

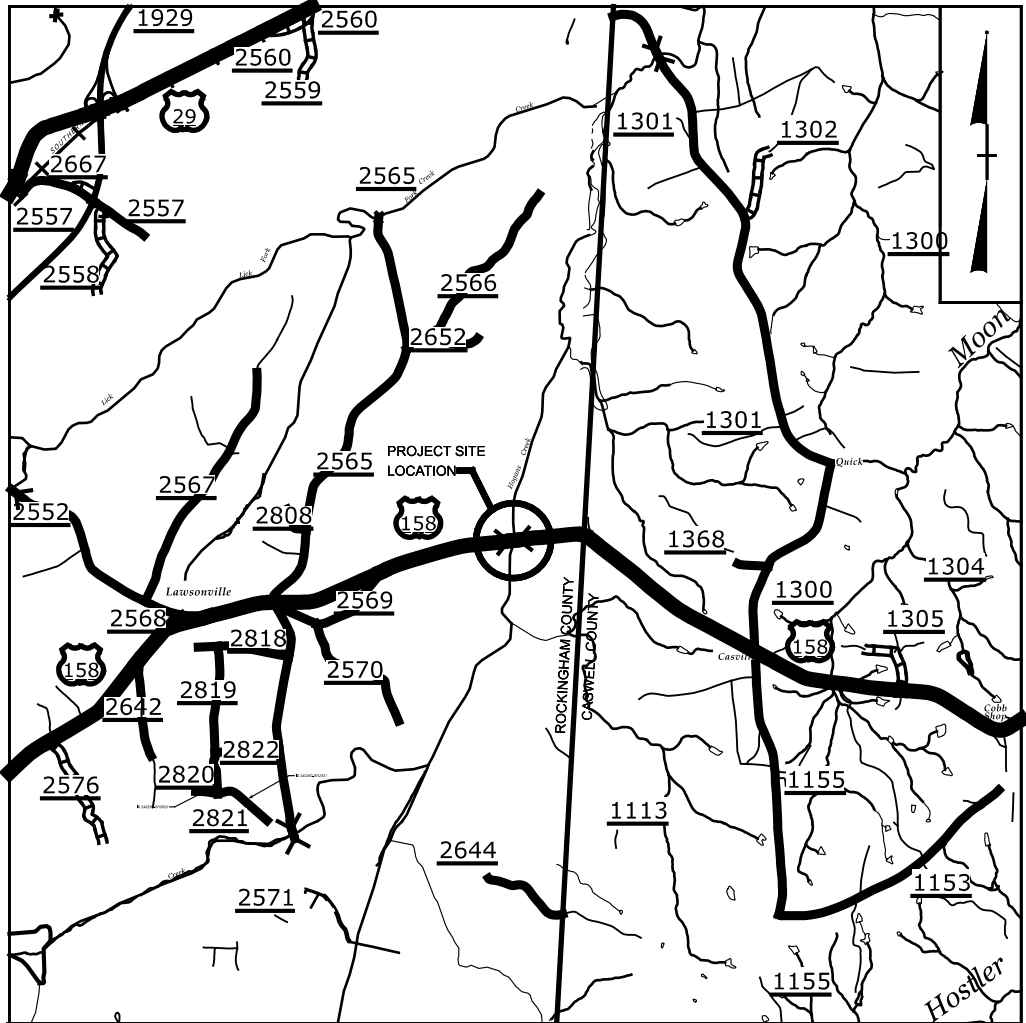
TIP PROJECT: BR-0155

CONTRACT: C205071

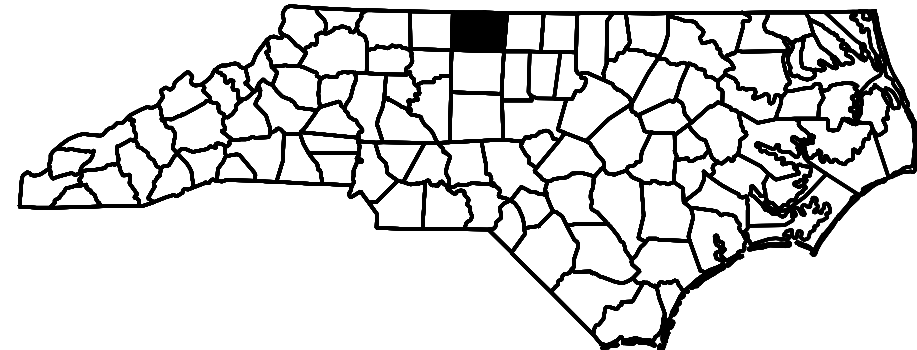
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY

LOCATION: *BRIDGE NO. 780163 ON US 158 OVER HOGAN'S CREEK*

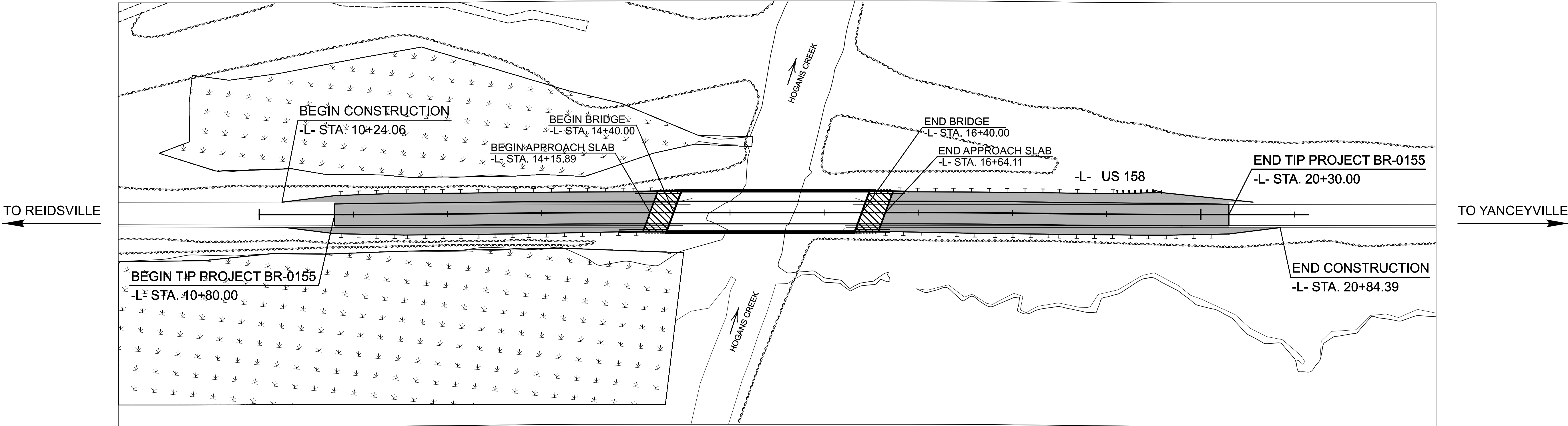
TYPE OF WORK: *GRADING, DRAINAGE, PAVING AND STRUCTURE*



VICINITY MAP (NTS)

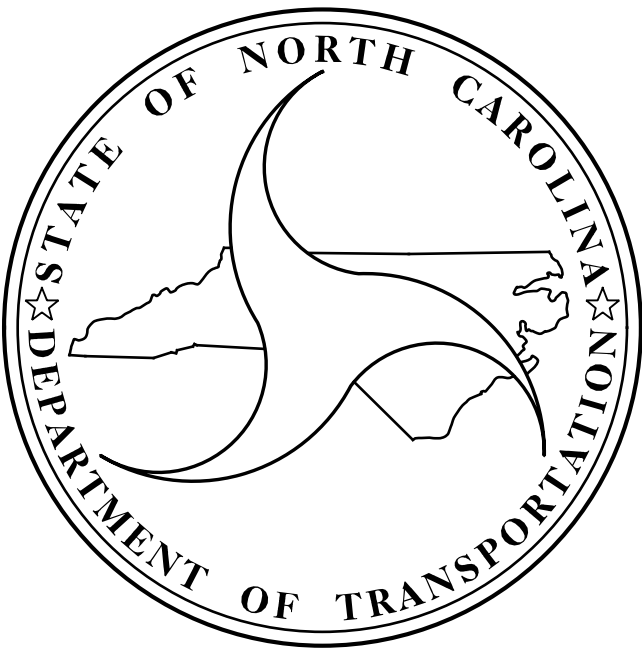


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0155	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
67155.1.1		PE	
67155.2.1		RW	
67155.3.1		CONST.	



STRUCTURE

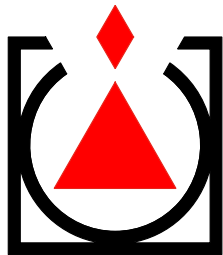
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA
ADT 2025 = 2,600
ADT 2045 = 2,900
K = 9 %
D = 55 %
T = 5 % *
V = 60 MPH
* TTST = 2 % DUAL = 3%
FUNC CLASS =
RURAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH
ROCKINGHAM COUNTY
LENGTH OF ROADWAY TIP PROJECT BR-0155 = 0.142 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0155 = 0.038 MILES
TOTAL LENGTH OF TIP PROJECT BR-0155 = 0.180 MILES

NCDOT CONTACT: SUZANA MATTA, PE
DIVISION 7 CONTACT



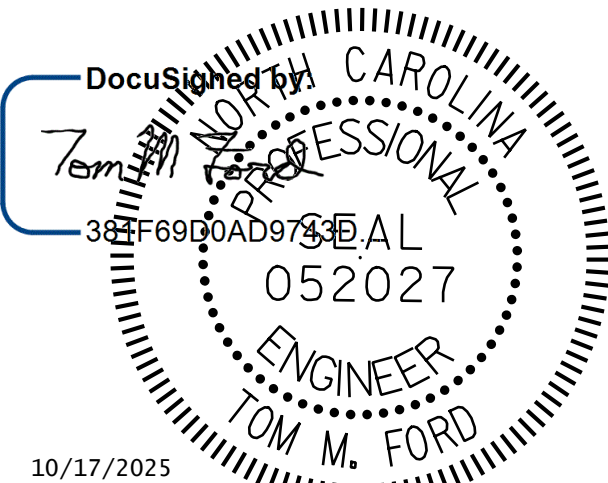
**GANNETT
FLEMING**

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

TOM FORD, P.E.
STRUCTURES DESIGN ENGINEER

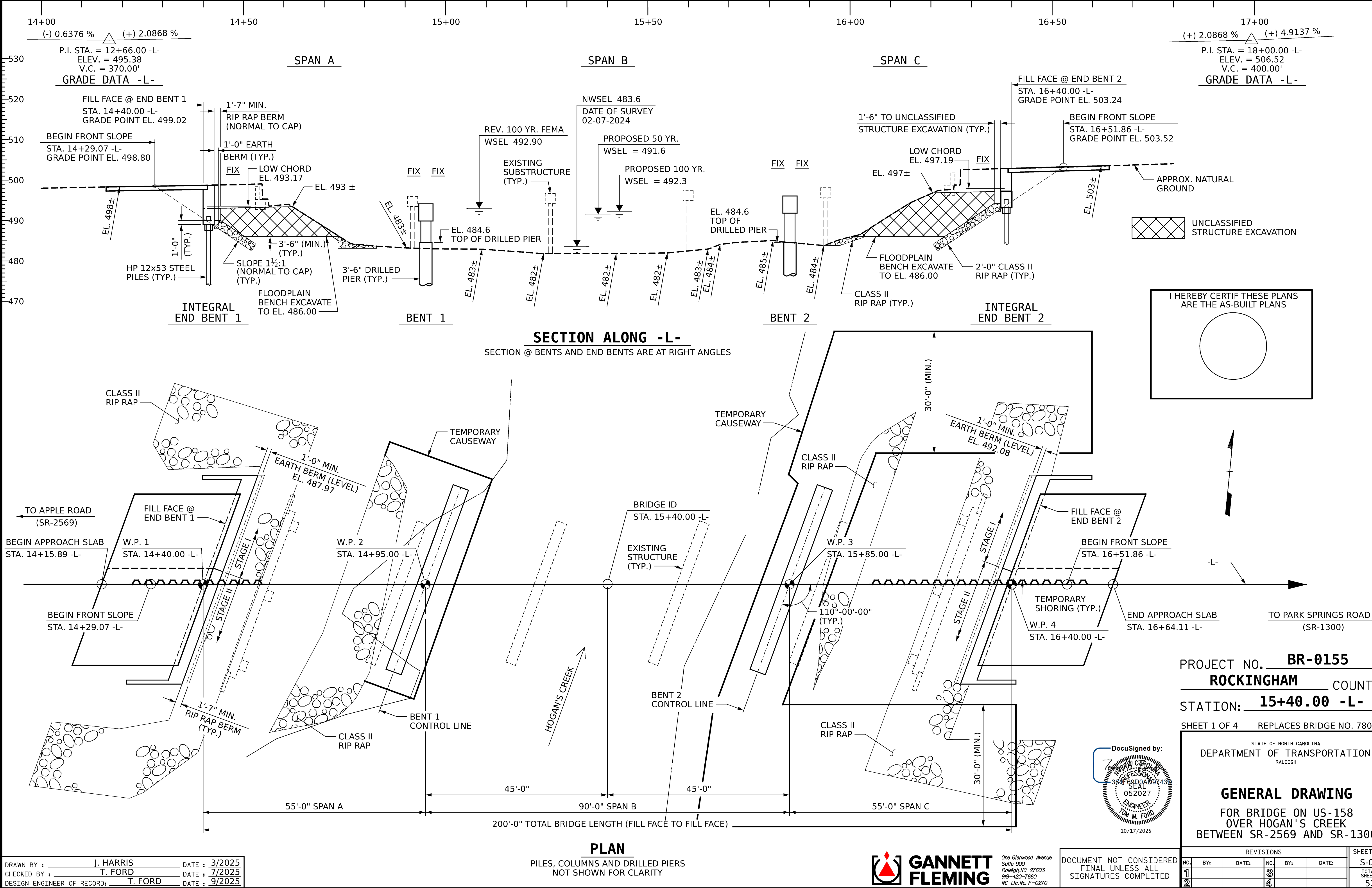
2024 STANDARD SPECIFICATIONS

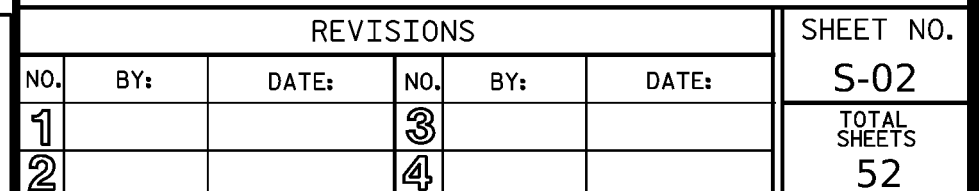
LETTING DATE:
DECEMBER 16, 2025



TOM FORD, P.E.
STRUCTURES DESIGN ENGINEER

dwz://gfnrt-pw.bentley.com/gfnrt-pw-01/dquments/Projects/73077_ORD/Task_003 - BR-0155 Rockingham 163/5-Working/Structures/CAD/3.0 100% Plans/401_001_BR0155-SMU_GD1_001_780163 10/16/2025 1:58:20 PM pdf_color_gfclt-F.S.plt Rock163.tbl





SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

[illegible]

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent No. 1, Piles 1-9	192			0.6		
End Bent No. 2, Piles 1-9	192			0.6		

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

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 EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent No. 1, Piles 5-9				5
TOTAL QUANTITY:				5

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent No. 1, Piers 1-2	2	660	439.00	10	475.00	13.2		16.2	29.4	Yes	452.20	32.4
Bent No. 1, Piers 3-4	2	660	447.00	10	475.00	13		15	22.6	Yes	460.00	24.6
Bent No. 2, Piers 1-2	2	655	442.00	10	475.00	20.9		22.6	20	Yes	462.90	21.7
Bent No. 2, Piers 3-4	2	655	441.00	10	475.00	20.7		23.5	20.1	Yes	461.70	22.9
TOTAL QUANTITY:								154.6	184.2			203.2

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

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

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent No. 1, Piers 1-4		1			
Bent No. 2, Piers 1-4		1			
TOTAL QUANTITY:		2			

PROJECT NO. BR-0155

Rockingham COUNTY

STATION: 15+40.00 -L- (Bridge 0163)

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Tom M. Ford, #052027) on 01-00-1900.
2. 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.
3. The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE AND DRILLED PIER FOUNDATION TABLES																		
DocuSigned by: <i>Tom M Ford</i> 10/17/2025																			
38169DQAD9743D SIGNATURE	DATE																		
REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td style="text-align: center;">4</td> <td></td> <td></td> </tr> </tbody> </table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
NO.	BY:	DATE:	NO.	BY:	DATE:														
1			3																
2			4																
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SHEET NO. S-03 TOTAL SHEETS 52																	

dw://gfnrt-pw.bentley.com/gfnet-pw-01/Documents/Projects/73077_ORD/Task_003 - BR-0155 Rockingham 163/5-Working/Structures/CAD/3.0 100% Plans/401-009_BR0155_SML_LRFR_005_780163 10/16/2025 1:59:33 PM pdf_color_gfclt_FS.plt Rock163.tbl

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																						
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						
						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	HL-93 (INVENTORY)	N/A	①	1.23	--	1.75	0.800	1.42	B	ER	44.126	0.947	1.23	B	I	8.825	0.80	0.800	1.24	B	ER	44.126
	HL-93 (OPERATING)	N/A		1.62	--	1.35	0.800	1.85	B	ER	44.126	0.947	1.62	B	I	8.825	N/A	--	--	--	--	--
	HS-20 (INVENTORY)	36.000	②	1.63	58.68	1.75	0.857	1.92	A	I	26.000	0.947	1.63	B	I	8.825	0.80	0.800	1.69	--	ER	44.126
	HS-20 (OPERATING)	36.000		2.14	77.04	1.35	0.857	2.49	A	I	26.000	0.947	2.14	B	I	8.825	N/A	--	--	--	--	--
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.94	53.19	1.40	0.857	4.98	A	I	26.000	0.947	5.17	B	I	8.825	0.80	0.800	3.94	B	ER	44.126
		SNGARBS2		2.88	57.60	1.40	0.857	3.89	A	I	26.000	0.947	3.61	B	I	8.825	0.80	0.800	2.88	B	ER	44.126
		SNAGRIS2		2.70	59.40	1.40	0.857	3.77	A	I	26.000	0.947	3.33	B	I	8.825	0.80	0.800	2.70	B	ER	44.126
		SNCOTTS3		1.96	53.41	1.40	0.857	2.48	A	I	26.000	0.947	2.52	B	I	8.825	0.80	0.800	1.96	B	ER	44.126
		SNAGGRS4		1.62	56.58	1.40	0.857	2.14	A	I	26.000	0.947	2.05	B	I	8.825	0.80	0.800	1.62	B	ER	44.126
		SNS5A		1.58	56.17	1.40	0.857	2.09	A	I	26.000	0.947	2.07	B	I	8.825	0.80	0.800	1.58	B	ER	44.126
		SNS6A		1.44	57.53	1.40	0.857	1.95	A	I	26.000	0.947	1.87	B	I	8.825	0.80	0.800	1.44	B	ER	44.126
		SNS7B		1.37	57.54	1.40	0.857	1.86	A	I	26.000	0.947	1.82	B	I	8.825	0.80	0.800	1.37	B	ER	44.126
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		1.76	58.08	1.40	0.857	2.39	A	I	26.000	0.947	2.24	B	I	8.825	0.80	0.800	1.76	B	ER	44.126
		TNT4A		1.76	58.21	1.40	0.857	2.40	A	I	26.000	0.947	2.20	B	I	8.825	0.80	0.800	1.76	B	ER	44.126
		TNT6A		1.43	59.49	1.40	0.857	2.00	A	I	26.000	0.947	1.92	B	I	8.825	0.80	0.800	1.43	B	ER	44.126
		TNT7A		1.43	60.06	1.40	0.857	2.02	A	I	26.000	0.947	1.88	B	I	8.825	0.80	0.800	1.43	B	ER	44.126
		TNT7B		1.47	61.74	1.40	0.857	2.11	A	I	26.000	0.947	1.78	B	I	8.825	0.80	0.800	1.47	B	ER	44.126
		TNAGRIT4		1.41	60.63	1.40	0.857	2.00	A	I	26.000	0.947	1.73	B	I	8.825	0.80	0.800	1.41	B	ER	44.126
		TNAGT5A		1.33	59.85	1.40	0.857	1.87	A	I	26.000	0.947	1.70	B	I	8.825	0.80	0.800	1.33	B	ER	44.126
		TNAGT5B	③	1.32	59.40	1.40	0.857	1.83	A	I	26.000	0.947	1.64	B	I	8.825	0.80	0.800	1.32	B	ER	44.126
EMERGENCY VEHICLE (EV)	EV2	28.750		2.03	58.36	1.30	0.857	2.99	A	I	26.000	0.947	2.70	B	I	8.825	0.80	0.800	2.03	B	ER	44.126
	EV3	43.000	④	1.33	57.19	1.30	0.857	1.94	A	I	26.000	0.947	1.78	B	I	8.825	0.80	0.800	1.33	B	ER	44.126

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:

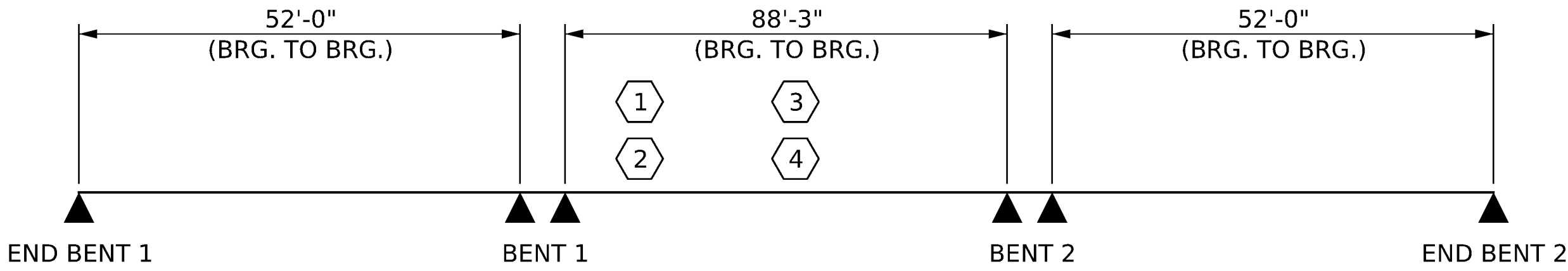
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

-
-
-
-

#	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	

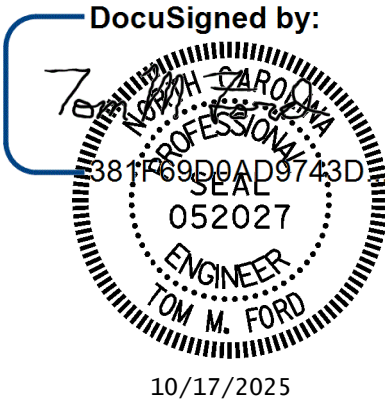


LRFR SUMMARY

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						
STANDARD						
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)						
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS
2			4			52

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

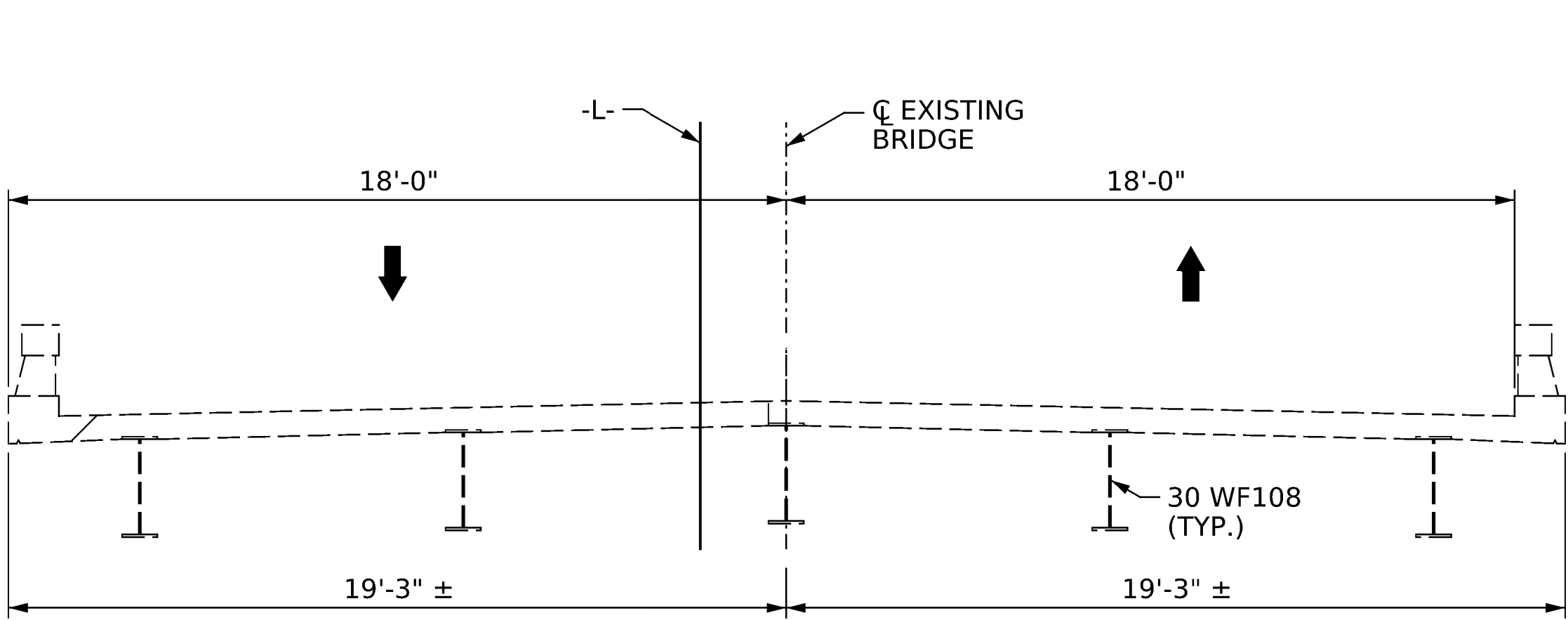


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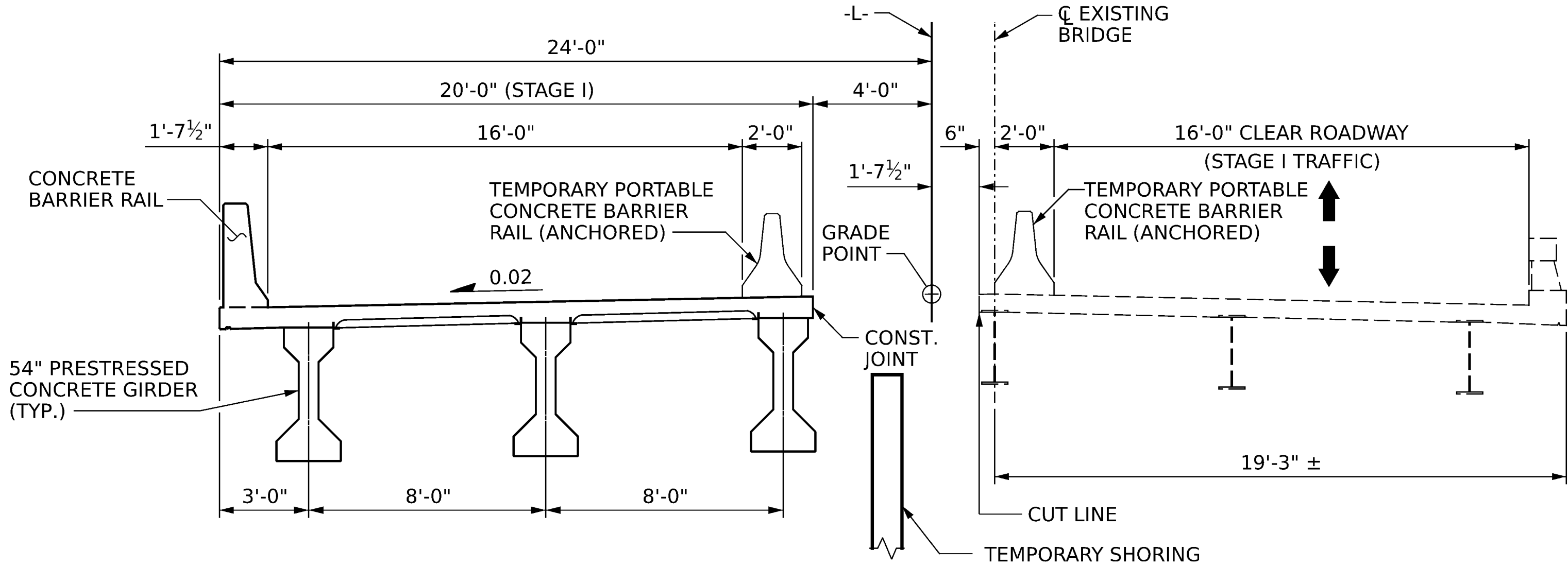
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CHECKED BY : T.M.FORD		DATE : 2/2025	
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CHECKED BY : GM/DI	2/08	REV. 10/1/11	MAA/GM
		REV. 04/23	BNS/AAI

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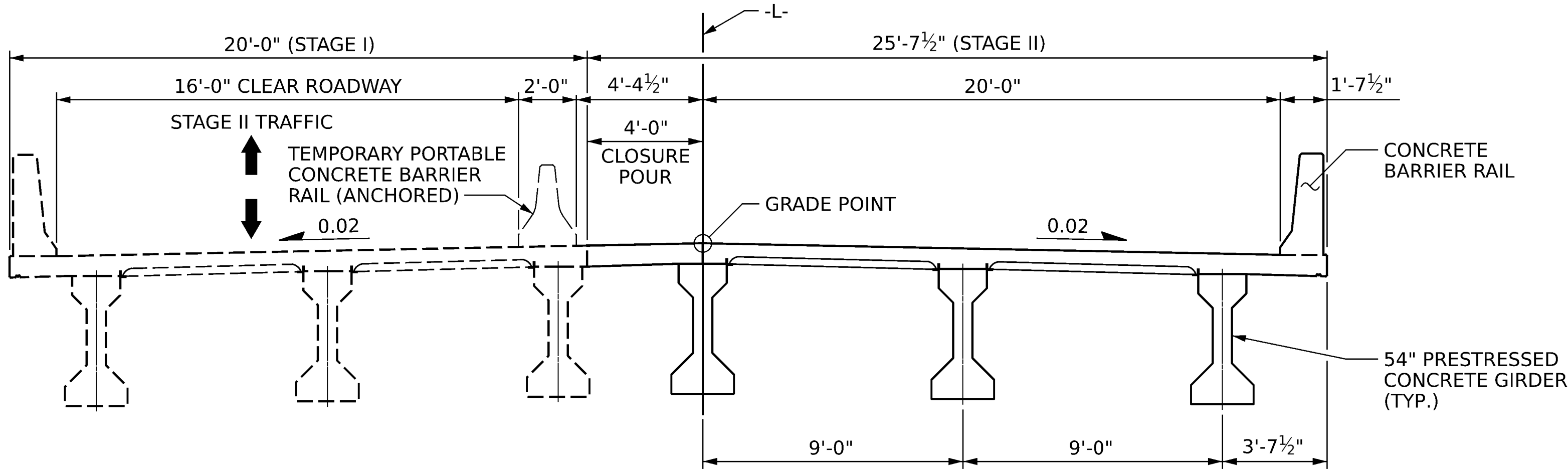
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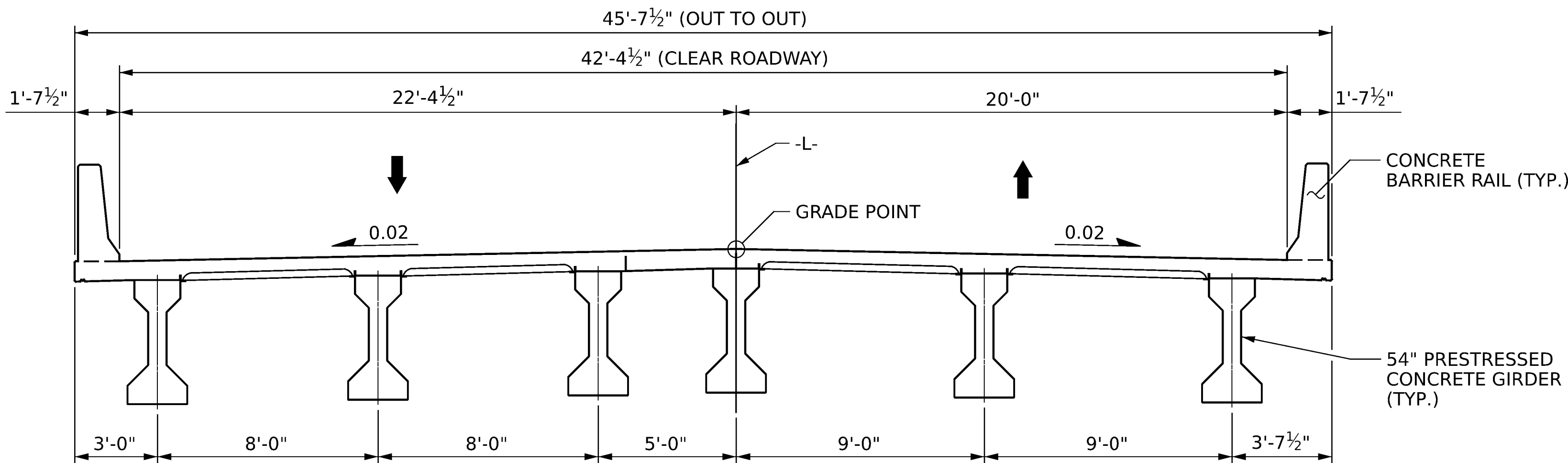
EXISTING BRIDGE SECTION



STAGE I

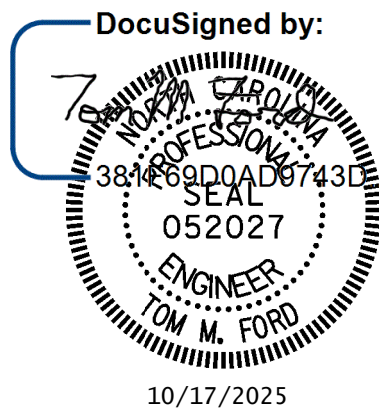


STAGE II



FINAL STAGE

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

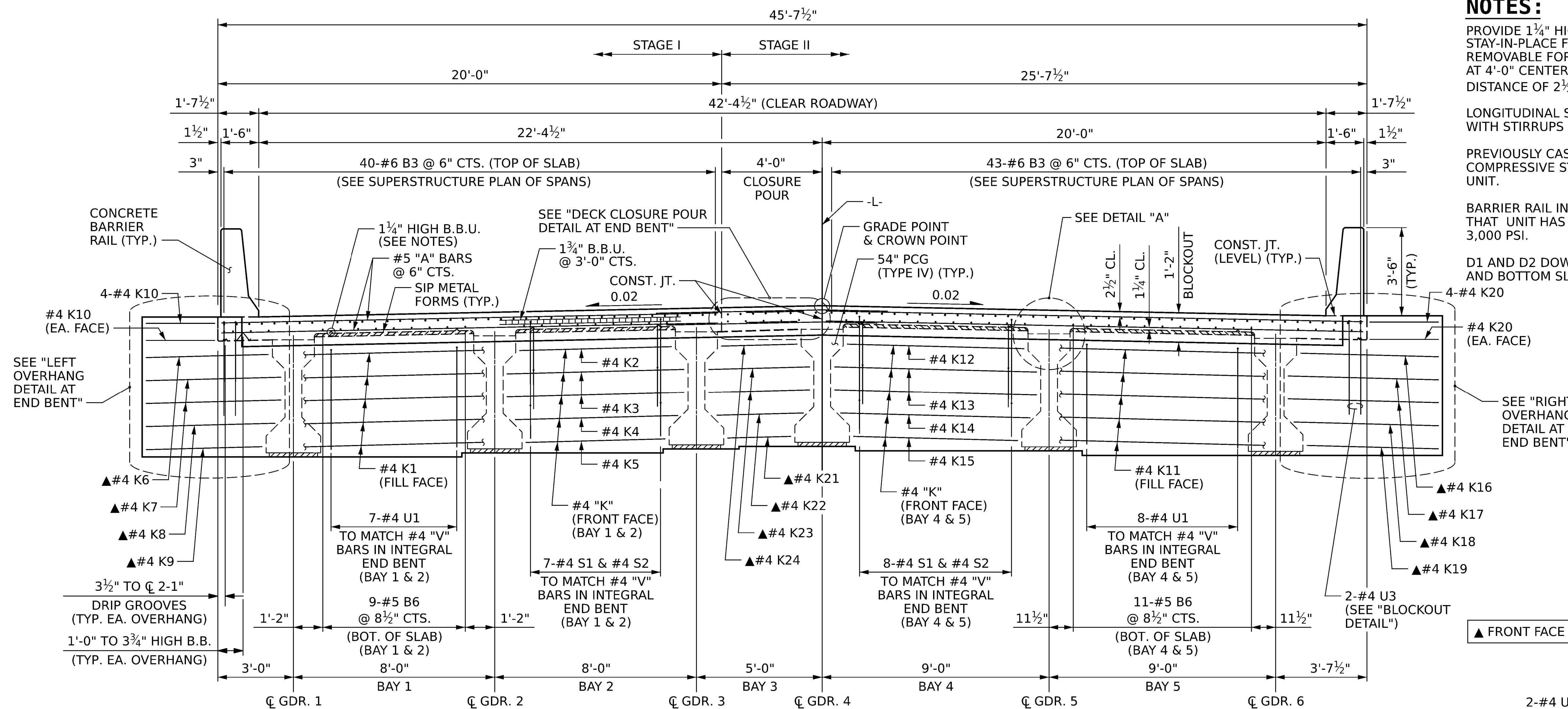


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CONSTRUCTION SEQUENCE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		
SHEET NO. S-06					TOTAL SHEETS 52



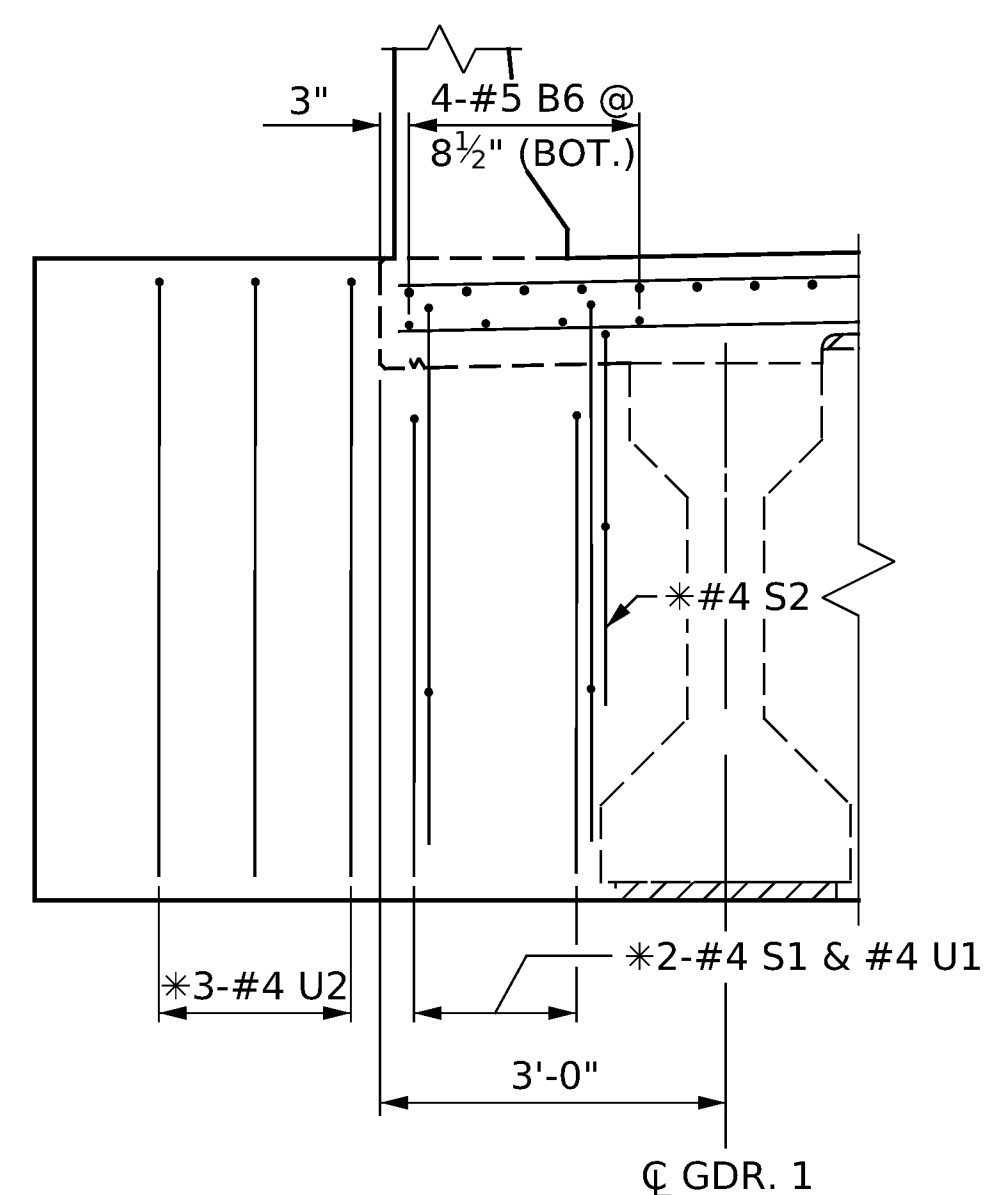
One Glenwood Avenue
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DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED



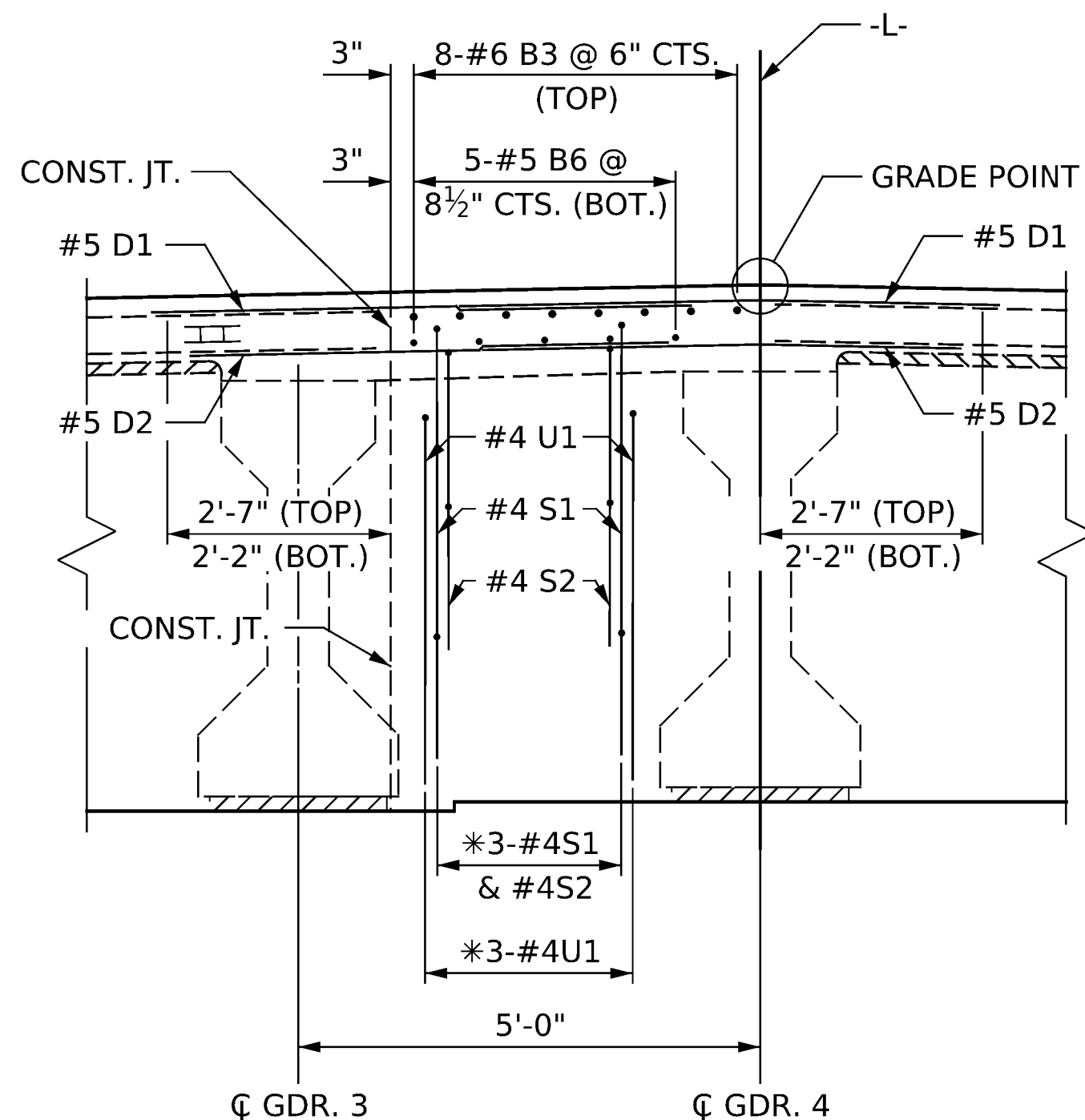
TYPICAL SECTION AT INTEGRAL END BENTS

(SHOWING END BENT 1 DIAPHRAGM, END BENT 2 SIMILAR)



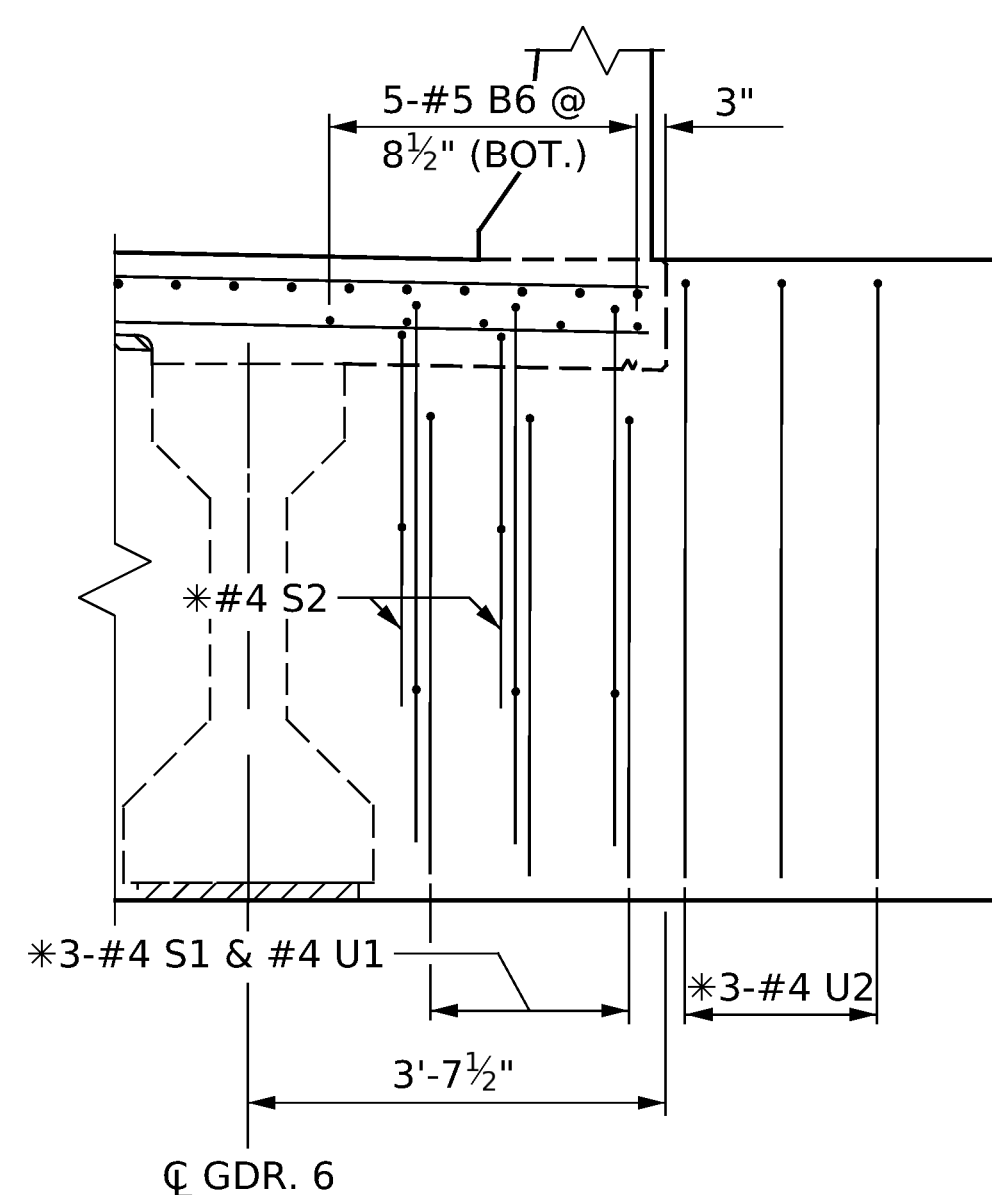
LEFT OVERHANG DETAIL AT END BENT

*BARS TO MATCH #4 "V" BARS
IN INTEGRAL END BENT



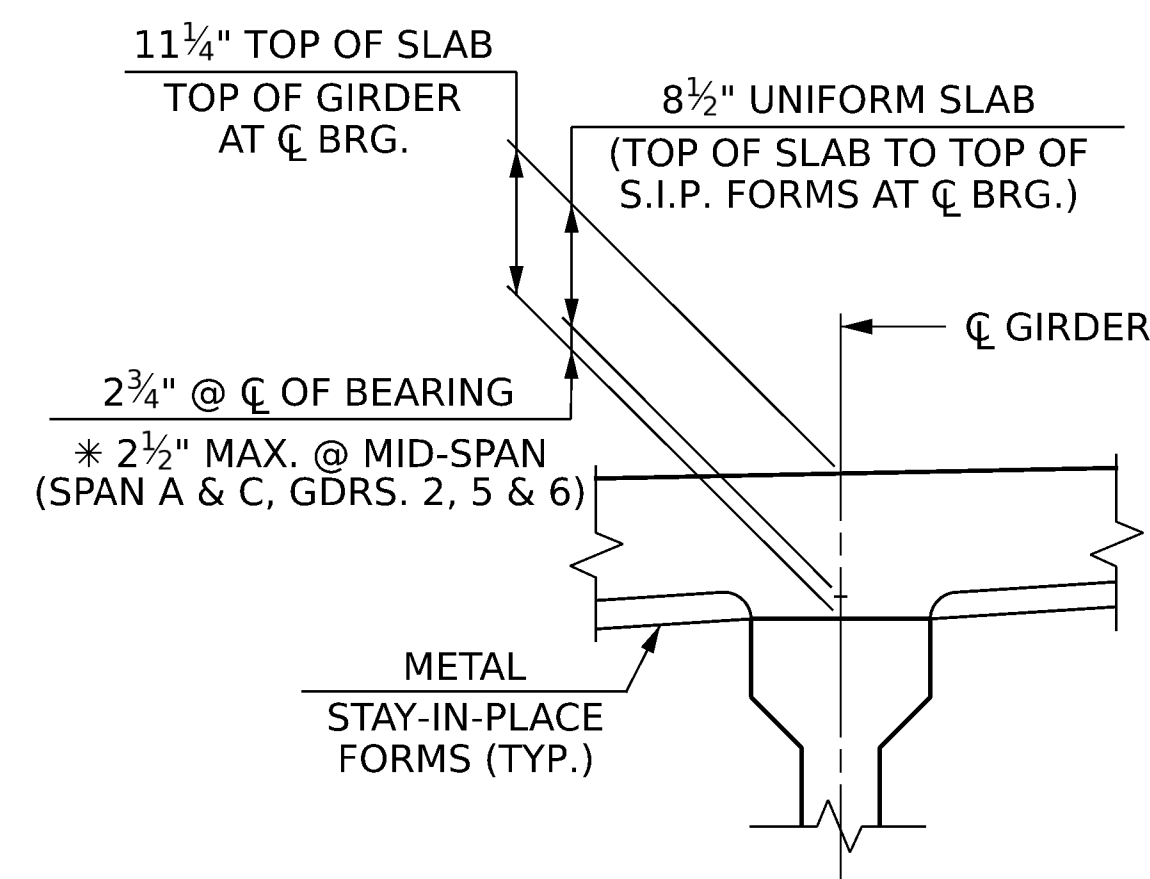
**DECK CLOSURE POUR
DETAIL AT END BENT**

*BARS TO MATCH #4 "V" BARS
IN INTEGRAL END BENT



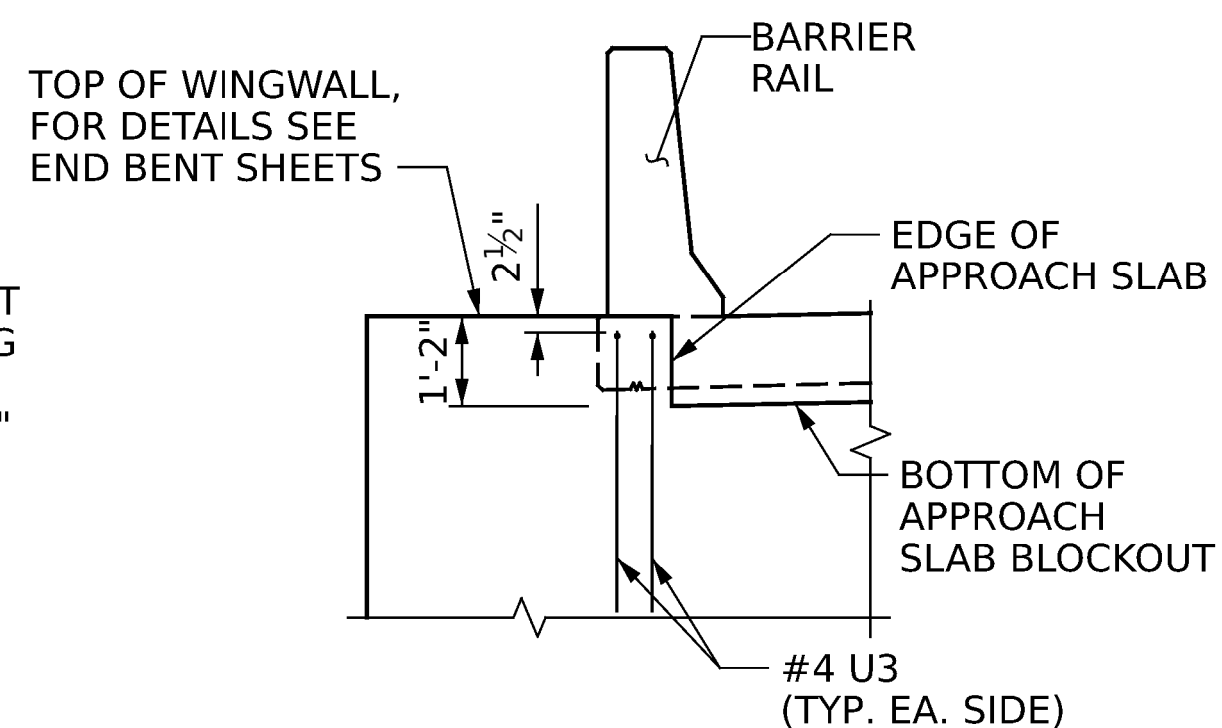
RIGHT OVERHANG DETAIL AT END BENT

*BARS TO MATCH #4 "V" BARS
IN INTEGRAL END BENT

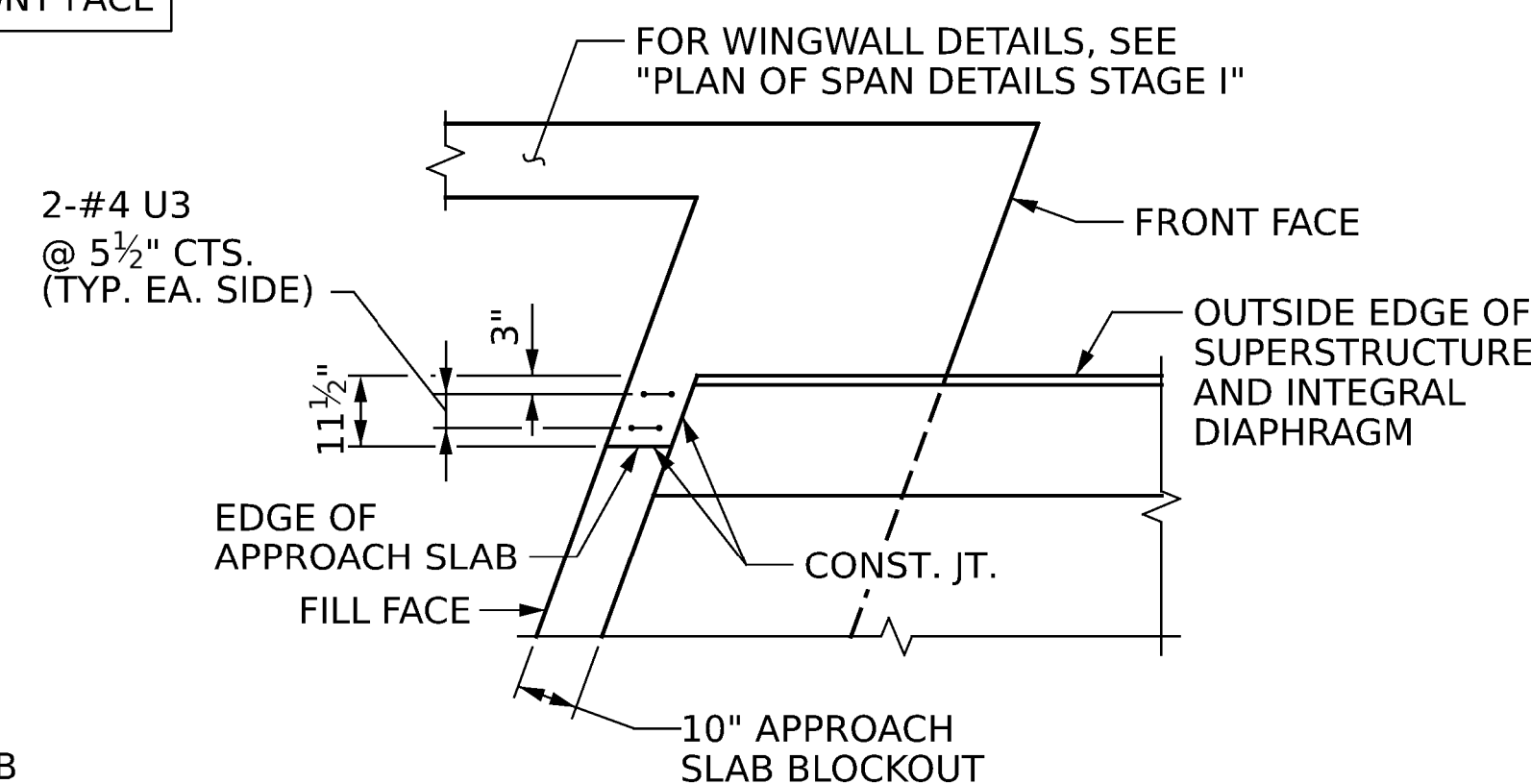


DETAIL "A"

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



BLOCKOUT DETAIL - ELEVATION VIEW



BLOCKOUT DETAIL - PLAN VIEW

END BENT 1 SHOWN, END BENT 2 SIMILAR.

