

TIP PROJECT: U-4758

CONTRACT: C204971

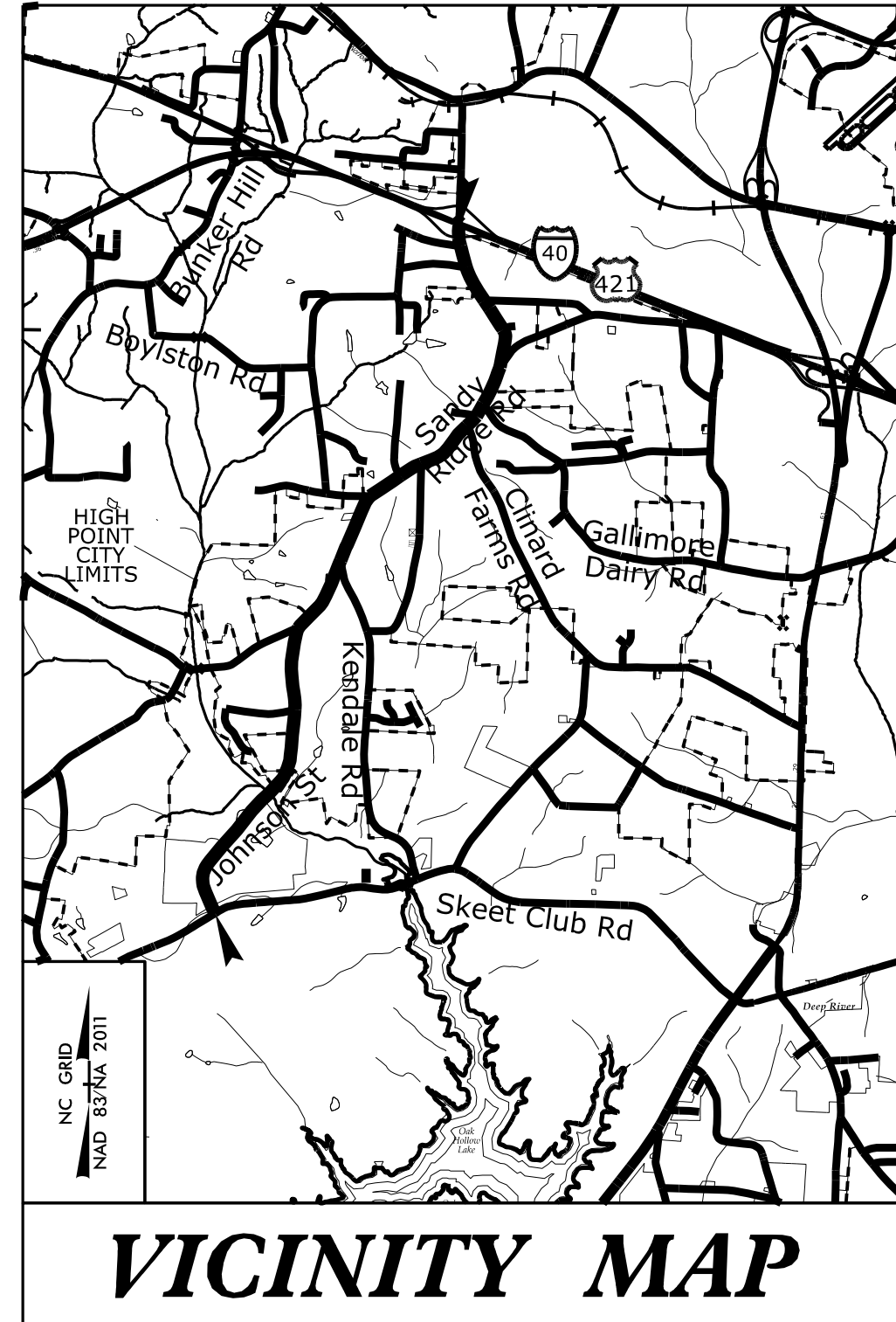
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

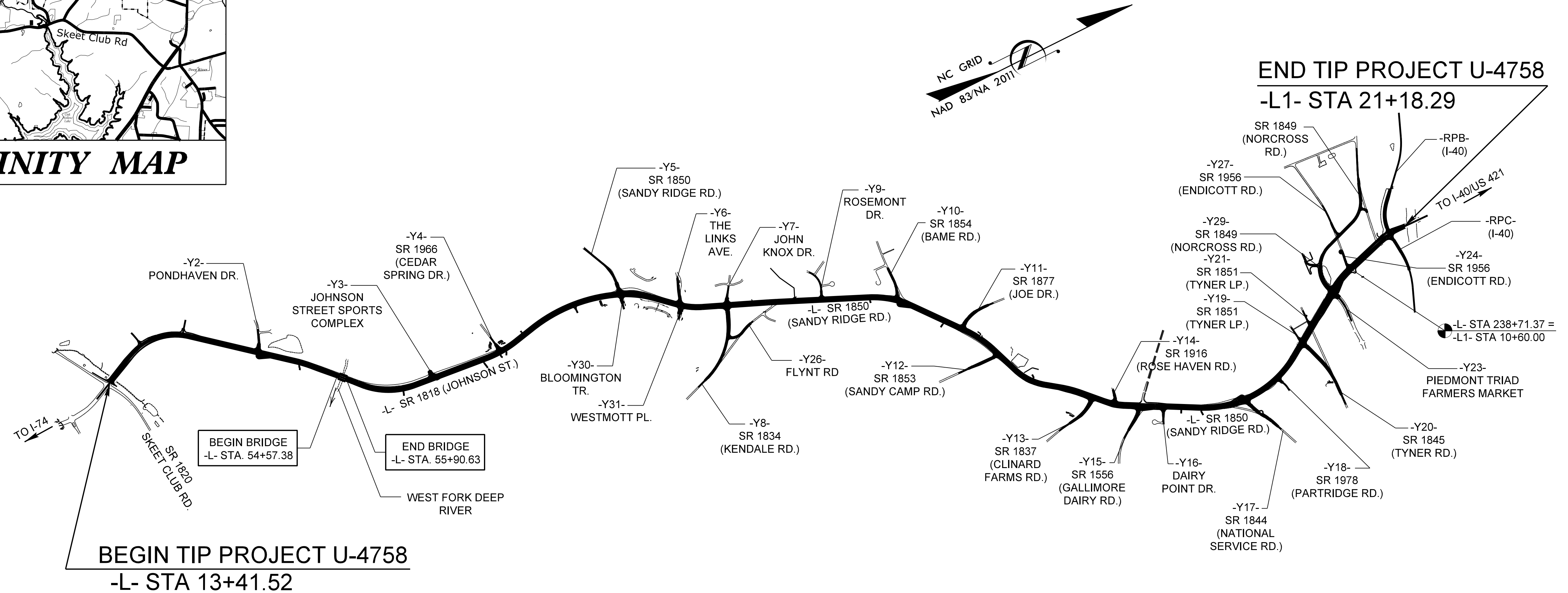
LOCATION: SR 1818 (JOHNSON STREET) /SR 1850 (SANDY RIDGE ROAD) FROM
SR 1820 (SKEET CLUB ROAD) TO SOUTH OF I-40 IN HIGH POINT

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING, SIGNALS,
AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4758	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
40251.1.1	0710025/0710027	PE	
40251.2.1	0710027	RW	
40251.2.2	0710027	UTILITIES	
40251.3.1	0710027	CONSTRUCTION	



VICINITY MAP



STRUCTURES

DESIGN DATA

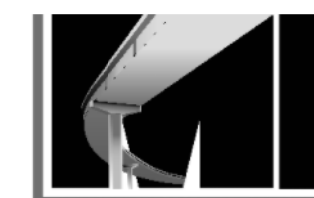
ADT 2025 = 20,200
ADT 2050 = 27,100
K = 11 %
D = 60 %
T = 9 %*
V = 50 MPH
*TTST = 4% DUAL = 5%
FUNC CLASS =
URBAN ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4758 = 4.442 MILES
LENGTH STRUCTURES TIP PROJECT U-4758 = 0.025 MILES
TOTAL LENGTH TIP PROJECT U-4758 = 4.467 MILES

NCDOT CONTACT: BRYAN KEY, P.E

Prepared in the Office of:



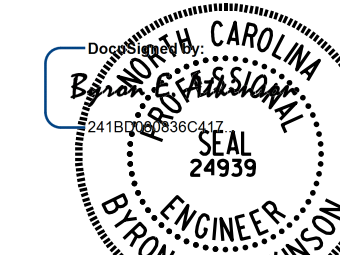
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

2024 STANDARD SPECIFICATIONS

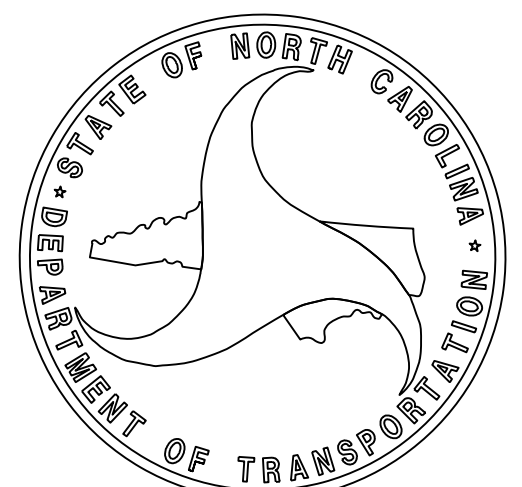
RIGHT OF WAY DATE:
DECEMBER 17, 2021

LETTING DATE:
AUGUST 19, 2025

BYRON E. ATKINSON, PE
PROJECT DESIGN ENGINEER



5/19/2025



GRADE DATA
PVI = 51+15.00 -L-
EL. = 828.03
V.C. = 365.00'
-4.7729% -0.9974%

GRADE DATA
PVI = 59+45.00 -L-
EL. = 819.75
V.C. = 450.00'
-0.9974% +2.9044%

830
820
810
800
790
780

APPROXIMATE
EXISTING
GROUND LINE

FILL FACE @ END BENT 1
STA. 54+57.38 -L-
GRADE POINT EL. 824.62

BEGIN FRONT SLOPE
STA. 54+46.10 -L-
GRADE POINT EL. 824.73

SPAN A

SPAN B

SPAN C

FILL FACE @ END BENT 2
STA. 55+90.63 -L-
GRADE POINT EL. 823.29

BEGIN FRONT SLOPE
STA. 56+01.53 -L-
GRADE POINT EL. 823.18

HP 12 X 53
STEEL PILES
UNCLASSIFIED STRUCTURE
EXCAVATION (TYP.)

EXCAVATE
TO EL. 808.00
(GRADE TO DRAIN)
TOP OF DRILLED PIER
EL. 804.17

END BENT 1

BENT 1

TOP OF DRILLED PIER
EL. 804.82

BENT 2

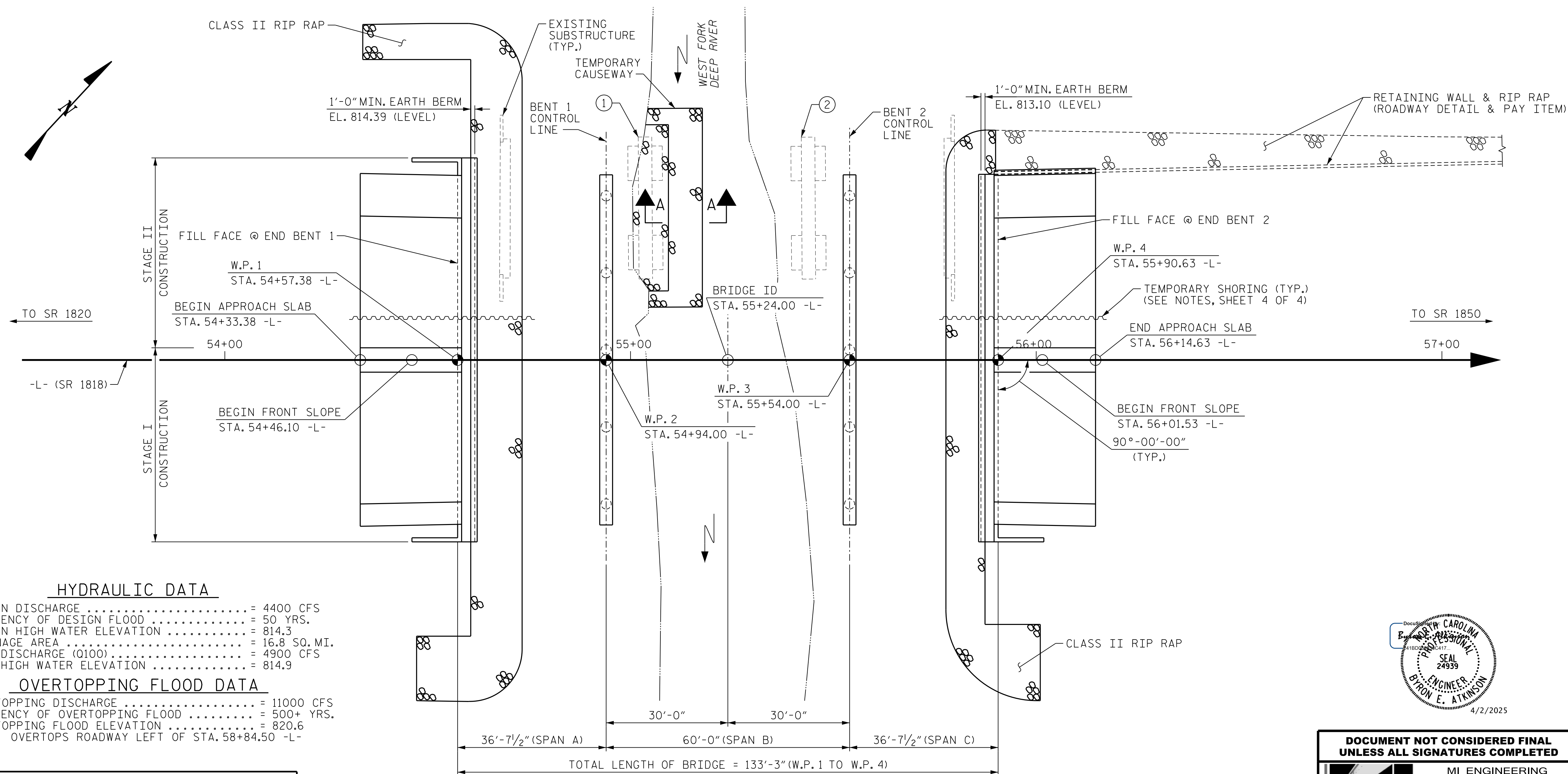
END BENT 2

SECTION ALONG -L-

* 2'-6" Ø COLUMN
** 3'-0" Ø DRILLED PIER
*** 11'-7" (MIN. VERT. CLR.
AT TOE OF RIP RAP)

CLASS B
RIP RAP
1 1/2:1 SLOPE
(TYP.)
CLASS II
RIP RAP
STREAM BED

SECTION A-A



- ① - REMOVE ENTIRE CAP.
- REMOVE COLUMN TO 1.0'
BELOW CREEK BED.
- RETAIN EXISTING FOOTING.
- ② - REMOVE ENTIRE CAP.
- REMOVE COLUMN TO
TOP OF FOOTING.
- RETAIN EXISTING FOOTING.

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

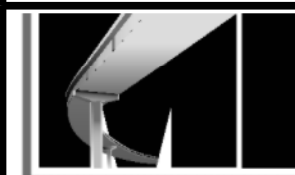
PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 400308

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON
SR 1818 (JOHNSON STREET)
OVER WEST FORK DEEP RIVER
BETWEEN SR 1820 & SR 1850

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

TOTAL
SHEETS
57

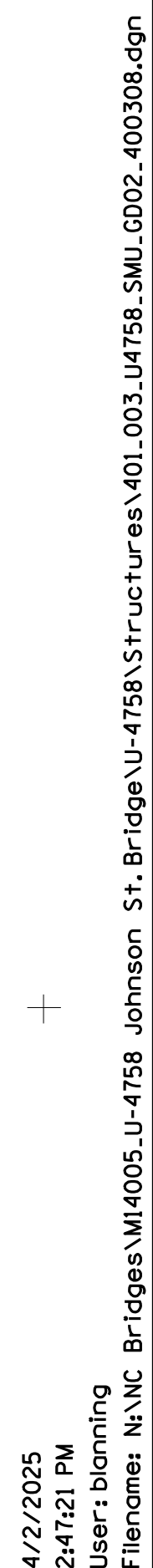
HYDRAULIC DATA
DESIGN DISCHARGE = 4400 CFS
FREQUENCY OF DESIGN FLOOD = 50 YRS.
DESIGN HIGH WATER ELEVATION = 814.3
DRAINAGE AREA = 16.8 SQ. MI.
BASE DISCHARGE (Q100) = 4900 CFS
BASE HIGH WATER ELEVATION = 814.9

OVERTOPPING FLOOD DATA
OVERTOPPING DISCHARGE = 11000 CFS
FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
OVERTOPPING FLOOD ELEVATION = 820.6
OVERTOPS ROADWAY LEFT OF STA. 58+84.50 -L-

DRAWN BY : B.E. LANNING DATE : 06/2024
CHECKED BY : B.E. ATKINSON DATE : 06/2024
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

PLAN

(PILES NOT SHOWN FOR CLARITY)



4/2/2025 2:47:22 PM User: blanning
Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758 Structures\401_005-U4758_SMU_CD03_400308.dgn

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 1-11	95	817.39	20			160							
End Bent 2, Piles 1-6	95	816.10	40			160							
End Bent 2, Piles 7-11	95	816.10	25			160							

*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 1-11	95			0.60			
End Bent 2, Piles 1-11	95			0.60			

*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 1-5	350	784.0	115	791.4	6.0		12.0	8.2	MAYBE	792.4	13.0
Bent 2, Piers 1-5	350	782.0	115	792.9	6.0		9.6	13.3	MAYBE	793.9	12.0
TOTAL QTY:							108.0	107.4			125

*Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either " ____ Dia. Drilled Piers" or " ____ Dia. Drilled Piers Not in Soil" and " ____ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

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

NOTES:

1. THE PILE AND DRILLED PIER FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (DAVID L. TEAGUE) ON 03/27/2024.
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 WILL DETERMINE THE NEED FOR DYNAMIC PILE TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTS, CSL TESTING, SID INSPECTIONS AND PITS WHEN THESE ITEMS MAY BE REQUIRED.
4. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
5. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SUMMARY OF DYNAMIC PILE TESTING/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing				Pile Order Lengths	
End Bent/ Bent No	Dynamic Pile Testing Required? YES or MAYBE	Dynamic Pile Testing Test Pile Length FT	Total Dynamic Pile Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or Dynamic Pile Testing

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-11				YES	
End Bent 2, Piles 1-11				YES	
TOTAL QTY:				22	

SUMMARY OF DRILLED PIER TESTING

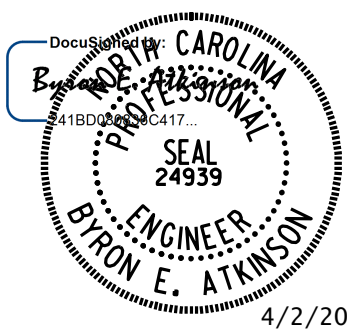
(Blank entries indicate item is not applicable to structure)

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 1-5	MAYBE	MAYBE	86.8	MAYBE	
Bent 2, Piers 1-5	MAYBE	MAYBE	97.6	MAYBE	
TOTAL QTY:	1	1	922.0	1	

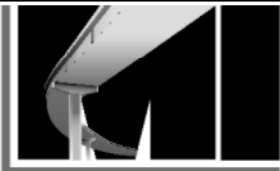
*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 5



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

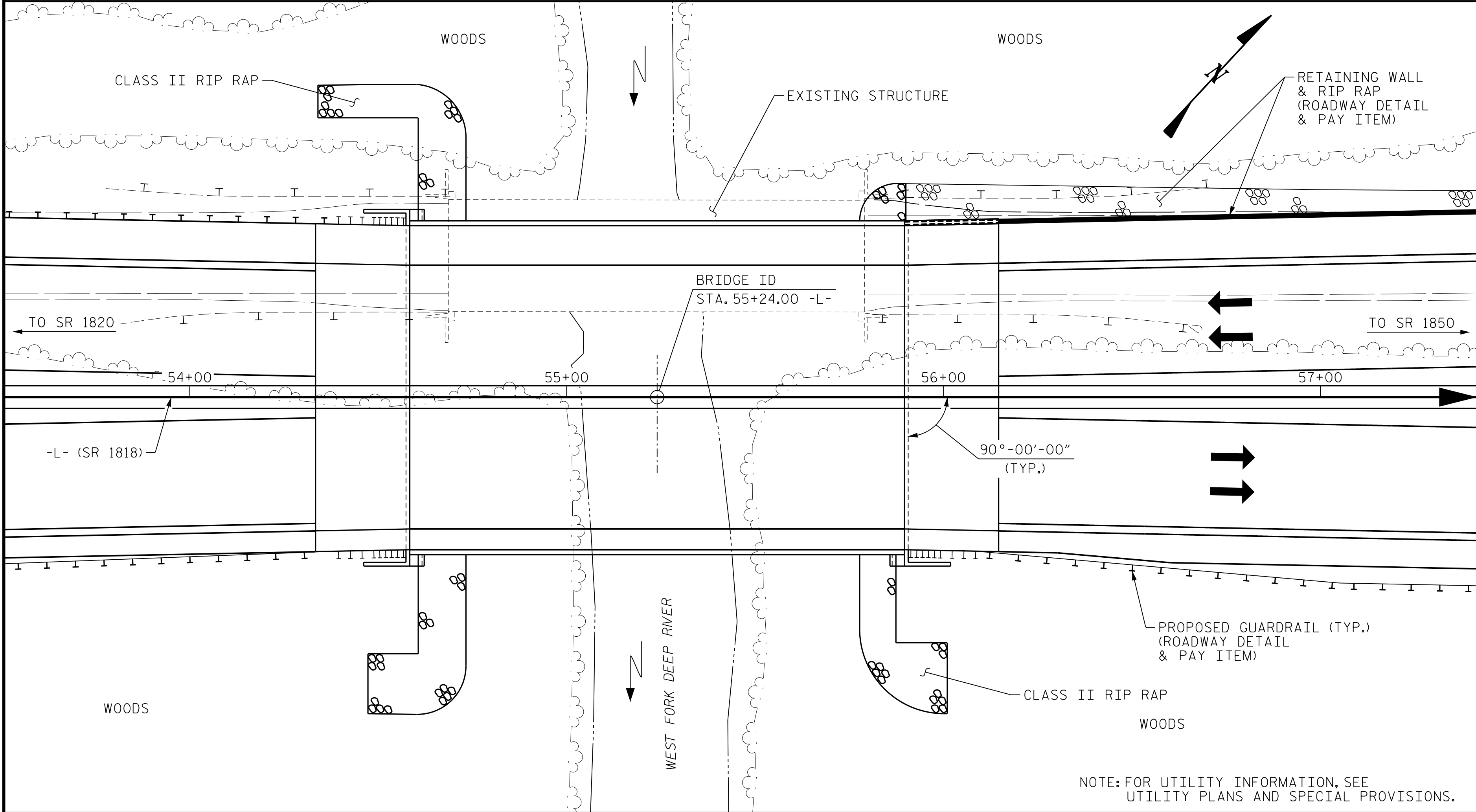
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER
FOUNDATION
TABLES

REVISIONS						SHEET NO. S-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 57
2			4			

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>06/2024</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

BM #4: RAILROAD SPIKE SET IN 16" CEDAR TREE, 208.71' RIGHT OF STA. 57+84.40 -L-, EL. 808.64



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS AT STA. 55+24.00 -L-	REMOVAL OF EXISTING STRUCTURE AT STA. 55+24.00 -L-	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE											11,620	10,316	
END BENT 1										LUMP SUM			71.1
BENT 1				41.0	60.0	65.0							49.9
BENT 2				66.4	48.0	60.0							48.8
END BENT 2										LUMP SUM			64.3
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	107.4	108.0	125.0	1	1	1	LUMP SUM	11,620	10,316	234.1

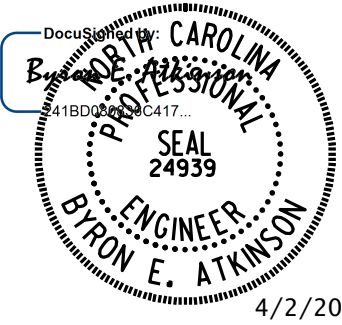
TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 3'-3" CONCRETE PARAPET	1'-2" X 3'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				30	1300.01					542.58	131.17	137.17			LUMP SUM	LUMP SUM
END BENT 1	LUMP SUM	9,380				11	11	220	11				388	432		
BENT 1		15,763	2,800													
BENT 2		15,978	2,897													
END BENT 2	LUMP SUM	8,436				11	11	365	11				283	314		
TOTAL	LUMP SUM	49,557	5,697	30	1300.01	22	22	585	22	542.58	131.17	131.17	671	746	LUMP SUM	LUMP SUM

DRAWN BY : B.E. LANNING DATE : 06/2024
CHECKED BY : B.E. ATKINSON DATE : 06/2024
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 4 OF 5



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUH DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON
SR 1818 (JOHNSON STREET)
OVER WEST FORK DEEP RIVER
BETWEEN SR 1820 & SR 1850

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4	
1			3			TOTAL SHEETS	
2			4			57	

NOTES:

1. ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
4. FOR OTHER DESIGN DATA AND GENERAL NOTES,SEE SHEET SN.
5. FOR EROSION CONTROL MEASURES,SEE EROSION CONTROL PLANS.
6. THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
7. 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.
8. NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
9. REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
10. TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.SEE ROADWAY PLANS AND TRAFFIC CONTROL PLANS FOR MORE INFORMATION.FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC,SEE ROADWAY PLANS.
11. STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.
12. THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE.THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
13. AFTER SERVING AS A TEMPORARY STRUCTURE,THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1@ 36'-1",1 @ 40'-1", AND 1 @ 36'-1") ASPHALT WEARING SURFACE WITH CLEAR ROADWAY OF 30'-0" WIDE; ON PRECAST PRESTRESSED CONCRETE CORED SLABS; ON REINFORCED CONCRETE END BENTS AND BENTS SHALL BE REMOVED EXCEPT AS NOTED ON PLANS. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT.SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE,A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
14. 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.
15. THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 70' LT.AND 90' RT 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.
16. AT THE CONTRACTOR'S OPTION,AND UPON REMOVAL OF THE CAUSEWAY,THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION.SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA.55+24.00 -L-.
17. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES".
18. FOR ASBESTOS ASSESSMENT,SEE SPECIAL PROVISIONS.
19. FOR SUBMITTAL OF WORKING DRAWINGS,SEE SPECIAL PROVISIONS.
20. FOR FALSEWORK AND FORMWORK,SEE SPECIAL PROVISIONS.
21. FOR CRANE SAFETY,SEE SPECIAL PROVISIONS.
22. FOR GROUT FOR STRUCTURES,SEE SPECIAL PROVISIONS.
23. FOR FOUNDATION NOTES,SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

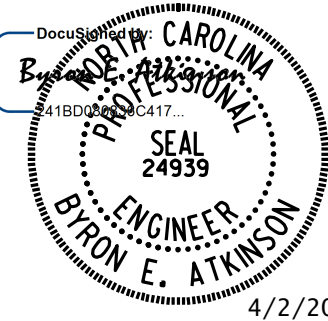
SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

PROJECT NO. U-4758

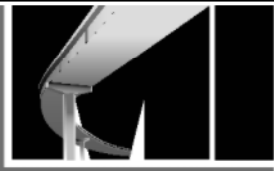
GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 5 OF 5



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
SR 1818 (JOHNSON STREET)
OVER WEST FORK DEEP RIVER
BETWEEN SR 1820 & SR 1850

REVISIONS						SHEET NO. S-5
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2			4			

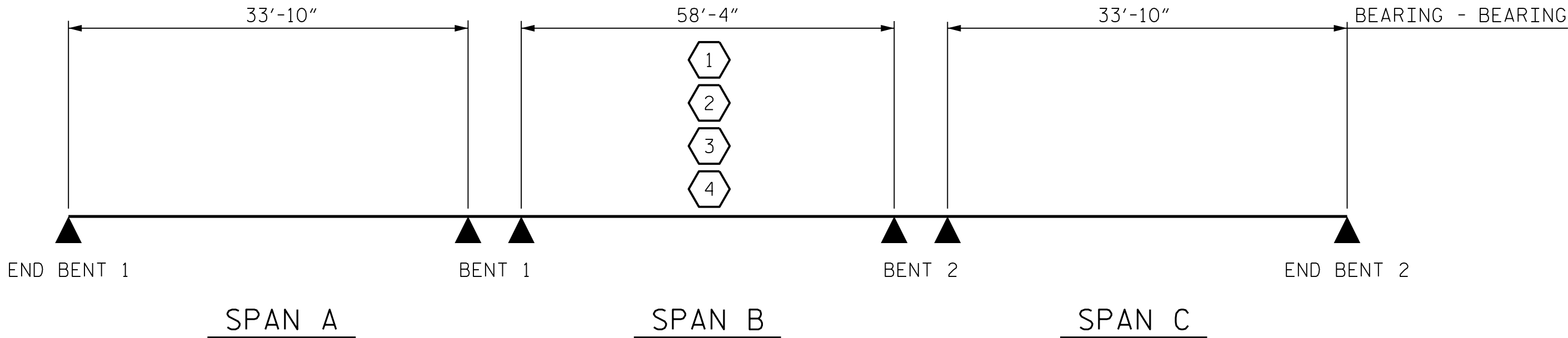
DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>06/2024</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

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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 × 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	1.30	--	1.75	0.864	1.46	A	I	19.4	0.943	1.37	A	I	11.6	0.80	0.807	1.30	B	EL	29.2		
	HL-93 (OPERATING)	N/A		1.90	--	1.35	0.864	1.90	A	I	19.4	0.943	2.54	B	I	3.3	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	⬢2	1.65	67.32	1.75	0.864	1.94	A	I	15.5	0.943	1.87	A	I	11.6	0.80	0.807	1.65	B	EL	29.2		
	HS-20 (OPERATING)	36.000		2.51	90.36	1.35	0.864	2.51	A	I	19.4	0.943	3.08	A	I	3.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.53	48.74	1.40	0.864	4.18	A	I	19.4	0.943	5.84	A	I	11.6	0.80	0.807	3.53	B	EL	29.2	
		SNGARBS2	20.000		2.71	62.60	1.40	0.864	3.56	A	I	15.5	0.943	4.59	A	I	3.9	0.80	0.807	2.71	B	EL	29.2	
		SNAGRIS2	22.000		2.60	68.64	1.40	0.864	3.52	A	I	15.5	0.943	4.39	A	I	3.9	0.80	0.807	2.60	B	EL	29.2	
		SNCOTTS3	27.250		1.76	49.32	1.40	0.864	2.09	A	I	19.4	0.943	2.92	A	I	11.6	0.80	0.807	1.76	B	EL	29.2	
		SNAGGRS4	34.925		1.50	58.33	1.40	0.864	1.94	A	I	19.4	0.943	2.52	A	I	11.6	0.80	0.807	1.50	B	EL	29.2	
		SNS5A	35.550		1.47	57.59	1.40	0.864	1.88	A	I	19.4	0.943	2.87	A	I	11.6	0.80	0.807	1.47	B	EL	29.2	
		SNS6A	39.950		1.36	62.72	1.40	0.864	1.81	A	I	19.4	0.943	2.56	A	I	11.6	0.80	0.807	1.36	B	EL	29.2	
		SNS7B	42.000		1.29	62.58	1.40	0.864	1.73	A	I	19.4	0.943	2.63	A	I	11.6	0.80	0.807	1.29	B	EL	29.2	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.66	64.02	1.40	0.864	2.24	A	I	19.4	0.943	3.24	B	I	3.3	0.80	0.807	1.66	B	EL	29.2	
		TNT4A	33.075		1.67	63.84	1.40	0.864	2.24	A	I	19.4	0.943	3.06	A	I	3.9	0.80	0.807	1.67	B	EL	29.2	
		TNT6A	41.600		1.38	70.30	1.40	0.864	1.96	A	I	19.4	0.943	2.90	A	I	11.6	0.80	0.807	1.38	B	EL	29.2	
		TNT7A	42.000		1.39	73.50	1.40	0.864	2.03	A	I	19.4	0.943	2.77	A	I	11.6	0.80	0.807	1.39	B	EL	29.2	
		TNT7B	42.000		1.45	72.24	1.40	0.864	1.99	A	I	19.4	0.943	2.60	A	I	11.6	0.80	0.807	1.45	B	EL	29.2	
		TNAGRIT4	43.000		1.37	74.82	1.40	0.864	2.01	A	I	15.5	0.943	2.53	A	I	11.6	0.80	0.807	1.37	B	EL	29.2	
		TNAGT5A	45.000		1.29	72.45	1.40	0.864	1.86	A	I	19.4	0.943	2.54	B	I	3.3	0.80	0.807	1.29	B	EL	29.2	
TNAGT5B	45.000	⬢3	1.27	69.75	1.40	0.864	1.80	A	I	19.4	0.943	2.06	A	I	11.6	0.80	0.807	1.27	B	EL	29.2			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.92	65.26	1.30	0.864	2.76	A	I	15.5	0.943	3.53	A	I	11.6	0.80	0.807	1.92	B	EL	23.3		
	EV3	43.000	⬢4	1.25	61.92	1.30	0.864	1.79	A	I	19.4	0.943	1.61	A	I	11.6	0.80	0.807	1.25	B	EL	29.2		



LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{OW}
	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:

- RAIL AND PARAPET LOADS DISTRIBUTED ACCORDING TO NCDOT DESIGN MANUAL SECTION 2.1.2.1.
- EXTERIOR GIRDER NO.1 CONTROLS THE RATING.
- RATING INCLUDES PEDESTRIAN LOAD APPLIED TO SIDEWALKS.
- DISTANCE FROM LEFT END OF SPAN IS MEASURED FROM CENTERLINE OF BEARING.
- RESULTS ARE SYMMETRICAL ABOUT MID-SPAN. SPAN C SIMILAR TO SPAN A.
- THE GIRDERS ARE CONSIDERED TO BE SIMPLY SUPPORTED.

⬡ CONTROLLING LOAD RATING

⬡1 DESIGN LOAD RATING (HL-93)

⬡2 DESIGN LOAD RATING (HS-20)

⬡3 LEGAL LOAD RATING **

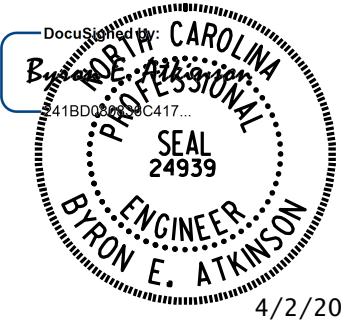
⬡4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

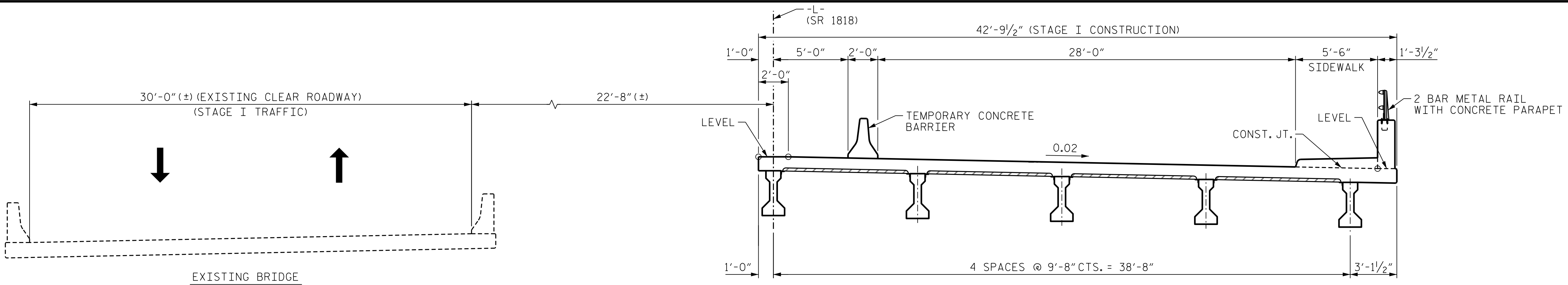


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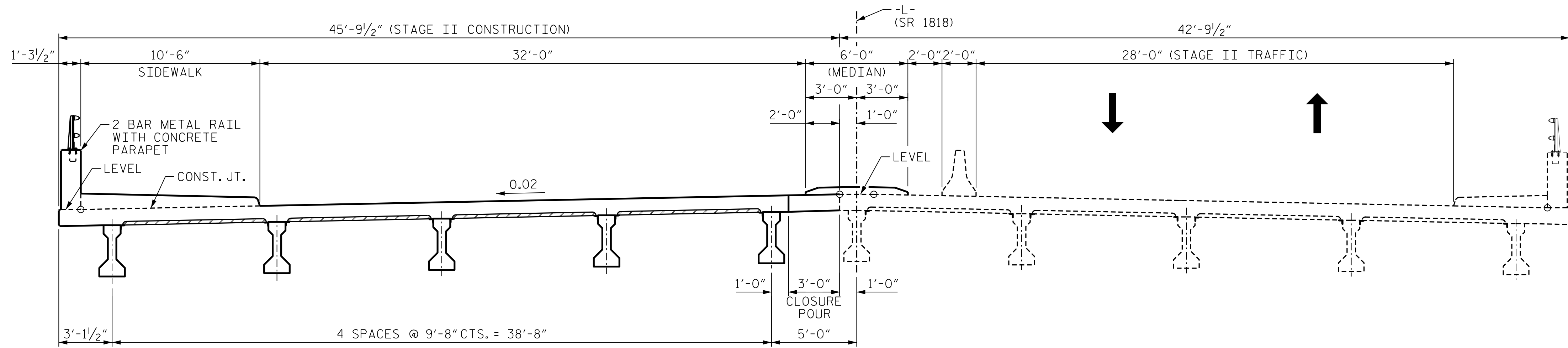
MI ENGINEERING
1011 SCHAUH DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

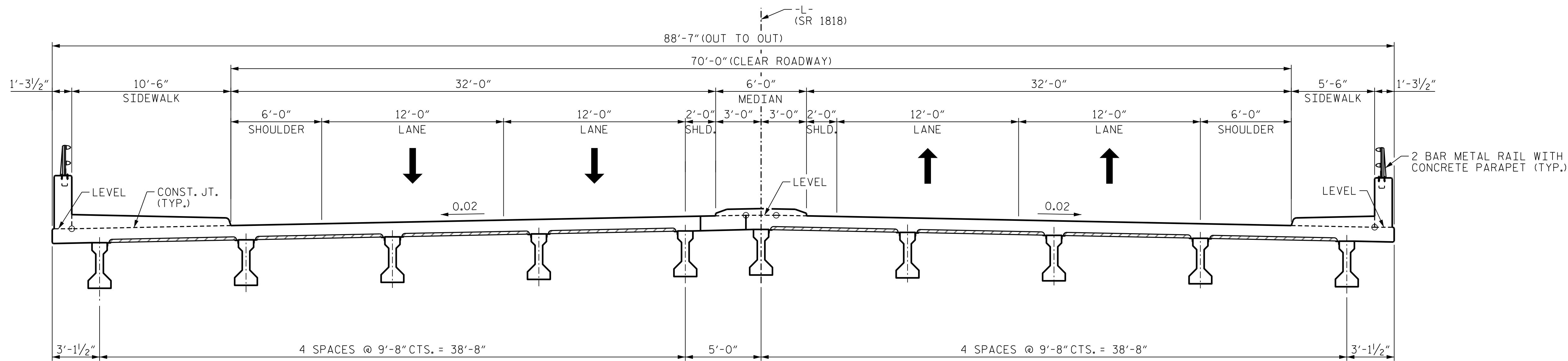
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2			4			



STAGE I



STAGE II

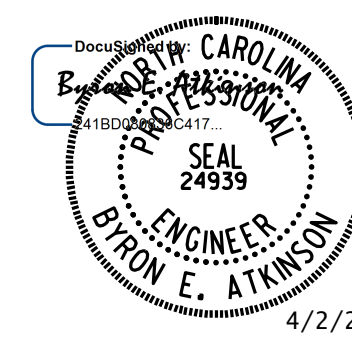


FINAL TYPICAL SECTION

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION
SEQUENCE



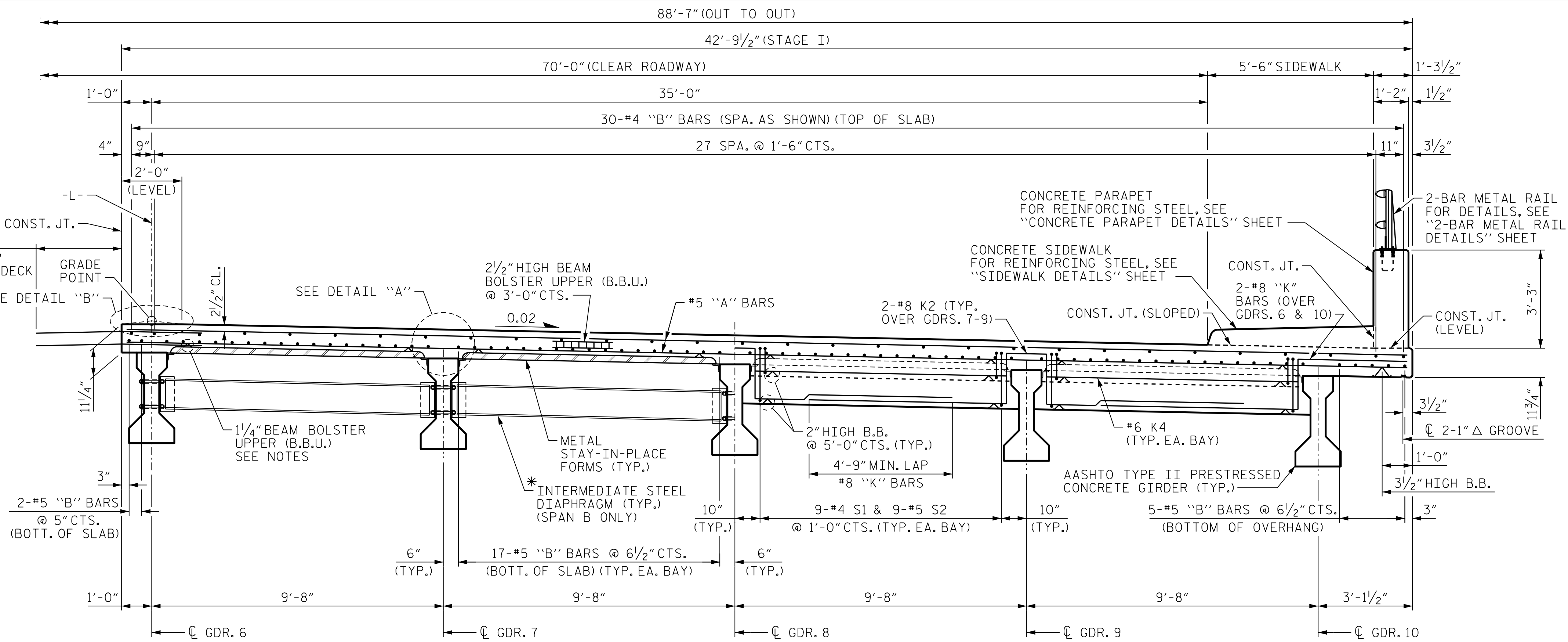
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MI ENGINEERING
1011 SCHAUH DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO. S-7
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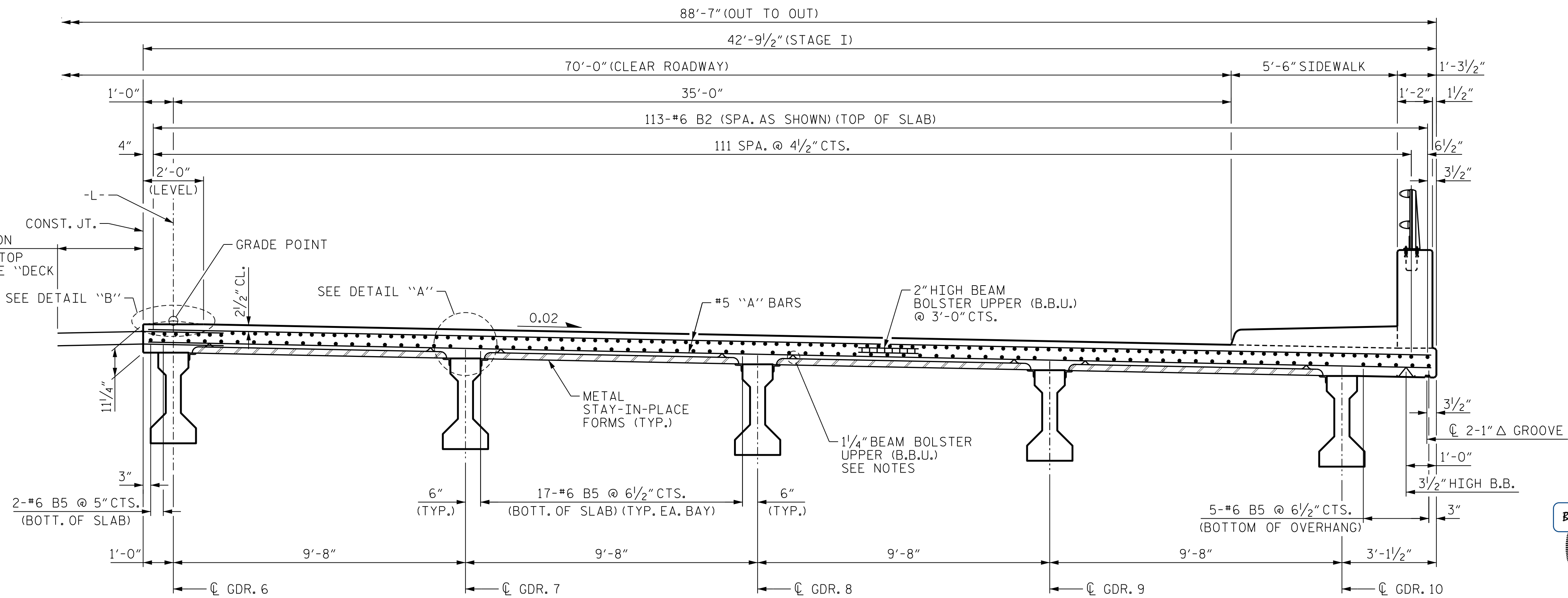


PARTIAL TYPICAL SECTION

SHOWING MID SPAN REGION

PARTIAL TYPICAL SECTION

SHOWING END DIAPHRAGM AT END BENTS 1 & 2



TYPICAL SECTION AT LINK SLAB OVER INTERIOR BENTS

(FOR ADDITIONAL DIMENSIONS AND CALLOUTS, SEE TYPICAL SECTION ABOVE)

NOTES:

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

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

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

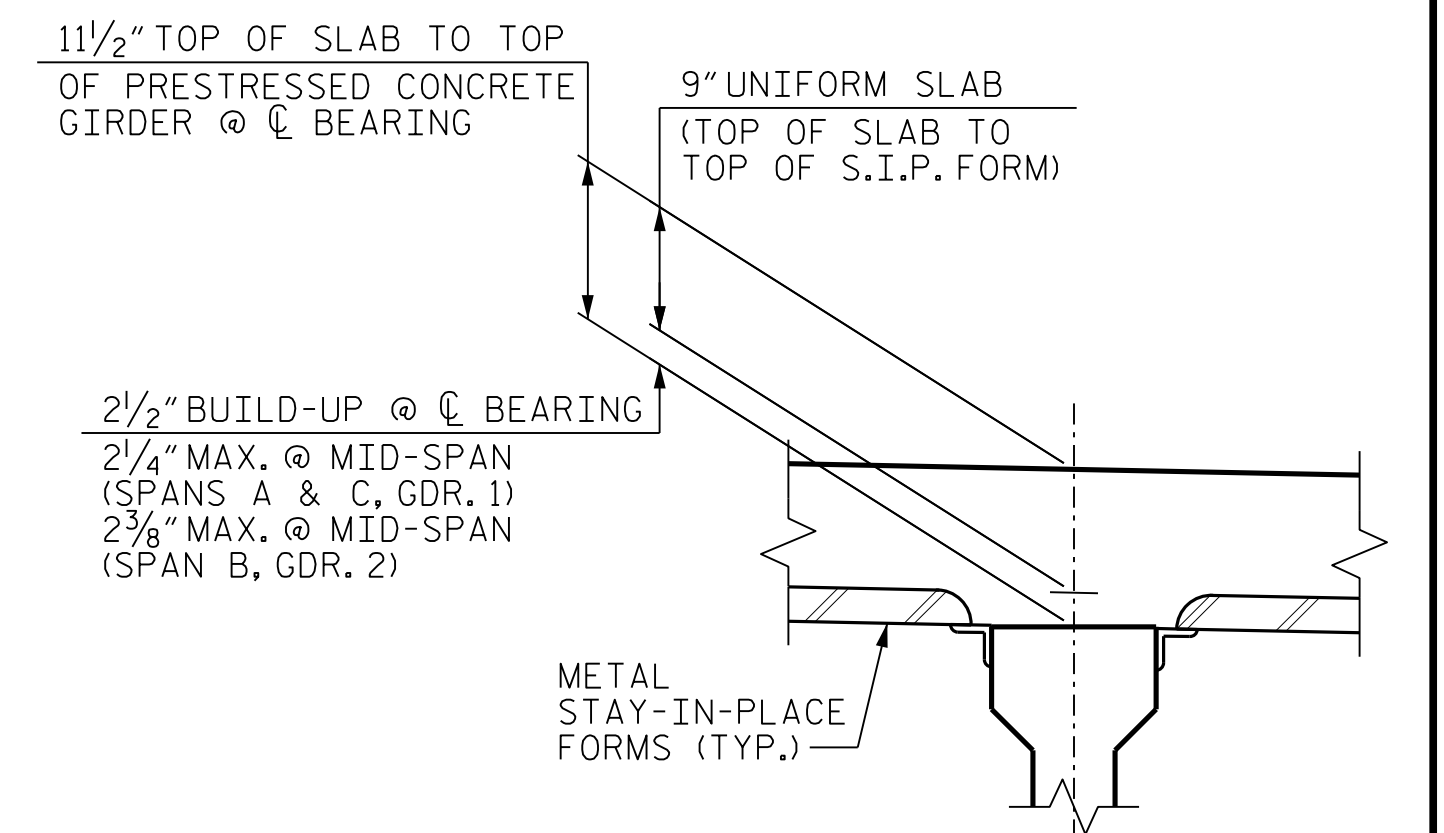
CONCRETE PARAPET, SIDEWALK AND CONCRETE MEDIAN IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

*FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS" SHEET.

FOR DETAIL "C" AND DETAIL "D", SEE SHEET 2 OF 3.



DETAIL "A"

DETAIL "B"

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

STAGE I

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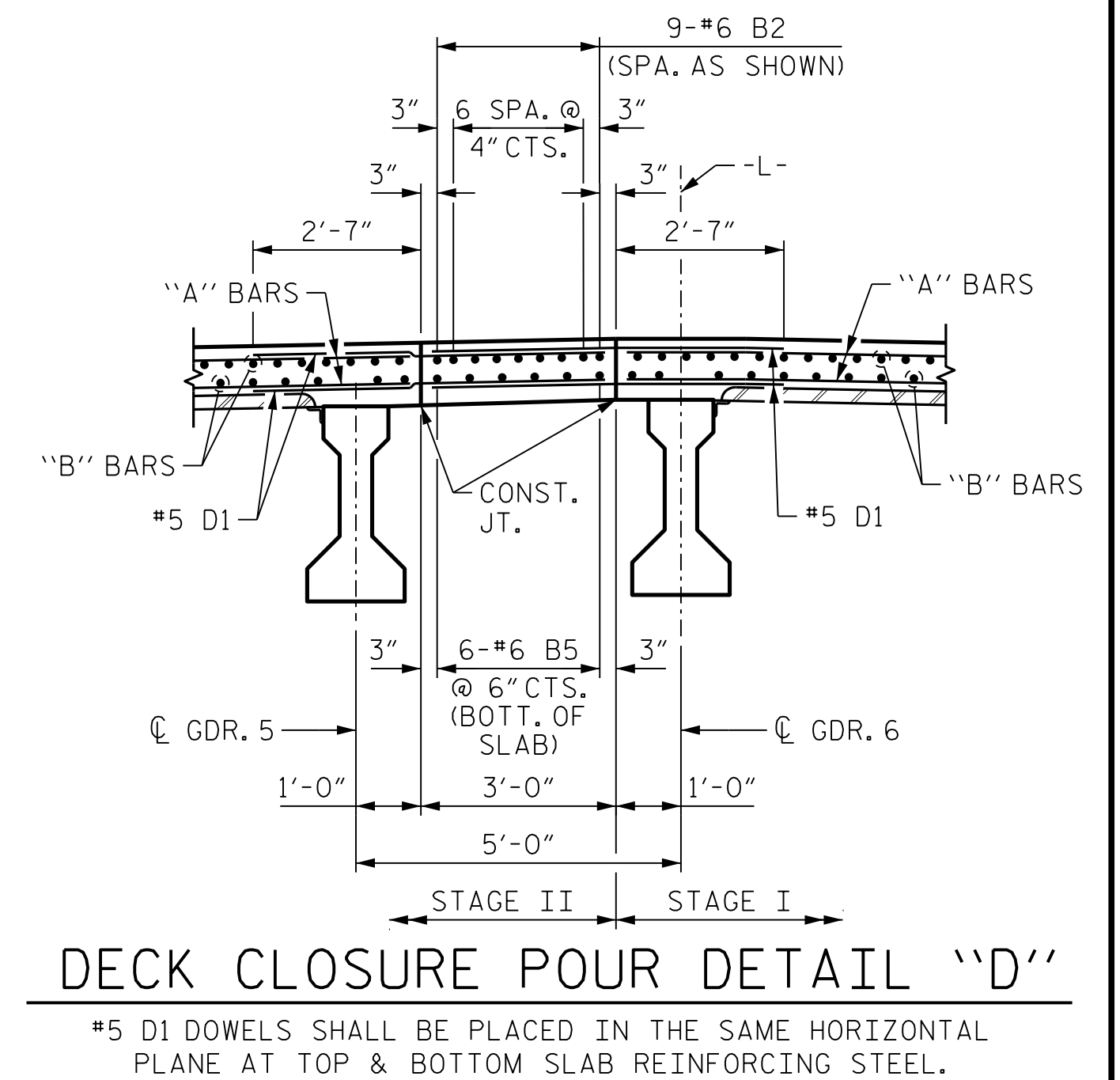
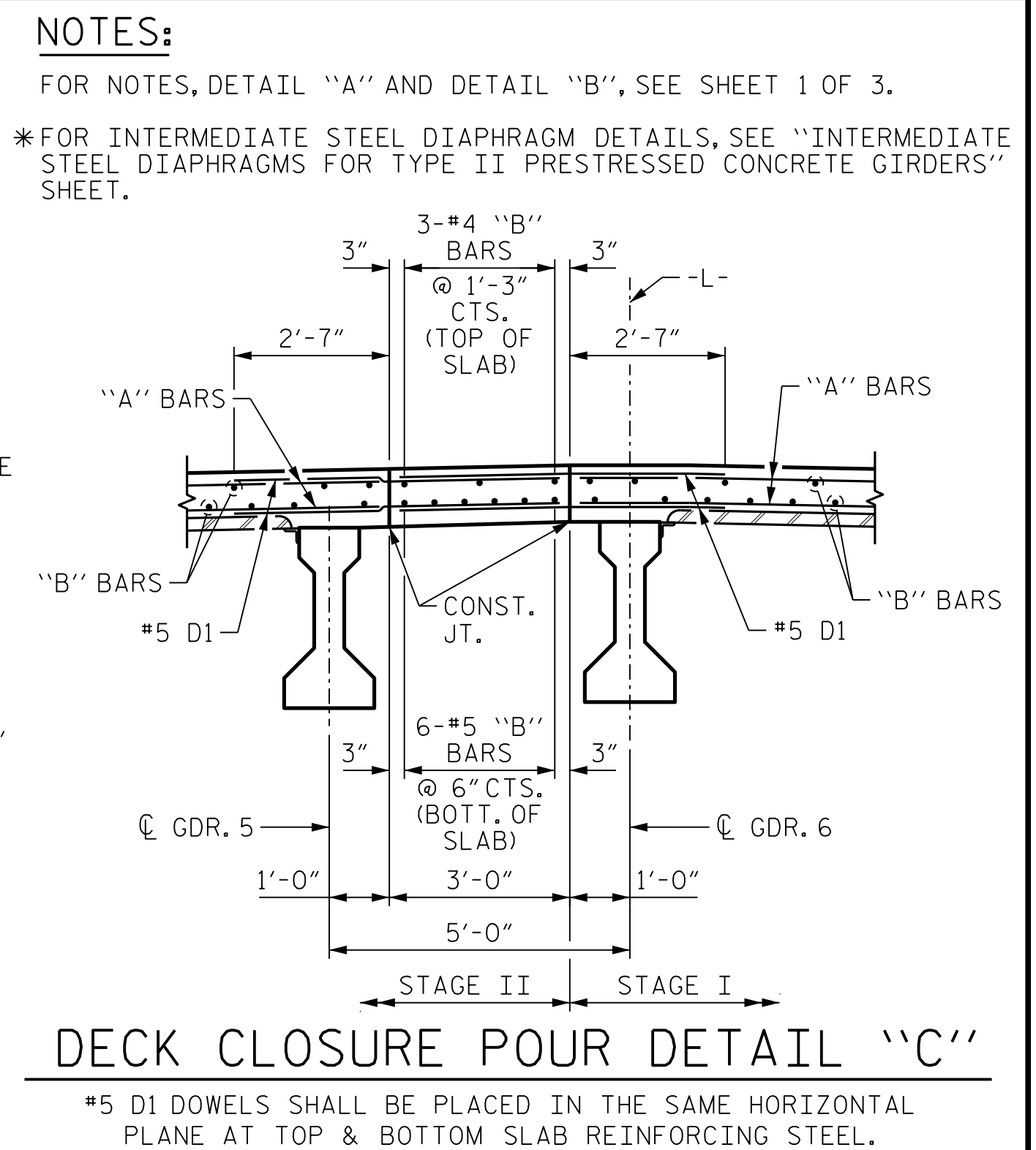
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

TOTAL SHEETS
57

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PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

STAGE II

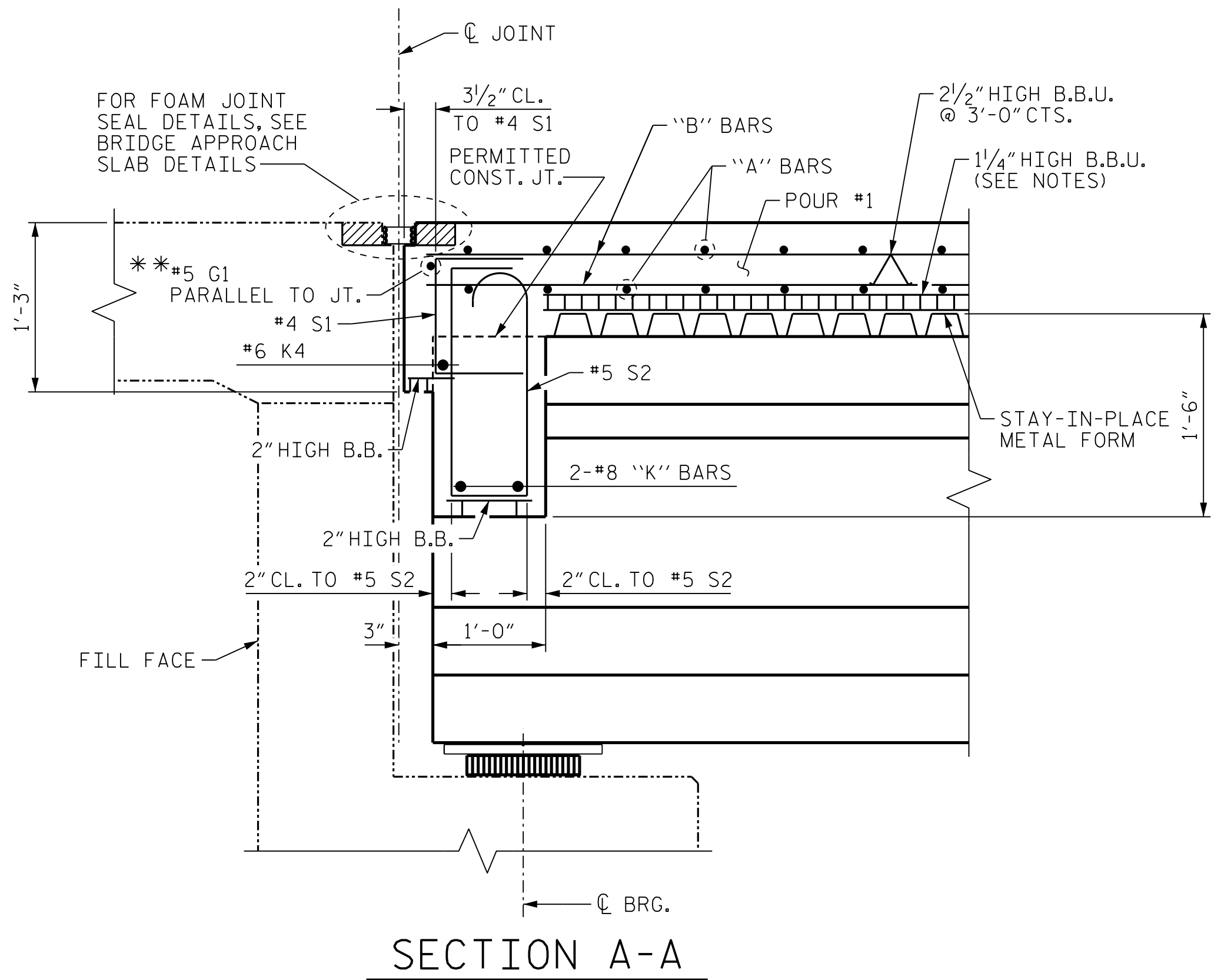
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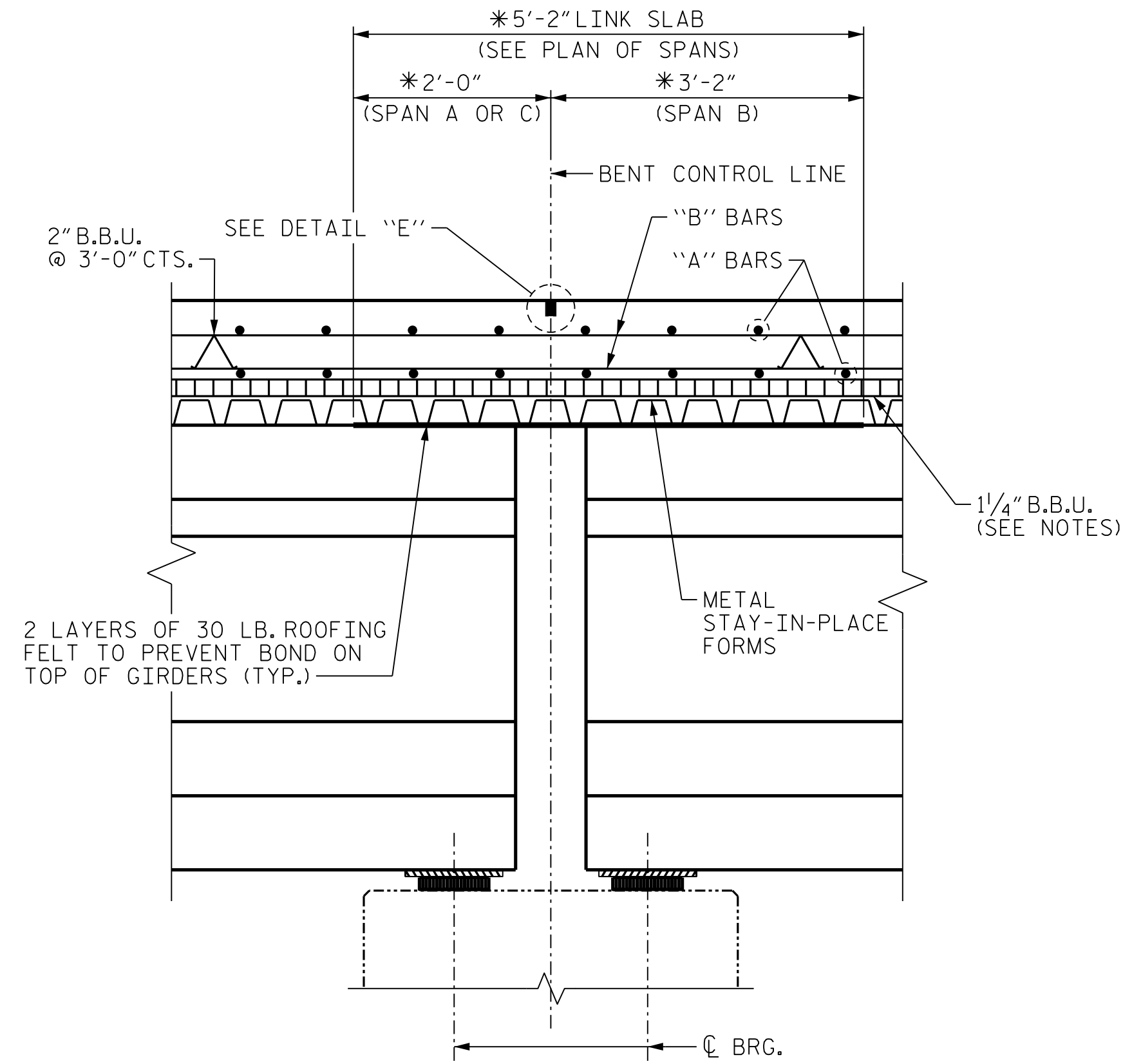
 MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
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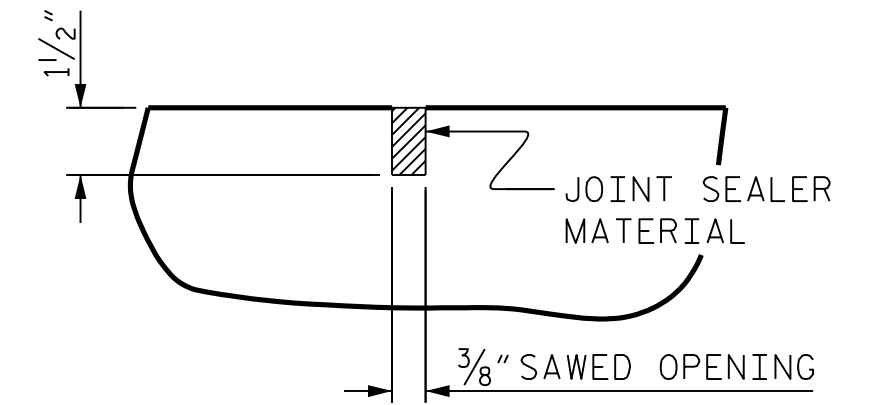
SECTION A-A



SECTION B-B

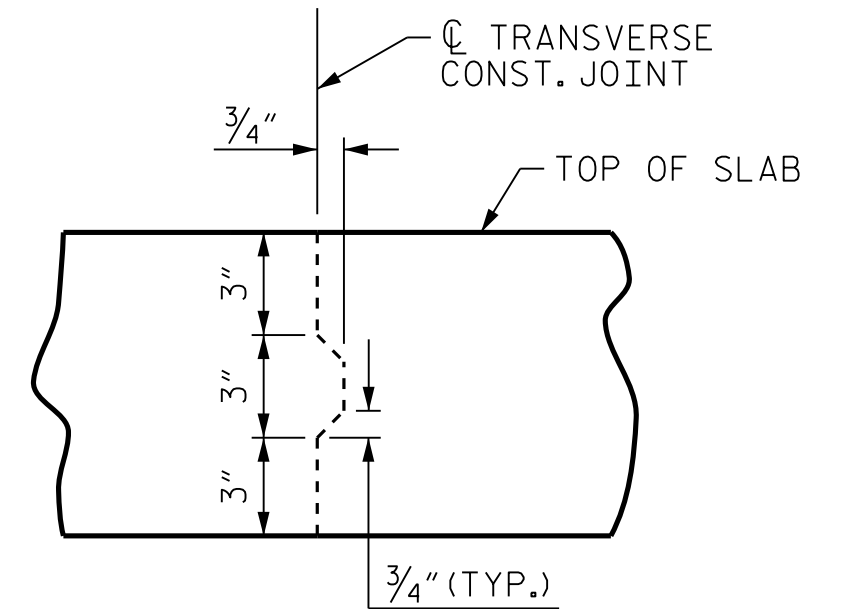
(BENT 1 SHOWN, BENT 2 SIMILAR)

NOTE: A 1/2" CONTRACTION JOINT AT THE BENT CONTROL LINE SHALL BE SAWED WITHIN 24 HOURS AFTER THE DECK 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 TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



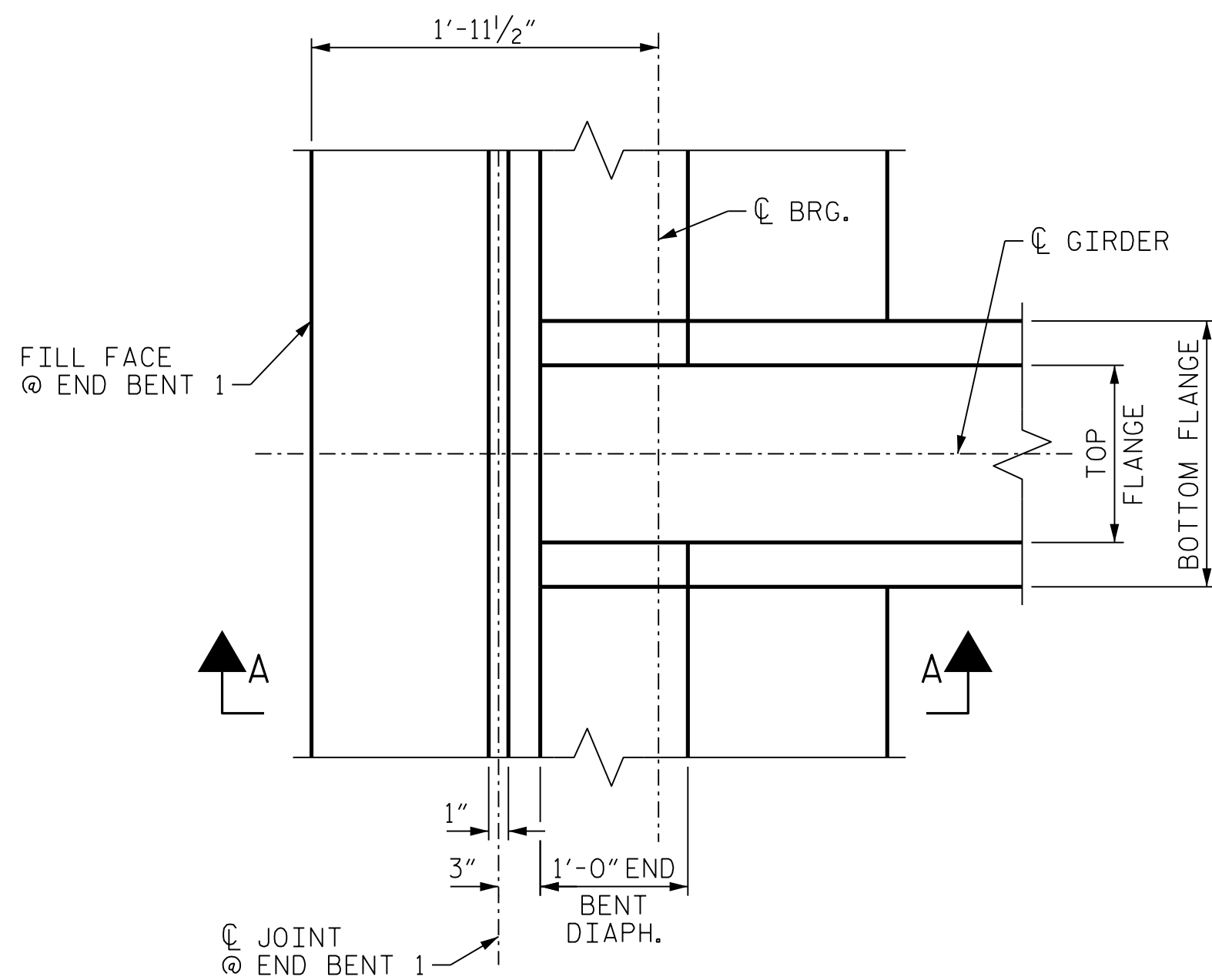
DETAIL "E"

SAW CUT CONTRACTION JOINT



TRANSVERSE CONSTRUCTION JOINT DETAIL

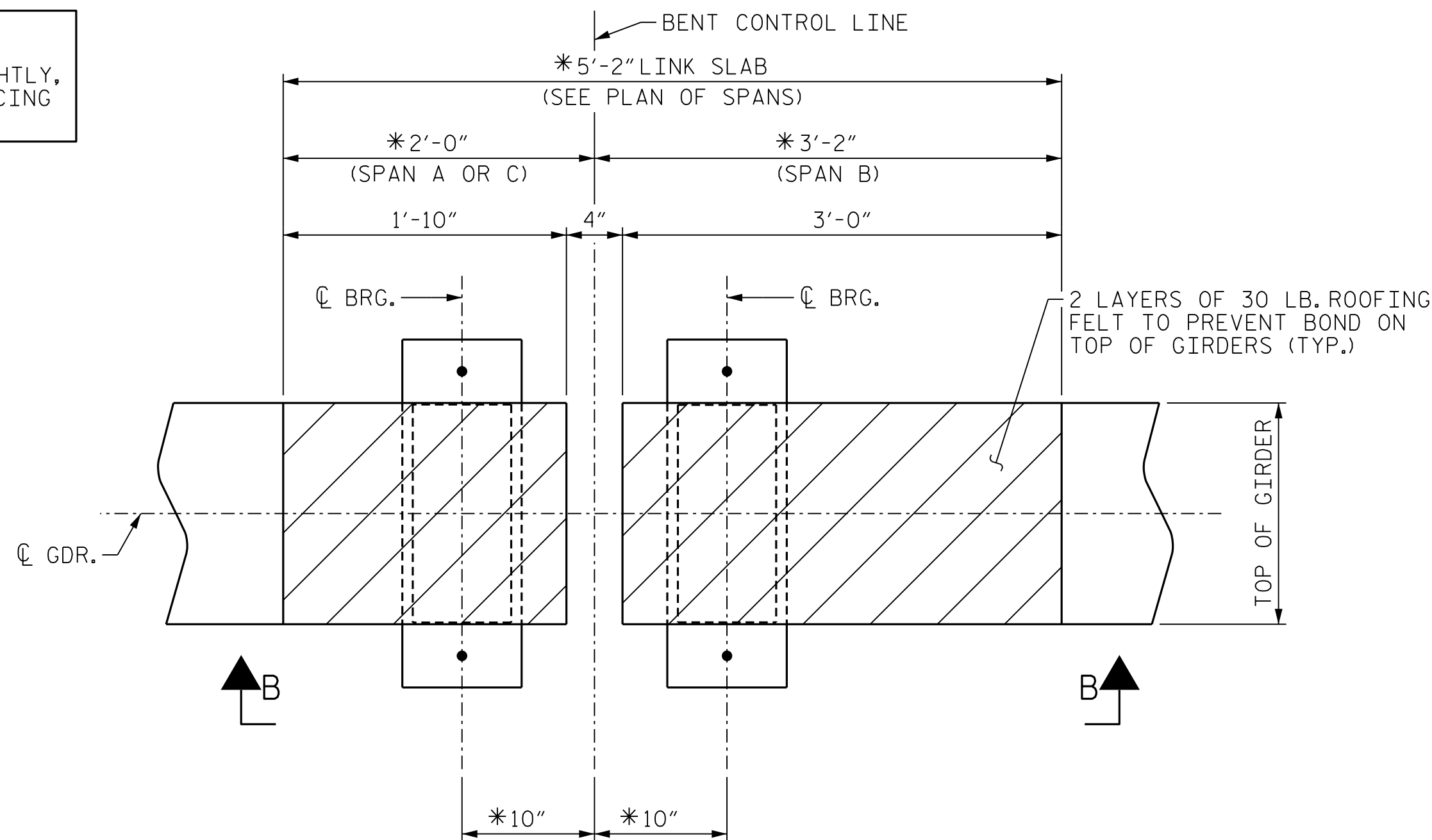
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.



