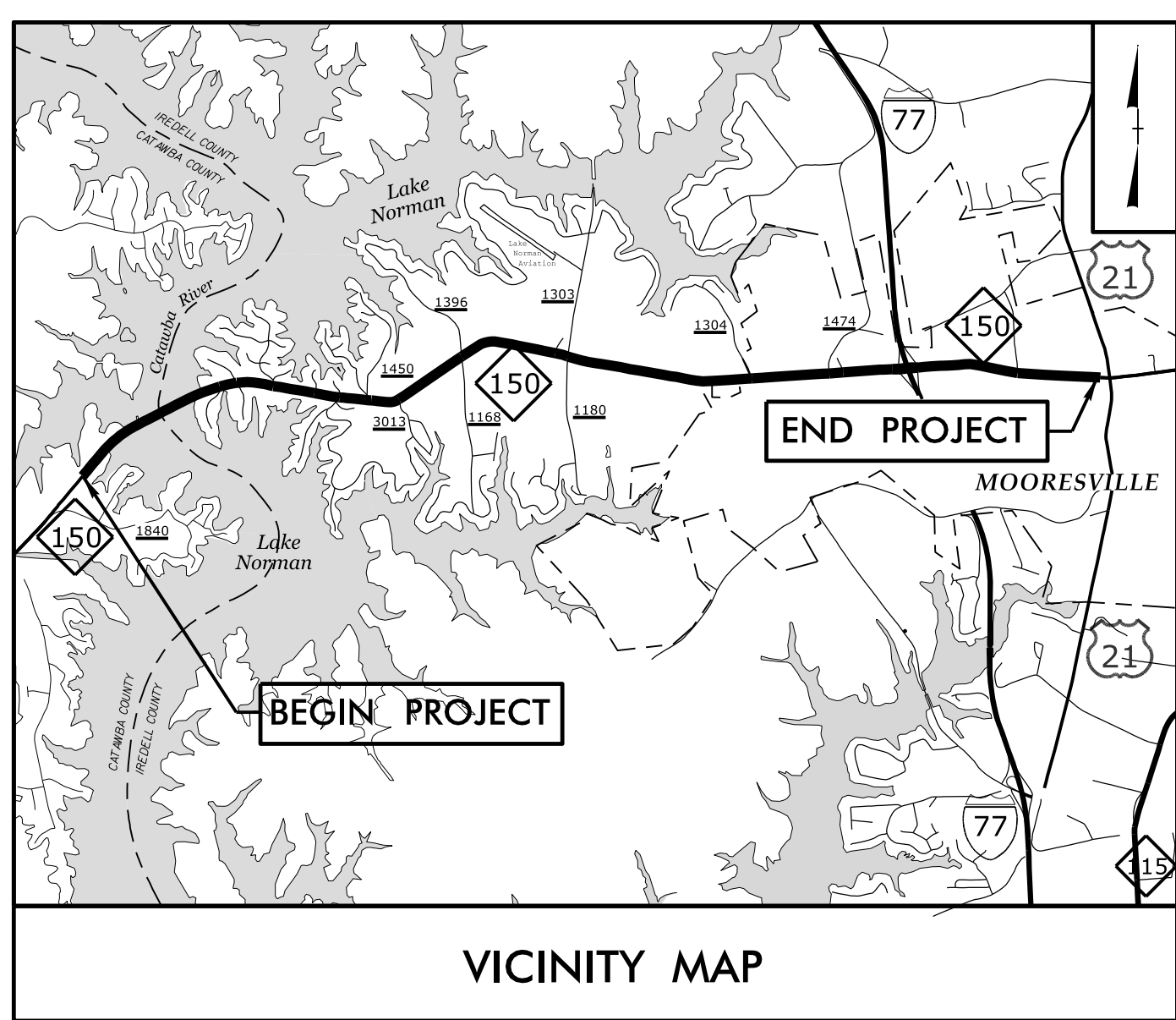


09/08/99

TIP PROJECT: R-2307B / I-5717

T.I.P. NO.	SHEET NO.
R-2307B / I-5717	SU-1

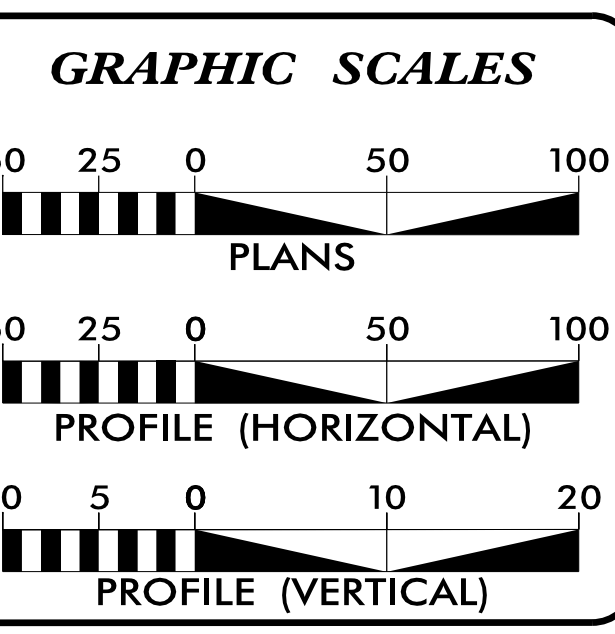
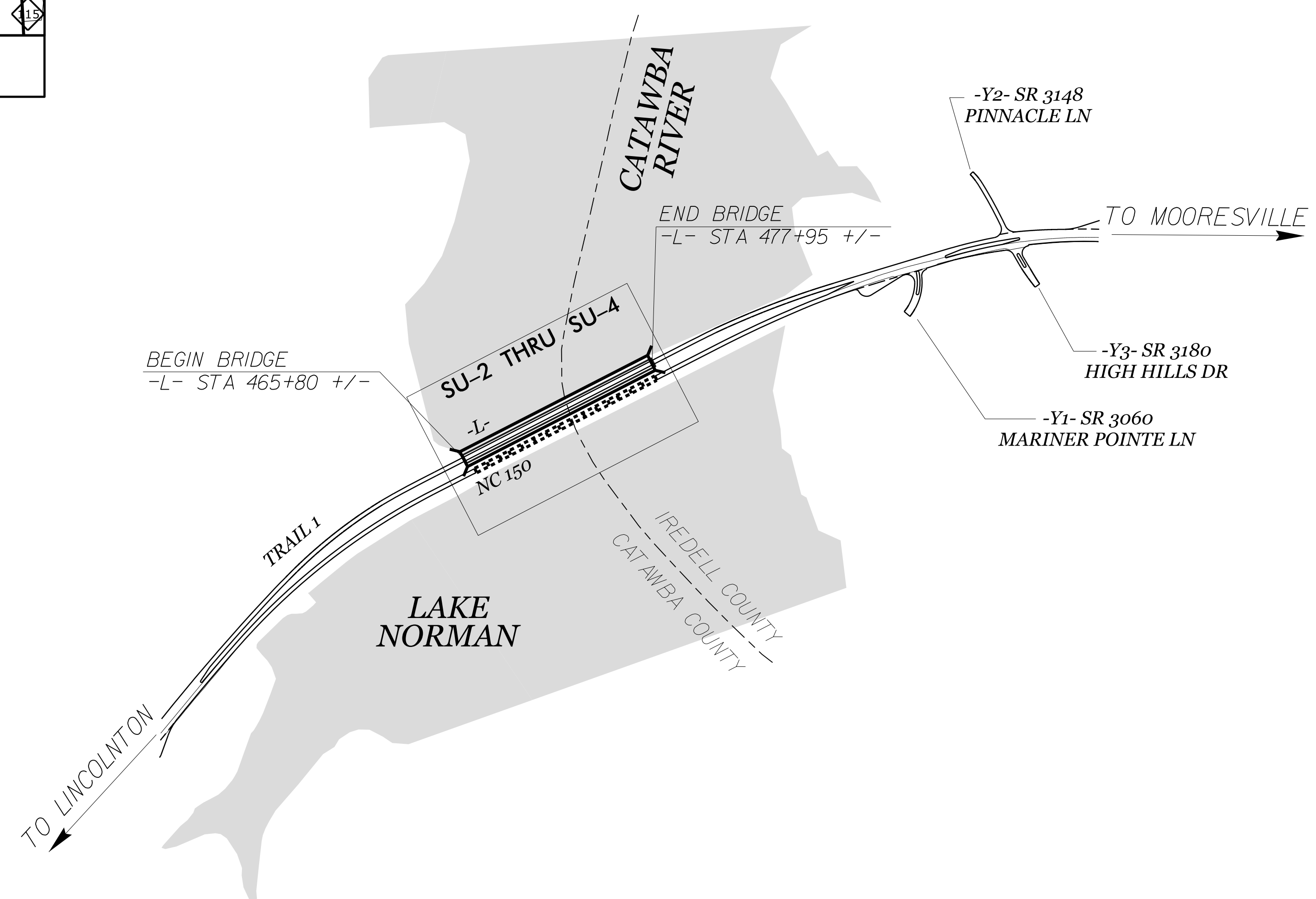


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STRUCTURE UTILITIES PLANS IREDELL & CATAWBA COUNTIES

LOCATION: NC 150 FROM SR 1840 (GREENWOOD RD) IN CATAWBA COUNTY TO US 21 IN IREDELL COUNTY

TYPE OF WORK: ATTACH 16" WATER LINE TO NEW BRIDGE



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
SU-1	TITLE SHEET
SU-2 THRU SU-3	PIPE HANGER BRIDGE CROSSINGS
SU-4	DETAILS

WATER AND SEWER OWNERS ON PROJECT

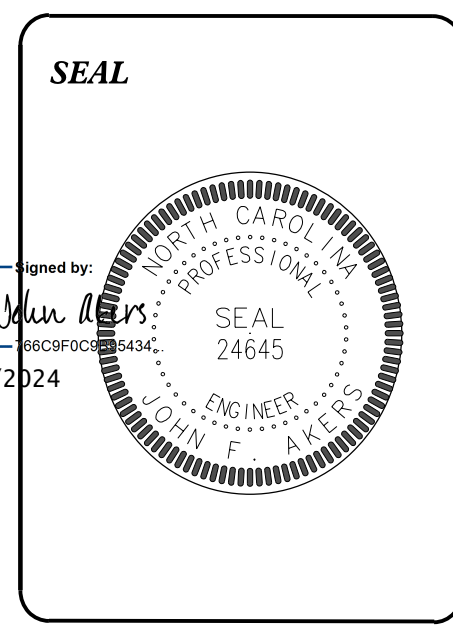
(A) CATAWBA COUNTY

PREPARED IN THE OFFICE OF

Dewberry 2610 WYCLIFF ROAD, SUITE 410
RALEIGH, NC 27607
919.881.9939
NCBELS: NO. F-0929

9/10/2024

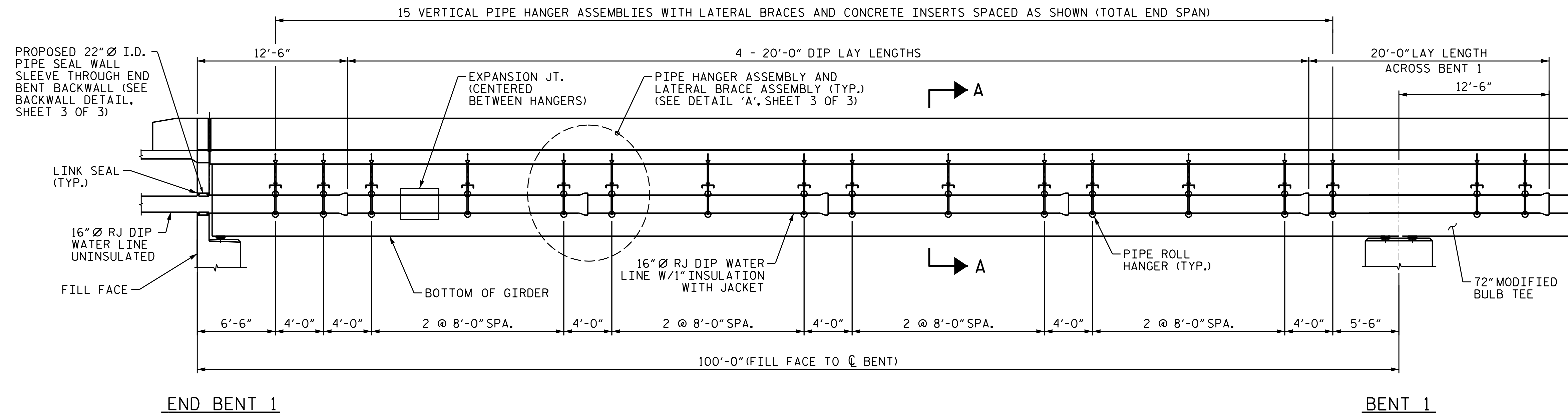
JOHN AKERS, PE	CONSULTANT CONTACT #1
PARROTT HOOD, PE	CONSULTANT CONTACT #2
JEFF WING, PE	CONSULTANT CONTACT #3



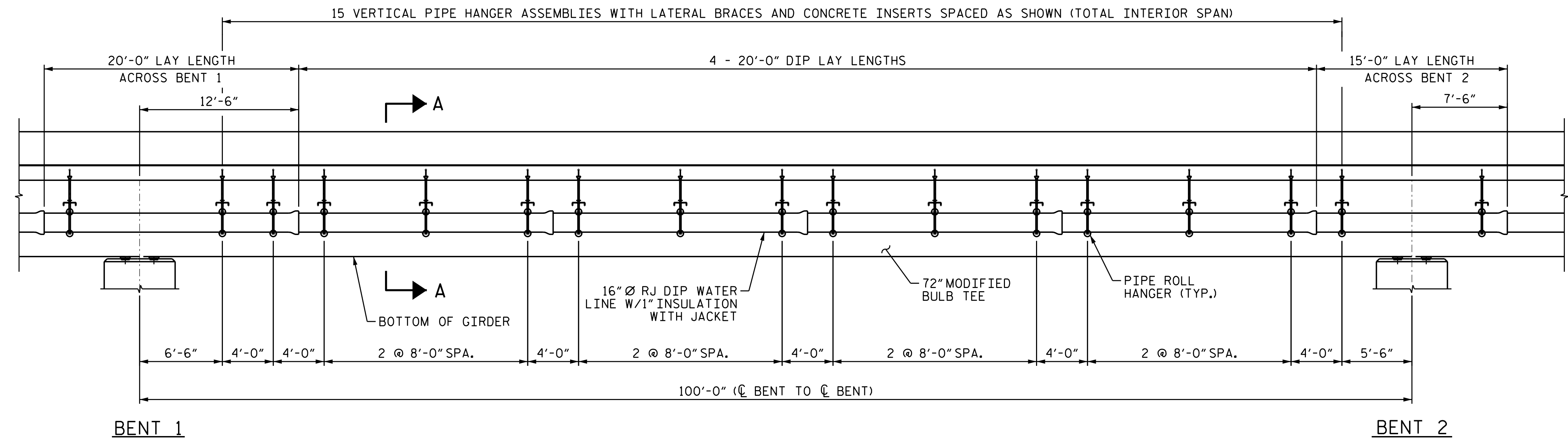
DIVISION OF HIGHWAYS UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

DONALD E. HAMPTON	UTILITIES REGIONAL ENGINEER
JONG-TAE YOON, PE	UTILITIES ENGINEER
AMY DUPLEE YORK	UTILITIES AREA COORDINATOR
STEVEN G. SEALY	UTILITIES COORDINATOR

\\280_001\R-2307B_UT_RDY01_SUI.dgn USER: tknecht



UTILITY ATTACHMENT (100' END SPAN)
(SPAN A SHOWN)



UTILITY ATTACHMENT (100' INTERIOR SPAN)
(SPAN B SHOWN)

NOTES

1. SLAB REINFORCEMENT MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH PIPE HANGER ASSEMBLY CONCRETE INSERTS.
2. INSERTS FOR PIPE HANGER ASSEMBLIES SHALL NOT BE LOCATED WITHIN 18" OF THE BRIDGE EXPANSION JOINTS.
3. WELDING TO BE PERFORMED IN ACCORDANCE WITH THE ANSI/AASHTO/AWS D1.5 WELDING CODE. ALL CONNECTIONS SHALL BE SEAL WELDED ALONG TOP AND BOTTOM HORIZONTAL SEAMS OF CONNECTIONS IN ADDITION TO ANY REQUIRED STRUCTURAL WELDS.
4. CHANNEL AND PLATE STEEL SHALL BE GRADE A36.
5. ALL STRUCTURAL ELEMENTS AND HARDWARE OF THE HANGER ASSEMBLIES SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS 2024.
6. PIPE LAY LENGTHS ARE NOMINAL AND SHALL BE CONFIRMED WITH MANUFACTURER DURING SHOP DRAWING PHASE.

DRAWN BY : J.J.PERRY DATE : 09/24
 CHECKED BY : Z.H.BROWN DATE : 09/24
 DESIGN ENGINEER OF RECORD: Z.H.BROWN DATE : 09/24

*****SYSTEM*****
 *****DCN*****
 *****USER*****

Signed by: *John Akers* SEAL 024645
 9/9/2024
 ENGINEER JOHN F. AKERS
 Signed by: *Zachary Brown* SEAL 046785
 9/9/2024
 ENGINEER ZACHARY BROWN

PROJECT NO. R-2307B
 CATAWBA/IREDELL COUNTY
 STATION: 471+85.00 -L-

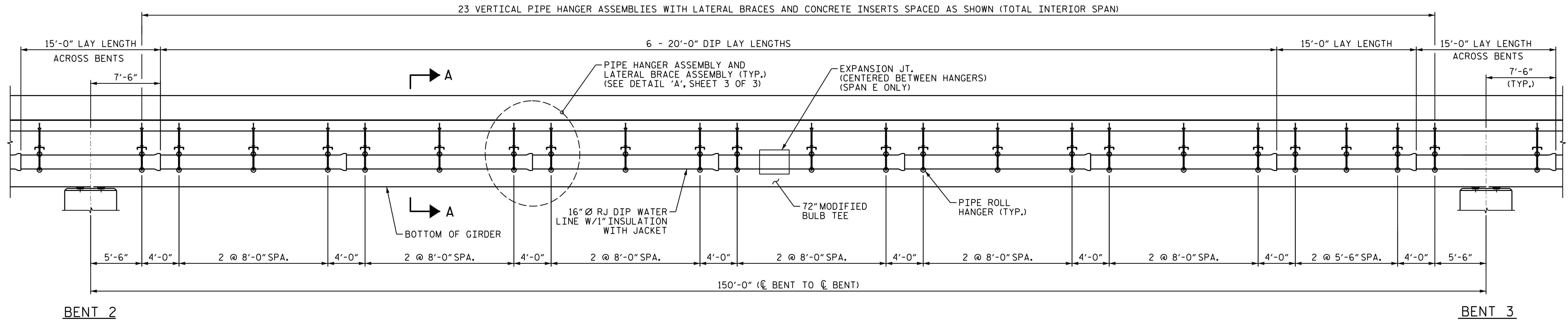
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

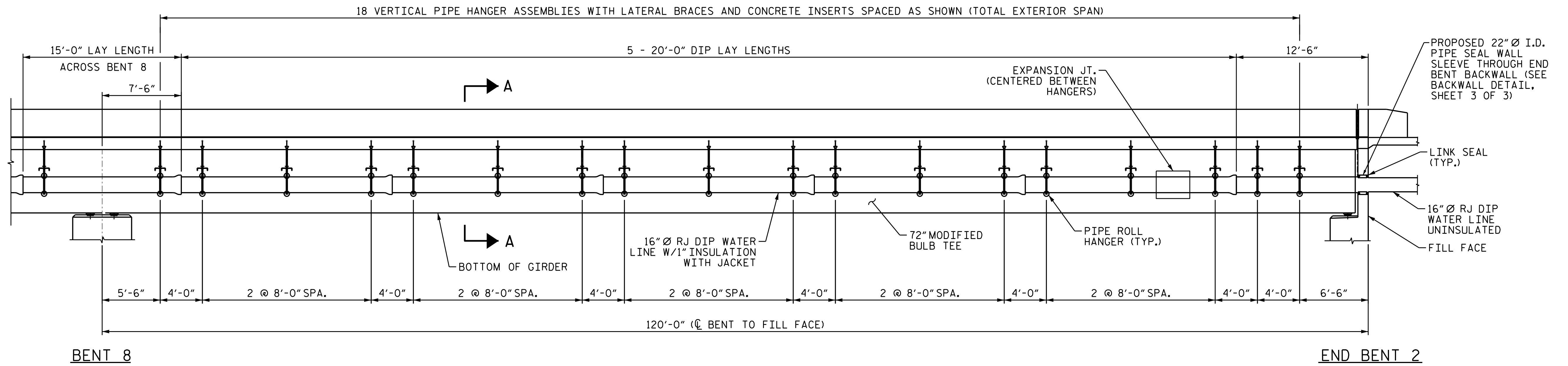
**PIPE HANGER
 BRIDGE CROSSING**

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



UTILITY ATTACHMENT (150' INTERIOR SPANS)
(SPAN C SHOWN, SPANS D, E, F, G & H SIMILAR)



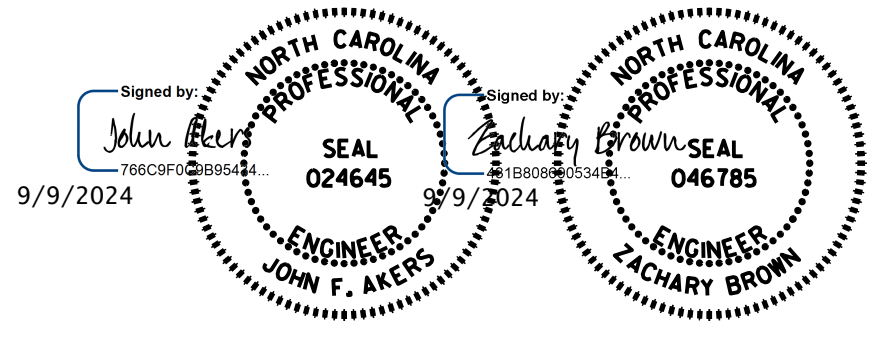
UTILITY ATTACHMENT (120' END SPAN)
(SPAN I SHOWN)

PROJECT NO. R-2307B
 CATAWBA/IREDELL COUNTY
 STATION: 471+85.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PIPE HANGER
 BRIDGE CROSSING**

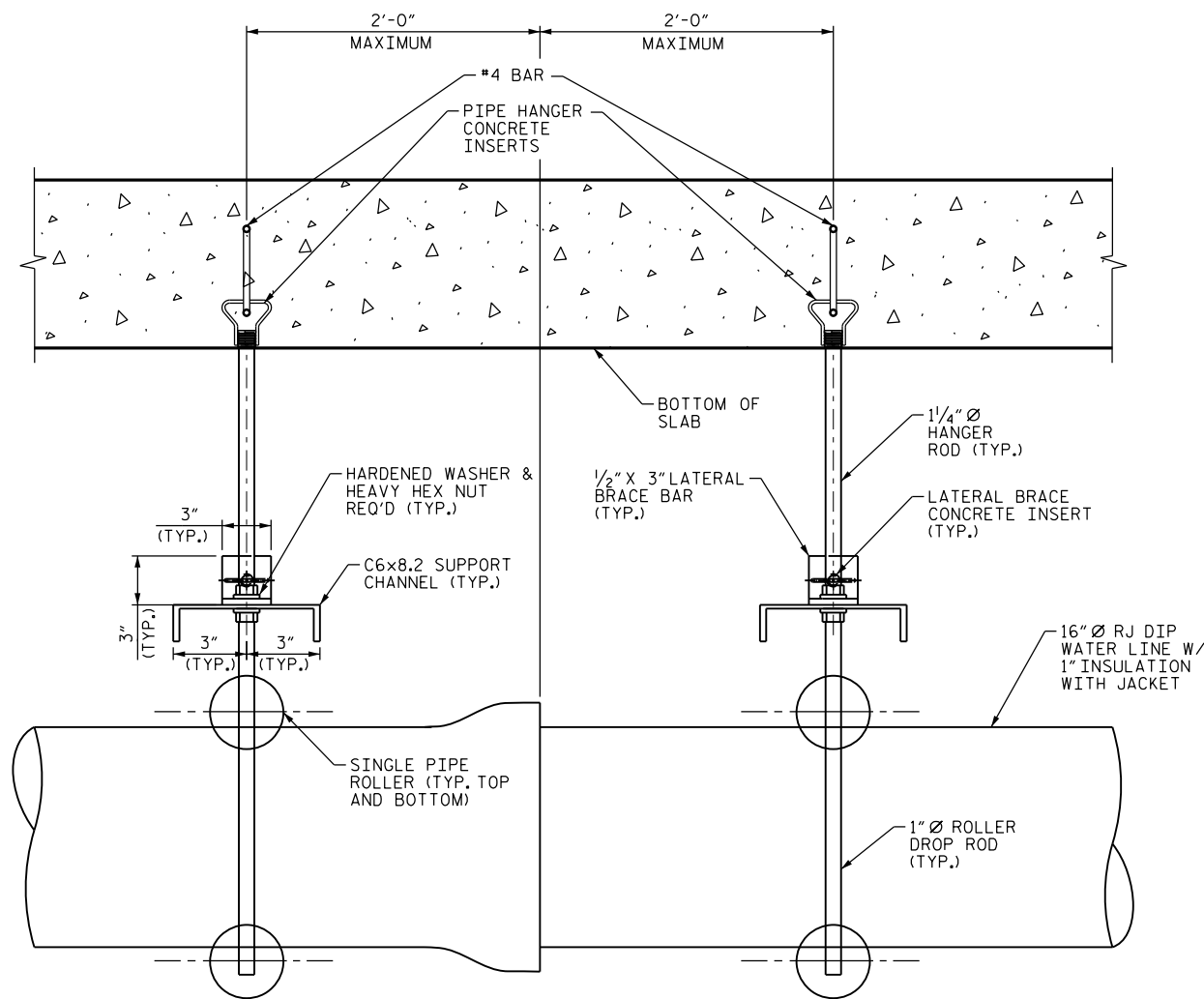


DRAWN BY : J.J.PERRY DATE : 09/24
 CHECKED BY : Z.H.BROWN DATE : 09/24
 DESIGN ENGINEER OF RECORD: Z.H.BROWN DATE : 09/24

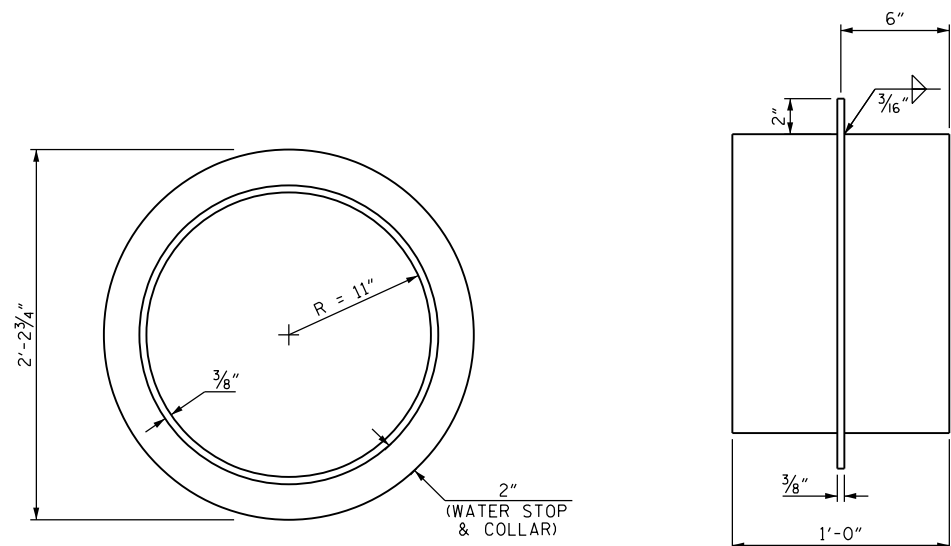
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NO.	BY:	DATE:	NO.	BY:	DATE:	SU-3
1			3			TOTAL SHEETS
2			4			4

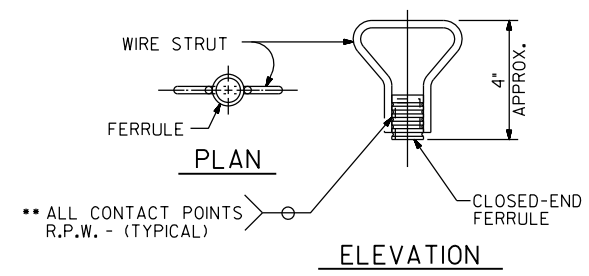
*****SYSTEM*****
 *****DCN*****
 *****USER*****



DETAIL 'A'



PIPE SEAL WALL SLEEVE DETAILS
(2 WALL SLEEVES REQUIRED)



CONCRETE INSERT

WIRE STRUT
FERRULE
PLAN
ELEVATION
CLOSED-END FERRULE
4" APPROX.

** ALL CONTACT POINTS R.P.W. - (TYPICAL)

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.
(186 - CONCRETE INSERTS FOR 1/4" THREADED ROD)
(186 - CONCRETE INSERTS FOR 3/4" BOLTS W/HARDENED WASHERS)

THE STRUCTURAL CONCRETE INSERT SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASTM A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".

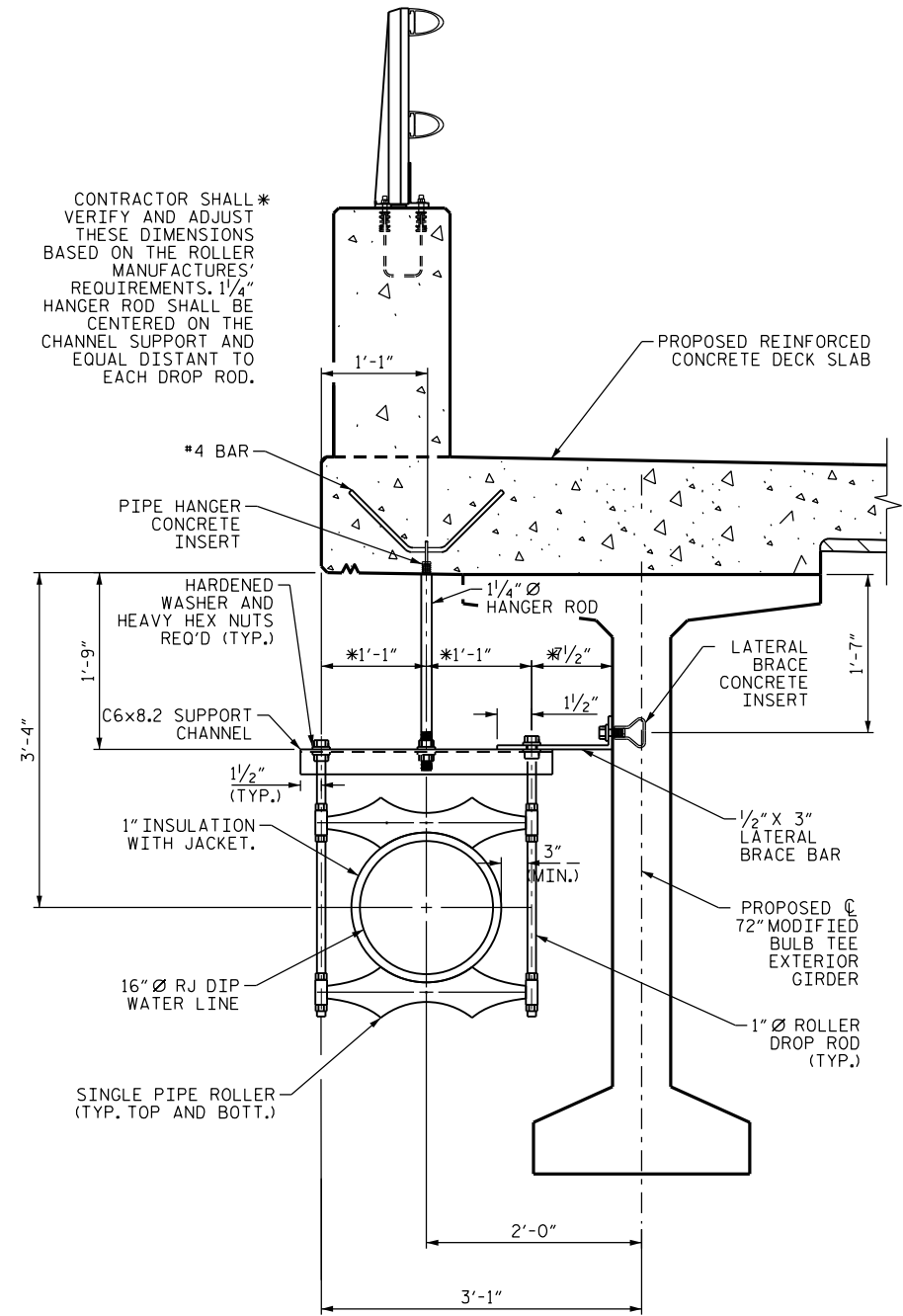
B. FOR PIPE HANGER ASSEMBLY: 1-1/4" Ø X 1 3/4" BOLT W/HARDENED WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. WASHERS SHALL CONFORM TO ASTM F436. BOLT AND WASHER SHALL BE GALVANIZED. BOLT WILL BE FURNISHED WITH THREADING TO MATCH A 1/4" Ø THREADED ROD AS A TEMPORARY PLUG FOR THE INSERT.

C. FOR LATERAL BRACE ASSEMBLY: 1-3/4" Ø X 1 3/4" BOLT W/HARDENED WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3125 GRADE A325. WASHERS SHALL CONFORM TO ASTM F436.

D. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100 KSI.

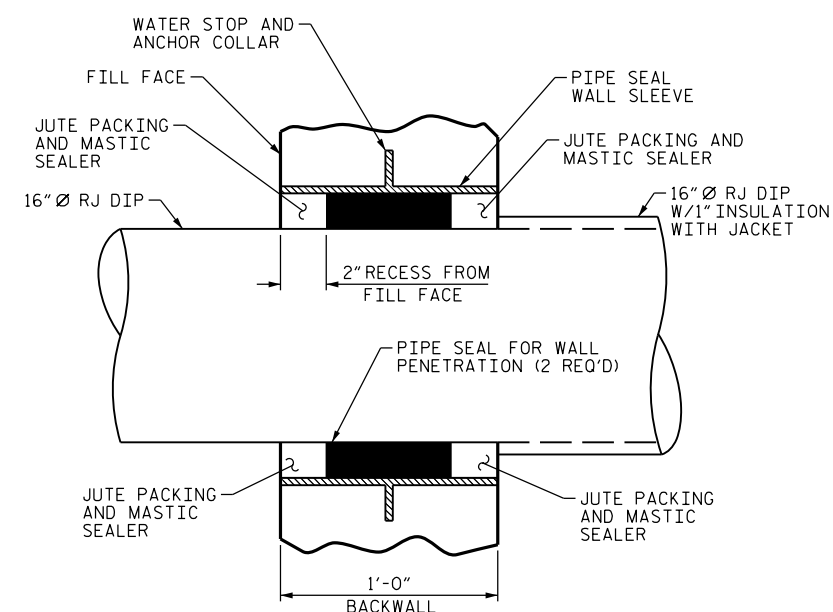
E. CONCRETE INSERTS SHALL BE OF AN APPROVED GALVANIZED TYPE HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 2500 LBS PER HANGER AND 1500 LBS PER LATERAL BRACE.

F. FOR LOCATION OF HANGERS WITH LATERAL BRACES, SEE SHEET 1 OF 1. LOCATION OF INSERTS SHALL BE COORDINATED WITH GIRDER FABRICATION ALONG GIRDER LINE 1.



SECTION A-A

CONTRACTOR SHALL * VERIFY AND ADJUST THESE DIMENSIONS BASED ON THE ROLLER MANUFACTURER'S REQUIREMENTS. 1/4" HANGER ROD SHALL BE CENTERED ON THE CHANNEL SUPPORT AND EQUAL DISTANT TO EACH DROP ROD.



DETAIL OF PIPE SEAL FOR THRU WALL PENETRATION AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. R-2307B
CATAWBA/IREDELL COUNTY
STATION: 471+85.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PIPE HANGER
BRIDGE CROSSING
CONCRETE INSERT
DETAILS

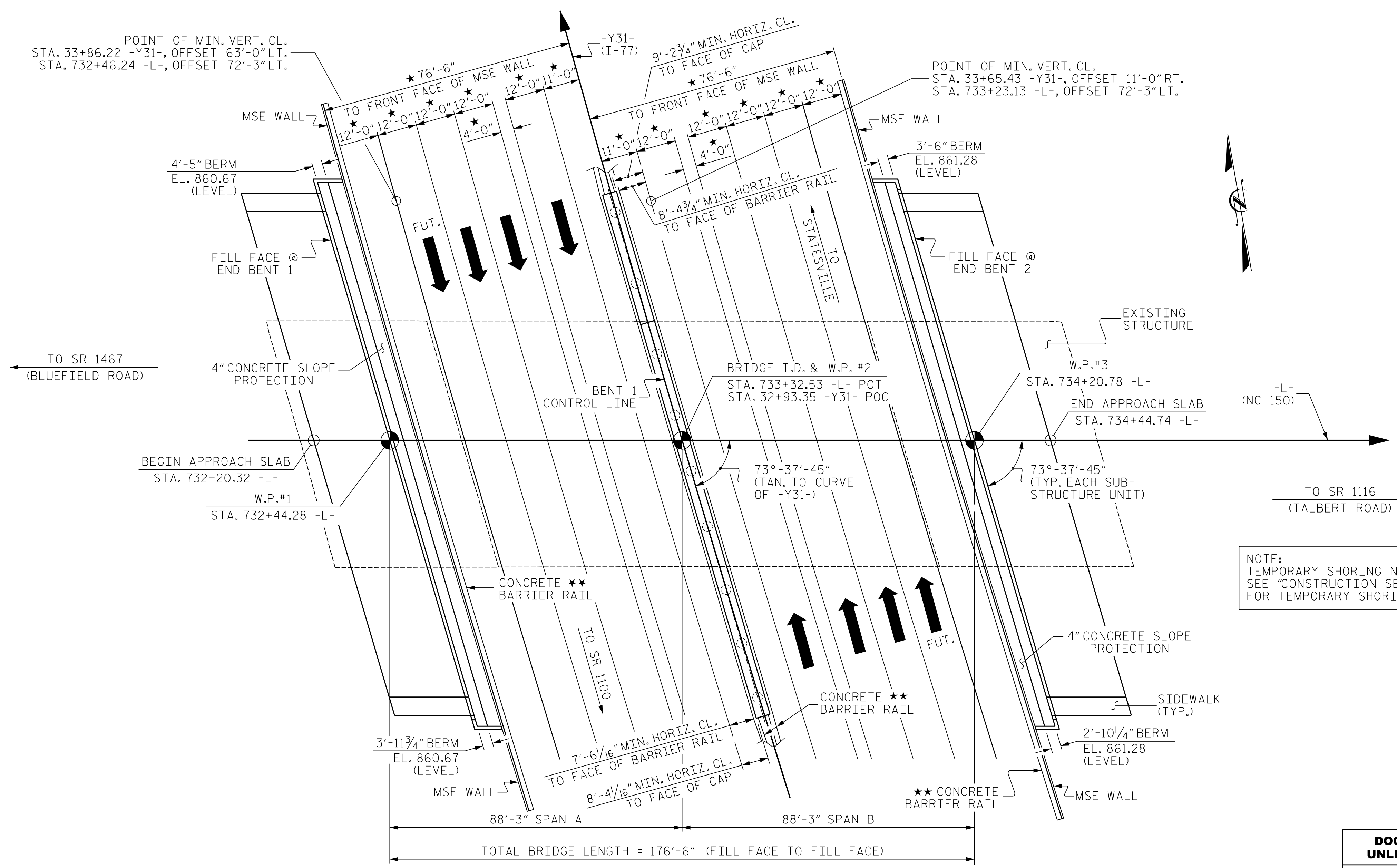
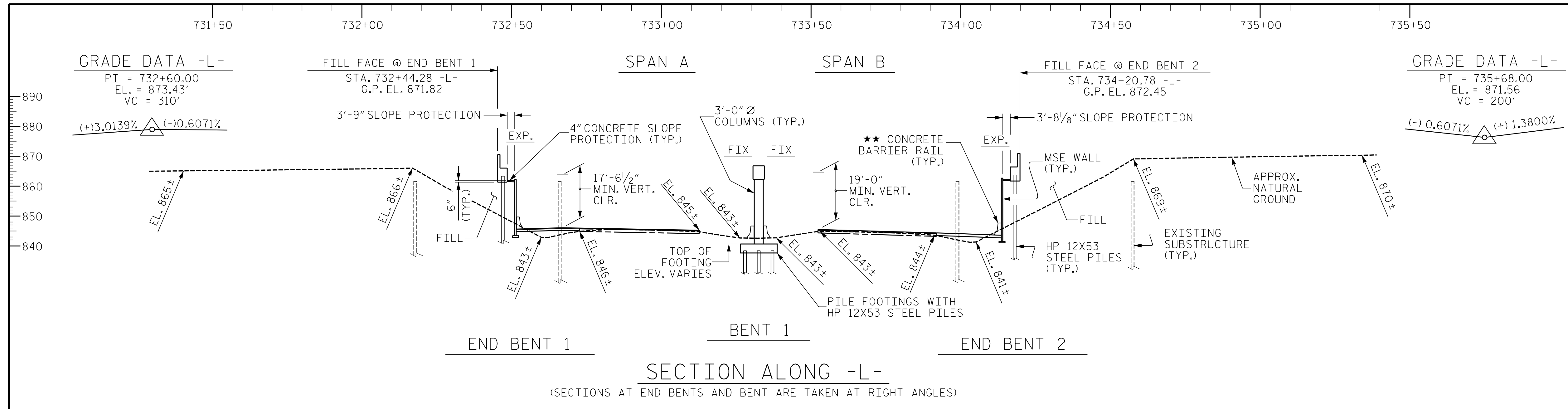
10/4/2024
10/4/2024

DRAWN BY : A.M.TYSINGER DATE : 10/24
CHECKED BY : Z.H.BROWN DATE : 10/24
DESIGN ENGINEER OF RECORD: Z.H.BROWN DATE : 10/24

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

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*****SYSTEM TIME*****
*****DGN*****
*****USERNAME*****



★ RADIAL DIMENSIONS
 ★★ ROADWAY DETAIL AND PAY ITEM

NOTE:
 TEMPORARY SHORING NOT SHOWN FOR CLARITY.
 SEE "CONSTRUCTION SEQUENCE LAYOUT SHEET"
 FOR TEMPORARY SHORING LOCATIONS.

