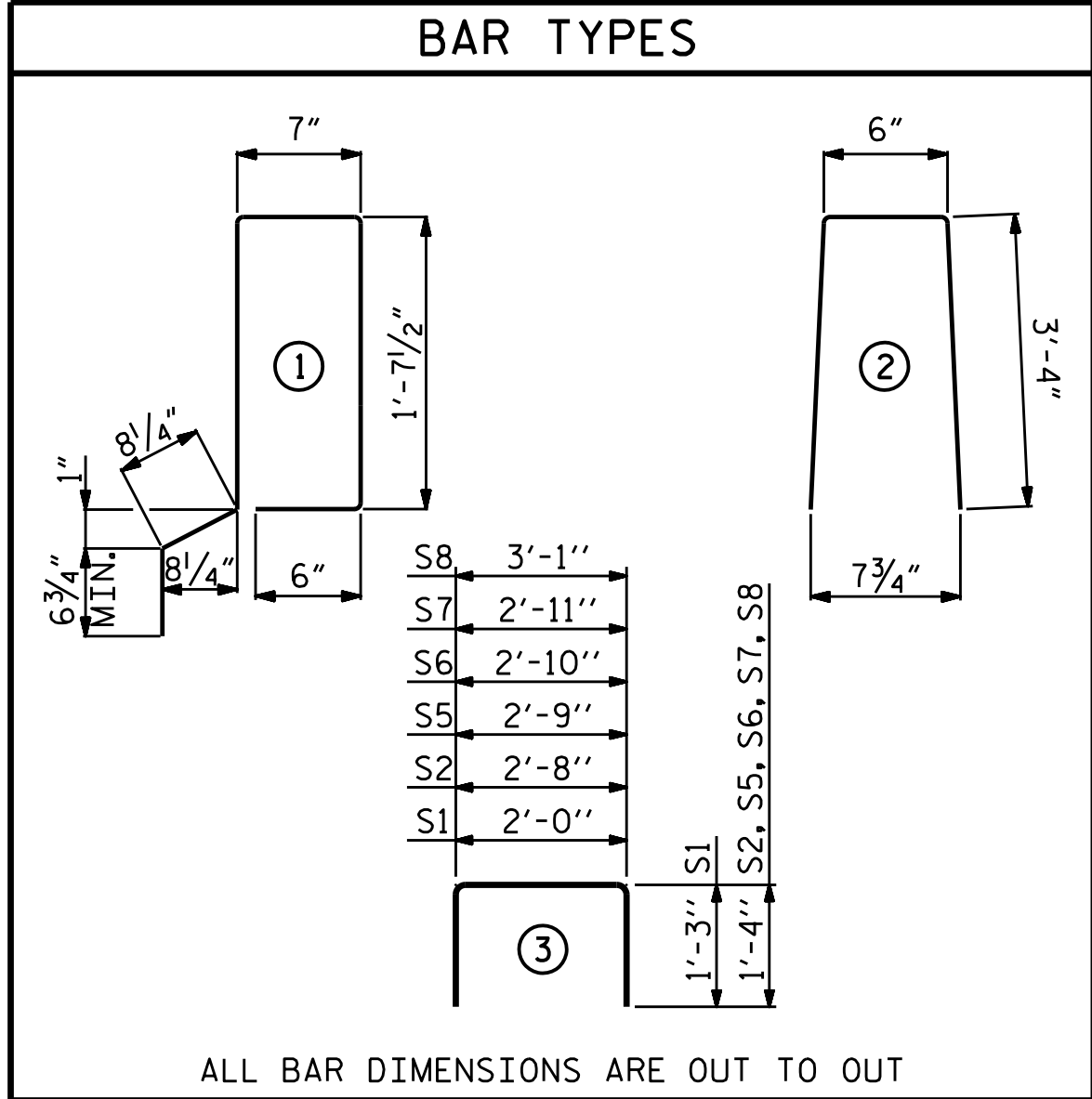
**FIXED END**  
(TYPE I - 44 REQ'D)

**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN A - 45' UNITS						
*B12	80	80	#5	STR	13'-0"	1085
*S4	108	108	#5	2	7'-2"	807
*EPOXY COATED REINFORCING STEEL						LBS. 1892
CLASS AA CONCRETE						CU.YDS. 11.5
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 90.29

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN C - 40' UNITS						
*B11	80	80	#5	STR	11'-9"	980
*S4	100	100	#5	2	7'-2"	747
*EPOXY COATED REINFORCING STEEL						LBS. 1727
CLASS AA CONCRETE						CU.YDS. 10.2
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 80.29



ALL BAR DIMENSIONS ARE OUT TO OUT

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM POST-TENSIONING, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

**SPANS A & C DEAD LOAD DEFLECTION AND CAMBER**

	3'-0" x 1'-9" 0.6" Ø L.R. STRAND
40' & 45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	5/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

**SPAN A - CORED SLABS REQUIRED**

45' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	9	45'-0"	405'-0"
TOTAL	11		495'-0"

**SPAN C - CORED SLABS REQUIRED**

40' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	9	40'-0"	360'-0"
TOTAL	11		440'-0"

**CONCRETE RELEASE STRENGTH**

UNIT	PSI
SPAN A - 45' UNITS	4900
SPAN C - 40' UNITS	4000

**GRADE 270 STRANDS**

AREA ( SQUARE INCHES )	0.6" Ø L.R.
ULTIMATE STRENGTH ( LBS. PER STRAND )	0.217
APPLIED PRESTRESS ( LBS. PER STRAND )	58,600
	43,950

**BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT (SPAN A)**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B5	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	92	#4	3	5'-4"	328	5'-4"	328
*S3	54	#5	1	5'-7"	314		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	487		487
*EPOXY COATED REINFORCING STEEL				LBS.	314		
6500 P.S.I. CONCRETE				CU. YDS.	6.6		6.6
0.6" Ø L.R. STRANDS				No.	13		13

**BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT (SPAN C)**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	82	#4	3	5'-4"	292	5'-4"	292
*S3	50	#5	1	5'-7"	291		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	444		444
*EPOXY COATED REINFORCING STEEL				LBS.	291		
5000 P.S.I. CONCRETE				CU. YDS.	5.9		5.9
0.6" Ø L.R. STRANDS				No.	13		13

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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 (704) 549-4260

NC LICENSE NO. F-1524



PROJECT NO. HB-0030

MACON COUNTY

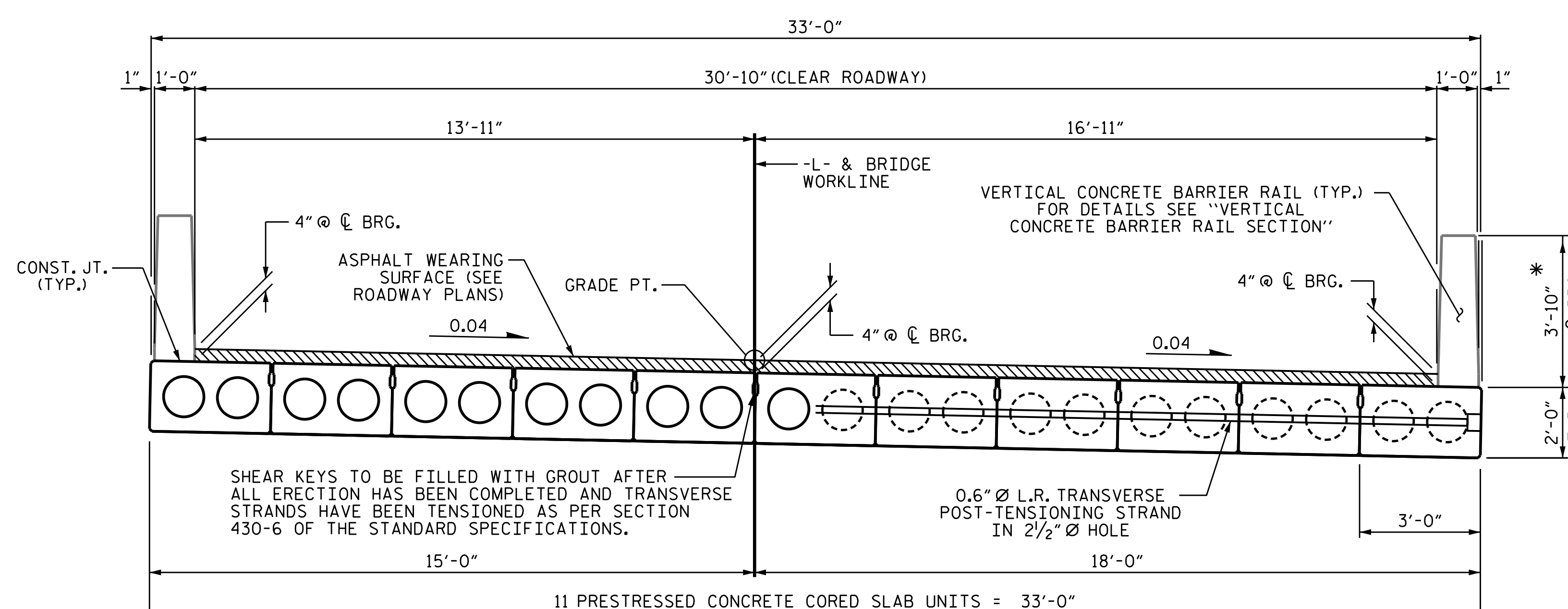
STATION: 16+10.49 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SPANS A & C  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 60° SKEW

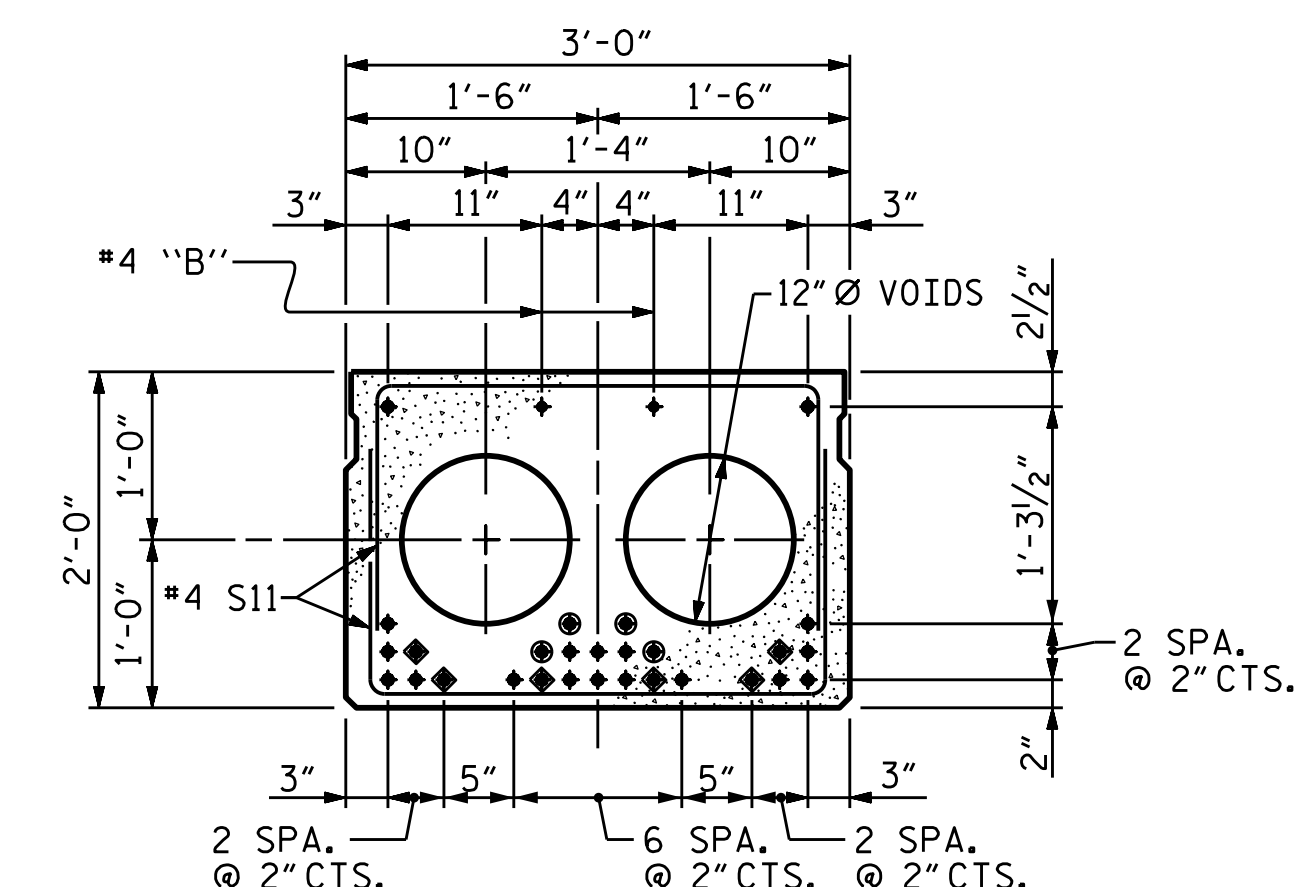
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 26



HALF SECTION THROUGH VOIDS      HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
**TYPICAL SECTION**

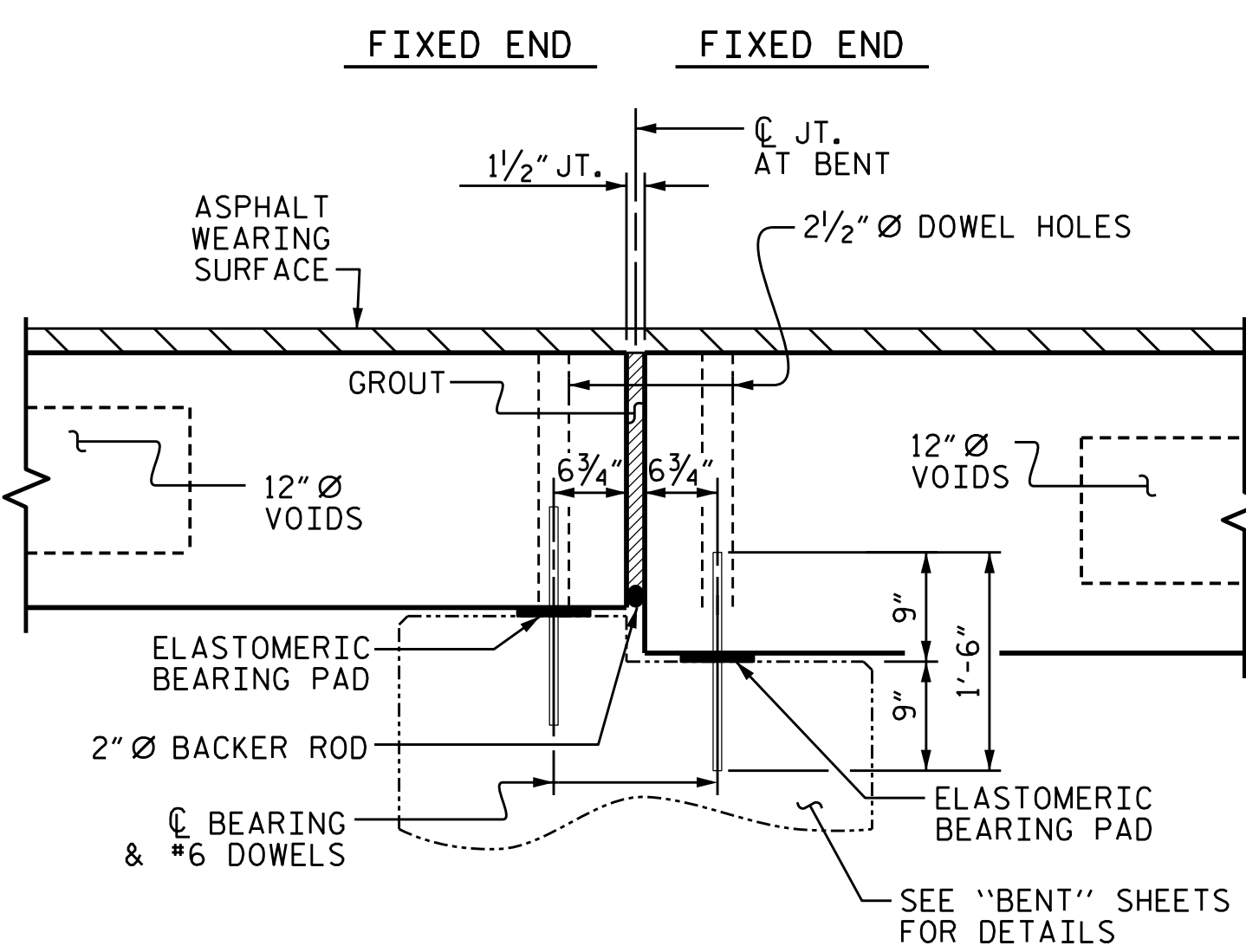
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



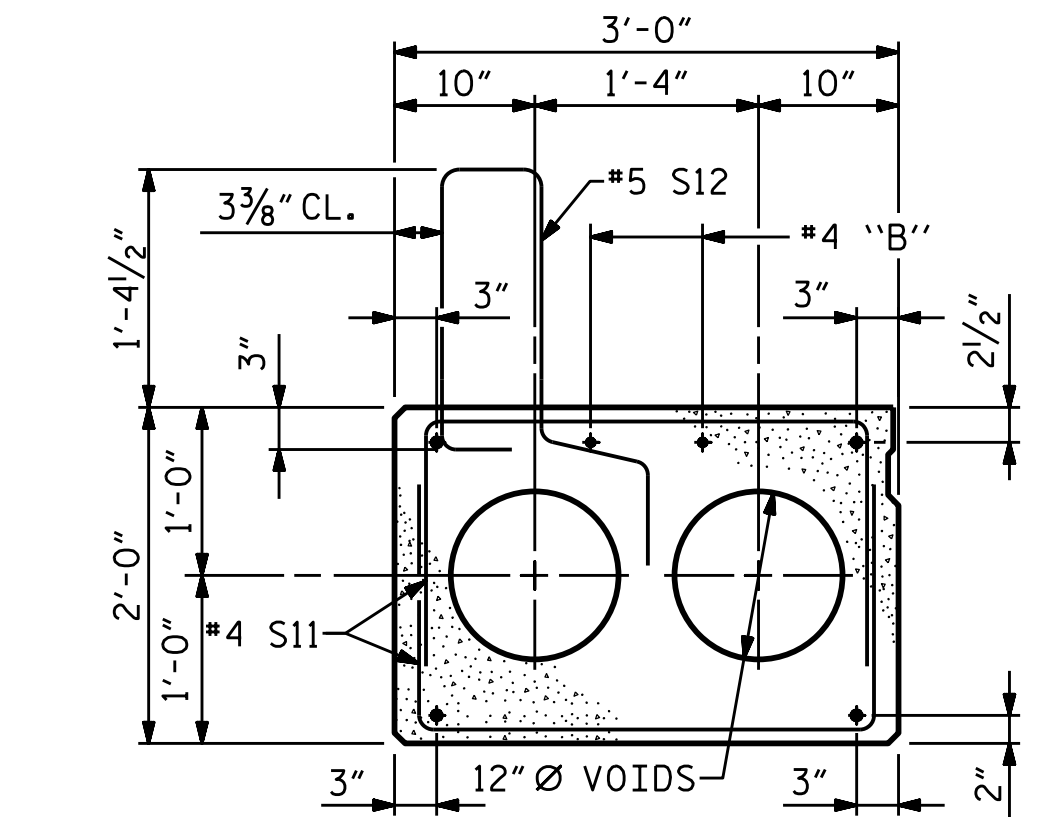
**INTERIOR SLAB SECTION (65' UNIT)**  
(24 STRANDS REQUIRED)  
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

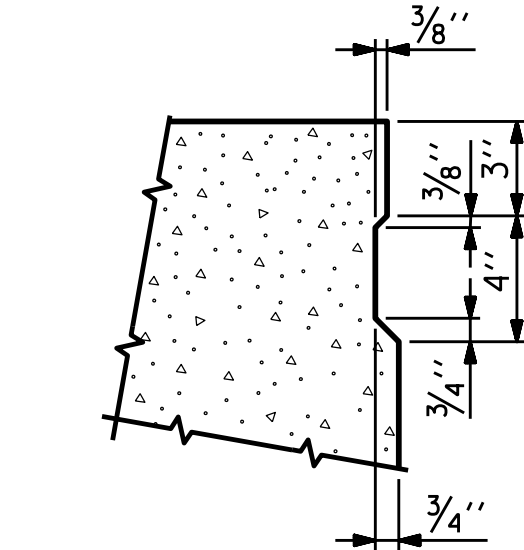
**DEBONDING LEGEND**



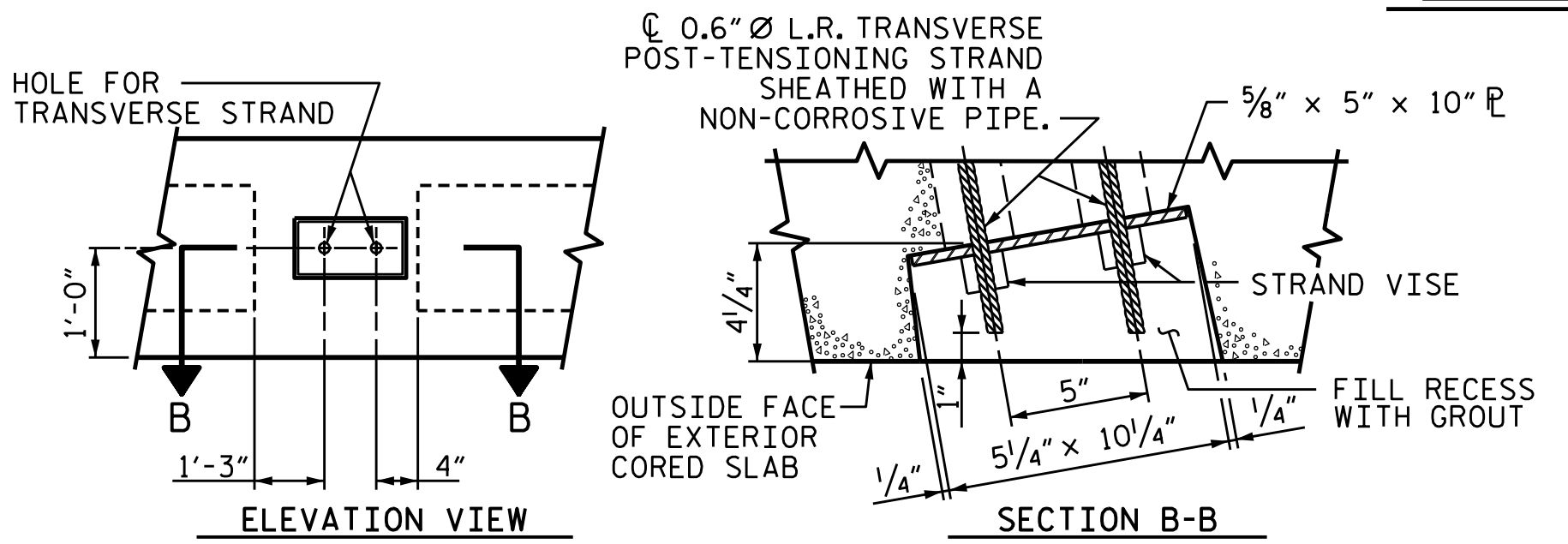
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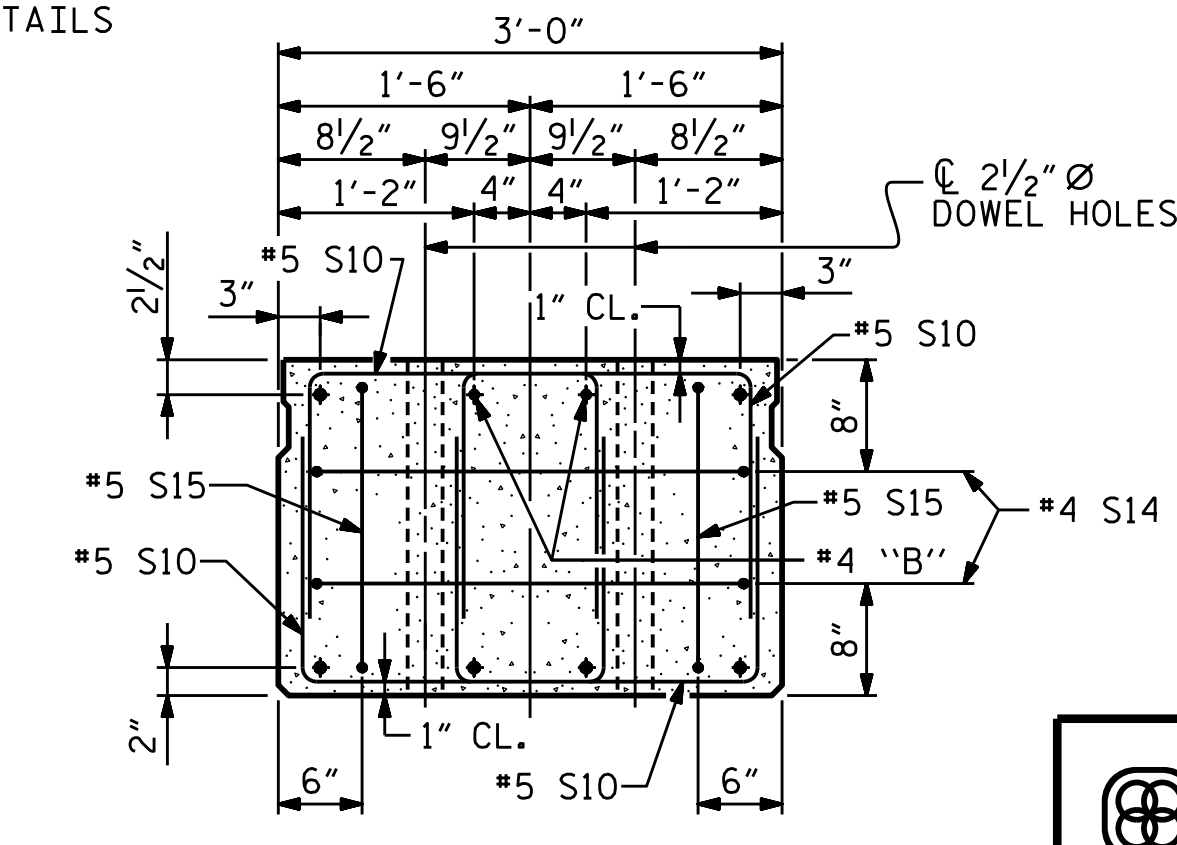
**EXTERIOR SLAB SECTION**  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