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: 15+40.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION

DRAWN BY : J. HARRIS DATE : 3/2025
 CHECKED BY : T. FORD DATE : 7/2025
 DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025



One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

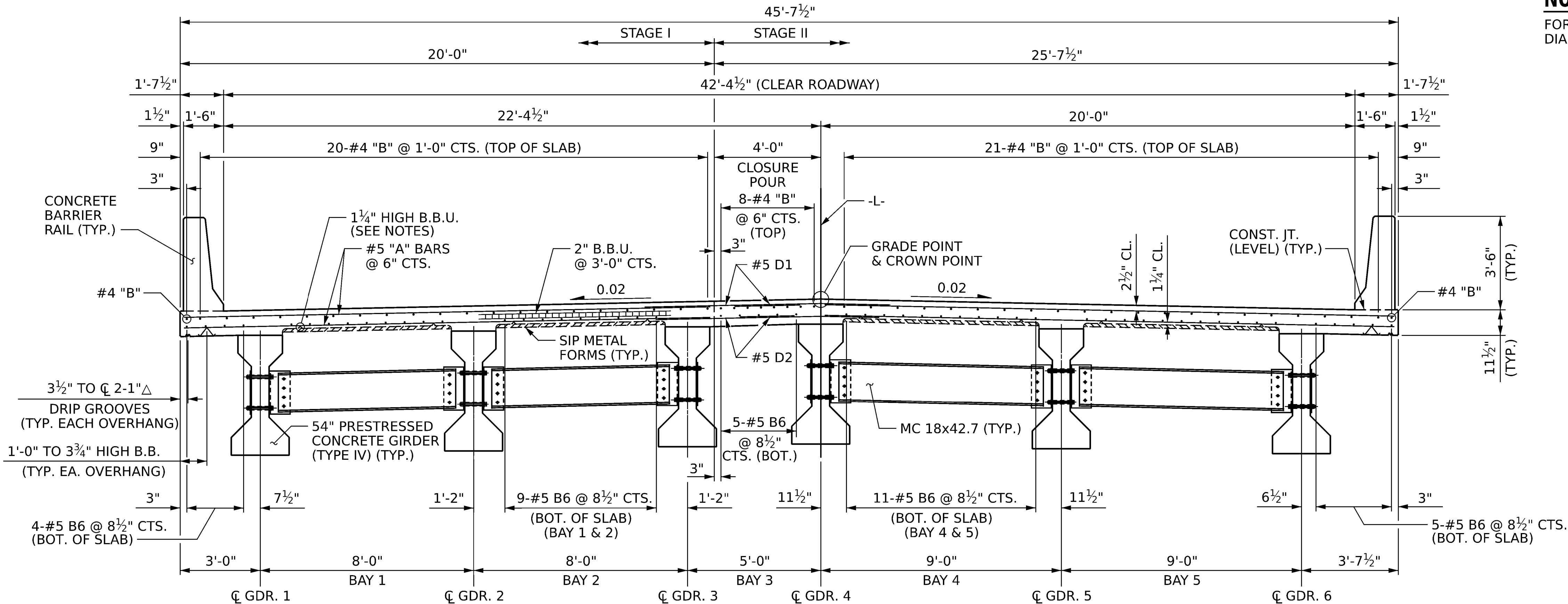
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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

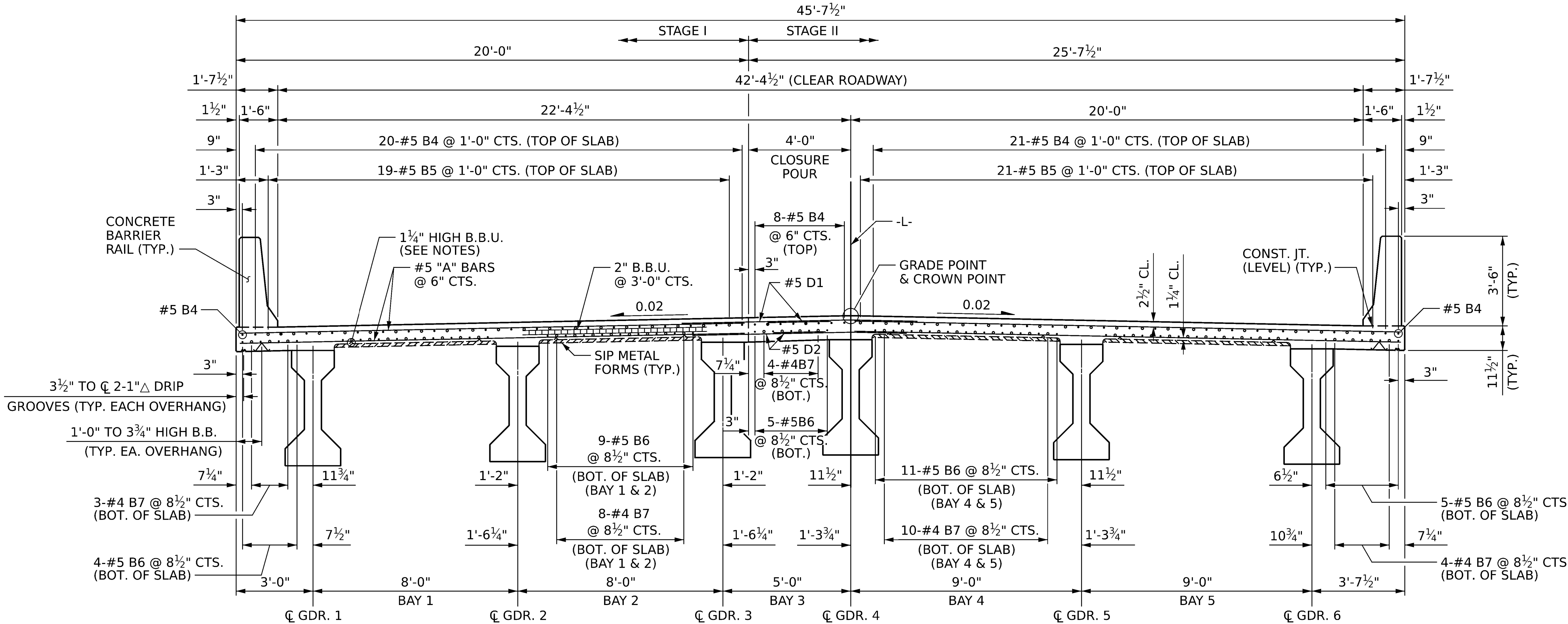
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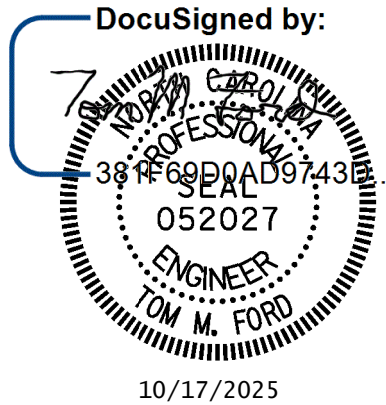
NOTES:
FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS



TYPICAL SECTION AT LINK SLAB



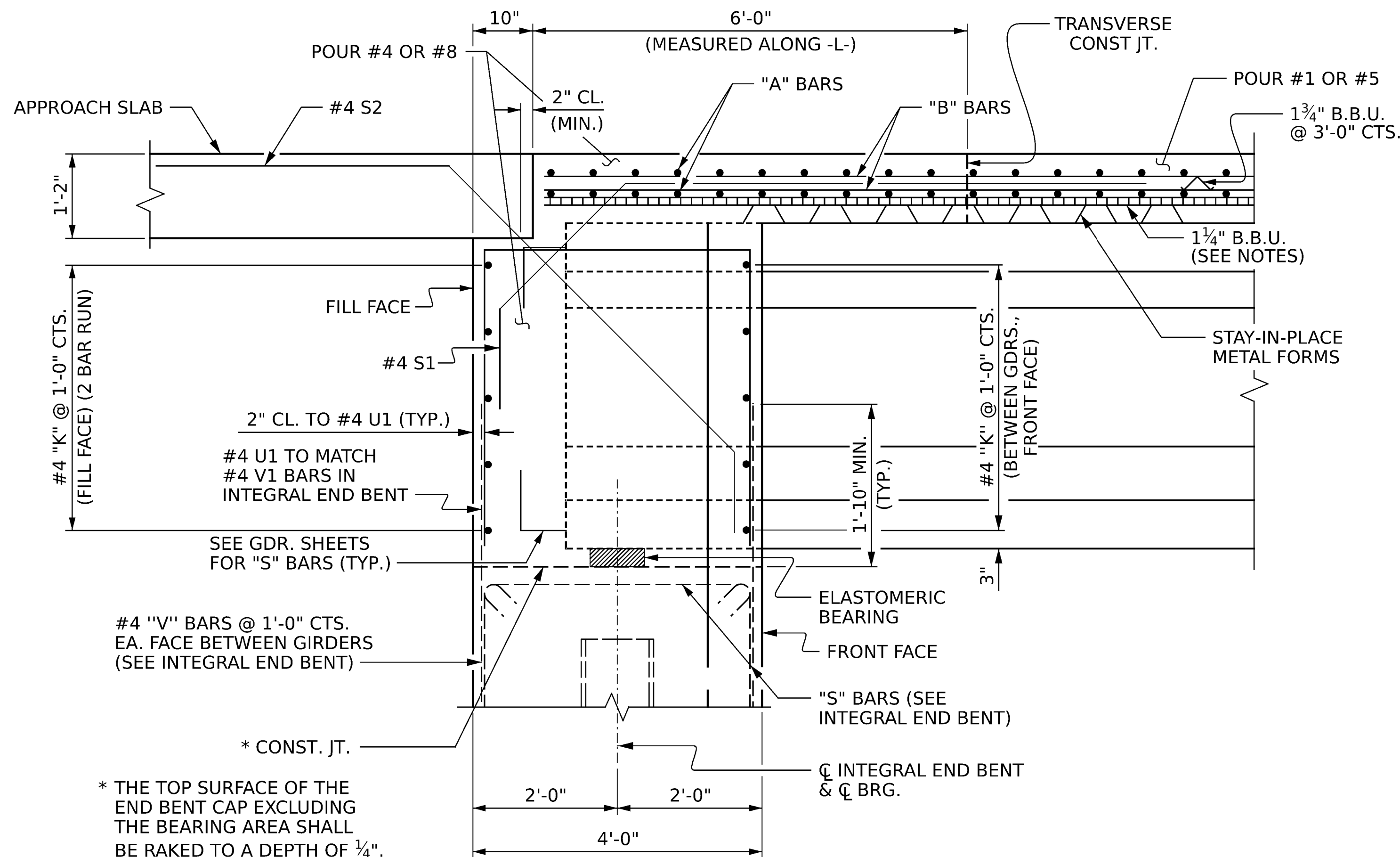
PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**
SHEET 2 OF 3

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-08
2			4		TOTAL SHEETS 52



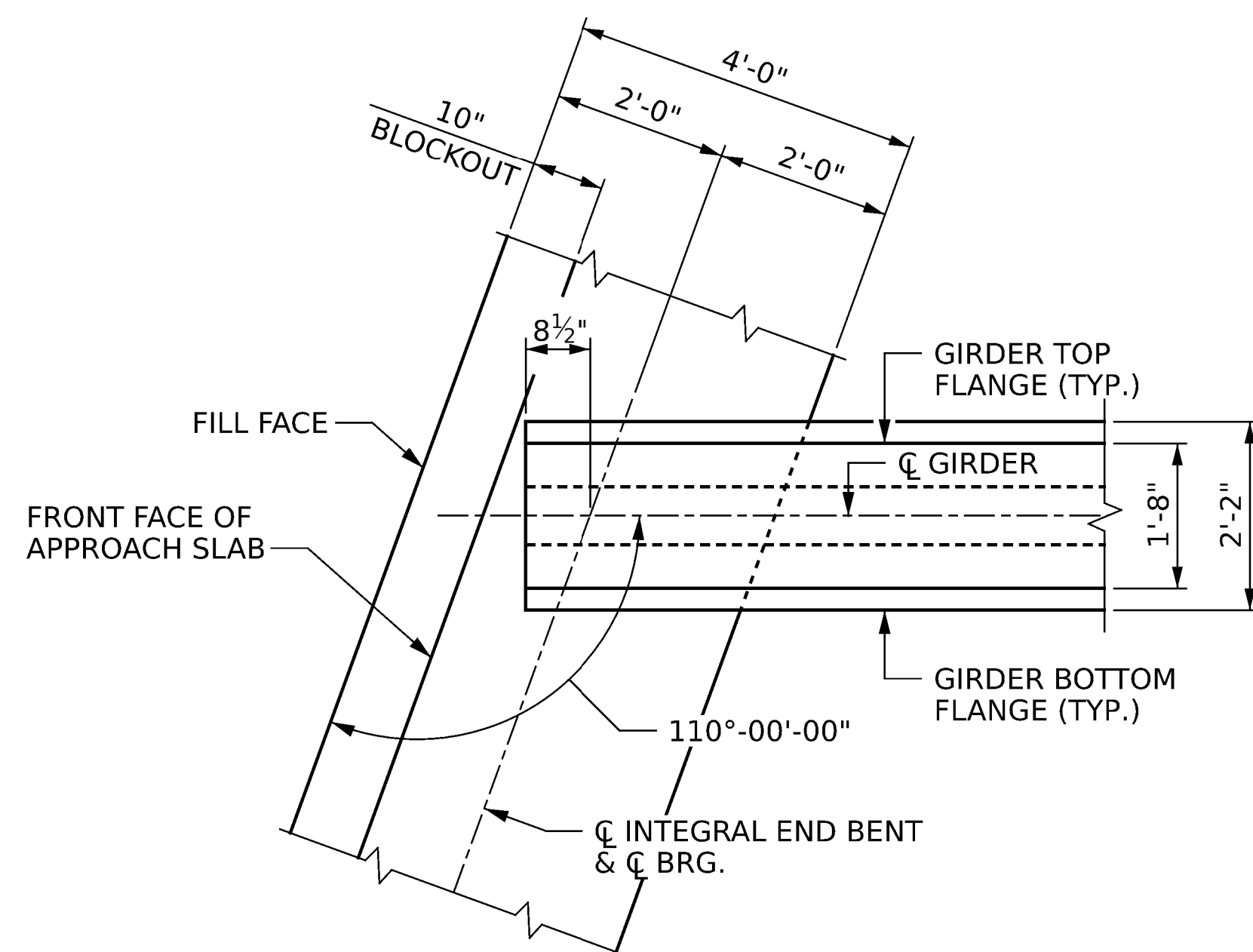
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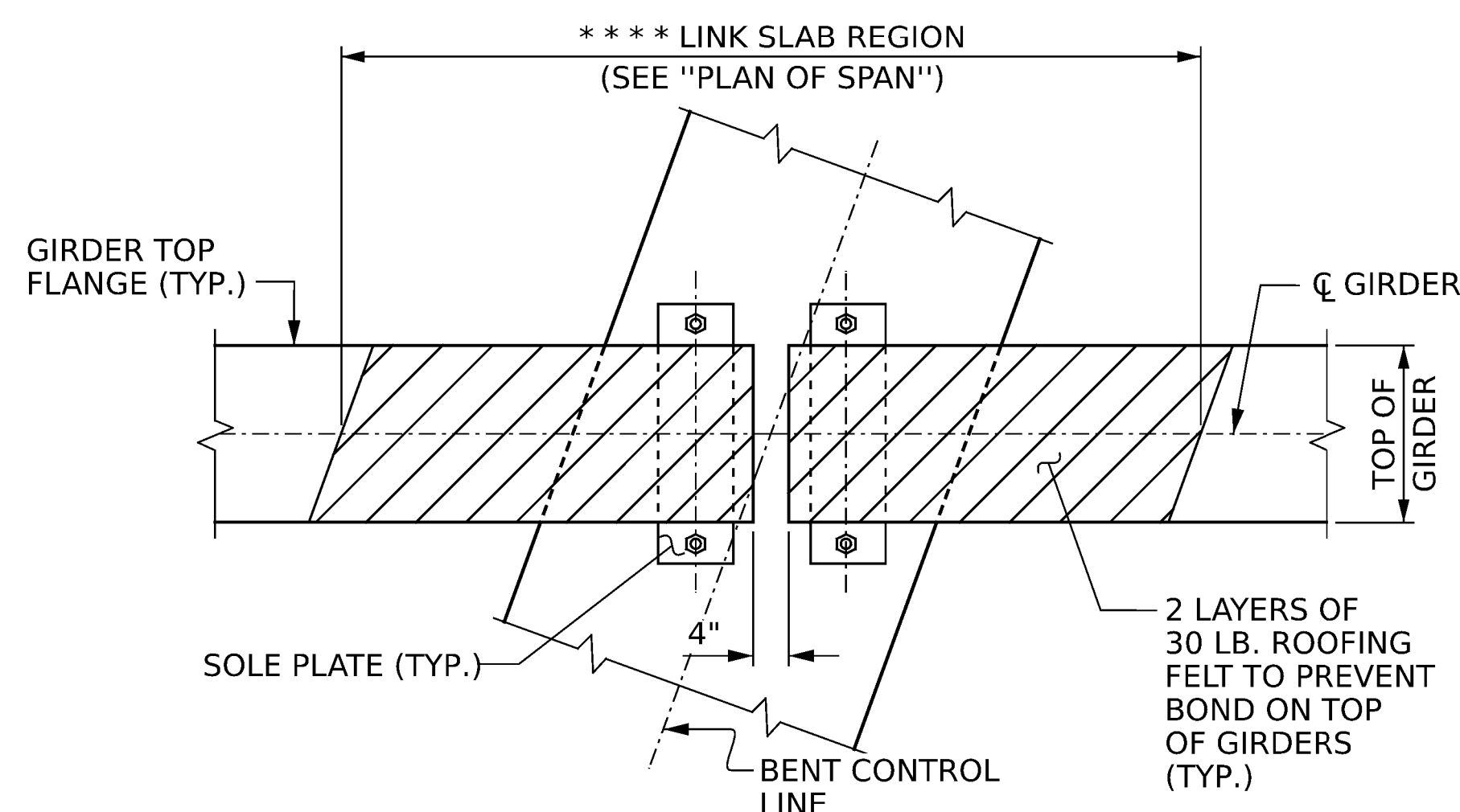
SECTION THRU INTEGRAL END BENT

(DIMENSIONS SHOWN ARE NORMAL TO THE INTEGRAL END BENT)
(INTEGRAL END BENT 1 SHOWN, INTEGRAL END BENT 2 SIMILAR)



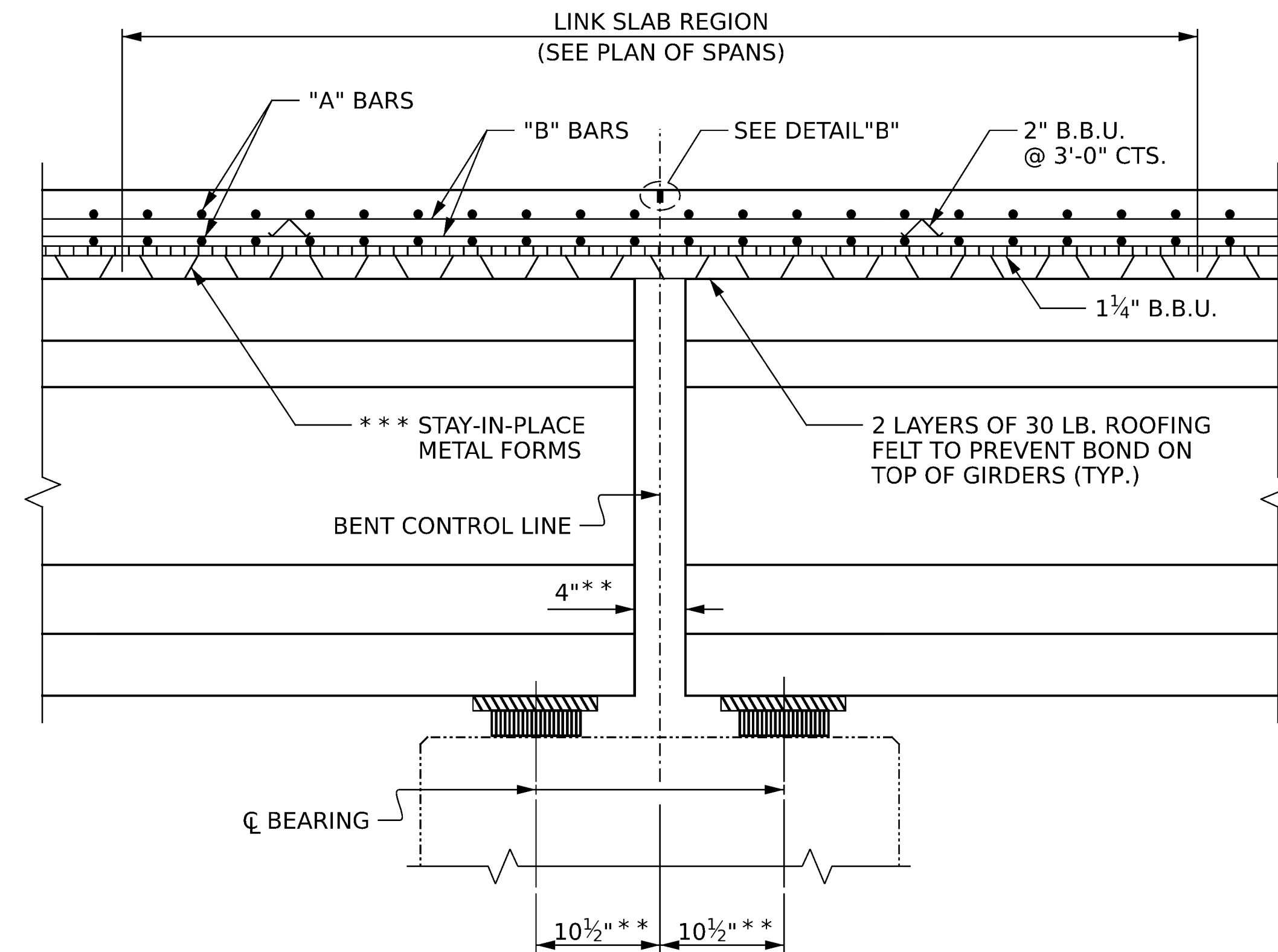
PLAN OF INTEGRAL END BENT

(INTEGRAL END BENT 1 SHOWN, INTEGRAL END BENT 2 SIMILAR)



PLAN OF GIRDERS AT LINK SLAB BENT

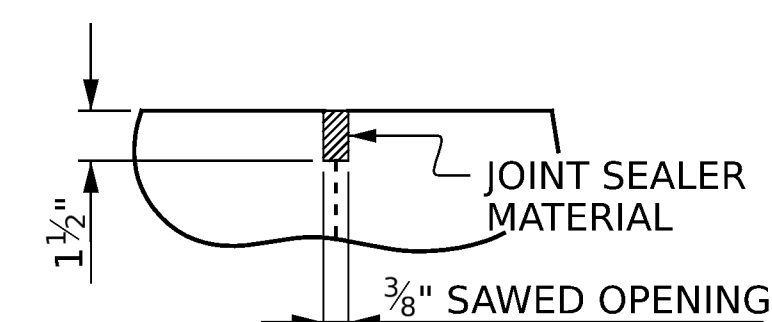
***** THE TOP OF THE GIRDER IN THE REGION
OF THE LINK SLAB SHALL BE SMOOTH
(NOT RAKED) AND FREE OF STIRRUPS,
ANCHOR STUDS, DECK FORMWORK
ATTACHMENTS, AND OVERHANG
FALSEWORK/FORMWORK ATTACHMENTS.



SECTION THROUGH LINK SLAB

* * MEASURED ALONG C GIRDER

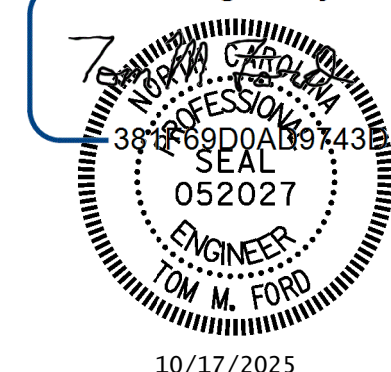
*** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.



DETAIL "B"

A 1½" DEEP, ¾" WIDE CONTRACTION JOINT AT C BENT SHALL BE SAWED 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.

—DocuSigned by:



10/17/2025

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION DETAILS

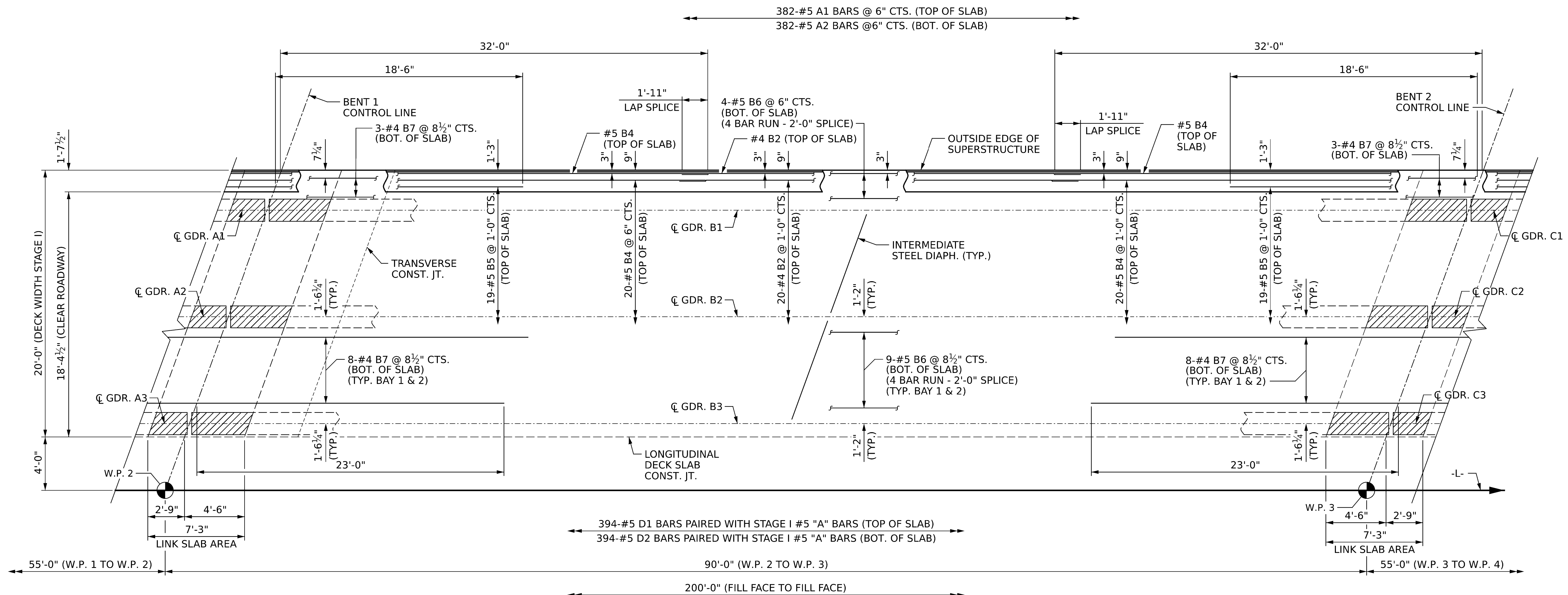
DRAWN BY : J. HARRIS DATE : 3/2025
 CHECKED BY : T. FORD DATE : 7/2025
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	2			4			52



PLAN OF SPAN B

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: 15+40.00 -L-

SHEET 2 OF 8

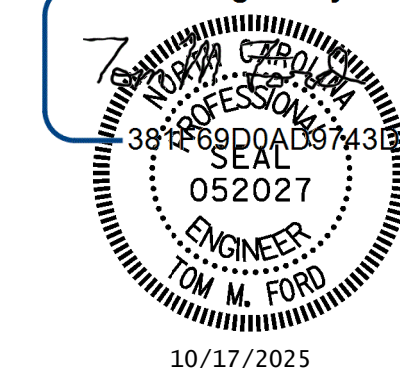
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

SPAN B

STAGE I

DocuSigned by:



10/17/202

DRAWN BY : J. HARRIS DATE : 3/2025
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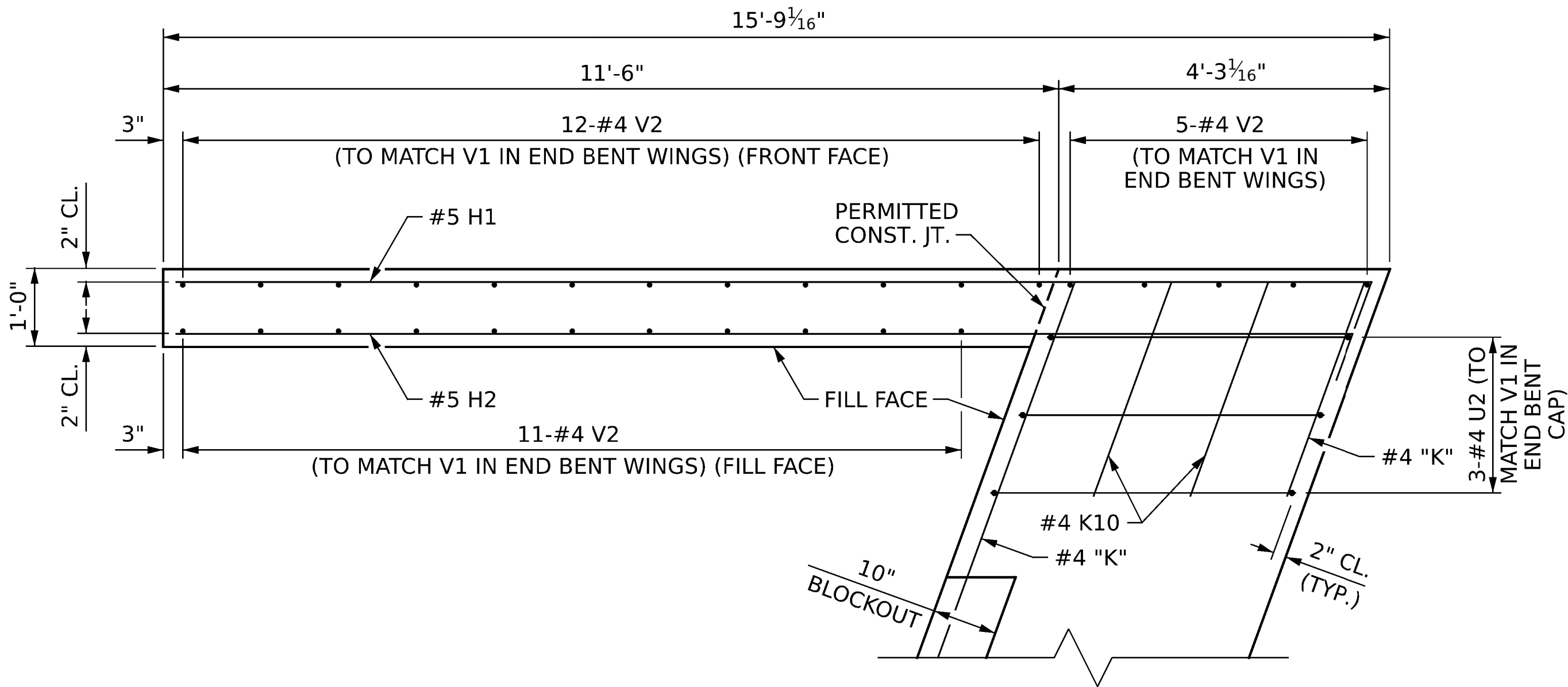
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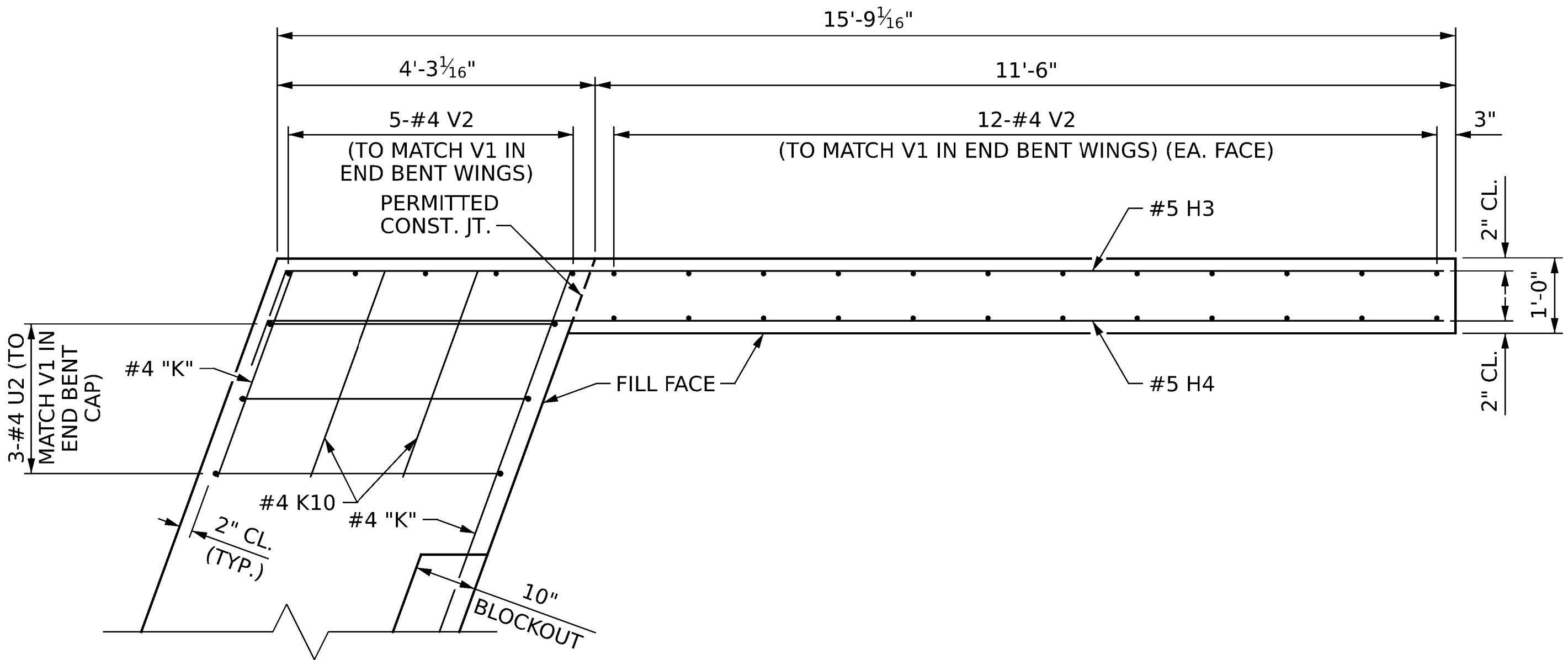
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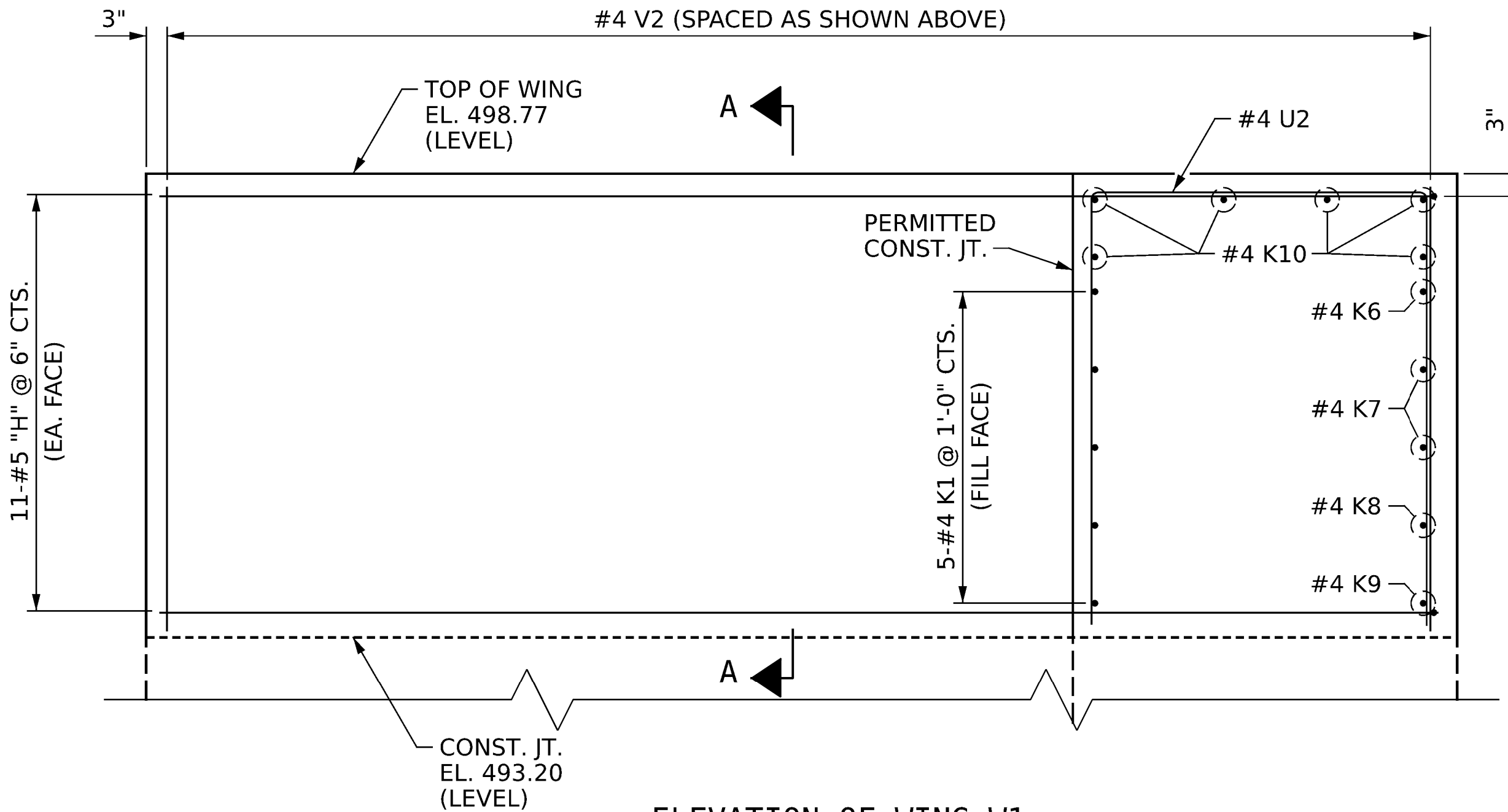
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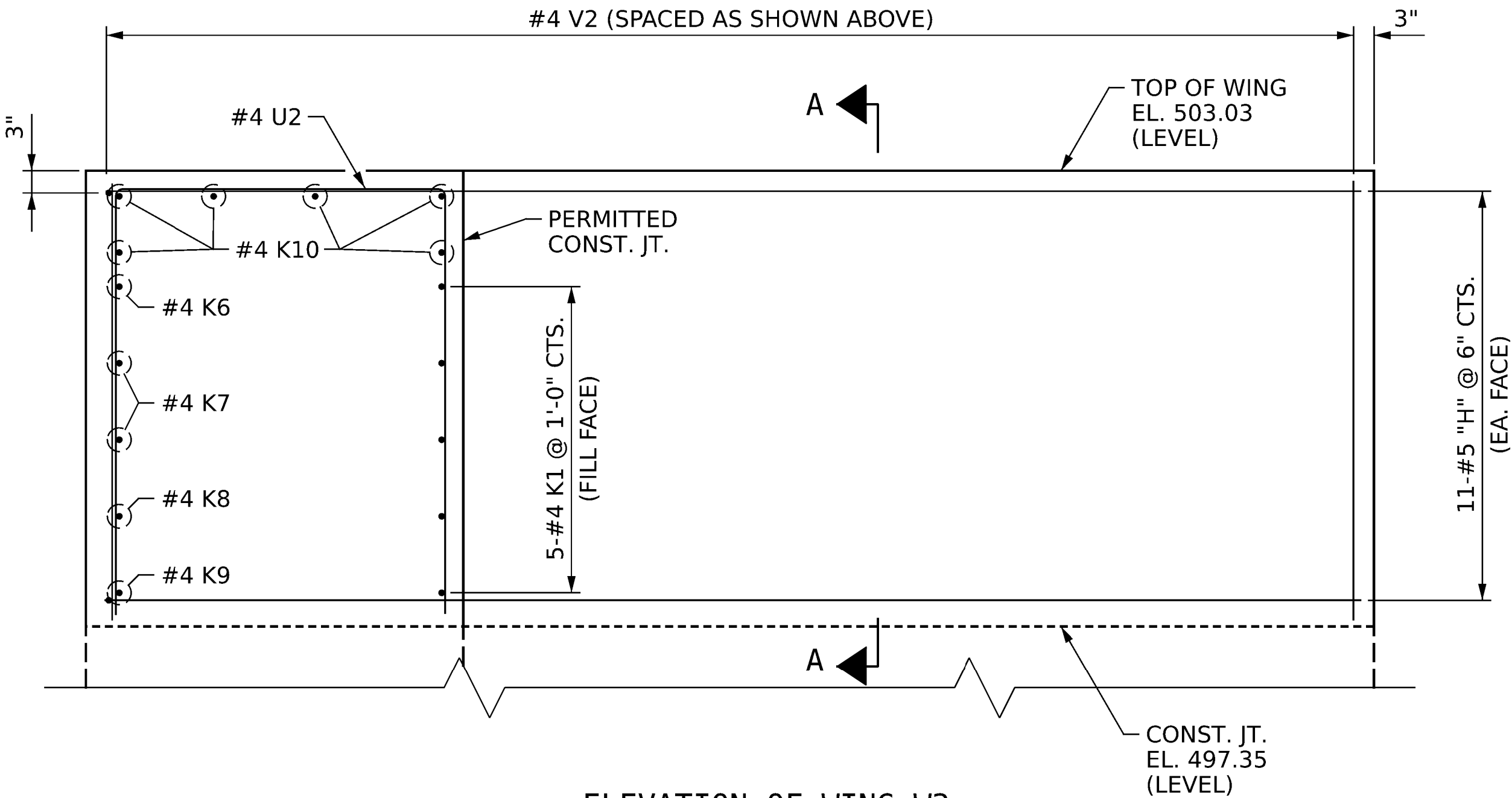
PLAN OF WING W1
AT END BENT 1



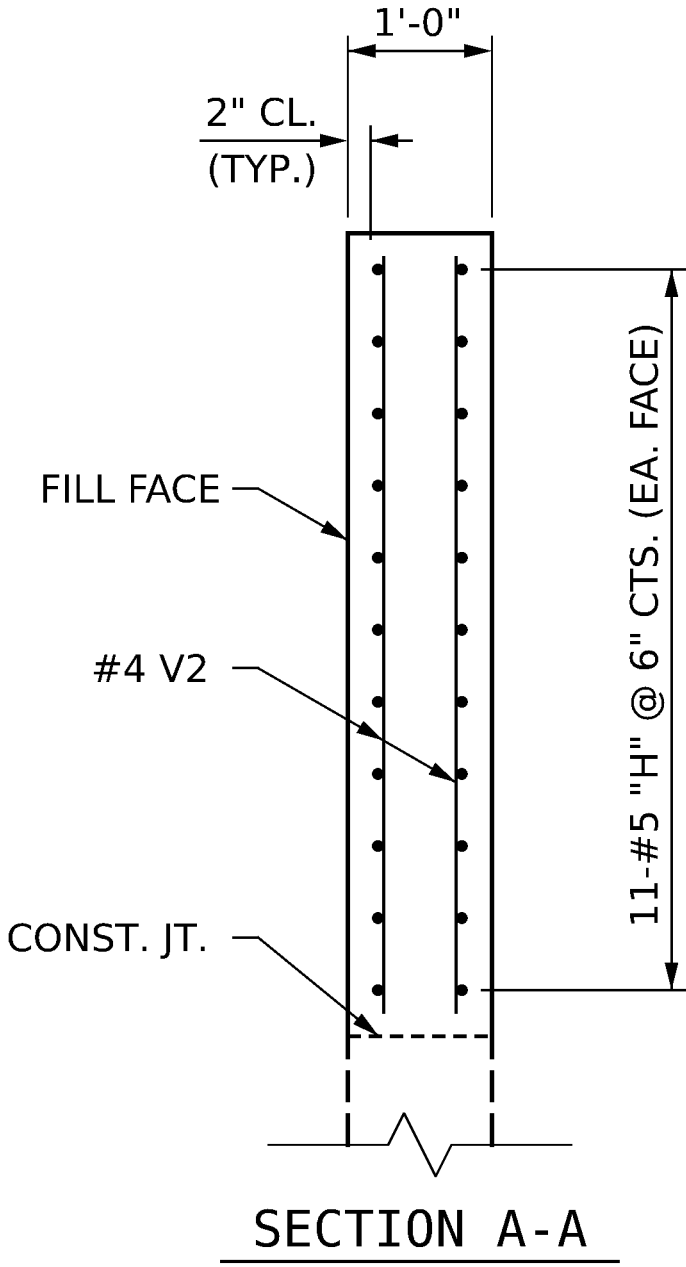
PLAN OF WING W3
AT END BENT 2



ELEVATION OF WING W1
AT END BENT 1



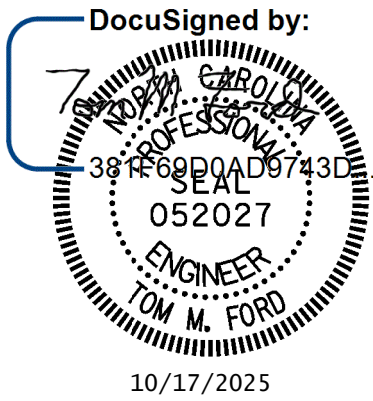
ELEVATION OF WING W3
AT END BENT 2



SECTION A-A

ABUTMENT WINGS

FOR END BENT REINFORCING STEEL AND DETAILS,
SEE "SUBSTRUCTURE END BENTS 1 & 2" SHEETS.



PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PLAN OF SPANS
DETAILS
STAGE I**

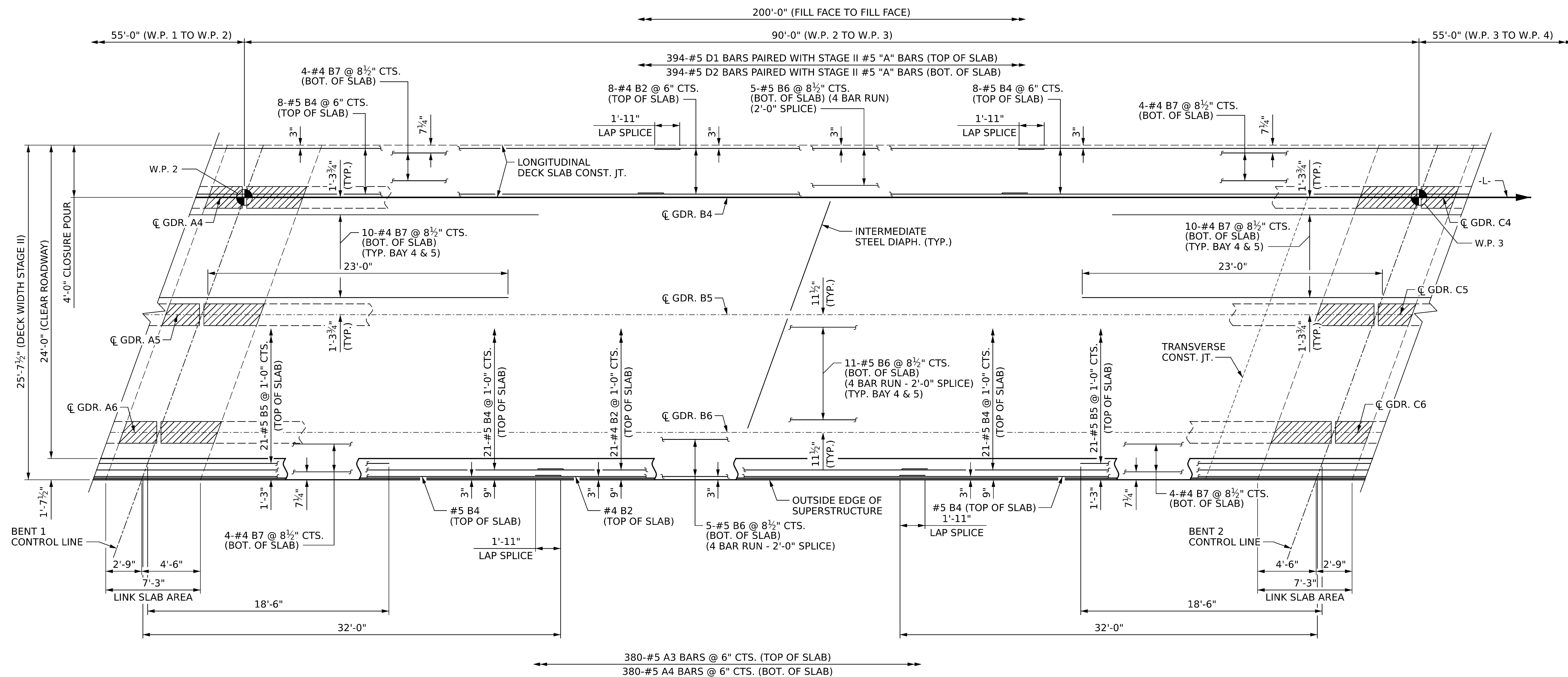
DRAWN BY : **J. HARRIS** DATE : **3/2025**
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DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**



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2			4			TOTAL SHEETS 52



PLAN OF SPAN B

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: 15+40.00 -L-

SHEET 6 OF 8

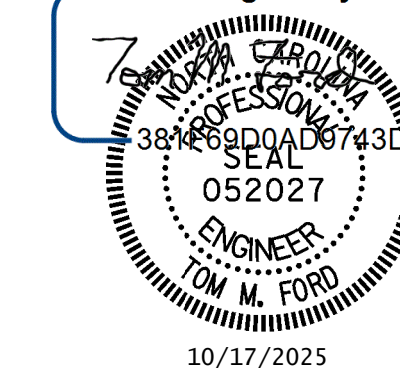
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS

SPAN B

STAGE II

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10/17/202

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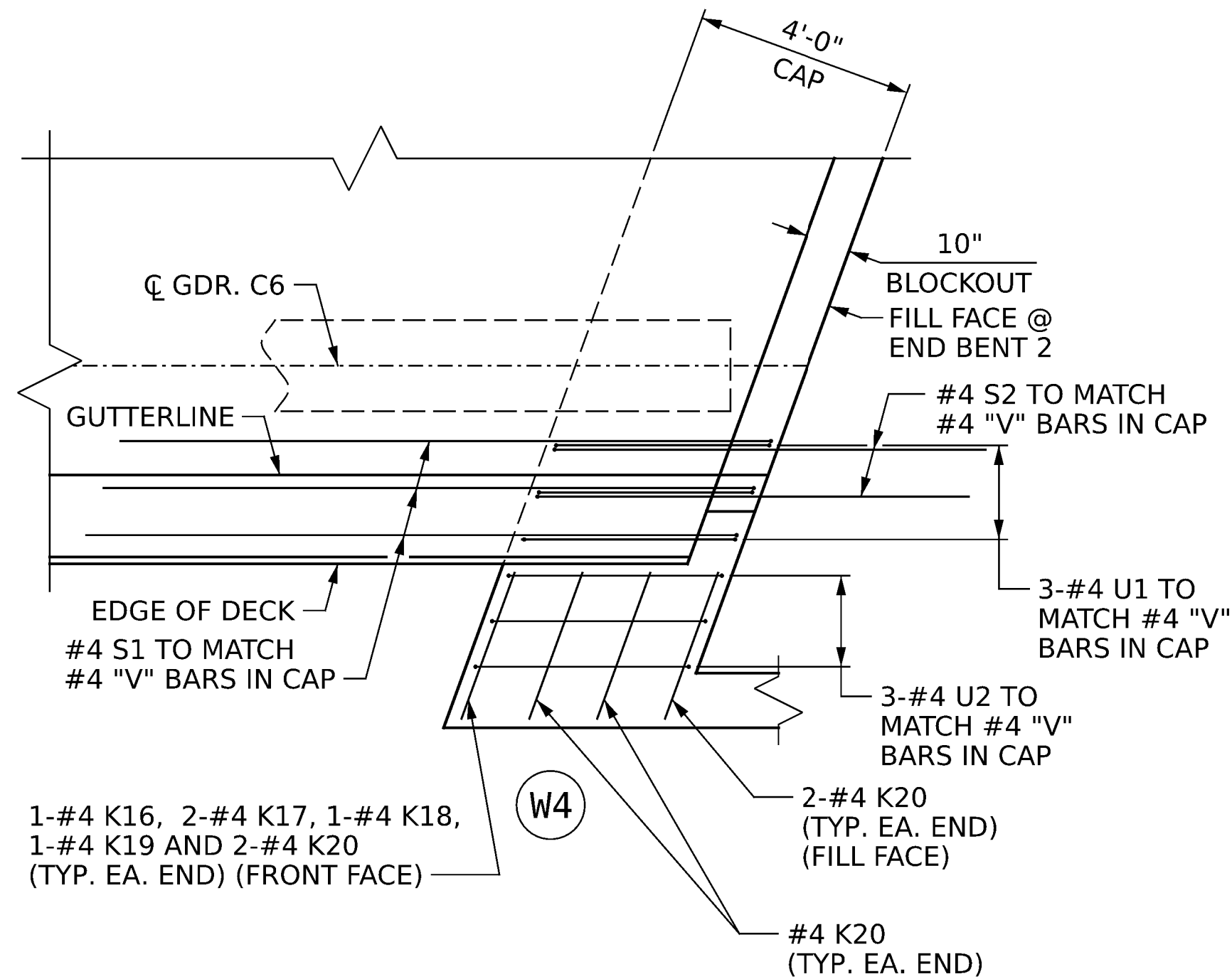
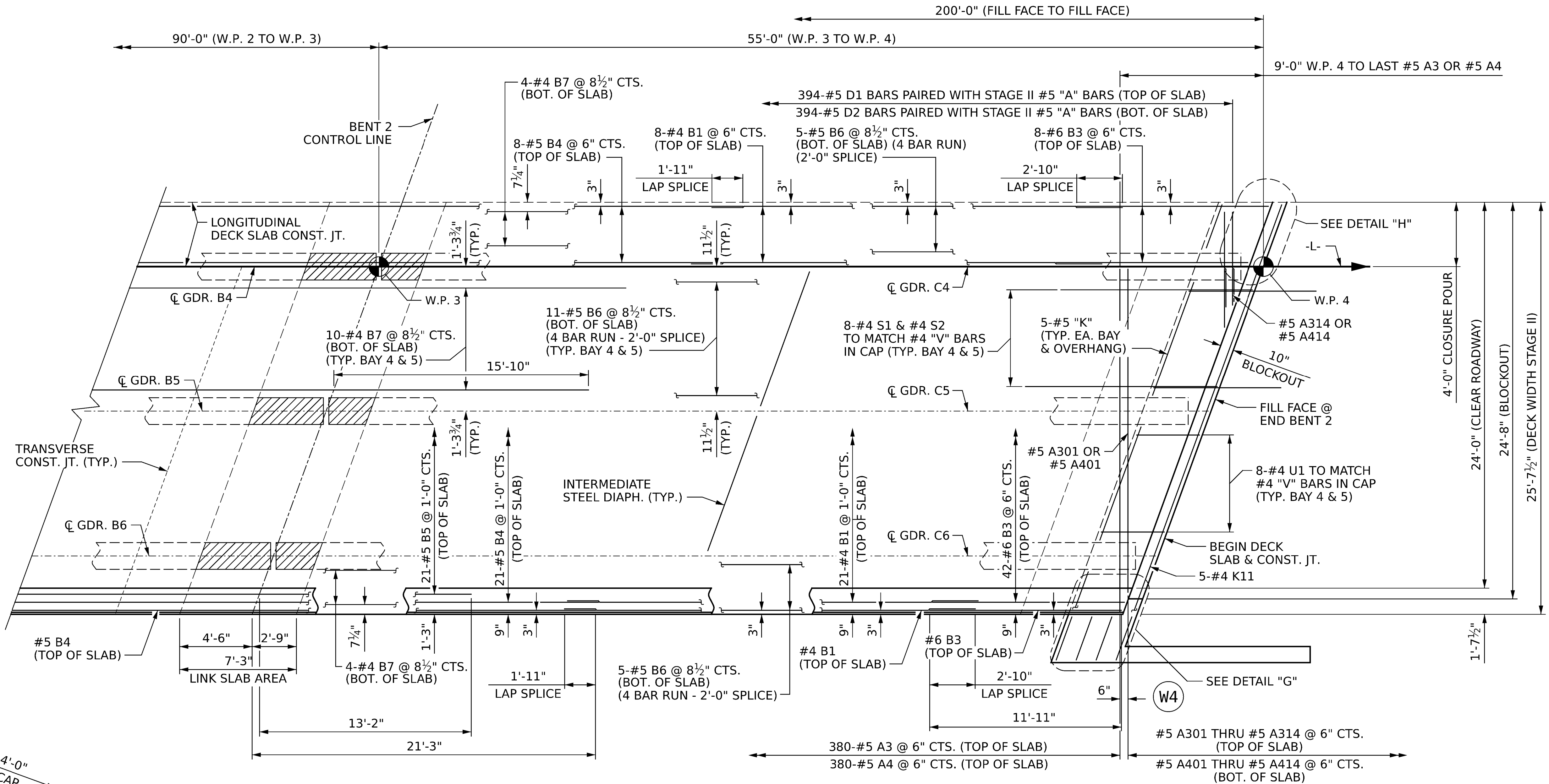
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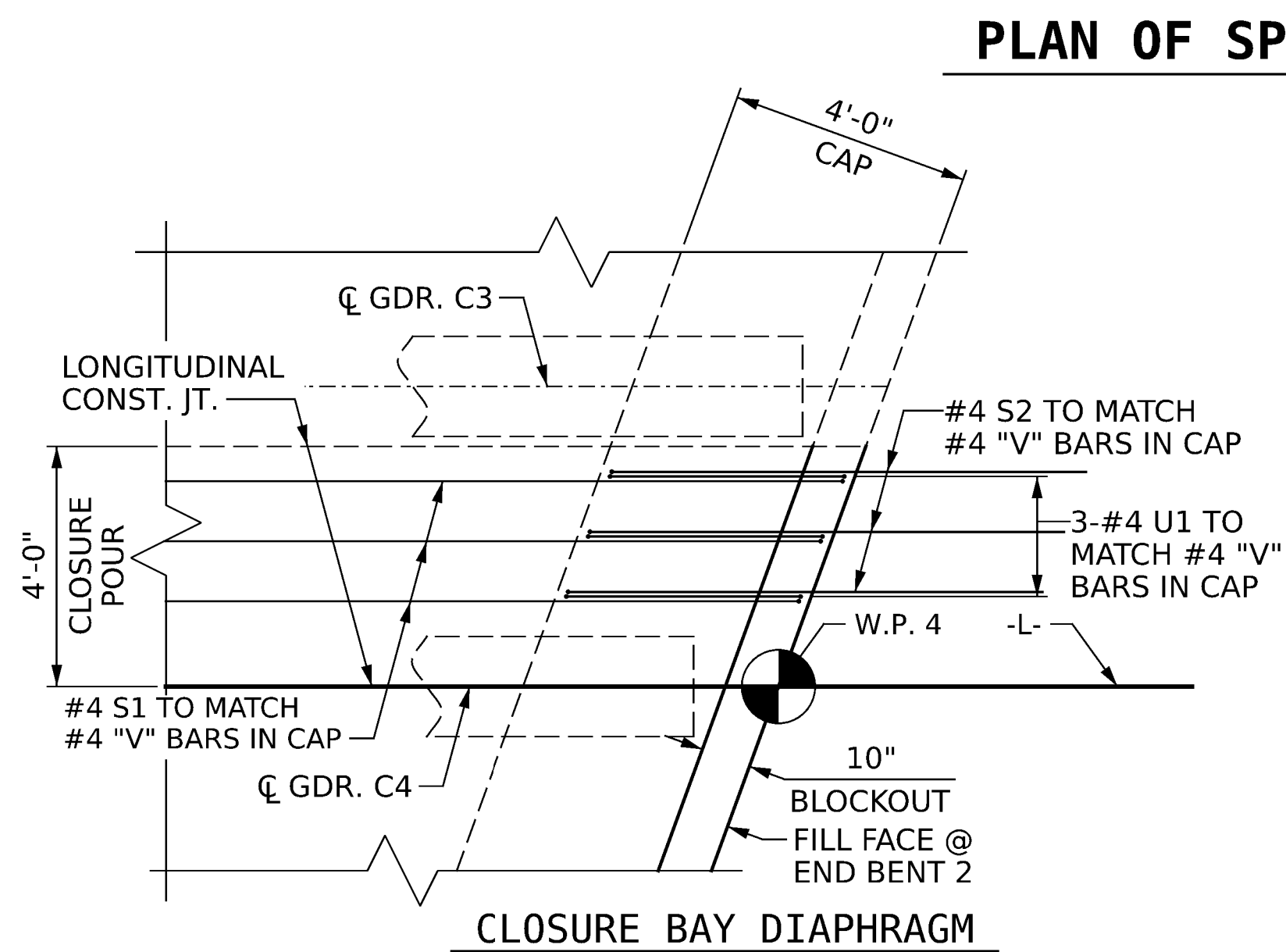
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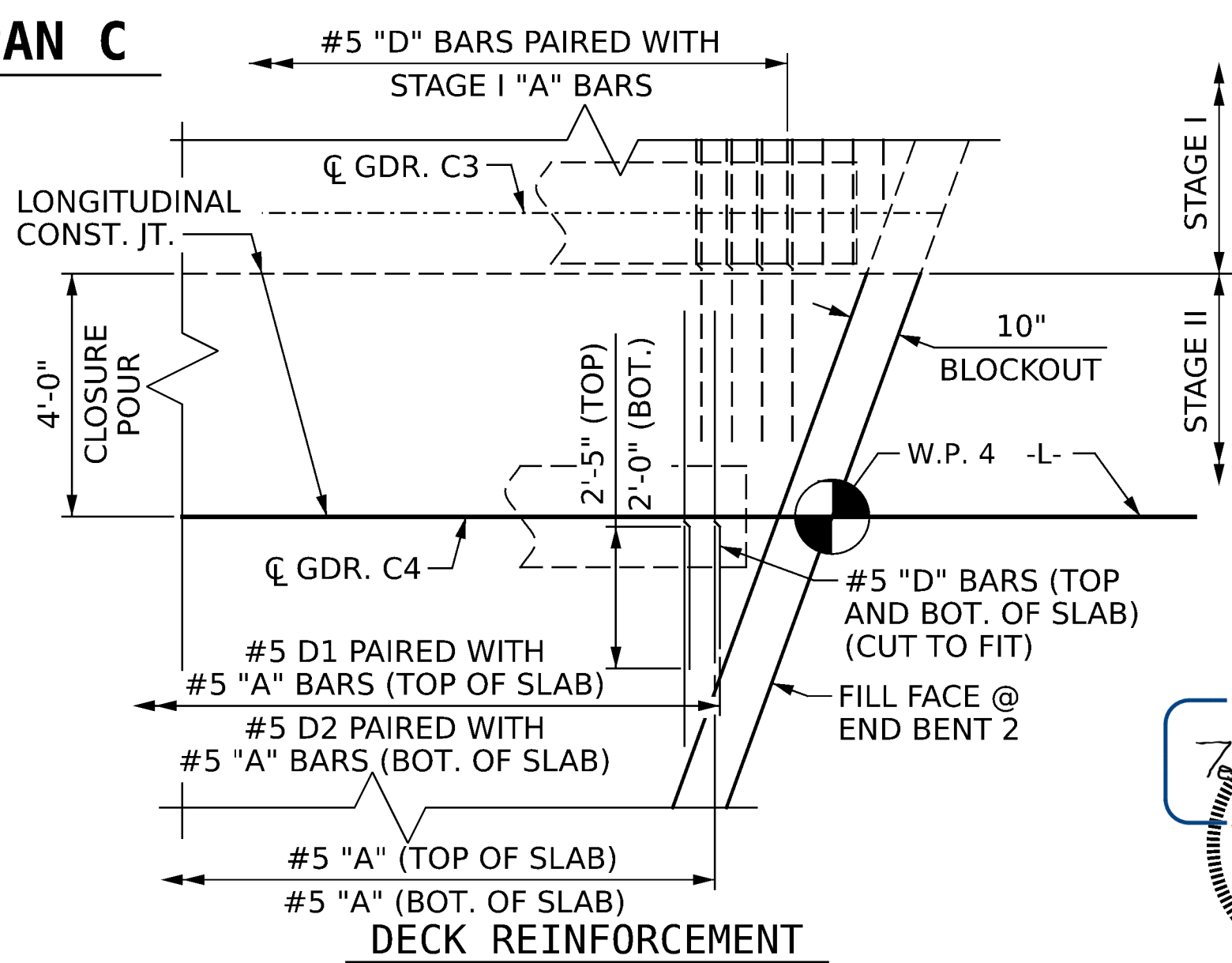


DETAIL "G"

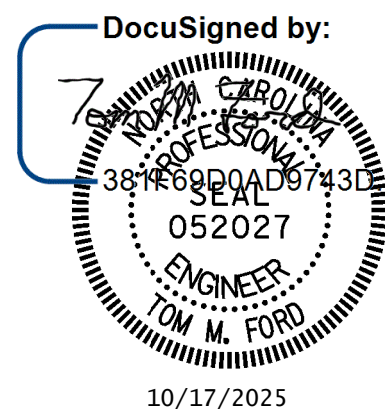


CLOSURE BAY DIAPHRAGM

PLAN OF SPAN C



DETAIL "F"



PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PLAN OF SPANS
SPAN C
STAGE II**

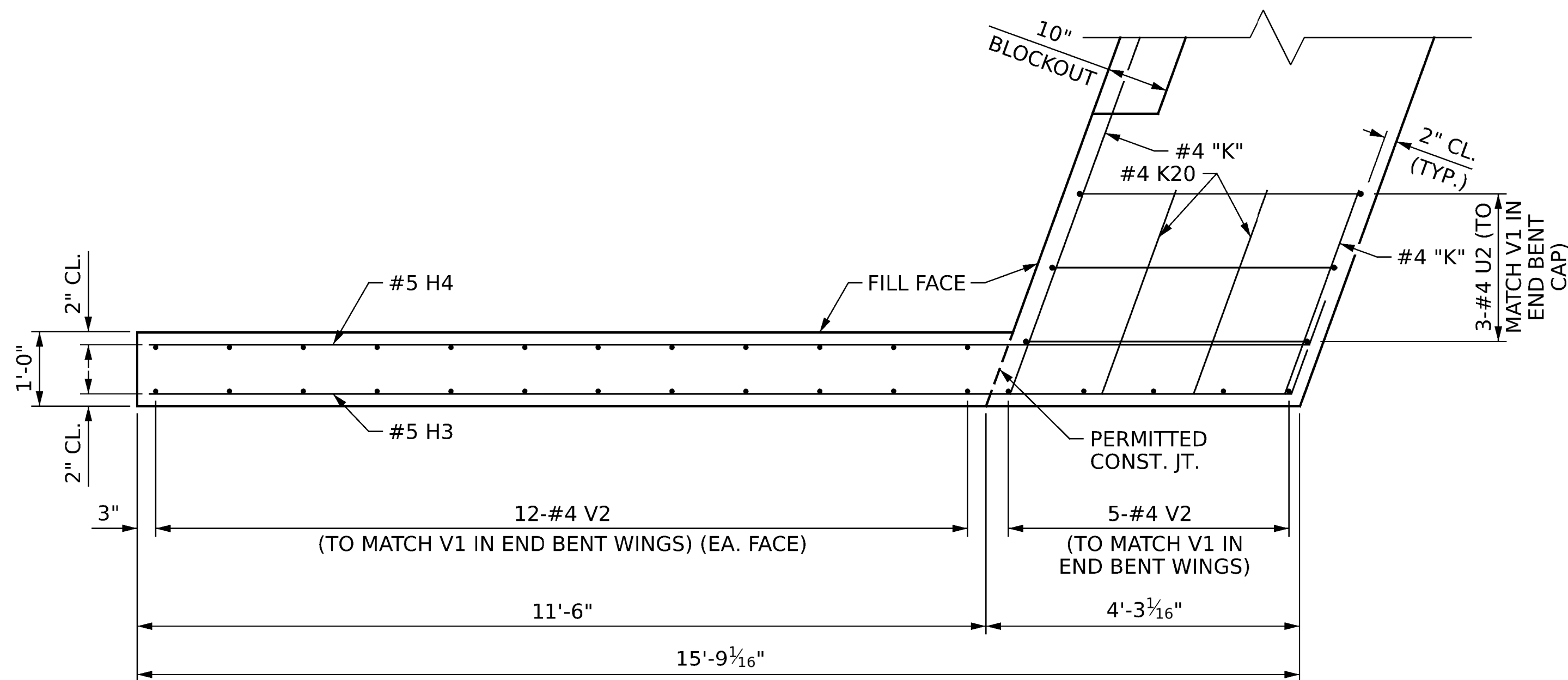
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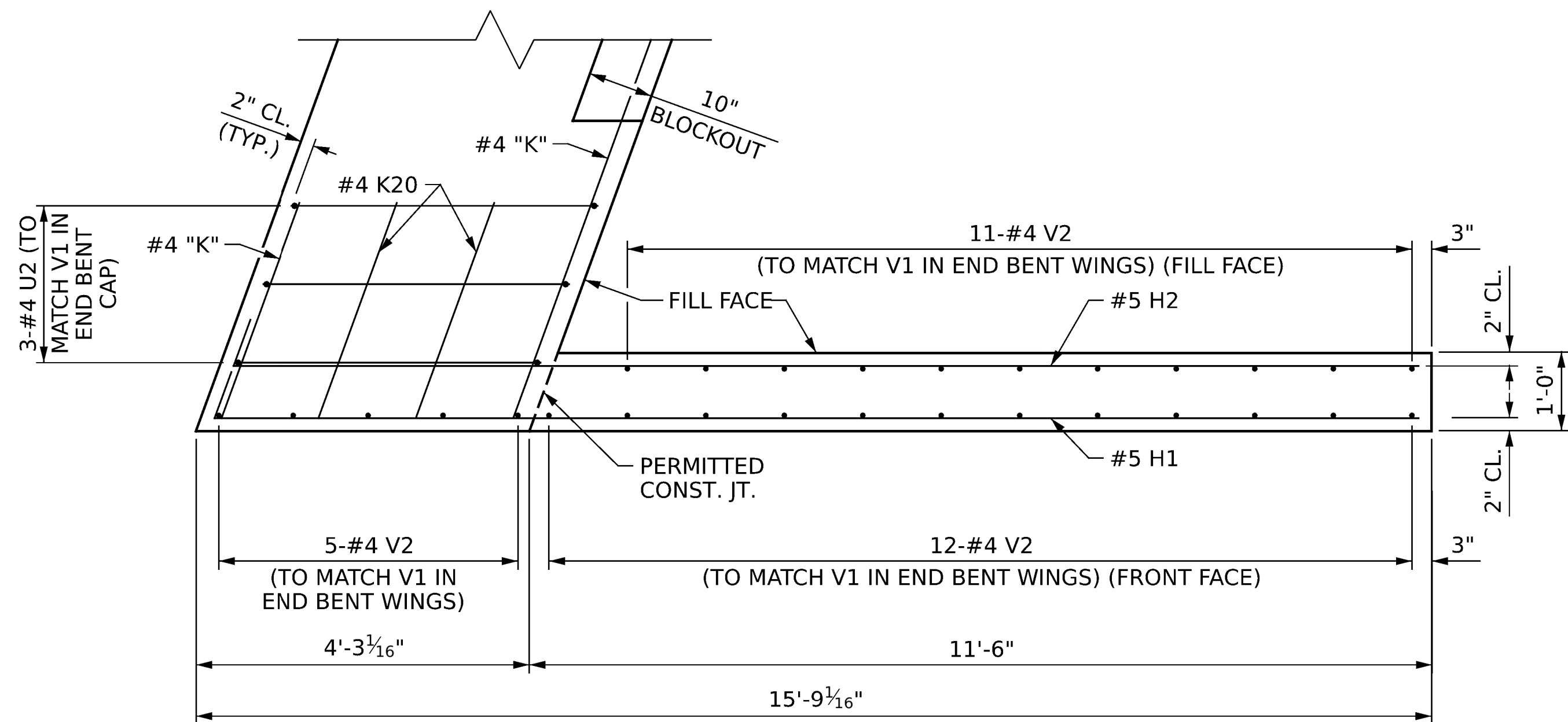
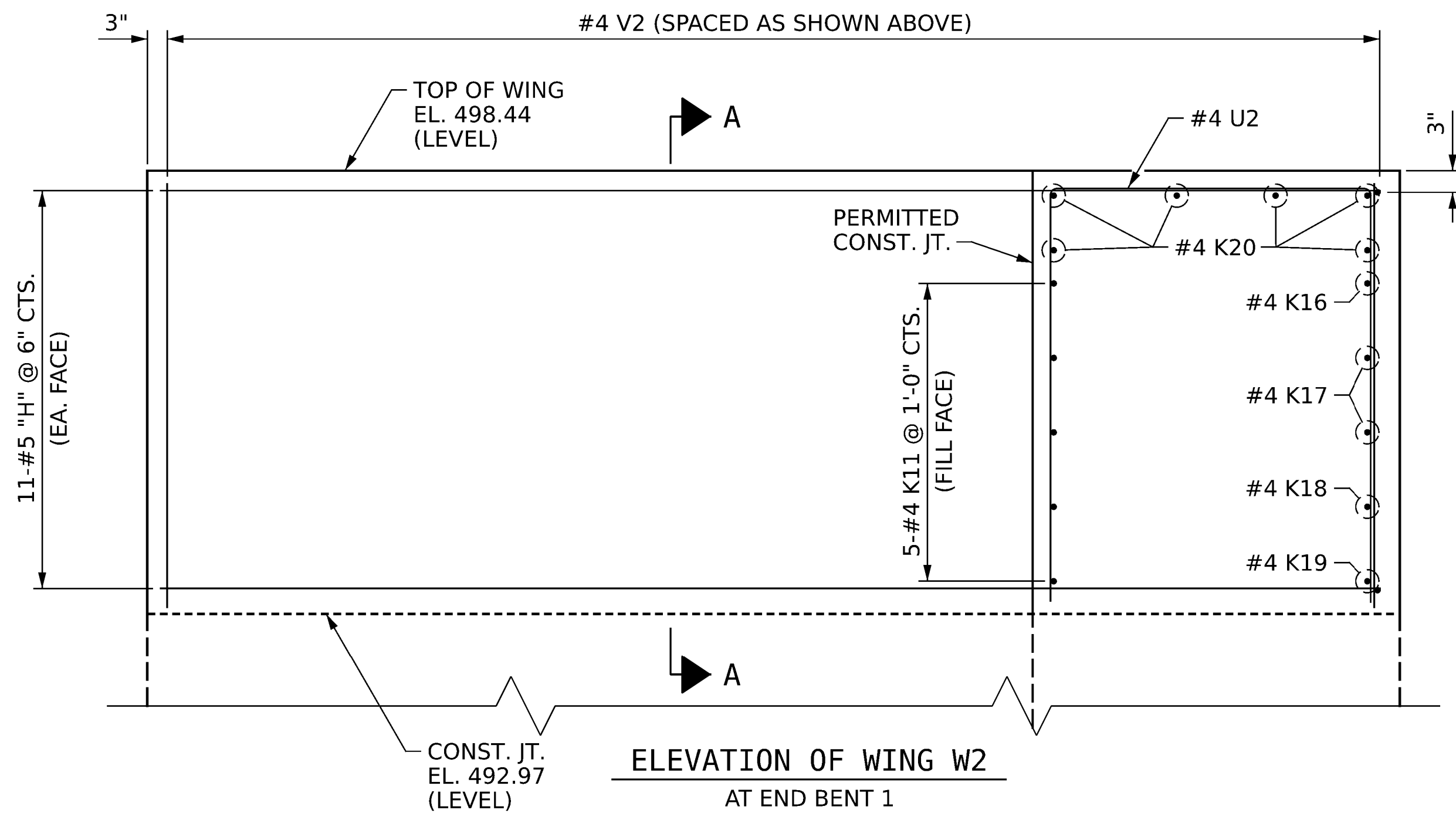
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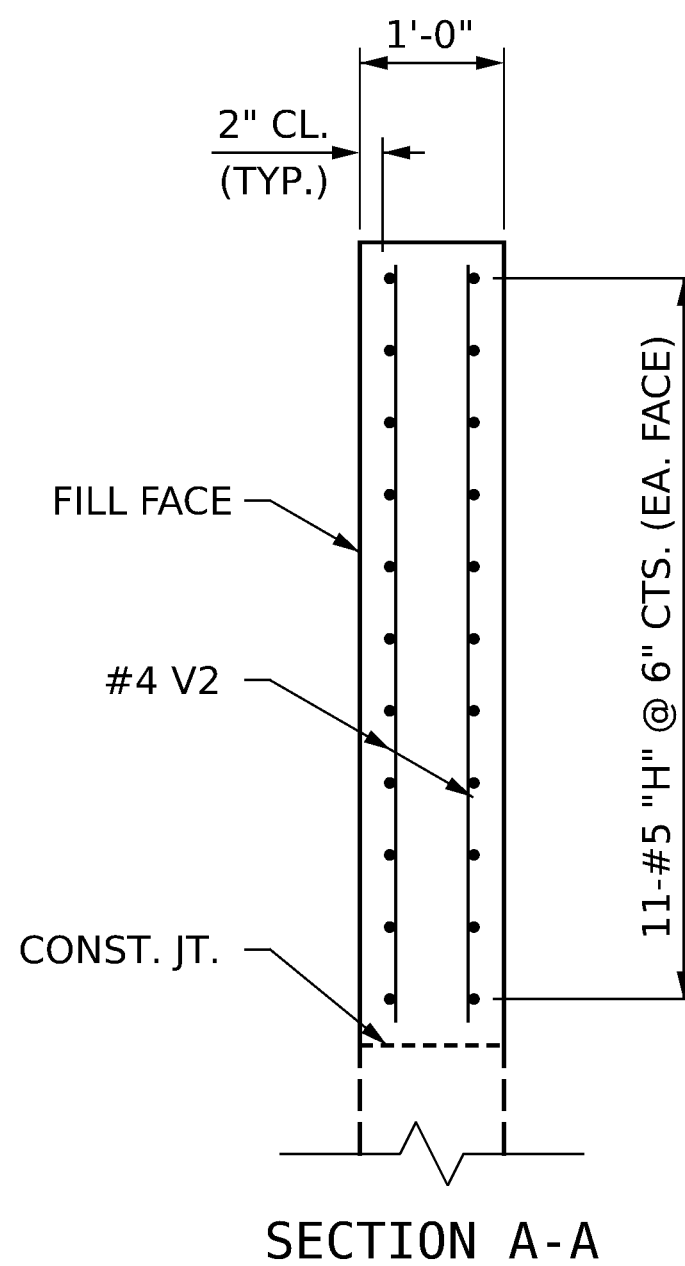
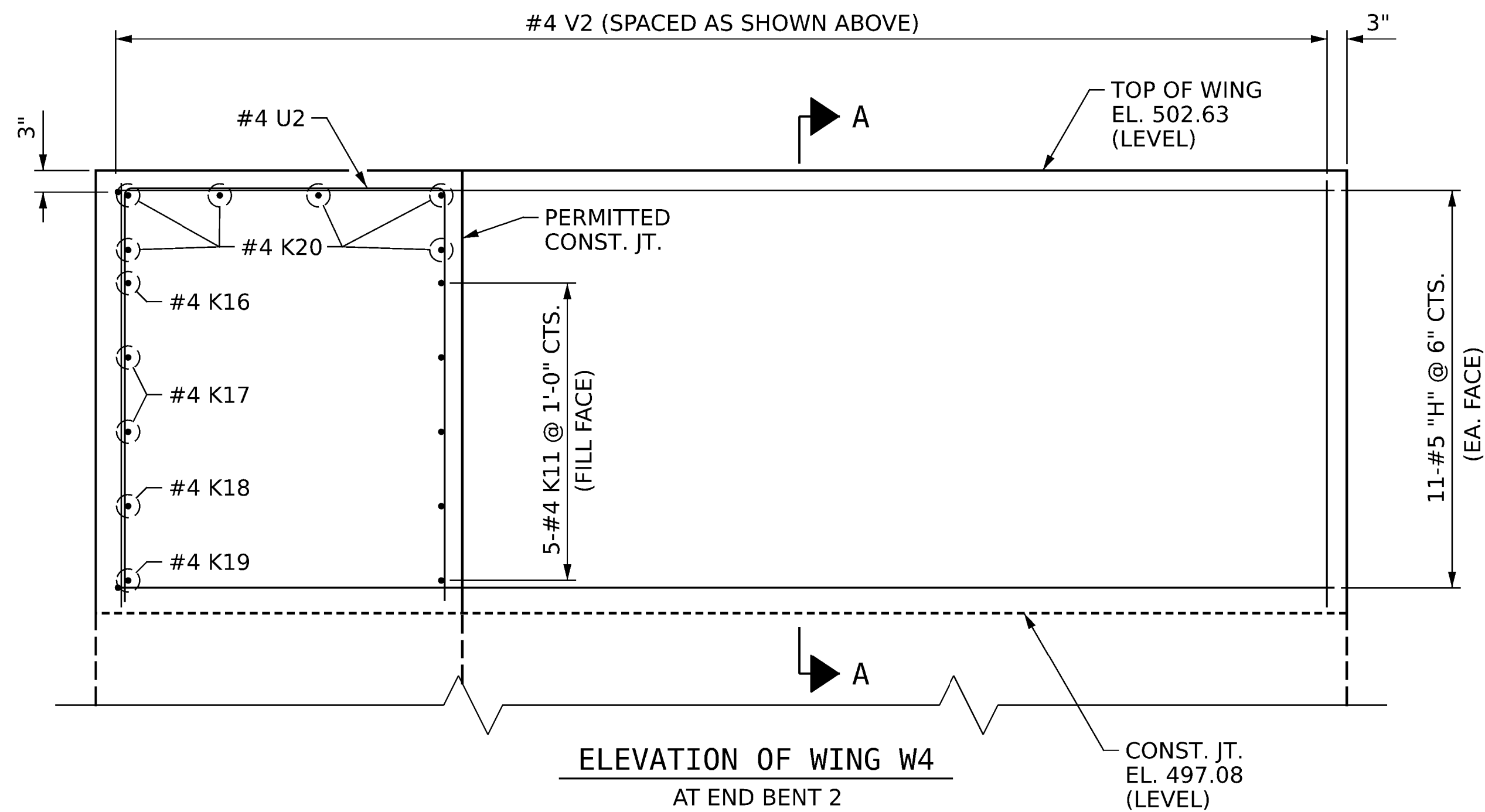
PLAN OF WING W2

AT END BENT 1



PLAN OF WING W4

AT END BENT 2



ABUTMENT WINGS

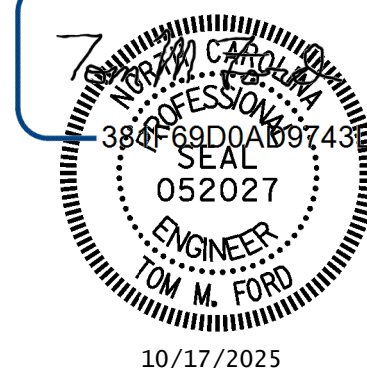
FOR END BENT REINFORCING STEEL AND DETAILS,
SEE "SUBSTRUCTURE END BENTS 1 & 2" SHEETS.



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PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: 15+40.00 -L-

SHEET 8 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

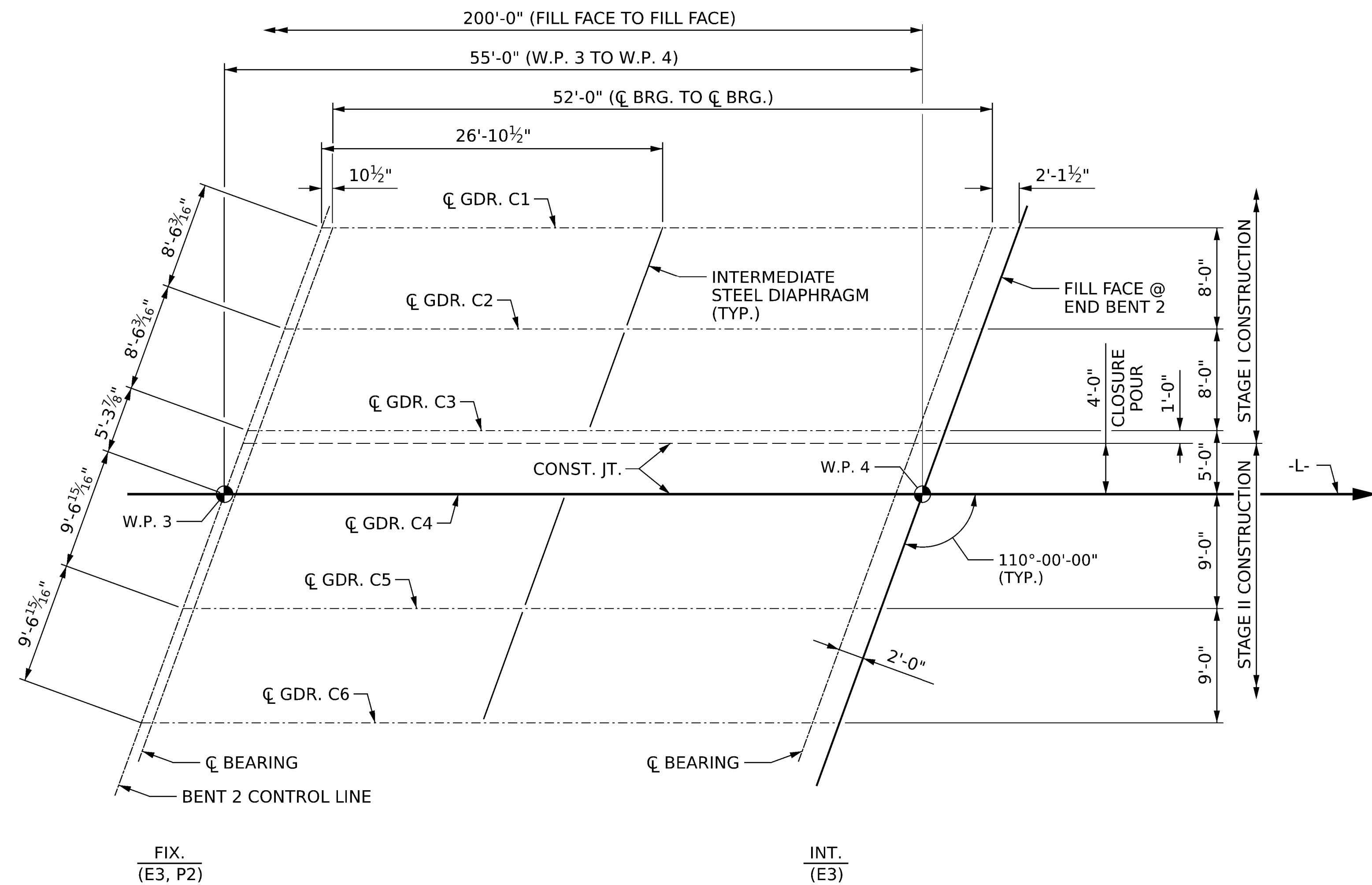
PLAN OF SPANS DETAILS STAGE II

DRAWN BY : J. HARRIS DATE : 3/2025
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1			3			TOTAL SHEETS
2			4			52



SPAN C

FRAMING PLAN SPAN C

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

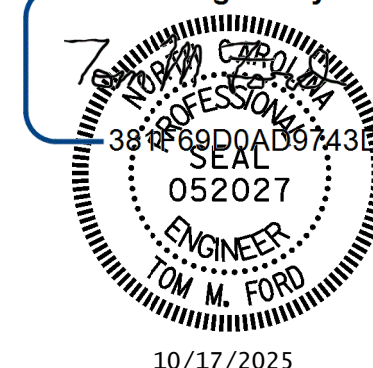
STATION: 15+40.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN
SPAN C

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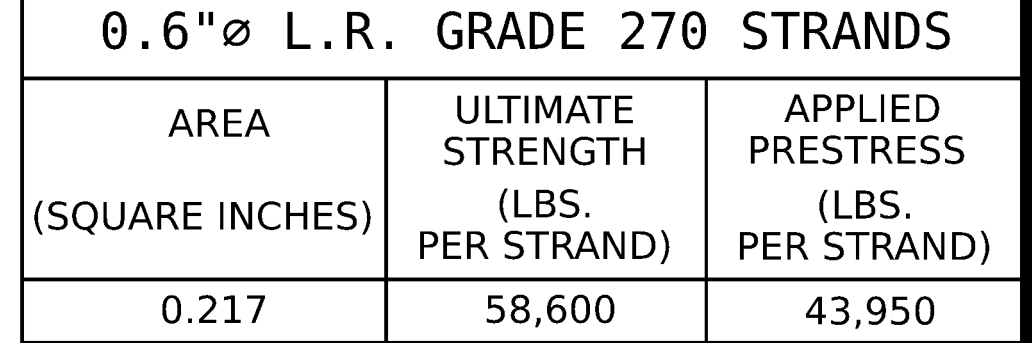
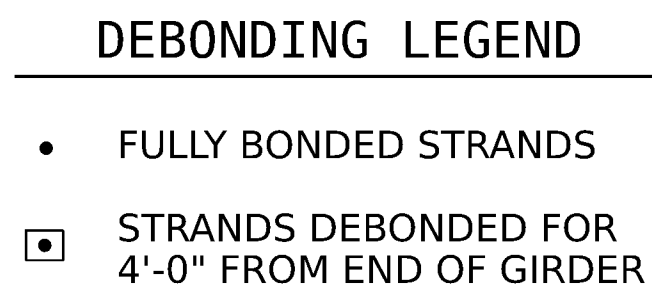
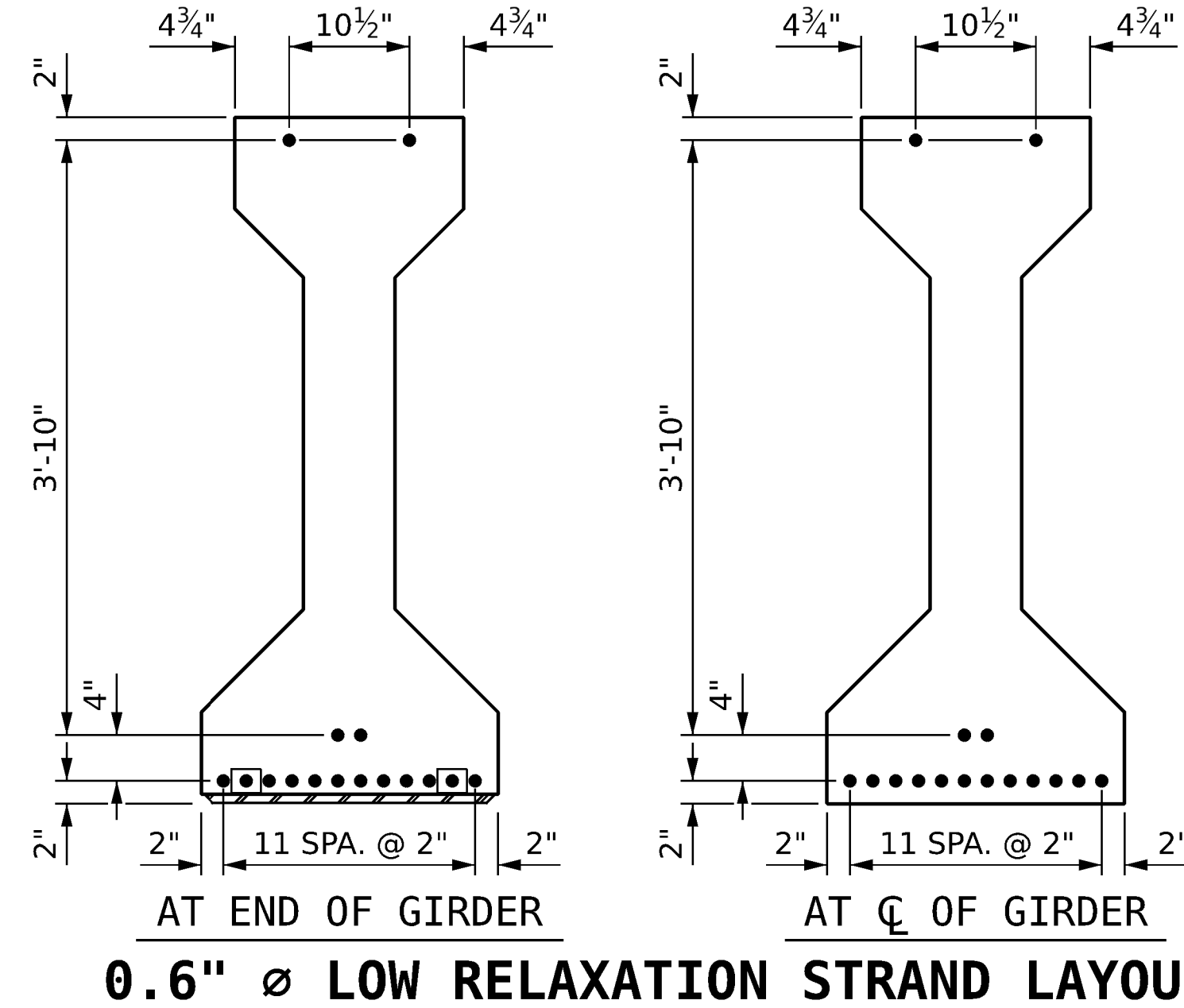
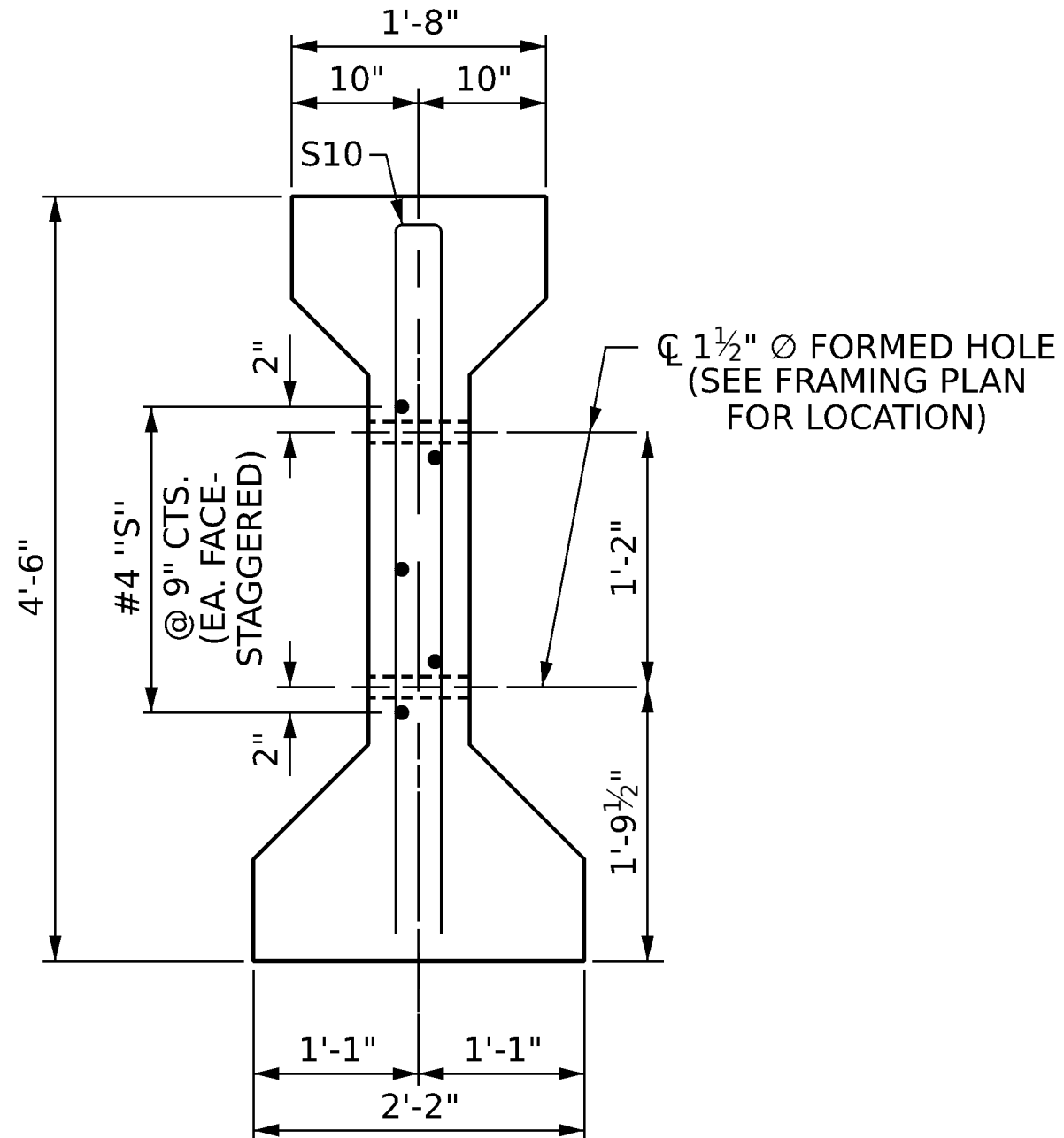
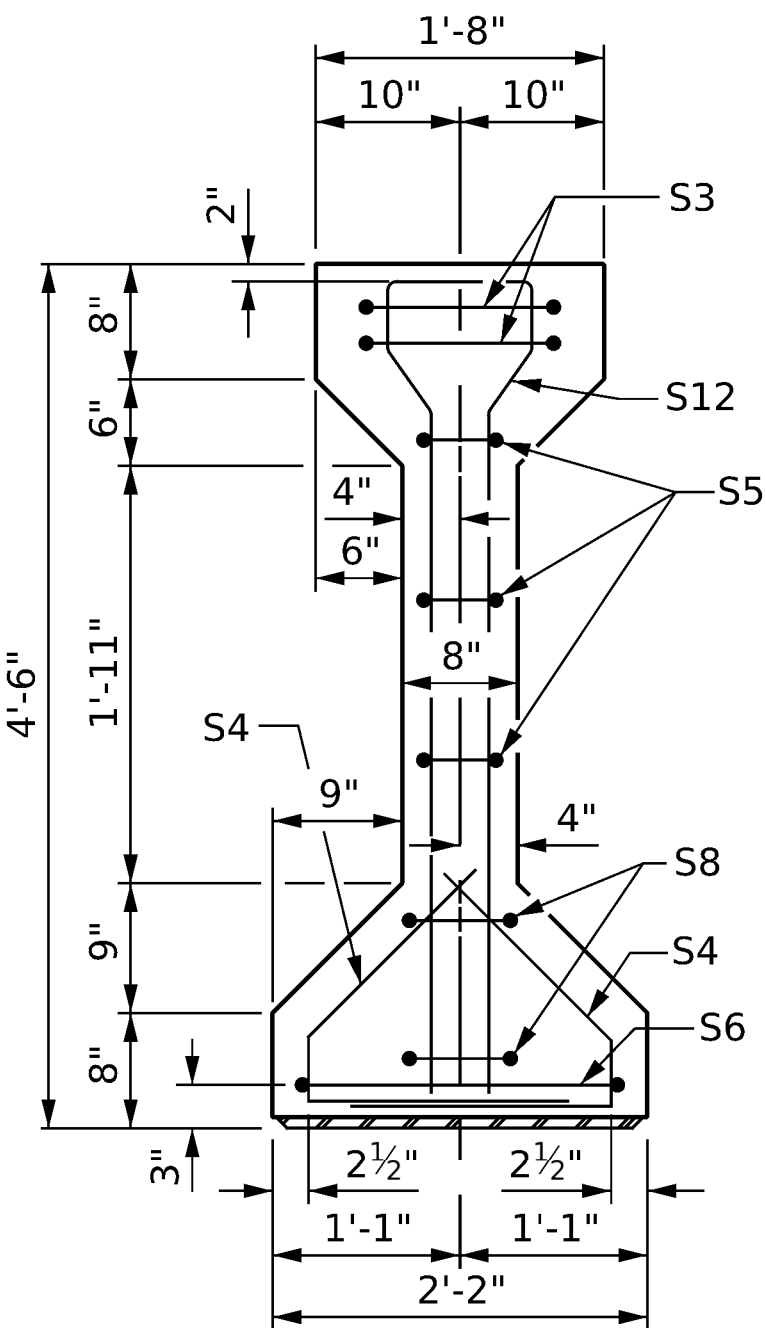
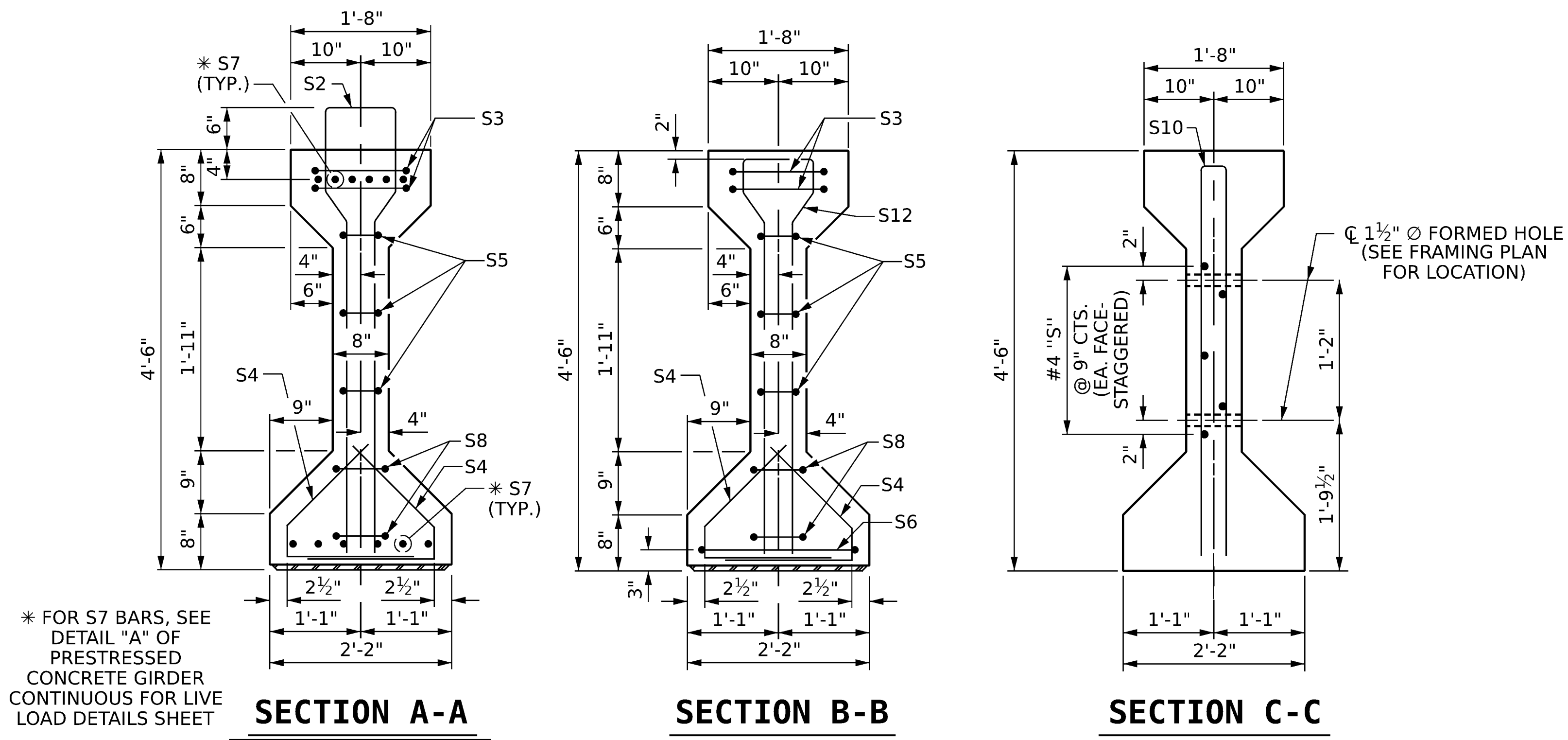
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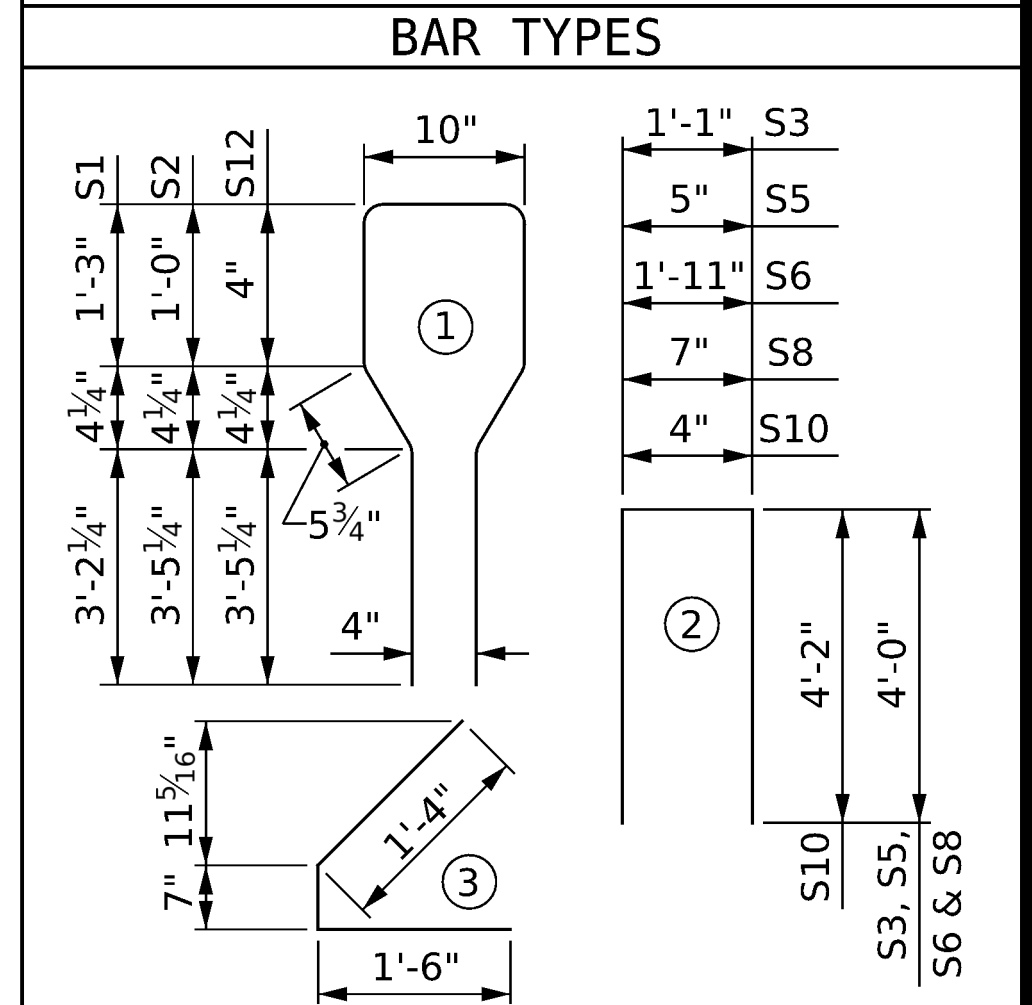
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1			3			
2			4			



REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	39	#4	1	10'-8"	278
S2	6	#6	1	10'-8"	97
S3	4	#4	2	9'-1"	25
S4	64	#4	3	3'-5"	147
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	19
S11	5	#4	STR	7'-0"	24
S12	7	#6	1	9'-4"	98
S14	1	#3	STR	1'-4"	1

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



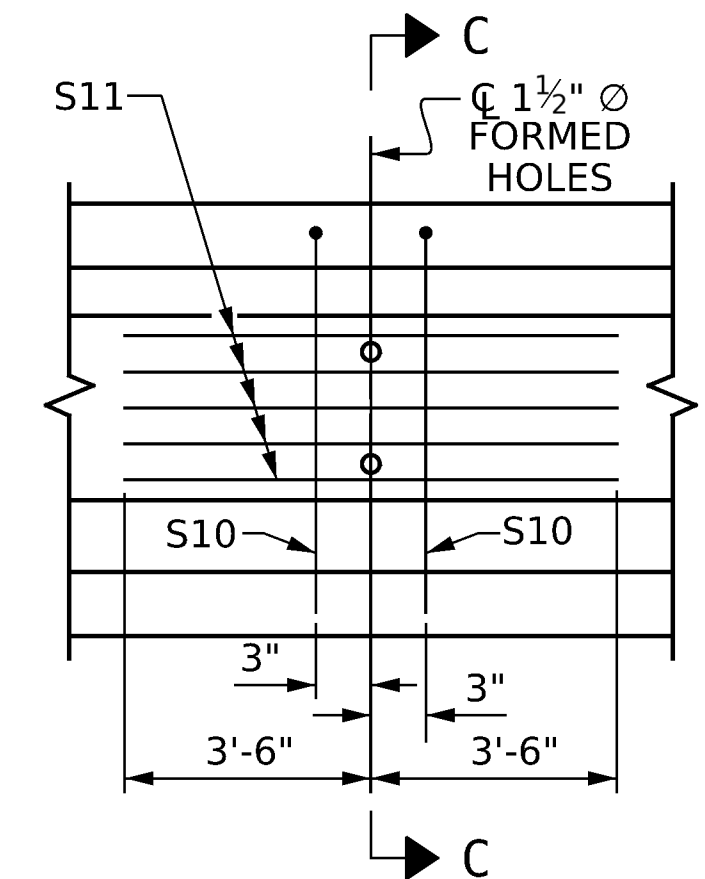
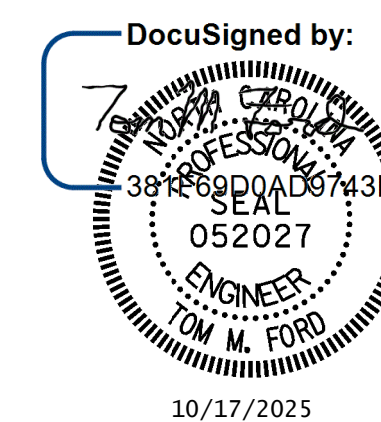
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
SPAN A	800	10.8	16
SPAN C	800	10.8	16

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	53'-5"	267'-1"
5	53'-5"	267'-1"

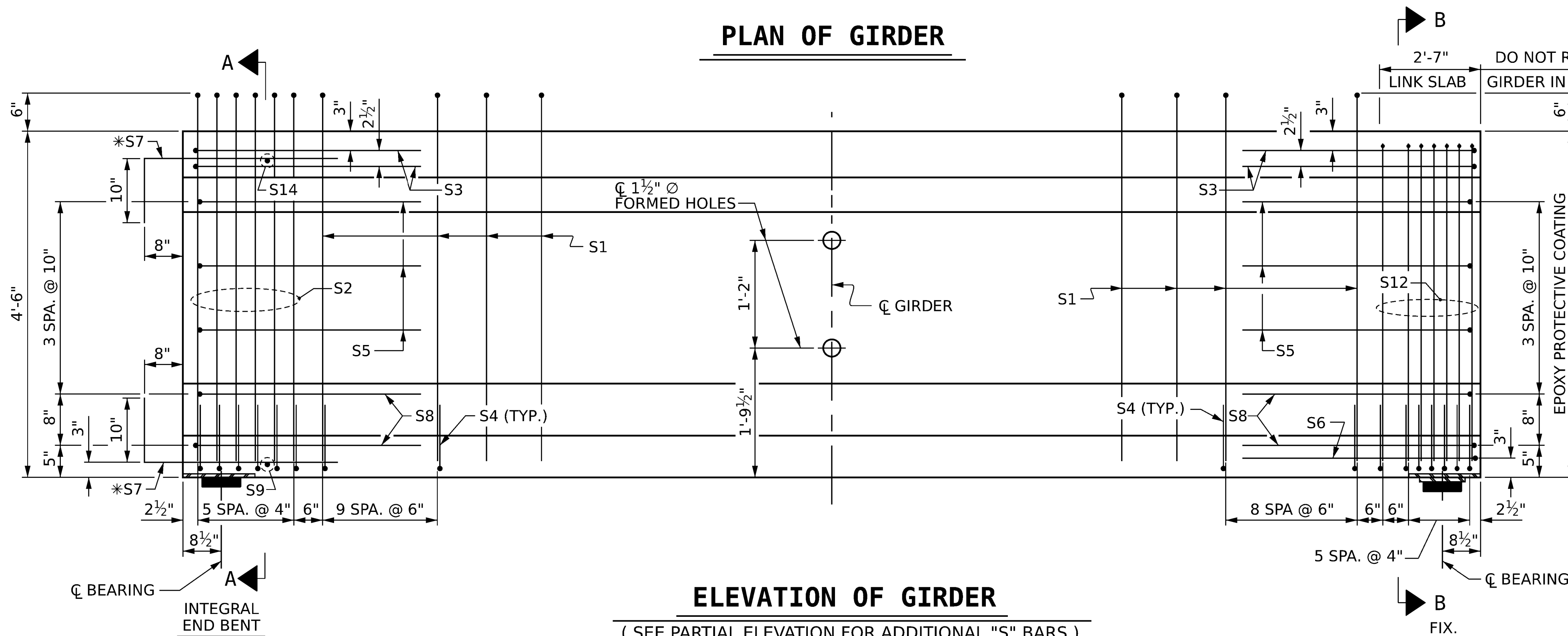
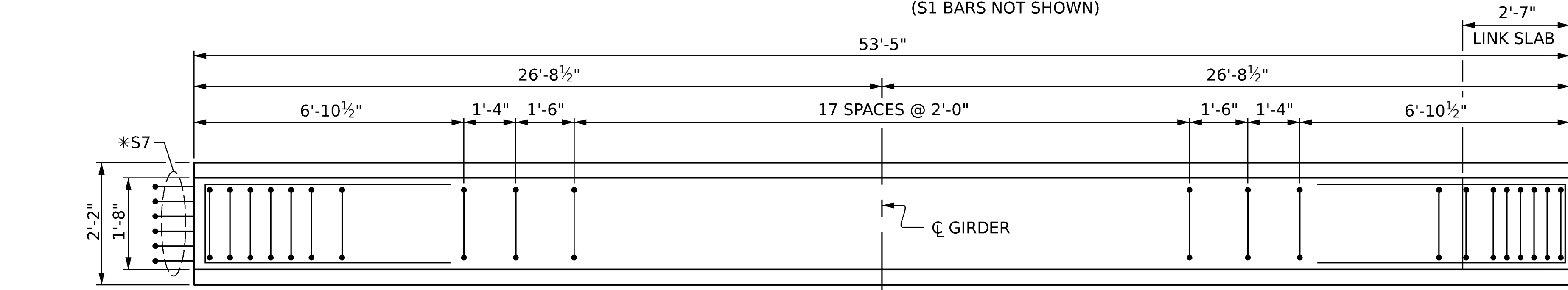
PROJECT NO. BR-0155
ROCKINGHAM COUNTY
 STATION: 15+40.00 - L -

