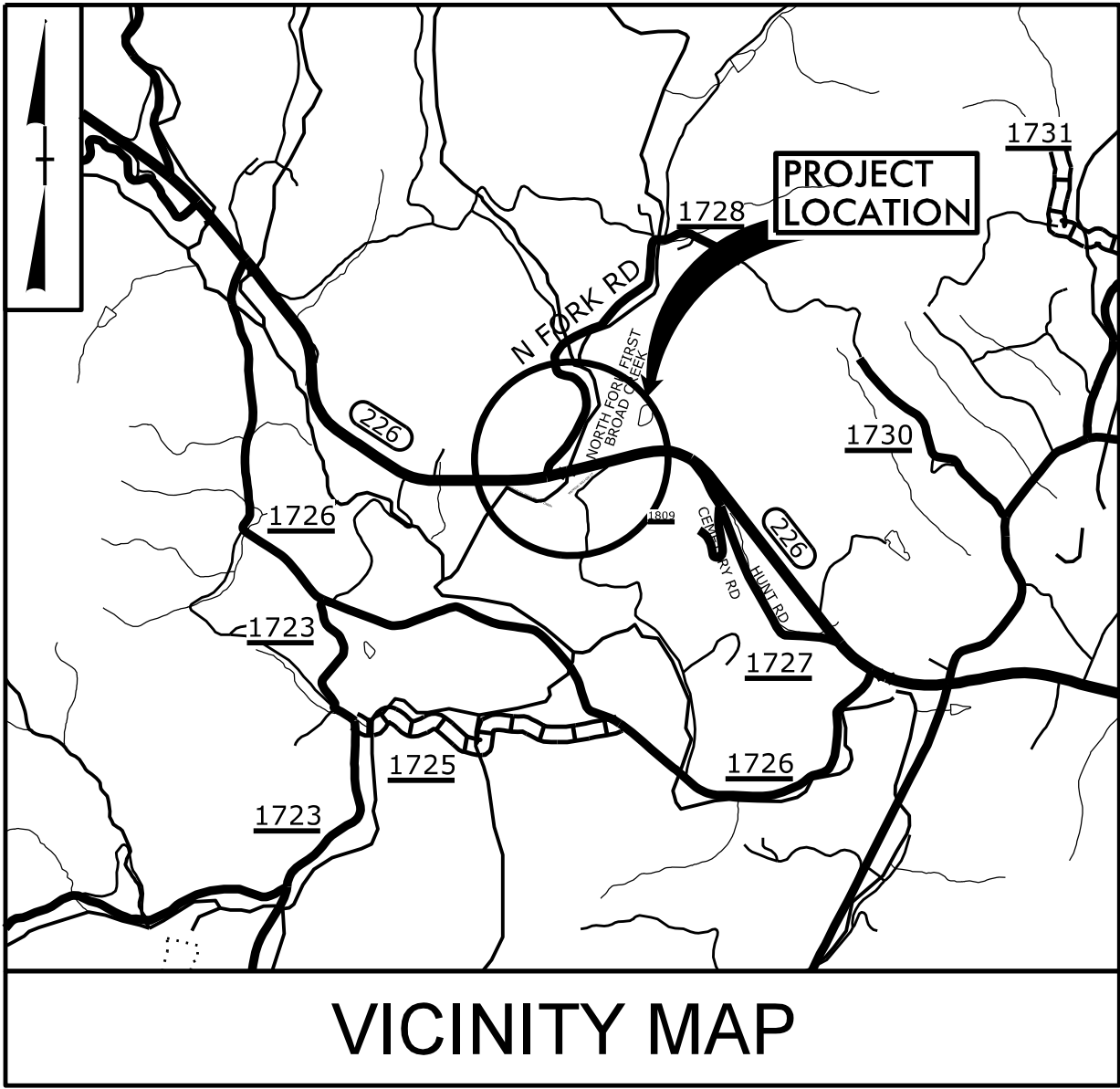


PROJECT: BR-0100

CONTRACT: C204883



VICINITY MAP

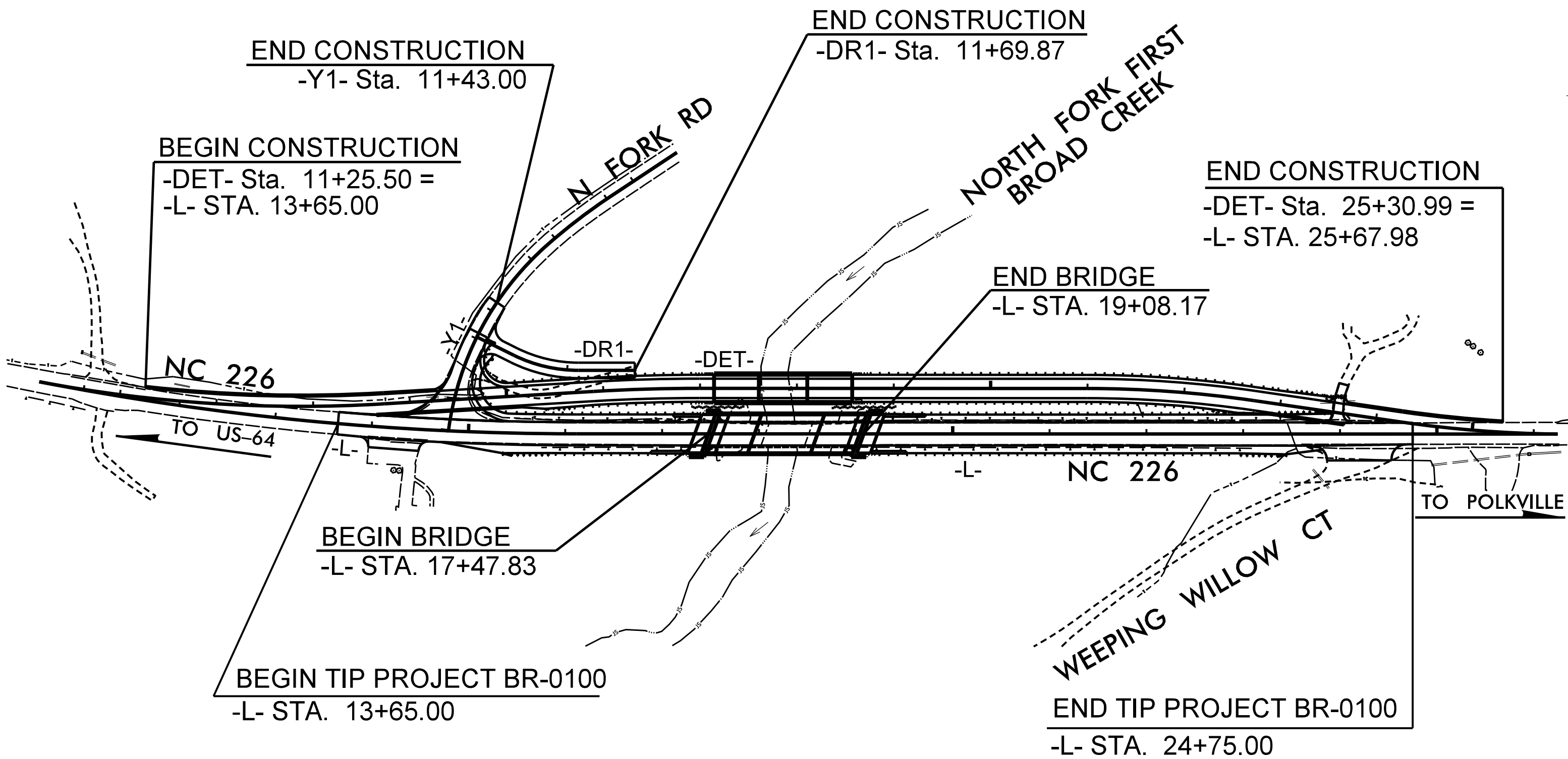
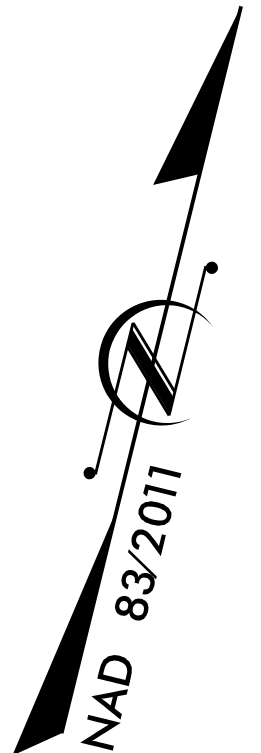
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

LOCATION: REPLACE BRIDGE No. 800040 ON NC 226 OVER NORTH FORK
FIRST BROAD CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0100		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
67100.1.1	N/A	PE	
67100.2.1	N/A	RW & UTILITY	
67100.3.1	N/A	CONSTRUCTION	



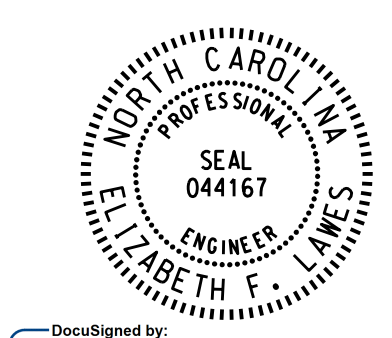
STRUCTURE

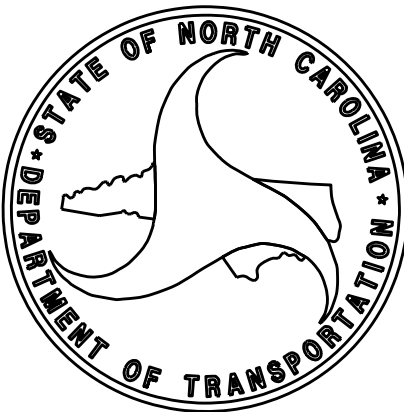
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

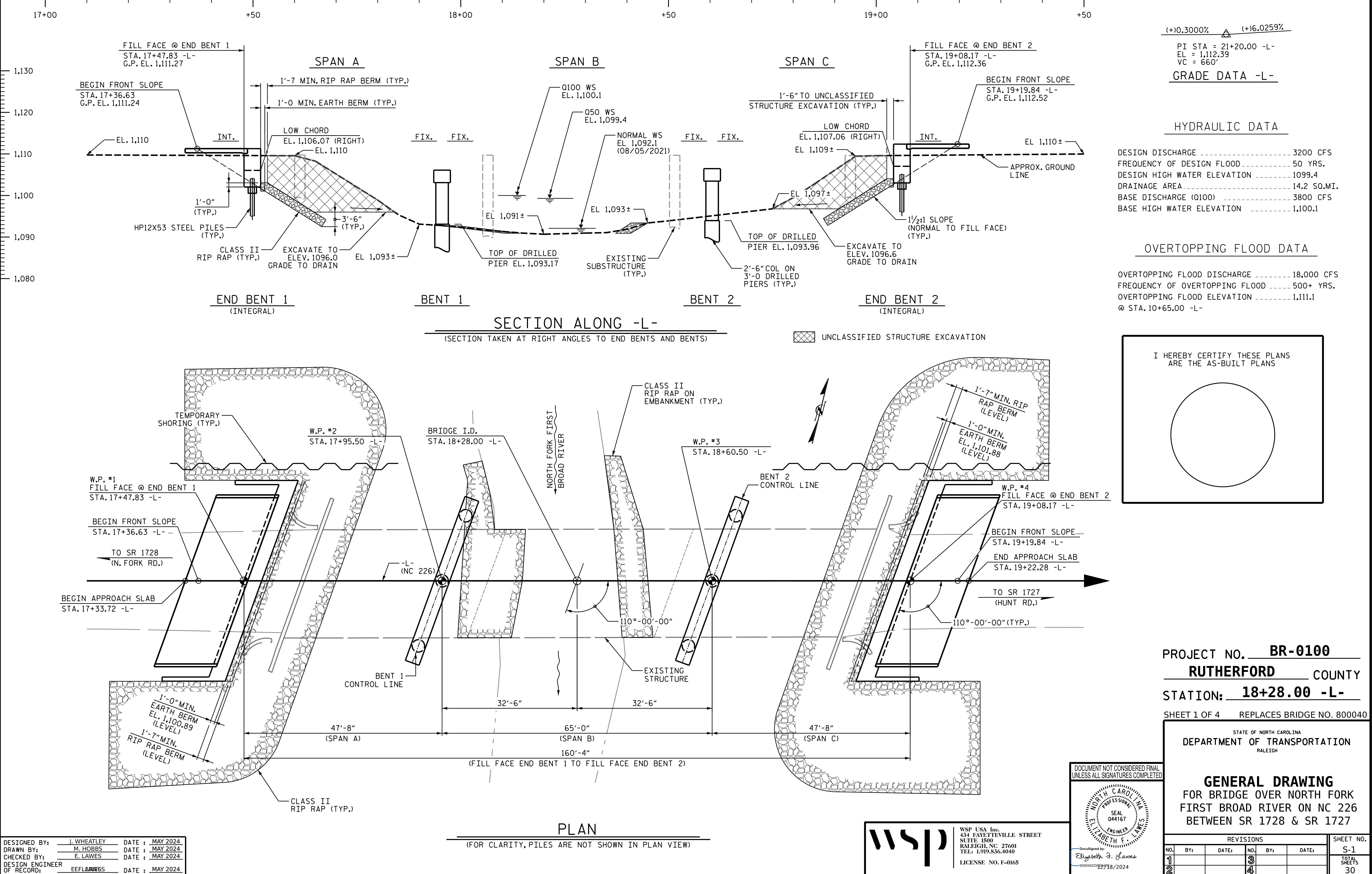
DESIGN DATA	
ADT 2024 =	2,160
ADT 2044 =	3,210
K =	%
D =	%
T =	13 % *
V =	60 MPH
* (TTST = 7% + DUAL = 6%)	
FUNC CLASS =	
RURAL, MAJOR COLLECTOR	
REGIONAL TIER	

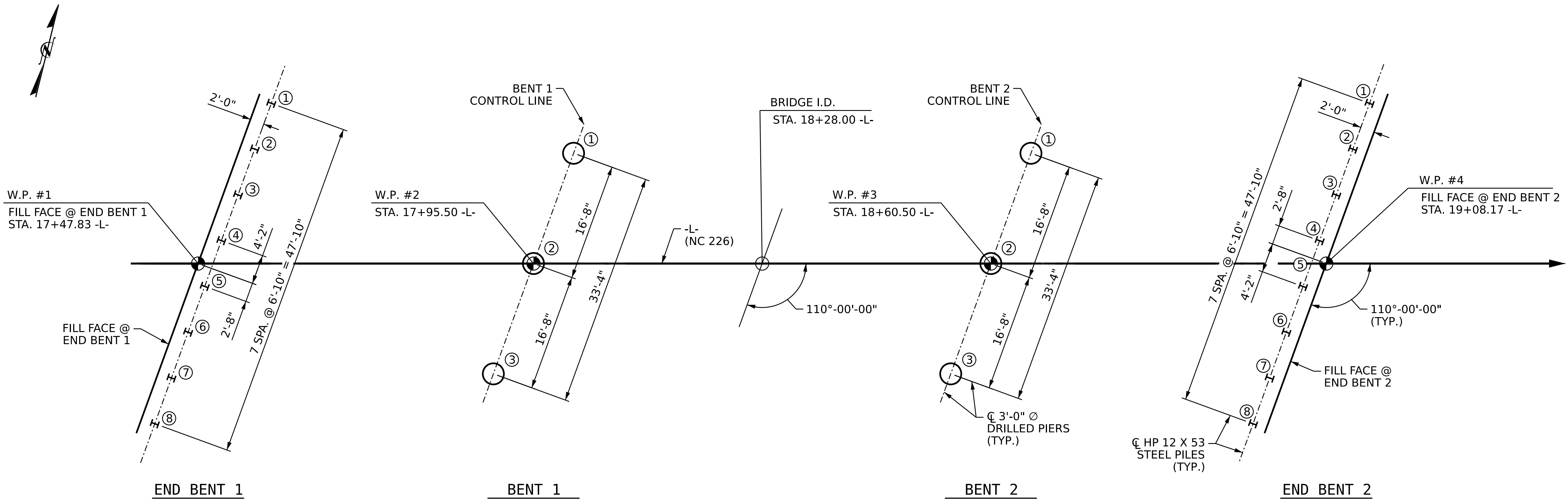
PROJECT LENGTH	
LENGTH OF ROADWAY TIP PROJECT BR-0100	= 0.180 MI
LENGTH OF STRUCTURE TIP PROJECT BR-0100	= 0.030 MI
TOTAL LENGTH OF TIP PROJECT BR-0100	= 0.210 MI

PREPARED IN THE OFFICE OF: wsp WSP USA 135 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1-919-836-4040 FAX: 1-919-836-4099 LICENSE NO. F-0165	
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 01, 2023	JOHN N. SMITH PROJECT ENGINEER
LETTING DATE: FEBRUARY 18, 2025	ELIZABETH F. LAWES PROJECT DESIGN ENGINEER
NCDOT CONTACT:	CLAUDIA LEE, PE NCDOT DIVISION 13 PROJECT LEAD

STRUCTURES DESIGN ENGINEER	
 12/18/2024	
ELIZABETH F. LAWES, PE SIGNATURE:	







FOUNDATION LAYOUT PLAN
(ALL END BENTS AND BENTS ARE PARALLEL)
DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO
THE CENTERLINE OF PILES AND DRILLED PIERS

FOUNDATION NOTES
FOR NOTES, SEE "PILE AND DRILLED PIER FOUNDATION
TABLES" SHEET.

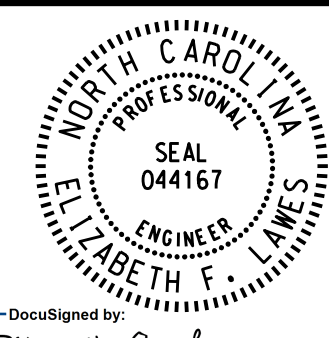
DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. F. LAWES	DATE :	MAY 2024
DESIGN ENGINEER			
OF RECORD:	E. LAWES	DATE :	MAY 2024

6/3/2024
J:\30900678R\BR-0100\BR-0100\Structures\2.0 Drafting\DCNs\401.003.BR100.SMU.FL.dgn
USEL722989



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DocuSigned by:
Elizabeth F. Lawes
930E641223C847F5
12/18/2024

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						
GENERAL DRAWING FOR BRIDGE OVER NORTH FORK FIRST BROAD RIVER ON NC 226 BETWEEN SR 1728 & SR 1727						
REVISIONS						SHEET NO. S-2 TOTAL SHEETS 30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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 1-8	63	See Structure Drawings	20	N/A		104							
End Bent 2, Piles 1-8	63		20	N/A		104							

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

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 1-8	63			0.60			1.00
End Bent 2, Piles 1-8	63			0.60			1.00
							1.00
							1.00
							1.00

*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, Piers 1-2	344	1073.0	60	1082	6.0		6.0	14.1	MAYBE	1085.0	8.0
Bent 1, Pier 3	344	1079.0	70	1086	6.0		6.0	8.1	MAYBE	1088.0	5.0
Bent 2, Piers 1-2	345	1081.0	100	1086	6.0		6.0	7.0	MAYBE	1088.0	6.0
Bent 2, Pier 3	345	1084.0	90	1089	6.0		6.0	4.0	MAYBE	1091.0	3.0
TOTAL QTY:							36.0	54.3			36

*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 "36" Dia. Drilled Piers" or "36" Dia. Drilled Piers Not in Soil" and "36" 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 36" Dia. Drilled Pier" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

GEOTECHNICAL TABLES

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?* YES or MAYBE	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, Piers 1-2		MAYBE	86.4		
Bent 2, Pier 3		MAYBE	62.4		
Bent 2, Piers 1-2		MAYBE	58.0		
Bent 2, Pier 3		MAYBE	46.0		
TOTAL QTY:		1	397.2		

*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.

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 Shiping Yang, License No. 031361 on 1/4/2023.
- 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, Pipe Pile Plates, Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 3 OF 4

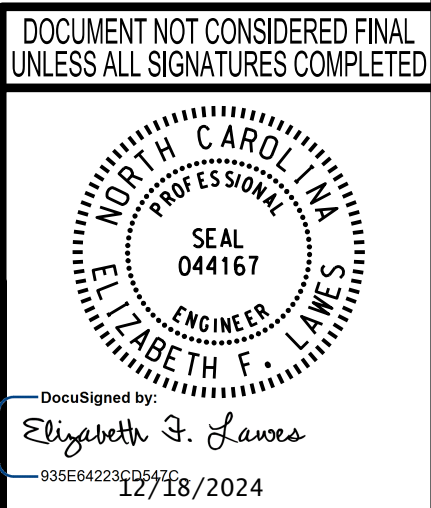
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER
FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-3
2			4			TOTAL SHEETS 30

DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: E. F. LAWES DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024

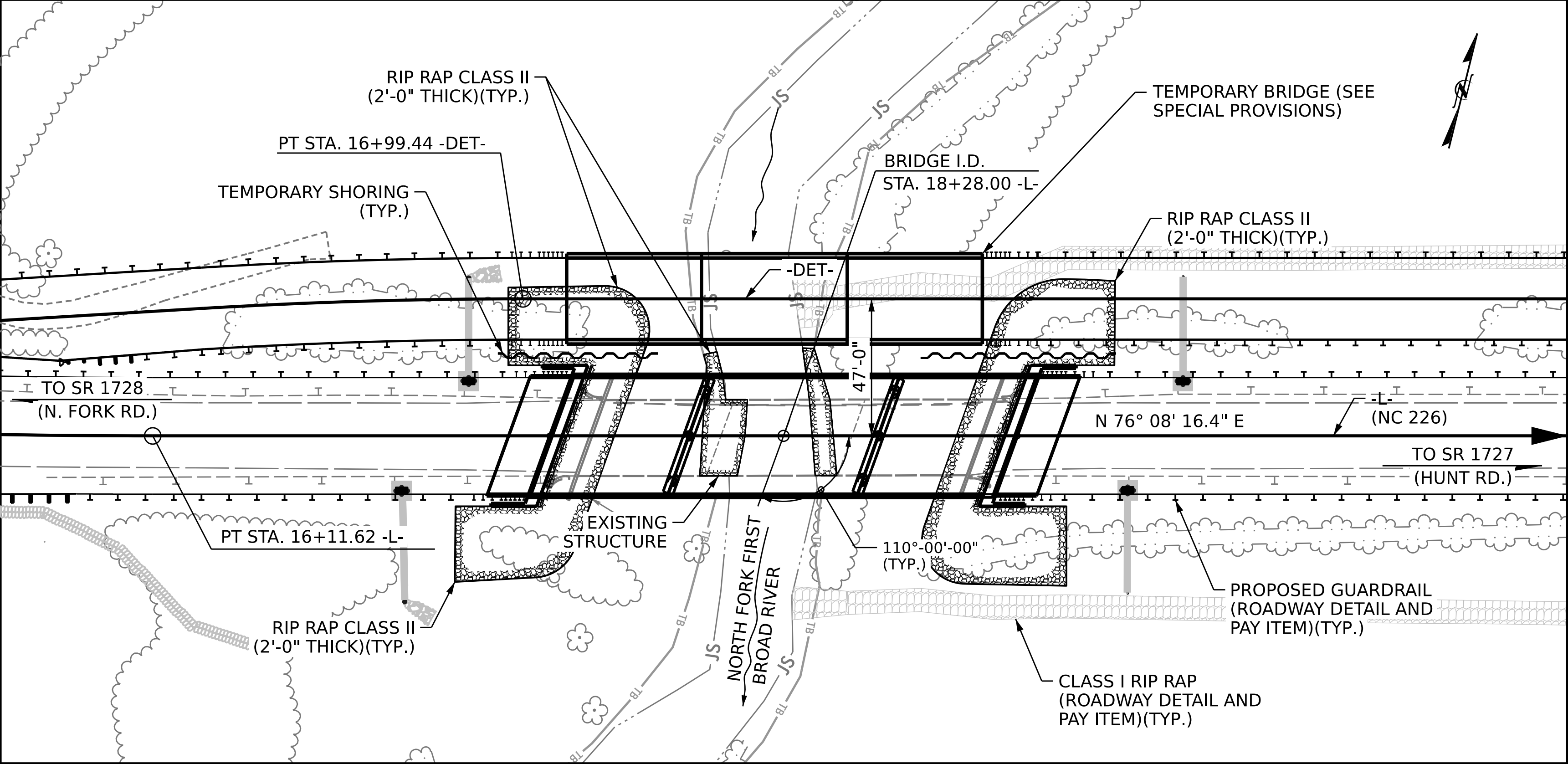
WSP
WSP USA, Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



TOTAL BILL OF MATERIAL																				
	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP STRUCTURE AT STA 18+28.00-L-	REMOVAL OF EXISTING STRUCTURE AT STATION 18+28.00 -L-	ASBESTOS ASSESSMENT	3'-0" DIA DRILLED PIERS IN SOIL	3'-0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 18+28.00 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS, STATION 18+28.00 -L-	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	45" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES	HP12X53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CY. YDS.	LUMP SUM	LBS.	LBS.	No.	LIN. FT.	EA.	No.	LIN. FT.	LIN. FT.
SUPERSTRUCTURE									6,699	7,005					12	626.96				317.13
END BENT 1								LUMP SUM			34		4,106				8	8	160	
BENT 1				36.3	18	21					14.8		7,558	1,491						
BENT 2				18	18	15					14.6		6,853	1,130						
END BENT 2								LUMP SUM			34		4,106				8	8	160	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	54.3	36	36	1	LUMP SUM	6,699	7,005	97.4	LUMP SUM	22,623	2,621	12	626.96	16	16	320	317.13

TOTAL BILL OF MATERIAL (CONT.)			
	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			LUMP SUM
END BENT 1	529	588	
BENT 1			
BENT 2			
END BENT 2	518	576	
TOTAL	1,047	1,164	LUMP SUM

BM #1: RR SPIKE IN BASE OF 22" WHITE OAK, STA. 24+72.02 -L-, OFFSET 76.89' RT., ELEV. 1142.53



LOCATION SKETCH
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: E. LAWES DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024

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 FALSEWORK AND FORMWORK, 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.

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 18+28.00 -L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT TO THE LEFT SIDE AND 66FT TO THE RIGHT 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 CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 18+28.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

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 EXISTING STRUCTURE CONSISTING OF THREE SPANS: 1 @ 45'-3", 1@ 45'-0", AND 1 @ 45'-3" WITH A REINFORCED CONCRETE DECK AND 2" OF ASPHALT WEARING SURFACE ON W33X130 STEEL I-BEAM GIRDERS AND A CLEAR ROADWAY WIDTH OF 26'-0" ON REINFORCED CONCRETE CAP AND COLUMN PIERS AND ABUTMENTS WITH RIP RAP SPILL THROUGH SLOPES 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, THE LOAD LIMIT MAYBE 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. 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.

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.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES." FOR SCOUR CRITICAL ELEVATIONS, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER NORTH FORK
FIRST BROAD RIVER ON NC 226
BETWEEN SR 1728 & SR 1727

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		5-4
2			4		TOTAL SHEETS 30

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Elizabeth F. Lawes
93564223012/18/2024

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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.

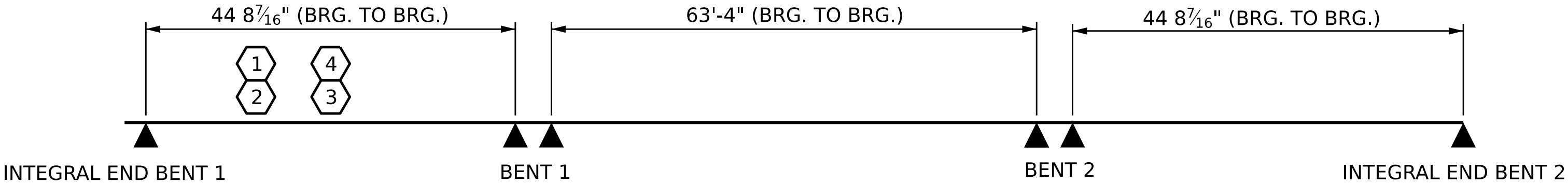
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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	

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		
						LIVE-LOAD FACTORS (γ_{LL})	MOMENT				SHEAR					LIVE-LOAD FACTORS (γ_{LL})	MOMENT							
							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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬡1	1.21	-	1.75	0.97	1.71	A	I	22.35	1.15	1.21	A	I	13.14	0.80	0.97	1.86	A	I	22.35		
	HL-93 (OPERATING)	N/A		2.10	-	1.35	0.97	2.21	A	I	22.35	1.15	2.10	A	I	8.54	N/A	-	-	-	-	-		
	HS-20 (INVENTORY)	36.000	⬡2	1.81	65.16	1.75	0.97	2.10	A	I	22.35	1.15	1.81	A	I	13.14	0.80	0.97	2.30	A	I	22.35		
	HS-20 (OPERATING)	36.000		2.43	87.48	1.35	0.97	2.72	A	I	22.35	1.15	2.43	A	I	13.14	N/A	-	-	-	-	-		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.56	61.56	1.40	0.97	5.22	A	I	22.35	1.15	4.92	A	I	13.14	0.80	0.97	4.56	A	I	22.35	
		SNGARBS2	20.000		3.64	72.80	1.40	0.97	4.17	A	I	22.35	1.15	3.70	A	I	13.14	0.80	0.97	3.64	A	I	22.35	
		SNAGRIS2	22.000		3.52	77.44	1.40	0.97	4.02	A	I	26.96	1.15	3.52	A	I	13.14	0.80	0.97	3.56	A	I	22.35	
		SNCOTTS3	27.250		2.28	62.13	1.40	0.97	2.61	A	I	22.35	1.15	2.46	A	I	13.14	0.80	0.97	2.28	A	I	22.35	
		SNAGGRS4	34.925		1.99	69.49	1.40	0.97	2.28	A	I	22.35	1.15	2.20	A	I	13.14	0.80	0.97	1.99	A	I	22.35	
		SNS5A	35.550		1.95	69.32	1.40	0.97	2.23	A	I	22.35	1.15	2.33	A	I	13.14	0.80	0.97	1.95	A	I	22.35	
		SNS6A	39.950		1.83	73.11	1.40	0.97	2.09	A	I	22.35	1.15	2.18	A	I	13.14	0.80	0.97	1.83	A	I	22.35	
		SNS7B	42.000		1.74	73.08	1.40	0.97	1.99	A	I	22.35	1.15	2.21	A	I	8.54	0.80	0.97	1.74	A	I	22.35	
	TRUCK TRACTOR SEMI- TRAILER (TTST)	TNAGRIT3	33.000		2.26	74.58	1.40	0.97	2.58	A	I	22.35	1.15	2.56	A	I	13.14	0.80	0.97	2.26	A	I	22.35	
		TNT4A	33.075		2.26	74.75	1.40	0.97	2.58	A	I	22.35	1.15	2.41	A	I	13.14	0.80	0.97	2.26	A	I	22.35	
		TNT6A	41.600		1.89	78.62	1.40	0.97	2.16	A	I	22.35	1.15	2.36	A	I	13.14	0.80	0.97	1.89	A	I	22.35	
		TNT7A	42.000		1.93	81.06	1.40	0.97	2.20	A	I	22.35	1.15	2.17	A	I	8.54	0.80	0.97	1.93	A	I	22.35	
		TNT7B	42.000		2.00	84.00	1.40	0.97	2.29	A	I	22.35	1.15	2.12	A	I	13.14	0.80	0.97	2.00	A	I	22.35	
		TNAGRIT4	43.000		1.92	82.56	1.40	0.97	2.19	A	I	22.35	1.15	2.03	A	I	13.14	0.80	0.97	1.92	A	I	22.35	
TNAGT5A		45.000		1.78	80.10	1.40	0.97	2.04	A	I	22.35	1.15	2.12	A	I	8.54	0.80	0.97	1.78	A	I	22.35		
TNAGT5B		45.000	⬡3	1.74	78.30	1.40	0.97	1.98	A	I	22.35	1.15	1.86	A	I	36.16	0.80	0.97	1.74	A	I	22.35		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.62	75.33	1.30	0.97	3.20	A	I	26.96	1.15	2.84	A	I	13.14	0.80	0.97	2.62	A	I	22.35		
	EV3	45.000	⬡4	1.68	72.24	1.30	0.97	2.07	A	I	22.35	1.15	1.91	A	I	13.14	0.80	0.97	1.68	A	I	22.35		



LRFR SUMMARY

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 1 OF 2

DRAWN BY : MAA	1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI	2/08	REV. 10/11/11	MAA/GM
		REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE : MAY 2024		
DRAWN BY: M. HOBBS	DATE : MAY 2024		
CHECKED BY: E. LAWES	DATE : MAY 2024		
DESIGN ENGINEER OF RECORD: E. LAWES	DATE : MAY 2024		

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
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DocuSigned by:
Elizabeth F. Lawes
938E84223C4B7F5
12/18/2024

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (SPANS A & C) (NON-INTERSTATE TRAFFIC)						SHEET NO. S-5 TOTAL SHEETS 30
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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.

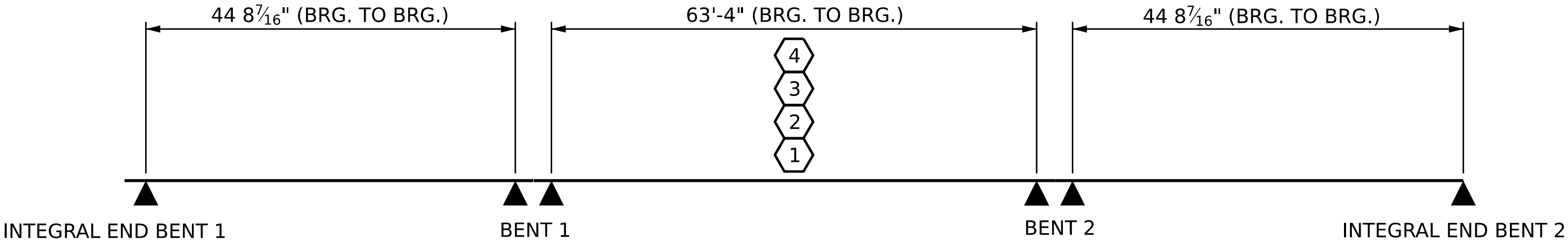
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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	

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		
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬢1	1.14	-	1.75	0.96	1.32	B	E	31.67	1.16	1.37	B	I	44.60	0.80	0.90	1.14	B	I	31.67		
	HL-93 (OPERATING)	N/A		1.72	-	1.35	0.96	1.72	B	E	31.67	1.16	1.88	B	I	12.27	N/A	-	-	-	-	-		
	HS-20 (INVENTORY)	36.000	⬢2	1.46	52.56	1.75	0.96	1.70	B	E	31.67	1.16	1.77	B	I	51.07	0.80	0.90	1.46	B	I	31.67		
	HS-20 (OPERATING)	36.000		2.21	79.56	1.35	0.96	2.21	B	E	31.67	1.16	2.33	B	I	51.07	N/A	-	-	-	-	-		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.23	43.61	1.40	0.96	4.69	B	E	31.67	1.16	5.58	B	I	12.27	0.80	0.90	3.23	B	I	31.67	
		SNGARBS2	20.000		2.44	48.80	1.40	0.96	3.54	B	E	31.67	1.16	4.03	B	I	12.27	0.80	0.90	2.44	B	I	31.67	
		SNAGRIS2	22.000		2.32	51.04	1.40	0.96	3.38	B	E	31.67	1.16	3.77	B	I	12.27	0.80	0.90	2.32	B	I	31.67	
		SNCOTTS3	27.250		1.61	43.87	1.40	0.96	2.34	B	E	31.67	1.16	2.56	B	I	51.07	0.80	0.90	1.61	B	I	31.67	
		SNAGGRS4	34.925		1.35	47.14	1.40	0.96	1.97	B	E	31.67	1.16	2.15	B	I	12.27	0.80	0.90	1.35	B	I	31.67	
		SNS5A	35.550		1.32	46.93	1.40	0.96	1.93	B	E	31.67	1.16	2.13	B	I	12.27	0.80	0.90	1.32	B	I	31.67	
		SNS6A	39.950		1.22	48.74	1.40	0.96	1.77	B	E	31.67	1.16	1.95	B	I	51.07	0.80	0.90	1.22	B	I	31.67	
		SNS7B	42.000		1.16	48.72	1.40	0.96	1.69	B	E	31.67	1.16	1.94	B	I	51.07	0.80	0.90	1.16	B	I	31.67	
	TRUCK TRACTOR SEMI- TRAILER (TTST)	TNAGRIT3	33.000		1.49	49.17	1.40	0.96	2.17	B	E	31.67	1.16	2.36	B	I	12.27	0.80	0.90	1.49	B	I	31.67	
		TNT4A	33.075		1.50	49.61	1.40	0.96	2.18	B	E	31.67	1.16	2.33	B	I	12.27	0.80	0.90	1.50	B	I	31.67	
		TNT6A	41.600		1.23	51.17	1.40	0.96	1.79	B	E	31.67	1.16	2.21	B	I	12.27	0.80	0.90	1.23	B	I	31.67	
		TNT7A	42.000		1.24	52.08	1.40	0.96	1.80	B	E	31.67	1.16	2.06	B	I	51.07	0.80	0.90	1.24	B	I	31.67	
		TNT7B	42.000		1.29	54.18	1.40	0.96	1.87	B	E	31.67	1.16	1.87	B	I	51.07	0.80	0.90	1.29	B	I	31.67	
		TNAGRIT4	43.000		1.22	52.46	1.40	0.96	1.77	B	E	31.67	1.16	1.88	B	I	51.07	0.80	0.90	1.22	B	I	31.67	
EMERGENCY VEHICLE (EV)	TNAGT5A	45.000		1.15	51.75	1.40	0.96	1.67	B	E	31.67	1.16	1.98	B	I	51.07	0.80	0.90	1.15	B	I	31.67		
	TNAGT5B	45.000	⬢3	1.13	50.85	1.40	0.96	1.65	B	E	31.67	1.16	1.78	B	I	12.27	0.80	0.90	1.13	B	I	31.67		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.73	49.74	1.30	0.96	2.70	B	E	31.67	1.16	2.95	B	I	12.27	0.80	0.90	1.73	B	I	31.67		
	EV3	45.000	⬢4	1.13	48.59	1.30	0.96	1.77	B	E	31.67	1.16	1.78	B	I	12.27	0.80	0.90	1.13	B	I	31.67		



LRFR SUMMARY

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 2 OF 2

DRAWN BY : MAA	1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI	2/08	REV. 10/11/11	MAA/GM
		REV. 12/17	MAA/THC
DESIGNED BY: J. WHEATLEY	DATE : MAY 2024		
DRAWN BY: M. HOBBS	DATE : MAY 2024		
CHECKED BY: E. LAWES	DATE : MAY 2024		
DESIGN ENGINEER OF RECORD: E. LAWES	DATE : MAY 2024		

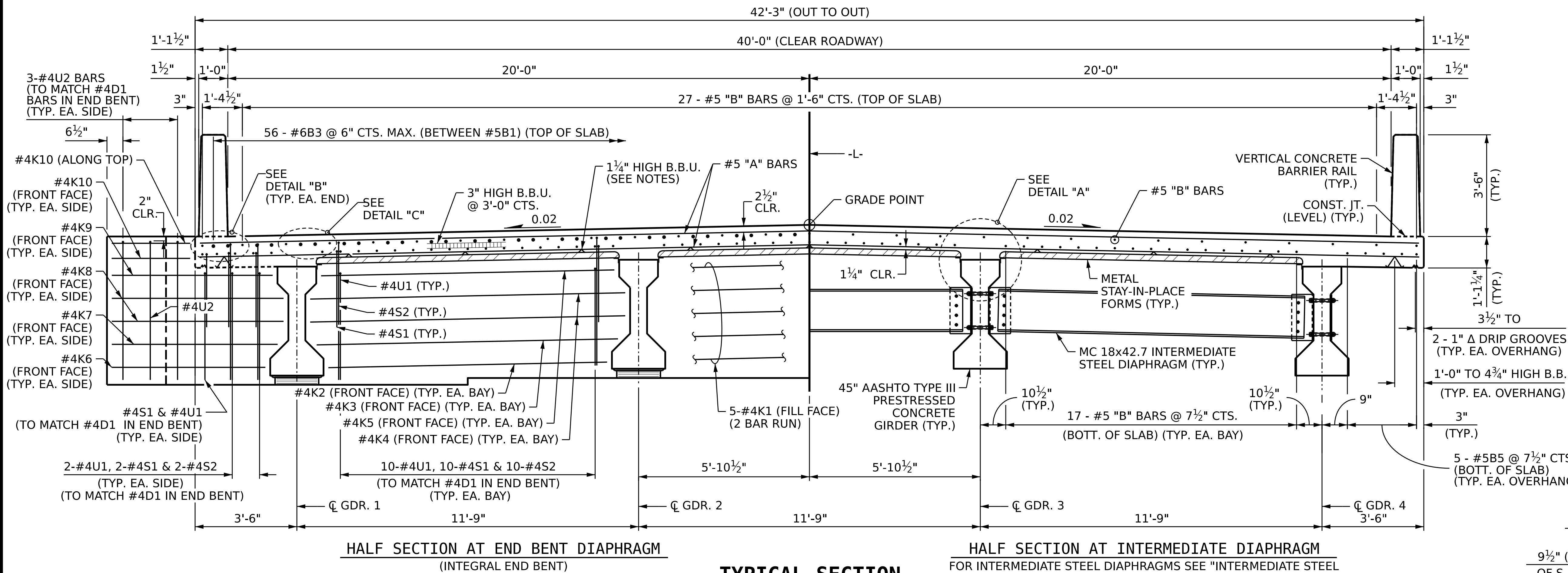
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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DocuSigned by:
Elizabeth F. Lawes
935E64223940605E
12/7/18/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
PRESTRESSED CONCRETE
GIRDERS (SPAN B)
(NON-INTERSTATE TRAFFIC)