**SHEAR KEY DETAIL**  
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



**GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS**



**END ELEVATION**  
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

PROJECT NO. HB-0030  
MACON COUNTY  
STATION: 16+10.49 -L-  
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SPAN B  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
60° SKEW

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 26

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

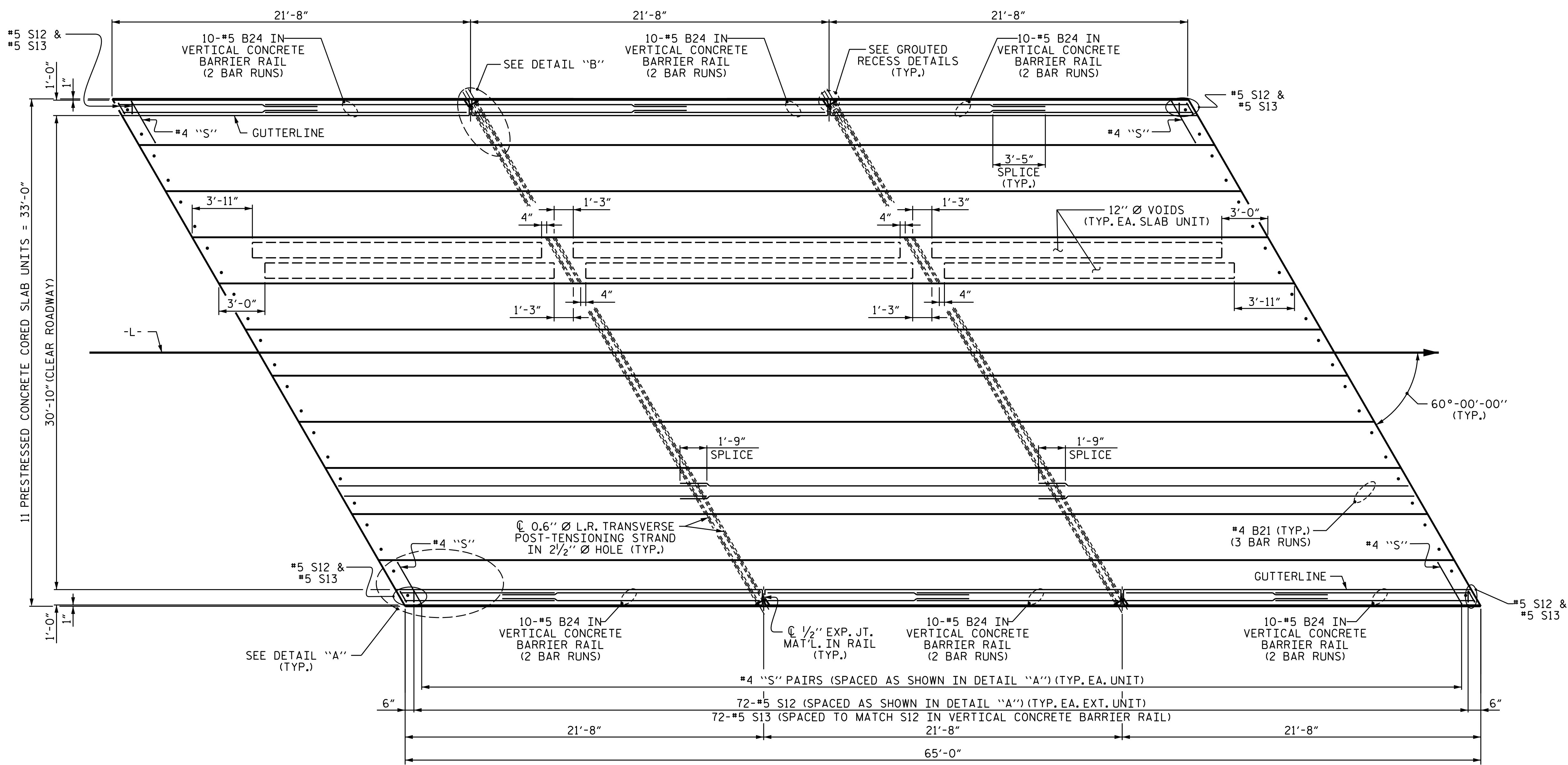
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**DRMP**

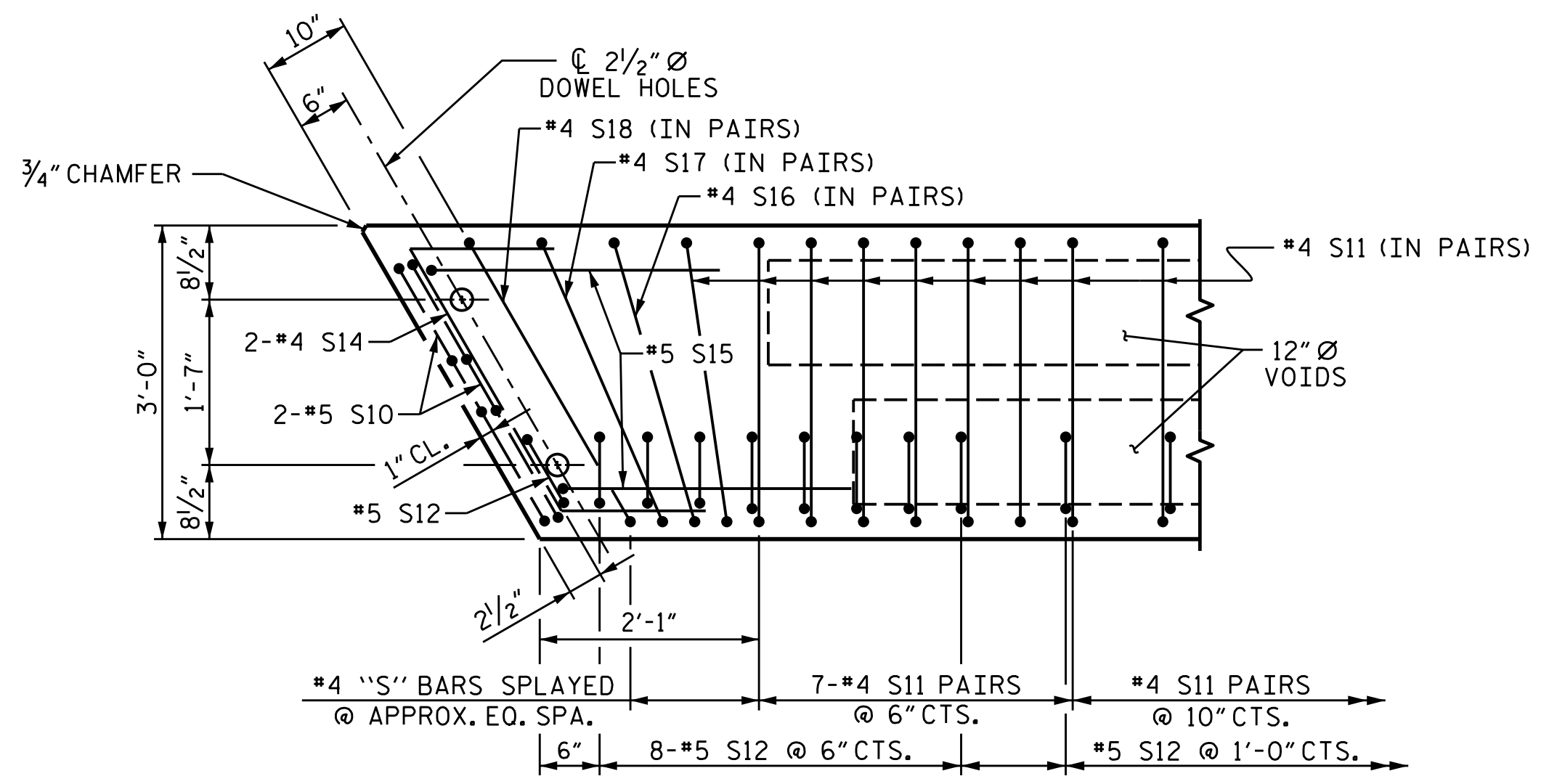
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CHARLOTTE, NC 28262  
(704) 549-4260

NC LICENSE NO. F-1524



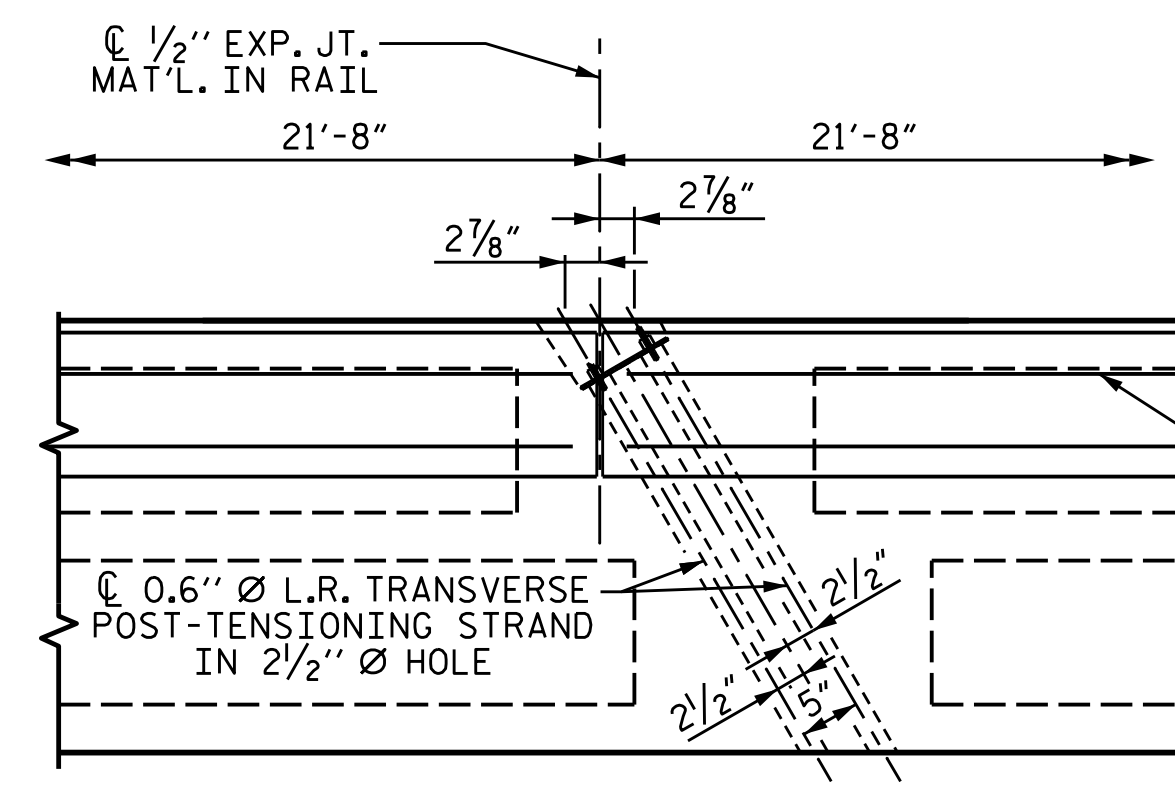


PLAN OF UNIT



DETAIL "A"

(SIMILAR EACH END OF UNIT)  
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SPAN B  
 PLAN OF 65'-0" UNIT  
 30'-10" CLEAR ROADWAY  
 60° SKEW

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-14  
TOTAL SHEETS 26



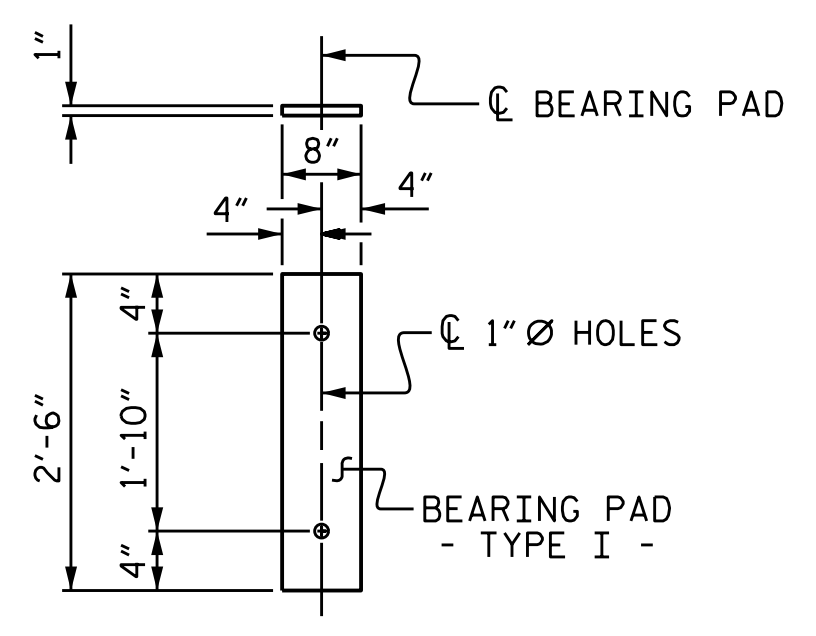
8210 UNIVERSITY EXECUTIVE  
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**FIXED END**  
(TYPE I - 22 REQ'D)

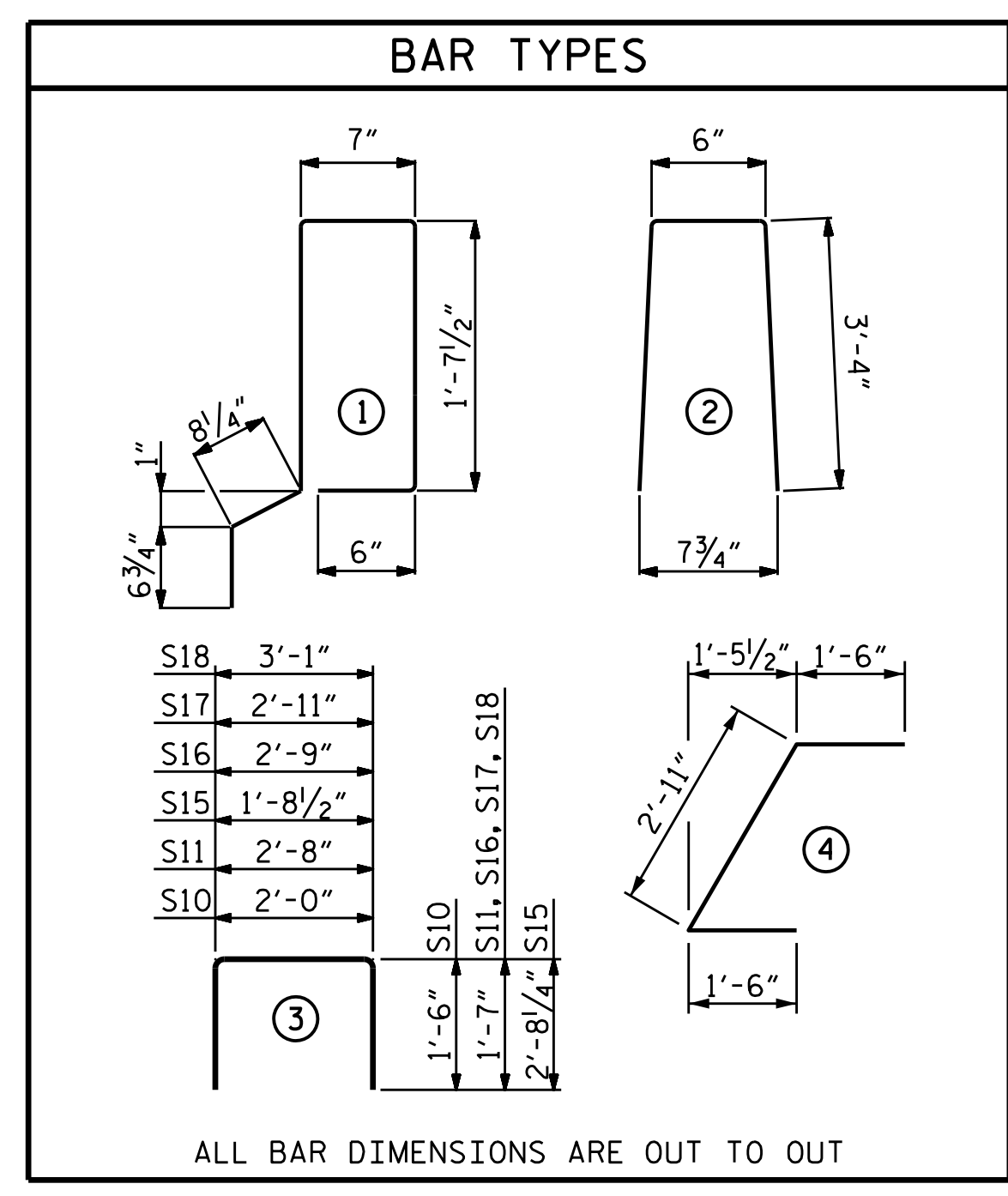
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
SPAN B - 65' UNITS	2 5/8"	3'-8 5/8"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN B - 65' UNITS						
*B24	120	120	#5	STR	12'-10"	1606
*S13	148	148	#5	2	7'-2"	1106
*EPOXY COATED REINFORCING STEEL						LBS. 2712
CLASS AA CONCRETE						CU.YDS. 16.9
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 130.29

BILL OF MATERIAL FOR ONE 65' CORED SLAB UNIT (SPAN B)							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B21	6	#4	STR	22'-10"	92	22'-10"	92
S10	8	#5	3	5'-0"	42	5'-0"	42
S11	158	#4	3	5'-10"	616	5'-10"	616
*S12	74	#5	1	5'-7"	431		
S14	4	#4	4	5'-11"	16	5'-11"	16
S15	4	#5	3	7'-1"	30	7'-1"	30
S16	4	#4	3	5'-11"	16	5'-11"	16
S17	4	#4	3	6'-1"	16	6'-1"	16
S18	4	#4	3	6'-3"	17	6'-3"	17
REINFORCING STEEL					LBS. 845	845	
*EPOXY COATED REINFORCING STEEL					LBS. 431		
6000 P.S.I. CONCRETE					CU. YDS. 11.2	11.2	
0.6" Ø L.R. STRANDS				No. 24		24	

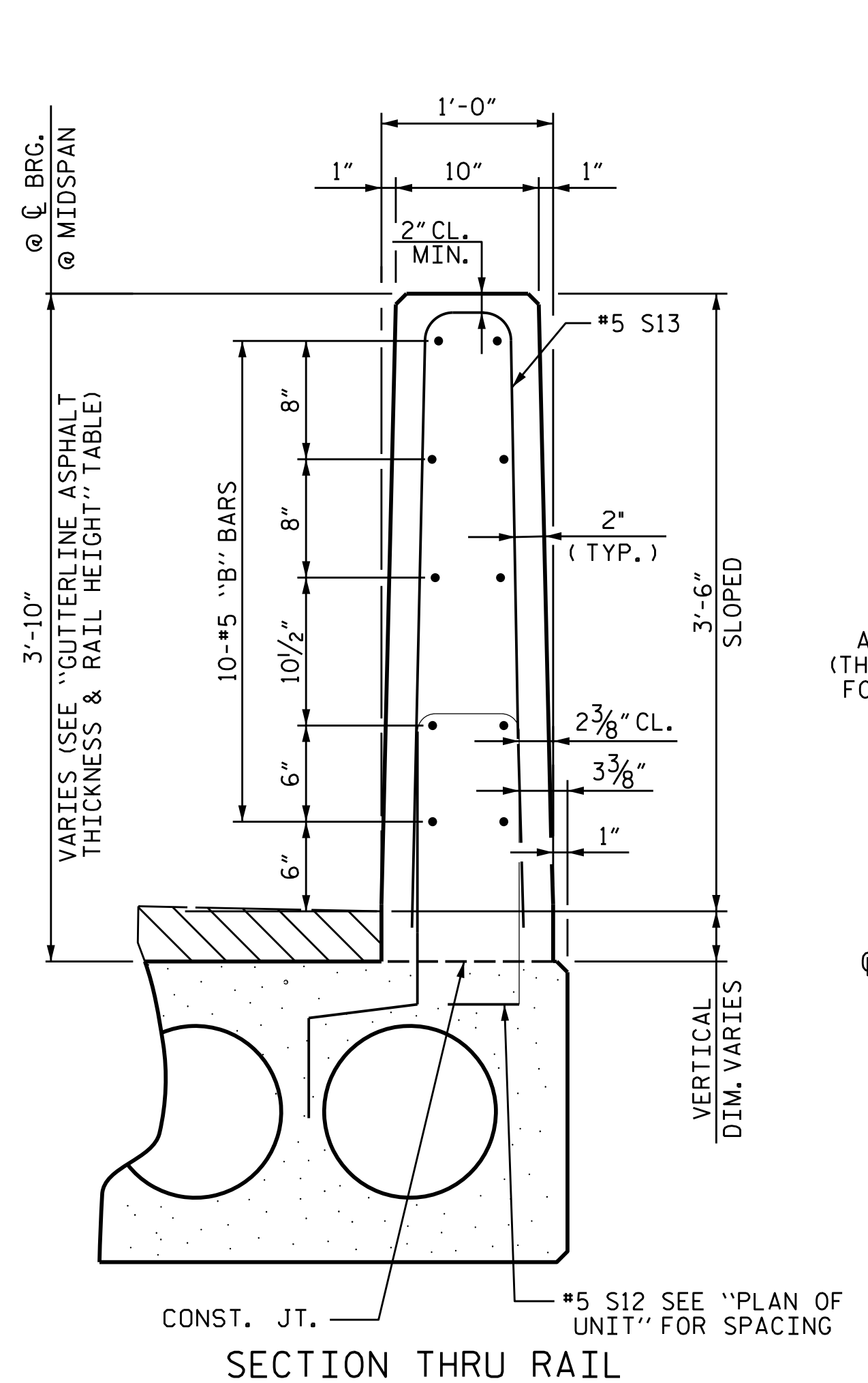


ALL BAR DIMENSIONS ARE OUT TO OUT

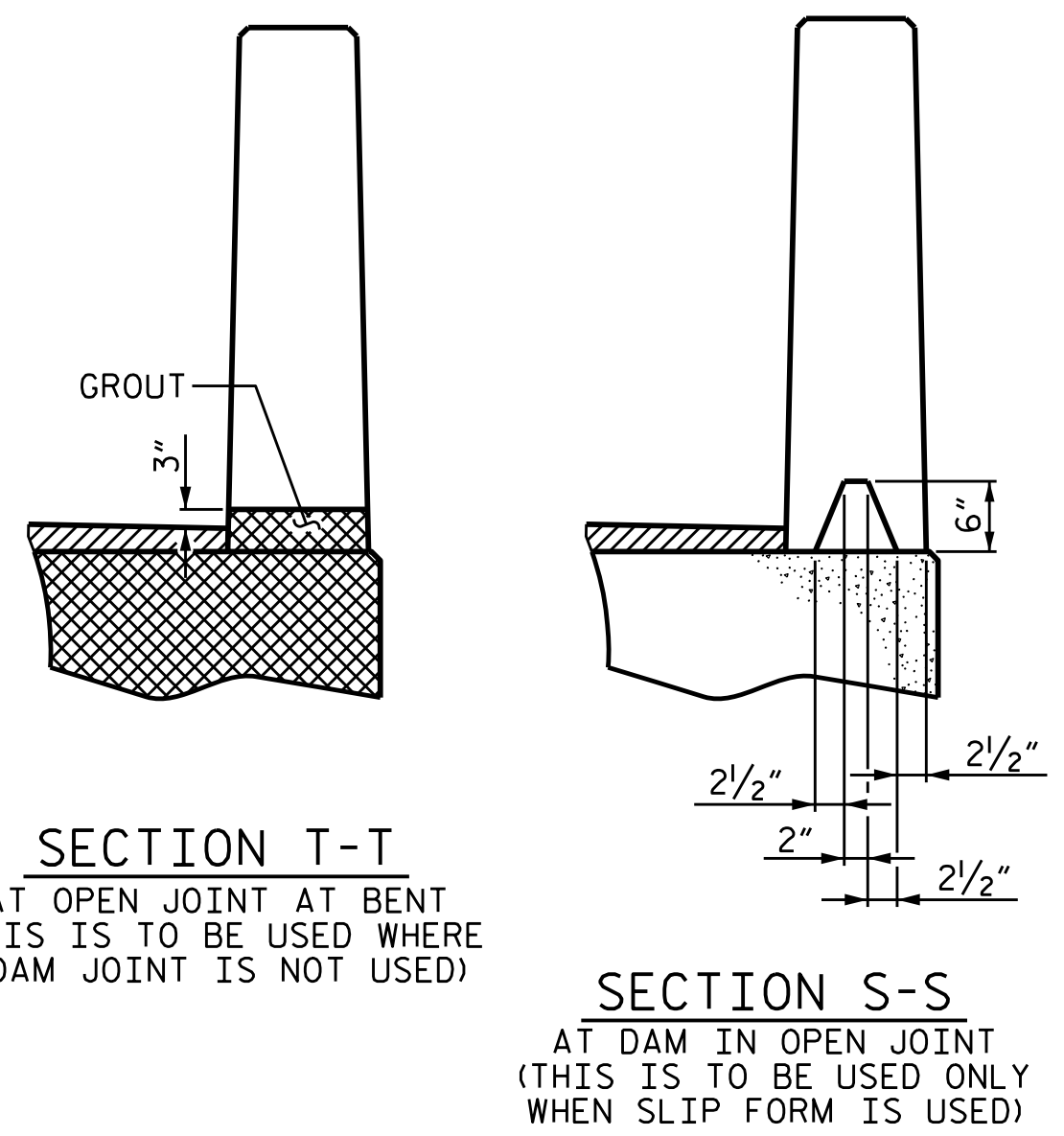
SPAN B DEAD LOAD DEFLECTION AND CAMBER	
65' CORED SLAB UNIT	3'-0" x 2'-0"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND 1 7/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/2" ↓
FINAL CAMBER	1 3/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