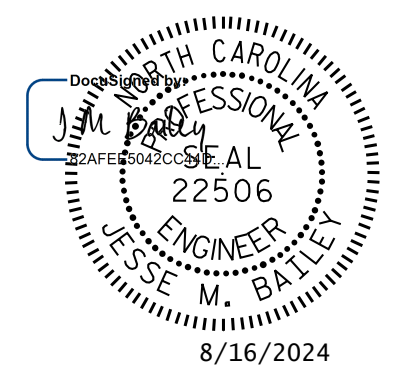
REPLACES BRIDGE NO. 480026

PROJECT NO. I-5717

IREDELL COUNTY

STATION: 733+32.53 -L-
32+93.35 -Y31-

SHEET 1 OF 4



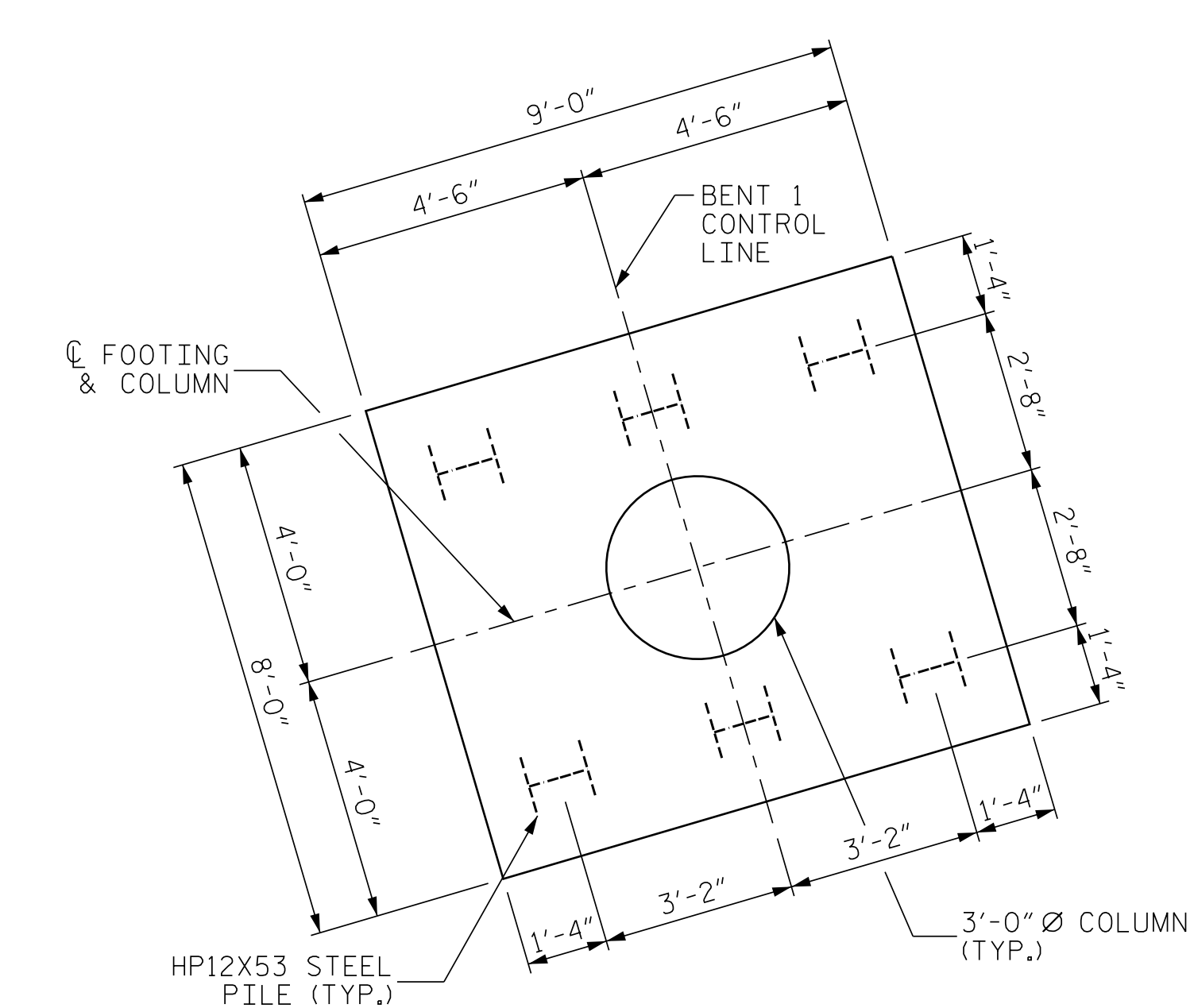
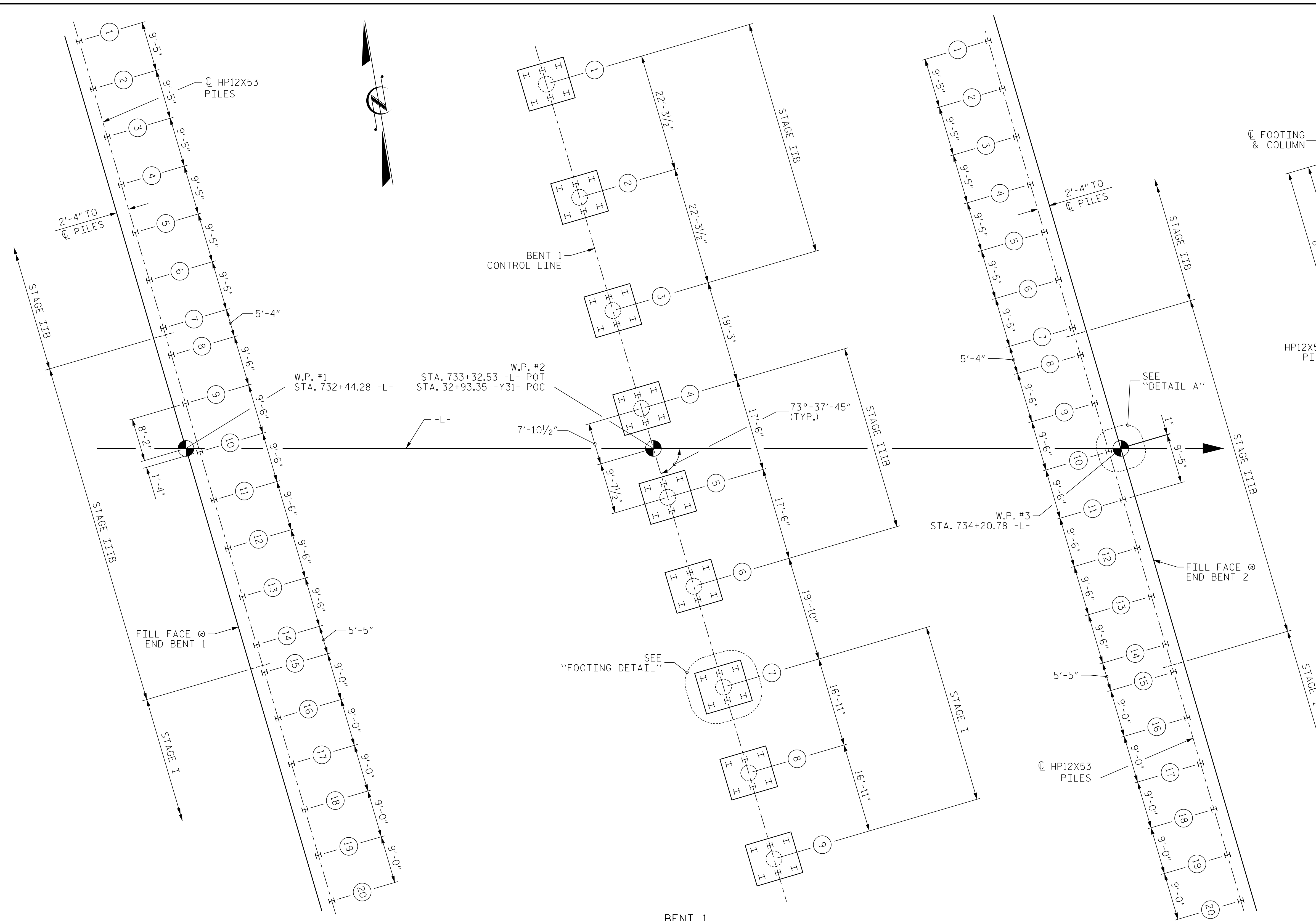
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

JMT Johnson, Mirmiran, & Thompson Inc.
 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			72

WDC:GDB: 06/20/2024 15:00:32 - Replacement NCADDS Structures CADD - I-5717 - 23'x40' - 001 - 5717_SML_GDDI_S01.dgn
 TIME: 7:30:2024

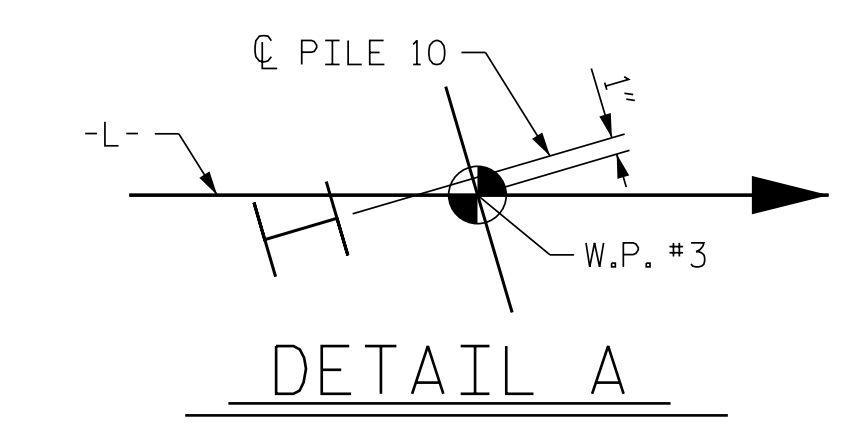
DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



FOOTING DETAIL
(TYP. EACH FOOTING LOCATION)

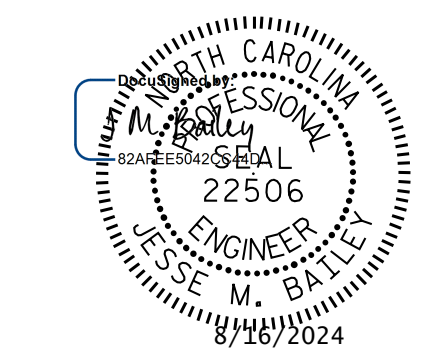
GENERAL NOTES:

- ALL DIMENSIONS ARE PARALLEL OR NORMAL TO CENTERLINE BENT LINES AND FILL FACES.
- ALL PILE DIMENSIONS ARE TO CENTERS OF PILES AT BOTTOM OF END BENT CAPS OR FOOTINGS.
- FOR FOUNDATION ELEVATIONS AND DETAILS, SEE BENT AND END BENT SHEETS.
- SEE GEOTECHNICAL FOUNDATION TABLES FOR MORE INFORMATION ON DRIVEN PILES.



DETAIL A

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER I-77 ON
 NC 150 BETWEEN BLUEFIELD RD.
 (SR 1467) AND TALBERT RD.
 (SR 1116)

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 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2	
1			3			TOTAL SHEETS	
2			4			72	

FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000 FT-LBS TO 65,000 PER BLOW WILL BE REQUIRED TO DRIVE PILES. 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.

CONSTRUCT MSE WALL PRIOR TO INSTALLING END BENTS NO.s 1 AND 2. INSTALL ISOLATION CANS AT ALL PILE LOCATIONS. AT THE CONTRACTORS OPTION, THE PILES FOR END BENT NO.s 1 AND 2 MAY BE PARTIALLY DRIVEN TO A DEPTH OF 20 FEET BELOW THE TOP OF THE MSE WALL LEVELING PAD. AFTER SETTLEMENT MONITORING OF THE EMBANKMENT IS COMPLETE, DRIVE THE PILES TO THEIR REQUIRED DRIVING RESISTANCE.

INSTALL 2 SETTLEMENT HUBS PER CONSTRUCTION PHASE (6 TOTAL PER END BENT) AFTER CONSTRUCTING THE EMBANKMENT TO FINISHED GRADE AT END BENT NO.s 1 AND 2. THE ENGINEER MAY RELEASE PILE DRIVING AFTER THE SETTLEMENT RATE IS LESS THAN 1/10" PER 4 WEEK PERIOD. THE MONITORING PERIOD IS ESTIMATED TO BE 2 MONTHS.

WDC/CFW
 DATE: 01/24
 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: JMB
 DATE: 01/24

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 1-20	140	See Structure Drawings	100			235							
Bent No. 1, Piles for Columns 1-3	140		70			235							
Bent No. 1, Piles for Columns 4-9	140		80			235							
End Bent No.2, Piles 1-20	140		95			235							

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No.1, Piles 1-20	140			0.60			1.00
Bent No. 1, Piles for Columns 1-3	140			0.60			1.00
Bent No. 1, Piles for Columns 4-9	140			0.60			1.00
End Bent No.2, Piles 1-20	140			0.60			1.00

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)		
End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	PDA Testing Required? YES or MAYBE	Total PDA Testing Quantity EACH

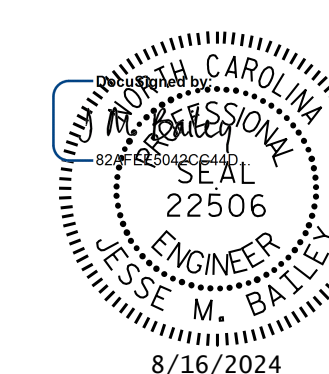
*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

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 Michael H. Stephens, PE (Seal No. 028893) on 8-18-2023.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer will determine the need for PDA Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PILE FOUNDATION TABLES

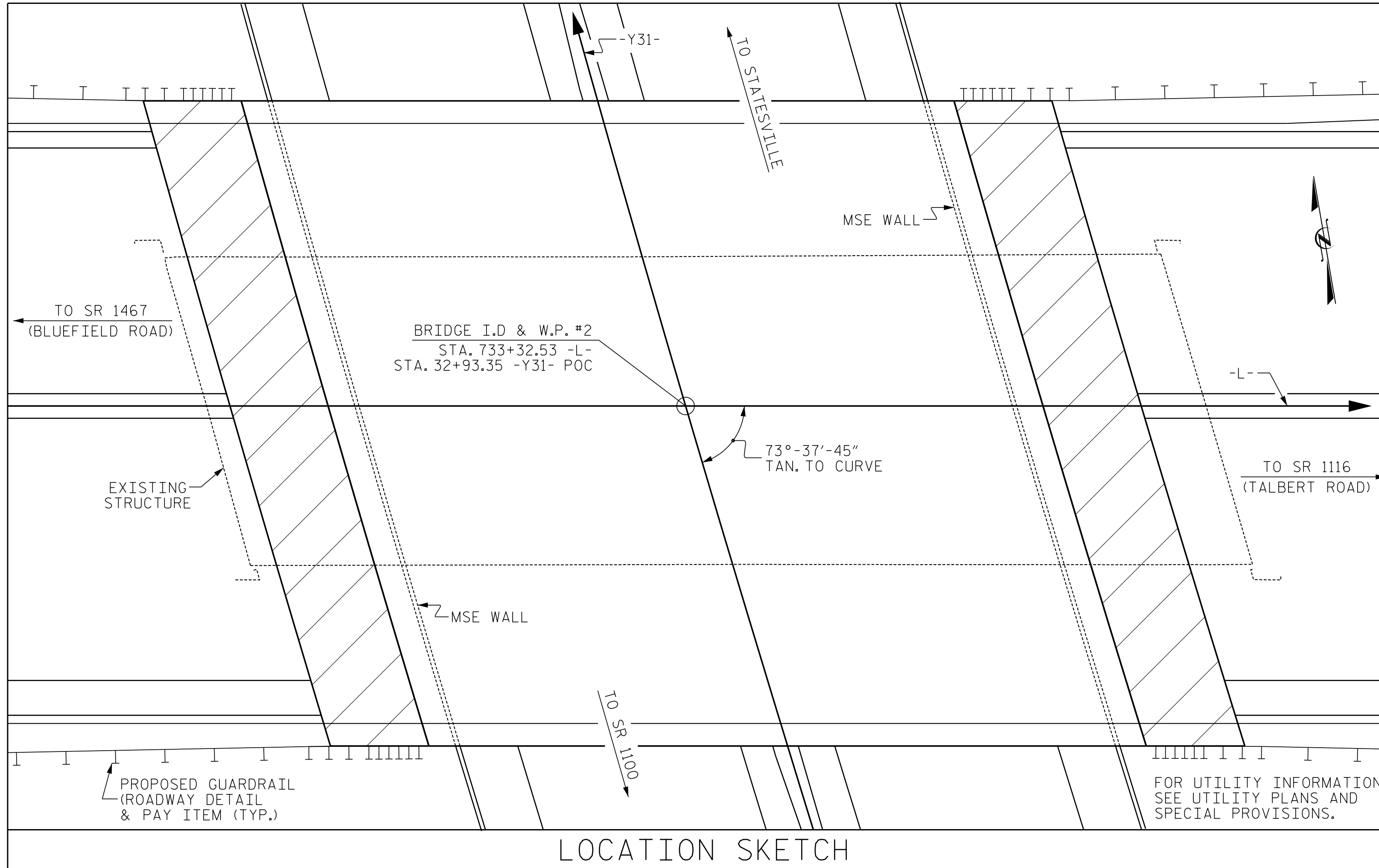
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			72

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 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

BENCHMARK #26: RR SPIKE IN BASE OF LIGHT POLE, STA. 724+69.61 -L-, 73.26' RT., EL. 859.71



GENERAL 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 1.

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND $f_y = 60\text{ksi}$

THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS @ 49'-0", 66'-6", 66'-6", AND 59'-0", WITH A CLEAR ROADWAY WIDTH OF 74'-0", WITH RC DECK ON PS CONCRETE GIRDERS ON END BENTS OF RC CAP ON PPC PILES, AND INTERIOR BENTS OF RC POST AND BEAM WITH PILE FOOTINGS, LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE AT STA. 733+32.53 -L-, SEE SPECIAL PROVISION.

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 ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

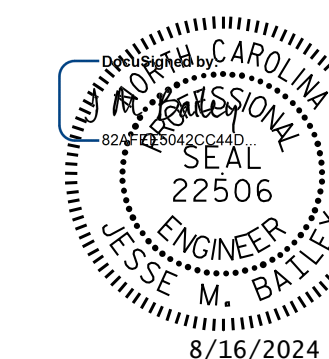
ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.

TOTAL BILL OF MATERIAL											
	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING	54" PRESTRESSED CONCRETE GIRDERS	
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE				27,886	32,568					36	3106.50
END BENT 1						161.4		21,344			
BENT 1			LUMP SUM			271.7		42,375	3,792		
END BENT 2						160.5		21,113			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	27,886	32,568	593.6	LUMP SUM	84,832	3,792	36	3106.50

TOTAL BILL OF MATERIAL (CONT.)							
	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12 X 53 STEEL PILES	TWO BAR METAL RAIL	1'-2" x 3'-3" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
		NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YD.	LUMP SUM
SUPERSTRUCTURE				332.28	347.96		
END BENT 1	20	20	2,000			74.0	
BENT 1	54	54	4,140				
END BENT 2	20	20	1,900			66.6	
TOTAL	94	94	8,040	332.28	347.96	140.6	LUMP SUM

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER I-77 ON
 NC 150 BETWEEN BLUEFIELD RD.
 (SR 1467) AND TALBERT RD.
 (SR 1116)

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

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 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			72

WDC/CFW
 DATE: 01/24
 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: JMB
 DATE: 01/24

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						MOMENT					SHEAR					MOMENT							
						LIVE-LOAD FACTORS (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	HL-93 (INVENTORY)	N/A	①	1.39	--	1.75	0.860	1.98	B	EL	42.44	0.990	1.39	B	I	7.92	0.80	0.780	2.01	B	EL	42.44	
	HL-93 (OPERATING)	N/A		1.82	--	1.35	0.860	2.57	B	EL	42.44	0.990	1.82	B	I	7.92							
	HS-20 (INVENTORY)	36.000	②	1.81	65.160	1.75	0.860	2.67	B	EL	42.44	0.990	1.81	B	I	7.92	0.80	0.780	2.71	B	EL	42.44	
	HS-20 (OPERATING)	36.000		2.38	85.680	1.35	0.860	3.46	B	EL	42.44	0.990	2.38	B	I	7.92							
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		5.69	76.815	1.40	0.860	7.75	B	EL	42.44	0.990	5.69	B	I	7.92	0.80	0.860	6.291	B	EL	42.44
		SNGARBS2	20.000		3.98	79.600	1.40	0.860	5.68	B	EL	42.44	0.990	3.98	B	I	7.92	0.80	0.860	4.61	B	EL	42.44
		SNAGRIS2	22.000		3.68	80.960	1.40	0.860	5.35	B	EL	42.44	0.990	3.68	B	I	7.92	0.80	0.860	4.34	B	EL	42.44
		SNCOTTS3	27.250		2.79	76.028	1.40	0.860	3.85	B	EL	42.44	0.990	2.79	B	I	7.92	0.80	0.860	3.13	B	EL	42.44
		SNAGGRS4	34.925		2.27	79.280	1.40	0.860	3.19	B	EL	42.44	0.990	2.27	B	I	7.92	0.80	0.860	2.59	B	EL	42.44
		SNS5A	35.550		2.29	81.410	1.40	0.860	3.12	B	EL	42.44	0.990	2.29	B	I	7.92	0.80	0.860	2.53	B	EL	42.44
		SNS6A	39.950		2.05	81.898	1.40	0.860	2.79	B	EL	42.44	0.990	2.05	B	I	7.92	0.80	0.860	2.26	B	EL	42.44
		SNS7B	42.000		2.03	85.260	1.40	0.860	2.71	B	EL	42.44	0.990	2.03	B	I	7.92	0.80	0.860	2.20	B	EL	42.44
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.50	82.500	1.40	0.860	3.47	B	EL	42.44	0.990	2.50	B	I	7.92	0.80	0.860	2.81	B	EL	42.44
		TNT4A	33.075		2.44	80.703	1.40	0.860	3.48	B	EL	42.44	0.990	2.44	B	I	7.92	0.80	0.860	2.82	B	EL	42.44
		TNT6A	41.600		2.14	89.024	1.40	0.860	2.83	B	EL	42.44	0.990	2.14	B	I	7.92	0.80	0.860	2.30	B	EL	42.44
		TNT7A	42.000		2.10	88.200	1.40	0.860	2.84	B	EL	42.44	0.990	2.10	B	I	7.92	0.80	0.860	2.30	B	EL	42.44
		TNT7B	42.000		1.98	83.160	1.40	0.860	2.92	B	EL	42.44	0.990	1.98	B	I	7.92	0.80	0.860	2.37	B	EL	42.44
		TNAGRIT4	43.000		1.92	82.560	1.40	0.860	2.79	B	EL	42.44	0.990	1.92	B	I	7.92	0.80	0.860	2.26	B	EL	42.44
		TNAGT5A	45.000		1.90	85.500	1.40	0.860	2.63	B	EL	42.44	0.990	1.90	B	I	7.92	0.80	0.860	2.14	B	EL	42.44
		TNAGT5B	45.000	③	1.82	81.900	1.40	0.860	2.61	B	EL	42.44	0.990	1.82	B	I	7.92	0.80	0.860	2.12	B	EL	42.44
EMERGENCY VEHICLE (EV)	EV2	28.750		2.98	85.675	1.30	0.860	4.32	B	EL	42.44	0.990	2.98	B	I	7.92	0.80	0.860	3.25	B	EL	42.44	
	EV3	43.000	④	1.98	85.140	1.30	0.860	2.84	B	EL	42.44	0.990	1.98	B	I	7.92	0.80	0.860	2.14	B	EL	42.44	

NOTES:

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

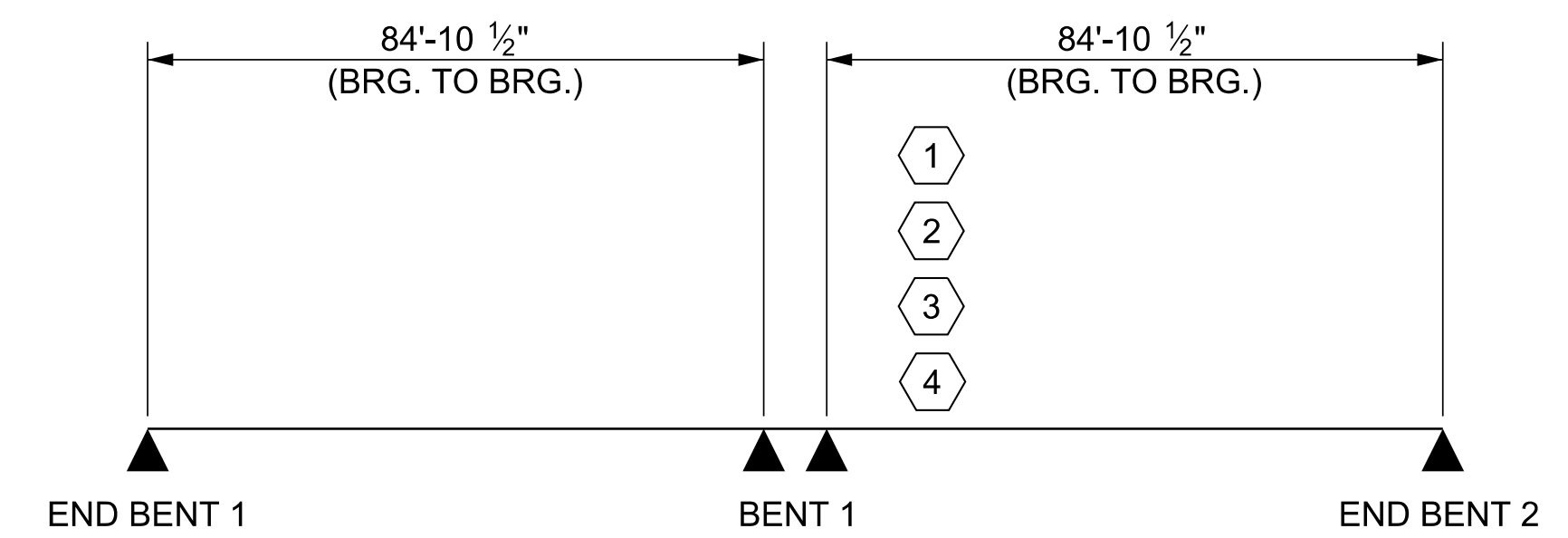
③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

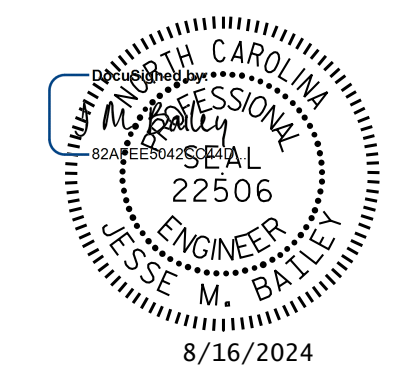
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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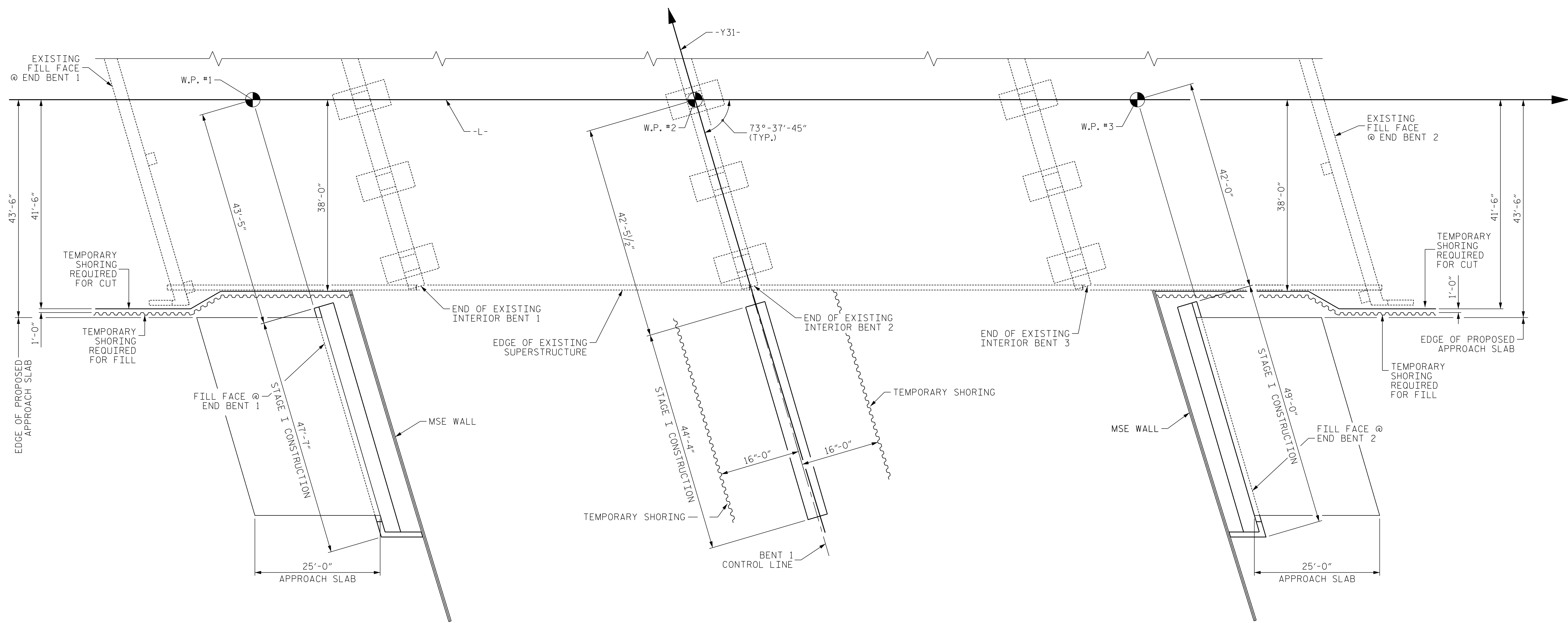
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1			3			TOTAL SHEETS
2			4			72

STD. NO. LRFR1

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CHKD. BY: GFW	DATE: 01/24	CHECKED BY: GM/DI	2/08	REV. 10/11/11	MAA/GM
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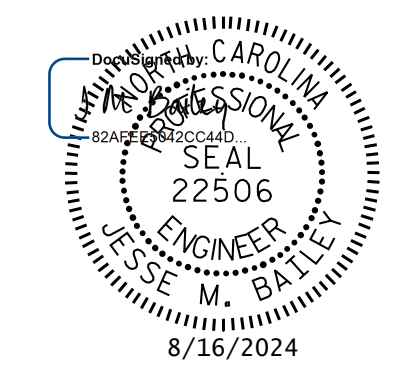


PLAN VIEW - STAGE I CONSTRUCTION

SHOWING PARTIAL CONSTRUCTION OF PROPOSED SUBSTRUCTURE AND TEMPORARY SHORING LOCATIONS

- CONSTRUCTION SEQUENCE**
- STAGE I CONST. - EASTBOUND LANE PARTIAL BRIDGE CONSTRUCTION.
 - STAGE IIA - PARTIAL REMOVAL OF EXISTING BRIDGE.
 - STAGE IIB CONST. - WESTBOUND LANE PARTIAL BRIDGE CONSTRUCTION.
 - STAGE IIIA - COMPLETE REMOVAL OF REMAINING PORTIONS OF THE EXISTING BRIDGE.
 - STAGE IIIB CONST. - CONSTRUCTION OF REMAINING PORTIONS OF NEW BRIDGE INCLUDING DECK CLOSURE POURS.
 - STAGE IV CONST. - SIDEWALKS TO BE CONSTRUCTED ON NEW BRIDGE FINAL CONSTRUCTION.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE LAYOUT STAGE I

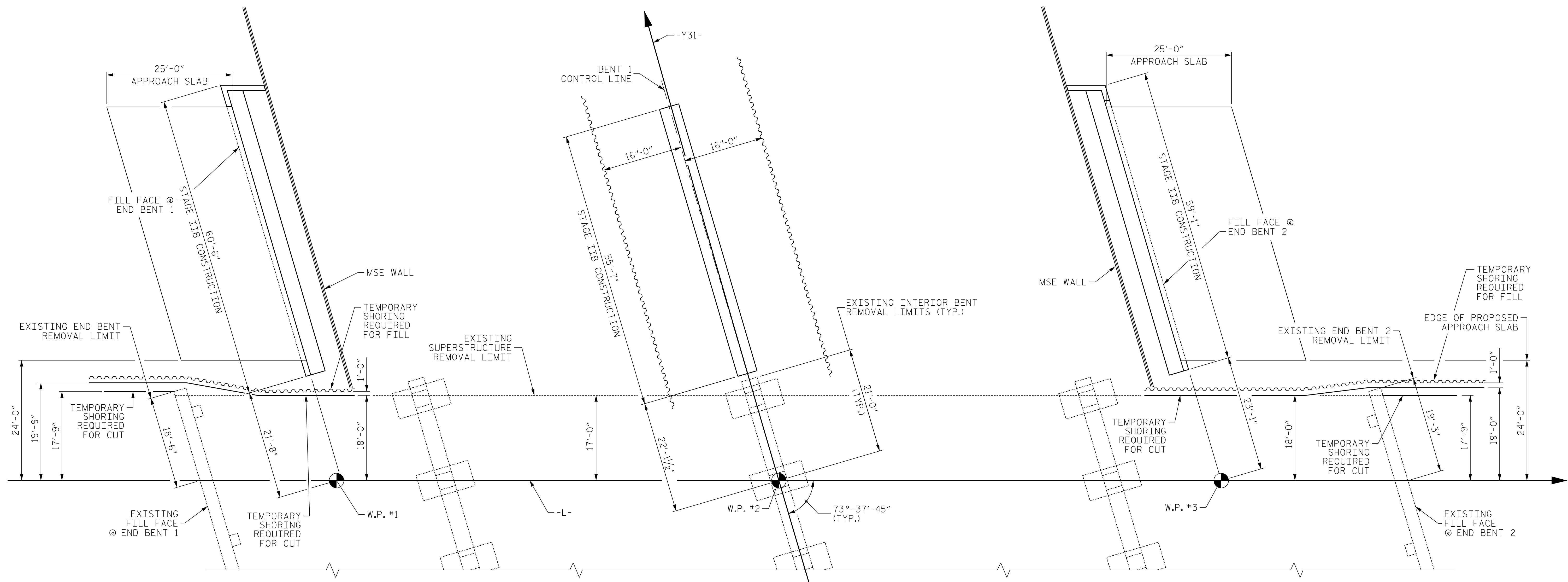
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1			3			TOTAL SHEETS
2			4			72

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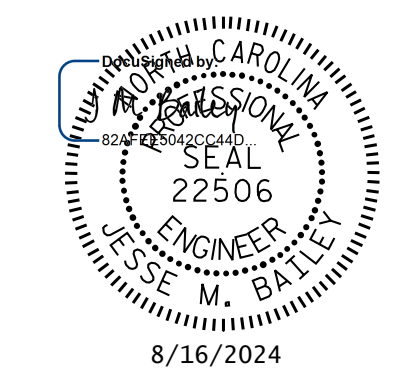


PLAN VIEW - STAGE IIB CONSTRUCTION

SHOWING PARTIAL REMOVAL LIMITS OF EXISTING SUPERSTRUCTURE, SUBSTRUCTURE AND TEMPORARY SHORING LOCATIONS

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 DATE: 01/30/2024
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PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 3

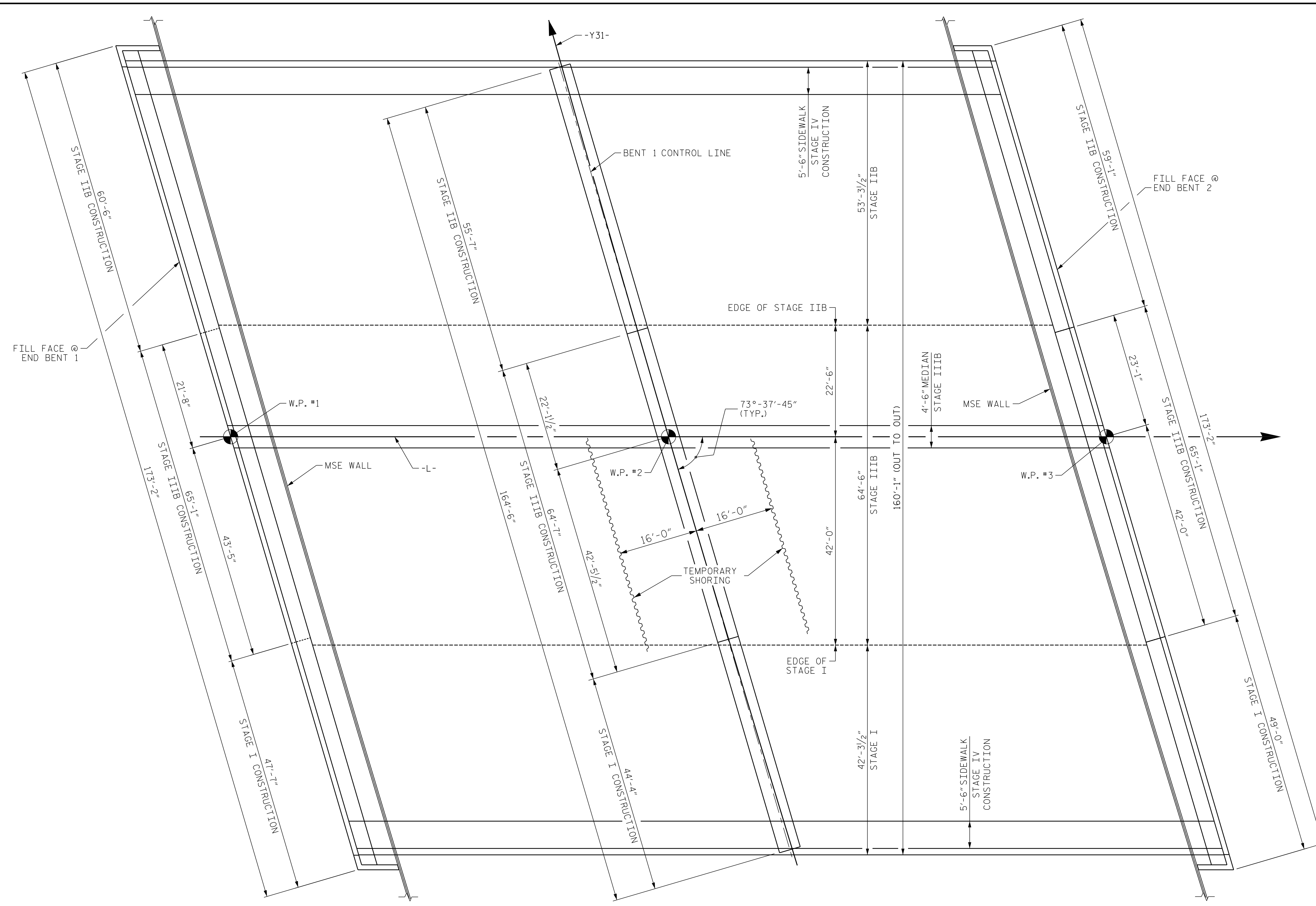


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
CONSTRUCTION SEQUENCE LAYOUT STAGE IIB

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 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

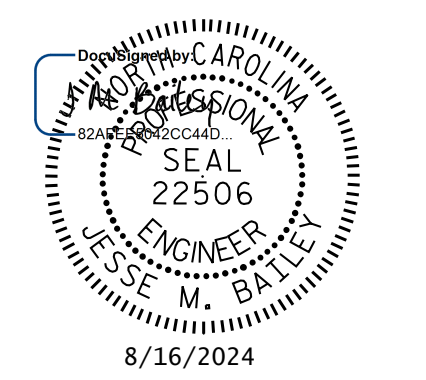
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-7
1			3			TOTAL SHEETS
2			4			72