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-6
2			4		
TOTAL SHEETS					30



NOTES:

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. AT THE TOP OF 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 (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

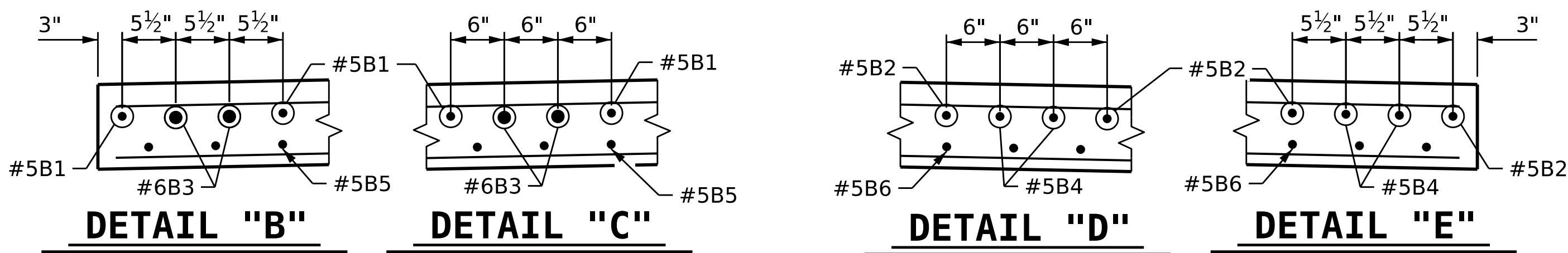
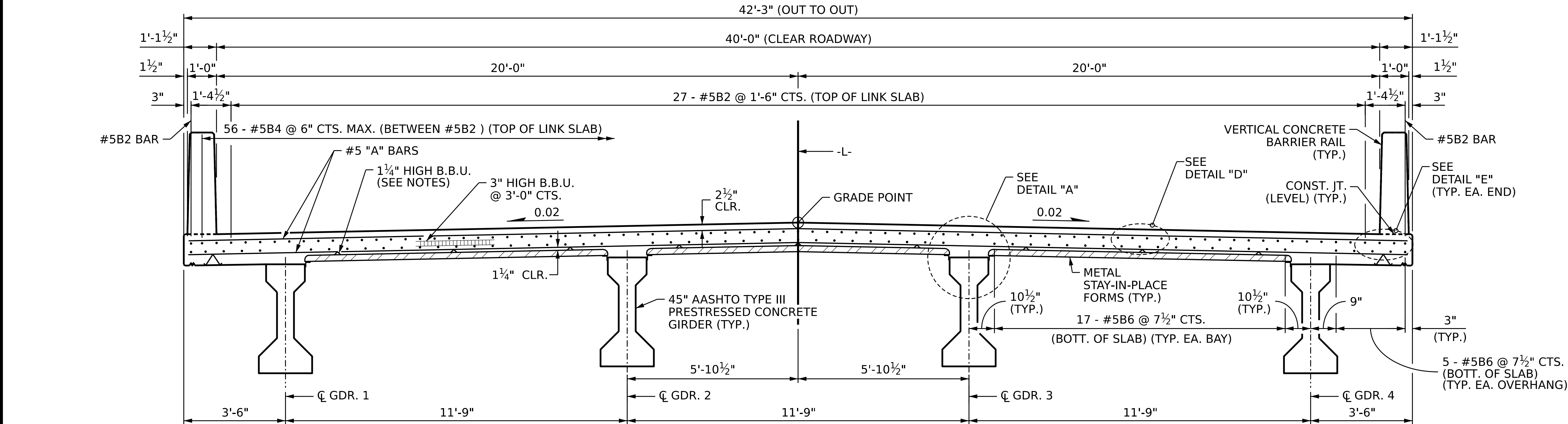
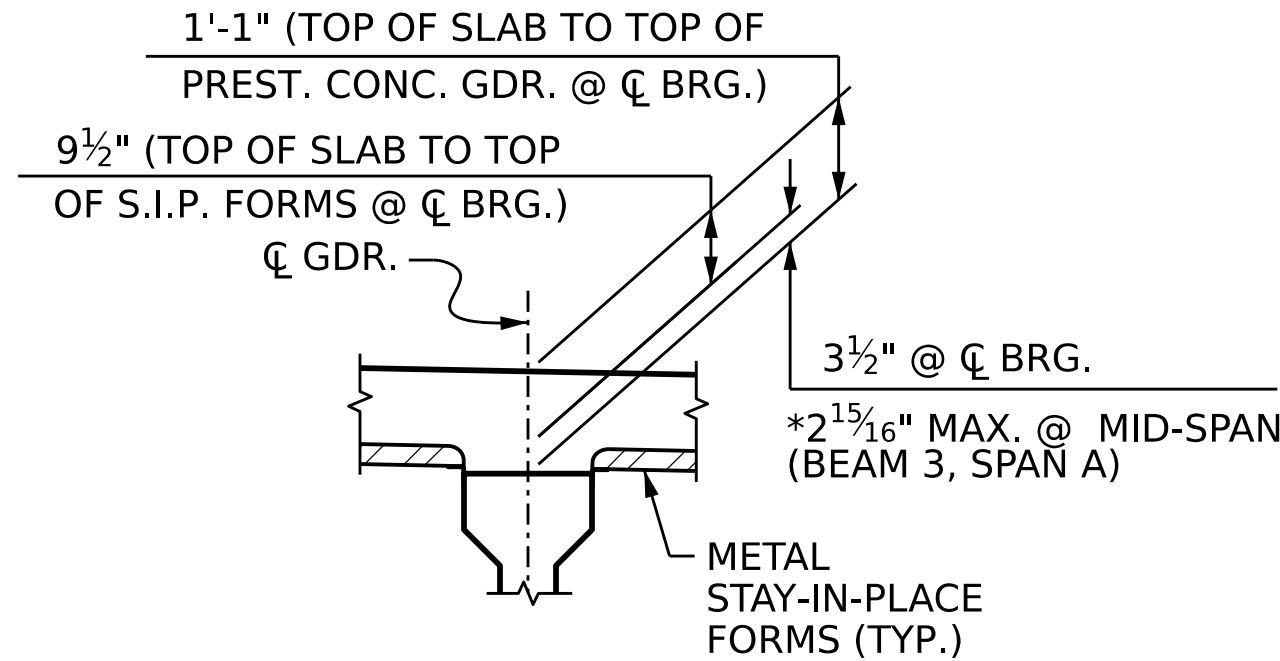
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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.

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

NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA. SEE "PLAN OF SPANS" SHEETS FOR LOCATIONS.

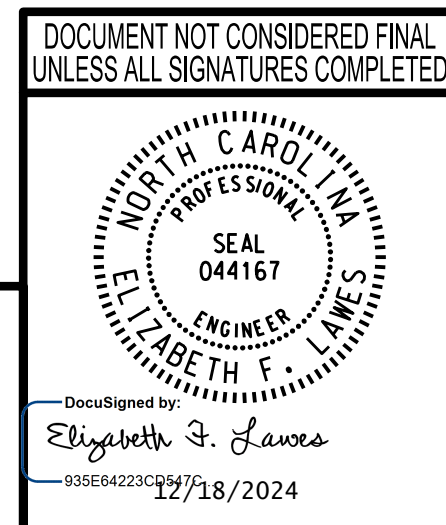
FOR VERTICAL CONCRETE BARRIER RAIL REINFORCING STEEL AND DETAILS, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEETS.



DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024



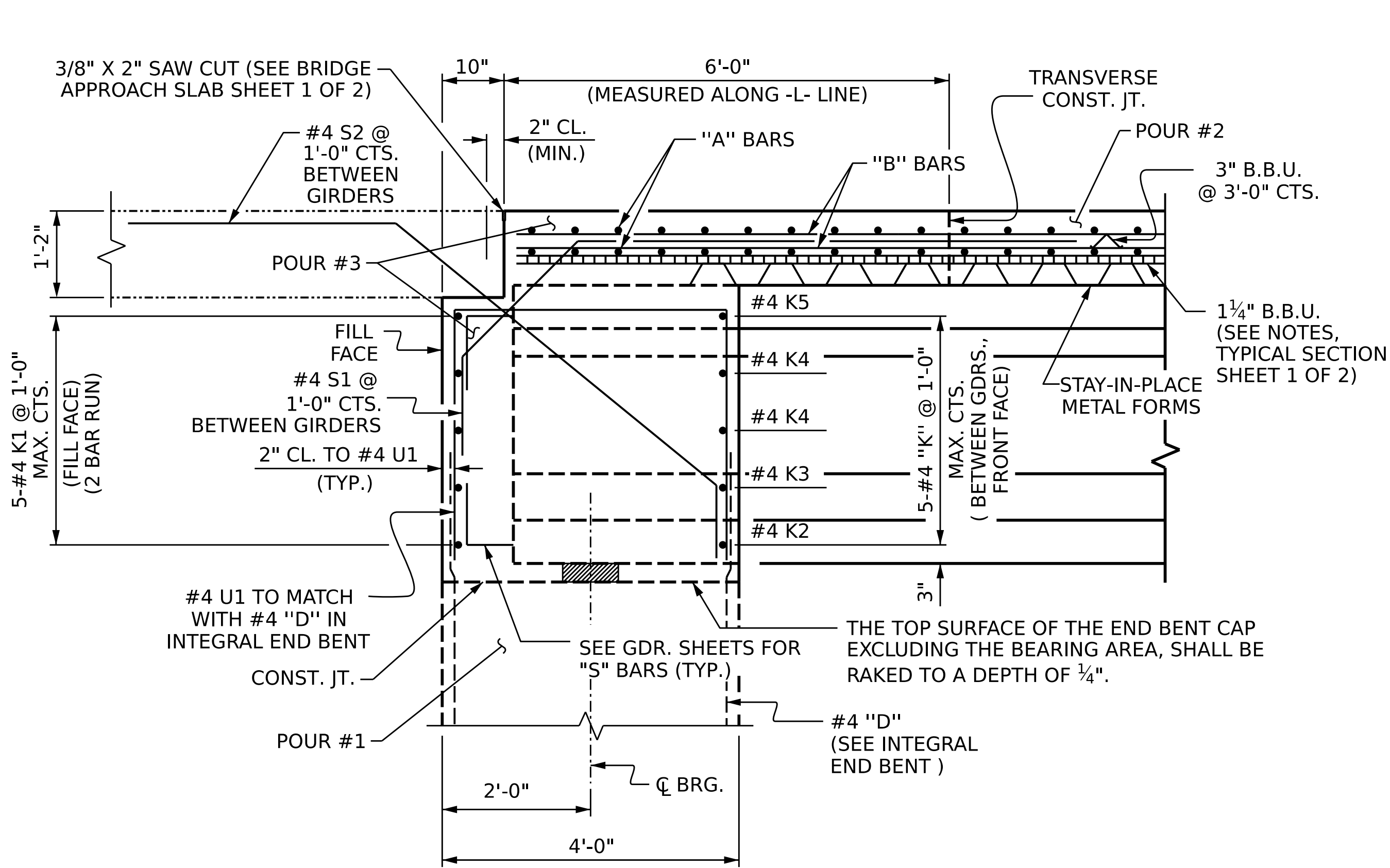
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.856.4040
LICENSE NO. F-0165



PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

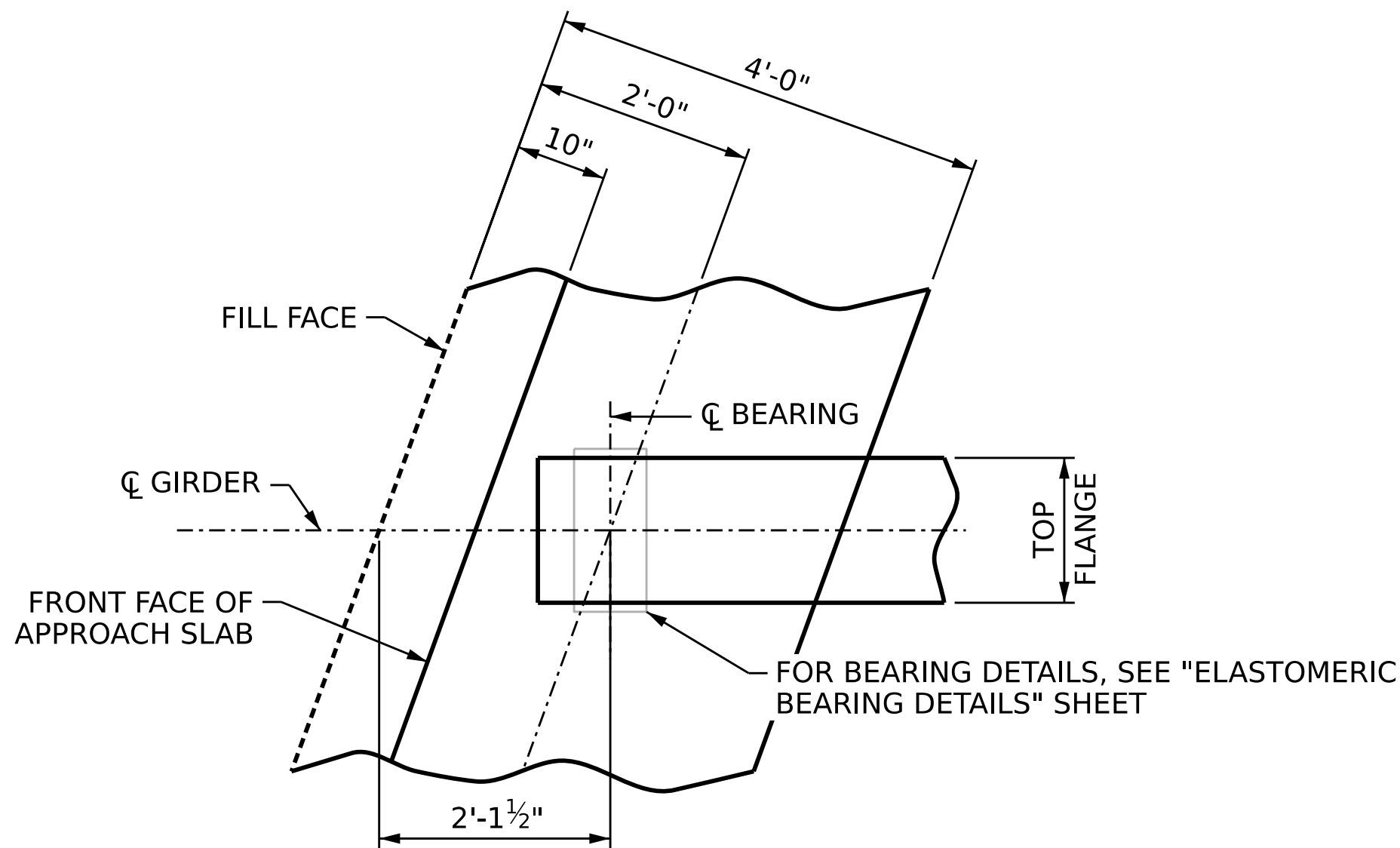
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
			S-7		
			TOTAL SHEETS 30		



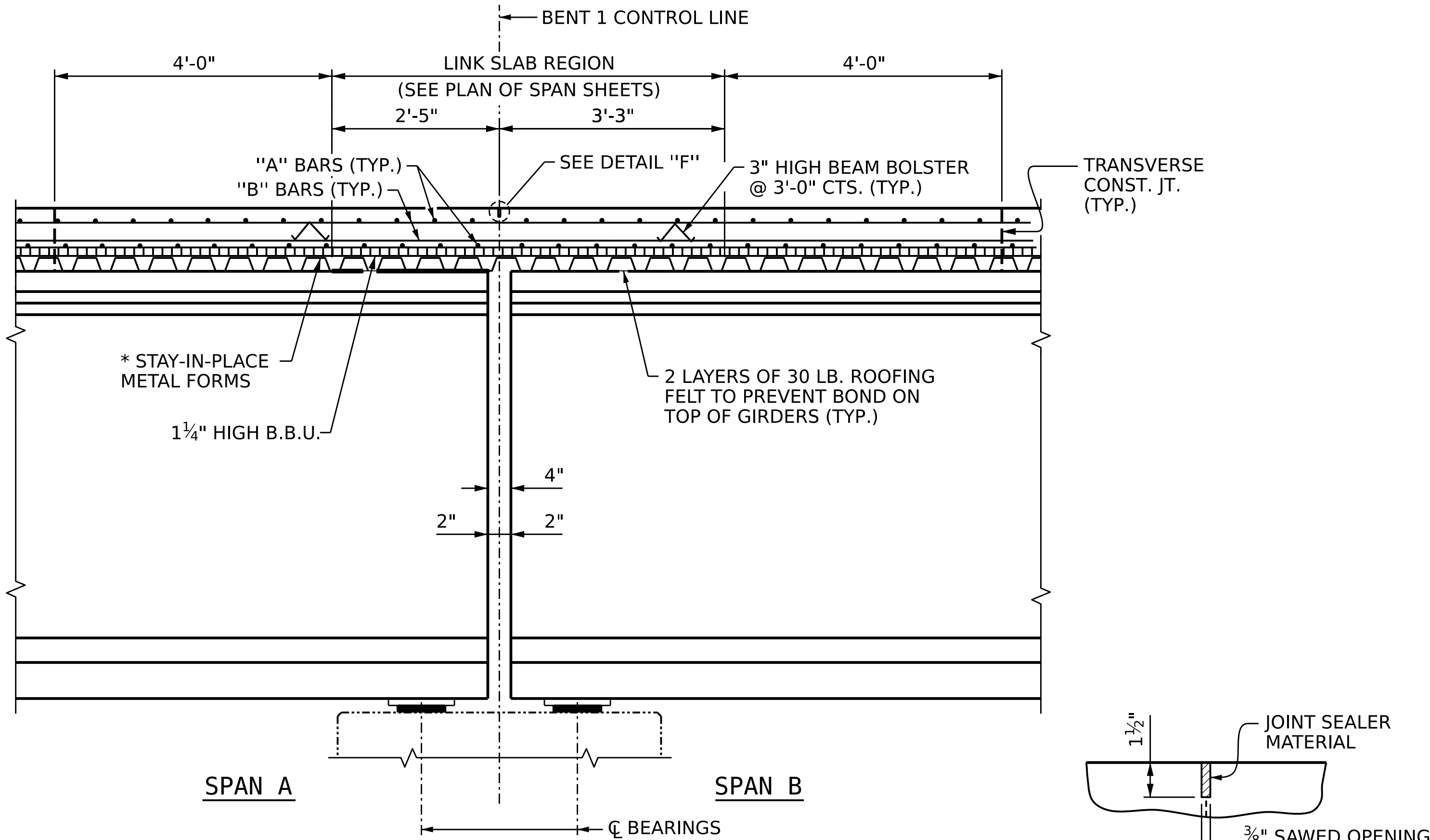
END OF GIRDER DETAIL AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)
(SEE END BENT SHEETS FOR INTEGRAL END BENT REINFORCING DETAILS)



PLAN OF GIRDER @ INTEGRAL END BENT

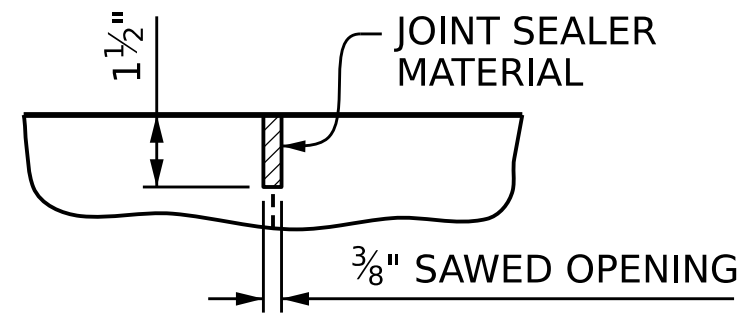
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)
(REINFORCING IN GIRDER NOT SHOWN FOR CLARITY)



SECTION AT LINK SLAB

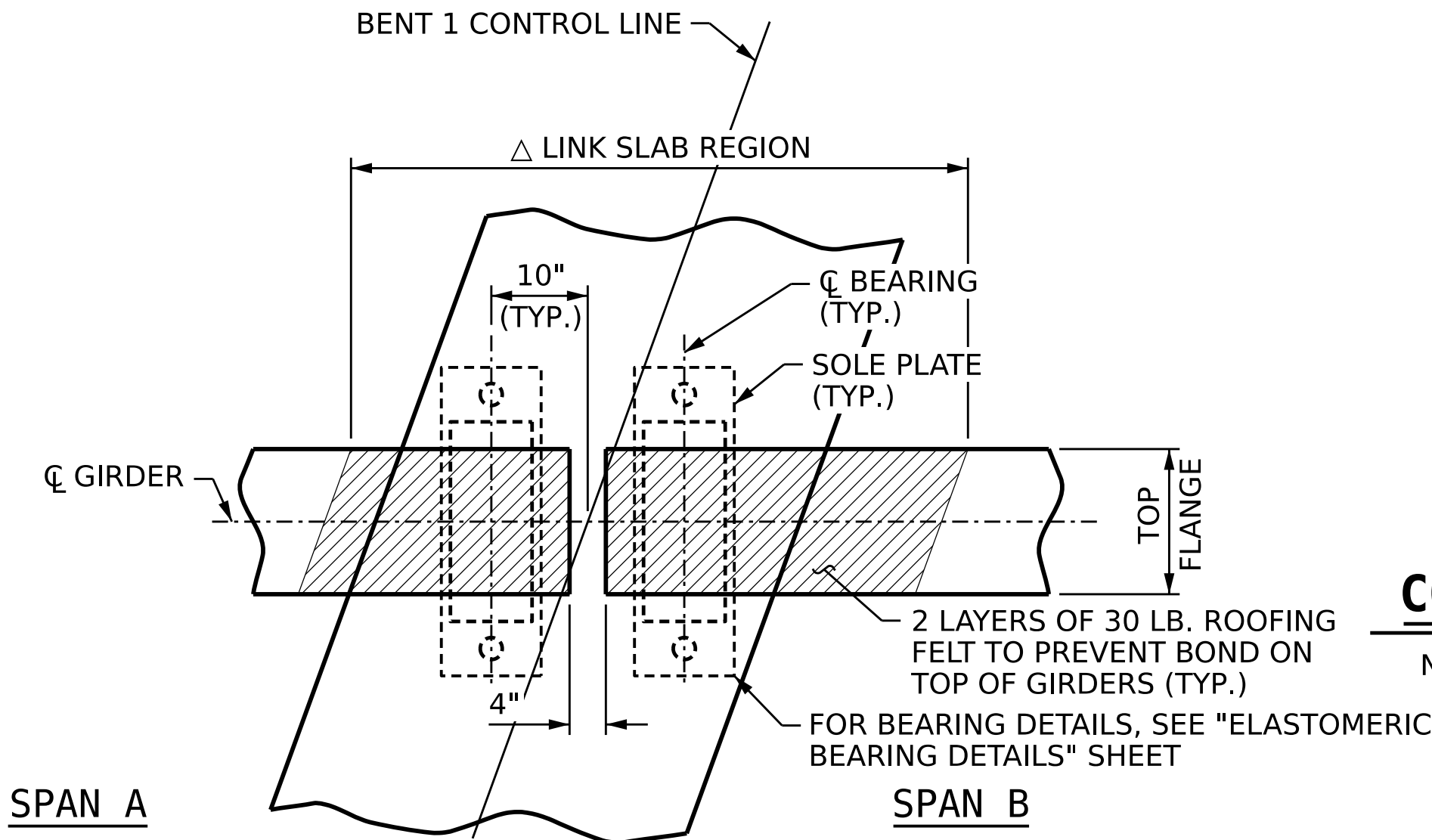
(SECTION SHOWN ALONG GIRDER)
(BENT 1 SHOWN. BENT 2 SIMILAR BY ROTATION)

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



DETAIL "F"

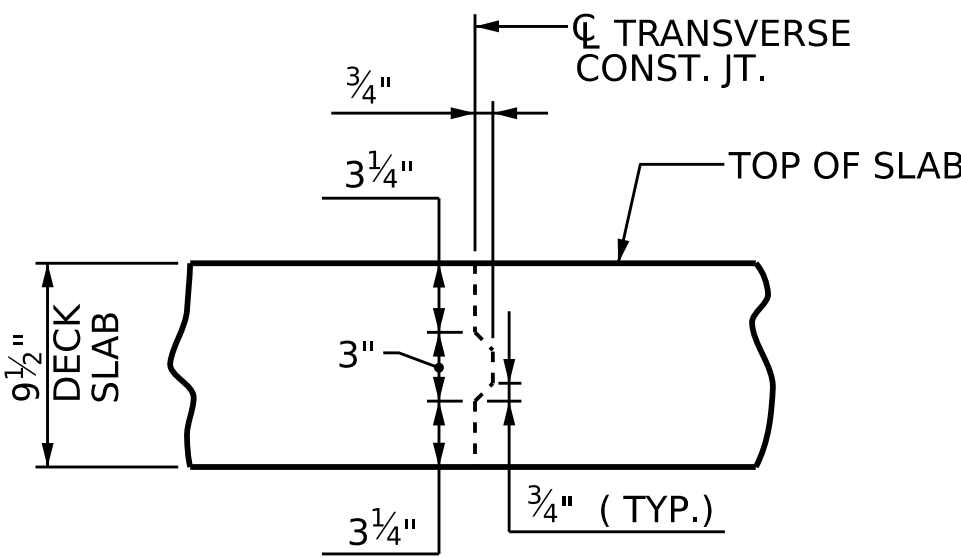
1½" DEEP X ¾" WIDE CONTRACTION JOINT AT
BENT CONTROL LINE SHALL BE SAWN WITHIN
24 HOURS OF POURING THE DECK. THE JOINT
SHALL BE FILLED WITH JOINT SEALER MATERIAL.
THE JOINT SEALER MATERIAL SHALL CONFORM
TO THE REQUIREMENTS OF SECTION 1028-3
OF THE STANDARD SPECIFICATIONS.



PLAN OF GIRDERS AT LINK SLAB BENT

(BENT 1 SHOWN. BENT 2 SIMILAR BY ROTATION)

△ 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.



TRANSVERSE CONSTRUCTION JOINT DETAIL

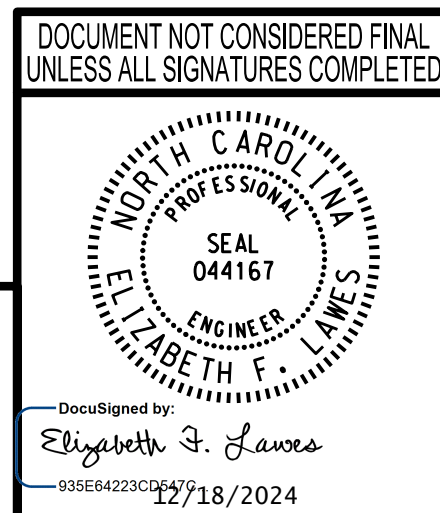
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THRU JOINT

DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024

6/3/2024
J:\30900678R\BR-0100\BR-0100\Structures\2.0 Drafting\DCNs\401.015.BR100.SMU.TS2.dgn
USL722989



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RALEIGH, NC 27601
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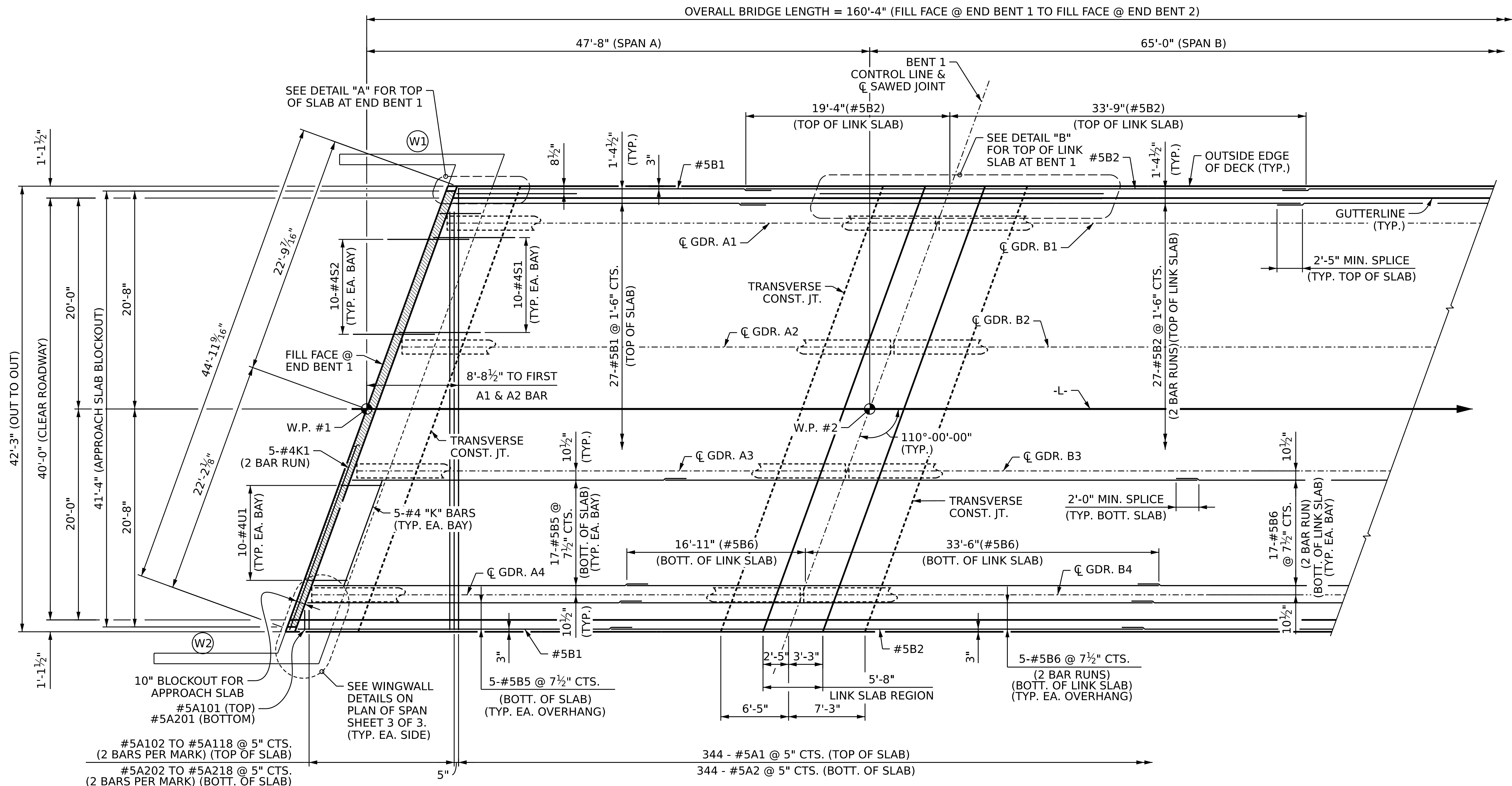
PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8
2			4			TOTAL SHEETS 30



PLAN OF SPANS A & B

NOTES:

FOR BAR LENGTH NOT SHOWN, REFER TO TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL".

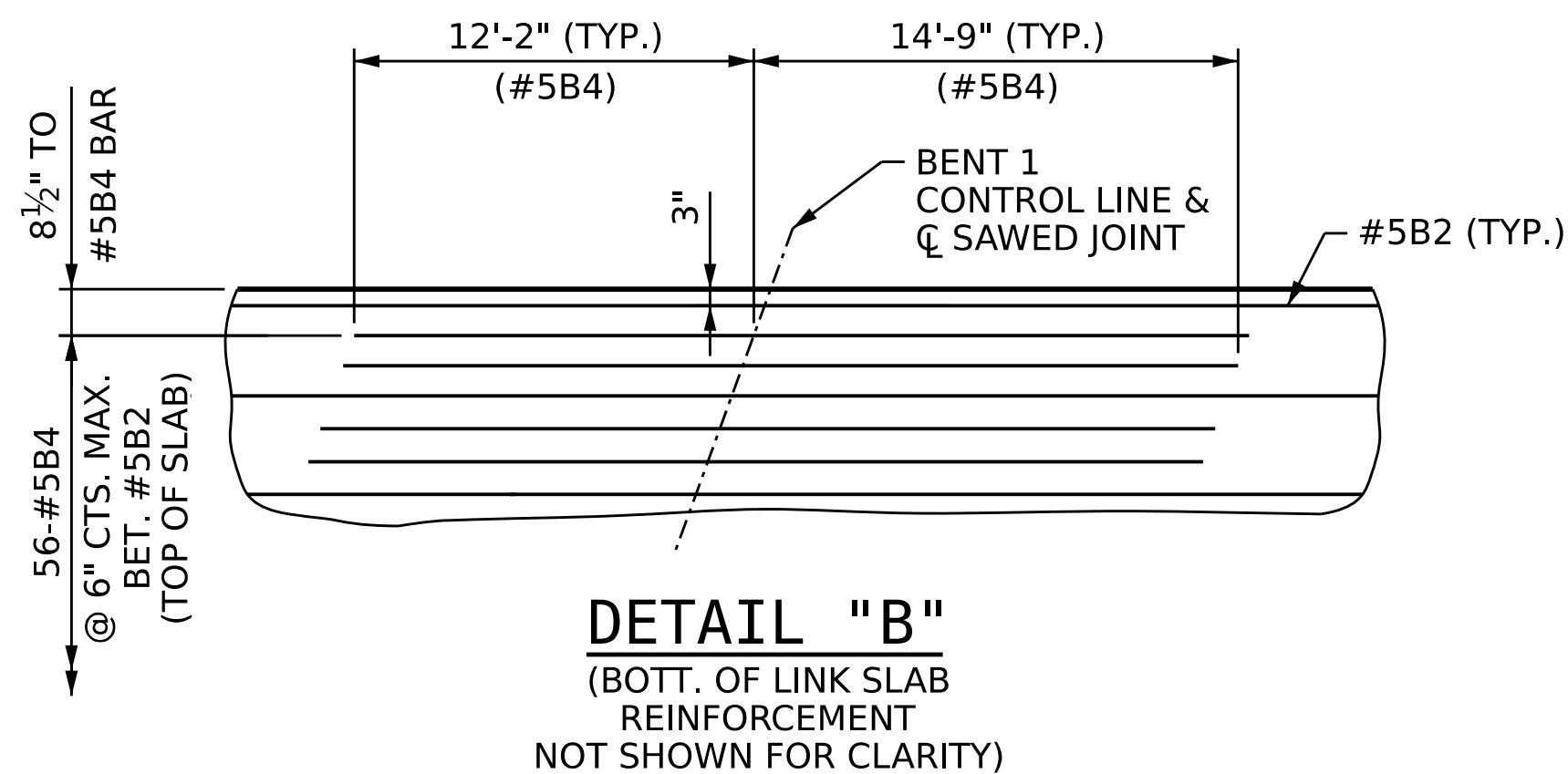
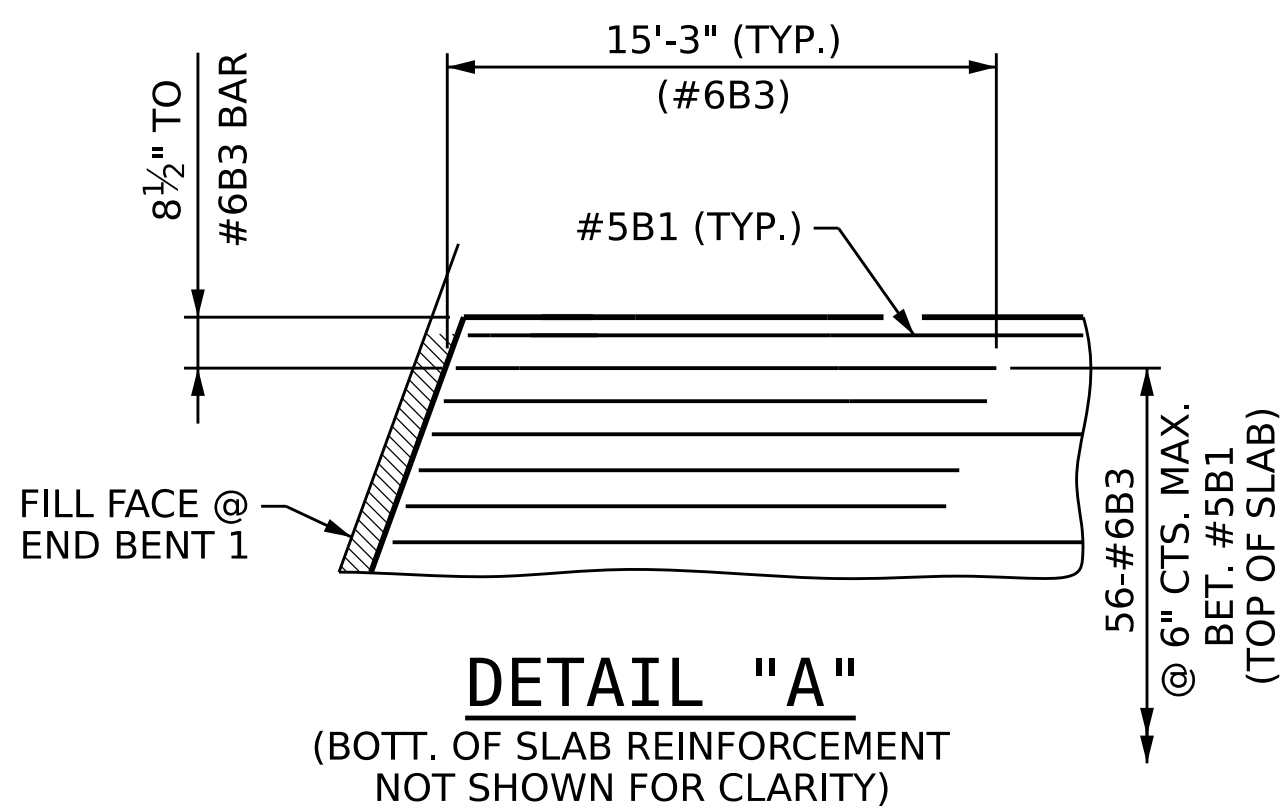
STEEL INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEETS.

FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "TYPICAL SECTION DETAILS" SHEET.

#5 "A" BARS SHALL BE PLACED PERPENDICULAR TO L-LINE WITH 2" MINIMUM CLEARANCE ON EACH END.

FOR SAWED JOINT DETAIL, SEE "TYPICAL SECTION DETAILS" SHEET.

FOR SECTION VIEWS, SEE "TYPICAL SECTION DETAILS" SHEET.