SHEET 1 OF 6



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR ALL GIRDERS



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

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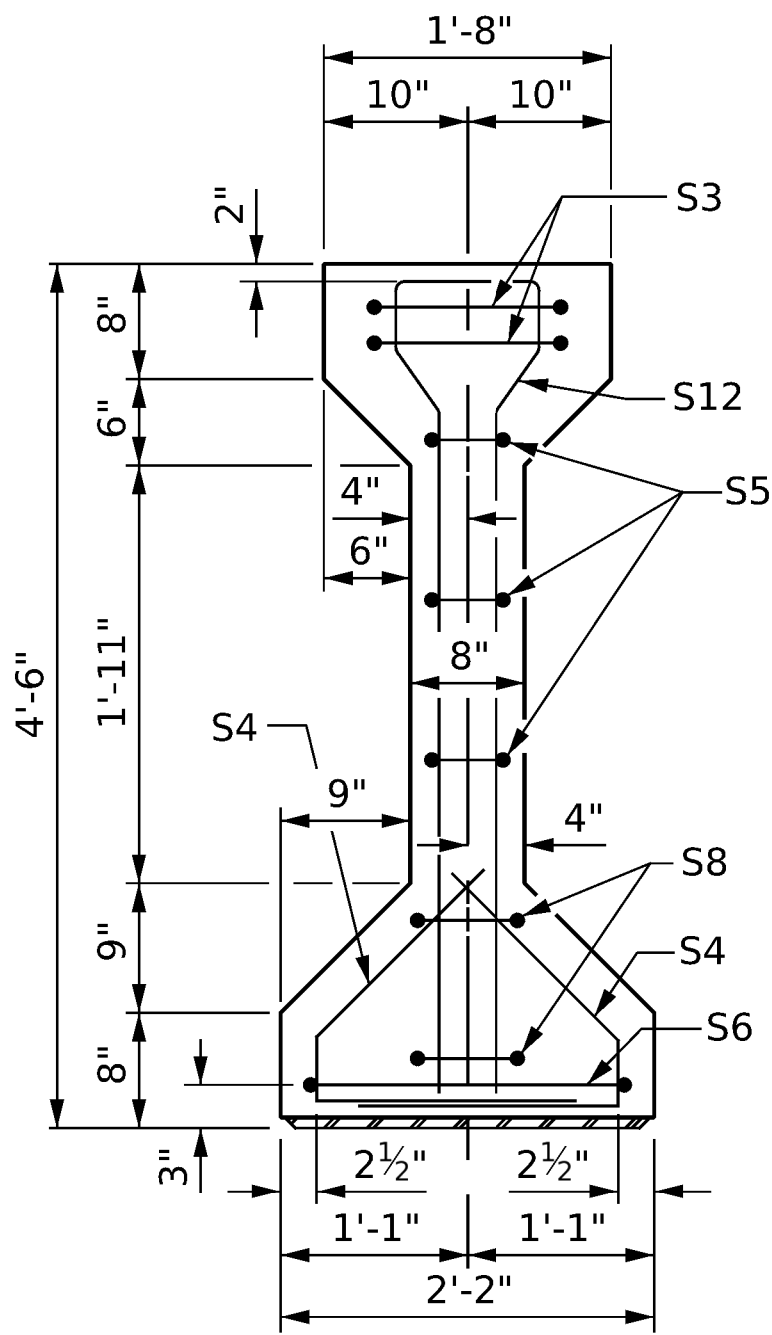
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FLEMING** One Glenwood Avenue
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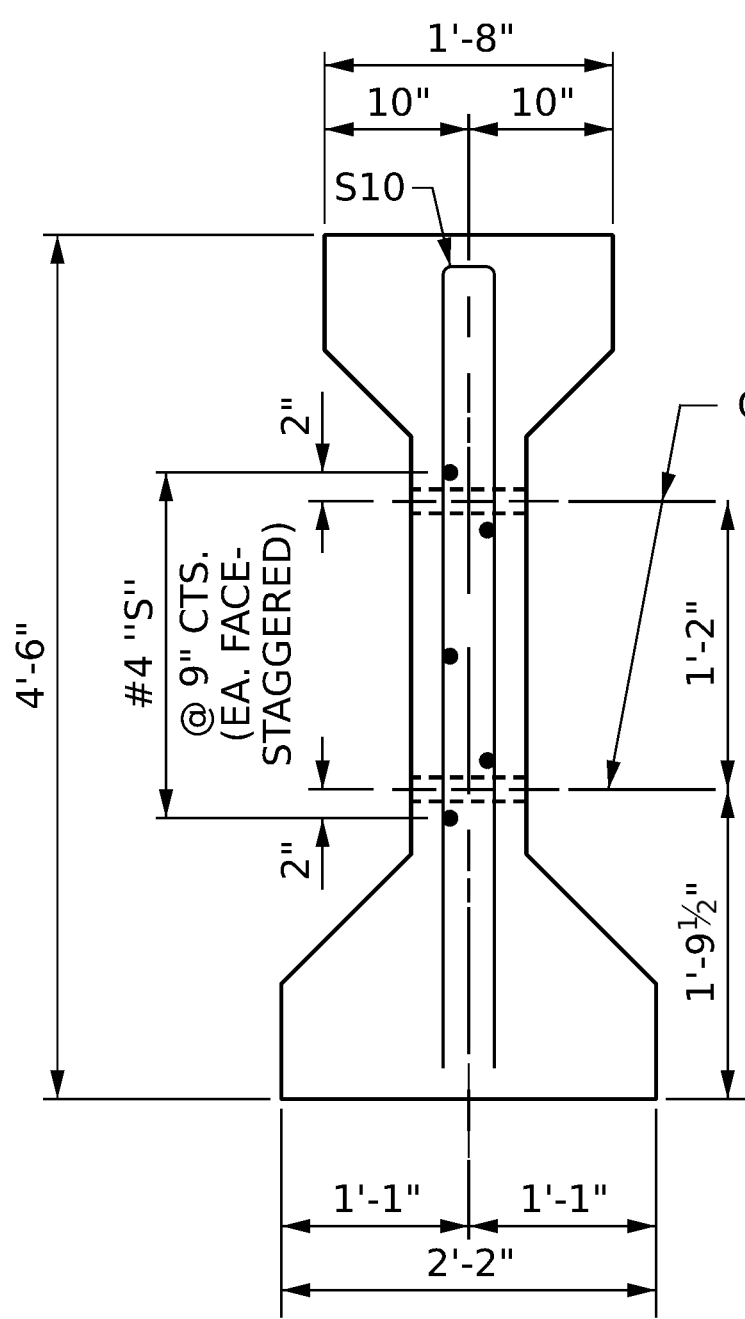
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dw://gfnrt-pw.bentley.com/gfnrt-pw-01/D4cuments/Projects/73077_ORD/Task_003 - BR-0155 Rockingham 163/5-Working/Structures/CAD/3.0 100% Plans/401_045_BR0155_SMJ_G4_023_780163 10/16/2025 2:06:50 PM pdf_color_gfclt_F.S.plt Rock163.tb

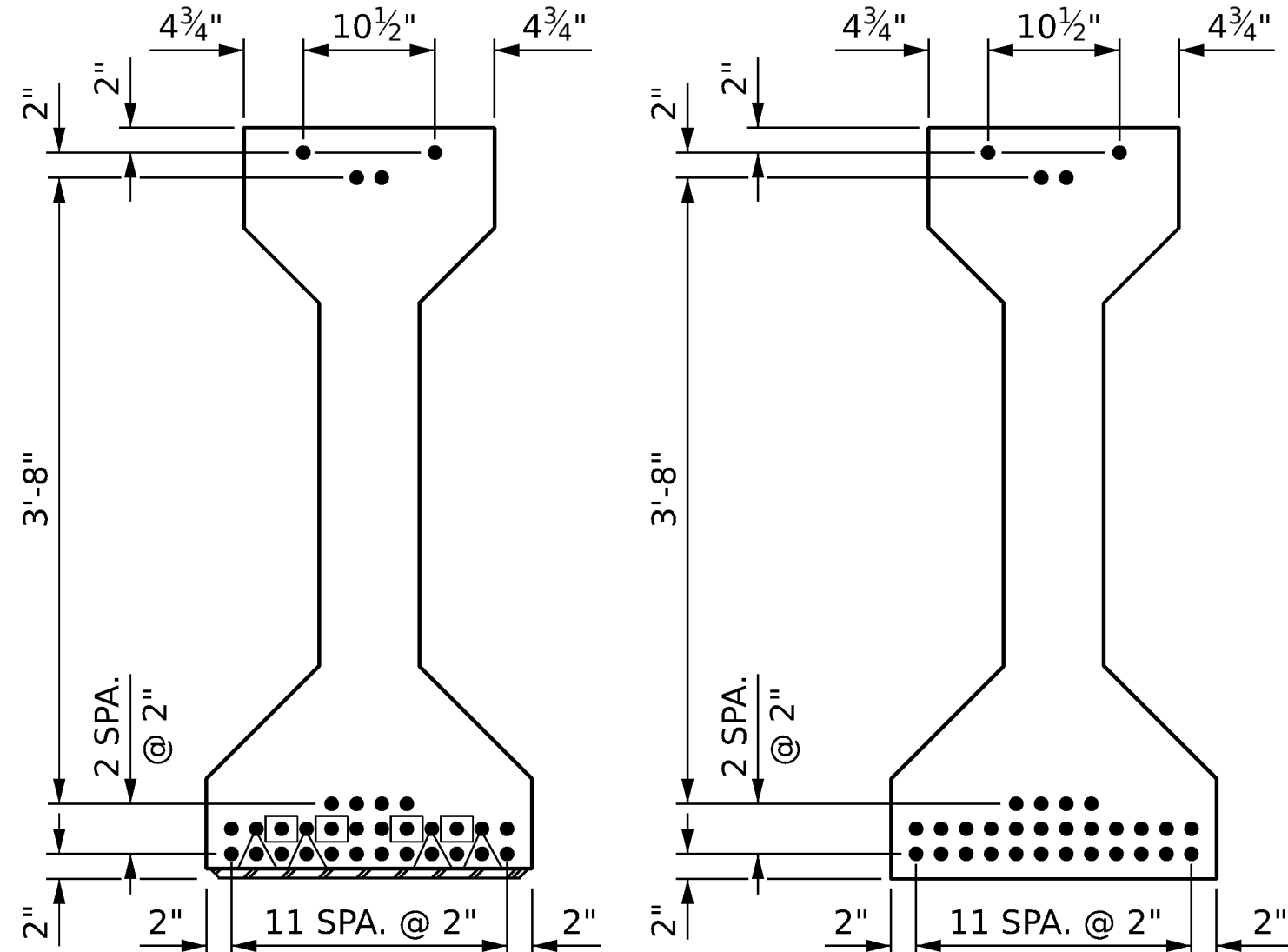


SECTION A-A



SECTION C-C

(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

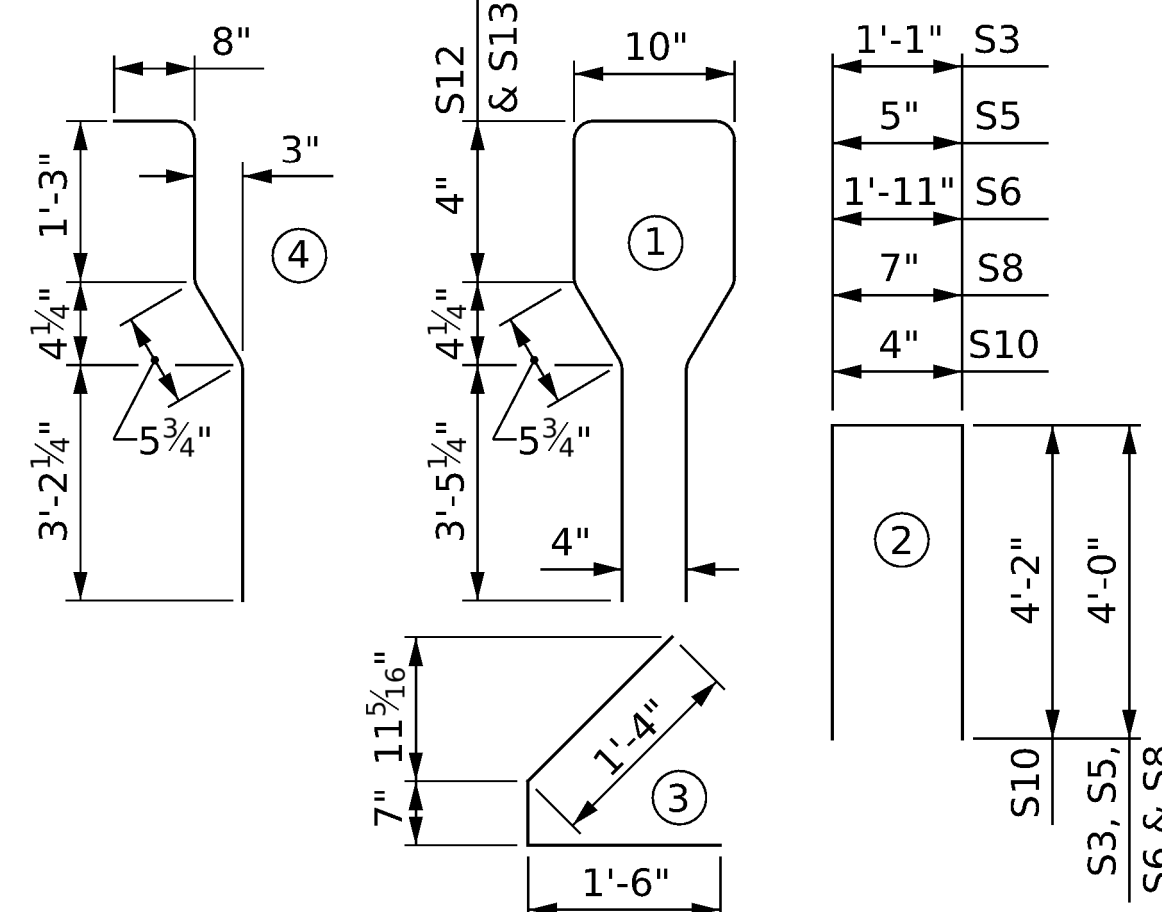
0.6" Ø L.R. GRADE 270 STRANDS

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	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	96	#4	4	5'-7"	358
S3	4	#4	2	9'-1"	25
S4	64	#4	3	3'-5"	147
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	14
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	19
S11	5	#4	STR	7'-0"	24
S12	12	#6	1	9'-4"	169
S13	10	#4	1	9'-4"	63

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN B	876	18.2	32

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
1	89'-8"	89'-8"

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

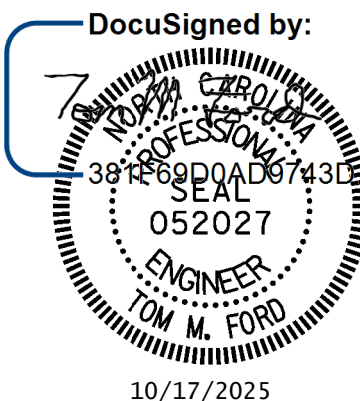
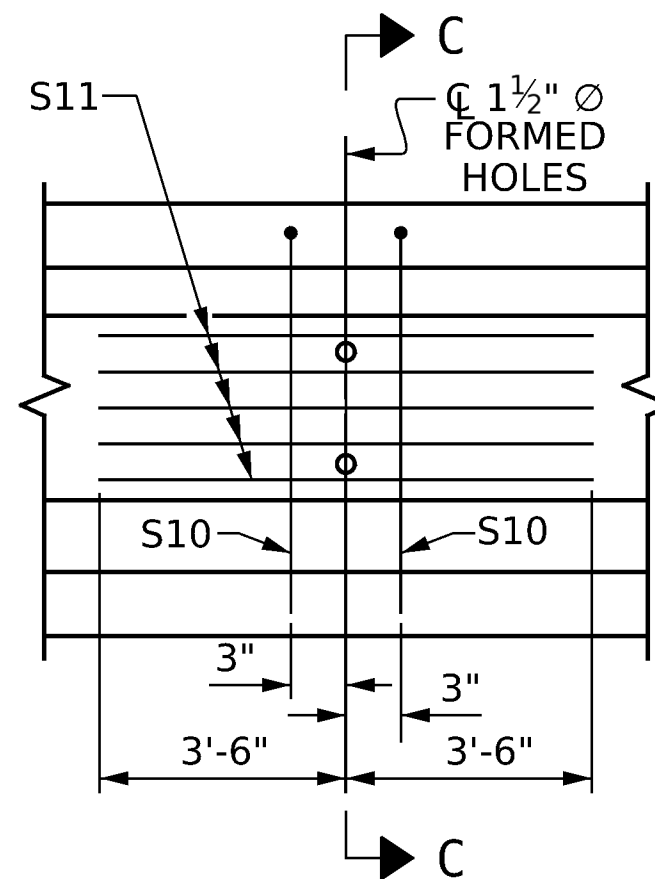
**AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB**
SPAN B
(GIRDER 4)

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					52

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR ALL GIRDERS

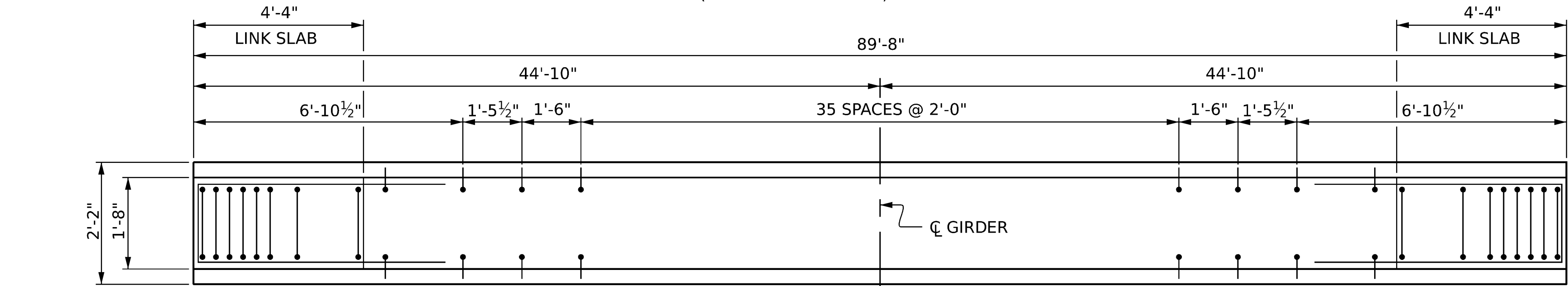


One Glenwood Avenue
Suite 500
Raleigh, NC 27603
919-420-7660
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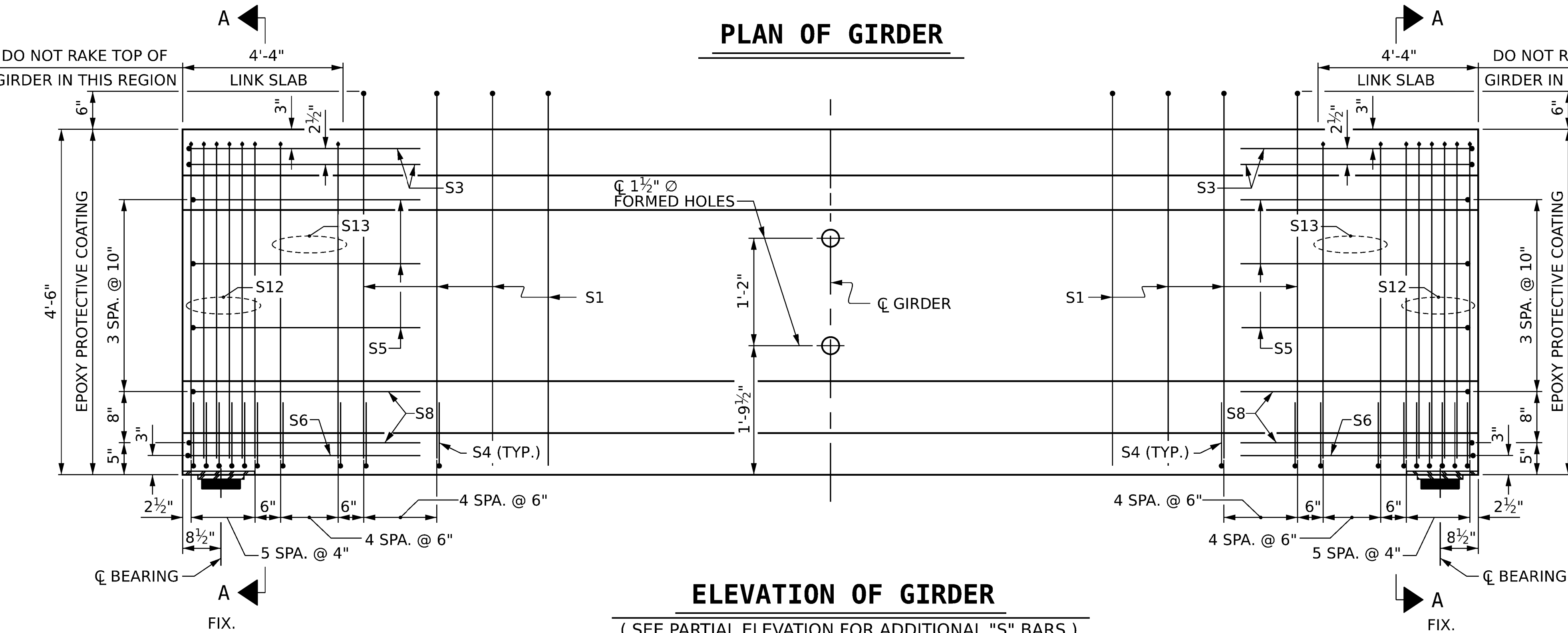
DRAWN BY : J. HARRIS DATE : 3/2025
CHECKED BY : T. FORD DATE : 7/2025
DESIGN ENGINEER OF RECORD : T. FORD DATE : 9/2025

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

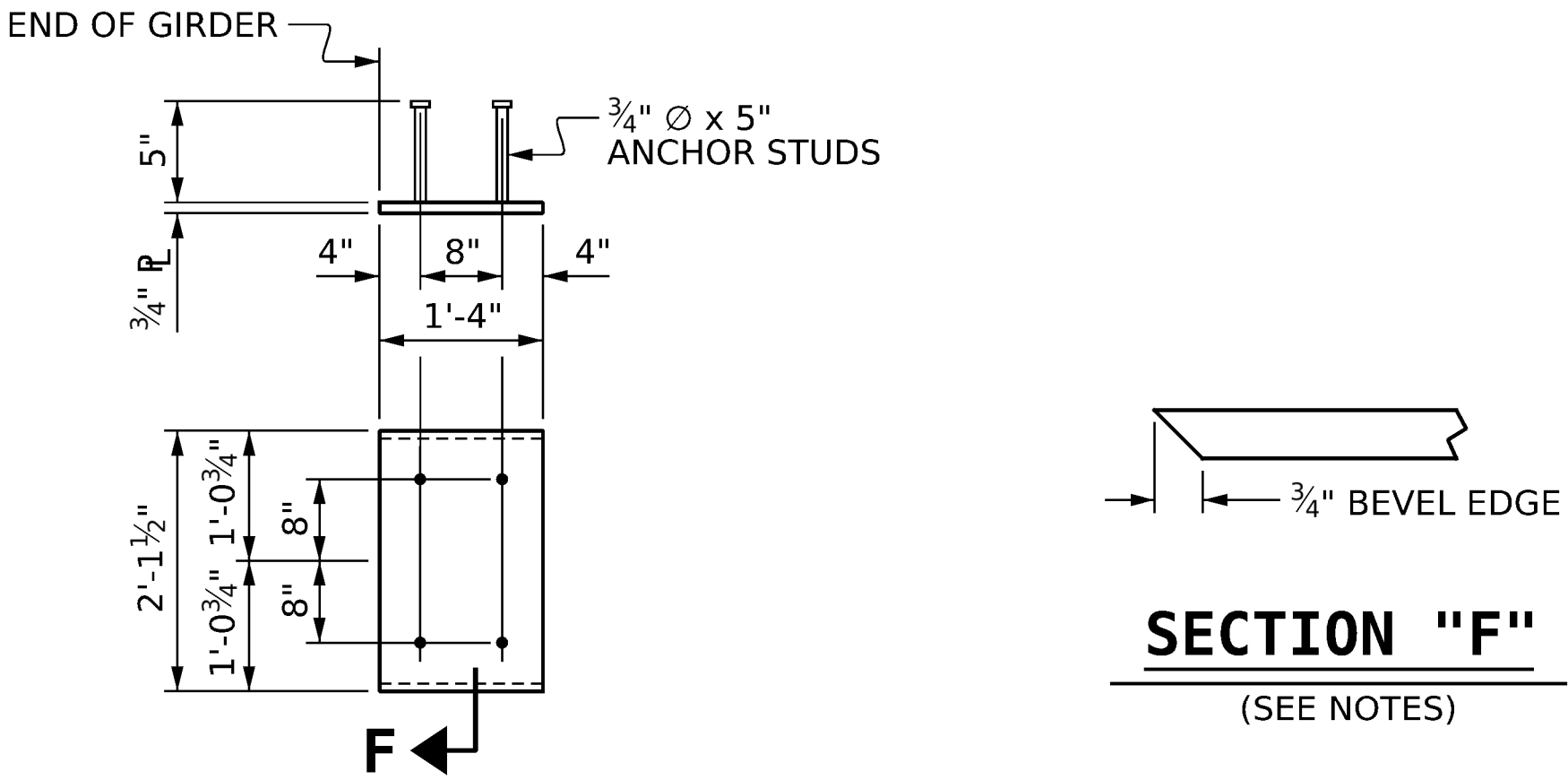


PLAN OF GIRDER



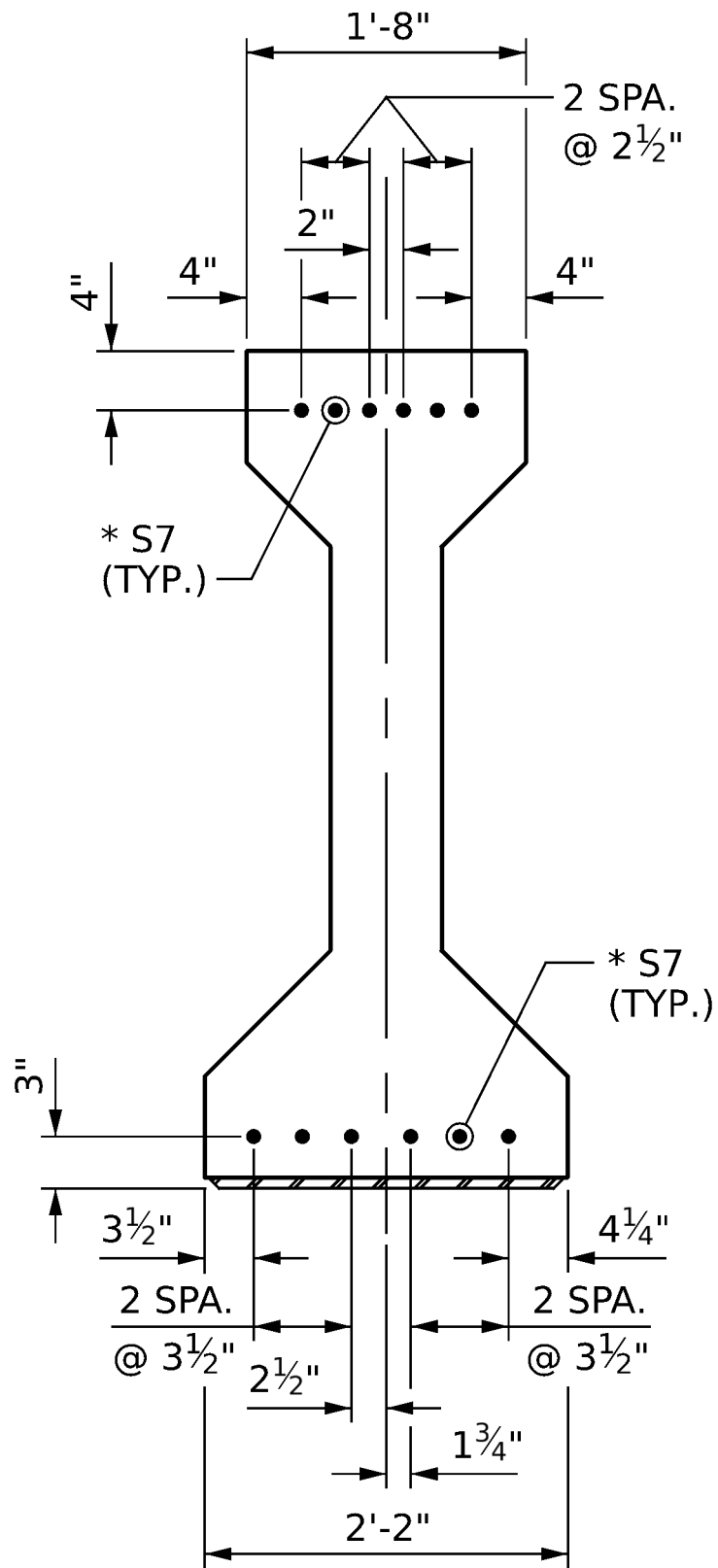
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pw://gfnrt-pw.bentley.com/gfnet-pw-01/Documents/Projects/73077_ORD/Task_003 - BR-0155 Rockingham 163/5-Working/Structures/CAD/3.0 100% Plans/401_047_BR0155_SMJ_65_024_780163 10/16/2025 2:07:12 PM pdf_color_gfclt_FS.plt Rock163.tbl



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER



DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)

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 BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES AS 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 WALL, 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 6,500 PSI.

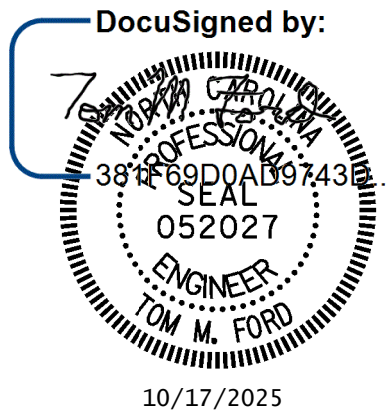
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER EXCLUDING THE OUTSIDE 4" AND AREA SHOWN ON GIRDER SHEETS, SHALL BE RAKED TO A DEPTH OF 1/4".

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 4,500 LBS.

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 5 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER DETAILS

DRAWN BY : J. HARRIS DATE : 3/2025
CHECKED BY : T. FORD DATE : 7/2025
DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025



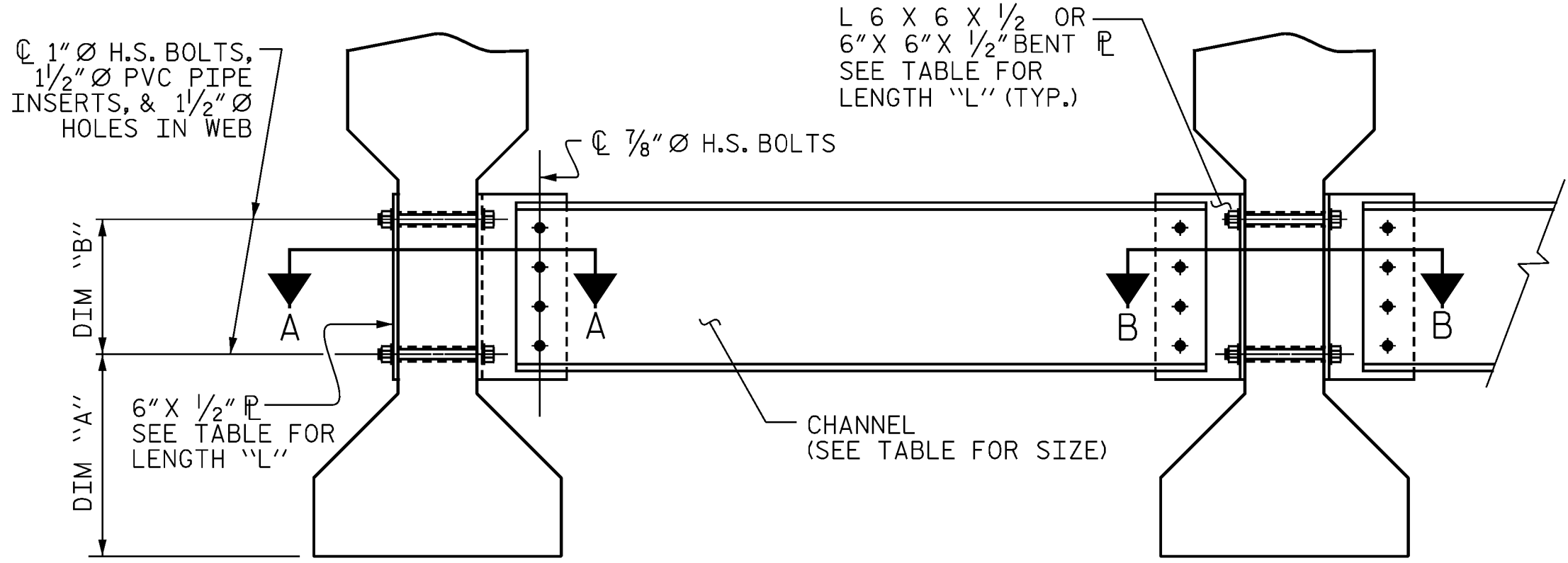
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-24 TOTAL SHEETS 52
2			4			

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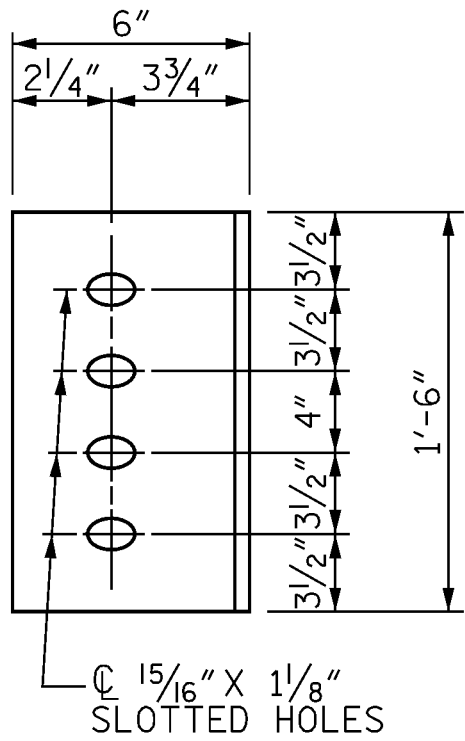
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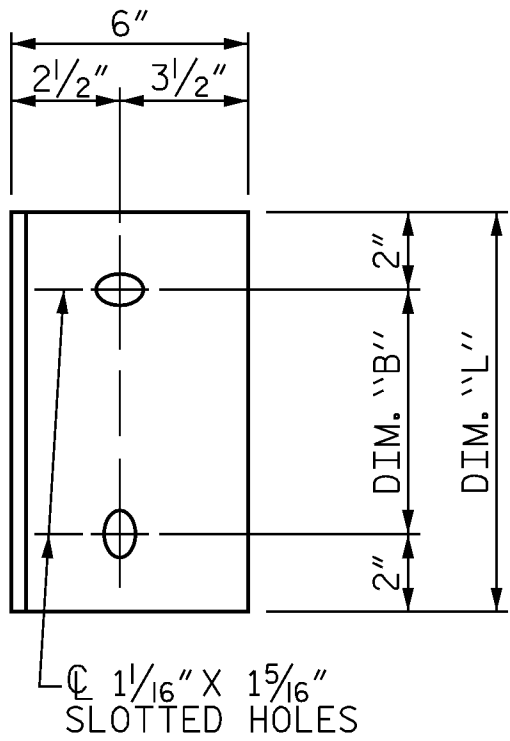
EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

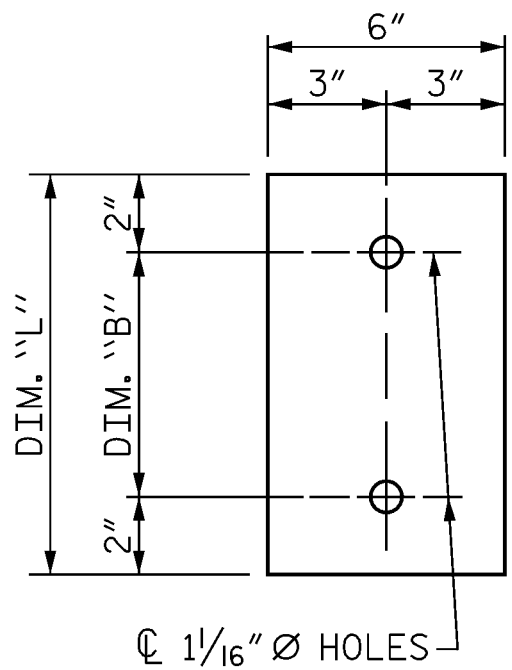
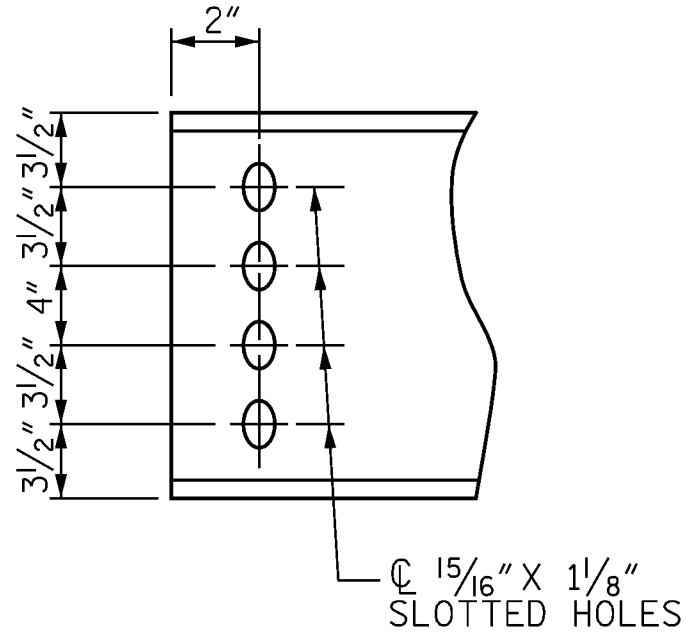
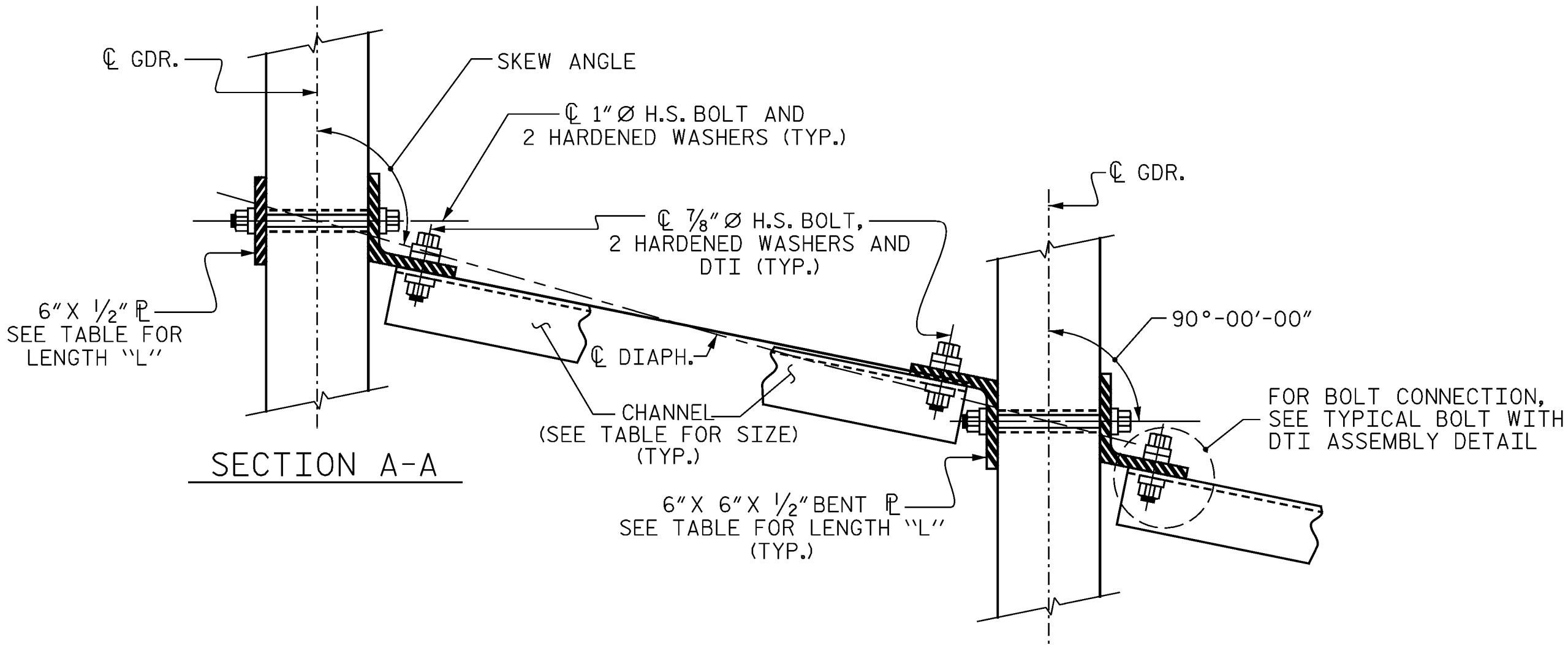


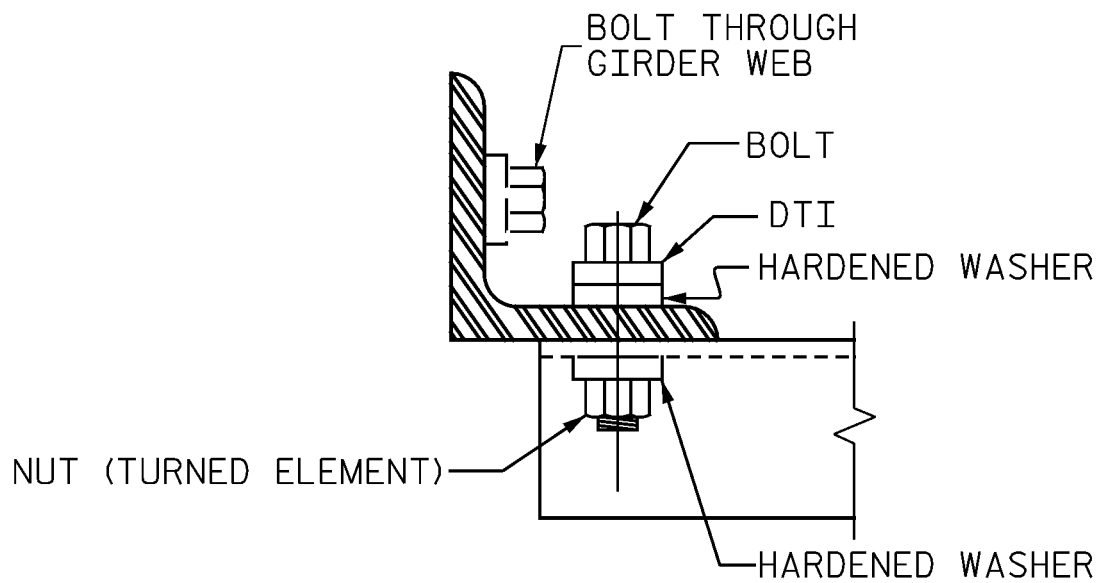
PLATE DETAILS



CHANNEL END



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.

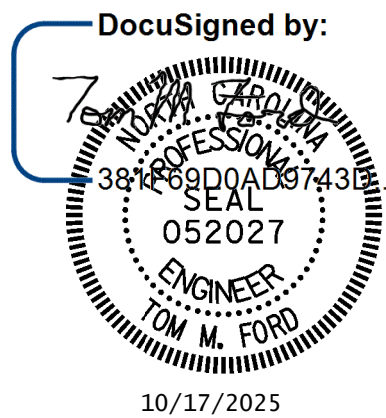
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 6 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE STEEL
DIAPHRAGMS FOR TYPE IV
PRESTRESSED CONCRETE
GIRDER

DRAWN BY : J. HARRIS DATE : 11/2024
CHECKED BY : T. FORD DATE : 7/2025
DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025



One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

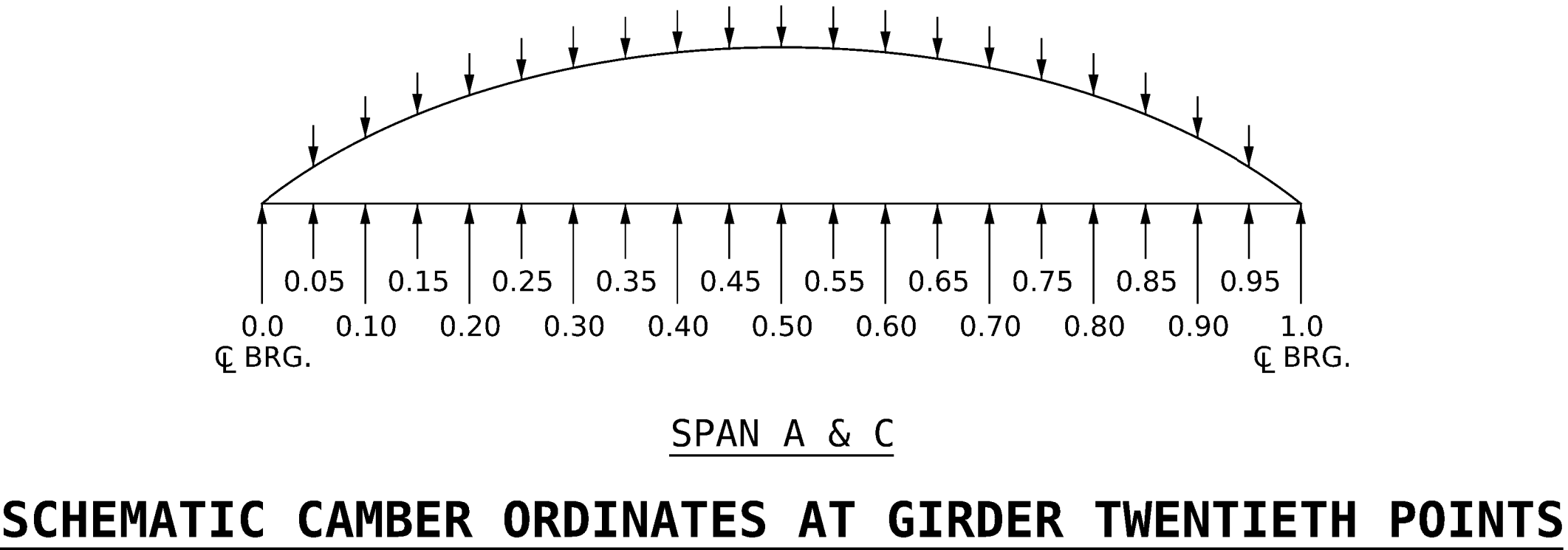
SHEET NO.
S-25
TOTAL SHEETS
52

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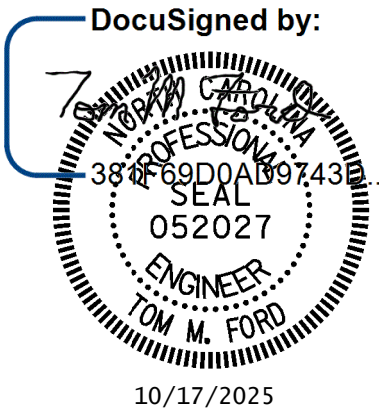
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DEAD LOAD DEFLECTION AND CAMBER TABLE FOR GIRDERS - SPAN A & C																					
	GIRDERS AG1 & CG1																				
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.002	0.003	0.005	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.005	0.003	0.002	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	5⁄16"	5⁄16"	5⁄16"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	0"
	GIRDERS AG2 & CG2																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.002	0.003	0.005	0.007	0.008	0.010	0.010	0.011	0.012	0.012	0.012	0.011	0.010	0.010	0.008	0.007	0.005	0.003	0.002	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄16"	1⁄8"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	1⁄8"	1⁄16"	1⁄16"	0"
	GIRDERS AG3 & CG3																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.001	0.003	0.004	0.006	0.007	0.008	0.009	0.009	0.010	0.010	0.010	0.009	0.009	0.008	0.007	0.006	0.004	0.003	0.001	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	5⁄16"	5⁄16"	5⁄16"	5⁄16"	5⁄16"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	0"
	GIRDERS AG4 & CG4																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.001	0.003	0.005	0.006	0.007	0.008	0.009	0.010	0.010	0.011	0.010	0.010	0.009	0.008	0.007	0.006	0.005	0.003	0.001	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	5⁄16"	5⁄16"	5⁄16"	5⁄16"	5⁄16"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	0"
	GIRDERS AG5 & CG5																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.002	0.004	0.006	0.008	0.009	0.011	0.011	0.012	0.013	0.013	0.013	0.012	0.011	0.011	0.009	0.008	0.006	0.004	0.002	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄16"	1⁄8"	3⁄16"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	3⁄16"	1⁄8"	1⁄16"	1⁄16"	0"
	GIRDERS AG6 & CG6																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.033	0.035	0.035	0.035	0.033	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.002	0.004	0.005	0.007	0.009	0.010	0.011	0.012	0.013	0.013	0.013	0.012	0.011	0.010	0.009	0.007	0.005	0.004	0.002	0.000
FINAL CAMBER	↑ 0"	1⁄16"	1⁄16"	1⁄8"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	1⁄8"	1⁄16"	1⁄16"	0"

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



PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**
SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV GIRDER
DEFLECTIONS & CAMBER
SPAN A & C

DRAWN BY : T. HARTLEY DATE : 2/2025
CHECKED BY : T. FORD DATE : 7/2025
DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025



One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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SIGNATURES COMPLETED

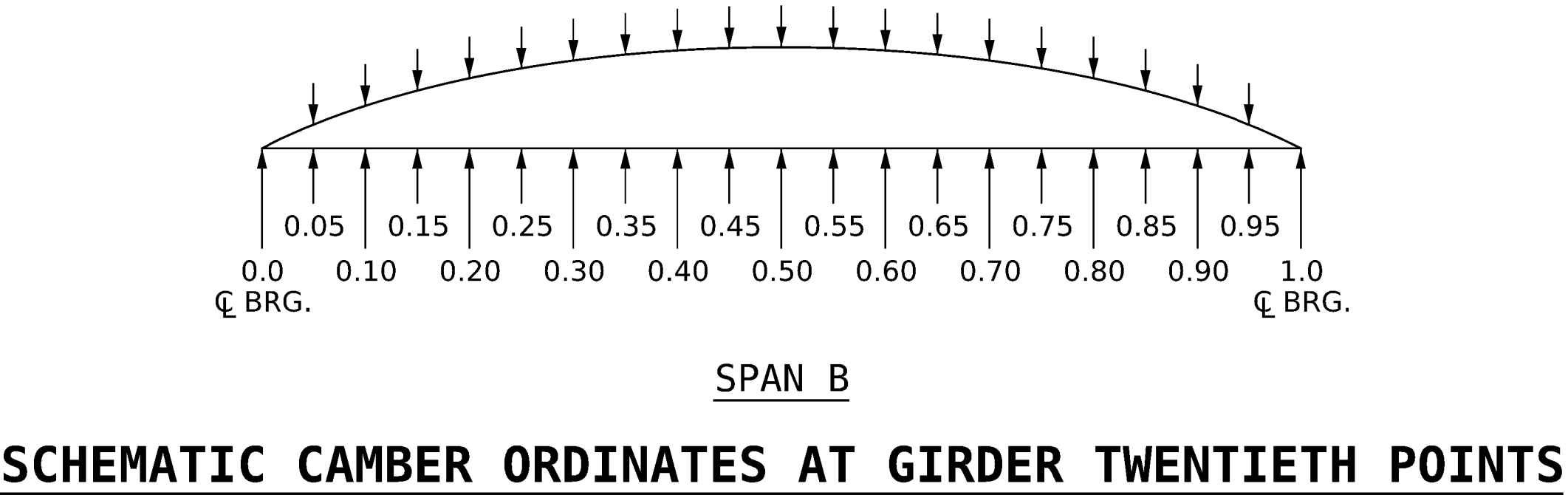
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NO.	BY:	DATE:	NO.	BY:	
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2			4		TOTAL SHEETS 52

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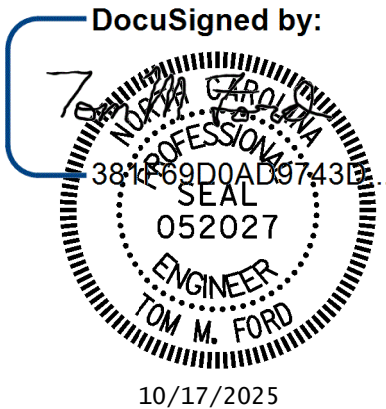
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DEAD LOAD DEFLECTION AND CAMBER TABLE FOR GIRDERS - SPAN B																					
	GIRDER BG1																				
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.014	0.029	0.043	0.057	0.069	0.079	0.087	0.093	0.096	0.097	0.096	0.093	0.087	0.079	0.069	0.057	0.043	0.029	0.014	0.000
FINAL CAMBER	↑ 0"	⅛"	⅜₁₆"	¼"	⅕₁₆"	⅜₈"	⅞₁₆"	½"	½"	½"	⅑₁₆"	½"	½"	½"	⅞₁₆"	⅜₈"	⅕₁₆"	¼"	⅜₁₆"	⅛"	0"
	GIRDER BG2																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.015	0.030	0.046	0.060	0.072	0.083	0.091	0.097	0.101	0.103	0.101	0.097	0.091	0.083	0.072	0.060	0.046	0.030	0.015	0.000
FINAL CAMBER	↑ 0"	⅞₁₆"	⅜₁₆"	¼"	⅕₁₆"	⅜₈"	⅞₁₆"	⅞₁₆"	⅞₁₆"	⅞₁₆"	½"	⅞₁₆"	⅞₁₆"	⅞₁₆"	⅜₈"	⅜₈"	⅕₁₆"	¼"	⅜₁₆"	⅞₁₆"	0"
	GIRDER BG3																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.013	0.025	0.038	0.050	0.060	0.069	0.076	0.081	0.084	0.086	0.084	0.081	0.076	0.069	0.060	0.050	0.038	0.025	0.013	0.000
FINAL CAMBER	↑ 0"	⅛"	¼"	⅕₁₆"	⅞₁₆"	½"	⅑₁₆"	⅕₈"	⅕₈"	⅞₁₆"	⅞₁₆"	⅞₁₆"	⅕₈"	⅕₈"	⅑₁₆"	½"	⅞₁₆"	⅕₁₆"	¼"	⅛"	0"
	GIRDER BG4																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.013	0.027	0.040	0.053	0.064	0.073	0.081	0.086	0.089	0.091	0.089	0.086	0.081	0.073	0.064	0.053	0.040	0.027	0.013	0.000
FINAL CAMBER	↑ 0"	⅛"	⅜₁₆"	⅕₁₆"	⅜₈"	⅞₁₆"	½"	⅑₁₆"	⅑₁₆"	⅕₈"	⅕₈"	⅕₈"	⅑₁₆"	⅑₁₆"	½"	⅞₁₆"	⅜₈"	⅕₁₆"	⅜₁₆"	⅛"	0"
	GIRDER BG5																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.017	0.033	0.050	0.066	0.079	0.091	0.100	0.107	0.111	0.113	0.111	0.107	0.100	0.091	0.079	0.066	0.050	0.033	0.017	0.000
FINAL CAMBER	↑ 0"	⅞₁₆"	⅛₈"	⅜₁₆"	¼"	¼"	⅕₁₆"	⅕₁₆"	⅕₁₆"	⅜₈"	⅜₈"	⅜₈"	⅕₁₆"	⅕₁₆"	⅕₁₆"	¼"	¼"	⅜₁₆"	⅛₈"	⅞₁₆"	0"
	GIRDER BG6																				
TWENTIETH POINTS	0.00	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.023	0.044	0.065	0.084	0.101	0.115	0.127	0.135	0.140	0.142	0.140	0.135	0.127	0.115	0.101	0.084	0.065	0.044	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.*	↓ 0.000	0.016	0.032	0.049	0.064	0.077	0.088	0.098	0.104	0.108	0.109	0.108	0.104	0.098	0.088	0.077	0.064	0.049	0.032	0.016	0.000
FINAL CAMBER	↑ 0"	⅞₁₆"	⅛₈"	⅜₁₆"	¼"	⅕₁₆"	⅕₁₆"	⅜₈"	⅜₈"	⅜₈"	⅜₈"	⅜₈"	⅜₈"	⅜₈"	⅕₁₆"	⅕₁₆"	¼"	⅜₁₆"	⅛₈"	⅞₁₆"	0"

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



PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
 STATION: **15+40.00 -L-**
 SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO.		
AASHTO TYPE IV GIRDER DEFLECTIONS & CAMBER					S-27		
SPAN B					TOTAL SHEETS		
					52		