SPAN B - CORED SLABS REQUIRED			
65' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	65'-0"	130'-0"
INTERIOR C.S.	9	65'-0"	585'-0"
TOTAL	11		715'-0"

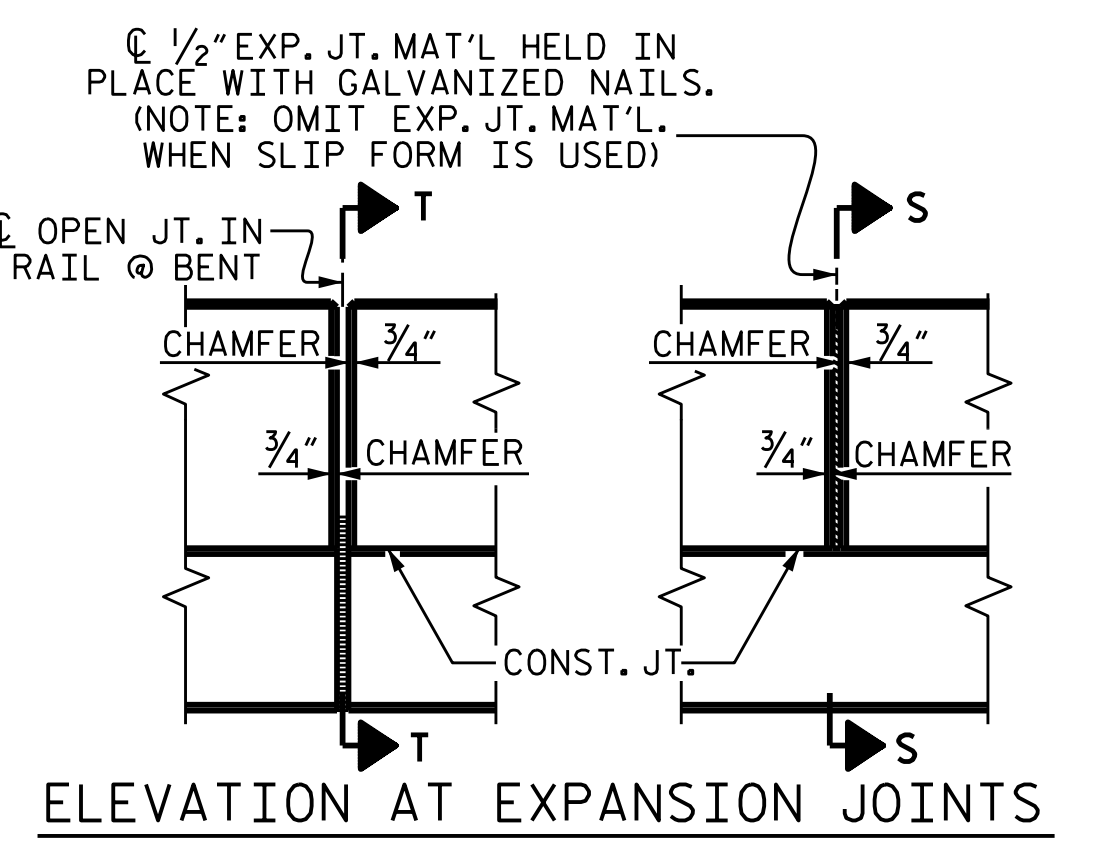


SECTION THRU RAIL



SECTION T-T  
AT OPEN JOINT AT BENT  
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

SECTION S-S  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

CONCRETE RELEASE STRENGTH	
UNIT	PSI
SPAN B - 65' UNITS	4800

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R. 0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

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**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM POST-TENSIONING, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PROJECT NO. HB-0030  
MACON COUNTY  
STATION: 16+10.49 -L-  
SHEET 3 OF 3

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-15  
TOTAL SHEETS 26

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SPAN B  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
60° SKEW

DRAWN BY: G. DWIGHT LOFLIN DATE: 01-2025  
CHECKED BY: LOGAN C. YARBROUGH DATE: 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE: 08-2025

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UNLESS ALL SIGNATURES COMPLETED**

**NOTES**

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

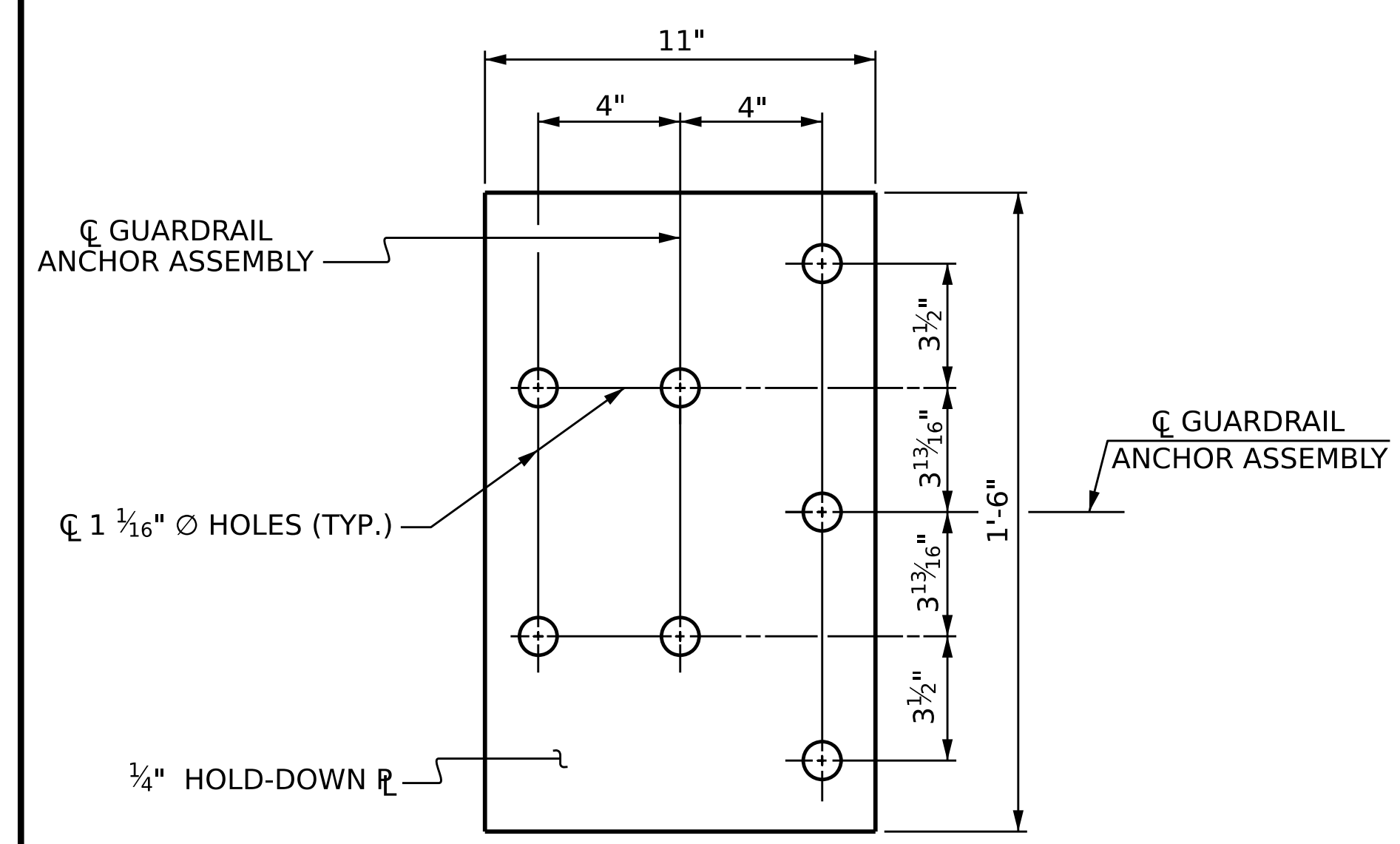
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

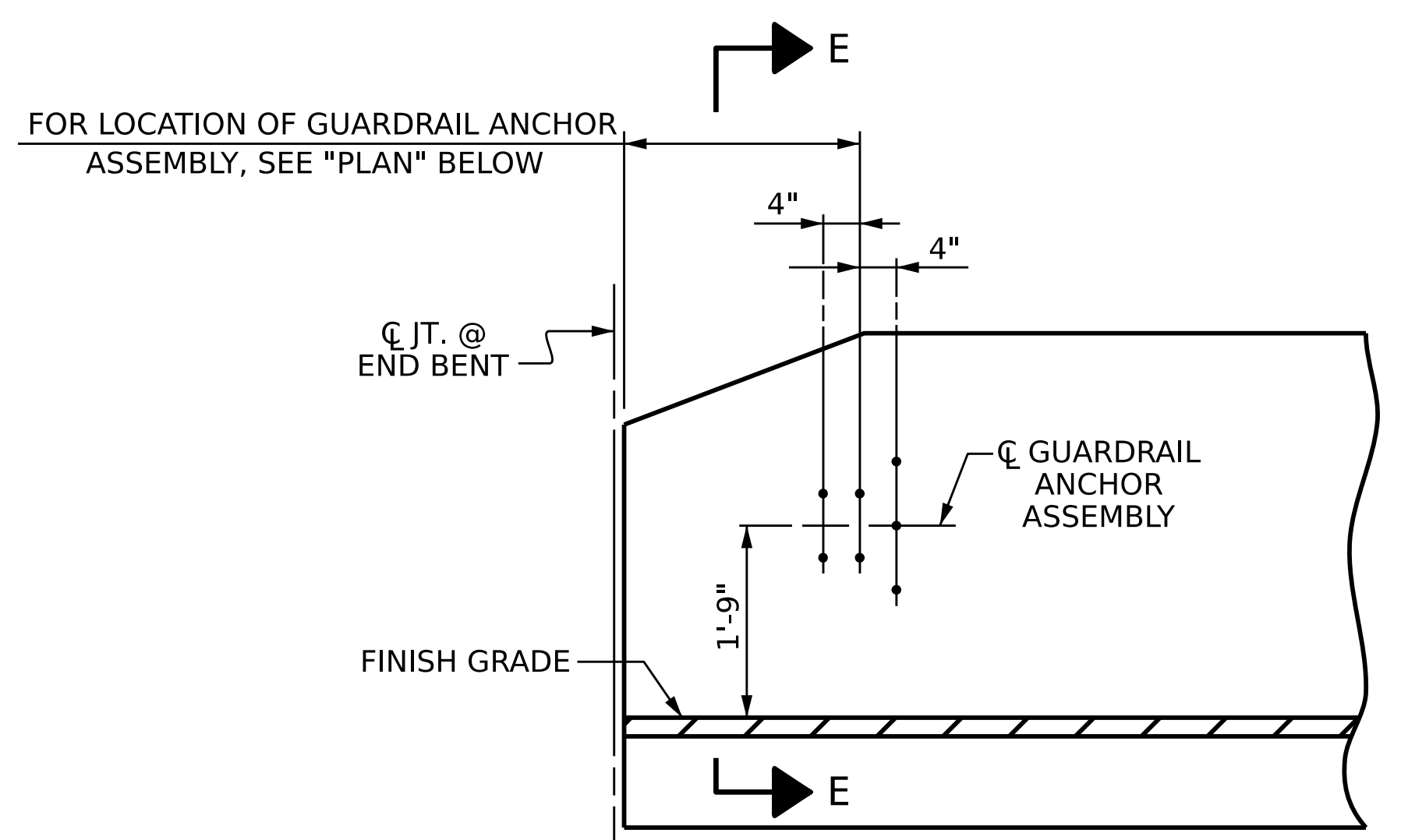
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

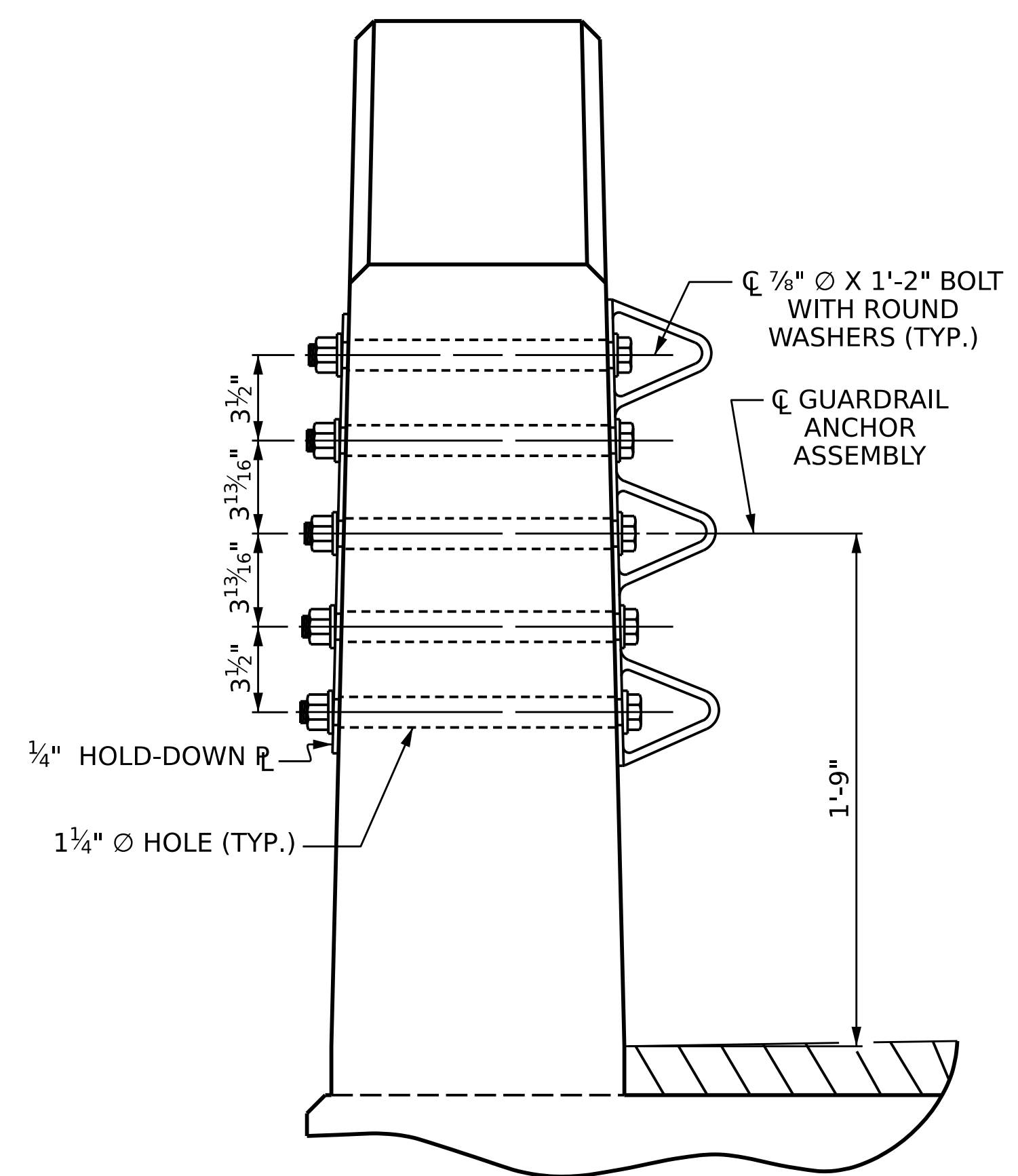
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



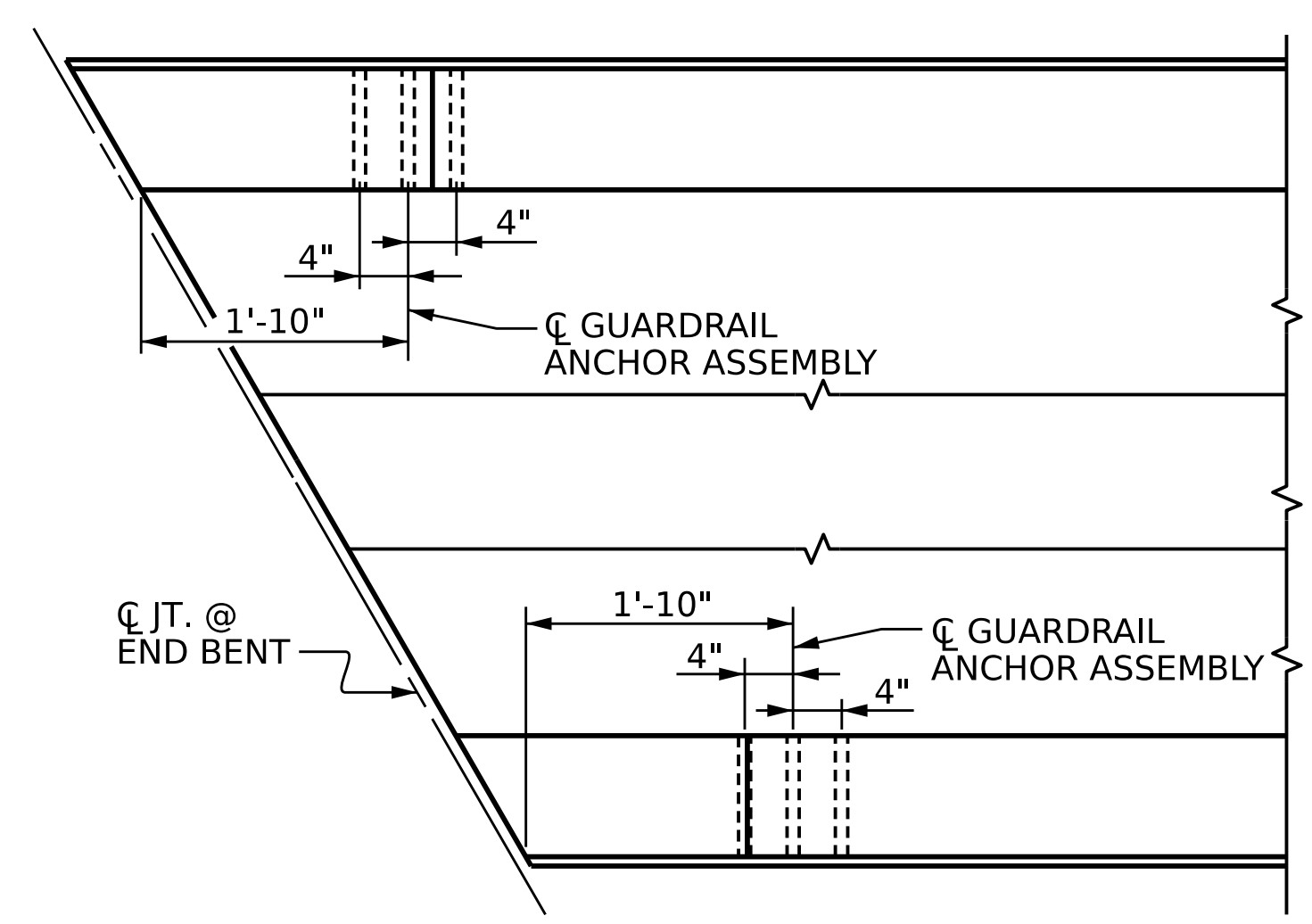
**PLAN**



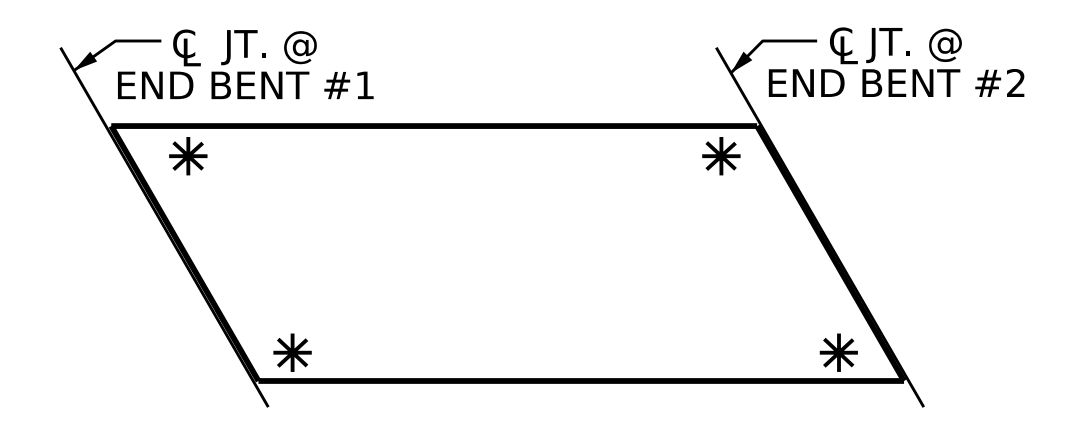
**ELEVATION**



**SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS**



**PLAN  
LOCATION OF ANCHORS FOR GUARDRAIL**



**SKETCH SHOWING  
POINTS OF ATTACHMENT**  
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**GUARDRAIL ANCHORAGE**  
 DETAILS FOR  
 VERTICAL CONCRETE  
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			26

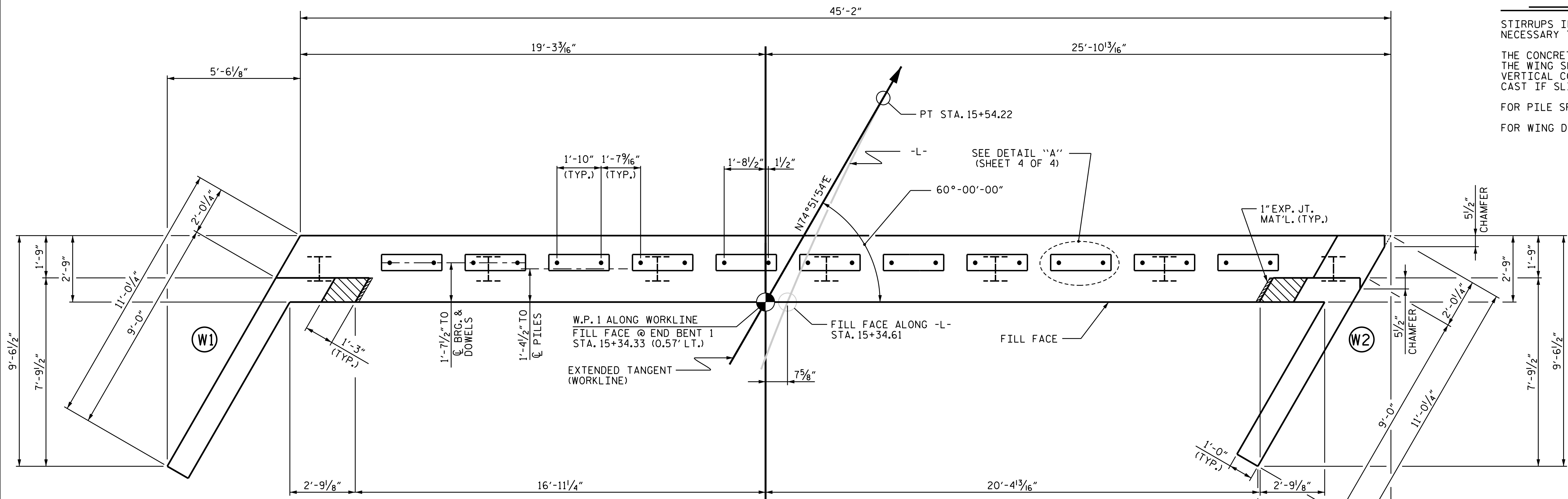
**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

