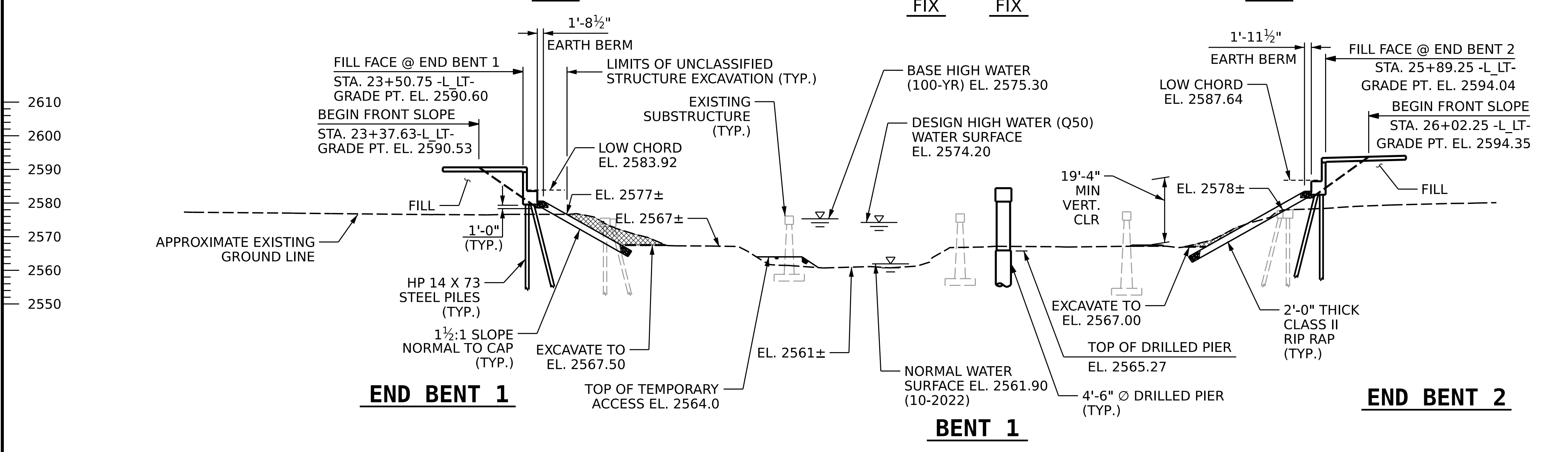


22+50 23+00 23+50 24+00 24+50 25+00 25+50 26+00 26+50

(-)5.4970% (+)3.7074%  
PI = 21+50.00  
EL. = 2576.43'  
VC = 1260'

**GRADE DATA -L LT-**



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

UNCLASSIFIED STRUCTURE EXCAVATION

**HYDROGRAPHIC DATA**

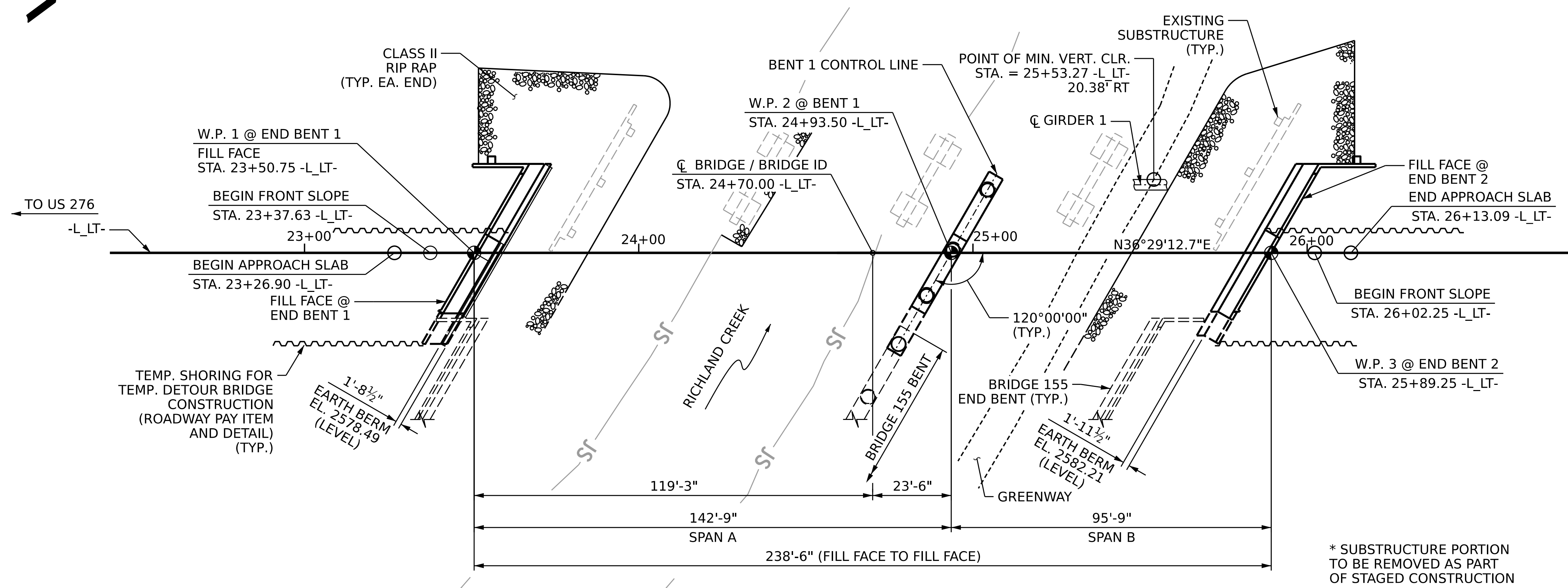
DESIGN DISCHARGE ..... = 8,700 CFS  
FREQUENCY OF DESIGN FLOOD ..... = 50 YR.  
DESIGN HIGH WATER ELEVATION ..... = 2574.2  
DRAINAGE AREA ..... = 56.9 SQ. MI.  
BASE DISCHARGE (Q100) ..... = 10,300 CFS  
BASE HIGH WATER ELEVATION ..... = 2575.3

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE ..... = 42,000 CFS  
FREQUENCY OF OVERTOPPING FLOOD ..... = + 500 YR.  
OVERTOPPING FLOOD ELEVATION AT STA. 22+72.00 -L\_LT- ..... = 2591.8 FT.

**SECTION ALONG -L-**

(SECTIONS AT BENTS AND END BENTS ARE AT RIGHT ANGLES)



PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
STATION: 24+70.00 -L\_LT-  
SHEET 1 OF 4 REPLACES BRIDGE NO. 430158

**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
5438 WIDE PARK BOULEVARD, SUITE 200  
RALEIGH, NC 27607  
(919) 854-6200 www.aecom.com  
AECOM License No. F0242

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON US74 WB/ US23 SB  
OVER RICHLAND CREEK BETWEEN  
US276 AND US19

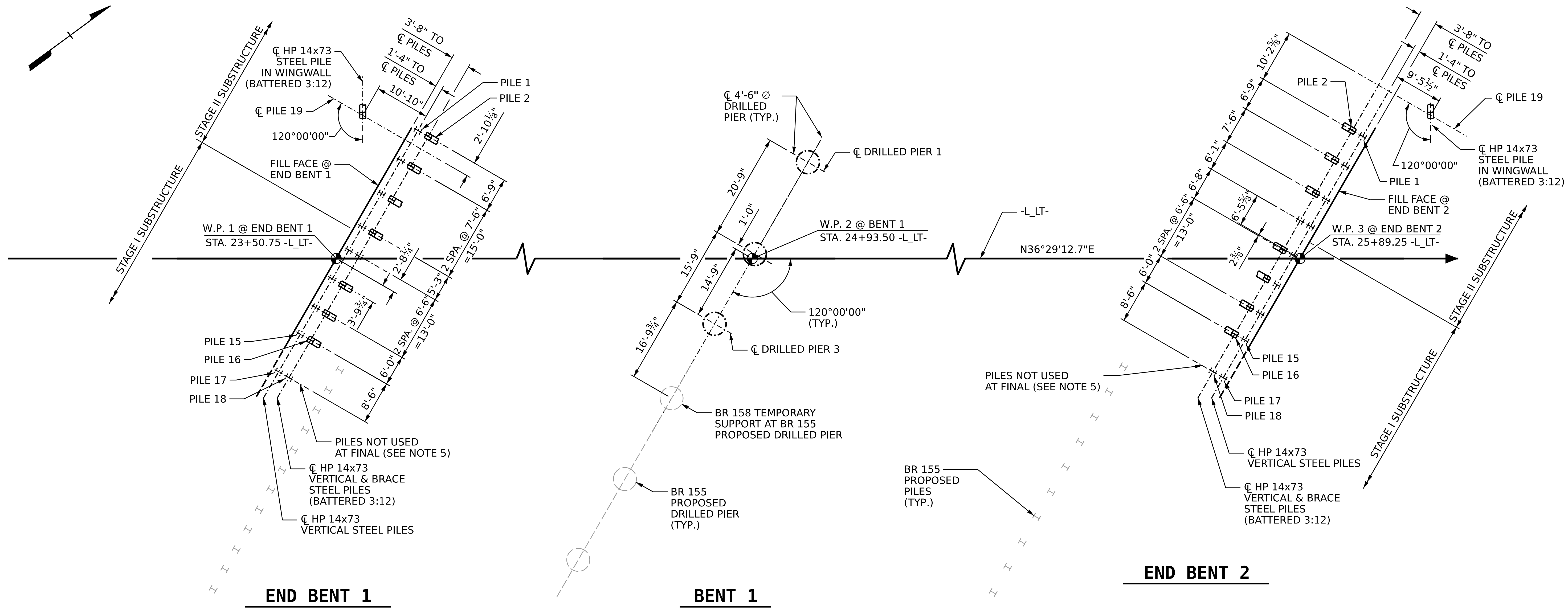
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S3-01**  
TOTAL SHEETS 50

DRAWN BY: M.L. CATER DATE: 04/2023  
CHECKED BY: D. TUTTLE DATE: 04/2023  
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

**PLAN**  
(END BENT PILES NOT SHOWN FOR CLARITY)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**FOUNDATION NOTES:**

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
3. INSTALL PERMANENT STEEL CASINGS AT BENT NO. 1 BY VIBRATING, SCREWING, OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING AN MATERIAL BELOW THE SPECIFIED PERMANENT CASING TIP ELEVATIONS.
4. SEE SPECIAL PROVISION FOR "TEMPORARY OVERBUILD AND REMOVAL."

**FOUNDATION LAYOUT**

(DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE TO CENTERLINE OF PILES AND DRILLED PIERS)

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+70.00 -L\_LT-

SHEET 2 OF 4

**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
 5430 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. F0242

DESIGNED BY: *[Signature]*  
 DATE: 04/4/23  
 CHECKED BY: *[Signature]*  
 DATE: 10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
FOR BRIDGE ON US74 WB/ US23 SB OVER RICHLAND CREEK BETWEEN US276 AND US19					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S3-02
					TOTAL SHEETS 50

DRAWN BY :	A.R. VAN VUREN	DATE :	06/2023
CHECKED BY :	S. NATARAJAN	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

### 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")	Factored Resistance per Pile TONS	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		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-19	130	2582.00	35	NA		220	18						
End Bent 2, Piles 1-19	115	2586.00	35	NA		195							

\*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.

$$**RDR = \frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \frac{\text{Nominal Downdrag Resistance} + \text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$$

### 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 TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-19	130			0.60			NA
End Bent 2, Piles 1-19	115			0.60			NA

\*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")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	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 or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT
Bent 1, Pier 1	780	2544.77	110.0	2556		12.6	7.9	MAYBE	2554.0	11.3	
Bent 1, Pier 2	780	2535.77	110.0	2548		14.1	15.4	MAYBE	2551.0	14.3	
Bent 1, Pier 3	780	2526.77	110.0	2541		15.5	23.0	MAYBE	2548.0	17.3	
<b>TOTAL QTY:</b>						42.2	46.3	3		42.9	

\*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*.

\*\*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 Casting for \_\_\_ Dia. Drilled Pier" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

**NOTES:**

- The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Ryan Patrick Doyle, #045161) on 08-01-2023.
- 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 will determine the need for PDA Testing, Permanent Steel Casing, CSL Testing, and SID Inspections when these items may be required.

### SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1, Piles 1-19	MAYBE	40	1		
End Bent 2, Piles 1-19	MAYBE	40			

\*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

### SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-19				YES	
End Bent 2, Piles 1-19				YES	
<b>TOTAL QTY:</b>				38	

### 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) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?*	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Pier 1		MAYBE	110.0	MAYBE	
Bent 1, Pier 2		MAYBE	155.0	MAYBE	
Bent 1, Pier 3		MAYBE	200.0	MAYBE	
<b>TOTAL QTY:</b>		3	465.0	3	

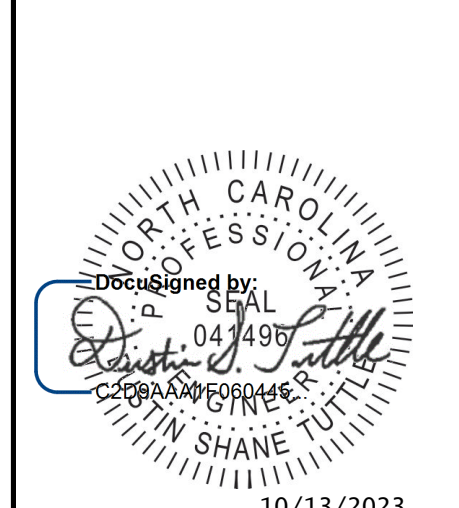
\*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

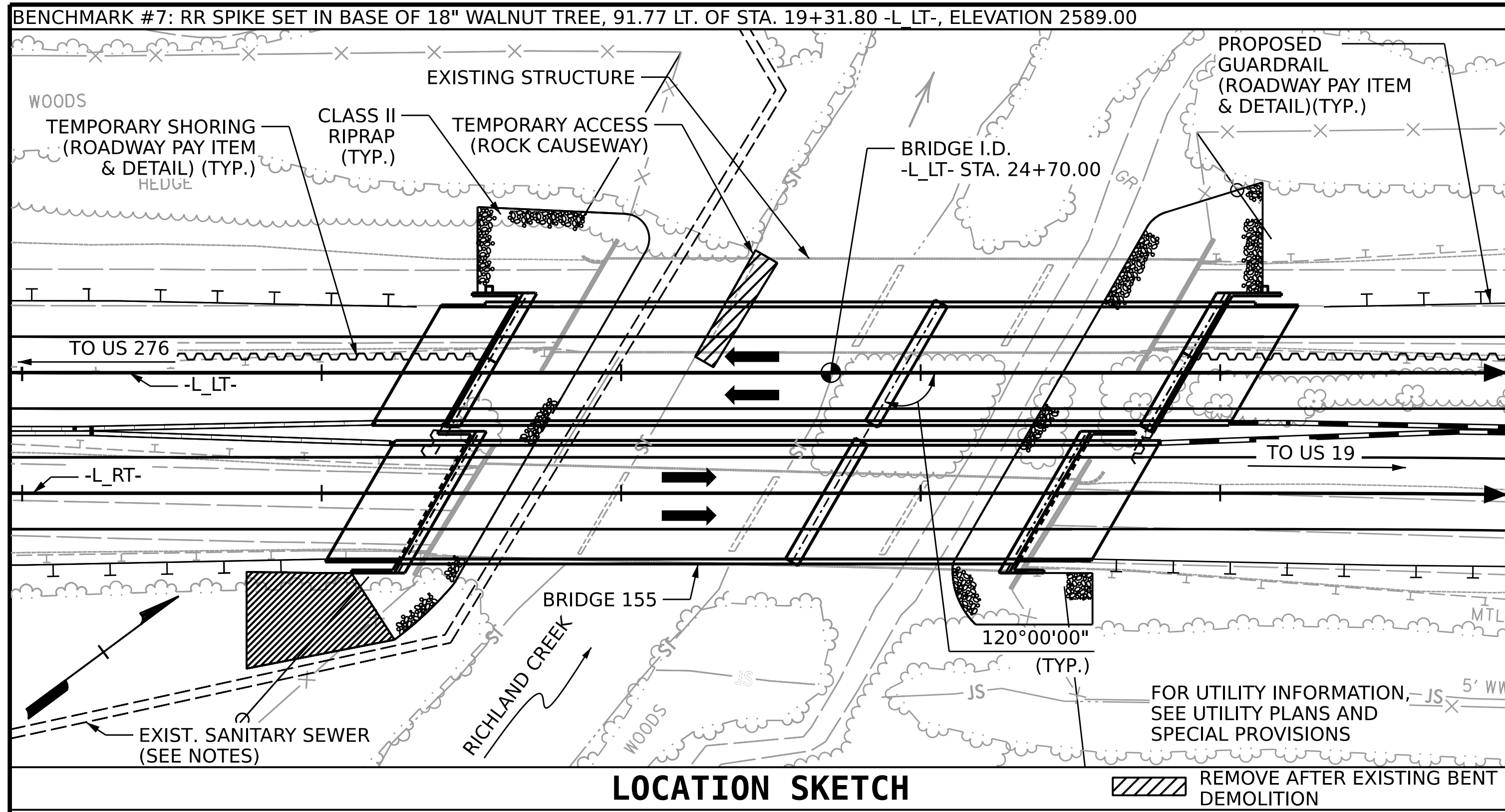
PROJECT NO. B-5898/B-3186

Haywood COUNTY

STATION: 24+70.00 -L LT-

SHEET 3 OF 4

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
	<b>PILE AND DRILLED PIER FOUNDATION TABLES</b>	
SIGNATURE	DATE	
REVISIONS		SHEET NO. S3-03
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. BY: DATE:	TOTAL SHEETS 50
1	3	
2	4	



**LOCATION SKETCH**

**SAMPLE BAR REPLACEMENT**

SIZE	SIZE
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

**NOTE:**  
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi. BAR LENGTHS IN THIS TABLE ARE A GUIDE. THE ENGINEER SHALL APPROVE FINAL LENGTHS BASED ON TYPE AND LOCATION OF SAMPLE BAR.

**NOTES CONT'D:**

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 STATION 24+70.00 -L LT-.

AT CONTRACTOR'S OPTION, THE EXISTING STRUCTURE CONCRETE MAY BE RUBBLIZED DURING REMOVAL AND USED AS STABILIZATION/ABC.M.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GLASS FIBER REINFORCED POLYMER (GFRP) BAR, SEE SPECIAL PROVISIONS.

**TOTAL BILL OF MATERIAL**

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STA. 24+70.00 -L LT-	REMOVAL OF EXISTING STRUCTURE AT STA. 24+70.00 -L LT-	ASEBESTOS ASSESSMENT	4'-6" Ø DRILLED PIERS IN SOIL	4'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER	PDA TESTING	SID TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 24+70.00	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM
SUPERSTRUCTURE											11,758	11,619		
END BENT 1													76.2	
BENT 1				46.3	42.2	42.9		3	3				82.5	
END BENT 2													72.7	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	46.3	42.2	42.9	1	3	3	LUMP SUM	11,758	11,619	231.4	LUMP SUM

**TOTAL BILL OF MATERIAL**

	REINFORCING STEEL	GLASS FIBER REINFORCED POLYMER (GFRP) BAR	SPIRAL COLUMN REINFORCING STEEL	63" F.I.B. PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	HP 14X73 STEEL PILES	STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS	TEMPORARY OVERBUILD AND REMOVAL		
	LBS.	LIN. FT.	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		9,230		14	1,632.6						778.1						
END BENT 1	9,097					19	19	665	19			489	543				
BENT 1	21,930		3,903														
END BENT 2	9,029					19	19	665	19			460	511				
TOTAL	40,056	9,230	3,903	14	1,632.6	38	38	1,330	38	18	778.1	949	1,054	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

DRAWN BY : A.R. VAN VUREN DATE : 06/2023  
 CHECKED BY : D. TUTTLE DATE : 06/2023  
 DESIGN ENGINEER OF RECORD : D. TUTTLE DATE : 06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**GENERAL NOTES:**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH 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 SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC-18 EVALUATING SCOUR AT BRIDGES."

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 LEFT SIDE AND RIGHT SIDE ARE 2554 FT AND 2550 FT. RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION & RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD FOR THE EXISTING STRUCTURE, 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 24+70.00 -L LT-".

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 4 SHALL BE EXCAVATED FOR A DISTANCE OF 64 FT. LEFT OF CENTERLINE -L LT- AND 37 FT. RIGHT OF CENTERLINE -L LT- 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 CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS AT 50FT OF CONCRETE DECK ON ROLLED STEEL W-SHAPE GIRDERS, WITH 28.0 FT CLEAR ROADWAY WIDTH, SUPPORTED BY PILE BENT CONCRETE END BENTS AND CONCRETE POST AND BEAM BENTS ON ISOLATED SPREAD FOOTINGS, AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

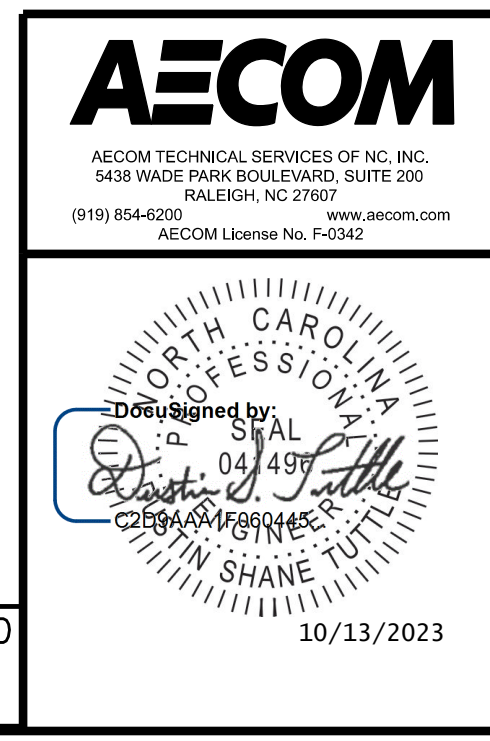
REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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 ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE LOCATION OF THE ABOVE GROUND SANITARY SEWER SHOWN IS BASED ON AN APPROXIMATE SURVEY. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, CONTRACTOR SHALL VERIFY THE LOCATION OF THE SANITARY SEWER AND ENSURE THAT THE UTILITY IS PROTECTED DURING THE REMOVAL OF THE EXISTING STRUCTURE AND DURING THE CONSTRUCTION OF THE PROPOSED STRUCTURES.

PROJECT NO. **B-3186 / B-5898**  
**HAYWOOD** COUNTY  
 STATION: **24+70.00 -L LT-**

SHEET 4 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON US74 WB/ US23 SB OVER RICHLAND CREEK BETWEEN US276 AND US19

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-04
1			3			TOTAL SHEETS 50
2			4			

10/13/2023

### LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	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 (Y <sub>LL</sub> )	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 (Y <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.07	--	1.75	0.75	1.45	A	ER	69.35	0.89	1.77	A	I	13.3	0.80	0.75	1.07	A	ER	69.3		
	HL-93 (OPERATING)	N/A		1.88	--	1.35	0.75	1.88	A	ER	69.35	0.89	2.32	A	I	13.3	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.62	58.32	1.75	0.74	2.16	B	ER	45.85	0.84	2.75	A	ER	125.4	0.80	0.75	1.62	A	ER	69.3		
	HS-20 (OPERATING)	36.000		2.80	100.80	1.35	0.74	2.80	B	ER	45.85	0.89	3.76	A	I	125.4	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.99	53.87	1.40	0.74	6.33	B	ER	45.85	0.89	9.31	A	I	13.3	0.80	0.75	3.99	A	ER	69.3	
		SNGARBS2	20.000		2.83	56.60	1.40	0.74	4.61	B	ER	45.85	0.89	6.42	A	I	13.3	0.80	0.75	2.83	A	ER	69.3	
		SNAGRIS2	22.000		2.62	57.64	1.40	0.74	4.32	B	ER	45.85	0.89	5.89	A	I	125.4	0.80	0.75	2.62	A	ER	69.3	
		SNCOTTS3	27.250		1.98	53.96	1.40	0.74	3.15	B	ER	45.85	0.89	4.58	A	I	13.3	0.80	0.75	1.98	A	ER	69.3	
		SNAGGRS4	34.925		1.60	55.88	1.40	0.74	2.59	B	ER	45.85	0.89	3.66	A	I	13.3	0.80	0.75	1.60	A	ER	69.3	
		SNS5A	35.550		1.57	55.81	1.40	0.74	2.53	B	ER	45.85	0.89	3.65	A	I	13.3	0.80	0.75	1.57	A	ER	69.3	
		SNS6A	39.950		1.42	56.73	1.40	0.74	2.31	B	ER	45.85	0.84	3.14	A	ER	13.3	0.80	0.75	1.42	A	ER	69.3	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.72	56.76	1.40	0.74	2.81	B	ER	45.85	0.89	3.96	A	I	13.3	0.80	0.75	1.72	A	ER	69.3	
		TNT4A	33.075		1.72	56.89	1.40	0.74	2.82	B	ER	45.85	0.89	3.90	A	I	125.4	0.80	0.75	1.72	A	ER	69.3	
		TNT6A	41.600		1.39	57.82	1.40	0.74	2.29	B	ER	45.85	0.84	3.14	A	ER	13.3	0.80	0.75	1.39	A	ER	69.3	
		TNT7A	42.000		1.38	57.96	1.40	0.74	2.29	B	ER	45.85	0.84	3.09	A	ER	13.3	0.80	0.75	1.38	A	ER	69.3	
		TNT7B	42.000		1.40	58.80	1.40	0.74	2.35	B	ER	45.85	0.84	2.99	A	ER	13.3	0.80	0.75	1.40	A	ER	69.3	
		TNAGRIT4	43.000		1.36	58.48	1.40	0.74	2.25	B	ER	45.85	0.84	2.91	A	ER	13.3	0.80	0.75	1.36	A	ER	69.3	
		TNAGT5A	45.000		1.29	58.05	1.40	0.74	2.13	B	ER	45.85	0.84	2.83	A	ER	13.3	0.80	0.75	1.29	A	ER	69.3	
TNAGT5B	45.000		③	1.28	57.60	1.40	0.74	2.11	B	ER	45.85	0.84	2.77	A	ER	125.4	0.80	0.75	1.28	A	ER	69.3		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.98	56.93	1.30	0.74	3.50	B	ER	45.85	0.89	4.81	A	I	13.3	0.80	0.75	1.98	A	ER	69.3		
	EV3	43.000		④	1.31	56.33	1.30	0.74	2.30	B	ER	45.85	0.89	3.19	A	I	13.3	0.80	0.75	1.31	A	ER	69.3	

**LOAD FACTORS:**

DESIGN LOAD RATING FACTORS	LIMIT STATE	Y <sub>DC</sub>	Y <sub>DW</sub>
	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)

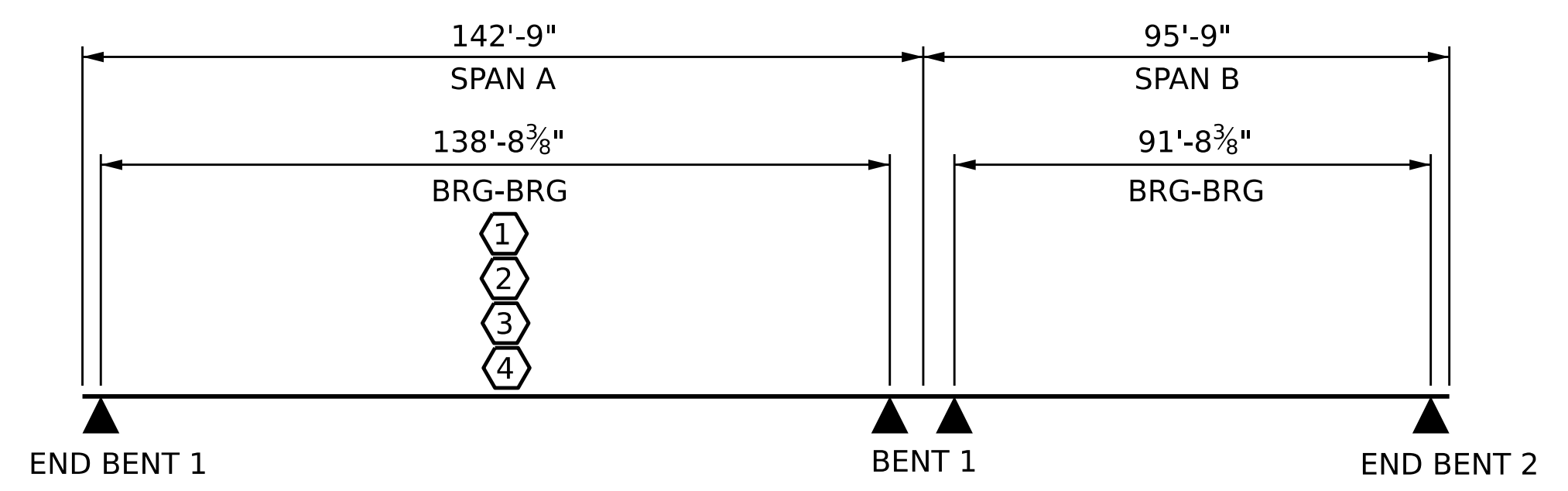
③ LEGAL LOAD RATING \*\*

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**

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_ LT-

ASSEMBLED BY : I.N. HART	DATE : 05/2023
CHECKED BY : D. TUTTLE	DATE : 06/2023
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

**AECOM**

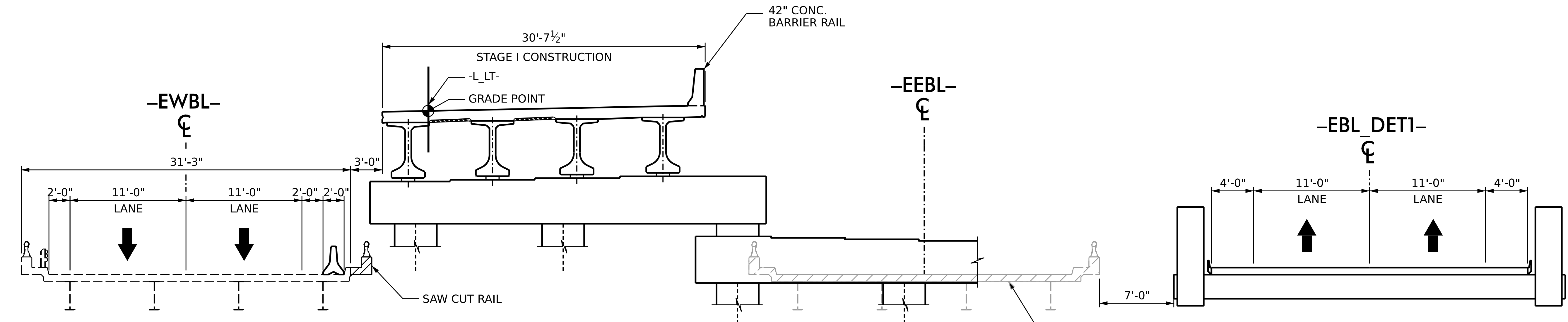
AECOM TECHNICAL SERVICES OF NC, INC.  
5430 WADE PARK BOULEVARD, SUITE 200  
RALEIGH, NC 27607  
(919) 854-6200 www.aecom.com  
AECOM License No. F0242

DESIGNED BY: SPAL  
DATE: 04/19/23  
CHECKED BY: SHANE TUTTLE  
DATE: 10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD <b>LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS</b> (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-05 TOTAL SHEETS 50

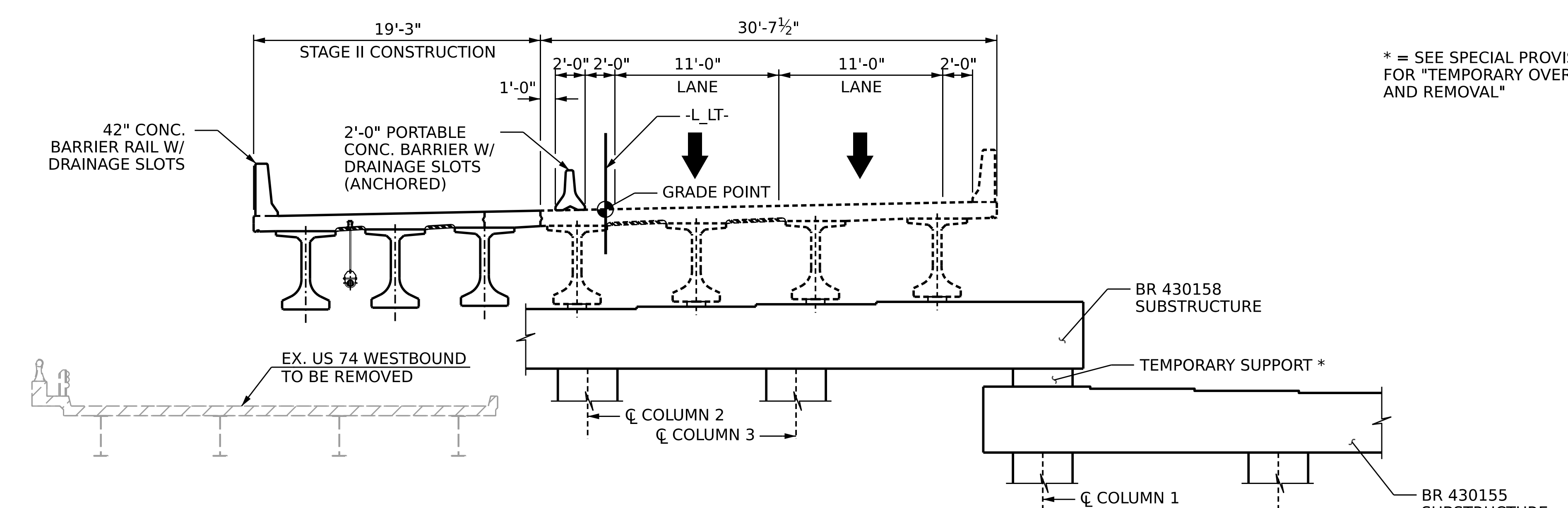


**EXISTING CONDITION**



**STAGE I CONSTRUCTION**

SHIFT EASTBOUND TRAFFIC ONTO -EBL\_DET1-  
 REMOVE EXISTING EASTBOUND BRIDGE  
 CONSTRUCT STAGE I (BR 430158)  
 TEMPORARILY SUPPORT BR 430158 SUBSTRUCTURE ON BR 430155 SUBSTRUCTURE



**STAGE II CONSTRUCTION**

SHIFT WESTBOUND TRAFFIC ONTO STAGE I  
 REMOVE EXISING WESTBOUND BRIDGE  
 CONSTRUCT STAGE II

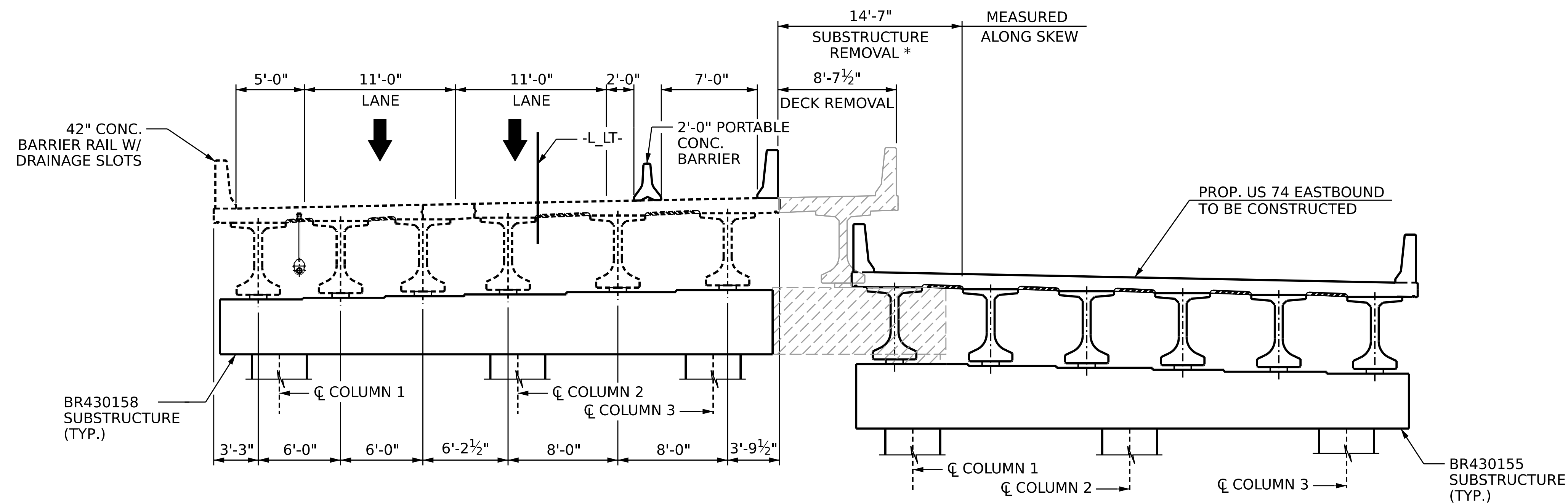
\* = SEE SPECIAL PROVISION FOR "TEMPORARY OVERBUILD AND REMOVAL"