PLAN OF GIRDER AT END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

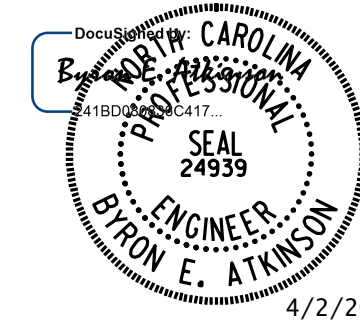
* MEASURED ALONG CL GIRDER
** #5 G1 BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



PLAN OF GIRDER AT INTERIOR BENT

(BENT 1 SHOWN, BENT 2 SIMILAR)

THE TOP OF THE BEAM IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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

TOTAL
SHEETS
57

NOTES:

FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET DETAILS STAGE I" SHEETS.

FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK DETAILS STAGE I" SHEET.

FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE I SHEET 5 OF 6.

FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 3 OF 3.

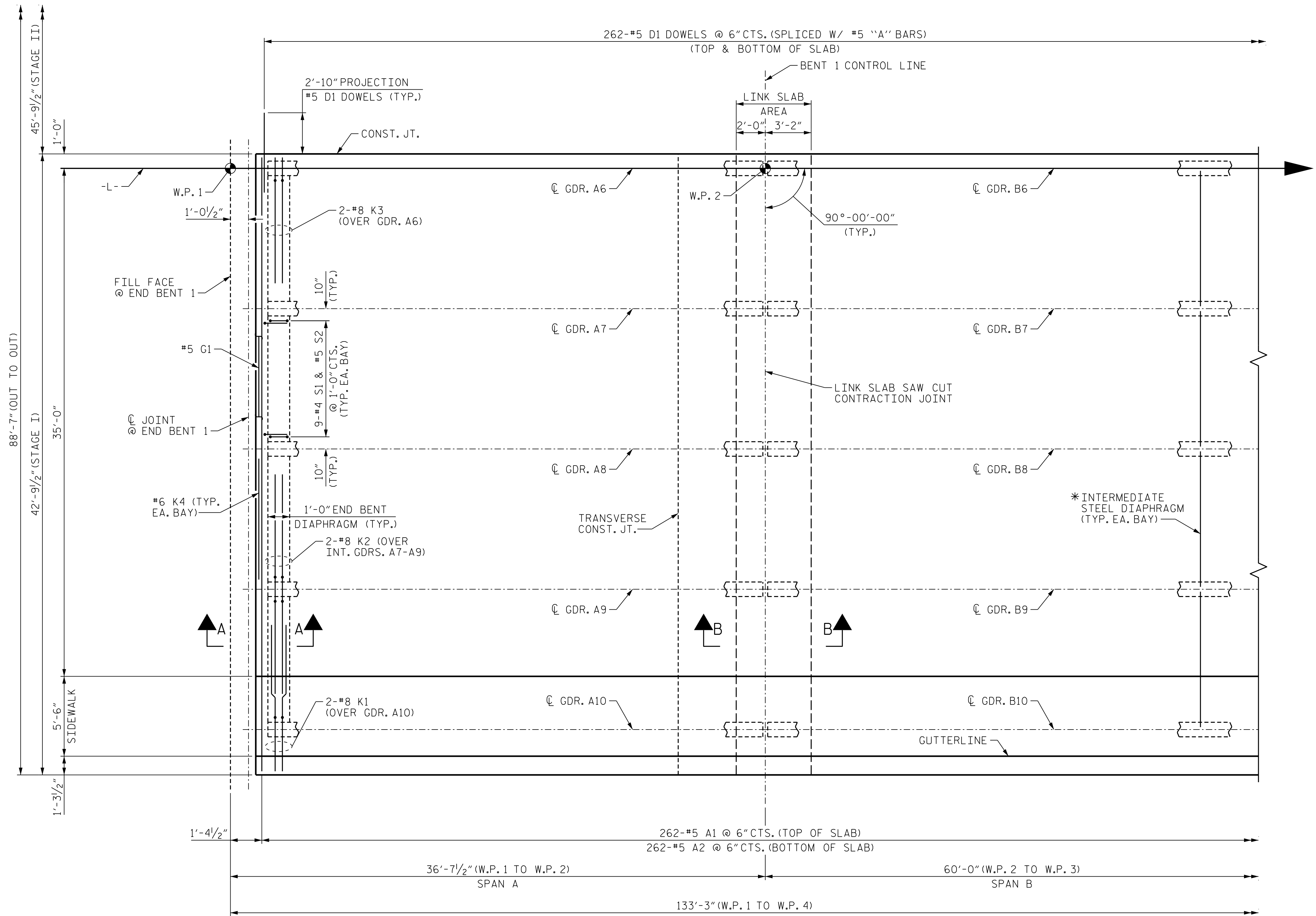
FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS" SHEET.

SEE "SUPERSTRUCTURE BILL OF MATERIAL STAGE I" FOR POUR SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINT.

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

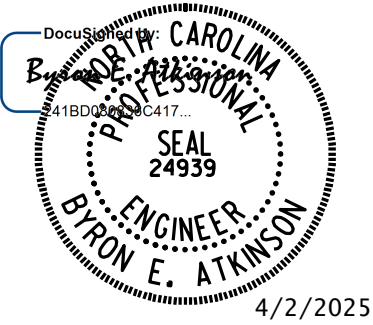
LINK SLAB SAW CUT CONTRACTION JOINT EXTEND TO THE EDGE OF DECK ON BOTH SIDES.



PLAN OF SPAN A AND PARTIAL PLAN OF SPAN B - STAGE I

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 6



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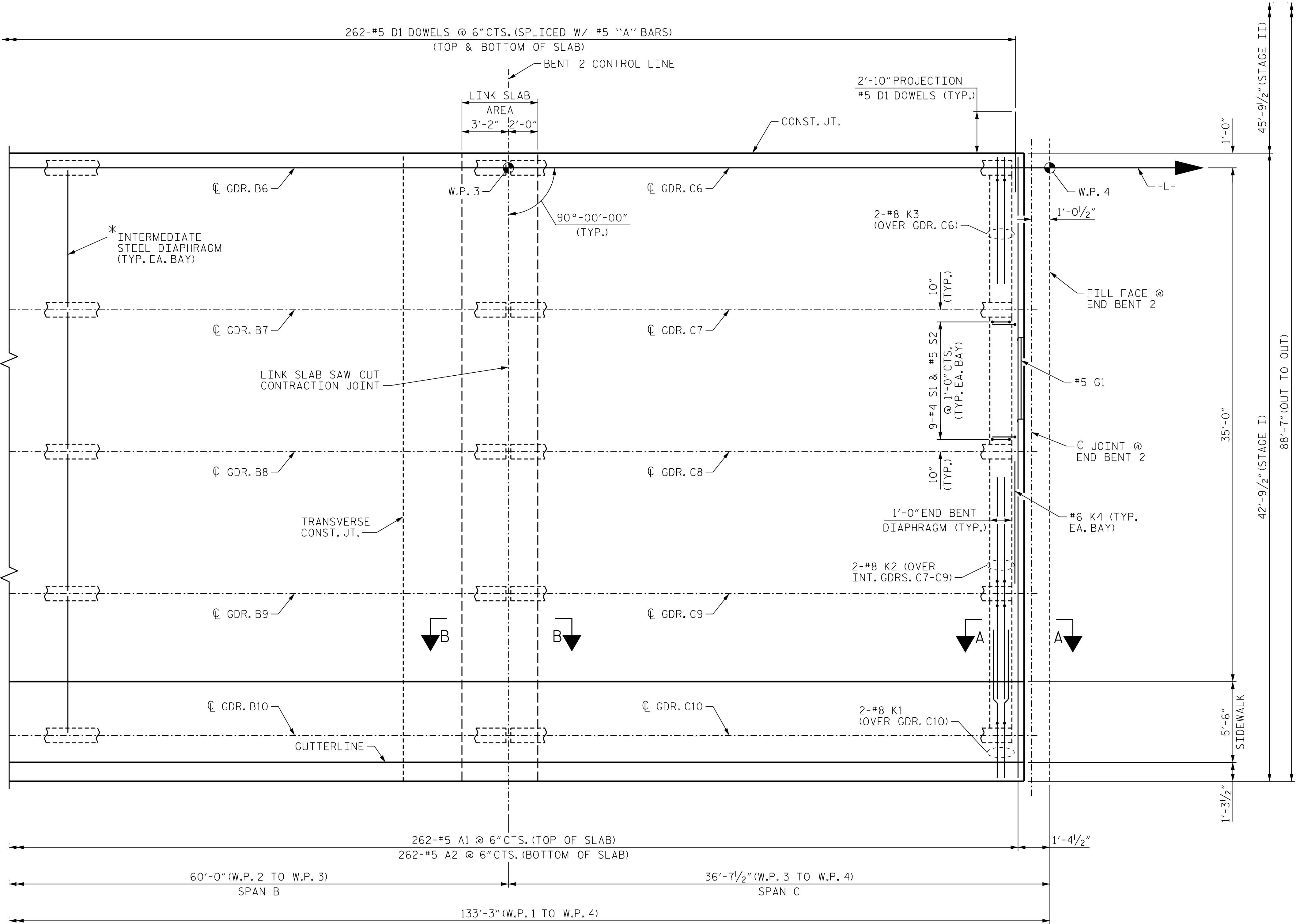
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			
TOTAL SHEETS						57

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NOTES:
FOR NOTES, SEE SHEET 1 OF 6.



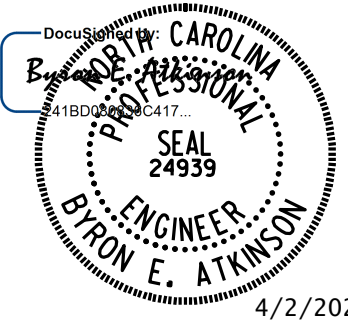
SPAN B

SPAN C

PARTIAL PLAN OF SPAN B AND PLAN OF SPAN C - STAGE I

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 2 OF 6



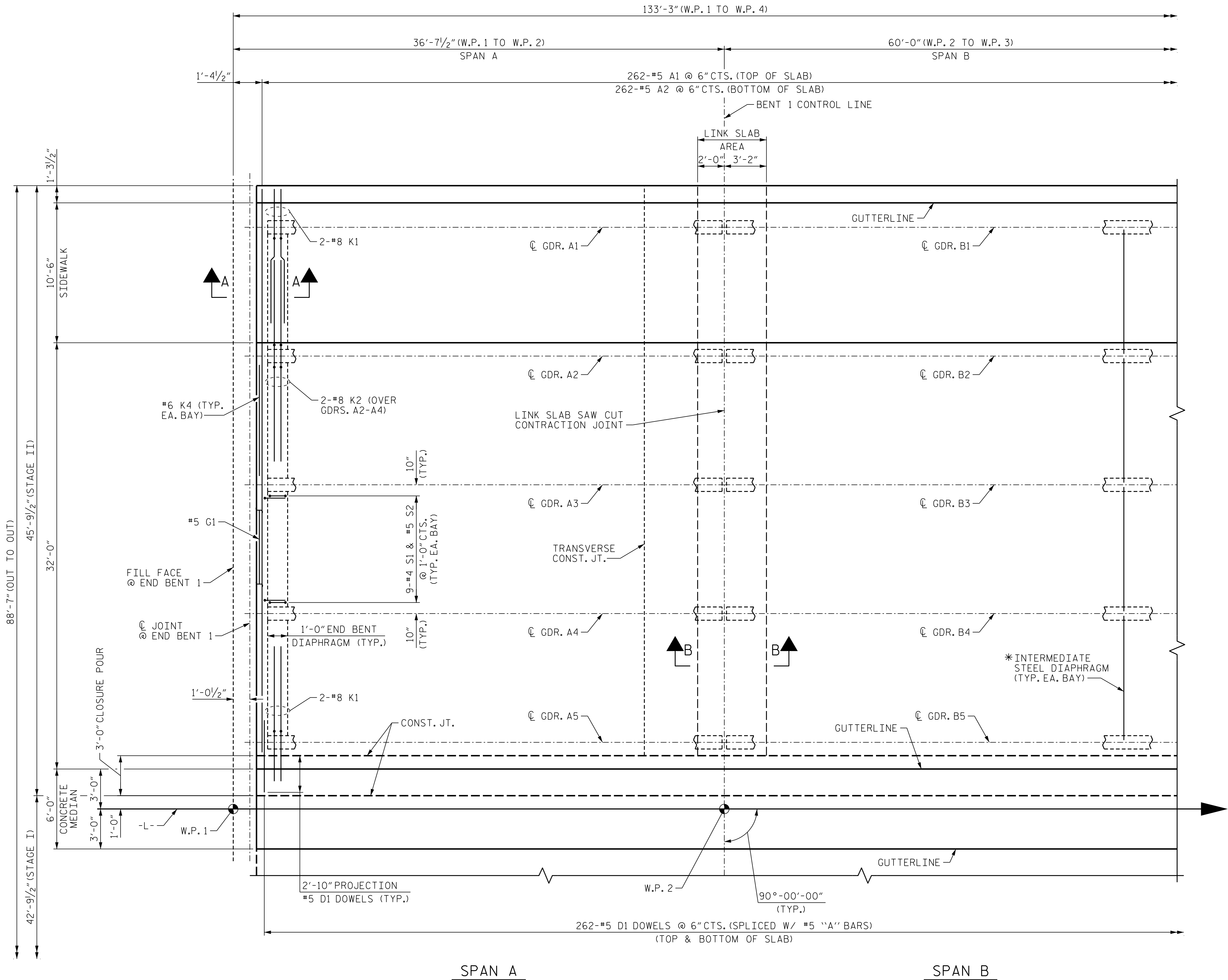
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
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PLAN OF SPAN A AND PARTIAL PLAN OF SPAN B - STAGE II

NOTES:

FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET DETAILS STAGE II" SHEETS.

FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK DETAILS STAGE I" SHEET.

FOR REINFORCING STEEL IN CONCRETE MEDIAN, SEE "CONCRETE MEDIAN DETAILS STAGE II" SHEET.

FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE II SHEET 6 OF 6.

FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 3 OF 3.

FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS" SHEET.

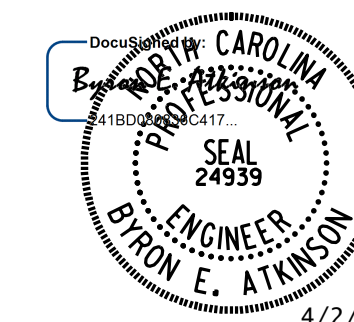
SEE "SUPERSTRUCTURE BILL OF MATERIAL STAGE II" FOR POUR SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINT.

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

LINK SLAB SAW CUT CONTRACTION JOINT EXTEND TO THE EDGE OF DECK ON BOTH SIDES.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 6



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
SPAN A AND
PARTIAL SPAN B
STAGE II

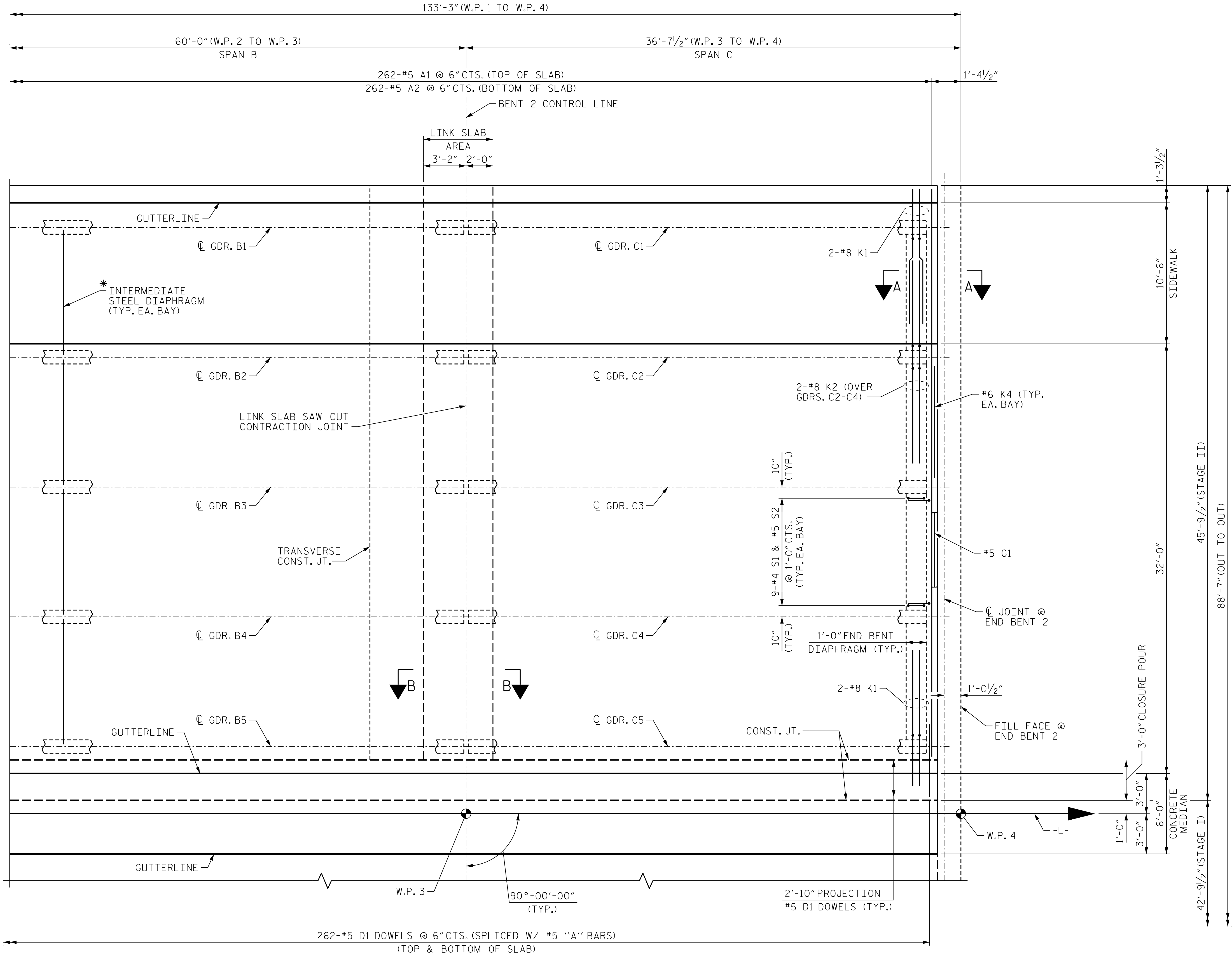
REVISIONS

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

SHEET NO.
S-13
TOTAL SHEETS
57

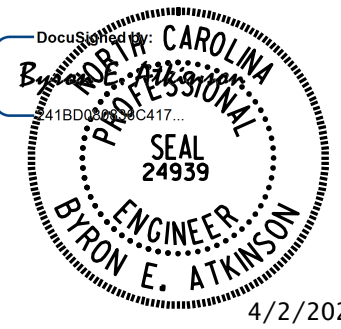
DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

NOTES:
FOR NOTES, SEE SHEET 3 OF 6.



PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 4 OF 6



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS PARTIAL SPAN B AND SPAN C STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-14					TOTAL SHEETS 57

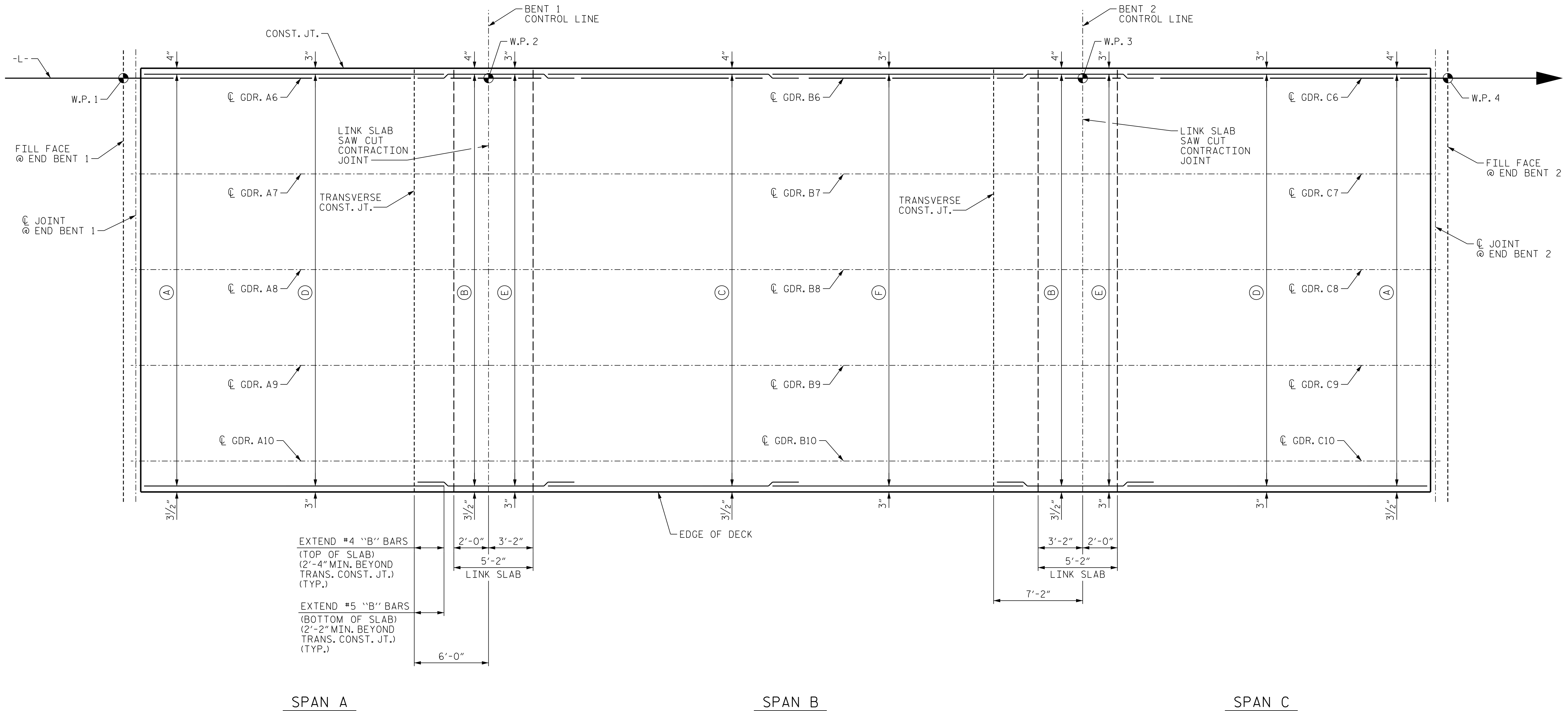
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>11/2023</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>11/2023</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

4/2/2025 2:47:42 PM User: blanning Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758 Structures\401.027.U4758.SMU_PSA_400308.dgn

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Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758 Structures\401.029-U4758-SMU-P55-400308.dgn



PLAN OF SPANS "B" BAR LAYOUT - STAGE I

(GUTTERLINE NOT SHOWN FOR CLARITY)

TOP BARS

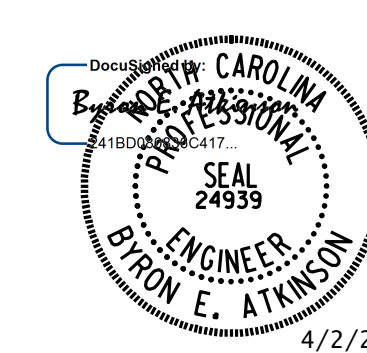
- (A) 30-#4 B1 (TOP OF SLAB)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)
- (B) 113-#6 B2 (TOP OF LINK SLAB)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)
- (C) 30-#4 B3 (2 BAR RUN)
(TOP OF SLAB) (1'-11" MIN. SPLICE)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)

BOTTOM BARS

- (D) 75-#5 B4 (BOTTOM OF SLAB)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)
- (E) 75-#6 B5 (BOTTOM OF LINK SLAB)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)
- (F) 75-#5 B6 (BOTTOM OF SLAB)
(SEE TYPICAL SECTION
SHEET 1 OF 3 FOR SPACING)

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 5 OF 6



DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
"B" BAR LAYOUT

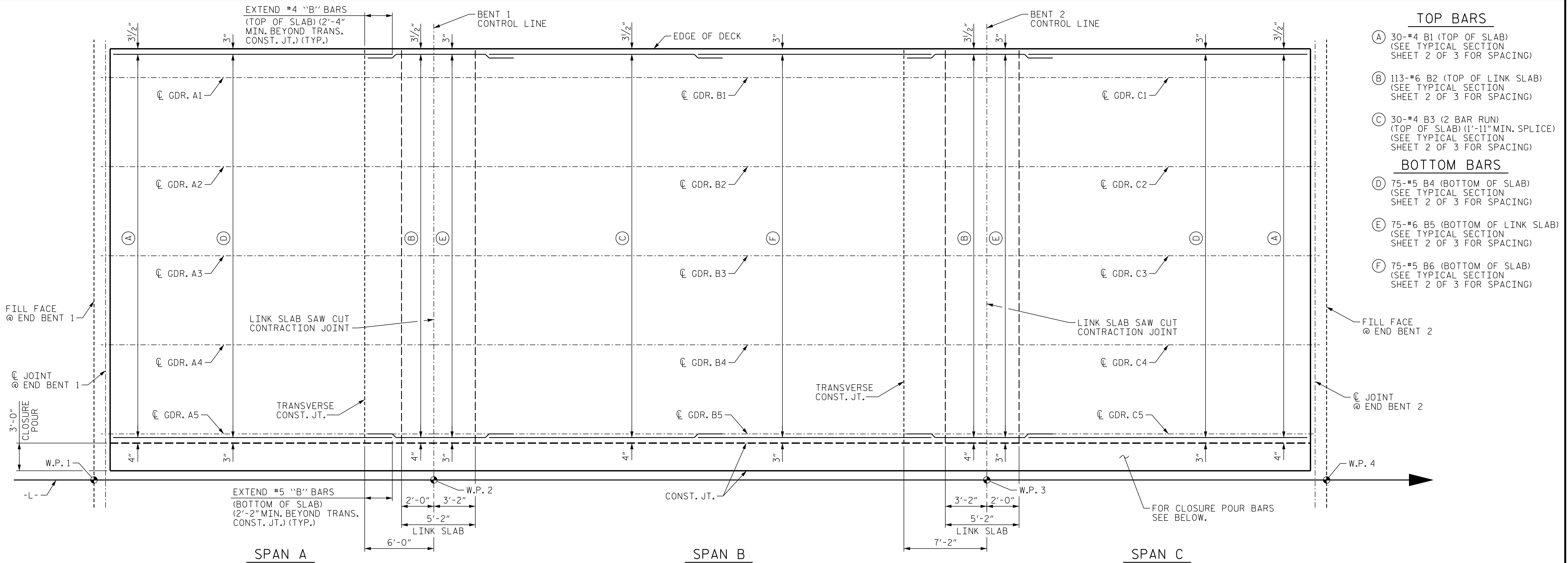
STAGE I

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

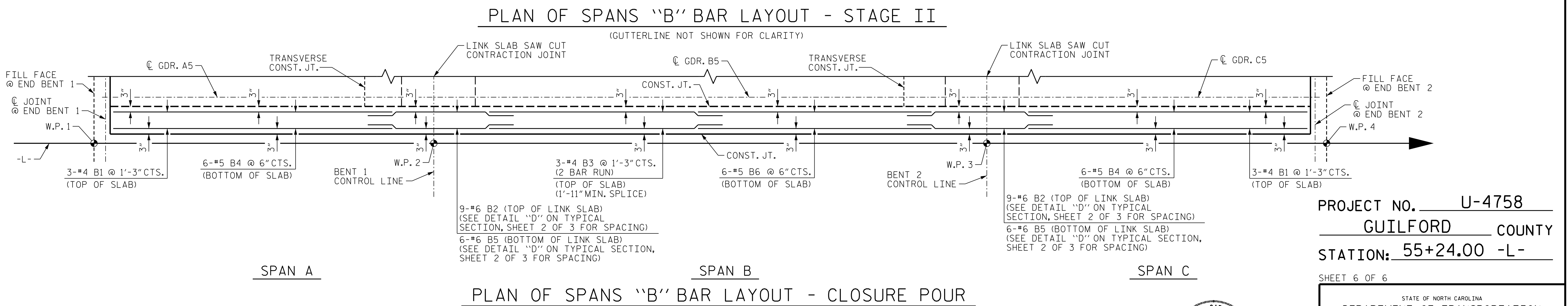
TOTAL SHEETS 57

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

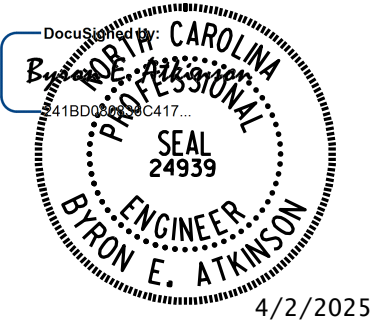
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Filename: N:\NC Bridges\W4005-U-4758 St. Bridge\U-4758 Structures\401.031.U4758.SMU.P56_400308.dgn



- TOP BARS**
- (A) 30-#4 B1 (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
 - (B) 113-#6 B2 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
 - (C) 30-#4 B3 (2 BAR RUN) (TOP OF SLAB) (1'-11" MIN. SPLICE) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
- BOTTOM BARS**
- (D) 75-#5 B4 (BOTTOM OF SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
 - (E) 75-#6 B5 (BOTTOM OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
 - (F) 75-#5 B6 (BOTTOM OF SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)



PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-
SHEET 6 OF 6



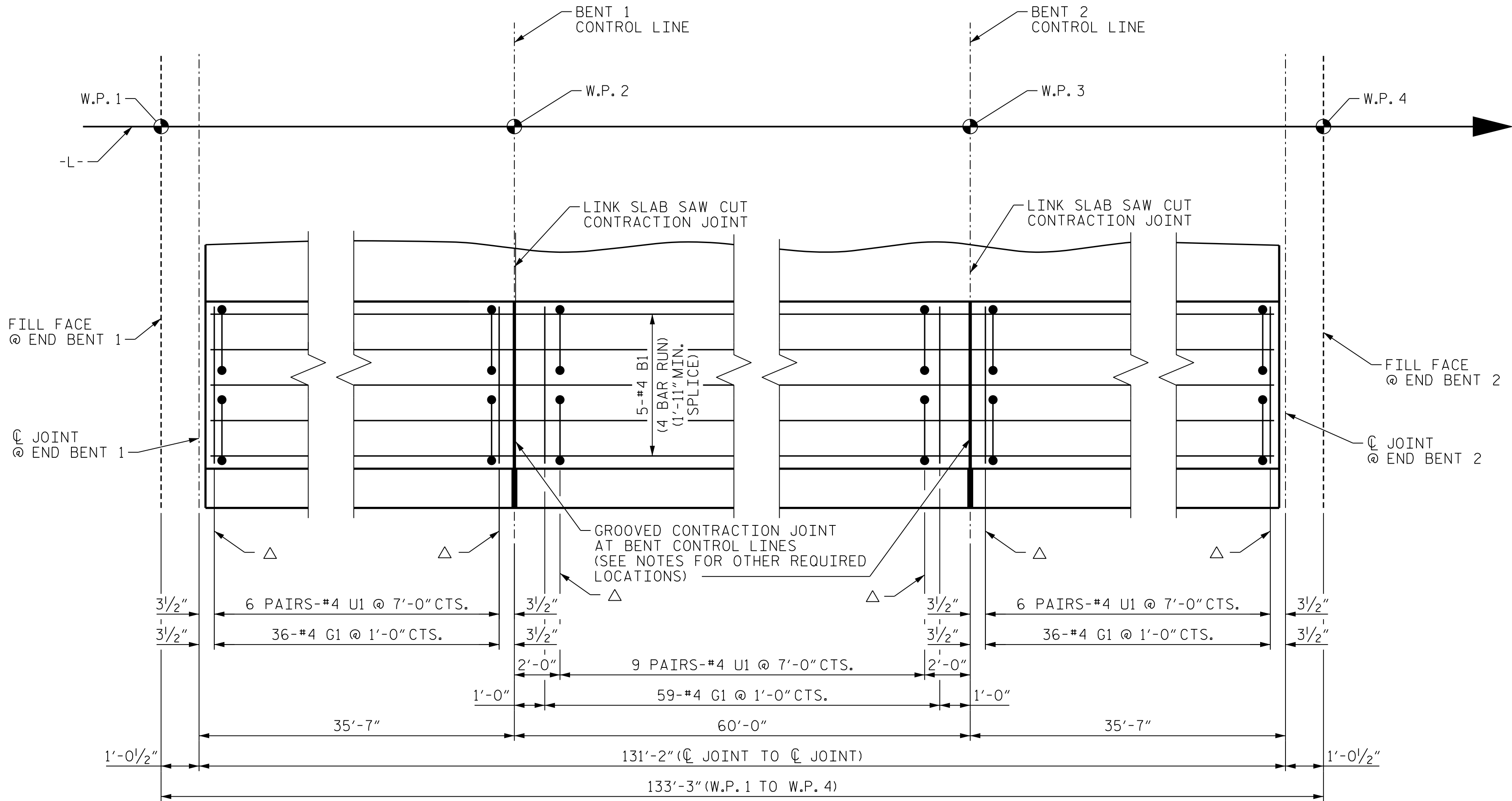
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

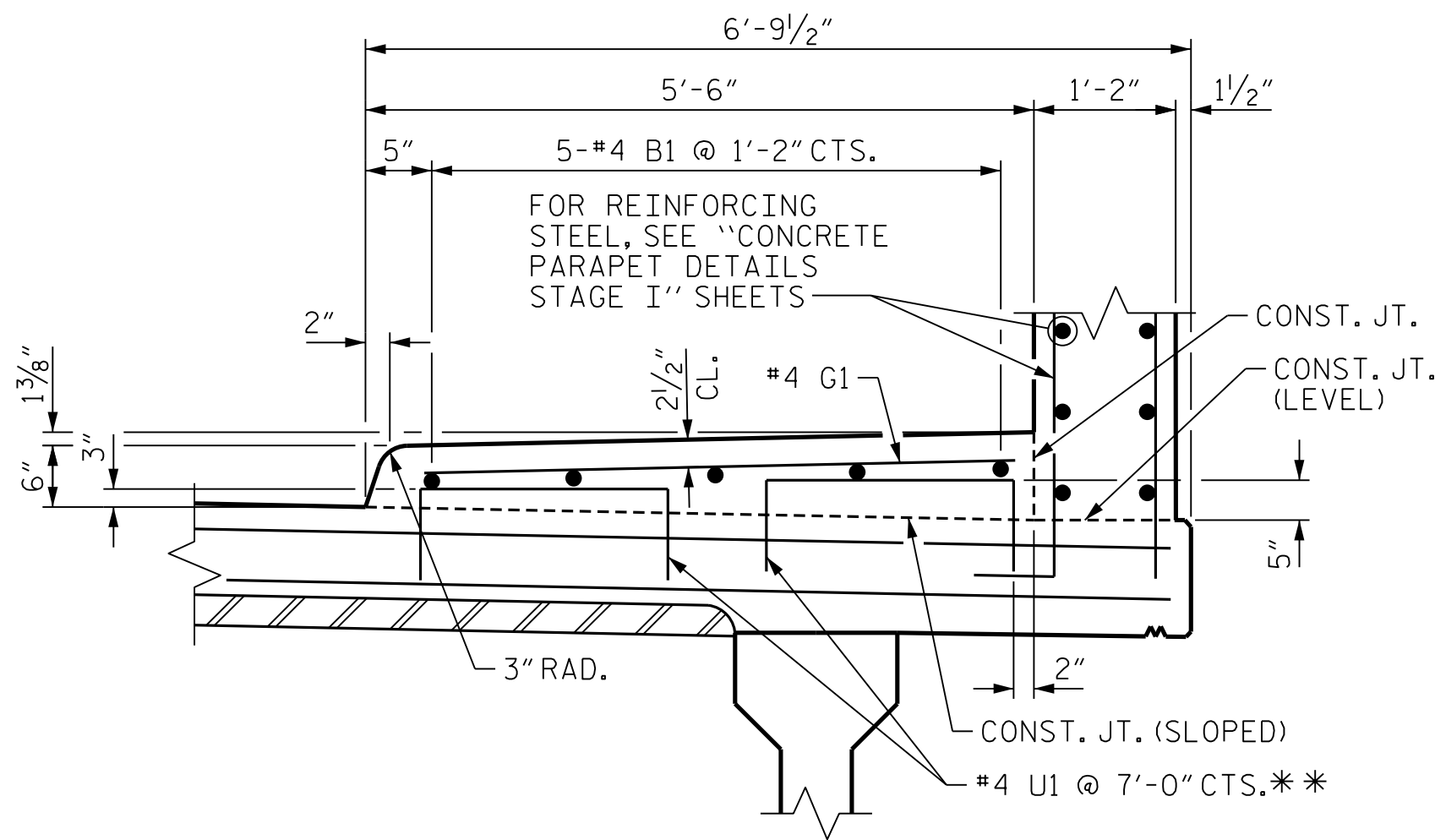
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-16
2			4			
TOTAL SHEETS						57

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

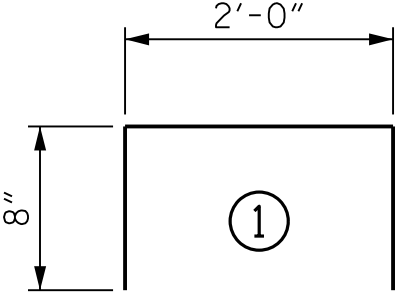
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PLAN OF SIDEWALK
STAGE I



SECTION THRU SIDEWALK
** #4 U1 MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

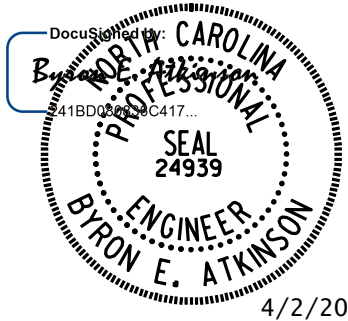
BAR TYPES		BILL OF MATERIAL					
		STAGE I					
		SIDEWALK					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		*B1	20	#4	STR	34'-2"	456
		*G1	131	#4	STR	5'-0"	438
		*U1	42	#4	1	3'-4"	94
		*EPOXY COATED REINFORCING STEEL					988 LBS.
		CLASS AA CONCRETE					16.4 C.Y.

NOTES:

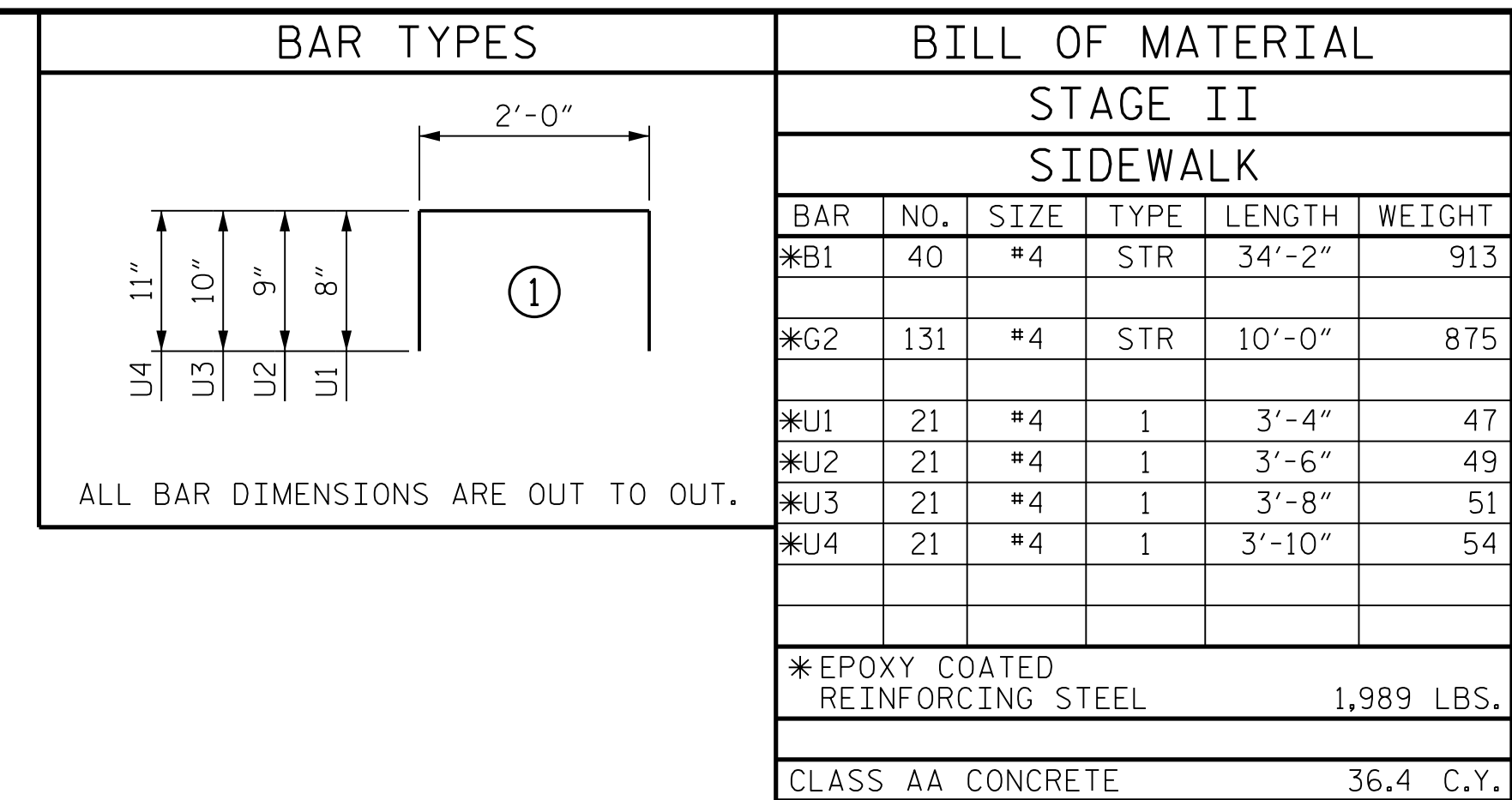
- FOR CONCRETE PARAPET RAIL REINFORCING STEEL AND DETAILS, SEE "CONCRETE PARAPET DETAILS STAGE I" SHEETS.
- GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- THE SIDEWALK 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 3000 PSI.
- SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE REINFORCED CONCRETE DECK SLAB PAY ITEM.
- ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.
- △ THE #4 U1 BARS WITHIN A DISTANCE OF 4'-0" OF THE JOINT AT END BENTS AND BENTS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE BARS GROUTED IN PLACE.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 2



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						STAGE I			SHEET NO.	
						REVISIONS			S-17 TOTAL SHEETS 57	
						NO.	BY:	DATE:		
						1				
						2				
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671						NO.	BY:	DATE:	S-17 TOTAL SHEETS 57	
						3				
						4				



FOR CONCRETE PARAPET RAIL REINFORCING STEEL AND DETAILS, SEE
"CONCRETE PARAPET DETAILS STAGE II" SHEETS.

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE SIDEWALK 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 3000 PSI.

SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE REINFORCED
CONCRETE DECK SLAB PAY ITEM.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

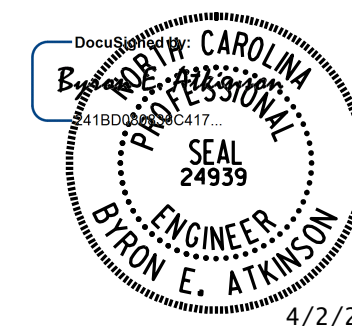
△ THE #4 U1 BARS WITHIN A DISTANCE OF 4'-0" OF THE JOINT AT END BENTS AND BENTS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE BARS GROUTED IN PLACE.

STAGE II



***#4 "U" BARS MAY BE PUSHED INTO GREEN CONCRETE
AFTER SPAN HAS BEEN SCREED OFF.

SHEET 2 OF 2



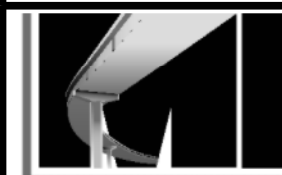
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAILS

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	S-18 TOTAL SHEETS 57
1			3			
2			4			

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : B.E. LANNING DATE : 02/2021
 CHECKED BY : B.E. ATKINSON DATE : 02/2021
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

BILL OF MATERIAL					
STAGE II					
CONCRETE MEDIAN					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	8	#4	STR	35'-2"	188
*B2	8	#4	STR	30'-10"	165
*G3	88	#4	STR	4'-8"	274
*EPOXY COATED REINFORCING STEEL					627 LBS.
CLASS AA CONCRETE					11.3 C.Y.

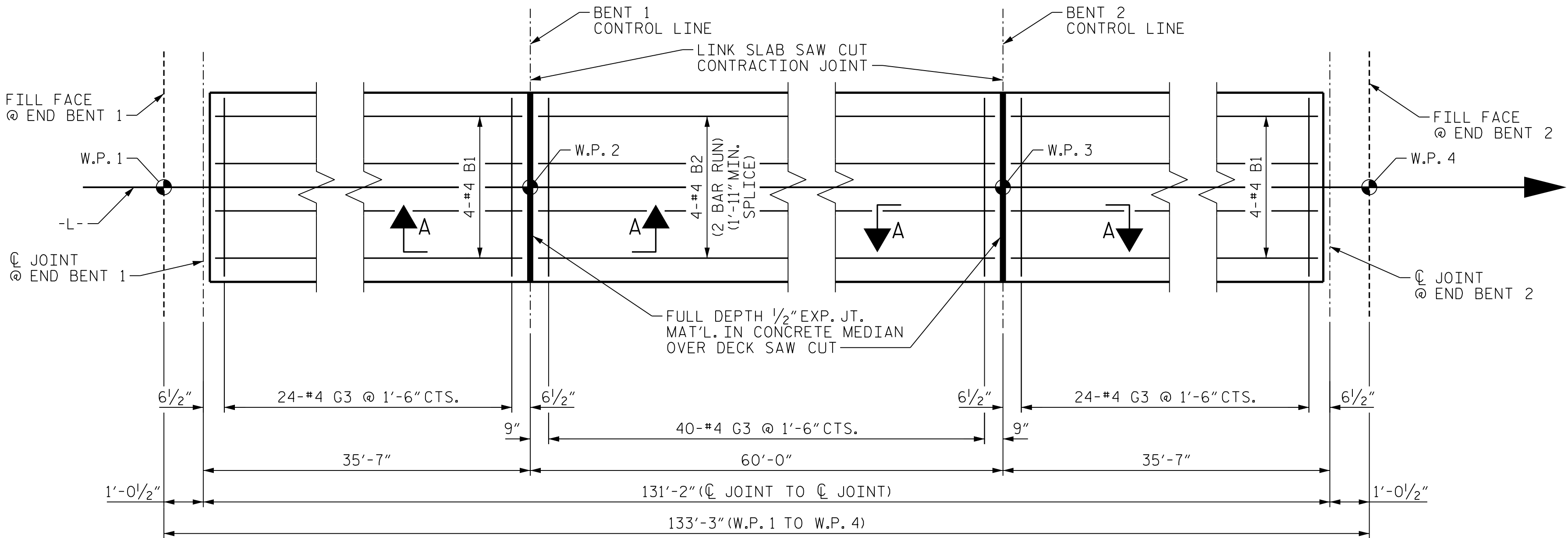
NOTES:

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

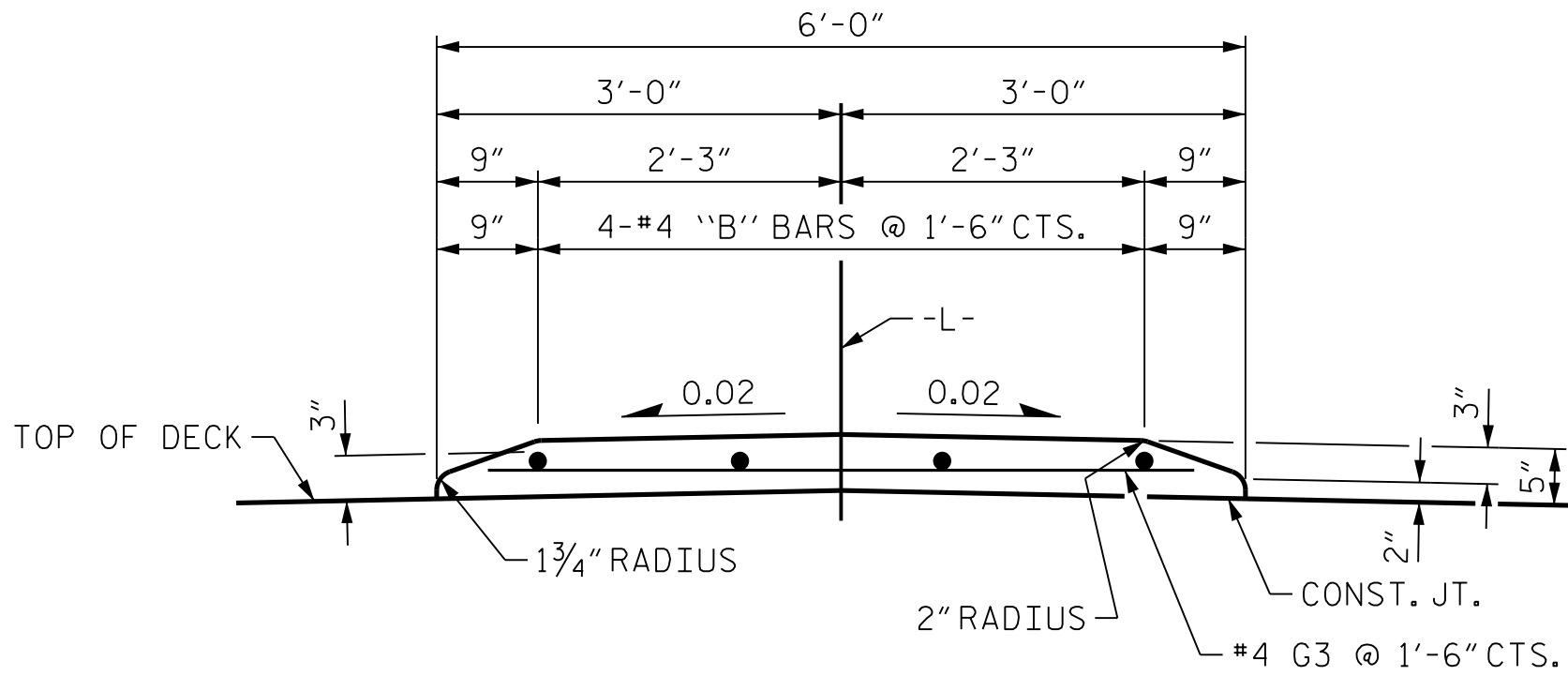
THE CONCRETE MEDIAN IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE CONCRETE MEDIAN. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT BID PRICE BID FOR THE REINFORCED CONCRETE DECK SLAB.

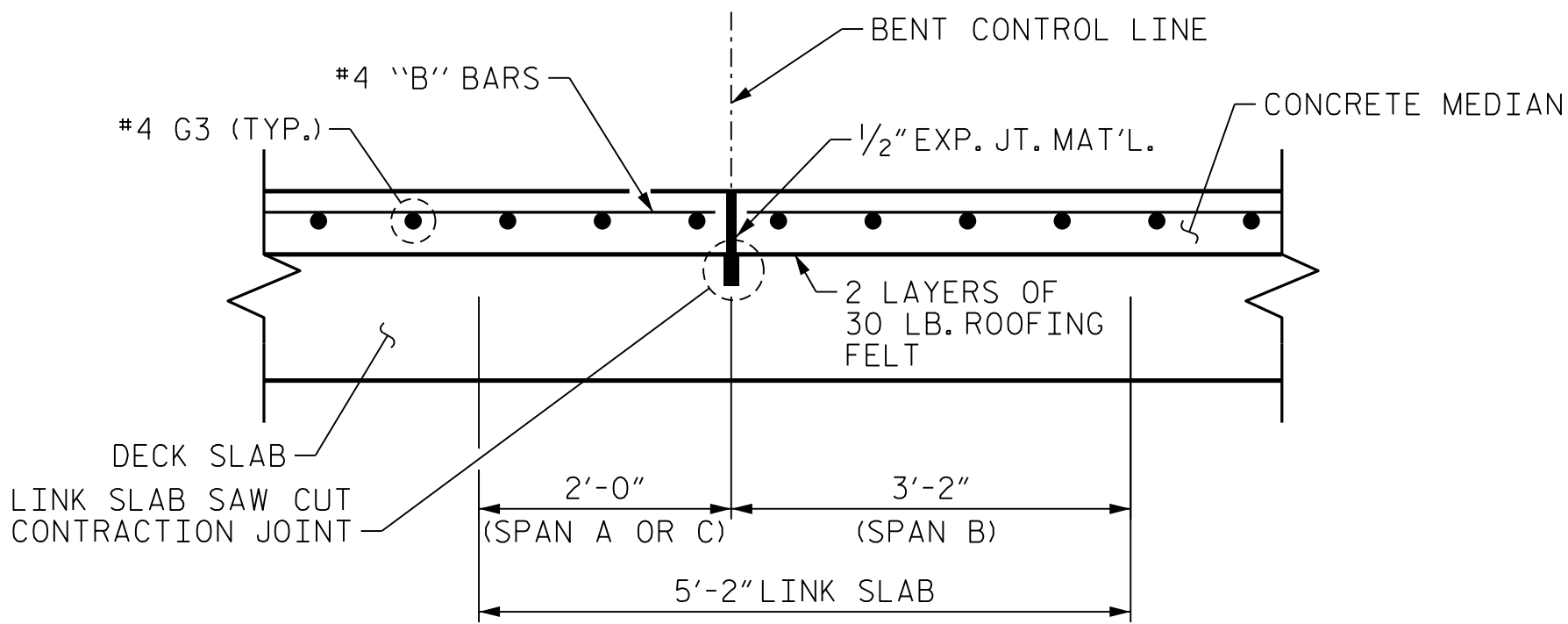
ALL REINFORCING STEEL IN CONCRETE MEDIAN SHALL BE EPOXY COATED.



PLAN OF CONCRETE MEDIAN
STAGE II

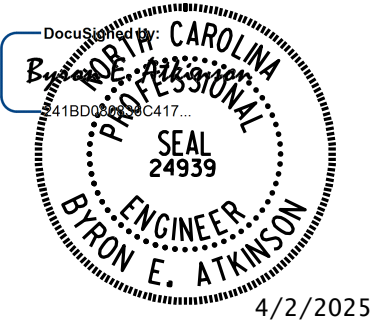


SECTION THRU CONCRETE MEDIAN



SECTION A-A

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-



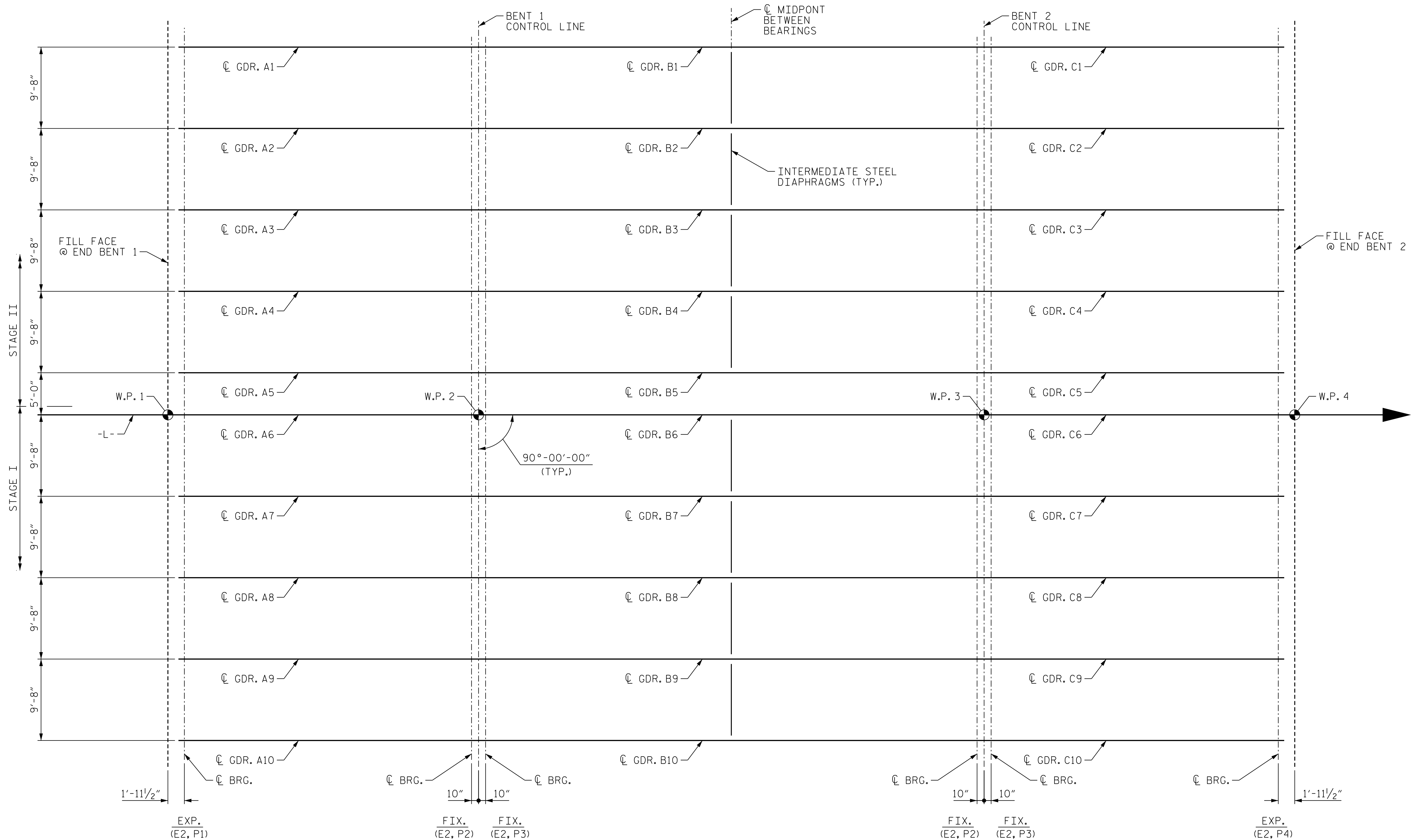
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONCRETE MEDIAN DETAILS					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-19
TOTAL SHEETS					57

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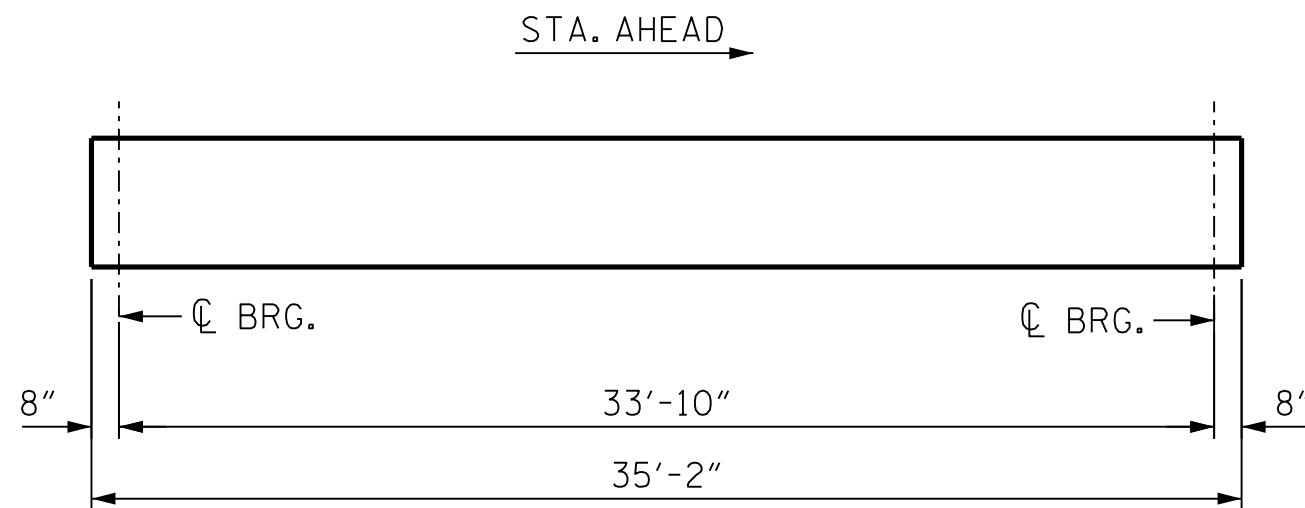
SPAN A

SPAN B

SPAN C

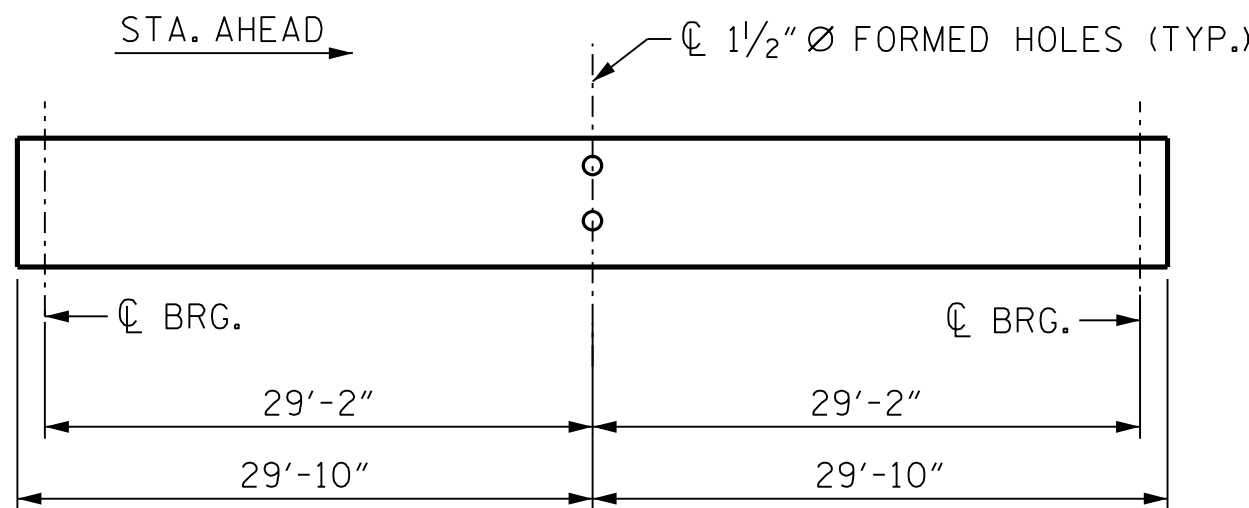
FRAMING PLAN

ALL DIMENSIONS HORIZONTAL U.O.N.



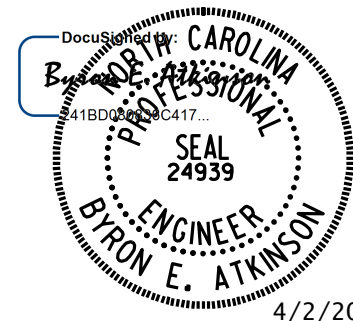
GIRDER ELEVATION - SPANS A & C

MEASUREMENTS GIVEN ALONG BOTTOM OF GIRDER



GIRDER ELEVATION - SPAN B

MEASUREMENTS GIVEN ALONG BOTTOM OF GIRDER



4/2/2025

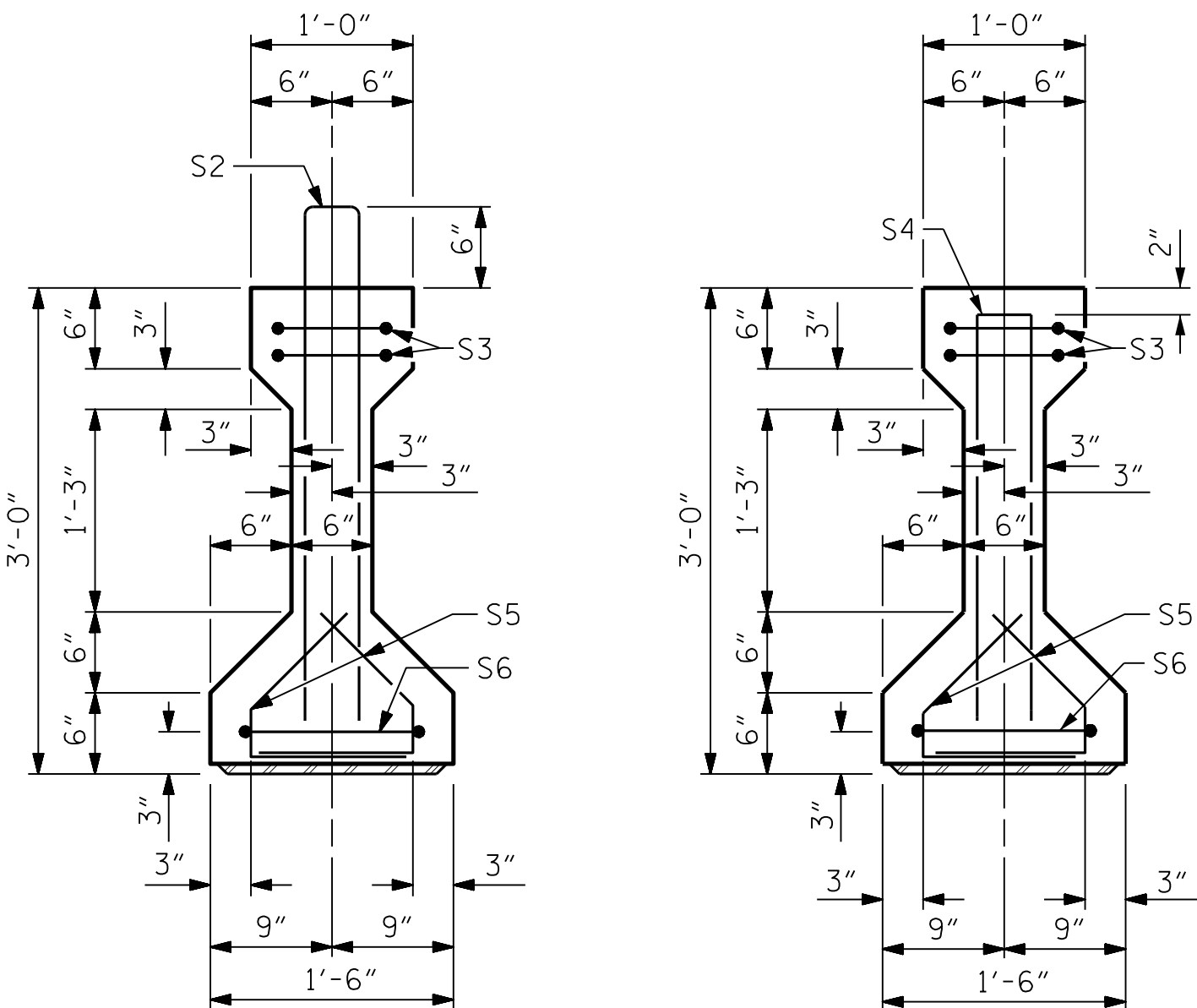
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

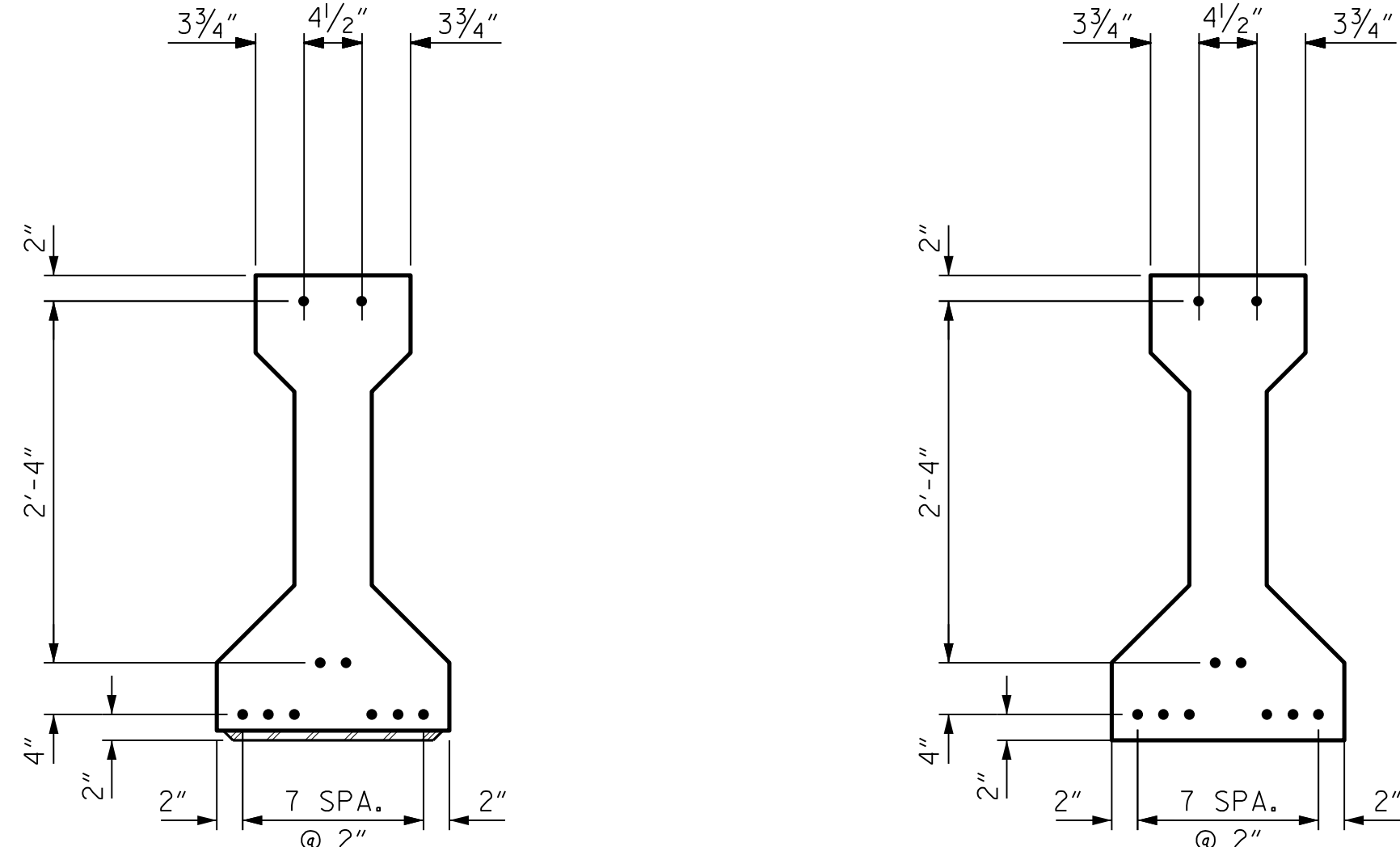
REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 57
2			4			

DRAWN BY : B.E. LANNING DATE : 02/2021
CHECKED BY : B.E. ATKINSON DATE : 02/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024



SECTION A-A

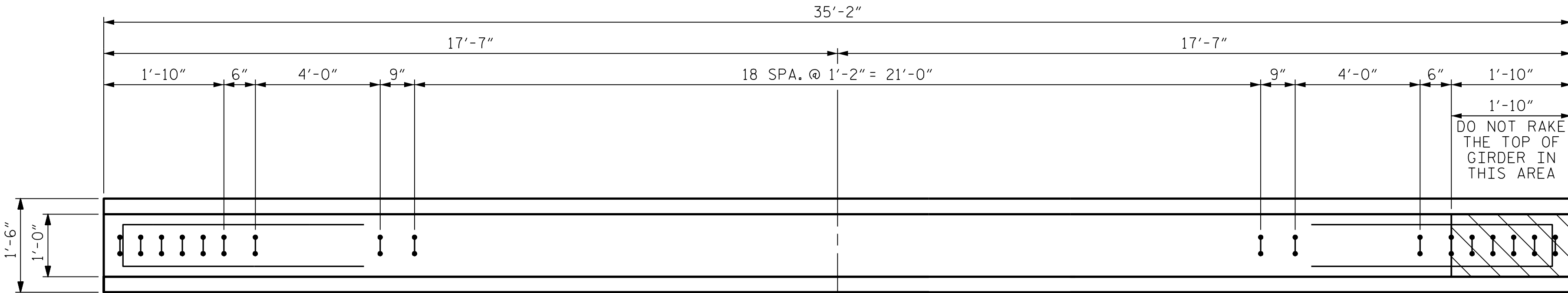
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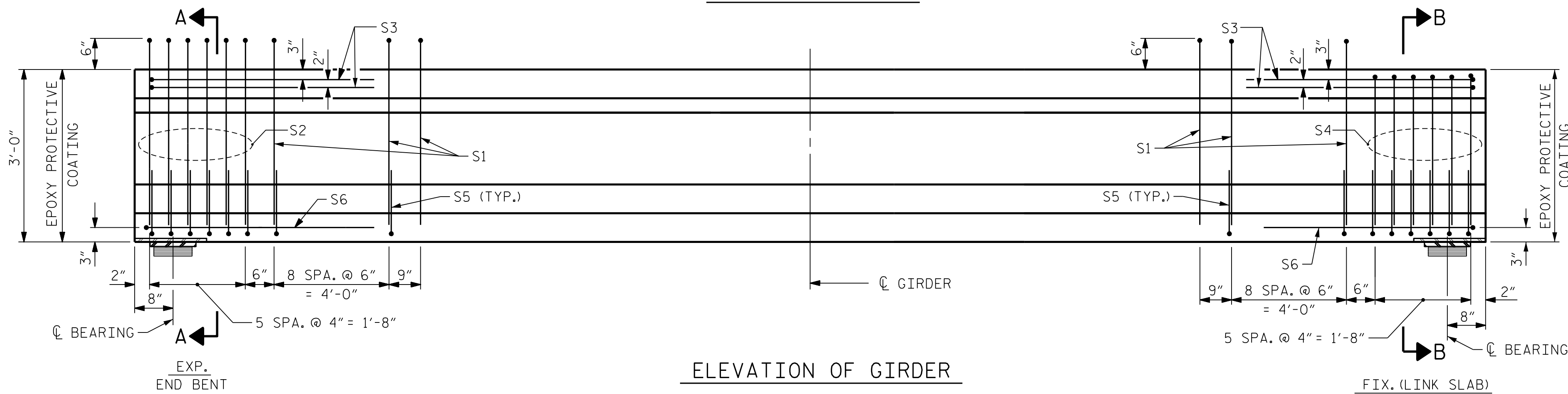
AT END OF GIRDER

AT CL OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



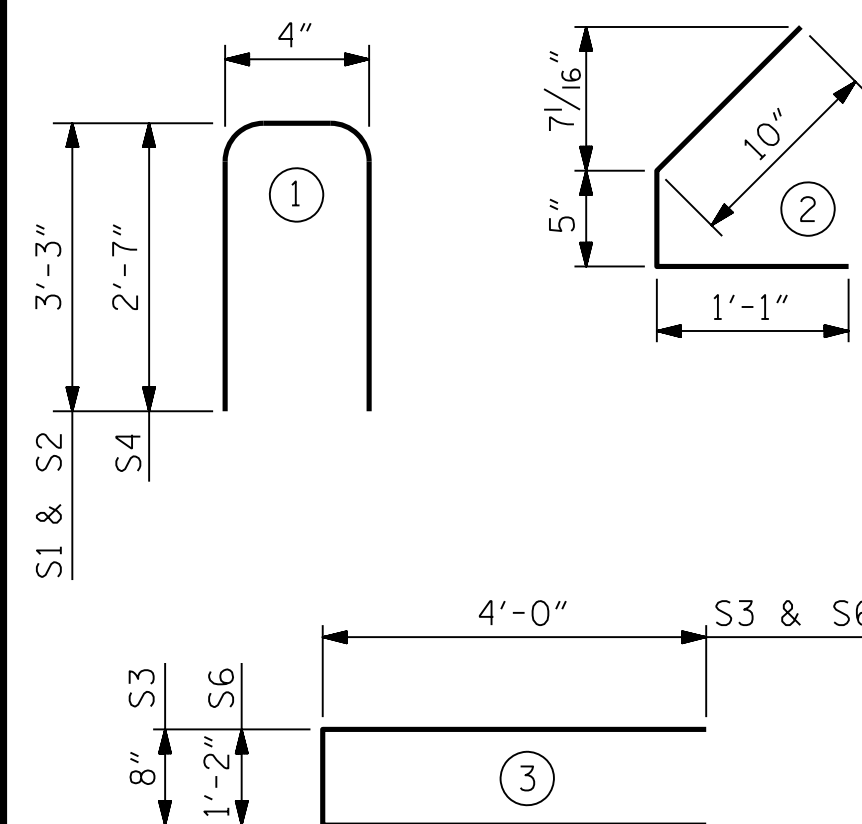
ELEVATION OF GIRDER

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	37	#4	1	6'-10"	169
S2	6	#5	1	6'-10"	43
S3	4	#4	3	8'-8"	23
S4	6	#5	1	5'-6"	34
S5	60	#4	2	2'-4"	94
S6	2	#4	3	9'-2"	12

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT.