PLAN VIEW - FINAL CONSTRUCTION

APPROACH SLABS NOT SHOWN, FOR CLARITY



PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**CONSTRUCTION
 SEQUENCE LAYOUT
 FINAL CONSTRUCTION**

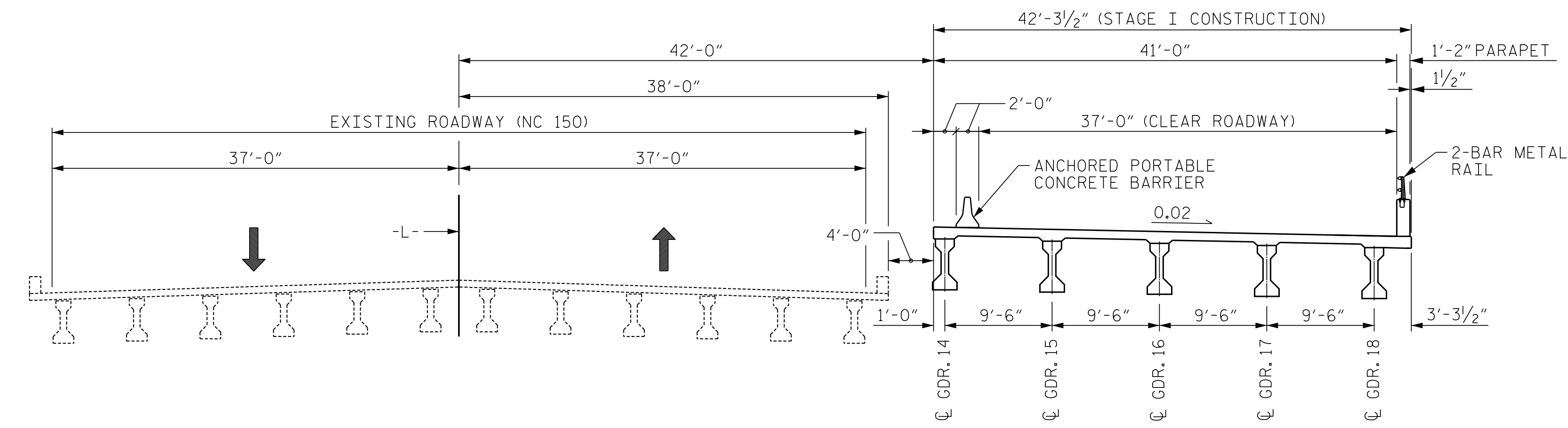
**DOCUMENT NOT CONSIDERED FINAL
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
1			3			TOTAL SHEETS
2			4			72

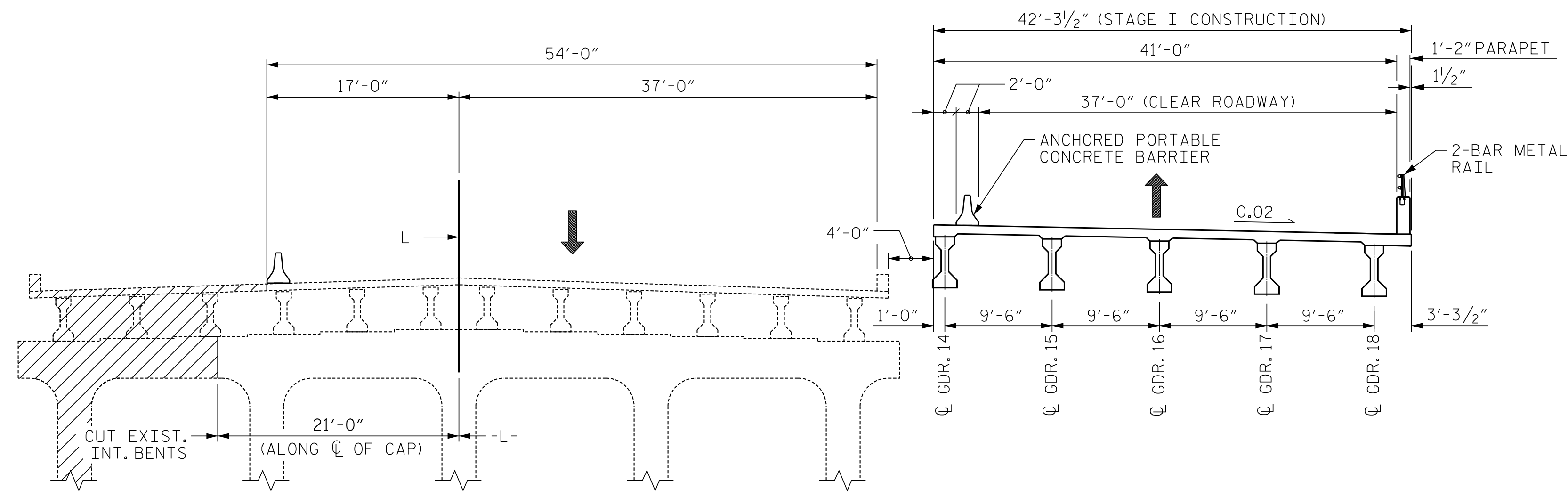
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 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



STAGE I CONSTRUCTION

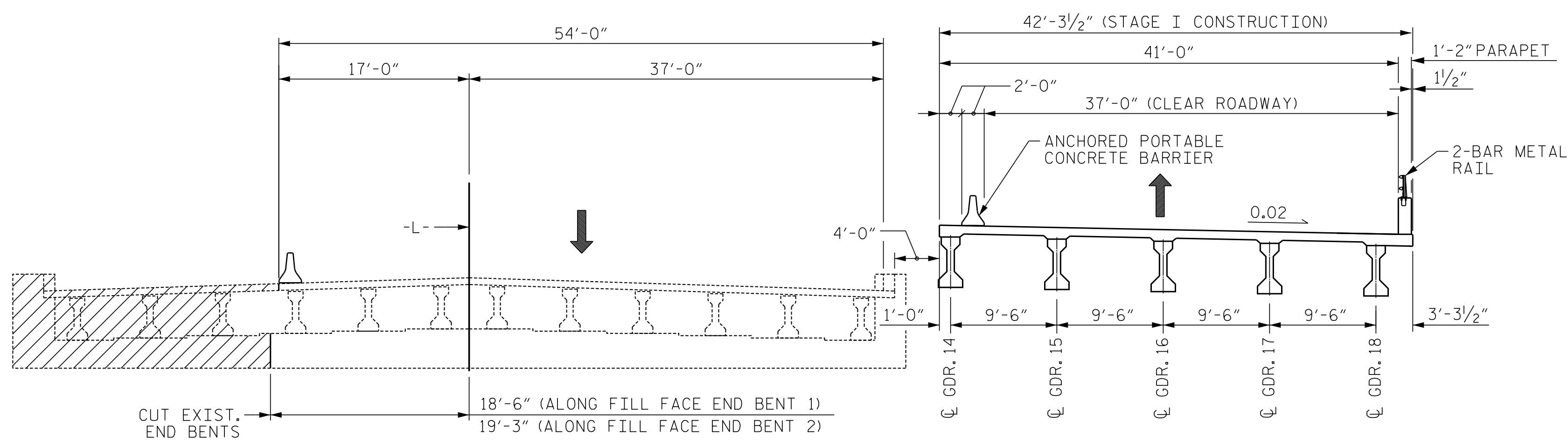
- CONSTRUCTION SEQUENCE**
- STAGE I CONST. - EASTBOUND LANE PARTIAL BRIDGE CONSTRUCTION.
 - STAGE IIA - PARTIAL REMOVAL OF EXISTING BRIDGE.
 - STAGE IIB CONST. - WESTBOUND LANE PARTIAL BRIDGE CONSTRUCTION.
 - STAGE IIIA - COMPLETE REMOVAL OF REMAINING PORTIONS OF THE EXISTING BRIDGE.
 - STAGE IIIB CONST. - CONSTRUCTION OF REMAINING PORTIONS OF NEW BRIDGE INCLUDING DECK CLOSURE POURS.
 - STAGE IV CONST. - SIDEWALKS TO BE CONSTRUCTED ON NEW BRIDGE FINAL CONSTRUCTION.
- SEE SIDEWALK/COVER PLATE DETAIL ON S2-71. THE 1/2" EXPANSION MATERIAL SHALL BE PLACED PRIOR TO POURING THE SIDEWALK TO PROVIDE FREEDOM OF MOVEMENT DUE TO EXPANSION AND CONTRACTION CAUSED BY THE CHANGES IN TEMPERATURE.



STAGE IIA (PARTIAL REMOVAL OF EXISTING BRIDGE)

INTERIOR BENT SHOWN

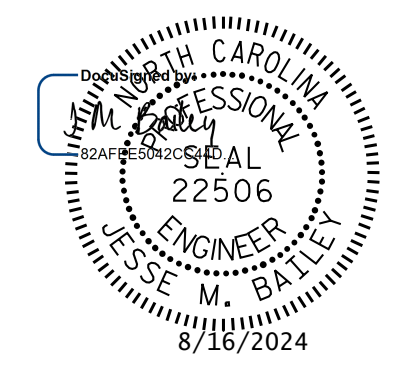
LEGEND:
 AREA TO BE REMOVED



STAGE IIA (PARTIAL REMOVAL OF EXISTING BRIDGE)

END BENTS 1 AND 2 SHOWN

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
CONSTRUCTION SEQUENCE TYPICALS

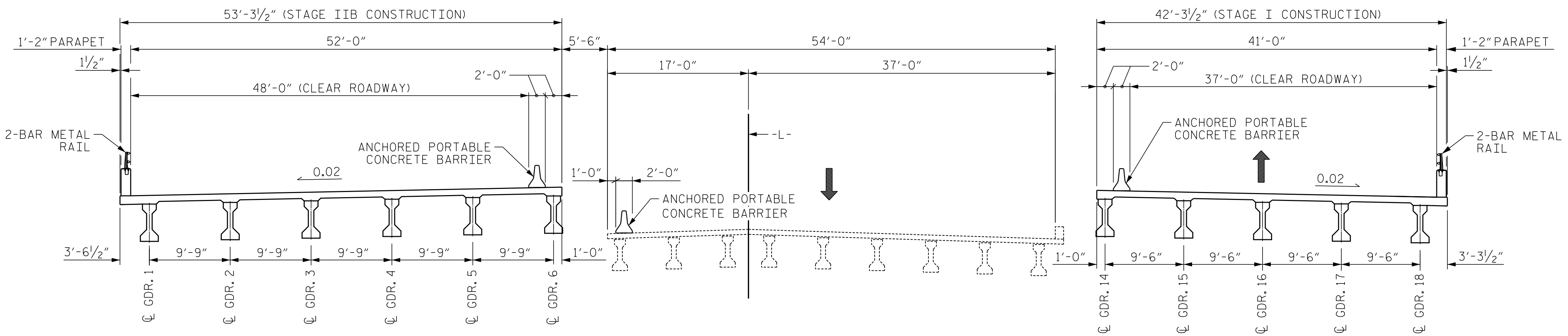
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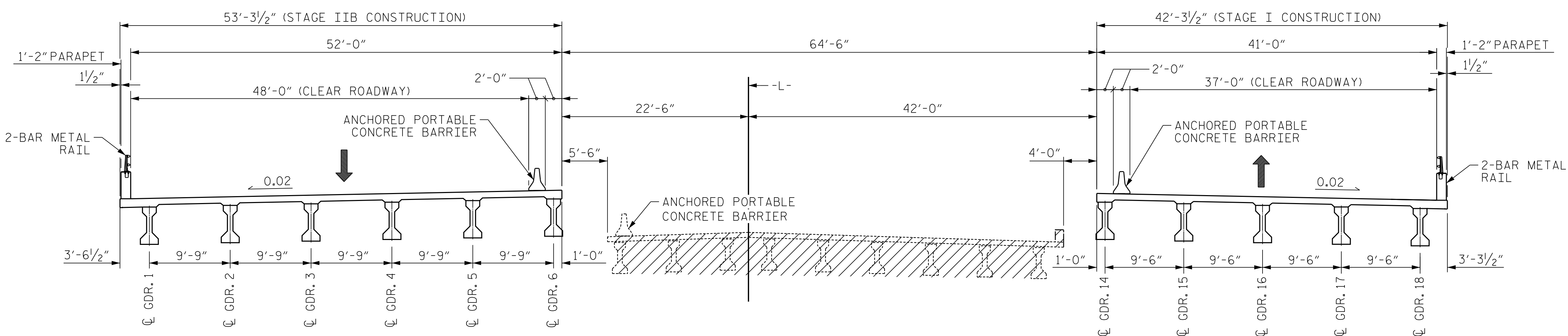
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-9
1			3			TOTAL SHEETS
2			4			72

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 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24
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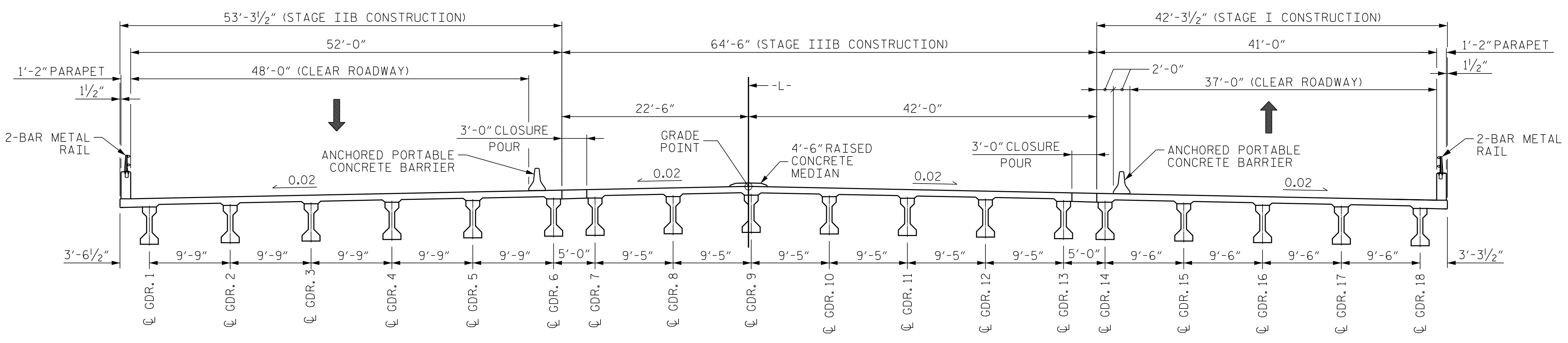
STAGE IIB CONSTRUCTION



STAGE IIIA

REMOVE REMAINING PORTIONS OF THE EXISTING SUPERSTRUCTURE AND SUBSTRUCTURE

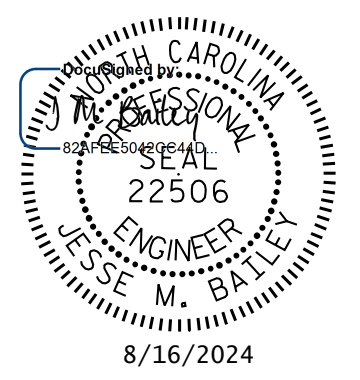
LEGEND:
 [Hatched Box] AREA TO BE REMOVED



STAGE IIIB CONSTRUCTION

INCLUDES ALL CLOSURE POURS

PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 3



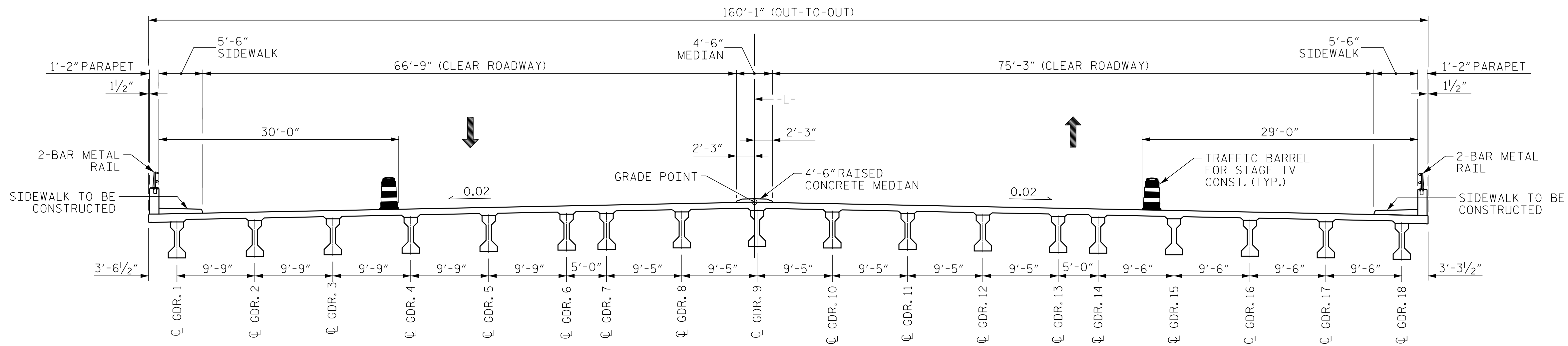
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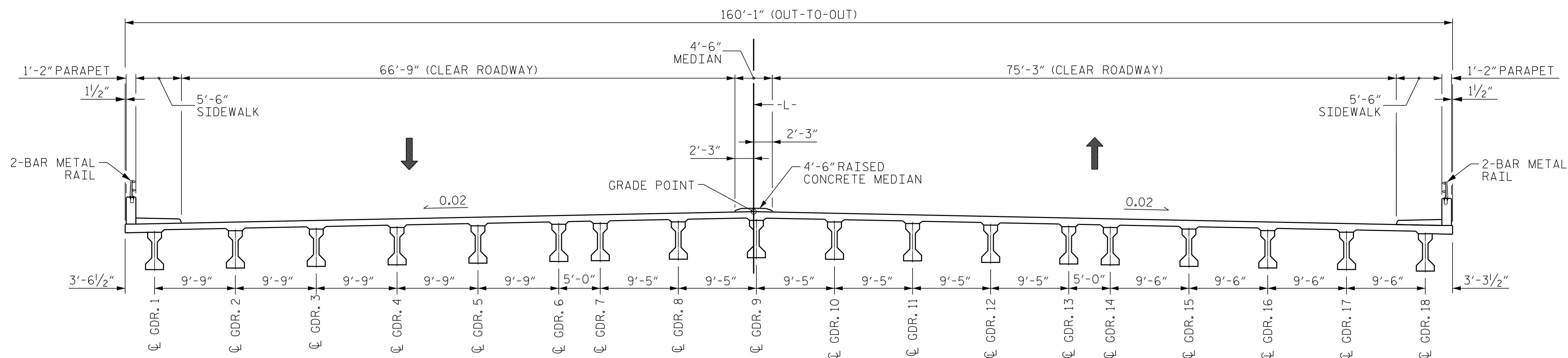
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DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



STAGE IV CONSTRUCTION



FINAL CONSTRUCTION

NOTES:

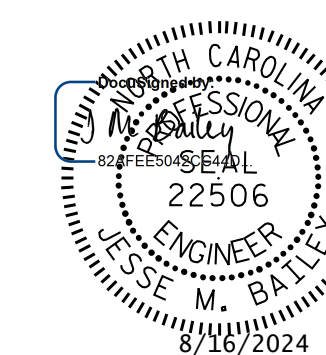
- FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.
- THE PORTABLE CONCRETE BARRIER AND DRUMS ARE A TRAFFIC CONTROL PAY ITEM.
- SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER AND DRUMS.

PROJECT NO. I-5717

IREDELL COUNTY

STATION: 733+32.53 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE TYPICALS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

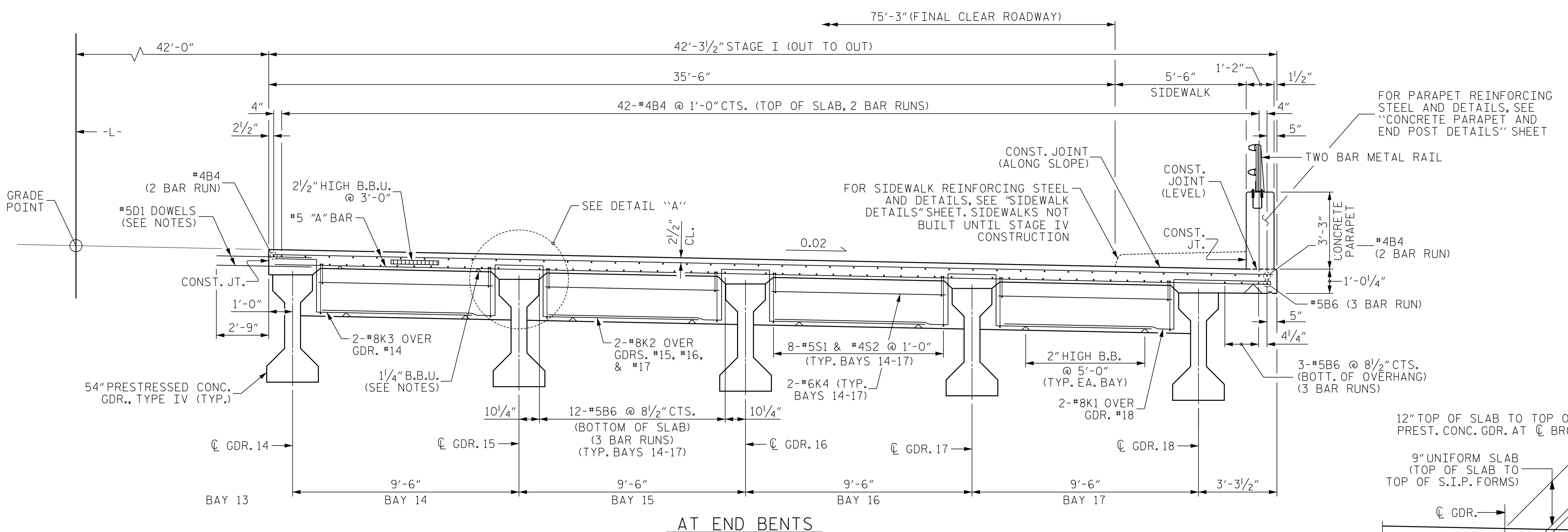


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License No: C-3097

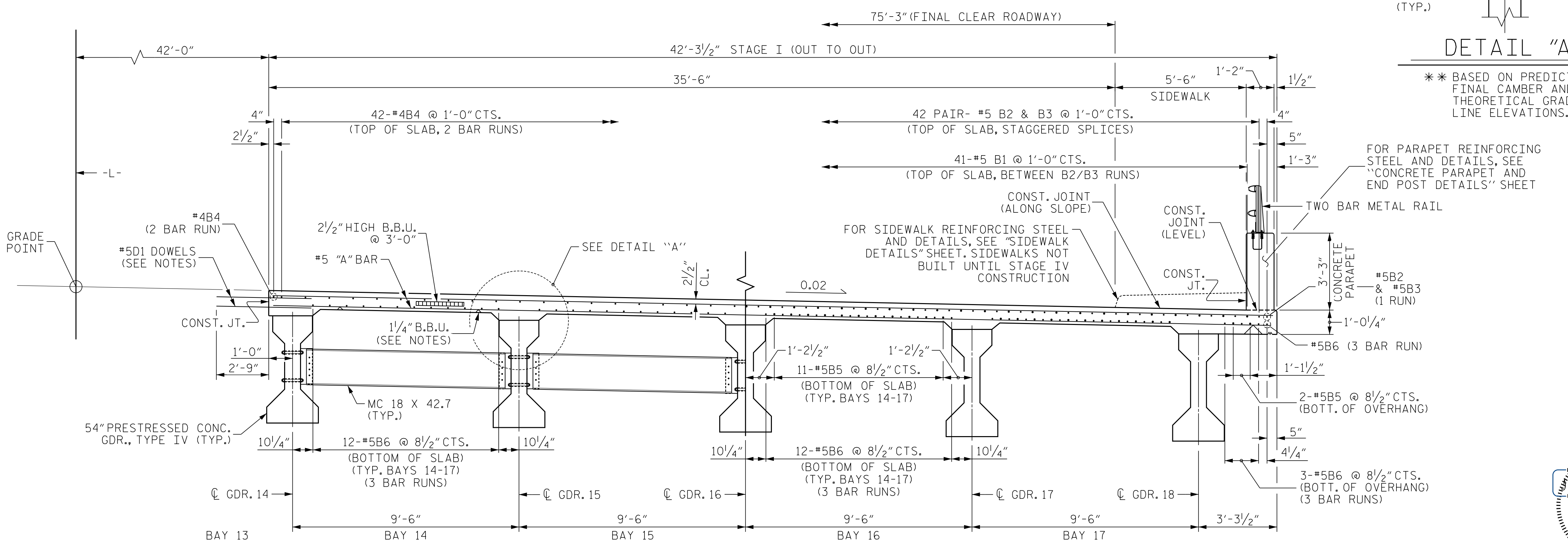
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
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2			4			72

WDC/CFW
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 DATE: 01/24
 DATE: 01/24
 TIME: 4:30/2024

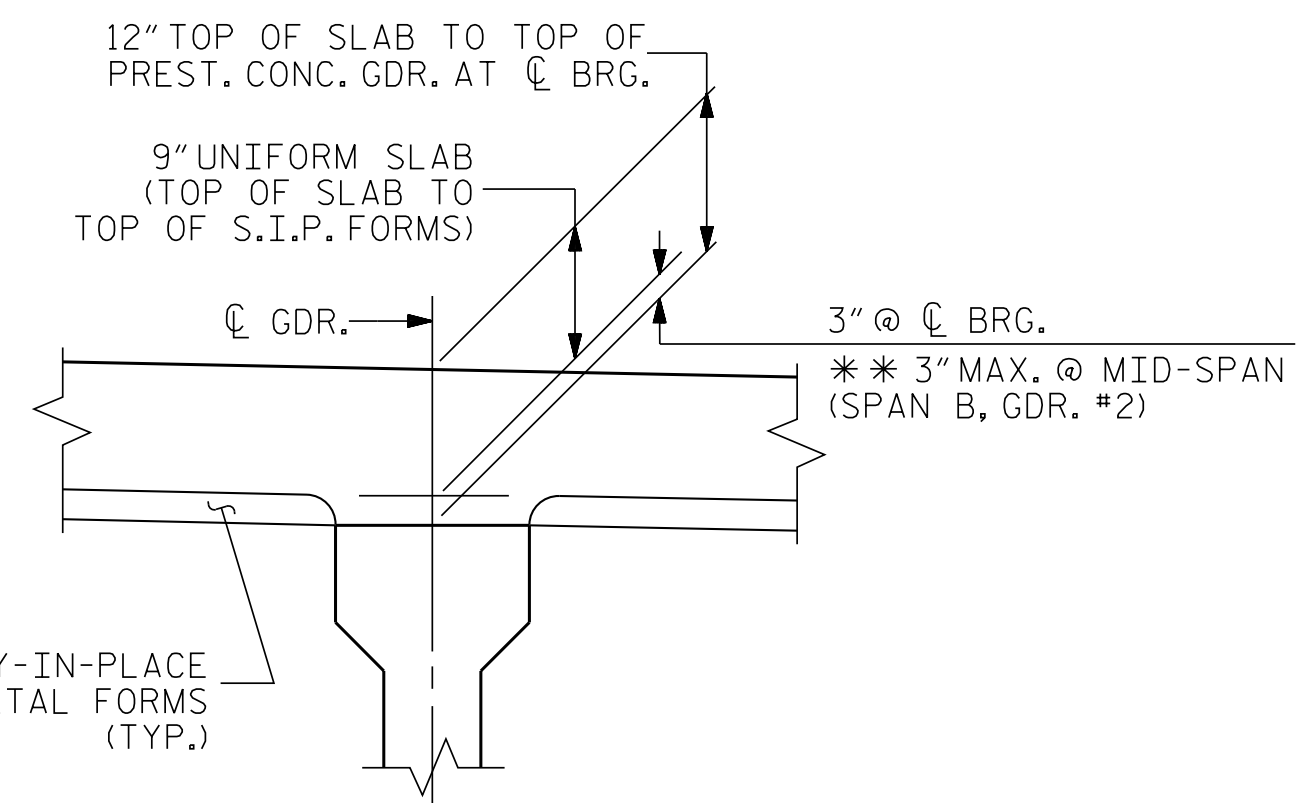
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 DATE: 01/24
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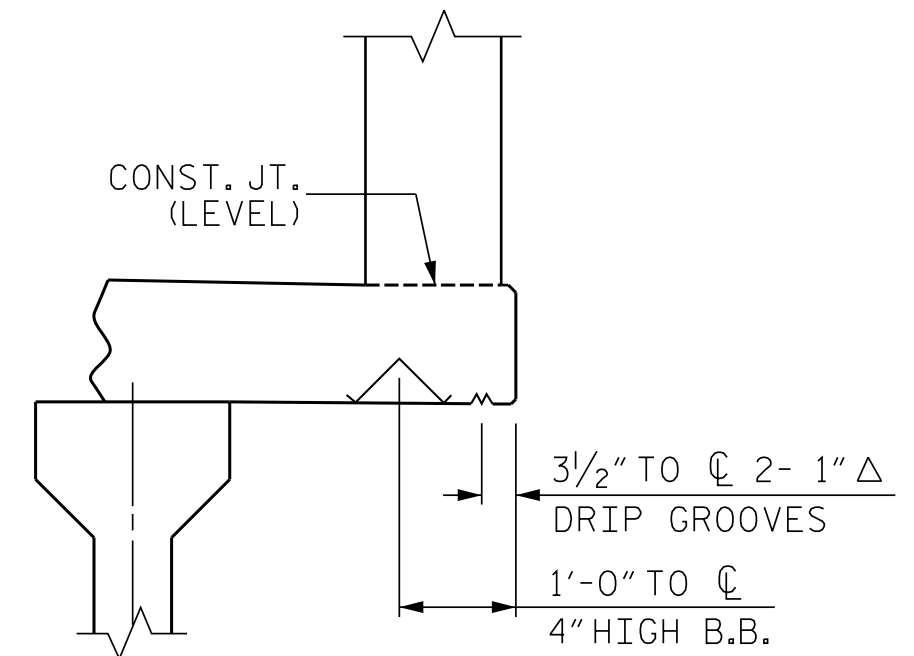
AT END BENTS
TYPICAL SECTION - STAGE I



HALF-SECTION AT INTERMEDIATE DIAPHRAGMS
HALF-SECTION AT LINK SLAB AT BENT
TYPICAL SECTION - STAGE I



DETAIL "A"



OVERHANG DETAIL

NOTES:

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

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

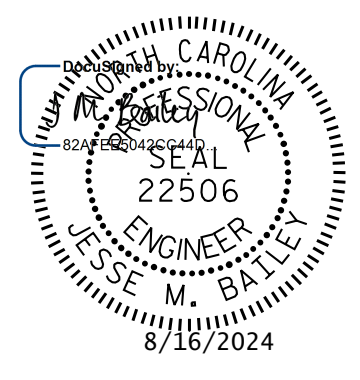
PARAPET IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

THE #5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM REINFORCING STEEL.

THE #5 "G" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 1 OF 5



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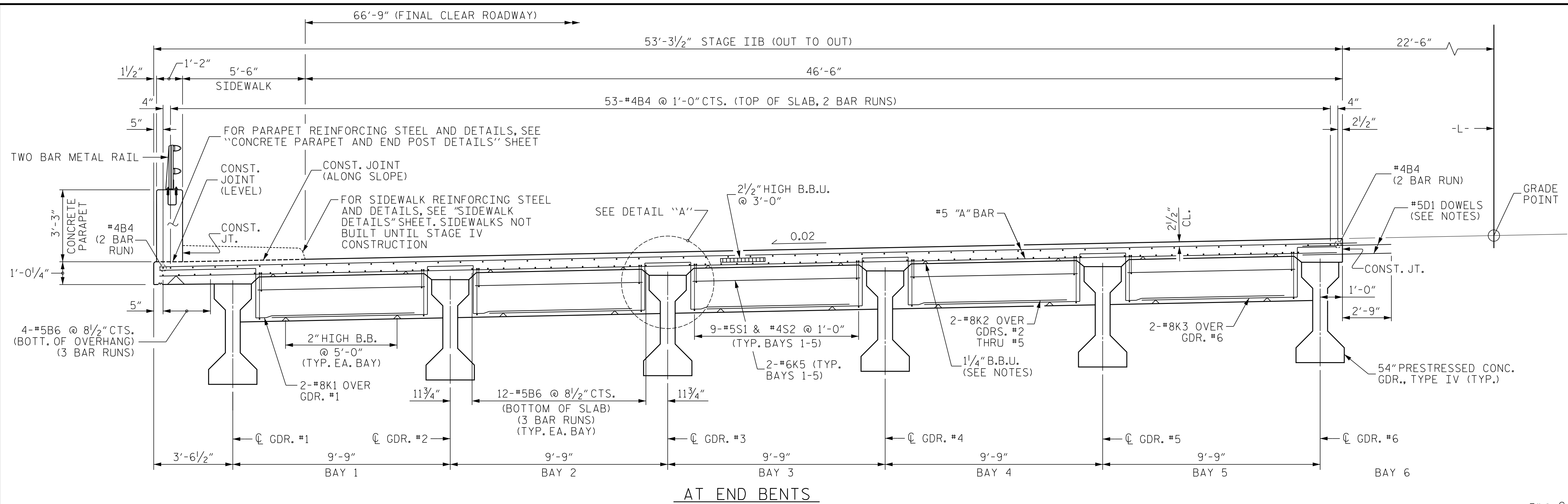
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DEPARTMENT OF TRANSPORTATION
RALEIGH

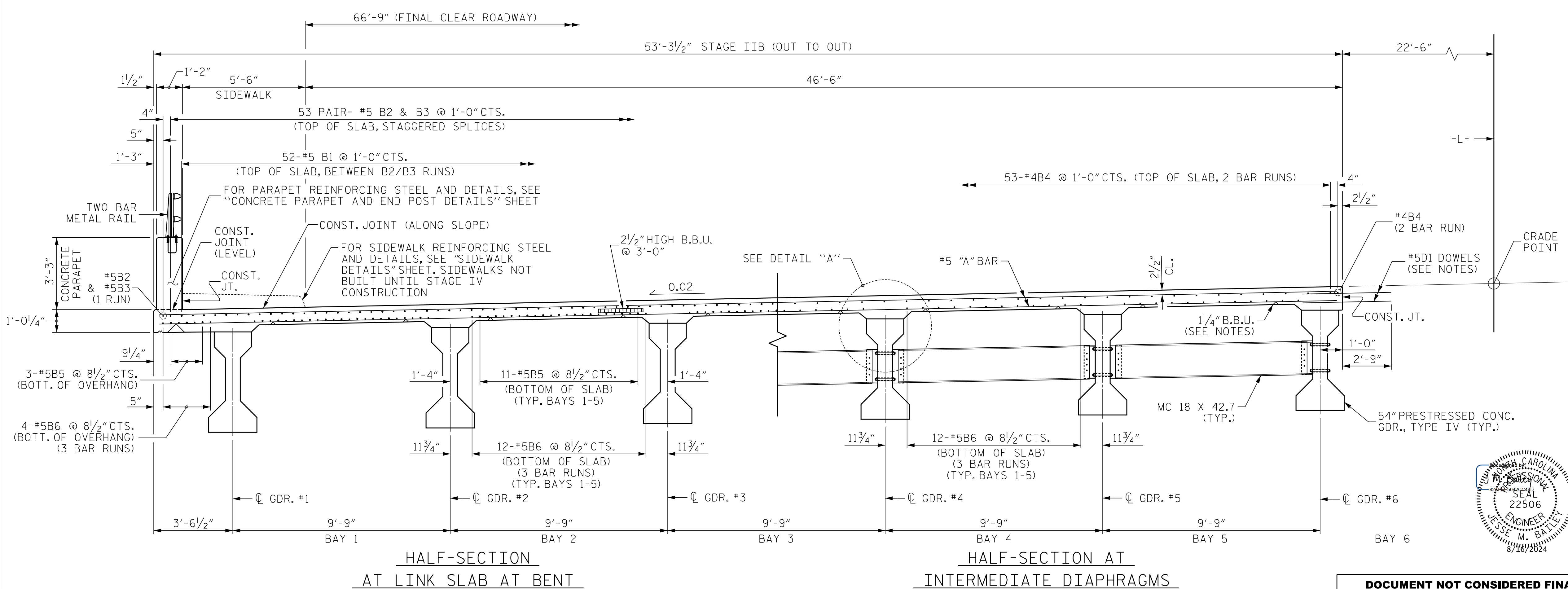
SUPERSTRUCTURE
TYPICAL SECTION
STAGE I

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12	
1			3			TOTAL SHEETS	
2			4			72	

WDC/CFW
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 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: JMB
 DATE: 01/24
 TIME: 4:30/2024

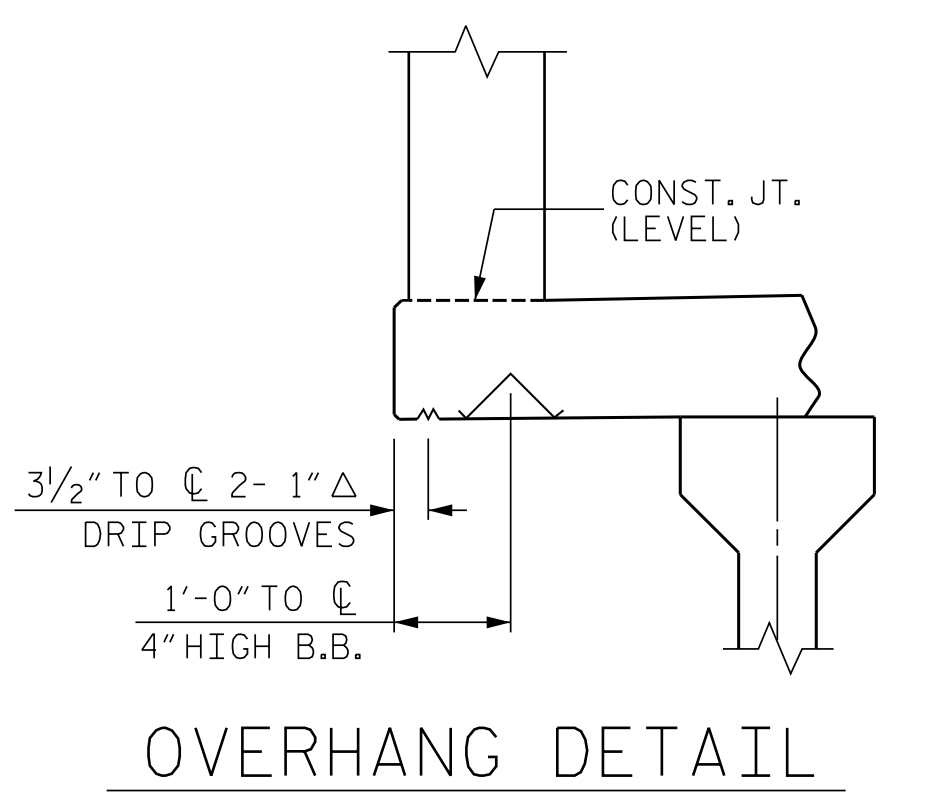


TYPICAL SECTION - STAGE IIB

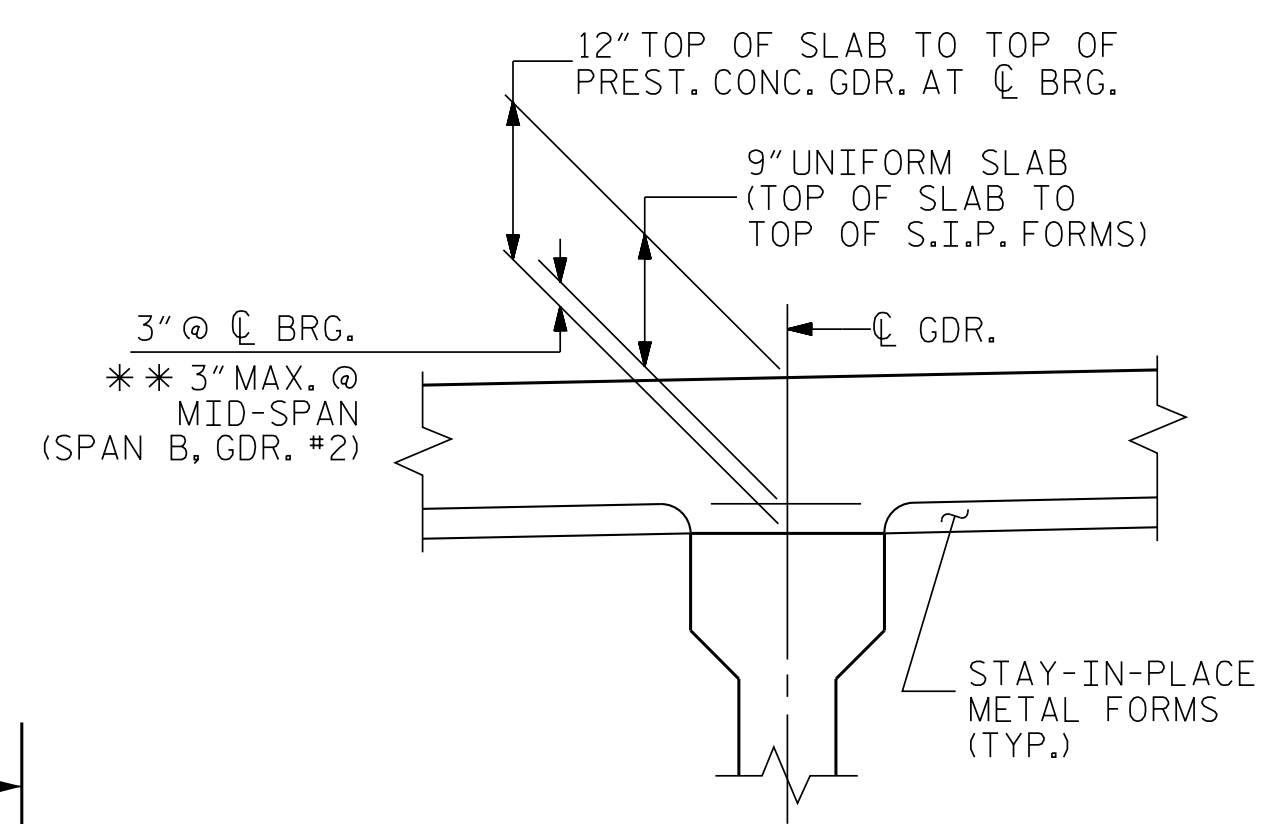


TYPICAL SECTION - STAGE IIB

FOR NOTES, SEE SHEET 1 OF 5.