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
CONSTRUCTION SEQUENCE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-06
					TOTAL SHEETS 50

DRAWN BY :	L. LEE	DATE :	03/2023
CHECKED BY :	D. TUTTLE	DATE :	03/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

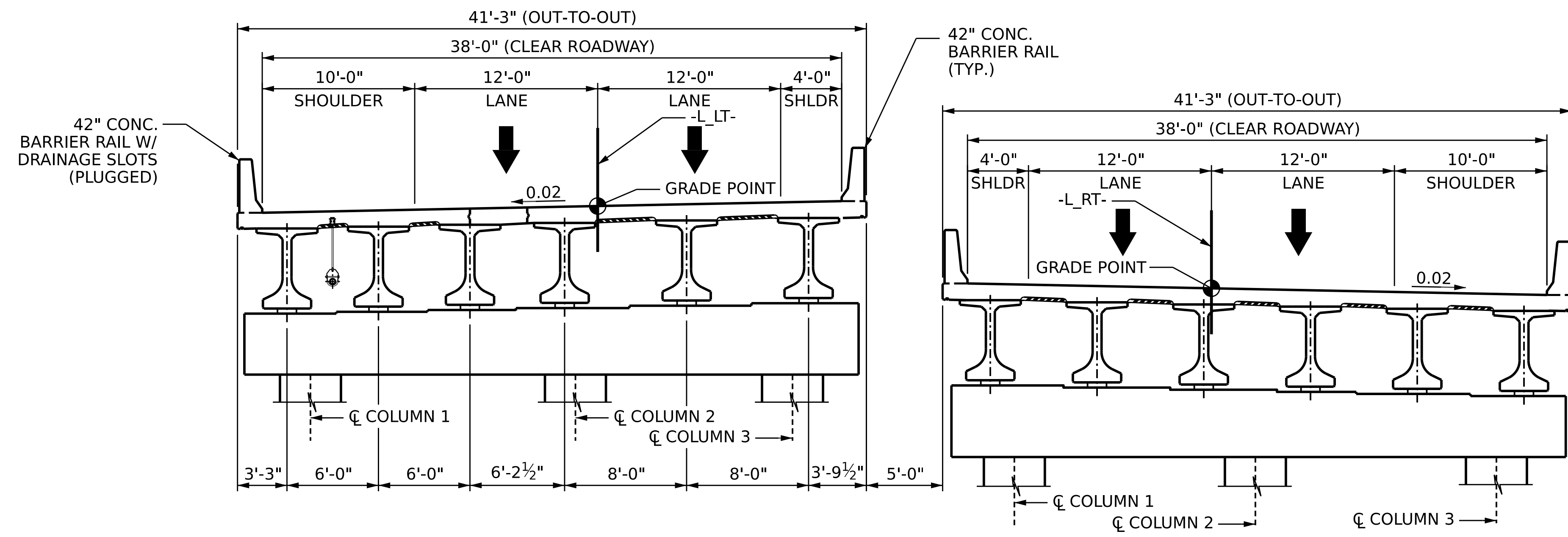
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED



\* = SEE SPECIAL PROVISION FOR "TEMPORARY OVERBUILD AND REMOVAL"

**STAGE III CONSTRUCTION & DEMOLITION**

SHIFT WESTBOUND TRAFFIC ONTO STAGE II  
 PARTIAL REMOVAL OF WESTBOUND BRIDGE  
 CONSTRUCTION OF PROPOSED BARRIER RAIL ON WESTBOUND BRIDGE  
 CONSTRUCTION OF PROPOSED EASTBOUND BRIDGE



**FINAL CONSTRUCTION**

SHIFT EASTBOUND TRAFFIC ONTO PROPOSED EASTBOUND BRIDGE  
 SHIFT WESTBOUND TRAFFIC ONTO PROPOSED WESTBOUND LANES

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-

SHEET 2 OF 2

**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
 5430 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. F0242

DESIGNED BY: SPAL  
 DATE: 04/19/23  
 CHECKED BY: [Signature]  
 DATE: 06/06/23  
 DRAWN BY: SHANE TUTTLE  
 DATE: 10/13/2023

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S3-07
2			4			50

DRAWN BY: L. LEE DATE: 03/2023  
 CHECKED BY: D. TUTTLE DATE: 03/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

**NOTES**

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY IN PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS. PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (CHCM) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

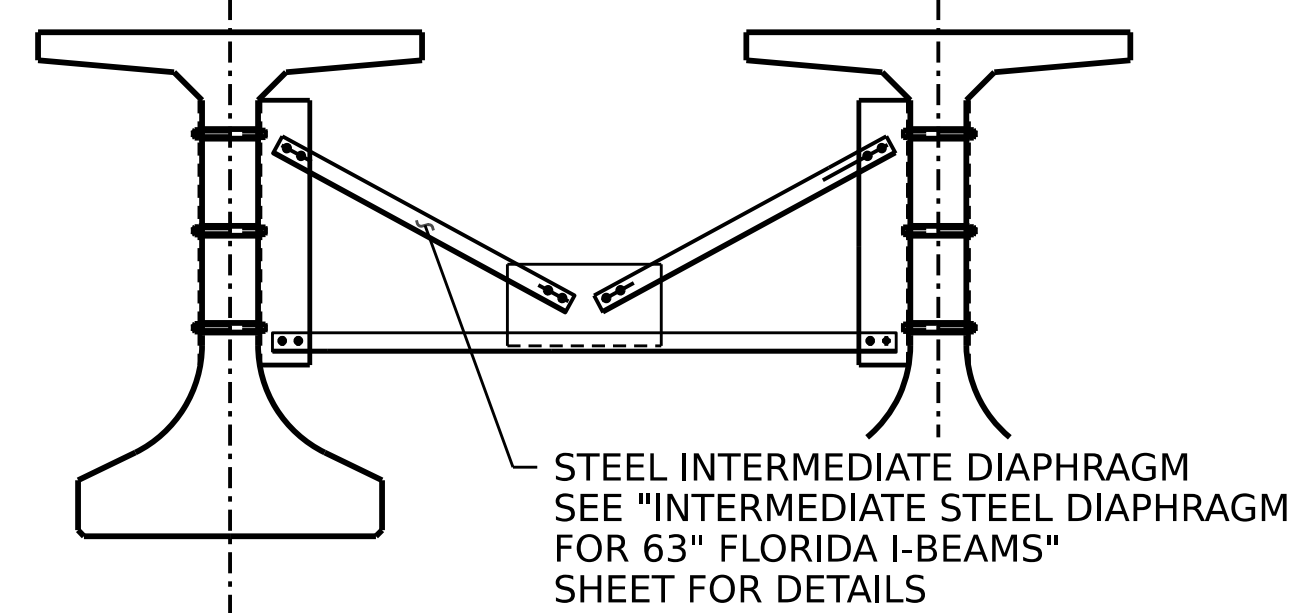
SEE CONCRETE BARRIER RAIL DETAILS SHEET FOR DETAILS OF STAGE III CONCRETE BARRIER REINFORCEMENT TO BE PLACED IN STAGE I. LONGITUDINAL "B" BARS MUST BE COORDINATED WITH BARRIER RAIL "D" BARS TO ENSURE NO CONFLICT DURING "D" BAR PLACEMENT.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

SEE CONSTRUCTION SEQUENCE SHEETS FOR LOCATION OF TEMPORARY PORTABLE CONCRETE BARRIER (ANCHORED)

BUILD-UP BARS #5K26 AND #5K27 MAY BE PLACED DIAGONALLY IF NEEDED TO CLEAR THE REINFORCEMENT AT THE TOP OF BRIDGE DECK.



**PART TYPICAL SECTION**  
(SHOWING INTERMEDIATE STEEL DIAPHRAGMS)

**"B" BAR KEY**

- = NON-CONTINUOUS BAR RUN FOR NEGATIVE MOMENT REGIONS. SEE "PLAN OF SPANS" SHEET
- = CONTINUOUS BAR RUN SEE "PLAN OF SPANS" SHEET

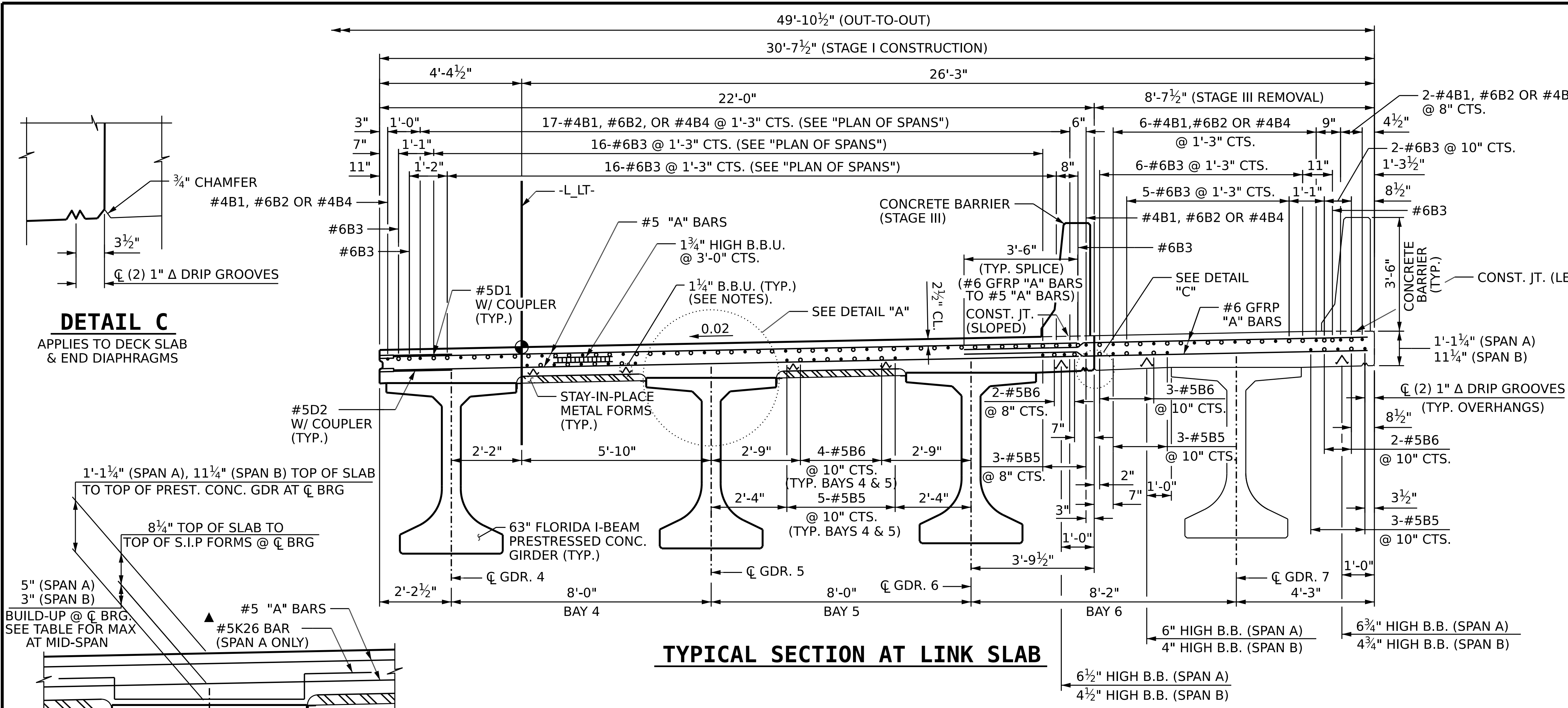
PROJECT NO. **B-3186 / B-5898**

**HAYWOOD** COUNTY

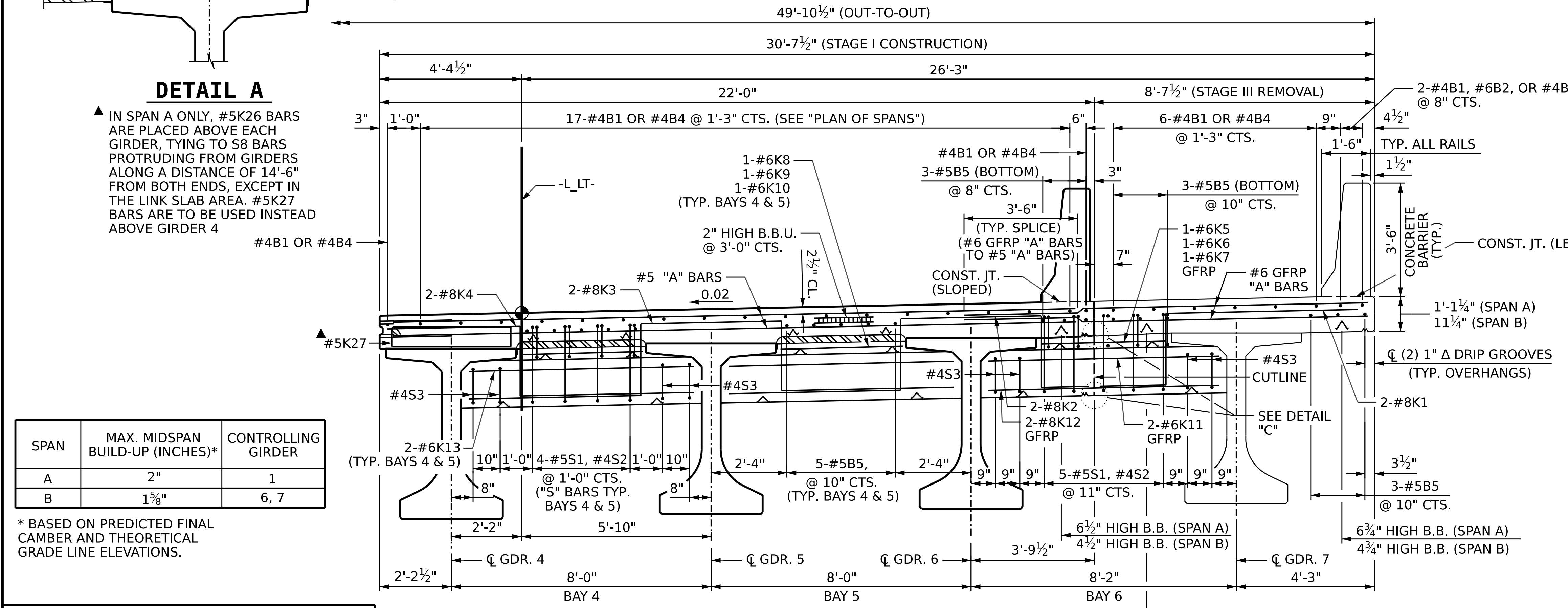
STATION: **24+70.00 -L\_LT-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE			
<b>TYPICAL SECTIONS</b>					
STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.			S3-08		
TOTAL SHEETS			50		



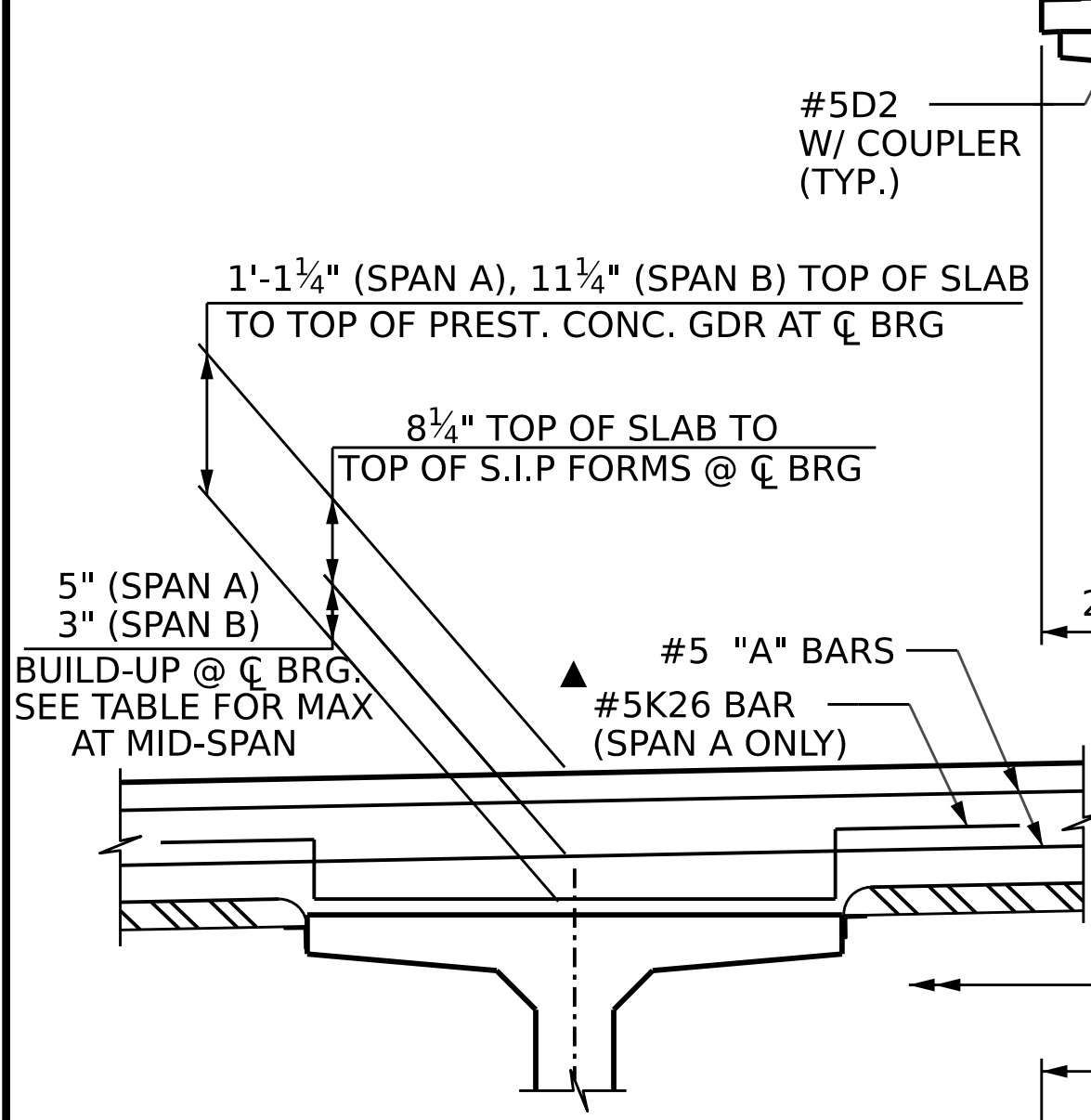
**TYPICAL SECTION AT LINK SLAB**



**TYPICAL SECTION AT END BENT**

**DETAIL C**

APPLIES TO DECK SLAB & END DIAPHRAGMS



**DETAIL A**

▲ IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S8 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS, EXCEPT IN THE LINK SLAB AREA. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 4

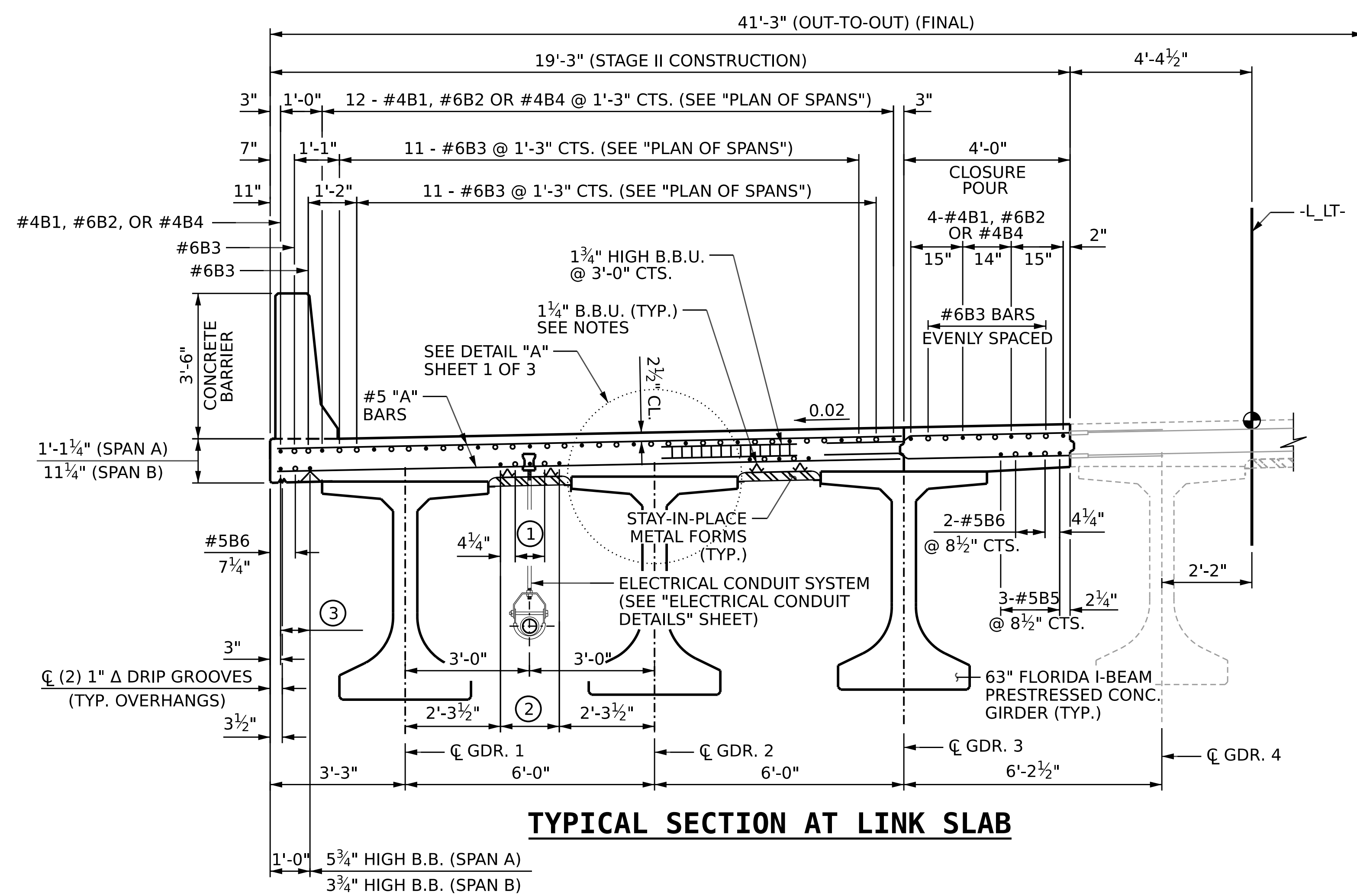
SPAN	MAX. MIDSPAN BUILD-UP (INCHES)*	CONTROLLING GIRDER
A	2"	1
B	1 5/8"	6, 7

\* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

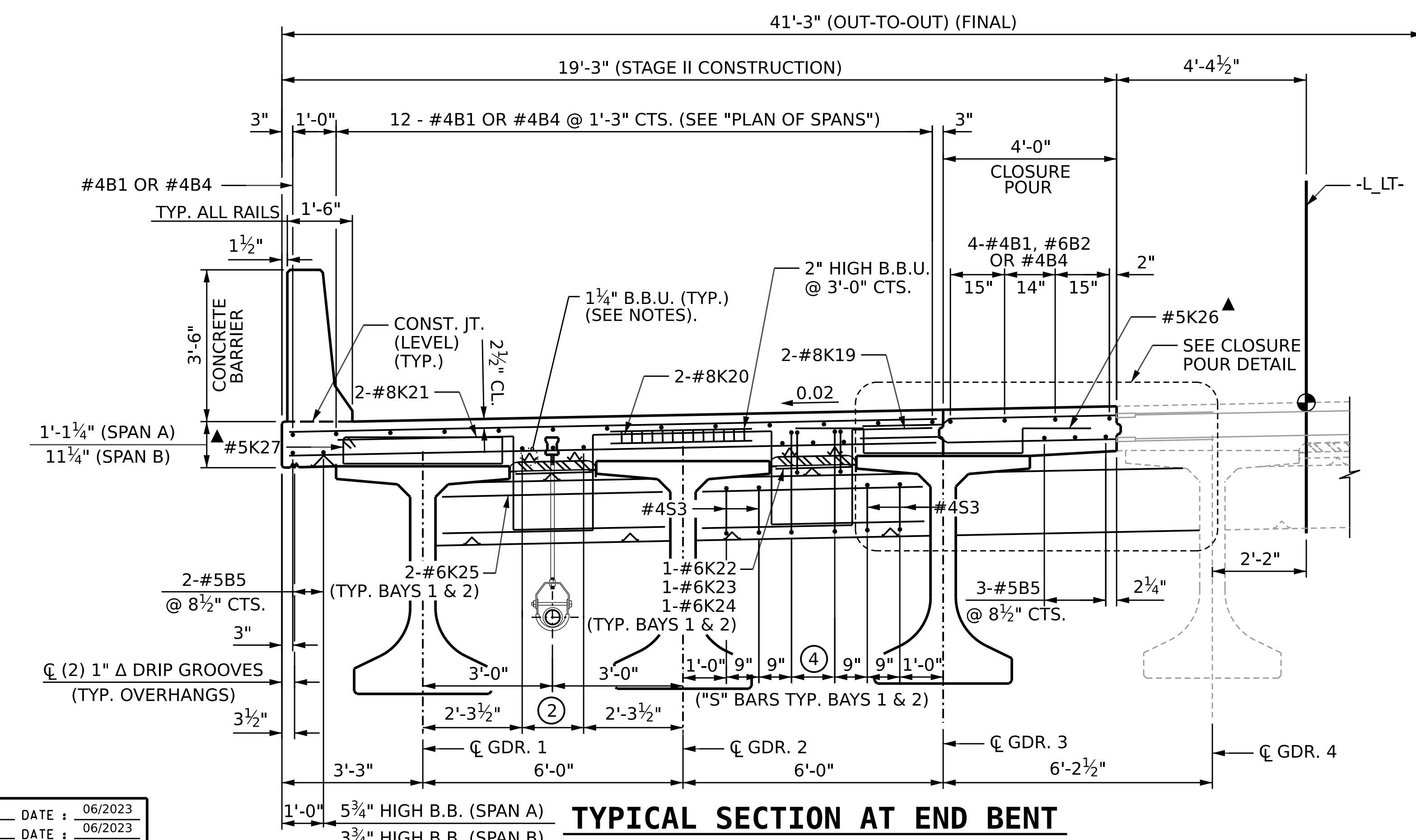
DRAWN BY :	M.L. CATER	DATE :	06/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD :	D. TUTTLE	DATE :	06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



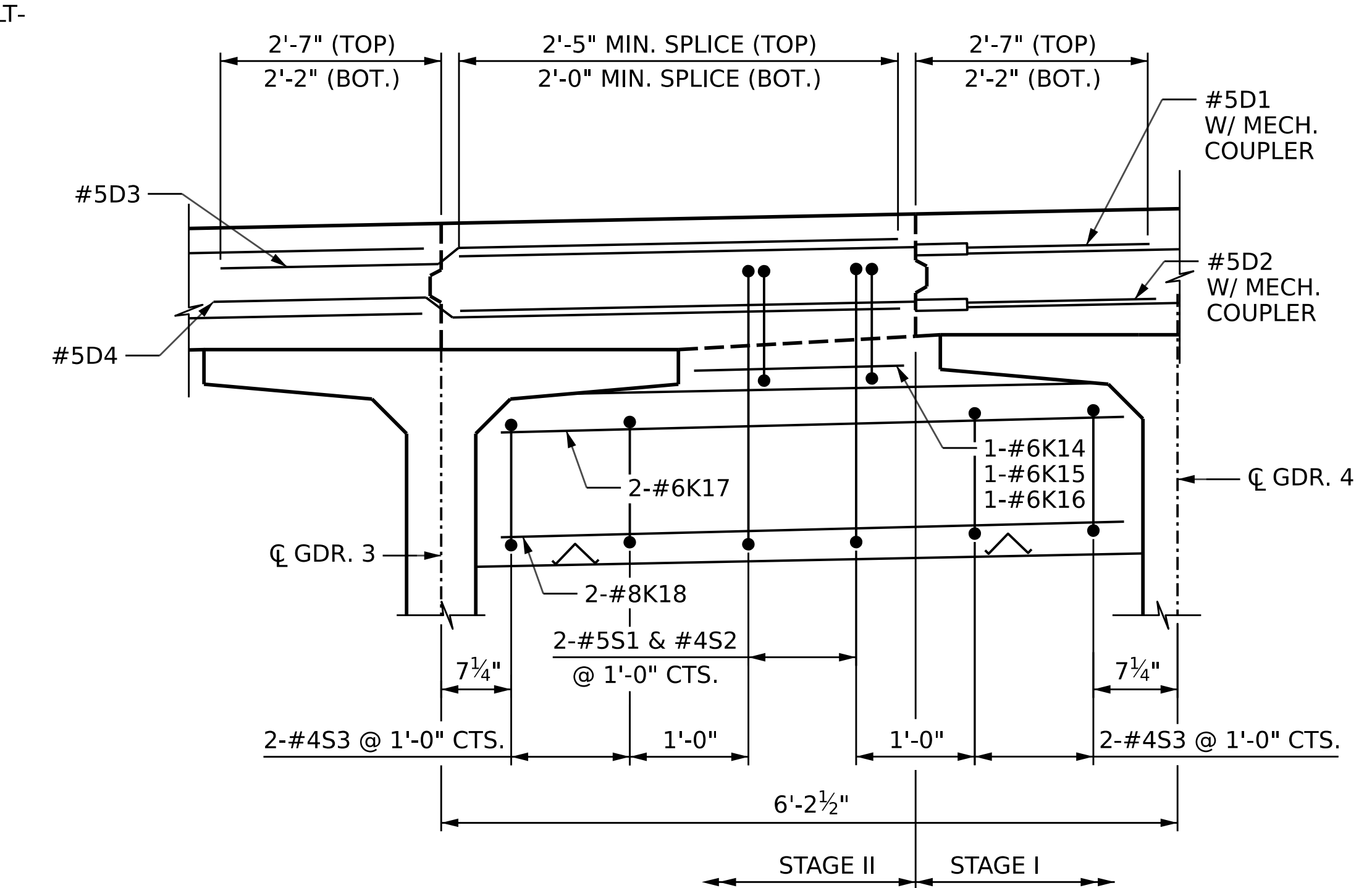


**TYPICAL SECTION AT LINK SLAB**



**TYPICAL SECTION AT END BENT**

**NOTES:**  
 FOR PART TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM, SEE SHEET 1 OF 3  
 FOR NOTES, SEE SHEET 1 OF 3



**CLOSURE POUR DETAIL**  
 DECK CLOSURE POUR DETAIL AT END BENT

- ① 2 - #5B6 @ 8 1/2" CTS. (TYP. BAYS 1 & 2)
  - ② 3 - #5B5 @ 8 1/2" CTS. (TYP. BAYS 1 & 2)
  - ③ 2 - #5B5 @ 8 1/2" CTS.
  - ④ 2 - #5S1 & #4S2 @ 1'-0" CTS. (TYP. IN BAYS 1 & 2)
- ▲ IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S9 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS, EXCEPT IN THE LINK SLAB. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 1
- "B" BAR KEY**
- = NON-CONTINUOUS BAR RUN FOR NEGATIVE MOMENT REGIONS. SEE "PLAN OF SPANS" SHEET
  - = CONTINUOUS BAR RUN SEE "PLAN OF SPANS" SHEET

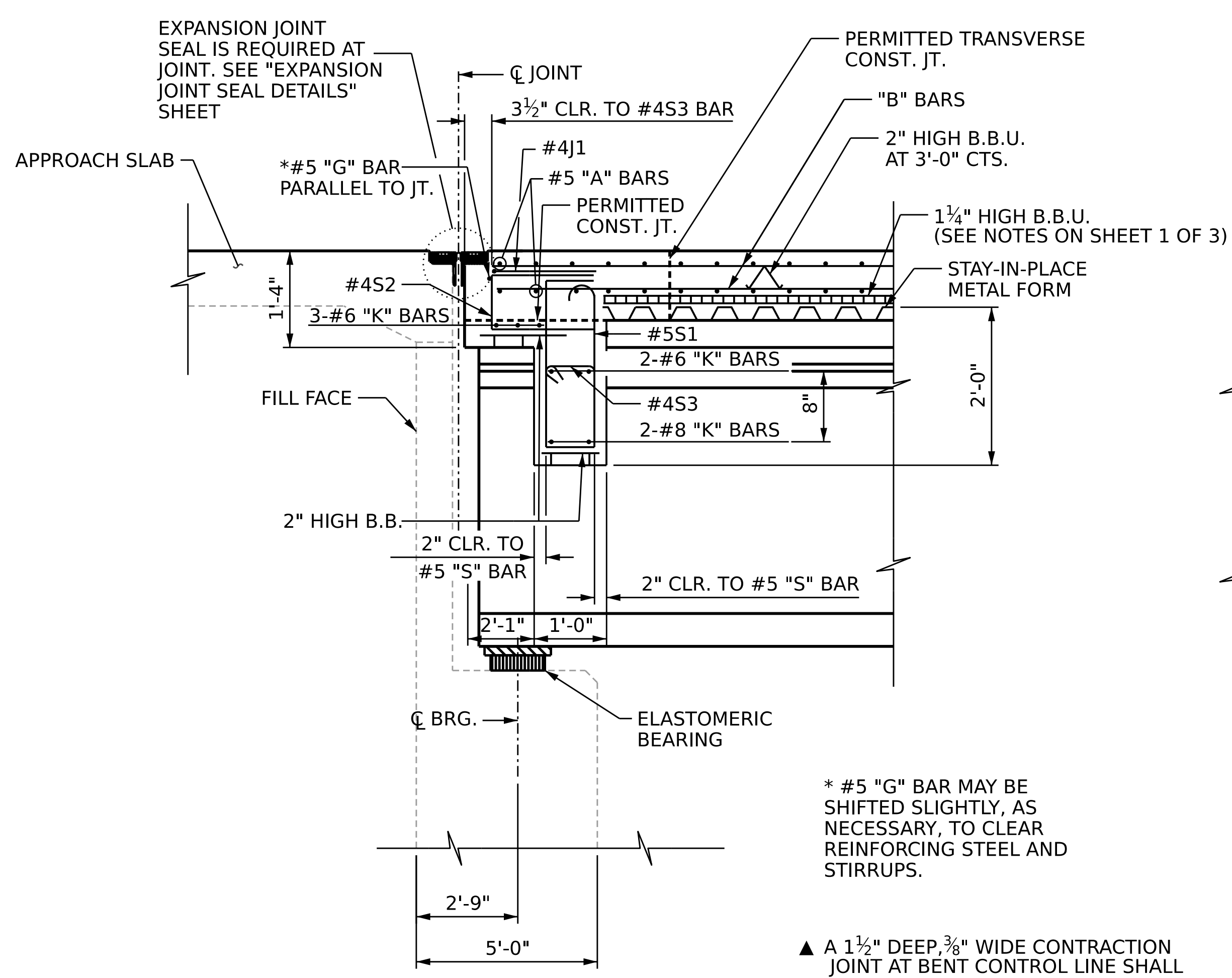
PROJECT NO. **B-3186 / B-5898**  
**HAYWOOD** COUNTY  
 STATION: **24+70.00 -L\_LT-**  
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE			
<b>TYPICAL SECTIONS</b>					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S3-09					
TOTAL SHEETS 50					