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GDR. A1 - GDR. A10	375	3.4	10
GDR. C1 - GDR. C10	375	3.4	10

GIRDERS REQUIRED

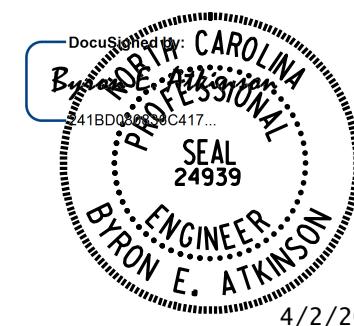
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	10	35.17'	351.67'
SPAN C	10	35.17'	351.67'

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
SPANS A & C



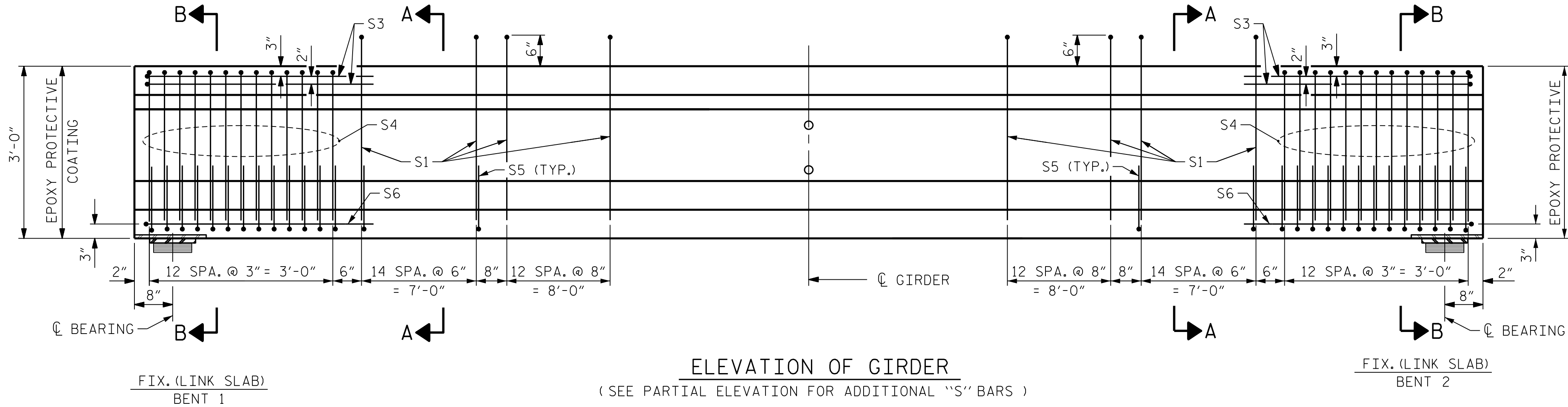
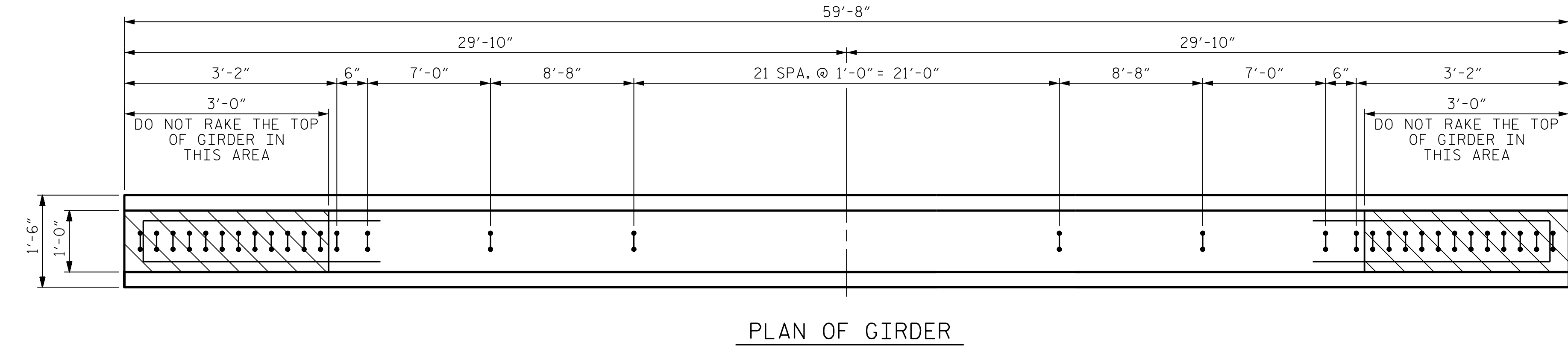
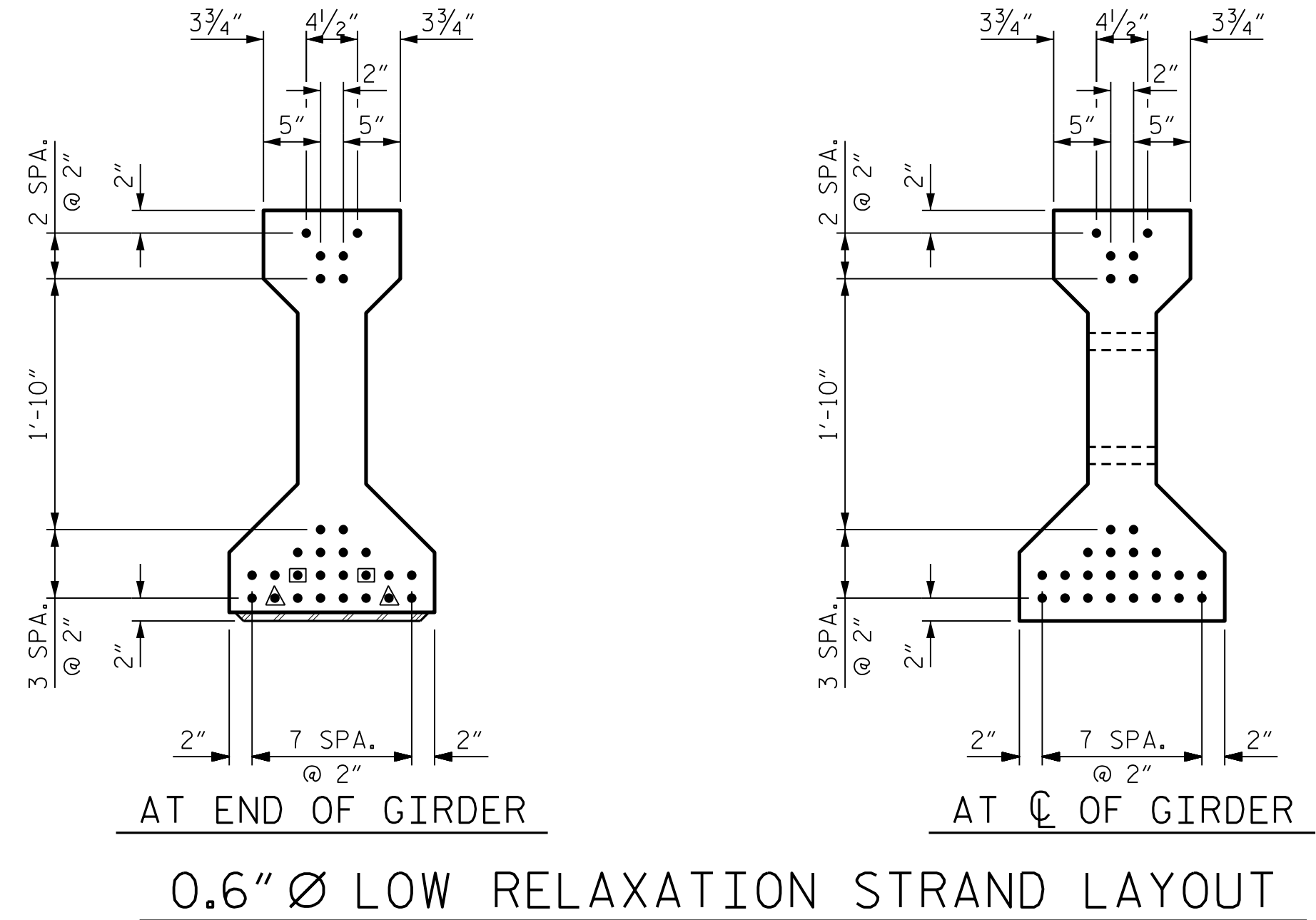
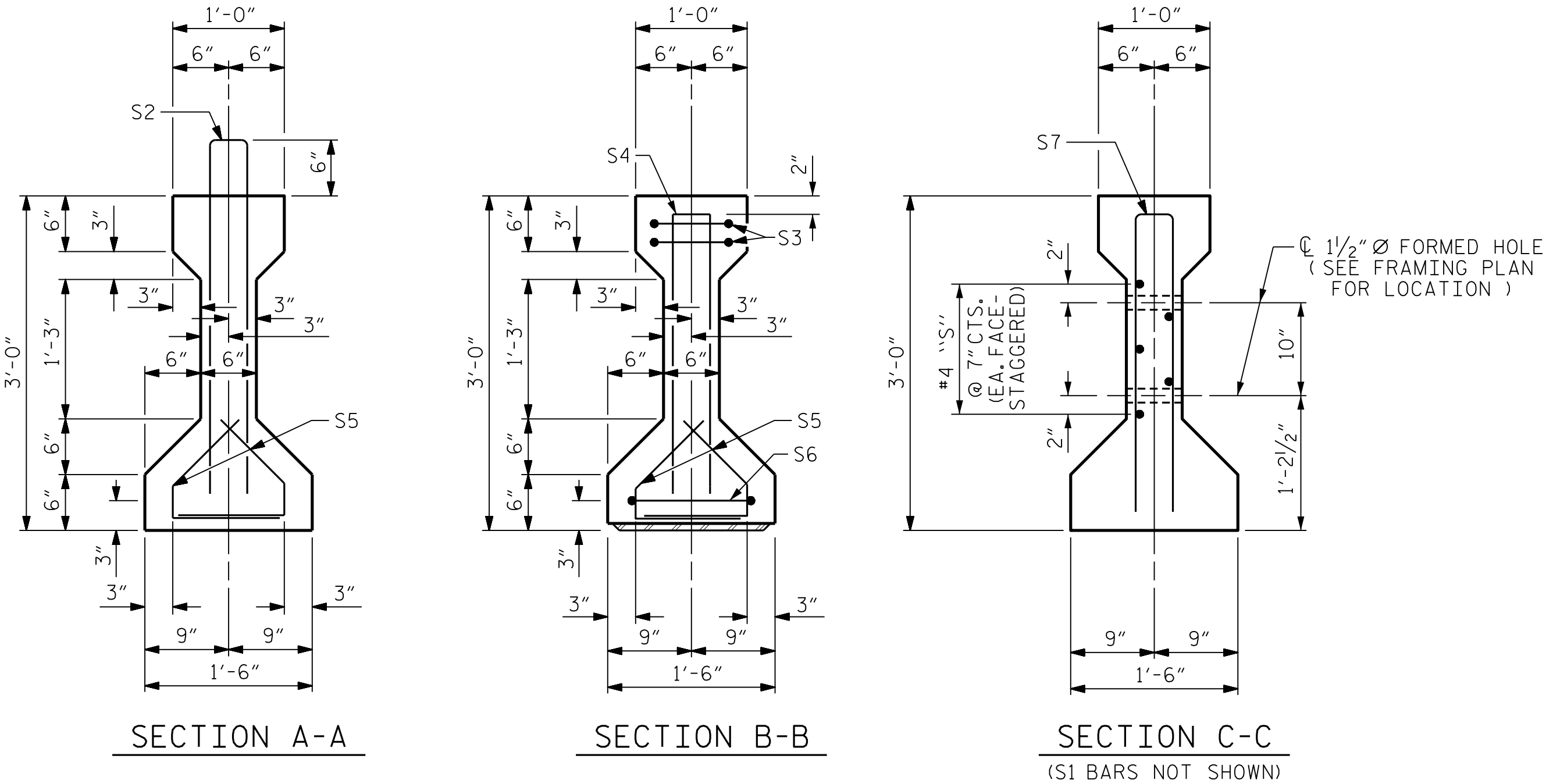
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 57
2			4			

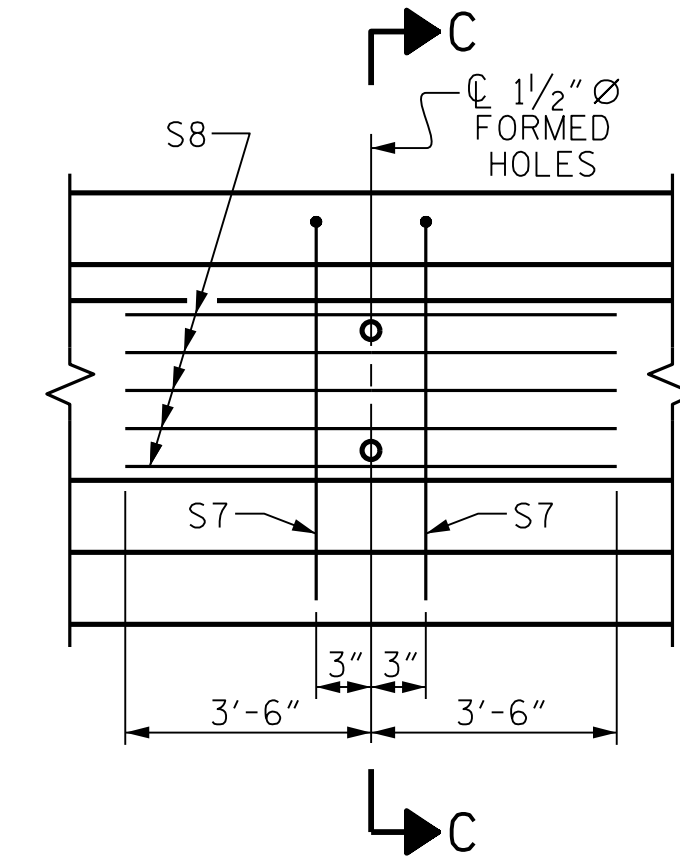
DRAWN BY : B.E. LANNING DATE : 02/2021
CHECKED BY : B.E. ATKINSON DATE : 02/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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DEBONDING LEGEND

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

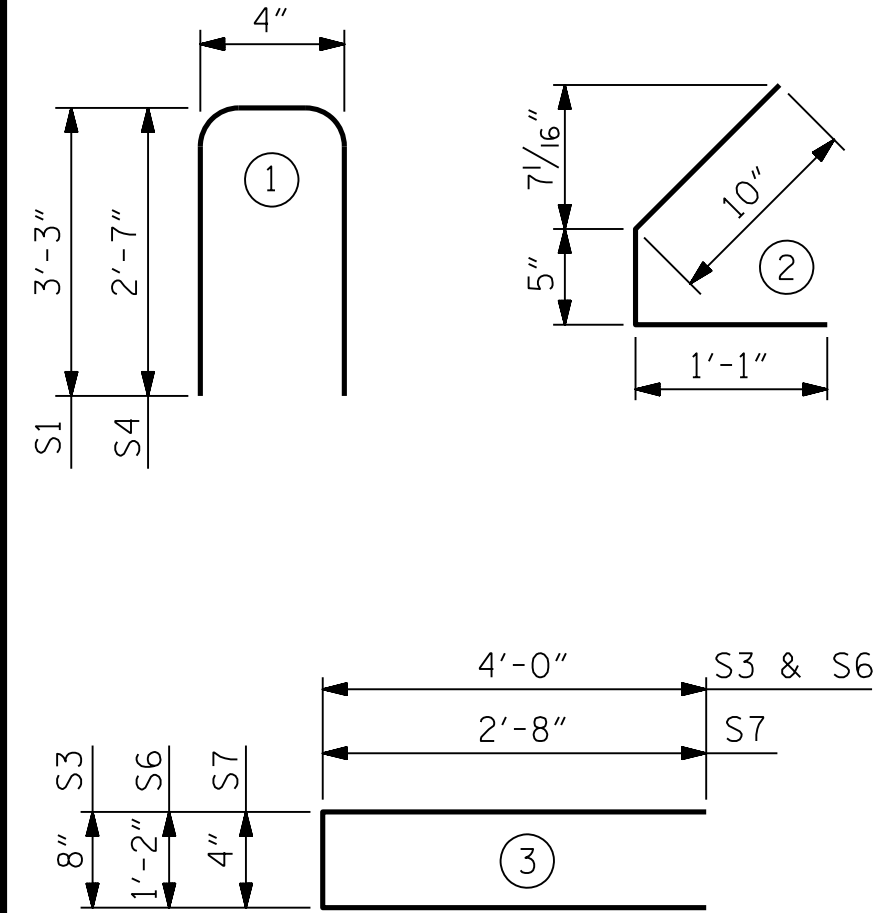


0.6" Ø L. R. GRADE 270 STRANDS

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	76	#4	1	6'-10"	347
S3	4	#4	3	8'-8"	23
S4	26	#6	1	5'-6"	215
S5	112	#4	2	2'-4"	175
S6	2	#4	3	9'-2"	12
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT.



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GDR. B1 - GDR. B10	807	5.7	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	59.67'	596.67'

PROJECT NO. U-4758

GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
SPAN B

REVISIONS						SHEET NO. S-22 TOTAL SHEETS 57
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

SEAL
24939
ENGINEER
BYRON E. ATKINSON
4/2/2025

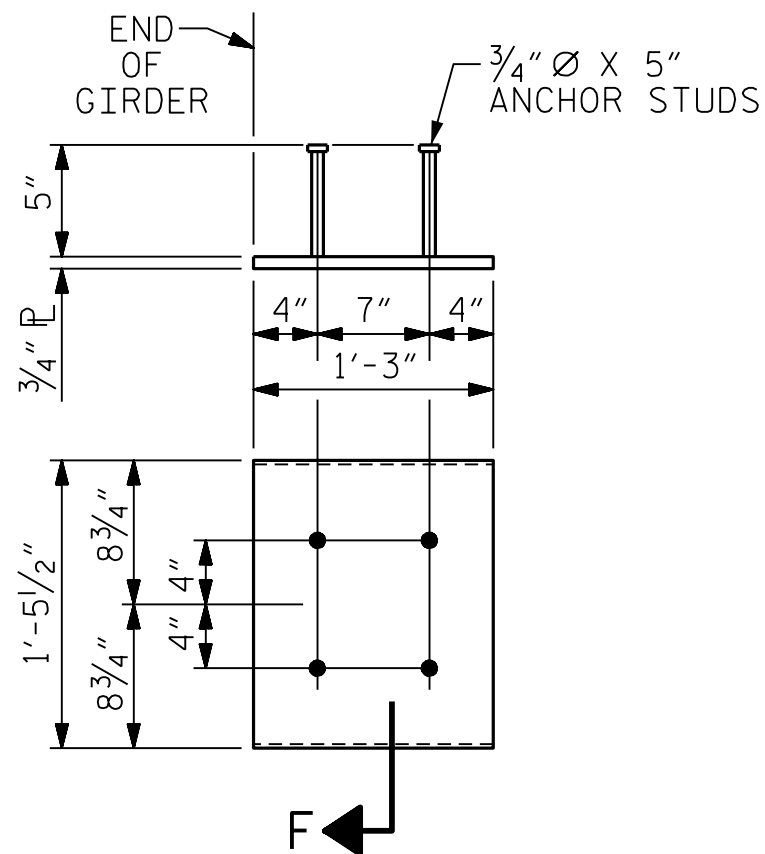
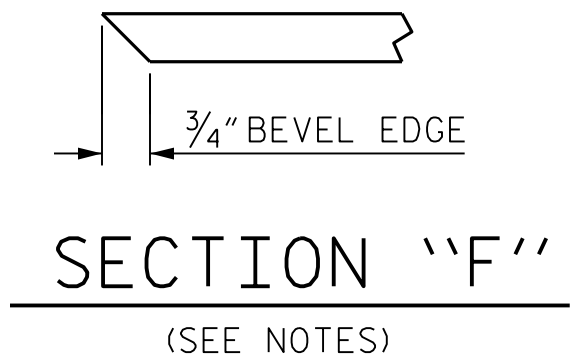
DRAWN BY : B.E. LANNING DATE : 02/2021
CHECKED BY : B.E. ATKINSON DATE : 02/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN A & SPAN C																					
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 1, 7 & 8																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.005	0.010	0.015	0.020	0.023	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.023	0.020	0.015	0.010	0.005	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.002	0.004	0.006	0.008	0.010	0.011	0.012	0.013	0.014	0.014	0.014	0.013	0.012	0.011	0.010	0.008	0.006	0.004	0.002	0
FINAL CAMBER ↑	0	1⁄16"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	1⁄16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 2, 3 & 9																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.005	0.010	0.015	0.020	0.023	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.023	0.020	0.015	0.010	0.005	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.002	0.004	0.006	0.009	0.010	0.012	0.013	0.014	0.015	0.015	0.015	0.014	0.013	0.012	0.010	0.009	0.006	0.004	0.002	0
FINAL CAMBER ↑	0	1⁄16"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	1⁄16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDER 4																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.005	0.010	0.015	0.020	0.023	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.023	0.020	0.015	0.010	0.005	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.002	0.004	0.006	0.008	0.009	0.011	0.012	0.013	0.013	0.014	0.013	0.013	0.012	0.011	0.009	0.008	0.006	0.004	0.002	0
FINAL CAMBER ↑	0	1⁄16"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	3⁄16"	1⁄8"	1⁄8"	1⁄16"	1⁄16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 5 & 6																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.005	0.010	0.015	0.020	0.023	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.023	0.020	0.015	0.010	0.005	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	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
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
0.60" Ø LOW RELAXATION STRANDS	GIRDER 10																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.005	0.010	0.015	0.020	0.023	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.023	0.020	0.015	0.010	0.005	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.002	0.004	0.005	0.007	0.009	0.011	0.012	0.012	0.013	0.013	0.013	0.012	0.012	0.011	0.009	0.007	0.005	0.004	0.002	0
FINAL CAMBER ↑	0	1⁄16"	1⁄16"	1⁄8"	1⁄8"	3⁄16"	3⁄16"	3⁄16"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	1⁄4"	3⁄16"	3⁄16"	3⁄16"	1⁄8"	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 SHOWN IN INCHES (FRACTION FORM).



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

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 4000 PSI FOR SPANS A AND C, AND 6800 PSI FOR SPAN B.

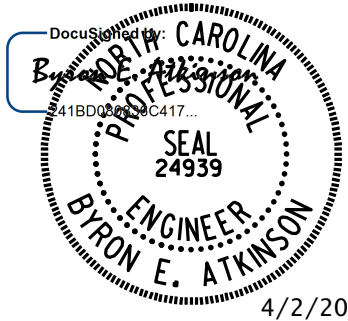
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

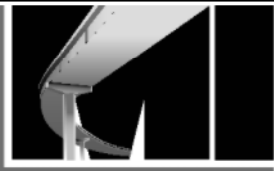
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE AREAS INDICATED IN THE PLAN VIEW, SHALL BE RAKED TO A DEPTH OF 1⁄4".

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 4500 lbs.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 5



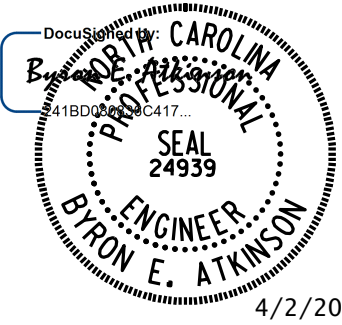
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						MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671						S-23 TOTAL SHEETS 57	
						NO.	BY:	DATE:	NO.	BY:	DATE:		
						1			3				
						2			4				

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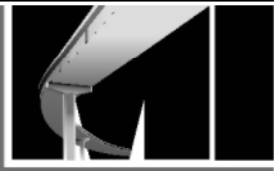
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN B																					
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 1 & 7																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.029	0.044	0.058	0.070	0.082	0.089	0.096	0.099	0.101	0.099	0.096	0.089	0.082	0.070	0.058	0.044	0.029	0.015	0
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/8"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDER 2																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.032	0.048	0.064	0.077	0.089	0.097	0.105	0.108	0.111	0.108	0.105	0.097	0.089	0.077	0.064	0.048	0.032	0.016	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	1/16"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 3 & 9																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.031	0.046	0.062	0.074	0.087	0.094	0.102	0.105	0.108	0.105	0.102	0.094	0.087	0.074	0.062	0.046	0.031	0.015	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDER 4																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.014	0.029	0.043	0.058	0.069	0.081	0.088	0.095	0.098	0.100	0.098	0.095	0.088	0.081	0.069	0.058	0.043	0.029	0.014	0
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	1/4"	1/4"	1/4"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/8"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDERS 5 & 6																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.012	0.023	0.035	0.047	0.056	0.066	0.072	0.078	0.080	0.082	0.080	0.078	0.072	0.066	0.056	0.047	0.035	0.023	0.012	0
FINAL CAMBER ↑	0	1/16"	3/16"	1/4"	5/16"	5/16"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	5/16"	5/16"	1/4"	3/16"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDER 8																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.030	0.045	0.060	0.072	0.084	0.092	0.100	0.102	0.105	0.102	0.100	0.092	0.084	0.072	0.060	0.045	0.030	0.015	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	0
0.60" Ø LOW RELAXATION STRANDS	GIRDER 10																				
TWENTIETH POINTS	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.019	0.037	0.055	0.071	0.085	0.097	0.106	0.113	0.117	0.119	0.117	0.113	0.106	0.097	0.085	0.071	0.055	0.037	0.019	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.014	0.027	0.041	0.055	0.066	0.077	0.084	0.091	0.093	0.096	0.093	0.091	0.084	0.077	0.066	0.055	0.041	0.027	0.014	0
FINAL CAMBER ↑	0	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"	1/4"	1/4"	3/16"	3/16"	1/8"	1/16"	0

** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),
EXCEPT "FINAL CAMBER", WHICH IS SHOWN IN INCHES (FRACTION FORM).



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>02/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>02/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER
DETAILS

REVISIONS						SHEET NO. S-24 TOTAL SHEETS 57
NO.	BY:	DATE:	NO.	BY:	DATE:	
<u>1</u>			<u>3</u>			
<u>2</u>			<u>4</u>			

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.

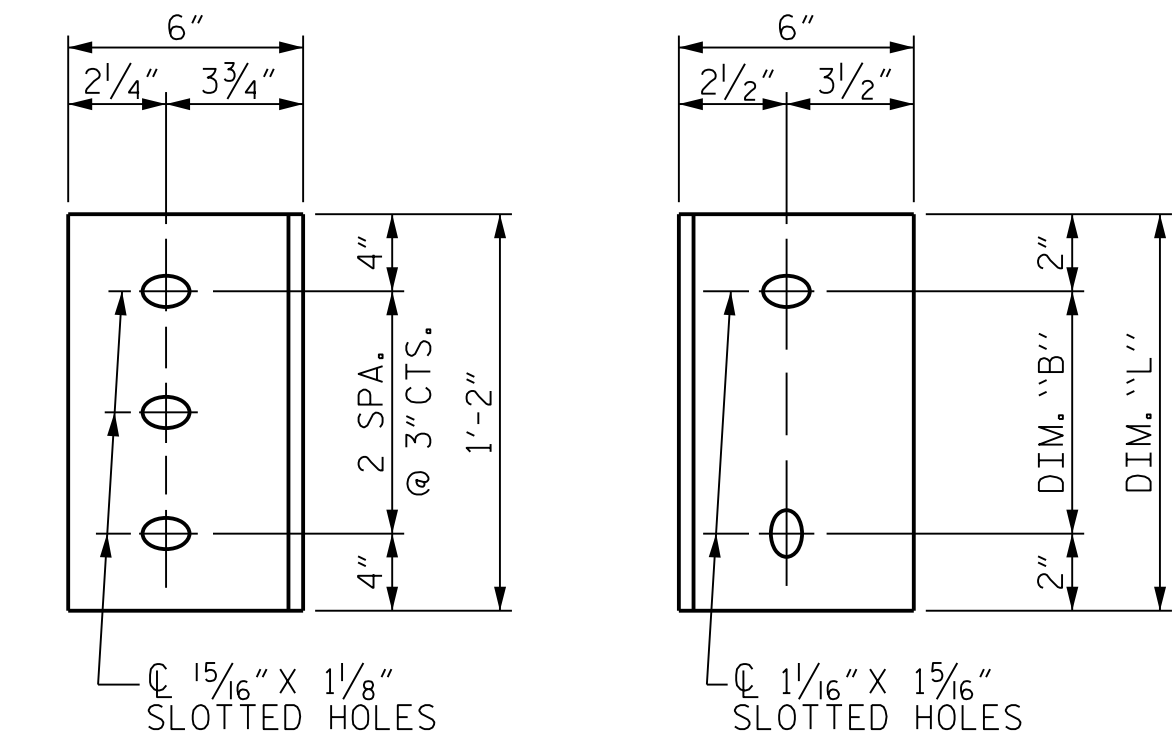
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS

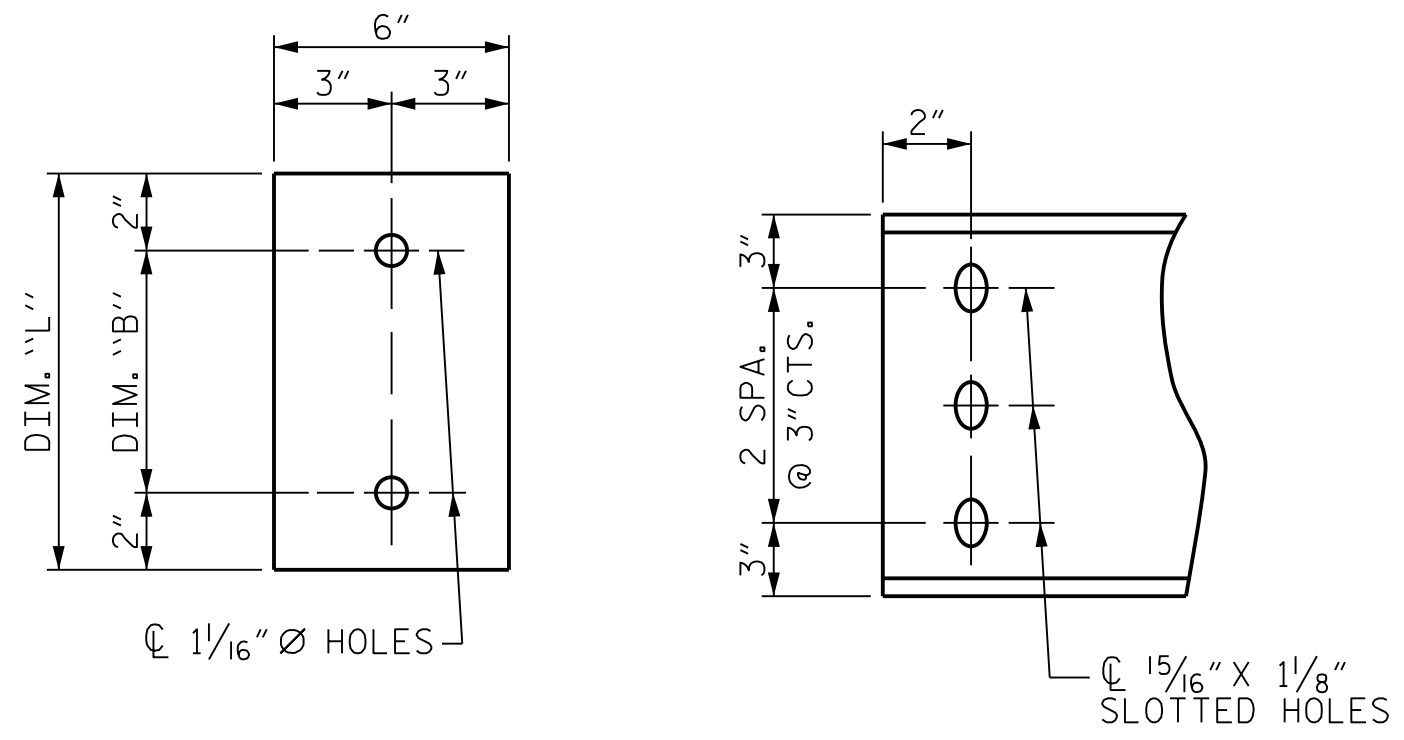
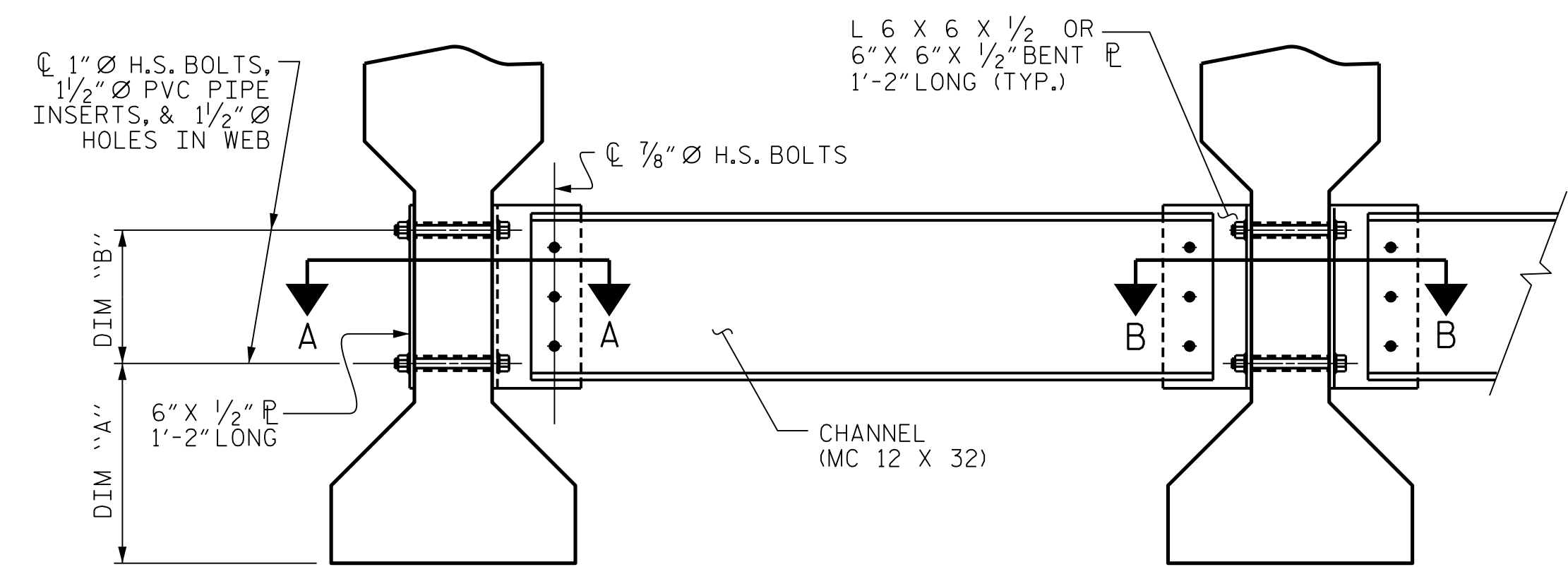


PLATE DETAILS CHANNEL END

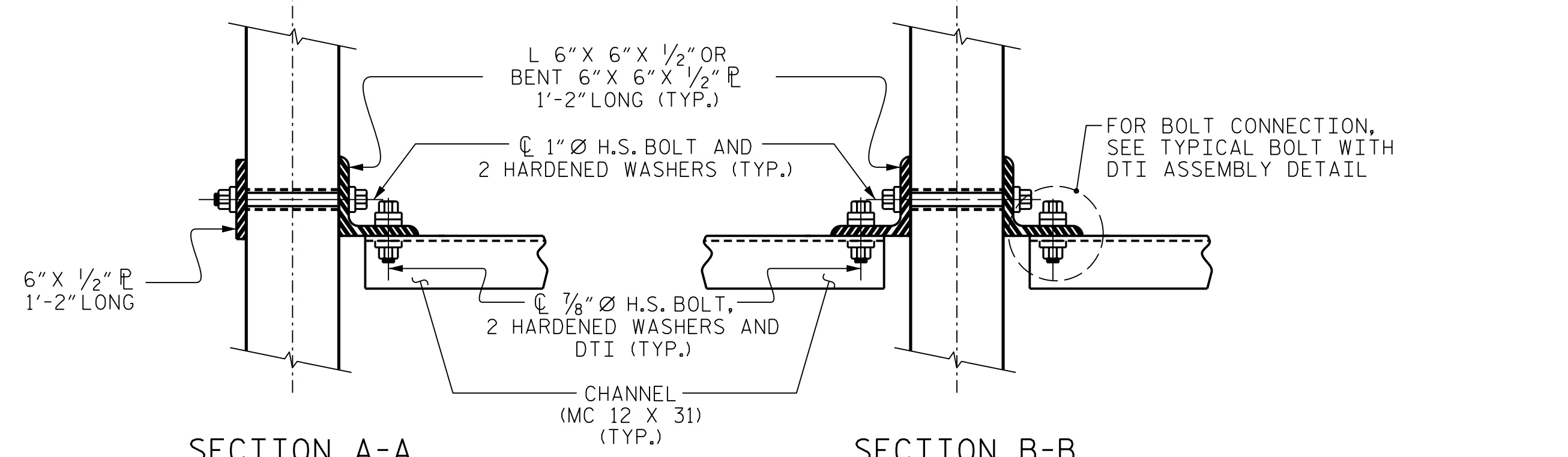
TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"



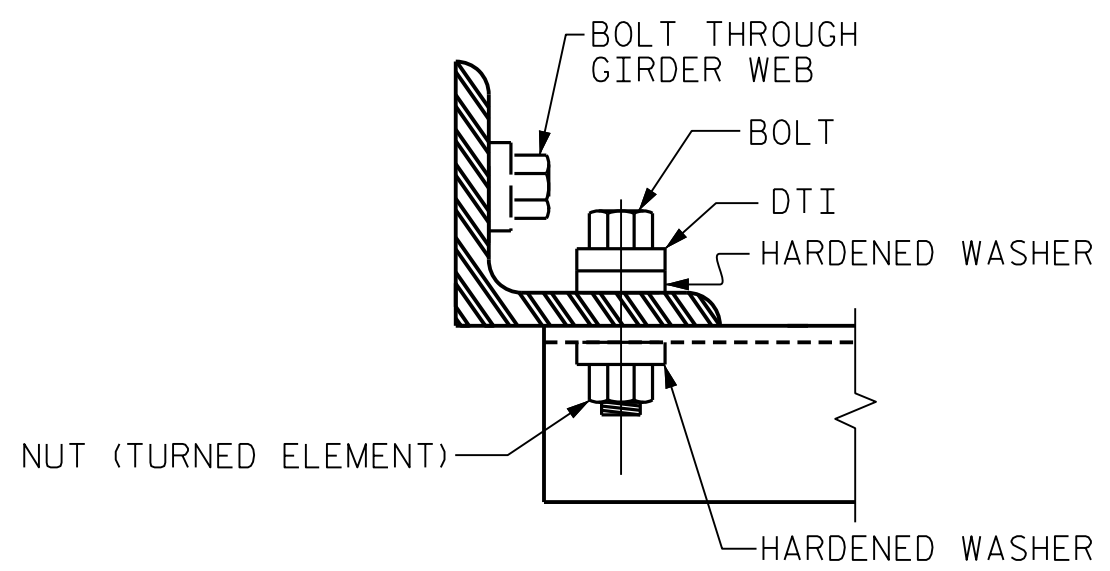
EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

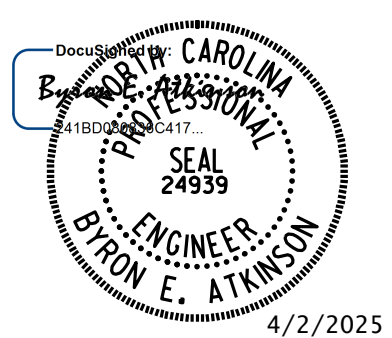


SECTION A-A SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE II
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			57

4/2/2025 2:48:06 PM User: blanning
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ASSEMBLED BY: B.E. LANNING	DATE: 02/2021
CHECKED BY: B.E. ATKINSON	DATE: 02/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 06/2024
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

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURIED WITH A SHARP POINTED TOOL.

THE 2"Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

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 SURFACE SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

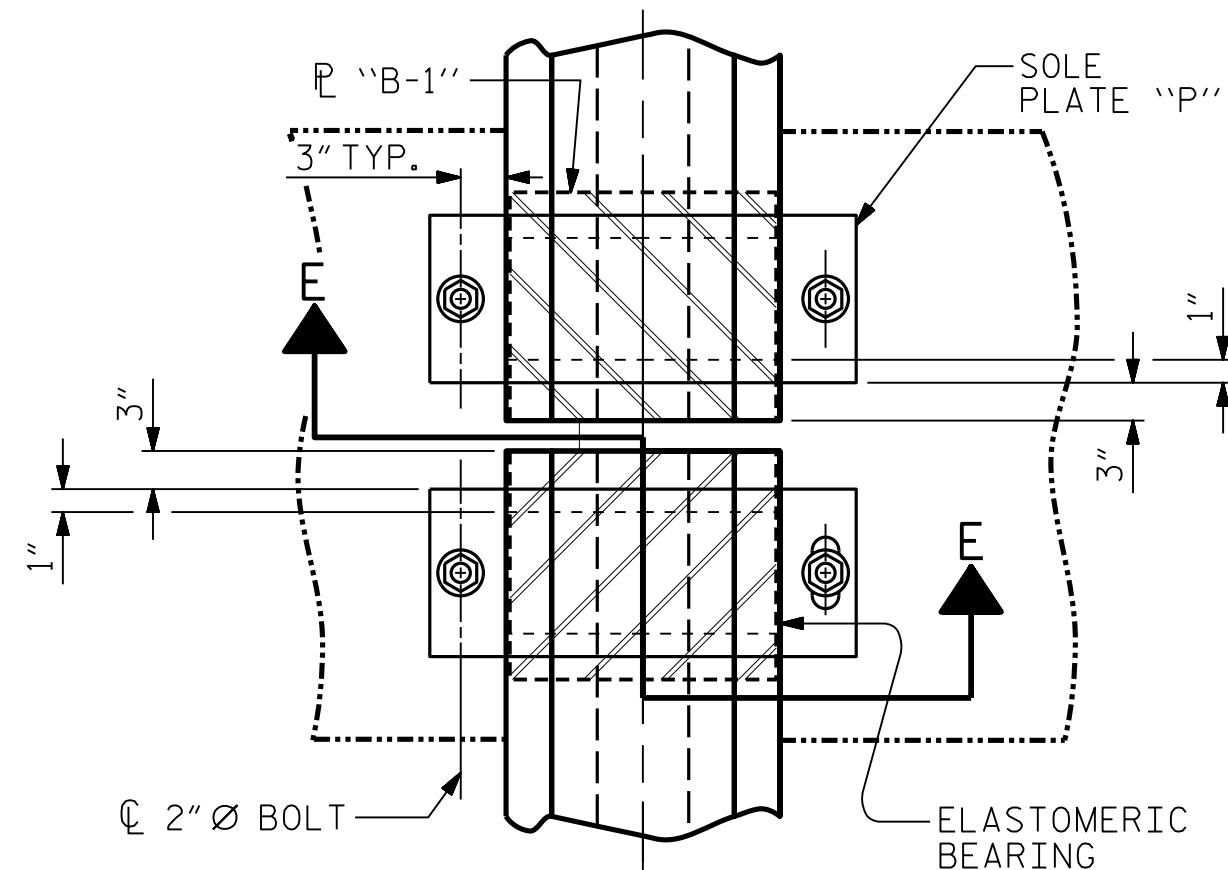
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A44
NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR
AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF
AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR
BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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 STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL HALF-PLAN | TYPICAL HALF-PLAN
(SHOWING FIXED BENT) (SHOWING EXPANSION BENT)

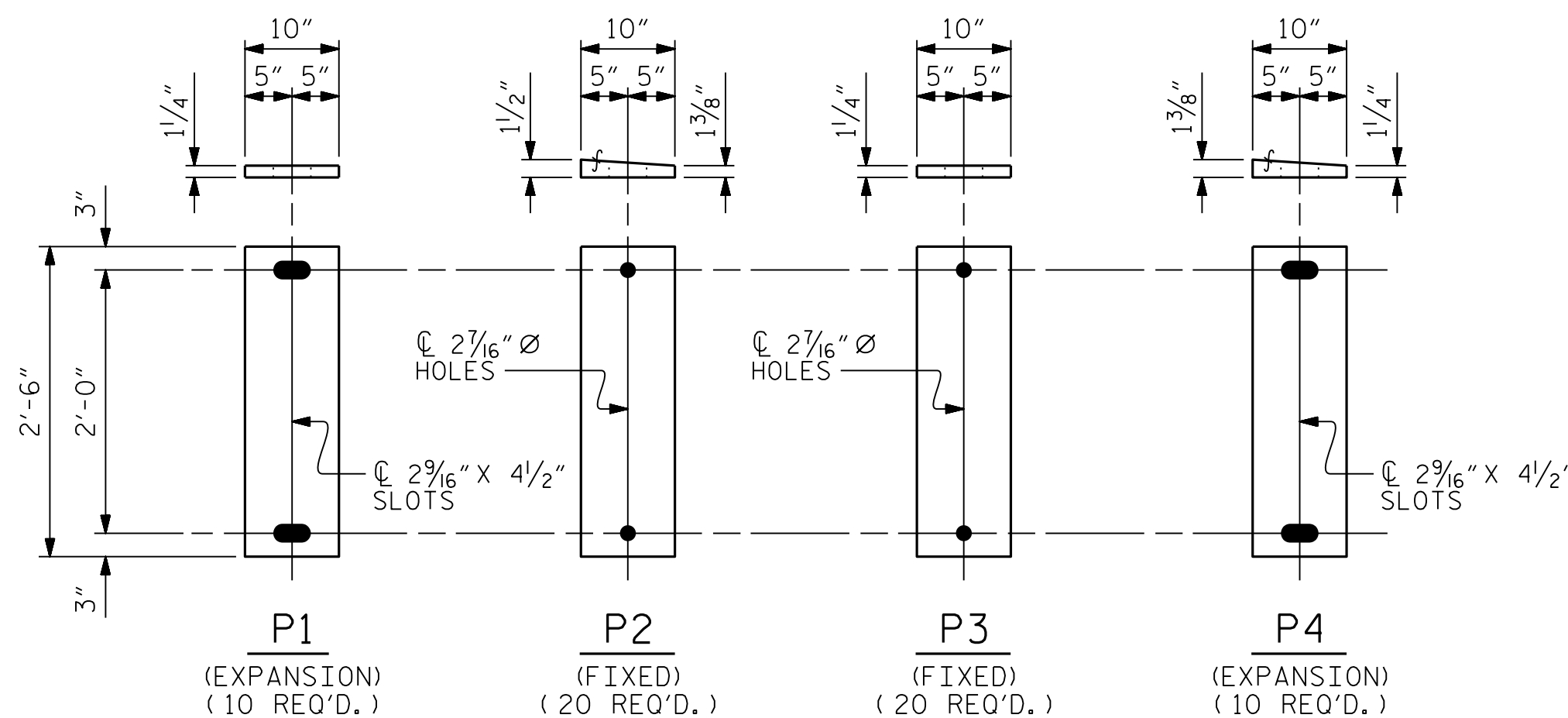


PLAN VIEW OF ELASTOMERIC BEARING

TYPE III



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k



SOLE PLATE DETAILS ("P")

PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

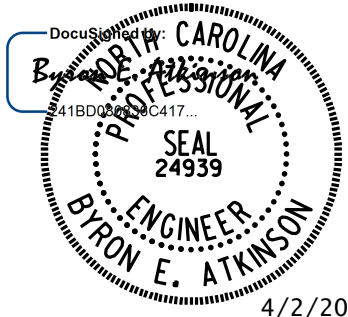
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26 TOTAL SHEETS 57
1			3			
2			4			

STD. NO. EB3 (SHT 2)

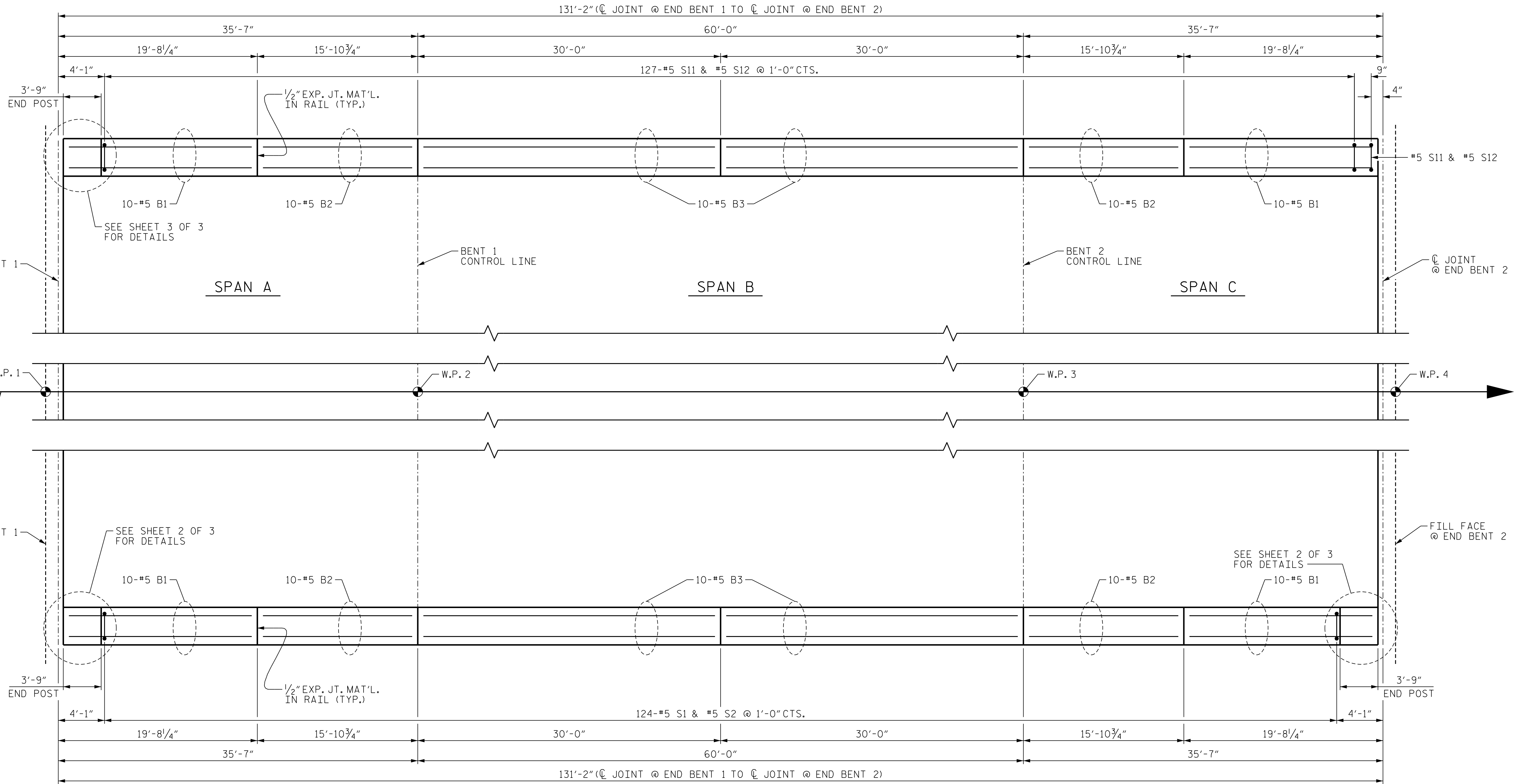


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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

ASSEMBLED BY:	B.E. LANNING	DATE:	11/2023
CHECKED BY :	B.E. ATKINSON	DATE:	11/2023
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE:	06/2024
DRAWN BY : WJH 8/89	REV. 12/17	MAA/THC	
CHECKED BY : CRK 8/89	REV. 10/21	BNB/AAI	
	REV. 10/23	BNB/SNM	

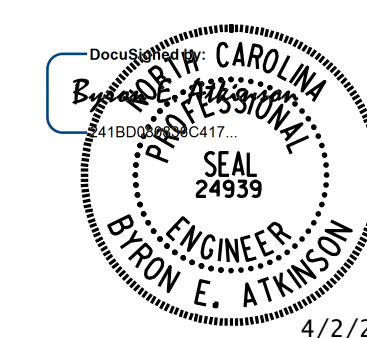


PLAN OF CONCRETE PARAPET

FOR DETAILS OF CONCRETE PARAPET, NOTES, AND
ADDITIONAL REINFORCEMENT, SEE SHEETS 2 OF 3 AND 3 OF 3

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 3



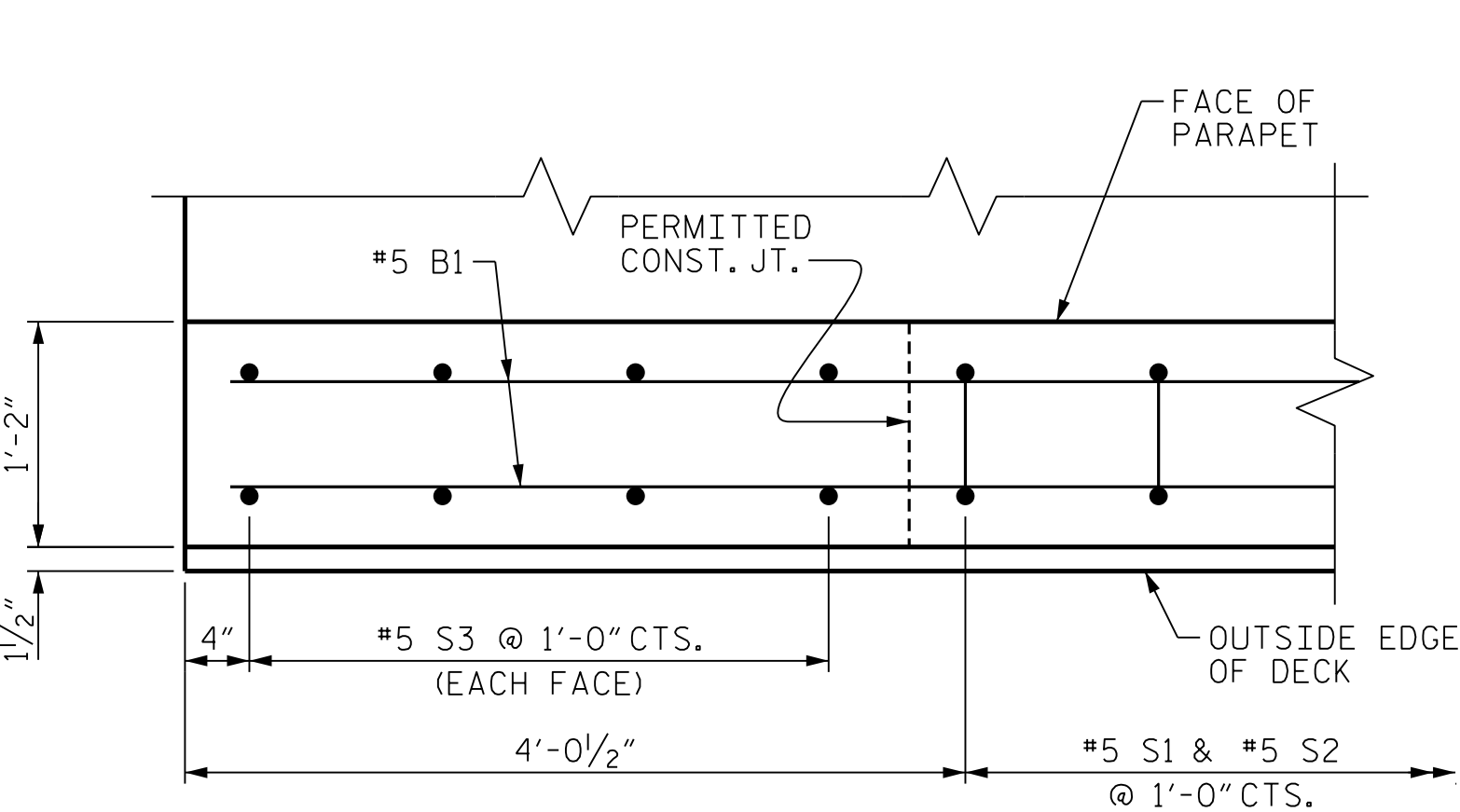
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

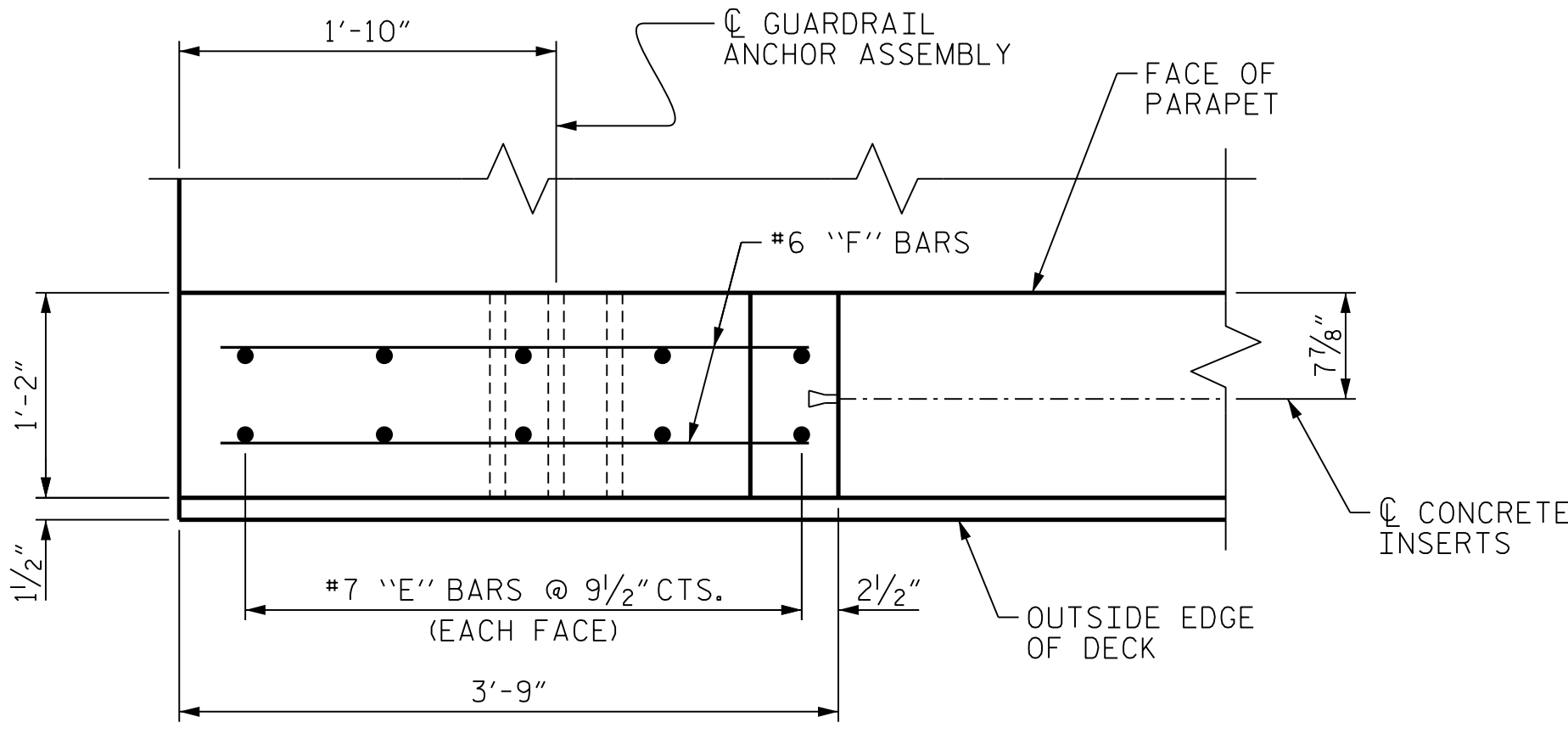
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-27
2			4			
TOTAL SHEETS						57

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>02/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>02/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

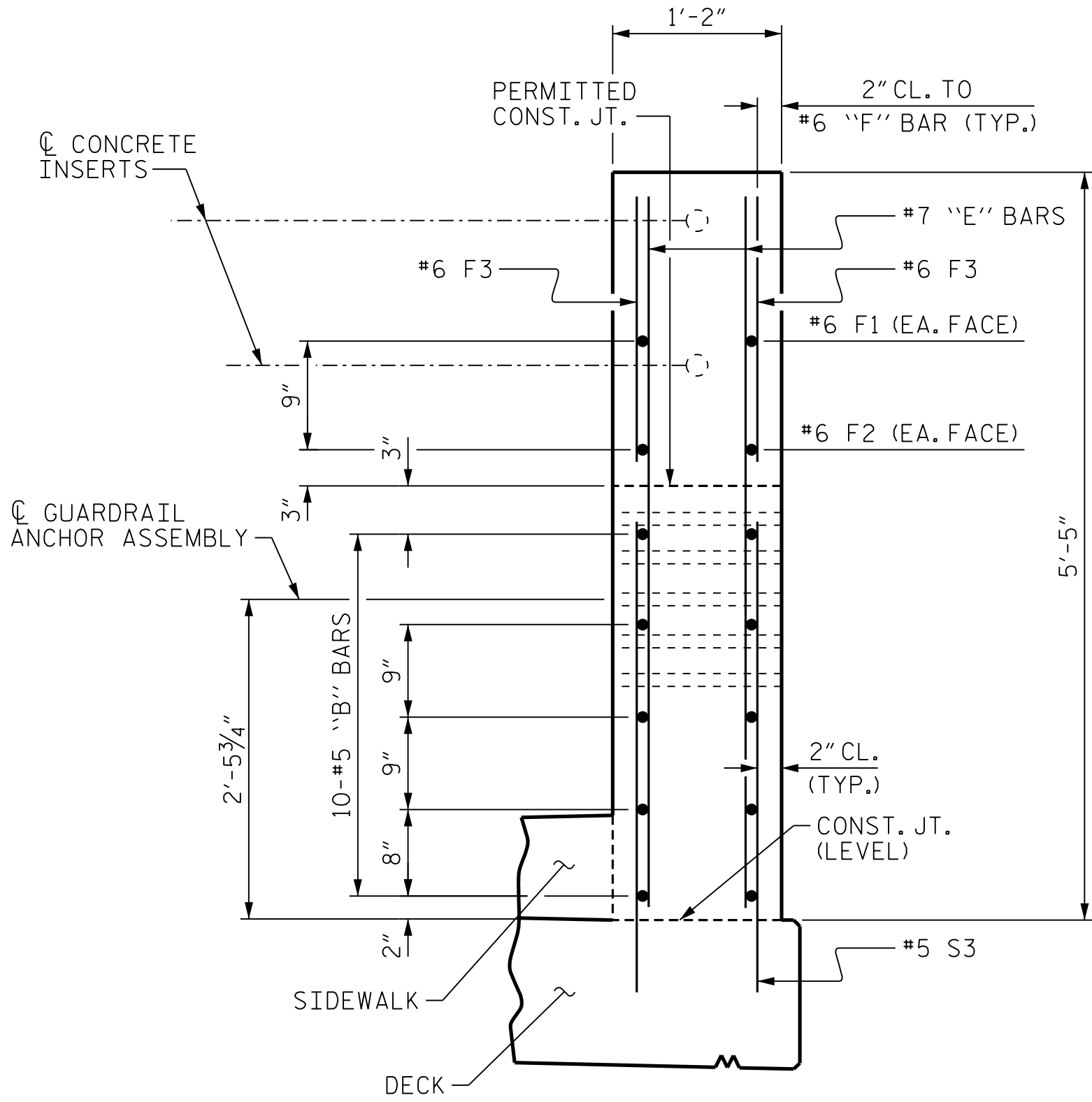
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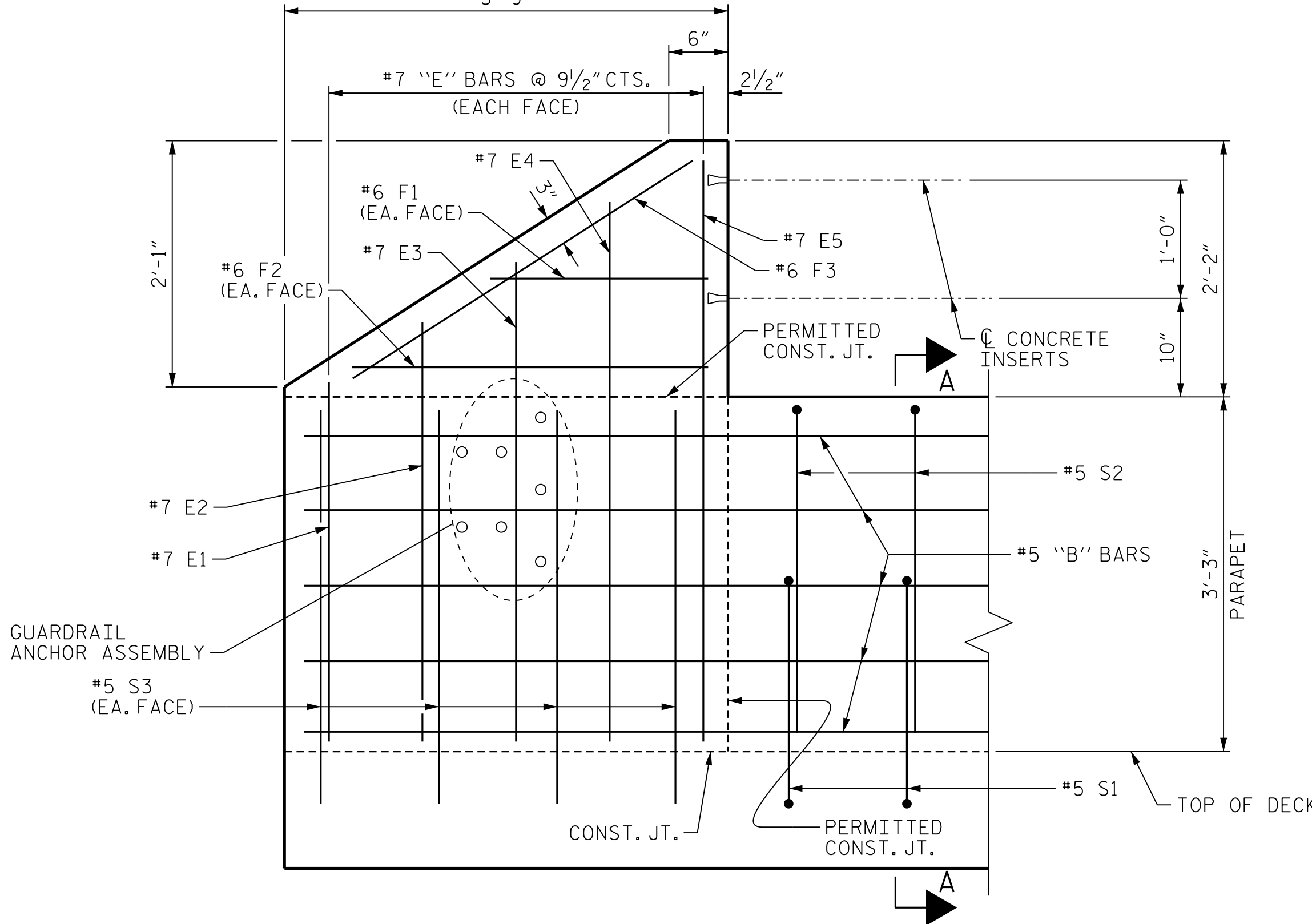
PLAN OF PARAPET



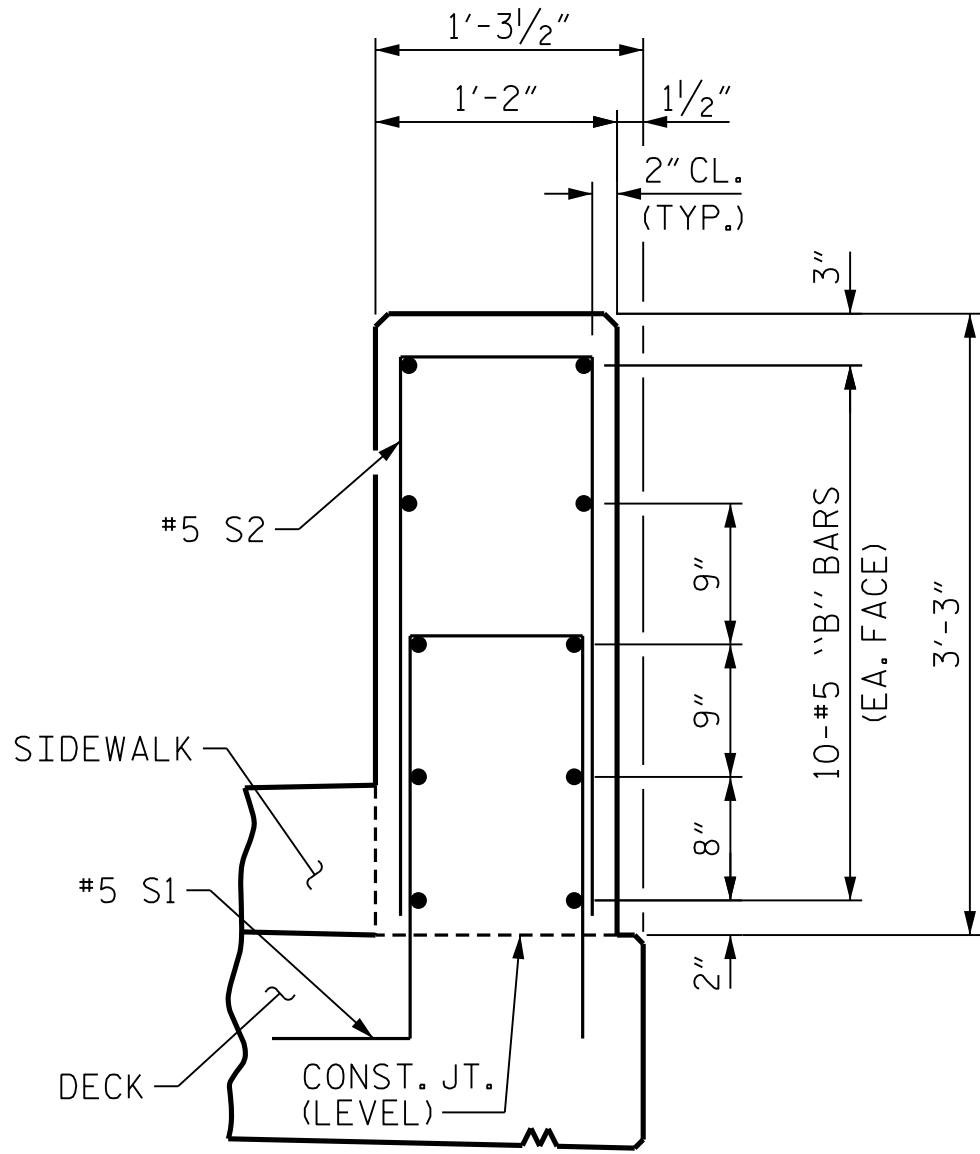
PLAN OF END POST



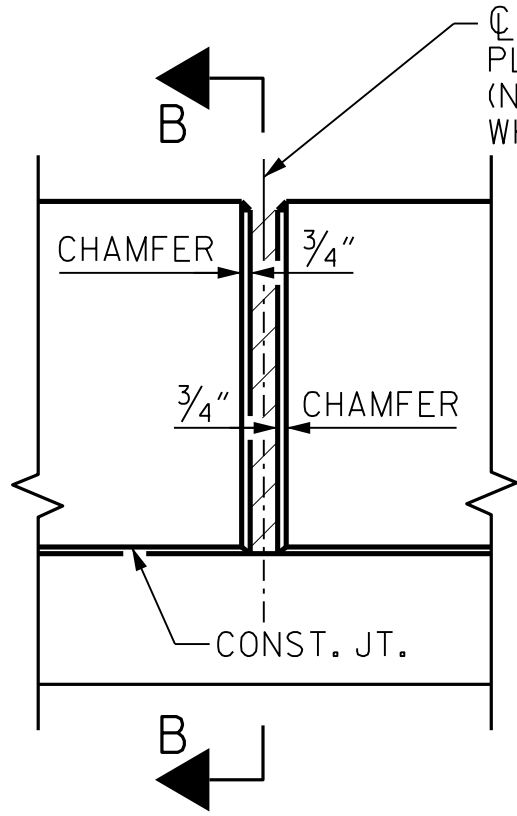
END VIEW



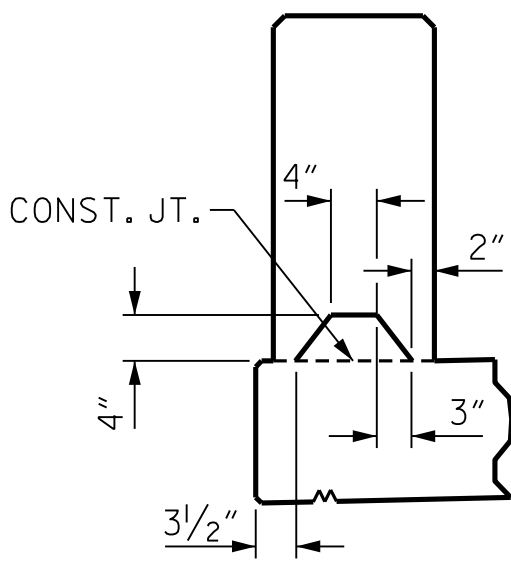
ELEVATION



SECTION A-A



ELEVATION AT EXPANSION JOINTS



SECTION B-B

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

PARAPET DETAILS

NOTES:

CONCRETE PARAPET 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 PARAPETS AND END POSTS SHALL BE EPOXY COATED.