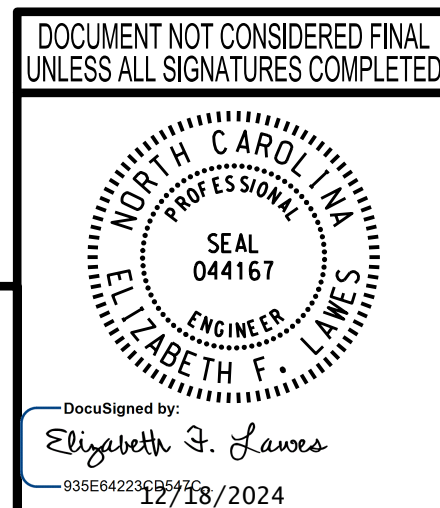


DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
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CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024

6/11/2024
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USL722989



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RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

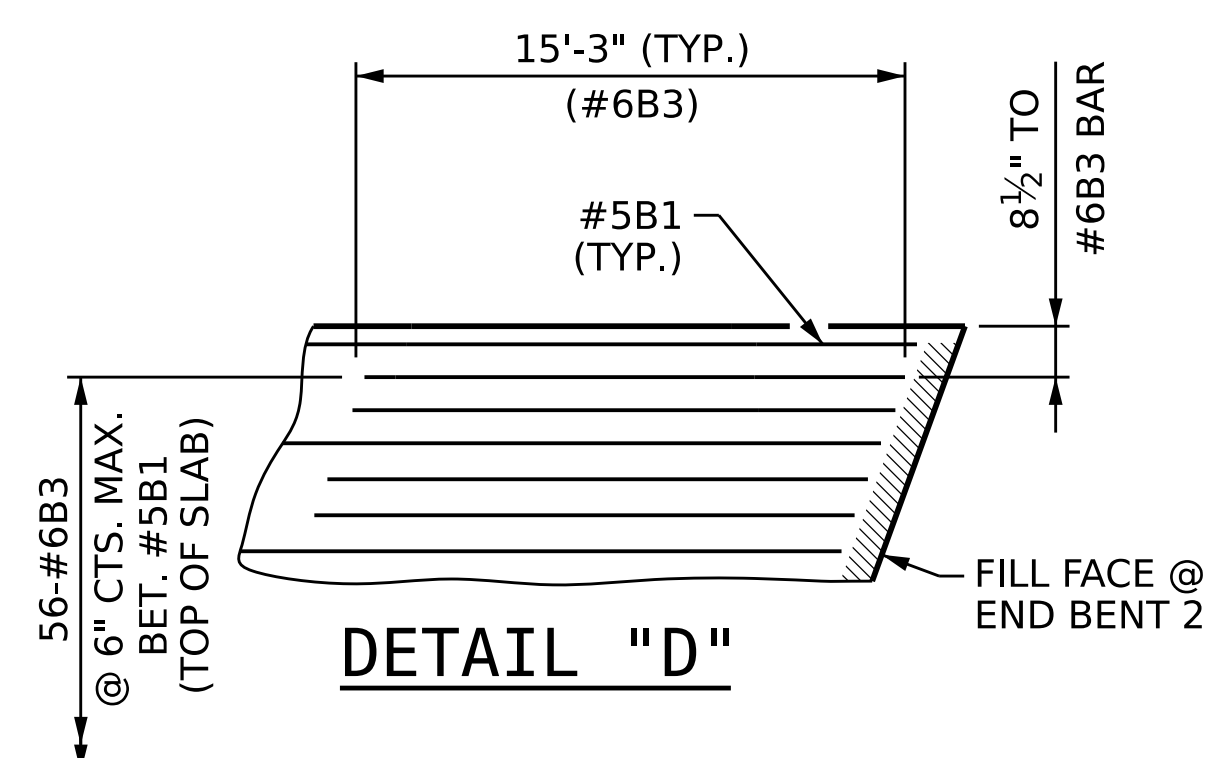
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS A & B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-9
2			4			TOTAL SHEETS 30

PLAN OF SPAN C



DETAIL "D"

— FILL FACE @
END BENT 2

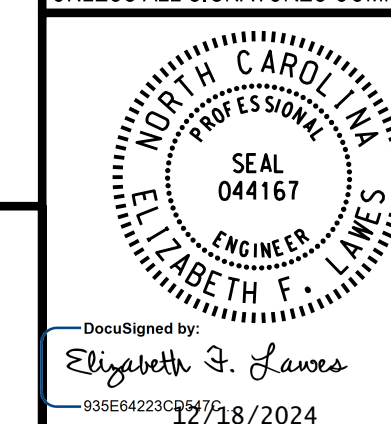
DESIGNED BY:	<u>J. WHEATLEY</u>	DATE :	<u>MAY 2024</u>
DRAWN BY:	<u>M. HOBBS</u>	DATE :	<u>MAY 2024</u>
CHECKED BY:	<u>E. LAWES</u>	DATE :	<u>MAY 2024</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>MAY 2024</u>



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RUTHERFORD COUNTY

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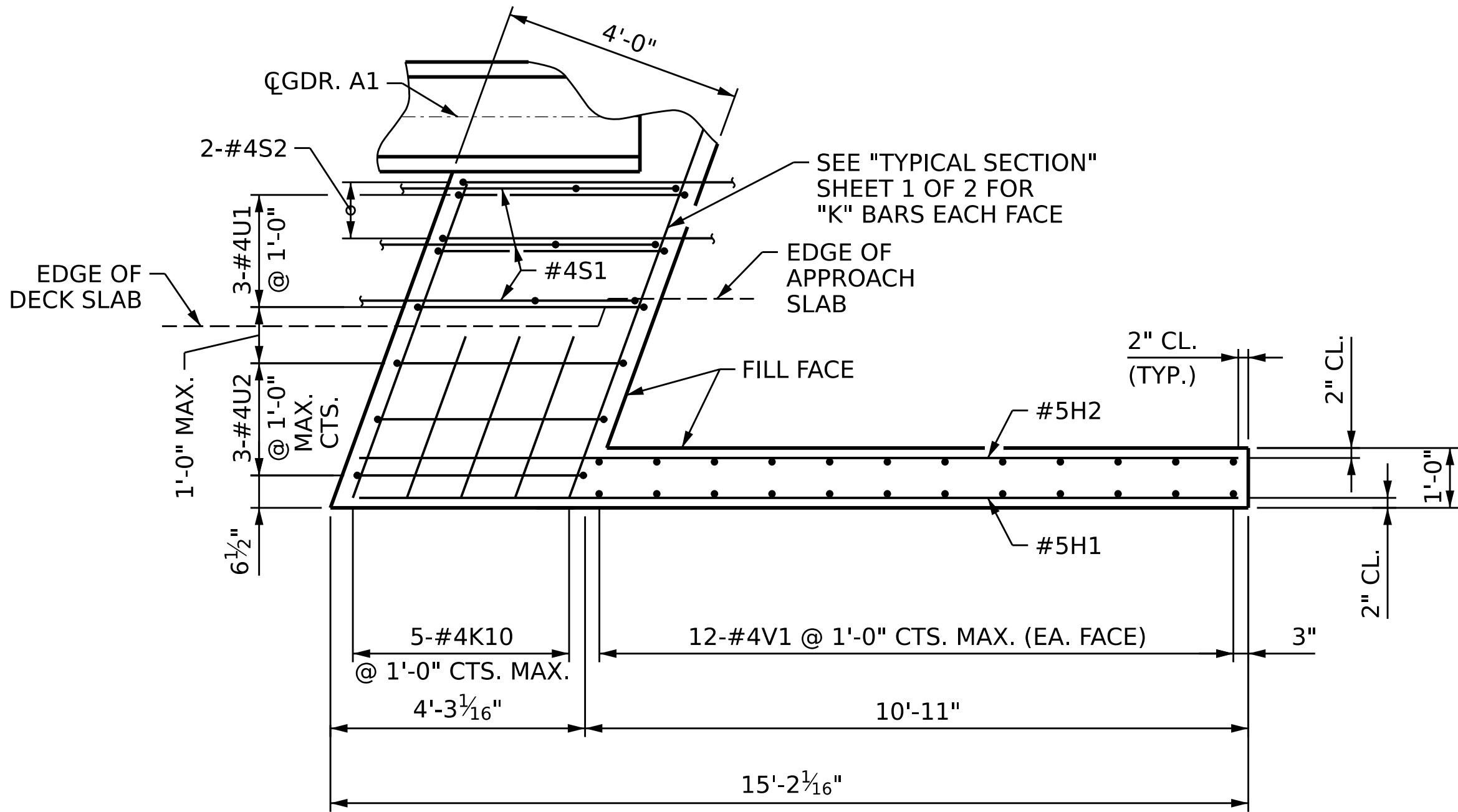
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN C

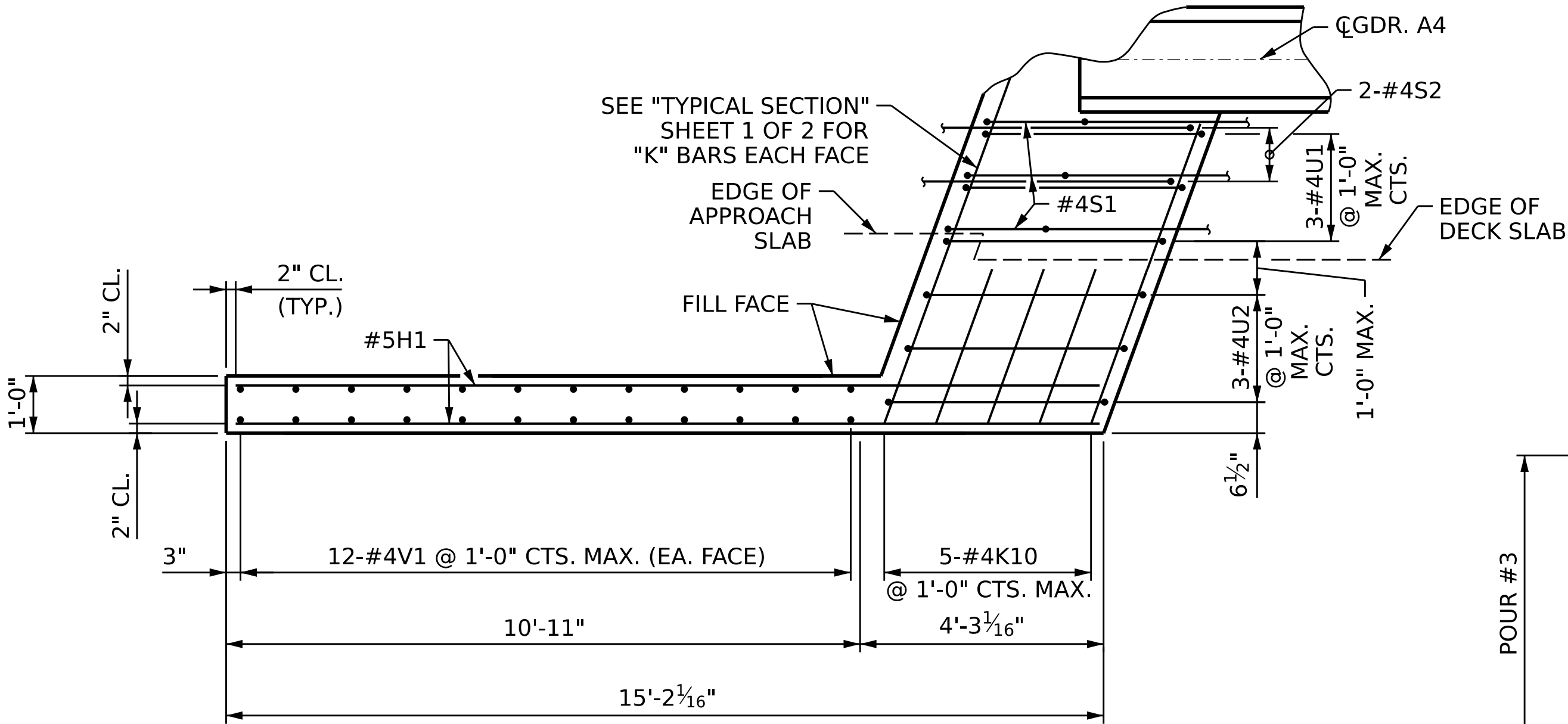
REVISIONS						SHEET NO. S-10 TOTAL SHEETS 30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

SHEET NO.



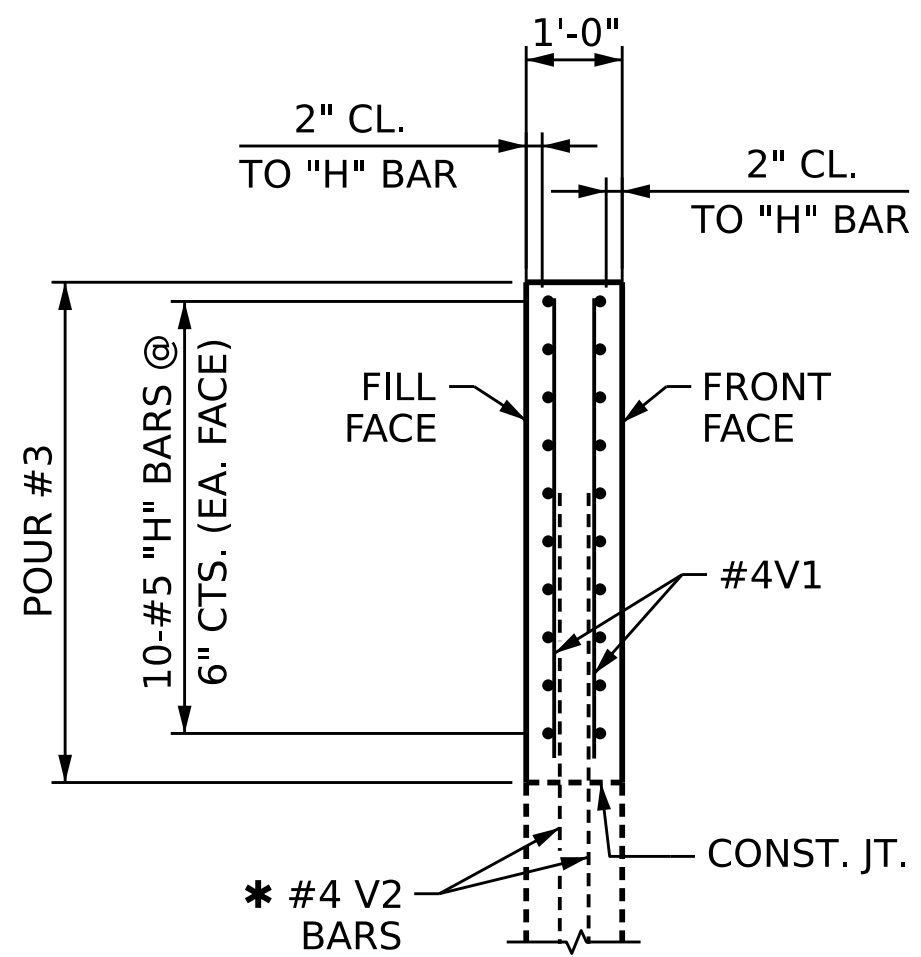
PLAN OF WING (W1)

INTEGRAL END BENT 1 (LEFT)
INTEGRAL END BENT 2 (RIGHT)

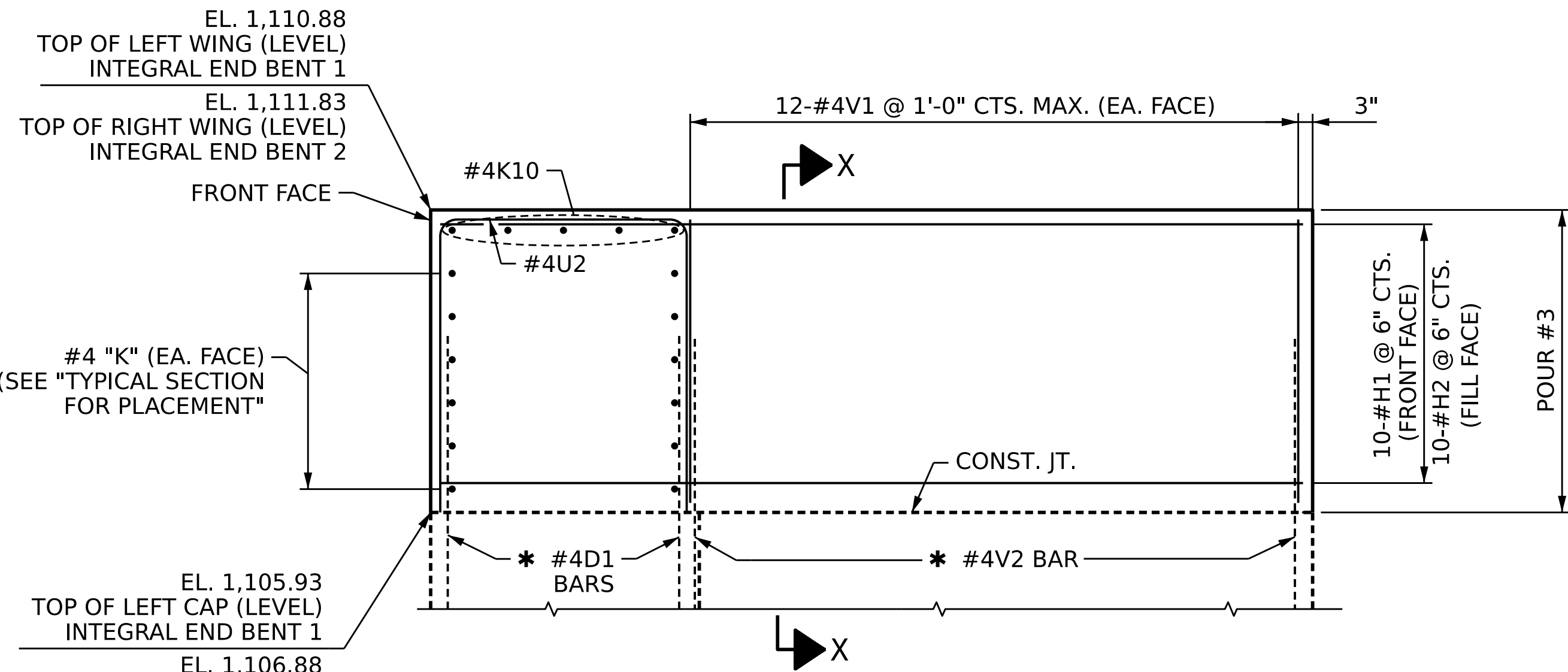


PLAN OF WING (W2)

INTEGRAL END BENT 1 (RIGHT)
INTEGRAL END BENT 2 (LEFT)

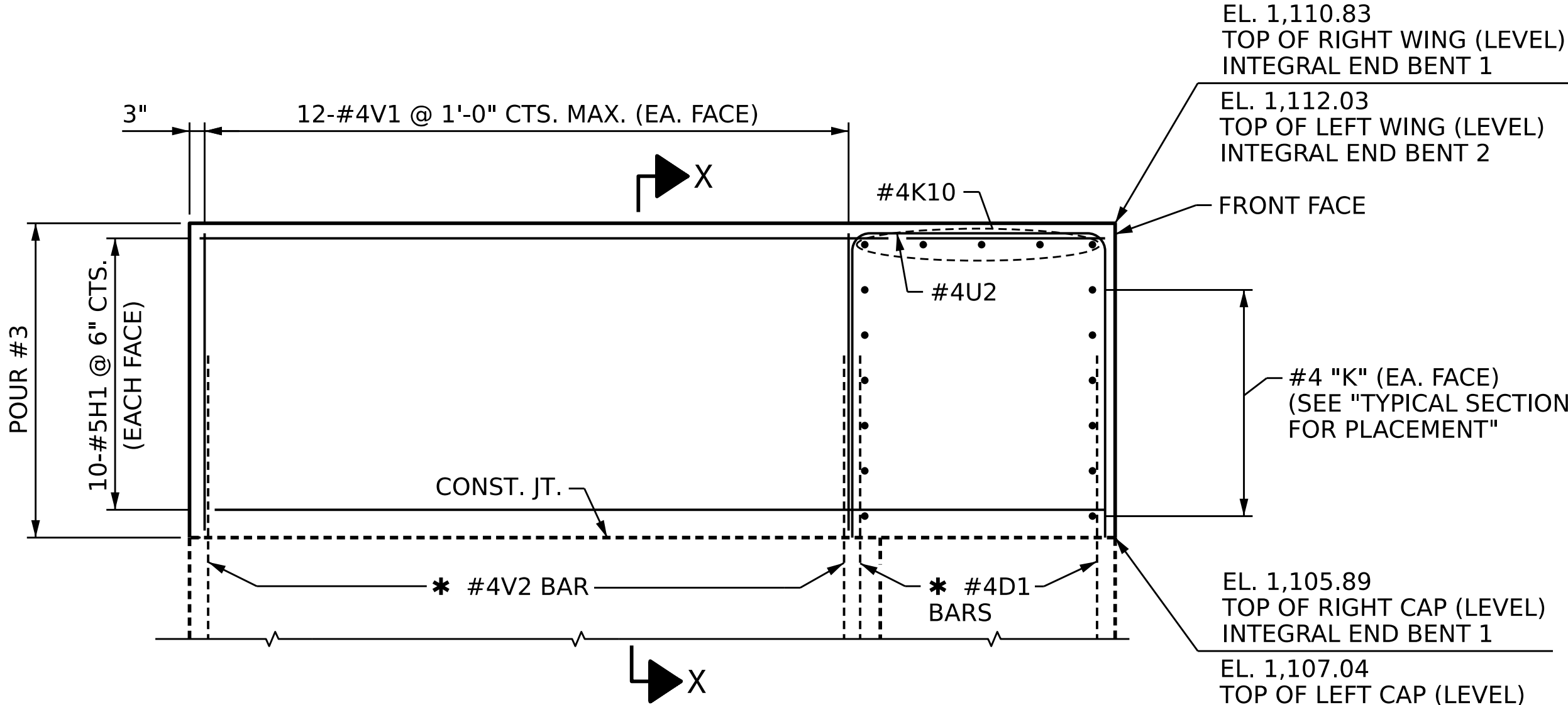


SECTION X-X



ELEVATION OF WING (W1)

INTEGRAL END BENT 1 (LEFT)
INTEGRAL END BENT 2 (RIGHT)



ELEVATION OF WING (W2)

INTEGRAL END BENT 1 (RIGHT)
INTEGRAL END BENT 2 (LEFT)

UPPER WINGS AT INTEGRAL END BENTS

* FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT" SHEETS

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**PLAN OF SPAN
UPPER WING DETAILS
(INTEGRAL)**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-11
2			4			TOTAL SHEETS 30

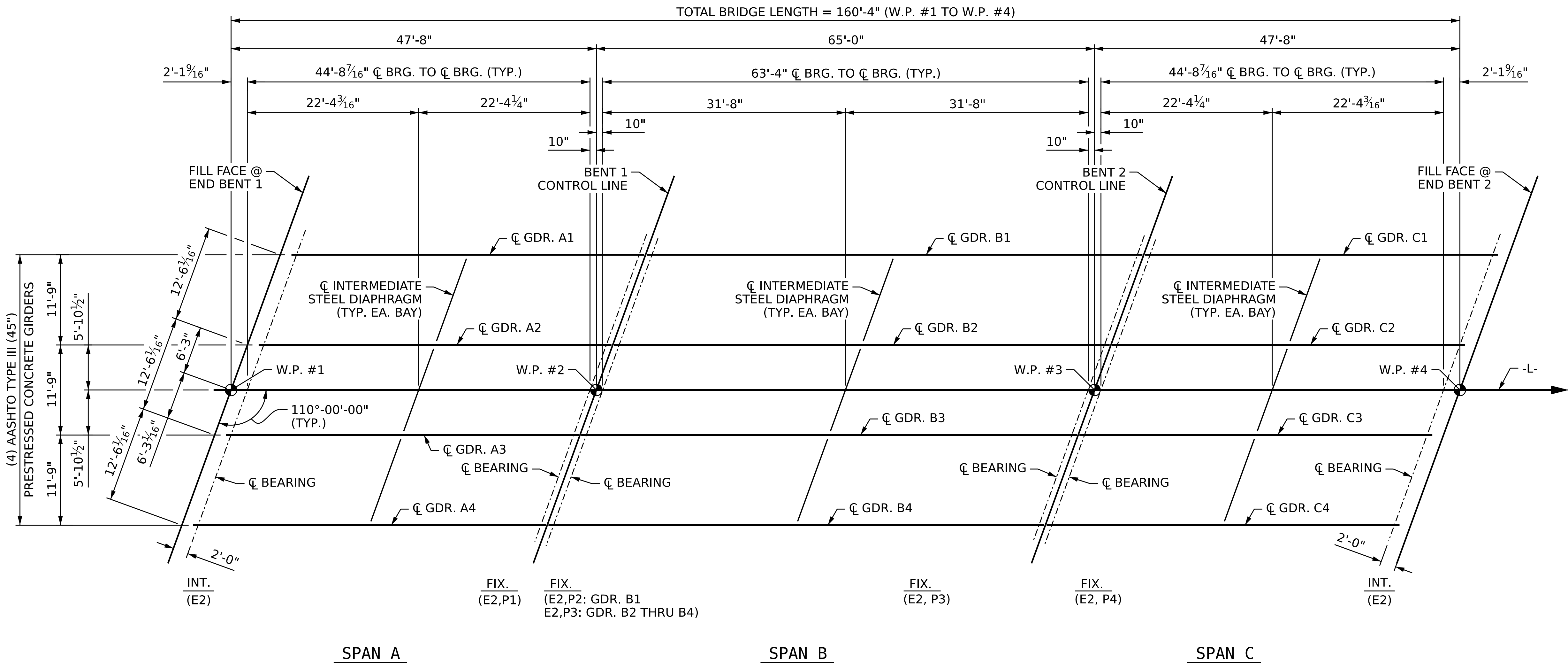
DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: M. WAGNER DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024

wsp

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
044167
ELIZABETH F. LAWES
12/18/2024



FRAMING PLAN

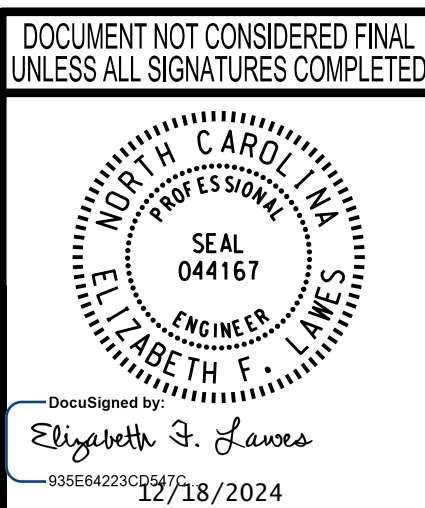
PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

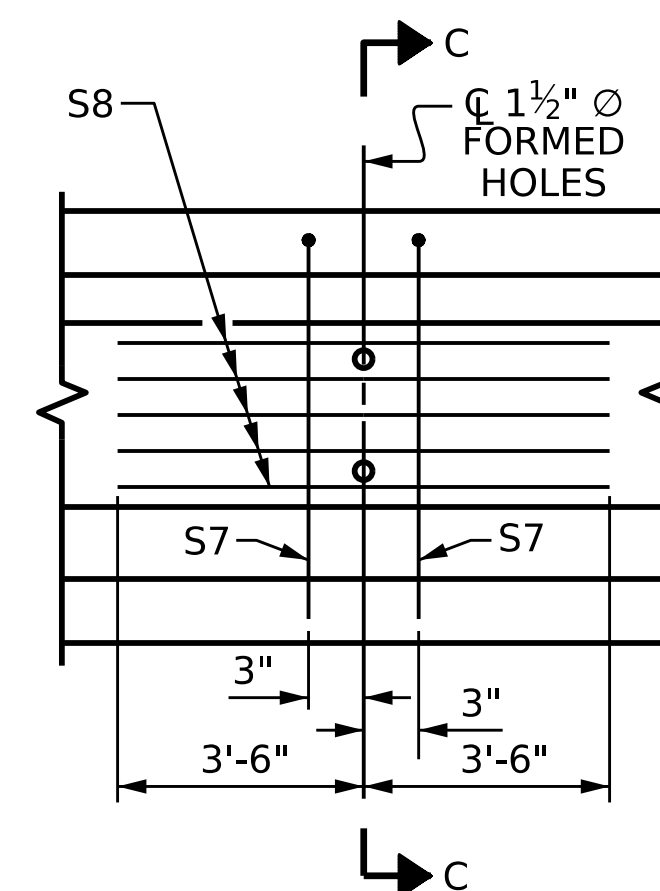
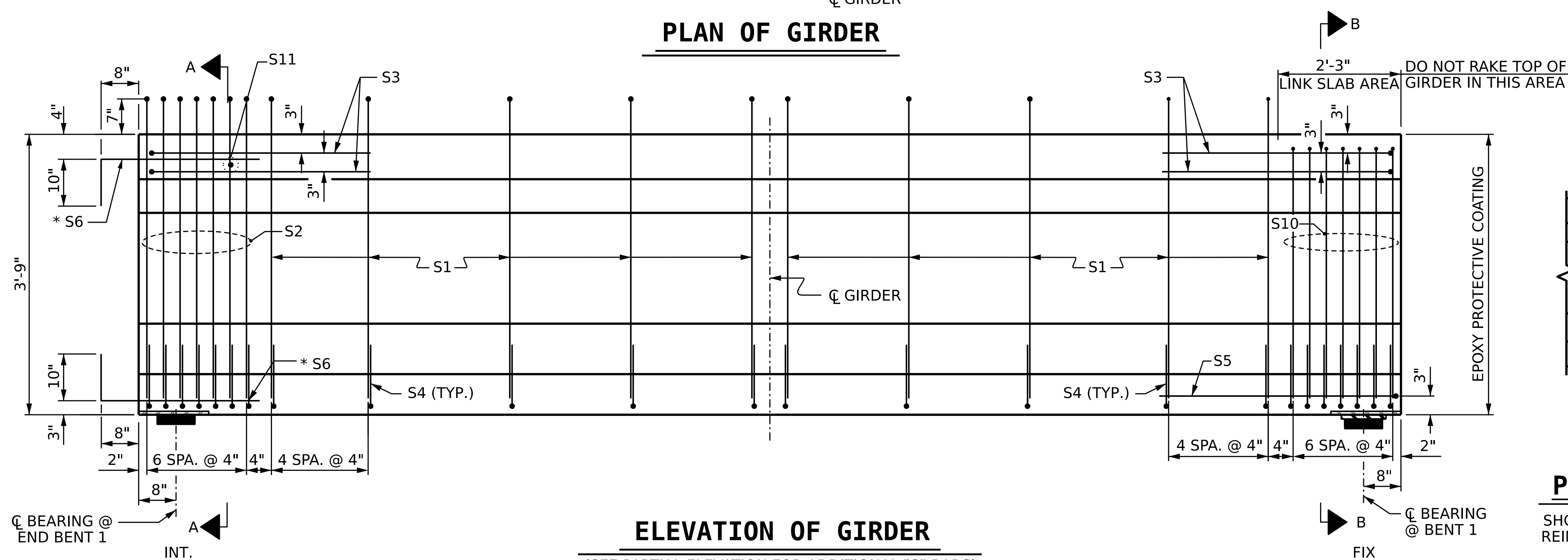
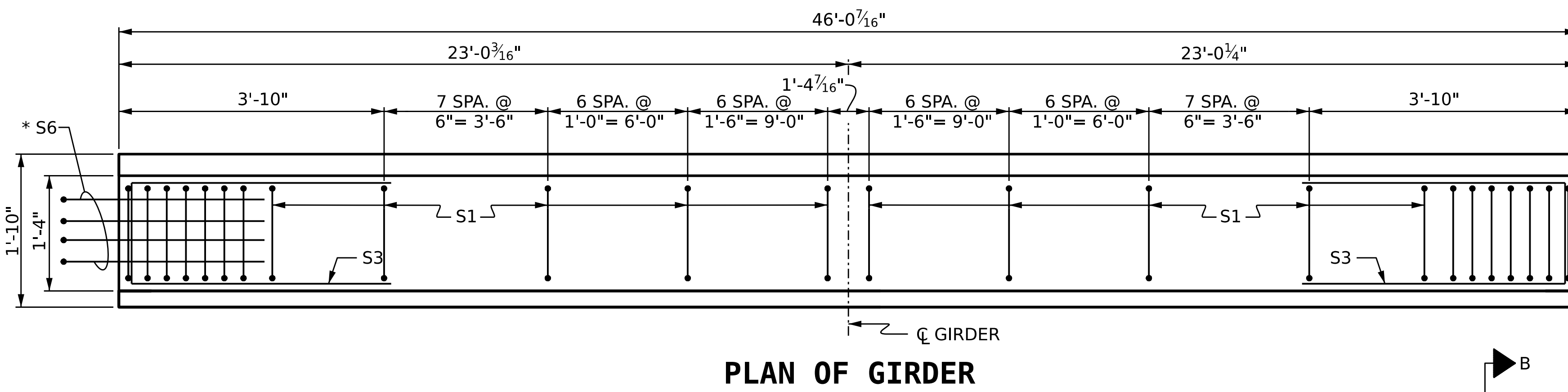
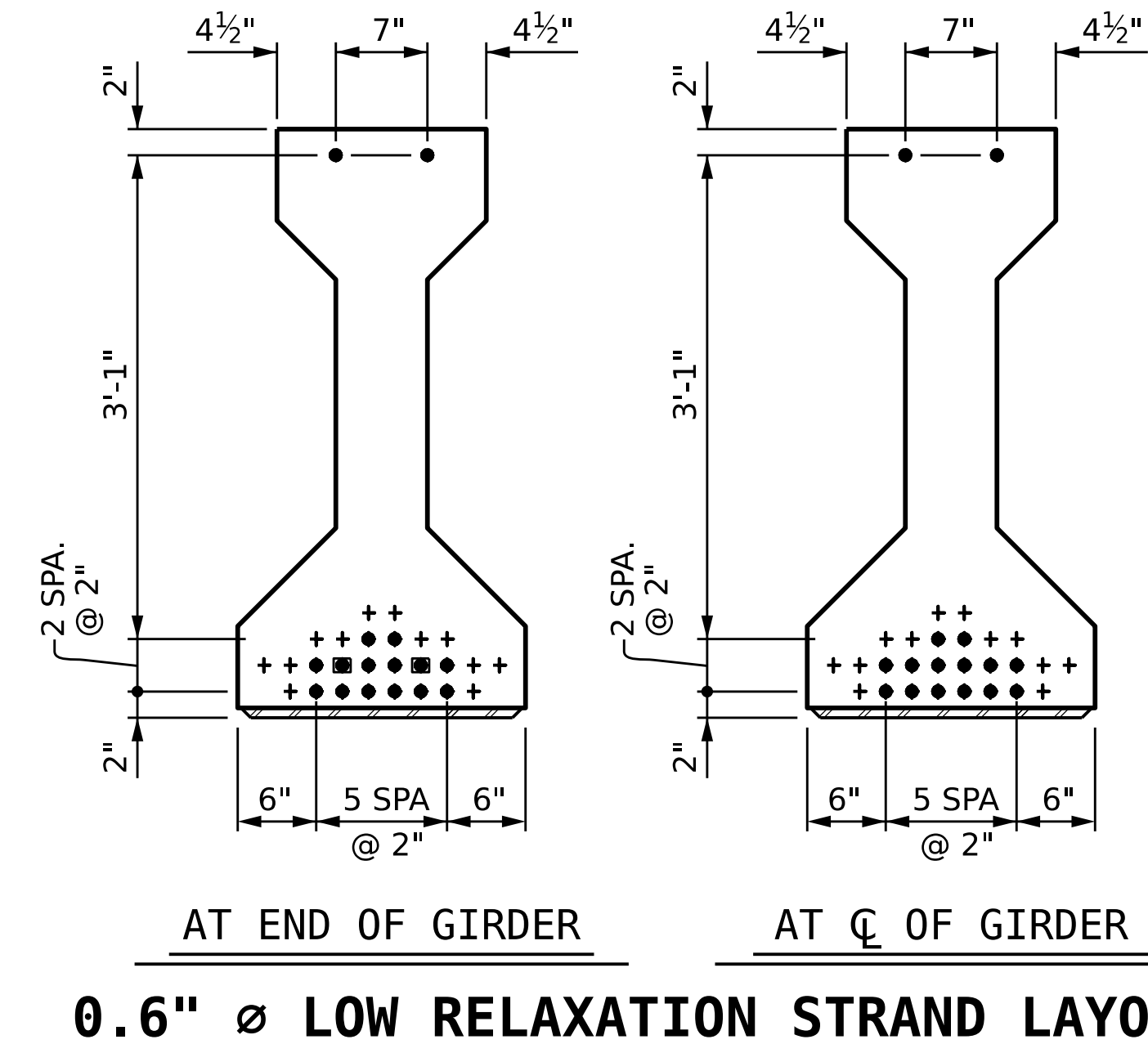
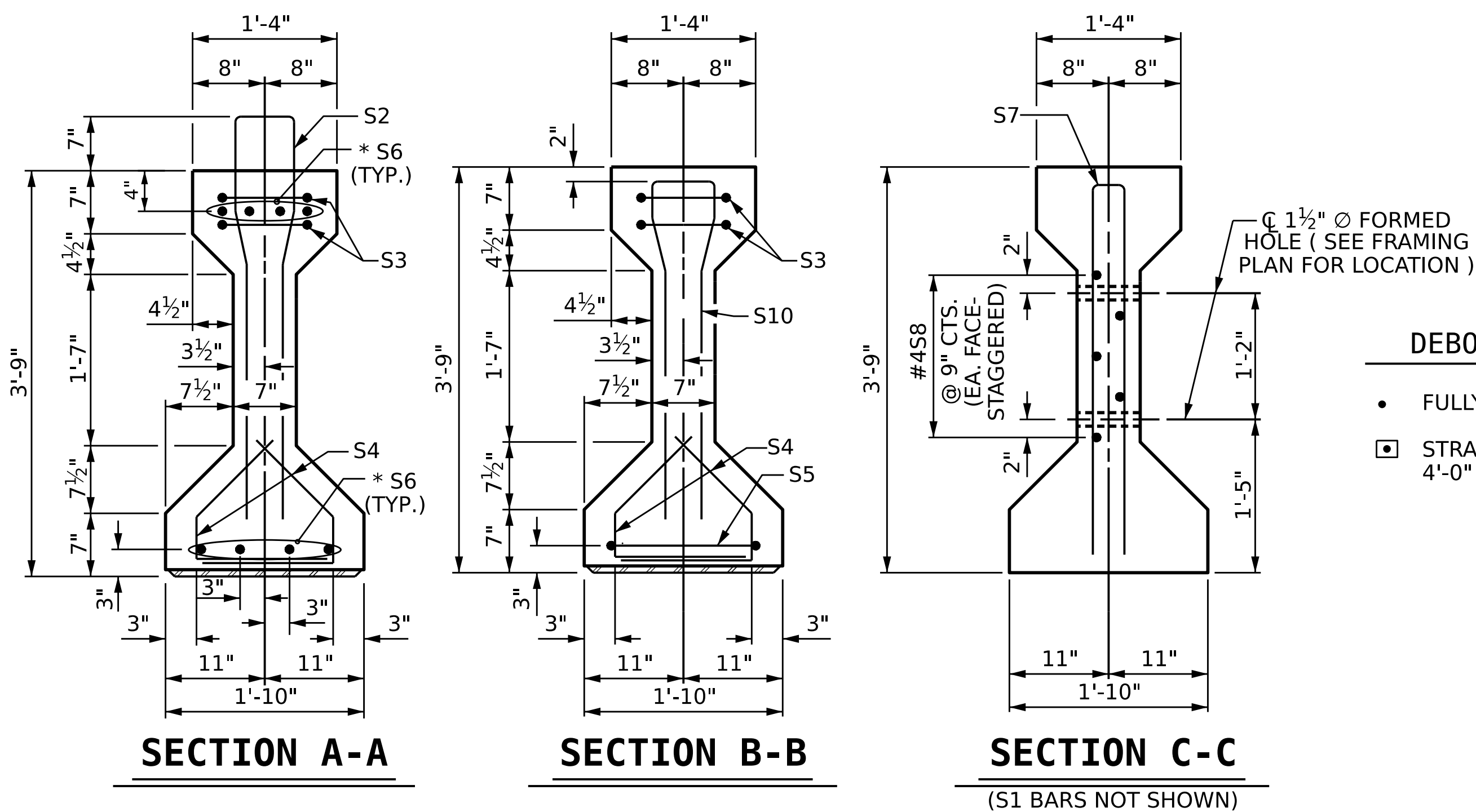
DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: T. HARRIS DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 30



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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	8'-8"	278
S2	7	#6	1	8'-8"	91
S3	4	#4	3	8'-8"	23
S4	124	#4	2	2'-9"	228
S5	1	#4	3	9'-6"	6
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	7	#6	1	7'-2"	75
S11	1	#3	STR	1'-0"	1

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

Bar Type 1 Dimensions:

- Top flange width: $6\frac{1}{2}"$
- Top flange thickness: $2\frac{1}{2}"$
- Distance from top flange to first bend: $11\frac{1}{2}"$
- Distance from first bend to second bend: $5\frac{7}{8}"$
- Distance from second bend to third bend: $5\frac{7}{8}"$
- Distance from third bend to bottom: $2\frac{1}{2}"$
- Bottom hook length: $3\frac{1}{2}"$
- Bottom hook width: $4"$
- Bottom hook angle: $6\frac{1}{4}"$
- Labels: S1, S2, S10, S1, S2

Bar Type 2 Dimensions:

- Top flange width: $1'-3"$
- Top flange thickness: $5"$
- Distance from top flange to bend: $9\frac{3}{16}"$
- Bend angle: $1'-1"$
- Label: S2

Bar Type 3 Dimensions:

- Top flange width: $8"$
- Top flange thickness: $1'-6"$
- Distance from top flange to bottom: $3'-5"$
- Bottom width: $4'-0"$
- Labels: S3, S5, S7, S3 & S5

ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
SPANS A & C	REINFORCING STEEL	5,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GIRDER QTY.	770	6.6	16

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
8	46.04	368.29

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
 STATION: **18+28.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

**AASHTO TYPE III
 PRESTRESSED CONCRETE
 GIRDER - LINK SLAB
 SPANS A & C**

DRAWN BY : BNB 09/21	
CHECKED BY : AAI 09/21	
DESIGNED BY: <u>J. WHEATLEY</u>	DATE : <u>MAY 2024</u>
DRAWN BY: <u>M. HOBBS</u>	DATE : <u>MAY 2024</u>
CHECKED BY: <u>E. LAWES</u>	DATE : <u>MAY 2024</u>
DESIGN ENGINEER OF RECORD: <u>E. LAWES</u>	DATE : <u>MAY 2024</u>

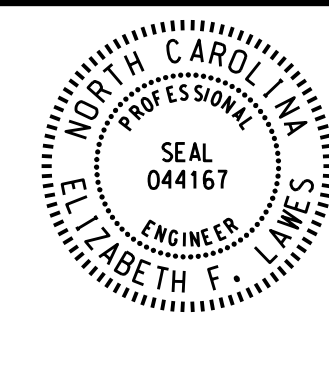
6/3/2024
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IISL 722989

WSP

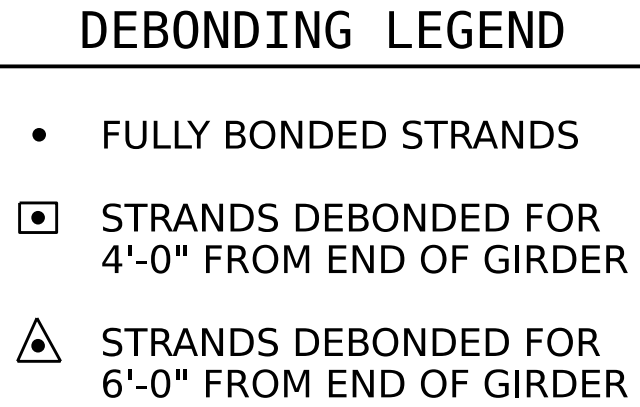
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETE



STD. NO. PCG5



(S1 BARS NOT SHOWN)



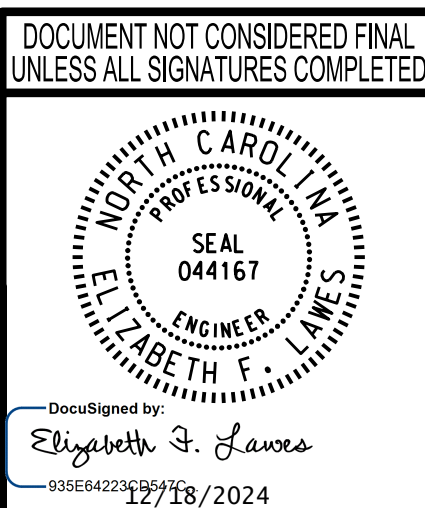
0.6" Ø LOW RELAXATION STRAND LAYOUT



ALL BAR DIMENSIONS
ARE OUT-TO-OUT

NUMBER	LENGTH	TOTAL LENGTH
4	64.67	258.67

STD. NO. PCG5



DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPANS A & C																						
GIRDERS 1 & 4	TWENTIETH POINTS	℄ BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	℄ BRG.
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.010	0.019	0.028	0.036	0.043	0.049	0.054	0.058	0.060	0.061	0.060	0.058	0.054	0.049	0.043	0.036	0.028	0.019	0.010	0.000
	* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.003	0.006	0.009	0.012	0.014	0.017	0.018	0.020	0.020	0.021	0.020	0.020	0.018	0.017	0.014	0.012	0.009	0.006	0.003	0.000
	FINAL CAMBER	0"	1/16"	3/16"	1/4"	5/16"	3/8"	3/8"	7/16"	7/16"	1/2"	1/2"	1/2"	7/16"	7/16"	3/8"	3/8"	5/16"	1/4"	3/16"	1/16"	0"
GIRDERS 2 & 3	TWENTIETH POINTS	℄ BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	℄ BRG.
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.010	0.019	0.028	0.036	0.043	0.049	0.054	0.058	0.060	0.061	0.060	0.058	0.054	0.049	0.043	0.036	0.028	0.019	0.010	0.000
	* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.003	0.007	0.011	0.014	0.017	0.020	0.022	0.023	0.024	0.025	0.024	0.023	0.022	0.020	0.017	0.014	0.011	0.007	0.003	0.000
	FINAL CAMBER	0"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	3/8"	5/16"	1/4"	3/16"	1/8"	1/16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN B																						
GIRDERS 1 & 4	TWENTIETH POINTS	℄ BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	℄ BRG.
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.019	0.039	0.056	0.072	0.087	0.100	0.110	0.117	0.121	0.123	0.121	0.117	0.110	0.100	0.087	0.073	0.056	0.039	0.019	0.000
	* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.010	0.021	0.032	0.042	0.051	0.059	0.065	0.069	0.072	0.073	0.072	0.069	0.065	0.059	0.051	0.042	0.032	0.021	0.010	0.000
	FINAL CAMBER	0"	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0"
GIRDERS 2 & 3	TWENTIETH POINTS	℄ BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	℄ BRG.
	CAMBER (GIRDER ALONE IN PLACE) (FT.)	0.000	0.019	0.039	0.056	0.072	0.087	0.100	0.110	0.117	0.121	0.123	0.121	0.117	0.110	0.100	0.087	0.073	0.056	0.039	0.019	0.000
	* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.)	0.000	0.012	0.025	0.038	0.050	0.061	0.071	0.078	0.083	0.086	0.087	0.086	0.083	0.078	0.071	0.061	0.050	0.038	0.025	0.012	0.000
	FINAL CAMBER	0"	1/16"	3/16"	3/16"	1/4"	5/16"	3/8"	3/8"	3/8"	7/16"	7/16"	7/16"	3/8"	3/8"	3/8"	5/16"	1/4"	3/16"	3/16"	1/16"	0"

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

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.