DRAWN BY: M.L. CATER DATE: 06/2023  
 CHECKED BY: D. TUTTLE DATE: 06/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

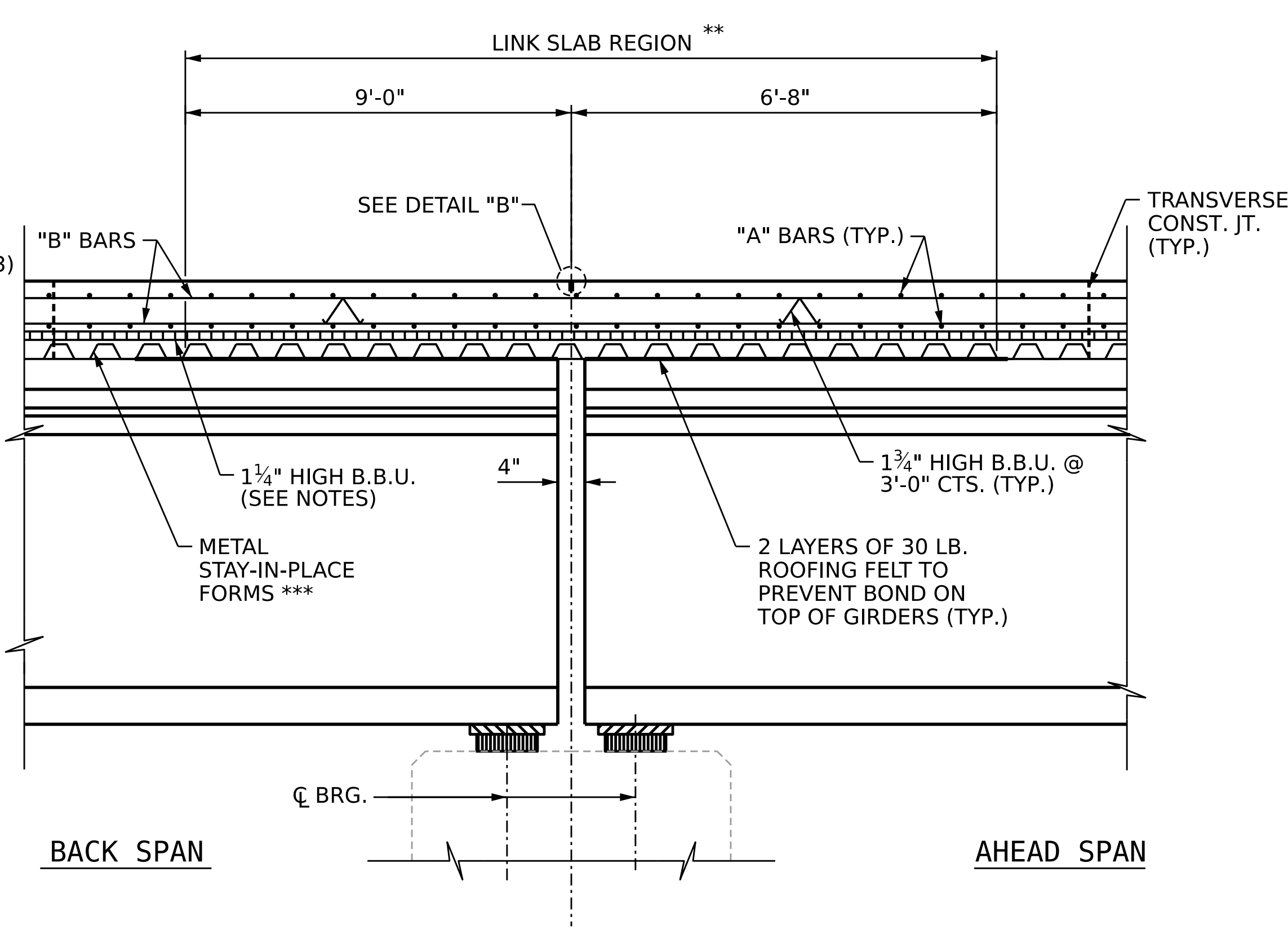
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**SECTION @ END BENT**

\* #5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

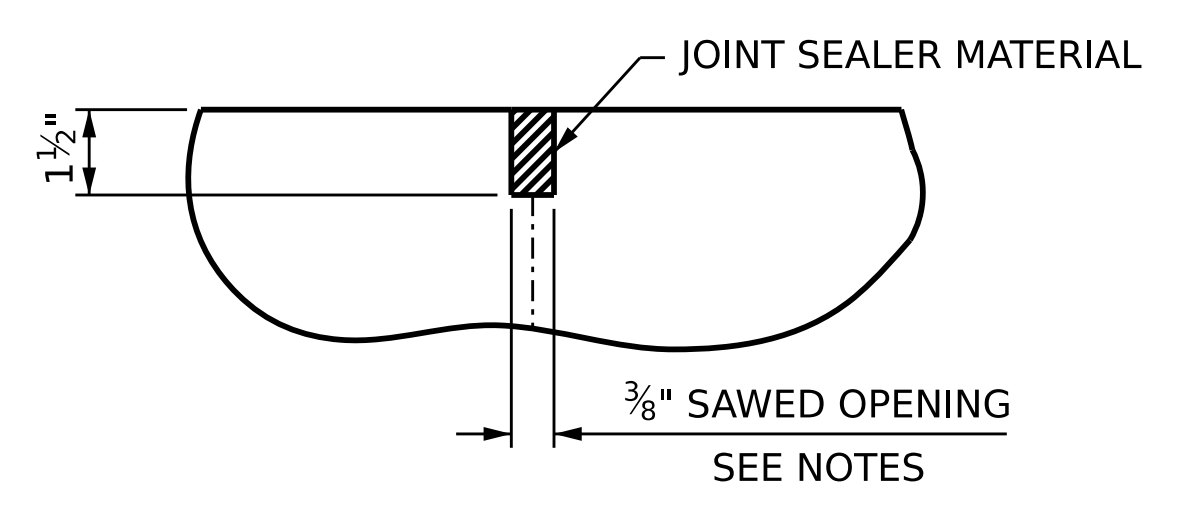
▲ A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



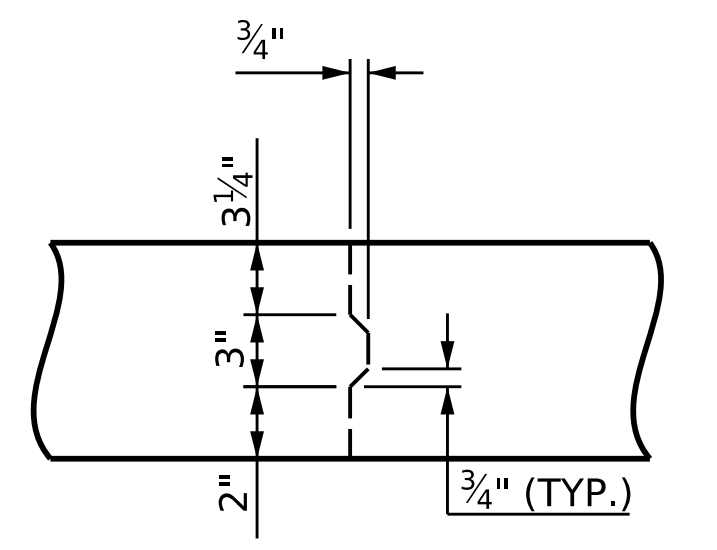
**SECTION @ LINK SLAB**  
SECTION SHOWN ALONG GIRDER

\*\* THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

\*\*\* METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

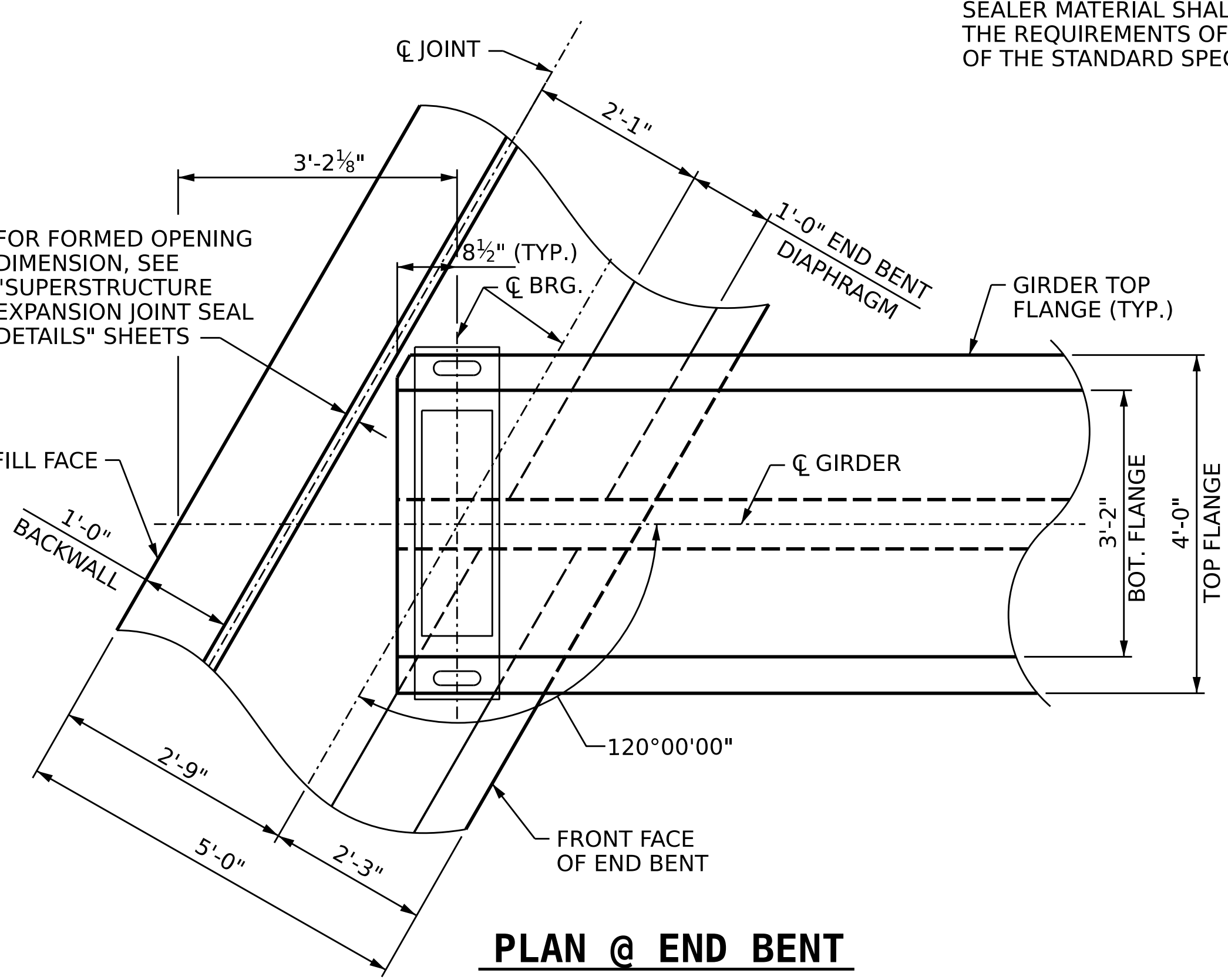


**DETAIL "B"**

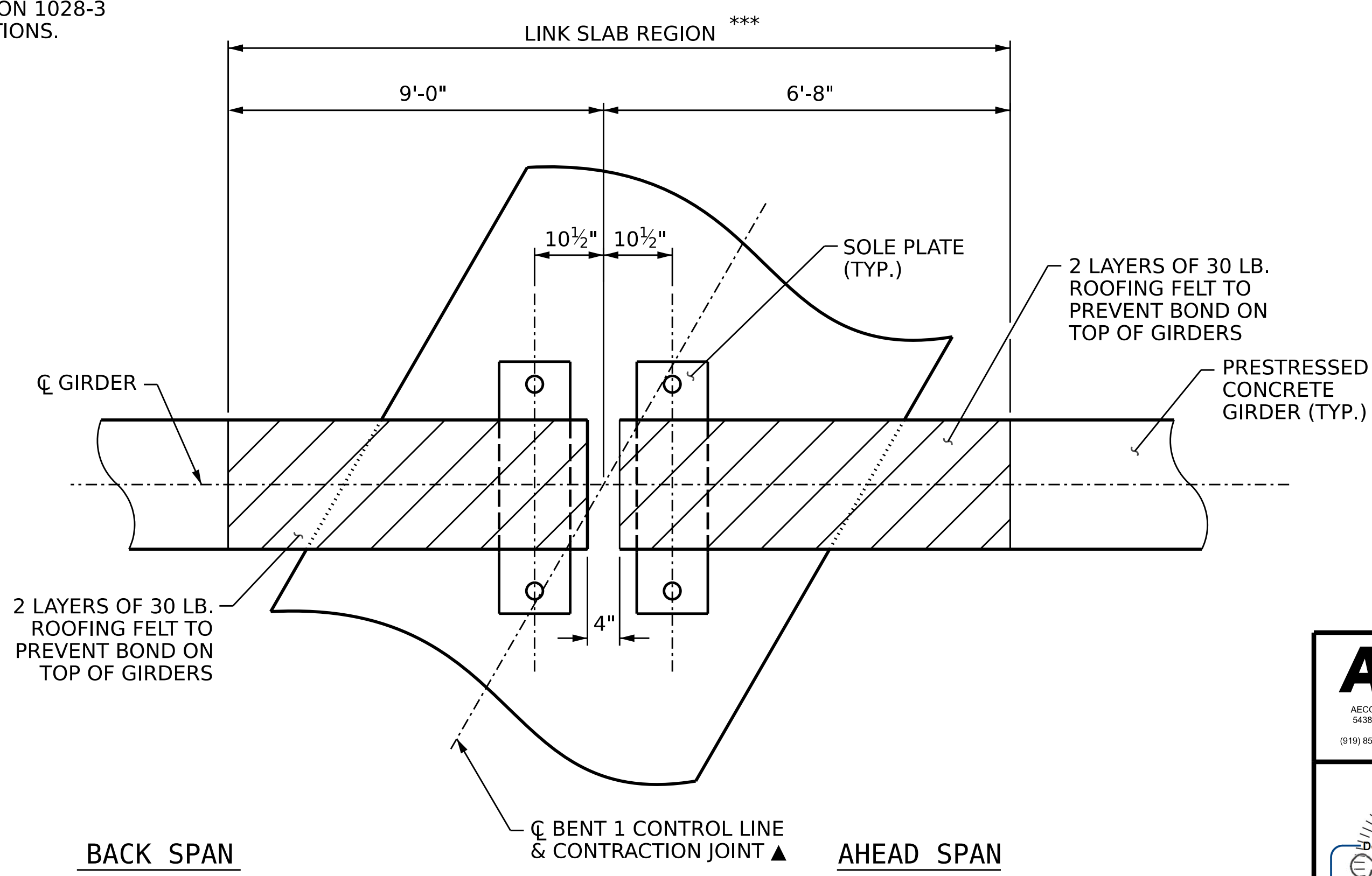


**TRANSVERSE CONSTRUCTION**  
**JOINT IN DECK SLAB**

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT.



**PLAN @ END BENT**



**PLAN @ BENT**

PROJECT NO. **B-3186 / B-5898**  
**HAYWOOD** COUNTY  
STATION: **24+70.00 -L\_LT-**  
SHEET 3 OF 3

**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
5430 WADE PARK BOULEVARD, SUITE 200  
RALEIGH, NC 27607  
(919) 854-6200 www.aecom.com  
AECOM License No. F0242

DESIGNED BY: SHAL  
CHECKED BY: SHAL  
DATE: 04/19/23  
DATE: 04/19/23  
DATE: 04/19/23

10/13/2023

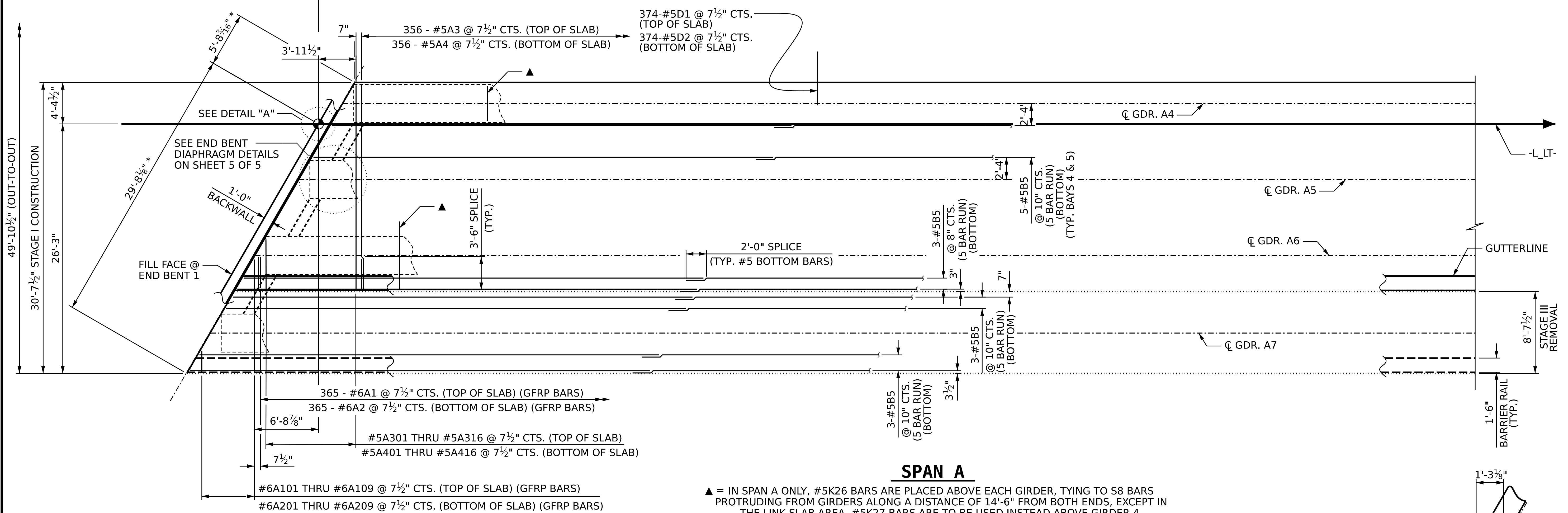
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
TYPICAL SECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-10
TOTAL SHEETS					50

DRAWN BY :	M.L. CATER	DATE :	06/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

OVERALL LENGTH = 238'-6" (FILL FACE AT END BENT 1 TO FILL FACE AT END BENT 2)

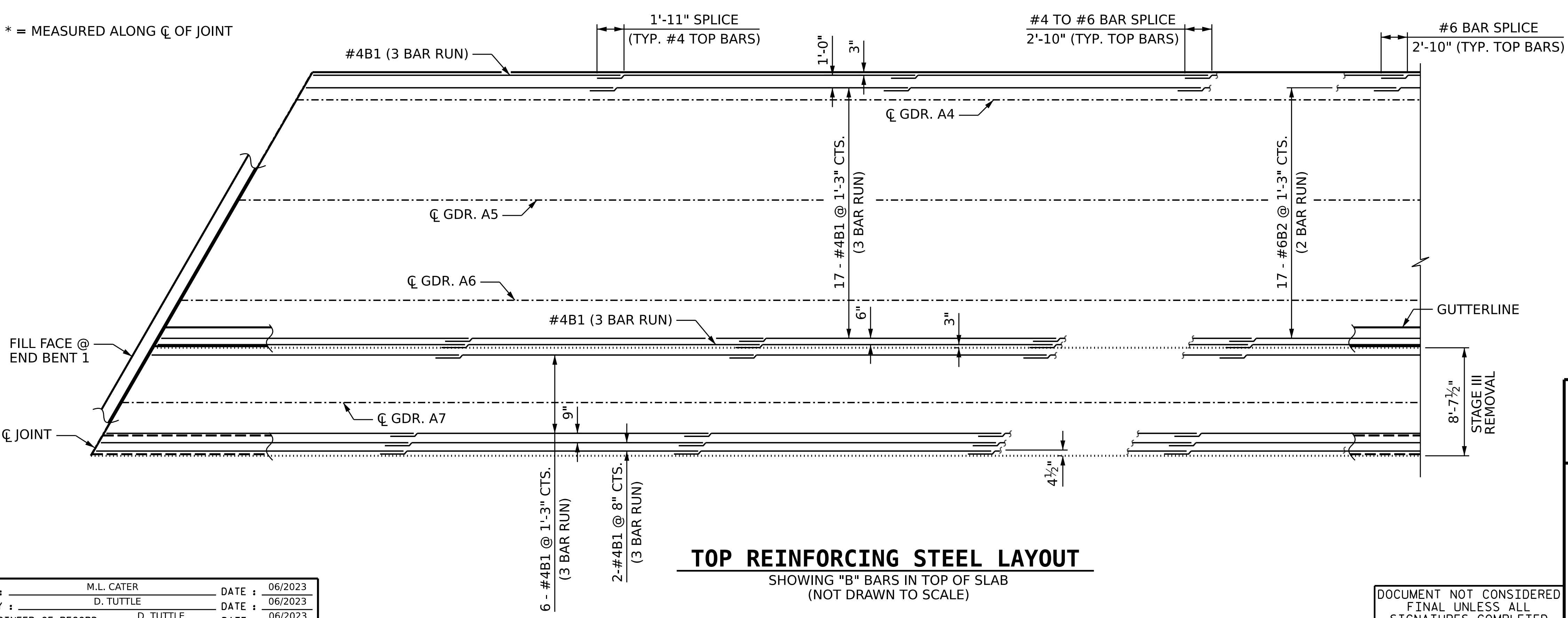
142'-9" (W.P. 1 TO W.P. 2)



**SPAN A**

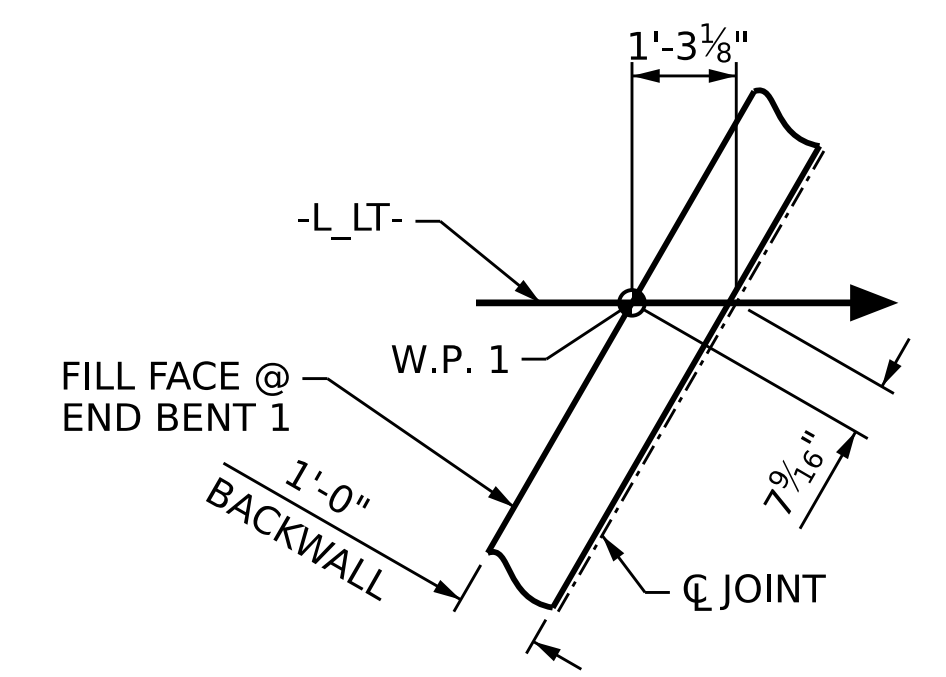
▲ = IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S8 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS, EXCEPT IN THE LINK SLAB AREA. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 4. (31 BARS PER GIRDER)

\* = MEASURED ALONG C OF JOINT



**TOP REINFORCING STEEL LAYOUT**

SHOWING "B" BARS IN TOP OF SLAB (NOT DRAWN TO SCALE)



**DETAIL "A"**

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-  
 SHEET 1 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE <b>PLAN OF SPAN A STAGE I CONSTRUCTION</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-11
					TOTAL SHEETS 50

DRAWN BY : M.L. CATER DATE : 06/2023  
 CHECKED BY : D. TUTTLE DATE : 06/2023  
 DESIGN ENGINEER OF RECORD : D. TUTTLE DATE : 06/2023

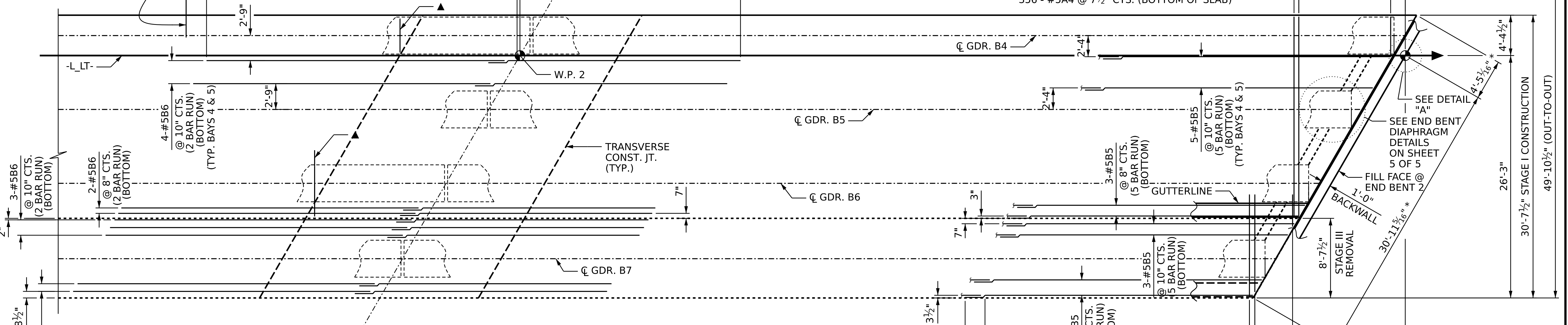
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

OVERALL LENGTH = 238'-6" (FILL FACE AT END BENT 1 TO FILL FACE AT END BENT 2)

142'-9" (W.P. 1 TO W.P. 2)

95'-9" (W.P. 2 TO W.P. 3)

374-#5D1 @ 7 1/2" CTS. (TOP OF SLAB)  
374-#5D2 @ 7 1/2" CTS. (BOTTOM OF SLAB)

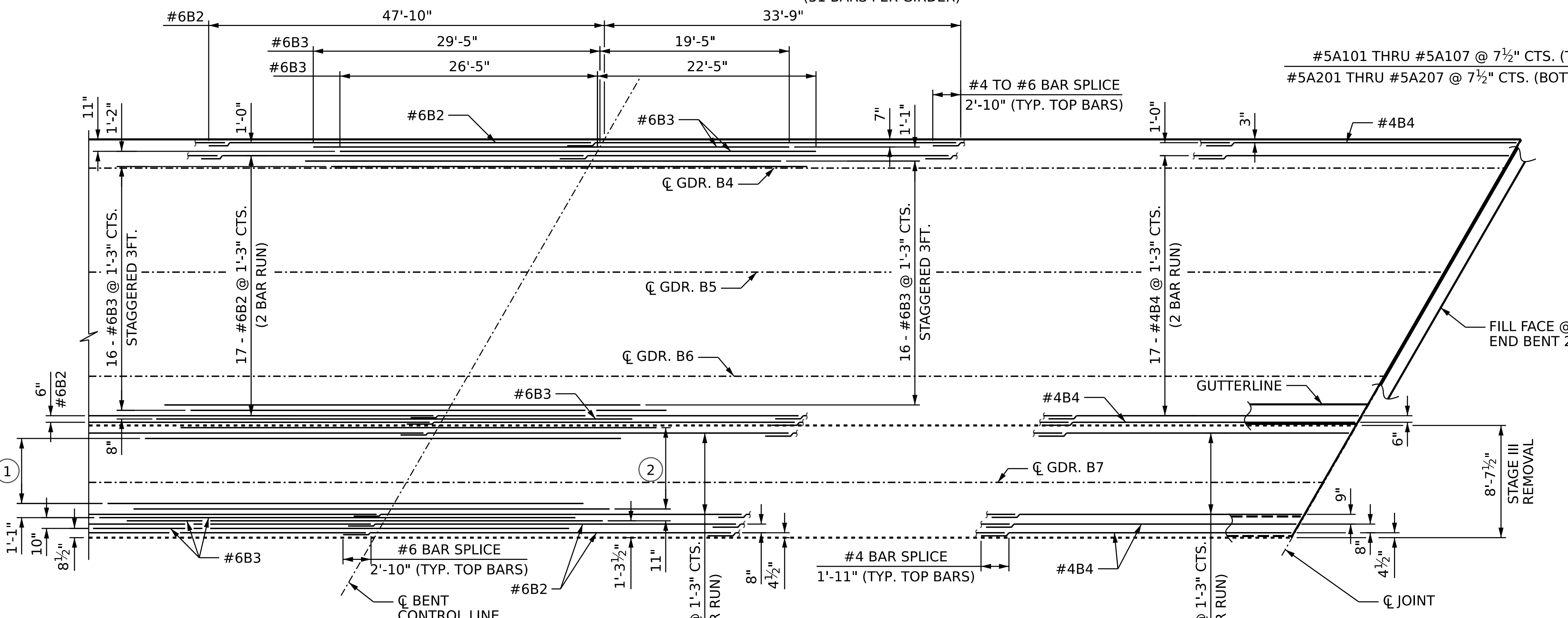


\* = MEASURED ALONG C OF JOINT

- ① 5 - #6B3 @ 1'-3" CTS. STAGGERED 3 FT.
- ② 6 - #6B3 @ 1'-3" CTS. STAGGERED 3 FT.