FOR DETAILS AND LOCATION OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

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

BILL OF MATERIAL					
PARAPET AND END POSTS					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR	19'-3"	402
B2	20	#5	STR	15'-5"	322
B3	20	#5	STR	29'-7"	617
E1	4	#7	STR	3'-3"	27
E2	4	#7	STR	3'-9"	31
E3	4	#7	STR	4'-3"	35
E4	4	#7	STR	4'-9"	39
E5	4	#7	STR	5'-1"	42
F1	4	#6	STR	1'-9"	11
F2	4	#6	STR	2'-11"	18
F3	4	#6	STR	3'-3"	20
S1	124	#5	1	5'-11"	765
S2	124	#5	2	7'-0"	905
S3	16	#5	STR	3'-9"	63
EPOXY COATED REINFORCING STEEL				3,297	LBS.
CLASS AA CONCRETE				18.8	C. Y.
1'-2" × 3'-3" CONCRETE PARAPET				131.17	LIN. FT.
BAR TYPES					
10" 2'-2½" 8" 1 10" 3'-1" 2					
ALL BAR DIMENSIONS ARE OUT TO OUT.					

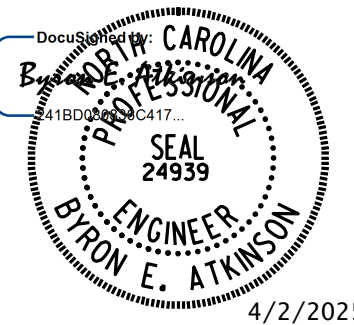
PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 2 OF 3

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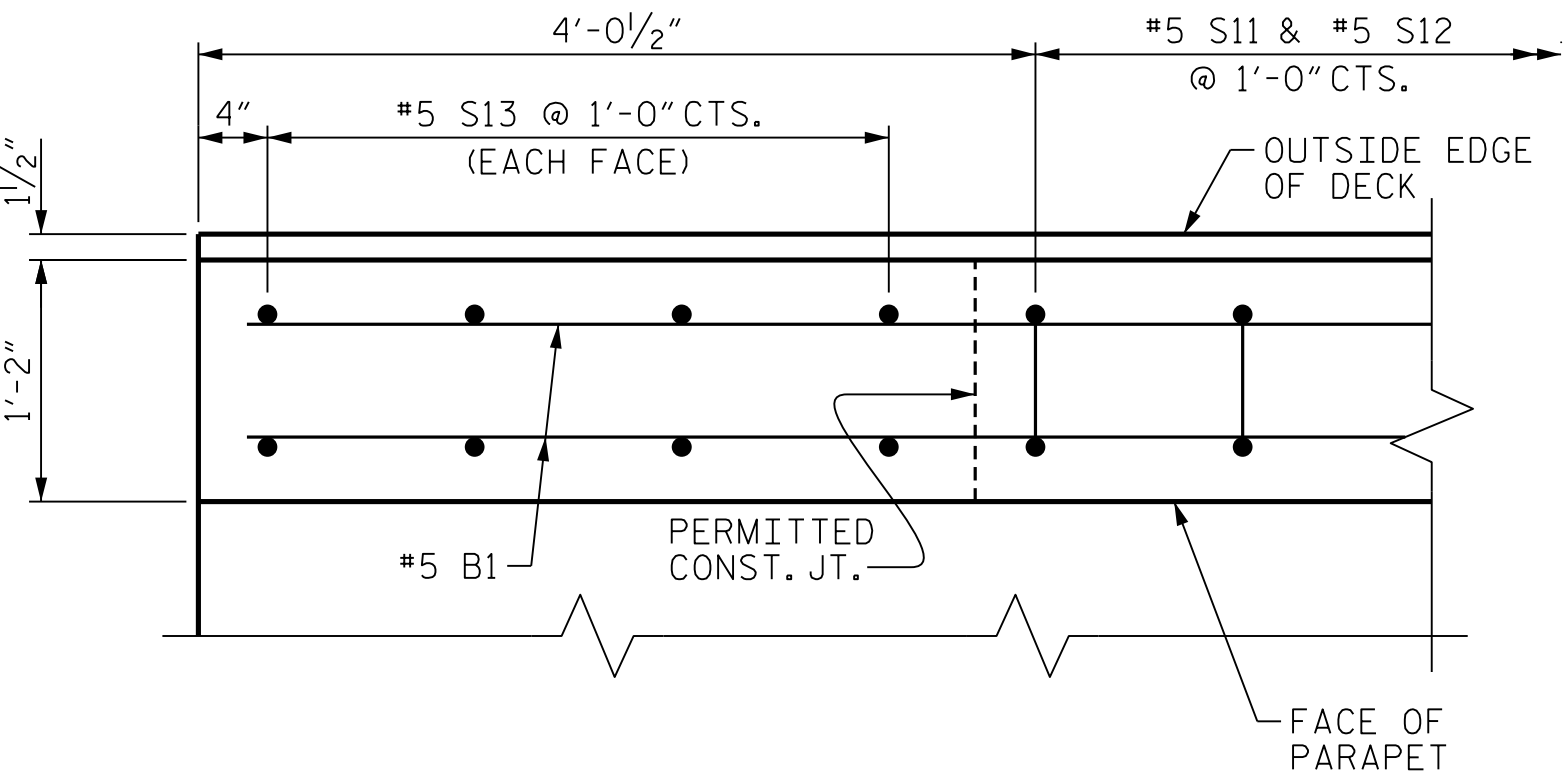
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



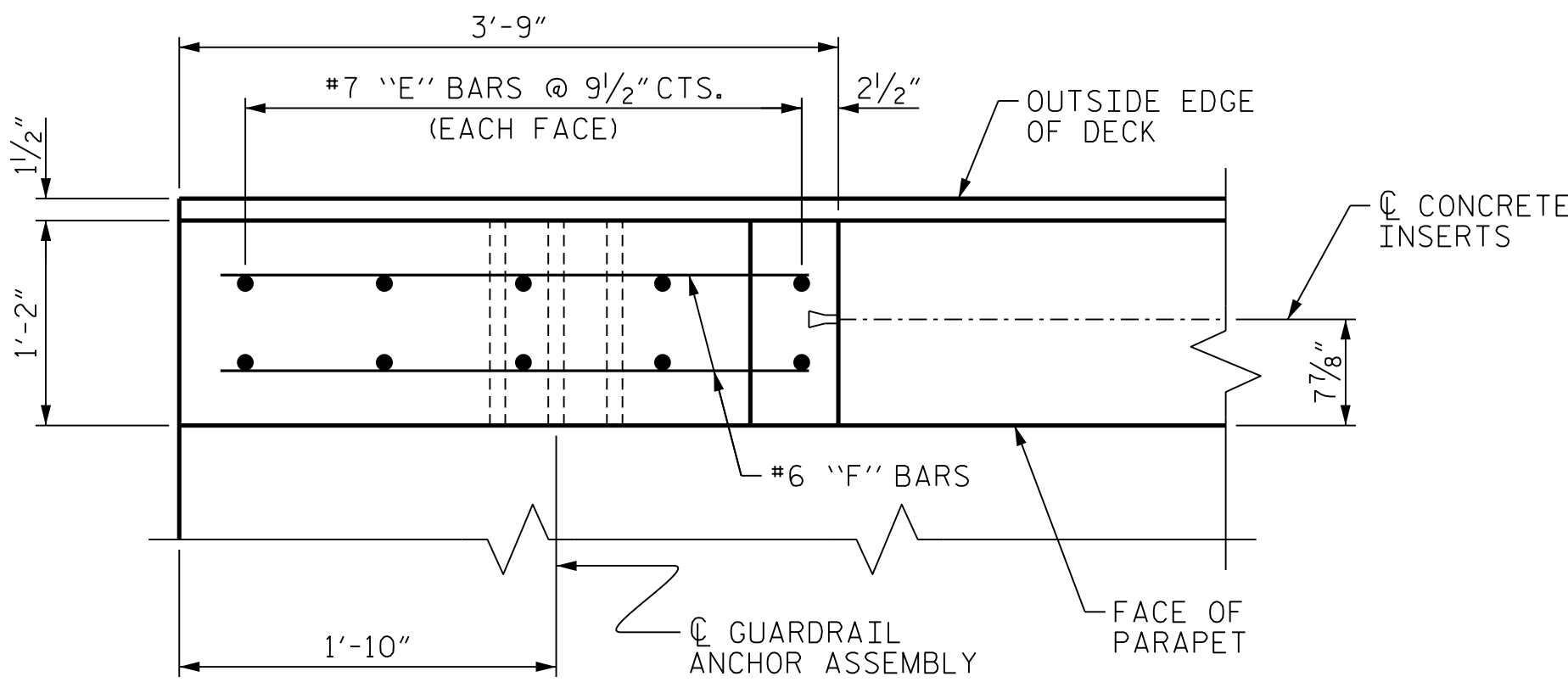
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-28
2			4			
TOTAL SHEETS						57

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>02/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>02/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

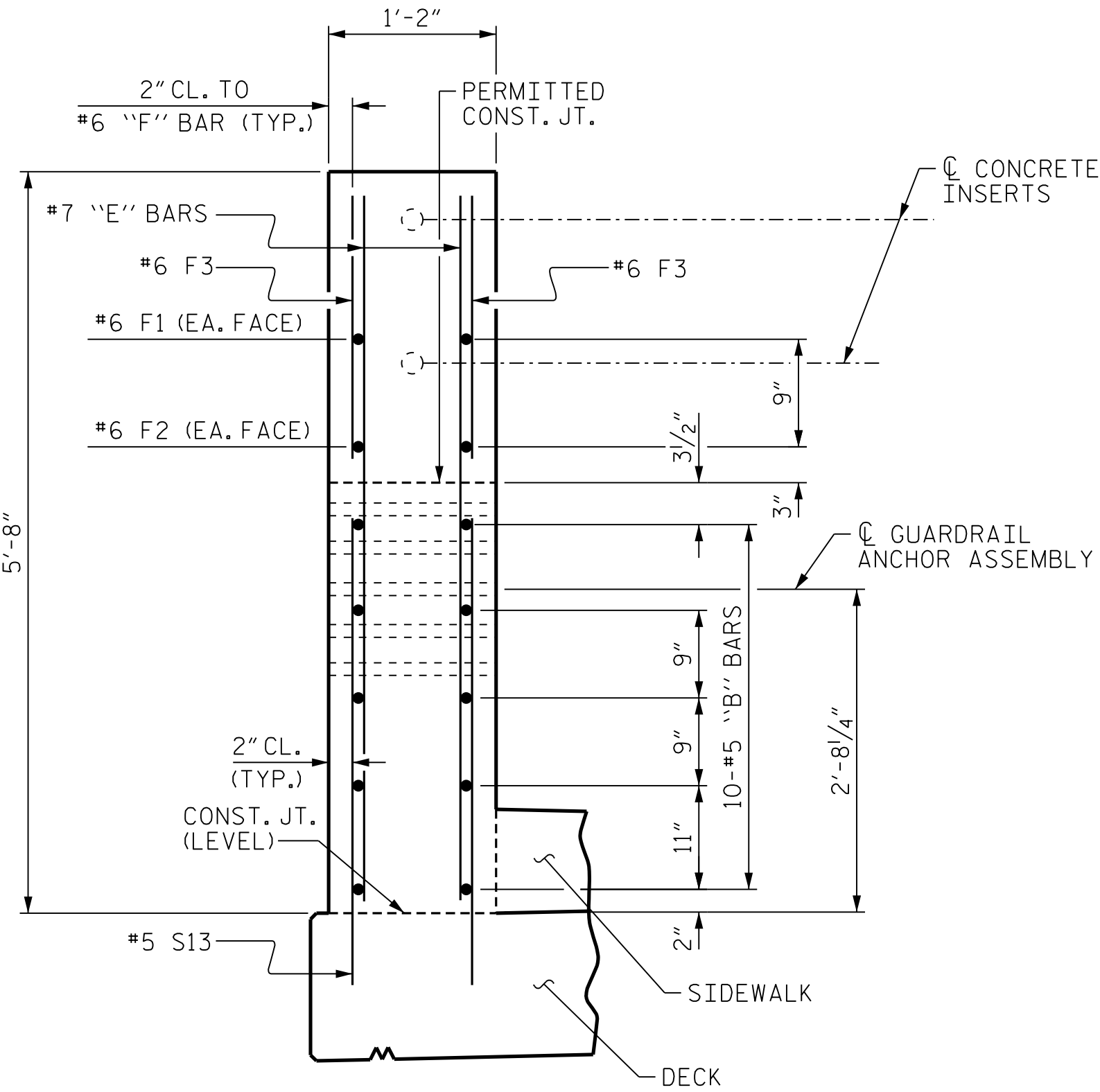
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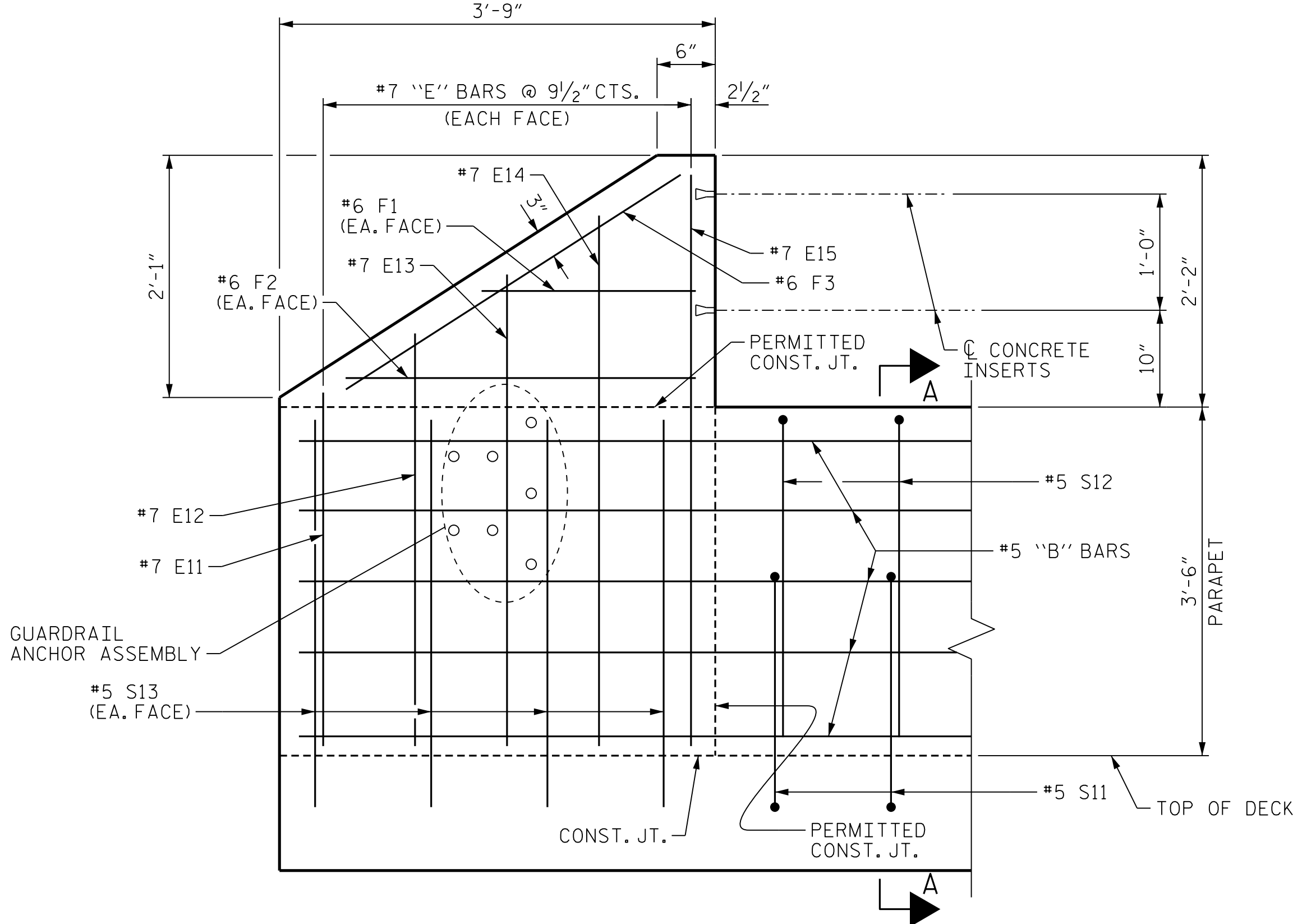
PLAN OF PARAPET



PLAN OF END POST



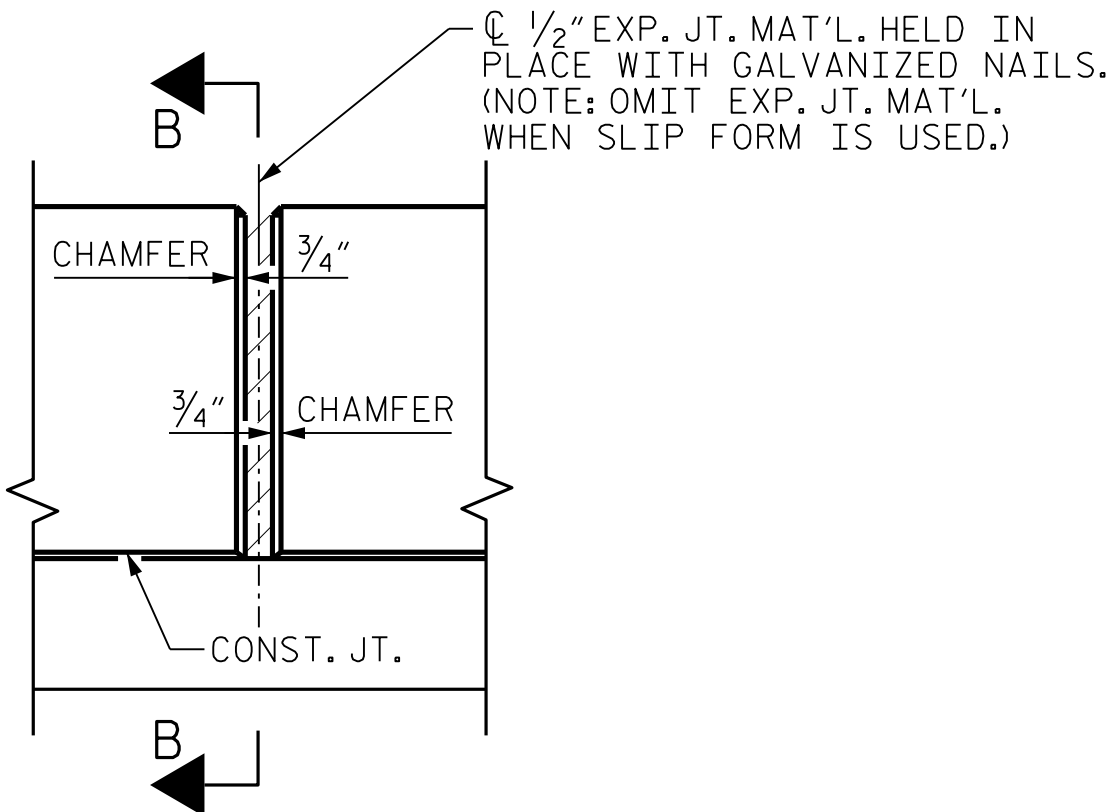
END VIEW



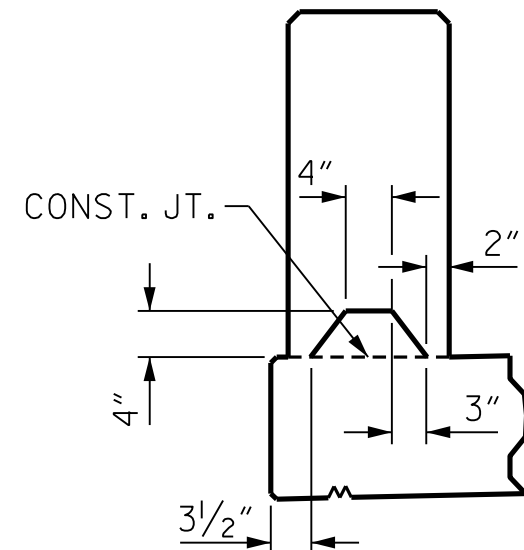
ELEVATION

PARAPET AND END POST FOR TWO BAR METAL RAIL

(ONE REQUIRED AT LEFT SIDE END BENT 1)



ELEVATION AT EXPANSION JOINTS



SECTION B-B

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

PARAPET DETAILS

NOTES:

CONCRETE PARAPET 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 PARAPETS AND END POSTS SHALL BE EPOXY COATED.

FOR DETAILS AND LOCATION OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

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

BILL OF MATERIAL

PARAPET AND END POSTS
STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#5	STR	19'-3"	402
B2	20	#5	STR	15'-5"	322
B3	20	#5	STR	29'-7"	617
E11	2	#7	STR	3'-6"	14
E12	2	#7	STR	4'-0"	16
E13	2	#7	STR	4'-6"	18
E14	2	#7	STR	5'-0"	20
E15	2	#7	STR	5'-4"	22

F1	2	#6	STR	1'-9"	5
F2	2	#6	STR	2'-11"	9
F3	2	#6	STR	3'-3"	10

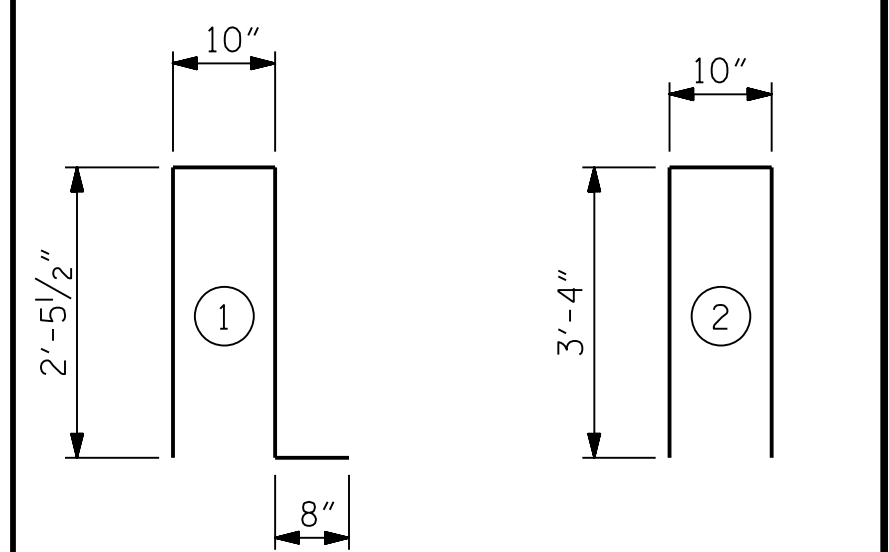
S11	128	#5	1	6'-5"	857
S12	128	#5	2	7'-6"	1001
S13	8	#5	STR	4'-0"	33

EPOXY COATED REINFORCING STEEL	3,346	LBS.
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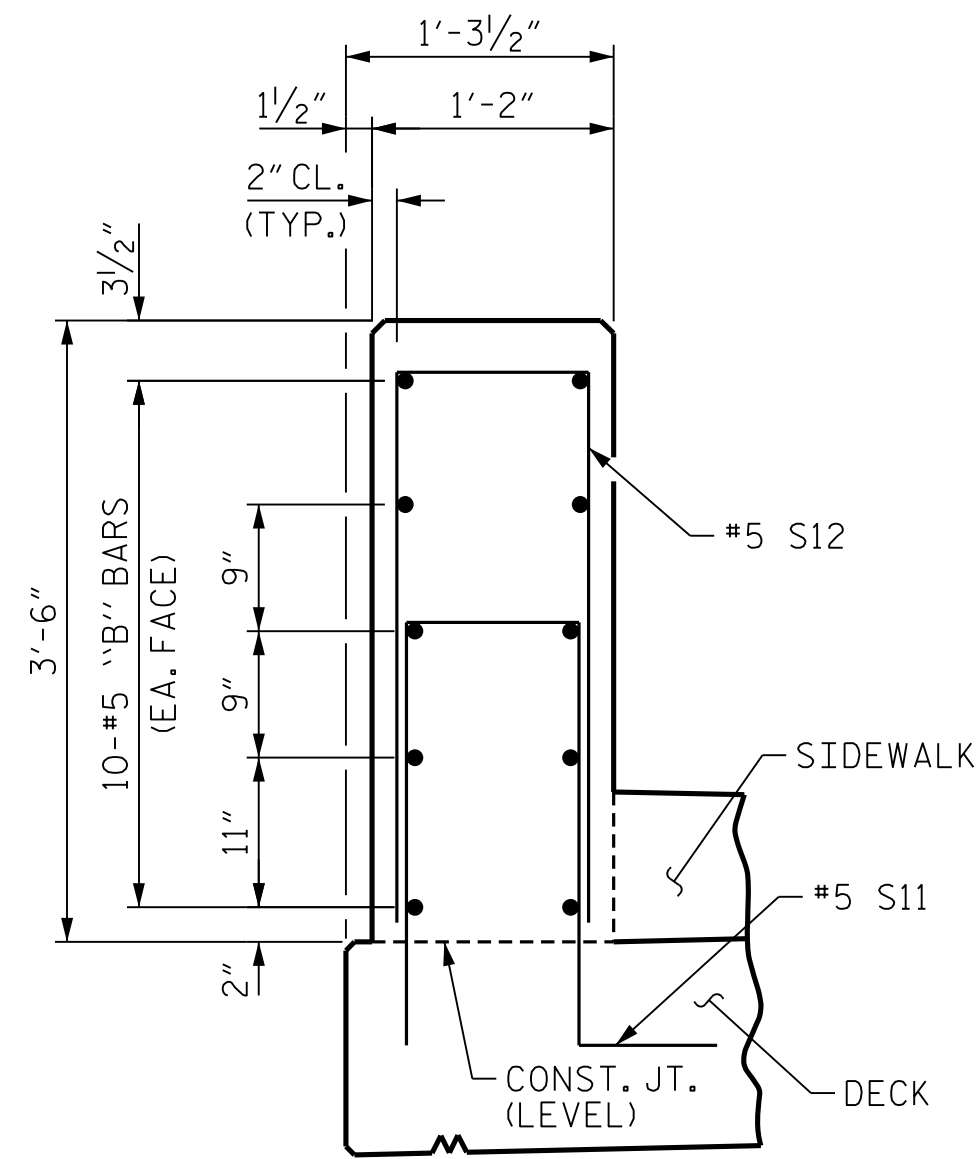
CLASS AA CONCRETE	20.1	C. Y.
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1'-2" x 3'-6" CONCRETE PARAPET	131.17	LIN. FT.
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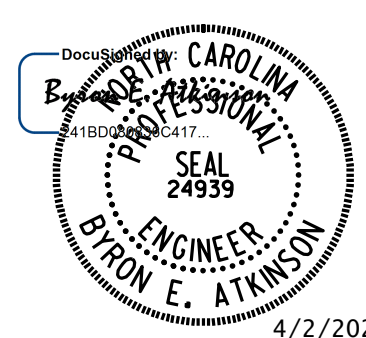
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A



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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 3

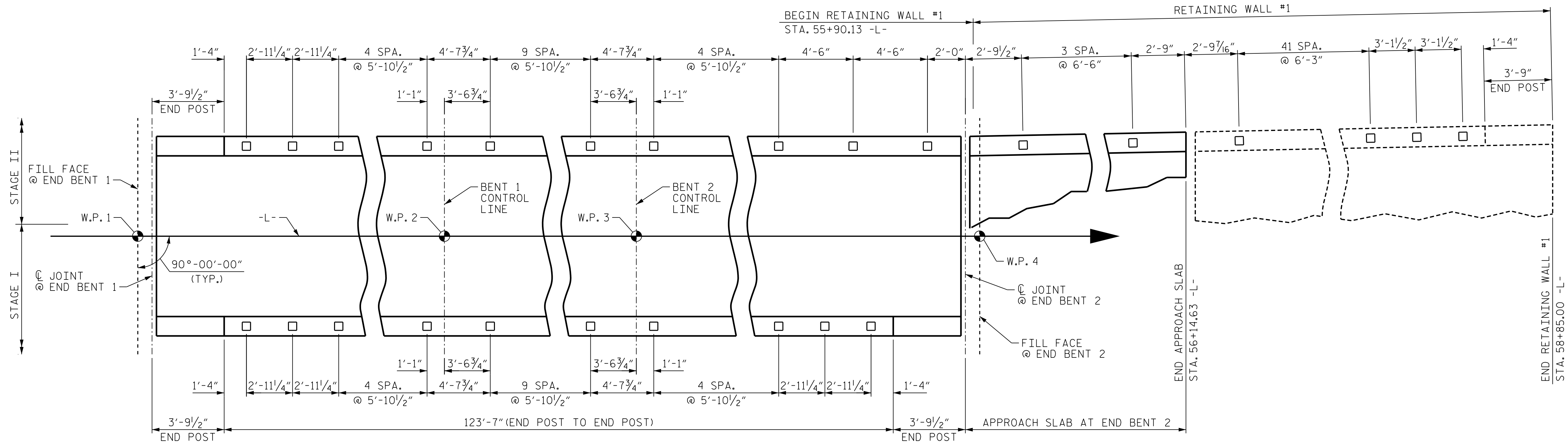
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CONCRETE PARAPET
DETAILS AND
BILL OF MATERIAL
STAGE II

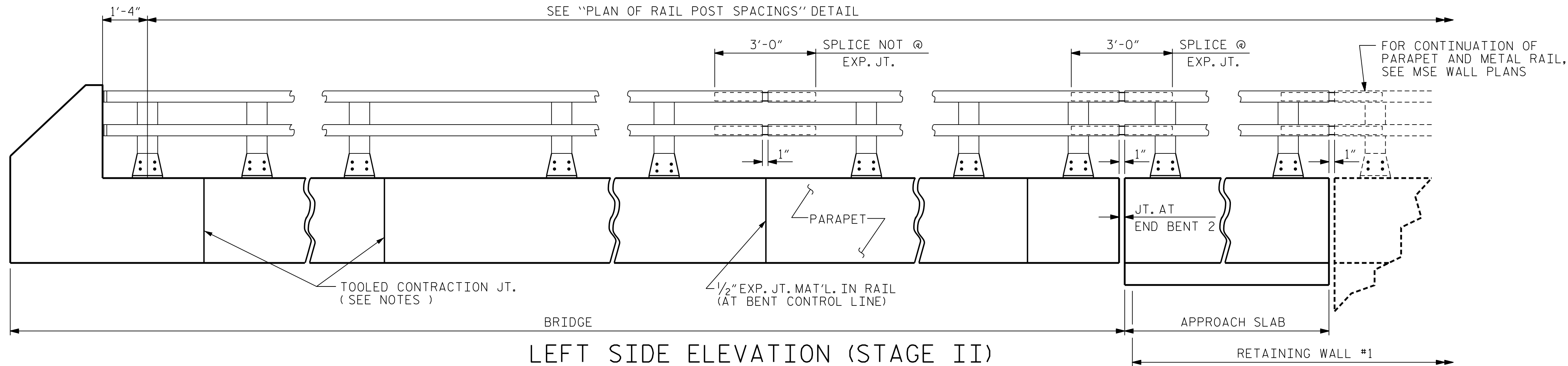
REVISIONS						SHEET NO. S-29 TOTAL SHEETS 57
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>02/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>02/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

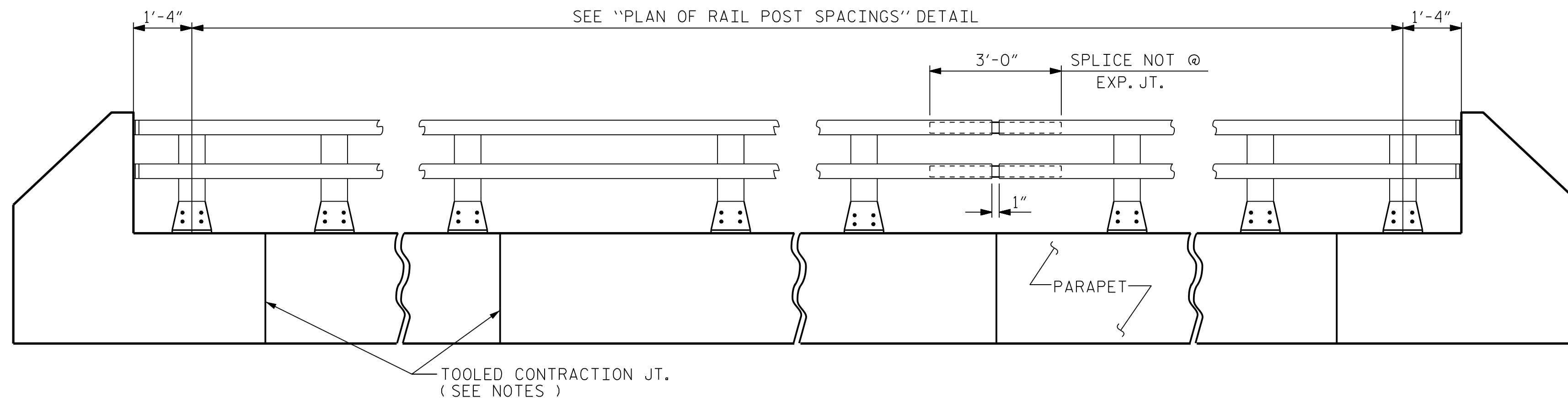
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Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758 Structures\401_059_U4758_SMU_BMP1_400308.dgn



PLAN OF RAIL POST SPACINGS



LEFT SIDE ELEVATION (STAGE II)
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 4 OF 4.



RIGHT SIDE ELEVATION (STAGE I)
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 4 OF 4.

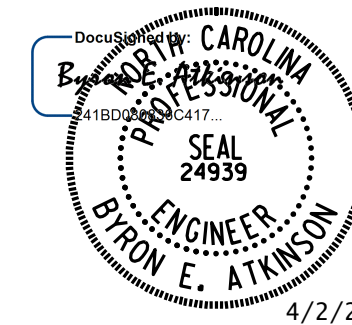
NOTES:
FOR NOTES AND DETAILS, SEE
SHEETS 2, 3 & 4 OF 4.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	57
1			3				
2			4				

DRAWN BY : B.E. LANNING DATE : 02/2021
CHECKED BY : B.E. ATKINSON DATE : 02/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024



ASSEMBLIES REQUIRED

STAGE I (BRIDGE)	-----24
STAGE II (BRIDGE)	-----24
STAGE II (APPROACH SLAB)	-- 4
STAGE II (RETAINING WALL)	--44
TOTAL	-----96

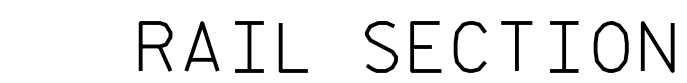
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $\frac{3}{4}$ " Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



NOTE :

SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 3 OF 4

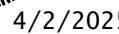
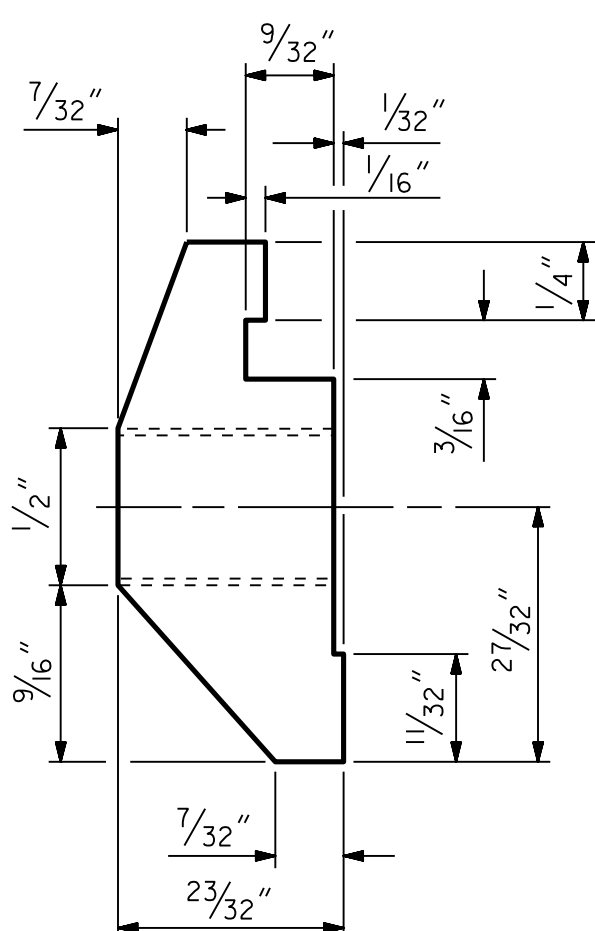
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY:	B.E. LANNING	DATE:	06/2024
CHECKED BY :	B.E. ATKINSON	DATE:	06/2024
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE:	06/2024
DRAWN BY :	EEM 6/94	REV. 10/11	MAA/G
CHECKED BY :	RGW 6/94	REV. 12/17	MAA/TH
		REV. 10/23	BNB/SN

(4 REQUIRED PER POST)



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

SHEET NO.
S-32
TOTAL
SHEETS
57

STD. NO. BMR4

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

1 - $\frac{3}{4}$ " $\varnothing$ $\times$ $\frac{1}{8}$ " BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE $\frac{3}{4}$ " $\varnothing$ $\times$ $\frac{1}{8}$ " GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A $\frac{1}{16}$ " Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" Ø x 1½" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" Ø x 1½" BOLT SHALL HAVE N. C. THREADS.

CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

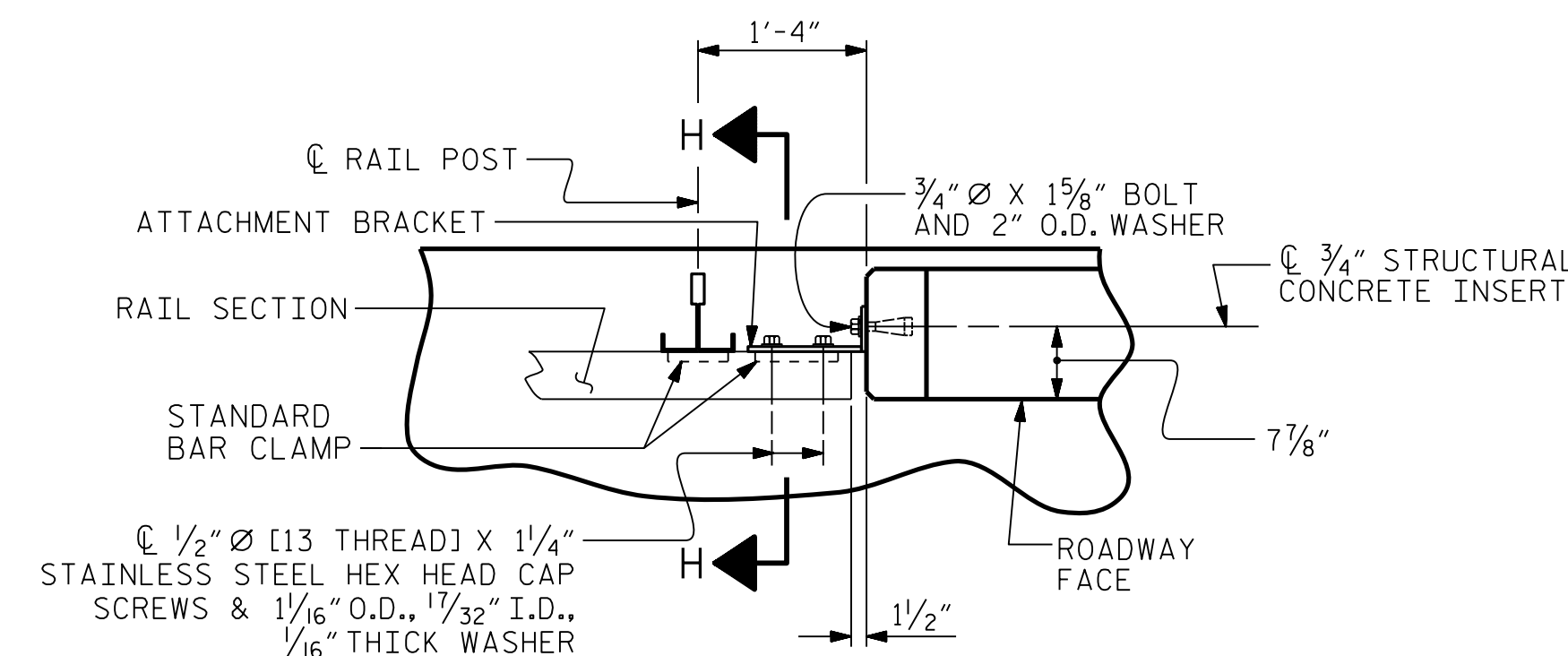
1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

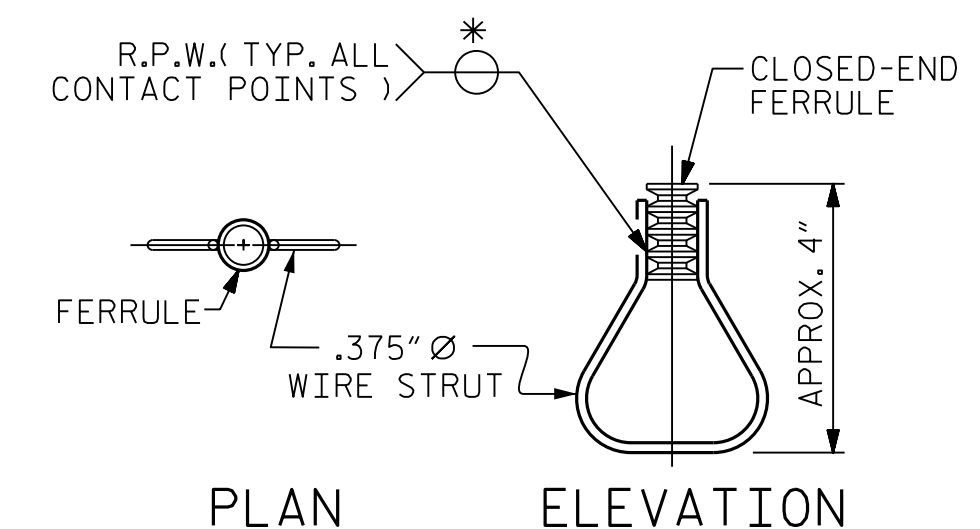
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE $\frac{3}{4}" \times 1\frac{5}{8}"$ BOLT WITH WASHER SHALL BE REPLACED WITH A $\frac{3}{4}" \times 6\frac{1}{2}"$ BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE $\frac{3}{4}" \times 1\frac{5}{8}"$ BOLT SHALL APPLY TO THE $\frac{3}{4}" \times 6\frac{1}{2}"$ BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN - RAIL AND END POST



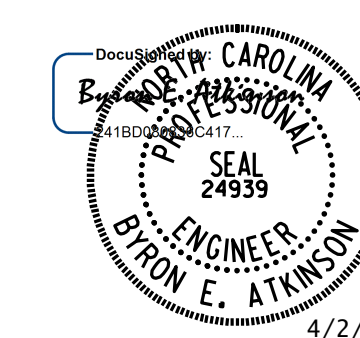
STRUCTURAL CONCRETE

INSERT

*EACH WELDED ATTACHMENT OF WIRE TO
FERRULE SHALL DEVELOP THE TENSILE
STRENGTH OF THE WIRE.

PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 4 OF 4



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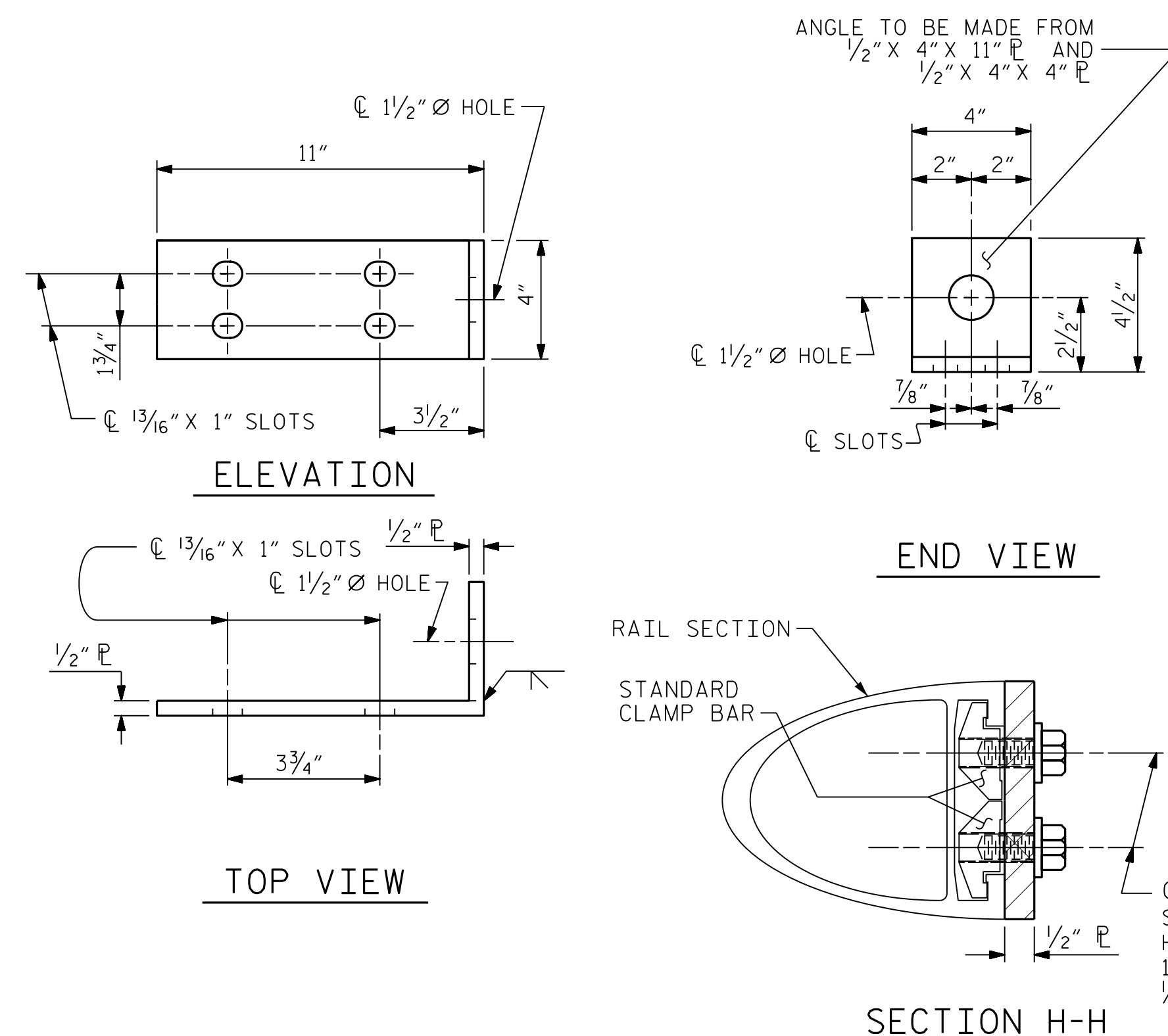


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 1
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO. S-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 57
2			4			

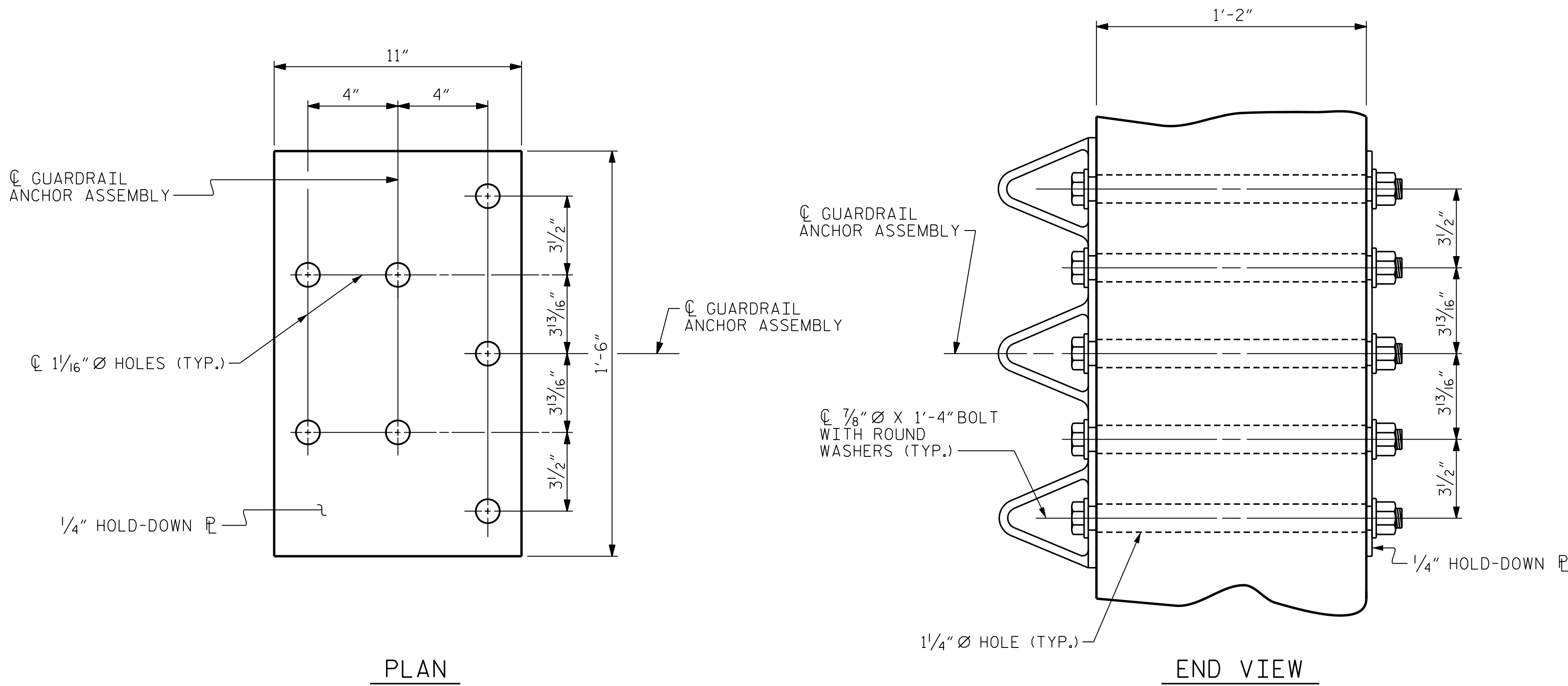
STD. NO. BMR2

FOR RAIL POST SPACINGS, SEE SHEET 1 OF 4

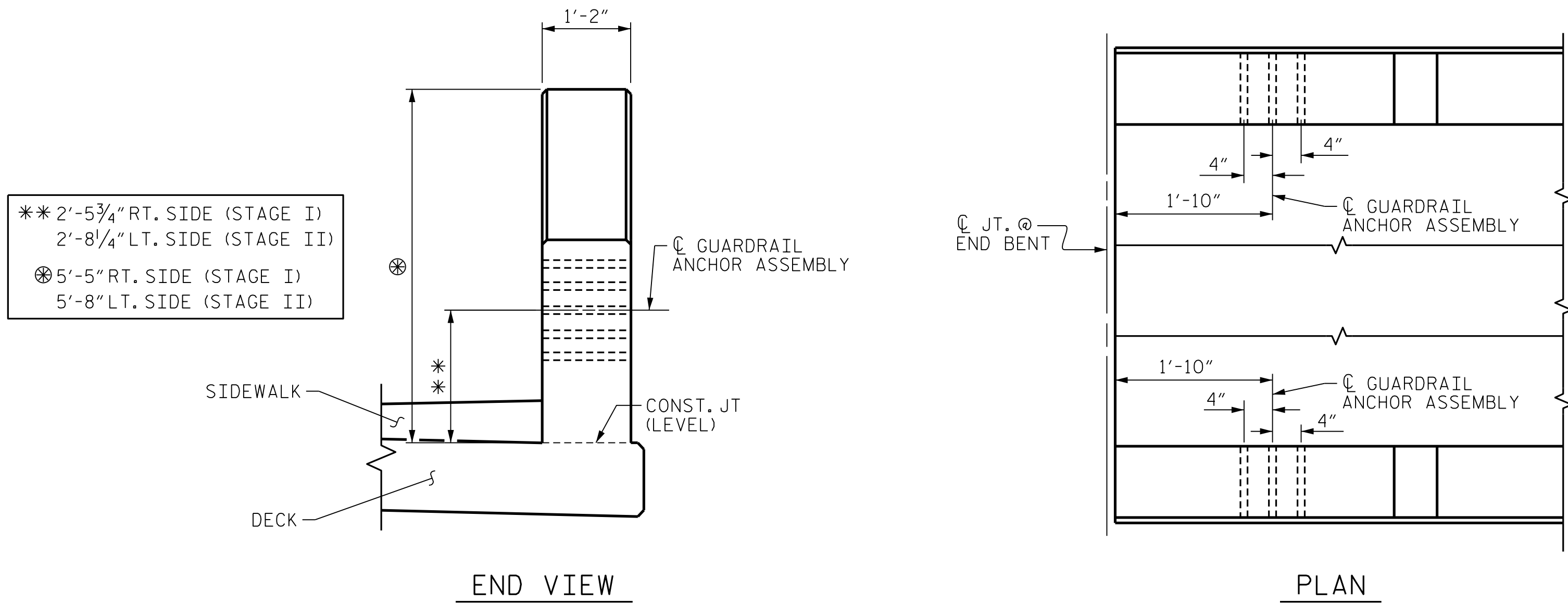


DETAILS FOR ATTACHING METAL RAIL TO END POST

ASSEMBLED BY:	B.E. LANNING	DATE:	06/2024
CHECKED BY :	B.E. ATKINSON	DATE:	06/2024
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE:	06/2024
DRAWN BY :	FCJ 1/88	REV. 10/1/11	MAA/GM
CHECKED BY :	CRK 3/89	REV. 12/1/11	MAA/THC
		REV. 10/23	RMR/SNY



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 AND END OF RETAINING WALL SIMILAR

NOTES

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

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

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

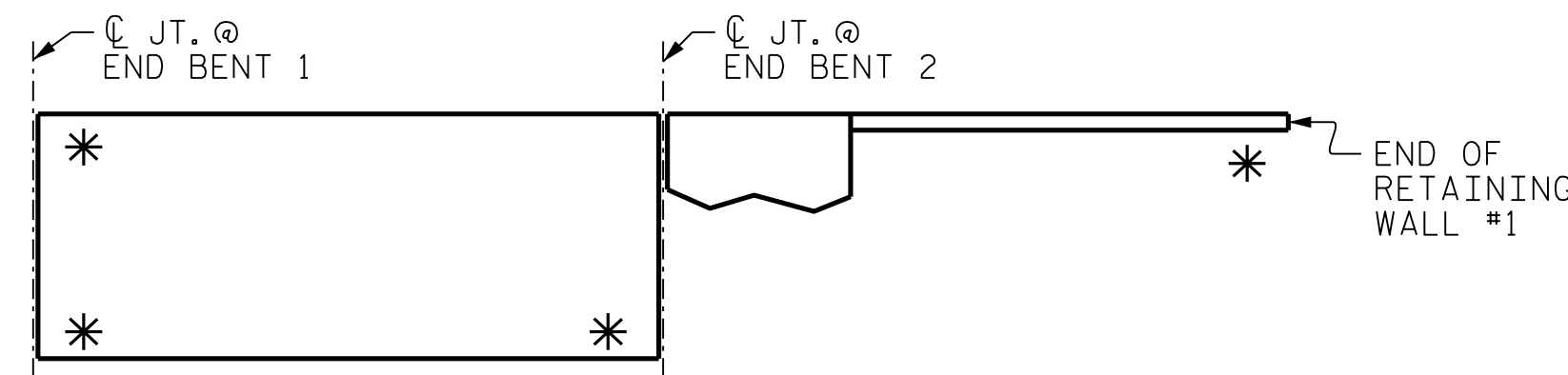
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

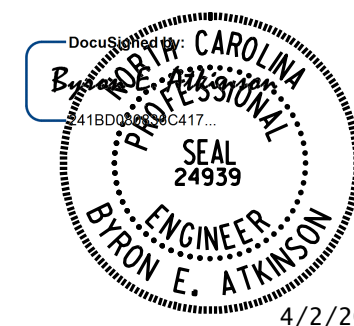
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



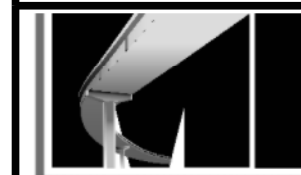
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

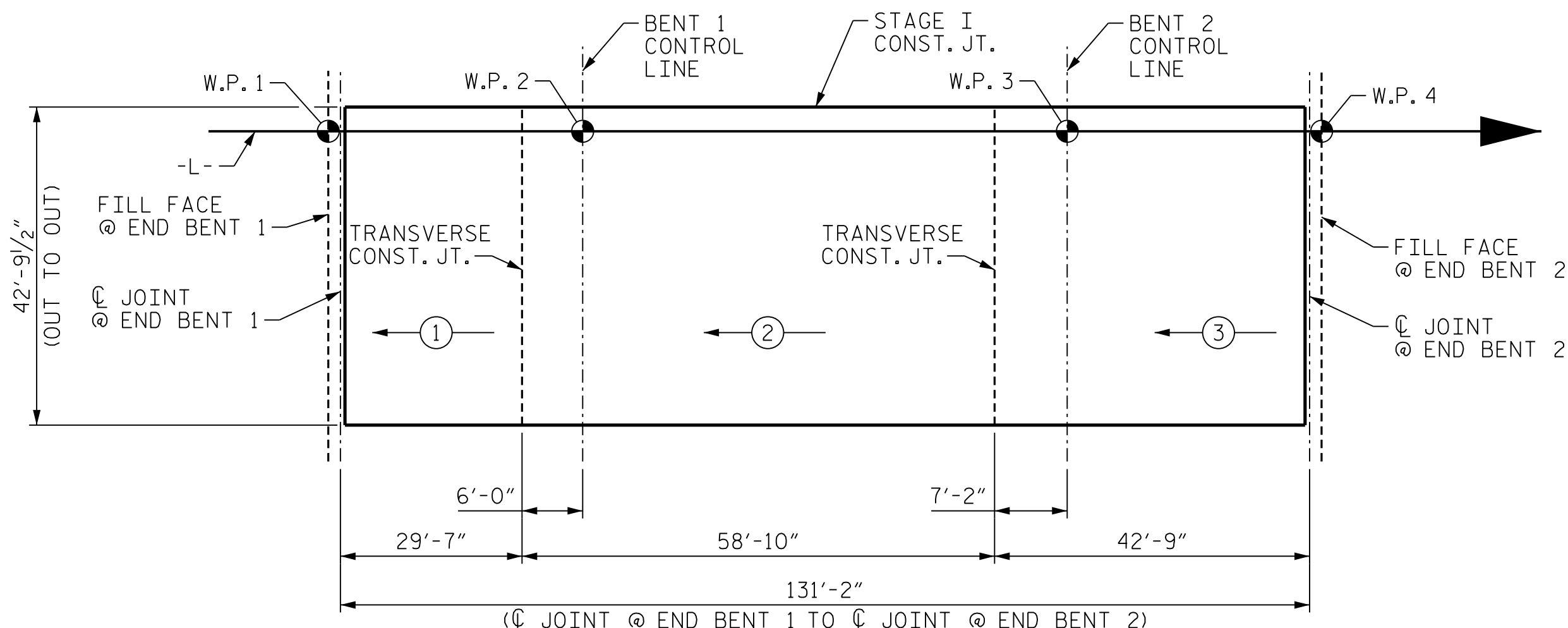
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

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

SHEET NO.
S-34
TOTAL
SHEETS
57

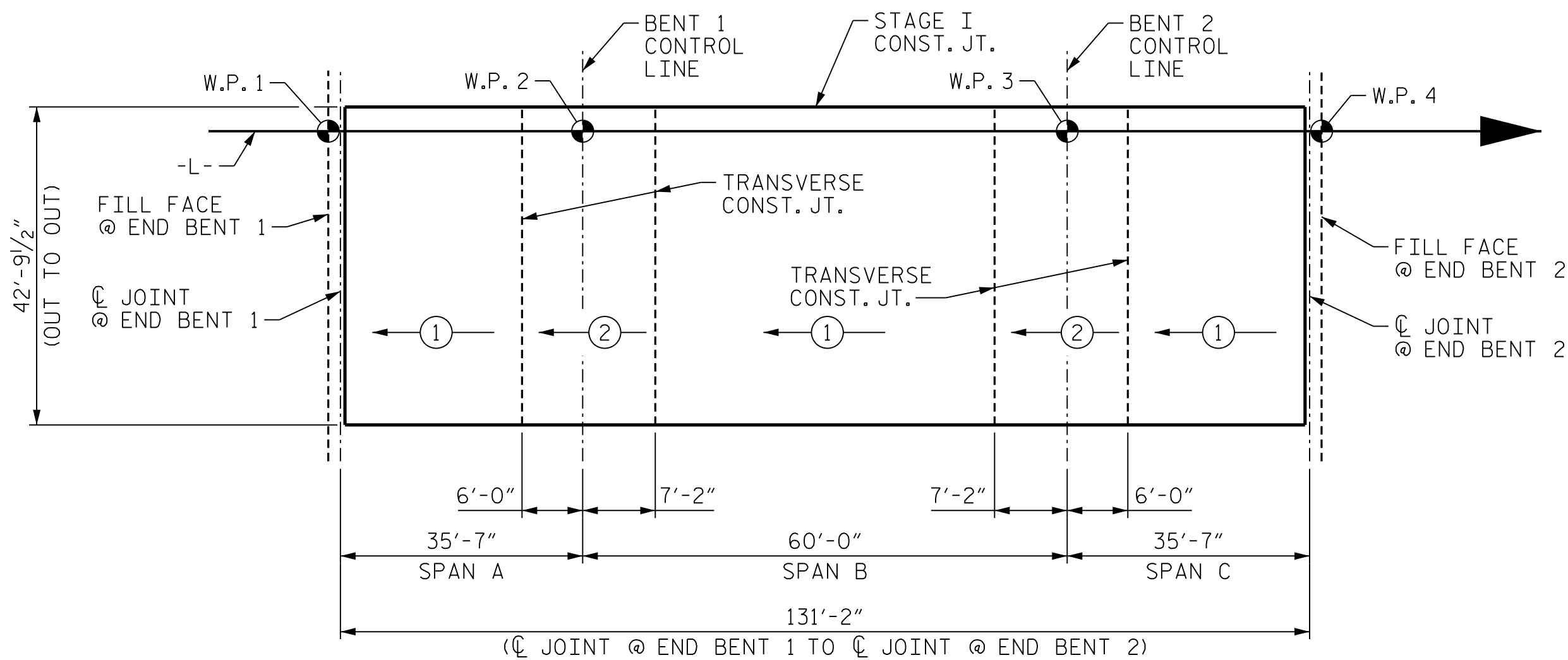
(SHT 2) STD. NO. GRA3

ASSEMBLED BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: B.E. ATKINSON	DATE: 06/2024
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 06/2024
DRAWN BY: MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY: GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC



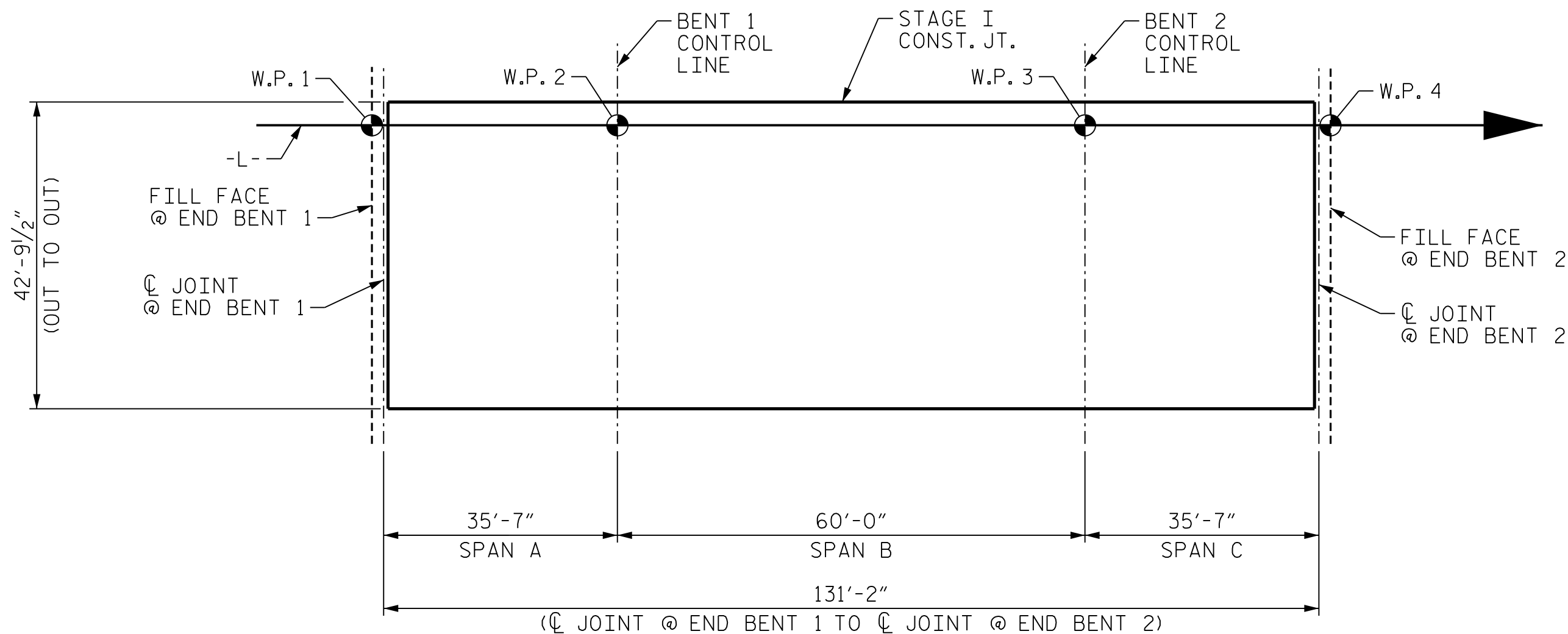
POURING SEQUENCE - STAGE I

← (#) — INDICATES POUR NUMBER AND POUR DIRECTION



OPTIONAL POURING SEQUENCE - STAGE I

← (#) — INDICATES POUR NUMBER AND POUR DIRECTION



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
STAGE I - (SQ. FT. = 5,613)