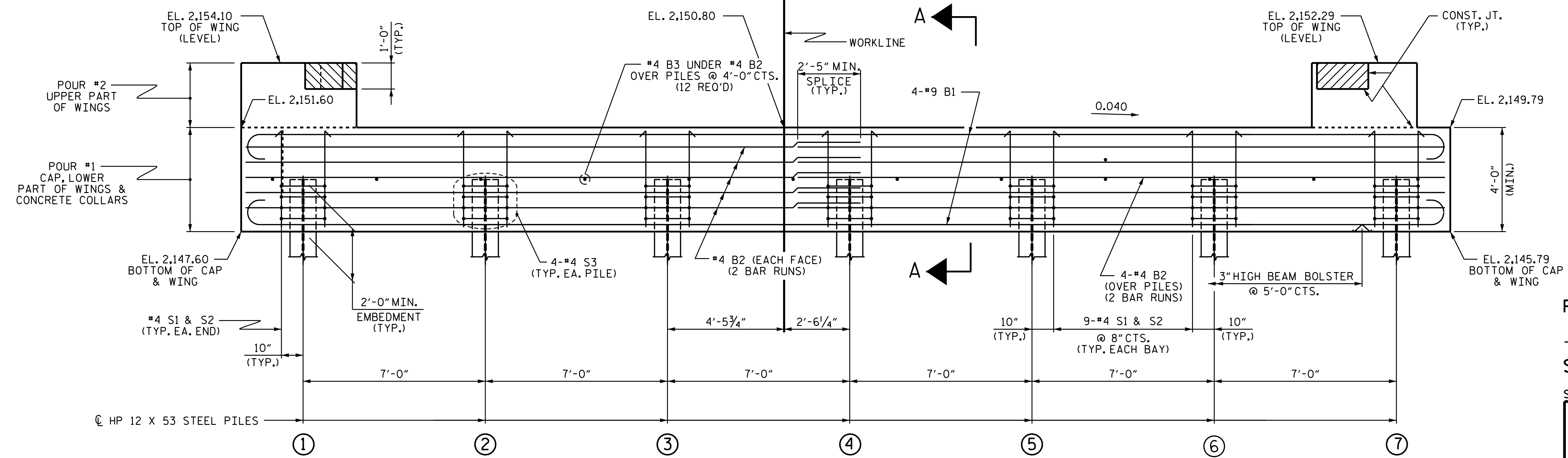
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**

TOP OF PILE ELEVATIONS	
①	2,149.54
②	2,149.26
③	2,148.98
④	2,148.70
⑤	2,148.42
⑥	2,148.14
⑦	2,147.86



**ELEVATION**

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 1**

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-17  
 TOTAL SHEETS 26

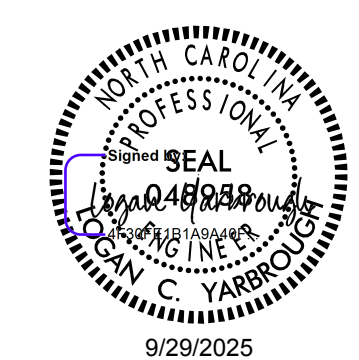
DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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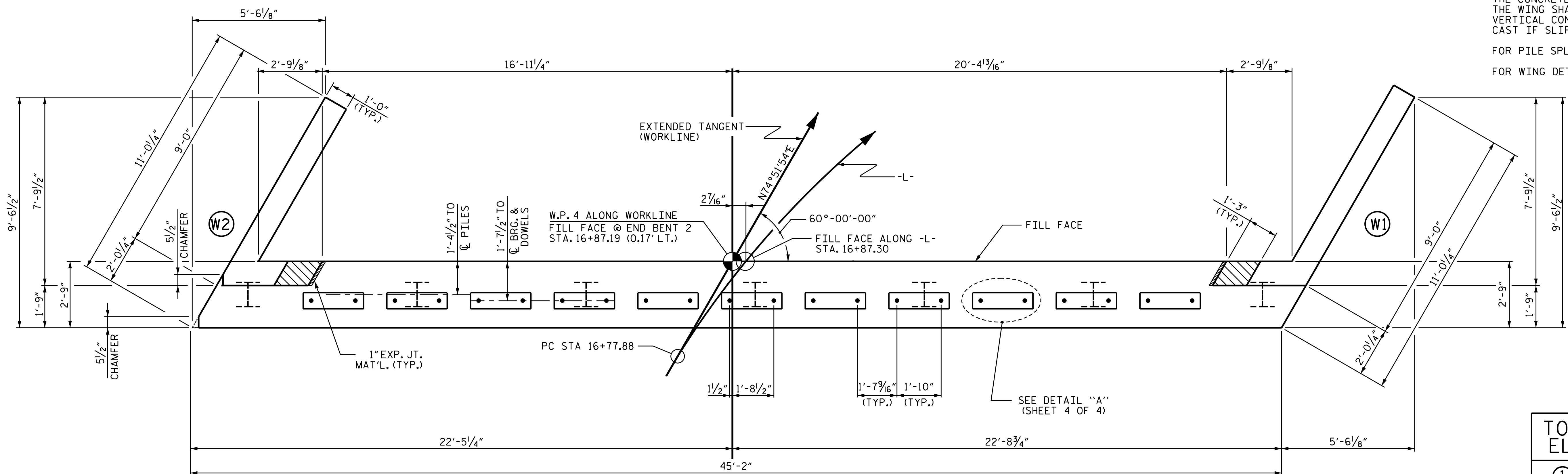
**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

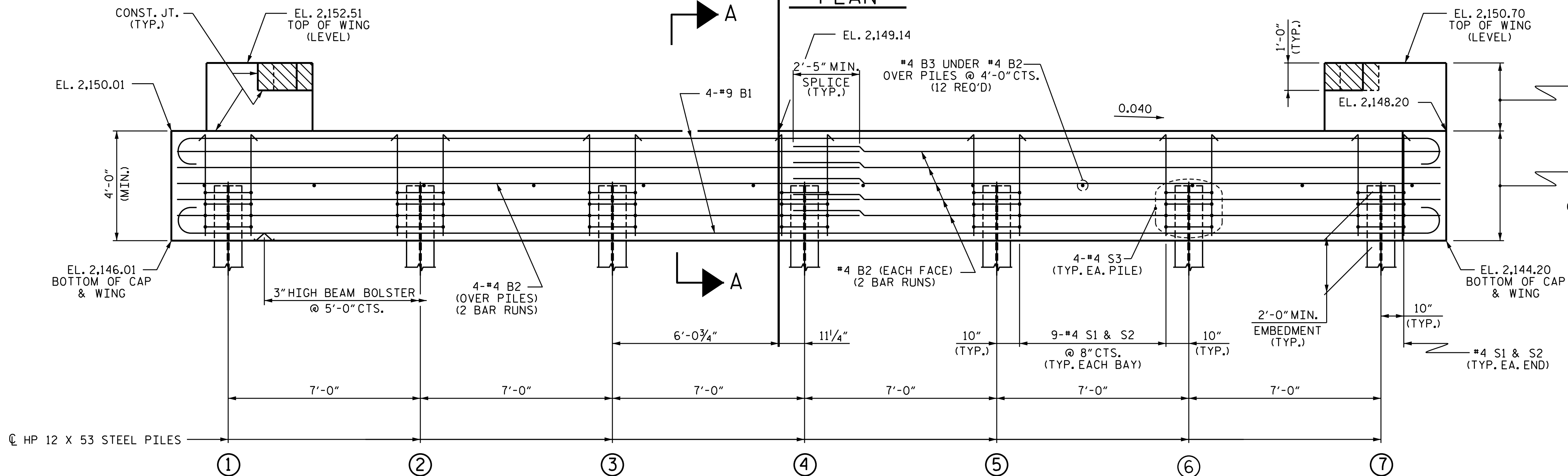
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



TOP OF PILE ELEVATIONS	
①	2,147.94
②	2,147.66
③	2,147.38
④	2,147.10
⑤	2,146.82
⑥	2,146.54
⑦	2,146.26

**PLAN**



**ELEVATION**

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. HB-0030

MACON COUNTY

STATION: 16+10.49 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUBSTRUCTURE  
END BENT 2**

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-18  
TOTAL SHEETS 26

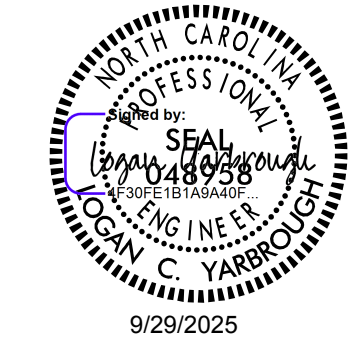
DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
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 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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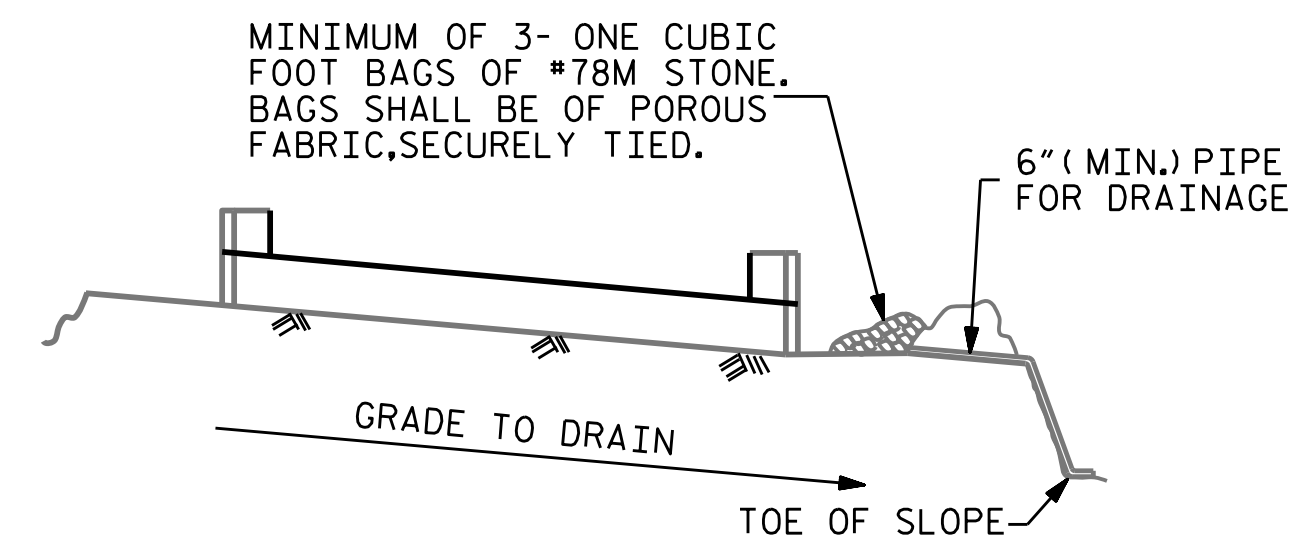


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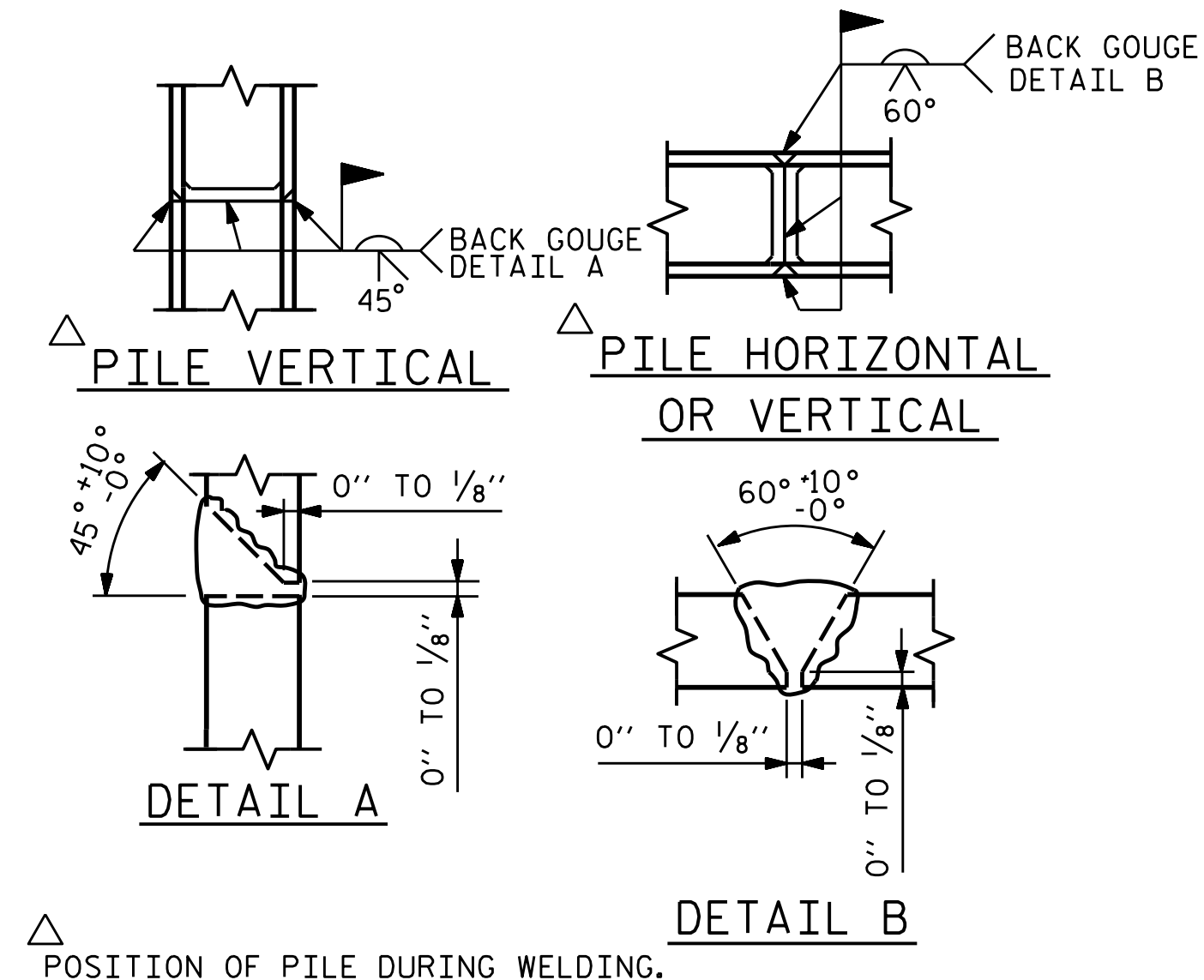


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**

BAR TYPES	

BILL OF MATERIAL FOR ONE END BENT				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	47'-2"	1283
B2	#4	STR	23'-8"	443
B3	#4	STR	2'-5"	19
D1	#6	STR	1'-6"	50
H1	#4	2	9'-9"	65
H2	#4	2	9'-4"	62
H3	#4	3	8'-10"	118
K1	#4	STR	3'-3"	35
S1	#6	4	10'-5"	390
S2	#4	5	3'-2"	118
S3	#4	6	6'-6"	122
V1	#4	STR	6'-2"	218

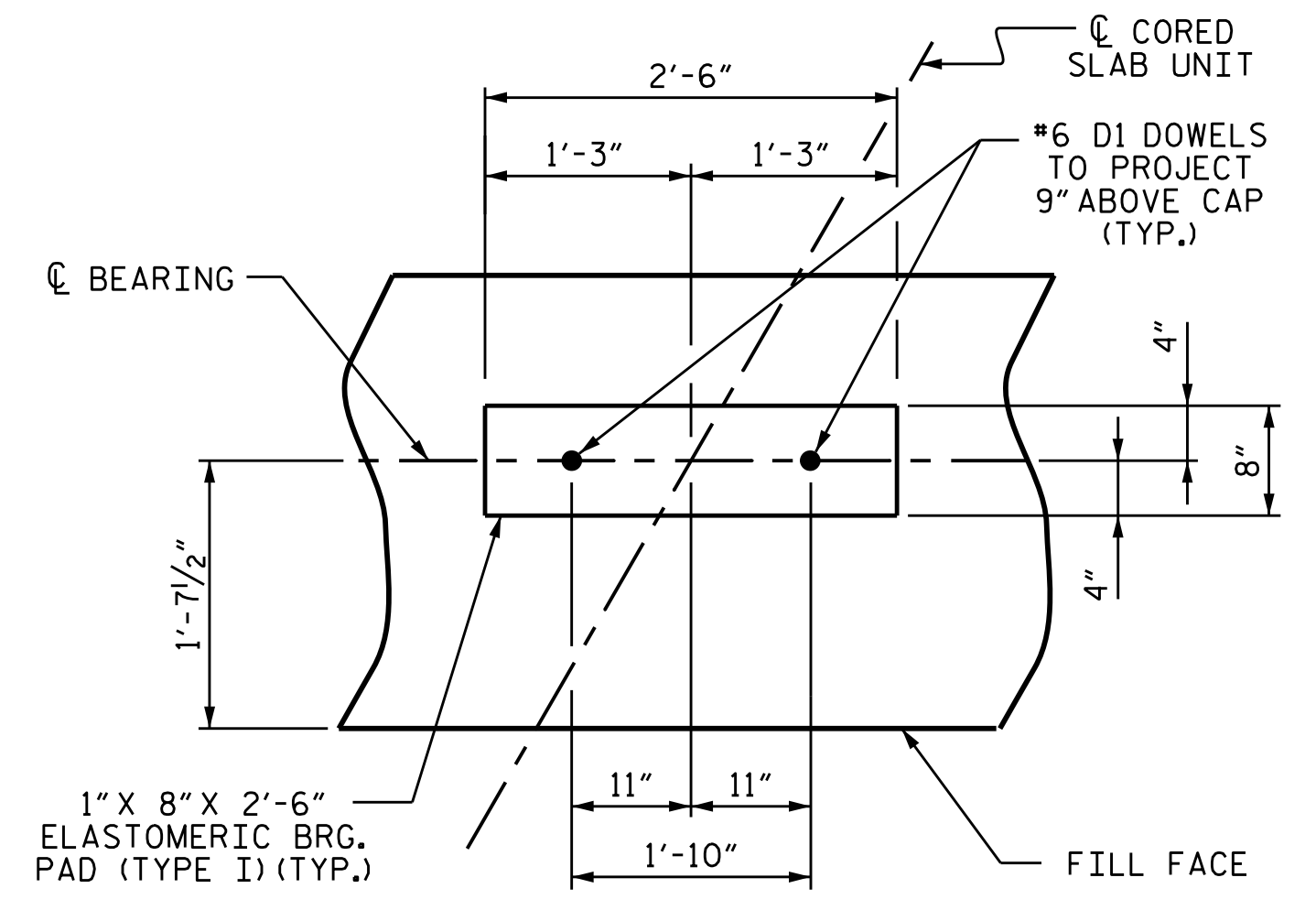
REINFORCING STEEL (FOR ONE END BENT)	
	2923 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)	
POUR #1 CAP, LOWER PART OF WINGS & COLLARS	21.9 C.Y.
POUR #2 UPPER PART OF WINGS	2.2 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>24.1 C.Y.</b>

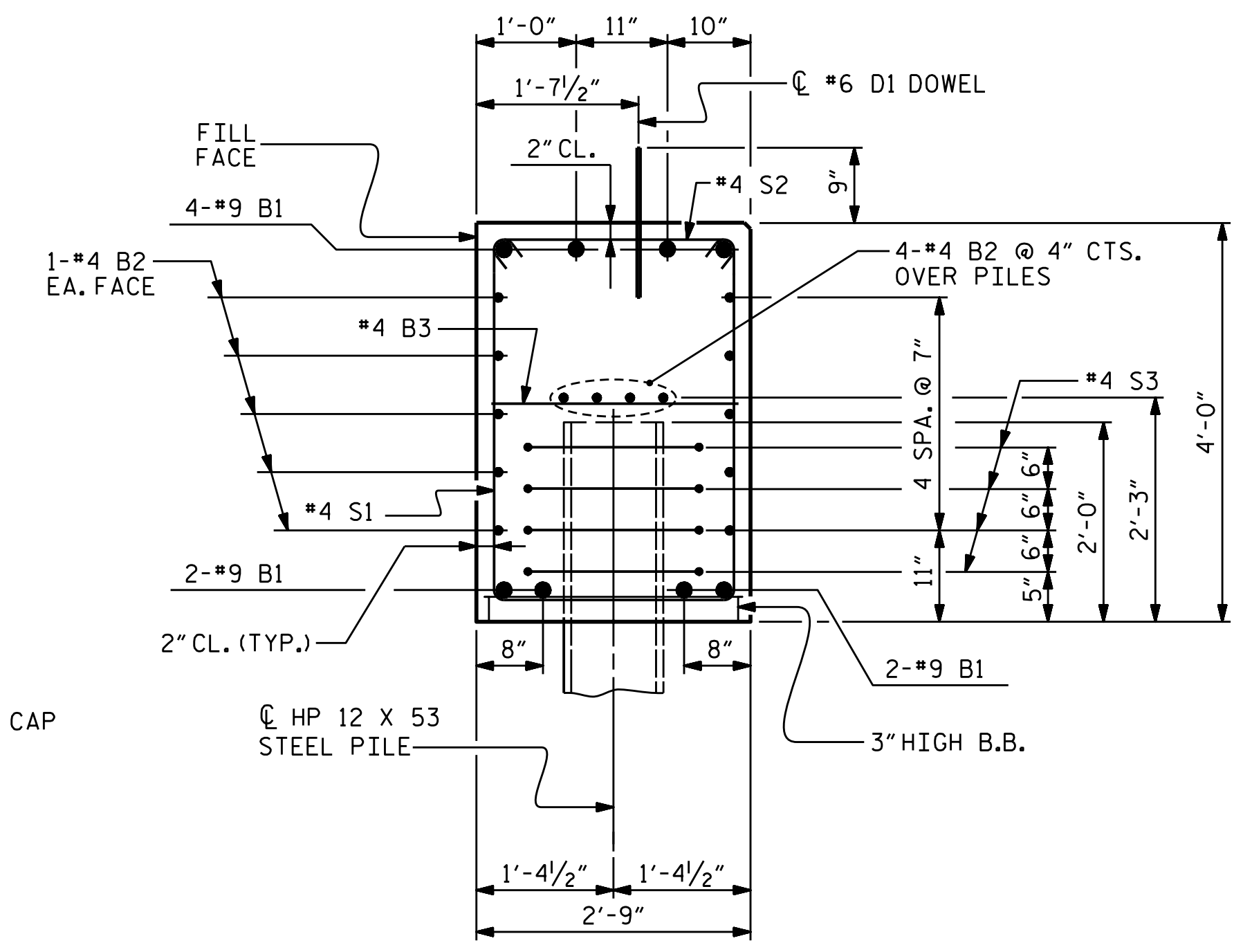
  

ALL BAR DIMENSIONS ARE OUT TO OUT.	
END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 165	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 105
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7



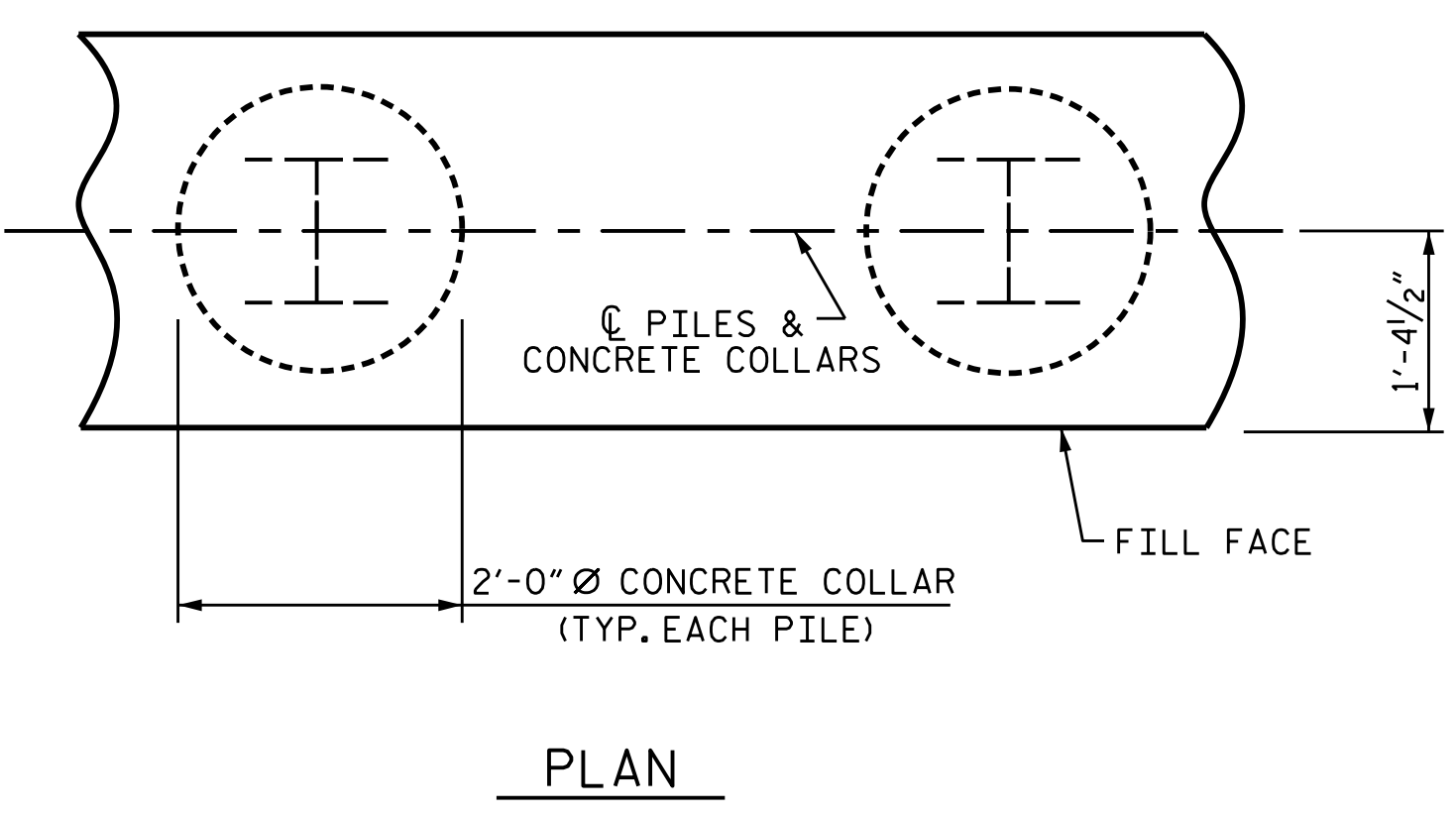
**DETAIL "A"**

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



**SECTION A-A**

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



**PLAN**

**ELEVATION**

**CORROSION PROTECTION FOR STEEL PILES DETAIL**

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1 & 2  
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