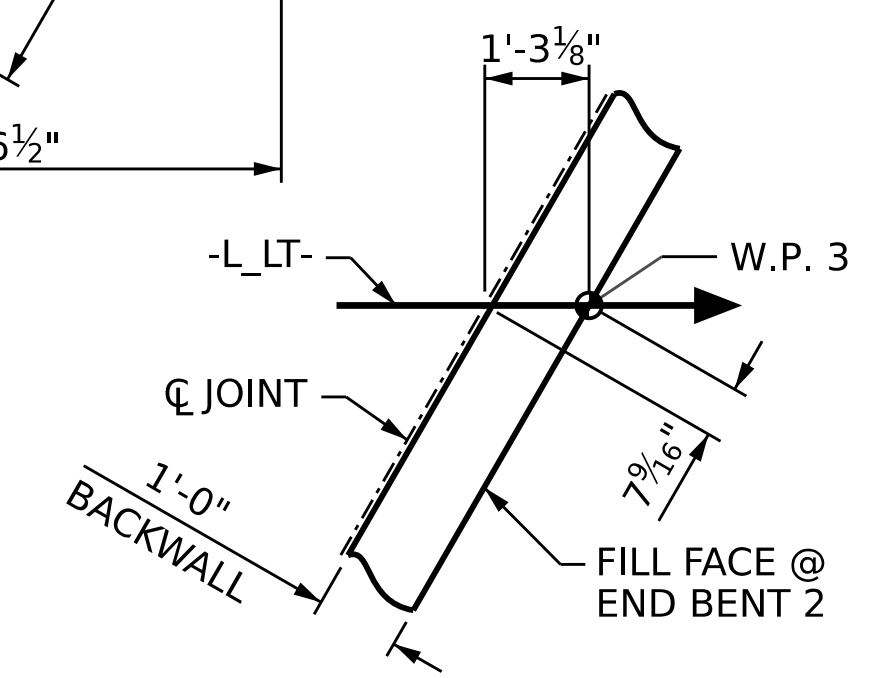
▲ = IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S8 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS EXCEPT IN LINK SLAB AREA. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 4. (31 BARS PER GIRDER)

### SPAN B



### TOP REINFORCING STEEL LAYOUT

SHOWING "B" BARS IN TOP OF SLAB (NOT DRAWN TO SCALE)



### DETAIL "A"

**NOTES:**  
FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE POURING SEQUENCE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L LT-  
 SHEET 2 OF 5

**AECOM**  
 AECOM TECHNICAL SERVICES OF NC, INC.  
 5438 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. F6242

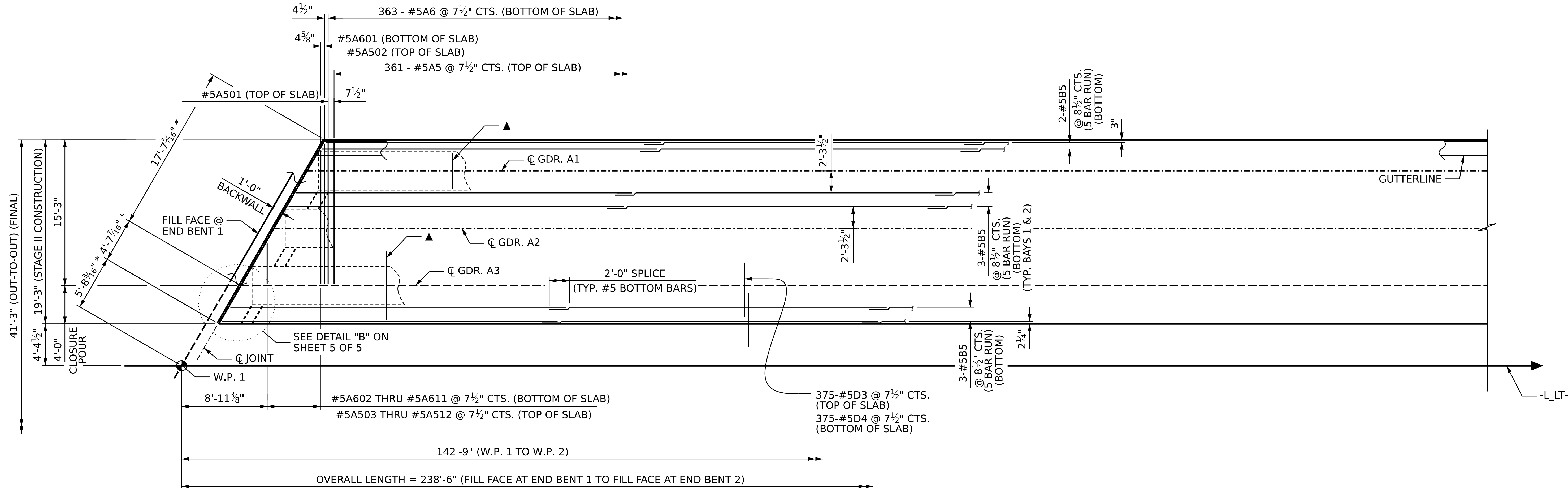
DESIGNED BY: SHAL  
 DATE: 04/19/23  
 CHECKED BY: SHANE TULL  
 DATE: 06/20/23

10/13/2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-12
1			3			TOTAL SHEETS
2			4			50

DRAWN BY: M.L. CATER DATE: 06/2023  
 CHECKED BY: D. TUTTLE DATE: 06/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

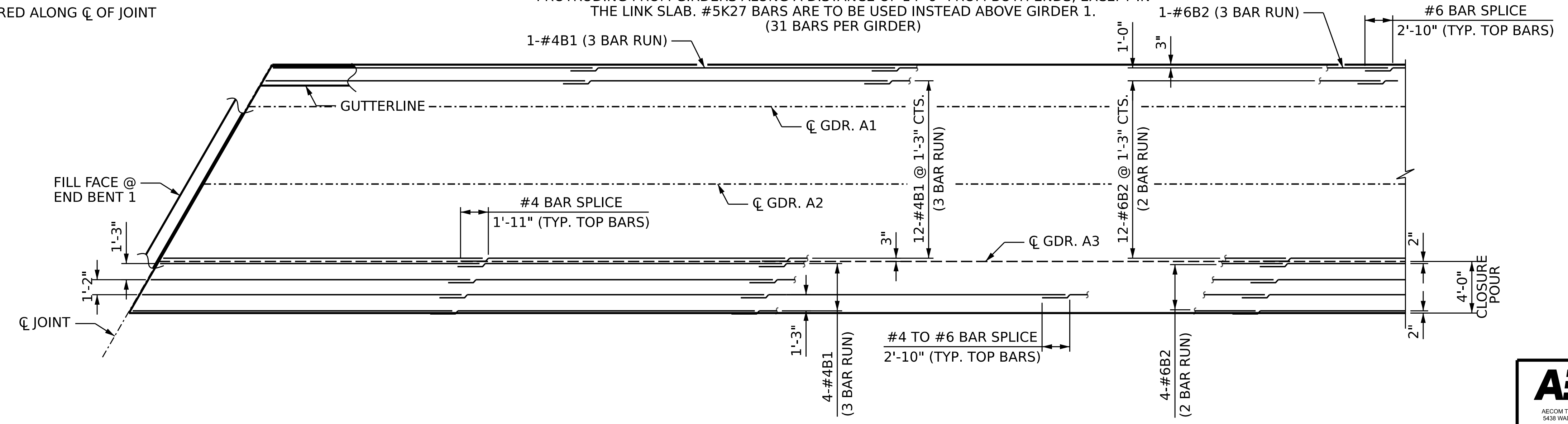
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**SPAN A**

▲ = IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S8 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS, EXCEPT IN THE LINK SLAB. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 1. (31 BARS PER GIRDER)

\* = MEASURED ALONG CL OF JOINT



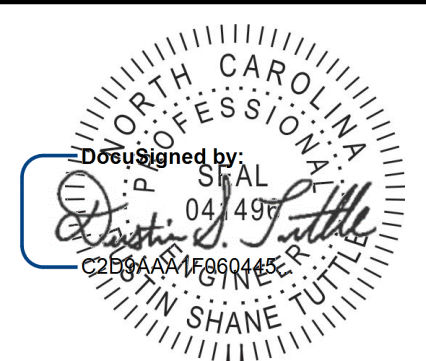
**TOP REINFORCING STEEL LAYOUT**

SHOWING "B" BARS IN TOP OF SLAB (NOT DRAWN TO SCALE)

PROJECT NO. B-3186 / B-5898  
 HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-  
 SHEET 3 OF 5



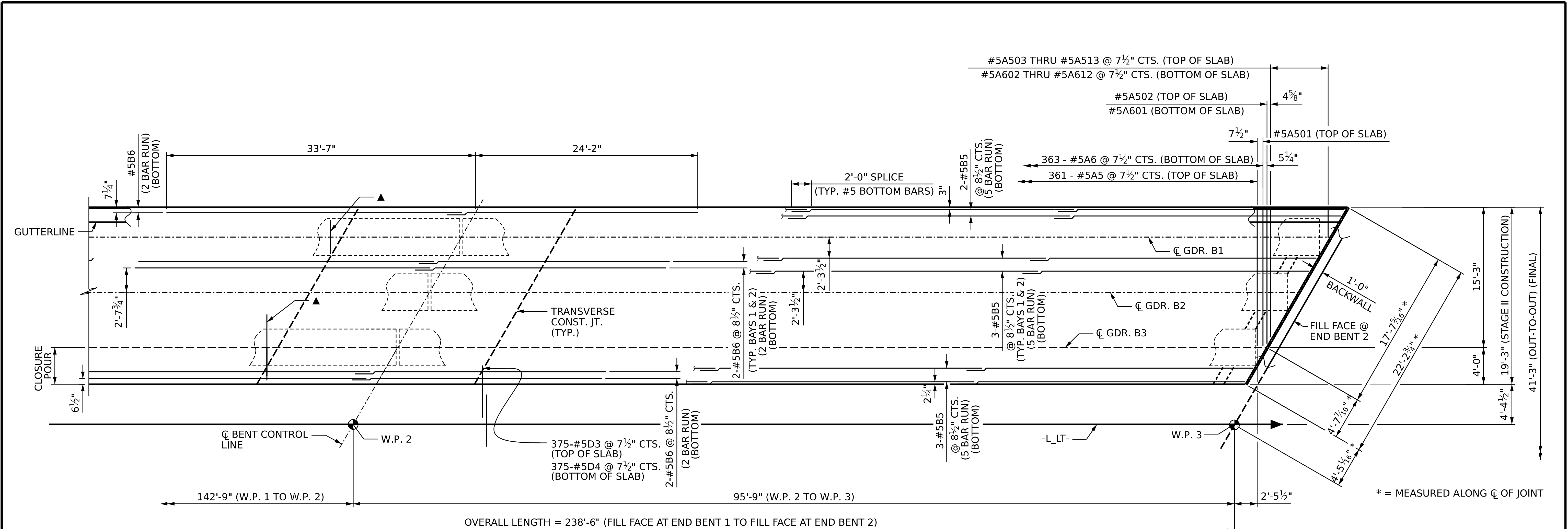
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
**PLAN OF SPAN A  
 STAGE II  
 CONSTRUCTION**



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-13	
1			3			TOTAL SHEETS	50
2			4				

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY :	M.L. CATER	DATE :	06/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD :	D. TUTTLE	DATE :	06/2023

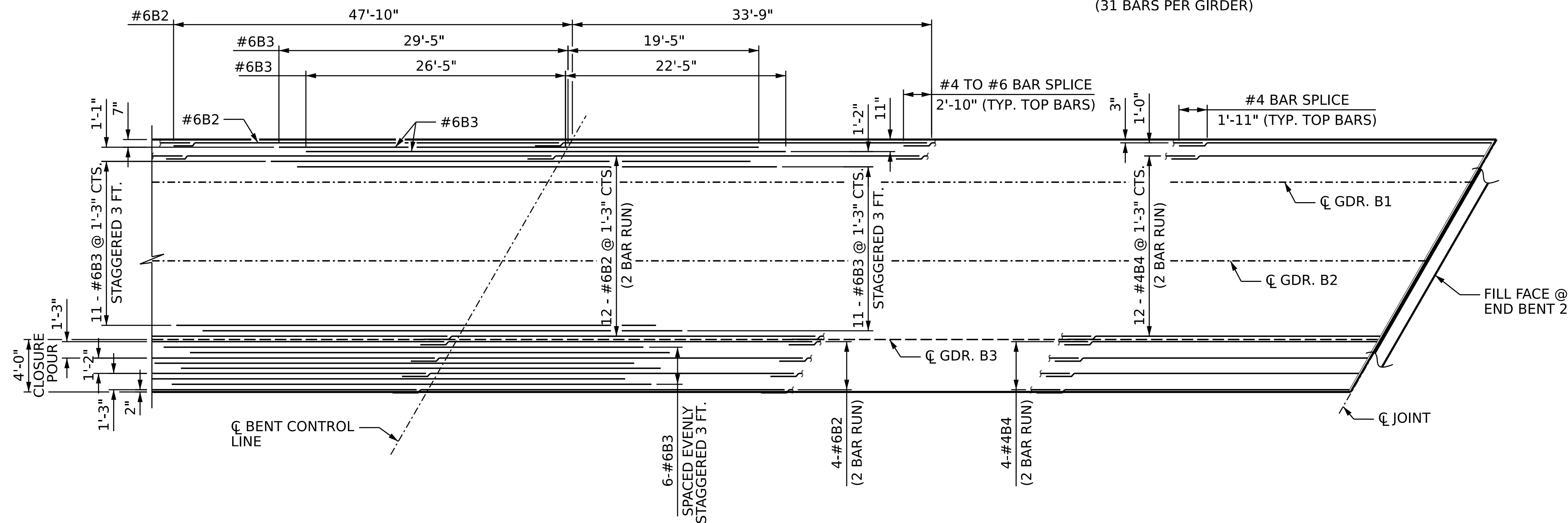


**SPAN B**

▲ = IN SPAN A ONLY, #5K26 BARS ARE PLACED ABOVE EACH GIRDER, TYING TO S8 BARS PROTRUDING FROM GIRDERS ALONG A DISTANCE OF 14'-6" FROM BOTH ENDS, EXCEPT IN THE LINK SLAB AREA. #5K27 BARS ARE TO BE USED INSTEAD ABOVE GIRDER 1. (31 BARS PER GIRDER)

**NOTES:**

FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE POURING SEQUENCE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.



**TOP REINFORCING STEEL LAYOUT**

SHOWING "B" BARS IN TOP OF SLAB  
(NOT DRAWN TO SCALE)

DRAWN BY: M.L. CATER DATE: 06/2023  
 CHECKED BY: D. TUTTLE DATE: 06/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

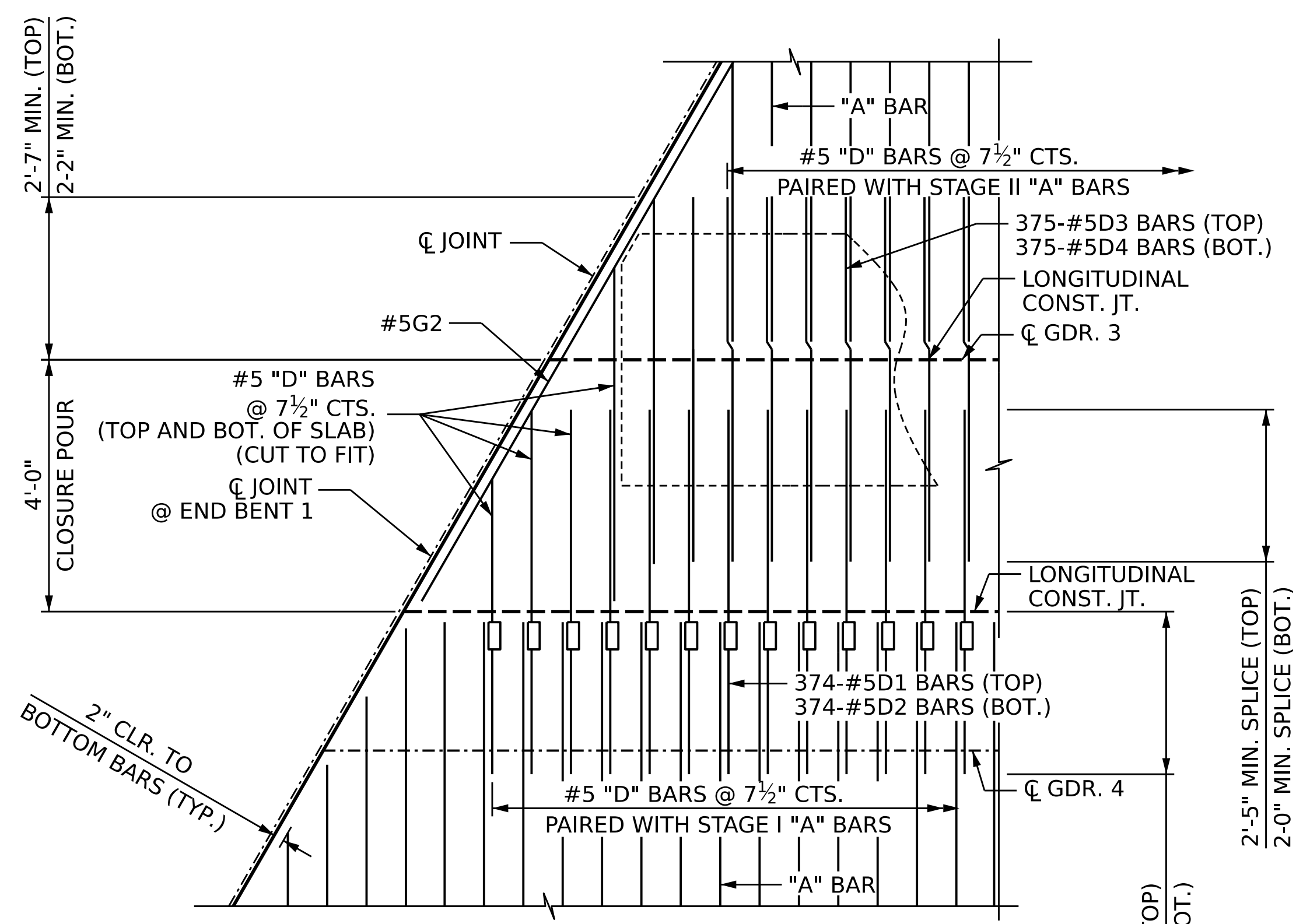
**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
 5438 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. FC6242

DESIGNED BY: [Signature]  
 SEAL: 04/497  
 PROFESSIONAL ENGINEER  
 IN SHANE TUTTLE

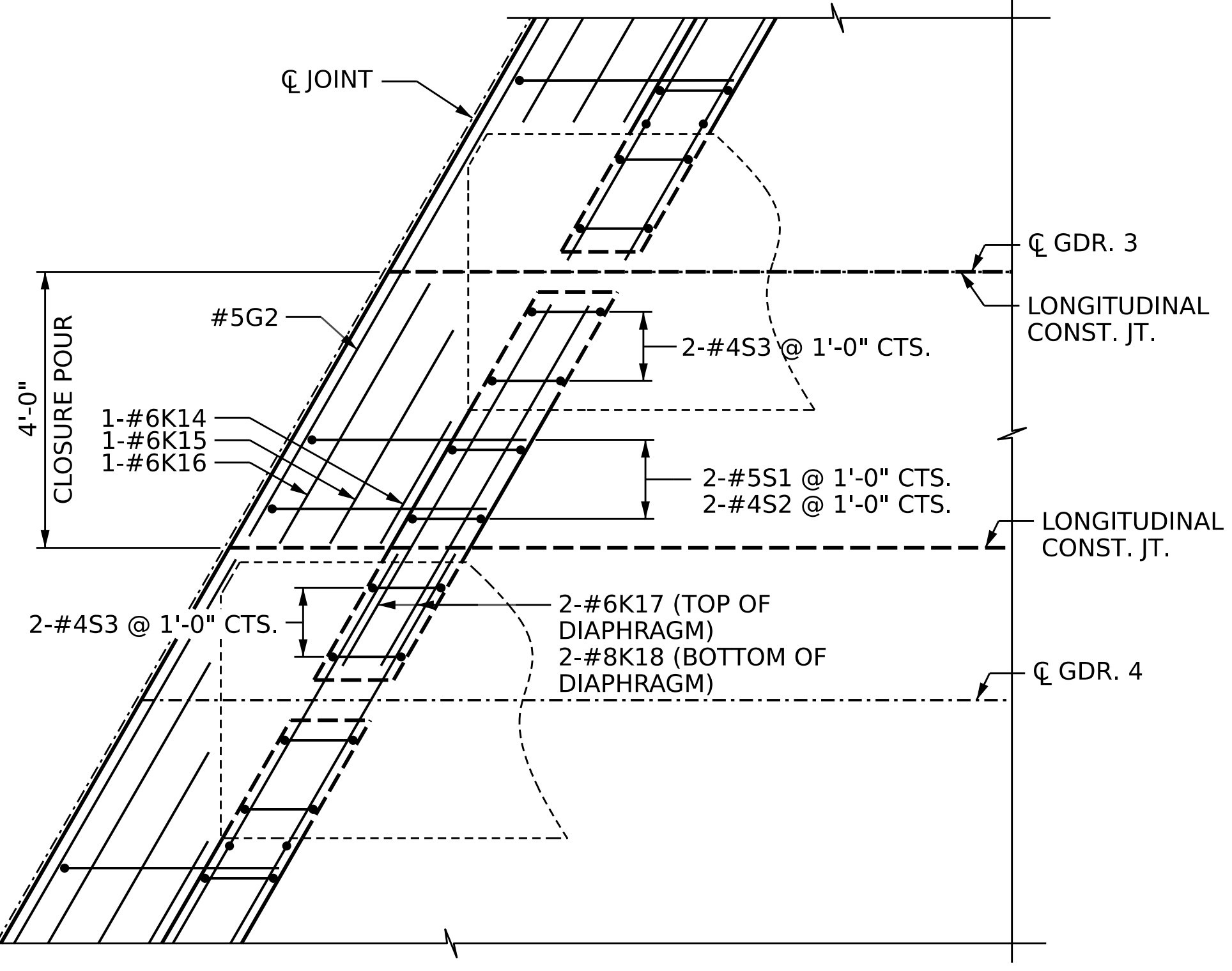
10/13/2023

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L LT-  
 SHEET 4 OF 5

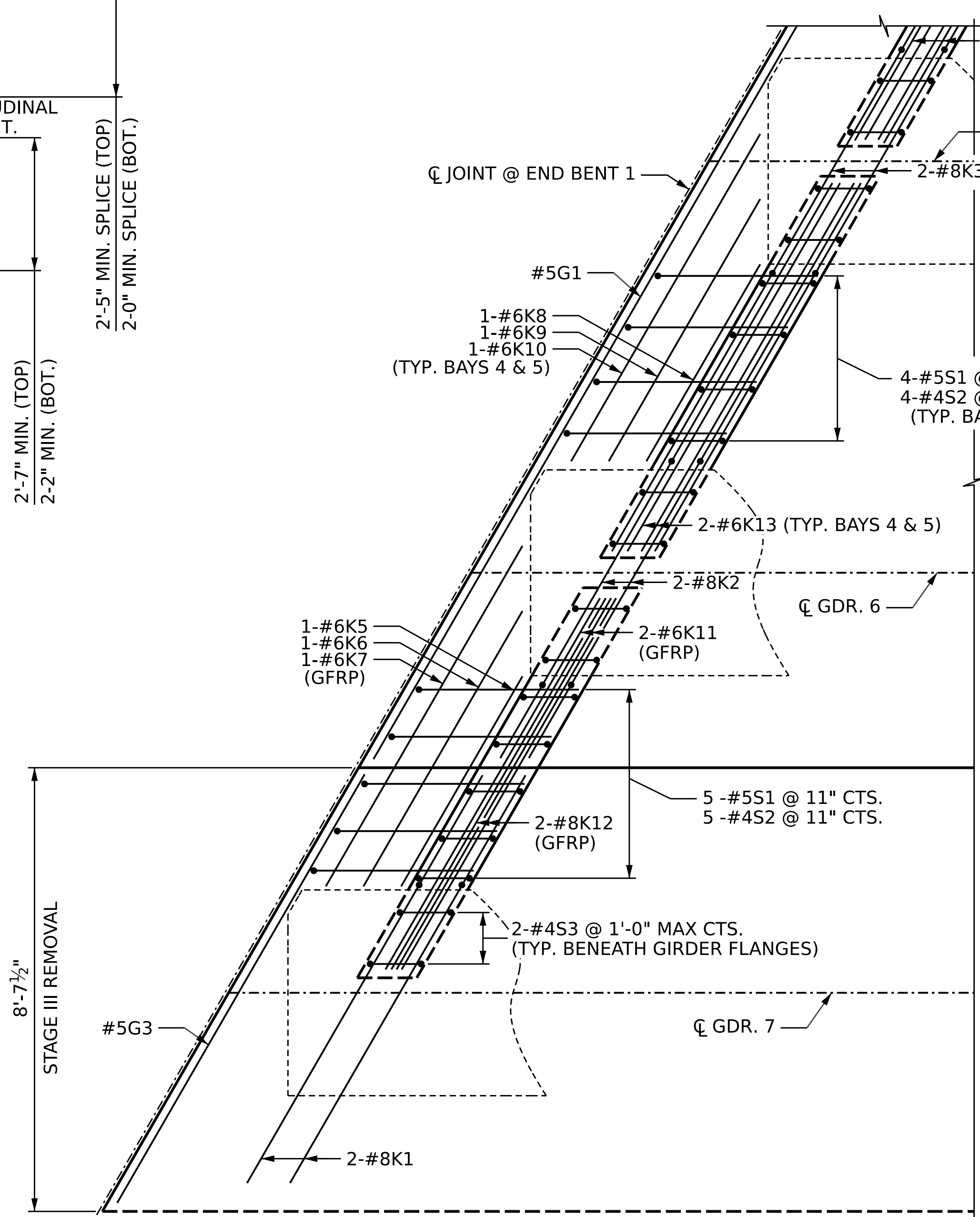
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE <b>PLAN OF SPAN B STAGE II CONSTRUCTION</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. <b>S3-14</b>					TOTAL SHEETS <b>50</b>



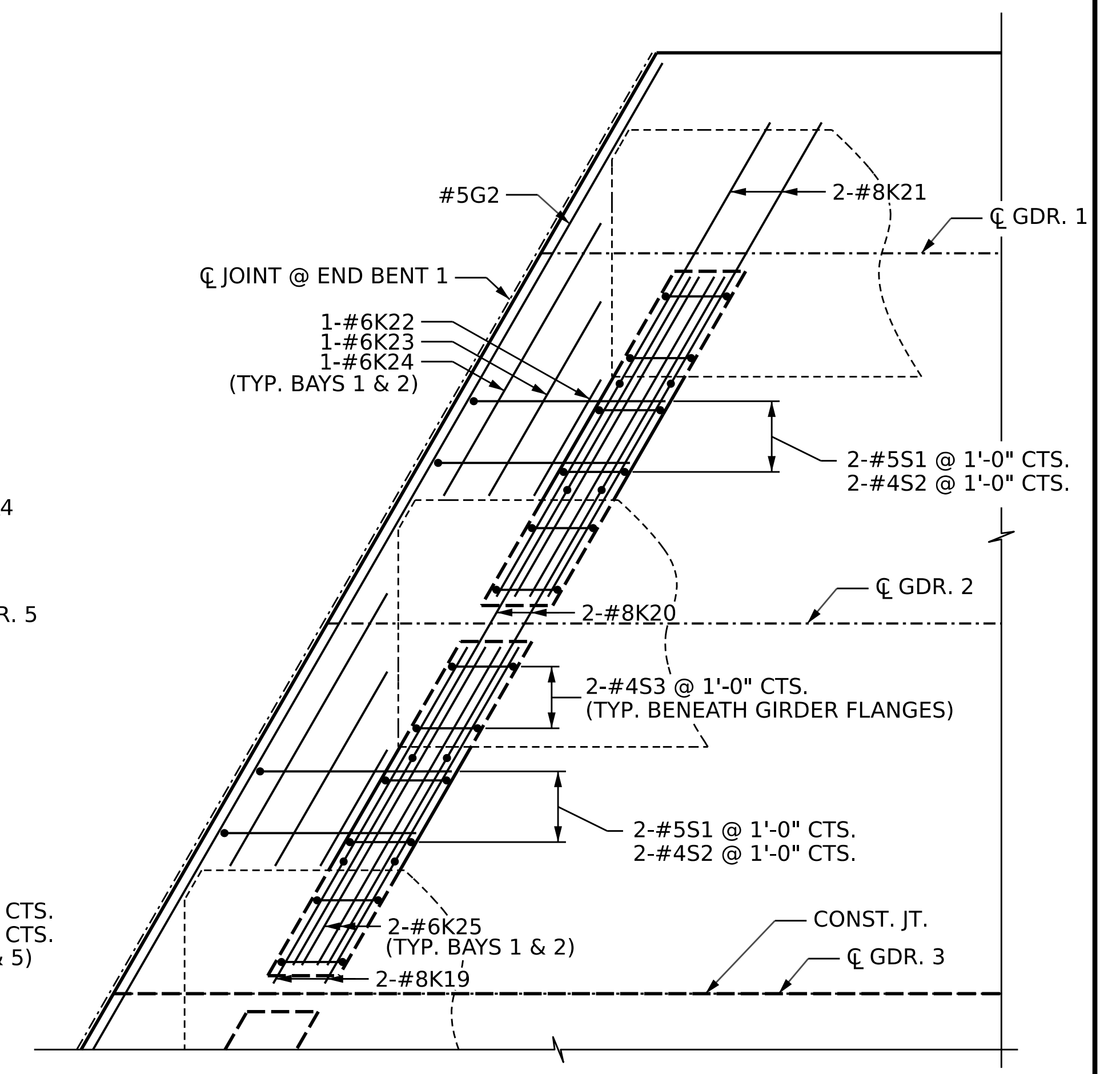
**DETAIL "B"**  
CLOSURE POUR DECK REINFORCEMENT  
END BENT 1 SHOWN, END BENT 2 SIMILAR



**DETAIL "B"**  
CLOSURE POUR DIAPHRAGM REINFORCEMENT  
END BENT 1 SHOWN, END BENT 2 SIMILAR

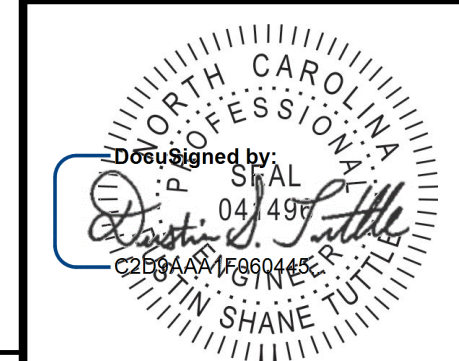


**END BENT DIAPHRAGM**  
STAGE I & OVERBUILD  
END BENT 1 SHOWN, END BENT 2 SIMILAR



**END BENT DIAPHRAGM**  
STAGE II  
END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
STATION: 24+70.00 -L LT-  
SHEET 5 OF 5



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUPERSTRUCTURE**  
**PLAN OF SPAN DETAILS**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-15	
1			3			TOTAL SHEETS	50
2			4				

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

DRAWN BY : M.L. CATER DATE : 06/2023  
CHECKED BY : D. TUTTLE DATE : 06/2023  
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 06/2023

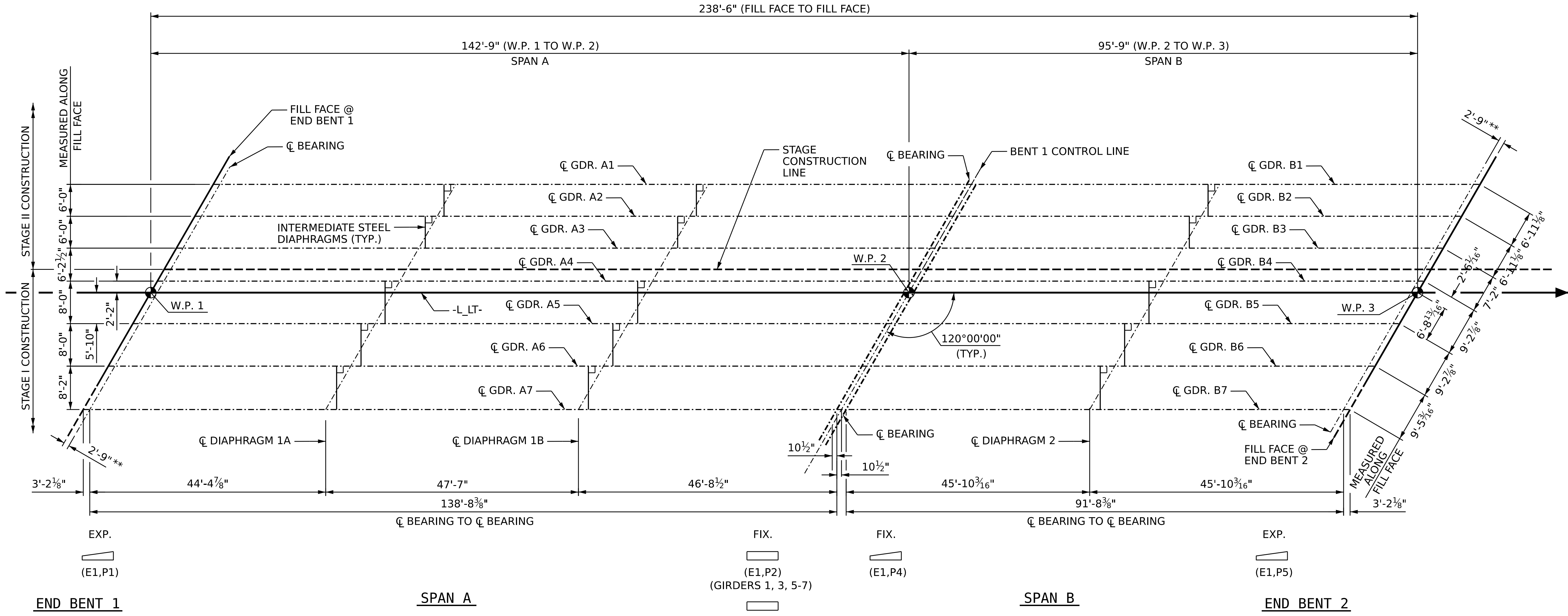
**NOTES**

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.

FOR DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

FOR END BENT DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEETS.

SEE CONSTRUCTION SEQUENCE SHEET FOR GIRDER 7 REMOVAL.



**FORMED HOLE LOCATIONS (DIAPH 1A)**

GIRDER	DIM "A"	DIM "B"	DIM "C"
A1	43'-4 5/8"	0'-0"	96'-8 3/4"
A2	43'-4 5/8"	3'-5 1/2"	93'-3 1/4"
A3	46'-10 3/8"	0'-0"	93'-3 1/4"
A4	42'-9 3/4"	0'-0"	97'-3 5/8"
A5	42'-9 3/4"	4'-7 3/8"	92'-8 1/4"
A6	42'-9 3/8"	4'-8"	92'-8 1/4"
A7	47'-5 11/16"	0'-0"	92'-7 1 1/16"

**FORMED HOLE LOCATIONS (DIAPH 1B)**

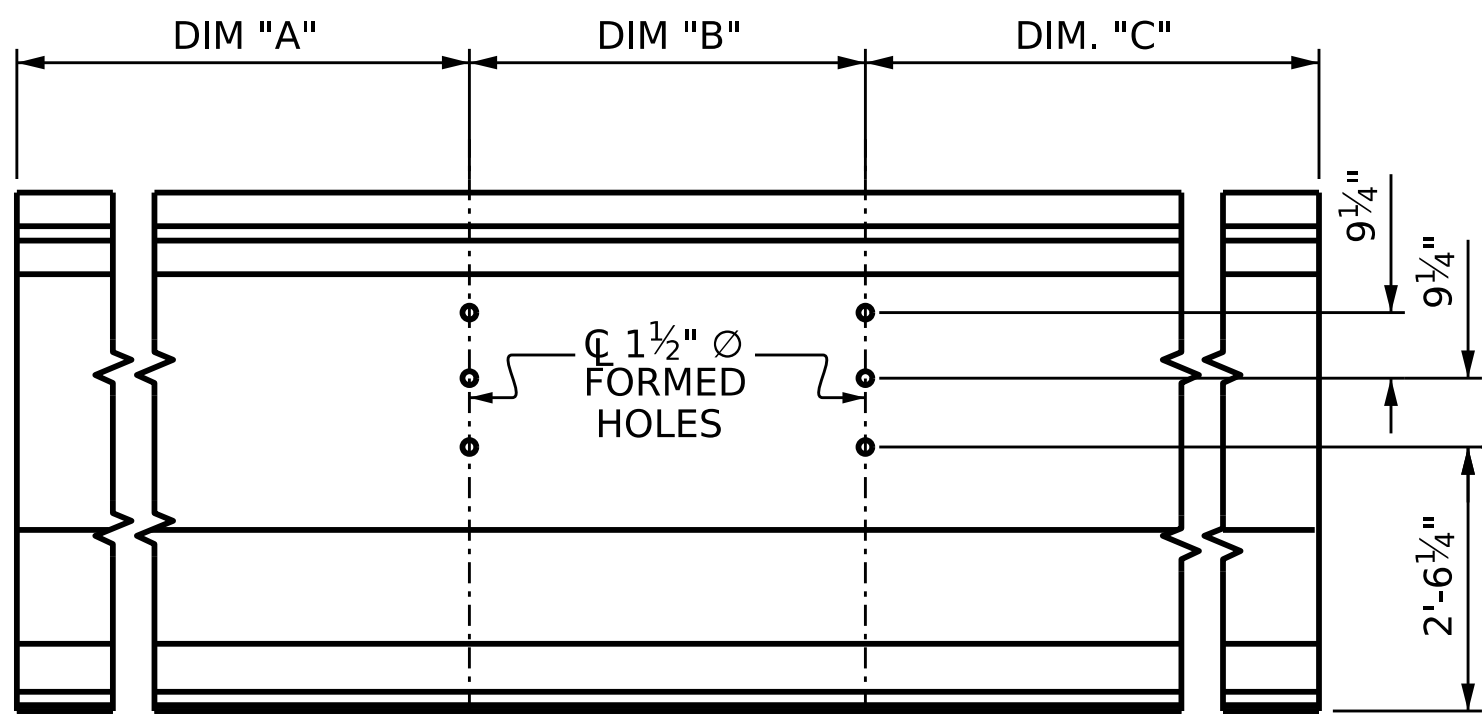
GIRDER	DIM "A"	DIM "B"	DIM "C"
A1	90'-11 5/8"	0'-0"	49'-1 3/4"
A2	90'-11 5/8"	3'-5 1/2"	45'-8 1/4"
A3	94'-5 1/2"	0'-0"	45'-8 1/4"
A4	90'-4 3/4"	0'-0"	49'-8 5/8"
A5	90'-4 3/4"	4'-7 3/8"	45'-1 1/4"
A6	90'-4 1/8"	4'-8"	45'-1 1/4"
A7	95'-0 11/16"	0'-0"	45'-0 11/16"

**FORMED HOLE LOCATIONS (DIAPH 2)**

GIRDER	DIM "A"	DIM "B"	DIM "C"
B1	44'-9 15/16"	0'-0"	48'-3 7/16"
B2	44'-9 15/16"	3'-5 1/2"	44'-9 15/16"
B3	48'-3 7/16"	0'-0"	44'-9 15/16"
B4	44'-3"	0'-0"	48'-10 3/8"
B5	44'-3"	4'-7 3/8"	44'-3"
B6	44'-2 3/8"	4'-8"	44'-3"
B7	48'-11"	0'-0"	44'-2 3/8"

**FRAMING PLAN**

\*\* MEASURED PERPENDICULAR TO CONTROL LINE OR FILL FACE



**PARTIAL ELEVATION**

(SEE TABLE FOR FORMED HOLE LOCATIONS)