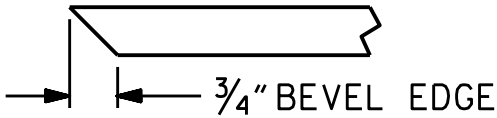
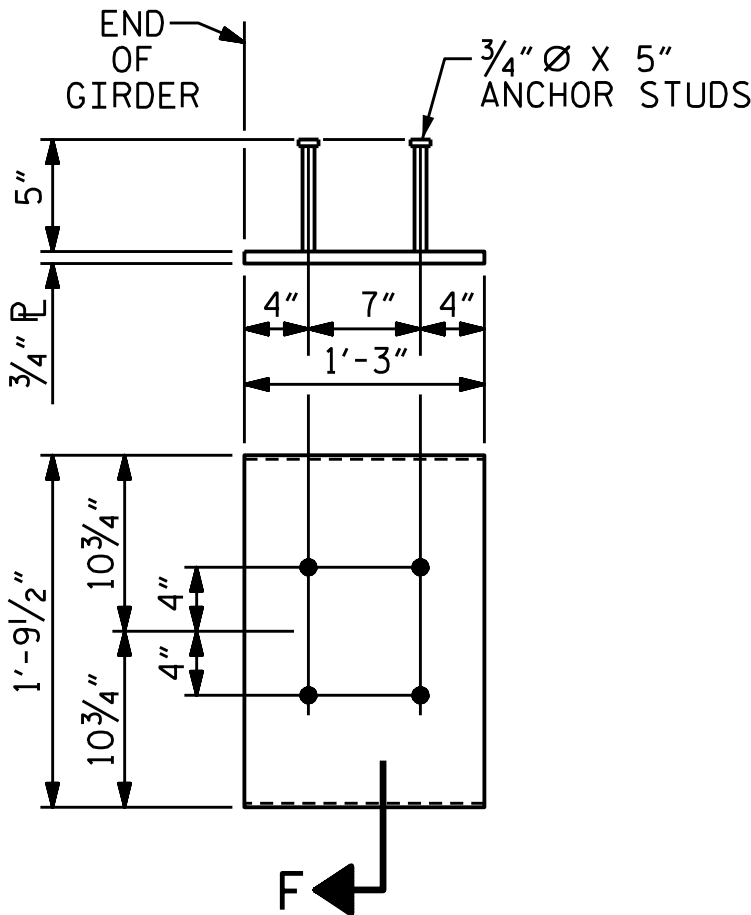
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI FOR SPANS A & C AND 6,000 PSI FOR SPAN B.

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", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE III GIRDER
(2 REQ'D PER GIRDER)

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
**PRESTRESSED CONCRETE
GIRDER FOR LINK SLAB
DETAILS**

REVISIONS						SHEET NO. S-15 TOTAL SHEETS 30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

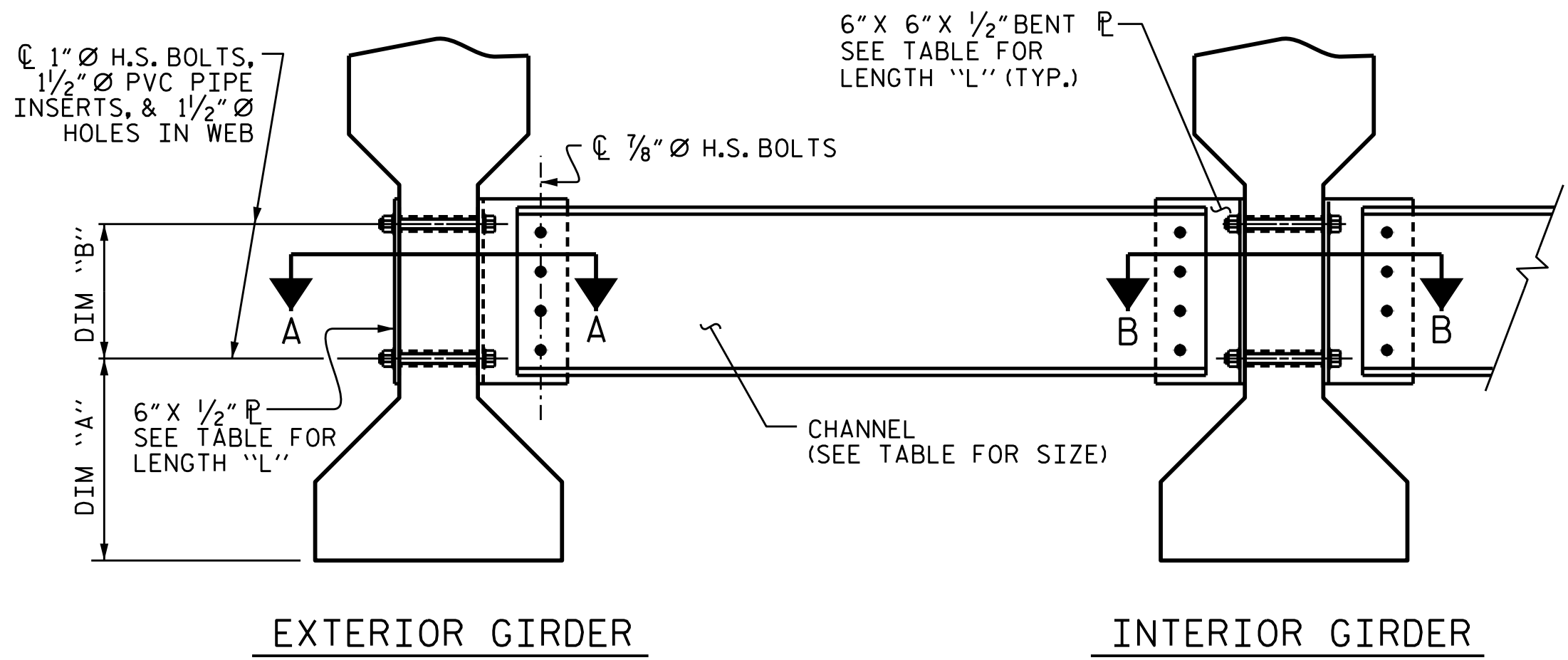
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Seal of Elizabeth F. Lawes, Professional Engineer, State of North Carolina, License No. 044167.

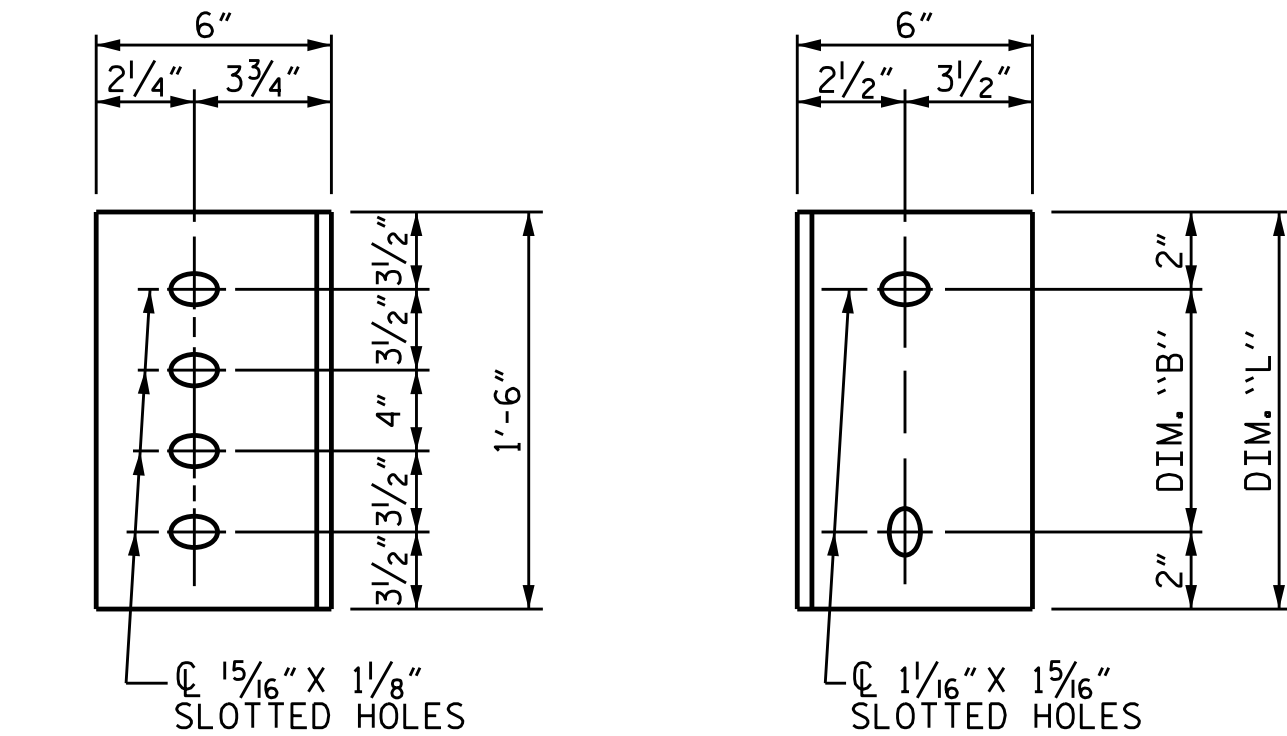
DocuSigned by:
Elizabeth F. Lawes
03568423232876
12/18/2024

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024



PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE III GIRDER SHOWN)



CONNECTOR PLATE DETAILS

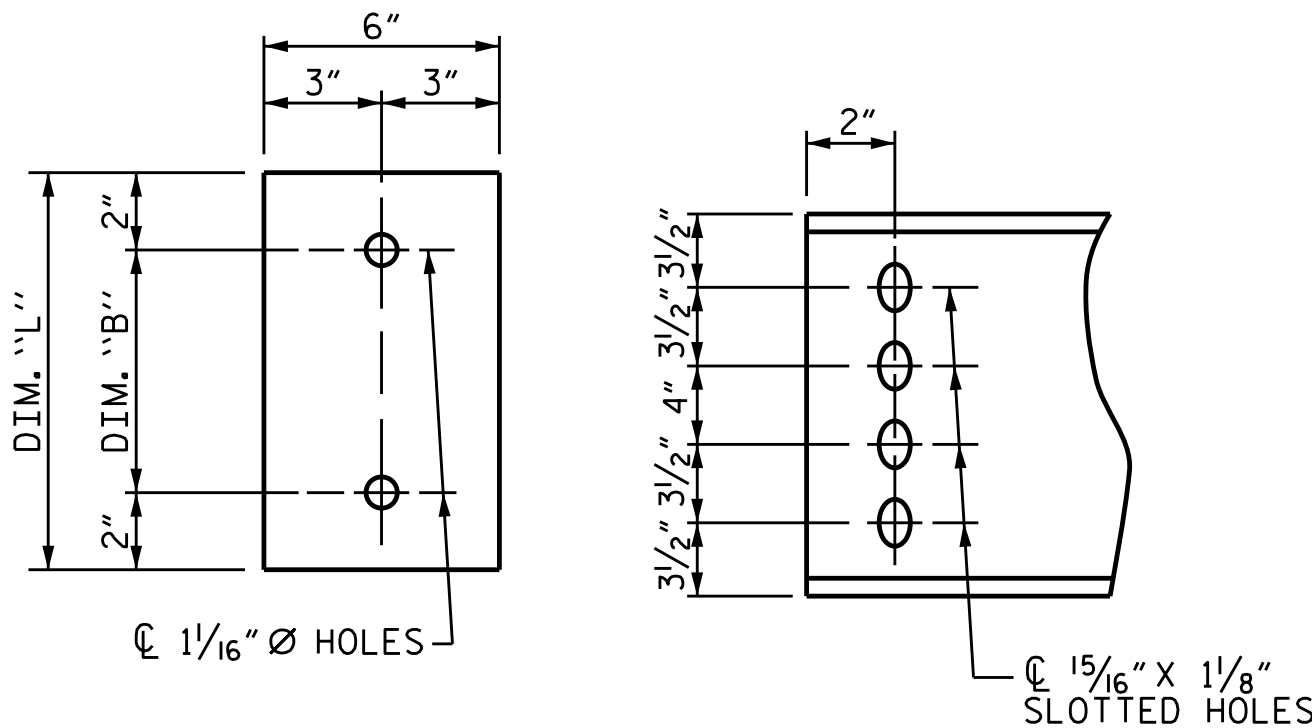
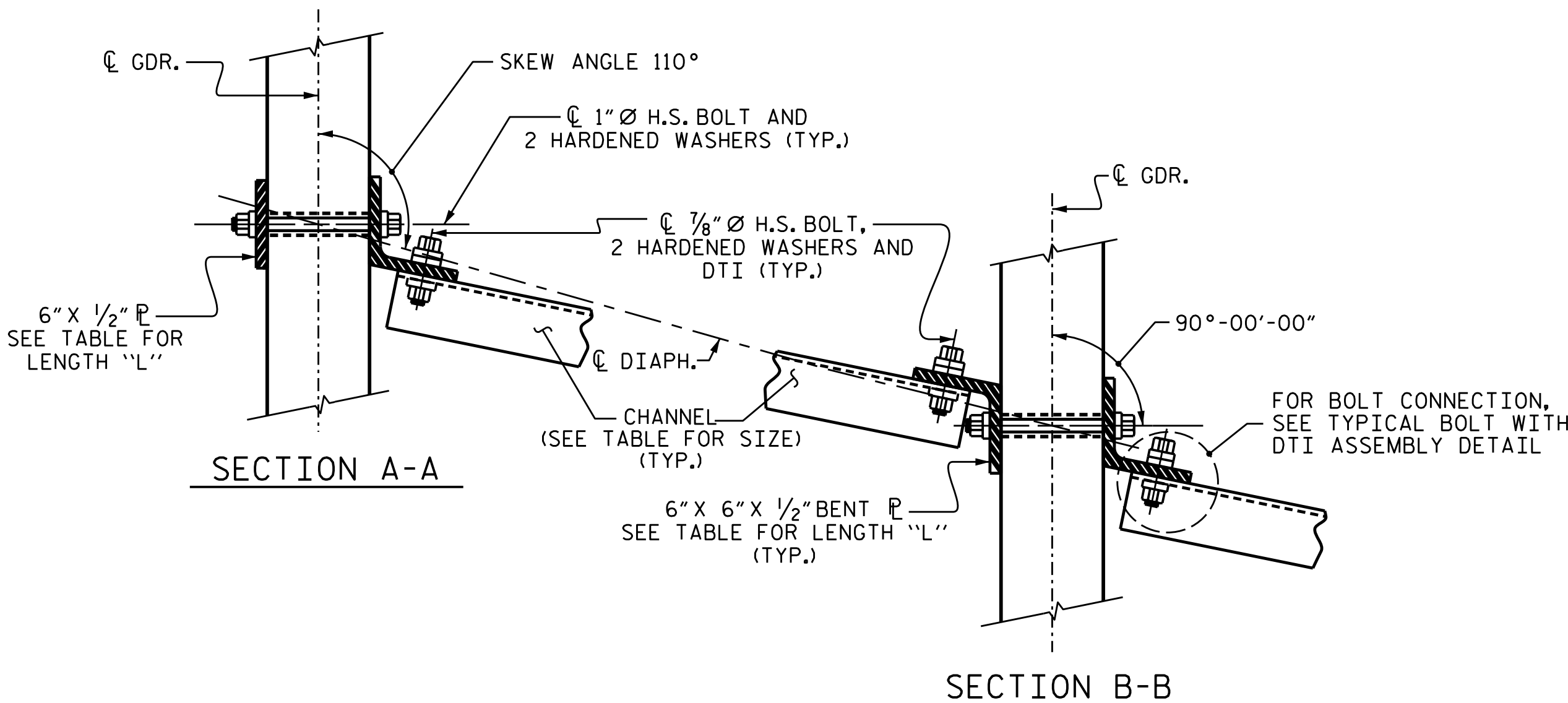
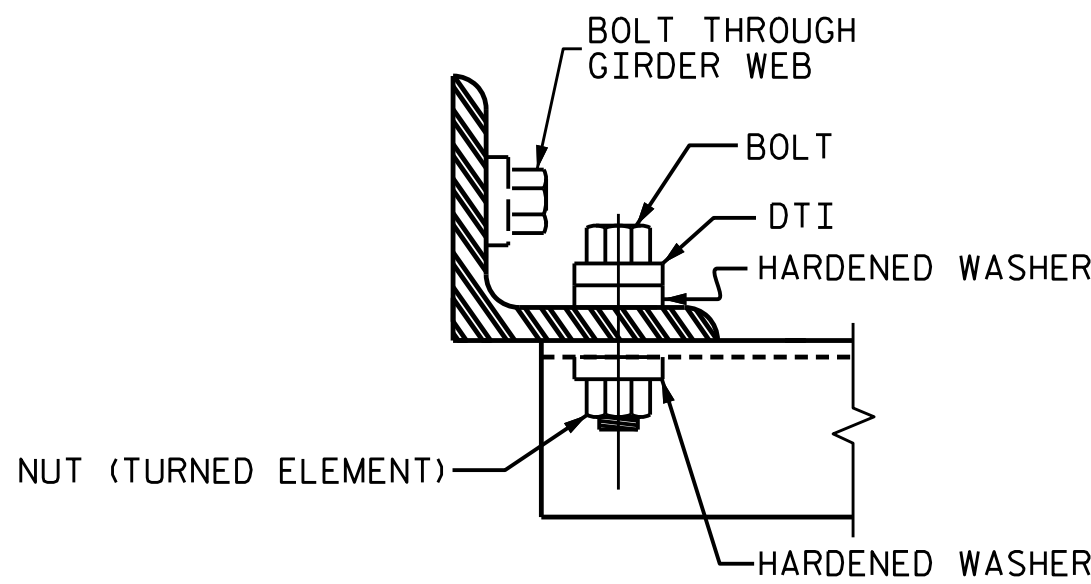


PLATE DETAILS

CHANNEL END
(TYPE III GDR.)



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 CHANNEL 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, CHANNELS, 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.

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS					REVISIONS			SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16			TOTAL SHEETS
1			3			S-16			30
2			4						

DRAWN BY :	TLA	6/05	REV. 5/1/06RRR	KMM/GM
CHECKED BY :	VC	6/05	REV. 10/1/11	MAA/GM
			REV. 12/17	MAA/THC
DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024	
DRAWN BY:	M. HOBBS	DATE :	MAY 2024	
CHECKED BY:	E. LAWES	DATE :	MAY 2024	
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024	

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARDSPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

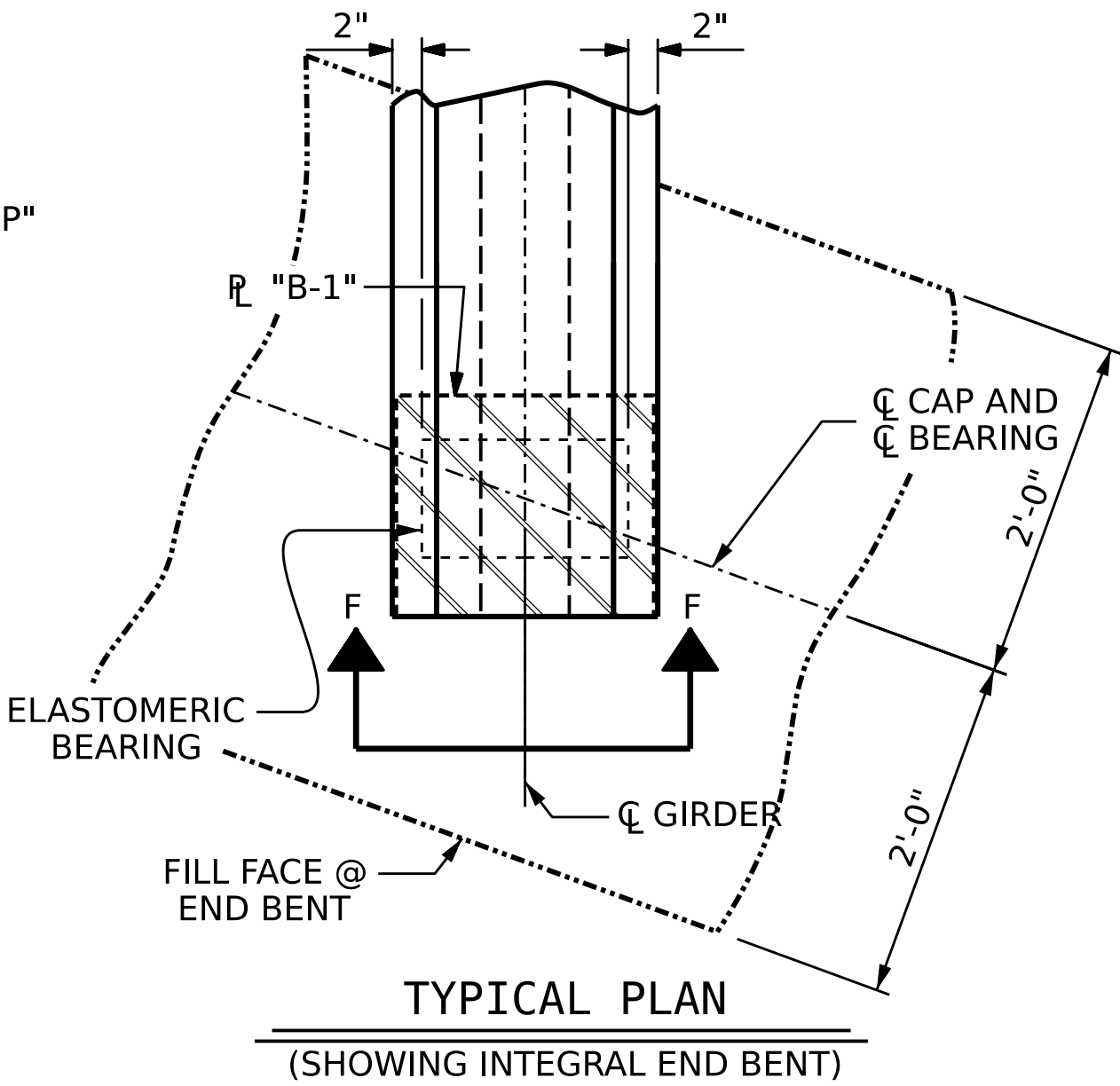
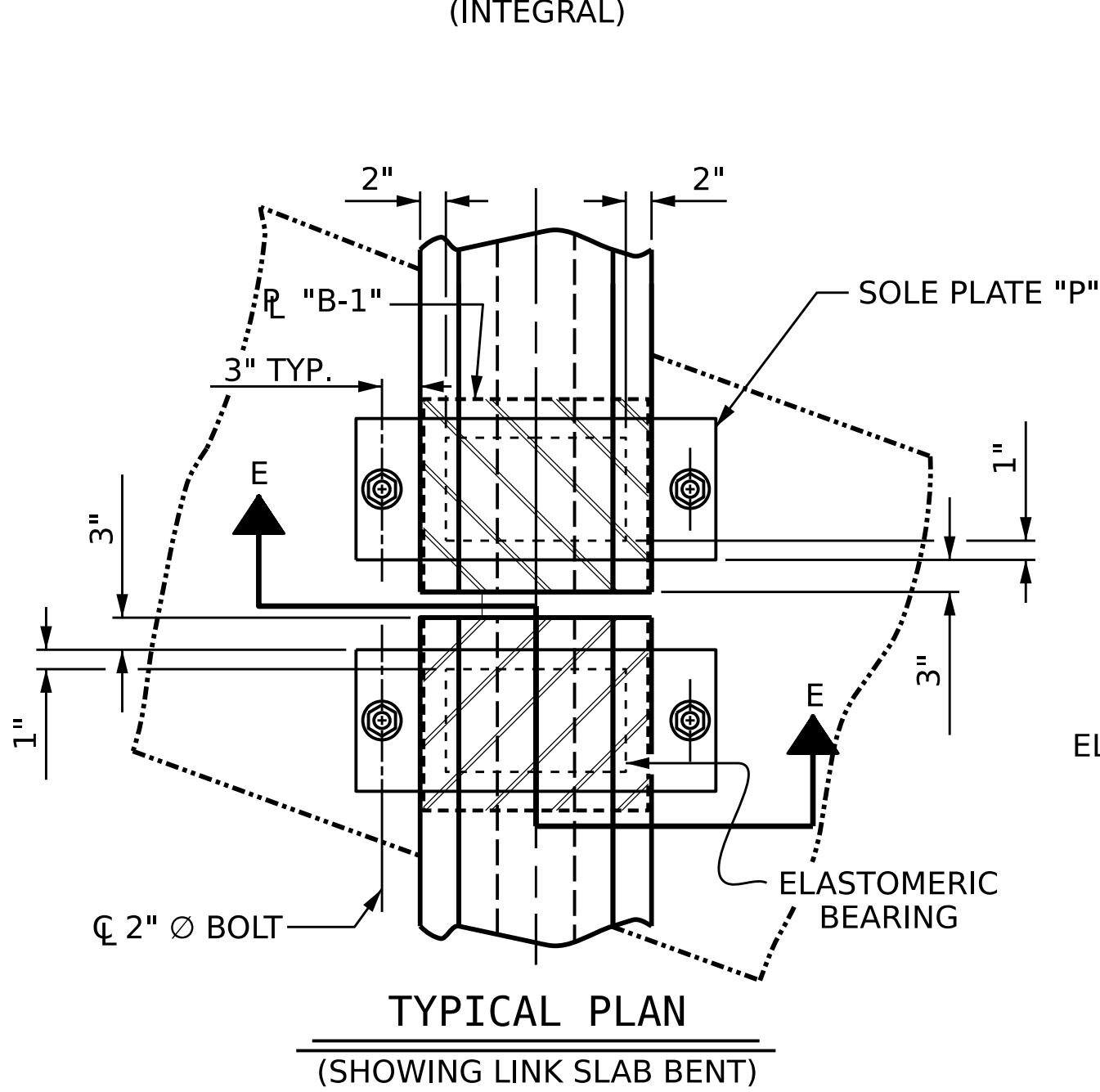
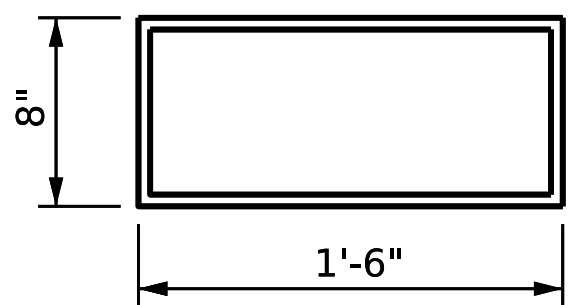
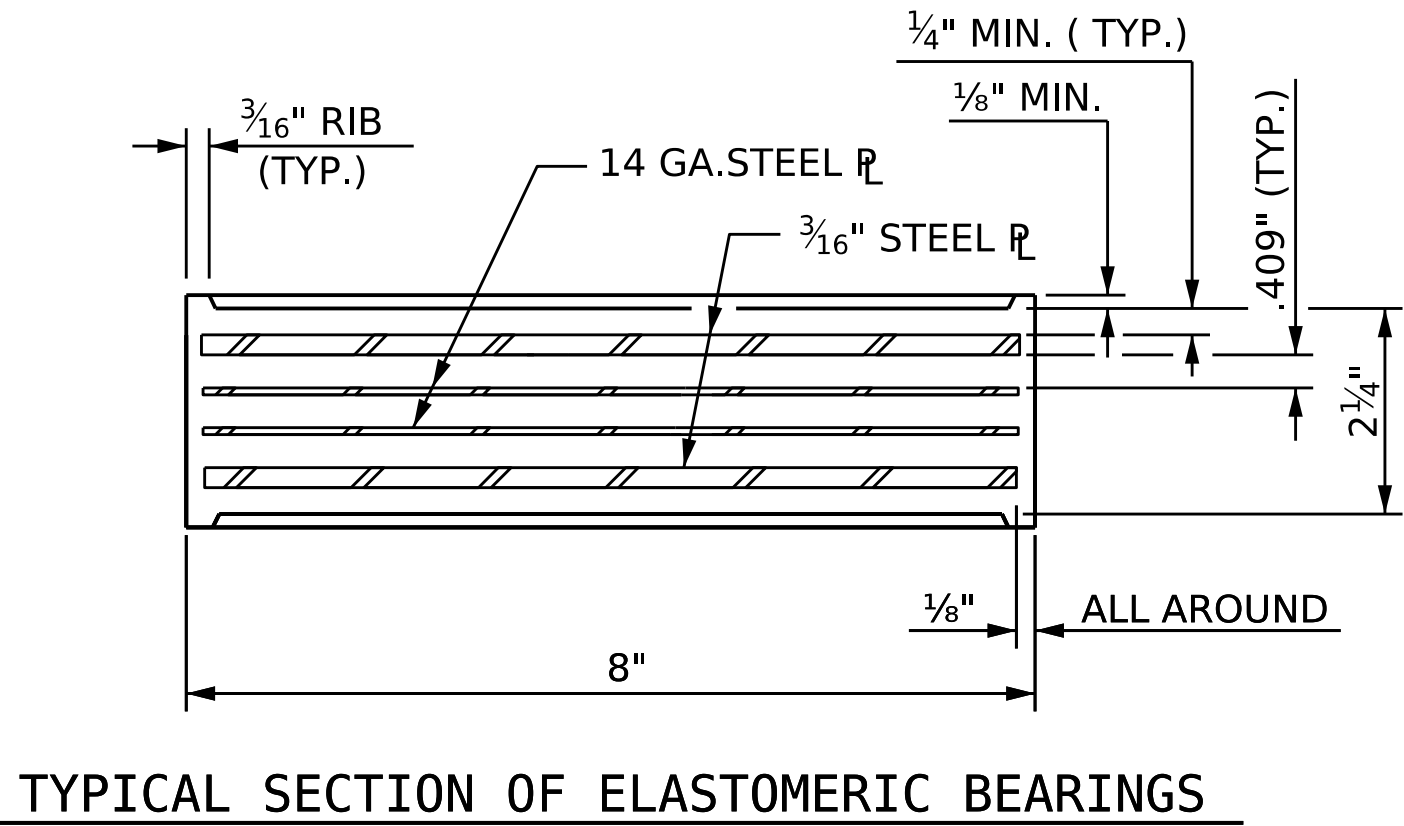
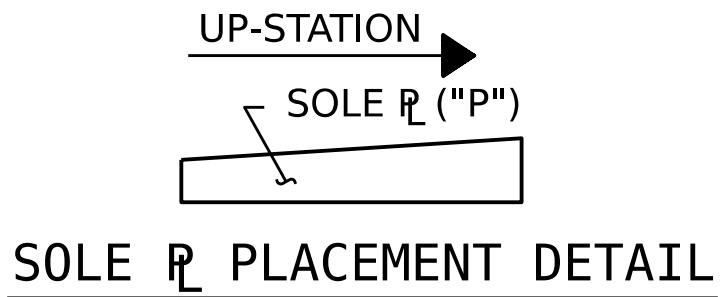
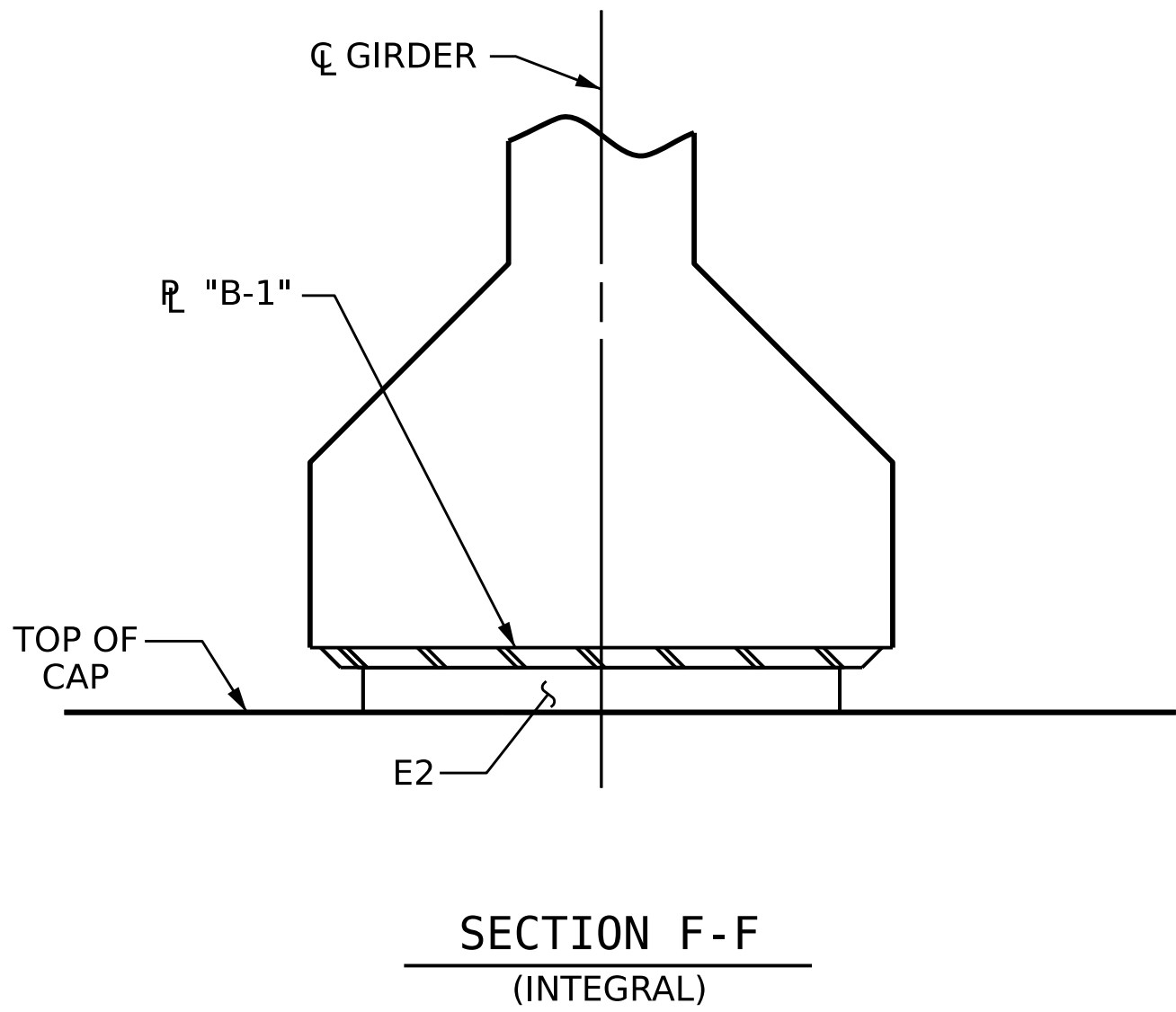
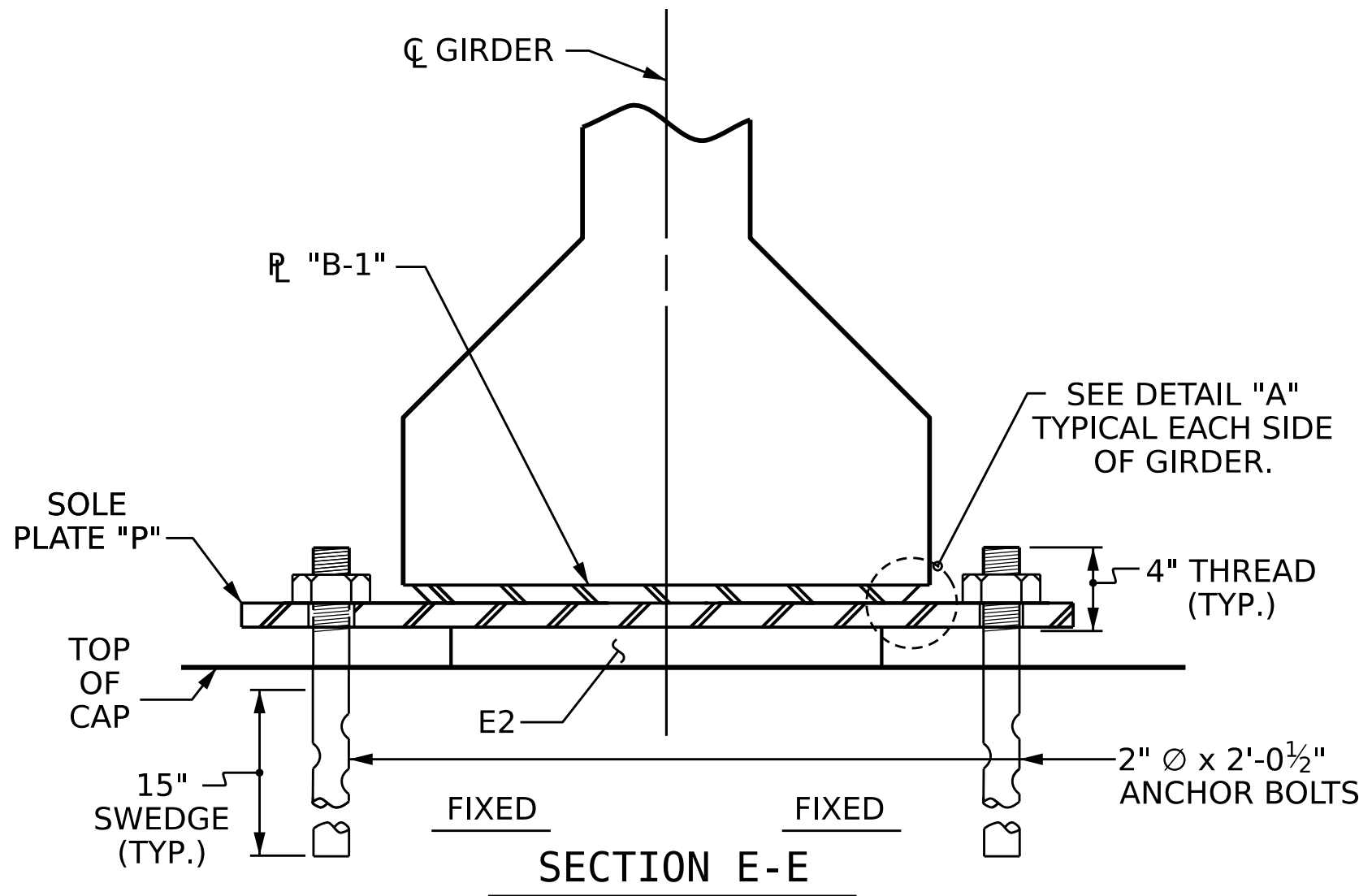
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