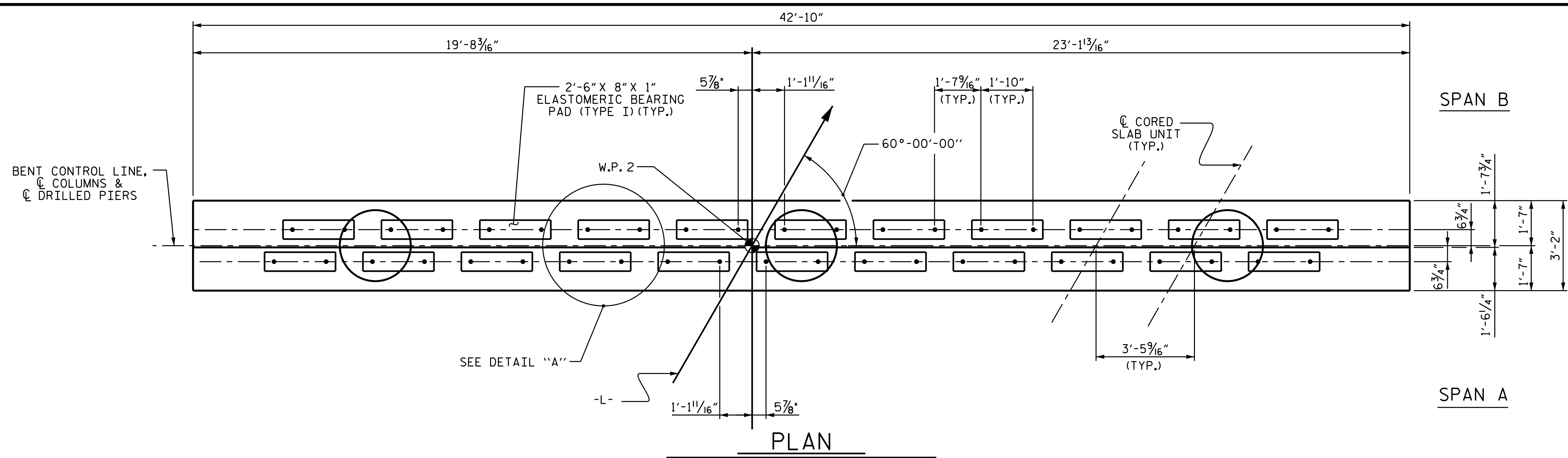
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### NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

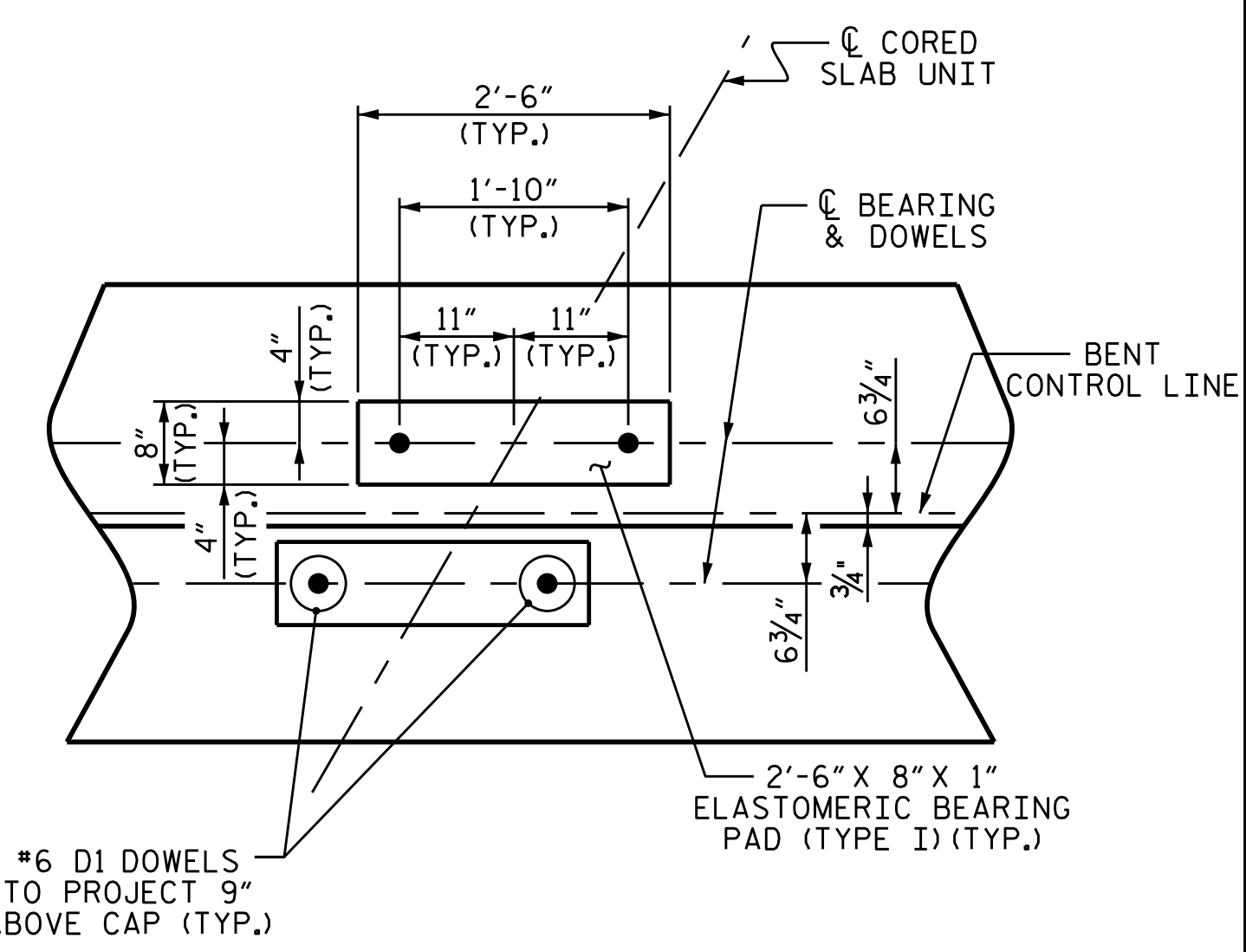
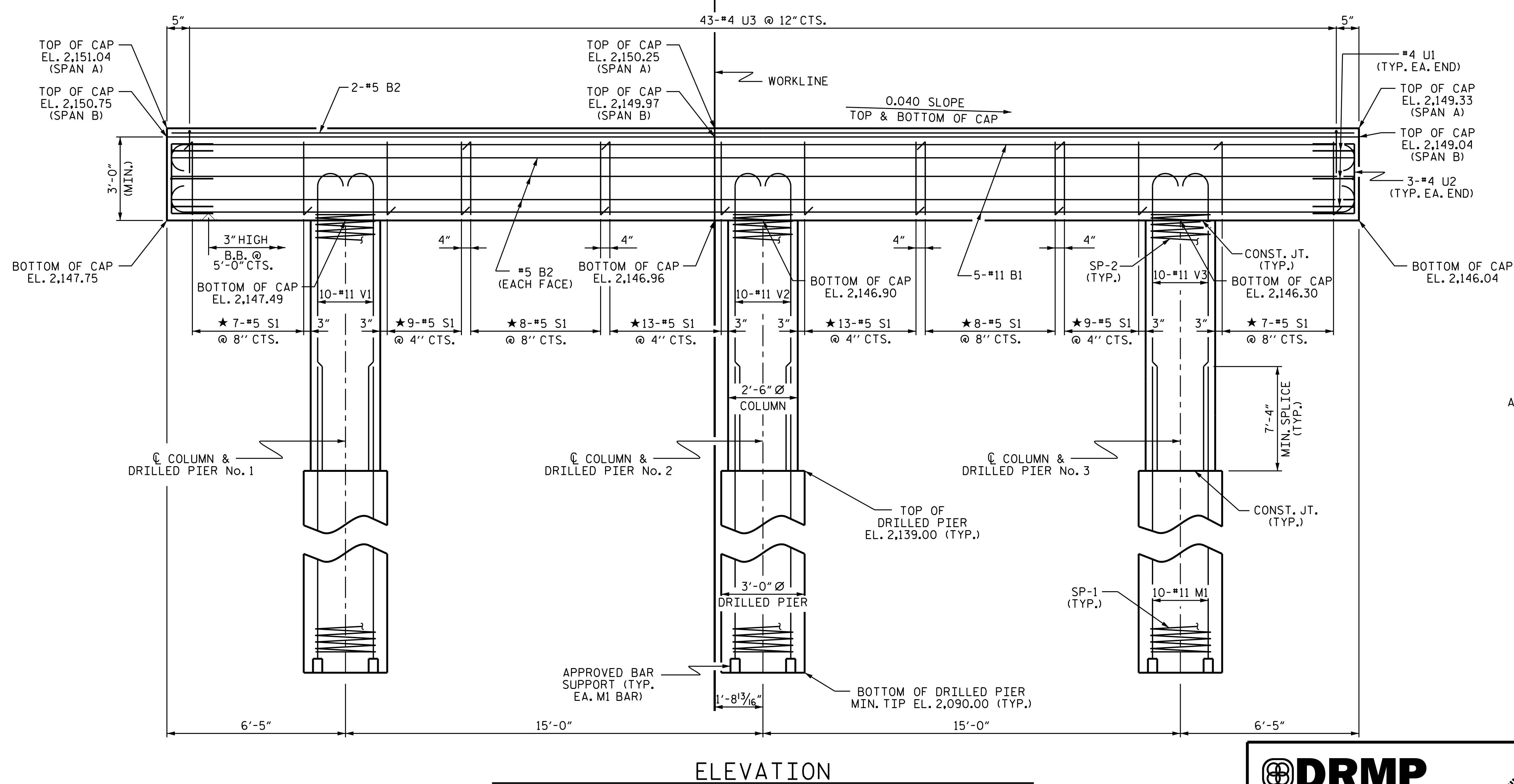
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



**DETAIL "A"**  
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 1 OF 4

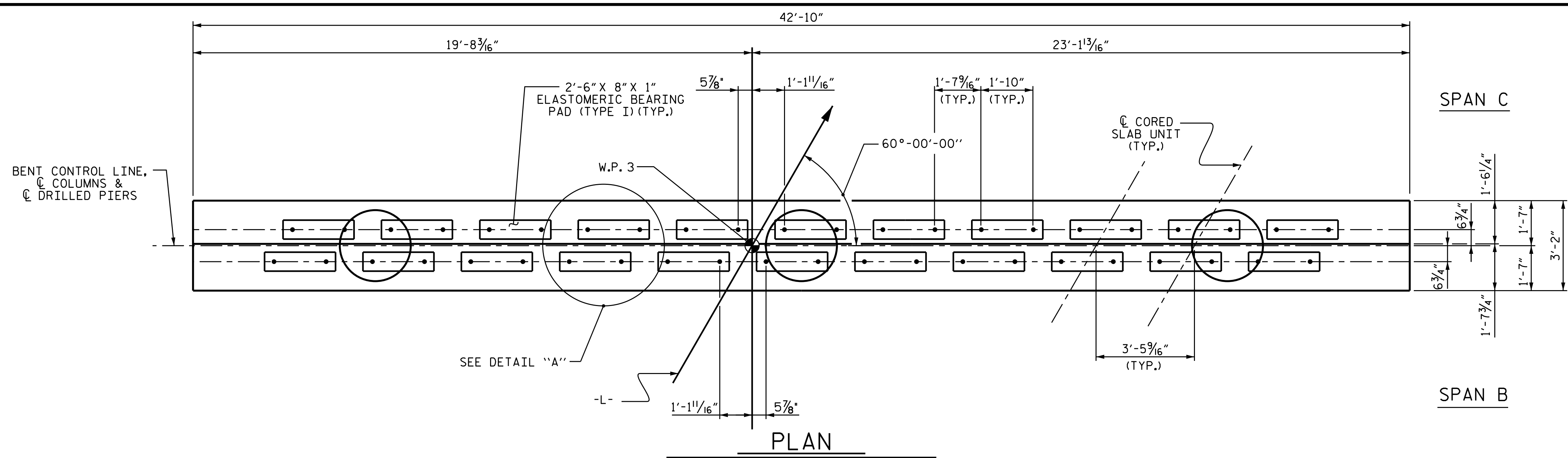
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-21
					TOTAL SHEETS 26

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DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

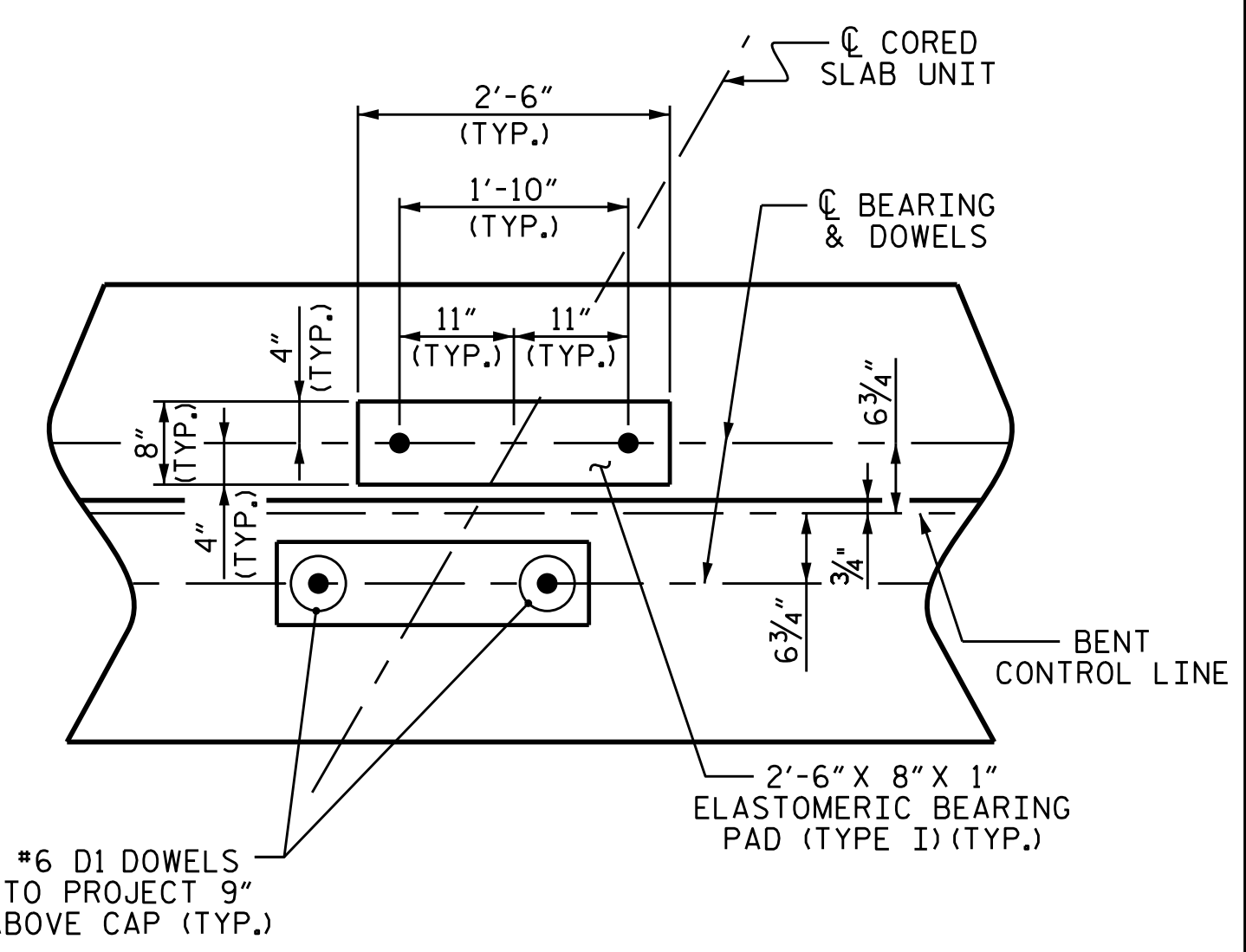
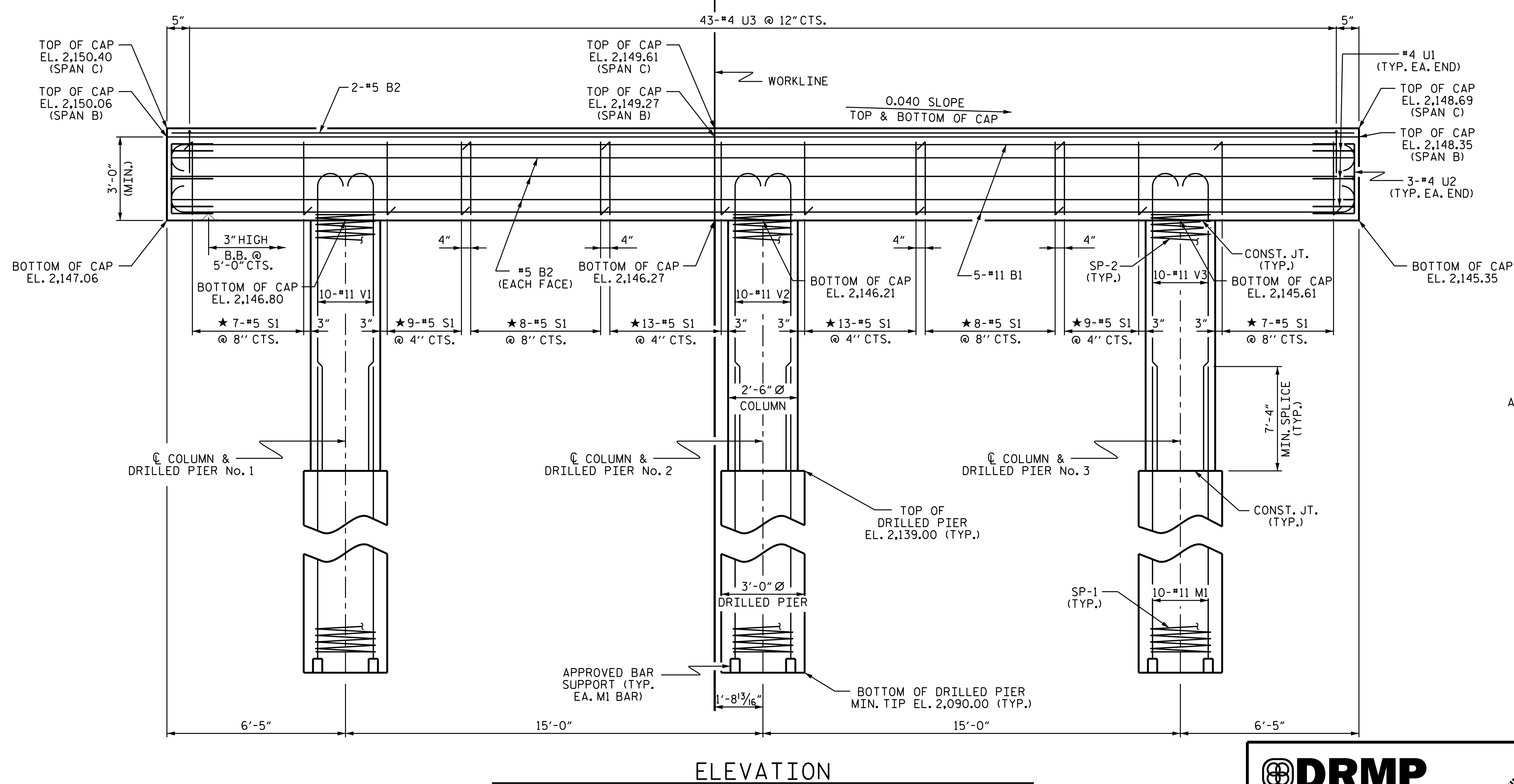
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



PROJECT NO. HB-0030

MACON COUNTY

STATION: 16+10.49 -L-

SHEET 2 OF 4

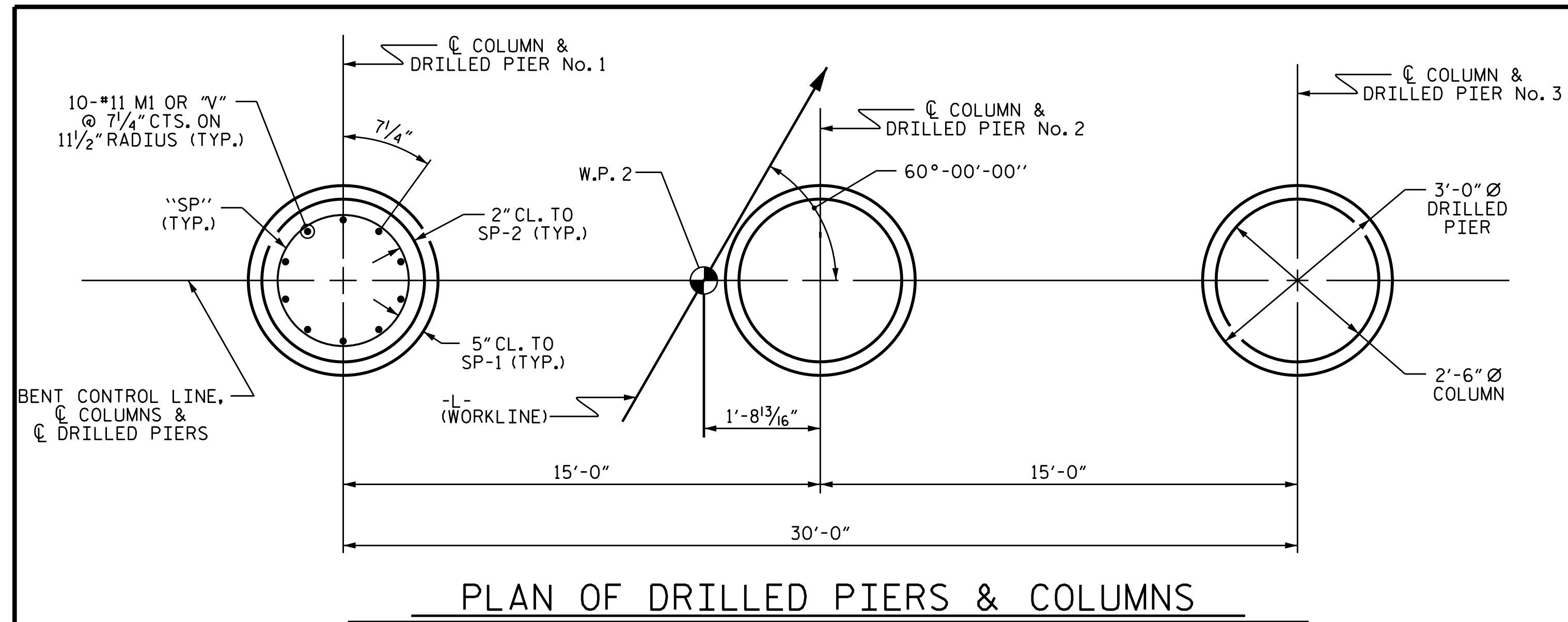
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-22					TOTAL SHEETS 26

DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

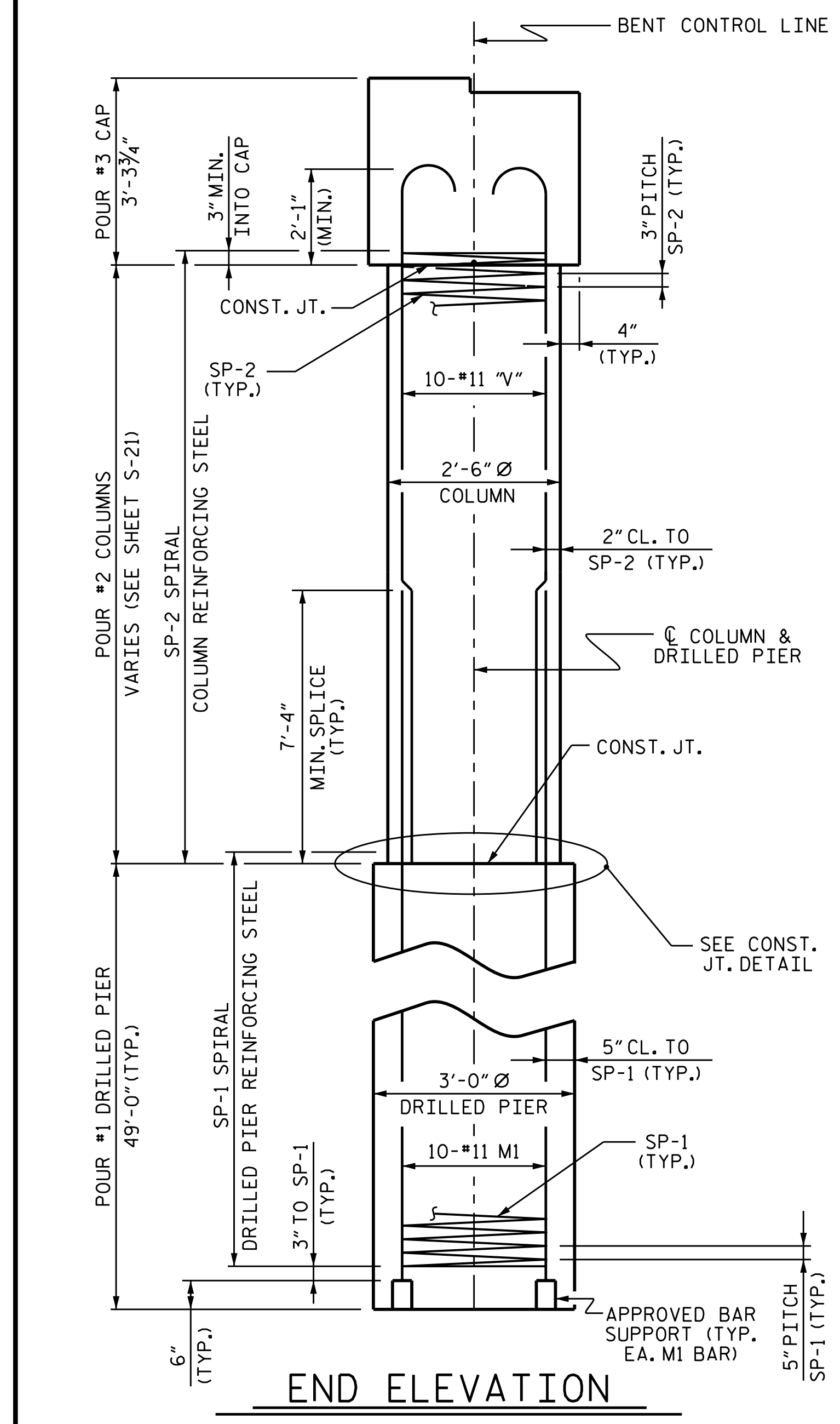
**DOCUMENT NOT CONSIDERED FINAL  
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 (704) 549-4260  
 NC LICENSE NO. F-1524

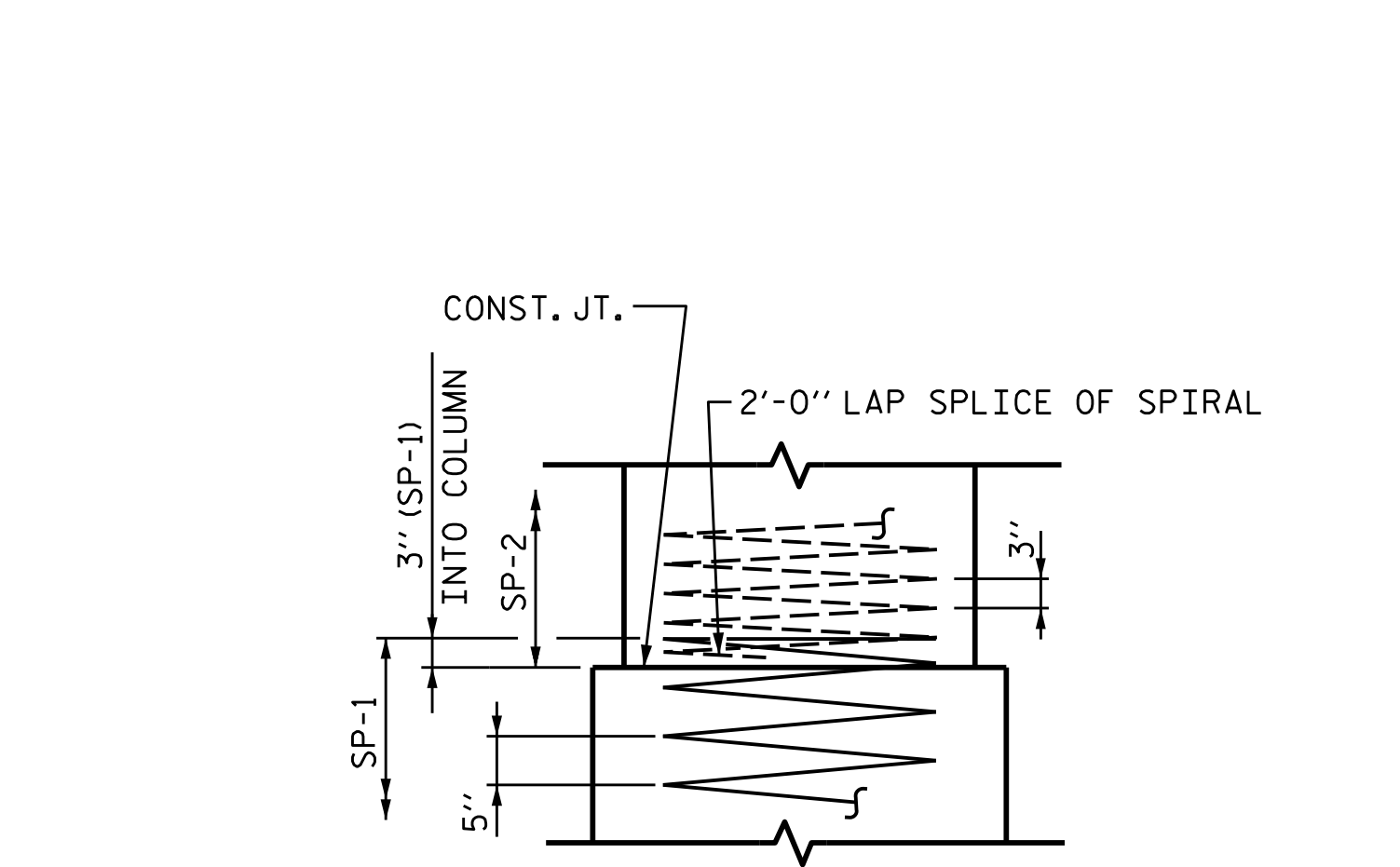




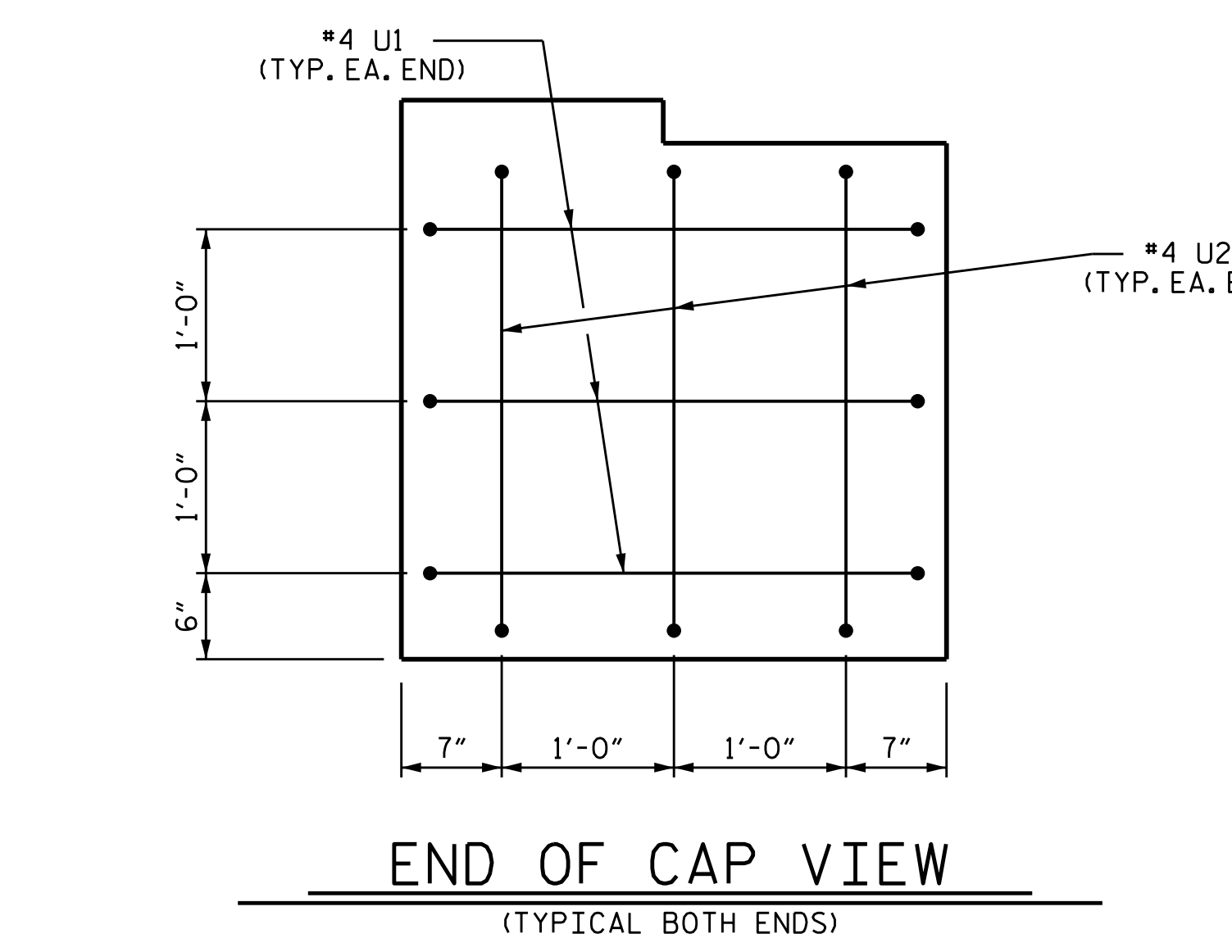
PLAN OF DRILLED PIERS & COLUMNS



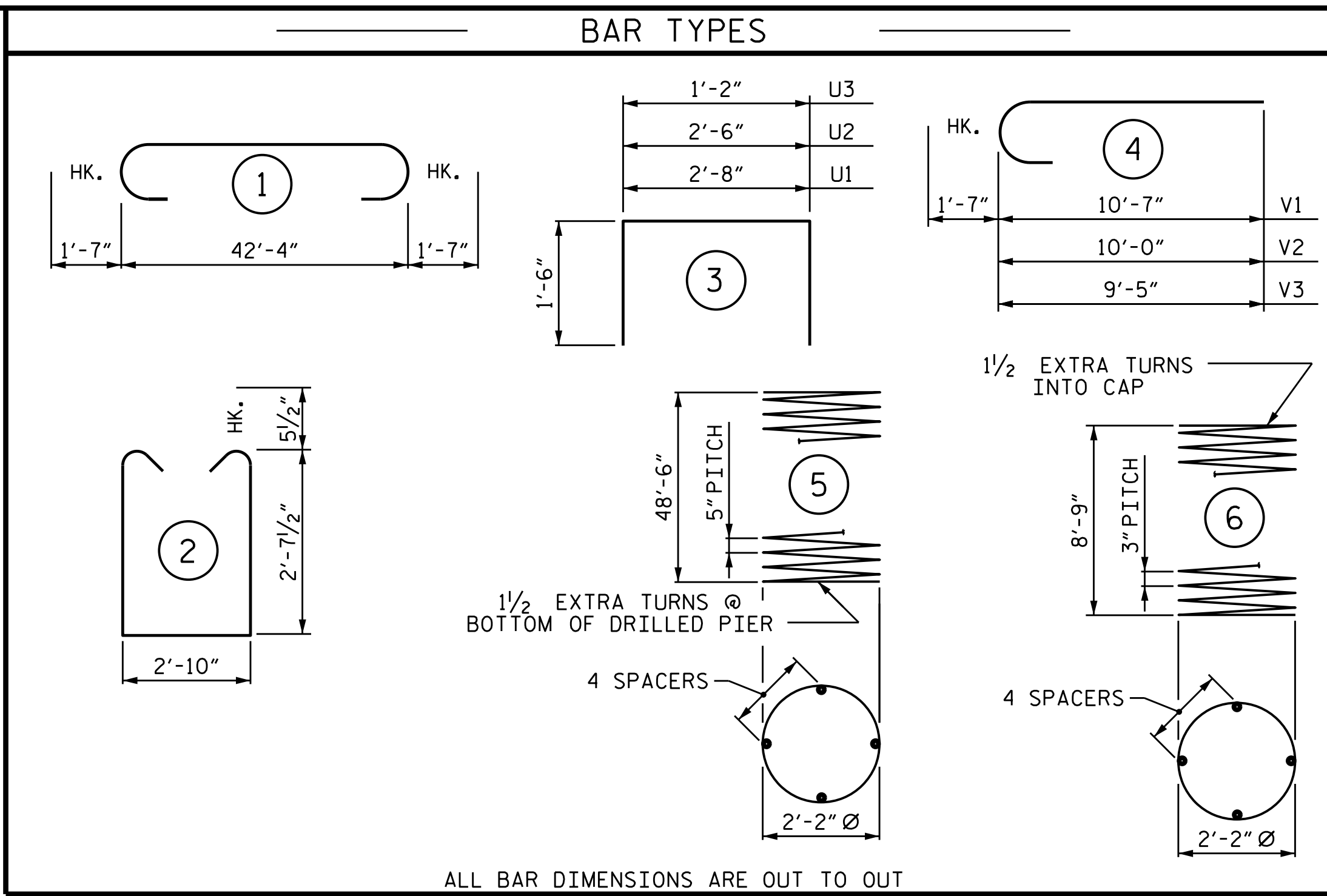
END ELEVATION



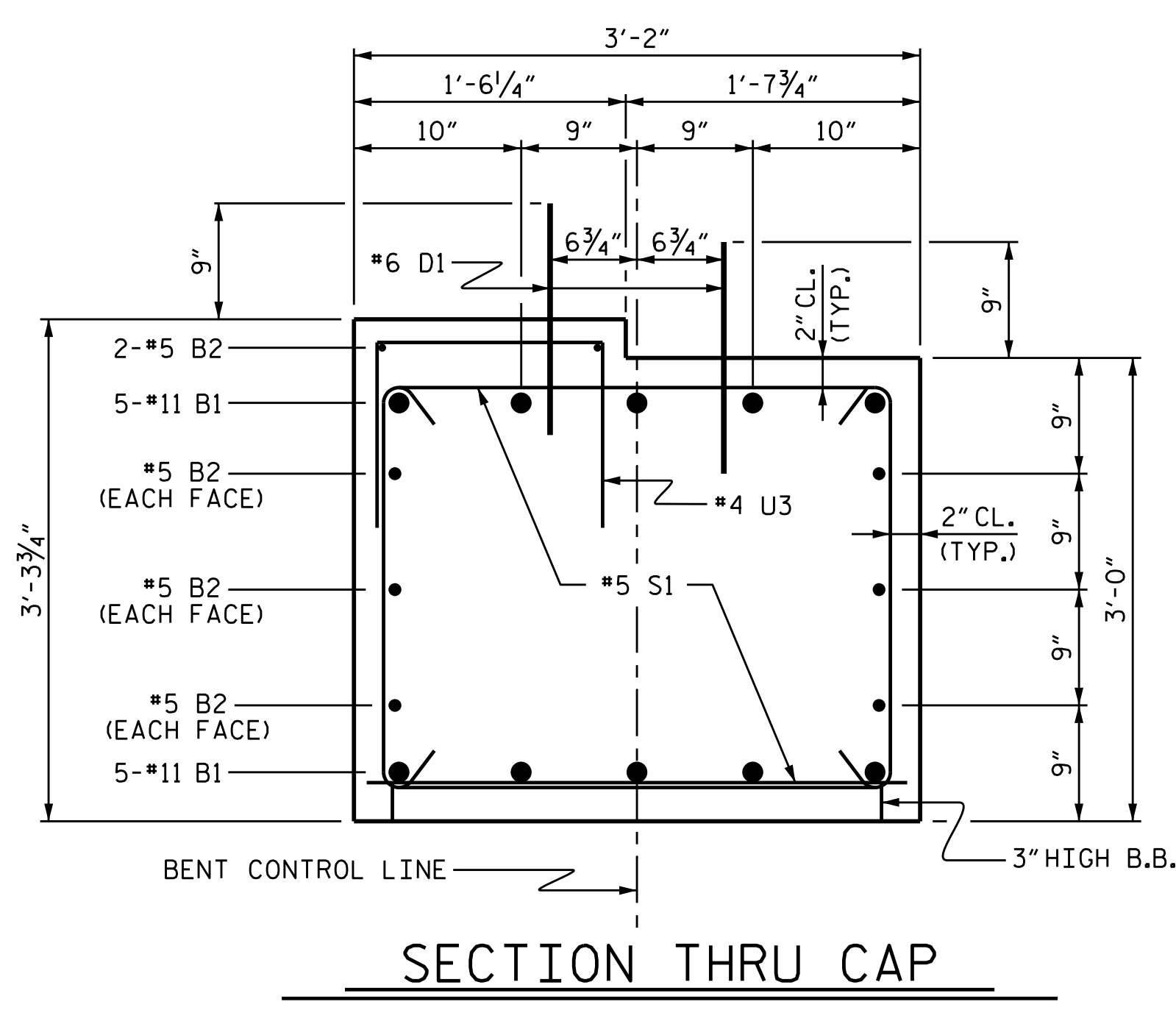
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW  
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL FOR BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	45'-6"	2417
B2	8	#5	STR	42'-6"	355
D1	44	#6	STR	1'-6"	99
M1	30	#11	STR	58'-10"	9377
S1	74	#5	2	9'-0"	695
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	43	#4	3	4'-2"	120
V1	10	#11	4	12'-2"	646
V2	10	#11	4	11'-7"	615
V3	10	#11	4	11'-0"	584
REINFORCING STEEL (FOR BENT 1)					14953 LBS.
SP-1	3	*	5	813'-5"	2545
SP-2	3	**	6	255'-4"	1151
SPIRAL COLUMN REINFORCING STEEL (FOR BENT 1)					3696 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR BENT 1)					
POUR #2 (COLUMNS)					4.3 C.Y.
POUR #3 (CAP)					16.1 C.Y.
TOTAL CLASS A CONCRETE					20.4 C.Y.
DRILLED PIERS: (FOR BENT 1)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					38.4 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL					69 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL					78 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					51 LIN. FT.
CSL TUBES					606 LIN. FT.

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1  
 DETAILS

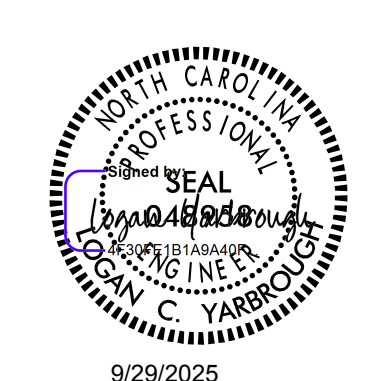
DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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**DRMP**

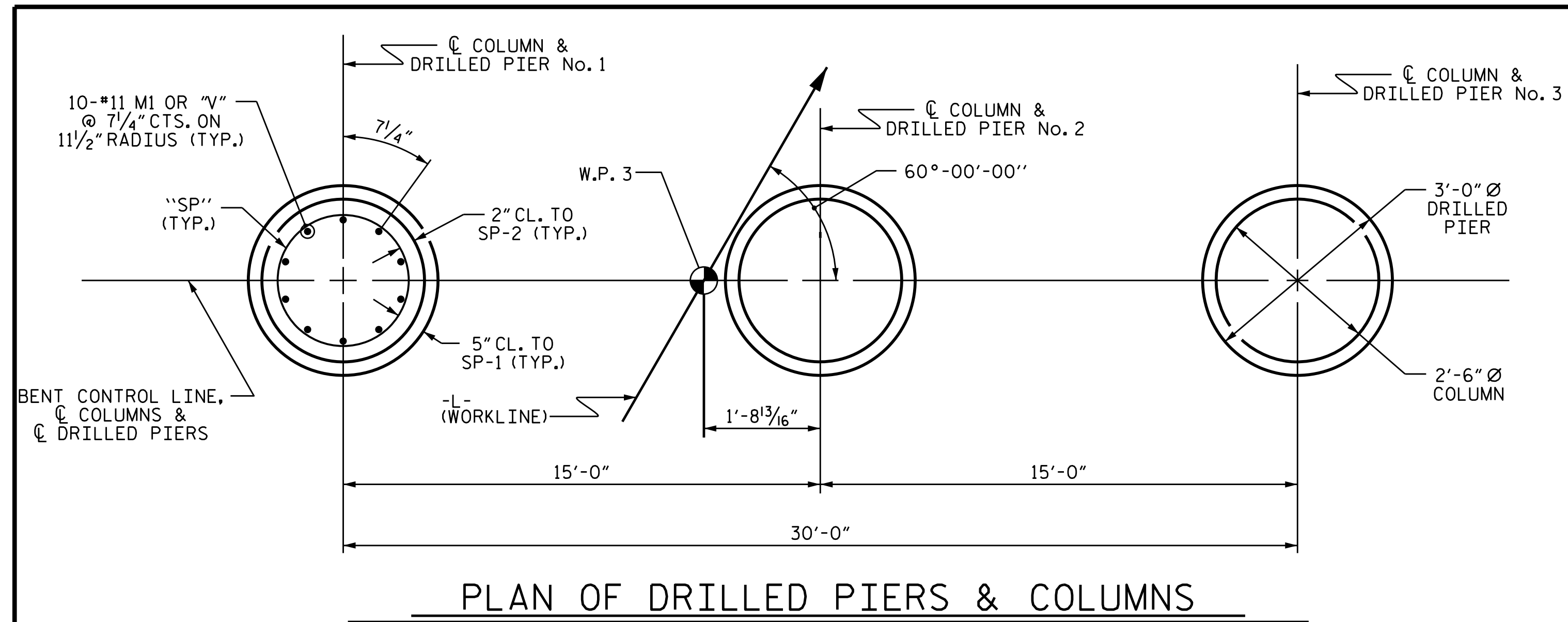
8210 UNIVERSITY EXECUTIVE  
 PARK DRIVE SUITE 220,  
 CHARLOTTE, NC 28262  
 (704) 549-4260