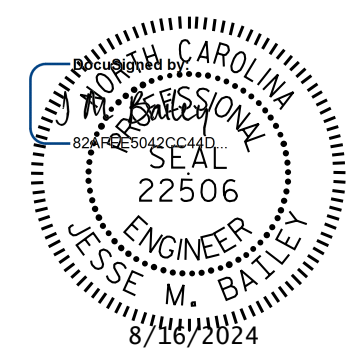
OVERHANG DETAIL



DETAIL "A"

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

PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 5



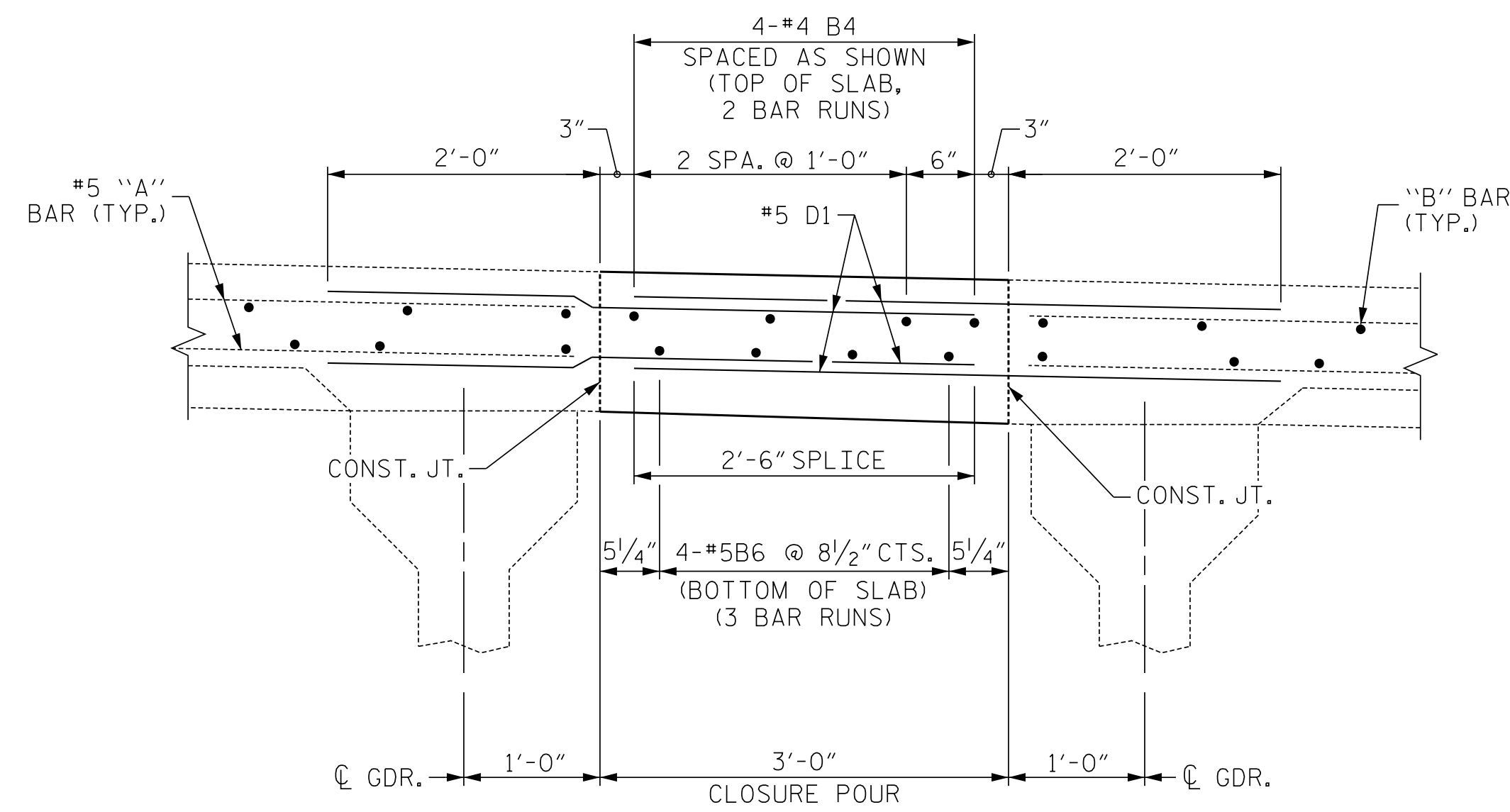
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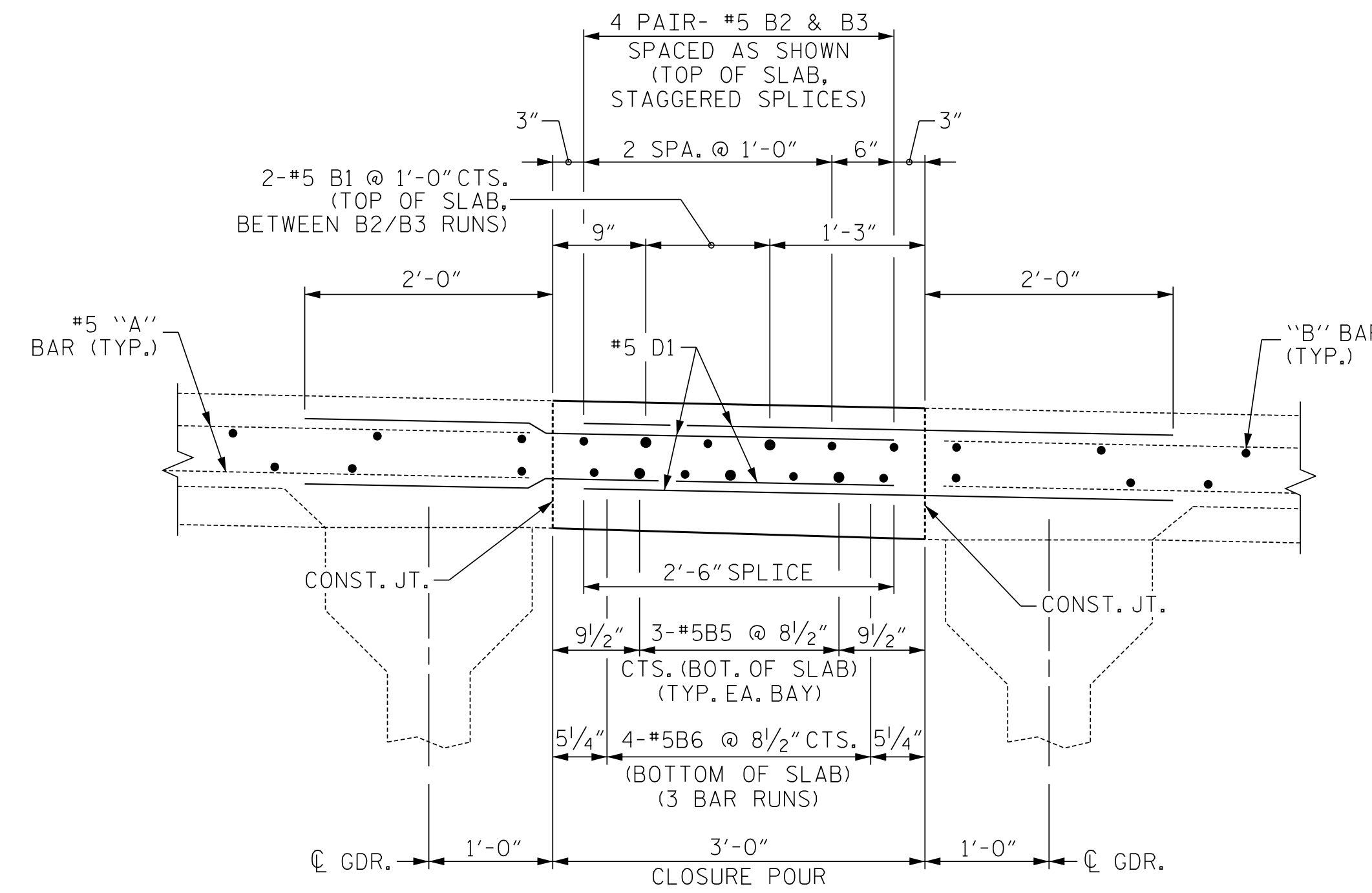
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SUPERSTRUCTURE TYPICAL SECTION STAGE IIB					
NO.		BY:		DATE:	
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2		4			
SHEET NO. S2-13					TOTAL SHEETS 72

WDC/CFW
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 TIME: 4/30/2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: CFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



TYPICAL SECTION AT END BENTS
AND INTERMEDIATE DIAPHRAGMS



TYPICAL SECTION AT
LINK SLAB AT BENT

(SECTION IS TYPICAL FOR EACH CLOSURE POUR)

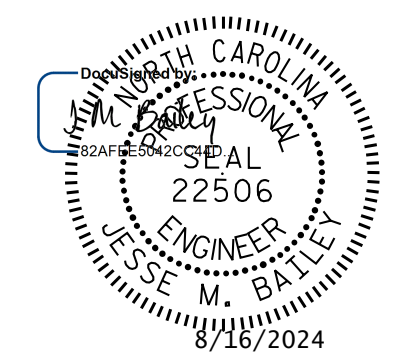
(#5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM REINFORCING STEEL AND EXTEND 2'-9" INTO CLOSURE POUR)

WDC: JMB
 DATE: 01/24
 TIME: 4:30/2024
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DWN. BY: WDC DATE: 01/24
 CHKD. BY: GWP DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

**DOCUMENT NOT CONSIDERED FINAL
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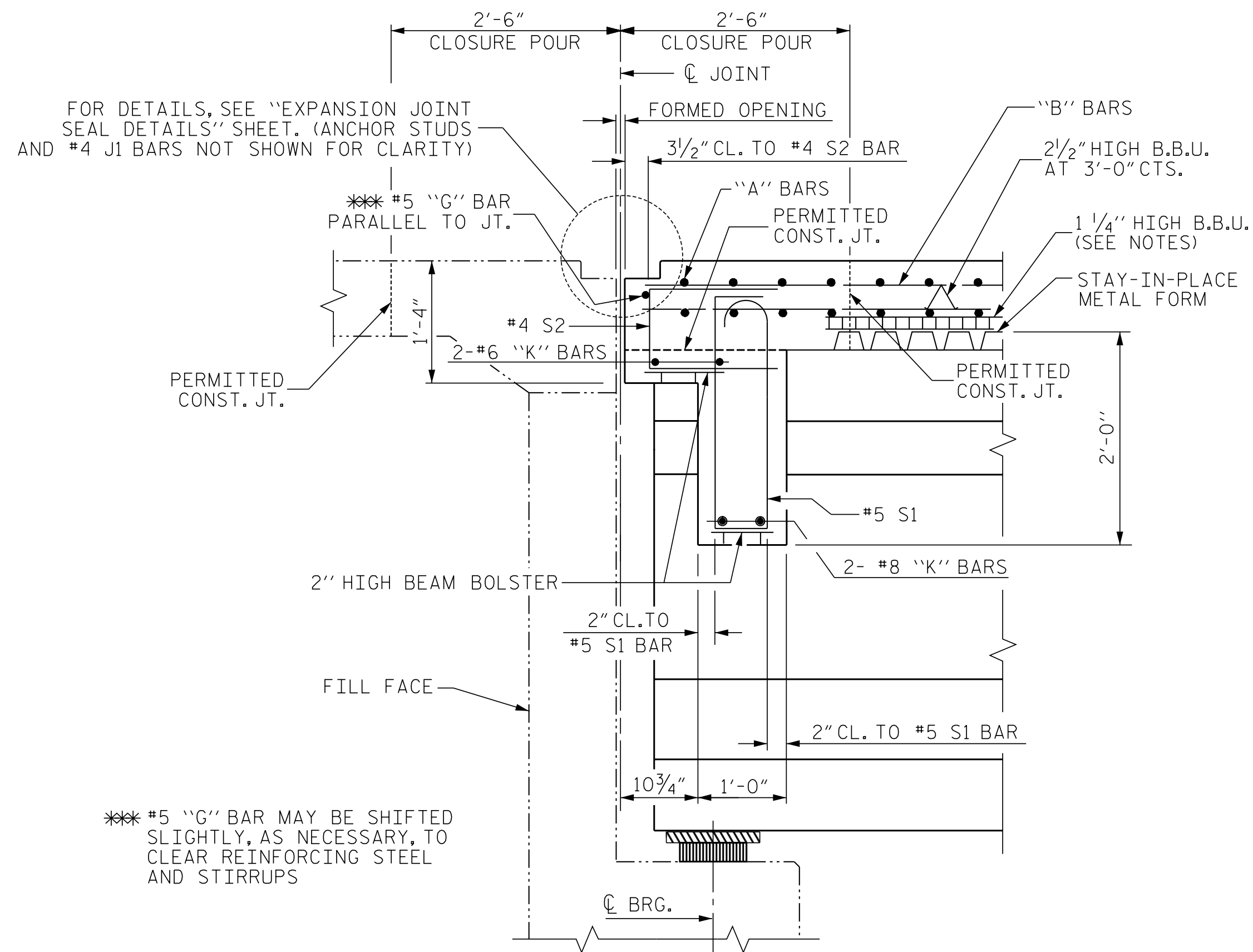


PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 4 OF 5

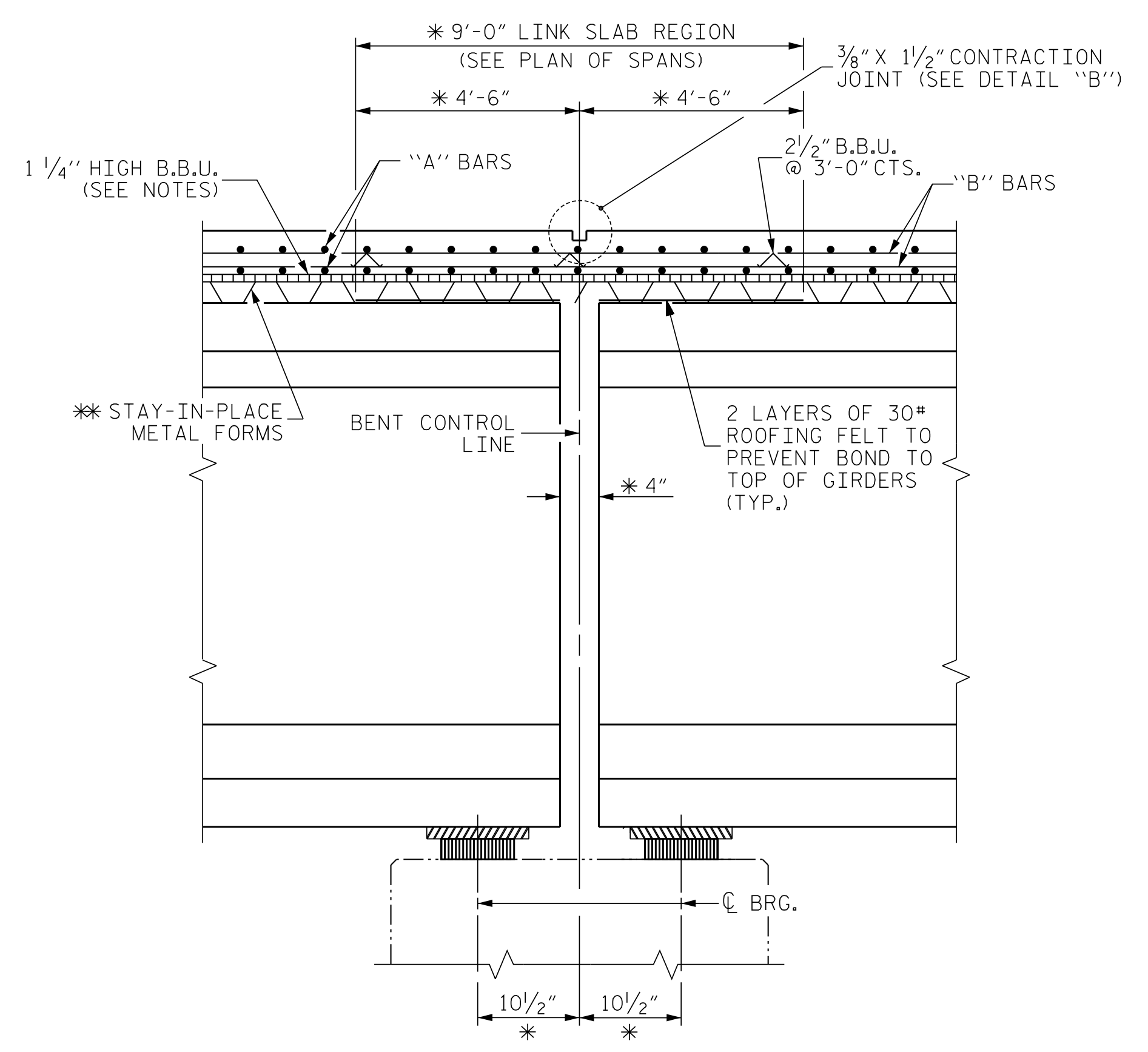
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION
CLOSURE POUR

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			72



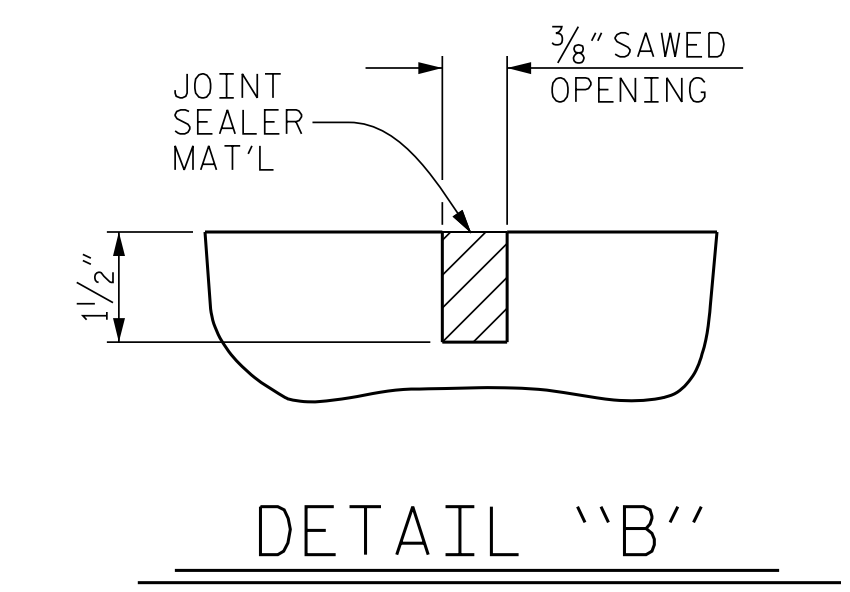
SECTION @ END BENT DIAPHRAGM
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



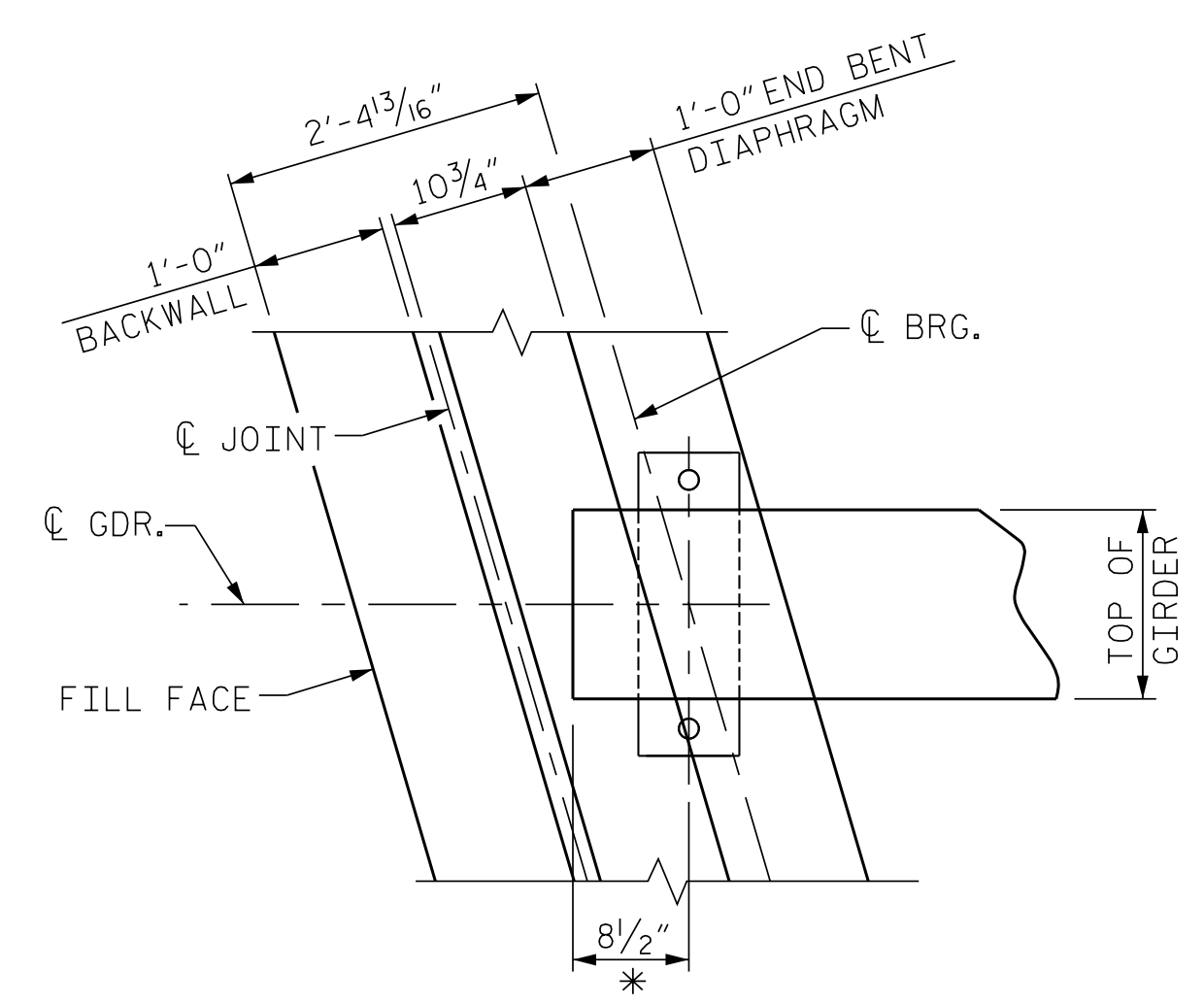
SECTION AT BENT

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.

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

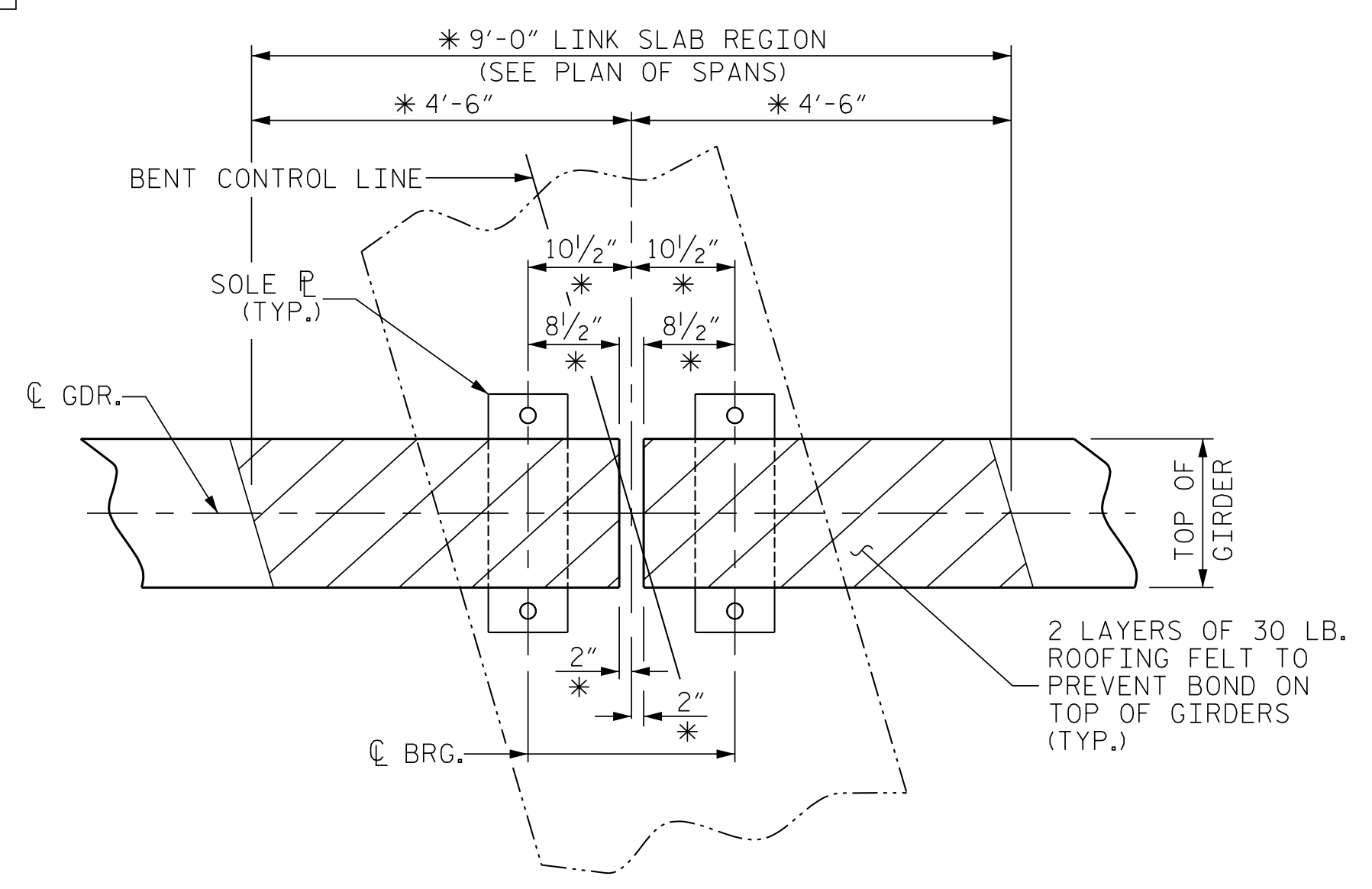


DETAIL "B"



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

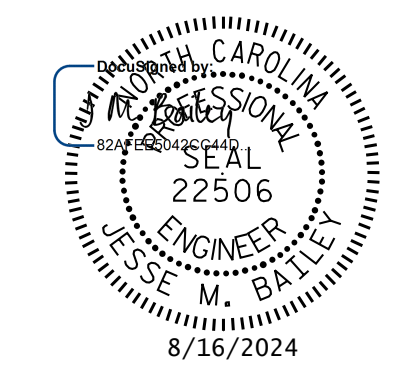
* MEASURED ALONG
CL OF GIRDER.



PLAN 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, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 5 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION
DETAILS**

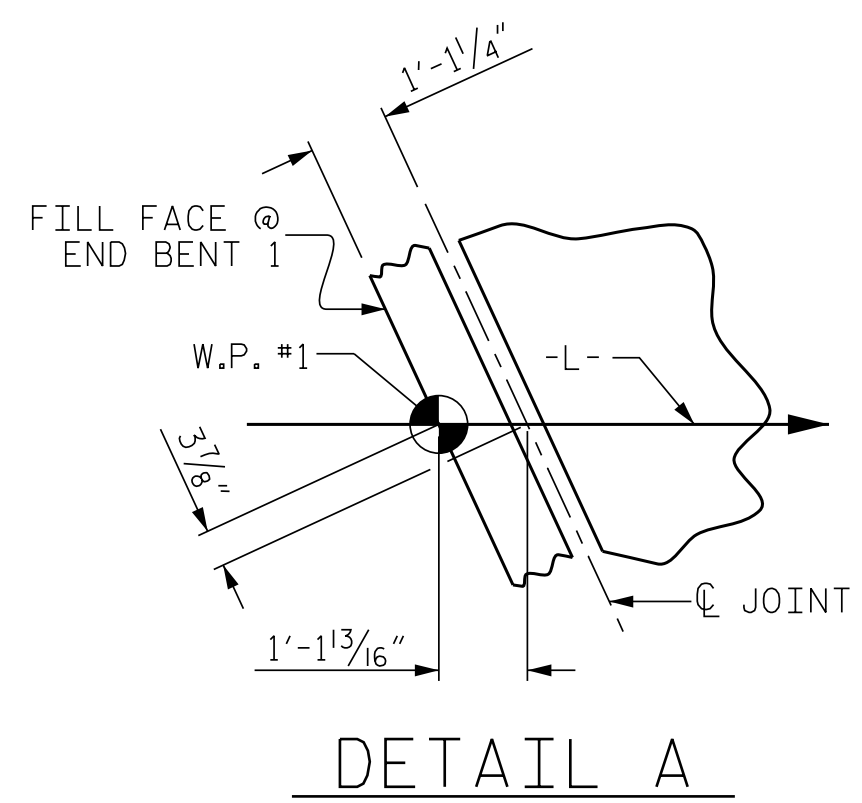
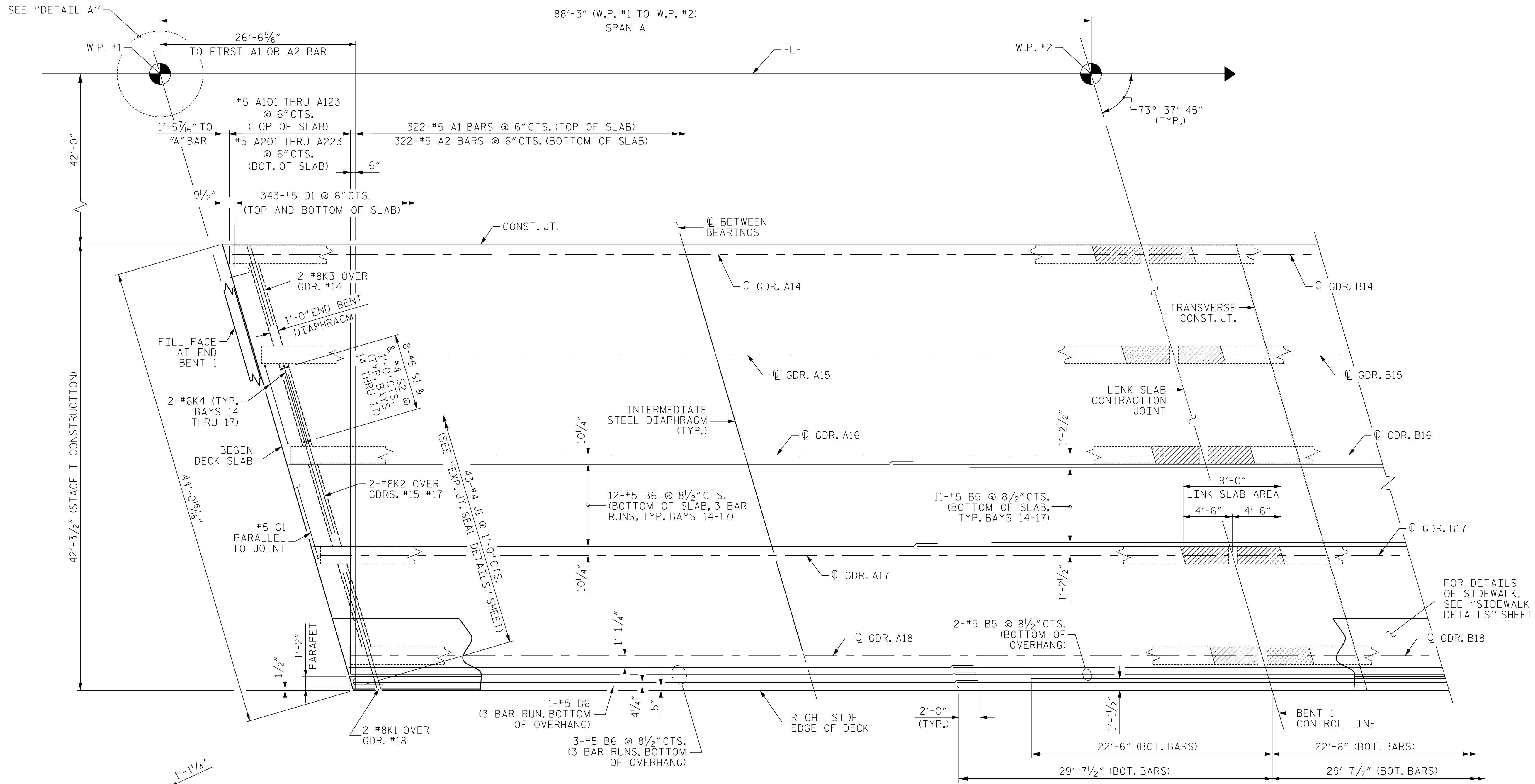
**DOCUMENT NOT CONSIDERED FINAL
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			72

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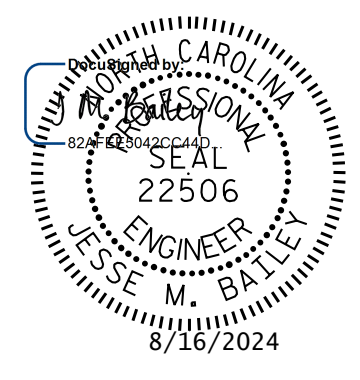
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 CHKD. BY: GWP DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF SPAN A - STAGE I CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE I",
SHEET 1 OF 4.

PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A
 STAGE I

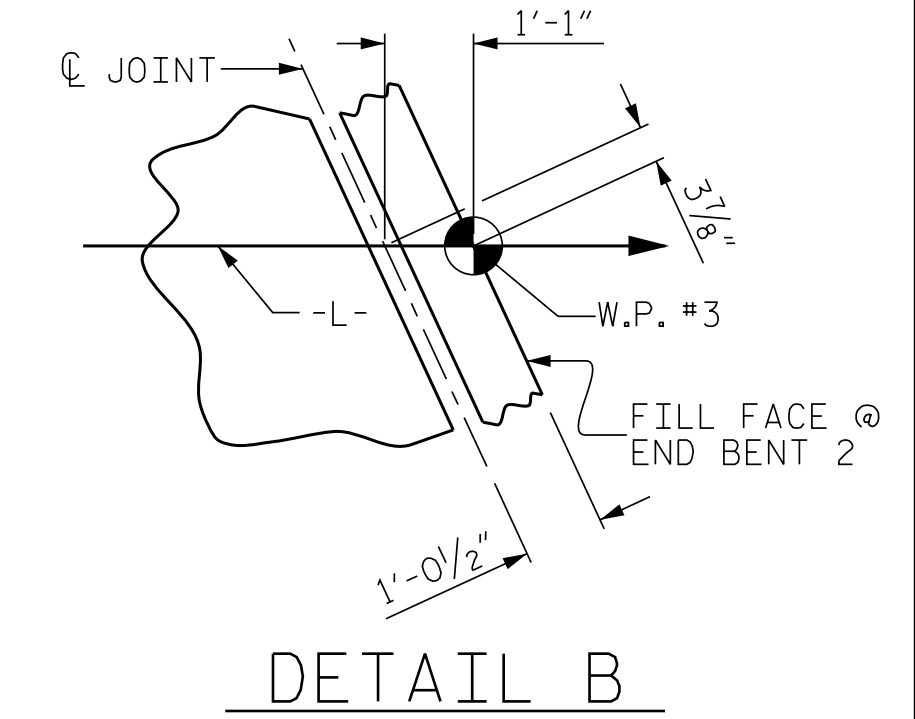
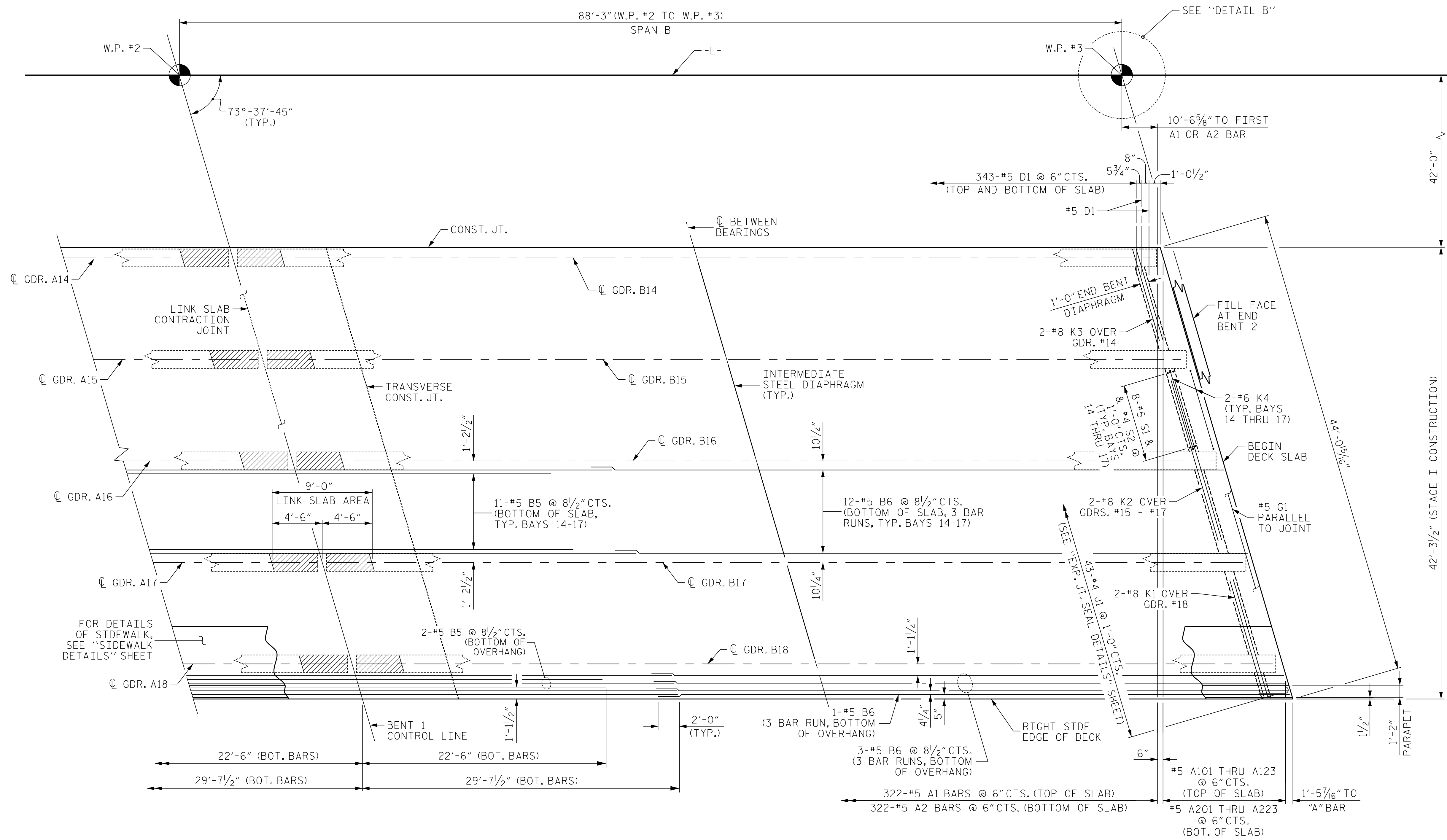
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17
1			3			TOTAL SHEETS
2			4			72

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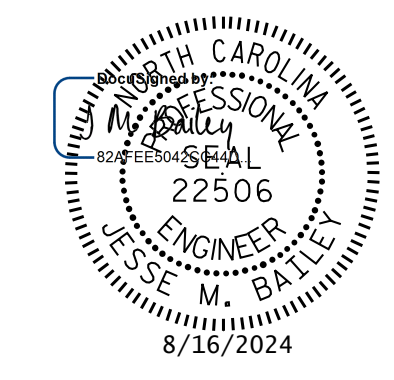
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 CHKD. BY: GWP DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF SPAN B - STAGE I CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE I",
SHEET 1 OF 4.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 2 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN B
STAGE I