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-

**AECOM**  
 AECOM TECHNICAL SERVICES OF NC, INC.  
 5430 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. F0242

DESIGNED BY: SPAL  
 DATE: 04/19/23  
 CHECKED BY: SHANE TULL  
 DATE: 06/02/23

10/13/2023

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

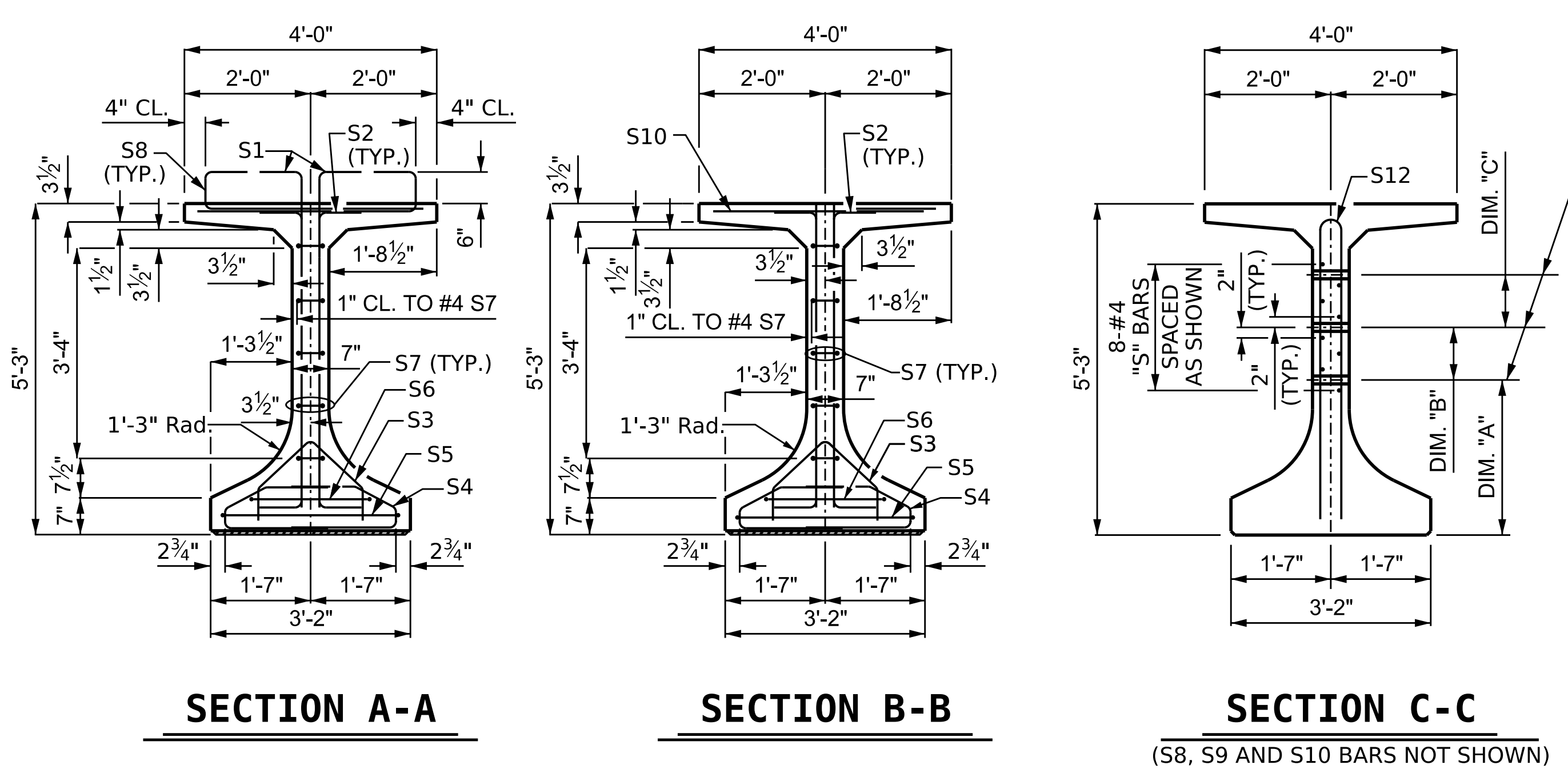
**SUPERSTRUCTURE  
 FRAMING PLAN**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-16
1			3			TOTAL SHEETS 50
2			4			

DRAWN BY: M.L. CATER DATE: 06/2023  
 CHECKED BY: D. TUTTLE DATE: 06/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

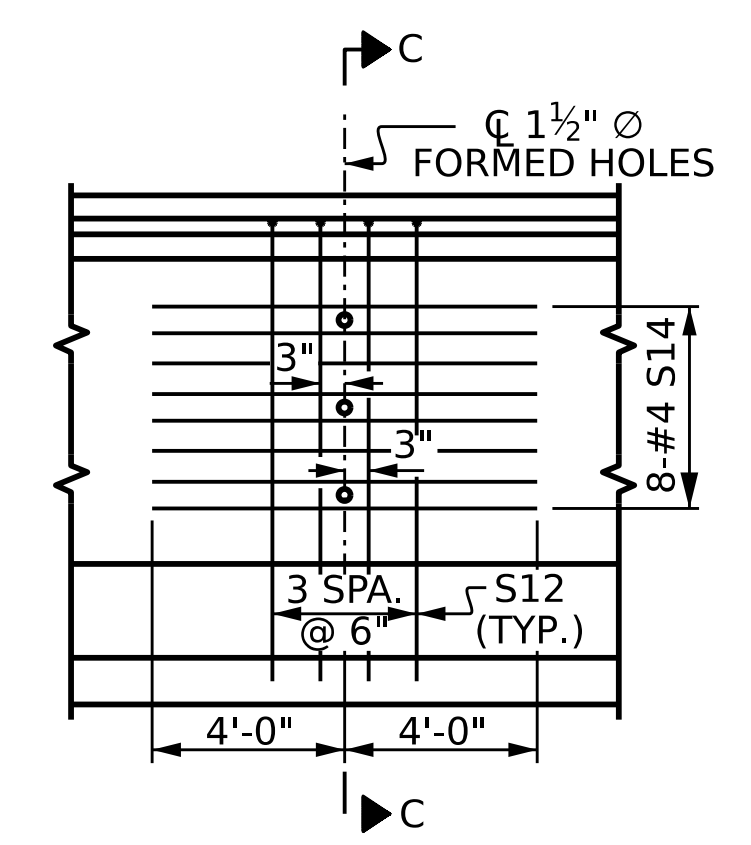
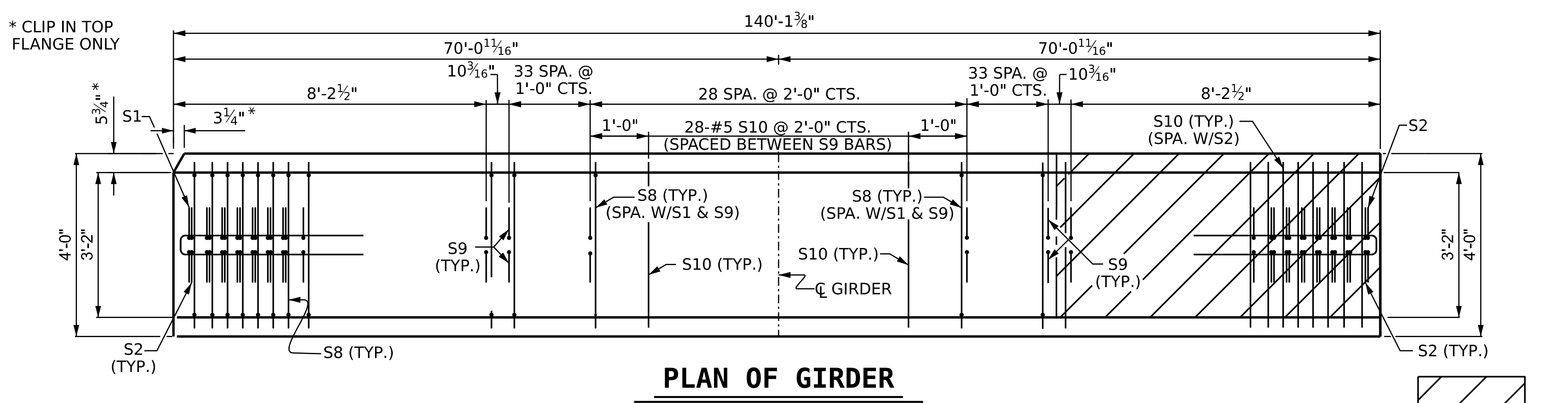
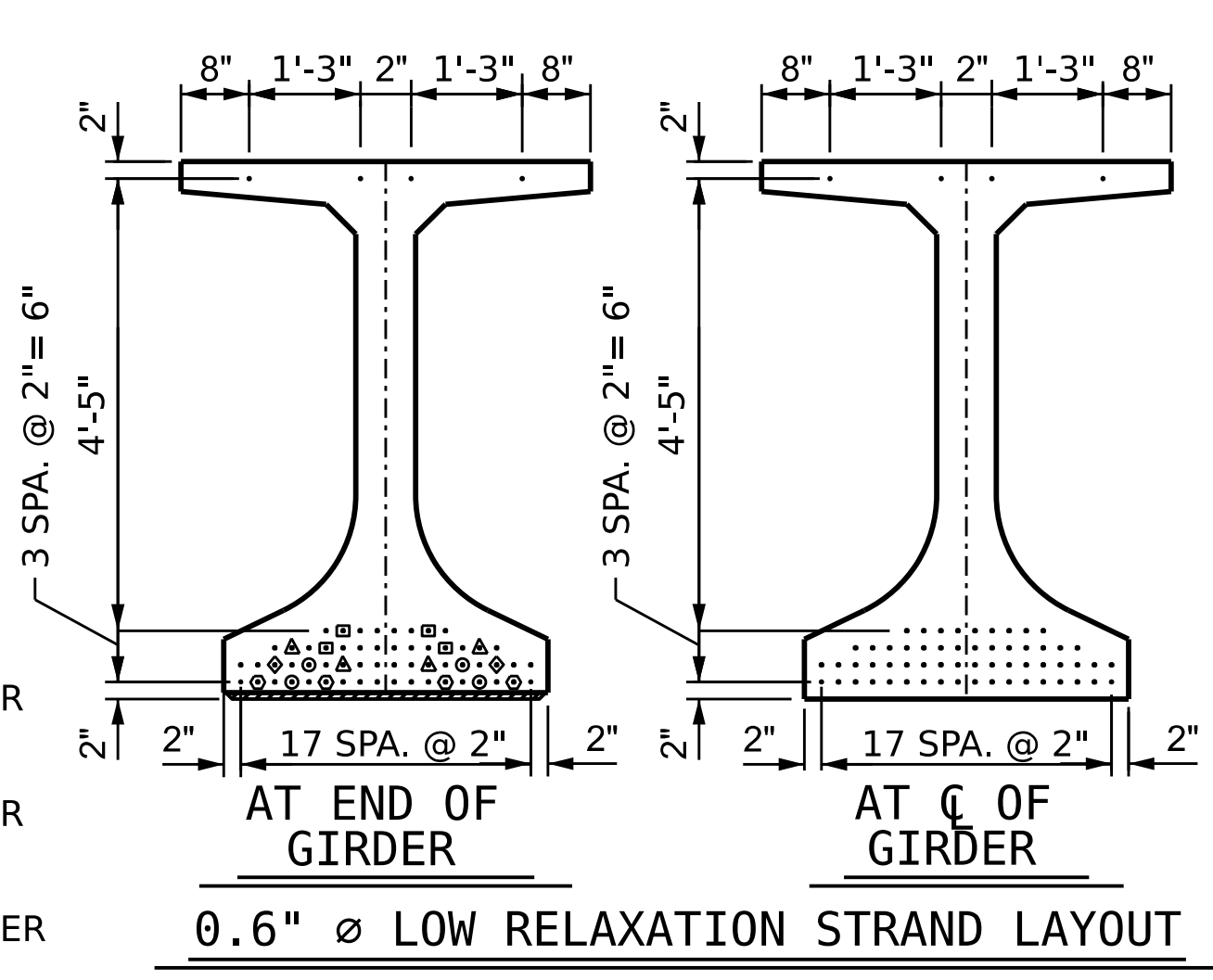
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED



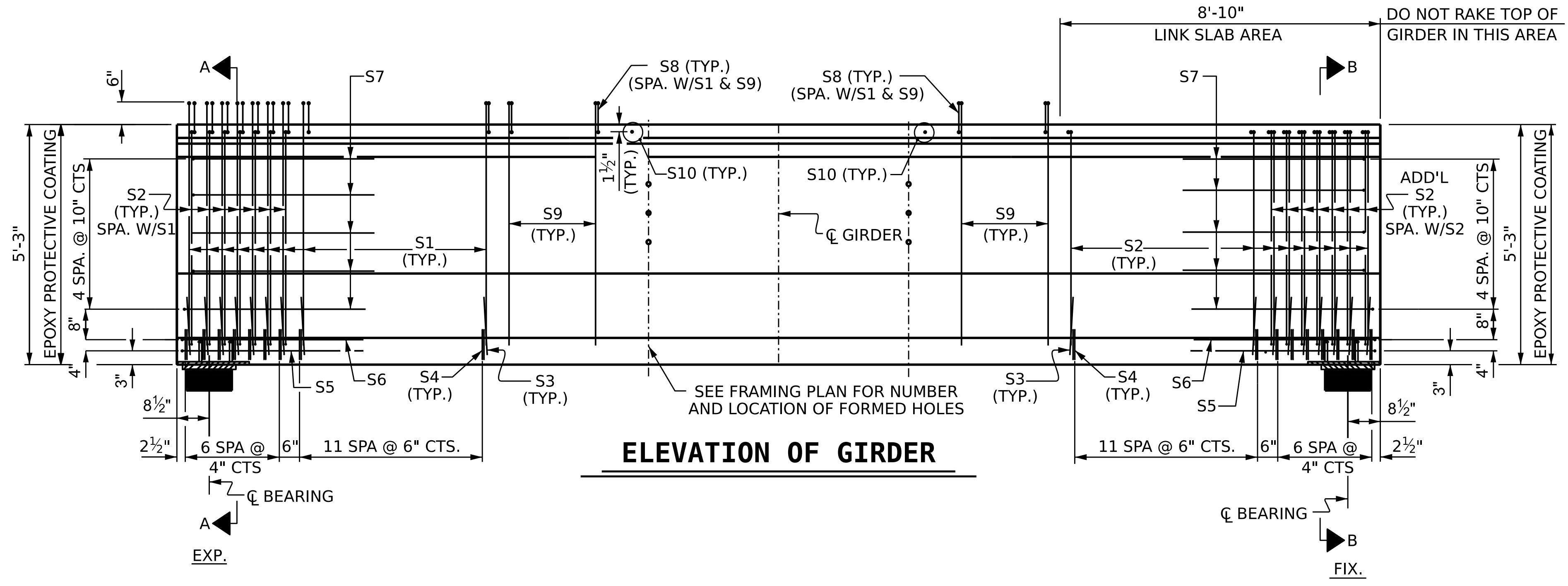


1 1/2" Ø FORMED HOLE. SEE FRAMING PLAN FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
  - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 18'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 28'-0" FROM END OF GIRDER



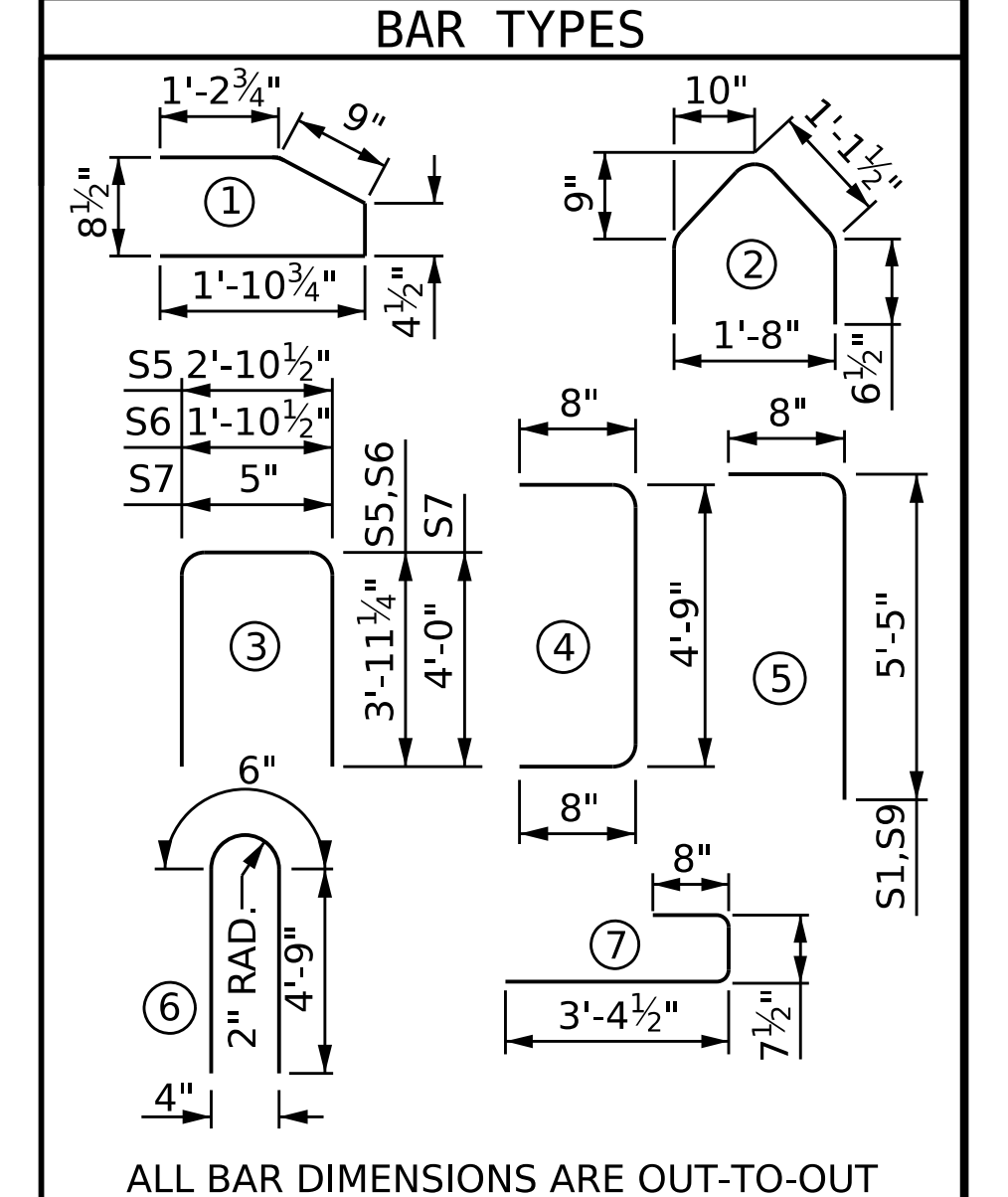
**PARTIAL ELEVATION**  
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 7



AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	38	#5	5	6'-1"	241
S2	66	#5	4	6'-1"	419
S3	38	#3	2	3'-4"	48
S4	76	#3	1	4'-3"	121
S5	2	#5	3	10'-9"	22
S6	2	#5	3	9'-9"	20
S7	10	#4	3	8'-5"	56
S8	228	#5	7	4'-8"	1110
S9	190	#5	5	6'-1"	1206
S10	47	#5	STR	3'-8"	180
S12	8	#5	6	10'-0"	83
S14	16	#4	STR	8'-0"	86



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	8500PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
3592	35.9	62

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
1	140'-1 3/8"	140'-1 3/8"

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_ LT-  
 SHEET 1 OF 7

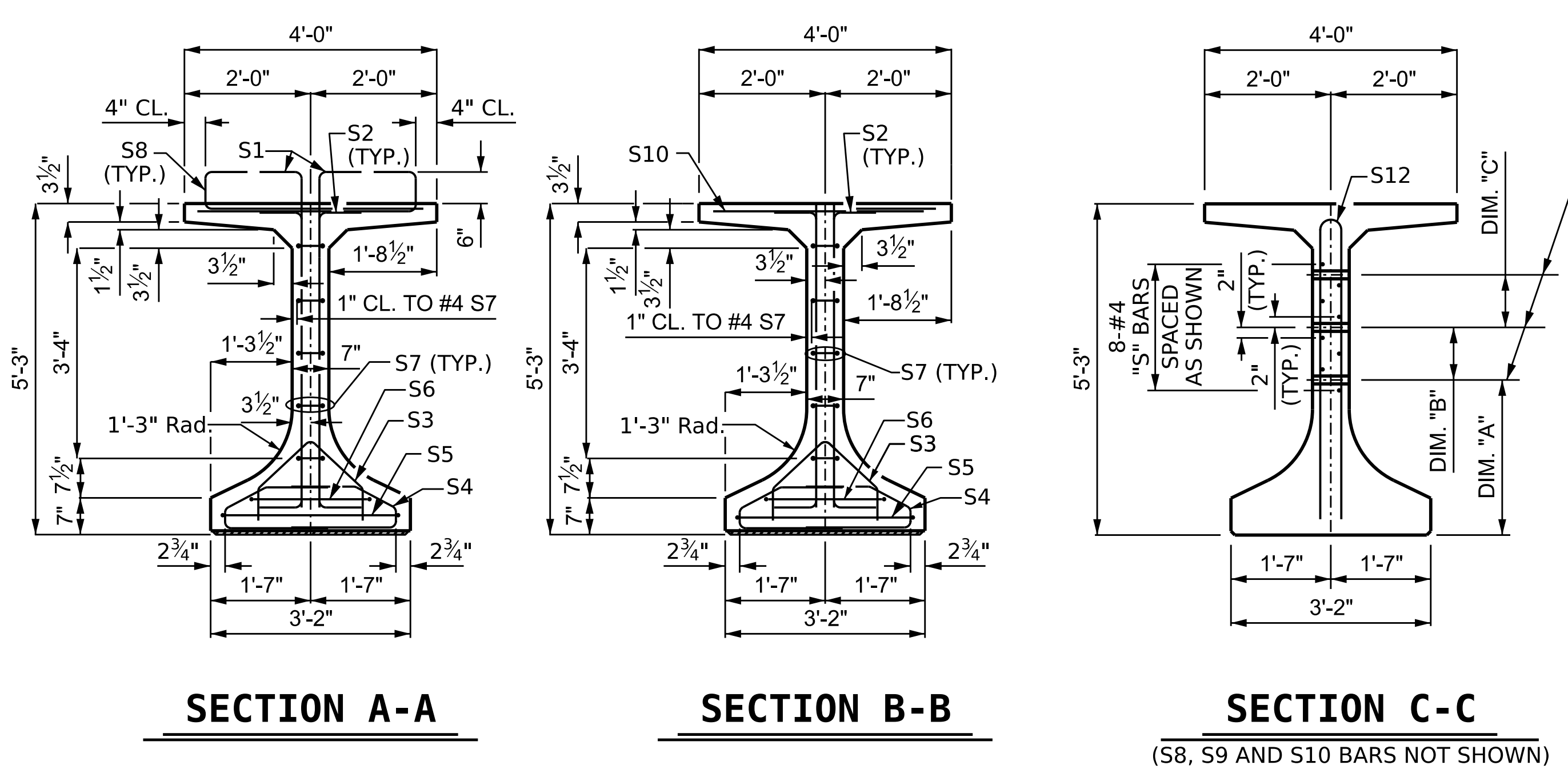
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 63" FLORIDA I-BEAM (FIB)  
**PRESTRESSED CONCRETE GIRDER**  
 SPAN A GIRDER 7

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

SHEET NO. **S3-17**  
 TOTAL SHEETS **50**

DRAWN BY: T. NEAL DATE: 04/2023  
 CHECKED BY: D. TUTTLE DATE: 05/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

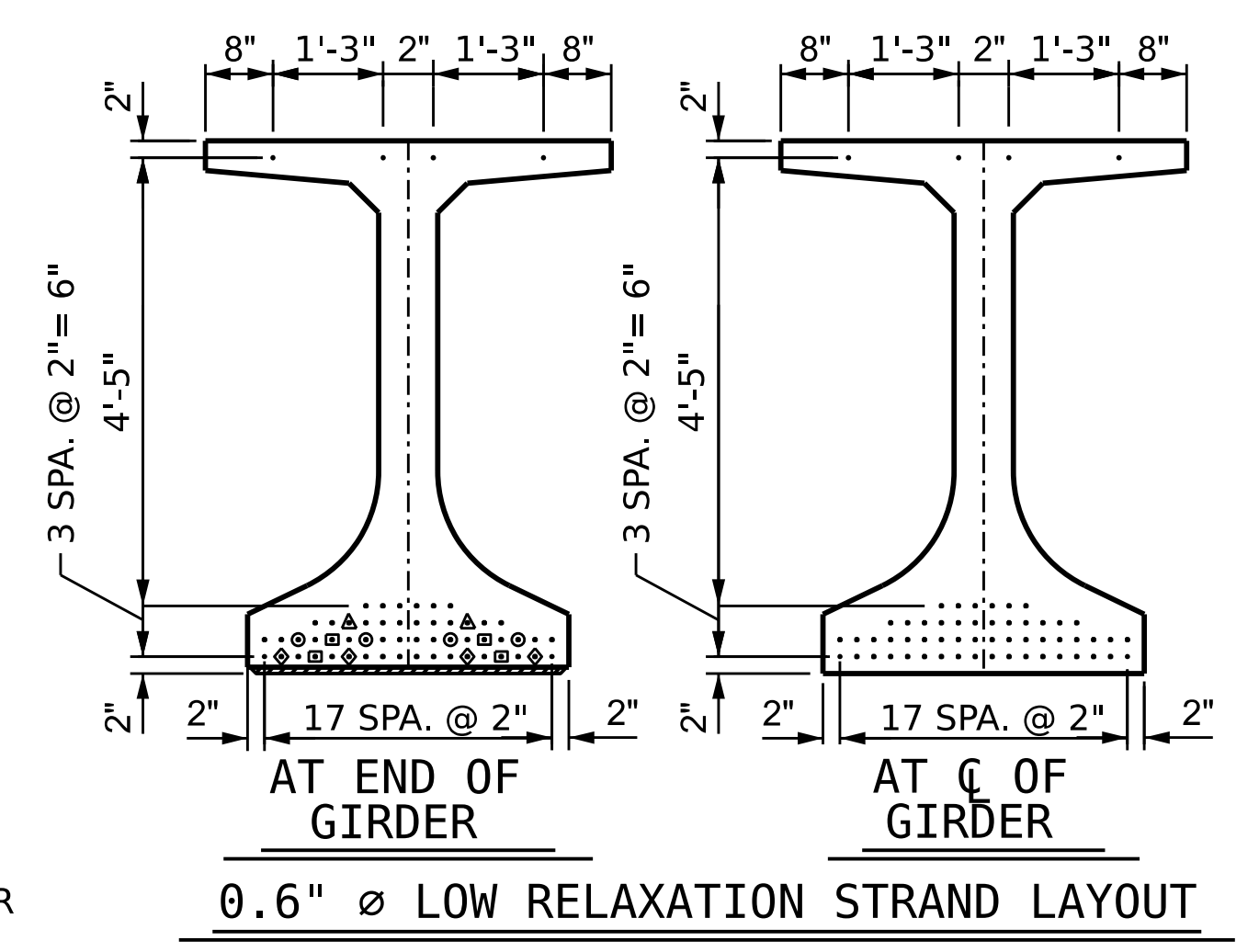
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



1 1/2" Ø FORMED HOLE. SEE FRAMING PLAN FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

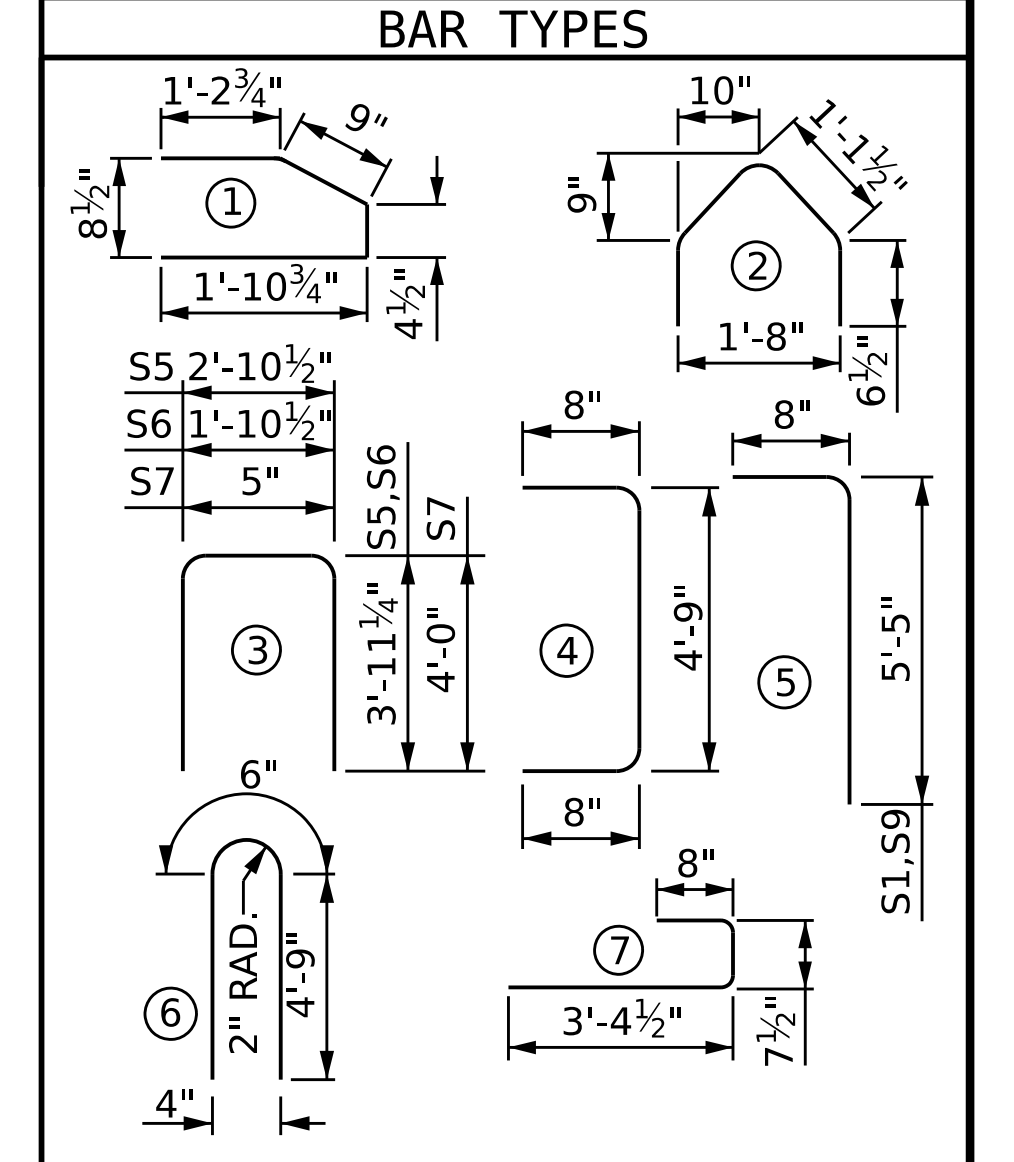
**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 28'-0" FROM END OF GIRDER



AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

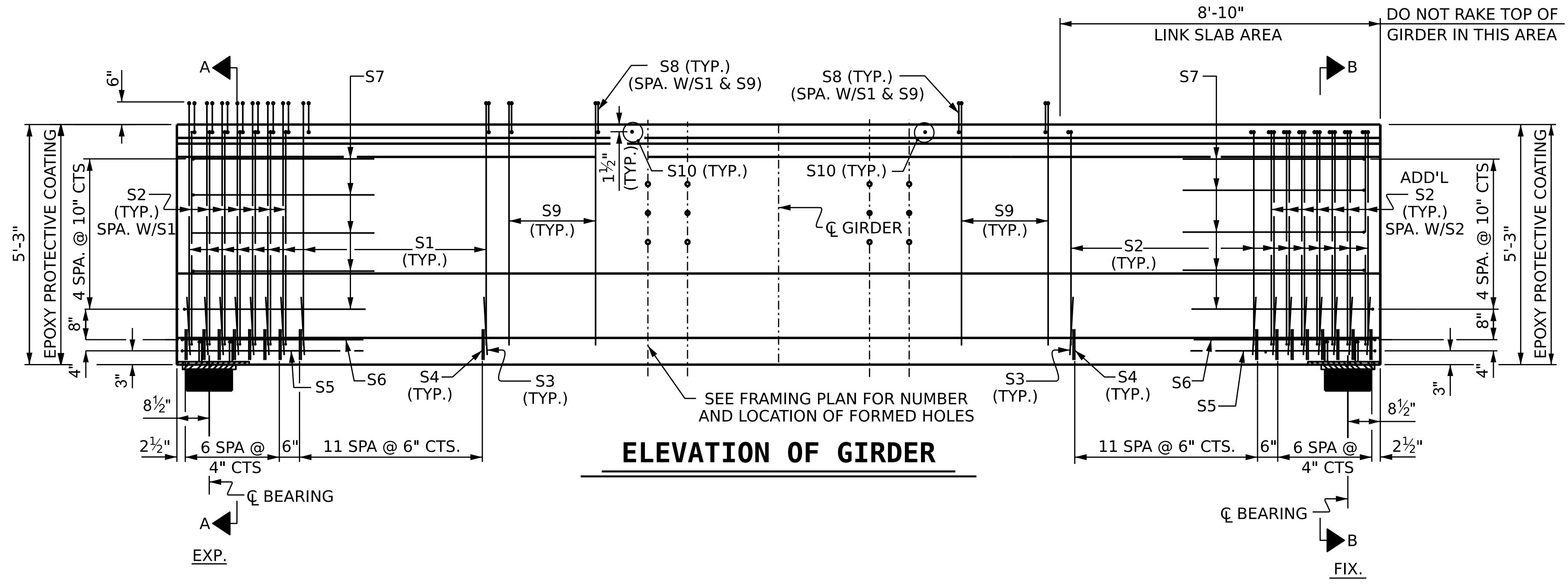
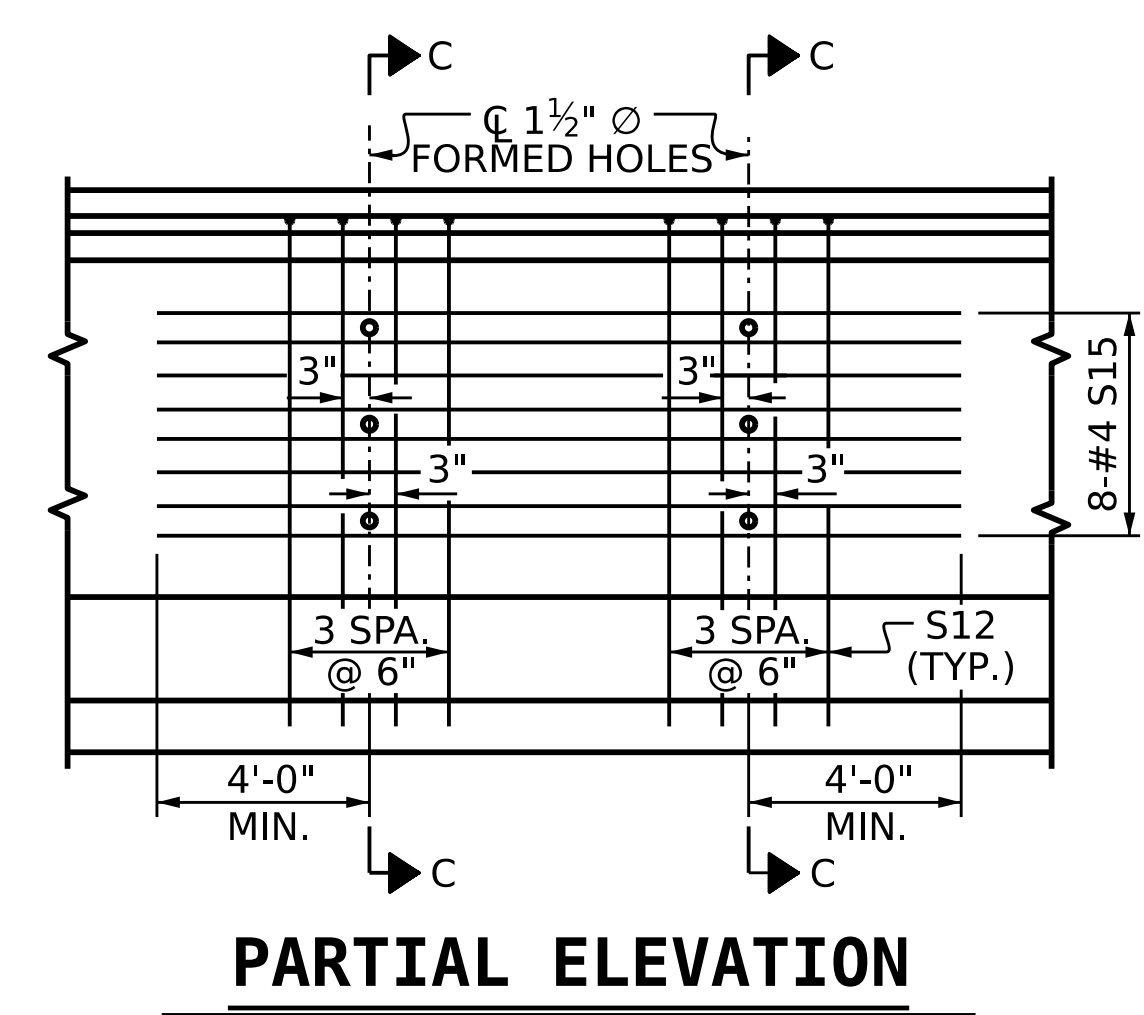
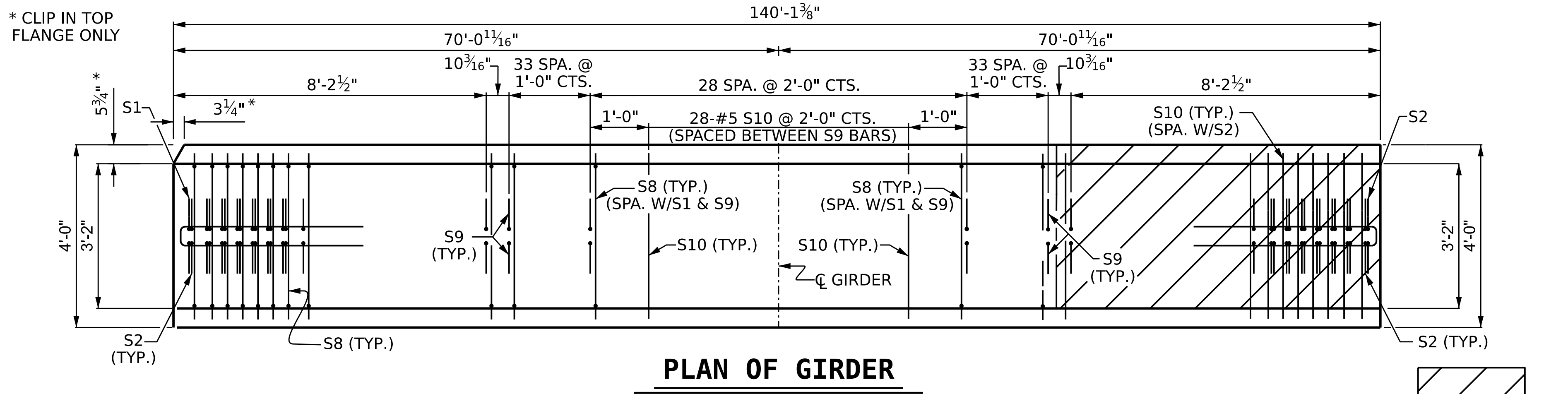
REINFORCING STEEL FOR ONE GDR				
BAR	NUMBER	SIZE	TYPE	LENGTH WEIGHT
S1	38	#5	5	6'-1" 241
S2	66	#5	4	6'-1" 419
S3	38	#3	2	3'-4" 48
S4	76	#3	1	4'-3" 121
S5	2	#5	3	10'-9" 22
S6	2	#5	3	9'-9" 20
S7	10	#4	3	8'-5" 56
S8	228	#5	7	4'-8" 1110
S9	190	#5	5	6'-1" 1206
S10	47	#5	STR	3'-8" 180
S12	16	#5	6	10'-0" 167
S15	16	#4	STR	12'-8" 135