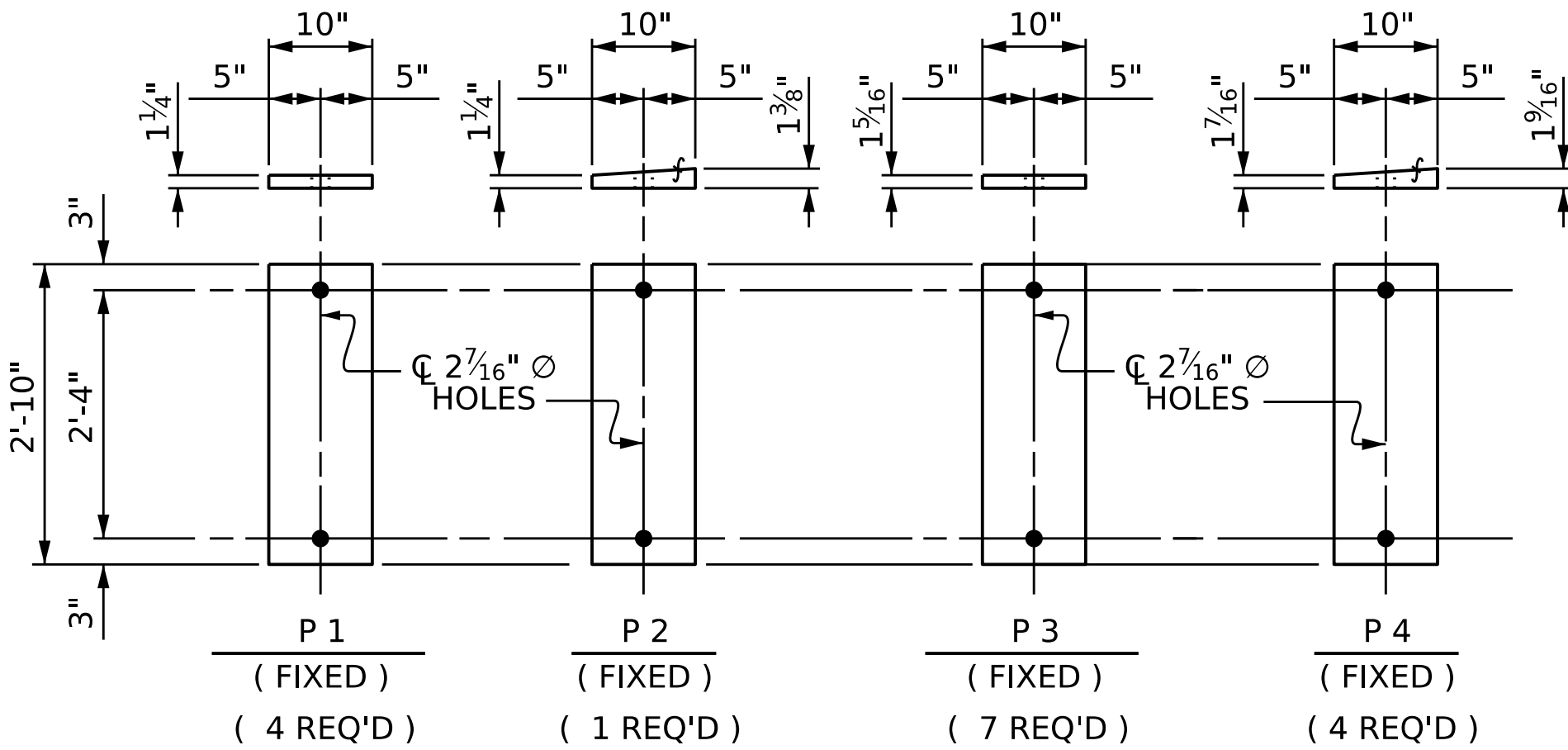
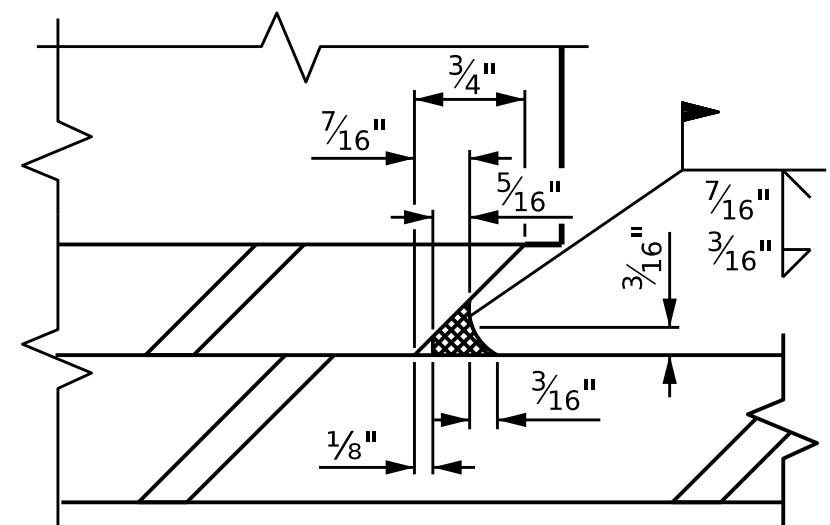
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



TYPE III MOD
(MODIFIED FOR 2 3/4" THICK PAD)

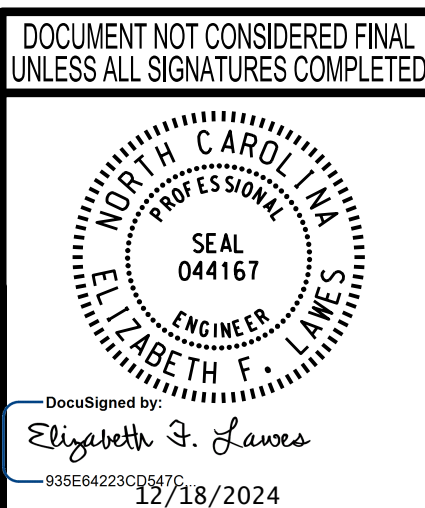


MAXIMUM ALLOWABLE SERVICE LOADS
D.L.+L.L. (NO IMPACT)
TYPE III (MOD) 215 k

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDERS
SUPERSTRUCTURE

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-17
2			4		TOTAL SHEETS 30



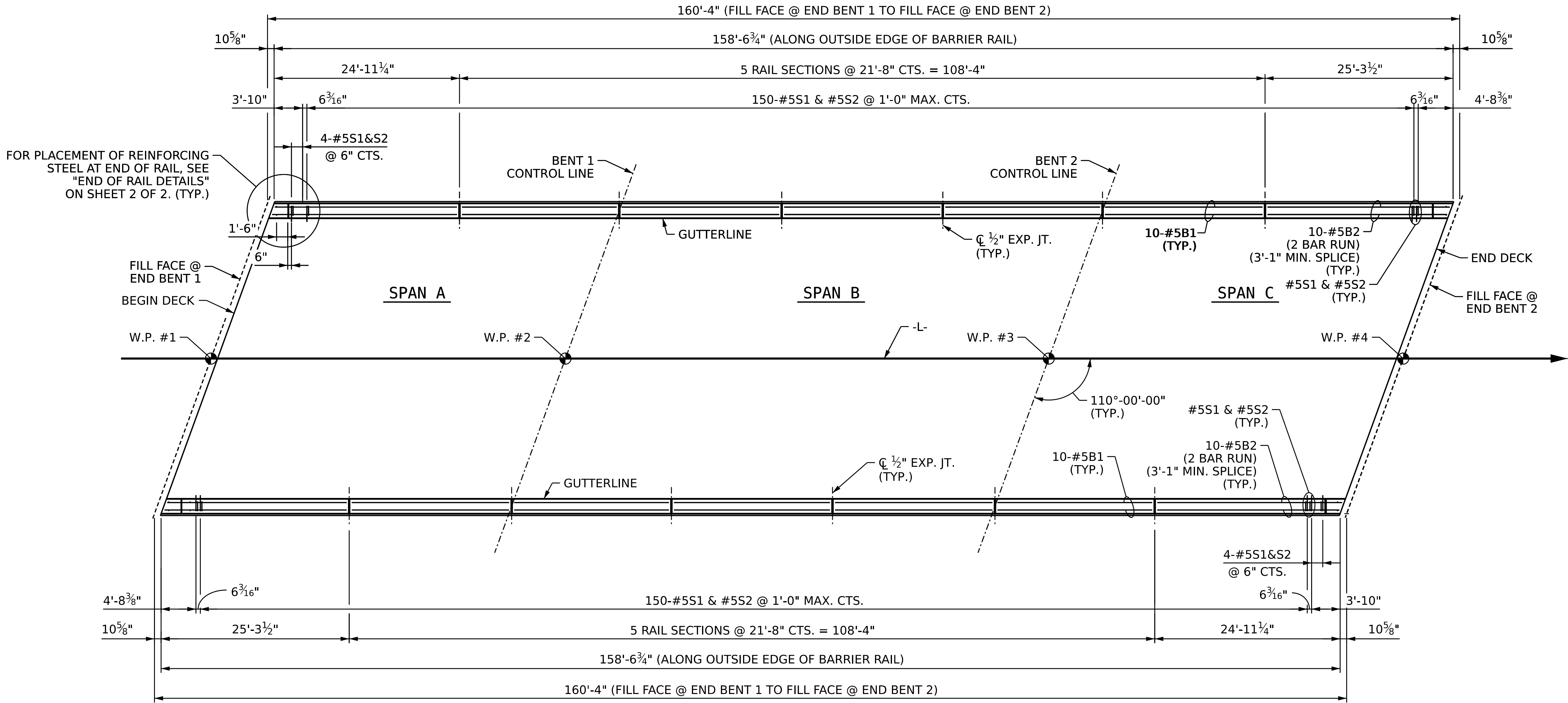
wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY: J. WHEATLEY
DRAWN BY: M. HOBBS
CHECKED BY: E. LAWES
DESIGN ENGINEER OF RECORD: E. LAWES
DATE: MAY 2024
DATE: MAY 2024
DATE: MAY 2024
DATE: MAY 2024

NOTES:

#5 S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY TO MAINTAIN 2" CLEAR TO EXPANSION JOINT IN RAIL.

DIMENSIONS ARE MEASURED ALONG OUTSIDE EDGE OF DECK SLAB.



PLAN OF VERTICAL CONCRETE BARRIER RAIL

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**VERTICAL CONCRETE
BARRIER RAIL**

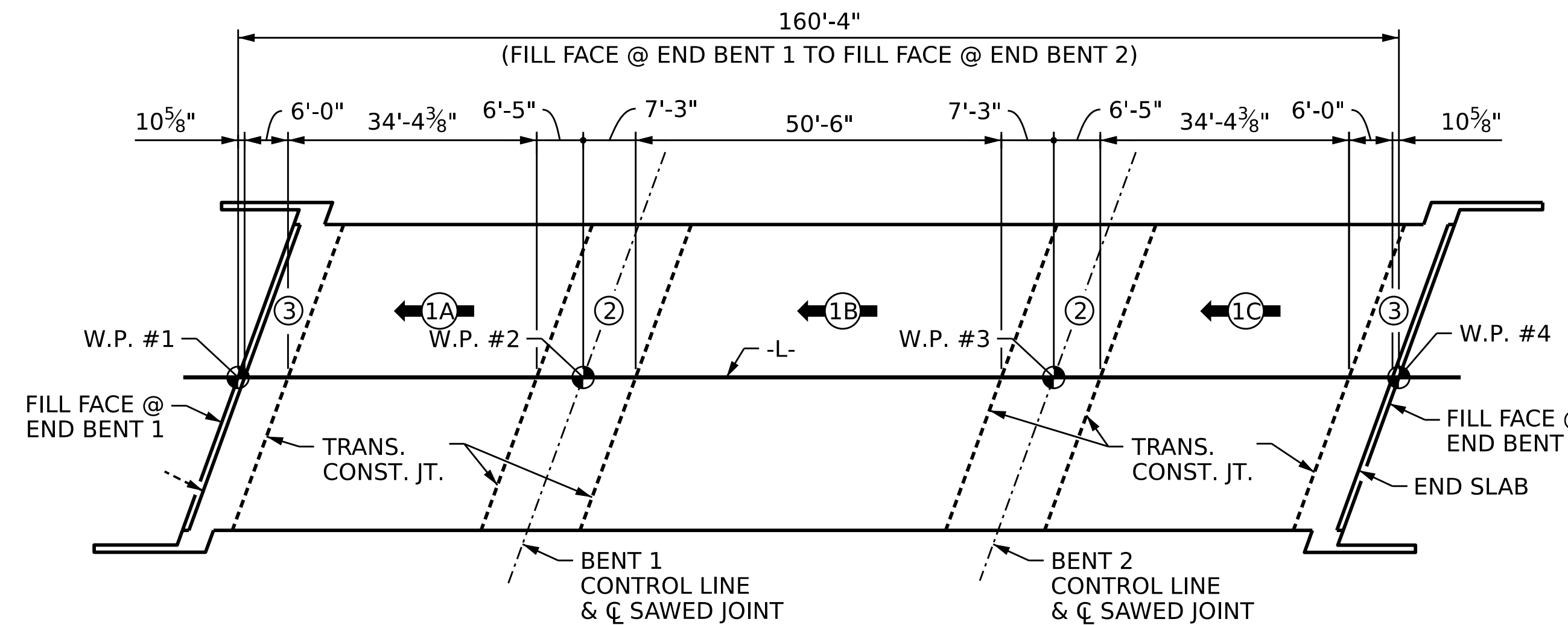
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-18
2			4			TOTAL SHEETS 30

DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: E. LAWES DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024

wsp
WSP USA Inc.
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RALEIGH, NC 27601
TEL: 1.919.836.4040
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SEAL
044167
ELIZABETH F. LAWES
ENGINEER
12/18/2024

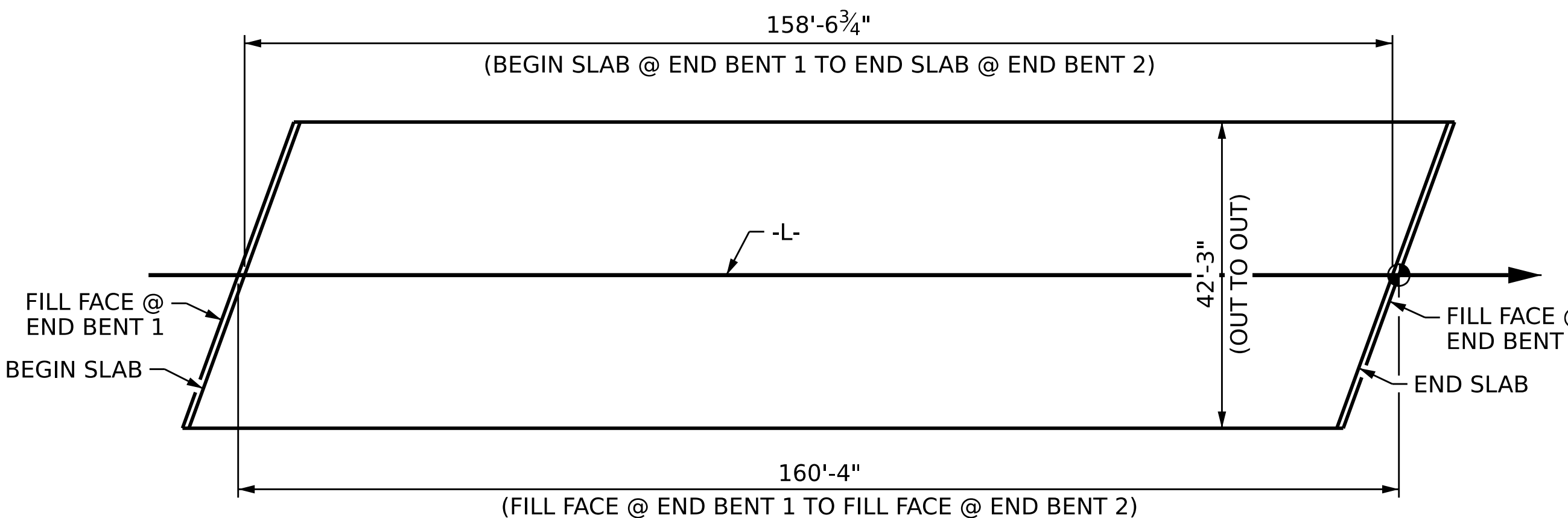


BEGIN SLAB –

POURING SEQUENCE

POURS CANNOT BE STARTED UNTIL BOTH ADJACENT POURS REACH A MINIMUM OF 3,000 PSI.

←①→ INDICATED POUR NUMBER AND DIRECTION OF POUR



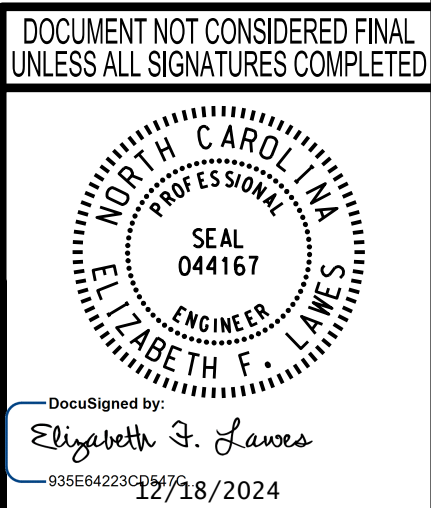
**LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB**
(SQ. FT. = 6,699)

DRAWN BY :	JMB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY :	SJD 9/87	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC
DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024

BILL OF MATERIAL											
SPANS A, B & C											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	344	#5	STR	41'-11"	15,039	*B1	58	#5	STR	29'-11"	1,810
A2	344	#5	STR	41'-11"	15,039	*B2	58	#5	STR	53'-1"	3,211
*A101	2	#5	STR	1'-10"	4	*B3	112	#6	STR	15'-3"	2,565
*A102	4	#5	STR	3'-0"	13	*B4	112	#5	STR	26'-11"	3,144
*A103	4	#5	STR	5'-4"	22	B5	122	#5	STR	31'-11"	4,061
*A104	4	#5	STR	7'-7"	32	B6	122	#5	STR	50'-5"	6,415
*A105	4	#5	STR	9'-11"	41						
*A106	4	#5	STR	12'-2"	51	H1	60	#5	STR	14'-9"	923
*A107	4	#5	STR	14'-6"	60	H2	20	#5	STR	14'-6"	302
*A108	4	#5	STR	16'-9"	70						
*A109	4	#5	STR	19'-1"	80	K1	20	#4	STR	26'-6"	354
*A110	4	#5	STR	21'-4"	89	K2	6	#4	STR	10'-3"	41
*A111	4	#5	STR	23'-8"	99	K3	6	#4	STR	10'-11"	44
*A112	4	#5	STR	25'-11"	108	K4	12	#4	STR	11'-7"	93
*A113	4	#5	STR	28'-2"	118	K5	6	#4	STR	10'-10"	43
*A114	4	#5	STR	30'-6"	127	K6	4	#4	STR	4'-8"	12
*A115	4	#5	STR	32'-9"	137	K7	4	#4	STR	5'-4"	14
*A116	4	#5	STR	35'-1"	146	K8	8	#4	STR	6'-0"	32
*A117	4	#5	STR	37'-4"	156	K9	4	#4	STR	5'-2"	14
*A118	4	#5	STR	39'-8"	165	K10	28	#4	STR	2'-11"	55
A201	2	#5	STR	1'-10"	4						
A202	4	#5	STR	3'-0"	13	S1	72	#4	1	11'-11"	573
A203	4	#5	STR	5'-4"	22	S2	68	#4	1	10'-6"	477
A204	4	#5	STR	7'-7"	32						
A205	4	#5	STR	9'-11"	41	U1	72	#4	2	11'-3"	541
A206	4	#5	STR	12'-2"	51	U2	12	#4	2	13'-5"	108
A207	4	#5	STR	14'-6"	60						
A208	4	#5	STR	16'-9"	70	V1	48	#4	STR	4'-7"	147
A209	4	#5	STR	19'-1"	80						
A210	4	#5	STR	21'-4"	89						
A211	4	#5	STR	23'-8"	99						
A212	4	#5	STR	25'-11"	108						
A213	4	#5	STR	28'-2"	118						
A214	4	#5	STR	30'-6"	127						
A215	4	#5	STR	32'-9"	137						
A216	4	#5	STR	35'-1"	146						
A217	4	#5	STR	37'-4"	156						
A218	4	#5	STR	39'-8"	165						

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
*4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
*5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
*6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
*7	4'-2"	2'-9"			
*8	4'-9"	3'-2"			

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,073 SQ.FT.
BRIDGE DECK	5,932 SQ.FT.
TOTAL	7,005 SQ.FT.



BAR TYPES			
ALL BAR DIMENSIONS ARE OUT TO OUT			
SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1A (SPAN "A")	46.6	30,659	27,287
POUR 1b (SPAN "B")	68.4		
POUR 1C (SPAN "C")	46.6		
POUR 2	34.7		
POUR 3	82.2		
TOTALS**	278.5	30,659	27,287

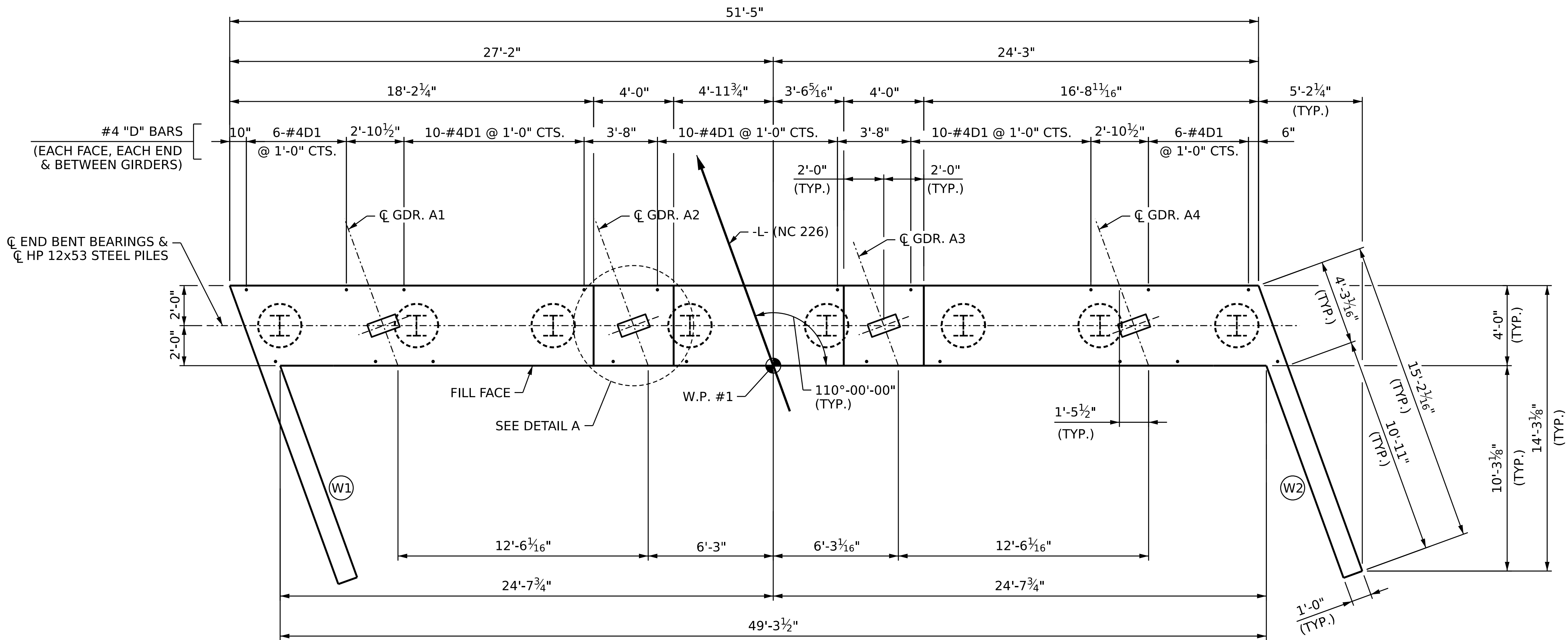
** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. **BR-0100**

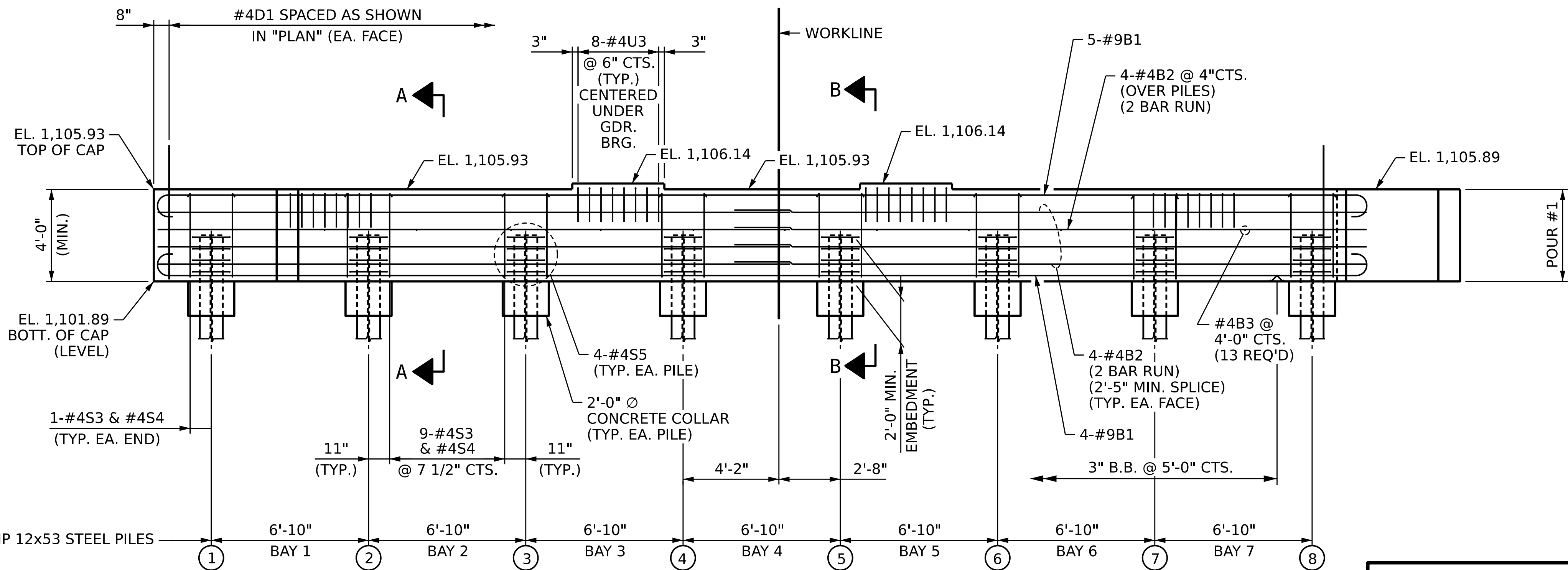
RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				SUPERSTRUCTURE BILL OF MATERIAL & POURING SEQUENCE		
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-21
2			4			30



PLAN



ELEVATION

NOTES:

FOR BEARING DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.

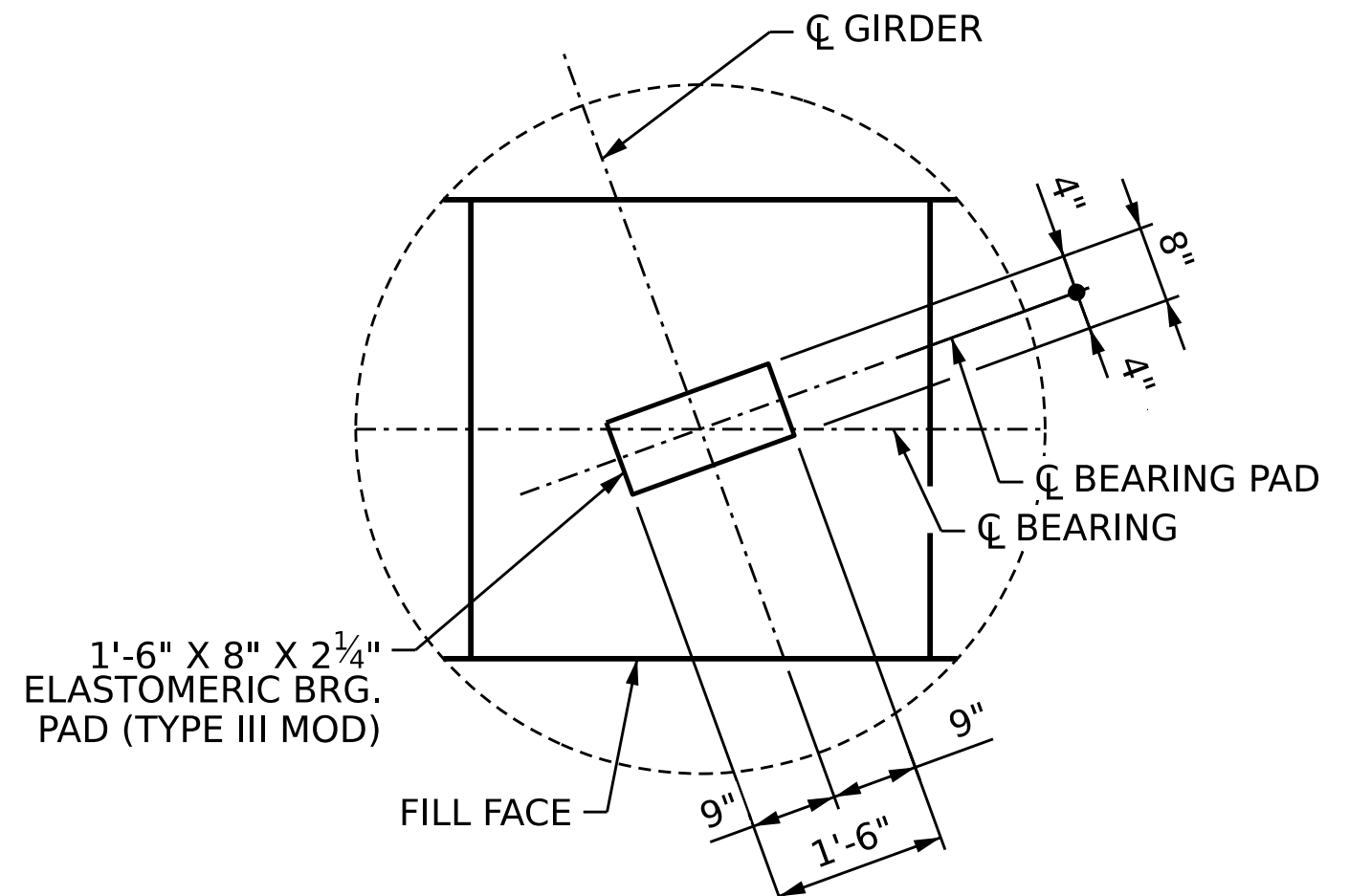
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR SECTION A-A & B-B SHEET 4 OF 4.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF THE WINGS ARE TO BE POURED WITH THE SUPERSTRUCTURE.

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT WING DETAILS.



DETAIL "A"

(TYP. EA. GIRDER, EXCEPT GIRDERS 1 AND 4 HAVE NO PEDESTALS)

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

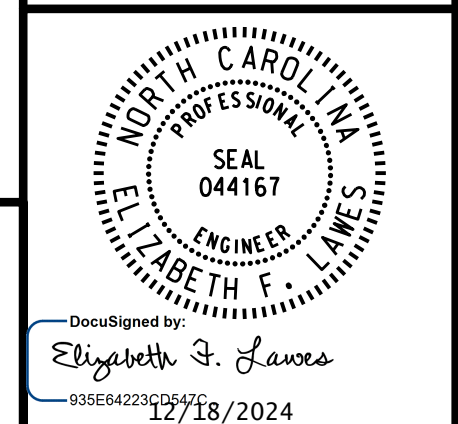
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

**END BENT 1
PLAN & ELEVATION
(INTEGRAL)**

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



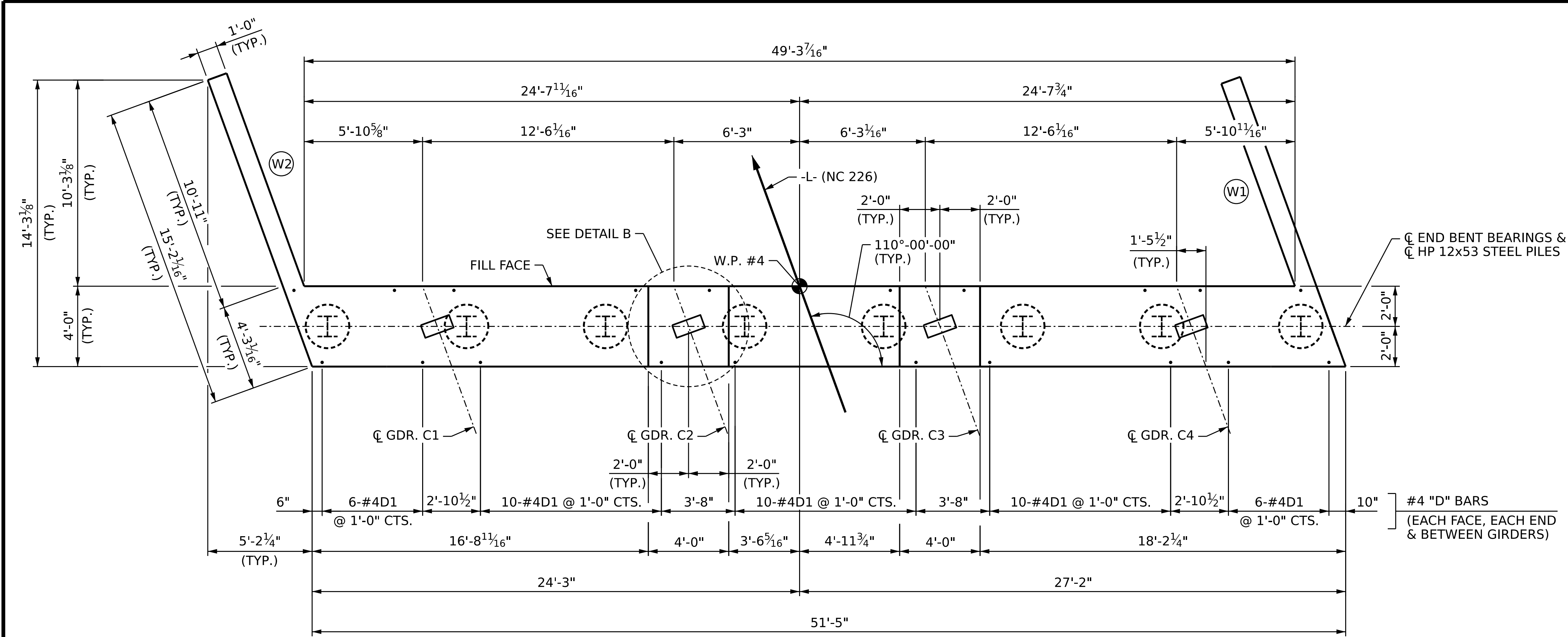
DESIGNED BY: J. WHEATLEY DATE: MAY 2024
DRAWN BY: M. HOBBS DATE: MAY 2024
CHECKED BY: E. LAWES DATE: MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE: MAY 2024



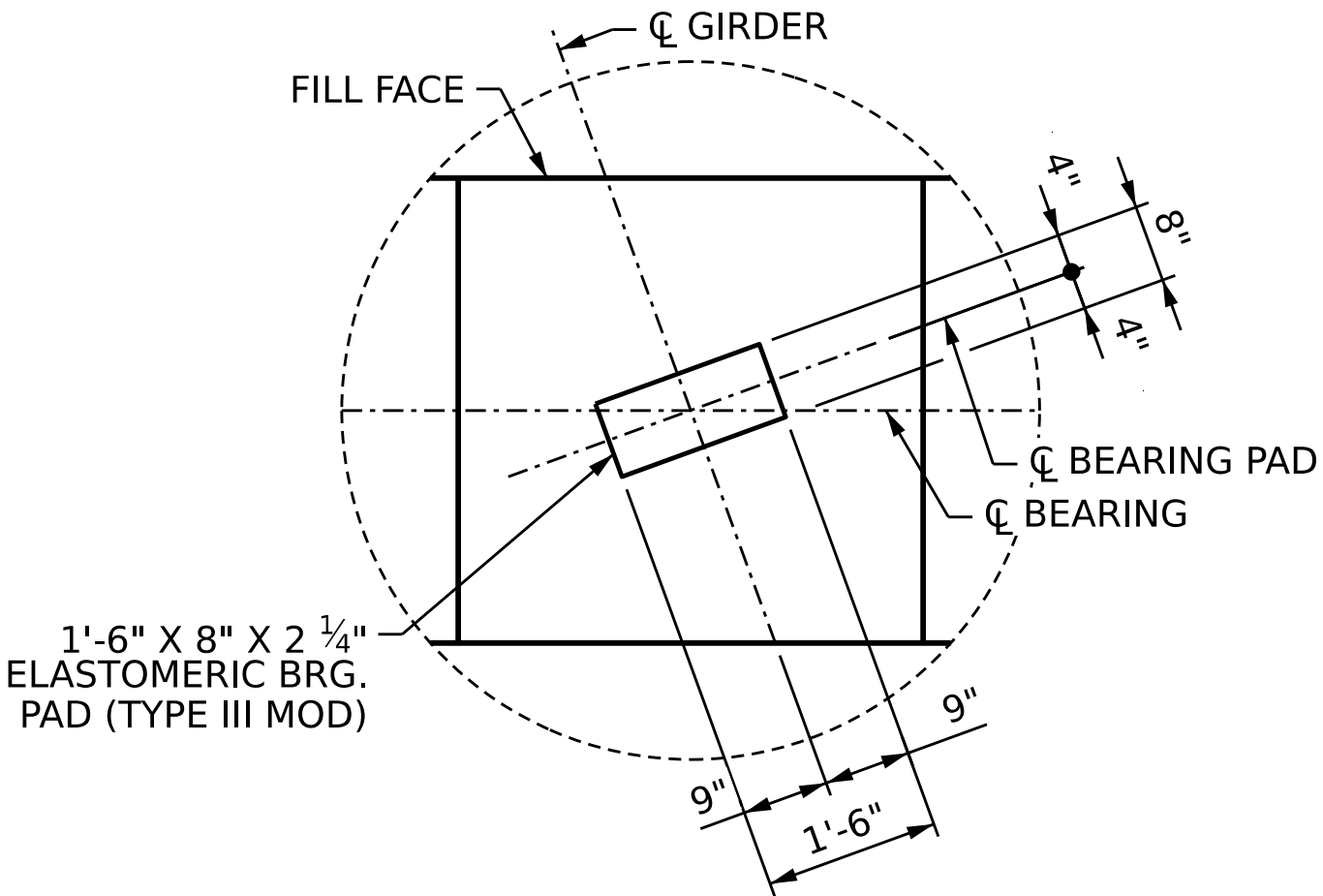
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-22
2			4			TOTAL SHEETS 30

NOTES:
FOR NOTES, SEE END BENT SHEET 1 OF 4.