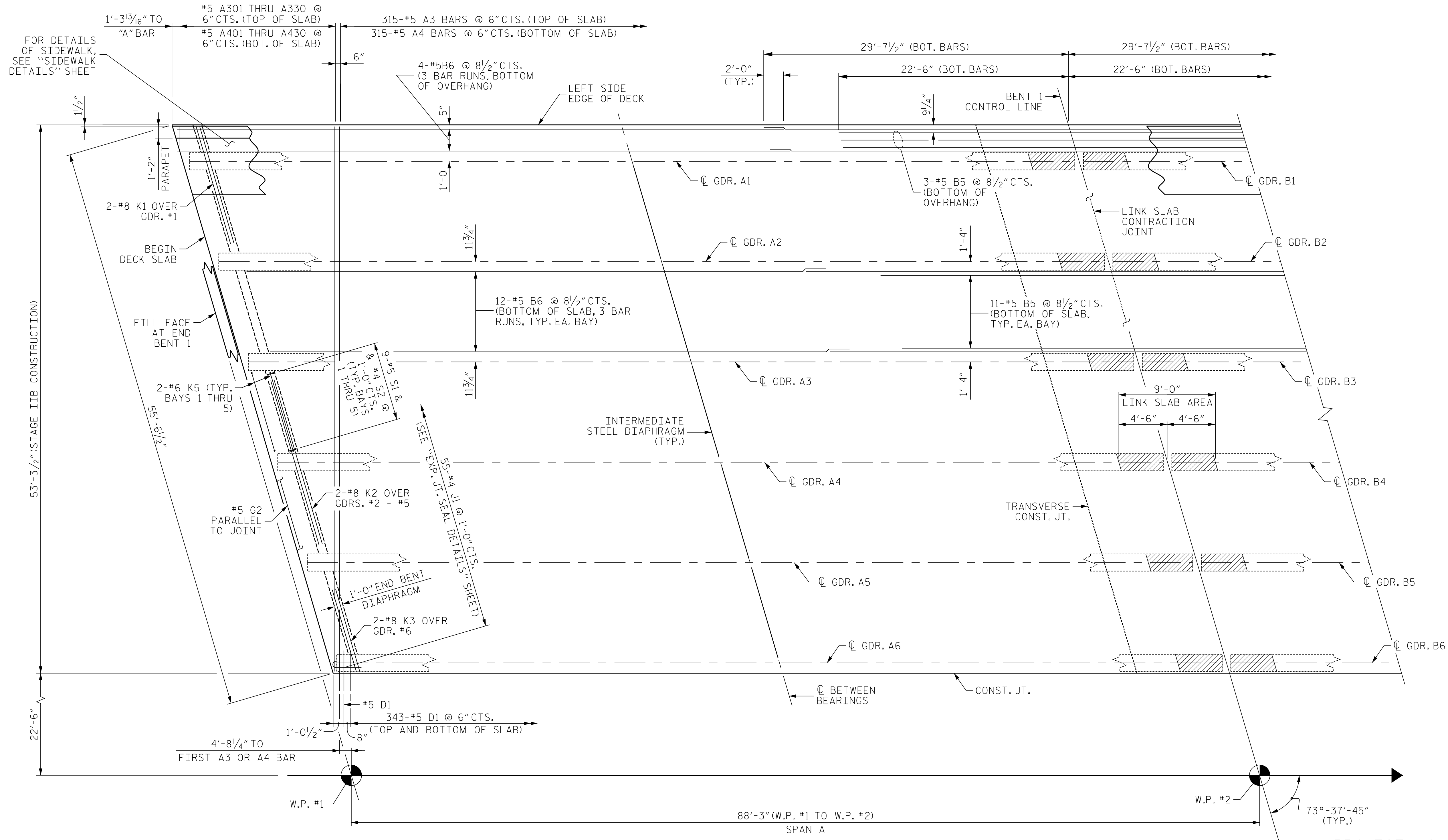
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-18
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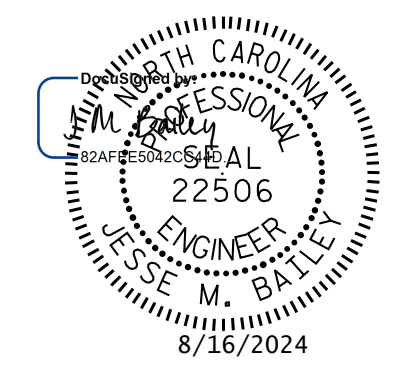
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 DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF SPAN A - STAGE IIB CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
 FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE IIB",
 SHEET 2 OF 4.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 3 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN A
STAGE IIB

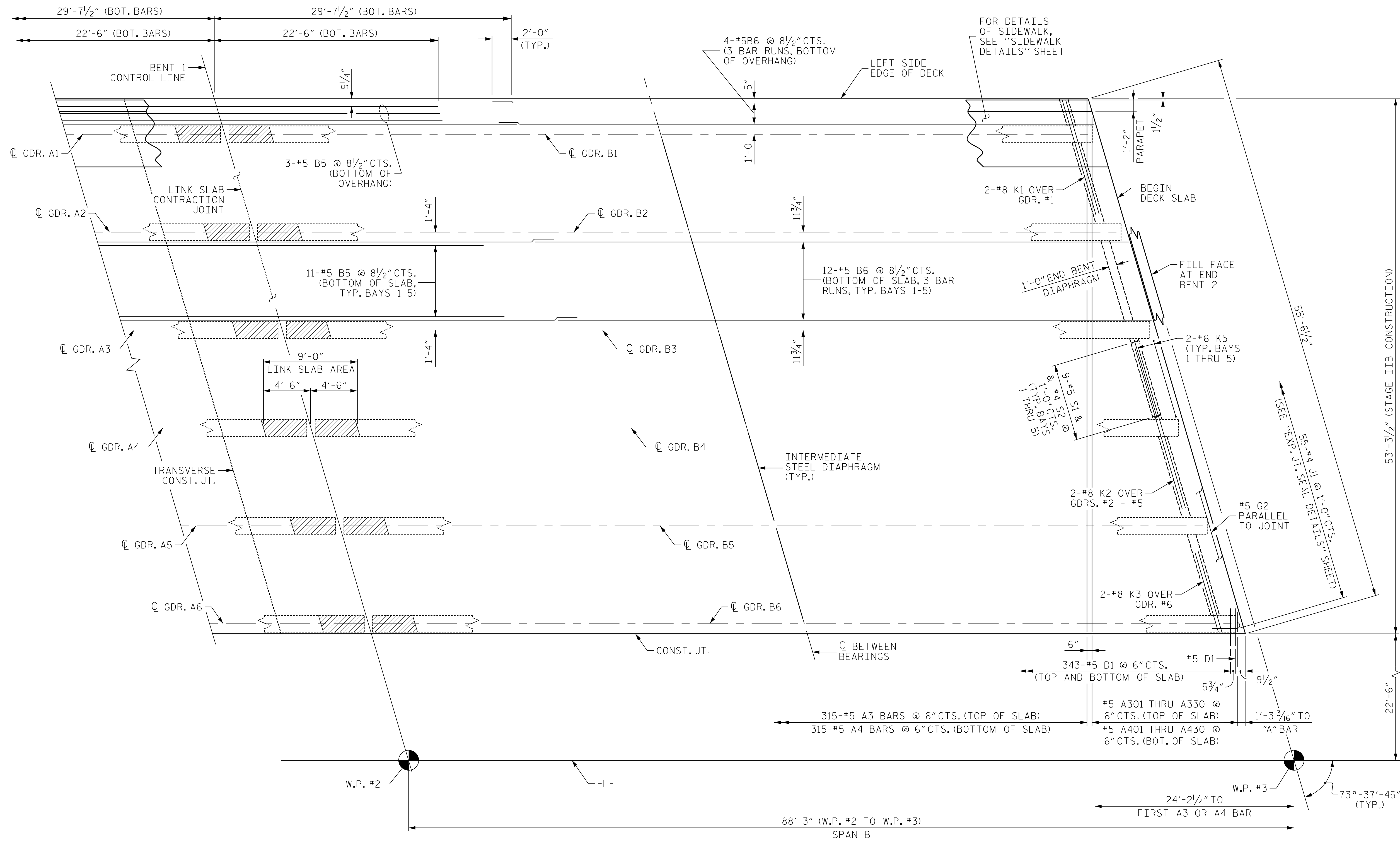
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			72

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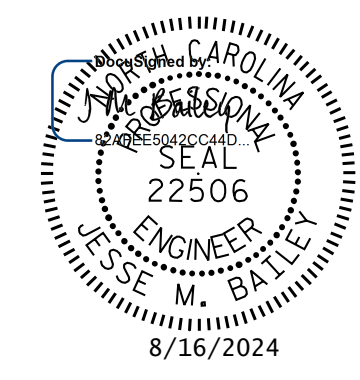
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 DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF SPAN B - STAGE IIB CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
 FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE IIB",
 SHEET 2 OF 4.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 4 OF 6

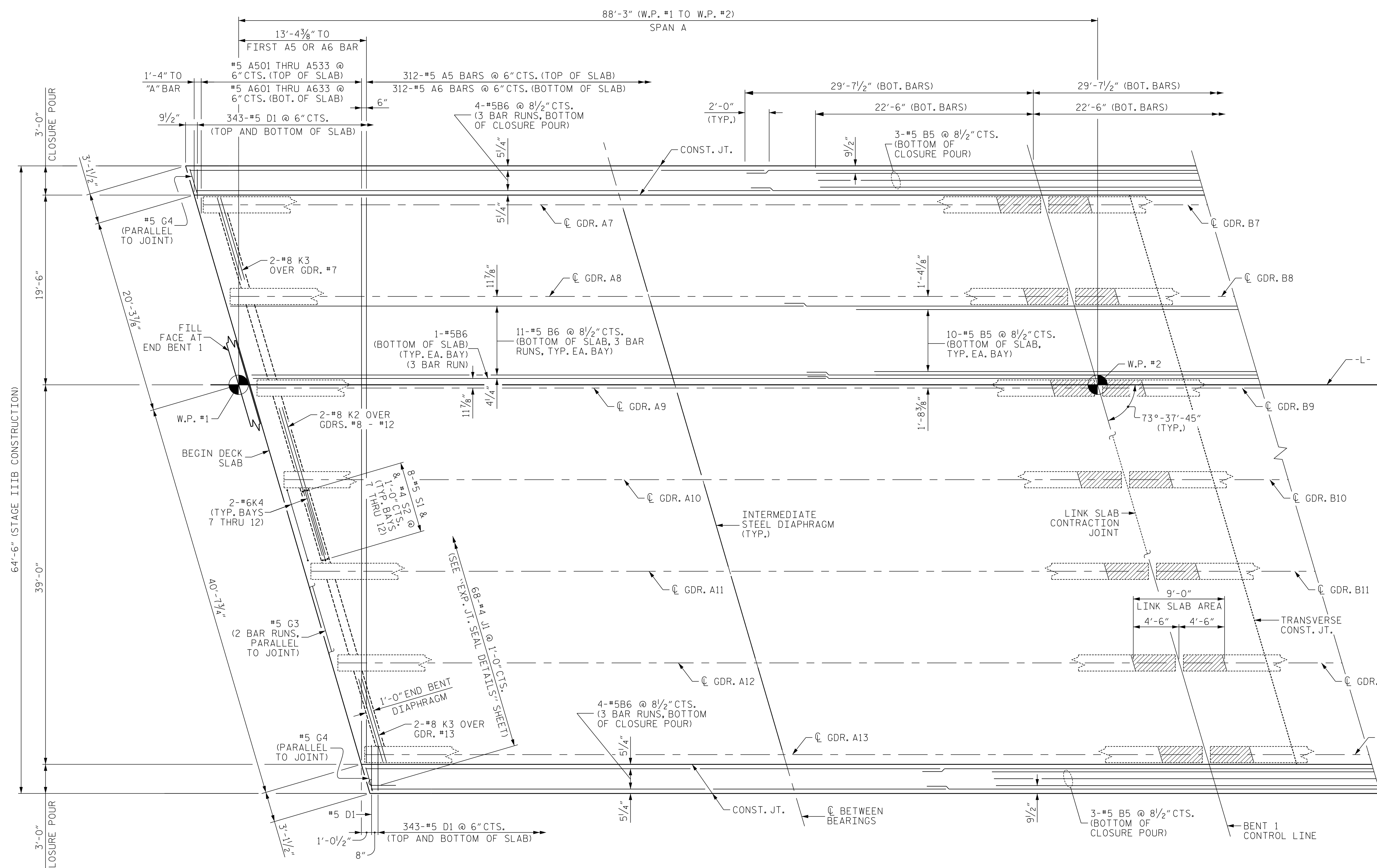


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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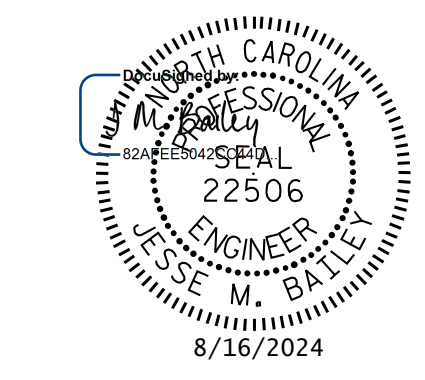
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 DES. EGR. OF RECORD: JMB
 DATE: 01/24



PLAN OF SPAN A - STAGE IIIB CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
 FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE III",
 SHEETS 3 OF 4, AND 4 OF 4.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 5 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A
 STAGE IIIB

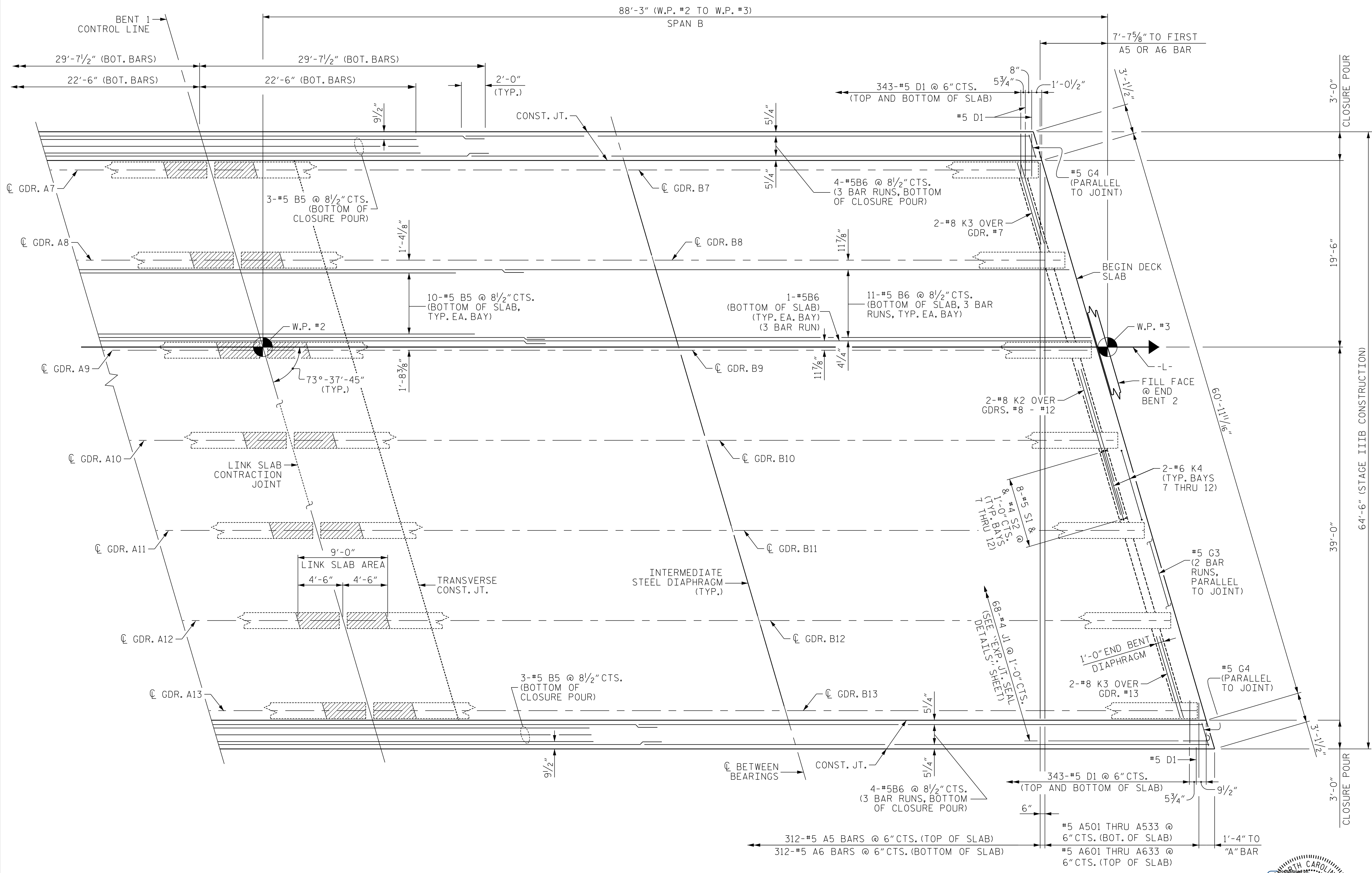
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
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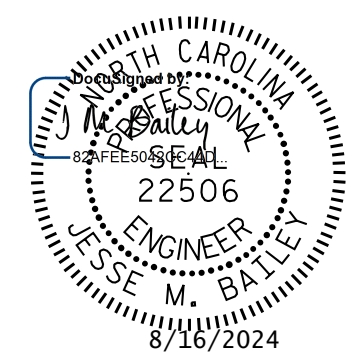
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 DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF SPAN B - STAGE IIIB CONSTRUCTION

ONLY BOTTOM MAT OF "B" BARS ARE SHOWN HERE.
 FOR TOP MAT OF "B" BARS, SEE "TOP B-BAR LAYOUT - STAGE III",
 SHEETS 3 OF 4 AND 4 OF 4.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 6 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B
 STAGE IIIB

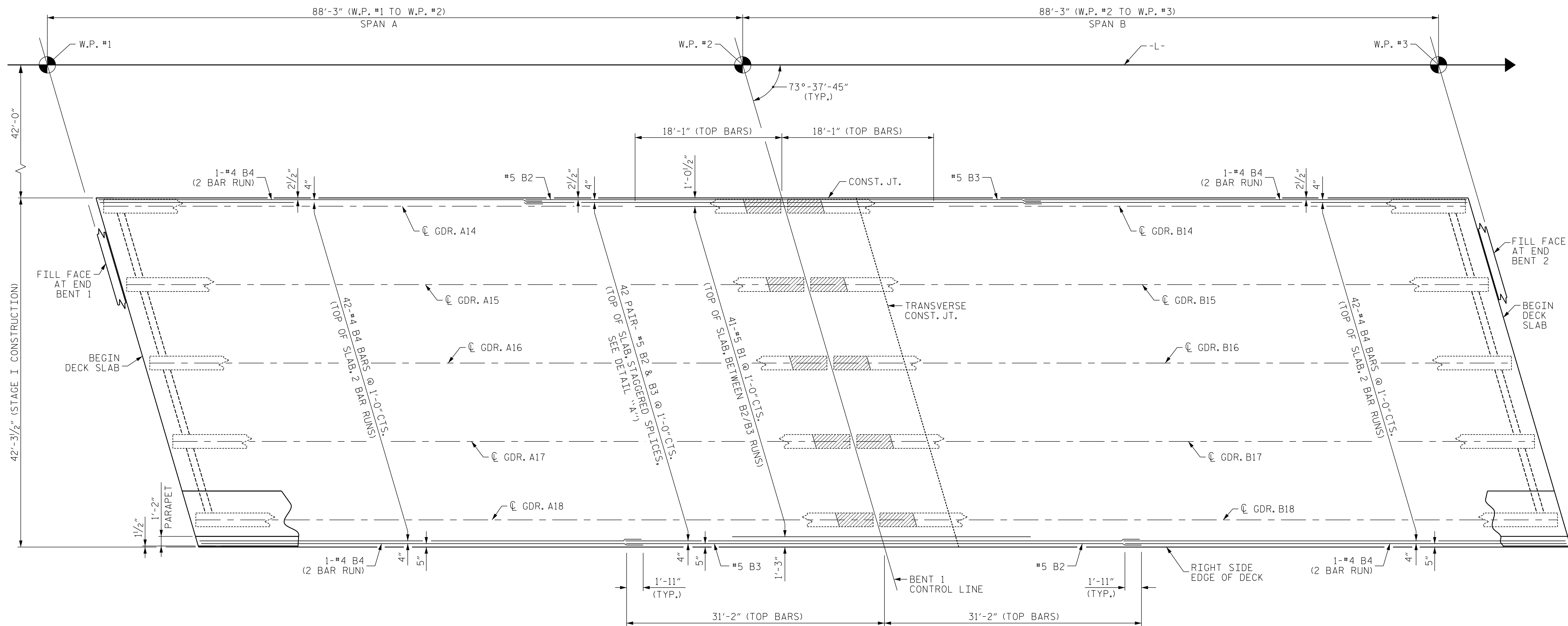
**DOCUMENT NOT CONSIDERED FINAL
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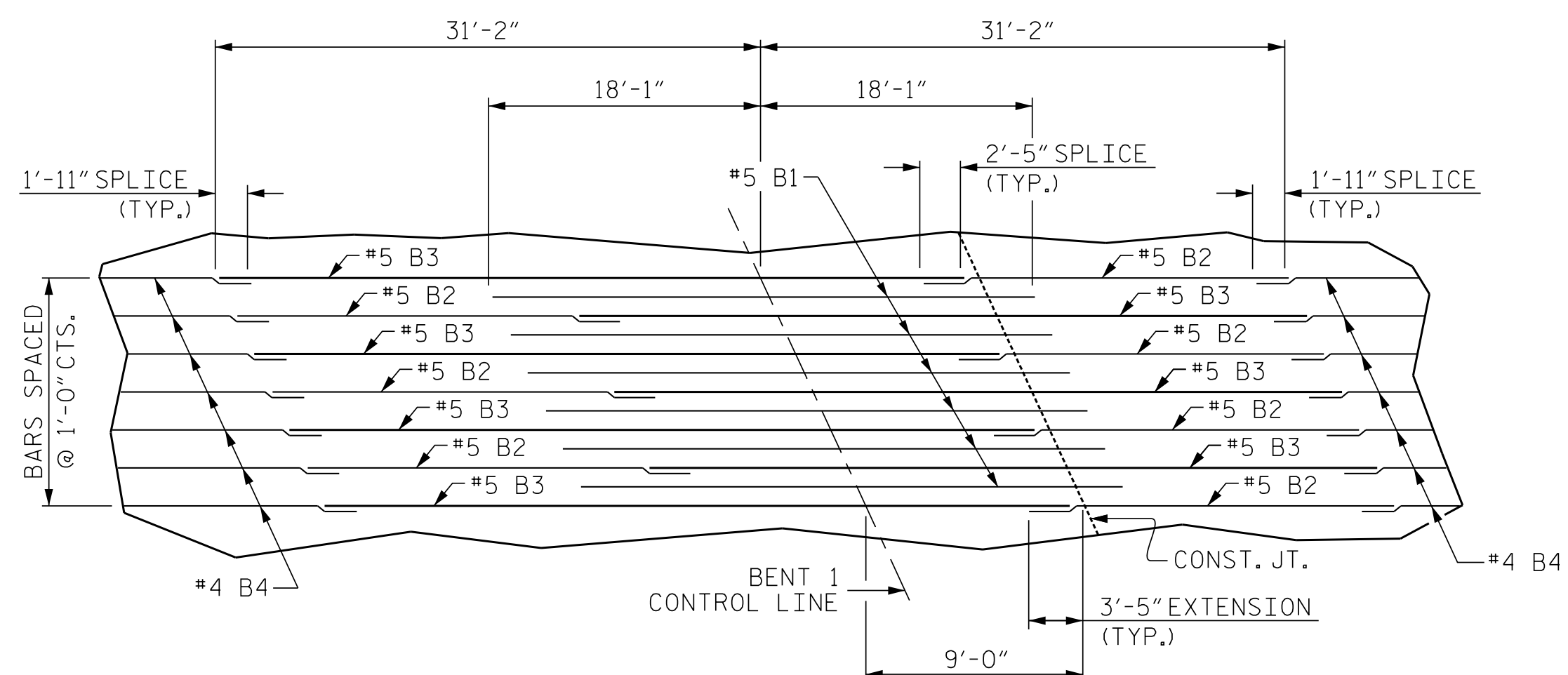
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 DES. EGR. OF RECORD: JMB DATE: 01/24



TOP "B" BARS - STAGE I CONSTRUCTION

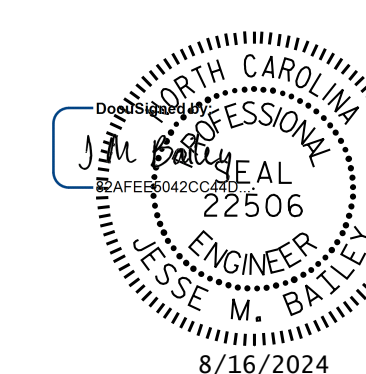
FOR LAYOUT OF #5 D1 BARS LOCATED IN THE TOP AND BOTTOM SLAB OF THE CLOSURE POUR, SEE PLAN OF SPAN SHEETS FOR STAGE I AND "TYPICAL SECTION CLOSURE POUR".



DETAIL "A"

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-

SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TOP B-BAR LAYOUT
 STAGE I

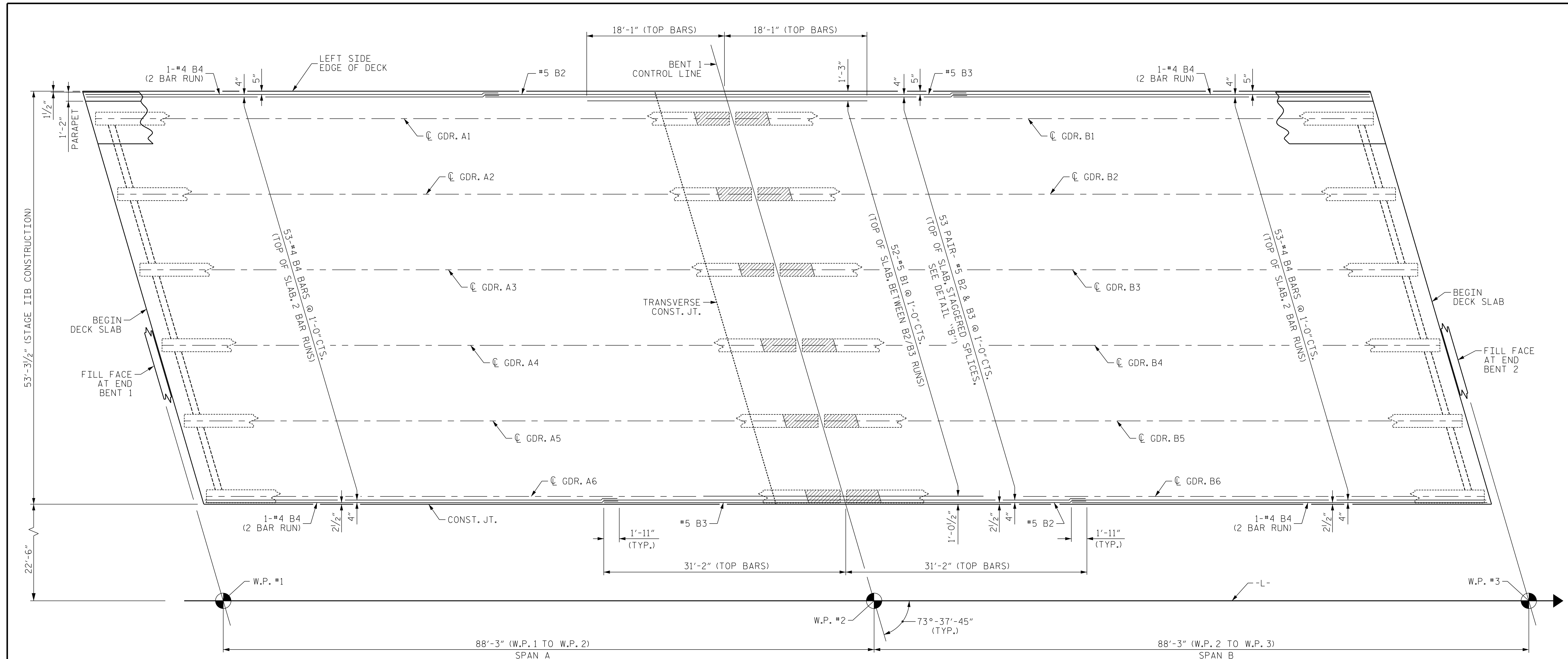
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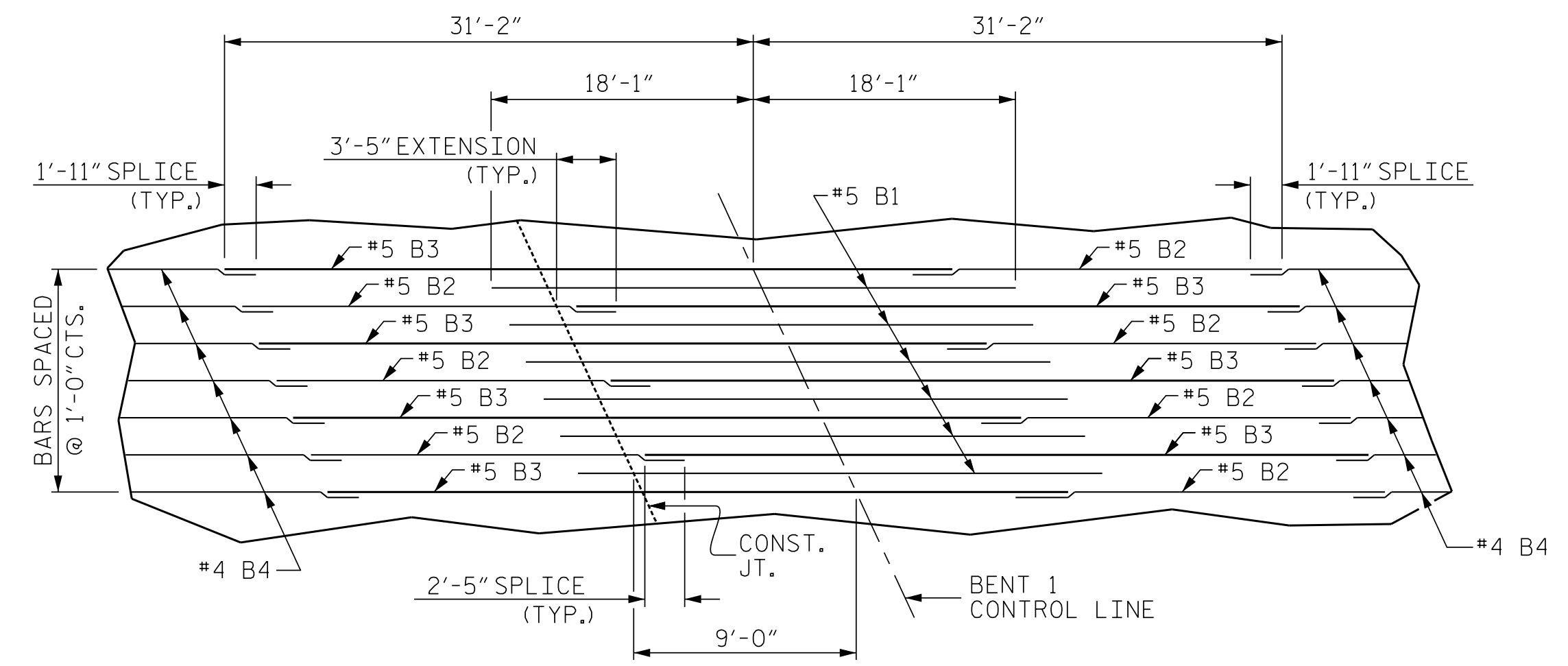
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			72

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 DATE: 01/24
 TIME: 1:30/2024



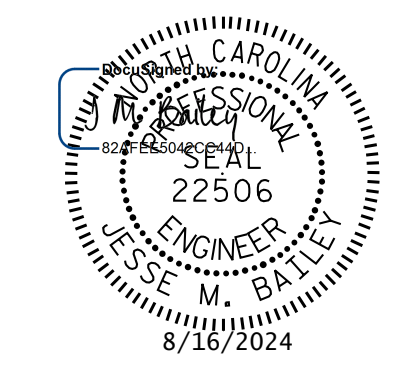
TOP "B" BARS - STAGE IIB CONSTRUCTION

FOR LAYOUT OF #5 D1 BARS LOCATED IN THE TOP AND BOTTOM SLAB OF THE CLOSURE POUR, SEE PLAN OF SPAN SHEETS FOR STAGE IIB AND "TYPICAL SECTION CLOSURE POUR".



DETAIL "B"

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TOP B-BAR LAYOUT
 STAGE IIB

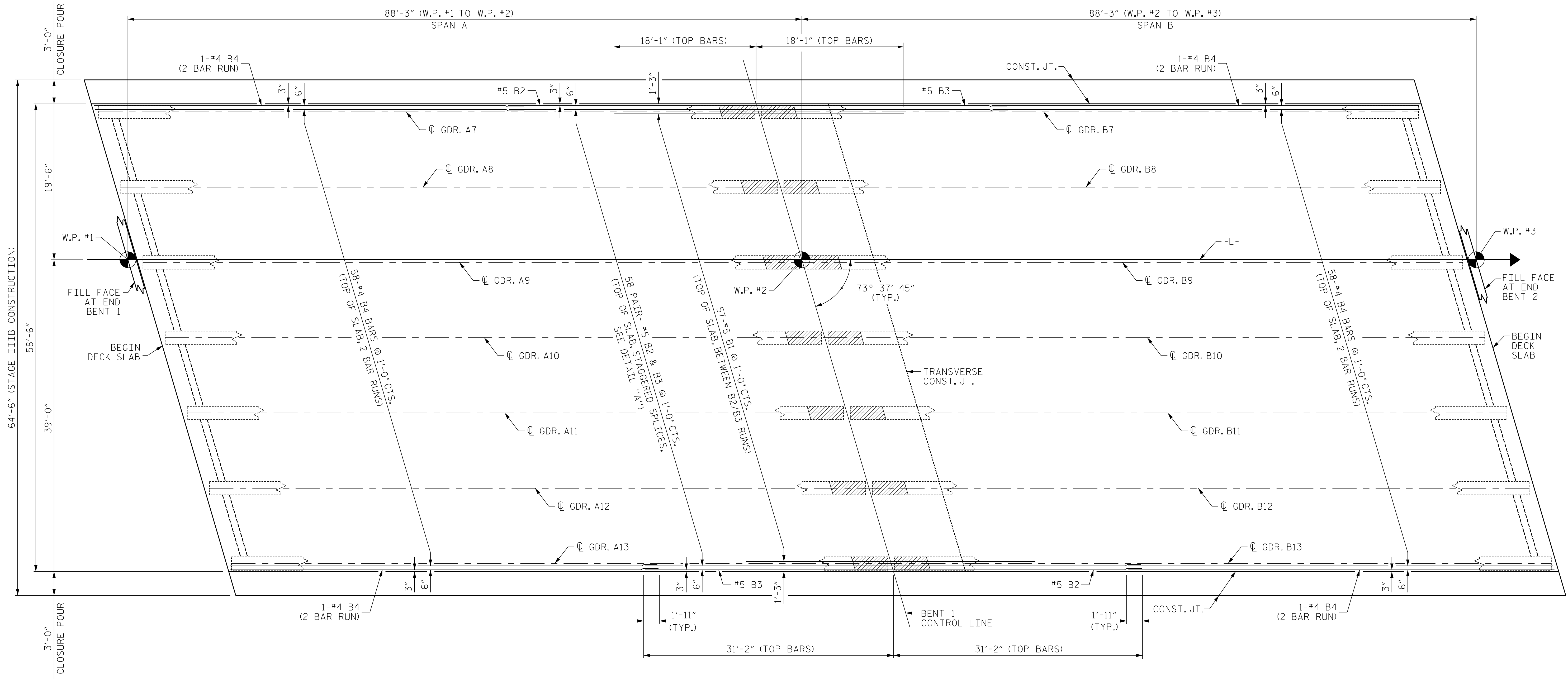
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

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REVISIONS						SHEET NO. S2-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

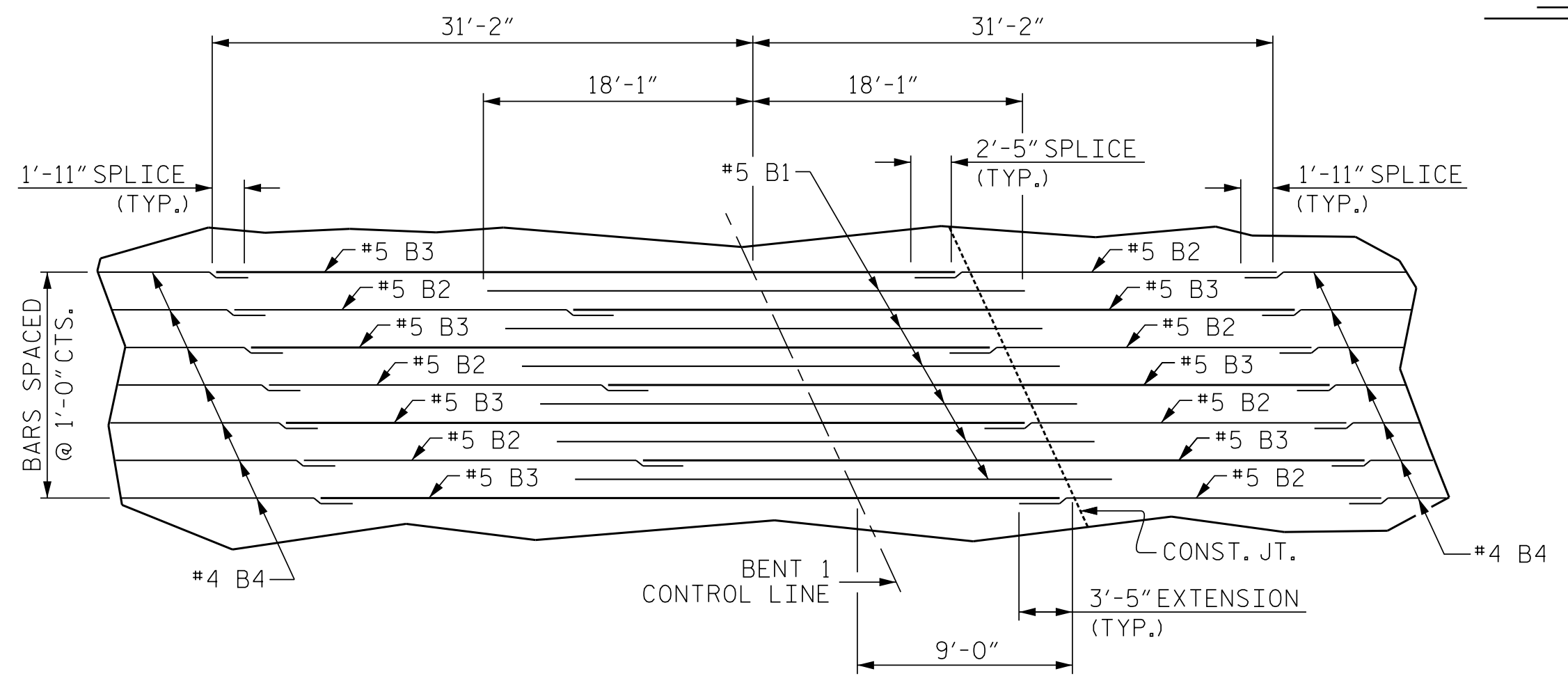
15/02/2024 09:20:17 AM I:\5_003_L-5717 - Replacement CAD Structures\CAD 3-31-23\401_045_L-5717_SML_BB02_S24.dgn
 DWG: 17/30/2024
 TIME: 17:30:2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



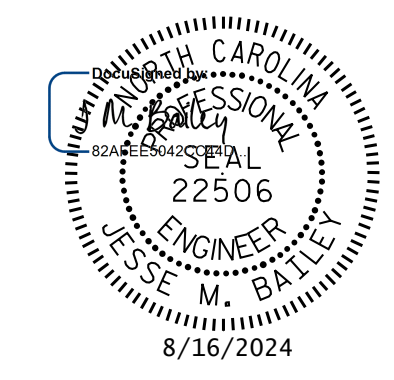
TOP "B" BARS - STAGE IIIB CONSTRUCTION

FOR LAYOUT OF #5 D1 BARS LOCATED IN THE TOP AND BOTTOM SLAB OF THE CLOSURE POUR, SEE PLAN OF SPAN SHEETS FOR STAGE IIIB AND "TYPICAL SECTION CLOSURE POUR".