DRAWN BY :	T. HARTLEY	DATE :	2/2025
CHECKED BY :	T. FORD	DATE :	7/2025
DESIGN ENGINEER OF RECORD:	T. FORD	DATE :	9/2025



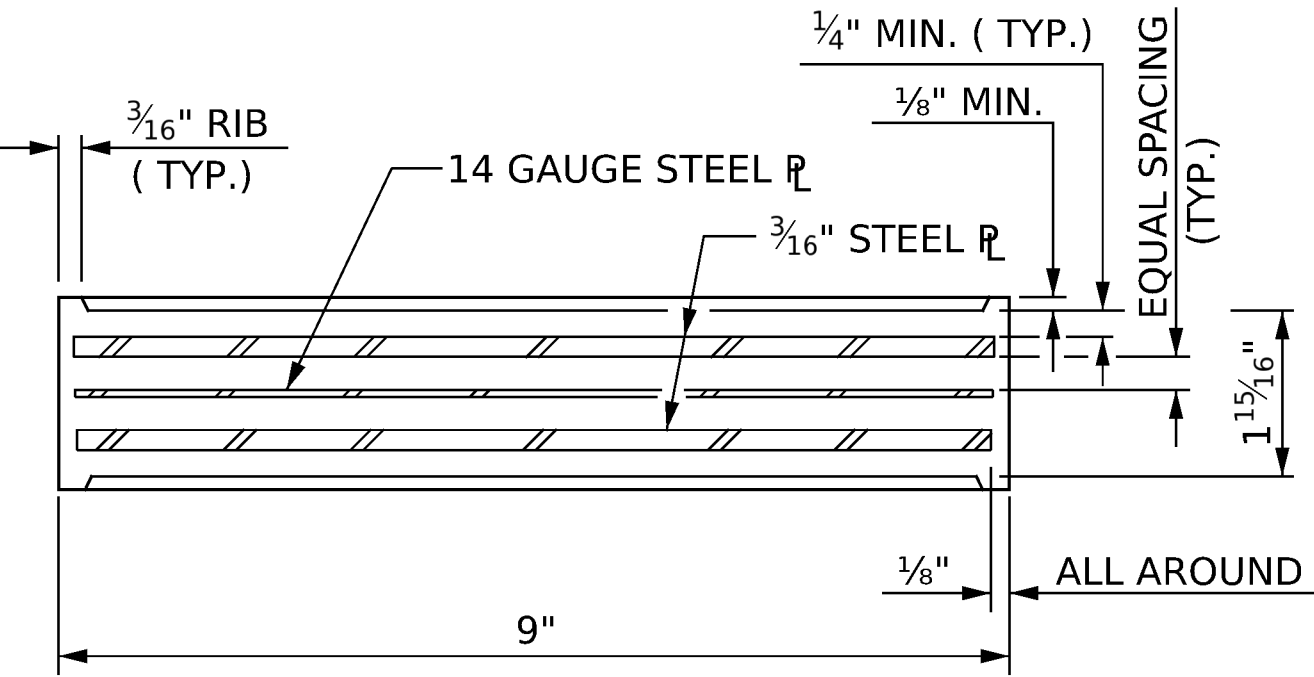
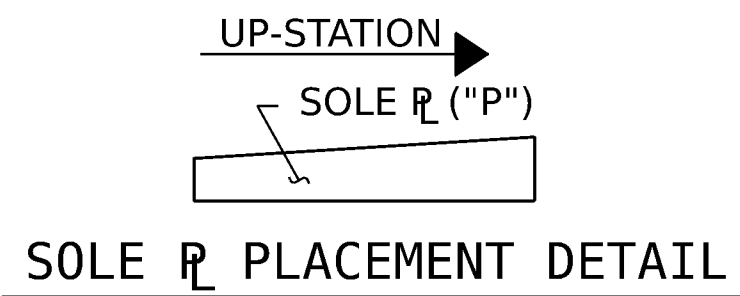
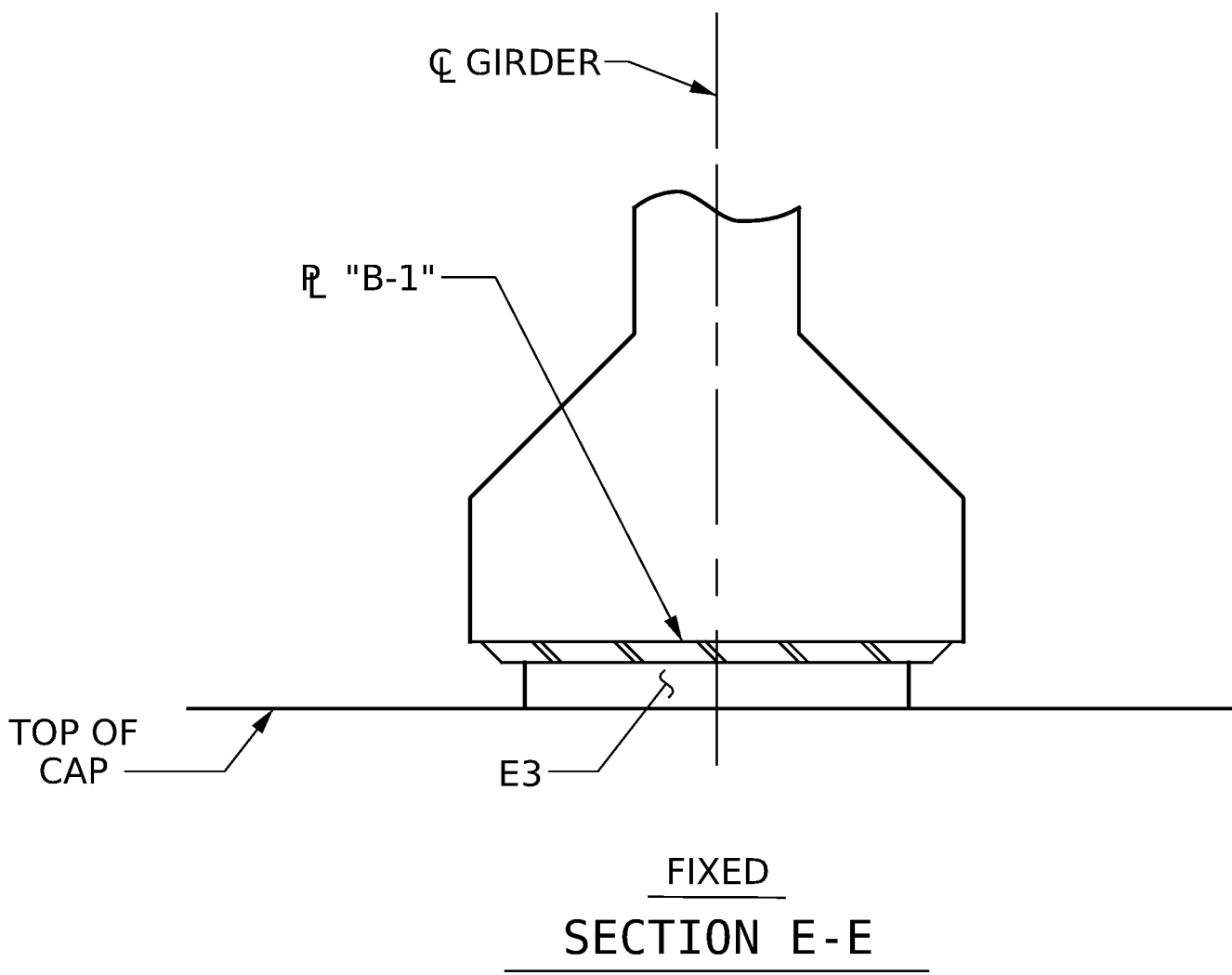
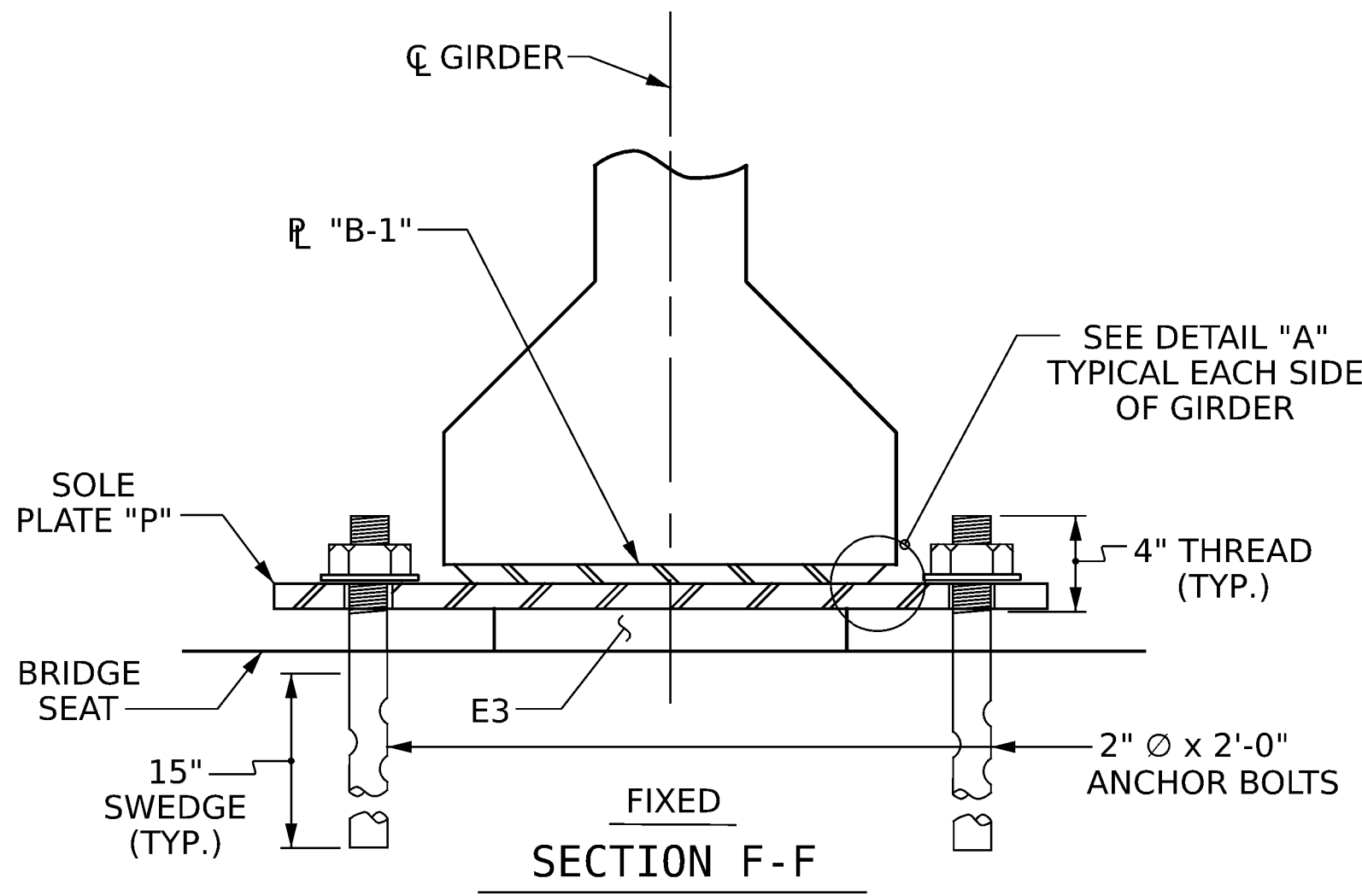
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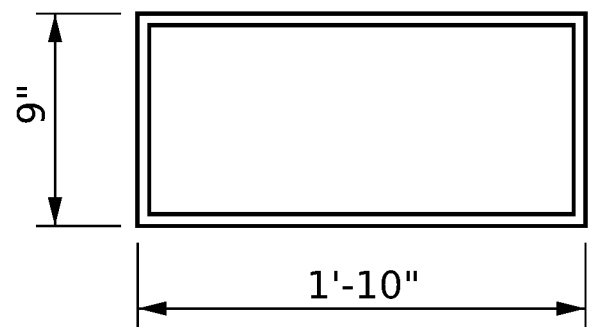
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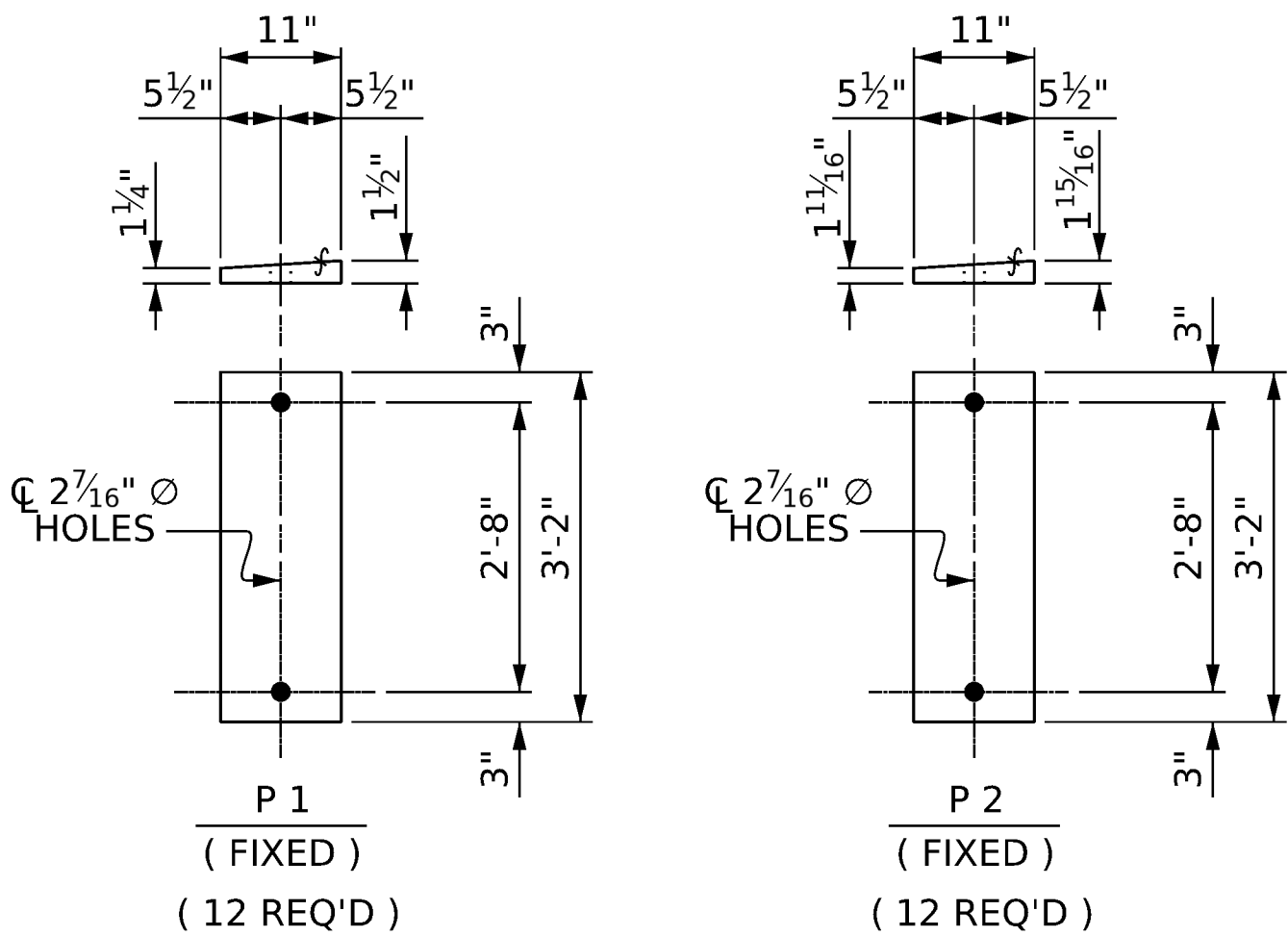


TYPICAL SECTION OF ELASTOMERIC BEARINGS

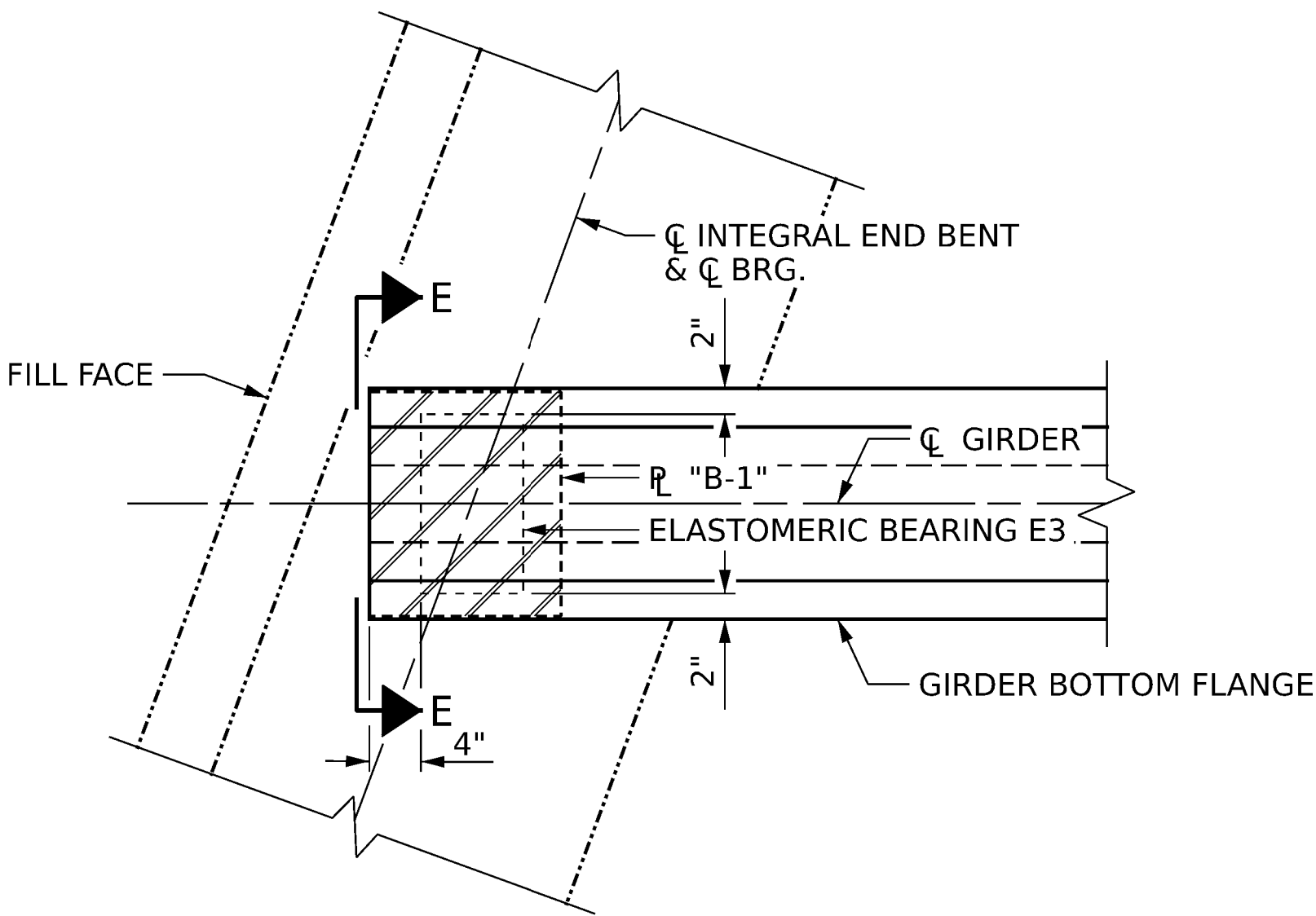


PLAN VIEW OF ELASTOMERIC BEARING
E3 (36 REQ'D)

TYPE IV

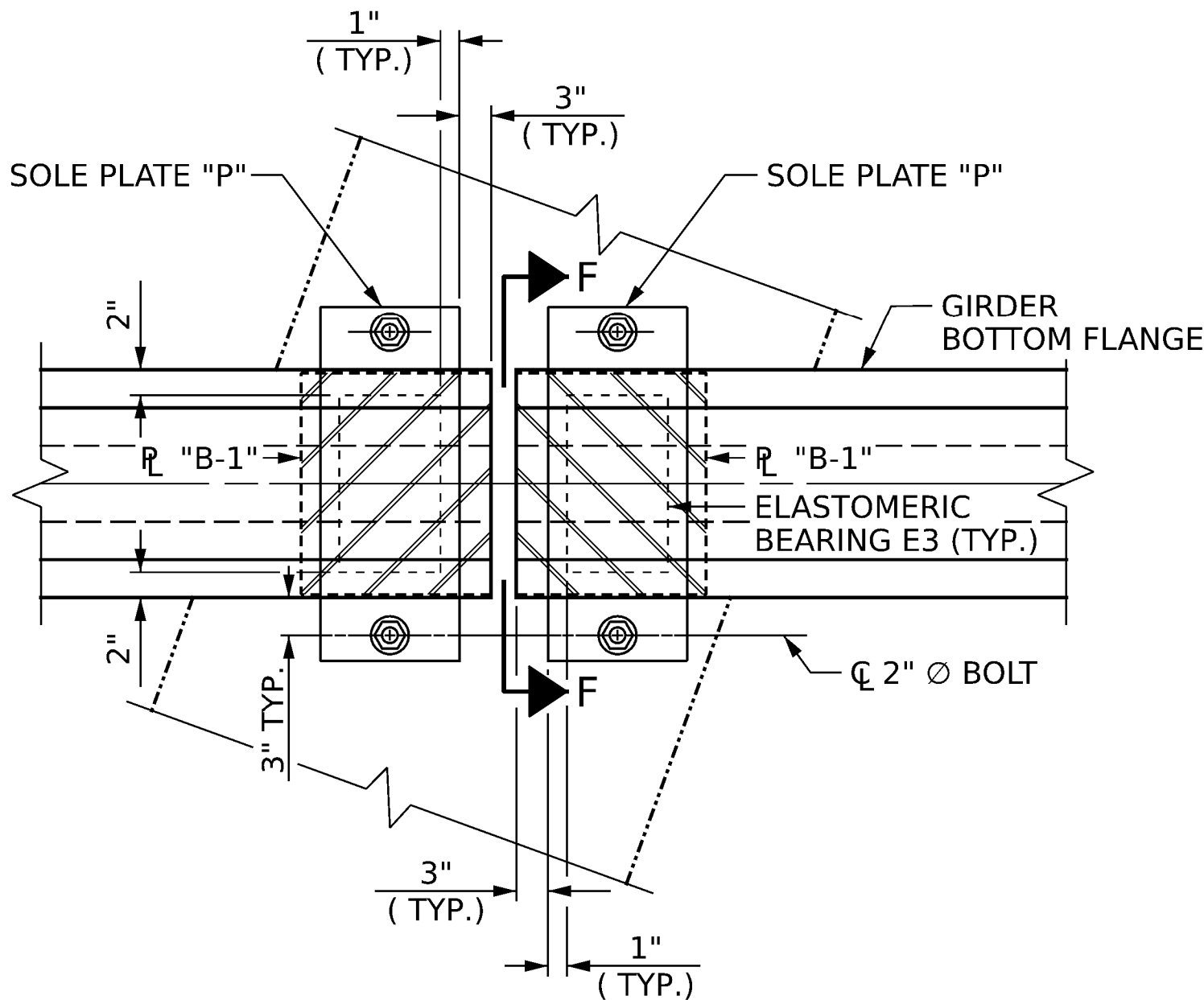


SOLE PLATE DETAILS ("P")

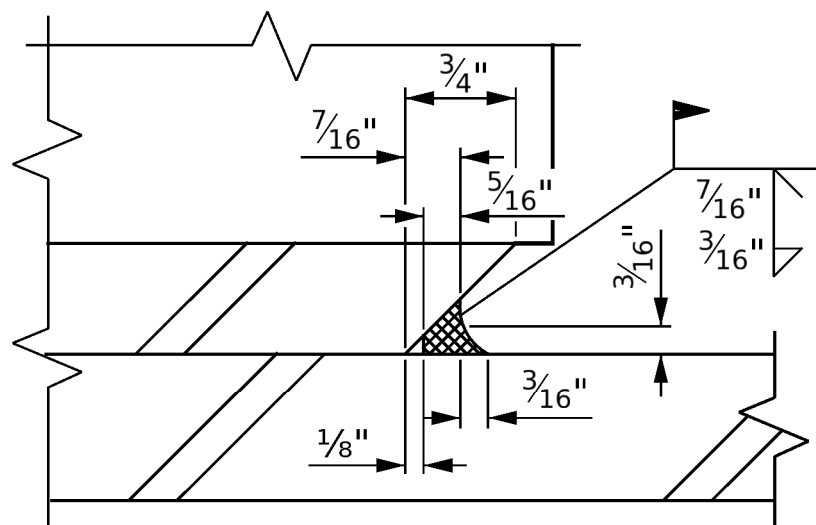


PLAN AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

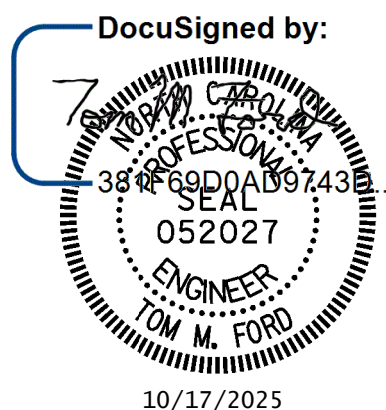


PLAN VIEW AT BENT



DETAIL "A"

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

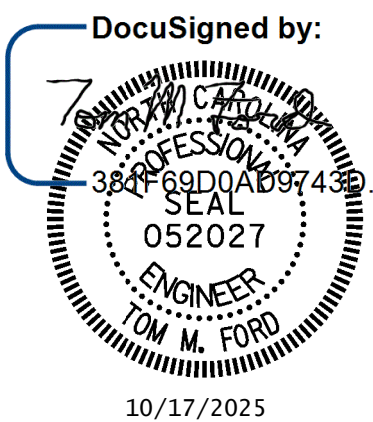
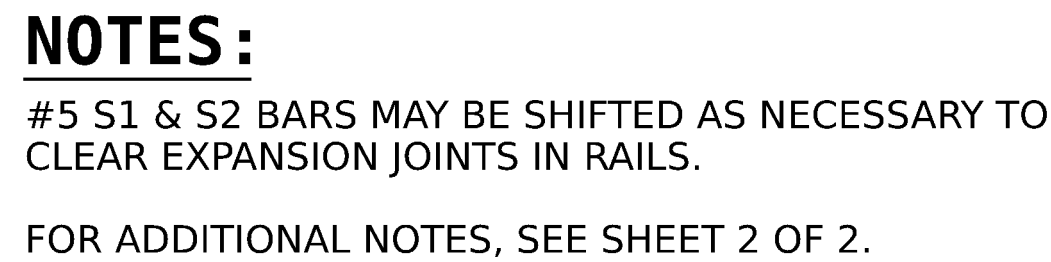


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD ELASTOMERIC BEARING DETAILS PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE						SHEET NO. S-28 TOTAL SHEETS 52	
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

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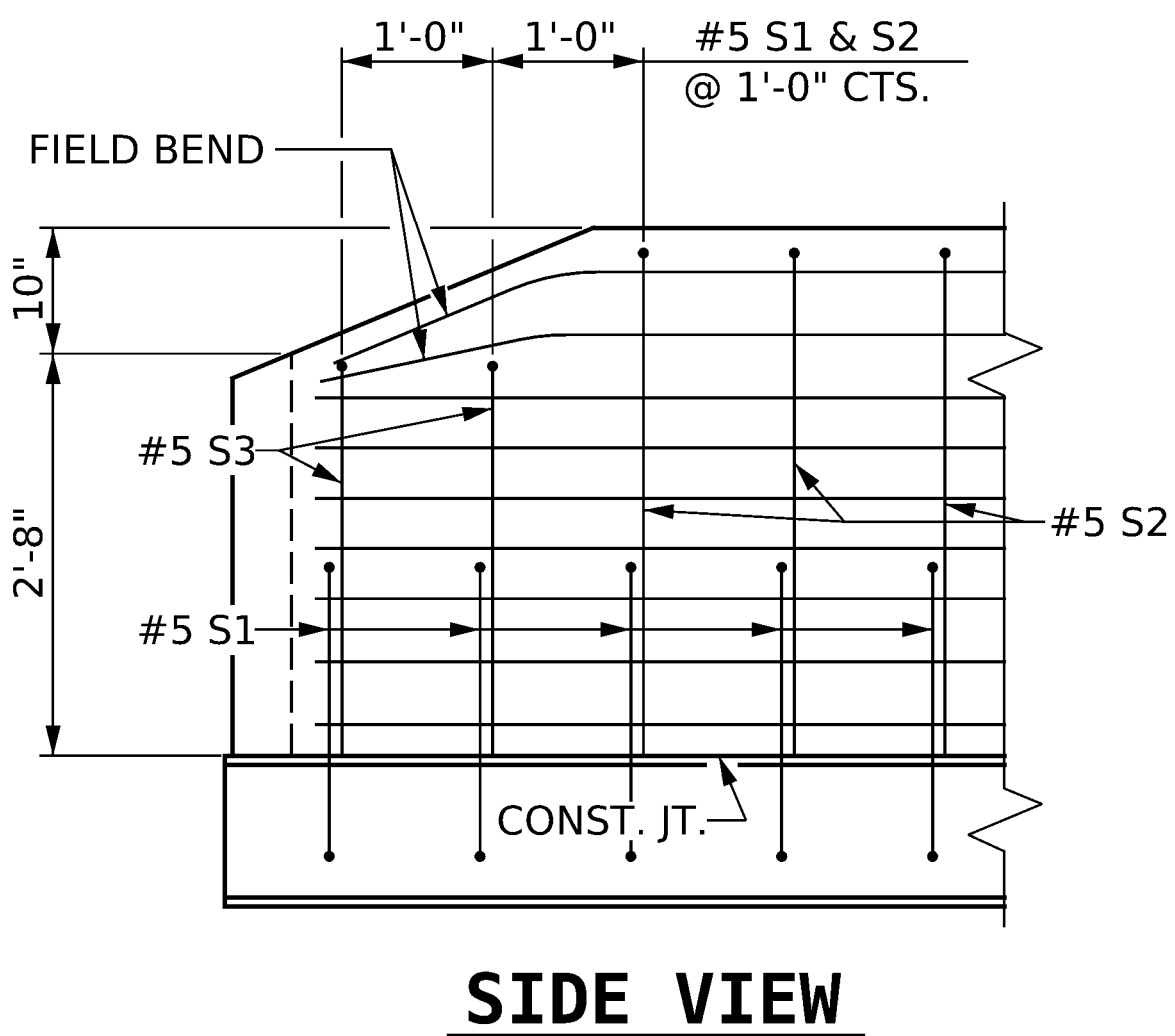
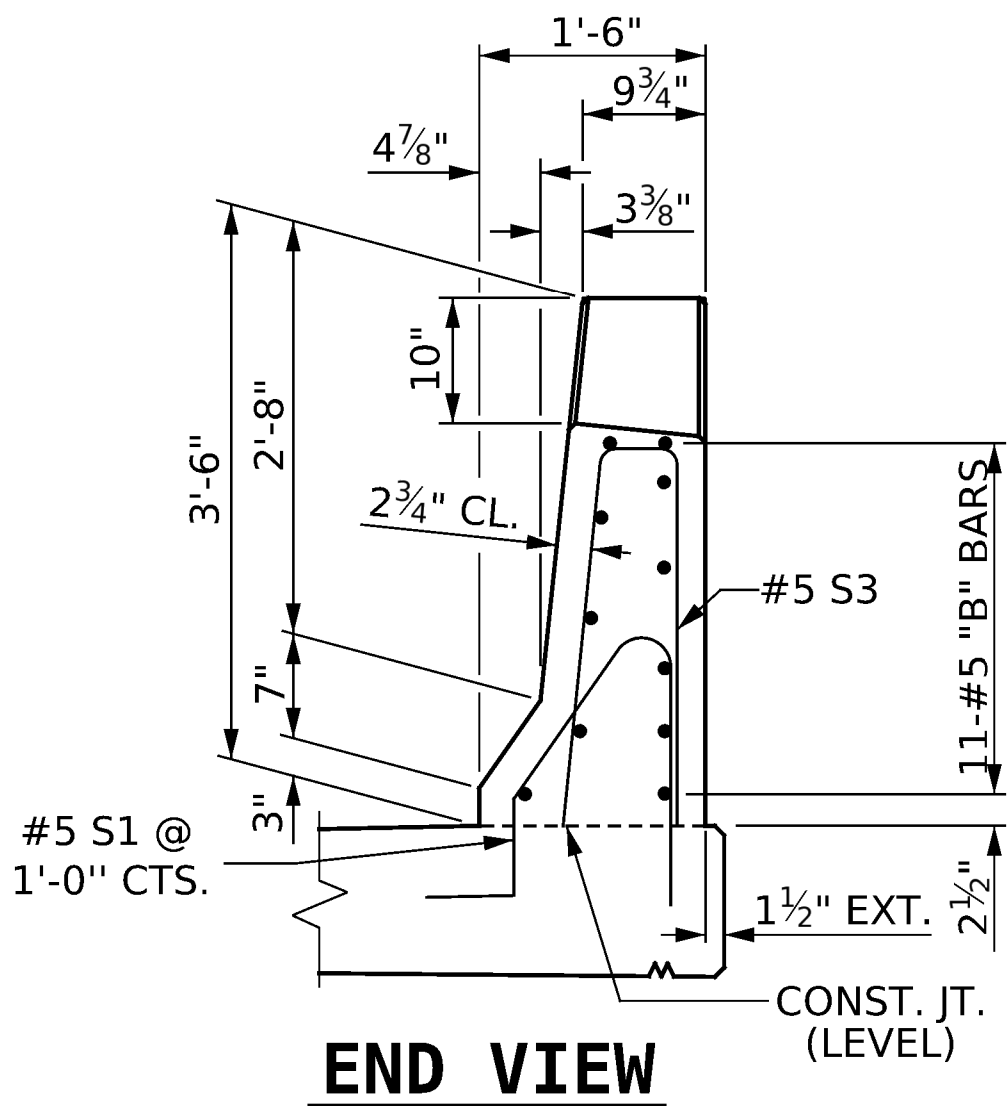
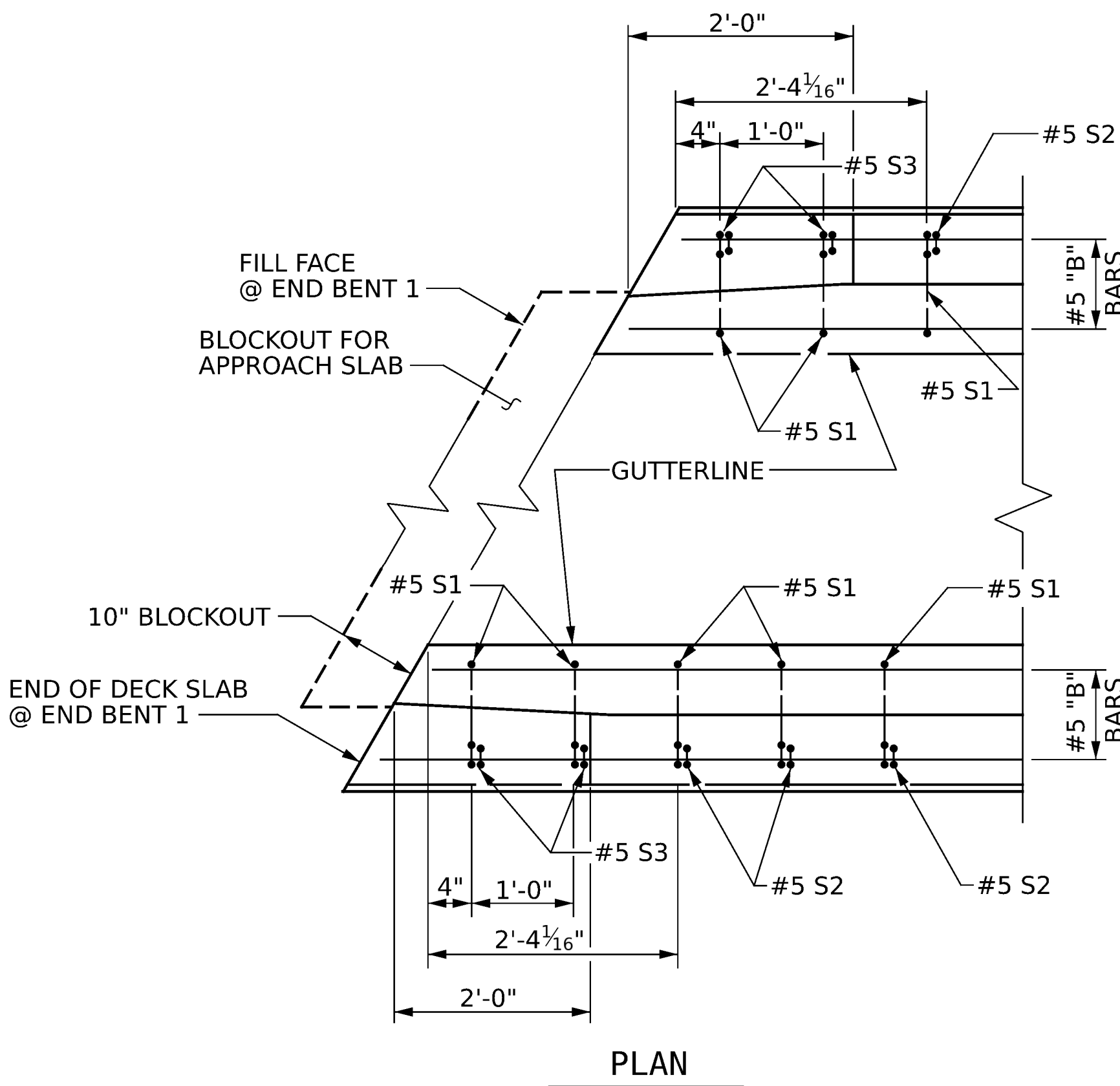
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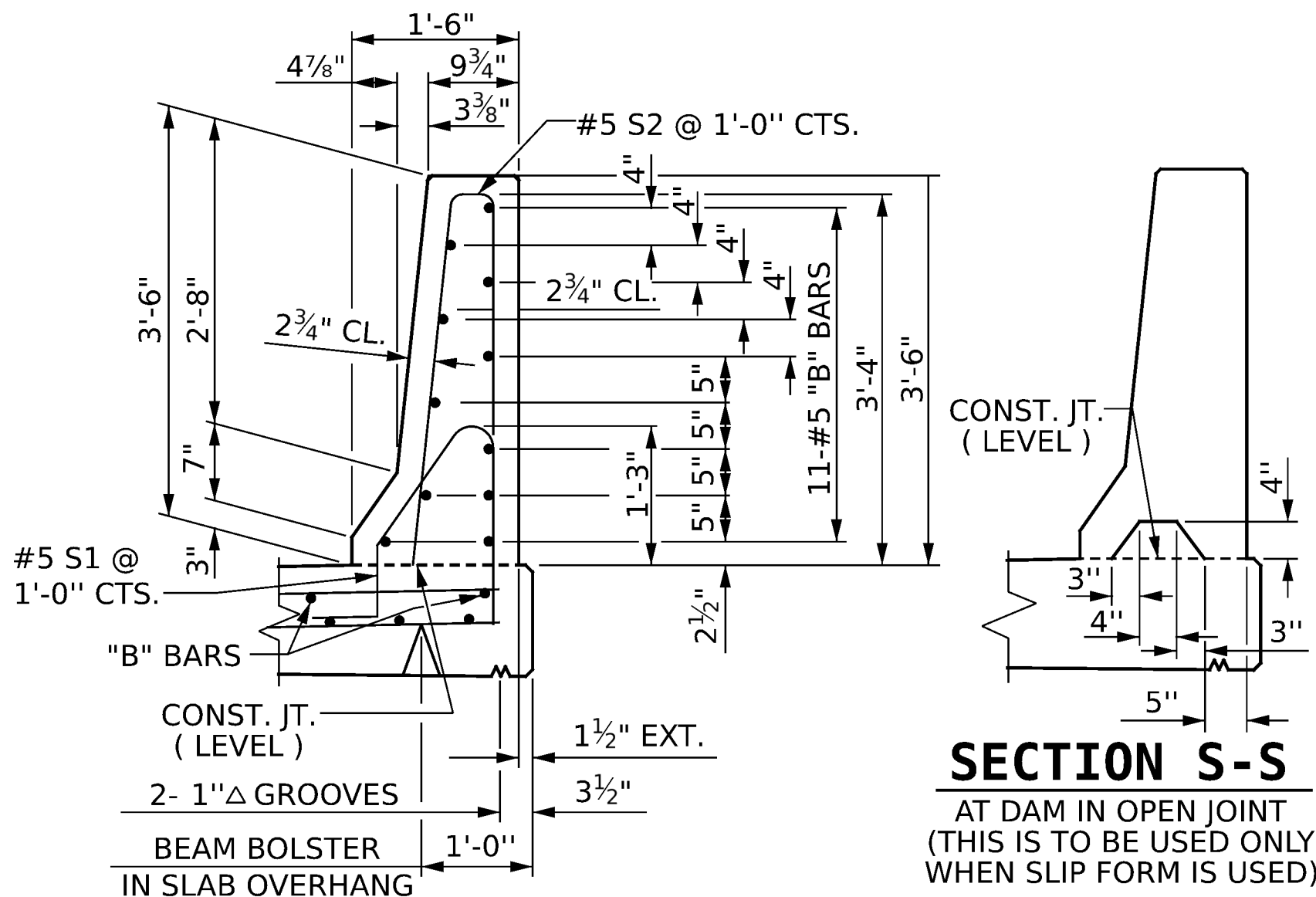
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**CONCRETE
BARRIER RAIL**

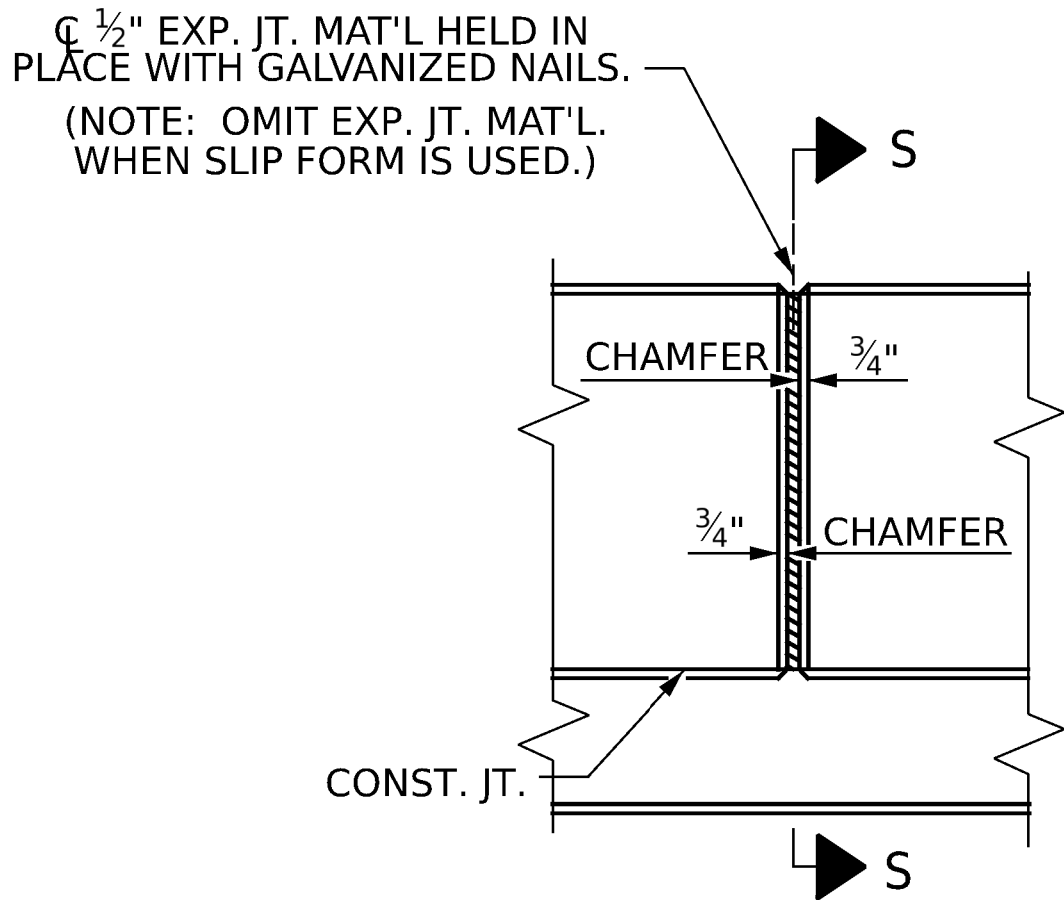
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			



END OF RAIL DETAILS



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

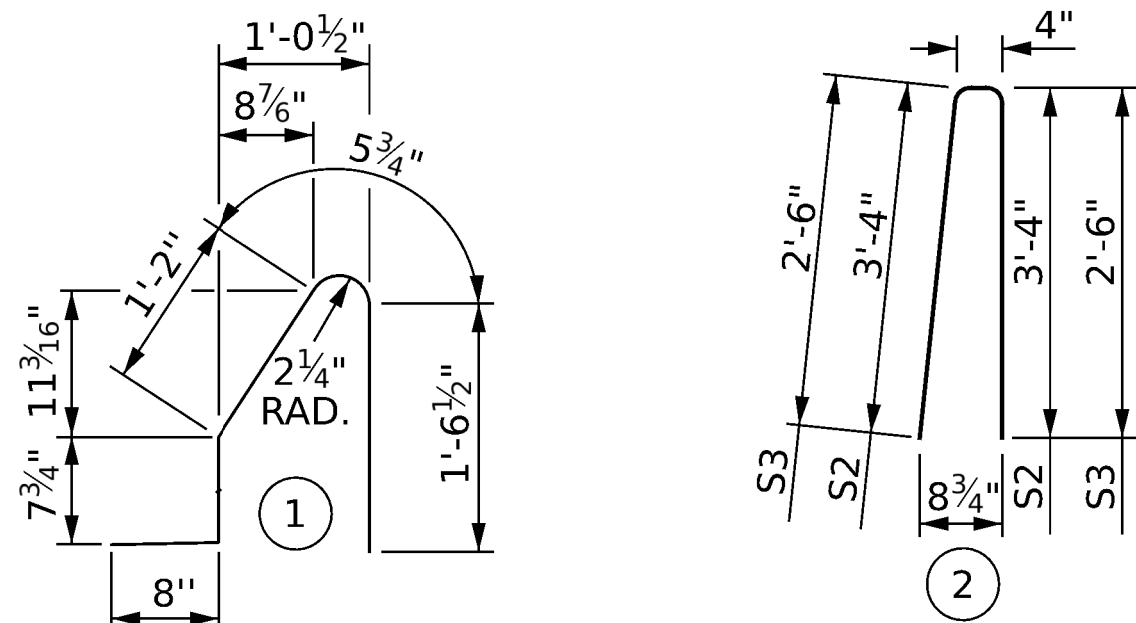
BARRIER RAIL DETAILS

NOTES

THE 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.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED
 FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE
 STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH
 THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION
 JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET
 IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS
 THAN 10 FEET IN LENGTH.



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	55	#5	STR	29'-7"	1697	* B1	55	#5	STR	29'-7"	1697
* B2	44	#5	STR	13'-7"	623	* B2	44	#5	STR	13'-7"	623
* S1	198	#5	1	4'-6"	929	* S1	198	#5	1	4'-6"	929
* S2	194	#5	2	7'-0"	1416	* S2	194	#5	2	7'-0"	1416
* S3	4	#5	2	5'-4"	22	* S3	4	#5	2	5'-4"	22
* EPOXY COATED REINFORCING STEEL 4687 LBS.						* EPOXY COATED REINFORCING STEEL 4687 LBS.					
CLASS AA CONCRETE				26.9	CU. YDS.	CLASS AA CONCRETE				26.9	CU. YDS.
CONCRETE BARRIER RAIL				198.23	LIN. FT.	CONCRETE BARRIER RAIL				198.23	LIN. FT.

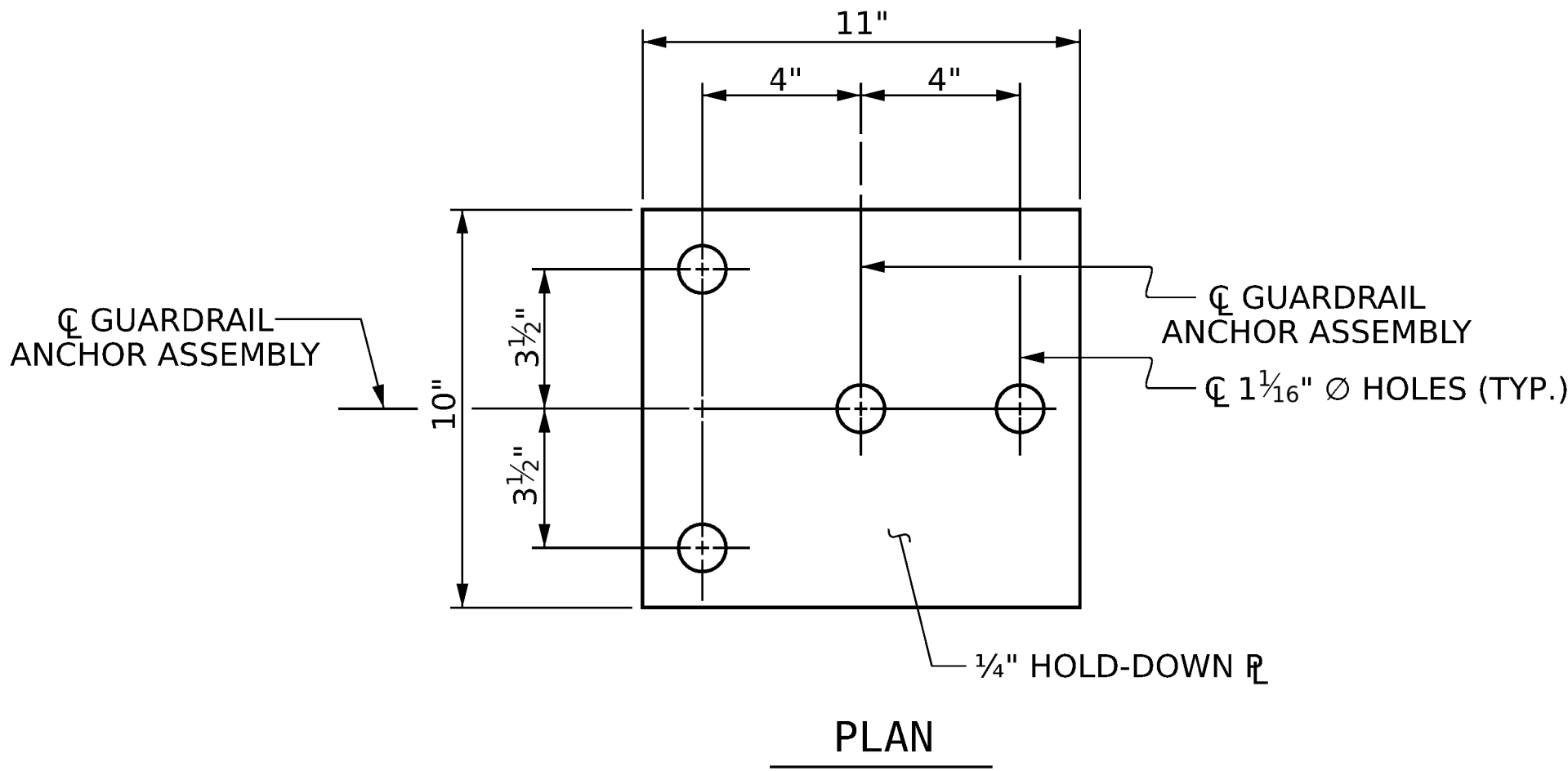
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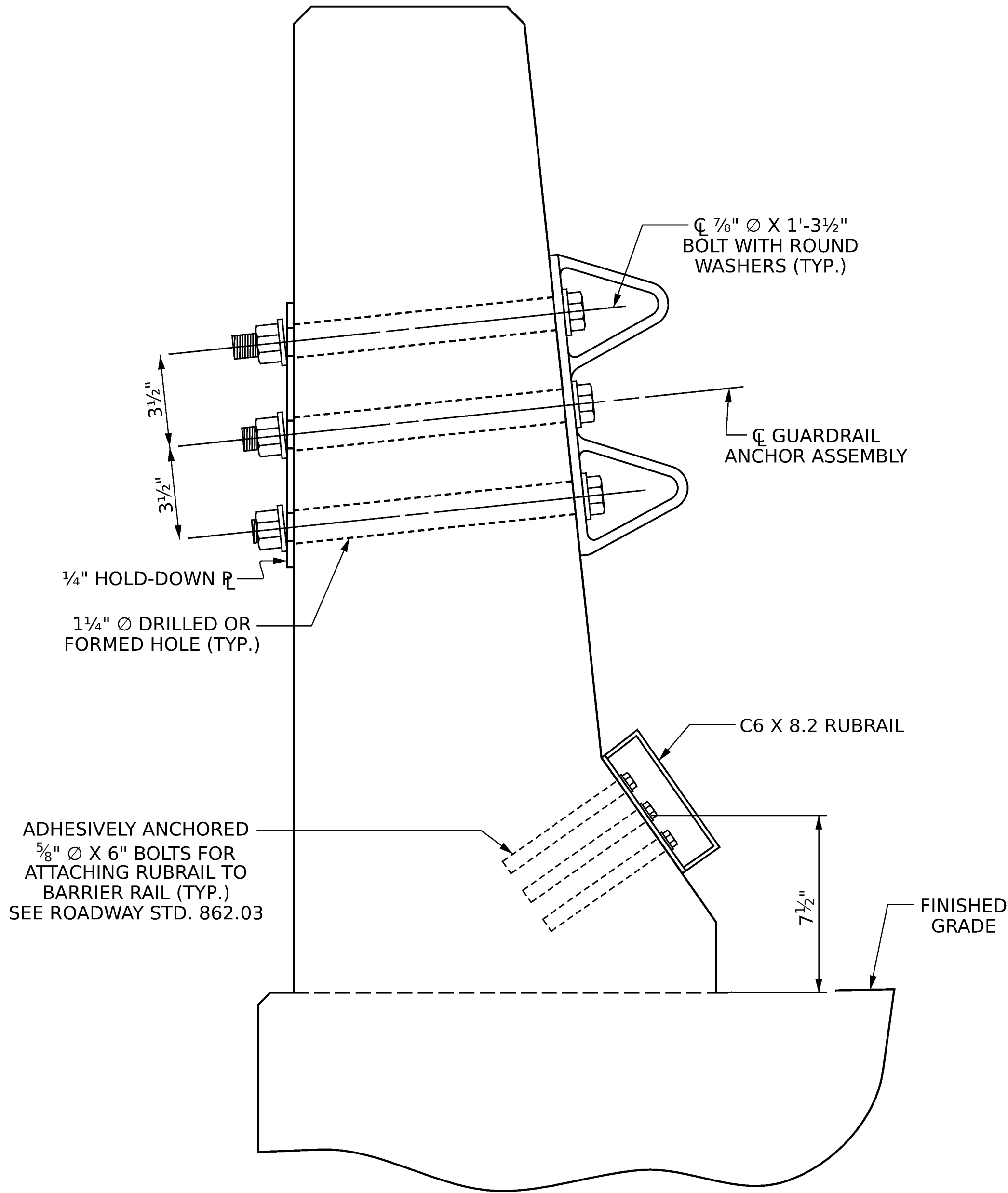
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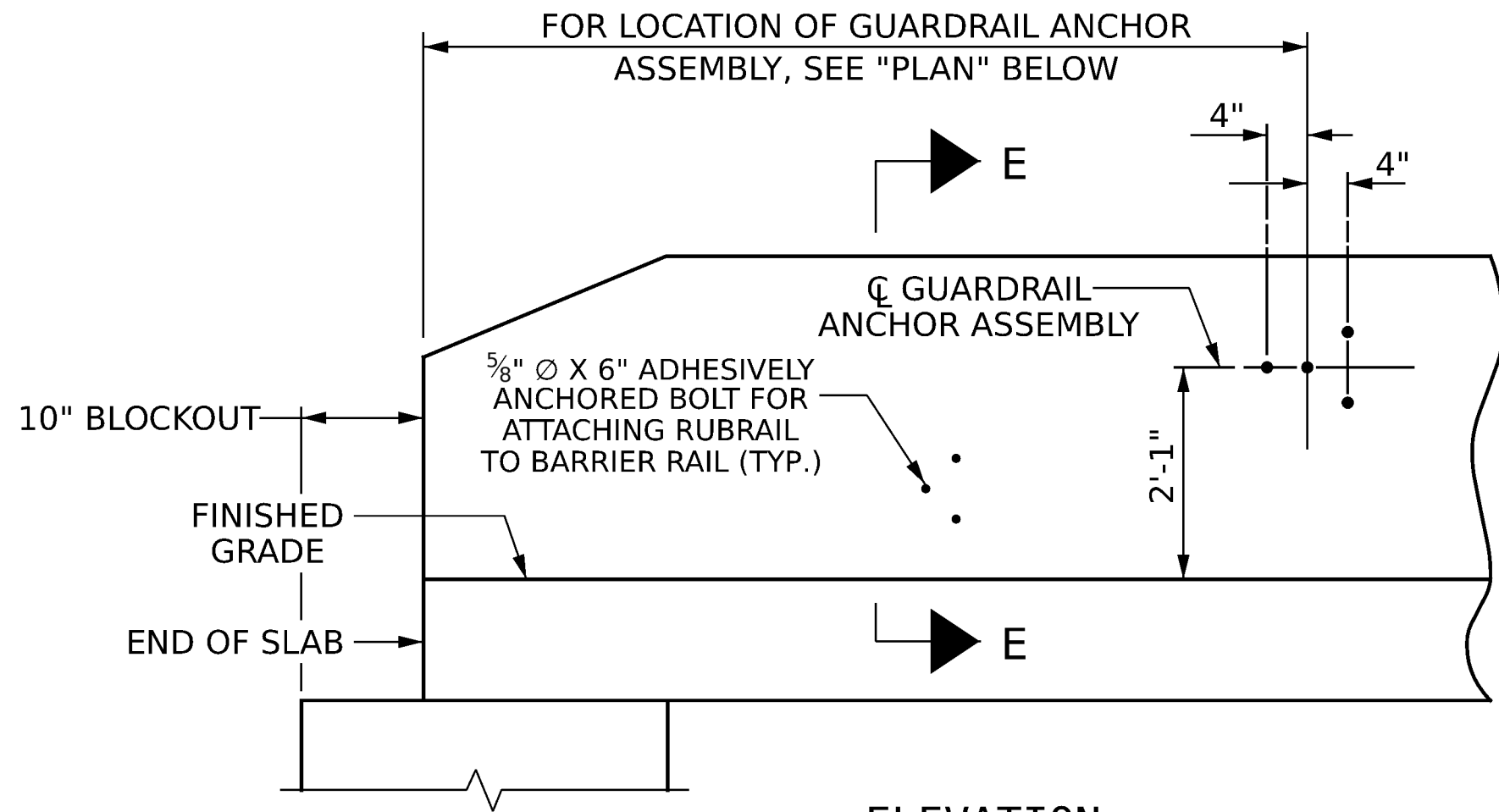