ALL BAR DIMENSIONS ARE OUT-TO-OUT

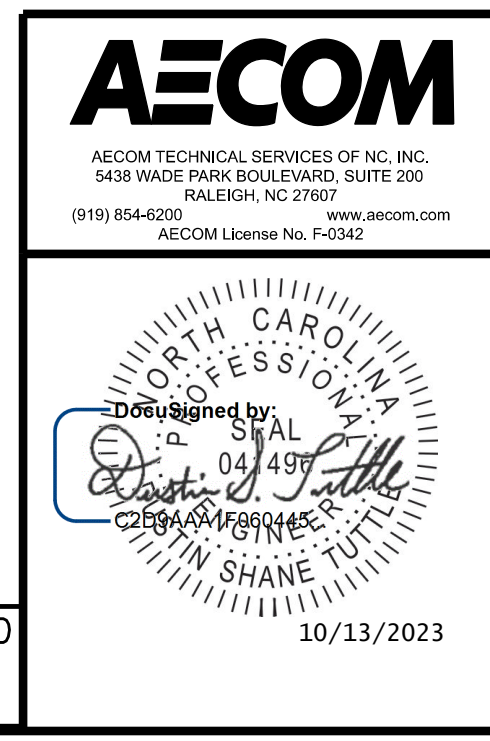
QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	8500PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
3725	35.9	58

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
2	140'-1 3/8"	280'-2 3/4"



DRAWN BY: T. NEAL DATE: 04/2023  
 CHECKED BY: D. TUTTLE DATE: 05/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

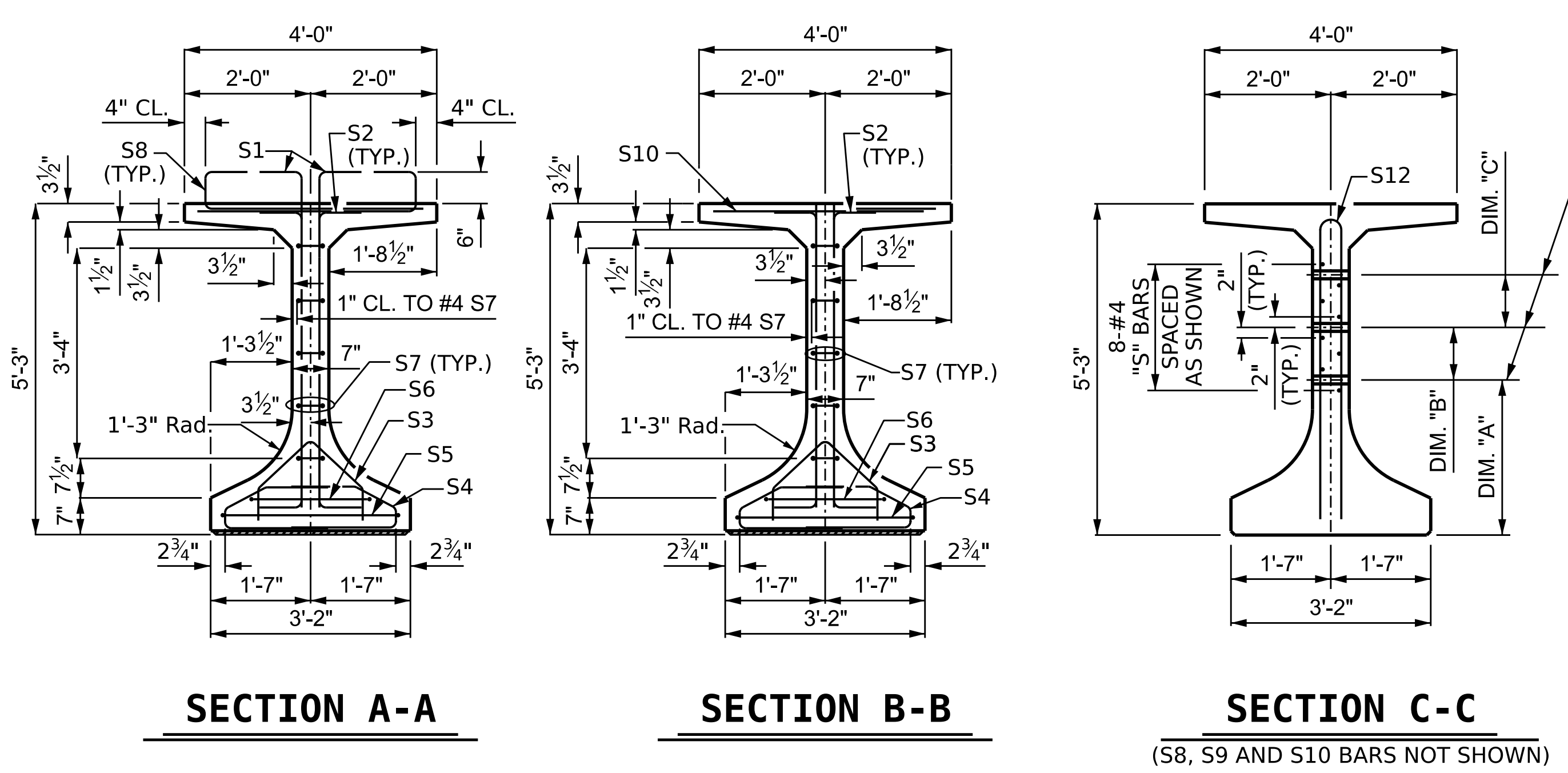
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. B-3186 / B-5898  
 HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_LT-  
 SHEET 2 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
63" FLORIDA I-BEAM (FIB) PRESTRESSED CONCRETE GIRDER					
SPAN A GIRDERS 5 & 6					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

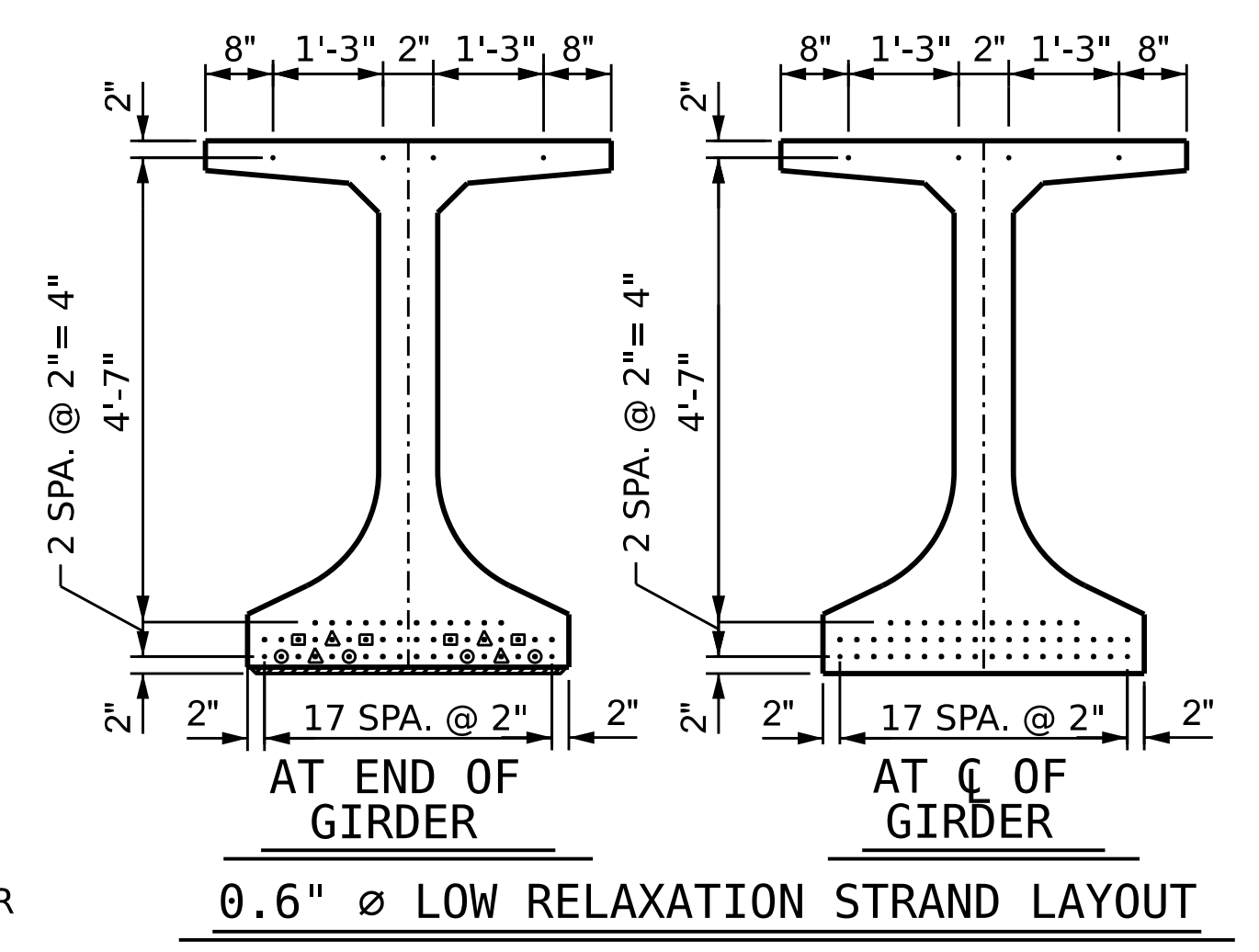
TOTALS: 50



1 1/2" Ø FORMED HOLE. SEE FRAMING PLAN FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

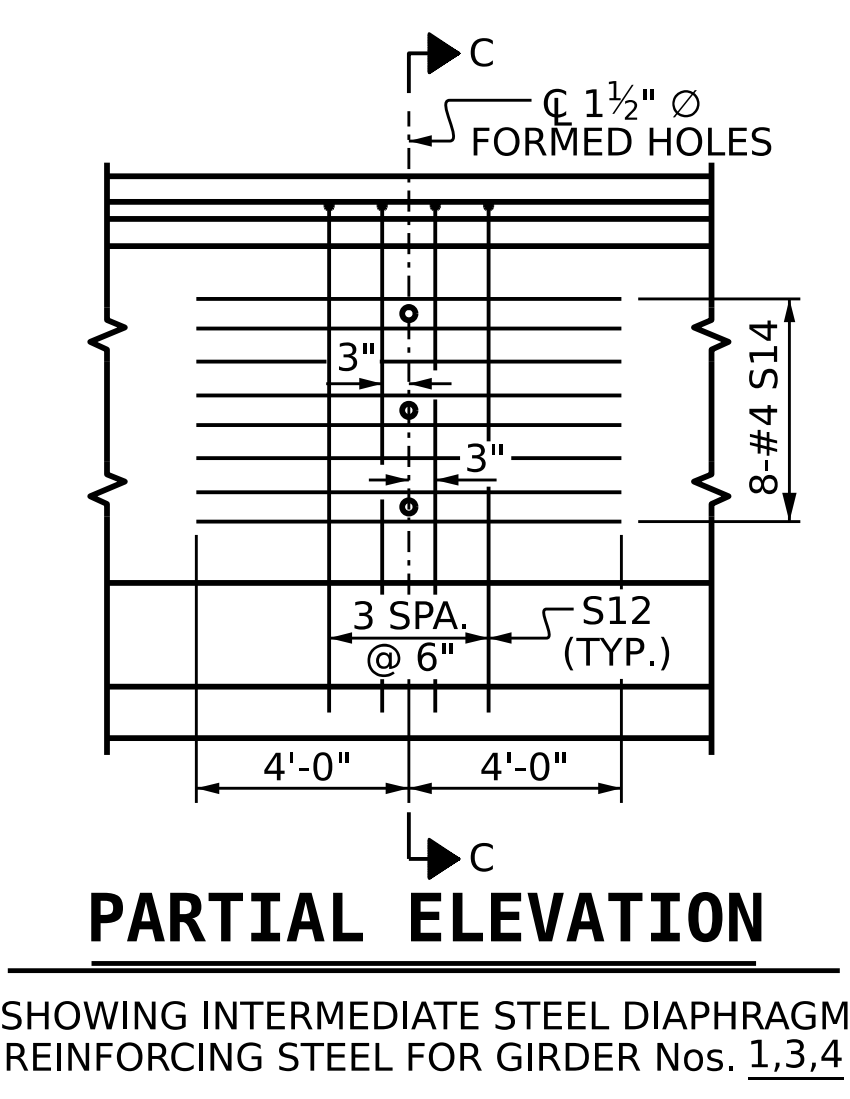
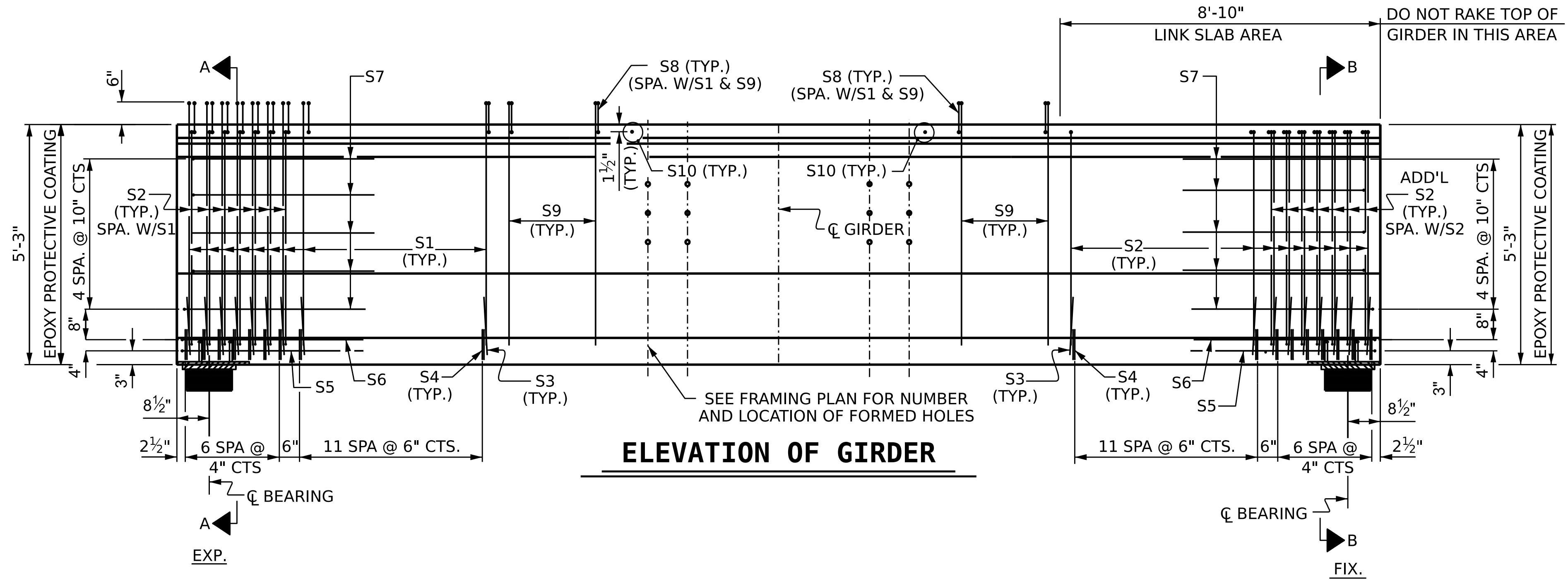
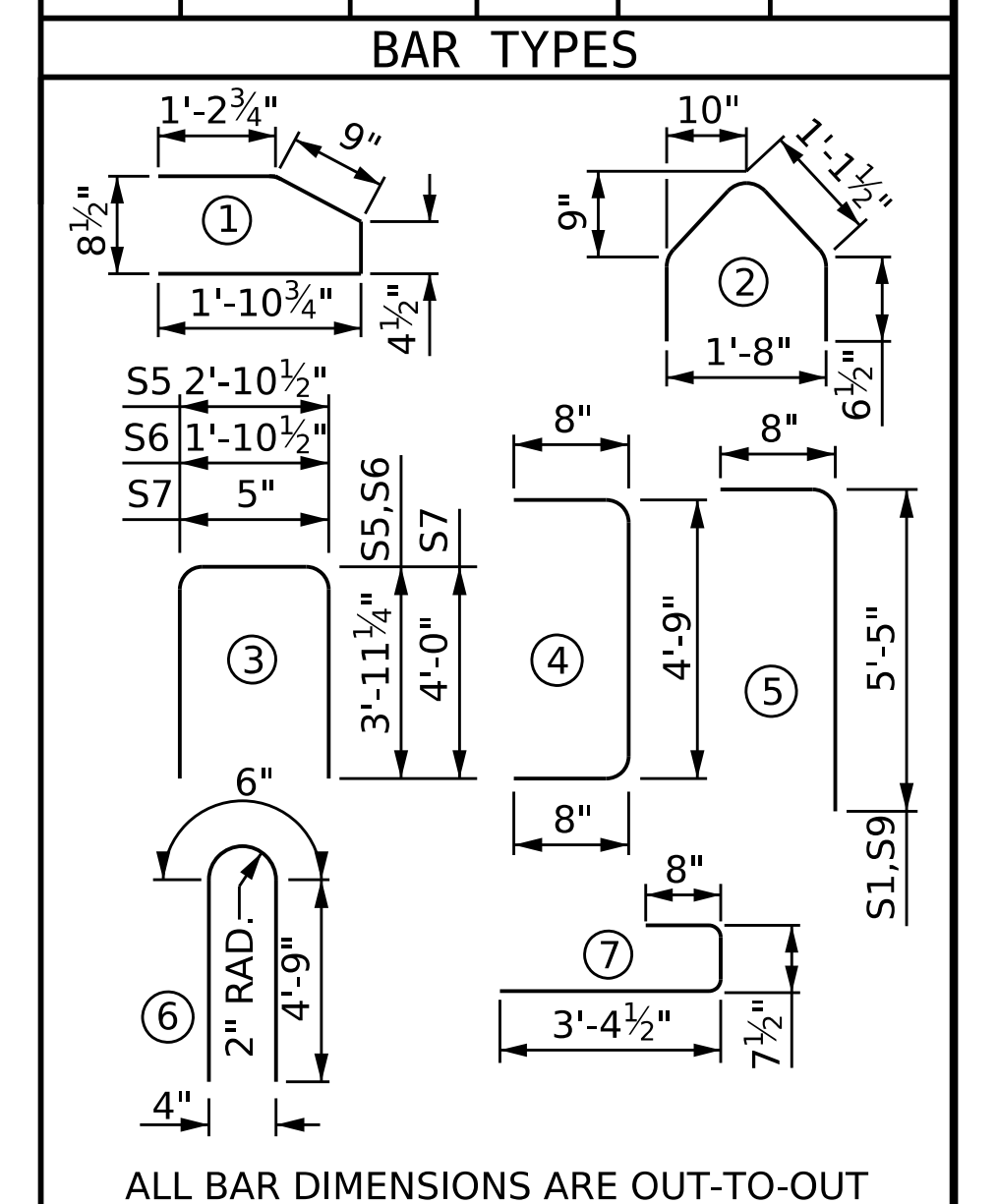
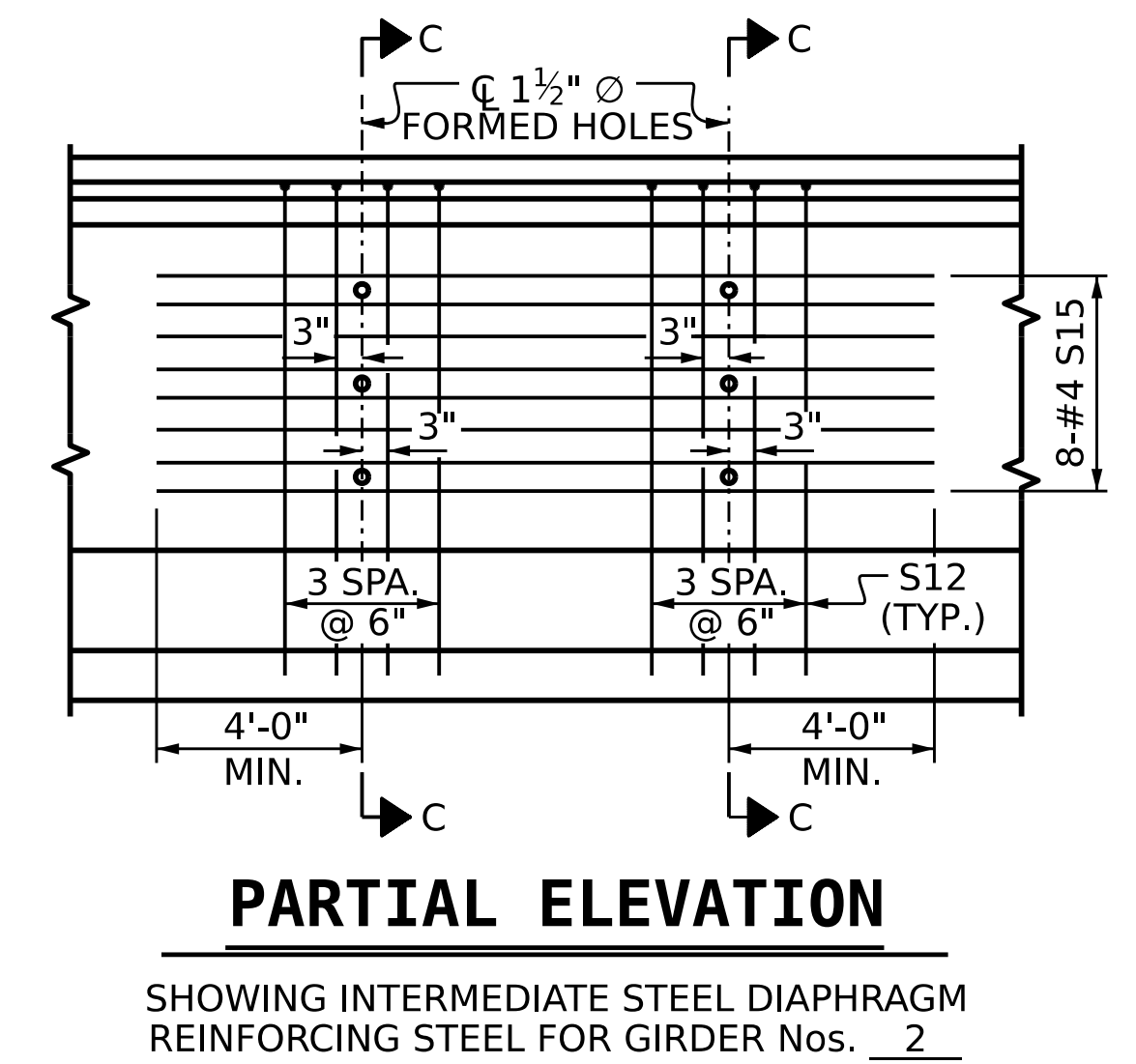
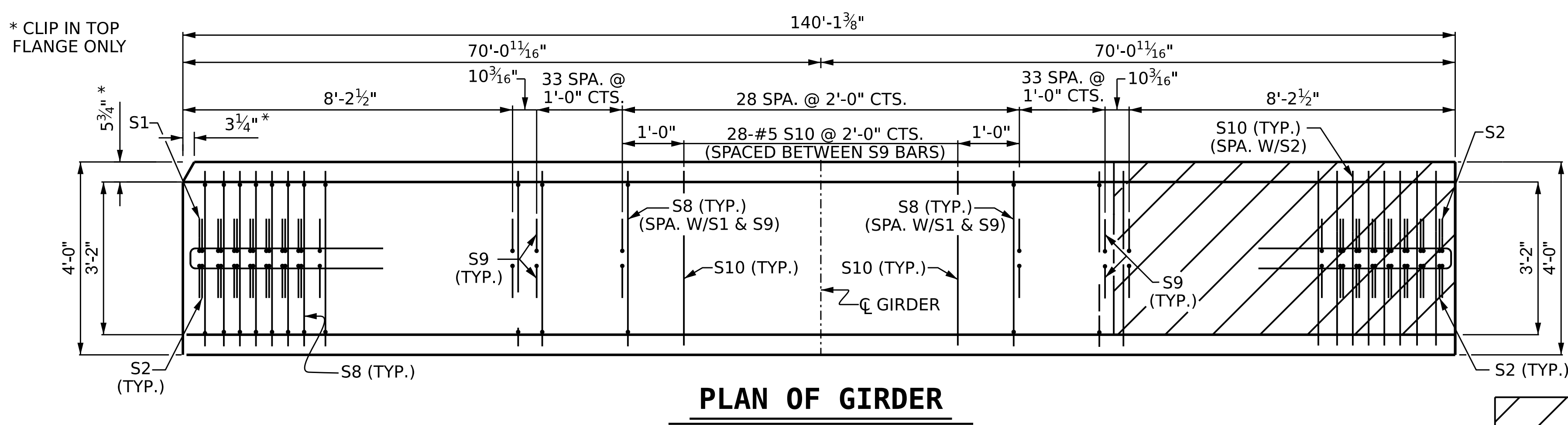
**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER



AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

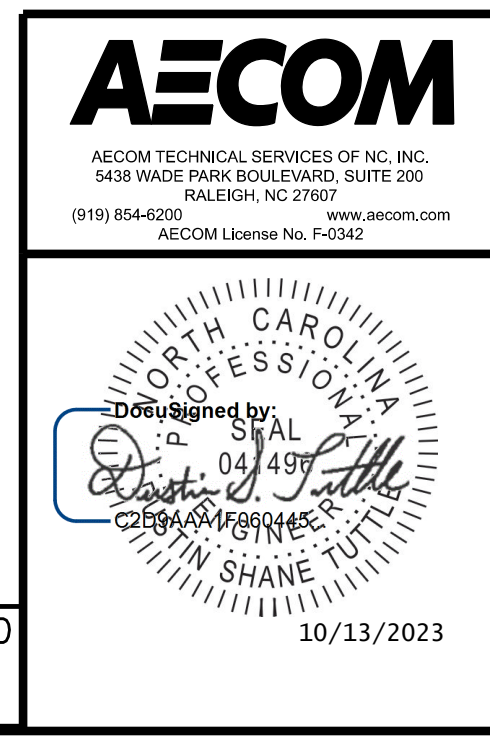
REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	38	#5	5	6'-1"	241	
S2	66	#5	4	6'-1"	419	
S3	38	#3	2	3'-4"	48	
S4	76	#3	1	4'-3"	121	
S5	2	#5	3	10'-9"	22	
S6	2	#5	3	9'-9"	20	
S7	10	#4	3	8'-5"	56	
S8	228	#5	7	4'-8"	1110	
S9	190	#5	5	6'-1"	1206	
S10	47	#5	STR	3'-8"	180	
GDR. 1,3,4	S12	8	#5	6	10'-0"	83
GDR. 2	S12	16	#5	6	10'-0"	167
GDR. 1,3,4	S14	16	#4	STR	8'-0"	86
GDR. 2	S15	16	#4	STR	11'-6"	123



QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8500PSI CONCRETE	0.6" Ø L.R. STRANDS	
LB.	C.Y.	No.	
GDR. 1,3,4	3592	35.9	52
GDR. 2	3713	35.9	52

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	140'-1 3/8"	560'-5 1/2"

PROJECT NO. **B-3186 / B-5898**  
**HAYWOOD** COUNTY  
 STATION: **24+70.00 -L\_ LT-**  
 SHEET 3 OF 7

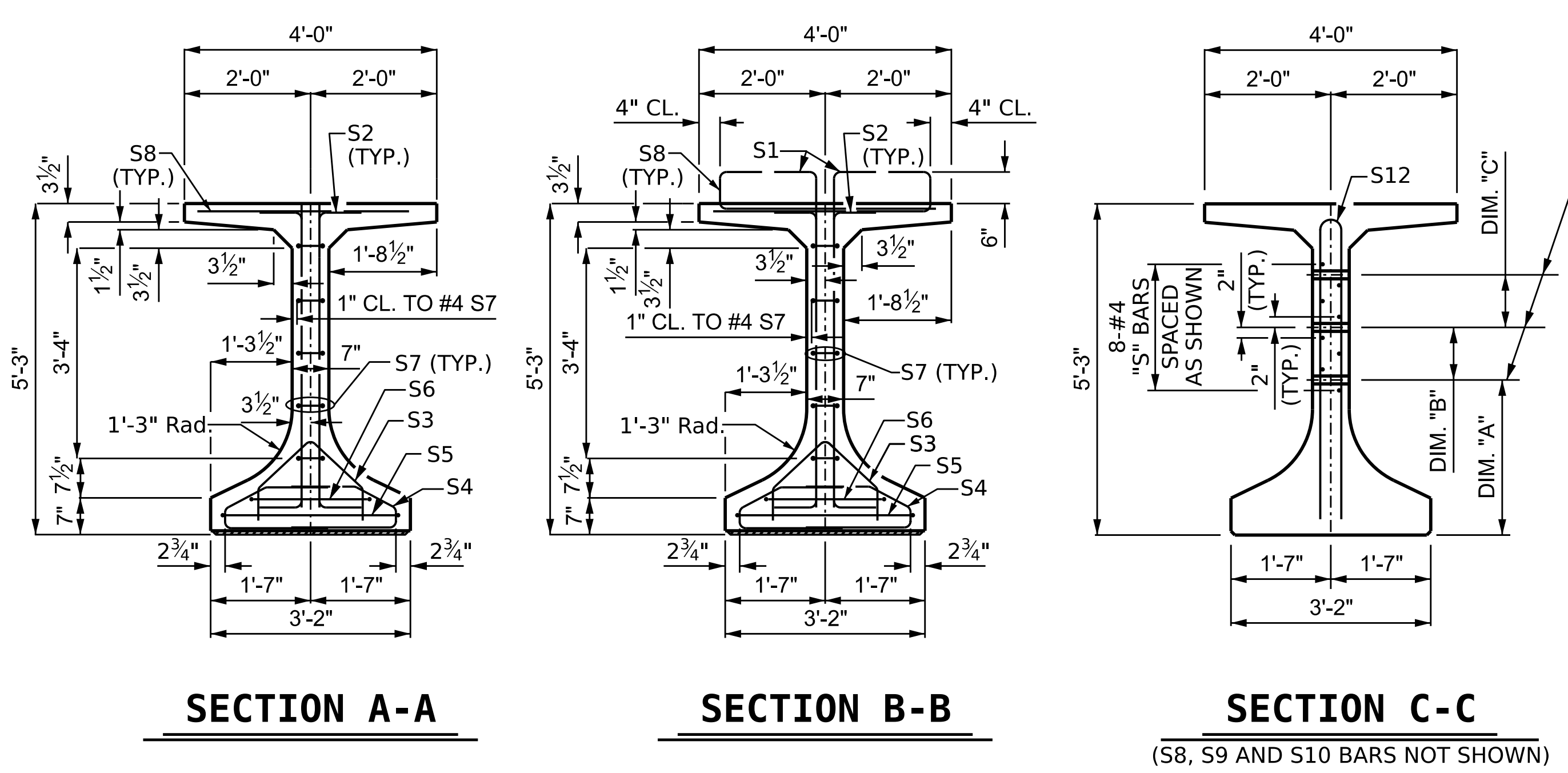


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
63" FLORIDA I-BEAM (FIB)					
PRESTRESSED CONCRETE GIRDER					
SPAN A GIRDERS 1-4					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 50