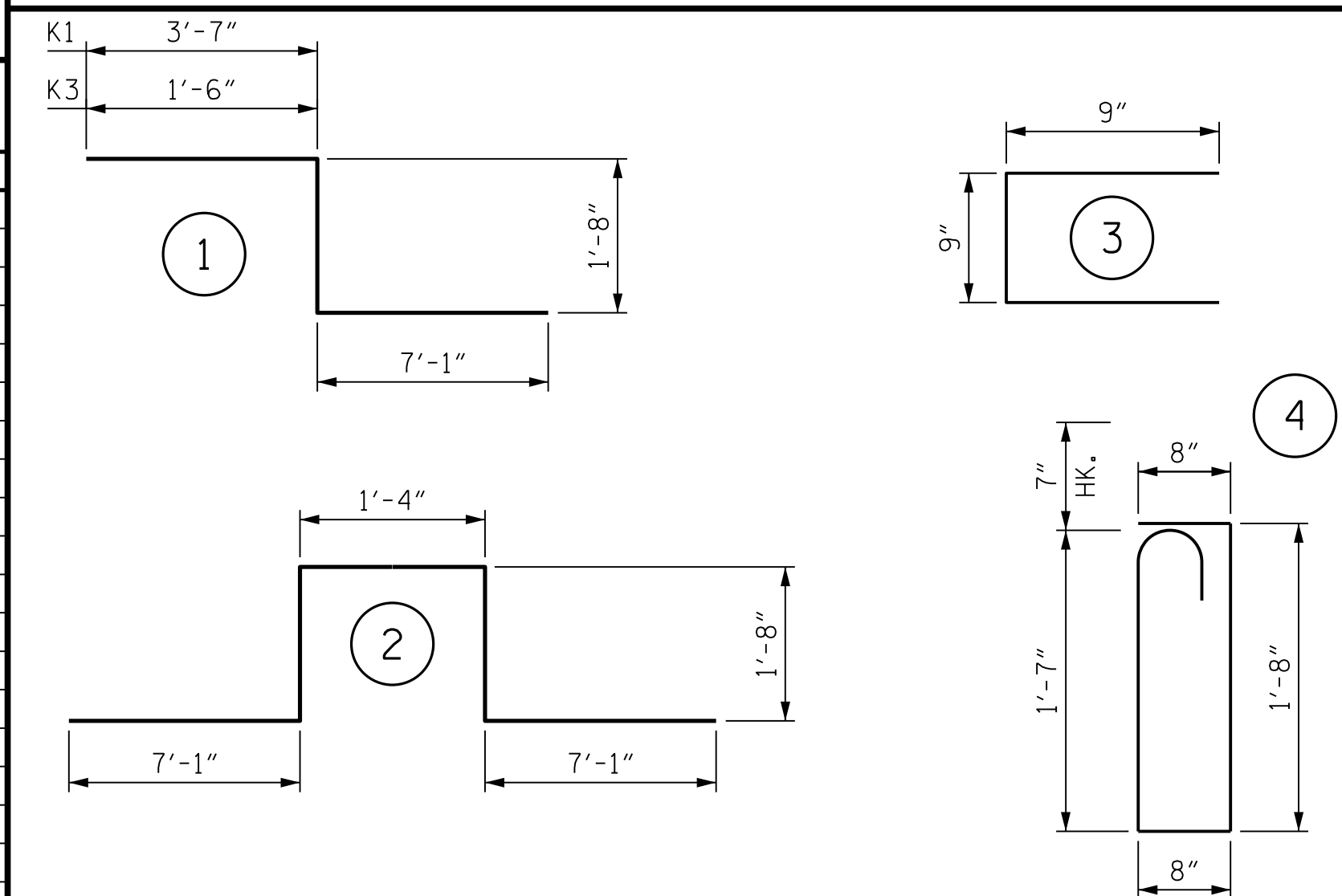
REINFORCING
BAR SCHEDULE

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	262	#5	STR	42'-5"	11,591
A2	262	#5	STR	42'-5"	11,591
*B1	60	#4	STR	31'-9"	1,273
*B2	226	#6	STR	12'-10"	4,356
*B3	60	#4	STR	26'-2"	1,049
B4	150	#5	STR	31'-7"	4,941
B5	150	#6	STR	12'-10"	2,891
B6	75	#5	STR	50'-4"	3,937
*D1	524	#5	STR	5'-5"	2,960
*G1	2	#5	STR	42'-5"	88
*K1	4	#8	1	12'-4"	132
*K2	12	#8	2	18'-10"	603
*K3	4	#8	1	10'-3"	109
K4	8	#6	STR	8'-2"	98
*S1	72	#4	3	2'-3"	108
*S2	72	#5	4	5'-2"	388

* DENOTES EPOXY COATED REINFORCING STEEL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

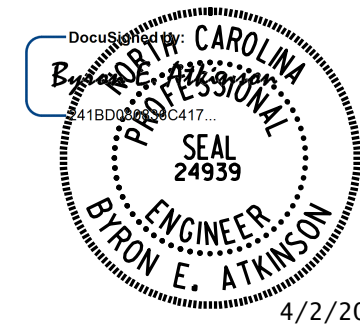
FOR SUMMARY OF QUANTITIES, SEE SHEET 2 OF 2

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"			

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 2



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

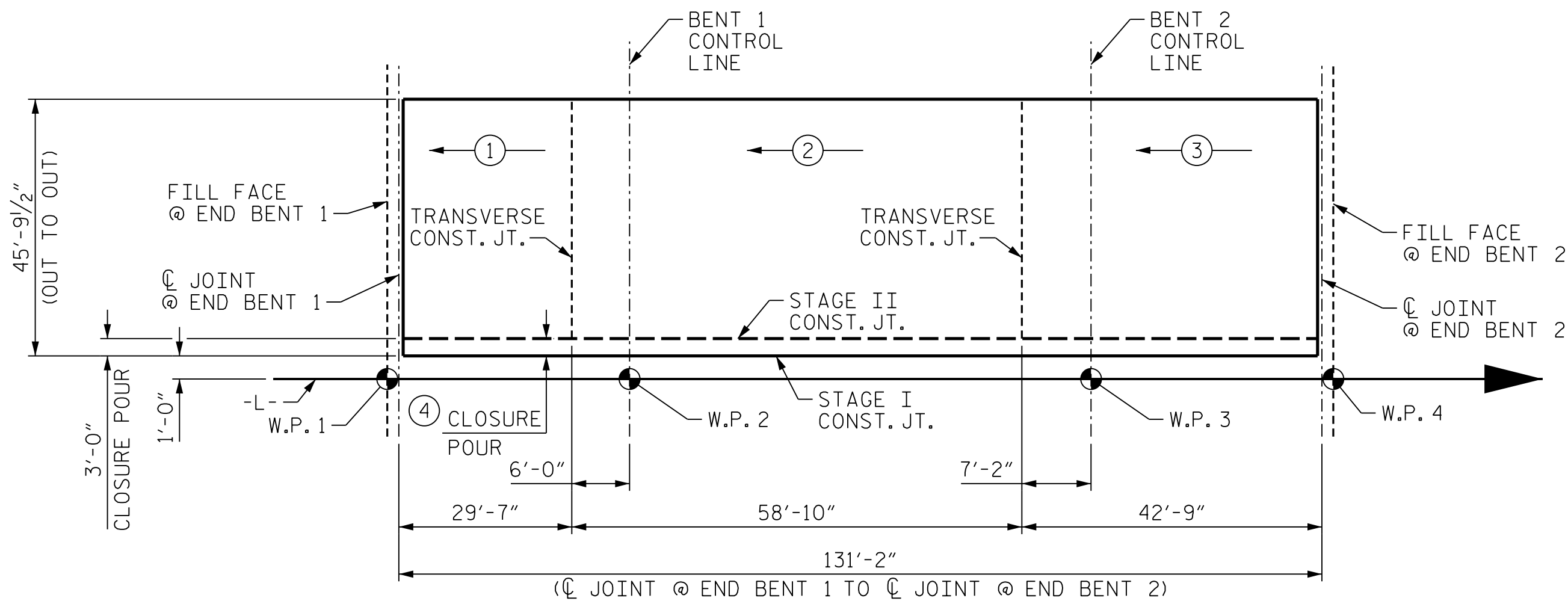
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

STAGE I

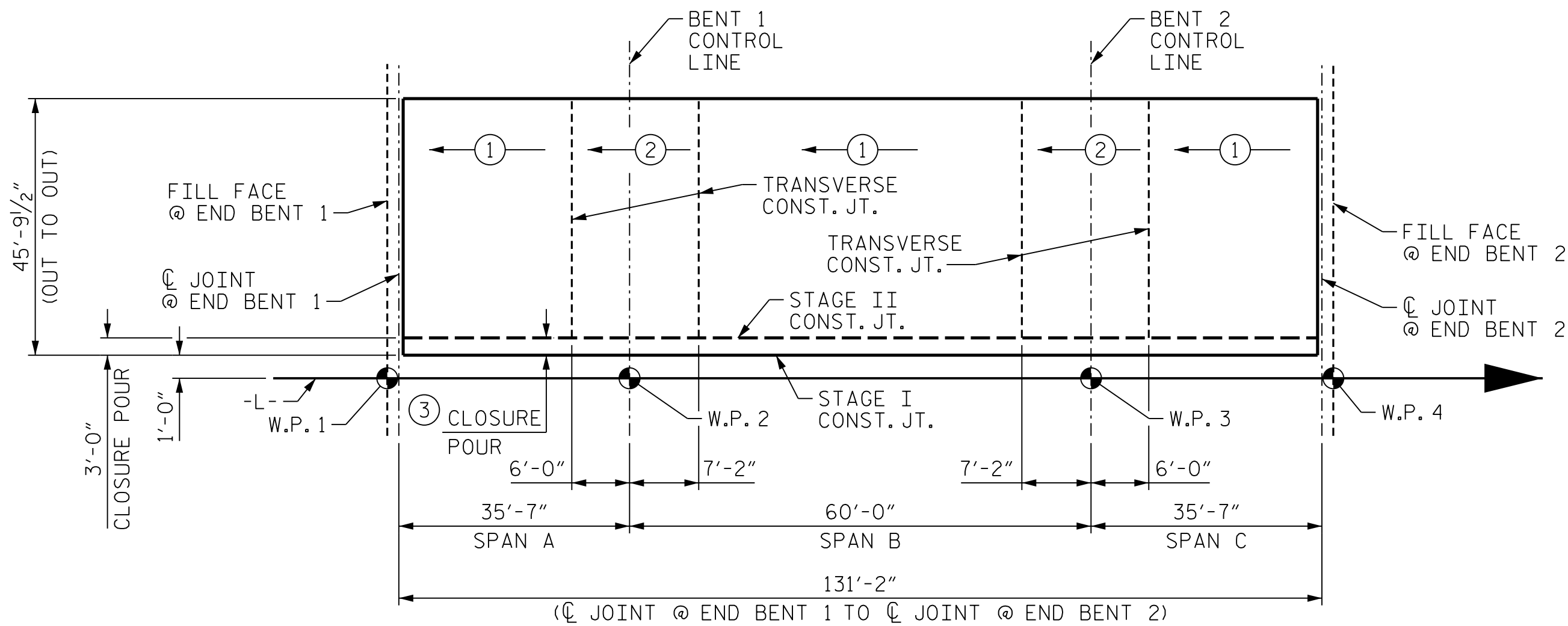
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-35
2			4			TOTAL SHEETS 57

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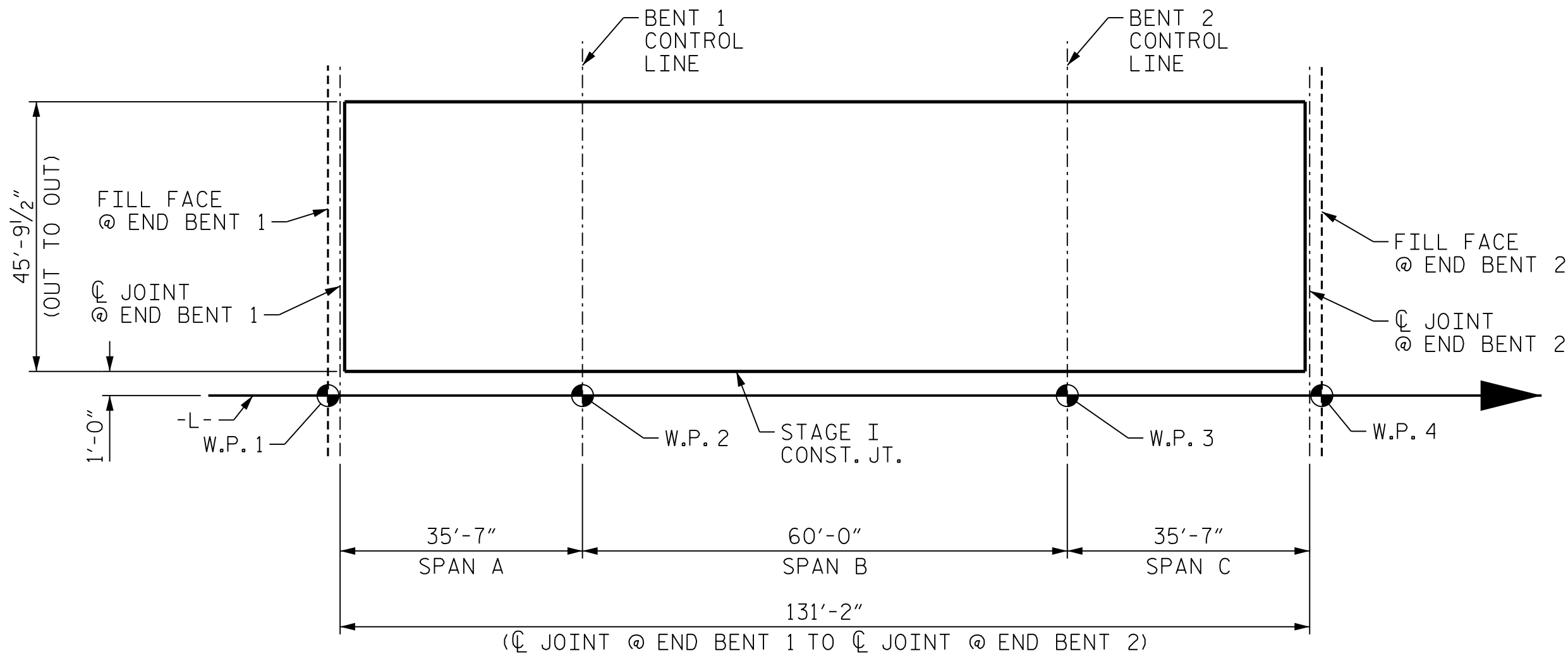
POURING SEQUENCE - STAGE II

① — INDICATES POUR NUMBER AND POUR DIRECTION



OPTIONAL POURING SEQUENCE - STAGE II

① — INDICATES POUR NUMBER AND POUR DIRECTION



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
STAGE II - (SQ. FT. = 6,007)

TOTAL STAGE I & STAGE II- (SQ. FT. = 11,620)

REINFORCING BAR SCHEDULE

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	262	#5	STR	42'-5"	11,591
A2	262	#5	STR	42'-5"	11,591
*B1	66	#4	STR	31'-9"	1,400
*B2	244	#6	STR	12'-10"	4,703
*B3	66	#4	STR	26'-2"	1,154
B4	162	#5	STR	31'-7"	5,337
B5	162	#6	STR	12'-10"	3,123
B6	81	#5	STR	50'-4"	4,252
*D1	524	#5	STR	5'-5"	2,960
*G1	2	#5	STR	42'-5"	88
*K1	8	#8	1	12'-4"	263
*K2	12	#8	2	18'-10"	603
K4	8	#6	STR	8'-2"	98
*S1	72	#4	3	2'-3"	108
*S2	72	#5	4	5'-2"	388

* DENOTES EPOXY COATED REINFORCING STEEL

— SUPERSTRUCTURE BILL OF MATERIAL —

	① CLASS AA CONCRETE					REINFORCING STEEL	*EPOXY COATED REINFORCING STEEL
	(CU. YDS.)					(LBS.)	(LBS.)
POUR NO.	#1	#2	#3	#4	TOTAL **		
STAGE I DECK	41.8	79.5	59.6	--	180.9	23,458	22,657
STAGE II DECK	41.8	79.5	59.6	14.0	194.9	24,401	23,258
TOTALS **					375.8	47,859	45,915

** QUANTITIES FOR PARAPET, SIDEWALK AND MEDIAN ARE NOT INCLUDED

① QUANTITY FOR OPTIONAL POURING SEQUENCE NOT SHOWN.

GROOVING BRIDGE FLOORS

STAGE I

APPROACH SLABS	1,383 SQ.FT.
BRIDGE DECK	3,775 SQ.FT.
TOTAL	5,158 SQ.FT.

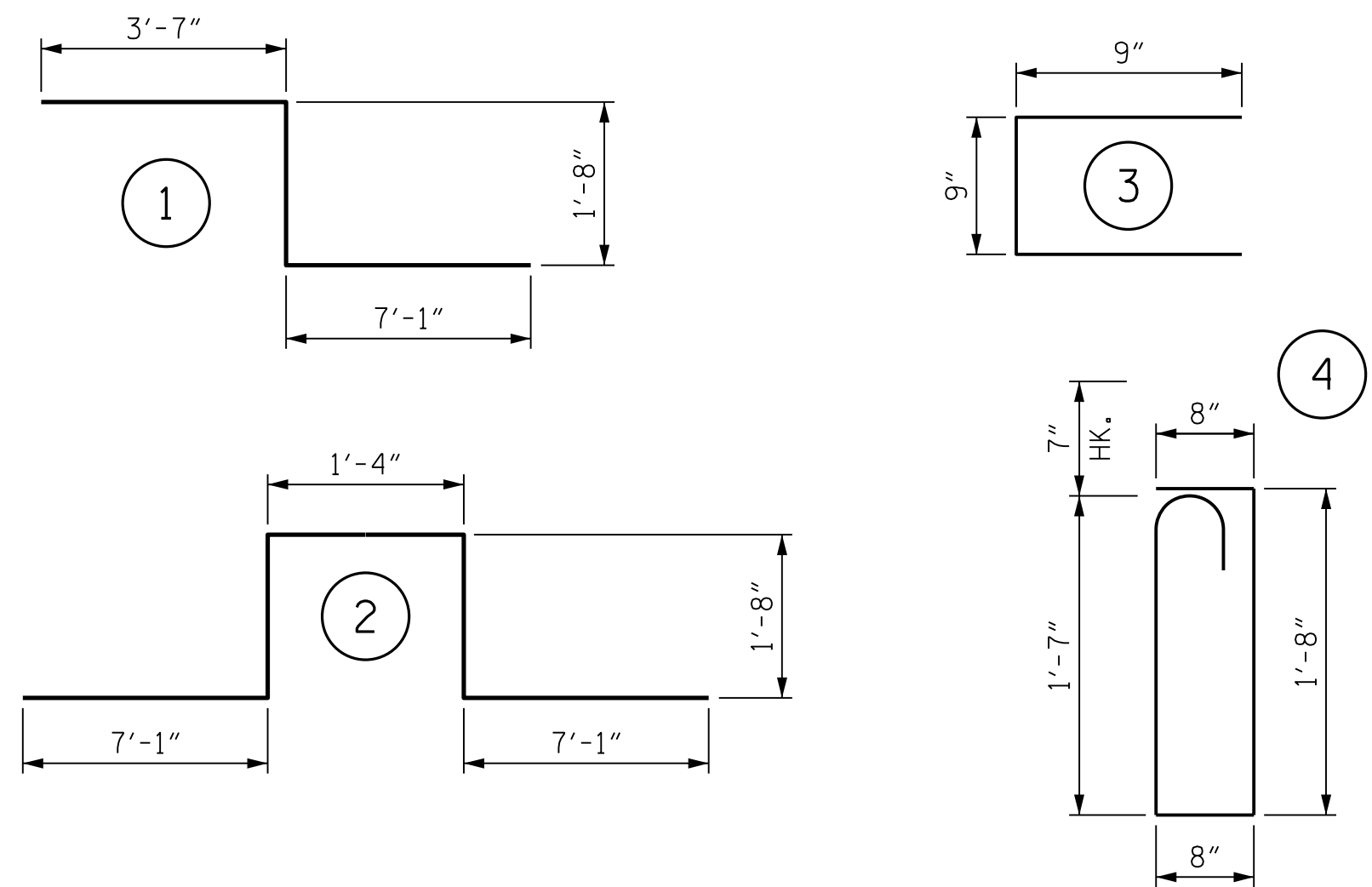
STAGE II

APPROACH SLABS	1,383 SQ.FT.
BRIDGE DECK	3,775 SQ.FT.
TOTAL	5,158 SQ.FT.

TOTAL

APPROACH SLABS	2,766 SQ.FT.
BRIDGE DECK	7,550 SQ.FT.
TOTAL	10,316 SQ.FT.

BAR TYPES



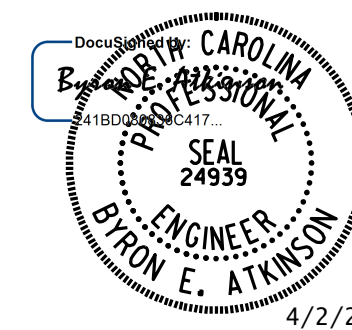
ALL BAR DIMENSIONS ARE OUT TO OUT.

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"			

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 2 OF 2



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

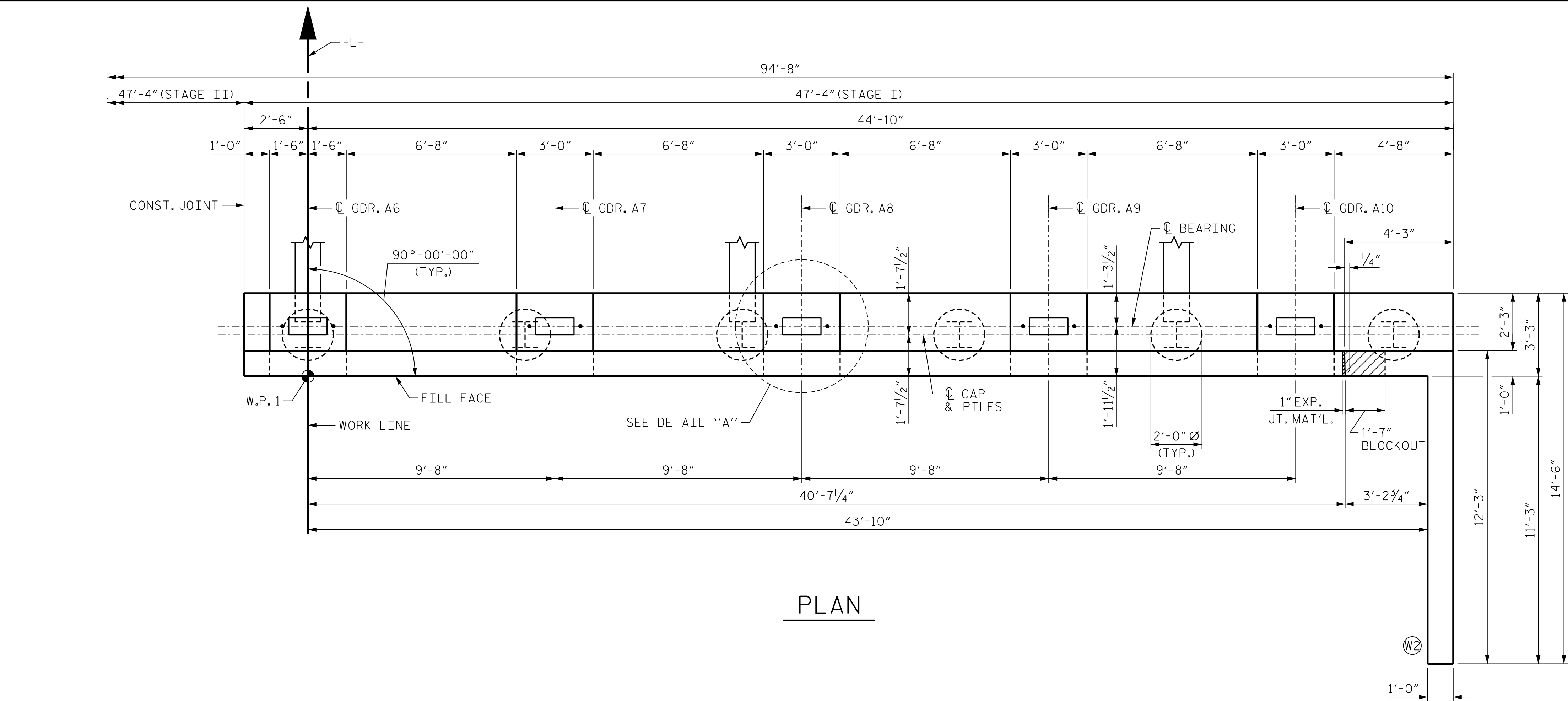
SUPERSTRUCTURE BILL OF MATERIAL

STAGE II

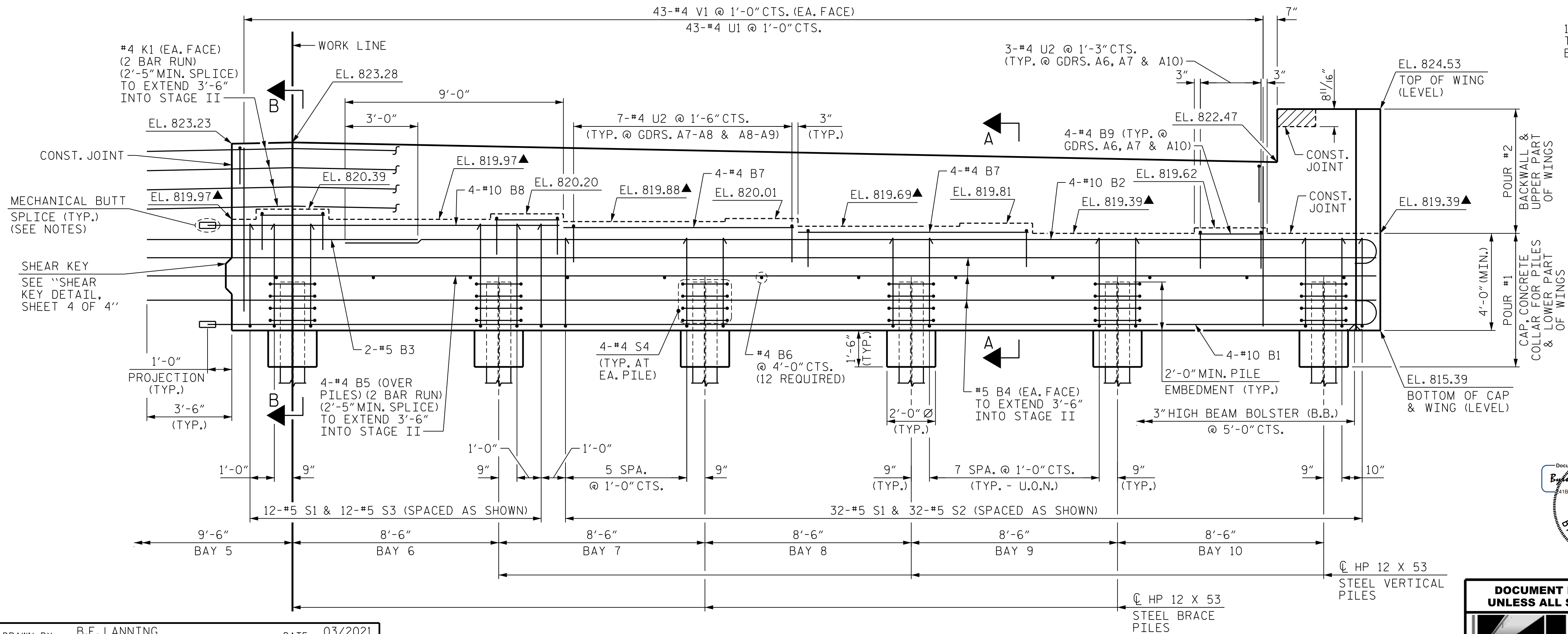
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-36
2			4			

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758\Structures\401.073-U4758-SMU-EIA-400308.dgn



PLAN



ELEVATION

NOTES:

STIRRUPS AND #4 U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

#4 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

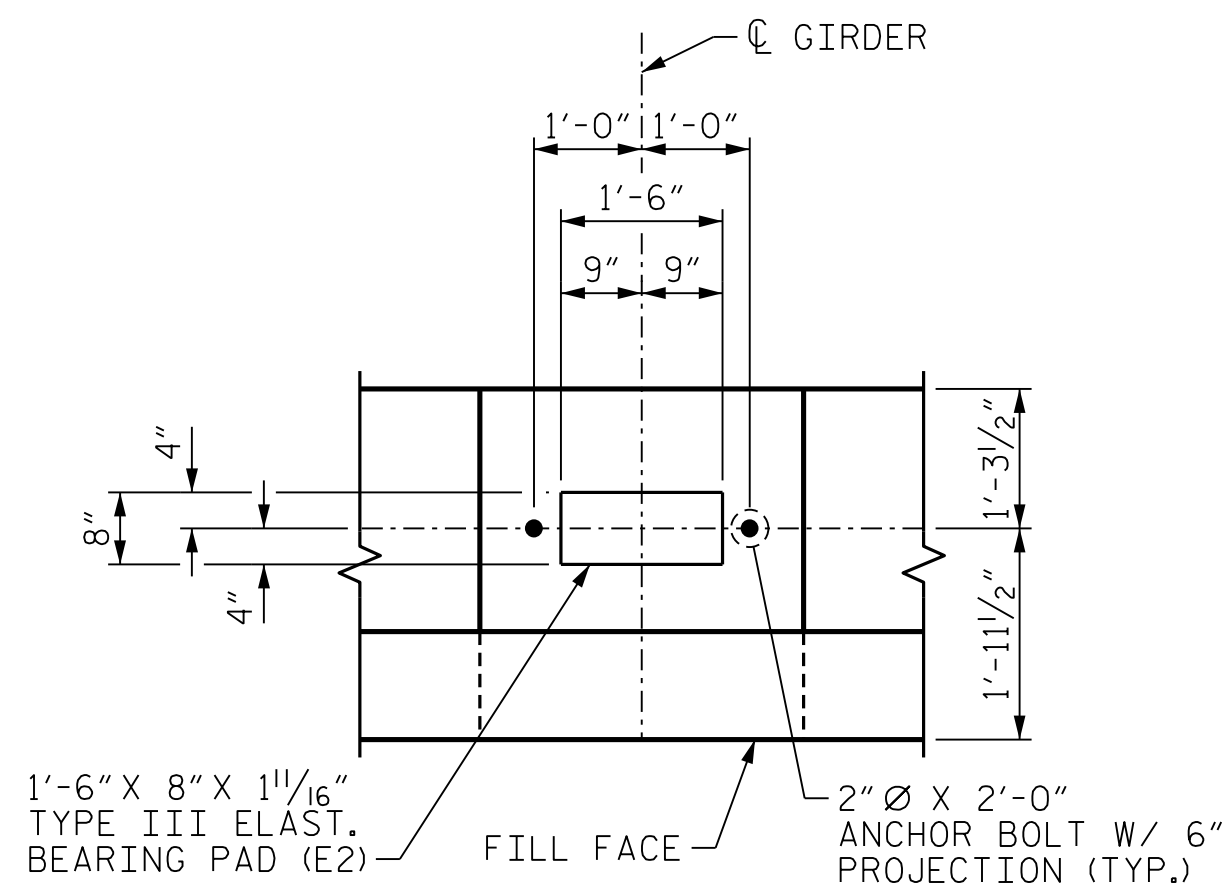
▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTIONS A-A AND B-B ON SHEET 4 OF 4.

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

FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, SHEAR KEY DETAIL AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.

THE "B" BARS AND "K" BARS THAT ARE EXTENDED INTO STAGE II MAY BE TEMPORARILY BENT OUT OF THE WAY IF THEY ARE IN CONFLICT AND BENT BACK INTO PLACE PRIOR TO POURING STAGE II.

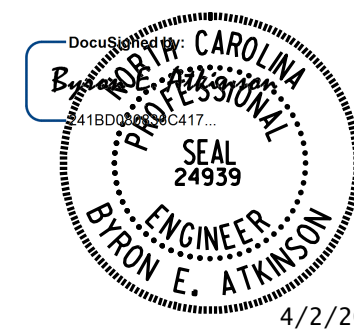
FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL, SEE SECTION 425-5 OF THE STANDARD SPECIFICATIONS.



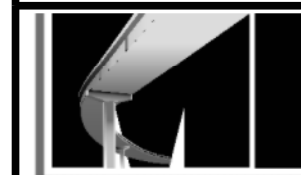
DETAIL "A"
(TYP. EACH BEARING)

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 4



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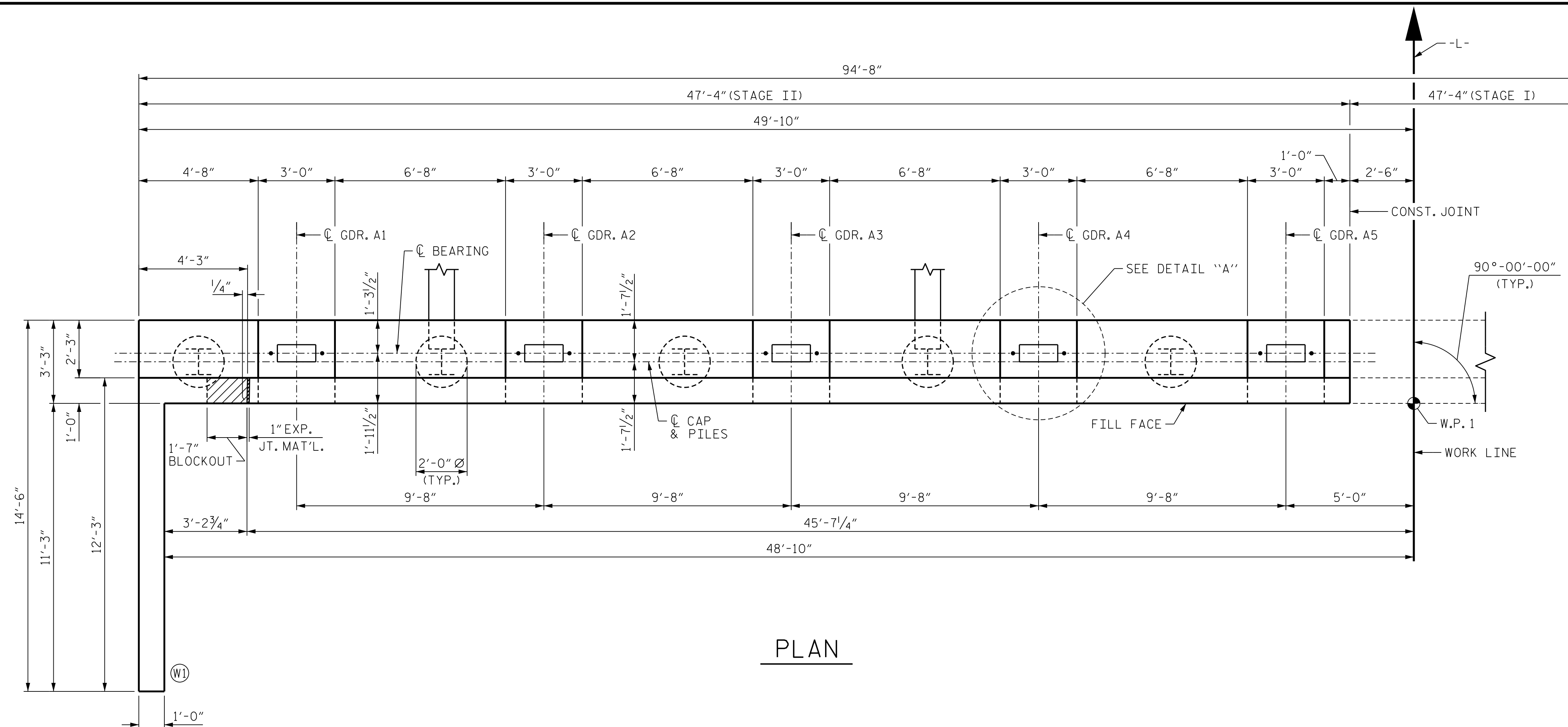
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION
STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-37
2			4			

DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

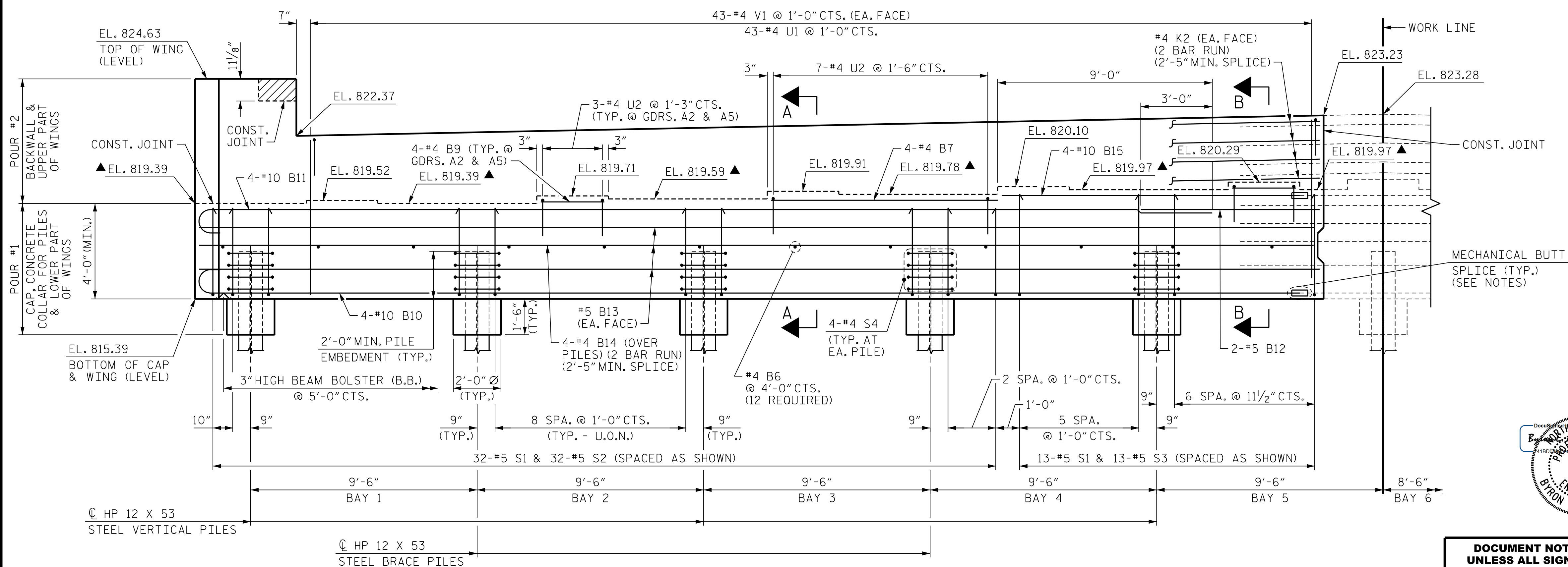


NOTES:

FOR NOTES, SEE SHEET 1 OF 4.

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A ON SHEET 4 OF 4.

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



PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION
STAGE II

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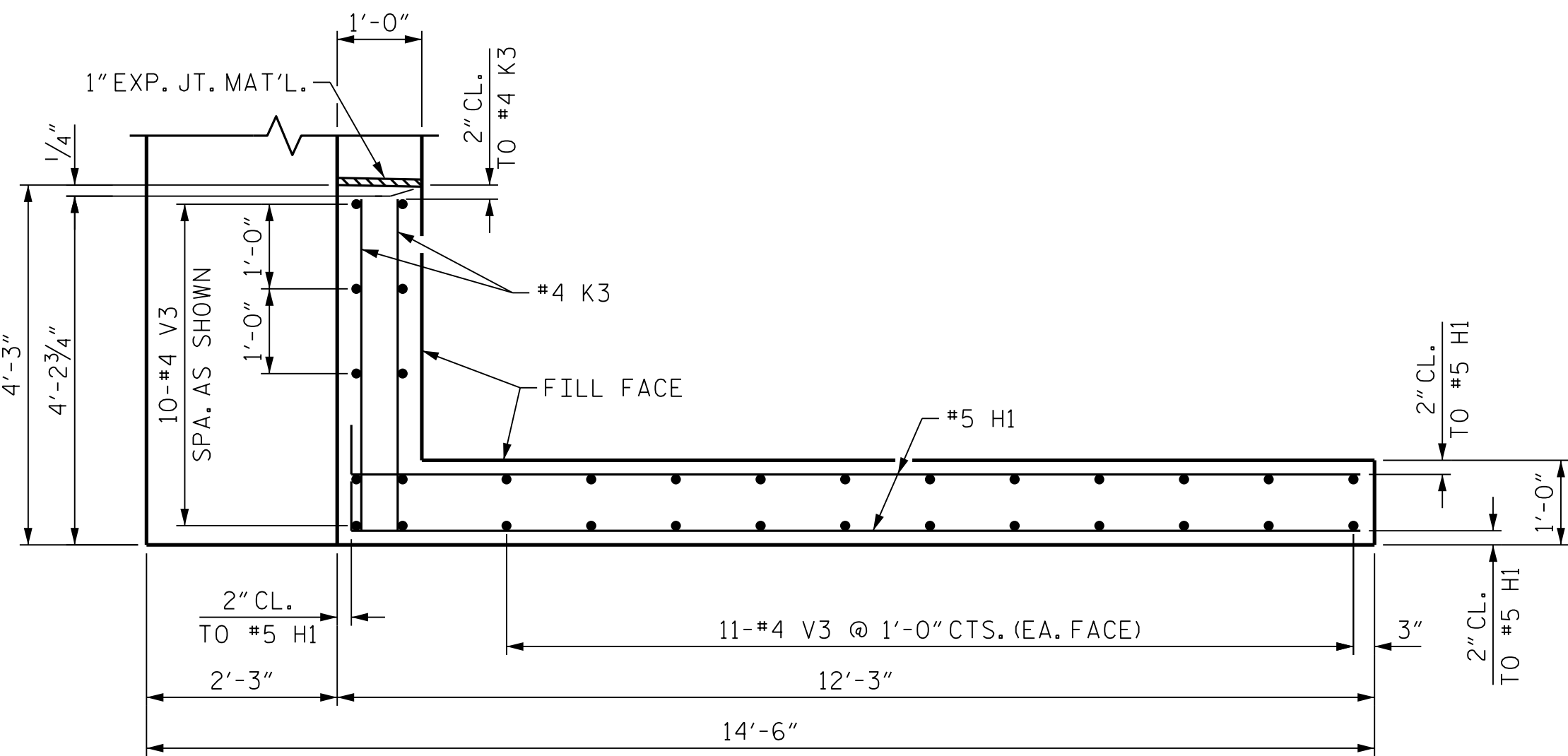


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

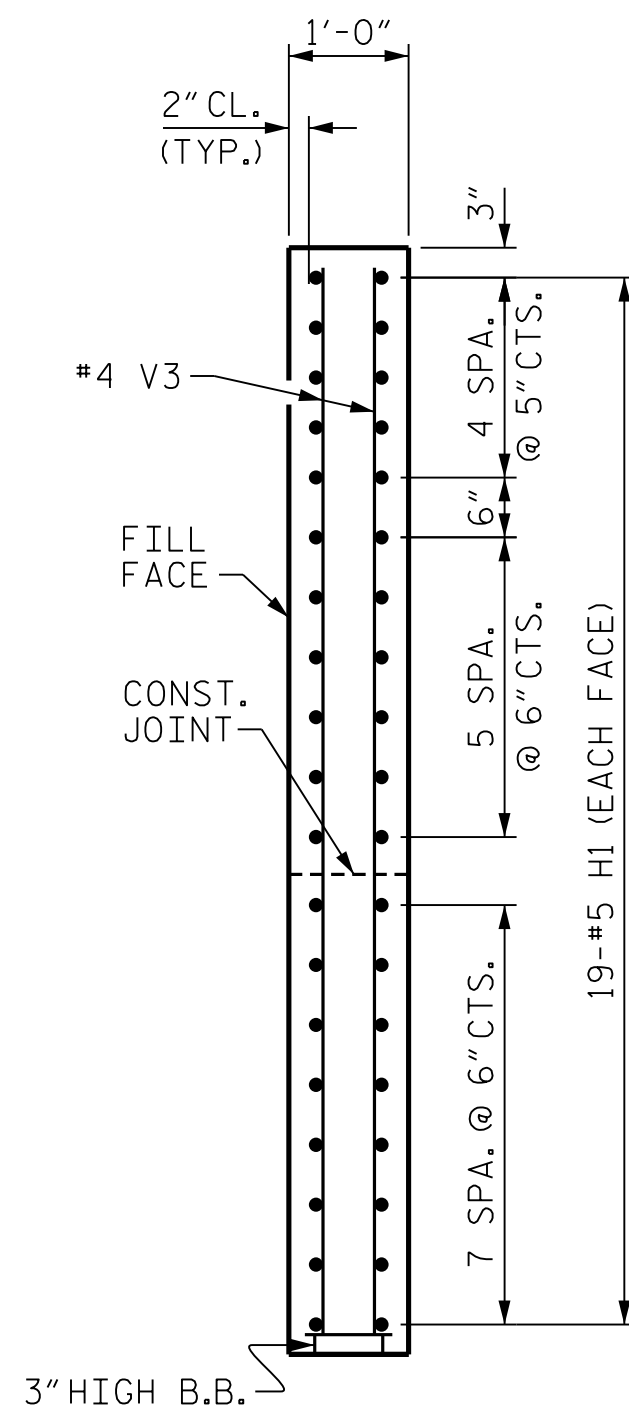
		REVISIONS						SHEET NO.	
100	NO.	BY:	DATE:	NO.	BY:	DATE:	S-38		
	1			3			TOTAL SHEETS		
1	2			4			57		

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>04/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

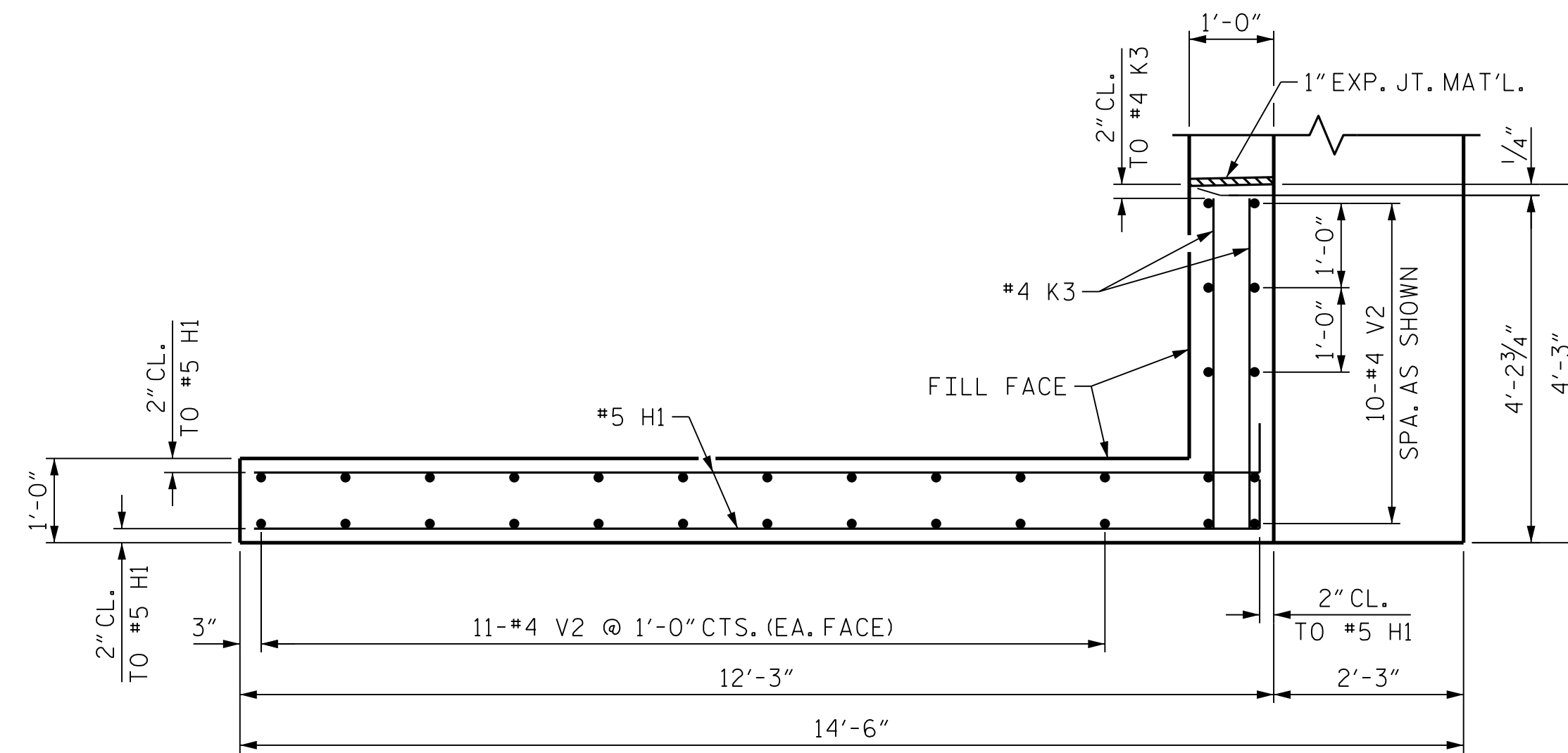
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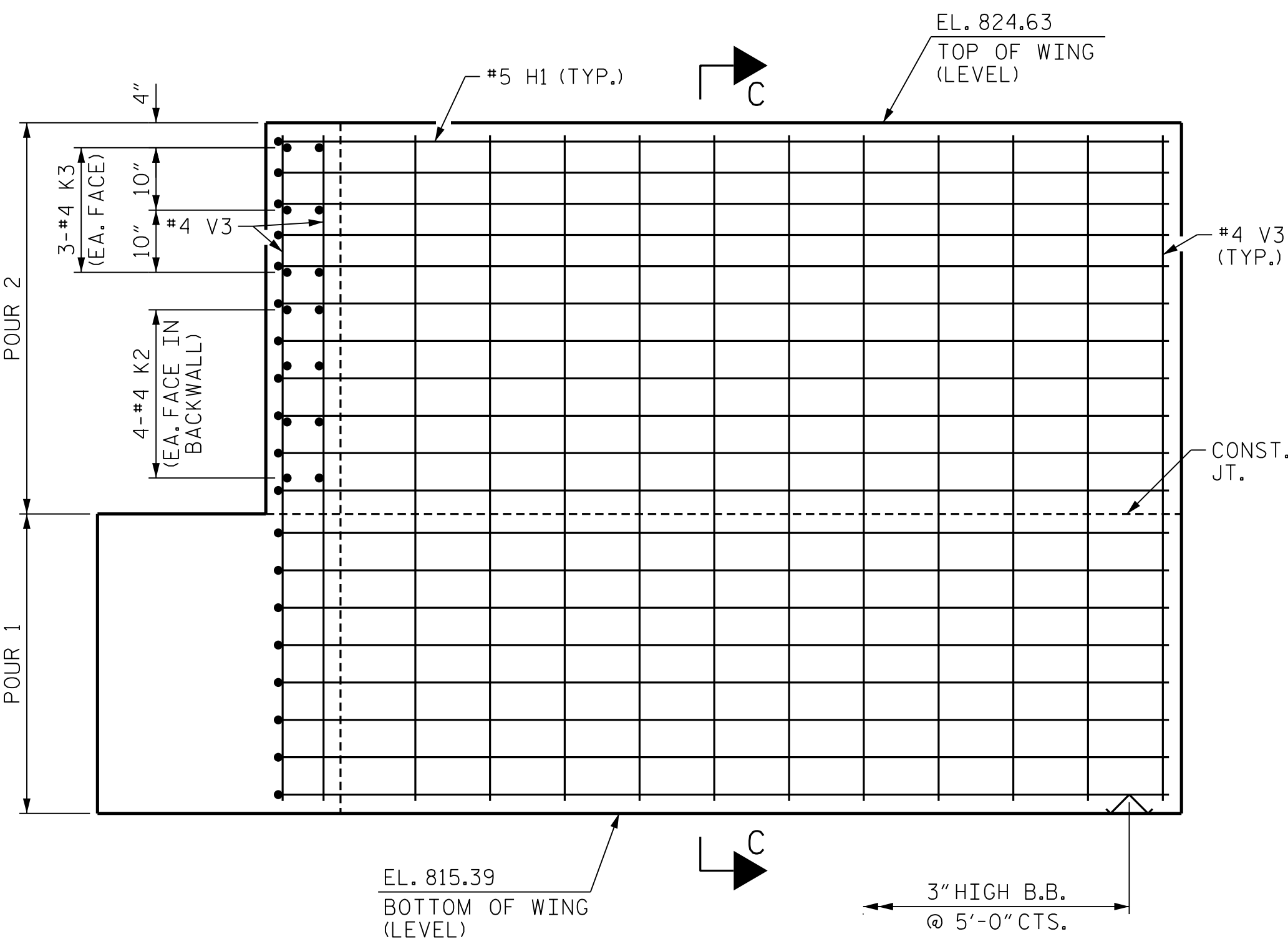
PLAN OF WING (W1)
STAGE II



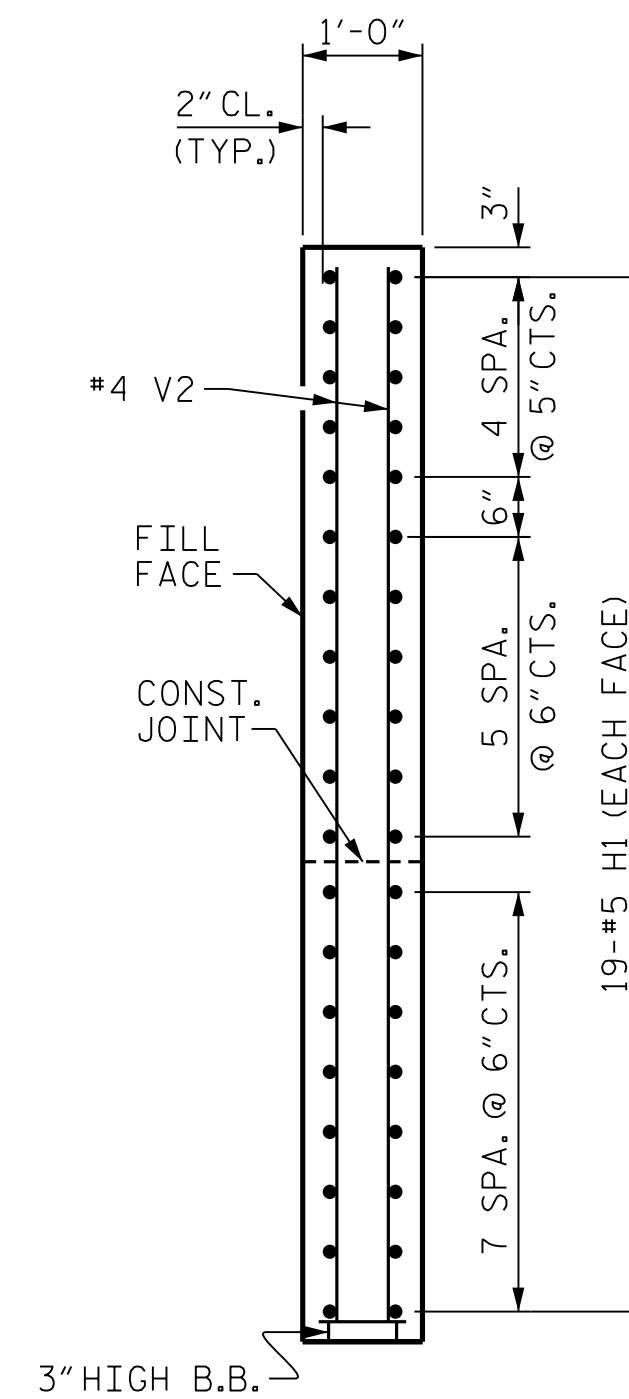
SECTION C-C



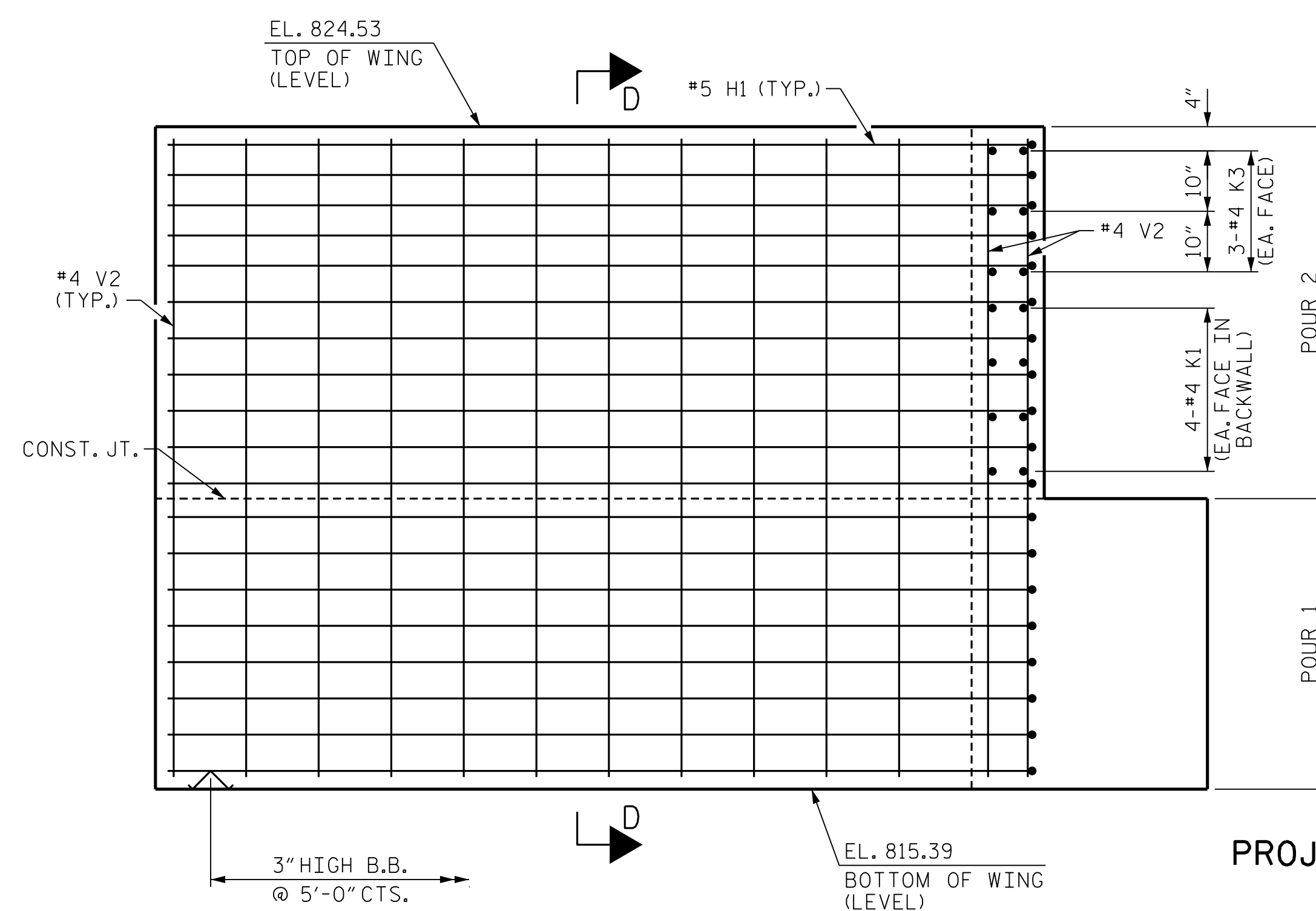
PLAN OF WING (W2)
STAGE I



ELEVATION OF WING (W1)
STAGE II



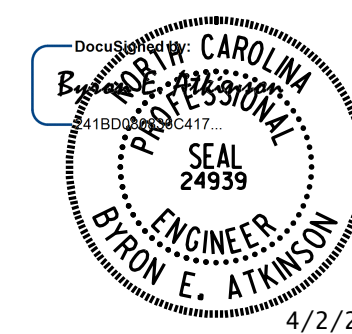
SECTION D-D



ELEVATION OF WING (W2)
STAGE I

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 3 OF 4



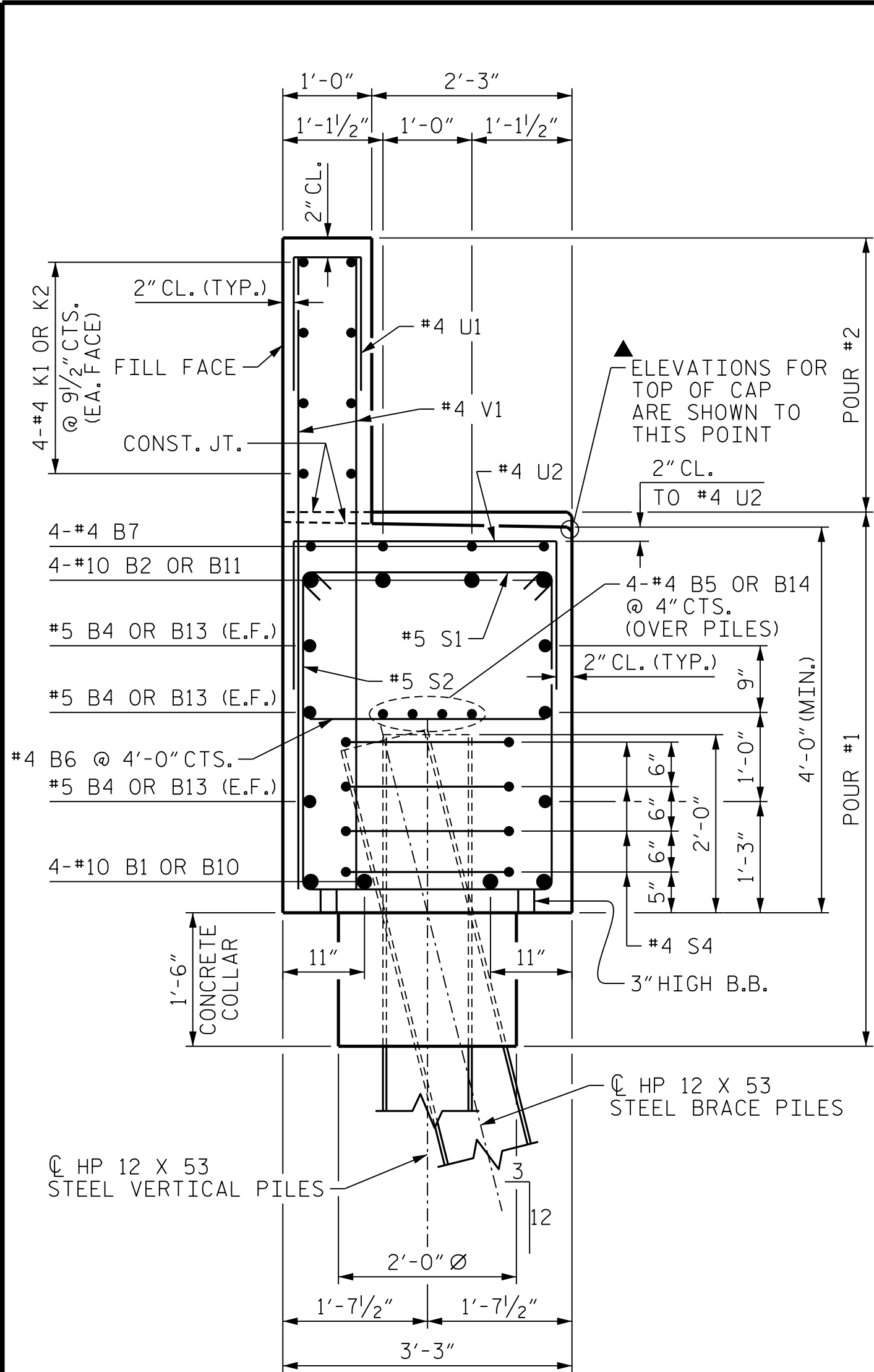
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

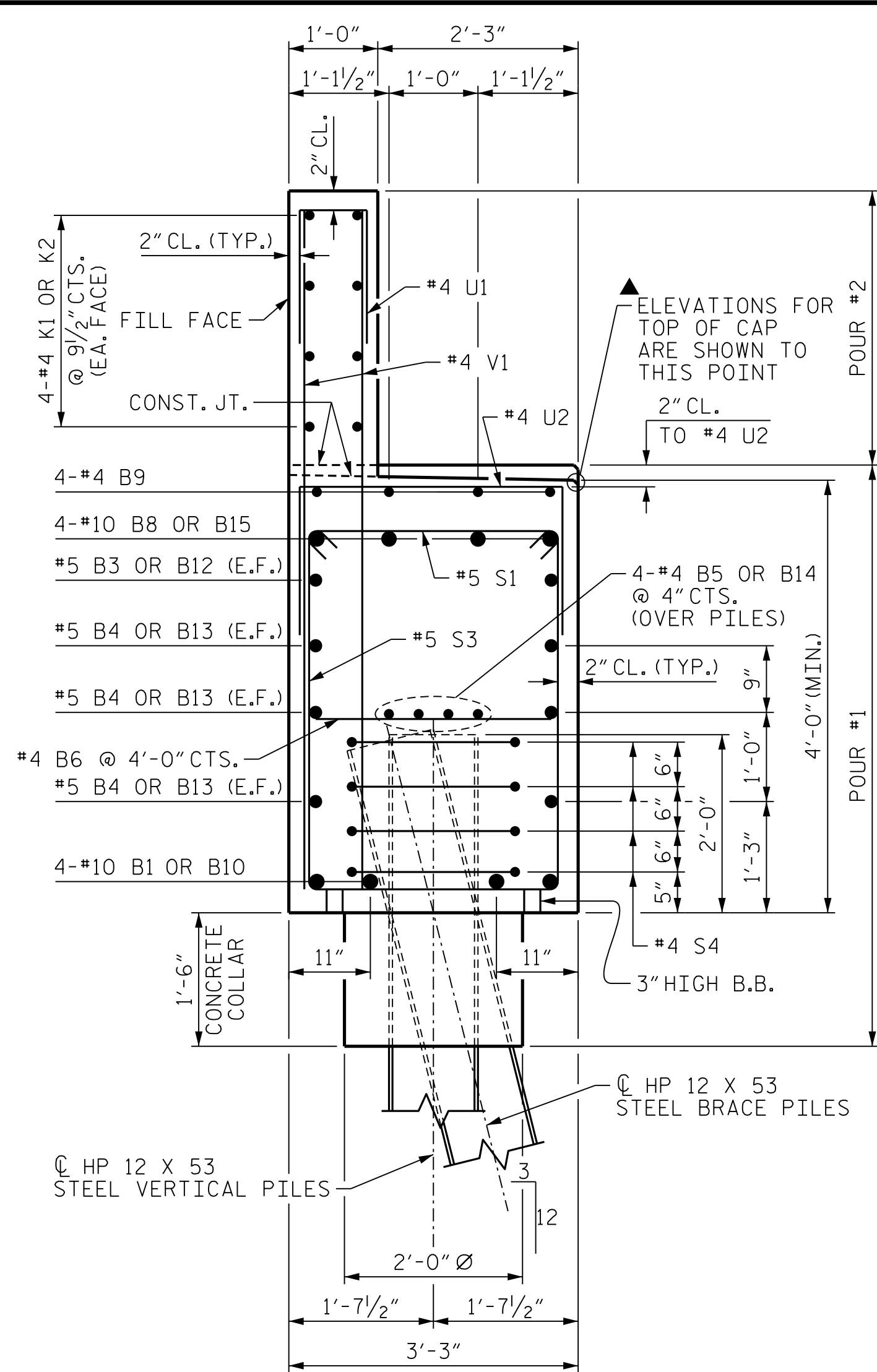
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-39
2			4			
TOTAL SHEETS						57

DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

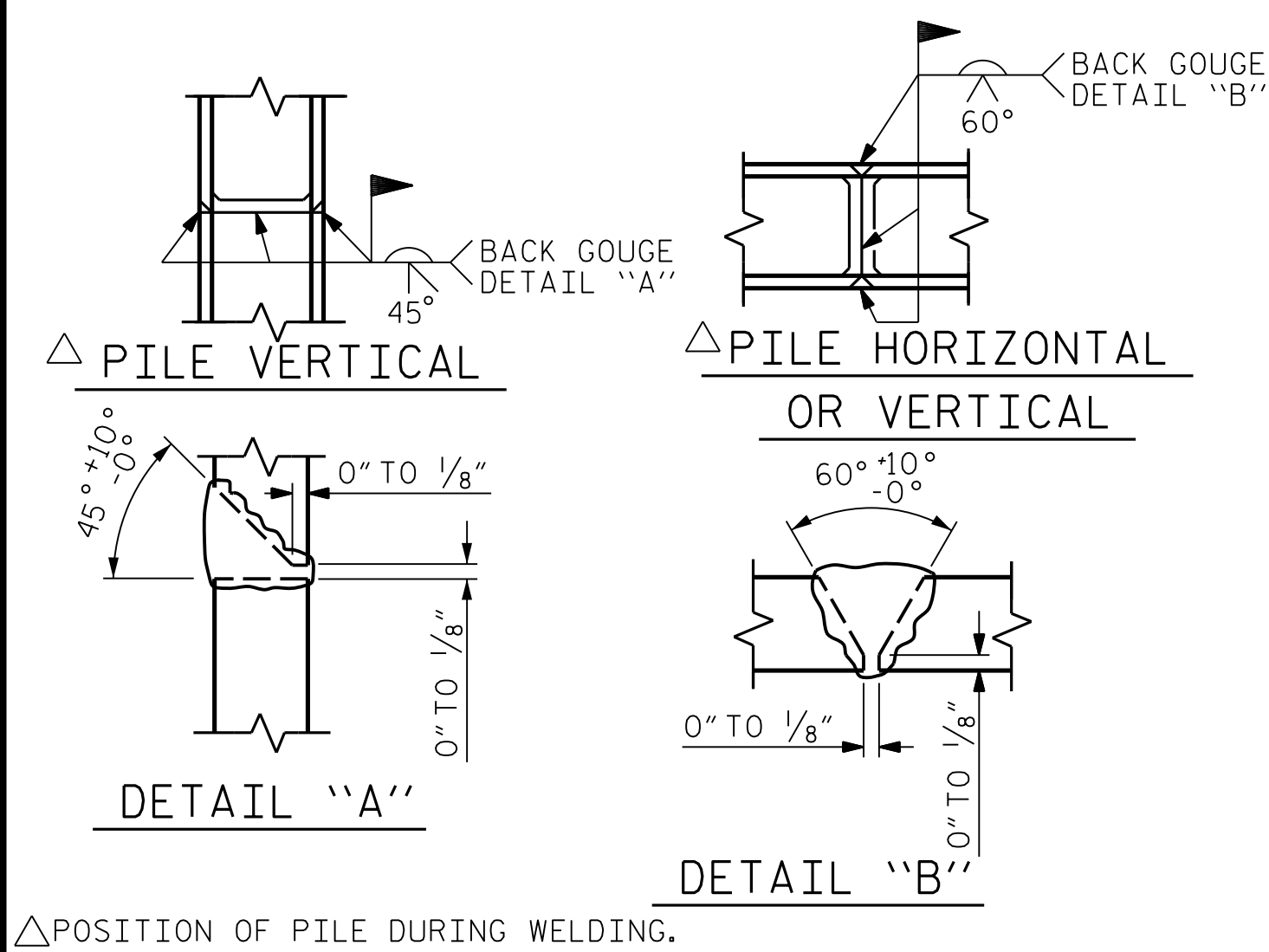
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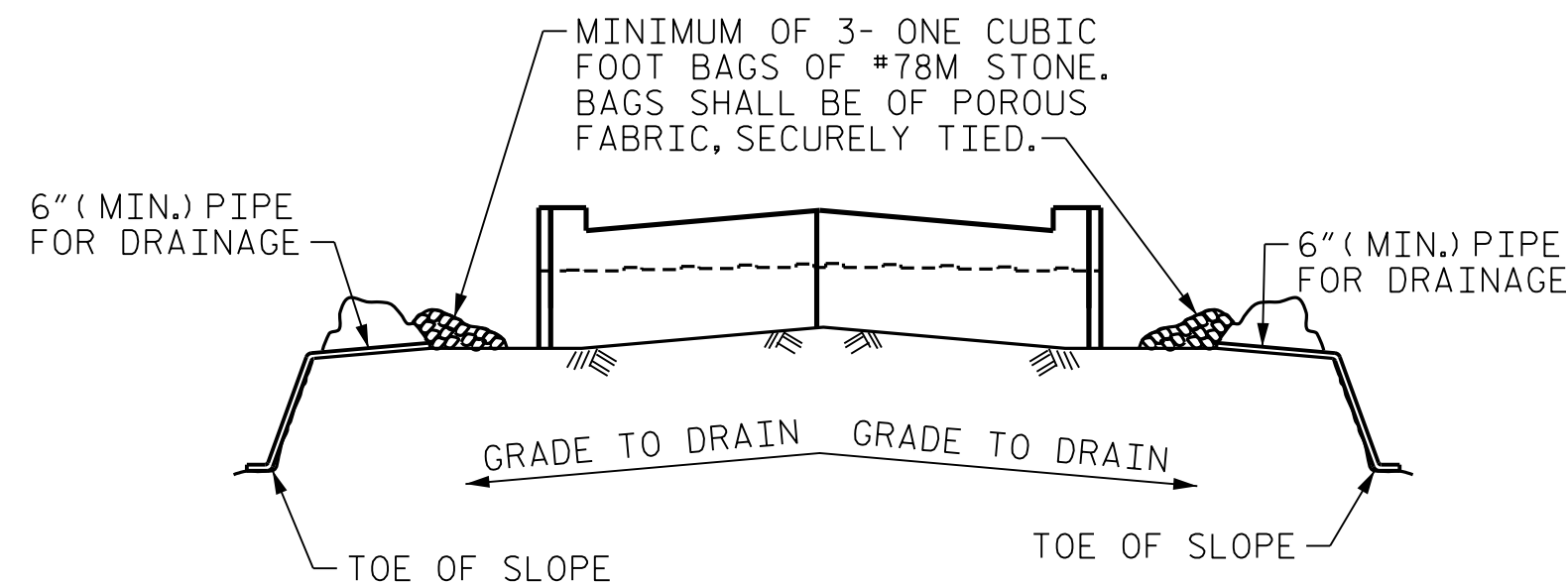
SECTION A-A



SECTION B-B



PILE SPLICE DETAILS

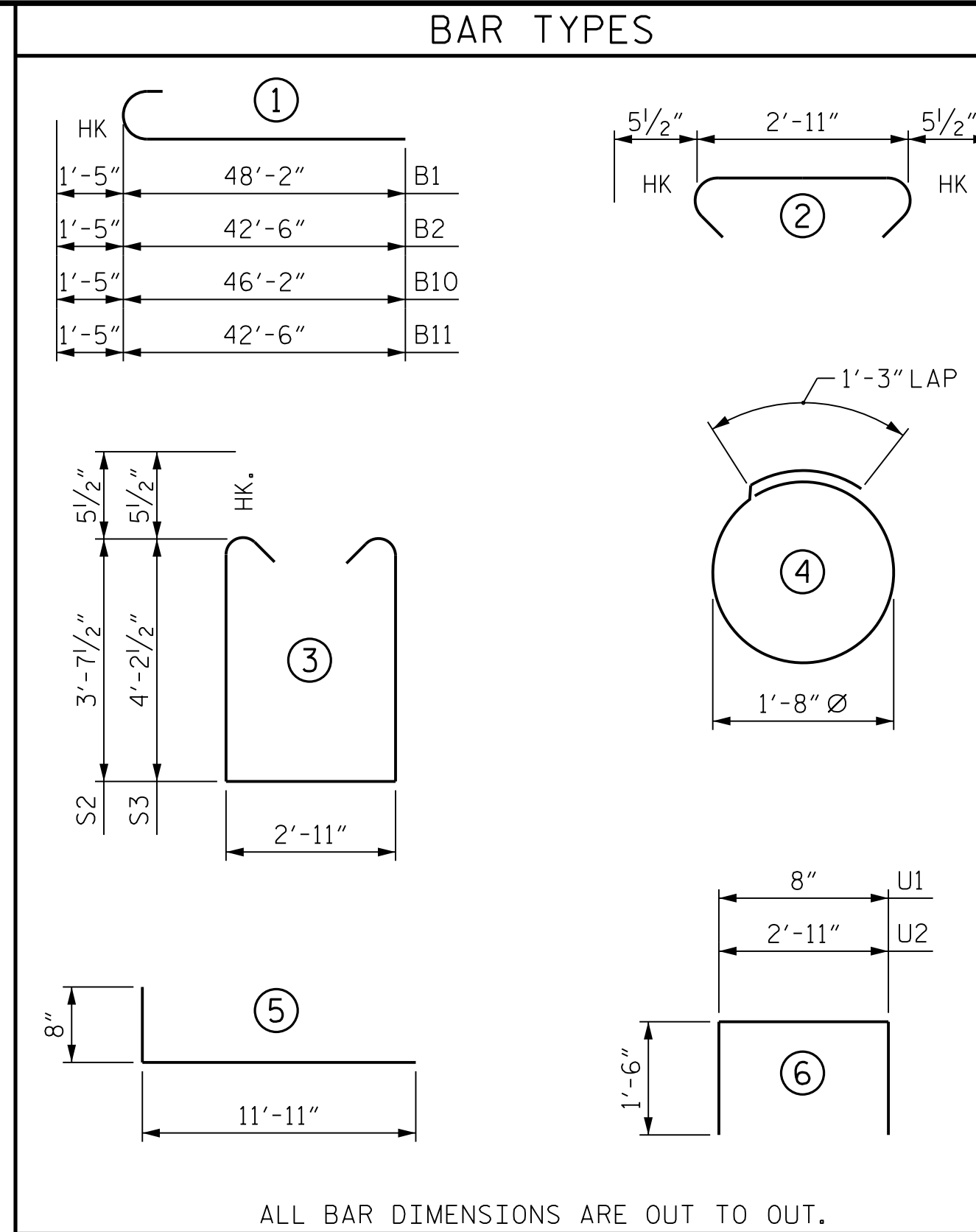


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

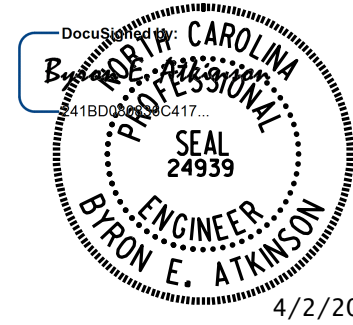
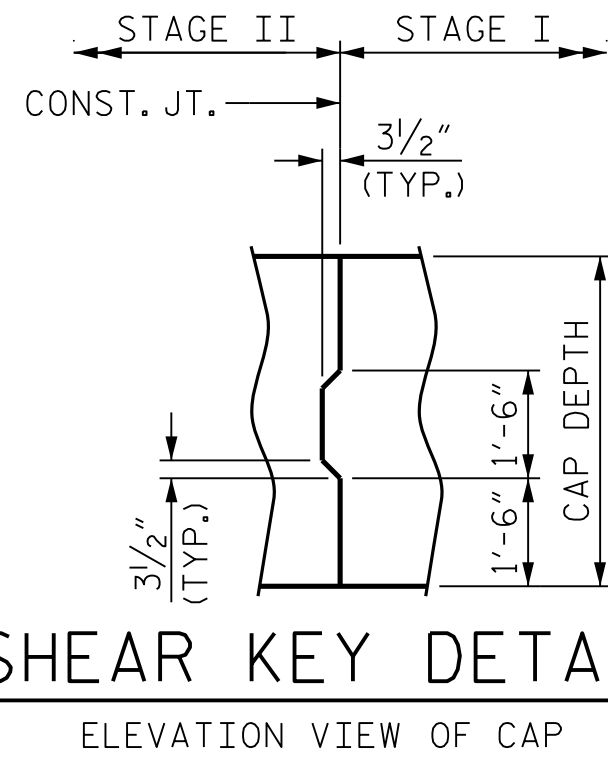
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL						BILL OF MATERIAL					
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	49'-7"	853	B6	12	#4	STR	2'-11"	23
B2	4	#10	1	43'-11"	756	B7	4	#4	STR	9'-6"	25
B3	2	#5	STR	11'-2"	23	B9	8	#4	STR	2'-8"	14
B4	6	#5	STR	50'-8"	317	B10	4	#10	1	47'-7"	819
B5	8	#4	STR	26'-7"	142	B11	4	#10	1	43'-11"	756
B6	12	#4	STR	2'-11"	23	B12	2	#5	STR	7'-6"	16
B7	8	#4	STR	9'-6"	51	B13	6	#5	STR	46'-8"	292
B8	4	#10	STR	14'-6"	250	B14	8	#4	STR	24'-7"	131
B9	12	#4	STR	2'-8"	21	B15	4	#10	STR	12'-6"	215
H1	38	#5	5	12'-7"	499	H1	38	#5	5	12'-7"	499
K1	16	#4	STR	26'-7"	284	K2	16	#4	STR	24'-9"	265
K3	6	#4	STR	3'-10"	15	K3	6	#4	STR	3'-10"	15
S1	44	#5	2	3'-10"	176	S1	45	#5	2	3'-10"	180
S2	32	#5	3	11'-1"	370	S2	32	#5	3	11'-1"	370
S3	12	#5	3	12'-3"	153	S3	13	#5	3	12'-3"	166
S4	24	#4	4	6'-6"	104	S4	20	#4	4	6'-6"	87
U1	43	#4	6	3'-8"	105	U1	43	#4	6	3'-8"	105
U2	23	#4	6	5'-11"	91	U2	13	#4	6	5'-11"	51
V1	86	#4	STR	6'-6"	373	V1	86	#4	STR	6'-6"	373
V2	32	#4	STR	8'-8"	185	V3	32	#4	STR	8'-9"	187
REINFORCING STEEL					4,791 LBS.	REINFORCING STEEL					4,589 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WINGS)				28.0 C.Y.		POUR #1 (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WINGS)				27.5 C.Y.	
POUR #2 (BACKWALL & UPPER PART OF WINGS)				7.8 C.Y.		POUR #2 (BACKWALL & UPPER PART OF WINGS)				7.8 C.Y.	
TOTAL					35.8 C.Y.	TOTAL					35.3 C.Y.