DETAIL "A"

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TOP B-BAR LAYOUT
 STAGE IIIB

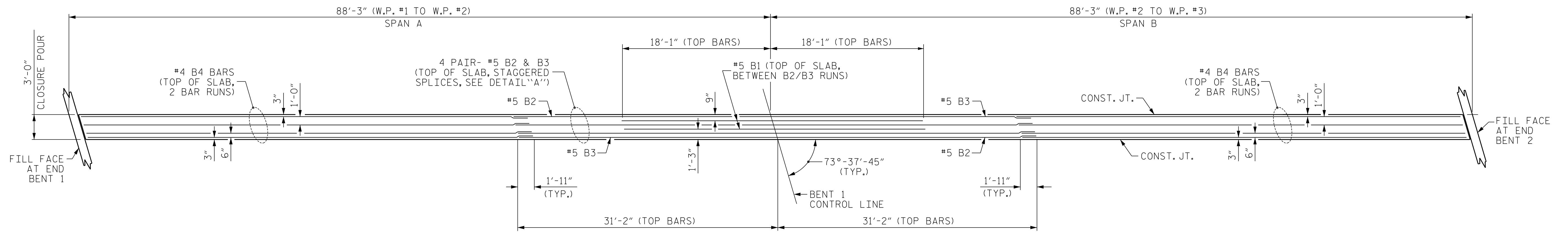
**DOCUMENT NOT CONSIDERED FINAL
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REVISIONS						SHEET NO. S2-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

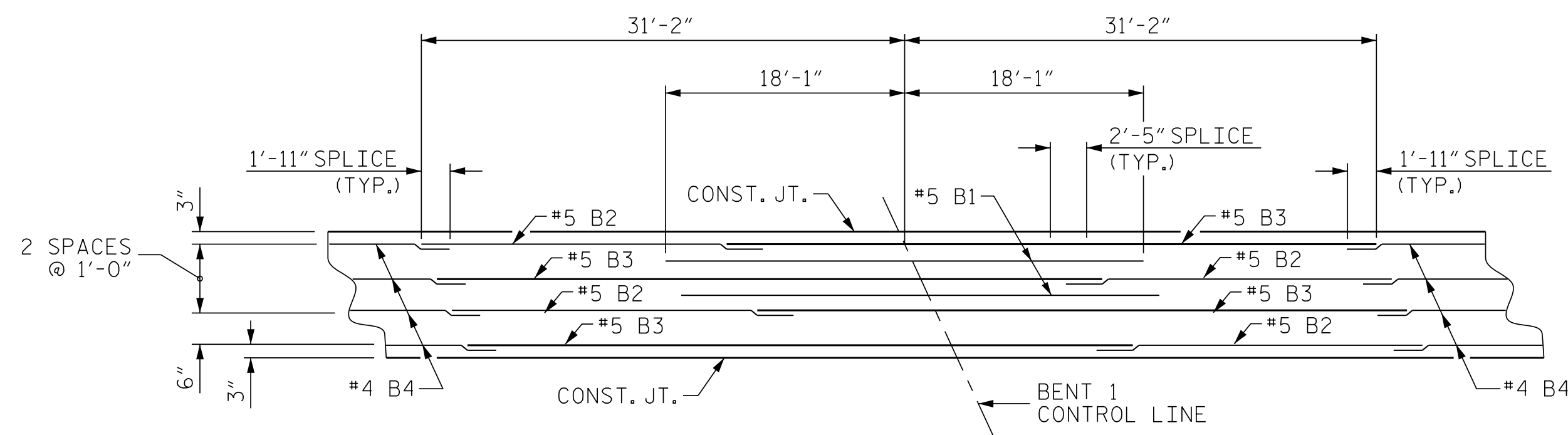
WDC/CFW 01/20/24 11:45 AM 5:00 AM - Replacement CAD Structures CAD 3-31-23 V01.DWG - SML_BB03_S25.dgn
 TIME: 1:30:2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: CFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



TOP "B" BARS - CLOSURE POUR - STAGE IIIB CONSTRUCTION

(2 REQUIRED)



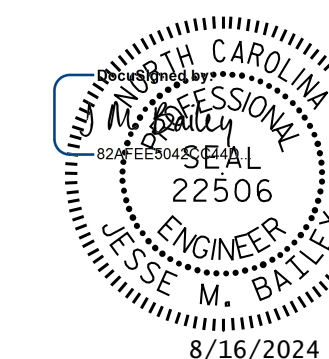
DETAIL "A"

PROJECT NO. I-5717

IREDELL COUNTY

STATION: 733+32.53 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TOP B-BAR LAYOUT
CLOSURE POURS
STAGE IIIB

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



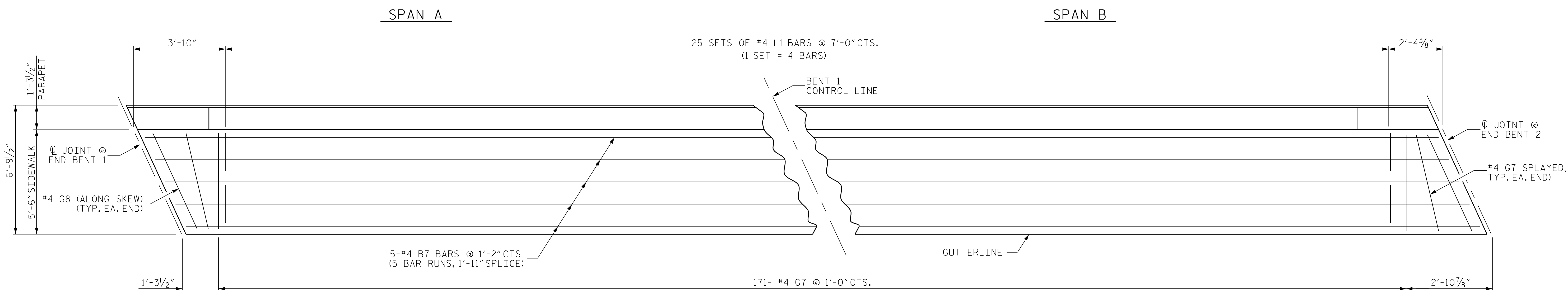
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-26
1			3			TOTAL SHEETS
2			4			72

WDC:DWG 01/20/24 15:00:15 003_L1-5717 - Replacement NCADDS Structures CAD 3-31-23 V01_049_L1-5717_SKU_LB04_S26.dgn
 TIME: 4/30/2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

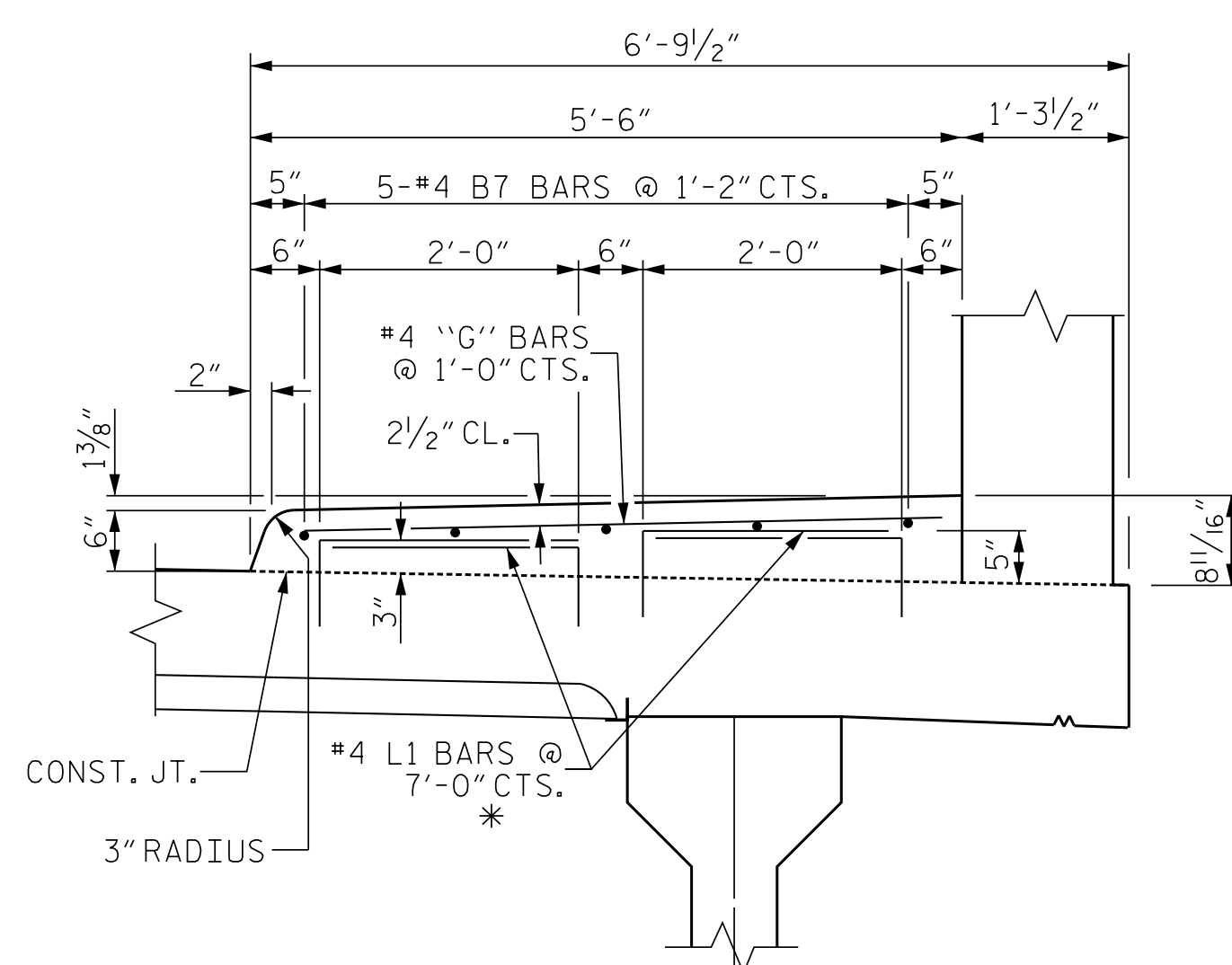
NOTES

- SIDEWALK SHALL BE POURED IN STAGE IV.
- THE JOINT IN THE DECK AT THE END BENTS SHALL BE FORMED PRIOR TO THE CASTING OF THE SIDEWALKS.
- ALL REINFORCING STEEL IN SIDEWALKS SHALL BE EPOXY COATED.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- FOR SIDEWALK DETAILS ON APPROACH SLABS, SEE BRIDGE APPROACH SLAB SHEETS.
- FOR SIDEWALK REINFORCING STEEL AND CONCRETE QUANTITIES, SEE SUPERSTRUCTURE "BILL OF MATERIAL".
- NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "EXPANSION JOINT SEALS".



PLAN OF SIDEWALK - STAGE IV

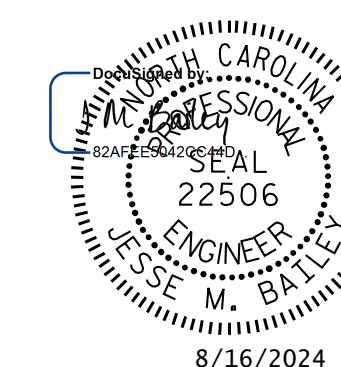
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



SECTION THRU SIDEWALK

* L1 BARS SHALL BE DRILLED AND GROUTED IN STAGE IV.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE SIDEWALK DETAILS STAGE IV

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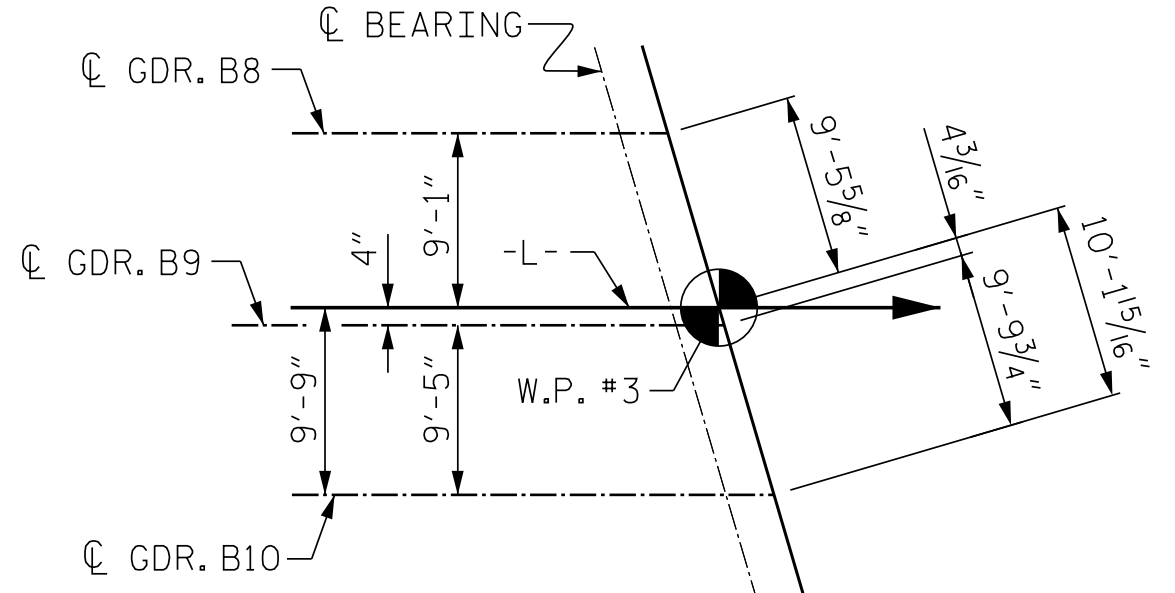
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			72
2			4			

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

SOLE PLATE TABLE

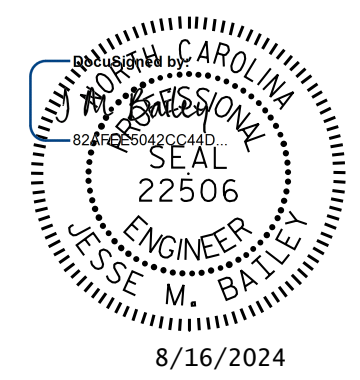
GIRDER #	END BENT 1		INTERIOR BENT			END BENT 2	
	TYPE	ORIENTATION	NEAR	FAR	ORIENTATION	TYPE	ORIENTATION
GIRDER 1	P1		P3	P3		P5	
GIRDER 2	P1		P3	P3		P5	
GIRDER 3	P1		P3	P3		P5	
GIRDER 4	P1		P3	P3		P5	
GIRDER 5	P2		P4	P4		P6	
GIRDER 6	P2		P4	P4		P6	
GIRDER 7	P2		P4	P4		P6	
GIRDER 8	P2		P4	P4		P6	
GIRDER 9	P2		P4	P4		P6	
GIRDER 10	P2		P4	P4		P6	
GIRDER 11	P2		P4	P4		P6	
GIRDER 12	P2		P4	P4		P6	
GIRDER 13	P2		P4	P4		P6	
GIRDER 14	P2		P4	P4		P6	
GIRDER 15	P1		P3	P3		P5	
GIRDER 16	P1		P3	P3		P5	
GIRDER 17	P1		P3	P3		P5	
GIRDER 18	P1		P3	P3		P5	

NOTE:
FOR INTERMEDIATE DIAPHRAGM DETAILS,
SEE "INTERMEDIATE STEEL DIAPHRAGM" SHEET.



DETAIL "A"

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-

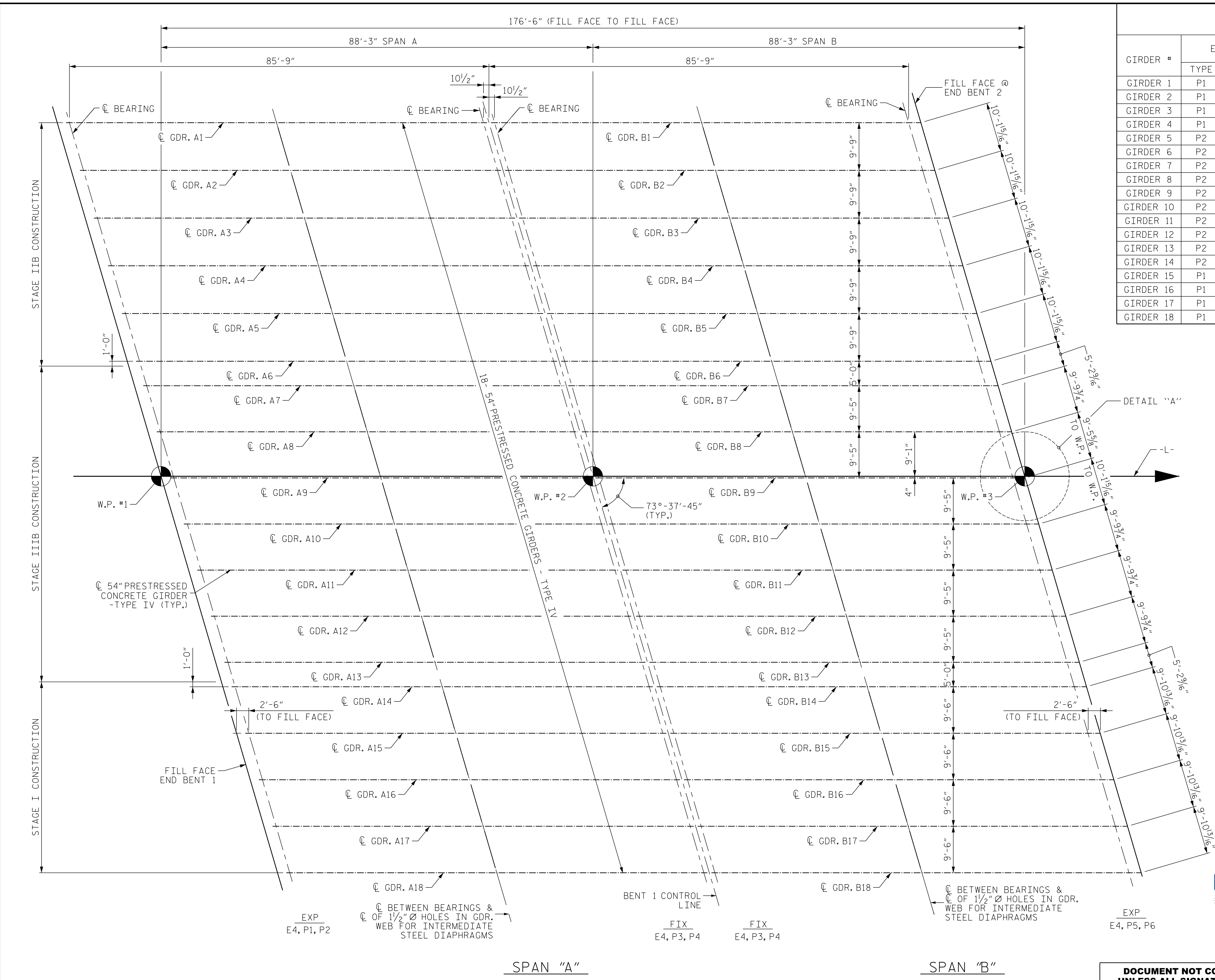


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
FRAMING PLAN**

**DOCUMENT NOT CONSIDERED FINAL
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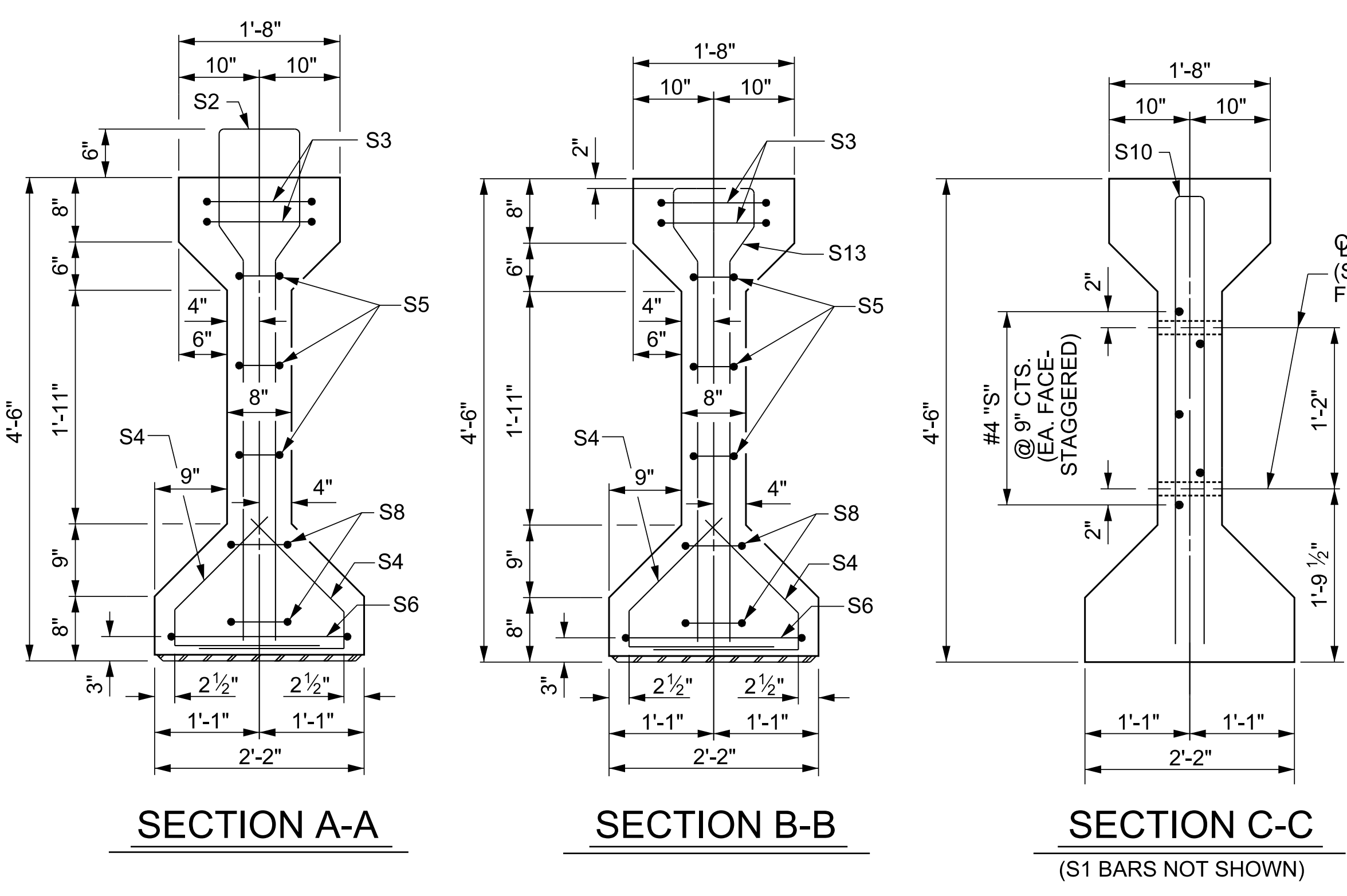
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-29	
1			3			TOTAL SHEETS	
2			4			72	



DWN. BY: WDC DATE: 01/24
CHKD. BY: GFW DATE: 01/24
DES. EGR. OF RECORD: JMB DATE: 01/24

FRAMING PLAN

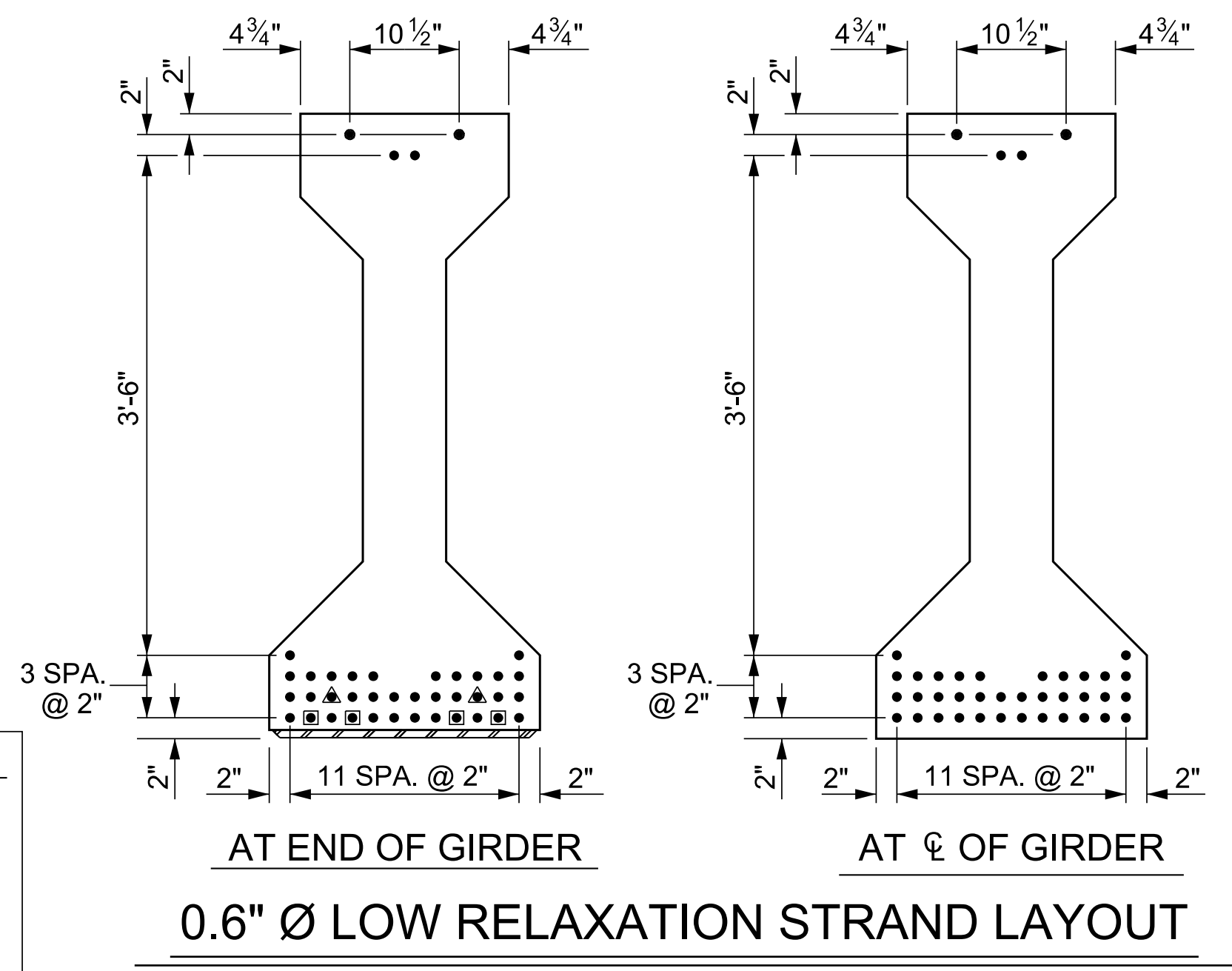
WDC/JMB
 25K/10/2017/1/15_003_L1-5717 - Replacement CAD Structures CADD 3-31-23/401_055_L1-5717-SM/FPO_L2824q
 TIME: 4/30/2024



Ø 1 1/2" Ø FORMED HOLE
 (SEE FRAMING PLAN FOR LOCATION)

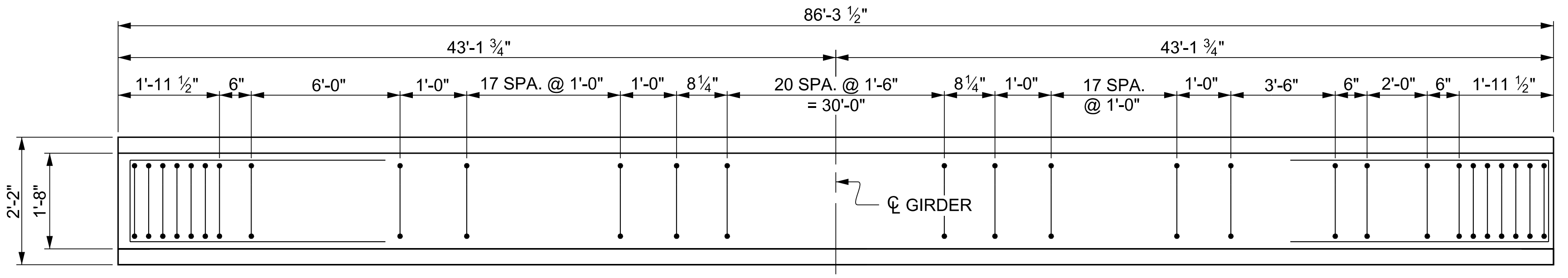
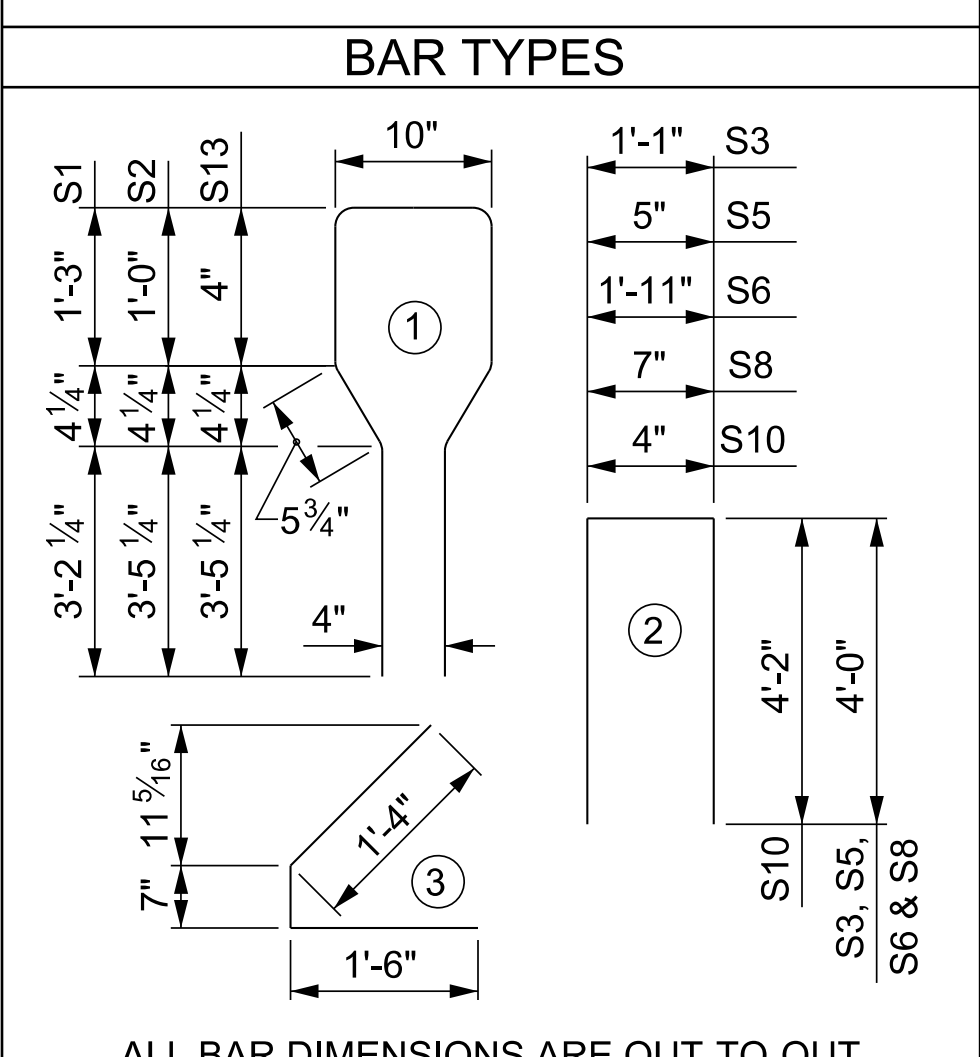
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER
- △ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



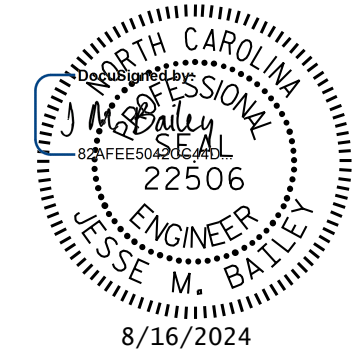
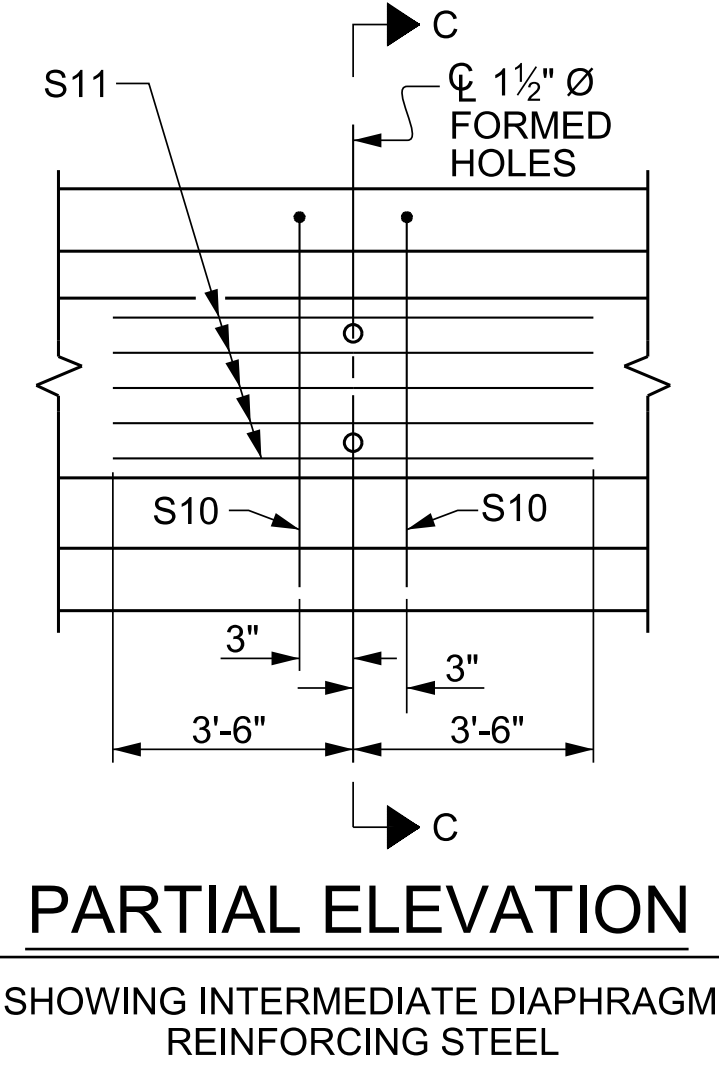
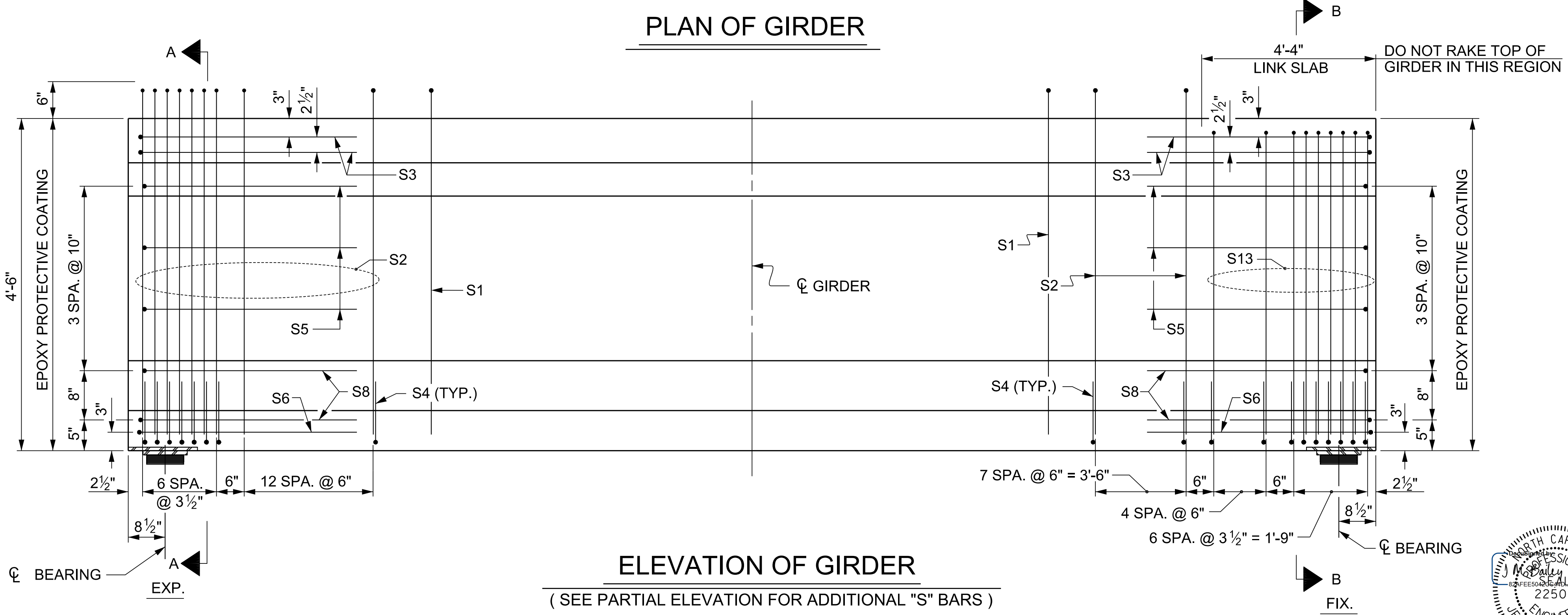
0.6"Ø L.R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	59	#4	1	10'-8"	420
S2	28	#6	1	10'-8"	449
S3	4	#4	2	9'-1"	24
S4	80	#4	3	3'-5"	183
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	12	#6	1	9'-4"	168



QUANTITIES FOR ONE GIRDER			
GDRS. 1 THRU 18	REINFORCING STEEL LB.	7000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
		1355	17.5

GIRDERS REQUIRED			
STAGE	NUMBER	LENGTH	TOTAL LENGTH
STAGE I	10	86'-3 1/2"	862'-11"
STAGE II B	12	86'-3 1/2"	1035'-6"
STAGE III	14	86'-3 1/2"	1208'-1"
TOTAL	36		3106'-6"



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PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER - LINK SLAB SPAN A & B

REVISIONS						SHEET NO. S2-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

WDC/CFW
 DATE: 01/24
 DATE: 01/24
 DATE: 01/24
 DRAWN BY: BNB 09/21
 CHECKED BY: AAI 09/21
 TIME: 4:30/2024

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,900 PSI.

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

THE TOP SURFACE OF THE GIRDER 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.

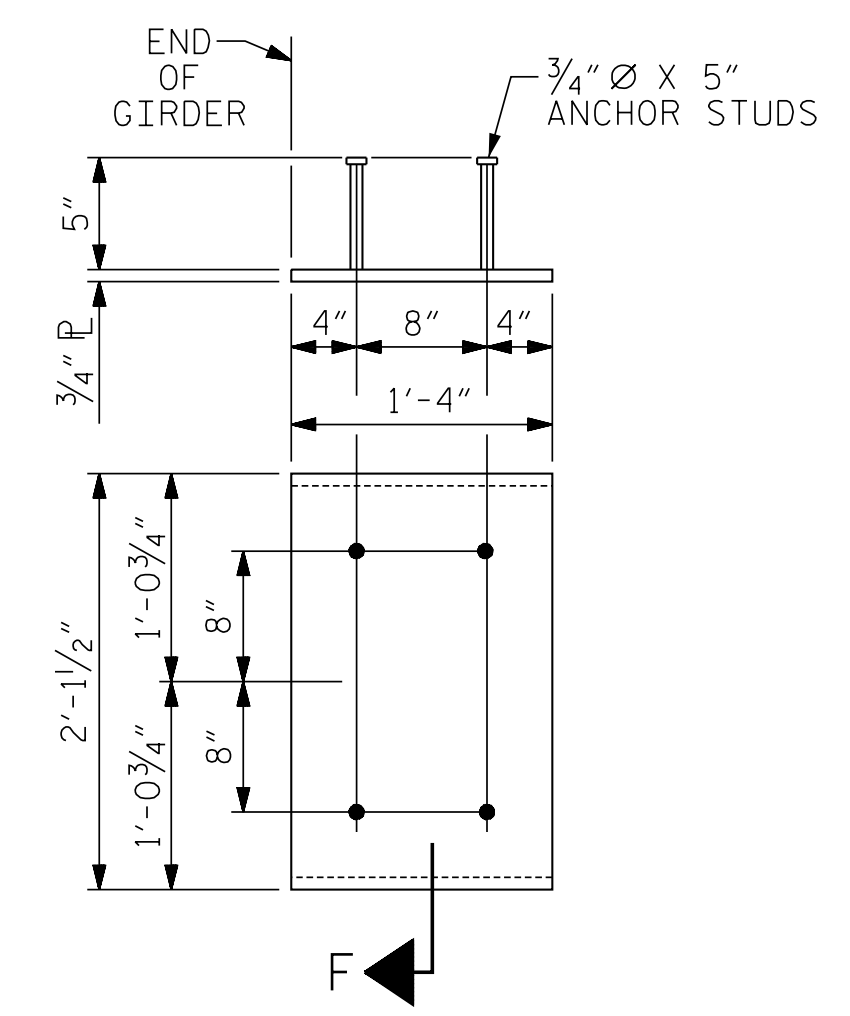
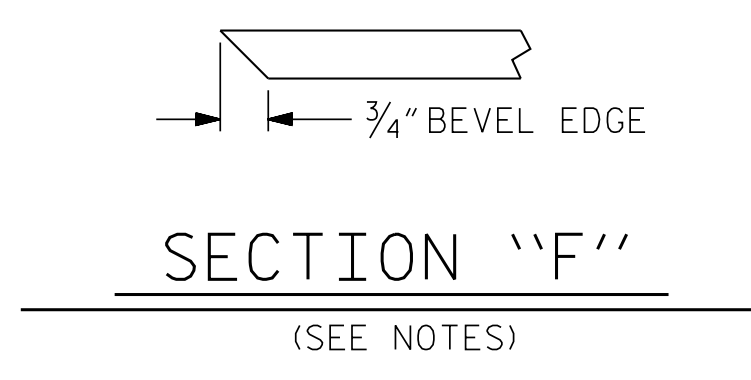
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6" Ø LOW RELAXATION	SPAN A OR B - GIRDERS 1 THRU 5, 8 THRU 12, AND 15 THRU 18																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER IN PLACE) ↑	0	0.032	0.063	0.093	0.120	0.144	0.164	0.180	0.192	0.199	0.201	0.199	0.192	0.180	0.164	0.144	0.120	0.093	0.063	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.031	0.046	0.061	0.073	0.084	0.092	0.099	0.102	0.104	0.102	0.099	0.092	0.084	0.073	0.061	0.046	0.031	0.016	0
FINAL CAMBER ↑	0	3/16	3/8	9/16	11/16	7/8	15/16	1 1/16	1 1/8	1 3/16	1 3/16	1 3/16	1 1/8	1 1/16	15/16	7/8	11/16	9/16	3/8	3/16	0

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

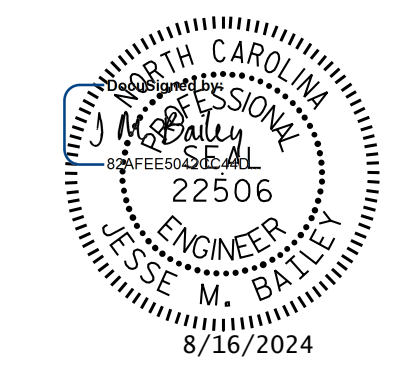
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6" Ø LOW RELAXATION	SPAN A OR B - GIRDERS 6, 7, 13, AND 14																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER IN PLACE) ↑	0	0.032	0.063	0.093	0.120	0.144	0.164	0.180	0.192	0.199	0.201	0.199	0.192	0.180	0.164	0.144	0.120	0.093	0.063	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.012	0.024	0.036	0.047	0.056	0.065	0.071	0.077	0.079	0.081	0.079	0.077	0.071	0.065	0.056	0.047	0.036	0.024	0.012	0
FINAL CAMBER ↑	0	1/4	1/2	11/16	7/8	1 1/16	1 3/16	1 5/16	1 3/8	1 7/16	1 7/16	1 7/16	1 3/8	1 5/16	1 3/16	1 1/16	7/8	11/16	1/2	1/4	0

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



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

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER DETAILS & DEAD LOAD DEFLECTIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
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 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-31
1			3			TOTAL SHEETS
2			4			72

WDC/CFW
 DATE: 01/24
 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: JMB
 DATE: 01/24

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.

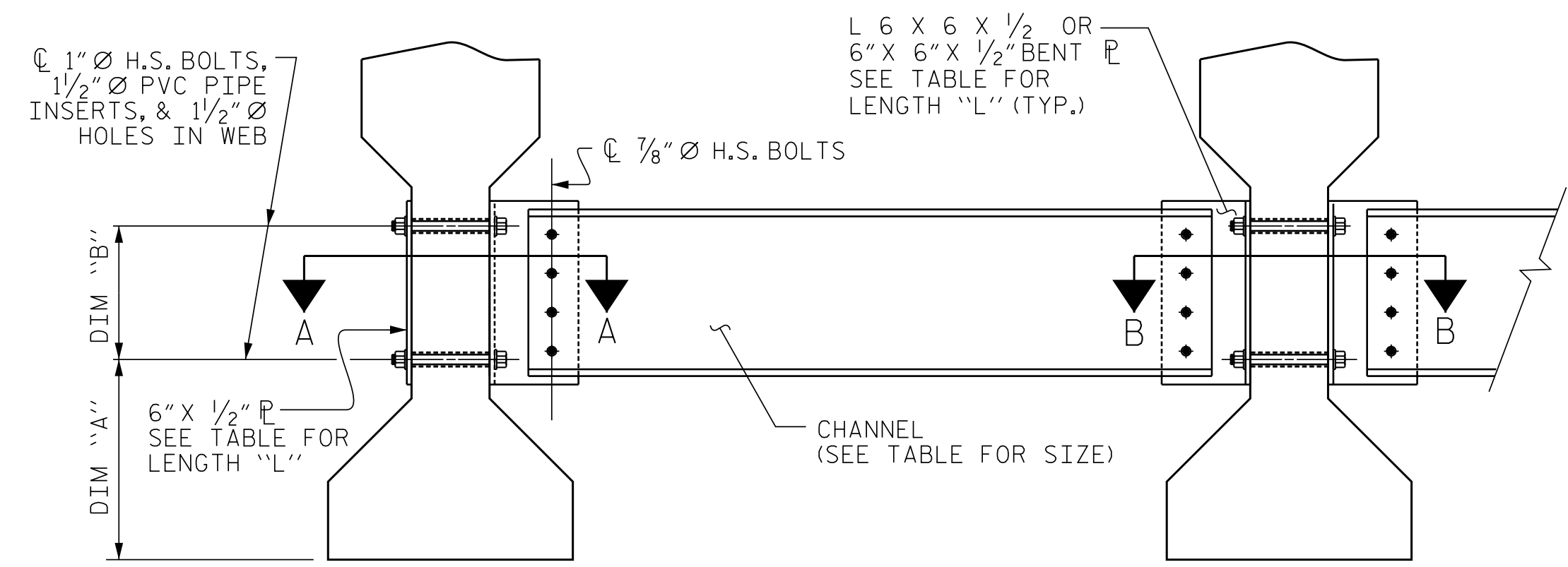
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

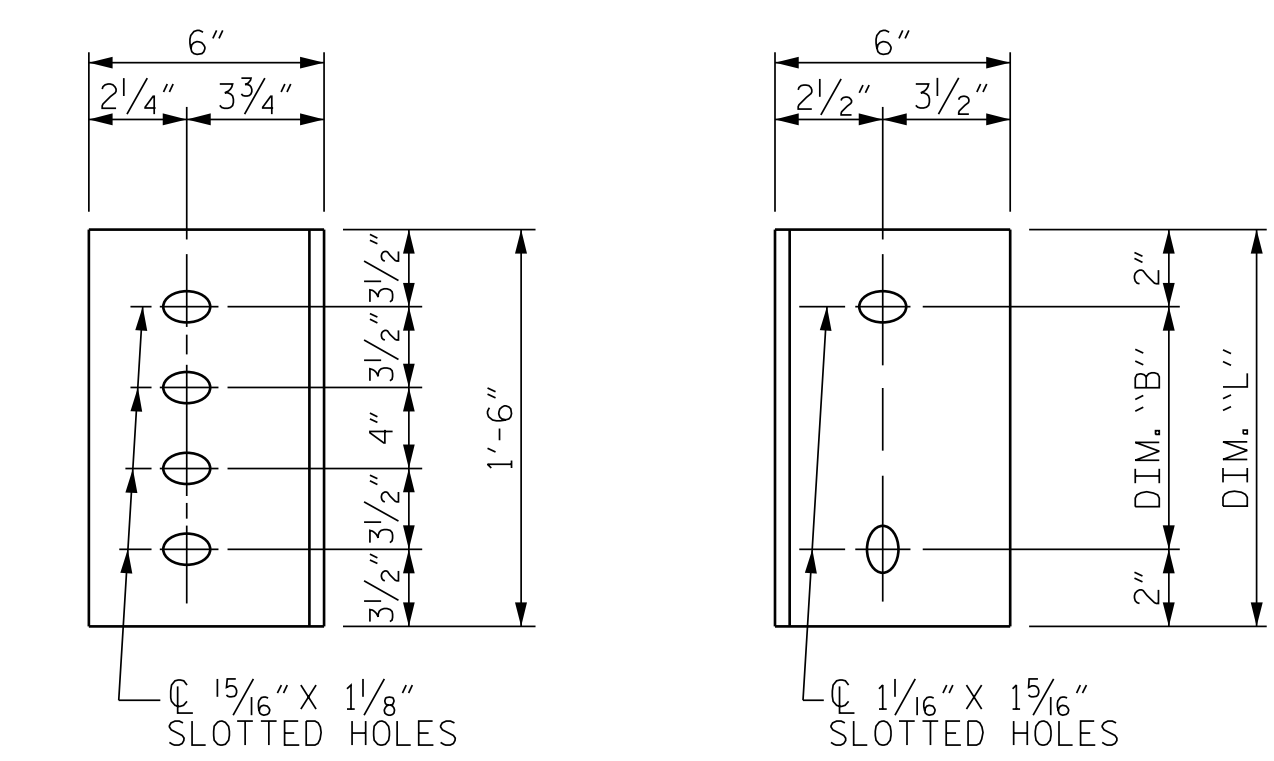
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

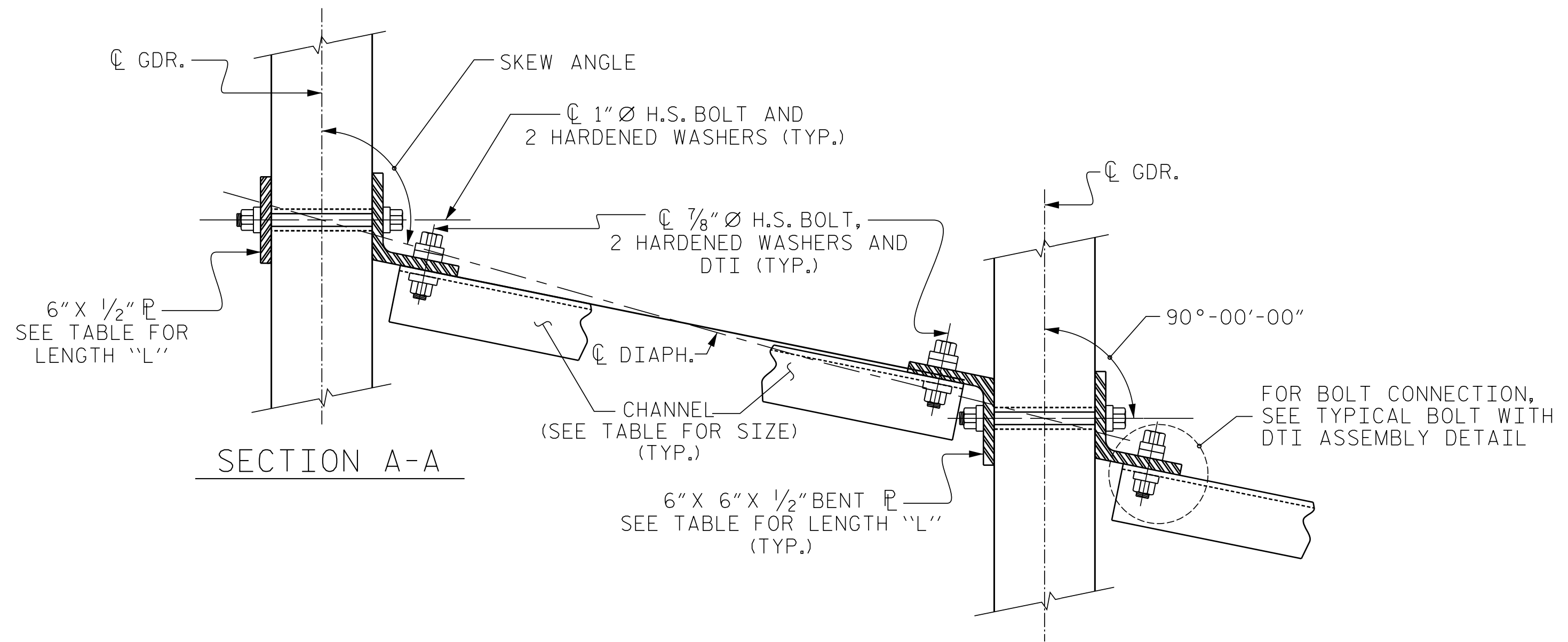
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS



SECTION A-A SECTION B-B
CONNECTION DETAILS

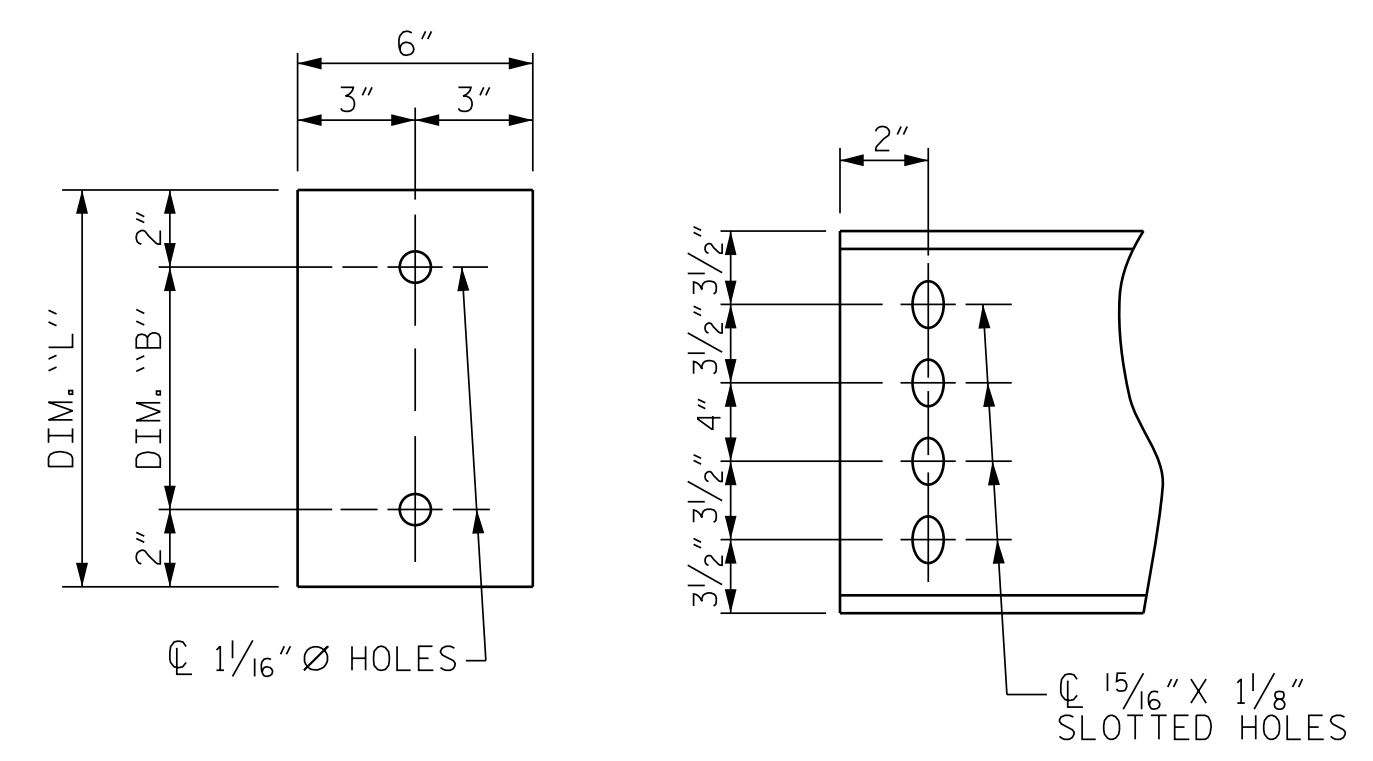
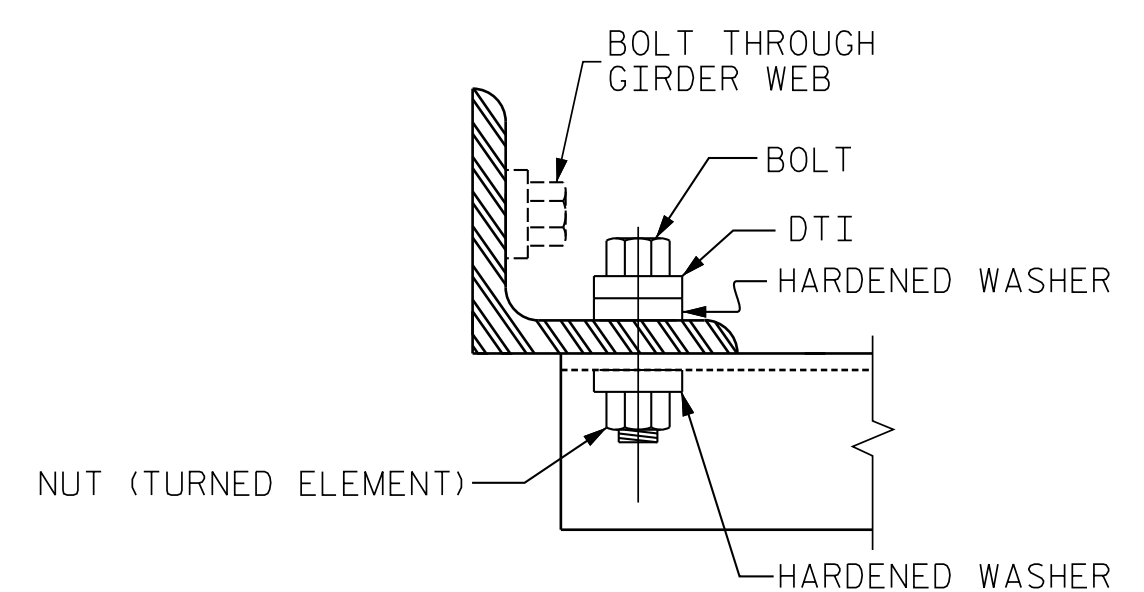


PLATE DETAILS CHANNEL END

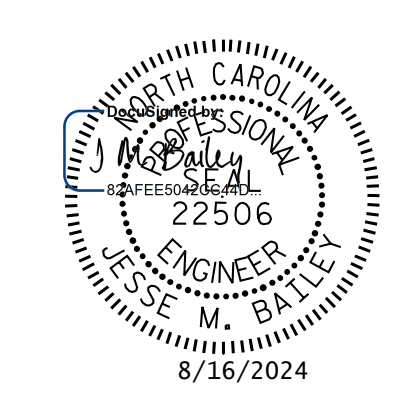


BOLT WITH DTI ASSEMBLY DETAIL

TABLE

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

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



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

DOCUMENT NOT CONSIDERED FINAL
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JM
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-32
1			3			TOTAL SHEETS
2			4			72

WDC/VCB/DBK 08/20/2024 15:00:32 - I-5717 - Replacement CAD Structures CA00 3-31-23 V01_06 L1-5717_SMI_LGDR3_S32.dgn
 TIME: 4:30:2024

DWN. BY: WDC	DATE: 01/24	DRAWN BY: TLA	6/05	REV. 5/1/06RRR	KMM/GM
CHKD. BY: GFW	DATE: 01/24	CHECKED BY: VC	6/05	REV. 10/1/11	MAA/GM
DES. EGR. OF RECORD: JMB	DATE: 01/24			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.

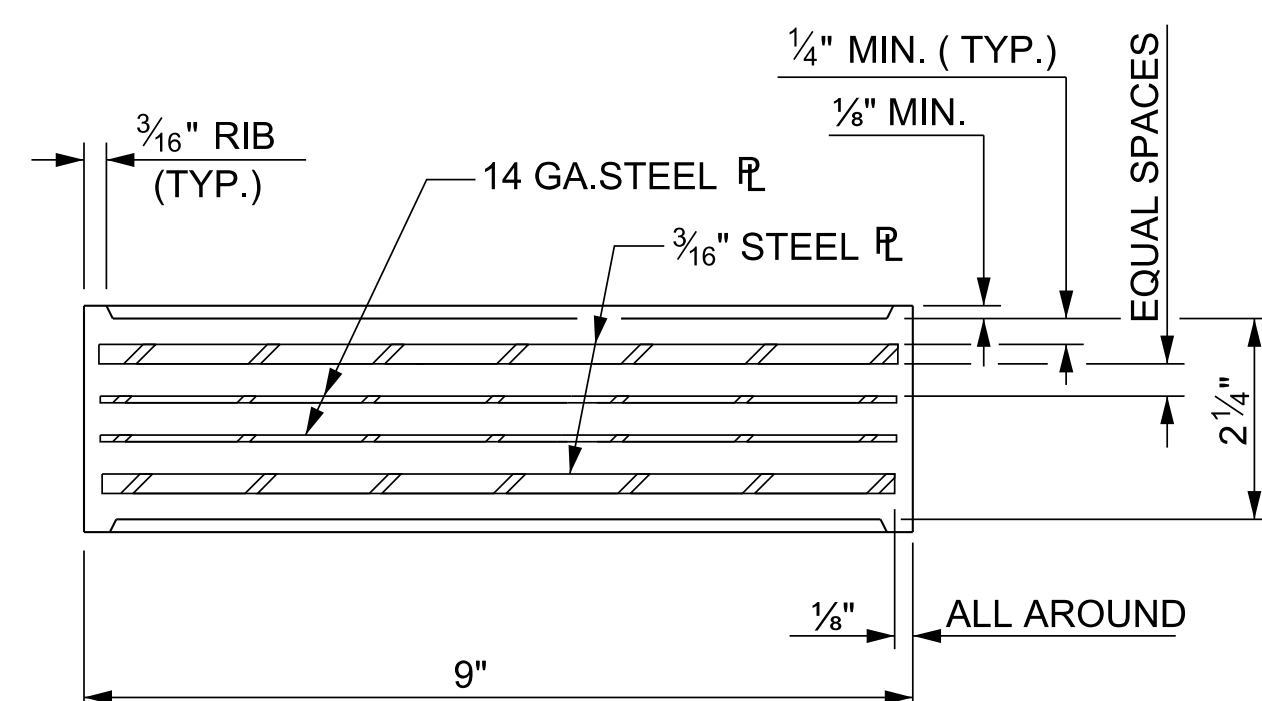
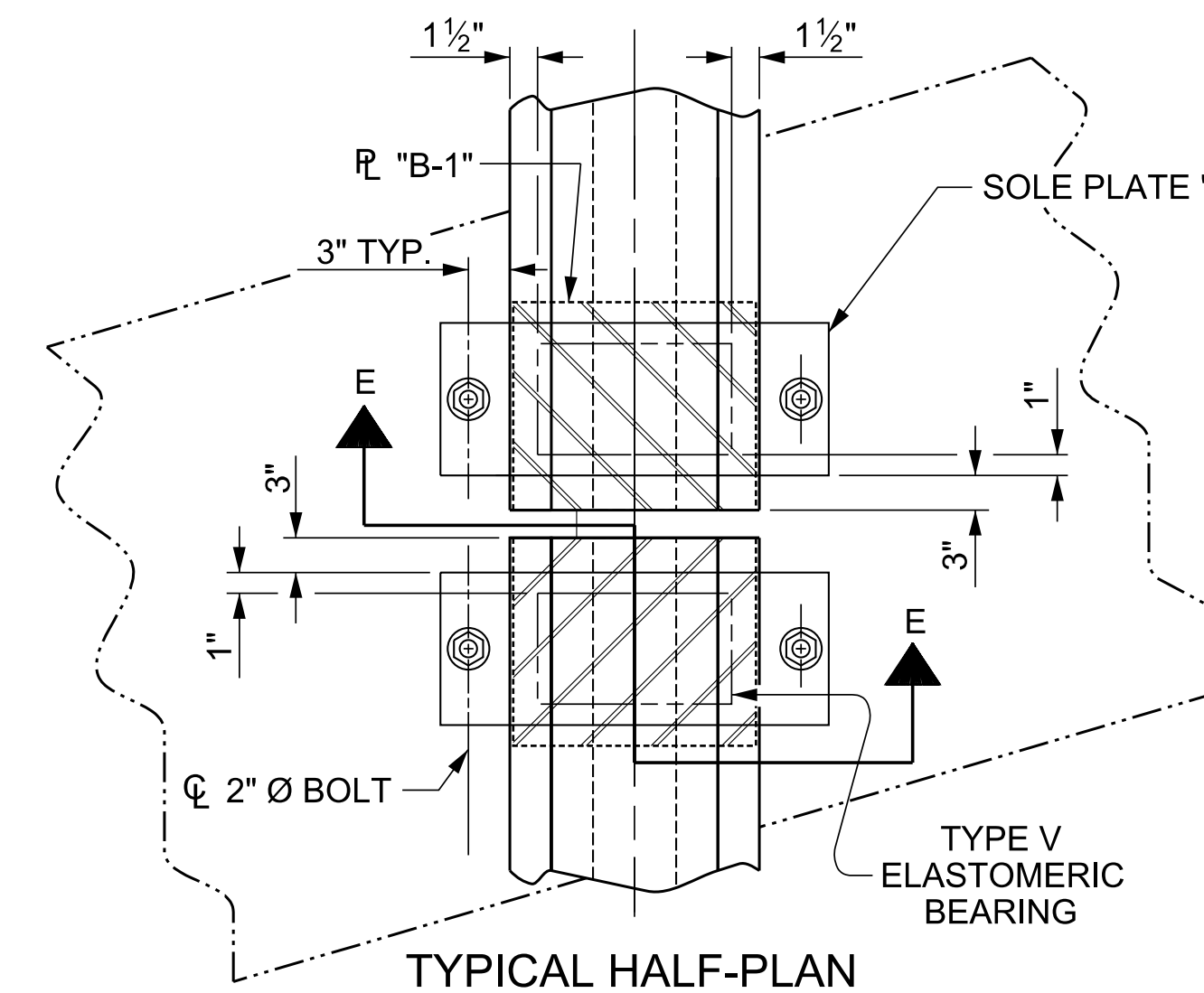
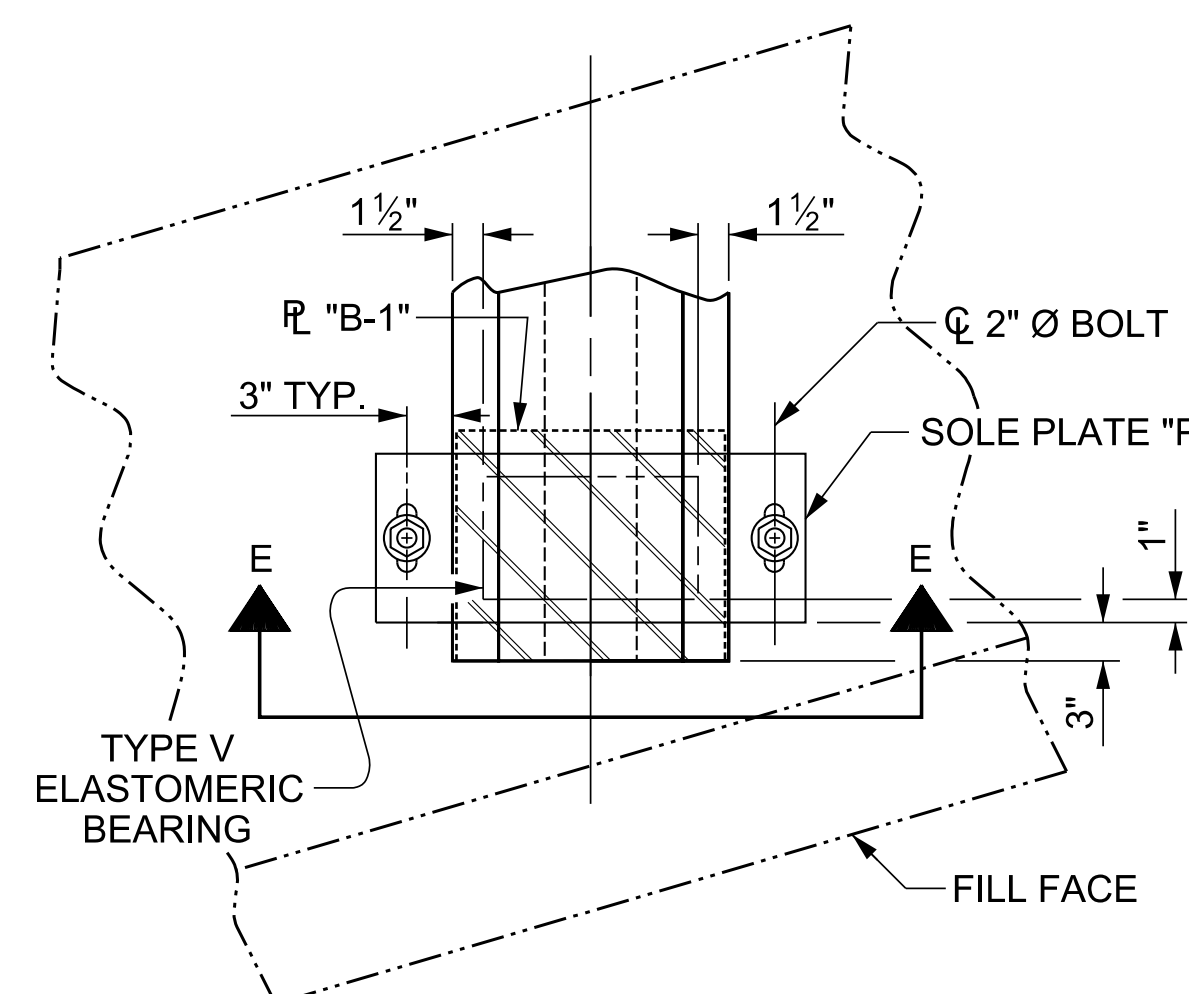
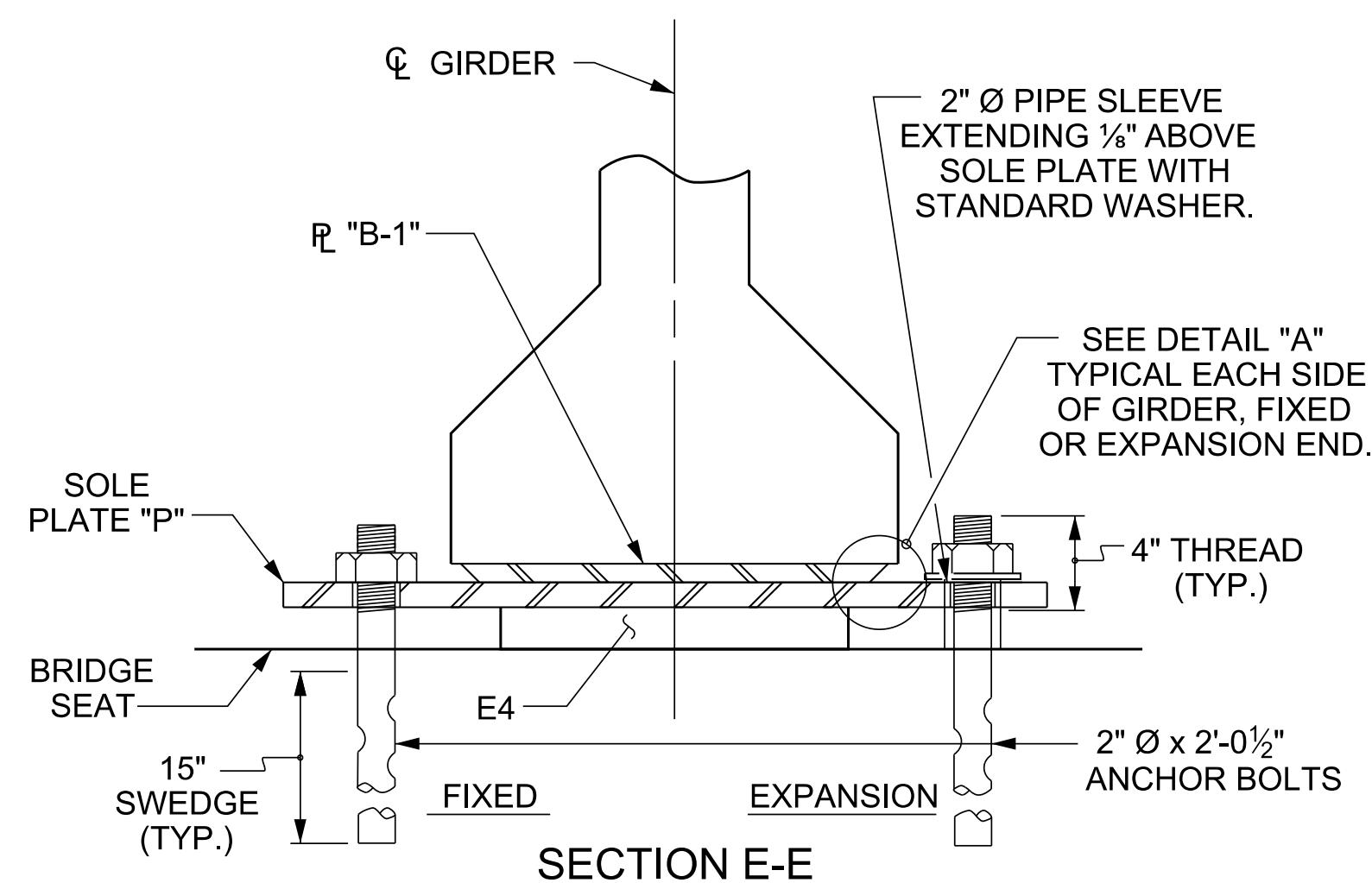
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

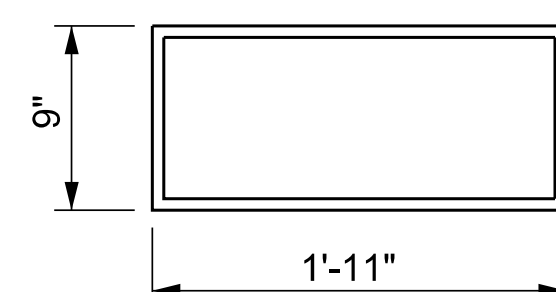
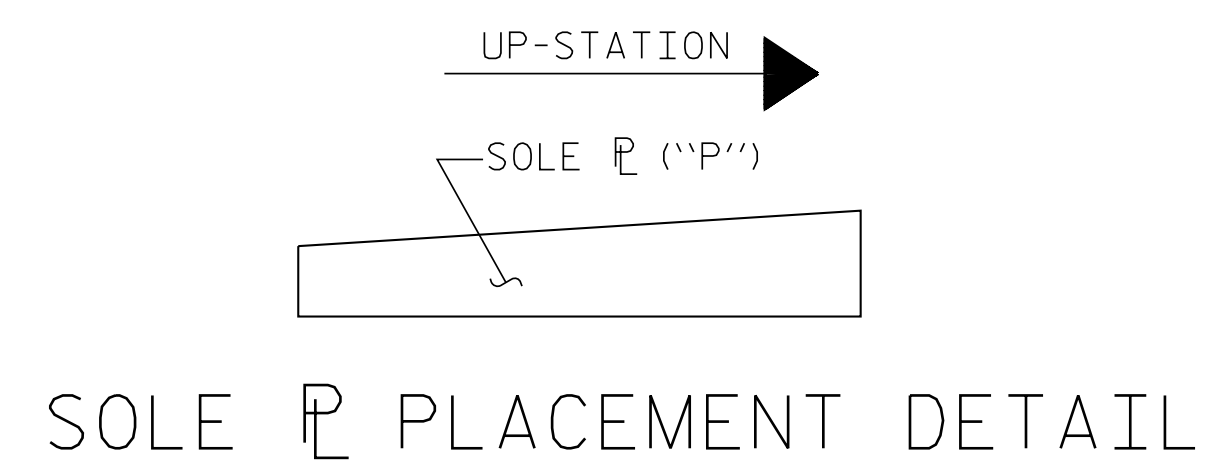
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

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

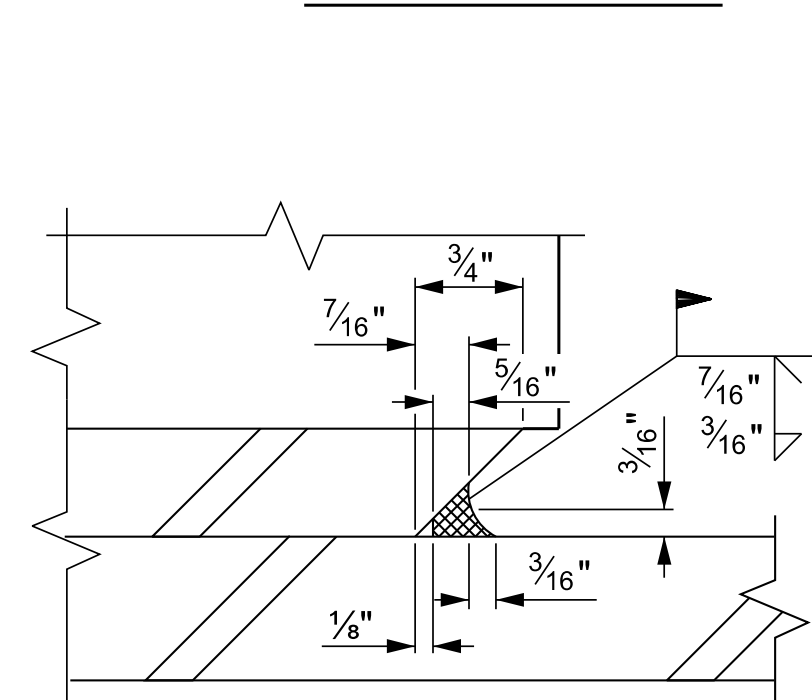


TYPICAL SECTION OF ELASTOMERIC BEARINGS

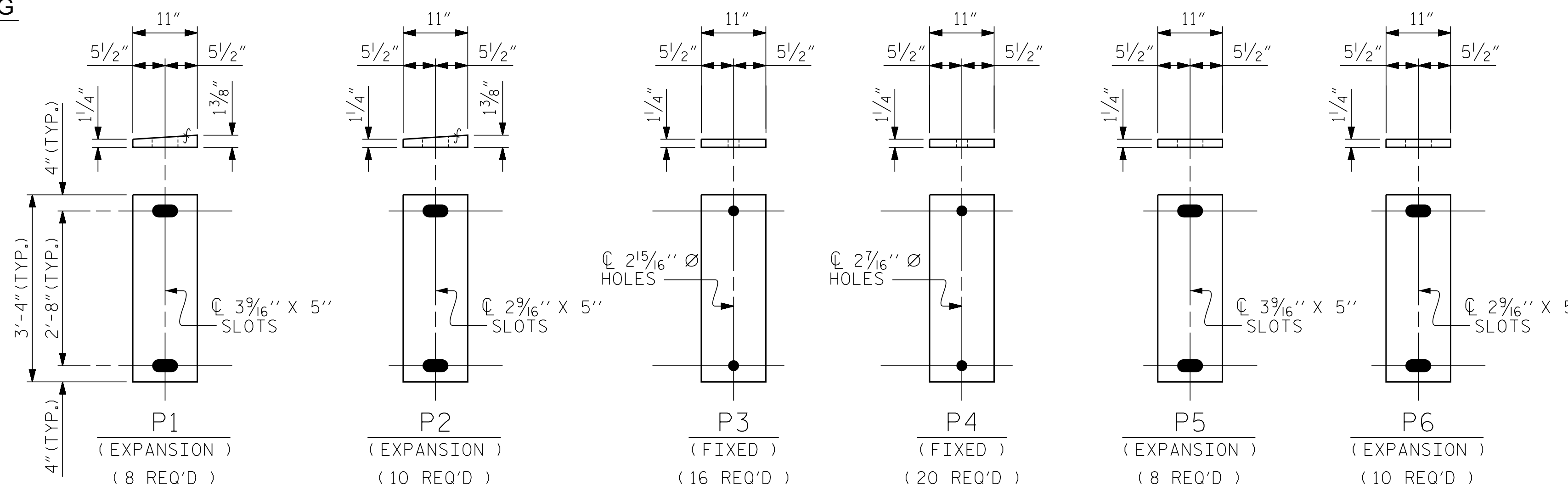


PLAN VIEW OF ELASTOMERIC BEARING
E4 (72 REQ'D)

TYPE V



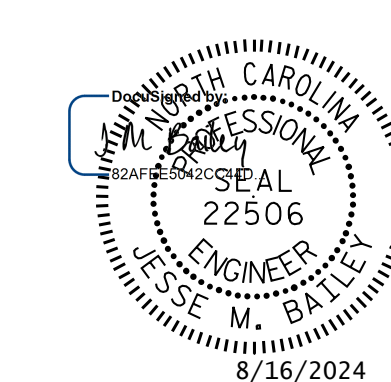
DETAIL "A"



SOLE PLATE DETAILS ("P")