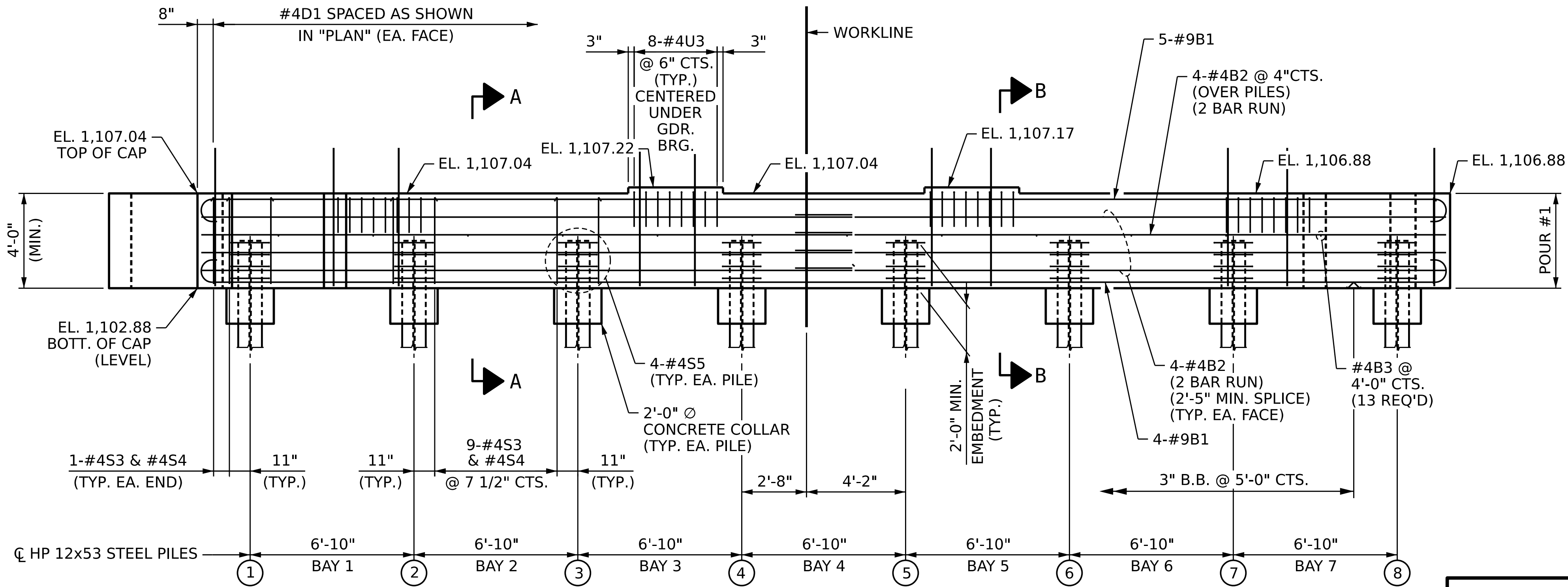


PLAN



DETAIL "B"

(TYP. EA. GIRDER, EXCEPT
GIRDERS 1 AND 4 HAVE NO PEDESTALS)



ELEVATION

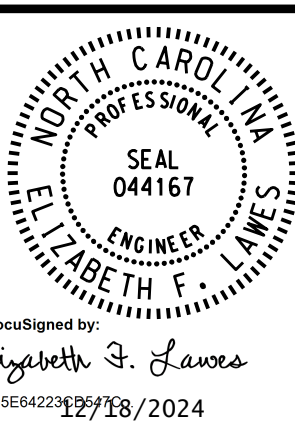
DESIGNED BY: J. WHEATLEY DATE: MAY 2024
DRAWN BY: M. HOBBS DATE: MAY 2024
CHECKED BY: E. LAWES DATE: MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE: MAY 2024

6/3/2024
J:\30900678R\BR-0100\BR-0100\Structures\2.0 Drafting\DCNs\401.045_BR100_SMU_EB21.dgn
USL722989



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 2 OF 4

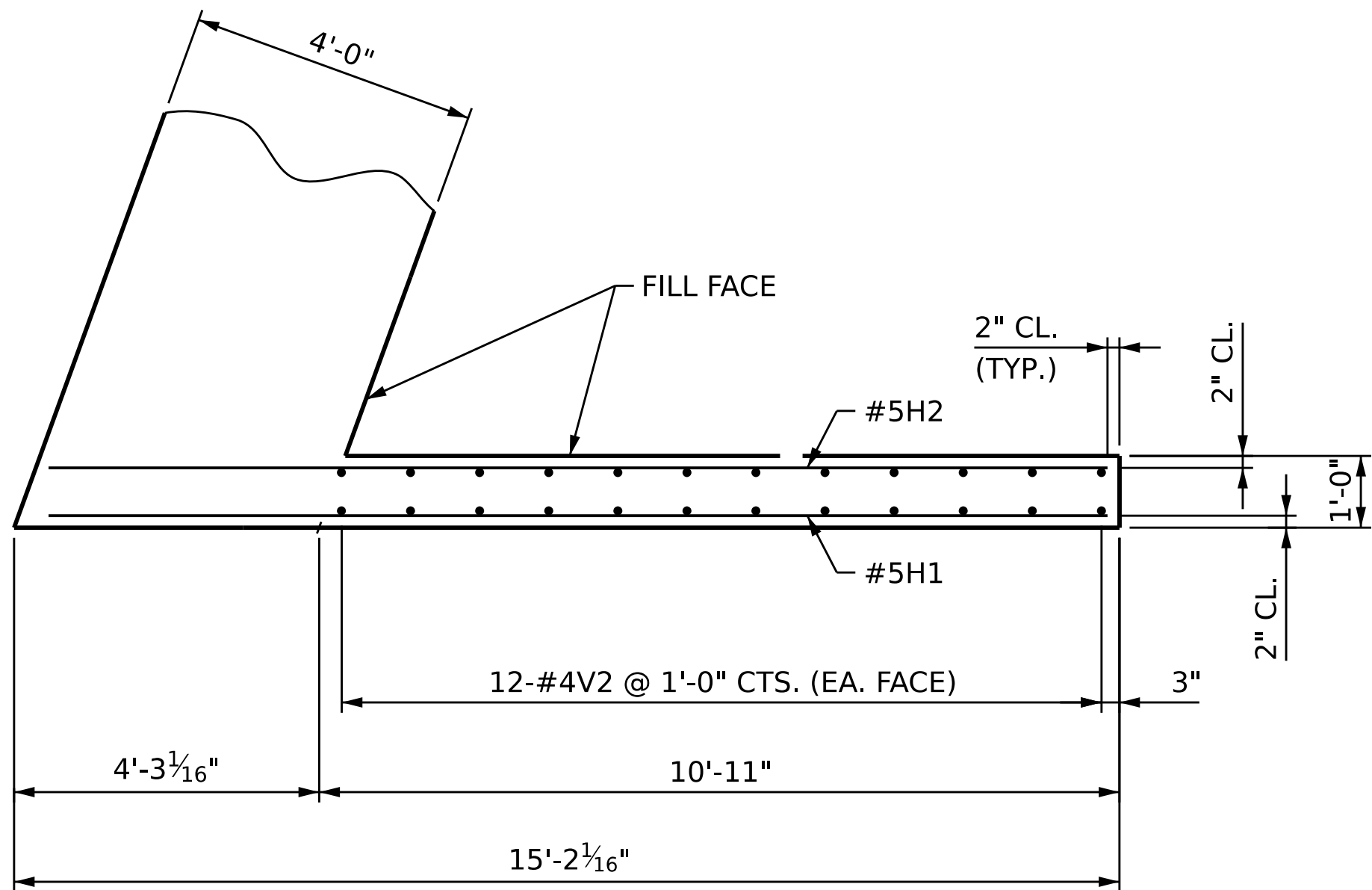
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

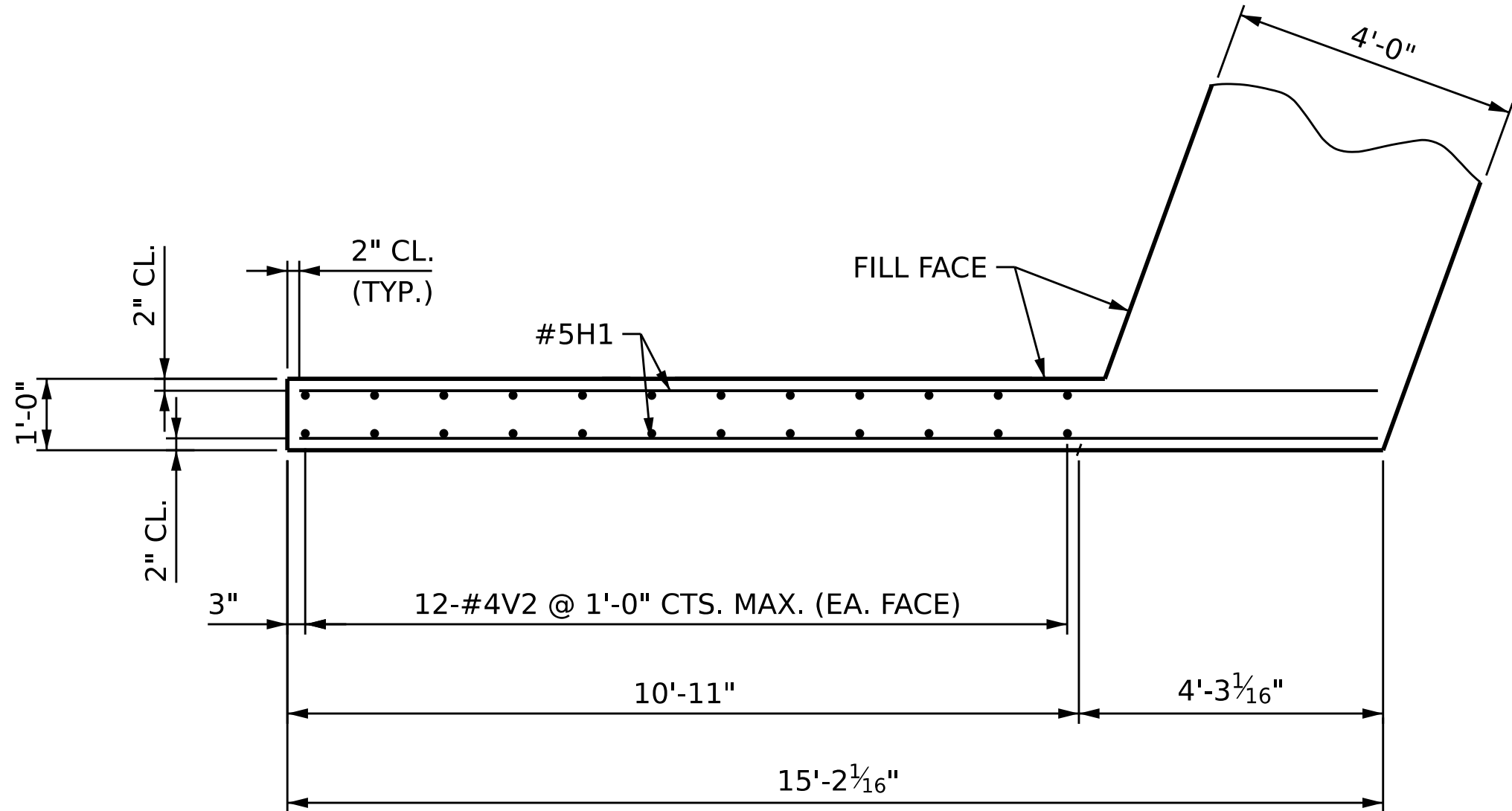
**END BENT 2
PLAN & ELEVATION
(INTEGRAL)**

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

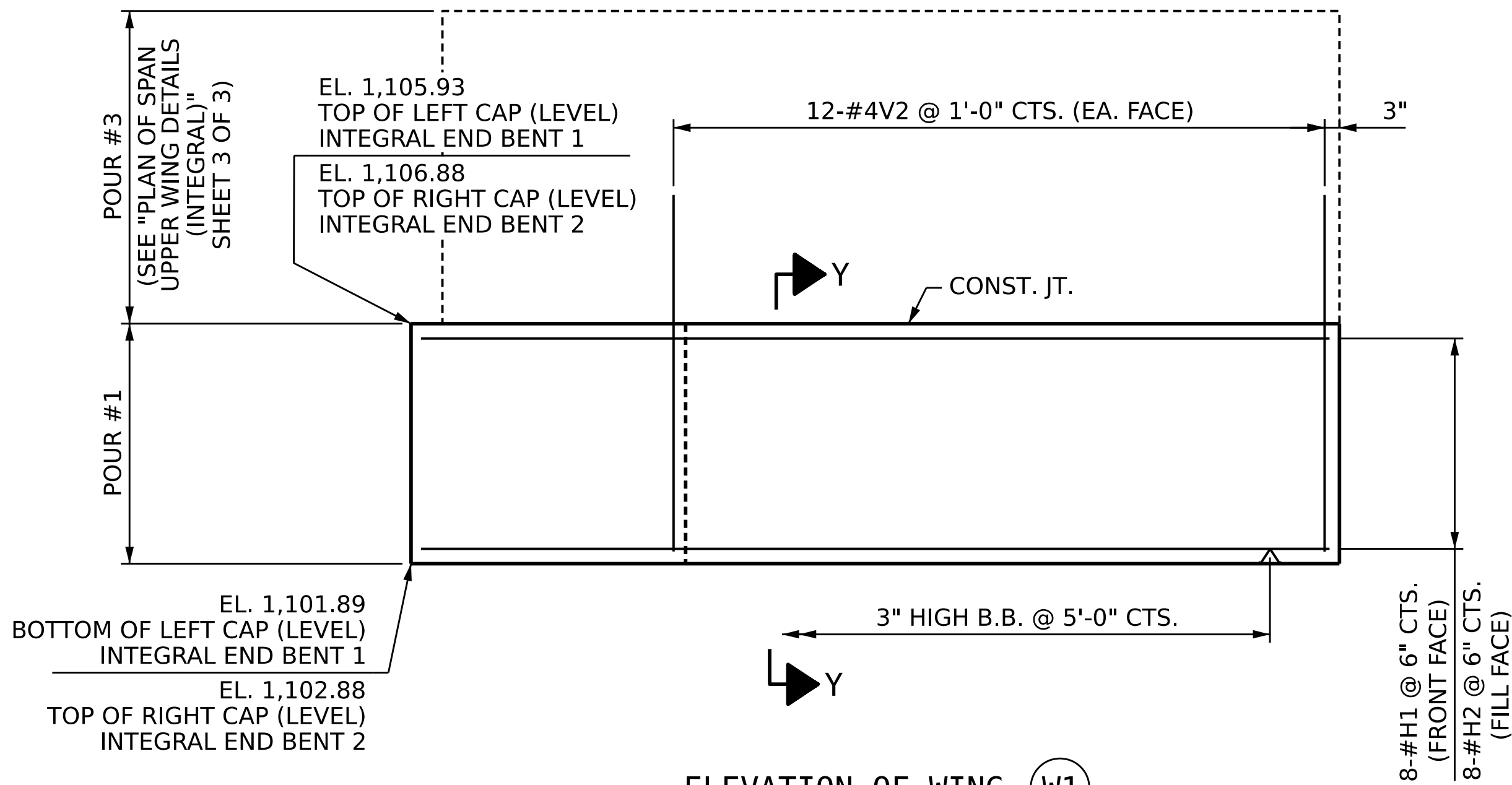
S-23
TOTAL SHEETS
30



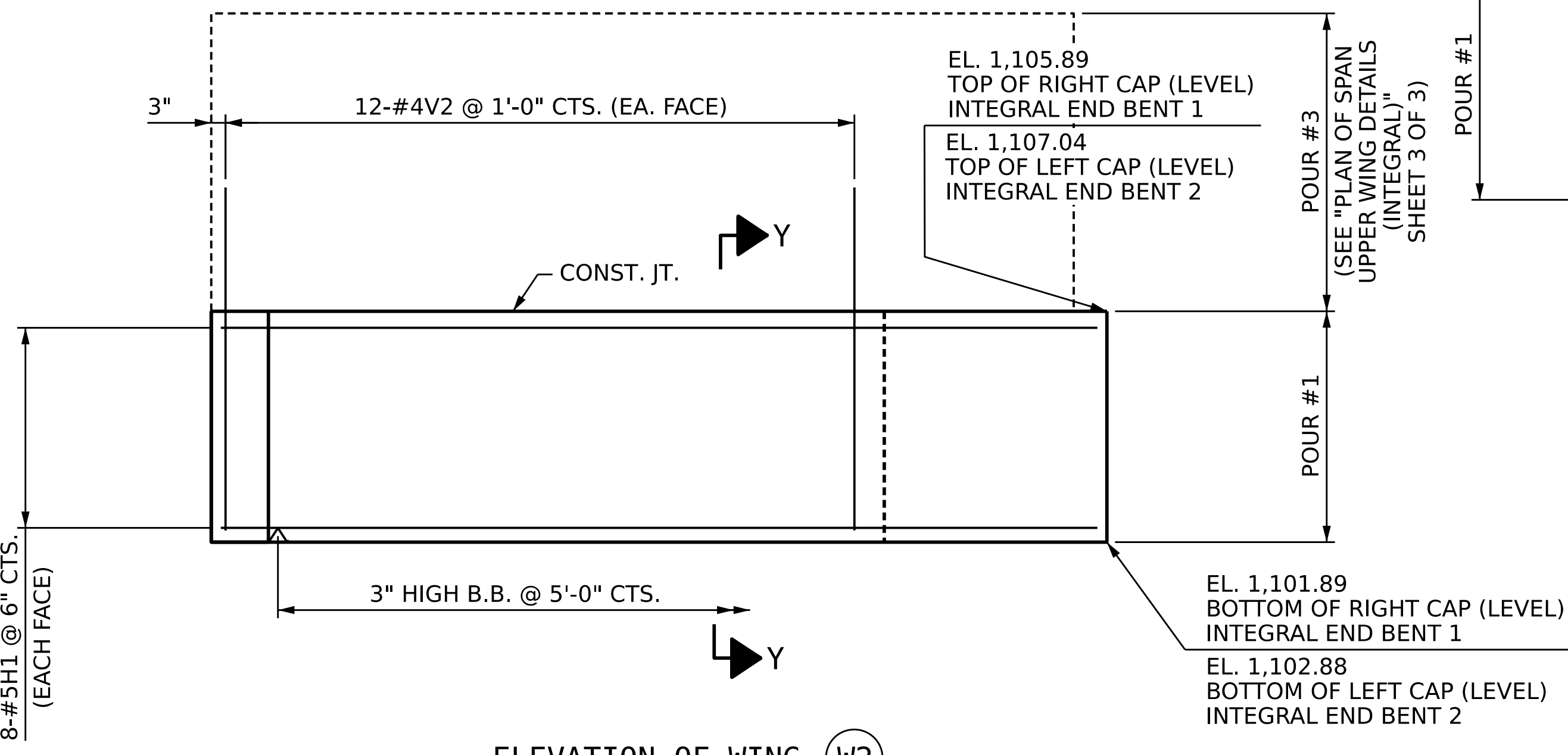
PLAN OF WING (W1)
INTEGRAL END BENT 1 (LEFT)
INTEGRAL END BENT 2 (RIGHT)



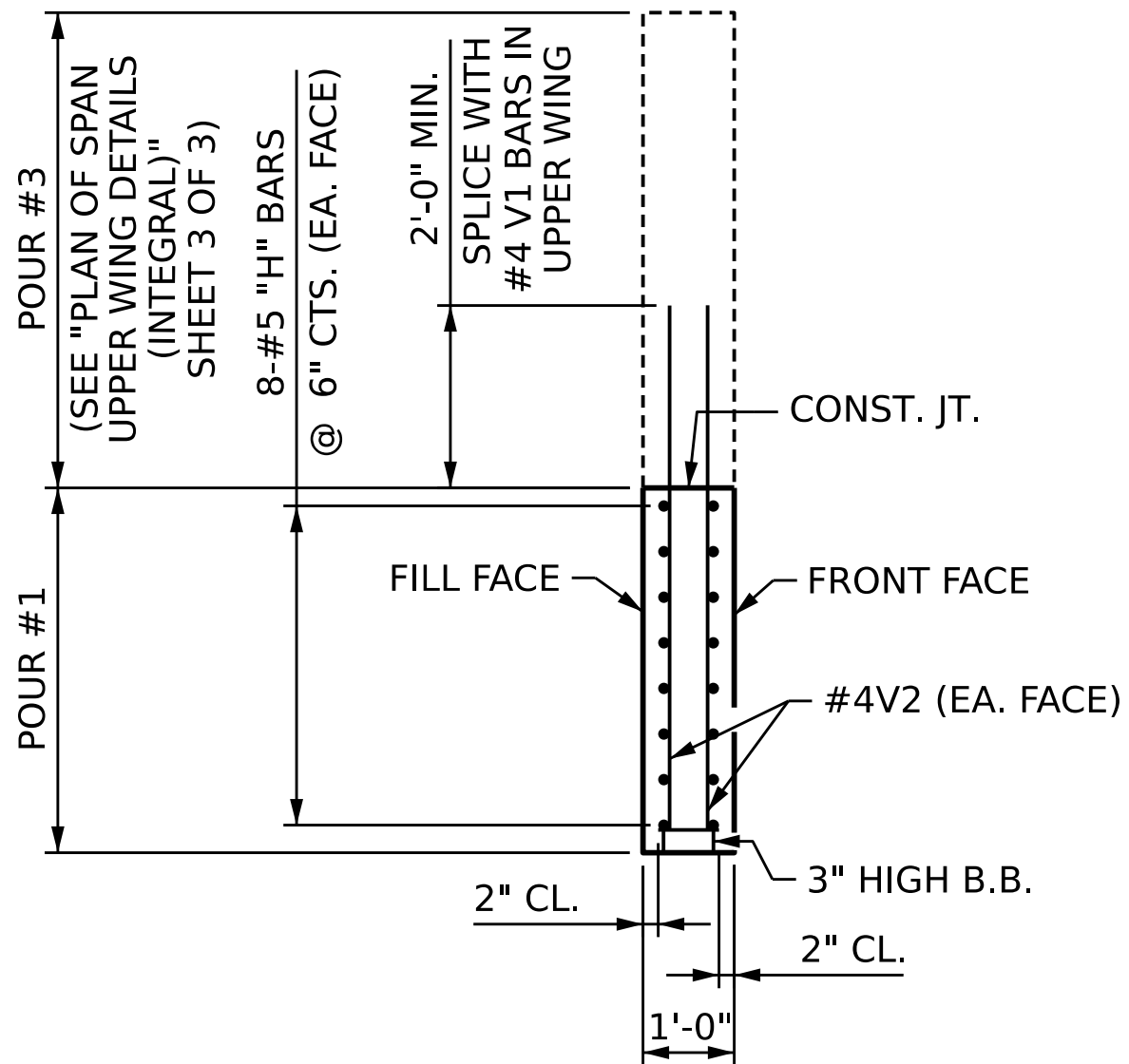
PLAN OF WING (W2)
INTEGRAL END BENT 1 (RIGHT)
INTEGRAL END BENT 2 (LEFT)



ELEVATION OF WING (W1)
INTEGRAL END BENT 1 (LEFT)
INTEGRAL END BENT 2 (RIGHT)



ELEVATION OF WING (W2)
INTEGRAL END BENT 1 (RIGHT)
INTEGRAL END BENT 2 (LEFT)



SECTION Y-Y

LOWER WINGS AT INTEGRAL END BENTS 1 & 2

(FOR UPPER WING REINFORCING STEEL AND DETAILS, SEE
"PLAN OF SPAN UPPER WING DETAILS (INTEGRAL)" SHEET 3 OF 3)

DESIGNED BY: J. WHEATLEY DATE: MAY 2024
DRAWN BY: M. HOBBS DATE: MAY 2024
CHECKED BY: E. LAWES DATE: MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE: MAY 2024

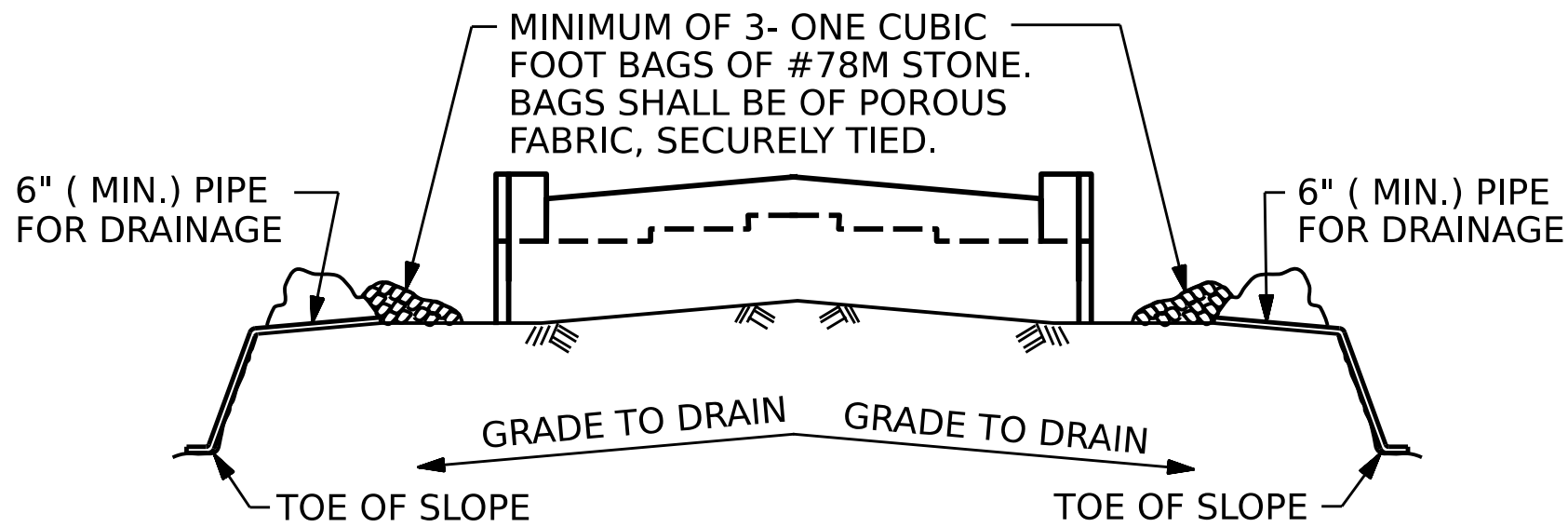
wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
NORTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
SEAL
044167
ELIZABETH F. LAWES
12/18/2024

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE END BENTS 1 & 2 LOWER WINGS (INTEGRAL)						SHEET NO.		
REVISIONS						S-24		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS		
1			3			30		
2			4					

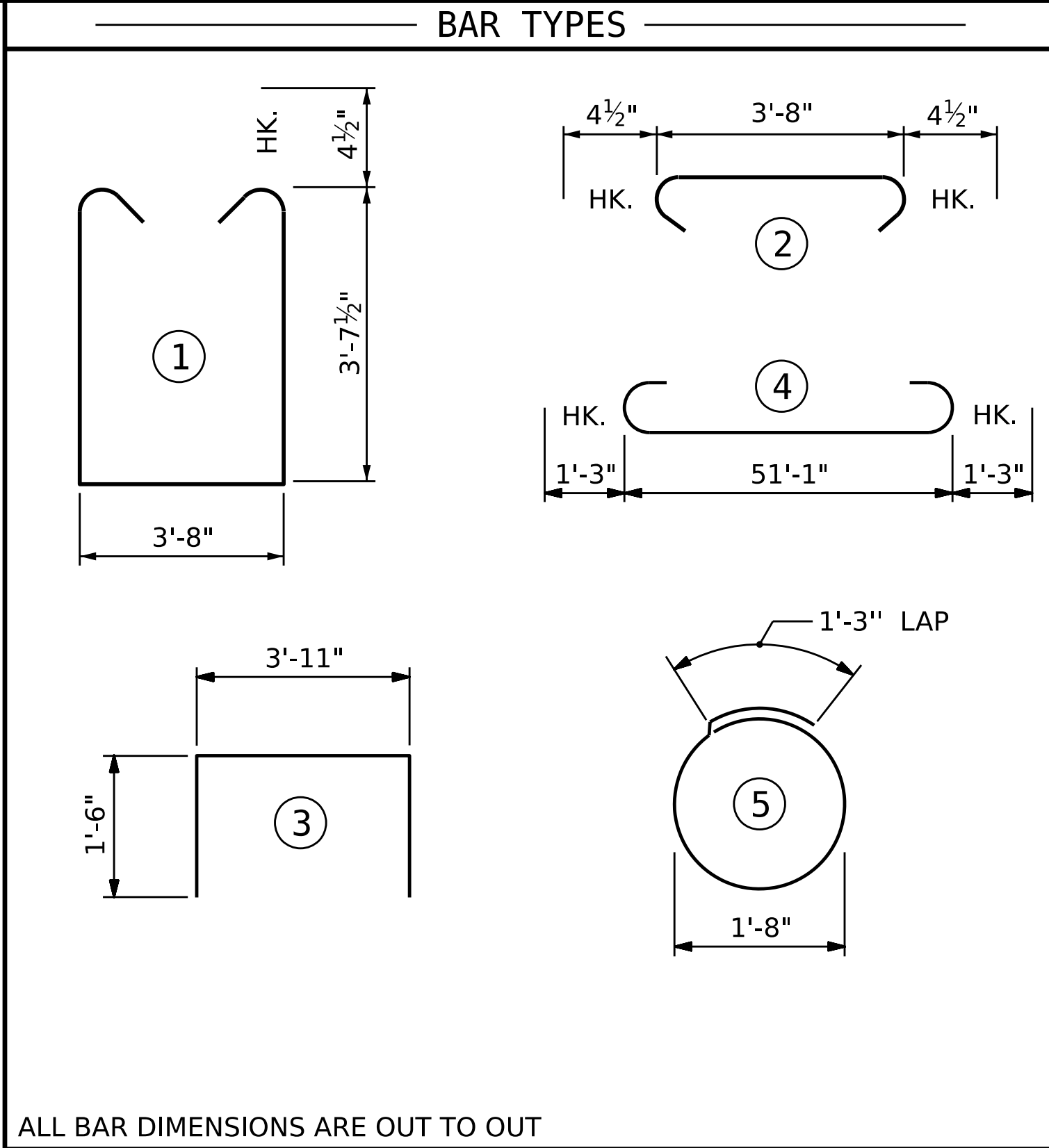


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

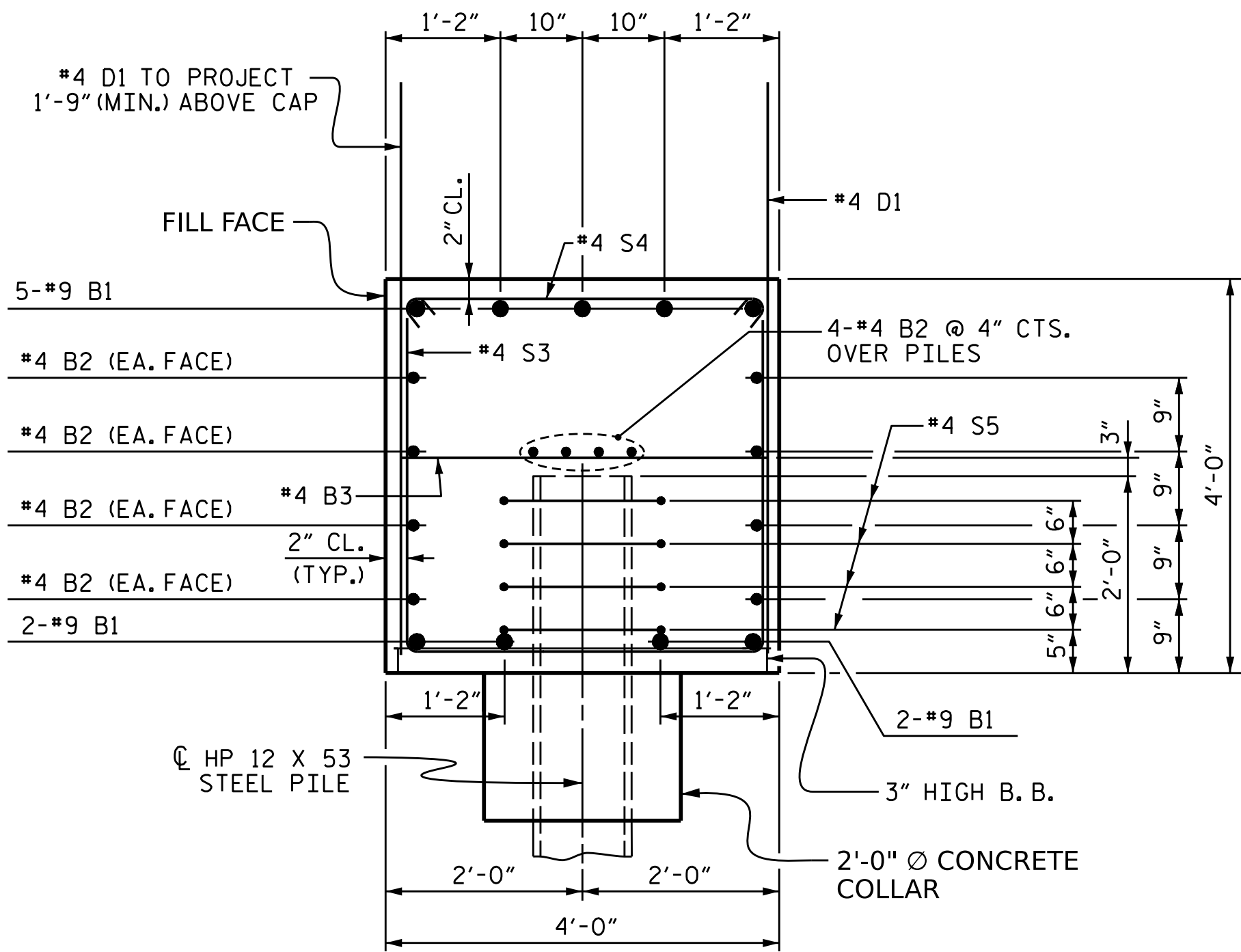
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

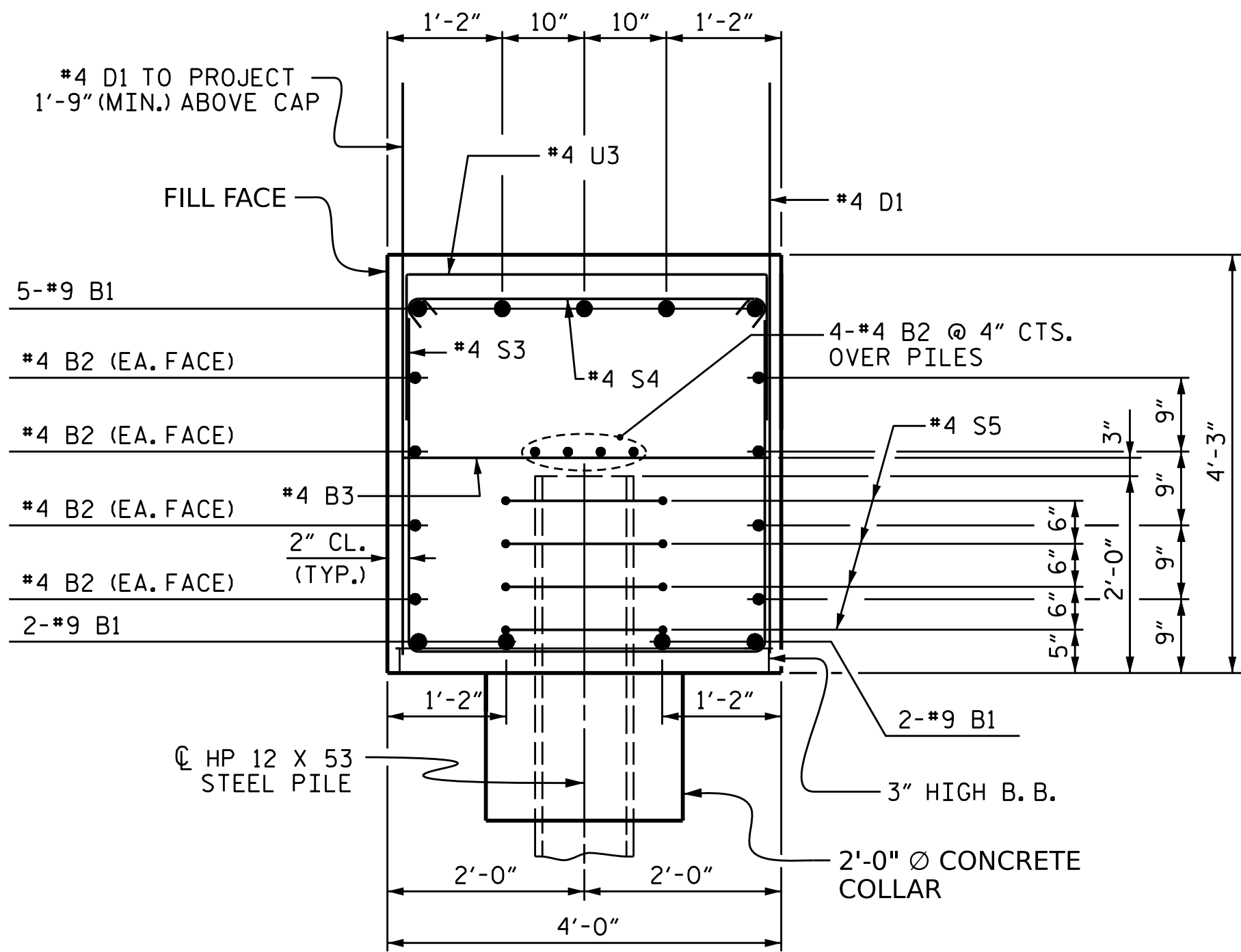


BILL OF MATERIAL											
END BENT 1						END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#9	4	53'-7"	1640	B1	9	#9	4	53'-7"	1640
B2	24	#4	STR	26'-9"	429	B2	24	#4	STR	26'-9"	429
B3	13	#4	STR	3'-8"	32	B3	13	#4	STR	3'-8"	32
D1	84	#4	STR	6'-0"	337	D1	84	#4	STR	6'-0"	337
H1	24	#5	STR	14'-9"	369	H1	24	#5	STR	14'-9"	369
H2	8	#5	STR	14'-6"	121	H2	8	#5	STR	14'-6"	121
S3	65	#4	1	11'-8"	507	S3	65	#4	1	11'-8"	507
S4	65	#4	2	4'-5"	192	S4	65	#4	2	4'-5"	192
S5	32	#4	5	6'-6"	139	S5	32	#4	5	6'-6"	139
V2	48	#4	STR	6'-0"	192	V2	48	#4	STR	6'-0"	192
U3	32	#4	3	6'-11"	148	U3	32	#4	3	6'-11"	148
REINFORCING STEEL						REINFORCING STEEL					
CLASS "A" CONCRETE BREAKDOWN						CLASS "A" CONCRETE BREAKDOWN					
POUR #1 - CAP & LOWER WING C.Y. 34.0 POUR #3 - UPPER WING*						POUR #1 - CAP & LOWER WING C.Y. 34.0 POUR #3 - UPPER WING*					
CLASS "A" CONCRETE TOTAL C.Y. 34.0						CLASS "A" CONCRETE TOTAL C.Y. 34.0					

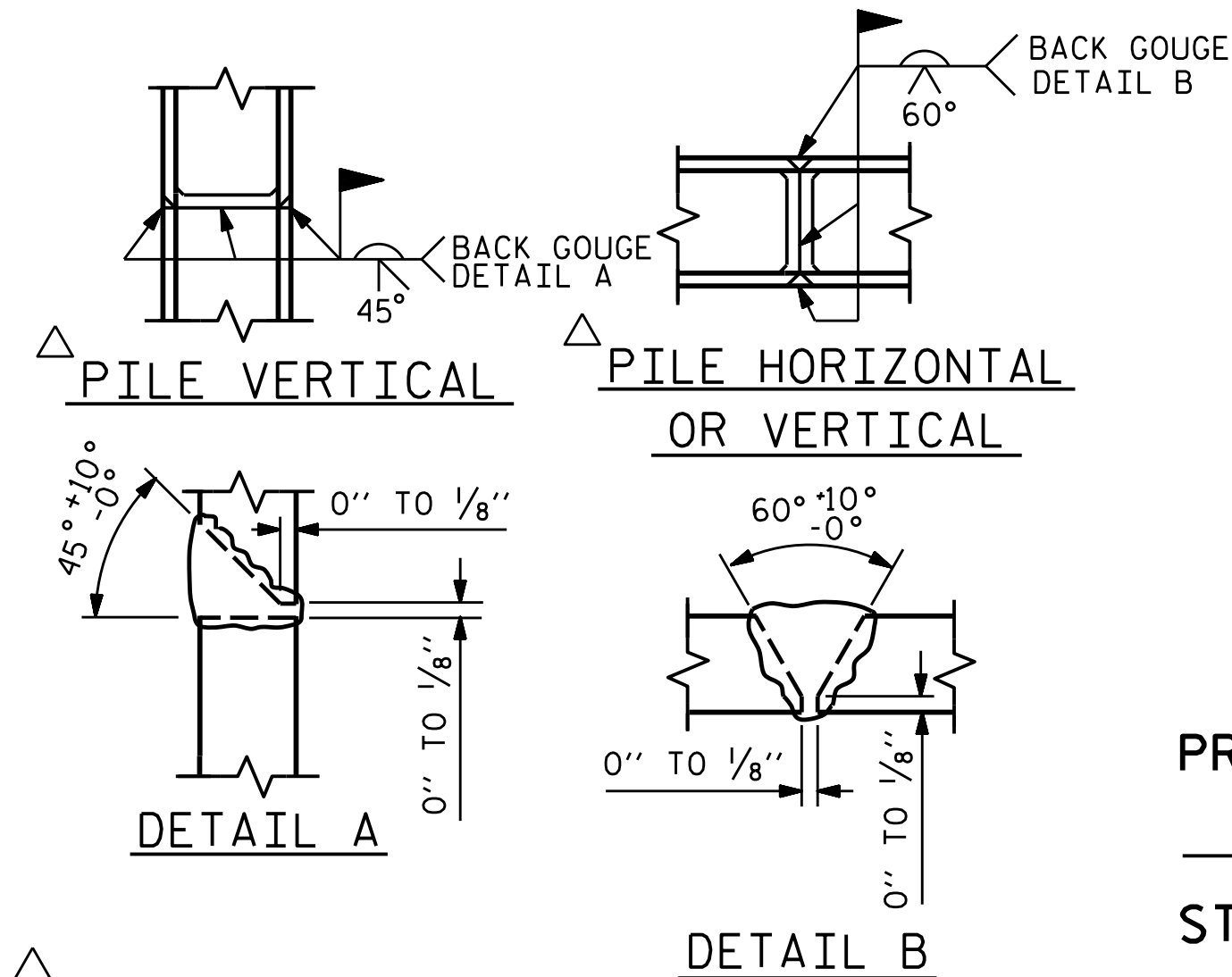
*UPPER WING QUANTITIES INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL SHEET S-20.



SECTION A-A



SECTION B-B



PILE SPLICE DETAILS

DESIGNED BY: J. WHEATLEY DATE : MAY 2024
DRAWN BY: M. HOBBS DATE : MAY 2024
CHECKED BY: E. LAWES DATE : MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : MAY 2024

wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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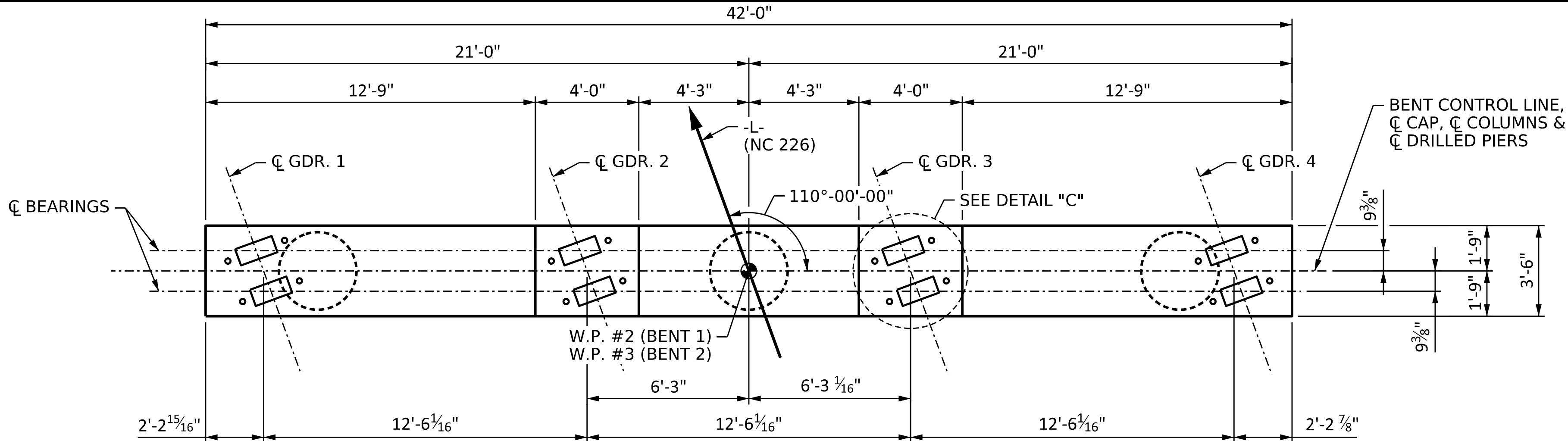
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENTS 1 & 2
DETAILS &
BILL OF MATERIAL

935E64223CD547C
12/18/2024

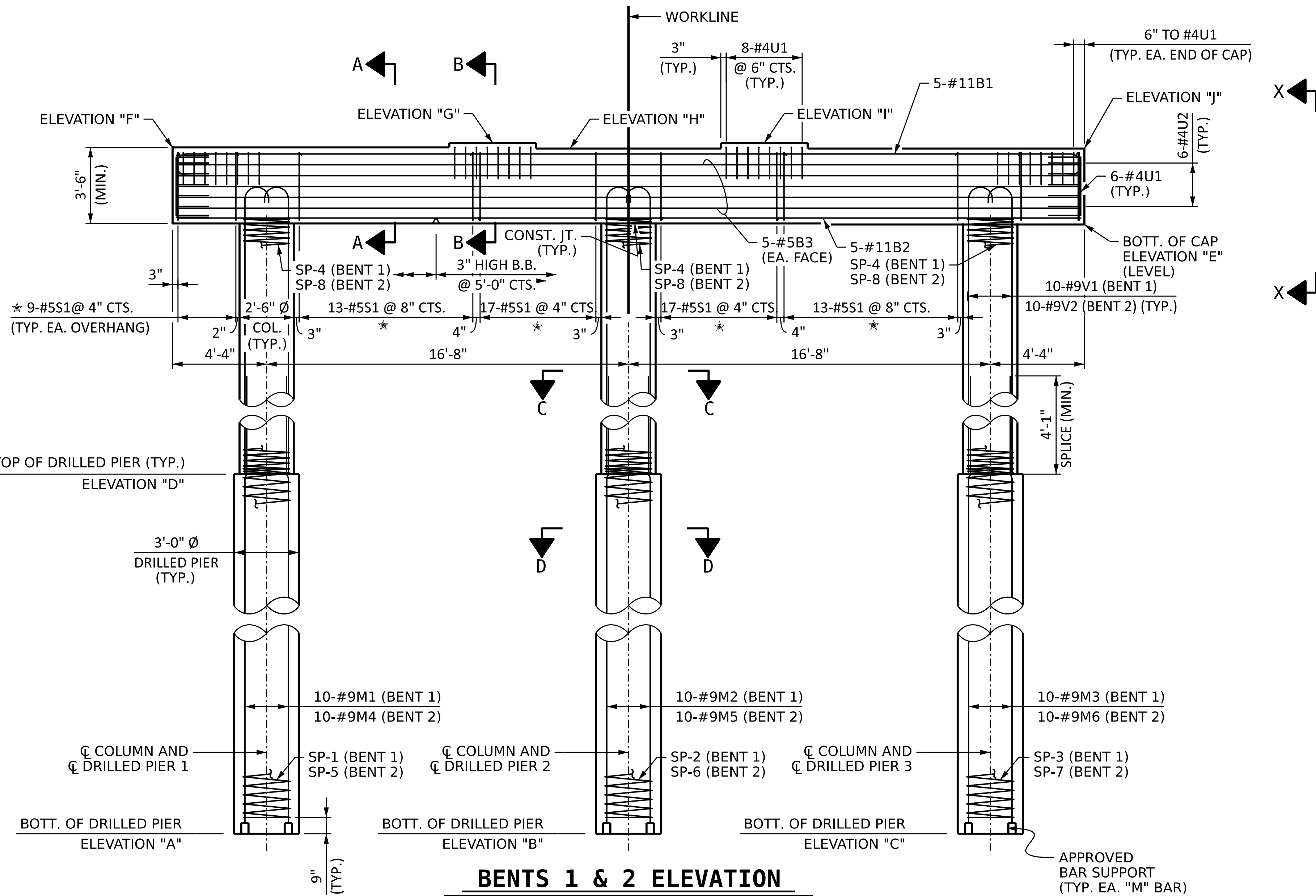
PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 4 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-25
2			4			TOTAL SHEETS 30

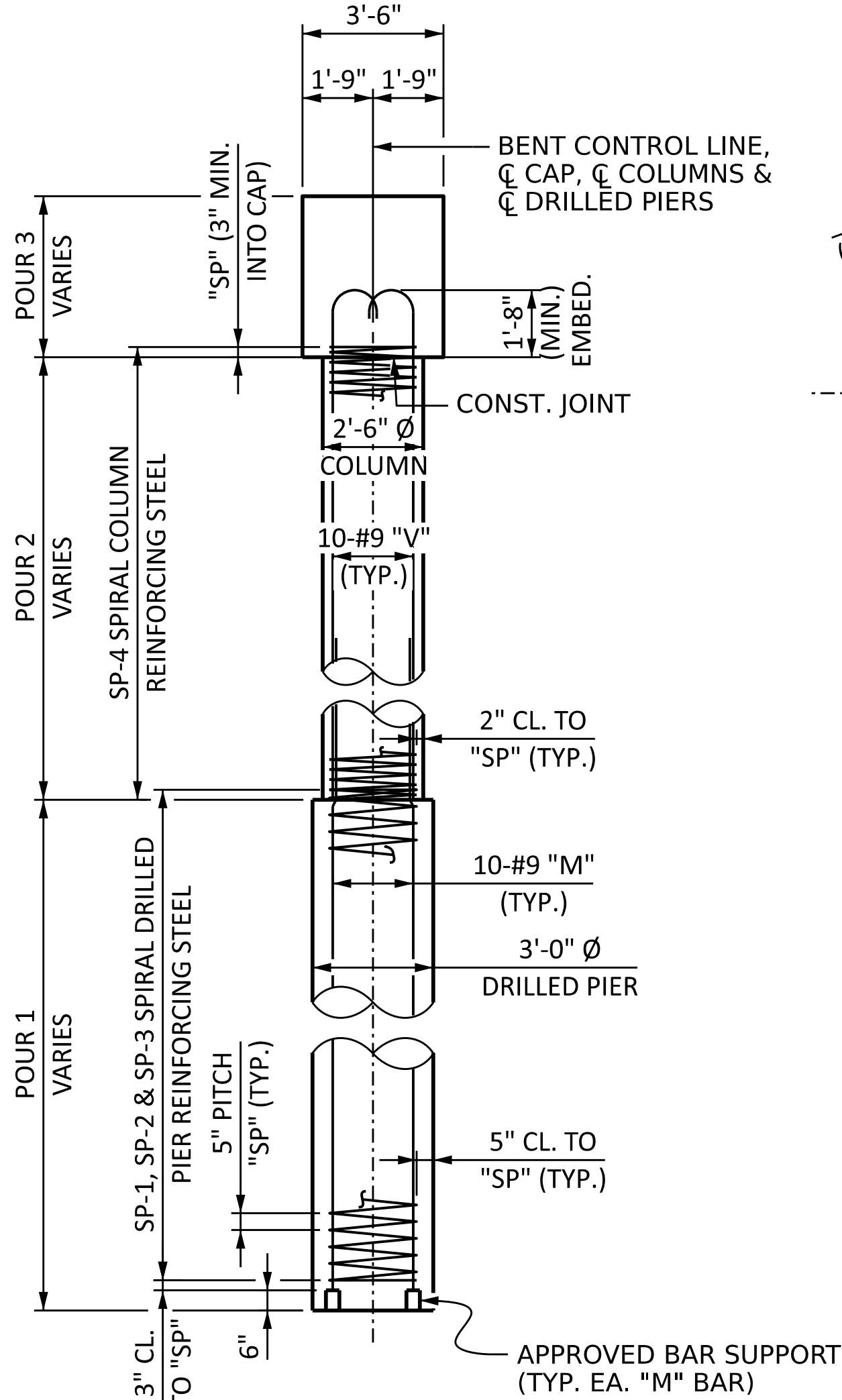


BENTS 1 & 2 PLAN



BENTS 1 & 2 ELEVATION

BENT ELEVATION TABLE		
ELEVATION	BENT 1	BENT 2
"A"	1072.17	1080.96
"B"	1075.17	1082.46
"C"	1078.17	1083.96
"D"	1093.17	1093.96
"E"	1,102.42	1,102.79
"F"	1,105.96	1,106.40
"G"	1,106.17	1,106.59
"H"	1,105.96	1,106.40
"I"	1,106.17	1,106.55
"J"	1,105.92	1,106.28



END ELEVATION

NOTE: BENT 1 SHOWN, BENT 2 SIMILAR

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

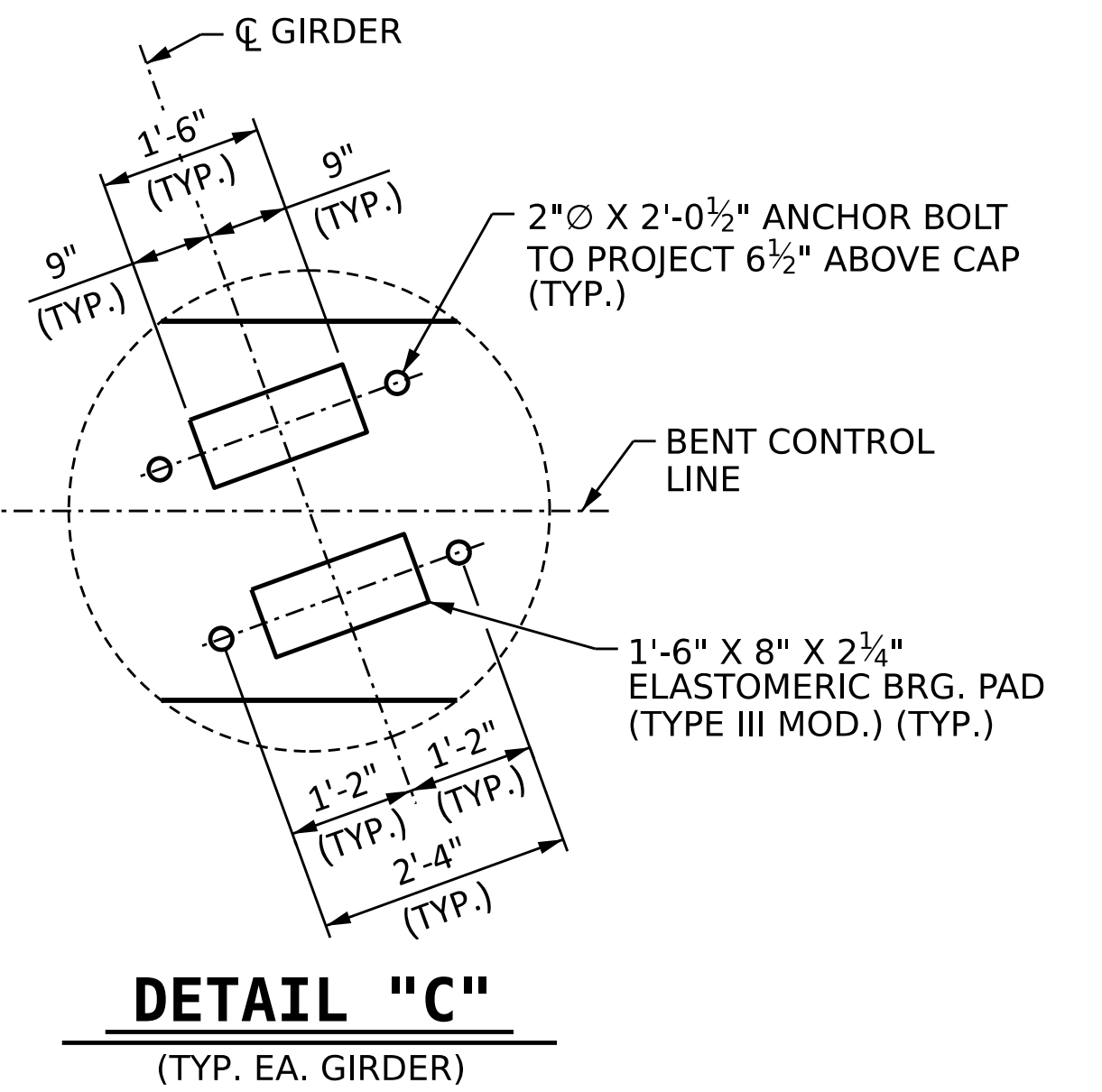
★ INVERT ALTERNATE STIRRUPS

FOR SECTIONS A-A, B-B, C-C AND D-D, AND VIEW X-X, SEE SHEET 2 OF 2.

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

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

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



DETAIL C

(TYP. EA. GIRDER)

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

**BENTS 1 & 2
PLAN & ELEVATION**

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S-26
2			4	TOTAL SHEETS 30

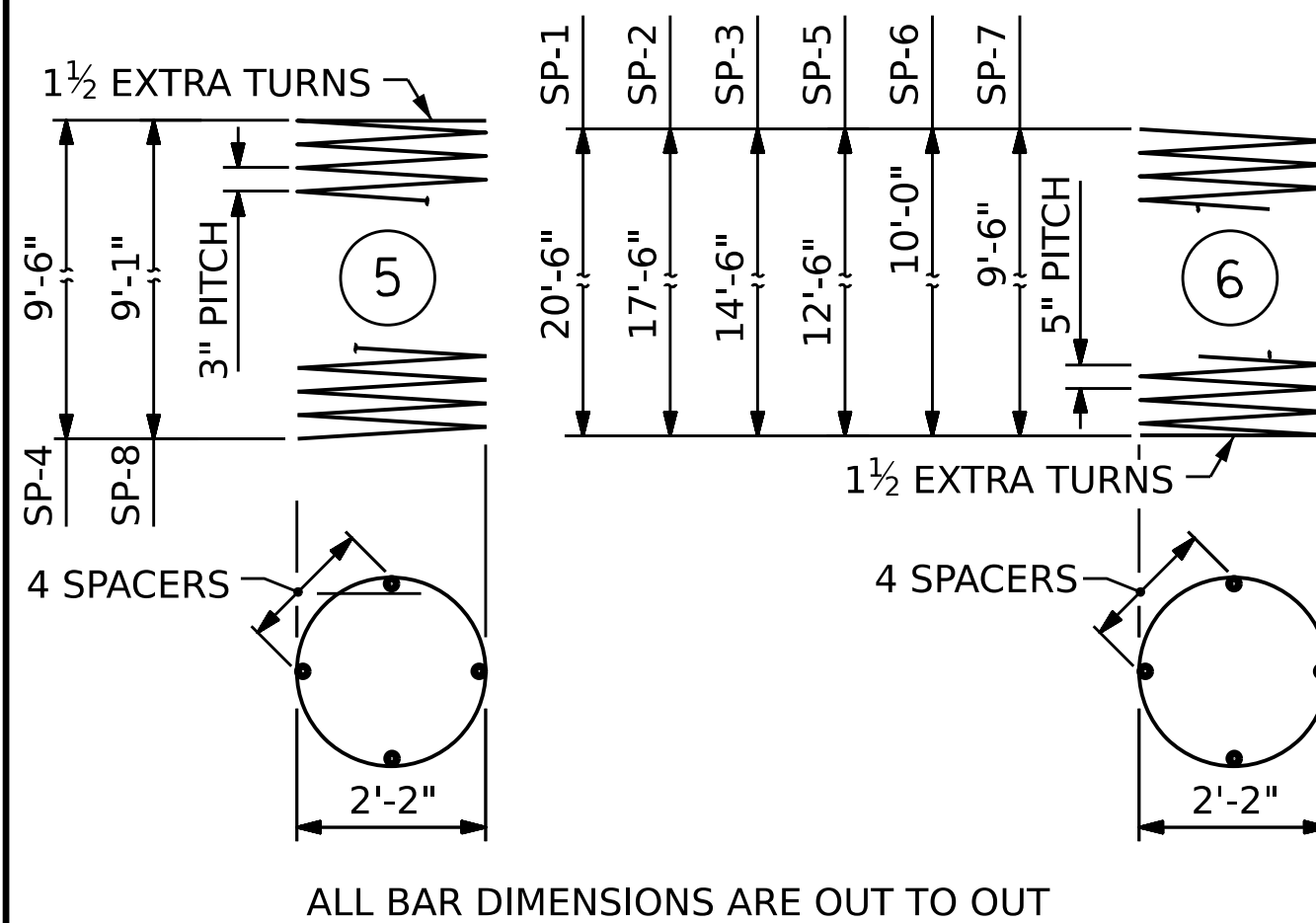
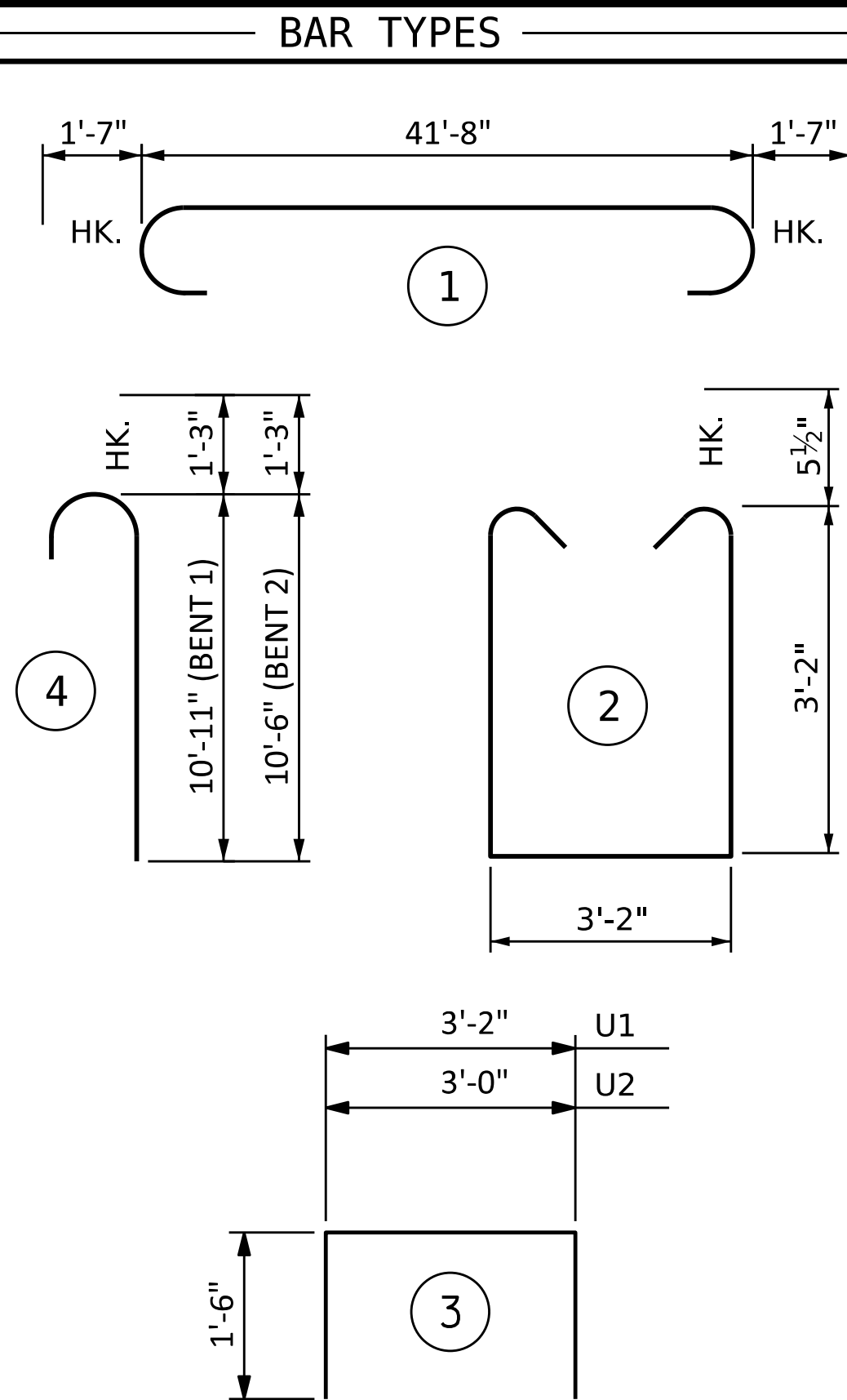
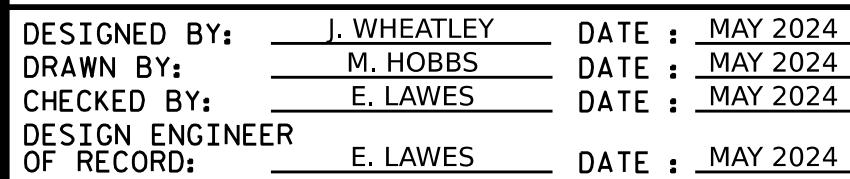
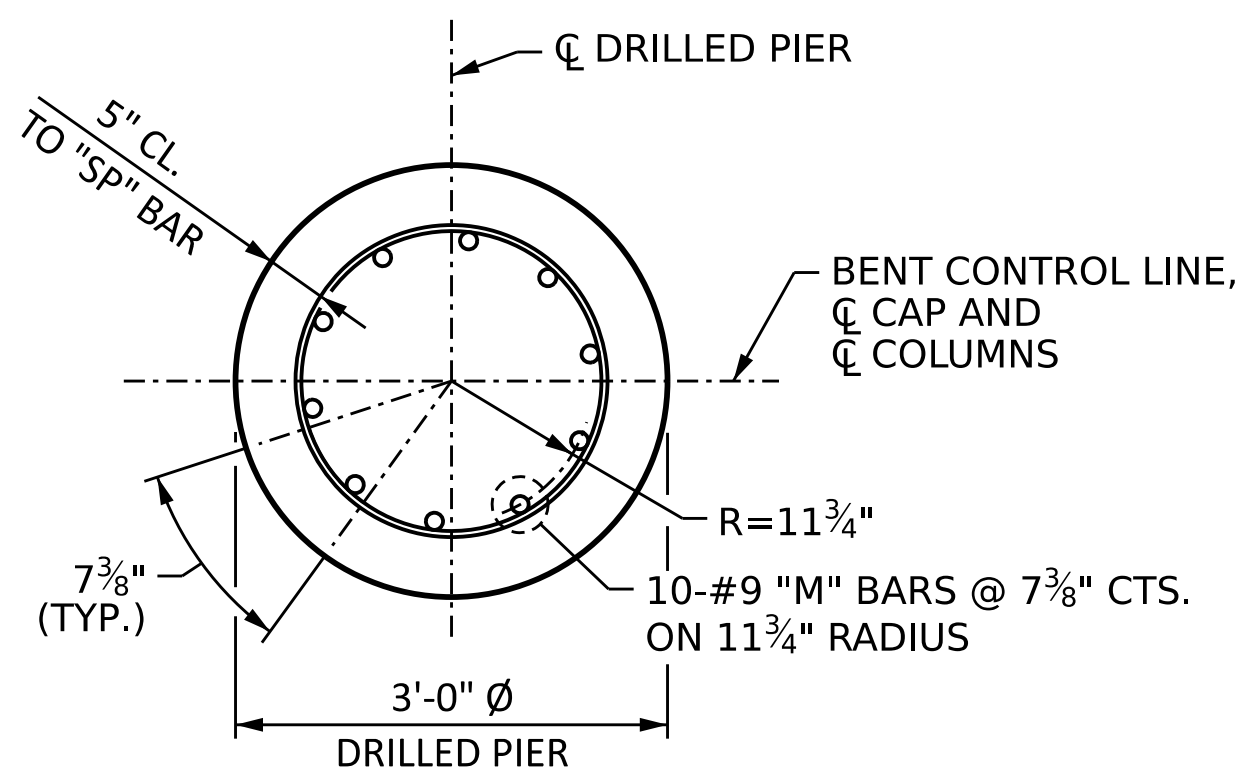
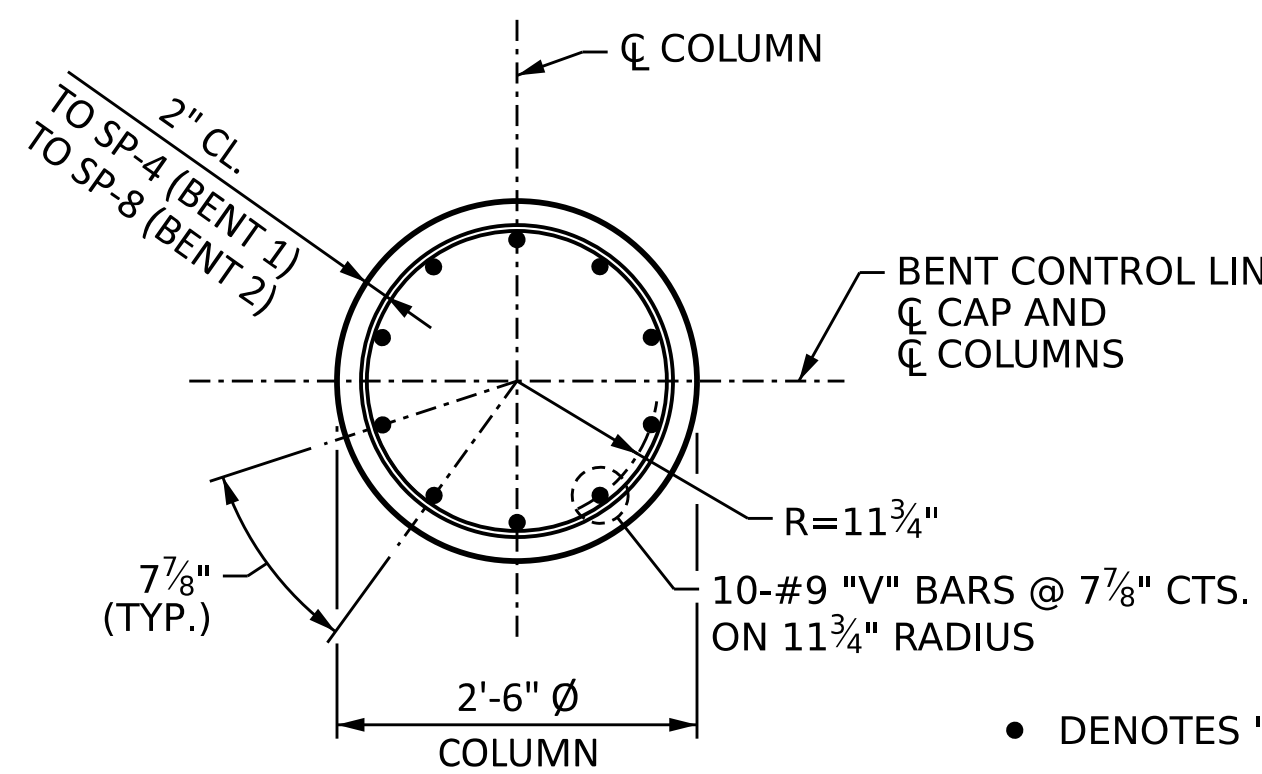
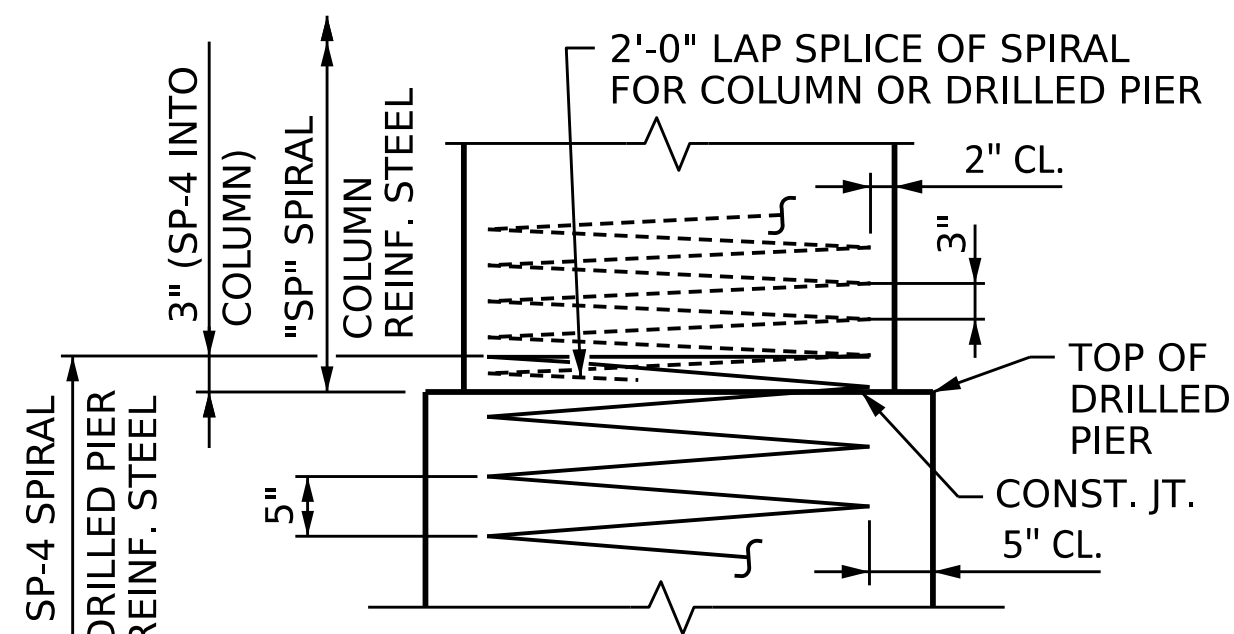
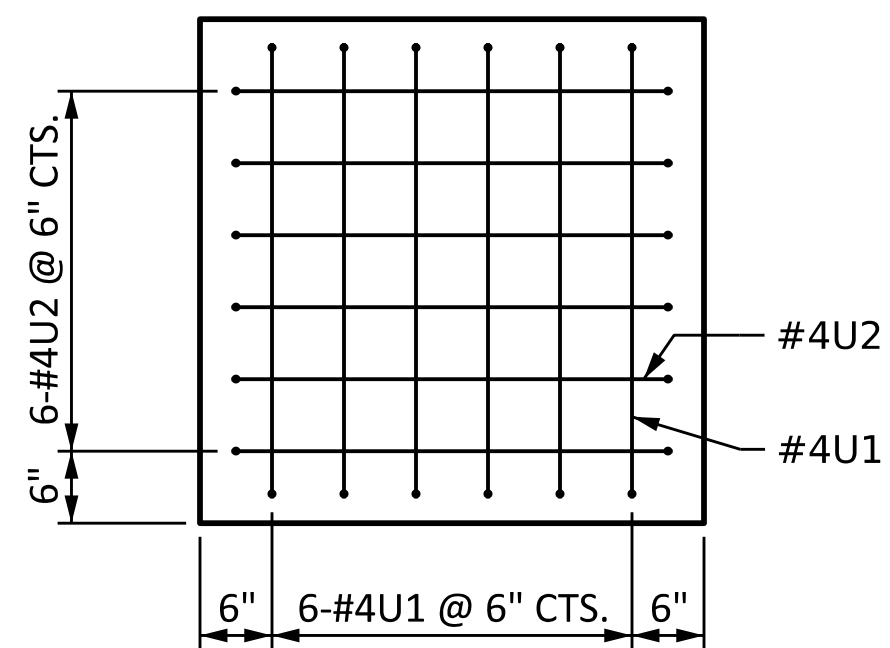
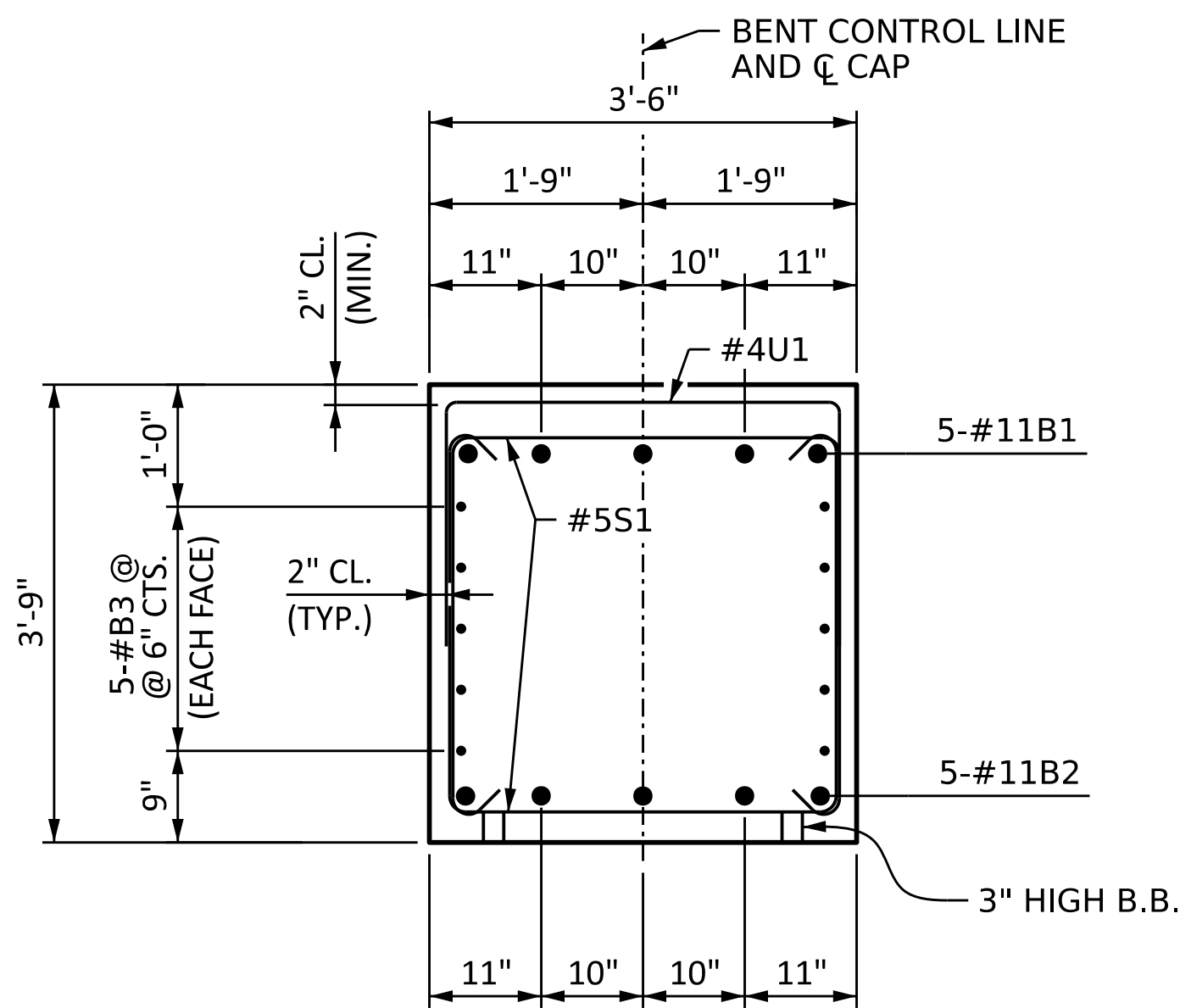
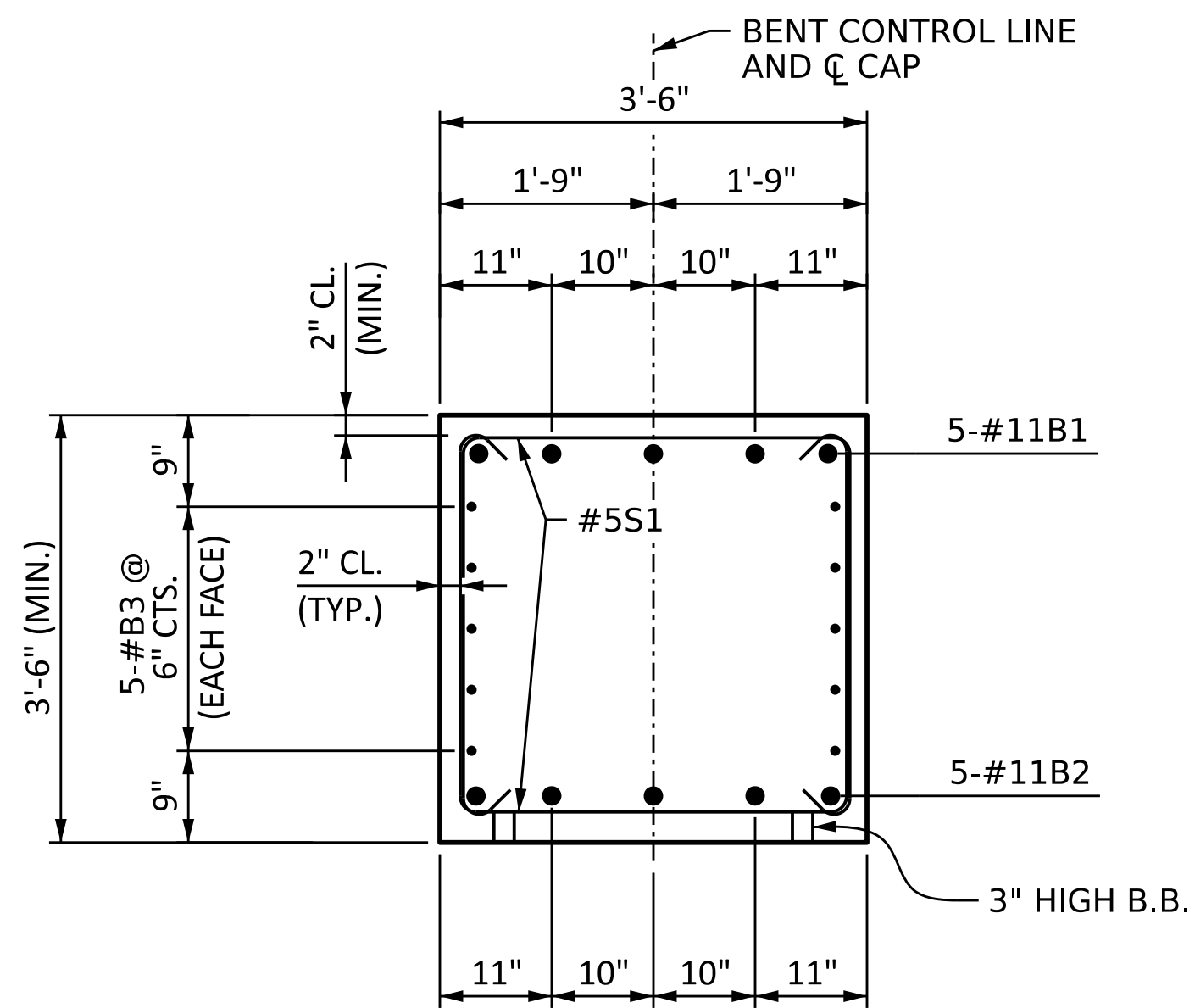
DESIGNED BY: J. WHEATLEY DATE: MAY 2024
DRAWN BY: M. HOBBS DATE: MAY 2024
CHECKED BY: E. LAWES DATE: MAY 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE: MAY 2024

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SEAL
044167
2/6/2025
ENGINEER
ELIZABETH F. LAWES

Designed by:
Elizabeth F. Lawes
93564232C0547C...



BILL OF MATERIAL											
BENT 1						BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#11	1	44'-10"	1191	B1	5	#11	1	44'-10"	1191
B2	5	#11	STR	41'-8"	1107	B2	5	#11	STR	41'-8"	1107
B3	10	#5	STR	41'-8"	435	B3	10	#5	STR	41'-8"	435
M1	10	#9	STR	27'-7"	938	M4	10	#9	STR	19'-7"	666
M2	10	#9	STR	24'-7"	836	M5	10	#9	STR	18'-1"	615
M3	10	#9	STR	21'-7"	734	M6	10	#9	STR	16'-7"	564
S1	78	#5	2	10'-5"	847	S1	78	#5	2	10'-5"	847
U1	44	#4	3	6'-2"	181	U1	44	#4	3	6'-2"	181
U2	12	#4	3	6'-0"	48	U2	12	#4	3	6'-0"	48
V1	30	#9	4	12'-2"	1241	V2	30	#9	4	11'-9"	1199
REINFORCING STEEL 7,558						REINFORCING STEEL 6,853					
SP-1	1	*	6	349'-10"	365	SP-5	1	*	6	220'-3"	230
SP-2	1	*	6	302'-1"	315	SP-6	1	*	6	193'-0"	201
SP-3	1	*	6	254'-4"	265	SP-7	1	*	6	172'-6"	180
SP-4	3	**	5	272'-6"	546	SP-8	3	**	5	258'-10"	519
SPIRAL COLUMN REINFORCING STEEL LBS. 1,491						SPIRAL COLUMN REINFORCING STEEL LBS. 1,130					
* THE SPIRAL SP-1, SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR. **THE SPIRAL SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.						* THE SPIRAL SP-1, SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR. **THE SPIRAL SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
CLASS "A" CONCRETE BREAKDOWN						CLASS "A" CONCRETE BREAKDOWN					
POUR #2 - COLUMNS				5.0 C.Y.		POUR #2 - COLUMNS				4.8 C.Y.	
POUR #3 - CAP				9.8 C.Y.		POUR #3 - CAP				9.8 C.Y.	
CLASS "A" CONCRETE TOTAL				14.8 C.Y.		CLASS "A" CONCRETE TOTAL				14.6 C.Y.	
3'-0" Ø DRILLED PIERS						3'-0" Ø DRILLED PIERS					
POUR #1 - DRILLED PIERS				C.Y. 14.1		POUR #1 - DRILLED PIERS				C.Y. 9.0	

PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: 18+28.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

SUBSTRUCTURE

BENTS 1 & 2 DETAILS AND BILL OF MATERIAL

BILL OF MATERIAL

REVISIONS						SHEET NO. 5-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

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DocuSigned by:
Elizabeth F. Lawes
935E84223C0D547C...



DocuSigned by:
Elizabeth F. Lawes
935E64223CD547C...

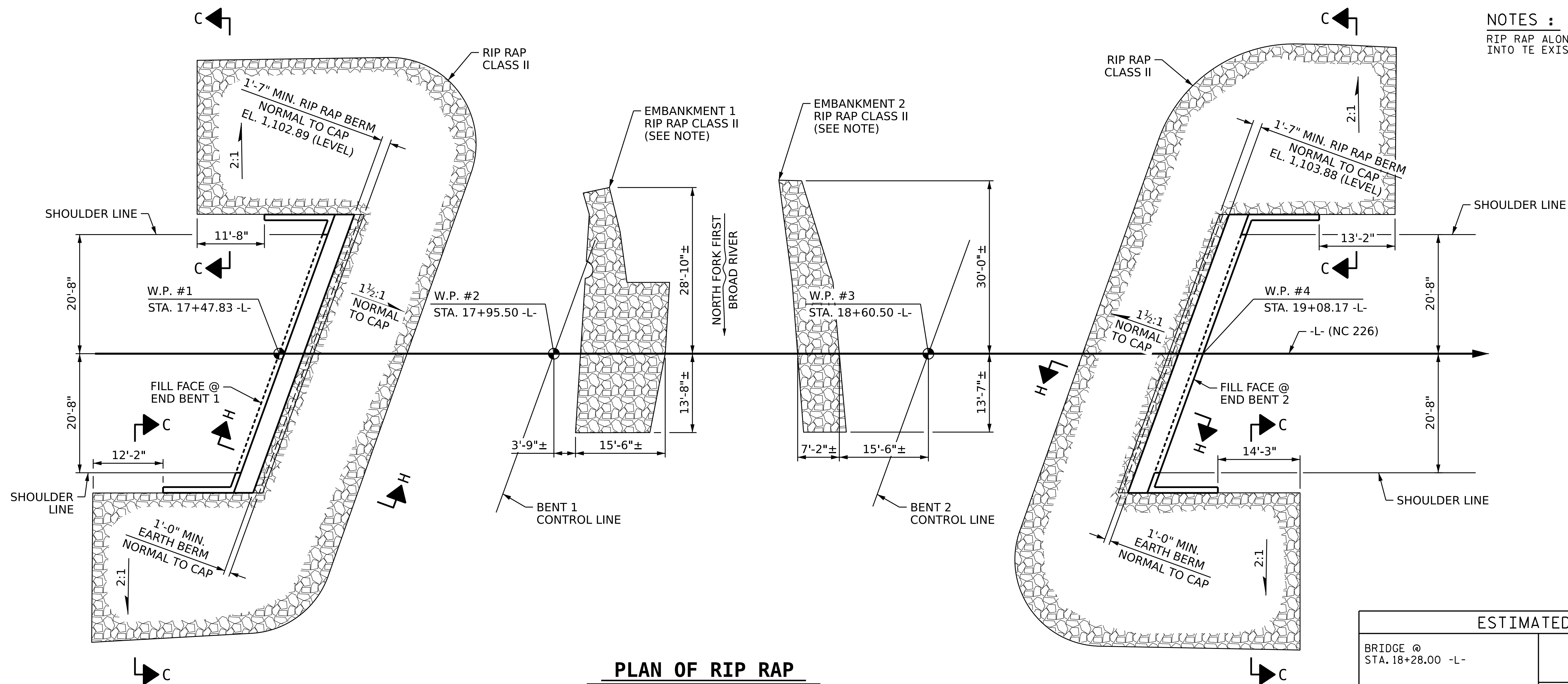


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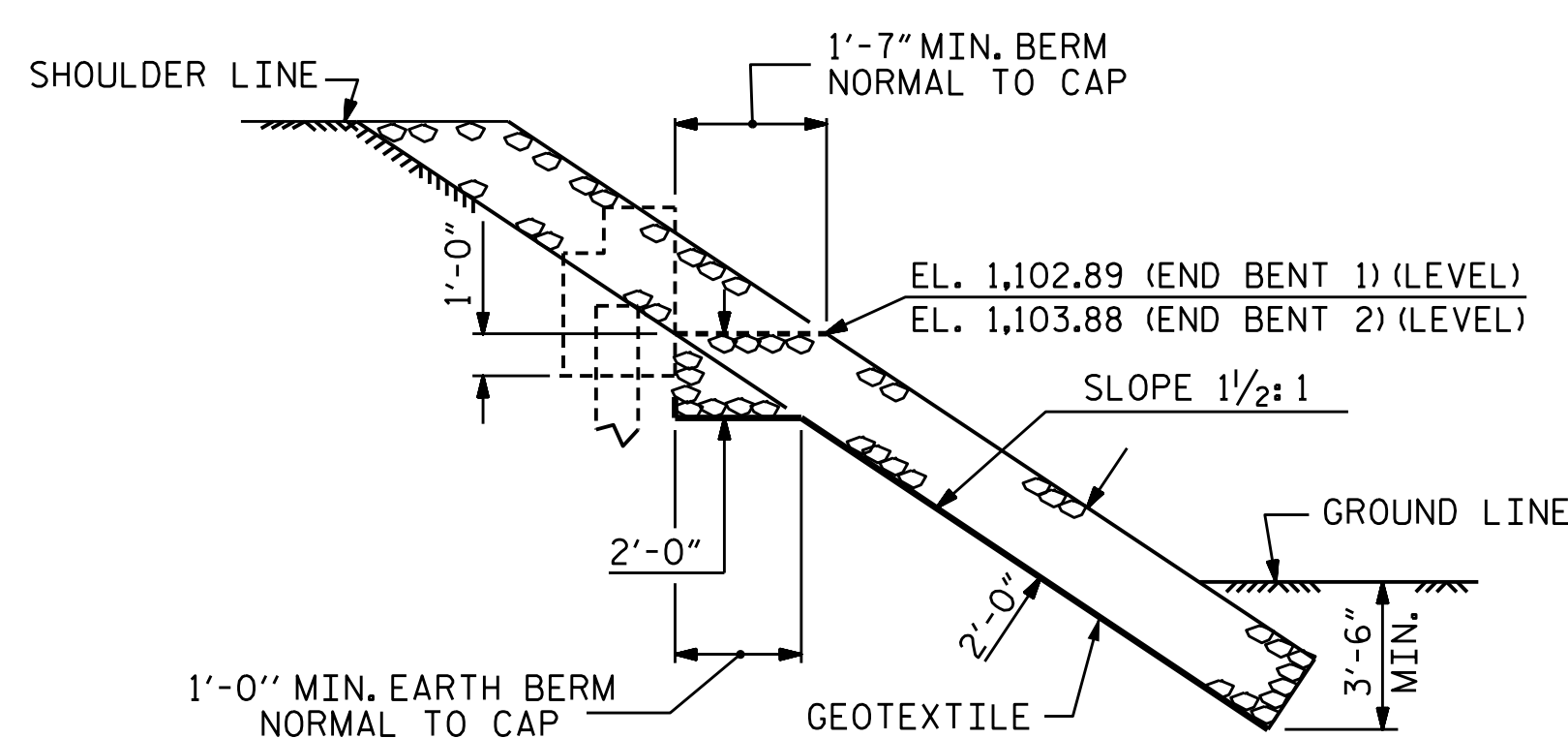
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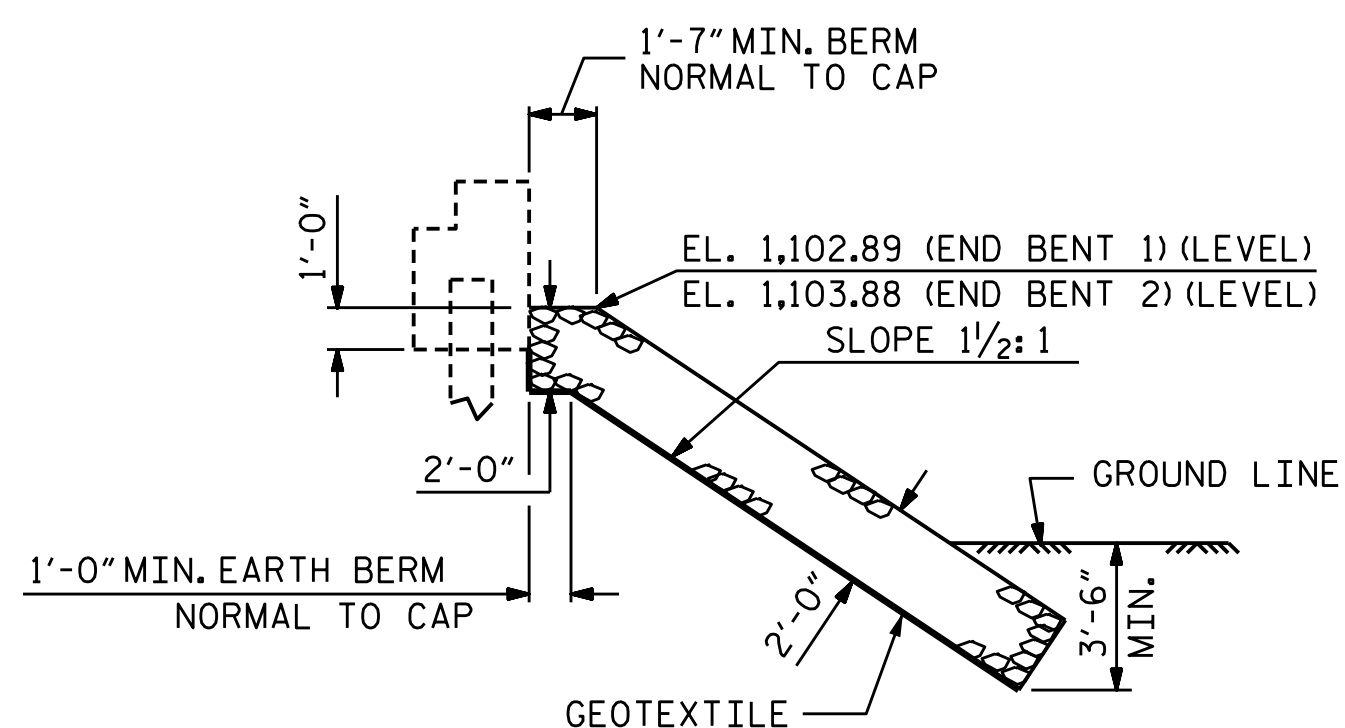
PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+28.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	* 529	* 588
END BENT 2	+ 518	+ 576

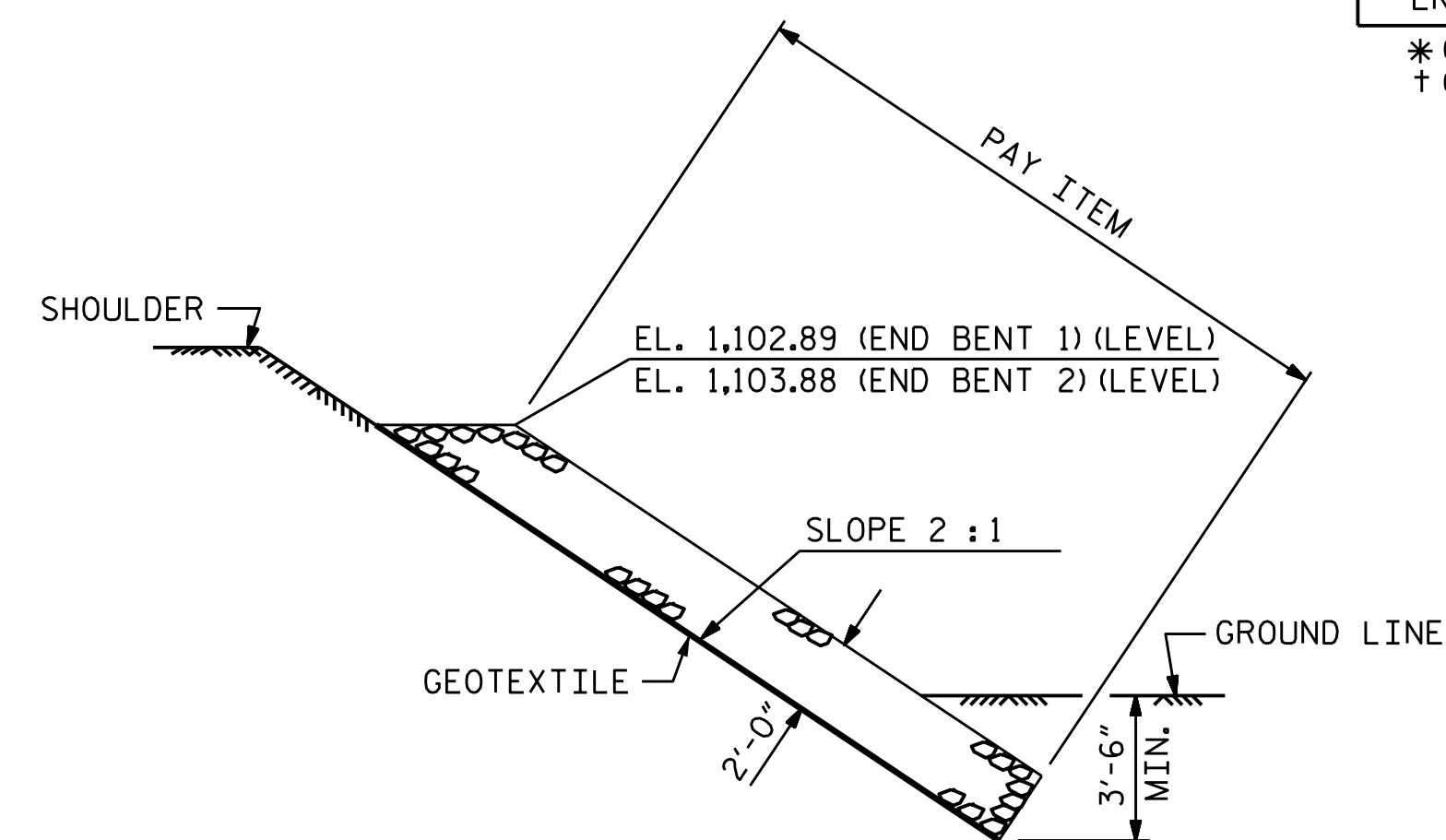
* QUANTITIES INCLUDE EMBANKMENT 1 RIP RAP
† QUANTITIES INCLUDE EMBANKMENT 2 RIP RAP



SECTION H-H



SECTION
BERM RIP RAPPED



SECTION C-C

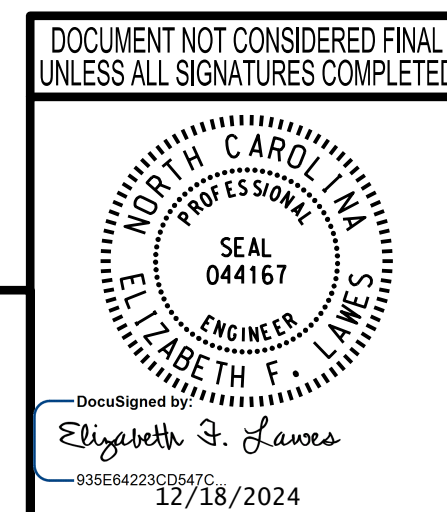
DRAWN BY : REK 1/84	REV. 10/1/II	MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/II	MAA/GM
	REV. 12/17	MAA/THC

DESIGNED BY:	J. WHEATLEY	DATE :	MAY 2024
DRAWN BY:	M. HOBBS	DATE :	MAY 2024
CHECKED BY:	E. LAWES	DATE :	MAY 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	MAY 2024



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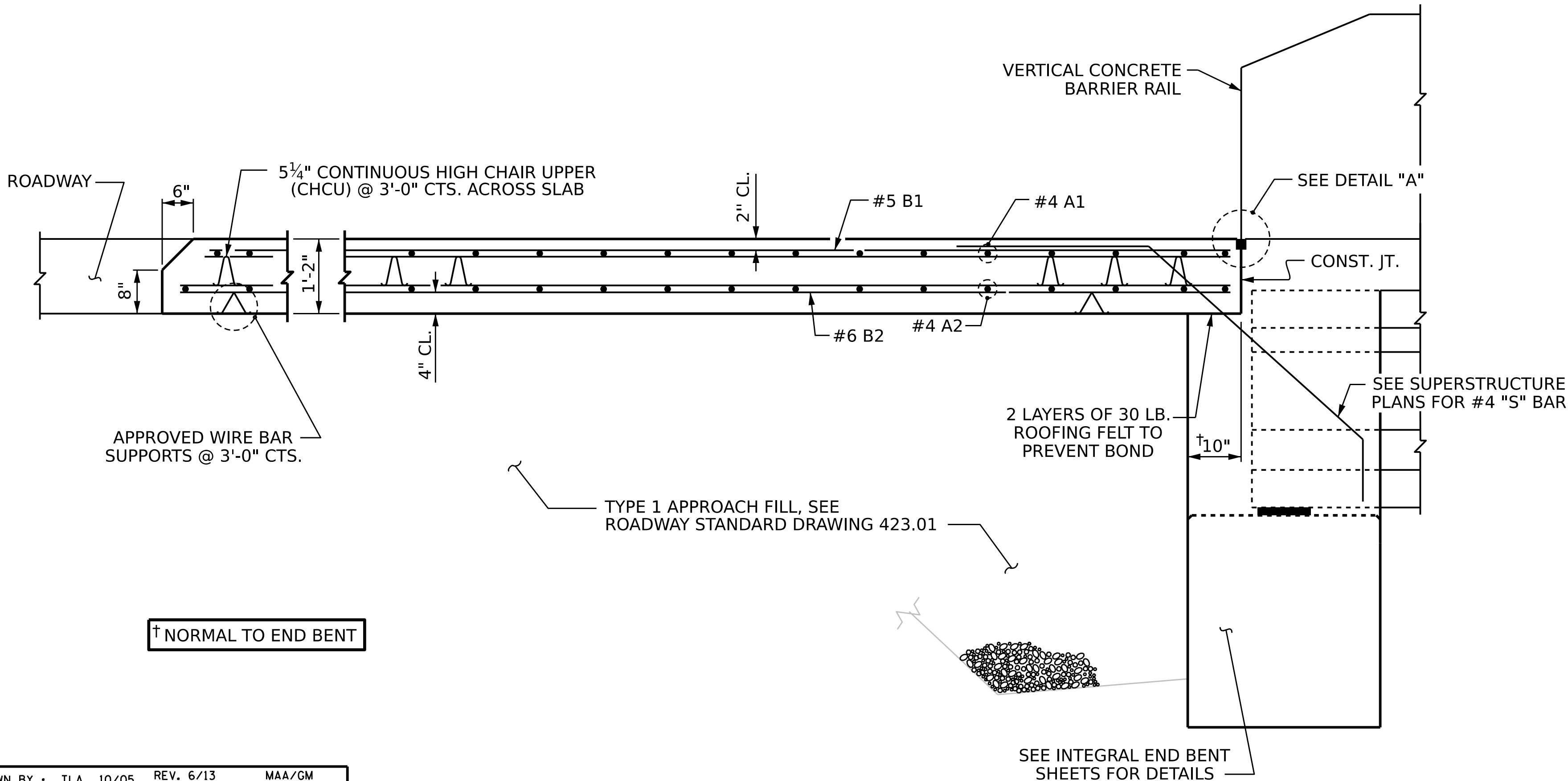
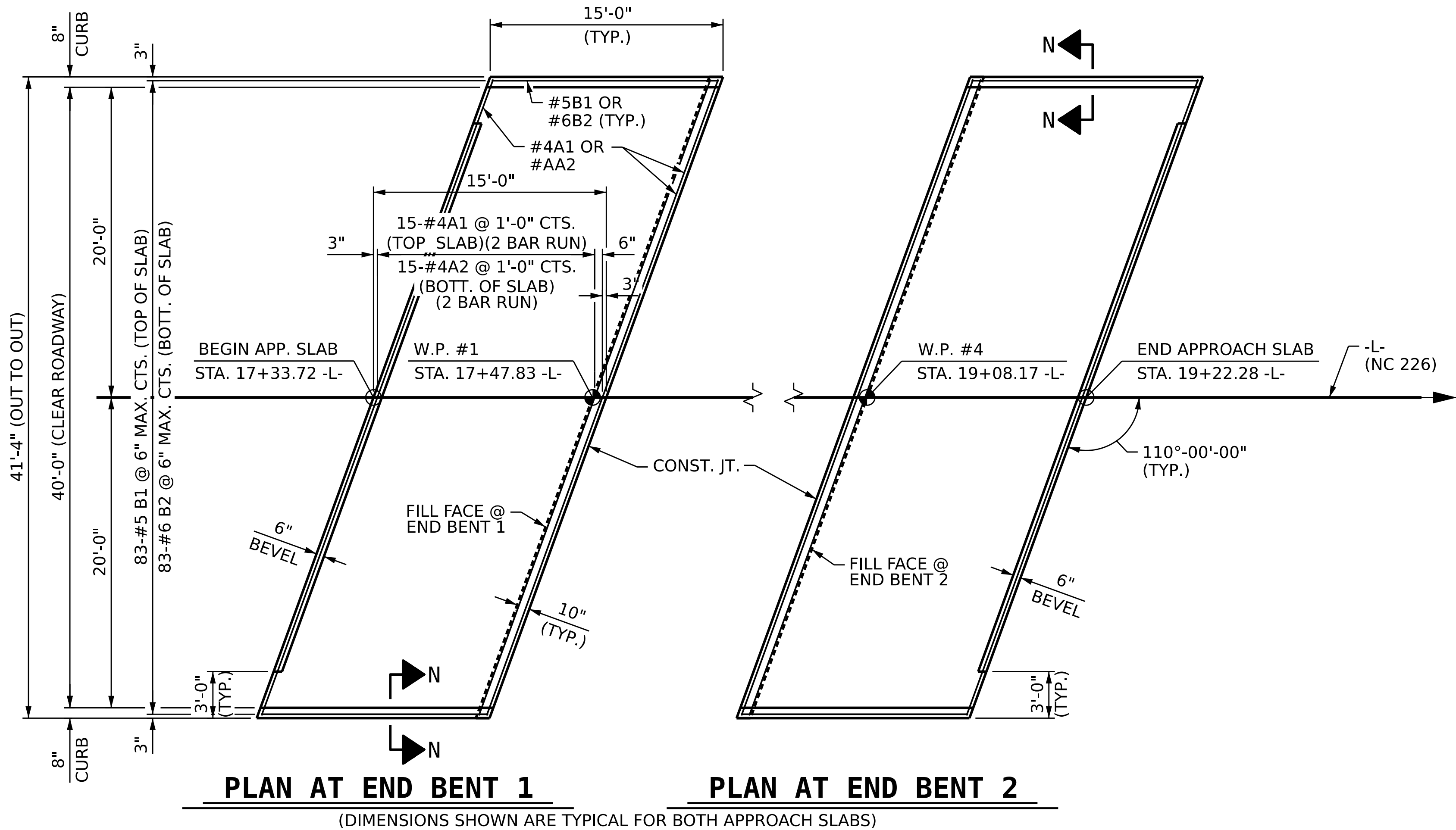


PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
 STATION: **18+28.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			30

STD. NO. RR1



NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

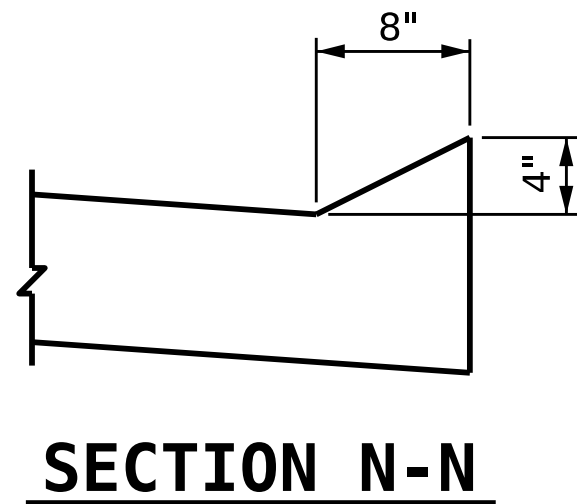
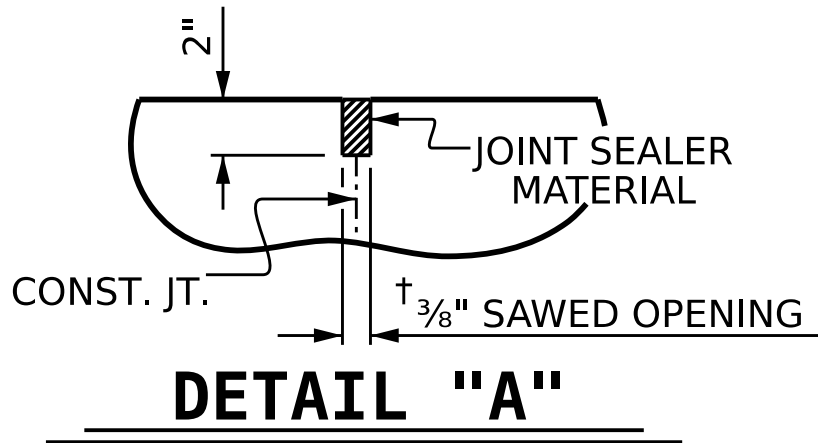
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".

BILL OF MATERIAL						
FOR ONE APPROACH SLAB (2 REQ'D)						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	30	#4	STR	22'-9"	456	
A2	30	#4	STR	22'-7"	453	
* B1	83	#5	STR	14'-2"	1226	
B2	83	#6	STR	14'-8"	1828	
REINFORCING STEEL				LBS.	2,281	
* EPOXY COATED REINFORCING STEEL				LBS.	1,682	
CLASS AA CONCRETE				C. Y.	26.7	

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



PROJECT NO. **BR-0100**

RUTHERFORD COUNTY

STATION: **18+28.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

**BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
WITH FLEXIBLE PAVEMENT**

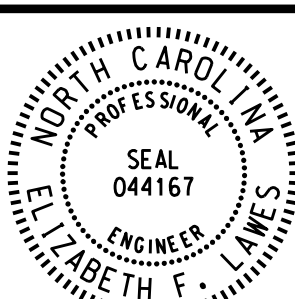
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-29
2			4			TOTAL SHEETS 30

DRAWN BY: TLA	10/05	REV. 6/13	MAA/GM
CHECKED BY: GM	5/06	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC
DESIGNED BY: J. WHEATLEY	DATE: MAY 2024		
DRAWN BY: M. HOBBS	DATE: MAY 2024		
CHECKED BY: E. LAWES	DATE: MAY 2024		
DESIGN ENGINEER OF RECORD: E. LAWES	DATE: MAY 2024		

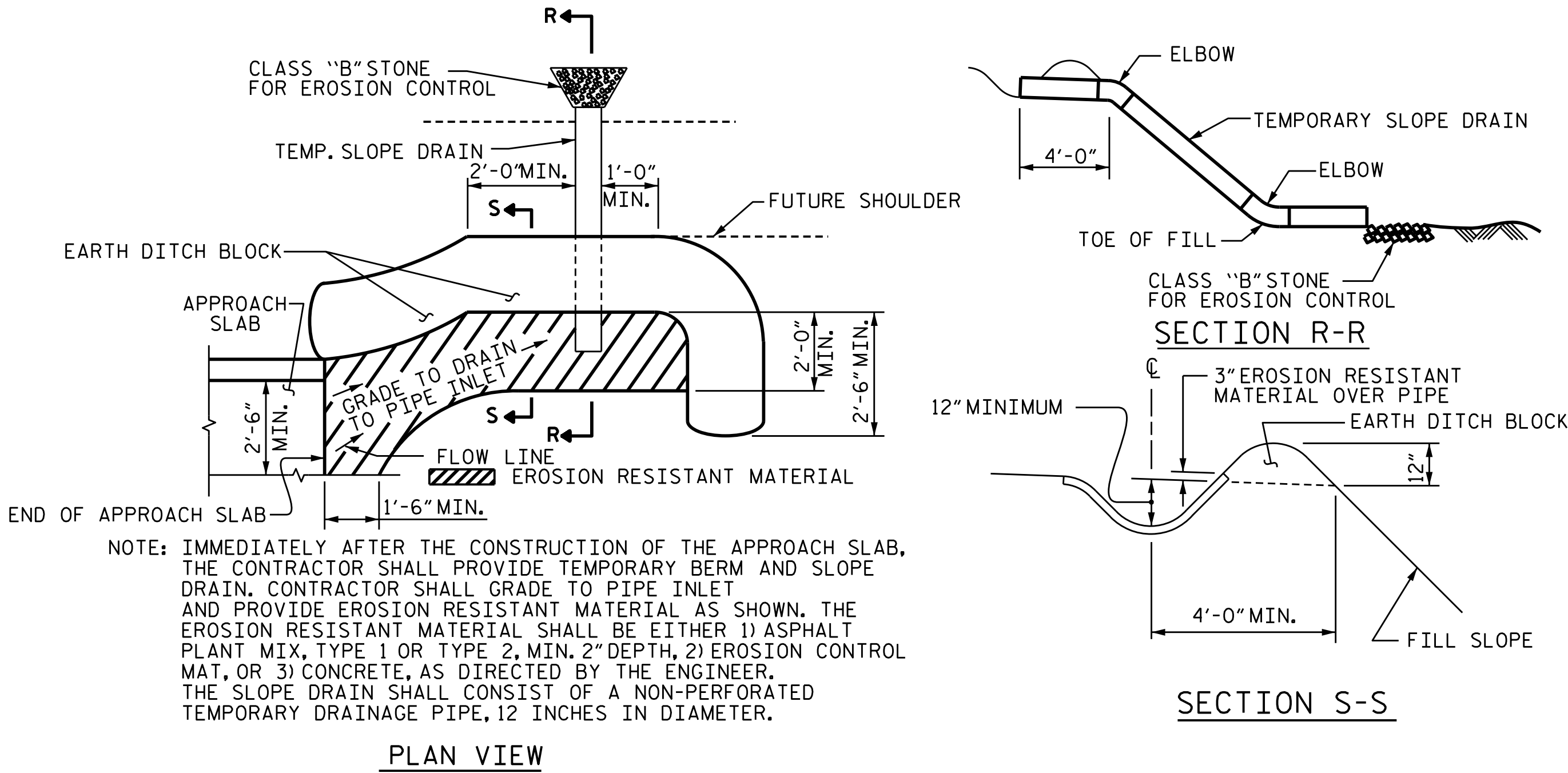


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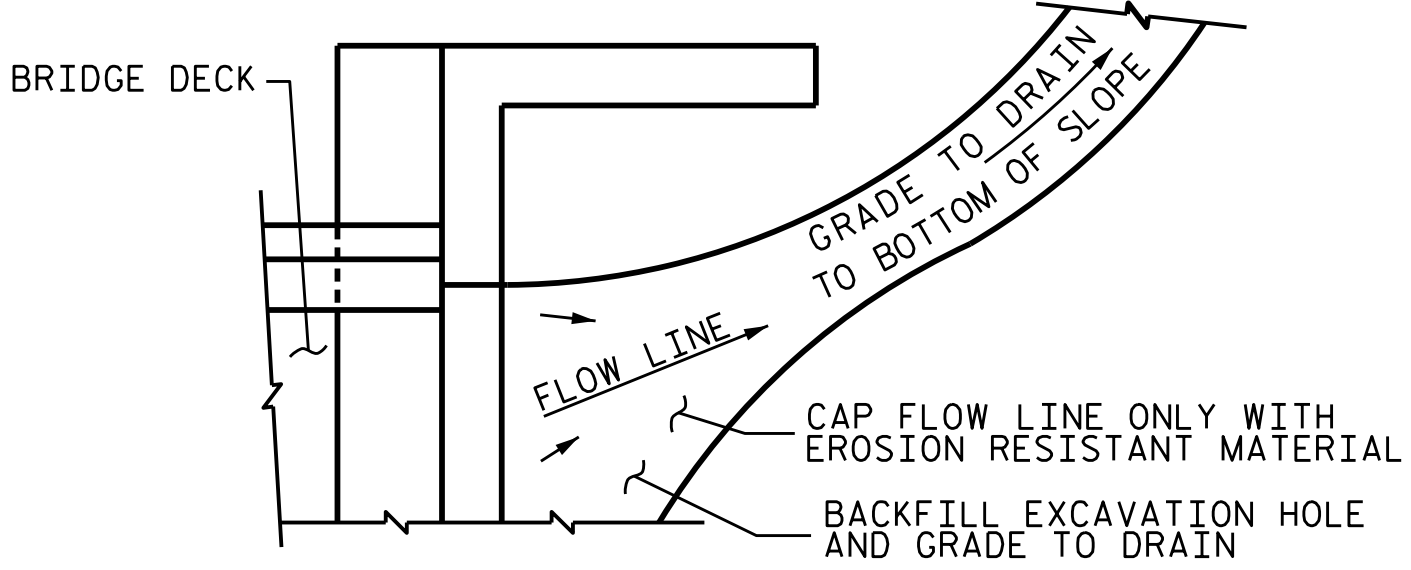


DocuSigned by:
Elizabeth F. Lawes
935E6422332738/2024



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS 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

NOTES

FOR NOTES, SEE SHEET 1 OF 2.

PROJECT NO. **BR-0100**
RUTHERFORD COUNTY
STATION: **18+28.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

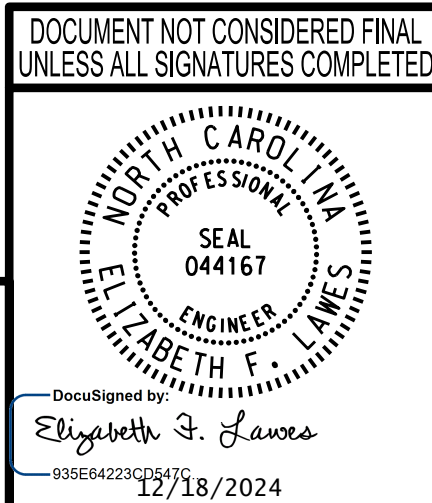
STANDARD BRIDGE APPROACH SLAB DETAILS

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-30
2			4		TOTAL SHEETS 30

DRAWN BY :	TLA	10/05	REV. 12/21/11	MAA/GM
CHECKED BY :	GM	5/06	REV. 6/13	MAA/GM
			REV. 12/17	MAA/THC
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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
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 AASHTO
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 5/16" 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.