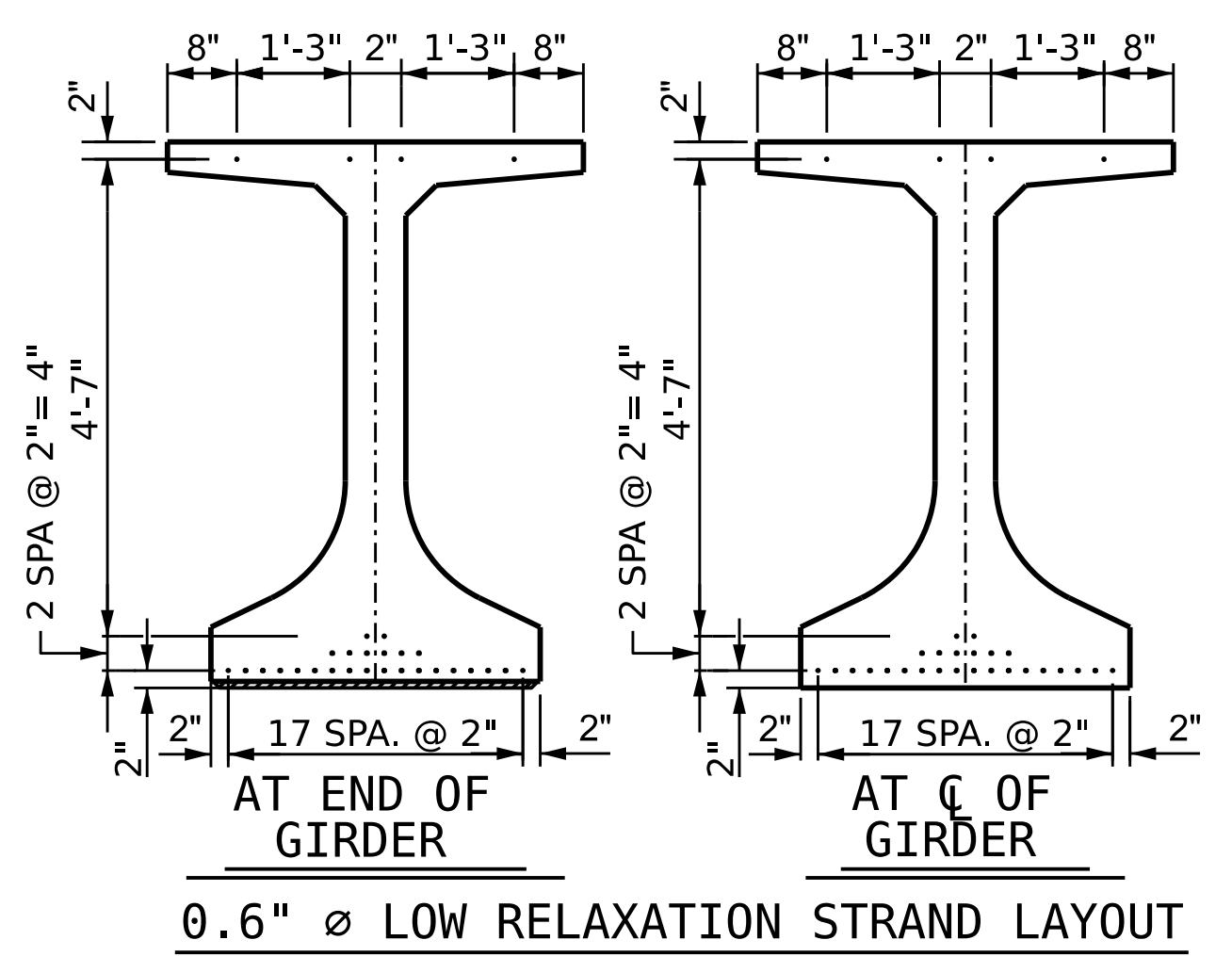
DRAWN BY: T. NEAL DATE: 04/2023  
 CHECKED BY: D. TUTTLE DATE: 05/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



1 1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

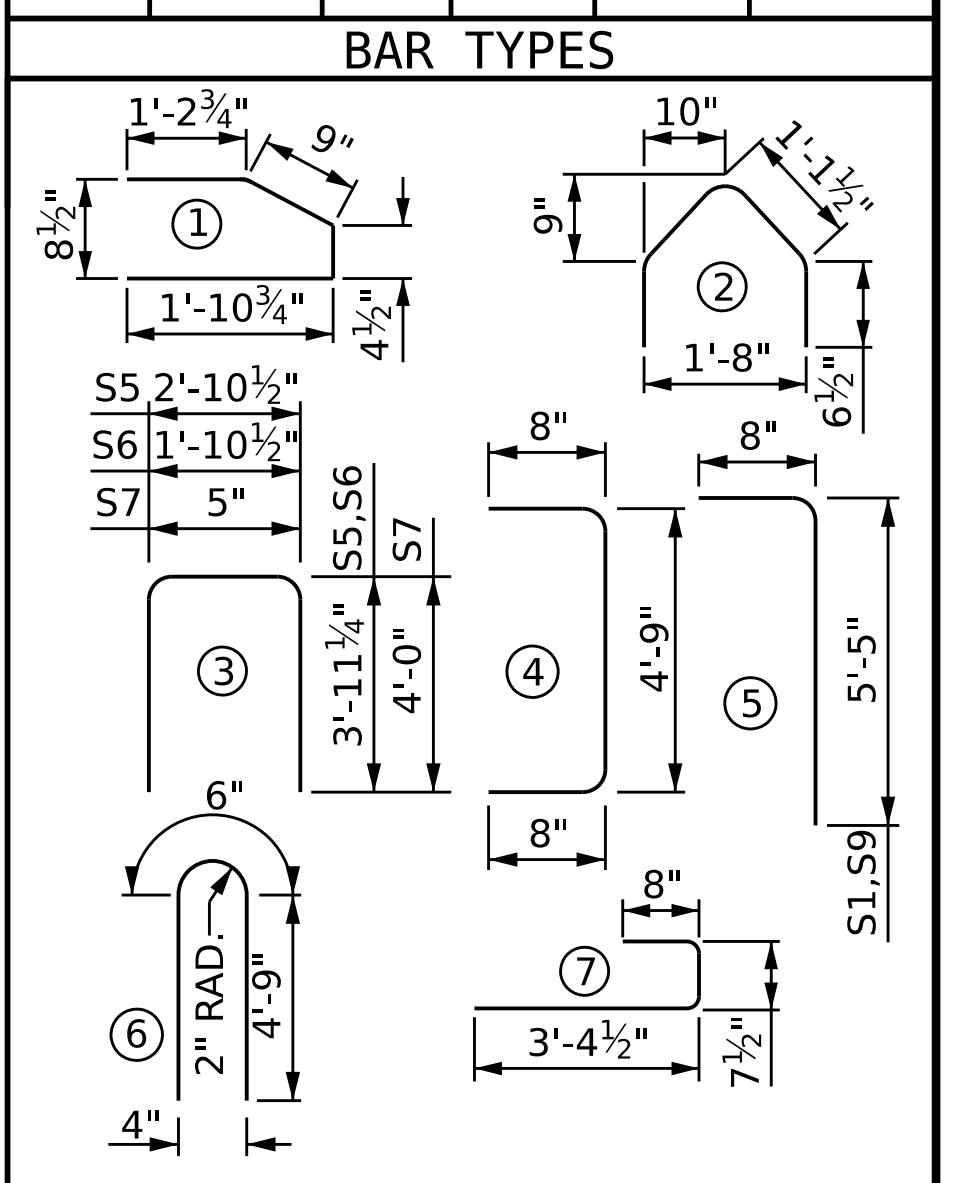
**DEBONDING LEGEND**  
 • FULLY BONDED STRANDS



AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	46	#5	5	6'-1"	292	
S2	58	#5	4	6'-1"	368	
S3	38	#3	2	3'-4"	48	
S4	76	#3	1	4'-3"	121	
S5	2	#5	3	10'-9"	22	
S6	2	#5	3	9'-9"	20	
S7	10	#4	3	8'-5"	56	
S8	164	#5	7	4'-8"	798	
S9	118	#5	5	6'-1"	749	
S10	33	#5	STR	3'-8"	126	
GDR. 1,3,4,7	S12	4	#5	6	10'-0"	42
GDR. 2,5,6	S12	8	#5	6	10'-0"	83
GDR. 1,3,4,7	S14	8	#4	STR	8'-0"	43
GDR. 2,5,6	S15	8	#4	STR	12'-8"	68

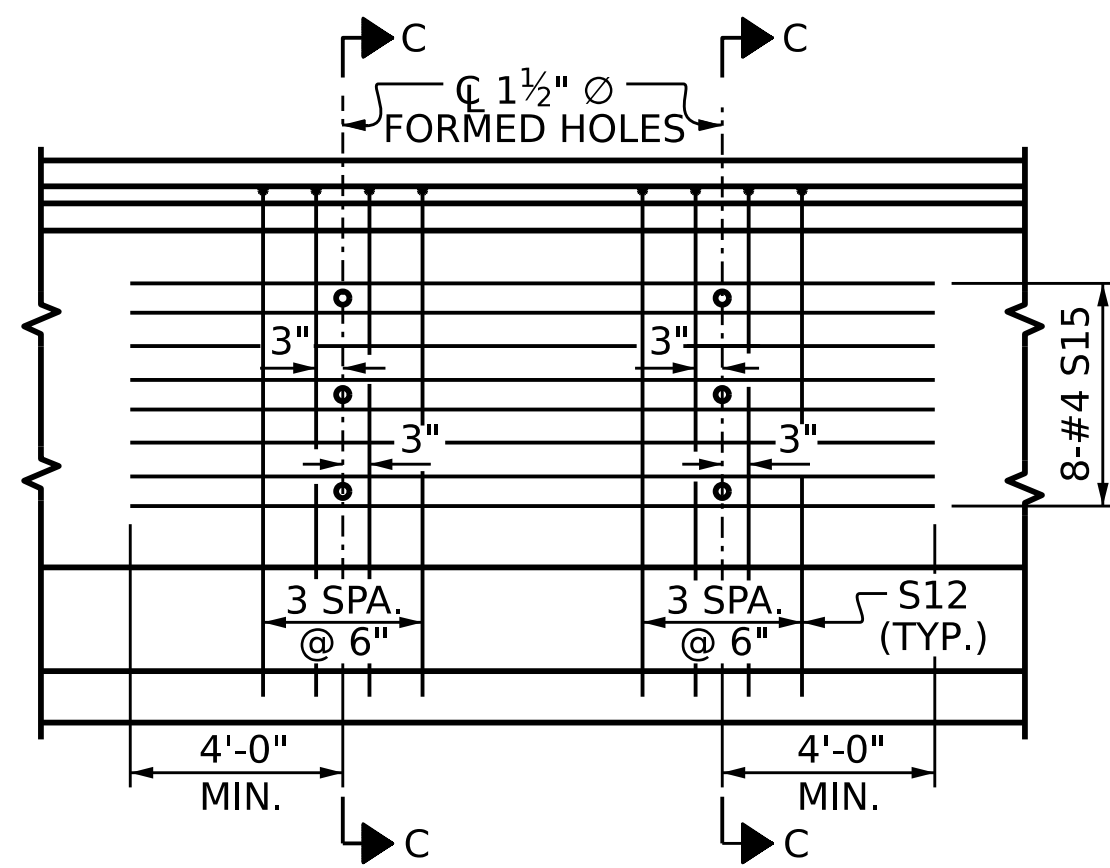
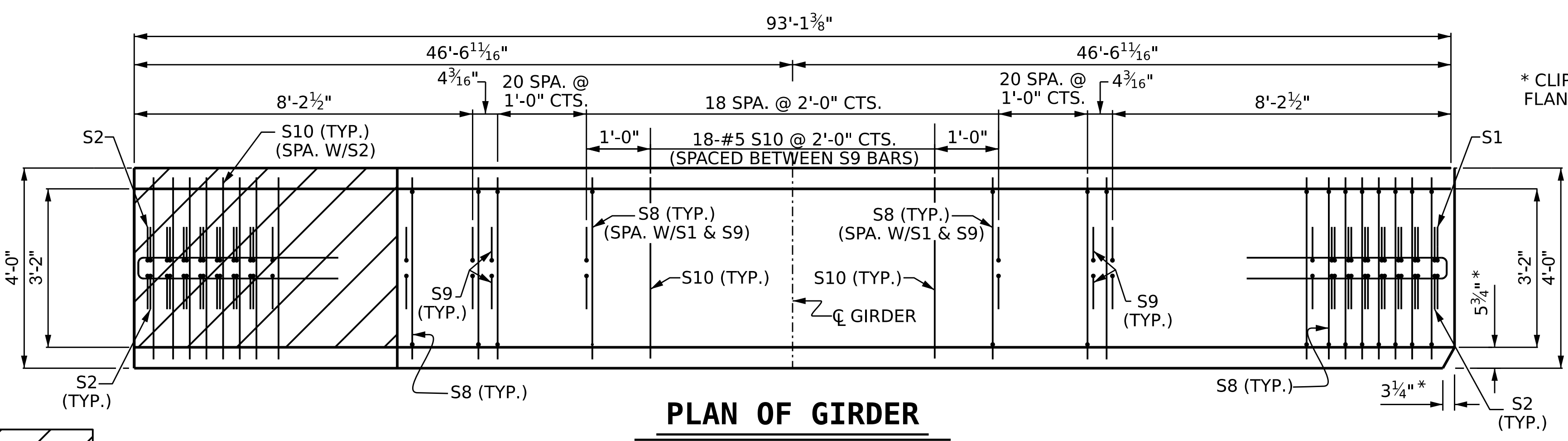


ALL BAR DIMENSIONS ARE OUT-TO-OUT

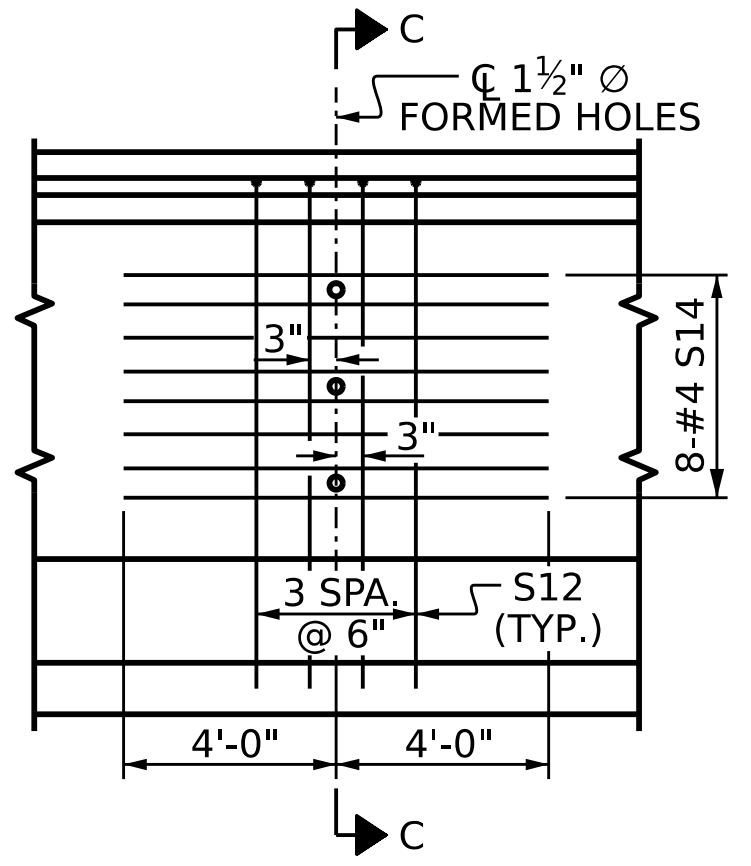
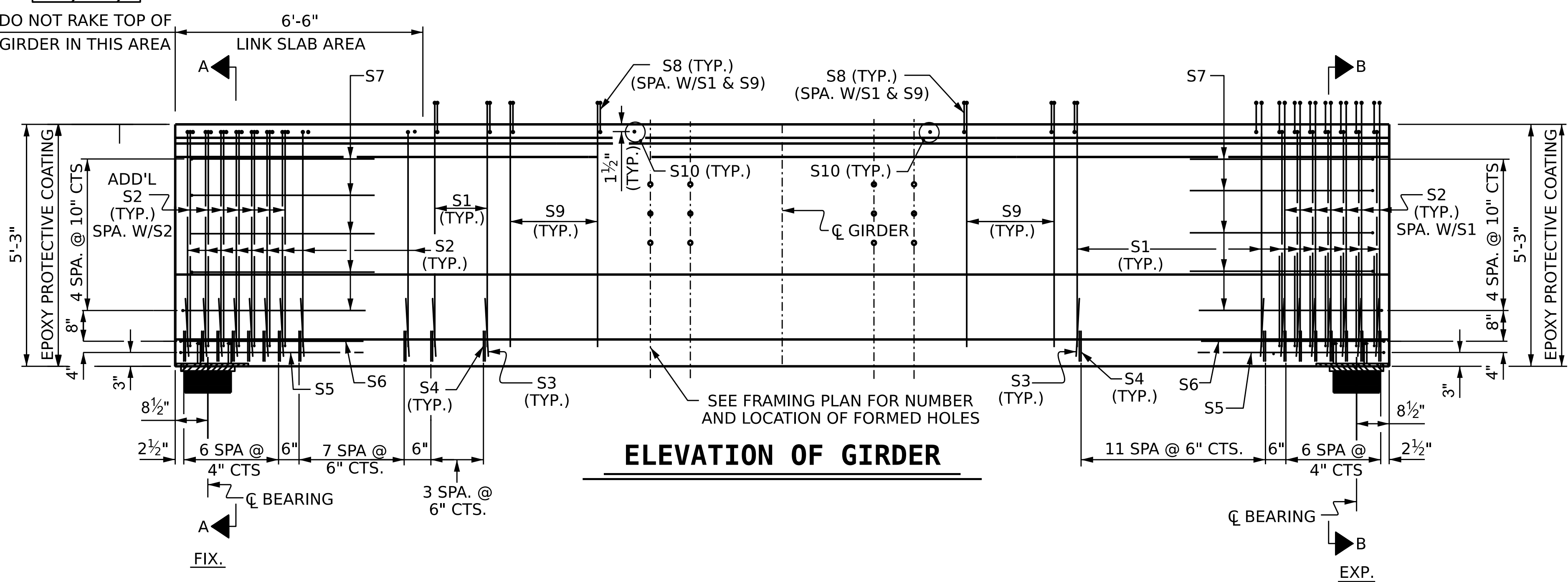
QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L.R. STRANDS	
LB.	C.Y.	No.	
GDR. 1,3,4,7	2685	23.8	30
GDR. 2,5,6	2751	23.8	30

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
7	93'-1 3/8"	651'-9 5/8"



**PARTIAL ELEVATION**  
 SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2,5,6



**PARTIAL ELEVATION**  
 SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1,3,4,7

PROJECT NO. **B-3186 / B-5898**  
**HAYWOOD** COUNTY  
 STATION: **24+70.00 -L LT-**  
 SHEET 4 OF 7

**AECOM**  
 AECOM TECHNICAL SERVICES OF NC, INC.  
 5430 WADE PARK BOULEVARD, SUITE 200  
 RALEIGH, NC 27607  
 (919) 854-6200 www.aecom.com  
 AECOM License No. F0262

DESIGNED BY: *[Signature]*  
 DATE: 04/29/23  
 CHECKED BY: *[Signature]*  
 DATE: 06/06/23

10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
63" FLORIDA I-BEAM (FIB)					
PRESTRESSED CONCRETE GIRDER					
SPAN B GIRDERS 1-7					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S3-20  
 TOTAL SHEETS: 50

DRAWN BY: T. NEAL DATE: 04/2023  
 CHECKED BY: D. TUTTLE DATE: 05/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DEAD LOAD DEFLECTION TABLE FOR GIRDERS OF SPAN A

Table with columns for GIRDERS 1 through 7, rows for 40TH POINTS, CAMBER (GIRDER IN PLACE), \* DEFLECTION DUE TO SUPERIMPOSED DL, and FINAL CAMBER. Values are in feet (decimal form) or inches (fraction form).

\* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT 'FINAL CAMBER', WHICH IS SHOWN IN INCHES (FRACTION FORM)

Table with columns: DRAWN BY, CHECKED BY, DESIGN ENGINEER OF RECORD, T.E. NEAL, S. NATARAJAN, D. TUTTLE, DATE: 06/2023.

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 SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

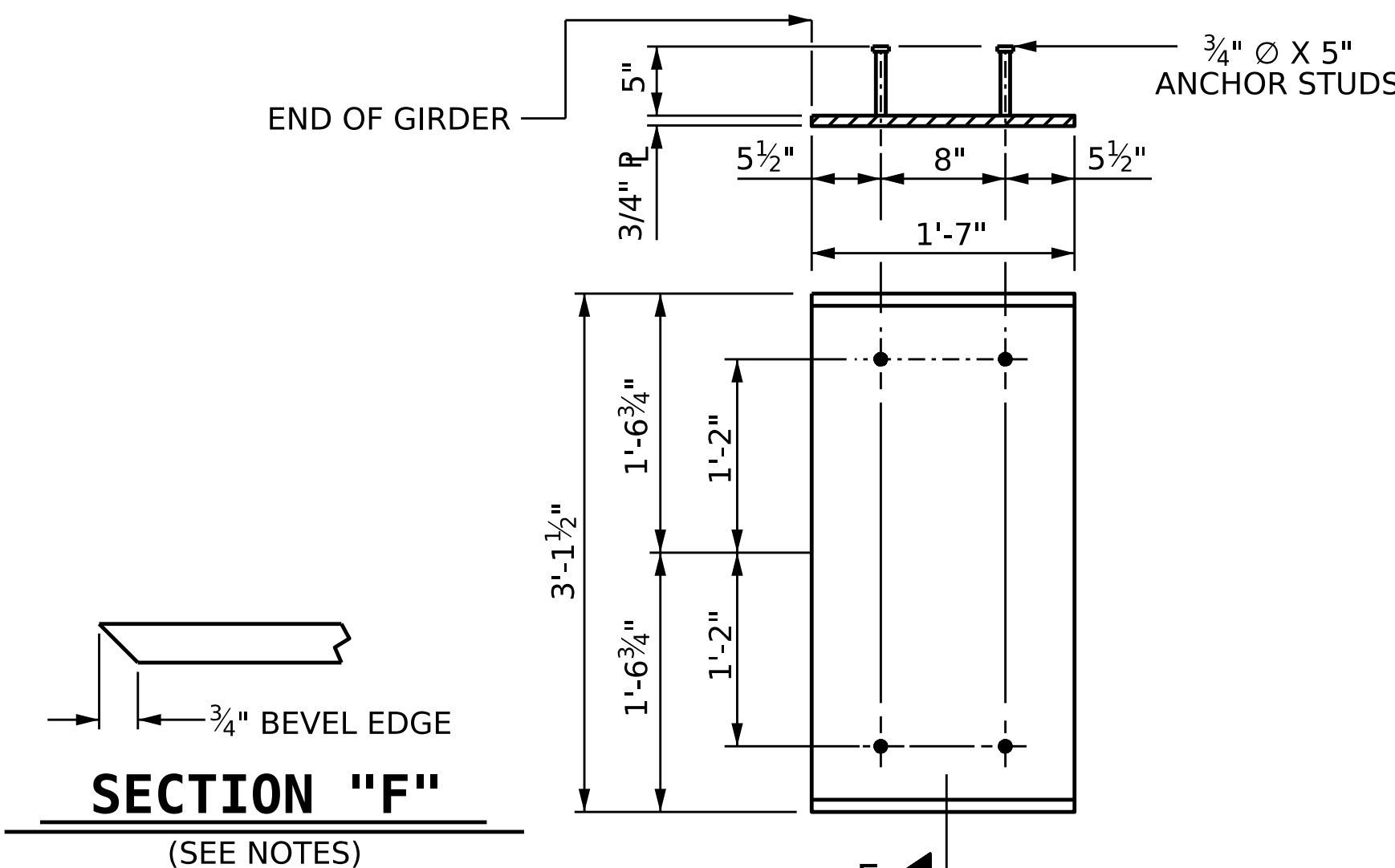
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND SHADED AREA NEAR BENT, SHALL BE RAKED TO A DEPTH OF 1/4".



EMBEDDED PLATE "B-1" DETAILS FOR FIB GIRDER

(2 REQ'D PER GIRDER)

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
STATION: 24+70.00 -L LT-

SHEET 5 OF 7

AECOM logo and professional seal for a North Carolina Professional Engineer, signed by D. Tuttle on 04/19/23.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE DEAD LOAD DEFLECTION TABLES. Includes a REVISIONS table and SHEET NO. S3-21.

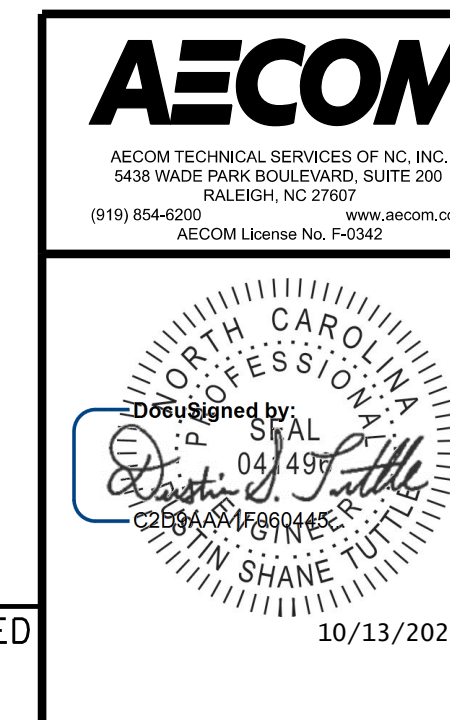
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>DEAD LOAD DEFLECTION TABLE FOR GIRDERS OF SPAN B</b>														
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 1</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.007	0.014	0.021	0.028	0.034	0.039	0.043	0.046	0.047	0.049
FINAL CAMBER ↑				0"	3/16"	5/16"	7/16"	1/2"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.047	0.046	0.043	0.039	0.034	0.028	0.021	0.014	0.007	0.000
FINAL CAMBER ↑					5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	5/16"	3/16"	0"	
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 2</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.007	0.014	0.020	0.027	0.032	0.037	0.041	0.044	0.045	0.046
FINAL CAMBER ↑				0"	3/16"	5/16"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	5/8"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.045	0.044	0.041	0.037	0.032	0.027	0.020	0.014	0.007	0.000
FINAL CAMBER ↑					5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	5/16"	3/16"	0"
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 3</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.007	0.014	0.021	0.028	0.033	0.039	0.042	0.046	0.047	0.048
FINAL CAMBER ↑				0"	3/16"	5/16"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	5/8"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.047	0.046	0.042	0.039	0.033	0.028	0.021	0.014	0.007	0.000
FINAL CAMBER ↑					5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	5/16"	3/16"	0"	
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 4</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.007	0.013	0.020	0.026	0.031	0.037	0.040	0.043	0.044	0.045
FINAL CAMBER ↑				0"	3/16"	5/16"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	5/8"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.044	0.043	0.040	0.037	0.031	0.026	0.020	0.013	0.007	0.000
FINAL CAMBER ↑					5/8"	5/8"	5/8"	5/8"	9/16"	1/2"	7/16"	5/16"	3/16"	0"
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 5</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.008	0.016	0.024	0.031	0.038	0.044	0.047	0.051	0.053	0.054
FINAL CAMBER ↑				0"	3/16"	5/16"	3/8"	7/16"	1/2"	1/2"	1/2"	9/16"	9/16"	9/16"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.053	0.051	0.047	0.044	0.038	0.031	0.024	0.016	0.008	0.000
FINAL CAMBER ↑					9/16"	9/16"	1/2"	1/2"	1/2"	7/16"	3/8"	5/16"	3/16"	0"
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 6</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.008	0.017	0.025	0.033	0.039	0.046	0.050	0.054	0.055	0.056
FINAL CAMBER ↑				0"	3/16"	5/16"	3/8"	7/16"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.00
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.055	0.054	0.050	0.046	0.039	0.033	0.025	0.017	0.008	0.00
FINAL CAMBER ↑					1/2"	1/2"	1/2"	1/2"	7/16"	7/16"	3/8"	5/16"	3/16"	0"
<b>0.6" ø LOW RELAXATION</b>				<b>GIRDER 7</b>										
20TH POINTS				0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
CAMBER (GIRDER IN PLACE) ↑				0.000	0.020	0.039	0.053	0.066	0.075	0.084	0.088	0.093	0.095	0.096
* DEFLECTION DUE TO SUPERIMPOSED DL ↓				0.000	0.009	0.018	0.026	0.035	0.042	0.049	0.053	0.057	0.059	0.060
FINAL CAMBER ↑				0"	3/16"	5/16"	3/8"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"
20TH POINTS					0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑					0.095	0.093	0.088	0.084	0.075	0.066	0.053	0.039	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓					0.059	0.057	0.053	0.049	0.042	0.035	0.026	0.018	0.009	0.000
FINAL CAMBER ↑					7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	3/8"	5/16"	3/16"	0"

\* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD  
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS SHOWN IN INCHES (FRACTION FORM)

PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L LT-

SHEET 6 OF 7



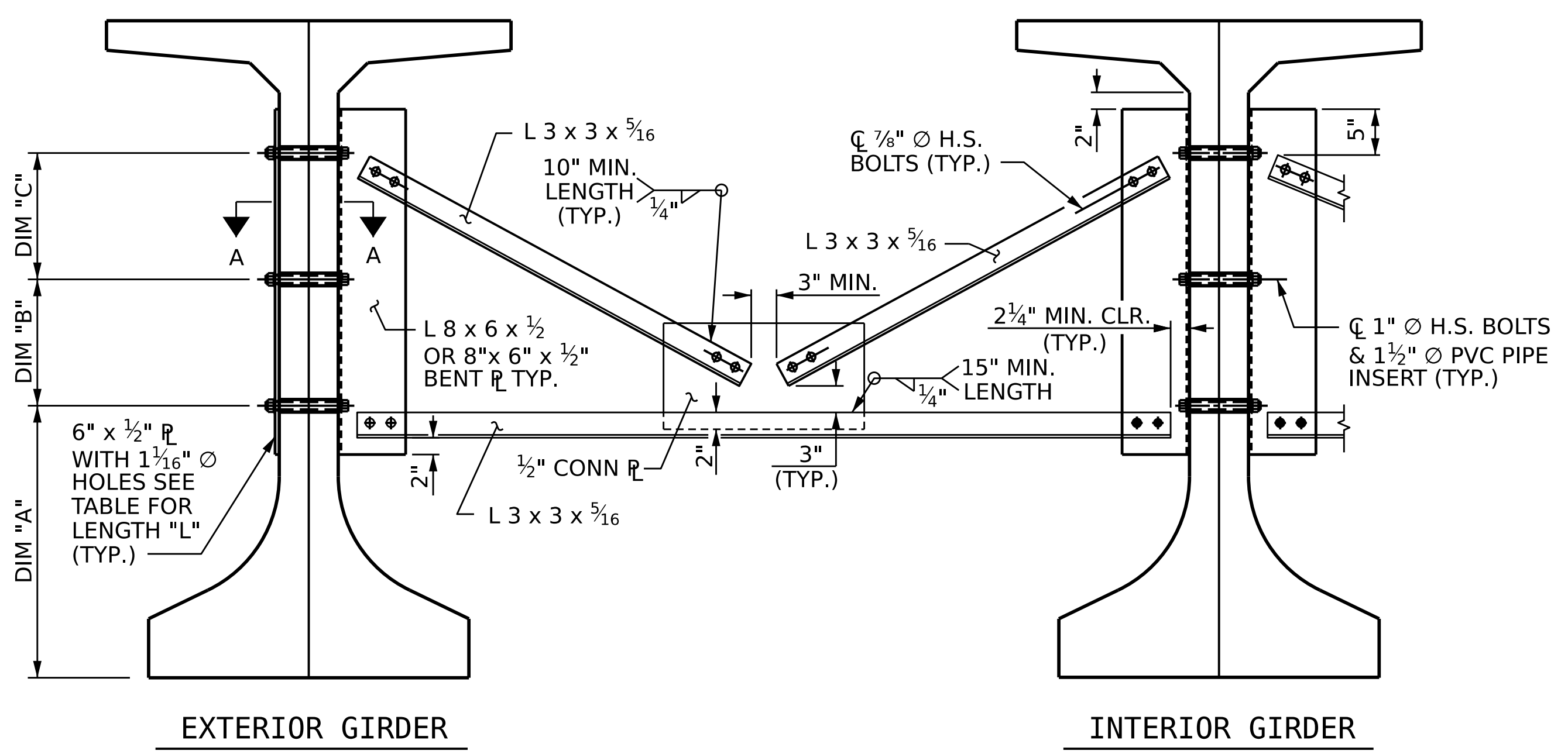
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 DEAD LOAD  
 DEFLECTION  
 TABLES**

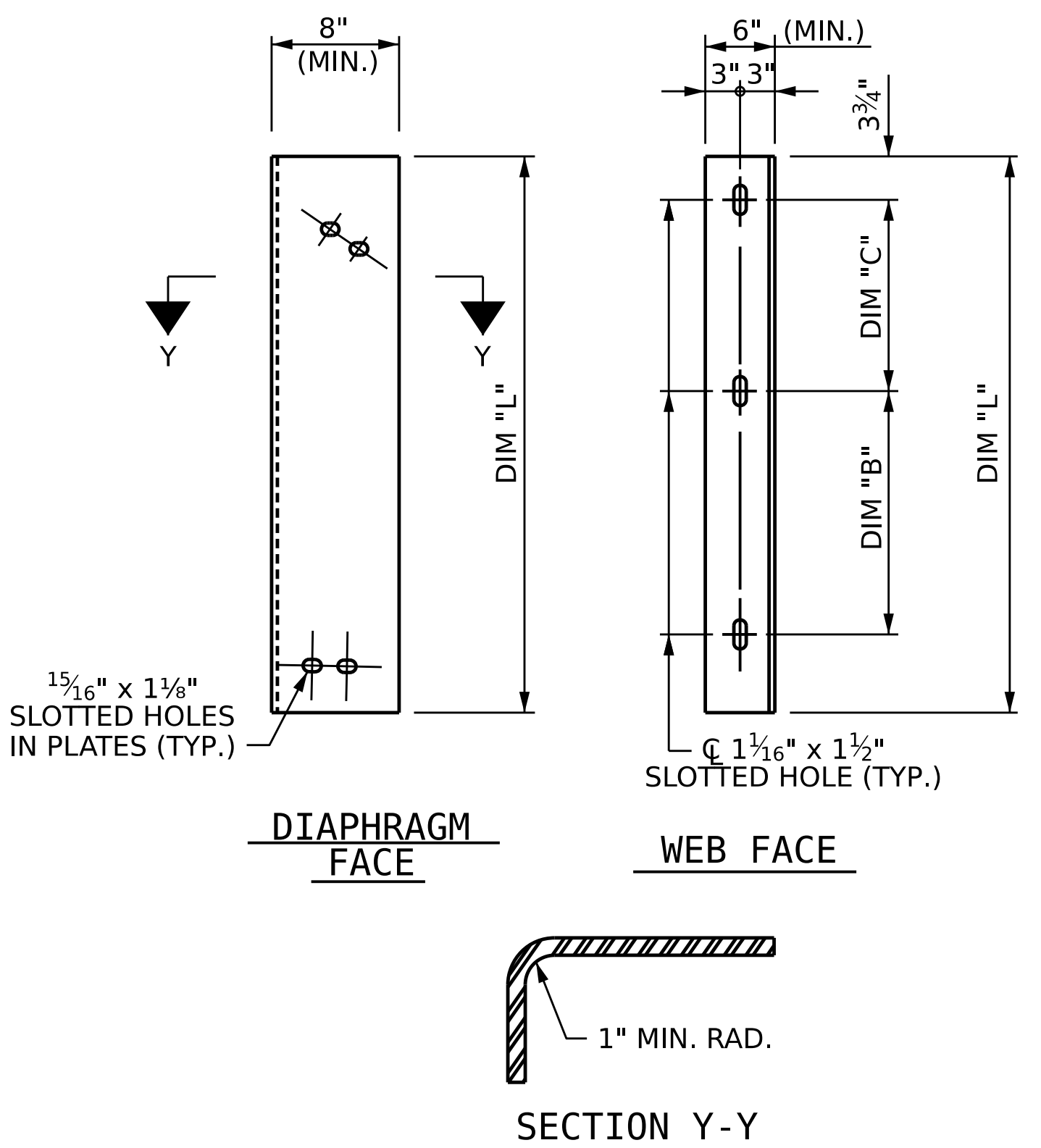
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			

DRAWN BY : T.E. NEAL DATE : 04/2023  
 CHECKED BY : S. NATARAJAN DATE : 04/2023  
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 06/2023