PLAN

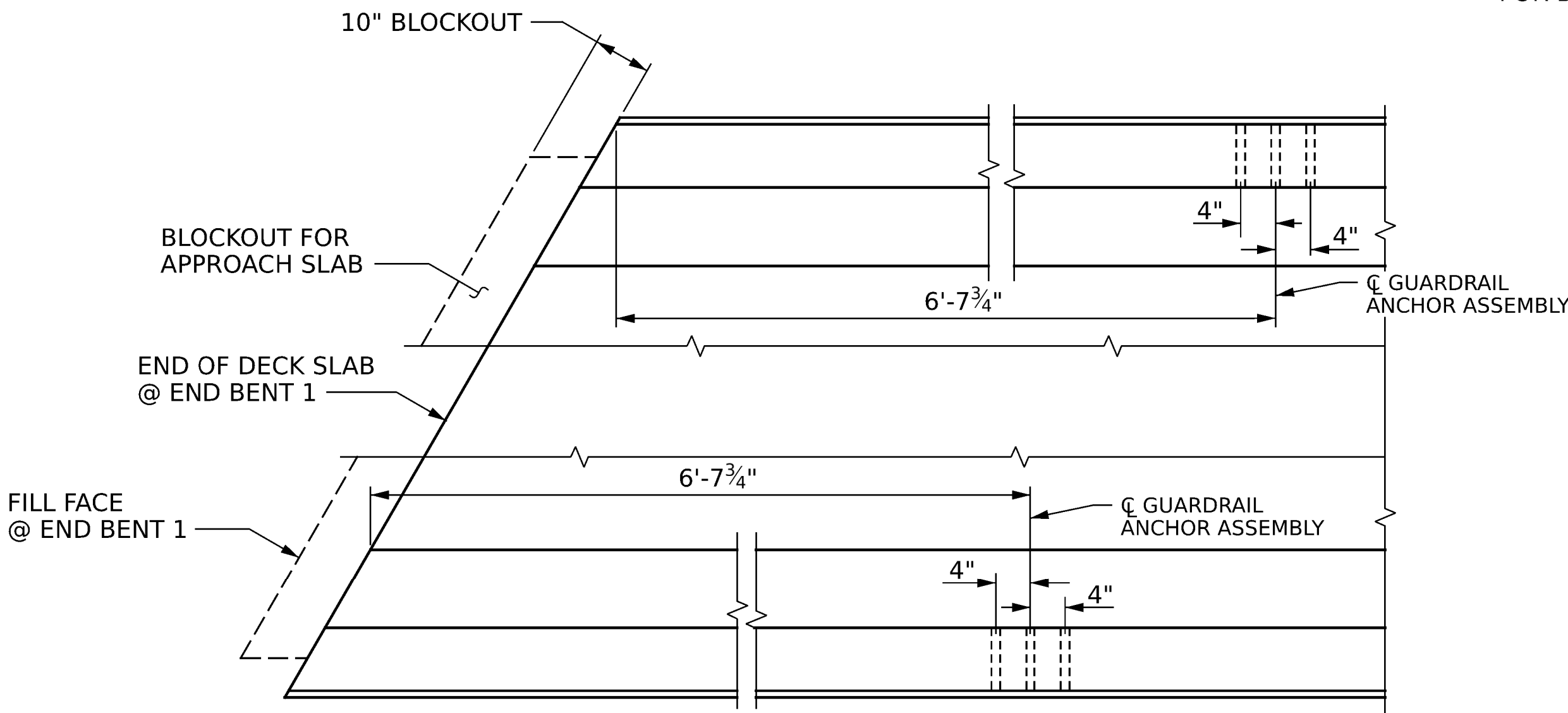


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

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

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

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

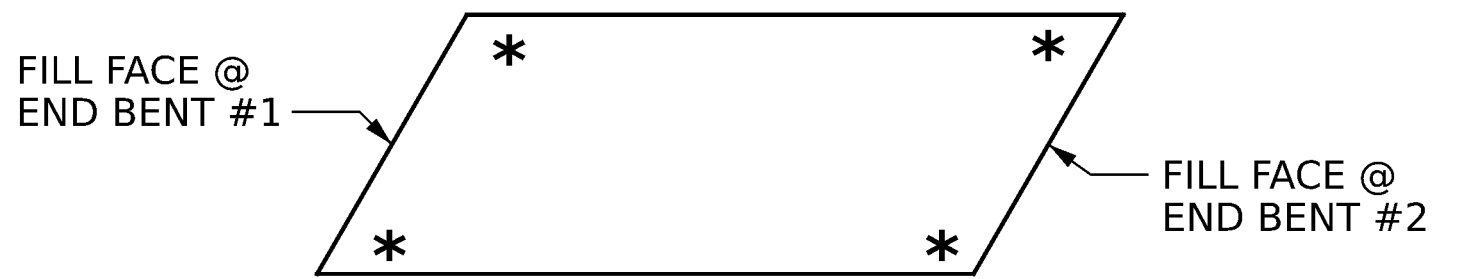
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 5/8" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

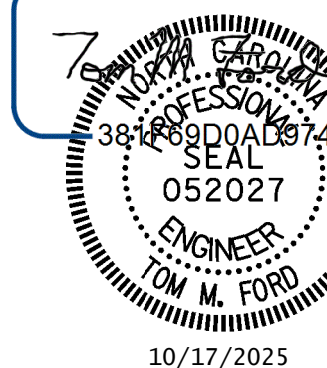


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

DocuSigned by:



10/17/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

DRAWN BY : **J. HARRIS** DATE : **3/2025**
CHECKED BY : **T. FORD** DATE : **7/2025**
DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**

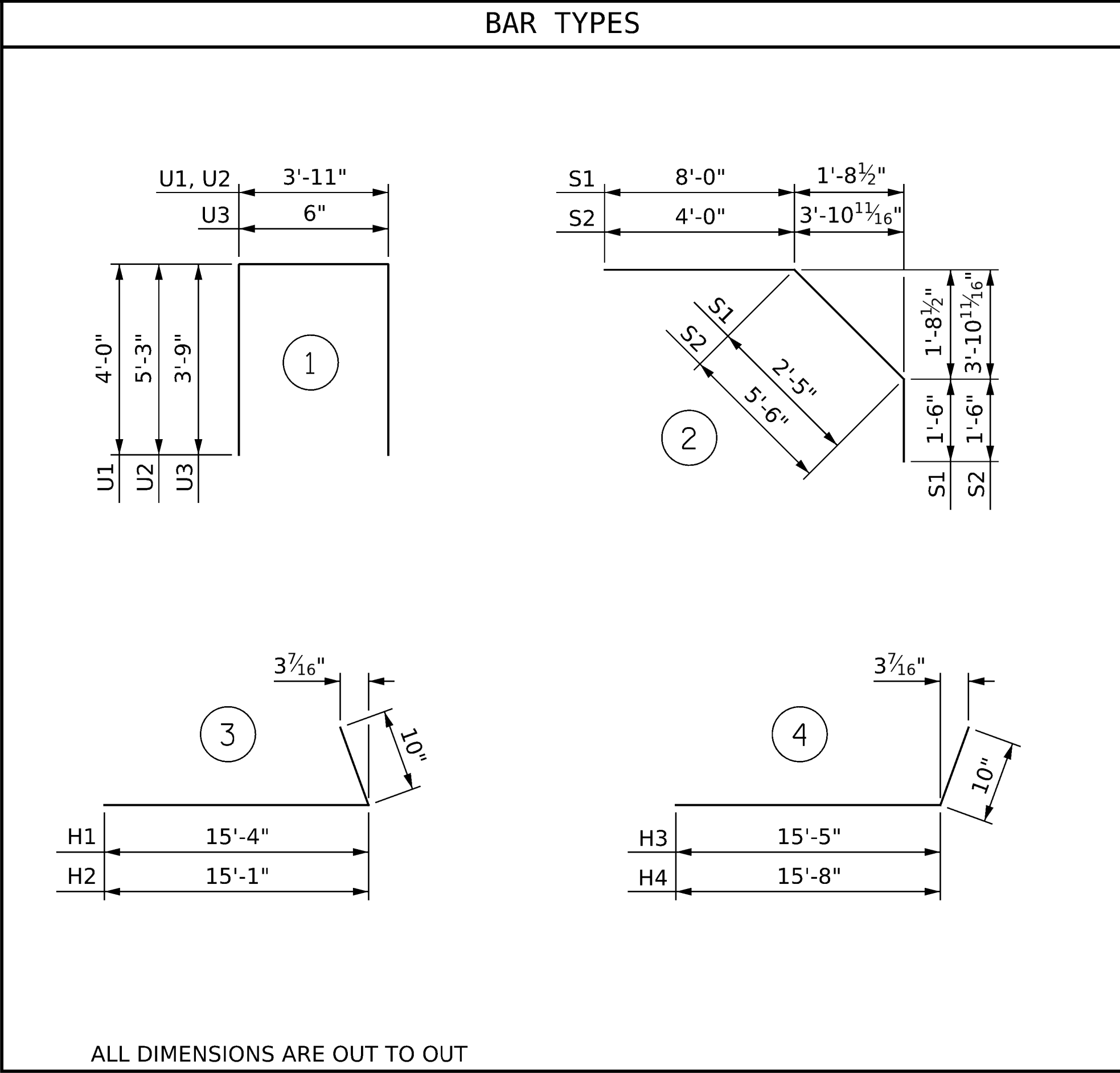


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2			4			TOTAL SHEETS 52

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REINFORCING BAR SCHEDULE											
STAGE I											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	382	#5	STR	19'-8"	7,836	*B1	42	#4	STR	25'-7"	718
A2	382	#5	STR	19'-8"	7,836	*B2	21	#4	STR	29'-10"	419
						*B3	80	#6	STR	11'-11"	1,432
*A101	2	#5	STR	18'-7"	39	*B4	42	#5	STR	53'-3"	2,333
*A102	2	#5	STR	17'-2"	36	*B5	38	#5	STR	31'-8"	1,256
*A103	2	#5	STR	15'-10"	34	B6	88	#5	STR	51'-0"	4,681
*A104	2	#5	STR	14'-5"	31	B7	38	#4	STR	38'-10"	986
*A105	2	#5	STR	13'-1"	28						
*A106	2	#5	STR	11'-8"	25	*D1	394	#5	STR	5'-10"	2,397
*A107	2	#5	STR	10'-4"	22	D2	394	#5	STR	5'-2"	2,123
*A108	2	#5	STR	8'-11"	19						
*A109	2	#5	STR	7'-7"	16	H1	11	#5	3	16'-2"	185
*A110	2	#5	STR	6'-2"	13	H2	11	#5	3	15'-11"	183
*A111	2	#5	STR	4'-10"	11	H3	11	#5	4	16'-3"	186
*A112	2	#5	STR	3'-5"	8	H4	11	#5	4	16'-6"	189
*A113	2	#5	STR	2'-1"	5						
						K1	10	#4	STR	26'-2"	175
A201	2	#5	STR	18'-7"	39	K2	4	#4	STR	6'-4"	17
A202	2	#5	STR	17'-2"	36	K3	8	#4	STR	7'-5"	40
A203	2	#5	STR	15'-10"	34	K4	4	#4	STR	6'-7"	18
A204	2	#5	STR	14'-5"	31	K5	4	#4	STR	5'-10"	16
A205	2	#5	STR	13'-1"	28	K6	2	#4	STR	5'-1"	7
A206	2	#5	STR	11'-8"	25	K7	4	#4	STR	5'-8"	15
A207	2	#5	STR	10'-4"	22	K8	2	#4	STR	5'-1"	7
A208	2	#5	STR	8'-11"	19	K9	2	#4	STR	4'-10"	7
A209	2	#5	STR	7'-7"	16	K10	12	#4	STR	2'-10"	23
A210	2	#5	STR	6'-2"	13						
A211	2	#5	STR	4'-10"	11	*S1	32	#4	2	11'-11"	255
A212	2	#5	STR	3'-5"	8	*S2	30	#4	2	11'-0"	220
A213	2	#5	STR	2'-1"	5						
						U1	32	#4	1	11'-11"	255
						U2	6	#4	1	14'-5"	58
						U3	4	#4	1	8'-0"	21
						V2	57	#4	STR	5'-4"	203
TOTAL REINFORCING STEEL											LBS. 17,518
* TOTAL EPOXY COATED REINFORCING STEEL											LBS. 17,153

REINFORCING BAR SCHEDULE											
STAGE II											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	380	#5	STR	21'-3"	8,423	*B1	60	#4	STR	25'-7"	1,026
A4	380	#5	STR	21'-3"	8,423	*B2	30	#4	STR	29'-10"	598
						*B3	102	#6	STR	11'-11"	1,826
*A301	2	#5	STR	20'-2"	43	*B4	60	#5	STR	53'-3"	3,333
*A302	2	#5	STR	18'-9"	39	*B5	42	#5	STR	31'-8"	1,388
*A303	2	#5	STR	17'-5"	37	B6	128	#5	STR	51'-0"	6,809
*A304	2	#5	STR	16'-0"	34	B7	56	#4	STR	38'-10"	1,453
*A305	2	#5	STR	14'-8"	31						
*A306	2	#5	STR	13'-3"	28	*D1	394	#5	STR	5'-10"	2,397
*A307	2	#5	STR	11'-11"	25	D2	394	#5	STR	5'-2"	2,123
*A308	2	#5	STR	10'-6"	22						
*A309	2	#5	STR	9'-2"	20	H1	11	#5	3	16'-2"	185
*A310	2	#5	STR	7'-9"	17	H2	11	#5	3	15'-11"	183
*A311	2	#5	STR	6'-5"	14	H3	11	#5	4	16'-3"	186
*A312	2	#5	STR	5'-0"	11	H4	11	#5	4	16'-6"	189
*A313	2	#5	STR	3'-8"	8						
*A314	2	#5	STR	2'-3"	5	K11	10	#4	STR	30'-3"	203
						K12	4	#4	STR	7'-4"	20
A401	2	#5	STR	20'-2"	43	K13	8	#4	STR	8'-5"	45
A402	2	#5	STR	18'-9"	39	K14	4	#4	STR	7'-7"	21
A403	2	#5	STR	17'-5"	37	K15	4	#4	STR	6'-10"	19
A404	2	#5	STR	16'-0"	34	K16	2	#4	STR	5'-9"	8
A405	2	#5	STR	14'-8"	31	K17	4	#4	STR	6'-4"	17
A406	2	#5	STR	13'-3"	28	K18	2	#4	STR	5'-8"	8
A407	2	#5	STR	11'-11"	25	K19	2	#4	STR	5'-5"	8
A408	2	#5	STR	10'-6"	22	K20	12	#4	STR	2'-10"	23
A409	2	#5	STR	9'-2"	20	K21	2	#4	STR	2'-9"	4
A410	2	#5	STR	7'-9"	17	K22	2	#4	STR	3'-7"	5
A411	2	#5	STR	6'-5"	14	K23	4	#4	STR	4'-3"	11
A412	2	#5	STR	5'-0"	11	K24	2	#4	STR	3'-2"	5
A413	2	#5	STR	3'-8"	8						
A414	2	#5	STR	2'-3"	5	*S1	44	#4	2	11'-11"	351
						*S2	42	#4	2	11'-0"	309
						U1	44	#4	1	11'-11"	351
						U2	6	#4	1	14'-5"	58
						U3	4	#4	1	8'-0"	21
						V2	57	#4	STR	5'-4"	203
TOTAL REINFORCING STEEL											LBS. 20,915
* TOTAL EPOXY COATED REINFORCING STEEL											LBS. 19,985

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	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"			

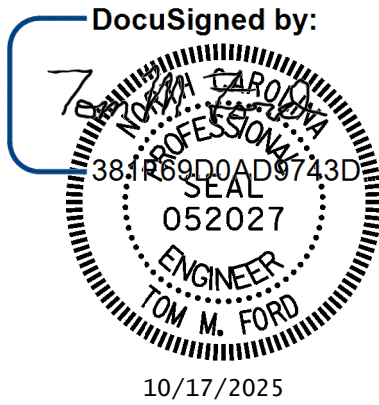
PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					52

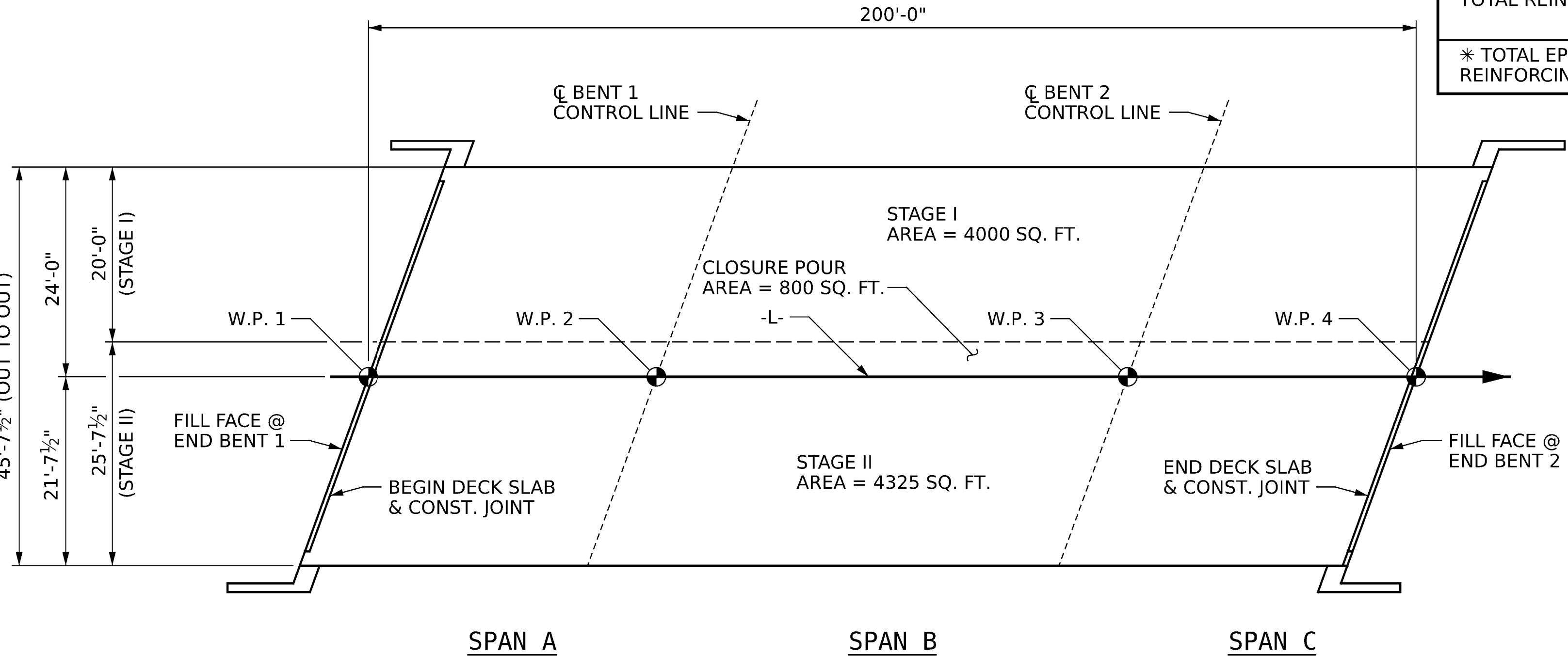


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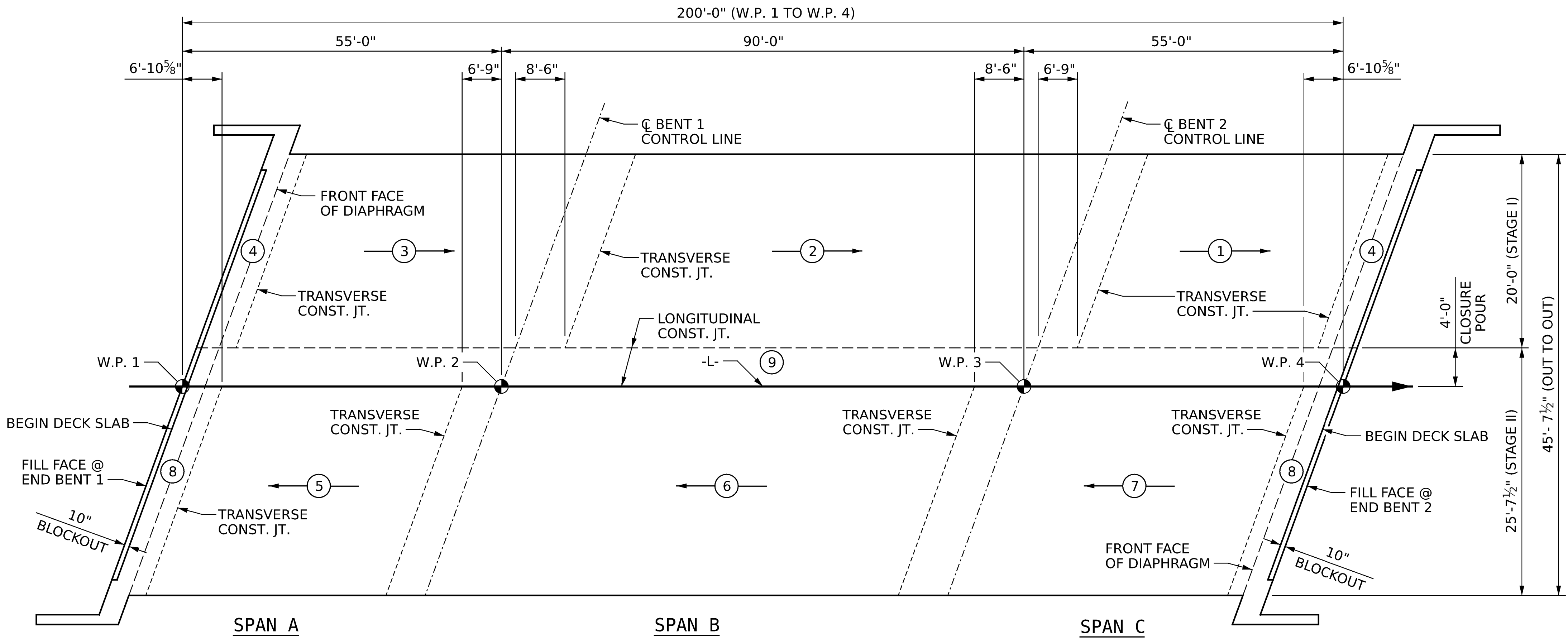
DRAWN BY : J. HARRIS DATE : 3/2025
 CHECKED BY : T. FORD DATE : 7/2025
 DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025

LAYOUT FOR COMPUTING
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 9,125)



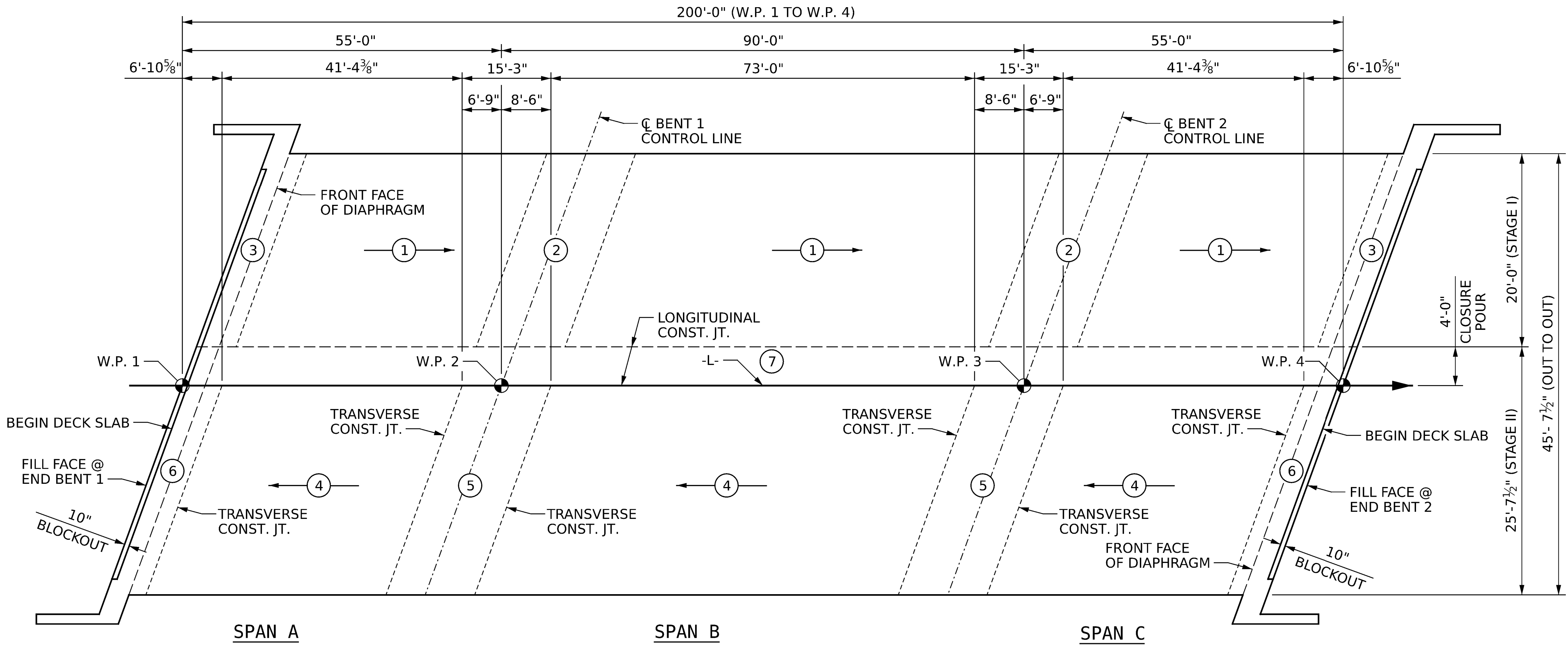
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POURING SEQUENCE

← # INDICATES POUR NUMBER AND POUR DIRECTION



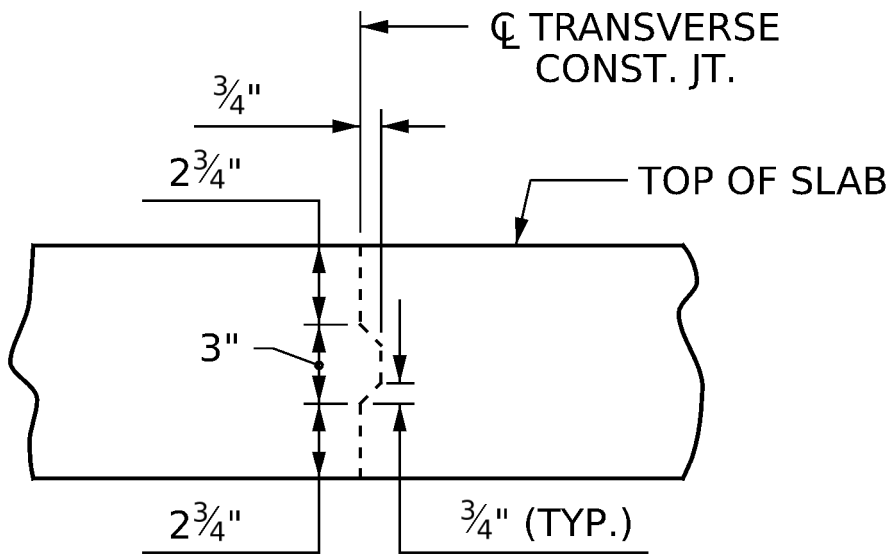
OPTIONAL POURING SEQUENCE

← # INDICATES POUR NUMBER AND POUR DIRECTION

SUPERSTRUCTURE BILL OF MATERIAL				
		CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
		(CU. YDS)	(LBS.)	(LBS.)
STAGE I	POUR #1	35.5	-	-
	POUR #2	55.3	-	-
	POUR #3	25.9	-	-
	POUR #4	44.4	-	-
	TOTAL	161.1	17,518	17,153
STAGE II	POUR #5	27.9	-	-
	POUR #6	59.5	-	-
	POUR #7	38.1	-	-
	POUR #8	48.3	-	-
	POUR #9	33.0	-	-
	TOTAL	206.8	20,915	19,985
	TOTALS **	367.9	38,433	37,138

**QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS	
STAGE I	
APPROACH SLABS	838 SQ. FT.
BRIDGE DECK	3,345 SQ. FT.
TOTAL	4,183 SQ. FT.
STAGE II	
APPROACH SLABS	1,118 SQ. FT.
BRIDGE DECK	4,460 SQ. FT.
TOTAL	5,578 SQ. FT.
TOTAL	
APPROACH SLABS	1,956 SQ. FT.
BRIDGE DECK	7,805 SQ. FT.
TOTAL	9,761 SQ. FT.

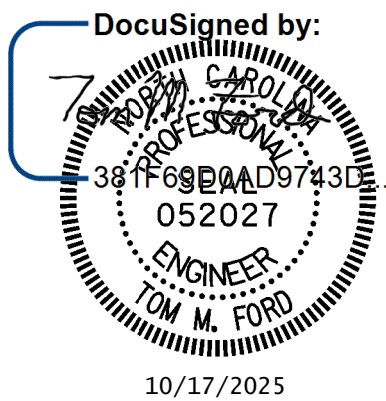


TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
BILL OF MATERIAL	

DRAWN BY : J. HARRIS DATE : 3/2025
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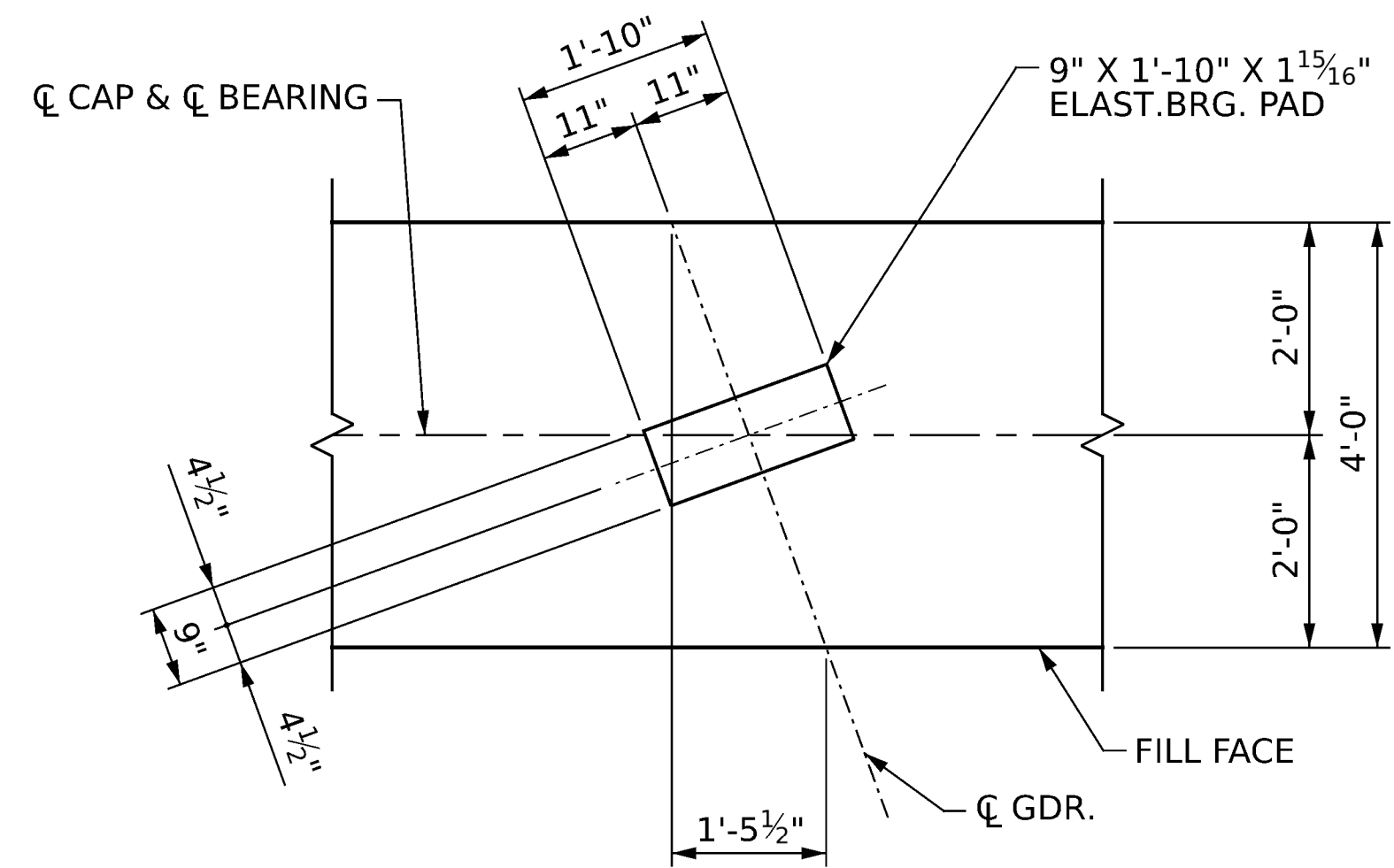
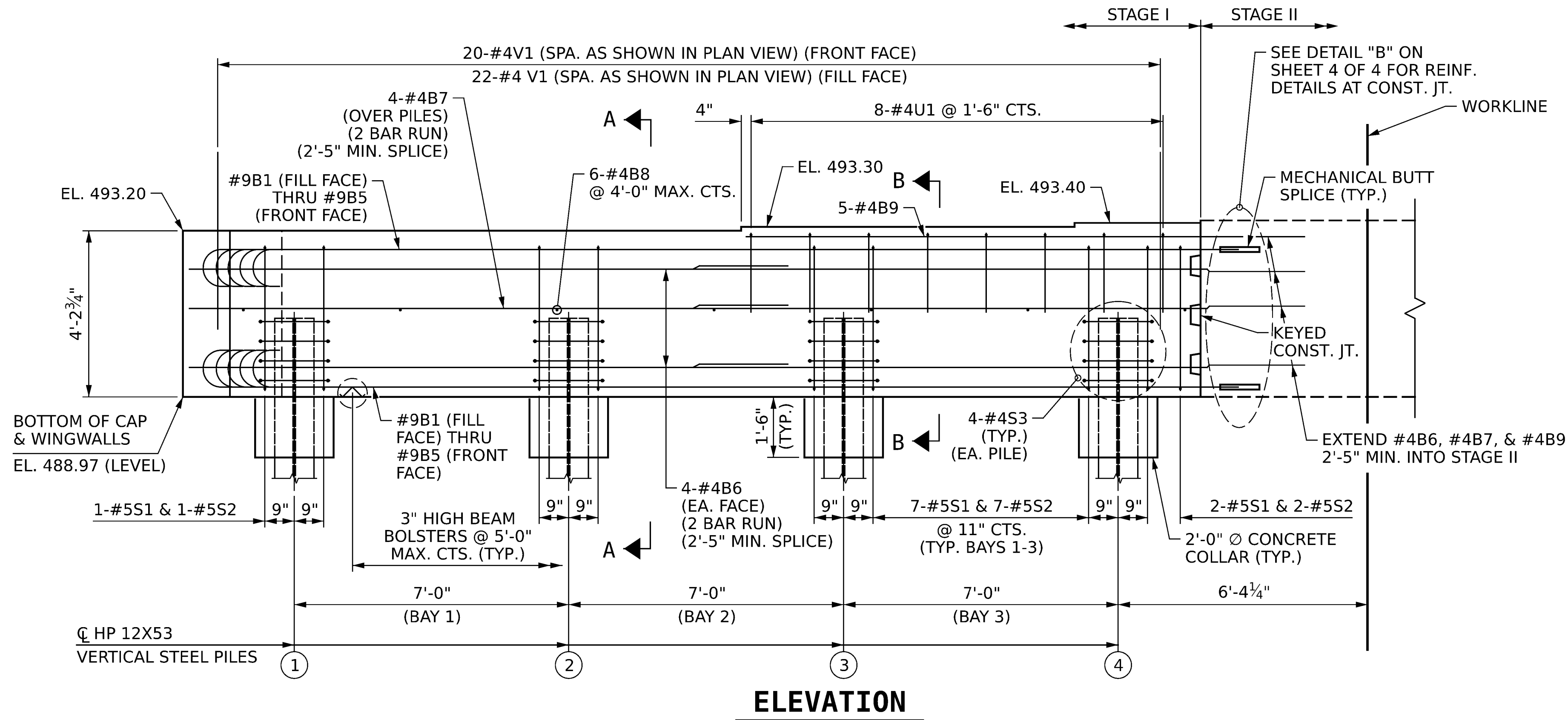
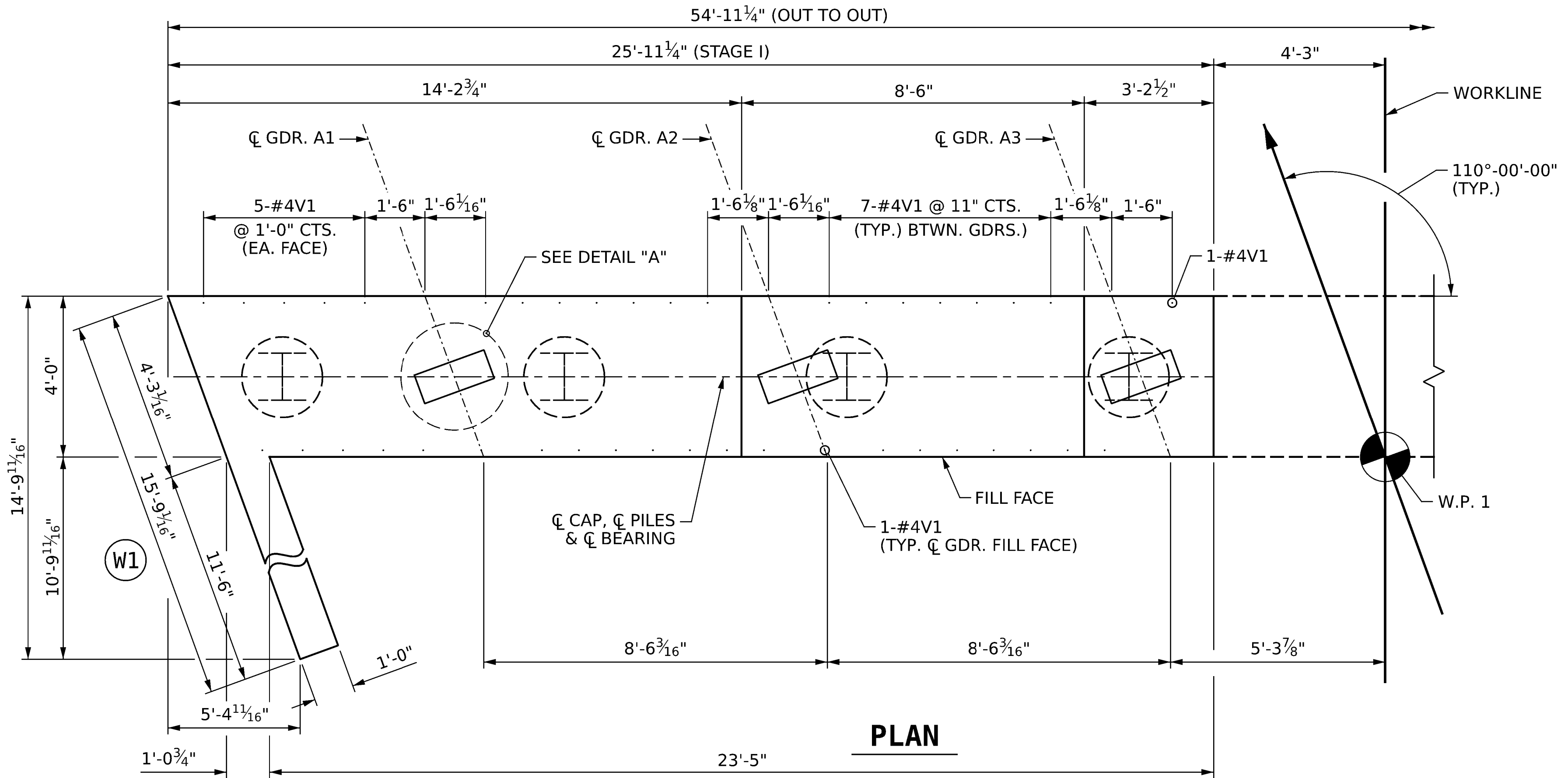
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1			3	S-33
2			4	TOTAL SHEETS 52

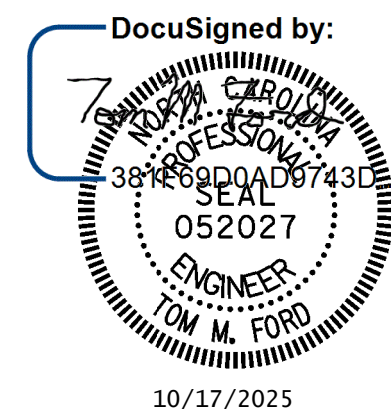
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NOTES:
 MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 BARS IN STAGE I WITH THE #9 "B" BARS IN STAGE II.
 FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LENGTHS OF THE #9 "B" BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITION PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.
 #4V1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.
 FOR WING DETAILS, SEE SHEET 3 OF 4.
 FOR DETAIL "B", PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.
 FOR CONSTRUCTION JOINT DETAILS, SEE "KEYED CONSTRUCTION JOINT DETAIL" ON SHEET 4 OF 4.
 FOR SECTIONS A-A AND B-B, SEE SHEET 4 OF 4.
 THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.
 THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF $\frac{1}{4}$ ".
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 & 2, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
 STATION: **15+40.00 -L-**
 SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
END BENT 1
 STAGE I



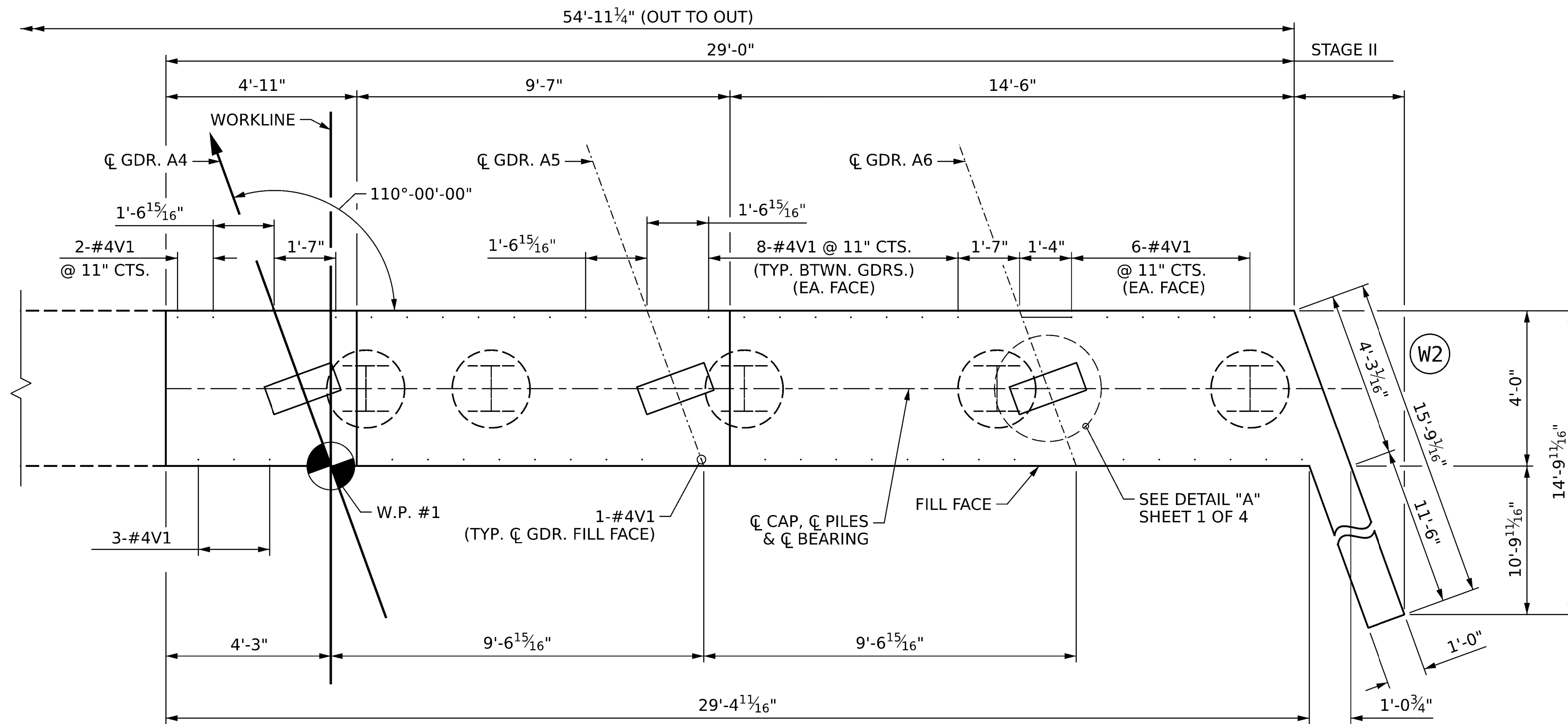
DRAWN BY : **Z. BLINSON** DATE : **7/2025**
 CHECKED BY : **T. FORD** DATE : **7/2025**
 DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**



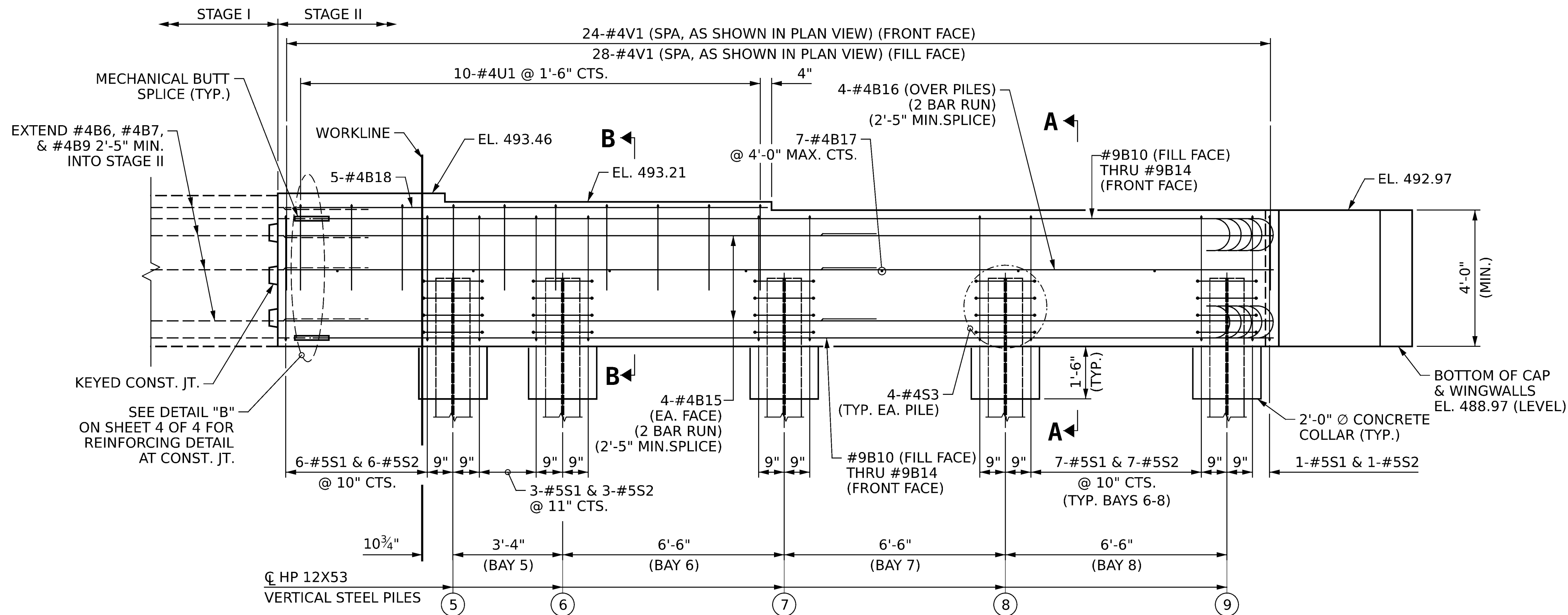
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1			3			S-34
2			4			TOTAL SHEETS 52



PLAN



ELEVATION

NOTES:

FOR NOTES AND DETAIL "A", SEE SHEET 1 OF 4.

FOR REINFORCING DETAIL AT CONSTRUCTION JOINT AND DETAIL "B",
SEE SHEET 4 OF 4.

FOR SECTIONS A-A AND SECTION B-B, SEE SHEET 4 of 4.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.

THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

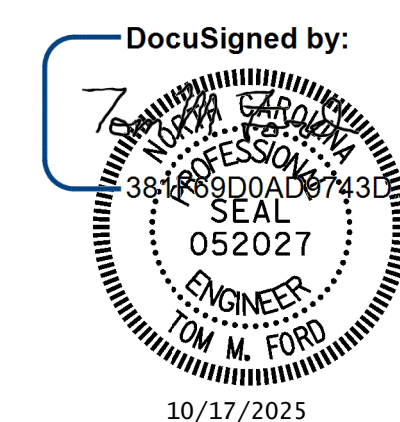
STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 & 2, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1
STAGE II



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 DESIGN ENGINEER OF RECORD: T. FORD DATE : 9/2025



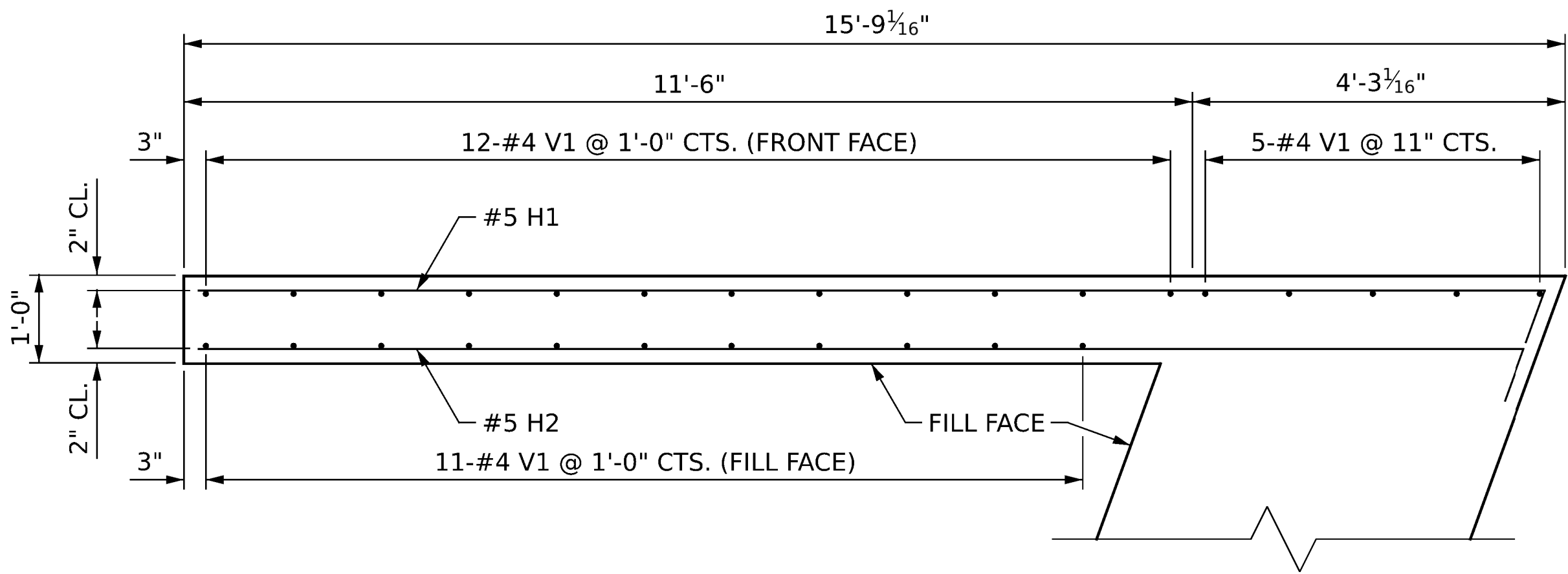
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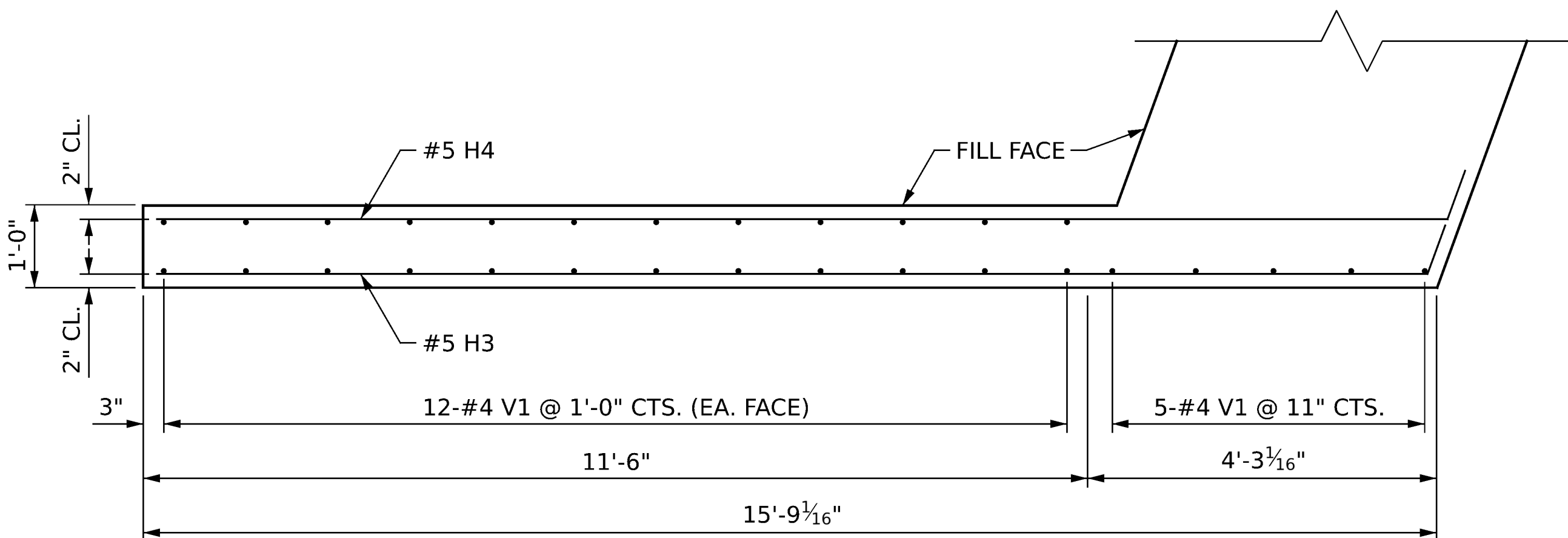
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	NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
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	2			4			

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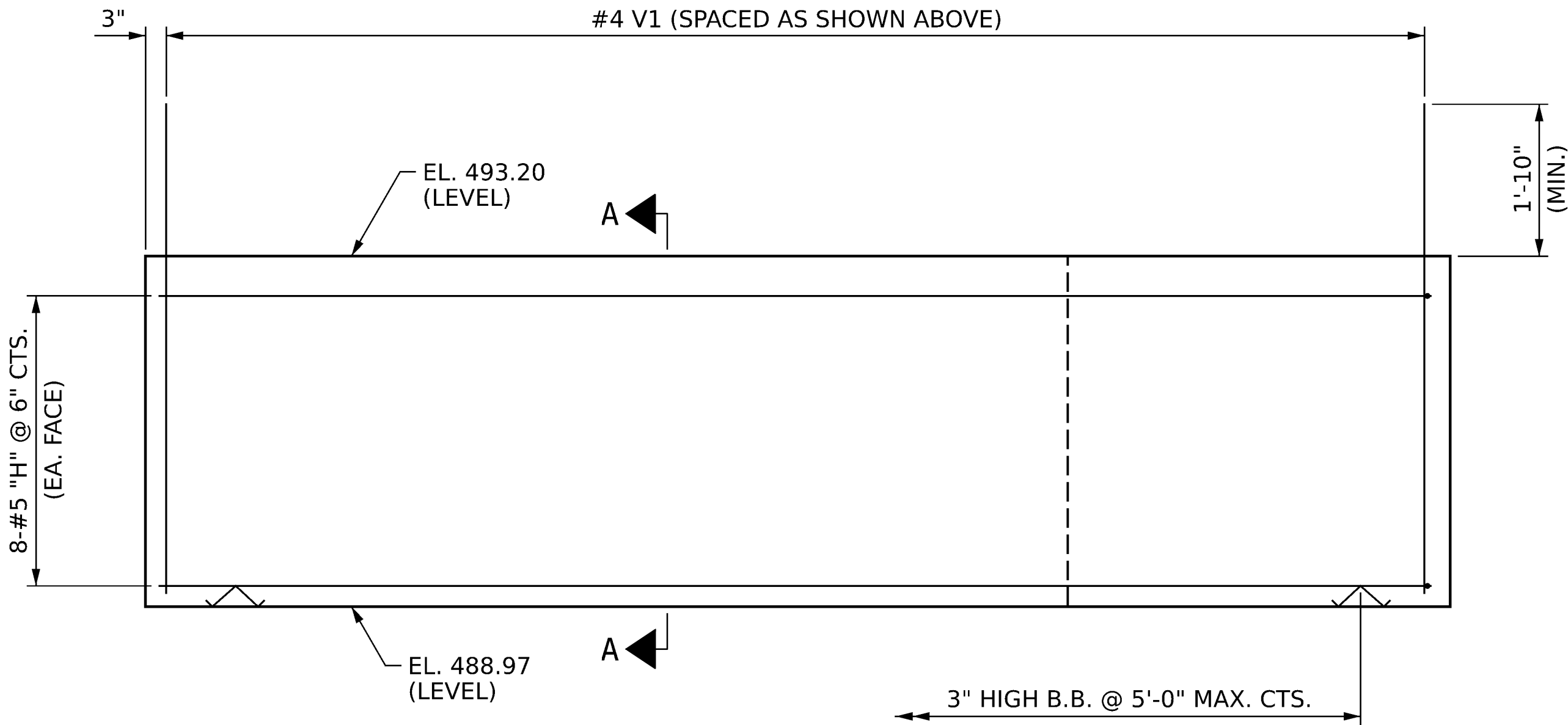
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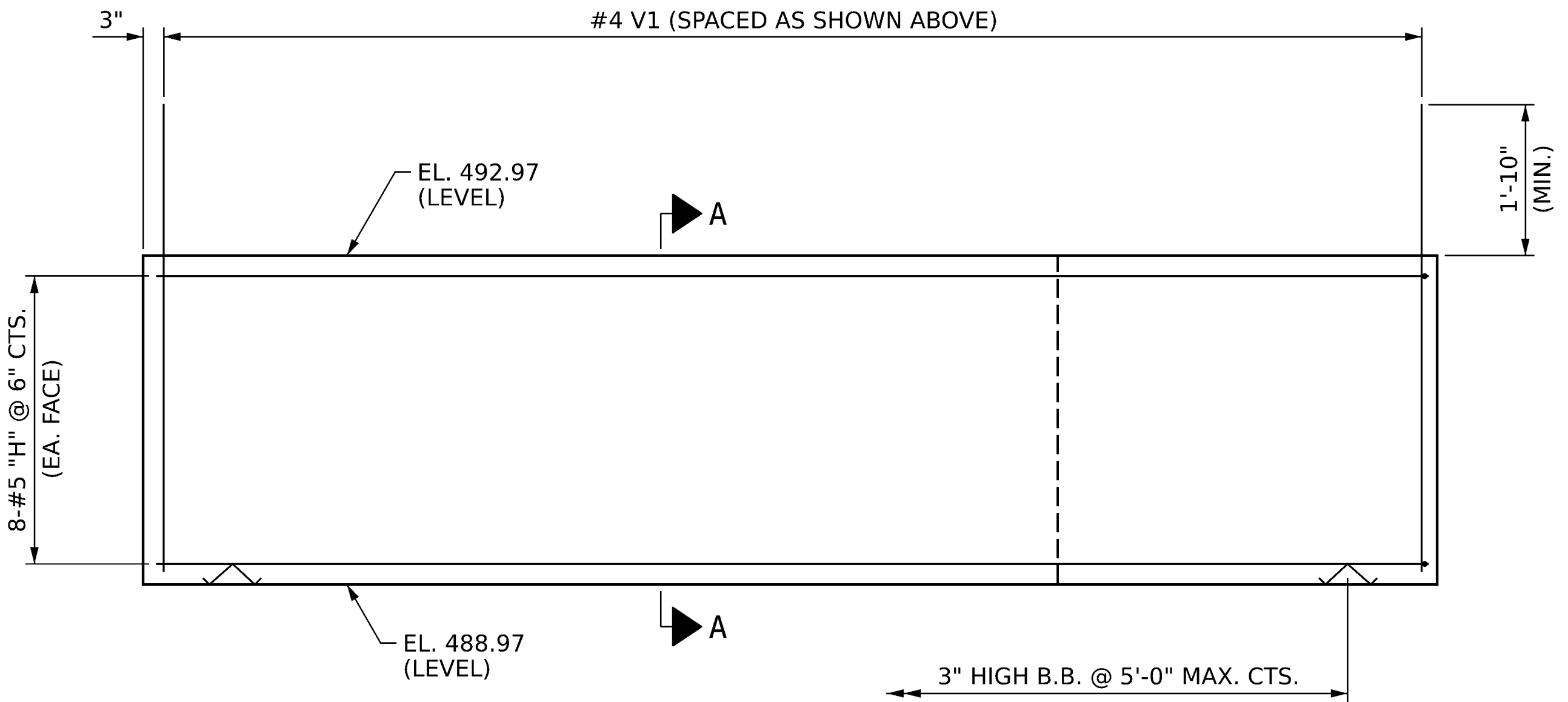
PLAN OF WING W1
(STAGE I)



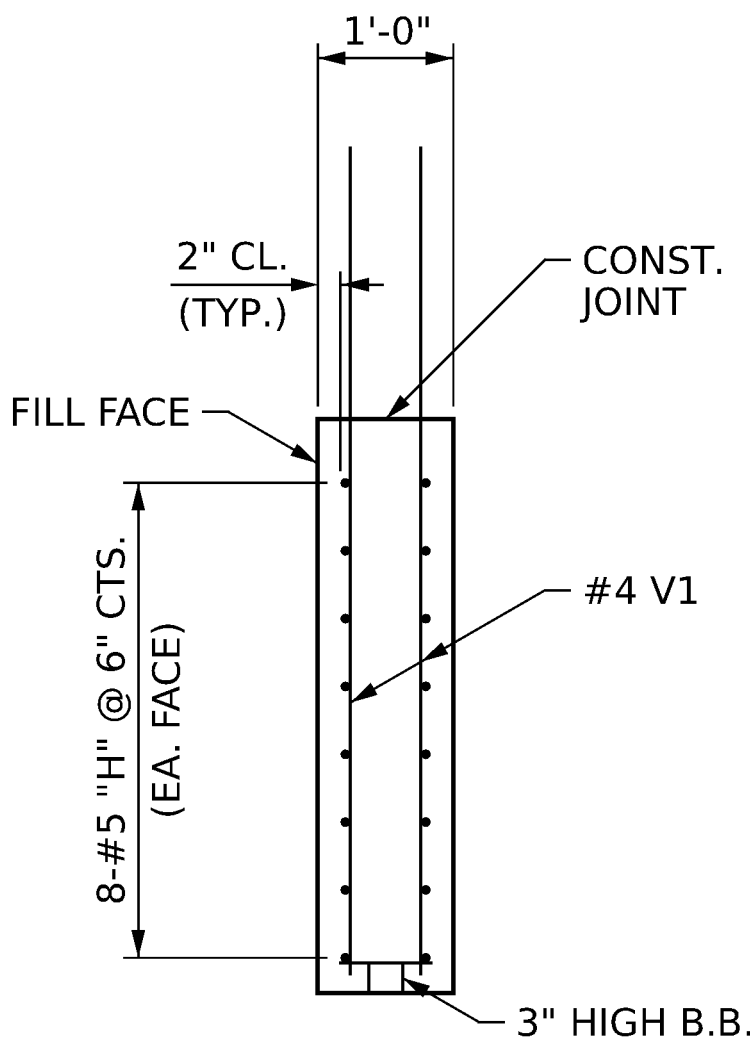
PLAN OF WING W2
(STAGE II)



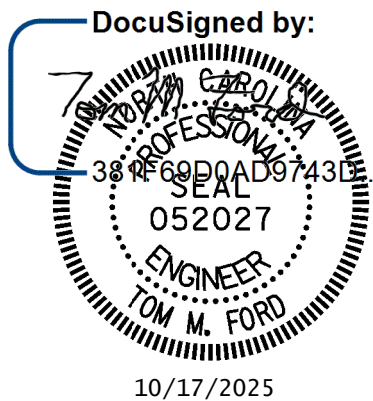
ELEVATION OF WING W1
(STAGE I)



ELEVATION OF WING W2
(STAGE II)



SECTION A-A



PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**END BENT 1
WING DETAILS**

DRAWN BY : **J. HARRIS** DATE : **3/2025**
CHECKED BY : **T. FORD** DATE : **7/2025**
DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**

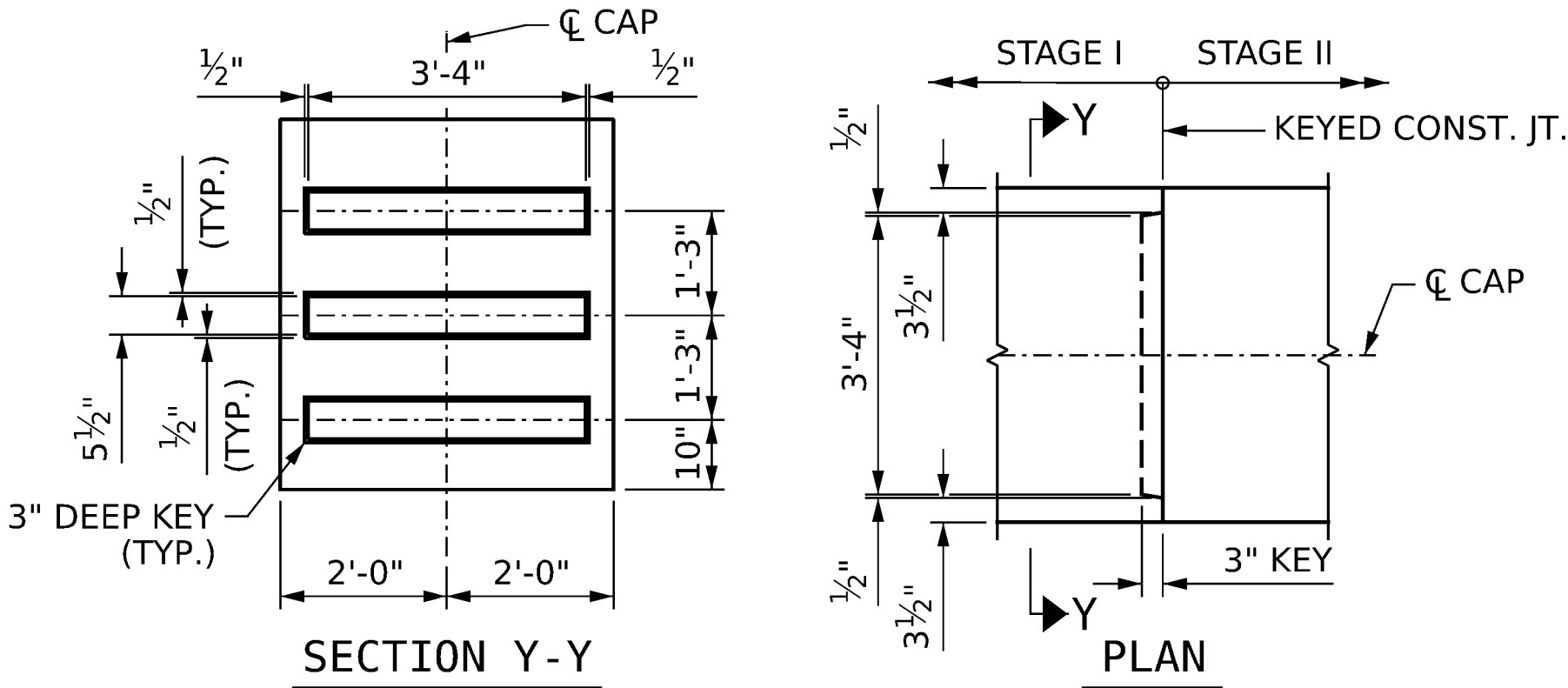
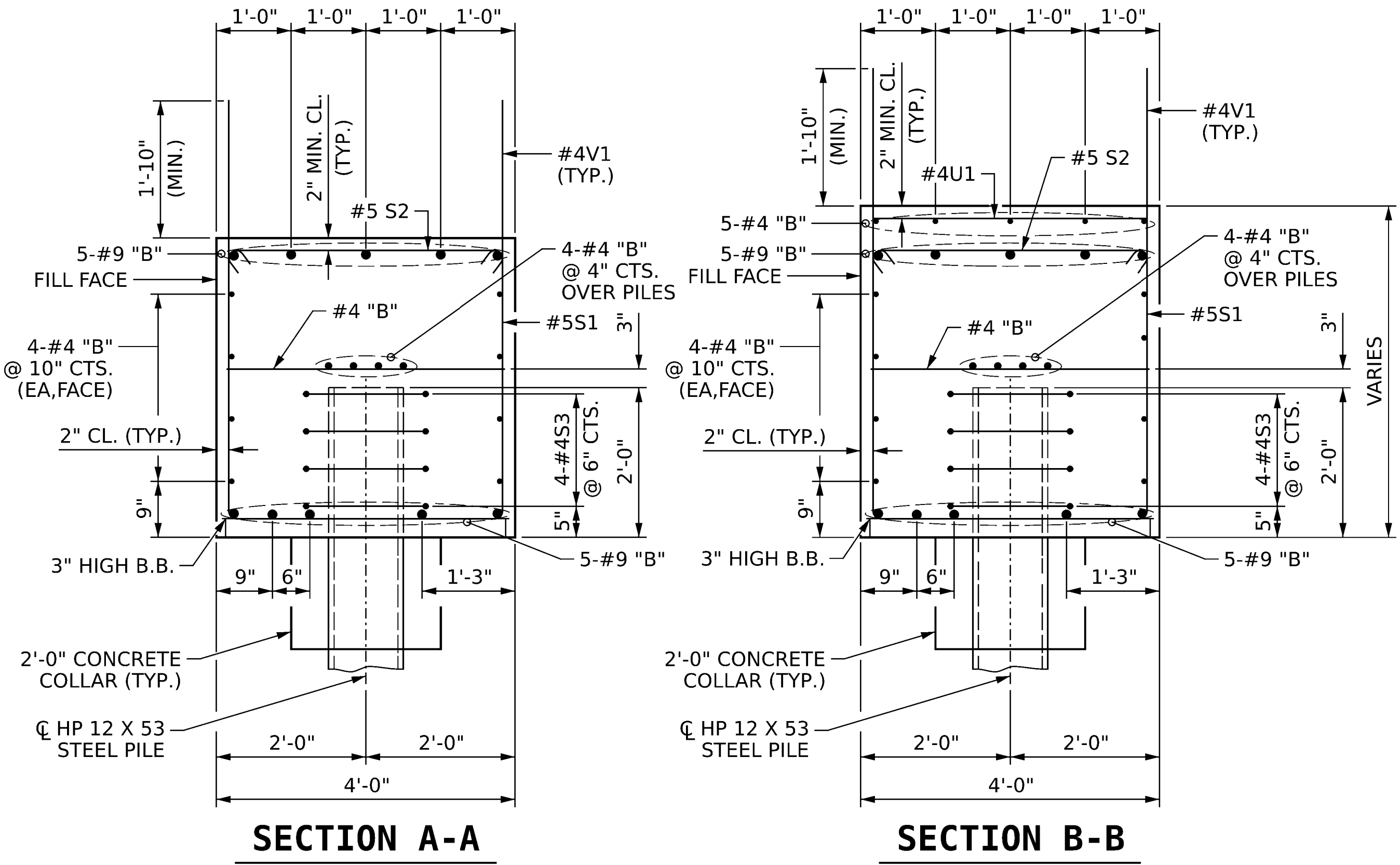


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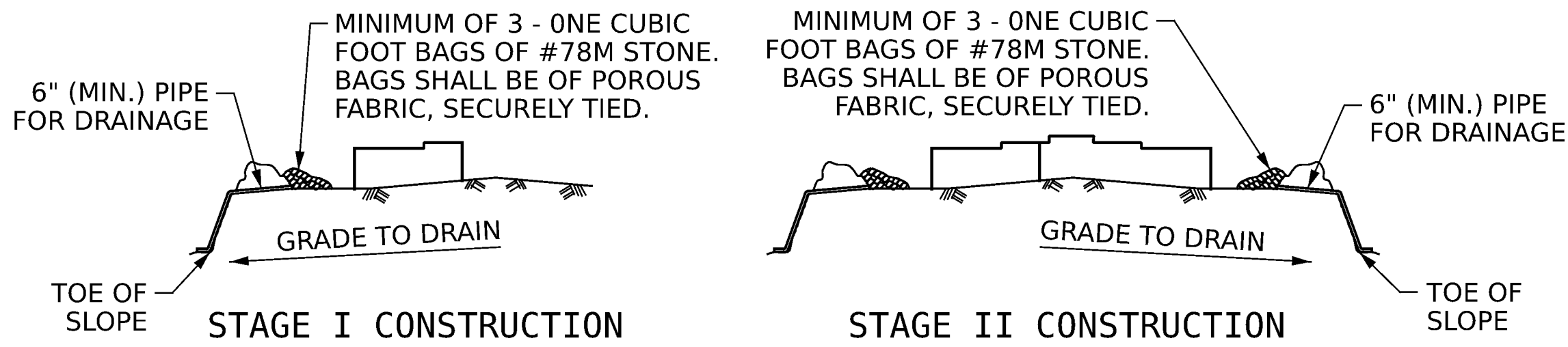
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1			3			S-36
2			4			TOTAL SHEETS 52

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KEYED CONSTRUCTION JOINT DETAIL



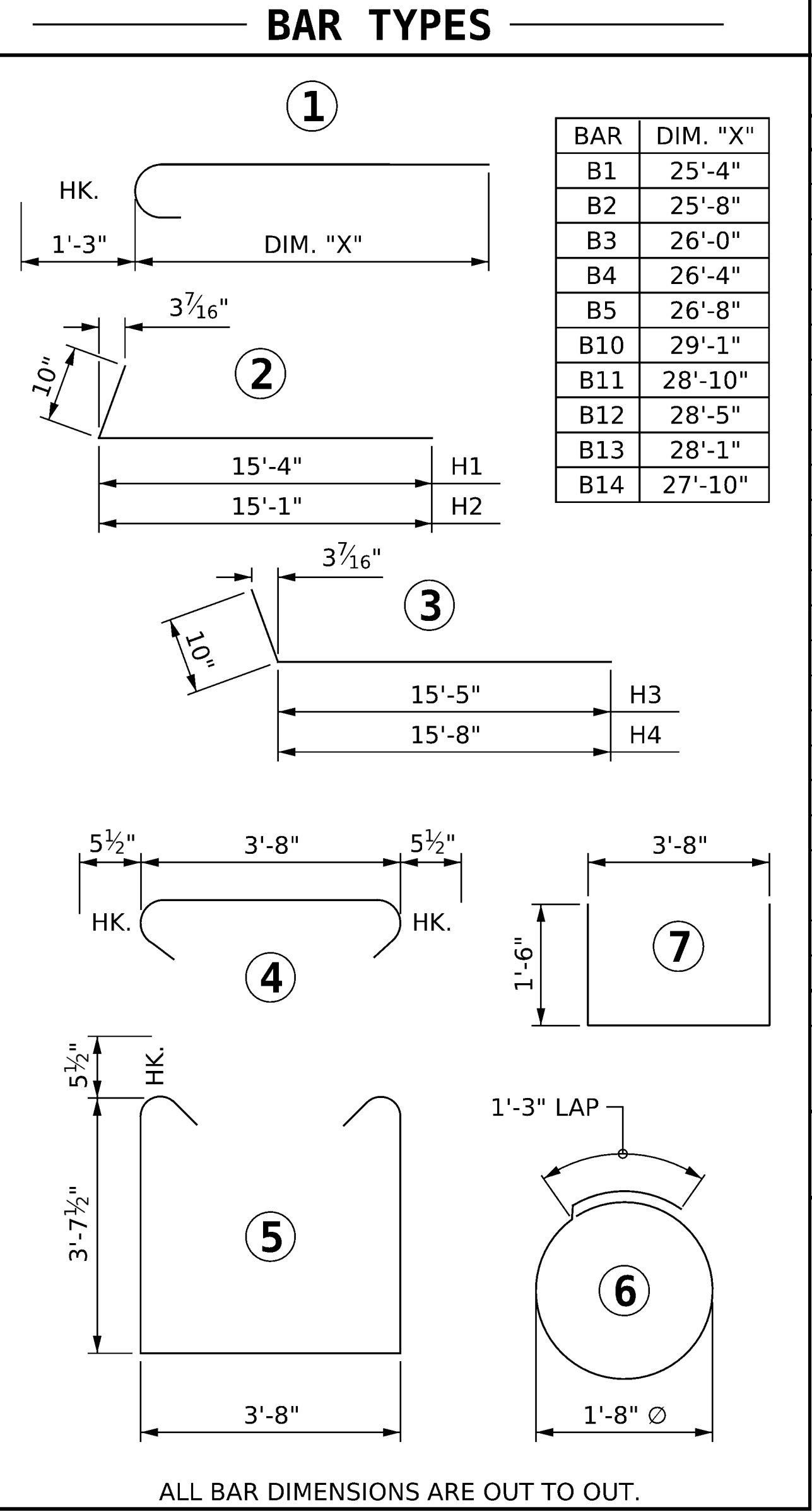
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY. OR CORRUGATED PLASTIC, PERFORATED PIPE WILL NOT BE ALLOWED.

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.

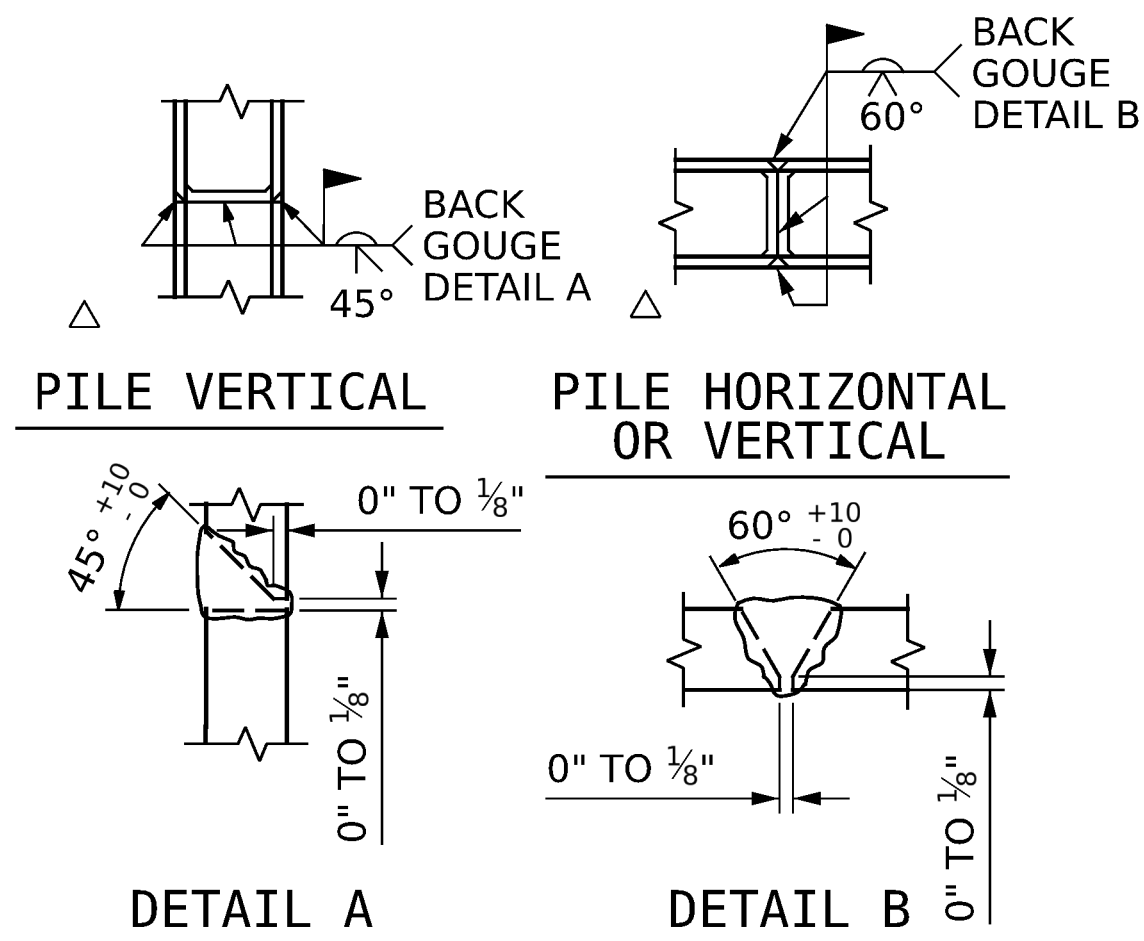
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : Z. BLINSON DATE : 7/2025
CHECKED BY : T. FORD DATE : 7/2025
DESIGN ENGINEER OF RECORD : T. FORD DATE : 9/2025

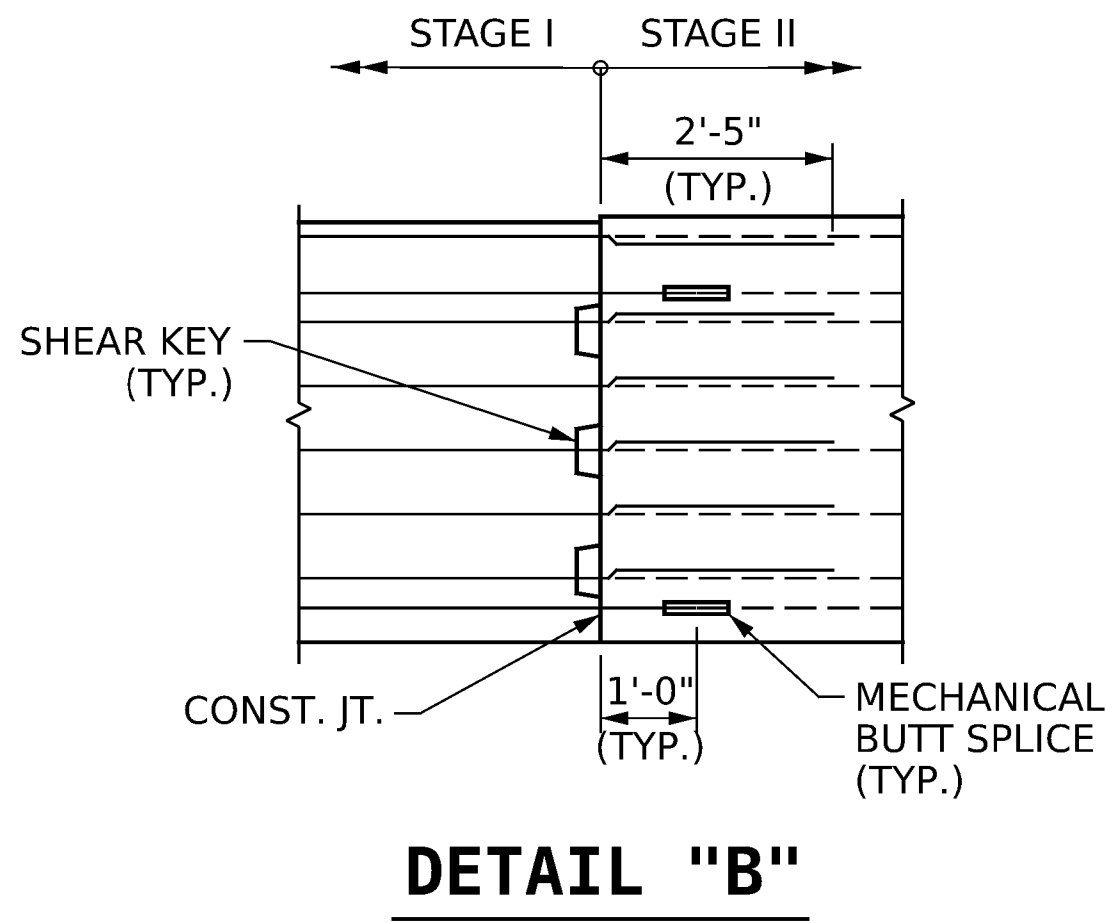


BILL OF MATERIAL											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	26'-7"	181	B10	2	#9	1	30'-4"	206
B2	2	#9	1	26'-11"	183	B12	2	#9	1	30'-1"	205
B3	2	#9	1	27'-3"	185	B11	2	#9	1	29'-8"	202
B4	2	#9	1	27'-7"	188	B13	2	#9	1	29'-4"	199
B5	2	#9	1	27'-11"	190	B14	2	#9	1	29'-1"	198
B6	16	#4	STR.	15'-3"	163	B15	16	#4	STR.	16'-4"	175
B7	8	#4	STR.	15'-1"	81	B16	8	#4	STR.	16'-1"	86
B8	6	#4	STR.	3'-8"	15	B17	6	#4	STR.	3'-8"	17
B9	5	#4	STR.	14'-0"	47	B18	5	#4	STR.	14'-4"	48
H1	8	#5	2	16'-2"	135	H3	8	#5	3	16'-3"	136
H2	8	#5	2	15'-11"	133	H4	8	#5	3	16'-6"	138
S1	24	#5	5	11'-10"	296	S1	31	#5	5	11'-10"	383
S2	24	#5	4	4'-7"	115	S2	31	#5	4	4'-7"	148
S3	16	#4	6	6'-6"	69	S3	20	#4	6	6'-6"	87
U1	8	#4	7	6'-8"	36	U1	10	#4	7	6'-8"	45
V1	70	#4	STR.	6'-2"	288	V1	81	#4	STR.	6'-2"	334
REINFORCING STEEL						REINFORCING STEEL					
2,305 LBS.						2,607 LBS.					
CLASS A CONCRETE						CLASS A CONCRETE					
CAP, COLLARS & LOWER WINGWALL						CAP, COLLARS & LOWER WINGWALL					
19.0 C.Y.						20.7 C.Y.					
HP 12 X 53 STEEL PILES						HP 12 X 53 STEEL PILES					
4 PILES						5 PILES					
160 L.F.						200 L.F.					



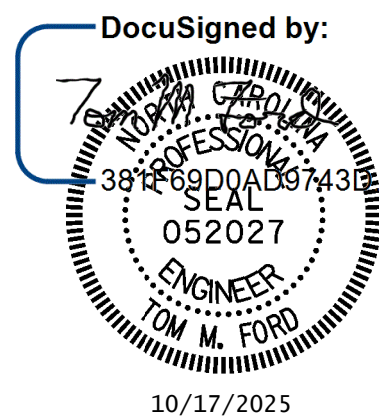
△ POSITION OF PILE DURING WELDING

PILE SPLICE DETAILS



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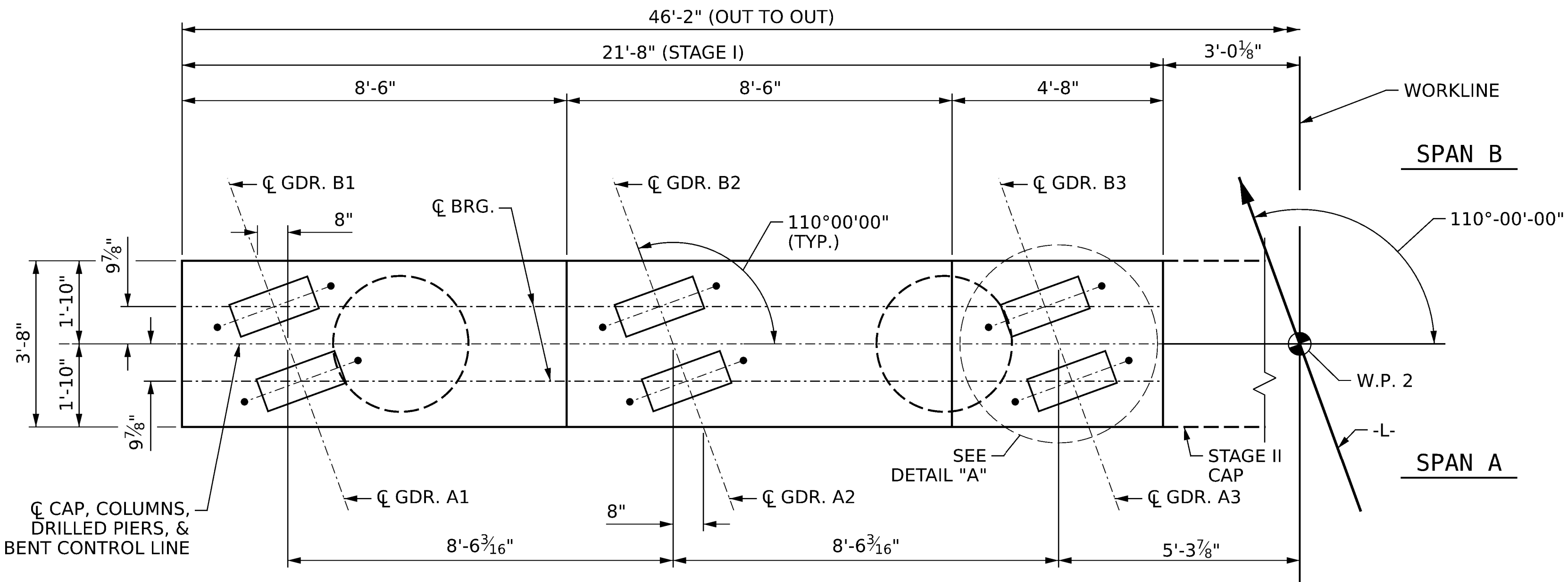
SHEET 4 OF 4

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

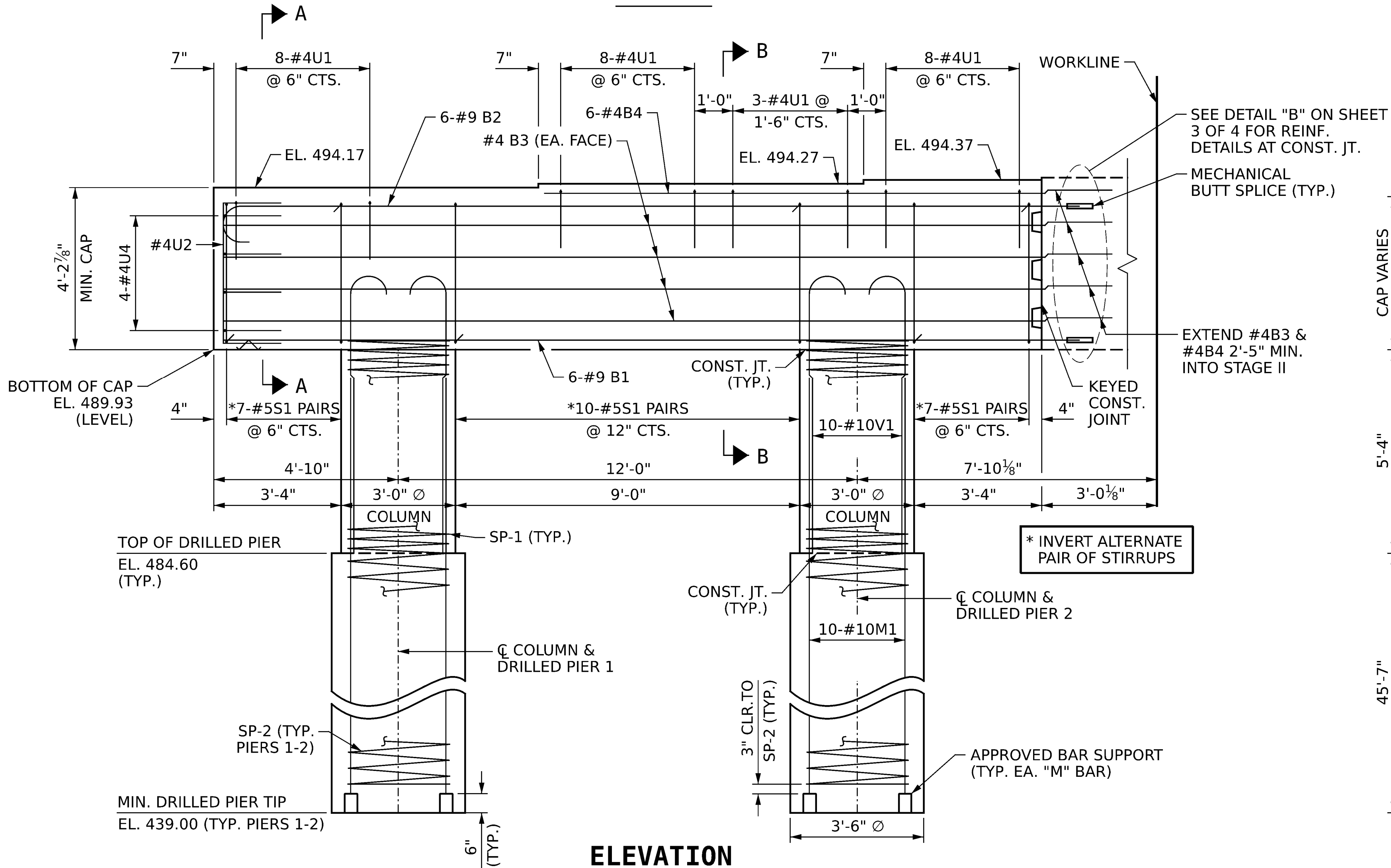
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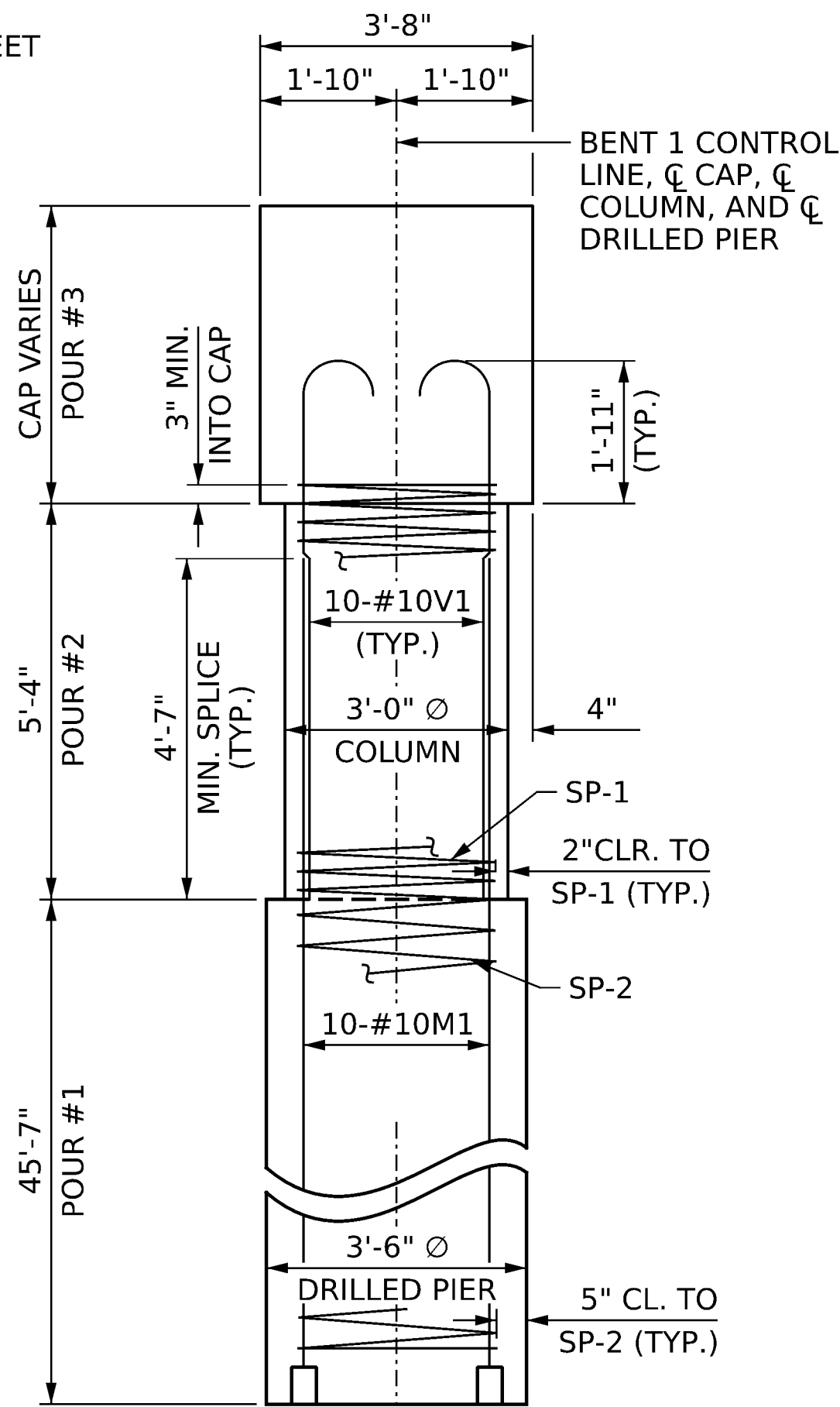
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PLAN



ELEVATION



STAGE I END ELEVATION

NOTES:

FOR CONSTRUCTION JOINT DETAIL, SECTIONS A-A AND B-B, SECTION THRU COLUMN, CAP END VIEW, DETAIL "B", AND SHEAR KEY DETAIL, SEE SHEET 3 OF 4.

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

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

FOR DRILLED PIERS AND PERMANENT STEEL CASING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

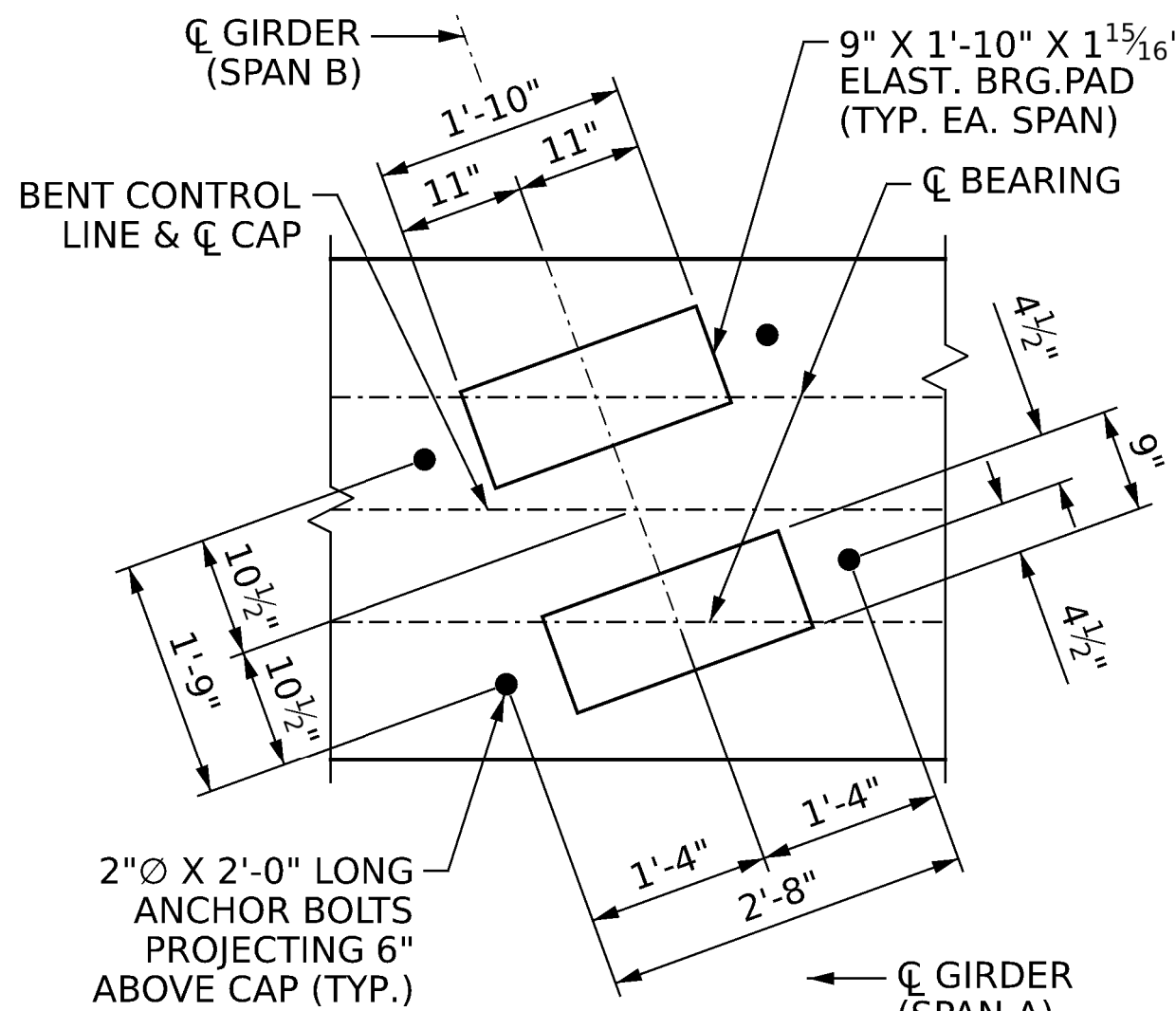
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

SEE PILE AND DRILLED PIER FOUNDATION TABLES FOR DRILLED PIER FOUNDATION DATA.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 BARS IN STAGE I WITH THE #9 "B" BARS IN STAGE II.

FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LENGTHS OF THE #9 "B" BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITION PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.



DETAIL "A"

TYP. EA. BRG. FOR EA. GDR.

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**

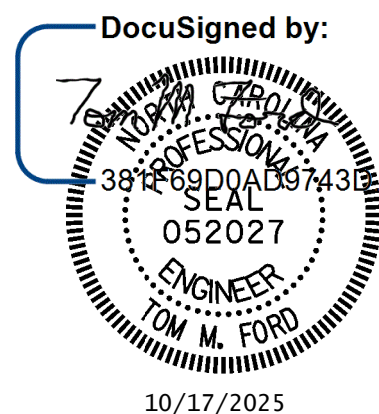
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

STAGE I



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DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**



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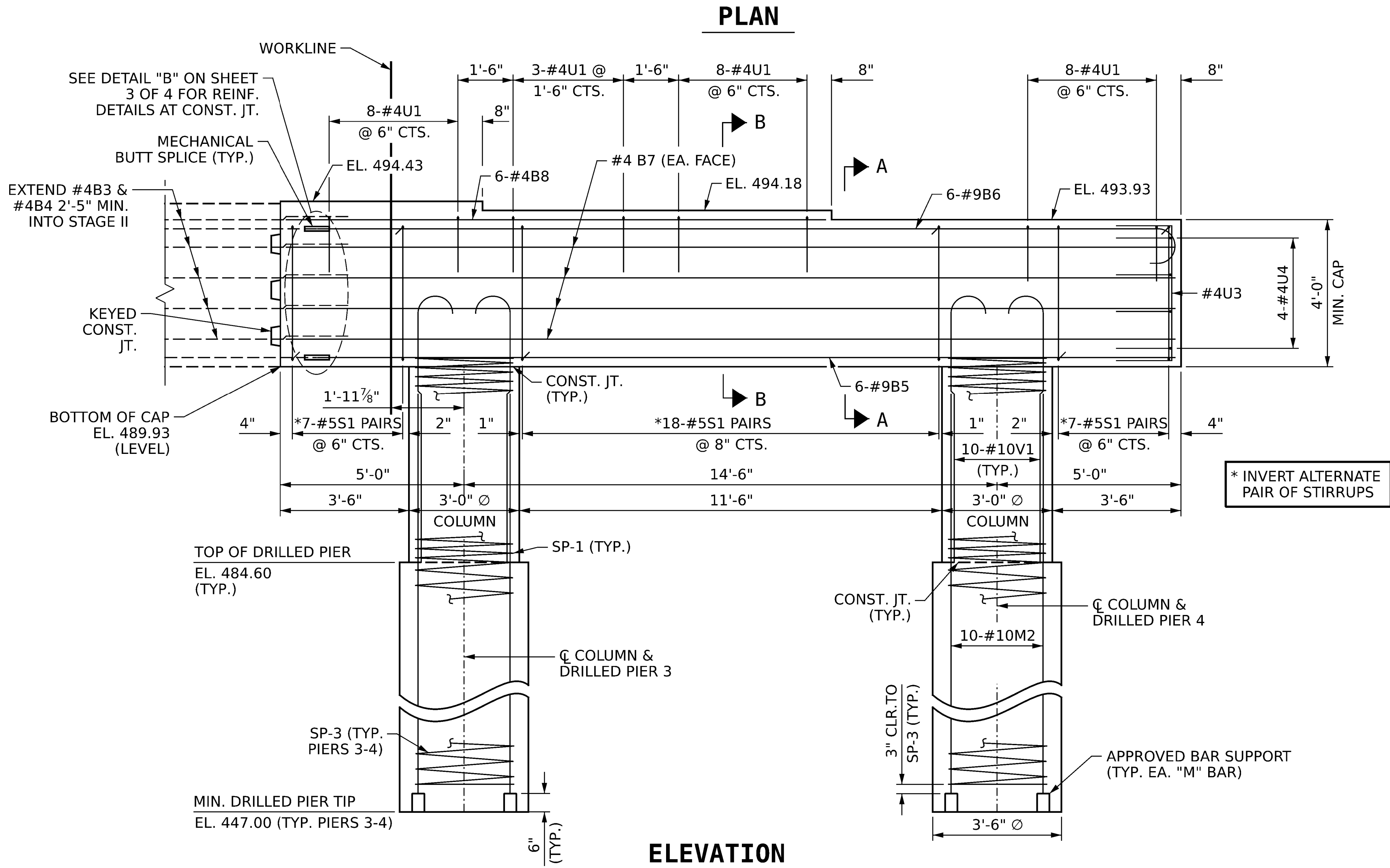
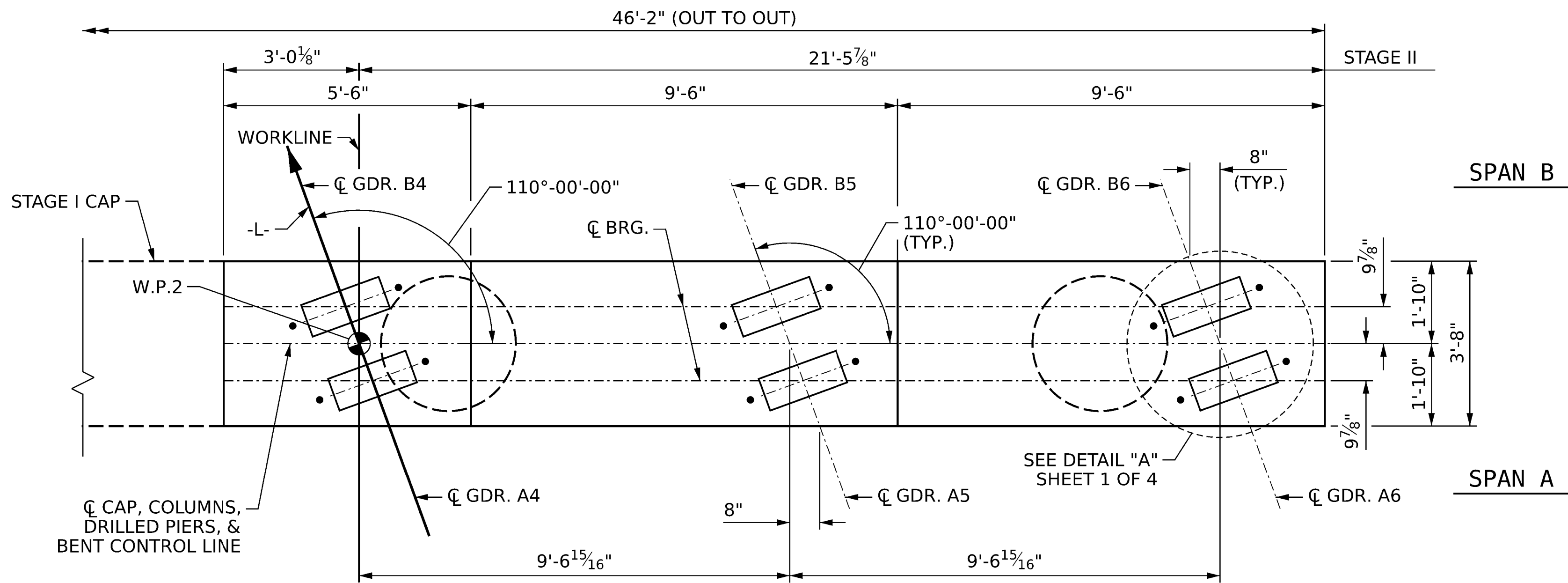
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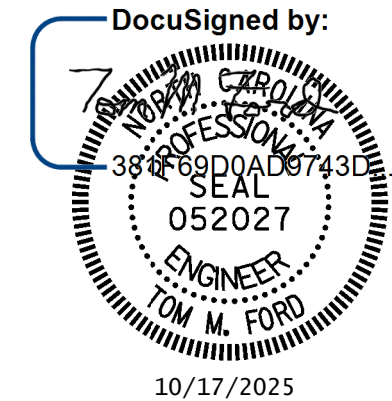
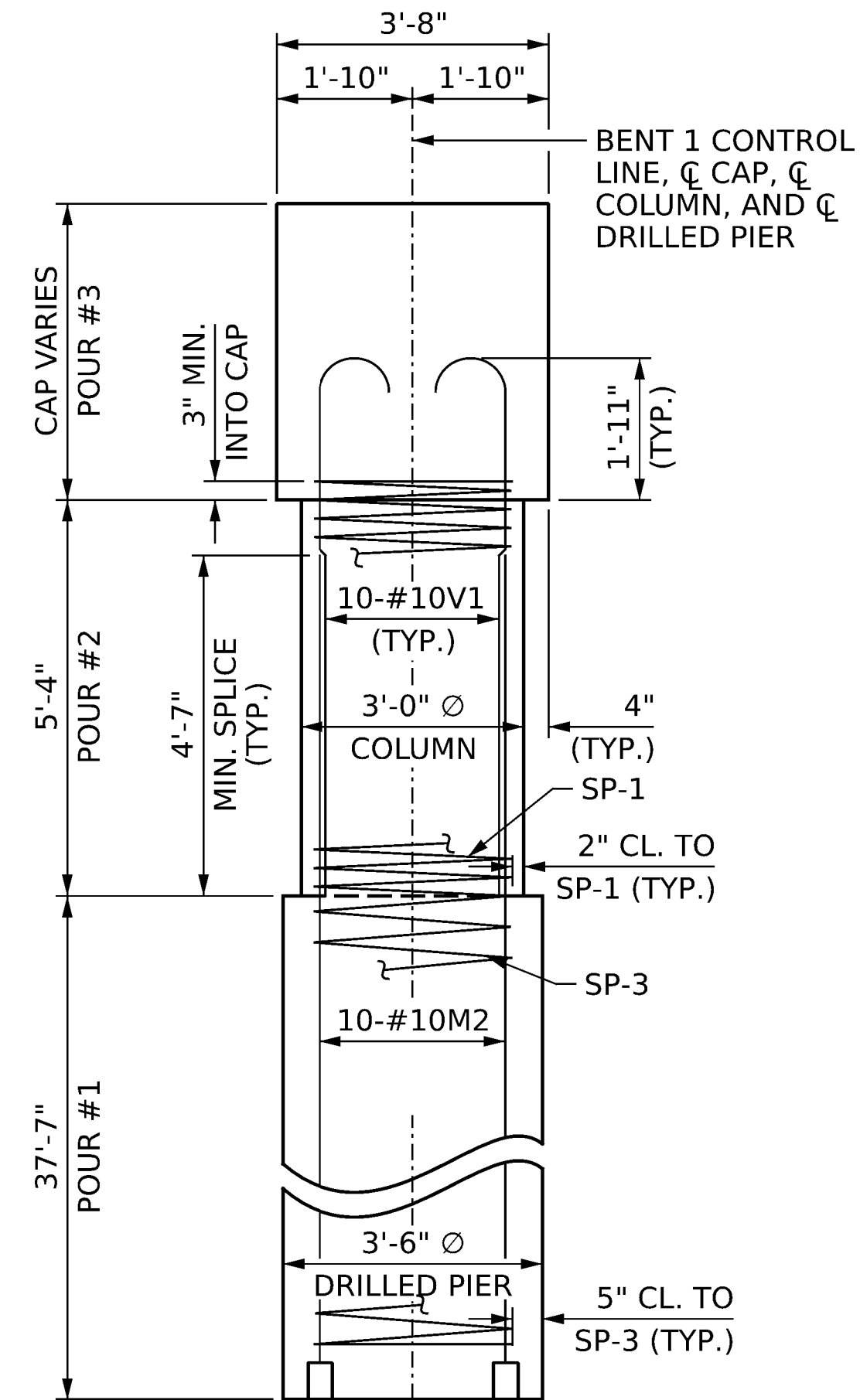
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NOTES:

FOR NOTES AND DETAIL "A", SEE SHEET 1 OF 4.

FOR CONSTRUCTION JOINT DETAIL, SECTIONS A-A AND B-B, SECTION THRU COLUMN, CAP END VIEW, DETAIL "B", AND SHEAR KEY DETAIL, SEE SHEET 3 OF 4.



PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

STAGE II

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CHECKED BY : **T. FORD** DATE : **7/2025**

DESIGN ENGINEER OF RECORD: **T. FORD** DATE : **9/2025**



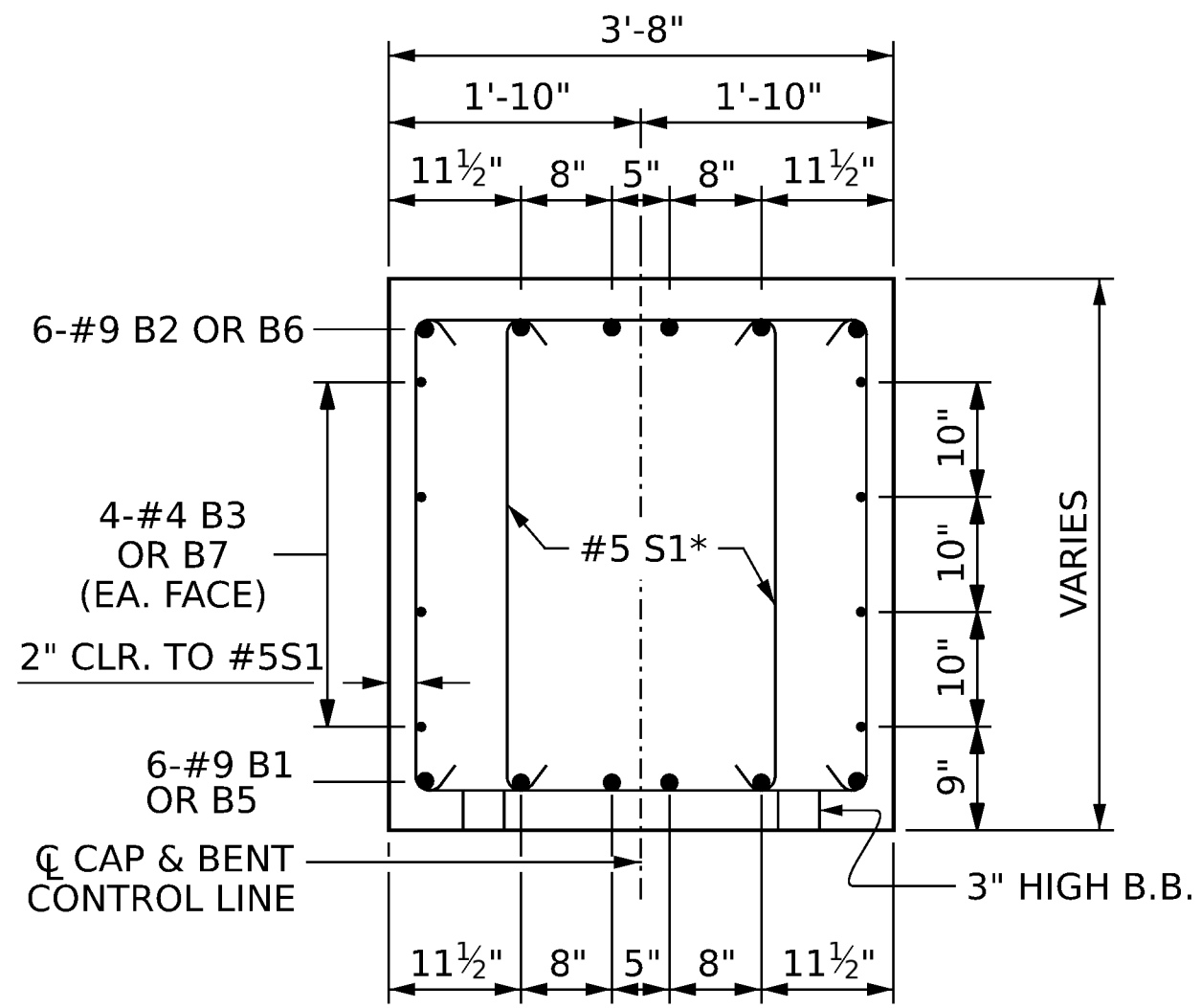
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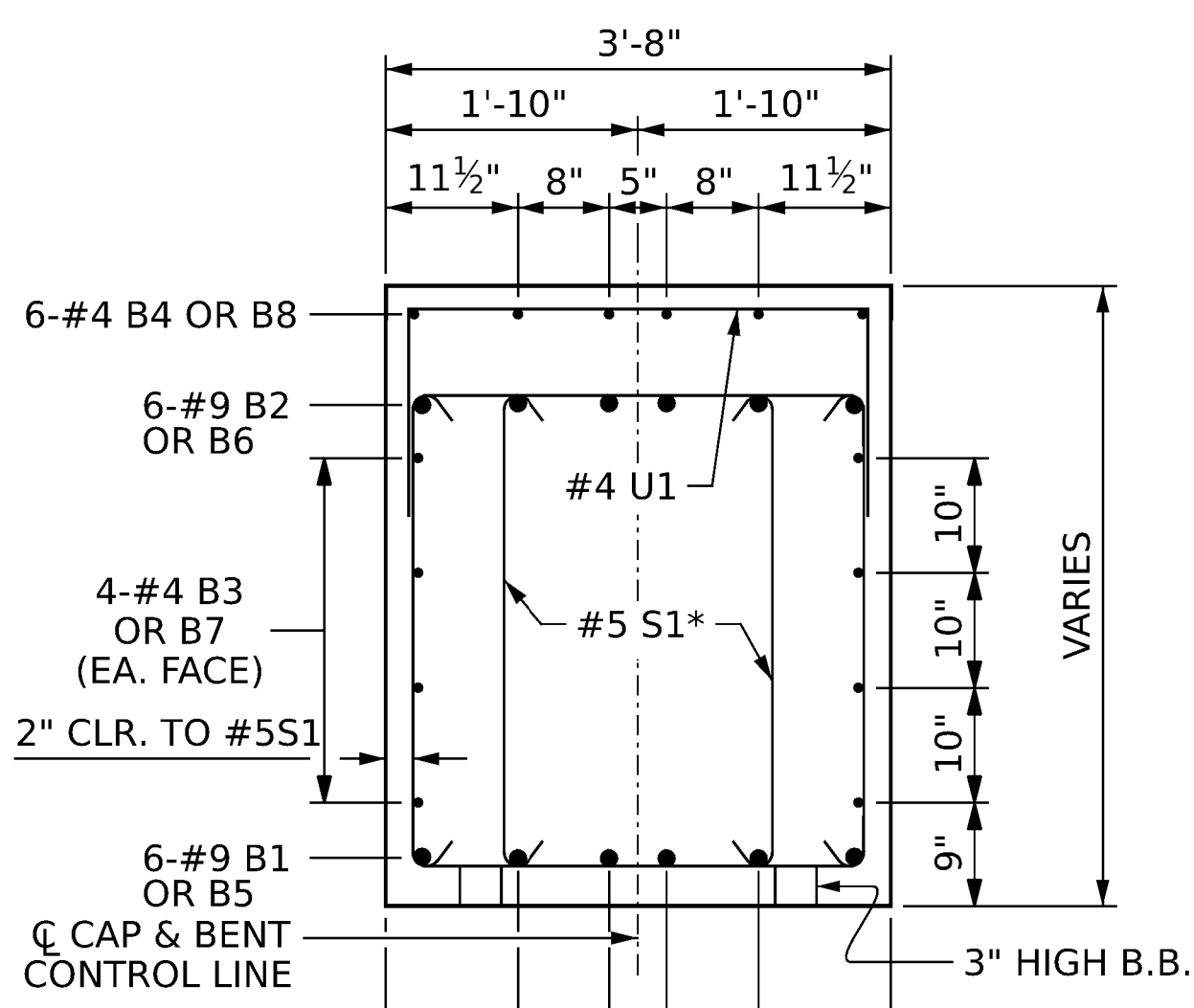
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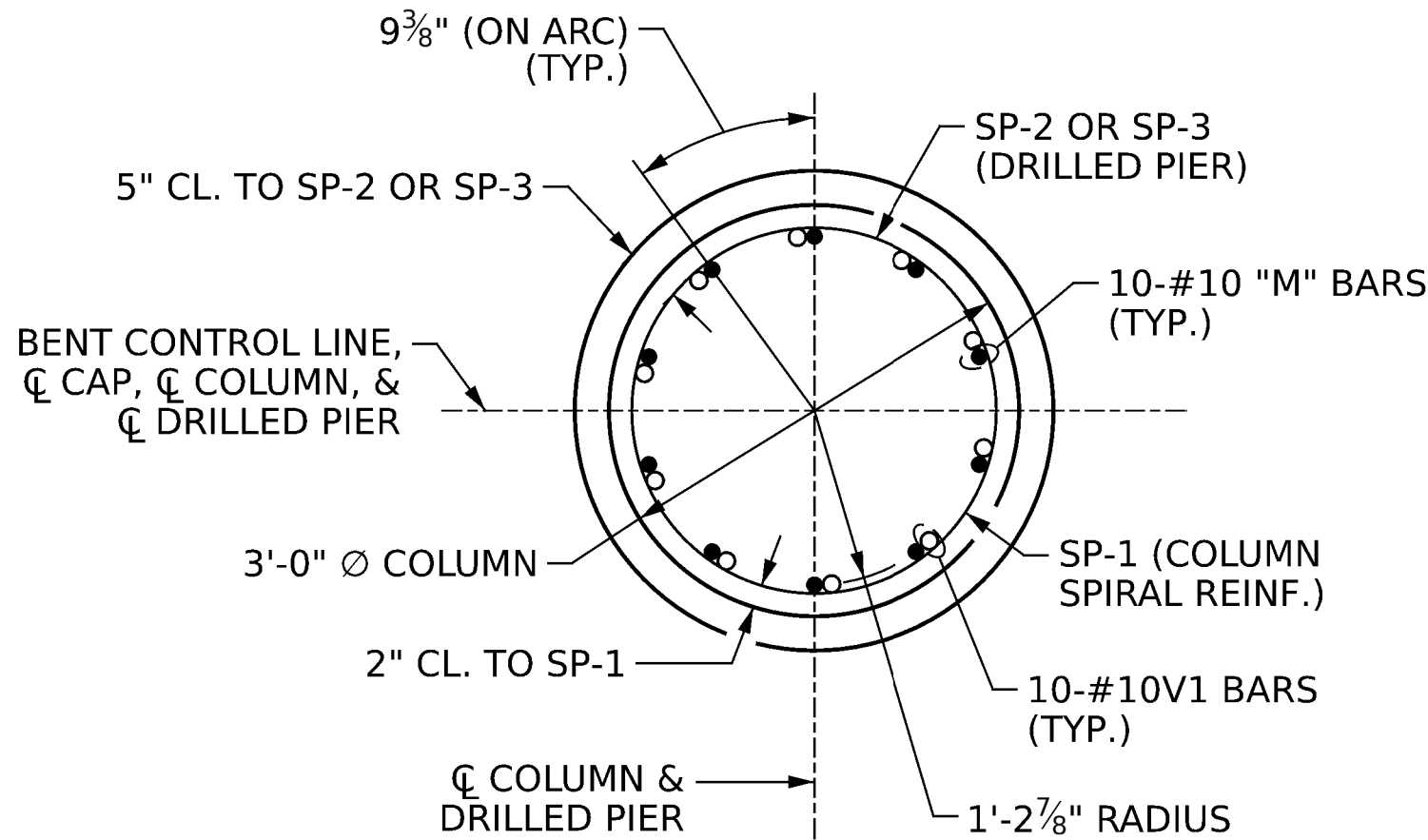


SECTION A-A

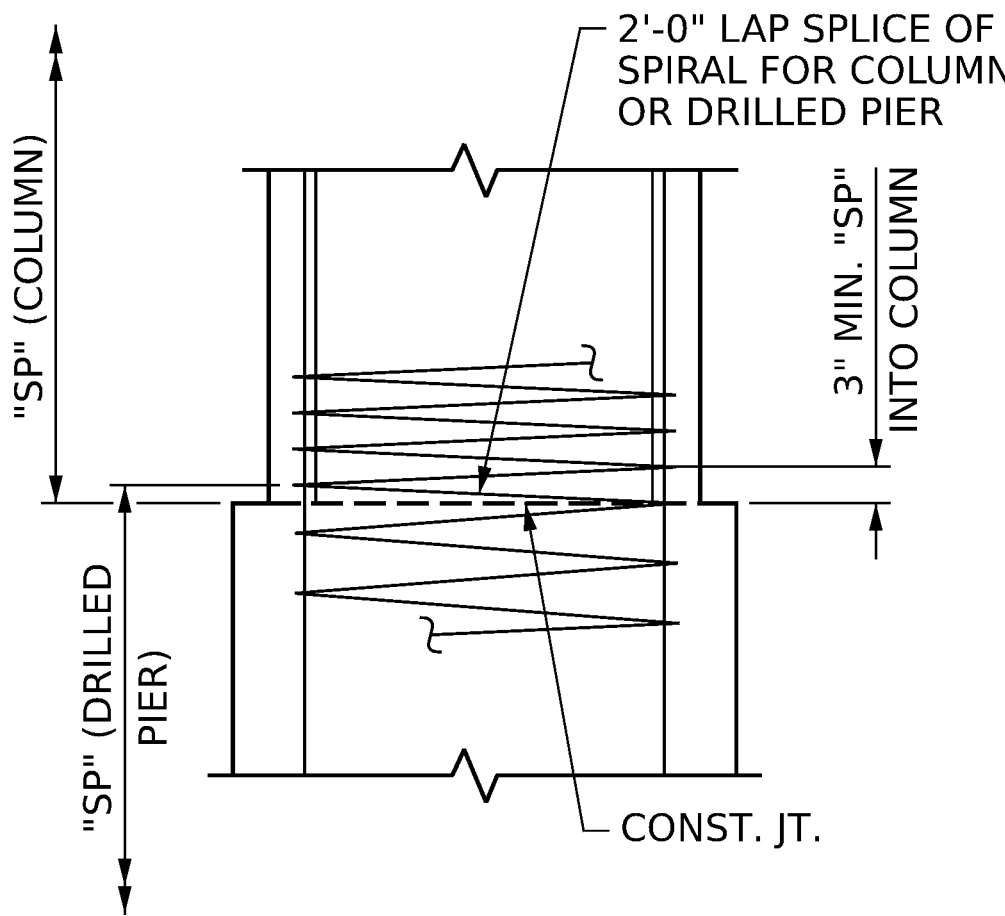


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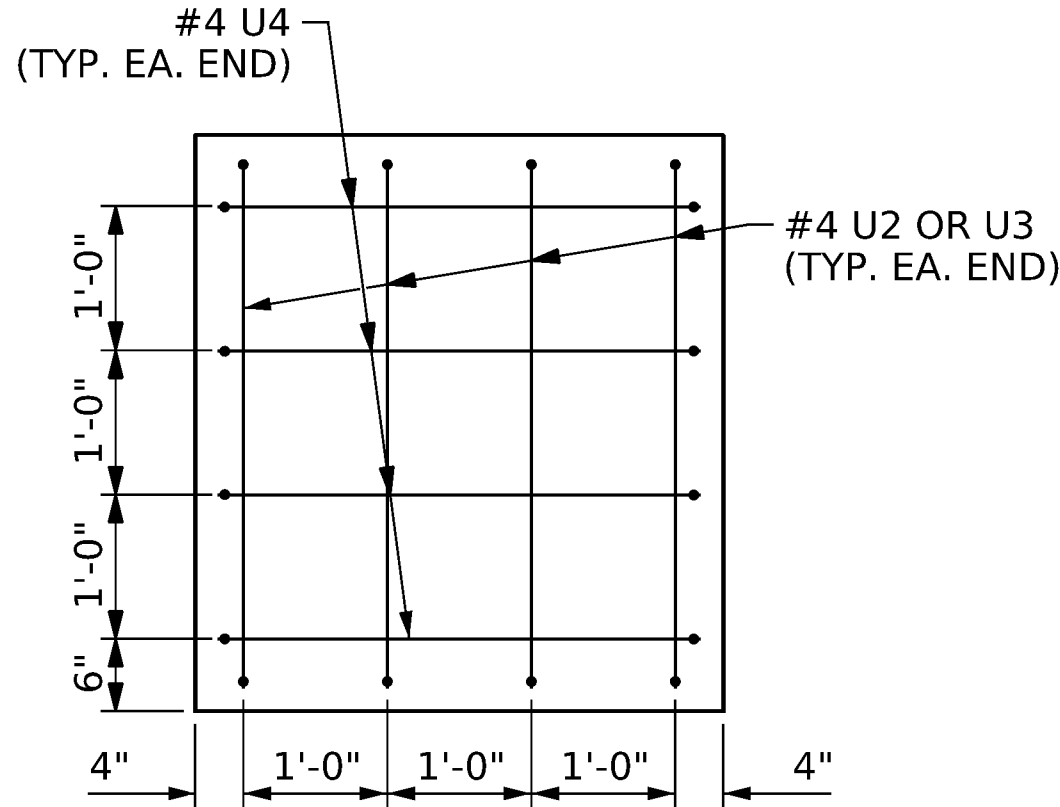
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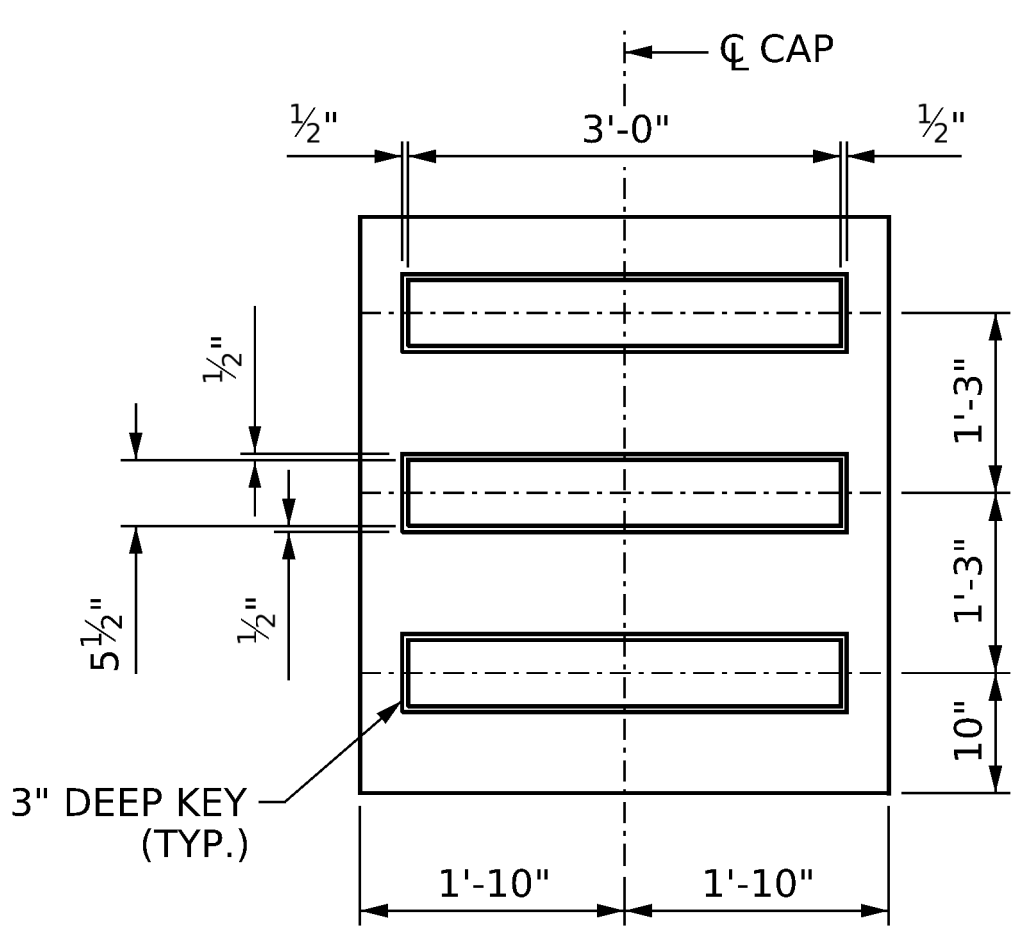
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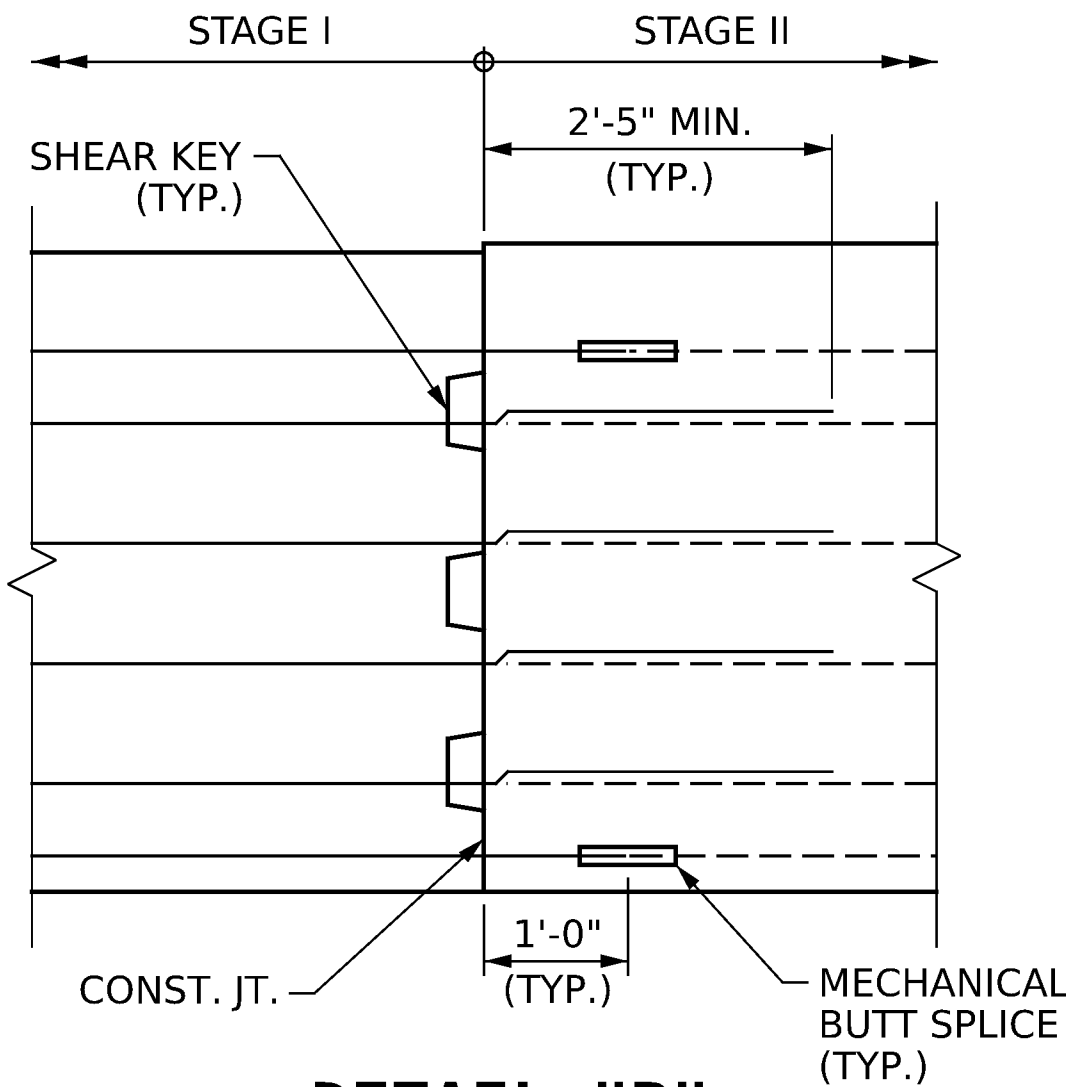
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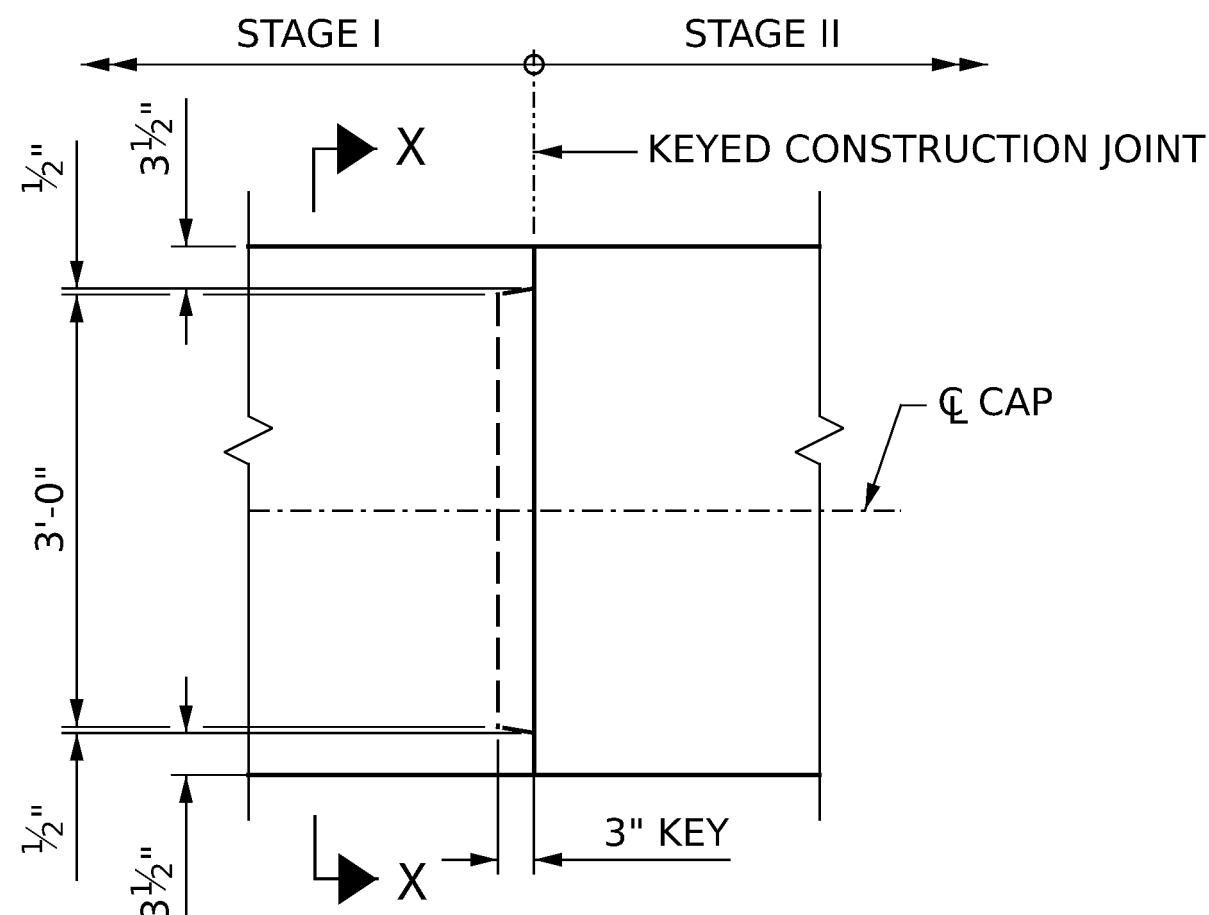
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SECTION X-X

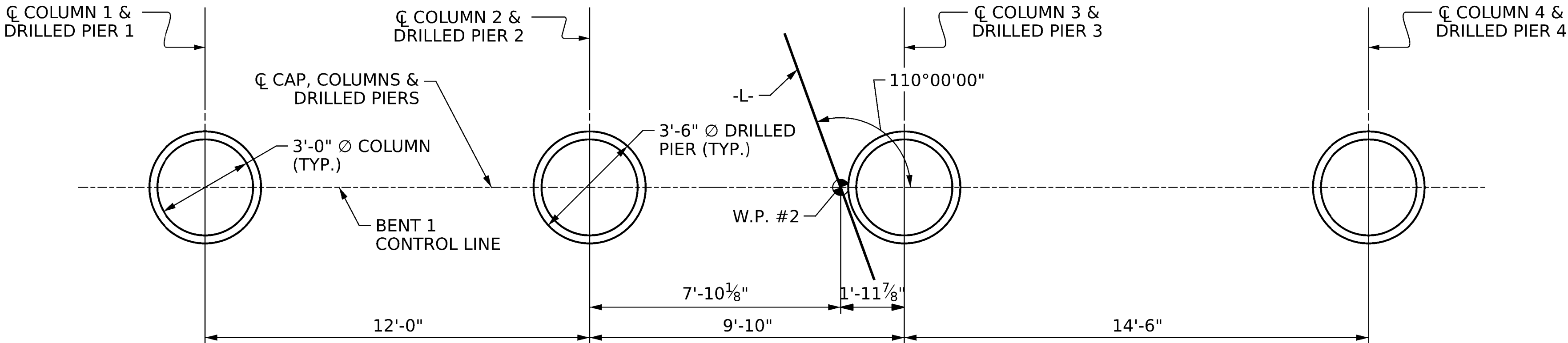


DETAIL "B"



PLAN

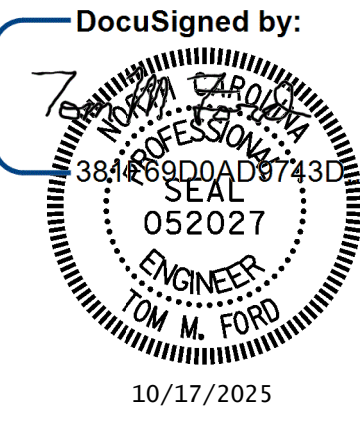
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PLAN OF DRILLED PIERS AND COLUMNS

PROJECT NO. **BR-0155**
ROCKINGHAM COUNTY
STATION: **15+40.00 -L-**

SHEET 3 OF 4



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2			4			TOTAL SHEETS 52

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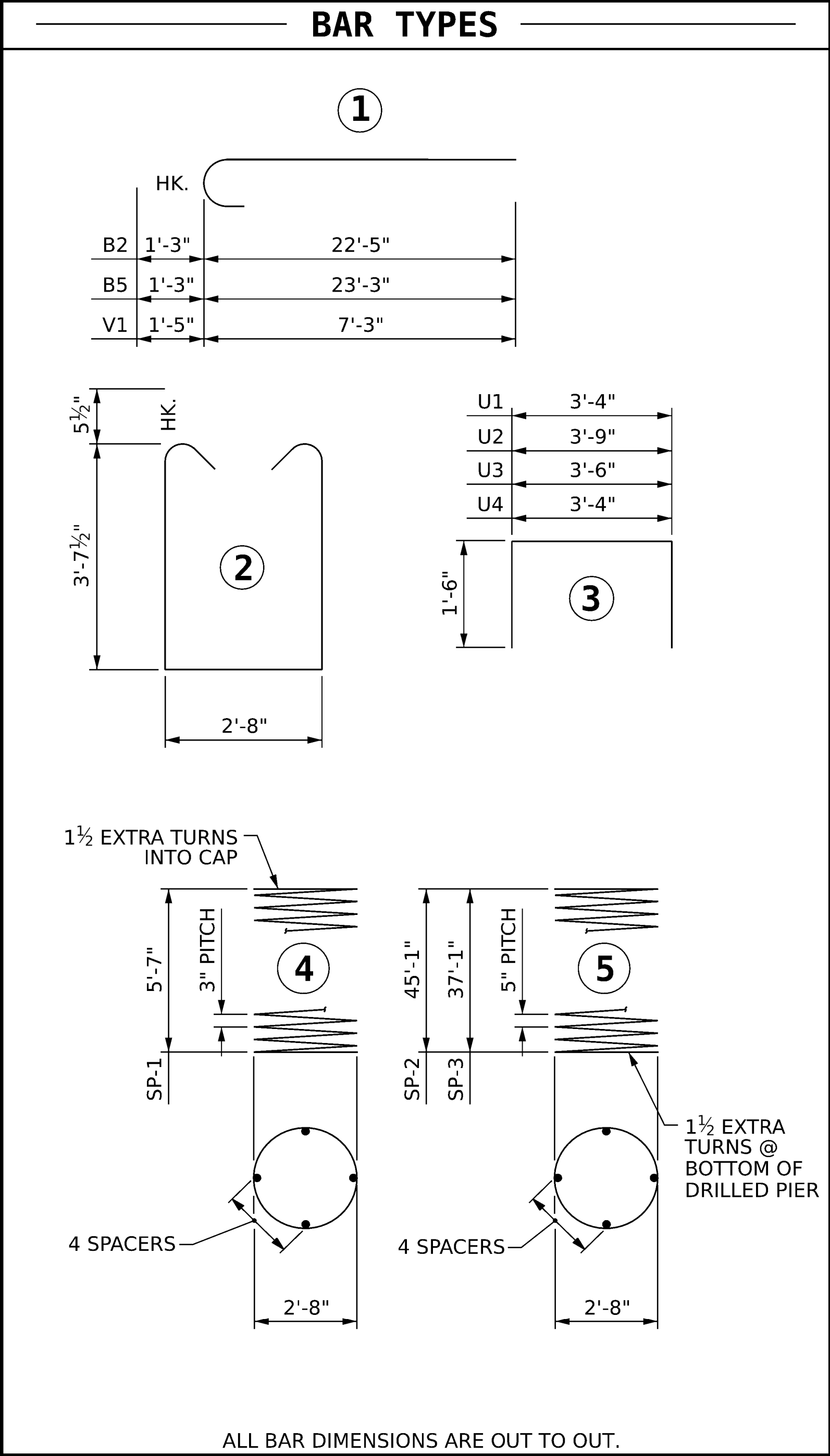


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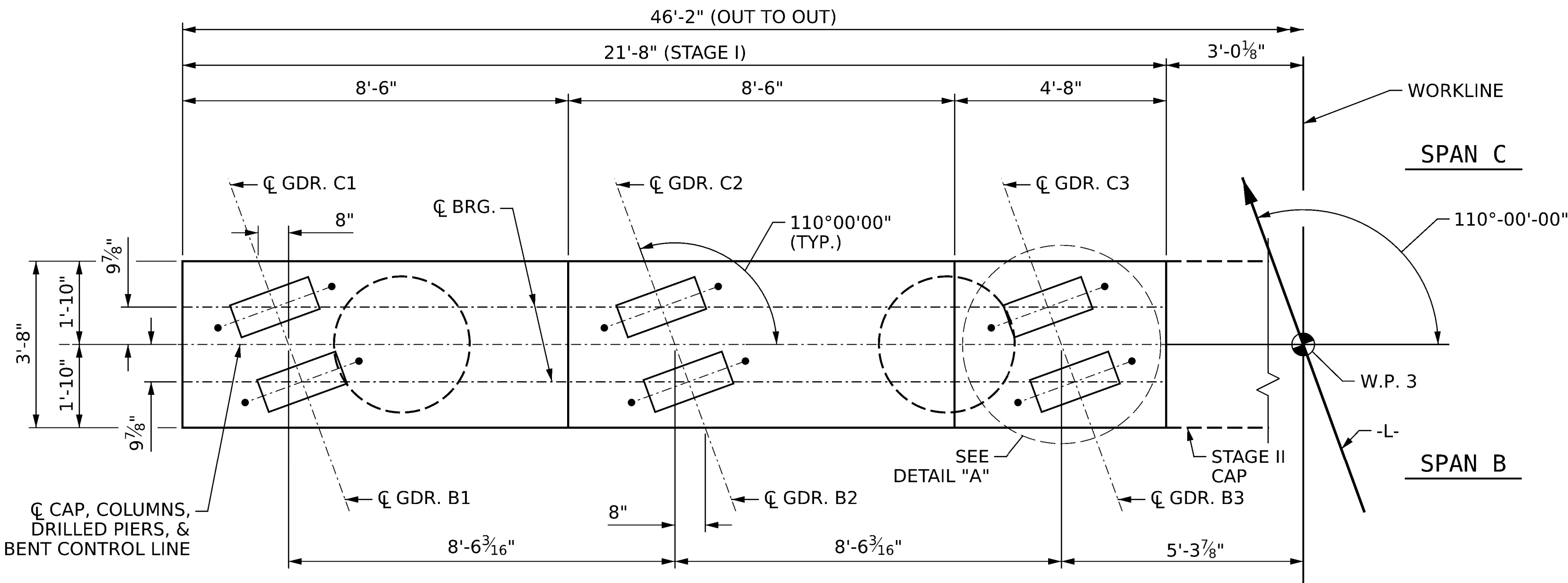
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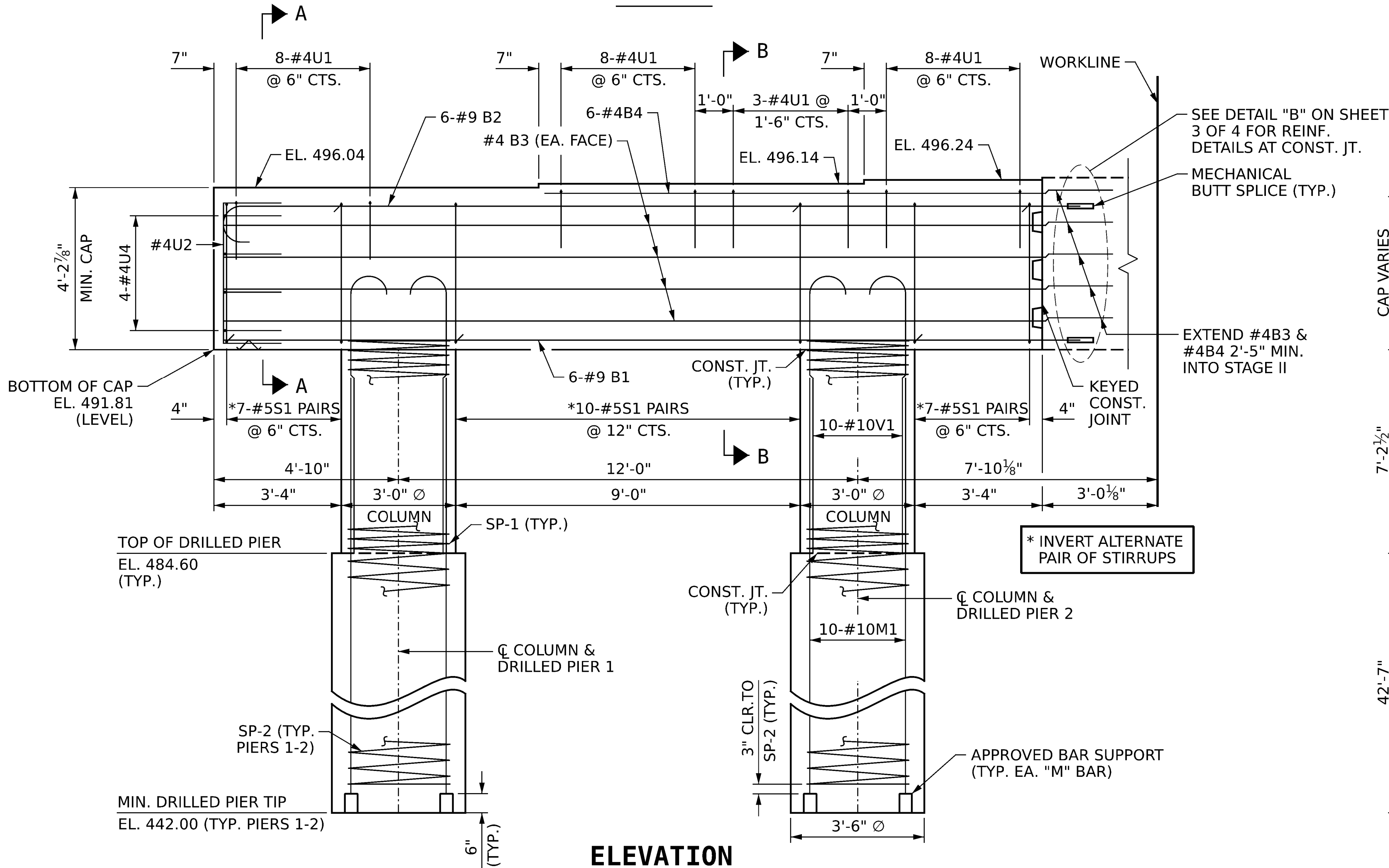


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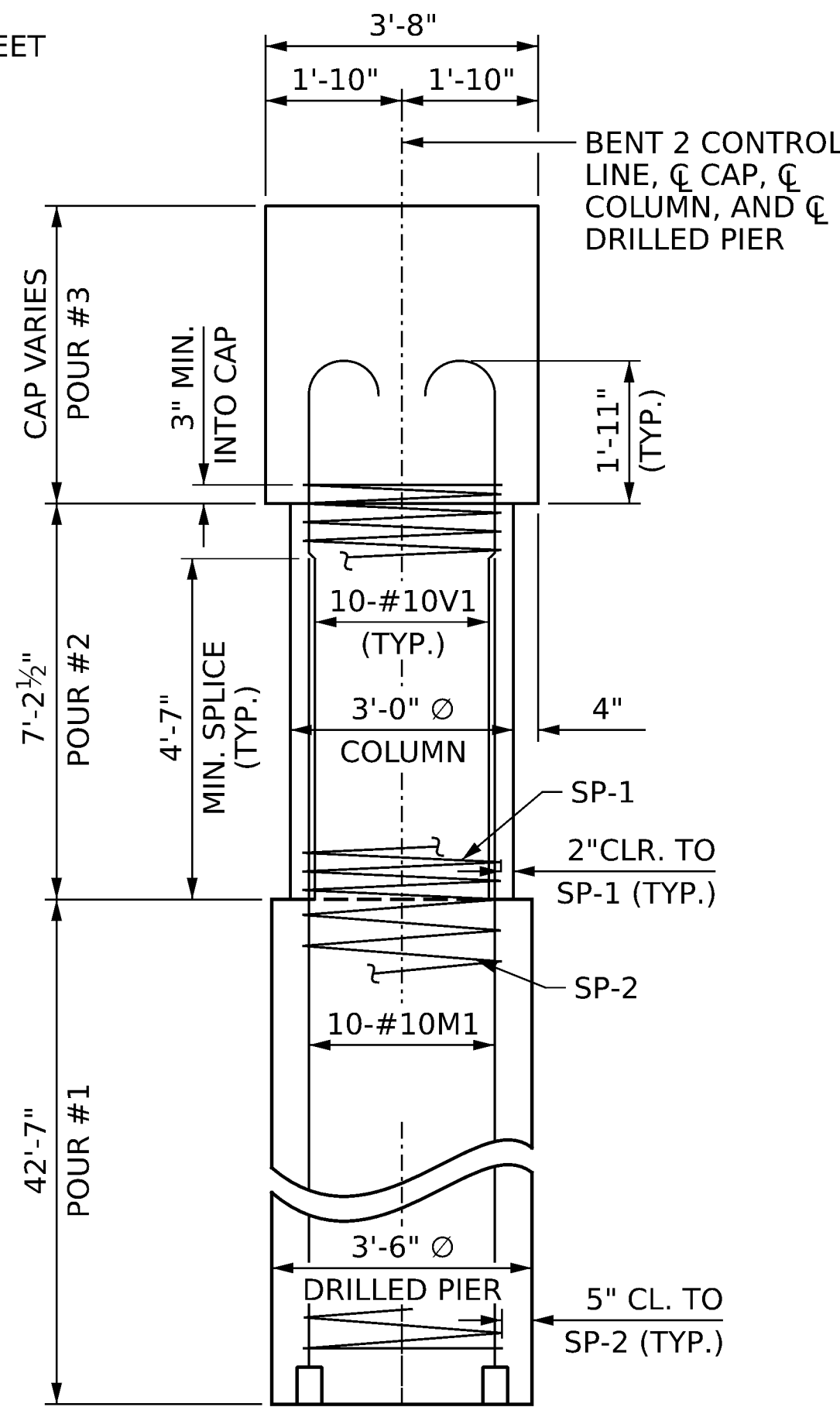
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PLAN



ELEVATION



STAGE I END ELEVATION

NOTES :

FOR CONSTRUCTION JOINT DETAIL, SECTIONS A-A AND B-B, SECTION THRU COLUMN, CAP END VIEW, DETAIL "B", AND SHEAR KEY DETAIL, SEE SHEET 3 OF 4.

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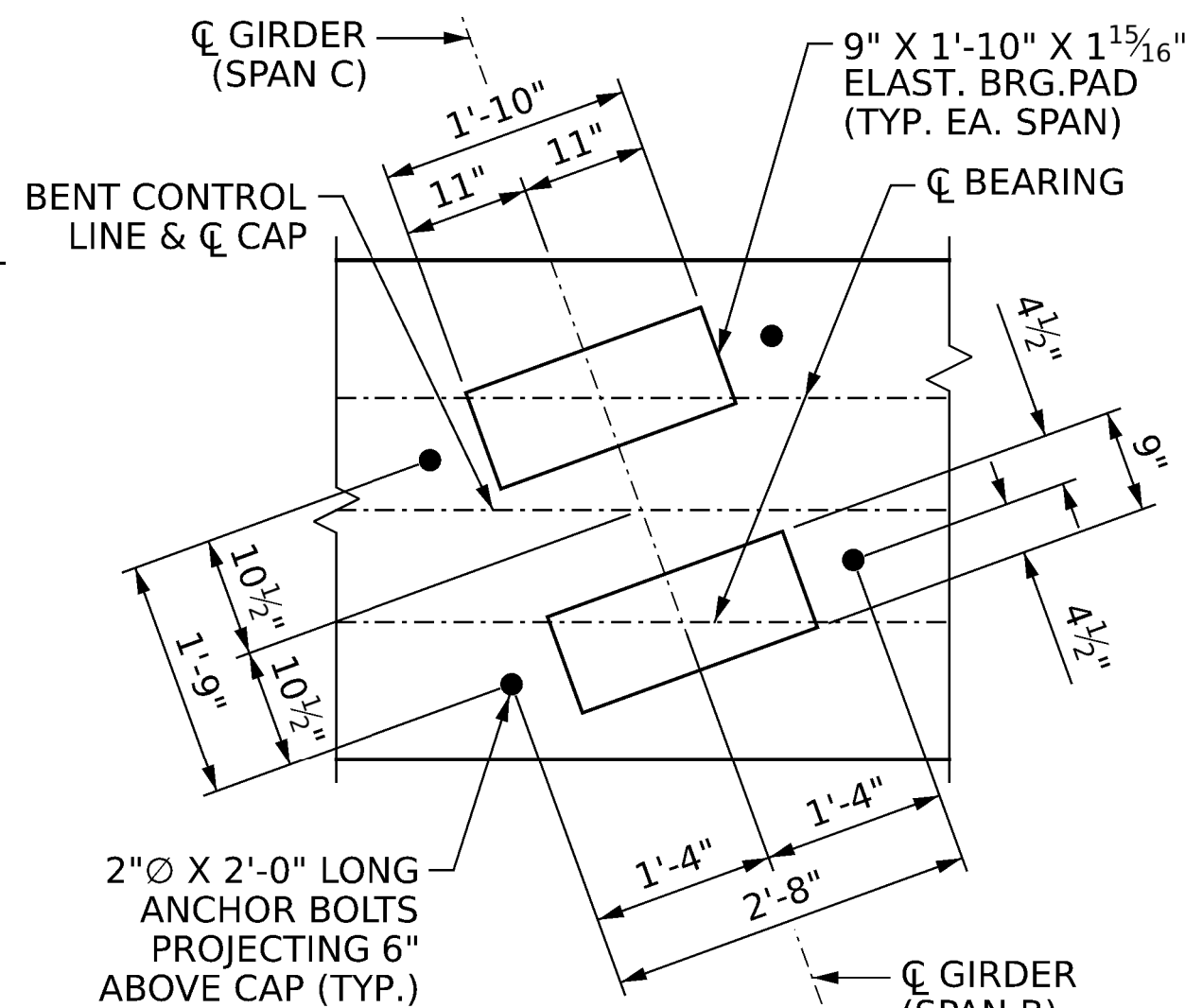
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DETAIL "A"

TYP. EA. BRG. FOR EA. GDR.

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**

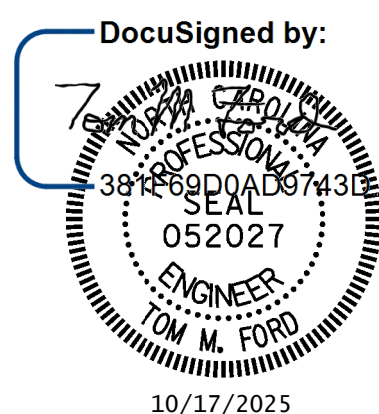
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

STAGE I



10/17/2025



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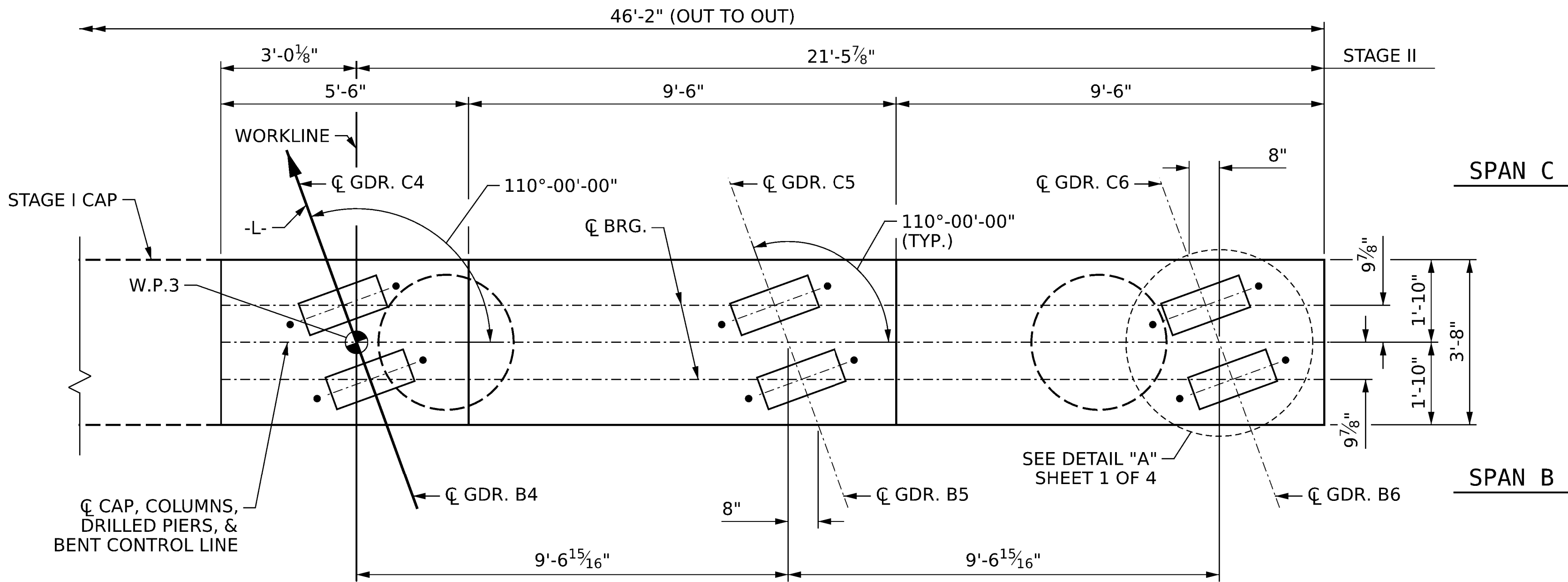
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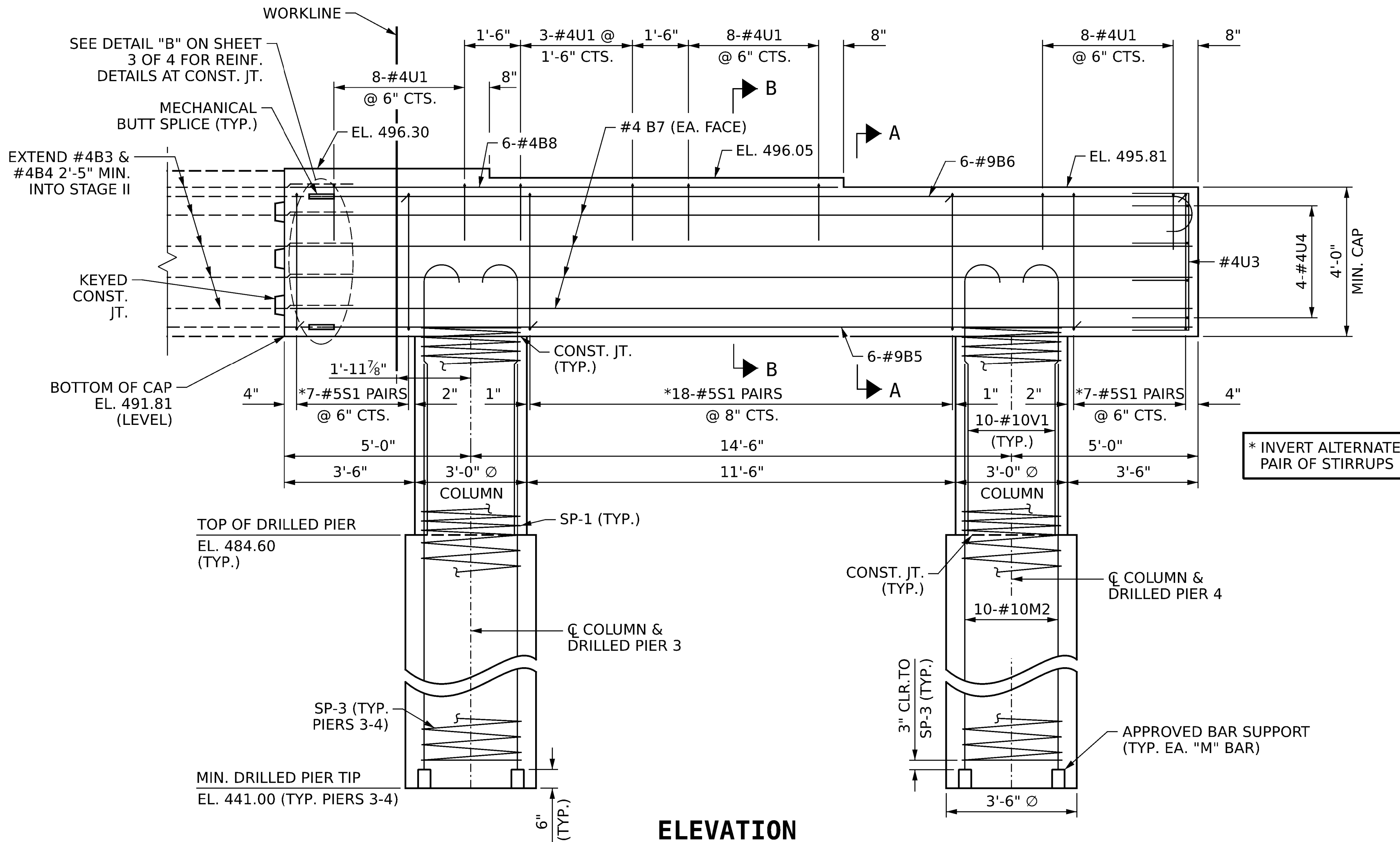
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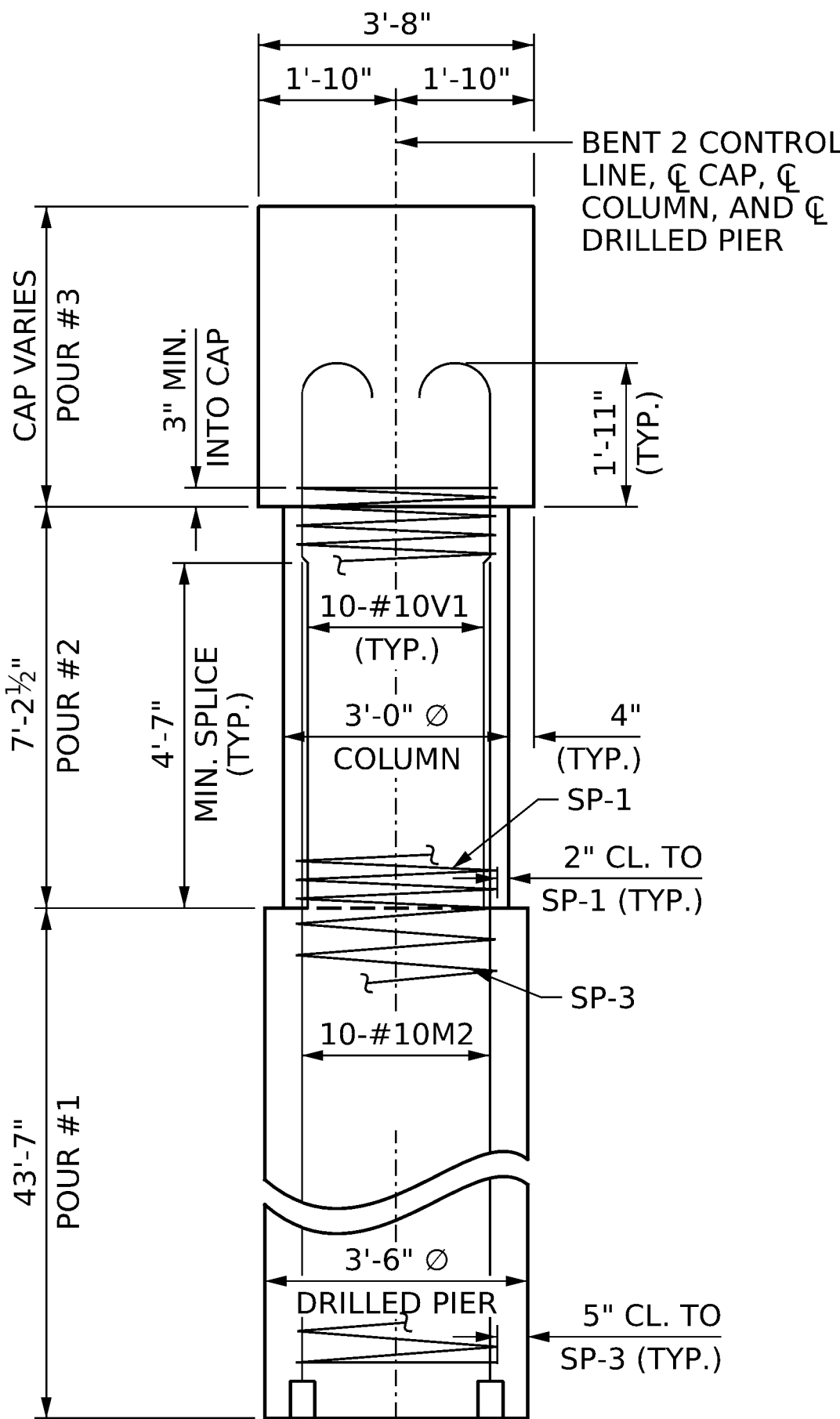
PLAN



NOTES:

FOR NOTES AND DETAIL "A", SEE SHEET 1 OF 4.

FOR CONSTRUCTION JOINT DETAIL, SECTIONS A-A AND B-B, SECTION THRU COLUMN, CAP END VIEW, DETAIL "B", AND SHEAR KEY DETAIL, SEE SHEET 3 OF 4.



STAGE II END ELEVATION

PROJECT NO. **BR-0155**

ROCKINGHAM COUNTY

STATION: **15+40.00 -L-**

SHEET 2 OF 4

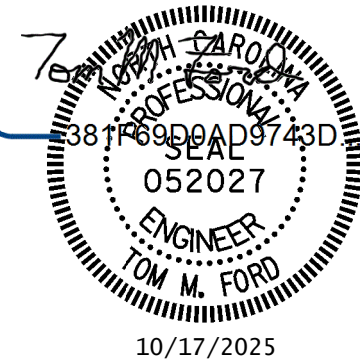
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

STAGE II

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CHECKED BY : **T. FORD** DATE : **7/2025**
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