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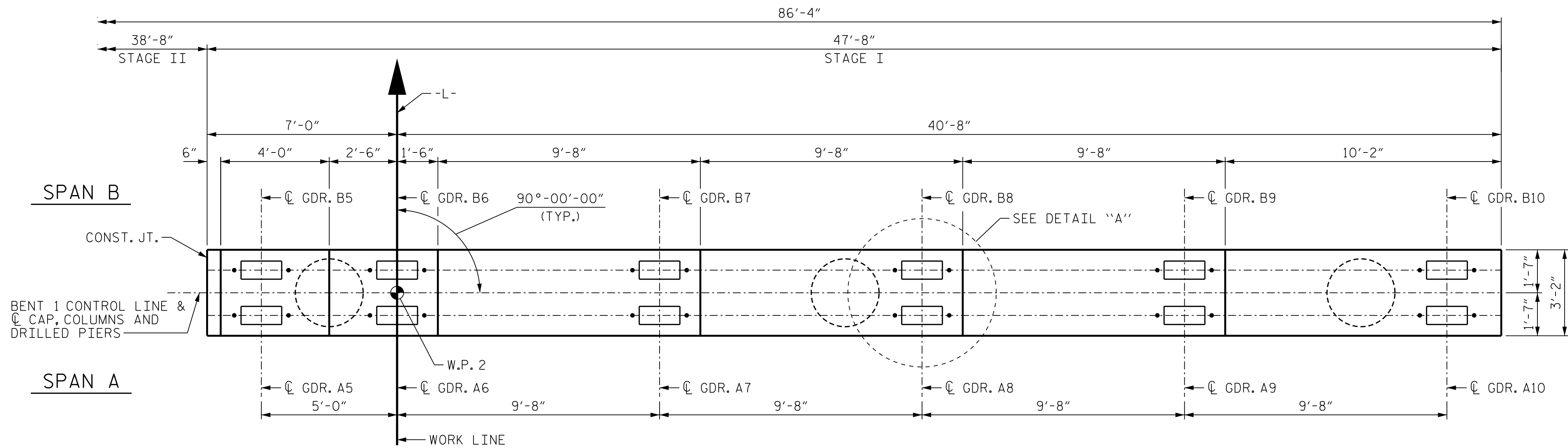
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

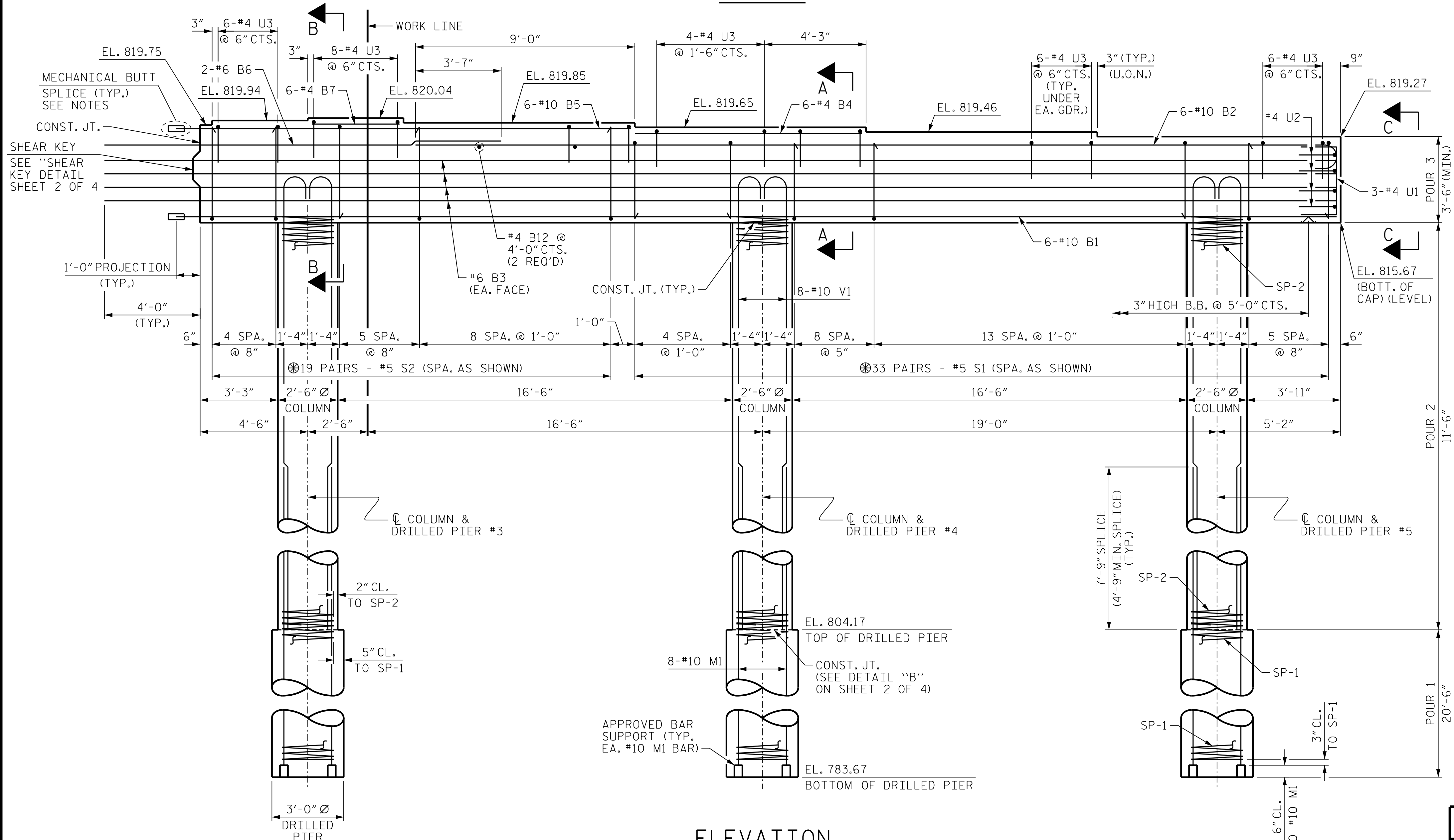
SHEET 4 OF 4

DEPARTMENT OF TRANSPORTATION RALEIGH						SUBSTRUCTURE END BENT 1 DETAILS AND BILL OF MATERIAL					
REVISIONS						SHEET NO.					
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40					
1			3			TOTAL SHEETS 57					
2			4								

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PLAN



ELEVATION

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.

FOR SECTION A-A, SECTION B-B, VIEW C-C, SHEAR KEY DETAIL AND END ELEVATION, SEE SHEET 2 OF 4.

⊗ INVERT ALTERNATE PAIRS OF STIRRUPS.

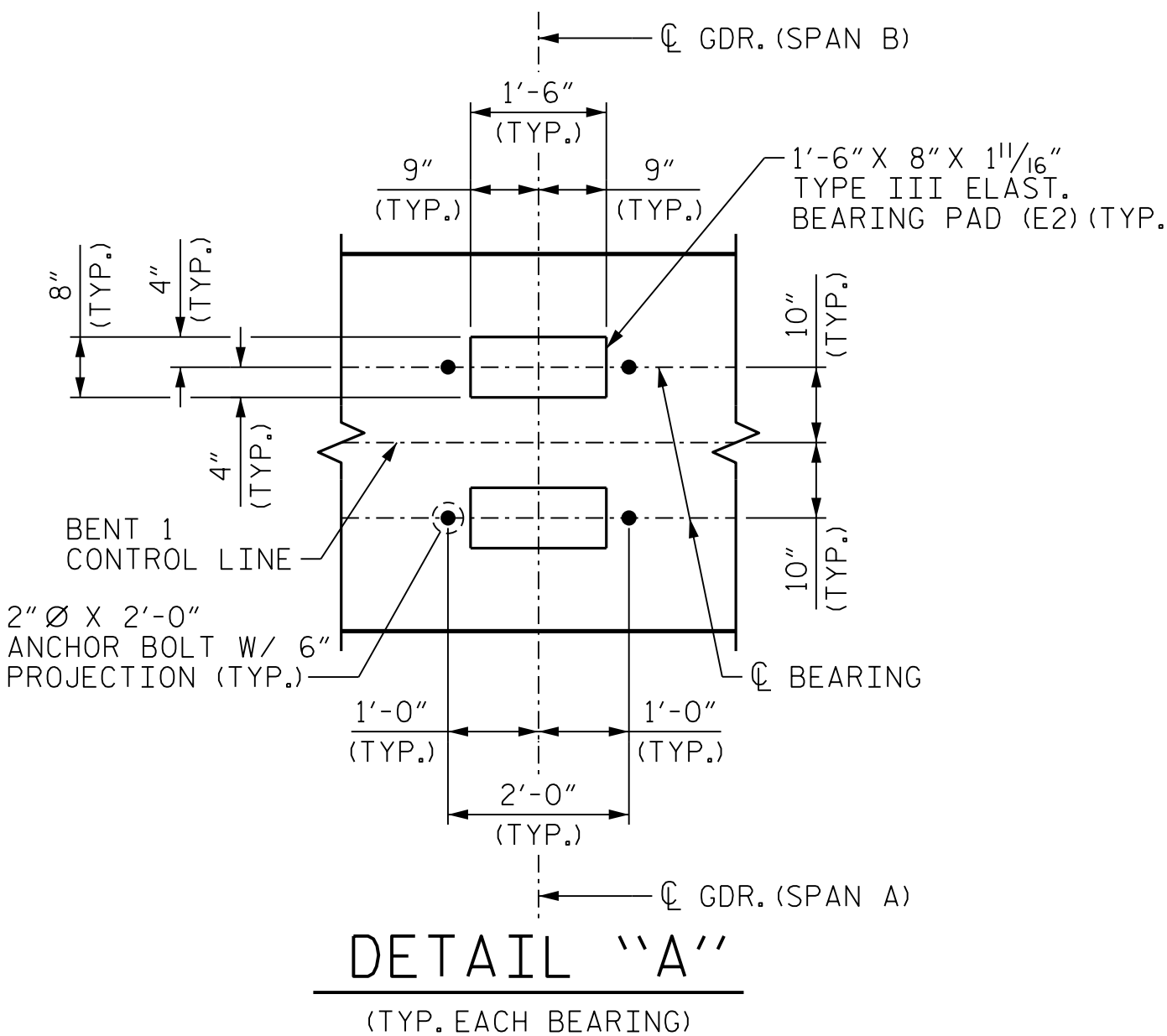
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

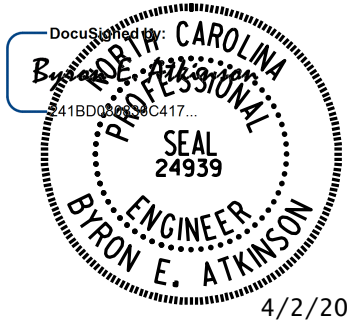
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL, SEE SECTION 425-5 OF THE STANDARD SPECIFICATIONS.

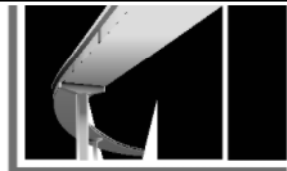


PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 4



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1
PLAN AND ELEVATION
STAGE I

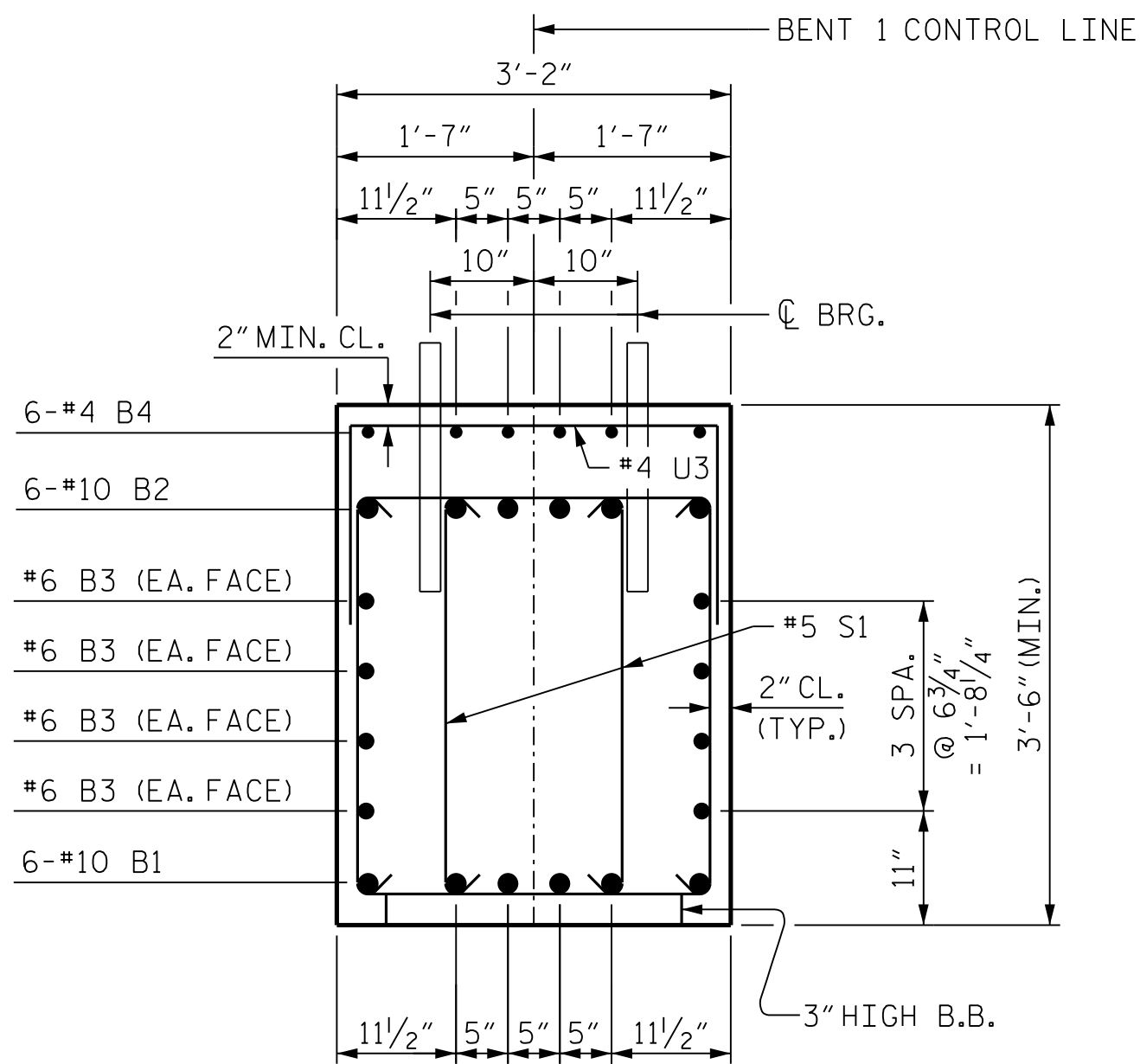
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-41
2			4			

TOTAL SHEETS
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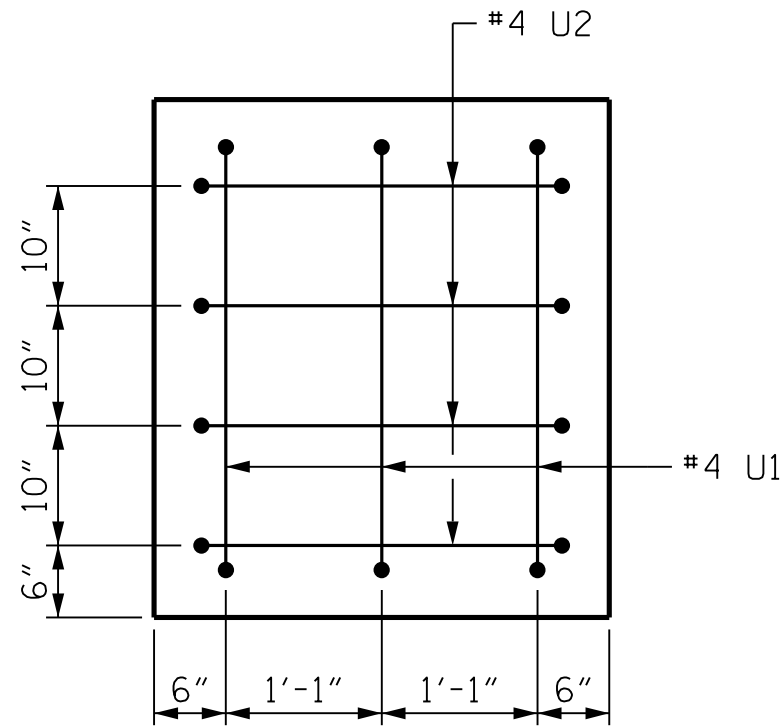
DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL
FOR EACH COLUMN AND DRILLED PIER UNLESS OTHERWISE NOTED (U.O.N.)

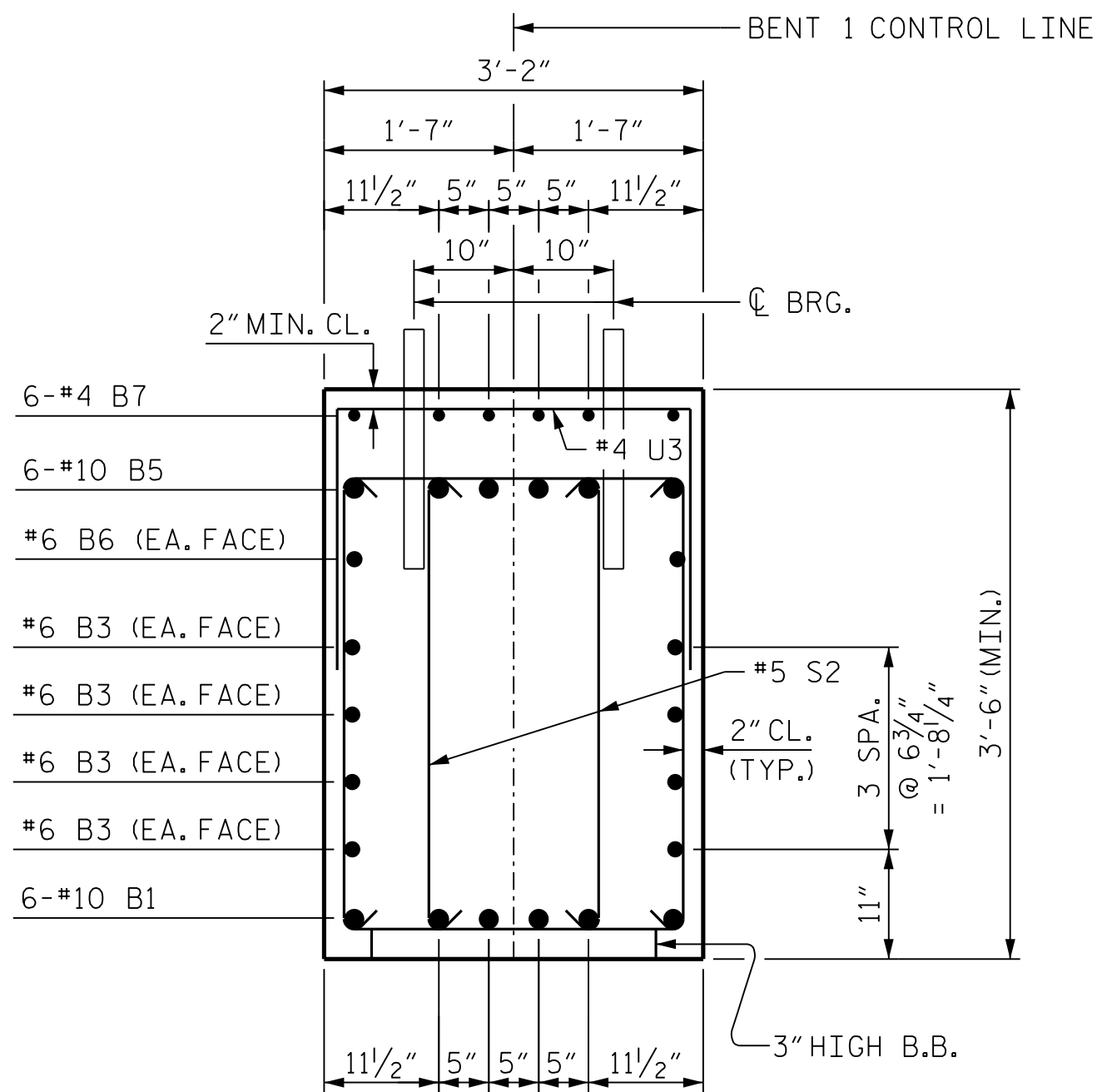
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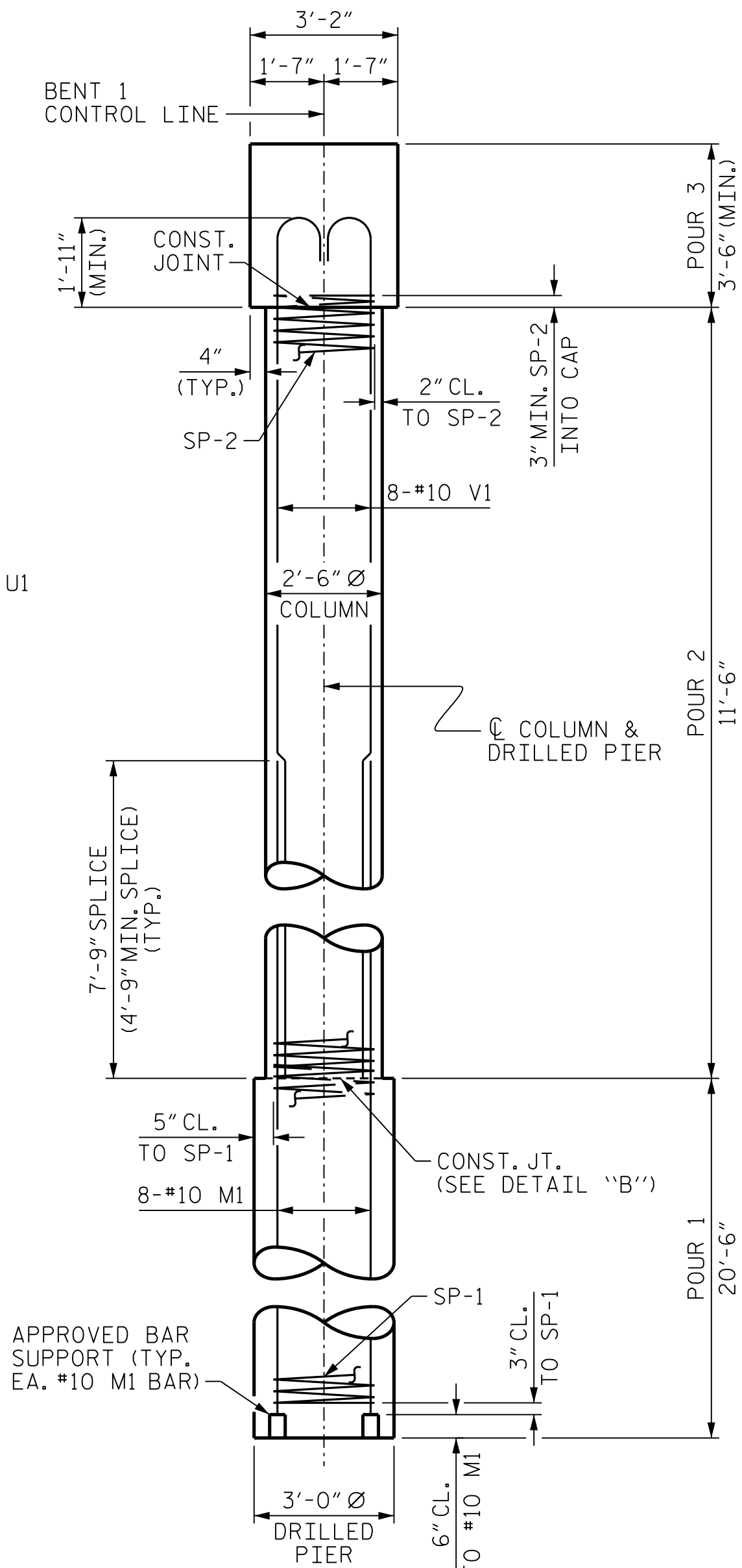
SECTION A-A



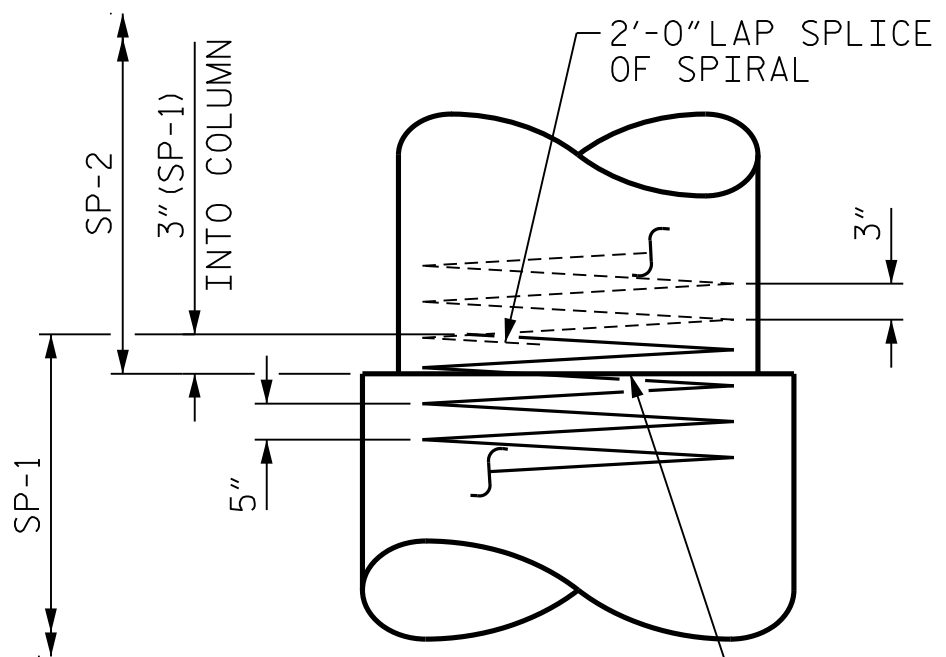
VIEW C-C



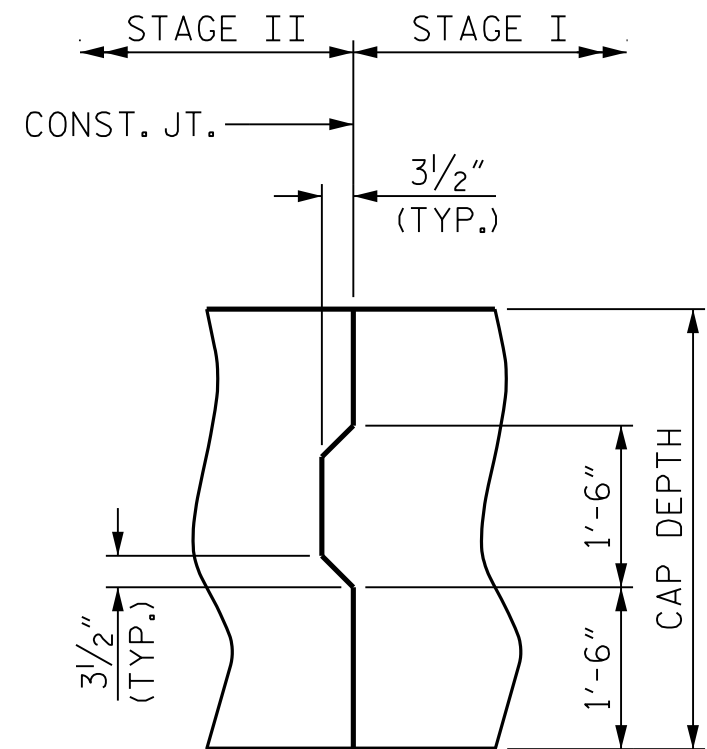
SECTION B-B



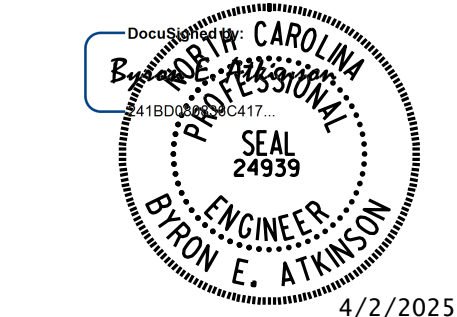
END ELEVATION



DETAIL "B"



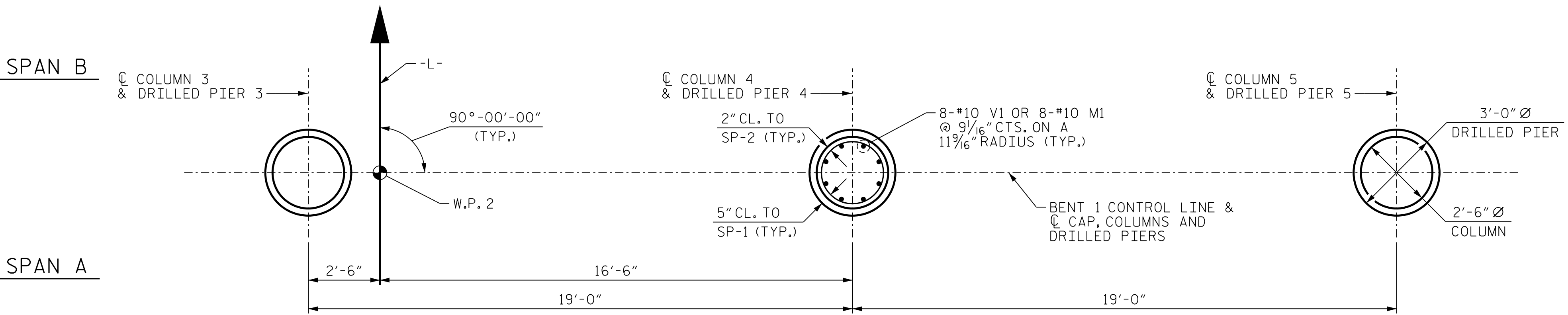
SHEAR KEY DETAIL



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

BILL OF MATERIAL					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	48'-6"	1,252
B2	6	#10	1	39'-9"	1,026
B3	8	#6	STR	51'-6"	619
B4	6	#4	STR	9'-6"	38
B5	6	#10	STR	19'-0"	491
B6	2	#6	STR	16'-9"	50
B7	6	#4	STR	3'-8"	15
B12	2	#4	STR	2'-10"	4
M1	24	#10	STR	27'-9"	2,866
S1	66	#5	2	9'-4"	642
S2	38	#5	2	10'-6"	416
U1	3	#4	3	6'-0"	12
U2	4	#4	3	5'-8"	15
U3	42	#4	3	5'-10"	164
V1	24	#10	1	14'-11"	1,540
REINFORCING STEEL					9,150 LBS.
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	**	5	329'-5"	1,031
SP-2	3	*	4	324'-0"	649
SPIRAL COLUMN REINFORCING STEEL					1,680 LBS.
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMN)				6.3	C.Y.
POUR #3 (CAP)				22.2	C.Y.
TOTAL				28.5	C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				16.1	C.Y.



PLAN OF COLUMNS AND DRILLED PIERS

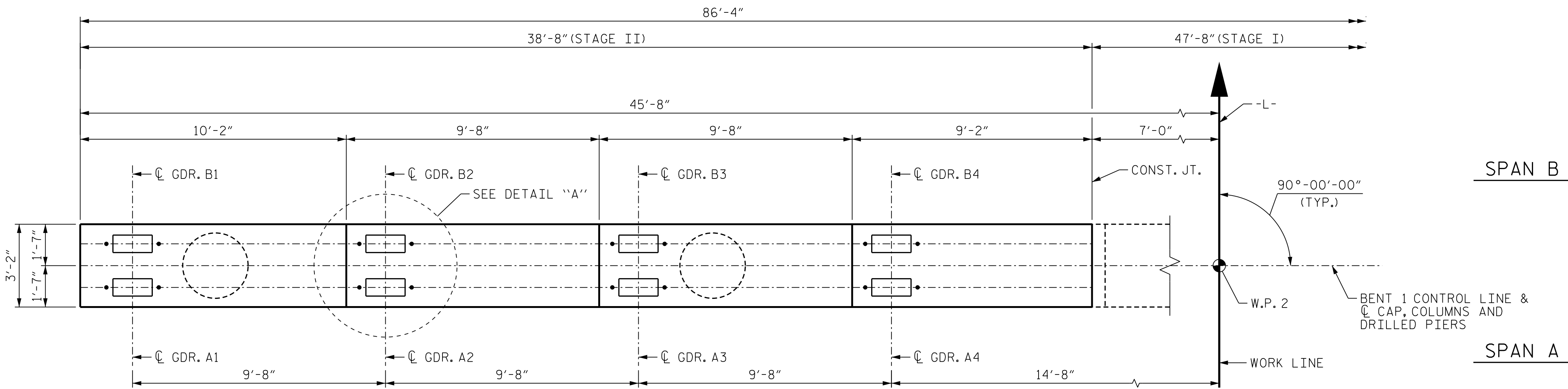
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

DRAWN BY : B.E. LANNING	DATE : 03/2021
CHECKED BY : B.E. ATKINSON	DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 06/2024

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 2 OF 4

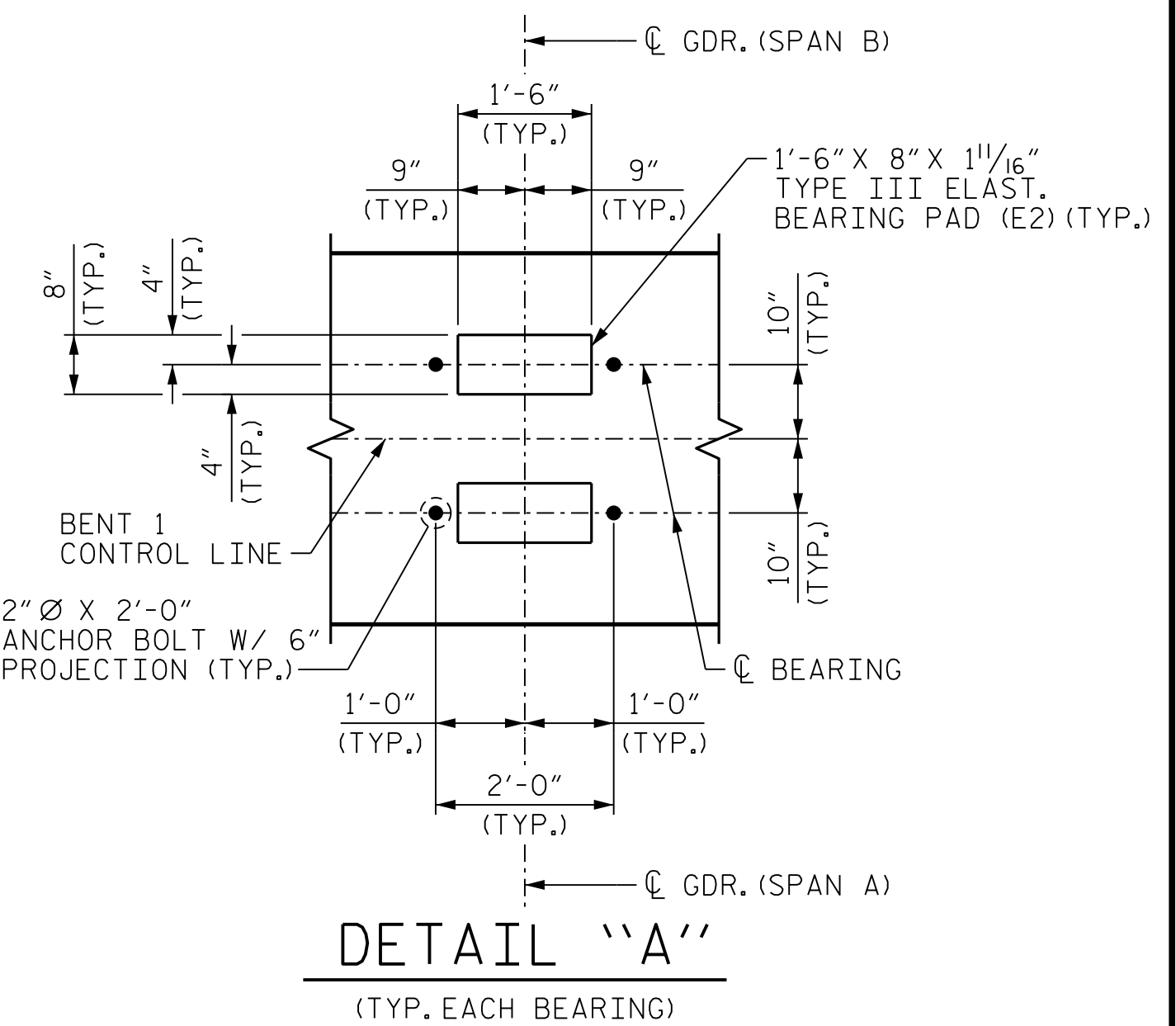
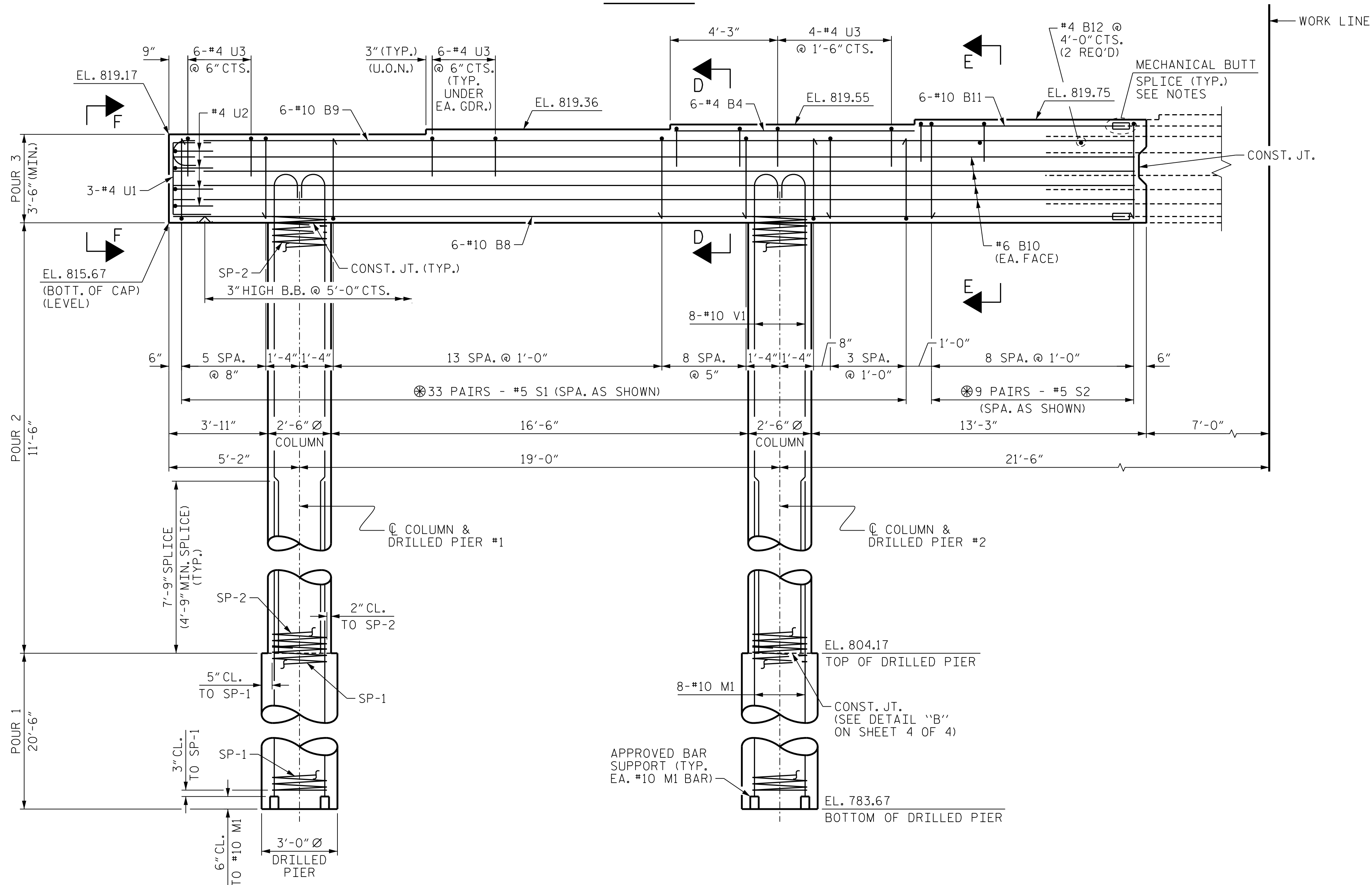
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-42
2			4			
TOTAL SHEETS 57						



NOTES:

FOR SECTION D-D, SECTION E-E, VIEW F-F AND END ELEVATION, SEE SHEET 4 OF 4.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 4.

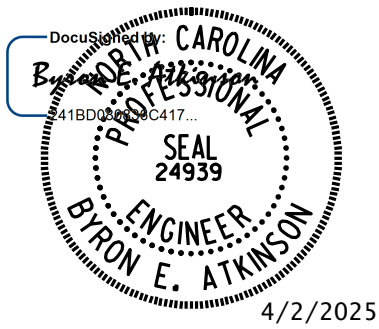


PROJECT NO. U-4758

GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 3 OF 4



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-43
2			4			
TOTAL SHEETS						57

DRAWN BY : B.E. LANNING DATE : 03/2021

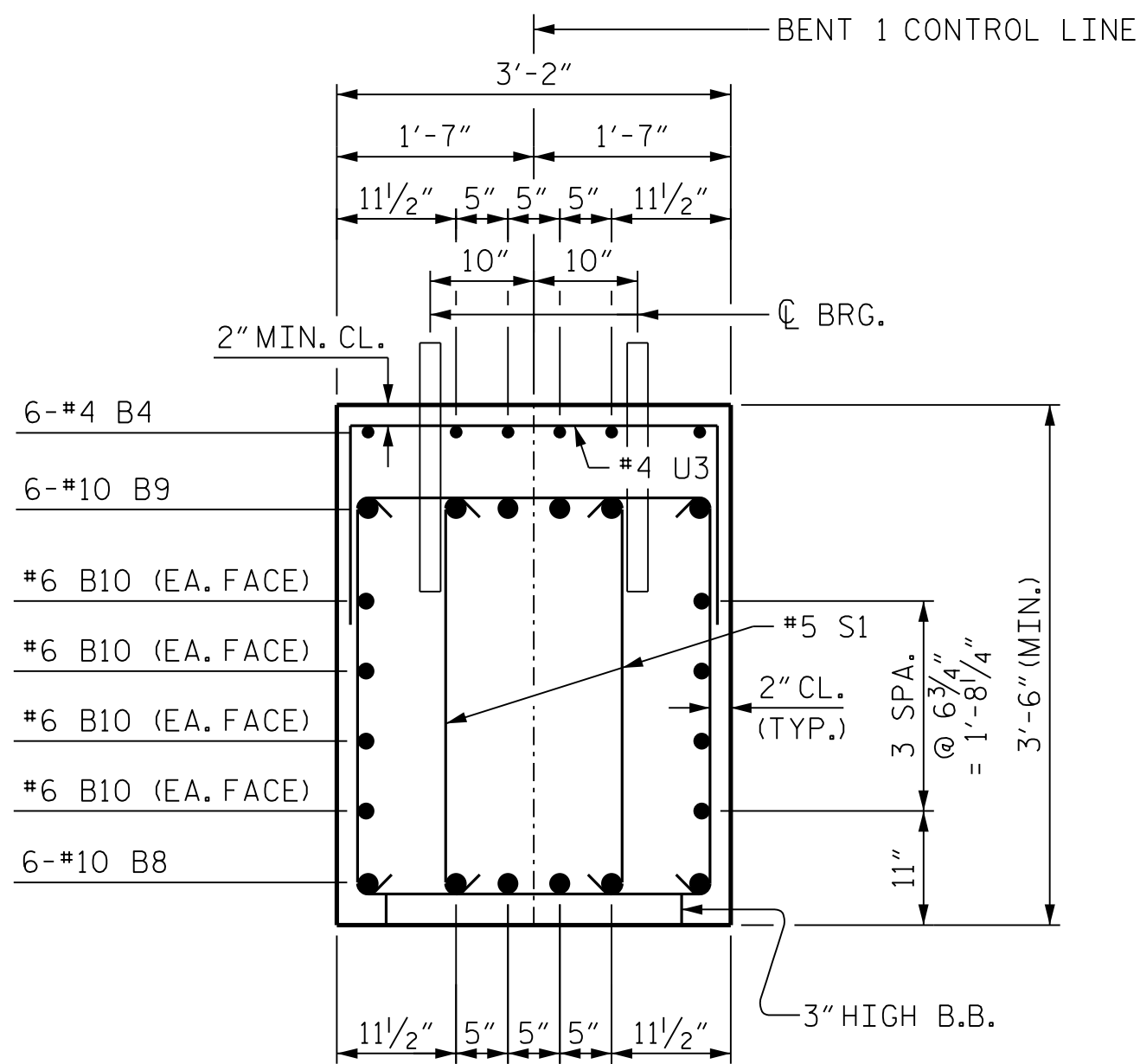
CHECKED BY : B.E. ATKINSON DATE : 04/2021

DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

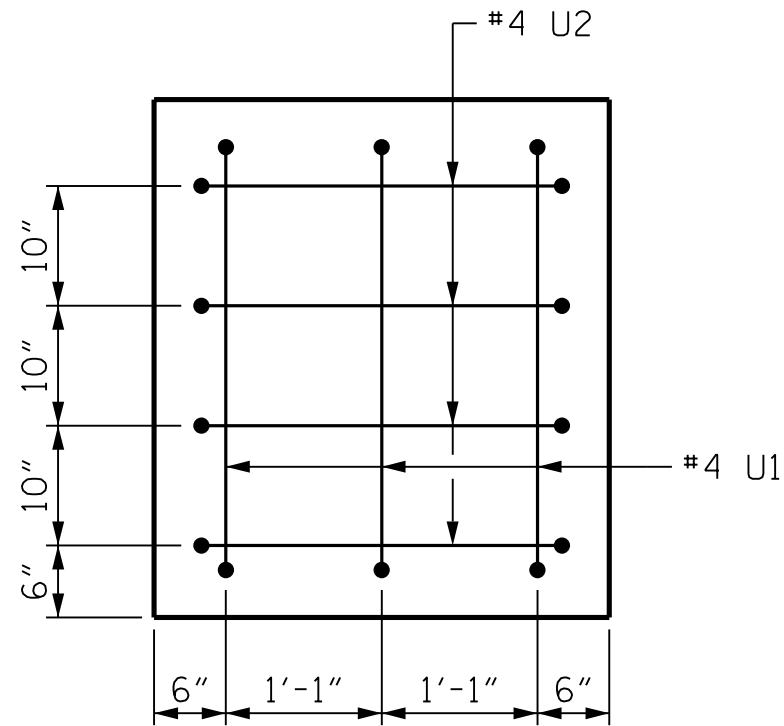
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL
FOR EACH COLUMN AND DRILLED PIER UNLESS OTHERWISE NOTED (U.O.N.)

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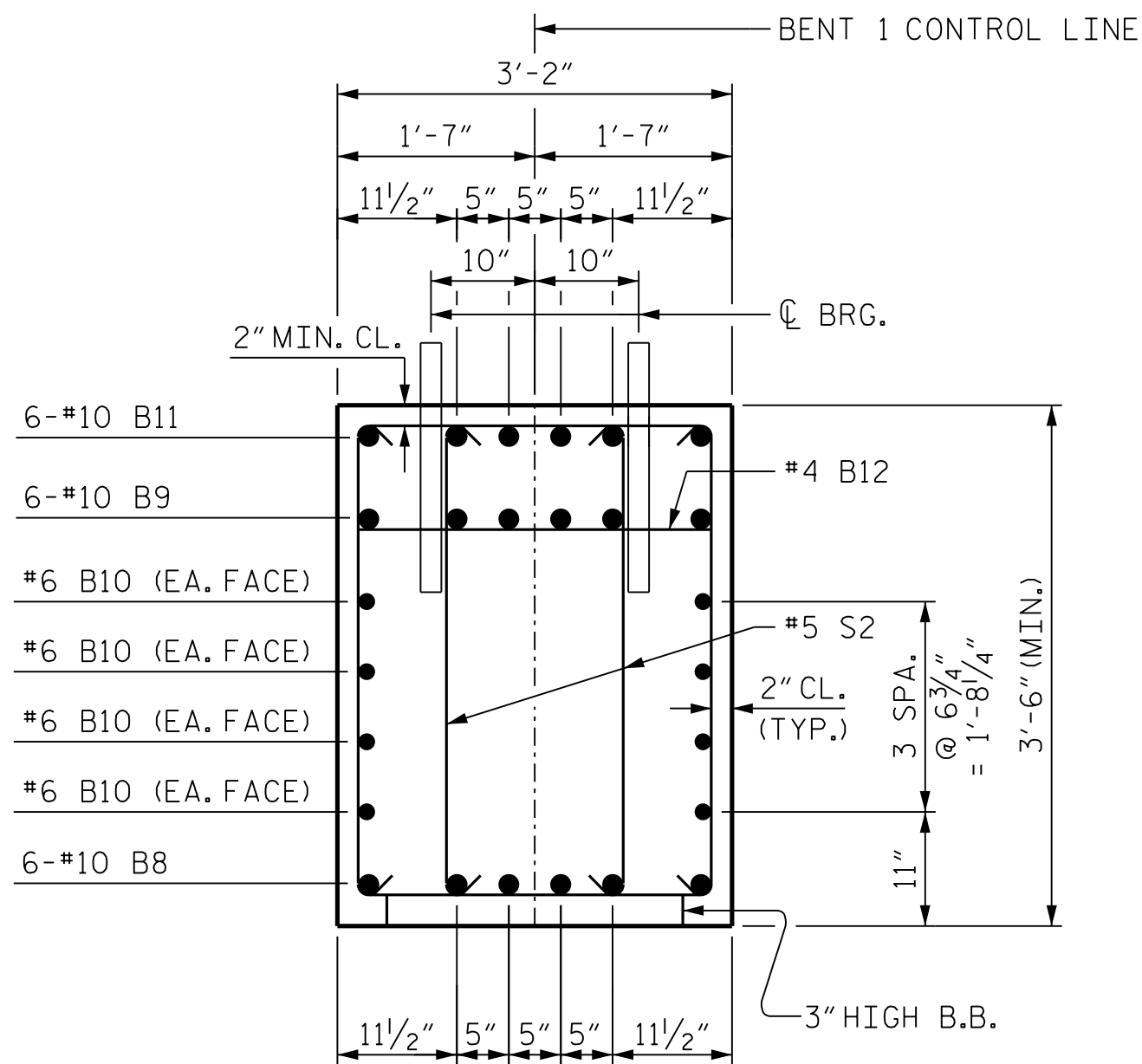
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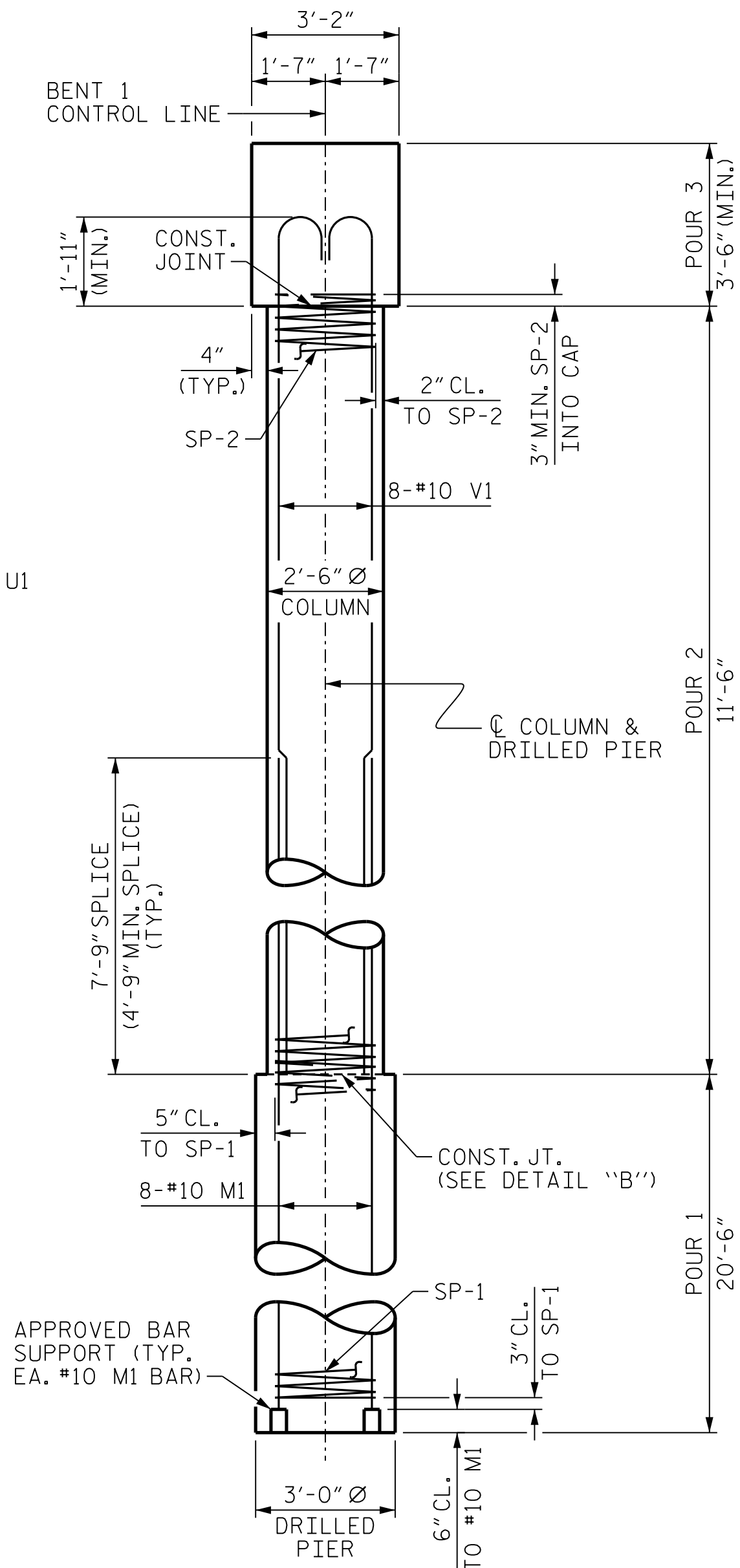
SECTION D-D



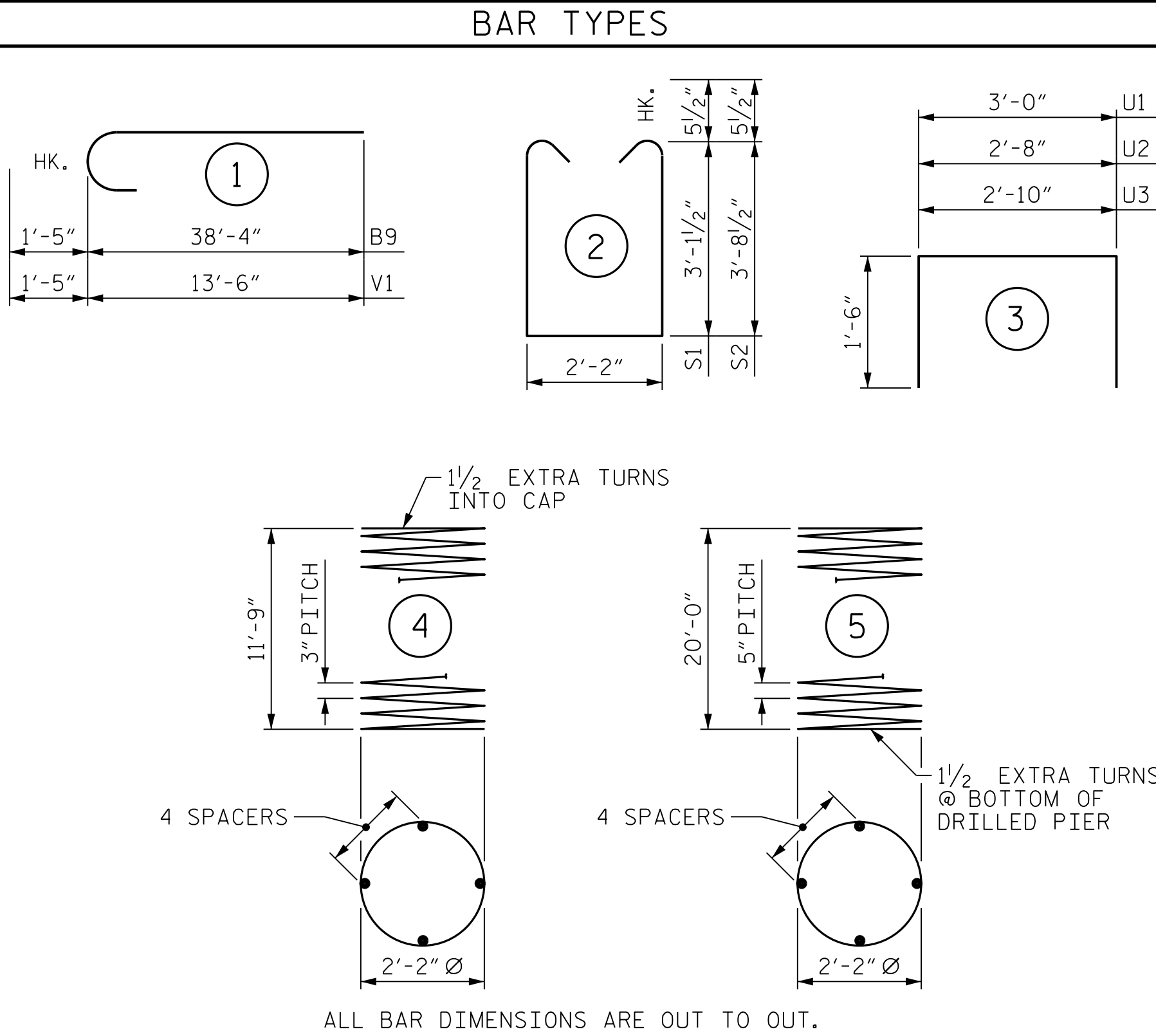
VIEW F-F



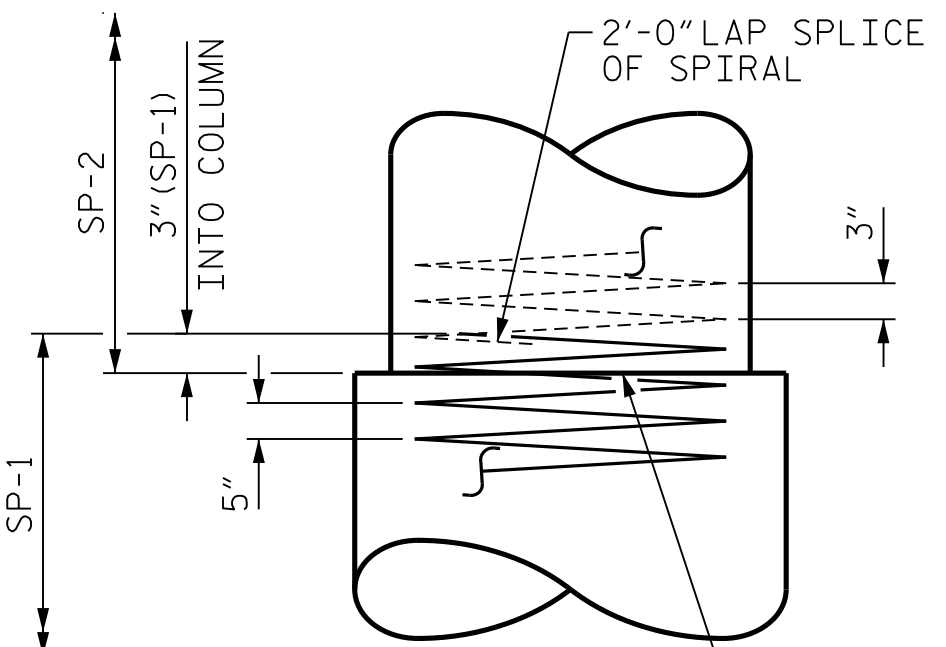
SECTION E-E



END ELEVATION



ALL BAR DIMENSIONS ARE OUT TO OUT.



DETAIL "B"

BILL OF MATERIAL

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	6	#4	STR	9'-6"	38
B8	6	#10	STR	37'-6"	968
B9	6	#10	1	39'-9"	1,026
B10	8	#6	STR	38'-0"	457
B11	6	#10	STR	8'-0"	207
B12	2	#4	STR	2'-10"	4

M1	16	#10	STR	27'-9"	1,911
S1	66	#5	2	9'-4"	642
S2	18	#5	2	10'-6"	197

U1	3	#4	3	6'-0"	12
U2	4	#4	3	5'-8"	15
U3	28	#4	3	5'-10"	109
V1	16	#10	1	14'-11"	1,027

REINFORCING STEEL 6,613 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	**	5	329'-5"	687
SP-2	2	*	4	324'-0"	433

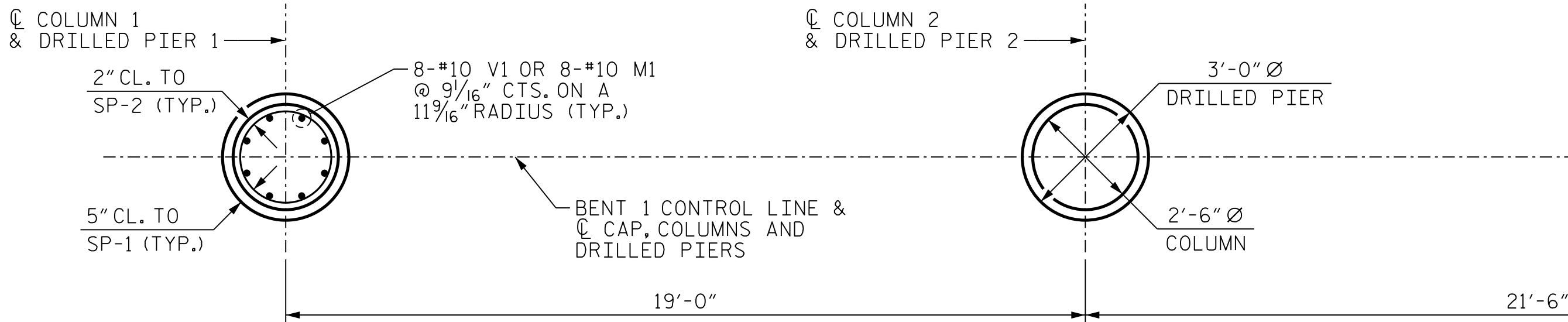
SPIRAL COLUMN REINFORCING STEEL 1,120 LBS.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMN)	4.2 C.Y.
POUR #3 (CAP)	17.2 C.Y.
TOTAL	21.4 C.Y.

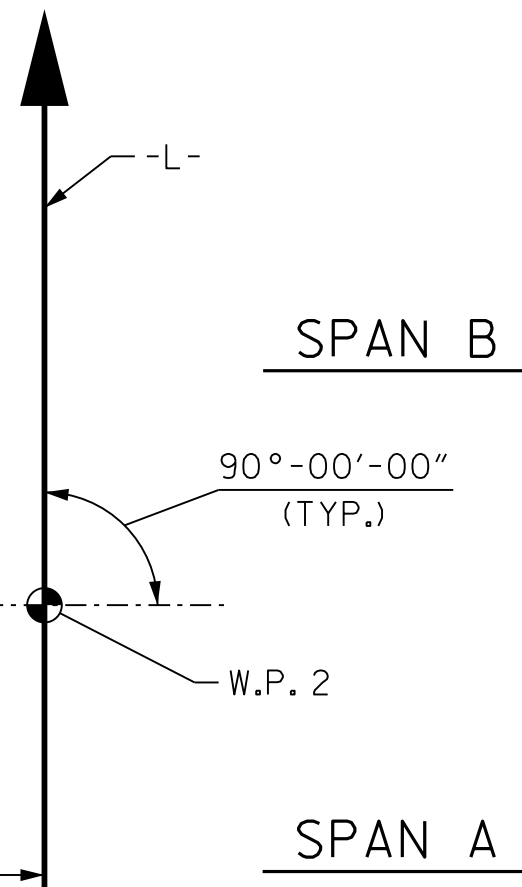
DRILLED PIERS	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	10.8 C.Y.