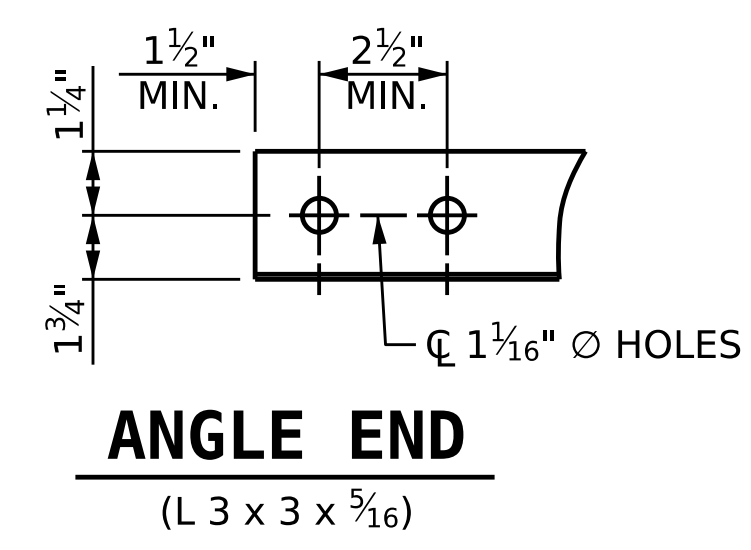
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED



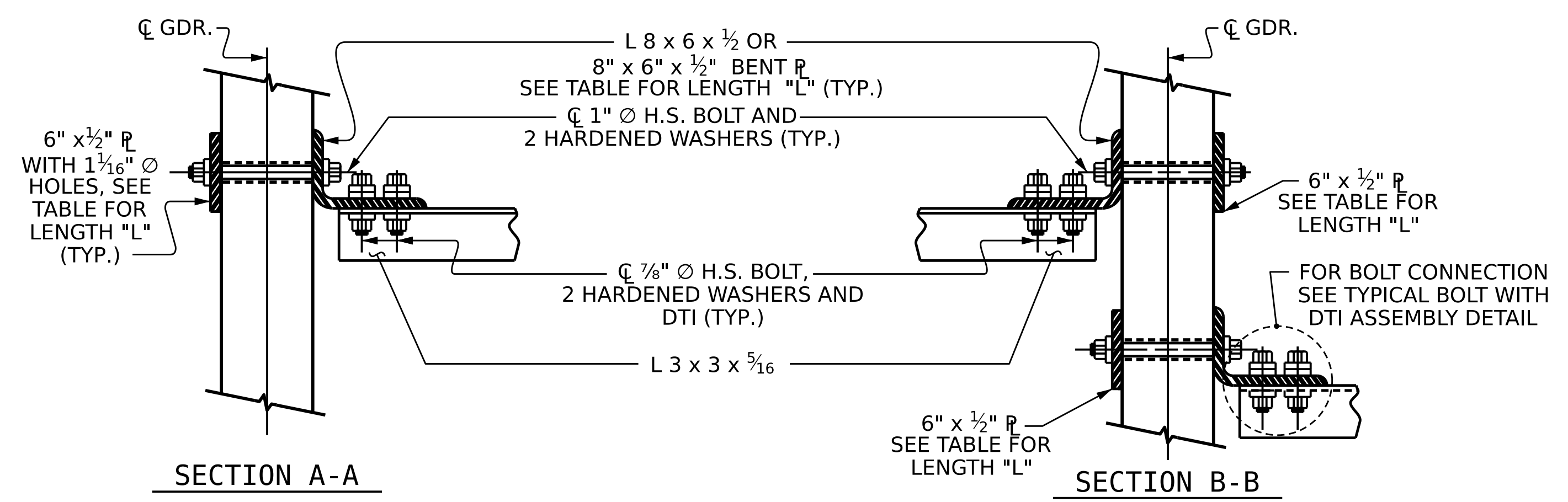
**PART SECTION AT INTERMEDIATE DIAPHRAGM**



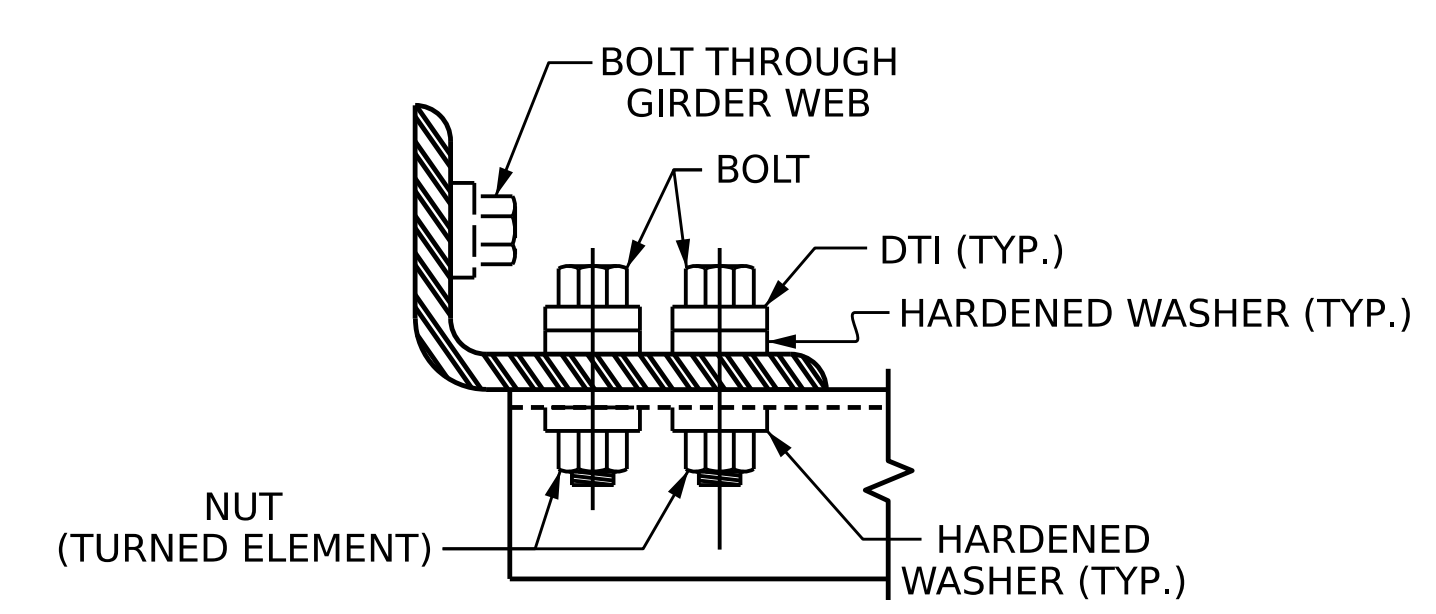
**CONNECTOR PLATE DETAIL**



**ANGLE END**  
(L 3 x 3 x 5/16)



**CONNECTION DETAILS**



**BOLT WITH DTI ASSEMBLY DETAIL**

**STRUCTURAL STEEL NOTES**

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

DIAPHRAGM BETWEEN GIRDER 6 AND TEMPORARY GIRDER 7 TO BE REMOVED DURING STAGE III DEMOLITION. L 8X6X1/2 OR 8"X 6"X 1/2" BENT PL ON EXTERIOR OF GIRDER 6 TO BE REPLACED WITH 6"X1/2" PL AFTER DEMOLITION.

**TABLE**

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" FIB	2'-6 3/4"	9 1/4"	9 1/4"	2'-2"

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+70.00 -L LT-

SHEET 7 OF 7

**AECOM**  
AECOM TECHNICAL SERVICES OF NC, INC.  
5430 WADE PARK BOULEVARD, SUITE 200  
RALEIGH, NC 27607  
(919) 854-6200 www.aecom.com  
AECOM License No. F0242

DESIGNED BY: SHAL  
DATE: 04/29/23  
CHECKED BY: SHANE TULL  
DATE: 04/29/23

10/13/2023

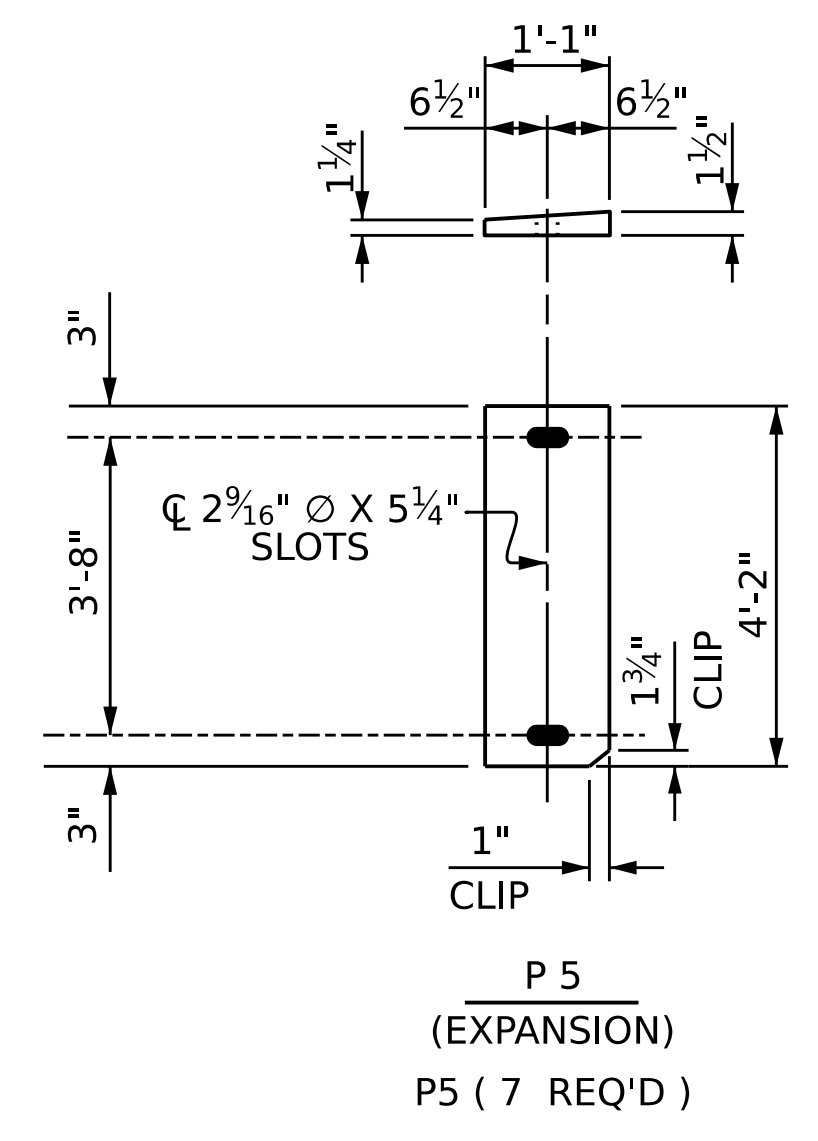
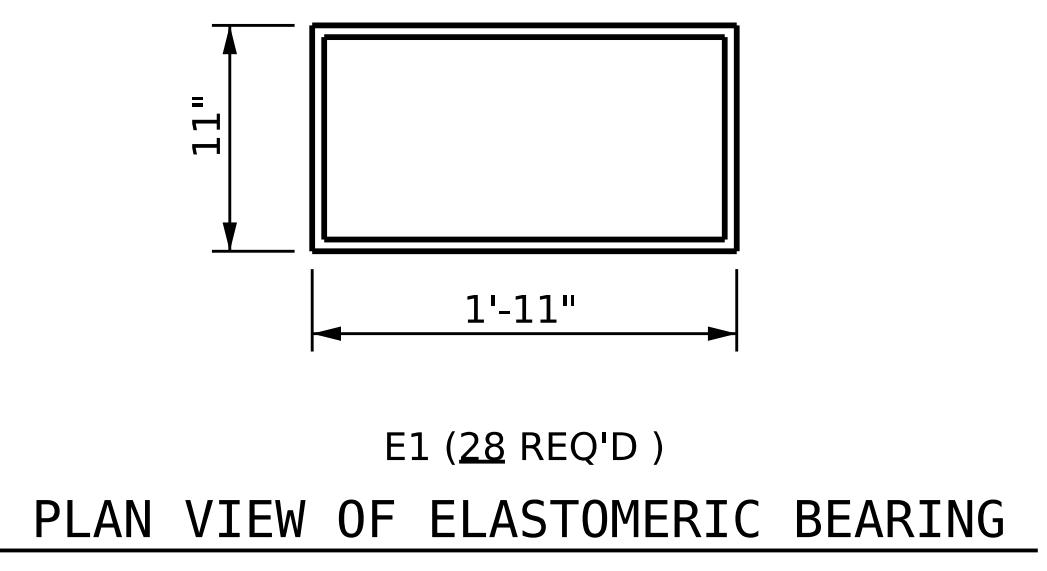
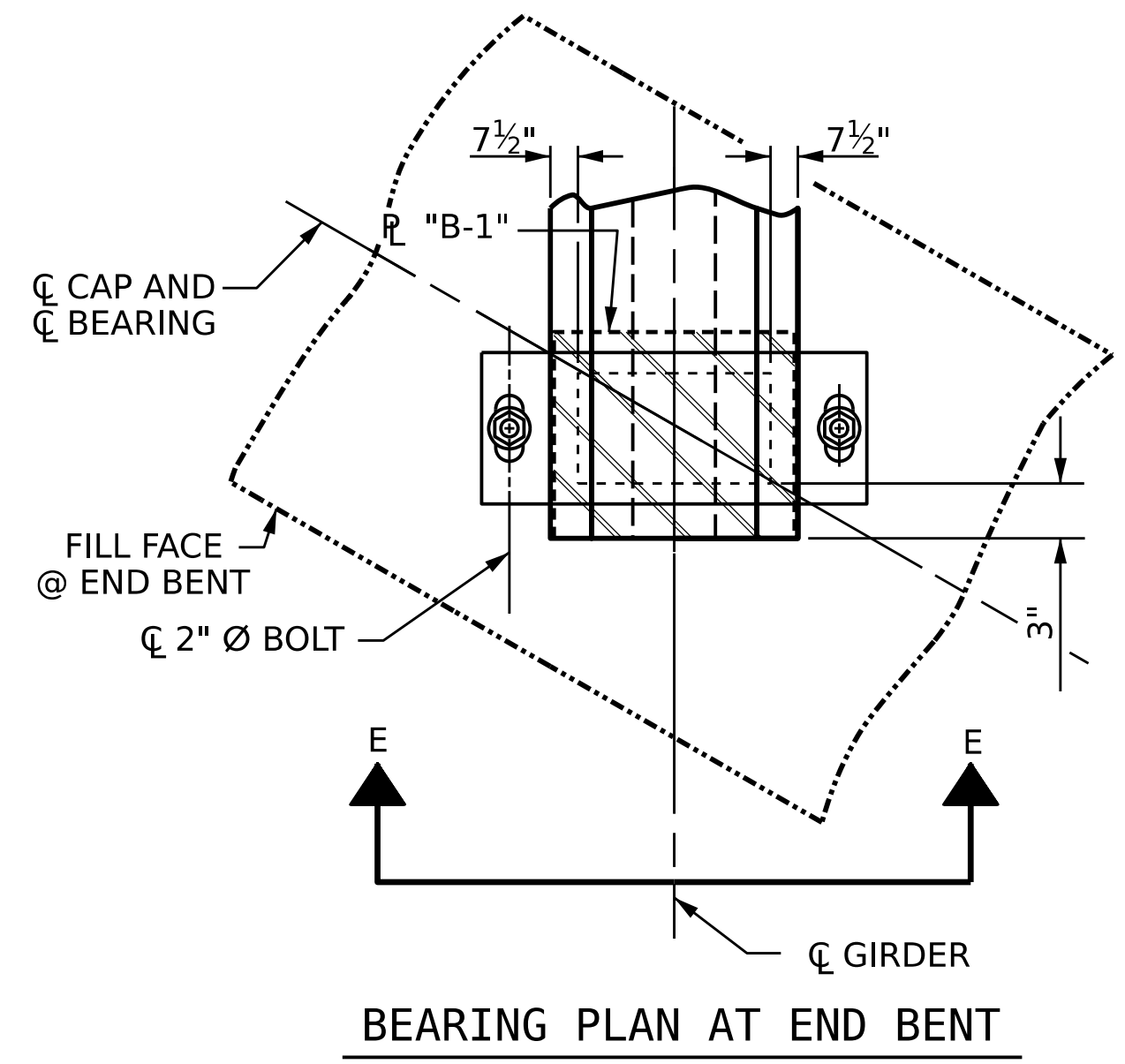
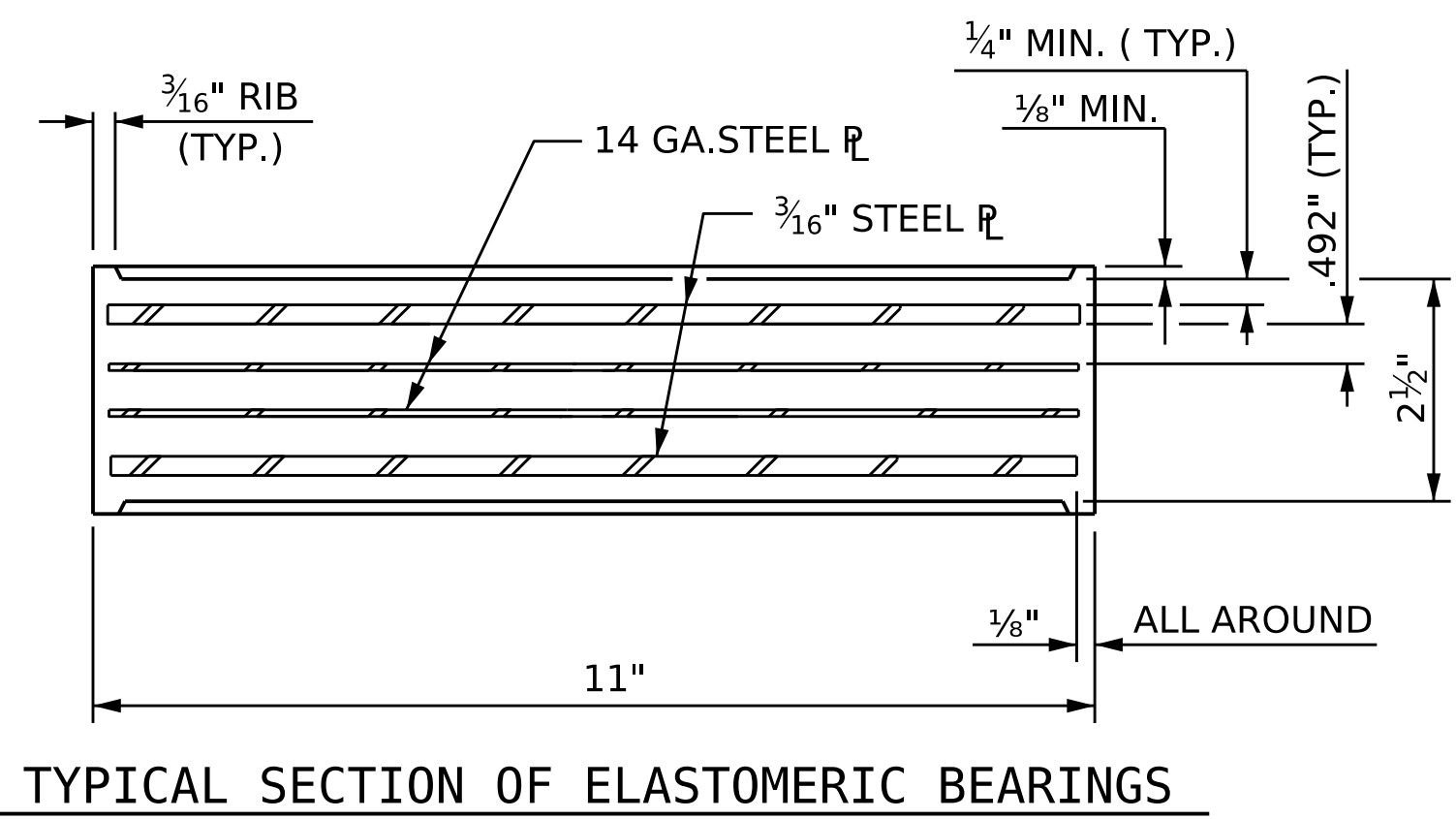
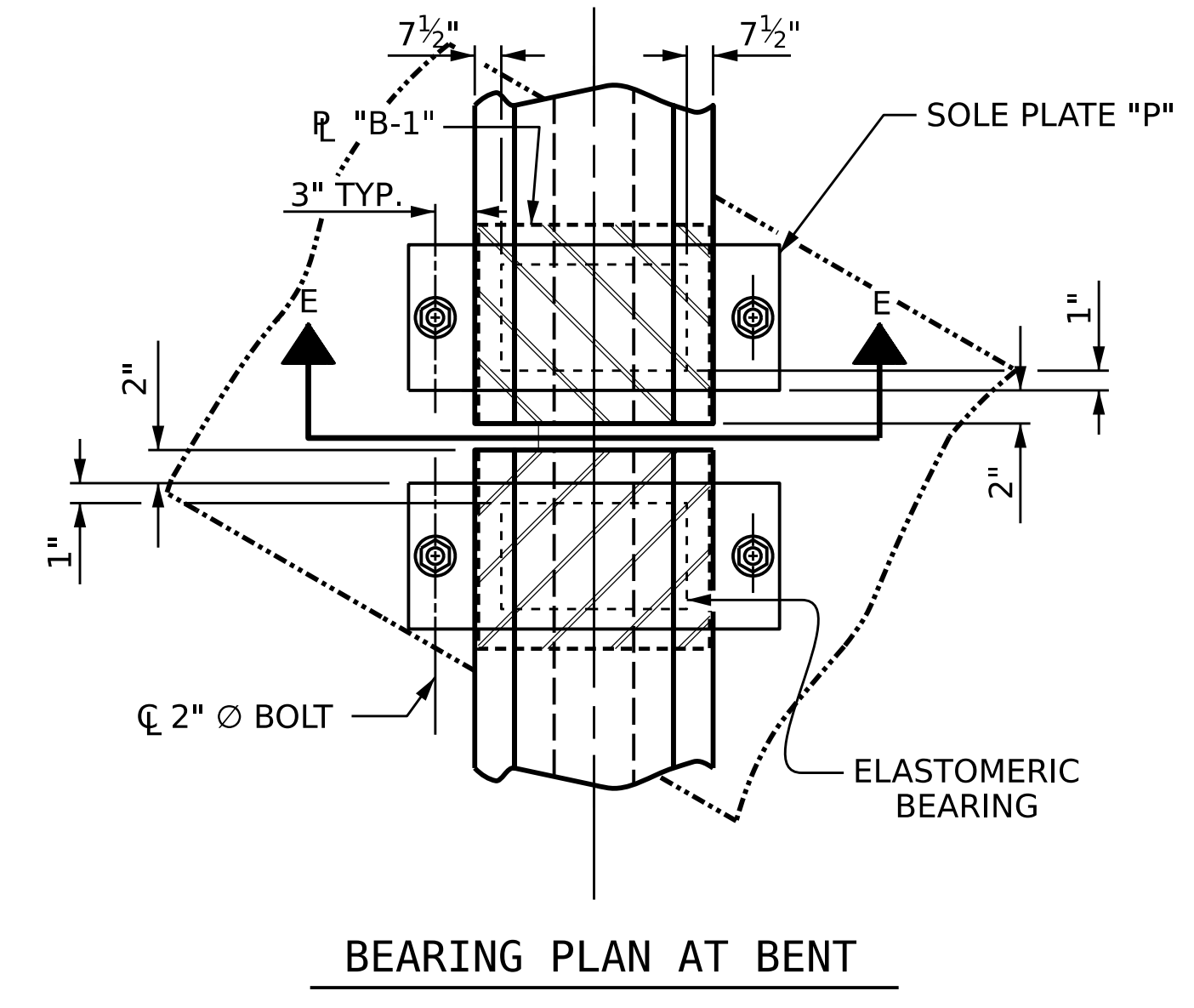
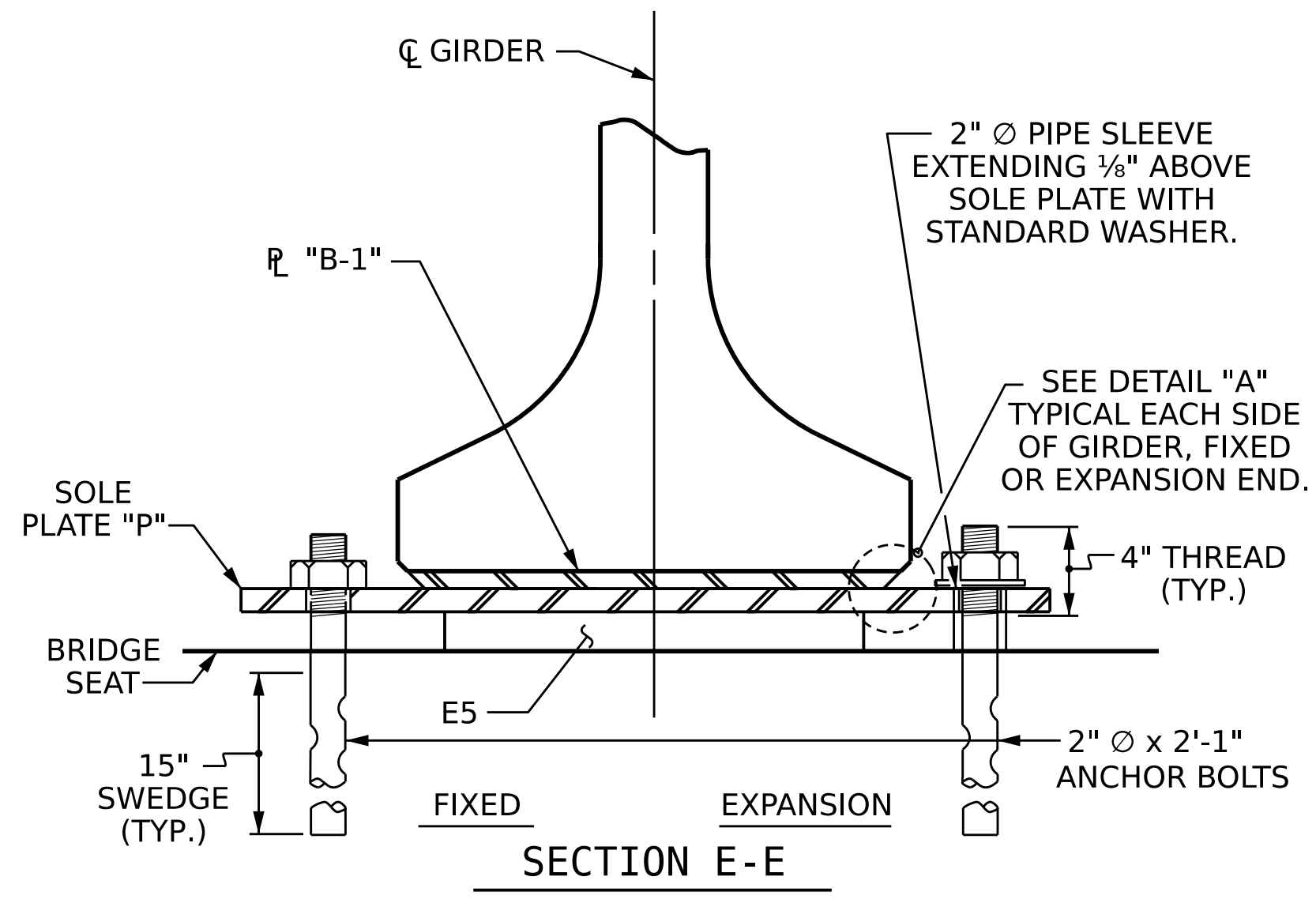
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
**INTERMEDIATE STEEL  
DIAPHRAGMS FOR 63"  
FLORIDA I-BEAMS**

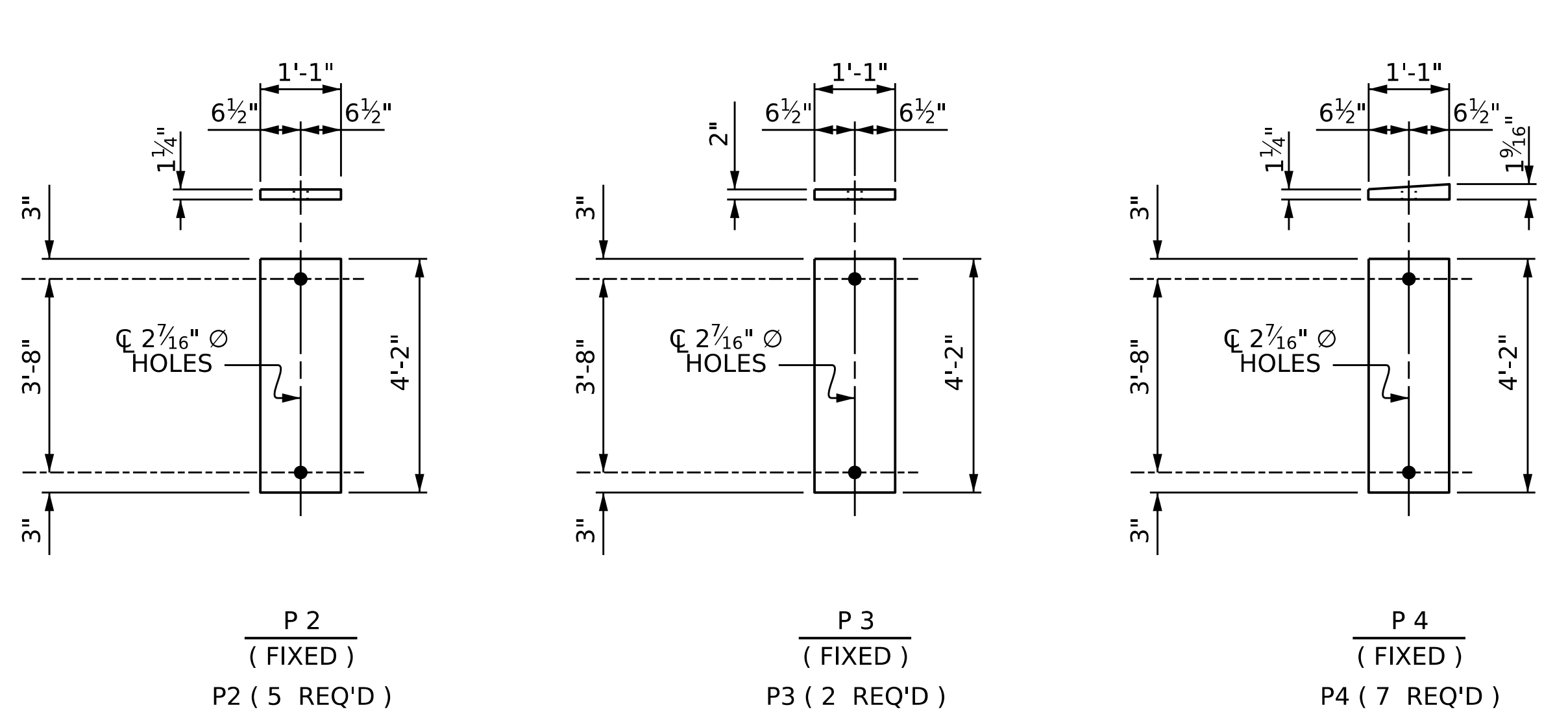
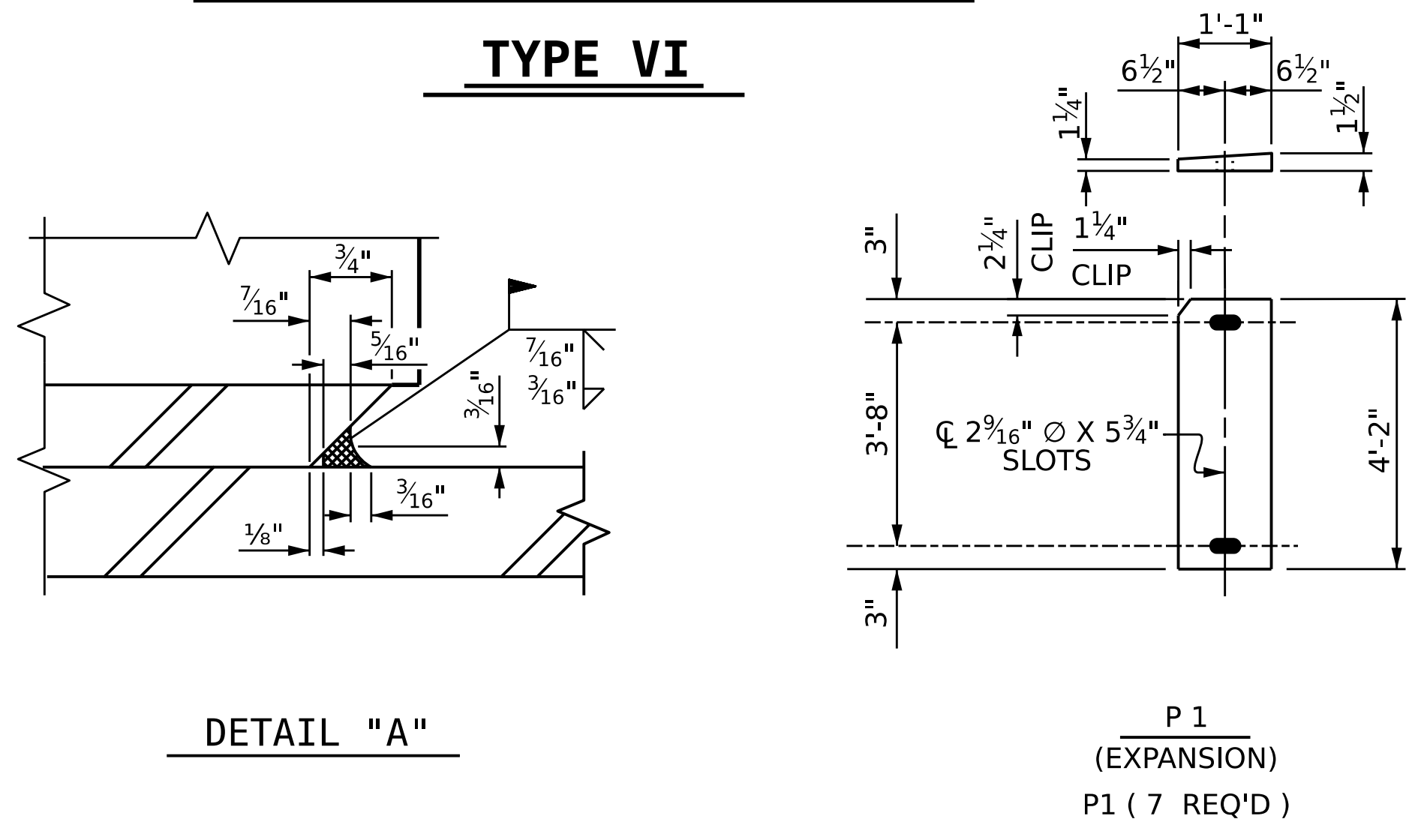
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-23
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : L. LEE DATE : 04/2023  
CHECKED BY : D. TUTTLE DATE : 05/2023  
DRAWN BY : BNB 08/21  
CHECKED BY : AAI 08/21

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VI	420 k



PROJECT NO. B-3186 / B-5898  
HAYWOOD COUNTY  
 STATION: 24+70.00 -L\_ LT-  
 SHEET 1 OF 1

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD <b>ELASTOMERIC BEARING DETAILS</b> PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S3-24					TOTAL SHEETS 50

DRAWN BY: M.L. CATER DATE: 05/2023  
 CHECKED BY: D.S. TUTTLE DATE: 05/2023  
 DESIGN ENGINEER OF RECORD: D.S. TUTTLE DATE: 06/2023

SOLE PLATE DETAILS ("P")

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED