

09_08/2019

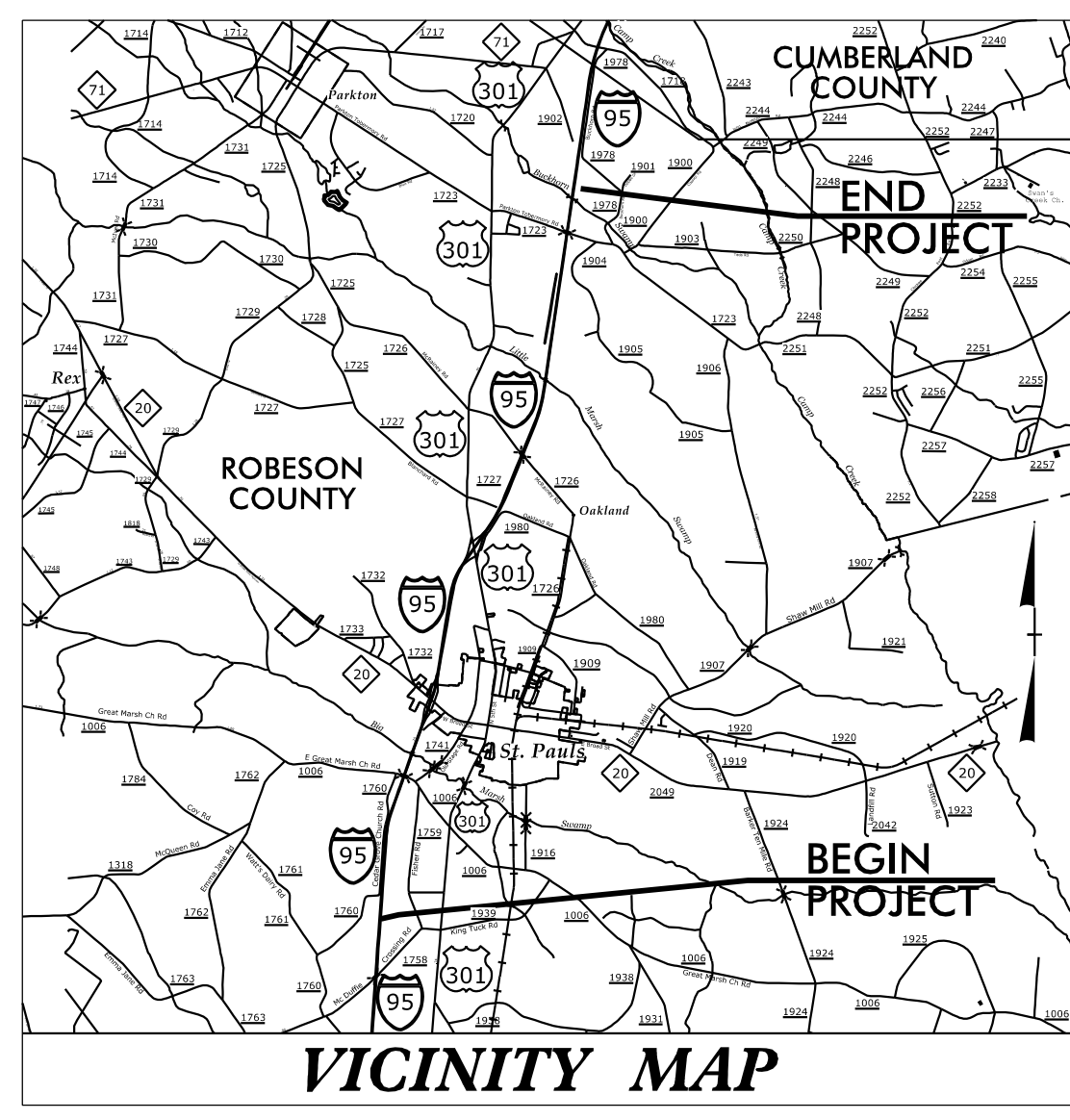
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5987B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47533.1.3		PE	
47533.2.3		RW	
47533.2.5		UTIL	
47533.3.3		CONST	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

**LOCATION: I-95 IMPROVEMENTS FROM
SOUTH OF NC 20 TO SOUTH OF PROPOSED I-295**

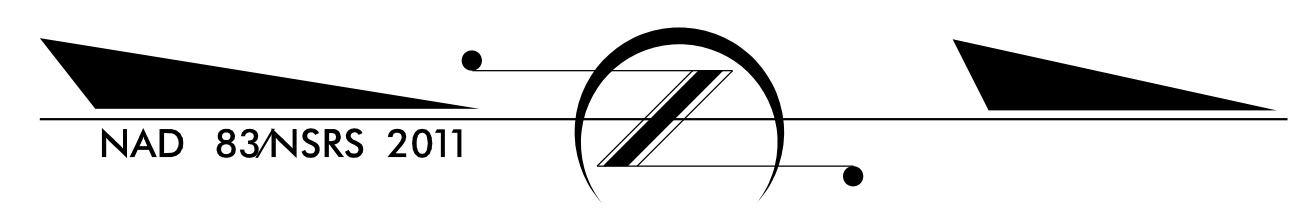
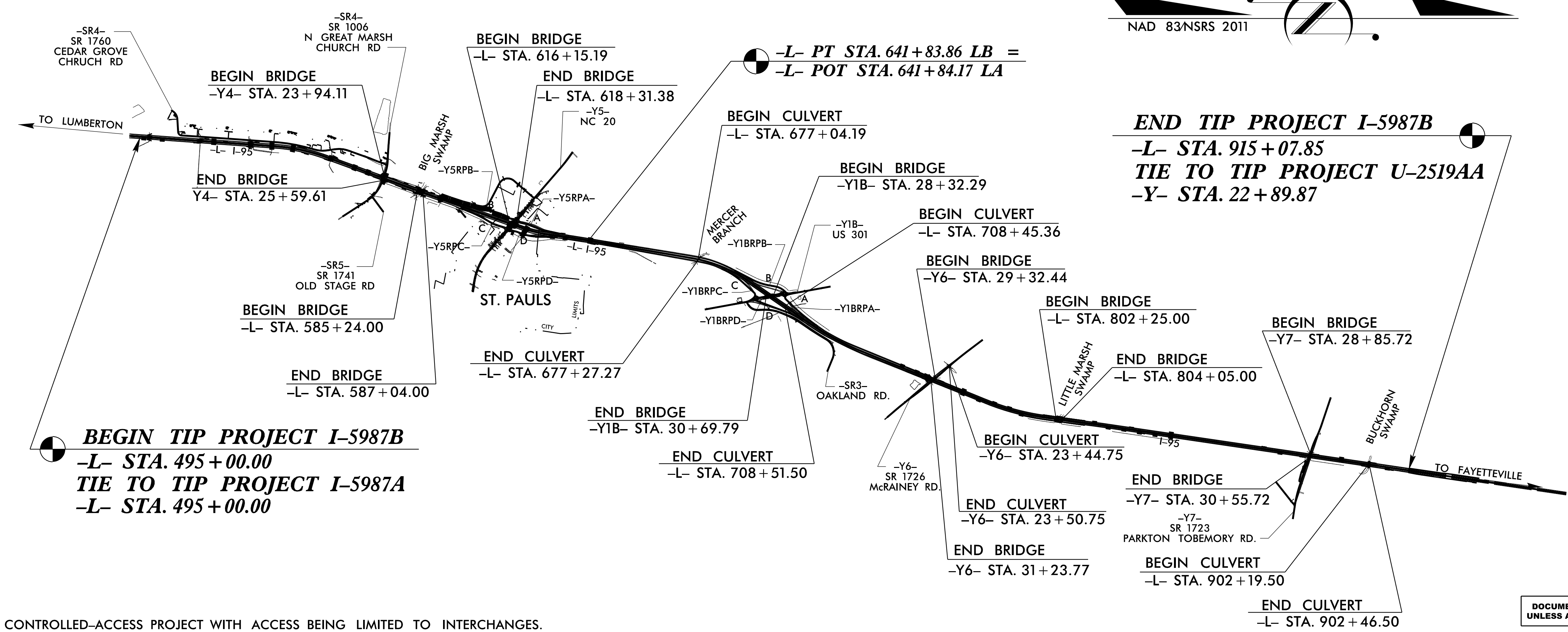
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES,
CULVERTS, AND RETAINING WALLS**



TIP PROJECT: I-5987B

STRUCTURES

CONTRACT: C204728



END TIP PROJECT I-5987B
-L- STA. 915 + 07.85
TIE TO TIP PROJECT U-2519AA
-Y- STA. 22 + 89.87

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2022 =	63,300
ADT 2042 =	92,600
K =	8 %
D =	55 %
T =	14 % *
V =	75 MPH
* TTST =	11 DUAL 3
FUNC CLASS =	INTERSTATE
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5987B =	7.844 MILES
LENGTH STRUCTURES TIP PROJECT I-5987B =	0.112 MILES
TOTAL LENGTH OF TIP PROJECT I-5987B =	7.956 MILES

PREPARED IN THE OFFICE OF:

NIV5

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 28, 2021

LETTING DATE:
JULY 19, 2022

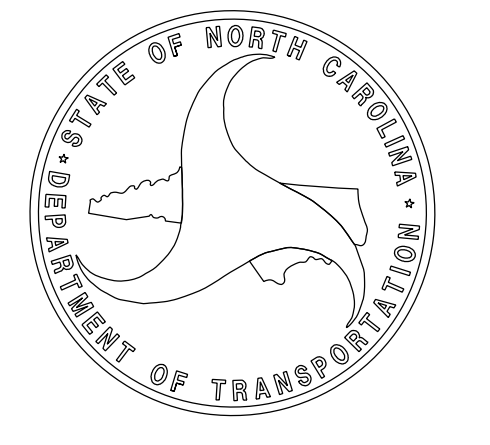
DAVID C. WALLER, PE
PROJECT ENGINEER

MICHAEL D. PEKAREK, PE
PROJECT DESIGN ENGINEER

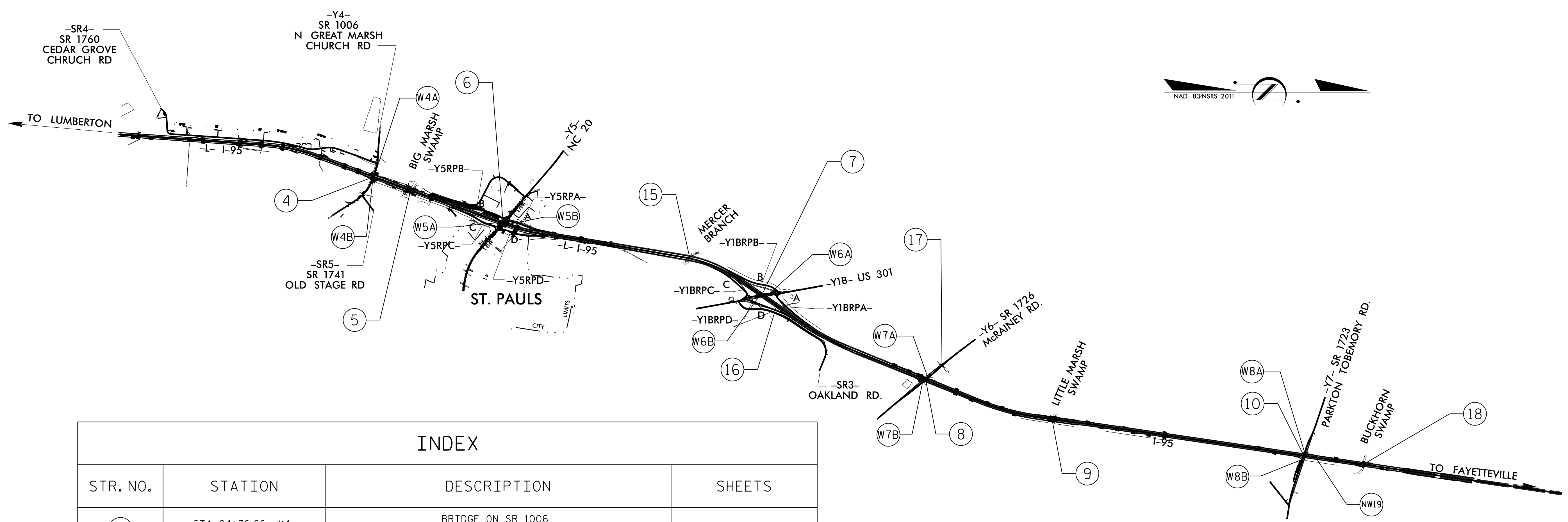
CRAIG A. FREEMAN, JR., PE
NCDOT CONTACT - DIVISION 6

STRUCTURE DESIGN ENGINEER

DocuSigned by:
L. Kevin Austin
SIGNATURE: P.E.



4/29/2022
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INDEX

STR. NO.	STATION	DESCRIPTION	SHEETS
④	STA. 24+76.86 -Y4- STA. 573+67.87 -L-	BRIDGE ON SR 1006 OVER I-95 BETWEEN SR 1760 AND SR 1741	S4-1 THRU S4-29
⑤	STA. 586+14.00 -L-	BRIDGE ON I-95 OVER BIG MARSH SWAMP BETWEEN SR 1006 AND NC 20	S5-1 THRU S5-64
⑥	STA. 617+12.20 -L- STA. 40+91.02 -Y5-	BRIDGE ON I-95 OVER NC 20 BETWEEN SR 1006 AND US 301	S6-1 THRU S6-53
⑦	STA. 29+51.04 -Y1B- STA. 702+75.43 -L-	BRIDGE ON US 301 OVER I-95 BETWEEN SR 1727 AND SR 1734	S7-1 THRU S7-37
⑧	STA. 30+28.11 -Y6- STA. 761+20.96 -L-	BRIDGE ON SR 1726 OVER I-95 BETWEEN HWY 301 AND SR 1980	S8-1 THRU S8-28
⑨	STA. 803+15.00 -L-	BRIDGE ON I-95 OVER LITTLE MARSH SWAMP BETWEEN SR 1726 AND SR 1723	S9-1 THRU S9-69
⑩	STA. 29+70.72 -Y7- STA. 883+36.60 -L-	BRIDGE ON SR 1723 OVER I-95 BETWEEN US 301 AND SR 1904	S10-1 THRU S10-33
⑮	STA. 677+13.20 -L-	DOUBLE 8' X 8' REINFORCED CONCRETE BOX CULVERT	C15-1 THRU C15-13
⑯	STA. 708+48.43 -L-	SINGLE 6' X 7' REINFORCED CONCRETE BOX CULVERT	C16-1 THRU C16-20
⑰	STA. 23+47.75 -Y6-	SINGLE 6' X 7' REINFORCED CONCRETE BOX CULVERT	C17-1 THRU C17-5
⑱	STA. 902+33.00 -L-	TRIPLE 9' X 8' REINFORCED CONCRETE BOX CULVERT	C18-1 THRU C18-9
W4A, W4B, W5A, W5B, W6A, W6B, W7A, W7B, W8A, W8B		RETAINING WALLS	W-1 THRU W-19
NW19		NOISE WALL	W19-1 THRU W19-4

NOTE: STRUCTURES 1 THRU 3 AND 11 THRU 14 ARE ON THE I-5987A PROJECT

PROJECT NO. I-5987B
ROBESON COUNTY

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INDEX SHEET

PLANS PREPARED BY:

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NV5.com
 NC License # F-1333

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

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

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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 TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent No. 1, Piles 1-7	120	169.43	95			200							
End Bent No. 2, Piles 1-7	120	169.13	90			200							
							7						

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No. 1, Piles 1-7	120			0.60			1.00
End Bent No. 2, Piles 1-7	120			0.60			1.00

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
Bent No. 1, Piers 1-3	360	78.0	5			72.7					

*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.

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent No. 1	MAYBE	100	1		
End Bent No. 2	MAYBE	95			

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

SUMMARY OF 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 No. 1, Piers 1-3	MAYBE	MAYBE	297	YES	
TOTAL QTY:			891		

*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. I-5987B


ROBESON COUNTY

STATION: -Y4- 24+74.16 / -L- 573+67.87

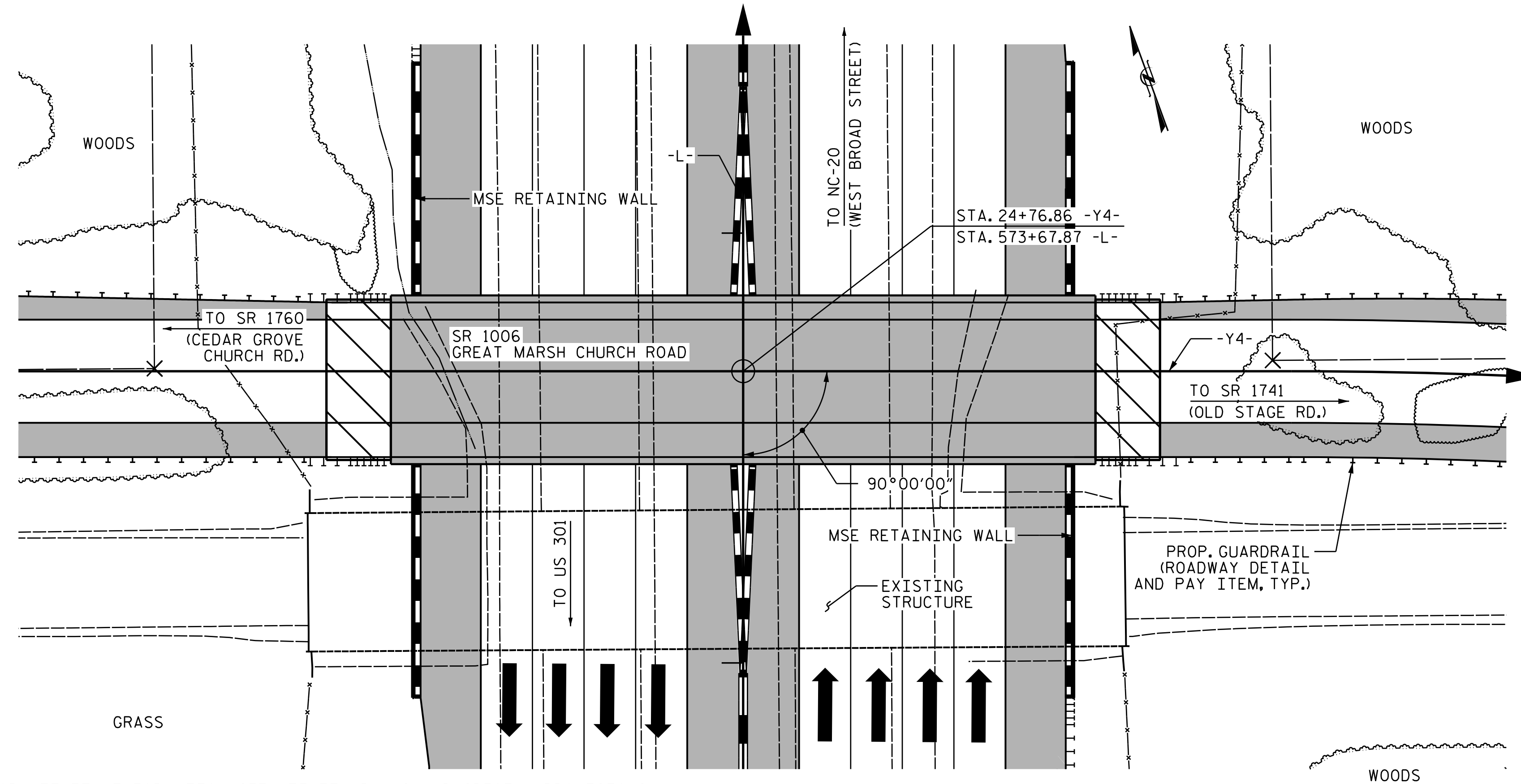
SHEET 3 OF 4

NOTES:

- The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Stephen C. Crockett, 048207) on 12/16/21.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer will determine the need for PDA Testing, SPTs, CSL Testing, and SID Inspections when these items may be required.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				PILE AND DRILLED PIER FOUNDATION TABLES
	SIGNATURE _____	DATE _____	REVISIONS		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. 1	BY:	DATE:	NO. 3	TOTAL SHEETS 29
	2			4	

BM#31: RAILROAD SPIKE IN BASE OF 12" OAK; 309' RT STA. 571+31 -L- ELEV. 155.00



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-6" DRILLED PIERS	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	FEET	EA.	EA.	EA.	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE		LUMP SUM						6,430	6,353			
END BENT 1										27.5		3,882
BENT 1			218.1							34.2		23,760
END BENT 2										27.5		3,882
TOTAL	LUMP SUM	LUMP SUM	218.1	1	1	1	1	6,430	6,353	89.2	LUMP SUM	31,524
	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS			
	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM		
SUPERSTRUCTURE		8	653.33					327.66		LUMP SUM		
END BENT 1				7	7	665			12			
BENT 1	6,285											
END BENT 2				7	7	630			12			
TOTAL	6,285	8	653.33	14	14	1295	7	327.66	24	LUMP SUM		

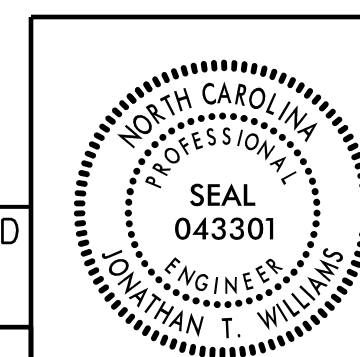
NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE REGION OF THE LINK SLAB.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 4 SPANS: 1 @ 41'-2", 1 @ 54'-0", 1 @ 54'-0", & 1 @ 41'-2"; 28'-0" CLEAR ROADWAY WIDTH AND REINFORCED CONCRETE DECK ON 4 LINES OF PRESTRESSED CONCRETE GIRDERS IN SPANS 1 & 4, AND 5 LINES OF PRESTRESSED CONCRETE GIRDERS IN SPANS 2 & 3; END AND INTERIOR BENTS WITH REINFORCED CONCRETE CAPS ON PRESTRESSED CONCRETE PILES, LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON -Y4- (SR 1006)
 OVER -L- (INTERSTATE 95)
 BETWEEN SR 1760 AND SR 1741



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 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-4
1			3			TOTAL SHEETS
2			4			29

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DRAWN BY: R. L. DICKE DATE: 11-2021
 CHECKED BY: J. M. ROBINSON DATE: 11-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 11-2021

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	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 (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.05	--	1.75	0.833	1.35	A&B	I	40.1	1.011	1.08	A&B	I	23.8	0.80	0.833	1.05	A&B	I	40.1		
	HL-93 (OPERATING)	N/A		1.48	--	1.35	0.833	1.75	A&B	I	40.1	1.011	1.48	A&B	I	7.5	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.40	50.400	1.75	0.833	1.81	A&B	I	40.1	1.011	1.46	A&B	I	7.5	0.80	0.833	1.40	A&B	I	40.1		
	HS-20 (OPERATING)	36.000		1.92	69.120	1.35	0.833	2.34	A&B	I	40.1	1.011	1.92	A&B	I	7.5	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.25	43.875	1.40	0.833	5.22	A&B	I	40.1	1.011	4.58	A&B	I	7.5	0.80	0.833	3.25	A&B	I	40.1	
		SNGARBS2	20.000		2.38	47.600	1.40	0.833	3.83	A&B	I	40.1	1.011	3.21	A&B	I	7.5	0.80	0.833	2.38	A&B	I	40.1	
		SNAGRIS2	22.000		2.23	49.060	1.40	0.833	3.59	A&B	I	40.1	1.011	2.97	A&B	I	7.5	0.80	0.833	2.23	A&B	I	40.1	
		SNCOTTS3	27.250		1.60	43.600	1.40	0.833	2.58	A&B	I	40.1	1.011	2.24	A&B	I	7.5	0.80	0.833	1.60	A&B	I	40.1	
		SNAGGRS4	34.925		1.33	46.450	1.40	0.833	2.14	A&B	I	40.1	1.011	1.83	A&B	I	7.5	0.80	0.833	1.33	A&B	I	40.1	
		SNS5A	35.550		1.30	46.215	1.40	0.833	2.09	A&B	I	40.1	1.011	1.85	A&B	I	7.5	0.80	0.833	1.30	A&B	I	40.1	
		SNS6A	39.950		1.19	47.541	1.40	0.833	1.91	A&B	I	40.1	1.011	1.68	A&B	I	7.5	0.80	0.833	1.19	A&B	I	40.1	
		SNS7B	42.000		1.13	47.460	1.40	0.833	1.82	A&B	I	40.1	1.011	1.64	A&B	I	7.5	0.80	0.833	1.13	A&B	I	40.1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.45	47.850	1.40	0.833	2.34	A&B	I	40.1	1.011	2.01	A&B	I	7.5	0.80	0.833	1.45	A&B	I	40.1	
		TNT4A	33.075		1.46	48.290	1.40	0.833	2.34	A&B	I	40.1	1.011	1.97	A&B	I	7.5	0.80	0.833	1.46	A&B	I	40.1	
		TNT6A	41.600		1.18	49.088	1.40	0.833	1.90	A&B	I	40.1	1.011	1.74	A&B	I	7.5	0.80	0.833	1.18	A&B	I	40.1	
		TNT7A	42.000		1.19	49.980	1.40	0.833	1.91	A&B	I	40.1	1.011	1.70	A&B	I	7.5	0.80	0.833	1.19	A&B	I	40.1	
		TNT7B	42.000		1.22	51.240	1.40	0.833	1.96	A&B	I	40.1	1.011	1.60	A&B	I	7.5	0.80	0.833	1.22	A&B	I	40.1	
		TNAGRIT4	43.000		1.17	50.310	1.40	0.833	1.88	A&B	I	40.1	1.011	1.55	A&B	I	7.5	0.80	0.833	1.17	A&B	I	40.1	
		TNAGT5A	45.000		1.10	49.500	1.40	0.833	1.77	A&B	I	40.1	1.011	1.53	A&B	I	7.5	0.80	0.833	1.10	A&B	I	40.1	
TNAGT5B	45.000	③	1.09	49.050	1.40	0.833	1.75	A&B	I	40.1	1.011	1.47	A&B	I	7.5	0.80	0.833	1.09	A&B	I	40.1			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

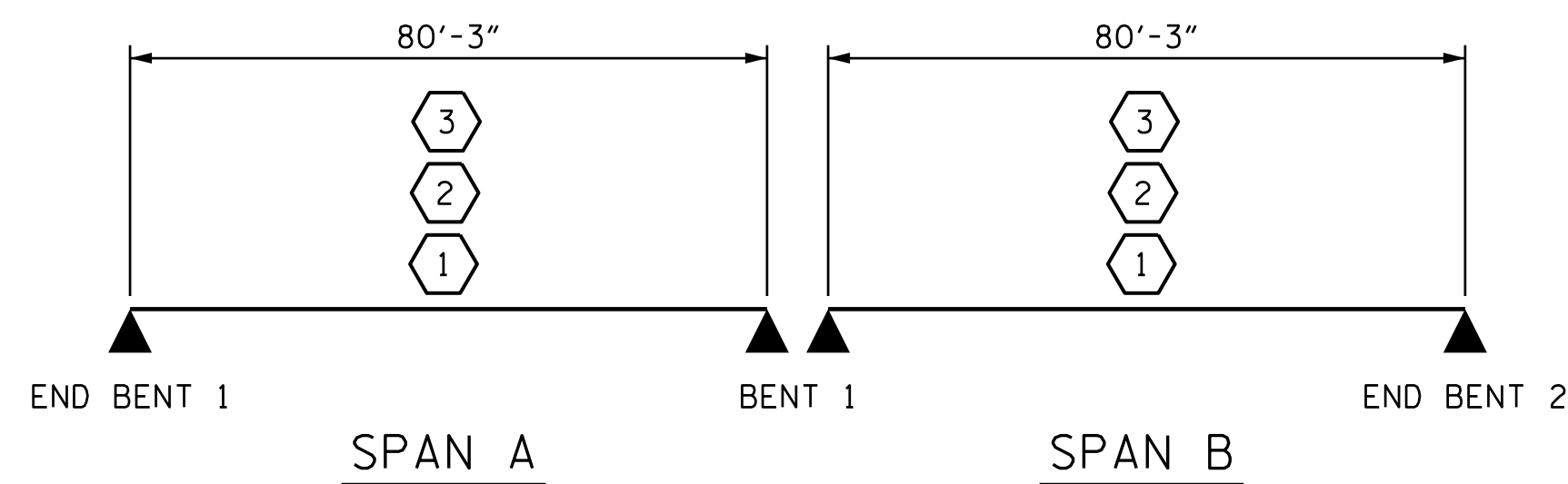
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING
① DESIGN LOAD RATING (HL-93)
② DESIGN LOAD RATING (HS-20)
③ LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE
GIRDER LOCATION
I - INTERIOR GIRDER E - EXTERIOR GIRDER

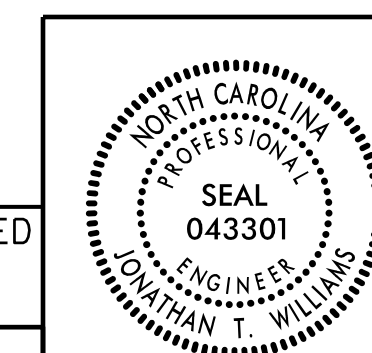


LRFR SUMMARY

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

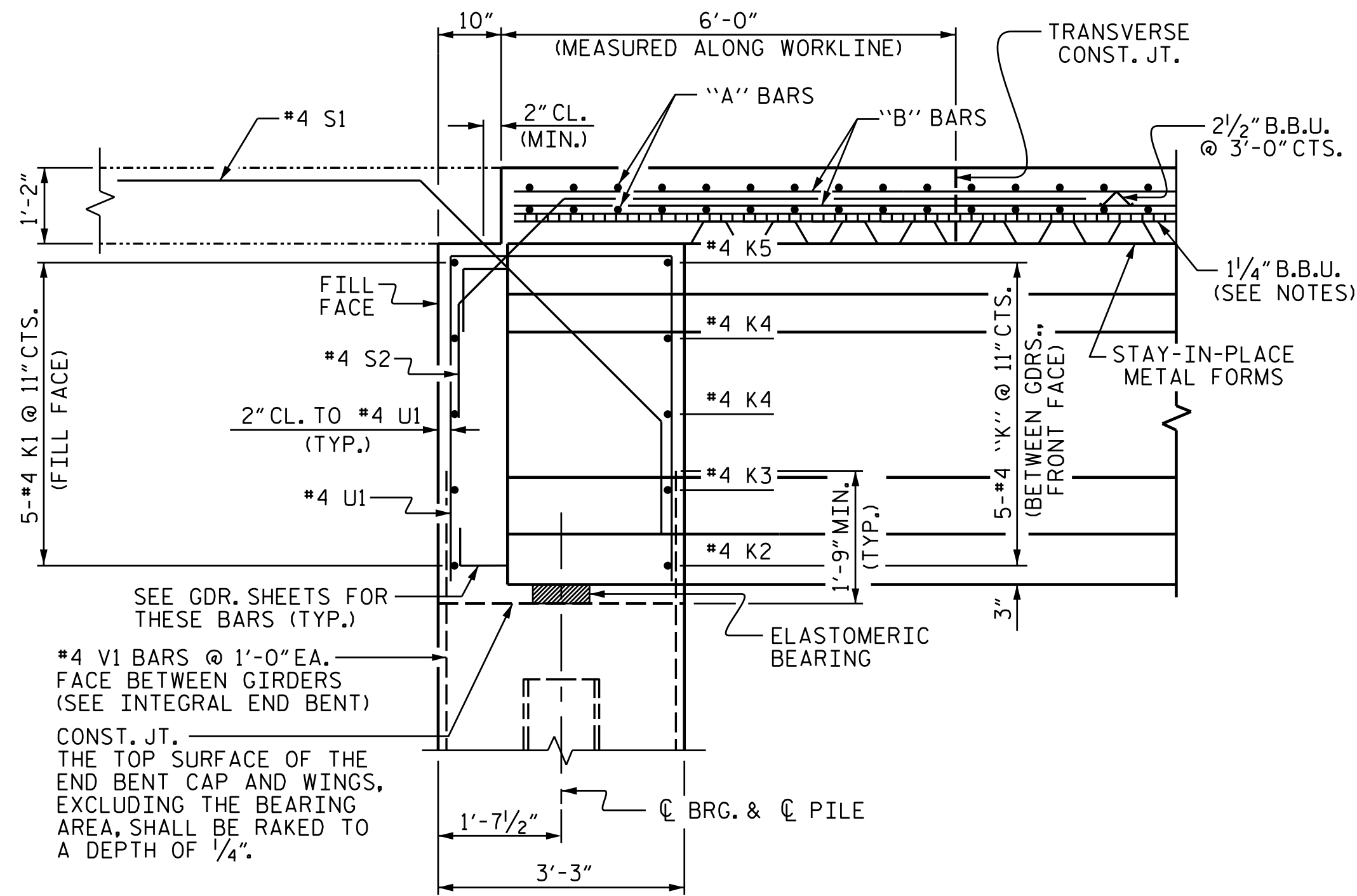


DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

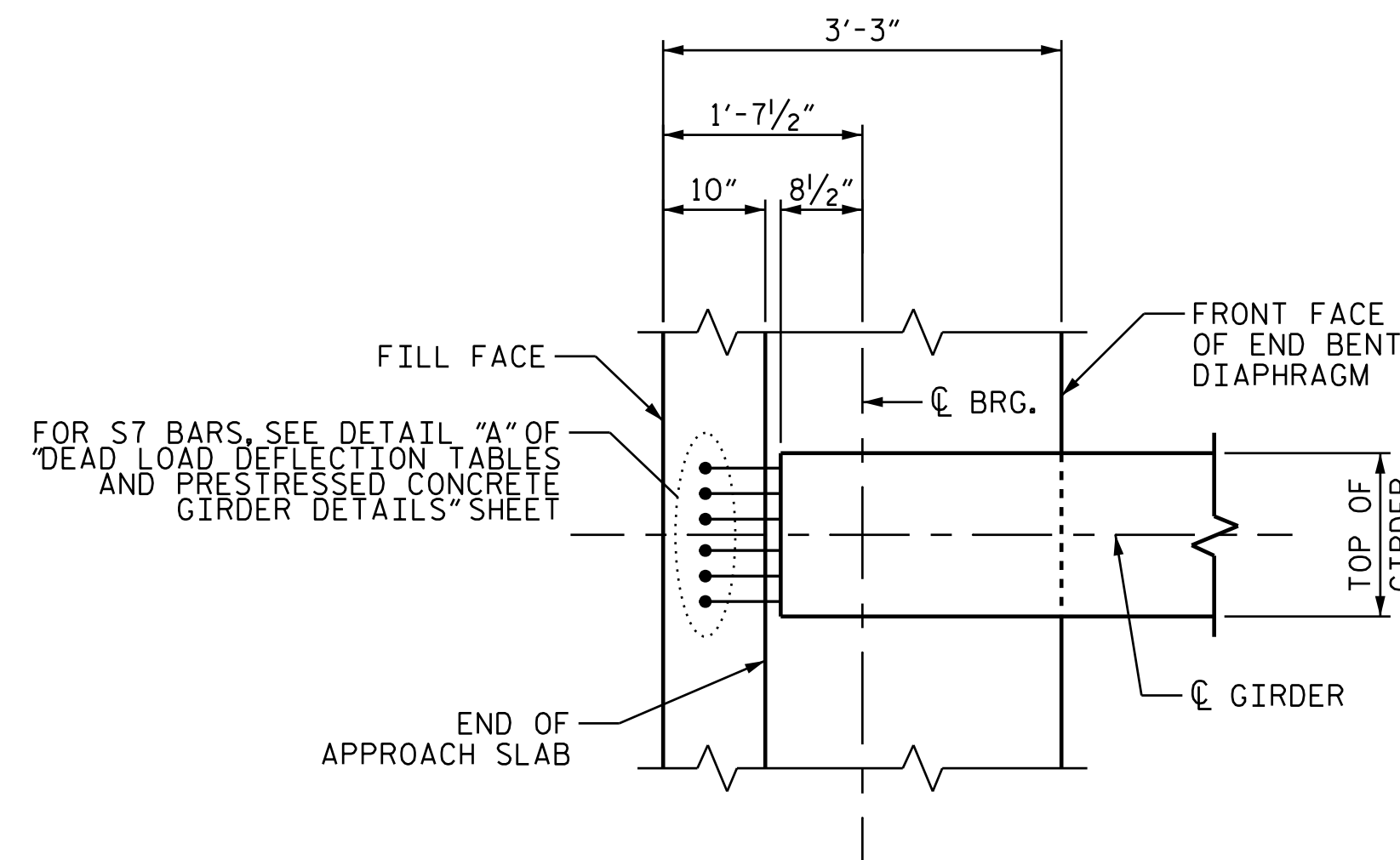
PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
M MOTT
 MACDONALD LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-5
1			3			TOTAL SHEETS
2			4			29

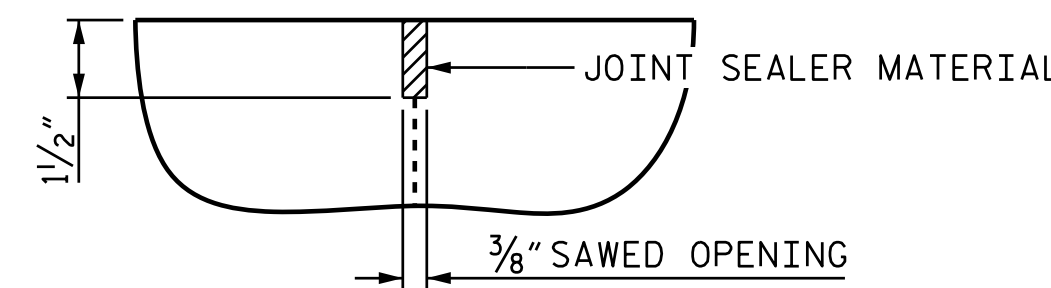
NOTES:
FOR NOTES, SEE SHEET 1 OF 3.



SECTION @ INTEGRAL END BENT

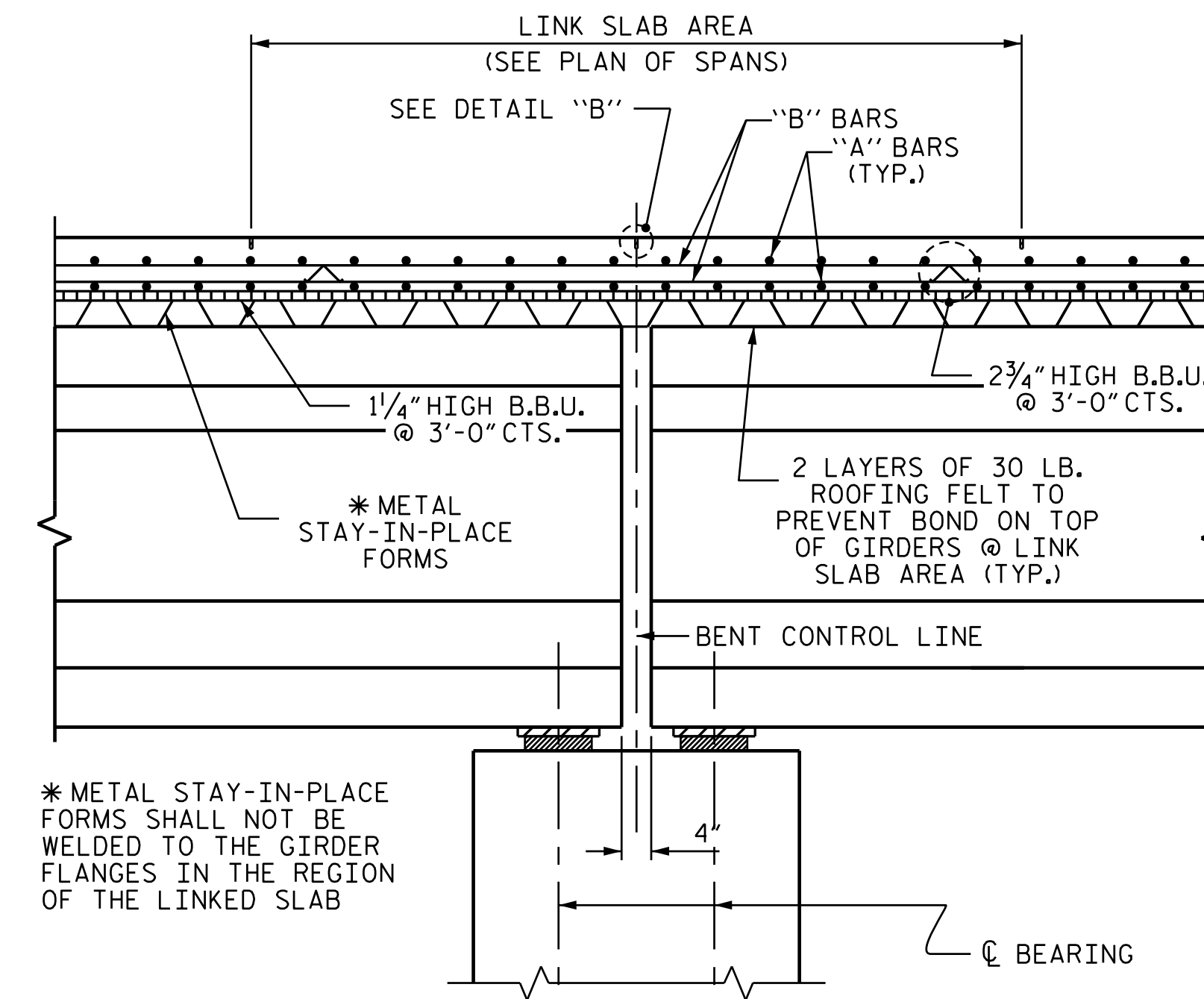


PLAN @ INTEGRAL END BENT

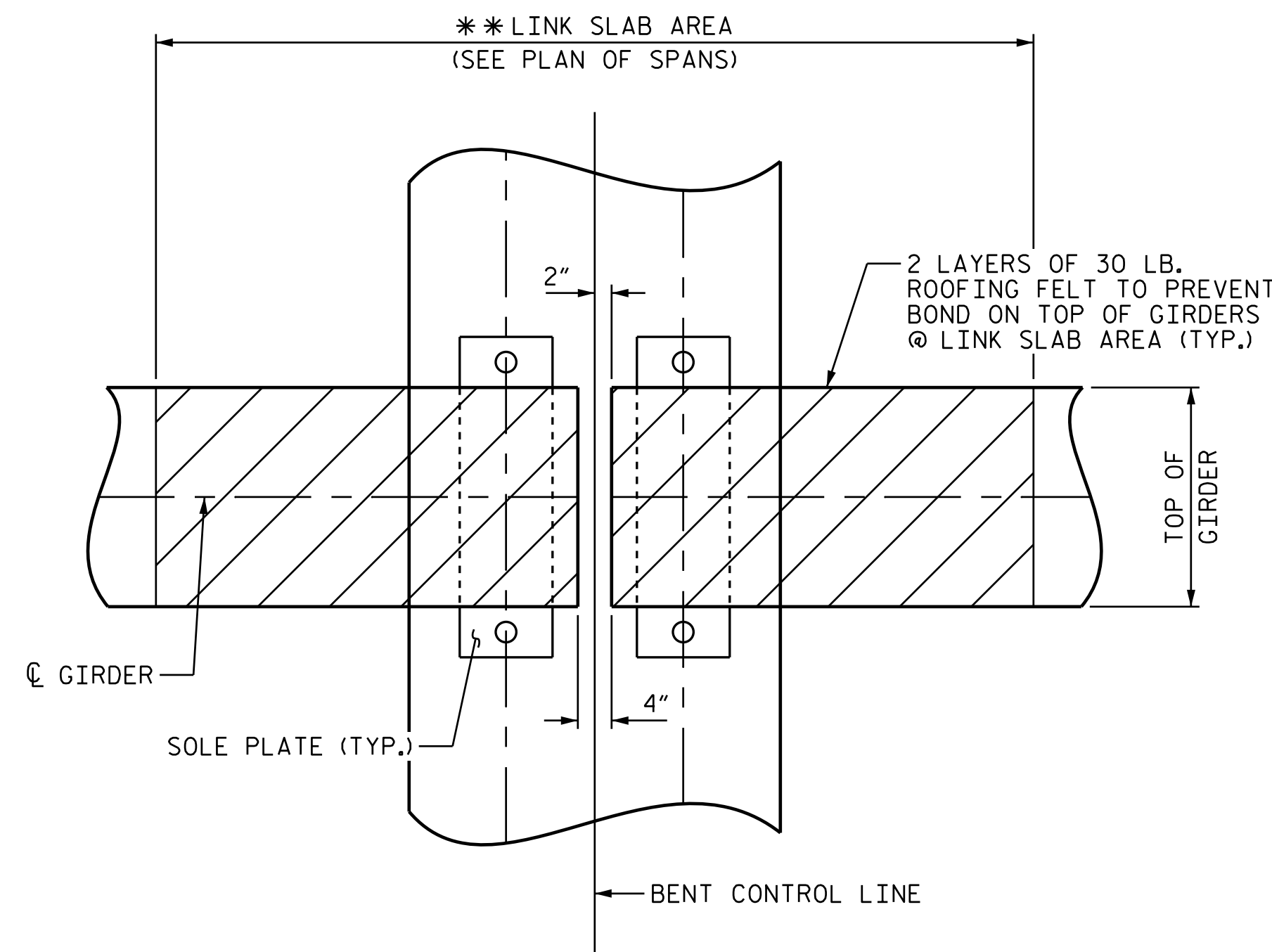


DETAIL "B"

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



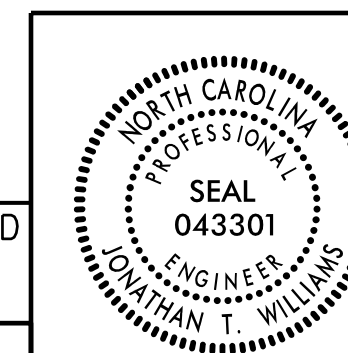
SECTION @ LINK SLAB



PLAN @ BENT

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

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PLANS PREPARED BY:
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ROBESON COUNTY
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SHEET 3 OF 3

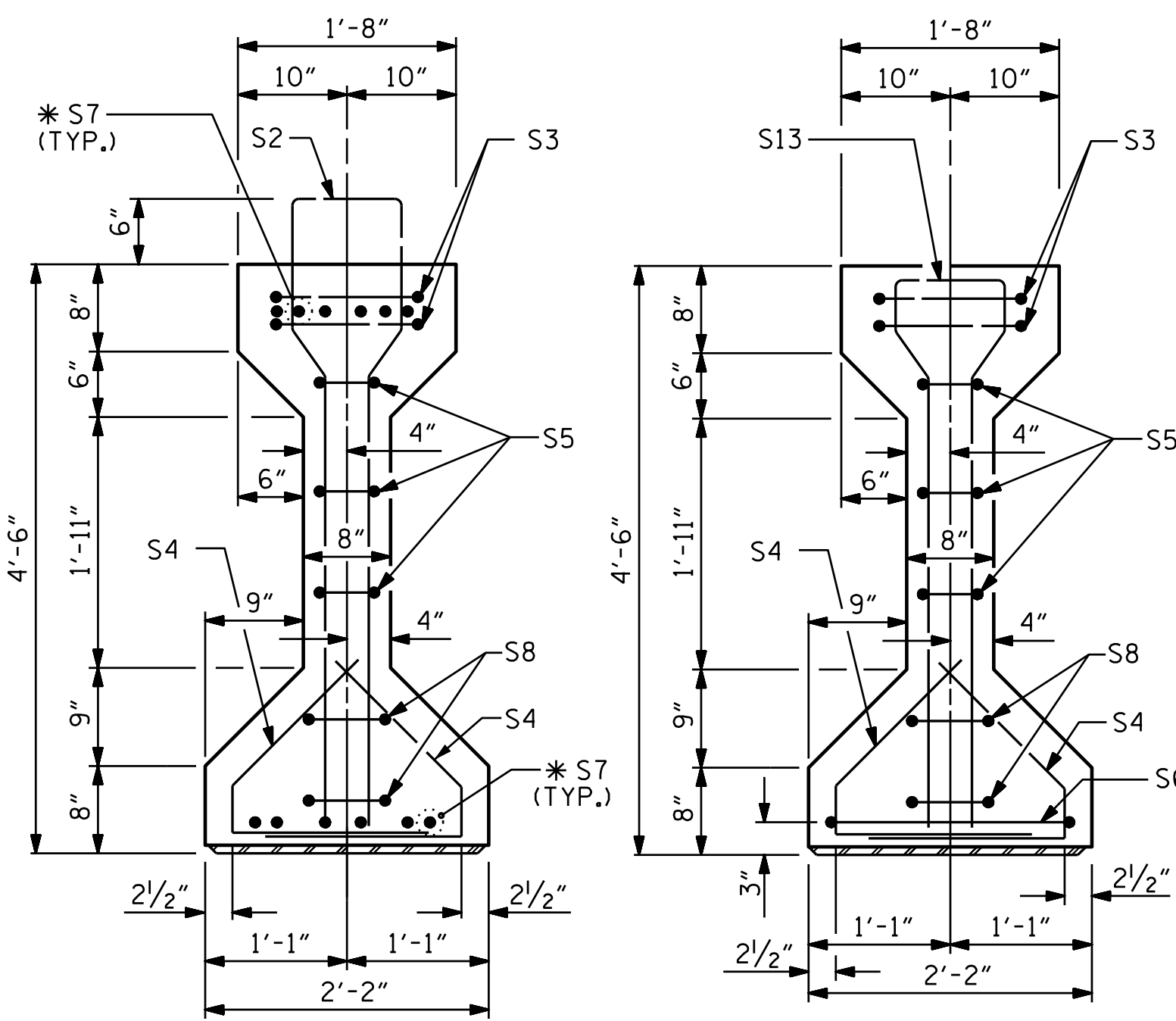
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S4-8
2			4			TOTAL SHEETS 29

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 5/18/2022 10:52:32 AM

DRAWN BY: R. L. DICKE DATE: 07-2021
 CHECKED BY: J. T. WILLIAMS DATE: 07-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 07-2021



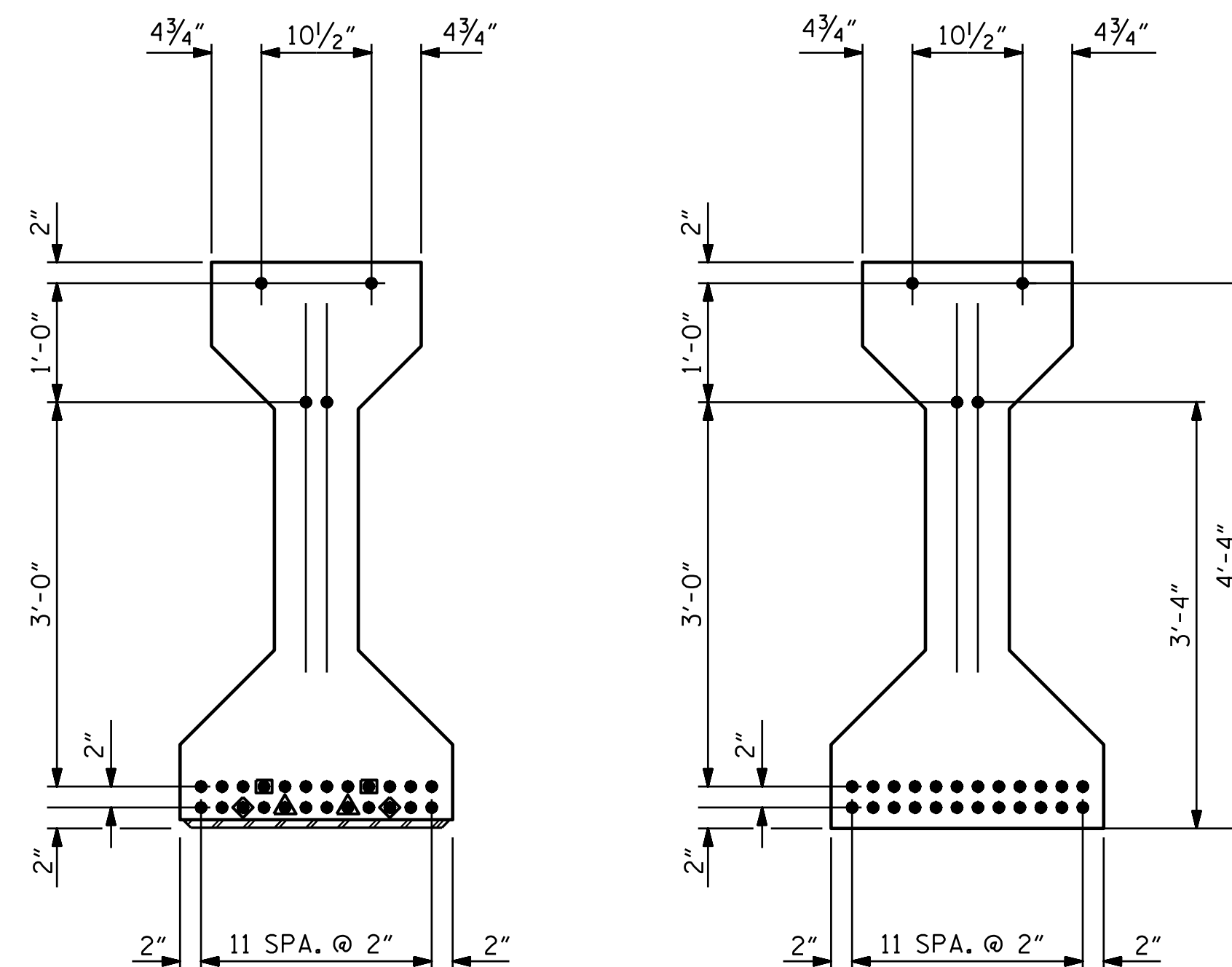
SECTION A-A

SECTION B-B

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◆ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

* FOR S7 BARS, SEE
DETAIL "A" OF
"DEAD LOAD DEFLECTION TABLES
AND PRESTRESSED CONCRETE
GIRDER DETAILS" SHEET

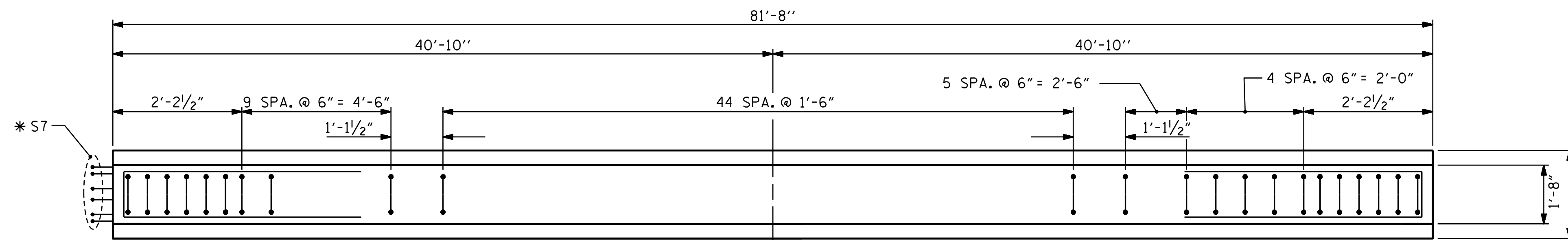


AT END OF GIRDER

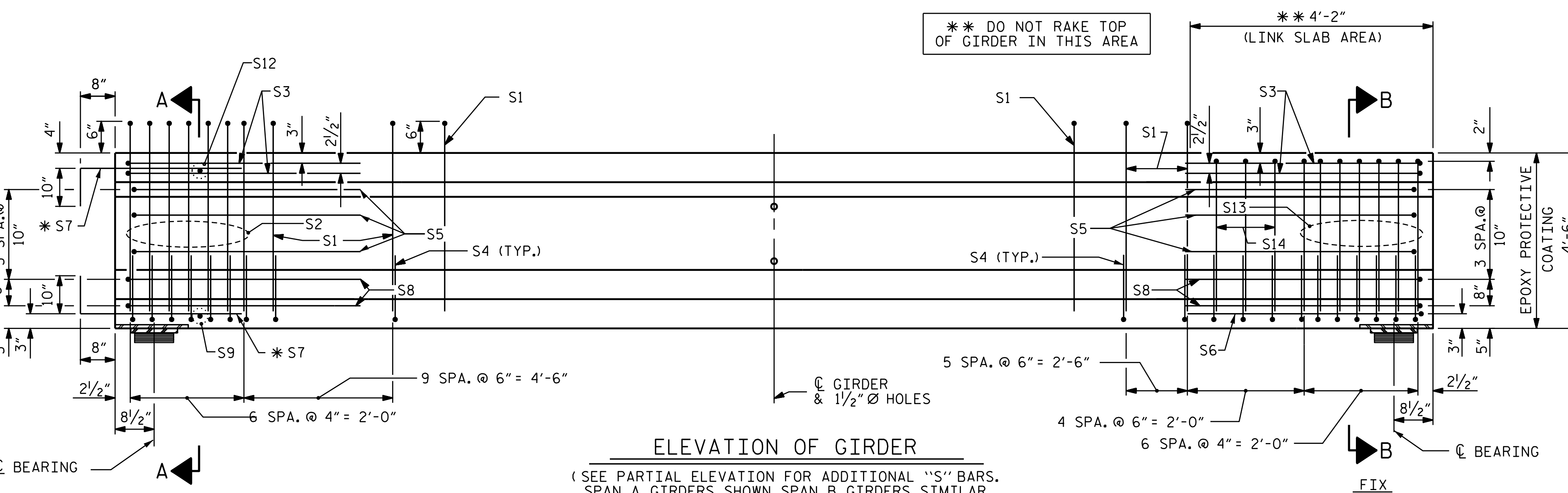
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(28 STRANDS REQUIRED, ALL STRAIGHT)



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS.
SPAN A GIRDERS SHOWN, SPAN B GIRDERS SIMILAR
BY ROTATION)

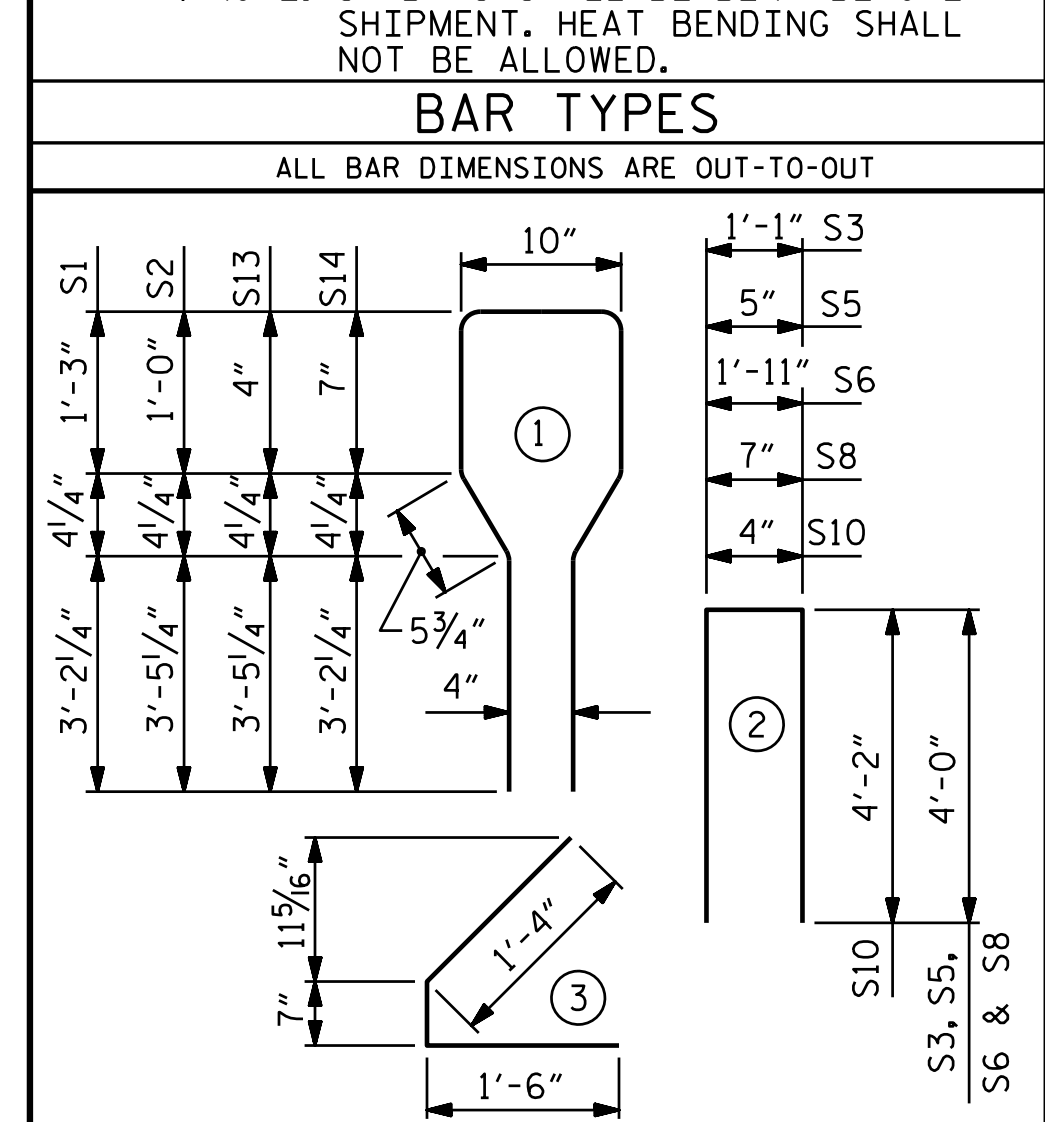
0.6" Ø L. R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	60	#4	1	10'-8"	428
S2	7	#6	1	10'-8"	112
S3	4	#4	2	9'-1"	24
S4	32	#4	3	3'-5"	73
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S12	1	#3	STR	1'-4"	1
S13	7	#6	1	9'-4"	98
S14	3	#4	1	9'-4"	19

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



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7500 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
EXTERIOR GIRDER	907	16.6	28
INTERIOR GIRDER	907	16.6	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	81'-8"	653'-4"

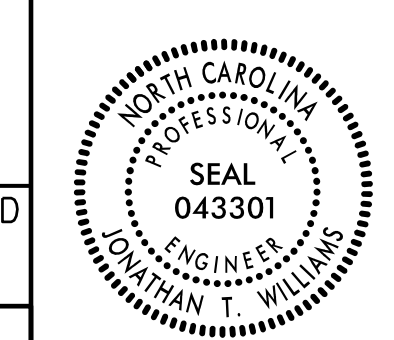
PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 24+76.86 -Y4-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

SPANS A & B



DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

PLANS PREPARED BY:
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PO Box 700
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S4-12
TOTAL SHEETS
29

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 5/18/2022 10:52:36 AM

DRAWN BY: R. L. DICKE DATE: 5-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

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.

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

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

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

ALL PRESTRESSED 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 5000 PSI.

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

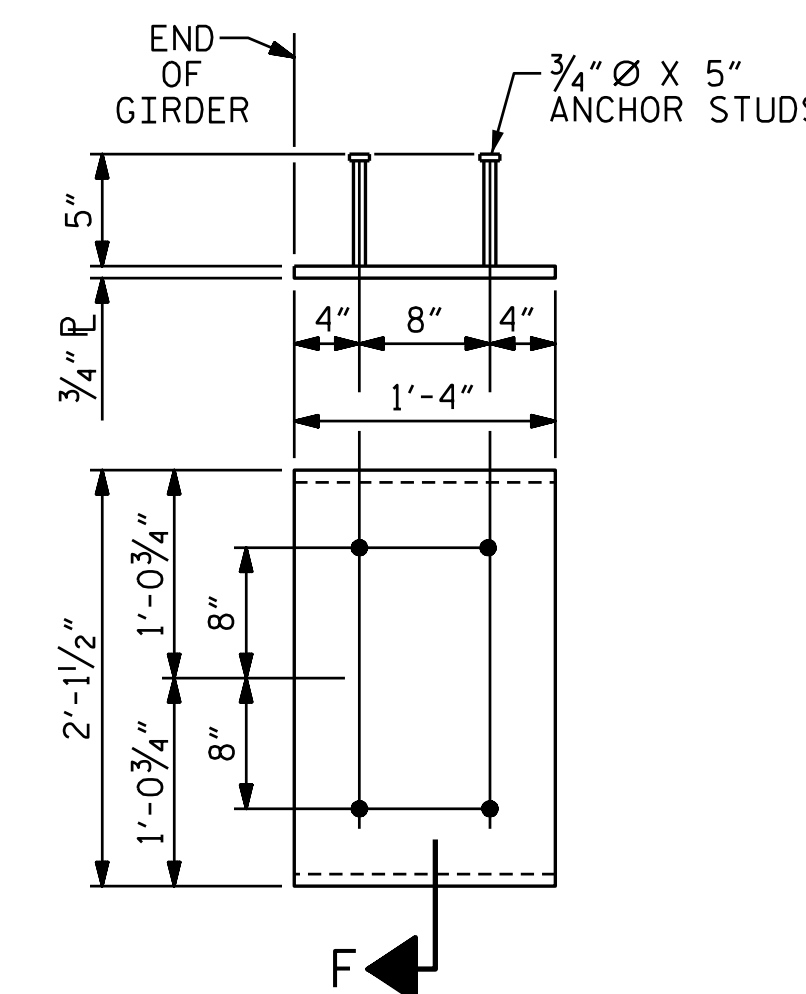
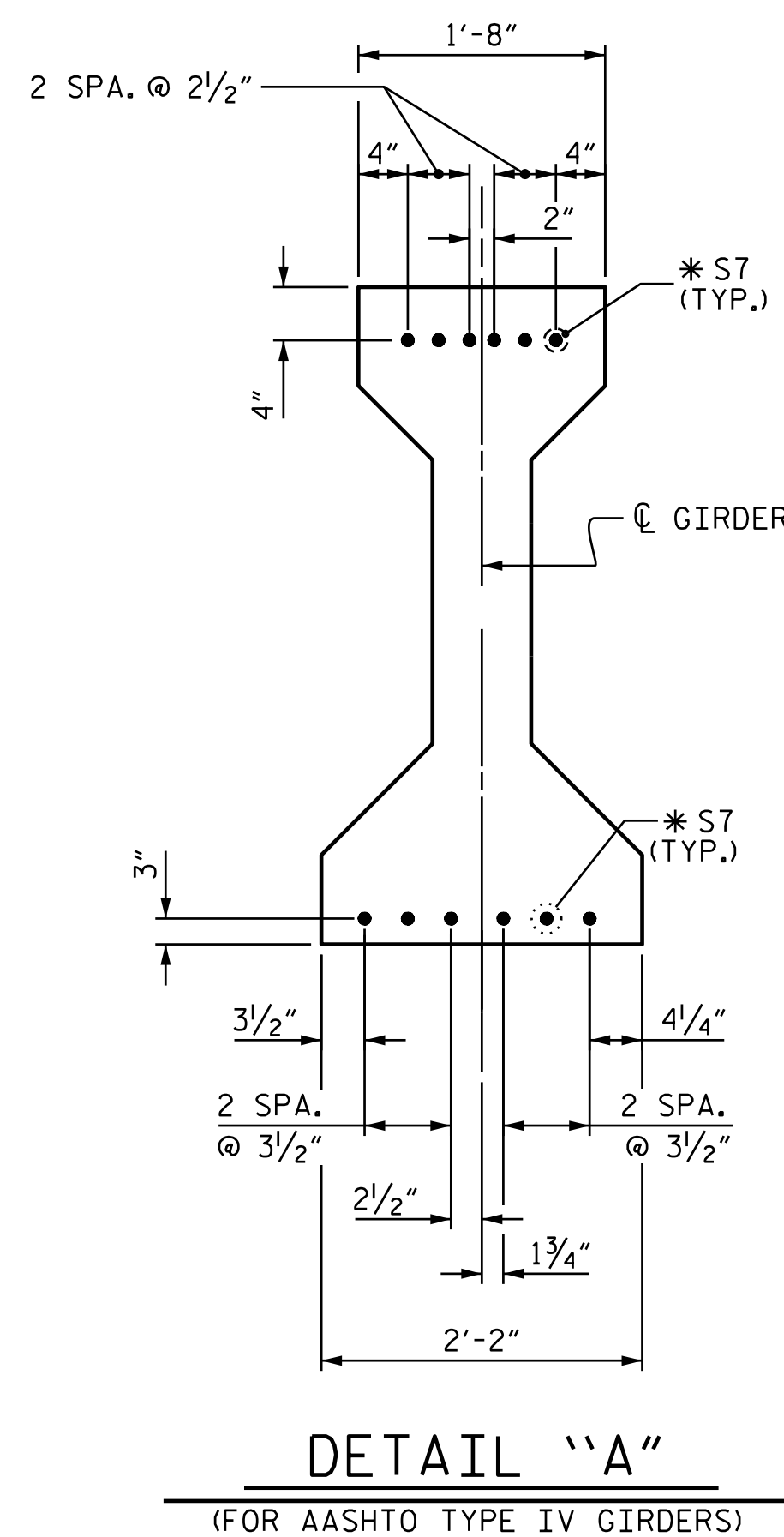
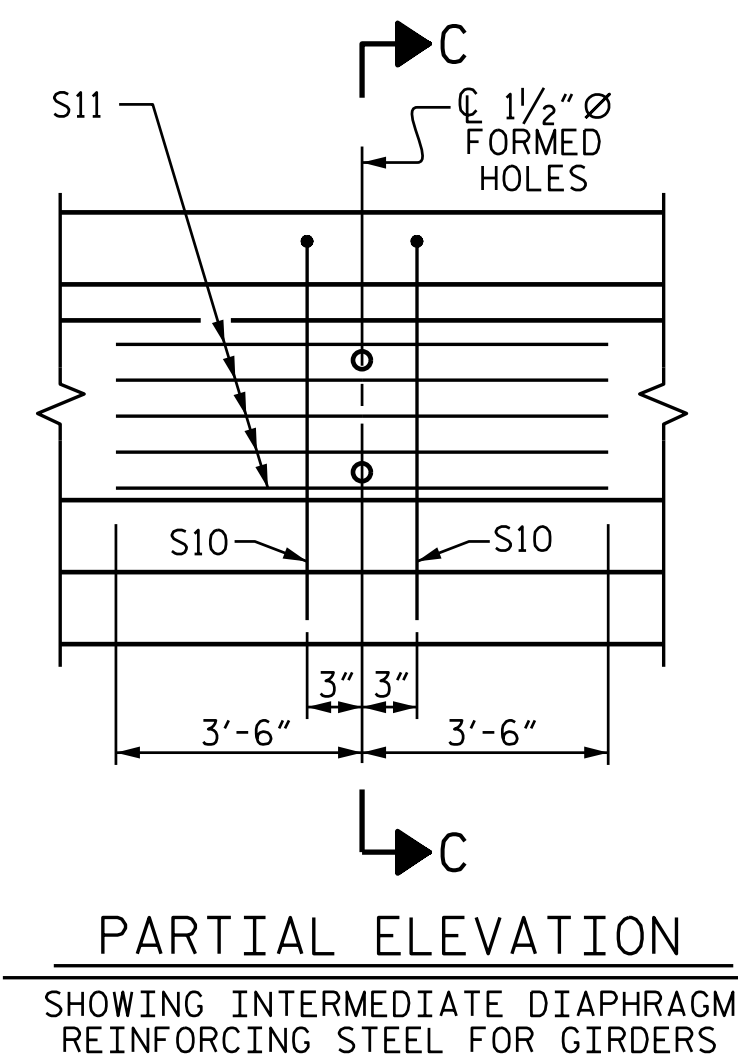
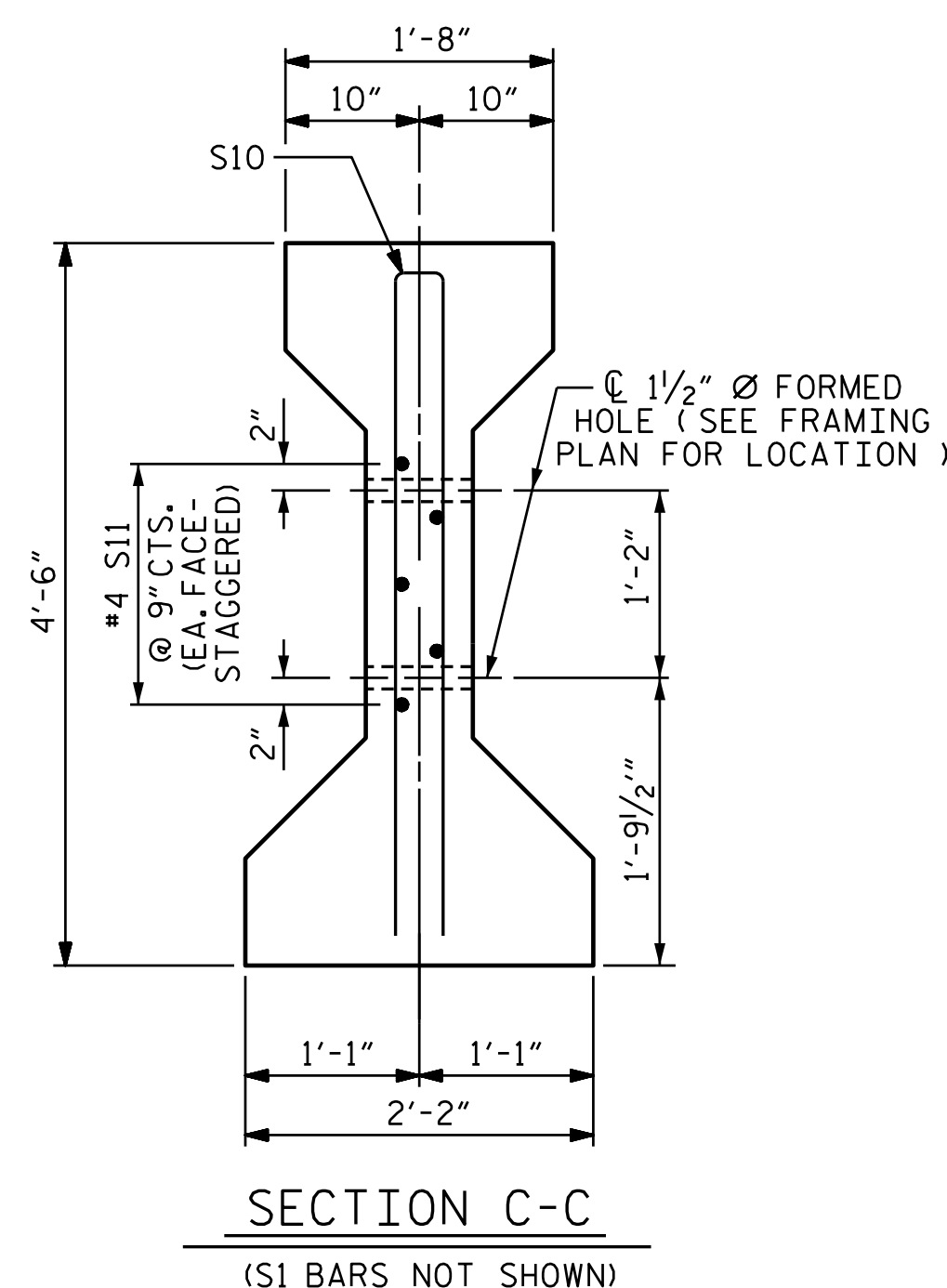
THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER AND WHERE NOTED ON THE GIRDER SHEET.

DEAD LOAD DEFLECTION TABLE

0.6" Ø LOW RELAXATION	SPANS A AND B																					
	EXTERIOR GIRDERS																					
	TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.020	0.039	0.058	0.074	0.089	0.102	0.112	0.119	0.124	0.125	0.124	0.119	0.112	0.102	0.089	0.074	0.058	0.039	0.020	0.0
* DEFLECTION DUE TO D.L.	↓	0.0	-0.013	-0.024	-0.038	-0.048	-0.059	-0.067	-0.074	-0.079	-0.082	-0.083	-0.082	-0.079	-0.074	-0.067	-0.059	-0.048	-0.038	-0.024	-0.013	0.0
FINAL CAMBER	↑	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"	7/16"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0
INTERIOR GIRDERS																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.020	0.039	0.058	0.074	0.089	0.102	0.112	0.119	0.124	0.125	0.124	0.119	0.112	0.102	0.089	0.074	0.058	0.039	0.020	0.0
* DEFLECTION DUE TO D.L.	↓	0.0	-0.015	-0.028	-0.044	-0.056	-0.069	-0.078	-0.086	-0.092	-0.095	-0.096	-0.095	-0.092	-0.086	-0.078	-0.069	-0.056	-0.044	-0.028	-0.015	0.0
FINAL CAMBER	↑	0	1/16"	1/8"	3/16"	3/16"	1/4"	5/16"	5/16"	5/16"	3/8"	3/8"	3/8"	5/16"	5/16"	5/16"	1/4"	3/16"	3/16"	1/8"	1/16"	0

* INCLUDES FUTURE WEARING SURFACE

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



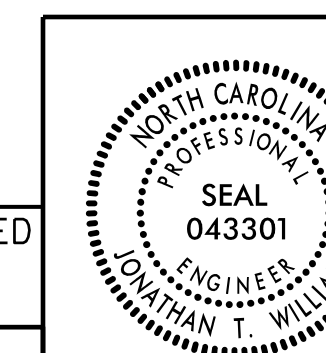
EMBEDDED PLATE "B-1" DETAILS
(2 REQ'D PER GIRDER)

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DEAD LOAD DEFLECTION TABLES
 AND PRESTRESSED CONCRETE
 GIRDER DETAILS



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PLANS PREPARED BY:
 MOTT MACDONALD
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 (919) 552-2253
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 LICENSE NO. F-0669

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 10/26/2022 10:52:57 AM

DRAWN BY: R. L. DICKE DATE: 5-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

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.

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, AND WASHERS, SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

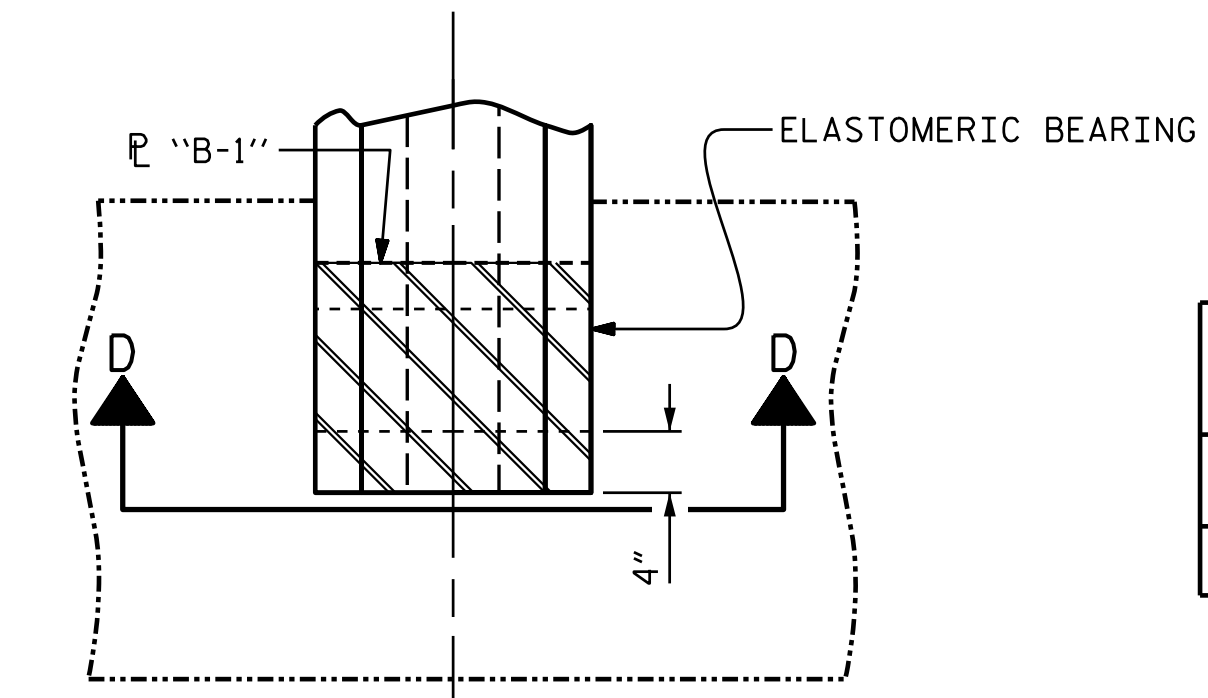
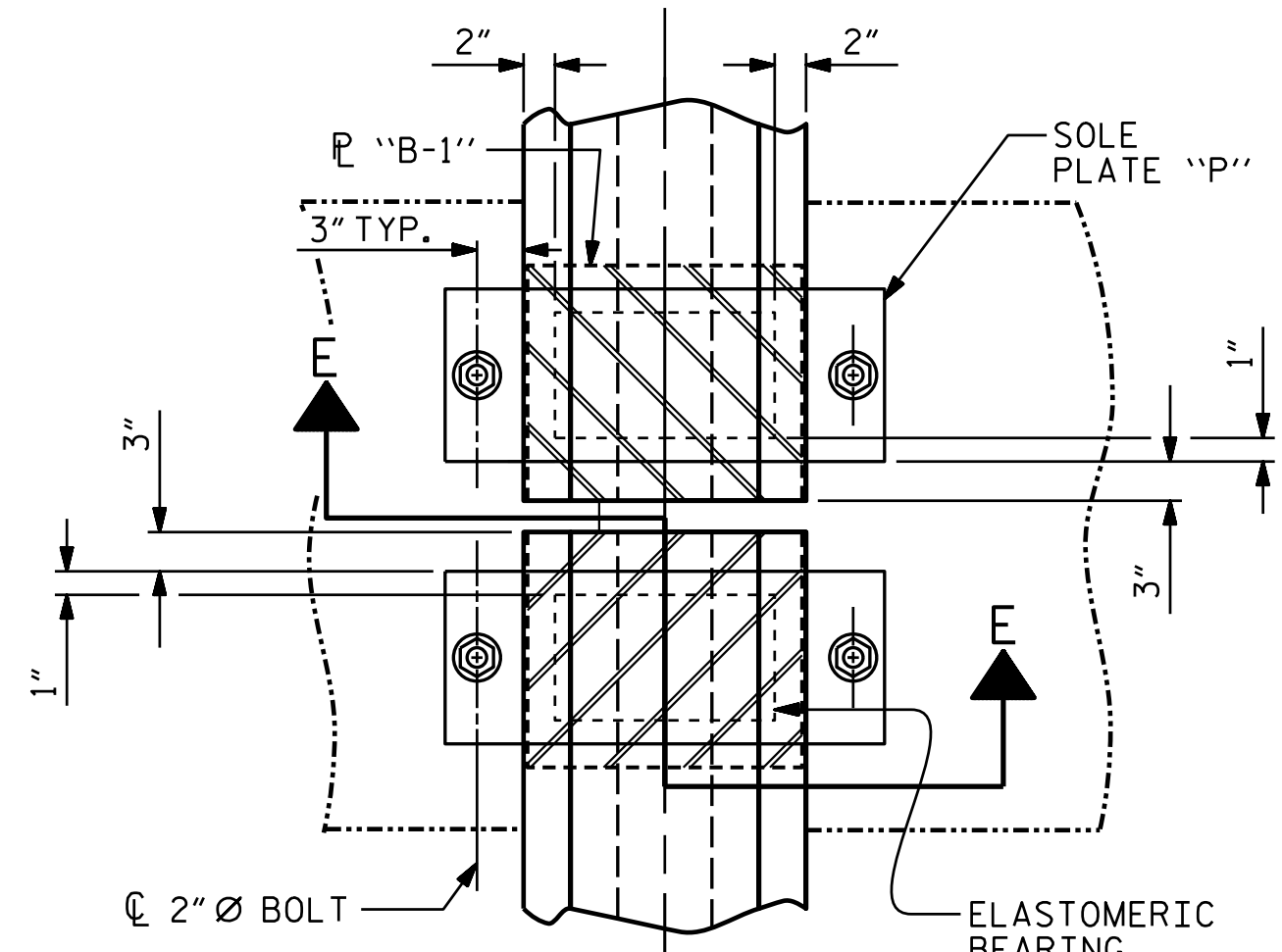
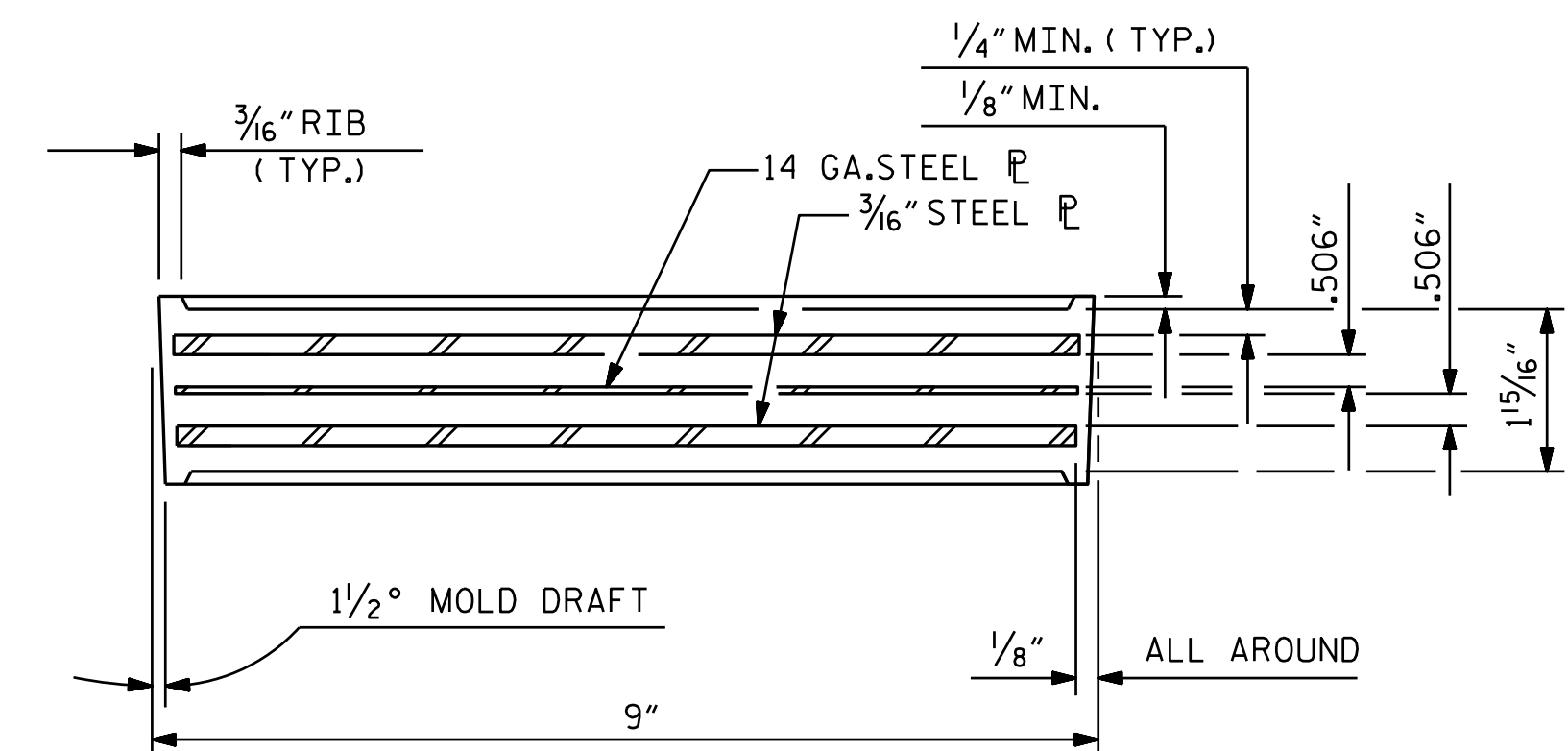
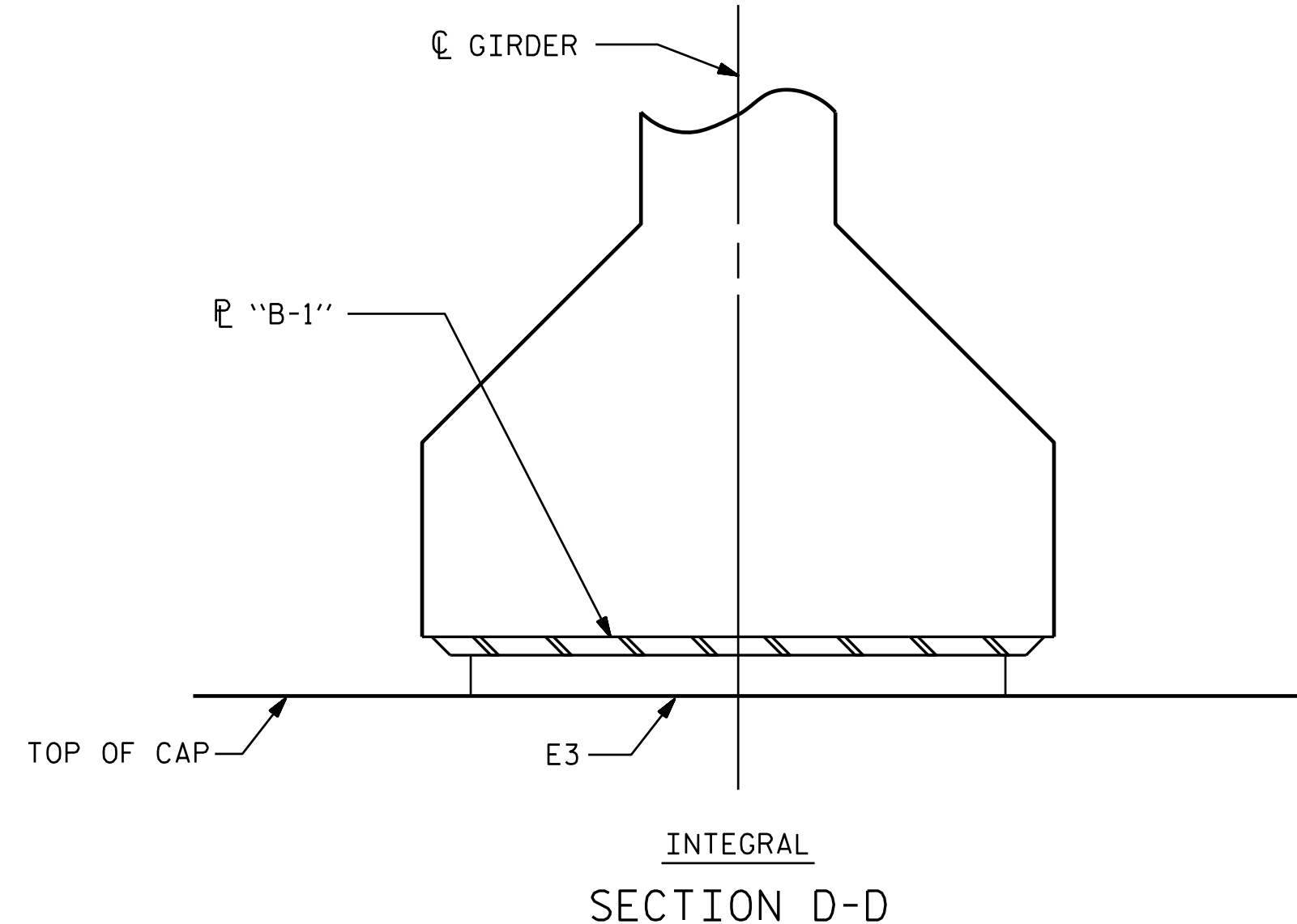
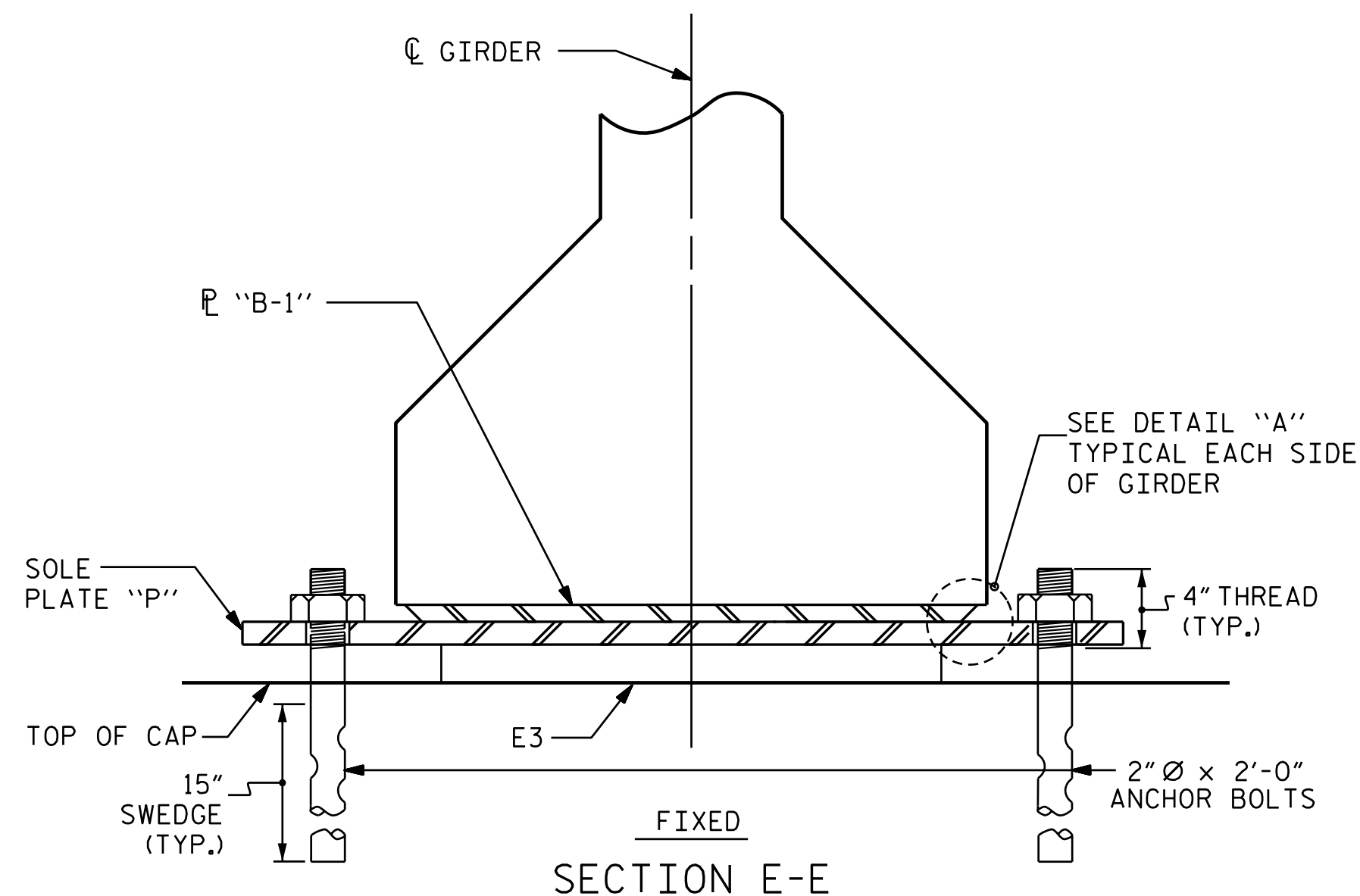
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

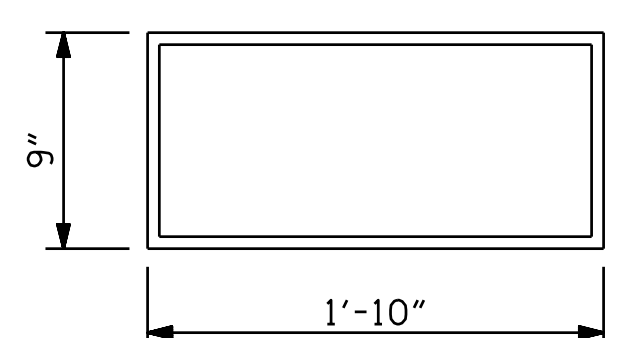
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

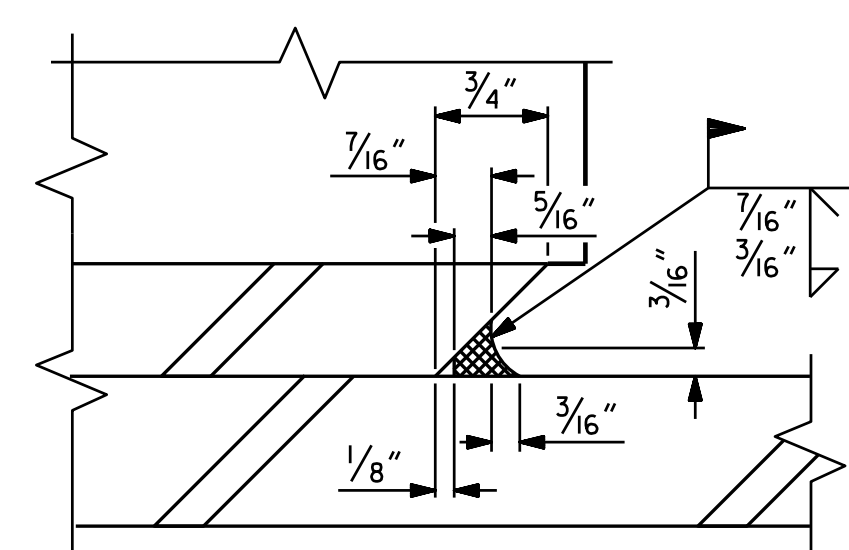
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



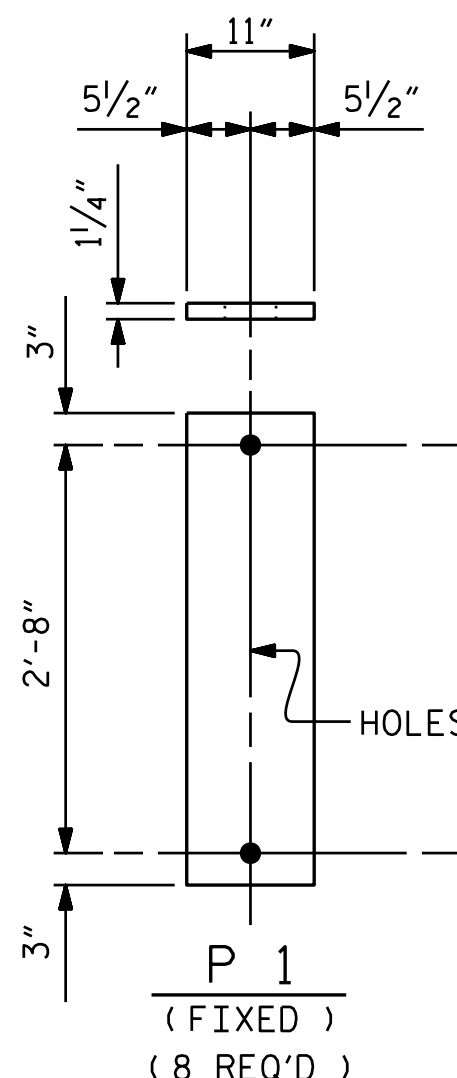
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k



E3 (16 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



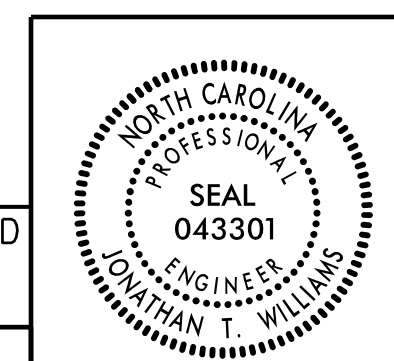
DETAIL "A"



P 1
(FIXED)
(8 REQ'D)

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STATE OF NORTH CAROLINA
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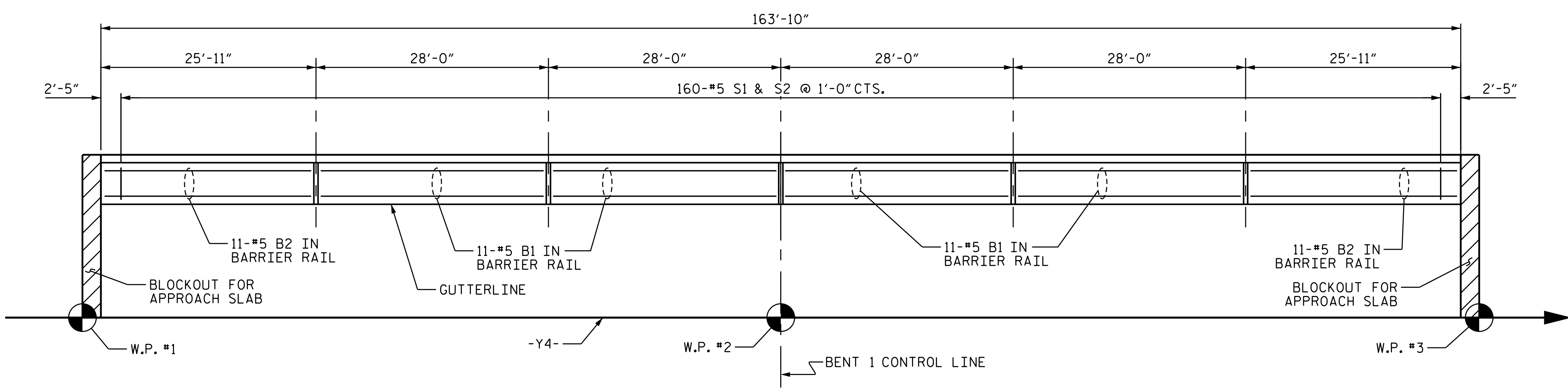
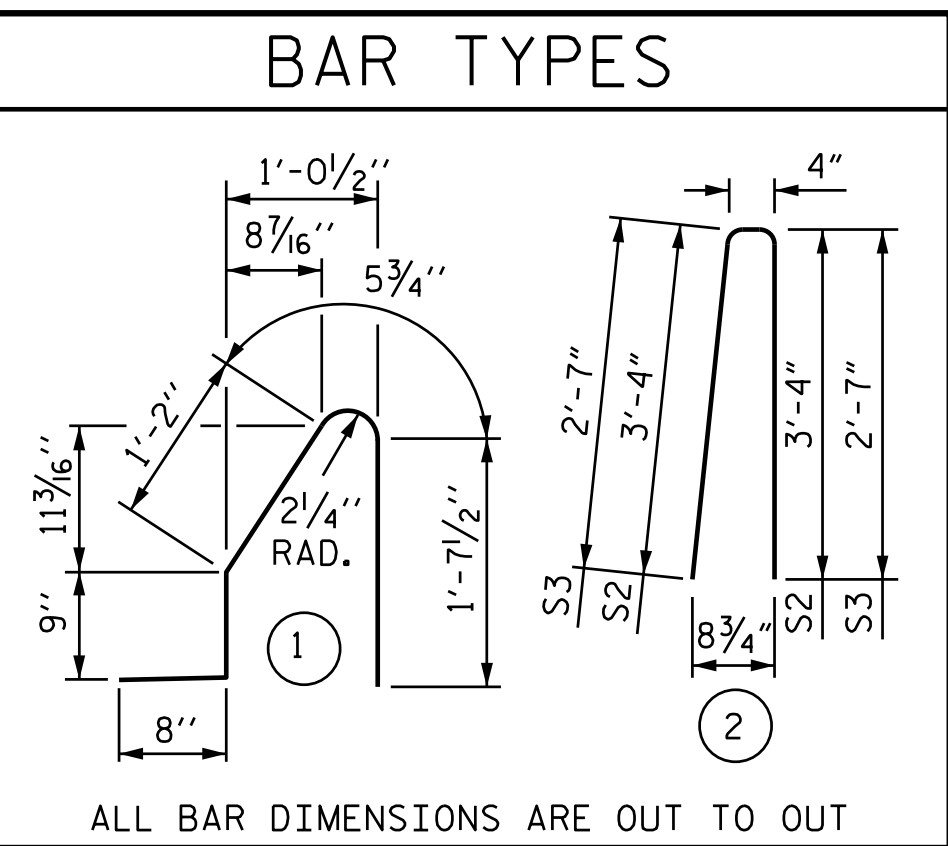
ELASTOMERIC BEARING DETAILS

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 3/18/2022 10:52:53 AM

DRAWN BY: R. L. DICKE DATE: 6-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	88	#5	STR	27'-7"	2532
* B2	44	#5	STR	25'-6"	1170
* S1	332	#5	1	4'-8"	1617
* S2	320	#5	2	7'-0"	2336
* S3	12	#5	2	5'-6"	69
* EPOXY COATED REINFORCING STEEL					7,724 LBS.
CLASS AA CONCRETE					44.5 CU. YDS.
CONCRETE BARRIER RAIL					327.66 LIN. FT.



PLAN OF BARRIER RAIL

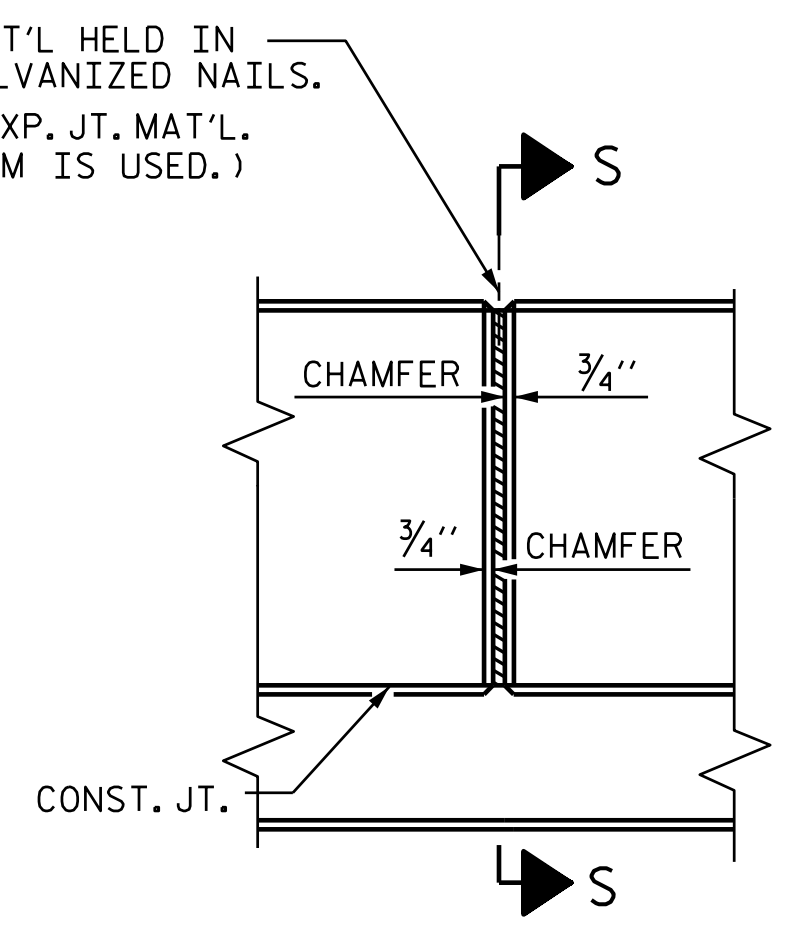
LEFT SIDE SHOWN, RIGHT SIDE SIMILAR

NOTES

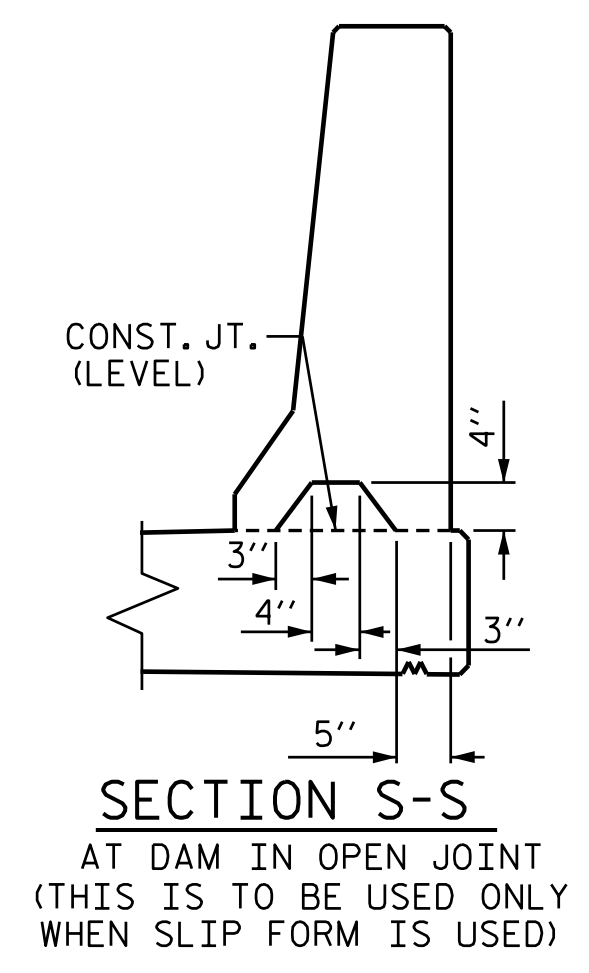
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

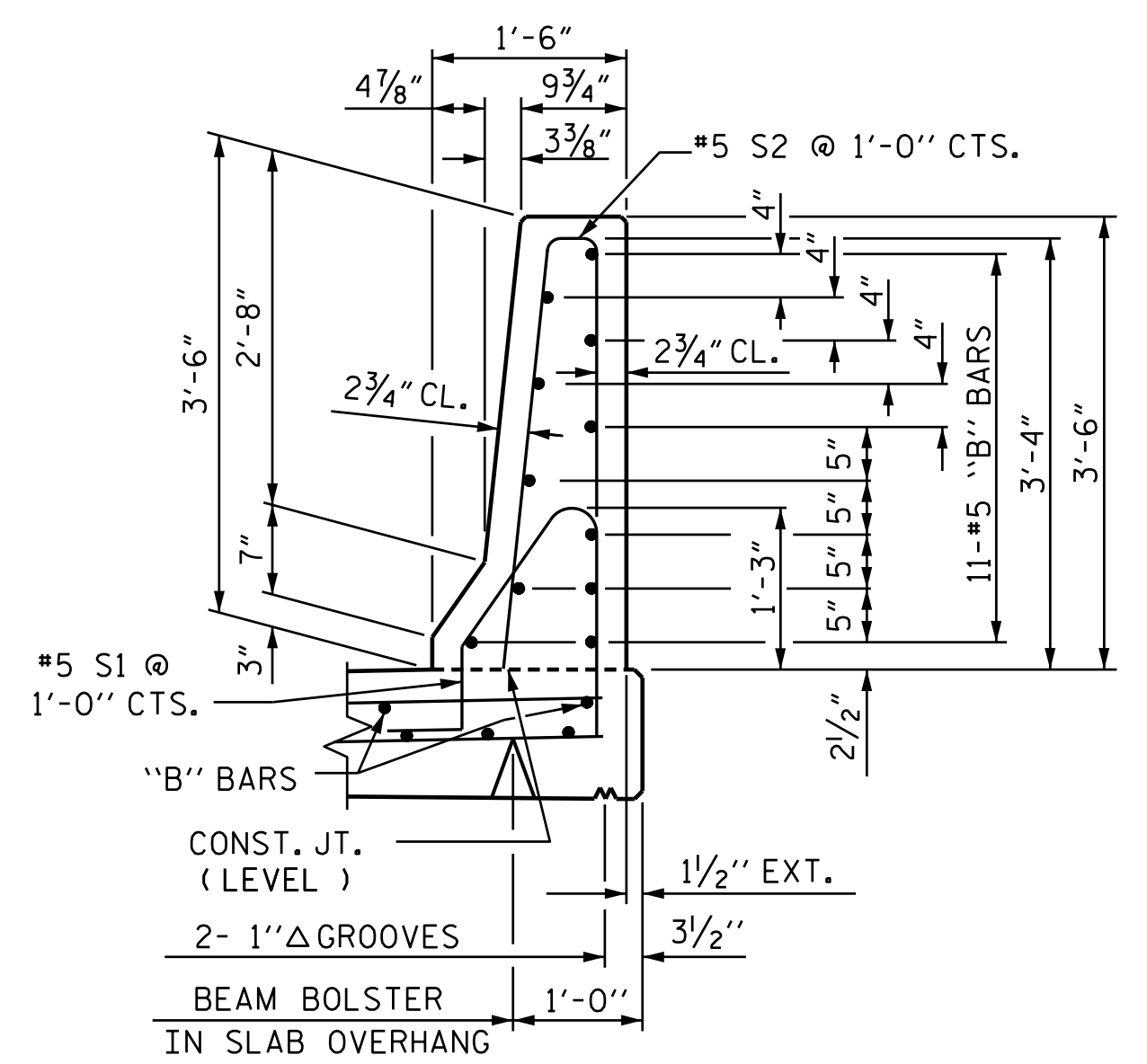
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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



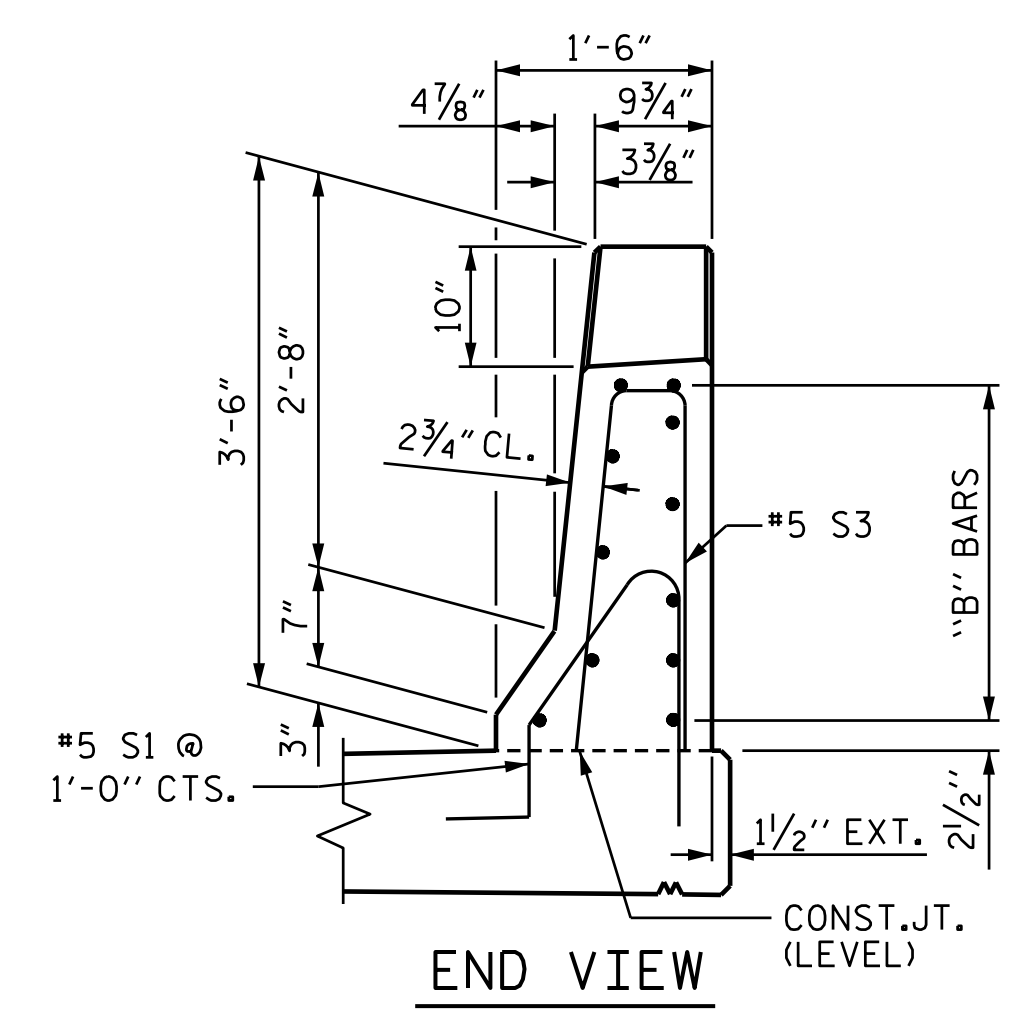
ELEVATION AT EXPANSION JOINTS



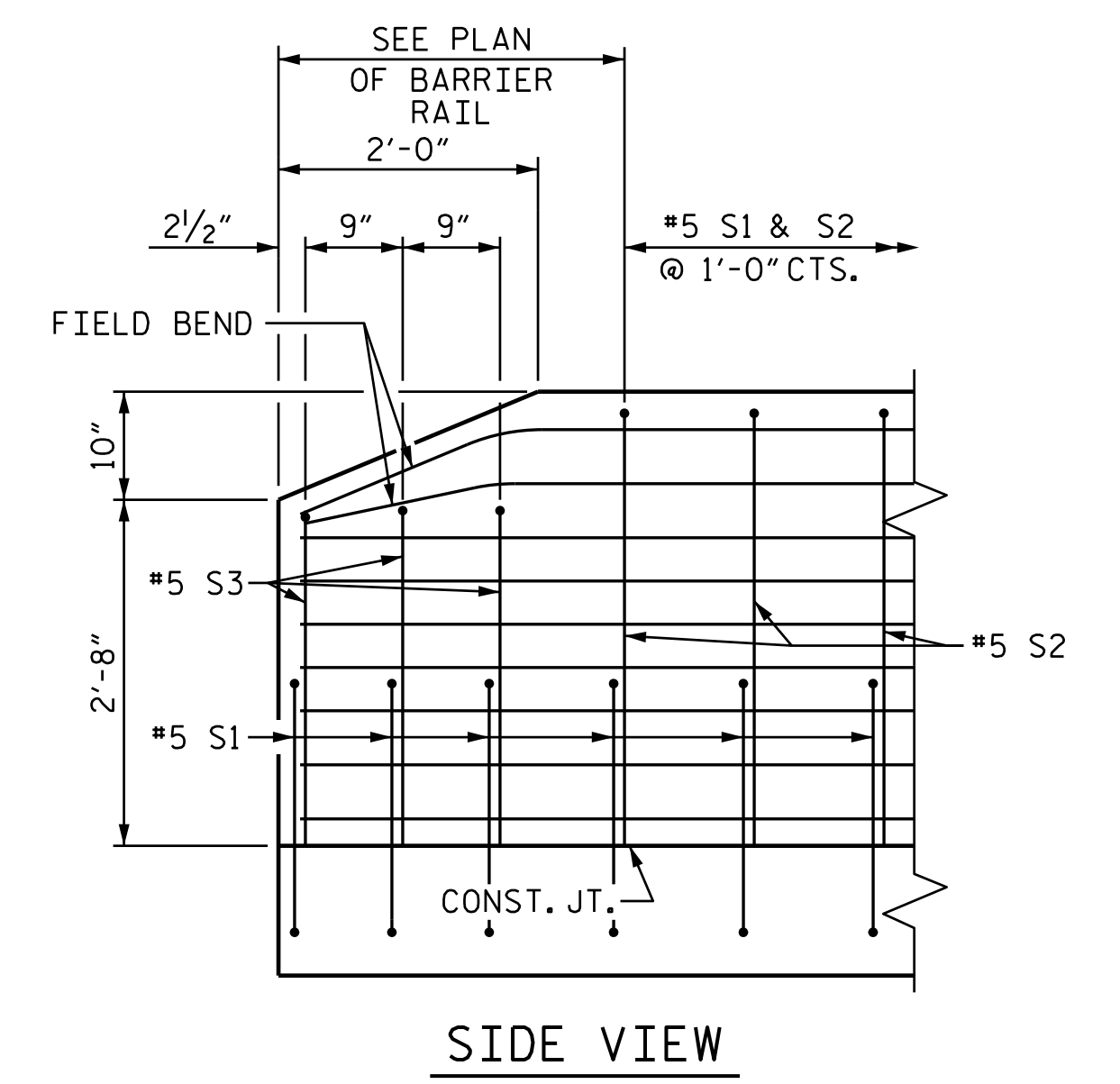
SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



SECTION THRU RAIL



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

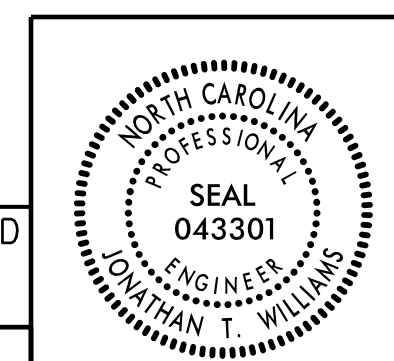
BARRIER RAIL DETAILS

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE BARRIER RAIL

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

SHEET NO. S4-16
 TOTAL SHEETS 29

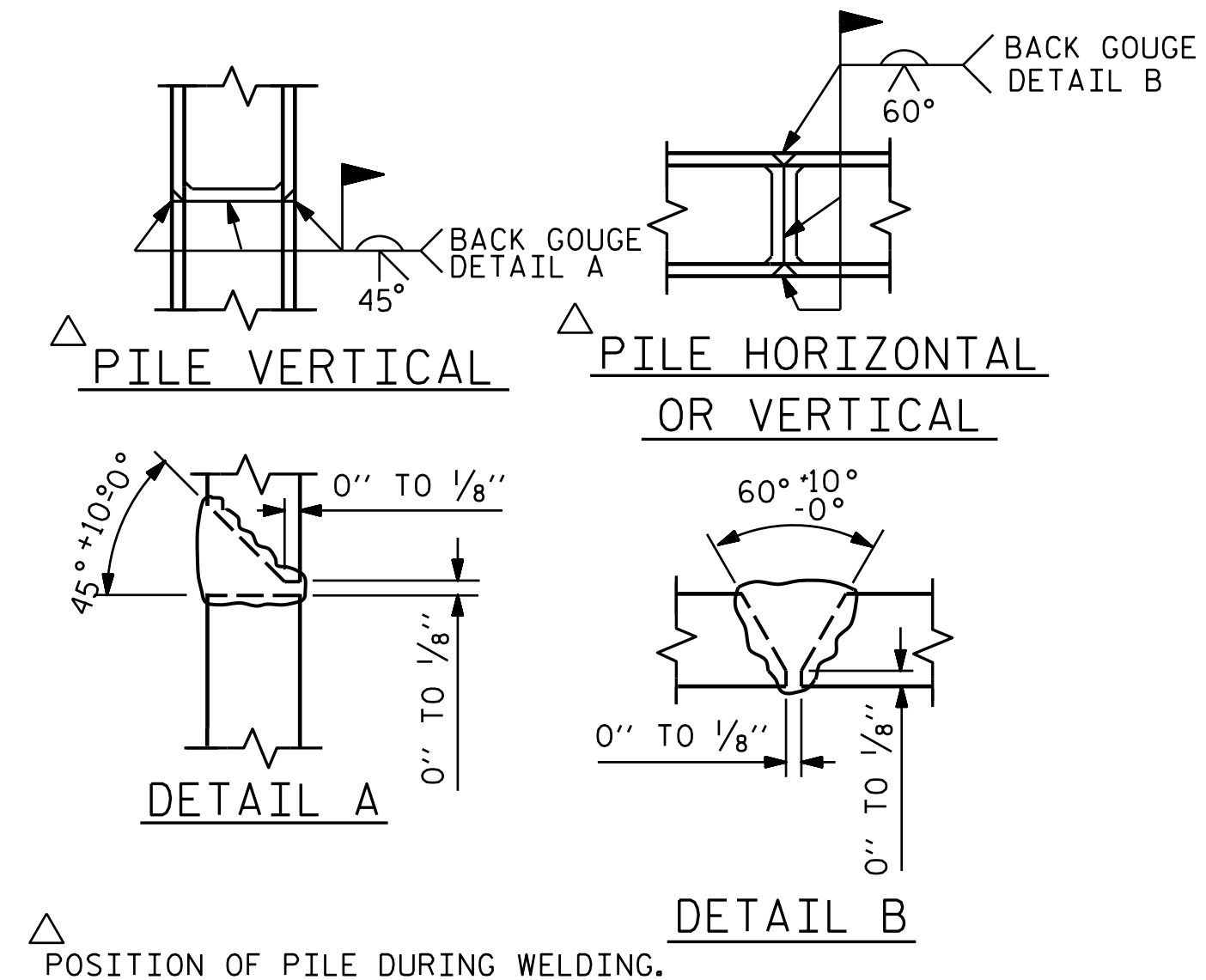


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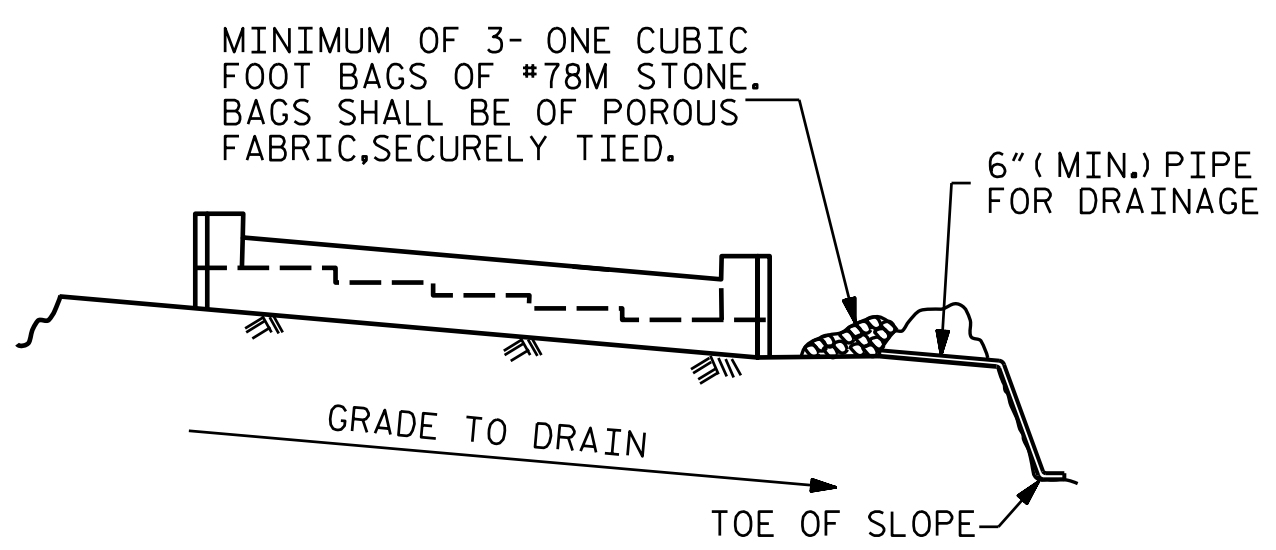
PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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DRAWN BY: R. L. DICKE DATE: 6-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021



PILE SPLICE DETAILS

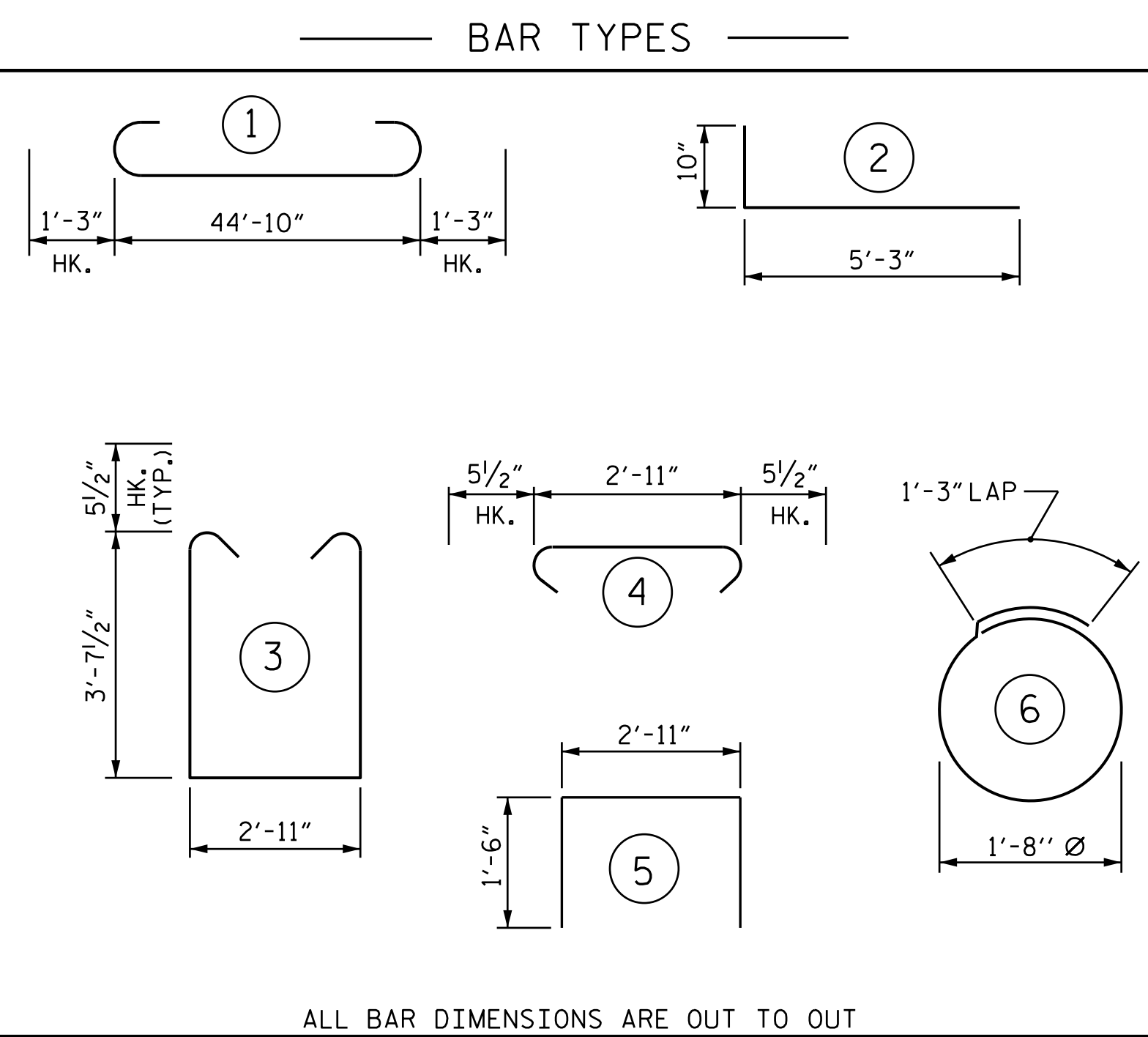


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

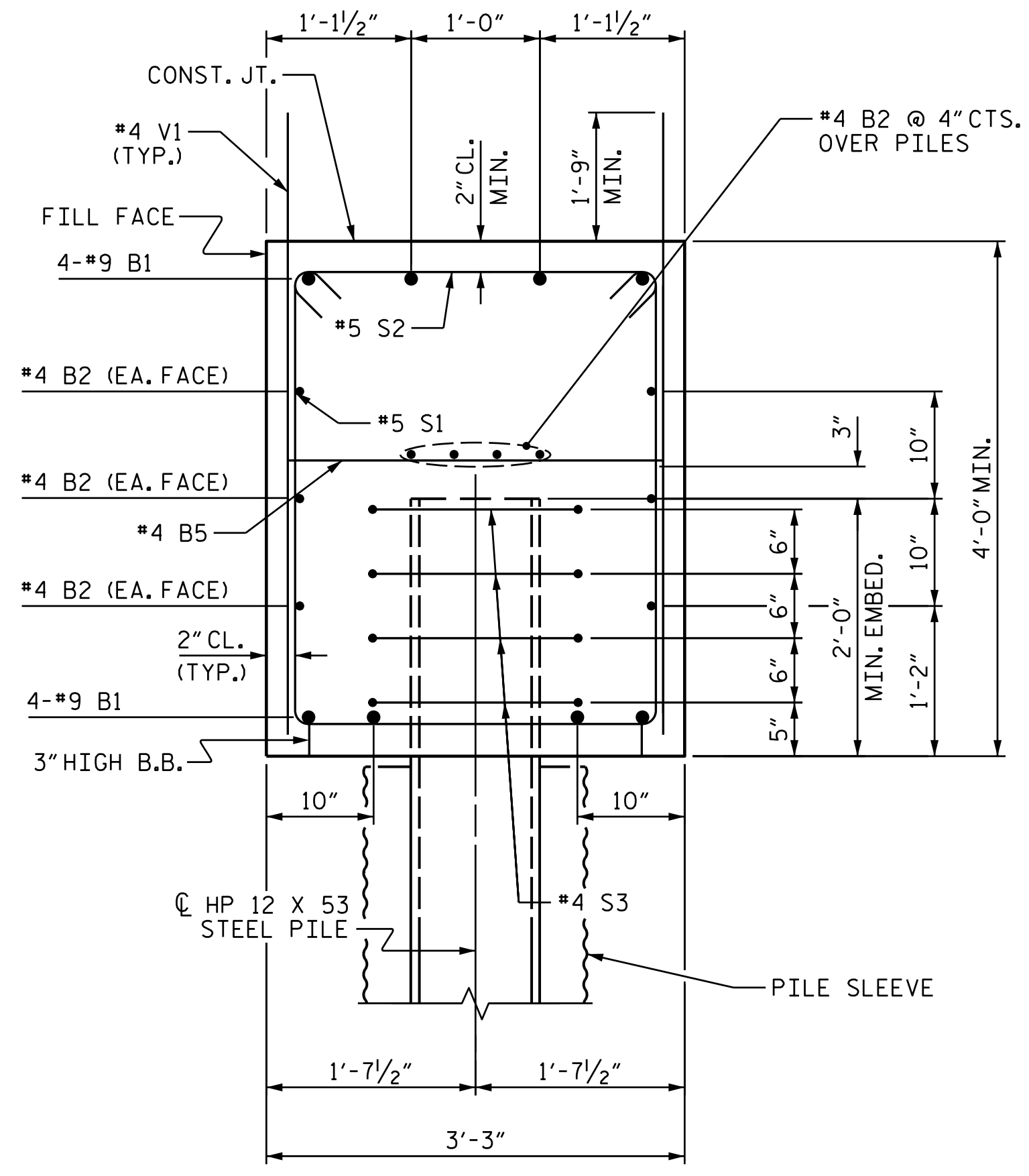
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

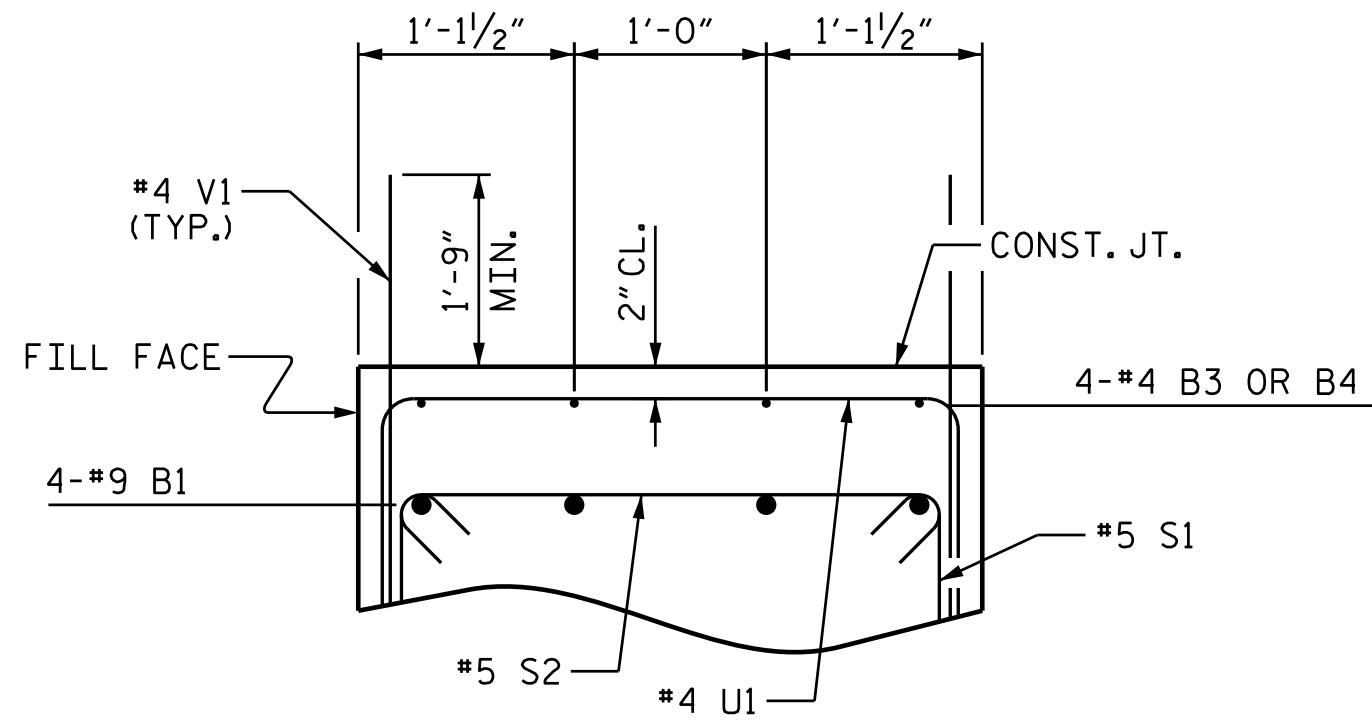


BILL OF MATERIAL

FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-4"	1287
B2	20	#4	STR	23'-9"	317
B3	4	#4	STR	13'-1"	35
B4	4	#4	STR	8'-0"	21
B5	13	#4	STR	2'-11"	25
H1	50	#5	2	6'-1"	317
K1	28	#5	STR	2'-8"	78
S1	70	#5	3	11'-1"	809
S2	70	#5	4	3'-10"	280
S3	28	#4	6	6'-6"	122
U1	13	#4	5	5'-11"	51
V1	74	#4	STR	6'-2"	305
V2	18	#4	STR	10'-2"	122
V3	18	#4	STR	9'-5"	113
REINFORCING STEEL					3882 LBS
CLASS A CONCRETE:					
POUR #1: CAP, LOWER PART OF WINGS				24.1 C.Y.	
POUR #2: UPPER PART OF WINGS				3.4 C.Y.	
TOTAL CLASS A CONCRETE					27.5 C.Y.



SECTION A-A



SECTION B-B

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 24+76.86 -Y4-

SHEET 3 OF 3

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



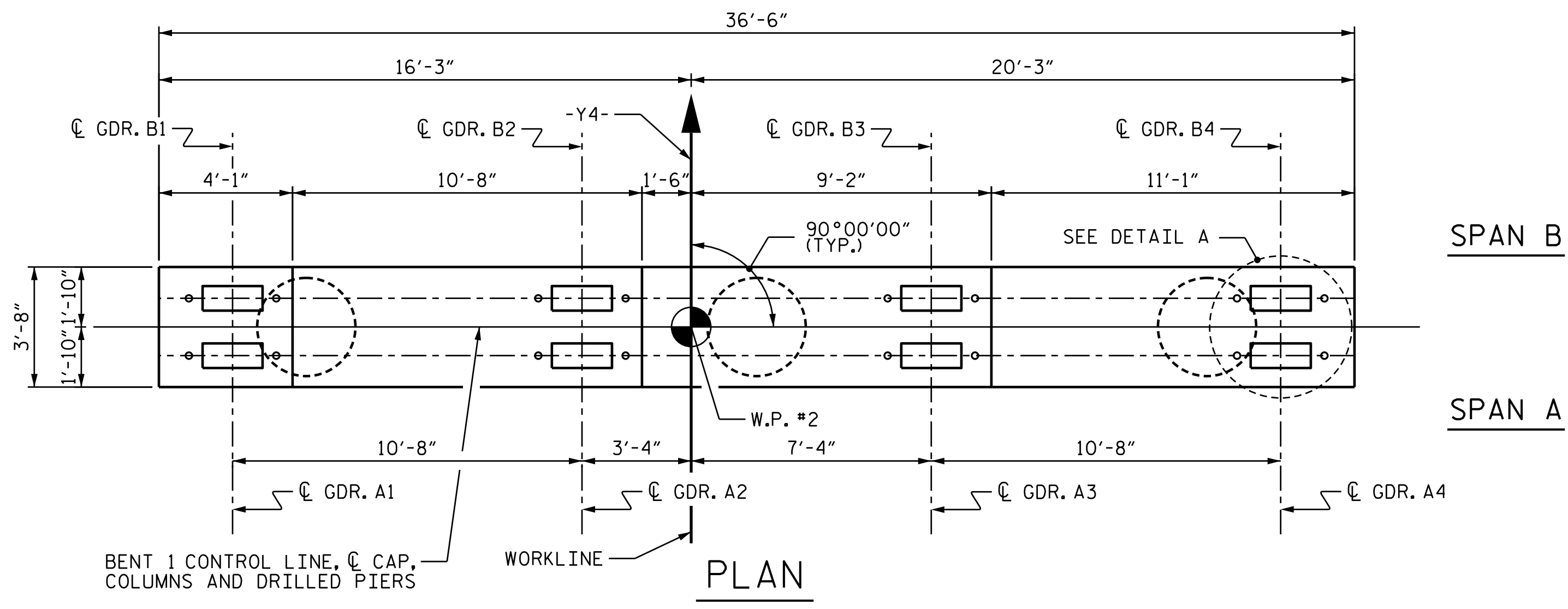
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			29

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DRAWN BY: R. L. DICKE DATE: 8-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021



NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

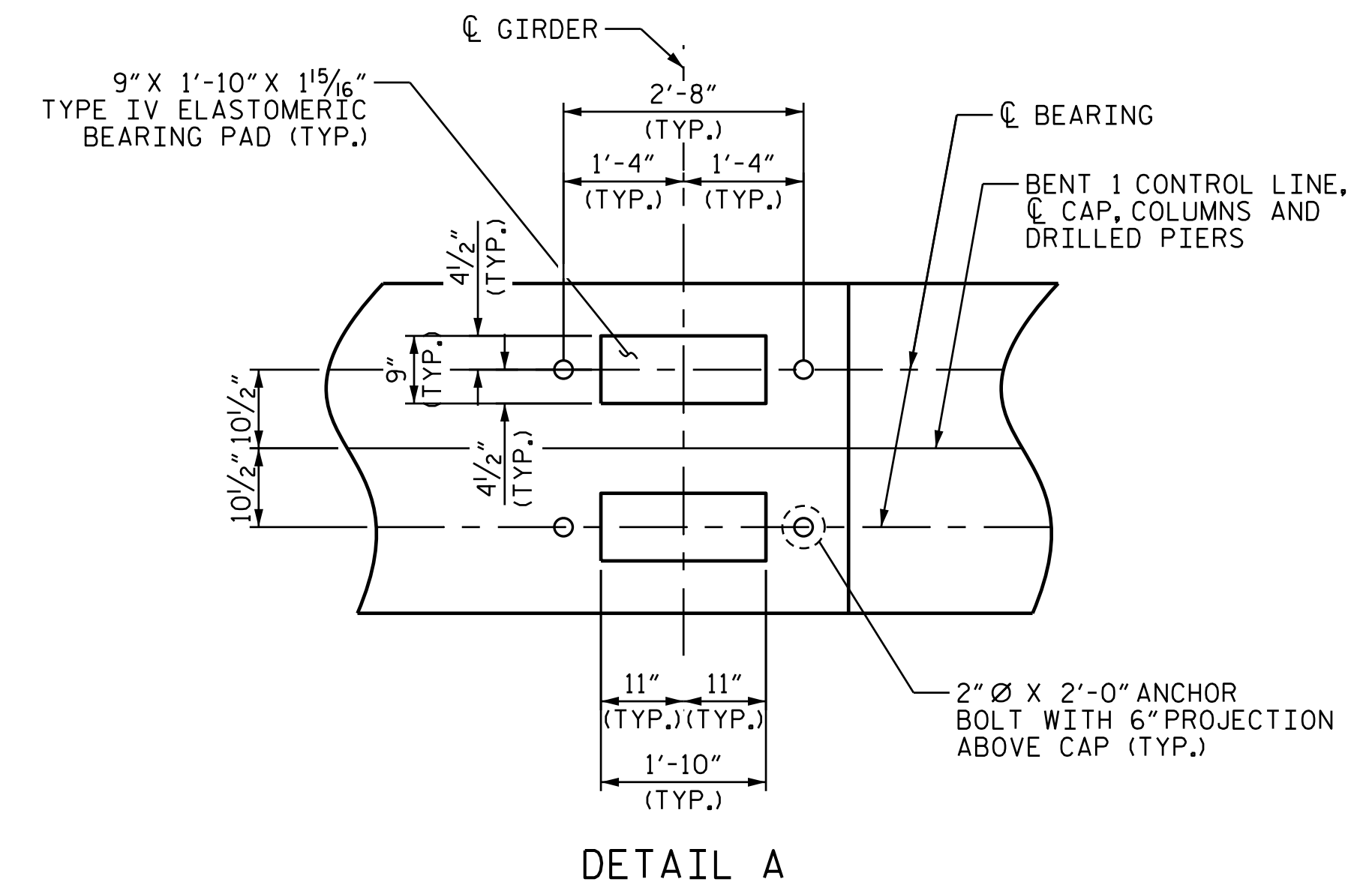
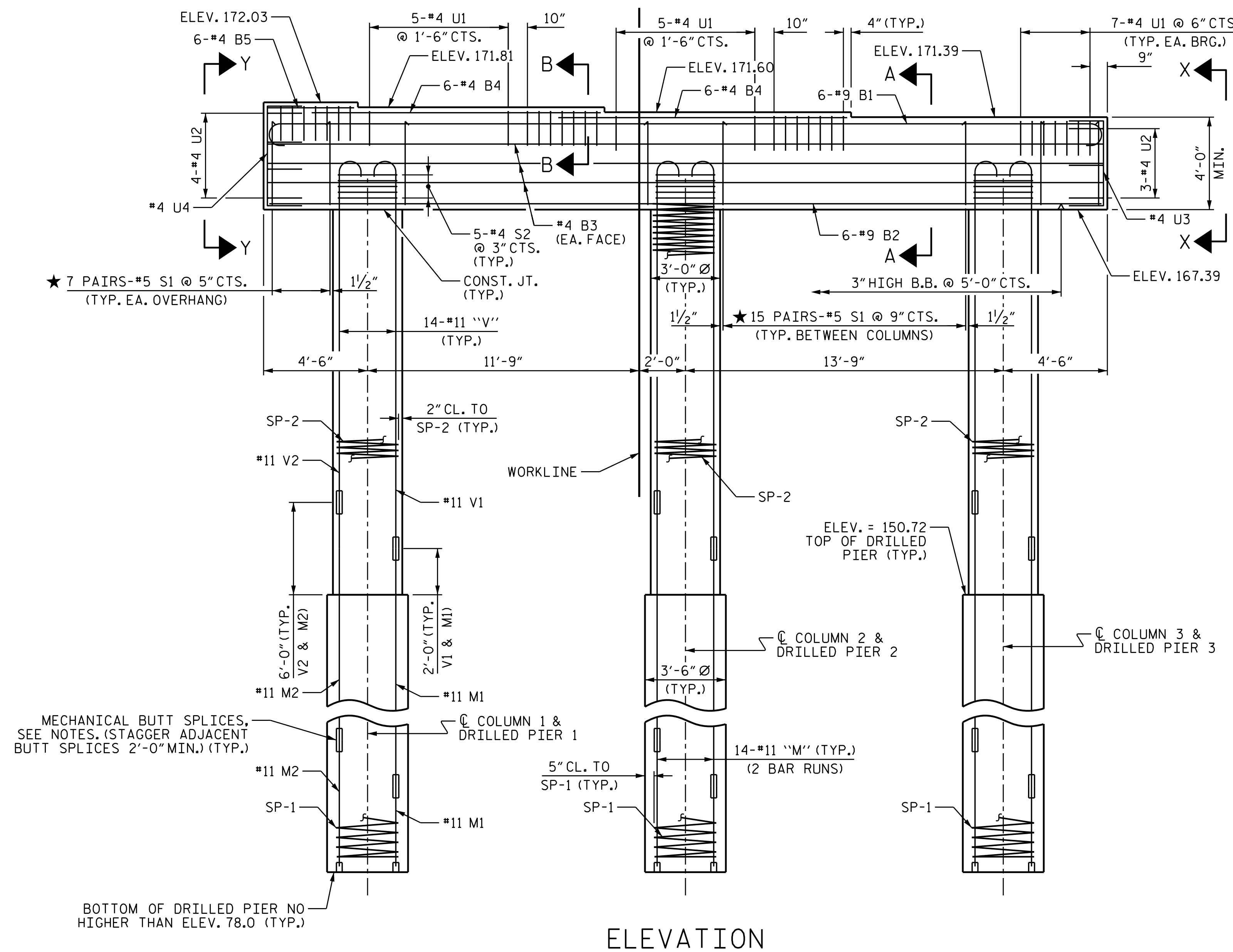
LAP SPLICES IN DRILLED PIERS AND COLUMNS SHALL NOT BE ALLOWED.

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

★ INVERT ALTERNATE #5 S1 STIRRUP PAIRS.

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

LONGITUDINAL REINFORCING STEEL IN THE COLUMNS AND DRILLED PIERS SHALL BE SPLICED USING MECHANICAL BUTT SPLICES WHERE SHOWN IN THE ELEVATIONS VIEW. ADJACENT SPLICES TO BE OFFSET 2'-0" MIN. MECHANICAL BUTT SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. MECHANICAL BUTT SPLICES SHALL BE SUBMITTED FOR APPROVAL. NO EXTRA PAYMENT WILL BE MADE FOR USING MECHANICAL BUTT SPLICES OR MODIFYING BAR LENGTHS. THE COST WILL BE INCIDENTAL TO REINFORCING STEEL.

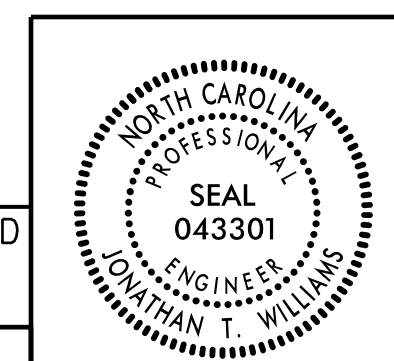


PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
 BENT 1



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REVISIONS COMPLETED						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-22
1			3			TOTAL SHEETS
2			4			29

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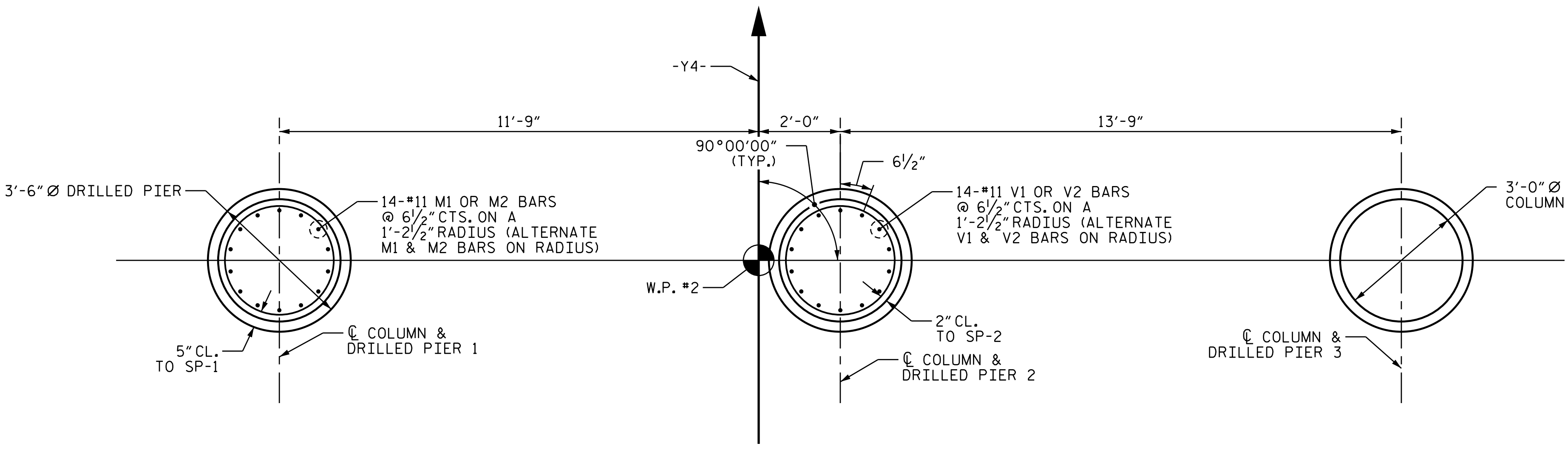
DRAWN BY: R. L. DICKE DATE: 11-2021
 CHECKED BY: J. M. ROBINSON DATE: 11-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 11-2021

BOTTOM OF DRILLED PIER NO HIGHER THAN ELEV. 78.0 (TYP.)

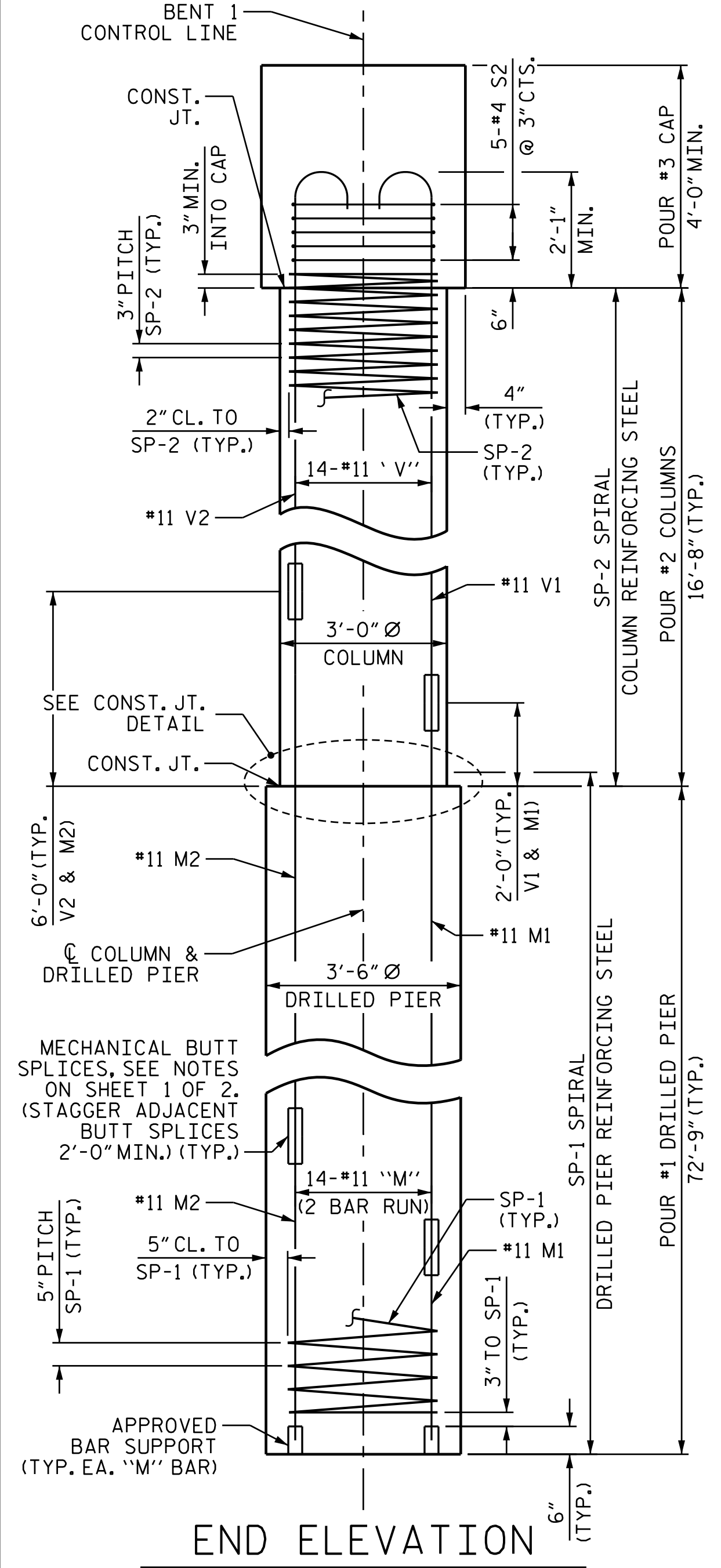
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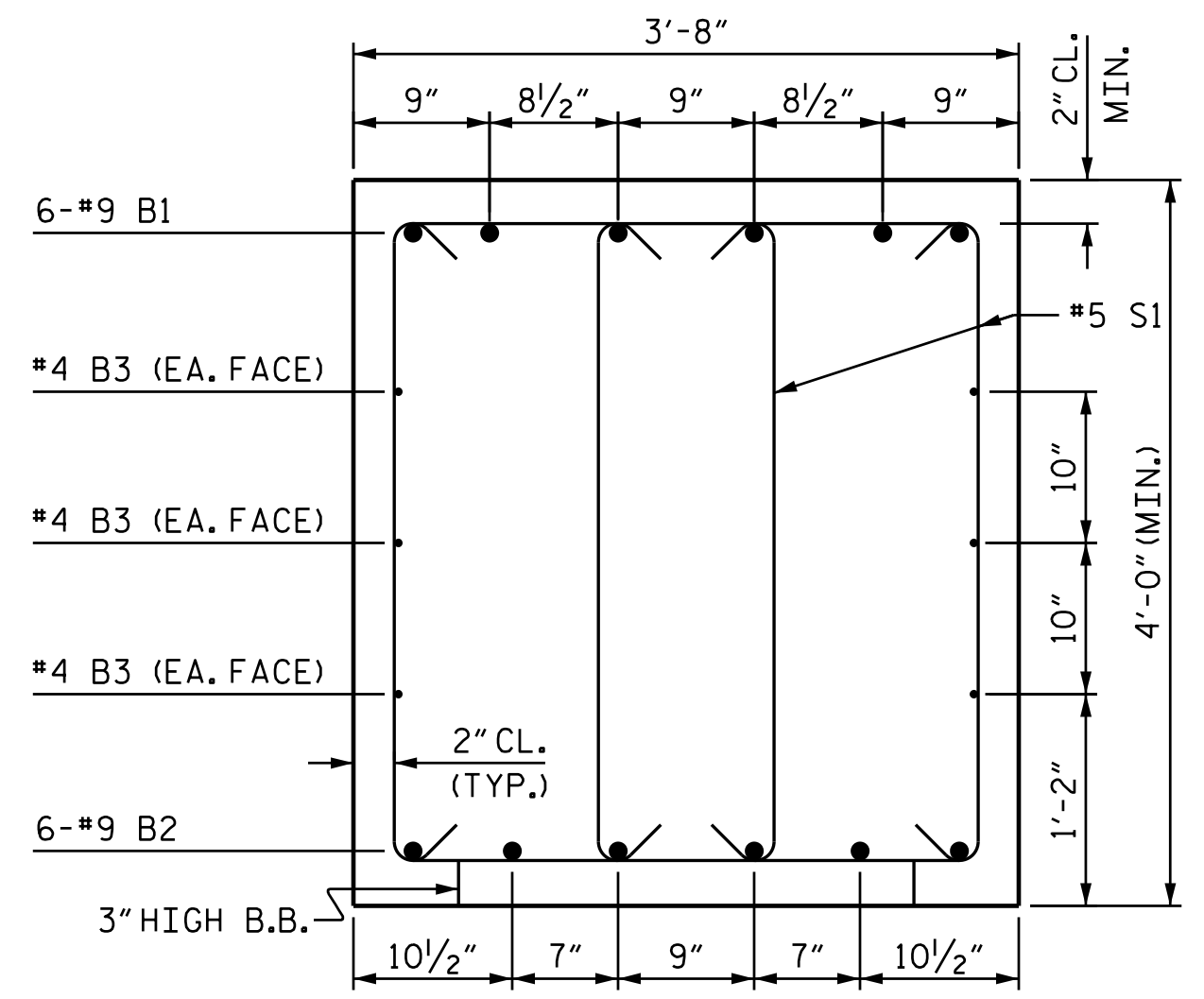
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 CHECKED BY: J. M. ROBINSON DATE: 11-2021
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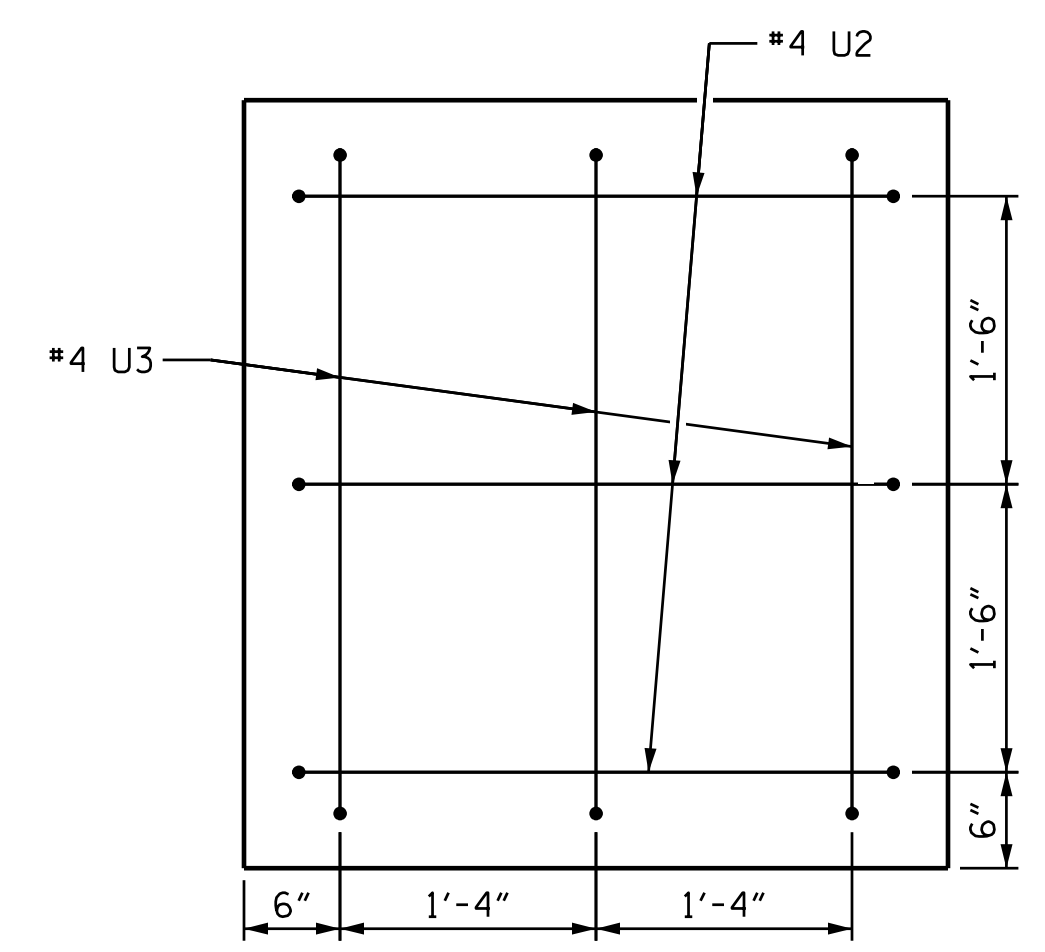
PLAN OF DRILLED SHAFTS & COLUMNS



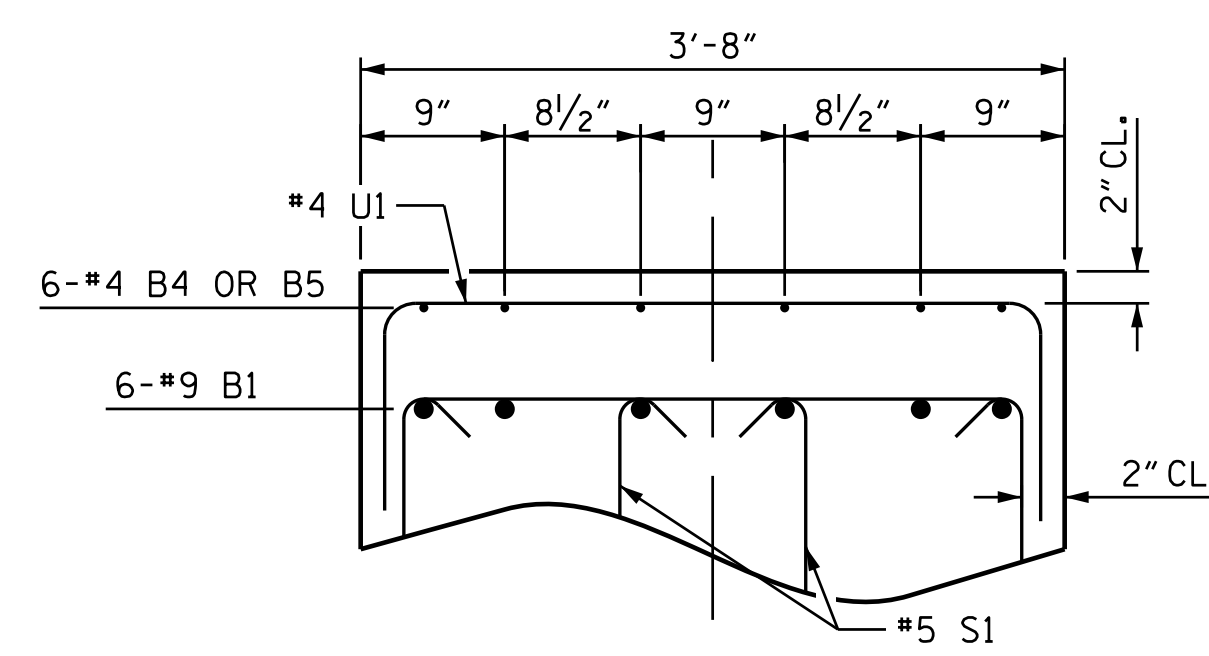
END ELEVATION



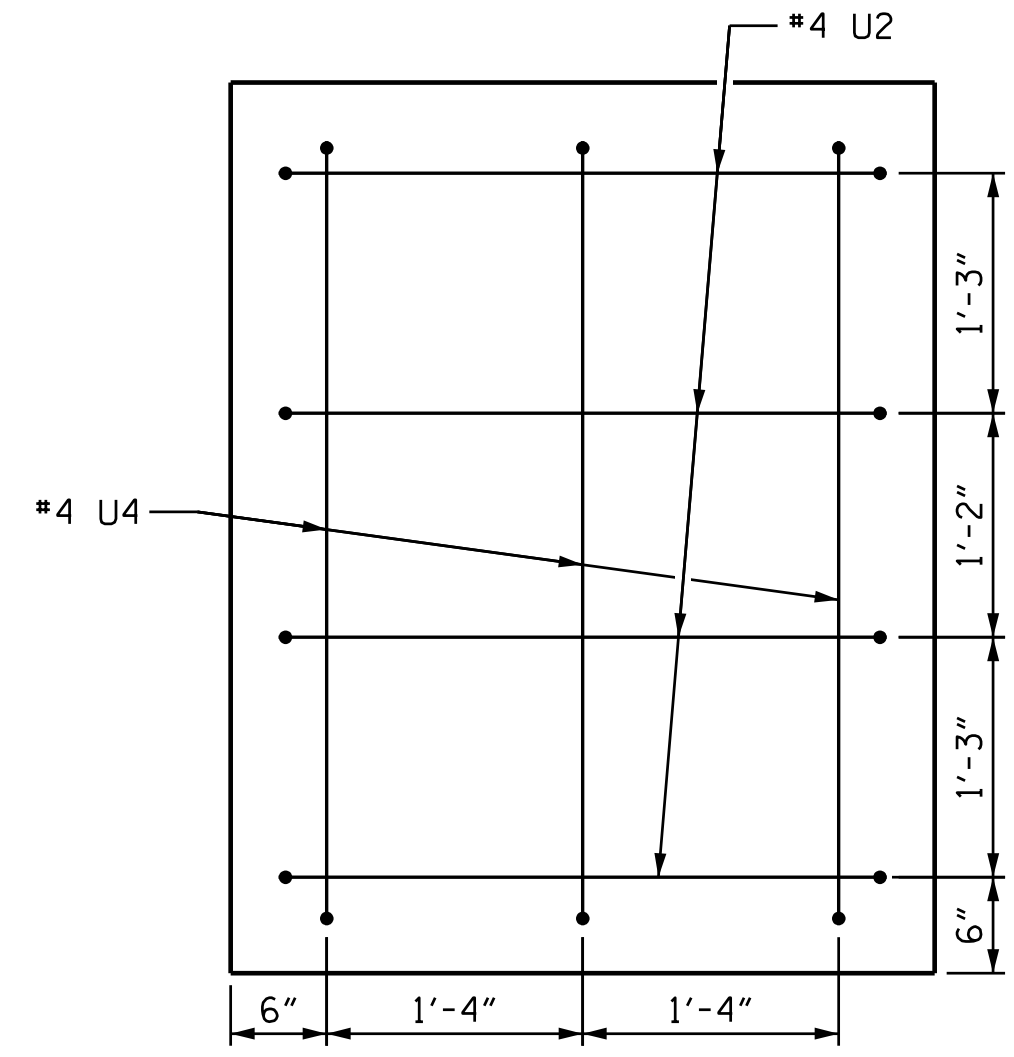
SECTION A-A



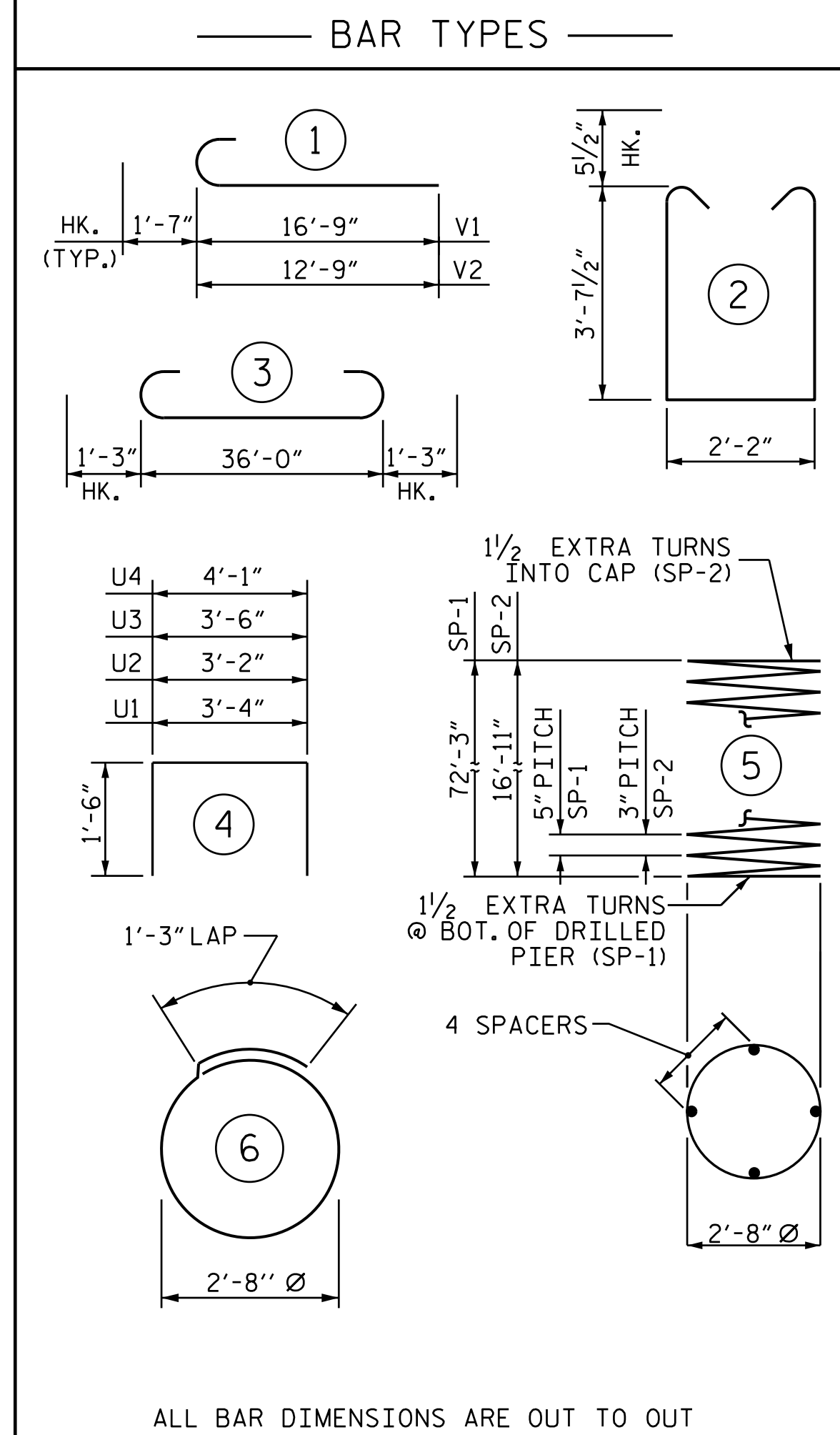
VIEW X-X



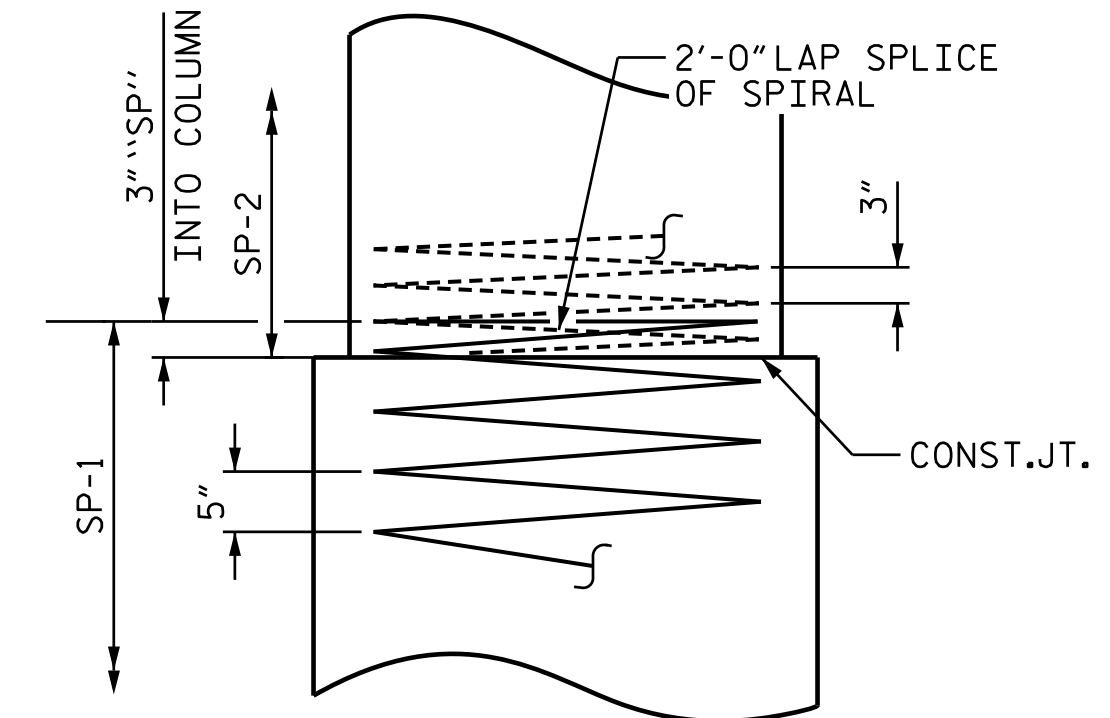
SECTION B-B



VIEW Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT



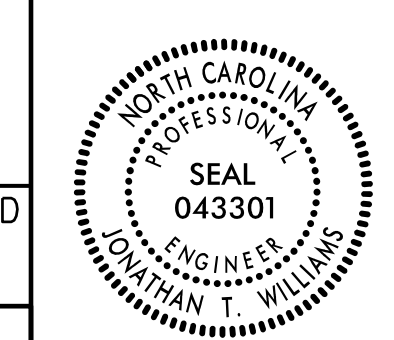
CONSTRUCTION JT. DETAIL

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	3	38'-6"	785
B2	6	#9	STR	36'-2"	738
B3	6	#4	STR	36'-2"	145
B4	12	#4	STR	12'-6"	100
B5	6	#4	STR	3'-9"	15
M1	42	#11	STR	37'-3"	8312
M2	42	#11	STR	39'-3"	8758
S1	88	#5	2	10'-4"	948
S2	15	#4	6	9'-8"	97
U1	38	#4	4	6'-4"	161
U2	7	#4	4	6'-2"	29
U3	3	#4	4	6'-6"	13
U4	3	#4	4	7'-1"	14
V1	21	#11	1	18'-4"	2046
V2	21	#11	1	14'-4"	1599
REINFORCING STEEL				=	23,760 LBS
SP-1	3	*	5	1439'-4"	4504
SP-2	3	*	5	569'-1"	1781
SPIRAL COLUMN REINFORCING STEEL				=	6,285 LBS
* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE BREAKDOWN: (FOR BENT 1)					
POUR #2 (COLUMNS)					13.1 C.Y.
POUR #3 (CAPS)					21.1 C.Y.
TOTAL CLASS A CONCRETE					34.2 C.Y.
DRILLED PIERS: (FOR BENT 1)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					77.8 C.Y.

PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 2 OF 2

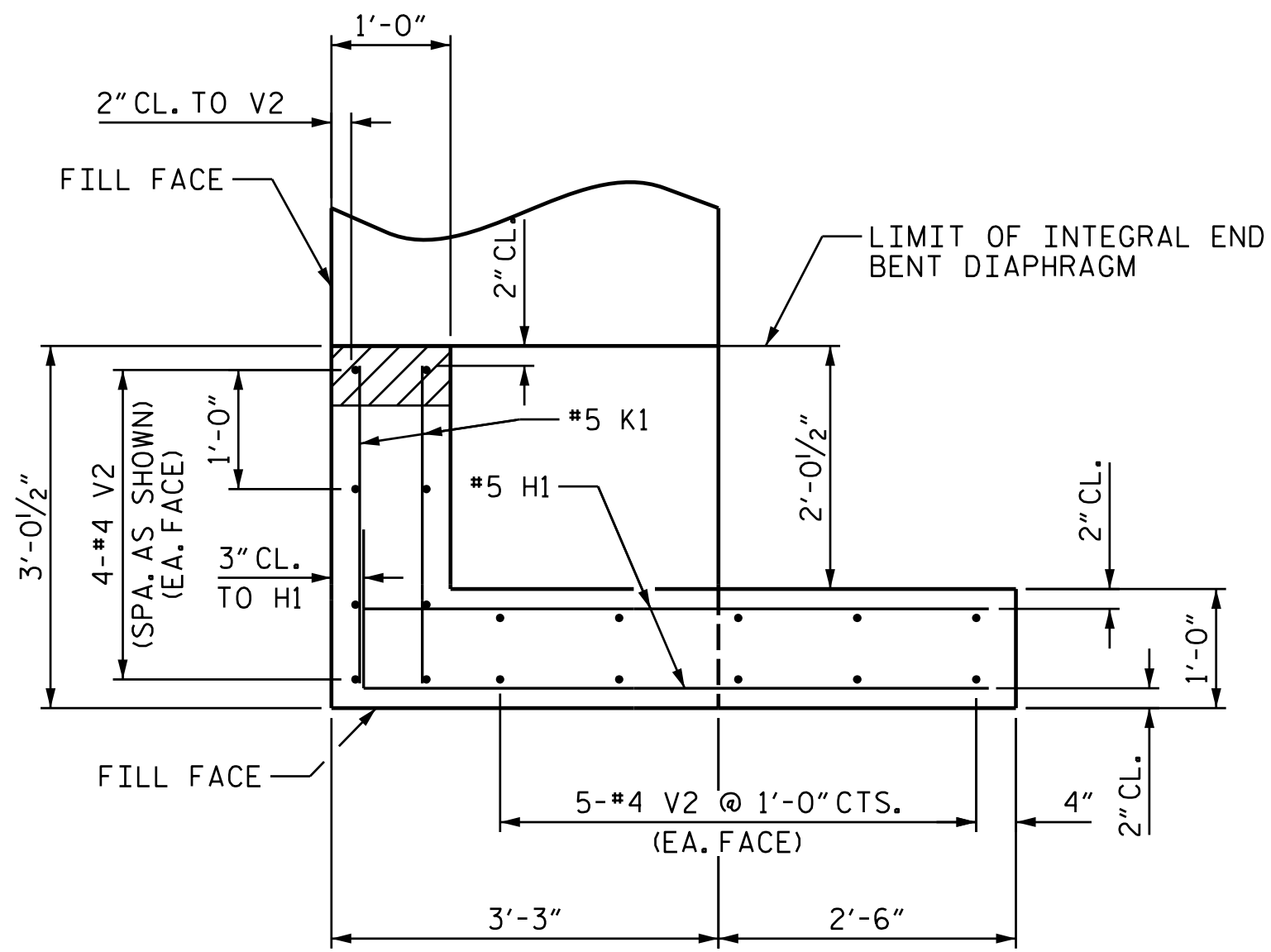
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1 DETAILS



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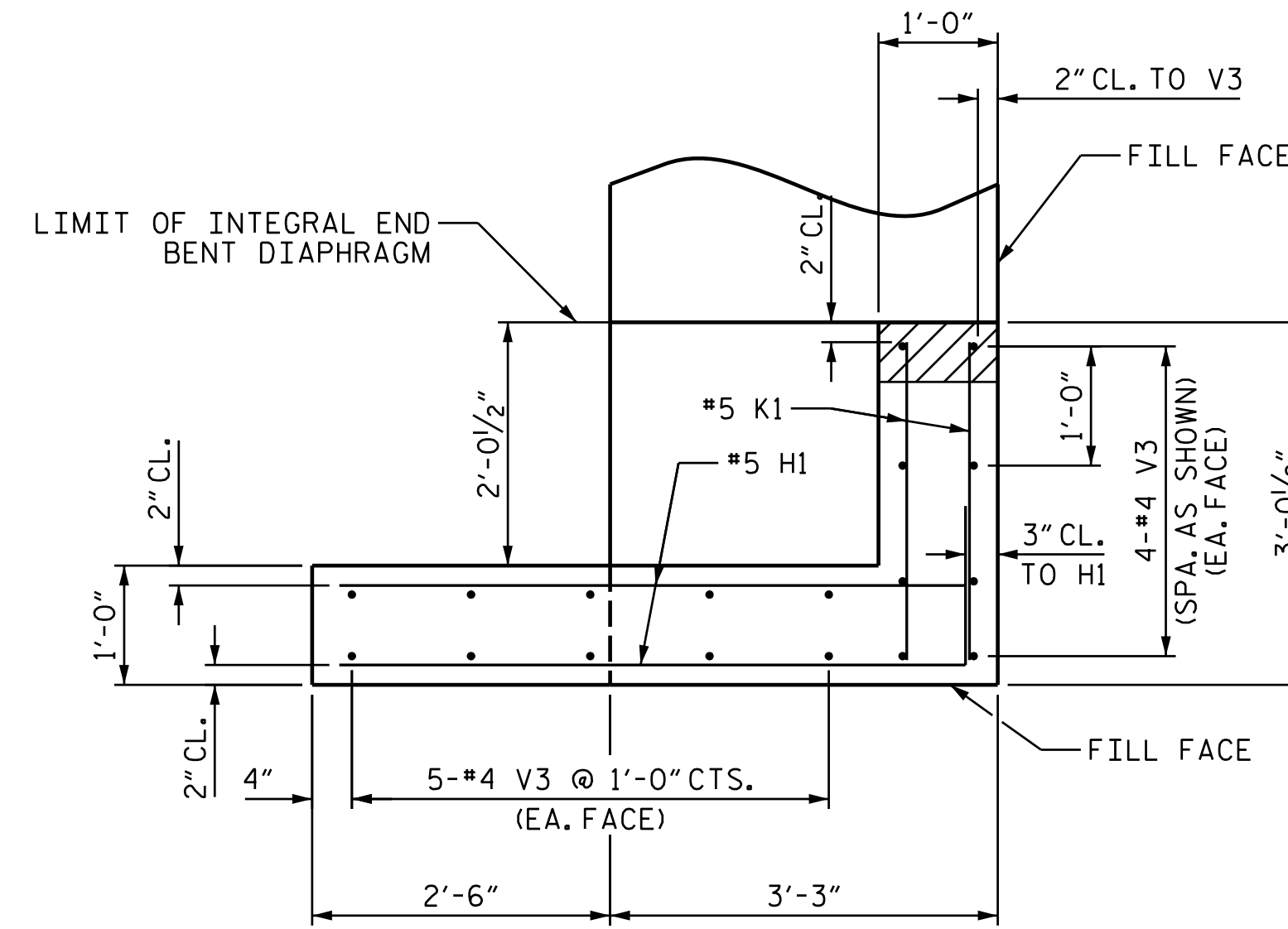
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SHEET NO.
 S4-23
 TOTAL SHEETS
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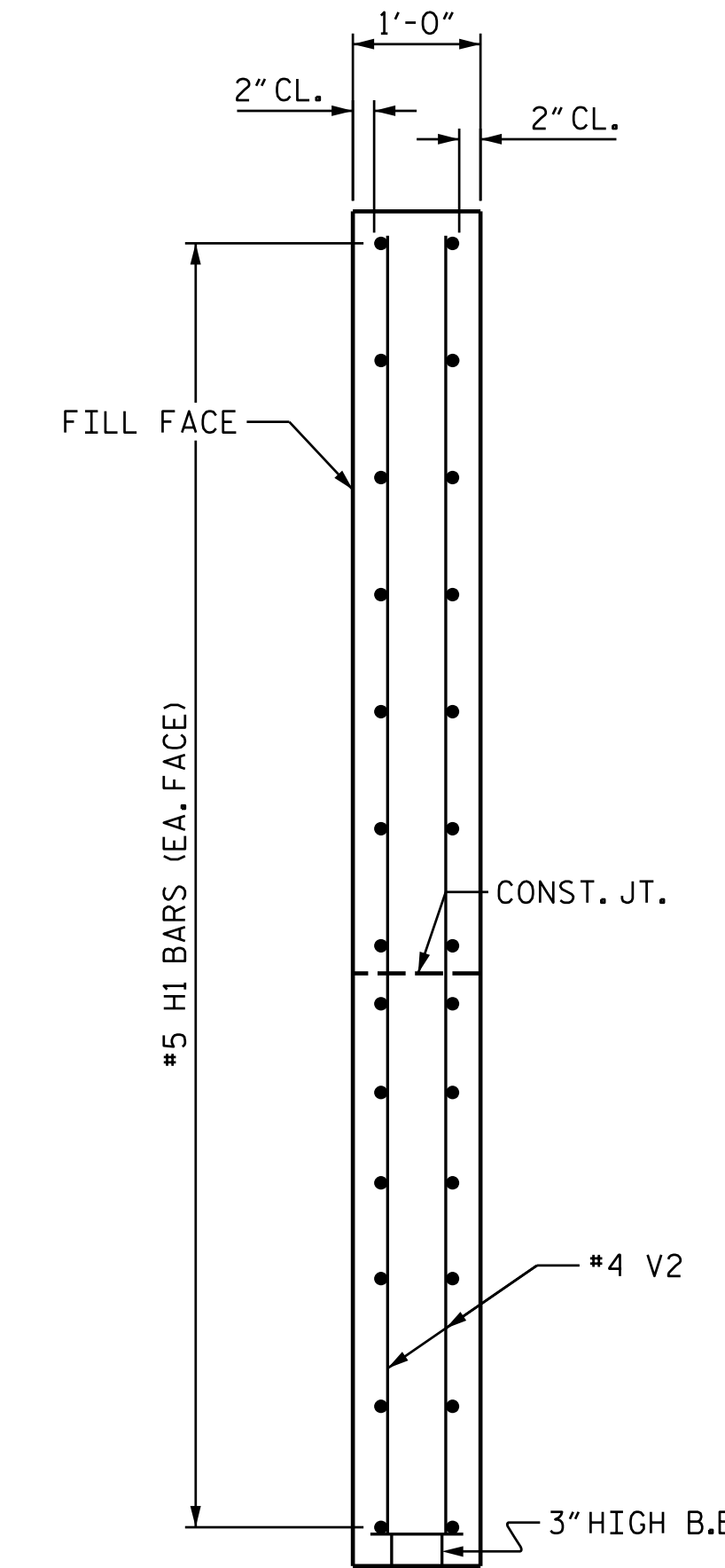
PLAN OF WING W3

SEE NOTES ON SHEET 1 OF 3

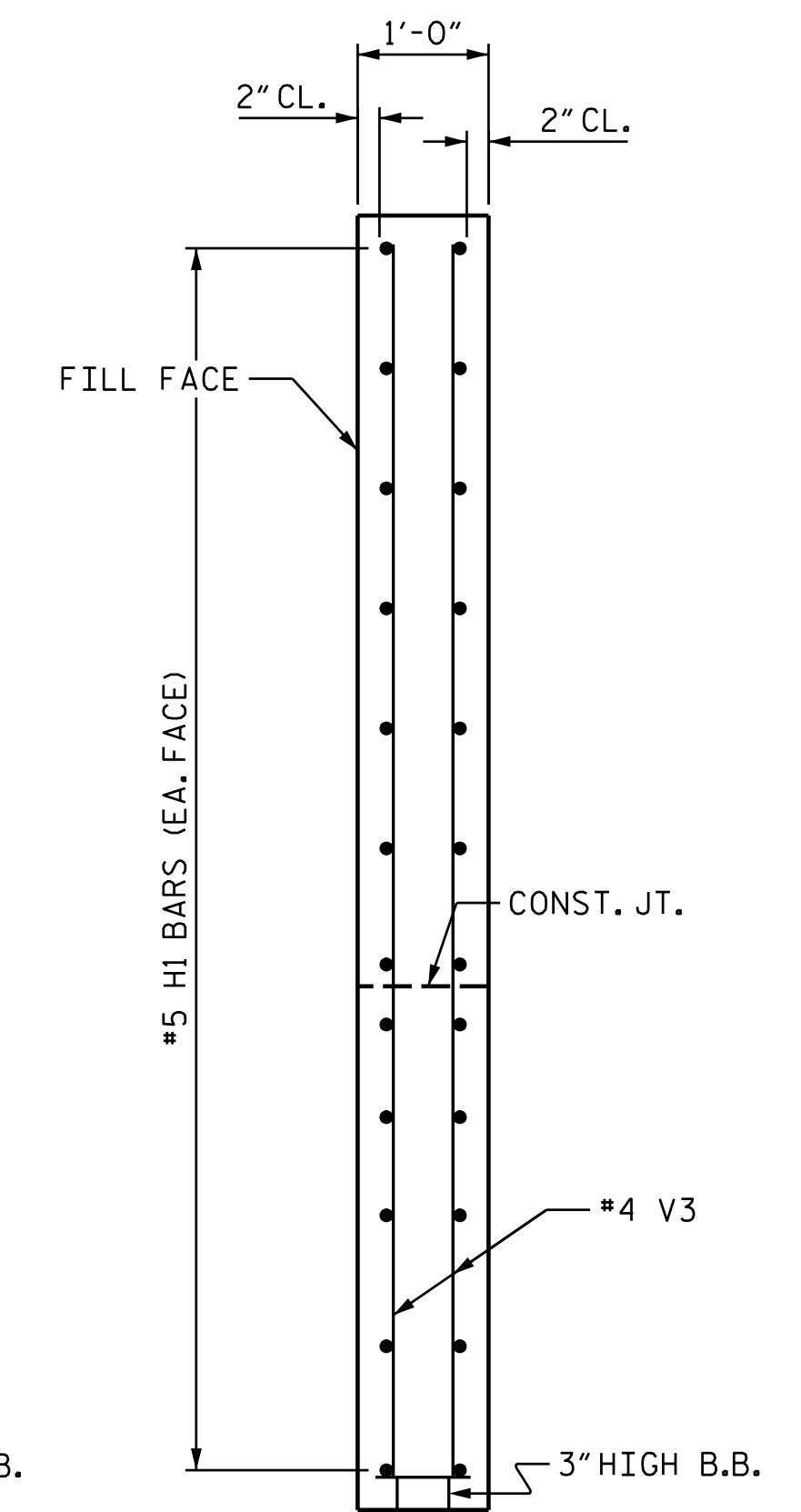


PLAN OF WING W4

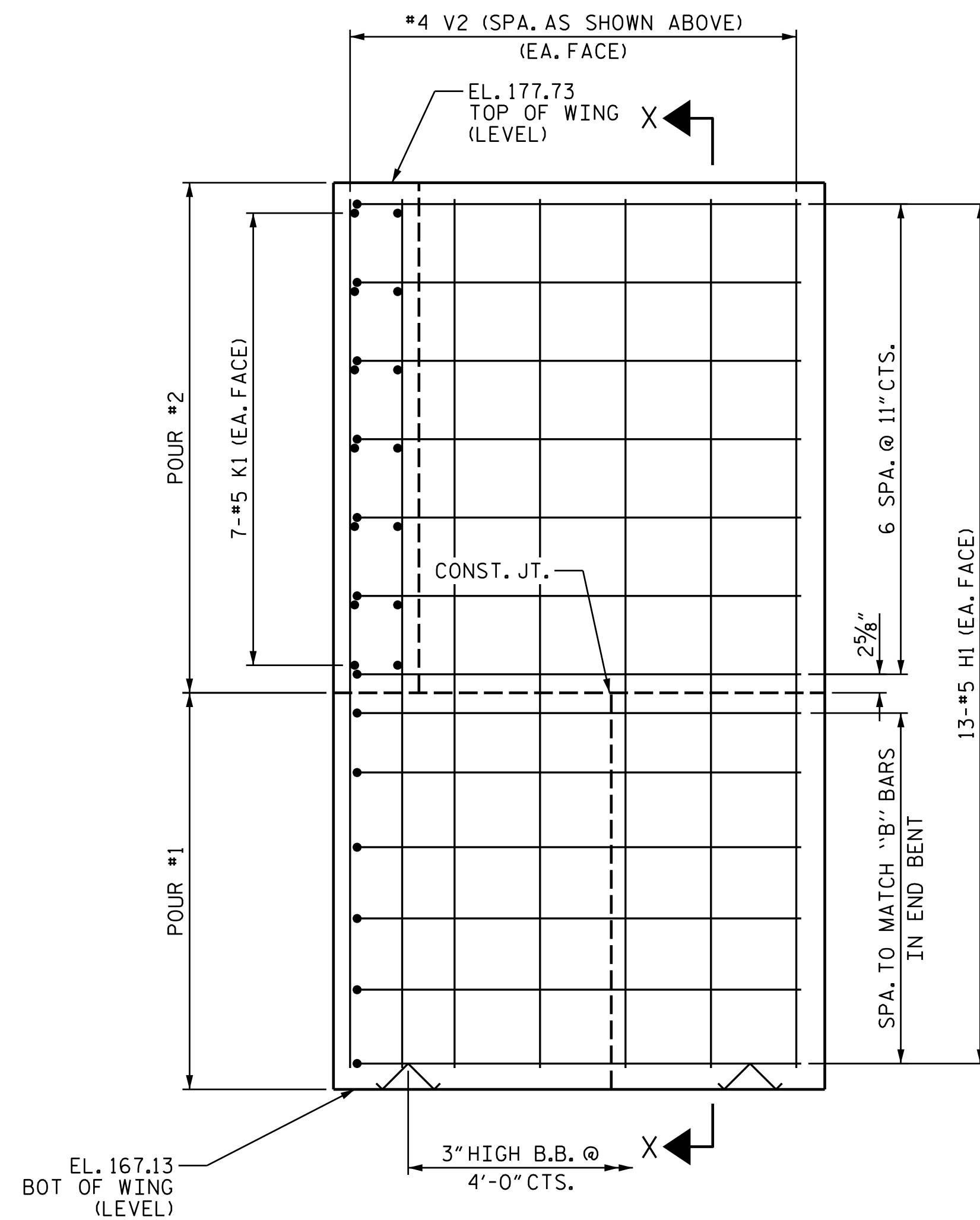
SEE NOTES ON SHEET 1 OF 3



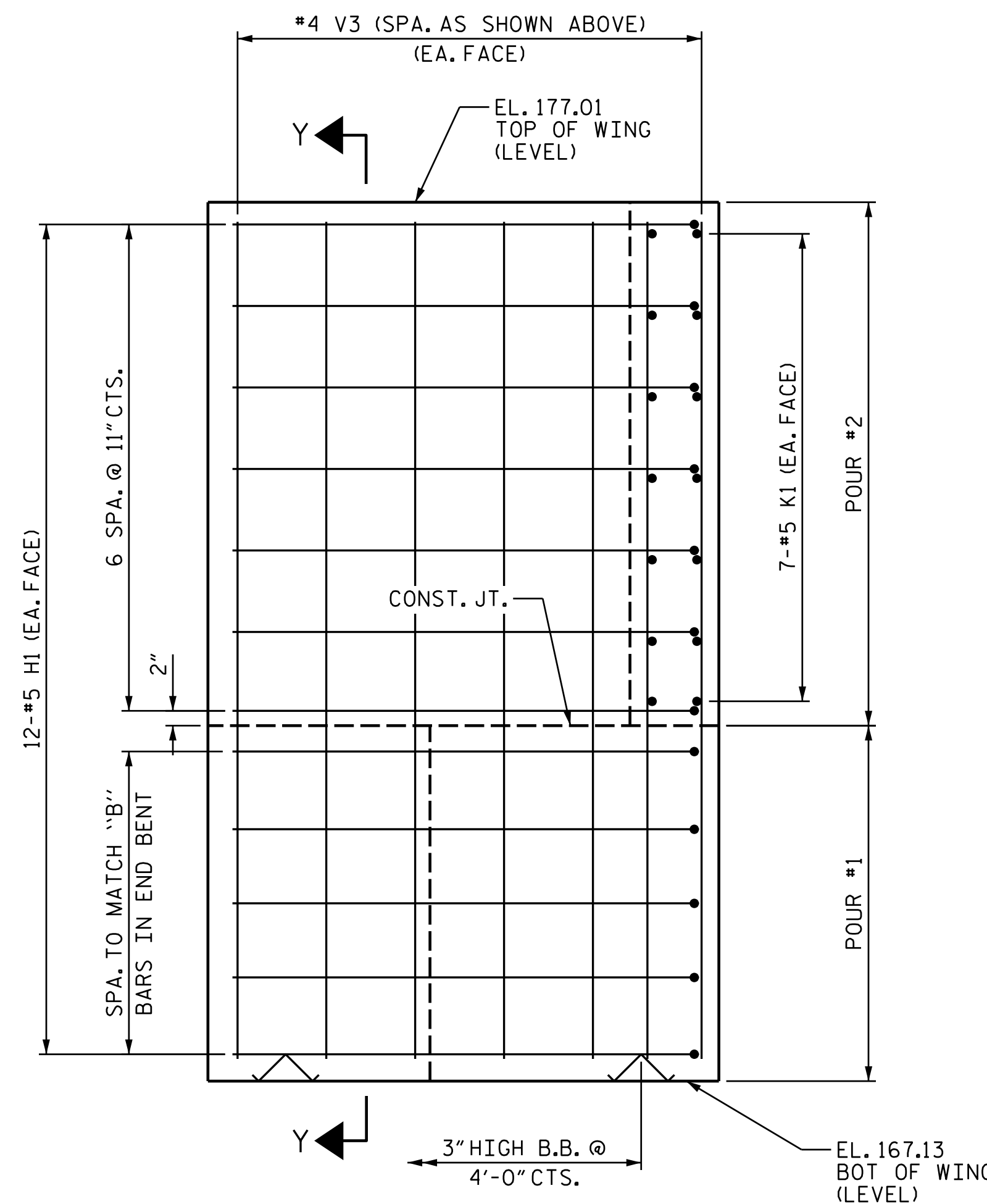
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W3

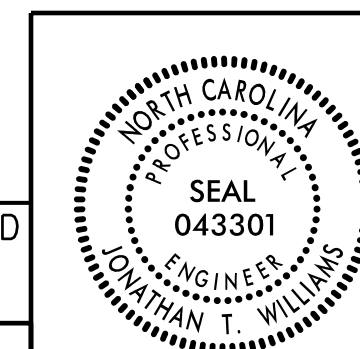


ELEVATION OF WING W4

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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 SUBSTRUCTURE
 END BENT 2



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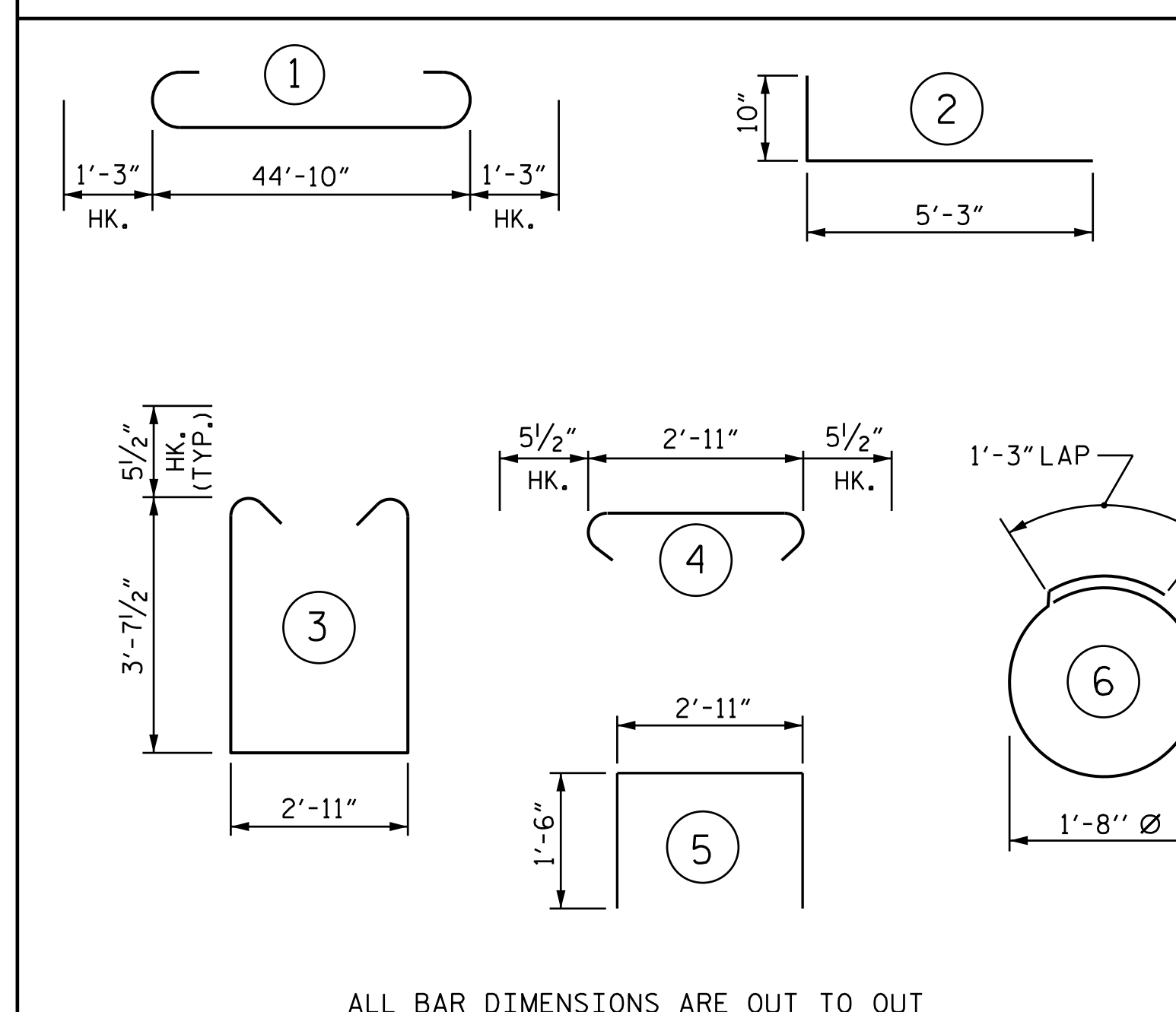
DRAWN BY: R. L. DICKE DATE: 8-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

BILL OF MATERIAL

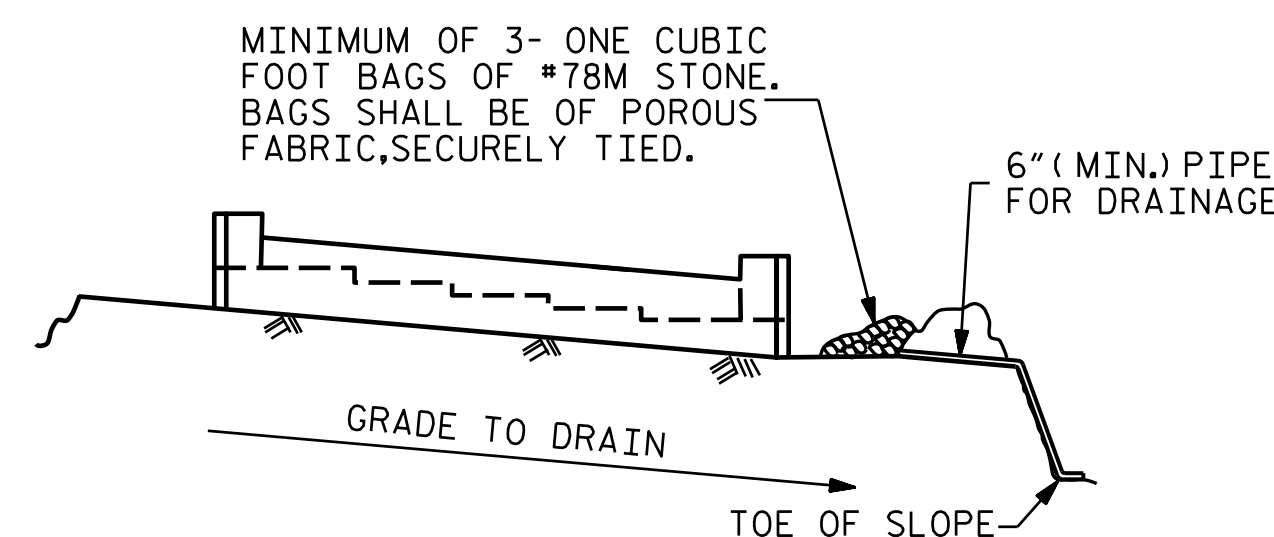
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-4"	1287
B2	20	#4	STR	23'-9"	317
B3	4	#4	STR	13'-1"	35
B4	4	#4	STR	8'-0"	21
B5	13	#4	STR	2'-11"	25
H1	50	#5	2	6'-1"	317
K1	28	#5	STR	2'-8"	78
S1	70	#5	3	11'-1"	809
S2	70	#5	4	3'-10"	280
S3	28	#4	6	6'-6"	122
U1	13	#4	5	5'-11"	51
V1	74	#4	STR	6'-2"	305
V2	18	#4	STR	10'-2"	122
V3	18	#4	STR	9'-5"	113
REINFORCING STEEL				=	3882 LBS
CLASS A CONCRETE:					
POUR #1: CAP, LOWER PART OF WINGS				24.1 C.Y.	
POUR #2: UPPER PART OF WINGS				3.4 C.Y.	
TOTAL CLASS A CONCRETE				27.5 C.Y.	

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



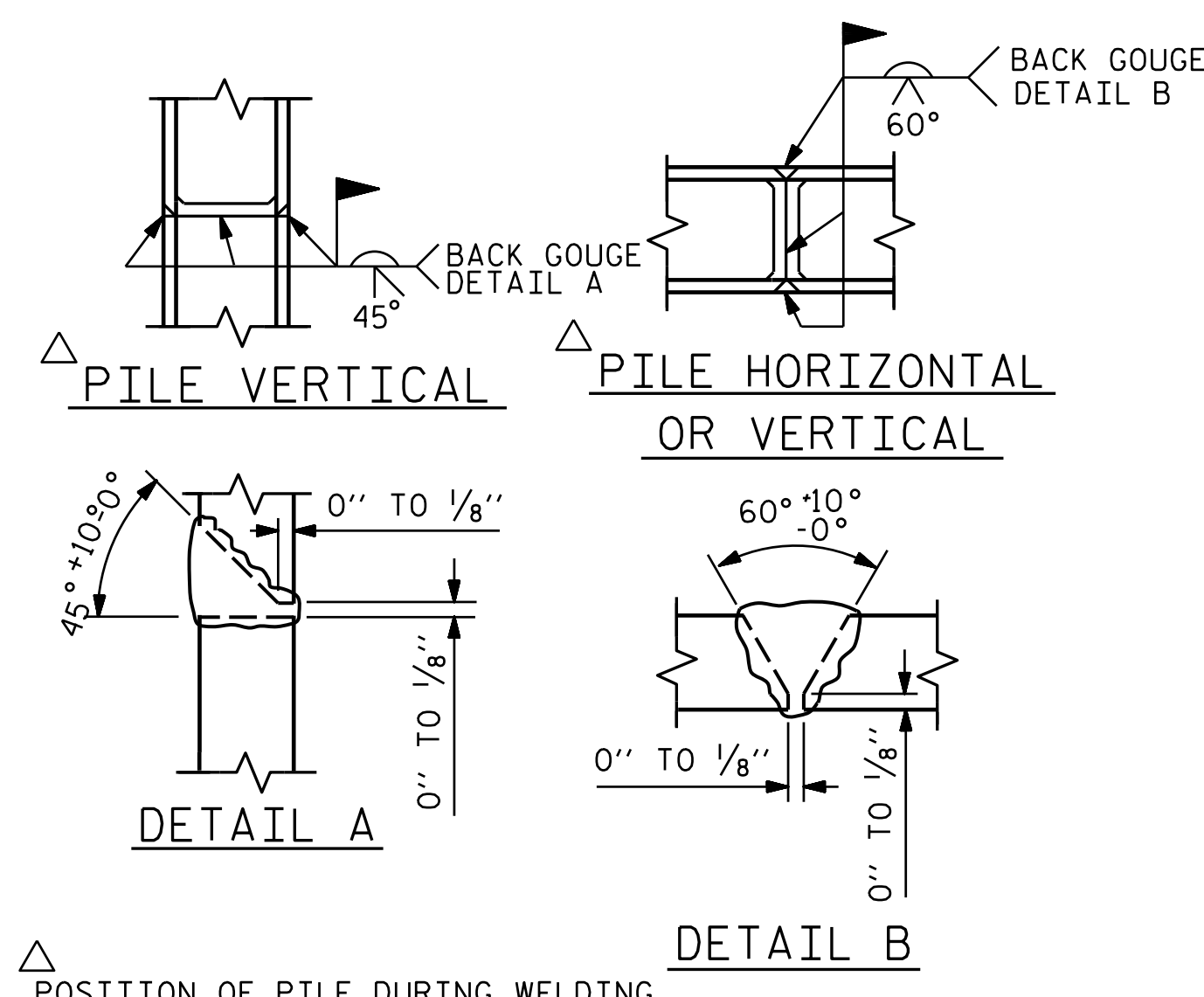
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

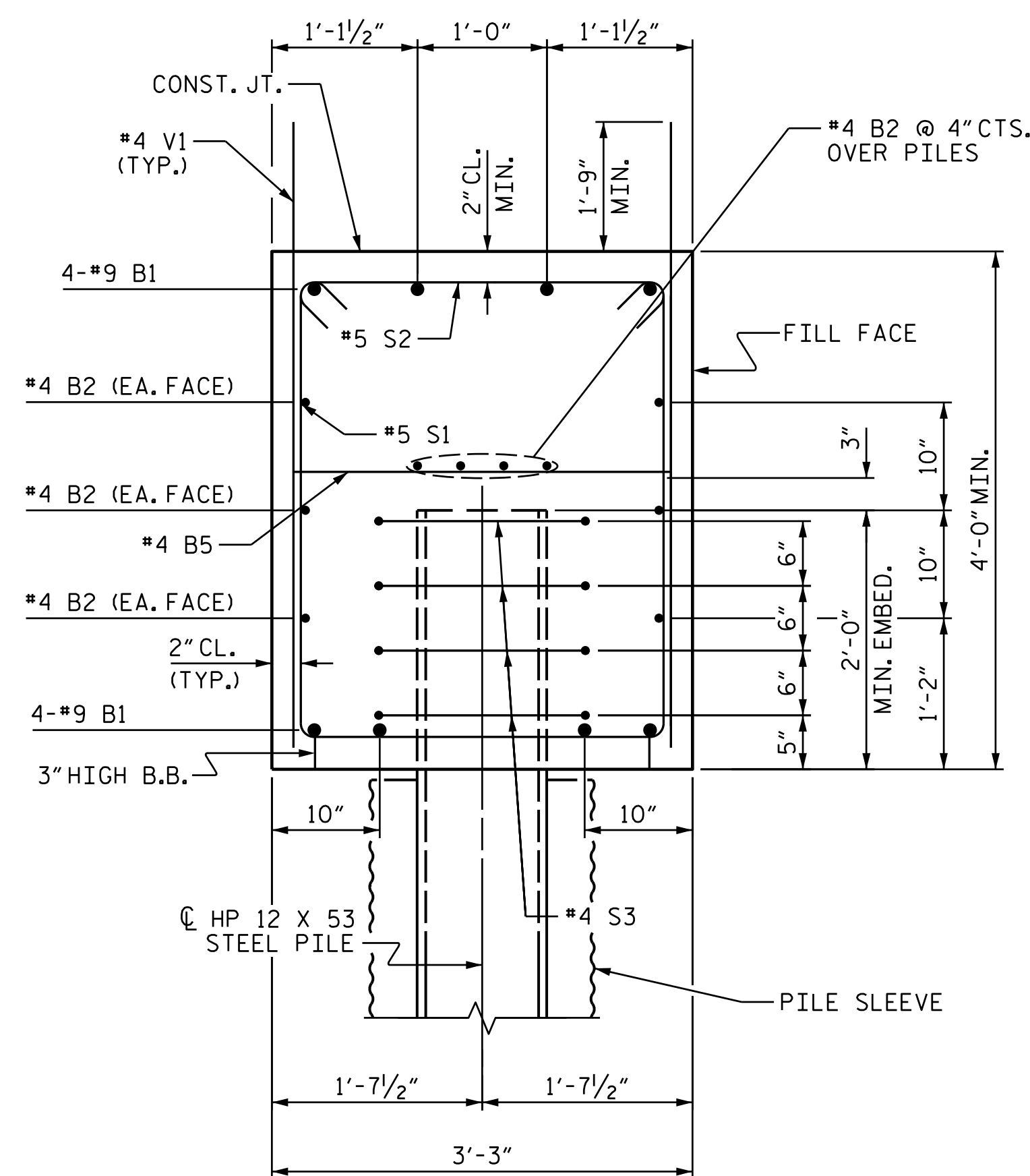
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

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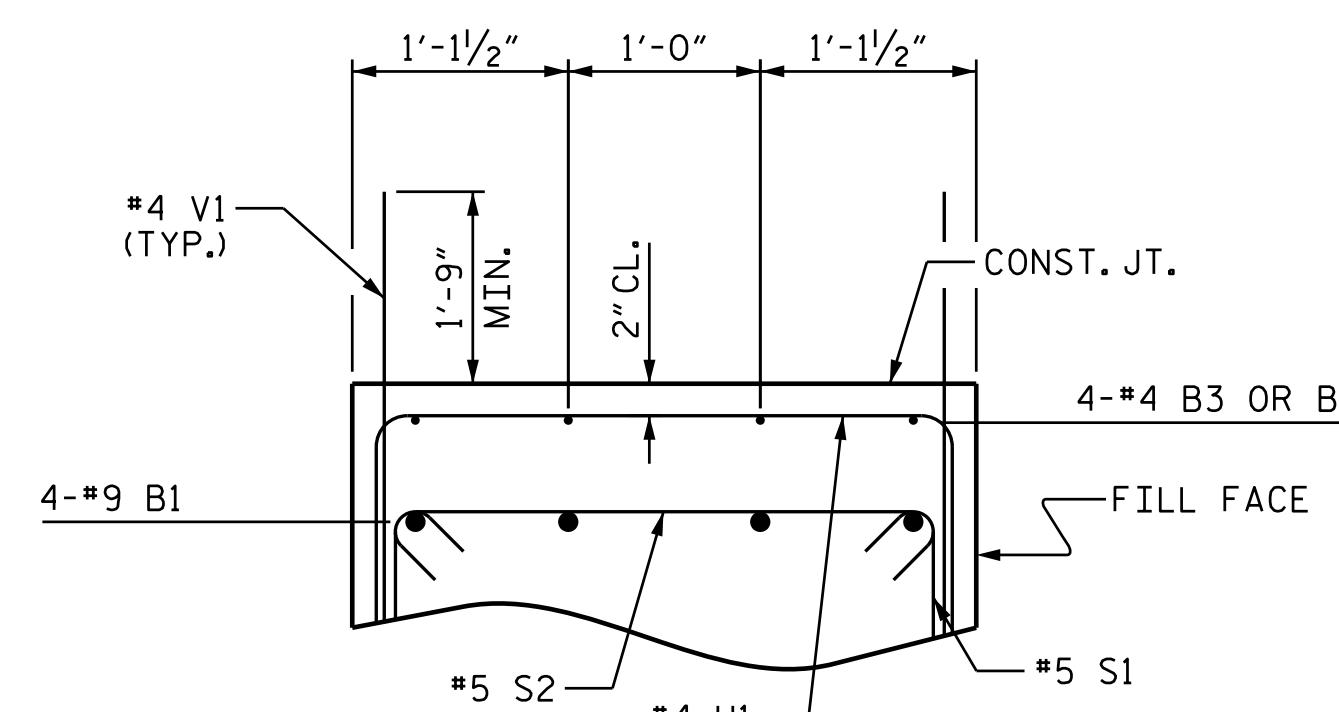
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



SECTION A-A

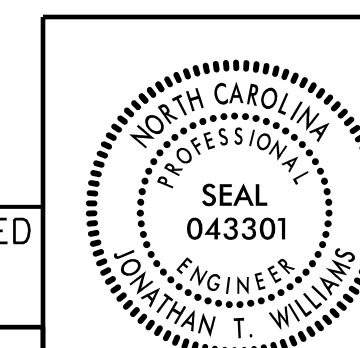


SECTION B-B

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 3 OF 3

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



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SHEET NO. S4-26
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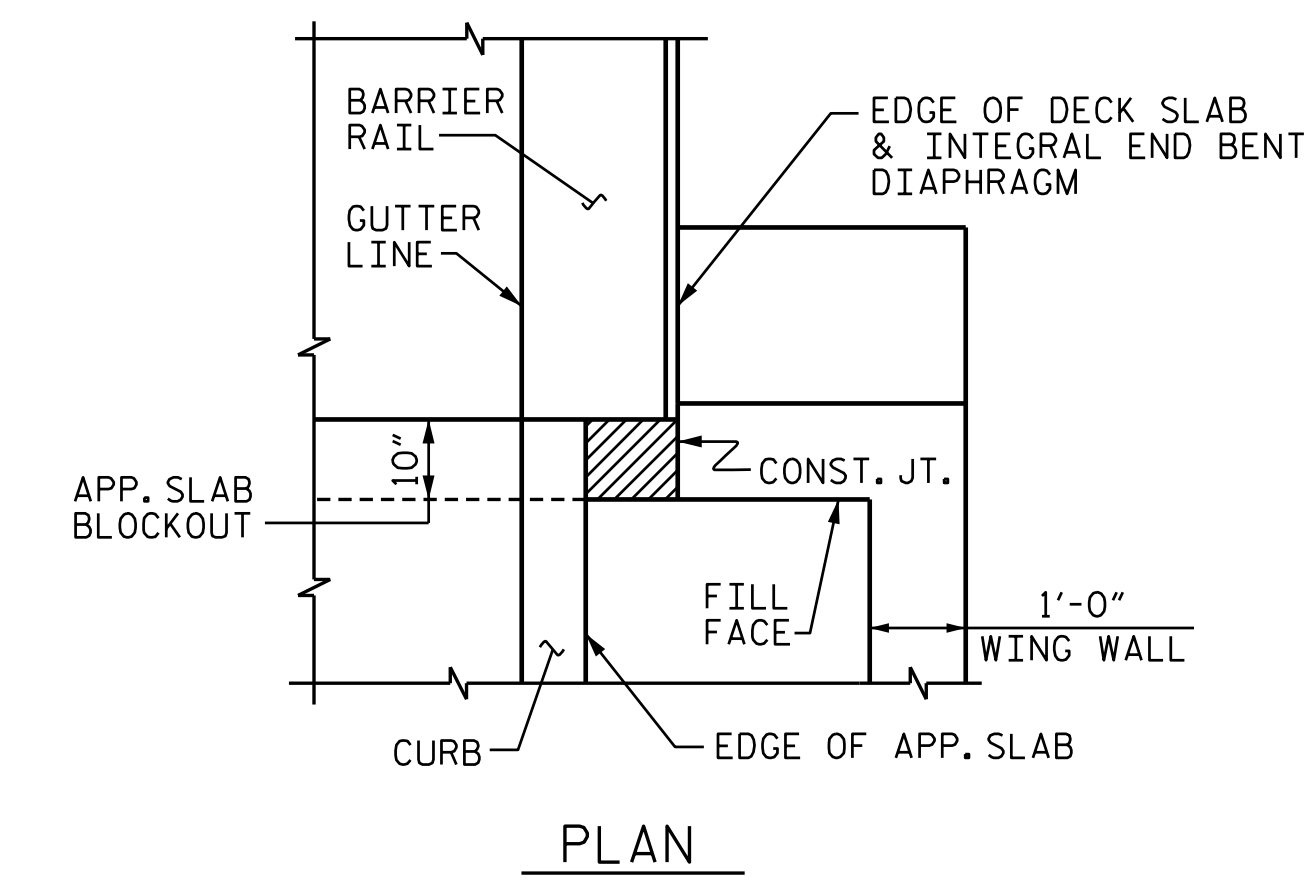
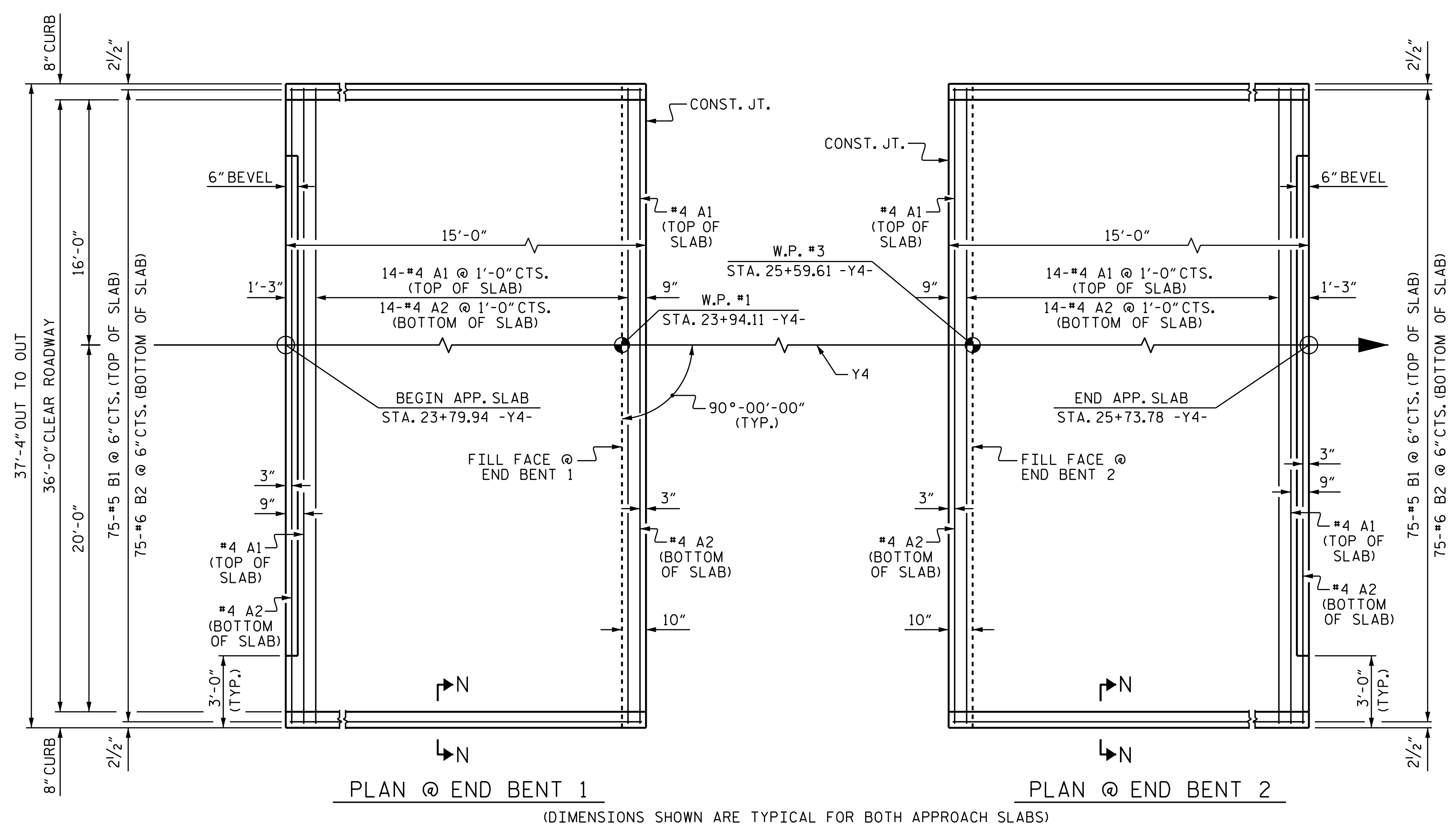
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DRAWN BY: R. L. DICKE DATE: 8-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

NOTES
SEE SHEET 2 OF 2 FOR APPROACH FILL REQUIREMENTS.

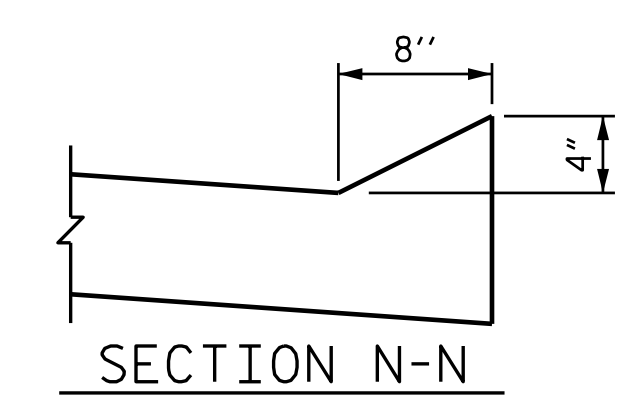
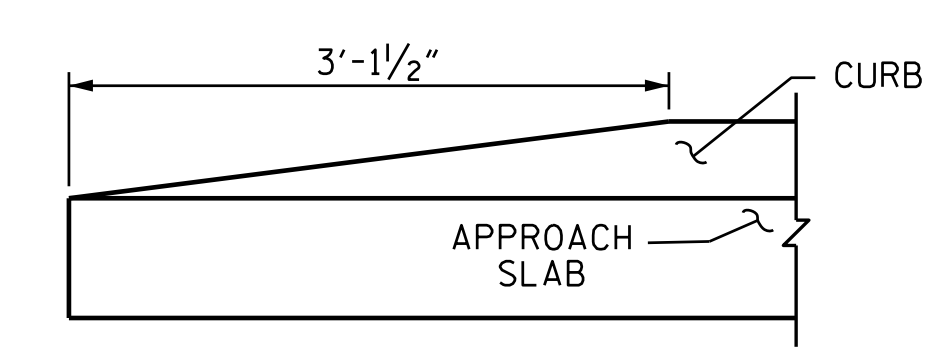
BILL OF MATERIAL						
FOR ONE APPROACH SLAB (2 REQ'D)						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	16	#4	STR	37'-0"	395	
A2	16	#4	STR	37'-0"	395	
* B1	75	#5	STR	14'-3"	1115	
B2	75	#6	STR	14'-7"	1643	
REINFORCING STEEL				LBS.	2038	
* EPOXY COATED REINFORCING STEEL				LBS.	1510	
CLASS AA CONCRETE				C. Y.	24.2	

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



APPROACH SLAB BLOCKOUT

THE CONCRETE IN THE SHADED AREA SHALL BE POURED ALONG WITH APPROACH SLAB CONSTRUCTION AND AFTER BARRIER RAIL HAS BEEN CAST IF SLIP FORMING IS USED.



END OF CURB WITHOUT SHOULDER BERM GUTTER

SECTION N-N

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 24+76.86 -Y4-

SHEET 1 OF 2

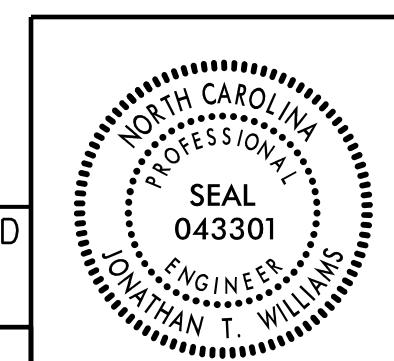
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-28
1			3			TOTAL SHEETS
2			4			29

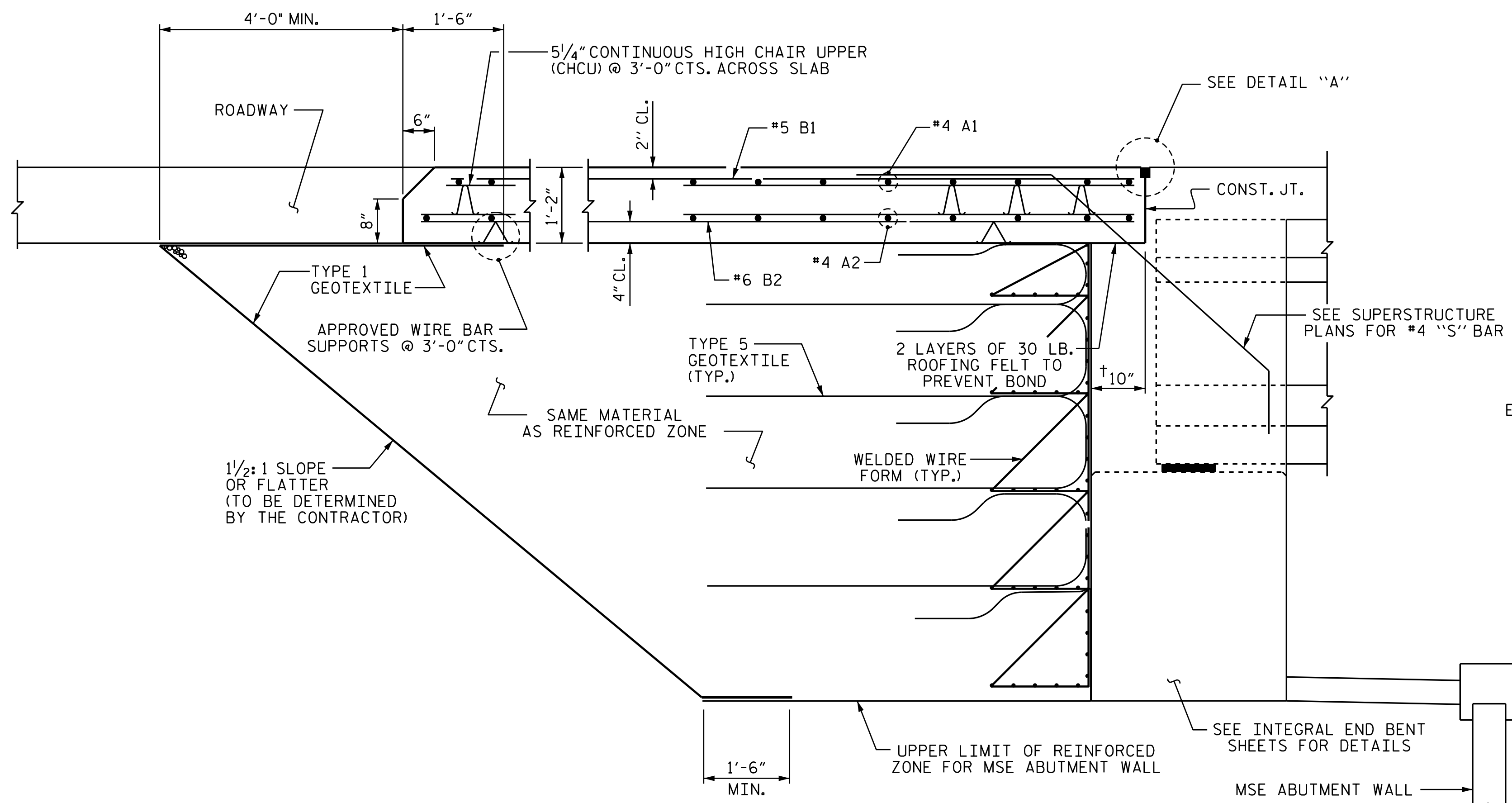
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PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

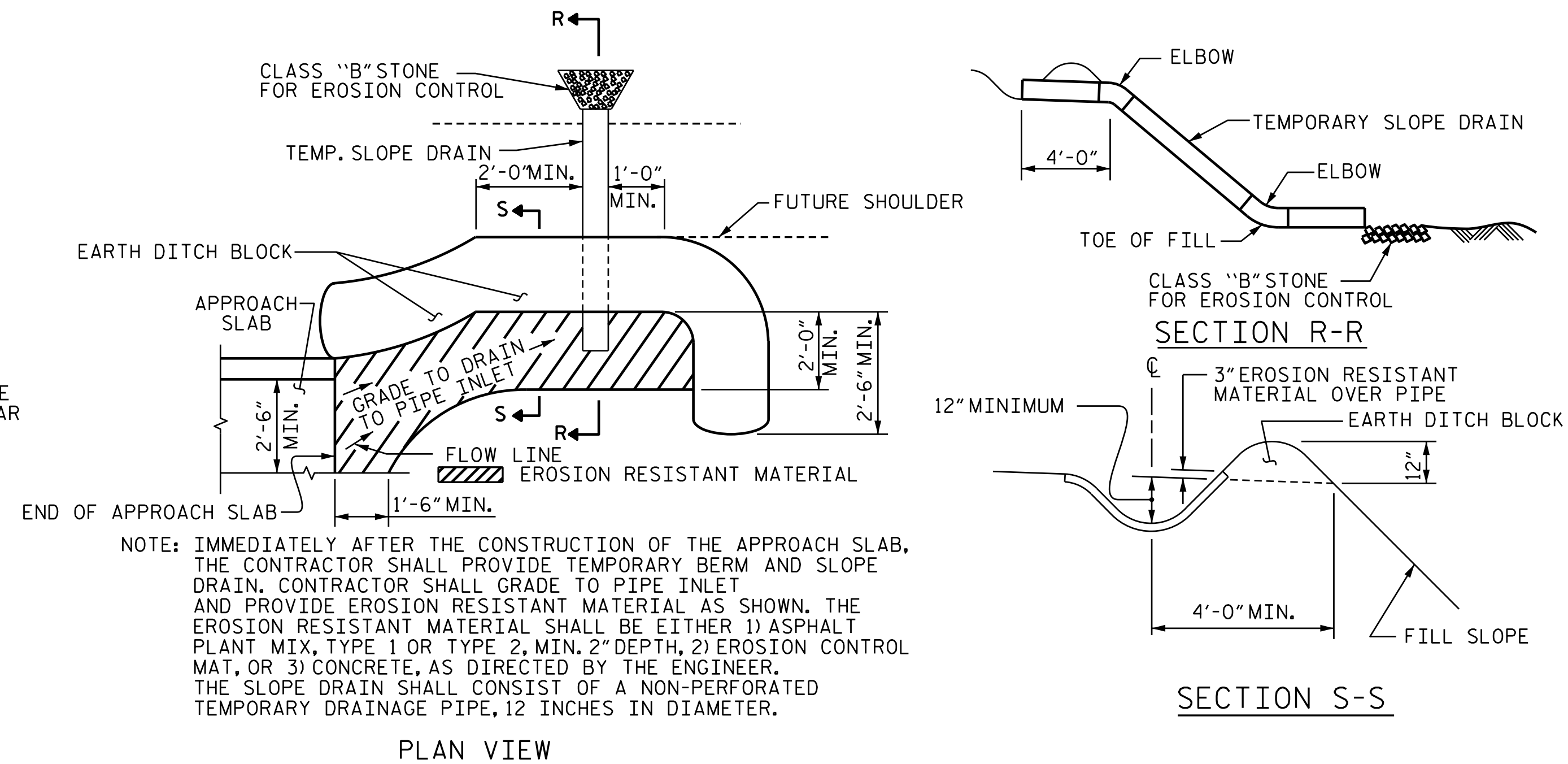
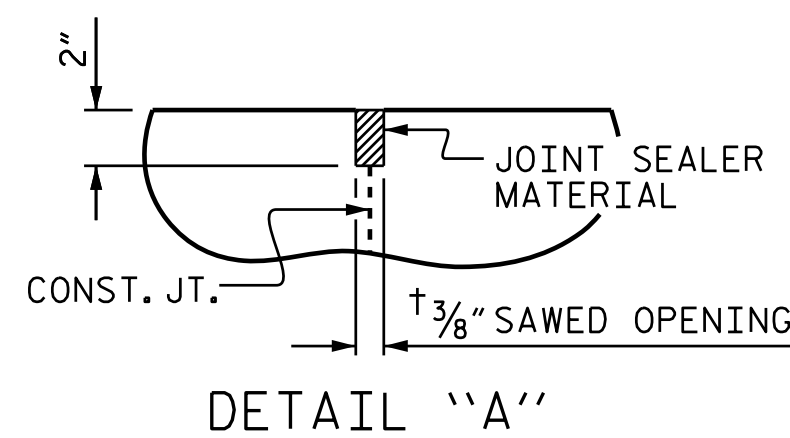


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DRAWN BY: R. L. DICKE DATE: 8-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021

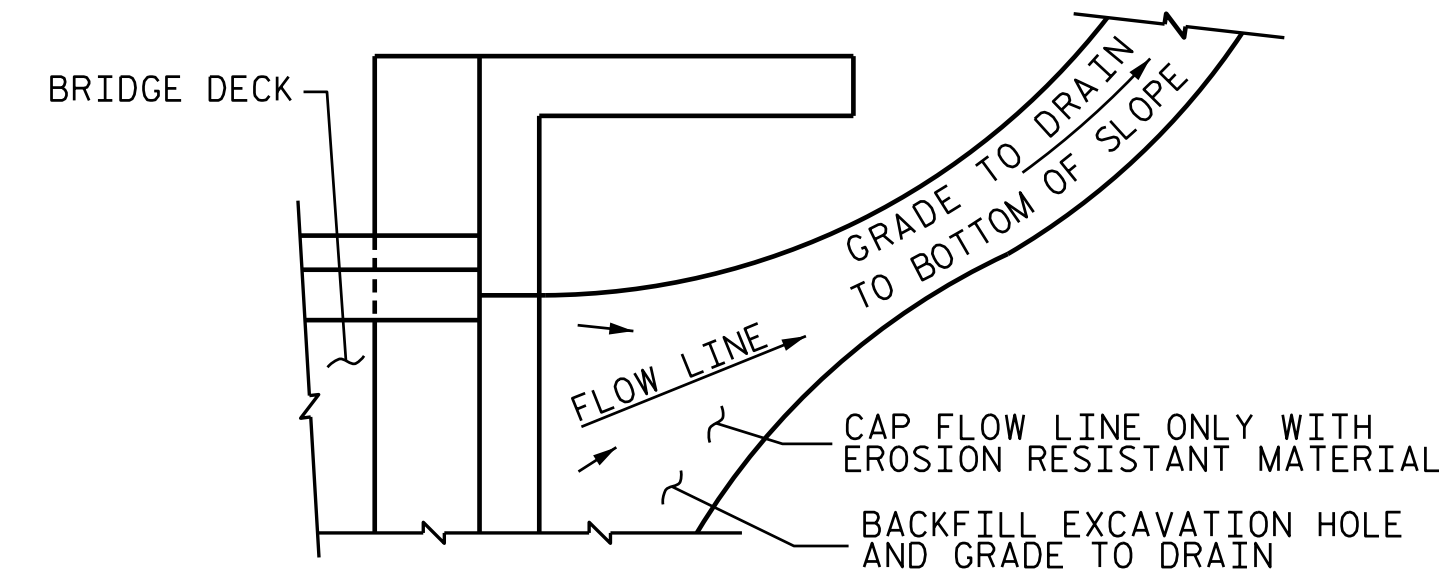


SECTION THRU SLAB
(SPECIAL BRIDGE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SPECIAL BRIDGE APPROACH FILL, SEE SPECIAL PROVISIONS.

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 24+76.86 -Y4-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS

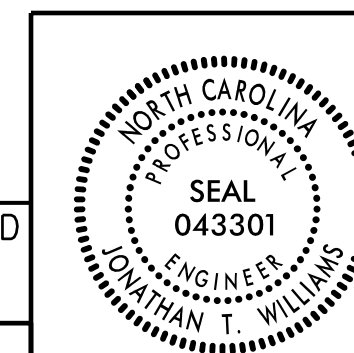
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SHEET NO.
 S4-29
 TOTAL SHEETS
 29

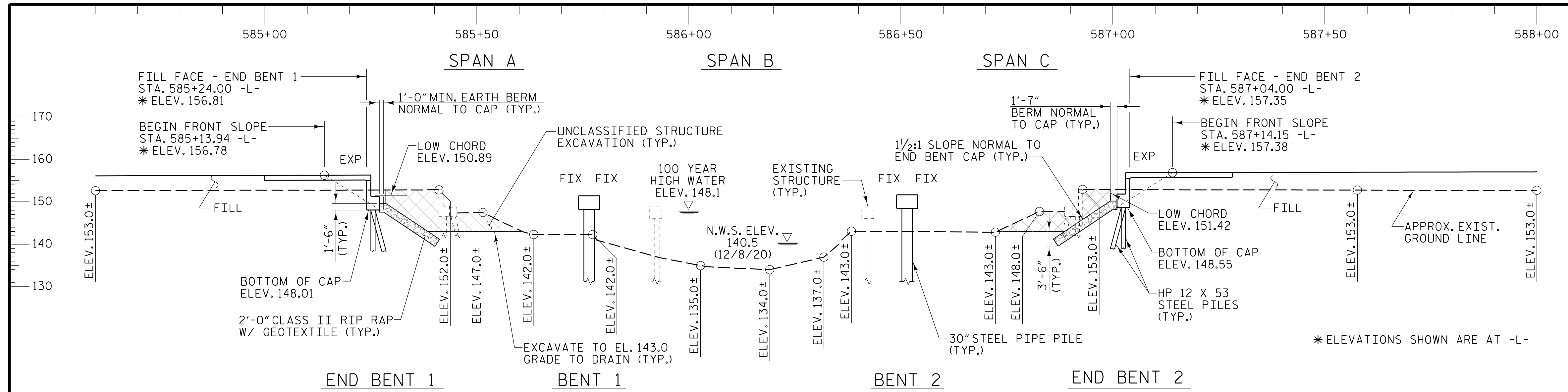
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DRAWN BY: R. L. DICKE DATE: 8-2021
 CHECKED BY: J. M. ROBINSON DATE: 8-2021
 DESIGN ENGINEER OF RECORD: J. T. WILLIAMS DATE: 8-2021



(+) 0.3000%	(-) 0.4075%
P.V.I. 588+60.00	
ELEV. 157.82	
VC 280.0'	
-VERTICAL CURVE DATA-	
-L- (NBL) & -L- (SBL)	

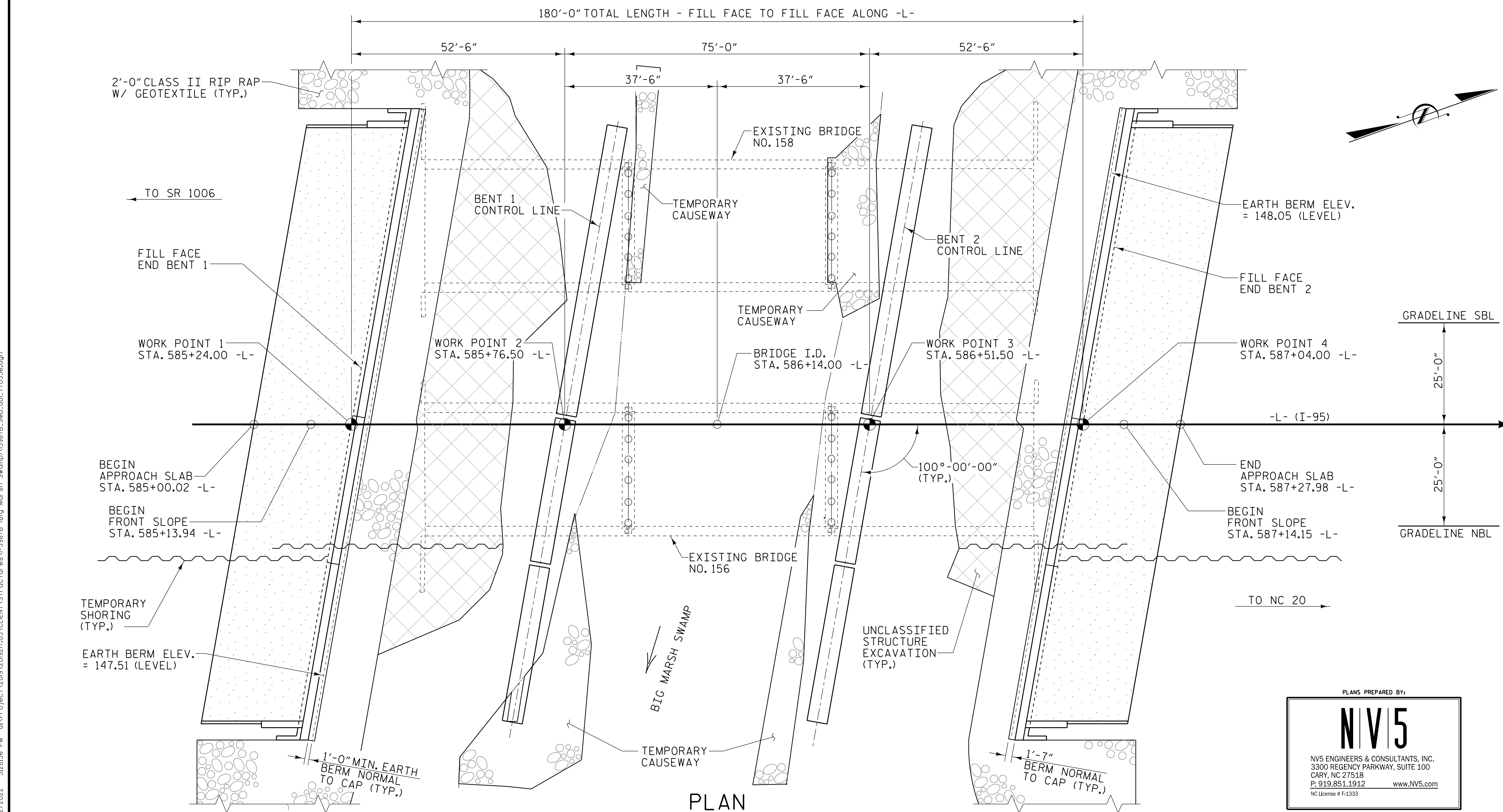
HYDRAULIC DATA:

DESIGN DISCHARGE -	4500 CFS
FREQUENCY OF DESIGN DISCHARGE -	100 YEAR
DESIGN HIGH WATER ELEVATION -	148.1
DRAINAGE AREA -	48.3 SQ. MI.
BASE DISCHARGE (Q 100) -	4500 CFS
BASE HIGH WATER ELEVATION -	148.1

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE -	17000 CFS
FREQUENCY OF OVERTOPPING FLOOD -	500+ YEAR
OVERTOPPING FLOOD ELEVATION -	153.9

OVERTOPPING OCCURS AT SAG AT -L- SB- STA. 575+00 LT.



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 1 OF 6 BRIDGE NO. 770536

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON I-95
 OVER BIG MARSH SWAMP
 BETWEEN SR 1006 AND NC 20

PLANS PREPARED BY:

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.nv5.com
 NC License # F-1333



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-1
1			3			TOTAL SHEETS
2			4			64

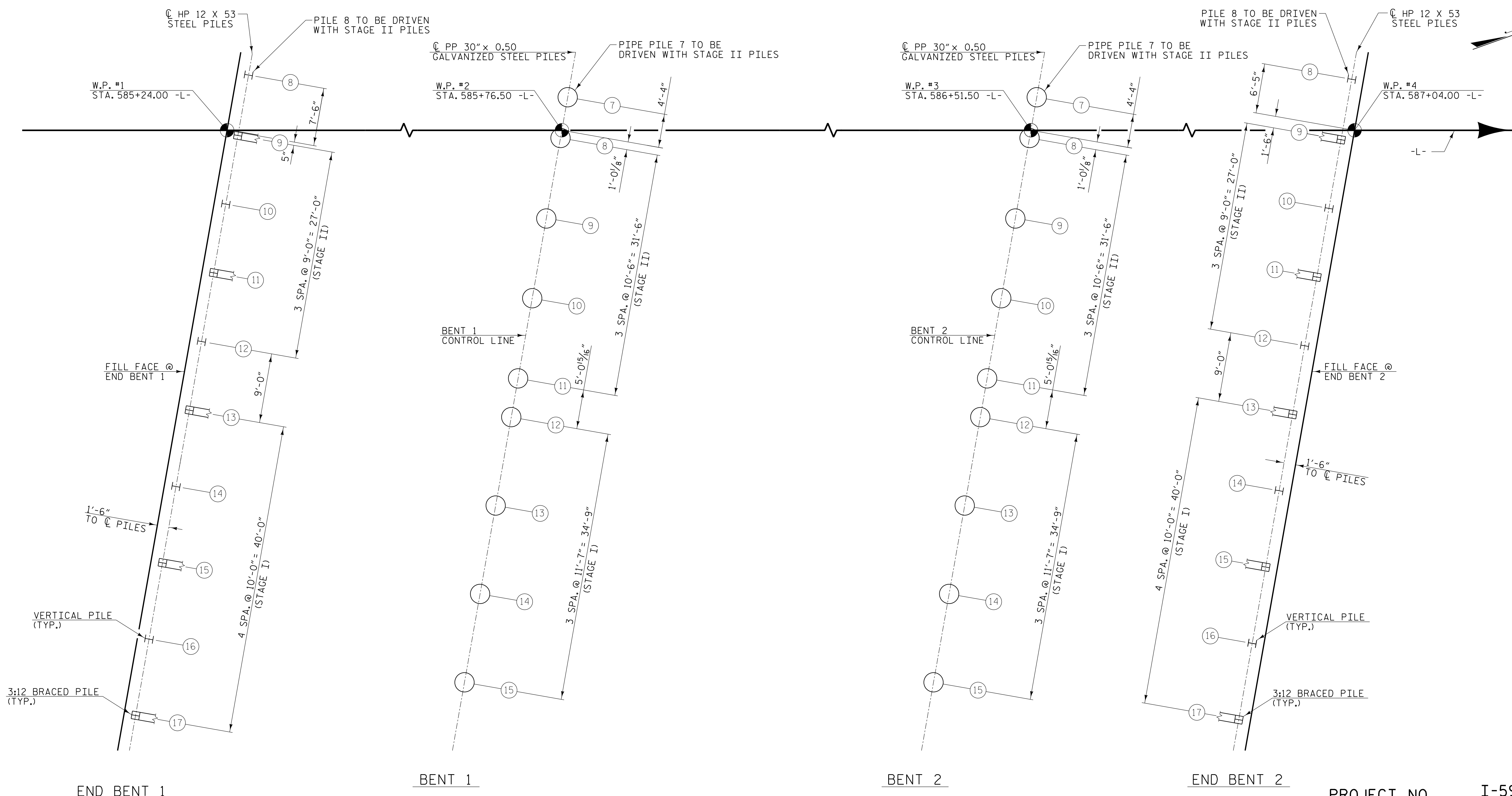
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DRAWN BY : W. B. ALLEN DATE : 4/21
 CHECKED BY : G. F. WILSON DATE : 5/21
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

(NOTE: PILES NOT SHOWN FOR CLARITY)

**DOCUMENT NOT CONSIDERED FINAL
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4/24/2022



FOUNDATION LAYOUT
STAGE I & II

NOTES

- FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- ALL DIMENSIONS ARE PARALLEL OR NORMAL TO CL BENT LINES AND FILL FACES.
- ALL PILE DIMENSIONS ARE CENTERS OF PILES AT BOTTOM OF END BENT AND BENT CAPS.
- FOR FOUNDATION ELEVATIONS AND DETAILS, SEE BENT AND END BENT SHEETS.
- SEE GEOTECHNICAL FOUNDATION TABLES FOR MORE INFORMATION ON DRIVEN PILES.
- OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 125 KIPS-FT PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 AND NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

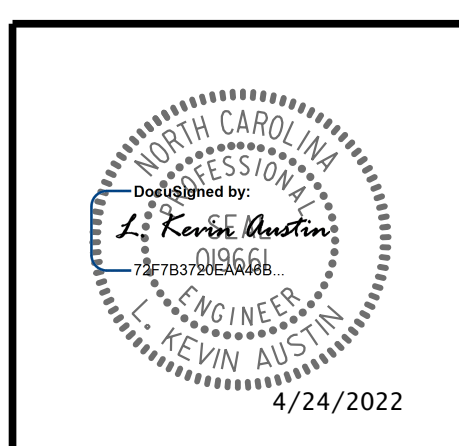
DRAWN BY : J. A. PANDOLI DATE : 2/22
 CHECKED BY : G. F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

PLANS PREPARED BY:

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PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

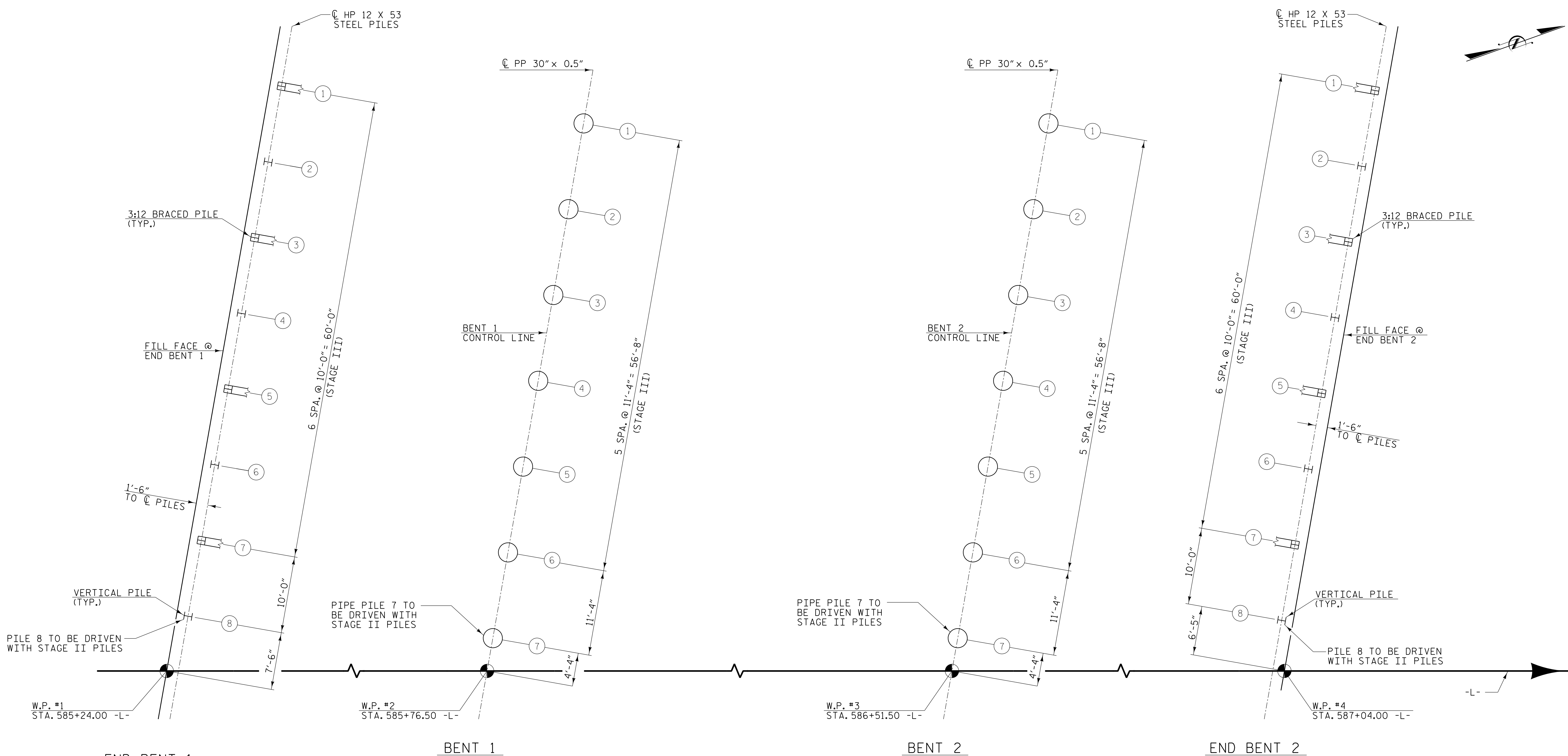
SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON I-95
 OVER BIG MARSH SWAMP
 BETWEEN SR 1006 AND NC 20

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			64
2			4			

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FOUNDATION LAYOUT
STAGE III

NOTES

1. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. ALL DIMENSIONS ARE PARALLEL OR NORMAL TO CL BENT LINES AND FILL FACES.
3. ALL PILE DIMENSIONS ARE CENTERS OF PILES AT BOTTOM OF END BENT AND BENT CAPS.
4. FOR FOUNDATION ELEVATIONS AND DETAILS, SEE BENT AND END BENT SHEETS.
5. SEE GEOTECHNICAL FOUNDATION TABLES FOR MORE INFORMATION ON DRIVEN PILES.
6. OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.
7. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 125 KIPS-FT PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 AND NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

DRAWN BY :	J. A. PANDOLI	DATE :	2/22
CHECKED BY :	G. F. WILSON	DATE :	2/22
DESIGN ENGINEER OF RECORD:	L. K. AUSTIN	DATE :	2/22

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PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON I-95
OVER BIG MARSH SWAMP
BETWEEN SR 1006 AND NC 20

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
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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 TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Exc 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 1-17	100	149.01	75			170							
End Bent 2, Piles 1-17	100	149.55	80			170							
Bent 1, Piles 1-15	250	149.45	95	118	96.0	365							
Bent 2, Piles 1-15	250	149.67	95	118	95.0	375							

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

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1	MAYBE	80	3		
End Bent 2	MAYBE	85			
Bent 1	YES	100			
Bent 2	YES	100			

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) ## (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-17	100			0.60			
End Bent 2, Piles 1-17	100			0.60			
Bent 1, Piles 1-15	250			0.75		27	1.00
Bent 2, Piles 1-15	250			0.75		40	1.00

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


PROJECT NO. I-5987B

ROBESON COUNTY

STATION: -L- 586+14.00

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Stephen C. Crockett, 048207) on 12/16/21.
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 when PDAs may be required.

 DocuSigned by: <i>Kevin Austin</i> DATE: 4/24/2022	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH <h2 style="text-align: center;">PILE FOUNDATION TABLES</h2>						SHEET NO. SS-4 TOTAL SHEETS 64
	REVISIONS						
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. 1	BY:	DATE:	NO. 3	BY:	DATE:	
	NO. 2			NO. 4			

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURES	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	45° PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES	HP 12 X 53 STEEL PILES		PP 30 X 0.50 GALVANIZED STEEL PILES		PILE REDRIVES
											NO.	FEET			NO.	LIN. FT.	NO.	LIN. FT.	
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	FEET	EACH	EACH	NO.	LIN. FT.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE						26545	31593		LUMP SUM		45	2645.00							
END BENT 1								86.4		15452			17		17	1275			
BENT 1								121.1		16617				15			15	1425	
BENT 2								121.1		16617				15			15	1425	
END BENT 2								86.4		15669			17		17	1360			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	3	LUMP SUM	26545	31593	415.0	LUMP SUM	64355	45	2645.00	34	30	34	2635	30	2850	32

TOTAL BILL OF MATERIAL

	CONCRETE BARRIER RAIL	CONCRETE MEDIAN BARRIER	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
SUPERSTRUCTURE	395.71	227.97			LUMP SUM	LUMP SUM
END BENT 1			475	530		
BENT 1						
BENT 2						
END BENT 2			470	525		
TOTAL	395.71	227.97	945	1055	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND 2 IS ELEVATION 118. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 100 FT RIGHT AND 60 FT LEFT OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR INTERIOR BENTS 1 & 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIAL GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED PILES.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 586+14.00 -L-.

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

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.

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.

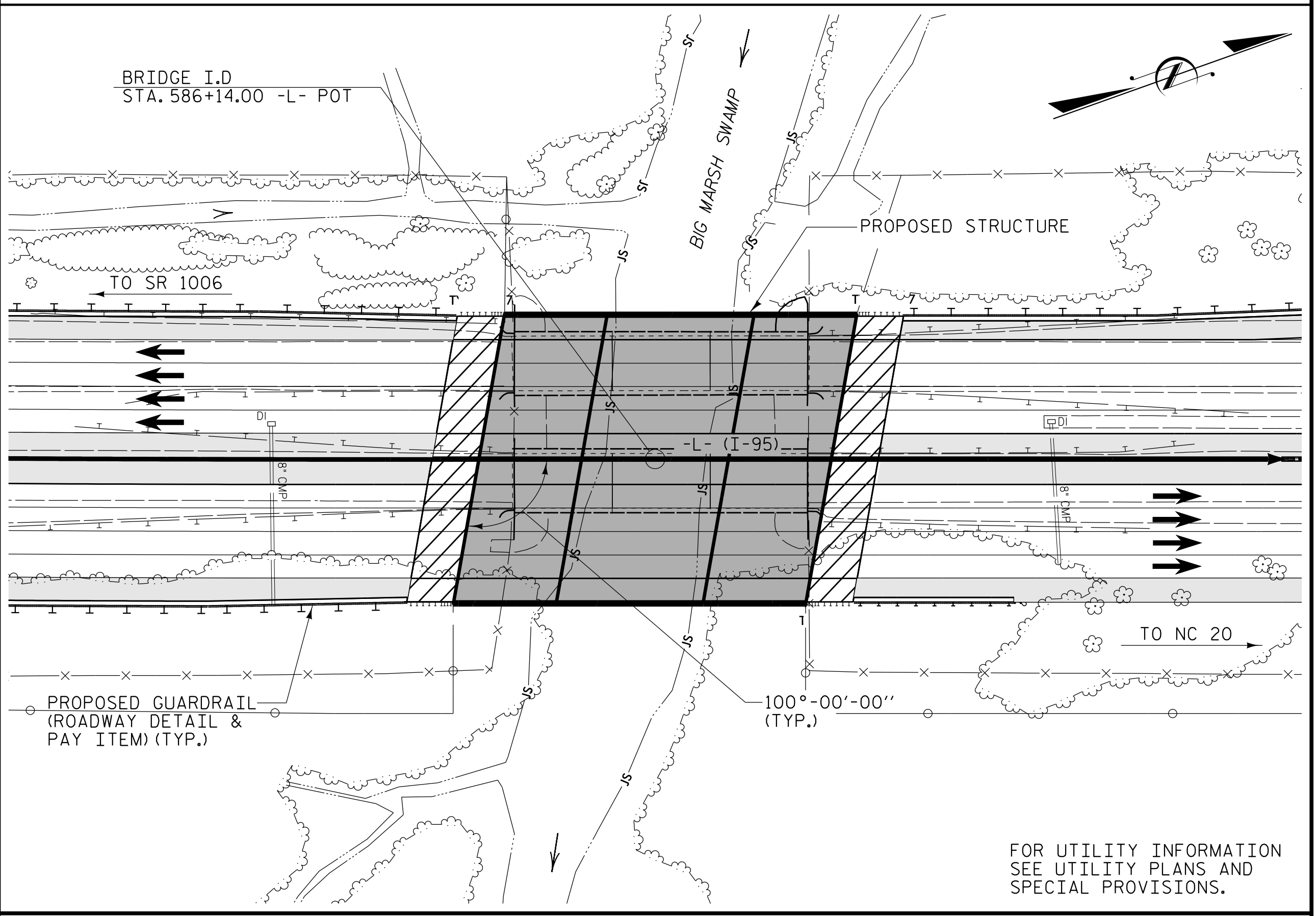
AFTER SERVING AS A TEMPORARY STRUCTURE (770156), THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, 1 SPAN @ 50'-5", 1 @ 50'-0" AND 1 @ 50'-5", 28' CLEAR ROADWAY WIDTH, REINFORCED CONCRETE DECK ON PRESTRESSED PRECAST CONCRETE GIRDERS WITH END BENTS AND BENTS CONSISTING OF REINFORCED CAPS ON PRESTRESSED PRECAST CONCRETE PILES AND LOCATED CONCURRENT WITH STAGE II & III OF NEW CONSTRUCTION, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

AFTER SERVING AS A TEMPORARY STRUCTURE (770158), THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, 1 SPAN @ 50'-4", 1 @ 50'-0" AND 1 @ 50'-4", 28' CLEAR ROADWAY WIDTH, REINFORCED CONCRETE DECK ON PRESTRESSED PRECAST CONCRETE GIRDERS WITH END BENTS AND BENTS CONSISTING OF REINFORCED CAPS ON PRESTRESSED PRECAST CONCRETE PILES AND LOCATED CONCURRENT WITH STAGE II & III OF NEW CONSTRUCTION, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 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.

BM#33: RR SPIKE IN BASE OF 14" PINE TREE; 324.17' RT STA. 591+02.29 -L- ELEV. 149.44



FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS.

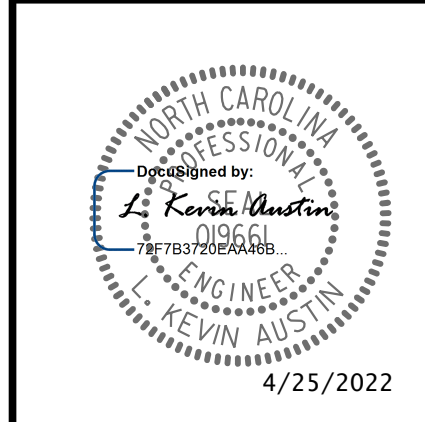
LOCATION SKETCH

DRAWN BY : W. B. ALLEN DATE : 5/21
 CHECKED BY : G. F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

PLANS PREPARED BY:

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PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON I-95
 OVER BIG MARSH SWAMP
 BETWEEN SR 1006 AND NC 20

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-5 TOTAL SHEETS 64
1			3			
2			4			

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LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	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 (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.15	--	1.75	0.87	1.65	B	I	36.67	1.09	1.15	B	I	66.00	0.80	0.87	1.36	B	I	36.67		
	HL-93 (OPERATING)	N/A		1.52	--	1.35	0.87	2.14	B	I	36.67	1.09	1.52	B	I	66.00	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.47	52.92	1.75	0.87	2.16	B	I	36.67	1.09	1.47	B	I	66.00	0.80	0.87	1.79	B	I	36.67		
	HS-20 (OPERATING)	36.000		1.93	69.48	1.35	0.87	2.80	B	I	36.67	1.09	1.93	B	I	66.00	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH			4.39	54.88	1.40	0.87	6.64	B	I	36.67	1.09	4.93	B	I	66.00	0.80	0.87	4.39	B	I	36.67	
		S3C			2.57	55.26	1.40	0.87	3.89	B	I	36.67	1.09	2.85	B	I	7.33	0.80	0.87	2.57	B	I	36.67	
		S3A			2.44	55.51	1.40	0.87	3.68	B	I	36.67	1.09	2.72	B	I	66.00	0.80	0.87	2.44	B	I	36.67	
		S4A			2.16	57.78	1.40	0.87	3.27	B	I	36.67	1.09	2.37	B	I	66.00	0.80	0.87	2.16	B	I	36.67	
		S5A			1.91	58.26	1.40	0.87	2.89	B	I	36.67	1.09	2.19	B	I	7.33	0.80	0.87	1.91	B	I	36.67	
		S6A			1.74	60.03	1.40	0.87	2.63	B	I	36.67	1.09	1.97	B	I	7.33	0.80	0.87	1.74	B	I	36.67	
		S7B			1.59	61.22	1.40	0.87	2.40	B	I	36.67	1.09	1.85	B	I	7.33	0.80	0.87	1.59	B	I	36.67	
		S7A		③	1.58	63.20	1.40	0.87	2.39	B	I	36.67	1.09	1.92	B	I	66.00	0.80	0.87	1.58	B	I	36.67	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A			2.15	60.74	1.40	0.87	3.25	B	I	36.67	1.09	2.31	B	I	66.00	0.80	0.87	2.15	B	I	36.67	
		T5B			1.89	60.48	1.40	0.87	2.85	B	I	36.67	1.09	2.22	B	I	66.00	0.80	0.87	1.89	B	I	36.67	
		T6A			1.74	62.64	1.40	0.87	2.63	B	I	36.67	1.09	2.04	B	I	66.00	0.80	0.87	1.74	B	I	36.67	
		T7A			1.63	65.20	1.40	0.87	2.46	B	I	36.67	1.09	1.91	B	I	7.33	0.80	0.87	1.63	B	I	36.67	
	T7B			1.76	70.40	1.40	0.87	2.66	B	I	36.67	1.09	1.77	B	I	7.33	0.80	0.87	1.76	B	I	36.67		

NOTES:
 MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:
 1.
 2.
 3.
 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

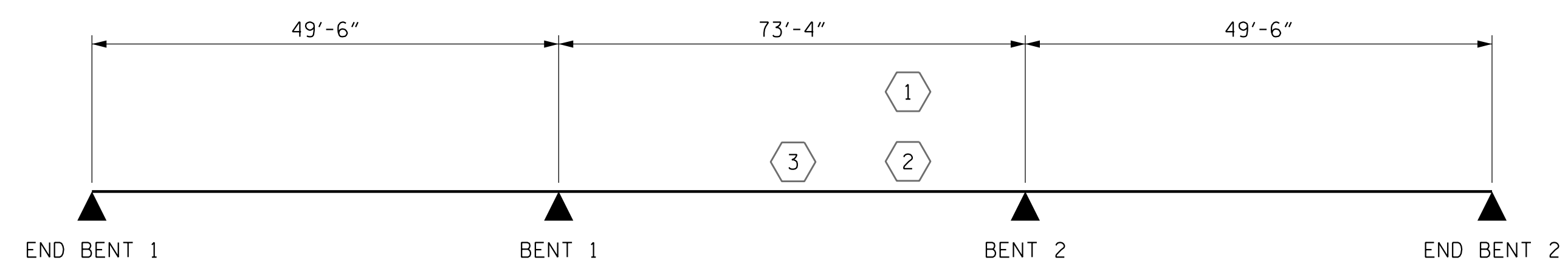
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					64

PLANS PREPARED BY:

NV5

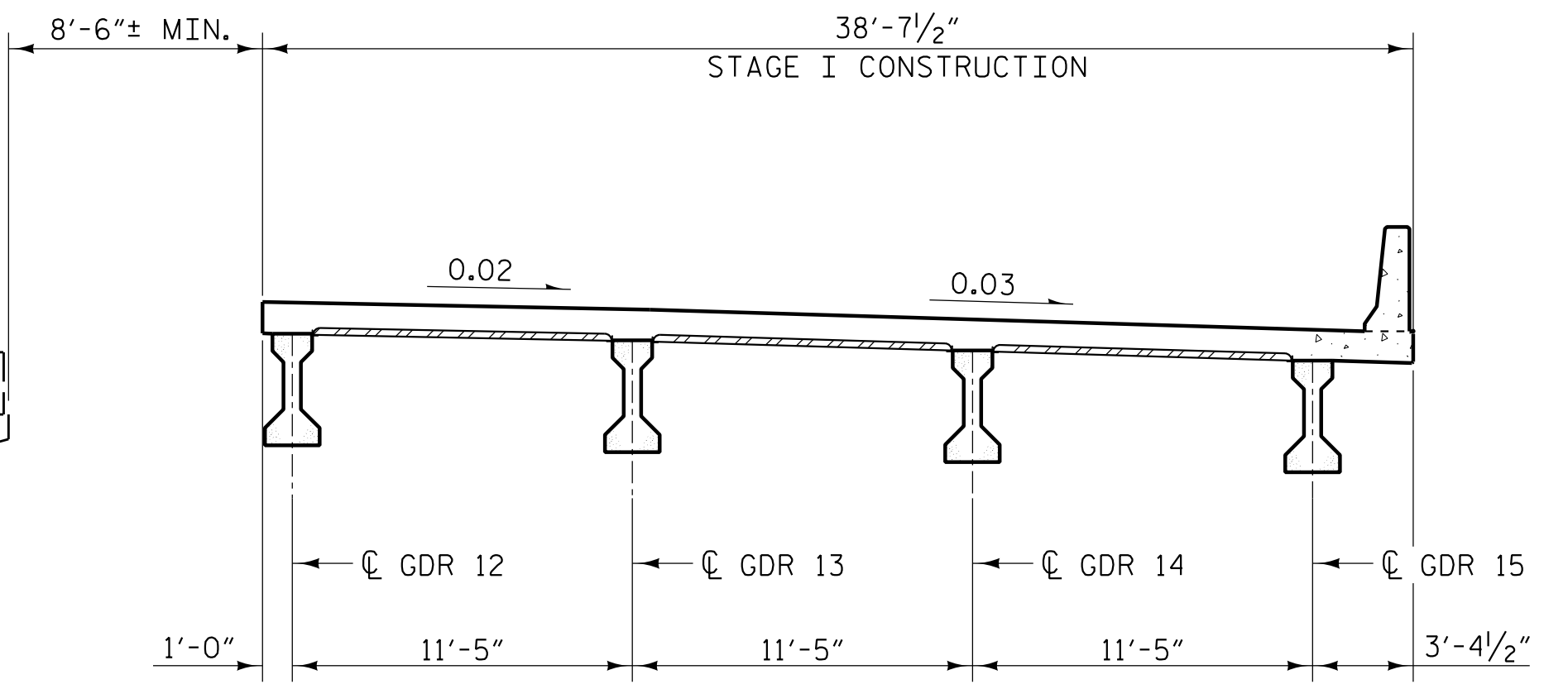
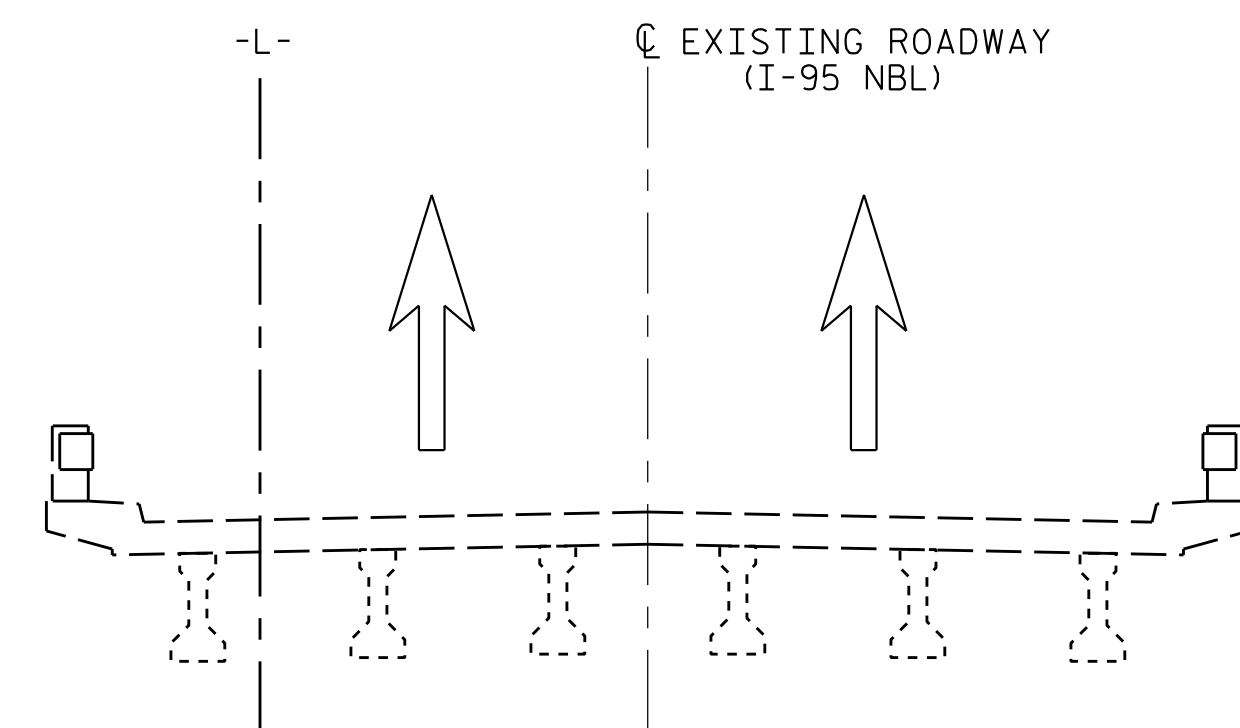
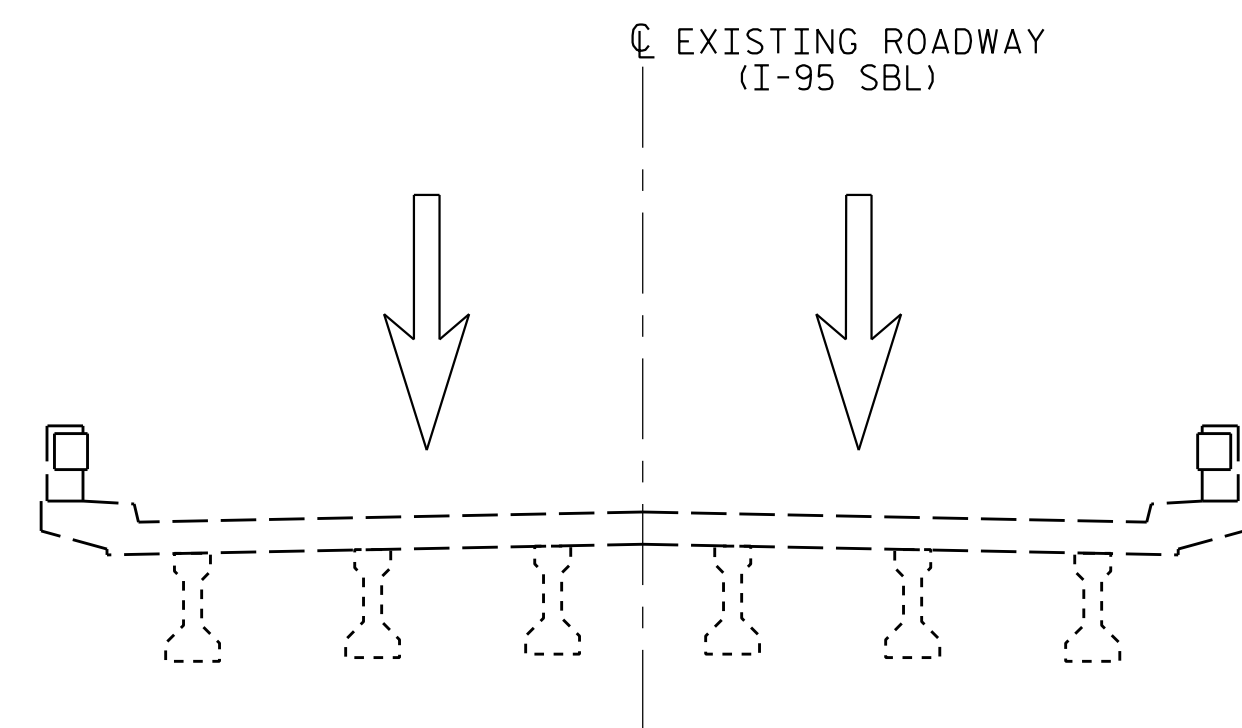
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THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

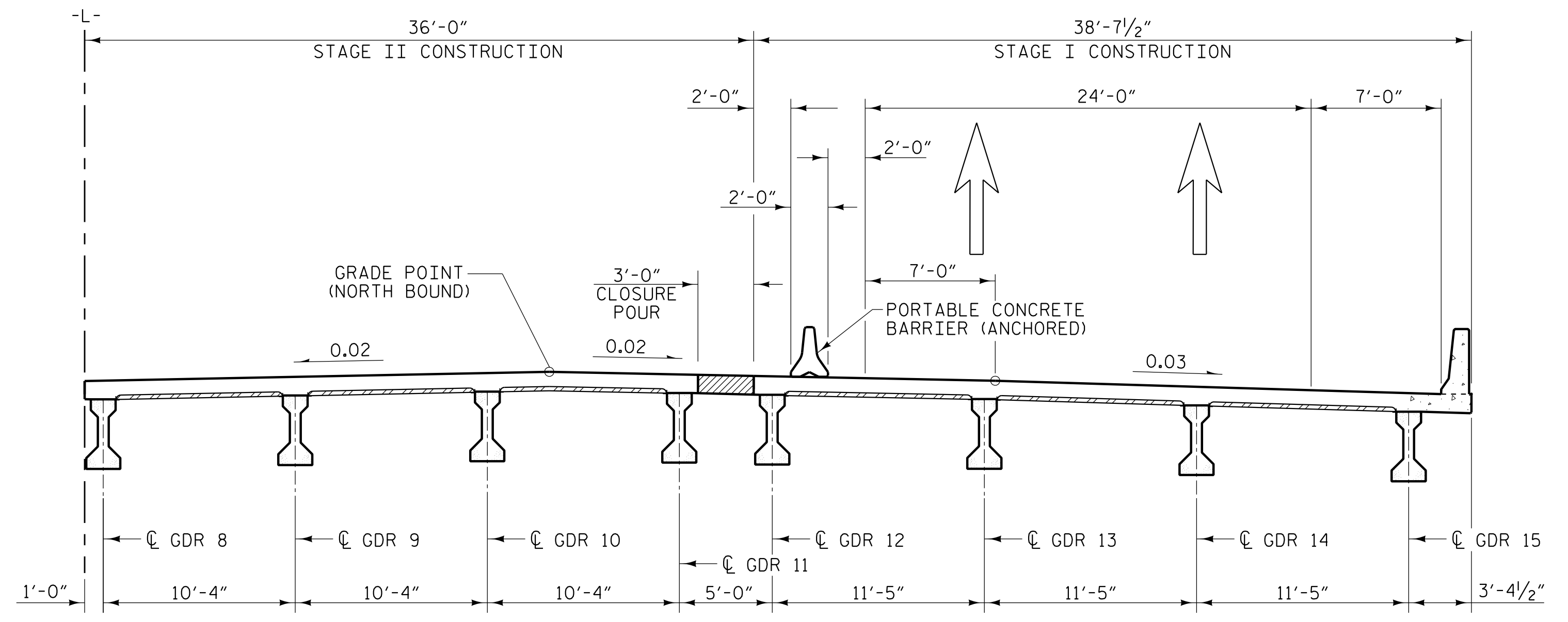
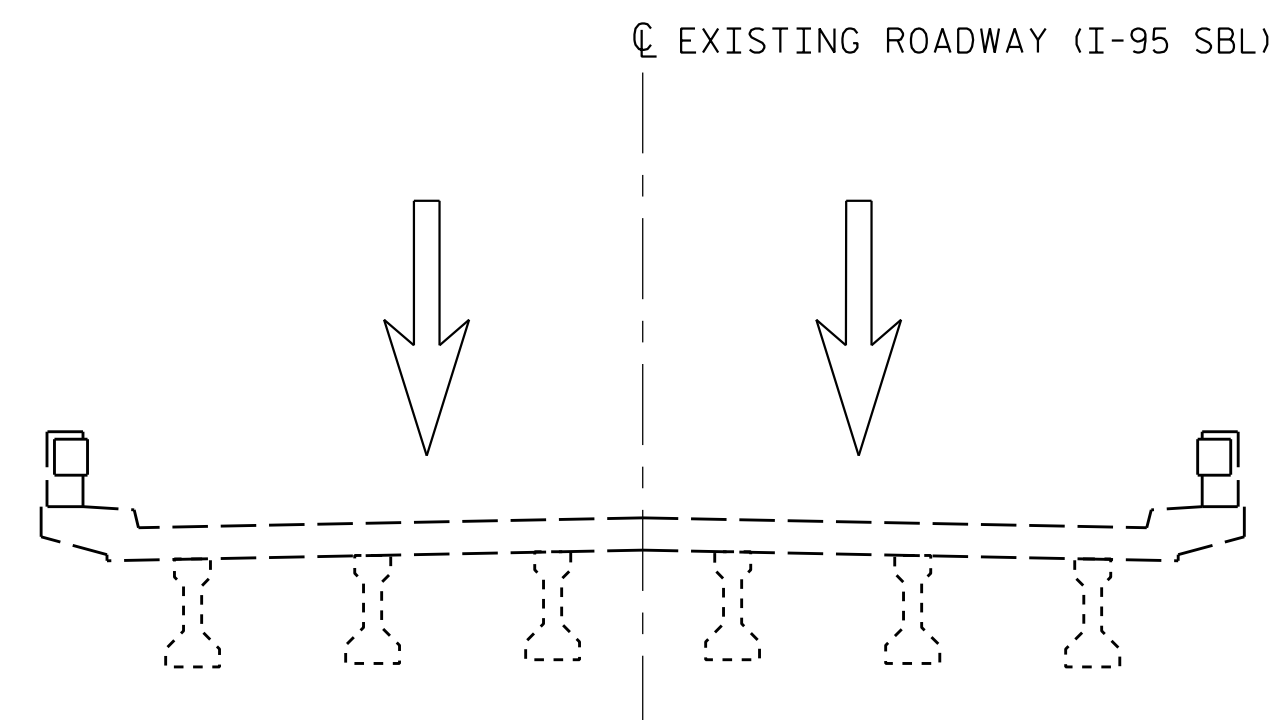
Kevin Austin
 L. KEVIN AUSTIN
 ENGINEER
 4/24/2022

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ASSEMBLED BY : J. A. PANDOLI	DATE : 11/21
CHECKED BY : G. F. WILSON	DATE : 12/21
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



STAGE I CONSTRUCTION



STAGE II CONSTRUCTION

NOTES:

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.
 THE PORTABLE CONCRETE BARRIER IS A TRAFFIC CONTROL PAY ITEM.
 SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE PORTABLE CONCRETE BARRIER.

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION STAGING SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-7
1			3			TOTAL SHEETS
2			4			64

PLANS PREPARED BY:

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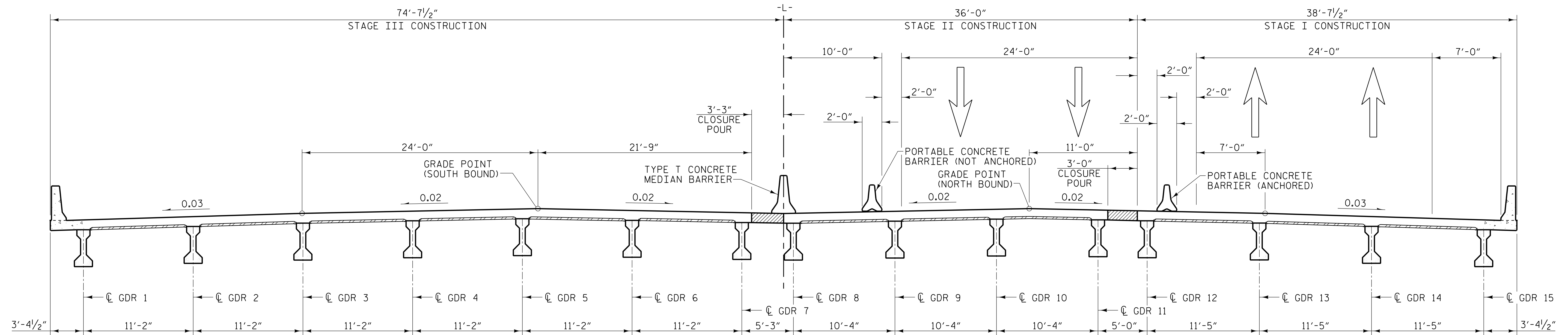
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Professional Engineer Seal for L. Kevin Austin, State of North Carolina, License No. 78702, Exp. 12/31/2025.

4/24/2022

DRAWN BY : W. B. ALLEN DATE : 5/21
 CHECKED BY : G. F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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STAGE III CONSTRUCTION

NOTES:

- FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.
- THE PORTABLE CONCRETE BARRIER IS A TRAFFIC CONTROL PAY ITEM.
- SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE PORTABLE CONCRETE BARRIER.

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION STAGING SEQUENCE

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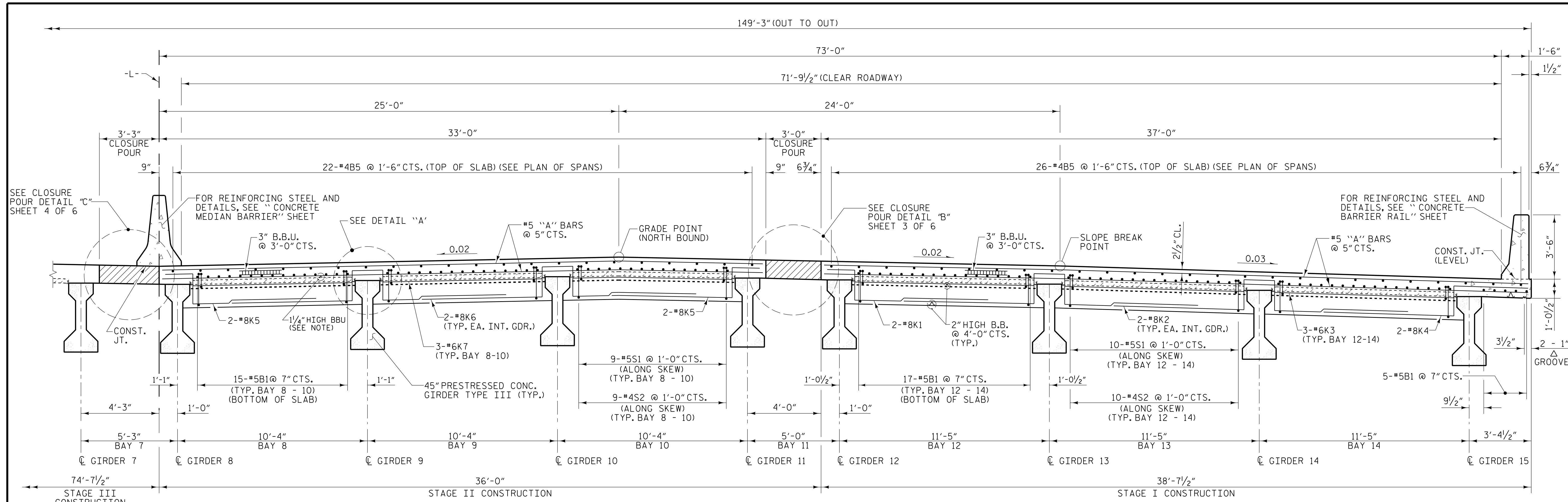
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REVISIONS						SHEET NO.
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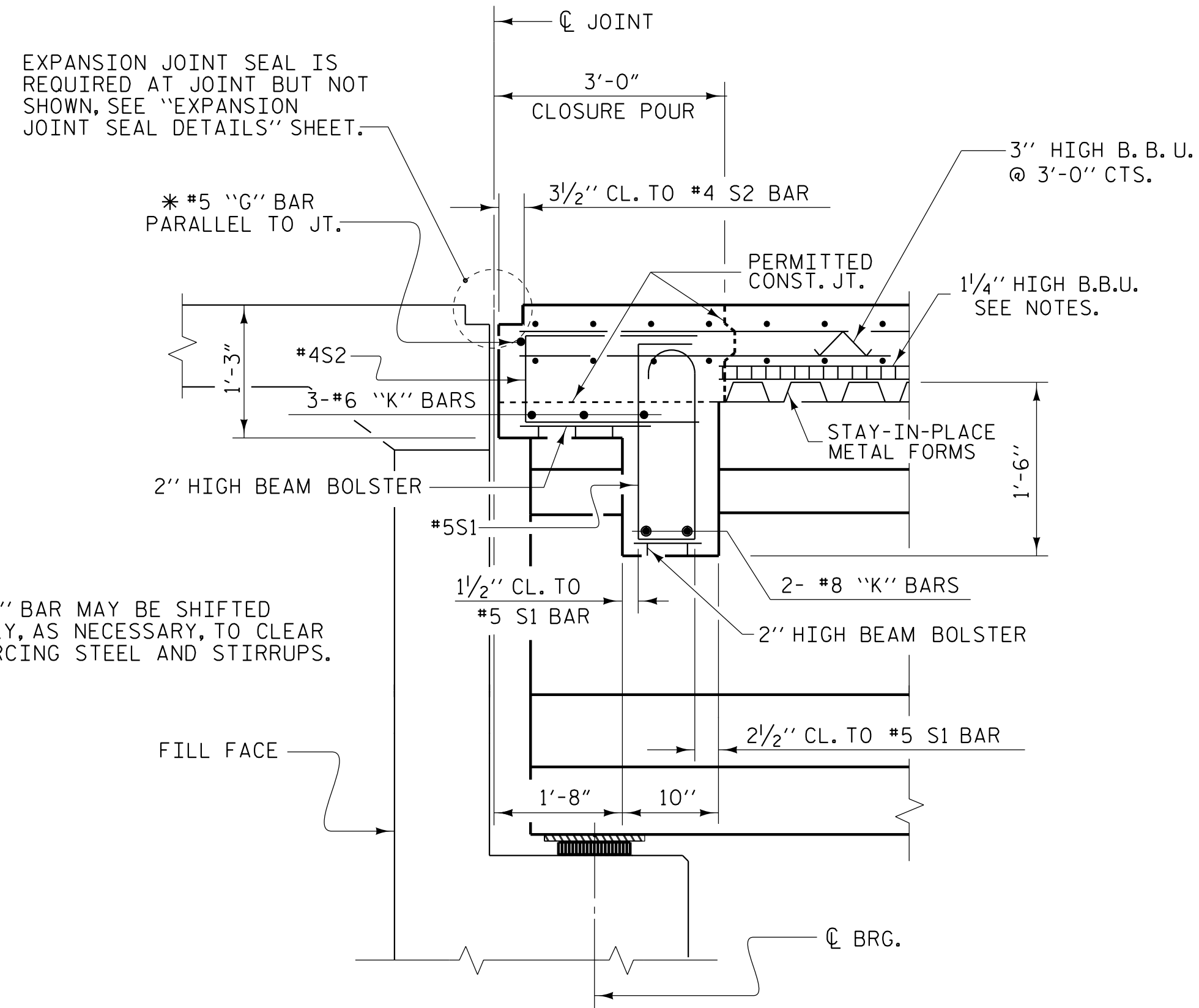
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TYPICAL HALF SECTION
(SHOWING END BENT DIAPHRAGMS)



SECTION THRU END BENT DIAPHRAGMS

NOTES:

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER (BBU) AT 4'-0" CENTERS 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 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.

PROJECT NO. **I-5987B**
ROBESON COUNTY
 STATION: **586+14.00 -L- POT**

SHEET 1 OF 6
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

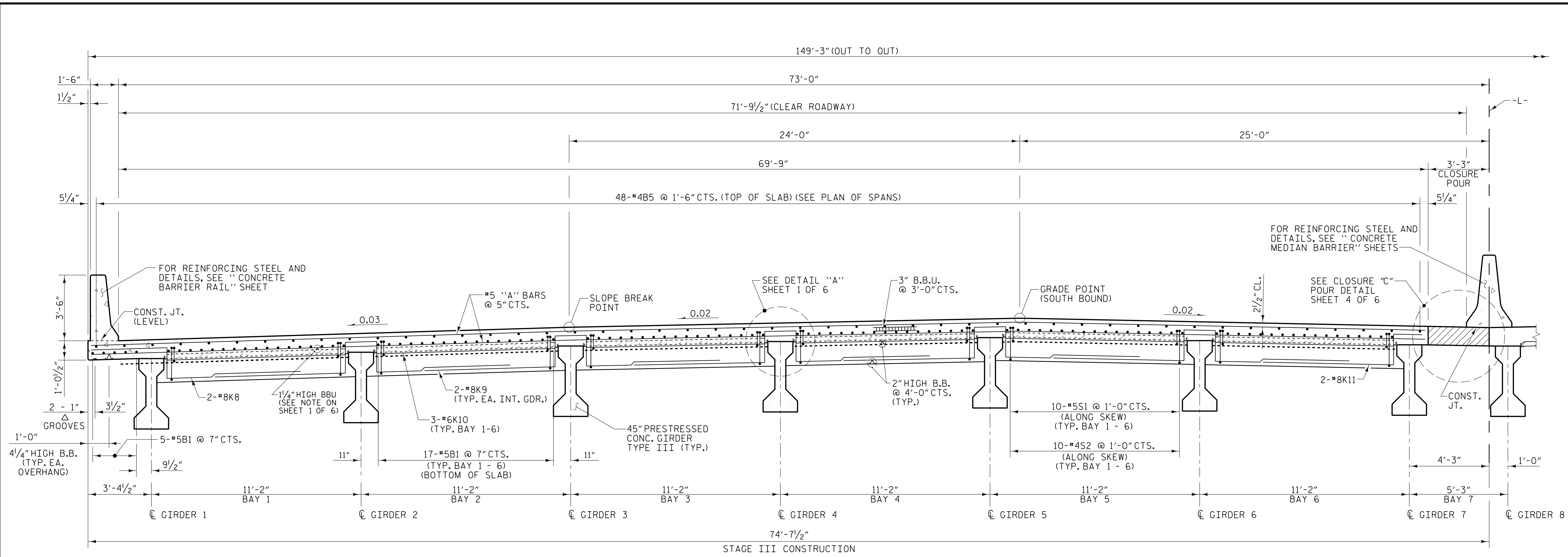
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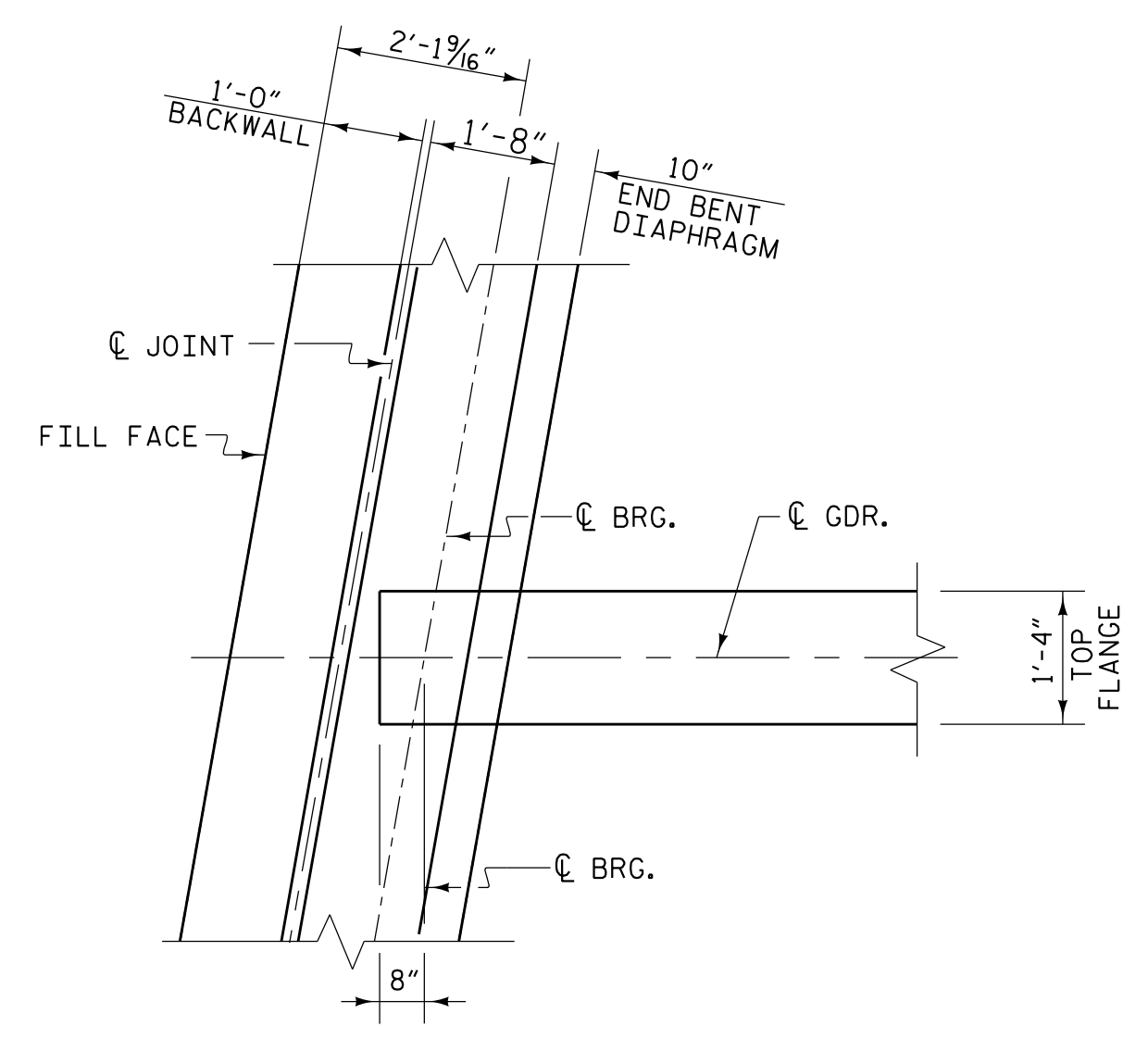
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TYPICAL HALF SECTION
(SHOWING END BENT DIAPHRAGMS)



PLAN OF GIRDER AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 2 OF 6

STATE OF NORTH CAROLINA
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 RALEIGH

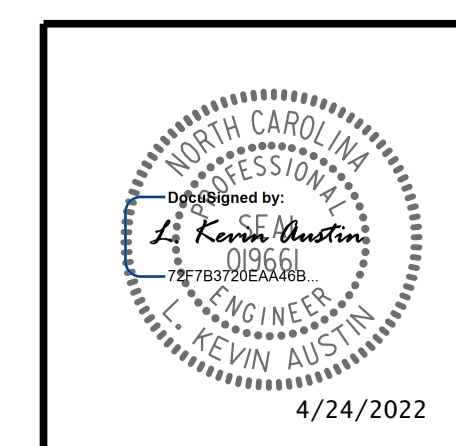
SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-10
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2			4			64

PLANS PREPARED BY:

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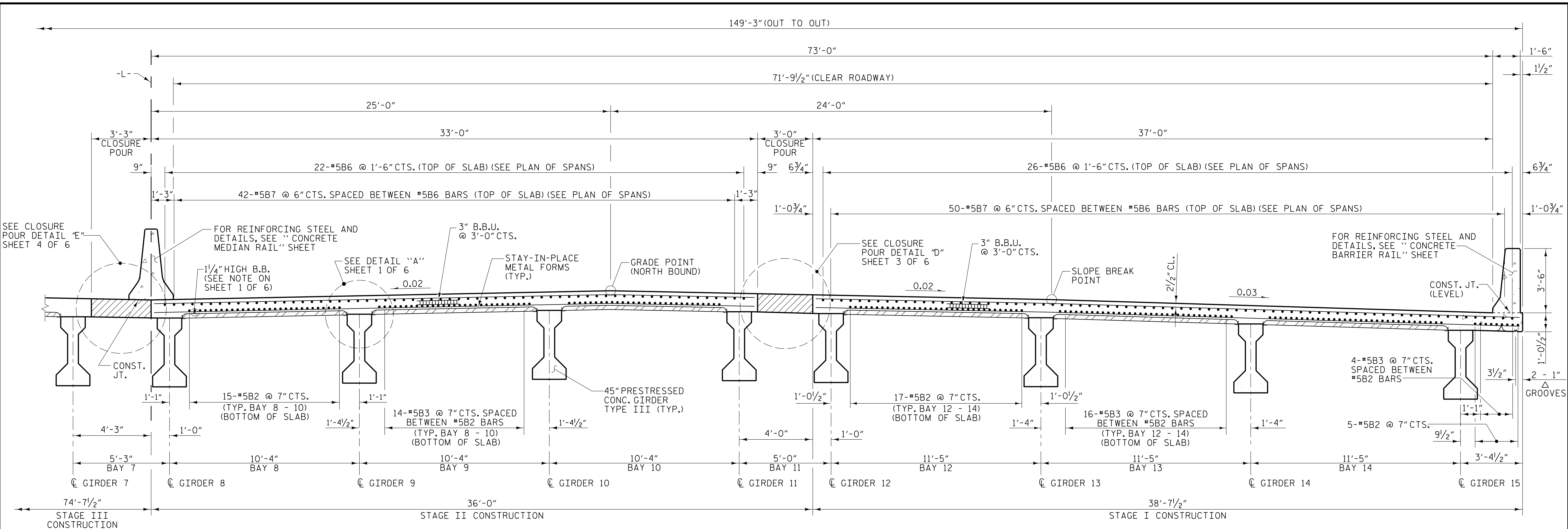
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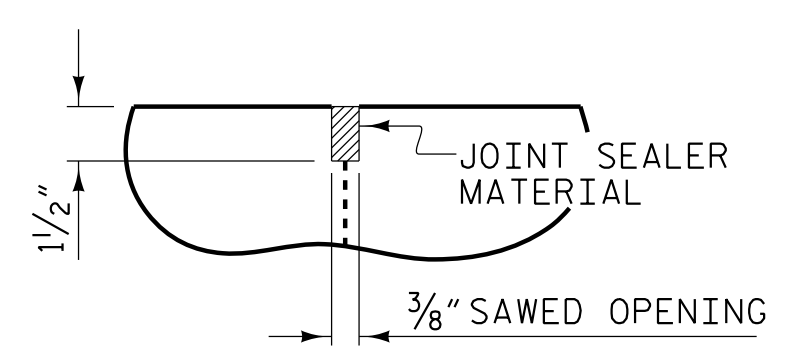
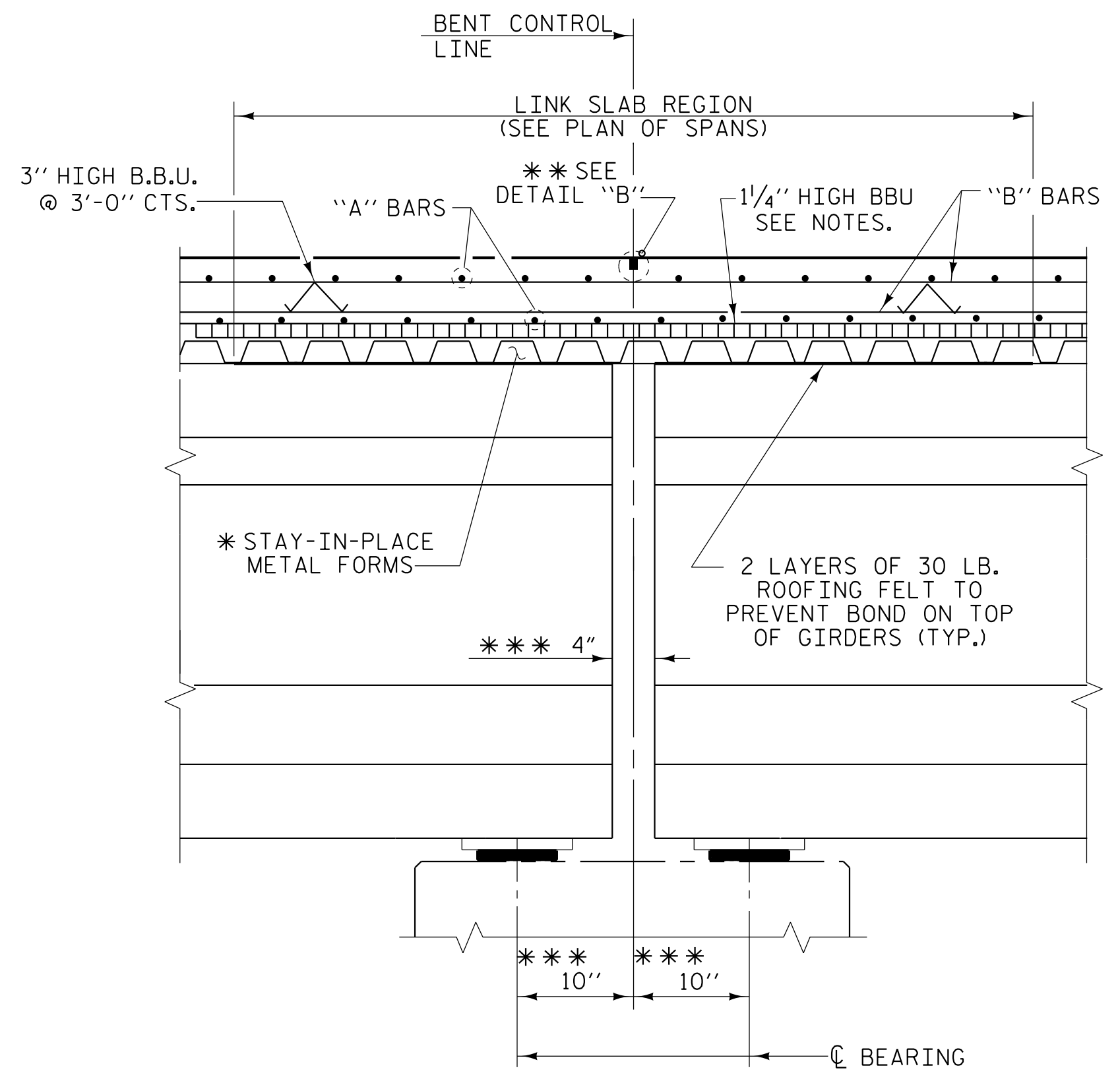
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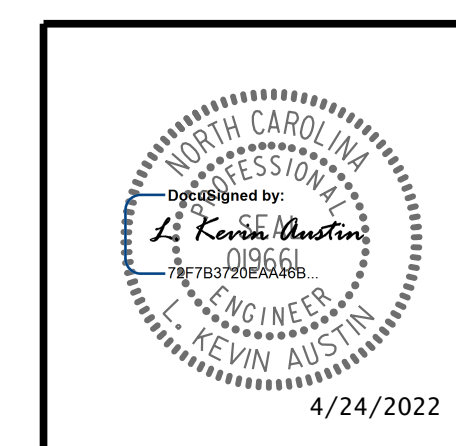
TYPICAL HALF SECTION
 (SHOWING LINK SLAB AT BENT)



DETAIL "B"

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

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PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 5 OF 6

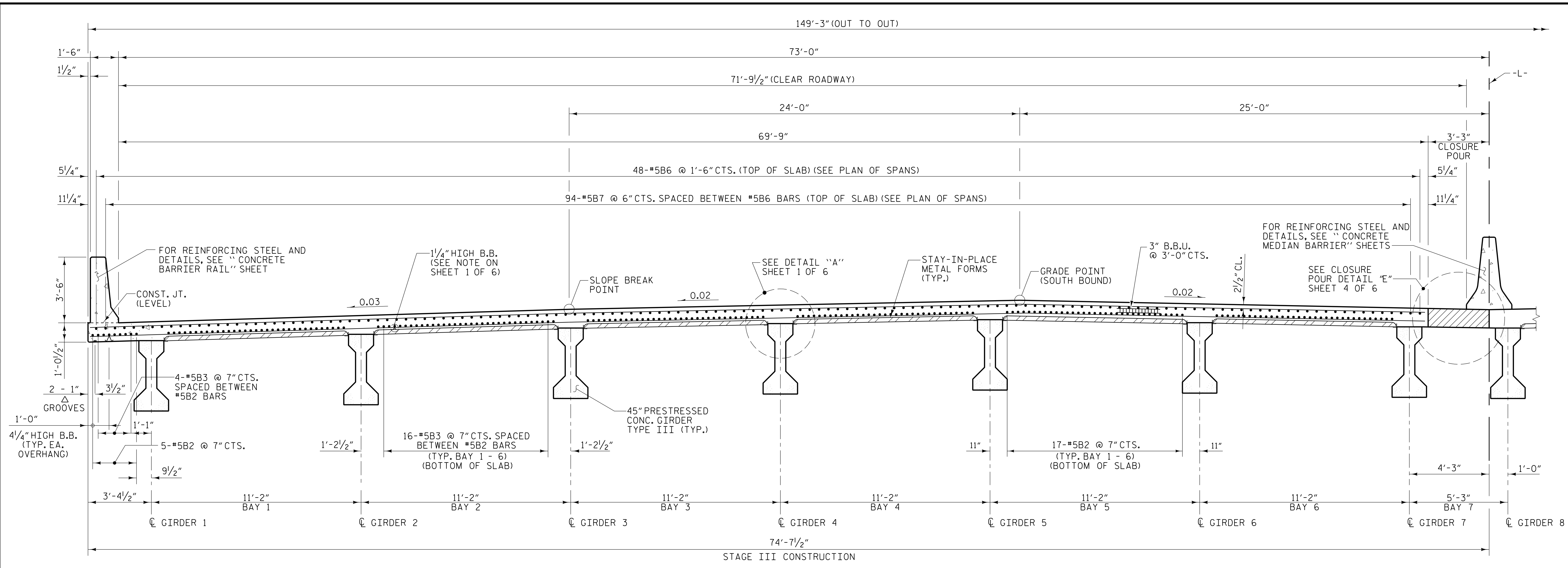
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

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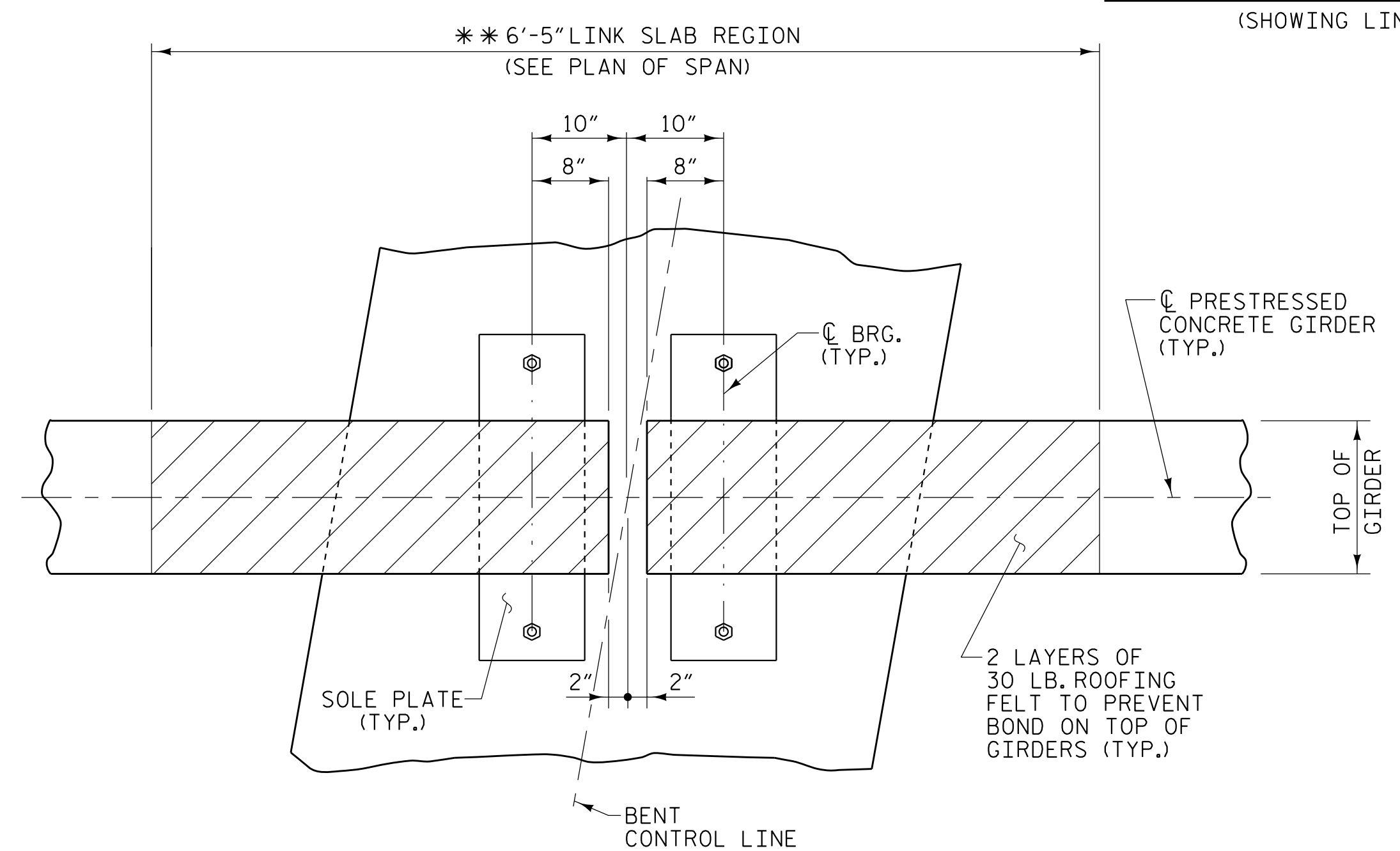
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 CHECKED BY : G. F. WILSON DATE : 5/21
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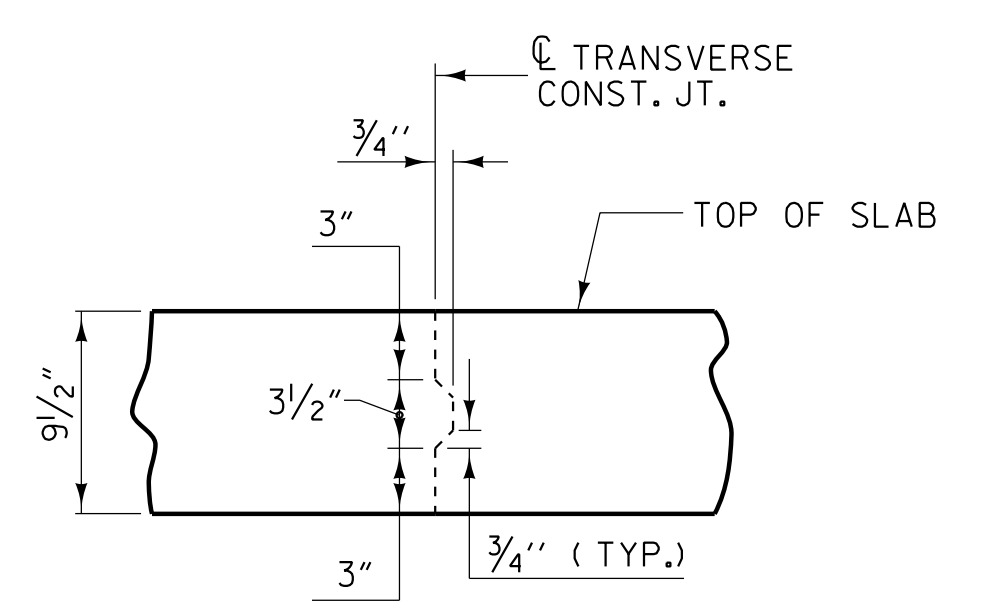


TYPICAL HALF SECTION
 (SHOWING LINK SLAB AT BENT)



PLAN OF GIRDERS AT BENT - LINK SLAB

** 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.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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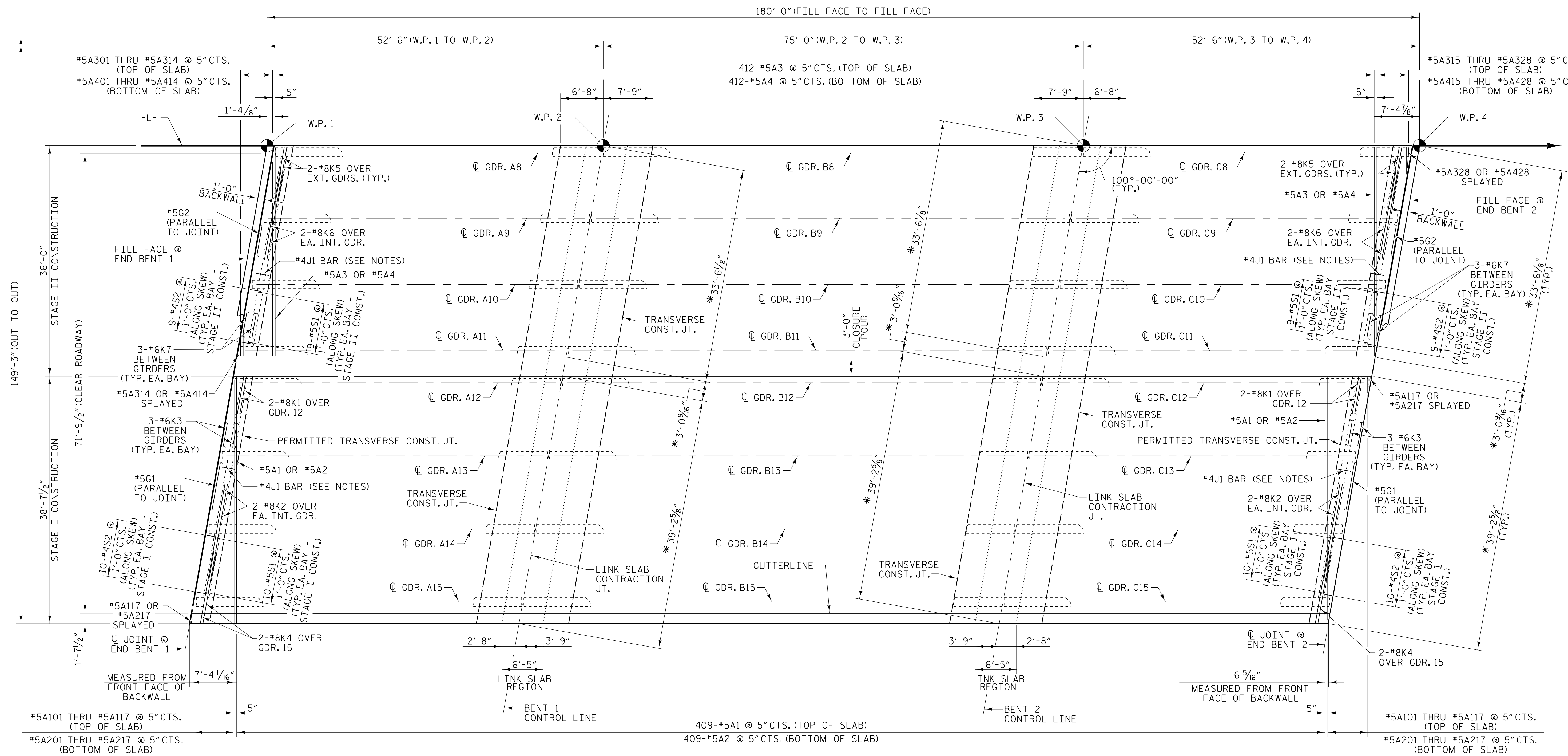
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PROFESSIONAL ENGINEER
 L. KEVIN AUSTIN
 4/24/2022

DRAWN BY :	W. B. ALLEN	DATE :	5/21
CHECKED BY :	G. F. WILSON	DATE :	5/21
DESIGN ENGINEER OF RECORD:	L. K. AUSTIN	DATE :	2/22

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NOTES

- FOR "B" BARS AND REINFORCING STEEL IN THE CLOSURE POUR SEE "PLAN OF SPANS "B" BAR LAYOUT".
- FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 6 OF 6.
- FOR POUR SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET 2 OF 2.
- FOR PLACEMENT OF #4J1 BARS, SEE EXPANSION JOINT SEAL DETAILS" SHEET.
- #5 "G" BAR MAY BE SHIFTED, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

PLAN OF SPANS
STAGE I & STAGE II
CONSTRUCTION

* MEASURED ALONG @ JOINT

DRAWN BY : W. B. ALLEN DATE : 5/21
 CHECKED BY : G. F. WILSON DATE : 5/21
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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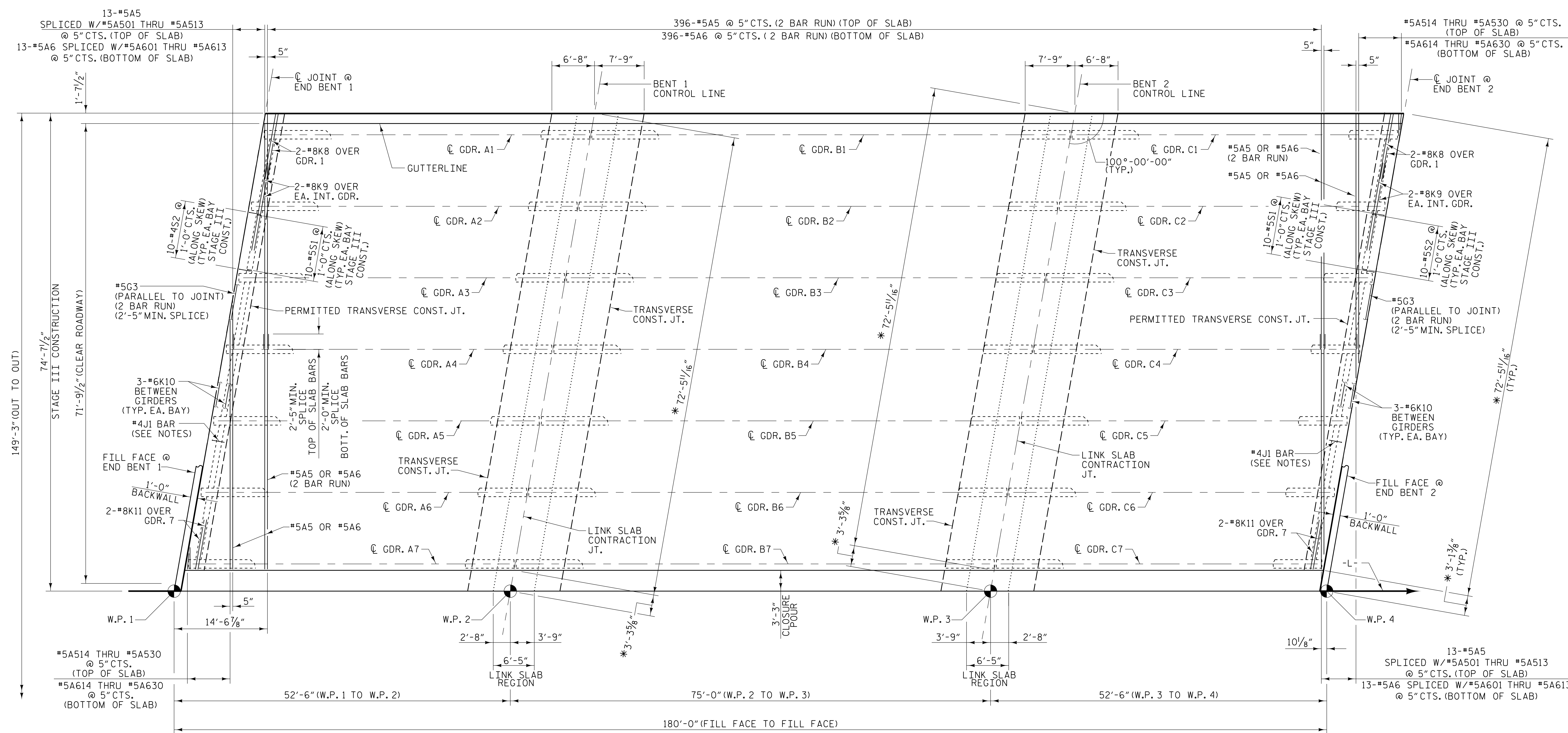
4/24/2022

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 1 OF 5

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-15
1			3			TOTAL SHEETS
2			4			64

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SPAN A

SPAN B

SPAN C

NOTES

- FOR "B" BARS AND REINFORCING STEEL IN THE CLOSURE POUR SEE "PLAN OF SPANS "B" BAR LAYOUT".
- FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 6 OF 6.
- FOR POUR SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET 2 OF 2.
- FOR PLACEMENT OF #4J1 BARS, SEE EXPANSION JOINT SEAL DETAILS" SHEET.
- #5 "G" BAR MAY BE SHIFTED, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

PLAN OF SPANS
STAGE III CONSTRUCTION

* MEASURED ALONG C JOINT

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
STAGE III

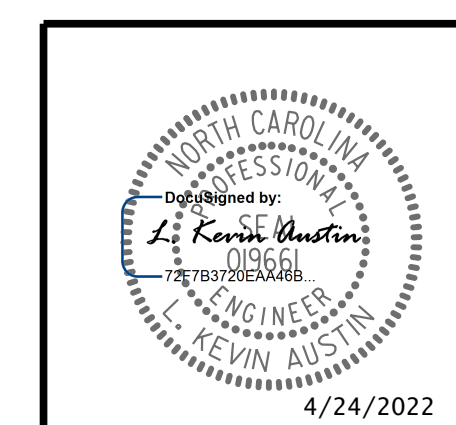
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1			3		
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TOTAL SHEETS: 64

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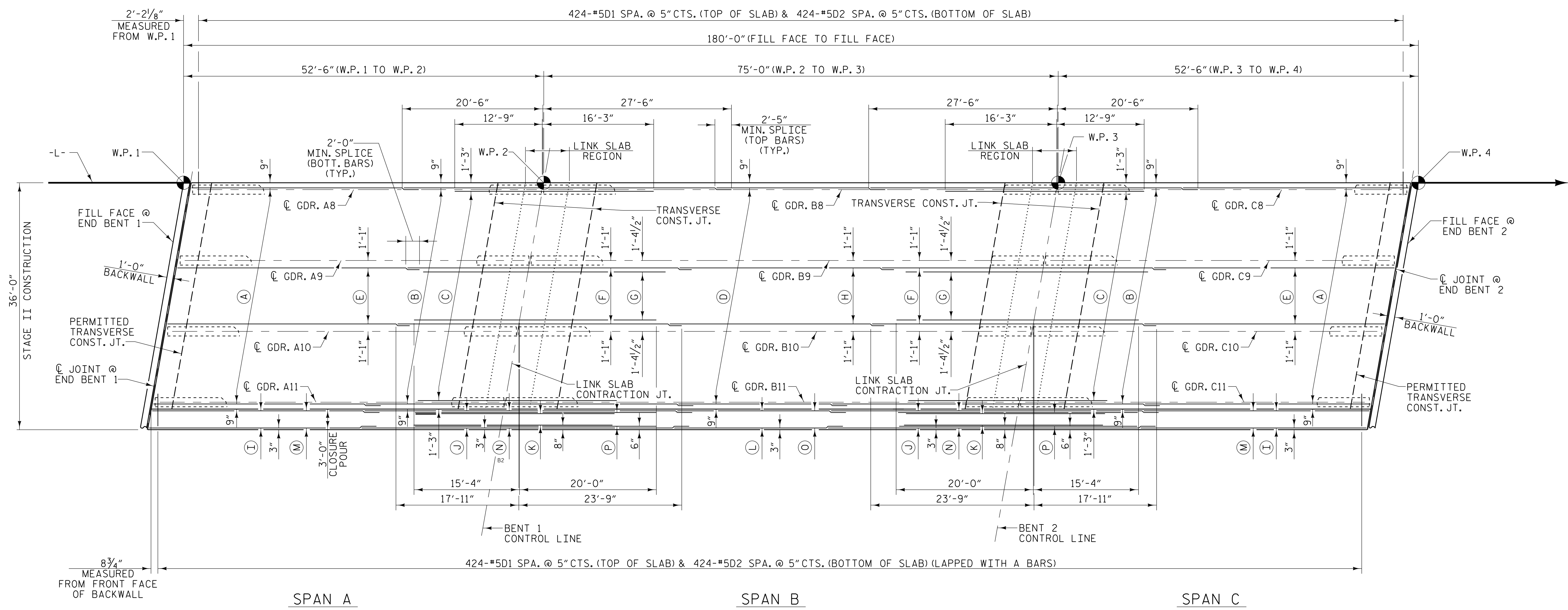
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DRAWN BY :	W. B. ALLEN	DATE :	5/21
CHECKED BY :	G. F. WILSON	DATE :	5/21
DESIGN ENGINEER OF RECORD:	L. K. AUSTIN	DATE :	2/22

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PLAN OF SPANS - "B" BAR LAYOUT
 STAGE II CONSTRUCTION
 (MEDIAN CONCRETE BARRIER NOT SHOWN FOR CLARITY)

- | | |
|---|--|
| (A) 22-#4B5 @ 1'-6" CTS. (TOP OF SLAB) | (H) 15-#5B4 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 8 - 10) |
| (B) 22-#5B6 @ 1'-6" CTS. (TOP OF SLAB) | (I) 3-#4B5 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR) |
| (C) 42-#5B7 @ 6" CTS. SPACED BETWEEN #5B6 BARS (TOP OF SLAB) | (J) 3-#5B6 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR) |
| (D) 22-#4B8 @ 1'-6" CTS. (TOP OF SLAB) | (K) 4-#5B7 @ 5" CTS. SPACED BETWEEN #5B6 BARS (TOP OF SLAB) (CLOSURE POUR) |
| (E) 15-#5B1 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 8 - 10) | (L) 3-#4B8 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR) |
| (F) 15-#5B2 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 8 - 10) | (M) 6-#5B1 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR) |
| (G) 14-#5B3 @ 7" CTS. SPACED BETWEEN #5B2 BARS (BOTTOM OF SLAB) (TYP. BAY 8 - 10) | (N) 6-#5B2 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR) |
| | (O) 6-#5B4 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR) |
| | (P) 5-#5B3 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR) |

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

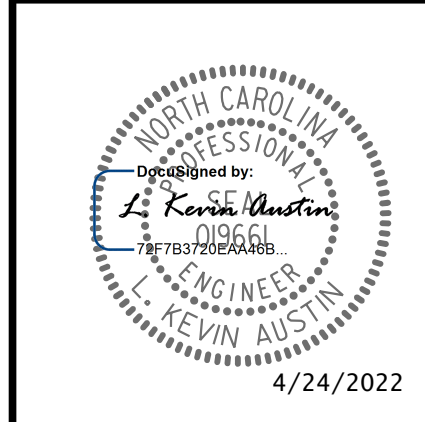
SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS
 "B" BAR LAYOUT
 STAGE II

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

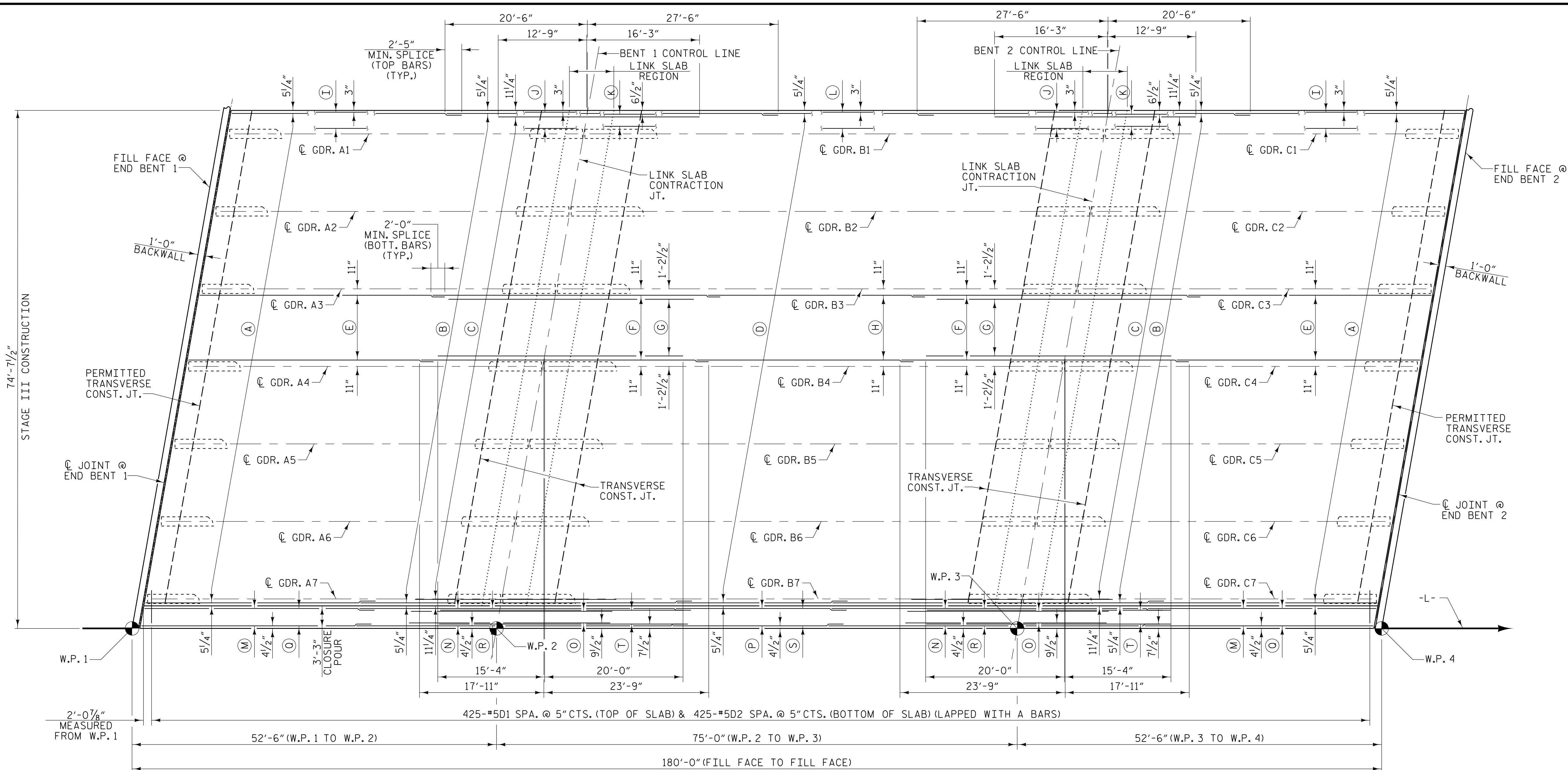
TOTAL SHEETS: 64



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DRAWN BY : W. B. ALLEN DATE : 5/21
 CHECKED BY : G. F. WILSON DATE : 5/21
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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SPAN A

SPAN B

SPAN C

PLAN OF SPANS - "B" BAR LAYOUT

STAGE III CONSTRUCTION

(BARRIER RAIL AND MEDIAN CONCRETE BARRIER NOT SHOWN FOR CLARITY)

- (A) 48-#4B5 @ 1'-6" CTS. (TOP OF SLAB)
- (B) 48-#5B6 @ 1'-6" CTS. (TOP OF SLAB)
- (C) 94-#5B7 @ 6" CTS. SPACED BETWEEN #5B6 BARS (TOP OF SLAB)
- (D) 48-#4B8 @ 1'-6" CTS. (TOP OF SLAB)
- (E) 17-#5B1 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 1 - 6)
- (F) 17-#5B2 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 1 - 6)
- (G) 16-#5B3 @ 7" CTS. SPACED BETWEEN #5B2 BARS (BOTTOM OF SLAB) (TYP. BAY 1 - 6)
- (H) 17-#5B4 @ 7" CTS. (BOTTOM OF SLAB) (TYP. BAY 1 - 6)
- (I) 5-#5B1 @ 7" CTS. (BOTTOM OF SLAB) (OVERHANG)
- (J) 5-#5B2 @ 7" CTS. (BOTTOM OF SLAB) (OVERHANG)

- (K) 4-#5B3 @ 7" CTS. SPACED BETWEEN #5B2 BARS (BOTTOM OF SLAB) (OVERHANG)
- (L) 5-#5B4 @ 7" CTS. (BOTTOM OF SLAB) (OVERHANG)
- (M) 3-#4B5 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR)
- (N) 3-#5B6 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR)
- (O) 4-#5B7 @ 5" CTS. SPACED BETWEEN #5B6 BARS (TOP OF SLAB) (CLOSURE POUR)
- (P) 3-#4B8 @ 1'-3" CTS. (TOP OF SLAB) (CLOSURE POUR)
- (Q) 6-#5B1 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR)
- (R) 6-#5B2 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR)
- (S) 6-#5B4 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR)
- (T) 5-#5B3 @ 6" CTS. (BOTTOM OF SLAB) (CLOSURE POUR)

DRAWN BY : W. B. ALLEN DATE : 5/21
 CHECKED BY : G. F. WILSON DATE : 5/21
 DESIGN ENGINEER OF RECORD : L. K. AUSTIN DATE : 2/22



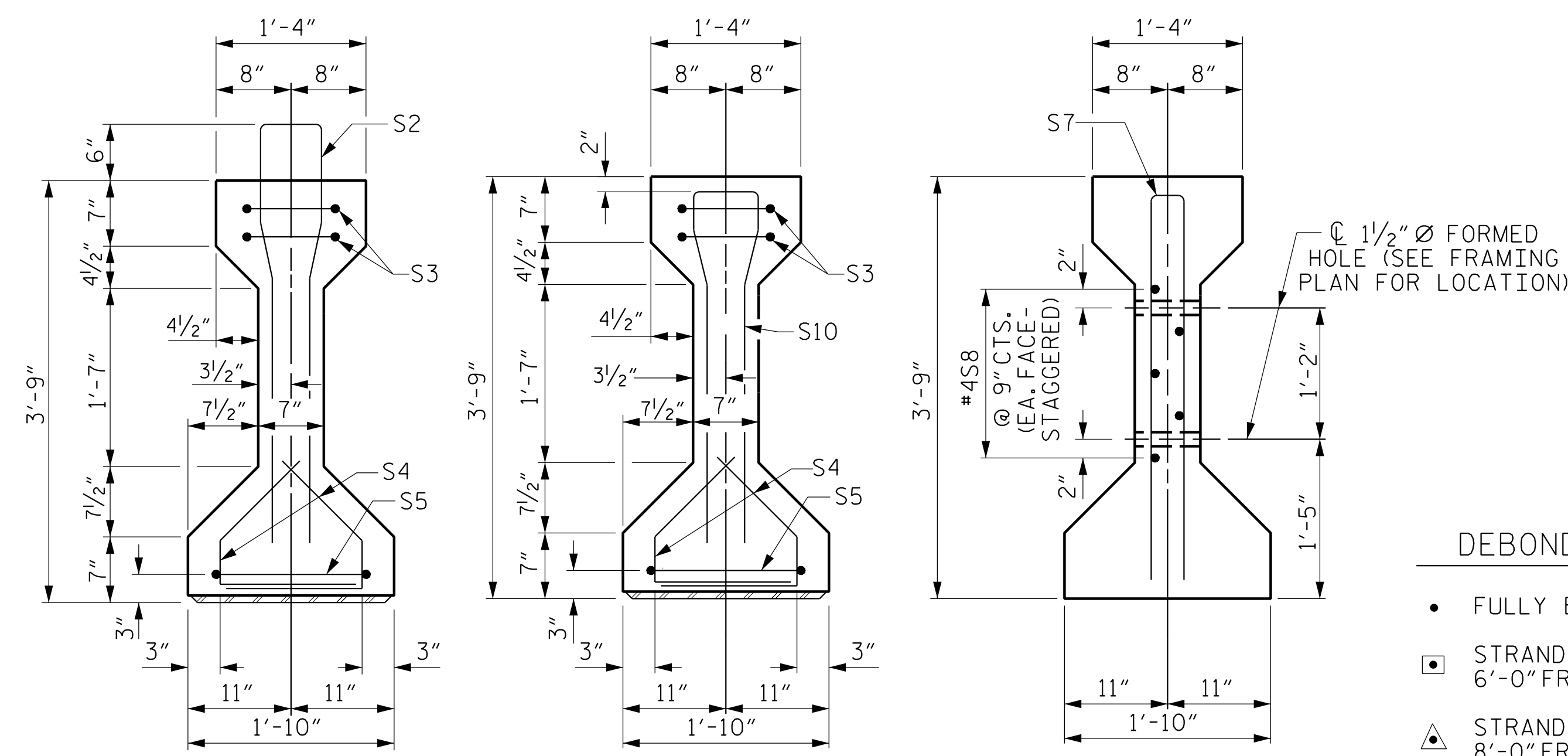
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ROBESON COUNTY
 STATION: 586+14.00 -L- POT

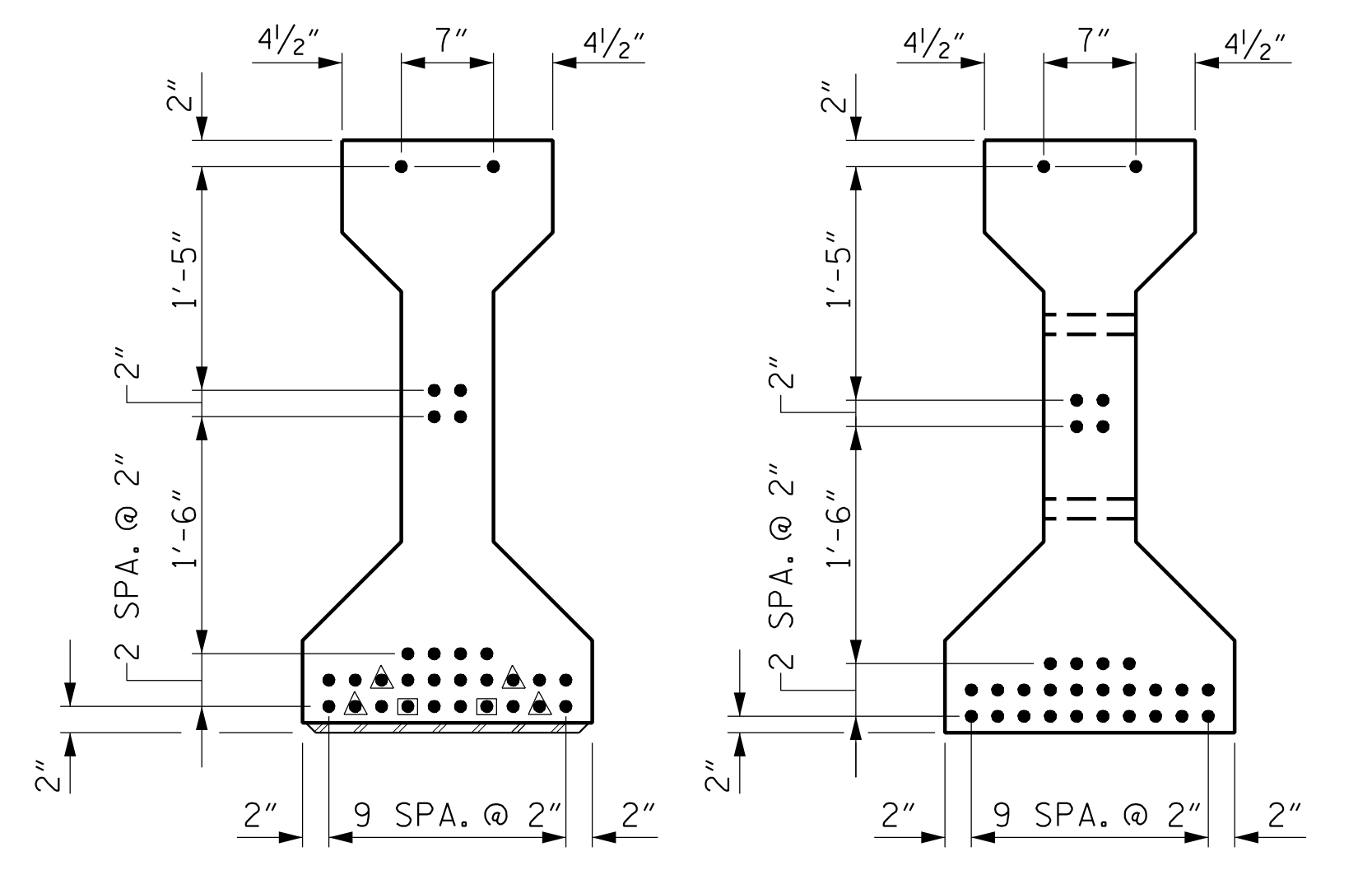
SHEET 5 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS "B" BAR LAYOUT STAGE III					
SHEET NO. S5-19					
TOTAL SHEETS 64					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

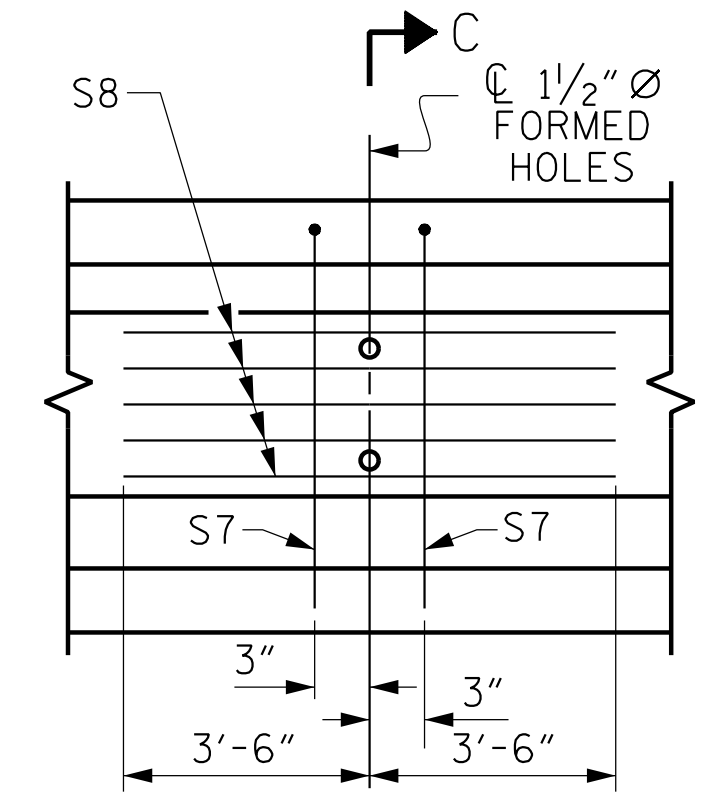
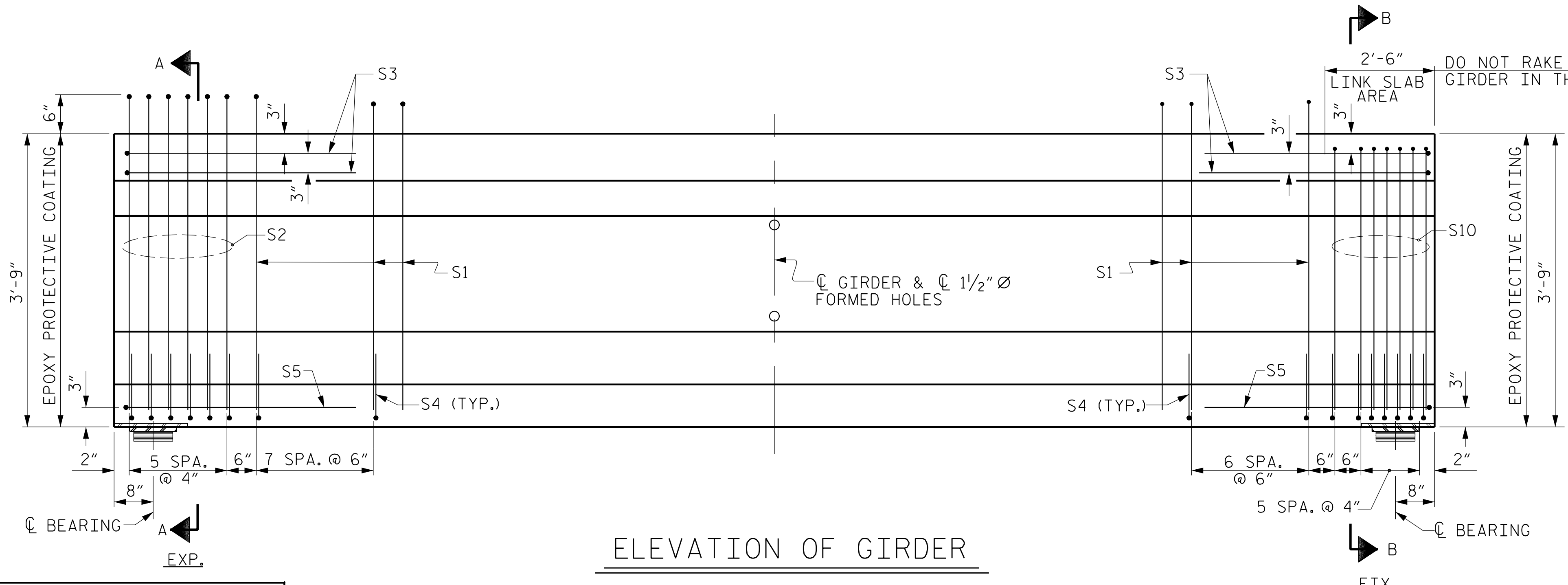
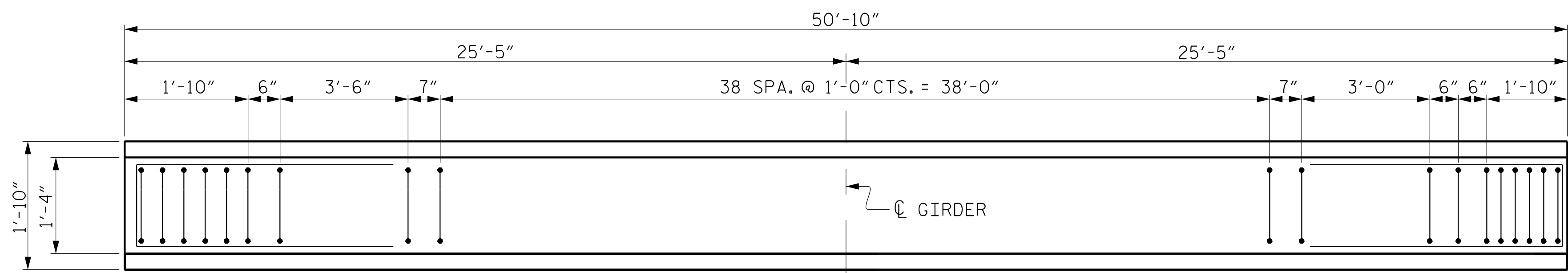
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- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

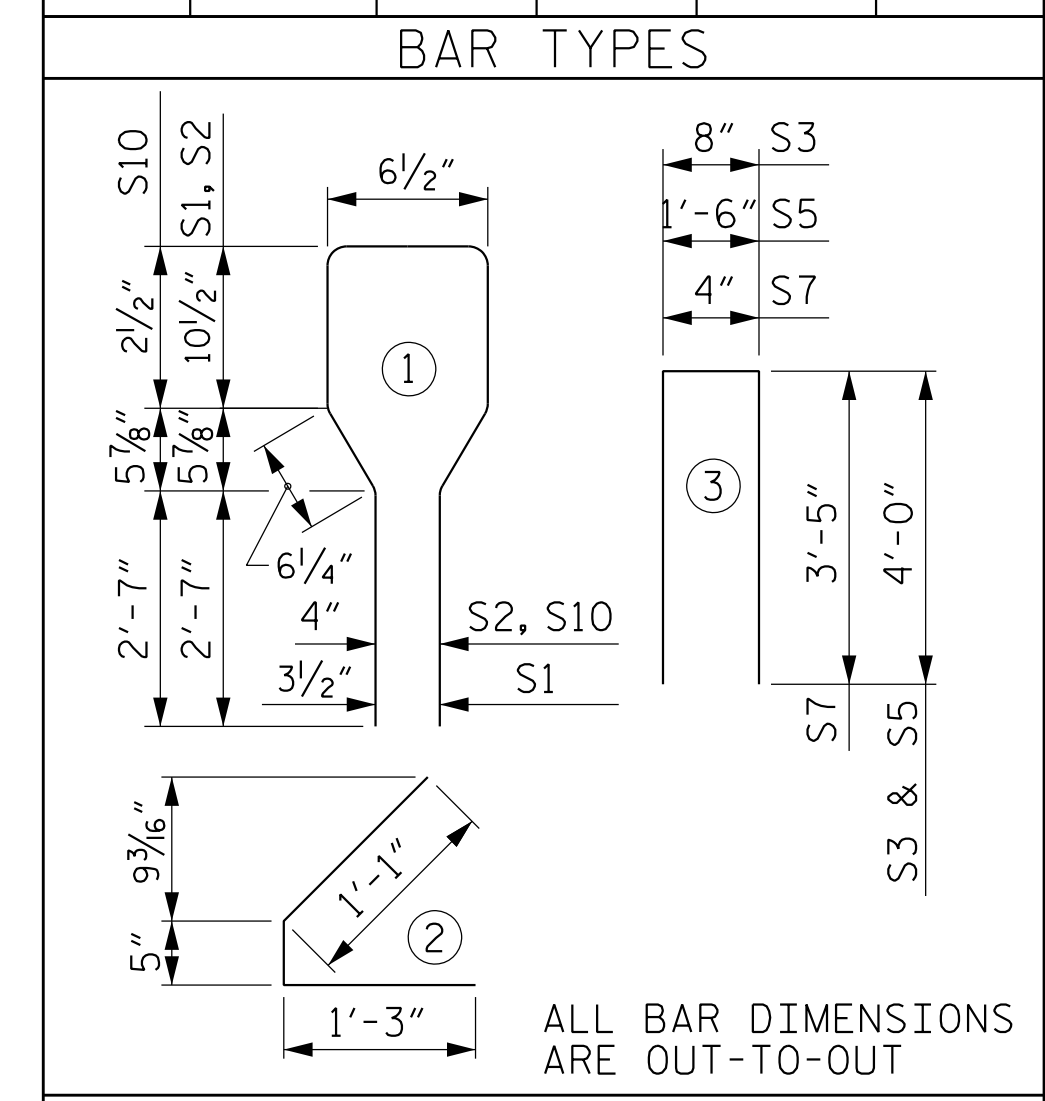


0.6" Ø LOW RELAXATION STRAND LAYOUT



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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	54	#4	1	8'-6"	307
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	7	#6	1	7'-2"	75



QUANTITIES FOR ONE GIRDER			
GDRS. 1 - 15	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	636	7.3	30

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
30	50'-10"	1525'-0"

PLANS PREPARED BY:

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
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THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

4/24/2022

PROJECT NO. **I-5987B**
ROBESON COUNTY
 STATION: **586+14.00 -L- POT**

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

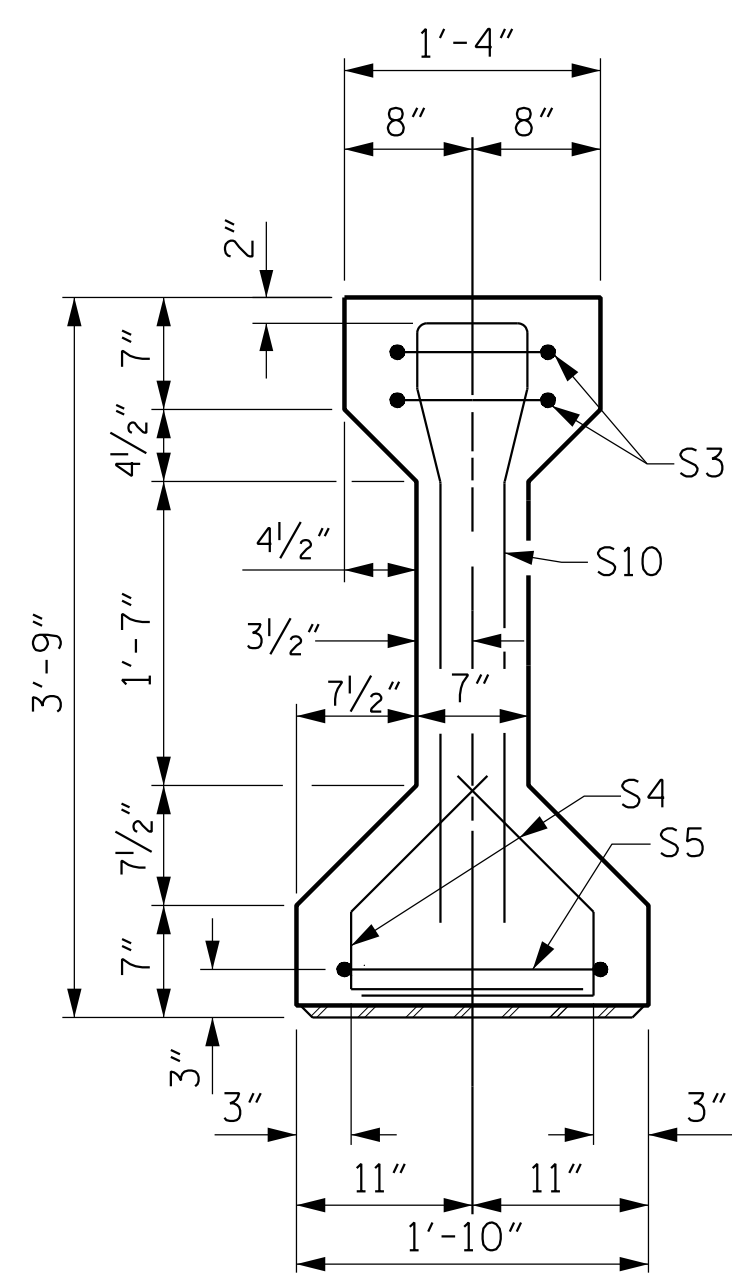
**STANDARD
 AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER
 -LINK SLAB
 SPAN A & C**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-21
1			3			TOTAL SHEETS
2			4			64

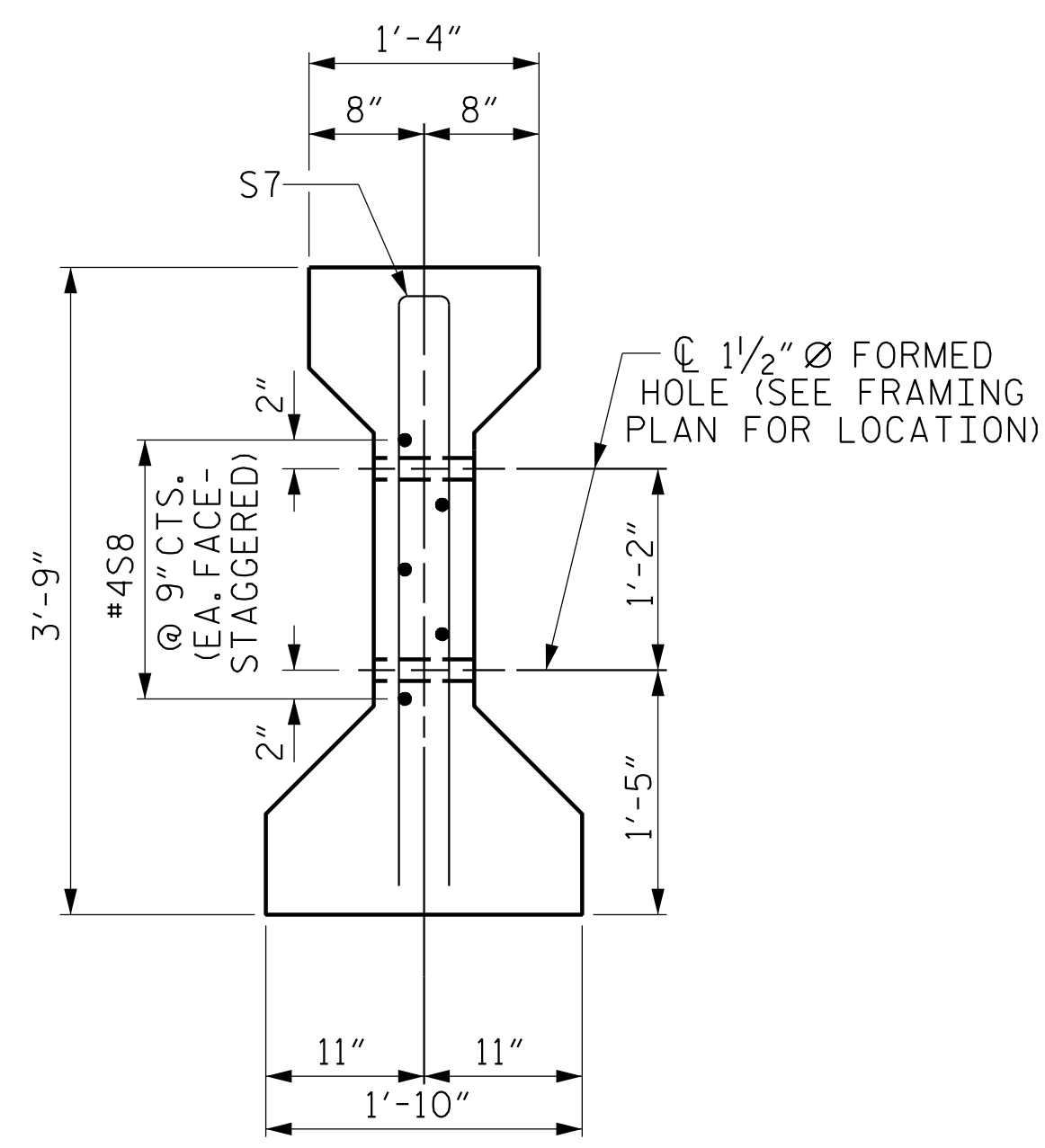
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ASSEMBLED BY : **W. B. ALLEN** DATE : 12/21
 CHECKED BY : **G. F. WILSON** DATE : 2/22
 DRAWN BY : **BNB** 09/21
 CHECKED BY : **AAI** 09/21

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SECTION B-B

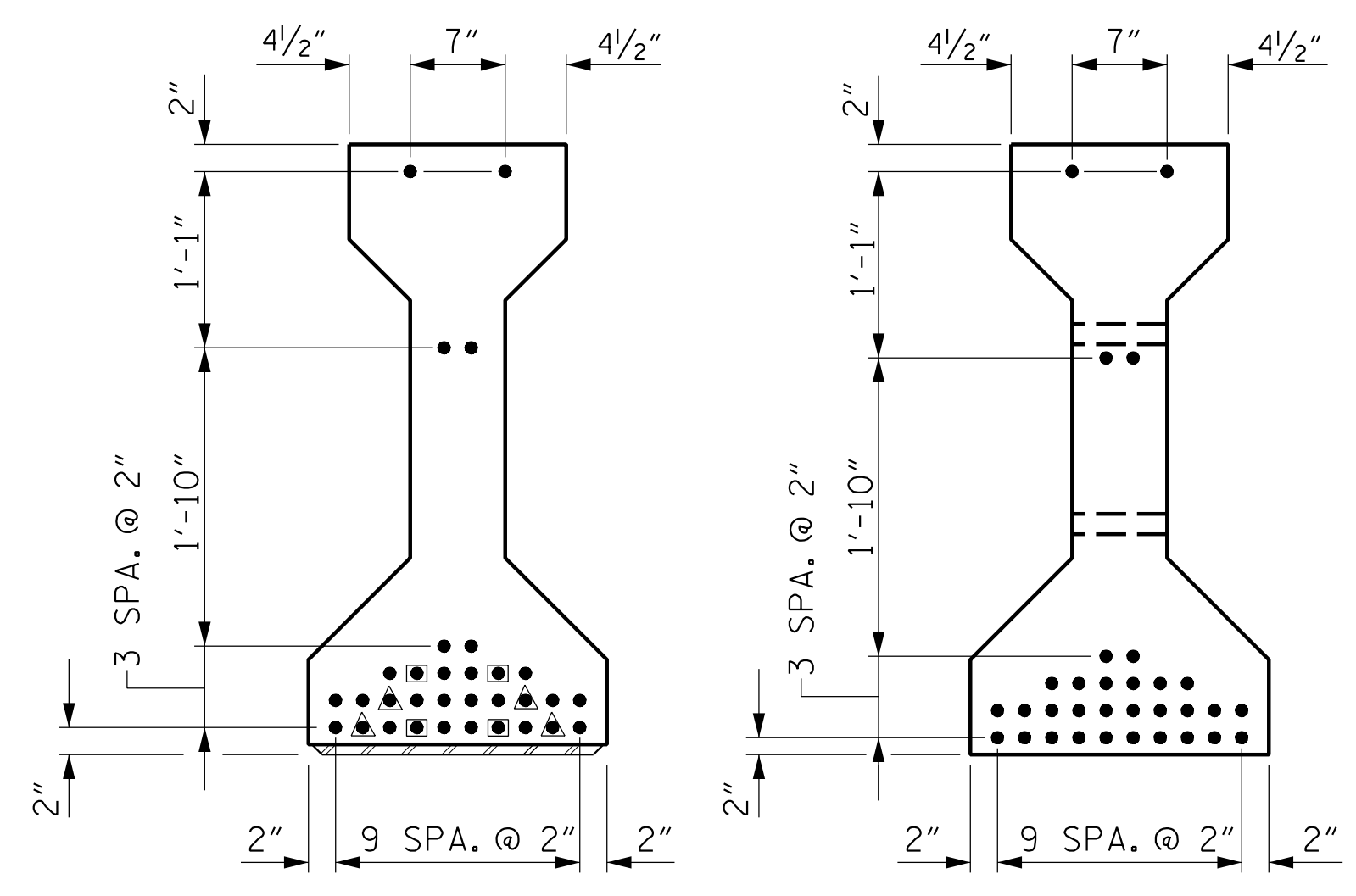


SECTION C-C

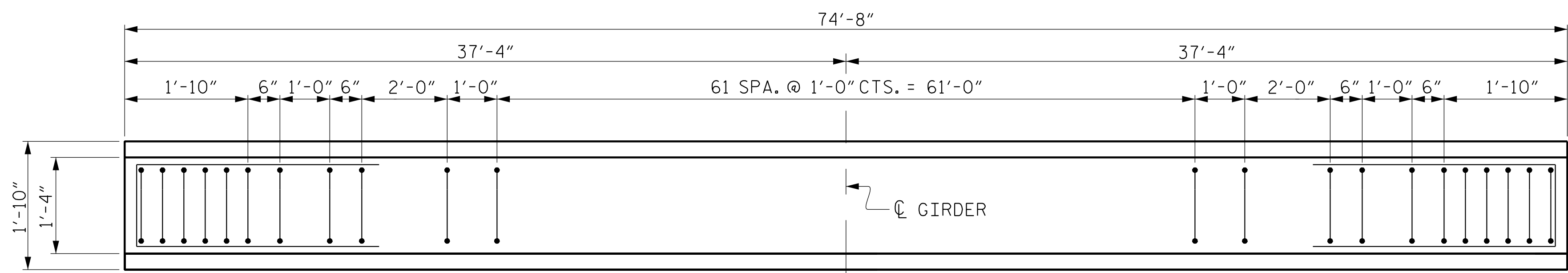
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

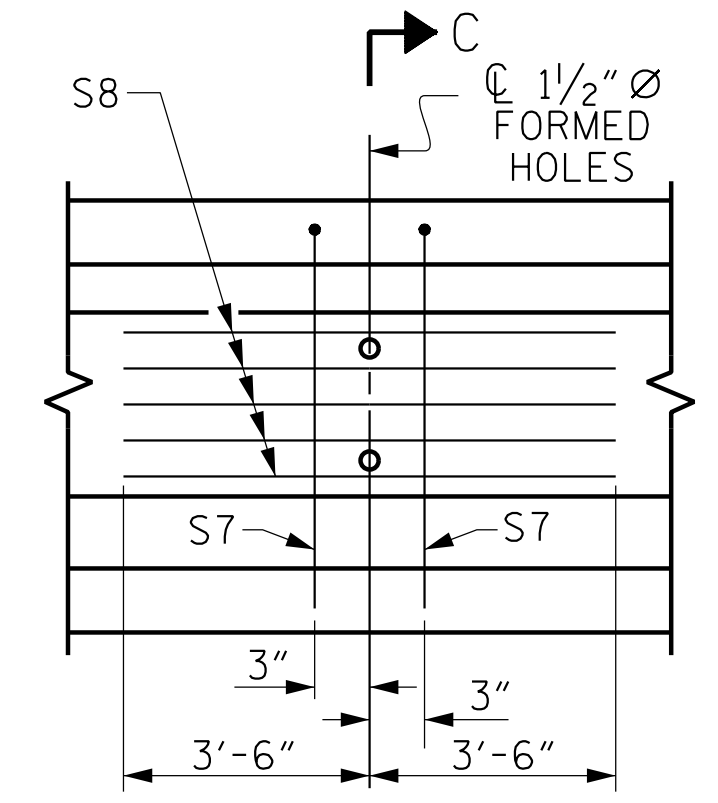
- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



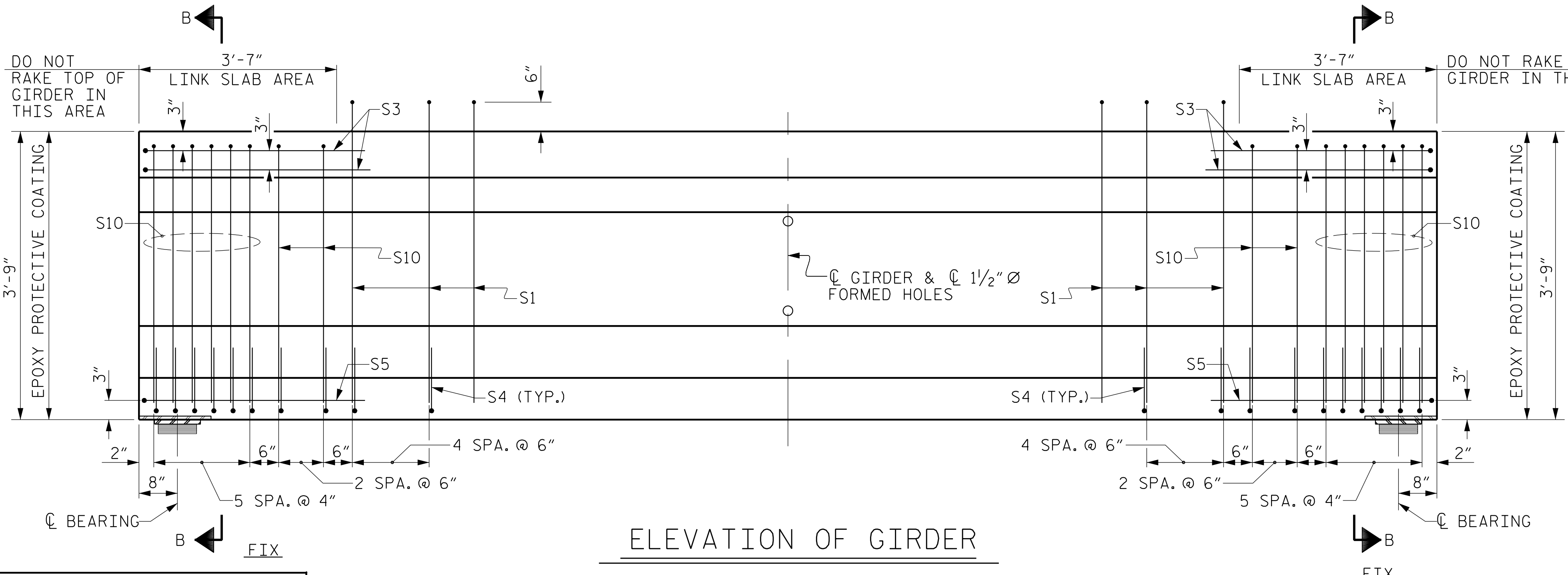
AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

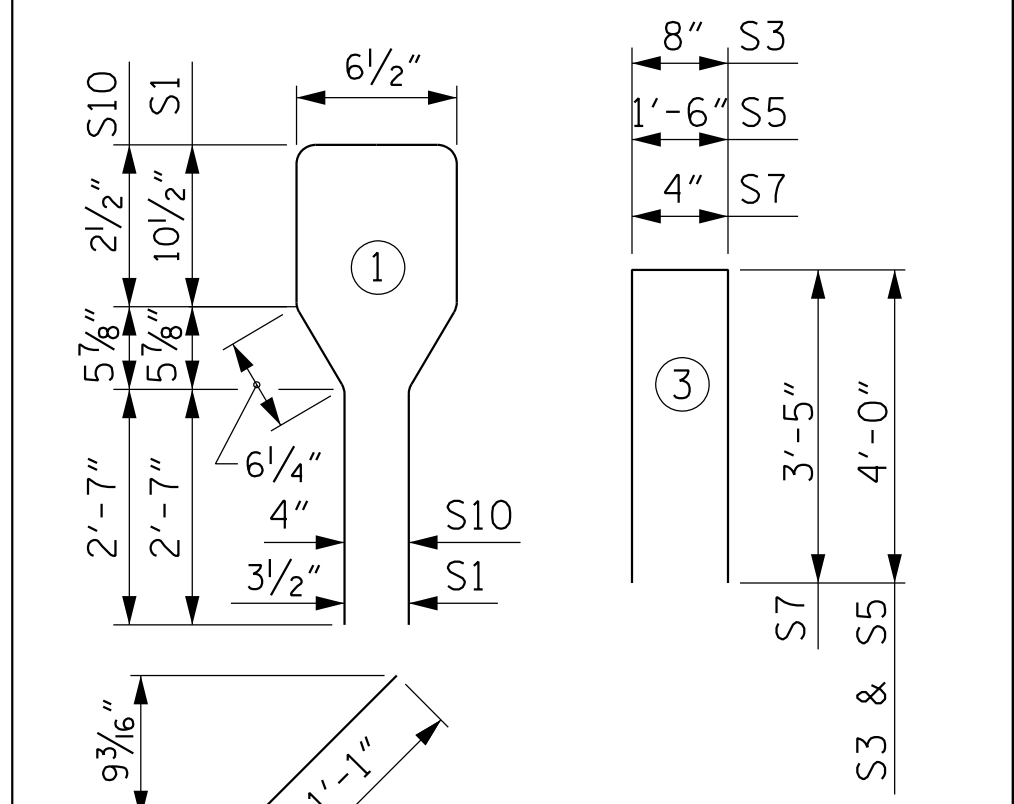


ELEVATION OF GIRDER

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 GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	8'-6"	409
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	18	#6	1	7'-2"	194

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
GDRS. 1 - 15	REINFORCING STEEL	10000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	780	10.7	32

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
15	74'-8"	1120'-0"

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

SHEET 2 OF 4
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
-LINK SLAB
SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-22
1			3			TOTAL SHEETS
2			4			64

PLANS PREPARED BY:

NV5

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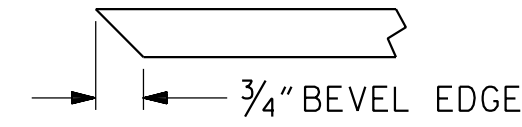
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4/25/2022

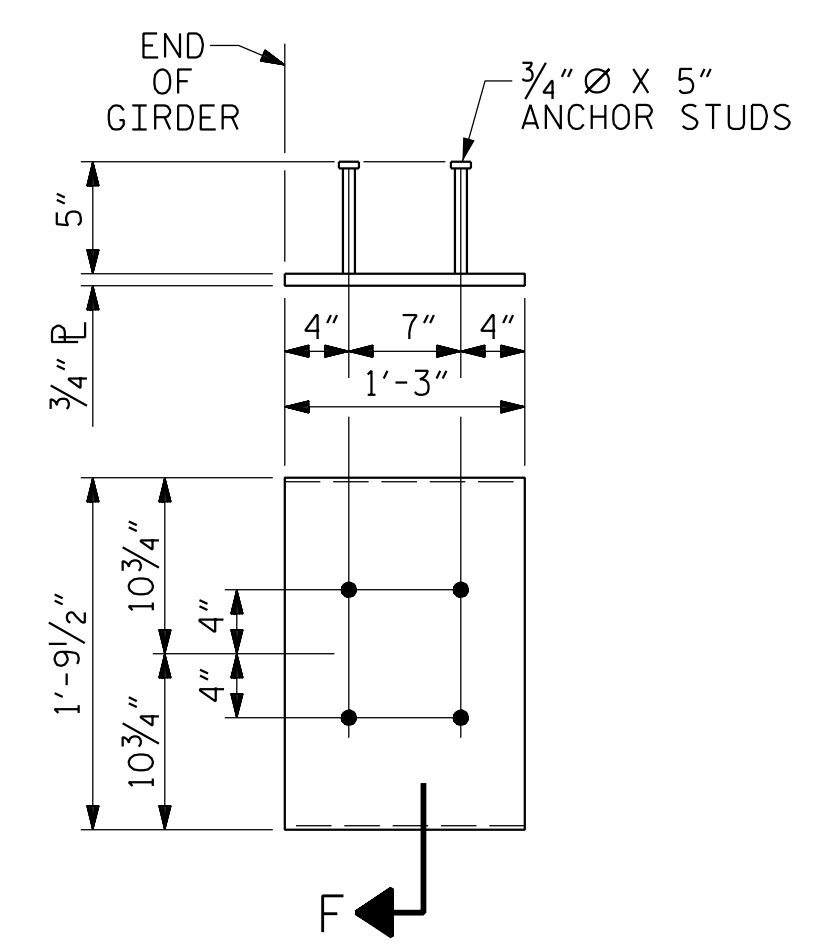
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ASSEMBLED BY : W. B. ALLEN	DATE : 12/21
CHECKED BY : G. F. WILSON	DATE : 2/22
DRAWN BY : BNB 09/21	
CHECKED BY : AAI 09/21	



SECTION "F"
(SEE NOTES)



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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.

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 6300 PSI IN SPANS A & C.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7500 PSI IN 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 SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER AND WHERE NOTED ON THE GIRDER SHEET.

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.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS - SPAN A & C

0.6" Ø LOW RELAXATION	GIRDERS 1 - 15																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.015	0.030	0.044	0.057	0.068	0.077	0.085	0.091	0.094	0.095	0.094	0.091	0.085	0.077	0.068	0.057	0.044	0.030	0.015	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.003	0.005	0.008	0.011	0.013	0.015	0.017	0.018	0.019	0.019	0.019	0.018	0.017	0.015	0.013	0.011	0.008	0.005	0.003	0.0
FINAL CAMBER ↑	0.0	1/8"	5/16"	7/16"	9/16"	11/16"	3/4"	13/16"	7/8"	7/8"	15/16"	7/8"	7/8"	13/16"	3/4"	11/16"	9/16"	7/16"	5/16"	1/8"	0.0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS - SPAN B

0.6" Ø LOW RELAXATION	GIRDERS 1 & 15																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.030	0.059	0.087	0.112	0.135	0.153	0.169	0.180	0.186	0.189	0.186	0.180	0.169	0.153	0.135	0.112	0.087	0.059	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.016	0.031	0.046	0.062	0.074	0.086	0.093	0.101	0.103	0.106	0.103	0.101	0.093	0.086	0.074	0.062	0.046	0.031	0.016	0.0
FINAL CAMBER ↑	0.0	3/16"	5/16"	1/2"	5/8"	3/4"	13/16"	15/16"	15/16"	1"	1"	1"	15/16"	15/16"	13/16"	3/4"	5/8"	1/2"	5/16"	3/16"	0.0

0.6" Ø LOW RELAXATION	GIRDERS 2 - 6, 13 & 14																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.030	0.059	0.087	0.112	0.135	0.153	0.169	0.180	0.186	0.189	0.186	0.180	0.169	0.153	0.135	0.112	0.087	0.059	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.016	0.031	0.046	0.062	0.074	0.086	0.096	0.105	0.114	0.117	0.120	0.117	0.114	0.105	0.096	0.083	0.069	0.052	0.035	0.018
FINAL CAMBER ↑	0.0	1/8"	5/16"	7/16"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	13/16"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	5/16"	1/8"	0.0

0.6" Ø LOW RELAXATION	GIRDERS 7, 11 & 12																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.030	0.059	0.087	0.112	0.135	0.153	0.169	0.180	0.186	0.189	0.186	0.180	0.169	0.153	0.135	0.112	0.087	0.059	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.012	0.024	0.036	0.048	0.057	0.067	0.072	0.078	0.080	0.082	0.080	0.078	0.072	0.067	0.057	0.048	0.036	0.024	0.012	0.0
FINAL CAMBER ↑	0.0	3/16"	7/16"	5/8"	3/4"	15/16"	11/16"	13/16"	11/4"	11/4"	11/4"	11/4"	11/4"	13/16"	11/16"	15/16"	3/4"	5/8"	7/16"	3/16"	0.0

0.6" Ø LOW RELAXATION	GIRDER 8																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.030	0.059	0.087	0.112	0.135	0.153	0.169	0.180	0.186	0.189	0.186	0.180	0.169	0.153	0.135	0.112	0.087	0.059	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.015	0.029	0.043	0.058	0.069	0.080	0.087	0.095	0.097	0.100	0.097	0.095	0.087	0.080	0.069	0.058	0.043	0.029	0.015	0.0
FINAL CAMBER ↑	0.0	3/16"	3/8"	1/2"	5/8"	13/16"	7/8"	1"	1"	11/16"	11/16"	11/16"	1"	1"	7/8"	13/16"	5/8"	1/2"	3/8"	3/16"	0.0

0.6" Ø LOW RELAXATION	GIRDERS 9 & 10																				
	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.0	0.030	0.059	0.087	0.112	0.135	0.153	0.169	0.180	0.186	0.189	0.186	0.180	0.169	0.153	0.135	0.112	0.087	0.059	0.030	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.0	0.016	0.033	0.049	0.065	0.078	0.090	0.098	0.107	0.109	0.112	0.109	0.107	0.098	0.090	0.078	0.065	0.049	0.033	0.016	0.0
FINAL CAMBER ↑	0.0	3/16"	5/16"	7/16"	9/16"	11/16"	3/4"	7/8"	7/8"	15/16"	15/16"	15/16"	7/8"	7/8"	3/4"	11/16"	9/16"	7/16"	5/16"	3/16"	0.0

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

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PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PRESTRESSED CONCRETE GIRDER
FOR LINK SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-23
1			3			TOTAL SHEETS
2			4			64

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DRAWN BY :	W. B. ALLEN	DATE :	11/21
CHECKED BY :	G. F. WILSON	DATE :	2/22
DESIGN ENGINEER OF RECORD:	L. K. AUSTIN	DATE :	2/22

4/22/2022 5:49:20 PM G:\Projects\2019\2019\2019\CLIENTS\Structures\I-5987B (Big Marsh Swamp)\5987B_SML\G3_770536.dgn

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.
 TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

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

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

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

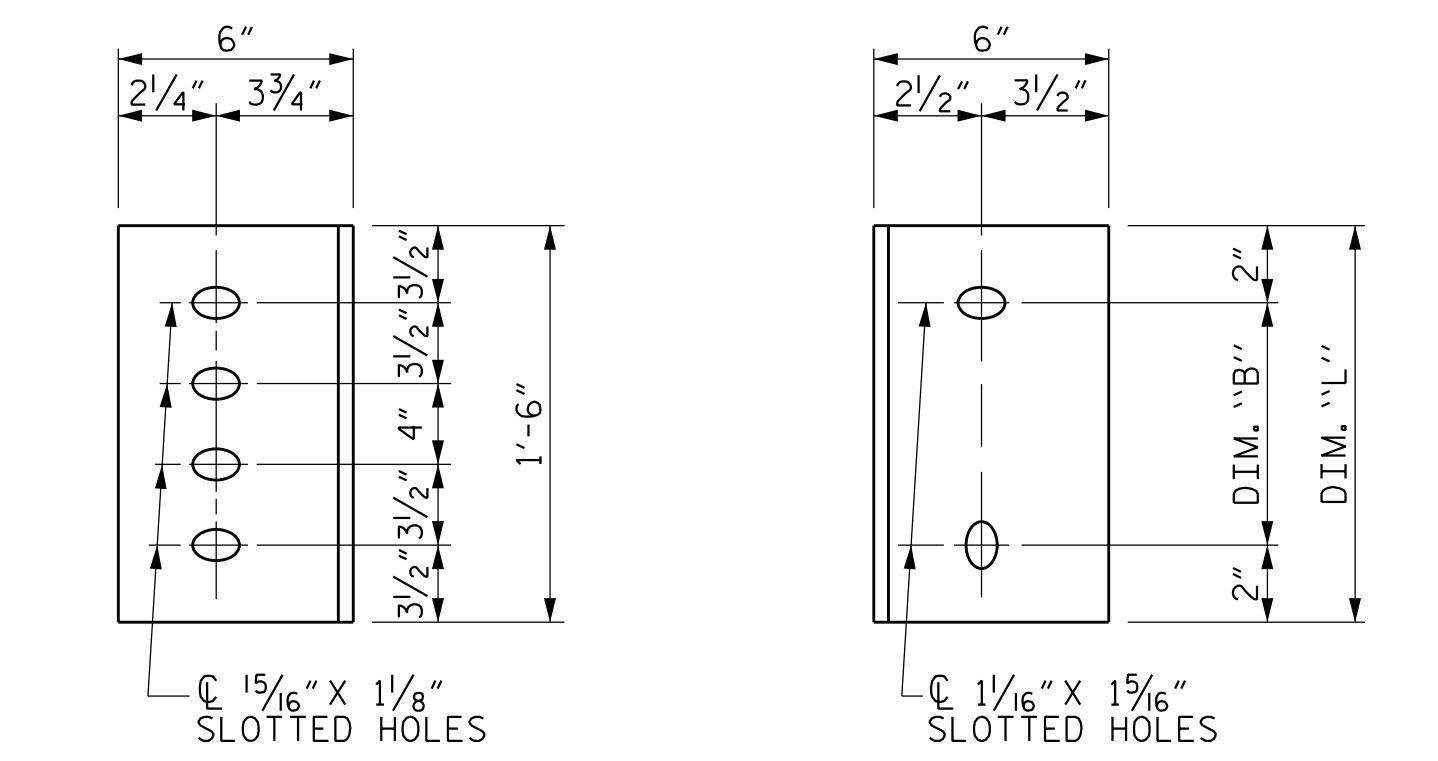
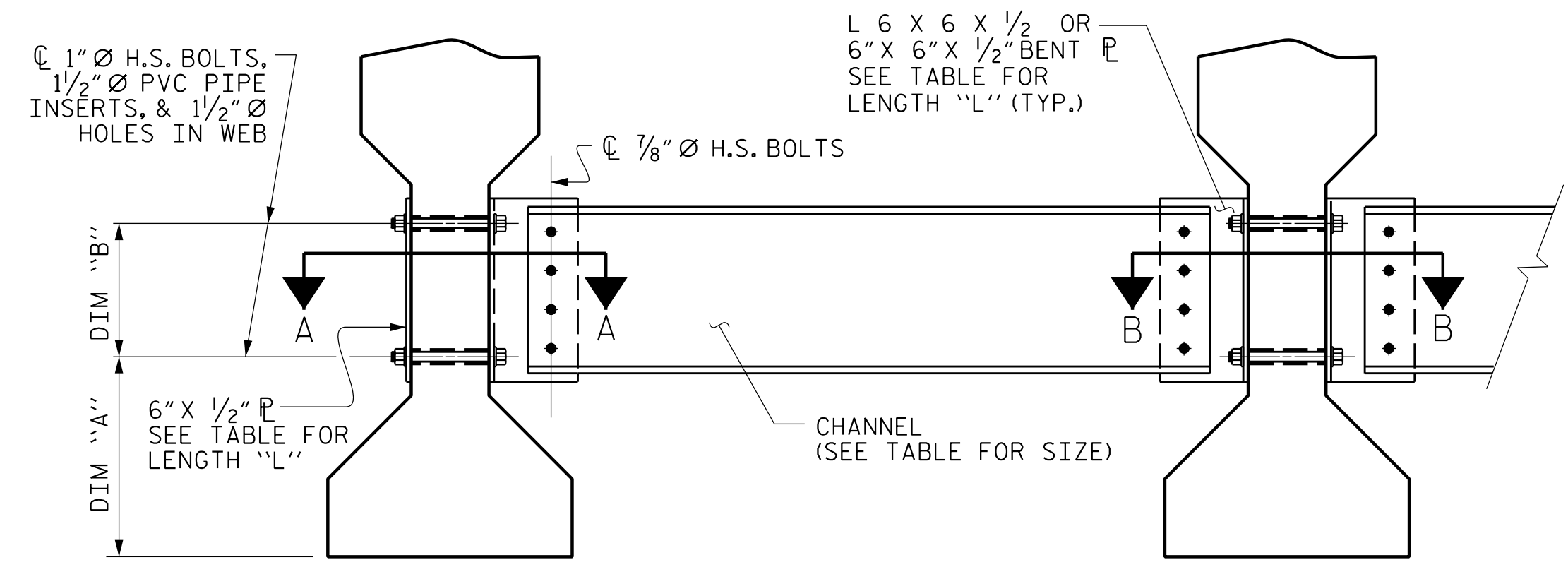
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

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

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

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



CONNECTOR PLATE DETAILS

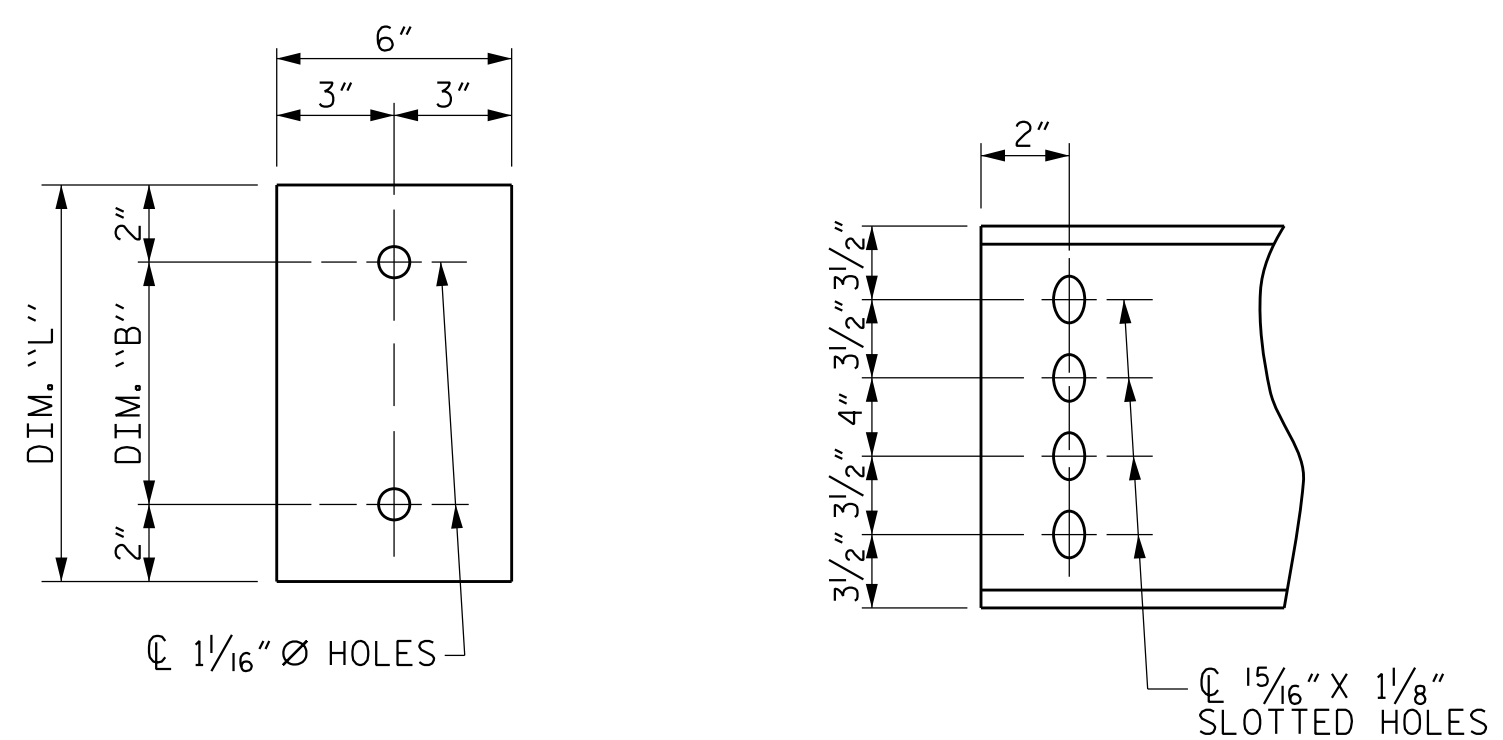
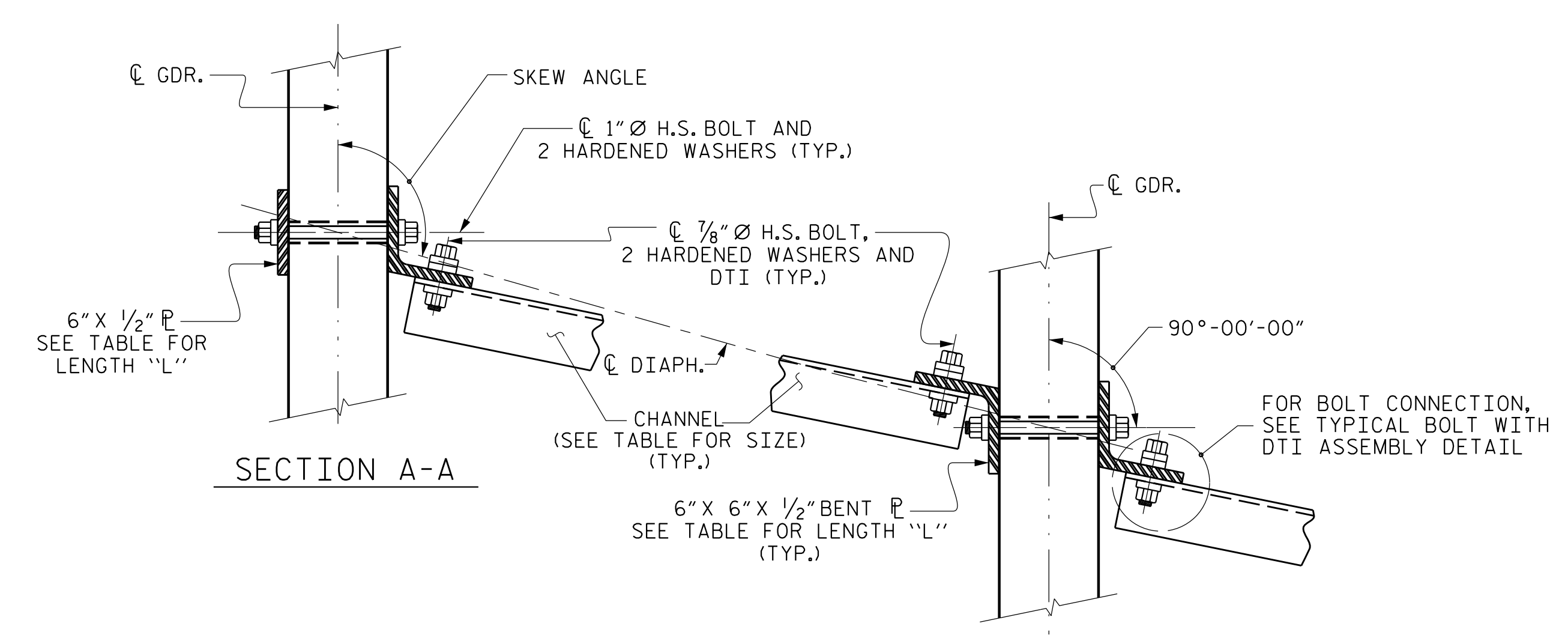
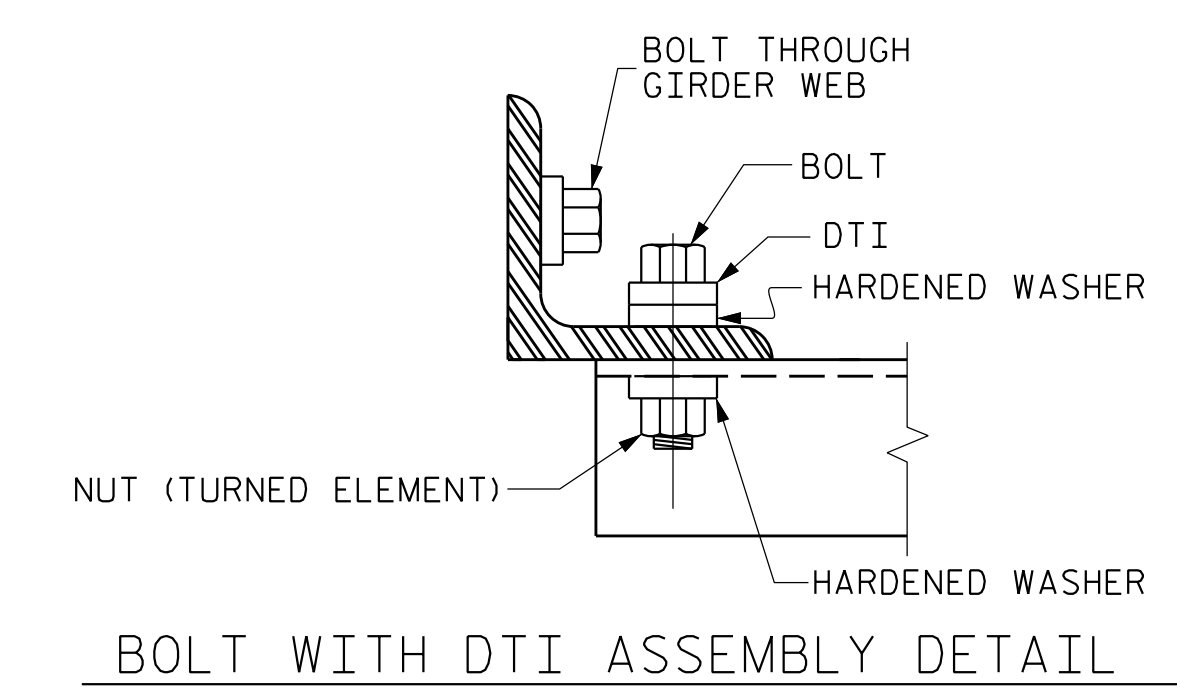


PLATE DETAILS



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

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

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE II, III, & IV
 PRESTRESSED CONCRETE
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-24
1			3			TOTAL SHEETS
2			4			64

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ASSEMBLED BY : W. B. ALLEN	DATE : 5/21
CHECKED BY : G. F. WILSON	DATE : 5/21
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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.

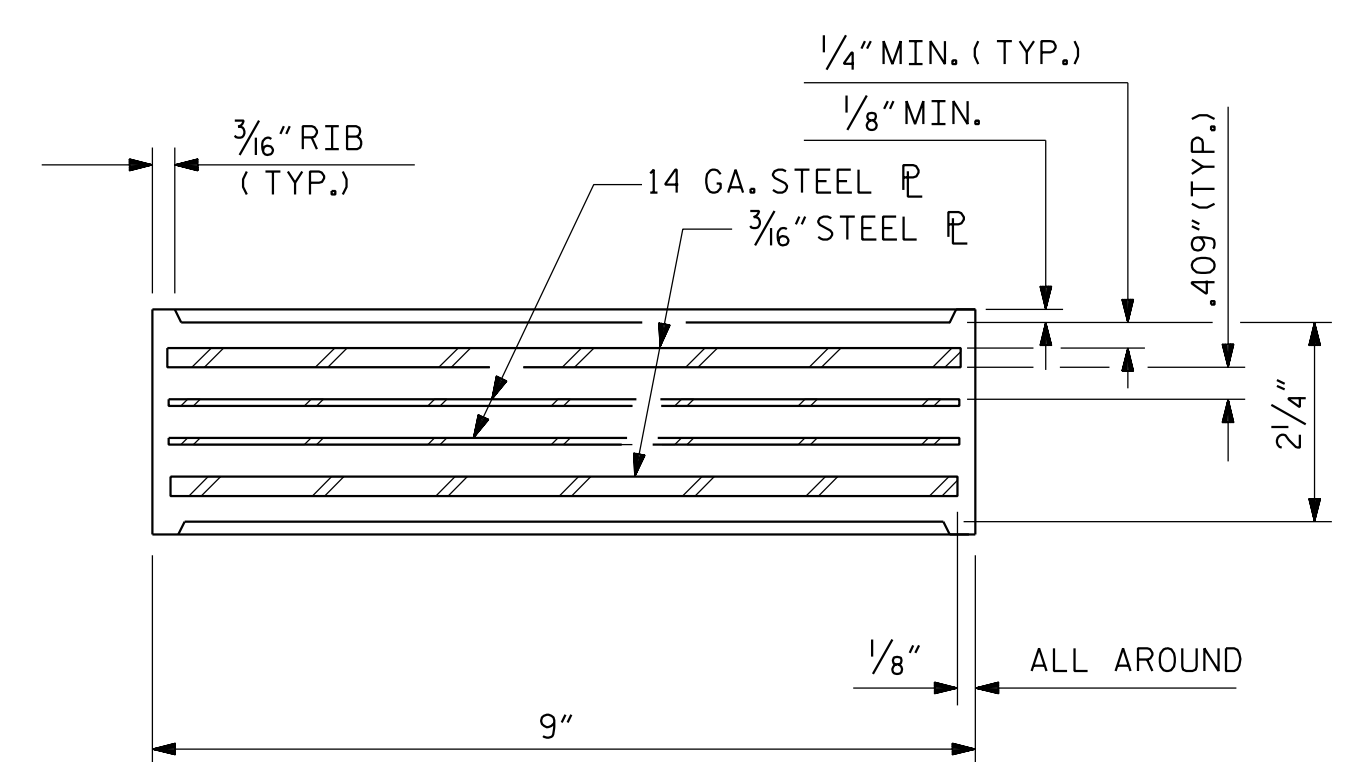
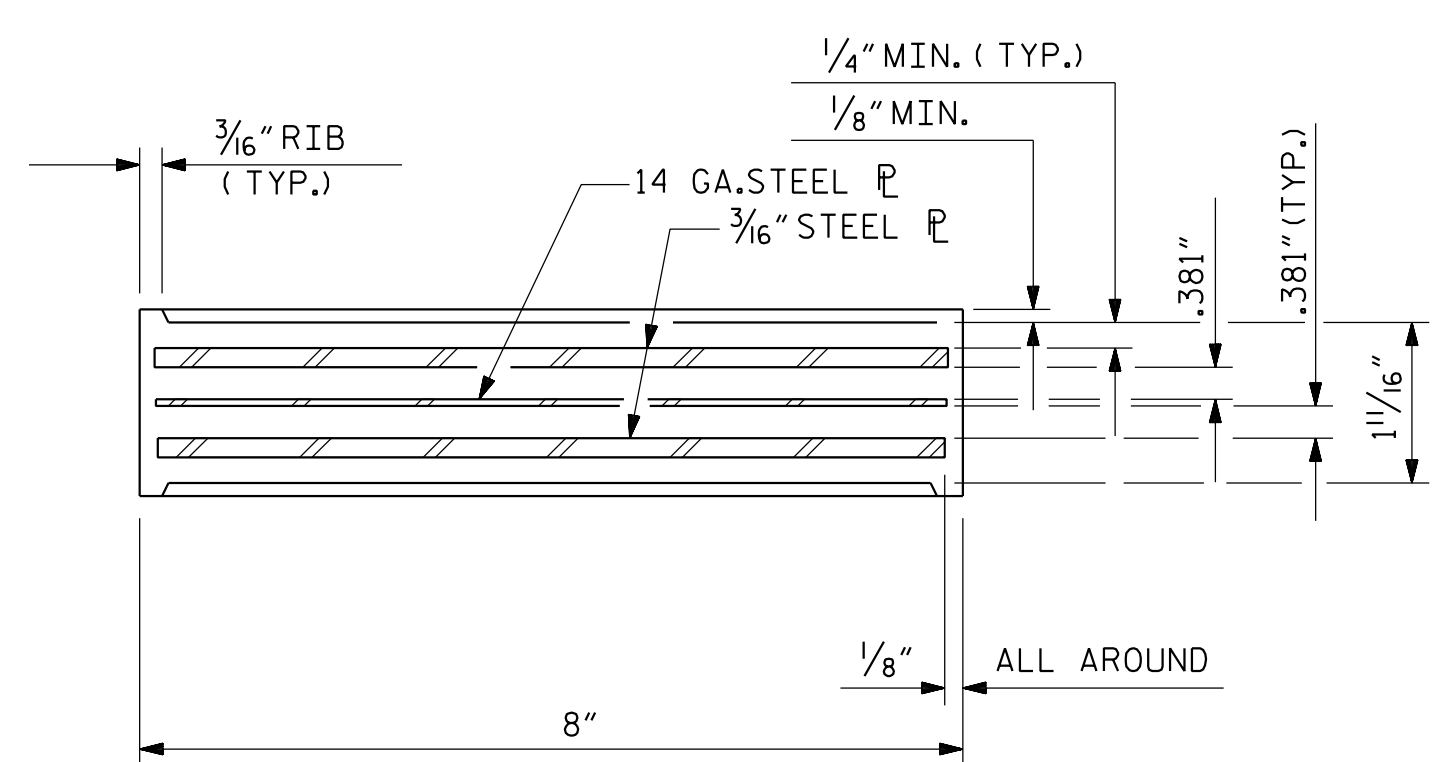
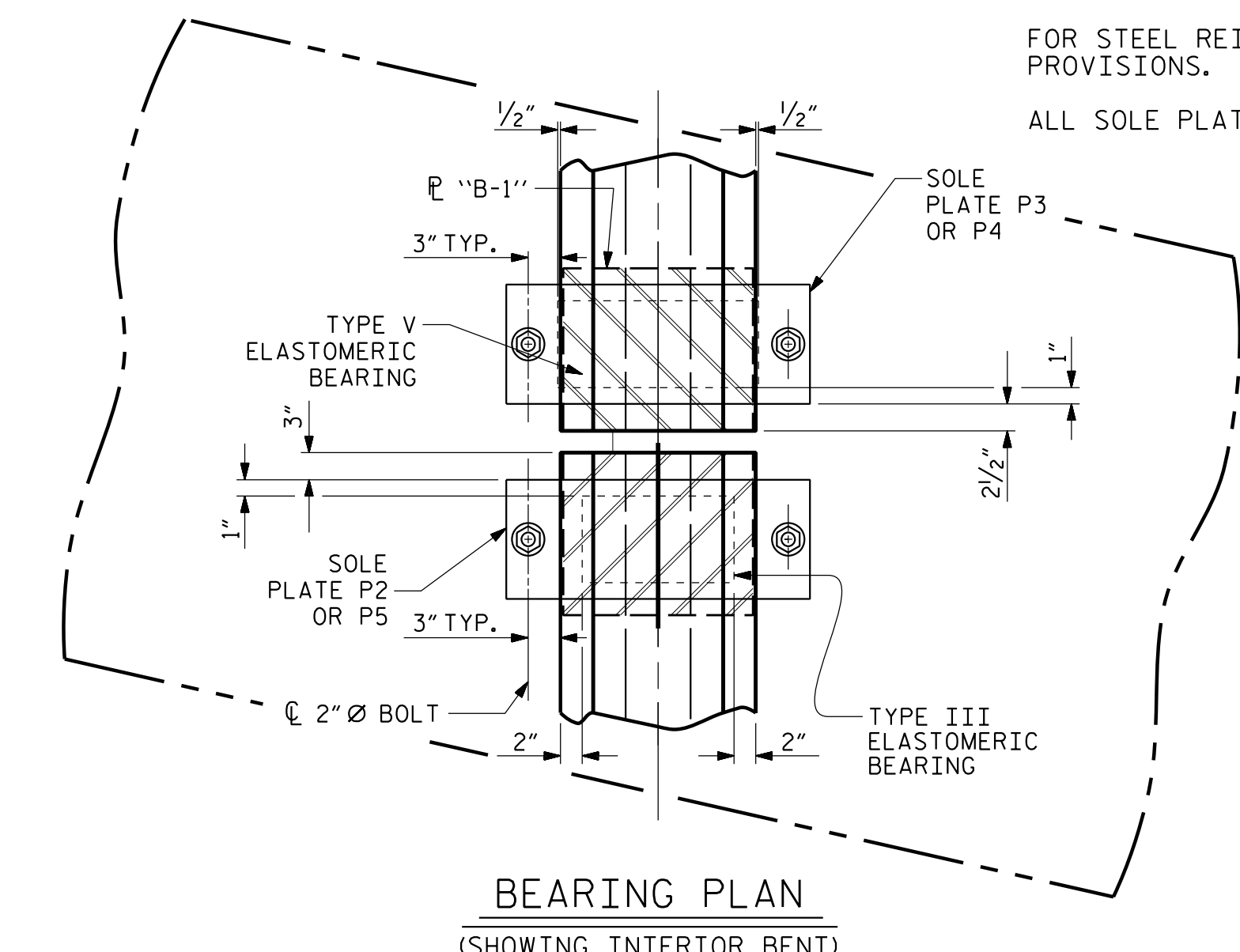
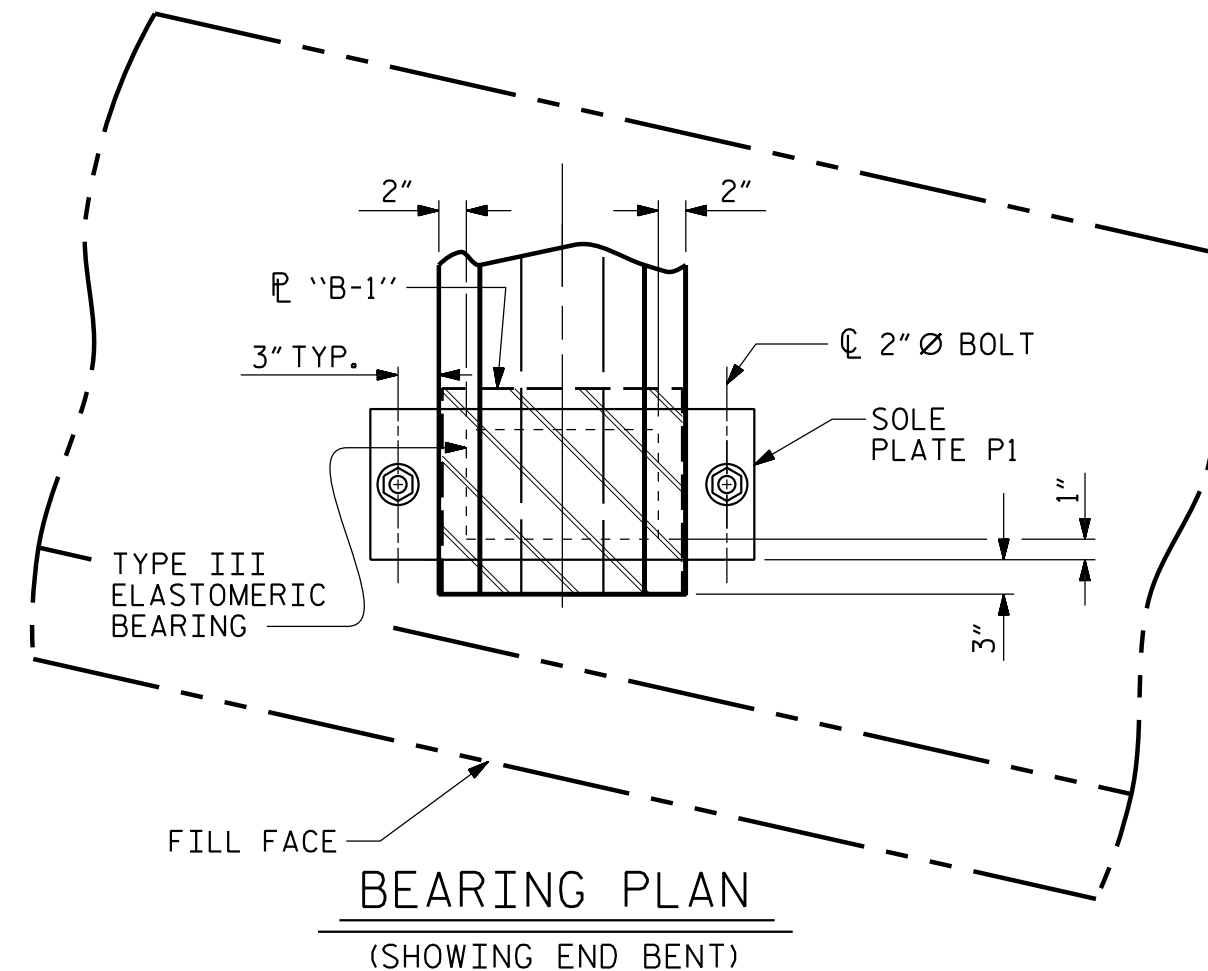
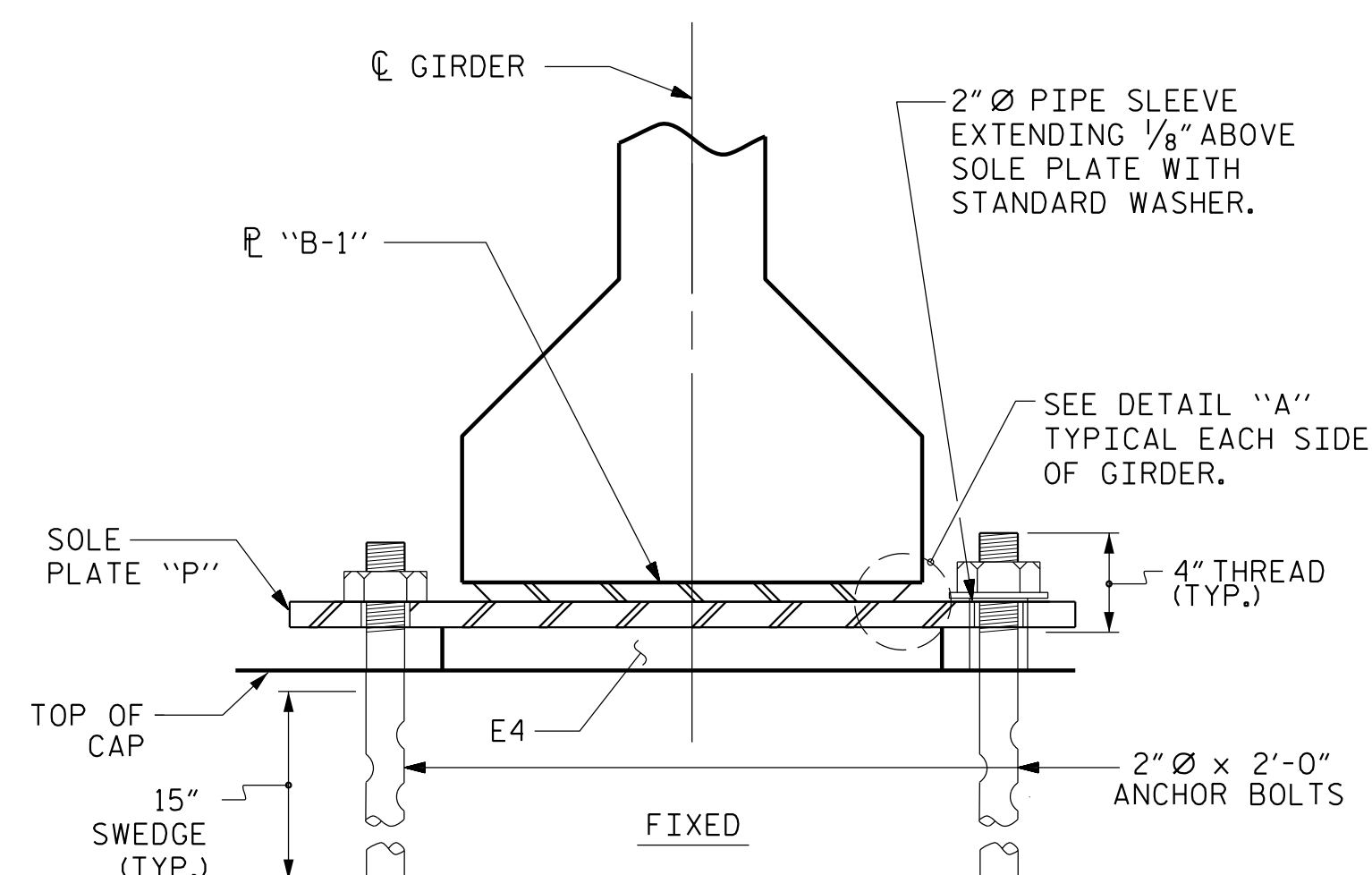
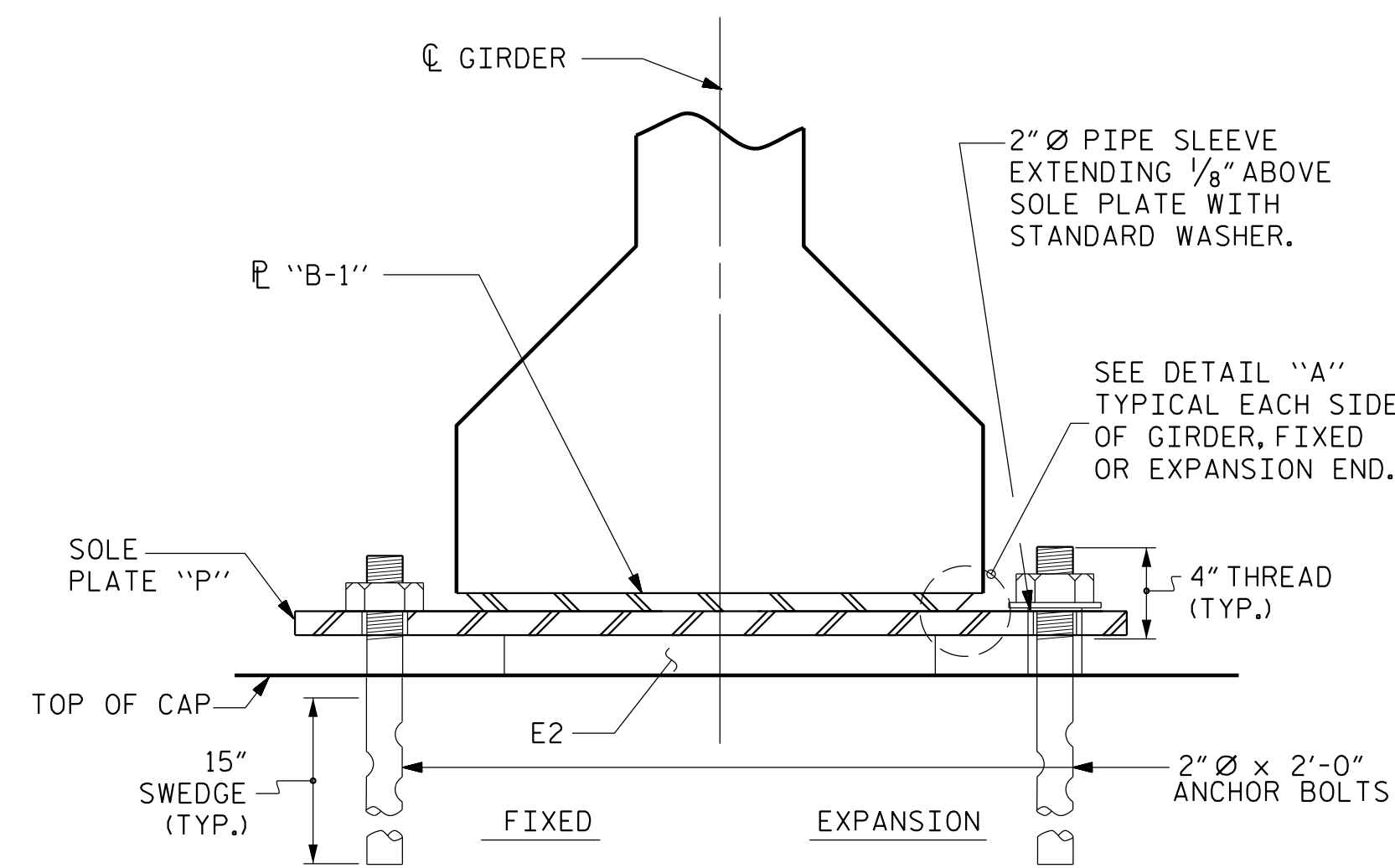
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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.

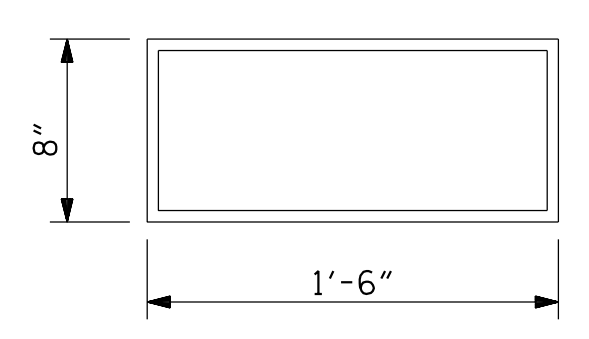
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



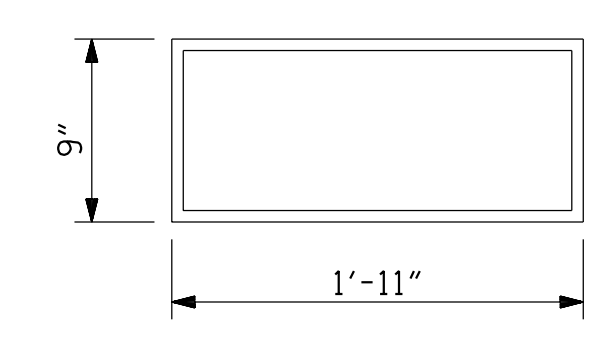
TYPICAL SECTION OF ELASTOMERIC BEARINGS

TYPICAL SECTION OF ELASTOMERIC BEARINGS



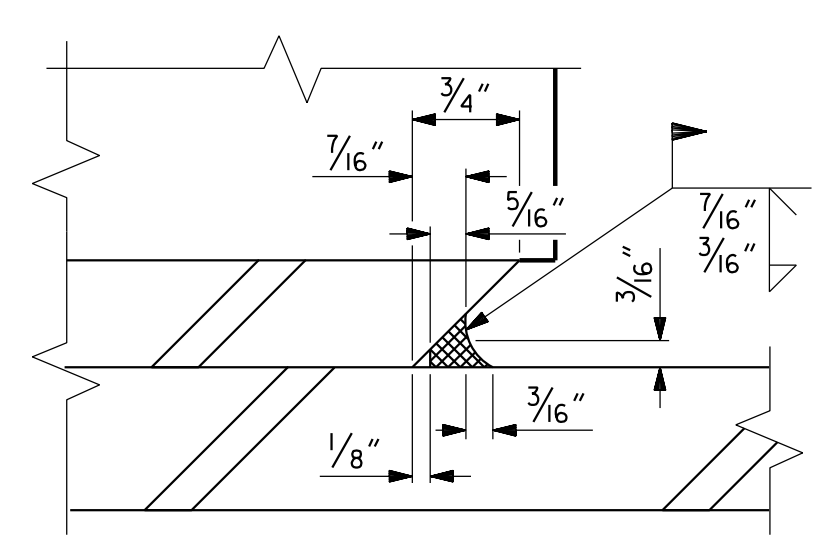
E2 (60 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE III

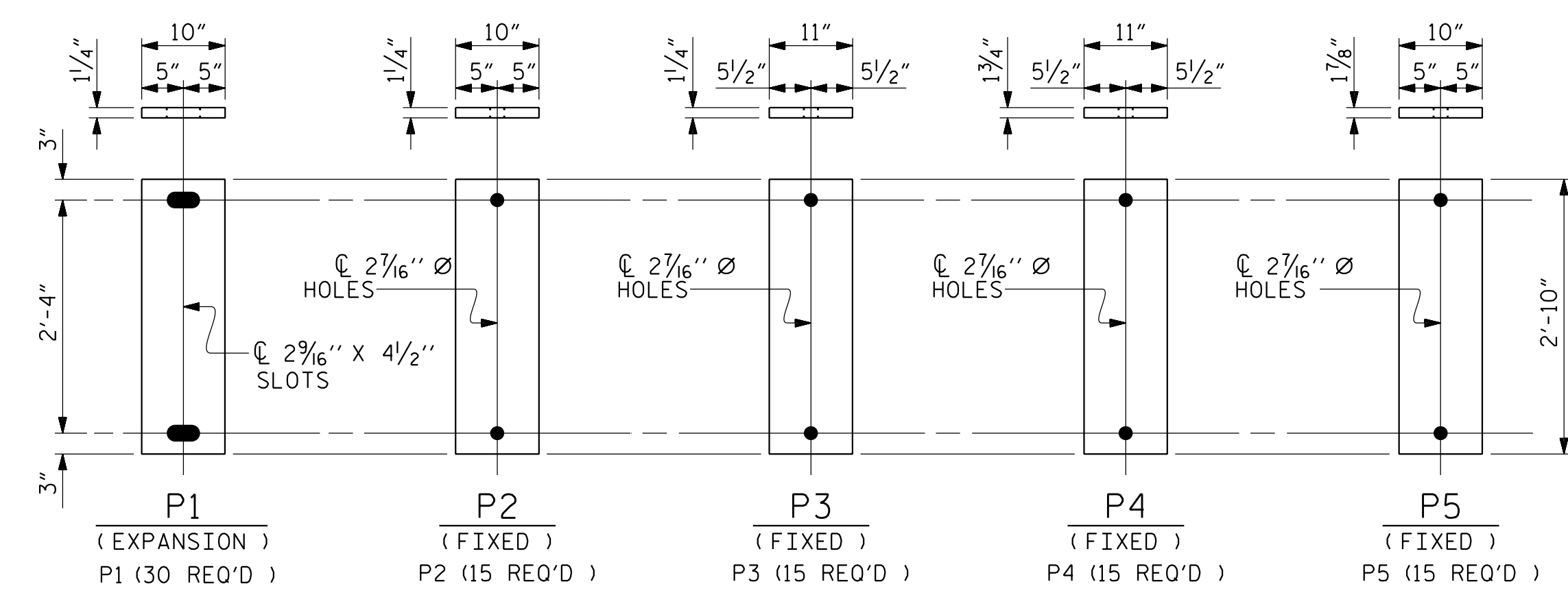


E4 (30 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



DETAIL "A"



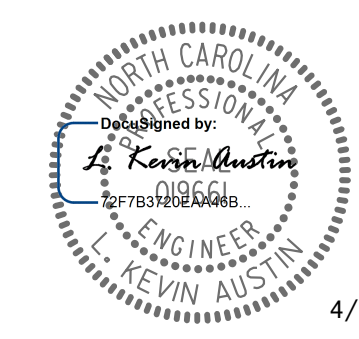
SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k
TYPE V	365 k

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

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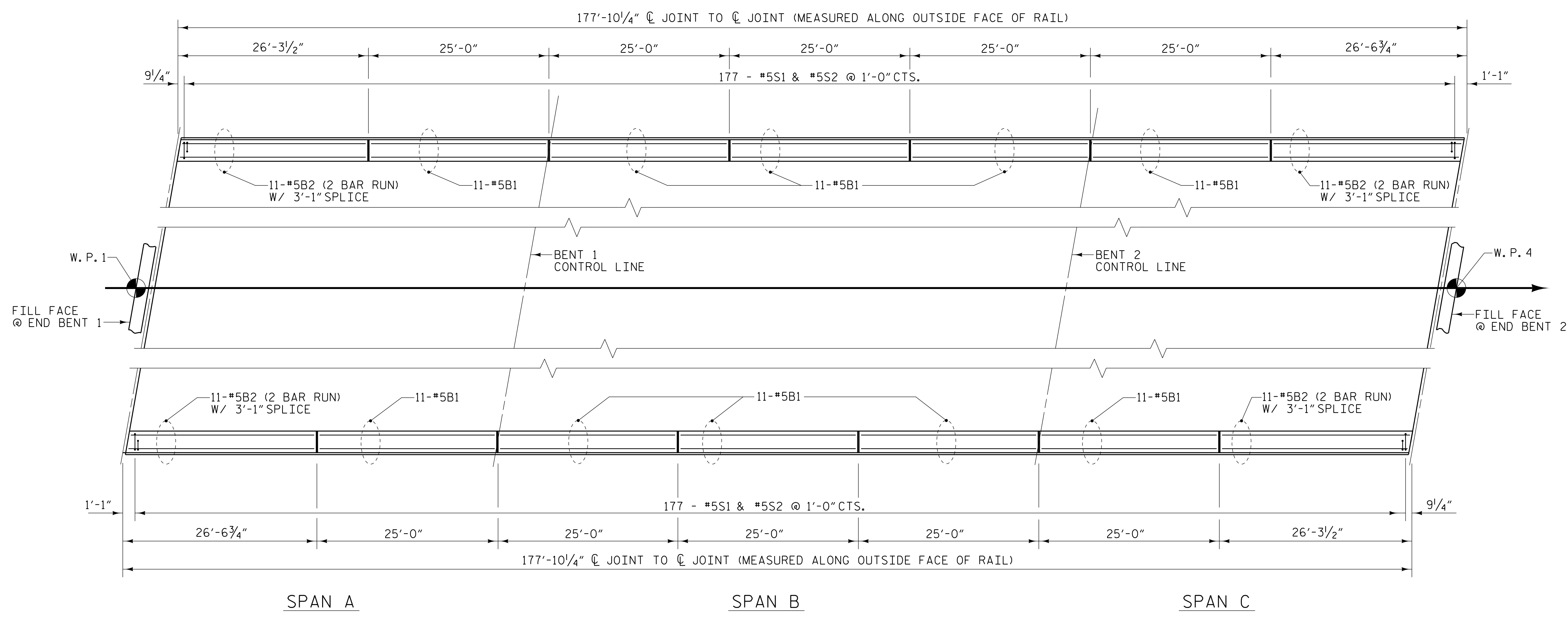
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-25
1			3			TOTAL SHEETS
2			4			64

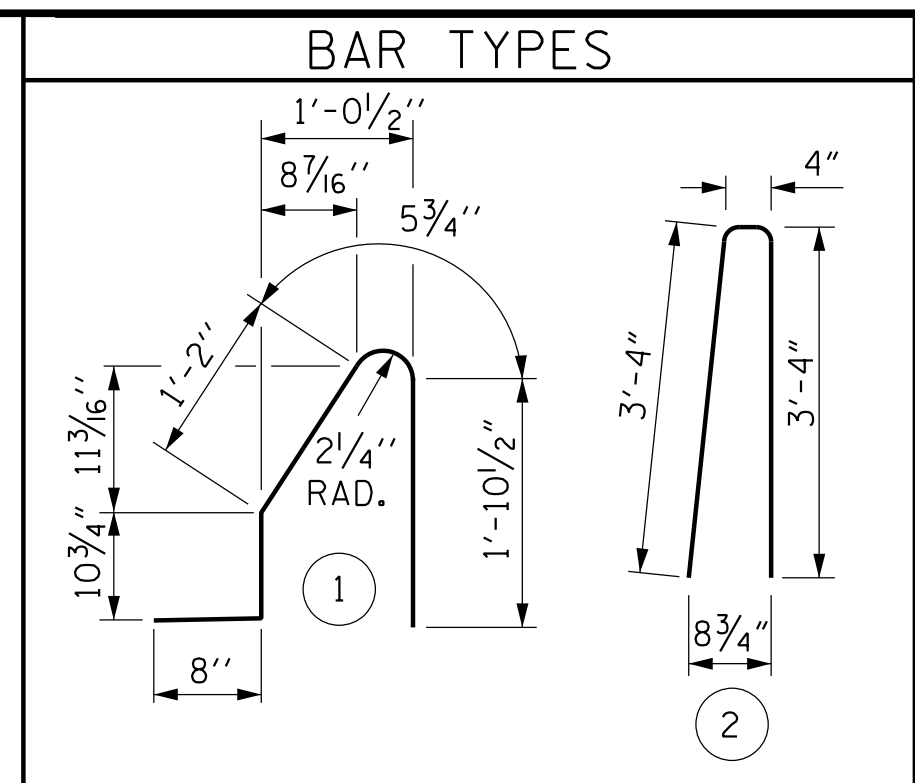
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ASSEMBLED BY: W. B. ALLEN DATE: 11/21
CHECKED BY: G. F. WILSON DATE: 2/22

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PLAN OF BARRIER RAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	110	#5	STR	24'-7"	2820
* B2	88	#5	STR	14'-7"	1339
* S1	354	#5	1	5'-1"	1877
* S2	354	#5	2	7'-0"	2585
* EPOXY COATED REINFORCING STEEL					8621 LBS.
CLASS AA CONCRETE					48.4 CU. YDS.
** CONCRETE BARRIER RAIL					395.71 LIN. FT.

** INCLUDES LENGTH OF BARRIER RAIL ON APPROACH SLABS

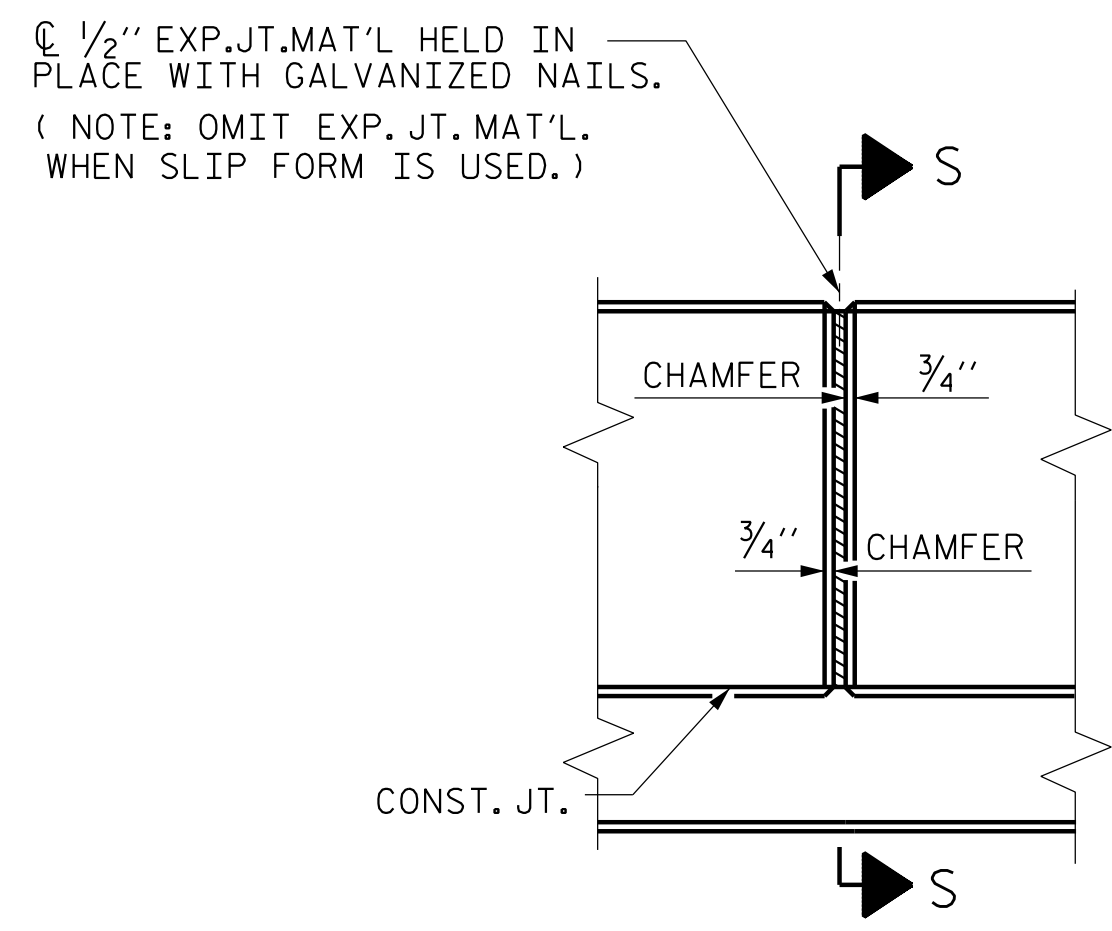
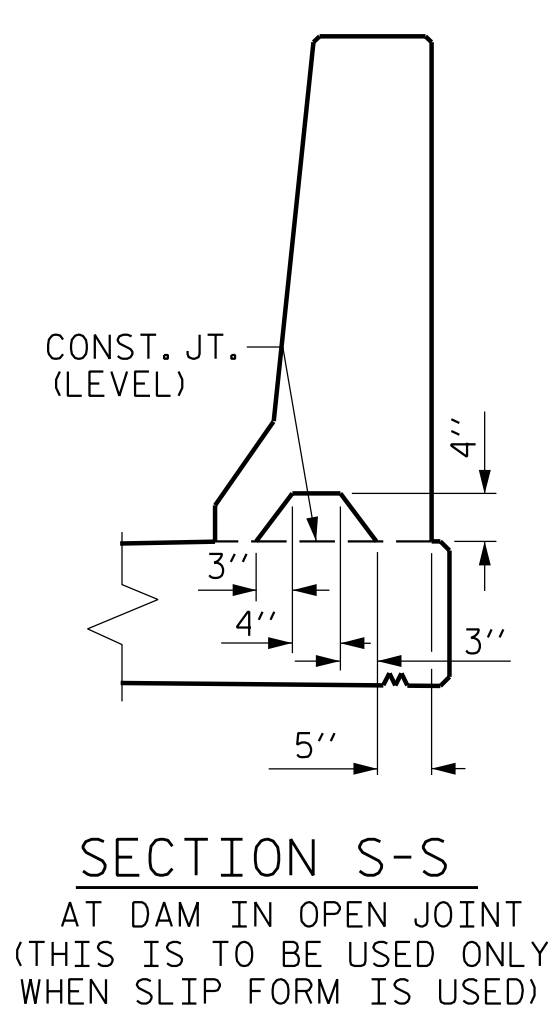
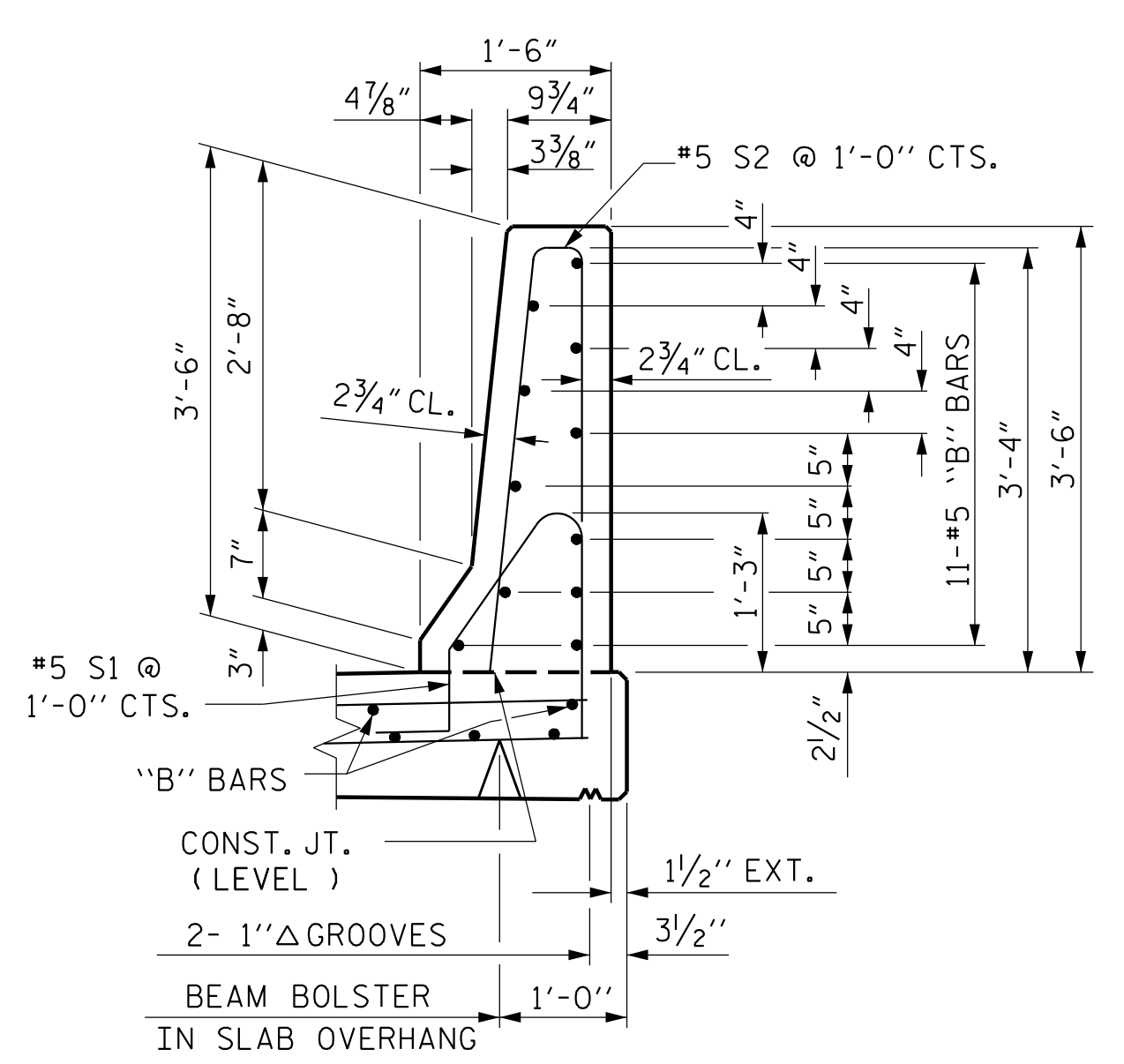
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5S1 AND S2 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL.



ELEVATION AT EXPANSION JOINTS

SECTION THRU RAIL

BARRIER RAIL DETAILS

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD CONCRETE BARRIER RAIL

REVISIONS

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

SHEET NO. **S5-26**
 TOTAL SHEETS **64**

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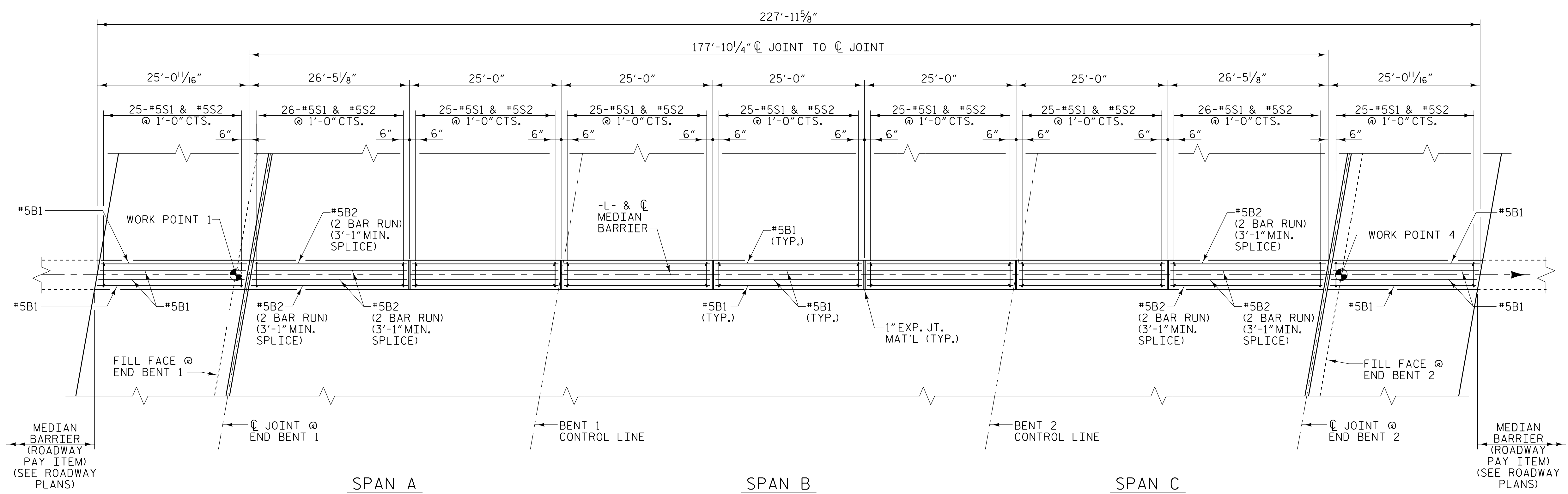
THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

L. Kevin Austin
 L. KEVIN AUSTIN
 PROFESSIONAL ENGINEER
 4/24/2022

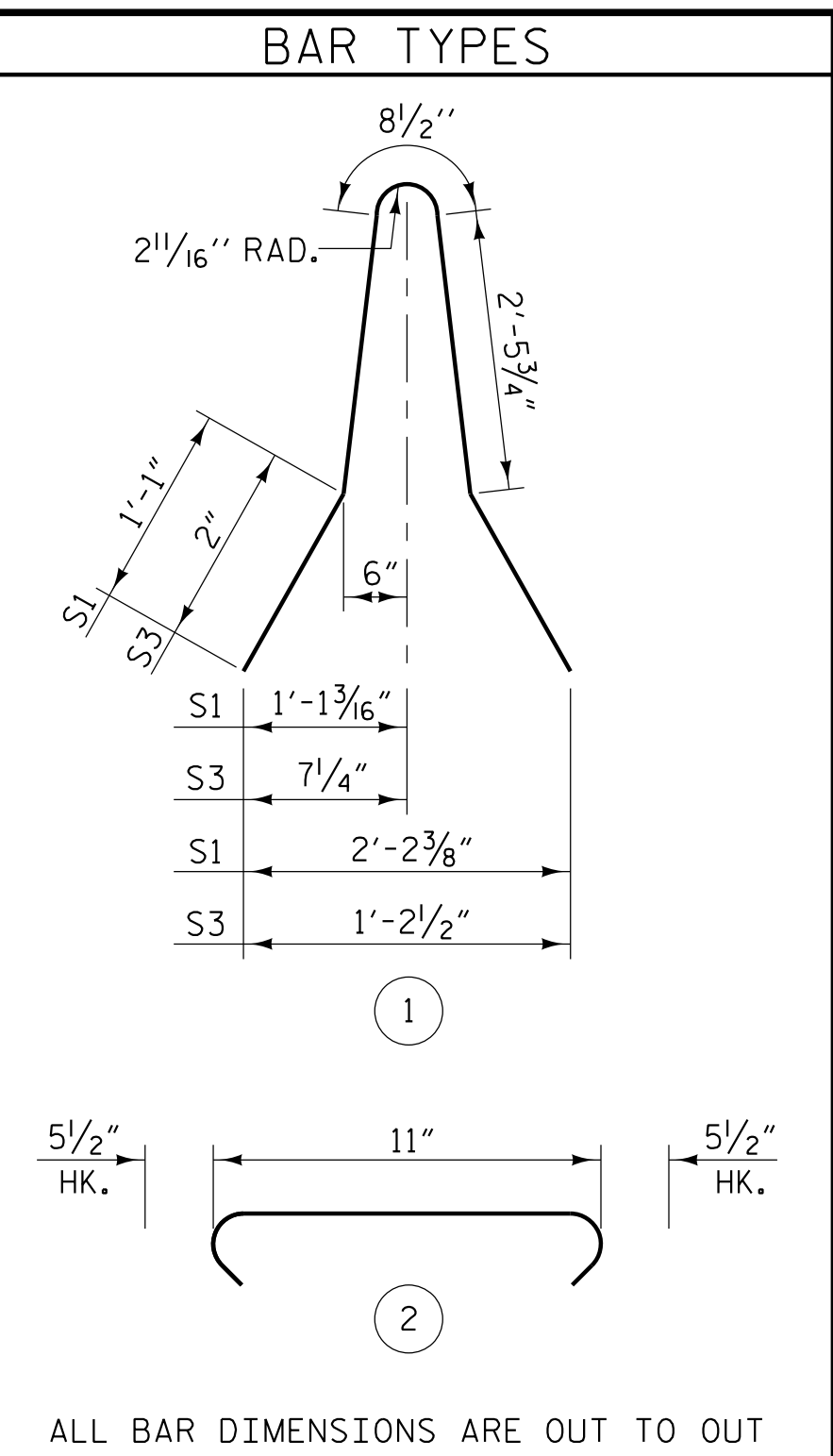
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ASSEMBLED BY : **W. B. ALLEN** DATE : 5/21
 CHECKED BY : **G. F. WILSON** DATE : 5/21

DRAWN BY : ARB 5/87 REV. 7/12 MAA/GM
 CHECKED BY : SJD 9/87 REV. 6/13 MAA/GM
 REV. 12/17 MAA/THC



PLAN OF MEDIAN BARRIER
SEE SECTION C-C ON SHEET 2 OF 2 FOR #5 "B" BAR LAYOUT



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE MEDIAN BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	84	#5	STR	24'-7"	2154
* B2	48	#5	STR	14'-8"	734
* S1	223	#5	1	7'-10"	1822
* S2	446	#5	2	1'-10"	853
* S3	4	#5	1	6'-0"	25
* EPOXY COATED REINFORCING STEEL					5588 LBS.
CLASS AA CONCRETE					40.4 CU. YDS.
CONCRETE MEDIAN BARRIER					227.97 LIN. FT.

NOTES

- THE MEDIAN BARRIER IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.
- THE #5S2 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SCREEDING.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE MEDIAN BARRIER AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN MEDIAN BARRIER EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF MEDIAN BARRIER SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

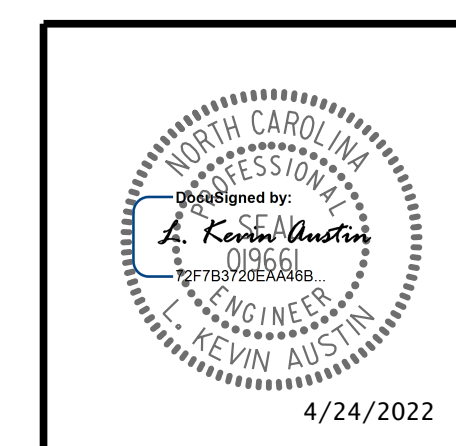
SUPERSTRUCTURE
**CONCRETE
 MEDIAN BARRIER**

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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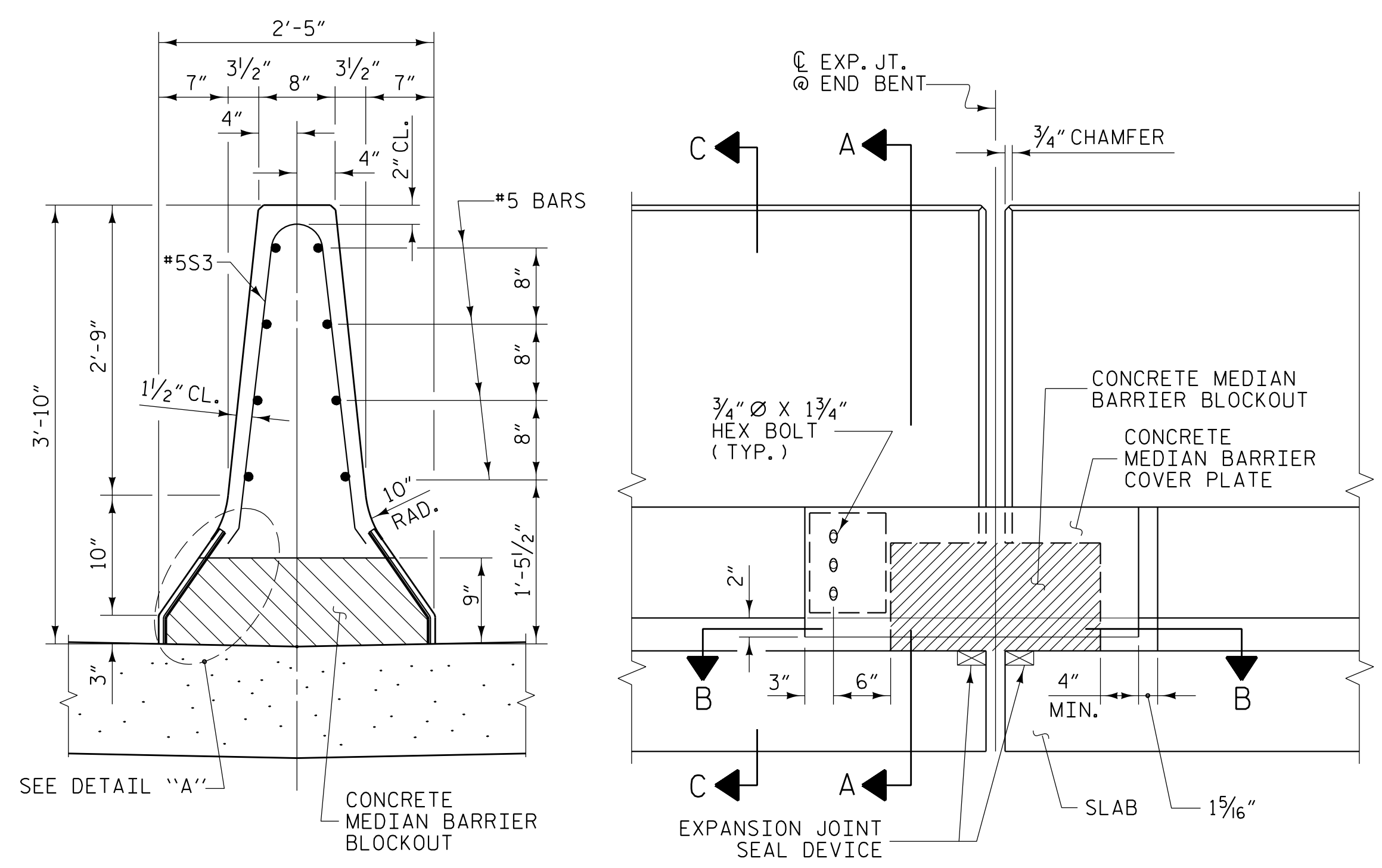


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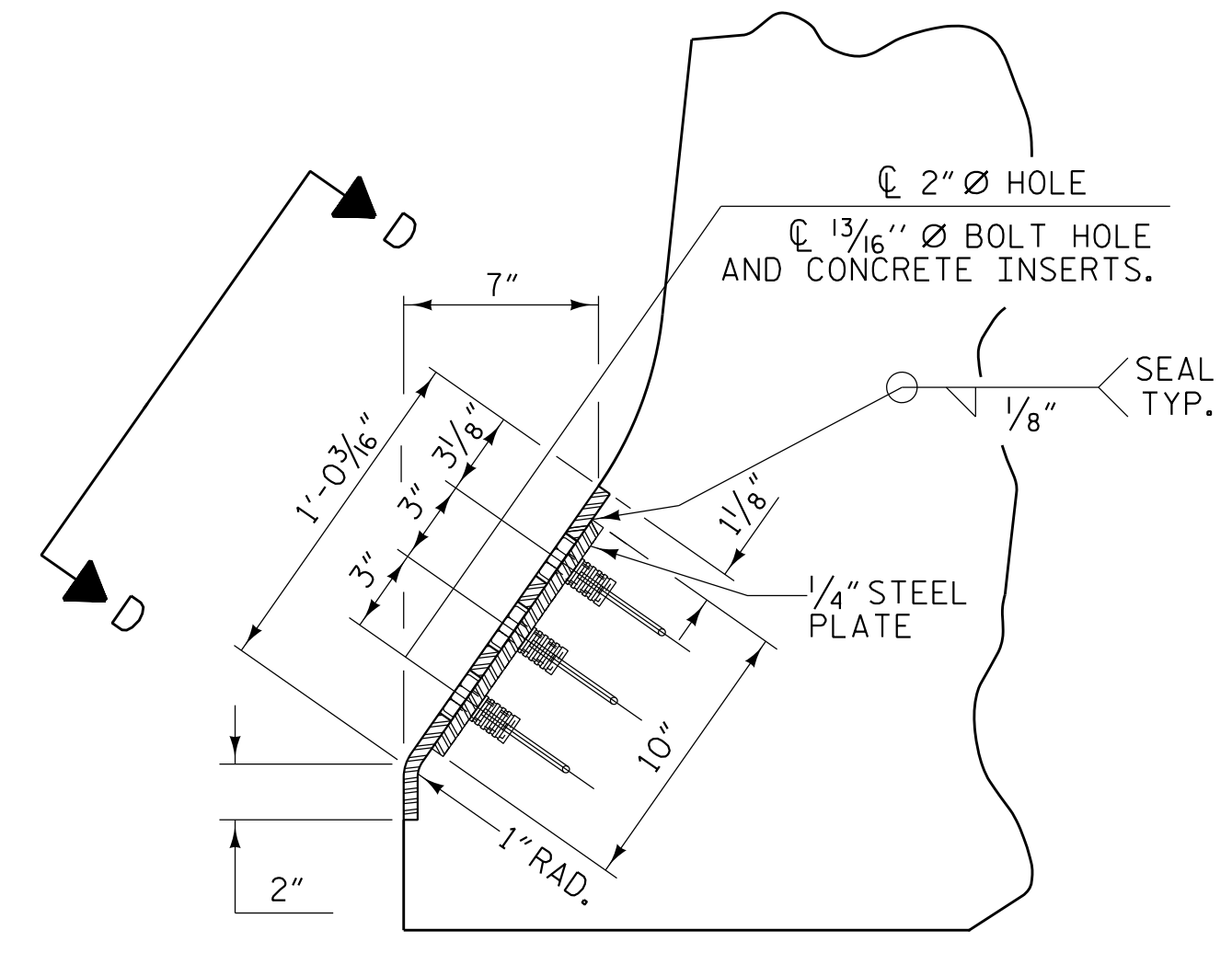
DRAWN BY : W. B. ALLEN DATE : 10/21
 CHECKED BY : G. F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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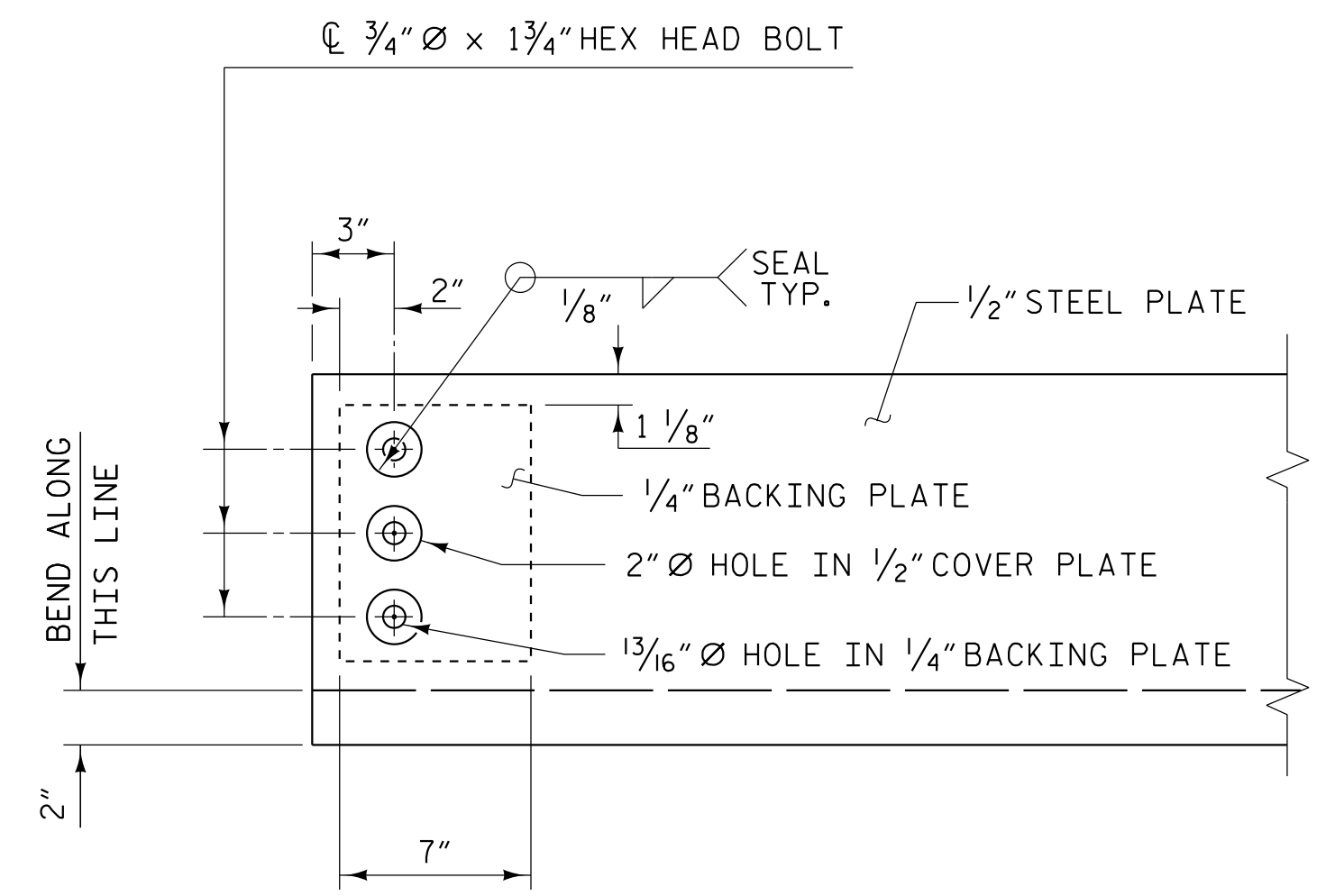
NOTE:
 NO SEPARATE PAYMENT WILL BE MADE FOR FINISHING AND
 INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS
 WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR
 EXPANSION JOINT SEALS.



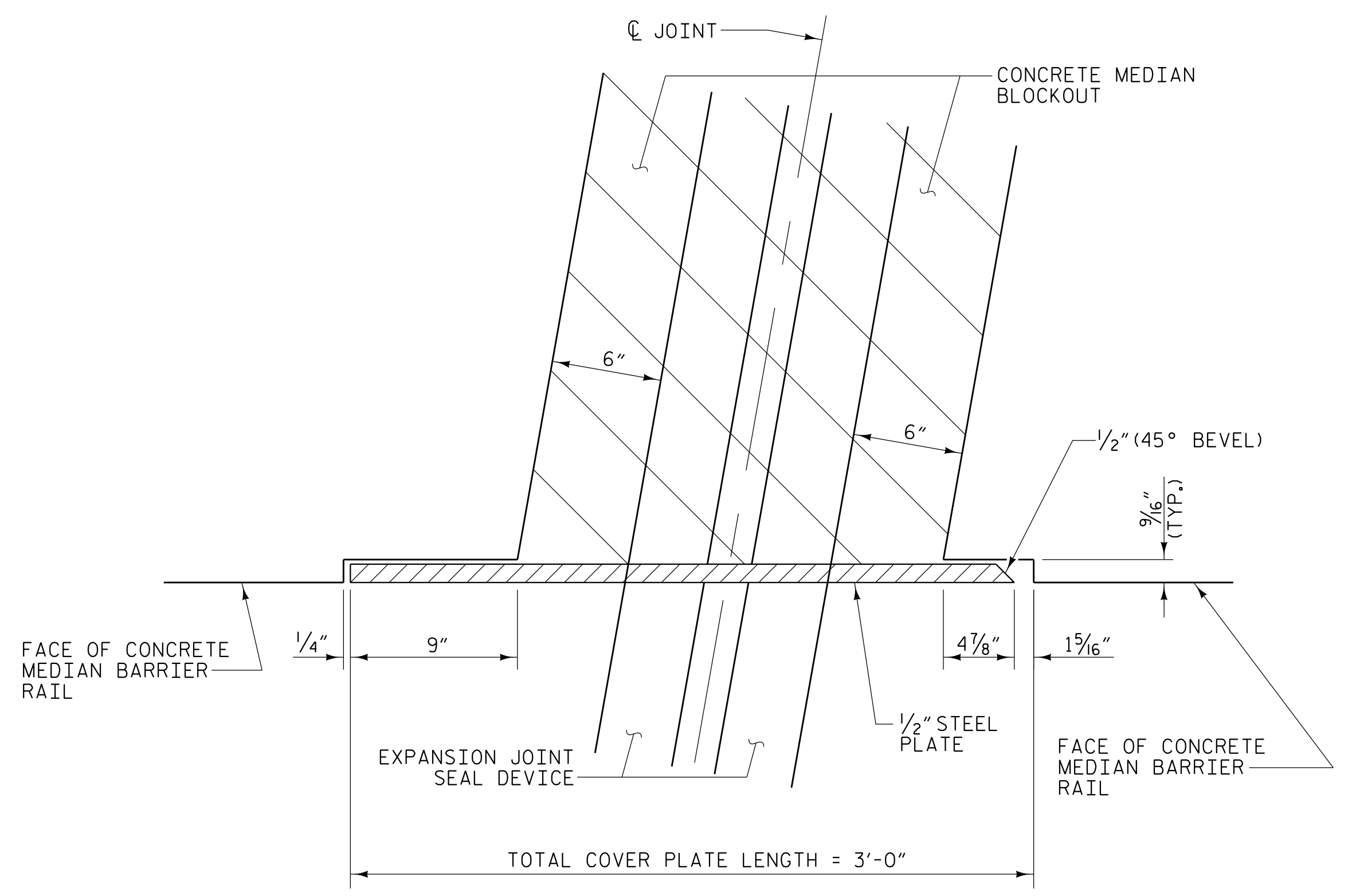
SECTION A-A ELEVATION @ EXP. JOINT



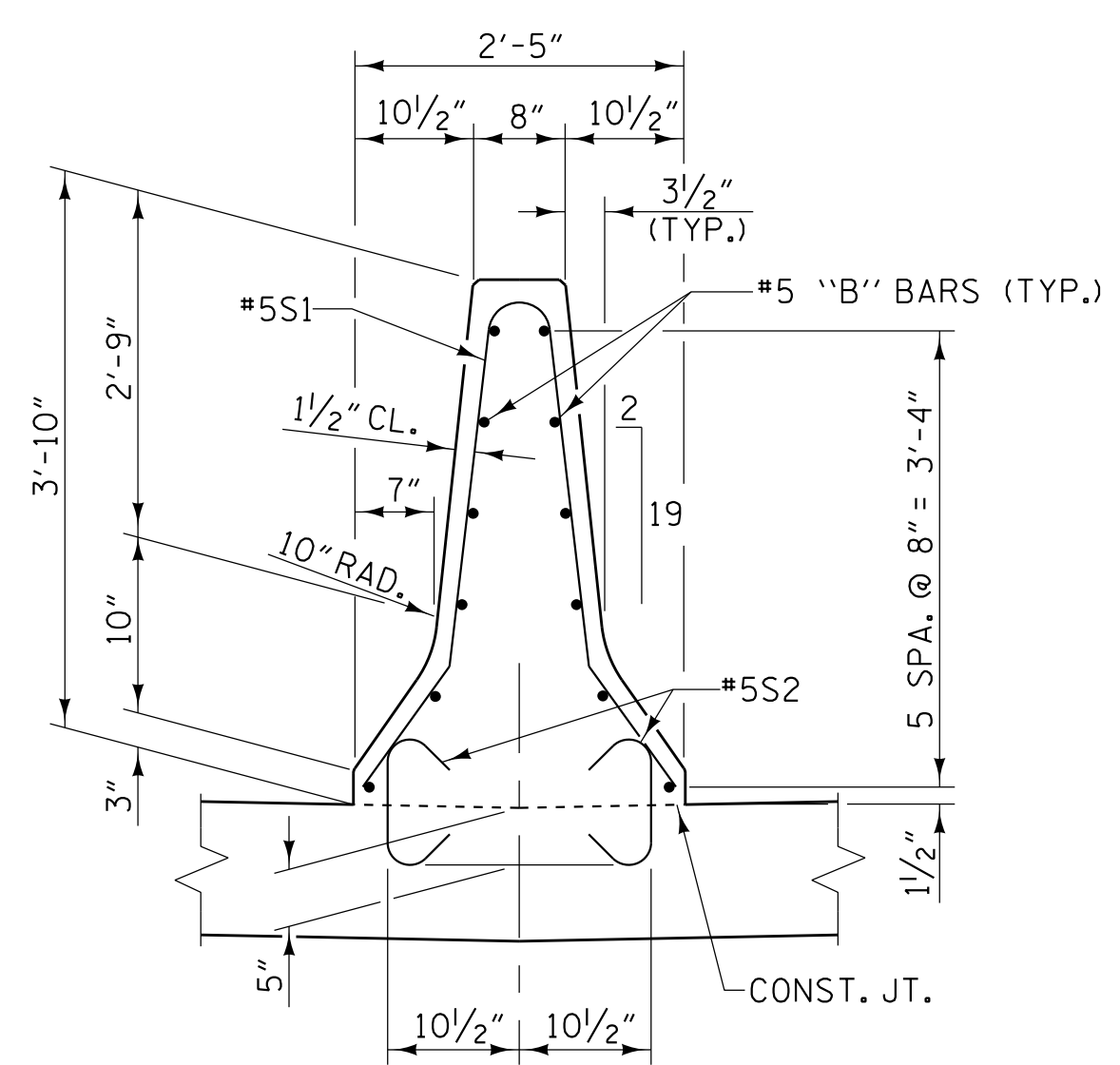
DETAIL "A"



VIEW D-D

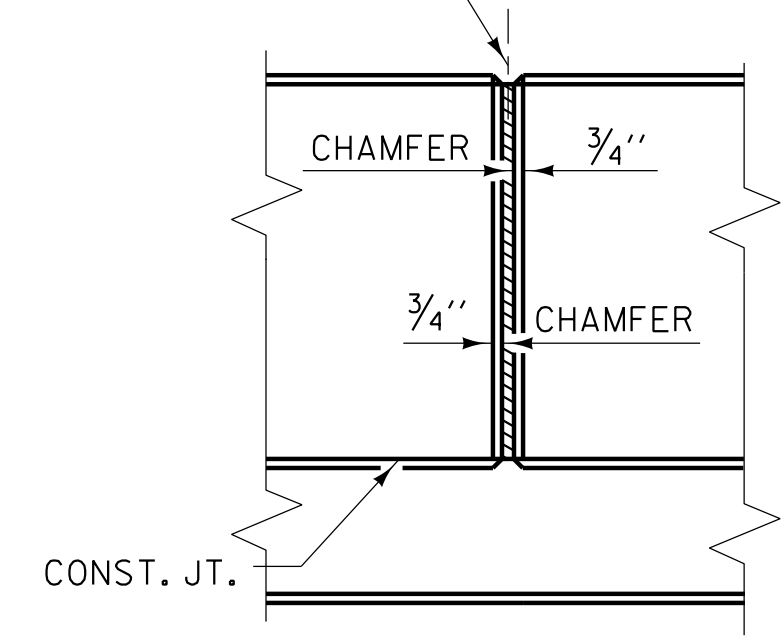


SECTION B-B
 MEDIAN BARRIER COVER PLATE DETAILS



SECTION C - C

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
 (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT MEDIAN BARRIER EXPANSION JOINTS

MEDIAN BARRIER DETAILS

PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 2 OF 2

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CONCRETE
 MEDIAN BARRIER**

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

TOTAL SHEETS: 64

DRAWN BY: W. B. ALLEN DATE: 10/21
 CHECKED BY: G. F. WILSON DATE: 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE: 2/22

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NOTES

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

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

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

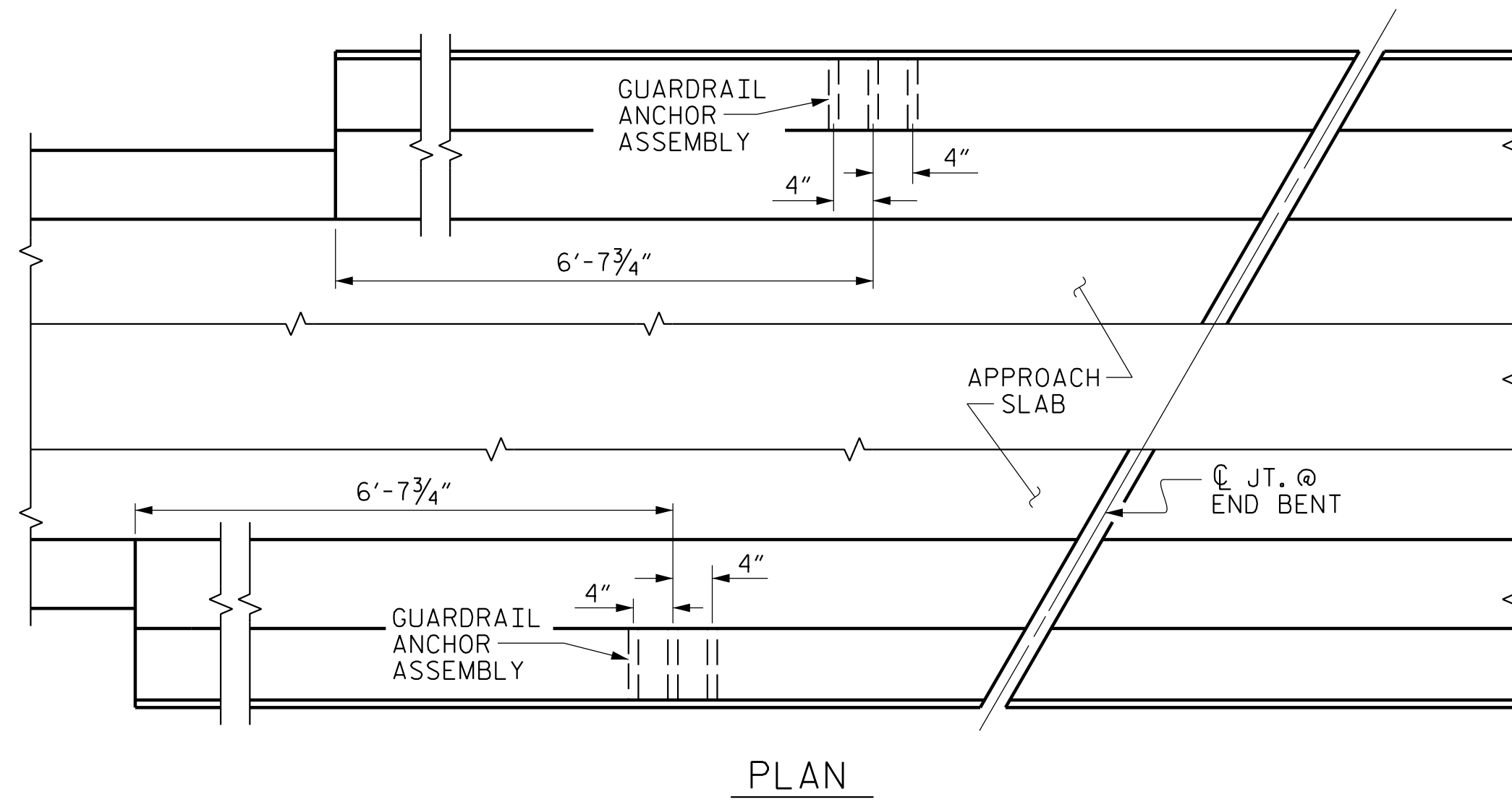
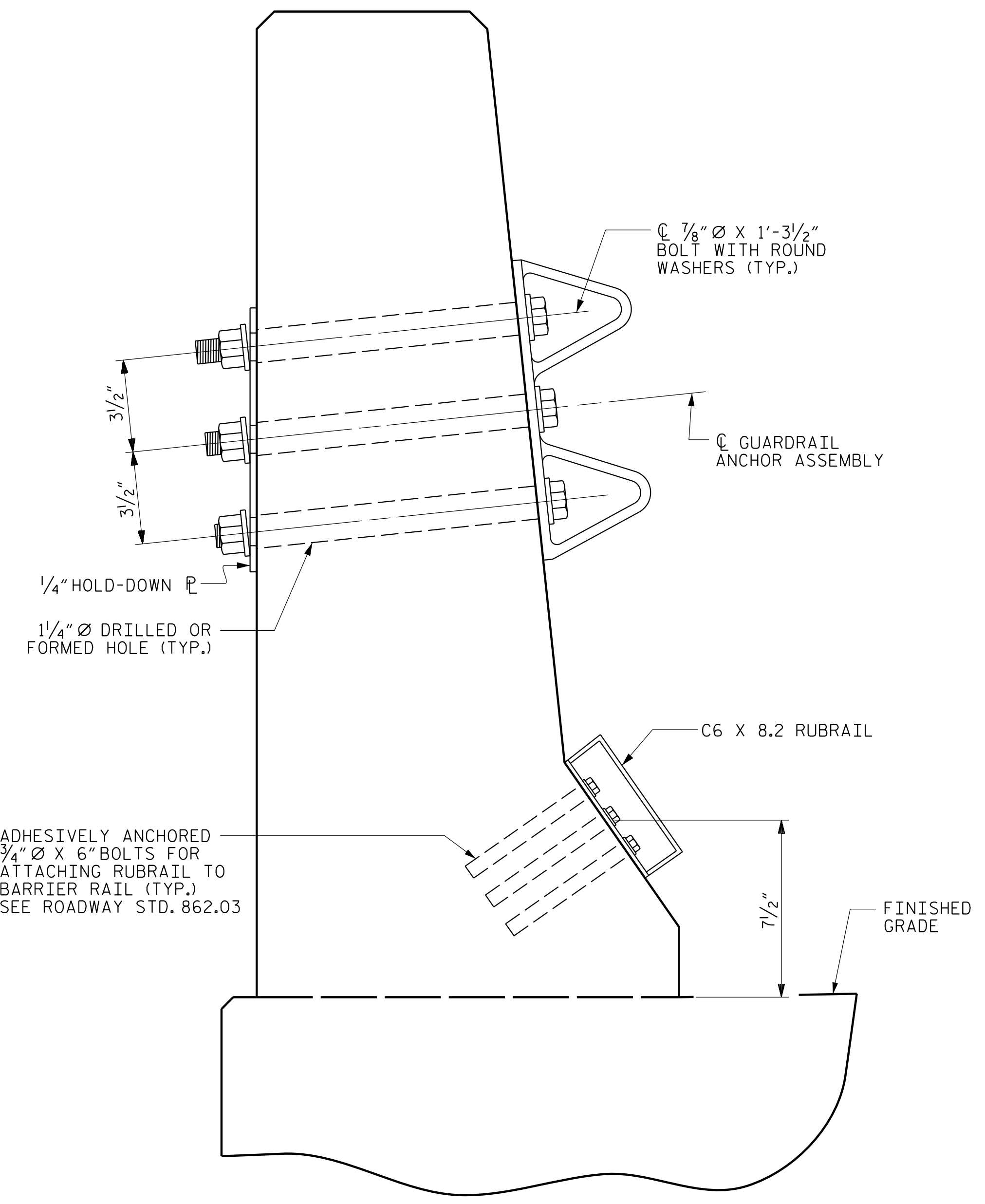
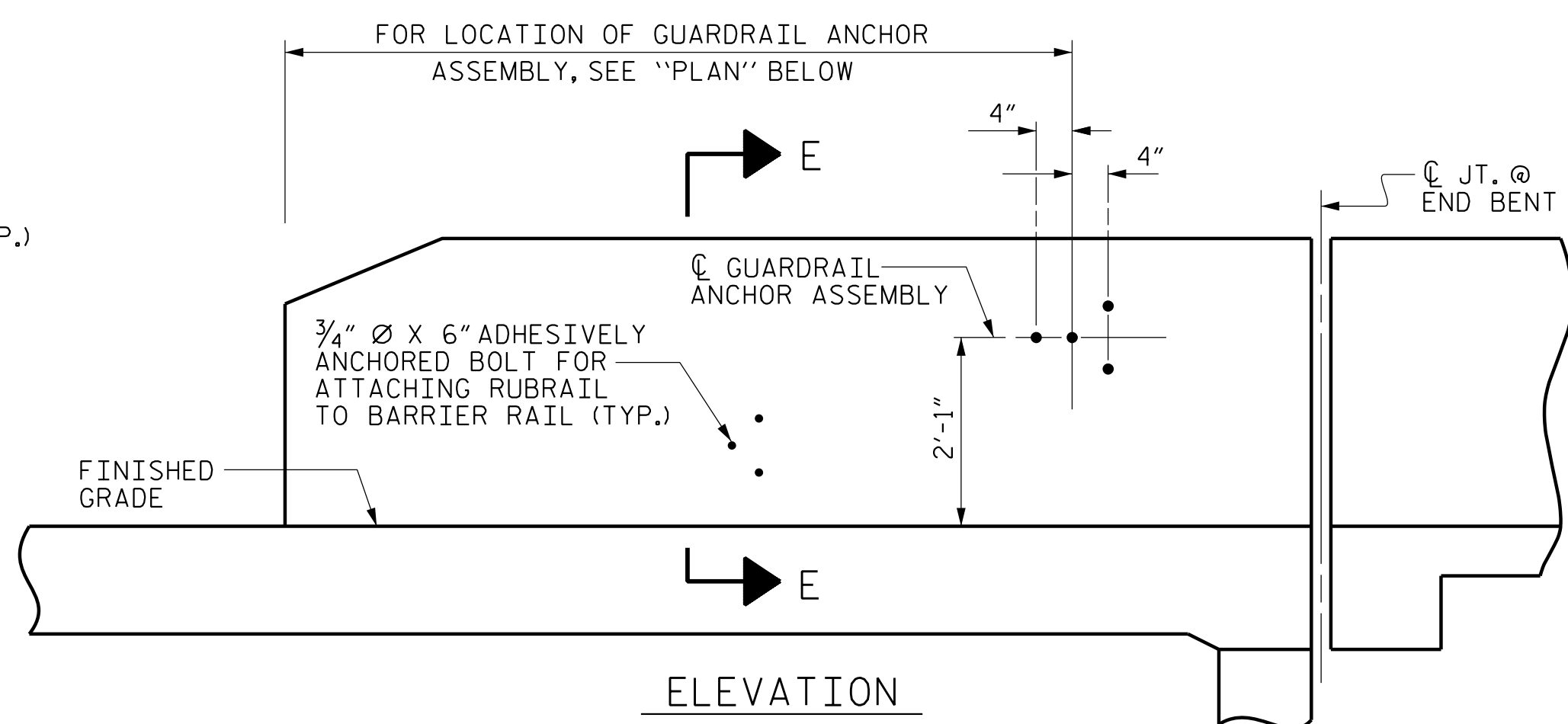
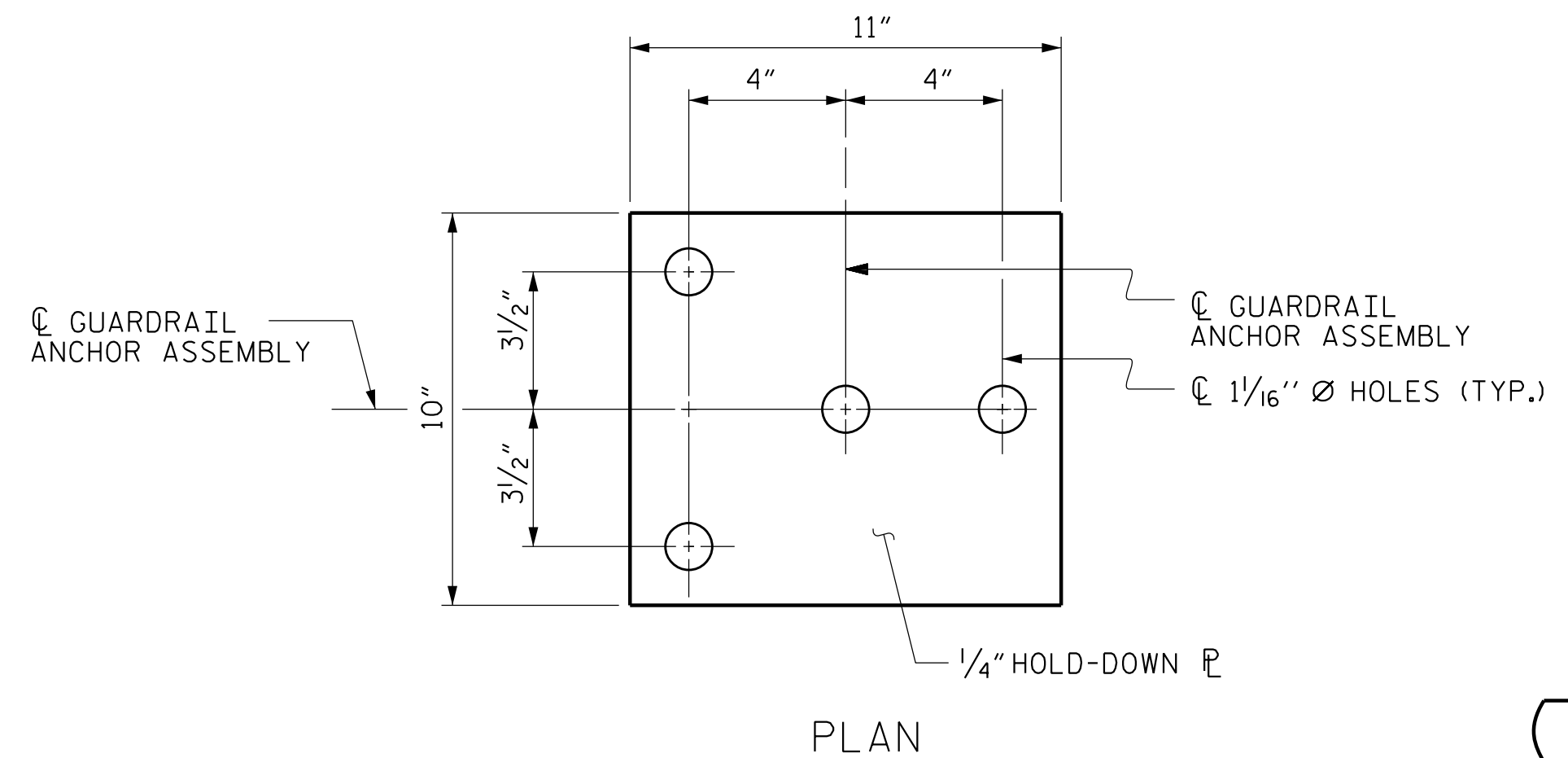
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

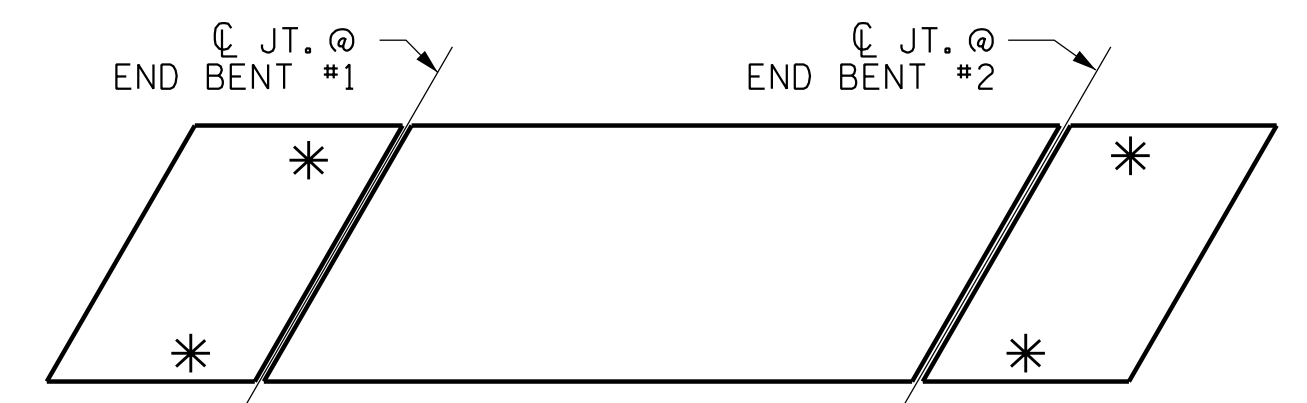
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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**STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL**

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2			4			

(SHT 3b) STD. NO. GRA2

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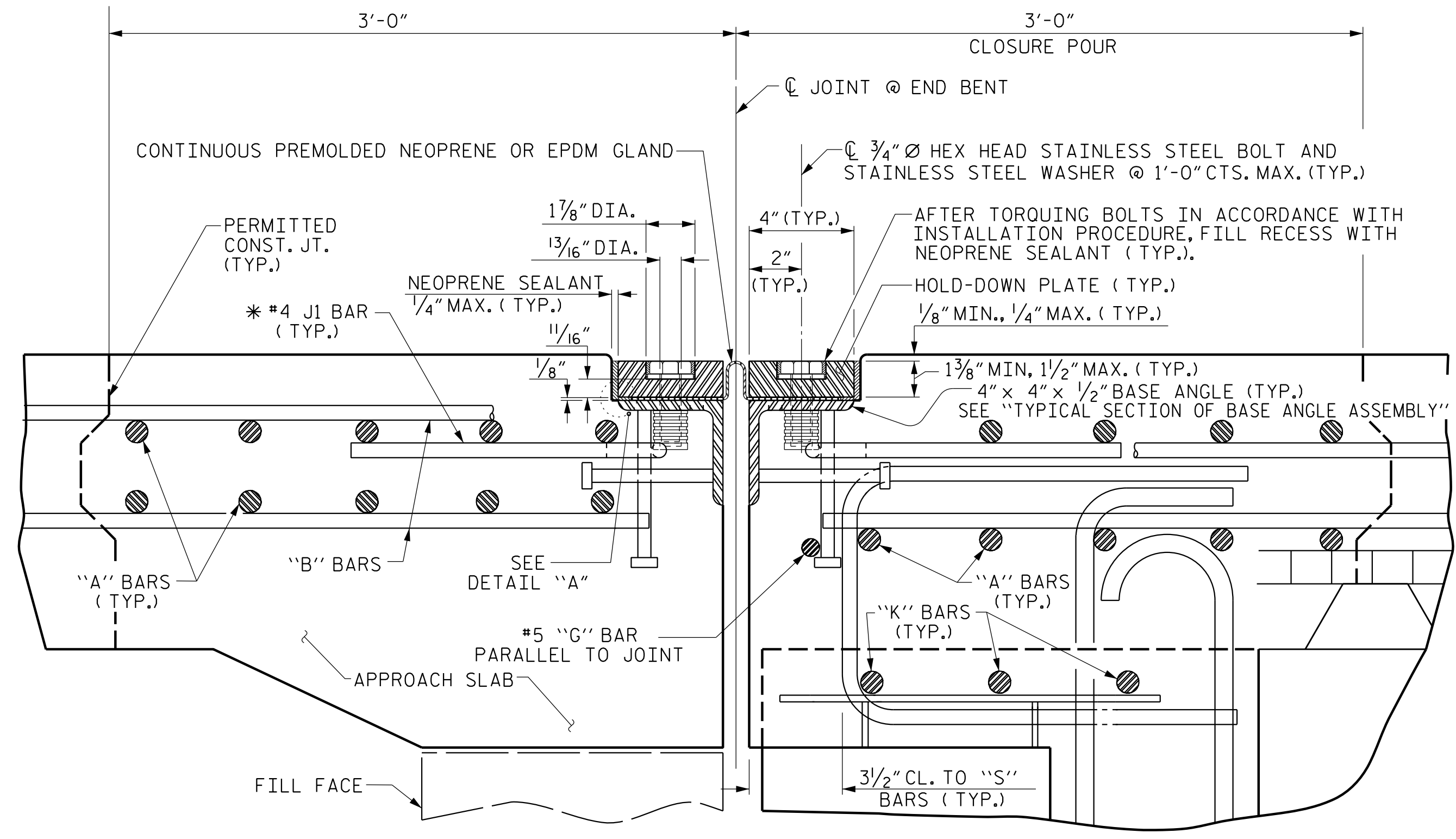
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CHECKED BY : G. F. WILSON	DATE : 5/21
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

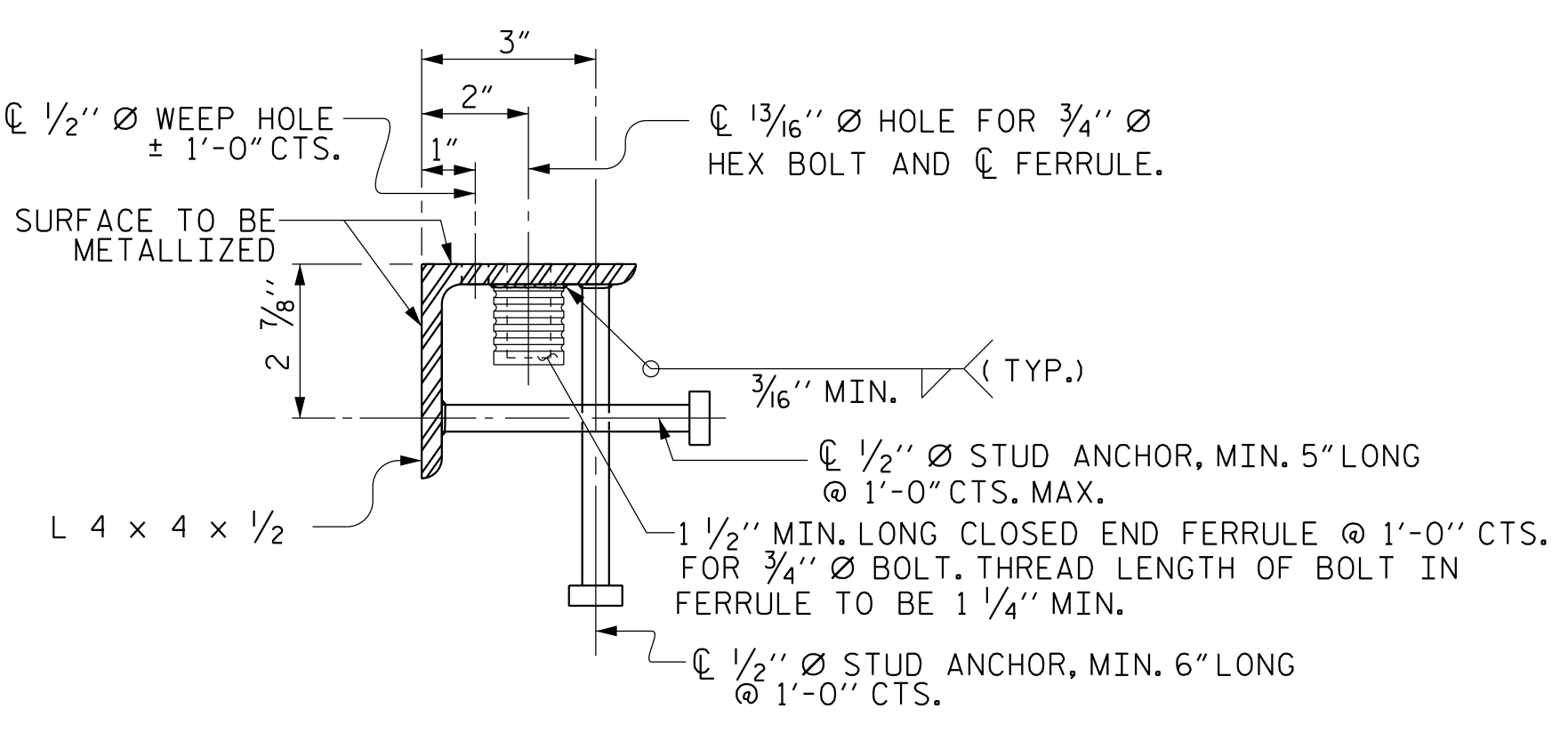
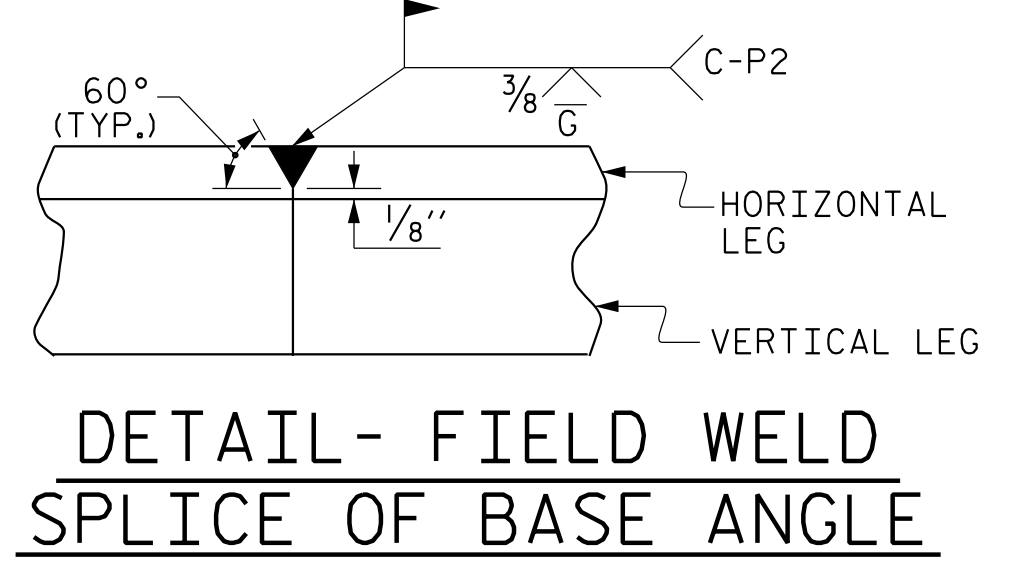
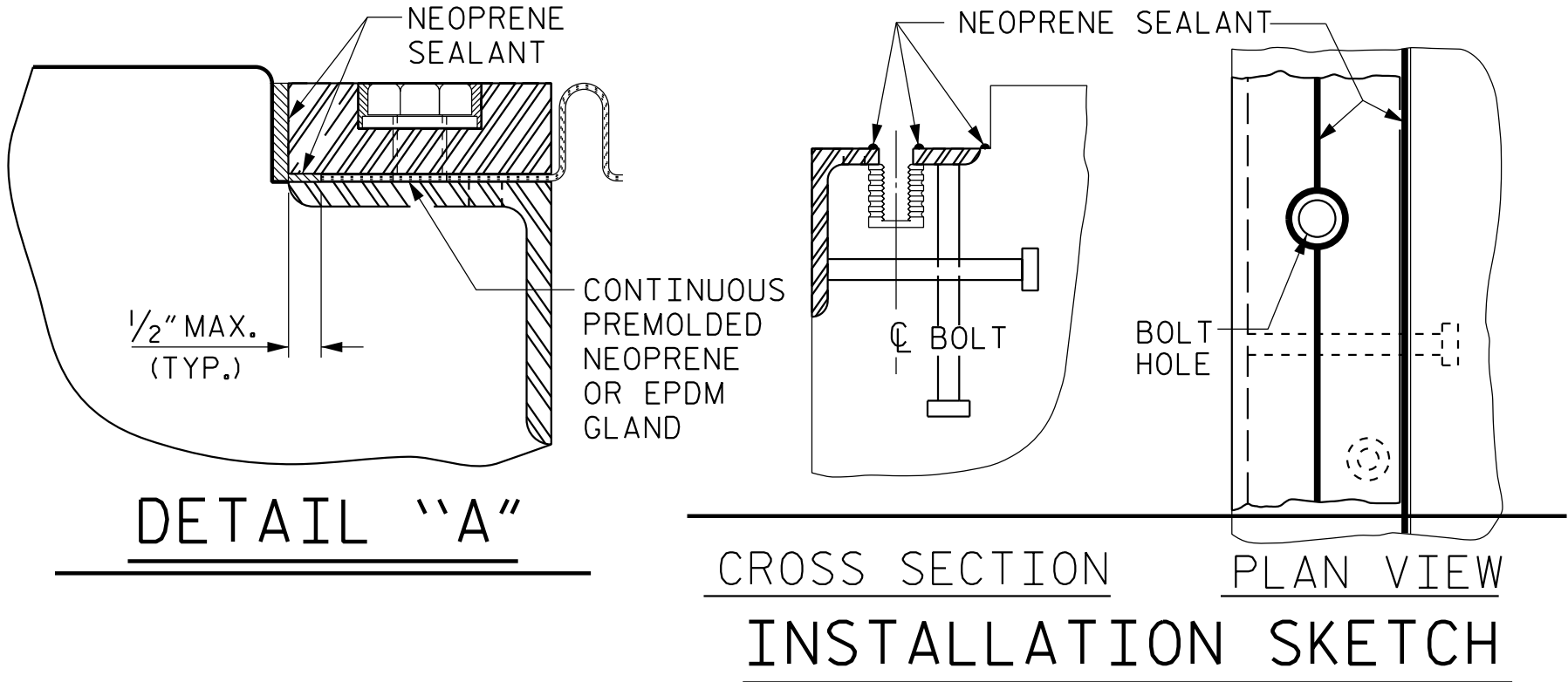
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 1/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 3/4" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X 1/2" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 7/8" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.
13. A TEMPORARY GLAND IS REQUIRED FOR STAGE I AND II. NO SEPARATE PAYMENT WILL BE MADE FOR THE TEMPORARY GLAND.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKIEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	100°-00'-00"	9/16"	1 3/8"	1 5/16"	1 1/8"
2	100°-00'-00"	9/16"	1 3/8"	1 5/16"	1 1/8"

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ROBESON COUNTY
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SHEET 1 OF 3

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STANDARD
EXPANSION JOINT SEAL DETAILS

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2			4			64

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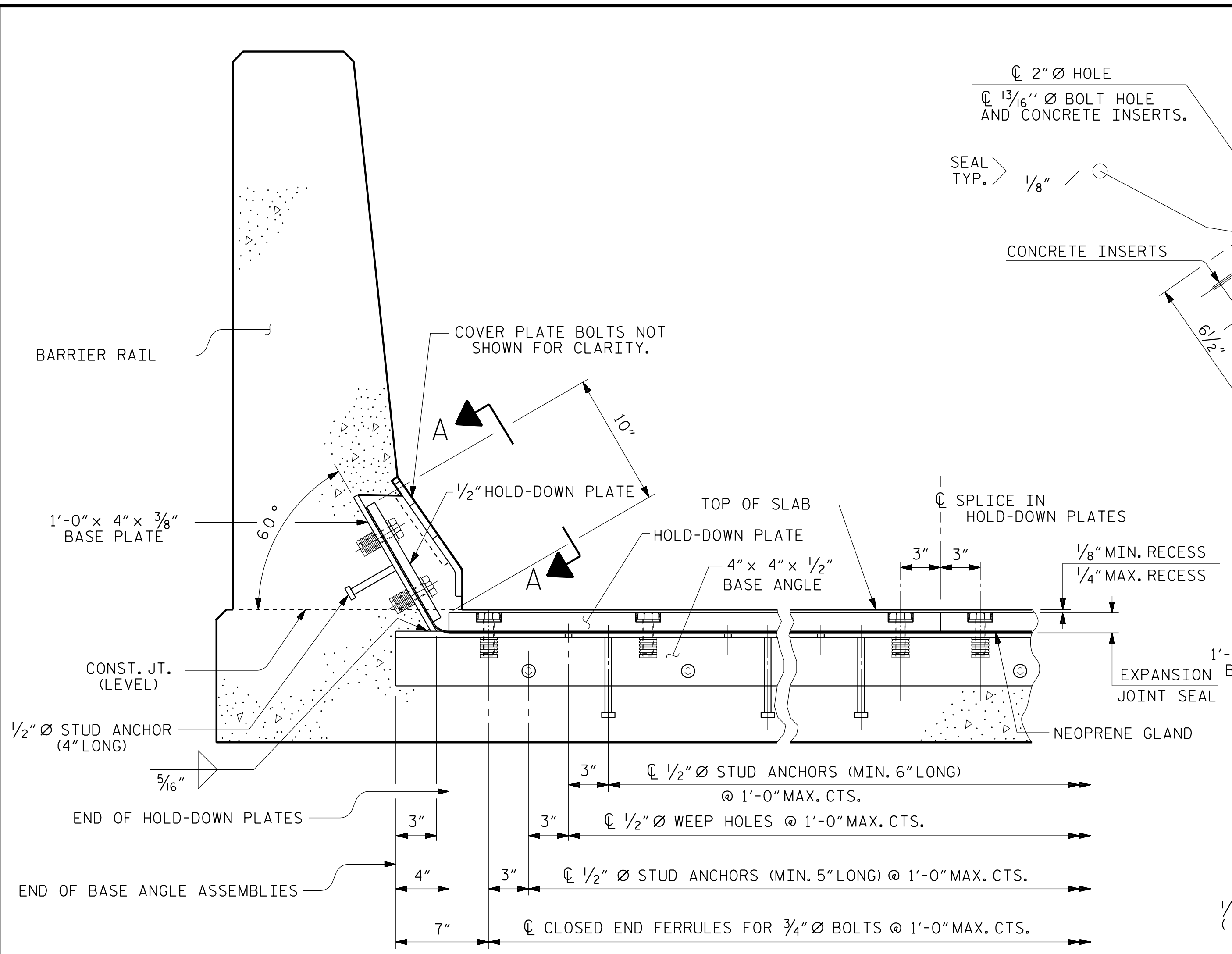
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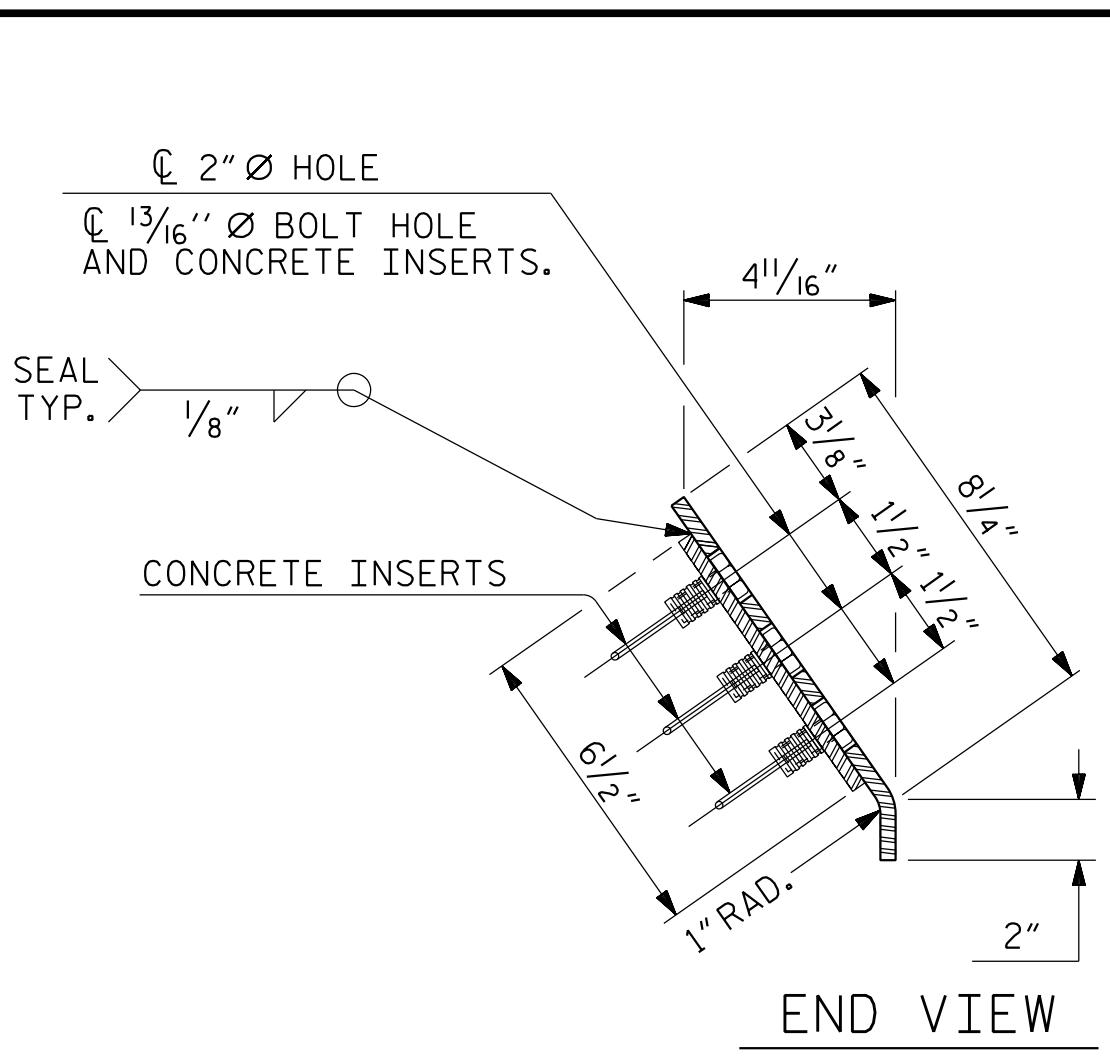
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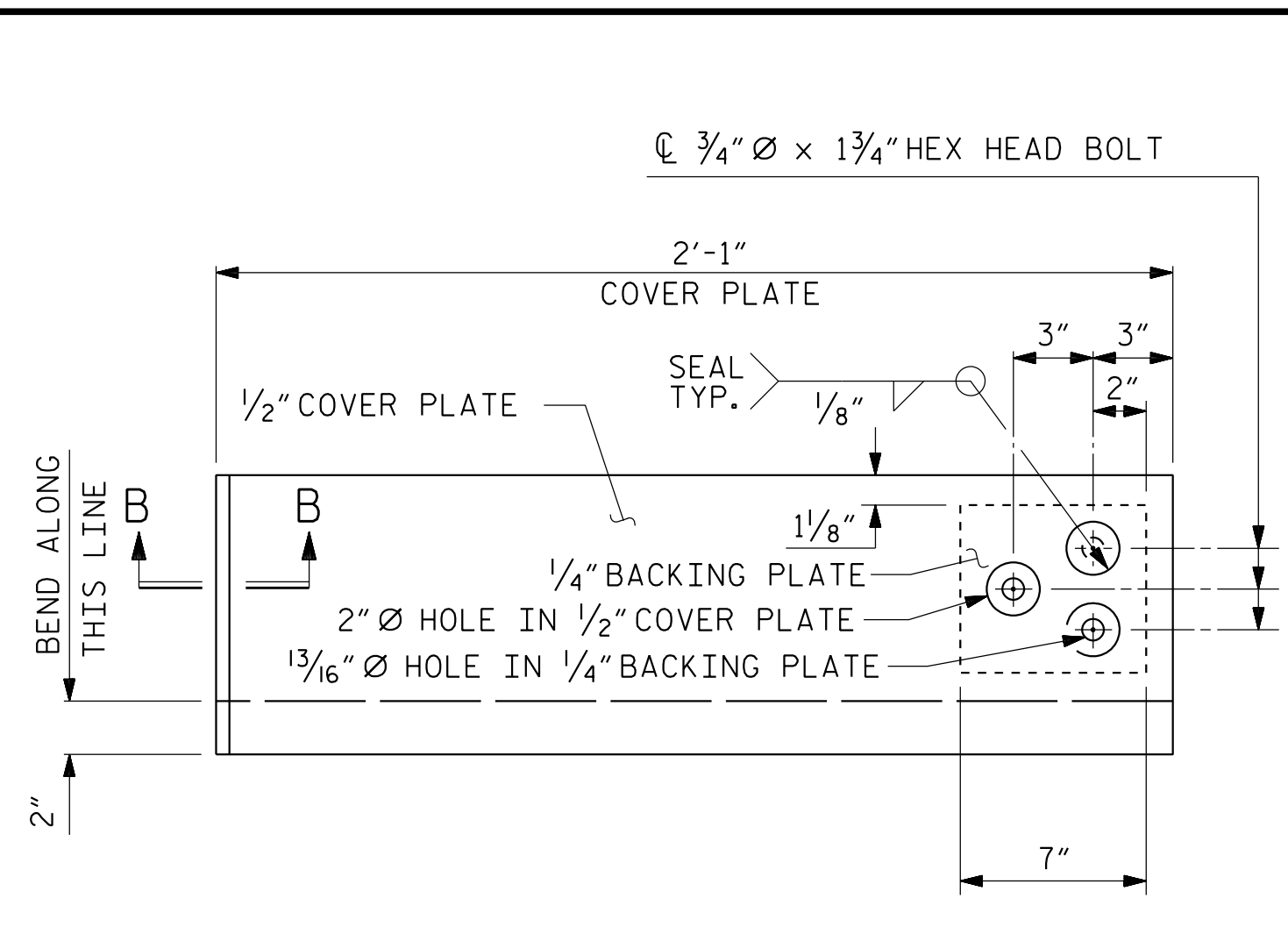
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 REV. 6/18 MAA/THC



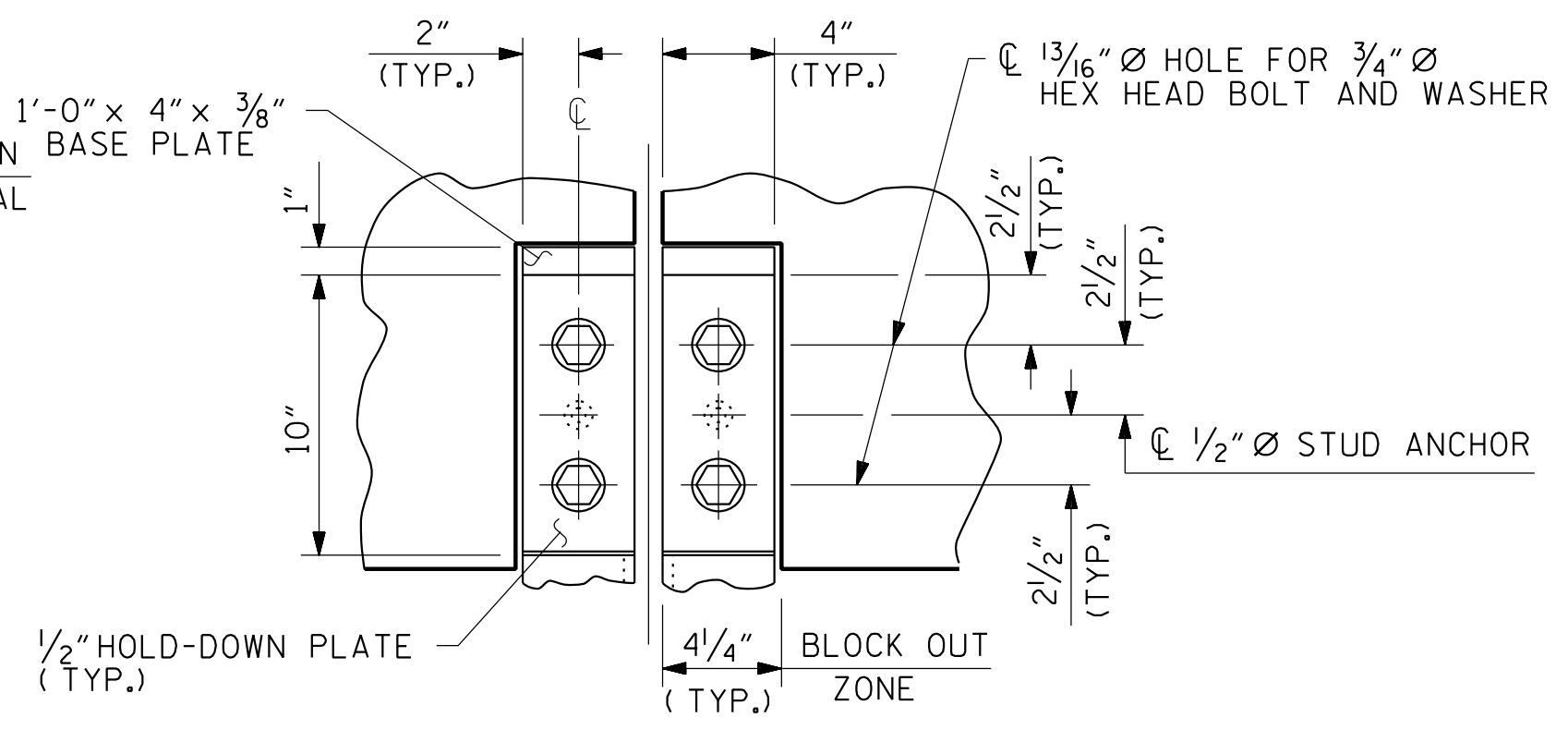
SECTION THRU RAIL NORMAL TO JOINT



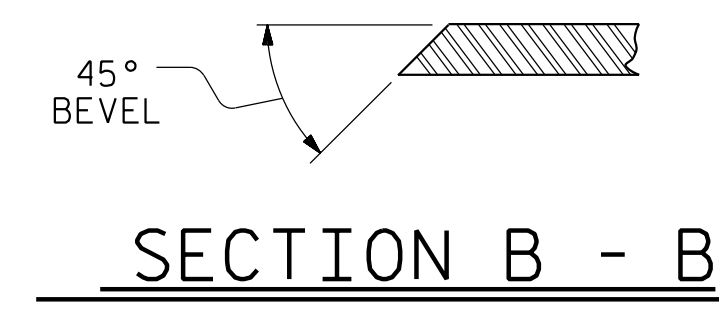
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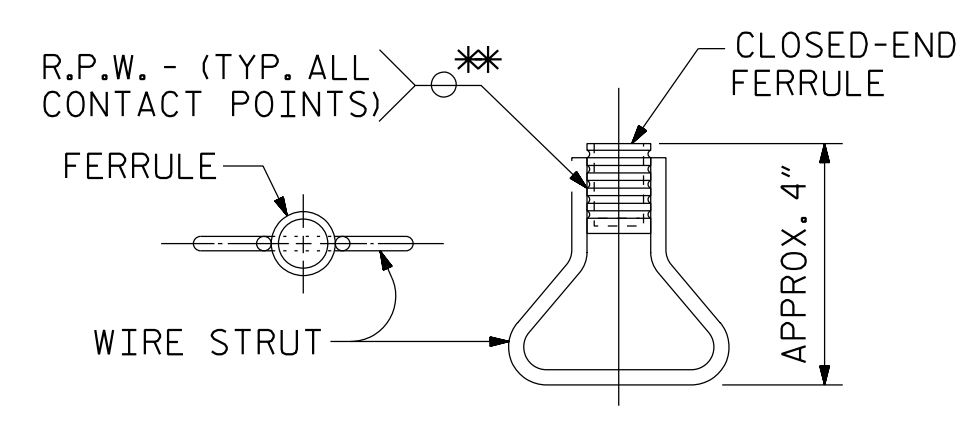
**TYPE II - ELEVATION VIEW
COVER PLATE DETAILS**



SECTION A - A



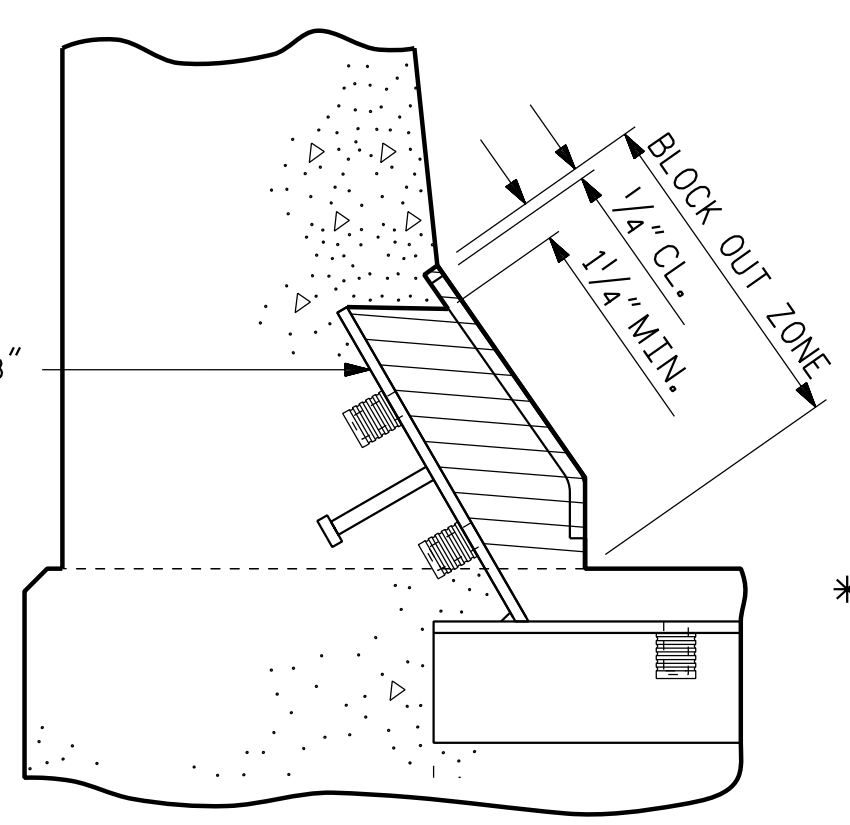
SECTION B - B



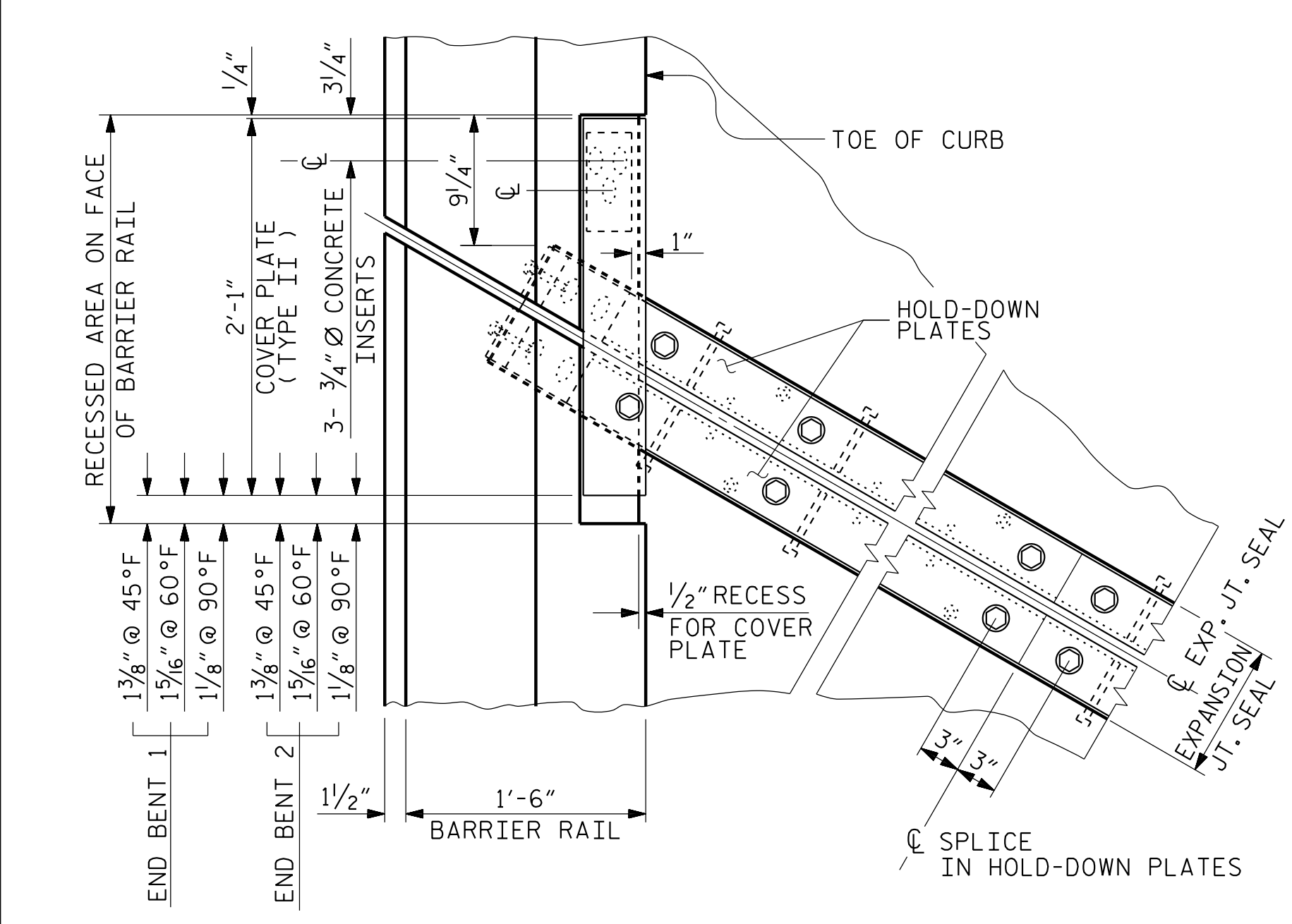
PLAN ELEVATION

CONCRETE INSERT

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



BLOCK OUT DETAIL
SEE "SECTION A - A" FOR OTHER DETAILS.



PLAN OF EXPANSION JOINT SEAL

FLOW OF TRAFFIC

FLOW OF TRAFFIC

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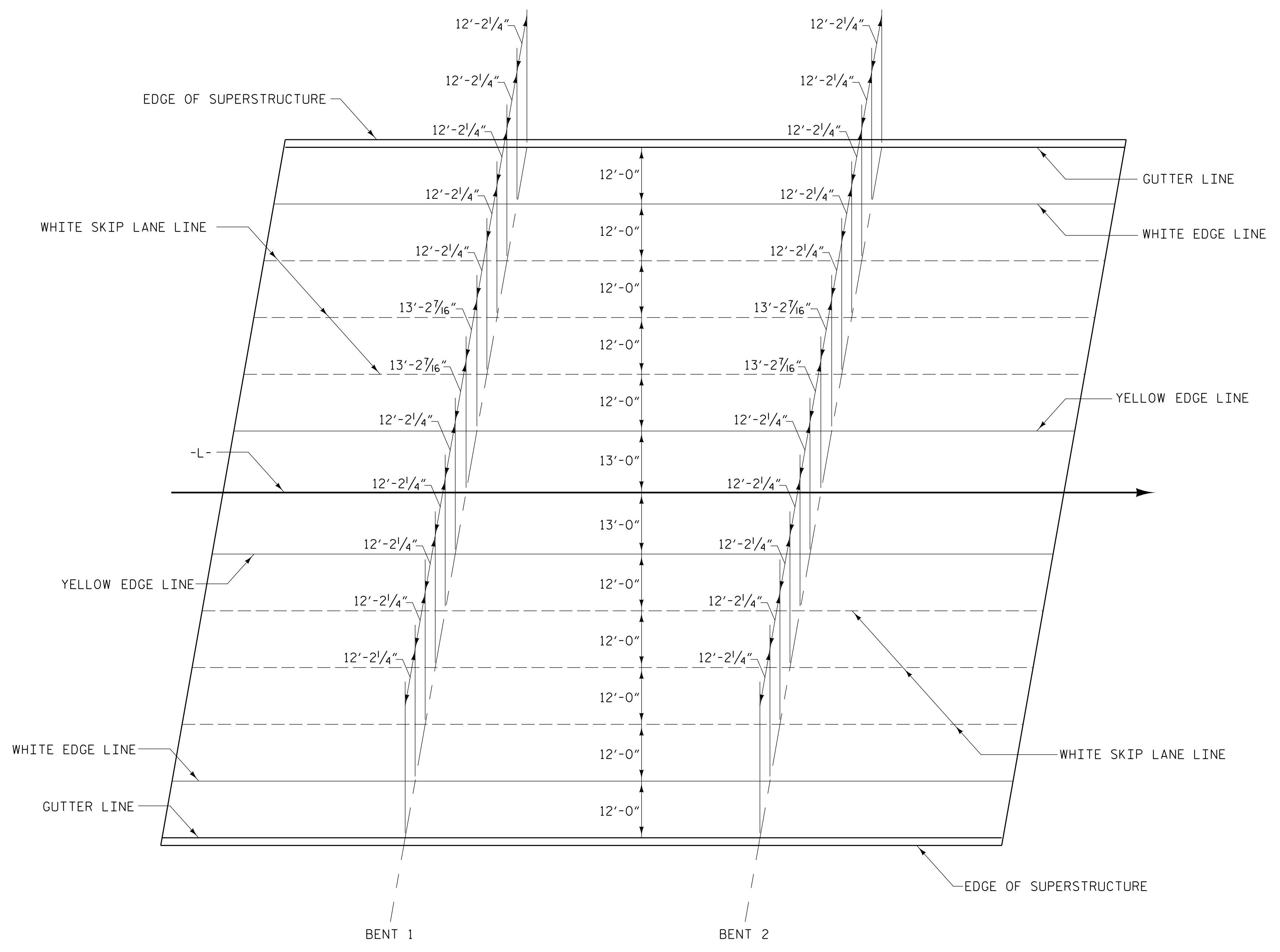
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ROBESON COUNTY
STATION: **586+14.00 -L- POT**

SHEET 2 OF 3

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SHEET 3 OF 3

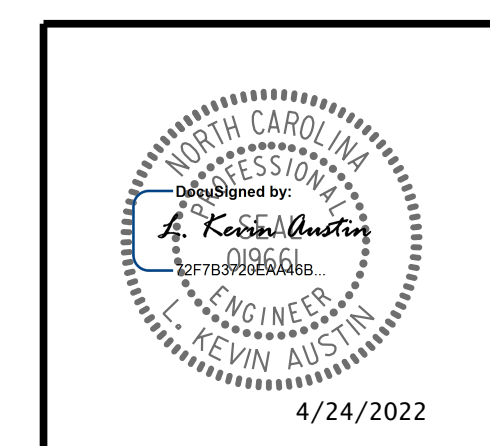
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**EXPANSION JOINT
 SEAL DETAILS**

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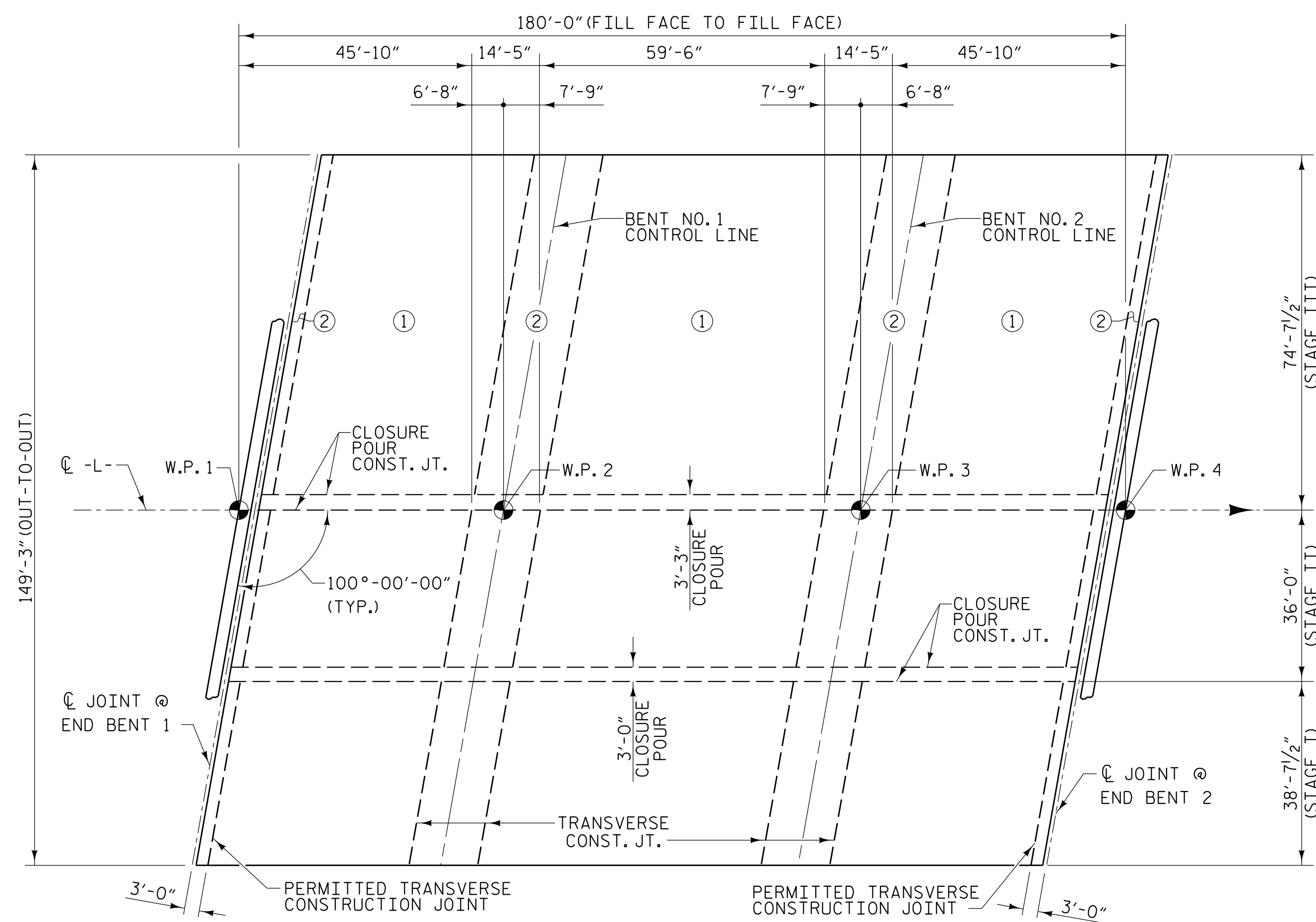


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2			4			64

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CHECKED BY :	<u>G. F. WILSON</u>	DATE :	<u>2/22</u>
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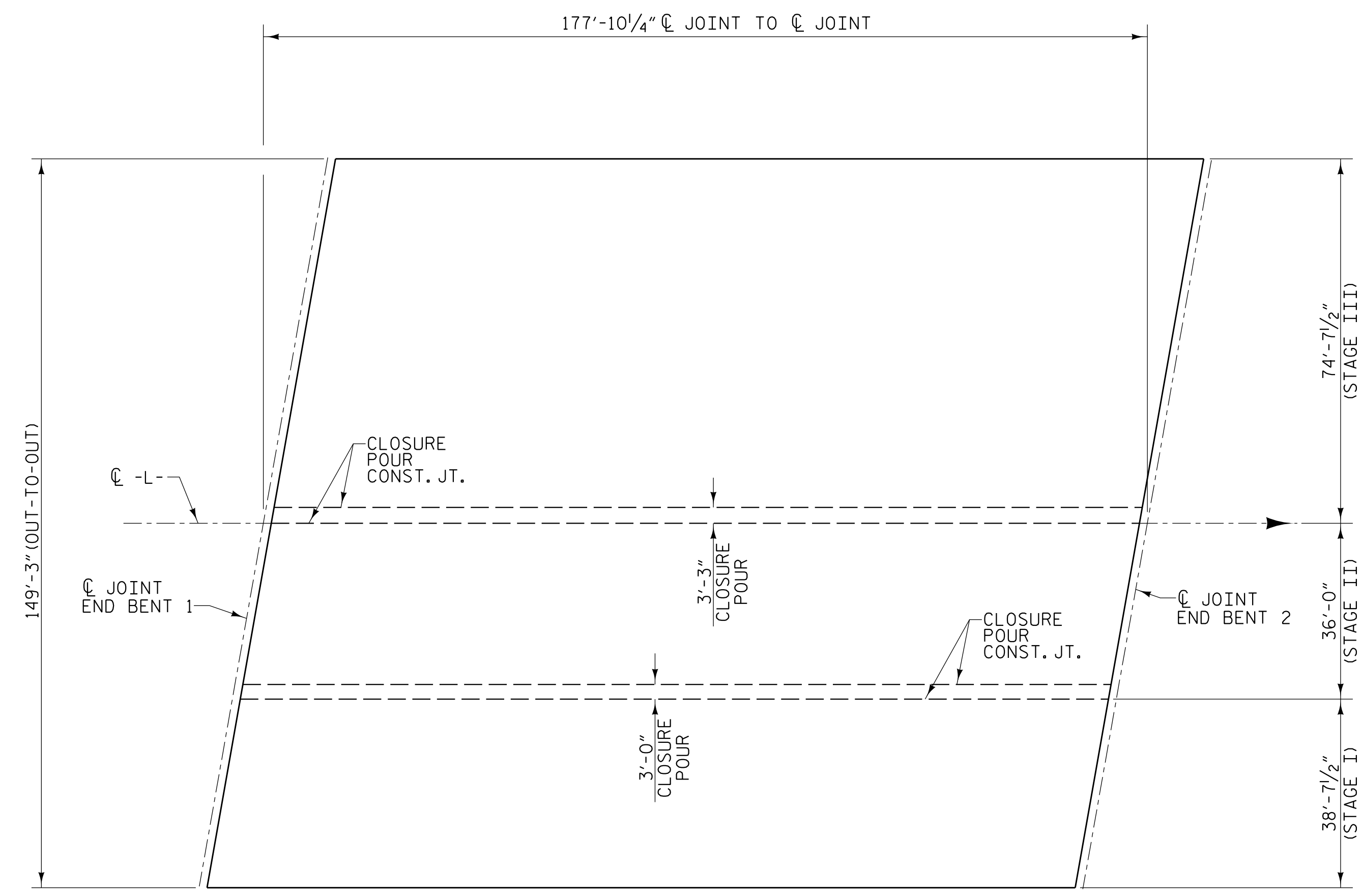
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POURING SEQUENCE SKETCH

⊕ INDICATES POUR SEQUENCE NUMBER
 NOTE: POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS REACH MINIMUM OF 3000 PSI



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(TOTAL SQ. FT. = 26545)
 (STAGE I = 6870 SQ. FT.)
 (STAGE II = 6403 SQ. FT.)
 (STAGE III = 13272 SQ. FT.)

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I	234.8	33841	28074
STAGE II	218.9	32198	27281
STAGE III	454.3	64291	52197
TOTALS **	908.0	130330	107552

* INDICATES EPOXY COATED REINFORCING STEEL
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS		
APPROACH SLABS (STAGE I)	1728	SO. FT.
APPROACH SLABS (STAGE II)	1679	SO. FT.
APPROACH SLABS (STAGE III)	3348	SO. FT.
TOTAL	6755	SO. FT.
BRIDGE DECK (STAGE I)	6298	SO. FT.
BRIDGE DECK (STAGE II)	6335	SO. FT.
BRIDGE DECK (STAGE III)	12205	SO. FT.
TOTAL	24838	SO. FT.

SPANS A, B & C	CLASS AA CONCRETE (CU. YDS.)		
	STAGE I	STAGE II	STAGE III
POUR 1	185.1	156.8	340.8
POUR 2	49.7	42.4	92.1
CLOSURE POUR	-	19.7	21.4
TOTALS	234.8	218.9	454.3

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL

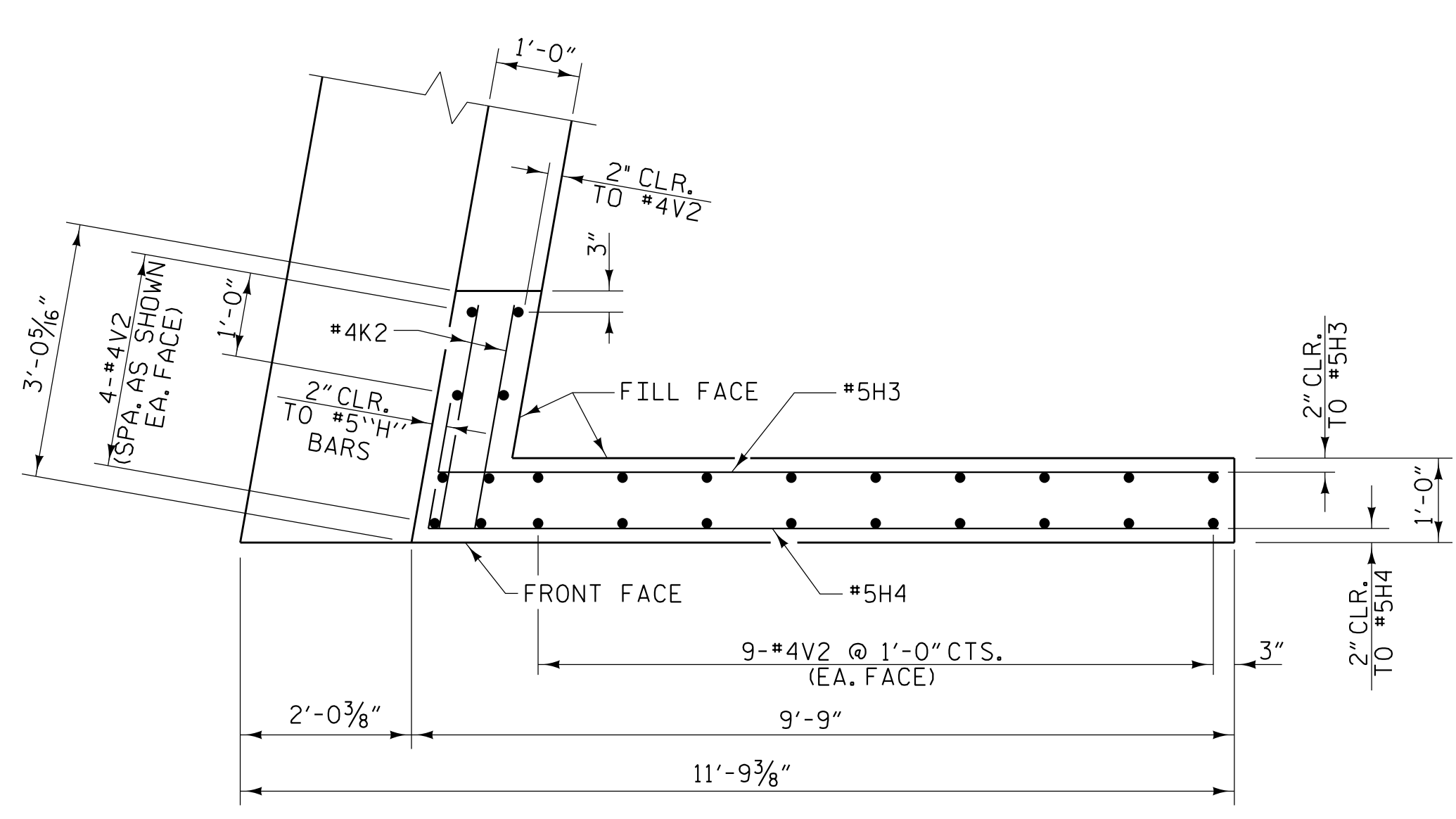
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1			3			S5-34
2			4			TOTAL SHEETS 64

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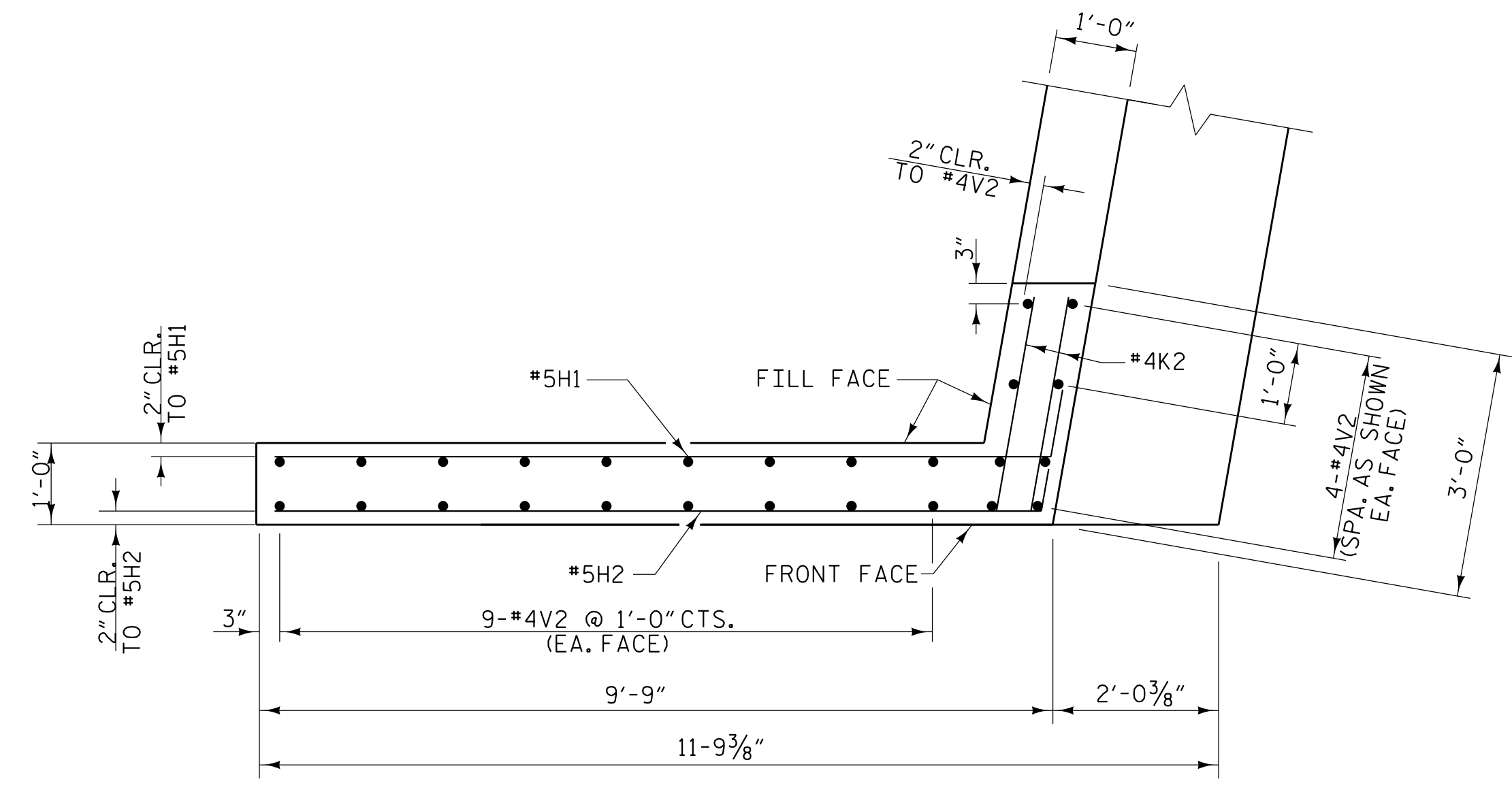
PROFESSIONAL ENGINEER
 L. KEVIN AUSTIN
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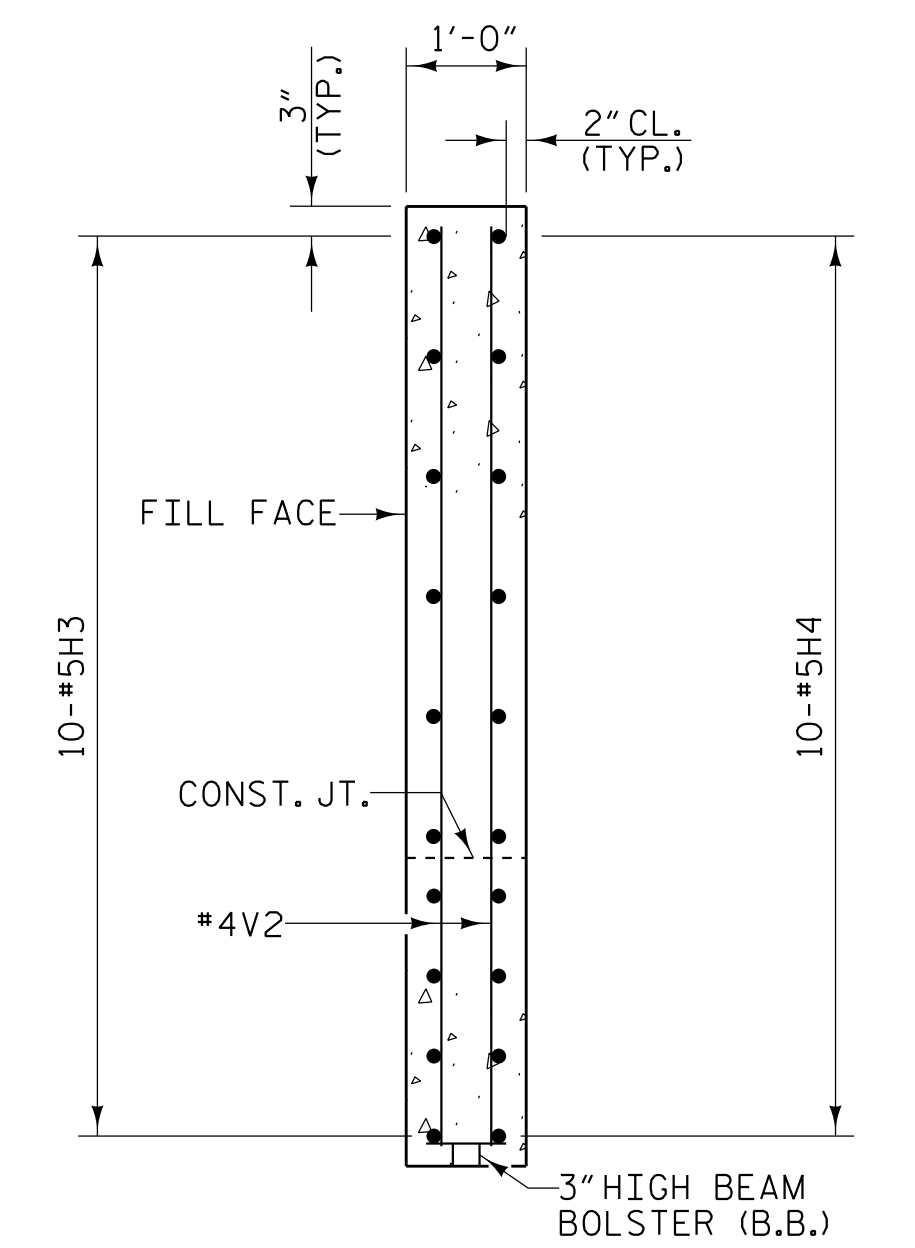
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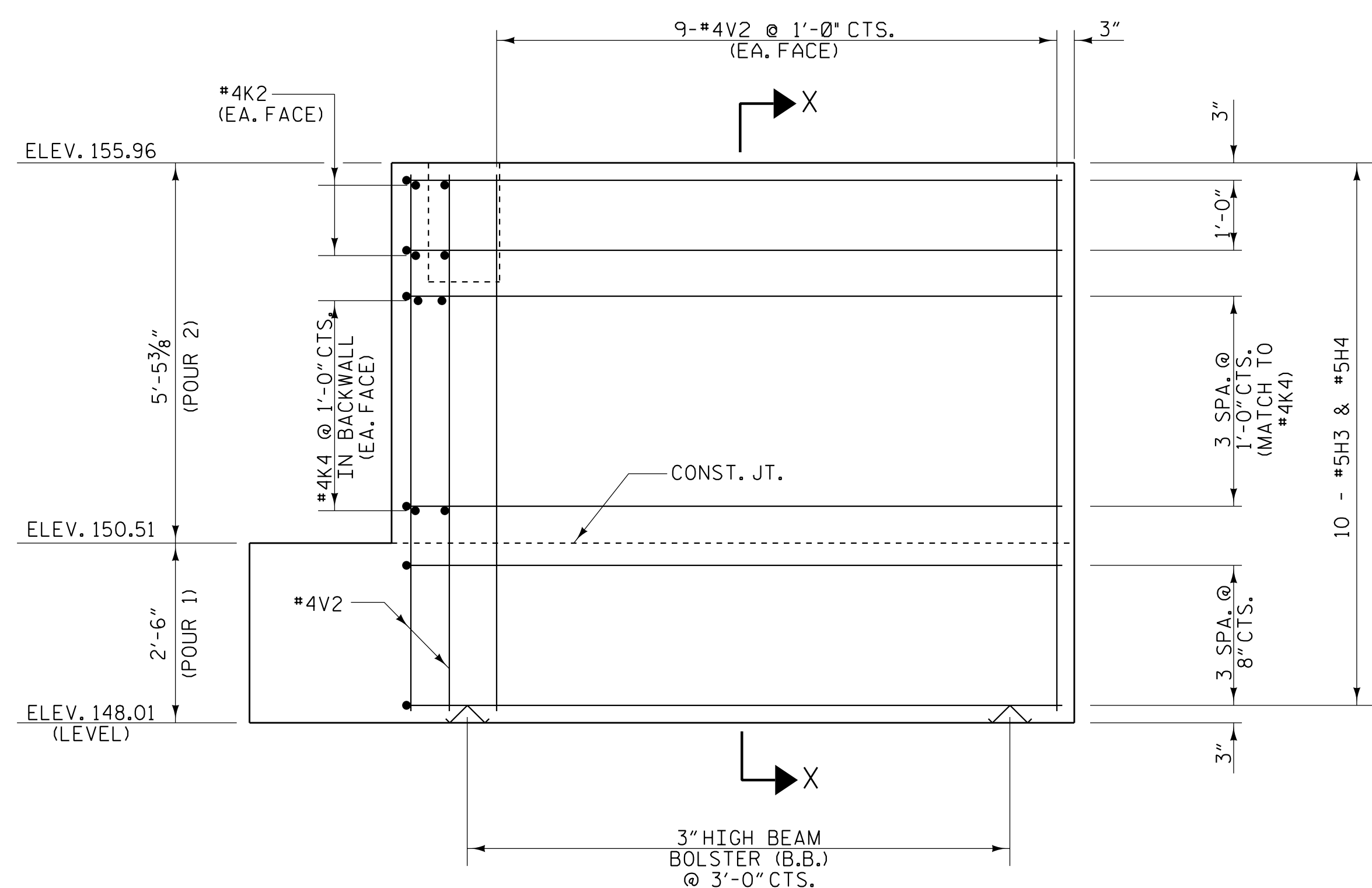
PLAN OF LEFT WING - W1
(STAGE III CONSTRUCTION)



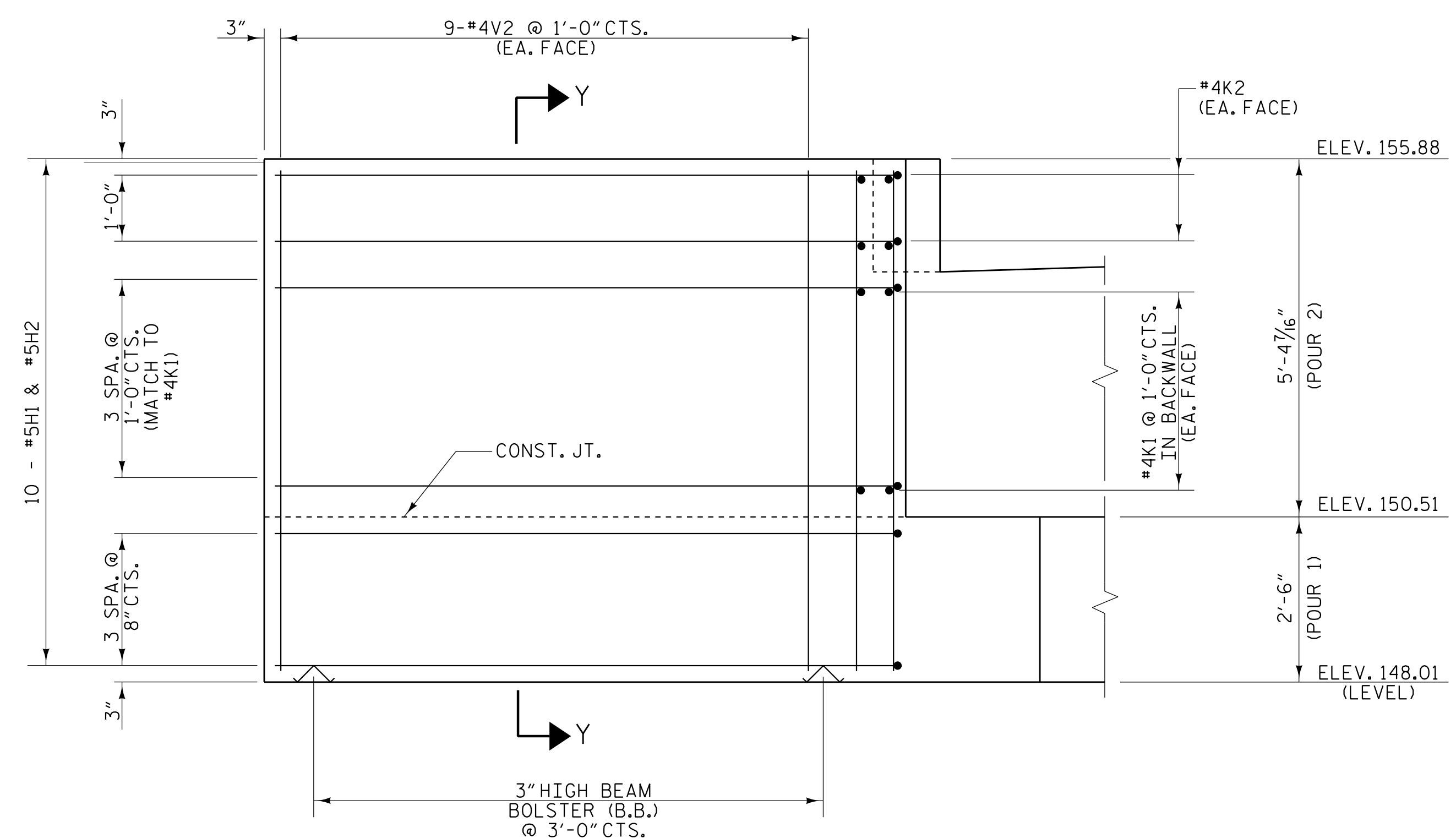
PLAN OF RIGHT WING - W2
(STAGE I CONSTRUCTION)



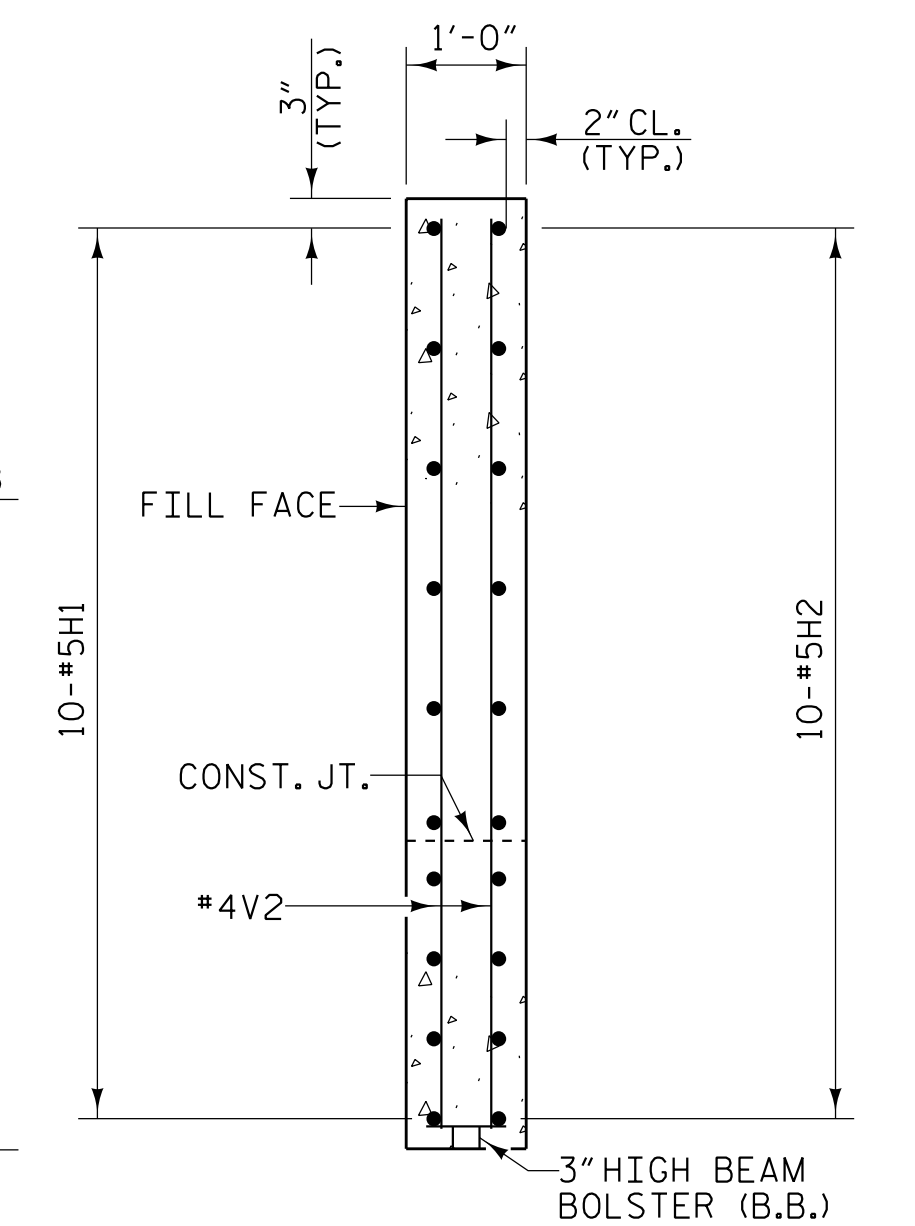
SECTION X-X



ELEVATION OF LEFT WING - W1
(STAGE III CONSTRUCTION)



ELEVATION OF RIGHT WING - W2
(STAGE I CONSTRUCTION)



SECTION Y-Y

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

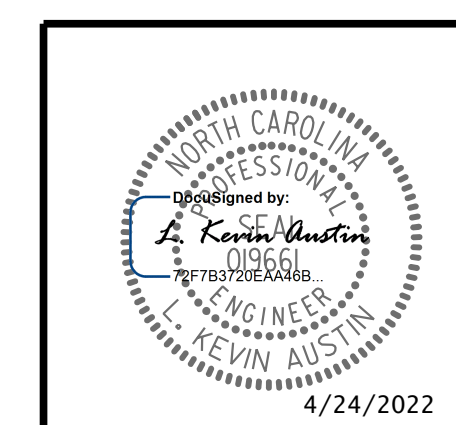
SUBSTRUCTURE
END BENT 1
WING DETAILS

REVISIONS						SHEET NO. S5-37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

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 CARY, NC 27518
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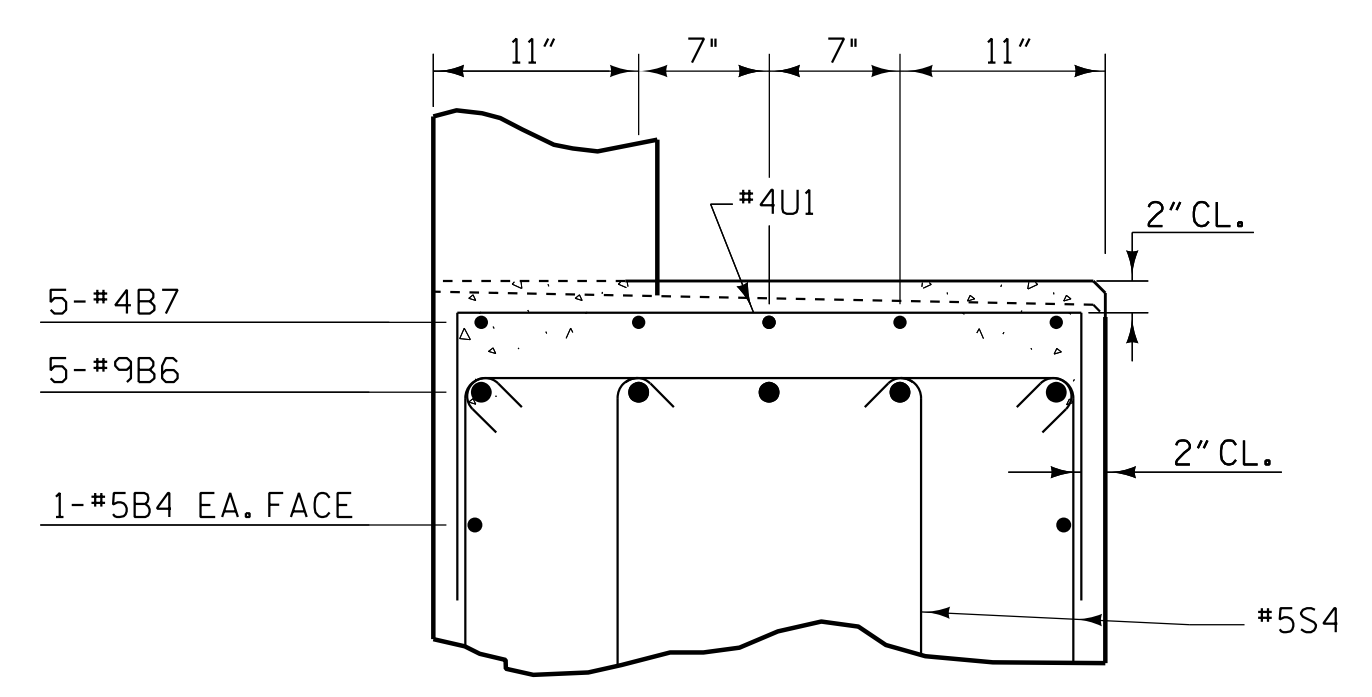
DRAWN BY : W. B. ALLEN DATE : 12/21
 CHECKED BY : G. F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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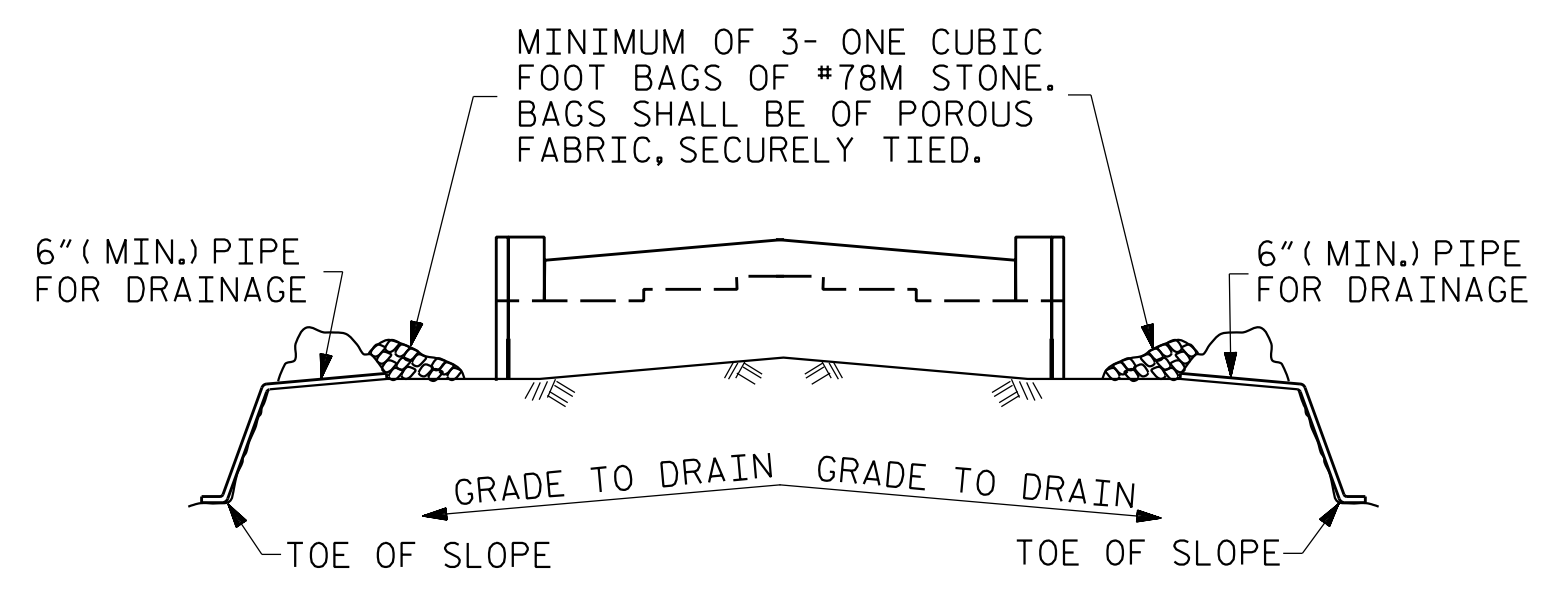
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PART SECTION B1-B1

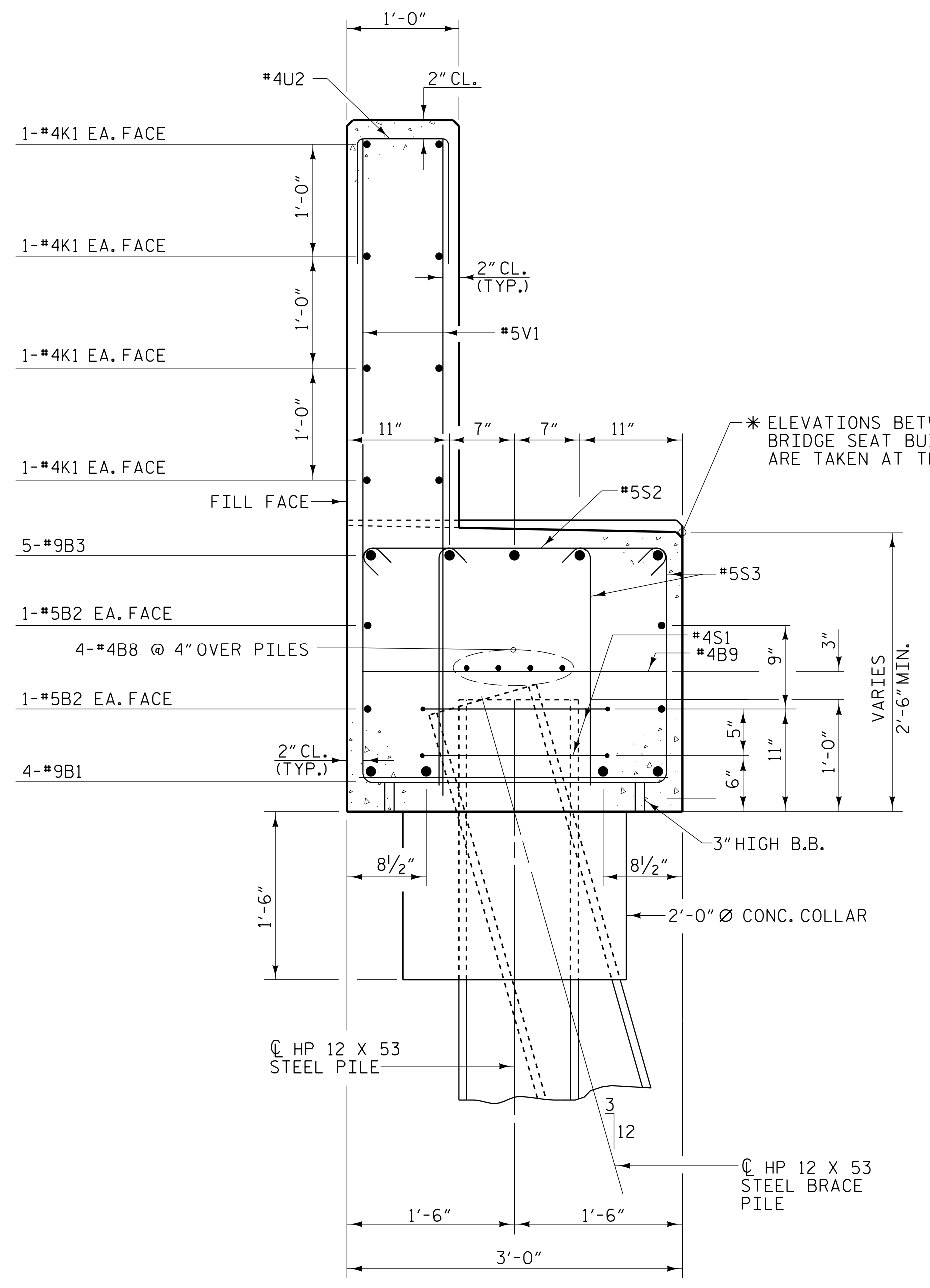


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

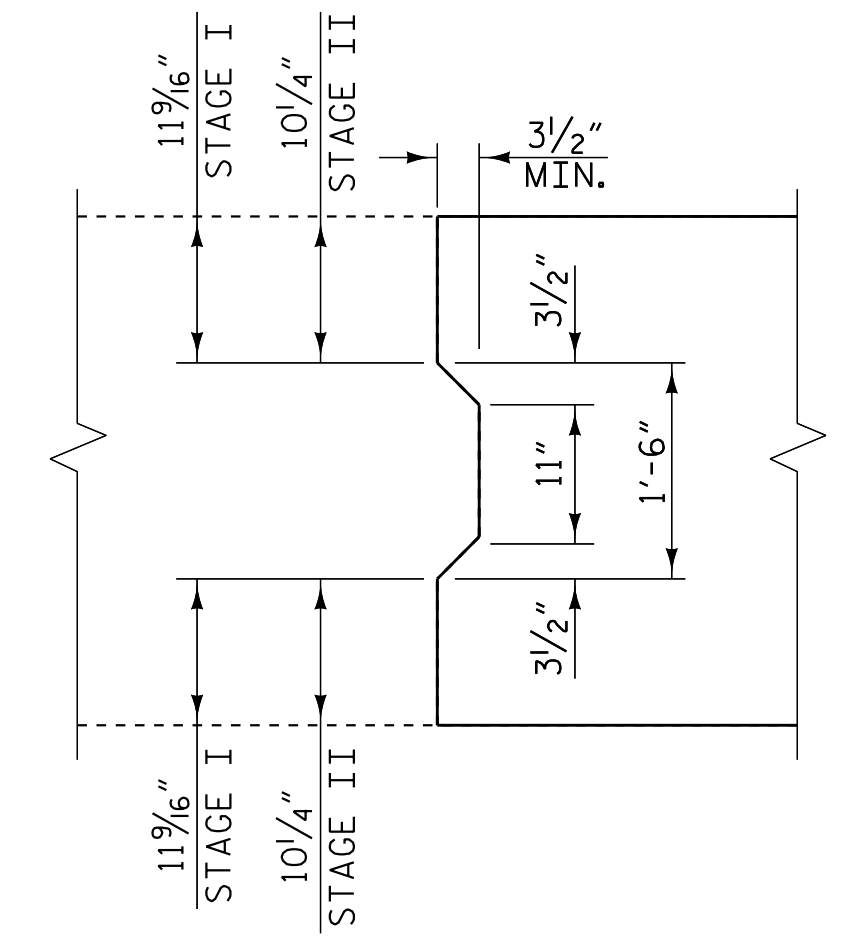
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR 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

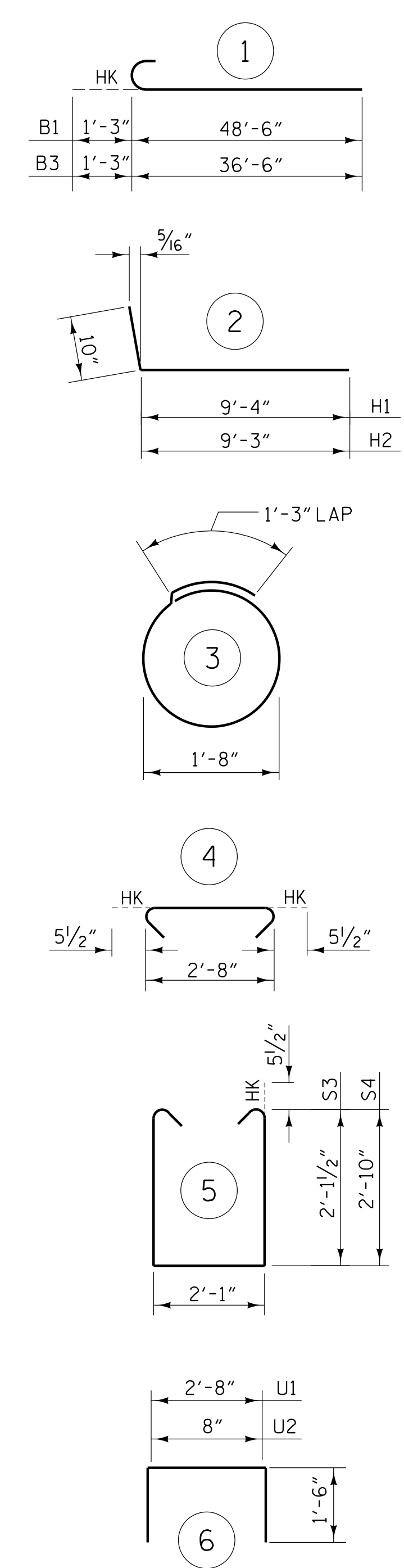


SECTION A1-A1



DETAIL "B"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

END BENT 1 - STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	49'-9"	677
B2	4	#5	STR	47'-5"	198
B3	5	#9	1	37'-9"	642
B4	2	#5	STR	16'-5"	34
B5	5	#4	STR	11'-5"	38
B6	5	#9	STR	21'-3"	361
B7	5	#4	STR	3'-11"	13
B8	8	#4	STR	24'-8"	132
B9	11	#4	STR	2'-8"	20
H1	10	#5	2	10'-2"	106
H2	10	#5	2	10'-1"	105
K1	16	#4	STR	23'-1"	247
K2	8	#4	STR	2'-8"	14
S1	10	#4	3	6'-6"	43
S2	52	#5	4	3'-7"	194
S3	66	#5	5	7'-3"	499
S4	38	#5	5	8'-8"	343
U1	16	#4	6	5'-8"	61
U2	41	#4	6	3'-8"	100
V1	82	#5	STR	5'-9"	492
V2	26	#4	STR	7'-5"	129
TOTAL REINFORCING STEEL					4448 lbs.

CLASS "A" CONCRETE - CU. YARDS	
POUR 1 (CAP, COLLARS, LOWER WING)	16.0 CU. YDS.
POUR 2 (BACKWALL & UPPER WING)	8.0 CU. YDS.
TOTAL	24.0 CU. YDS.

PROJECT NO. **I-5987B**
ROBESON COUNTY
 STATION: **586+14.00 -L- POT**

SHEET 4 OF 6

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

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

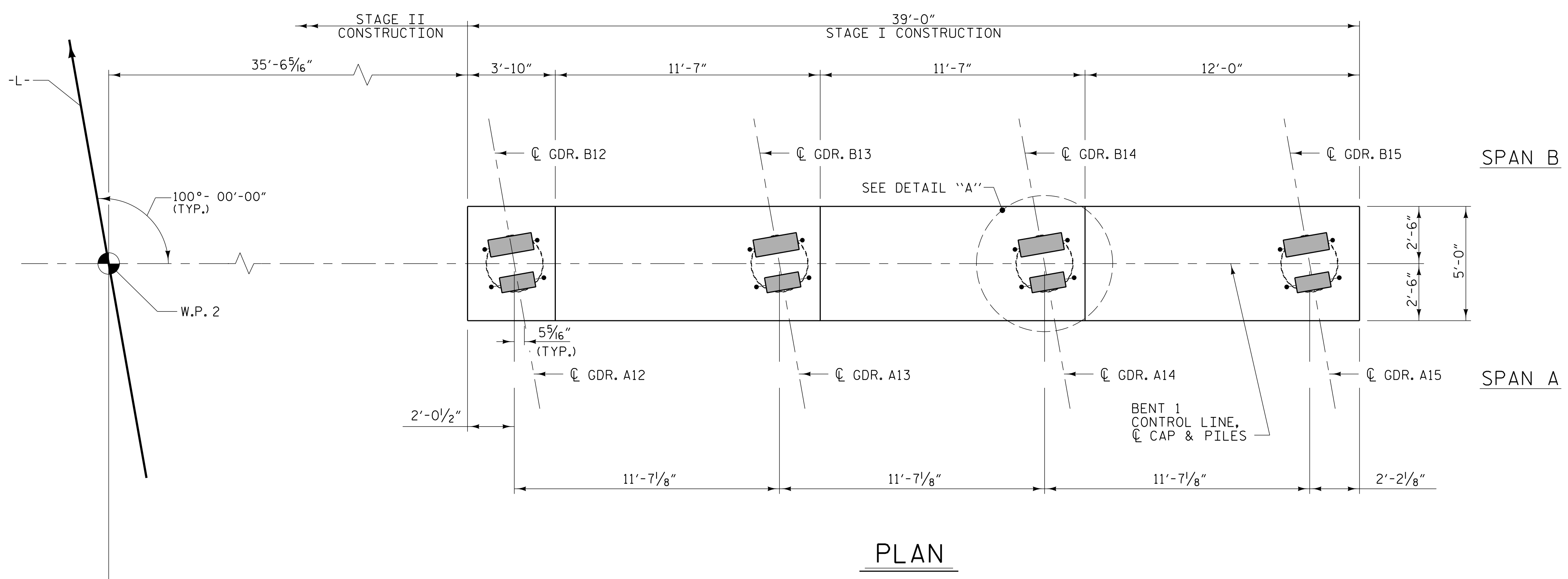
PLANS PREPARED BY:
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Professional Engineer Seal for L. Kevin Austin, State of North Carolina, License No. 78725, dated 4/24/2022.

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DRAWN BY: **W. B. ALLEN** DATE: **12/21**
 CHECKED BY: **G. F. WILSON** DATE: **2/22**
 DESIGN ENGINEER OF RECORD: **L. K. AUSTIN** DATE: **2/22**

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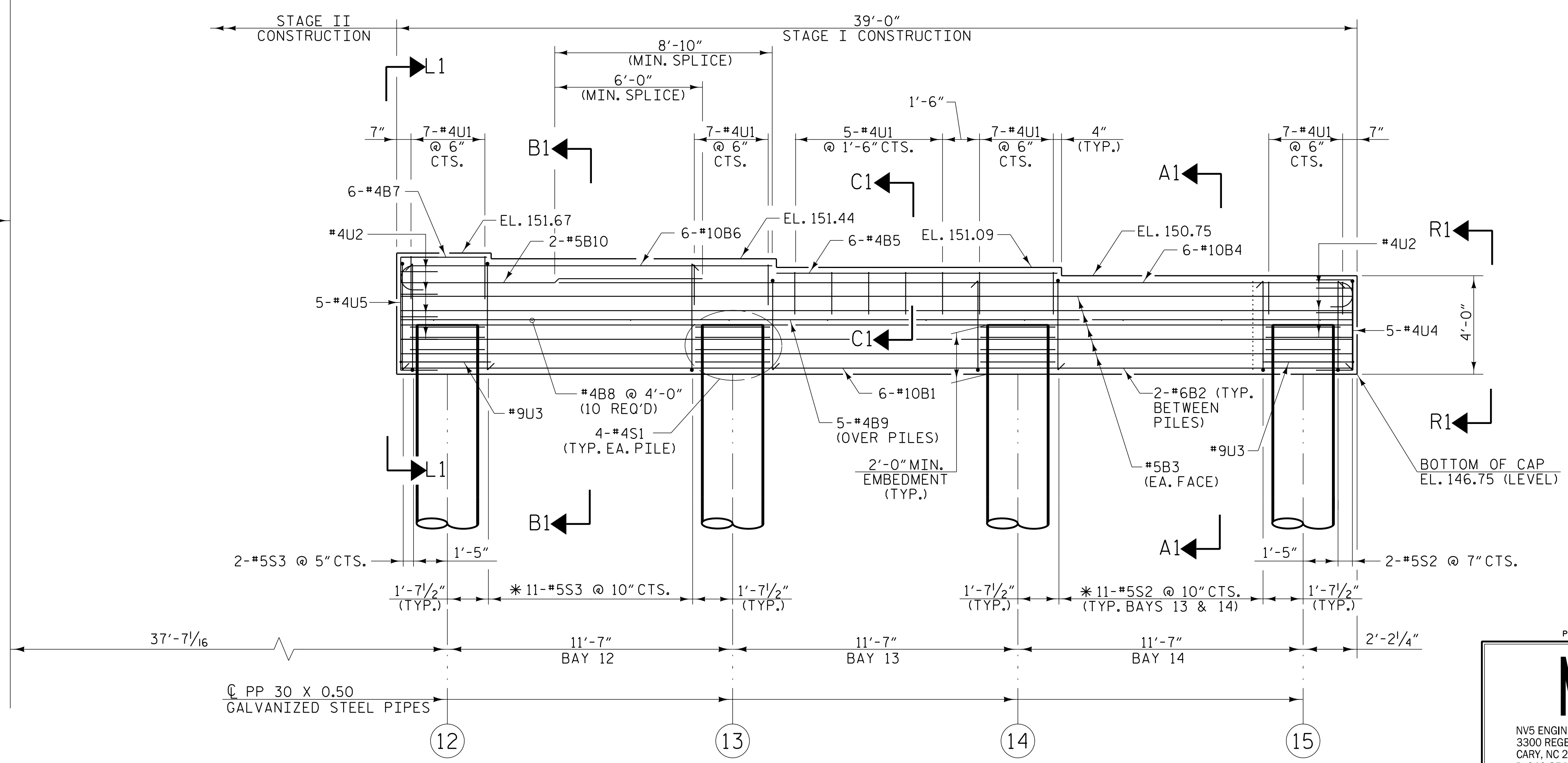
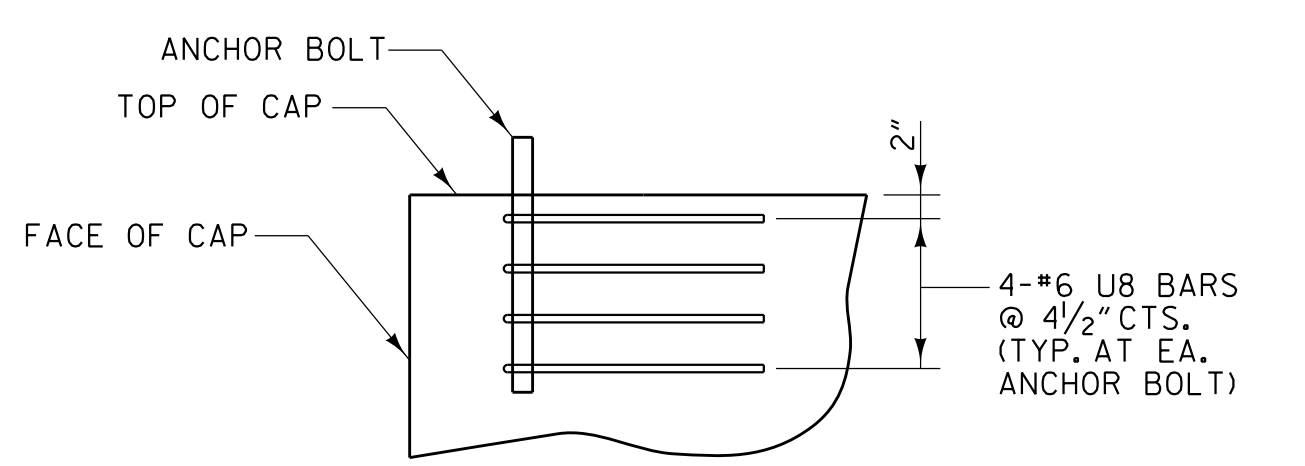
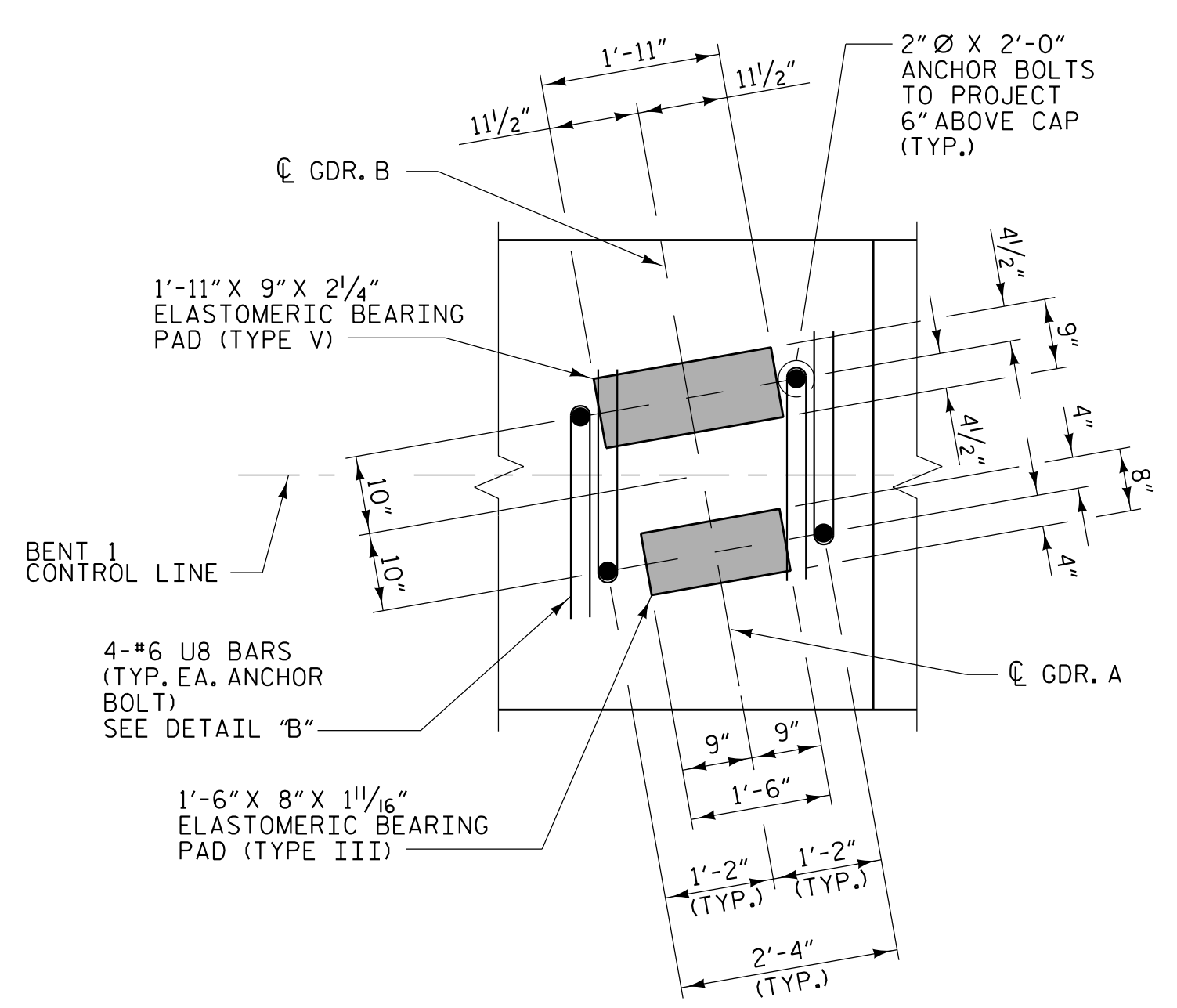
NOTES

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

* INVERT ALTERNATE STIRRUPS.

FOR ADDITIONAL REINFORCING STEEL IN PP 30 X 0.50 GALVANIZED STEEL PILES, SEE SHEET S5-53.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 26 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. I-5987B

ROBESON COUNTY

STATION: 586+14.00 -L- POT

SHEET 1 OF 6

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
BENT 1
STAGE I**

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

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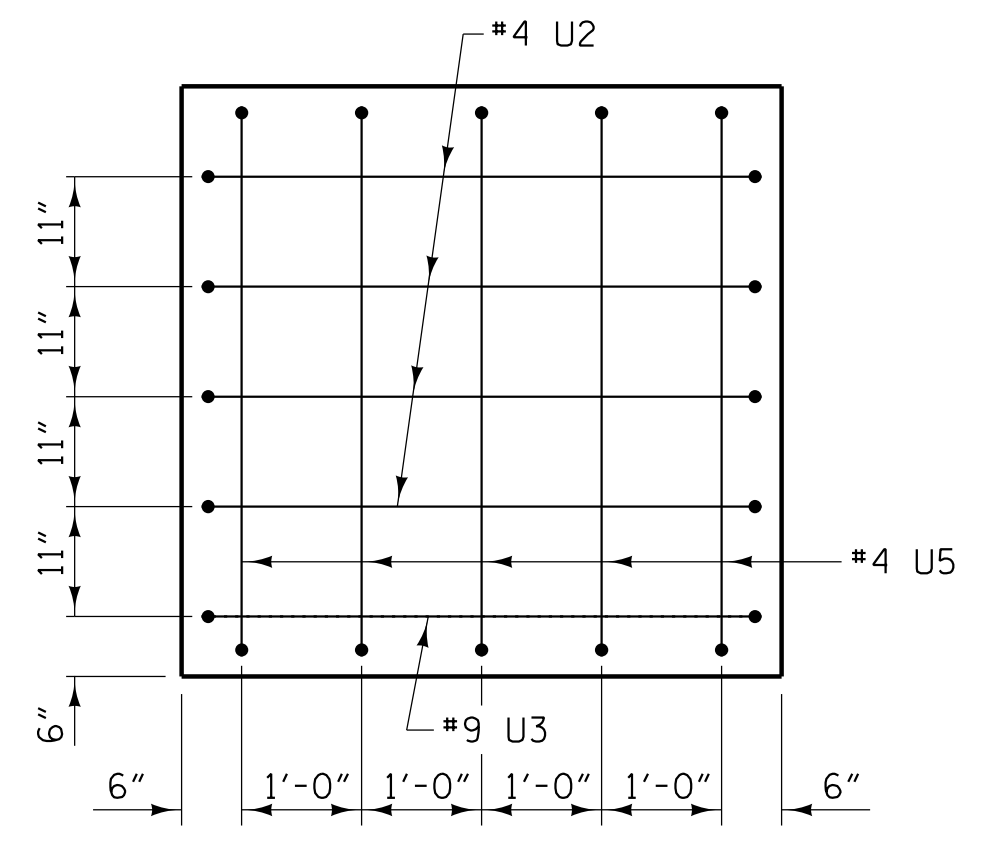
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DESIGN ENGINEER OF RECORD: L.K. AUSTIN DATE: 2/22

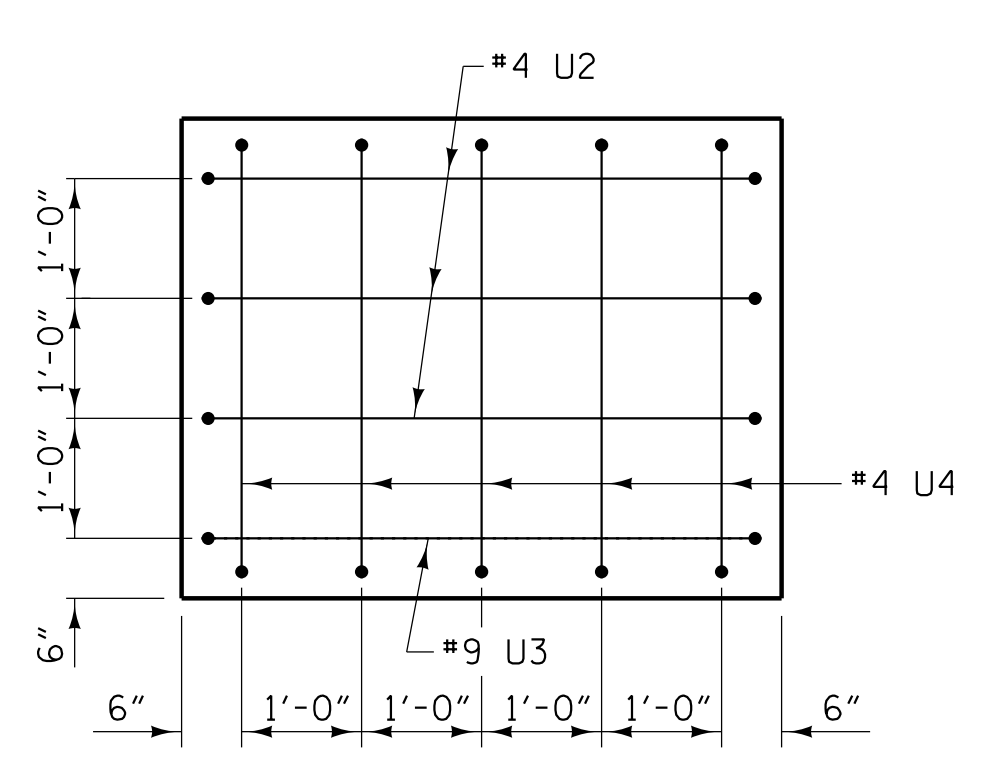
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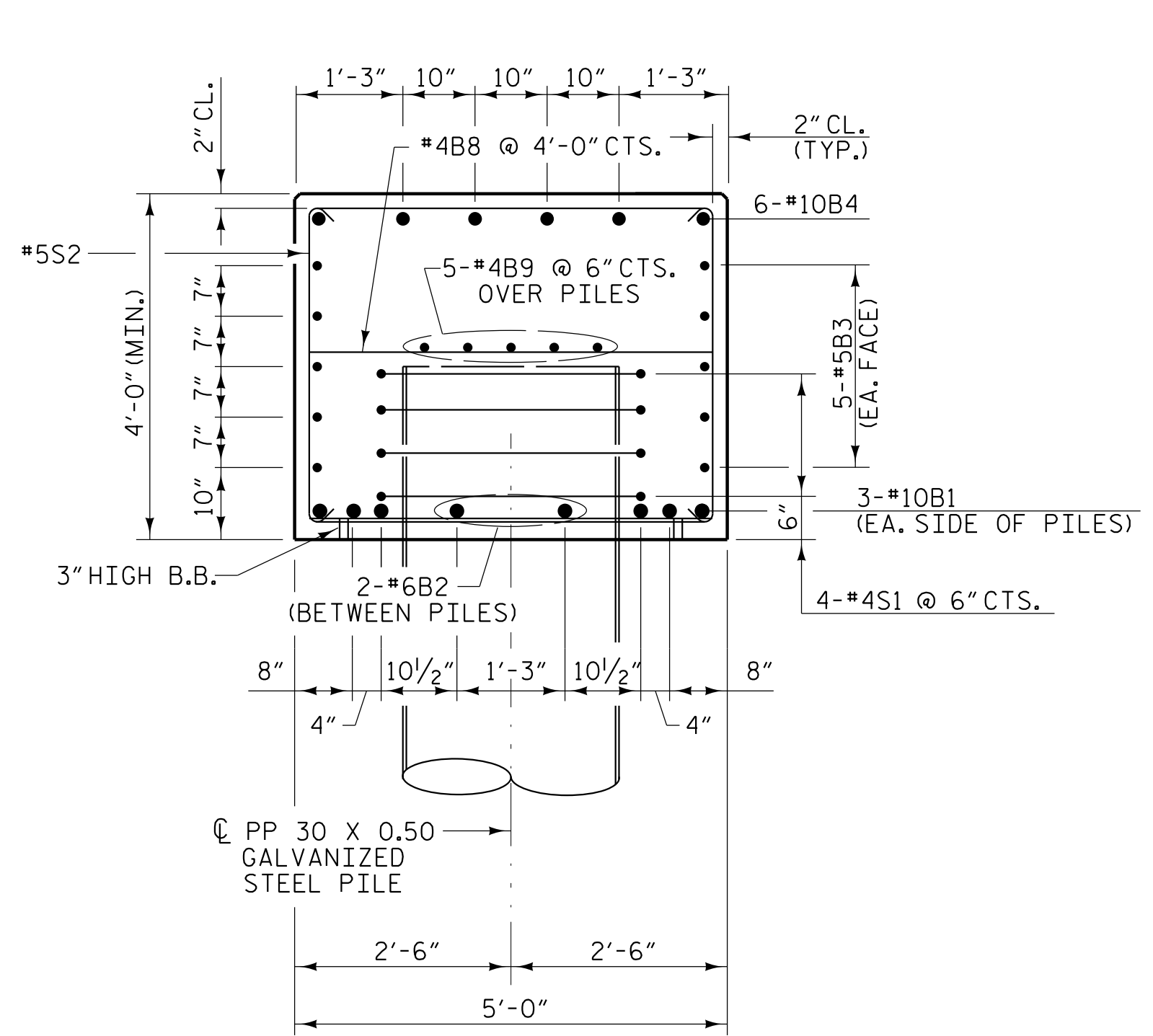
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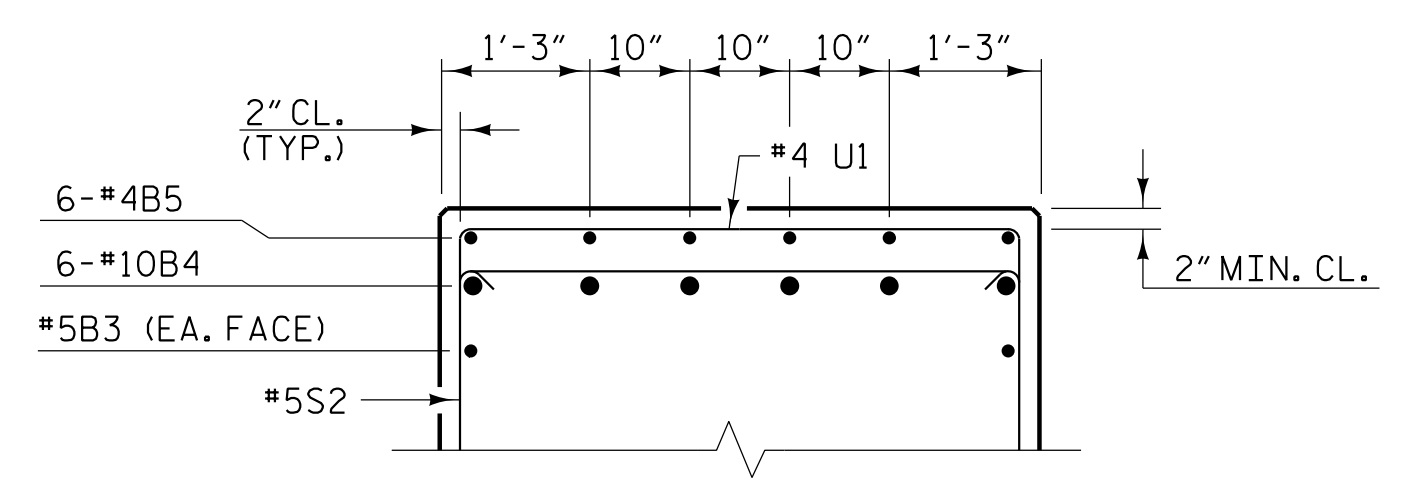
VIEW L1-L1



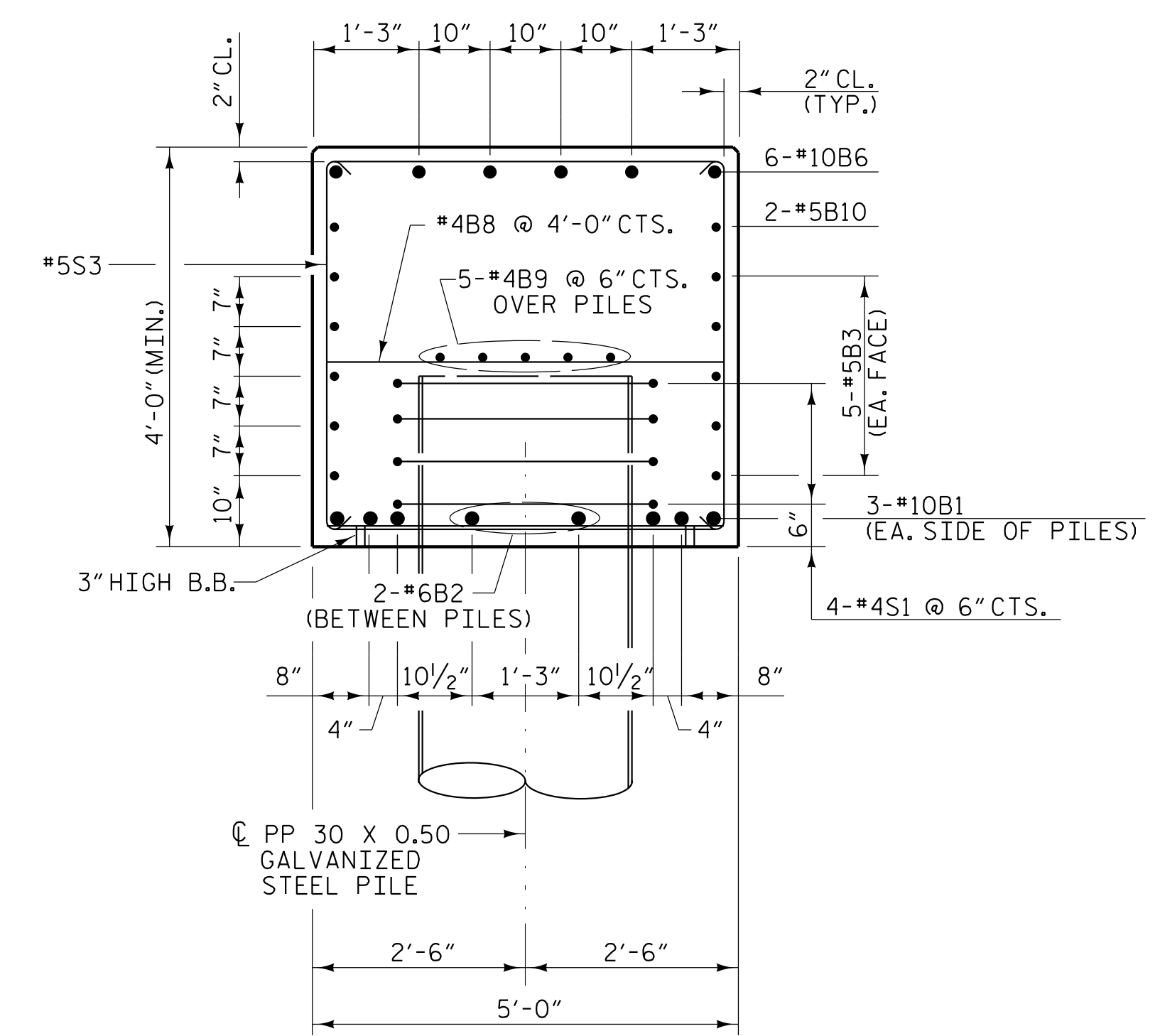
VIEW R1-R1



SECTION A1-A1

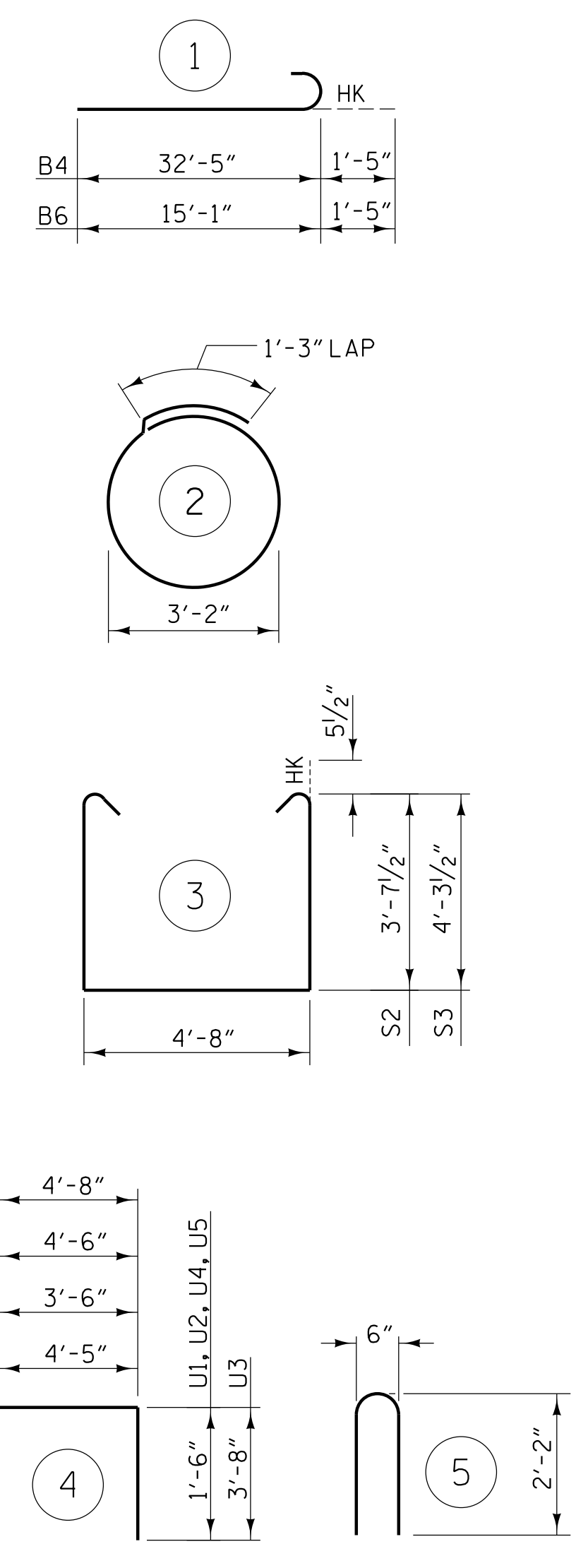


PARTIAL SECTION C1-C1



SECTION B1-B1

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1 - STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	38'-8"	998
B2	6	#6	STR	8'-9"	79
B3	10	#5	STR	38'-8"	403
B4	6	#10	1	33'-10"	874
B5	6	#4	STR	11'-5"	46
B6	6	#10	1	16'-6"	426
B7	6	#4	STR	3'-6"	14
B8	10	#4	STR	4'-8"	31
B9	5	#4	STR	38'-8"	129
B10	2	#5	STR	12'-3"	26
S1	16	#4	2	10'-8"	114
S2	24	#5	3	12'-10"	321
S3	13	#5	3	14'-2"	192
U1	33	#4	4	7'-8"	169
U2	7	#4	4	7'-6"	35
U3	2	#9	4	11'-10"	80
U4	5	#4	4	6'-6"	22
U5	5	#4	4	7'-5"	25
U8	64	#6	5	4'-10"	465

TOTAL REINFORCING STEEL 4449 LB.

TOTAL CLASS "A" CONCRETE 31.6 CU. YDS.

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Formerly CALYX Engineers & Consultants

PROJECT NO. I-5987B
ROBESON COUNTY
STATION: 586+14.00 -L- POT

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
DETAILS
STAGE I

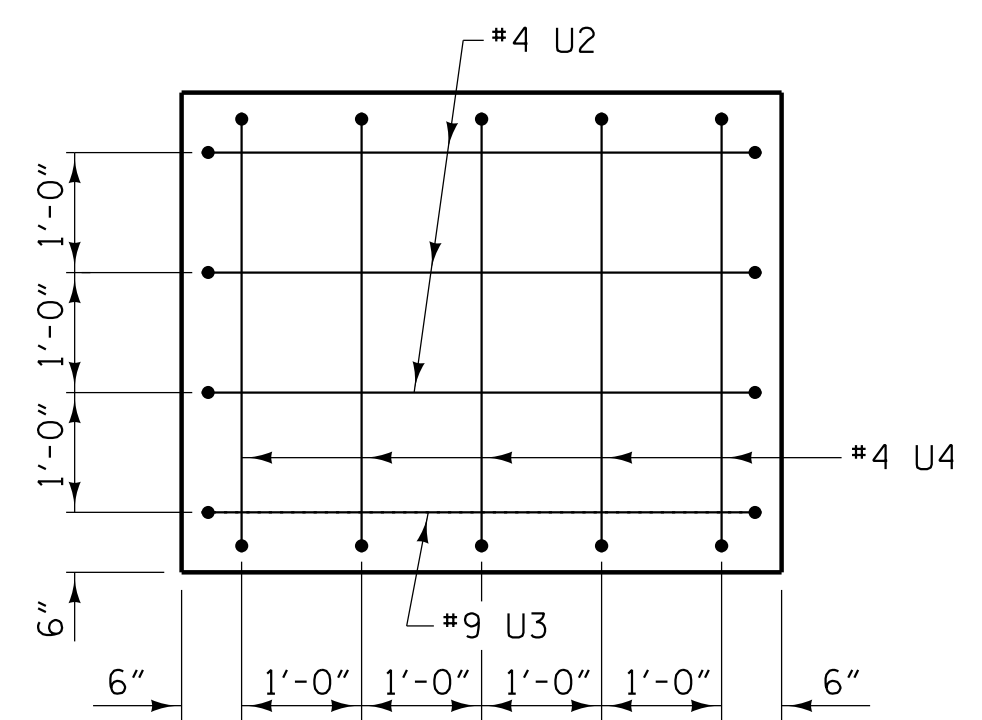
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

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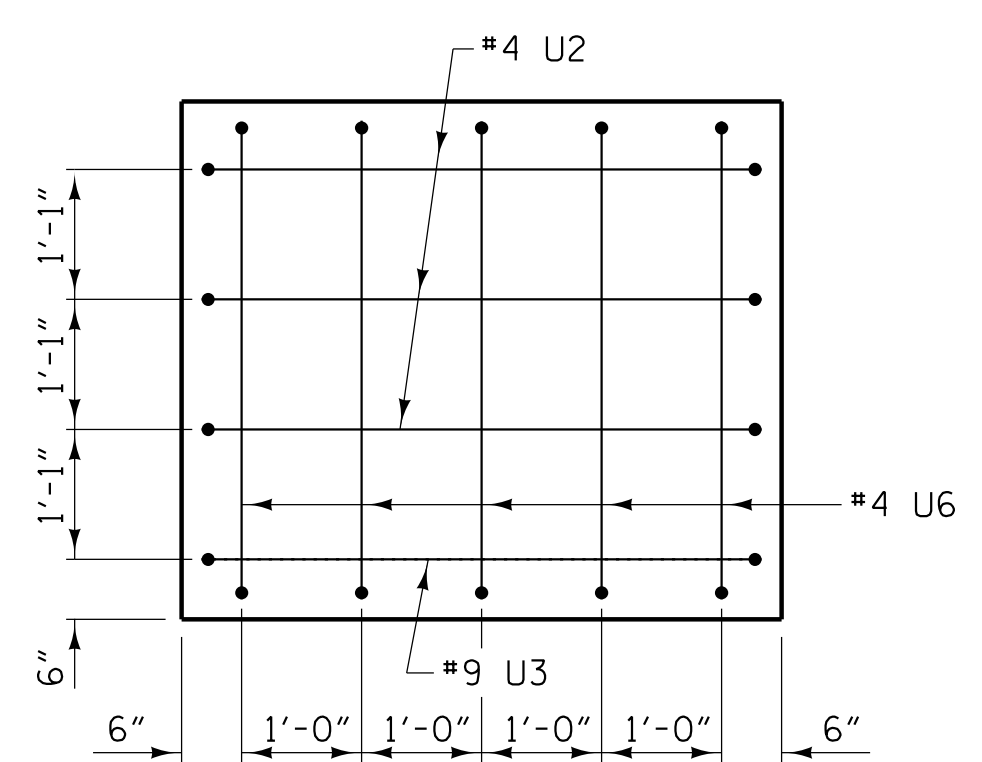
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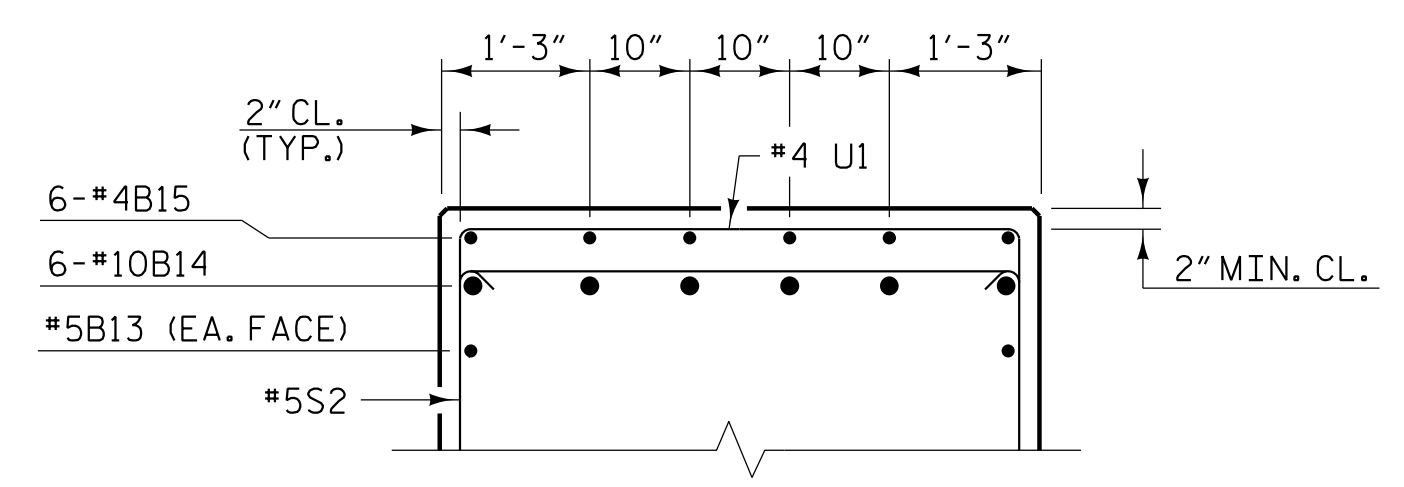
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CHECKED BY: G. F. WILSON DATE: 2/22
DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE: 2/22



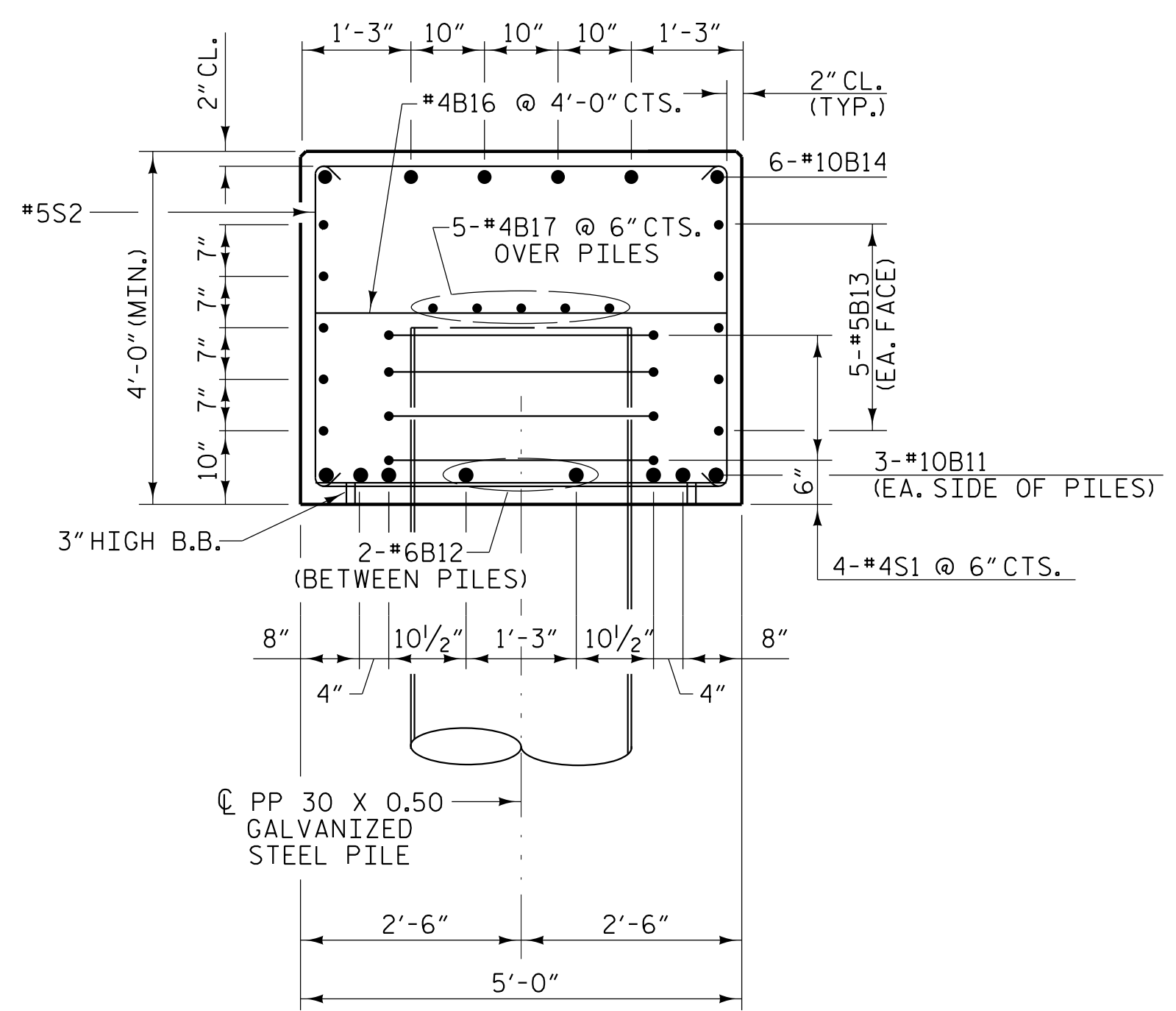
VIEW L2-L2



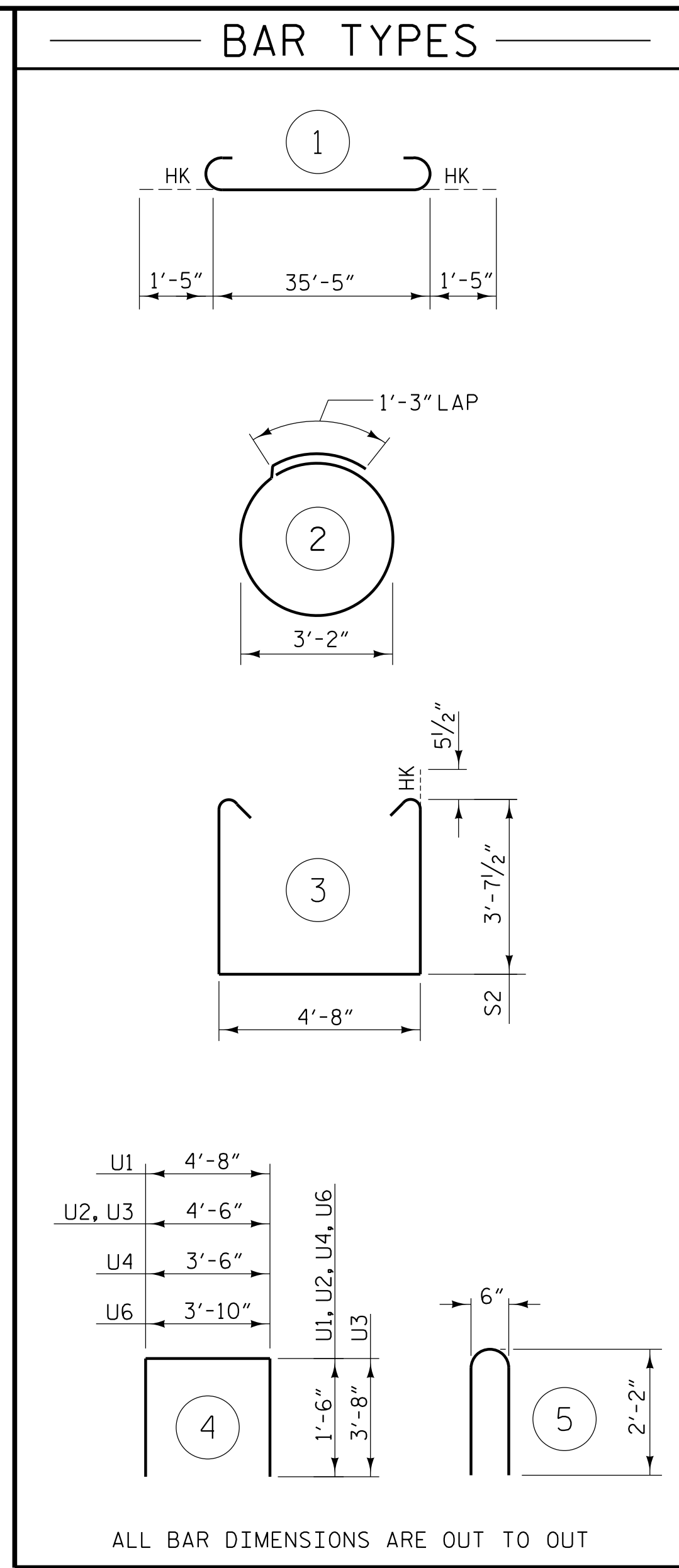
VIEW R2-R2



PARTIAL SECTION C2-C2



SECTION A2-A2



BENT 1 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B11	6	#10	STR	35'-5"	914
B12	6	#6	STR	7'-8"	69
B13	10	#5	STR	35'-5"	369
B14	6	#10	1	38'-3"	988
B15	6	#4	STR	14'-3"	57
B16	9	#4	STR	4'-8"	28
B17	5	#4	STR	35'-5"	118
S1	16	#4	2	10'-8"	114
S2	34	#5	3	12'-10"	455
U1	32	#4	4	7'-8"	164
U2	6	#4	4	7'-6"	30
U3	2	#9	4	11'-10"	80
U4	5	#4	4	6'-6"	22
U6	5	#4	4	6'-10"	23
U8	64	#6	5	4'-10"	465

TOTAL REINFORCING STEEL 3896LB.
 TOTAL CLASS "A" CONCRETE 27.8 CU. YDS.



PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1
 DETAILS
 STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			64
2			4			

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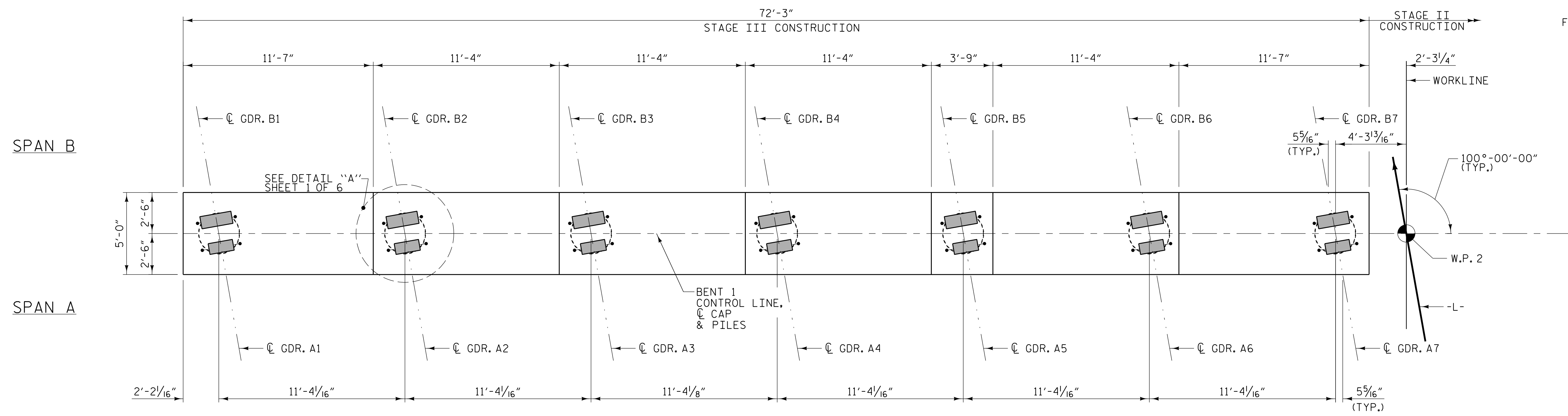
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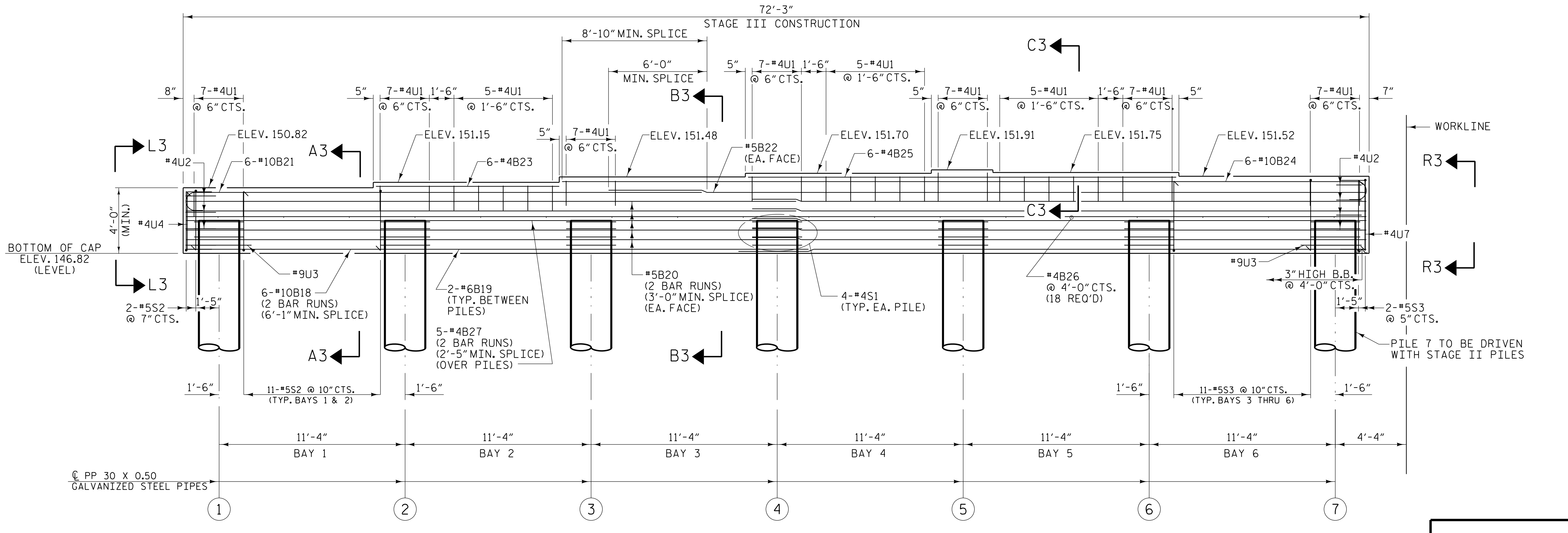
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NOTES
FOR NOTES SEE SHEET 1 OF 6.



PLAN



ELEVATION
⊕ INDICATES PILE NUMBER

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PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT 1
 STAGE III

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-45
1			3			TOTAL SHEETS
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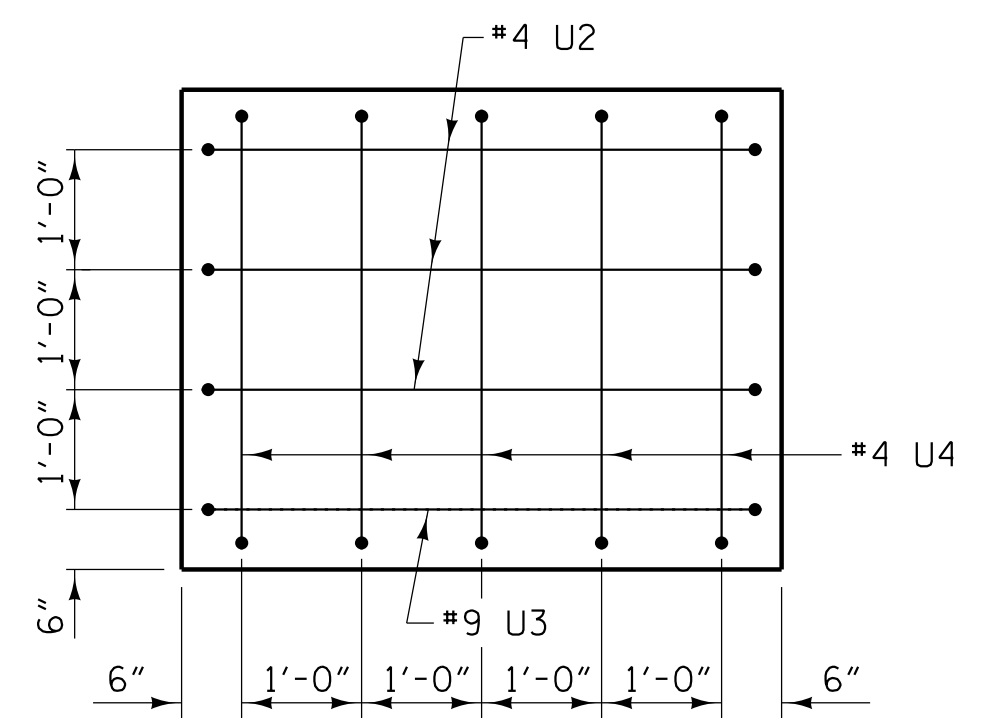
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DRAWN BY : J.A. PANDOLI DATE : 2/22
 CHECKED BY : G.F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L.K. AUSTIN DATE : 2/22

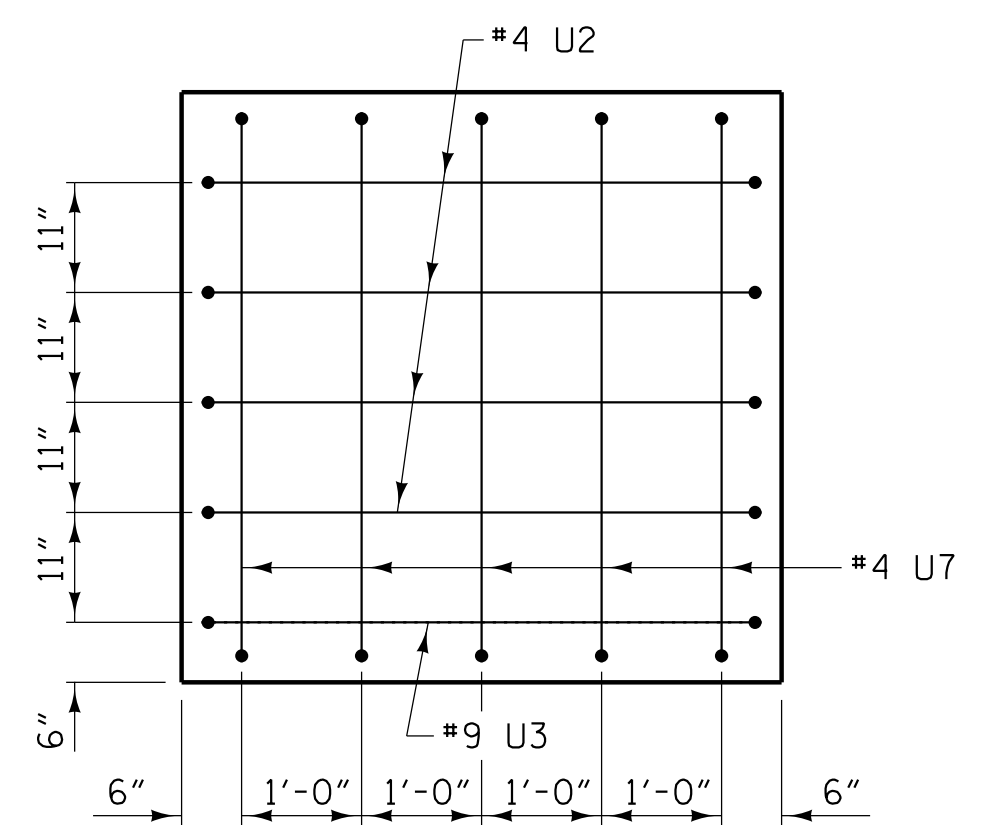
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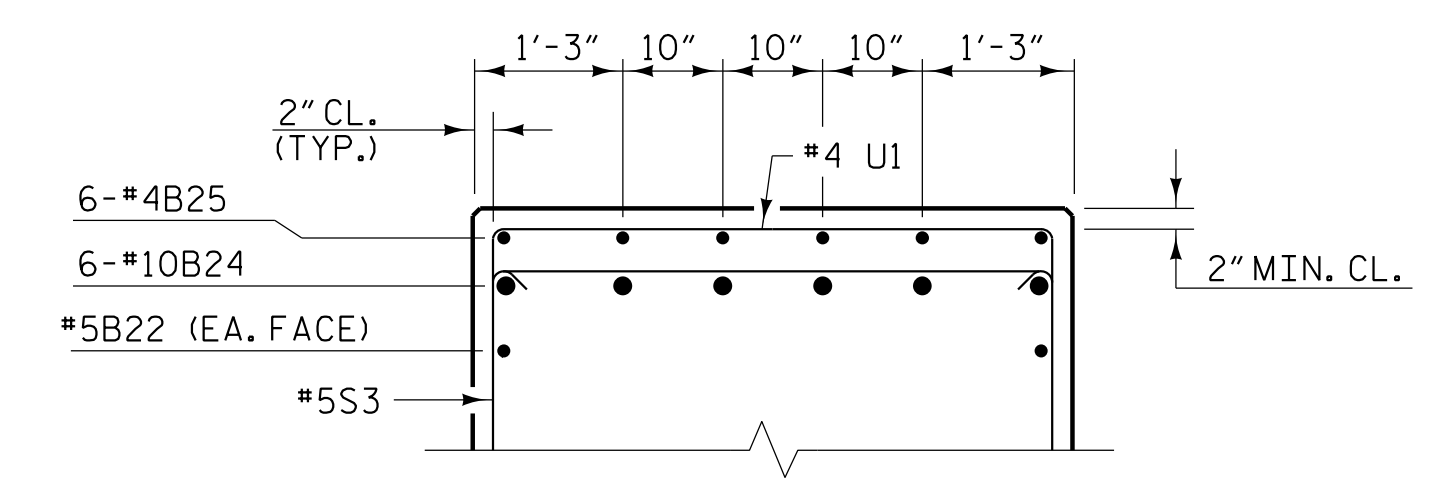
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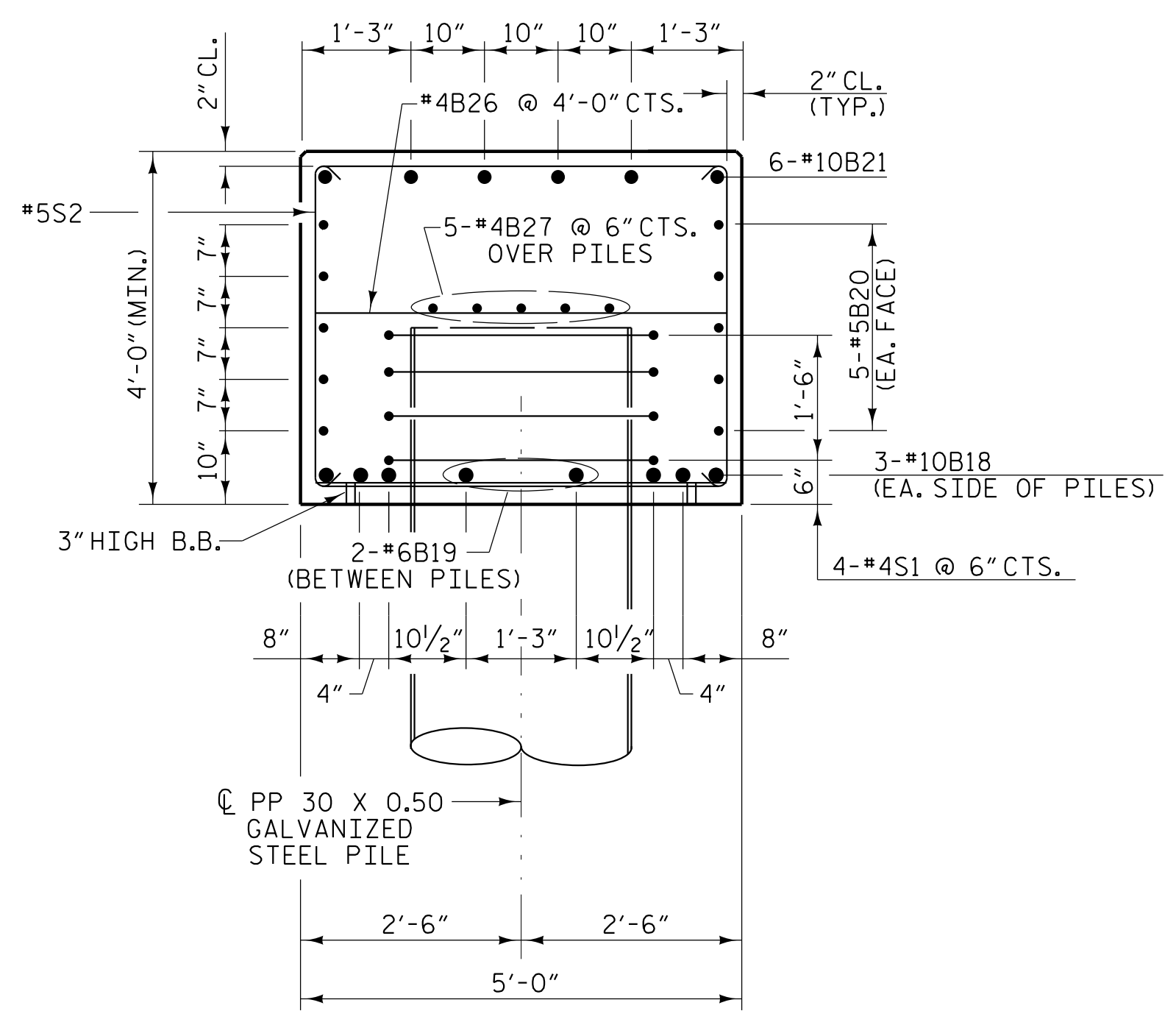
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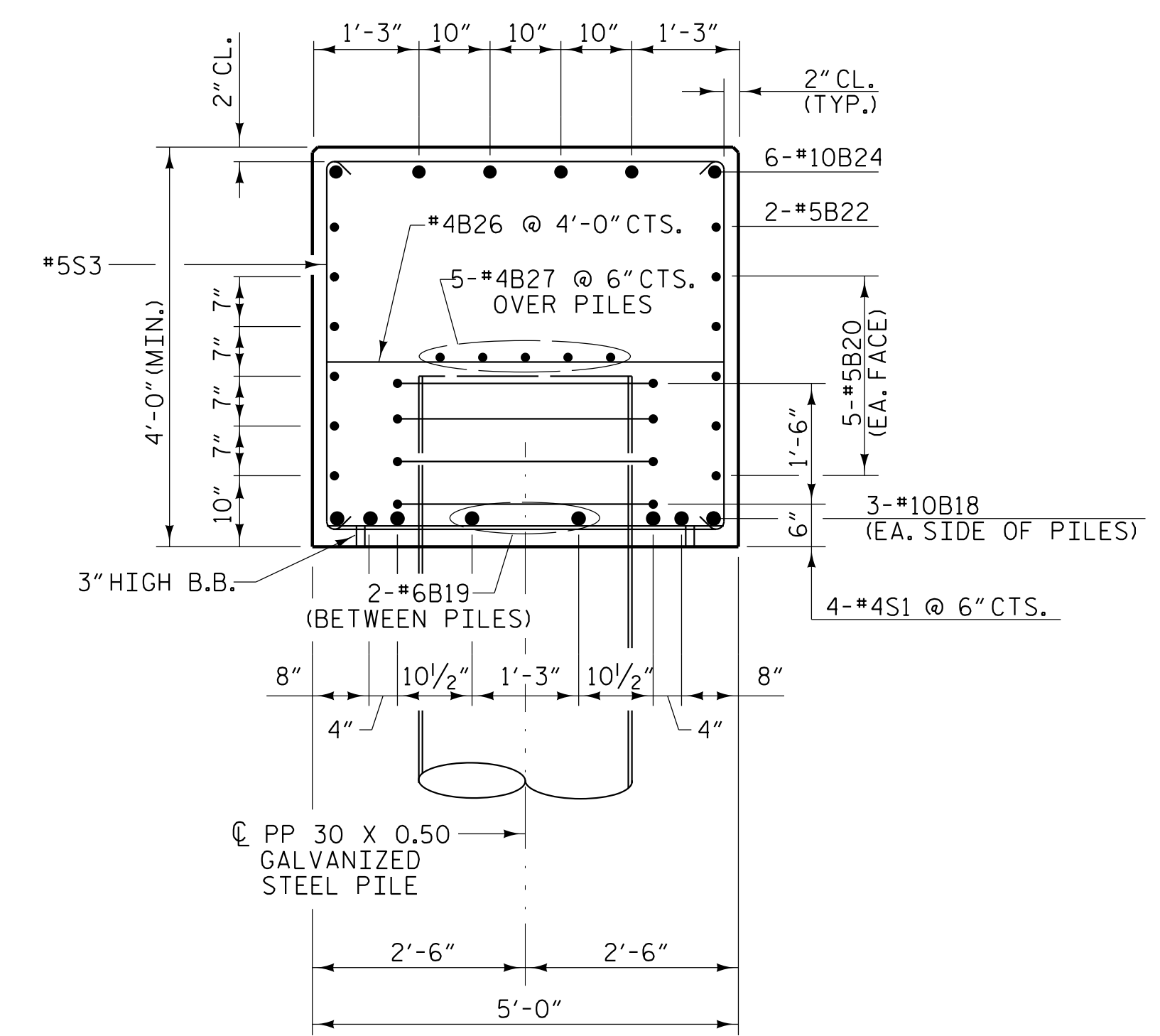
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PARTIAL SECTION C3-C3

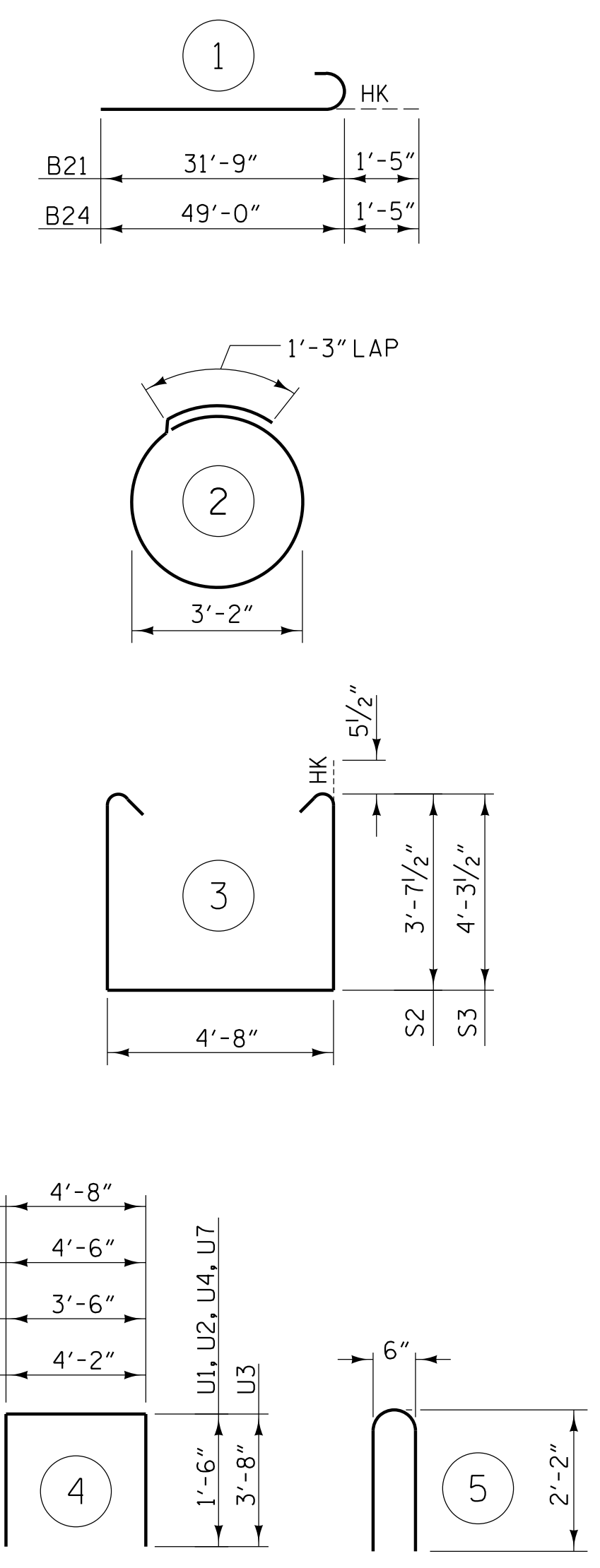


SECTION A3-A3



SECTION B3-B3

BAR TYPES



BILL OF MATERIAL

BENT 1 - STAGE III					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B18	12	#10	STR	39'-0"	2014
B19	12	#6	STR	8'-6"	153
B20	20	#5	STR	37'-6"	782
B21	6	#10	1	33'-2"	856
B22	2	#5	STR	46'-2"	96
B23	6	#4	STR	11'-2"	45
B24	6	#10	1	50'-5"	1302
B25	6	#4	STR	26'-1"	105
B26	18	#4	STR	4'-8"	56
B27	10	#4	STR	37'-2"	248
S1	28	#5	2	10'-8"	312
S2	24	#5	3	12'-10"	321
S3	46	#5	3	14'-2"	680
U1	64	#4	4	7'-8"	328
U2	7	#4	4	7'-6"	35
U3	2	#9	4	11'-10"	80
U4	5	#4	4	6'-6"	22
U7	5	#4	4	7'-2"	24
U8	112	#6	5	4'-10"	813

TOTAL REINFORCING STEEL 8272 LB.

TOTAL CLASS "A" CONCRETE 61.7 CU. YDS.



PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 DETAILS
 STAGE III

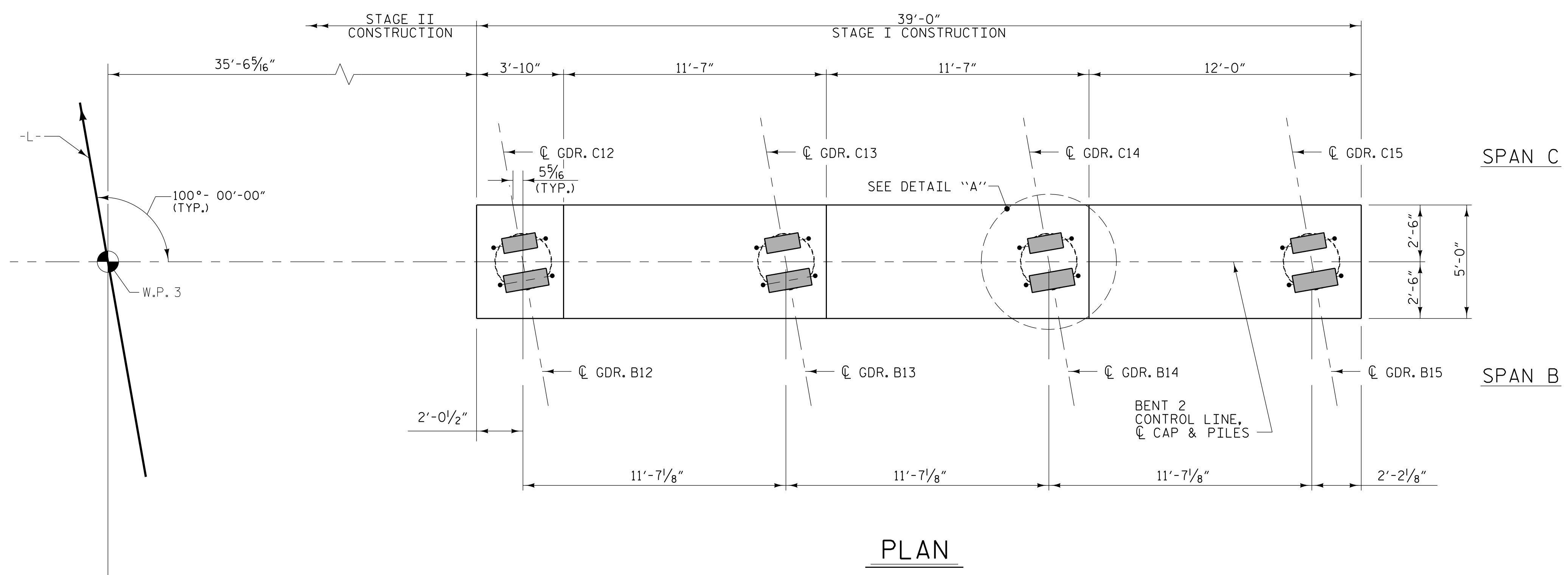
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			64
2			4			



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 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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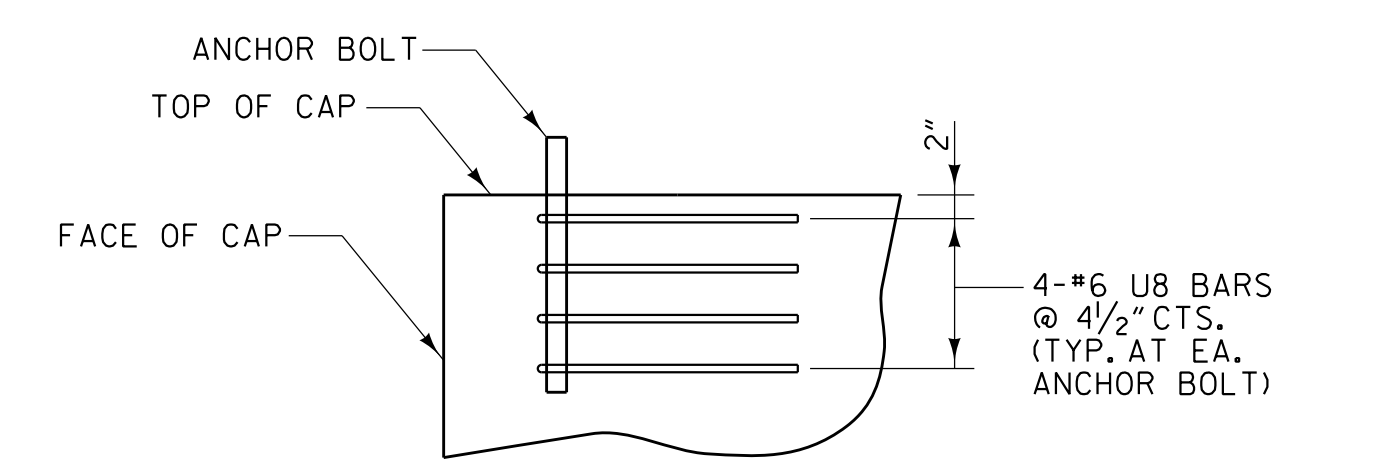
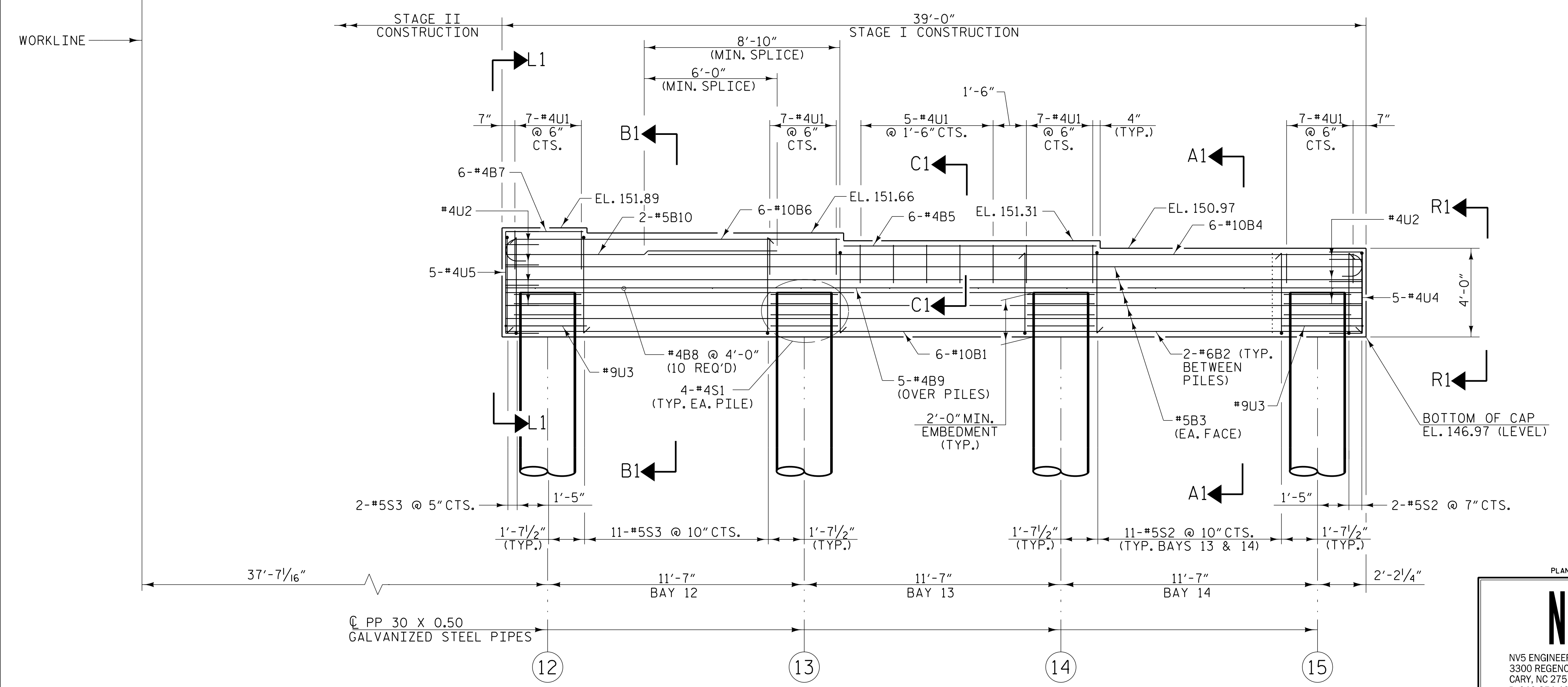
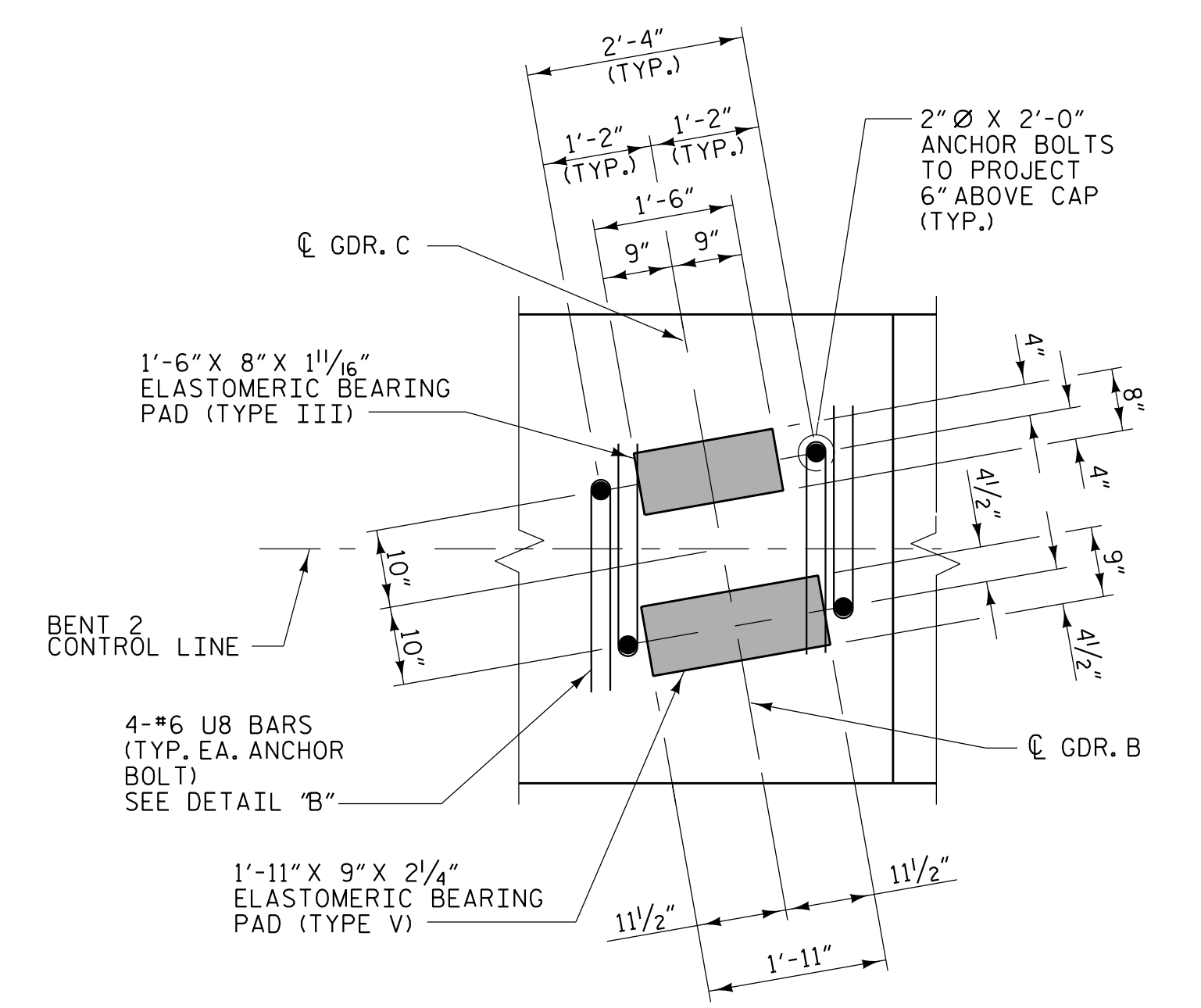
NOTES

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

* INVERT ALTERNATE STIRRUPS.

FOR ADDITIONAL REINFORCING STEEL IN PP 30 X 0.50 GALVANIZED STEEL PILES, SEE SHEET S5-53.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 26 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. I-5987B

ROBESON COUNTY

STATION: 586+14.00 -L- POT

SHEET 1 OF 6

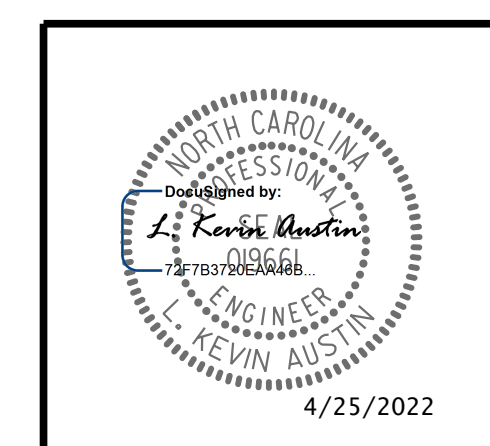
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DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
BENT 2
STAGE I**

PLANS PREPARED BY:

N|V|5

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			64
2			4			

DRAWN BY: J.A. PANDOLI DATE: 2/22

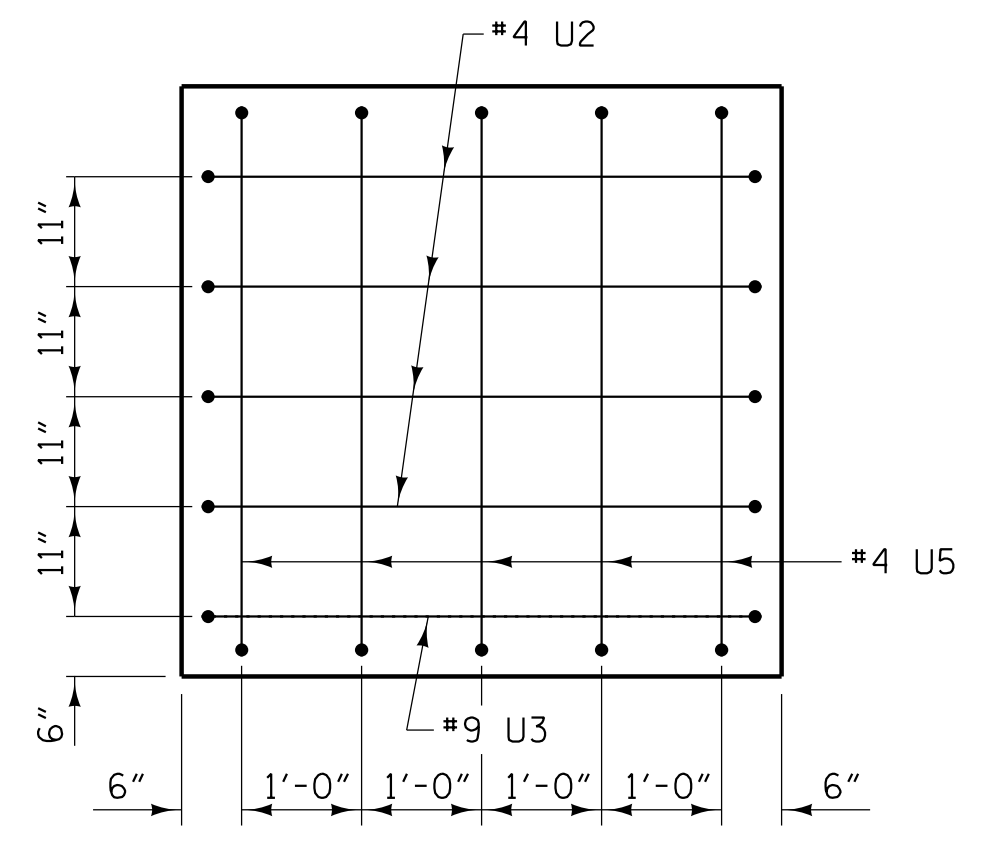
CHECKED BY: G.F. WILSON DATE: 2/22

DESIGN ENGINEER OF RECORD: L.K. AUSTIN DATE: 2/22

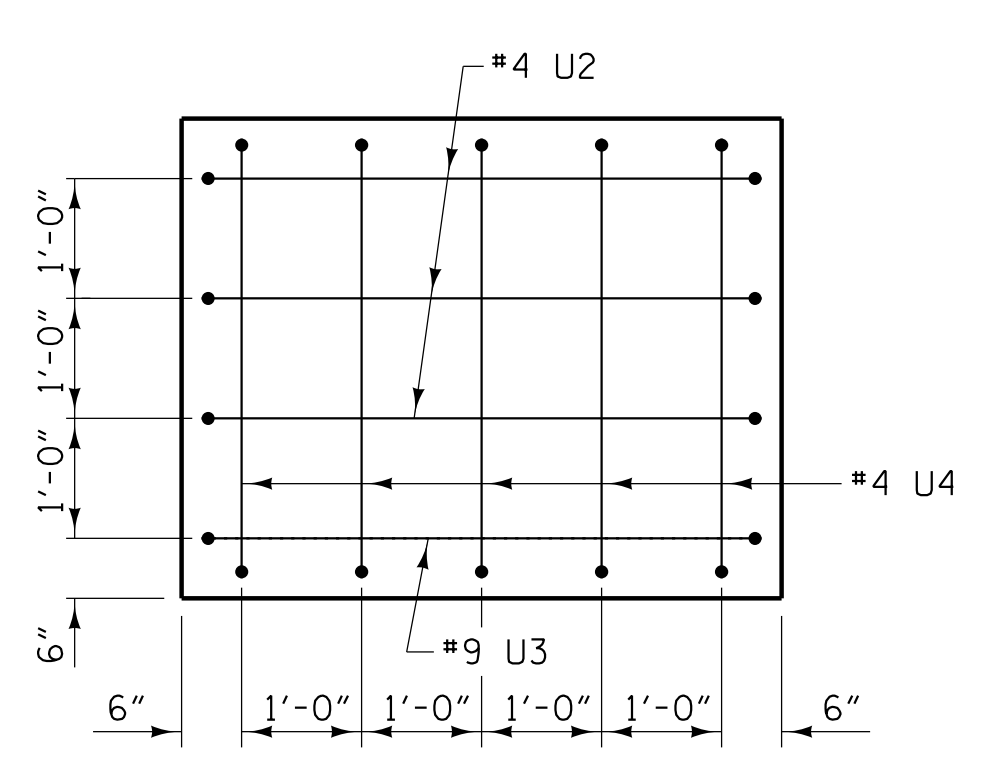
⊕ INDICATES PILE NUMBER

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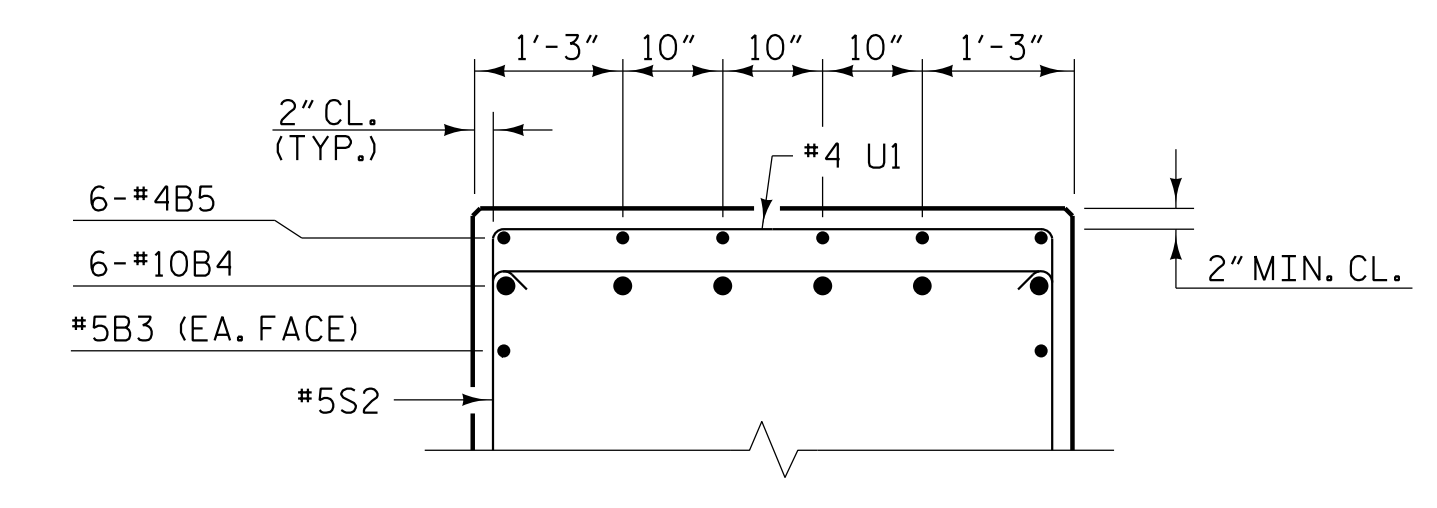
4/25/2022 6:02:27 PM G:\Projects\2019\2019\2019\CLIENTS\Structures\I-5987B (Big Marsh Swamp)\5987B.SMU.B7.770536.dgn



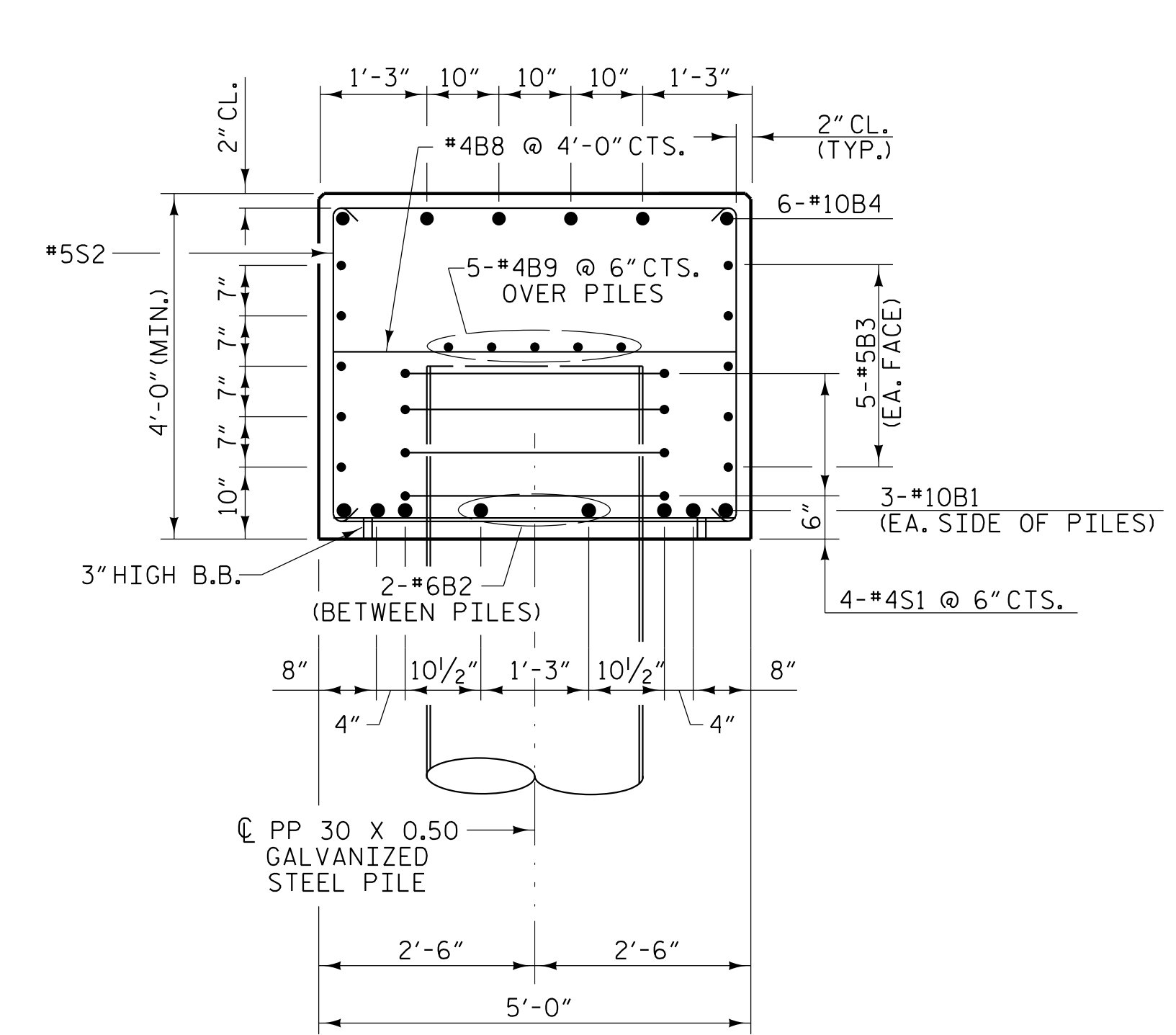
VIEW L1-L1



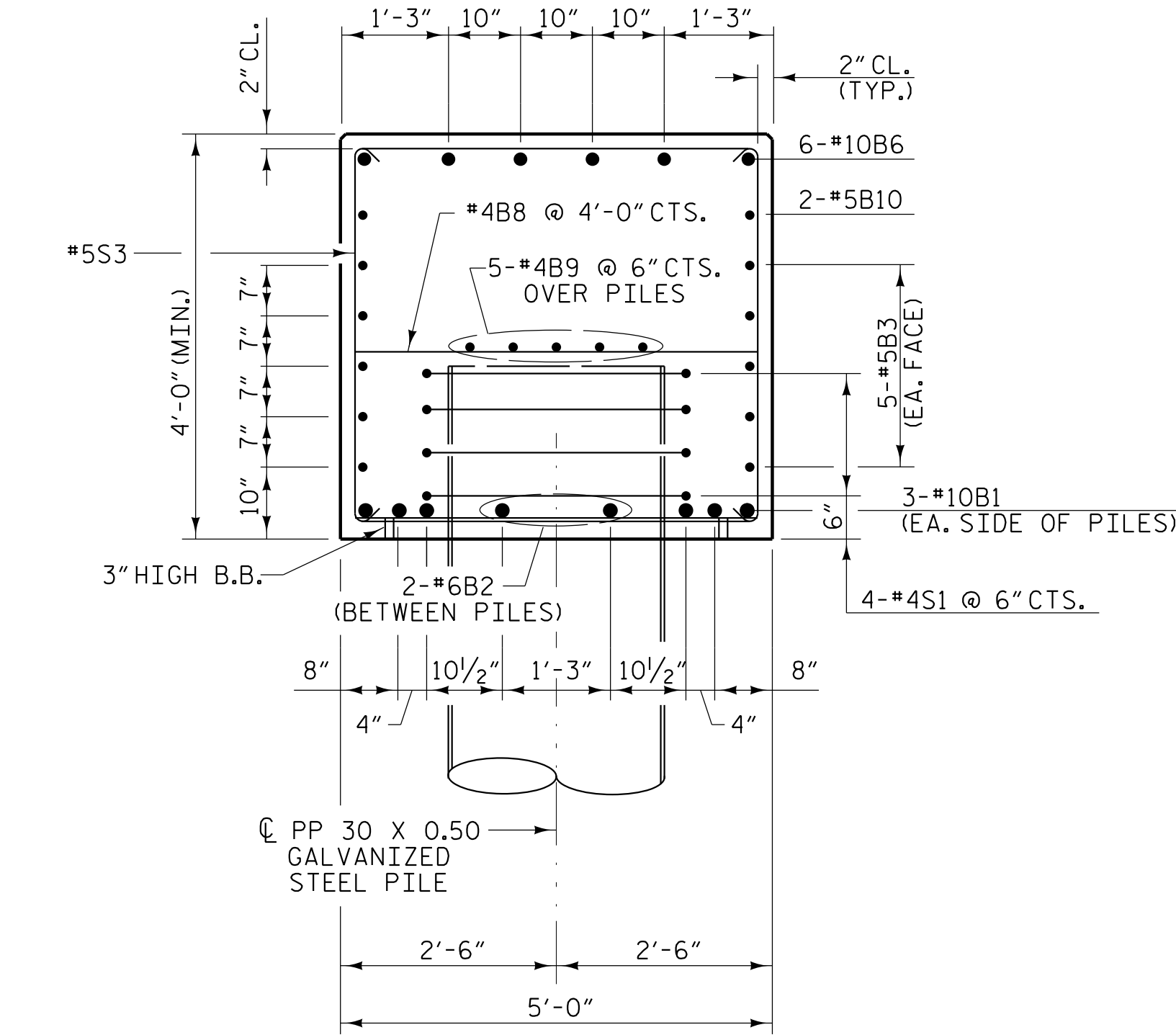
VIEW R1-R1



PARTIAL SECTION C1-C1

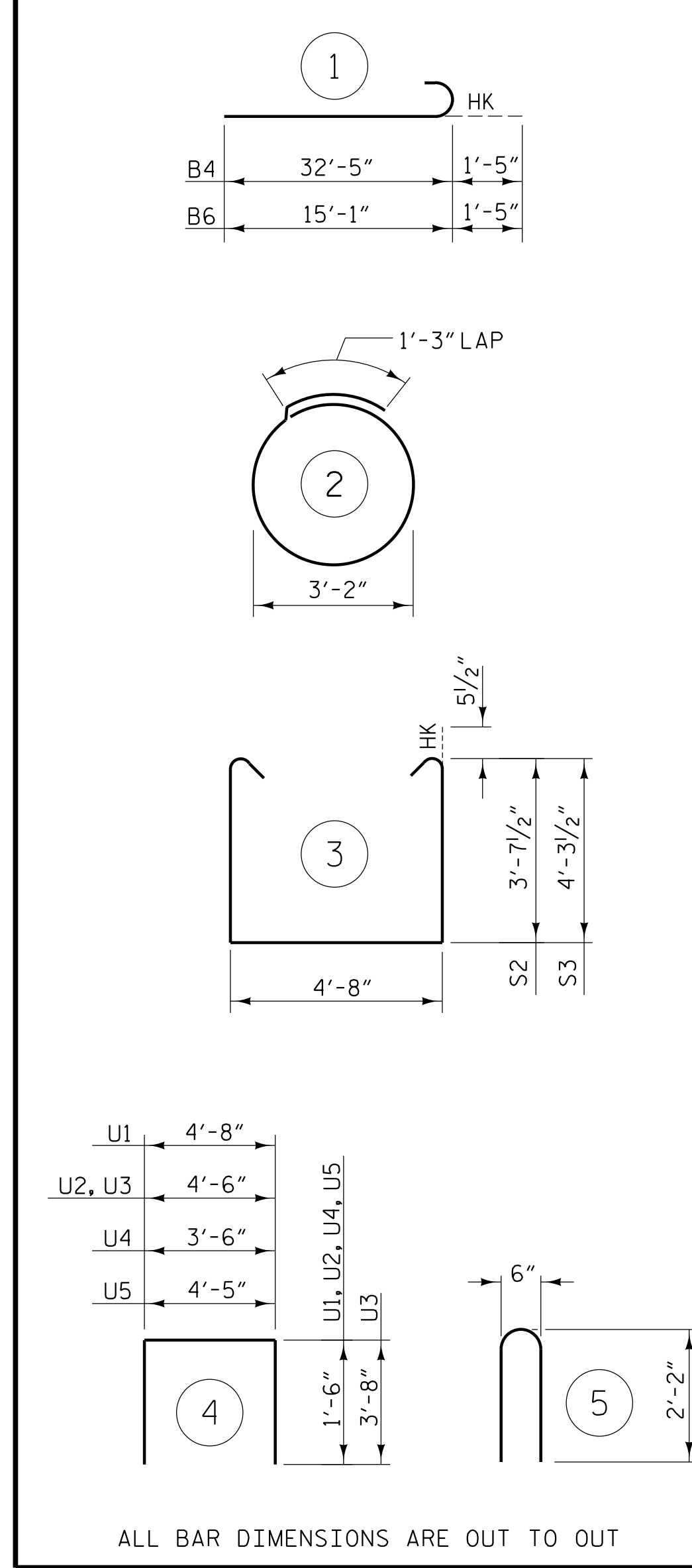


SECTION A1-A1



SECTION B1-B1

BAR TYPES



BILL OF MATERIAL

BENT 2 - STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	38'-8"	998
B2	6	#6	STR	8'-9"	79
B3	10	#5	STR	38'-8"	403
B4	6	#10	1	33'-10"	874
B5	6	#4	STR	11'-5"	46
B6	6	#10	1	16'-6"	426
B7	6	#4	STR	3'-6"	14
B8	10	#4	STR	4'-8"	31
B9	5	#4	STR	38'-8"	129
B10	2	#5	STR	12'-3"	26
S1	16	#4	2	10'-8"	114
S2	24	#5	3	12'-10"	321
S3	13	#5	3	14'-2"	192
U1	33	#4	4	7'-8"	169
U2	7	#4	4	7'-6"	35
U3	2	#9	4	11'-10"	80
U4	5	#4	4	6'-6"	22
U5	5	#4	4	7'-5"	25
U8	64	#6	5	4'-10"	465

TOTAL REINFORCING STEEL 4449 LB.

TOTAL CLASS "A" CONCRETE 31.6 CU. YDS.



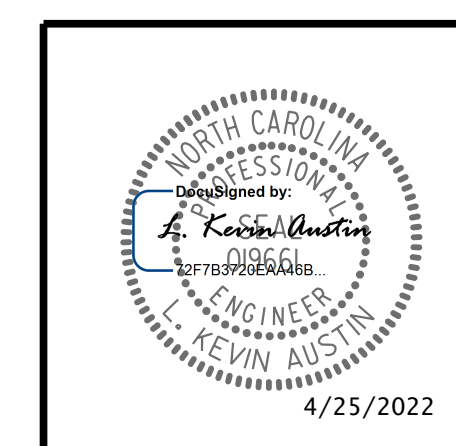
PROJECT NO. I-5987B
 ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 2 OF 6

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

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2			4			

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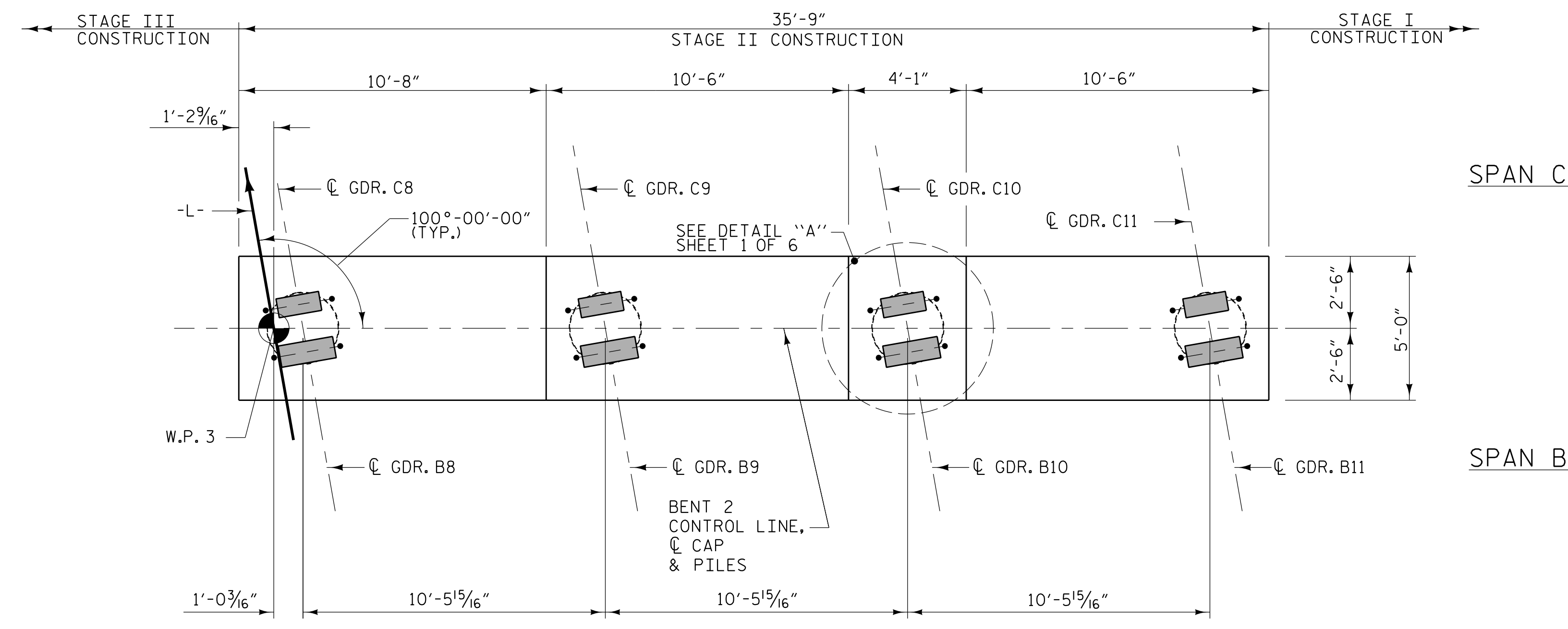


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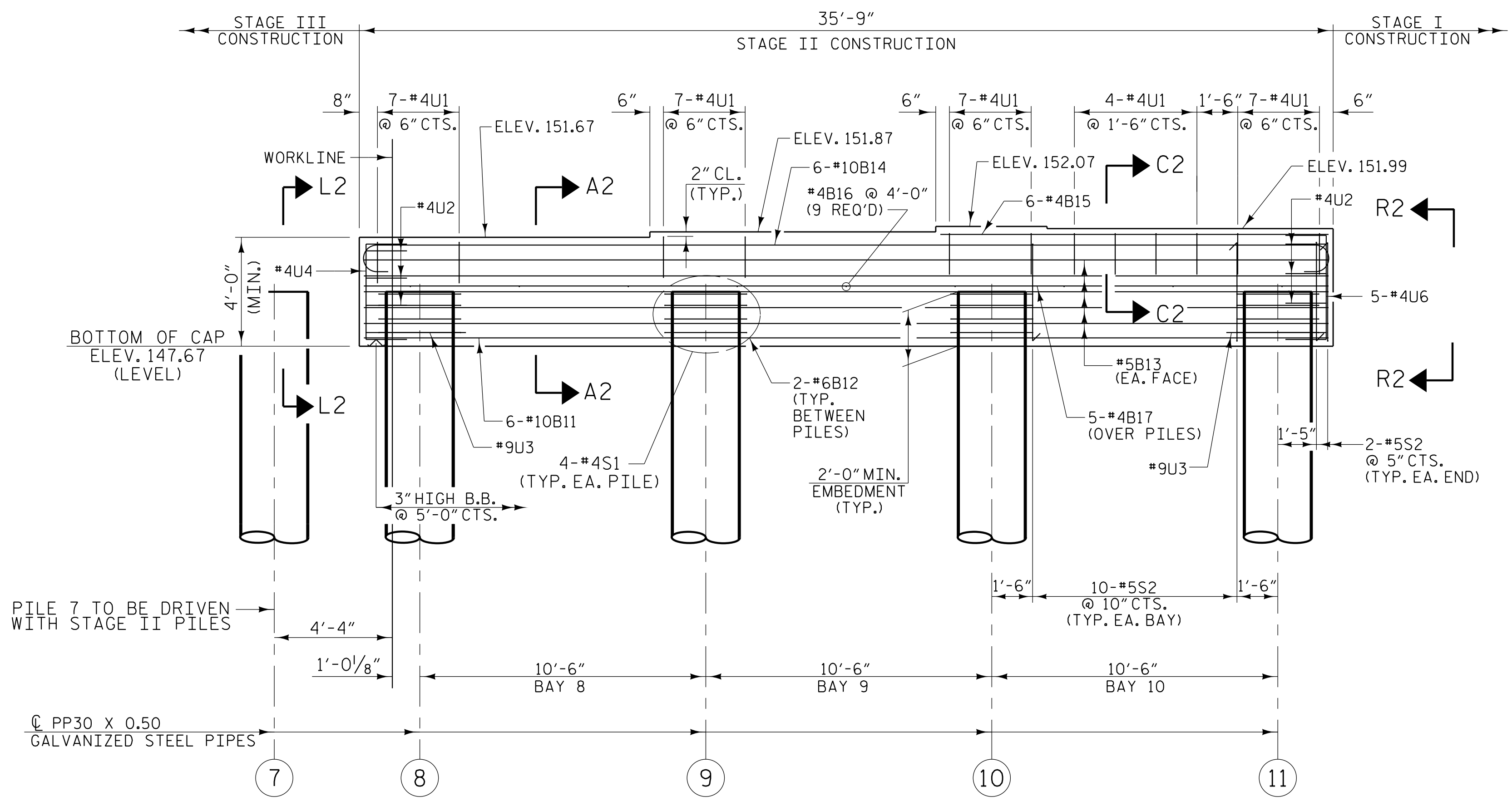
DRAWN BY: W. B. ALLEN DATE: 12/21
 CHECKED BY: G. F. WILSON DATE: 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE: 2/22

NOTES

FOR NOTES SEE SHEET 1 OF 6.



PLAN



ELEVATION

⊕ INDICATES PILE NUMBER

PROJECT NO. I-5987B
ROBESON COUNTY
 STATION: 586+14.00 -L- POT

SHEET 3 OF 6

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2
 STAGE II

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2			4			

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 CHECKED BY : G.F. WILSON DATE : 2/22
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 2/22

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