PLAN OF COLUMNS AND DRILLED PIERS

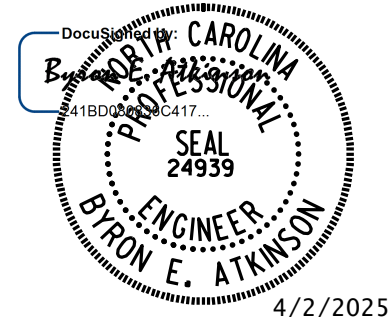
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

DRAWN BY : B.E. LANNING	DATE : 03/2021
CHECKED BY : B.E. ATKINSON	DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 06/2024



SPAN B

SPAN A



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671					

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

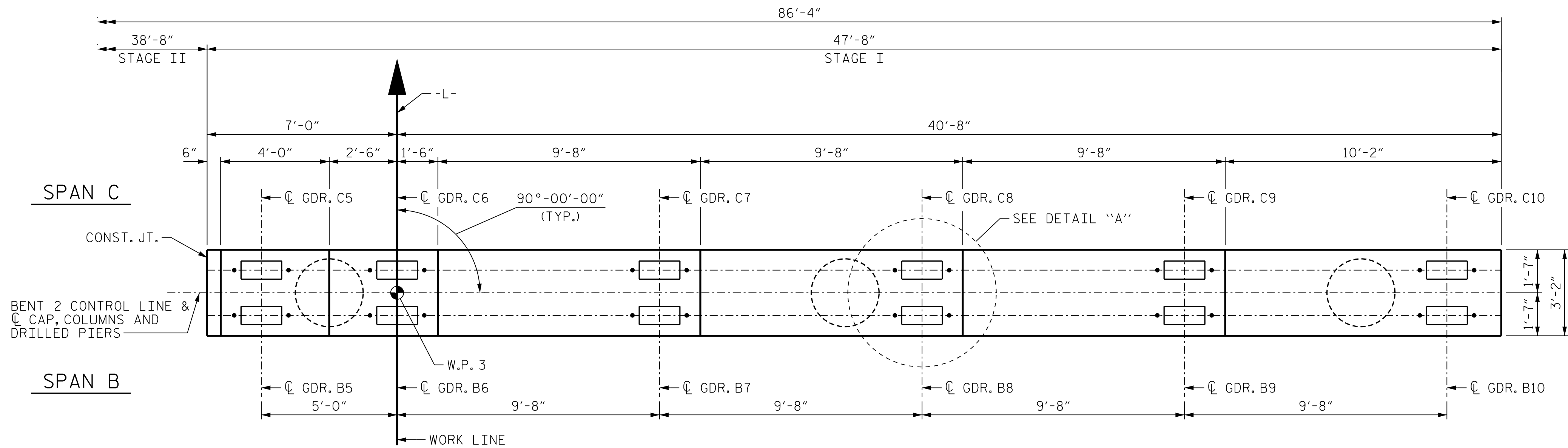
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1
DETAILS AND
BILL OF MATERIAL
STAGE II

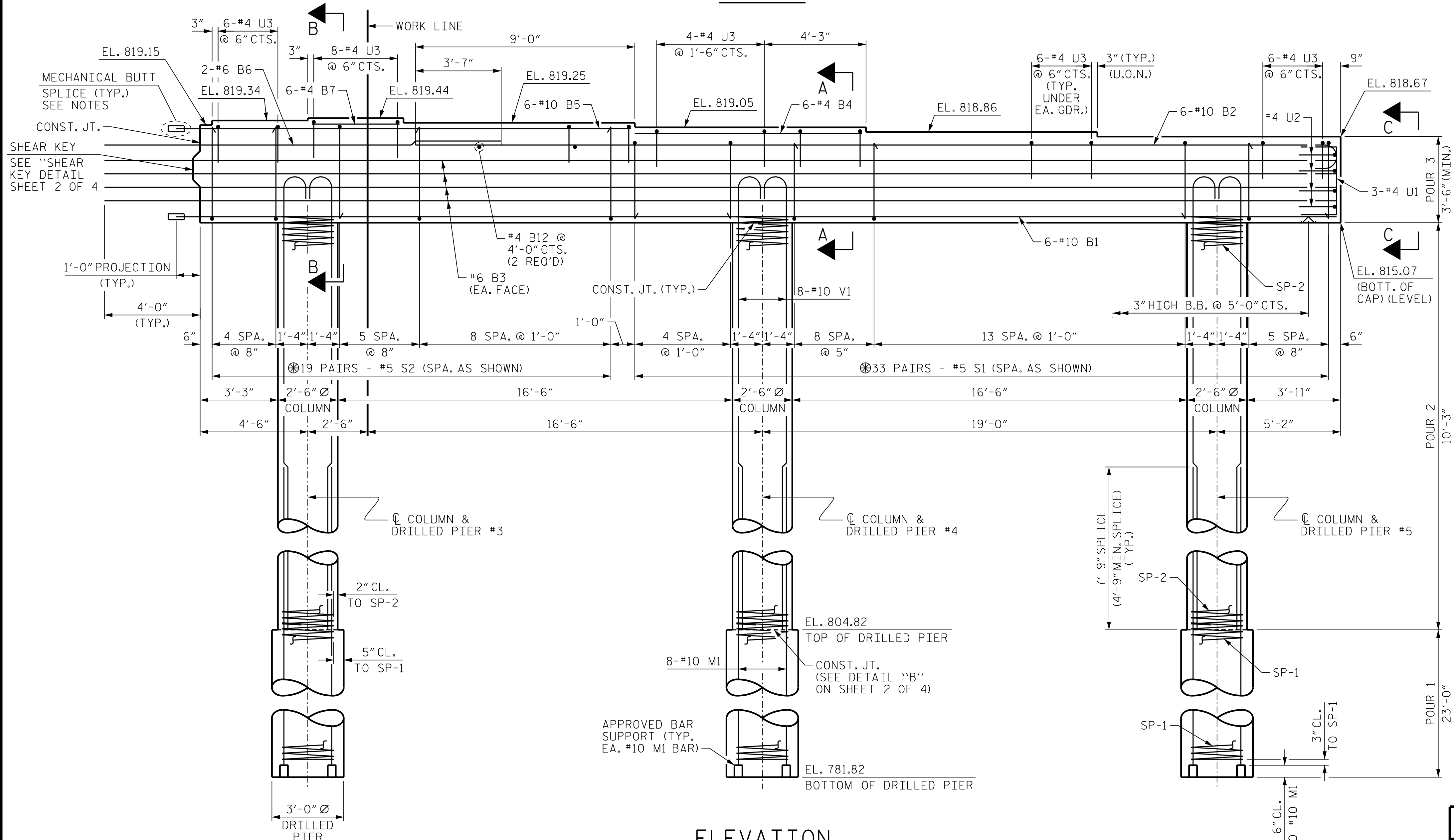
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SHEET NO. S-44
TOTAL SHEETS 57

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PLAN



ELEVATION

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.

FOR SECTION A-A, SECTION B-B, VIEW C-C, SHEAR KEY DETAIL AND END ELEVATION, SEE SHEET 2 OF 4.

⊗ INVERT ALTERNATE PAIRS OF STIRRUPS.

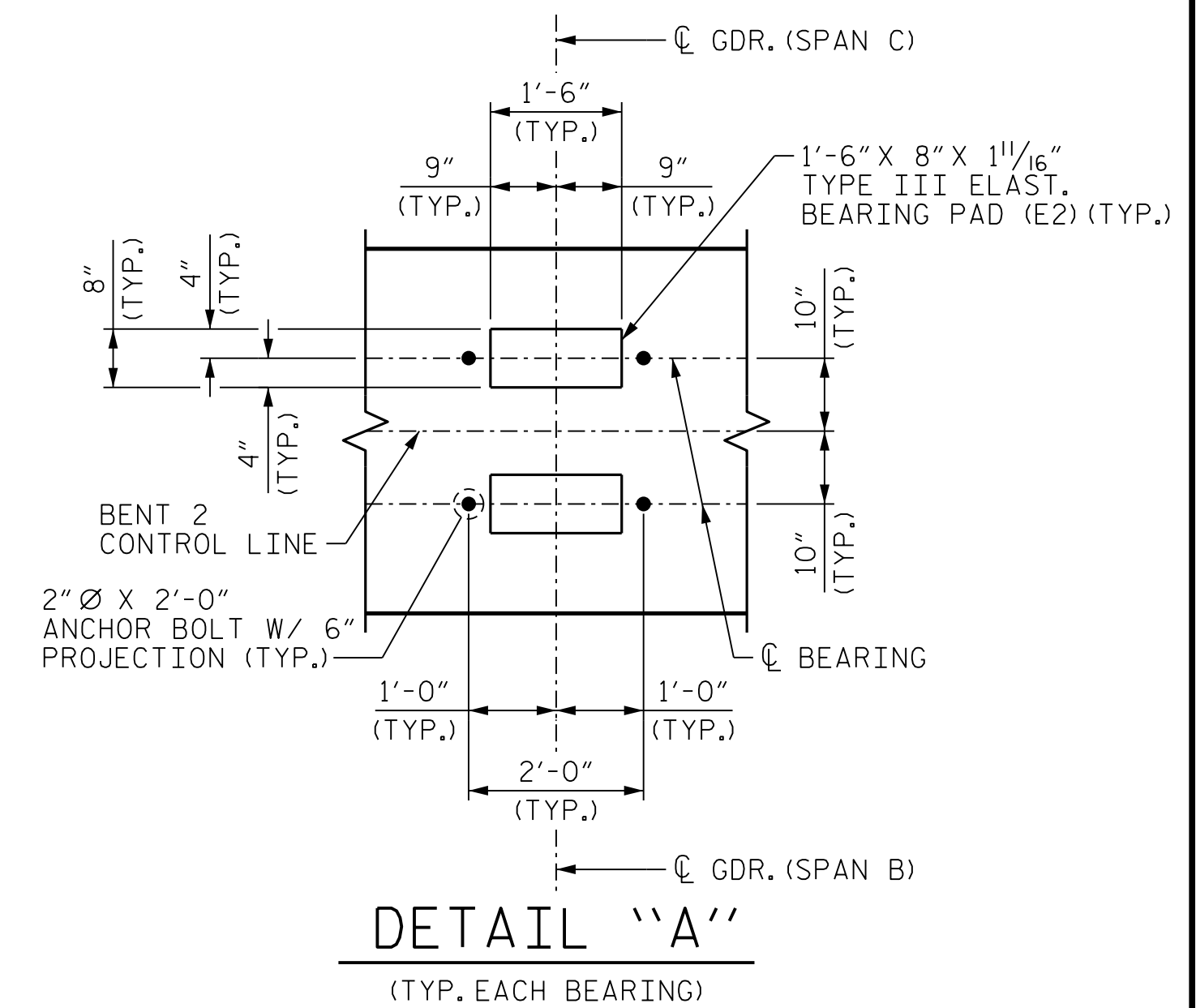
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL, SEE SECTION 425-5 OF THE STANDARD SPECIFICATIONS.

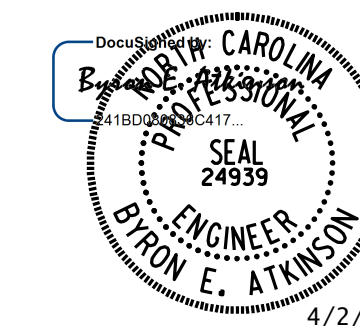


DETAIL "A"

(TYP. EACH BEARING)

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 4



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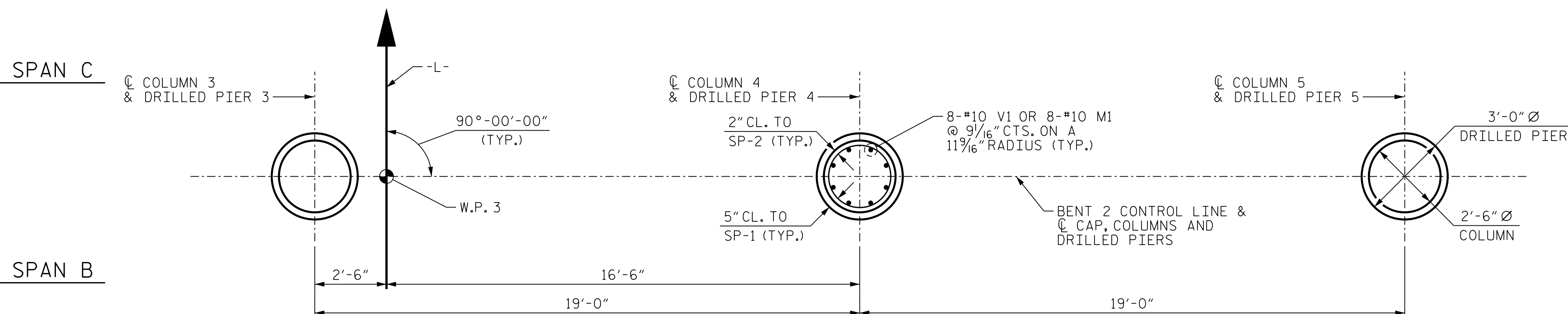
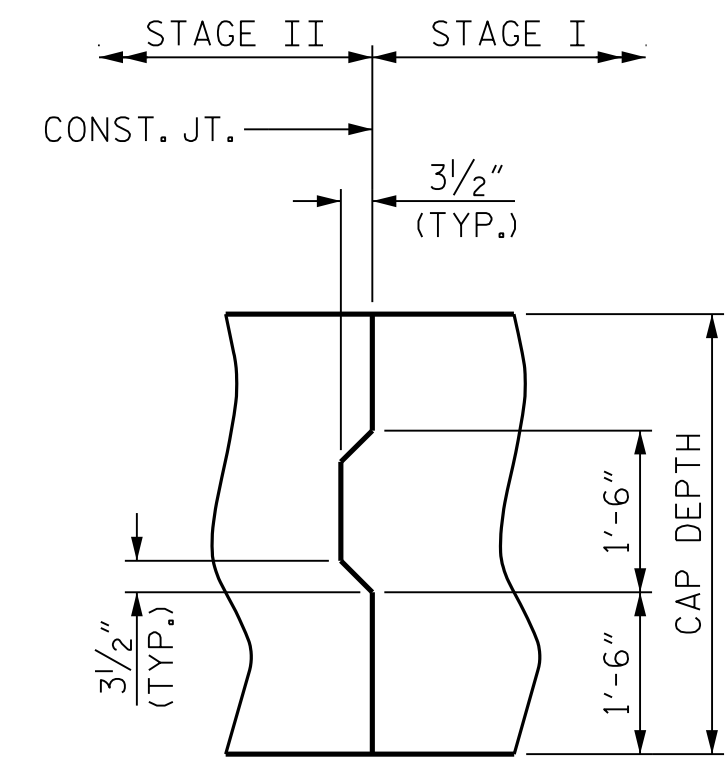
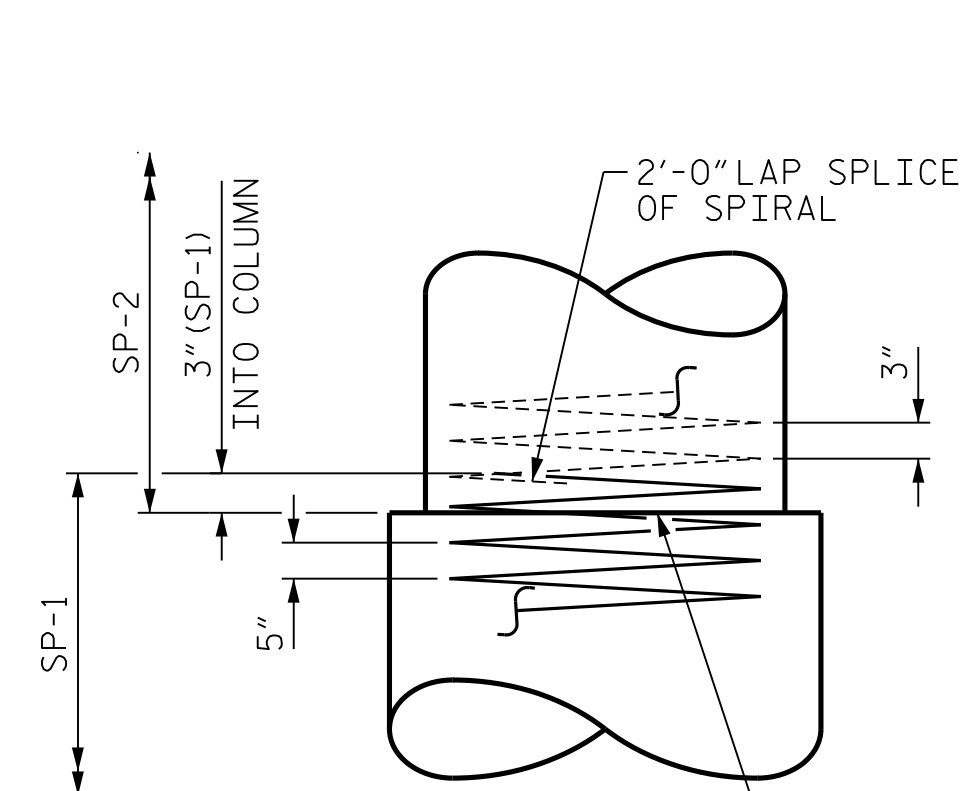
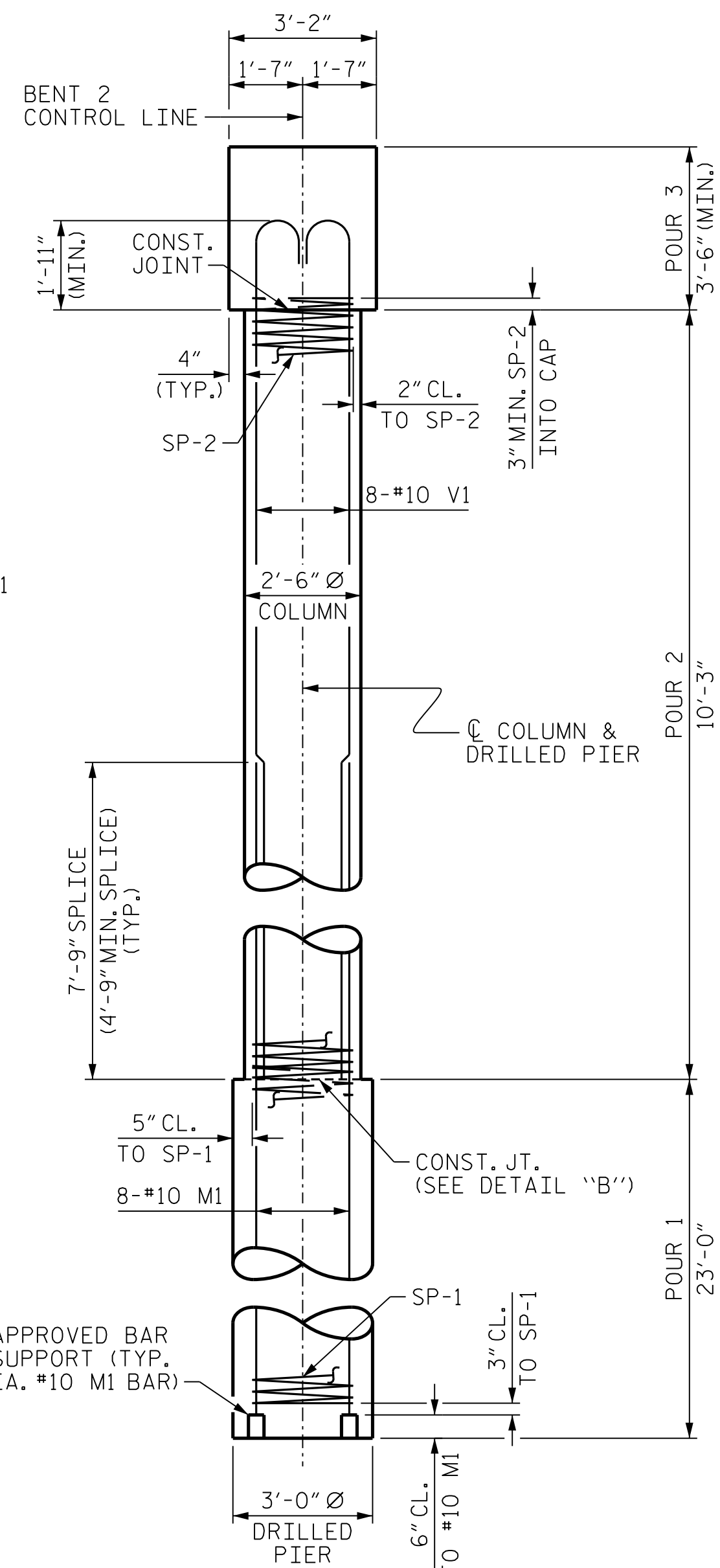
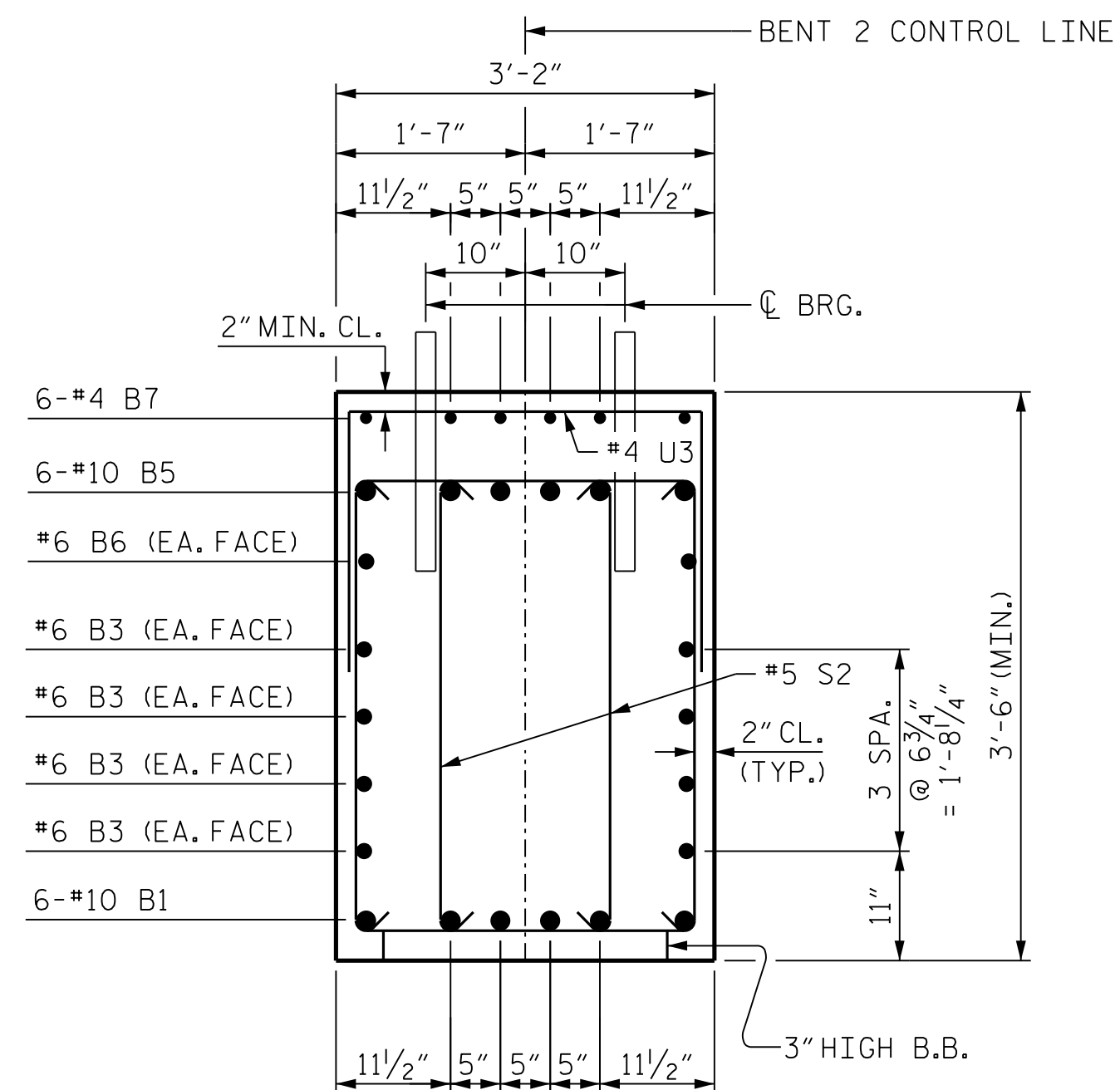
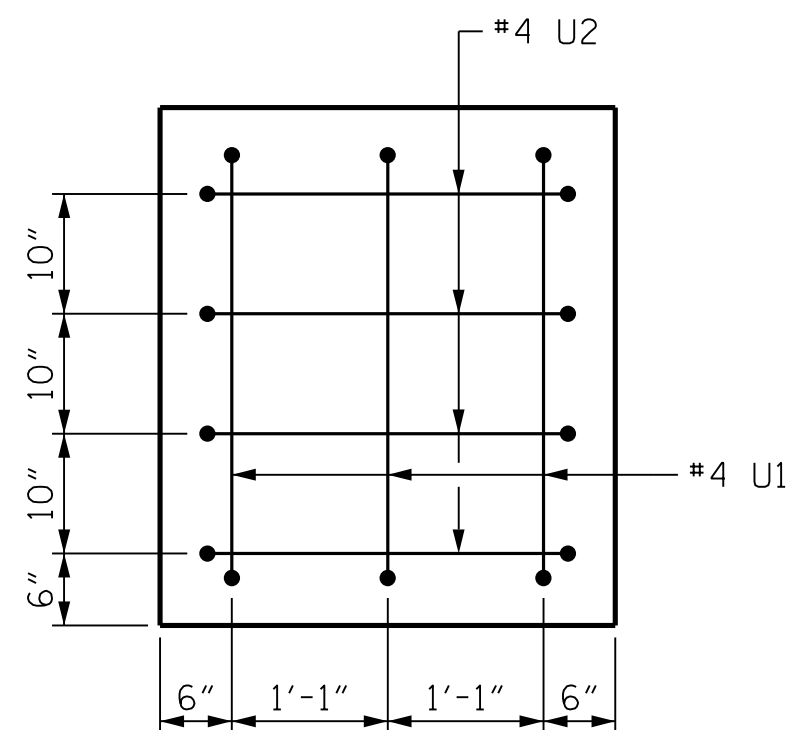
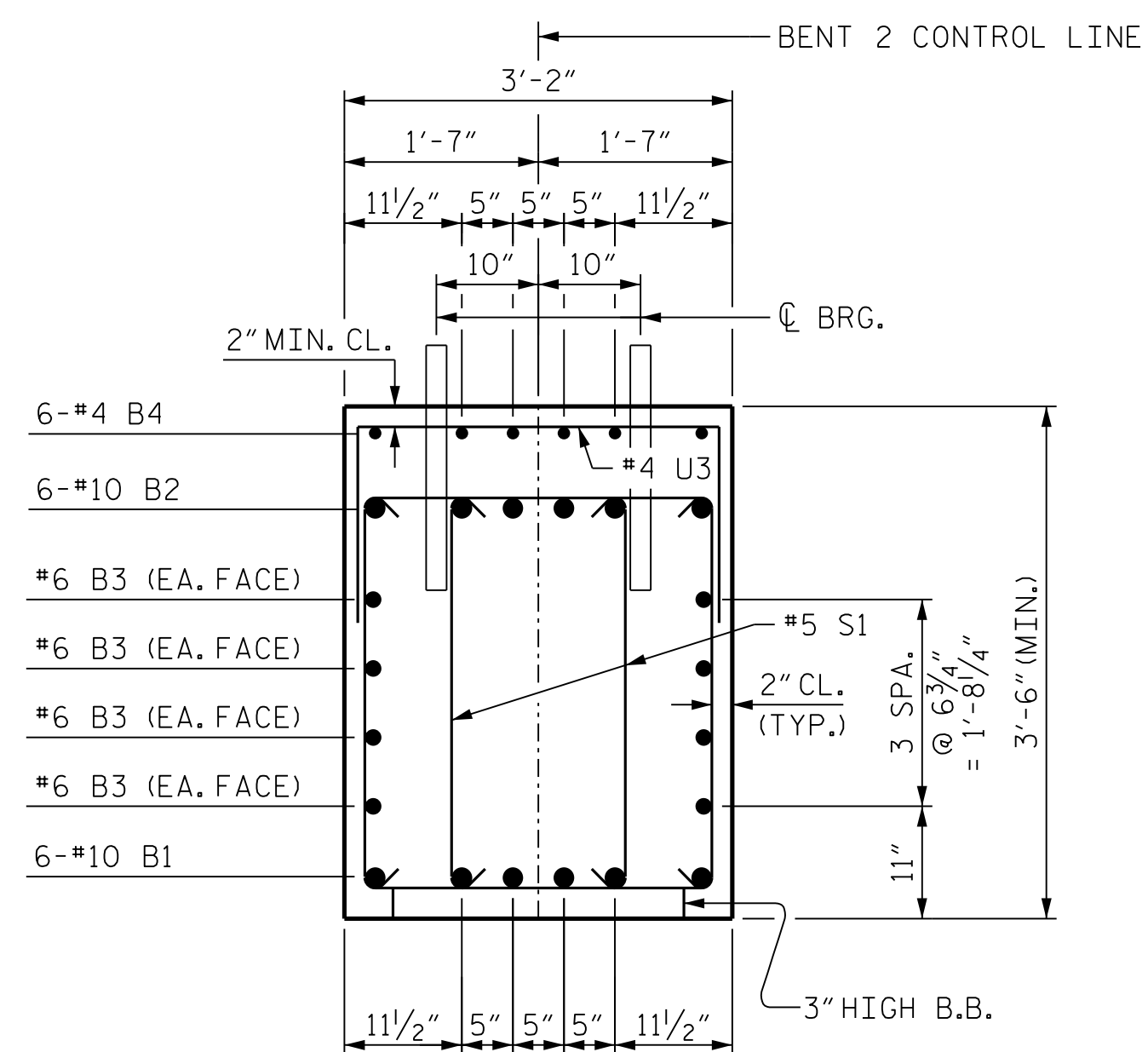
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-45
2			4			

TOTAL SHEETS	57
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DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

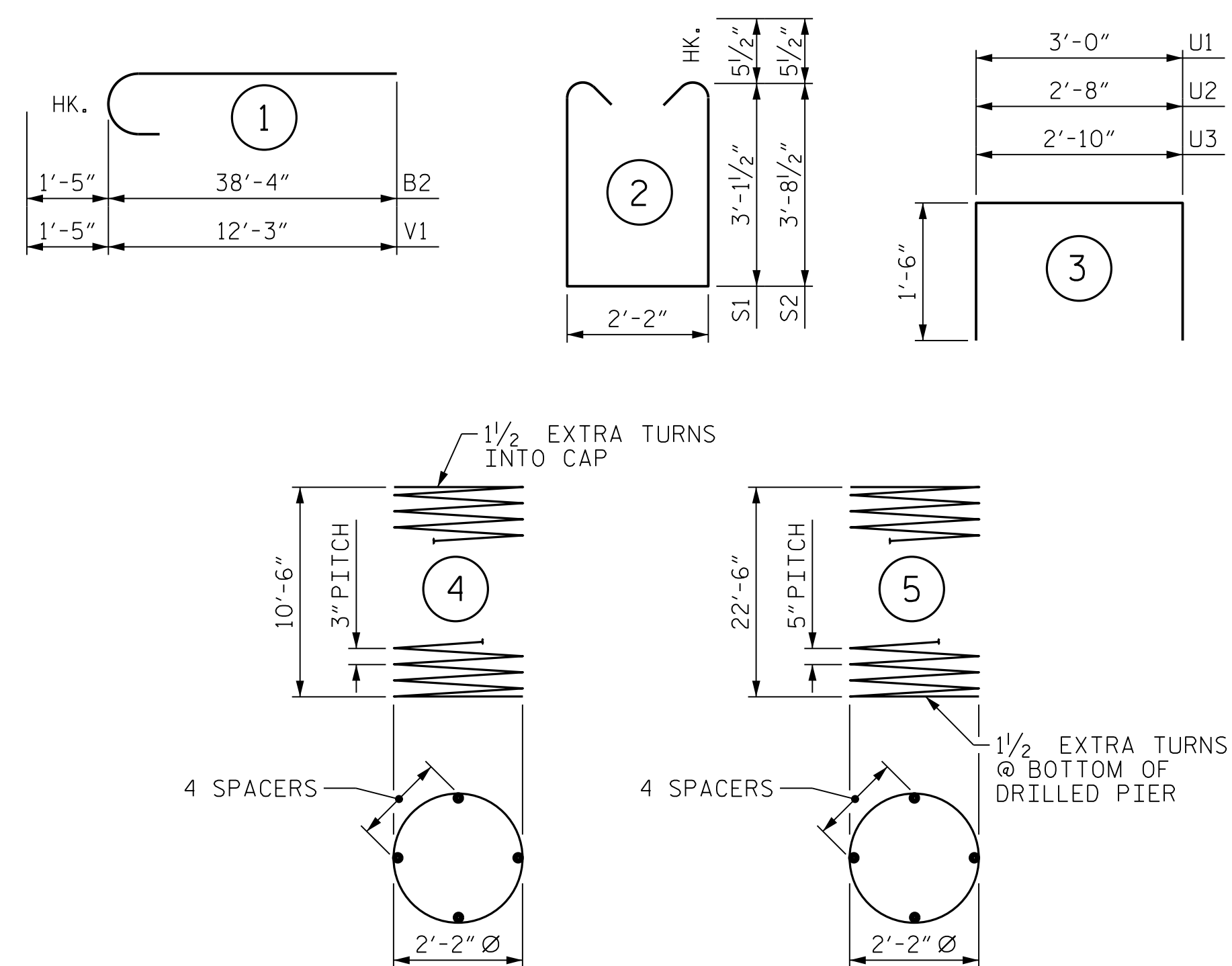
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL
FOR EACH COLUMN AND DRILLED PIER UNLESS OTHERWISE NOTED (U.O.N.)



DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

PLAN OF COLUMNS AND DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

BAR TYPES

BILL OF MATERIAL

STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	48'-6"	1,252
B2	6	#10	1	39'-9"	1,026
B3	8	#6	STR	51'-6"	619
B4	6	#4	STR	9'-6"	38
B5	6	#10	STR	19'-0"	491
B6	2	#6	STR	16'-9"	50
B7	6	#4	STR	3'-8"	15
B12	2	#4	STR	2'-10"	4

M1	24	#10	STR	30'-3"	3,124
S1	66	#5	2	9'-4"	642
S2	38	#5	2	10'-6"	416

U1	3	#4	3	6'-0"	12
U2	4	#4	3	5'-8"	15
U3	42	#4	3	5'-10"	164
V1	24	#10	1	13'-8"	1,411

REINFORCING STEEL					9,279 LBS.
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	**	5	369'-5"	1,156
SP-2	3	*	4	290'-7"	582

SPIRAL COLUMN REINFORCING STEEL	1.738 LBS.
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* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

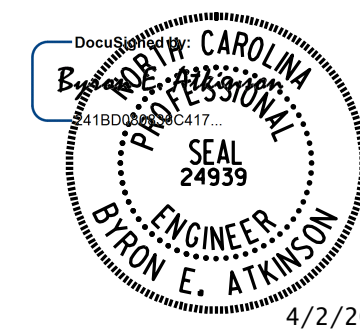
***THE SP-1 SPIRAL REINFORCING STEEL
SHALL BE W31 OR D-31 COLD DRAWN
WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMN)	5.6 C.Y.
POUR #3 (CAP)	22.2 C.Y.
TOTAL	27.8 C.Y.

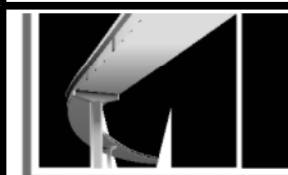
DRILLED PIERS	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	18.1 C.Y.

PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 2 OF 4



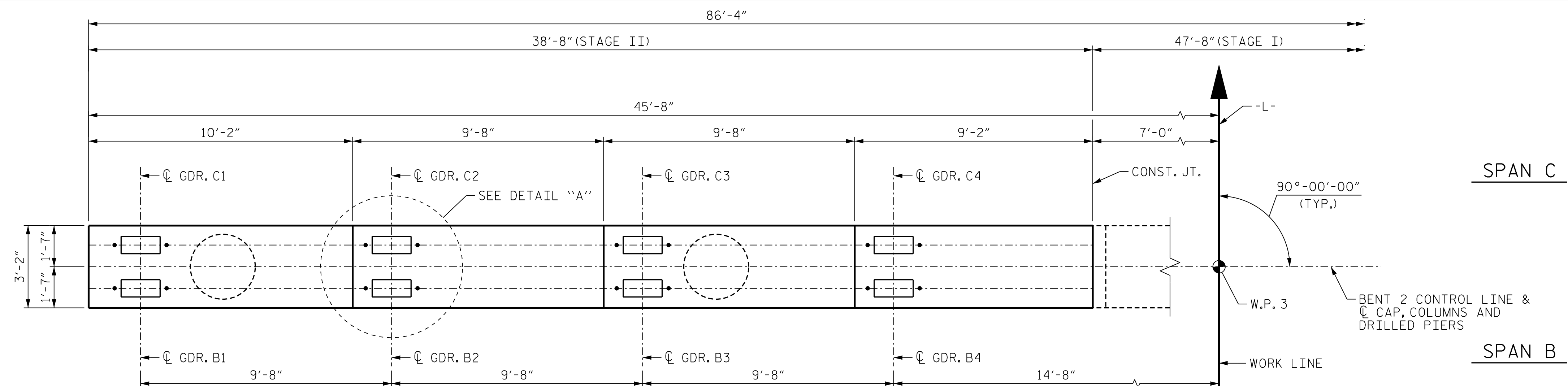
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

00	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
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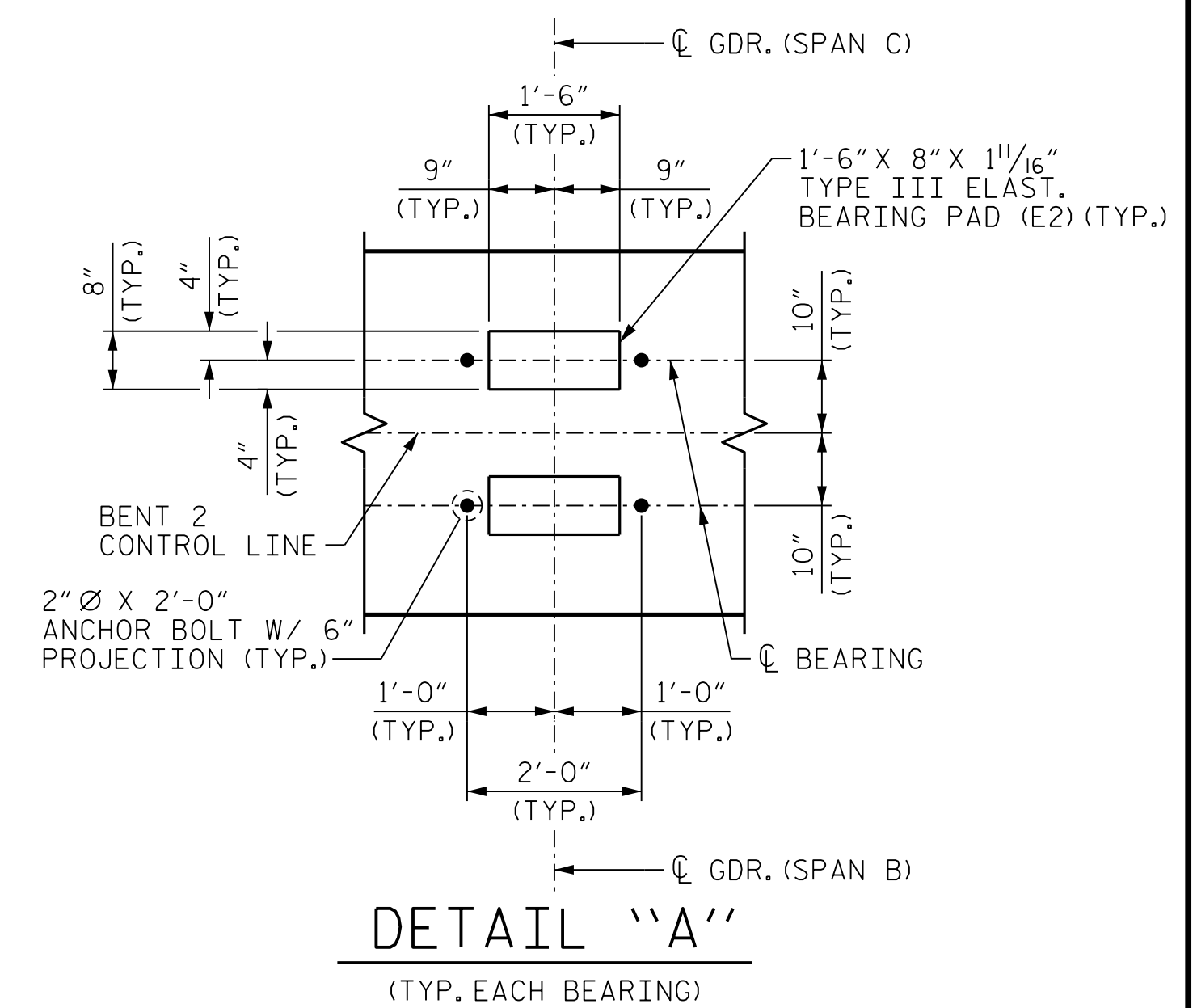
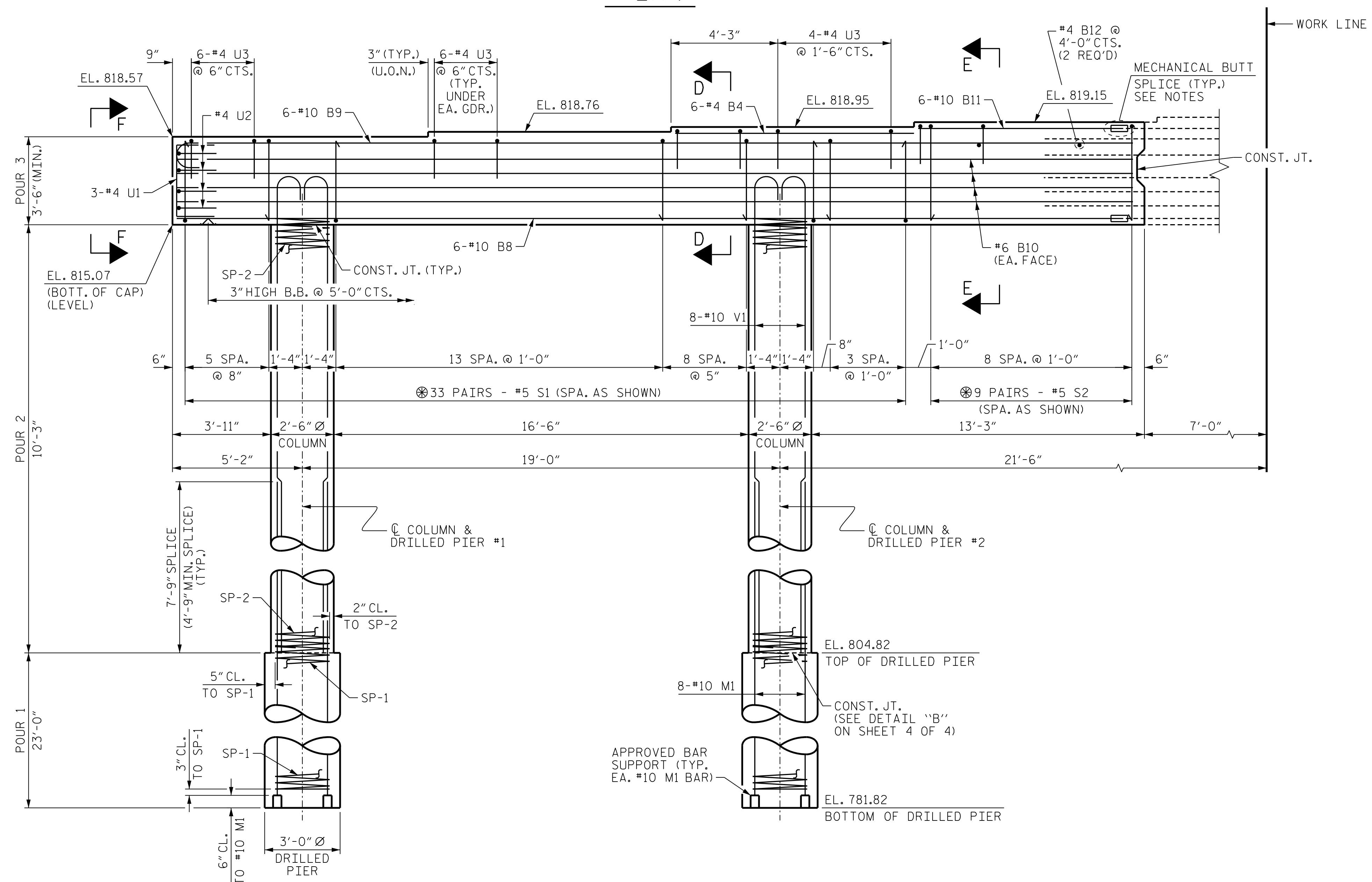
SHEET NO.	S-46
TOTAL SHEETS	57



NOTES:

FOR SECTION D-D, SECTION E-E, VIEW F-F AND END
ELEVATION, SEE SHEET 4 OF 4.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 4.



PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2
PLAN AND ELEVATION
STAGE II

BENT 2
PLAN AND ELEVATION
STAGE II

PLAN AND ELEVATION
STAGE II

STAGE II

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



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO.

S-47

TOTAL
SHEETS
57

S-47

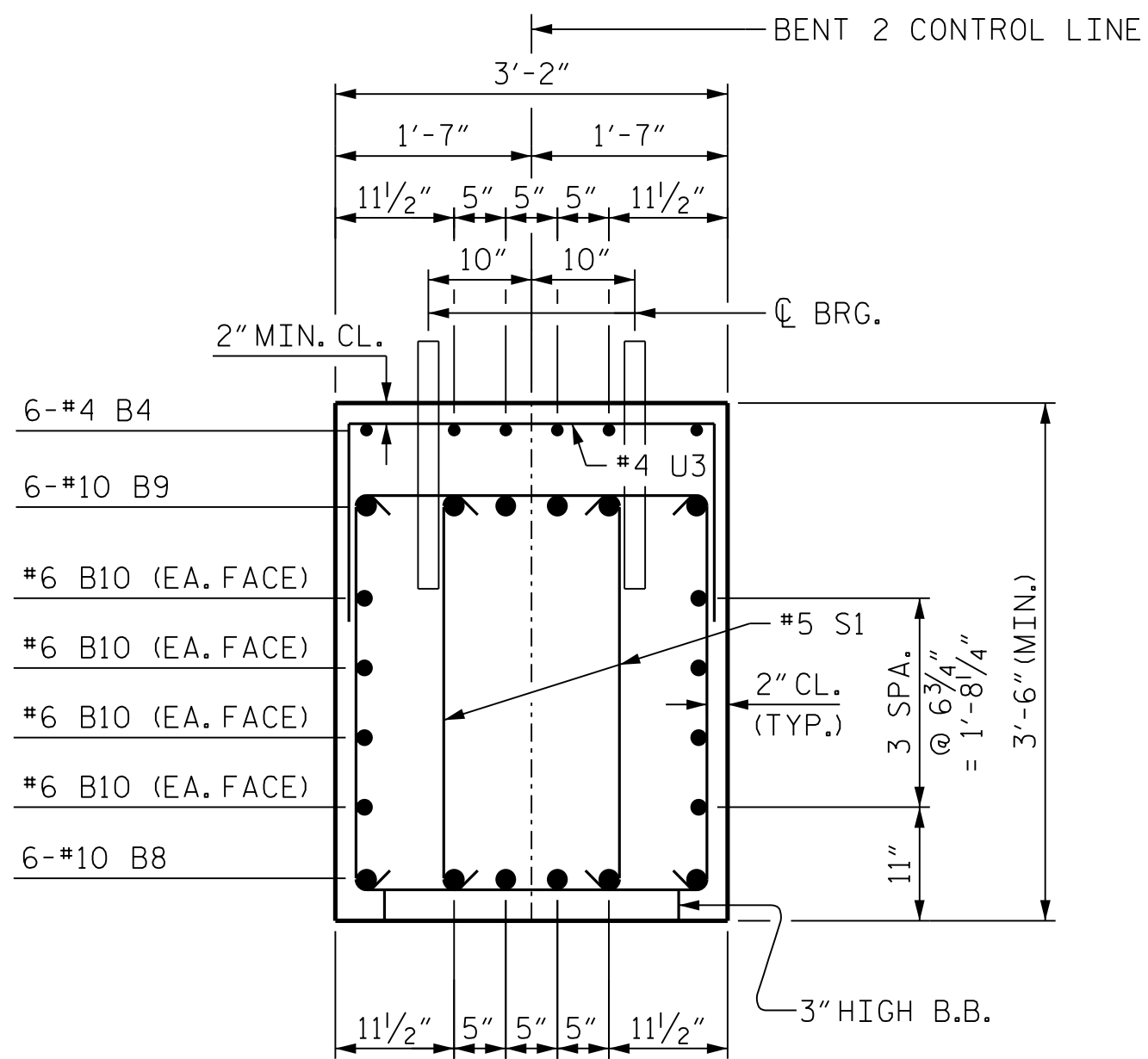
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57

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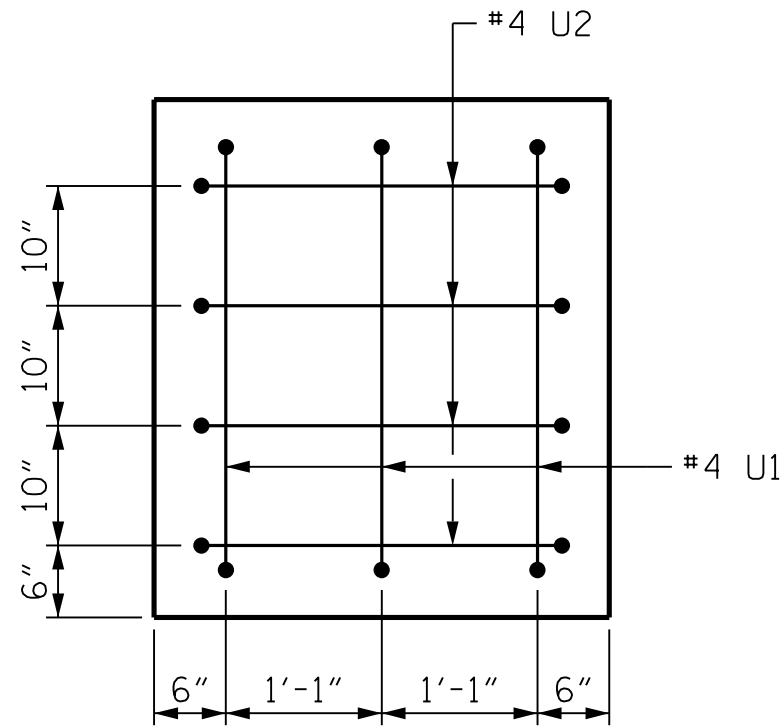
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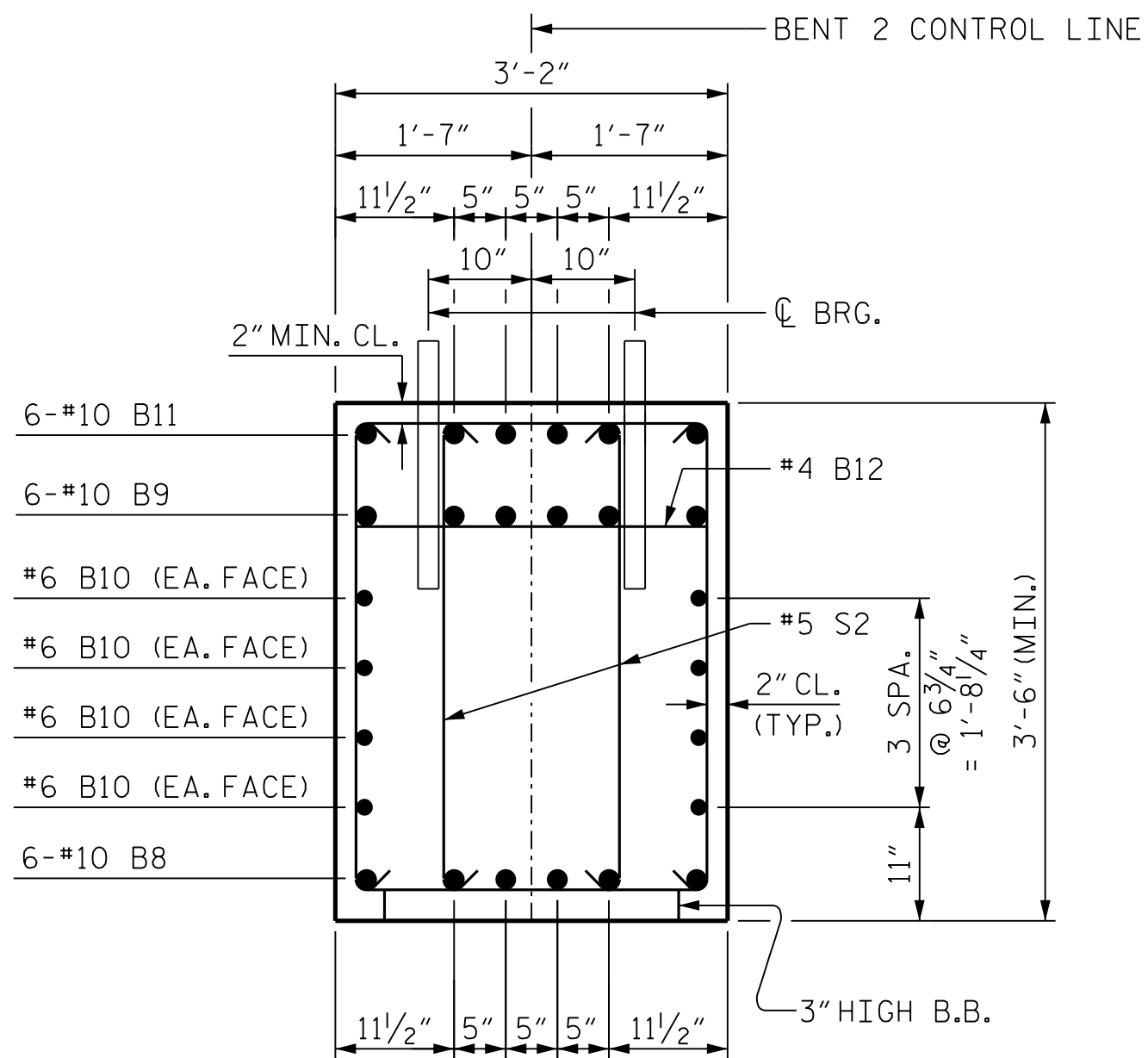
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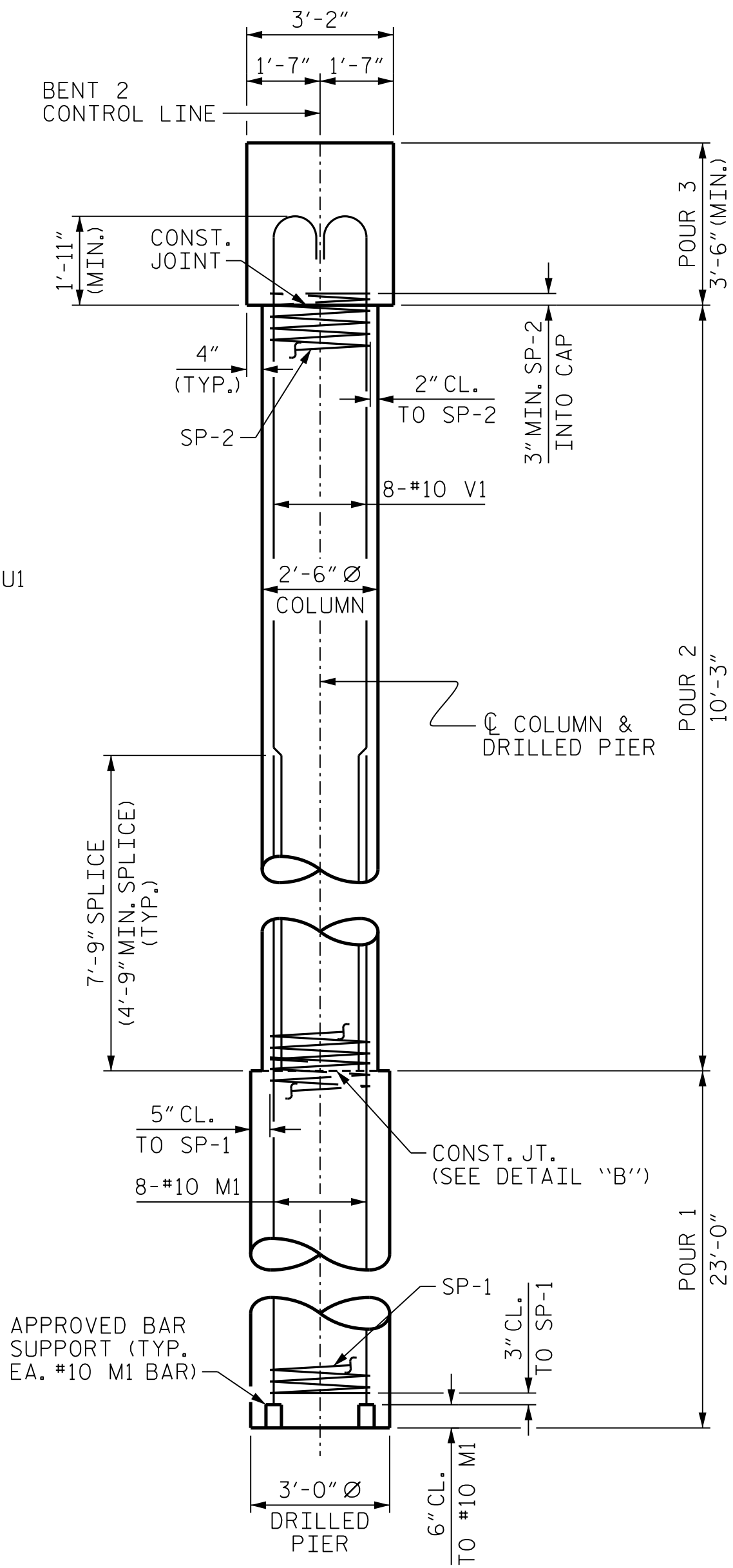
SECTION D-D



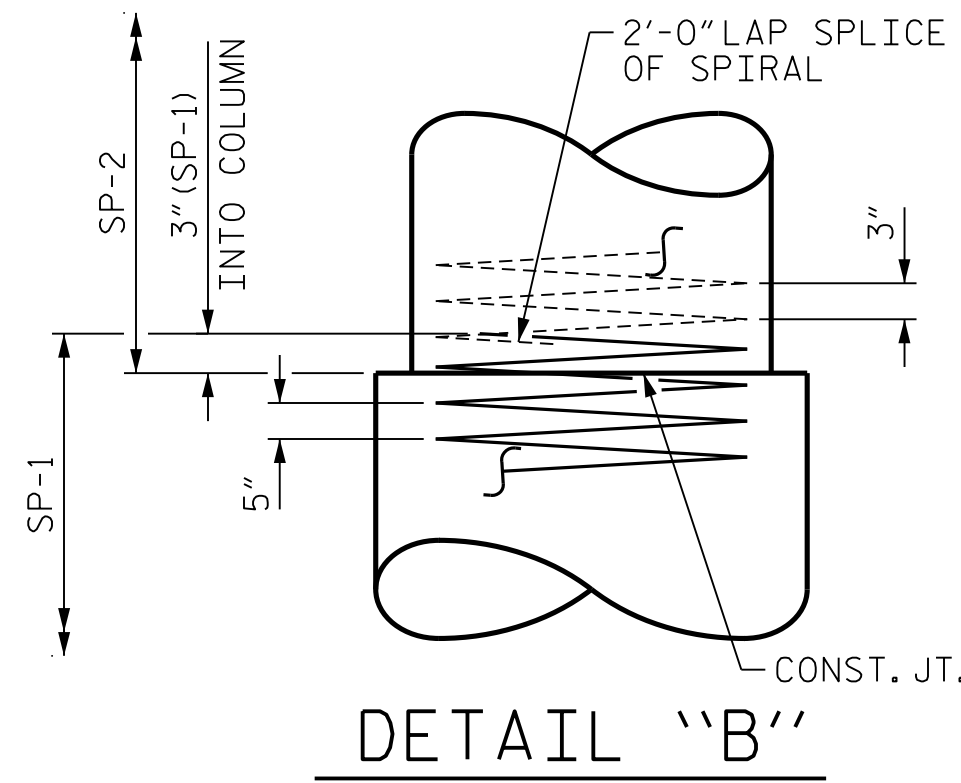
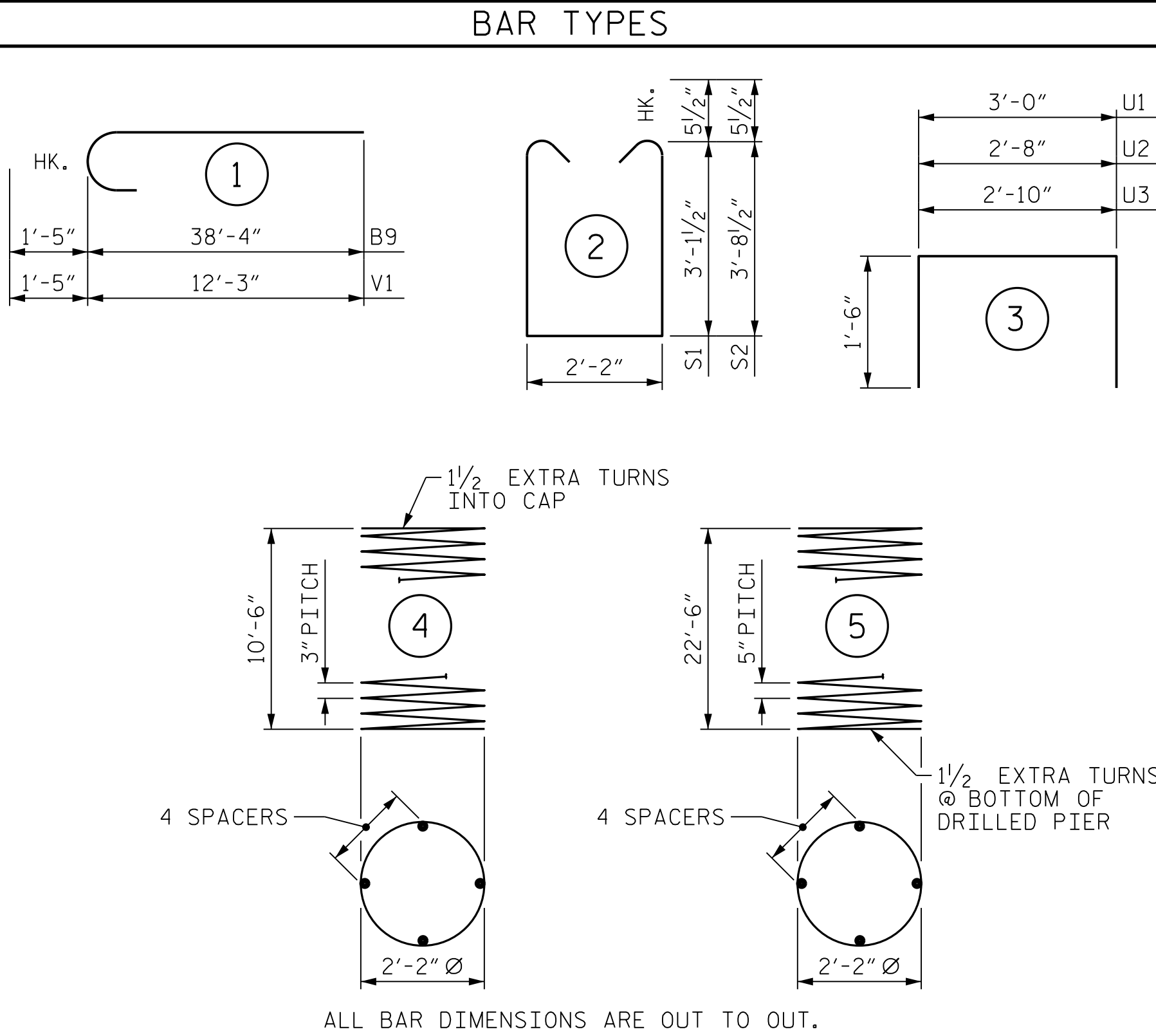
VIEW F-F



SECTION E-E



END ELEVATION



DETAIL "B"

BILL OF MATERIAL

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	6	#4	STR	9'-6"	38
B8	6	#10	STR	37'-6"	968
B9	6	#10	1	39'-9"	1,026
B10	8	#6	STR	38'-0"	457
B11	6	#10	STR	8'-0"	207
B12	2	#4	STR	2'-10"	4

M1	16	#10	STR	30'-3"	2,083
S1	66	#5	2	9'-4"	642
S2	18	#5	2	10'-6"	197

U1	3	#4	3	6'-0"	12
U2	4	#4	3	5'-8"	15
U3	28	#4	3	5'-10"	109
V1	16	#10	1	13'-8"	941

REINFORCING STEEL 6,699 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	**	5	369'-5"	771
SP-2	2	*	4	290'-7"	388

SPIRAL COLUMN REINFORCING STEEL 1,159 LBS.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMN)	3.8 C.Y.
POUR #3 (CAP)	17.2 C.Y.
TOTAL	21.0 C.Y.

DRILLED PIERS

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	12.1 C.Y.

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2
DETAILS AND
BILL OF MATERIAL
STAGE II

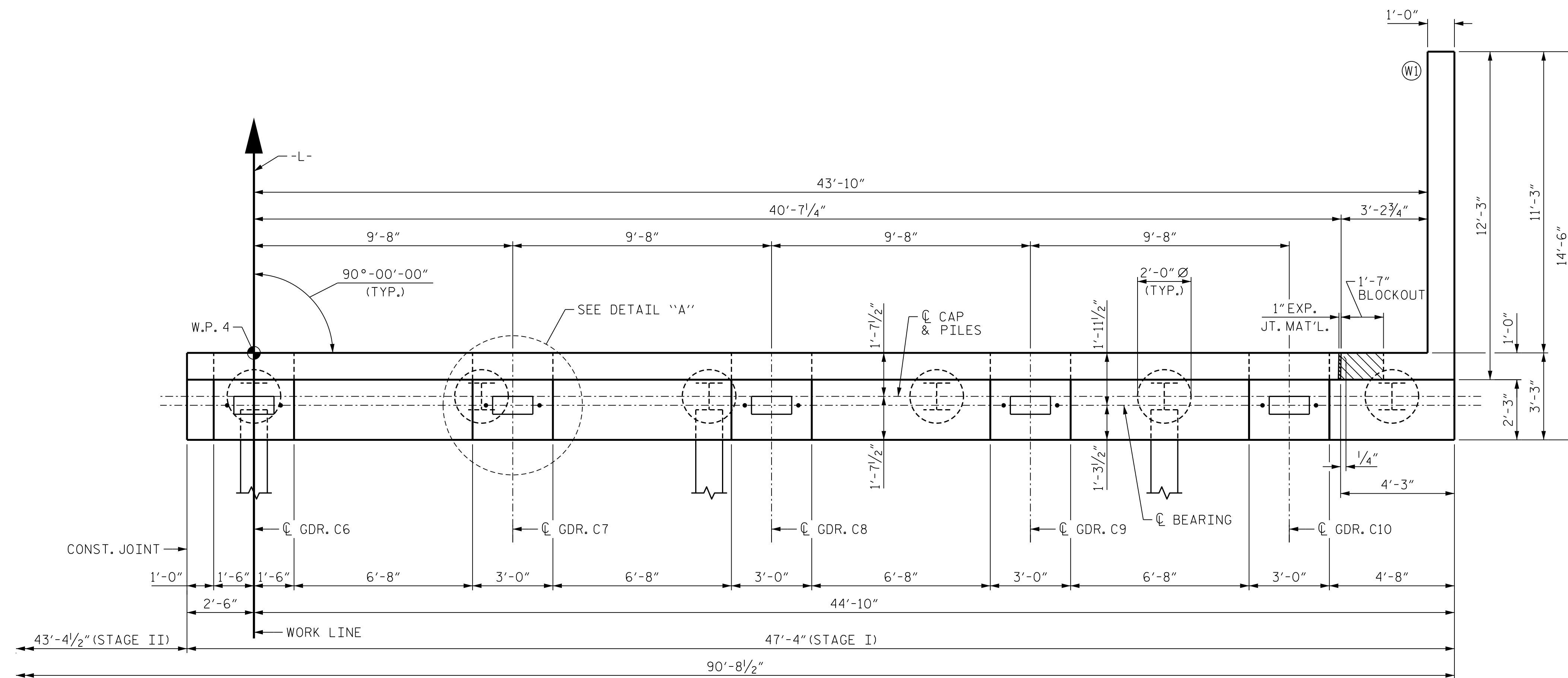
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

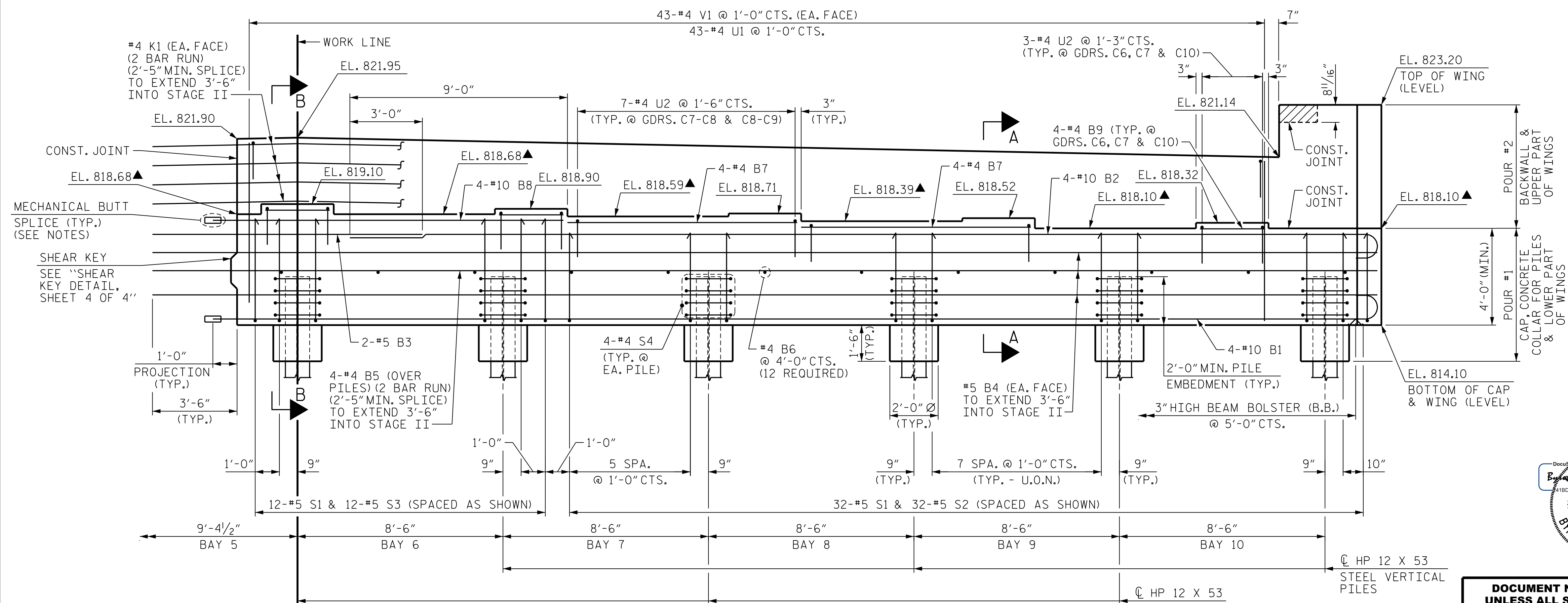
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PLAN OF COLUMNS AND DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

DRAWN BY : B.E. LANNING DATE : 03/2021
CHECKED BY : B.E. ATKINSON DATE : 04/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024



PLAN



NOTES:

STIRRUPS AND #4 U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

#4 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

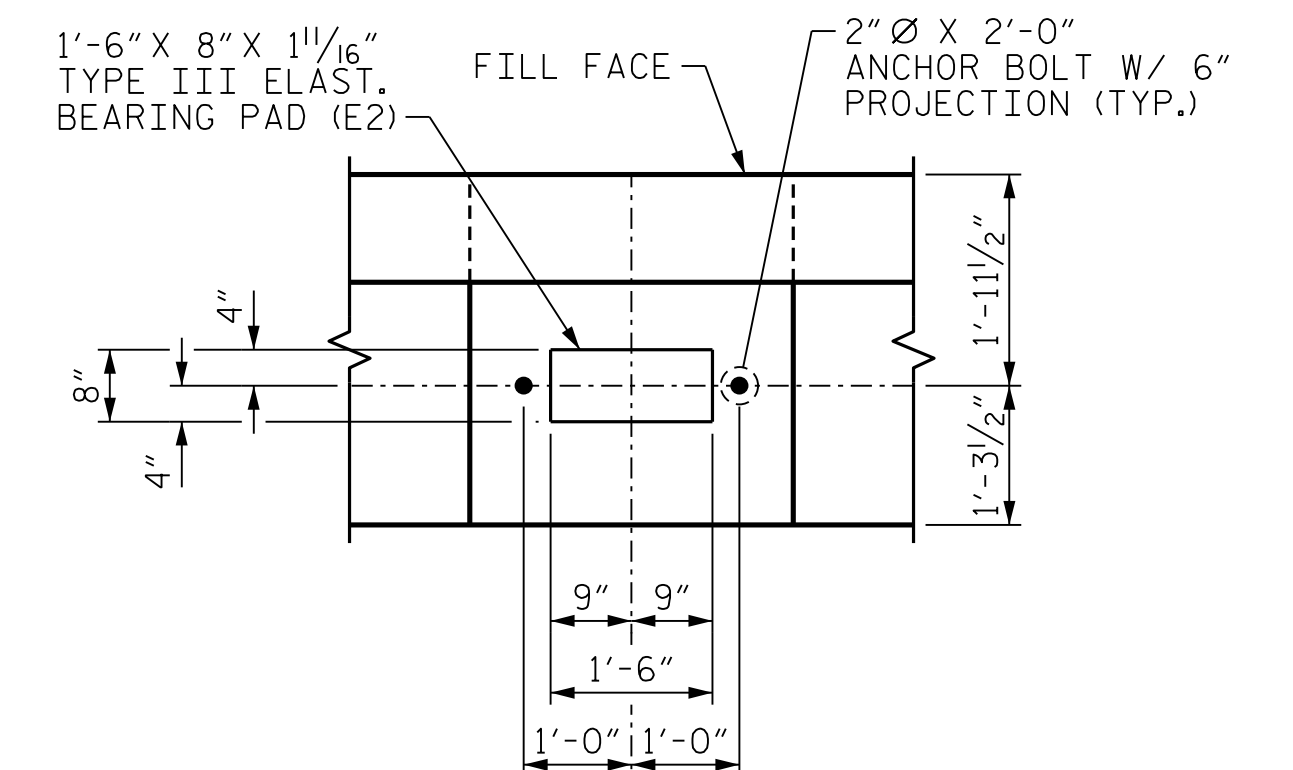
▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTIONS A-A AND B-B ON SHEET 4 OF 4.

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

FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, SHEAR KEY DETAIL AND
TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.

THE "B" BARS AND "K" BARS THAT ARE EXTENDED INTO STAGE II MAY BE TEMPORARILY BENT OUT OF THE WAY IF THEY ARE IN CONFLICT AND BENT BACK INTO PLACE PRIOR TO POURING STAGE II.

FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL, SEE SECTION 425-5 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

(TYP. EACH BEARING)

PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION
STAGE I

END BENT 2
PLAN AND ELEVATION
STAGE I

PLAN AND ELEVATION STAGE I

STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			57

EET NO.

S-49

TOTAL
SHEETS

57

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



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

1011 COURAGE DRIVE, SUITE
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

(919) 851-6606
FIRM PE NUMBER : P-0671

FIRM PE NUMBER : P-0671

DocuSign Envelope ID: 41BD0000-0000-4C47-...
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 24939
 ENGINEER
 BYRON E. ATKINSON
 4/2/2024

4/2/2025

4/2/2025
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User: blanning
Filename: N:\NC Bridges\MI4005.U-4758 Johnson St. Bridge\U-4758\Structures\401_097_U4758_SMU.E2A_400308.dgn

FOR NOTES, SEE SHEET 1 OF 4.

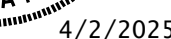
FOR DETAIL "A", SEE SHEET 1 OF 4.

FOR MSE WALL DETAILS, SEE MSE WALL PLANS.



SHEET 2 OF 4

SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION
STAGE II

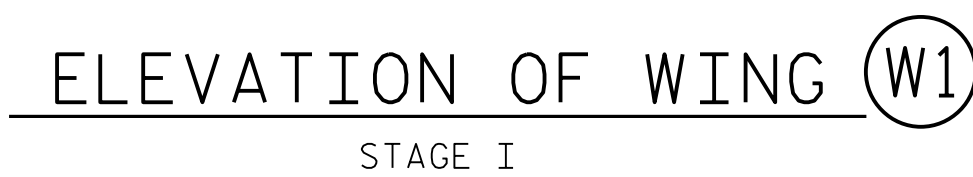


REVISIONS

SHEET NO.	S-50
TOTAL SHEETS	57

DRAWN BY : B.E. LANNING DATE : 03/2021
 CHECKED BY : B.E. ATKINSON DATE : 04/2021
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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SHEET 3 OF 4

SUBSTRUCTURE
END BENT 2
WINGWALL DETAILS

SHEET NO.	S-51
TOTAL SHEETS	57

DRAWN BY : B.E. LANNING DATE : 03/2021
 CHECKED BY : B.E. ATKINSON DATE : 04/2021
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

4/12/2025
2:48:42 PM
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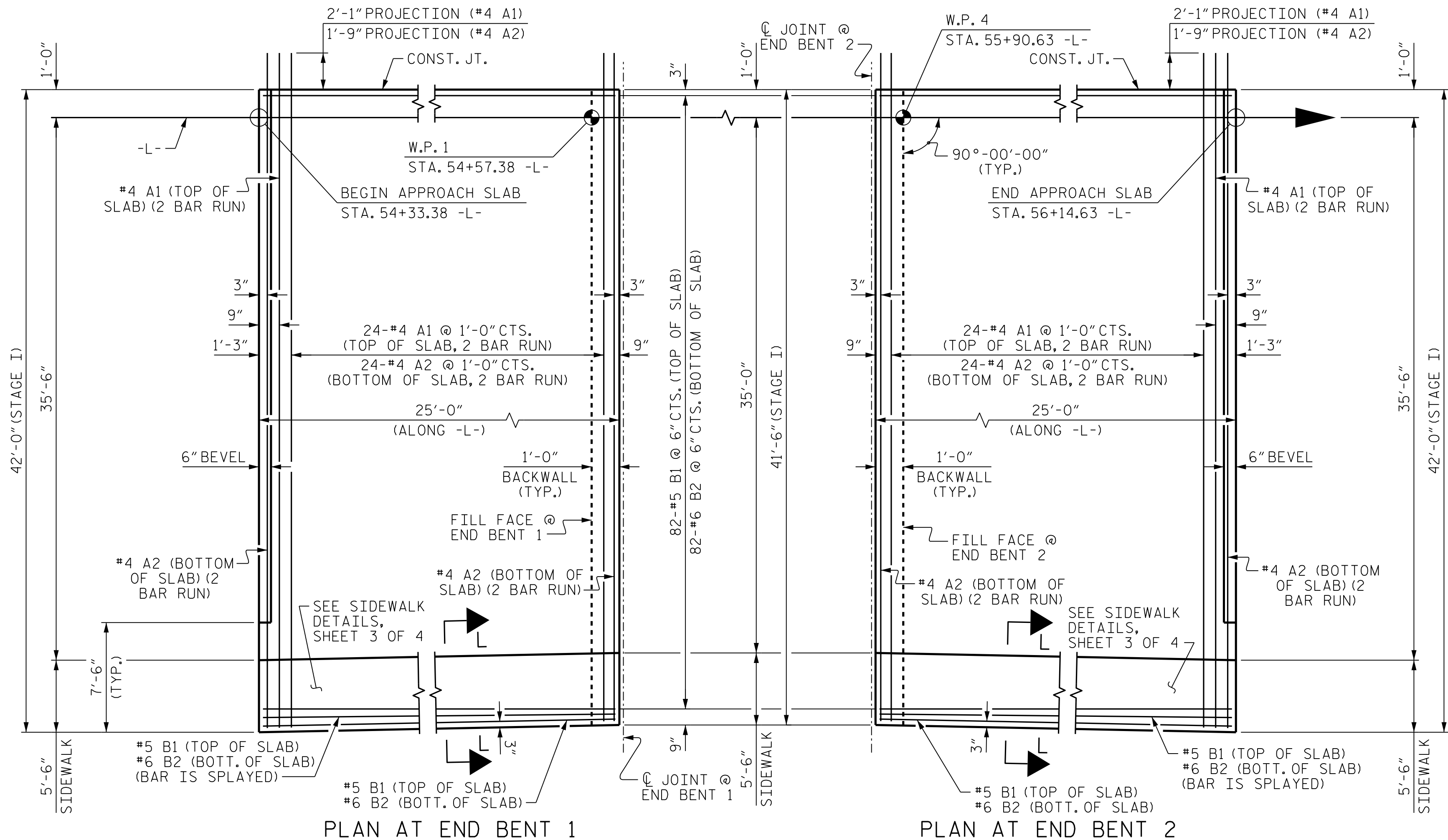


PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SUBSTRUCTURE
END BENT 2
DETAILS AND
BILL OF MATERIAL

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52	
1			3			TOTAL SHEETS	
2			4			57	

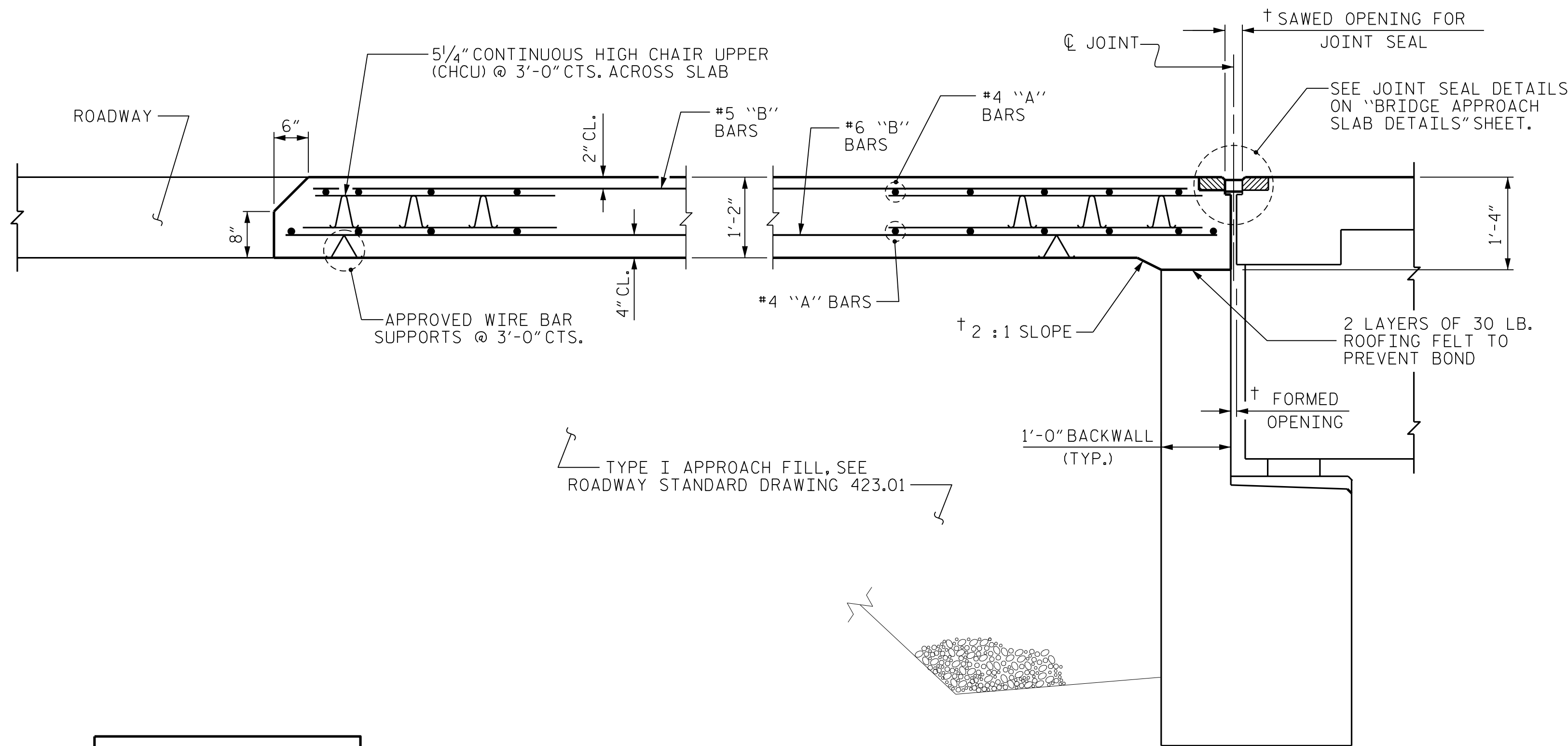
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Filename: N:\NC Bridges\W4005-U-4758 Johnson St. Bridge\U-4758\Structures\401.107.U4758.SMU.ASI-400308.dgn



PLAN AT END BENT 1

PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

NOTES:

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

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.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2\"/>

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQUIRED)

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	23'-2"	774
A2	52	#4	STR	22'-7"	784

*B1	84	#5	STR	24'-2"	2,117
B2	84	#6	STR	24'-8"	3,112
*B3	5	#4	STR	24'-8"	82

*G1	25	#4	STR	5'-0"	84
-----	----	----	-----	-------	----

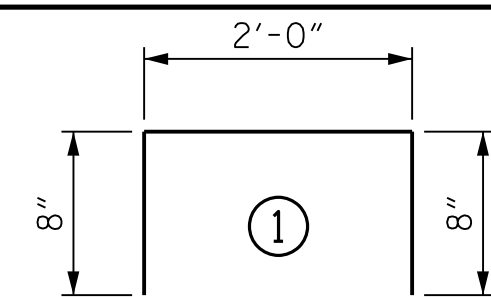
*U1	10	#4	1	3'-4"	22
-----	----	----	---	-------	----

REINFORCING STEEL 3,896 LBS.

* EPOXY COATED
REINFORCING STEEL 3,079 LBS.

CLASS AA CONCRETE BREAKDOWN	
POUR #1 (SLAB)	45.2 C.Y.
POUR #2 (SIDEWALK)	3.2 C.Y.
TOTAL	48.4 C.Y.

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTHS

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

PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT

STAGE I

REVISIONS

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

SHEET NO.
S-54
TOTAL SHEETS
57

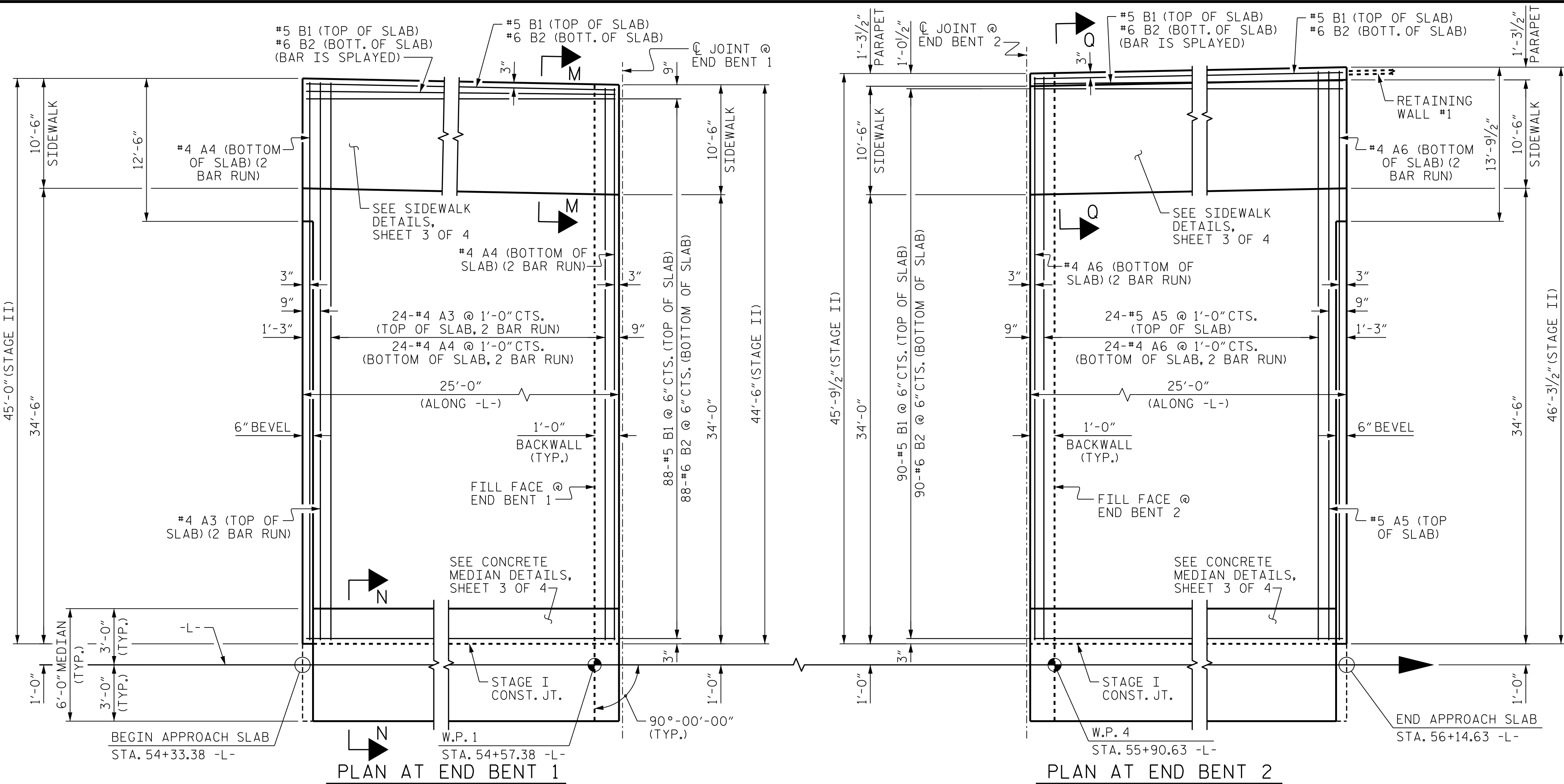
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UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : B.E. LANNING DATE : 11/2023
CHECKED BY : B.E. ATKINSON DATE : 11/2023
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

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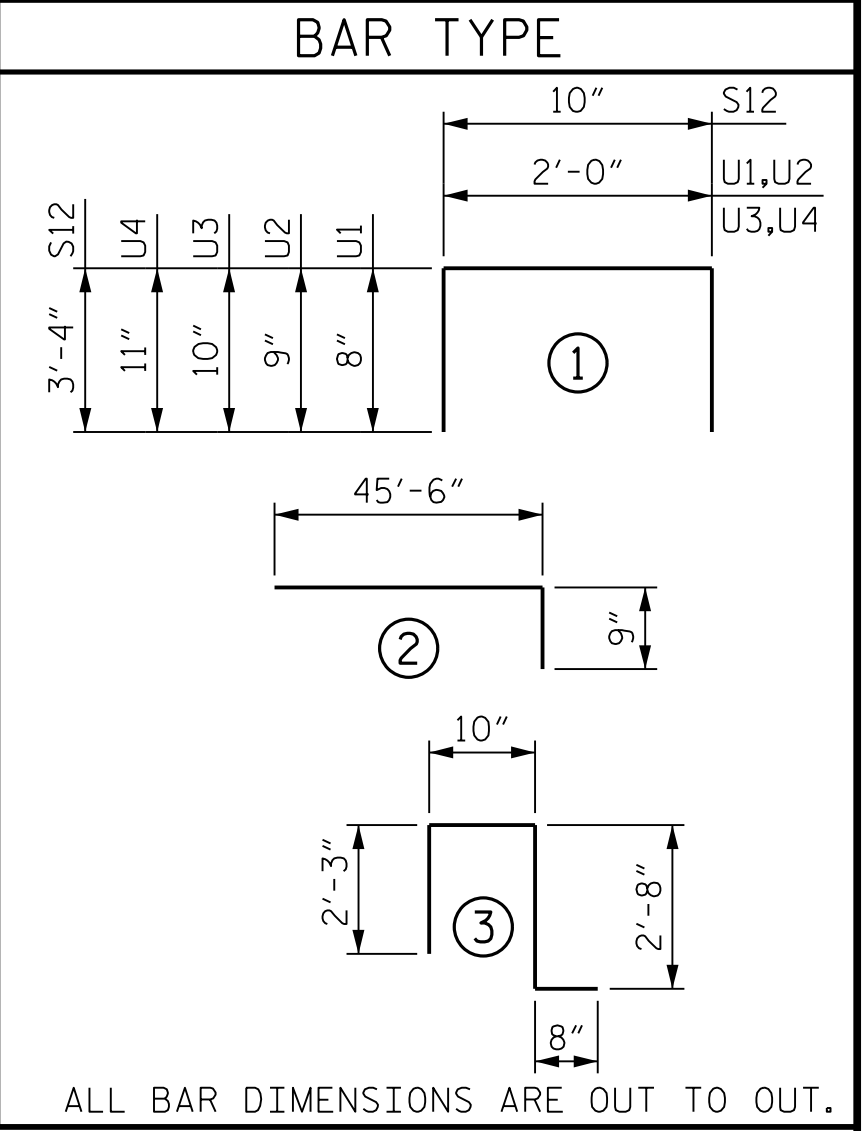


FOR SECTION THRU SLAB, SEE SHEET 1 OF 4.

BILL OF MATERIAL													
STAGE II													
AT END BENT 1						AT END BENT 2							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A3	50	#4	STR	23'-4"	779	*A5	25	# 5	2	46'-3"	1,206		
A4	52	#4	STR	23'-2"	805	A6	52	# 4	STR	23'-5"	813		
*B1	90	#5	STR	24'-2"	2,269	*B1	92	# 5	STR	24'-2"	2,319		
B2	90	#6	STR	24'-8"	3,334	B2	92	# 6	STR	24'-8"	3,409		
*B3	10	#4	STR	24'-8"	165	*B3	10	# 4	STR	24'-8"	165		
*B4	4	#4	STR	24'-2"	65	*B4	4	# 4	STR	24'-2"	65		
						*B5	10	# 5	STR	24'-8"	257		
*G2	25	#4	STR	10'-0"	167								
*G3	16	#4	STR	4'-8"	50	*G2	25	# 4	STR	10'-0"	167		
						*G3	16	# 4	STR	4'-8"	50		
*U1	5	#4	1	3'-4"	11								
*U2	5	#4	1	3'-6"	12	*S12	25	# 5	1	7'-6"	196		
*U3	5	#4	1	3'-8"	12	*S13	25	# 5	3	6'-5"	167		
*U4	5	#4	1	3'-10"	13								
						*U1	5	# 4	1	3'-4"	11		
						*U2	5	# 4	1	3'-6"	12		
						*U3	5	# 4	1	3'-8"	12		
						*U4	5	# 4	1	3'-10"	13		
						REINFORCING STEEL 4,222 LBS.							
REINFORCING STEEL 4,139 LBS.													
* EPOXY COATED REINFORCING STEEL 3,543 LBS.						* EPOXY COATED REINFORCING STEEL 4,640 LBS.							
						CLASS AA CONCRETE BREAKDOWN							
CLASS AA CONCRETE BREAKDOWN						POUR #1 (SLAB)						49.9 C.Y.	
POUR #1 (SLAB)				48.5 C.Y.		POUR #2 (PARAPET)						3.8 C.Y.	
POUR #2 (SIDEWALK & MEDIAN)				9.1 C.Y.		POUR #3 (SIDEWALK & MEDIAN)						9.1 C.Y.	
TOTAL				57.6 C.Y.		TOTAL						62.8 C.Y.	

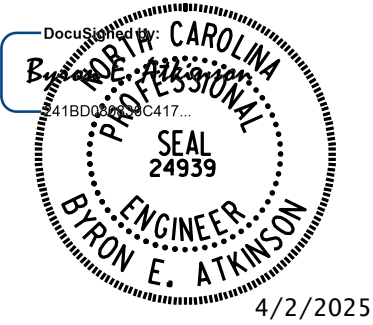
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

NOTES:
FOR NOTES, SEE SHEET 1 OF 4.
FOR SIDEWALK AND CONCRETE MEDIAN DETAILS, SEE SHEET 3 OF 4.



PROJECT NO. U-4758
GUILFORD COUNTY
STATION: 55+24.00 -L-

SHEET 2 OF 4

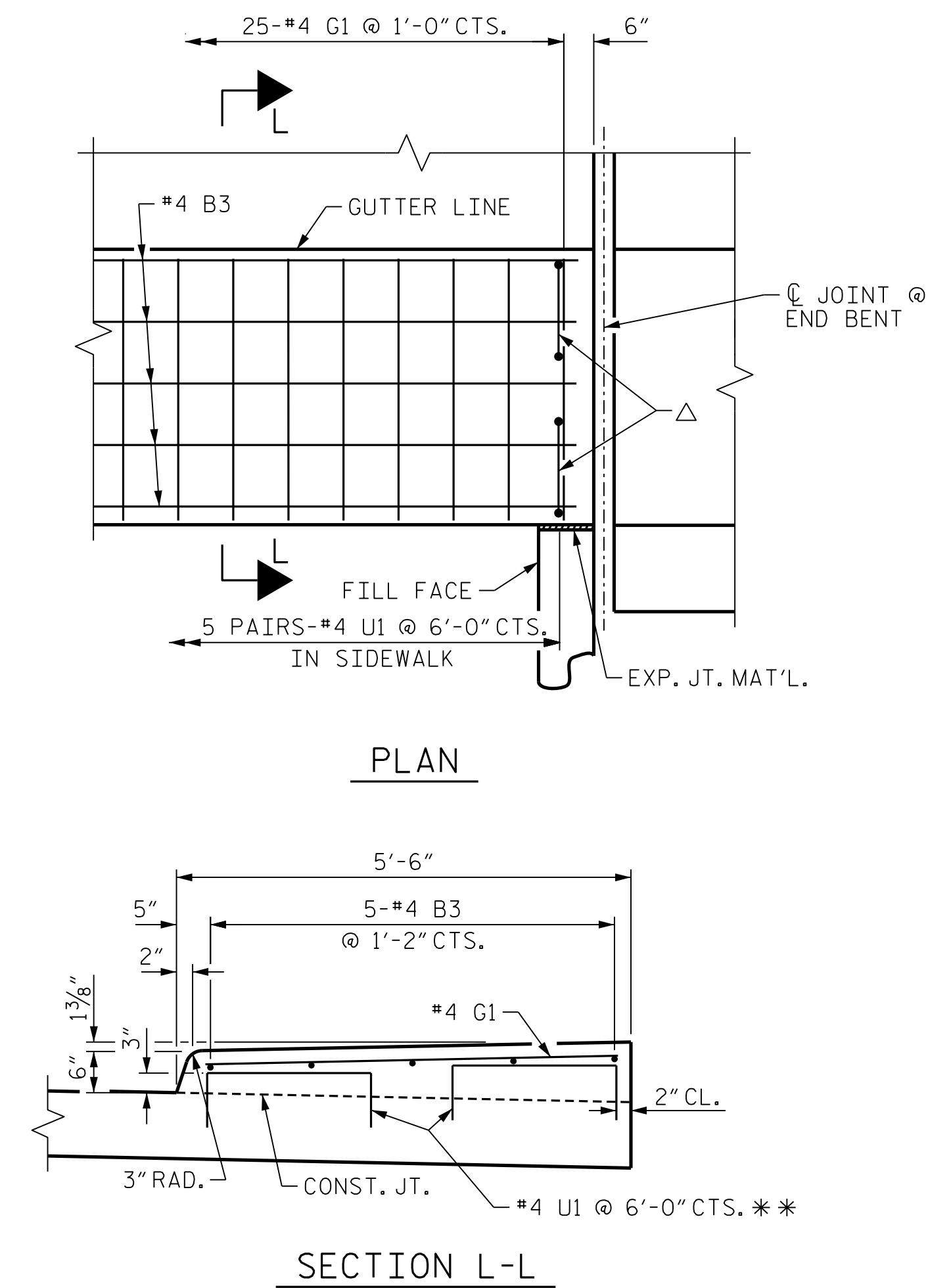


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED				STAGE II													
 MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671				REVISIONS						SHEET NO.							
				NO.		BY:		DATE:		NO.		BY:		DATE:		S-55	
				1						3						TOTAL SHEETS	
				2						4						57	

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>02/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>06/2024</u>

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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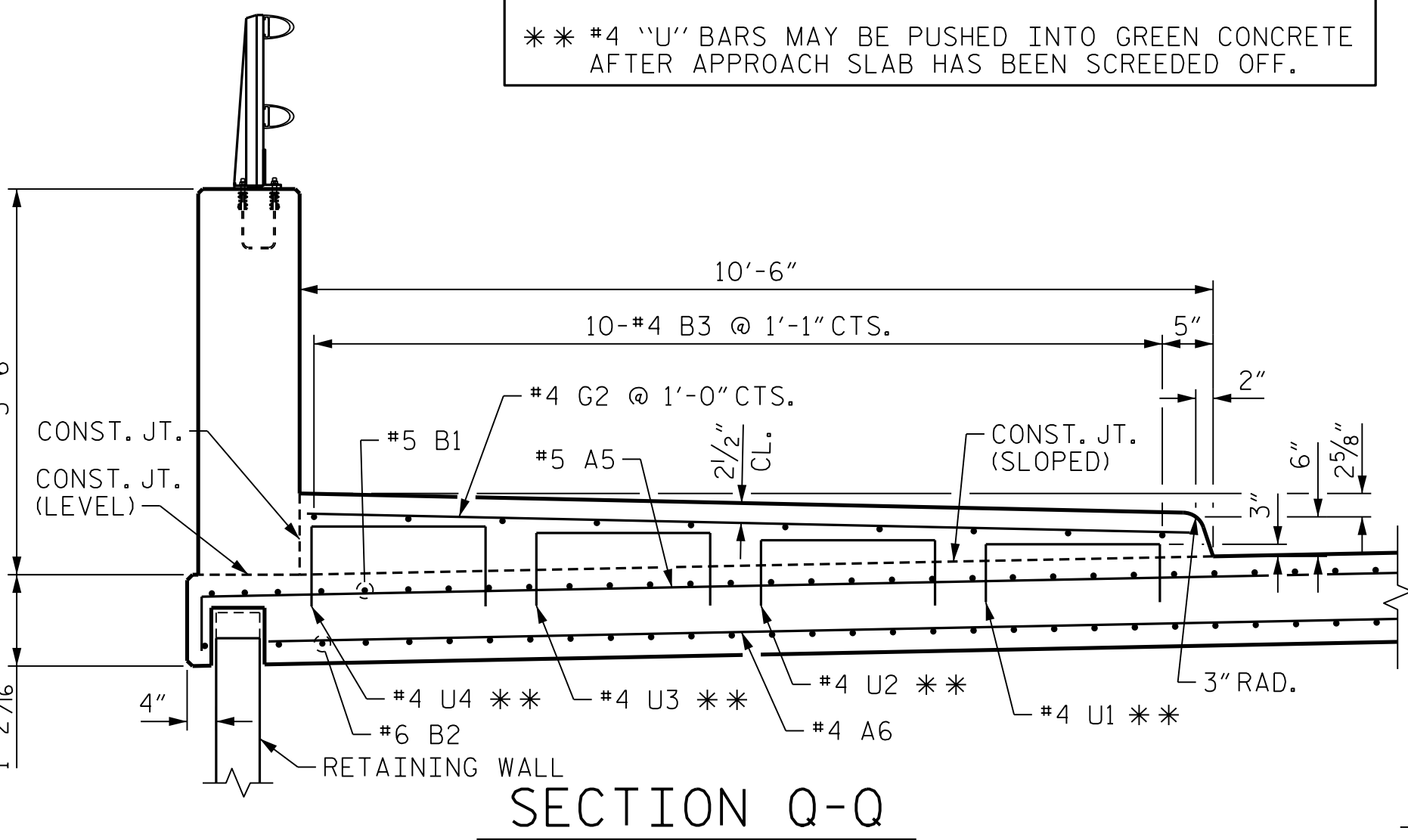
DETAILS OF SIDEWALK ON APPROACH SLAB

STAGE I SIDEWALK DETAILS

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

△ THESE BARS ARE TO BE PLACED AFTER THE SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED INTO PLACE.

** #4 "U" BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER APPROACH SLAB HAS BEEN SCREEDED OFF.



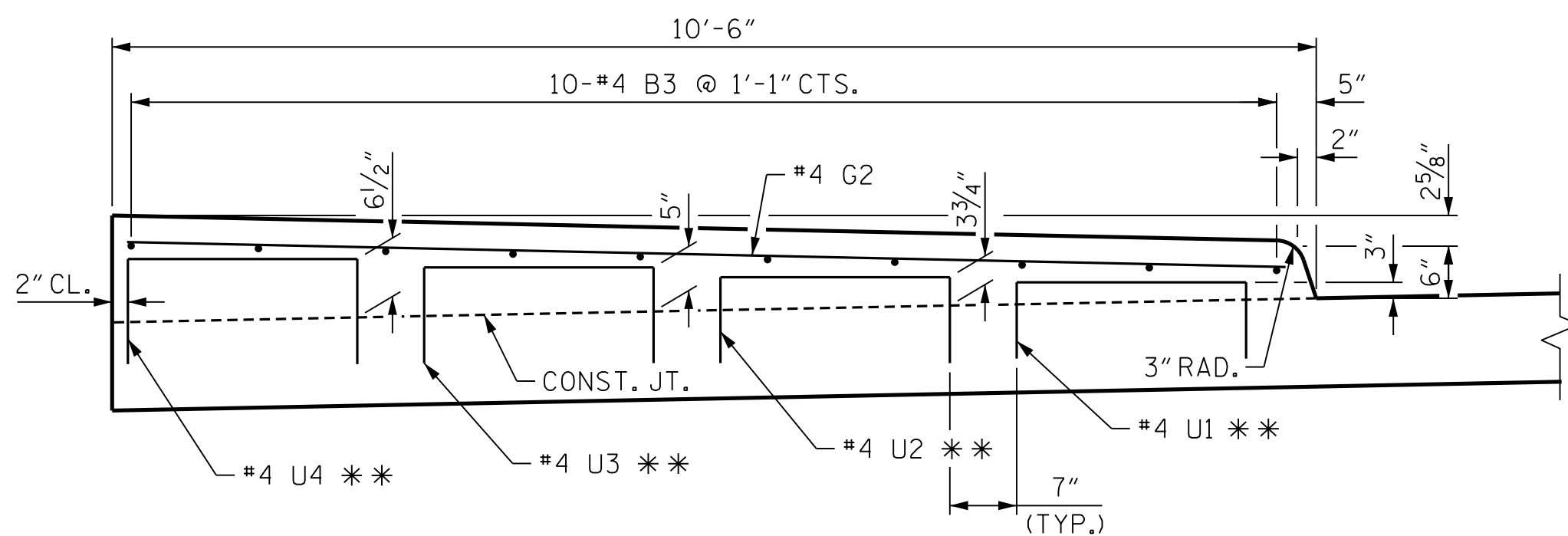
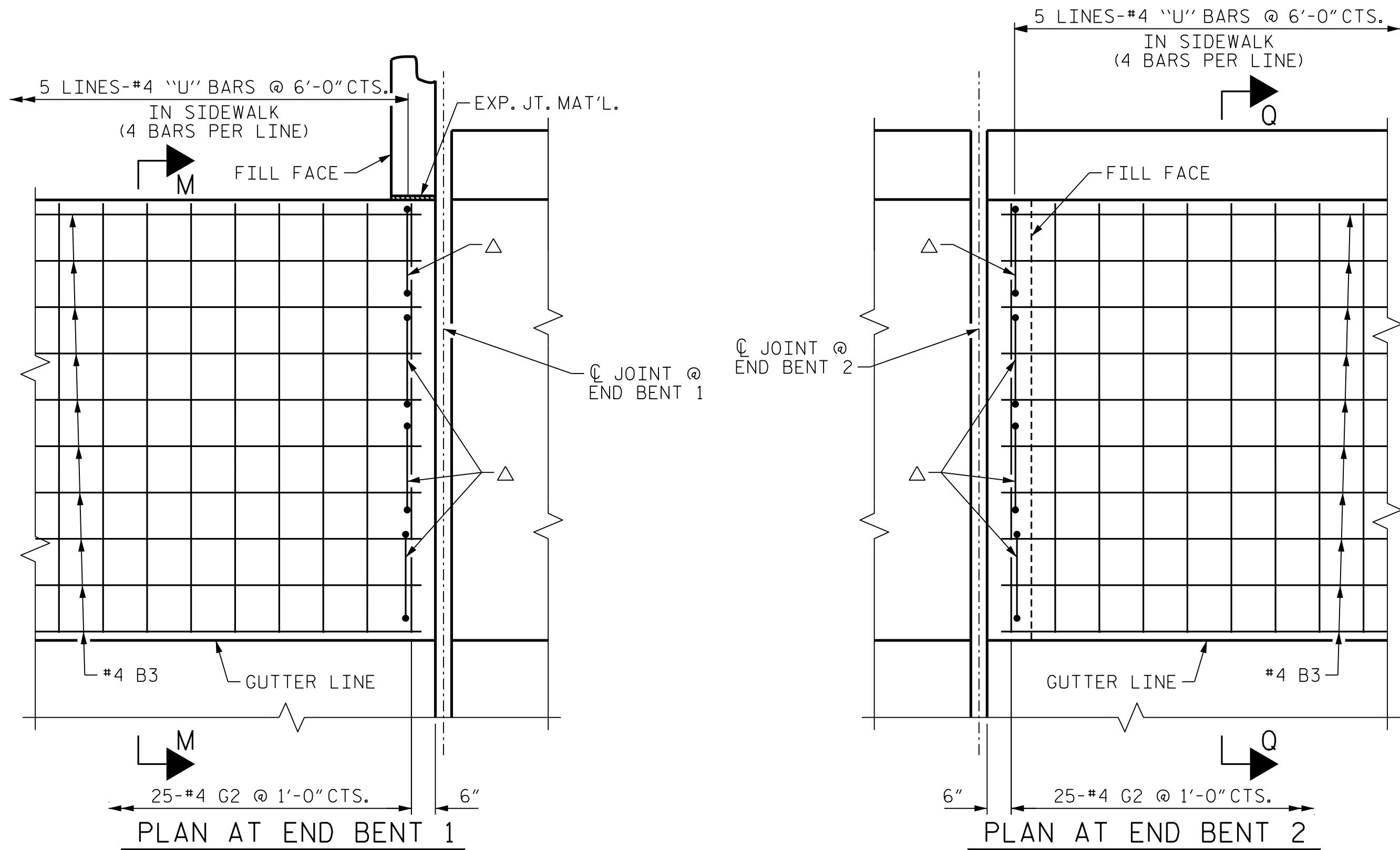
"B" BARS MAY BE SHIFTED TO AVOID RETAINING WALL

SEE SECTION M-M FOR ADDITIONAL DETAILS IN PLACING #4 "U" BARS

DRAWN BY : B.E. LANNING DATE : 02/2021

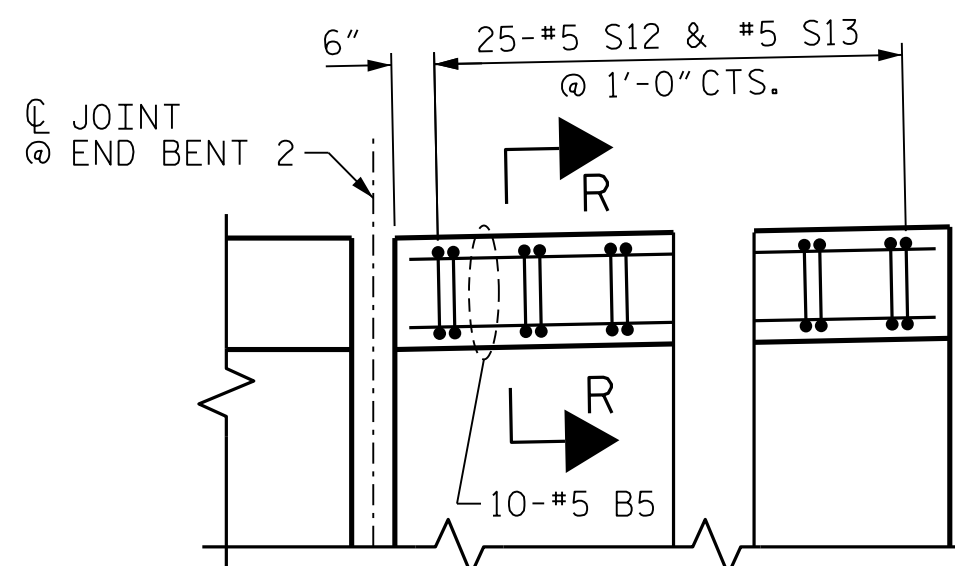
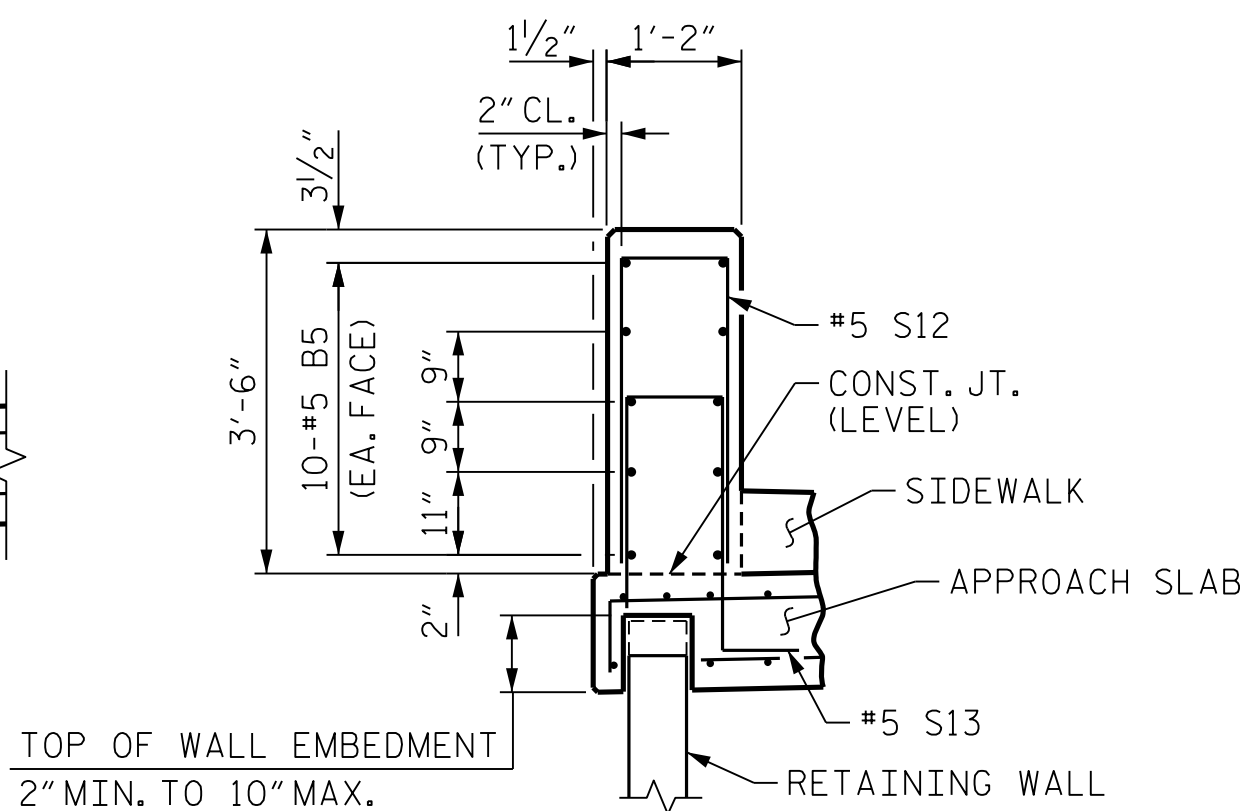
CHECKED BY : B.E. ATKINSON DATE : 03/2021

DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 06/2024

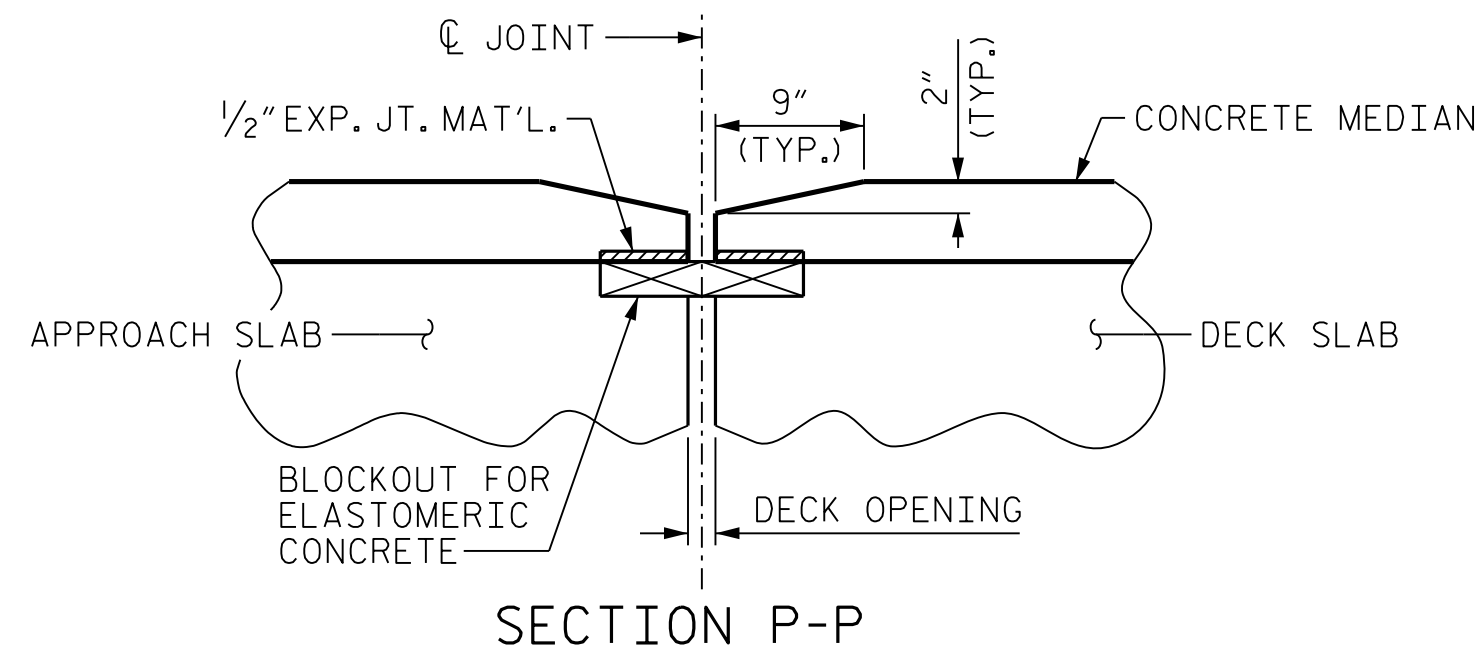
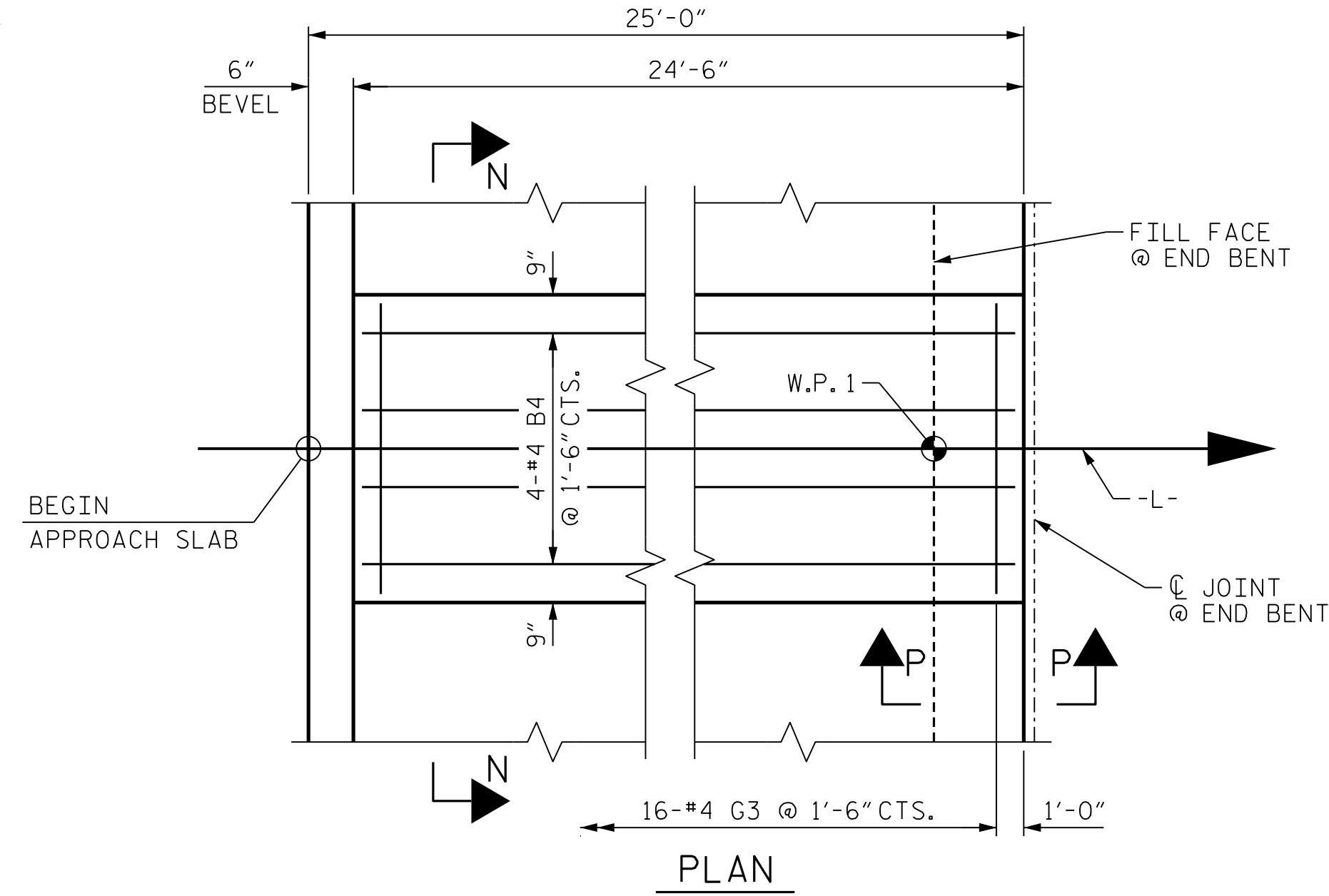


DETAILS OF SIDEWALK ON APPROACH SLAB

STAGE II SIDEWALK DETAILS



PLAN OF PARAPET AT END BENT 2



DETAILS OF CONCRETE MEDIAN ON APPROACH SLAB

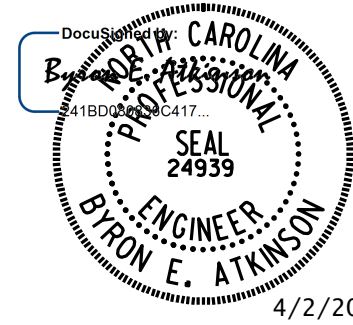
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. U-4758

GUILFORD COUNTY

STATION: 55+24.00 -L-

SHEET 3 OF 4



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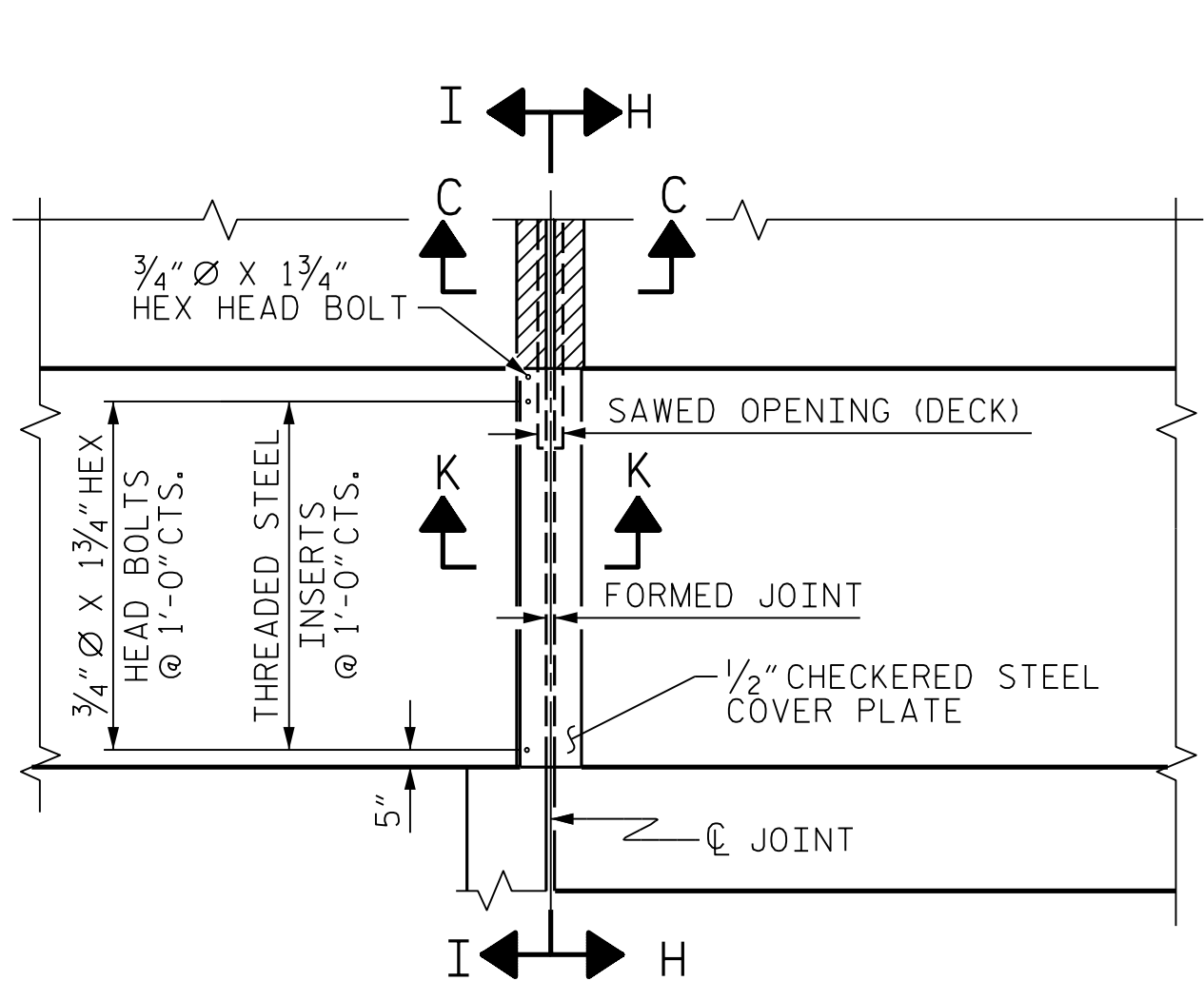
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

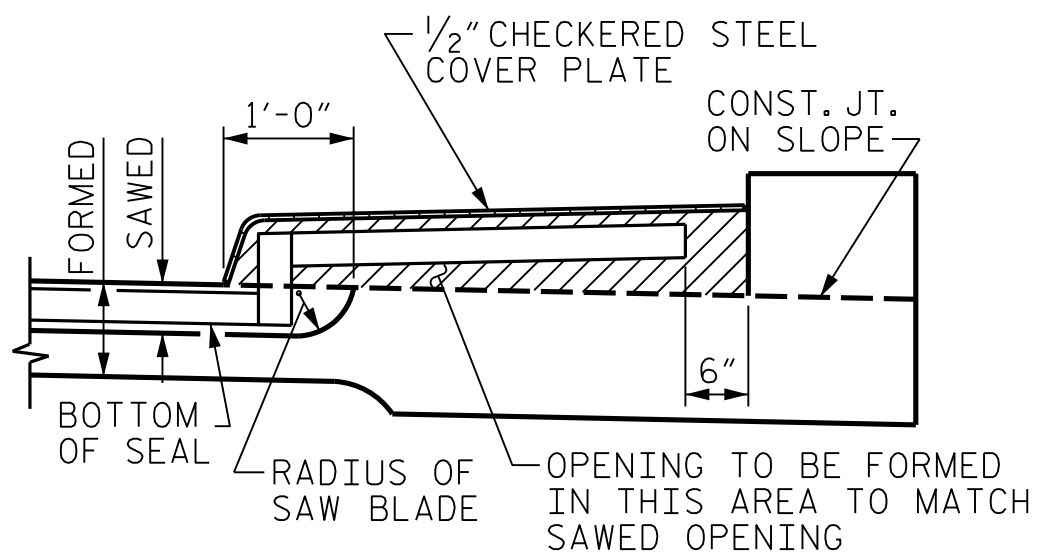
BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-56
2			4			

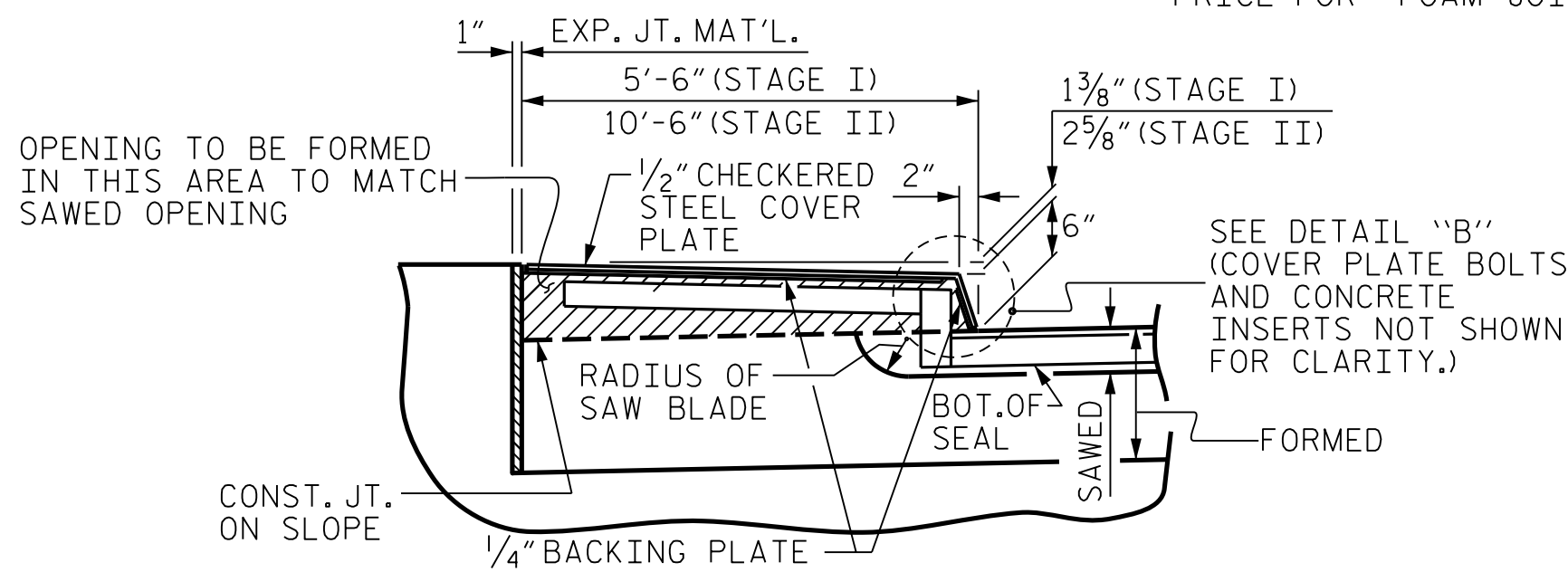
TOTAL SHEETS 57



PLAN OF FOAM JOINT
AT END BENT



SECTION H-H



SECTION I-I

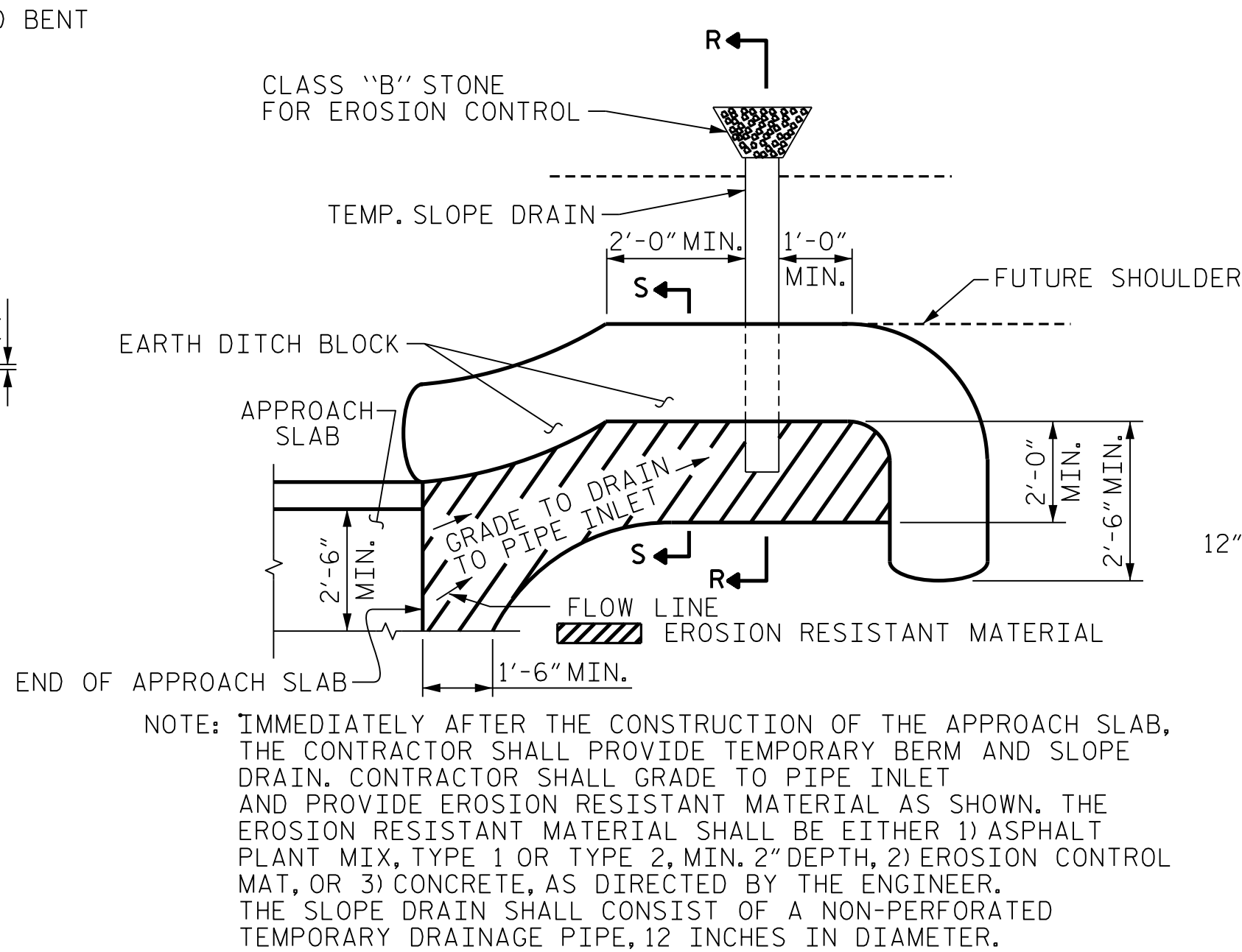
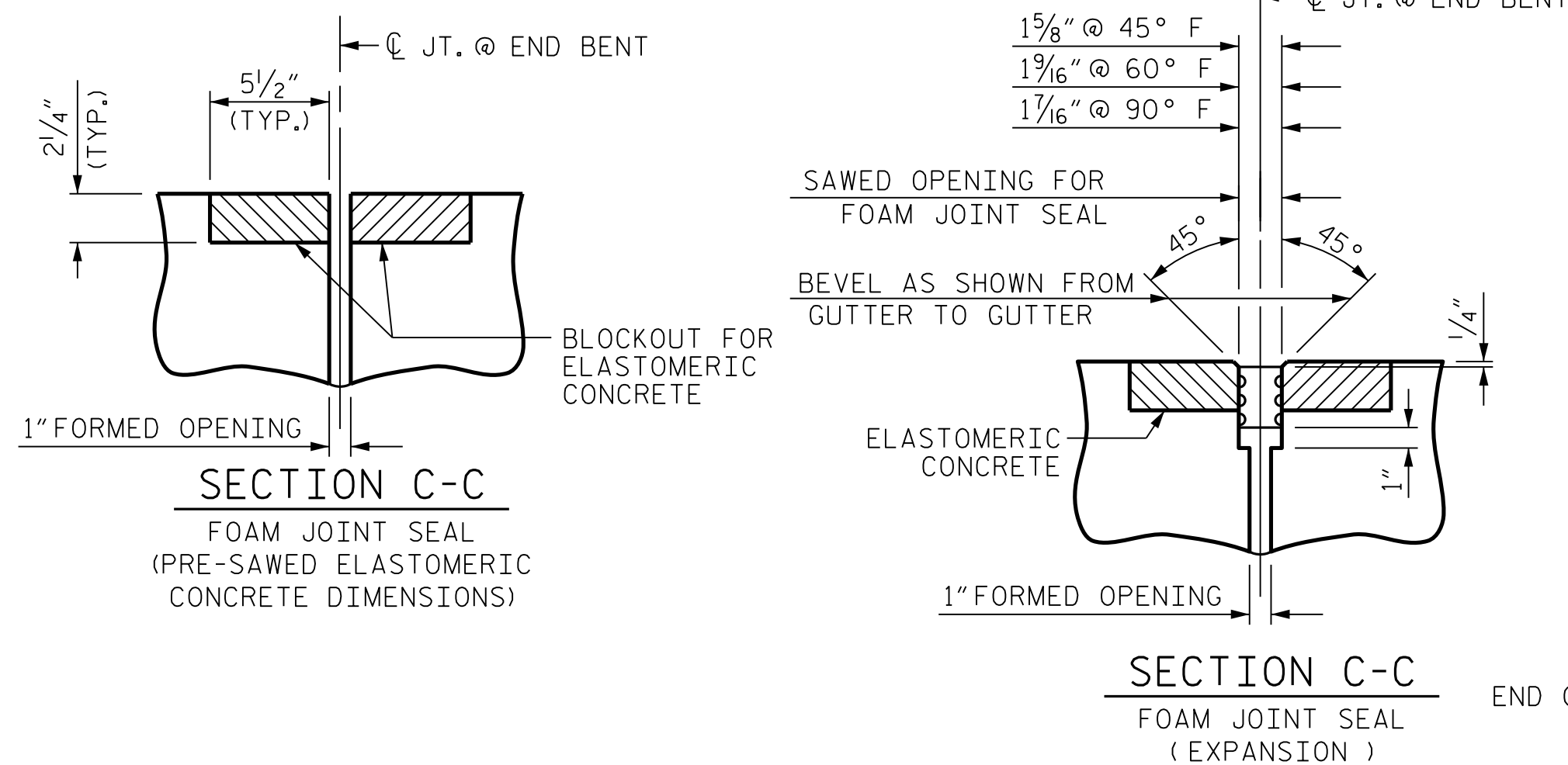
ELASTOMERIC CONCRETE		
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)	
	STAGE I	STAGE II
1	6.2	6.0
2	6.2	6.0
TOTAL	12.4	12.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE $\frac{3}{4}$ " DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

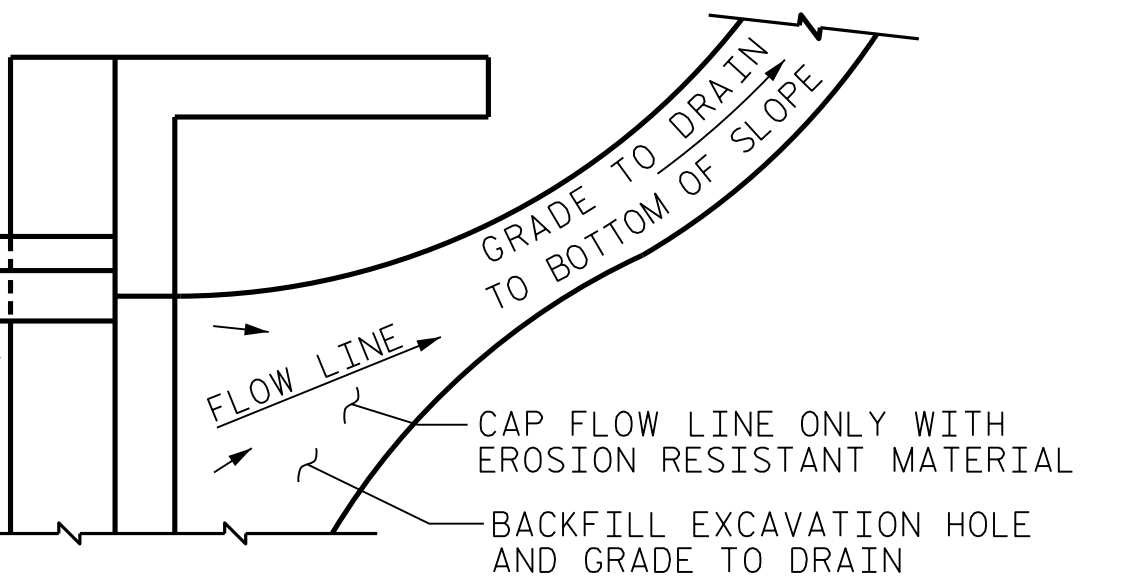
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



PLAN VIEW

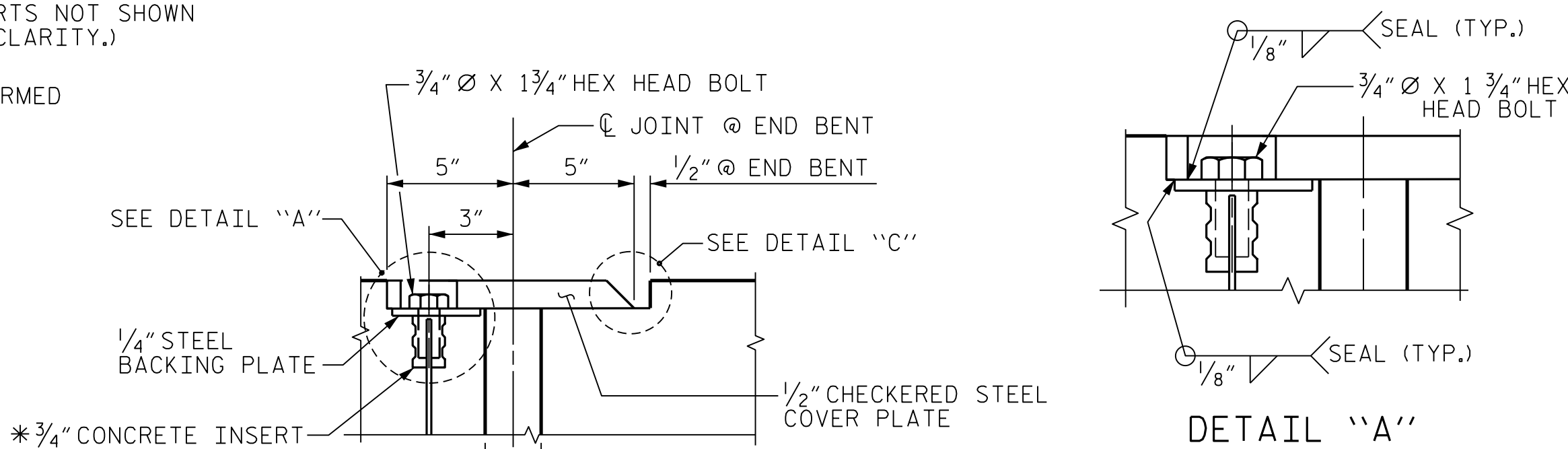
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

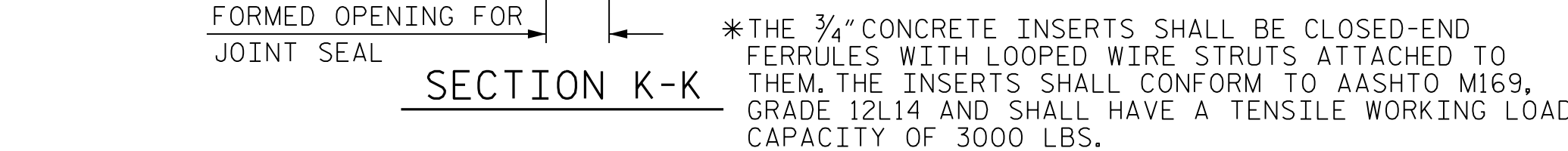


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

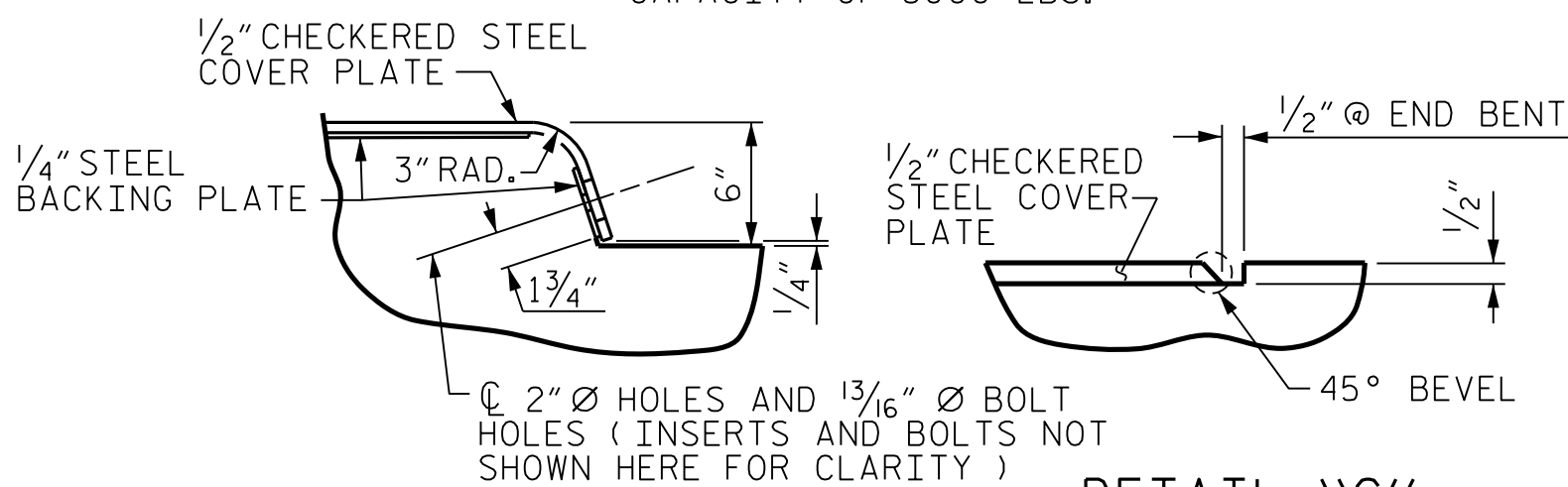
TEMPORARY DRAINAGE DETAIL



DETAIL "A"



SECTION K-K



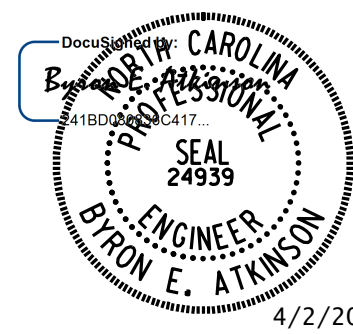
DETAIL "B"

DETAIL "C"

JOINT SEAL DETAILS AT END BENT

PROJECT NO. U-4758
GUILFORD COUNTY
 STATION: 55+24.00 -L-

SHEET 4 OF 4



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UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 57

STD. NO. BAS4 (SHT 2)

ASSEMBLED BY: B.E. LANNING	DATE: 02/2021
CHECKED BY: B.E. ATKINSON	DATE: 03/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 06/2024
DRAWN BY: FCJ 11/88	REV. 6/13 MAA/GM
CHECKED BY: ARB 11/88	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH 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.