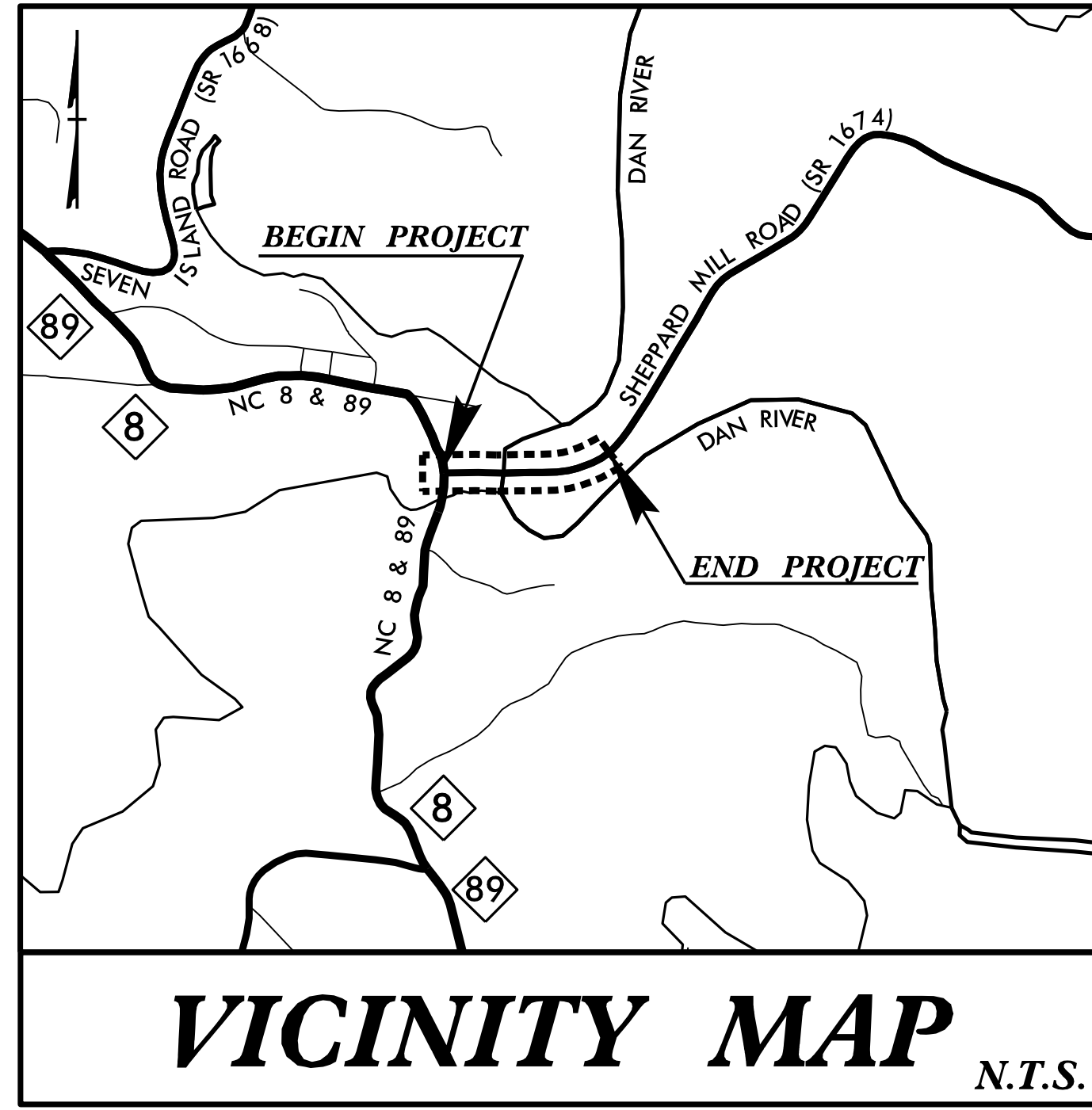


09_025/99

TIP PROJECT: B-5766

CONTRACT: C204978

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

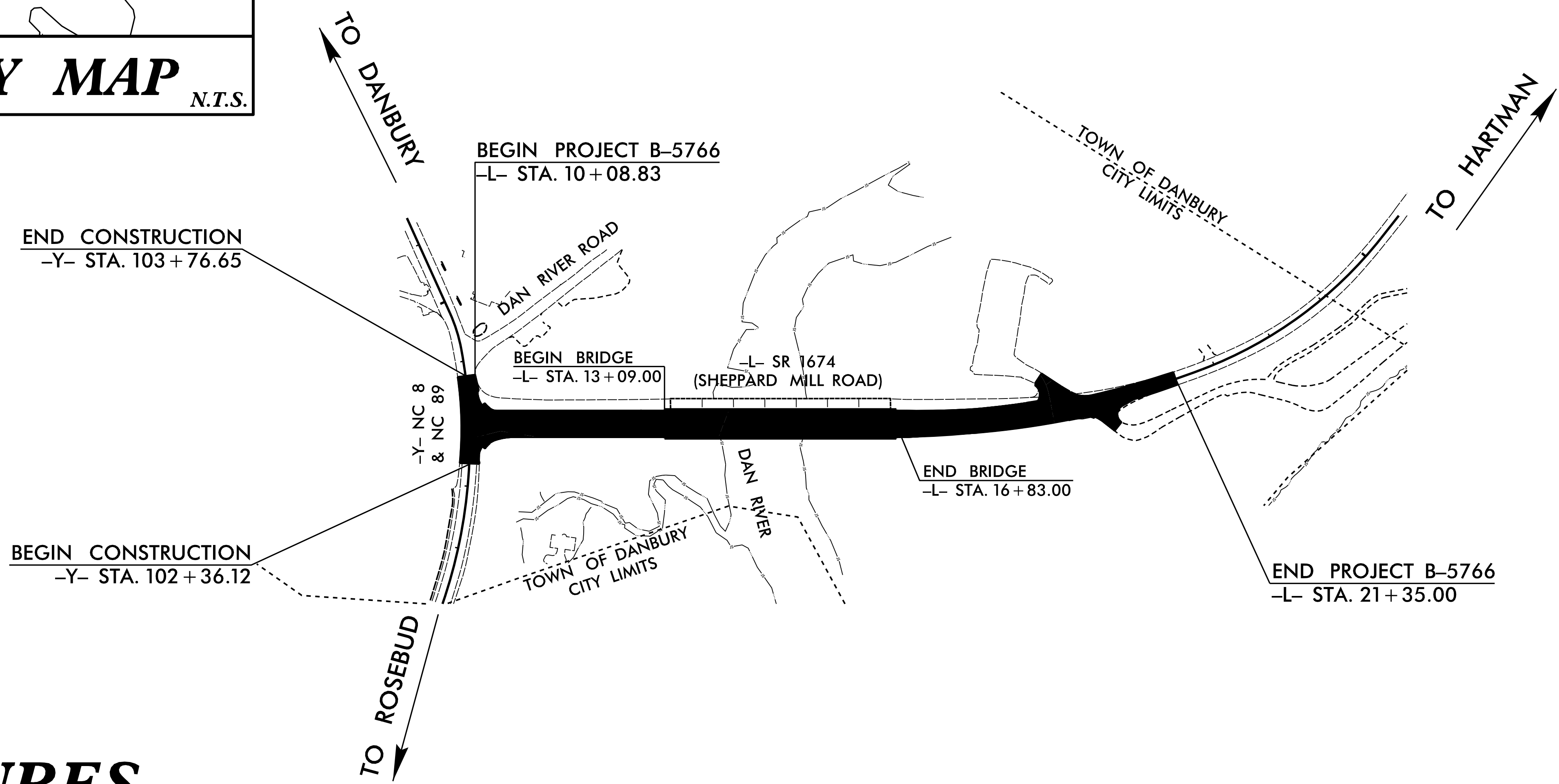
STOKES COUNTY

**LOCATION: BRIDGE NO. 82 OVER DAN RIVER ON
SR 1674 (SHEPPARD MILL ROAD)
DANBURY, NORTH CAROLINA**

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5766	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45722.1.3	N/A	PE	
45722.2.1	N/A	RW	
45722.2.2	N/A	UTIL	
45722.3.1	N/A	CONST.	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



STRUCTURES

DESIGN DATA

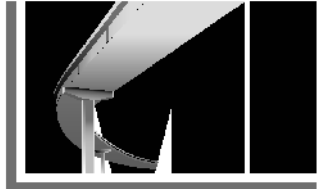
ADT 2025 =	950
ADT 2040 =	1,600
V =	40 MPH
K =	10%
D =	60%
TTST =	1%
DUALS =	2%
FUNC CLASS =	MINOR COLLECTOR SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5766 =	0.142 MILES
LENGTH STRUCTURE PROJECT B-5766 =	0.071 MILES
TOTAL LENGTH PROJECT B-5766 =	0.213 MILES

NCDOT CONTACT: RYAN NEWCOMB, PE
DIVISION PROJECT ENGINEER
PH: (336) 747-7800

Prepared In the Office of:

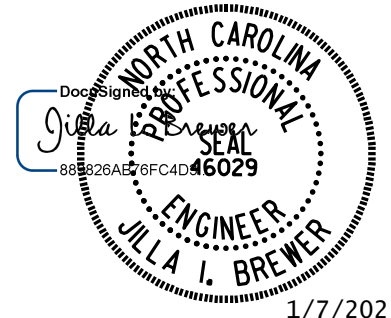
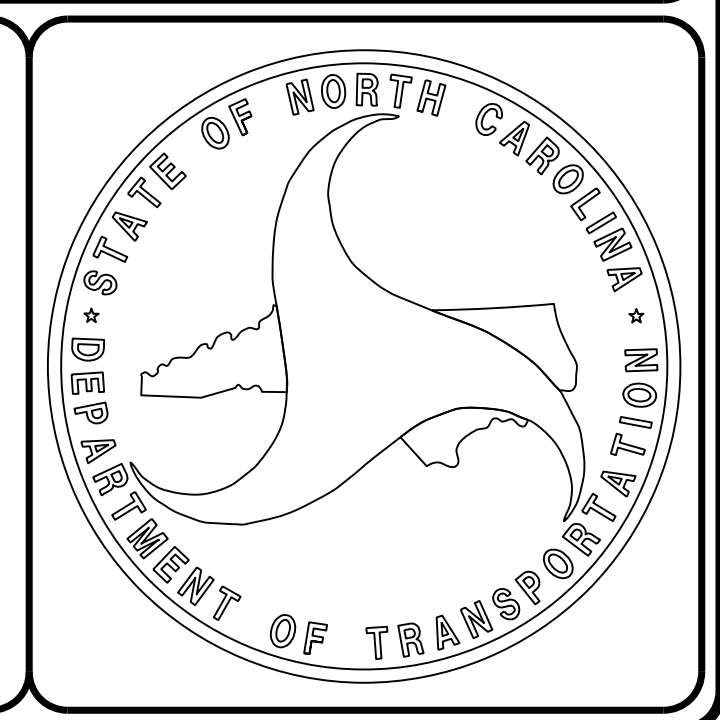


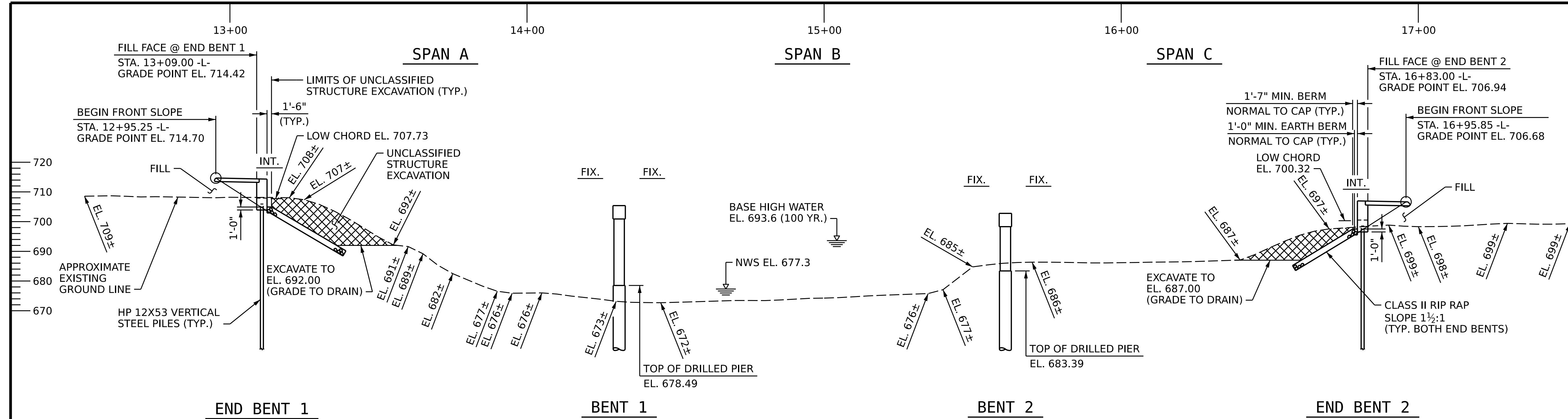
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

2024 STANDARD SPECIFICATIONS

FEBRUARY 18, 2025
LETTING DATE:

JILLA I. BREWER, PE
DESIGN ENGINEER OF RECORD



GRADE DATA -L-
 -2.0000% Δ +1.0518%
 PVI = 18+00.00 -L-
 EL. = 704.60
 V.C. = 200.00'

HYDRAULIC DATA

DESIGN DISCHARGE = 18100 CFS
 FREQUENCY OF DESIGN FLOOD = 25 YRS.
 DESIGN HIGH WATER ELEVATION = 690.1
 DRAINAGE AREA = 269 SQ. MI.
 BASE DISCHARGE (Q100) = 24544 CFS
 BASE HIGH WATER ELEVATION = 693.6

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 72000 CFS
 FREQUENCY OF OVERTOPPING FLOOD = +500 YRS.
 OVERTOPPING FLOOD ELEVATION = 705.3*
 * AT LOW POINT EAST OF BRIDGE AT STA. 18+30.00 -L-

HORIZ. CURVE DATA -L-

PI STA. 19+40.77 -L-
 Δ = 20°-52'-35.1" (LT.)
 D = 4°-18'-28.6"
 L = 484.60'
 T = 245.02'
 R = 1330.00'

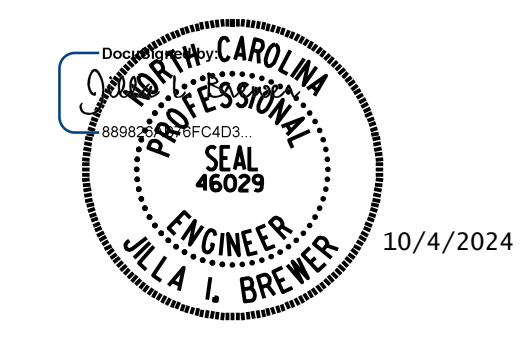
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. **B-5766**
 STOKES COUNTY
 STATION: **14+96.00 -L-**
 SHEET 1 OF 4 REPLACES BRIDGE NO. 840082

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1674
 OVER DAN RIVER BETWEEN
 NC 8 / NC 89 AND
 MORATOCK PARK ENTRANCE



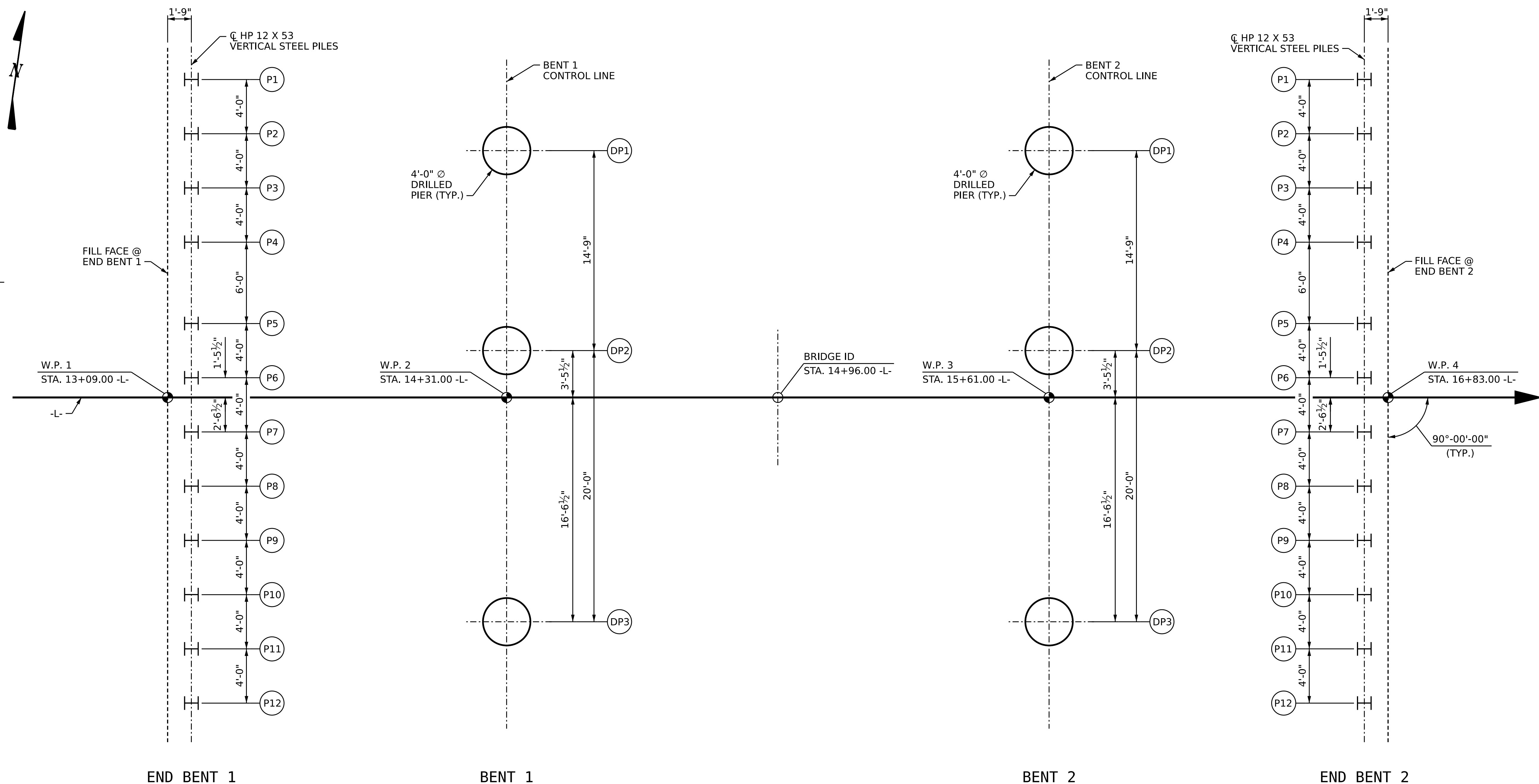
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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:	S-1
1			3			TOTAL SHEETS 60
2			4			

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DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024



FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED PIERS.

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

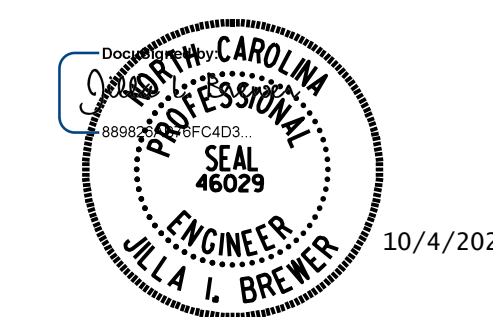
PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1674
 OVER DAN RIVER BETWEEN
 NC 8 / NC 89 AND
 MORATOCK PARK ENTRANCE



**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:	S-2
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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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 KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile KIPS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Pre-drill 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 1-12	235	See Structure Drawings	25	N/A		392							
End Bent 2, Piles 1-12	235		30	N/A		392							

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	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 1-12	235			0.60			
End Bent 2, Piles 1-12	235			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 KIPS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length* per Pier Lin FT	Drilled Pier Length Not In Soil* per Pier Lin FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Casing Required? YES 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 1-3	1473	657.0	100	672	10.0	21.5			YES	670.0	8.0
Bent 2, Piers 1-3	1473	656.9	100	672	10.0	26.5			YES	680.0	6.0
TOTAL QTY:						144.0					42

*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 Casing 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 SHIPING YANG, LICENSE NO. 031361 ON 08/19/2024.
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 PDA TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTS, CSL TESTING, SID INSPECTIONS AND PITS WHEN THESE ITEMS MAY BE REQUIRED."
4. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SUMMARY OF DRILLED PIER TESTING

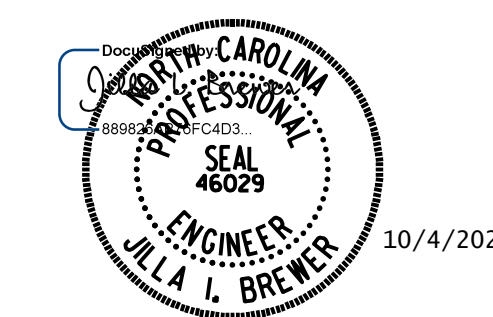
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?*	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-3		MAYBE	92.0		
Bent 2, Piers 1-3		MAYBE	112.0		
TOTAL QTY:		1	612.0		

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

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PILE AND DRILLED PIER
FOUNDATION TABLES**

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

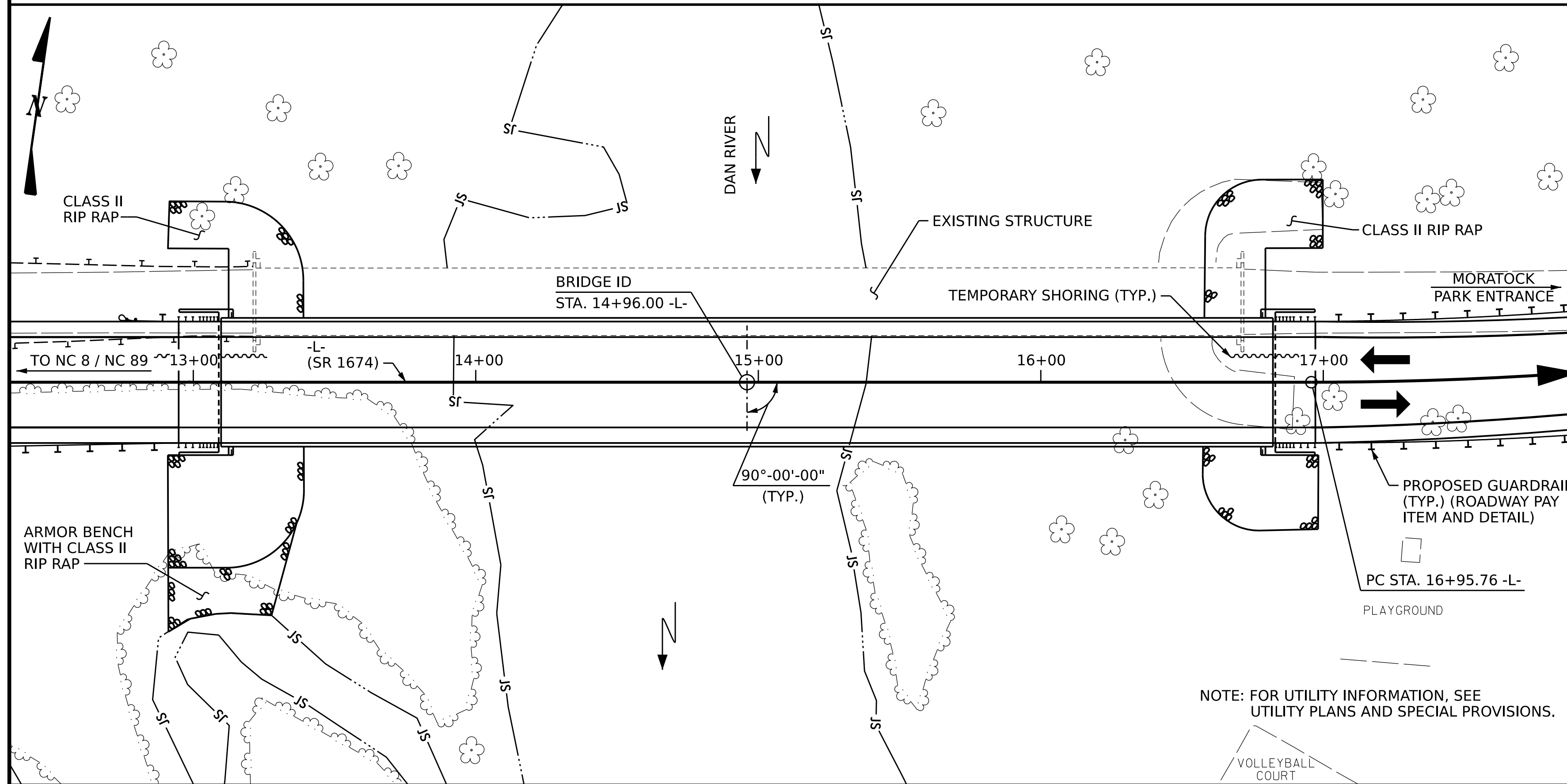
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-3
2			4			TOTAL SHEETS 60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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B.M. #2: RR SPIKE SET IN ROOT OF 15" MAPLE, 178.34' LT. OF STA. 19+29.05 -L-, EL. 693.11



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRATOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE FOR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 14+96.00 -L-."
- AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 7 SPANS (7 @ 50'-0") WITH ASPHALT WEARING SURFACE ON STEEL PLATE GIRDERS AND A CLEAR ROADWAY WIDTH OF 24'-0" ON REINFORCED CONCRETE CAPS WITH STEEL PILES ON END BENTS AND REINFORCED CONCRETE CAPS WITH REINFORCED CONCRETE COLUMNS WITH STRUTS ON FOOTINGS AND STEEL PILES AT INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED IN IT'S ENTIRETY. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 65 FT. EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- 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.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
- FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" Ø DRILLED PIER	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	LUMP SUM	SQ. FEET	SQ. FEET	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE							17,050	13,836		LUMP SUM	
END BENT 1						LUMP SUM			34.3		4,691
BENT 1			64.5	24					61.1		12,576
BENT 2			79.5	18					53.2		12,253
END BENT 2						LUMP SUM			34.0		4,619
TOTAL	LUMP SUM	LUMP SUM	144.0	42	1	LUMP SUM	17,050	13,836	182.6	LUMP SUM	34,139

TOTAL BILL OF MATERIAL

	SPIRAL COLUMN REINFORCING STEEL	FIB 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	TWO BAR METAL RAIL	1'-2" X 3'-3" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	INSTALL 6" Ø SEWER PIPE AT STA. 14+96.00 -L-	
	LBS.	LIN. FT.	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		1856.24				729.67	744.67			LUMP SUM	
END BENT 1			12	12	300.0		506	561			
BENT 1	3,287										
BENT 2	3,065										
END BENT 2			12	12	360.0		410	456			
TOTAL	6,352	1856.24	24	24	660.0	729.67	744.67	916	1,017	LUMP SUM	LUMP SUM

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 4 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

GENERAL DRAWING

FOR BRIDGE ON SR 1674
 OVER DAN RIVER BETWEEN
 NC 8 / NC 89 AND
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

1/7/2025 1:02:37 PM blanning
 Filename: N:\NC Br\ldges\W21018.RKA.Stokes 82 Br. Rep\B-5766\Structure\401_007_B5766_SML.GD04_B40082.dgn

LOAD FACTORS:

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

NOTES:

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

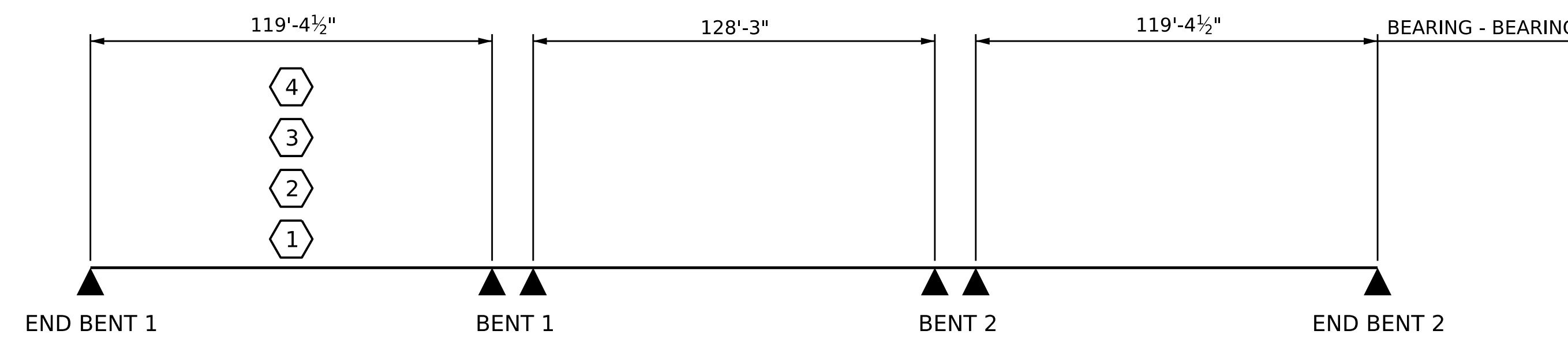
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

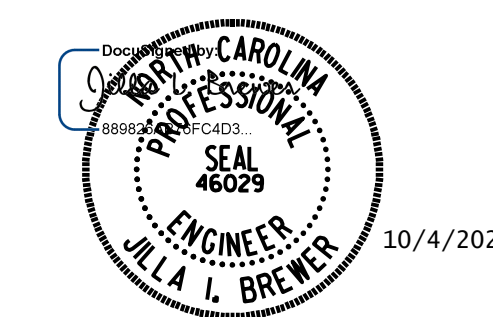
#	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING * *
④	EMERGENCY VEHICLE LOAD RATING * *
* * SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
4 - GIRDER 4	

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								SERVICE III LIMIT STATE								COMMENT NUMBER	
						MOMENT				SHEAR				MOMENT									
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.25	--	1.75	0.888	1.74	A	4	59.7	1.099	1.34	B	4	12.8	0.80	0.888	1.25	A	4	59.7	
	HL-93 (OPERATING)	N/A		1.77	--	1.35	0.888	2.26	A	4	59.7	1.099	1.77	B	4	12.8	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	②	1.83	67.32	1.75	0.888	2.54	A	4	59.7	1.099	1.95	B	4	12.8	0.80	0.888	1.83	A	4	59.7	
	HS-20 (OPERATING)	36.000		2.57	90.36	1.35	0.888	3.29	A	4	59.7	1.099	2.57	B	4	12.8	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		4.43	48.74	1.40	0.888	7.69	A	4	59.7	1.099	6.38	B	4	12.8	0.80	0.888	4.43	A	4	59.7	
		SNGARBS2	20.000		3.16	62.60	1.40	0.888	5.50	A	4	59.7	1.099	4.39	B	4	12.8	0.80	0.888	3.16	A	4	59.7
		SNAGRIS2	22.000		2.94	68.64	1.40	0.888	5.11	A	4	59.7	1.099	4.03	B	4	12.8	0.80	0.888	2.94	A	4	59.7
		SNCOTTS3	27.250		2.20	49.32	1.40	0.888	3.82	A	4	59.7	1.099	3.10	A	4	23.9	0.80	0.888	2.20	A	4	59.7
		SNAGGRS4	34.925		1.79	58.33	1.40	0.888	3.10	A	4	59.7	1.099	2.48	B	4	25.7	0.80	0.888	1.79	A	4	59.7
		SNS5A	35.550		1.75	57.59	1.40	0.888	3.04	A	4	59.7	1.099	2.48	B	4	12.8	0.80	0.888	1.75	A	4	59.7
		SNS6A	39.950		1.58	62.72	1.40	0.888	2.75	A	4	59.7	1.099	2.23	B	4	12.8	0.80	0.888	1.58	A	4	59.7
	SNS7B	42.000		1.51	62.58	1.40	0.888	2.62	A	4	59.7	1.099	2.15	B	4	12.8	0.80	0.888	1.51	A	4	59.7	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.93	64.02	1.40	0.888	3.35	A	4	59.7	1.099	2.70	B	4	12.8	0.80	0.888	1.93	A	4	59.7
		TNT4A	33.075		1.93	63.84	1.40	0.888	3.35	A	4	59.7	1.099	2.66	B	4	12.8	0.80	0.888	1.93	A	4	59.7
		TNT6A	41.600		1.56	70.30	1.40	0.888	2.71	A	4	59.7	1.099	2.24	B	4	12.8	0.80	0.888	1.56	A	4	59.7
		TNT7A	42.000		1.56	73.50	1.40	0.888	2.70	A	4	59.7	1.099	2.20	B	4	12.8	0.80	0.888	1.56	A	4	59.7
		TNT7B	42.000		1.58	72.24	1.40	0.888	2.75	A	4	59.7	1.099	2.12	B	4	12.8	0.80	0.888	1.58	A	4	59.7
		TNAGRIT4	43.000		1.53	74.82	1.40	0.888	2.65	A	4	59.7	1.099	2.06	B	4	12.8	0.80	0.888	1.53	A	4	59.7
TNAGT5A		45.000		1.45	72.45	1.40	0.888	2.51	A	4	59.7	1.099	2.01	B	4	12.8	0.80	0.888	1.45	A	4	59.7	
TNAGT5B	45.000		③	1.44	69.75	1.40	0.888	2.50	A	4	59.7	1.099	1.95	B	4	25.7	0.80	0.888	1.44	A	4	59.7	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.22	65.26	1.30	0.888	4.16	A	4	59.7	1.099	3.27	B	4	12.8	0.80	0.888	2.22	A	4	59.7	
	EV3	43.000		④	1.47	61.92	1.30	0.888	2.75	A	4	59.7	1.099	2.15	B	4	25.7	0.80	0.888	1.47	A	4	59.7



LRFR SUMMARY

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-



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

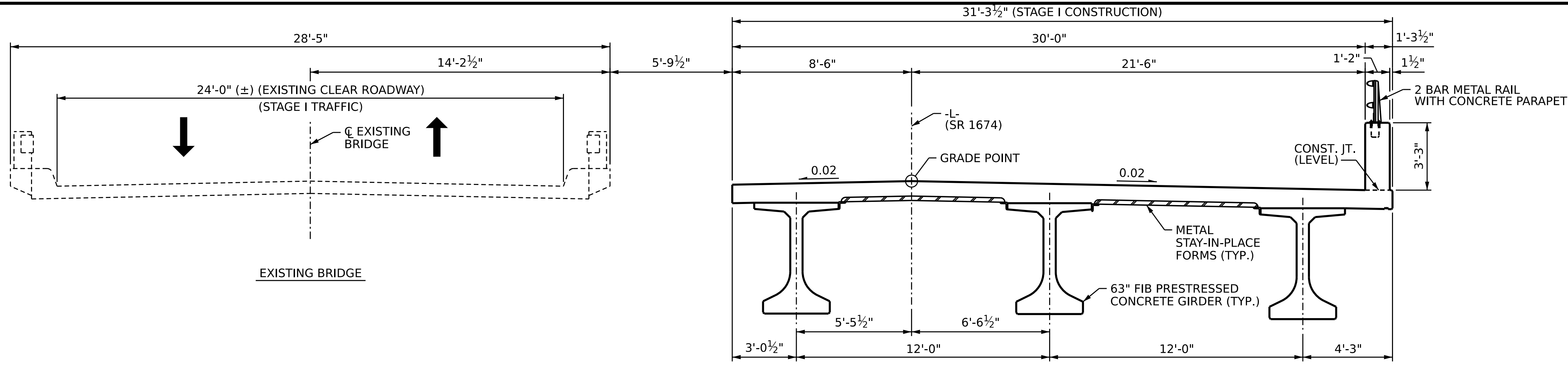
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

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

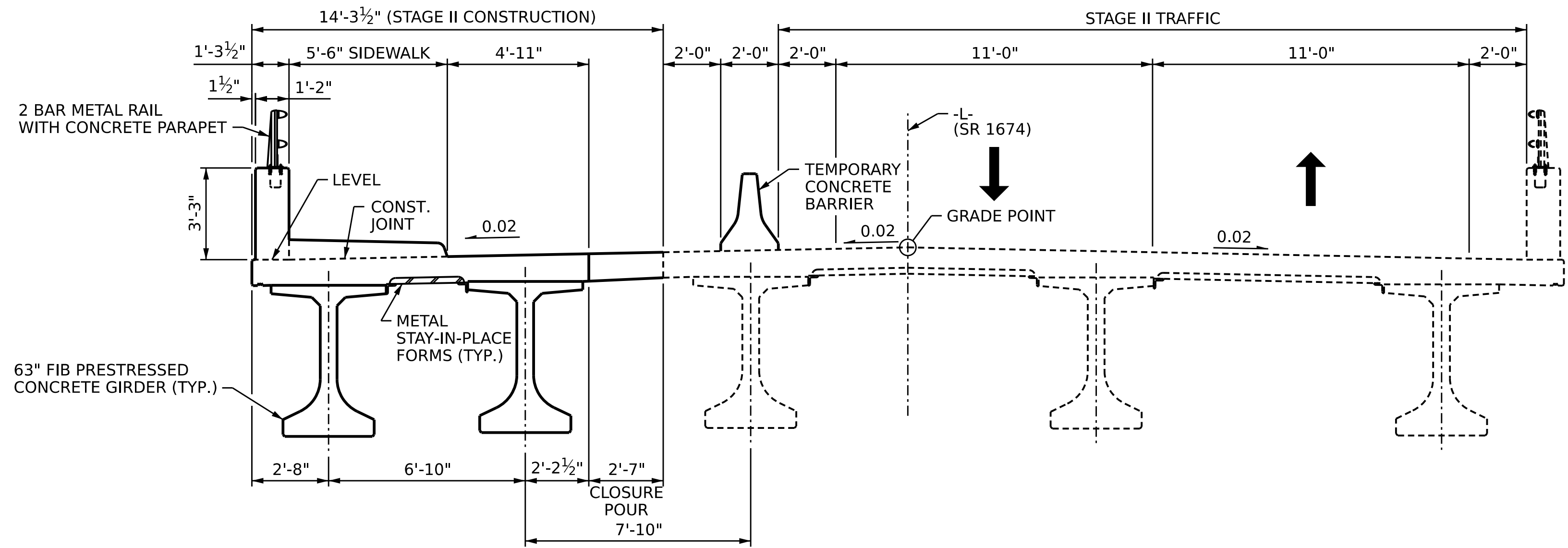
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 60
2			4			

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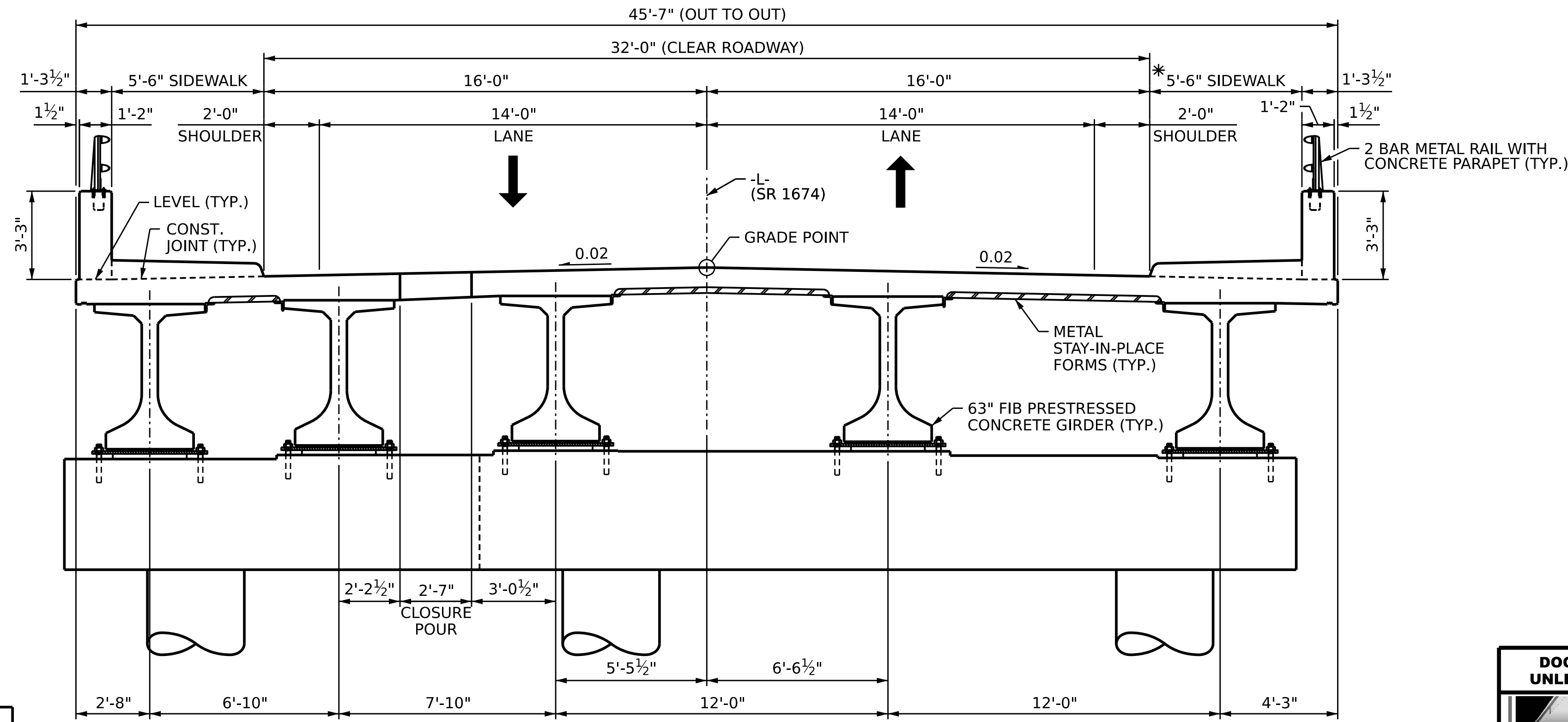
ASSEMBLED BY: B.E. LANNING	DATE: 07/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 07/2024
DRAWN BY: MAA I/08	REV. 11/2/08RR MAA/GM
CHECKED BY: GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 04/23 BNB/AAI



STAGE I CONSTRUCTION



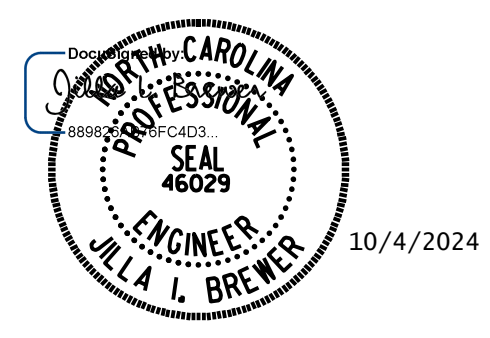
STAGE II CONSTRUCTION



FINAL TYPICAL SECTION

* SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION.

PROJECT NO. B-5766
 STOKES COUNTY
 STATION: 14+96.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
CONSTRUCTION SEQUENCE

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:	S-6
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>05/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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NOTES:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (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 AND 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 3,000 PSI.

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" FIB PRESTRESSED CONCRETE GIRDERS" SHEET.

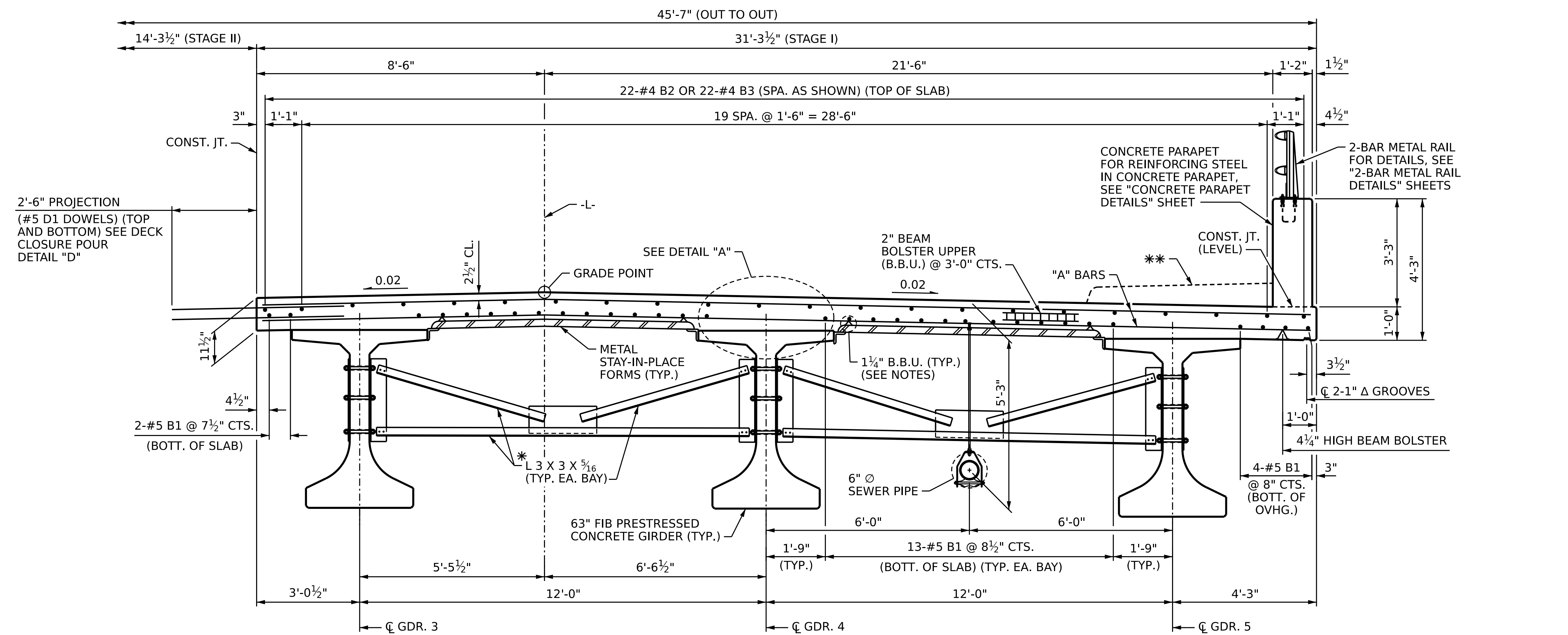
FOR DECK CLOSURE POUR DETAIL "D" AND DECK CLOSURE POUR DETAIL "E", SEE SHEET 4 OF 5.

** SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION. SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.

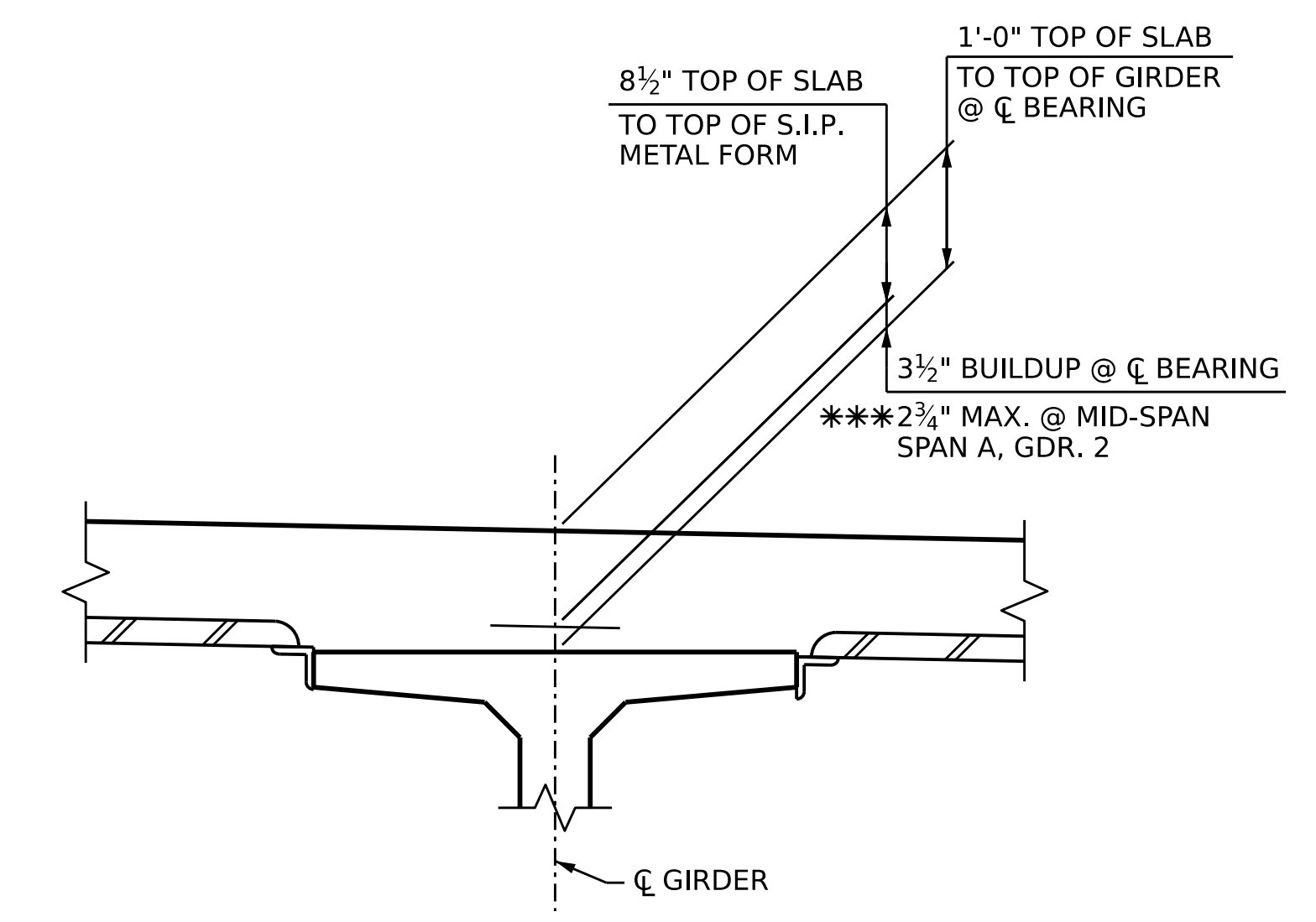
FOR DETAIL "B", SEE SHEET 2 OF 5.

CONTRACTOR MAY ELECT TO USE COUPLERS ON "K" BARS EXTENDING INTO STAGE II IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHODS.

FOR 6" Ø SANITARY SEWER PIPE DETAILS AND PAY ITEMS, SEE UTILITY PLANS. FOR HANGER INSERTS, SEE SHEET 2 OF 5.

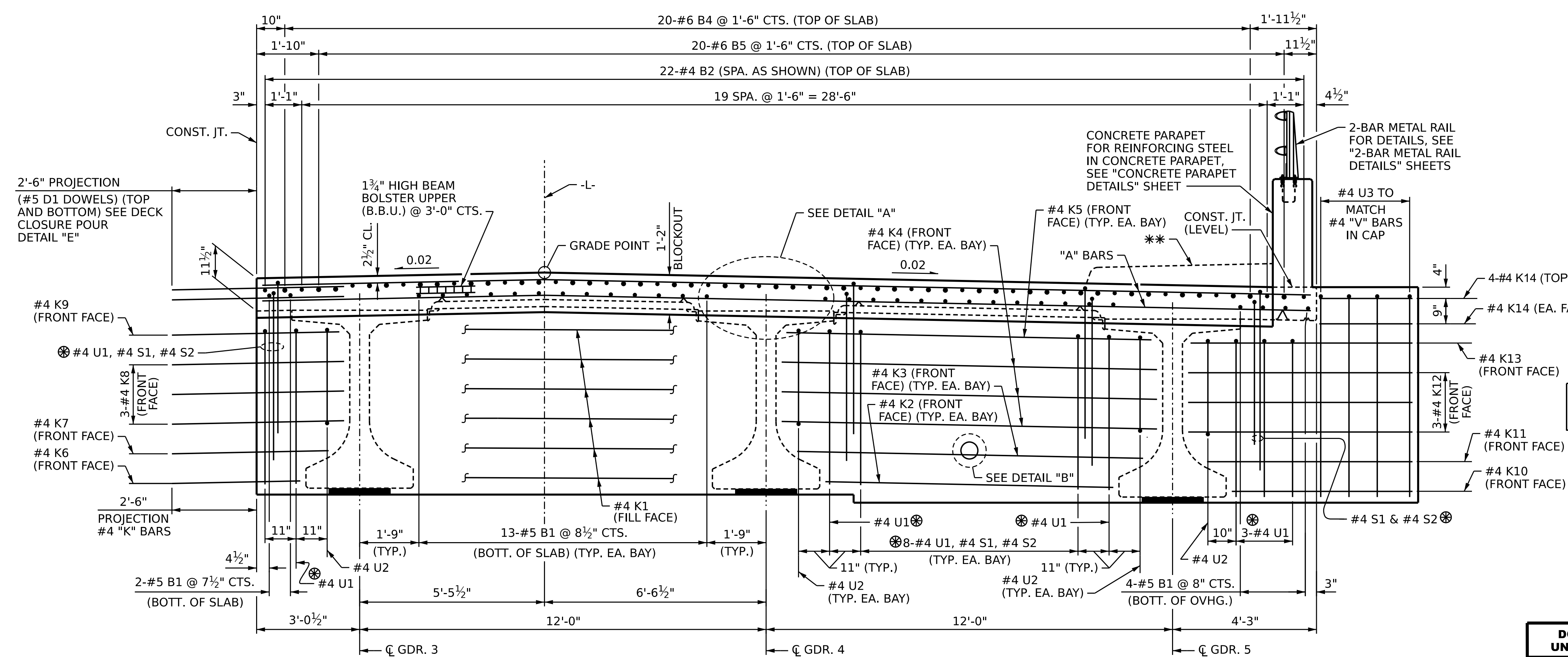


TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM



DETAIL "A"

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

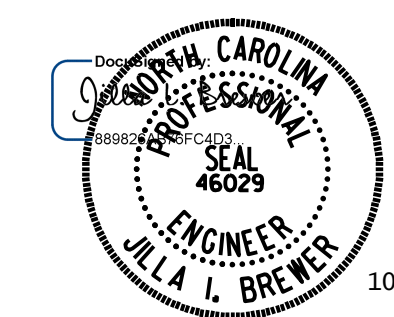


TYPICAL SECTION AT INTEGRAL END BENT

(FOR ADDITIONAL DIMENSIONS, SEE TYPICAL SECTION ABOVE)

PROJECT NO. **B-5766**
STOKES COUNTY
 STATION: **14+96.00 -L-**
 SHEET 1 OF 5

⊗ #4 S1, #4 S2 AND #4 U1 BARS TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.



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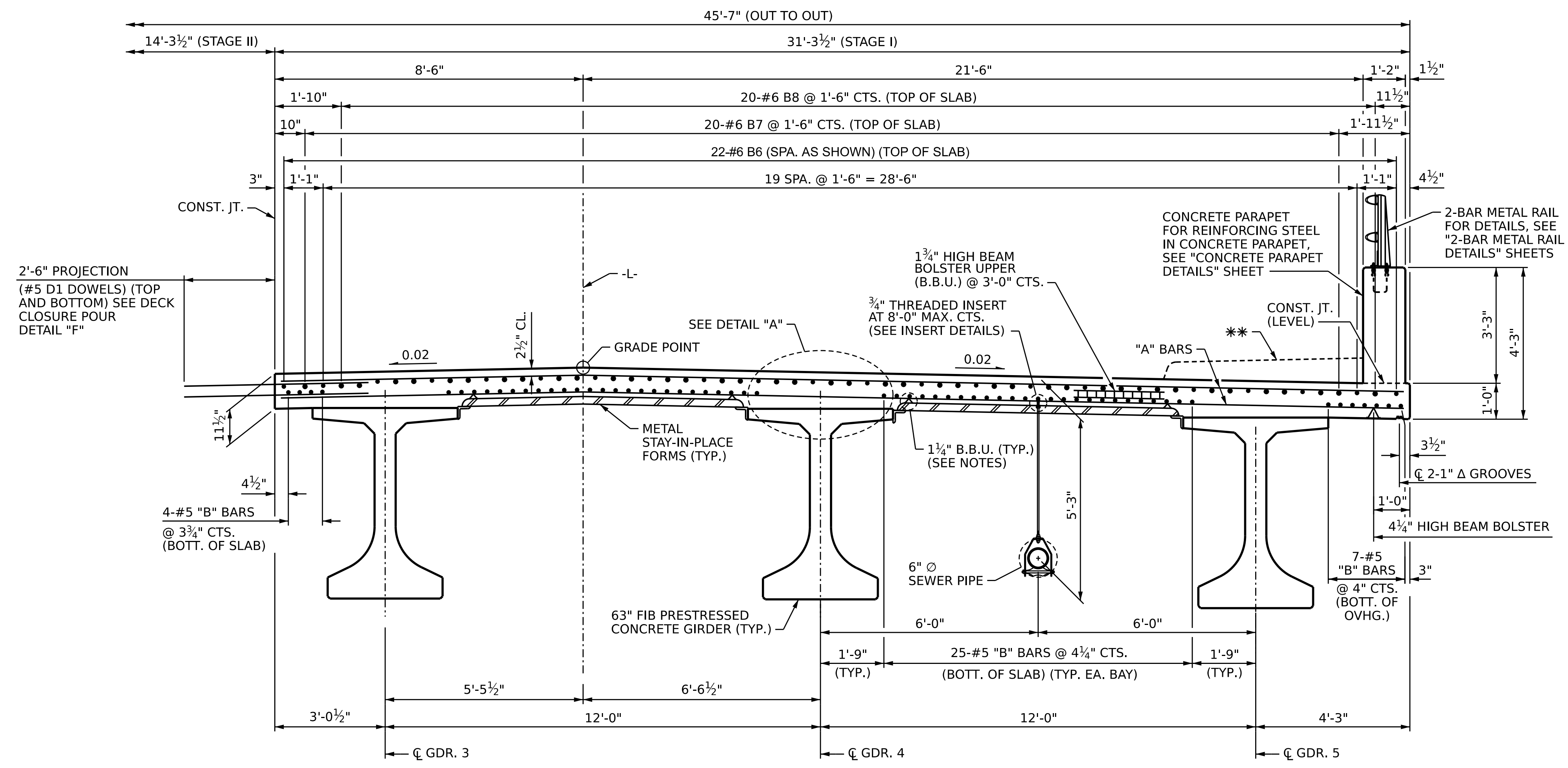
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM AND INTEGRAL END BENT					
STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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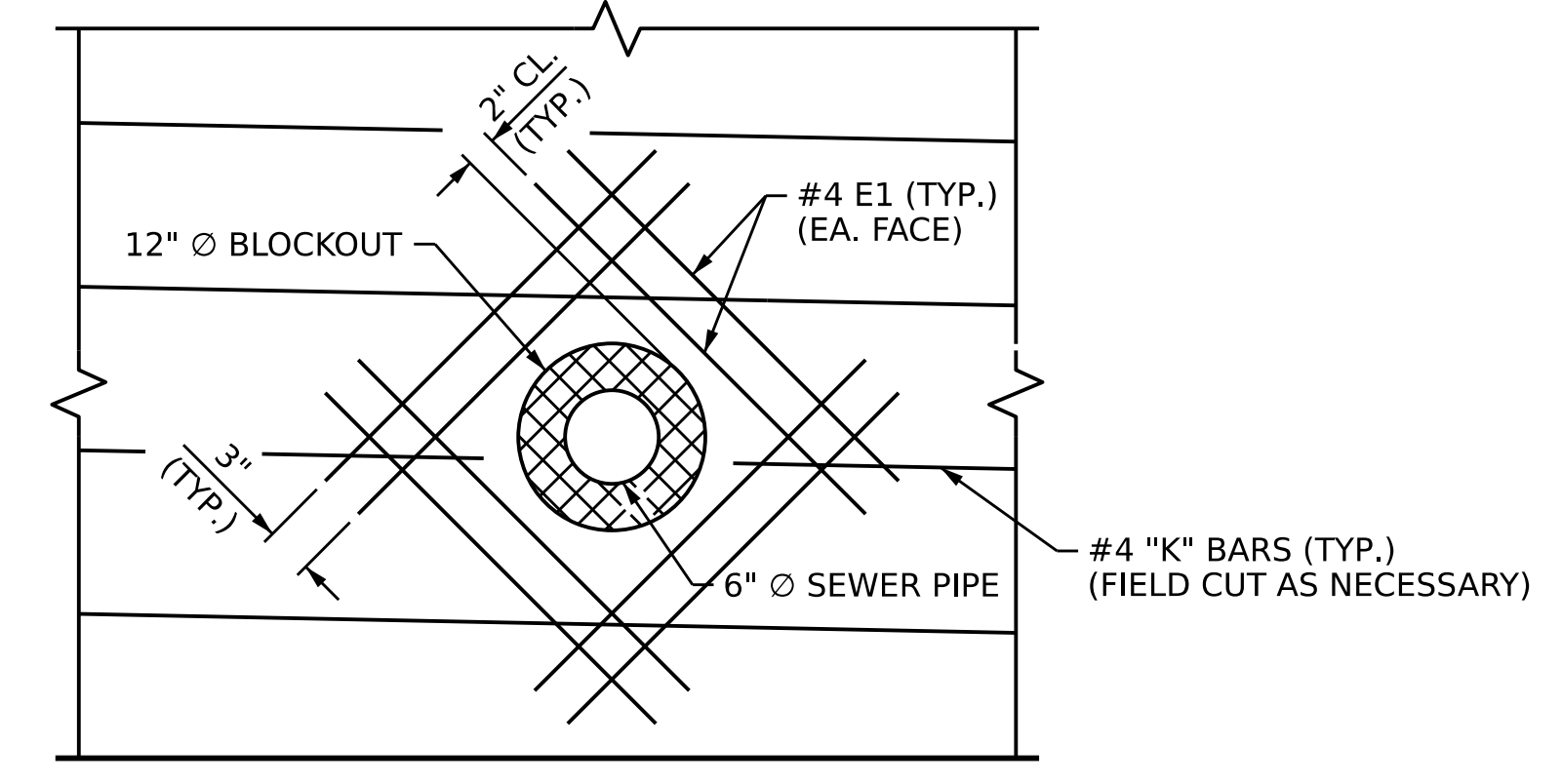
DRAWN BY: **B.E. LANNING** DATE: **05/2024**
 CHECKED BY: **J.I. BREWER** DATE: **07/2024**
 DESIGN ENGINEER OF RECORD: **J.I. BREWER** DATE: **10/2024**

SHEET NO. **S-7**
 TOTAL SHEETS **60**

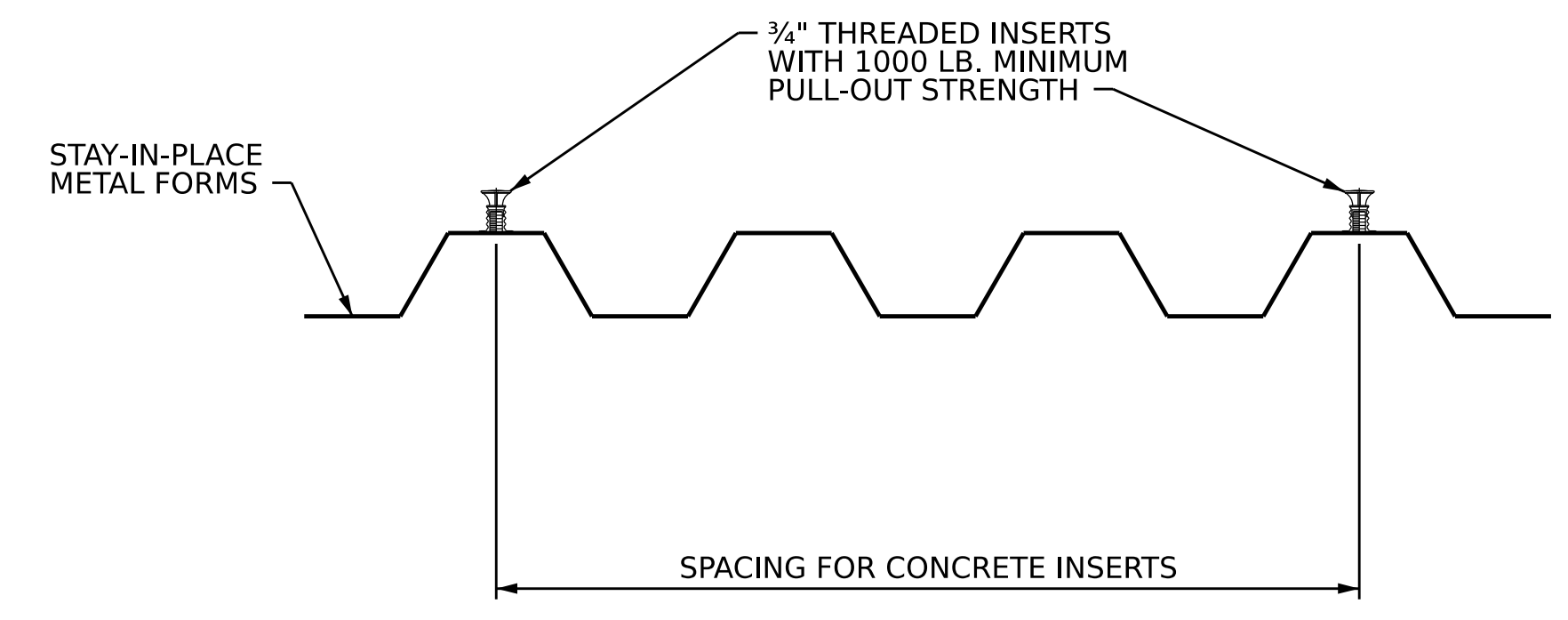


TYPICAL SECTION AT LINK SLAB OVER INTERIOR BENT

NOTES:
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.
 NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.
 FOR DETAIL "A", SEE SHEET 1 OF 5.
 FOR DECK CLOSURE POUR DETAIL "F", SEE SHEET 4 OF 5.
 ** SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION. SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.
 NO WELDING OF FORMS OR FALSEWORK WILL BE PERMITTED IN THE LINK SLAB AREA.



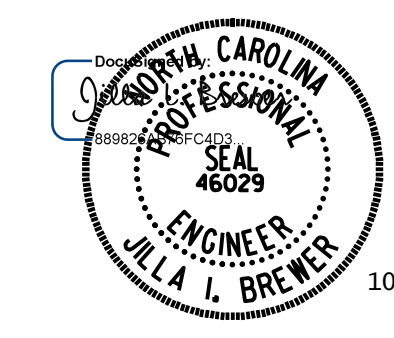
DETAIL "B"



INSERT DETAILS

INSERTS MUST BE LOCATED IN THE HIGH PART OF THE STAY-IN-PLACE FORMS. SPACING MAY VARY, BUT DO NOT EXCEED MAXIMUM SPACING. INSERTS ADJACENT TO INTERIOR BENTS SHOULD BE LOCATED NO CLOSER THAN 3'-0" FROM THE BENT CONTROL LINE.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**TYPICAL SECTION AT
 LINK SLAB OVER
 INTERIOR BENT
 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:	S-8
1			3			TOTAL SHEETS
2			4			60

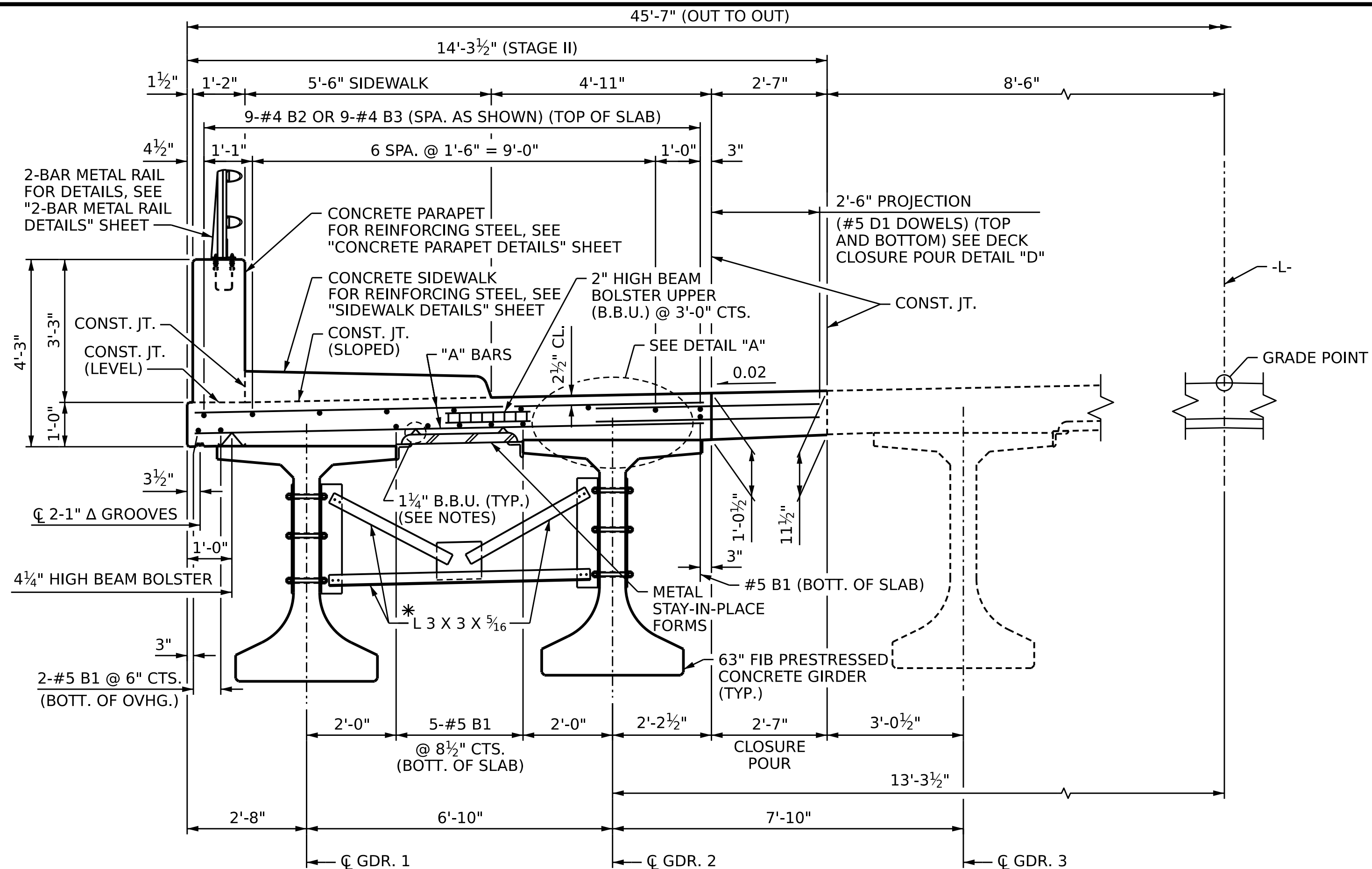
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CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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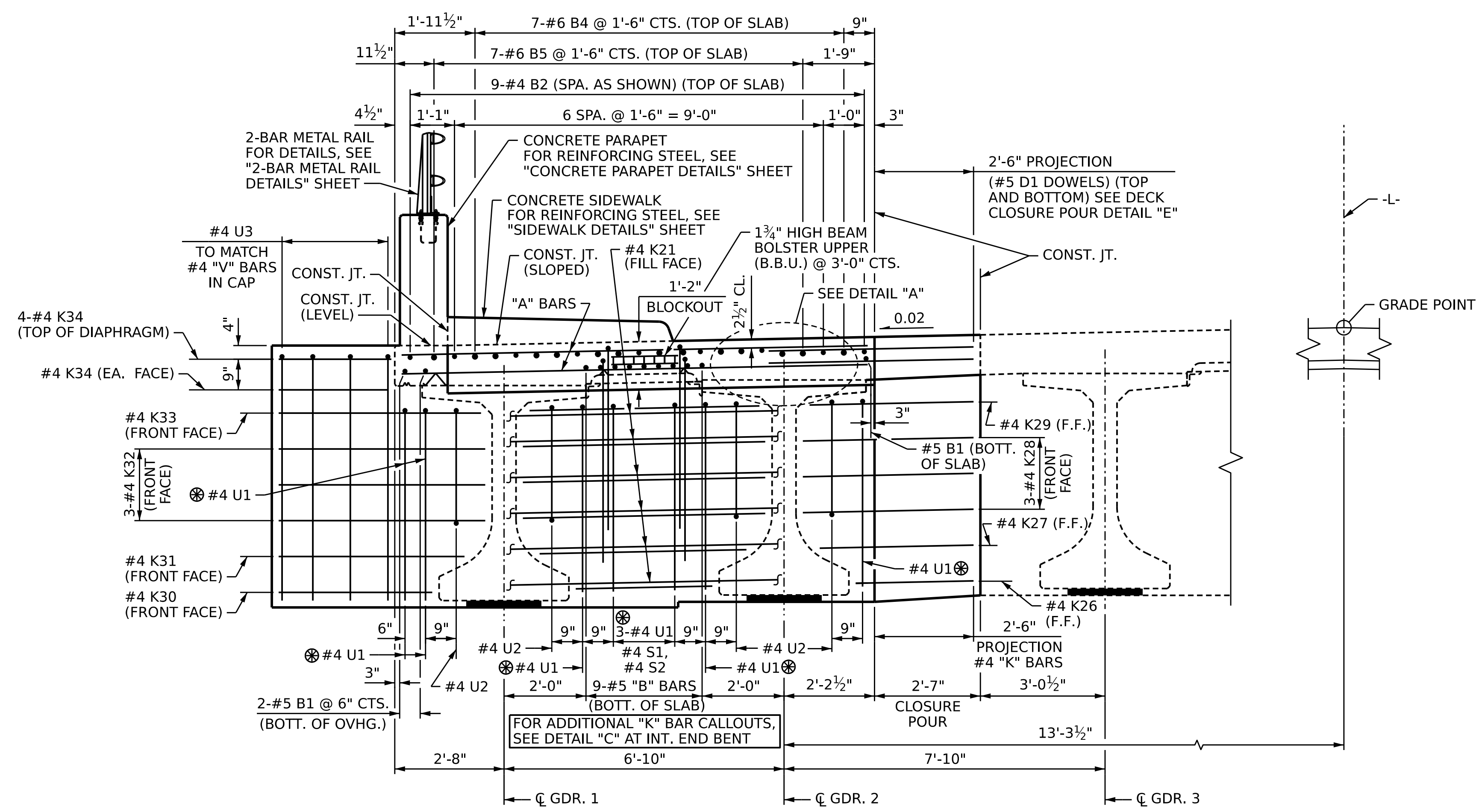
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TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

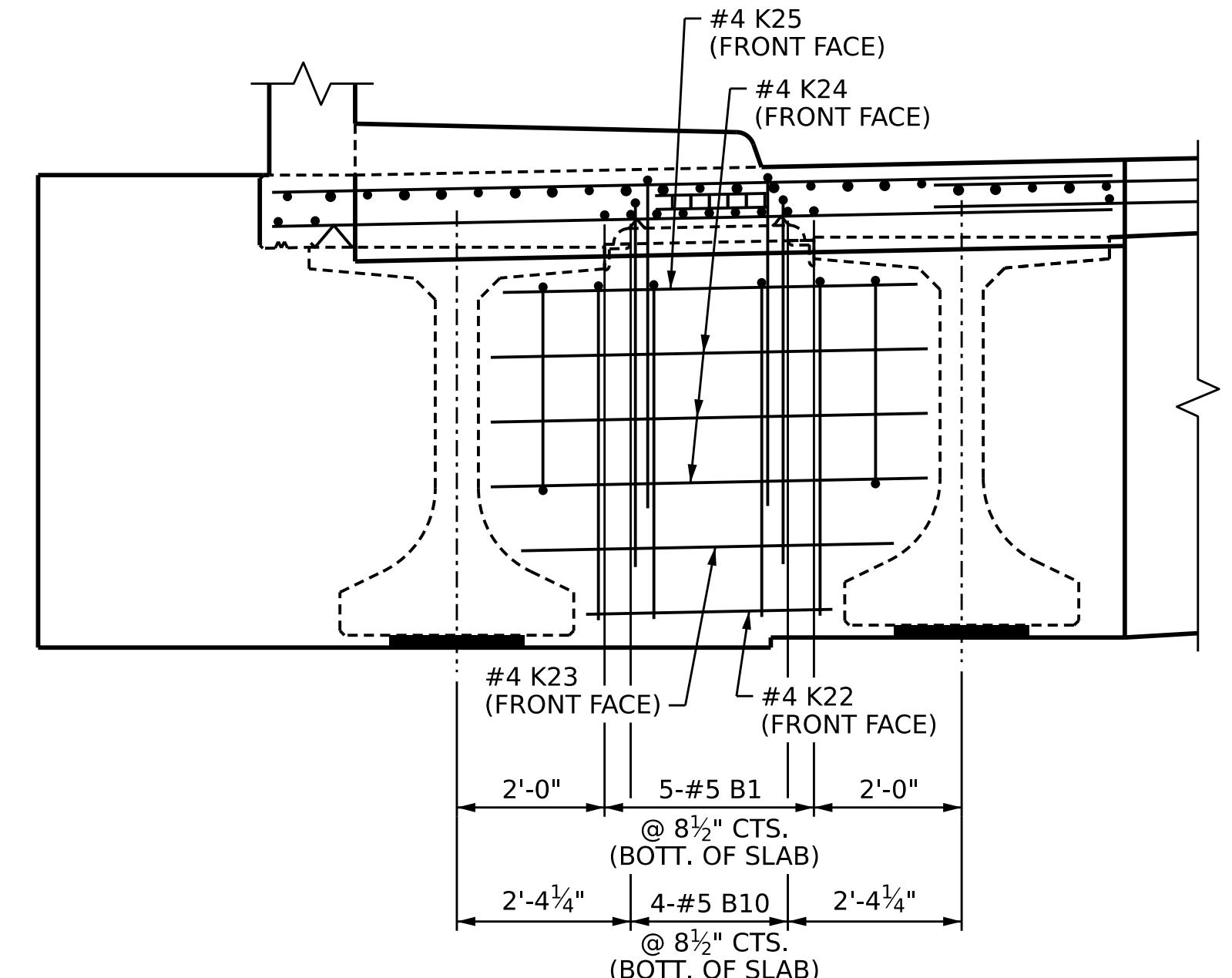


TYPICAL SECTION AT INTEGRAL END BENT

(FOR ADDITIONAL DIMENSIONS, SEE TYPICAL SECTION ABOVE)
(FOR ADDITIONAL "K" AND "B" BAR CALLOUTS IN BAY 1, SEE DETAIL "C" AT INTEGRAL END BENT)

NOTES:

- FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.
- FOR DETAIL "A", SEE SHEET 1 OF 5.
- FOR DECK CLOSURE POUR DETAIL "D" AND DECK CLOSURE POUR DETAIL "E", SEE SHEET 4 OF 5.
- * FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" FIB PRESTRESSED CONCRETE GIRDERS" SHEET.



DETAIL "C" AT INTEGRAL END BENT

(FOR ADDITIONAL DIMENSIONS AND CALLOUTS, SEE OTHER TYPICAL SECTIONS ON THIS SHEET)

FIELD CUT #4 "K" BARS AS NECESSARY.
F.F. = FRONT FACE
⊗ #4 S1, #4 S2 AND #4 U1 BARS TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.

PROJECT NO. B-5766

STOKES COUNTY

STATION: 14+96.00 -L-

SHEET 3 OF 5



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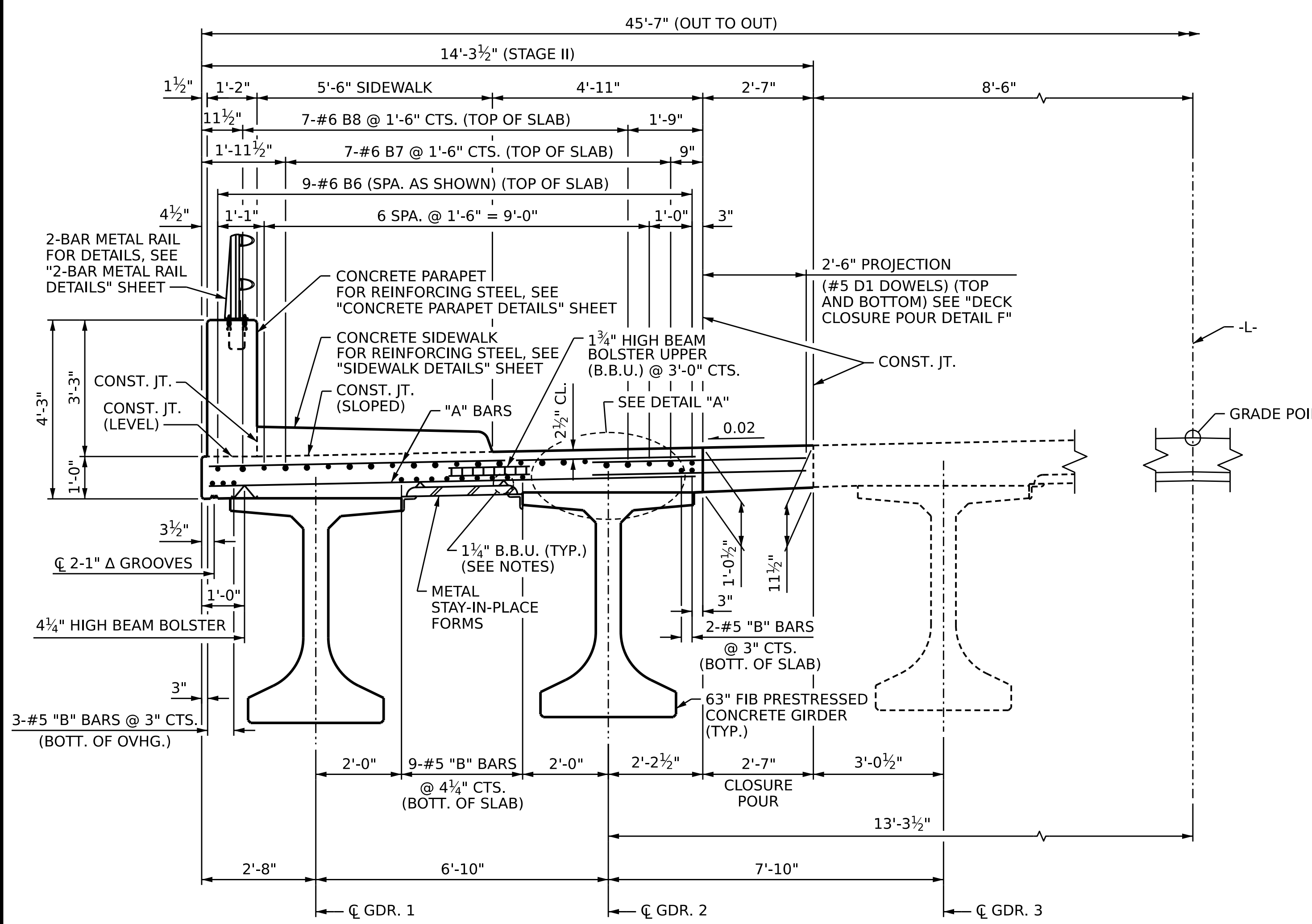
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM AND INTEGRAL END BENT STAGE II

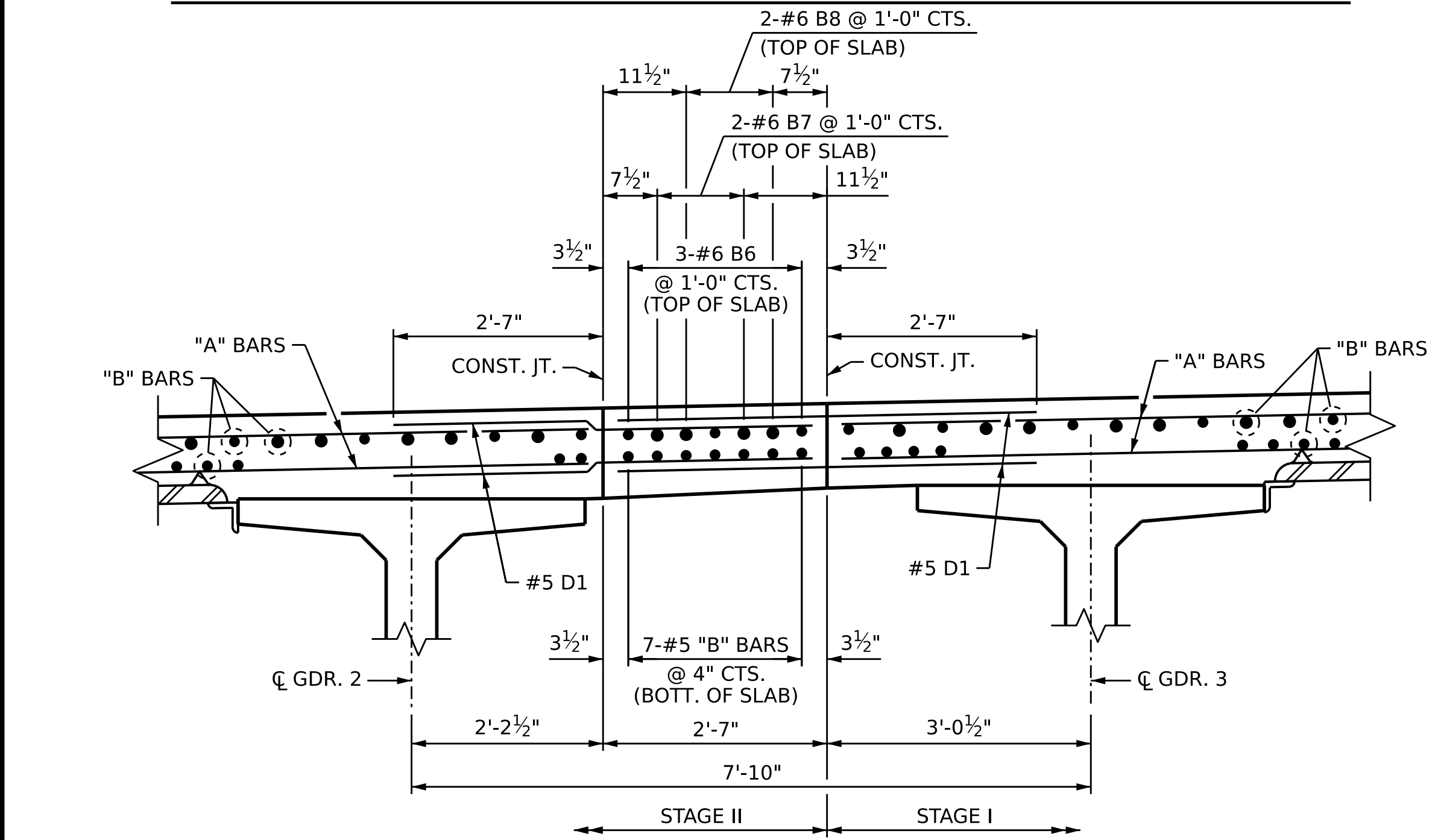
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>05/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

NOTES:
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.
 NO WELDING OF FORMS OR FALSEWORK WILL BE PERMITTED IN THE LINK SLAB AREA.
 FOR DETAIL "A", SEE SHEET 1 OF 5.

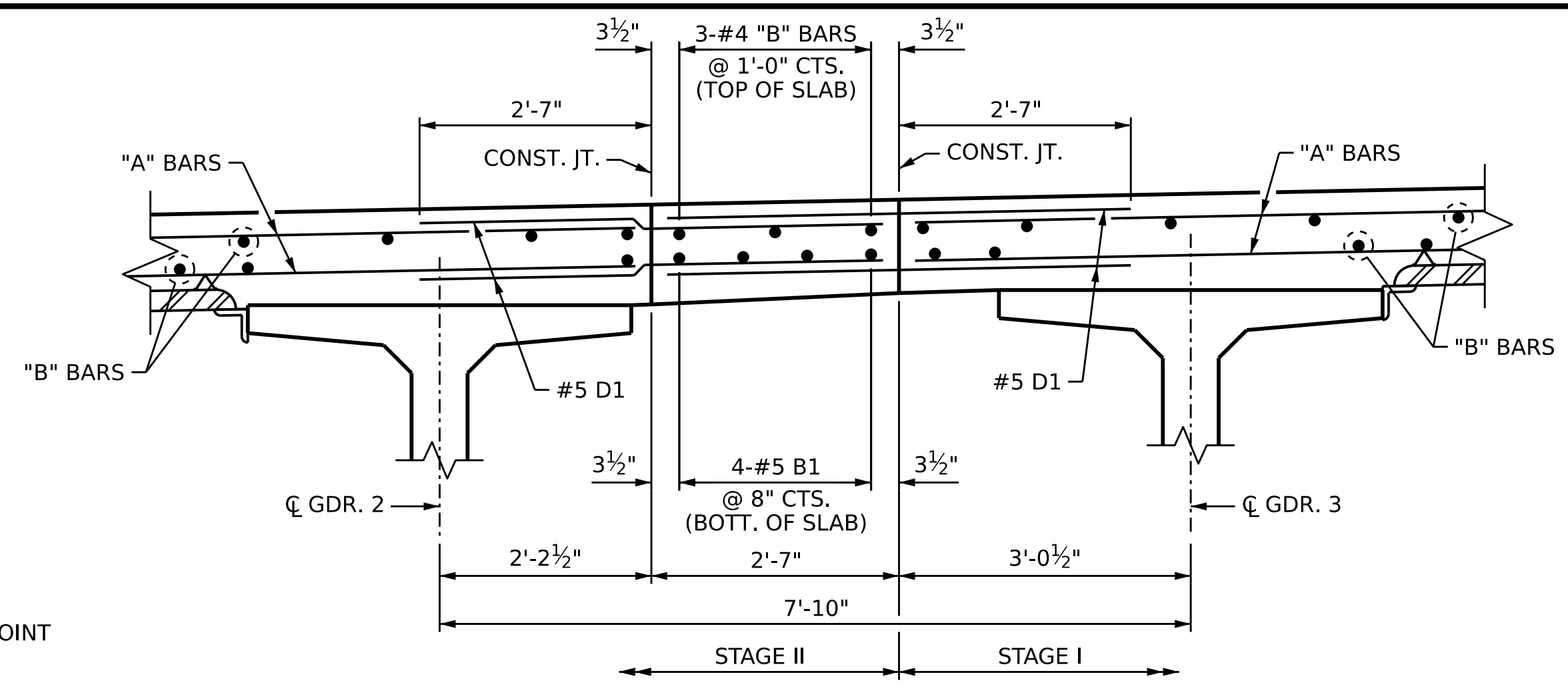


TYPICAL SECTION AT LINK SLAB OVER INTERIOR BENT



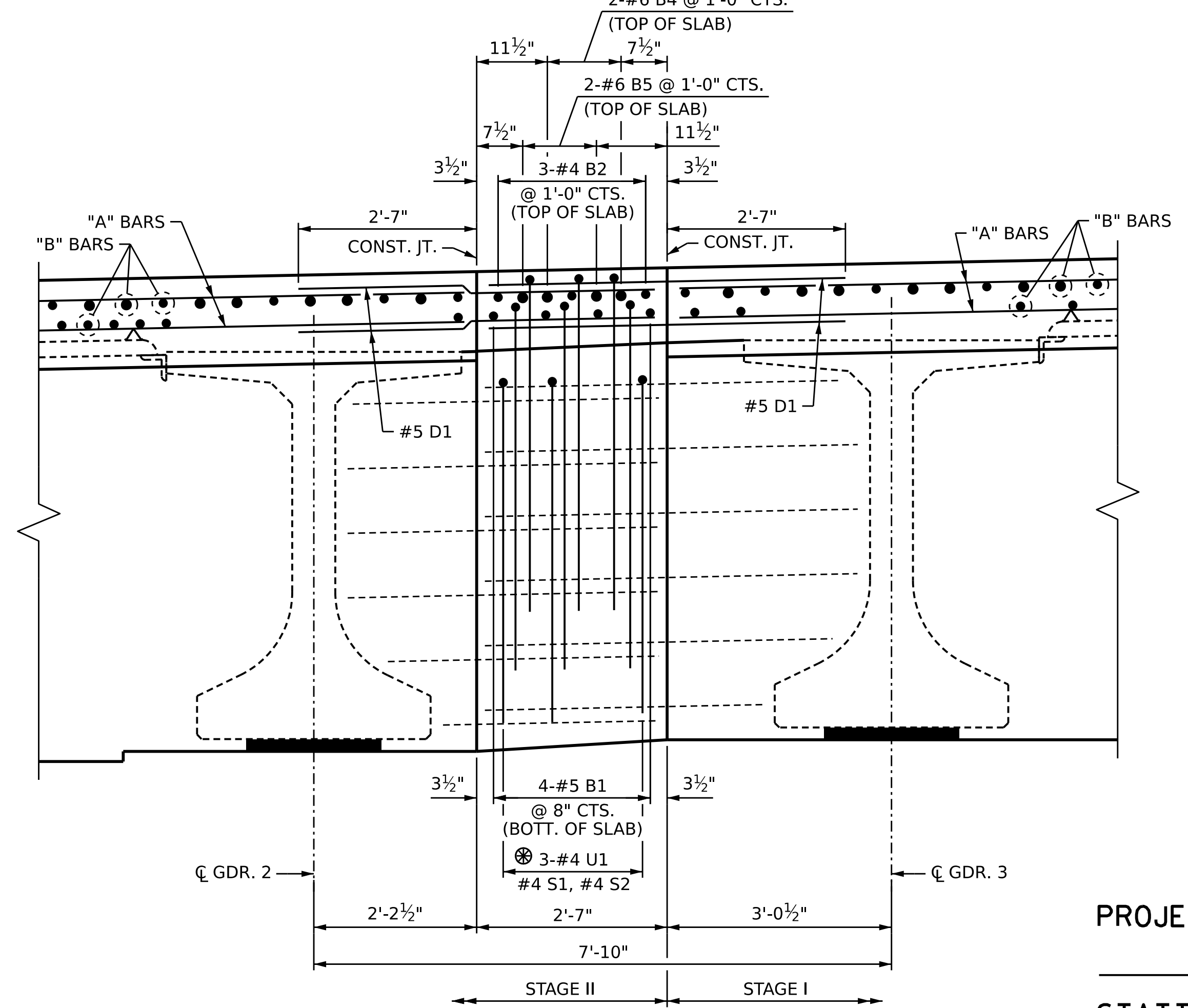
DECK CLOSURE POUR DETAIL "F"

AT LINK SLAB
 #5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AT TOP & BOTTOM REINFORCING STEEL.



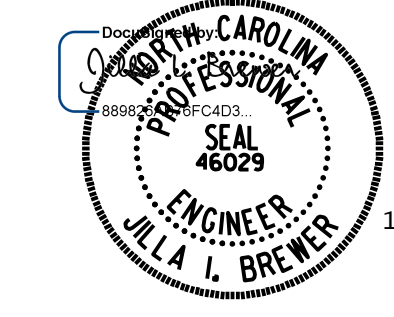
DECK CLOSURE POUR DETAIL "D"

AT MID-SPAN
 #5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AT TOP & BOTTOM REINFORCING STEEL.



DECK CLOSURE POUR DETAIL "E"

AT INTEGRAL END BENT
 #5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AT TOP & BOTTOM REINFORCING STEEL.
 MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.



PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**TYPICAL SECTION AT LINK
 SLAB OVER INTERIOR BENT
 AND CLOSURE POURS
 STAGE II**

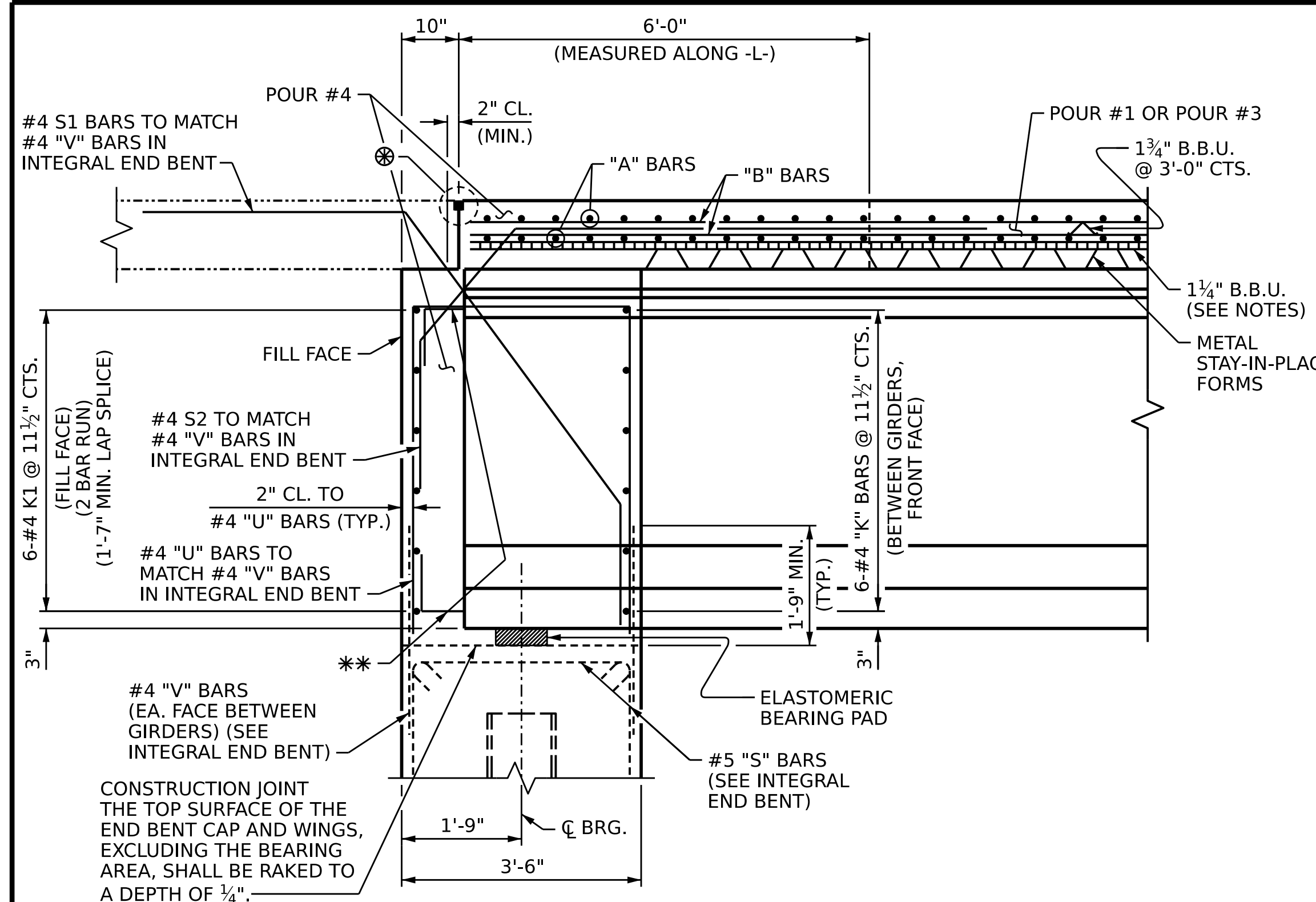
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 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			60

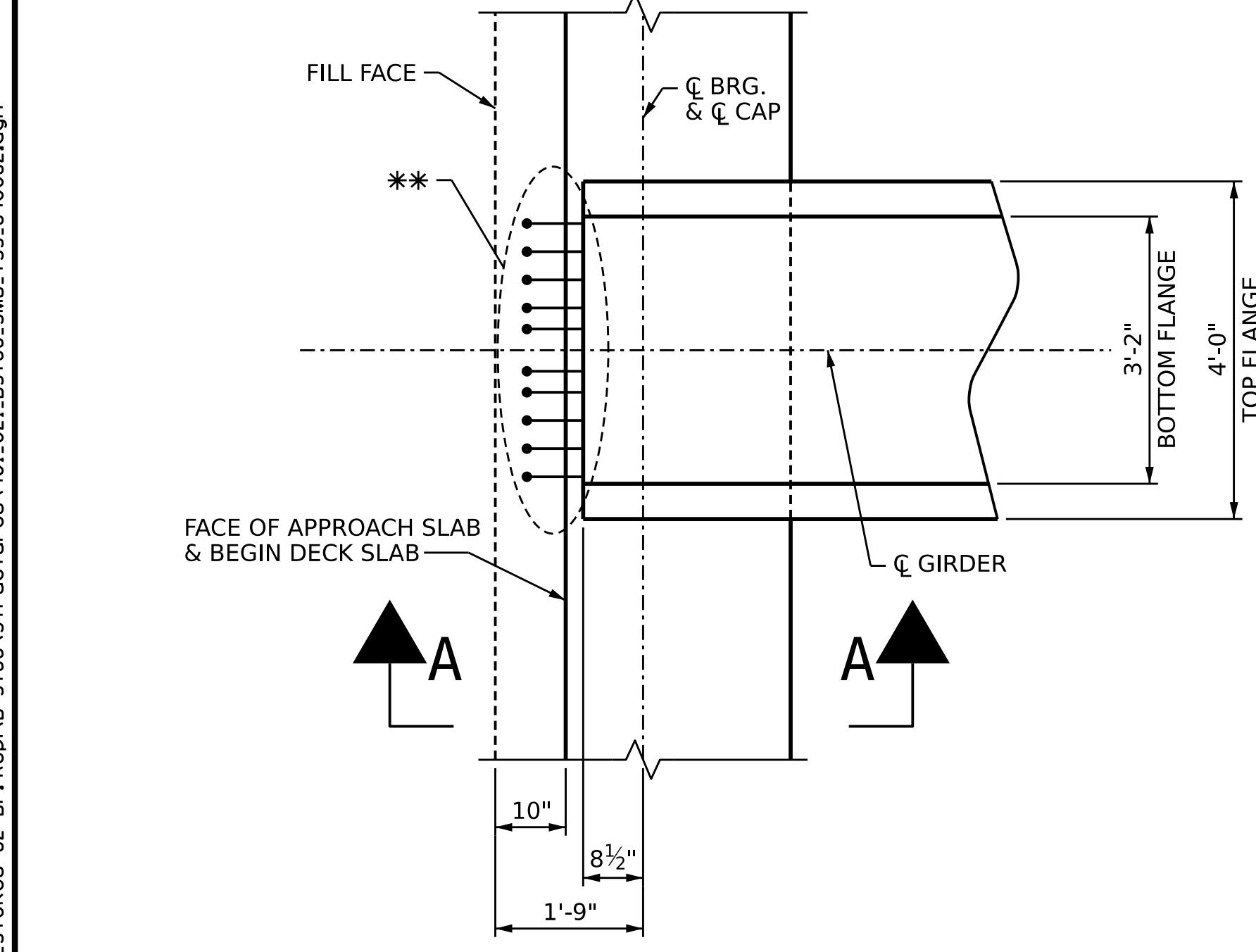
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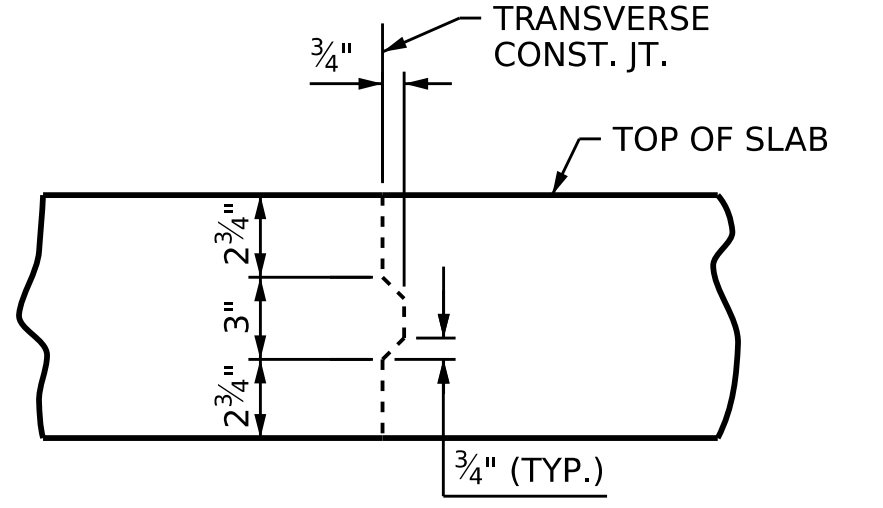


SECTION A-A
INTEGRAL END BENT

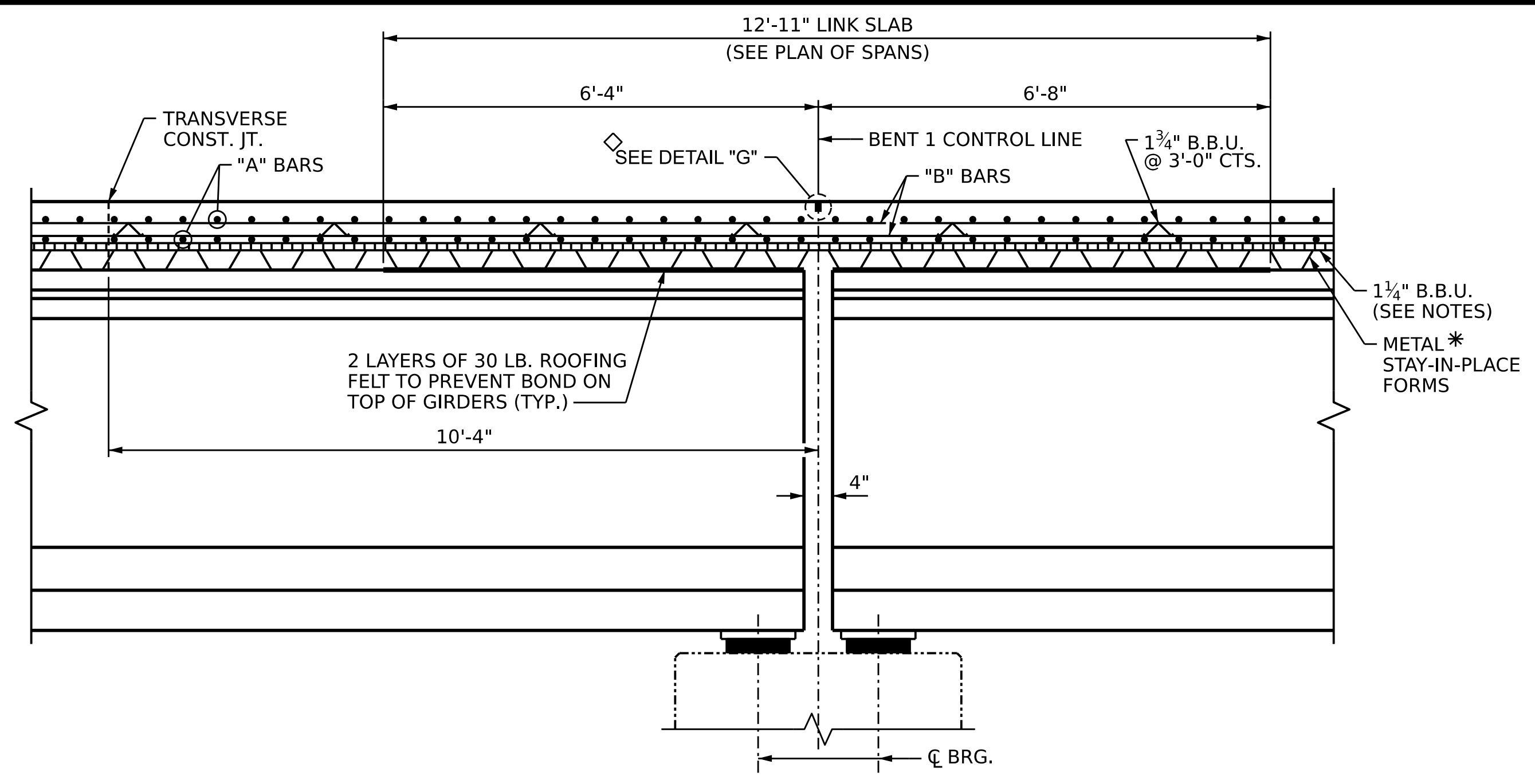
** #5 "S" BARS (TYP.)
(SEE GIRDER SHEETS)
⊗ SEE BRIDGE APPROACH
SLAB DETAILS SHEET
FOR SAWED JOINT DETAILS



**PLAN OF GIRDER
AT INTEGRAL END BENT**
(END BENT 1 SHOW, END BENT 2 SIMILAR)

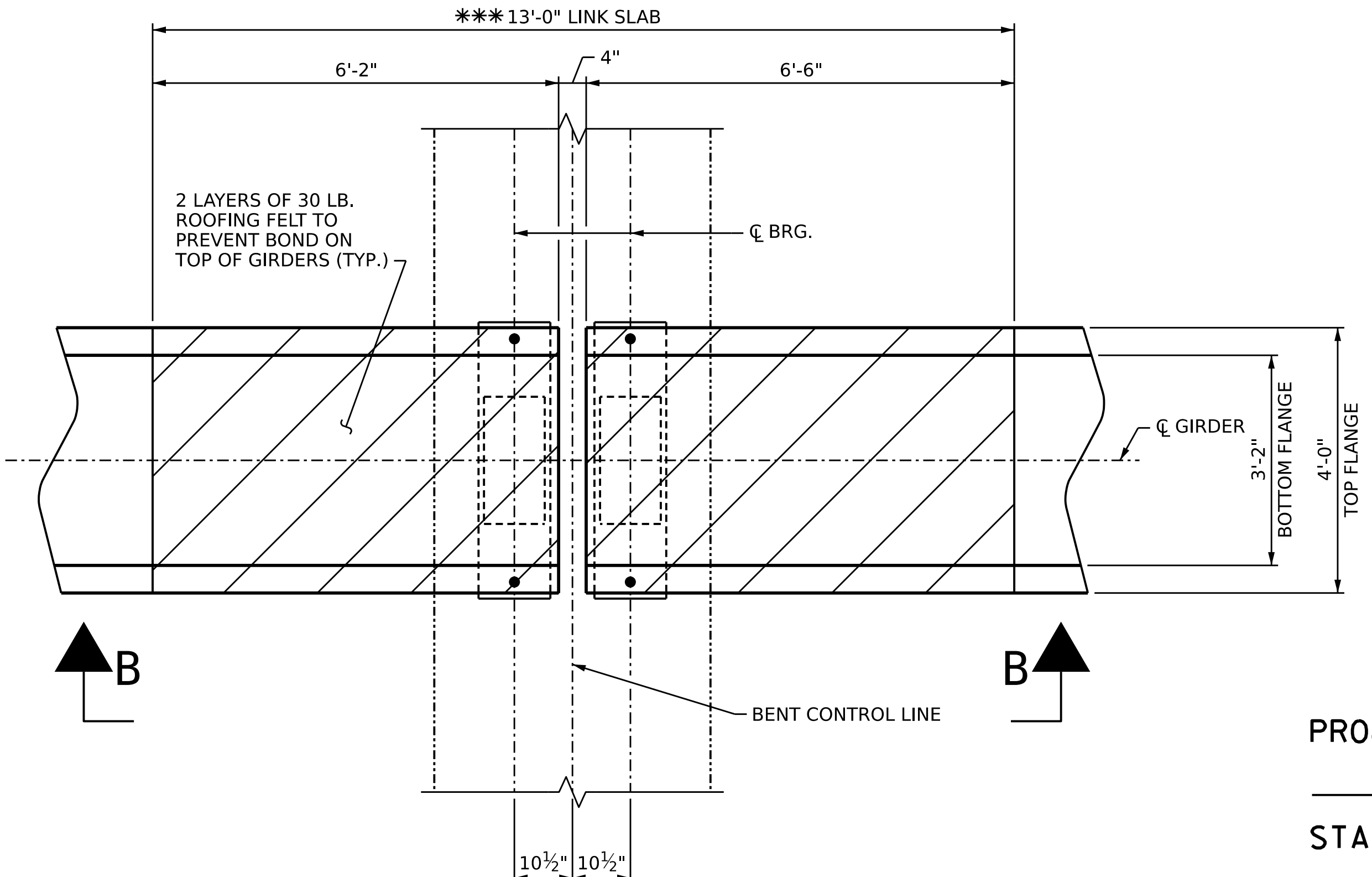


**TRANSVERSE CONSTRUCTION
JOINT DETAIL**
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THRU JOINT.



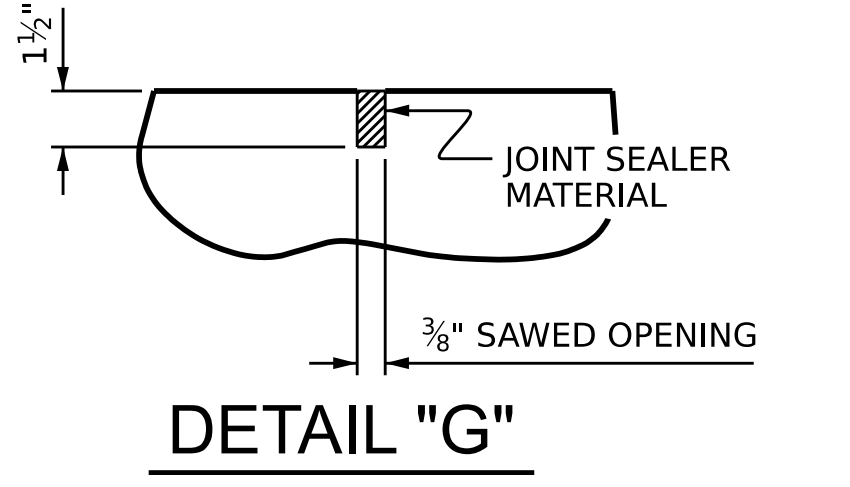
SECTION B-B
SECTION SHOWN ALONG GIRDER
BENT 1 SHOWN, BENT 2 SIMILAR

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



**PLAN OF GIRDER
AT INTERIOR BENT**
BENT 1 SHOWN, BENT 2 SIMILAR

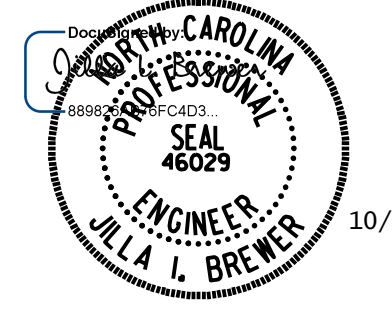
*** NOTE: THE TOP OF THE GIRDER IN THE REGION OF THE
LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND
FREE OF STIRRUPS, ANCHOR STUDS, DECK
FORMWORK ATTACHMENTS, AND OVERHANG
FALSEWORK/FORMWORK ATTACHMENTS.



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

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-
SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
TYPICAL SECTION
DETAILS**



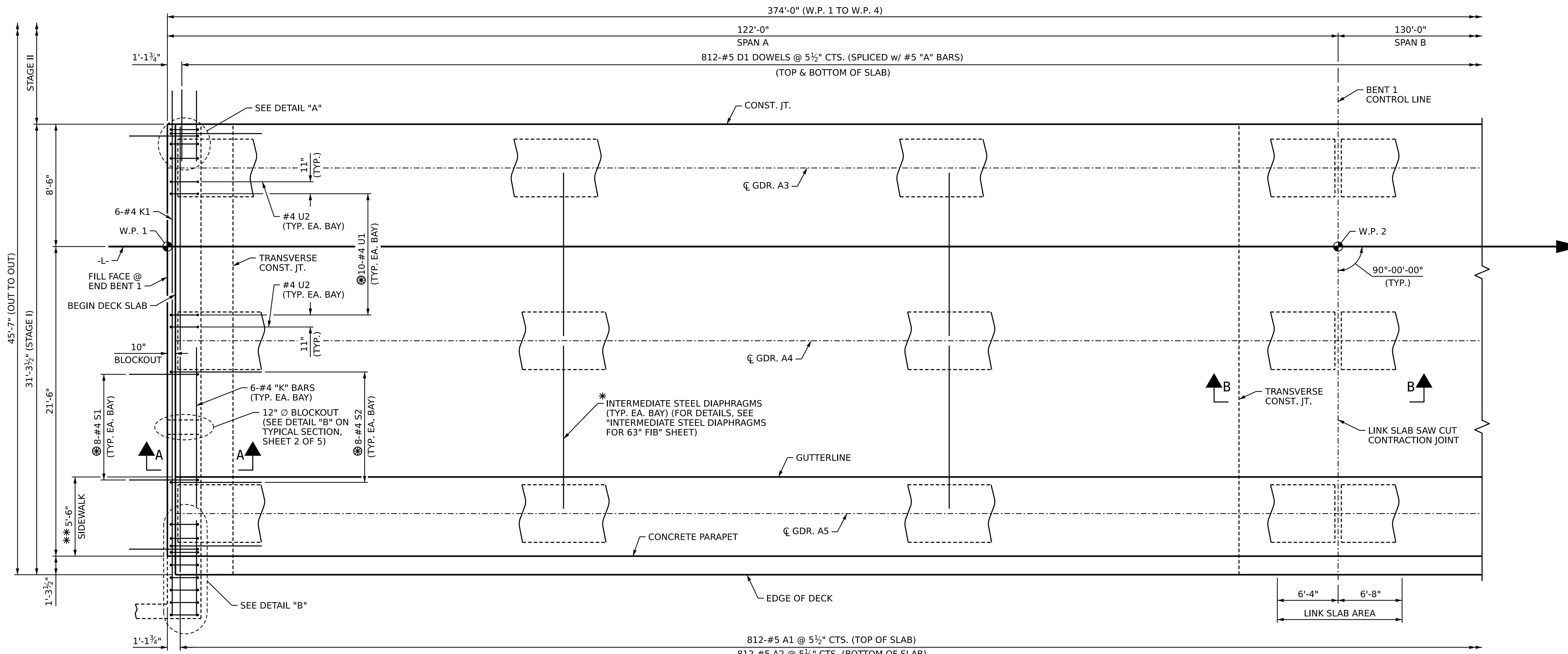
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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:	S-11
1			3			TOTAL SHEETS
2			4			60

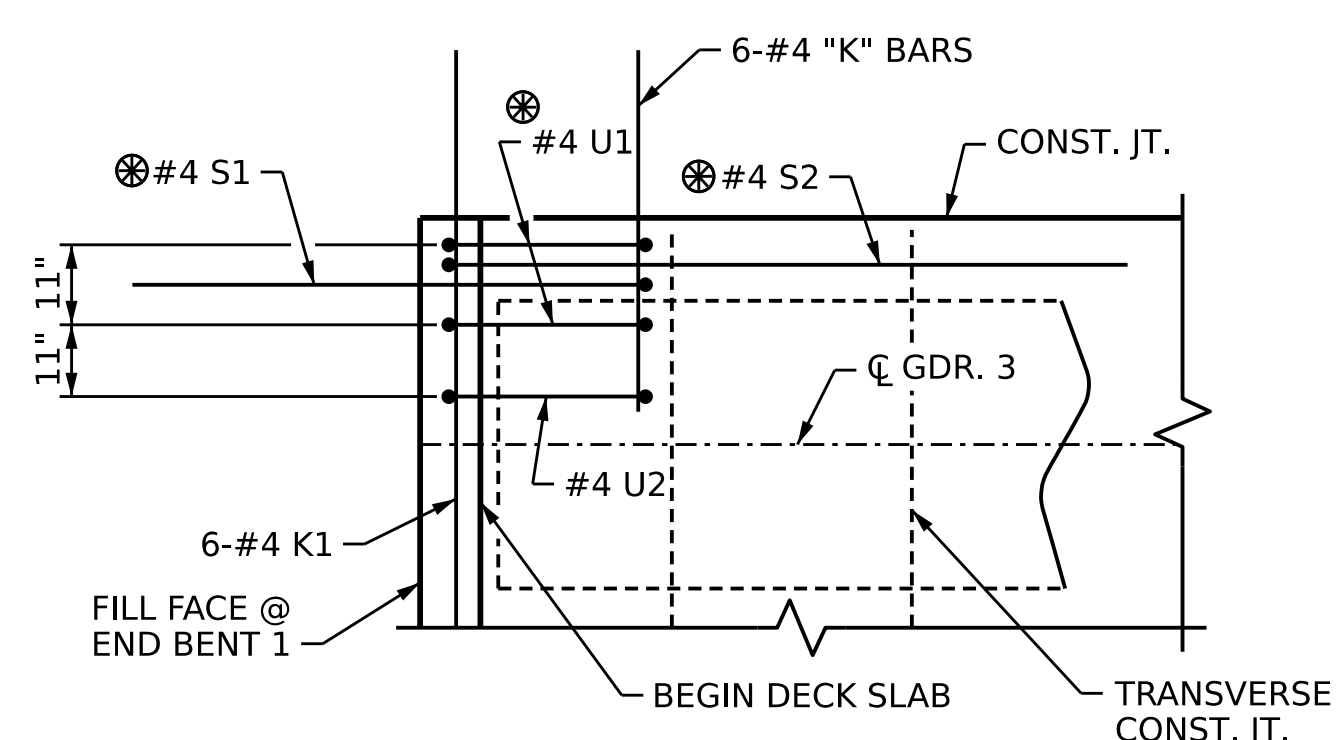
DRAWN BY: B.E. LANNING DATE: 06/2024
CHECKED BY: J.I. BREWER DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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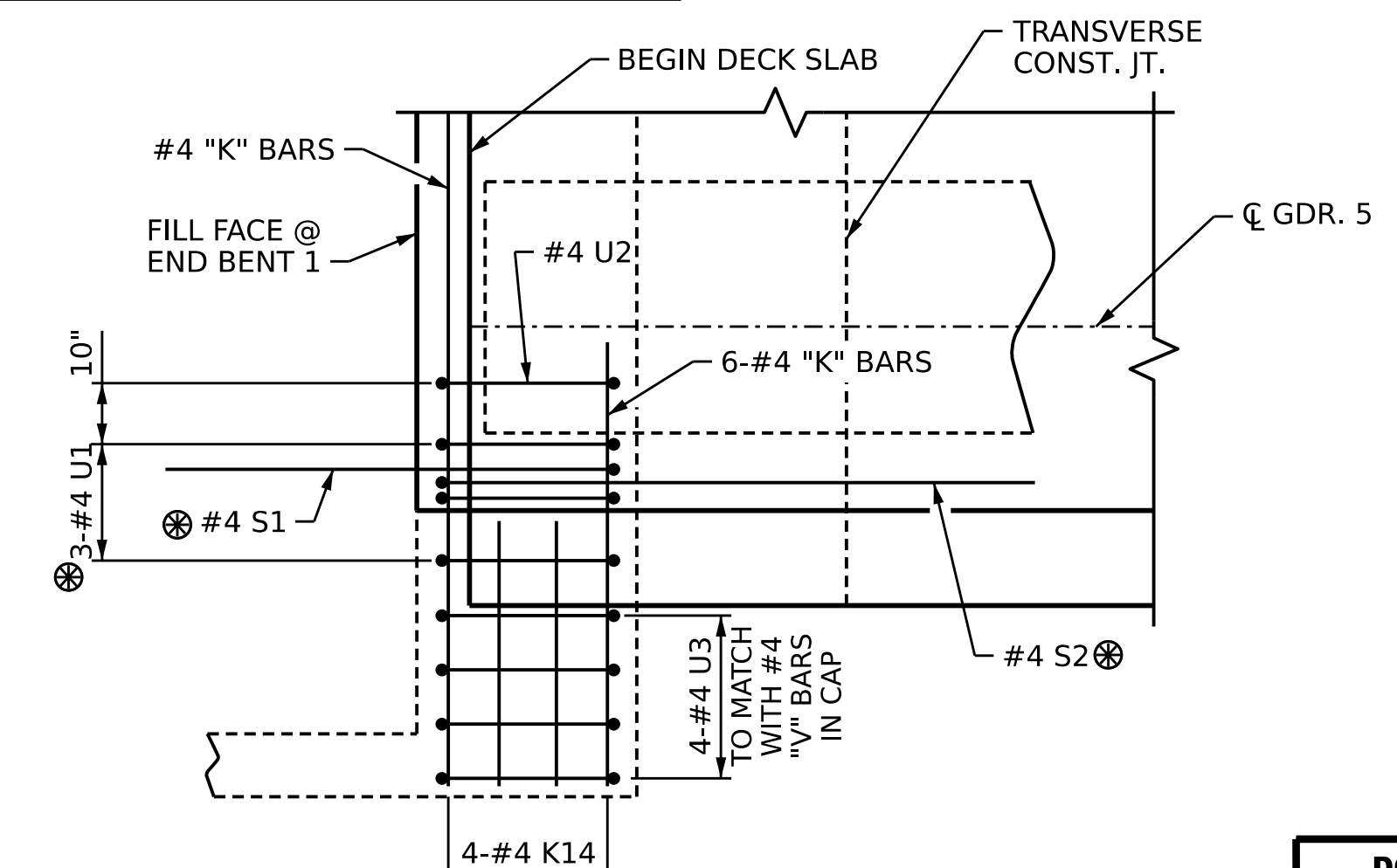
PLAN OF SPAN A - STAGE I

- NOTES:**
- FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET DETAILS" SHEETS.
 - FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE I SHEET 9 OF 10.
 - FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 5 OF 5.
 - * FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
 - ⊗ #4 S1, #4 S2 AND #4 U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.
 - 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.
 - ** SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION, SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.



DETAIL "A"

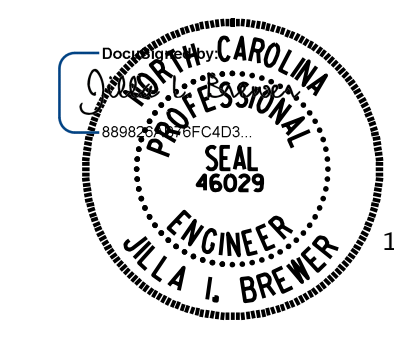
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



DETAIL "B"

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 SPAN A**

STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			60

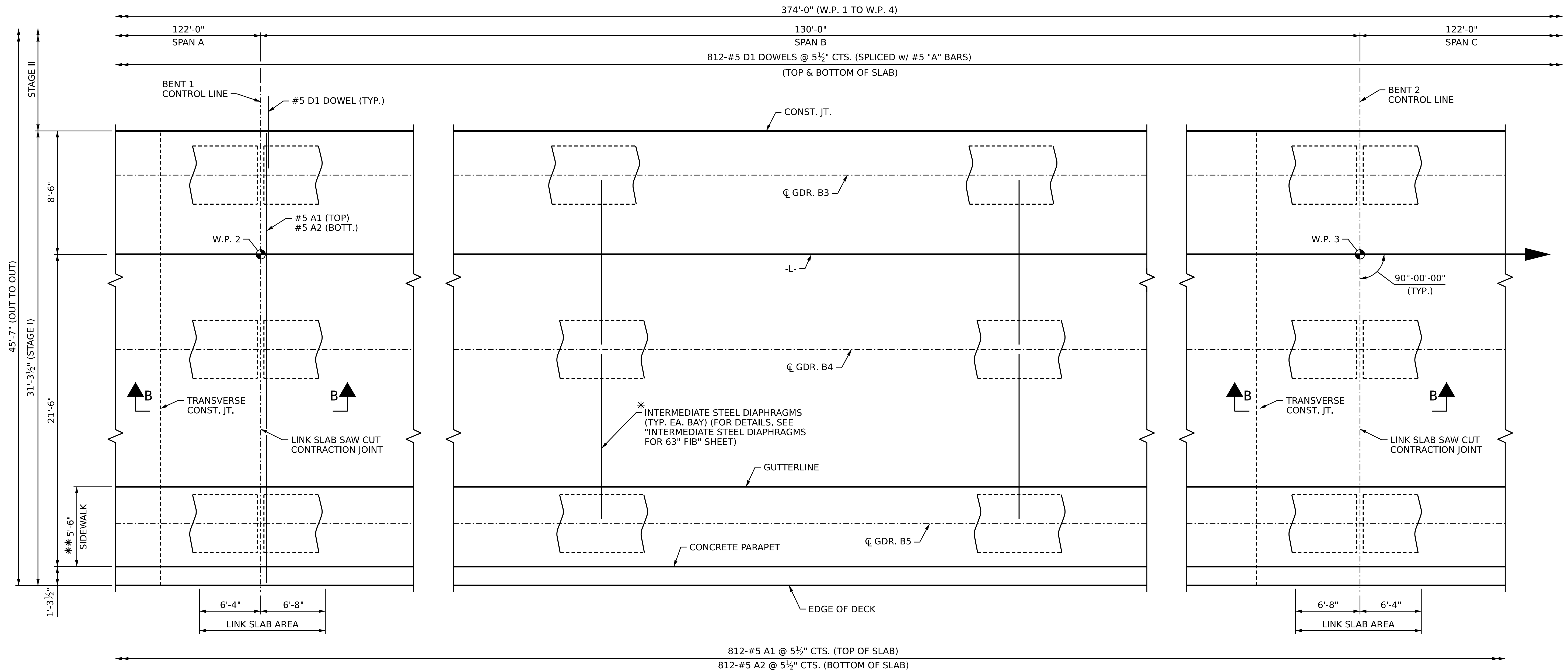
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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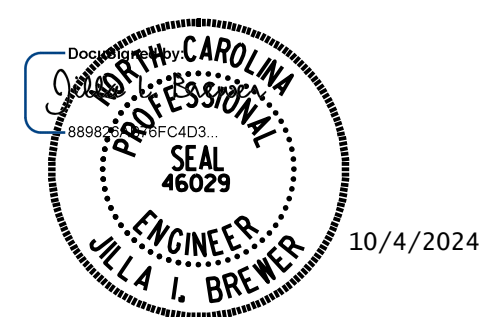
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PLAN OF SPAN B - STAGE I

- NOTES:**
- FOR NOTES, SEE SHEET 1 OF 10.
 - * FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
 - ** SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION, SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 SPAN B**

STAGE I

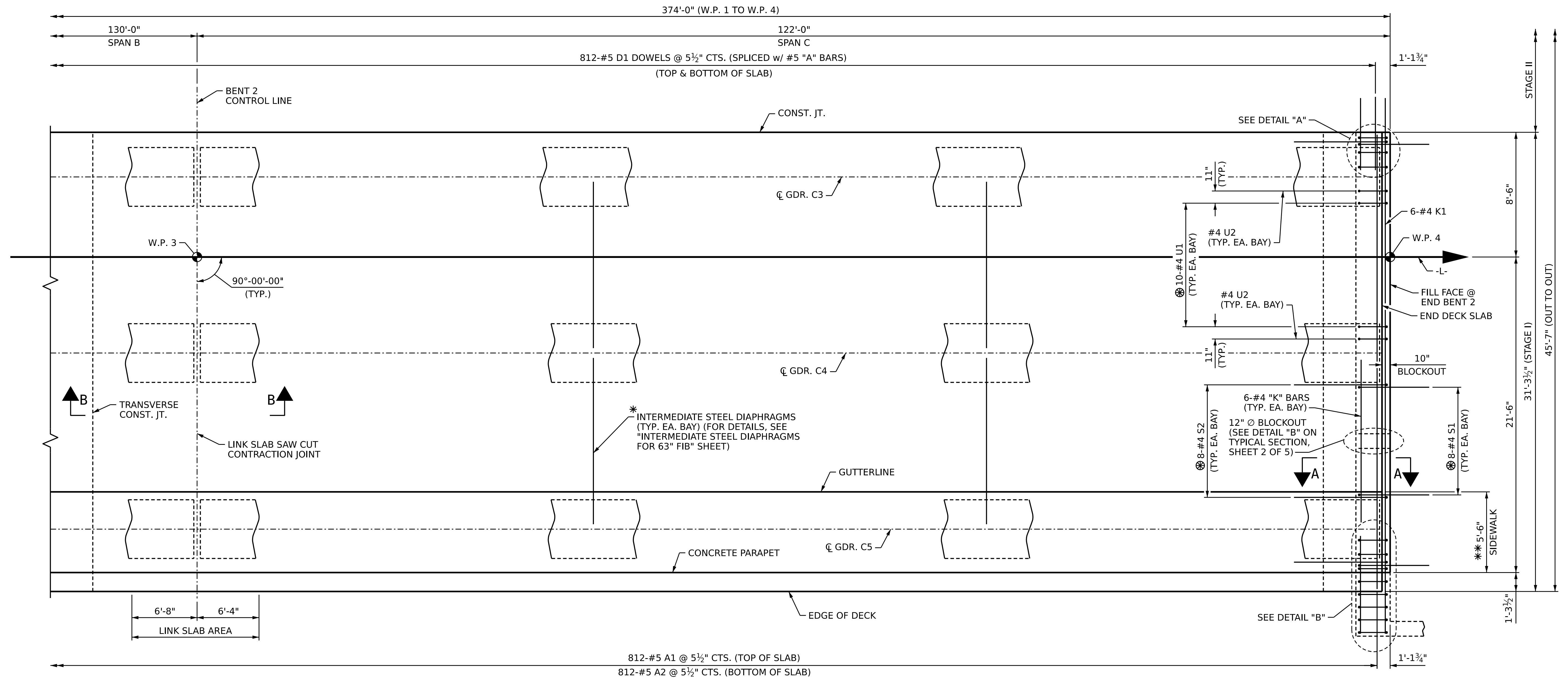
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			60

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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>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

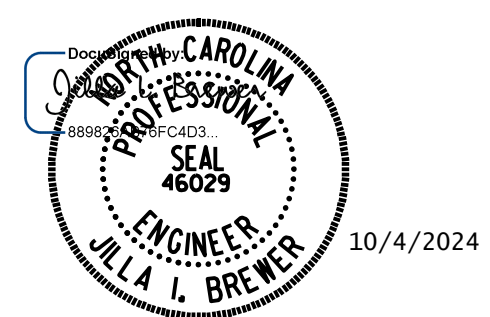
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PLAN OF SPAN C - STAGE I

- NOTES:**
- FOR NOTES, SEE SHEET 1 OF 10.
 - FOR DETAIL "A" AND DETAIL "B", SEE SHEET 1 OF 10.
 - * FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
 - ⊗ #4 S1, #4 S2 AND #4 U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.
 - * * SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION, SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 3 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 SPAN C**

STAGE I

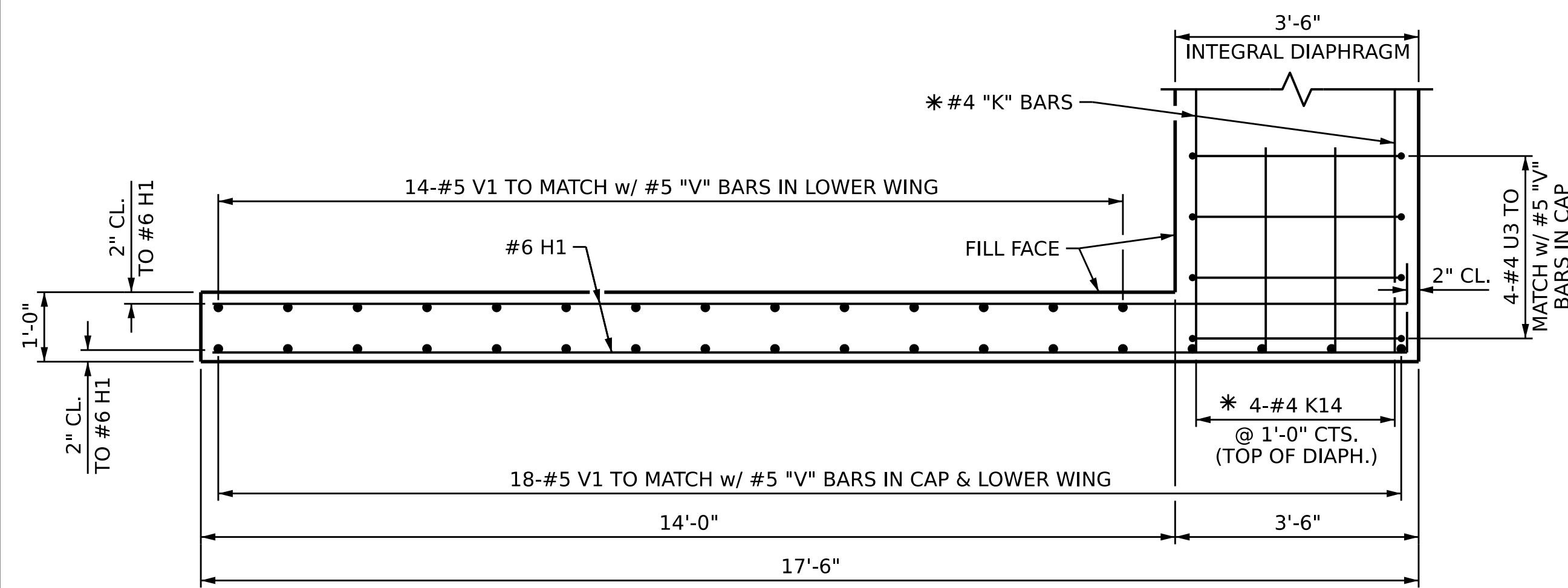
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

**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

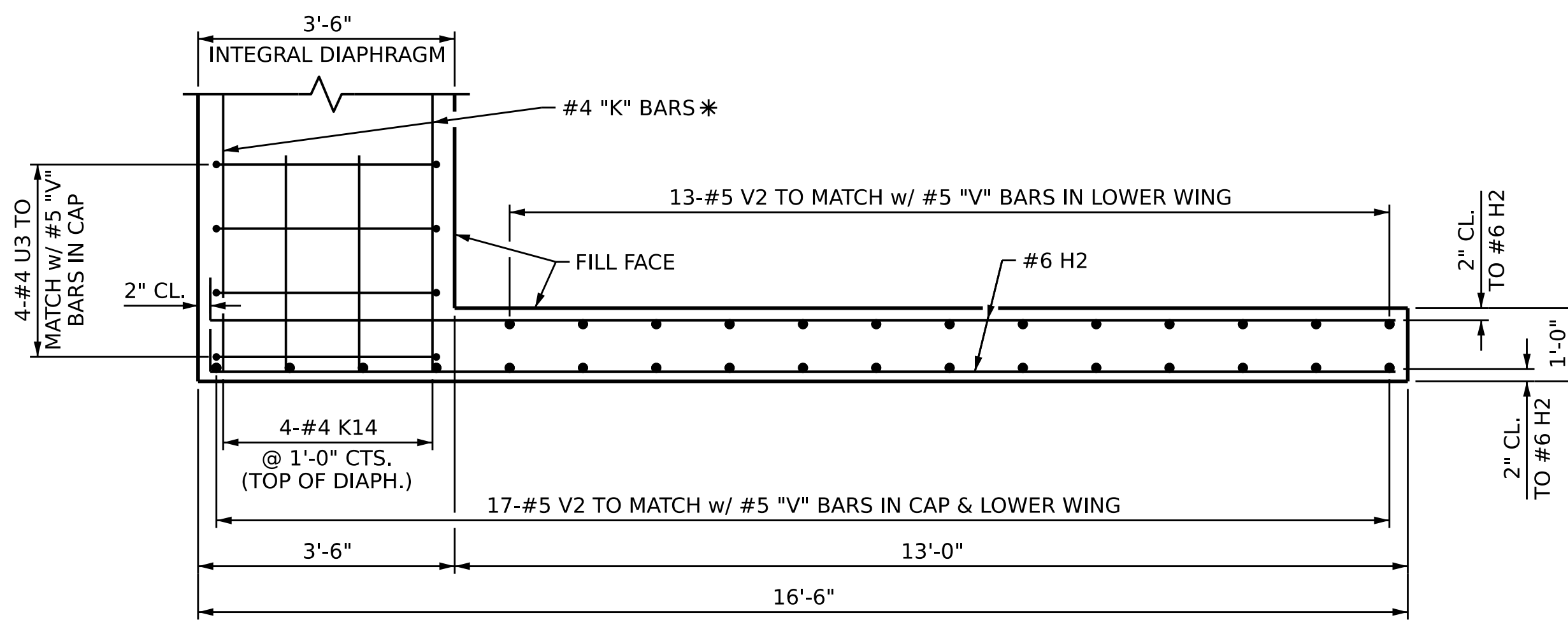
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CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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PLAN OF WING (W1)

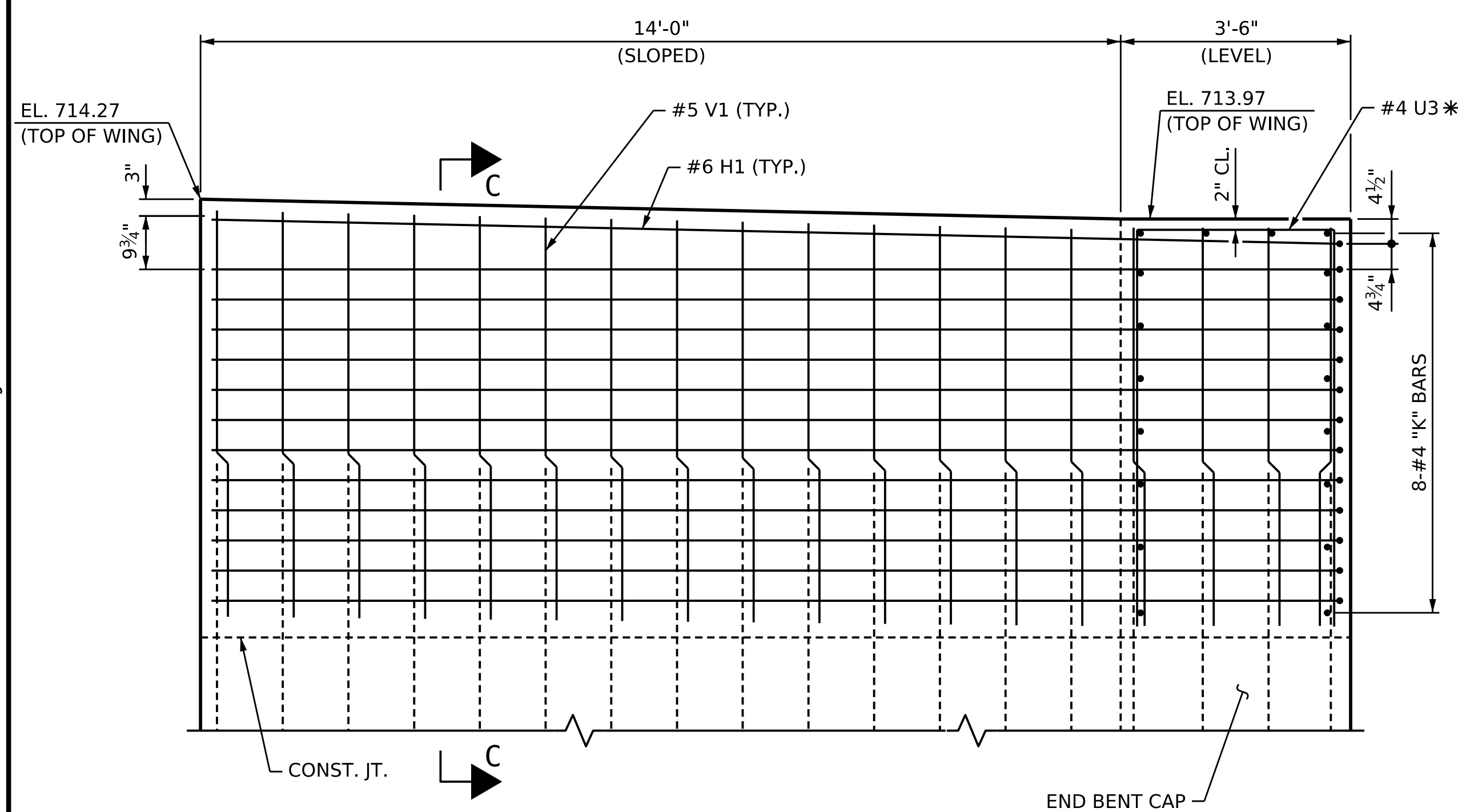
AT END BENT 1



PLAN OF WING (W3)

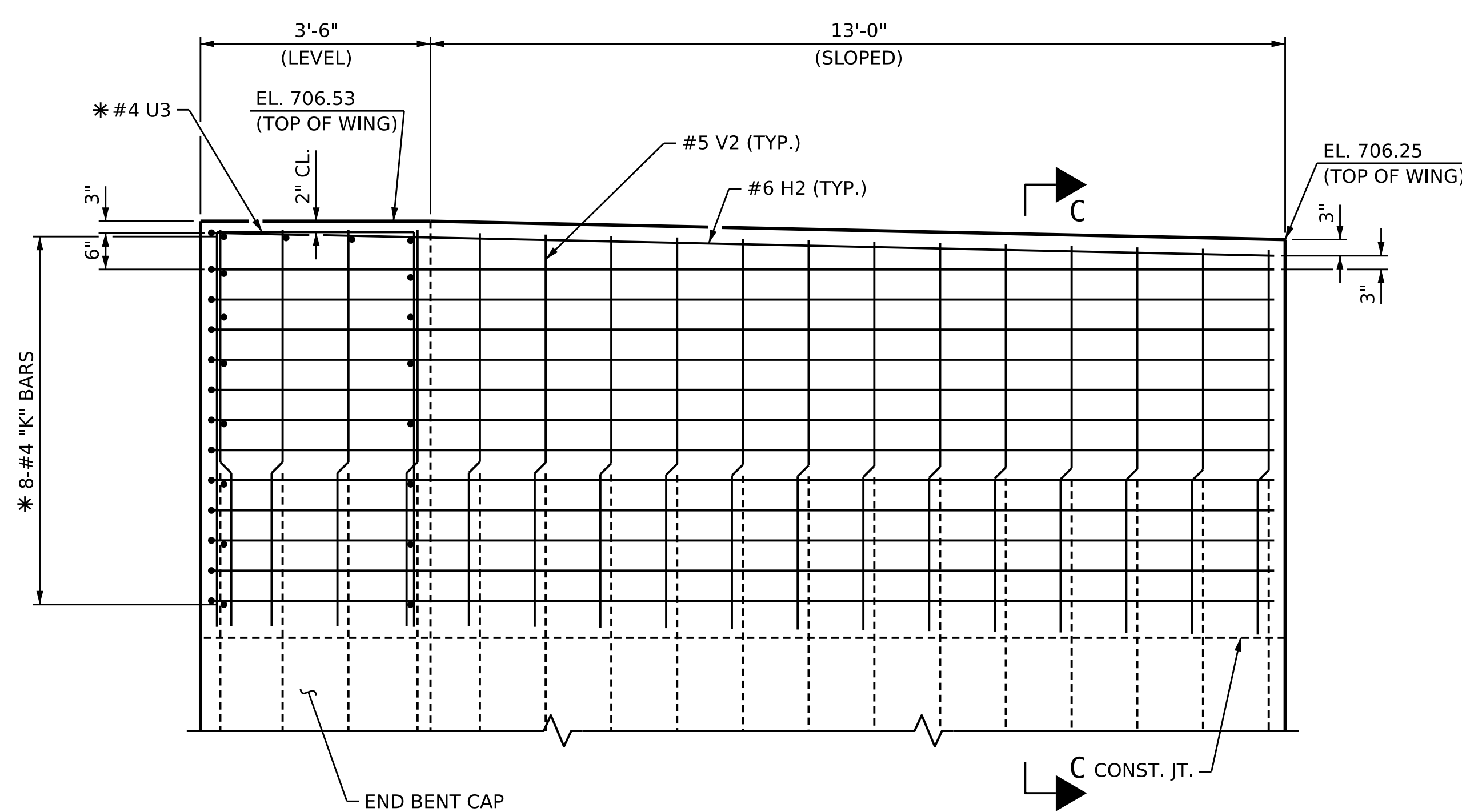
AT END BENT 2

* SEE TYPICAL SECTION SHEETS



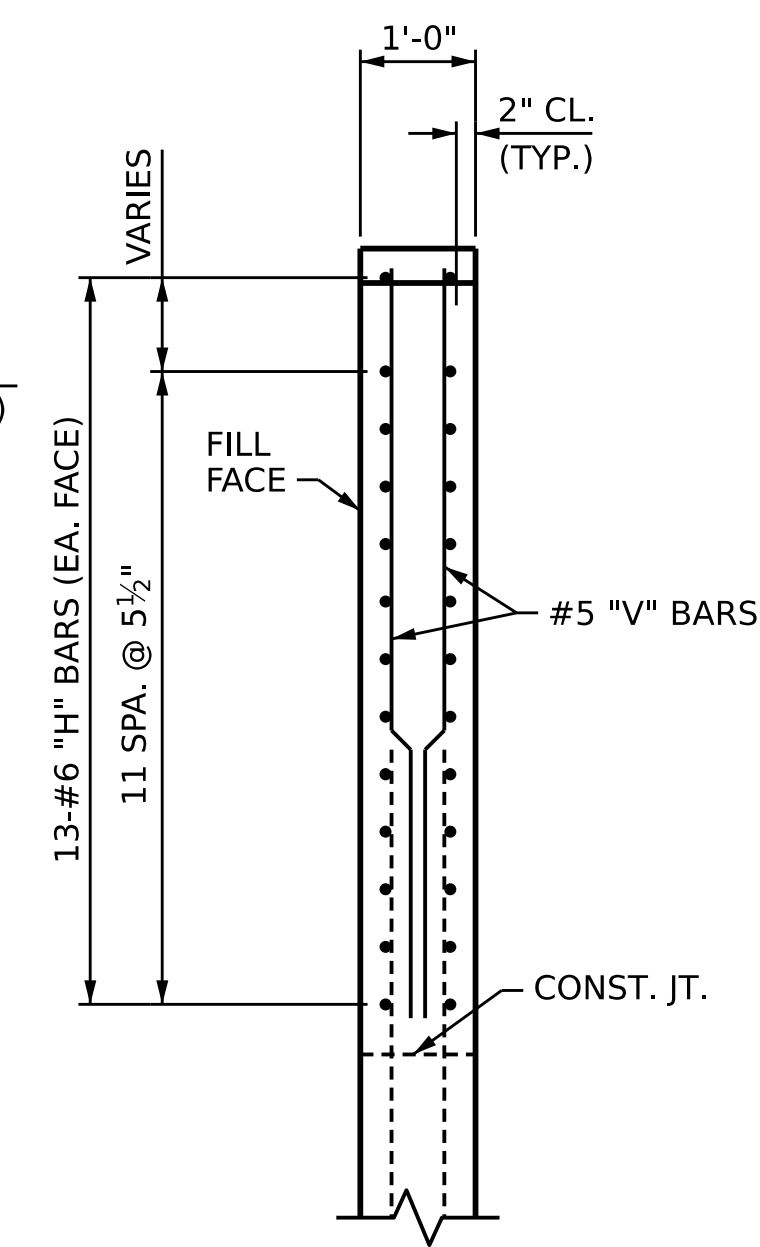
ELEVATION OF WING (W1)

AT END BENT 1



ELEVATION OF WING (W3)

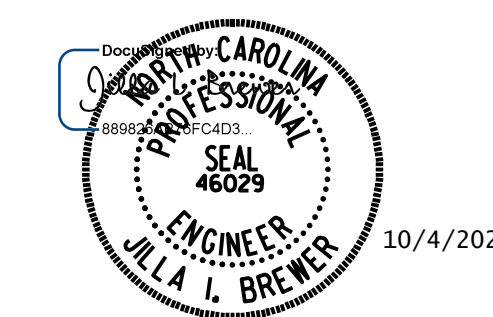
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SECTION C-C

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 4 OF 10



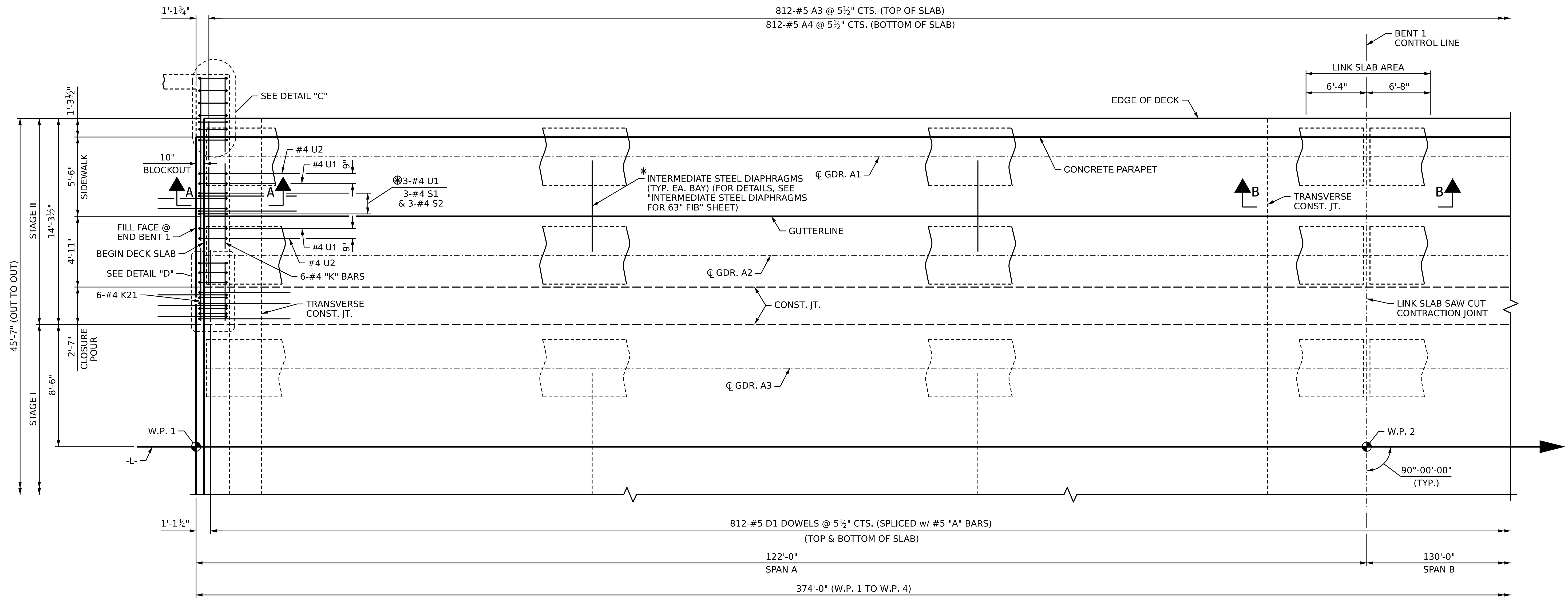
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS WINGWALL DETAILS AT END BENTS 1 AND 2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-15
TOTAL SHEETS					60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

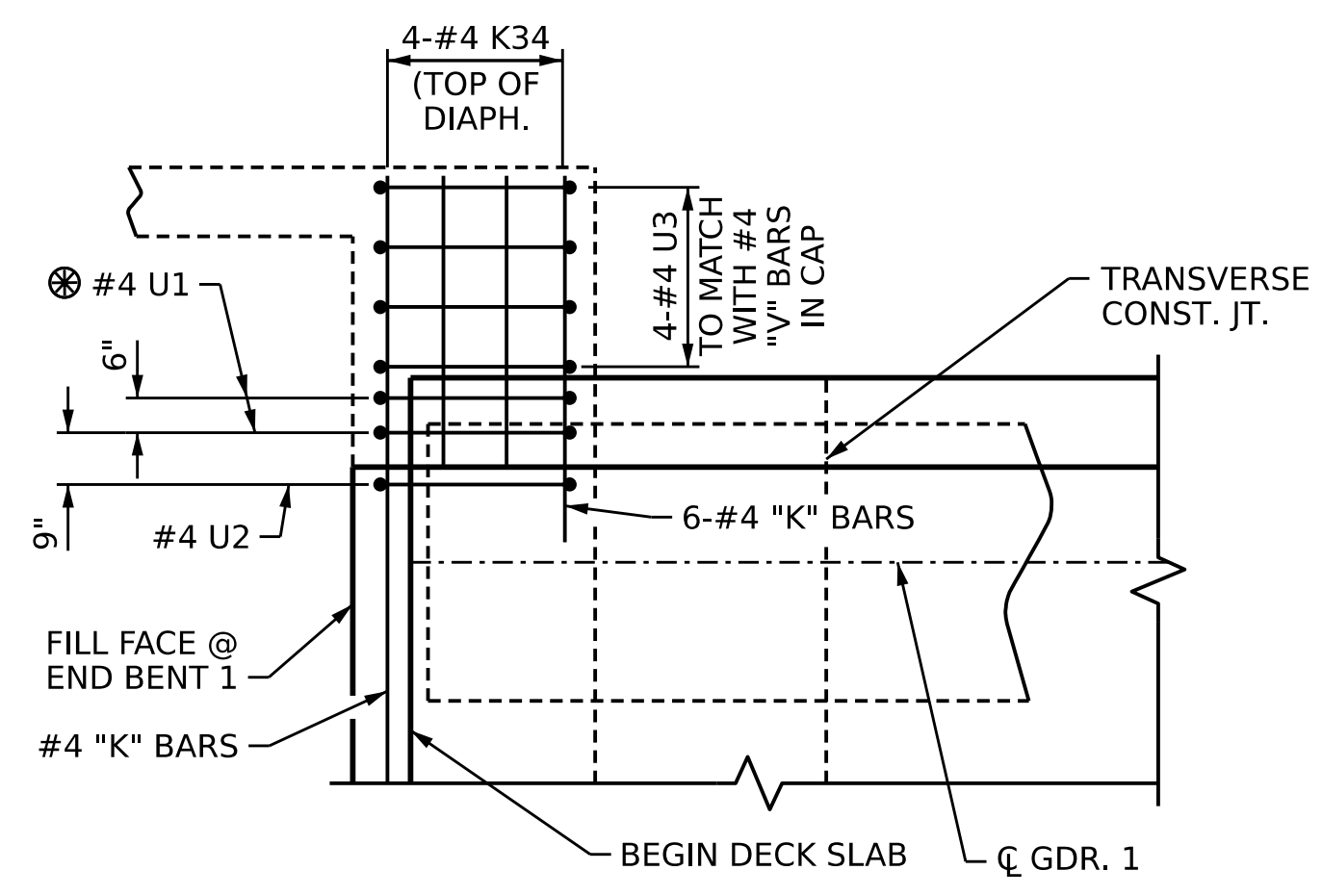
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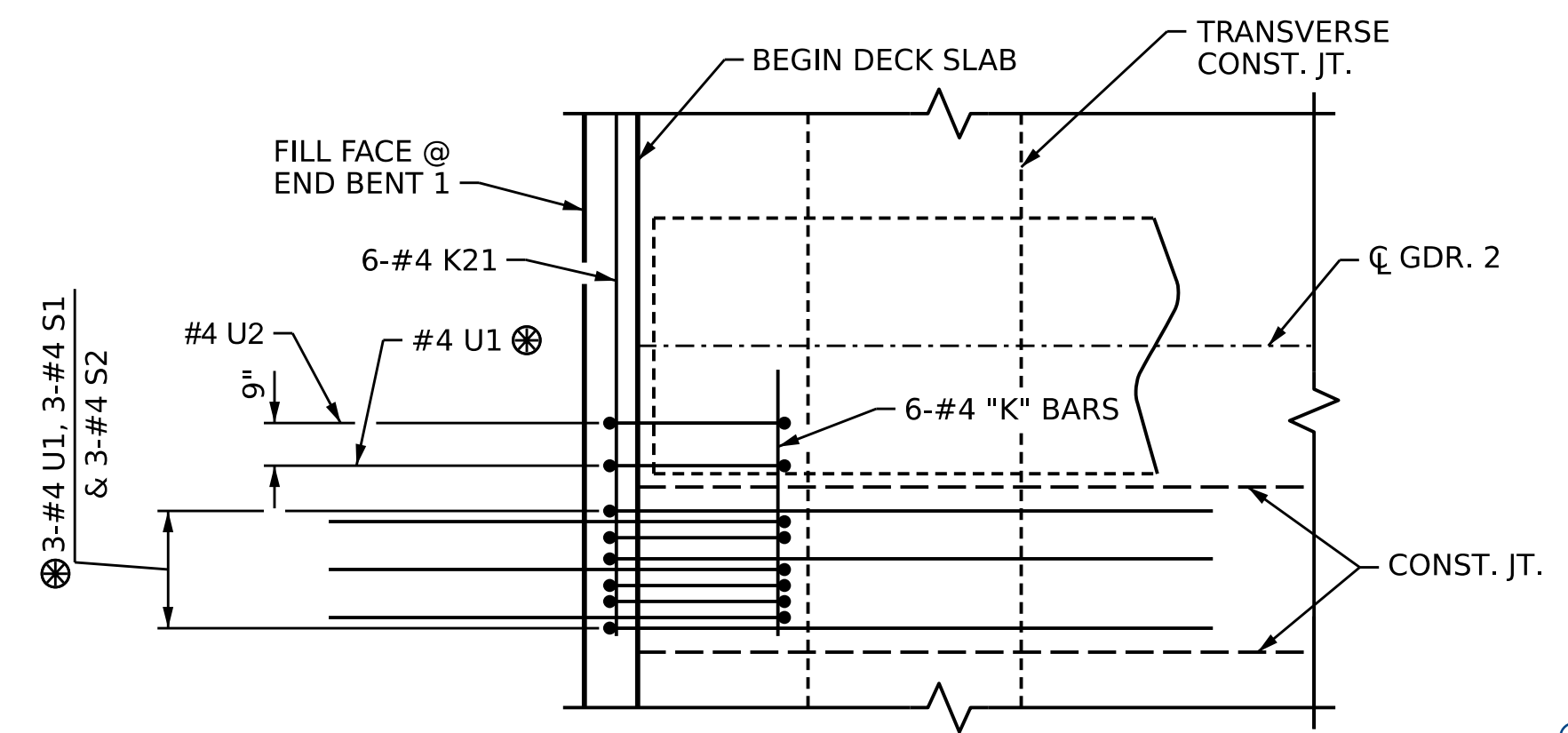
PLAN OF SPAN A - STAGE II

NOTES:

- FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET DETAILS" SHEETS.
- FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE II SHEET 10 OF 10.
- FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 5 OF 5.
- * FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
- ⊗ #4 S1, #4 S2 AND #4 U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.
- 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.

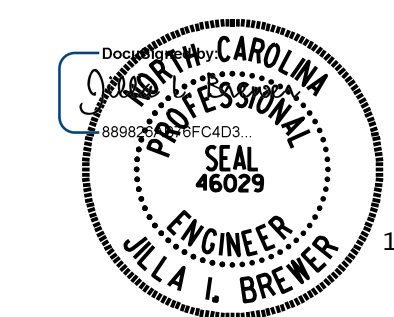


DETAIL "C"
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



DETAIL "D"
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. B-5766
 STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 5 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**PLAN OF SPANS
 SPAN A**

STAGE II

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

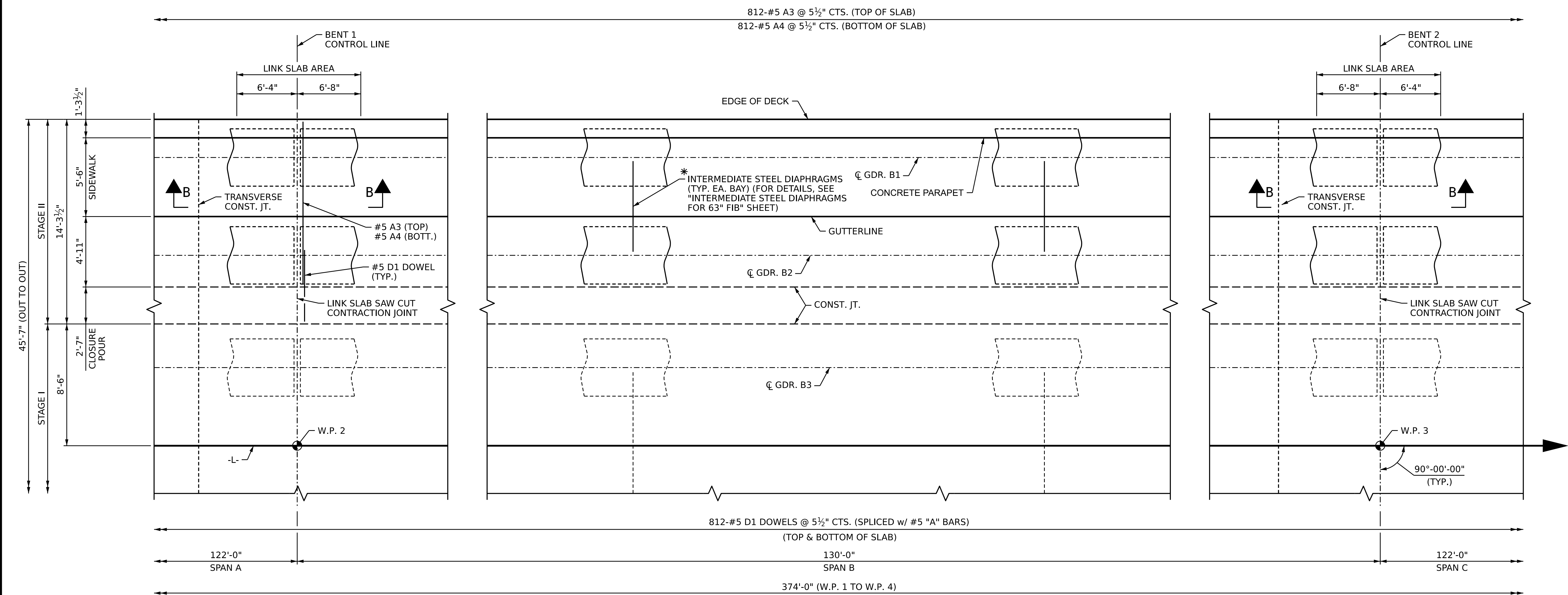
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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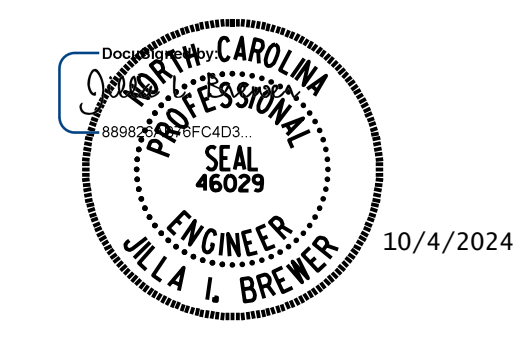
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PLAN OF SPAN B - STAGE II

NOTES:
 FOR NOTES, SEE SHEET 5 OF 10.
 * FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 6 OF 10



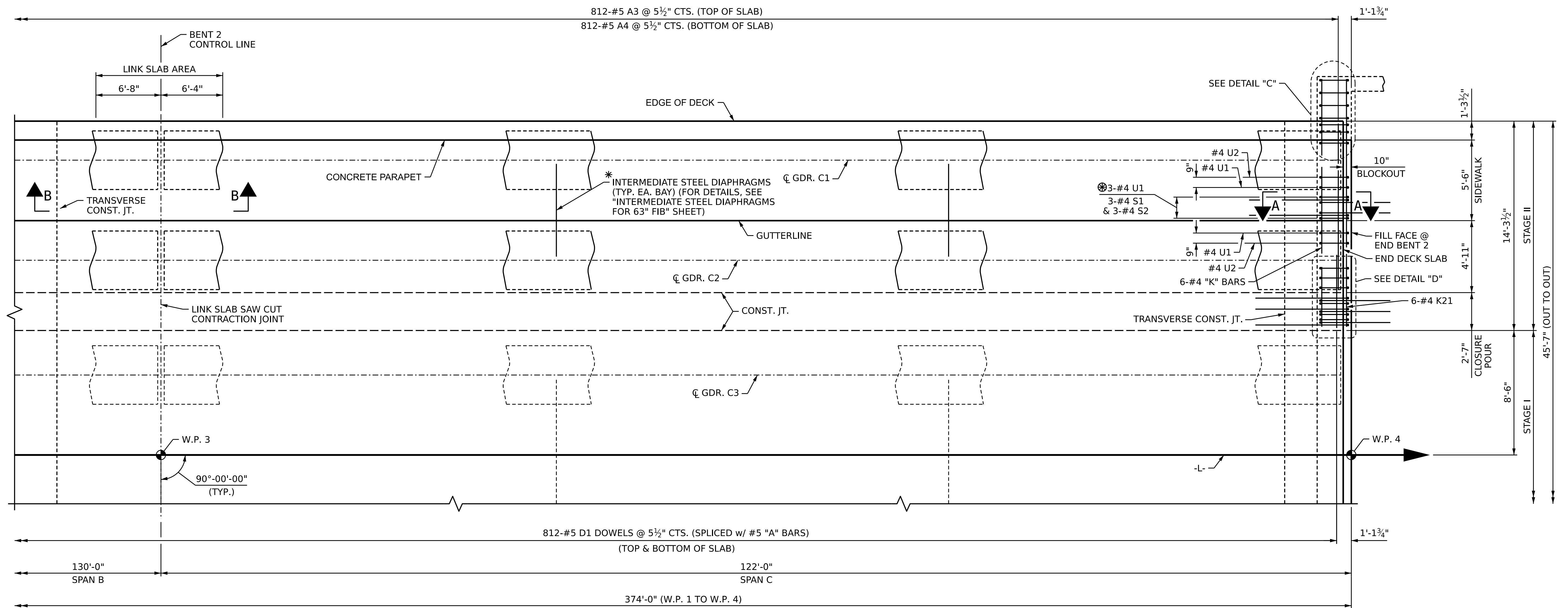
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**PLAN OF SPANS
 SPAN B**

**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:	S-17
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>



PLAN OF SPAN C - STAGE II

NOTES:

FOR NOTES, SEE SHEET 5 OF 10.

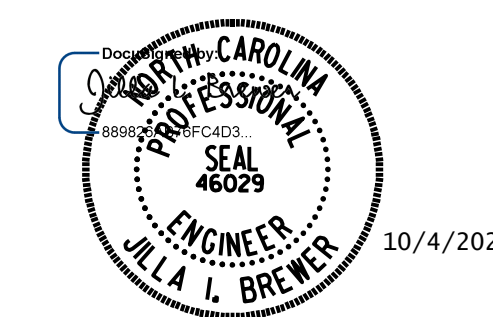
FOR DETAIL "C" AND DETAIL "D", SEE SHEET 6 OF 10.

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

⊗ #4 S1, #4 S2 AND #4 U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 7 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS
 SPAN C

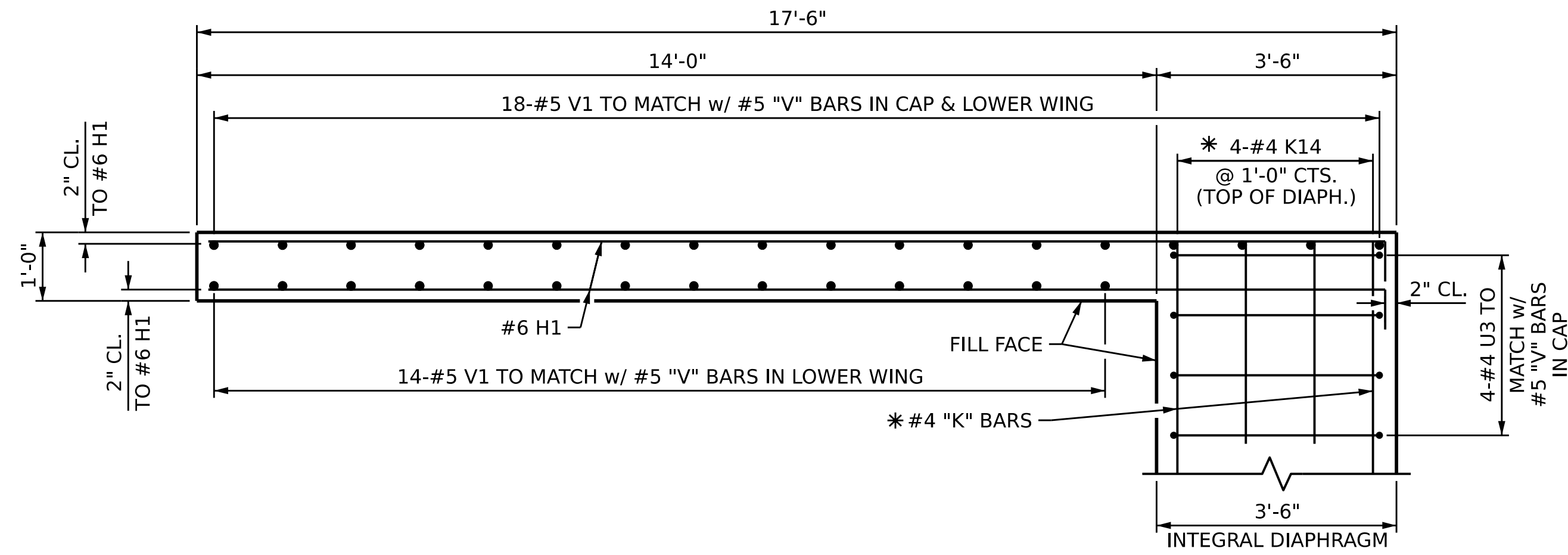
STAGE II

**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

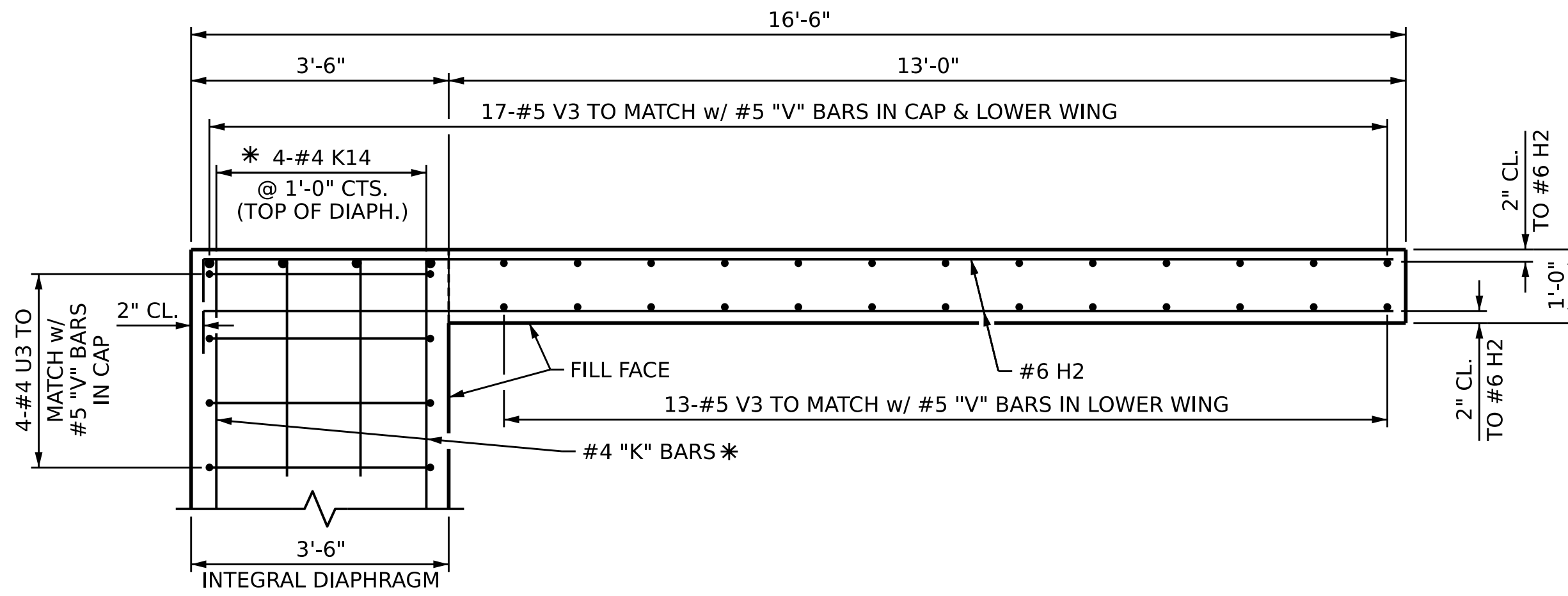
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>



PLAN OF WING W2

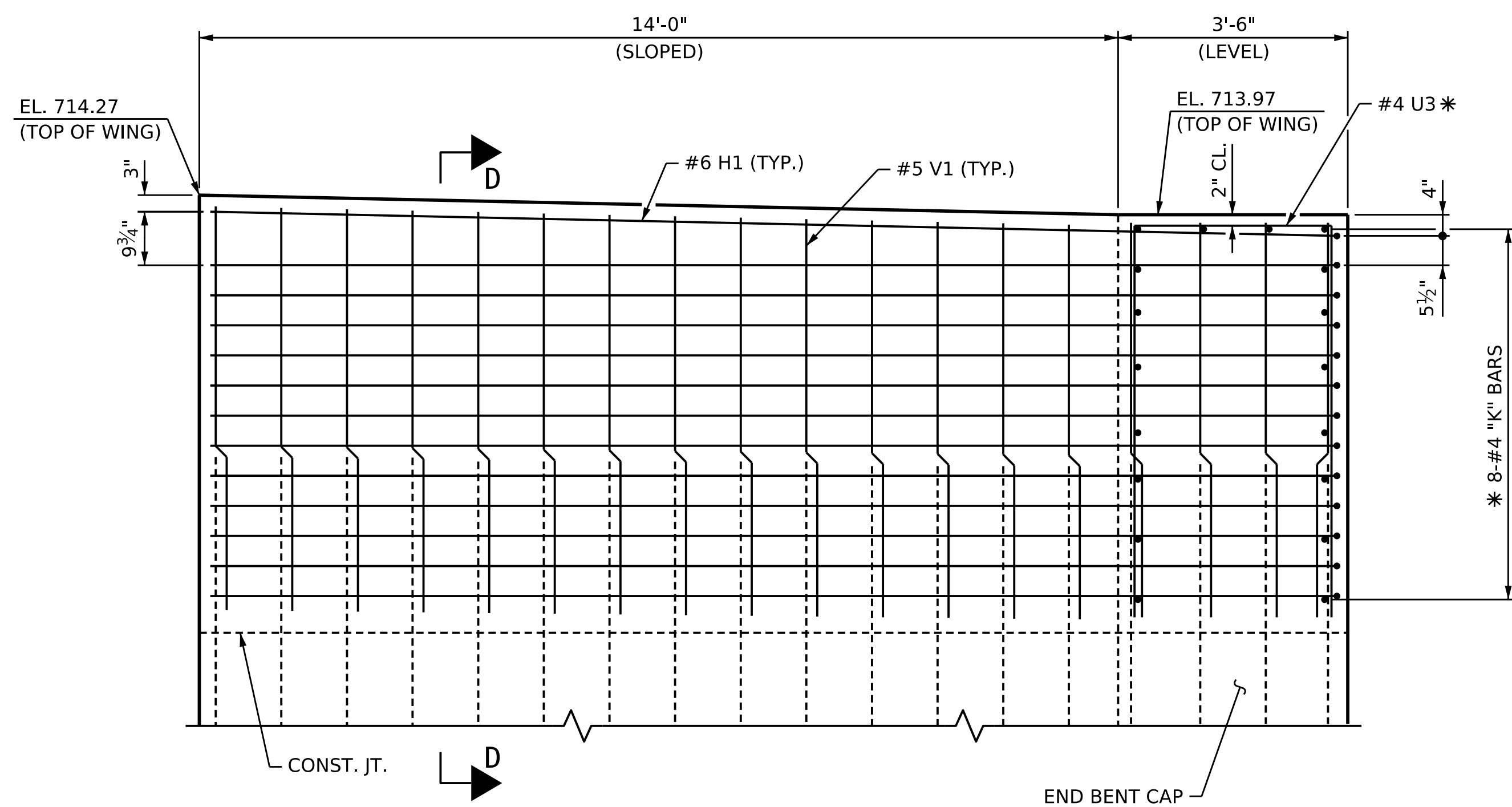
AT END BENT 1



PLAN OF WING W4

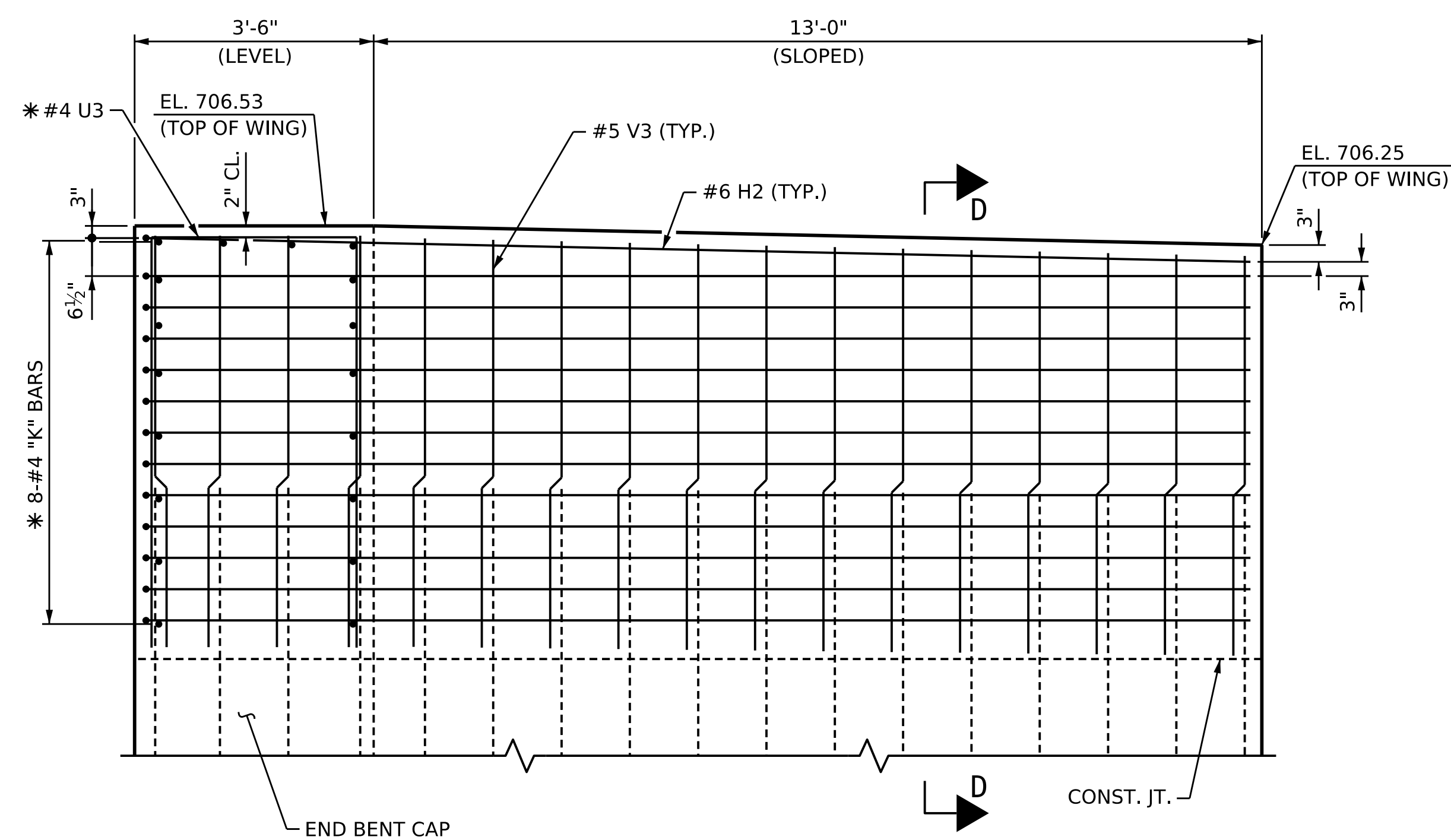
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* SEE TYPICAL SECTION SHEETS



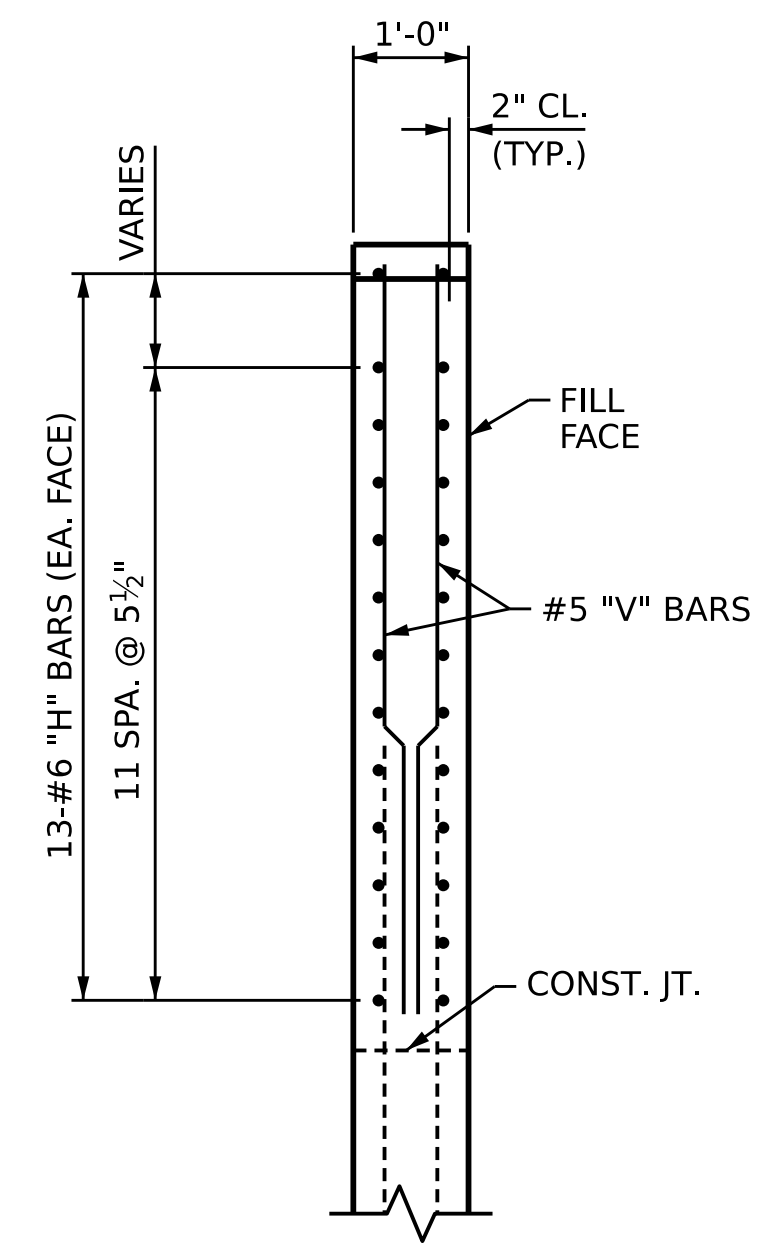
ELEVATION OF WING W2

AT END BENT 1



ELEVATION OF WING W4

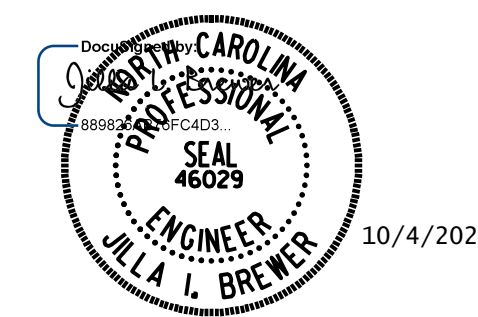
AT END BENT 2



SECTION D-D

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 8 OF 10



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

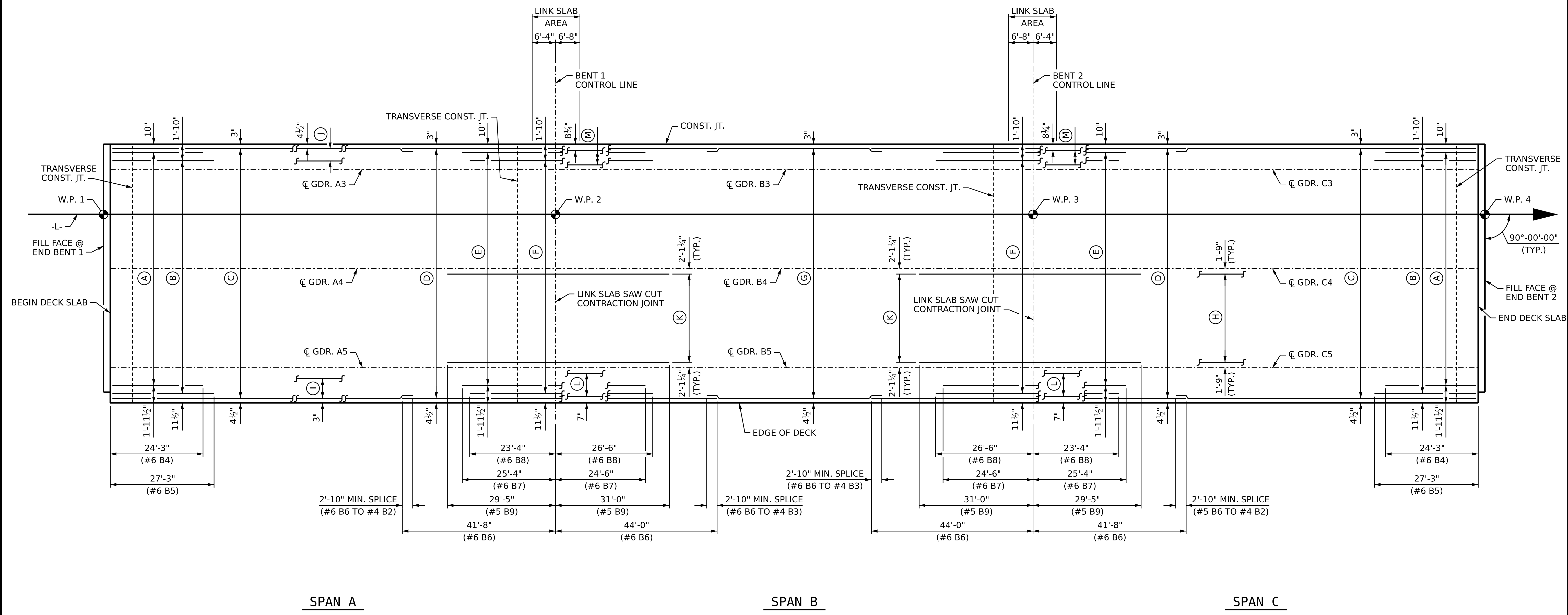
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS WINGWALL DETAILS AT END BENTS 1 AND 2 STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-19
TOTAL SHEETS					60

DRAWN BY:	B.E. LANNING	DATE:	07/2024
CHECKED BY:	J.I. BREWER	DATE:	07/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	10/2024

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Filename: N:\NC BrIdges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401_039_B5766_SML_PS9_B40082.dgn



PLAN OF SPANS "B" BAR LAYOUT - STAGE I

(GUTTERLINE NOT SHOWN FOR CLARITY)

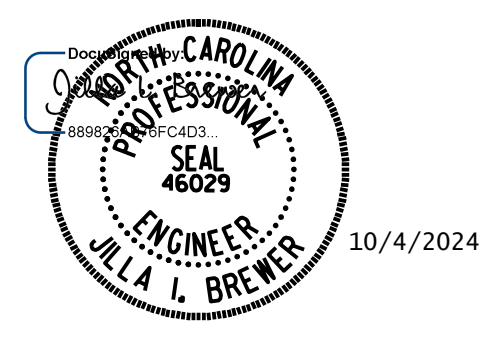
TOP BARS

- (A) 20-#6 B4 (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 1 OF 5 FOR SPACING)
- (B) 20-#6 B5 (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 1 OF 5 FOR SPACING)
- (C) 22-#4 B2 (3 BAR RUN) (1'-11" MIN. SPLICE) (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 1 OF 5 FOR SPACING)
- (D) 22-#6 B6 (3 BAR RUN) (2'-10" MIN. SPLICE) (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 5 FOR SPACING)
- (E) 20-#6 B7 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 5 FOR SPACING)
- (F) 20-#6 B8 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 5 FOR SPACING)
- (G) 22-#4 B3 (2 BAR RUN) (1'-11" MIN. SPLICE) (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 1 OF 5 FOR SPACING)

BOTTOM BARS

- (H) 13-#5 B1 @ 8 1/2" CTS. (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EA. BAY)
- (I) 4-#5 B1 @ 8" CTS. (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB IN RIGHT OVERHANG)
- (J) 2-#5 B1 @ 7 1/2" CTS. (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB IN LEFT OVERHANG)
- (K) 12-#5 B9 @ 8 1/2" CTS. (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB) (TYP. EA. BAY)
- (L) 3-#5 B9 @ 8" CTS. (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB IN RIGHT OVERHANG)
- (M) 2-#5 B9 @ 7 1/2" CTS. (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB IN LEFT OVERHANG)

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 9 OF 10



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**PLAN OF SPANS
 "B" BAR LAYOUT**

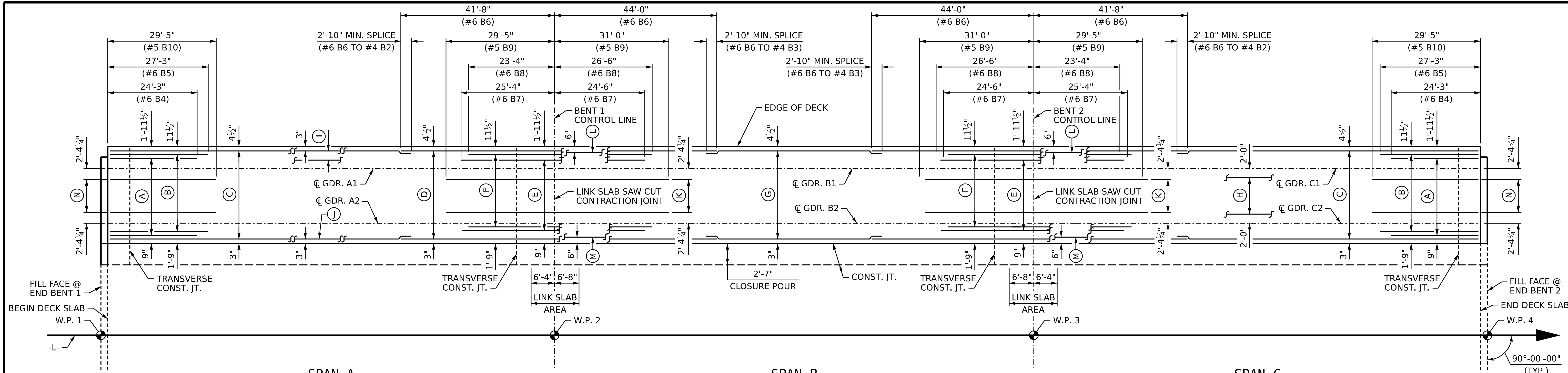
STAGE I

DRAWN BY: B.E. LANNING DATE: 06/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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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-20
1			3			TOTAL SHEETS
2			4			60



PLAN OF SPANS "B" BAR LAYOUT - STAGE II

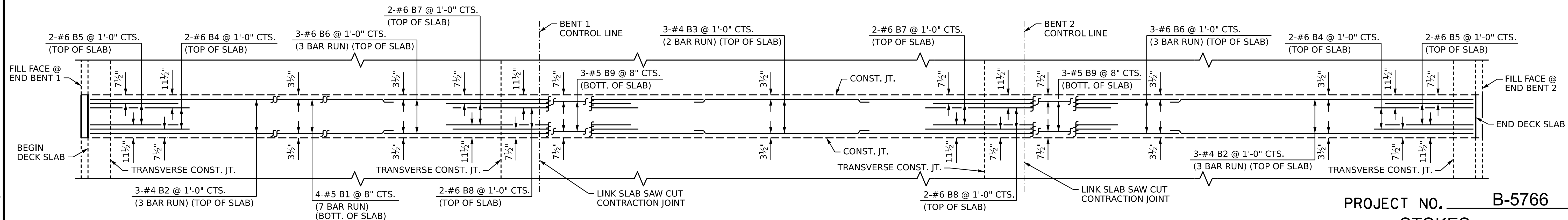
(GUTTERLINE NOT SHOWN FOR CLARITY)

TOP BARS

- (A) 7-#6 B4 (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 3 OF 5 FOR SPACING)
- (B) 7-#6 B5 (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 3 OF 5 FOR SPACING)
- (C) 9-#4 B2 (3 BAR RUN) (1'-11" MIN. SPLICE) (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 3 OF 5 FOR SPACING)
- (D) 9-#6 B6 (3 BAR RUN) (2'-10" MIN. SPLICE) (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 4 OF 5 FOR SPACING)
- (E) 7-#6 B7 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 4 OF 5 FOR SPACING)
- (F) 7-#6 B8 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 4 OF 5 FOR SPACING)
- (G) 9-#4 B3 (2 BAR RUN) (1'-11" MIN. SPLICE) (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 3 OF 5 FOR SPACING)

BOTTOM BARS

- (H) 5-#5 B1 @ 8½" CTS. (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB)
- (I) 2-#5 B1 @ 6" CTS. (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB IN LEFT OVERHANG)
- (J) 1-#5 B1 (7 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB IN RIGHT OVERHANG)
- (K) 4-#5 B9 @ 8½" CTS. (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB) (TYP. EA. BAY)
- (L) 1-#5 B9 (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB IN LEFT OVERHANG)
- (M) 1-#5 B9 (2 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF LINK SLAB IN RIGHT OVERHANG)
- (N) 4-#5 B10 @ 8½" CTS. (BOTTOM OF SLAB) (SEE TYPICAL SECTION SHEET 3 OF 5 "DETAIL AT INTEGRAL END BENT")



PLAN OF SPANS "B" BAR LAYOUT - CLOSURE POUR

(FOR ADDITIONAL DIMENSIONS, SEE PLAN VIEW ABOVE)

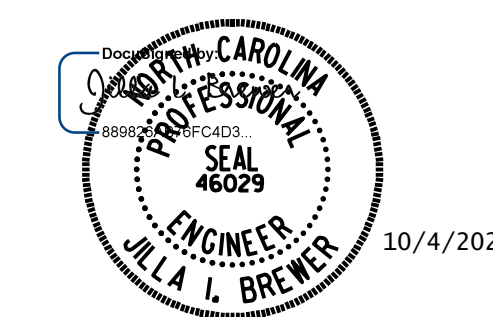
PROJECT NO. **B-5766**
STOKES COUNTY
 STATION: **14+96.00 -L-**

SHEET 10 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 "B" BAR LAYOUT**

STAGE II



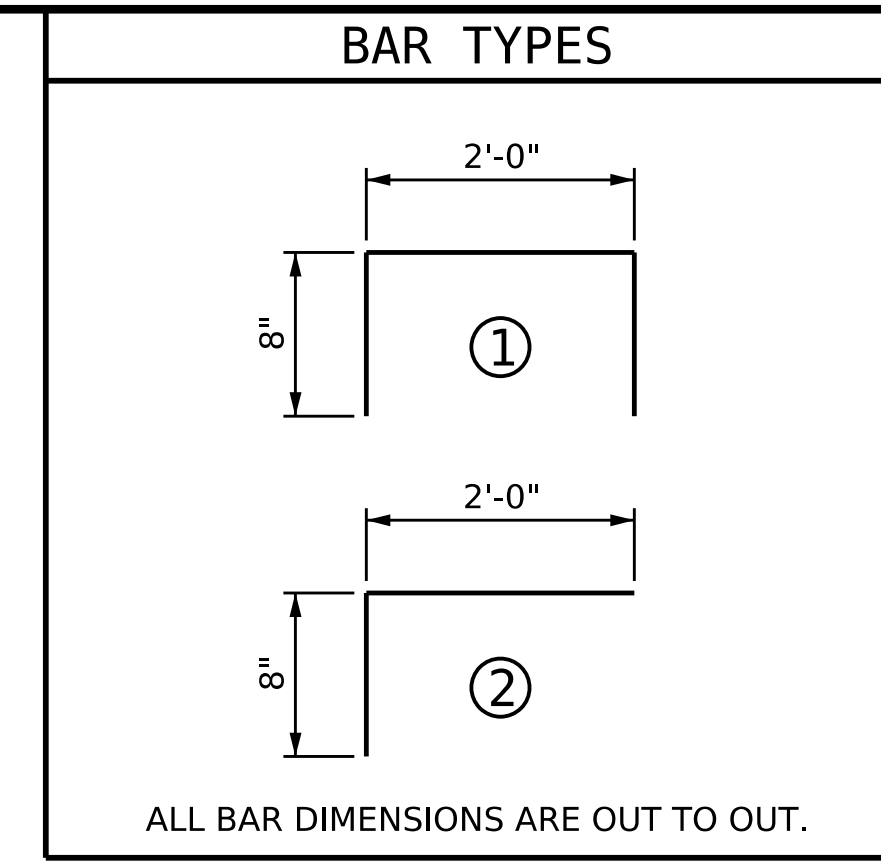
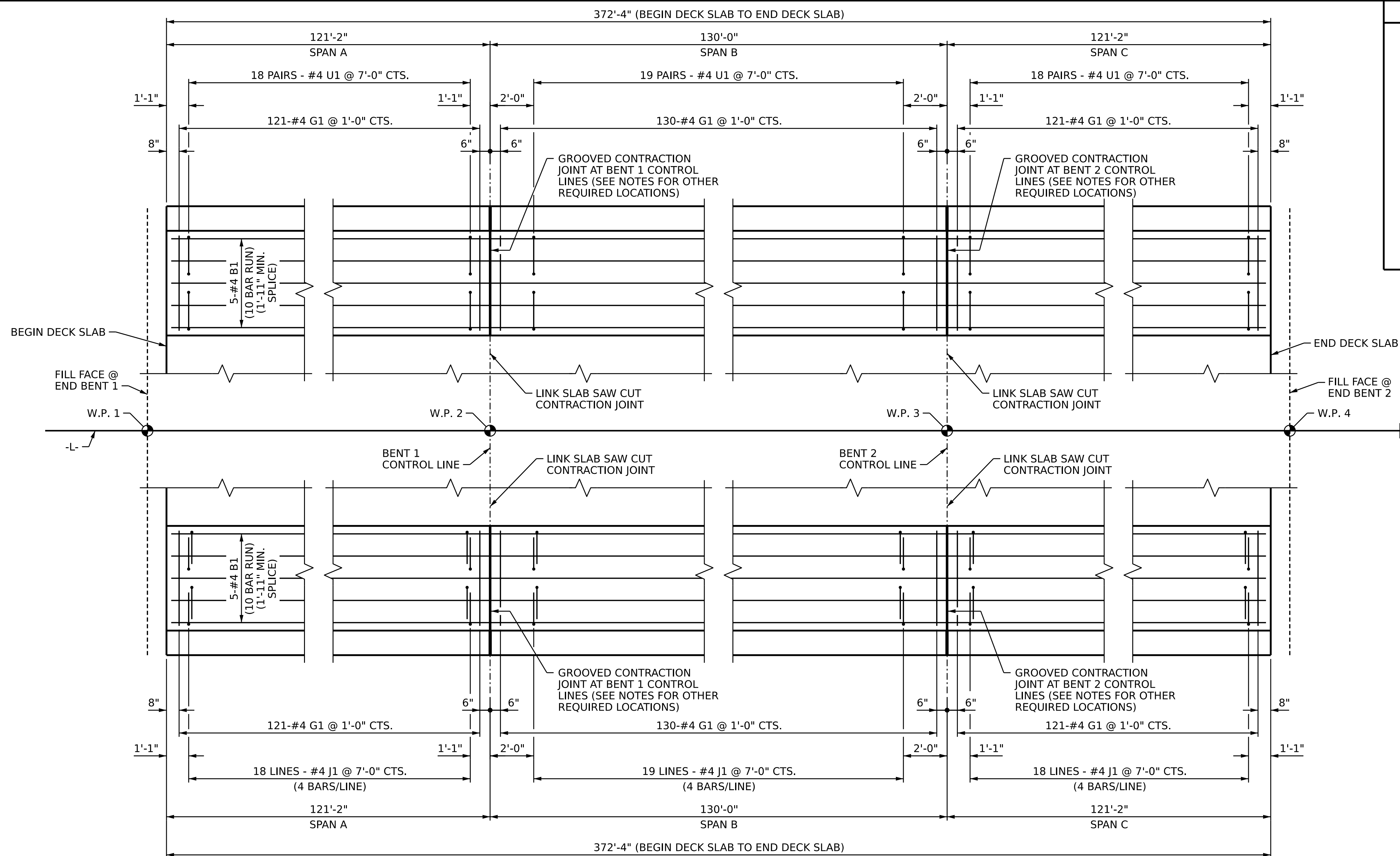
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO. S-21 TOTAL SHEETS 60
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024

10/4/2024 10:37:16 AM blanning N:\NC BrIdges\M21018.RKA.Stokes B2 Br. Rep\B-5766\Structures\401_041.B5766_SMUL_PS10_840082.dgn



BILL OF MATERIAL					
STAGE II					
LEFT SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	50	#4	STR	39'-0"	1,303
*G1	372	#4	STR	5'-0"	1,242
*U1	110	#4	1	3'-4"	245
* EPOXY COATED REINFORCING STEEL					2,790 LBS.
CLASS AA CONCRETE					46.5 C.Y.
RIGHT SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	50	#4	STR	39'-0"	1,303
*G1	372	#4	STR	5'-0"	1,242
*J1	220	#4	2	2'-8"	392
* EPOXY COATED REINFORCING STEEL					2,937 LBS.
CLASS AA CONCRETE					46.5 C.Y.

NOTES:

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

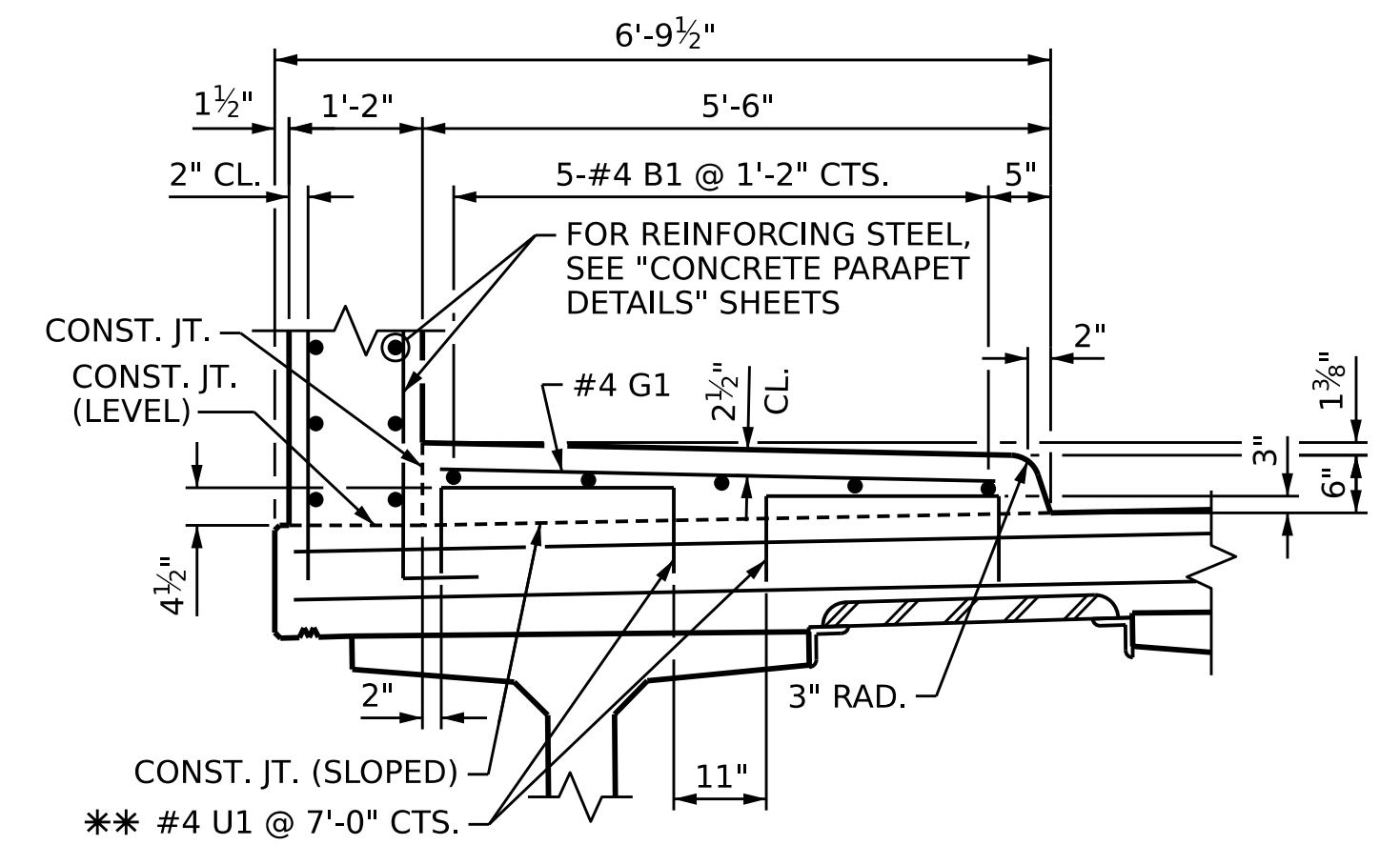
SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE REINFORCED CONCRETE DECK SLAB PAY ITEM.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

RIGHT SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION.

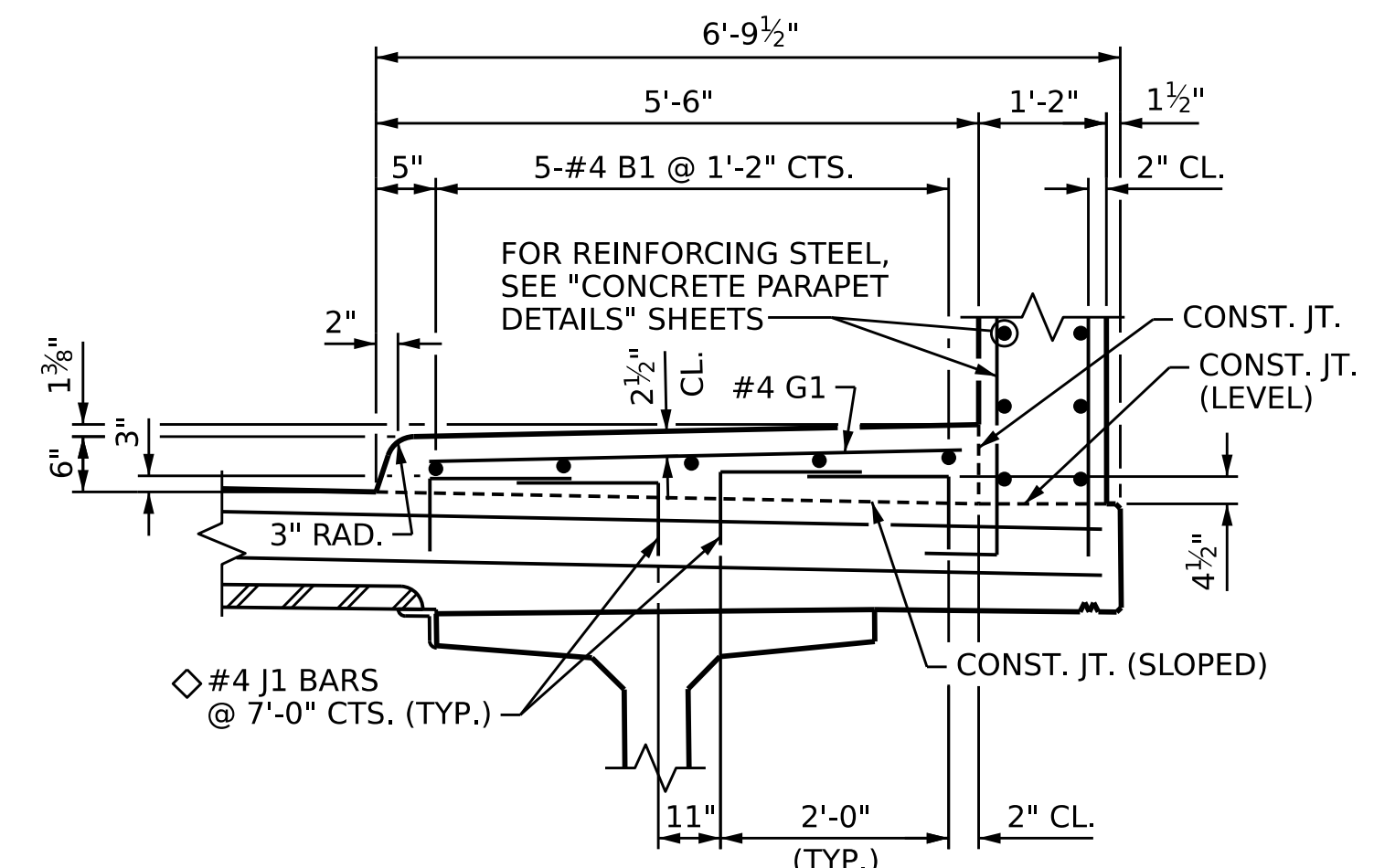
FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS NOT REQUIRED.

PLAN OF SIDEWALK



SECTION THRU LEFT SIDEWALK

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



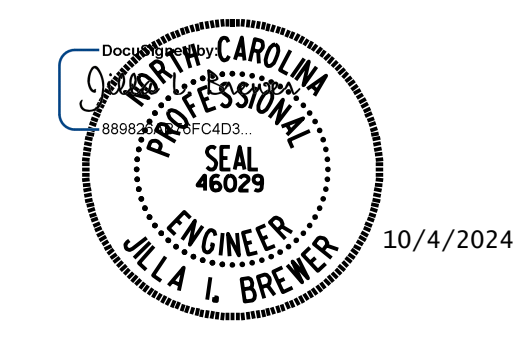
SECTION THRU RIGHT SIDEWALK

#4 J1 SHALL BE ADHESIVELY ANCHORED INTO DECK. (RIGHT SIDE ONLY)

PROJECT NO. B-5766

STOKES COUNTY

STATION: 14+96.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
SIDEWALK DETAILS

STAGE II

REVISIONS					
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

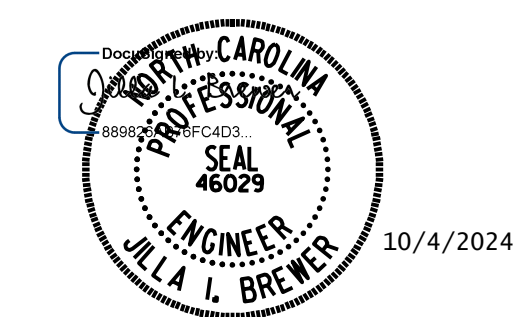
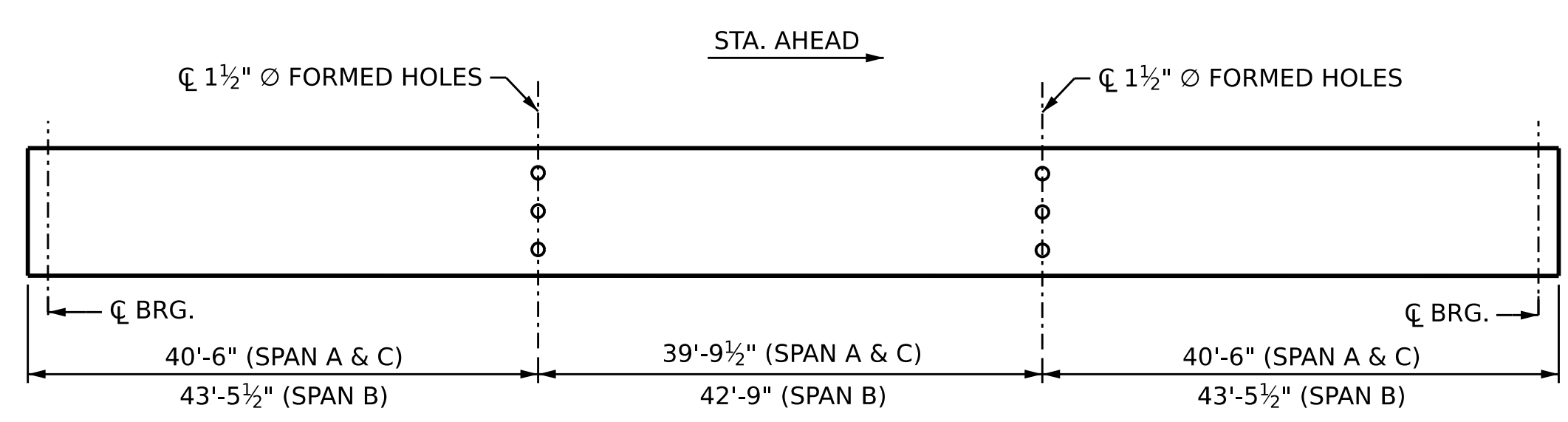
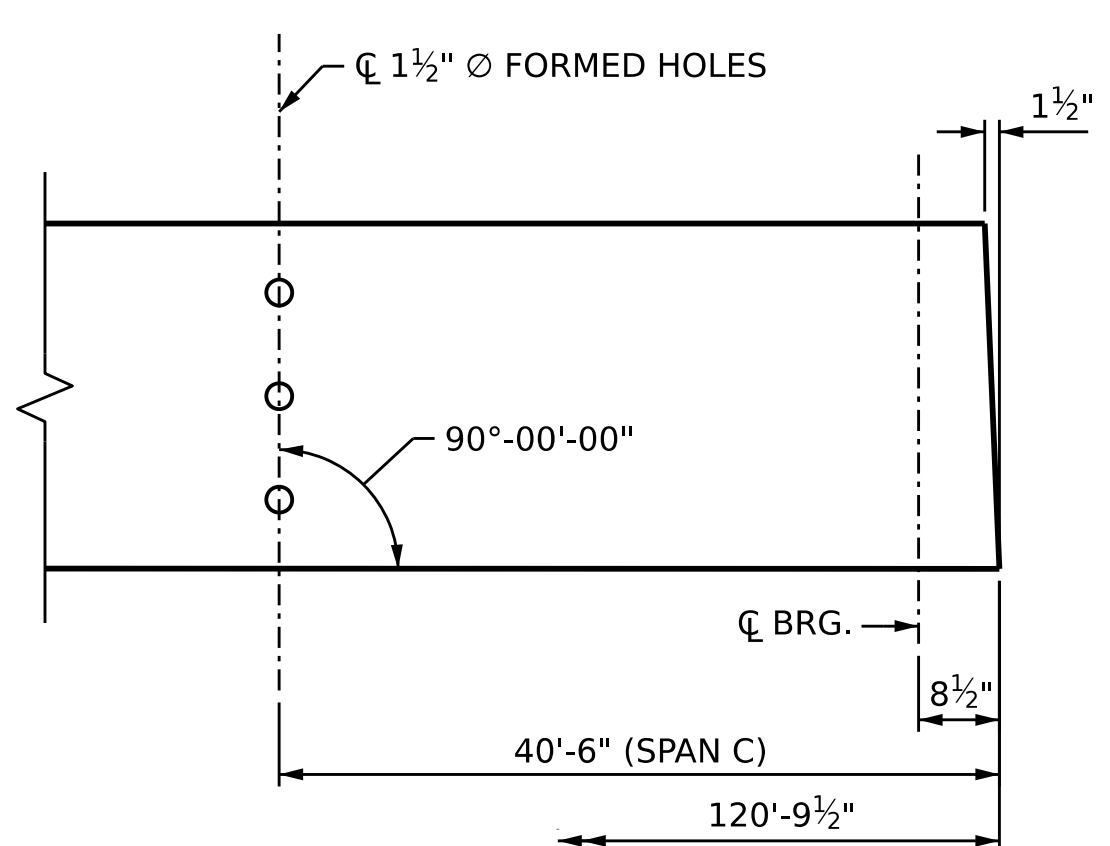
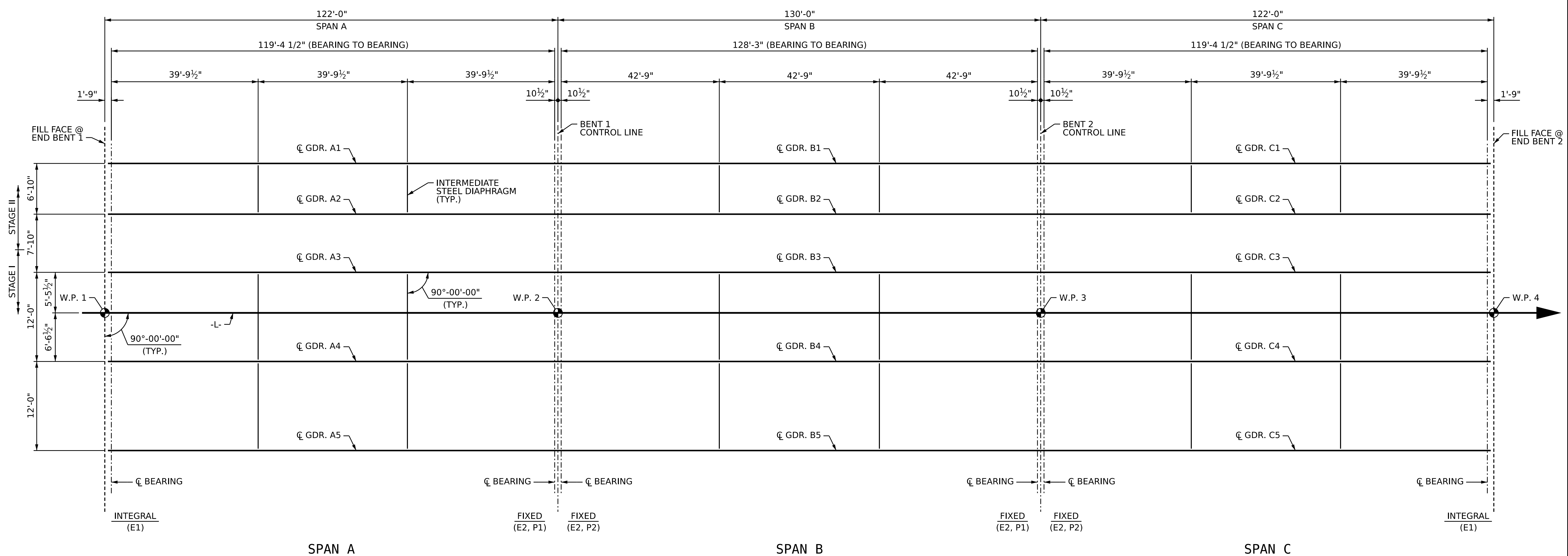
DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

SHEET NO. S-22
TOTAL SHEETS 60

10/4/2024 10:37:20 AM blanning
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10/4/2024
10:37:24 AM
blanning

Filename: N:\NC_Bridges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401_045_B5766_SMJ_FPI_840082.dgn



PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-

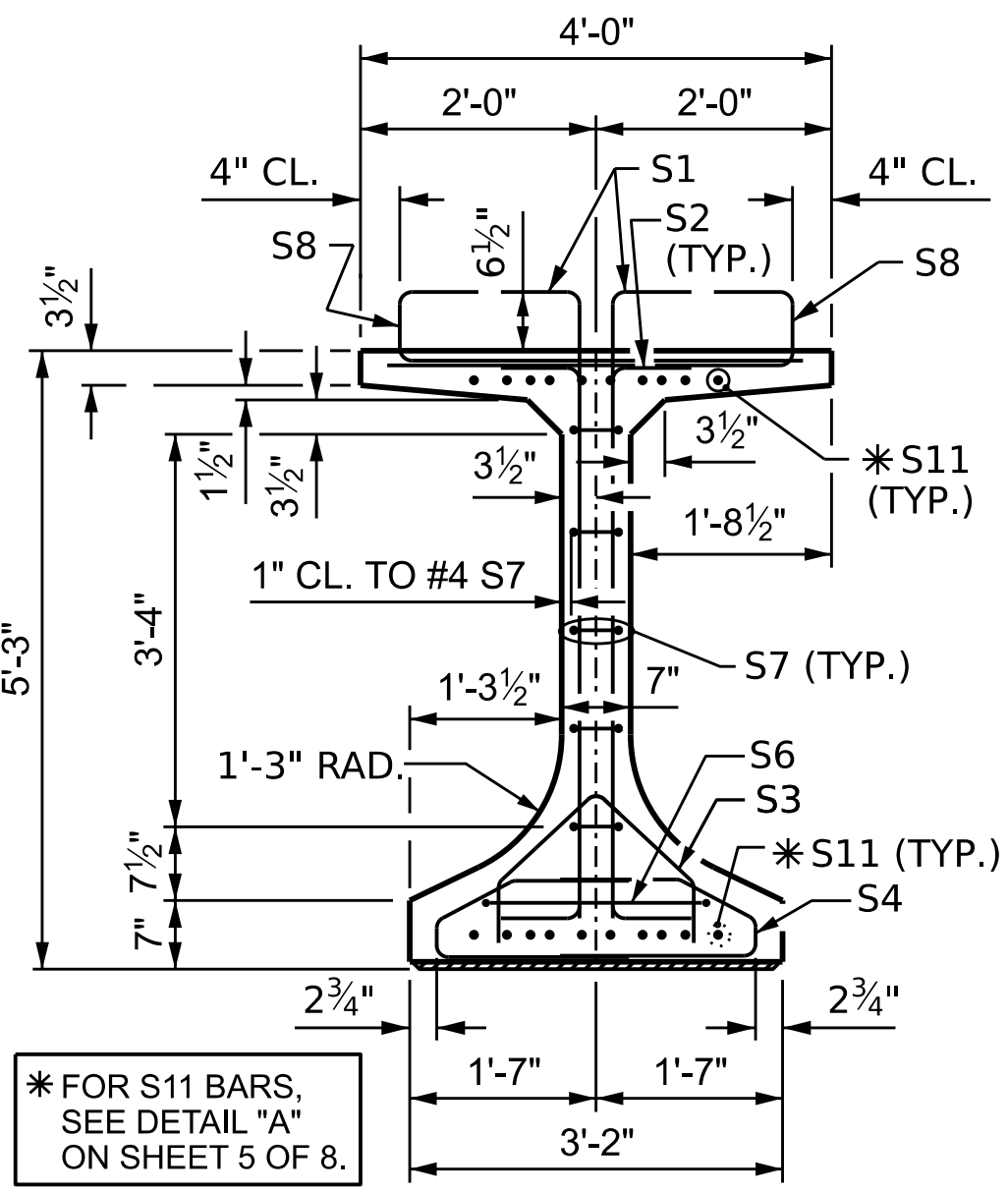
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

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

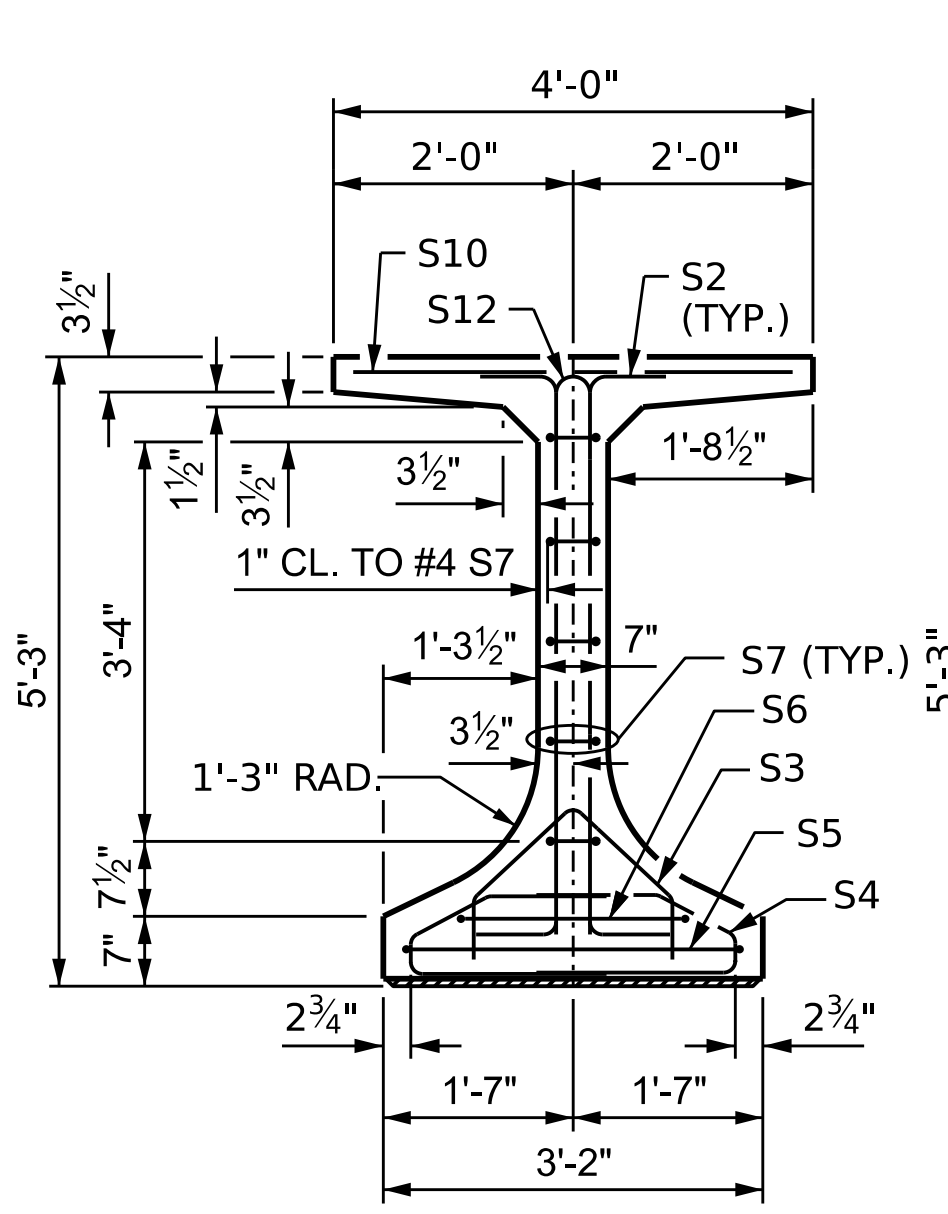
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS 60
2			4			

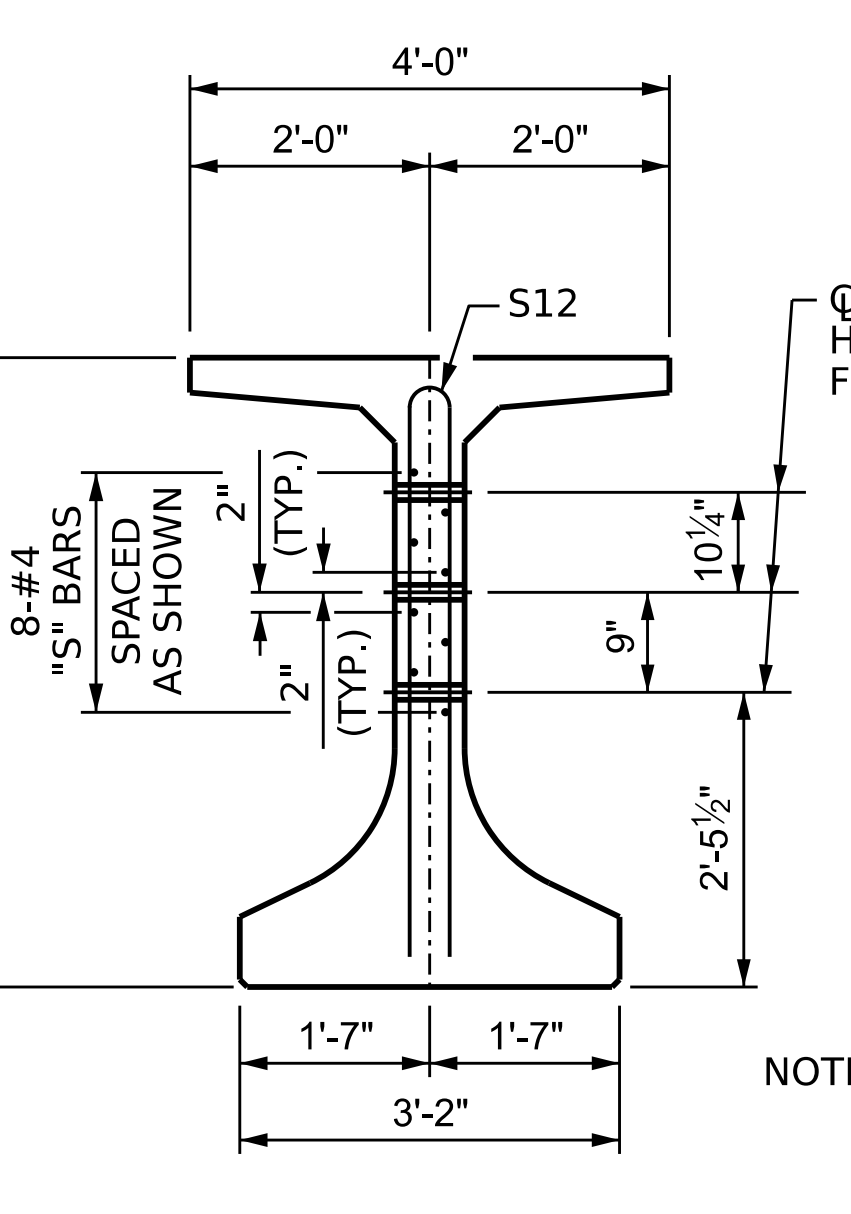
DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>



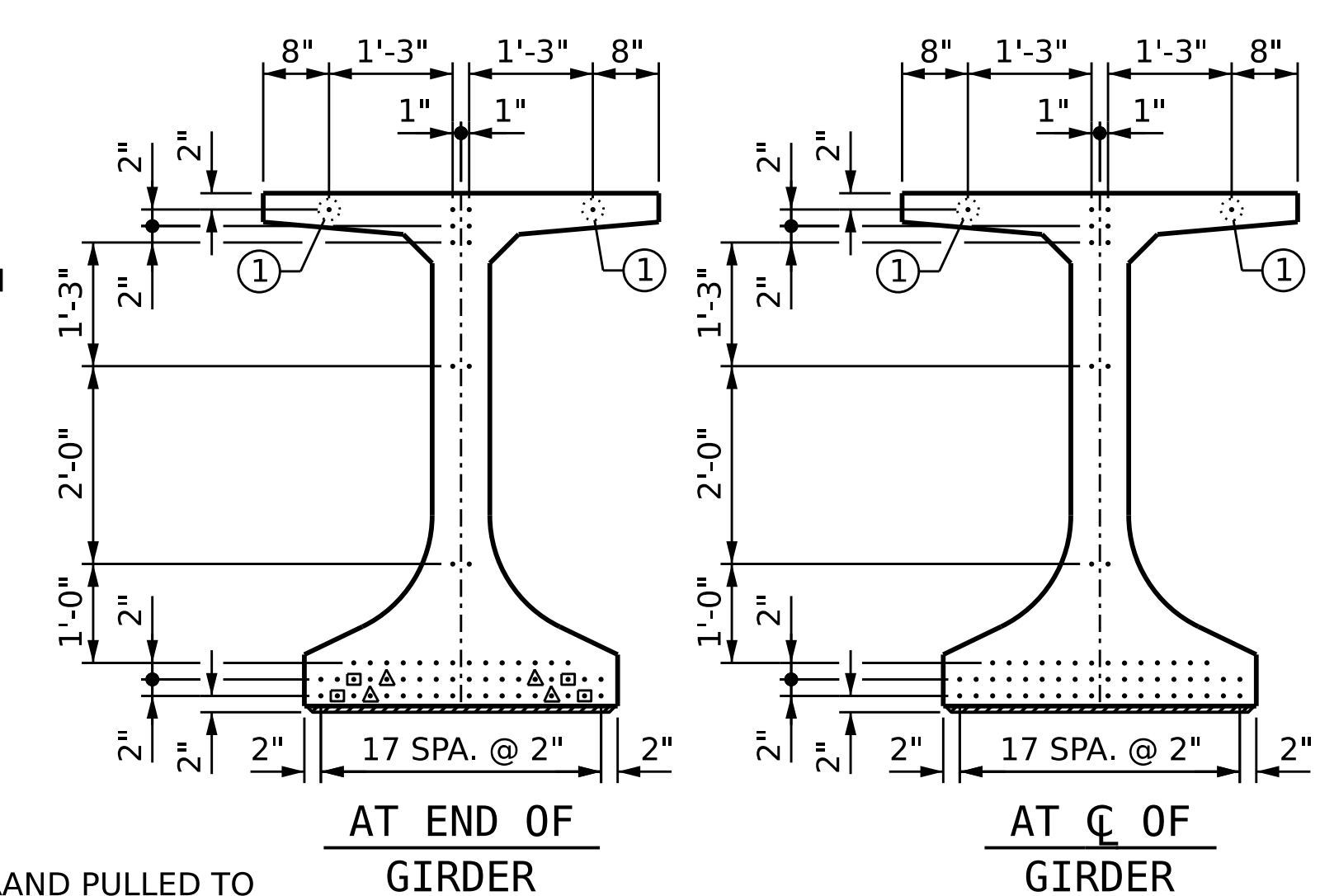
SECTION A-A



SECTION B-B



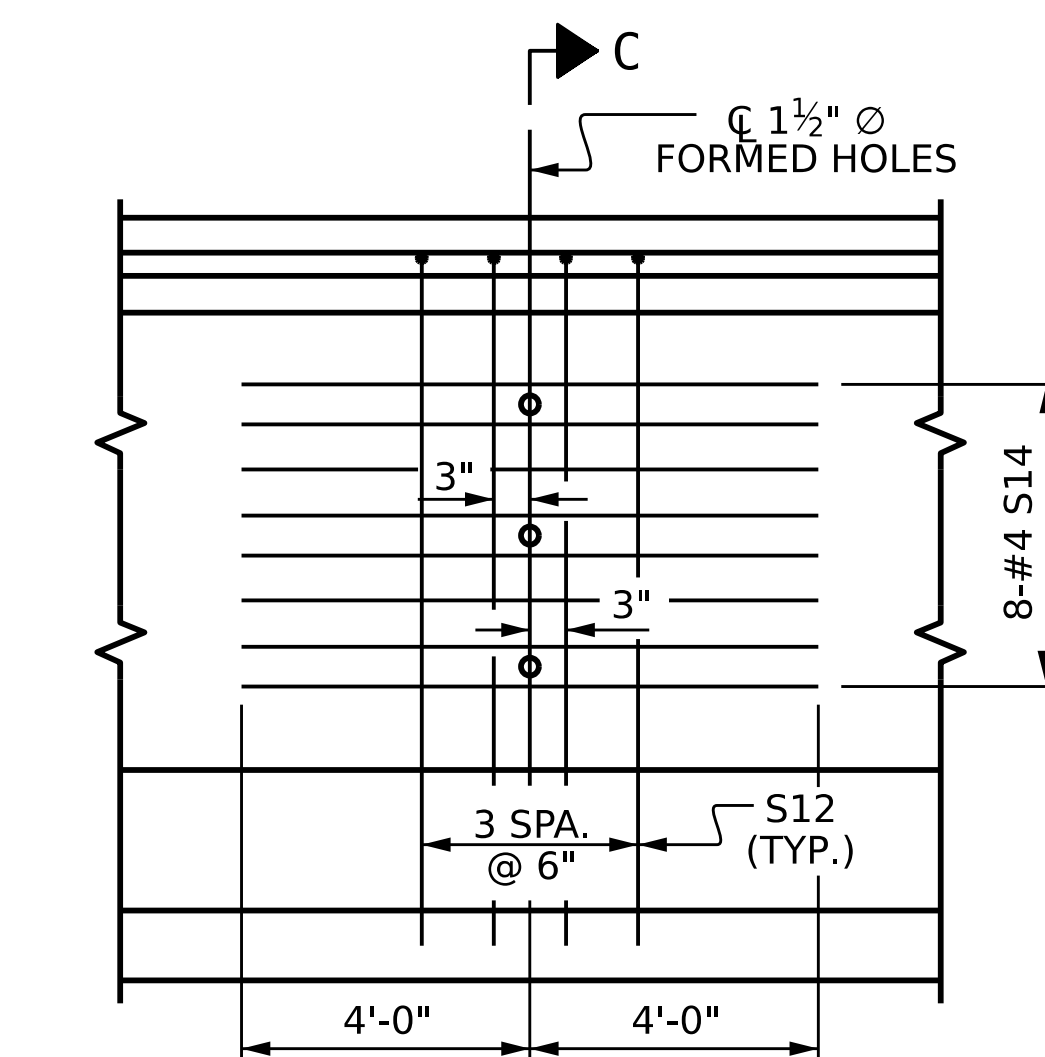
SECTION C-C



0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



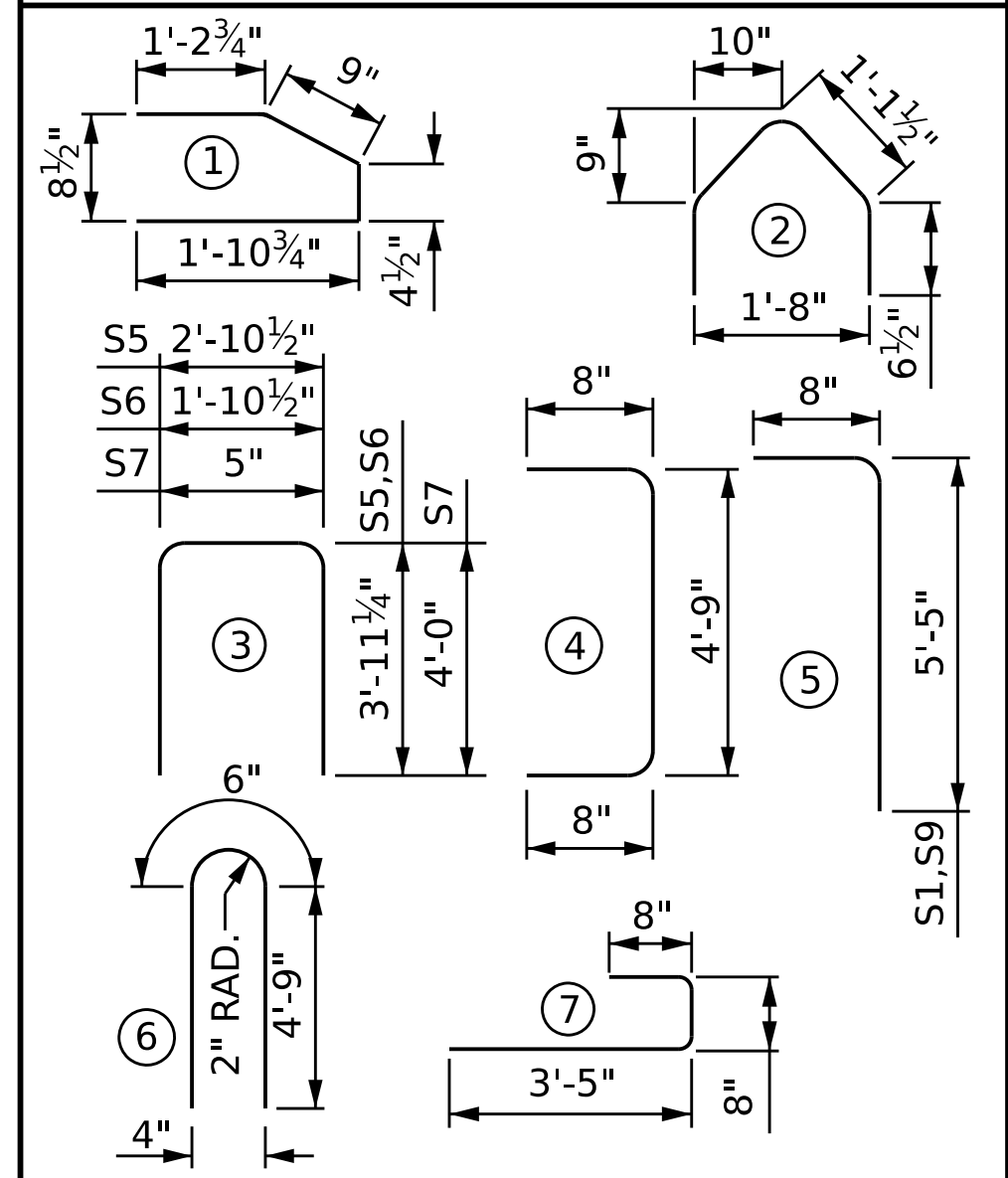
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS

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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#5	5	6'-1"	520
S2	50	#5	4	6'-1"	317
S3	56	#3	2	3'-4"	70
S4	112	#3	1	4'-3"	179
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	10	#4	3	8'-5"	56
S8	282	#5	7	4'-9"	1,397
S9	200	#4	5	6'-1"	813
S10	98	#5	STR	3'-8"	375
*S11	20	#6	STR	4'-8"	140
S12	18	#5	6	10'-0"	188
S13	1	#3	STR	2'-10"	1
S14	16	#4	STR	8'-0"	86

BAR TYPES



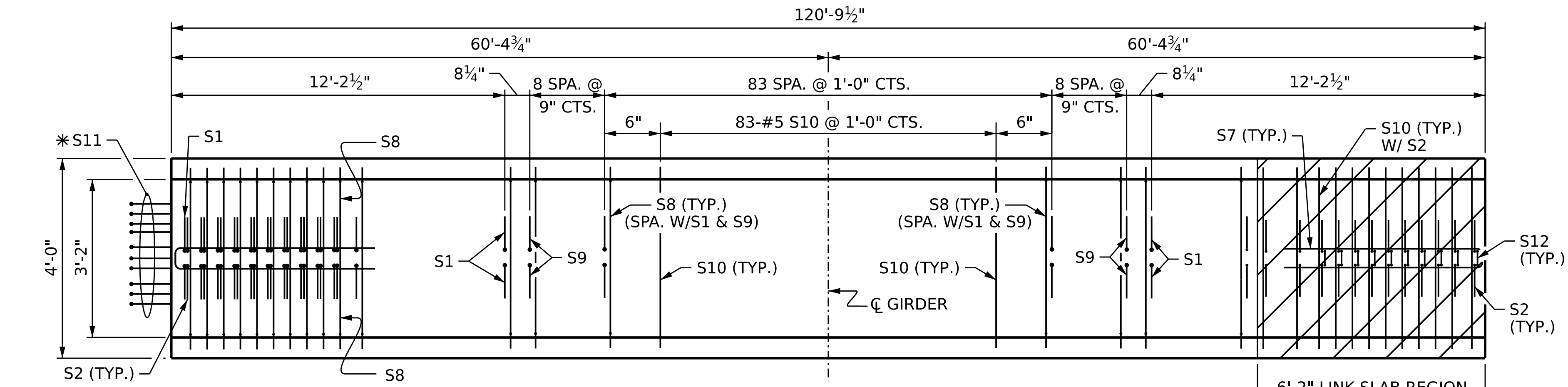
ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

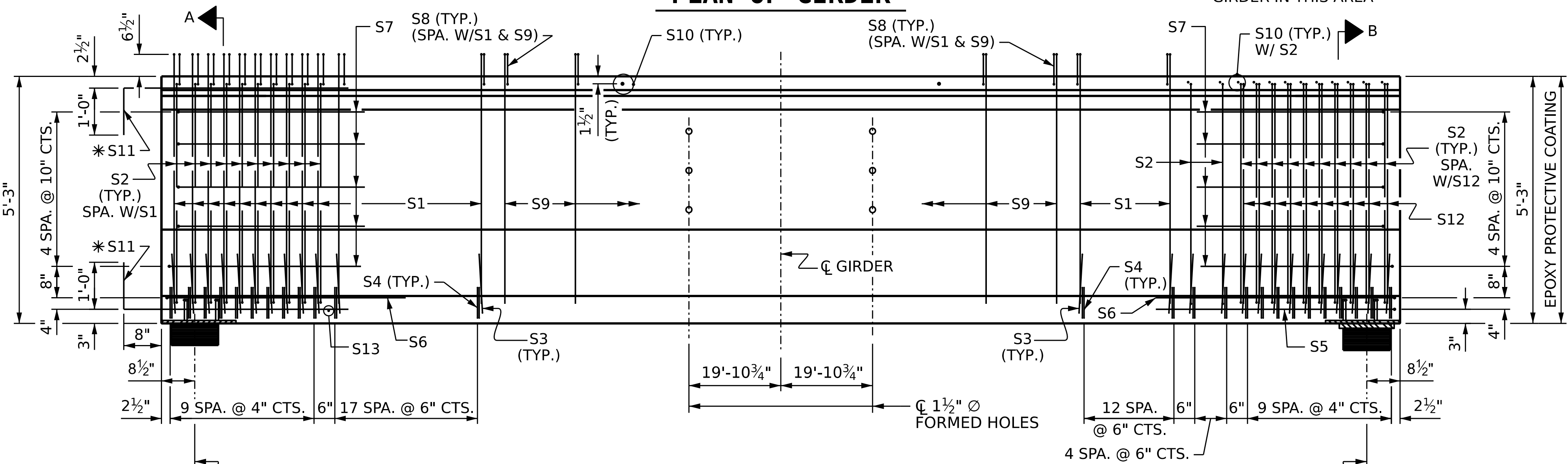
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
4,173	30.9	60

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
6	120.79	724.74



PLAN OF GIRDER



ELEVATION OF GIRDER

* NOTE: S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

SPAN C GIRDERS MIRRORED.

10/4/2024 10:37:29 AM blanning
 File name: N:\NC Br\Edges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401_047_B5766_SML.C1.840082.dgn

DRAWN BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024

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

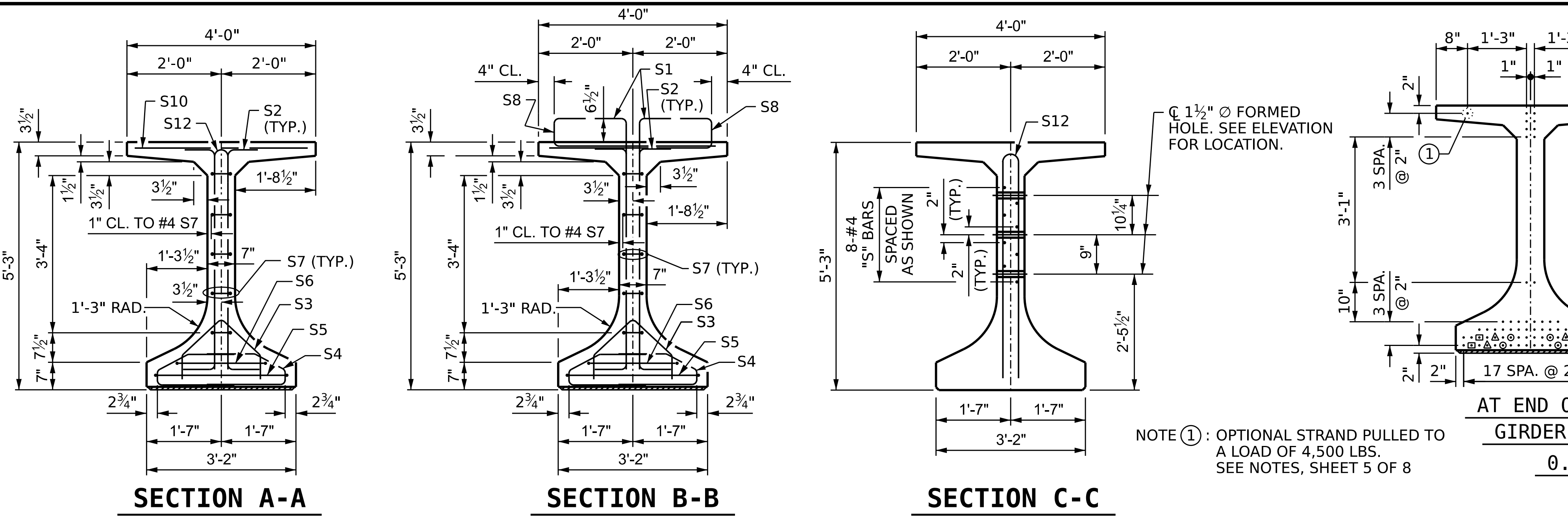
PROJECT NO. **B-5766**
 STOKES COUNTY
 STATION: **14+96.00 -L-**
 SHEET 1 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

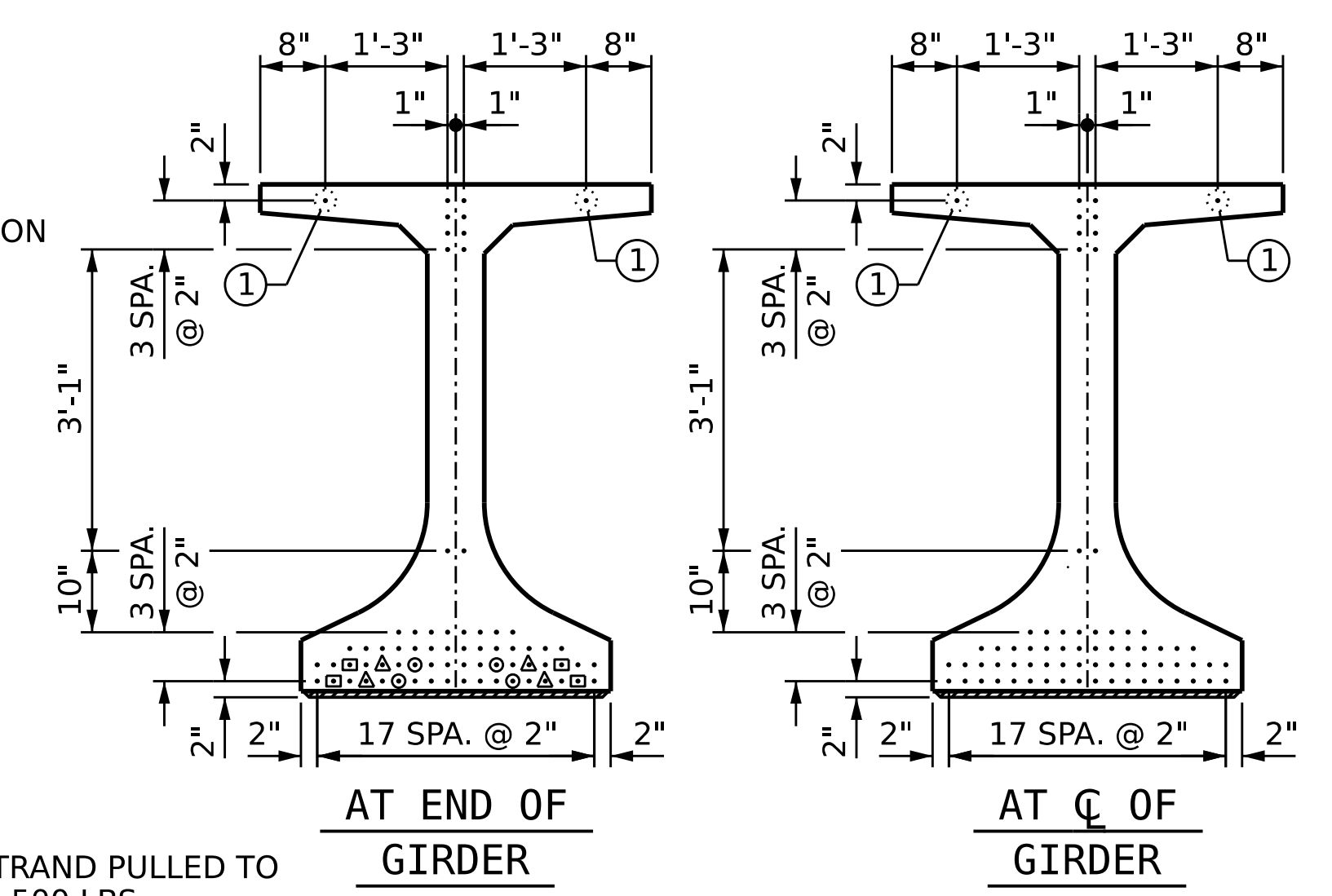
SUPERSTRUCTURE
63" FIB PRESTRESSED CONCRETE GIRDERS 3-5 SPANS A & C
STAGE I

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

SHEET NO. **S-24**
 TOTAL SHEETS **60**

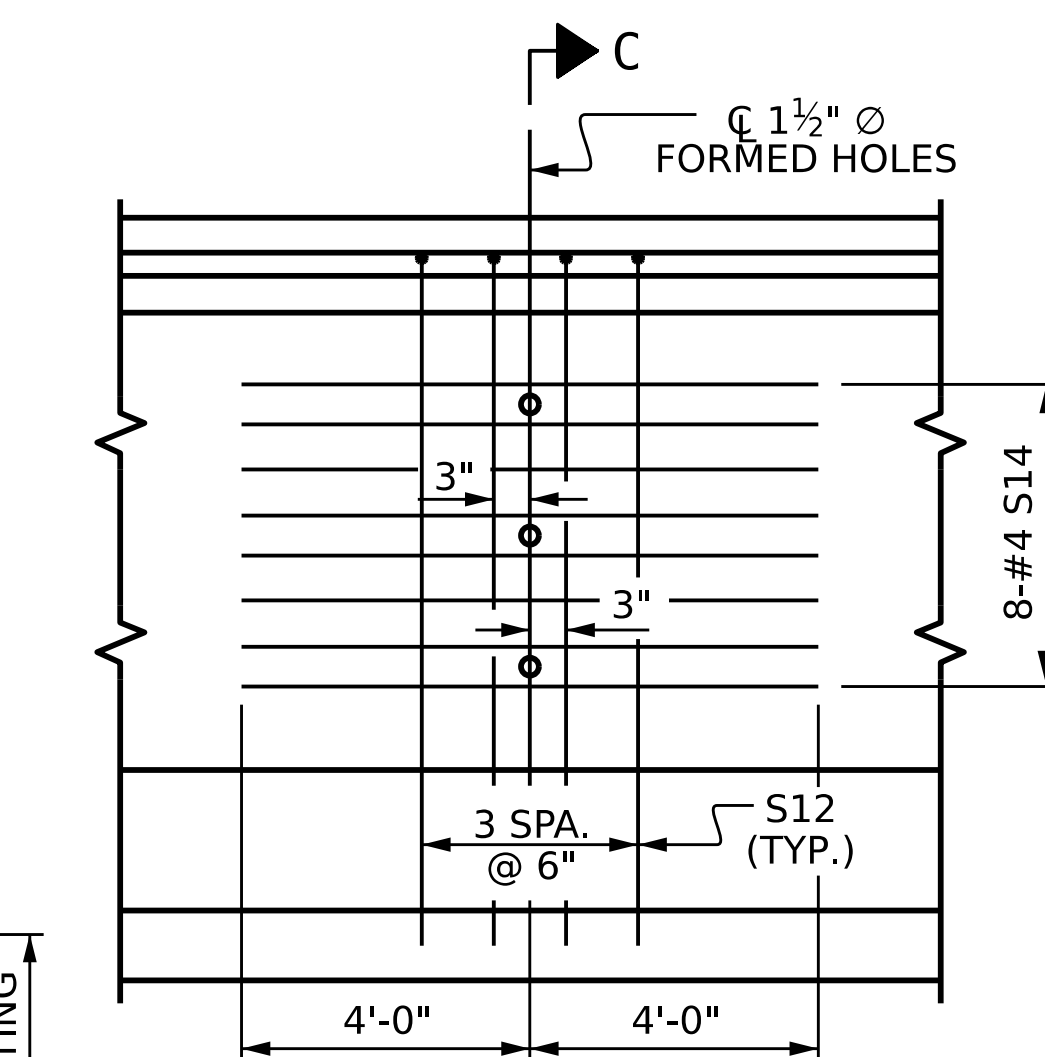


NOTE ①: OPTIONAL STRAND PULLED TO A LOAD OF 4,500 LBS. SEE NOTES, SHEET 5 OF 8



AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 26'-0" FROM END OF GIRDER
 - ◎ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

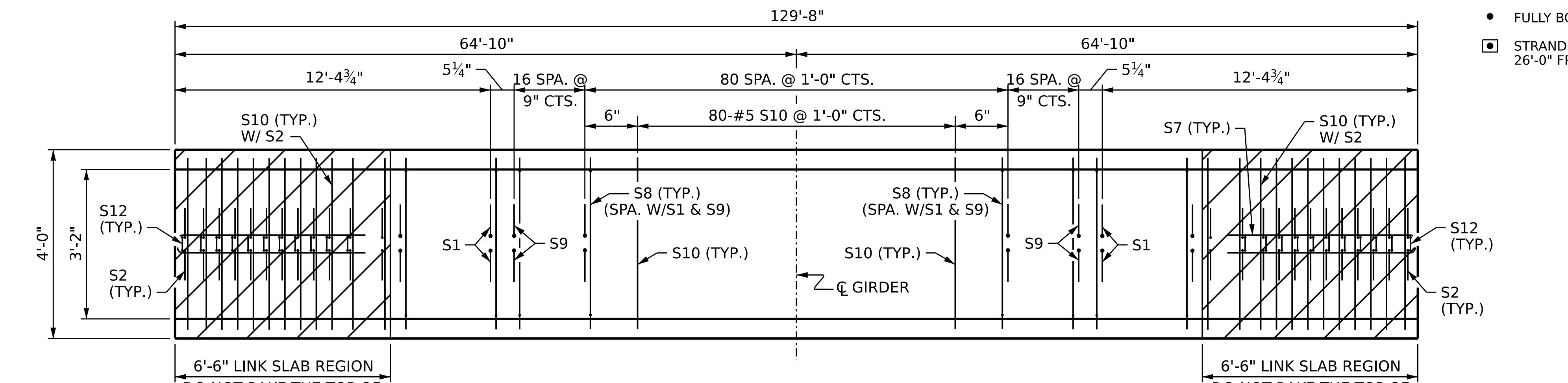
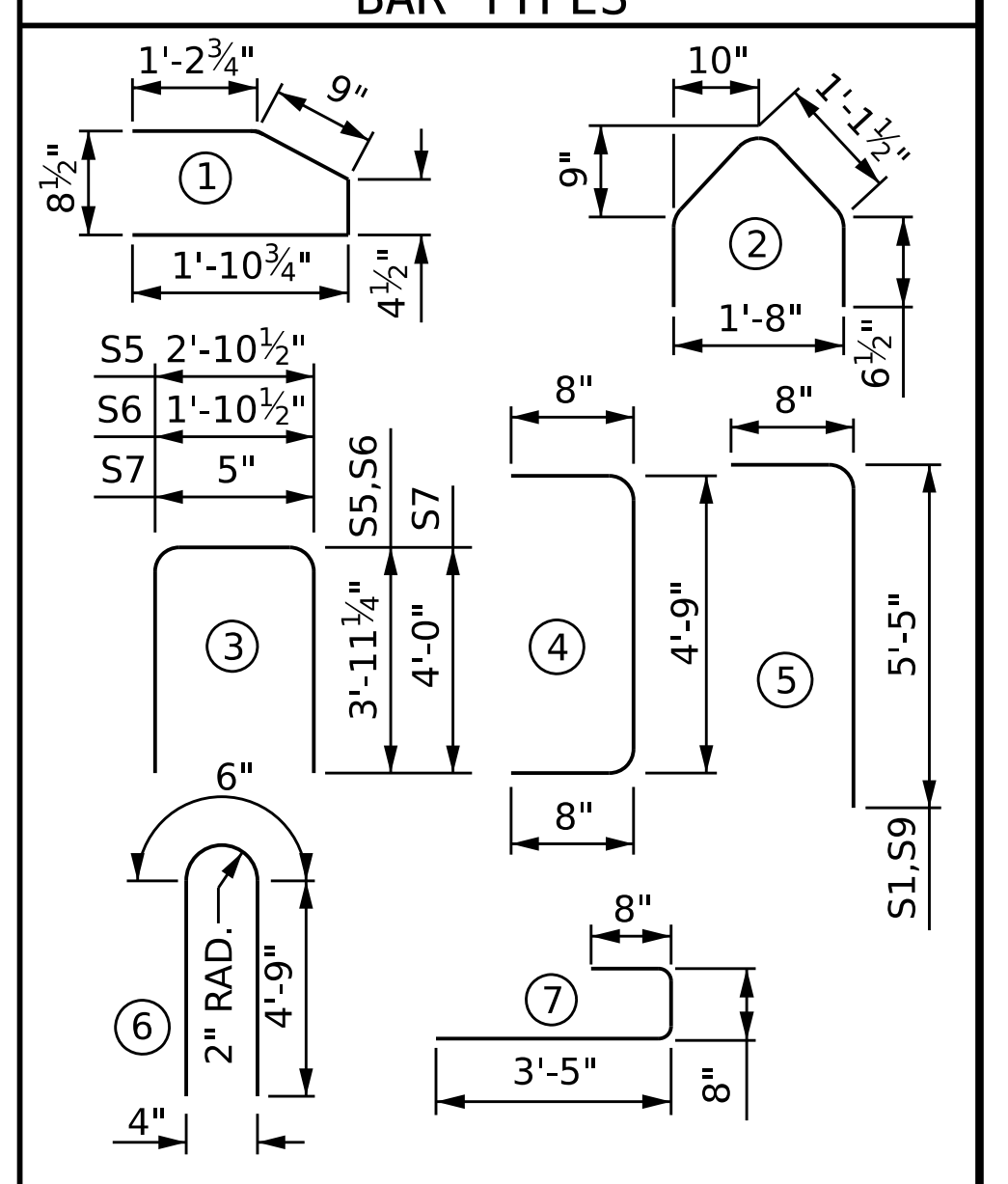


PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS

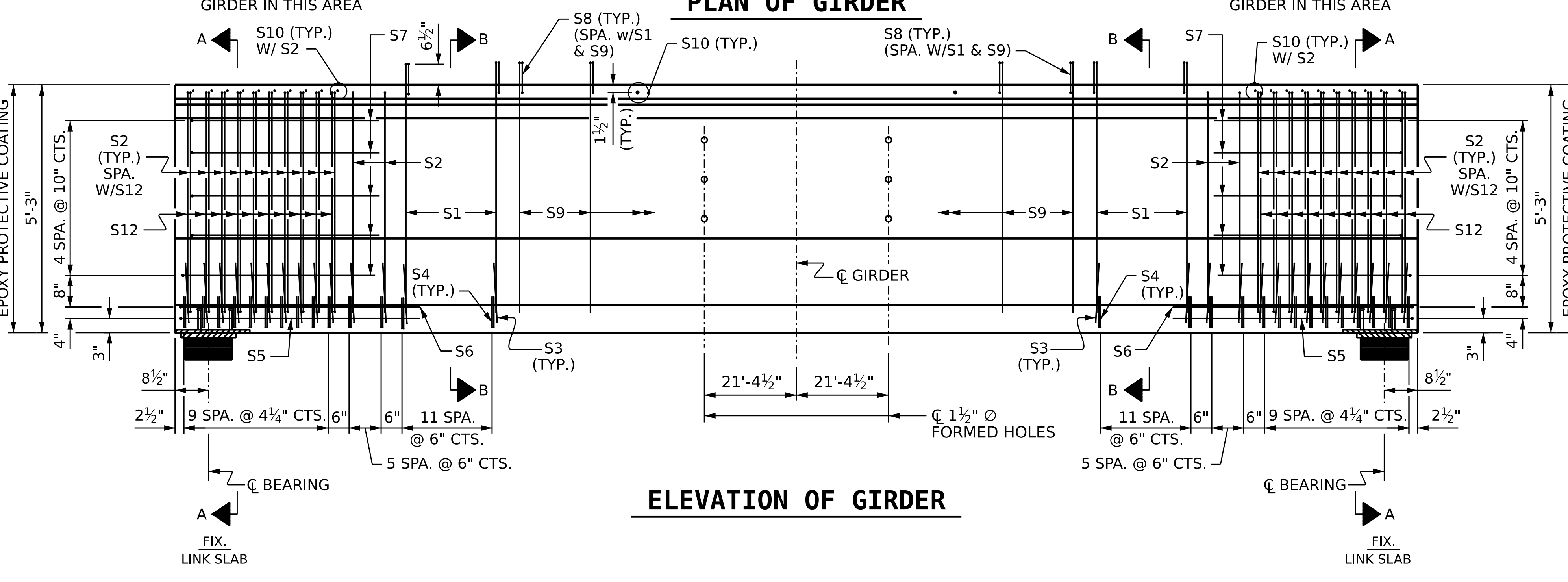
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#5	5	6'-1"	305
S2	64	#5	4	6'-1"	406
S3	56	#3	2	3'-4"	70
S4	112	#3	1	4'-3"	179
S5	2	#5	3	10'-9"	22
S6	2	#5	3	9'-9"	20
S7	10	#4	3	8'-5"	56
S8	274	#5	7	4'-9"	1,357
S9	226	#4	5	6'-1"	918
S10	112	#5	STR	3'-8"	428
S12	28	#5	6	10'-0"	292
S14	16	#4	STR	8'-0"	86

BAR TYPES					
[Diagram of bar 1: 1'-2 3/4" top width, 1'-10 3/4" bottom width, 8 1/2" height]					
[Diagram of bar 2: 10" top width, 1'-8" bottom width, 6 1/2" height]					
[Diagram of bar 3: 2'-10 1/2" length, 1'-10 1/2" width, 5" height]					
[Diagram of bar 4: 8" top width, 4'-9" length, 8" height]					
[Diagram of bar 5: 8" top width, 4'-9" length, 5'-5" height]					
[Diagram of bar 6: 2" radius, 4'-9" length, 4" height]					
[Diagram of bar 7: 8" top width, 3'-5" length, 8" height]					



PLAN OF GIRDER



ELEVATION OF GIRDER

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

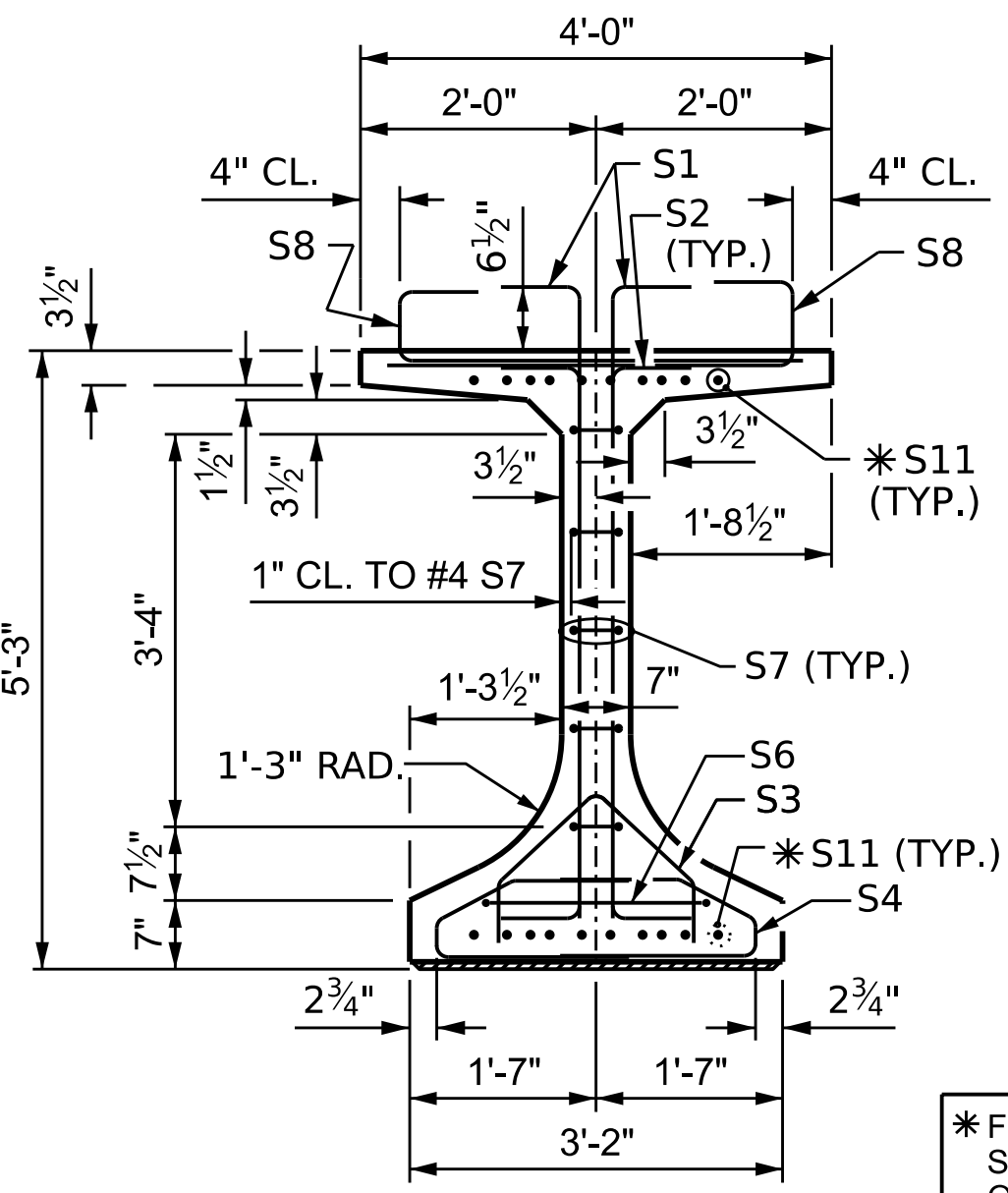
SUPERSTRUCTURE
63" FIB PRESTRESSED CONCRETE GIRDERS 3-5 SPAN B
STAGE I

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

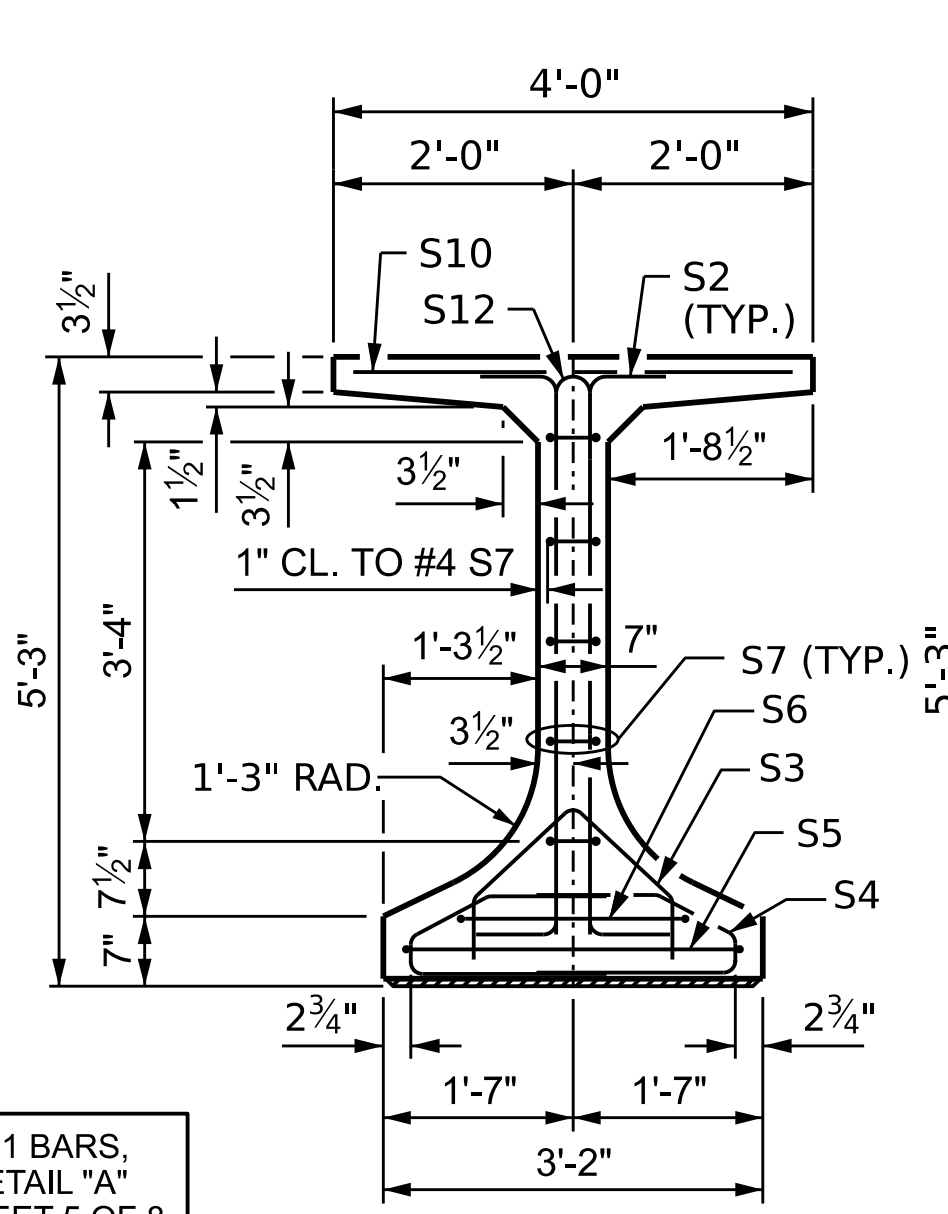
SHEET NO. S-25
TOTAL SHEETS 60

10/4/2024 10:37:31 AM blanning
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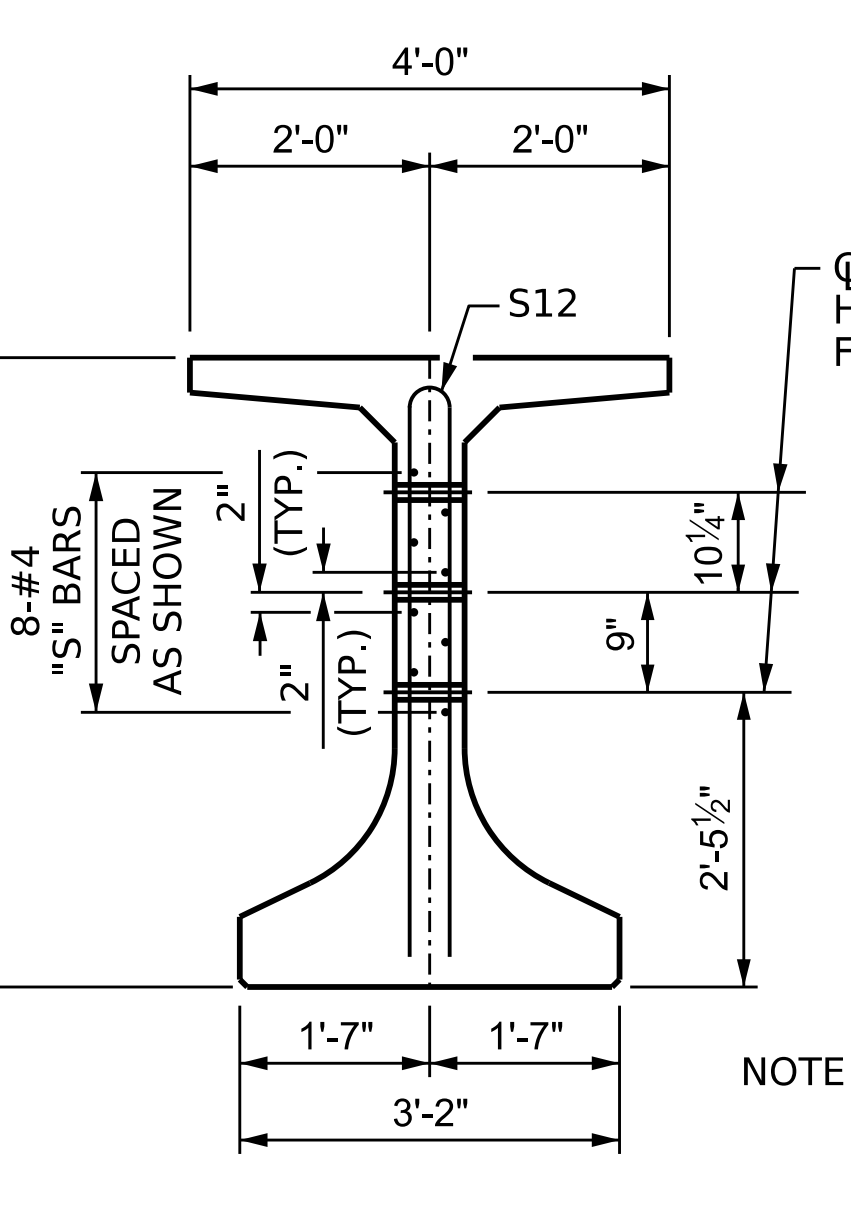
DRAWN BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024



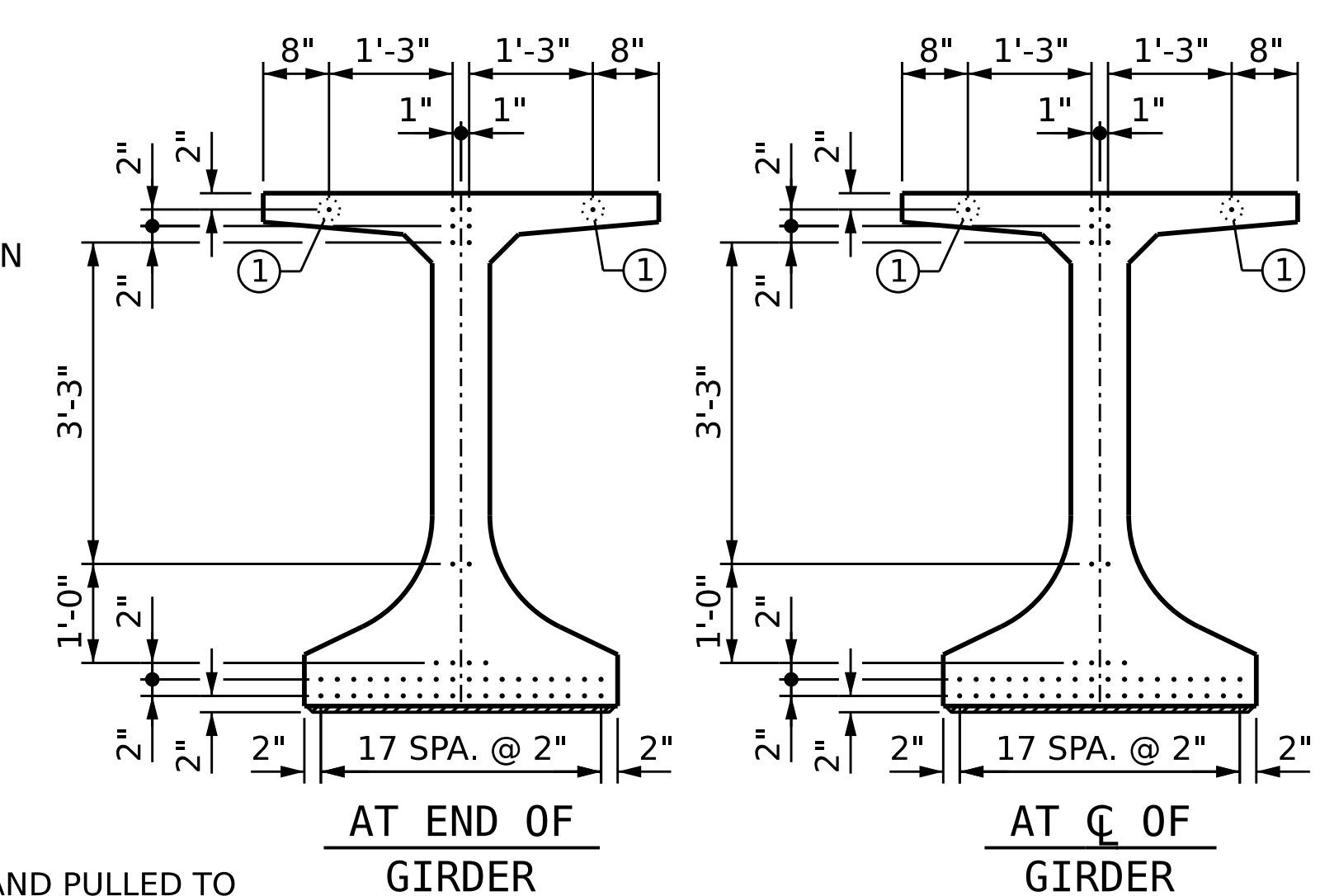
SECTION A-A



SECTION B-B

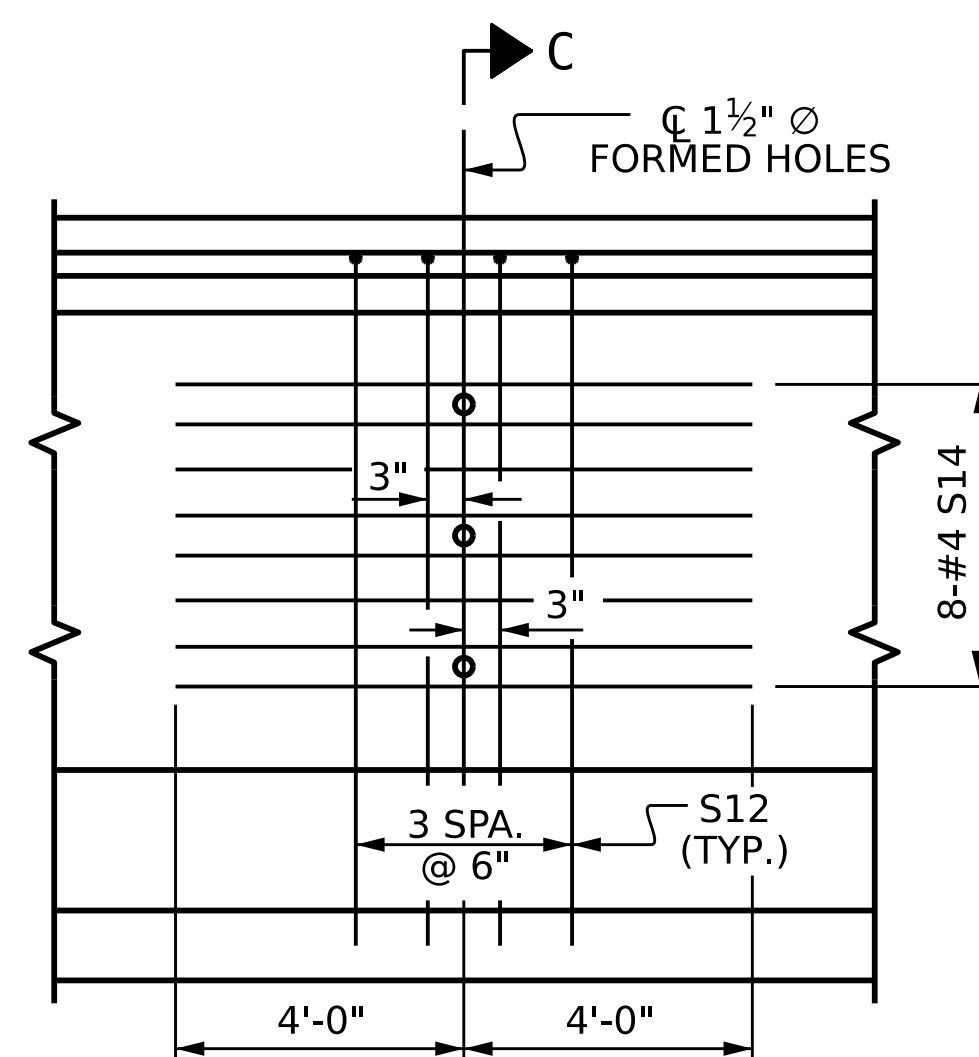


SECTION C-C

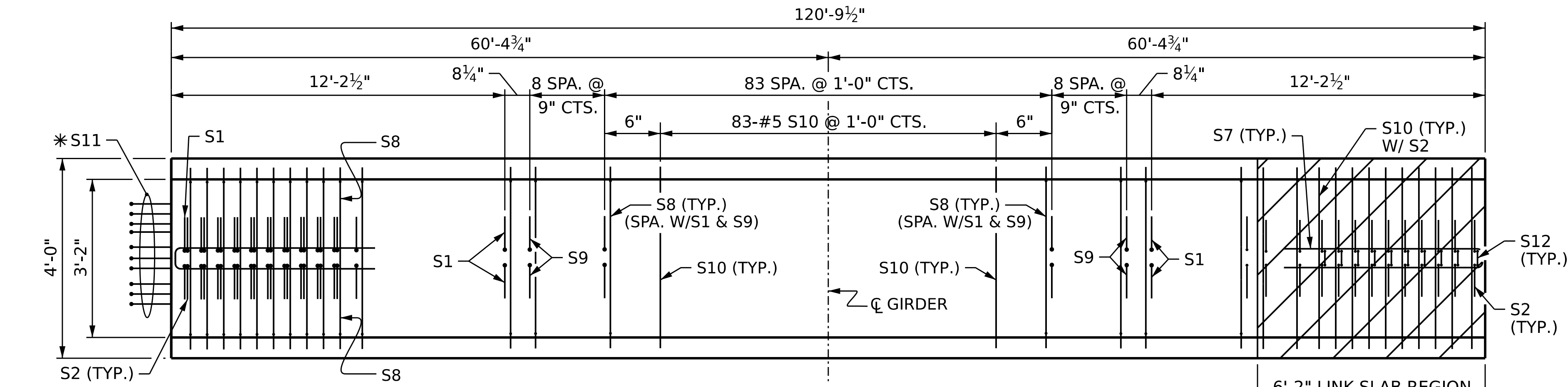


0.6" Ø LOW RELAXATION STRAND LAYOUT

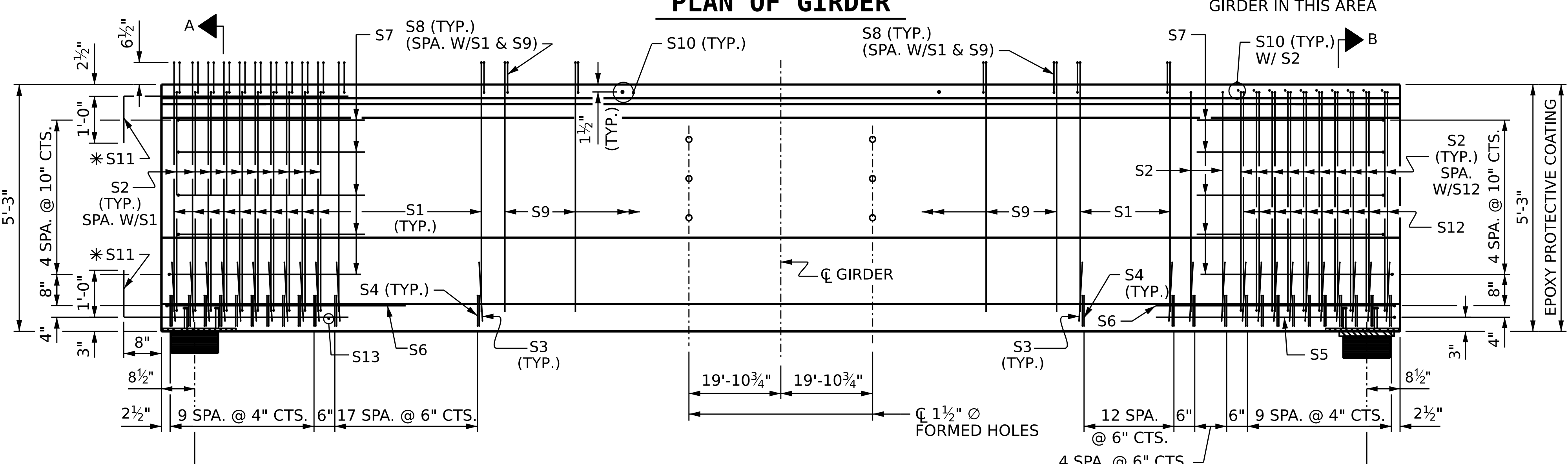
DEBONDING LEGEND
 • FULLY BONDED STRANDS



PARTIAL ELEVATION
 SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS



PLAN OF GIRDER



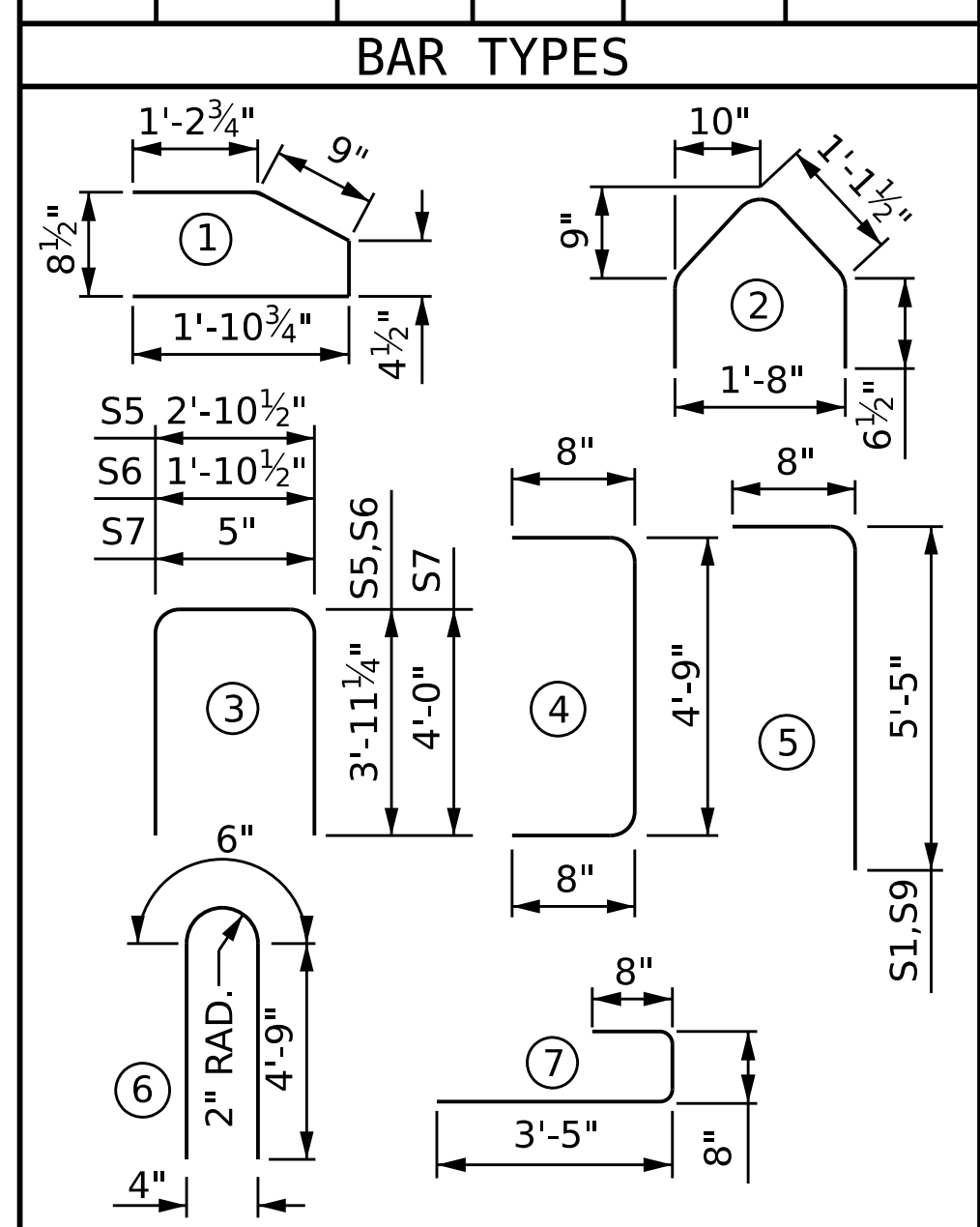
ELEVATION OF GIRDER

*** NOTE:**
 S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

SPAN C GIRDERS MIRRORED.

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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#5	5	6'-1"	520
S2	50	#5	4	6'-1"	317
S3	56	#3	2	3'-4"	70
S4	112	#3	1	4'-3"	179
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	10	#4	3	8'-5"	56
S8	282	#5	7	4'-9"	1,397
S9	200	#4	5	6'-1"	813
S10	98	#5	STR	8'-8"	375
*S11	20	#6	STR	4'-8"	140
S12	18	#5	6	10'-0"	188
S13	1	#3	STR	2'-10"	1
S14	16	#4	STR	8'-0"	86



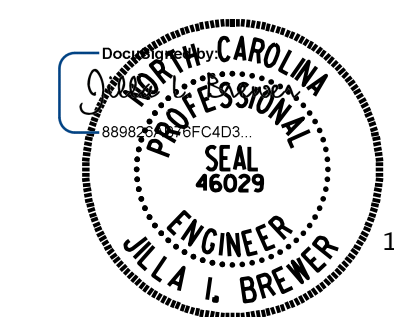
ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
4,173	30.9	48

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	120.79	483.17

PROJECT NO. **B-5766**
 STOKES COUNTY
 STATION: **14+96.00 -L-**
 SHEET 3 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
63" FIB PRESTRESSED CONCRETE GIRDERS 1-2 SPANS A & C
STAGE II



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

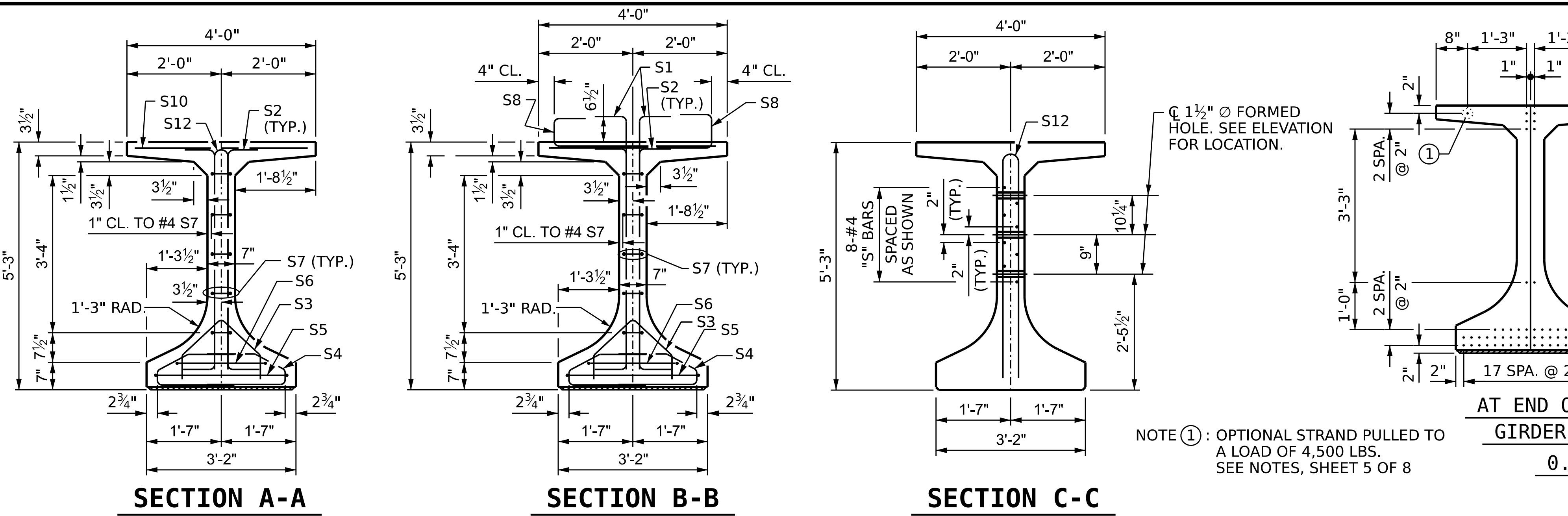
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

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

SHEET NO.
S-26
 TOTAL SHEETS
60

10/4/2024 10:37:34 AM blanning File: N:\NC Br\Edges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401_051.B5766_SMUL.C3.840082.dgn

DRAWN BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024



Ø 1 1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION.

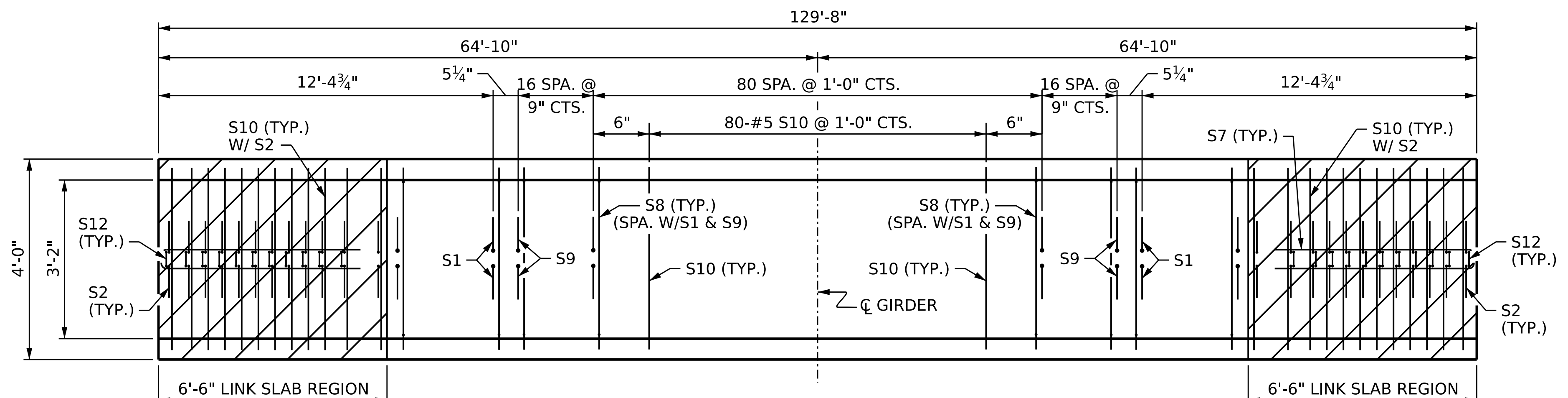
NOTE ①: OPTIONAL STRAND PULLED TO A LOAD OF 4,500 LBS. SEE NOTES, SHEET 5 OF 8

AT END OF GIRDER
AT Ø OF GIRDER

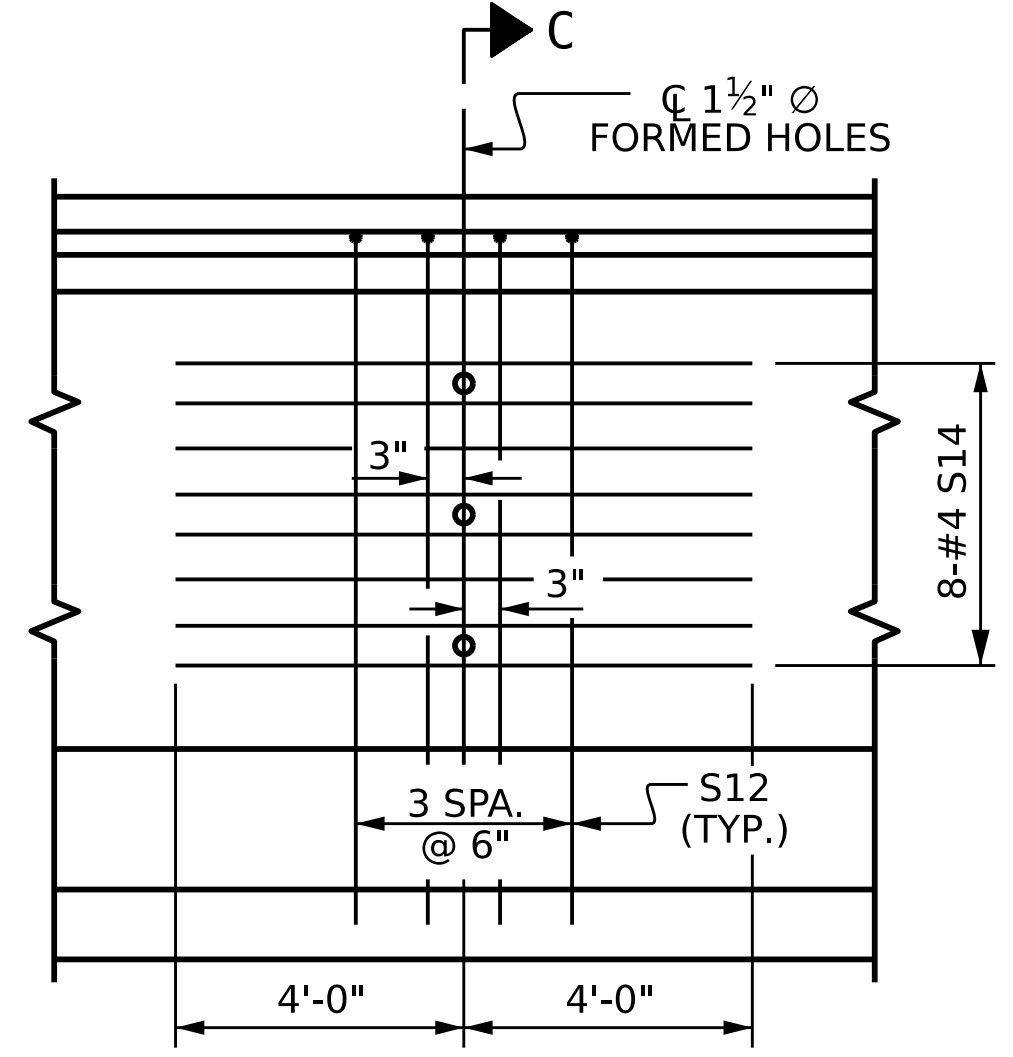
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS

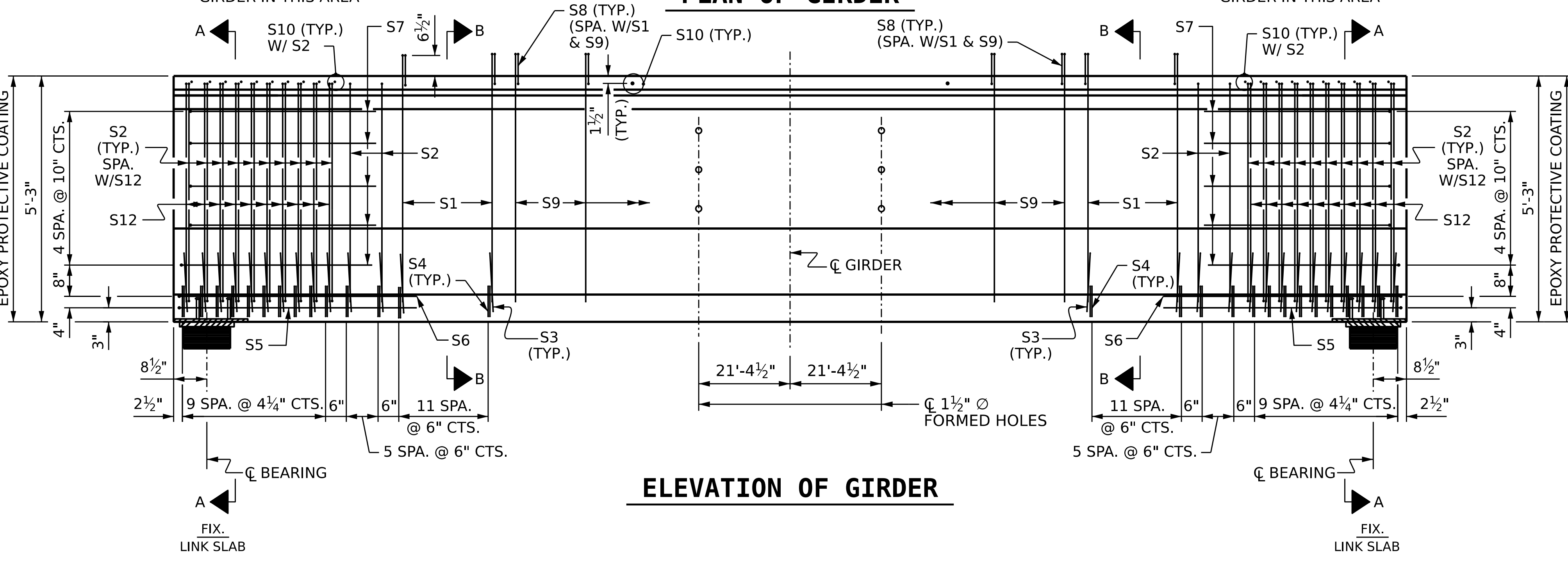


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS

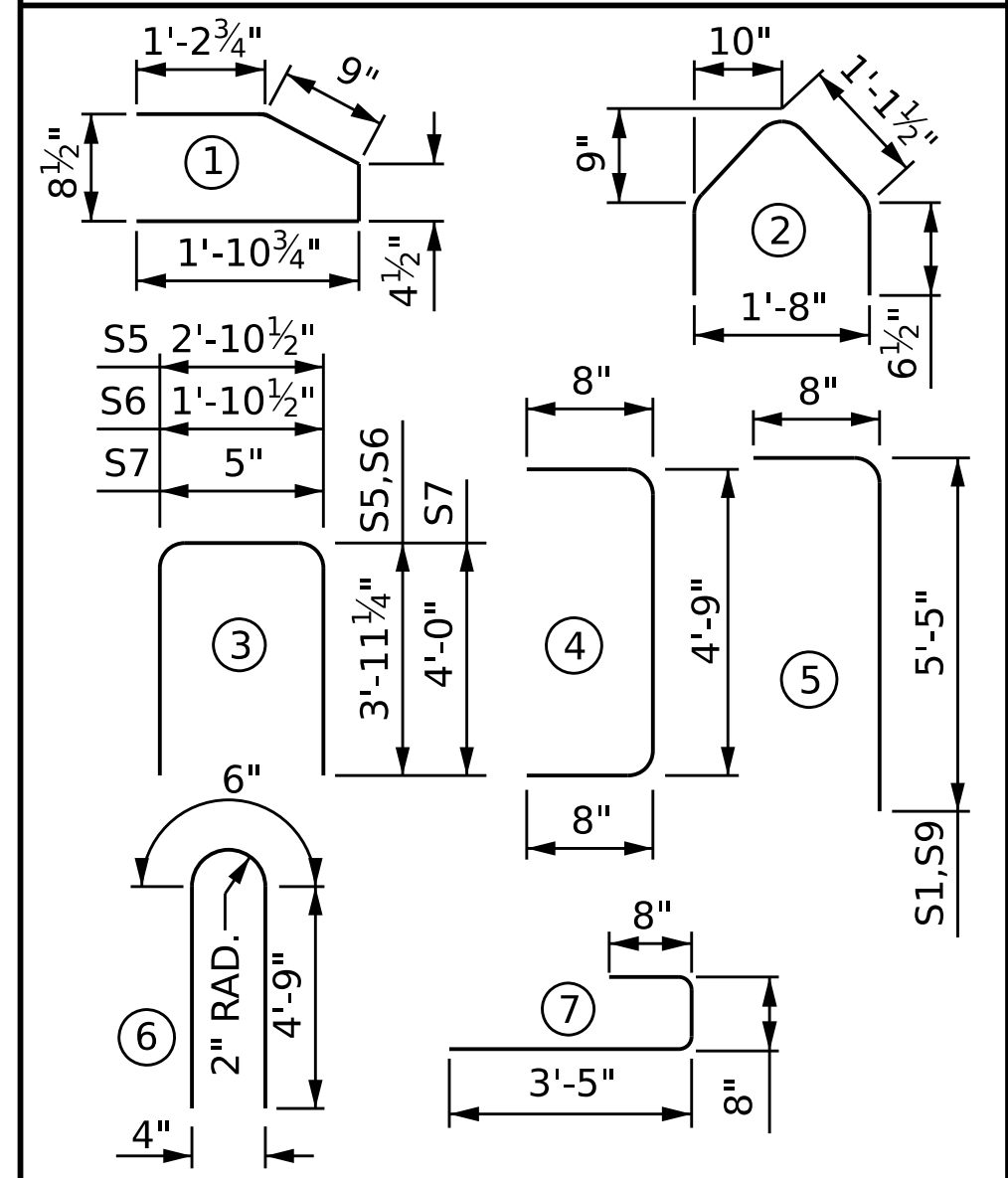


ELEVATION OF GIRDER

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 GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#5	5	6'-1"	305
S2	64	#5	4	6'-1"	406
S3	56	#3	2	3'-4"	70
S4	112	#3	1	4'-3"	179
S5	2	#5	3	10'-9"	22
S6	2	#5	3	9'-9"	20
S7	10	#4	3	8'-5"	56
S8	274	#5	7	4'-9"	1,357
S9	226	#4	5	6'-1"	918
S10	112	#5	STR	3'-8"	428
S12	28	#5	6	10'-0"	292
S14	16	#4	STR	8'-0"	86

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
4,139	33.2	54

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	129.67	259.33

PROJECT NO. B-5766

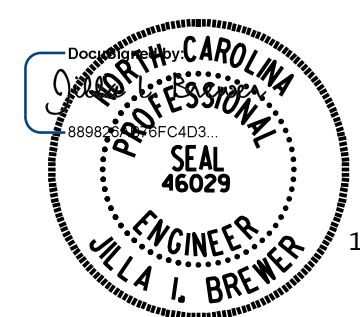
STOKES COUNTY

STATION: 14+96.00 -L-

SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
63" FIB PRESTRESSED CONCRETE GIRDERS 1-2
SPAN B
STAGE II



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

SHEET NO.	
S-27	TOTAL SHEETS 60

DRAWN BY: B.E. LANNING	DATE: 06/2024
CHECKED BY: J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024

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NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

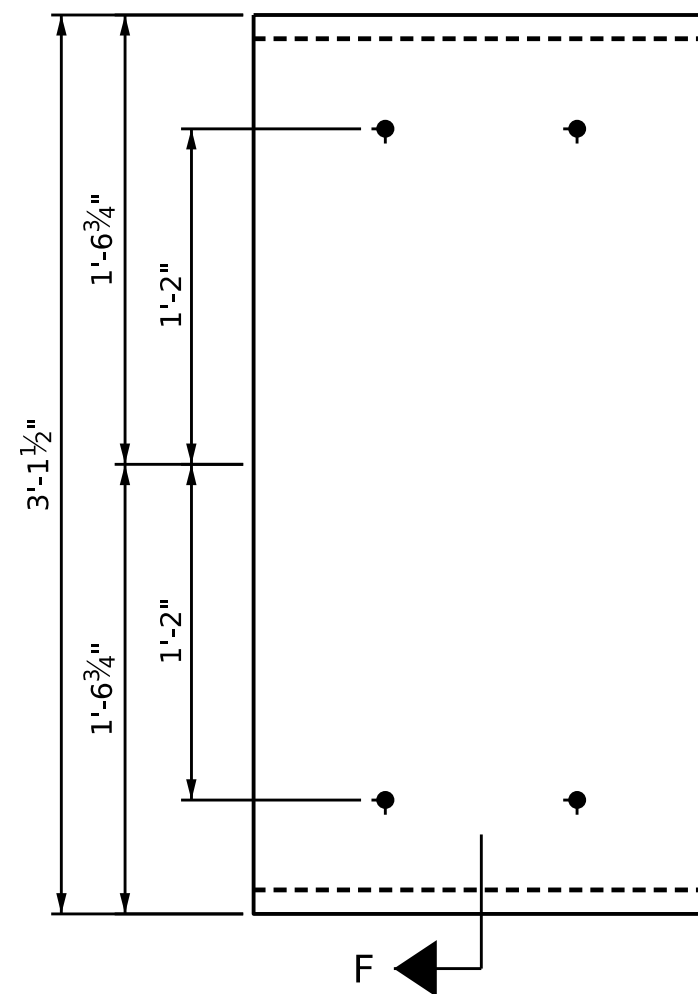
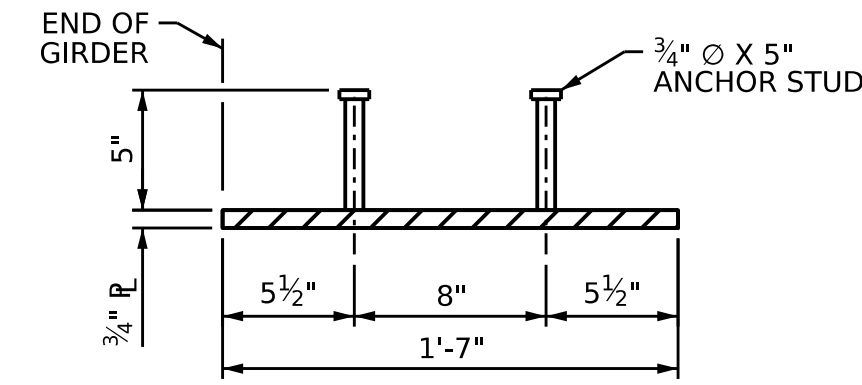
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI FOR SPANS A & C, 7500 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.

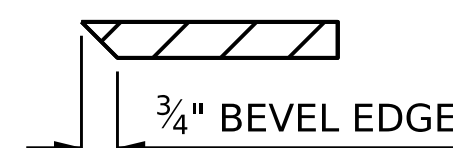
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE LINK SLAB ENDS AS INDICATED, SHALL BE RAKED TO A DEPTH OF 1/4".

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.



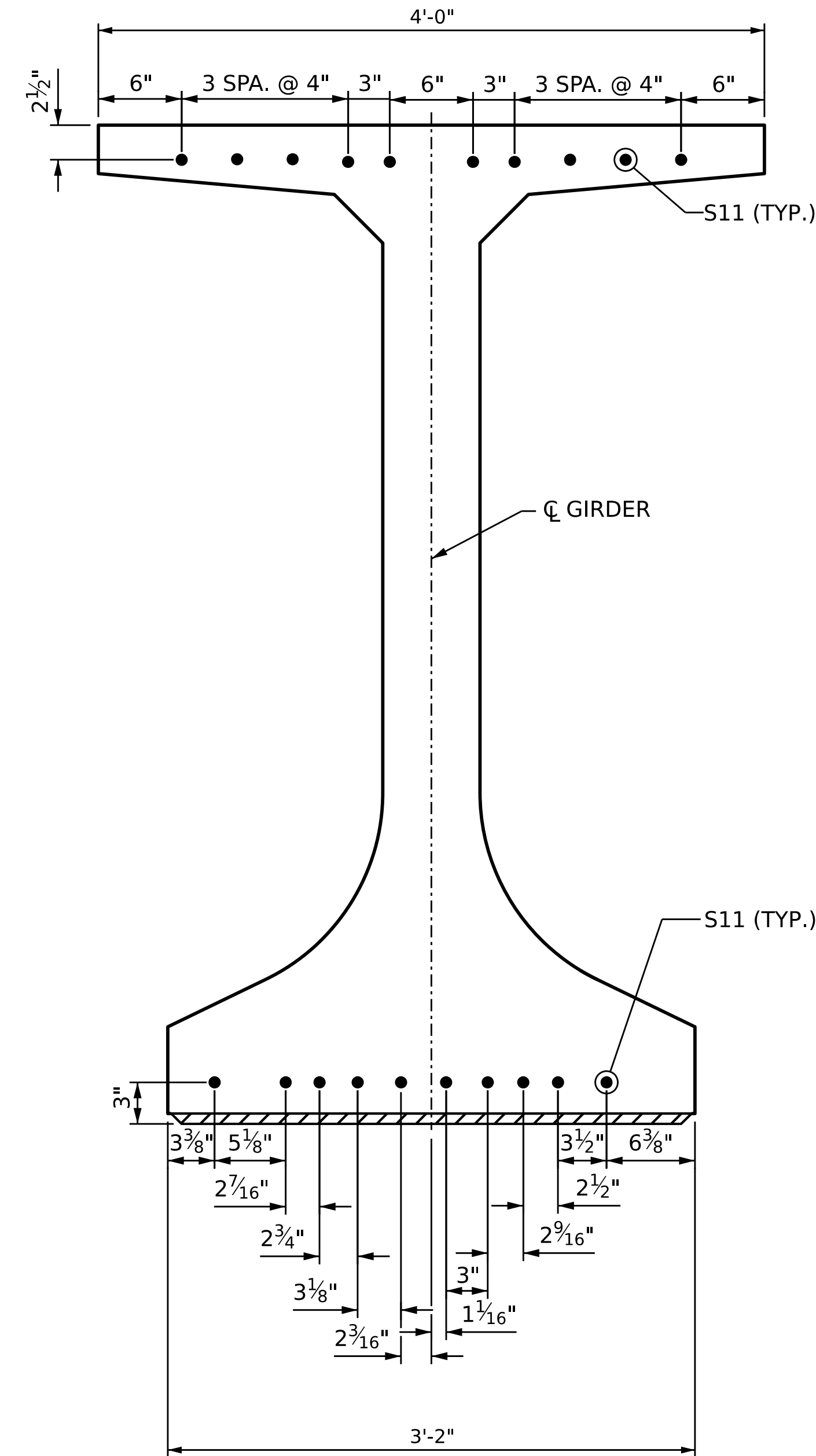
**EMBEDDED PLATE "B-1" DETAILS
FOR FIB GIRDER**

(2 REQ'D. PER GIRDER)



SECTION "F"

(SEE NOTES)

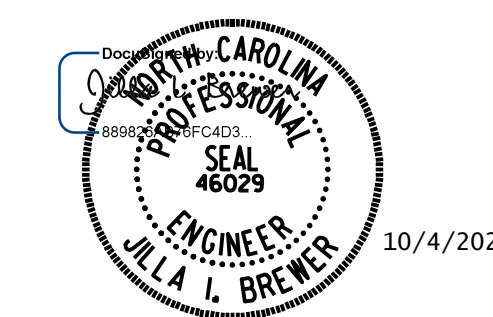


DETAIL "A"

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 5 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**FLORIDA I BEAM
 INTEGRAL DETAILS**



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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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>06/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPANS A AND C

0.60" Ø LOW RELAXATION STRANDS		GIRDER 1																																							
40TH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.026	0.050	0.071	0.091	0.109	0.124	0.139	0.151	0.162	0.172	0.181	0.189	0.195	0.201	0.205	0.209	0.212	0.214	0.215	0.215	0.215	0.214	0.212	0.209	0.205	0.201	0.195	0.189	0.181	0.172	0.162	0.151	0.139	0.124	0.109	0.091	0.071	0.050	0.026	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.012	0.025	0.037	0.049	0.061	0.073	0.084	0.095	0.105	0.114	0.123	0.131	0.138	0.144	0.149	0.154	0.157	0.160	0.161	0.162	0.161	0.160	0.157	0.154	0.149	0.144	0.138	0.131	0.123	0.114	0.105	0.095	0.084	0.073	0.061	0.049	0.037	0.025	0.012	0
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	5/8"	9/16"	1/2"	7/16"	5/16"	3/16"	0		

0.60" Ø LOW RELAXATION STRANDS		GIRDER 2																																							
40TH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.026	0.050	0.071	0.091	0.109	0.124	0.139	0.151	0.162	0.172	0.181	0.189	0.195	0.201	0.205	0.209	0.212	0.214	0.215	0.215	0.215	0.214	0.212	0.209	0.205	0.201	0.195	0.189	0.181	0.172	0.162	0.151	0.139	0.124	0.109	0.091	0.071	0.050	0.026	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.013	0.027	0.040	0.053	0.066	0.079	0.091	0.103	0.113	0.124	0.133	0.142	0.149	0.156	0.162	0.167	0.170	0.173	0.175	0.175	0.173	0.170	0.167	0.162	0.156	0.149	0.142	0.133	0.124	0.113	0.103	0.091	0.079	0.066	0.053	0.040	0.027	0.013	0	
FINAL CAMBER ↑	0	1/8"	1/4"	3/8"	7/16"	1/2"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	1/2"	7/16"	3/8"	1/4"	1/8"	0	

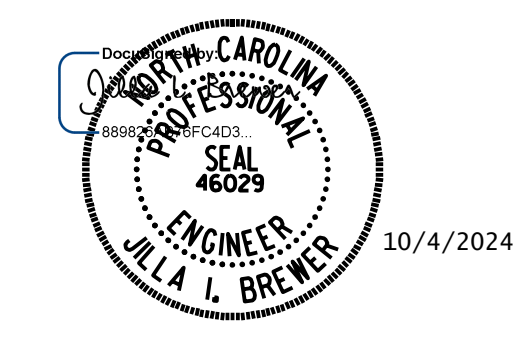
SPAN B

0.60" Ø LOW RELAXATION STRANDS		GIRDER 1																																							
40TH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.032	0.062	0.089	0.113	0.135	0.155	0.172	0.188	0.202	0.214	0.225	0.235	0.243	0.250	0.255	0.260	0.263	0.266	0.267	0.268	0.267	0.266	0.263	0.260	0.255	0.250	0.243	0.235	0.225	0.214	0.202	0.188	0.172	0.155	0.135	0.113	0.089	0.062	0.033	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.031	0.047	0.062	0.078	0.092	0.106	0.120	0.133	0.145	0.155	0.166	0.174	0.182	0.189	0.195	0.199	0.202	0.204	0.205	0.204	0.202	0.199	0.195	0.189	0.182	0.174	0.166	0.155	0.145	0.133	0.120	0.106	0.092	0.078	0.062	0.047	0.031	0.016	0
FINAL CAMBER ↑	0	3/16"	3/8"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	3/8"	3/16"	0	

0.60" Ø LOW RELAXATION STRANDS		GIRDER 2																																								
40TH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000	
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.032	0.062	0.089	0.113	0.135	0.155	0.172	0.188	0.202	0.214	0.225	0.235	0.243	0.250	0.255	0.260	0.263	0.266	0.267	0.268	0.267	0.266	0.263	0.260	0.255	0.250	0.243	0.235	0.225	0.214	0.202	0.188	0.172	0.155	0.135	0.113	0.089	0.062	0.033	0	
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.017	0.034	0.051	0.067	0.084	0.100	0.115	0.130	0.143	0.156	0.168	0.179	0.189	0.197	0.205	0.211	0.215	0.219	0.221	0.221	0.221	0.219	0.215	0.211	0.205	0.197	0.189	0.179	0.168	0.156	0.143	0.130	0.115	0.100	0.084	0.067	0.051	0.034	0.017	0	
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	9/16"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	5/8"	5/8"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	9/16"	5/8"	5/8"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	9/16"	7/16"	5/16"	3/16"	0

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

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 6 OF 8



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**DEAD LOAD DEFLECTION
 AND CAMBER TABLES**

**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:	S-29
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

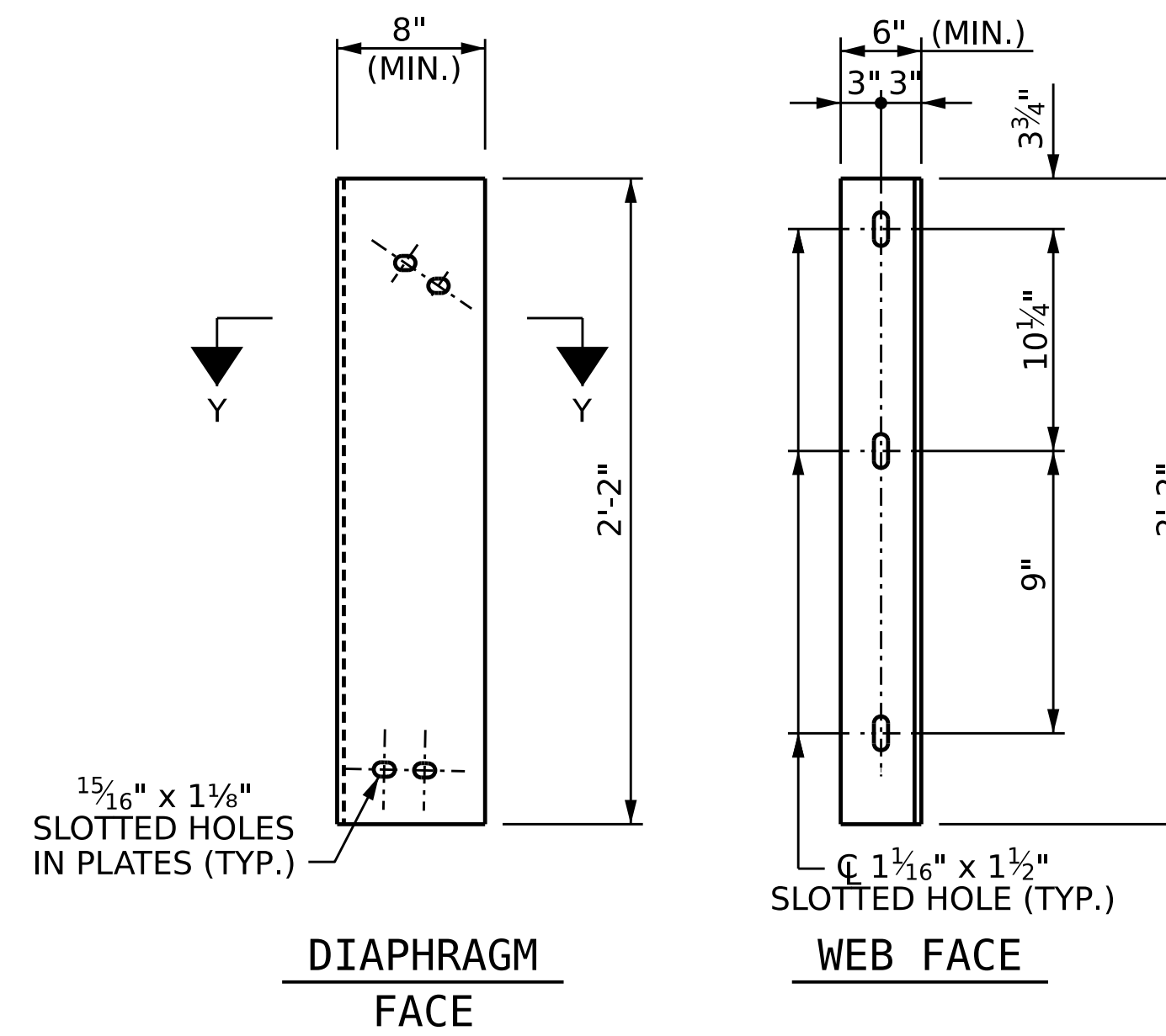
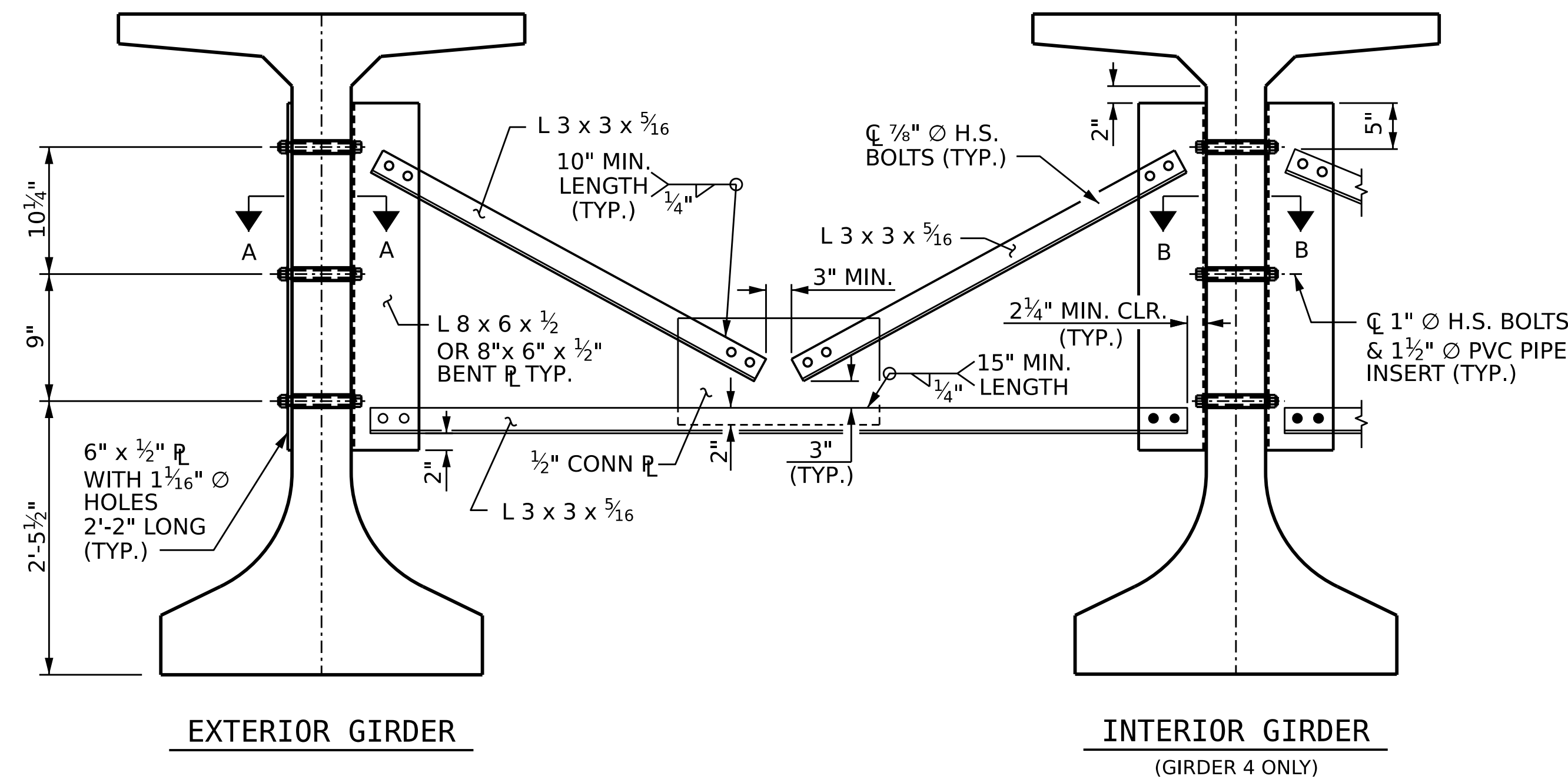
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

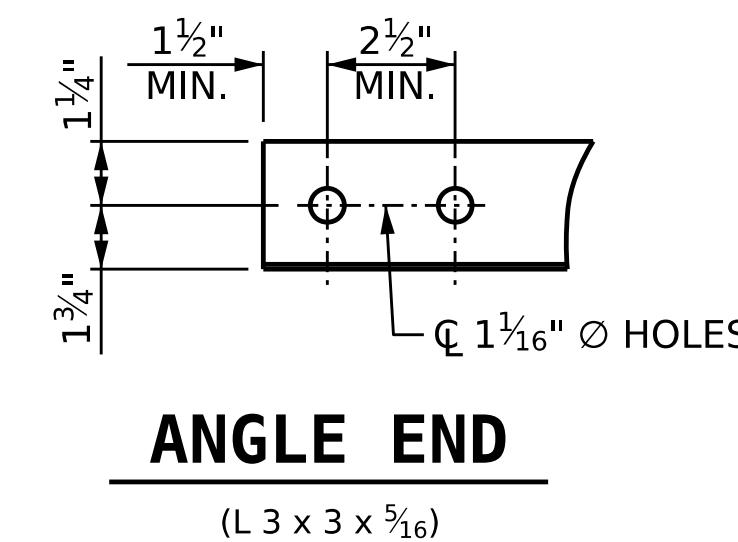
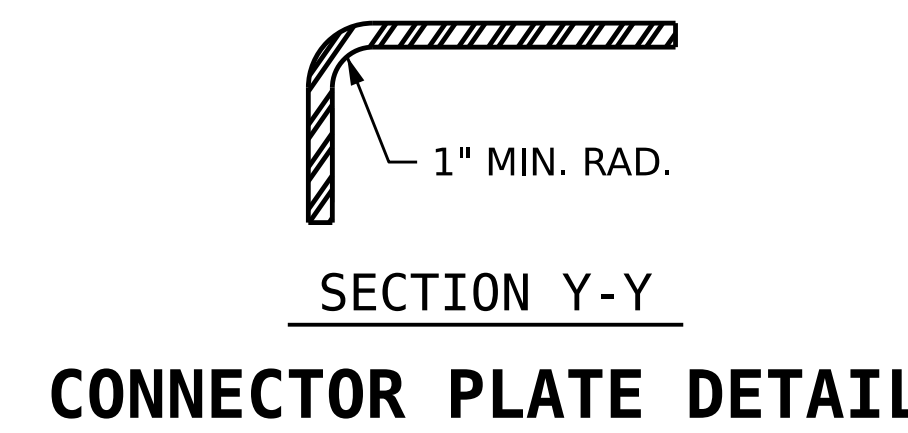
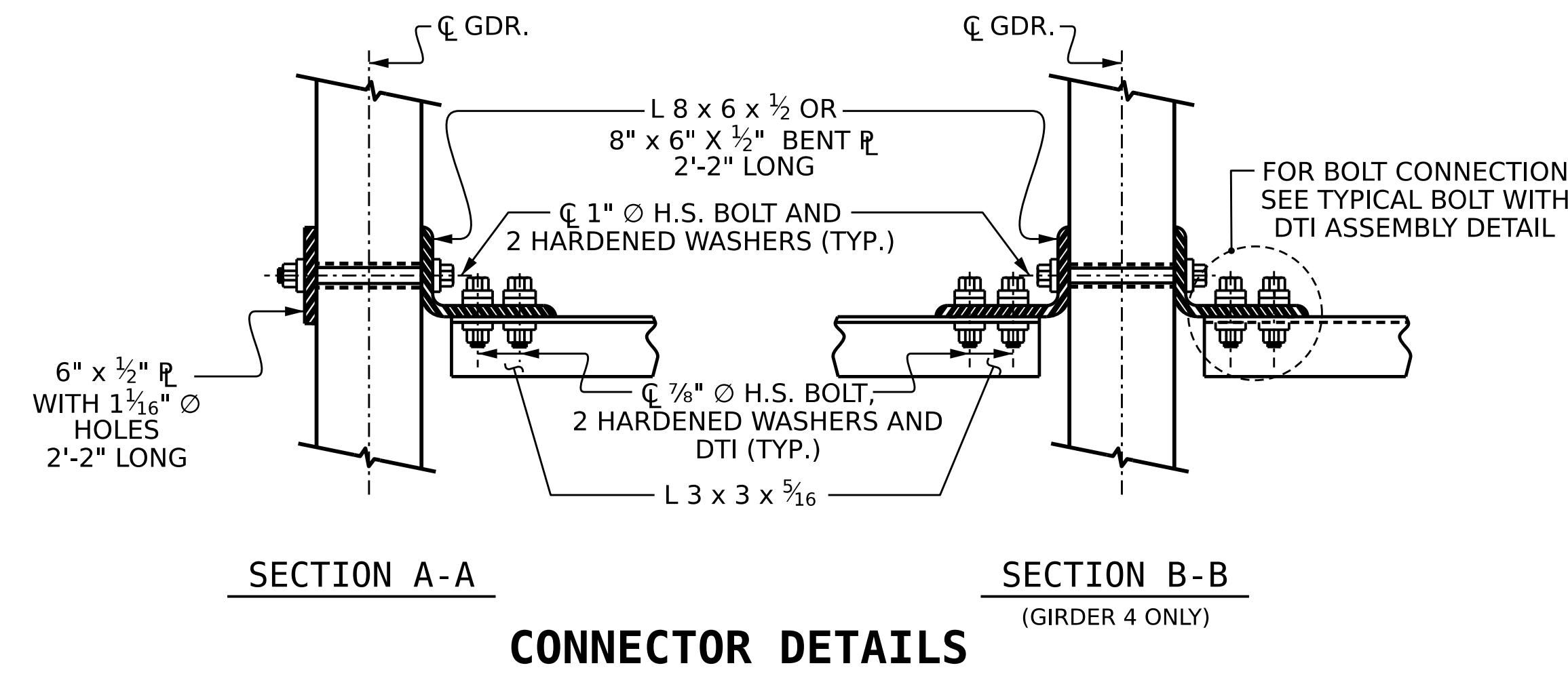
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

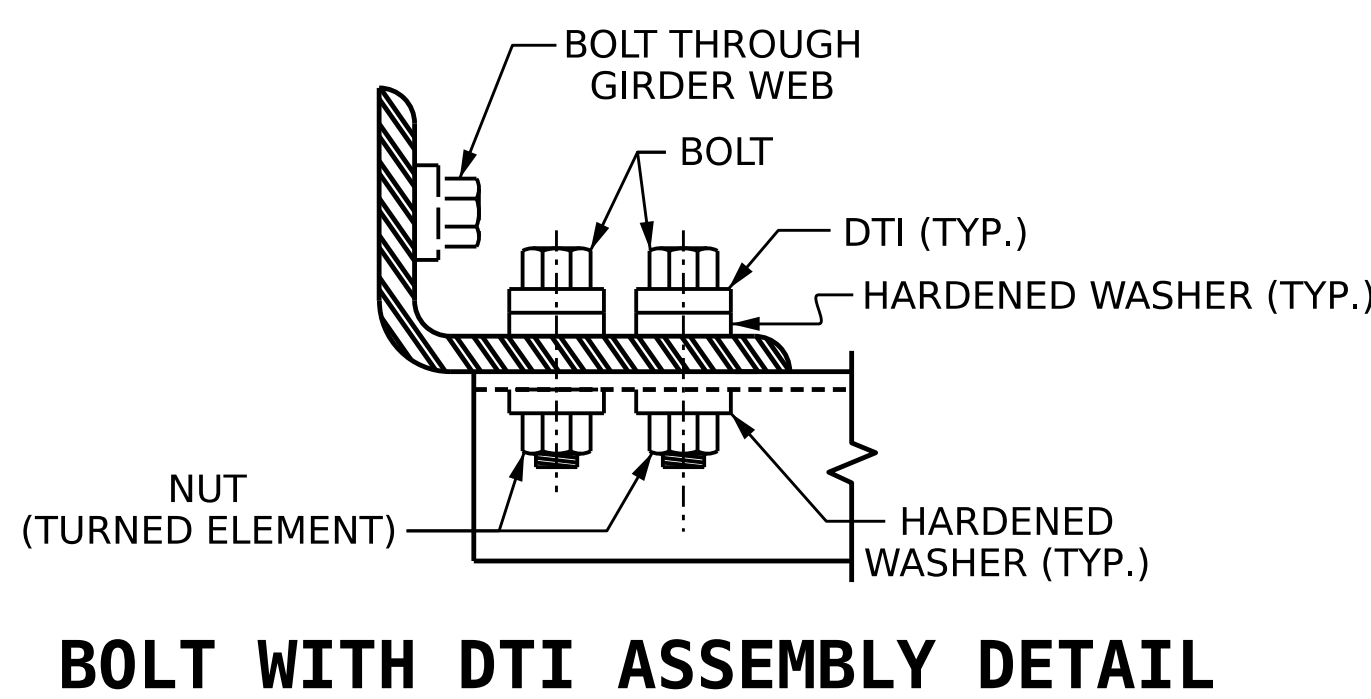


PART SECTION AT INTERMEDIATE DIAPHRAGM



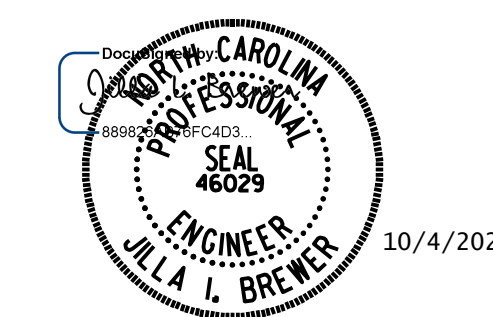
TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" FIB	2'-5 1/2"	9"	10 1/4"	2'-2"



PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 8 OF 8



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 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
INTERMEDIATE STEEL DIAPHRAGMS FOR 63" FIB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: B.E. LANNING DATE: 06/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
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NOTES

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 BURRED 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 SURFACES 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.

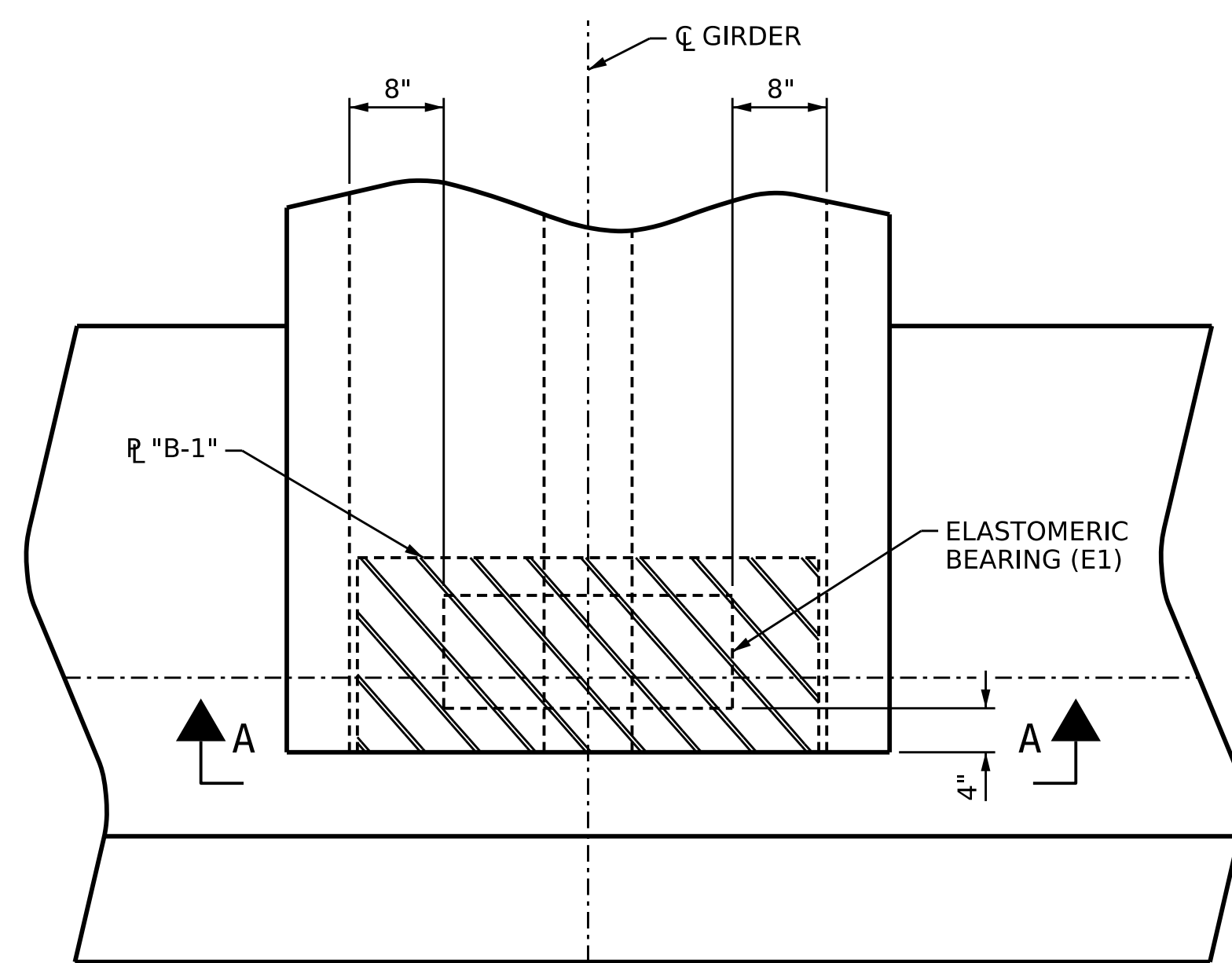
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

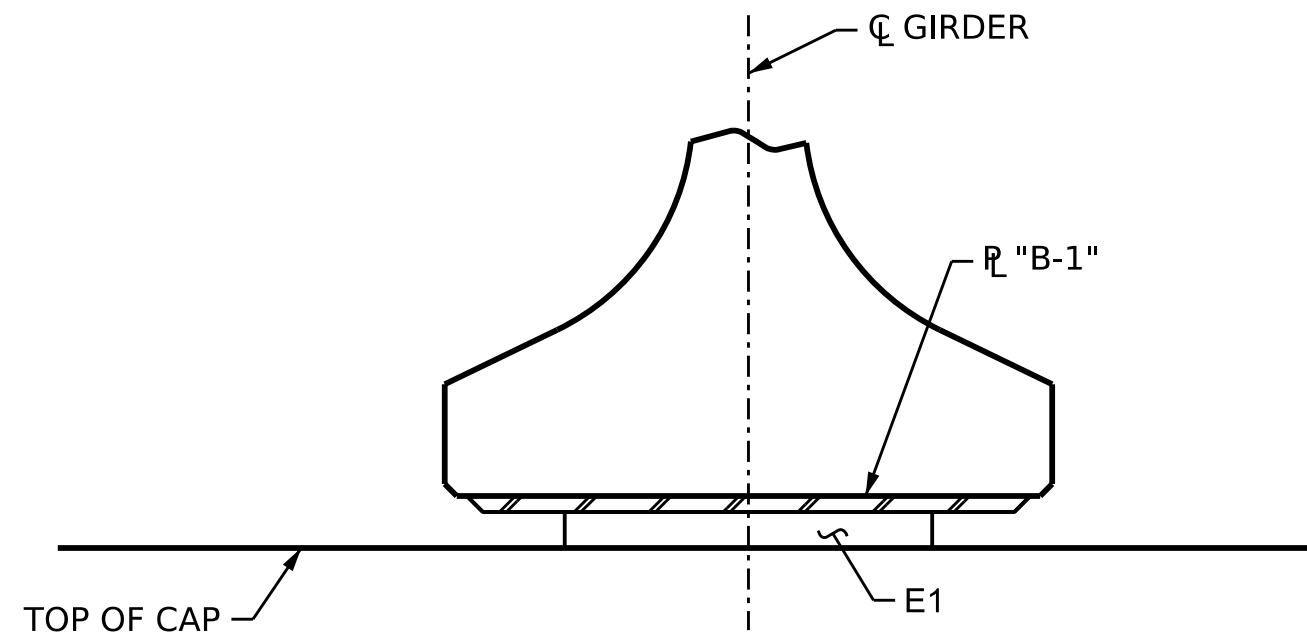
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

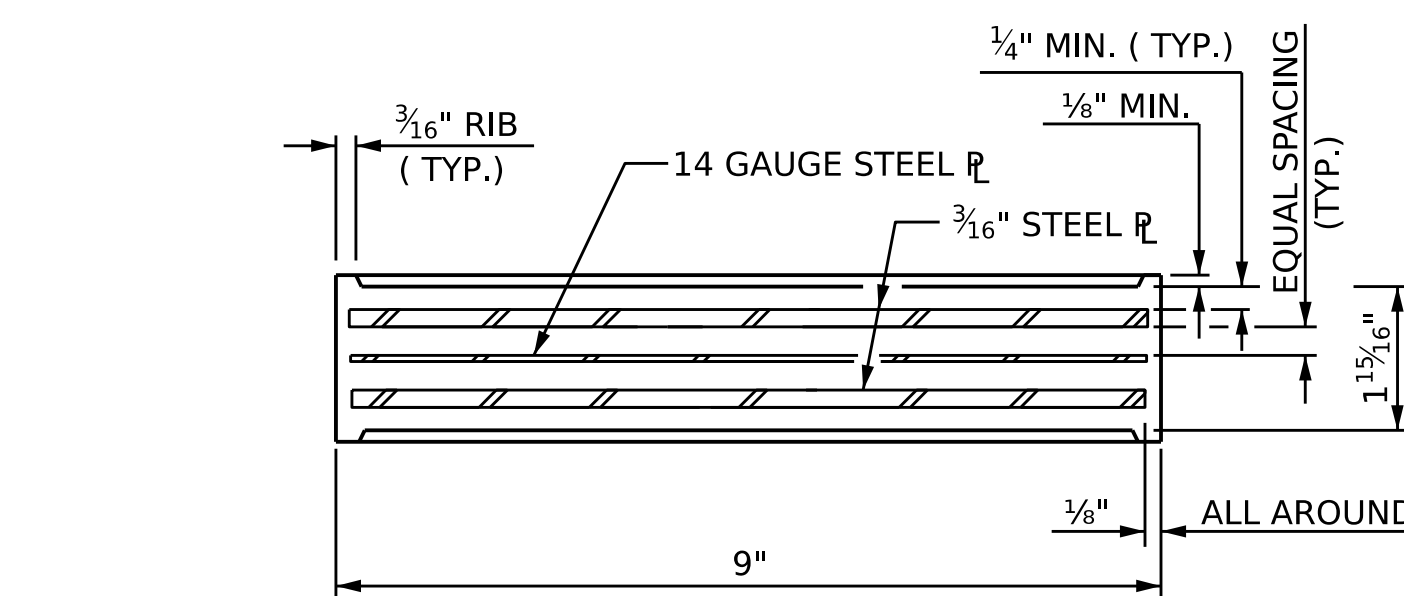
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



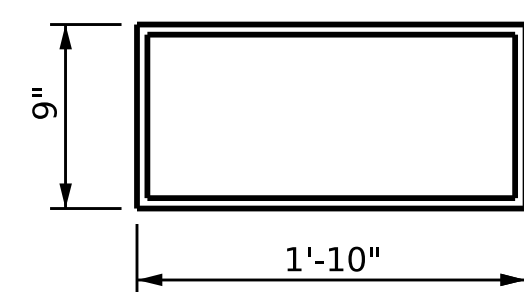
PLAN VIEW



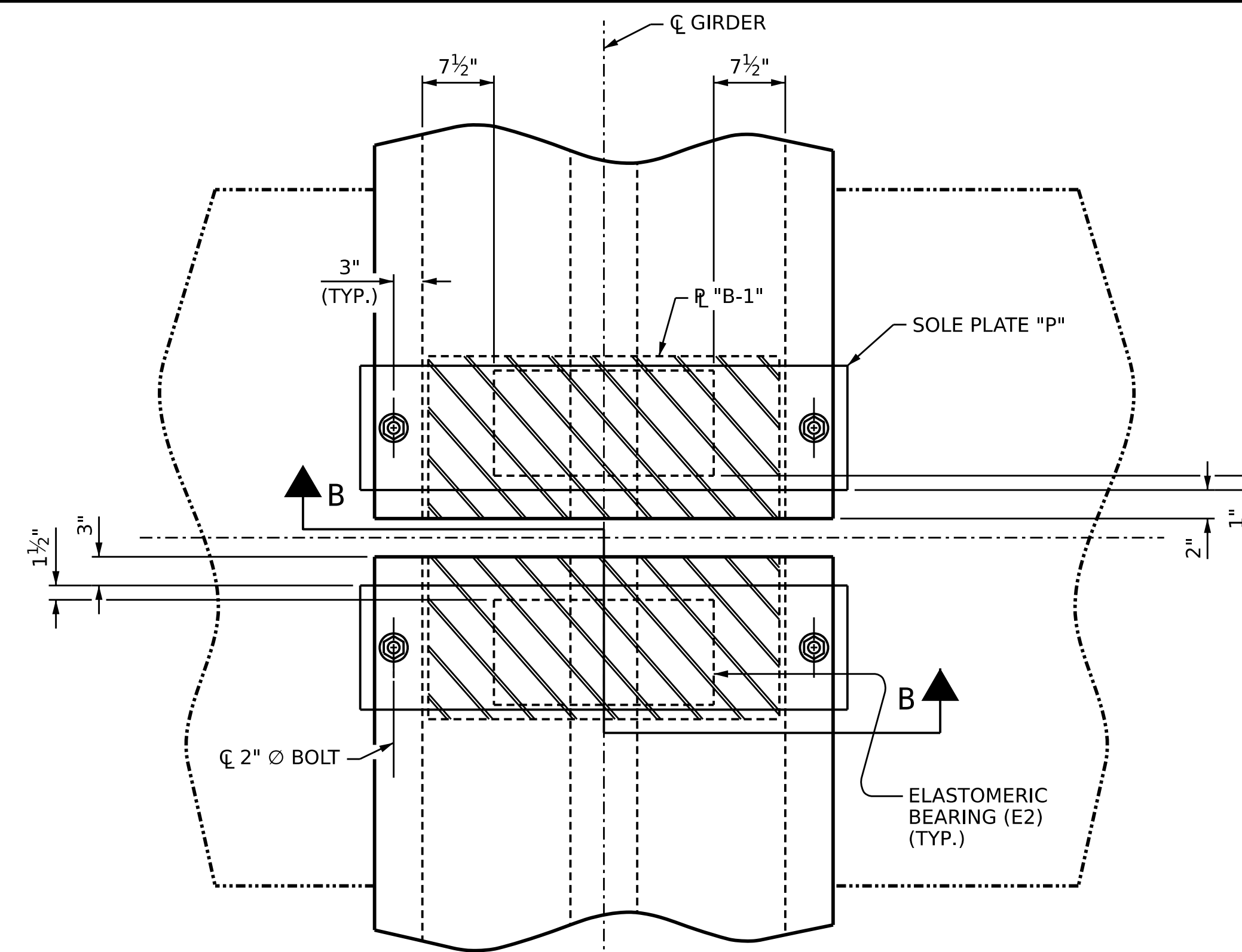
SECTION A-A



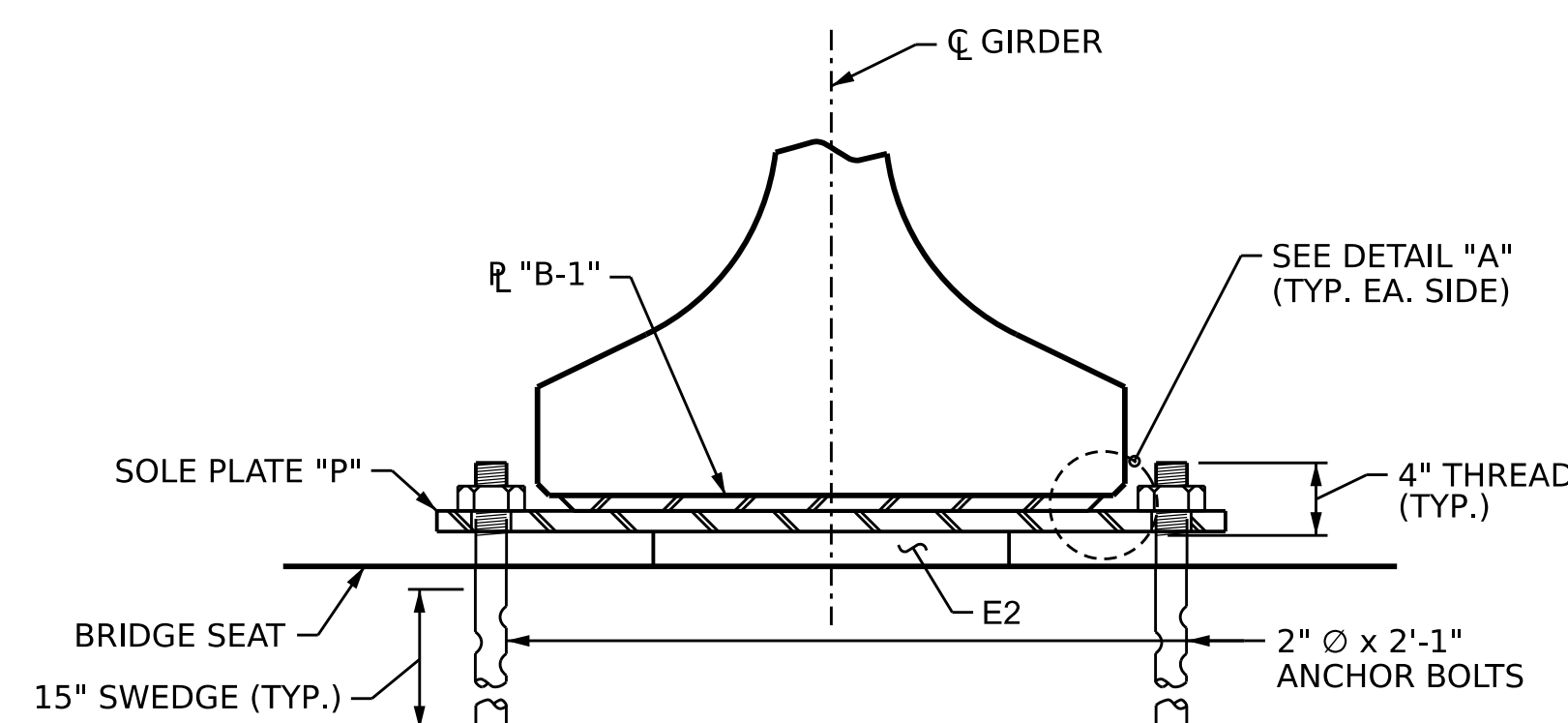
TYPICAL SECTION OF ELASTOMERIC BEARING



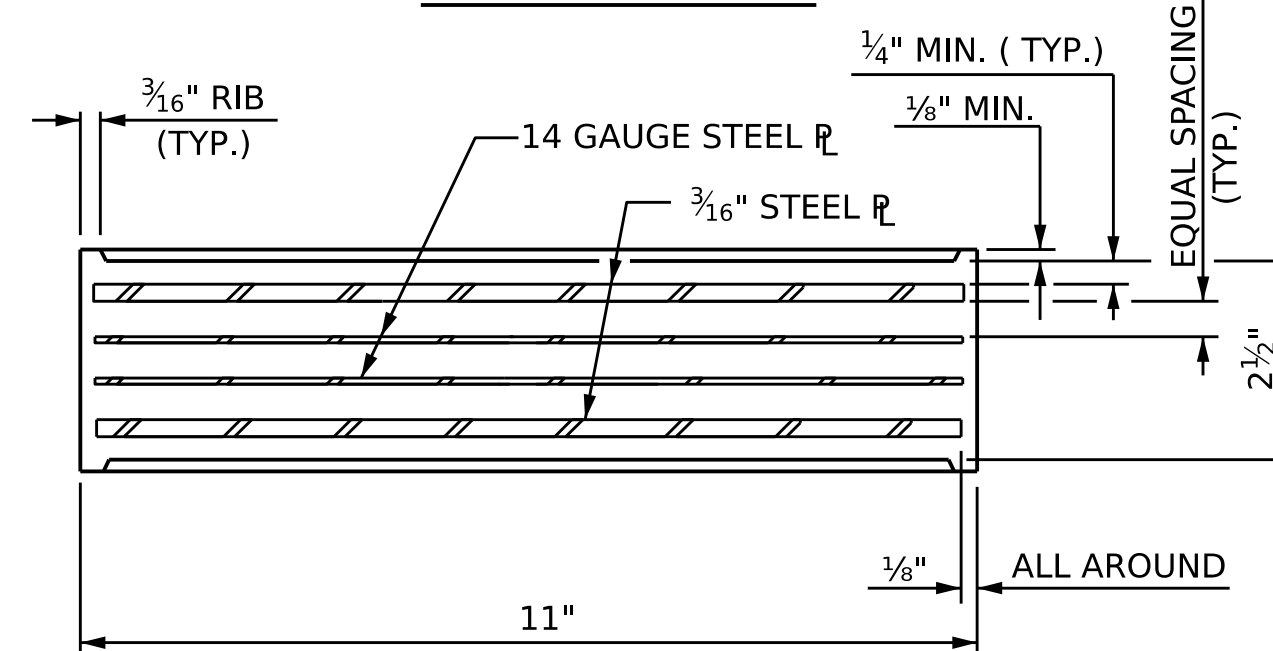
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PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



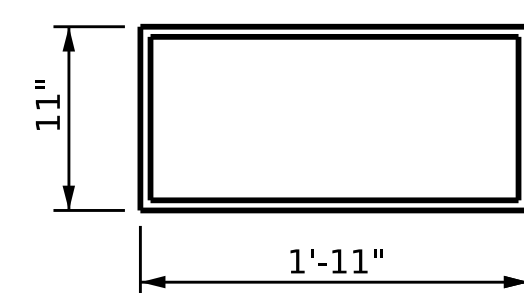
PLAN VIEW



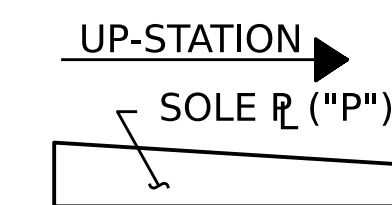
SECTION B-B



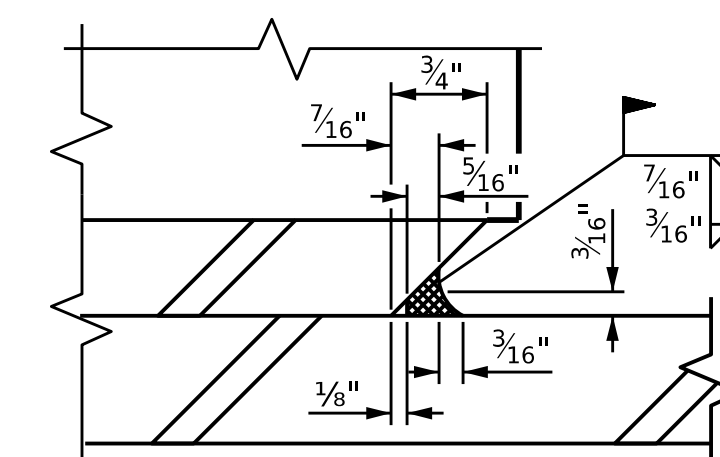
TYPICAL SECTION OF ELASTOMERIC BEARING



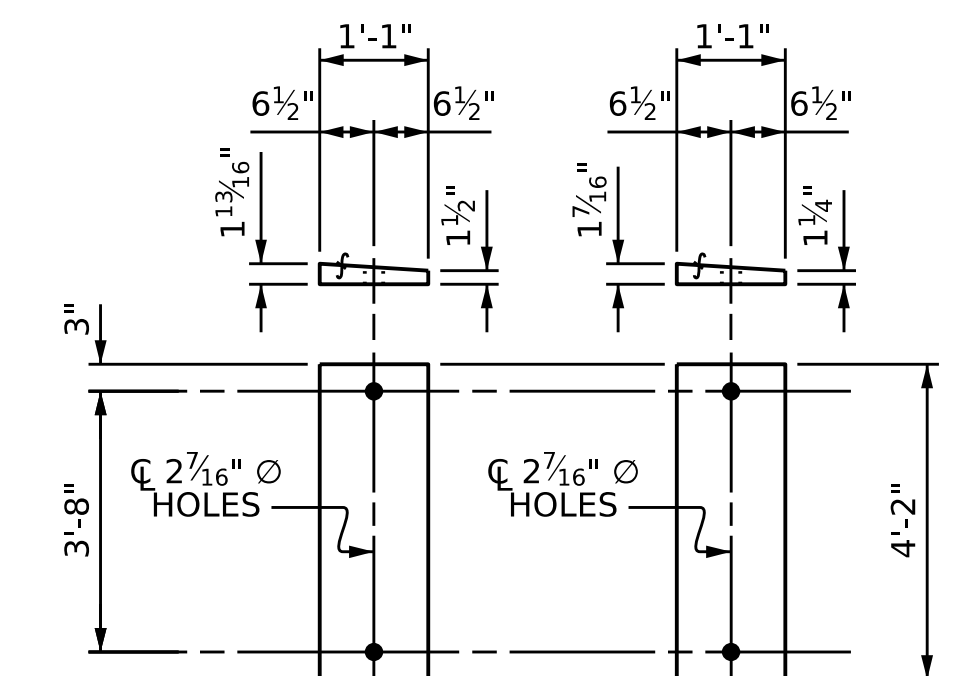
E2 (20 REQ'D.)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE VI



SOLE PLACEMENT DETAIL



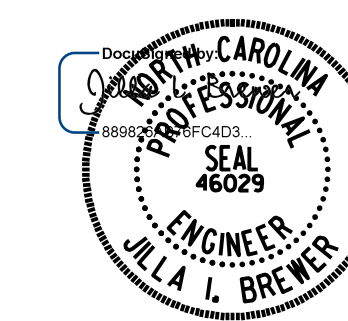
DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE VI	420 k

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-



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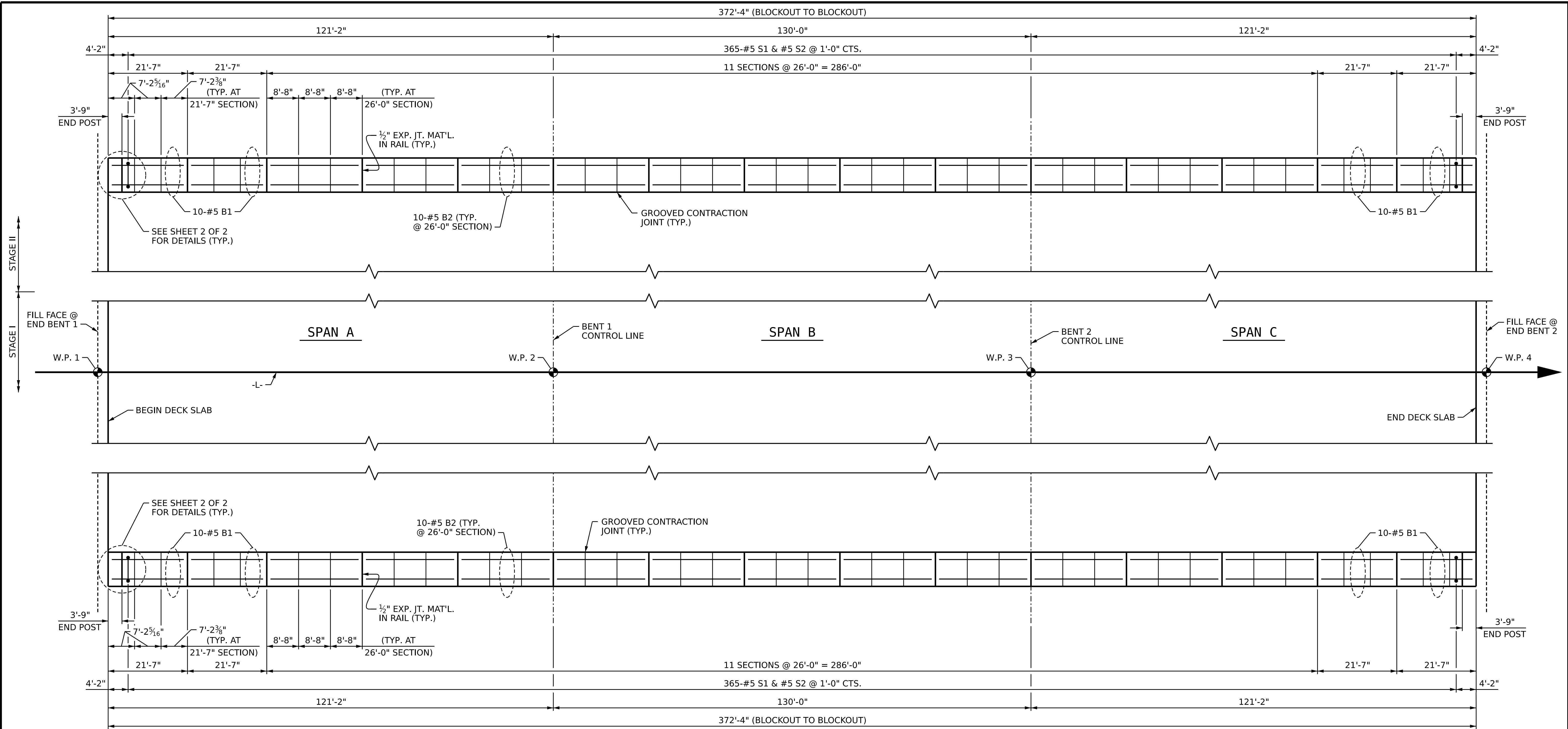
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
**ELASTOMERIC BEARING
DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-32
2			4			TOTAL SHEETS 60

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PLAN OF CONCRETE PARAPET

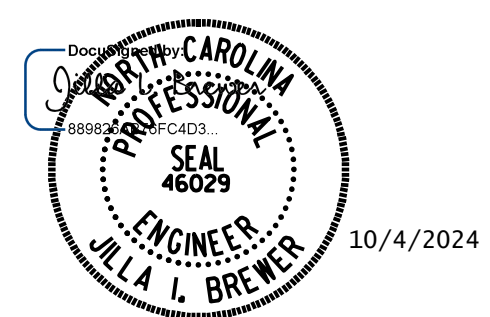
FOR NOTES, DETAILS OF CONCRETE PARAPET, AND ADDITIONAL REINFORCEMENT, SEE SHEET 2 OF 2

PROJECT NO. B-5766

STOKES COUNTY

STATION: 14+96.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
CONCRETE PARAPET PLAN

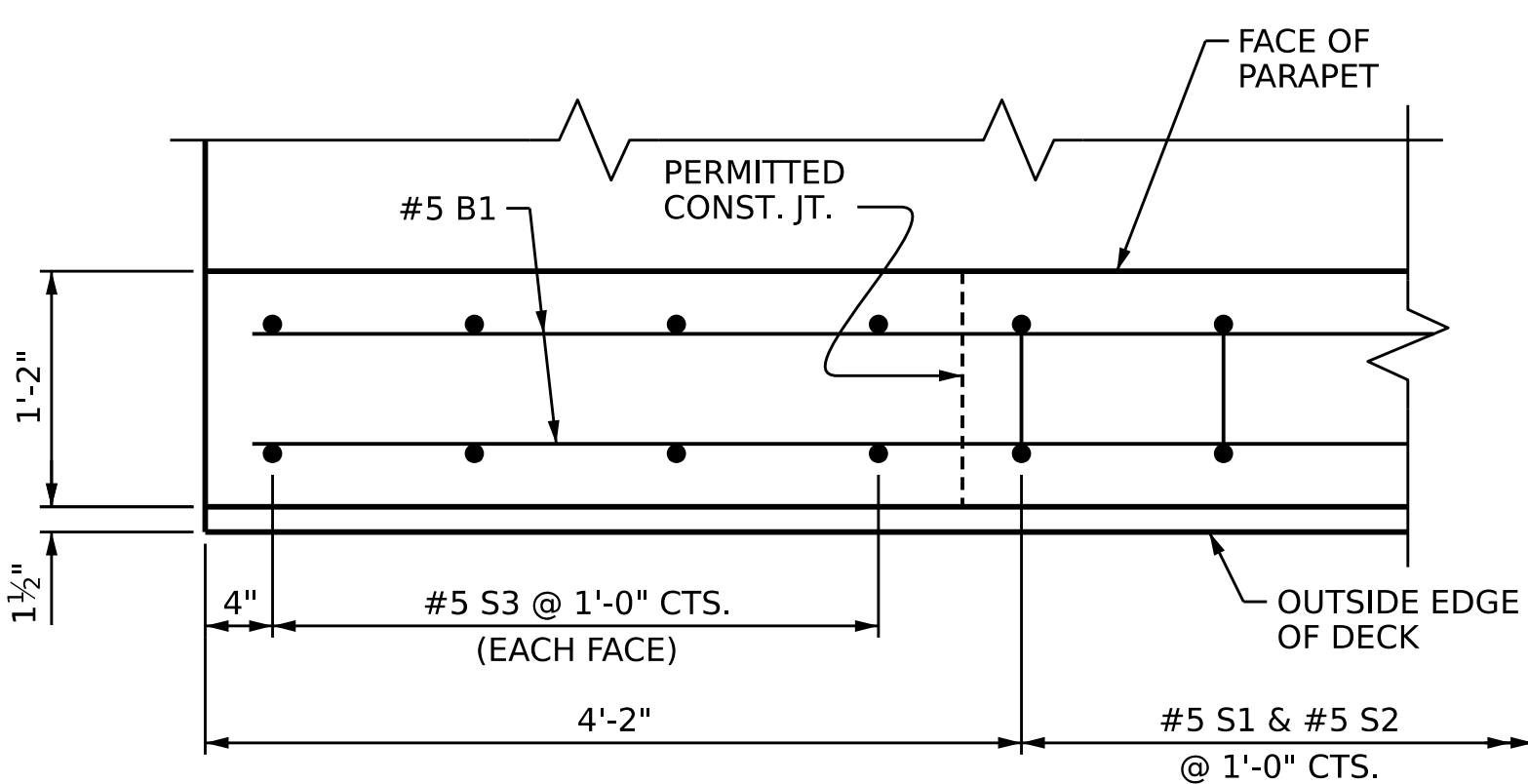
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 (919) 851-6606
 FIRM PE NUMBER : P-0671

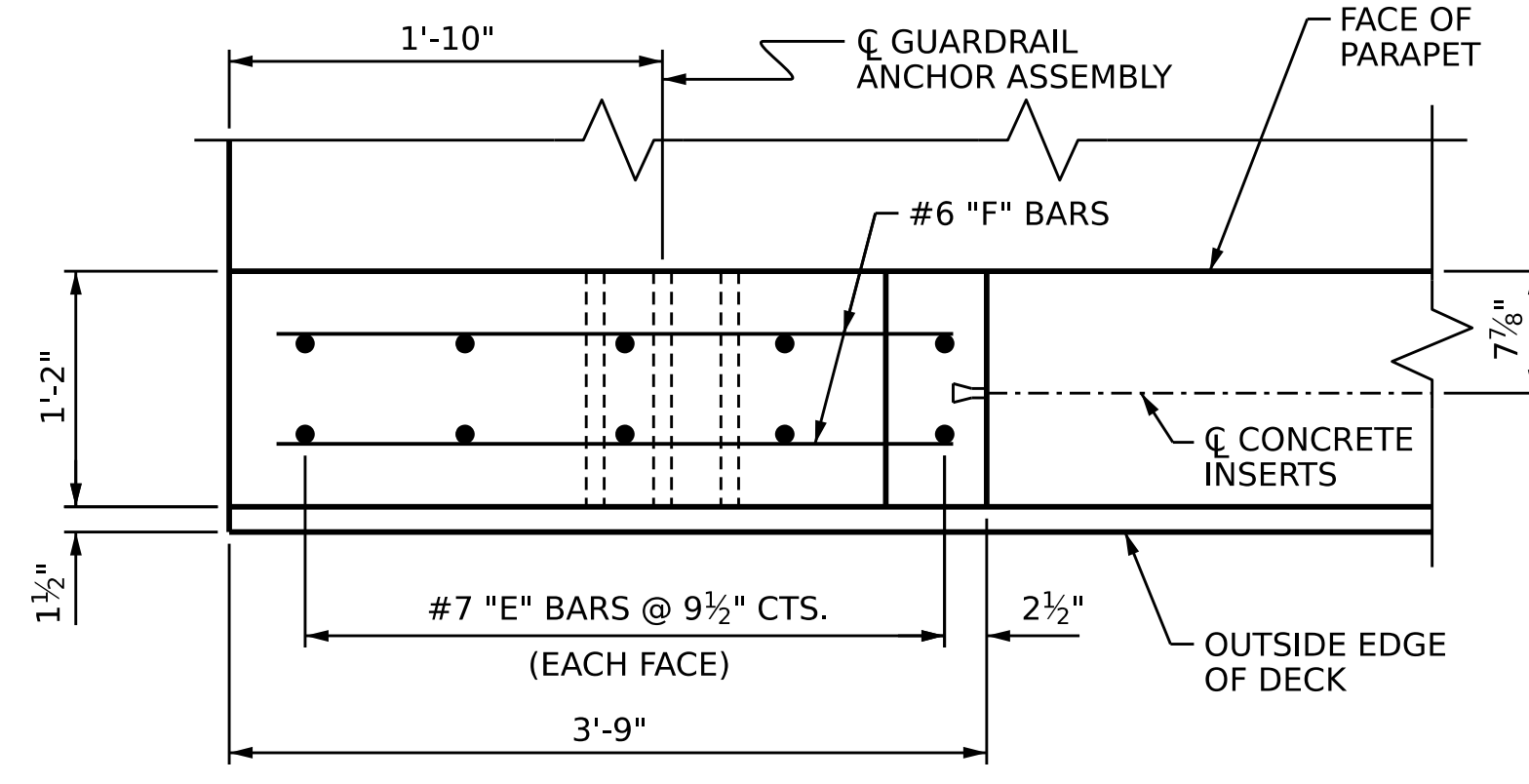
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-33
2			4			TOTAL SHEETS 60

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DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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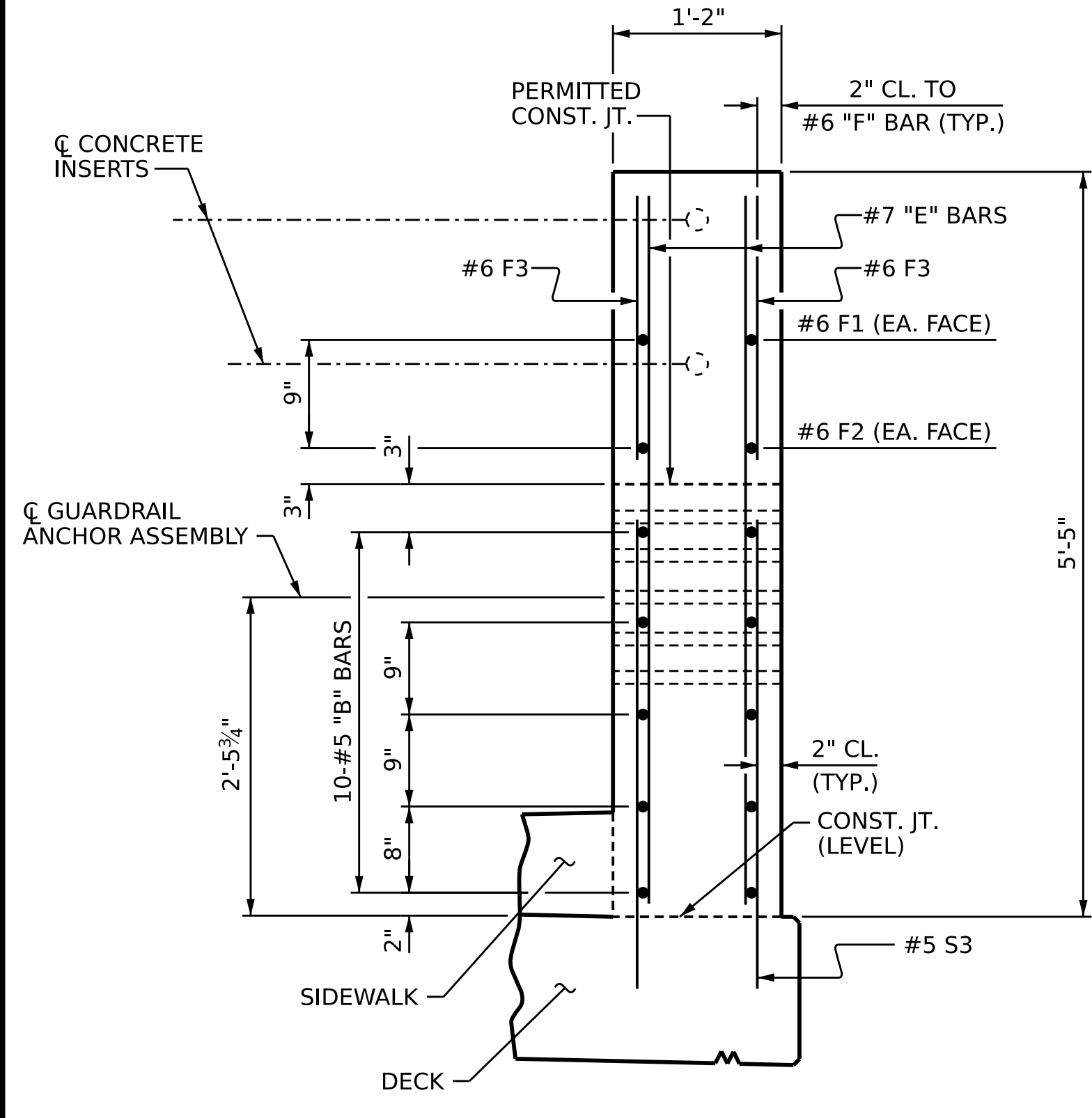
PLAN OF PARAPET



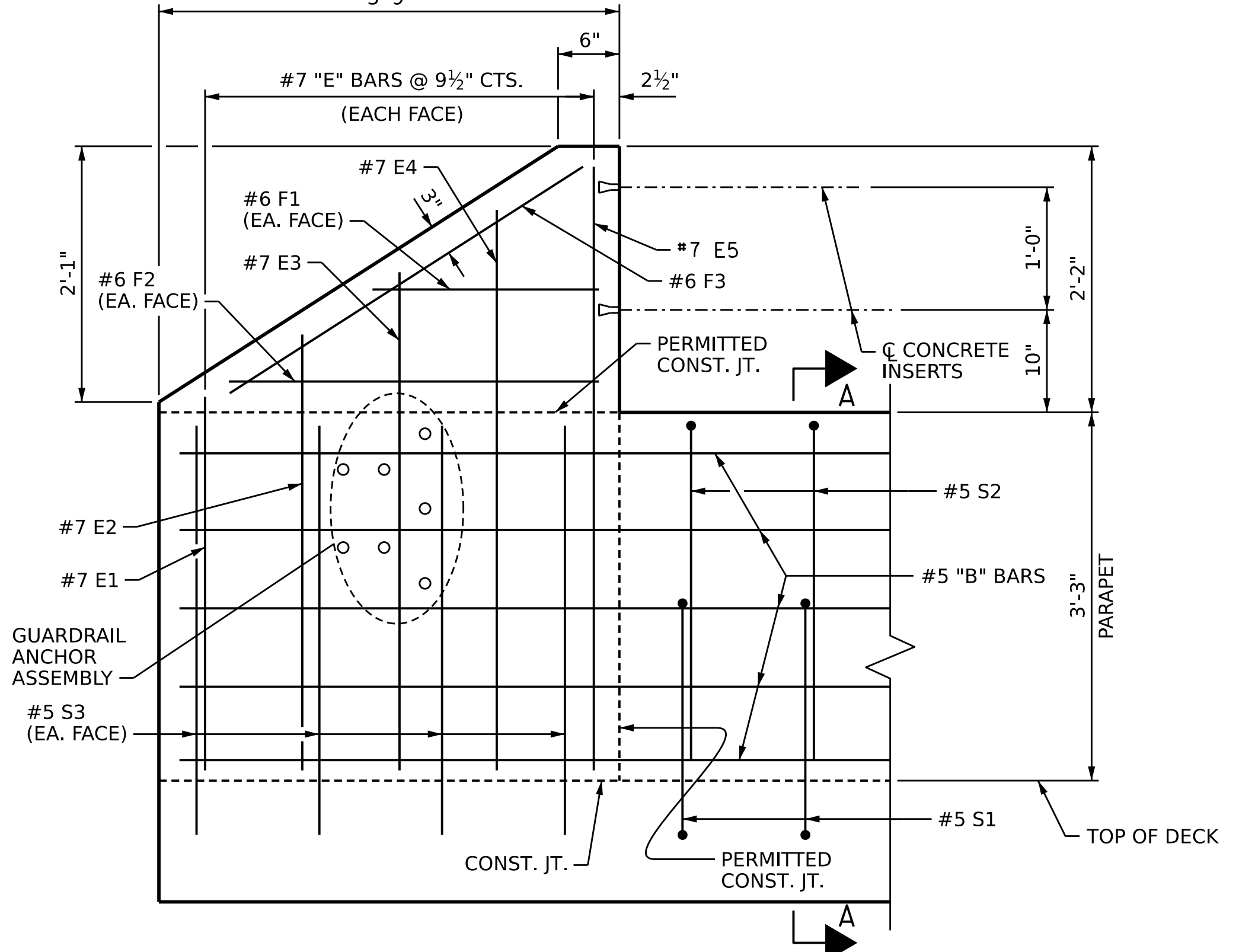
PLAN OF END POST

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.

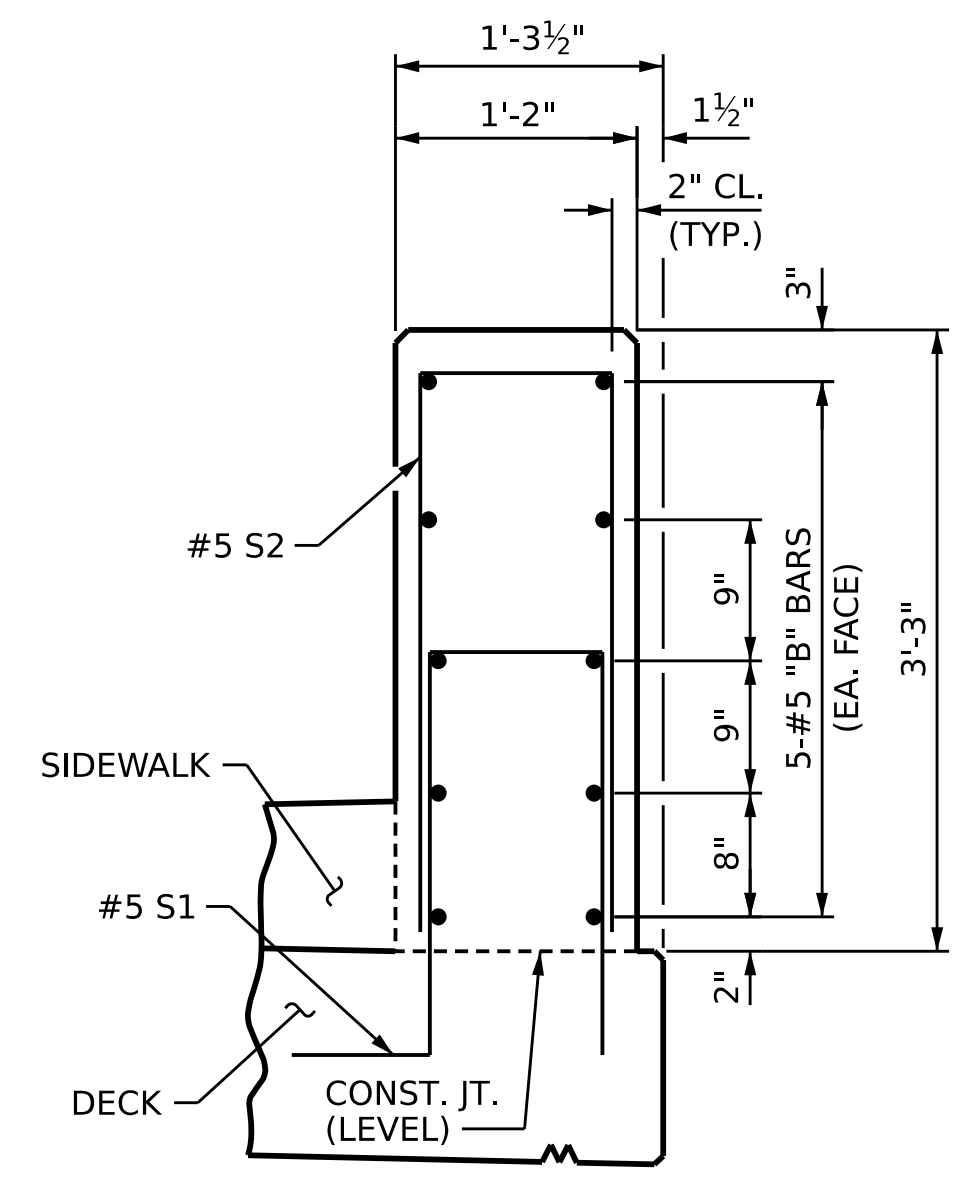
BILL OF MATERIAL													
PARAPET AND END POSTS STAGE I						PARAPET AND END POSTS STAGE II							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	40	#5	STR	21'-2"	883	B1	40	#5	STR	21'-2"	883		
B2	110	#5	STR	25'-7"	2935	B2	110	#5	STR	25'-7"	2935		
E1	4	#7	STR	3'-3"	27	E1	4	#7	STR	3'-3"	27		
E2	4	#7	STR	3'-9"	31	E2	4	#7	STR	3'-9"	31		
E3	4	#7	STR	4'-3"	35	E3	4	#7	STR	4'-3"	35		
E4	4	#7	STR	4'-9"	39	E4	4	#7	STR	4'-9"	39		
E5	4	#7	STR	5'-1"	42	E5	4	#7	STR	5'-1"	42		
F1	4	#6	STR	1'-9"	11	F1	4	#6	STR	1'-9"	11		
F2	4	#6	STR	2'-11"	18	F2	4	#6	STR	2'-11"	18		
F3	4	#6	STR	3'-4"	20	F3	4	#6	STR	3'-4"	20		
S1	365	#5	1	5'-10"	2221	S1	365	#5	1	5'-10"	2221		
S2	365	#5	2	7'-0"	2665	S2	365	#5	2	7'-0"	2665		
S3	16	#5	STR	3'-8"	61	S3	16	#5	STR	3'-8"	61		
EPOXY COATED REINFORCING STEEL					8,988	LBS.	EPOXY COATED REINFORCING STEEL					8,988	LBS.
CLASS AA CONCRETE					52.7	C.Y.	CLASS AA CONCRETE					52.7	C.Y.
1'-2" x 3'-3" CONCRETE PARAPET					372.33	LIN. FT.	1'-2" x 3'-3" CONCRETE PARAPET					372.33	LIN. FT.
TOTAL FOR STAGE I & STAGE II													
1'-2" x 3'-3" CONCRETE PARAPET					744.67	LIN. FT.							



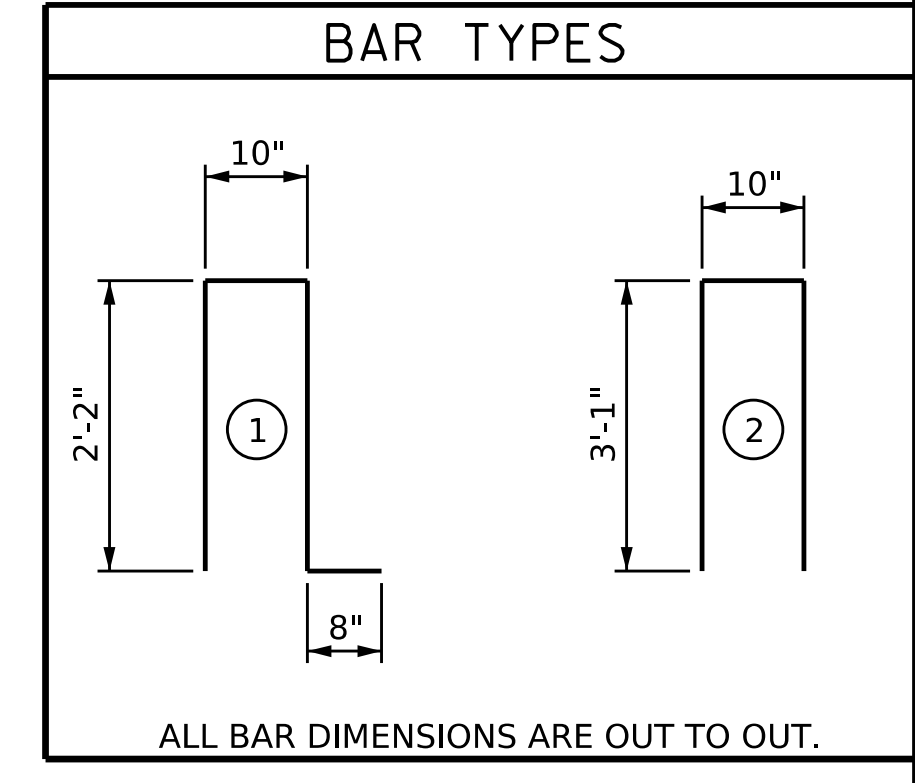
END VIEW



ELEVATION



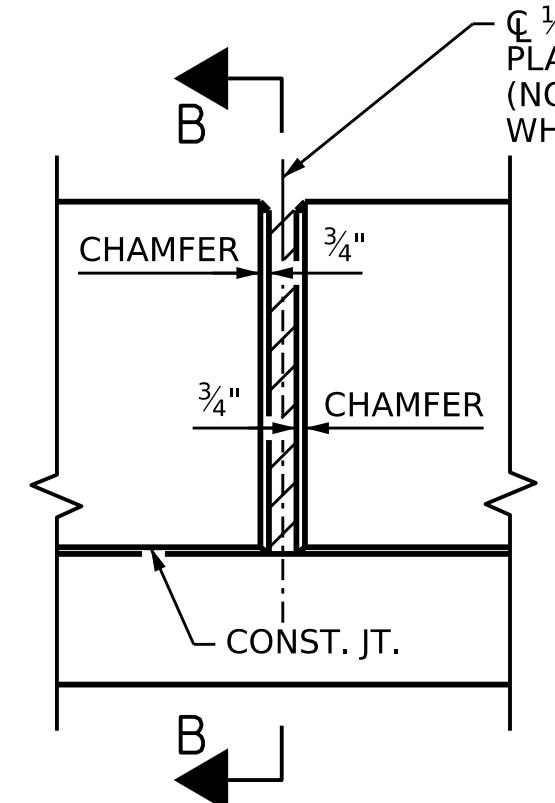
SECTION A-A



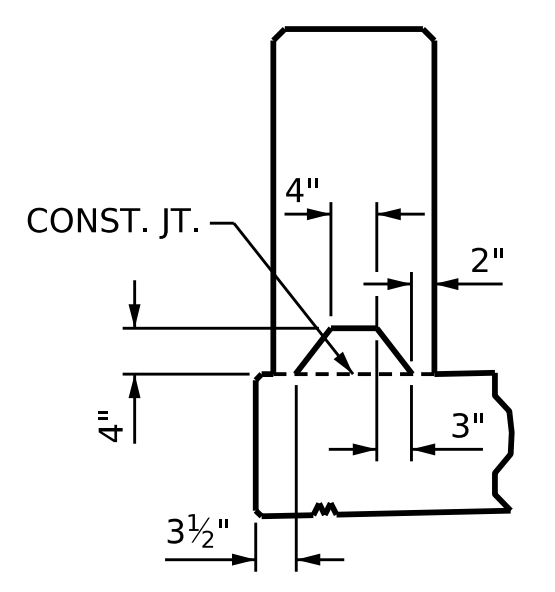
ALL BAR DIMENSIONS ARE OUT TO OUT.

PARAPET AND END POST FOR TWO BAR METAL RAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



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

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DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 10/2024

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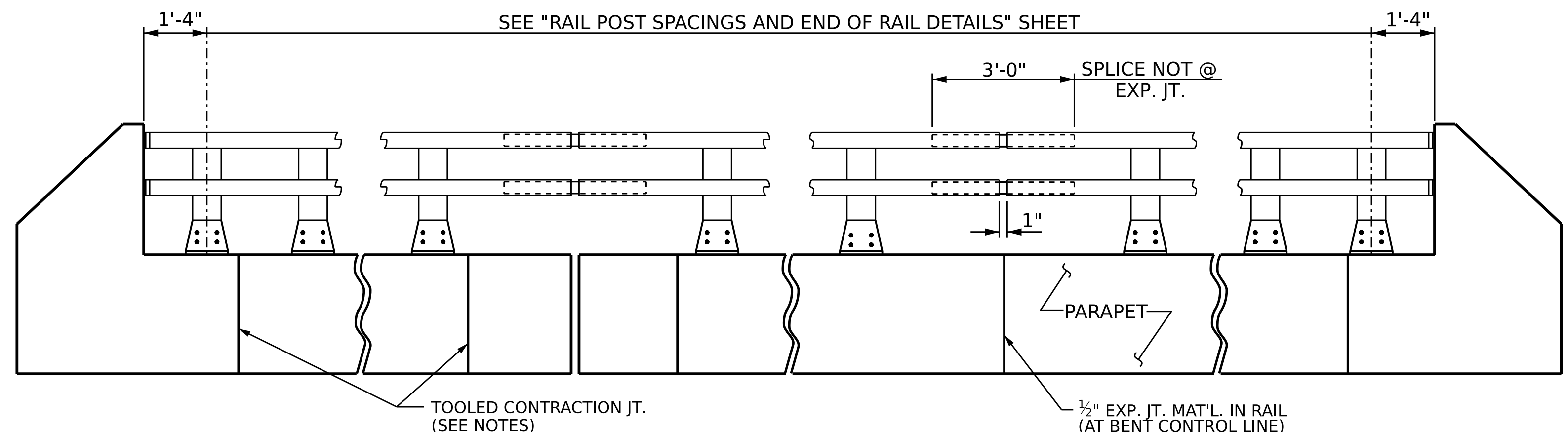
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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671



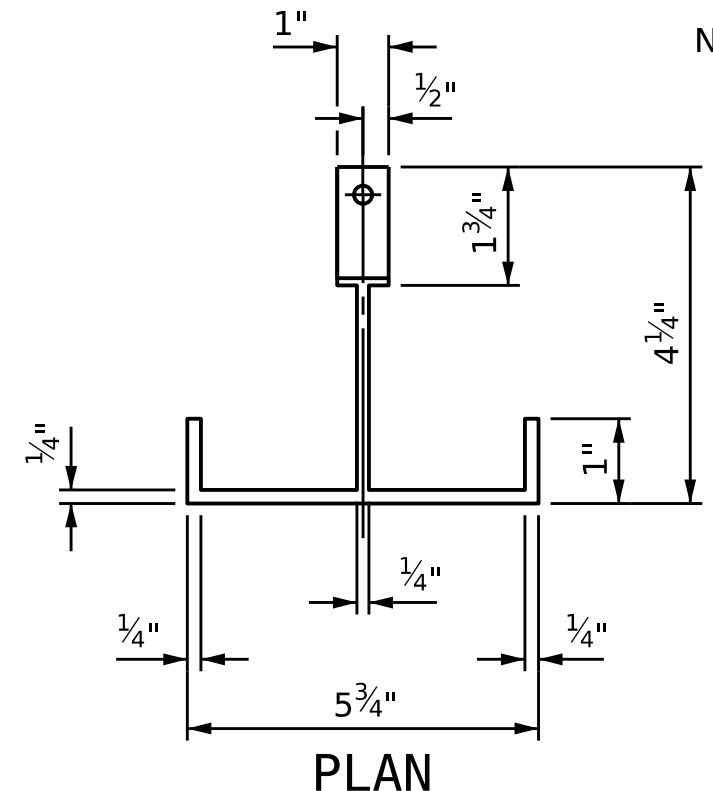
PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-34
2			4			TOTAL SHEETS 60

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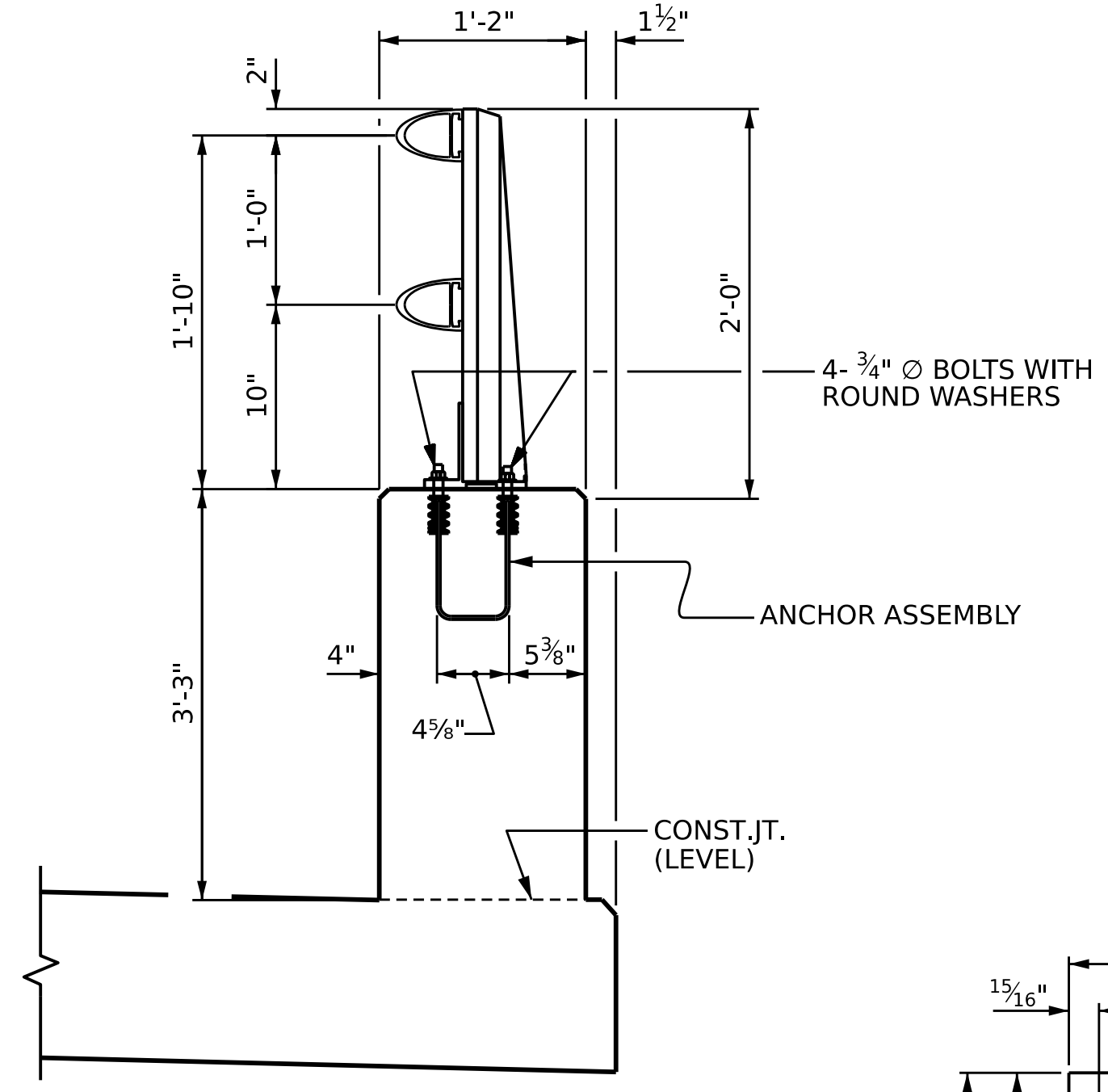


ELEVATION

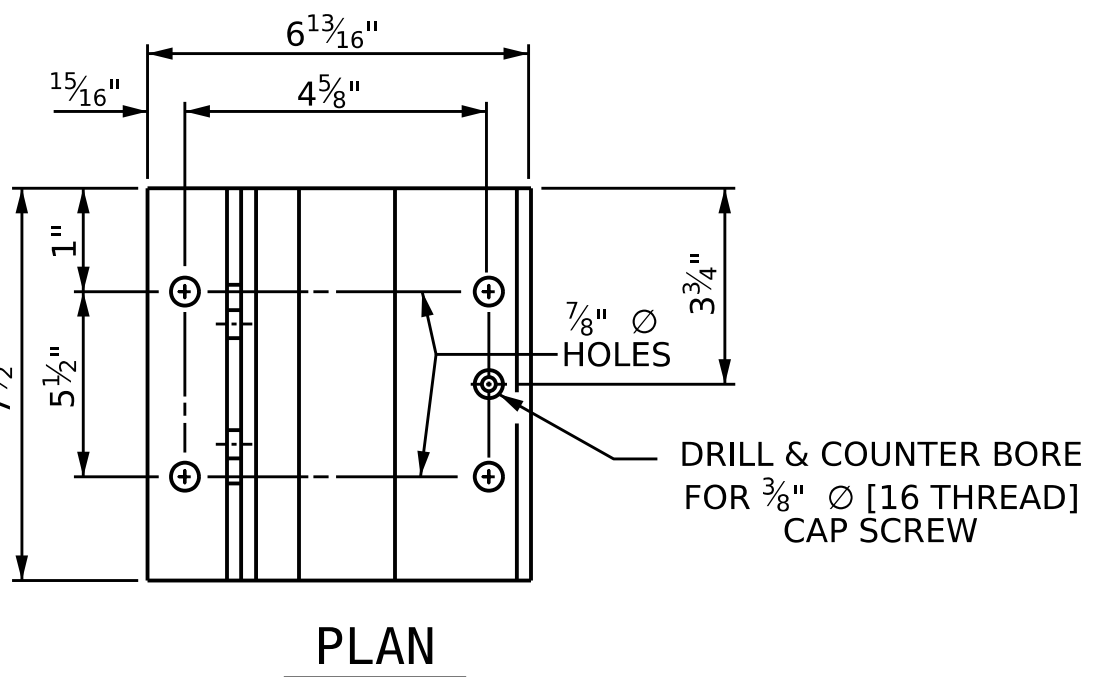


PLAN

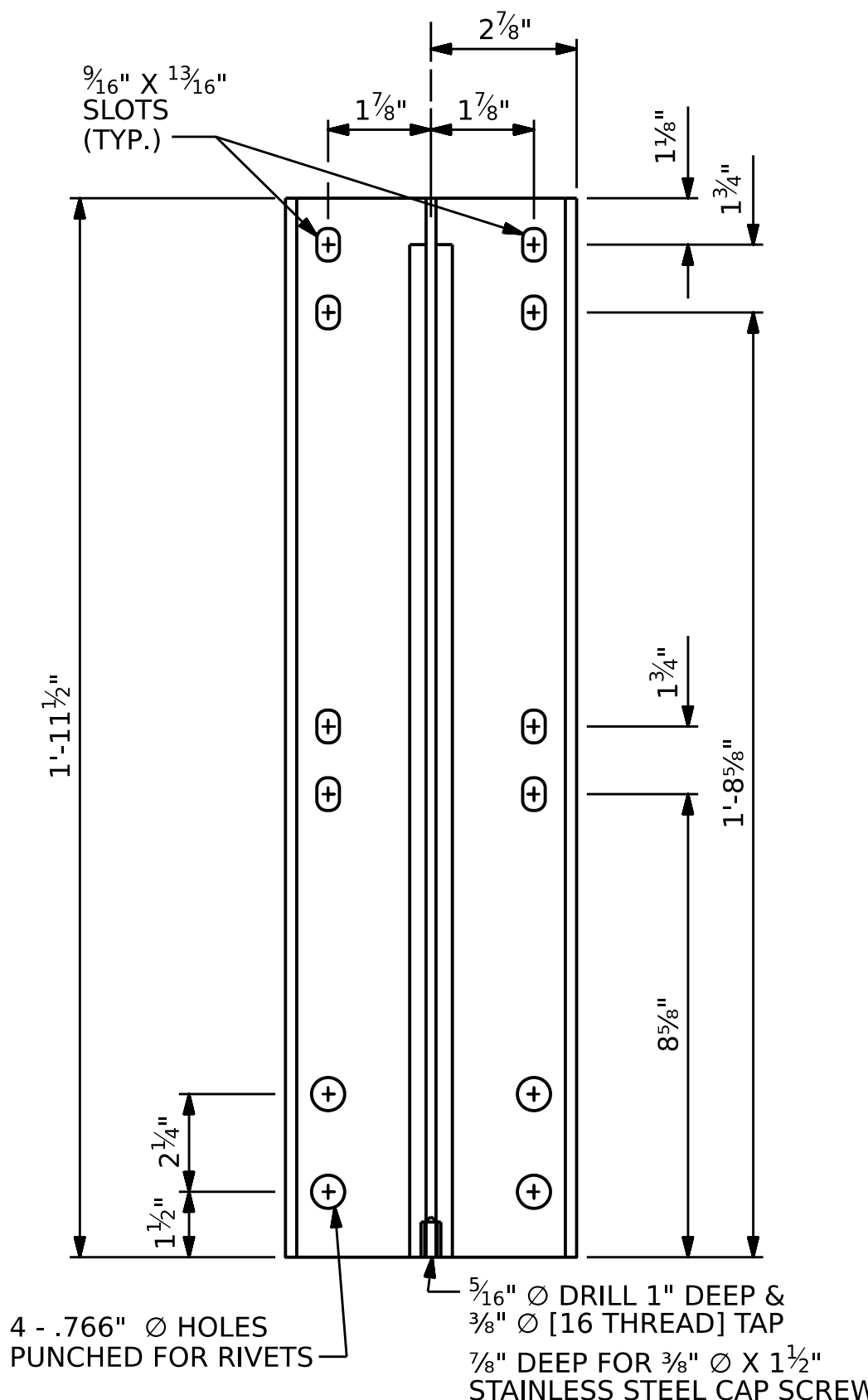
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.



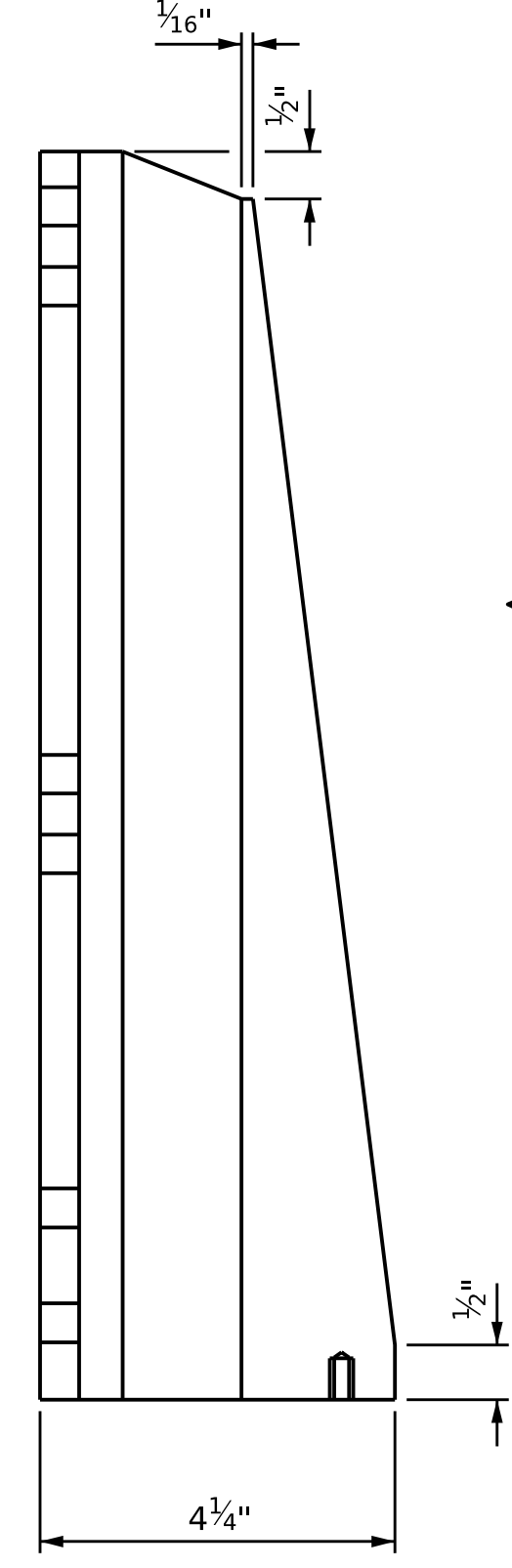
SECTION THRU PARAPET AND RAIL



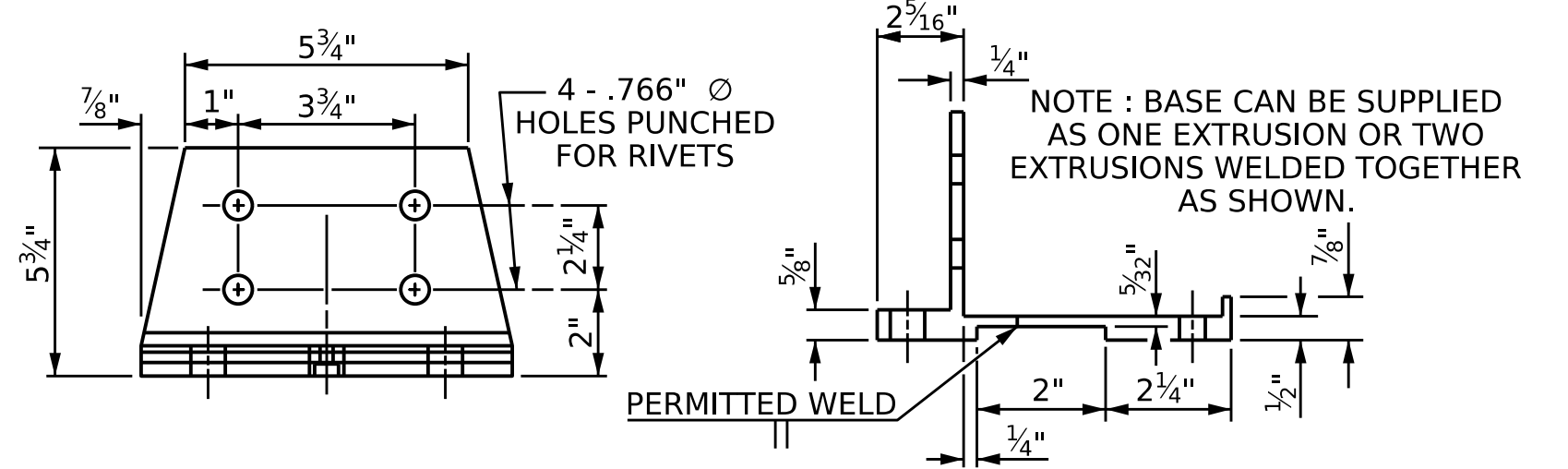
PLAN



FRONT ELEVATION



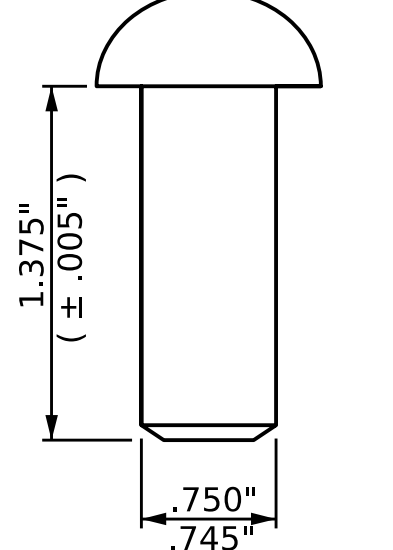
SIDE ELEVATION



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

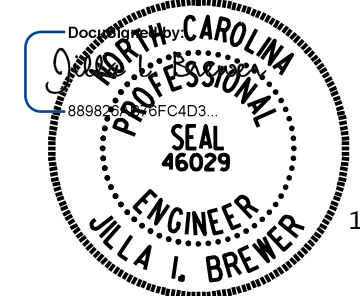
GROOVED CONTRACTION JOINTS 1/4" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH

STAGE I	364.83 LIN. FT.
STAGE II	364.83 LIN. FT.
TOTAL PAY LENGTH	729.67 LIN. FT.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
2 BAR METAL RAIL



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:	S-35
1			3			TOTAL SHEETS
2			4			60

STD. NO. BMR3 (SHT 1)

10/4/2024 10:38:00 AM blanning
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ASSEMBLED BY:	B.E. LANNING	DATE:	06/2024
CHECKED BY:	J.I. BREWER	DATE:	07/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	07/2024
DRAWN BY :	EEM 6/94	REV. 6/13	MAA/GM
CHECKED BY :	RGW 6/94	REV. 12/17	MAA/THC
		REV. 10/23	BNB/SNM

NOTES

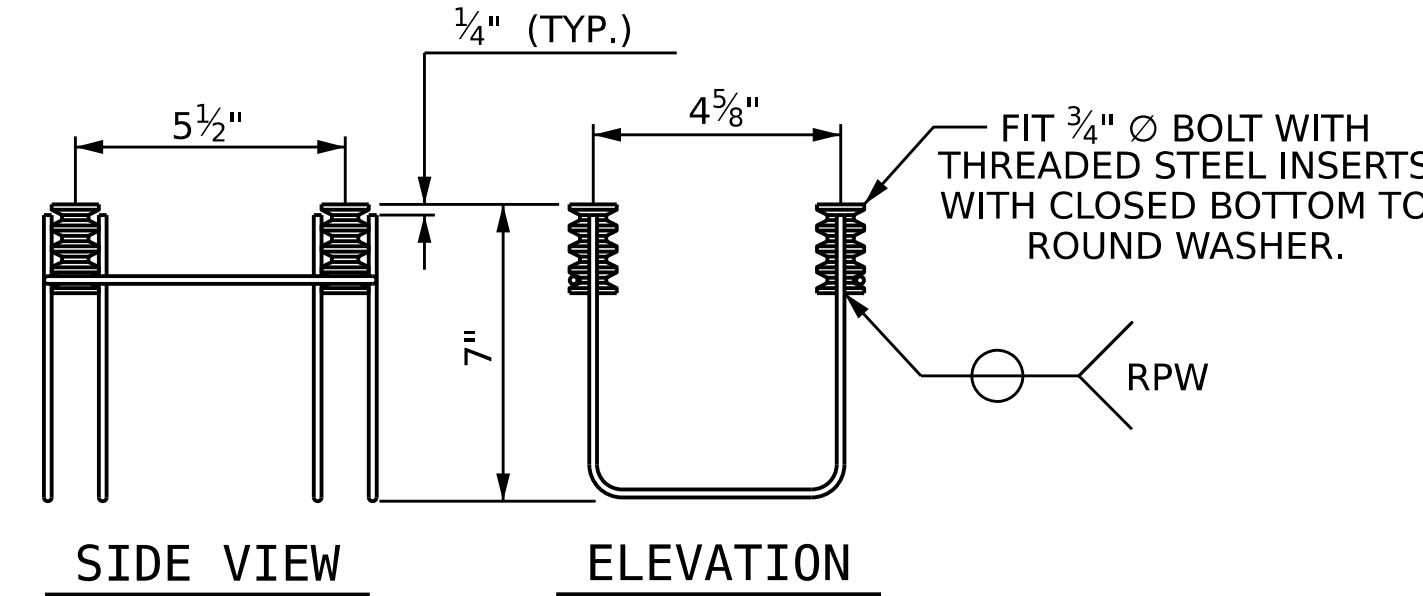
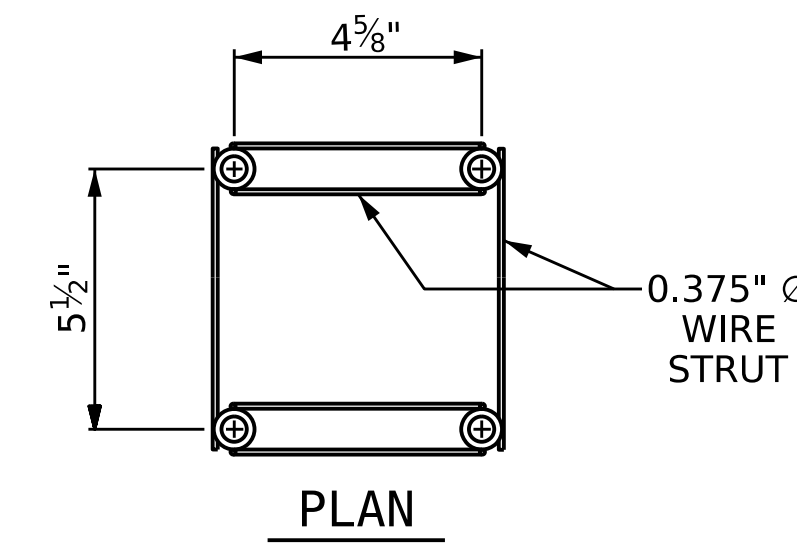
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" x 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

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 3/4" BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

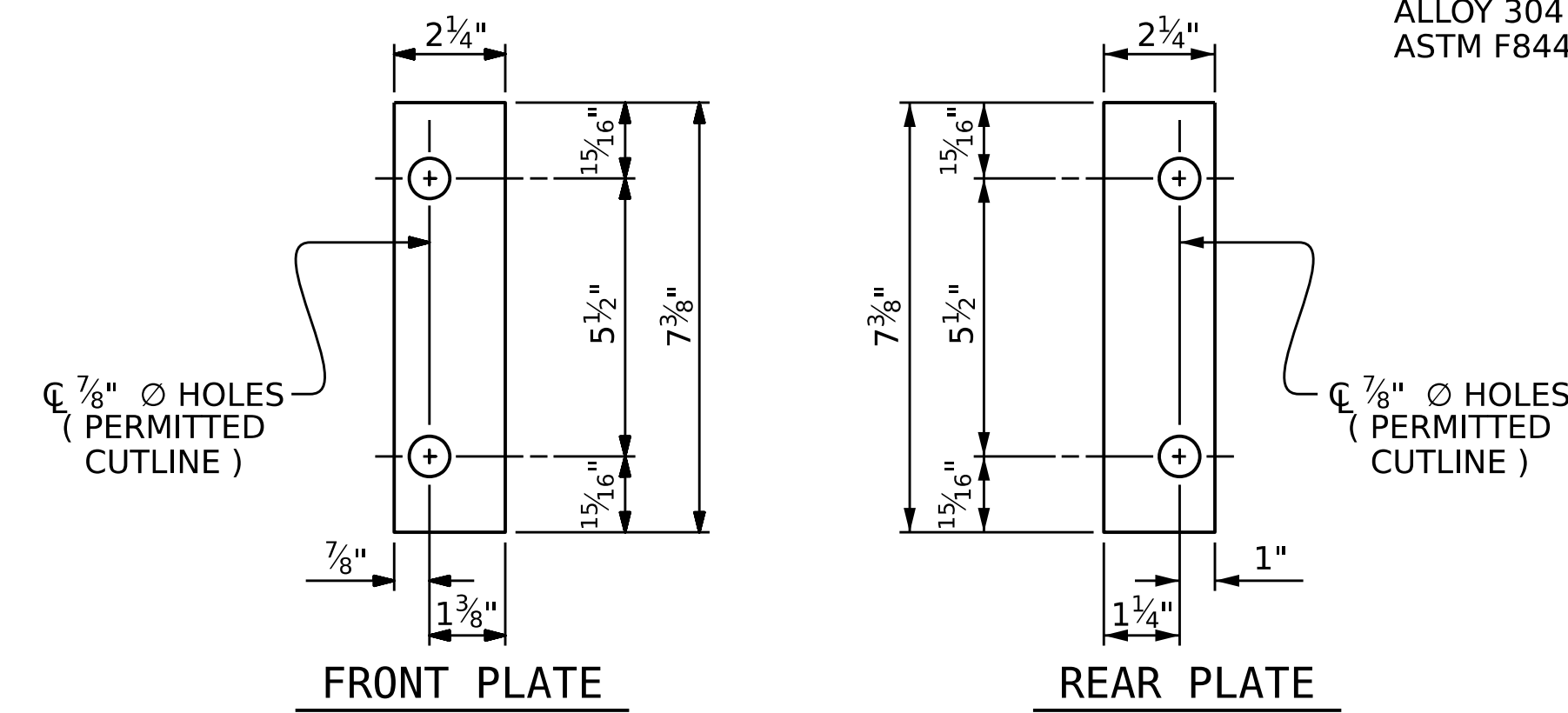
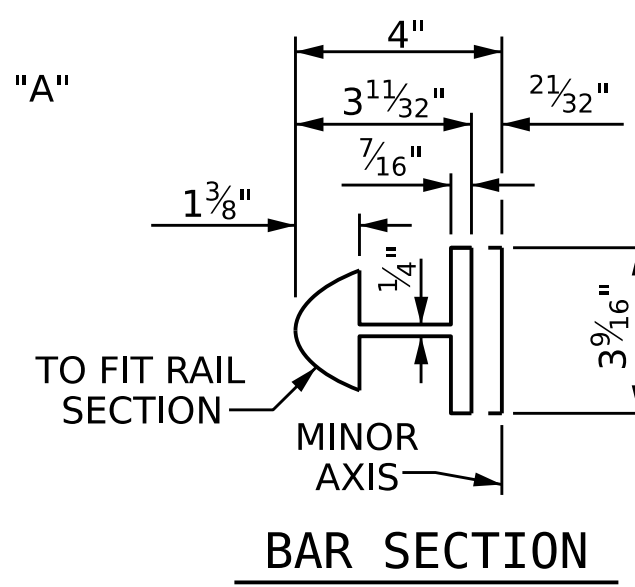
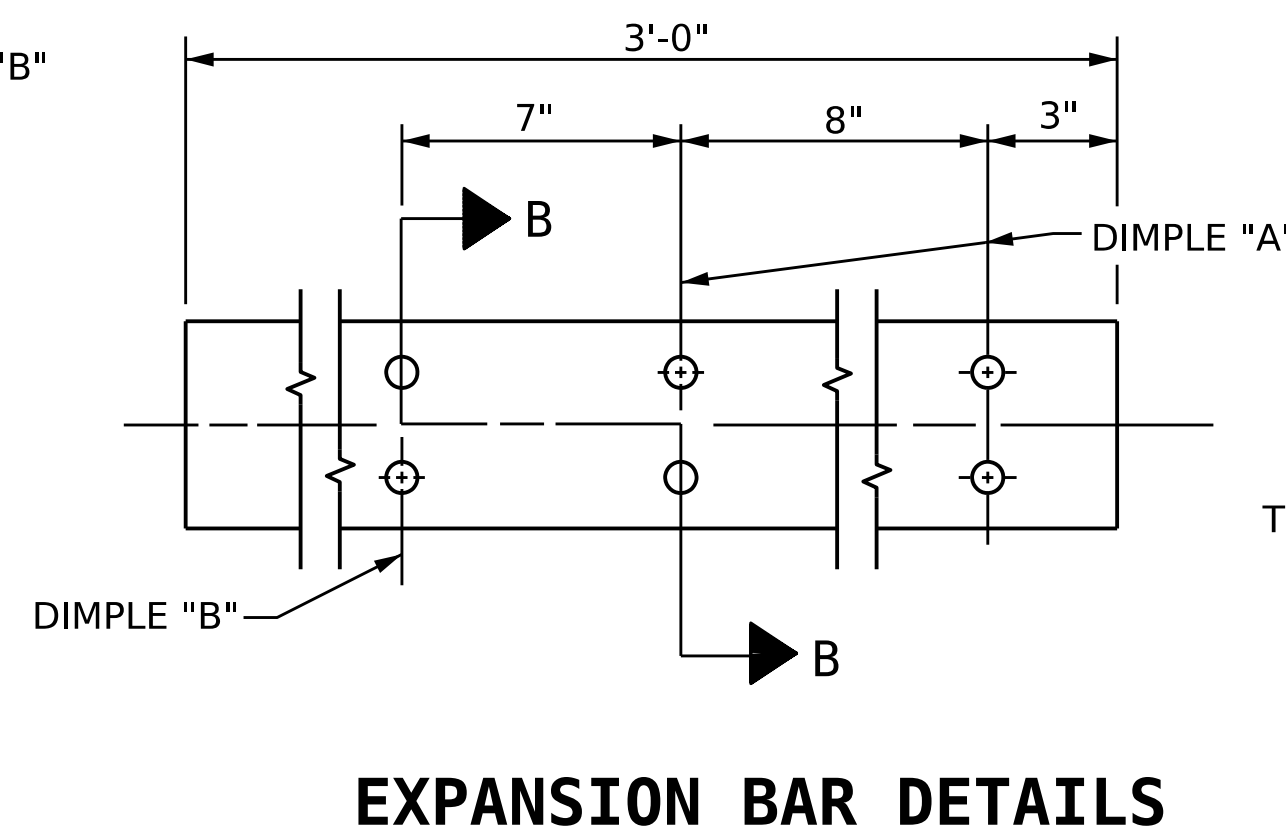
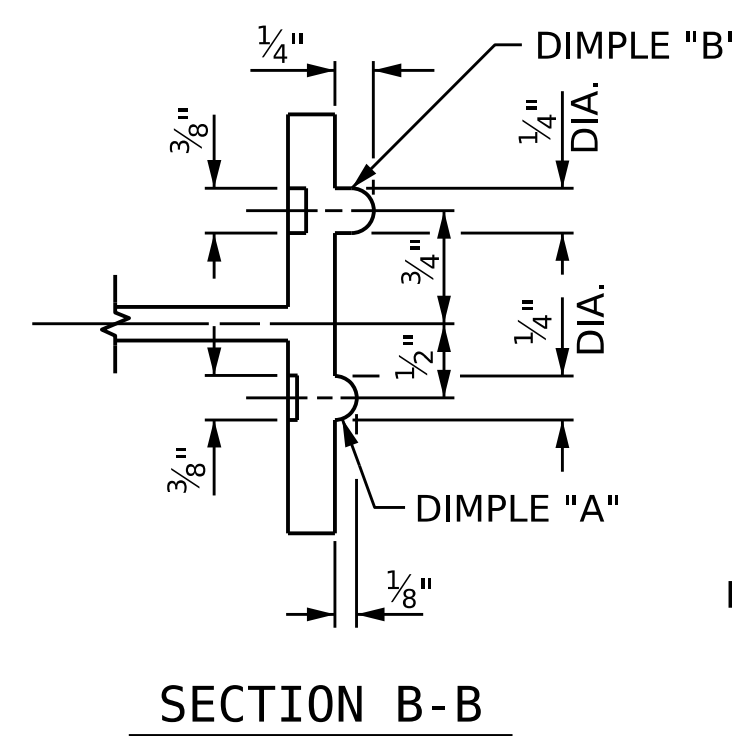
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



4-BOLT METAL RAIL ANCHOR ASSEMBLY

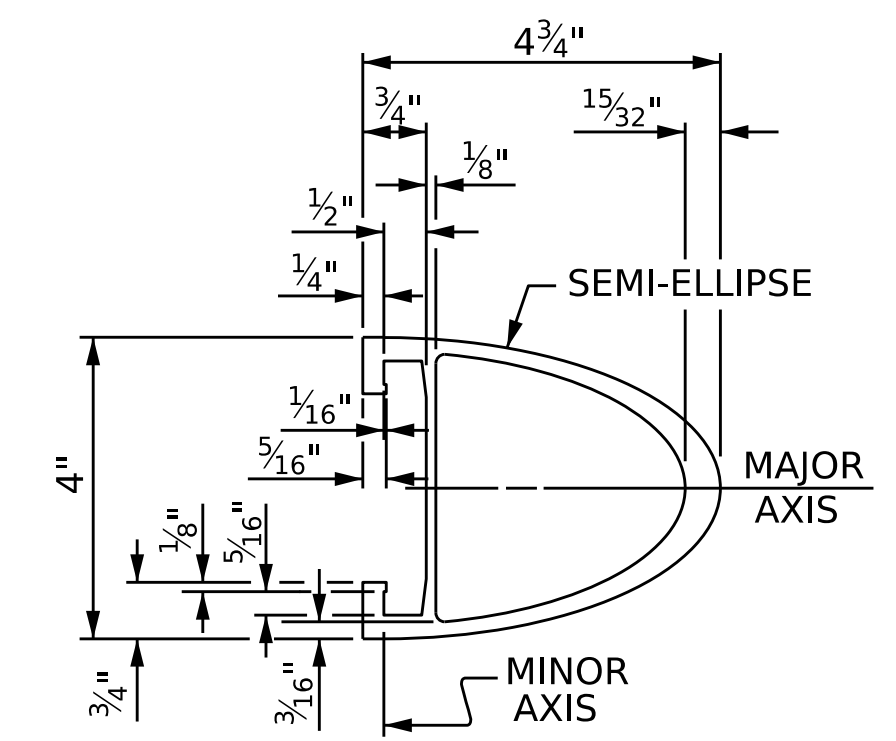
ASSEMBLIES REQUIRED

STAGE I	59
STAGE II	59
TOTAL	118

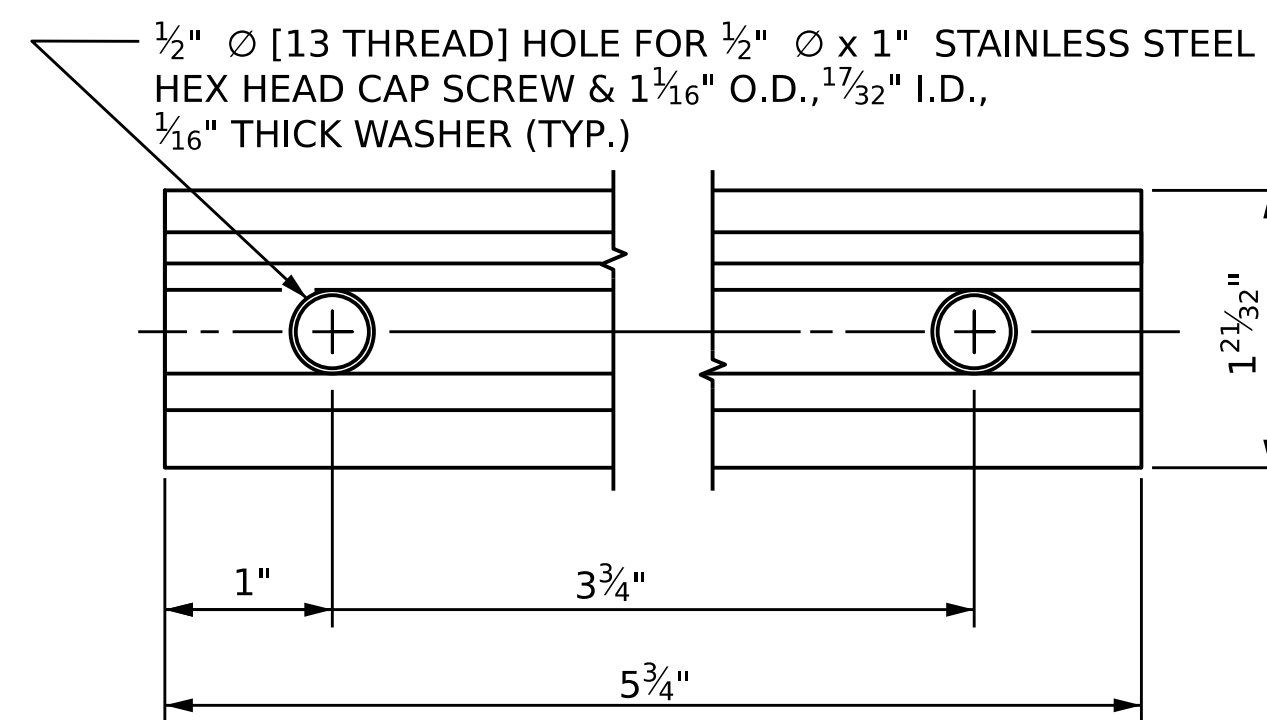


SHIM DETAILS

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

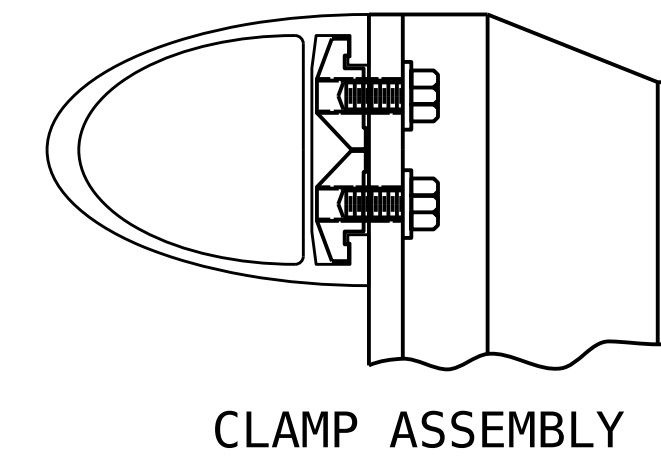
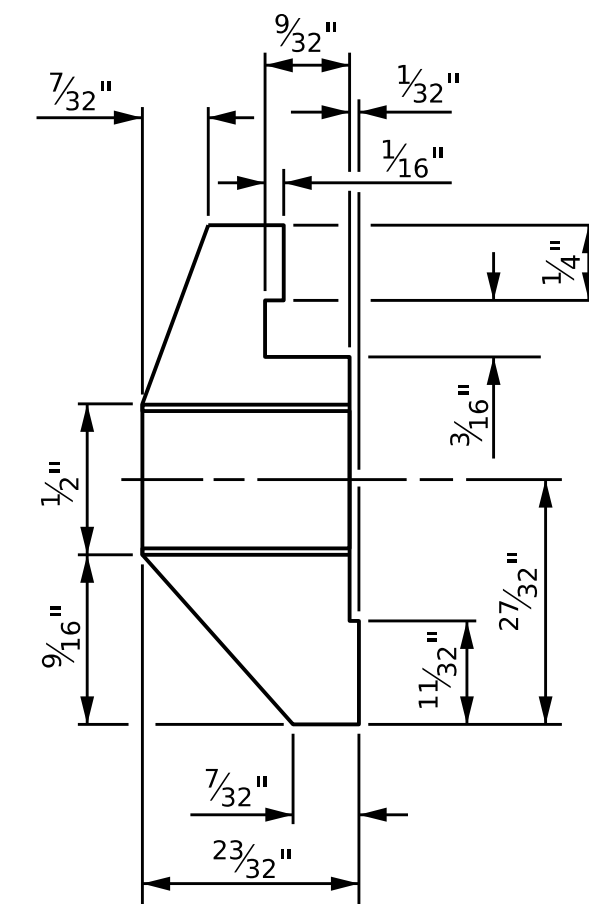


RAIL SECTION

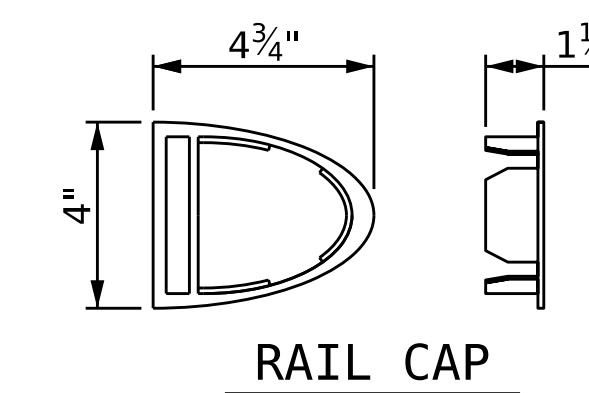


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

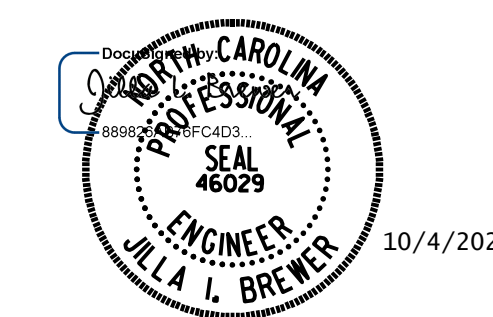


RAIL CAP

PROJECT NO. B-5766
 STOKES COUNTY
 STATION: 14+96.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
2 BAR METAL RAIL



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

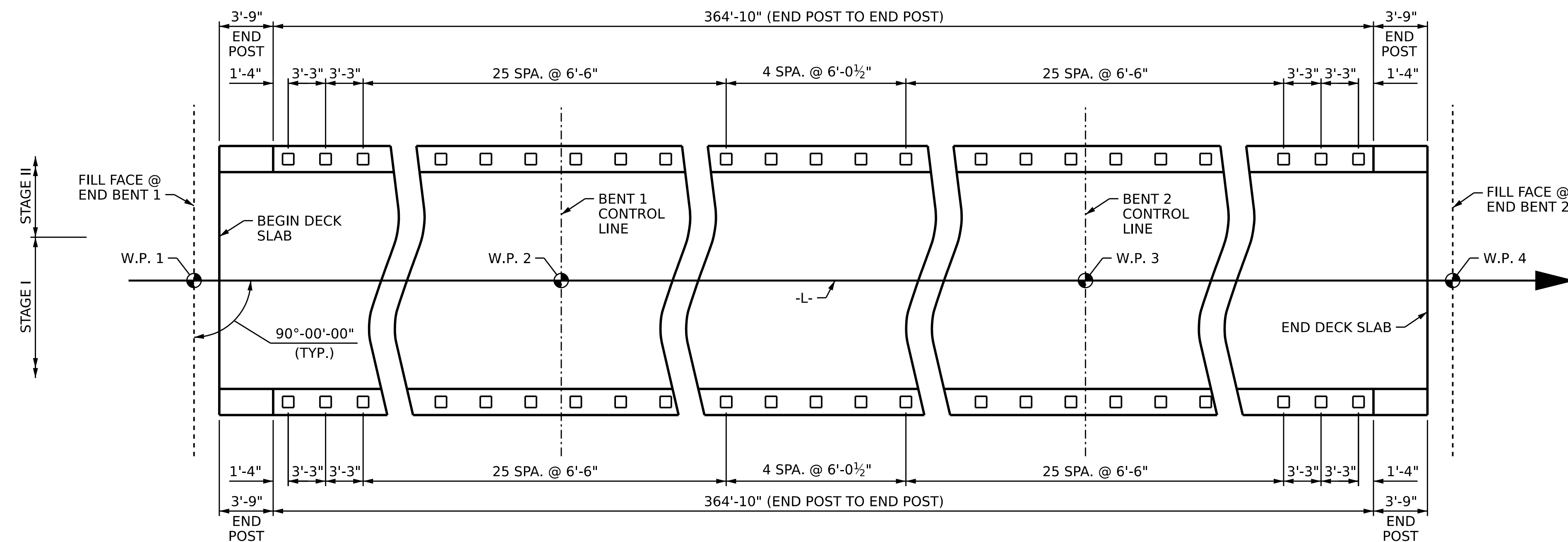
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS 60
2			4			

STD. NO. BMR4

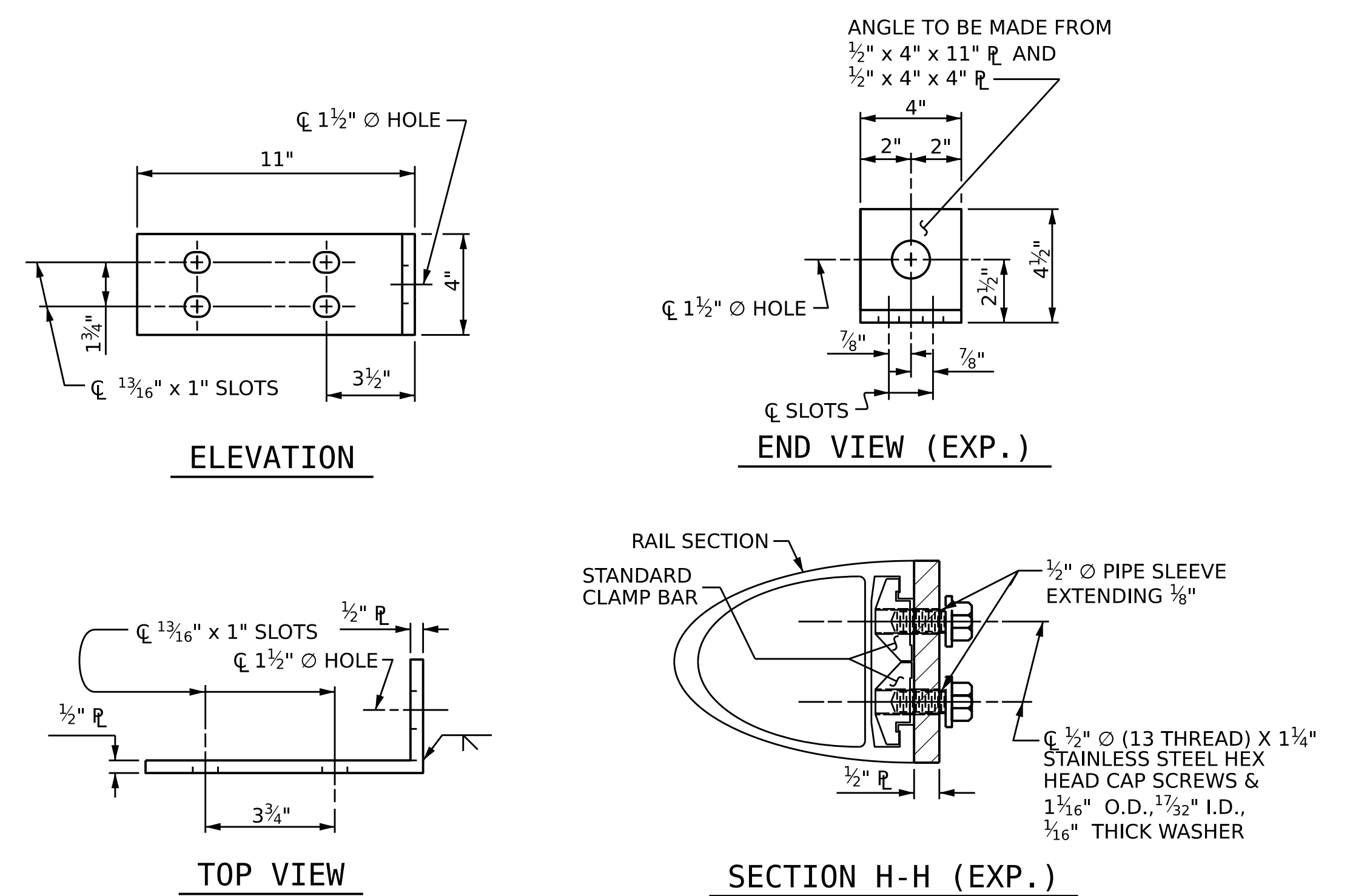
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ASSEMBLED BY : B.E. LANNING	DATE: 06/2024
CHECKED BY : J.I. BREWER	DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 07/2024
DRAWN BY : EEM 6/94	REV. 10/11 MAA/GM
CHECKED BY : RGW 6/94	REV. 12/17 MAA/THC
	REV. 10/23 BNB/SNM

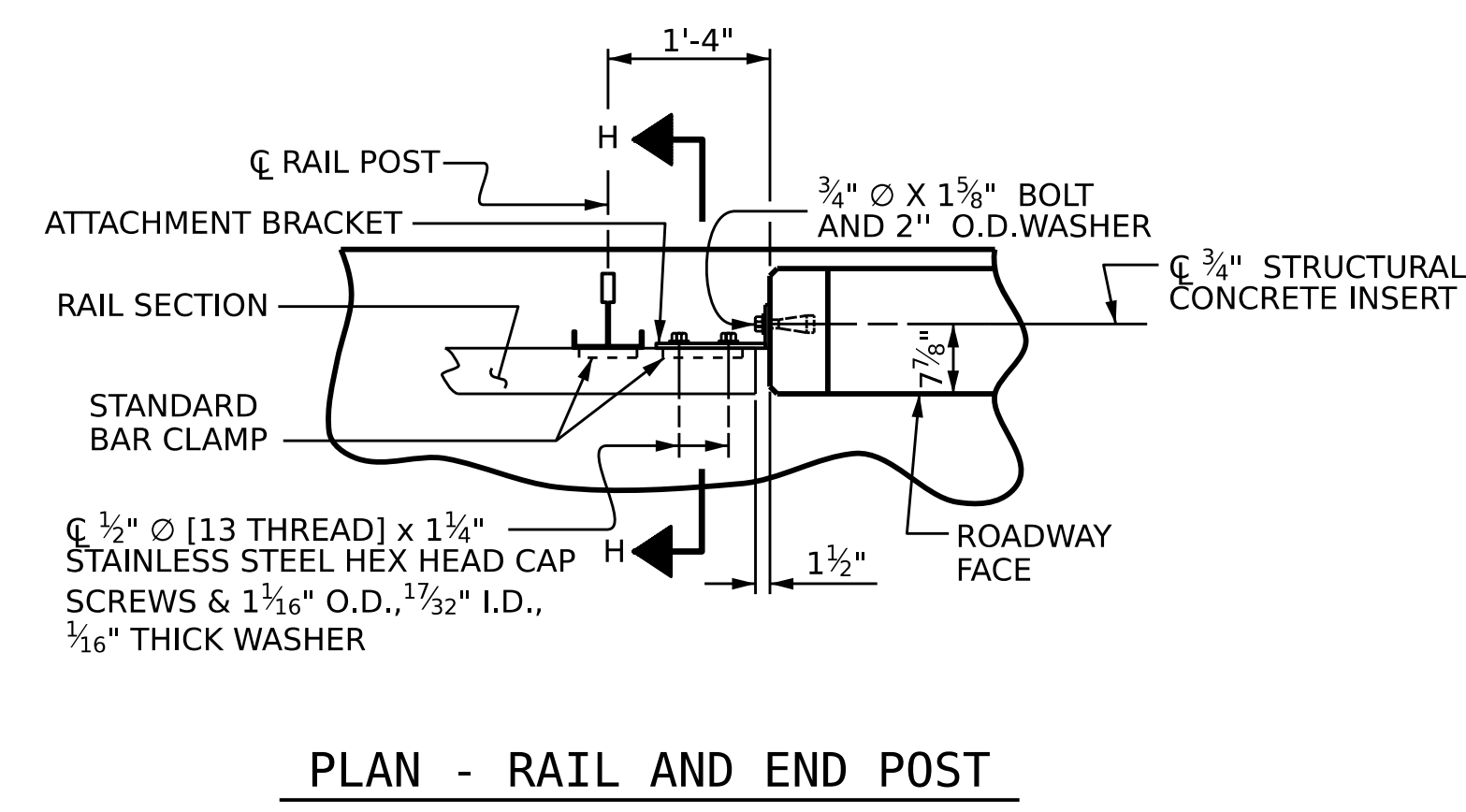
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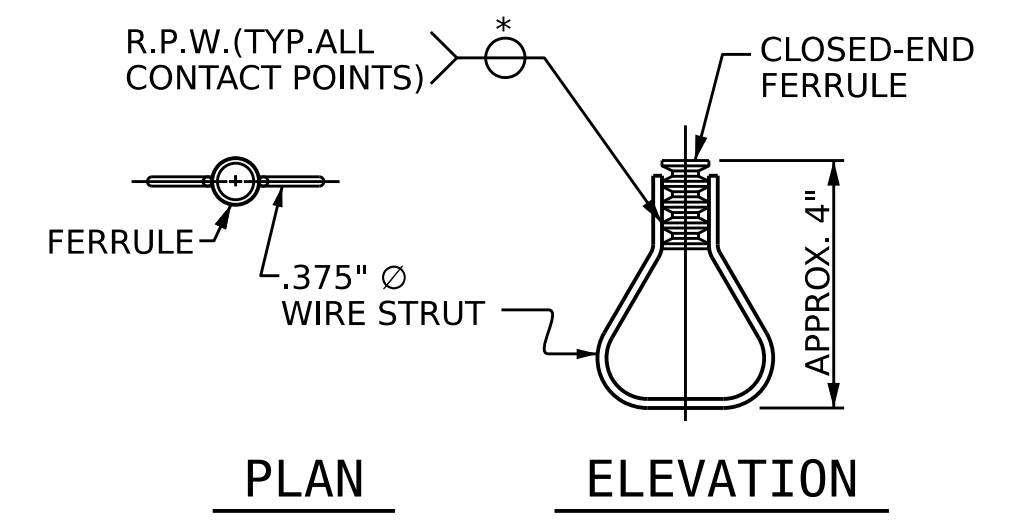
PLAN OF RAIL POST SPACINGS



DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST



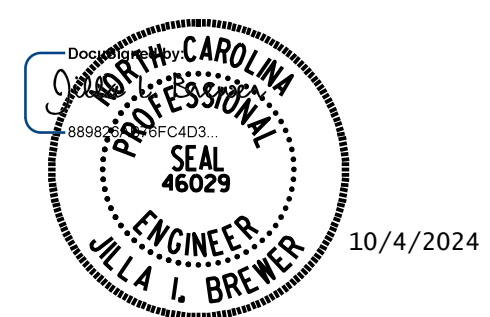
STRUCTURAL CONCRETE INSERT

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

PROJECT NO. **B-5766**
STOKES COUNTY
 STATION: **14+96.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS**
 FOR TWO BAR METAL RAILS



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 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-37
1			3			TOTAL SHEETS 60
2			4			

STD. NO. BMR2

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 1 1/2".
- 1 - 3/4" Ø x 1 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 3/4" Ø x 1 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 7/16" 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.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø x 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø x 1 1/8" 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 3/4" Ø x 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø x 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø x 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø x 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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.

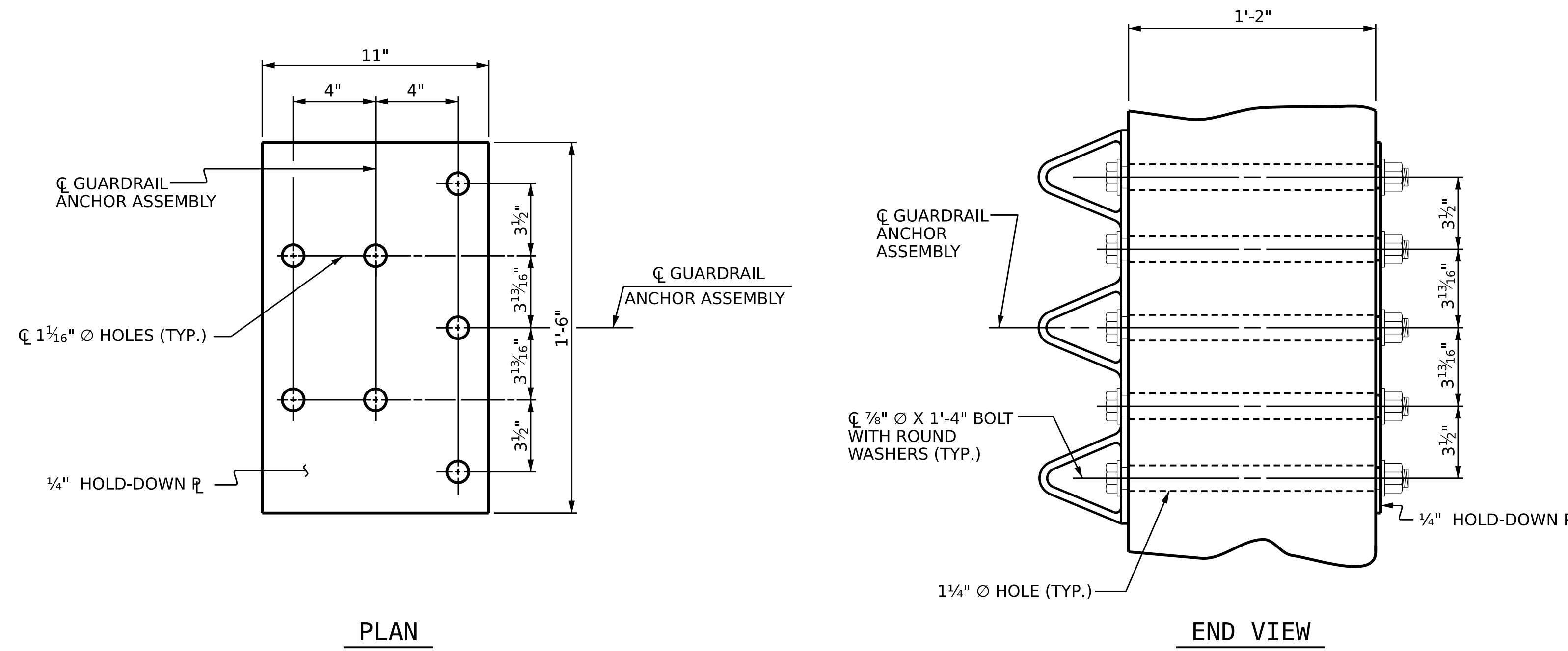
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

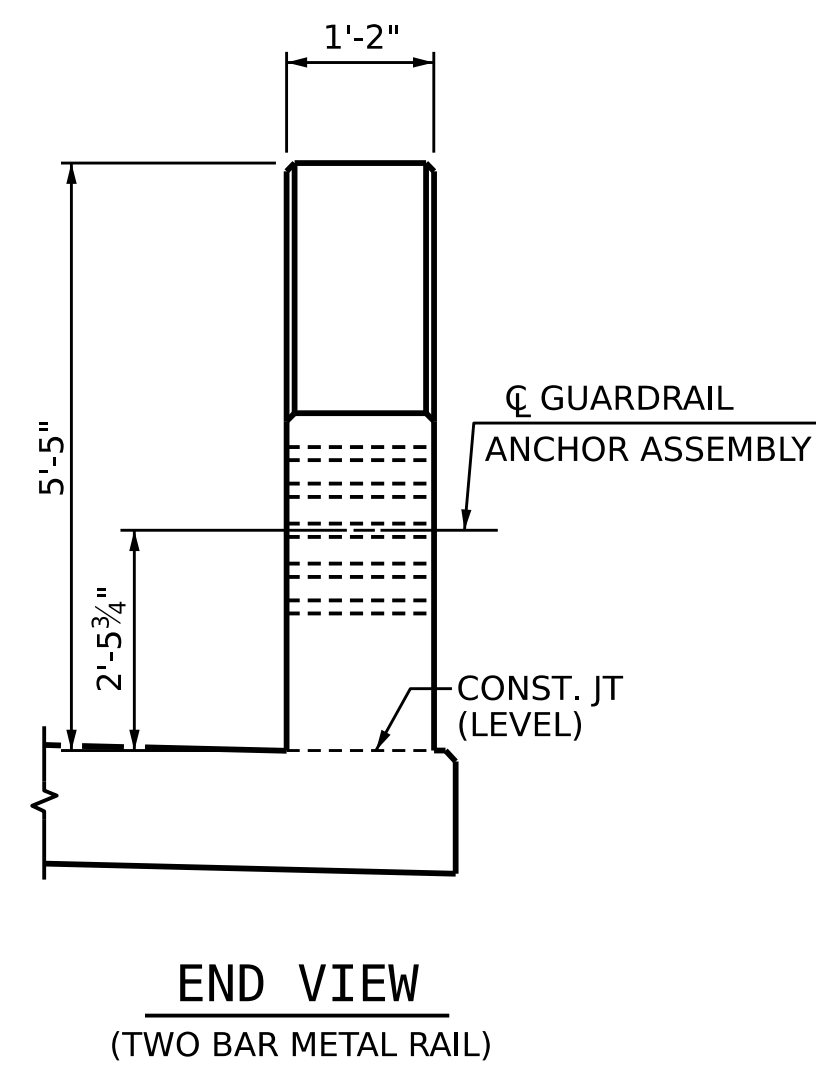


GUARDRAIL ANCHOR ASSEMBLY DETAILS

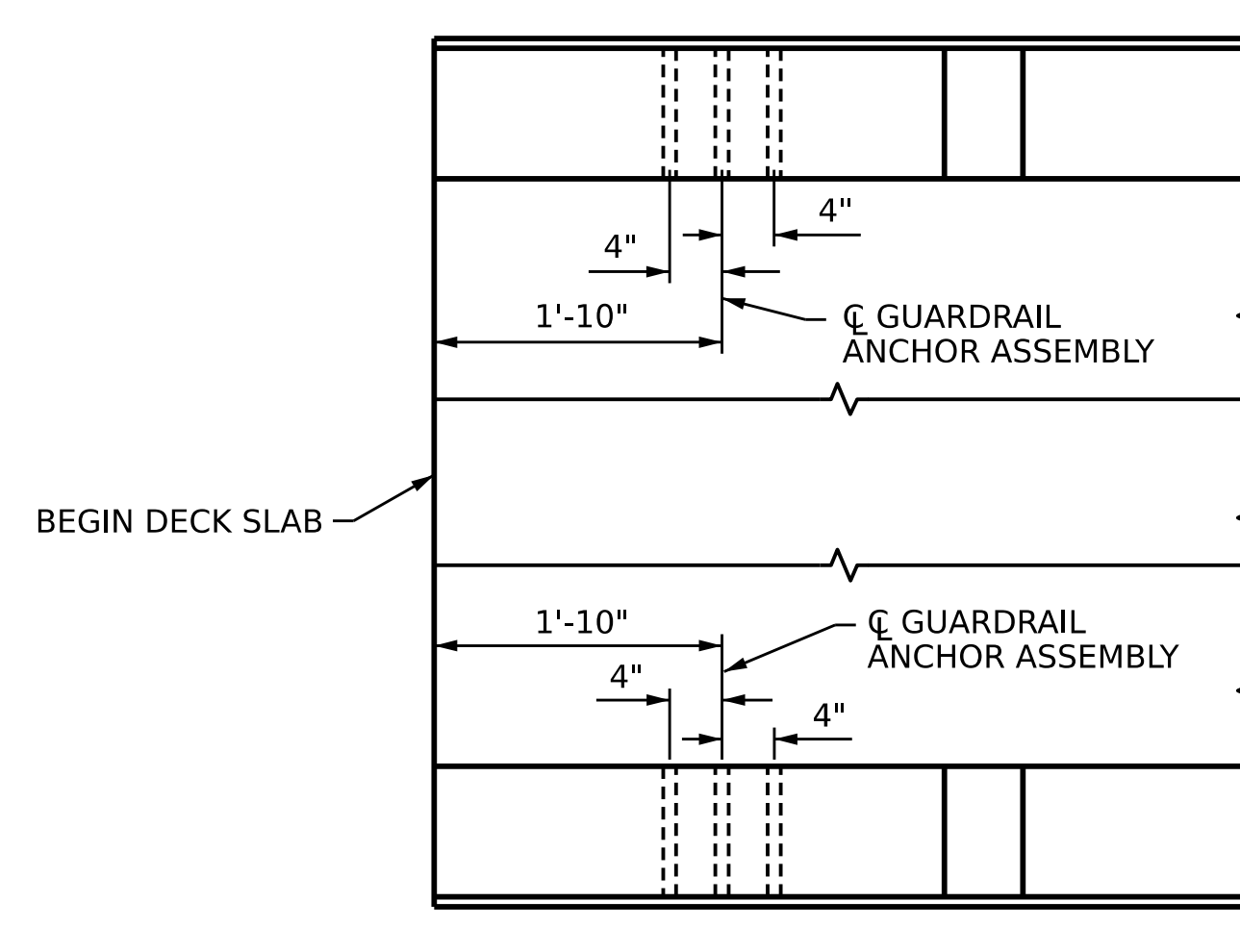


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



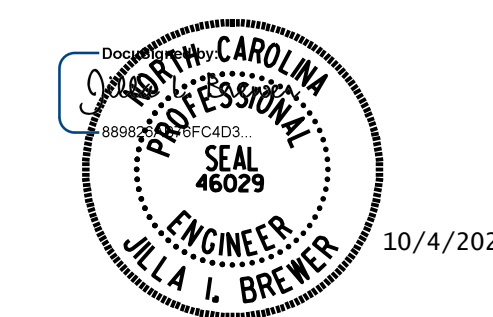
END VIEW
(TWO BAR METAL RAIL)



PLAN
GUARDRAIL ANCHORAGE ASSEMBLIES AT END BENT 1 SHOWN, DETAILS FOR END BENT 2 SIMILAR

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-



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

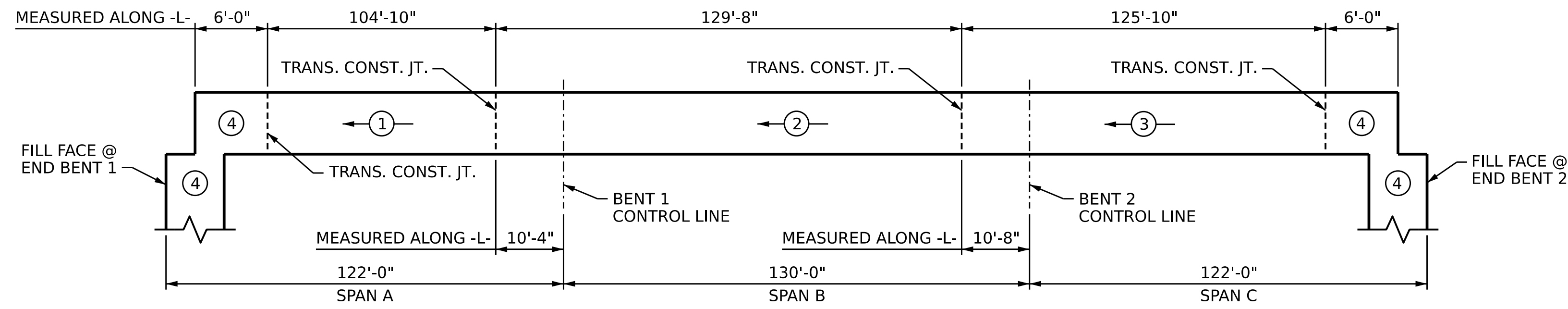
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS 60
2			4			

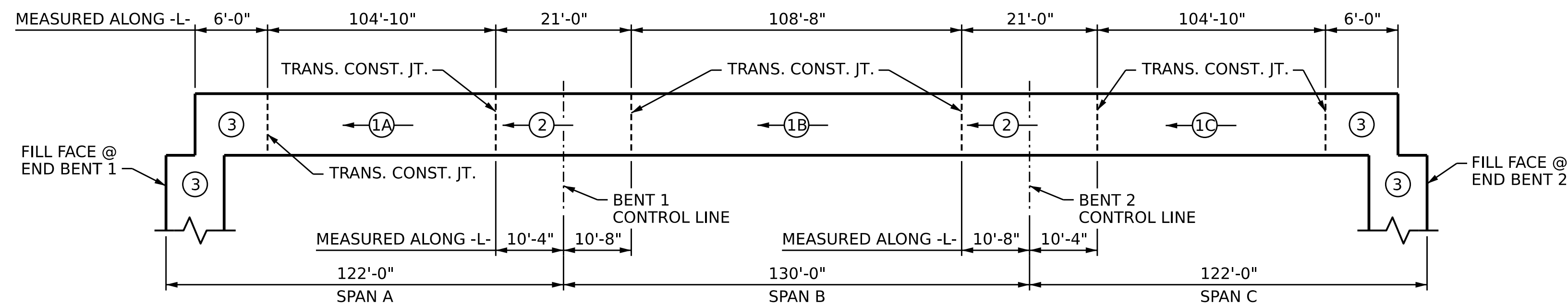
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ASSEMBLED BY:	B.E. LANNING	DATE:	06/2024
CHECKED BY:	J.I. BREWER	DATE:	07/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	07/2024
DRAWN BY :	MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY :	GM 5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC



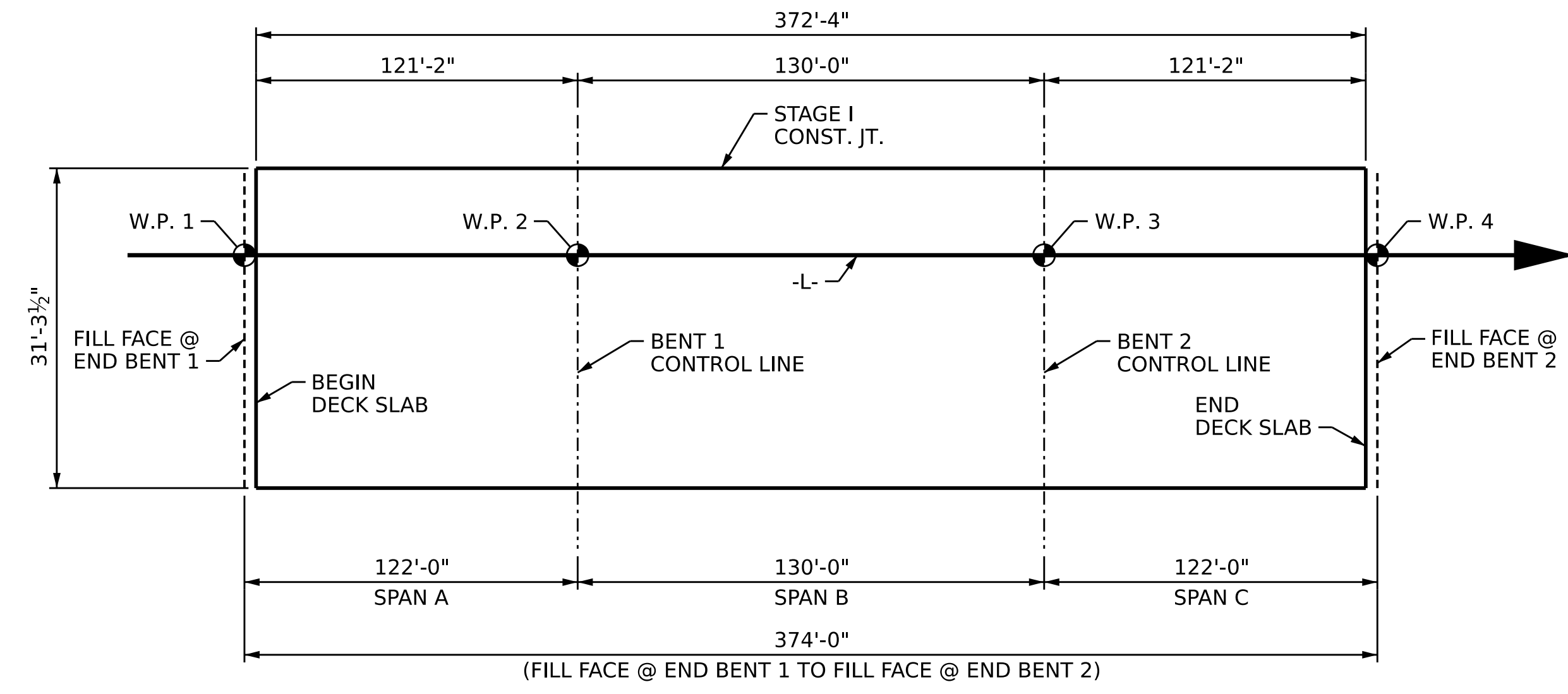
POURING SEQUENCE - STAGE I

① → INDICATES POUR NUMBER AND POUR DIRECTION



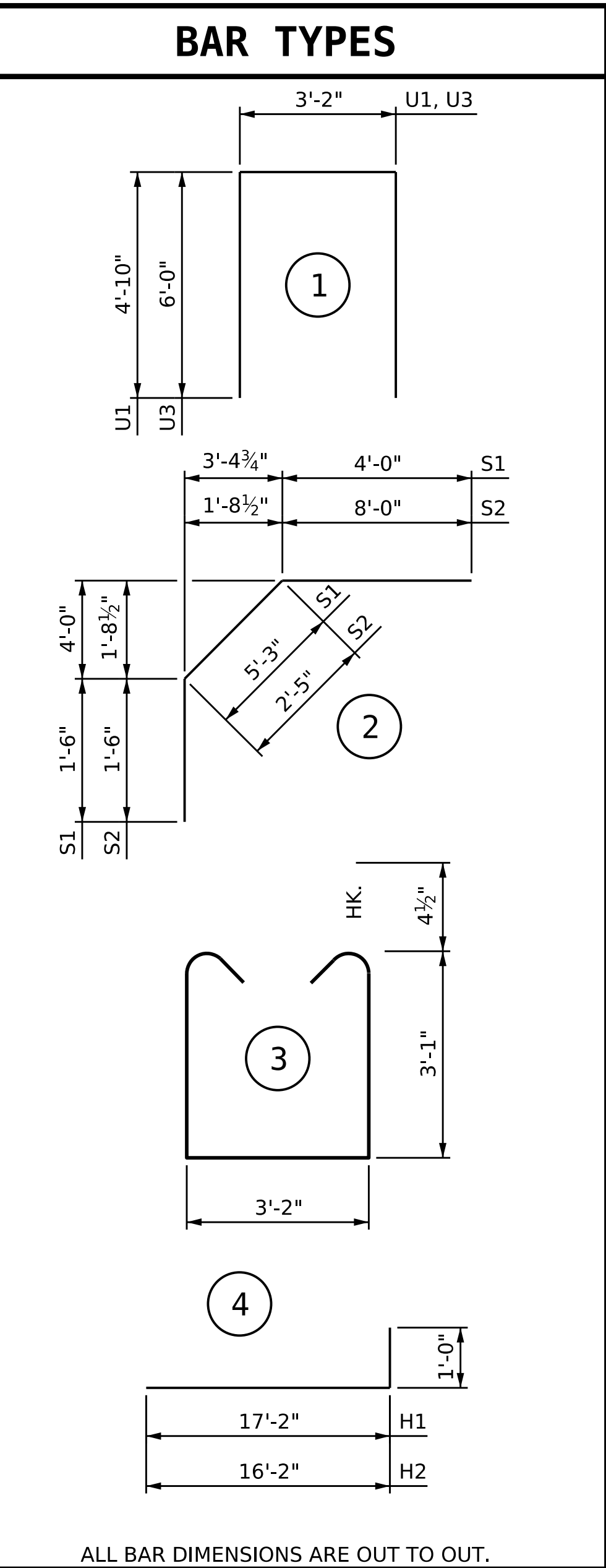
OPTIONAL POURING SEQUENCE - STAGE I

① → INDICATES POUR NUMBER AND POUR DIRECTION



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB STAGE I (SQ. FT. = 11,704)

REINFORCING BAR SCHEDULE					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	812	#5	STR	30'-11"	26,184
A2	812	#5	STR	30'-11"	26,184
B1	224	#5	STR	54'-11"	12,830
*B2	132	#4	STR	28'-7"	2,520
*B3	44	#4	STR	24'-5"	718
*B4	40	#6	STR	24'-1"	1,447
*B5	40	#6	STR	27'-1"	1,627
*B6	132	#6	STR	30'-5"	6,031
*B7	40	#6	STR	49'-10"	2,994
*B8	40	#6	STR	49'-10"	2,994
B9	116	#5	STR	31'-3"	3,781
*D1	1624	#5	STR	5'-1"	8,610
E1	32	#4	STR	2'-4"	50
H1	26	#6	4	18'-2"	709
H2	26	#6	4	17'-2"	670
K1	12	#4	STR	36'-7"	293
K2	4	#4	STR	8'-6"	23
K3	4	#4	STR	10'-2"	27
K4	12	#4	STR	11'-1"	89
K5	4	#4	STR	10'-9"	29
K6	2	#4	STR	3'-9"	5
K7	2	#4	STR	4'-7"	6
K8	6	#4	STR	5'-0"	20
K9	2	#4	STR	4'-10"	6
K10	2	#4	STR	5'-4"	7
K11	2	#4	STR	6'-0"	8
K12	6	#4	STR	6'-8"	27
K13	2	#4	STR	6'-6"	9
K14	12	#4	STR	2'-8"	21
*S1	36	#4	2	10'-9"	259
*S2	36	#4	2	11'-11"	287
U1	50	#4	1	12'-10"	429
U2	12	#4	3	10'-1"	81
U3	8	#4	1	15'-2"	81
V1	32	#5	STR	6'-0"	200
V2	30	#5	STR	5'-8"	177



FOR SUMMARY OF QUANTITIES, SEE SHEET 2 OF 2.

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

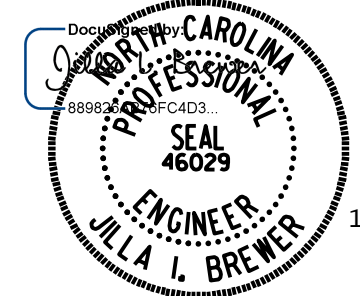
STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS 60
2			4			

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1' - 11"	1' - 7"	1' - 11"	1' - 7"	2' - 6"
#5	2' - 5"	2' - 0"	2' - 5"	2' - 0"	3' - 1"
#6	2' - 10"	2' - 5"	3' - 7"	2' - 5"	3' - 8"
#7	4' - 2"	2' - 9"			
#8	4' - 9"	3' - 2"			

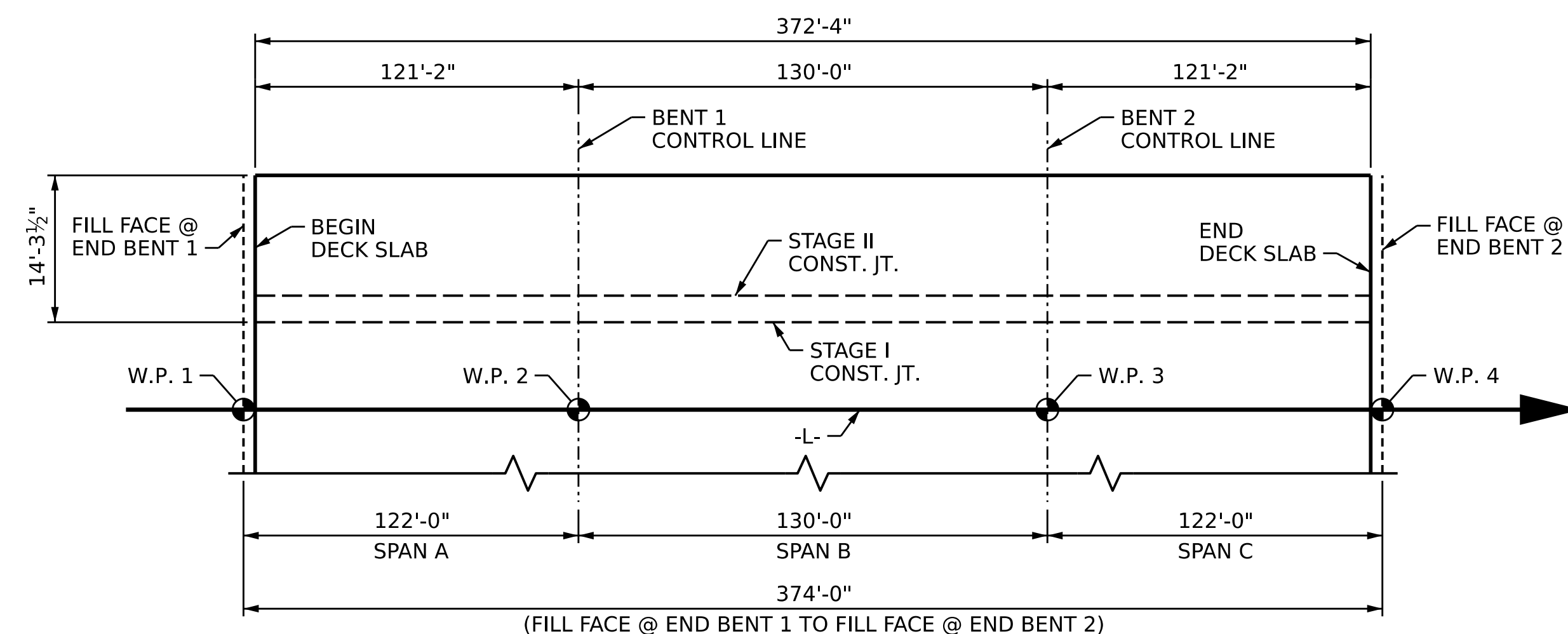
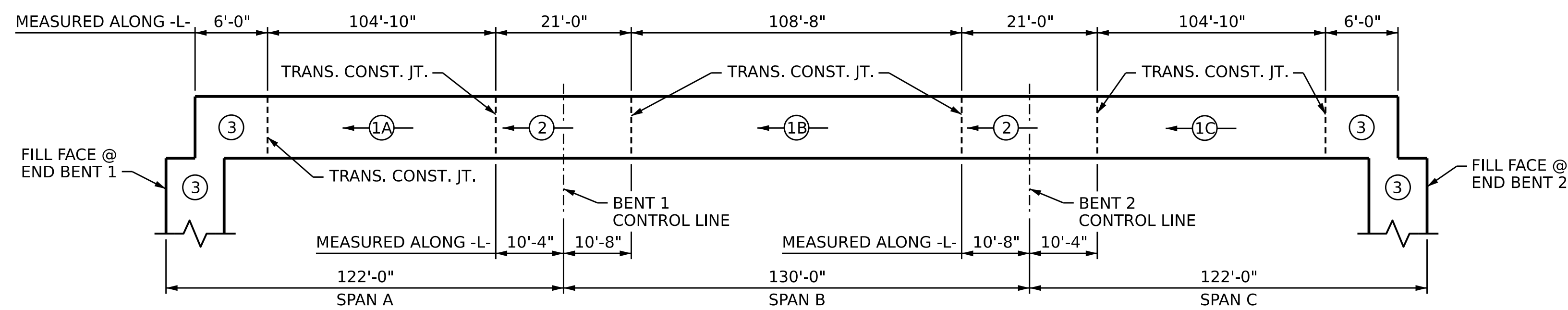
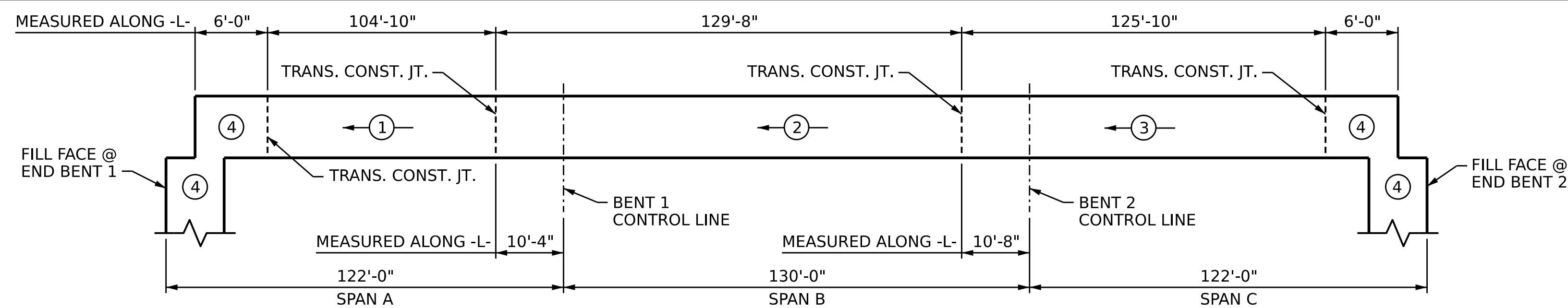
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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671



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DRAWN BY: B.E. LANNING DATE: 06/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

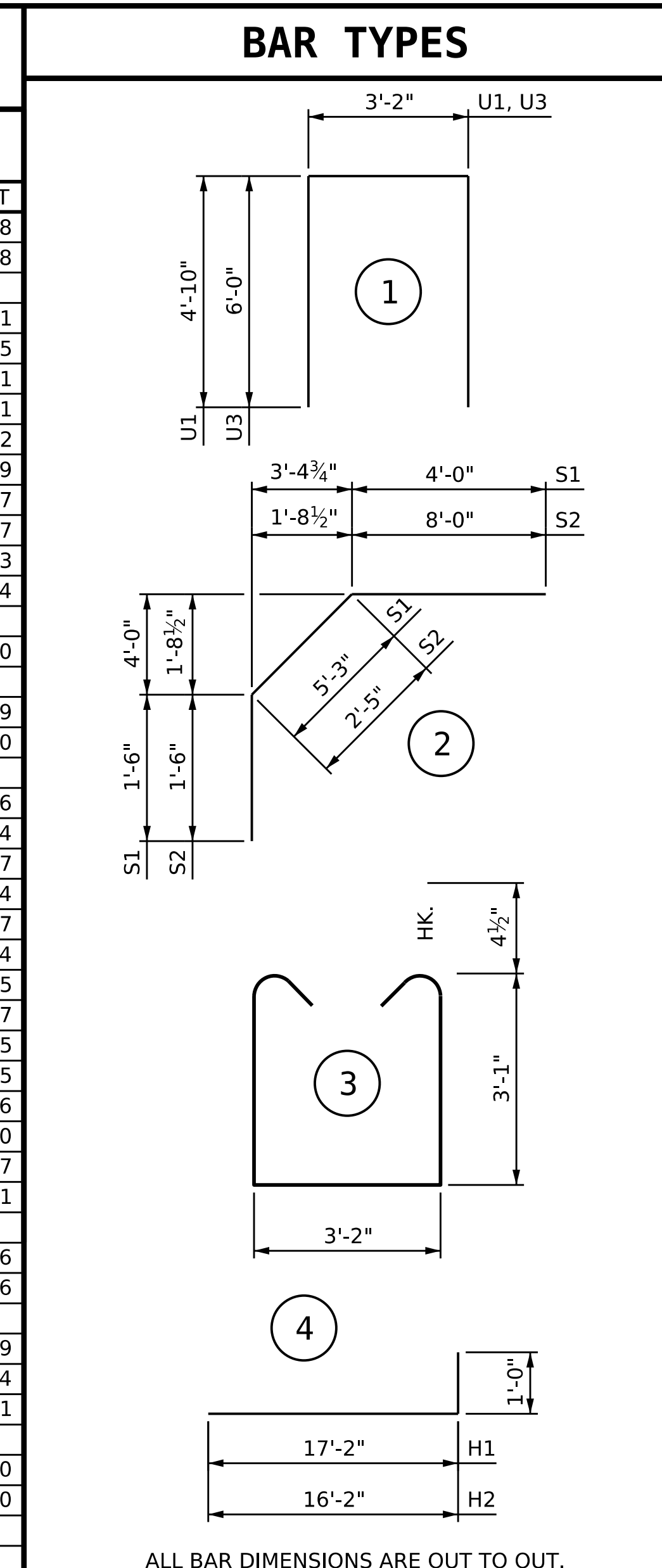


LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB STAGE II (SQ. FT. = 5,346)

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1' - 11"	1' - 7"	1' - 11"	1' - 7"	2' - 6"
#5	2' - 5"	2' - 0"	2' - 5"	2' - 0"	3' - 1"
#6	2' - 10"	2' - 5"	3' - 7"	2' - 5"	3' - 8"
#7	4' - 2"	2' - 9"			
#8	4' - 9"	3' - 2"			

GROOVING BRIDGE FLOORS	
STAGE I	
APPROACH SLABS	818 SQ.FT.
BRIDGE DECK	10,612 SQ.FT.
TOTAL	11,430 SQ.FT.
STAGE II	
APPROACH SLABS	172 SQ.FT.
BRIDGE DECK	2,234 SQ.FT.
TOTAL	2,406 SQ.FT.
TOTAL	
APPROACH SLABS	990 SQ.FT.
BRIDGE DECK	12,846 SQ.FT.
TOTAL	13,836 SQ.FT.

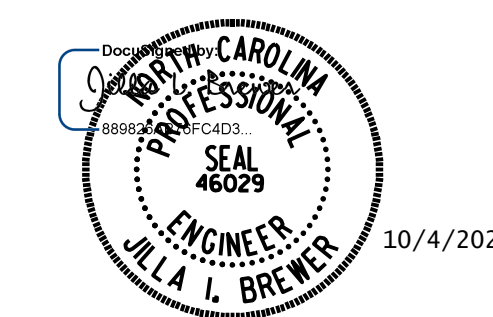
REINFORCING BAR SCHEDULE					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	812	#5	STR	11'-4"	9,598
A4	812	#5	STR	11'-4"	9,598
B1	84	#5	STR	54'-11"	4,811
*B2	72	#4	STR	28'-7"	1,375
*B3	24	#4	STR	24'-5"	391
*B4	18	#6	STR	24'-1"	651
*B5	18	#6	STR	27'-1"	732
*B6	72	#6	STR	30'-5"	3,289
*B7	18	#6	STR	49'-10"	1,347
*B8	18	#6	STR	49'-10"	1,347
B9	36	#5	STR	31'-3"	1,173
B10	8	#5	STR	29'-3"	244
*D1	1624	#5	STR	5'-1"	8,610
H1	26	#6	4	18'-2"	709
H2	26	#6	4	17'-2"	670
K21	12	#4	STR	17'-0"	136
K22	2	#4	STR	3'-4"	4
K23	2	#4	STR	5'-0"	7
K24	6	#4	STR	5'-11"	24
K25	2	#4	STR	5'-7"	7
K26	2	#4	STR	2'-10"	4
K27	2	#4	STR	3'-10"	5
K28	6	#4	STR	4'-2"	17
K29	2	#4	STR	4'-0"	5
K30	2	#4	STR	3'-9"	5
K31	2	#4	STR	4'-6"	6
K32	6	#4	STR	5'-1"	20
K33	2	#4	STR	4'-11"	7
K34	12	#4	STR	2'-8"	21
*S1	12	#4	2	10'-9"	86
*S2	12	#4	2	11'-11"	96
U1	22	#4	1	12'-10"	189
U2	8	#4	3	10'-1"	54
U3	8	#4	1	15'-2"	81
V1	32	#5	STR	6'-0"	200
V3	30	#5	STR	5'-9"	180



SUPERSTRUCTURE BILL OF MATERIAL								
	CLASS AA CONCRETE				REINFORCING STEEL	*EPOXY COATED REINFORCING STEEL	TOTAL**	
	(CU. YDS.)							
POUR NO.	#1	#2	#3	#4	CLOSURE POUR			
STAGE I DECK	115.5	142.8	138.6	64.8		461.7	45,762	53,671
STAGE II DECK	44.2	54.7	53.1	30.4	37.7	220.1	18,177	27,522
TOTALS**						681.8	63,939	81,193

** QUANTITIES FOR PARAPET AND SIDEWALK ARE NOT INCLUDED.

PROJECT NO. B-5766
 STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 2



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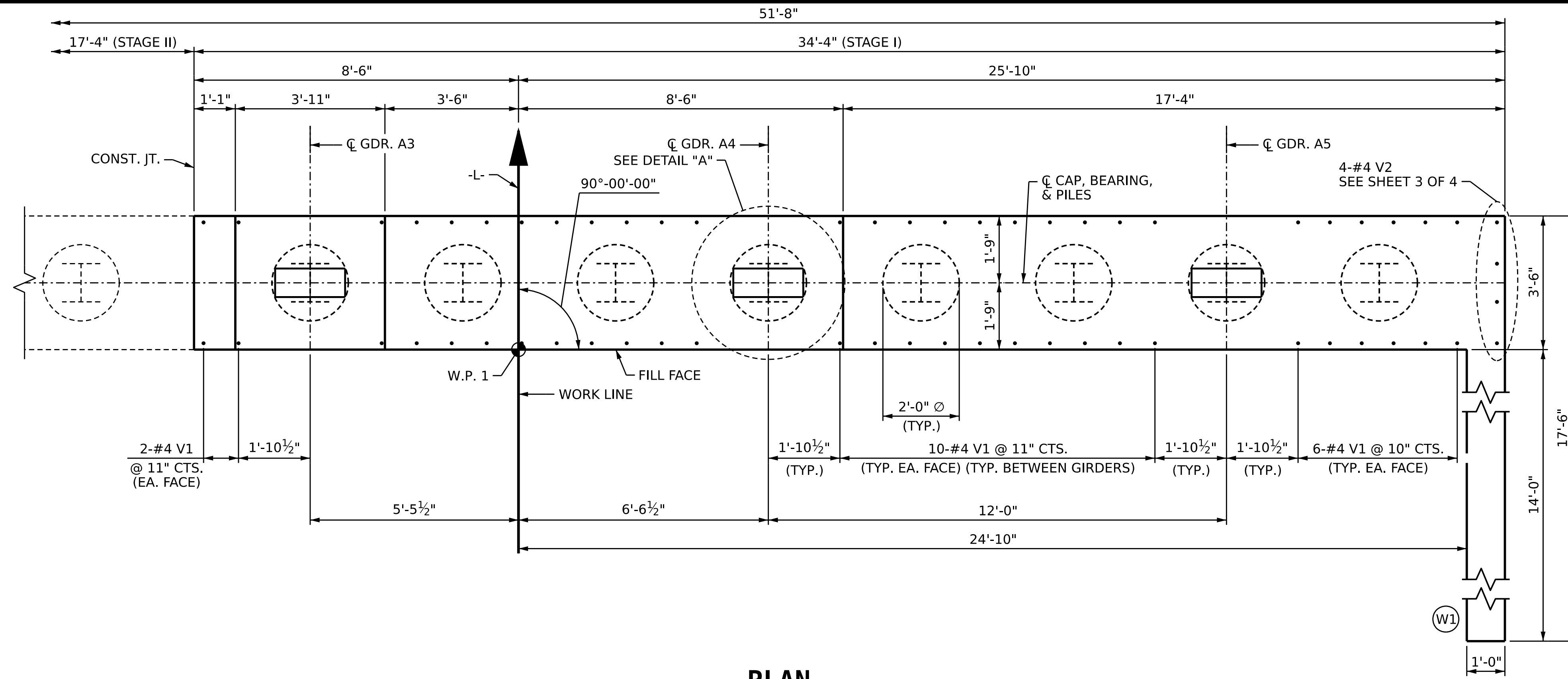
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

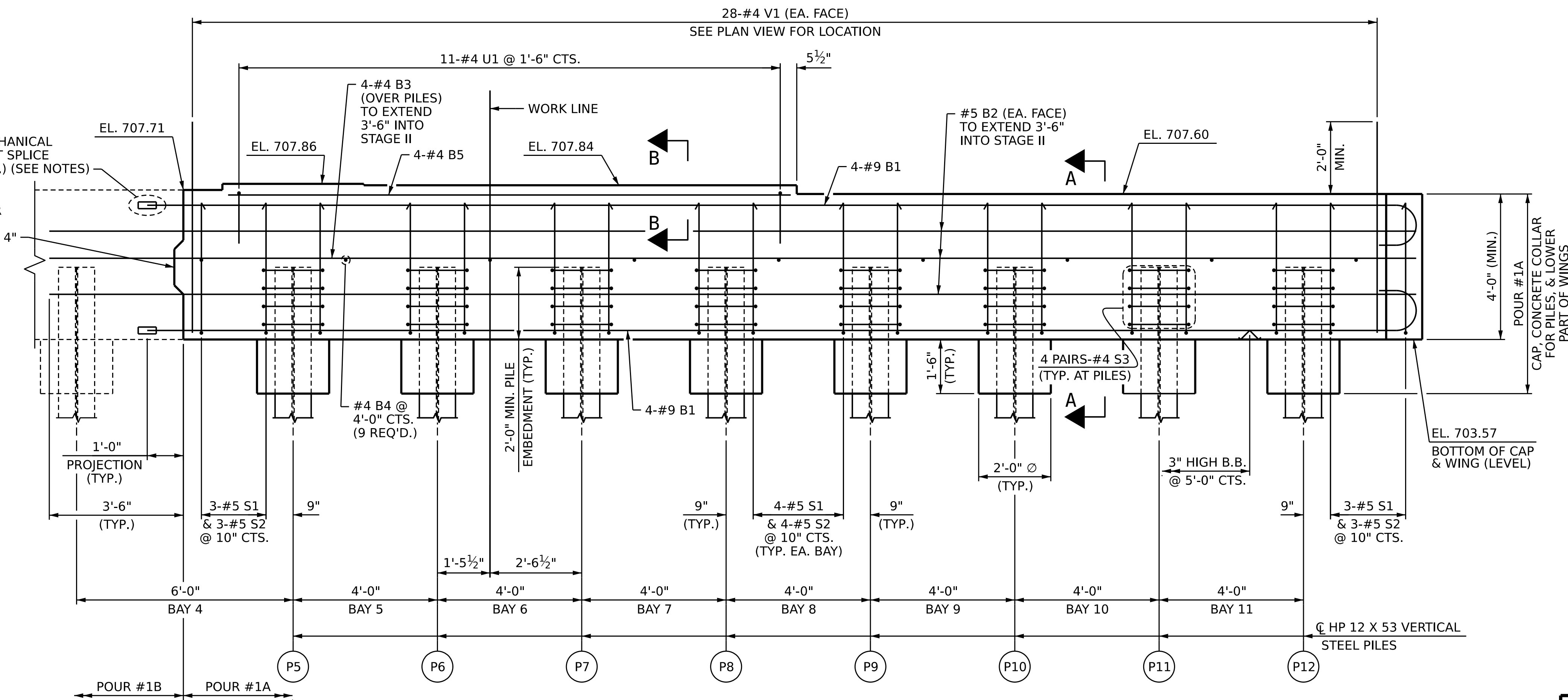
SHEET NO. S-40
 TOTAL SHEETS 60

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PLAN



ELEVATION

NOTES:

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1), EXCEPT THE BEARING AREAS, SHALL BE RAKED TO A DEPTH OF 1/4\".

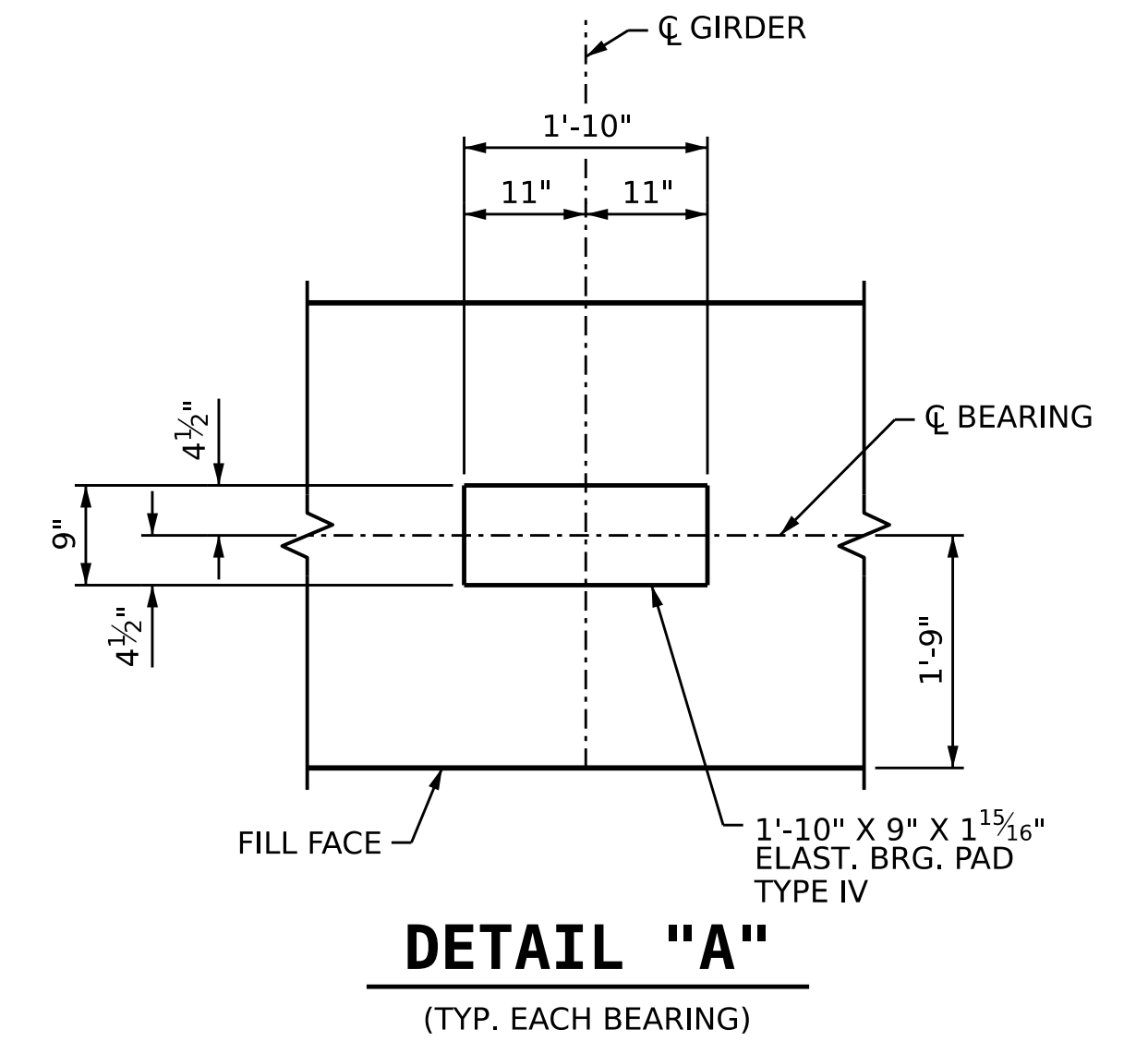
FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

CONTRACTOR MAY ELECT TO USE COUPLERS ON "B" BARS IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHODS.

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

THE UPPER PART OF END BENT CAP AND WINGS SHALL BE Poured WITH THE SUPERSTRUCTURE. SEE THE SUPERSTRUCTURE SHEETS FOR THE UPPER PART OF THE INTEGRAL END BENT DETAILS.

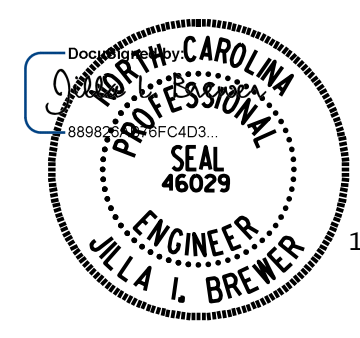


DETAIL "A"
(TYP. EACH BEARING)

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 4

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

STAGE I



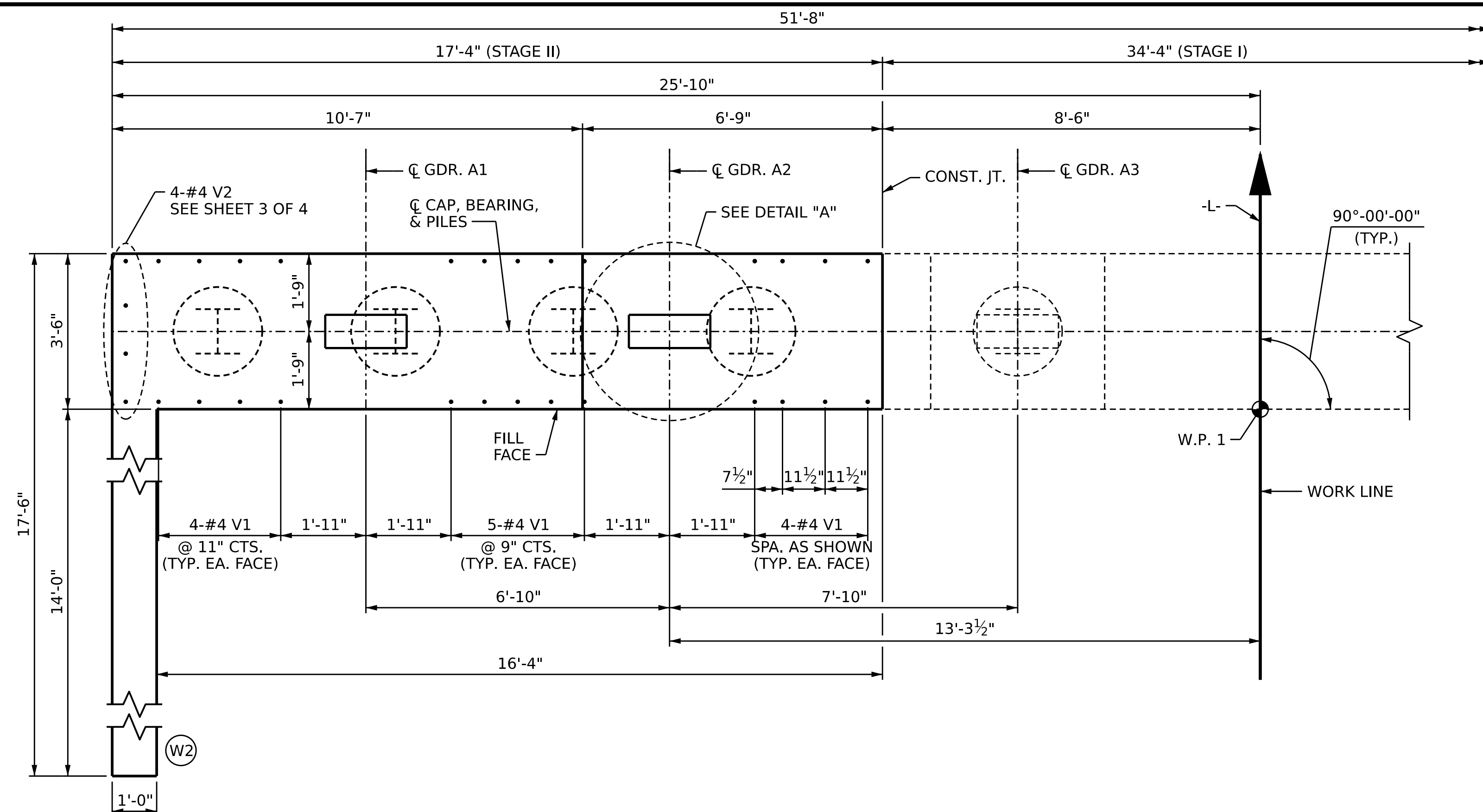
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

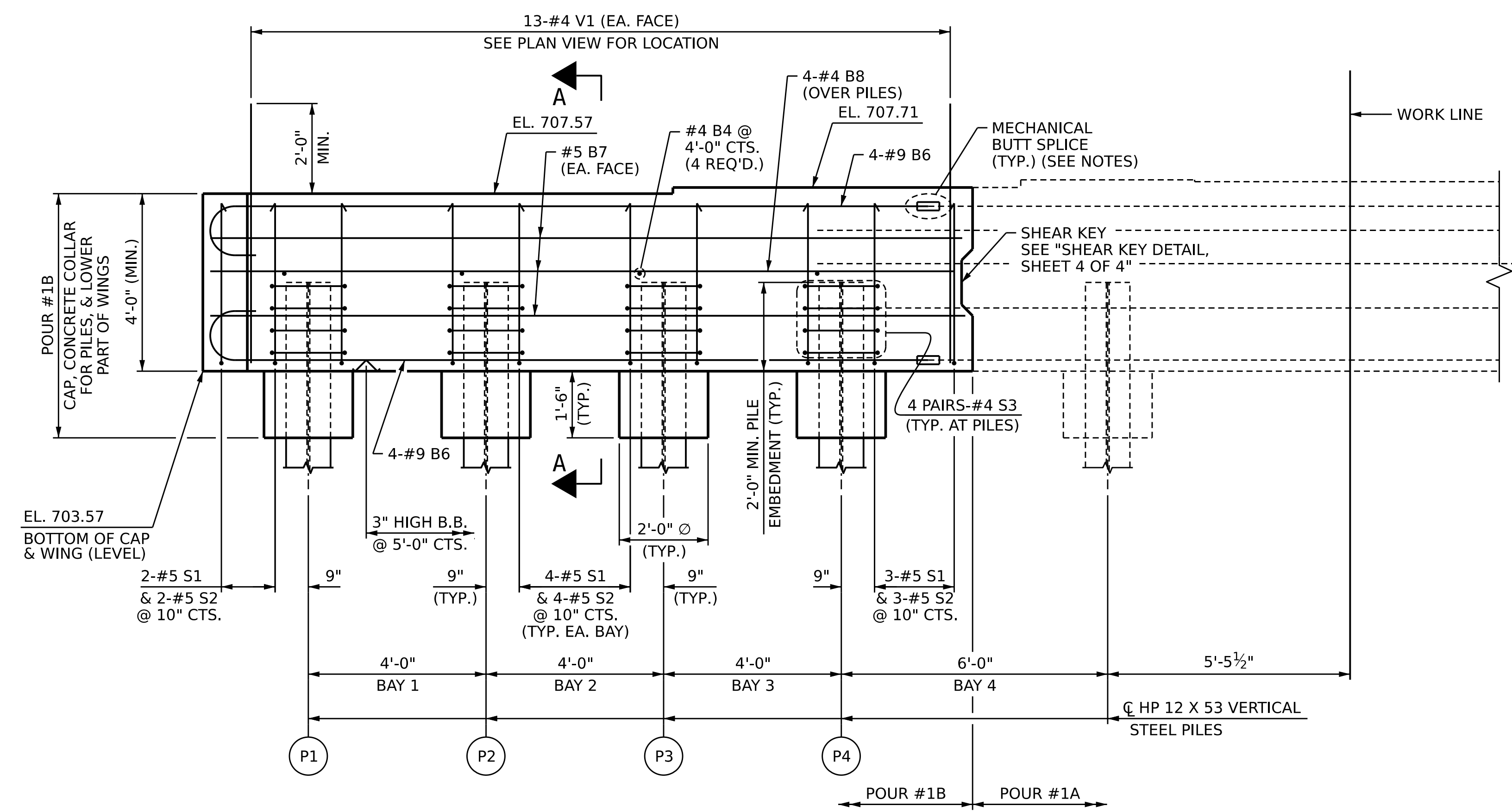
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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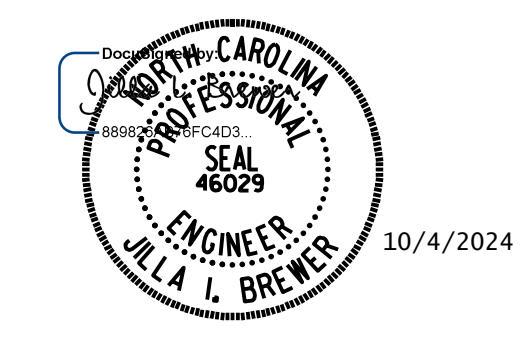
PLAN



ELEVATION

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

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 4



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

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

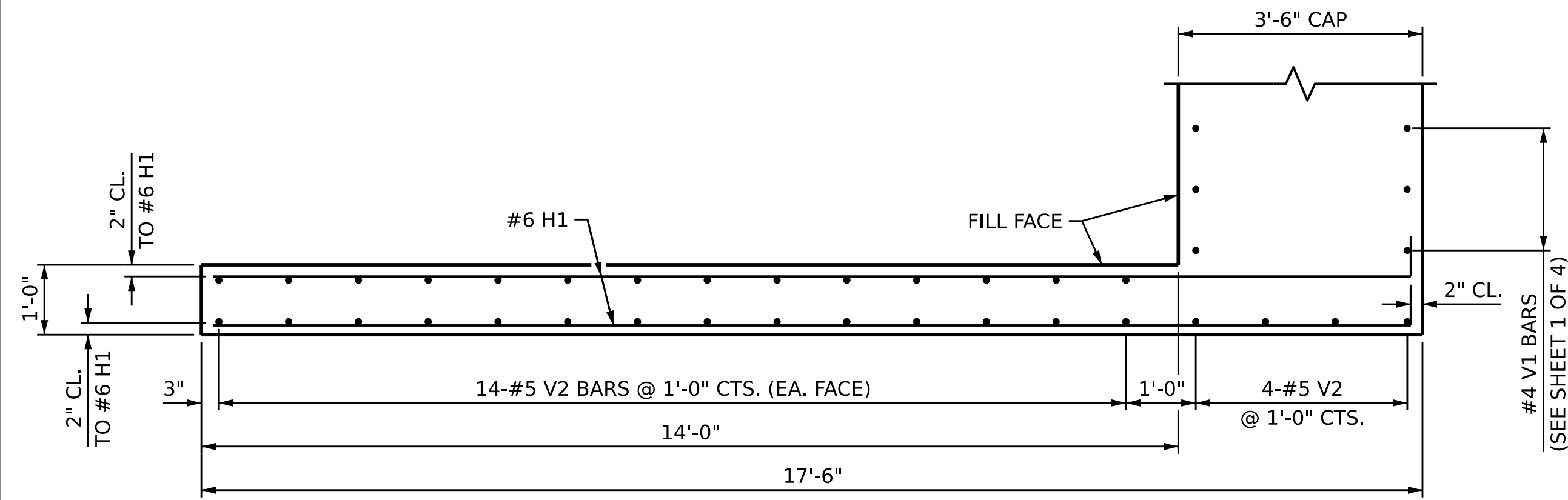
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

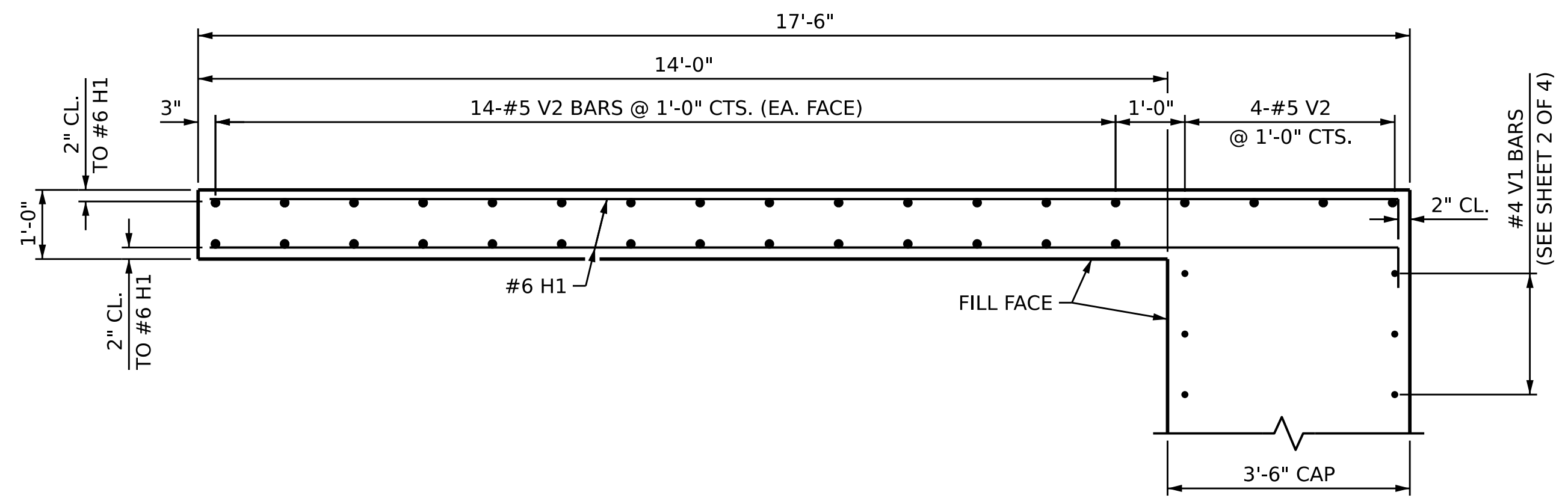
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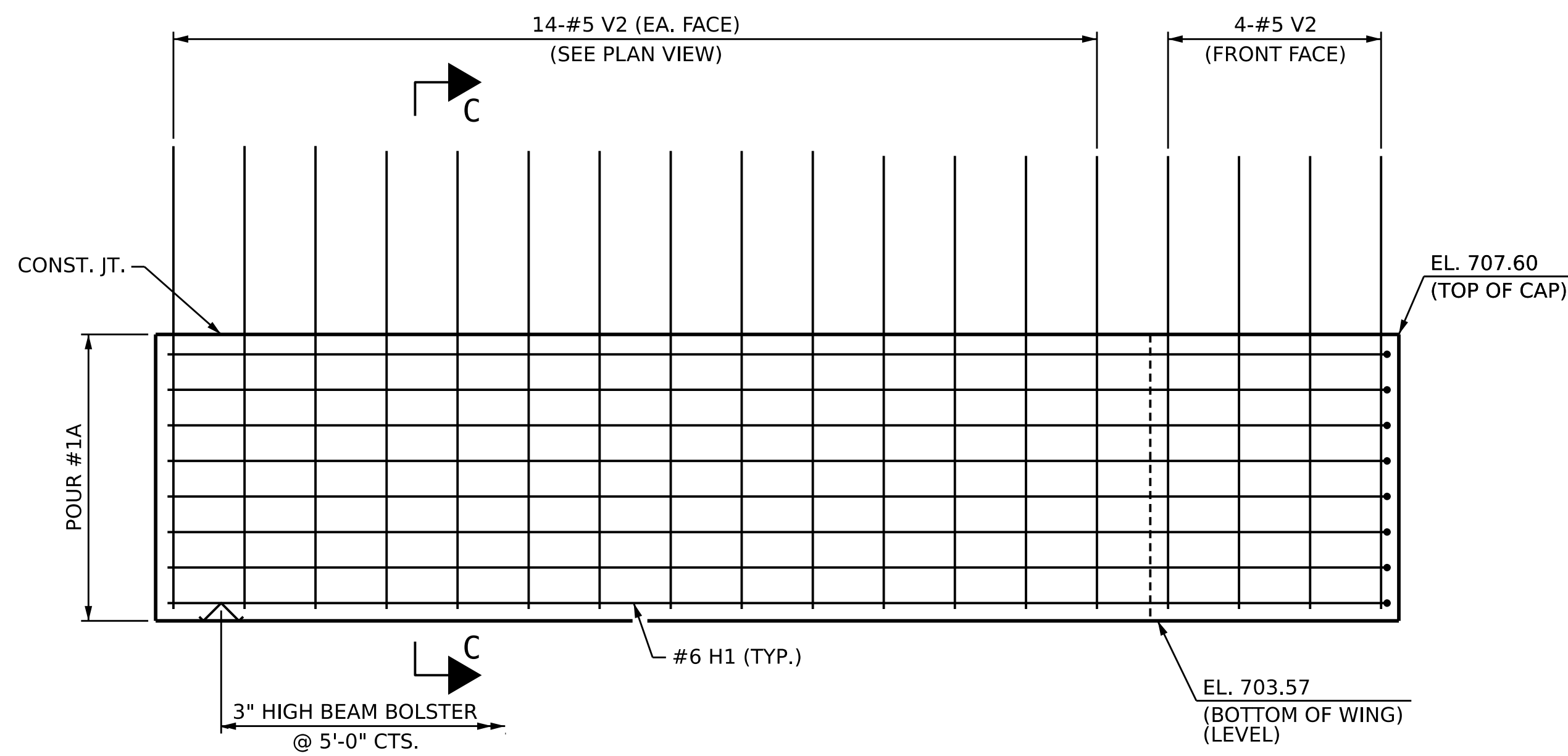
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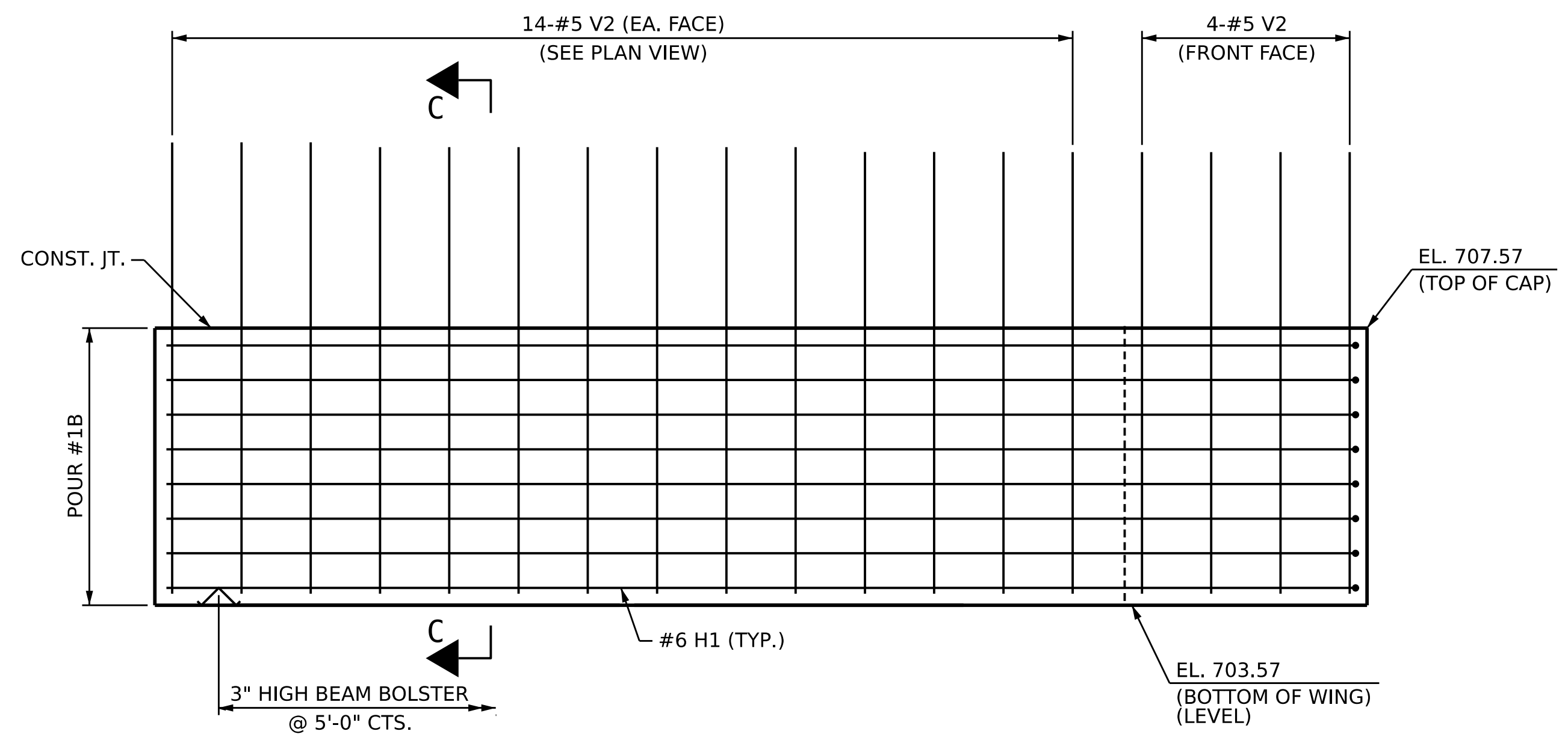
PLAN OF WING (W1)
STAGE I



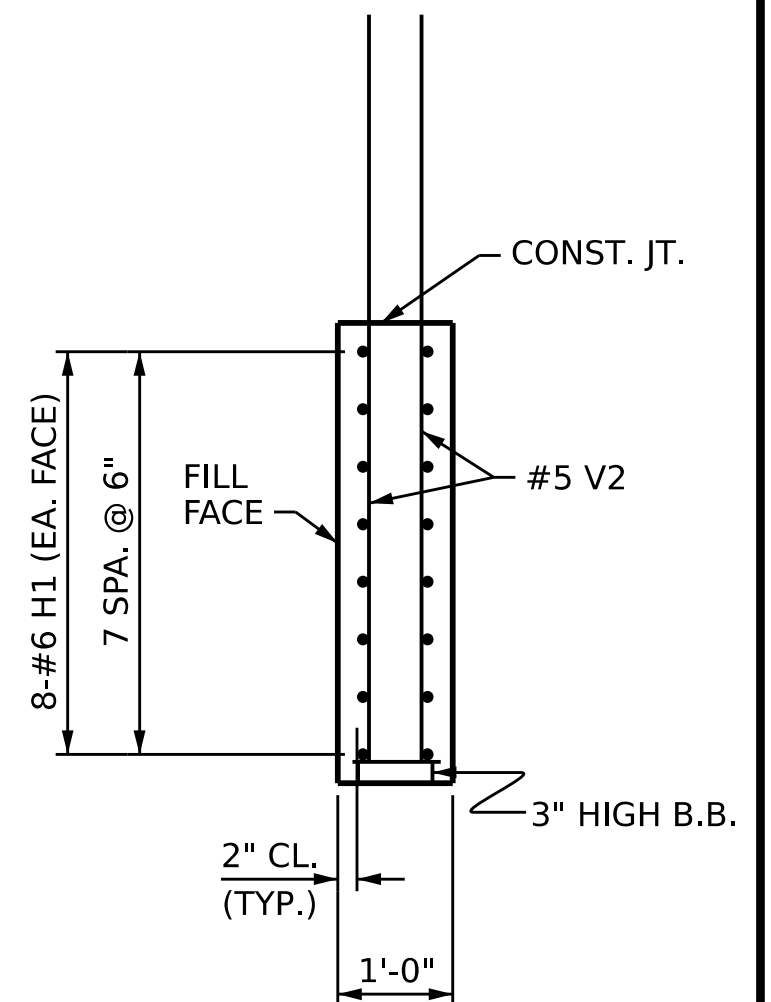
PLAN OF WING (W2)
STAGE II



ELEVATION OF WING (W1)
STAGE I



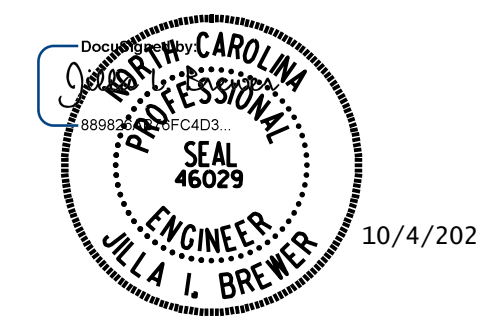
ELEVATION OF WING (W2)
STAGE II



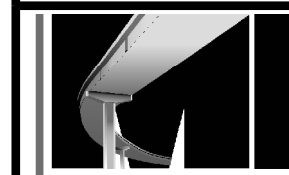
SECTION C-C

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-

SHEET 3 OF 4



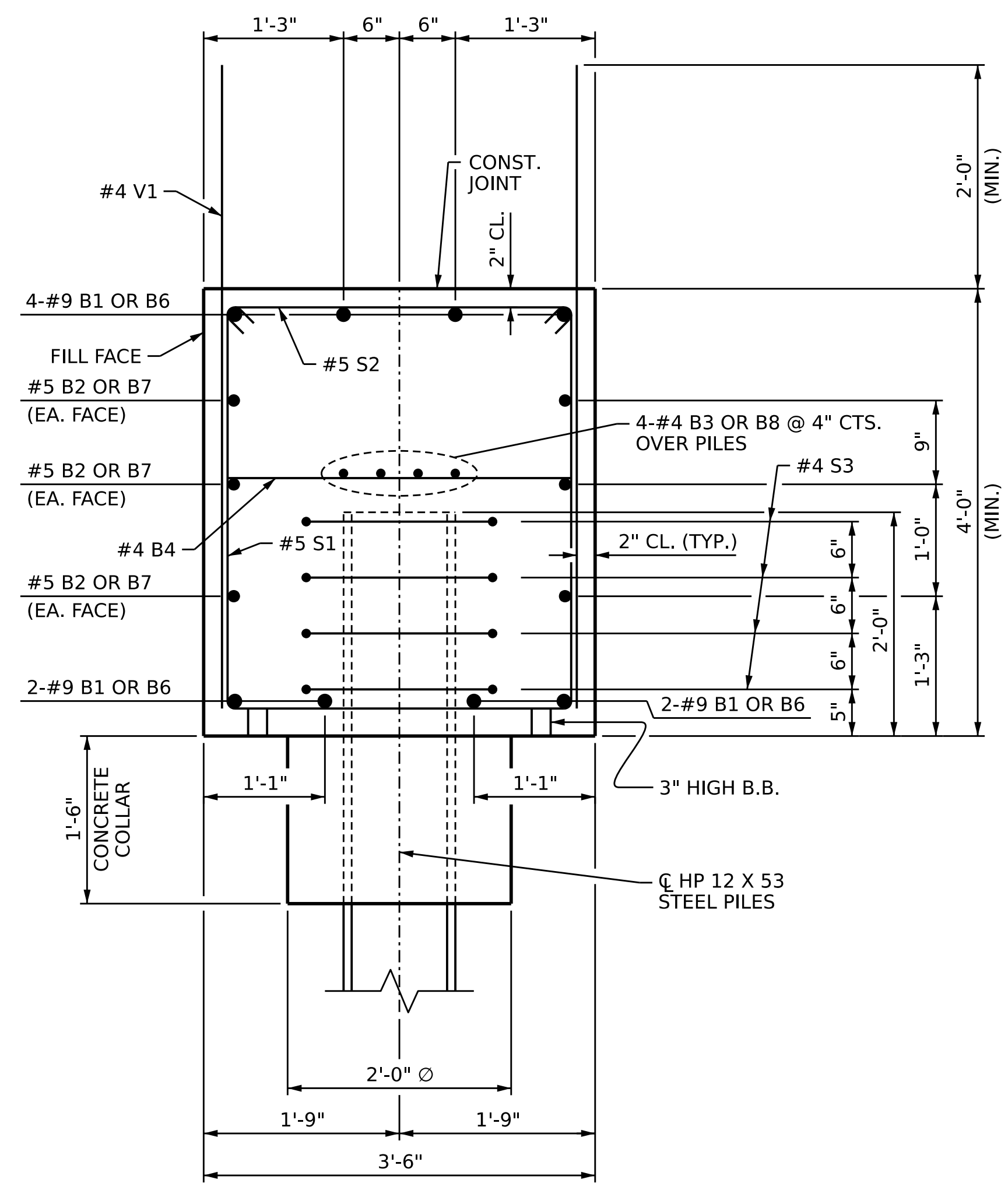
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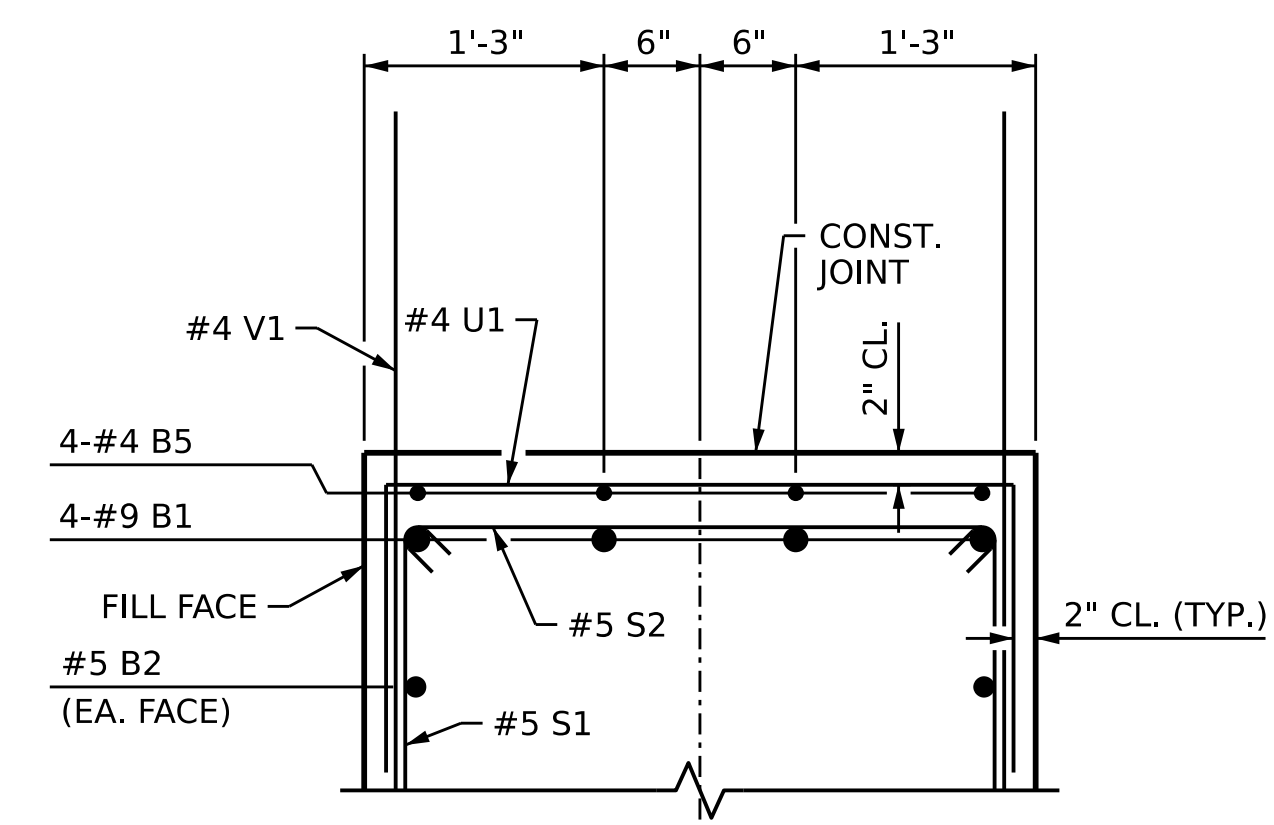
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 WINGWALL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-43					TOTAL SHEETS 60

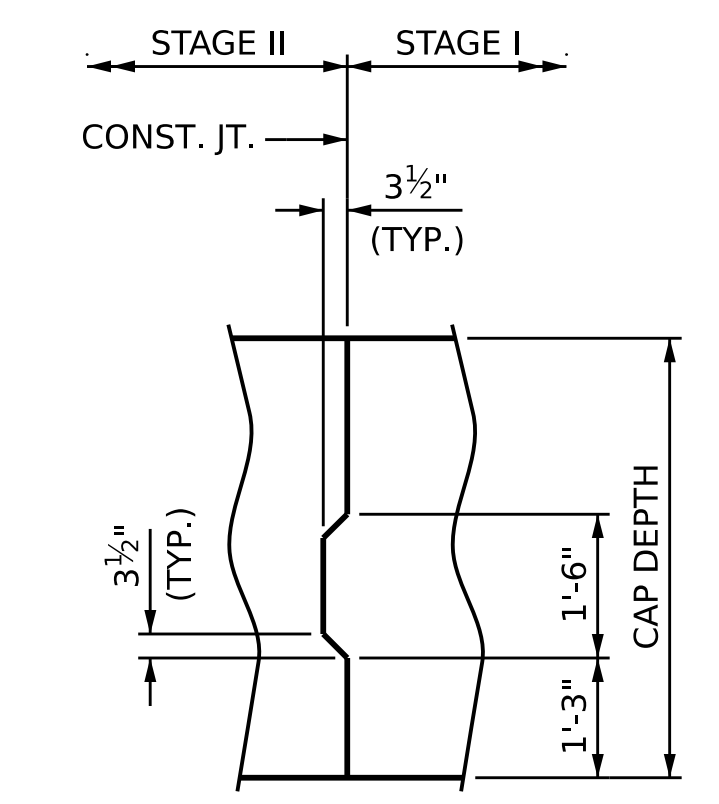
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DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>



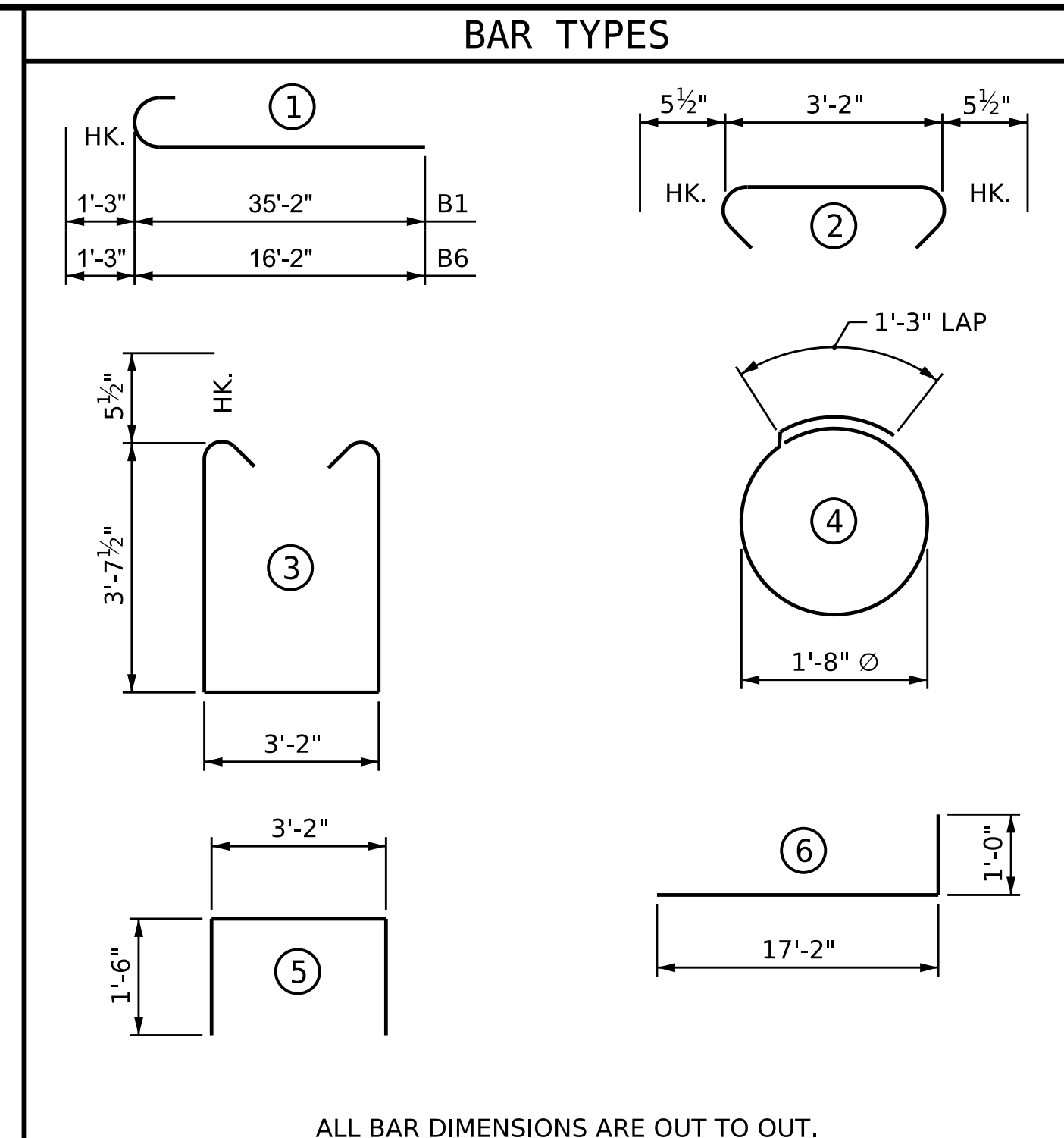
SECTION A-A



SECTION B-B



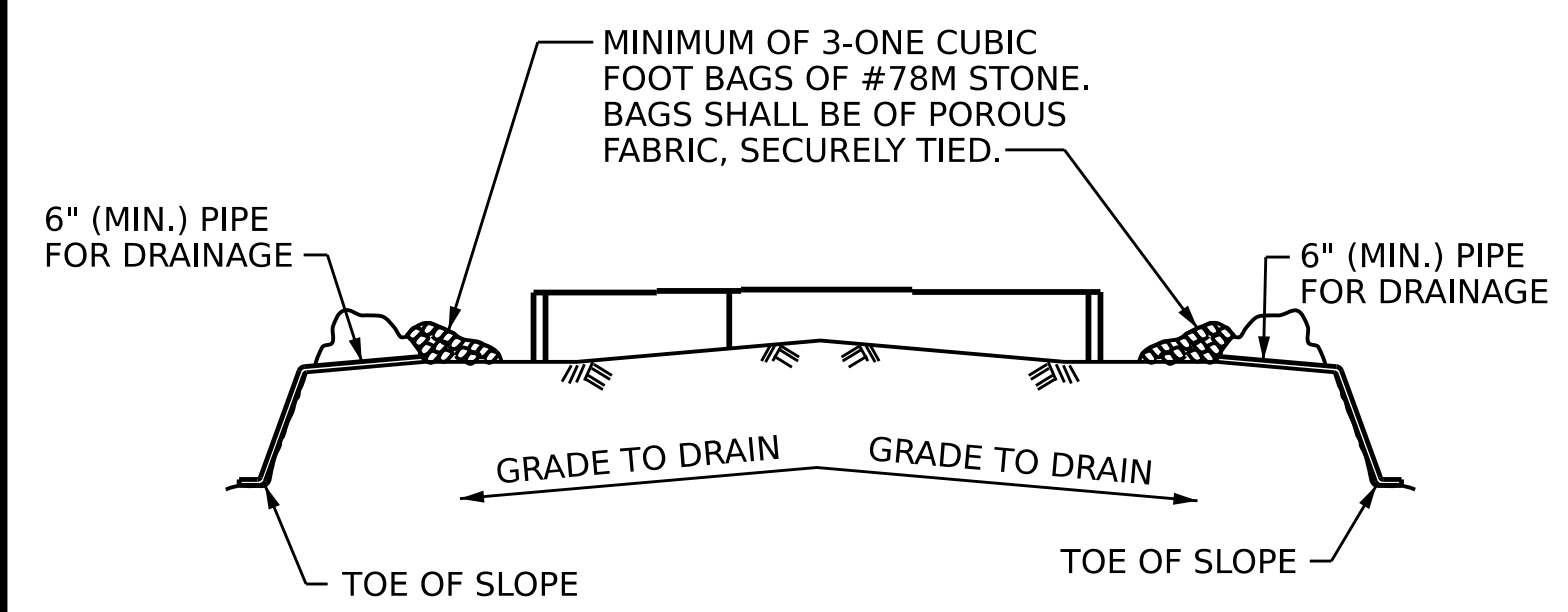
SHEAR KEY DETAIL
ELEVATION VIEW OF CAP



ALL BAR DIMENSIONS ARE OUT TO OUT.

CLASS A CONCRETE BREAKDOWN		
POUR #1A (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W1)	22.2	C.Y.
POUR #1B (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W2)	12.1	C.Y.
TOTAL	34.3	C.Y.

BILL OF MATERIAL					
END BENT 1					
STAGE I					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-5"	991
B2	6	#5	STR	37'-8"	236
B3	4	#4	STR	37'-8"	101
B4	9	#4	STR	3'-2"	19
B5	4	#4	STR	15'-7"	42
H1	16	#6	6	18'-2"	437
S1	34	#5	3	11'-4"	402
S2	34	#5	2	4'-1"	145
S3	32	#4	4	6'-6"	139
U1	11	#4	5	6'-2"	45
V1	56	#4	STR	6'-1"	228
V2	32	#5	STR	5'-10"	195
REINFORCING STEEL					2,980 LBS.
STAGE II					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	4	#4	STR	3'-2"	8
B6	8	#9	1	17'-5"	474
B7	6	#5	STR	16'-8"	104
B8	4	#4	STR	16'-8"	45
H1	16	#6	6	18'-2"	437
S1	17	#5	3	11'-4"	201
S2	17	#5	2	4'-1"	72
S3	16	#4	4	6'-6"	69
V1	26	#4	STR	6'-1"	106
V2	32	#5	STR	5'-10"	195
REINFORCING STEEL					1,711 LBS.

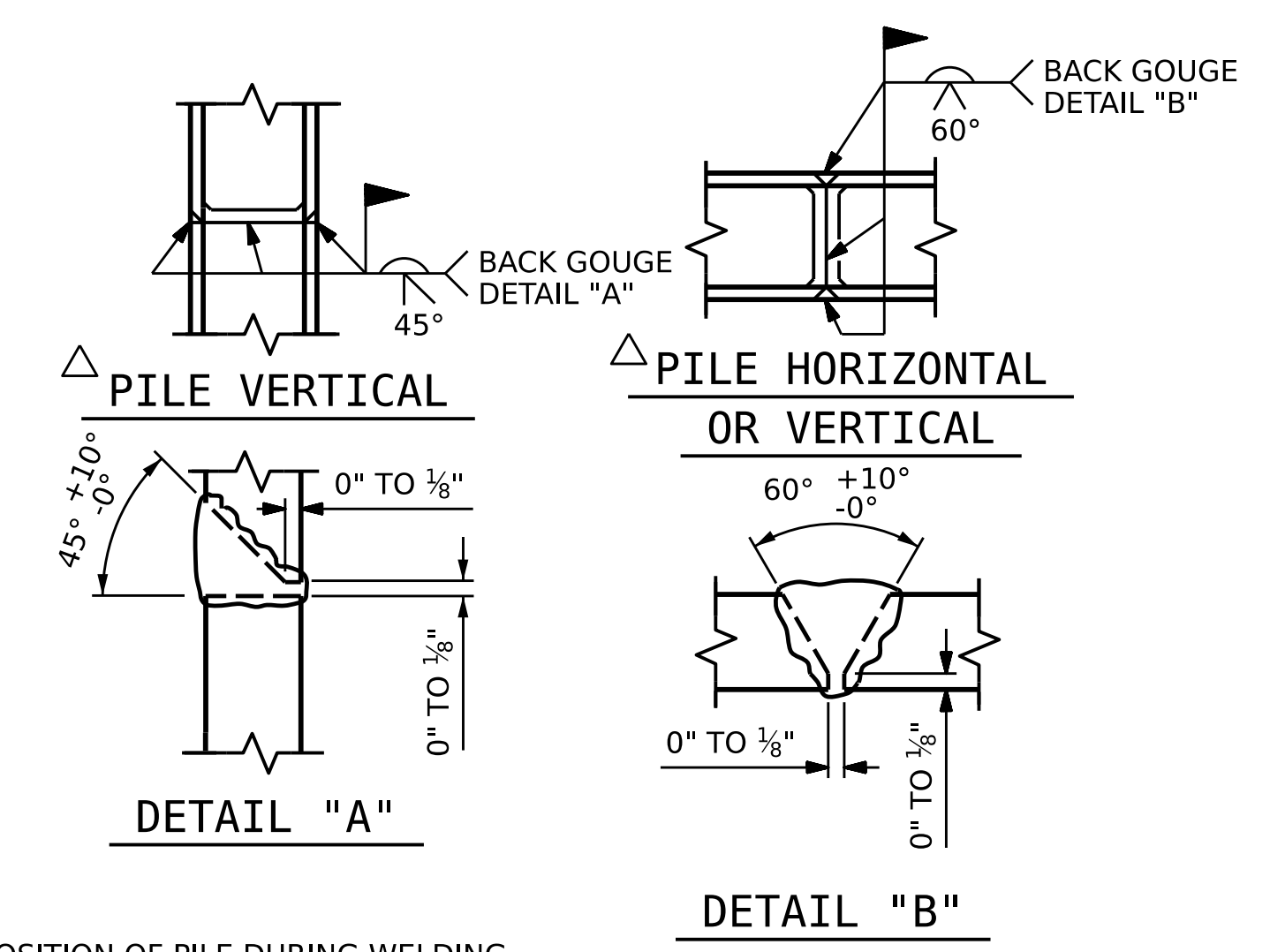


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

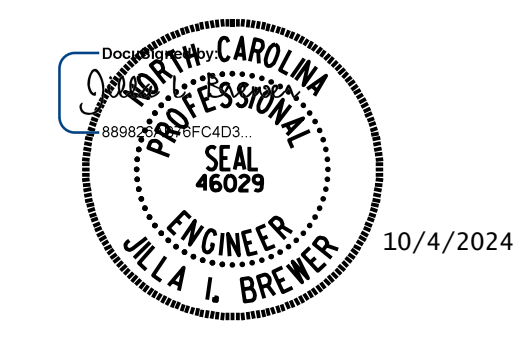
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 4 OF 4



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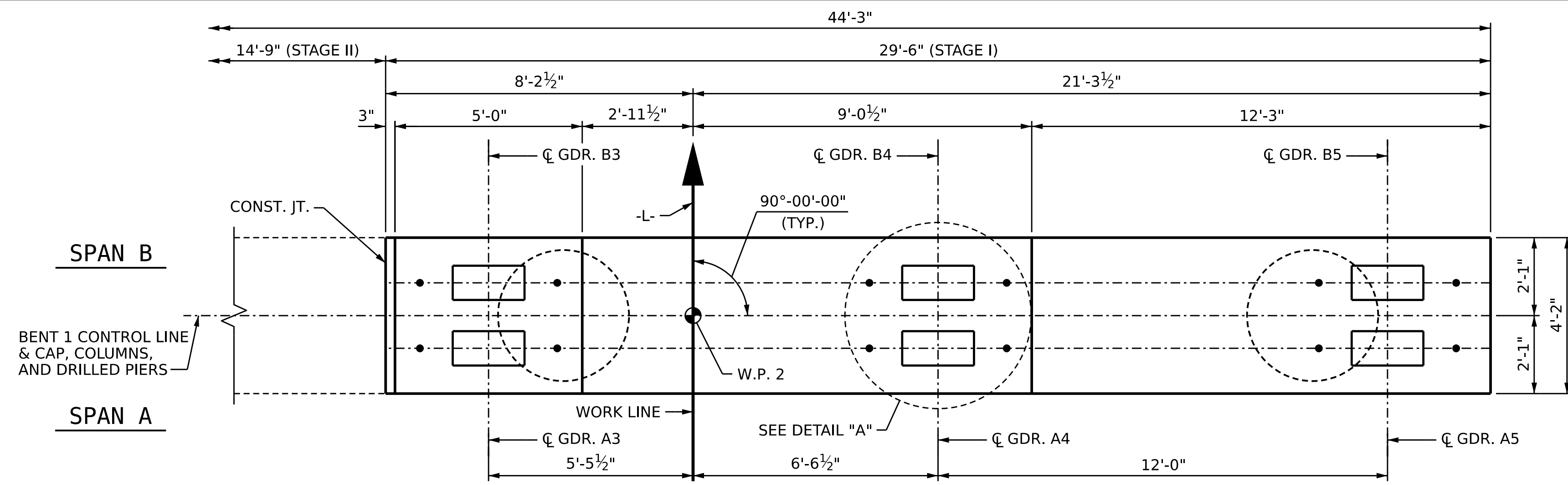
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

DEPARTMENT OF TRANSPORTATION					
SUBSTRUCTURE					
END BENT 1					
DETAILS AND					
BILL OF MATERIAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

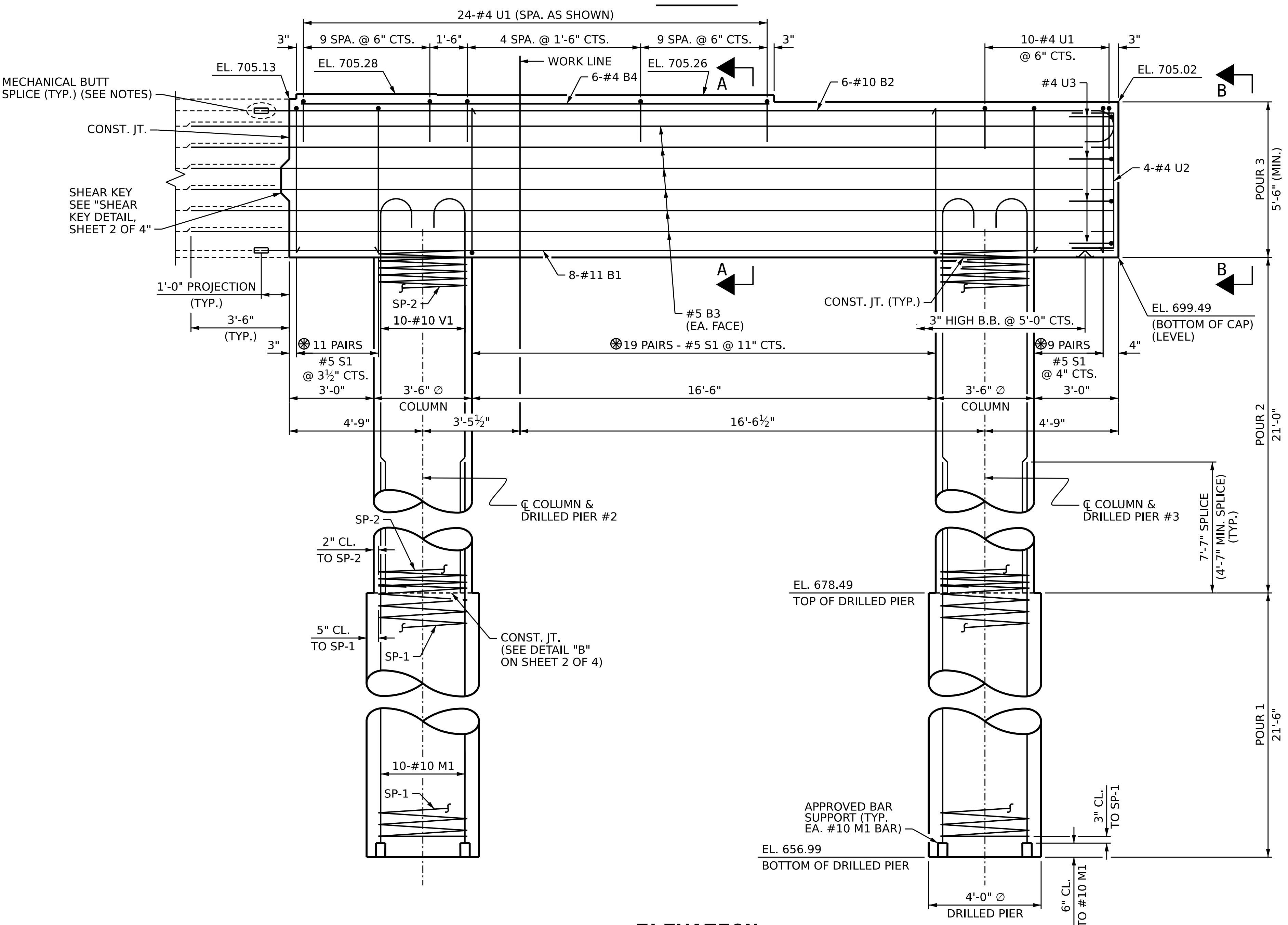
SHEET NO.	S-44
TOTAL SHEETS	60

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CHECKED BY:	J.I. BREWER	DATE:	07/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	10/2024



PLAN

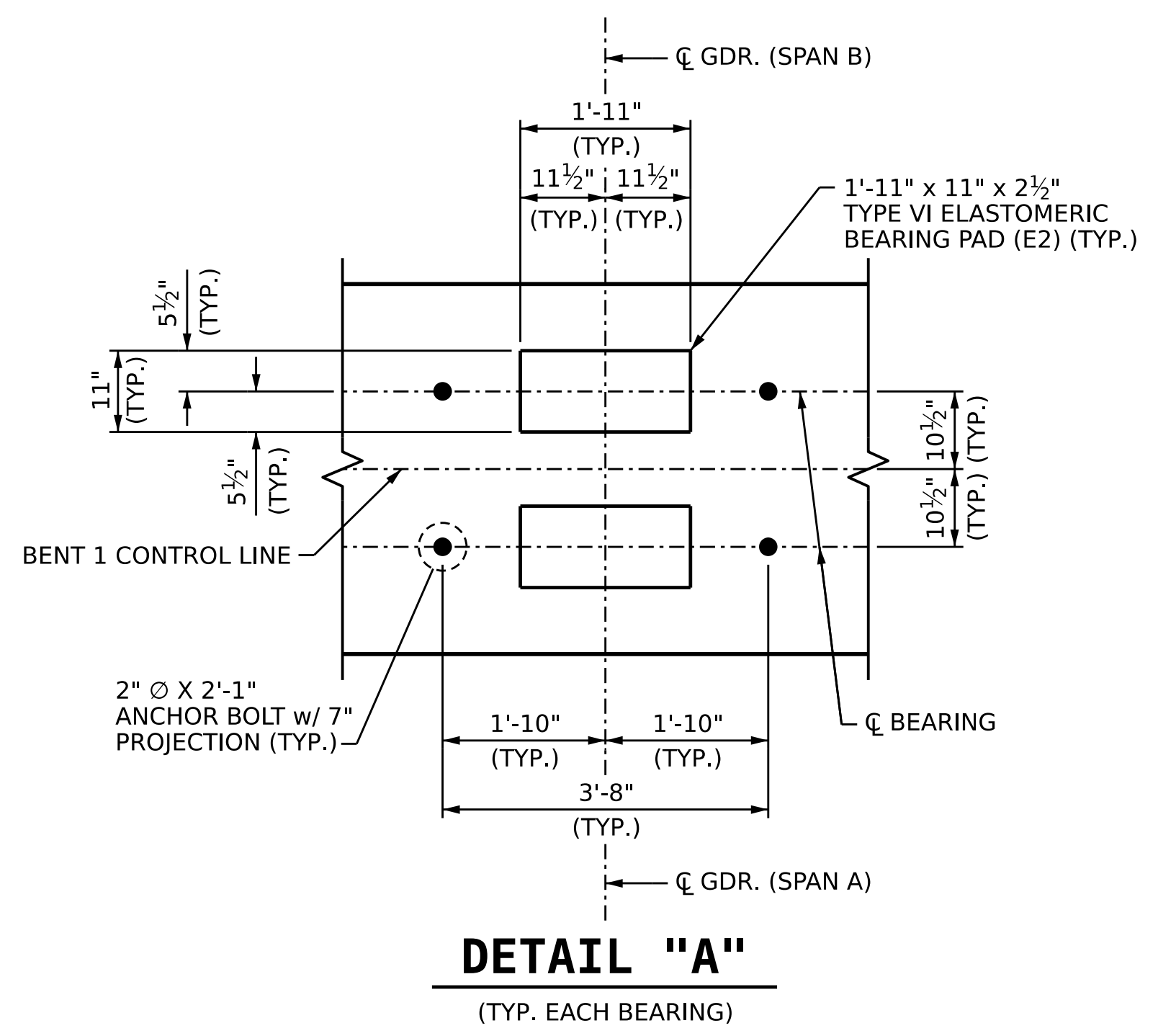


ELEVATION

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

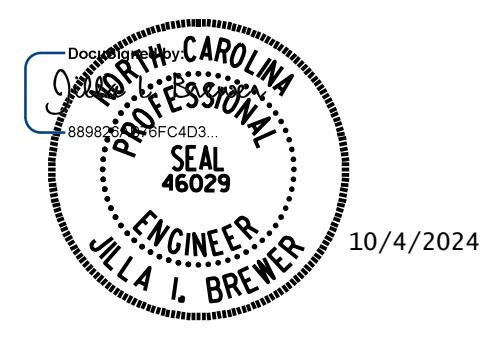
NOTES:

- 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, VIEW B-B, 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.
- CONTRACTOR MAY ELECT TO USE COUPLERS ON "B" BARS IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHOD.
- FOR MECHANICAL BUTT SPLICING OF REINFORCING STEEL, SEE SECTION 425-5 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"
(TYP. EACH BEARING)

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 4



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

STAGE I

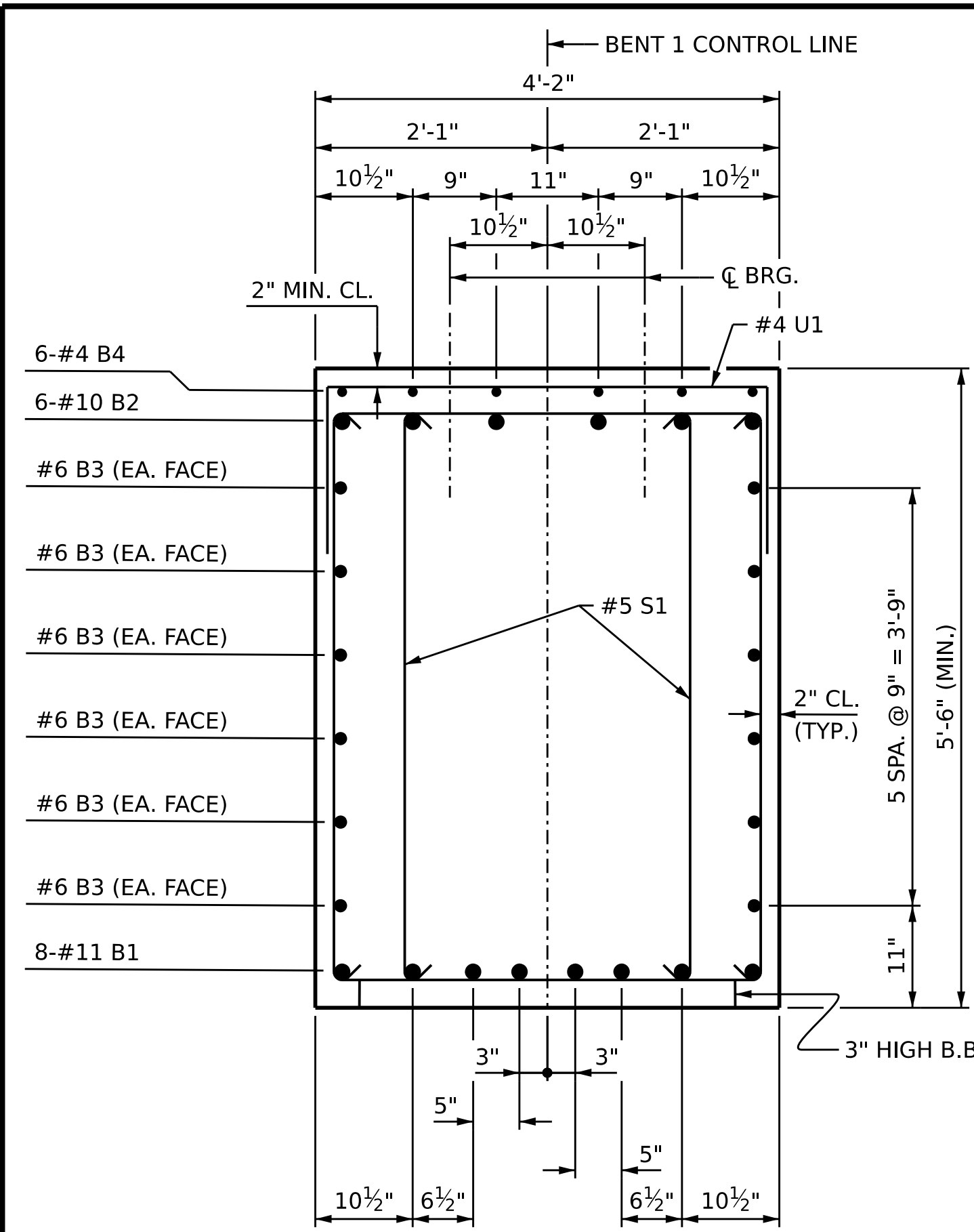
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 SEAL
 46029
 ENGINEER
 J. I. BREWER
 10/4/2024
 FIRM PE NUMBER : P-0671

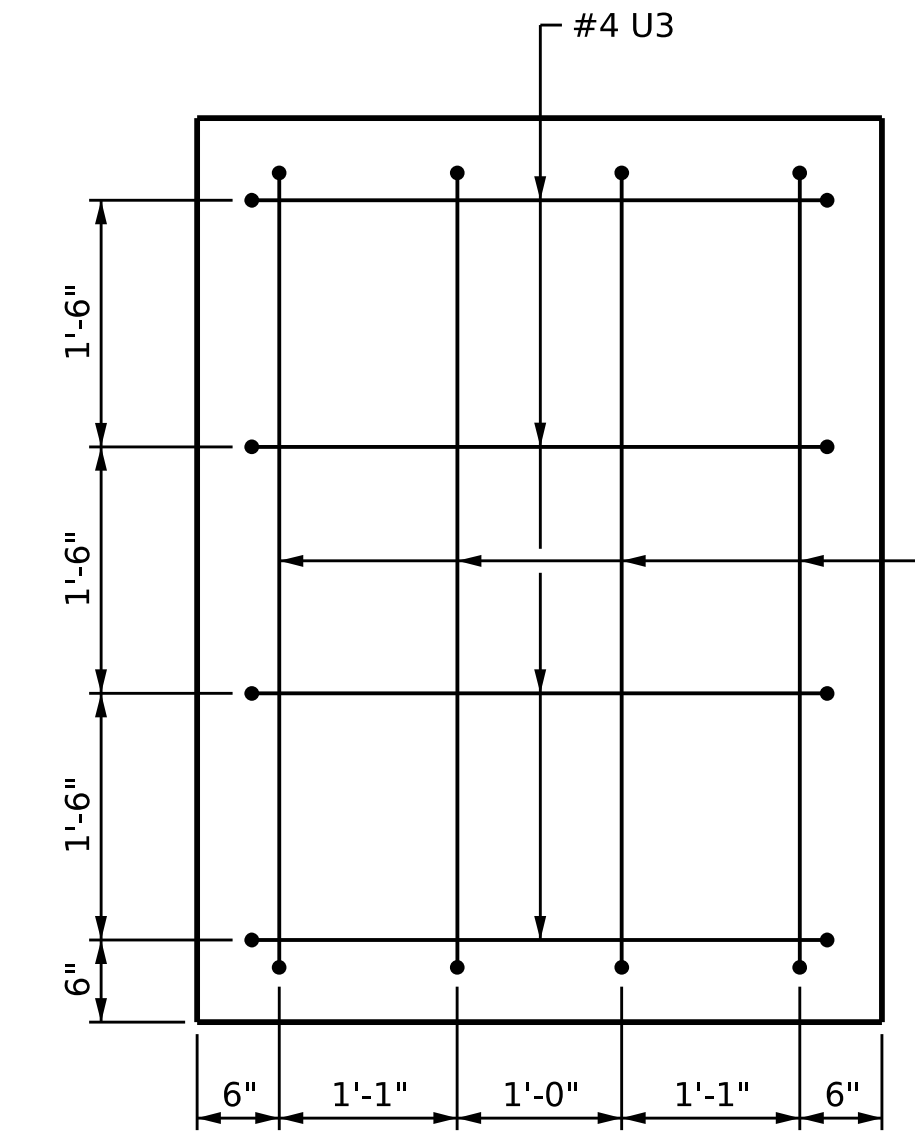
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			60

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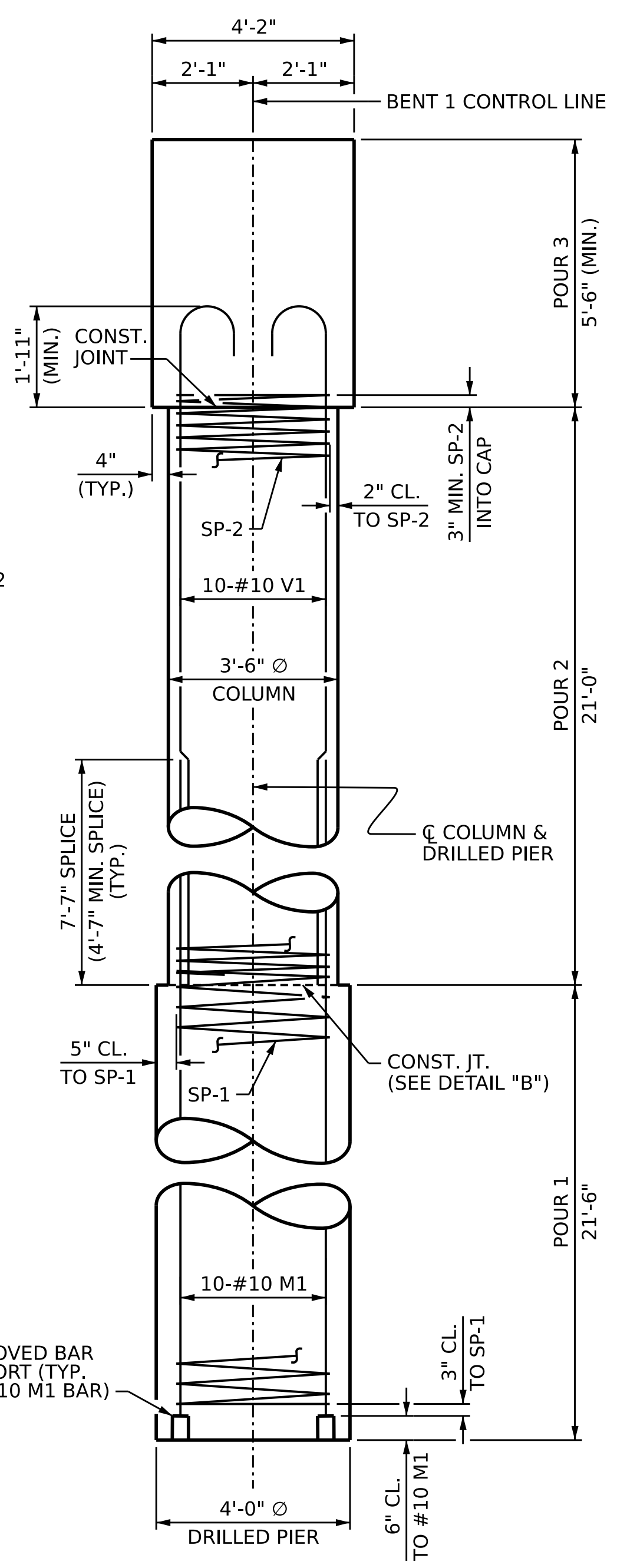
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 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024



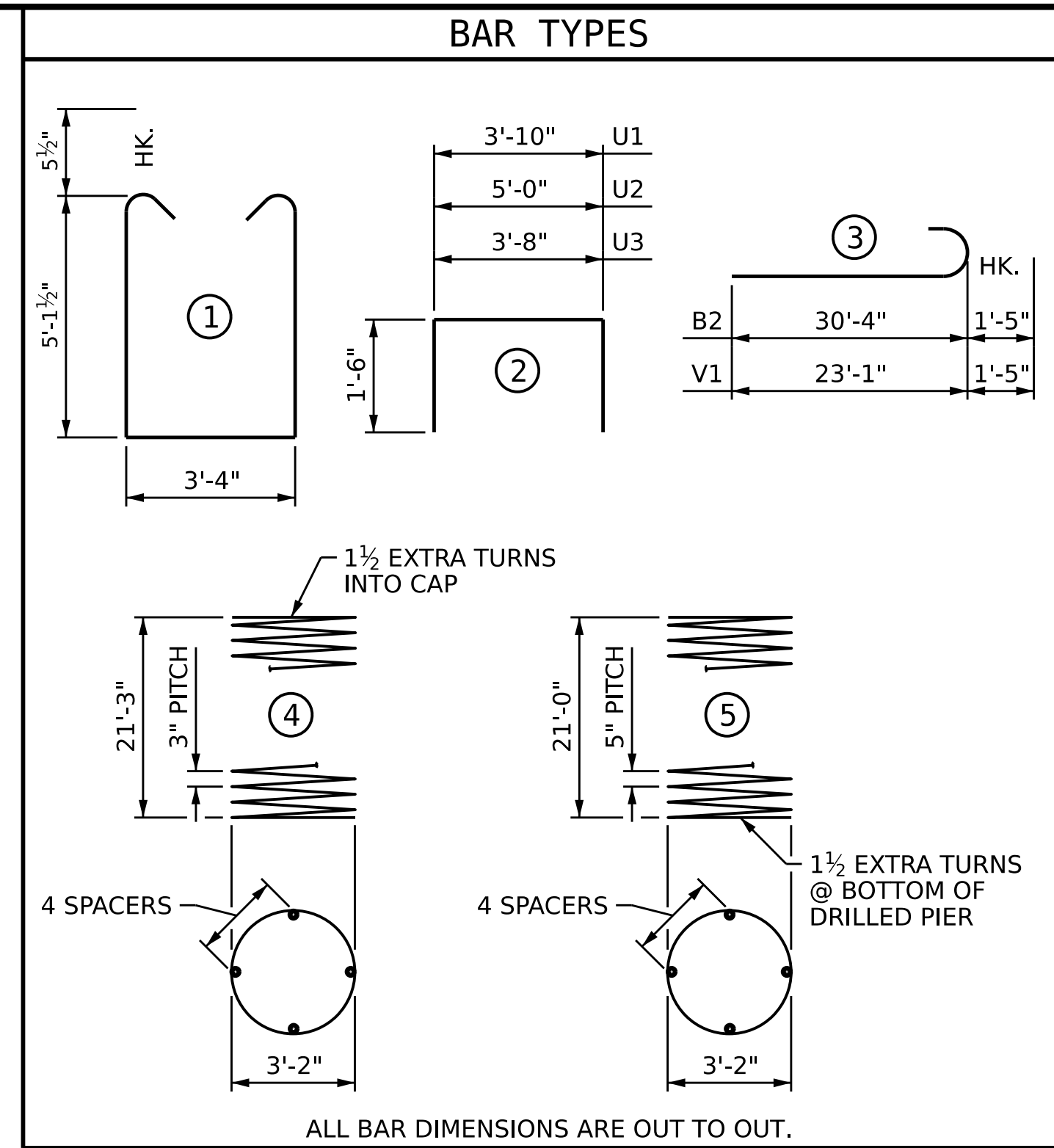
SECTION A-A



VIEW B-B

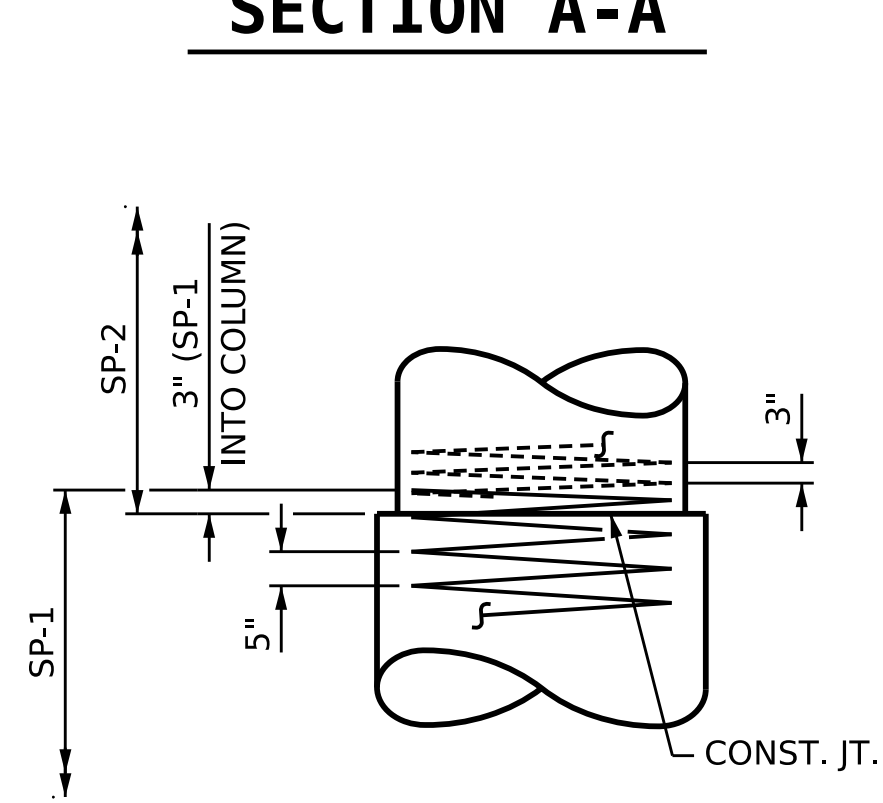


END ELEVATION

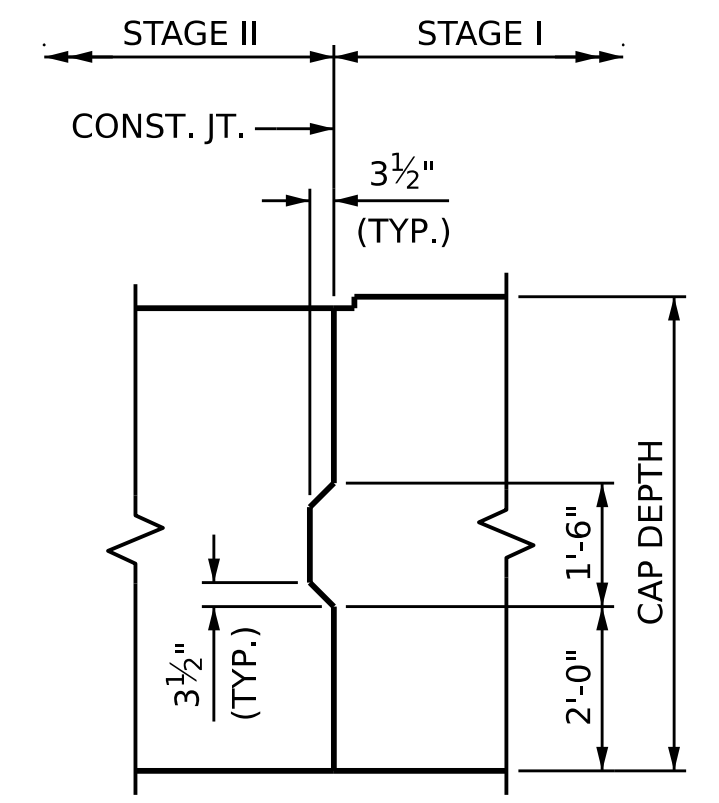


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 1					
STAGE I					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-4"	1,289
B2	6	#10	3	31'-9"	820
B3	12	#5	STR	32'-10"	411
B4	6	#4	STR	16'-8"	67
M1	20	#10	STR	28'-7"	2,460
S1	78	#5	1	14'-6"	1,180
U1	34	#4	2	6'-10"	155
U2	4	#4	2	8'-0"	21
U3	4	#4	2	6'-8"	18
V1	20	#10	3	24'-4"	2,094
REINFORCING STEEL					8,515 LBS.
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	**	5	507'-5"	1,058
SP-2	2	*	4	848'-1"	1,133
SPIRAL COLUMN REINFORCING STEEL					2,191 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)					15.0 C.Y.
POUR #3 (CAP)					25.9 C.Y.
TOTAL					40.9 C.Y.

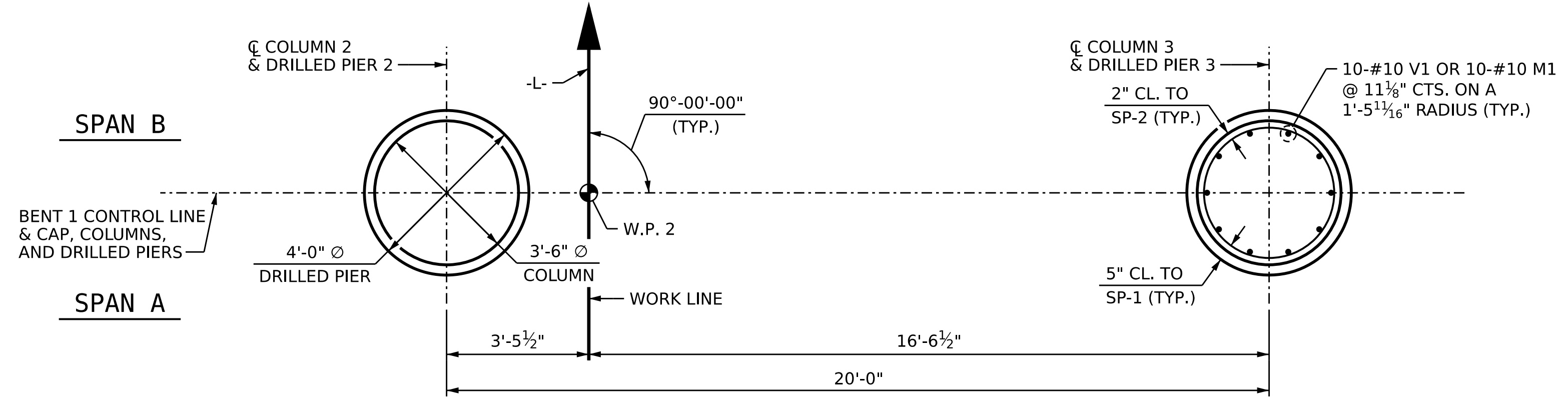


DETAIL "B"



SHEAR KEY DETAIL

ELEVATION VIEW OF CAP



PLAN OF COLUMNS AND DRILLED PIERS

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

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

Professional Engineer Seal for J. I. Brewer, No. 46029, State of North Carolina, dated 10/4/2024.

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

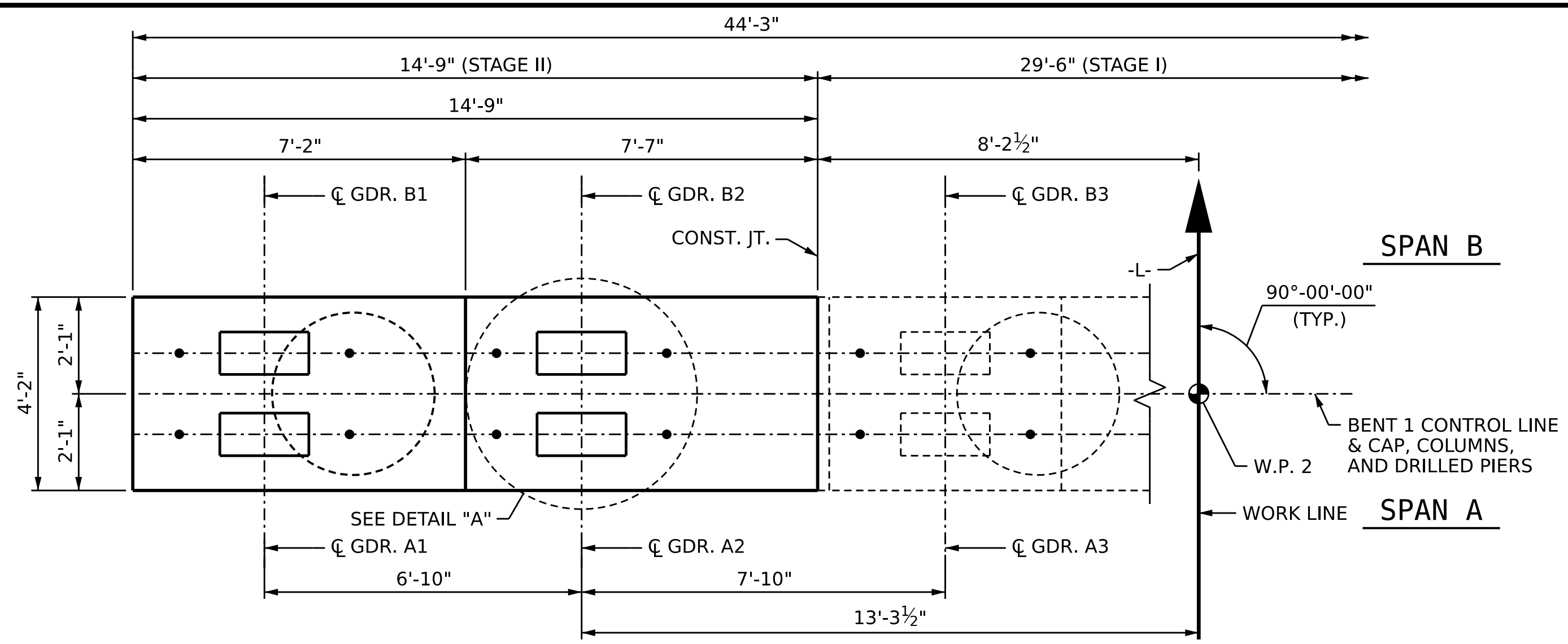
SUBSTRUCTURE
BENT 1
DETAILS AND
BILL OF MATERIAL
STAGE I

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

SHEET NO. S-46
TOTAL SHEETS 60

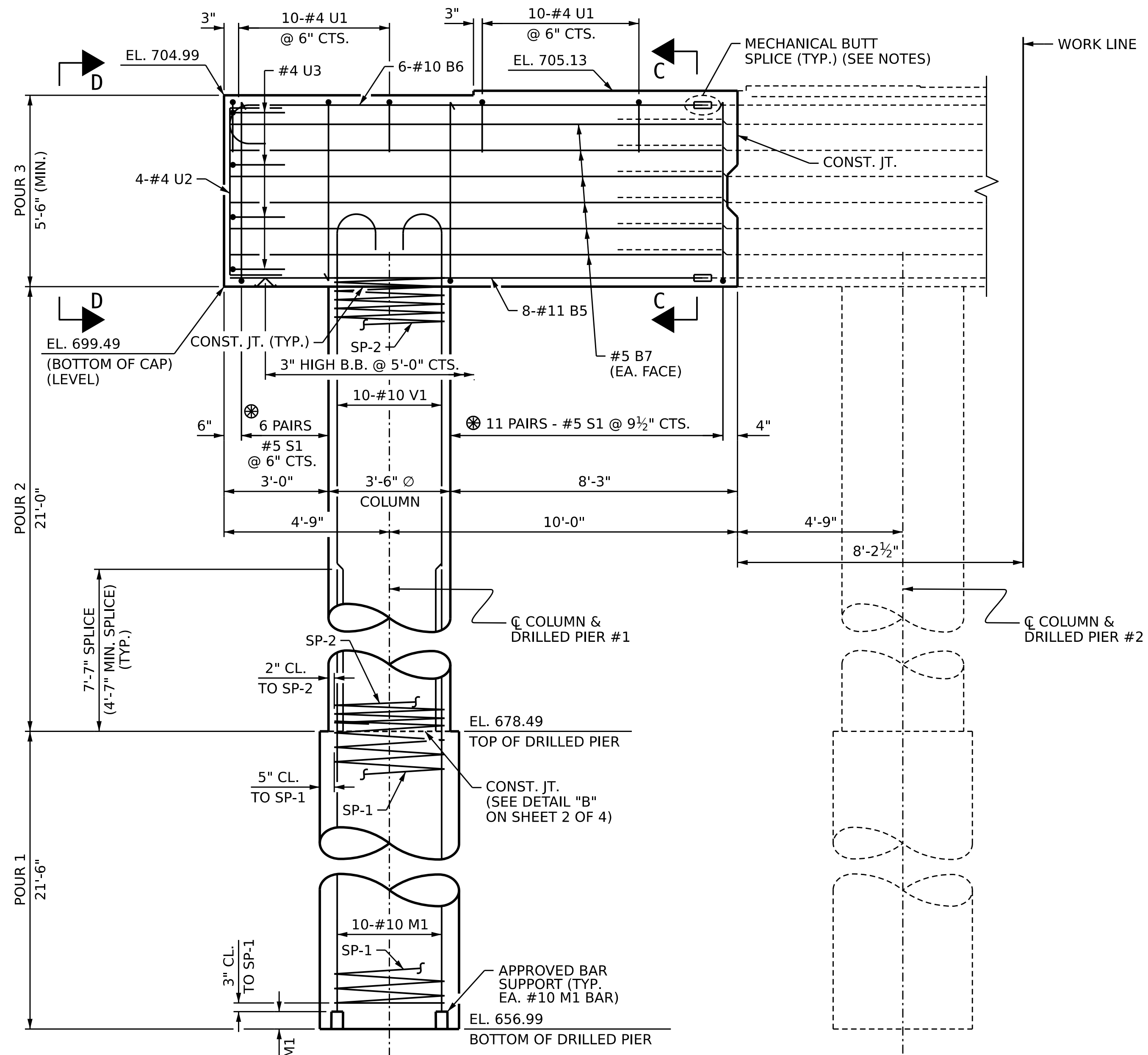
DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

10/4/2024 10:38:53 AM blanning
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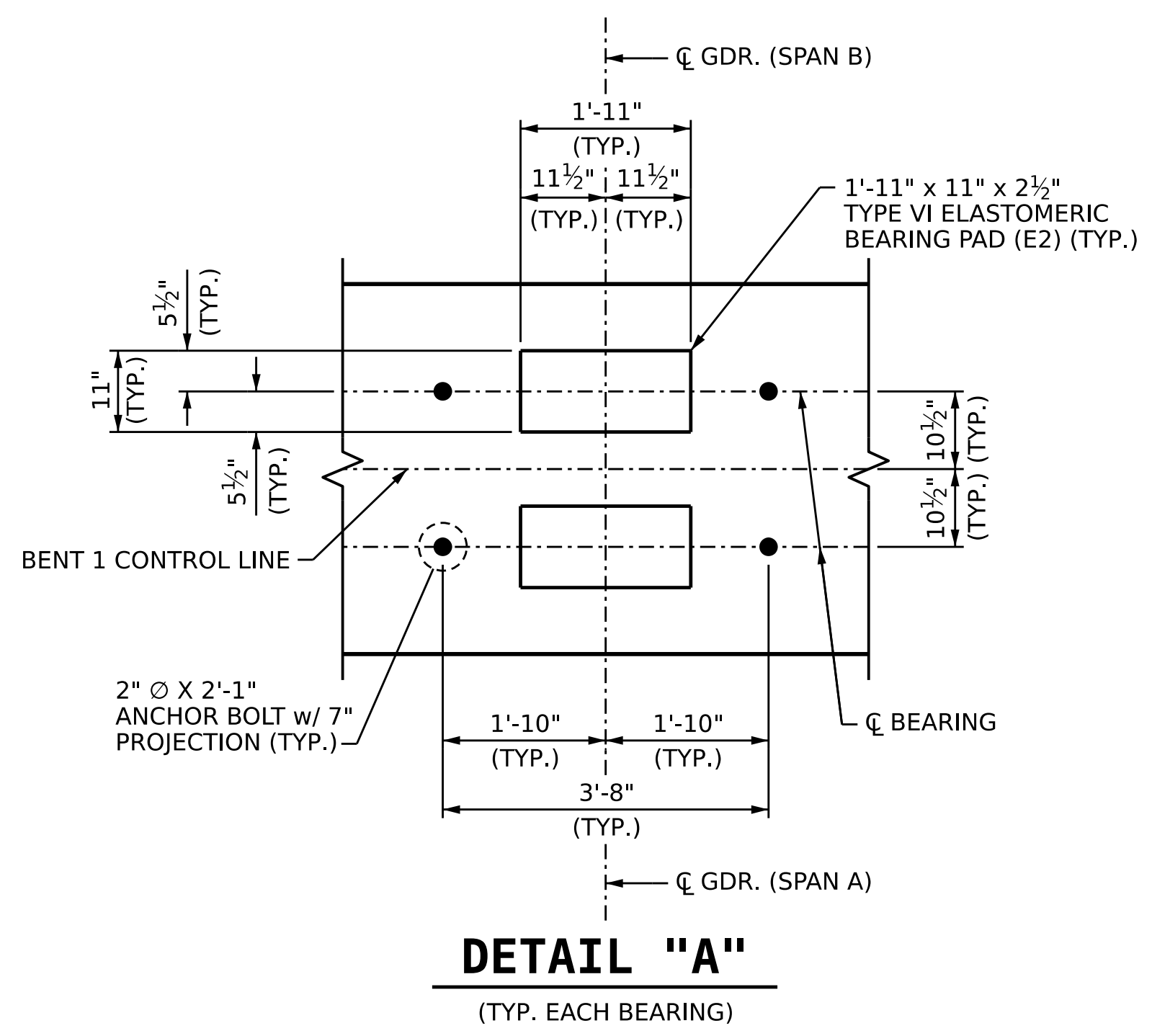


PLAN

NOTES:
 FOR SECTION C-C, VIEW D-D, AND END ELEVATION, SEE SHEET 4 OF 4.
 ⊗ INVERT ALTERNATE PAIRS OF STIRRUPS.
 FOR ADDITIONAL NOTES, SEE SHEET 1 OF 4.

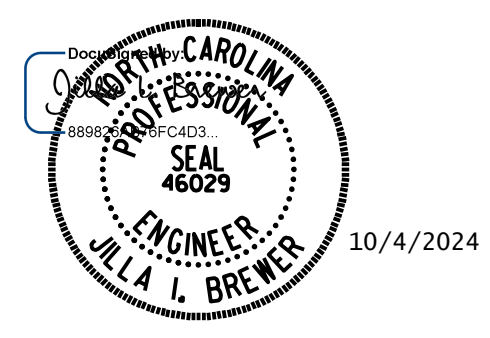


ELEVATION



DETAIL "A"
(TYP. EACH BEARING)

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 3 OF 4



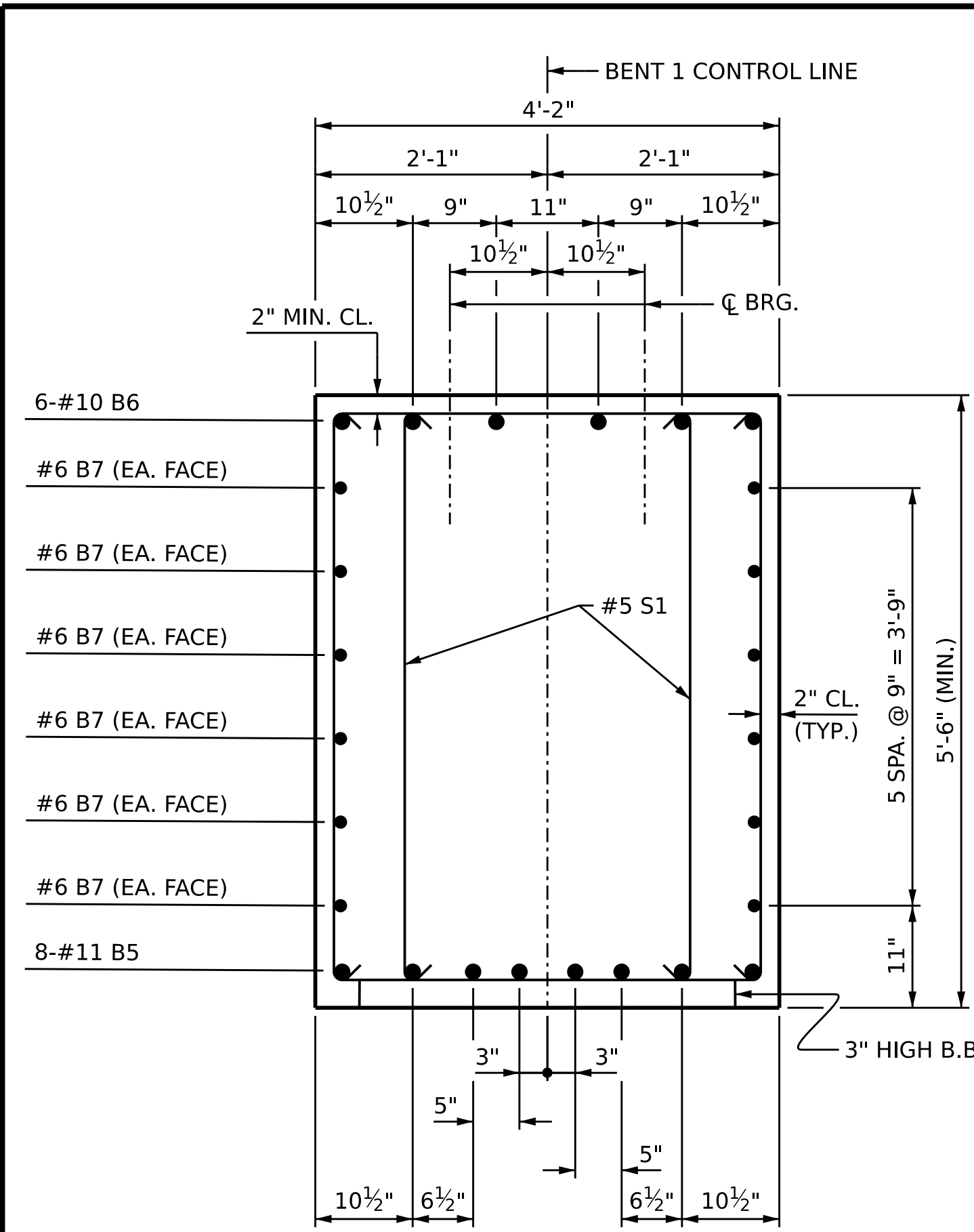
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 1
PLAN AND ELEVATION

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

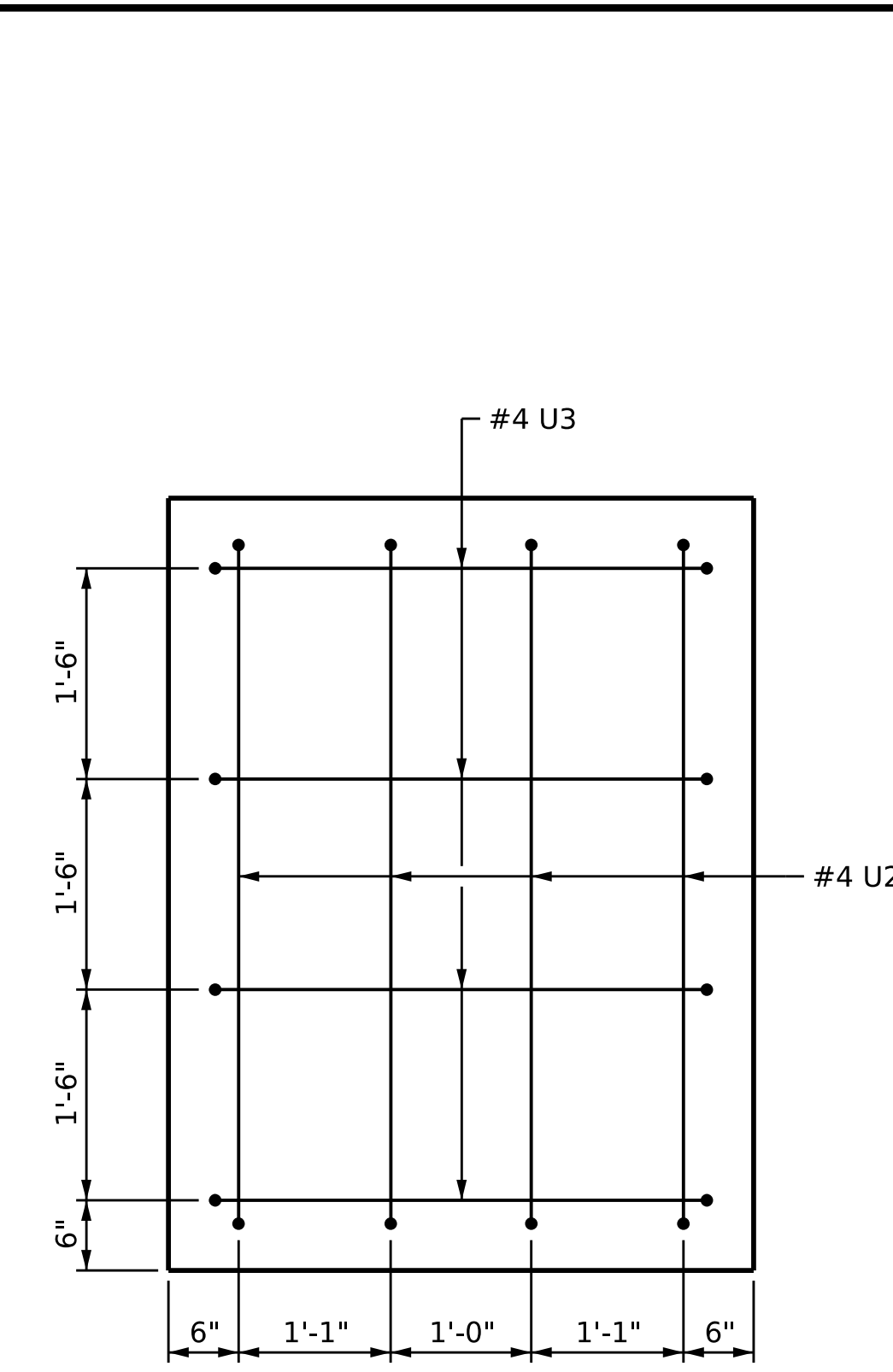
REVISIONS						SHEET NO. S-47
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

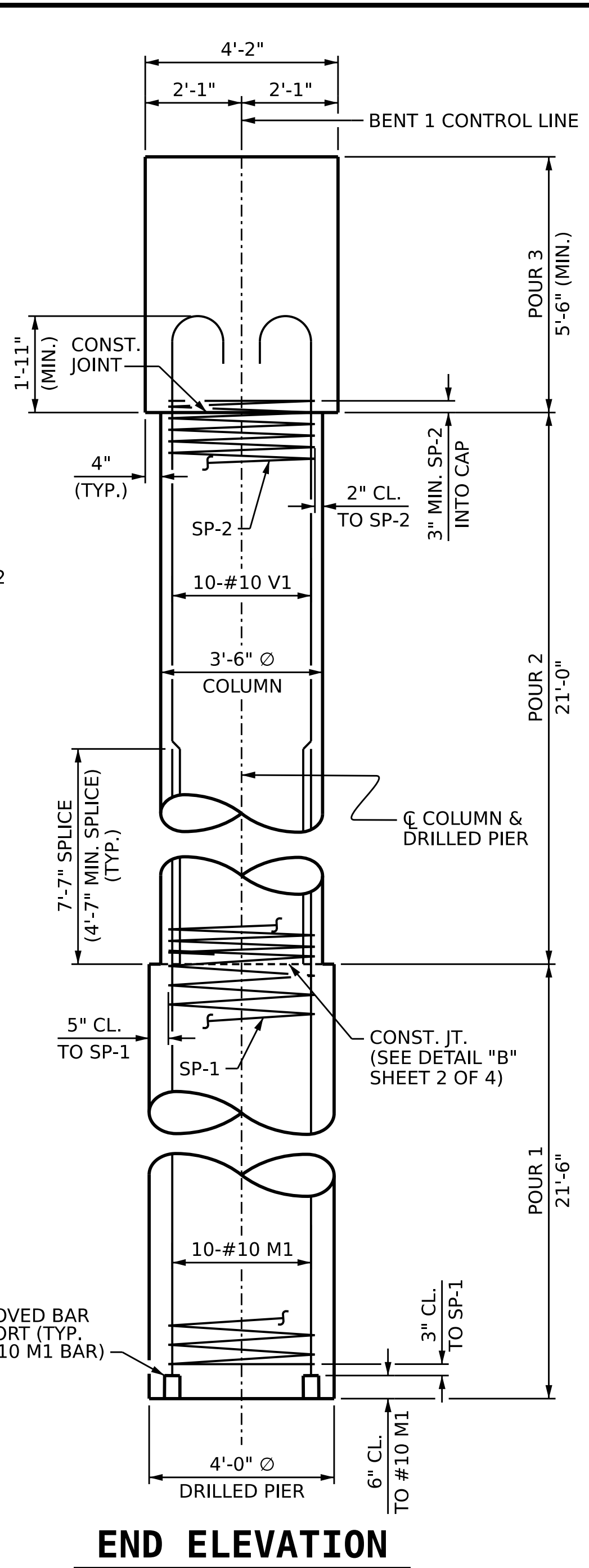
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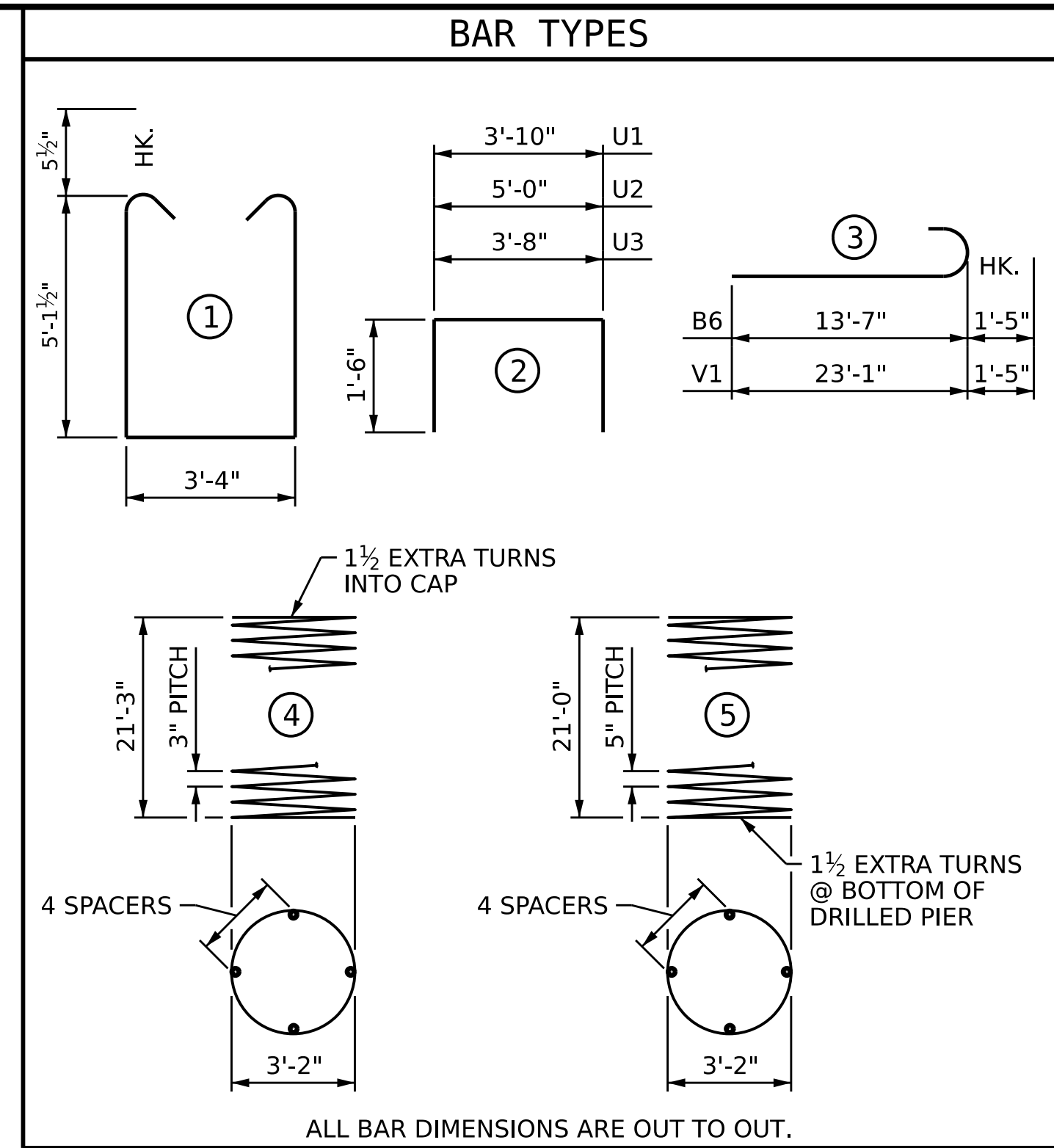
SECTION C-C



VIEW D-D

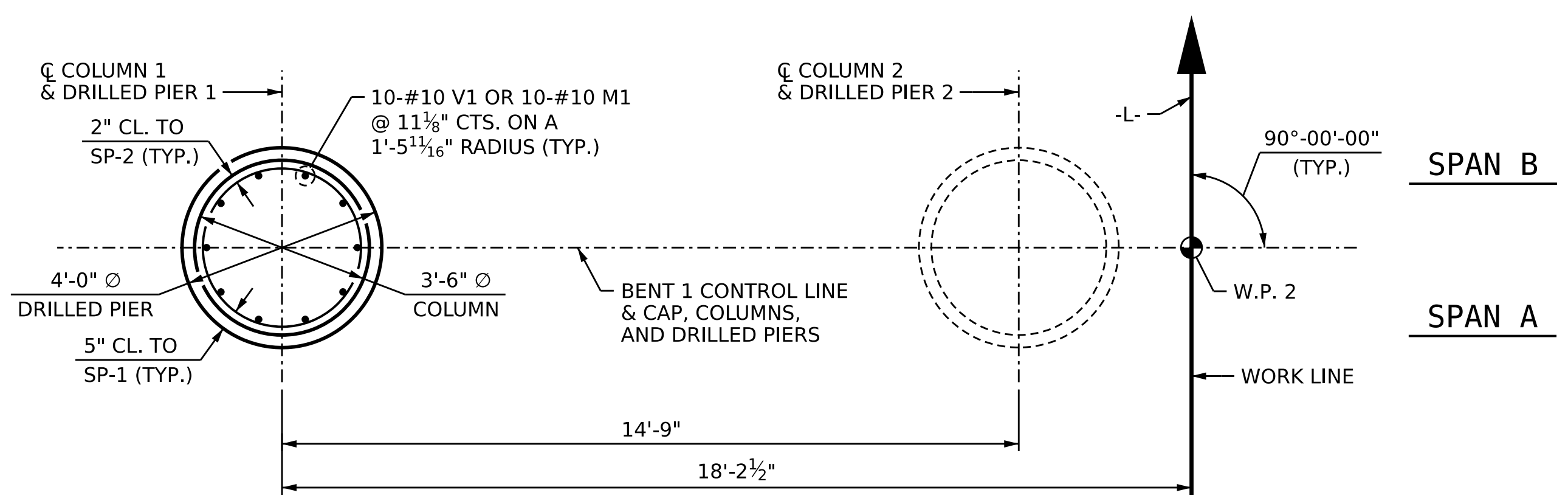


END ELEVATION



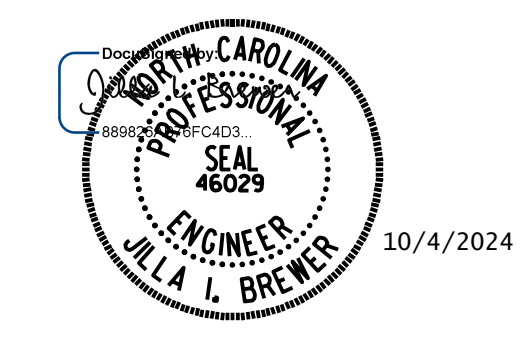
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 1					
STAGE II					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	8	#11	STR	13'-7"	557
B6	6	#10	3	15'-0"	387
B7	12	#5	STR	14'-1"	176
M1	10	#10	STR	28'-7"	1,230
S1	34	#5	1	14'-6"	514
U1	20	#4	2	6'-10"	91
U2	4	#4	2	8'-0"	21
U3	4	#4	2	6'-8"	18
V1	10	#10	3	24'-4"	1,047
REINFORCING STEEL					4,061 LBS.
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	**	5	507'-5"	529
SP-2	1	*	4	848'-1"	567
SPIRAL COLUMN REINFORCING STEEL					1,096 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)				7.5	C.Y.
POUR #3 (CAP)				12.7	C.Y.
TOTAL				20.2	C.Y.



PLAN OF COLUMN AND DRILLED PIER

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 4 OF 4



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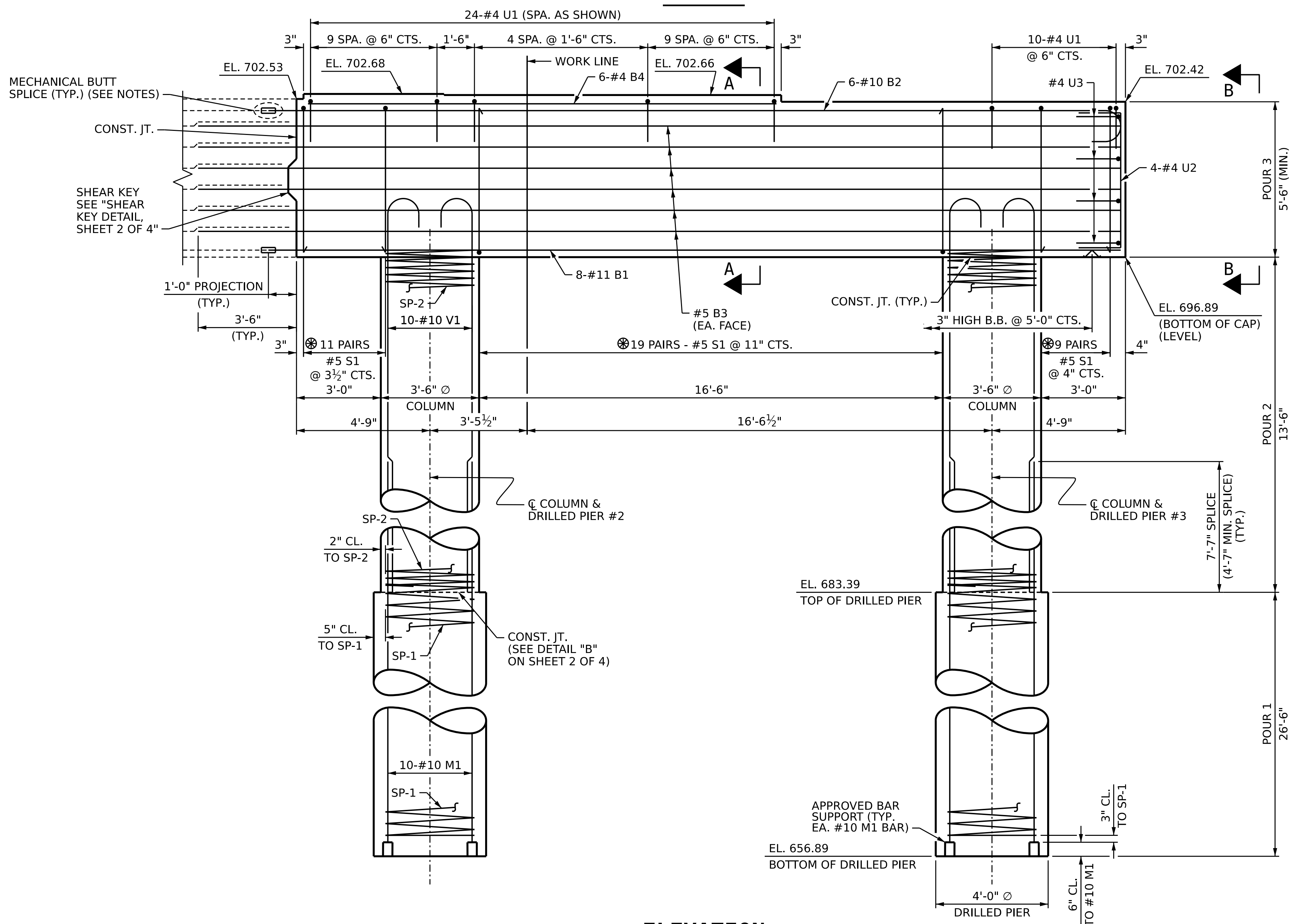
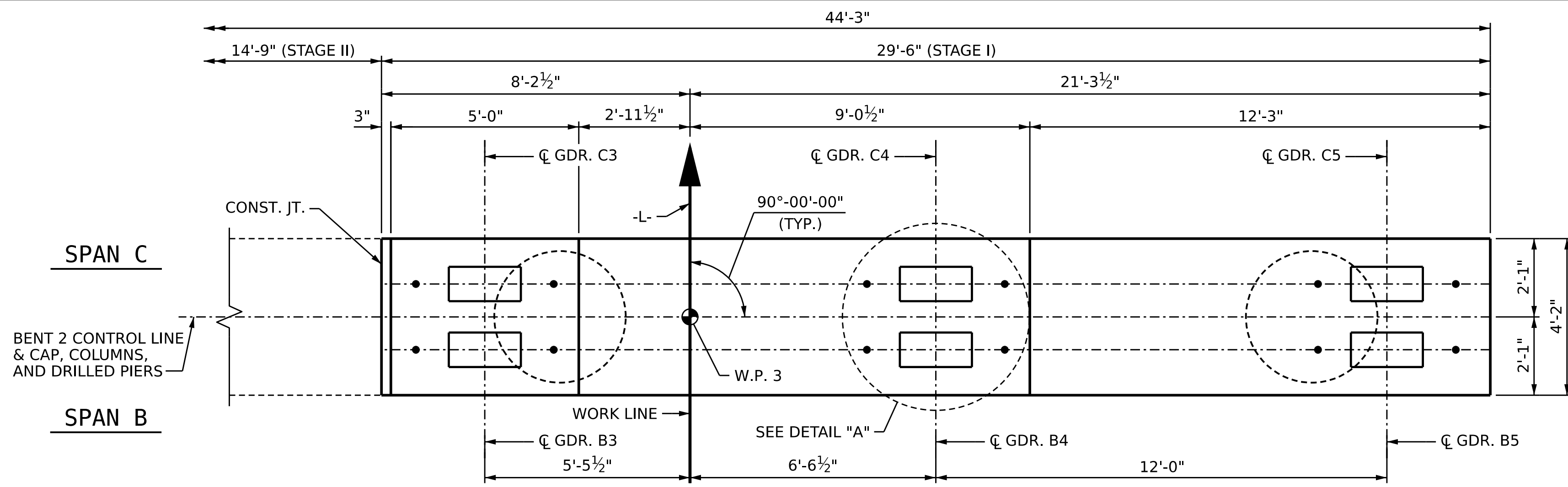
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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

SHEET NO.		S-48
TOTAL SHEETS		60

DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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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, VIEW B-B, AND END ELEVATION, SEE SHEET 2 OF 4.

⊗ INVERT ALTERNATE PAIRS OF STIRRUPS.

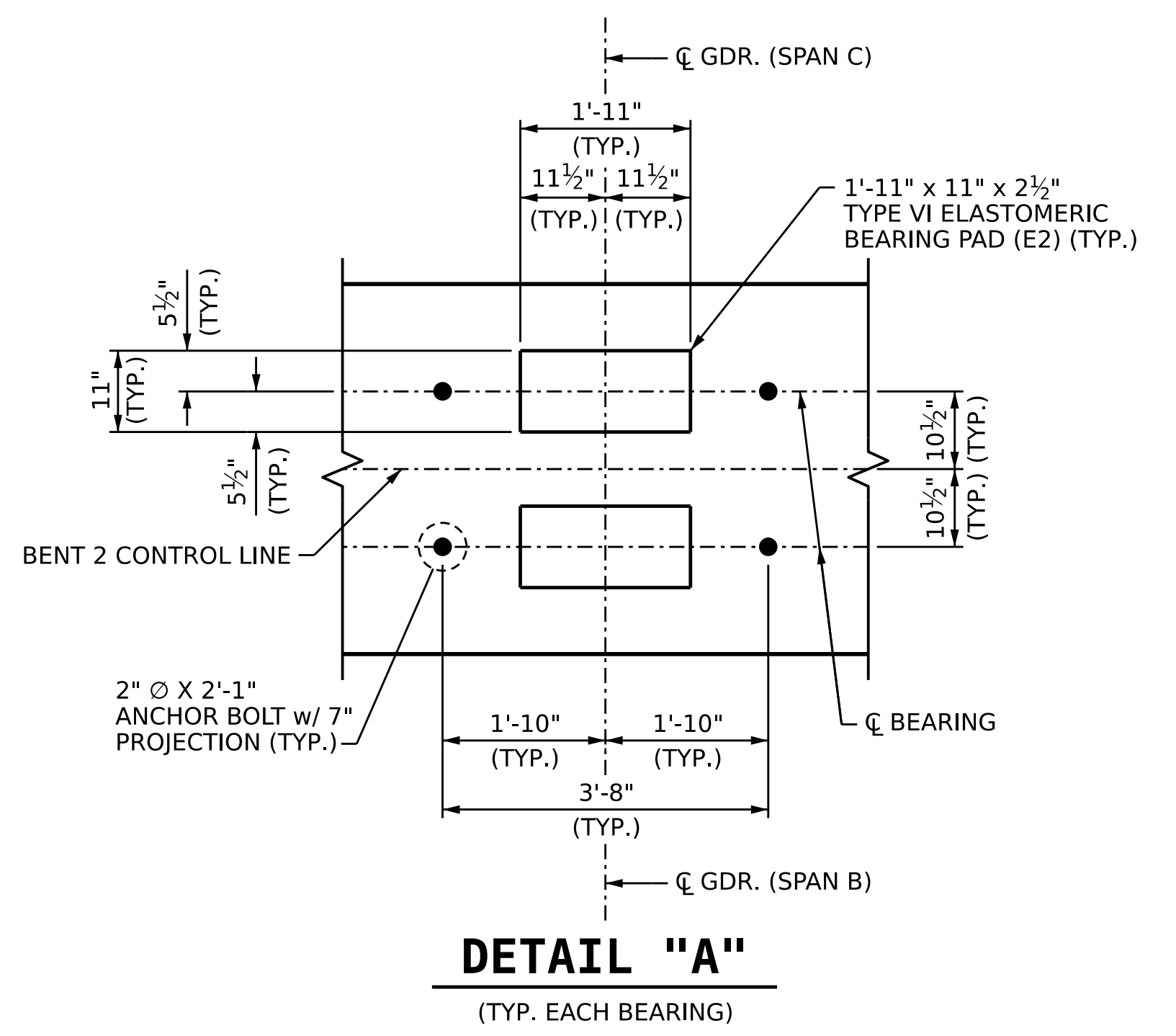
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

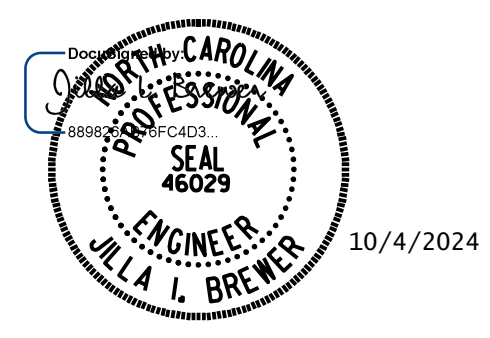
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIER IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

CONTRACTOR MAY ELECT TO USE COUPLERS ON "B" BARS IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHOD.

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



PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 4



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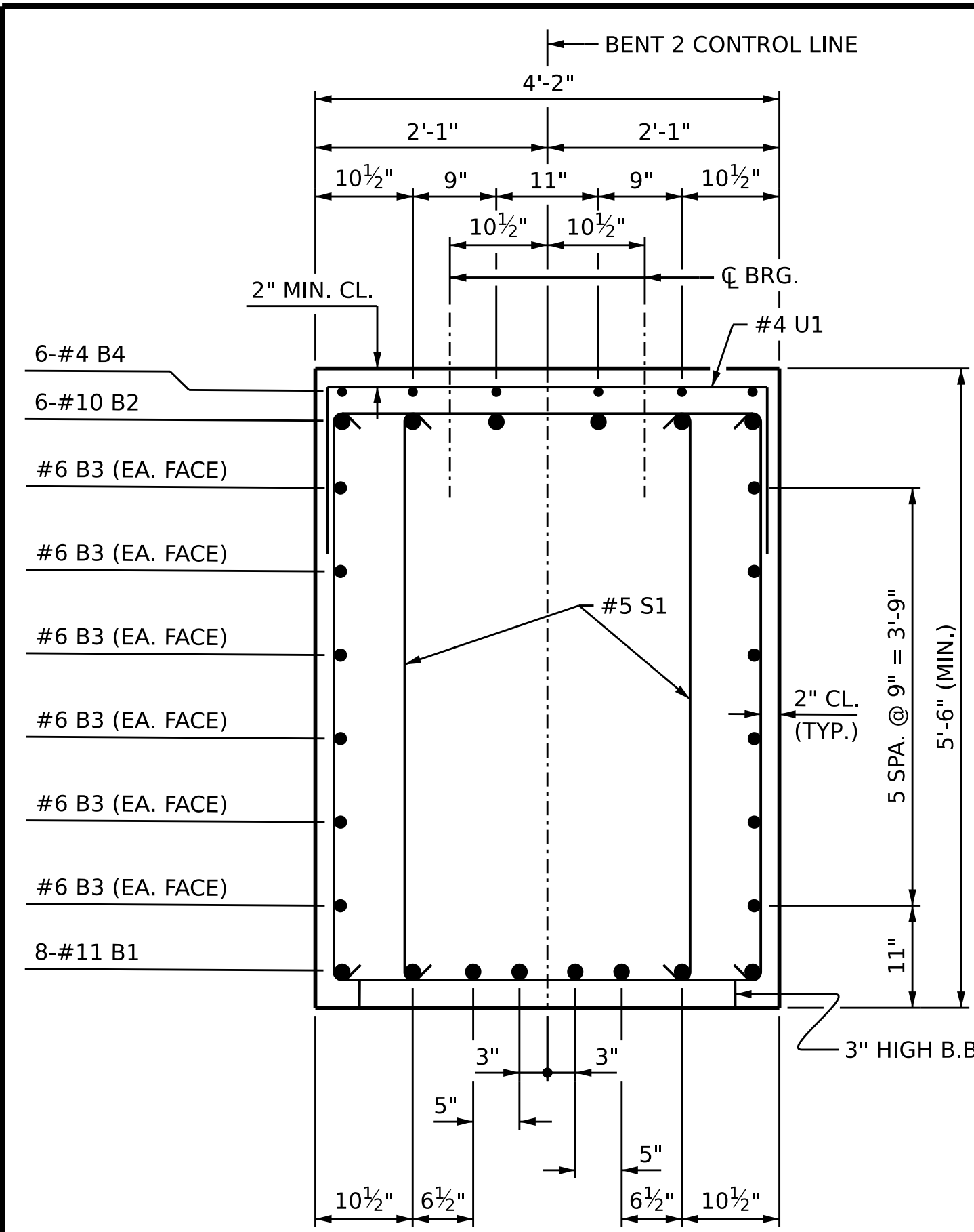
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2 PLAN AND ELEVATION					
STAGE I					
SHEET NO. S-49 TOTAL SHEETS 60					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

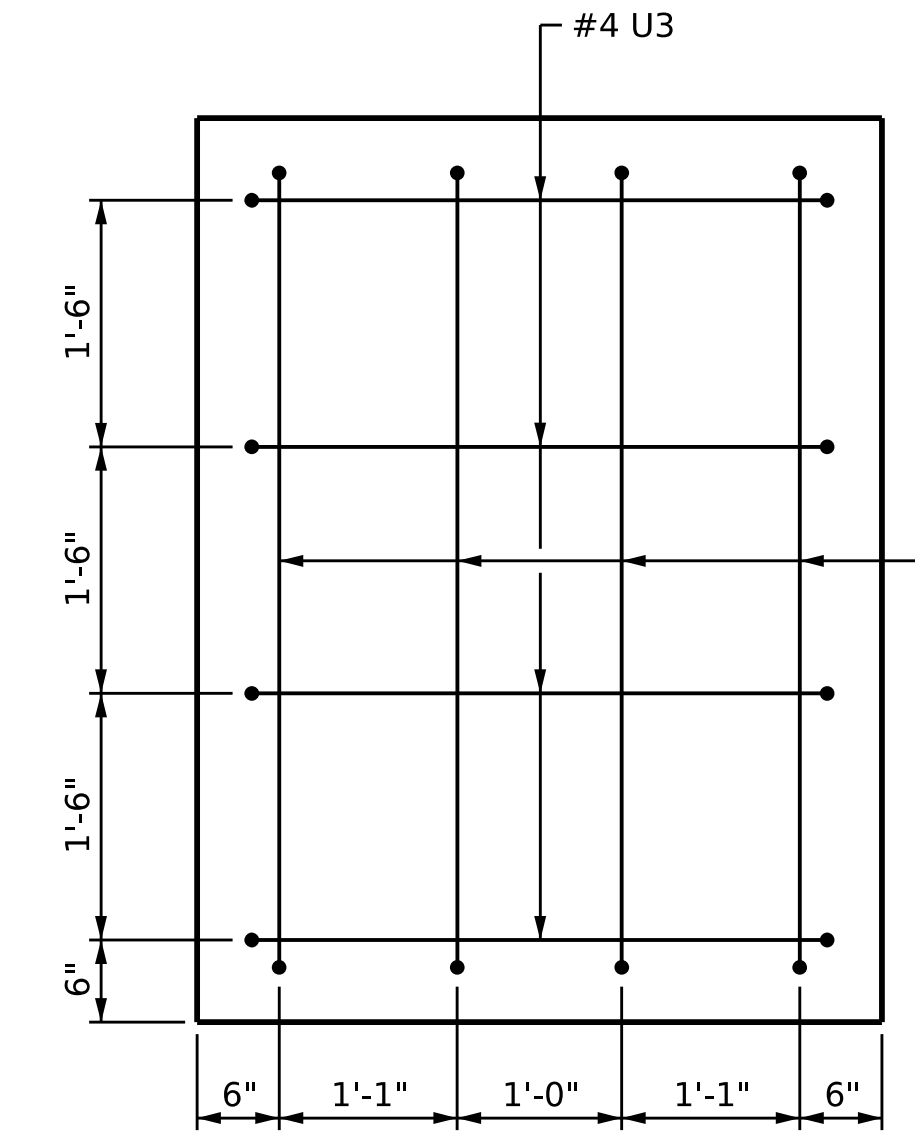
DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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

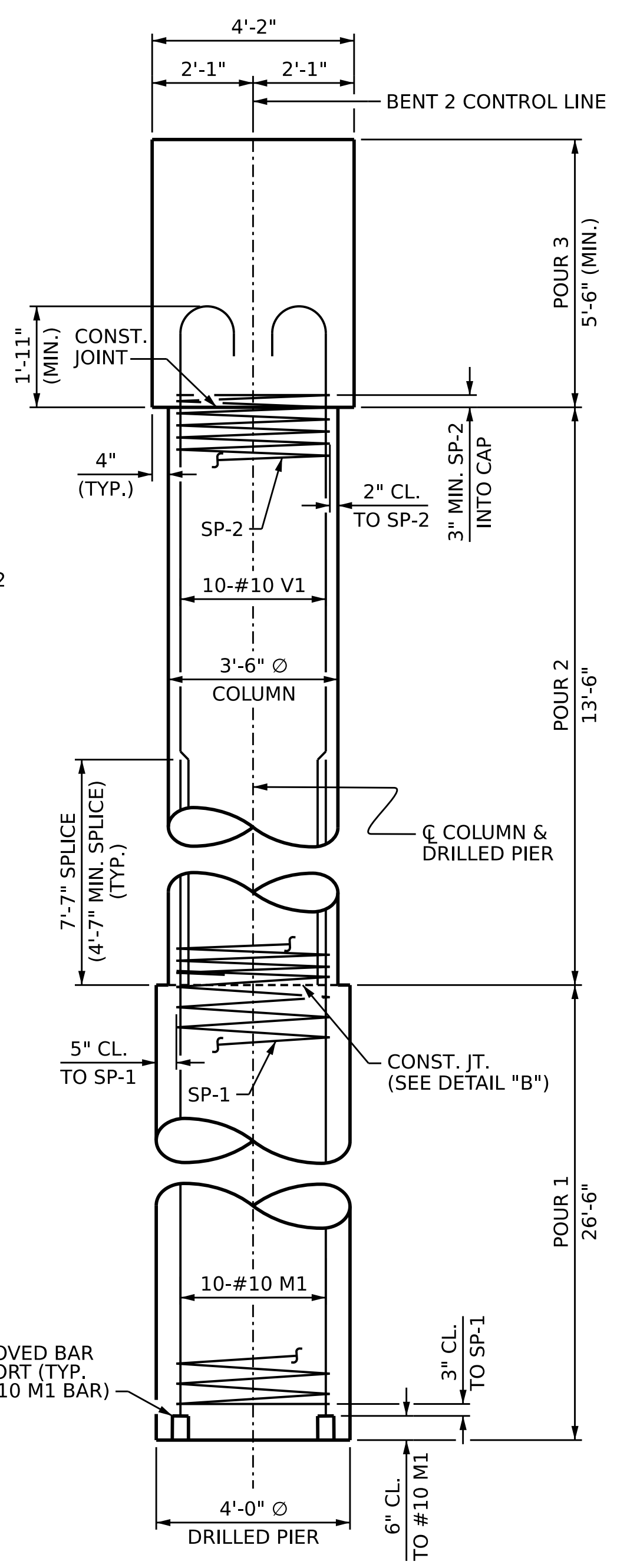
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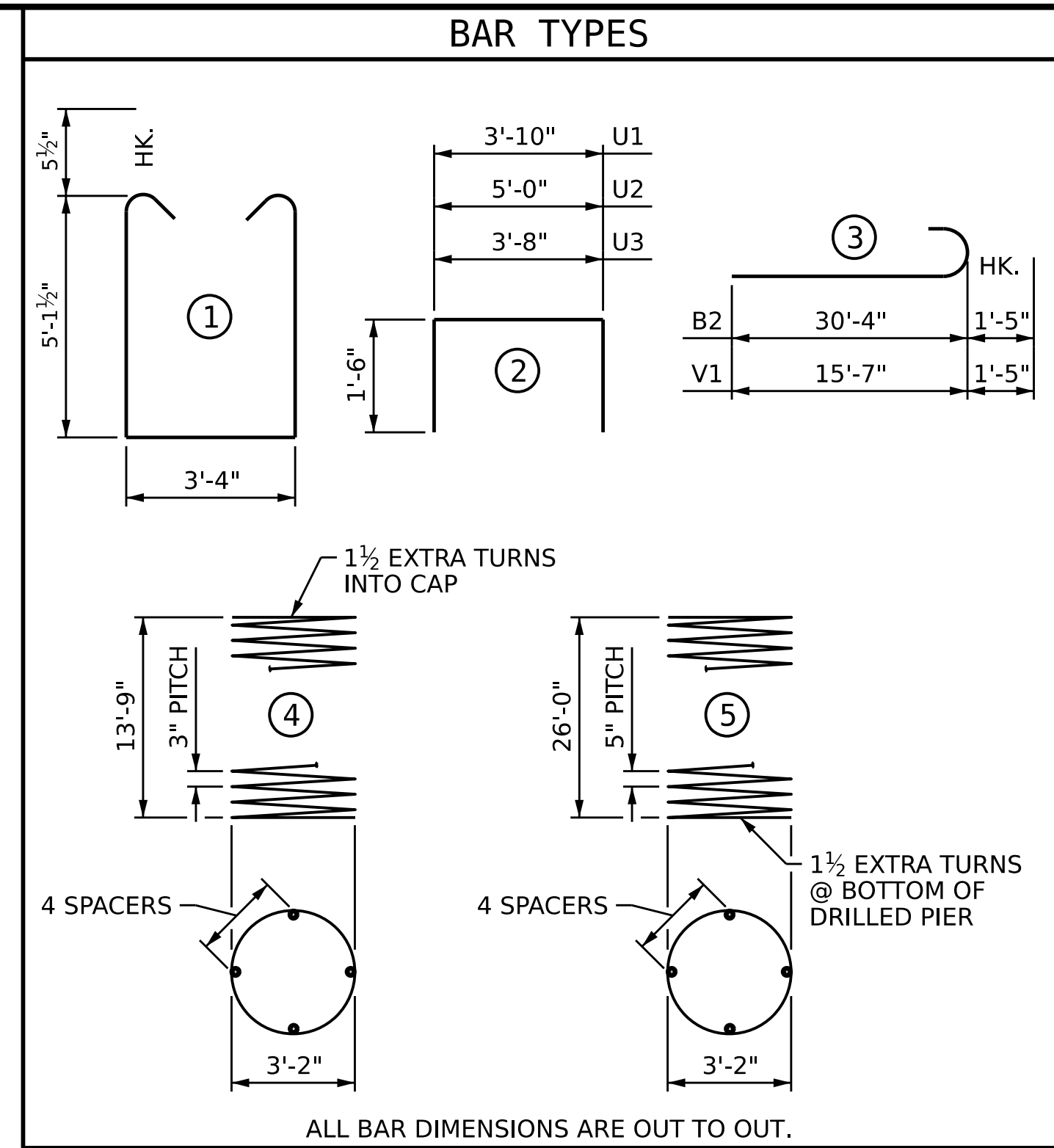
SECTION A-A



VIEW B-B

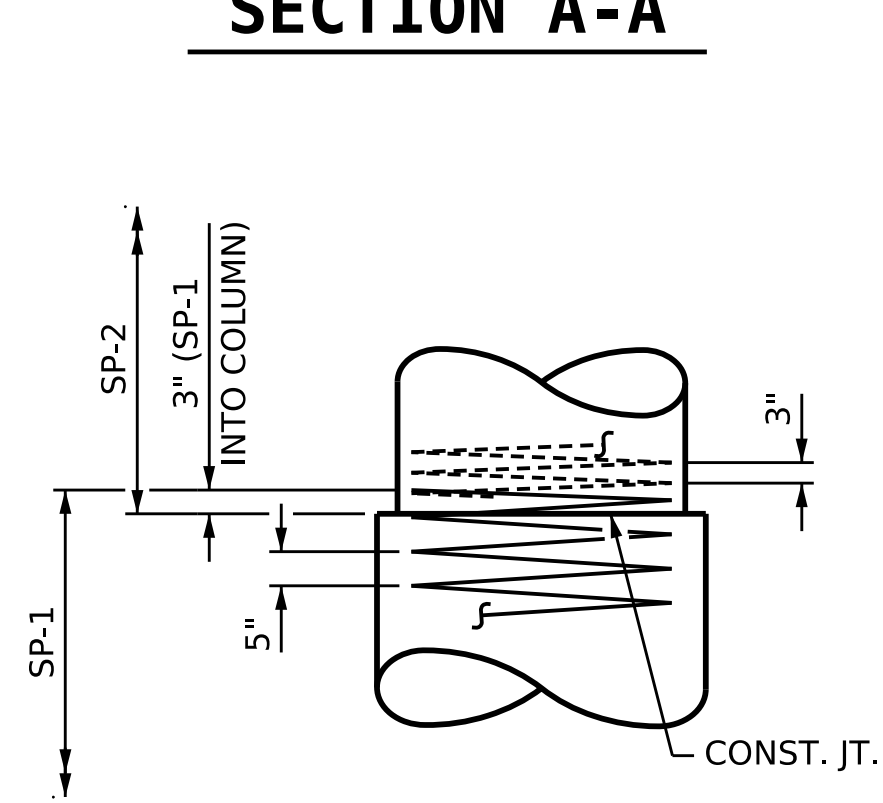


END ELEVATION

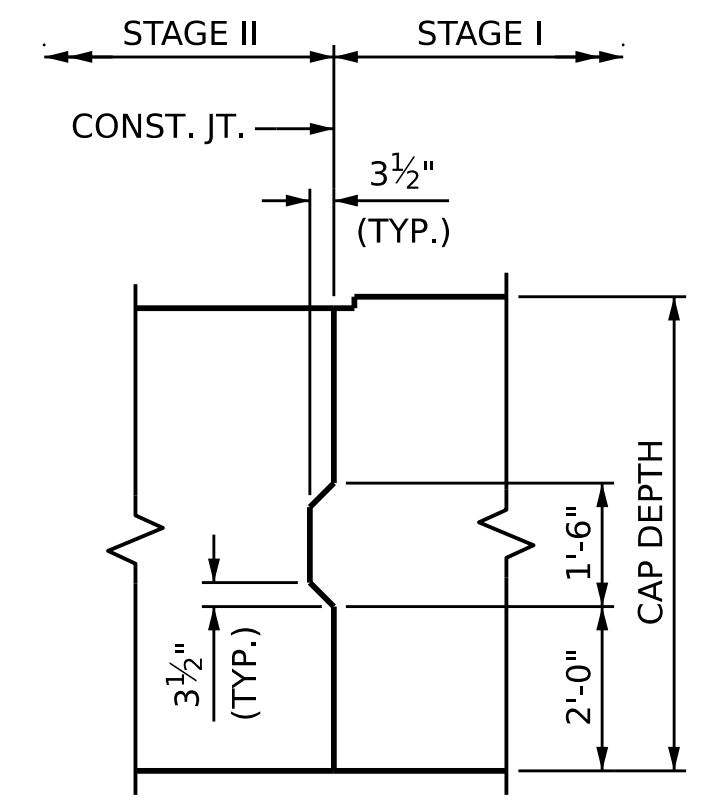


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 2					
STAGE I					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-4"	1,289
B2	6	#10	3	31'-9"	820
B3	12	#5	STR	32'-10"	411
B4	6	#4	STR	16'-8"	67
M1	20	#10	STR	33'-7"	2,890
S1	78	#5	1	14'-6"	1,180
U1	34	#4	2	6'-10"	155
U2	4	#4	2	8'-0"	21
U3	4	#4	2	6'-8"	18
V1	20	#10	3	16'-10"	1,449
REINFORCING STEEL					8,300 LBS.
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	**	5	624'-9"	1,303
SP-2	2	*	4	553'-11"	740
SPIRAL COLUMN REINFORCING STEEL					2,043 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)					9.7 C.Y.
POUR #3 (CAP)					25.9 C.Y.
TOTAL					35.6 C.Y.

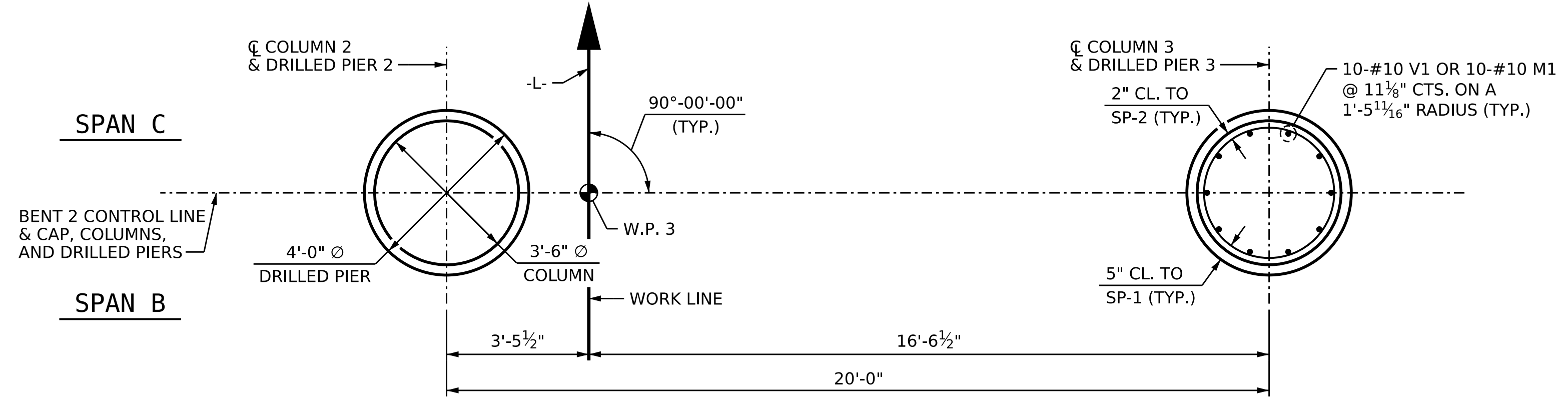


DETAIL "B"



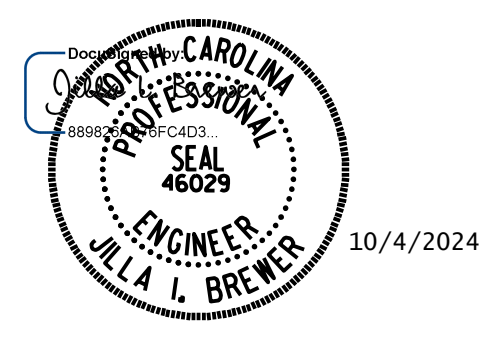
SHEAR KEY DETAIL

ELEVATION VIEW OF CAP



PLAN OF COLUMNS AND DRILLED PIERS

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



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

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-
SHEET 2 OF 4

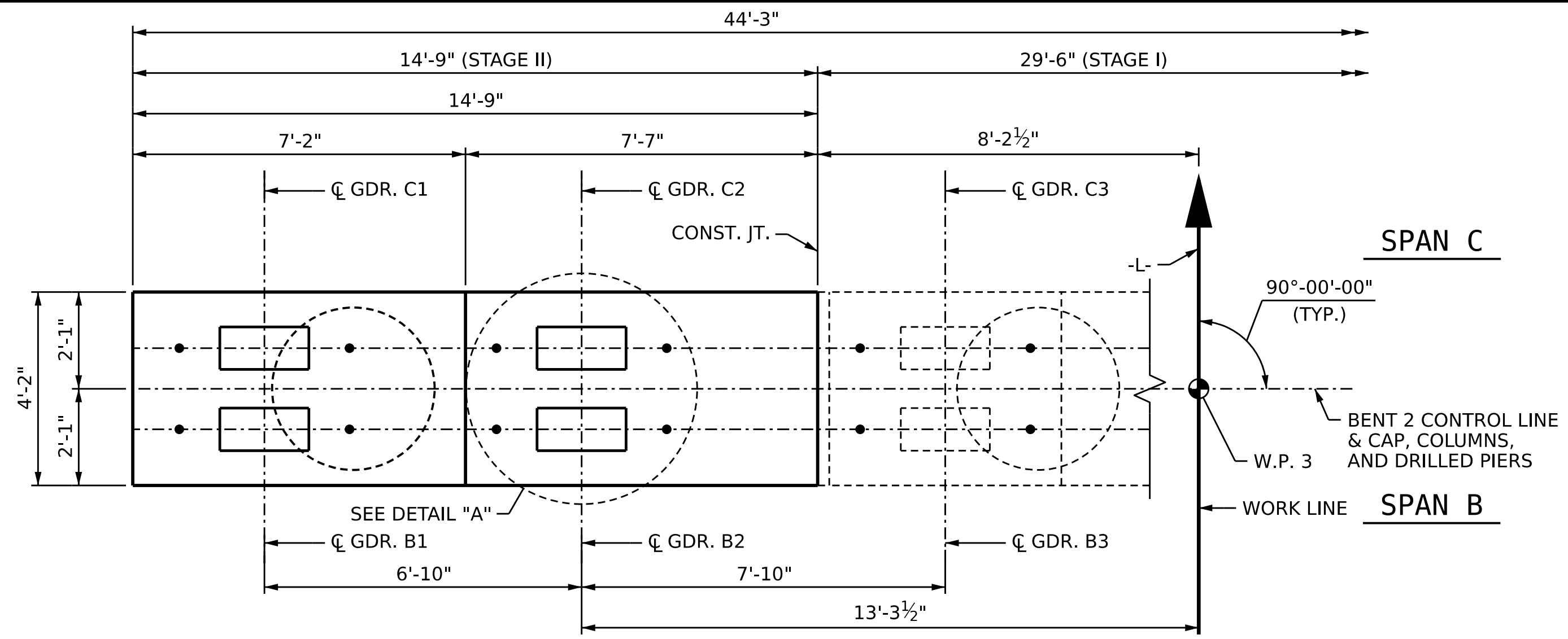
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2
DETAILS AND
BILL OF MATERIAL
STAGE I

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

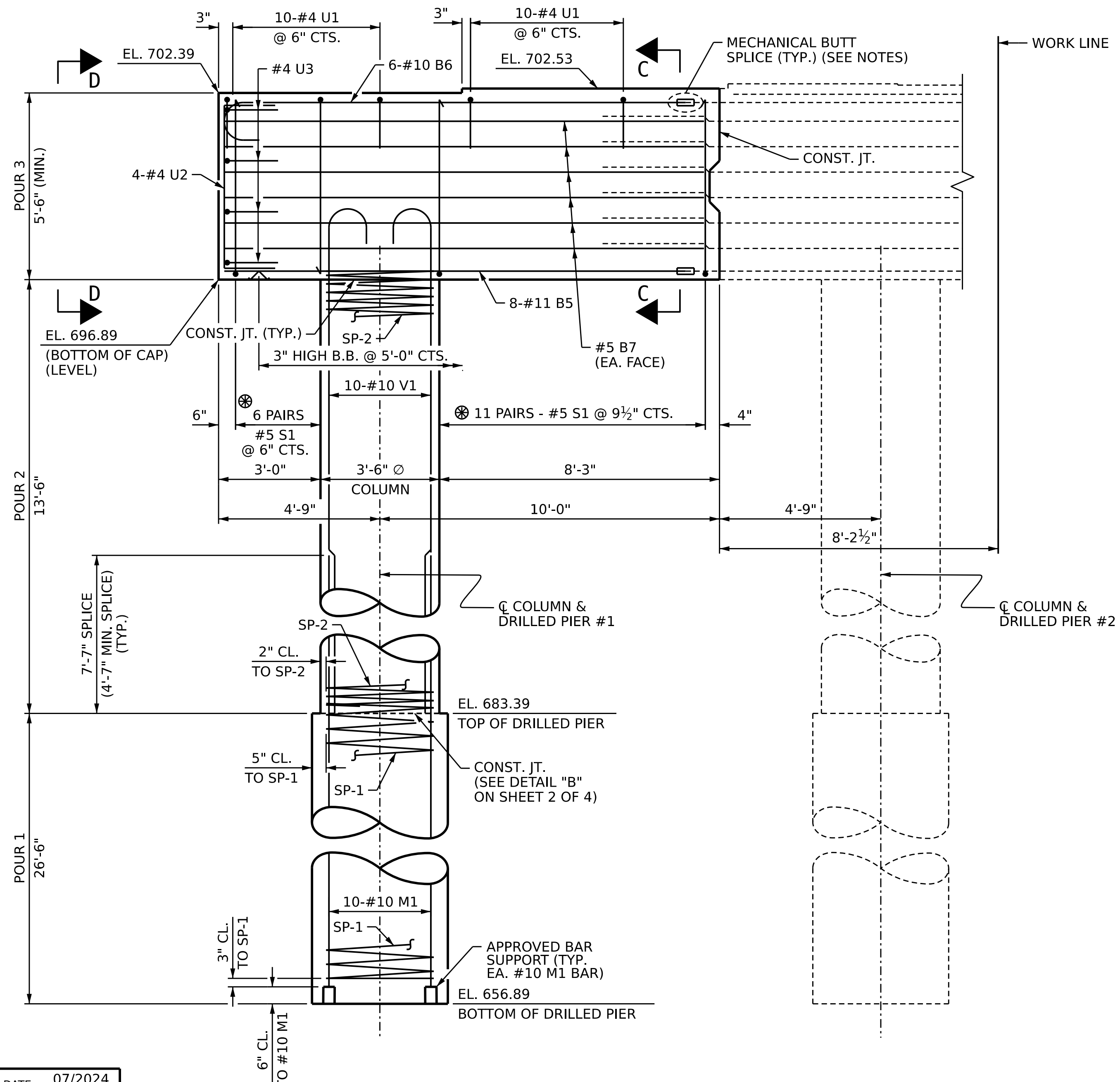
SHEET NO.
S-50
TOTAL SHEETS
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DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024



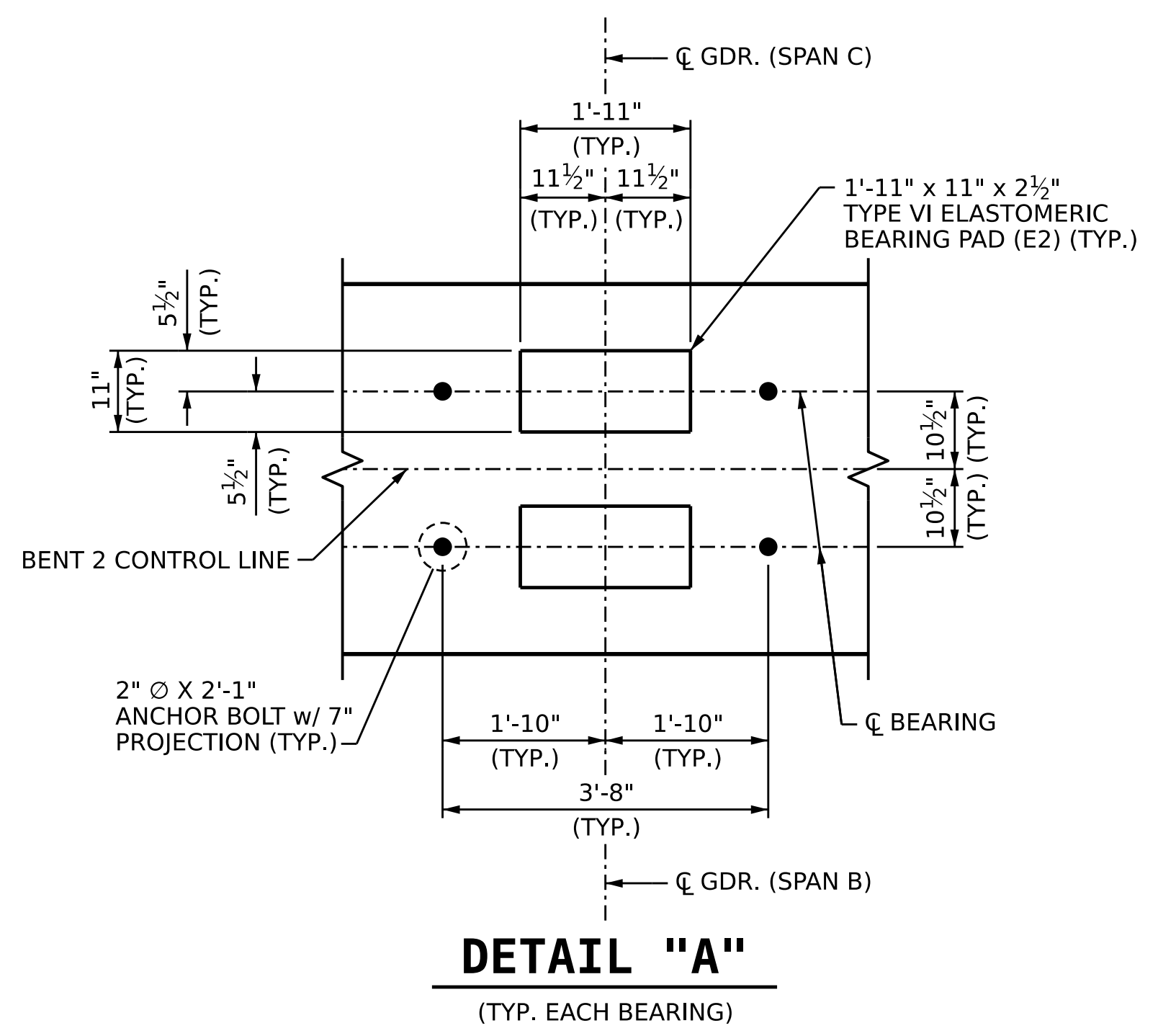
PLAN



ELEVATION

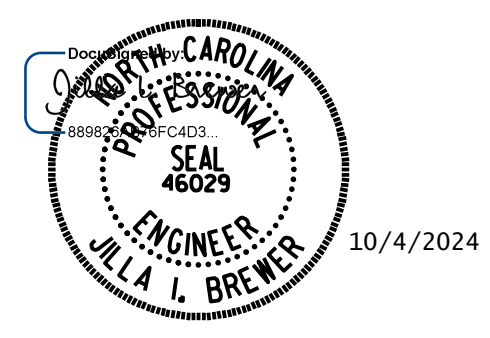
NOTES:

FOR SECTION C-C, VIEW D-D, AND END ELEVATION, SEE SHEET 4 OF 4.
⊗ INVERT ALTERNATE PAIRS OF STIRRUPS.
FOR ADDITIONAL NOTES, SEE SHEET 1 OF 4.



DETAIL "A"
(TYP. EACH BEARING)

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-
SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2
PLAN AND ELEVATION

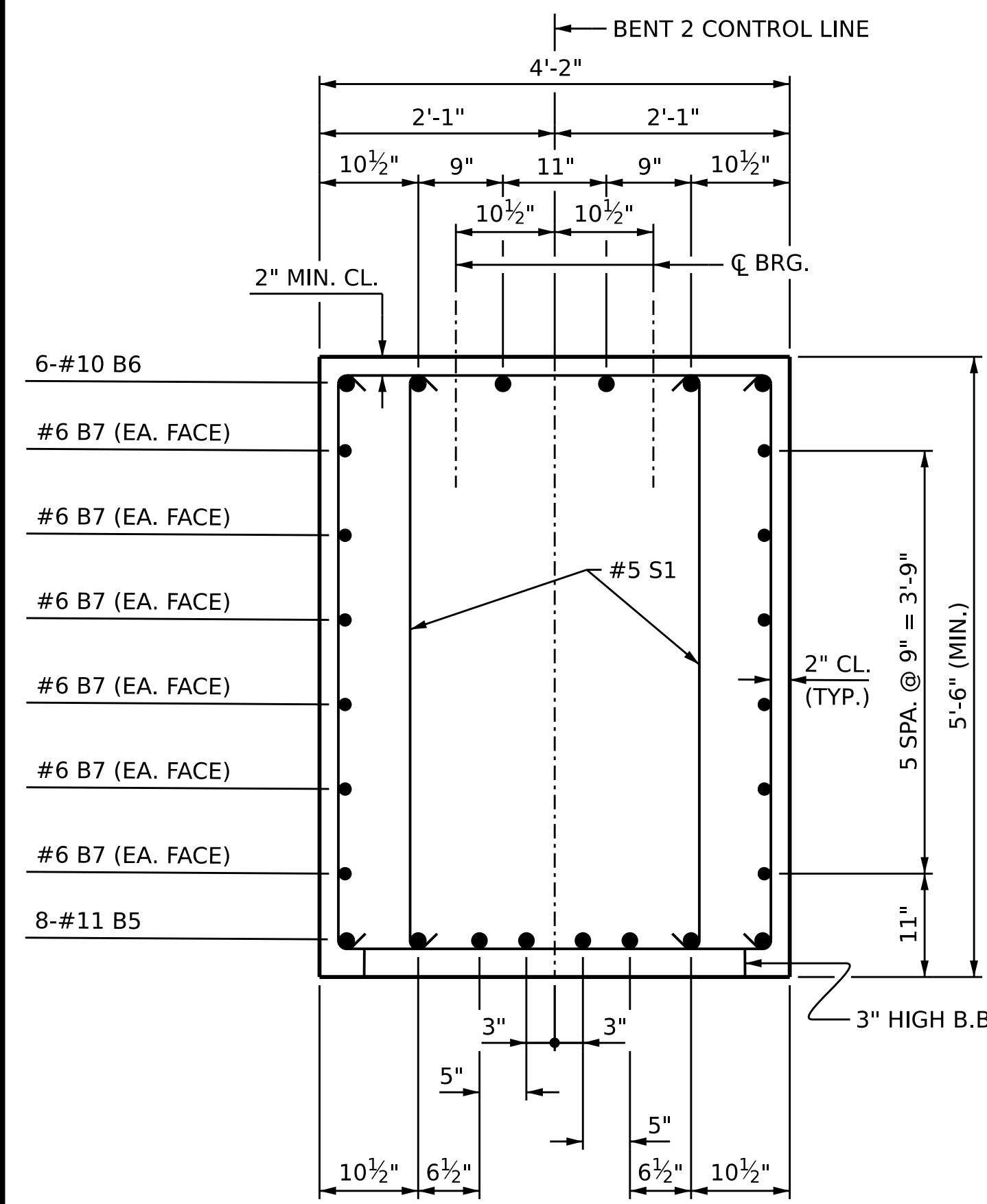
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

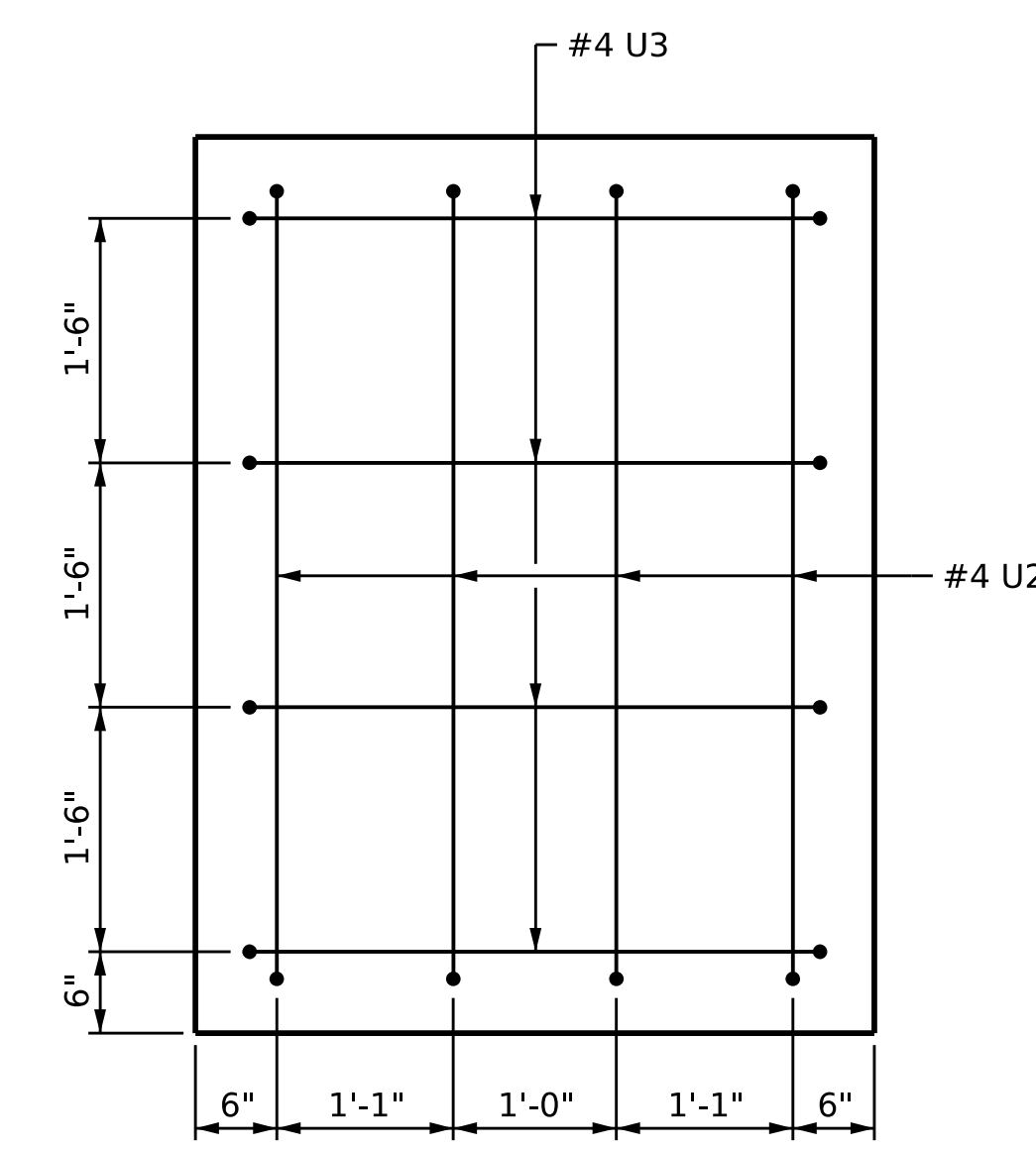
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			60

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CHECKED BY: J.I. BREWER DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

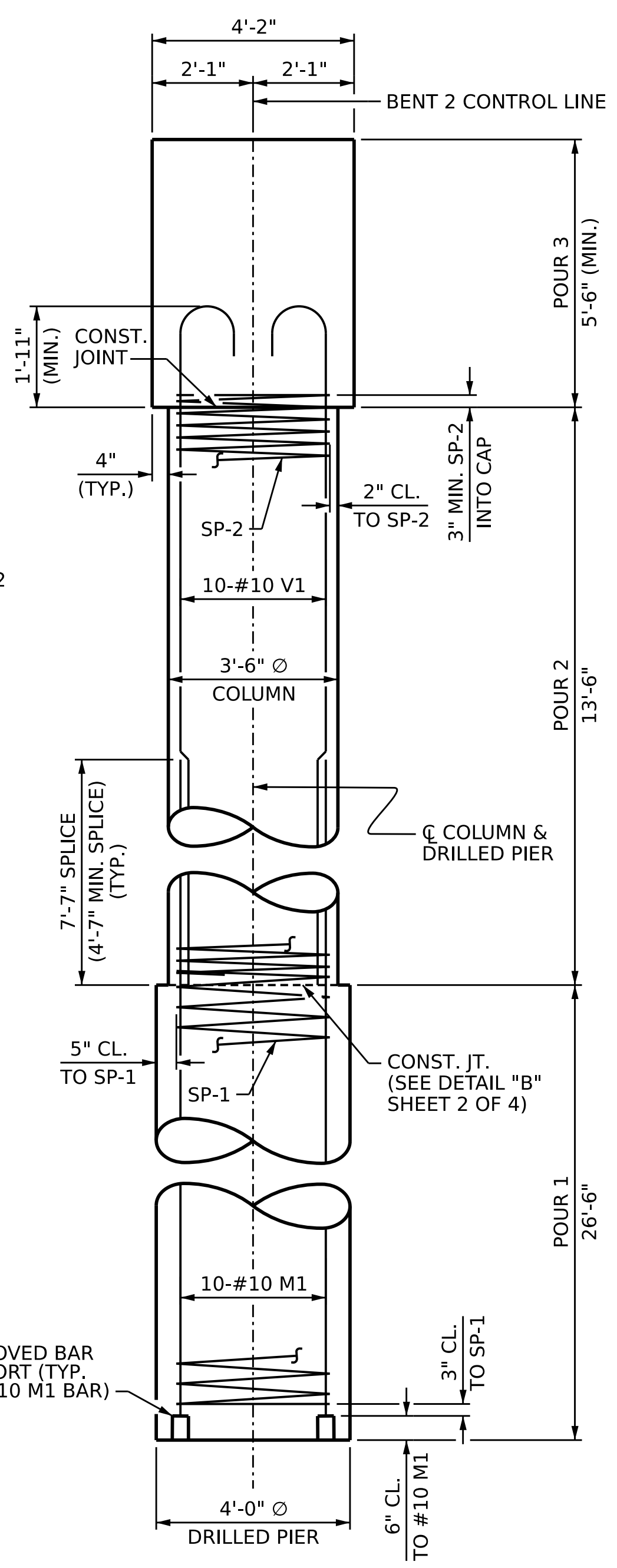
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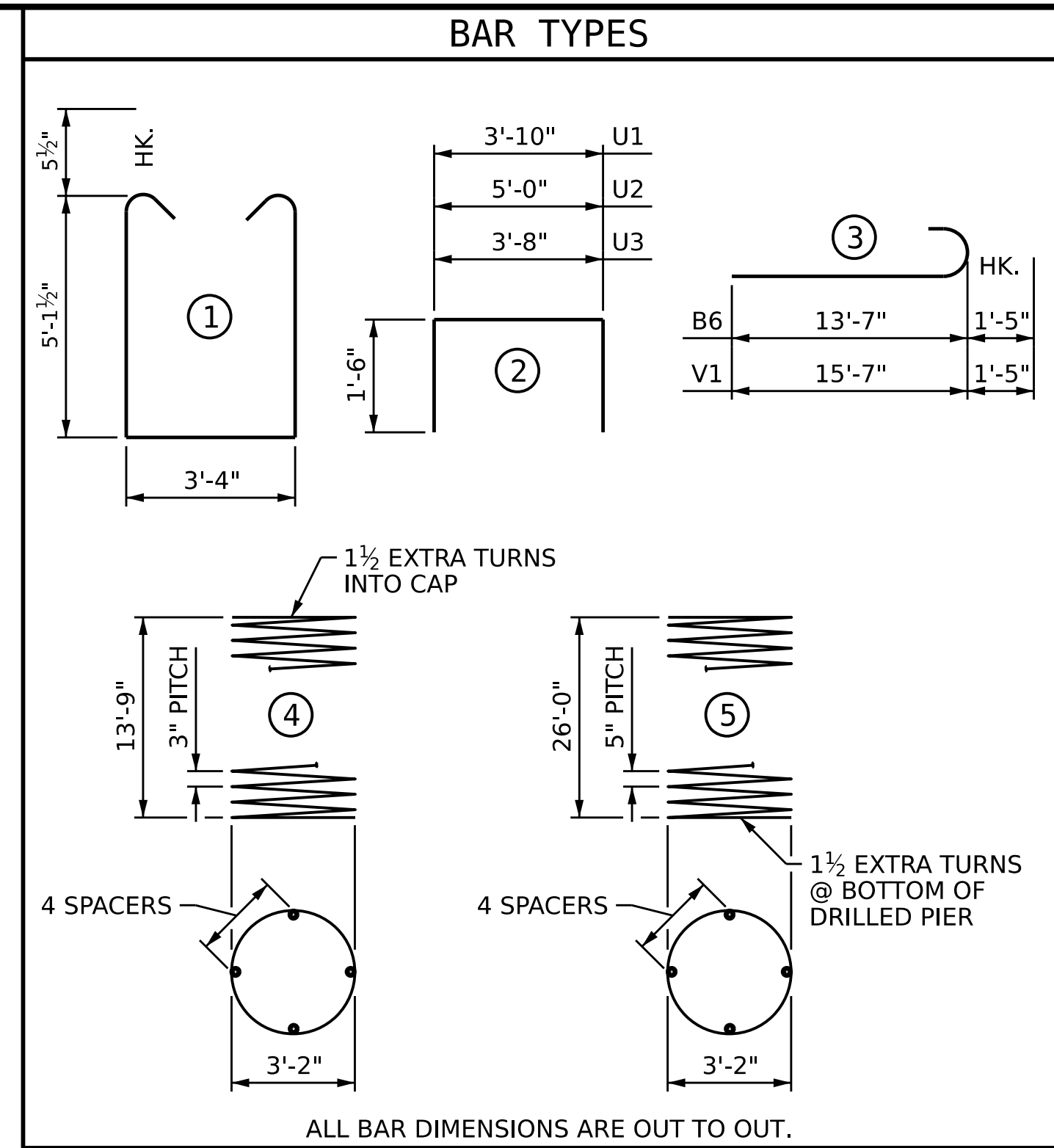
SECTION C-C



VIEW D-D

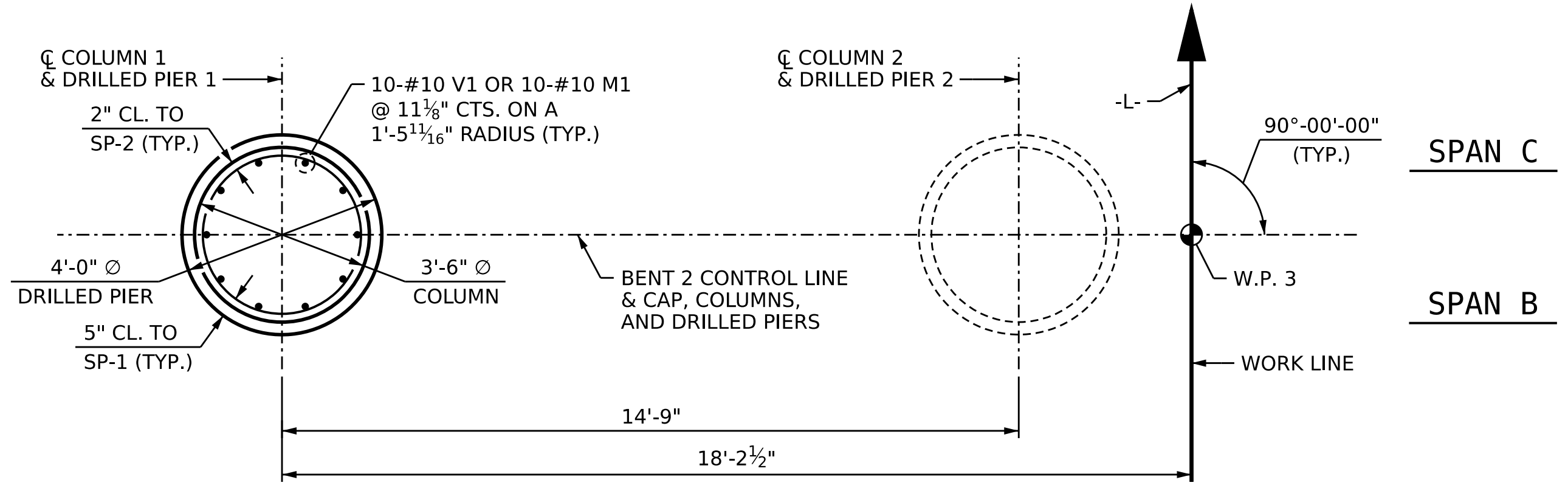


END ELEVATION



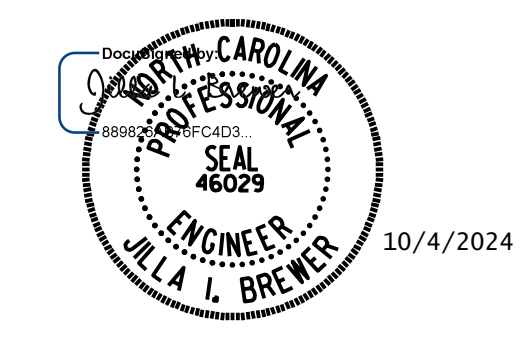
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 2					
STAGE II					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	8	#11	STR	13'-7"	557
B6	6	#10	3	15'-0"	387
B7	12	#5	STR	14'-1"	176
M1	10	#10	STR	33'-7"	1,445
S1	34	#5	1	14'-6"	514
U1	20	#4	2	6'-10"	91
U2	4	#4	2	8'-0"	21
U3	4	#4	2	6'-8"	18
V1	10	#10	3	16'-10"	724
REINFORCING STEEL					3,953 LBS.
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	**	5	624'-9"	652
SP-2	1	*	4	553'-11"	370
SPIRAL COLUMN REINFORCING STEEL					1,022 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)				4.9	C.Y.
POUR #3 (CAP)				12.7	C.Y.
TOTAL				17.6	C.Y.



PLAN OF COLUMN AND DRILLED PIER

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 4 OF 4



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
 SUBSTRUCTURE
BENT 2
DETAILS AND
BILL OF MATERIAL
STAGE II

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

SHEET NO.
S-52
 TOTAL SHEETS
60

DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

10/4/2024 10:39:15 AM blanning N:\NC BrIdges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401.103.B5766.SMU.B20.840082.dgn

NOTES:

THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1), EXCEPT THE BEARING AREAS, SHALL BE RAKED TO A DEPTH OF 1/4".

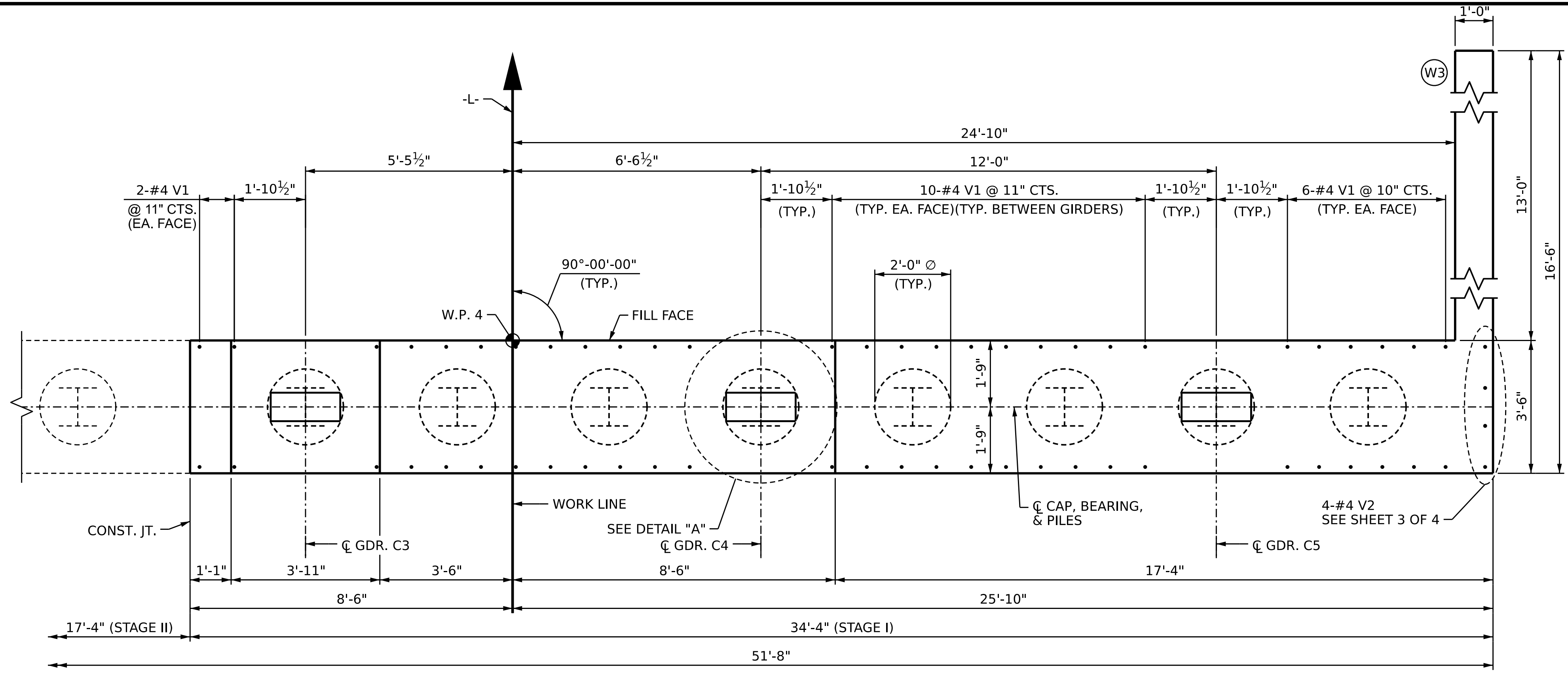
FOR SECTION A-A, SECTION B-B, PILE SPlice DETAILS AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

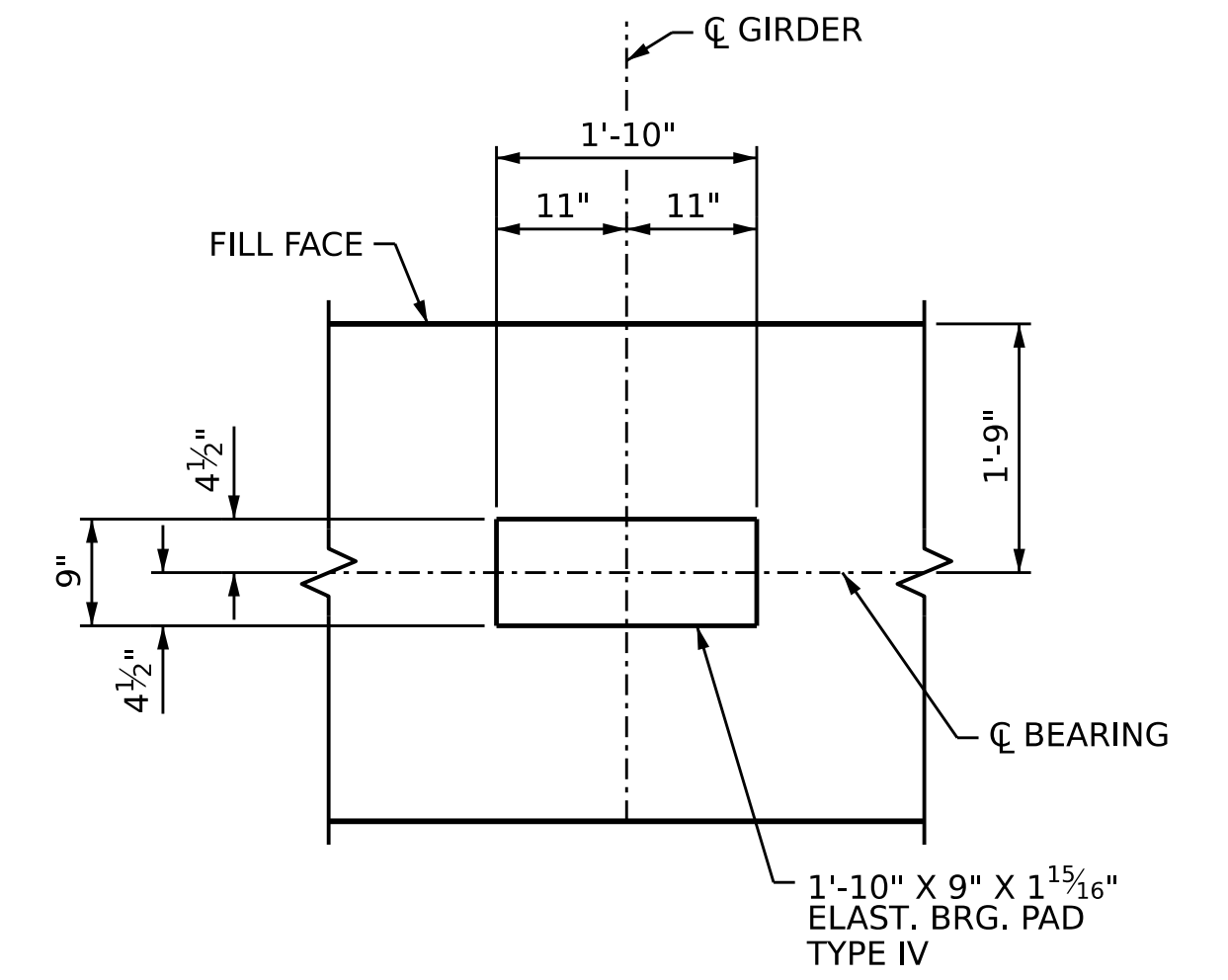
CONTRACTOR MAY ELECT TO USE COUPLERS ON "B" BARS IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHODS.

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

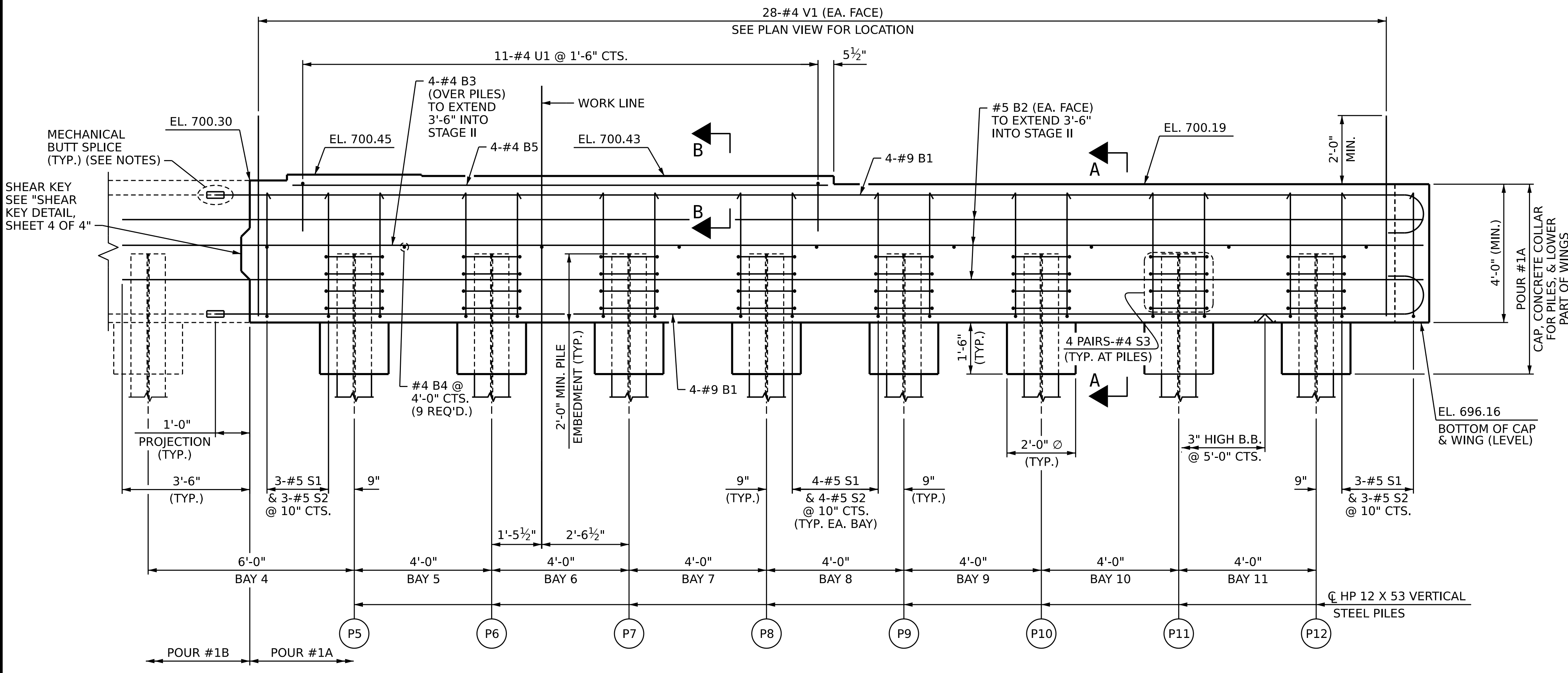
THE UPPER PART OF END BENT CAP AND WINGS SHALL BE Poured WITH THE SUPERSTRUCTURE. SEE THE SUPERSTRUCTURE SHEETS FOR THE UPPER PART OF THE INTEGRAL END BENT DETAILS.



PLAN



DETAIL "A"
(TYP. EACH BEARING)



ELEVATION

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION

STAGE I



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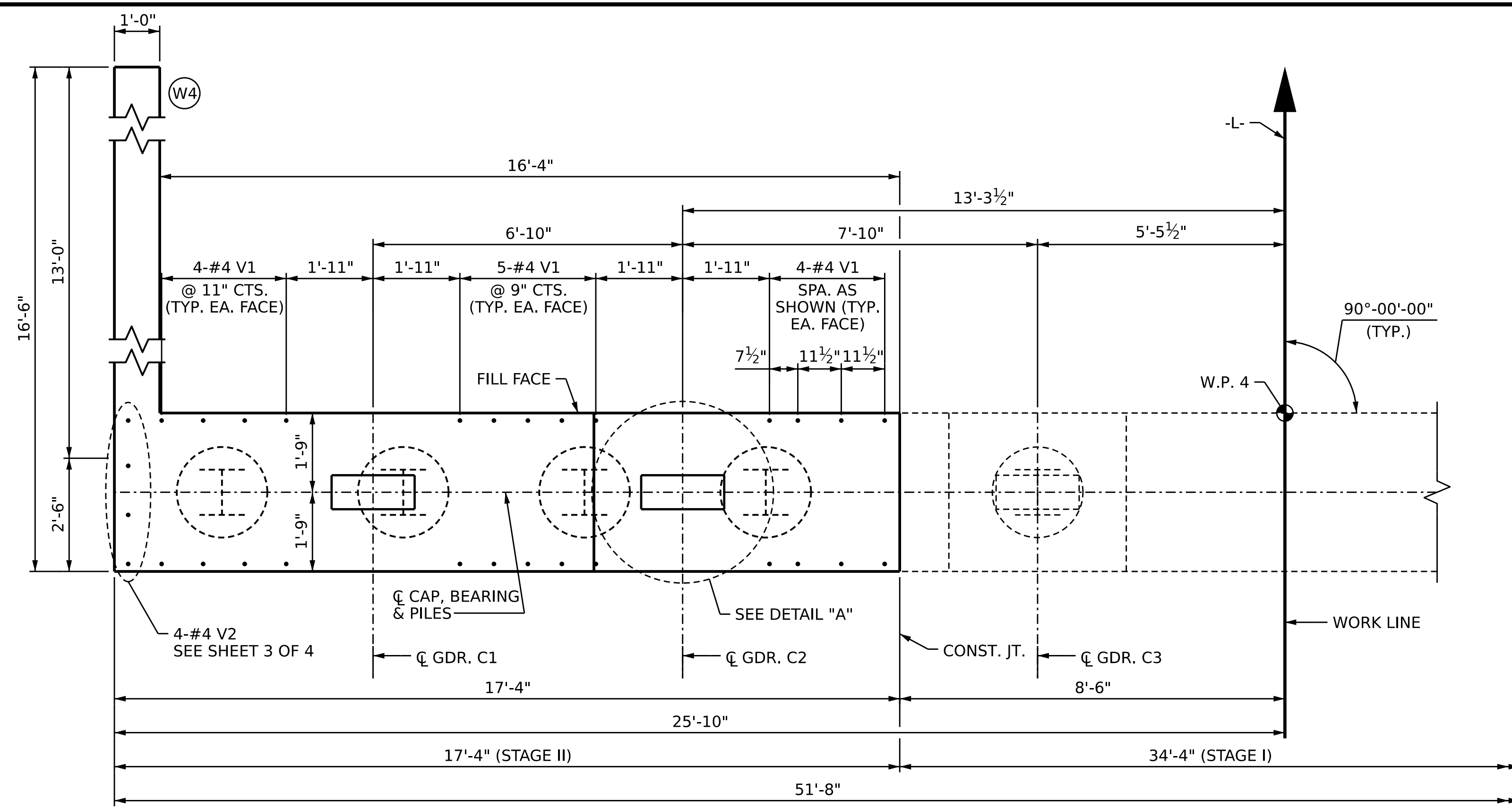
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO. S-53
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

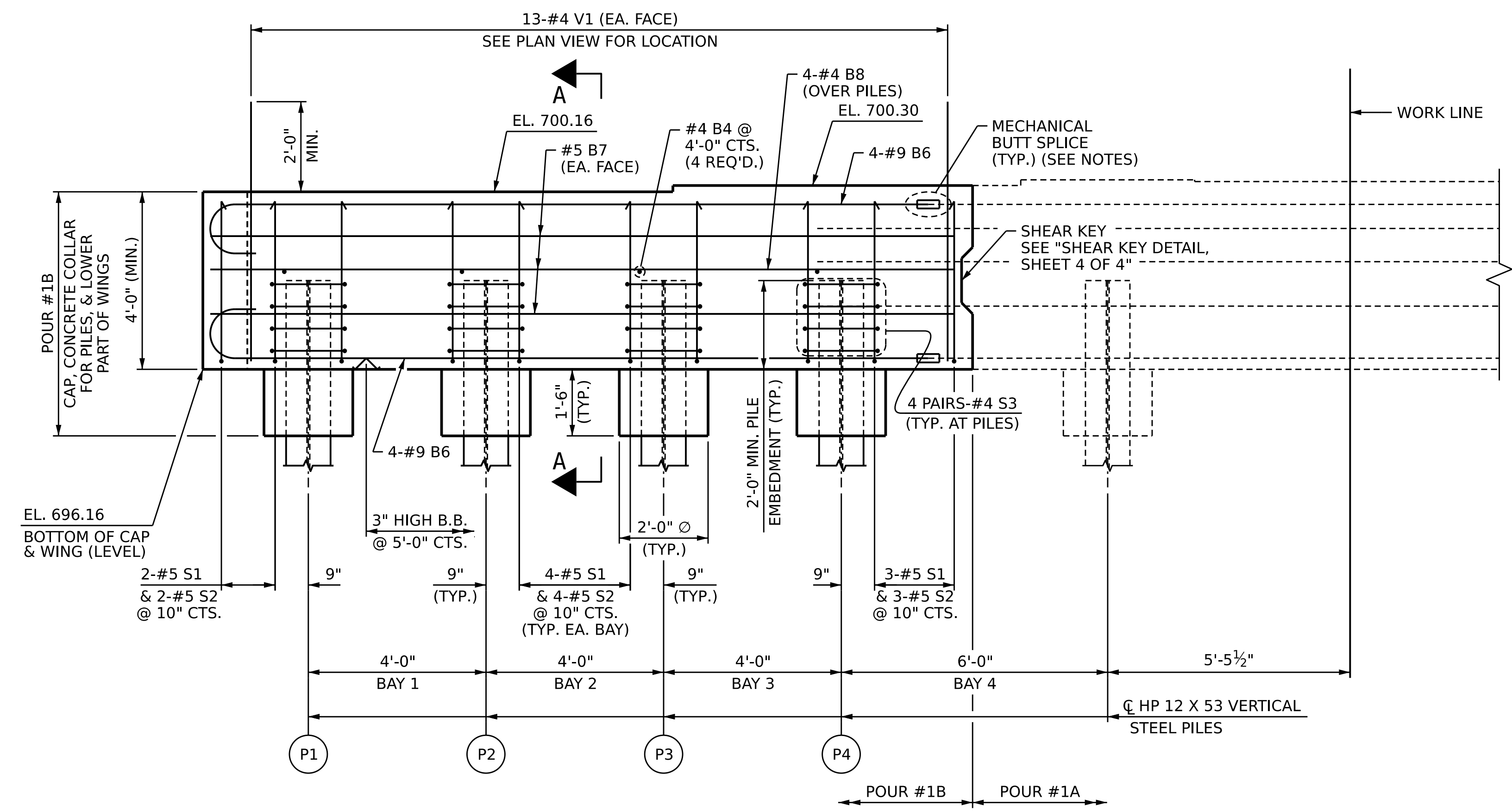
DRAWN BY: B.E. LANNING DATE: 07/2024
 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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



PLAN

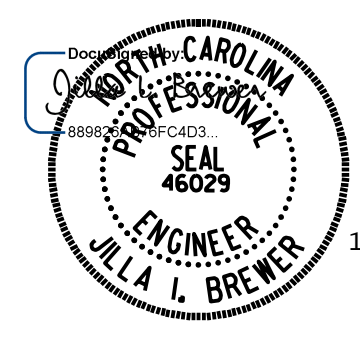


ELEVATION

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2
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

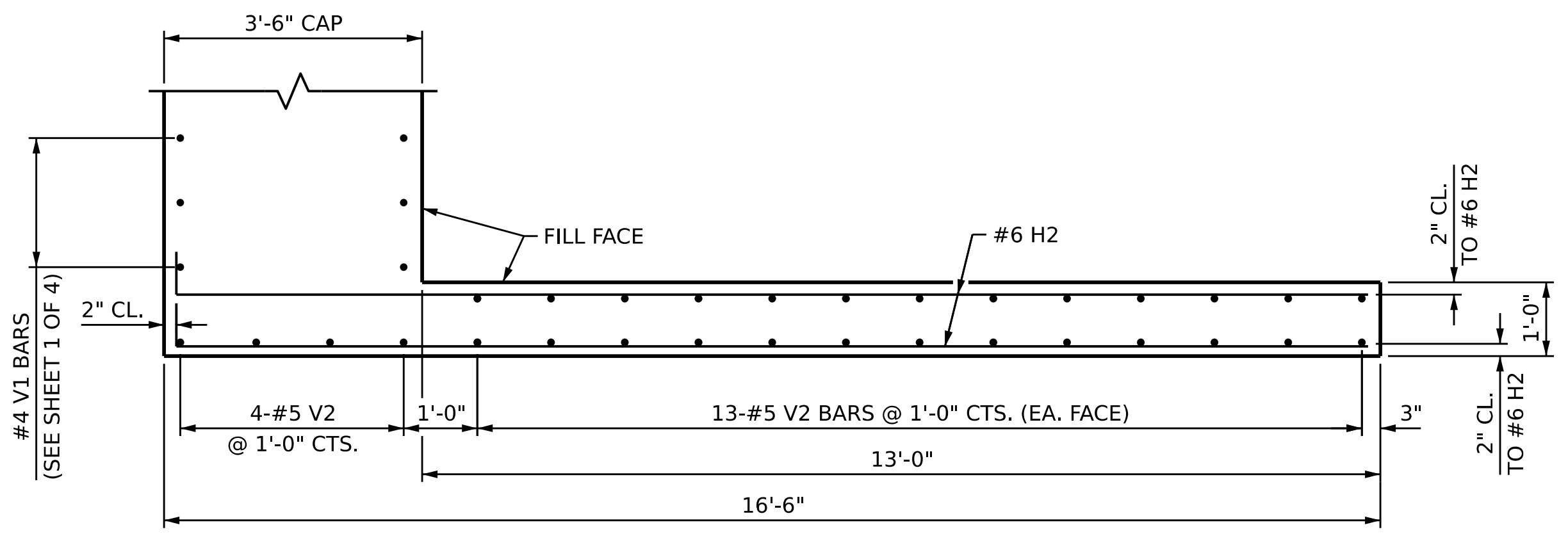
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
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2			4			60

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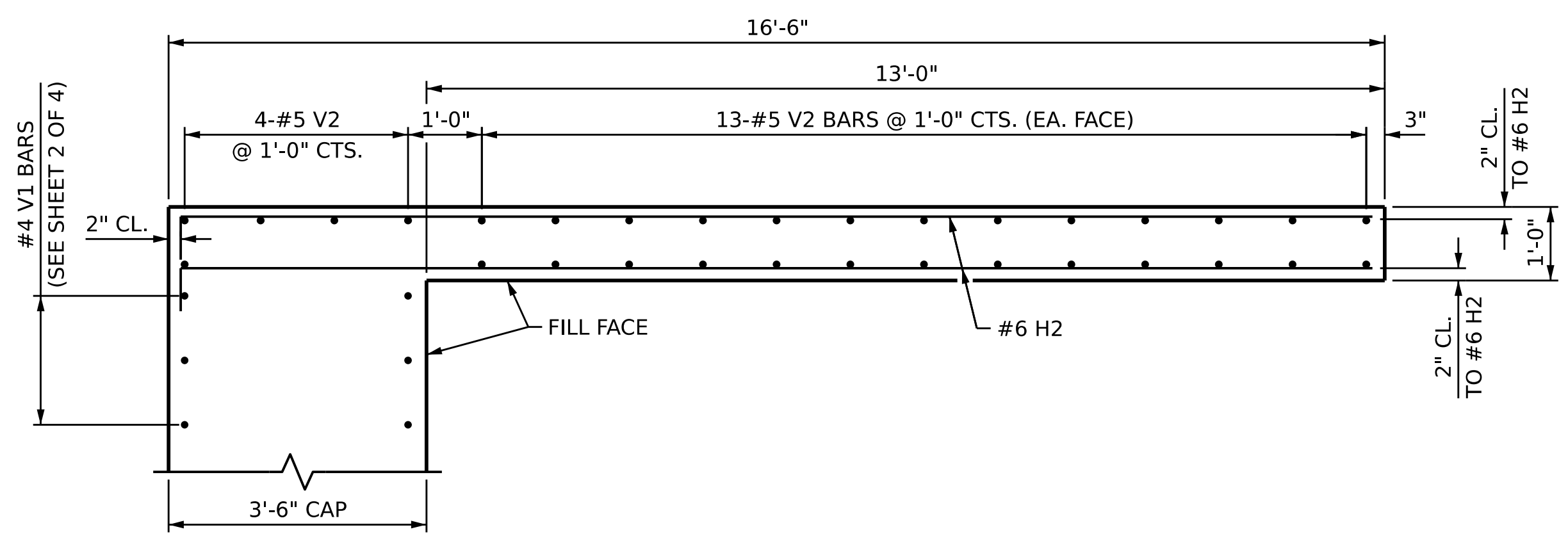
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 CHECKED BY: J.I. BREWER DATE: 07/2024
 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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blanning

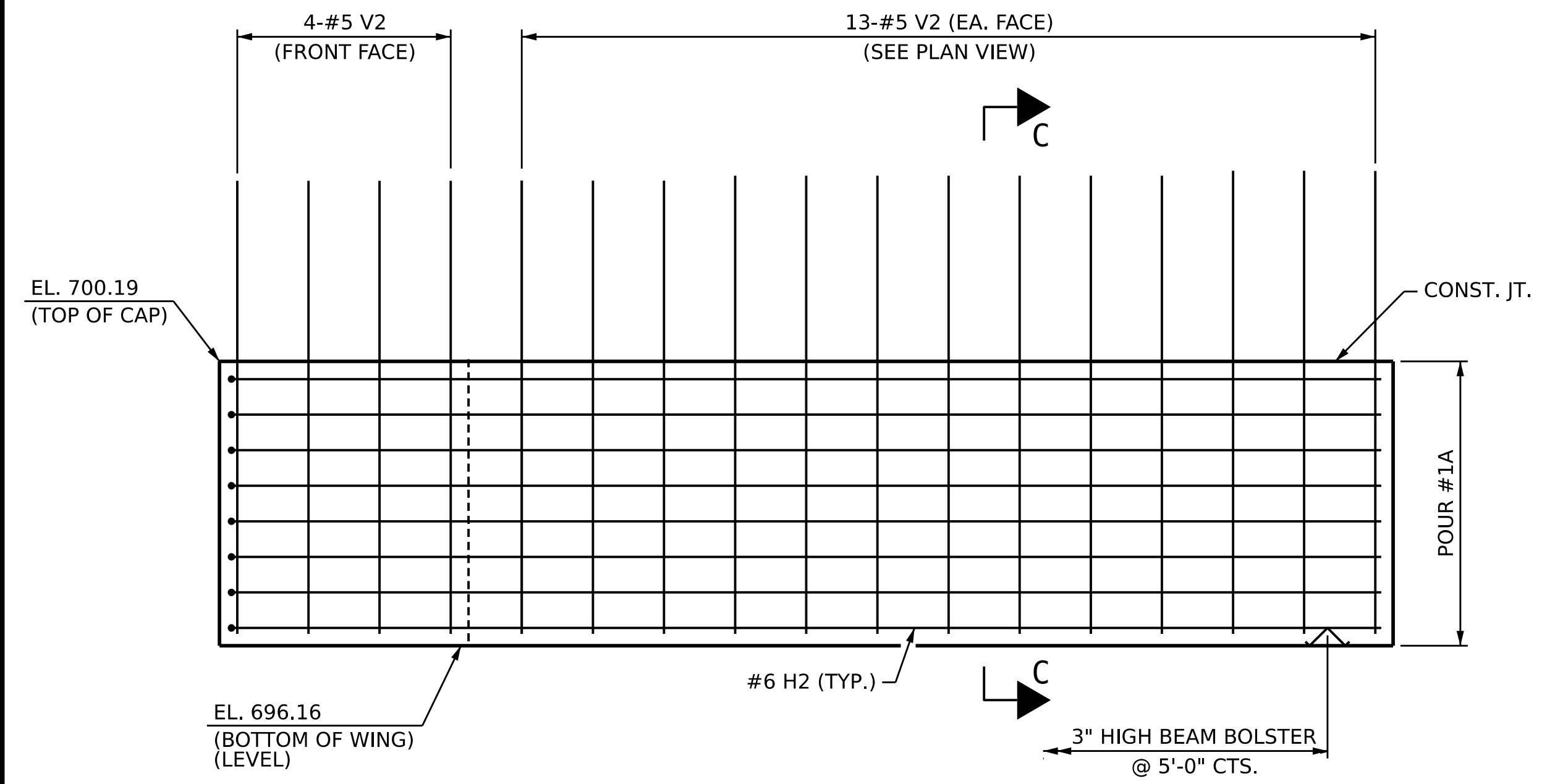
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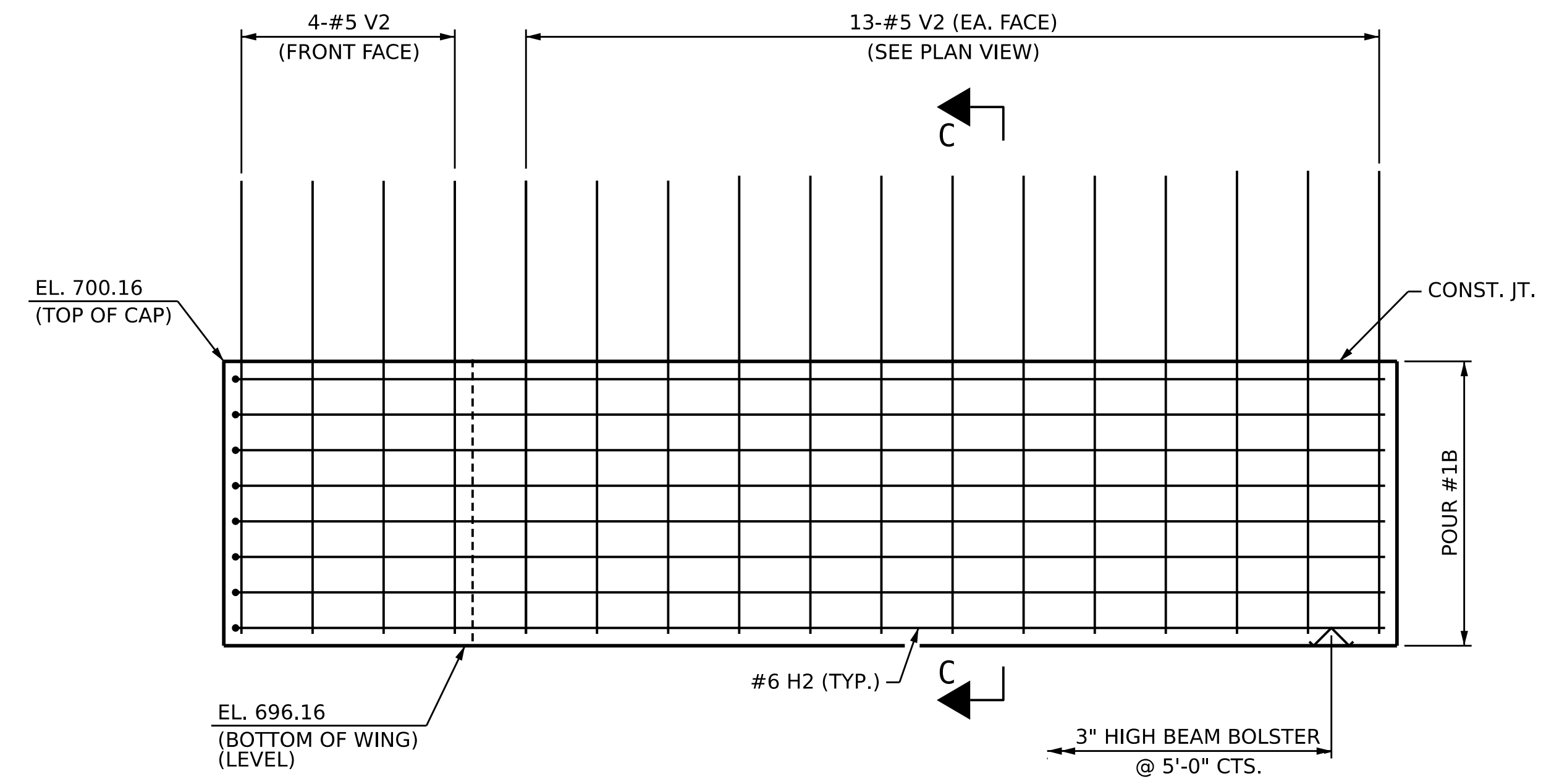
PLAN OF WING W3
STAGE I



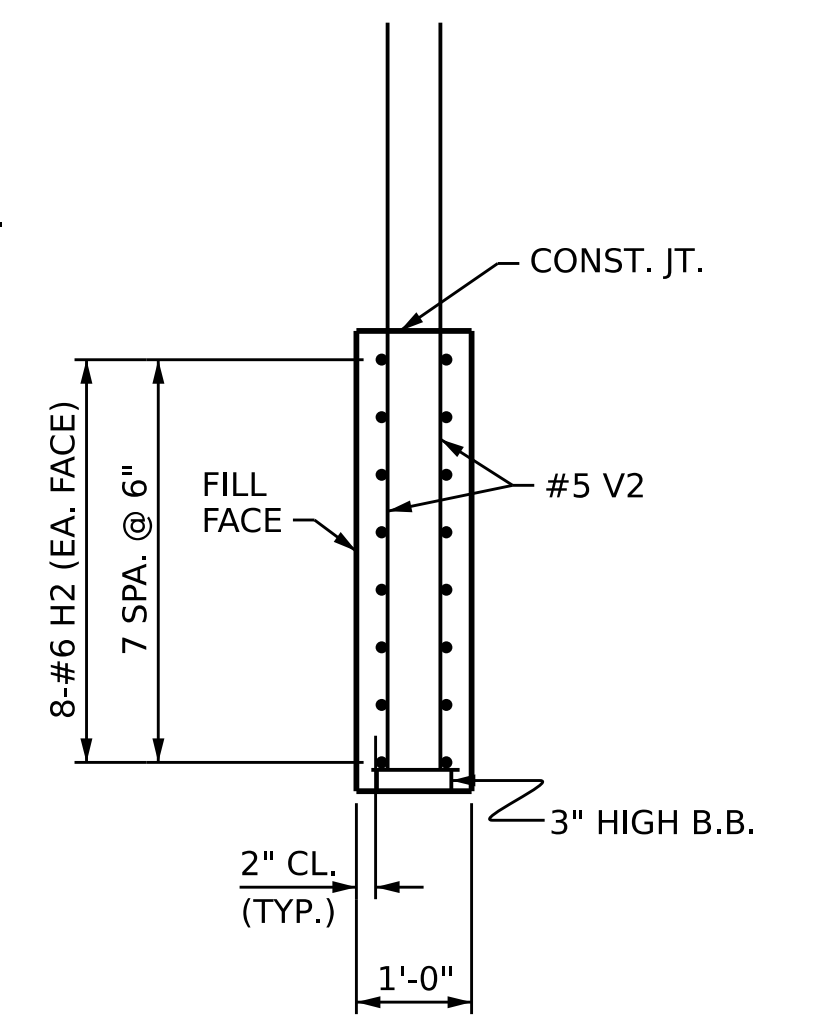
PLAN OF WING W4
STAGE II



ELEVATION OF WING W3
STAGE I



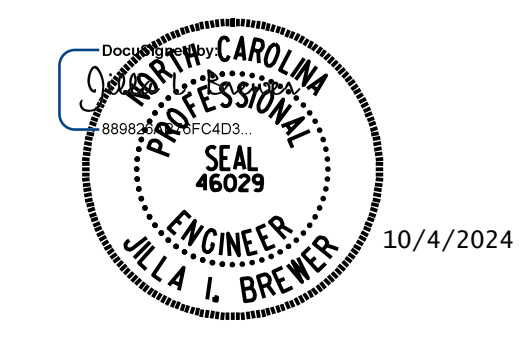
ELEVATION OF WING W4
STAGE II



SECTION C-C

PROJECT NO. B-5766
STOKES COUNTY
STATION: 14+96.00 -L-

SHEET 3 OF 4



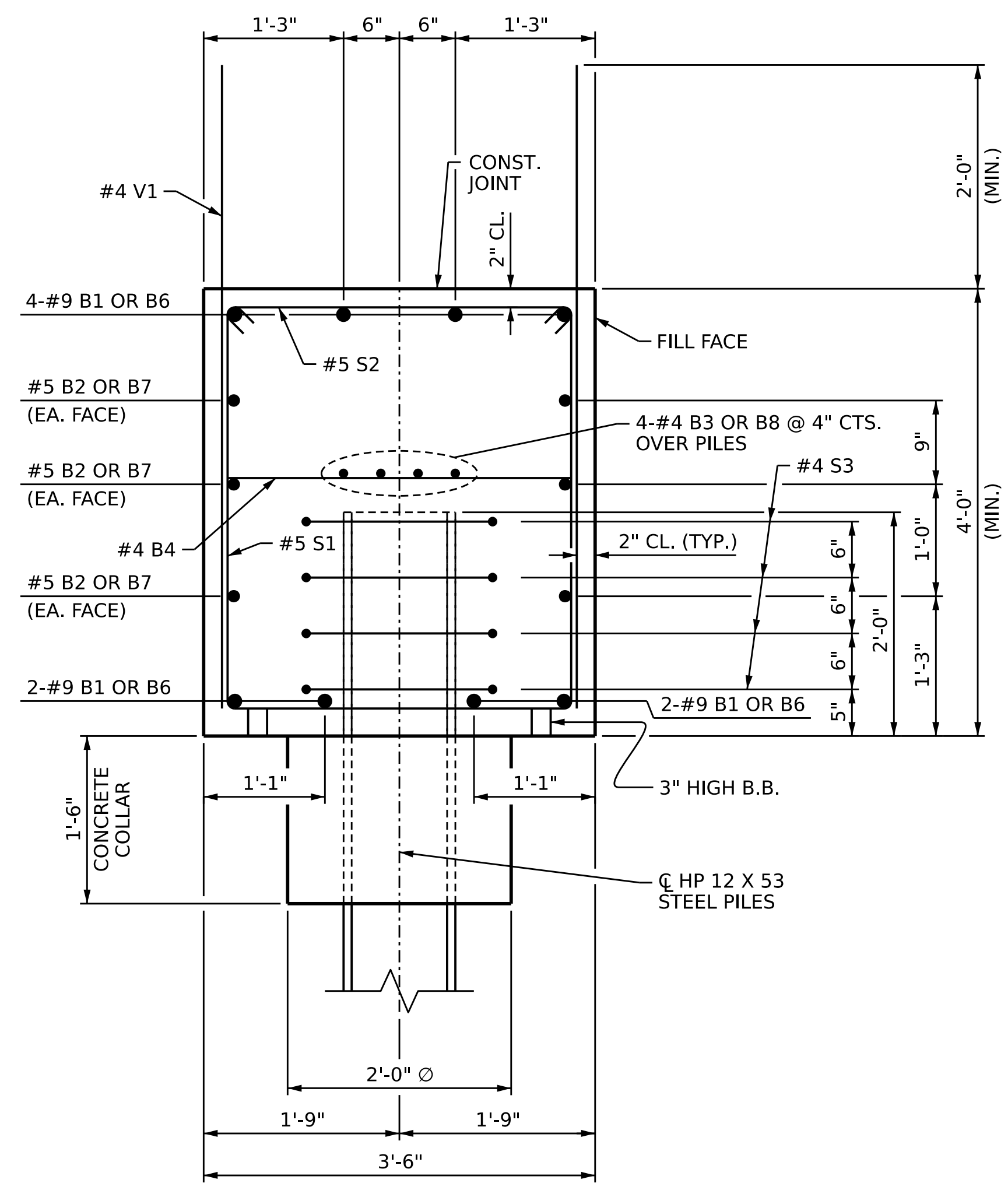
**DOCUMENT NOT CONSIDERED FINAL
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1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

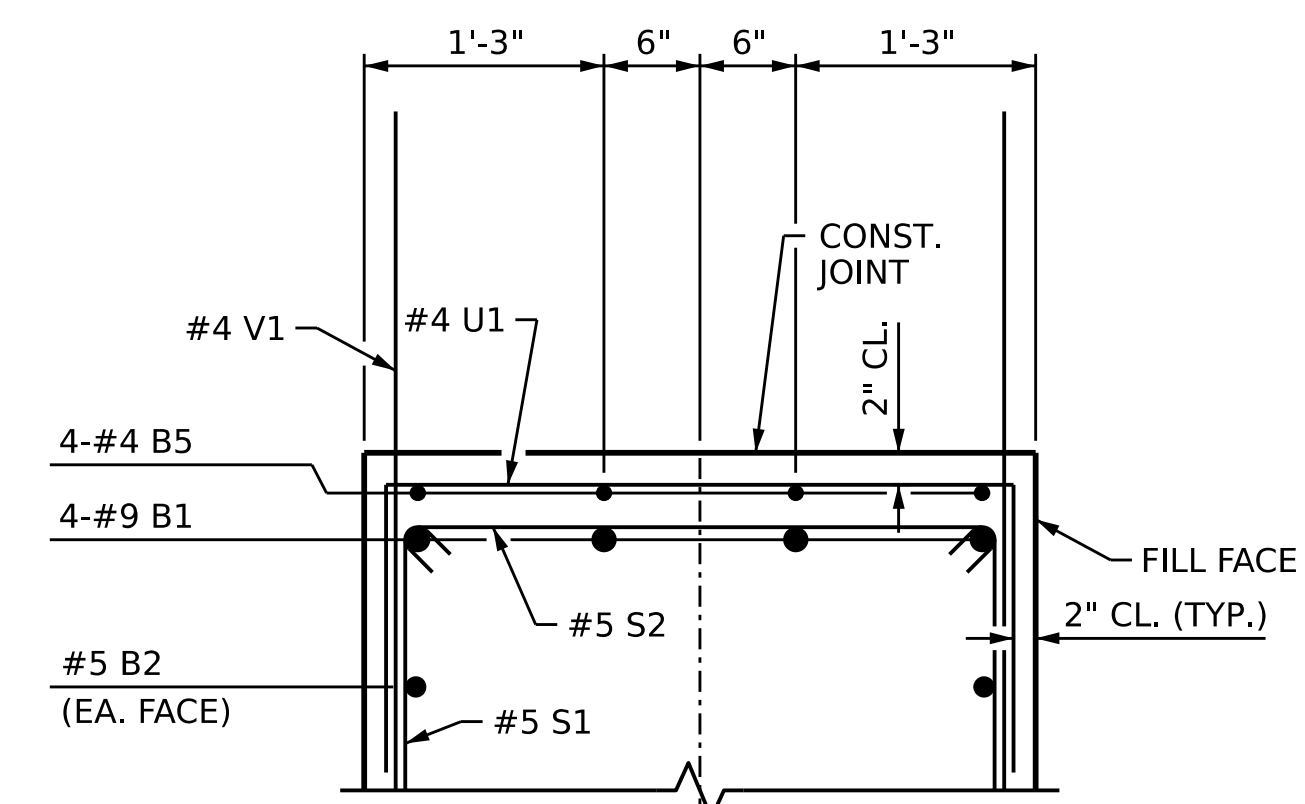
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
**END BENT 2
WINGWALL DETAILS**

DRAWN BY: B.E. LANNING DATE: 07/2024
CHECKED BY: J.I. BREWER DATE: 07/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

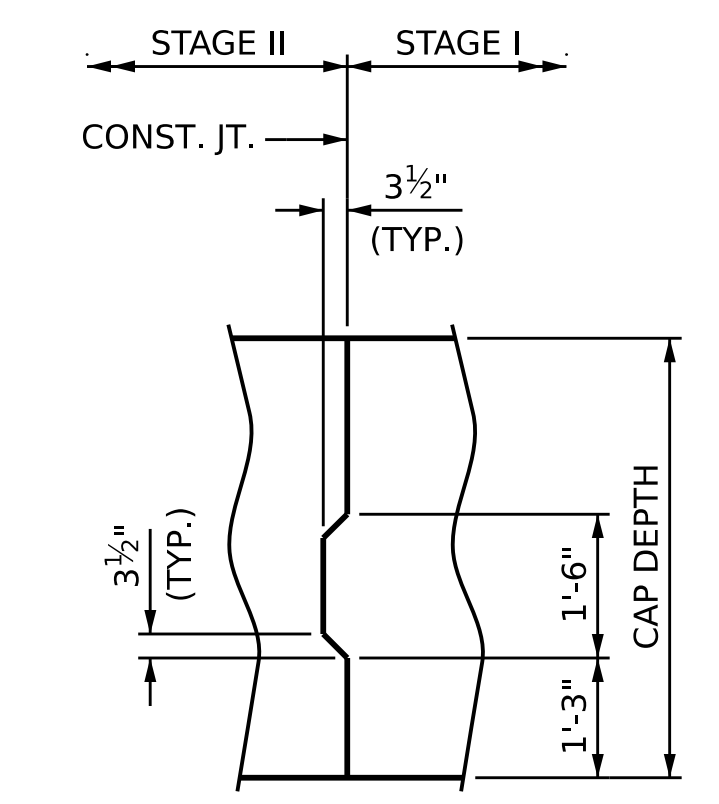
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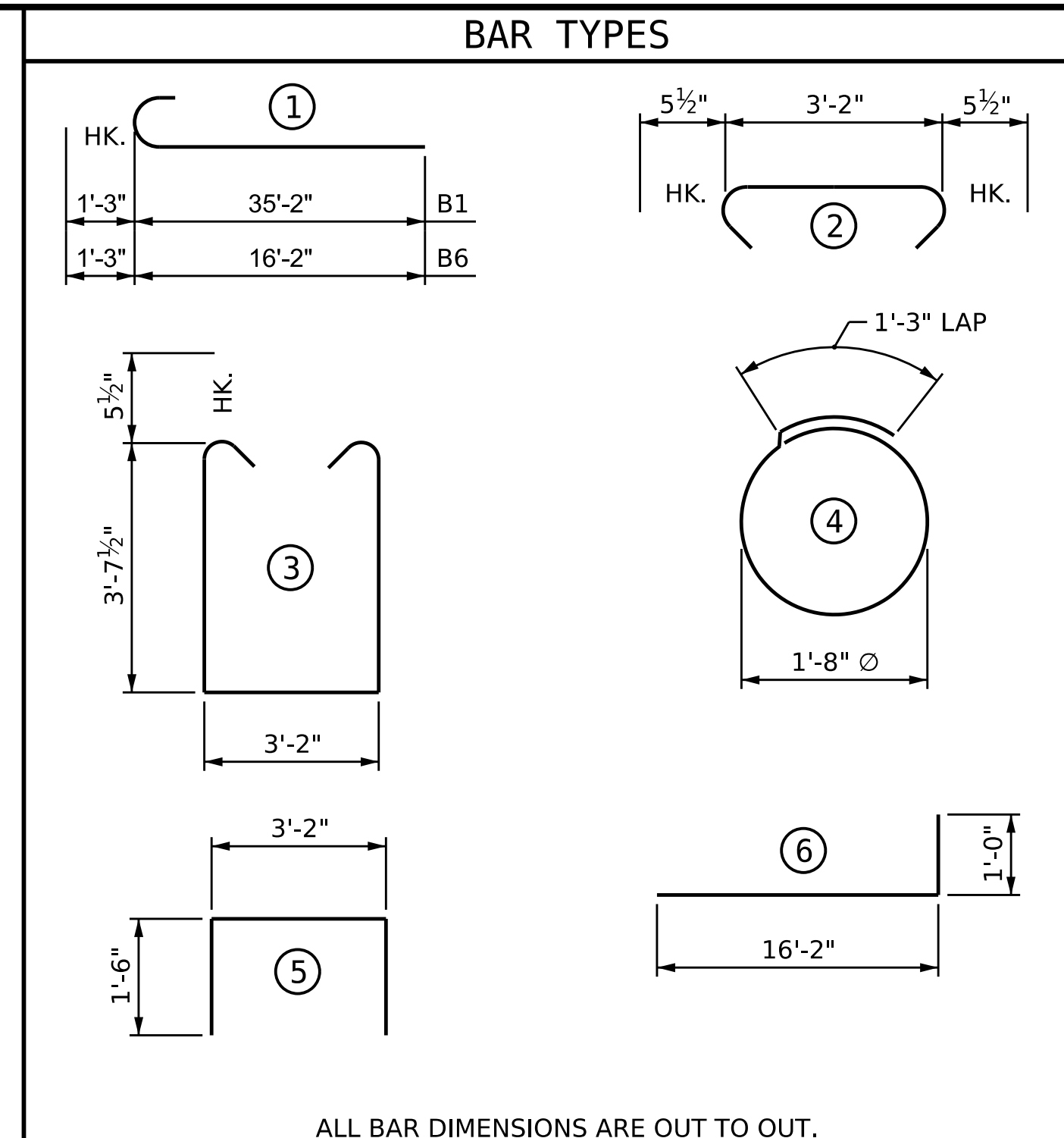
SECTION A-A



SECTION B-B



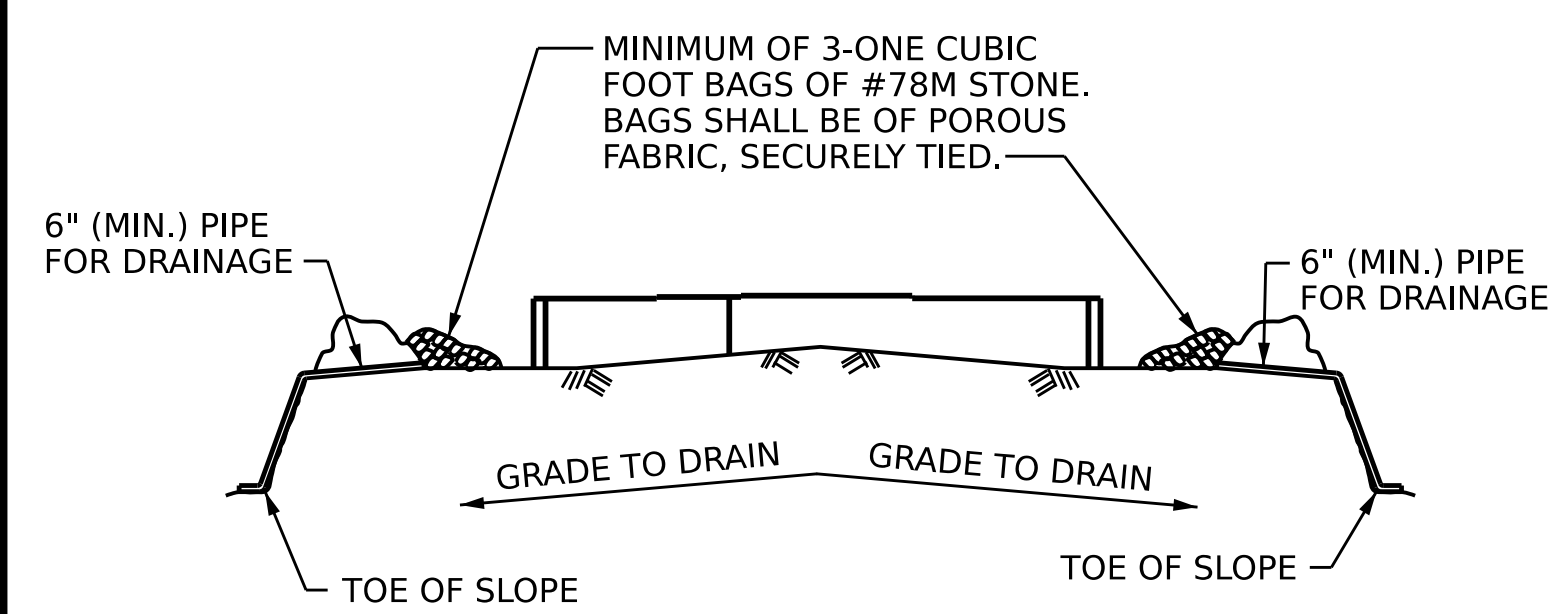
SHEAR KEY DETAIL
ELEVATION VIEW OF CAP



ALL BAR DIMENSIONS ARE OUT TO OUT.

CLASS A CONCRETE BREAKDOWN			
POUR #1A (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W1)	22.1	C.Y.	
POUR #1B (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W2)	11.9	C.Y.	
TOTAL	34.0	C.Y.	

BILL OF MATERIAL					
END BENT 2					
STAGE I					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		36'-5"	991
B2	6	#5	STR	37'-8"	236
B3	4	#4	STR	37'-8"	101
B4	9	#4	STR	3'-2"	19
B5	4	#4	STR	15'-7"	42
H2	16	#6		17'-2"	413
S1	34	#5		11'-4"	402
S2	34	#5		4'-1"	145
S3	32	#4		6'-6"	139
U1	11	#4		6'-2"	45
V1	56	#4	STR	6'-1"	228
V2	30	#5	STR	5'-10"	183
REINFORCING STEEL					2,944 LBS.
STAGE II					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	4	#4	STR	3'-2"	8
B6	8	#9		17'-5"	474
B7	6	#5	STR	16'-8"	104
B8	4	#4	STR	16'-8"	45
H2	16	#6		17'-2"	413
S1	17	#5		11'-4"	201
S2	17	#5		4'-1"	72
S3	16	#4		6'-6"	69
V1	26	#4	STR	6'-1"	106
V2	30	#5	STR	5'-10"	183
REINFORCING STEEL					1,675 LBS.

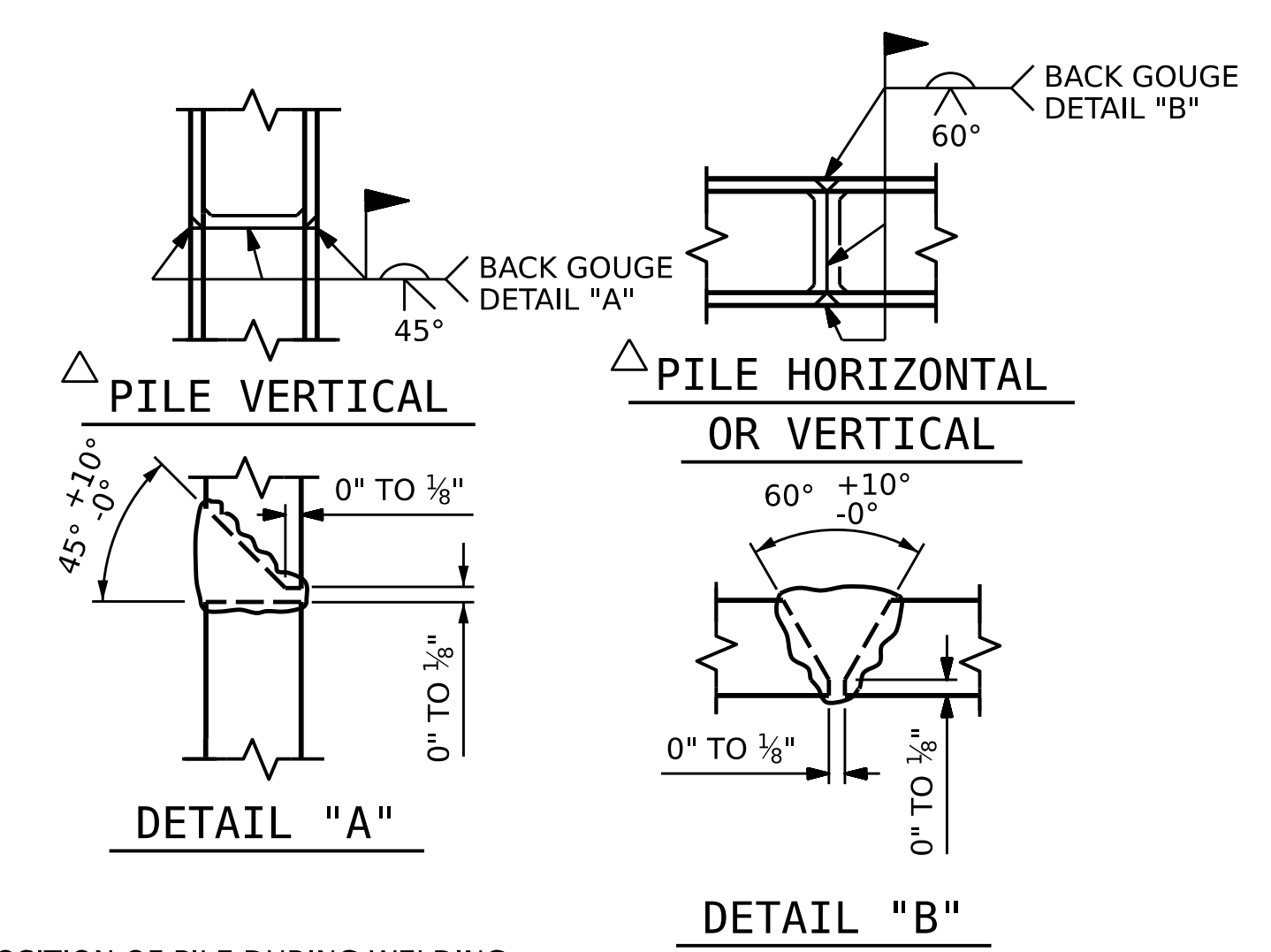


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

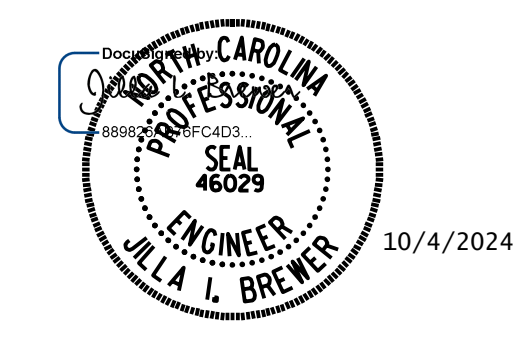
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2
DETAILS AND
BILL OF MATERIAL

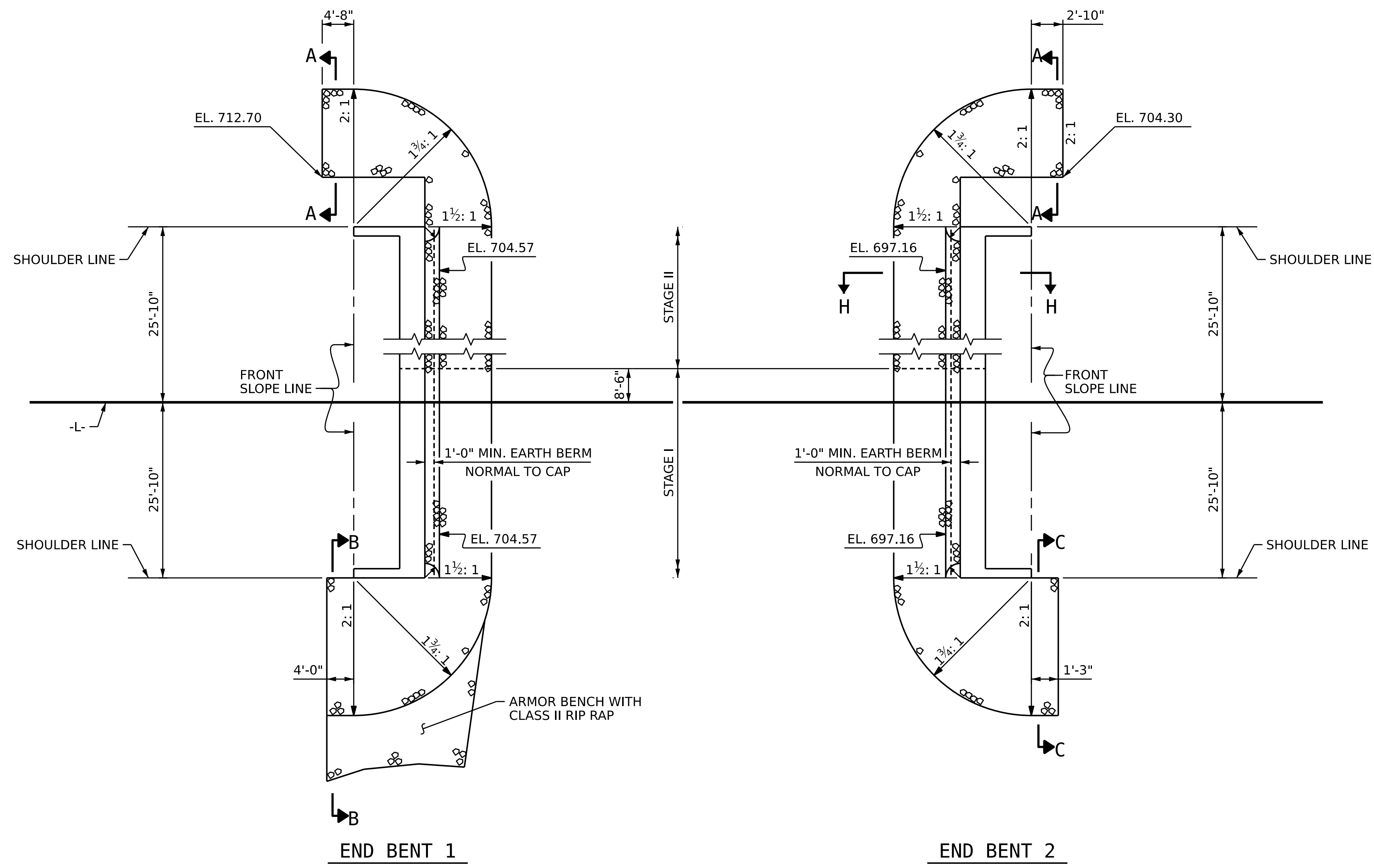
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-56					TOTAL SHEETS 60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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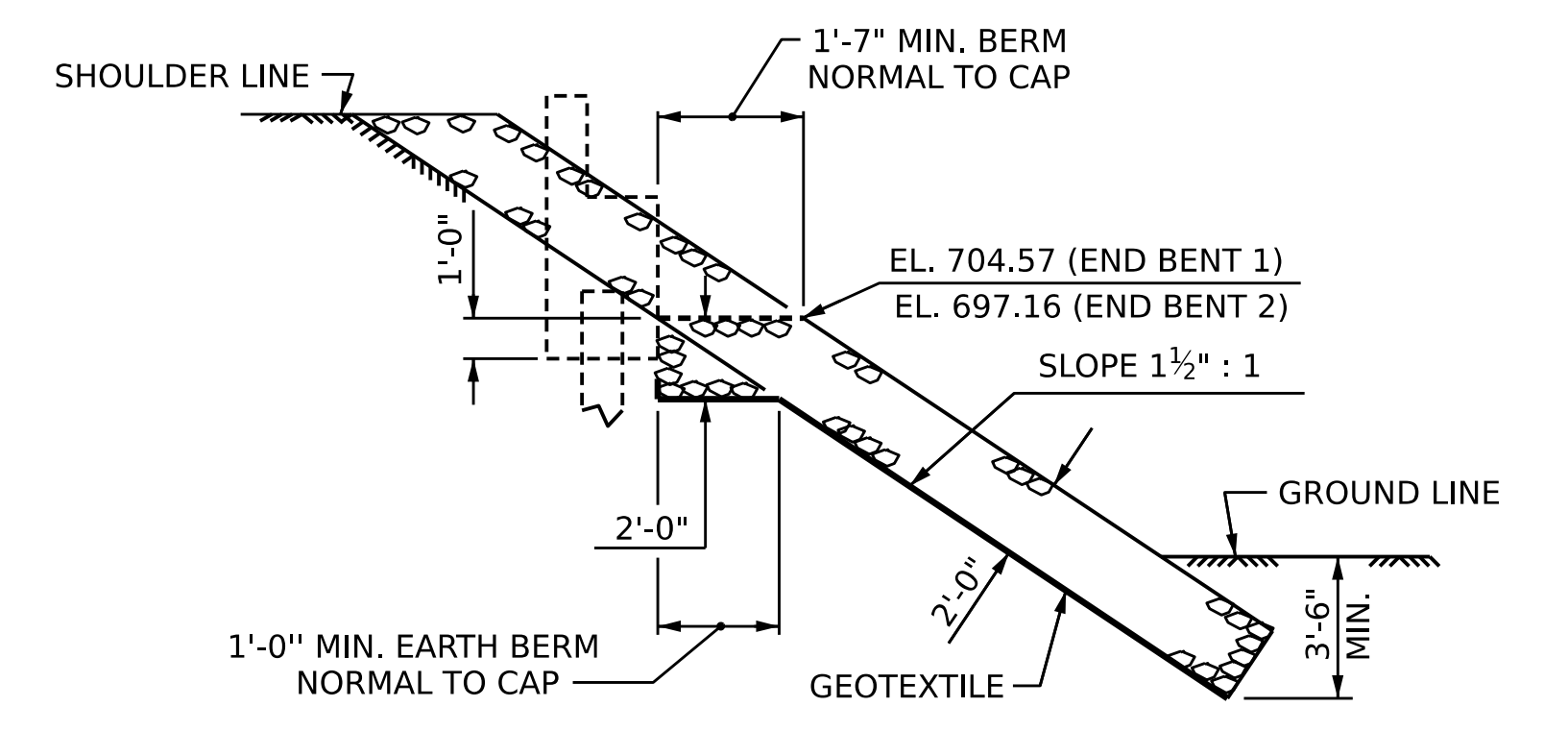
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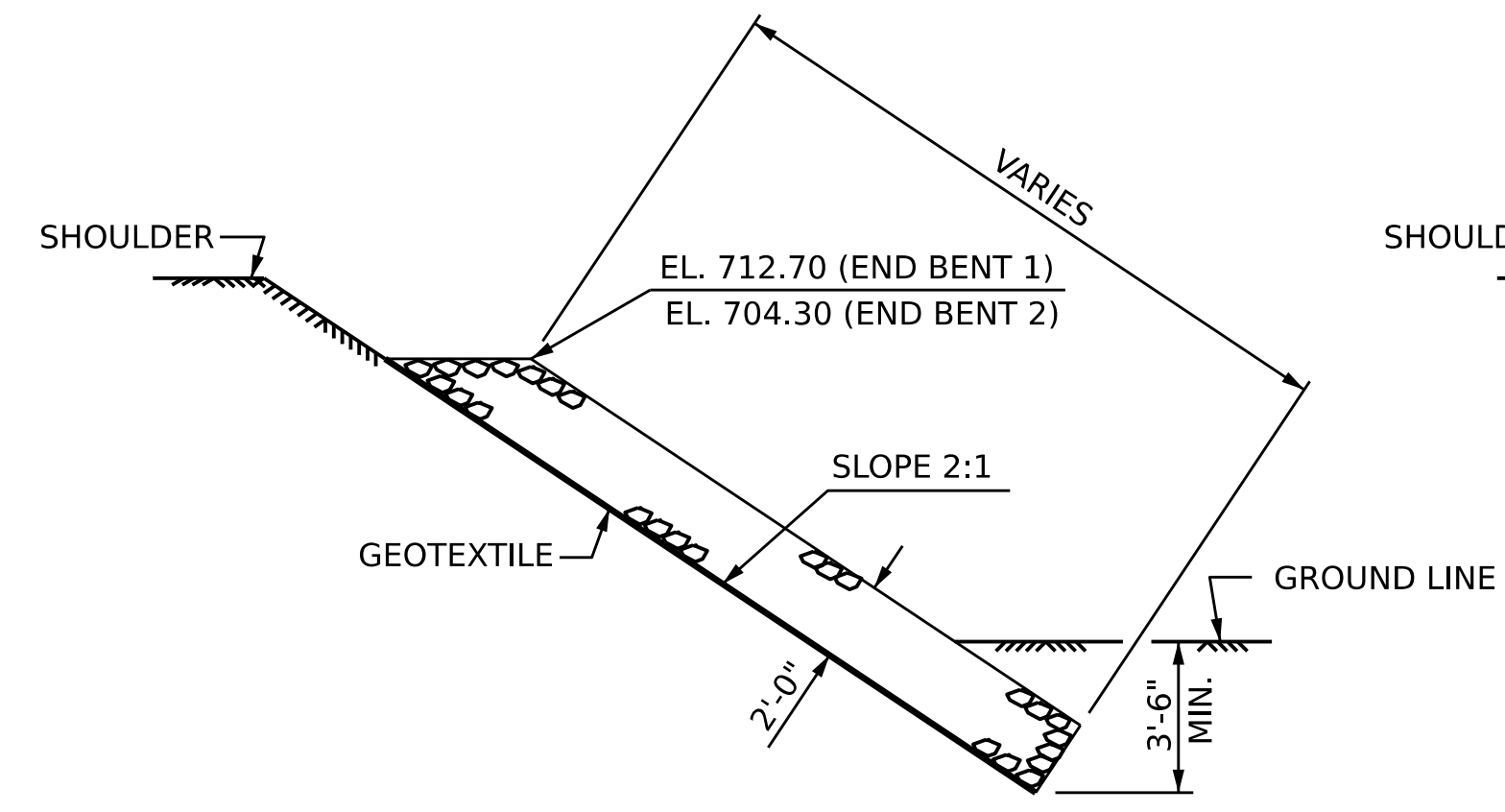


PLAN

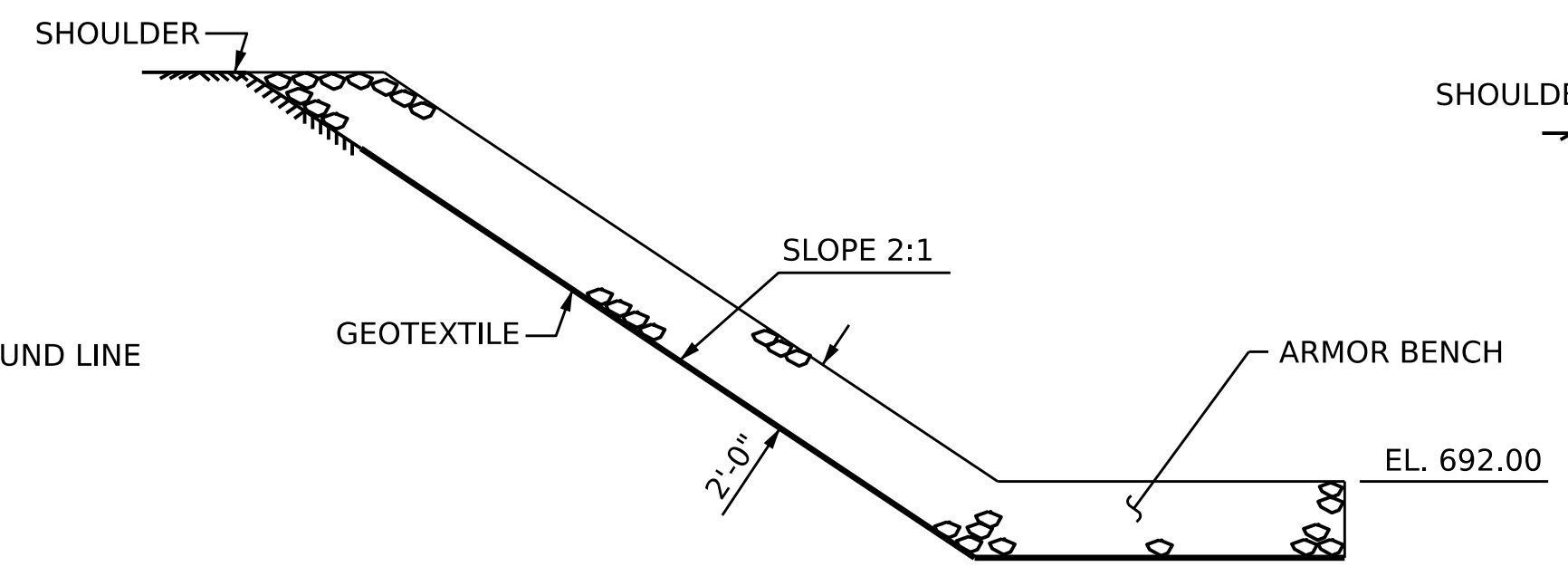
ESTIMATED QUANTITIES						
BRIDGE @ STA. 14+96.00 -L-	RIP RAP CLASS II (2'-0" THICK)			GEOTEXTILE FOR DRAINAGE		
	TONS			SQUARE YARDS		
	STAGE I	STAGE II	TOTAL	STAGE I	STAGE II	TOTAL
END BENT 1	311	195	506	345	216	561
END BENT 2	204	206	410	227	229	456
TOTAL			916			1,017



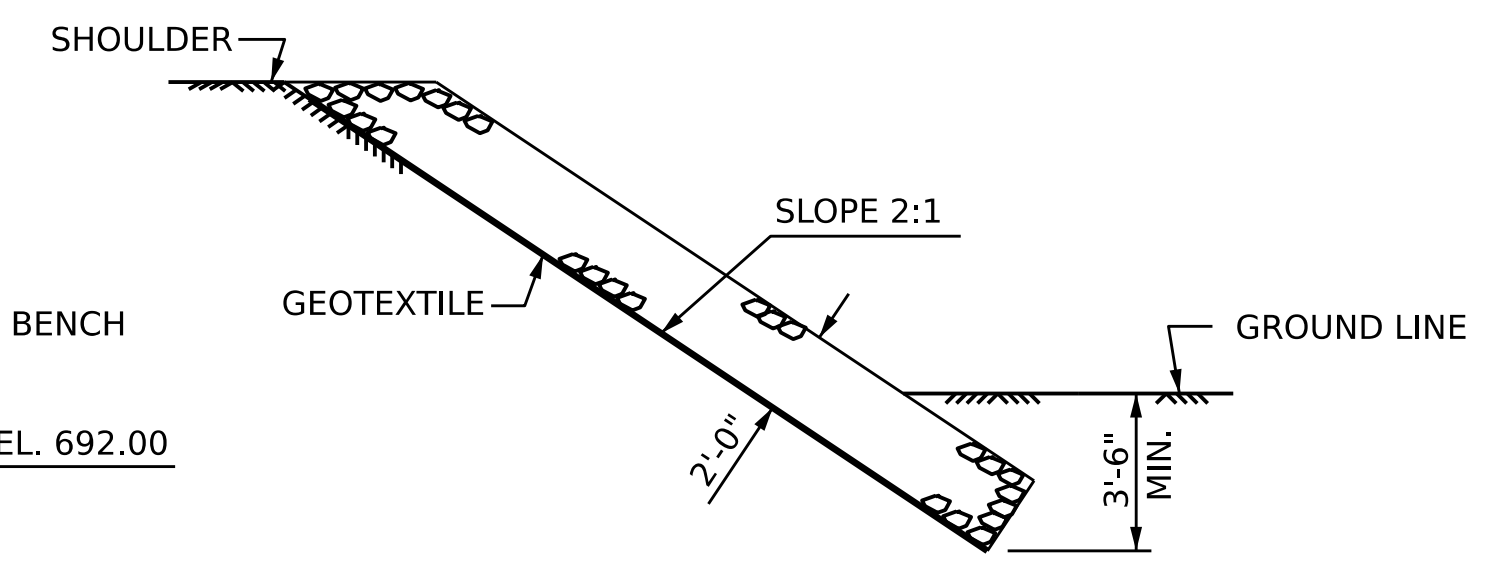
SECTION H-H



SECTION A-A

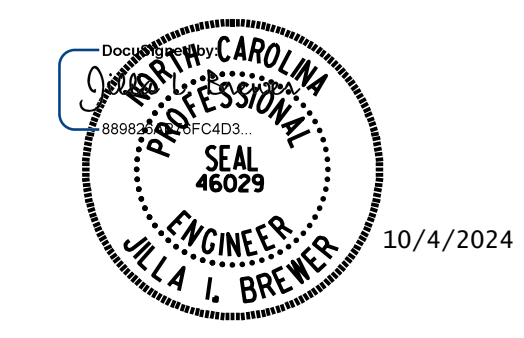


SECTION B-B



SECTION C-C

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
RIP RAP DETAILS

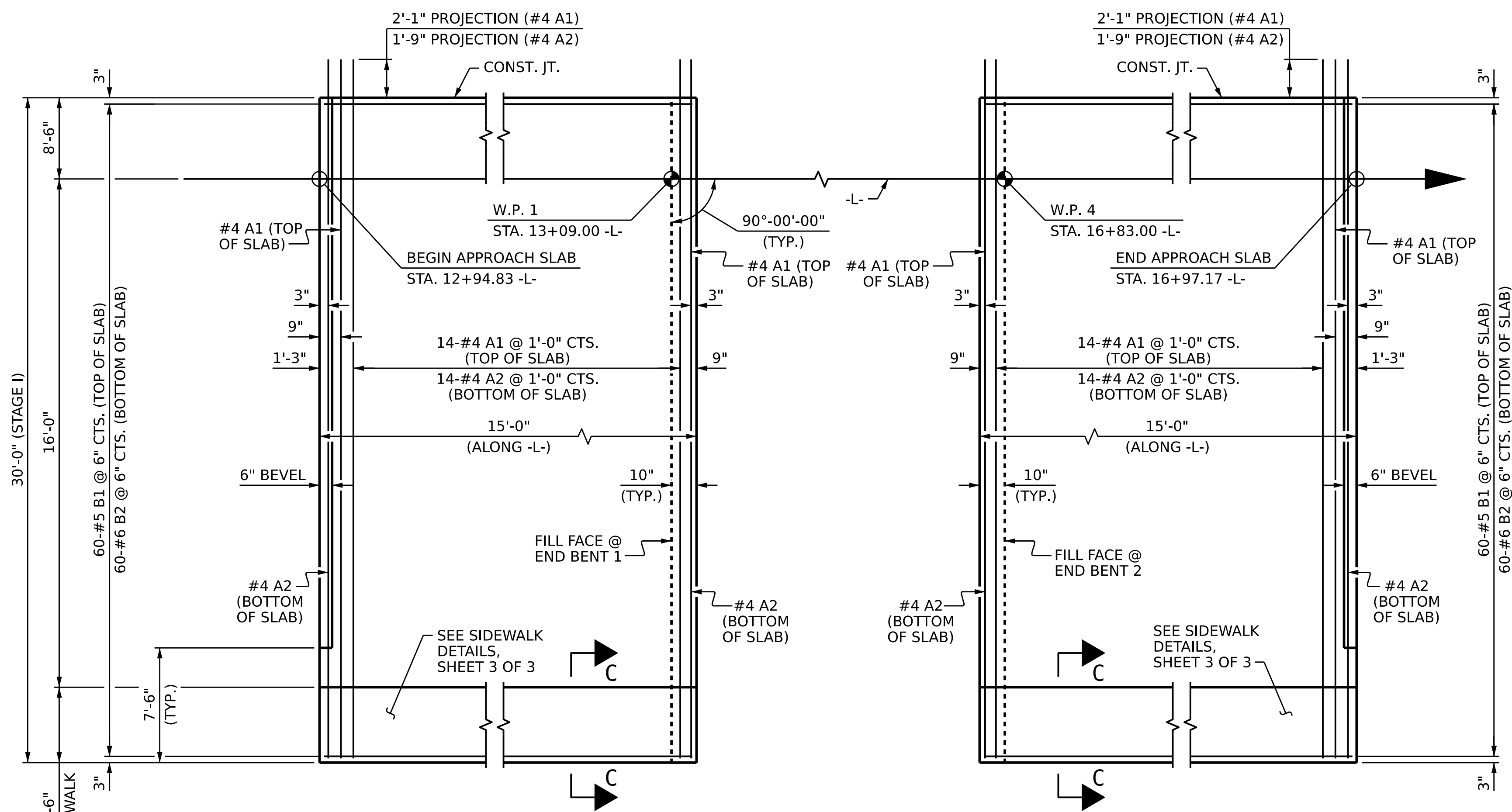
**DOCUMENT NOT CONSIDERED FINAL
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DRAWN BY: B.E. LANNING DATE: 07/2024
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 DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 10/2024

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

REVISIONS						SHEET NO. S-57 TOTAL SHEETS 60
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

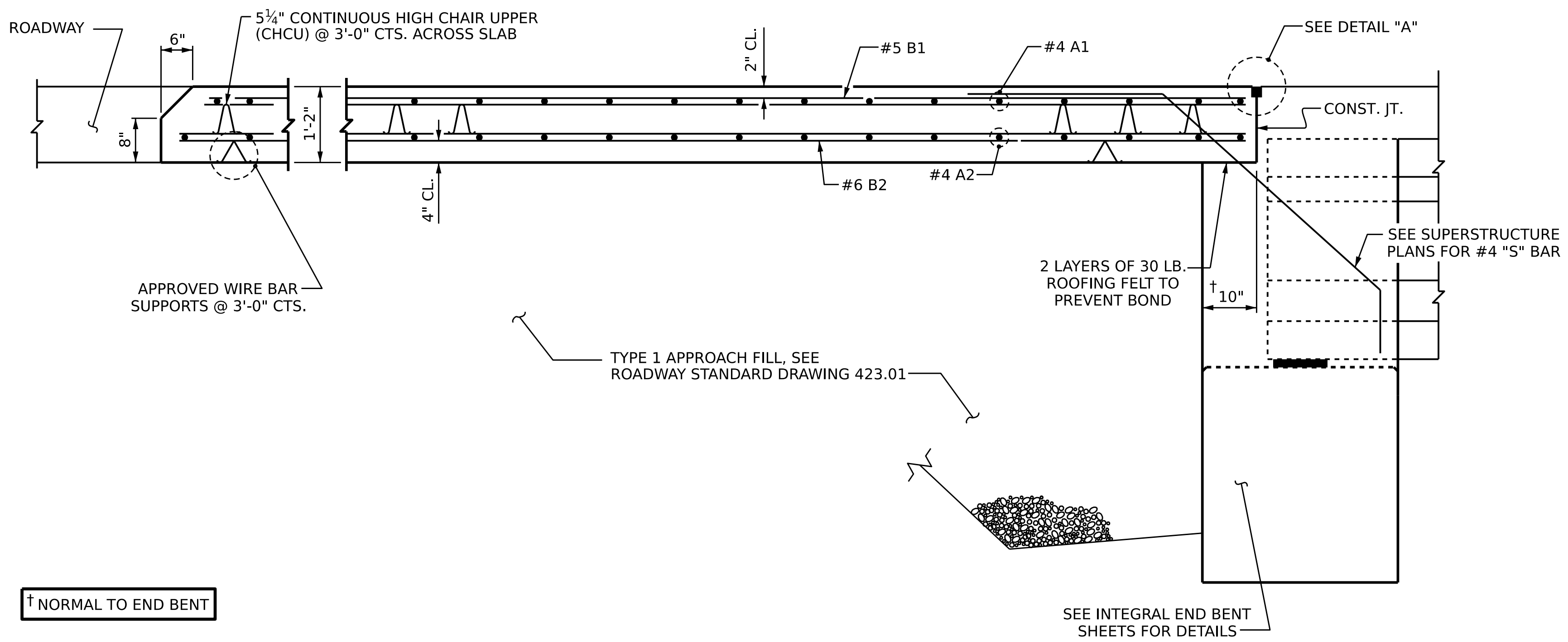
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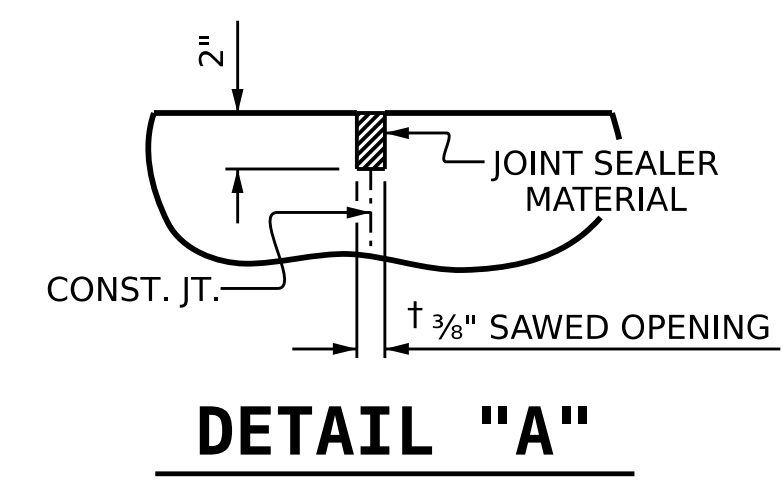
PLAN AT END BENT 1

PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



DETAIL "A"

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
 APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.
 AT THE CONTRACTORS OPTION "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".
 ⊗ SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION.
 FOR SECTION C-C, SEE SHEET 3 OF 3.
 CONTRACTOR MAY ELECT TO USE COUPLERS ON "A" BARS IF THEY INTERFERE WITH CONSTRUCTION MEANS AND METHOD.

BILL OF MATERIAL

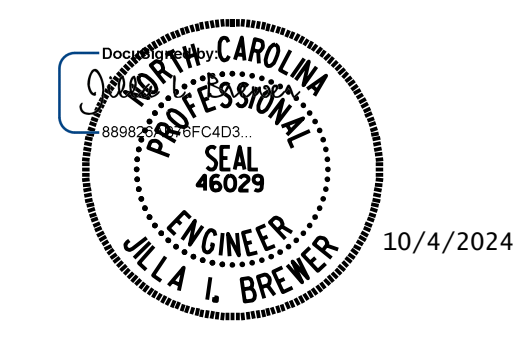
APPROACH SLAB AT END BENT 1					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	31'-11"	341
A2	16	#4	STR	31'-7"	338
*B1	60	#5	STR	14'-2"	887
B2	60	#6	STR	14'-8"	1,322
REINFORCING STEEL					LBS. 1,660
* EPOXY COATED REINFORCING STEEL					LBS. 1,228
CLASS AA CONCRETE					C. Y. 19.4

APPROACH SLAB AT END BENT 2					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	31'-11"	341
A2	16	#4	STR	31'-7"	338
*B1	60	#5	STR	14'-2"	887
B2	60	#6	STR	14'-8"	1,322
REINFORCING STEEL					LBS. 1,660
* EPOXY COATED REINFORCING STEEL					LBS. 1,228
CLASS AA CONCRETE					C. Y. 19.4

SPLICE LENGTHS

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

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

STAGE I

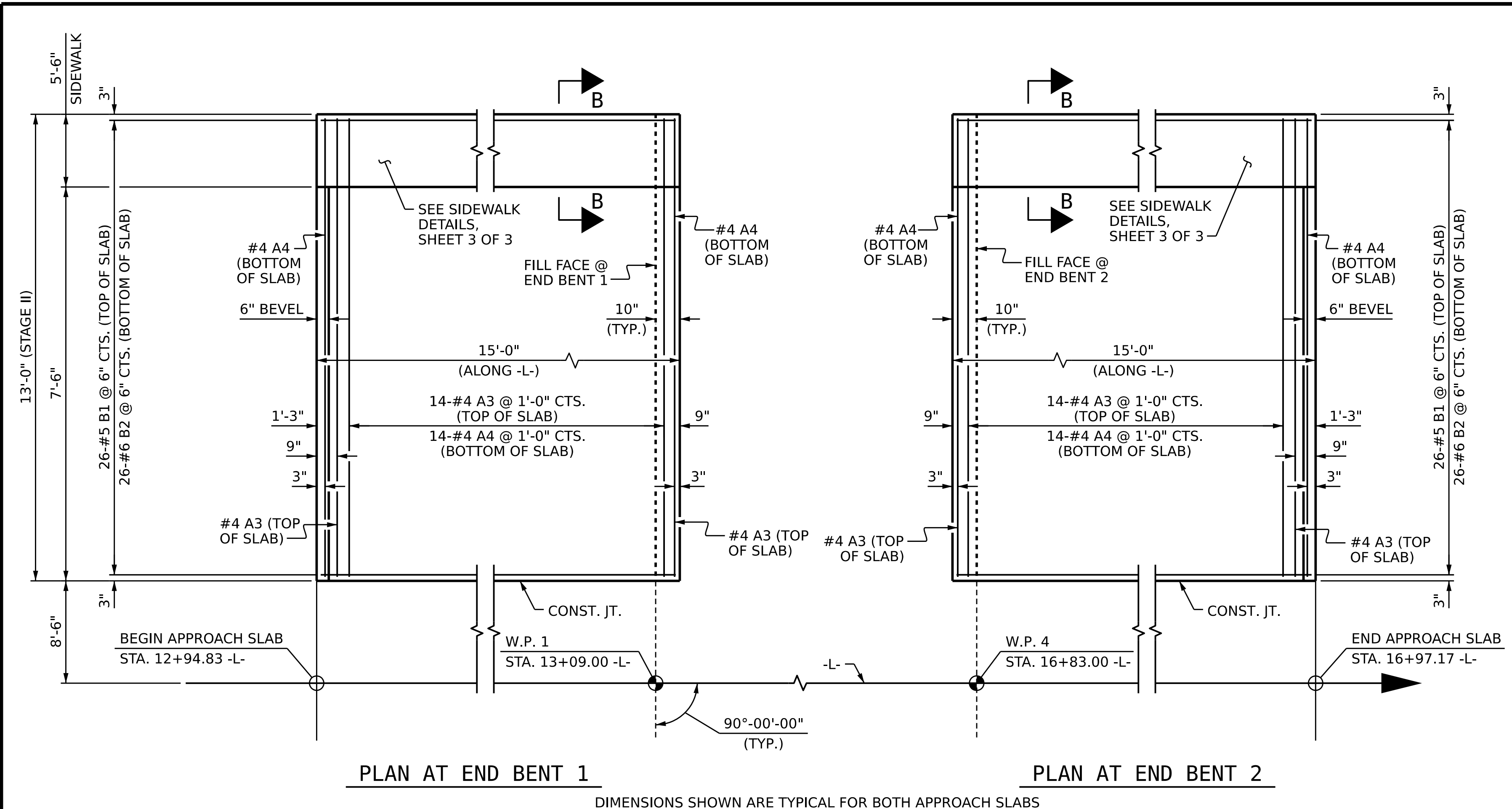
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

SHEET NO. S-58
 TOTAL SHEETS 60

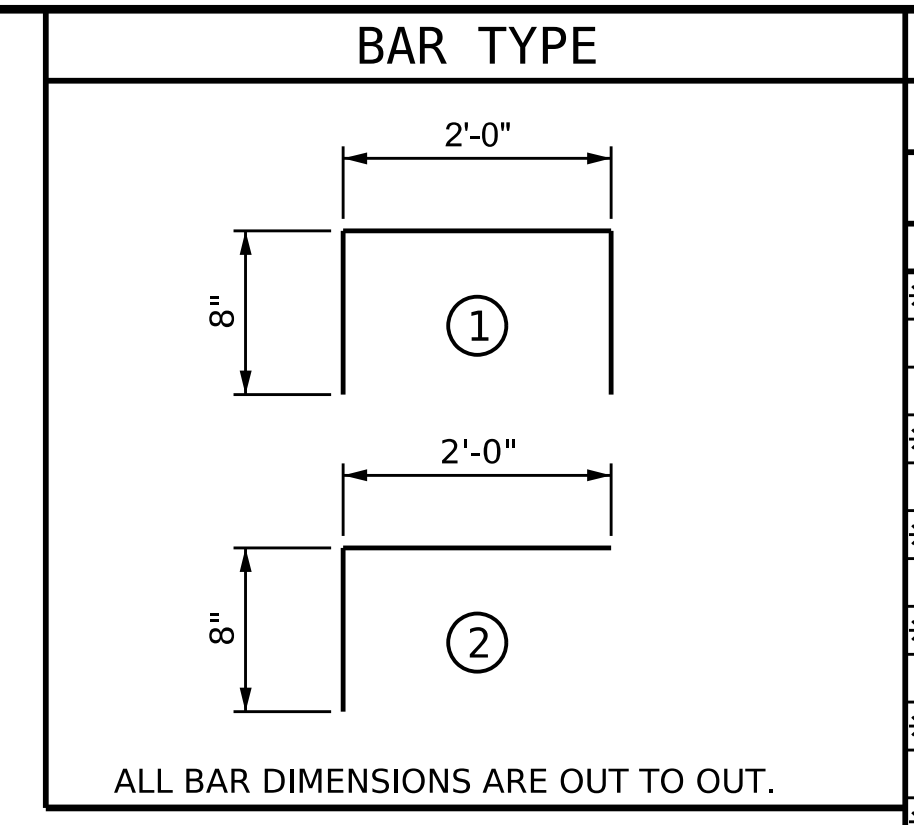


PLAN AT END BENT 1

PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

FOR SECTION THRU SLAB, SEE SHEET 1 OF 3.



BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
STAGE II					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A3	16	#4	STR	12'-8"	135
A4	16	#4	STR	12'-8"	135
*B1	26	#5	STR	14'-2"	384
B2	26	#6	STR	14'-8"	573
*B3	10	#4	STR	14'-8"	98
*G1	30	#4	STR	4'-9"	95
*J1	12	#4	1	2'-8"	21
*U1	6	#4	2	3'-4"	13

NOTES:

FOR NOTES, SEE SHEET 1 OF 3.
FOR SECTION B-B, SEE SHEET 3 OF 3.

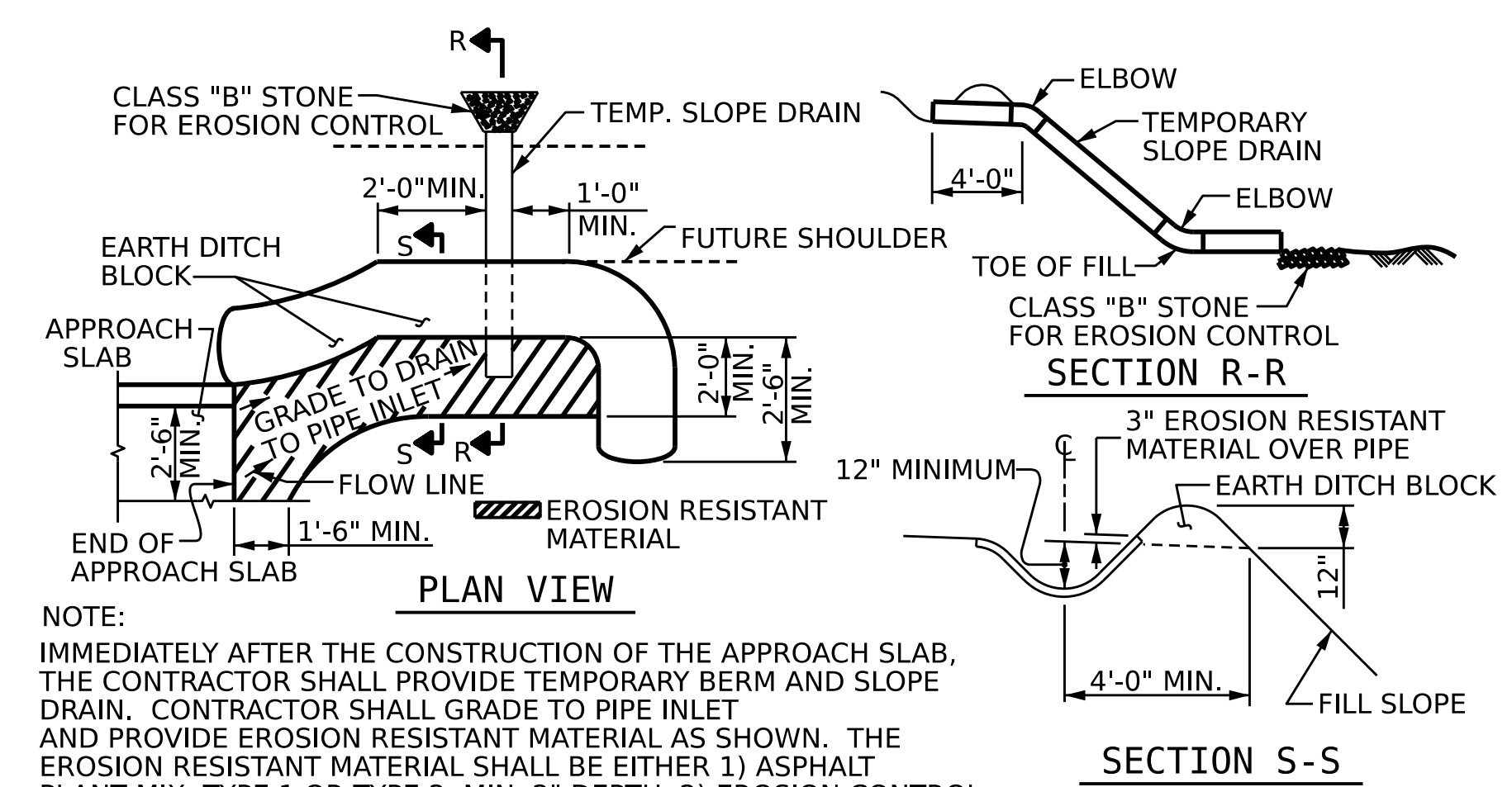
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

REINFORCING STEEL	LBS.	708
* EPOXY COATED REINFORCING STEEL	LBS.	746
CLASS AA CONCRETE	C. Y.	12.2

APPROACH SLAB AT END BENT 2

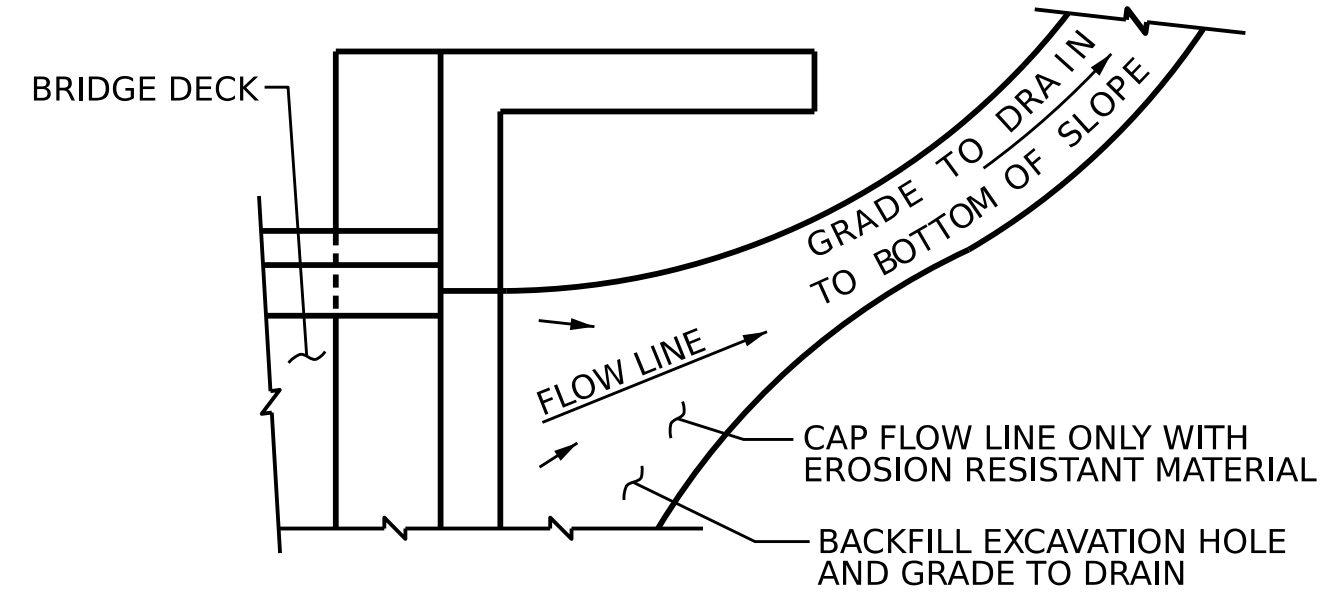
STAGE II					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A3	16	#4	STR	12'-8"	135
A4	16	#4	STR	12'-8"	135
*B1	26	#5	STR	14'-2"	384
B2	26	#6	STR	14'-8"	573
*B3	10	#4	STR	14'-8"	98
*G1	30	#4	STR	4'-9"	95
*J1	12	#4	1	2'-8"	21
*U1	6	#4	2	3'-4"	13

REINFORCING STEEL	LBS.	708
* EPOXY COATED REINFORCING STEEL	LBS.	746
CLASS AA CONCRETE	C. Y.	12.2



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

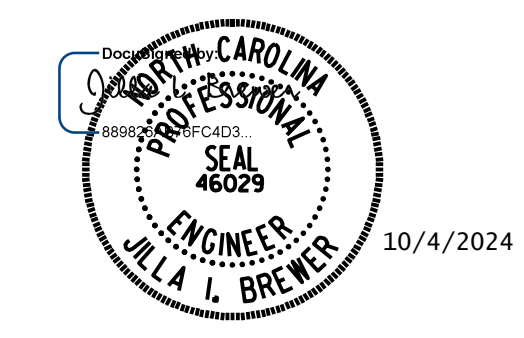


TEMPORARY DRAINAGE DETAIL

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.

10/4/2024 10:39:48 AM blanning
 Filename: N:\NC_Bridges\M21018.RKA.Stokes 82 Br. Rep\B-5766\Structures\401-117-B5766-SMU-AS2-840082.dgn

PROJECT NO. B-5766
STOKES COUNTY
 STATION: 14+96.00 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT**

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>07/2024</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>07/2024</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>10/2024</u>

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-59
 TOTAL SHEETS
60