NC LICENSE NO. F-1524

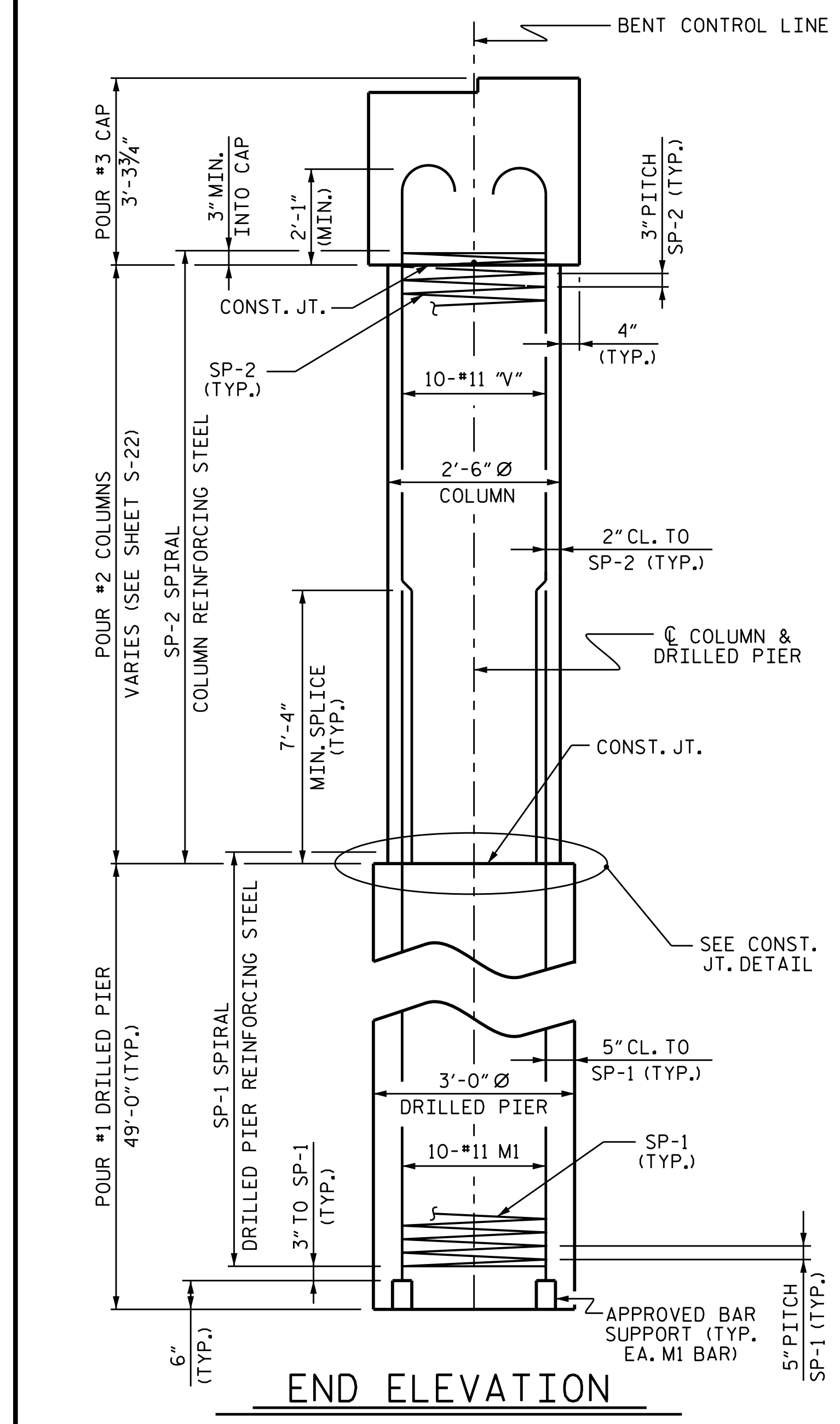


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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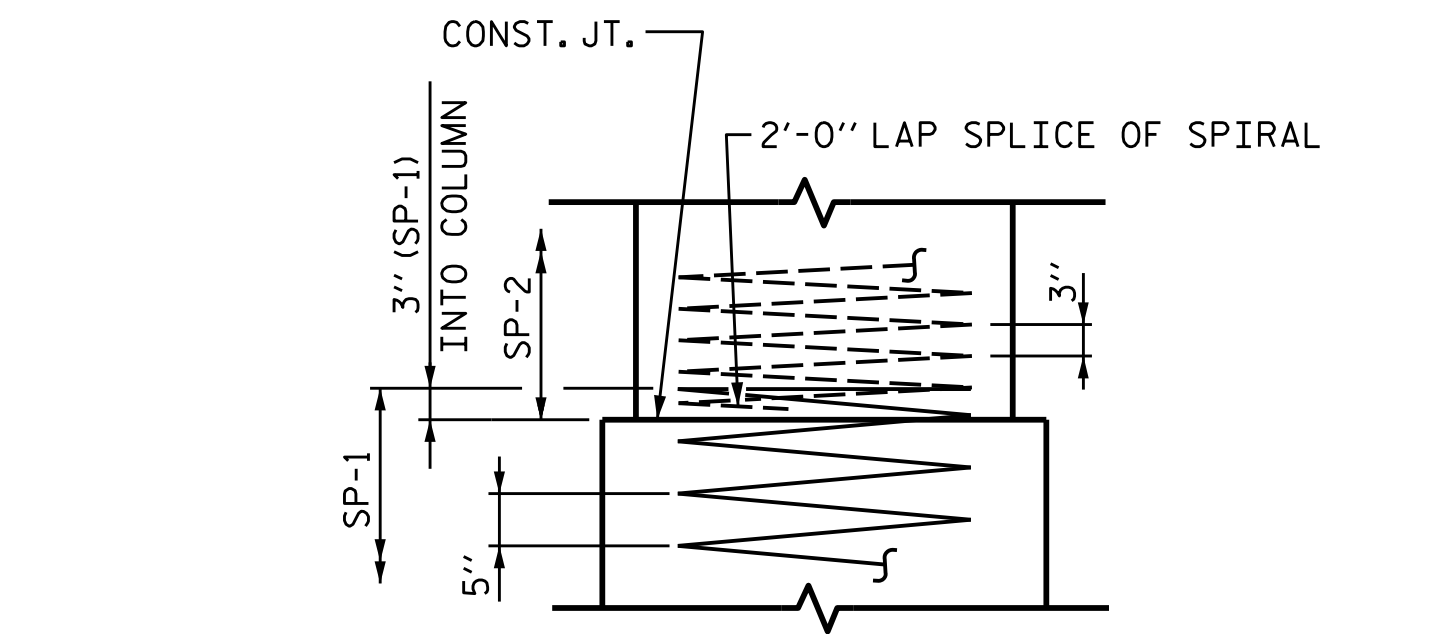
SHEET NO.  
 S-23  
 TOTAL SHEETS  
 26



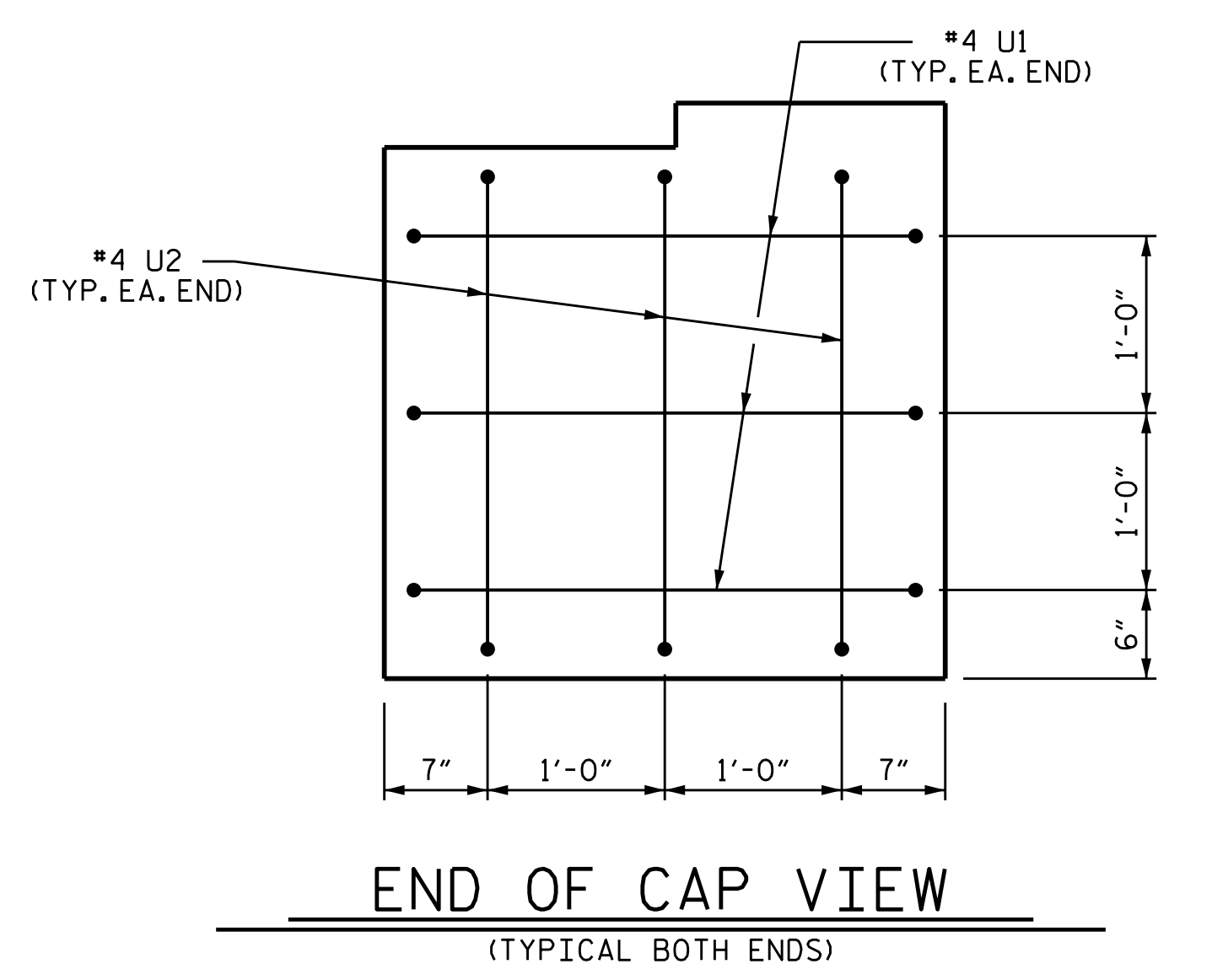
PLAN OF DRILLED PIERS & COLUMNS



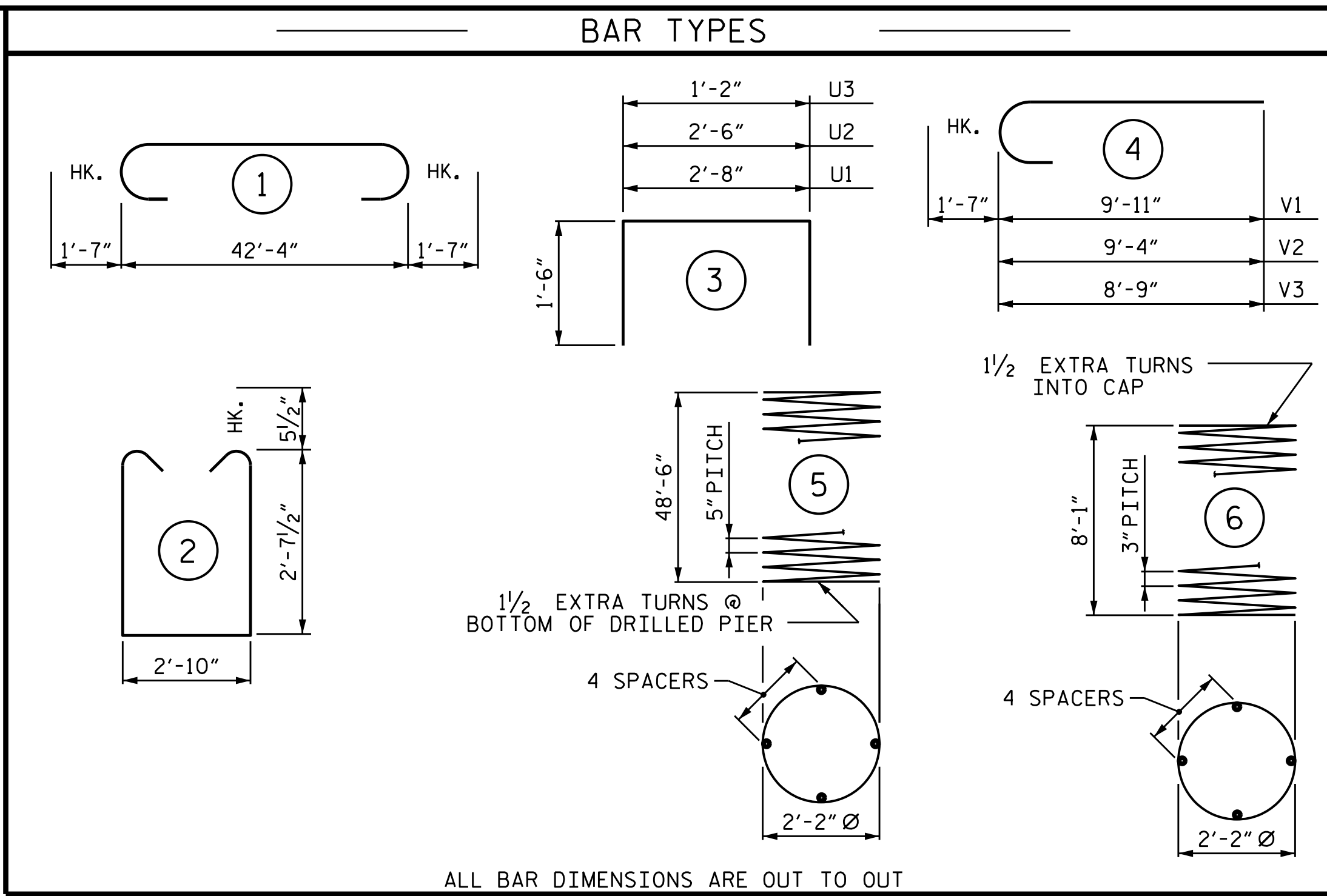
END ELEVATION



CONSTRUCTION JOINT DETAIL



END OF CAP VIEW  
(TYPICAL BOTH ENDS)

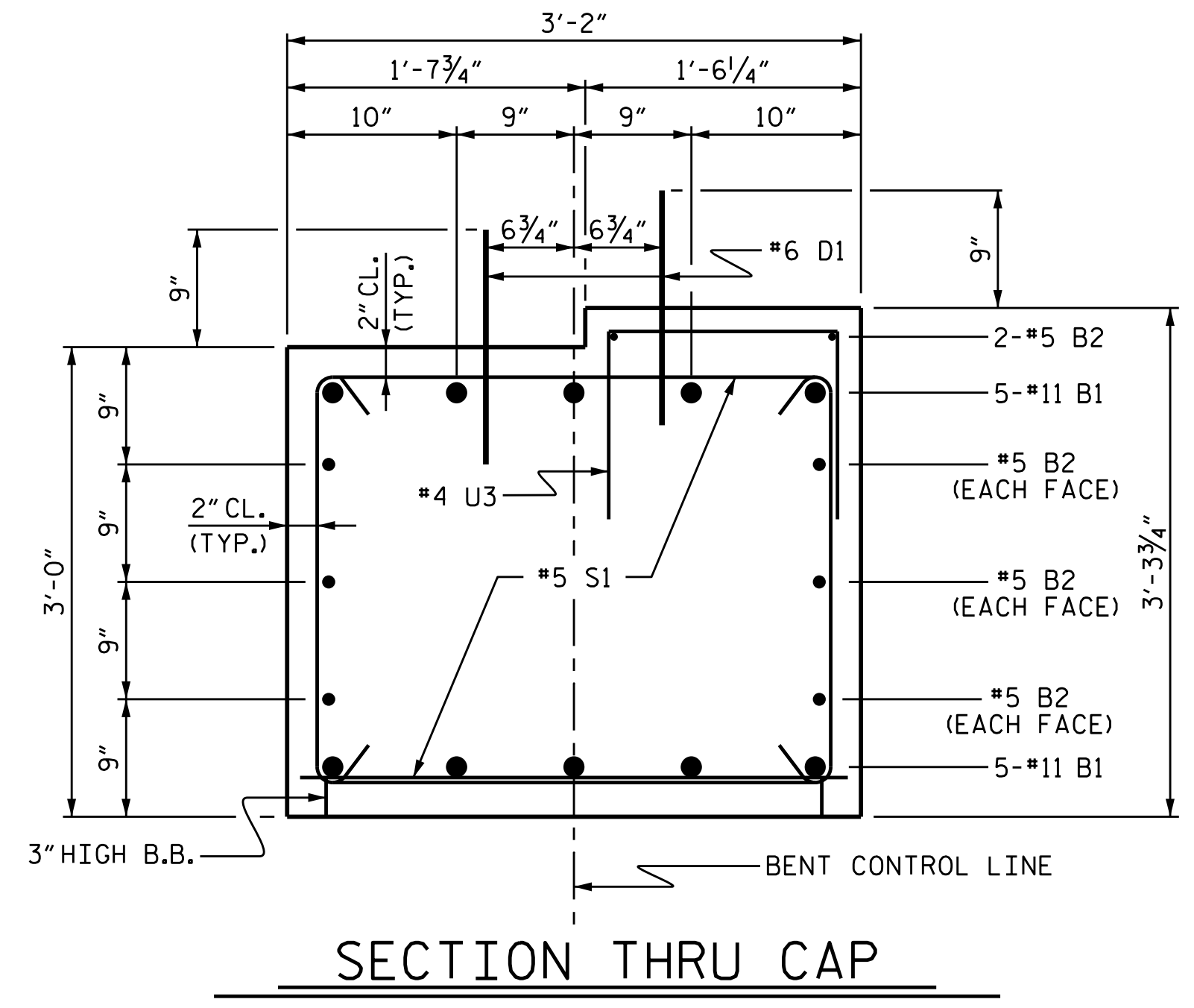


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	45'-6"	2417
B2	8	#5	STR	42'-6"	355
D1	44	#6	STR	1'-6"	99
M1	30	#11	STR	58'-10"	9377
S1	74	#5	2	9'-0"	695
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	43	#4	3	4'-2"	120
V1	10	#11	4	11'-6"	611
V2	10	#11	4	10'-11"	580
V3	10	#11	4	10'-4"	549
REINFORCING STEEL (FOR BENT 2)					14848 LBS.
SP-1	3	*	5	813'-5"	2545
SP-2	3	**	6	241'-8"	1089
SPIRAL COLUMN REINFORCING STEEL (FOR BENT 2)					3634 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					

CLASS A CONCRETE BREAKDOWN (FOR BENT 2)	
POUR #2 (COLUMNS)	3.9 C.Y.
POUR #3 (CAP)	16.1 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>20.0 C.Y.</b>

DRILLED PIERS: (FOR BENT 2)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	38.4 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	57 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	90 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	33 LIN. FT.
CSL TUBES	606 LIN. FT.



SECTION THRU CAP

PROJECT NO. HB-0030  
MACON COUNTY  
 STATION: 16+10.49 -L-  
 SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
**BENT 2**  
 DETAILS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.  
 S-24  
 TOTAL SHEETS  
 26

DRAWN BY : G. DWIGHT LOFLIN DATE : 07-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 07-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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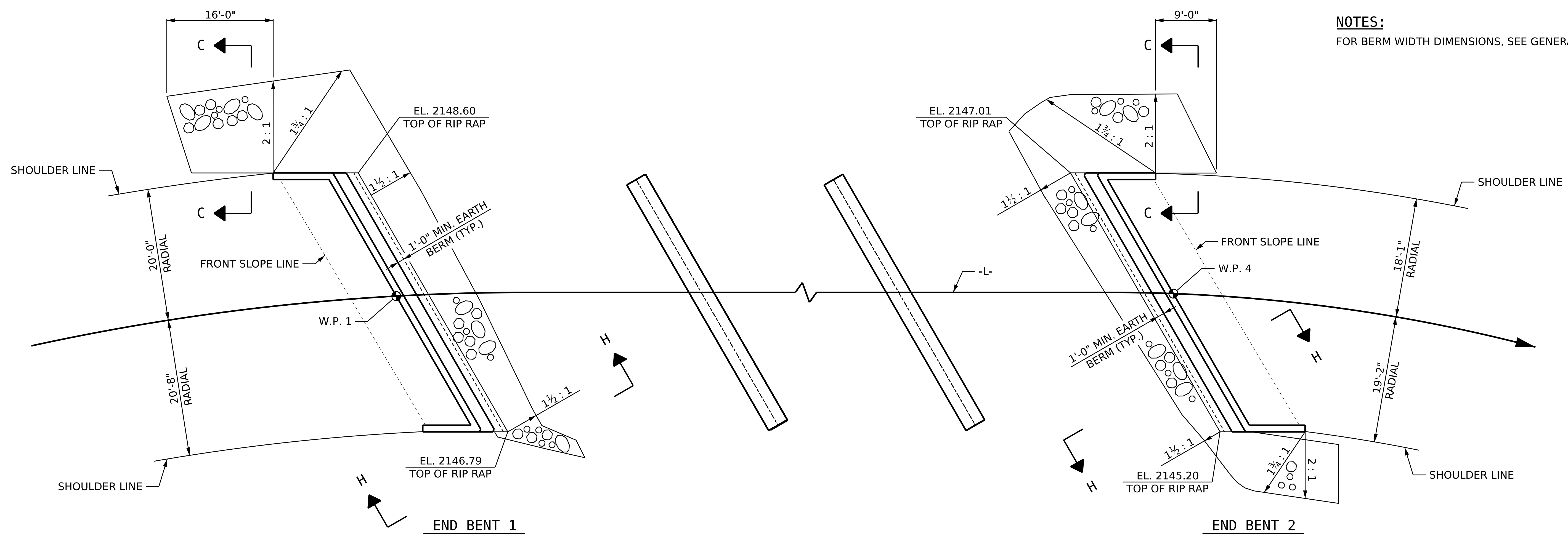
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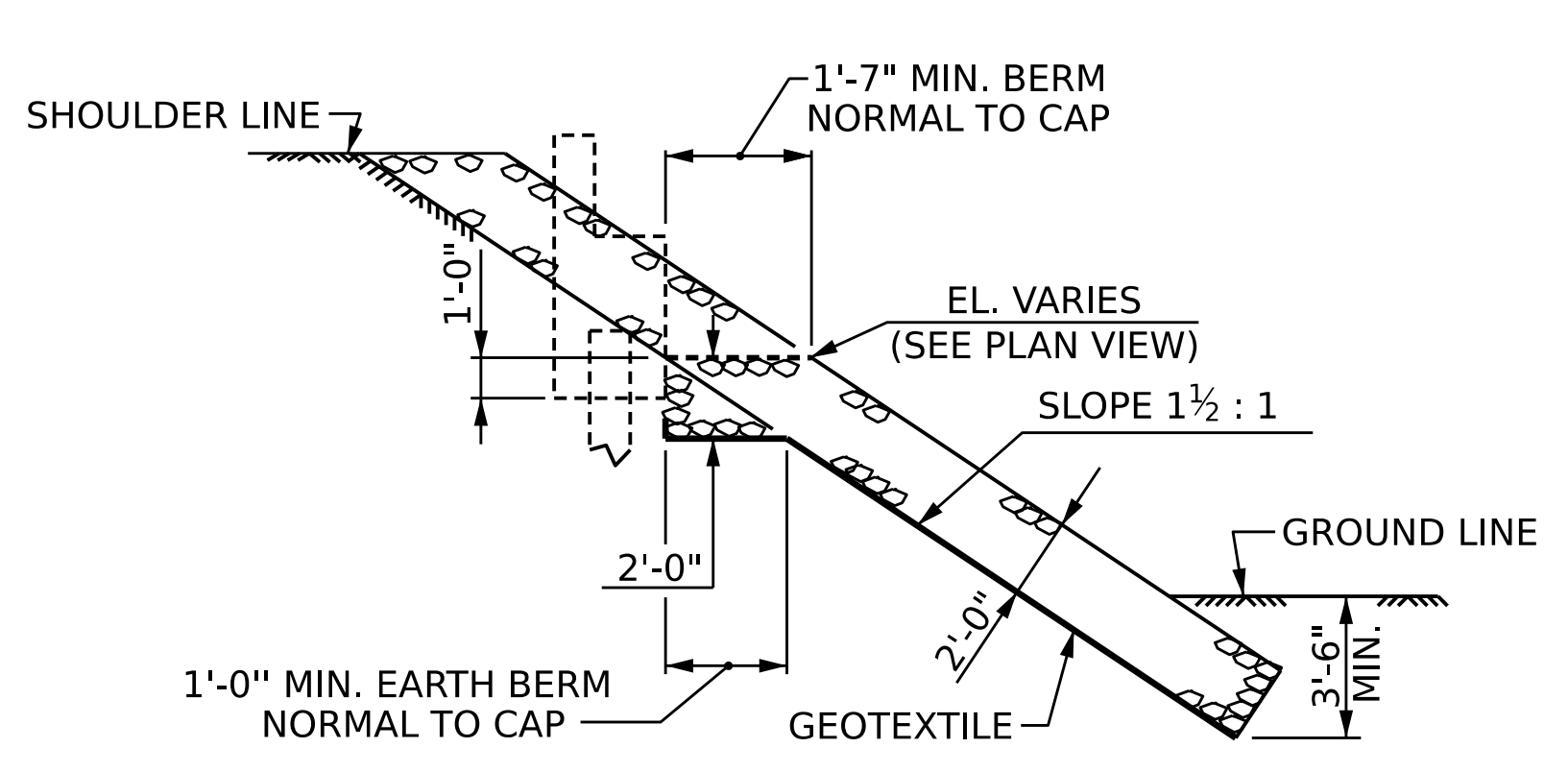
DRMP JOB NUMBER: 20-0464.031

STD. NO. DP\_BT\_33\_60S\_<50

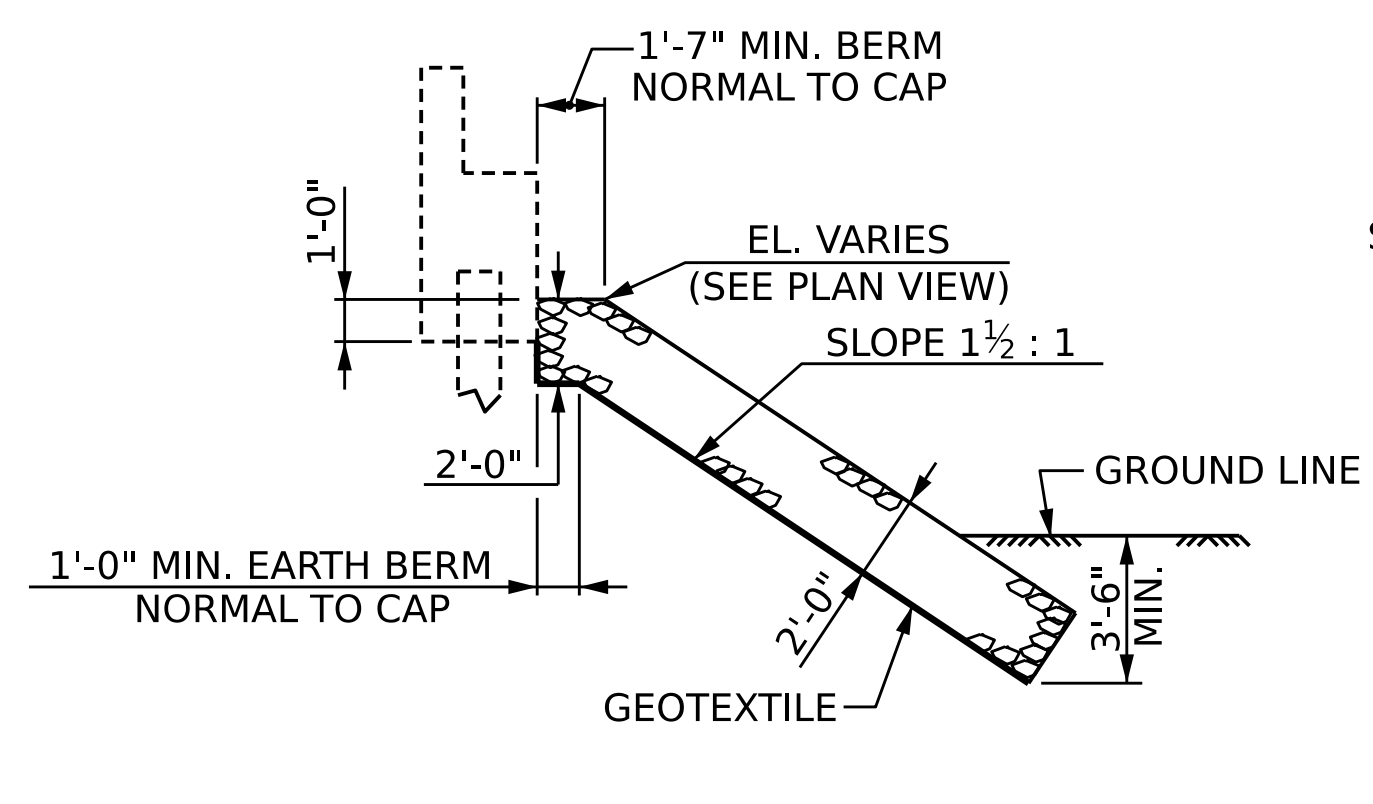
**NOTES:**  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+10.49	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	95	106
END BENT 2	87	97

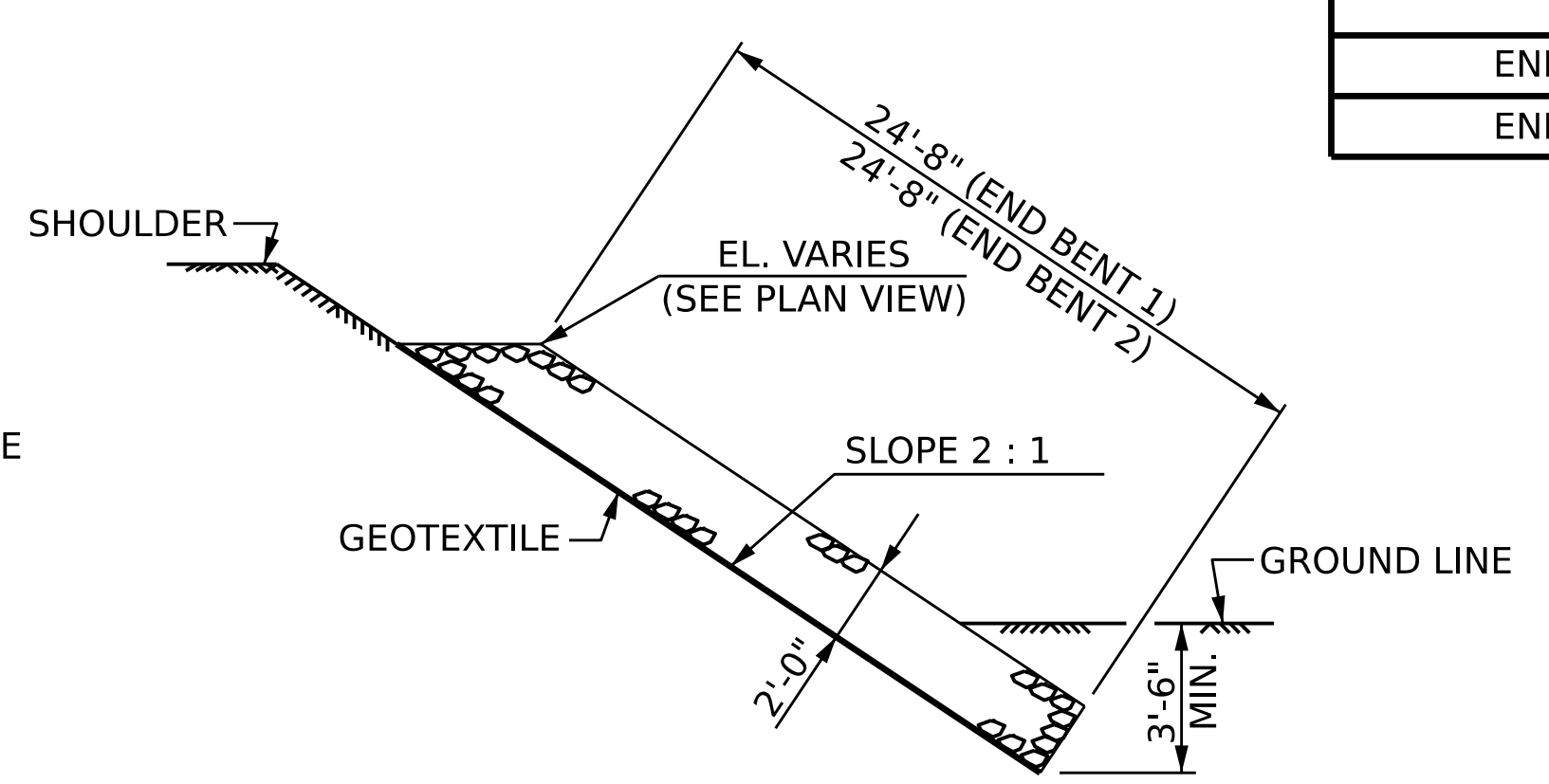


**SECTION H-H**



**SECTION C-C**

**BERM RIP RAPPED**



**SECTION C-C**

PROJECT NO. HB-0030  
MACON COUNTY  
STATION: 16+10.49 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**RIP RAP DETAILS**

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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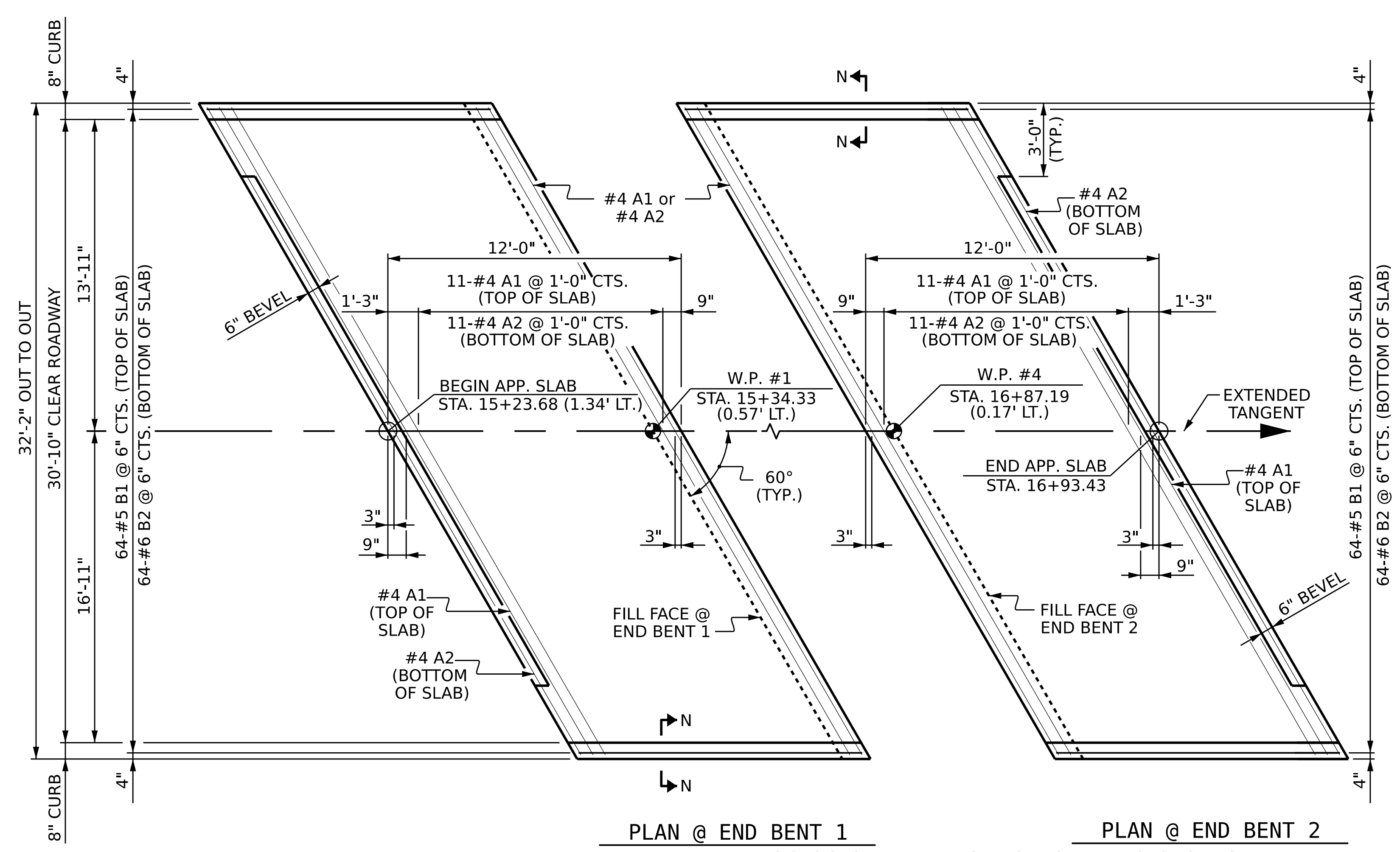


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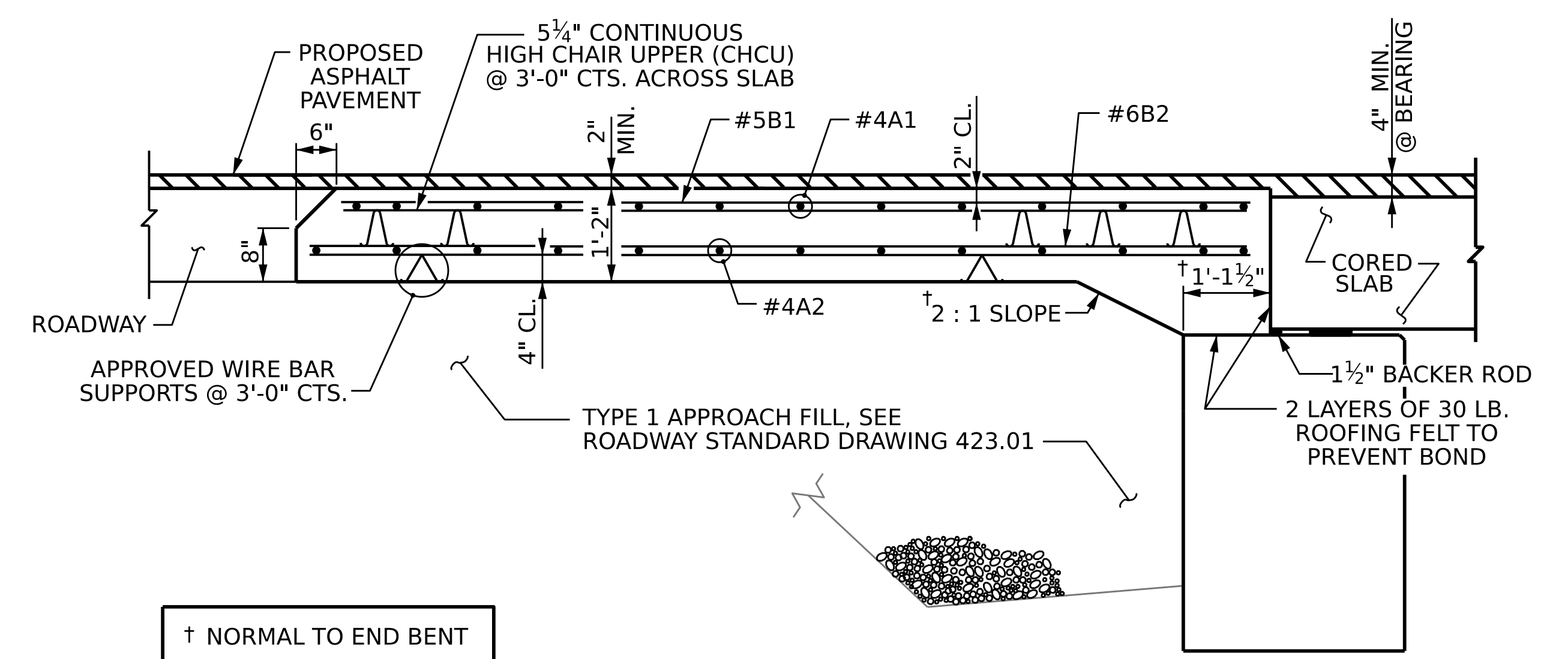
NC LICENSE NO. F-1524



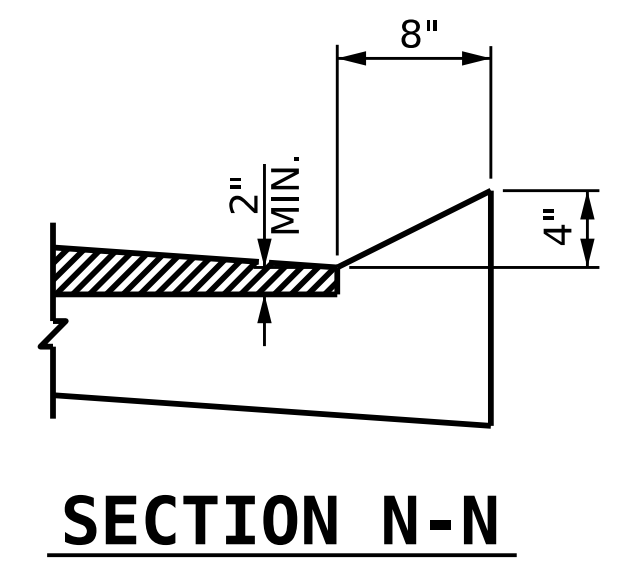
REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			



**PLAN @ END BENT 1**      **PLAN @ END BENT 2**  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS  
 ALL STATIONS AND DIMENSIONS SHOWN ARE ABOUT EXTENDED TANGENT SHOWN IN BRIDGE PLAN VIEW



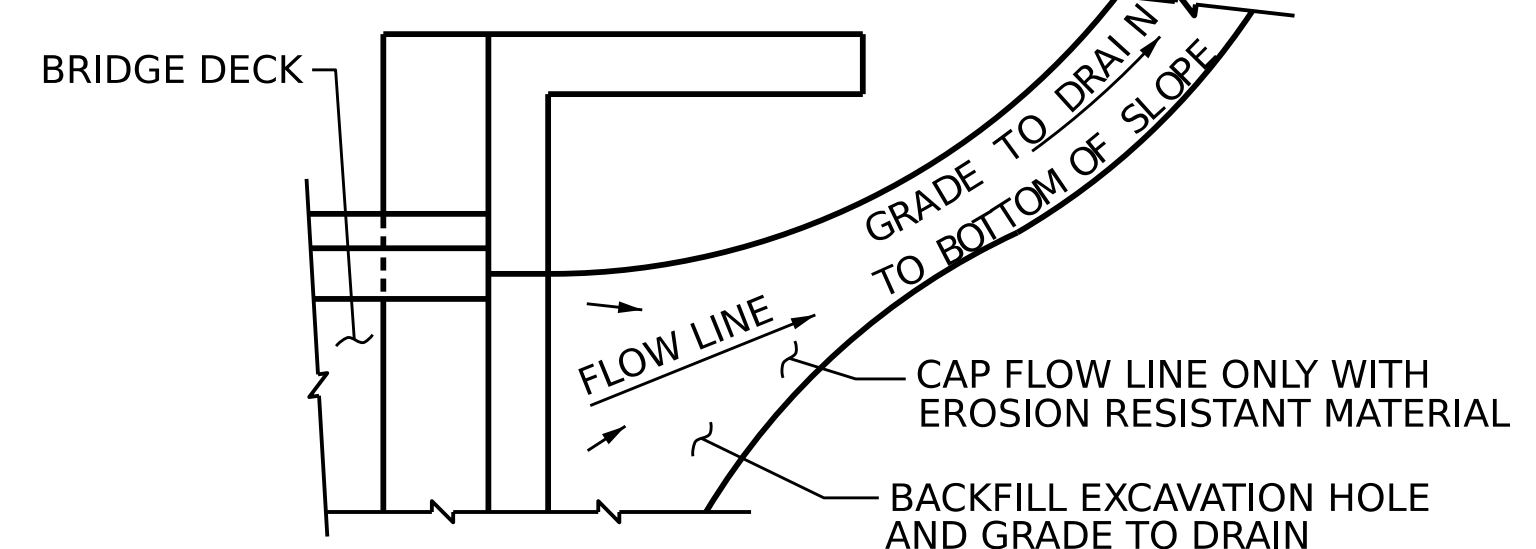
**SECTION THRU SLAB**



**SECTION N-N**

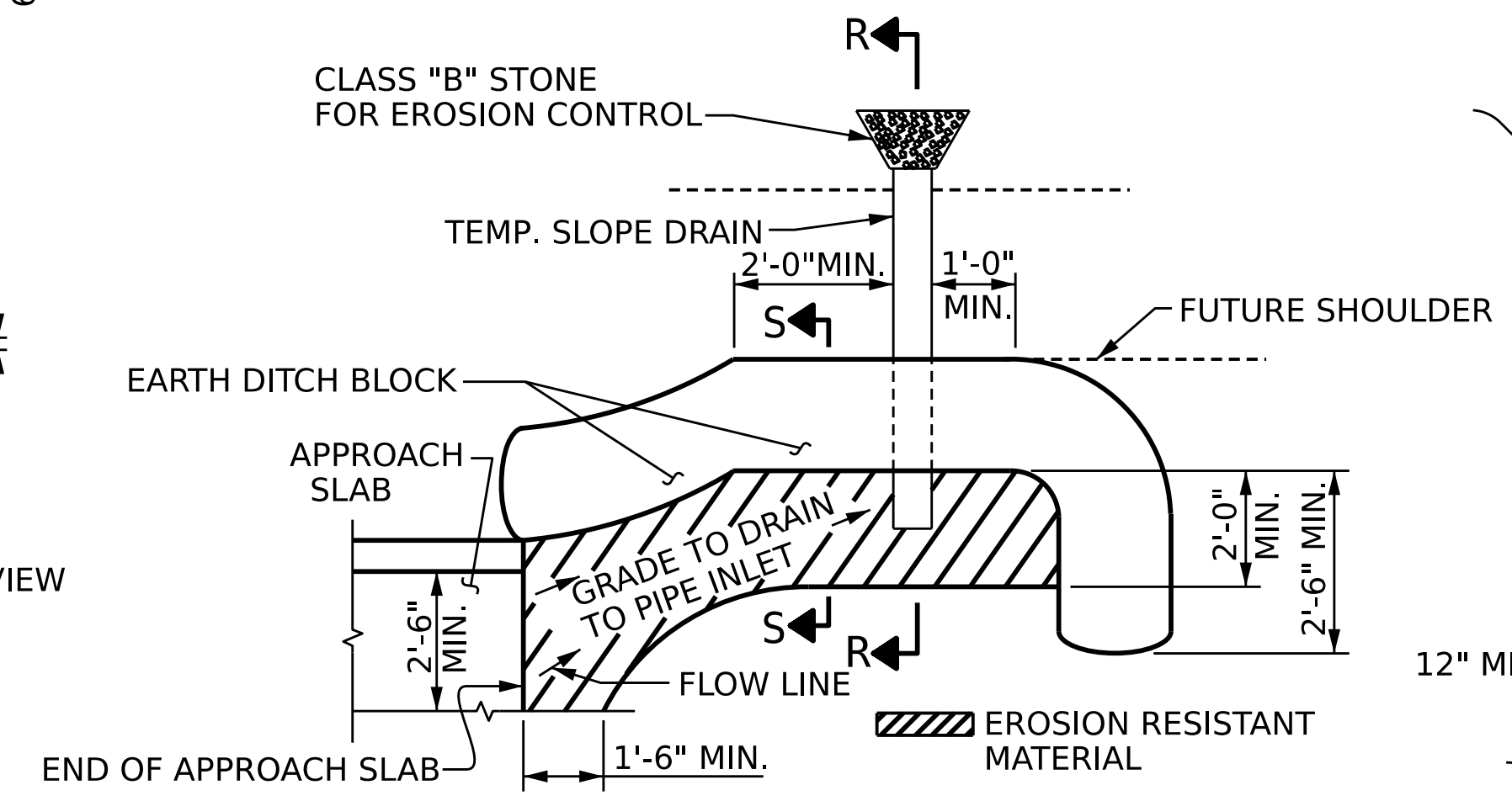
**NOTES**

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.  
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.  
 APPROACH SLAB GROOVING IS NOT REQUIRED.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

**TEMPORARY DRAINAGE DETAIL**



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

**PLAN VIEW**

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. HB-0030  
 MACON COUNTY  
 STATION: 16+10.49 -L-

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

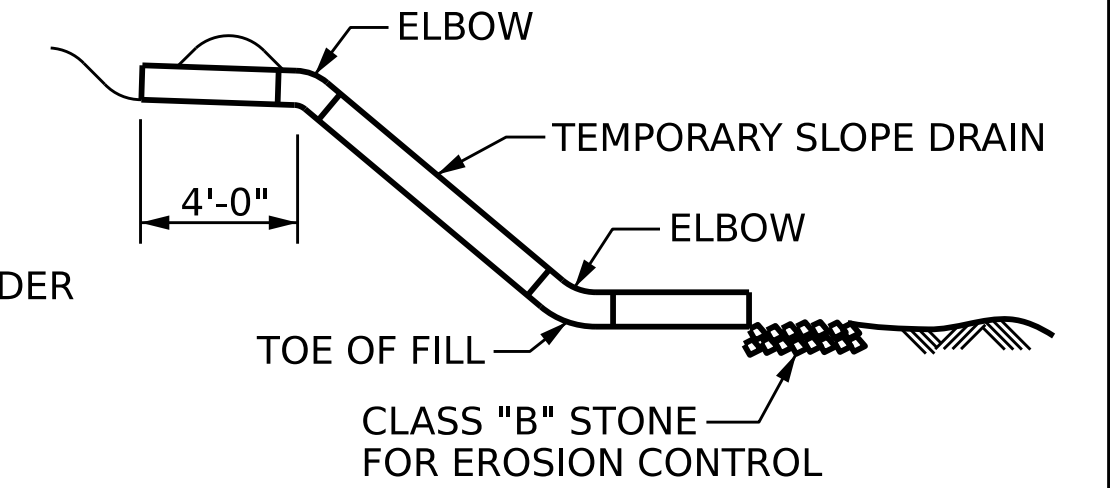
**BILL OF MATERIAL**

APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	36'-8"	318
A2	13	#4	STR	36'-8"	318
*B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113

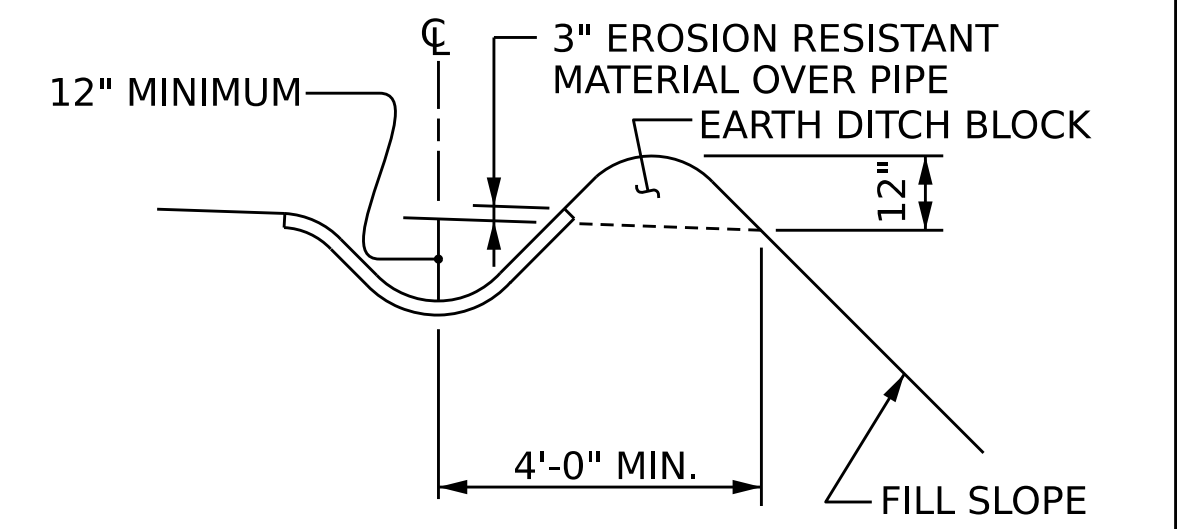
REINFORCING STEEL	LBS.	1431
* EPOXY COATED REINFORCING STEEL	LBS.	1058
CLASS AA CONCRETE	C. Y.	18.6

APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	36'-8"	318
A2	13	#4	STR	36'-8"	318
*B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113

REINFORCING STEEL	LBS.	1431
* EPOXY COATED REINFORCING STEEL	LBS.	1058
CLASS AA CONCRETE	C. Y.	18.6



**SECTION R-R**



**SECTION S-S**

DRAWN BY : G. DWIGHT LOFLIN DATE : 01-2025  
 CHECKED BY : LOGAN C. YARBROUGH DATE : 01-2025  
 DESIGN ENGINEER OF RECORD: LOGAN C. YARBROUGH DATE : 08-2025

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**DRMP**  
 8210 UNIVERSITY EXECUTIVE  
 PARK DRIVE SUITE 220,  
 CHARLOTTE, NC 28262  
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 NC LICENSE NO. F-1524



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB FOR  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)  
 60° SKEW

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN		
OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT.
		(MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.