FOR SOLE PLATE ORIENTATION, SEE FRAMING PLAN SHEET.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



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

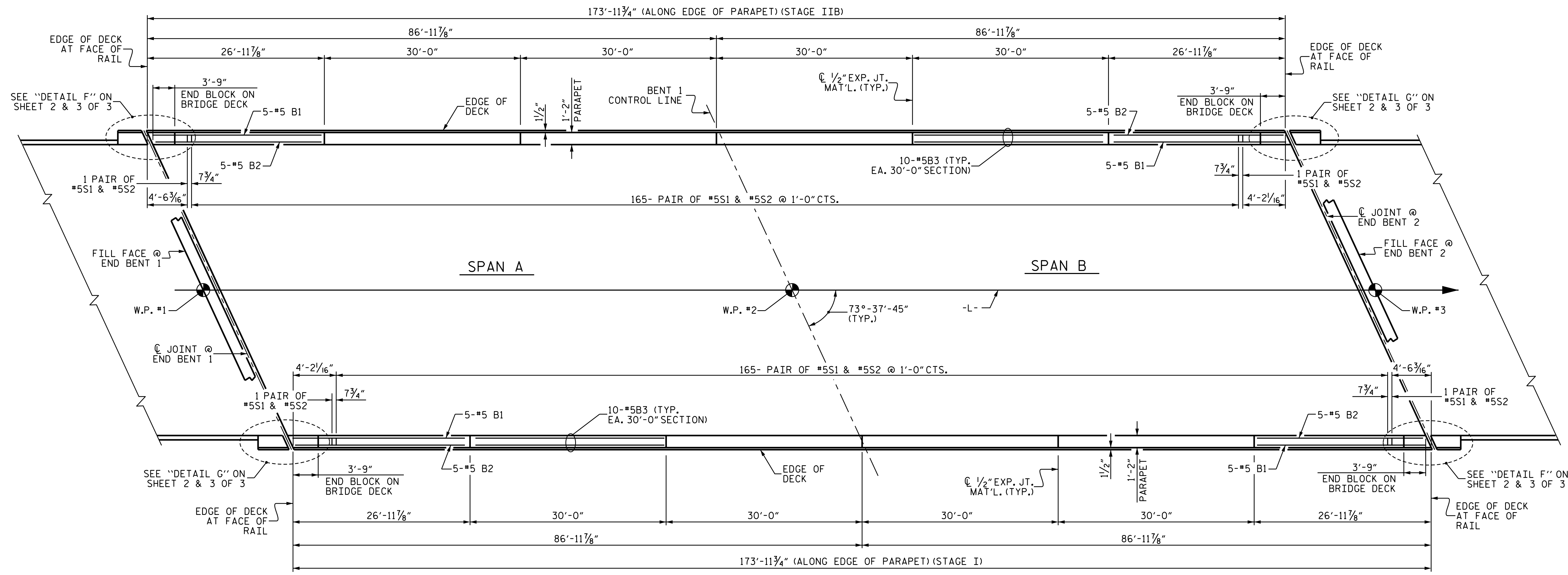
DOCUMENT NOT CONSIDERED FINAL
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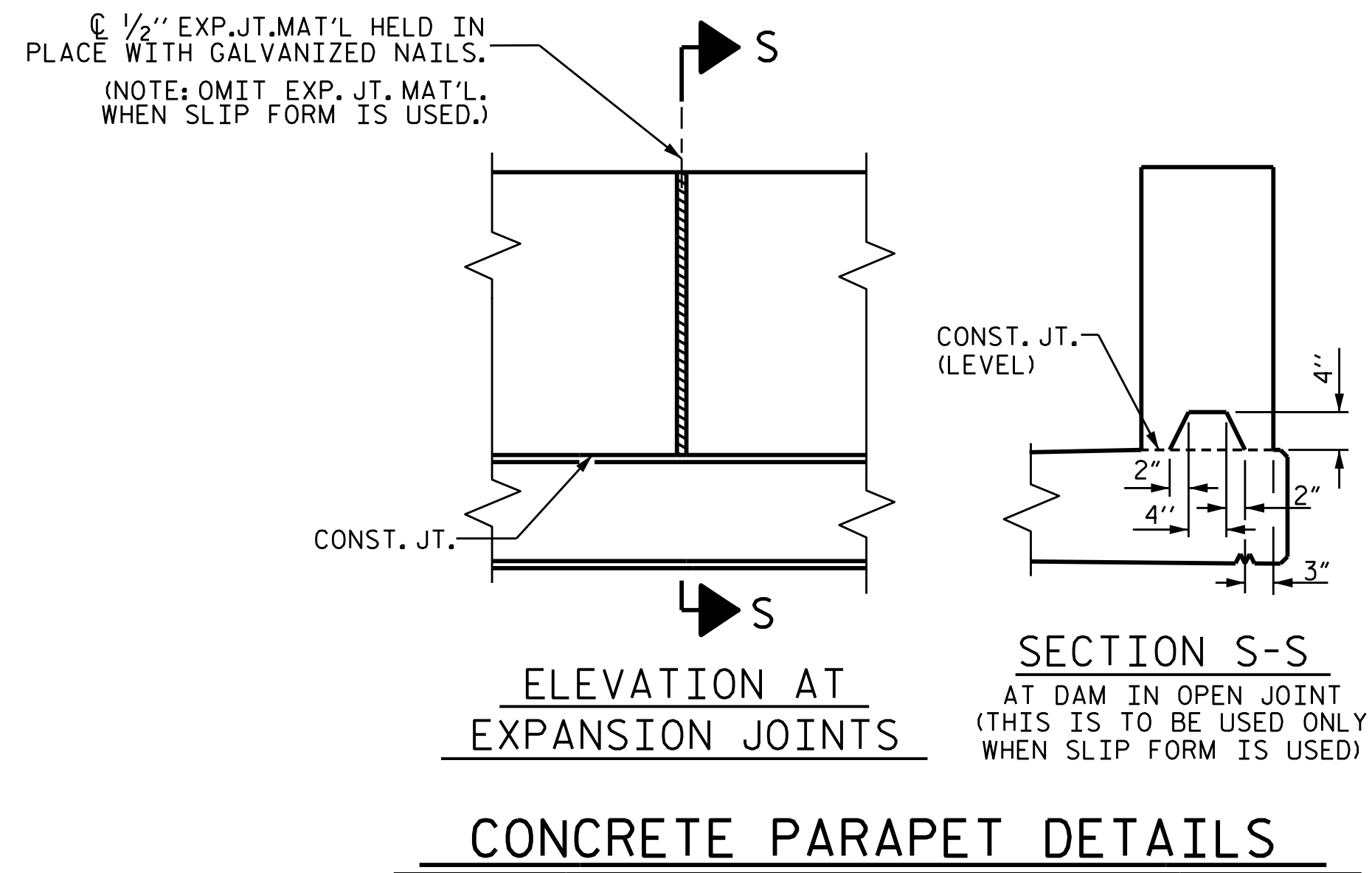
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-33
1			3			TOTAL SHEETS
2			4			72

16/01/2024 10:20:17 AM 15_003_L1 - Placement CAD Structures CAD 3-31-23 V01_063_L1 - 5717 - SML BRG_L33.dgn
 TIME: 4:30:2024

DWN. BY: WDC DATE: 01/24
CHKD. BY: GFW DATE: 01/24
DES. EGR. OF RECORD: JMB DATE: 01/24



PLAN OF PARAPET



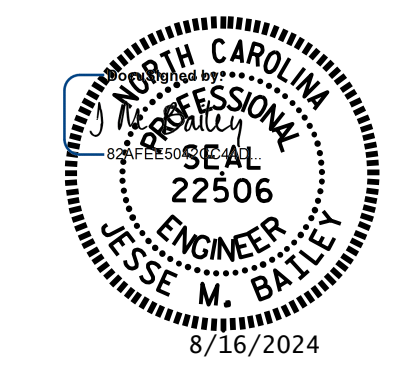
NOTES

ALL REINFORCING STEEL IN PARAPETS AND END BLOCKS SHALL BE EPOXY COATED.

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

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

THE #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL.



PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 3

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

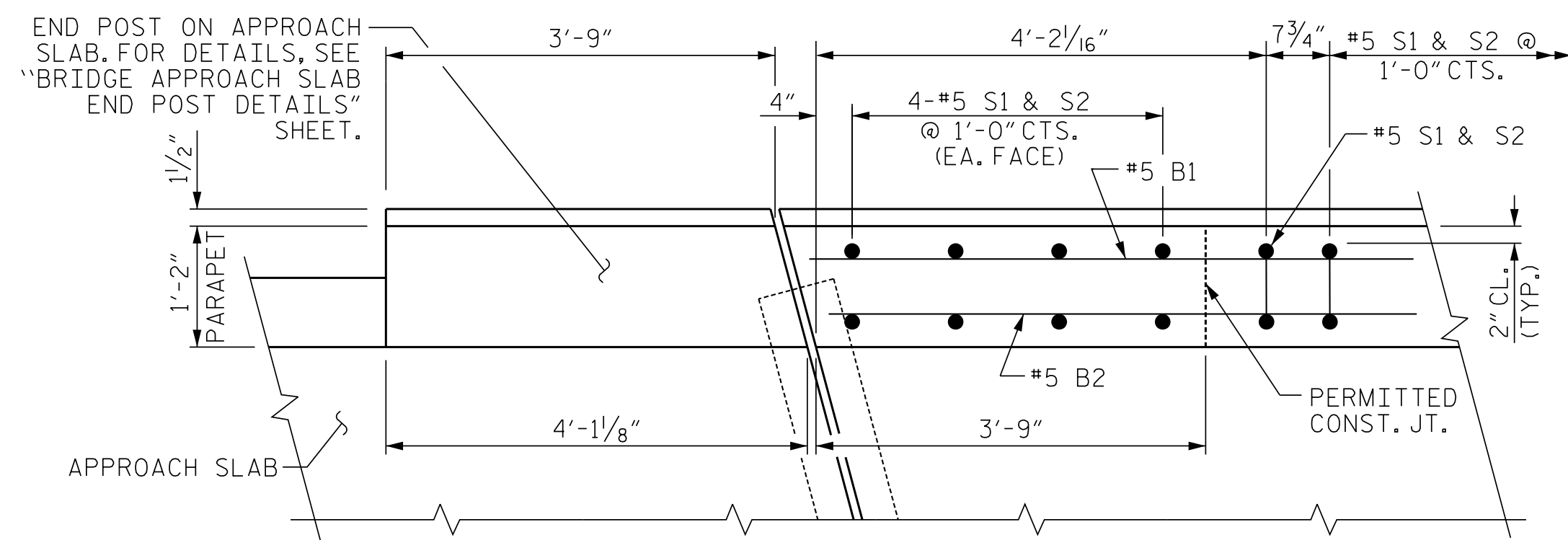
DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

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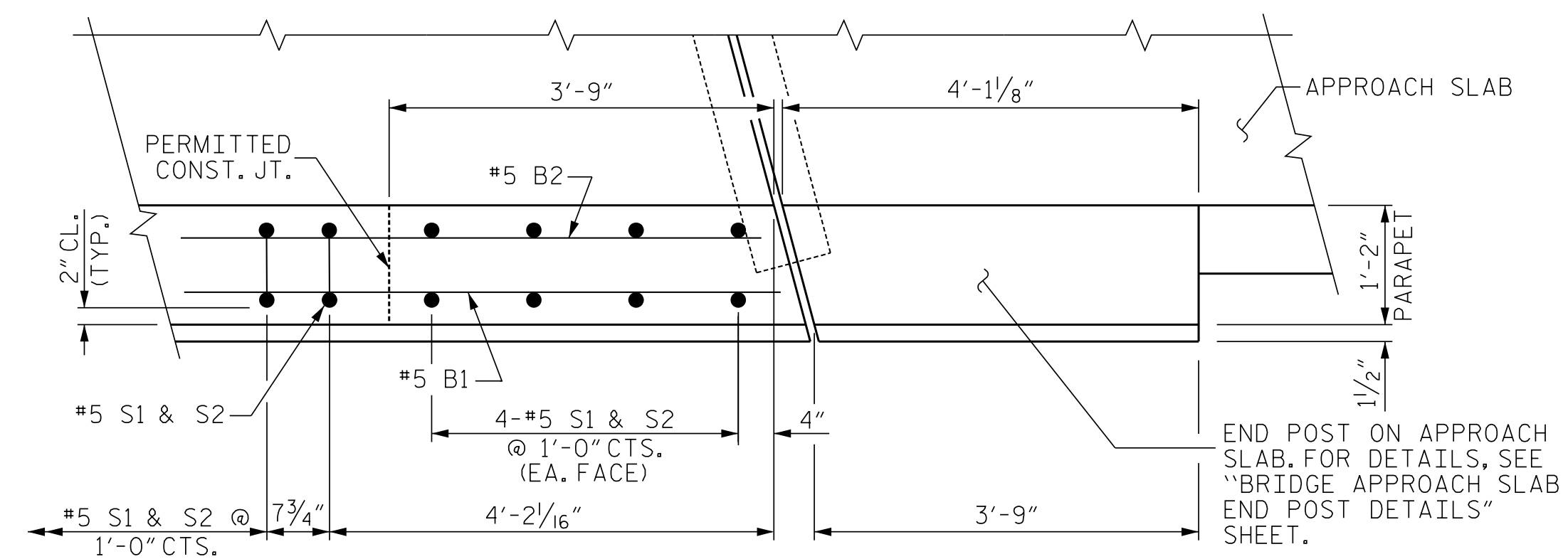
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REVISIONS						SHEET NO. S2-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

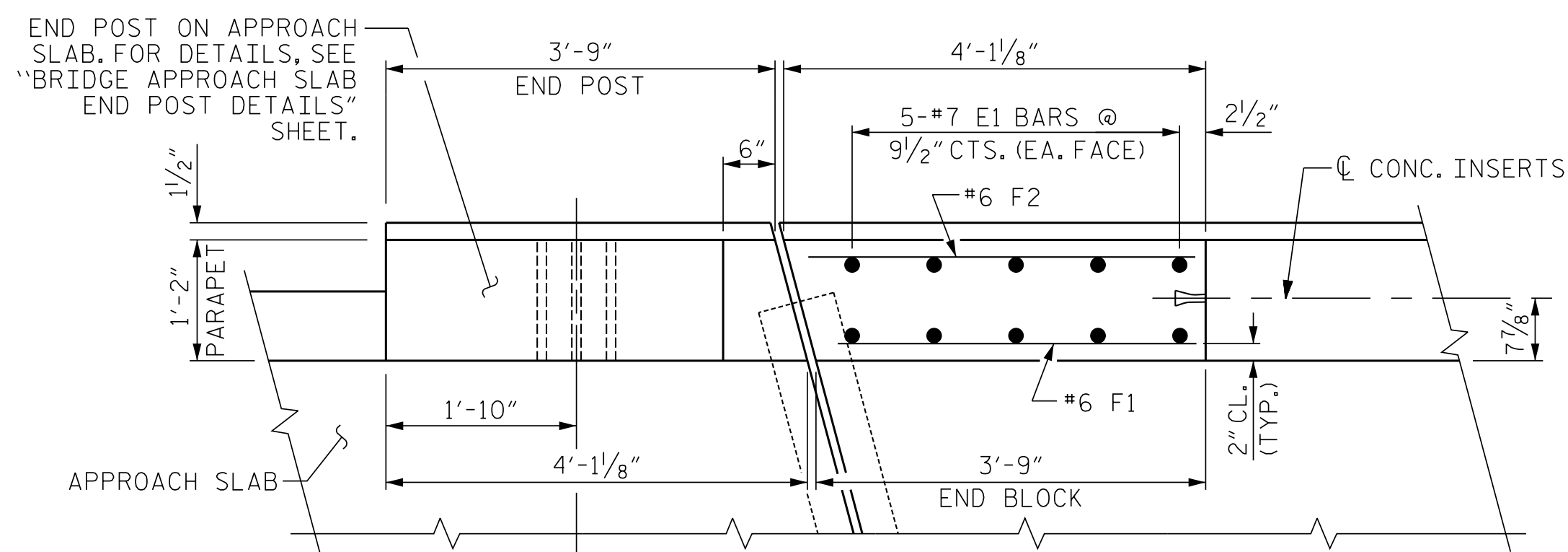
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 DATE: 01/20/2024 11:45:00 AM
 TIME: 4:30:20 PM



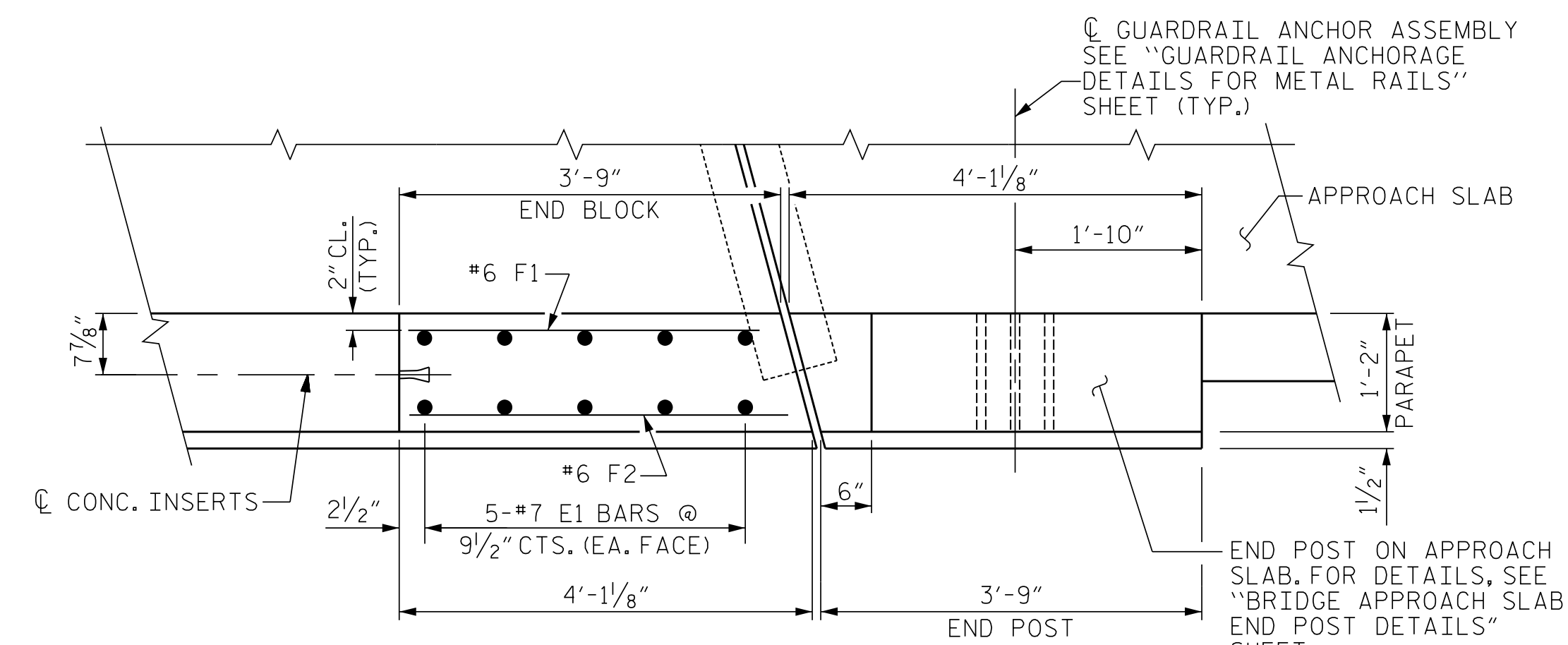
DETAIL F
PLAN OF END PARAPET ON BRIDGE



DETAIL G
PLAN OF END PARAPET ON BRIDGE



DETAIL F
PLAN OF END BLOCK ON BRIDGE

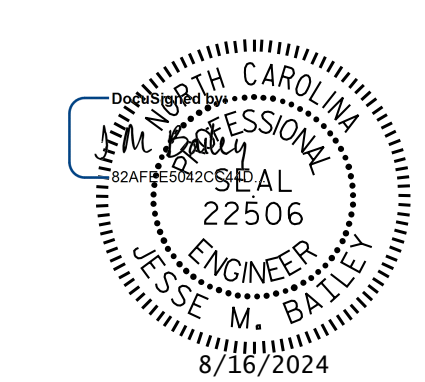


DETAIL G
PLAN OF END BLOCK ON BRIDGE

END POST ON APPROACH SLAB, FOR DETAILS, SEE "BRIDGE APPROACH SLAB END POST DETAILS" SHEET.
1'-2" PARAPET
APPROACH SLAB
1'-10"
4'-1/8"
3'-9"
2 1/2"
7 7/8"

CL GUARDRAIL ANCHOR ASSEMBLY SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET (TYP.)

CL GUARDRAIL ANCHOR ASSEMBLY SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET (TYP.)
APPROACH SLAB
1'-2" PARAPET
1'-10"
4'-1/8"
3'-9"
2 1/2"
7 7/8"



PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**CONCRETE PARAPET
AND END BLOCK
DETAILS**
(TWO BAR METAL RAIL)

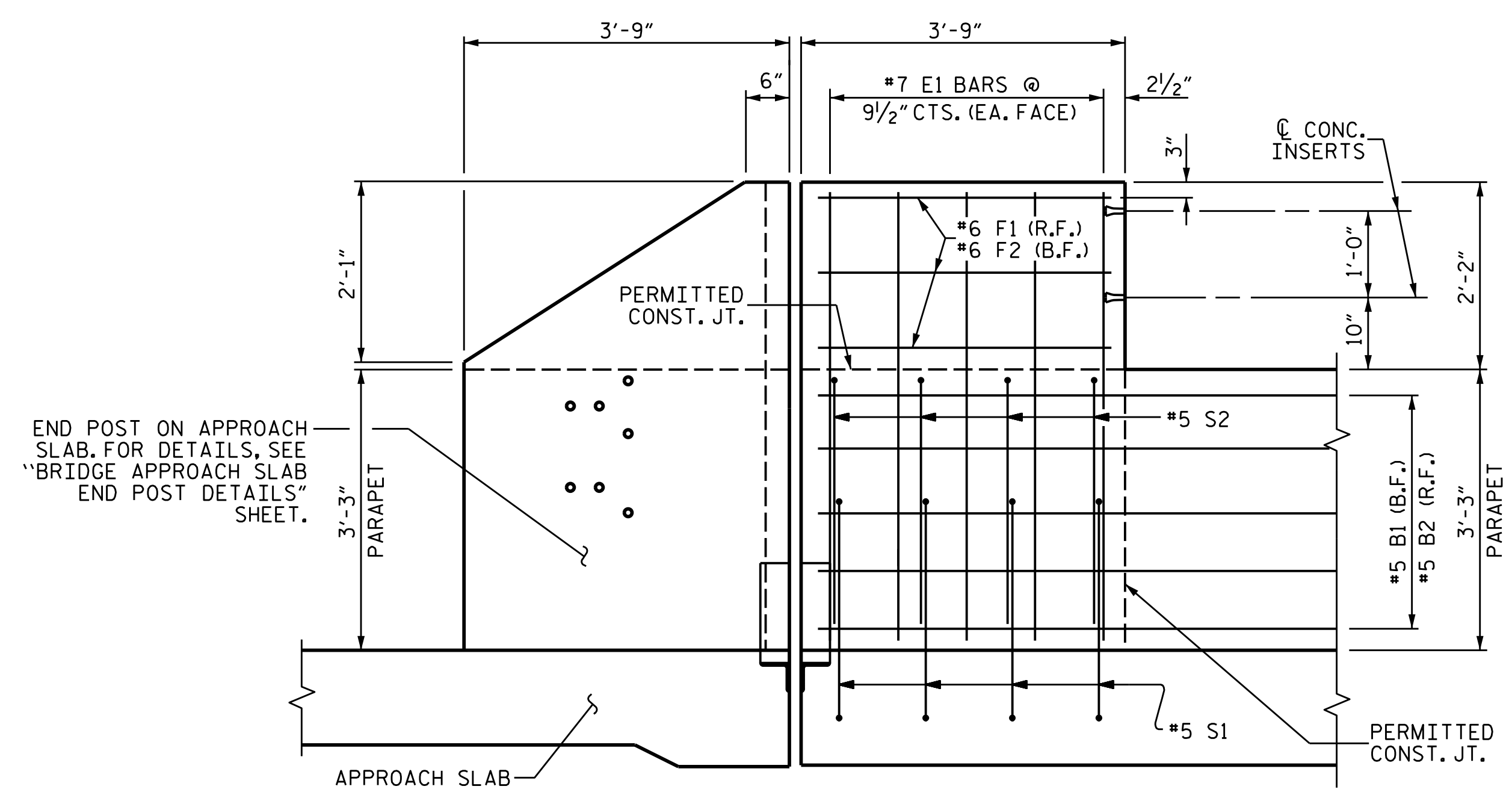
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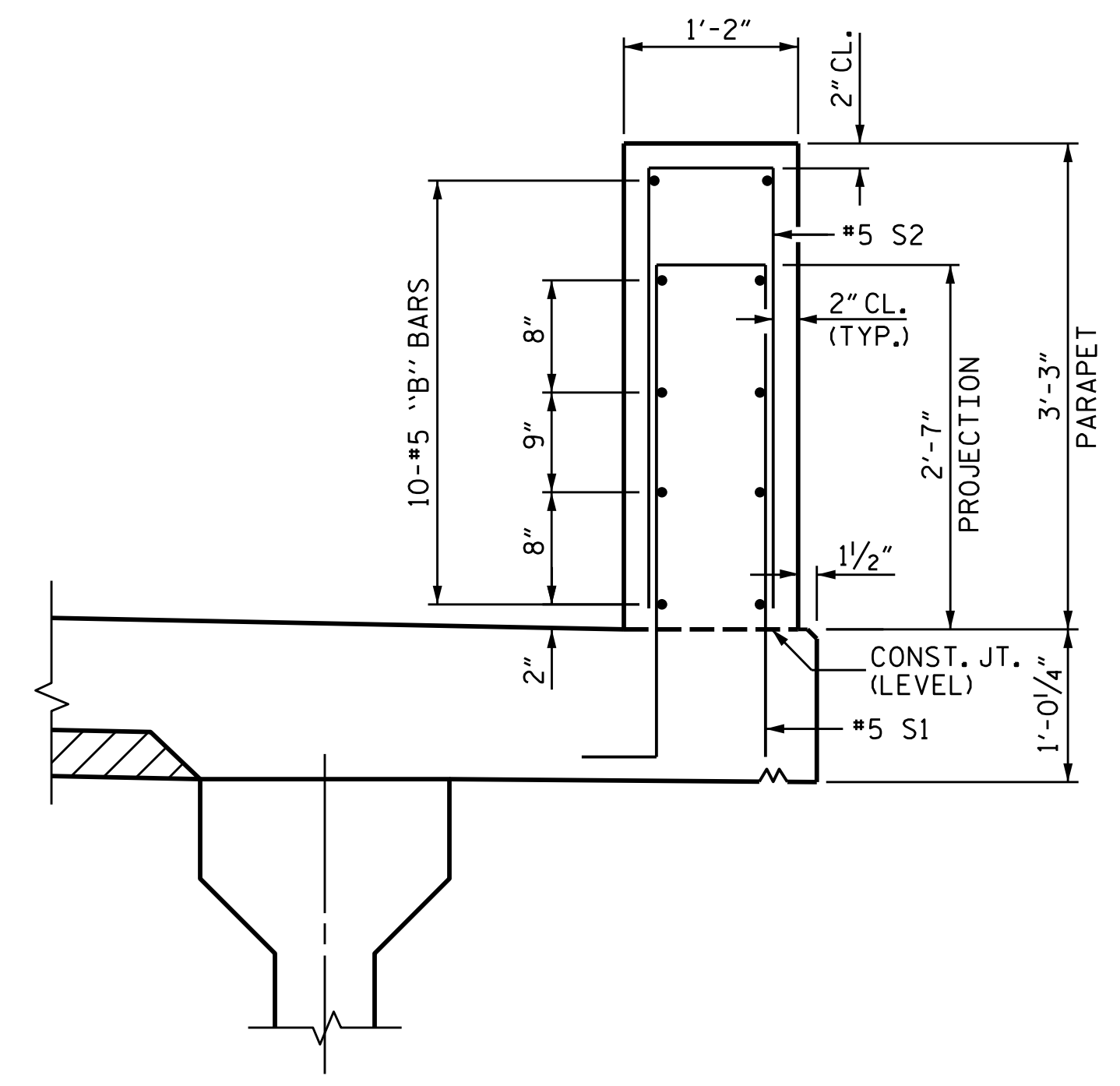
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-35
1			3			TOTAL SHEETS
2			4			72

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 DATE: 7/30/2024

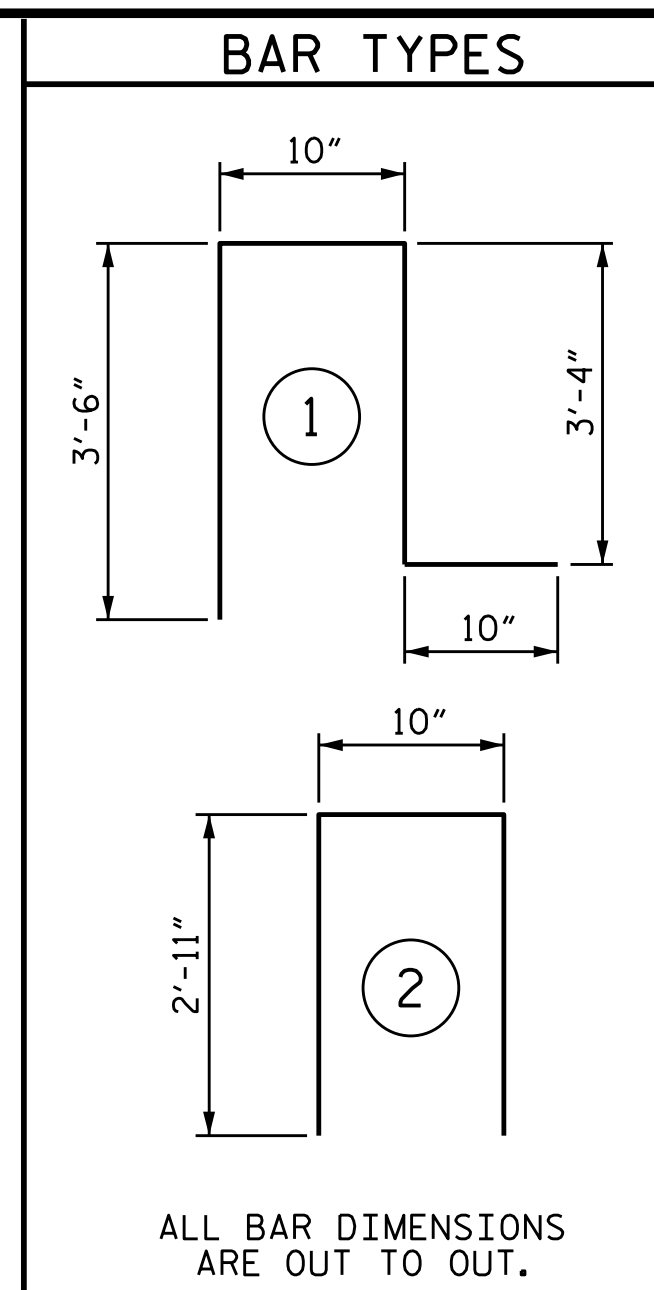
DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24



DETAIL F
ELEVATION OF END BLOCK
(ROADWAY FACE)



PARAPET DETAIL



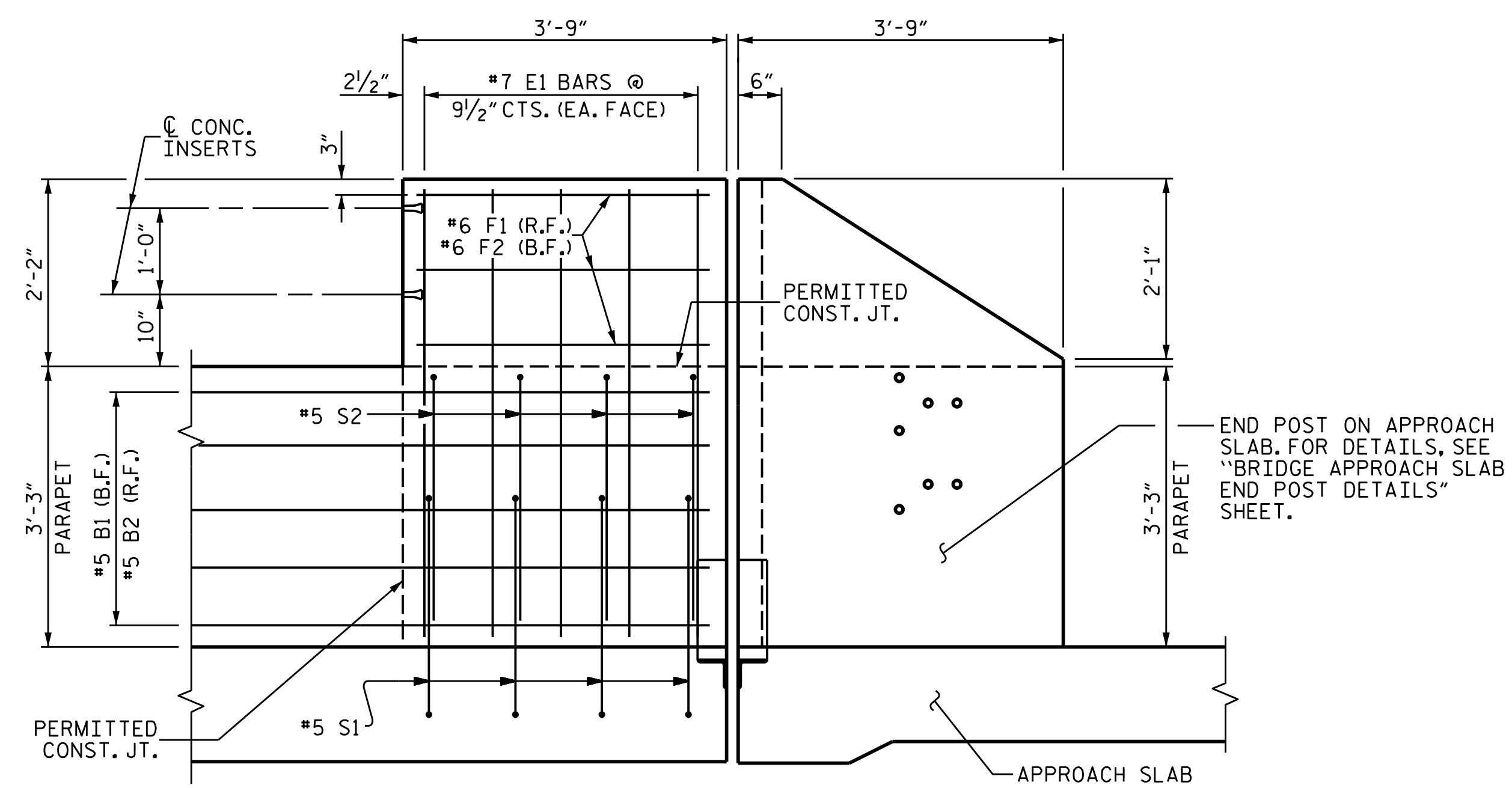
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
FOR 1 PARAPET AND 2 END BLOCKS					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	10	#5	STR	26'-7"	277
* B2	10	#5	STR	26'-4"	275
* B3	40	#5	STR	29'-7"	1234
* E1	20	#7	STR	5'-1"	208
* F1	6	#6	STR	3'-5"	31
* F2	6	#6	STR	3'-9"	34
* S1	175	#5	1	8'-6"	1551
* S2	175	#5	2	6'-8"	1217

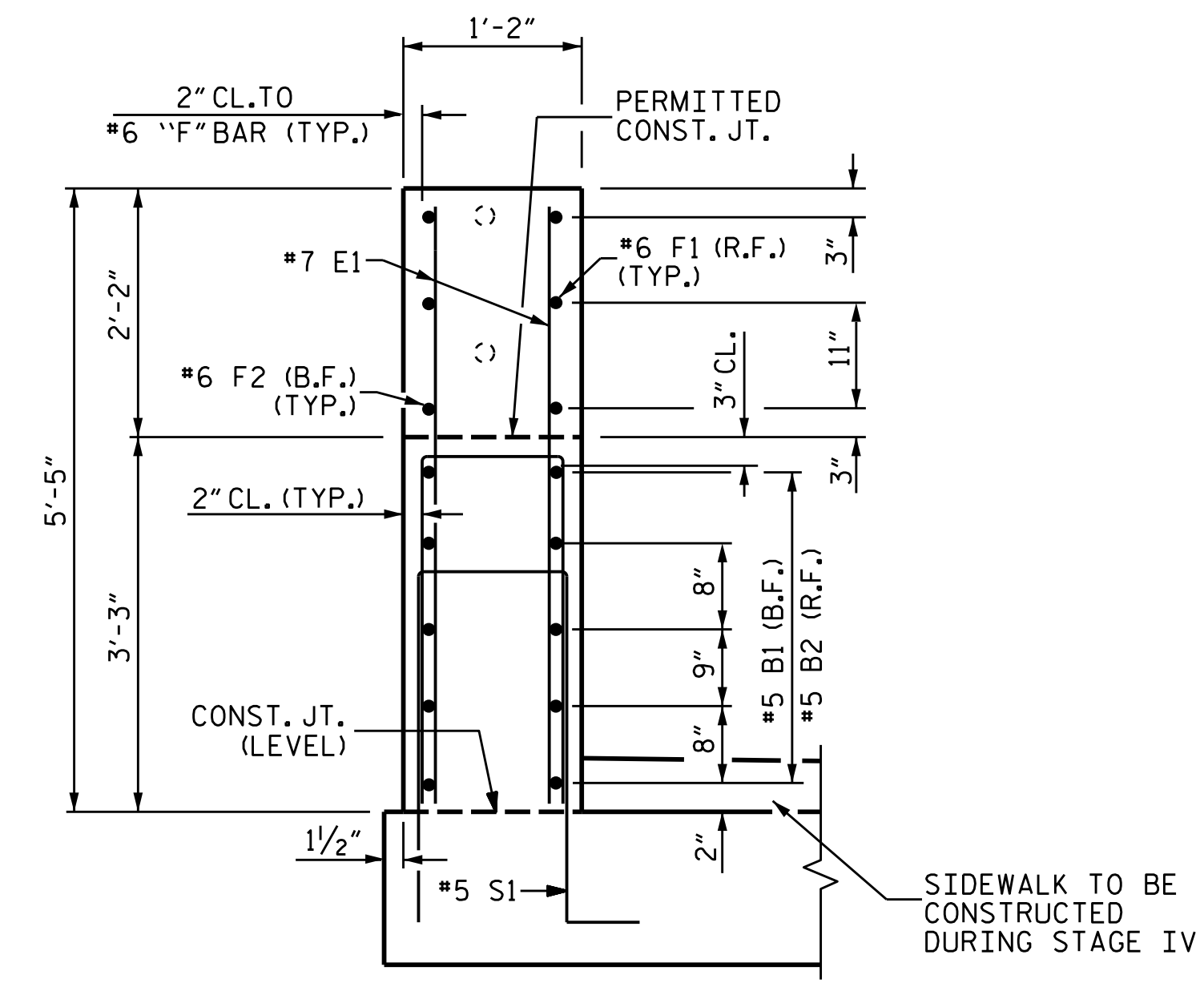
* EPOXY COATED REINFORCING STEEL 4827 LBS.
CLASS AA CONCRETE 25.2 CU. YDS.
1'-2" x 3'-3" CONCRETE PARAPET 173.98 LIN. FT.

BILL OF MATERIAL					
FOR 1 PARAPET AND 2 END BLOCKS					
STAGE IIB					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	10	#5	STR	26'-7"	277
* B2	10	#5	STR	26'-4"	275
* B3	40	#5	STR	29'-7"	1234
* E1	20	#7	STR	5'-1"	208
* F1	6	#6	STR	3'-5"	31
* F2	6	#6	STR	3'-9"	34
* S1	175	#5	1	8'-6"	1551
* S2	175	#5	2	6'-8"	1217

* EPOXY COATED REINFORCING STEEL 4827 LBS.
CLASS AA CONCRETE 25.2 CU. YDS.
1'-2" x 3'-3" CONCRETE PARAPET 173.98 LIN. FT.

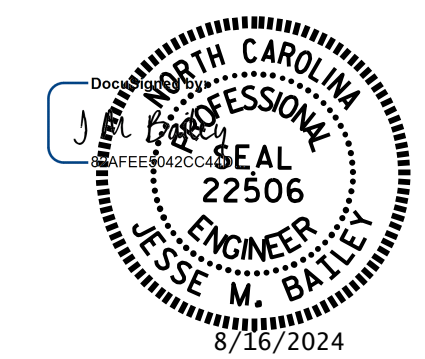


DETAIL G
ELEVATION OF END BLOCK
(ROADWAY FACE)



END ELEVATION

* GUARDRAIL ANCHOR ASSEMBLY SHALL BE INSTALLED DURING STAGE I (RT. SIDE) AND STAGE IIB (LT. SIDE). THE 2'-5 1/16" DIMENSION PLACES THE GUARDRAIL ANCHOR ASSEMBLY 1'-9" ABOVE TOP OF SIDEWALK, WHICH WILL BE CONSTRUCTED DURING STAGE IV.



PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CONCRETE PARAPET AND END BLOCK DETAILS
(TWO BAR METAL RAIL)

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

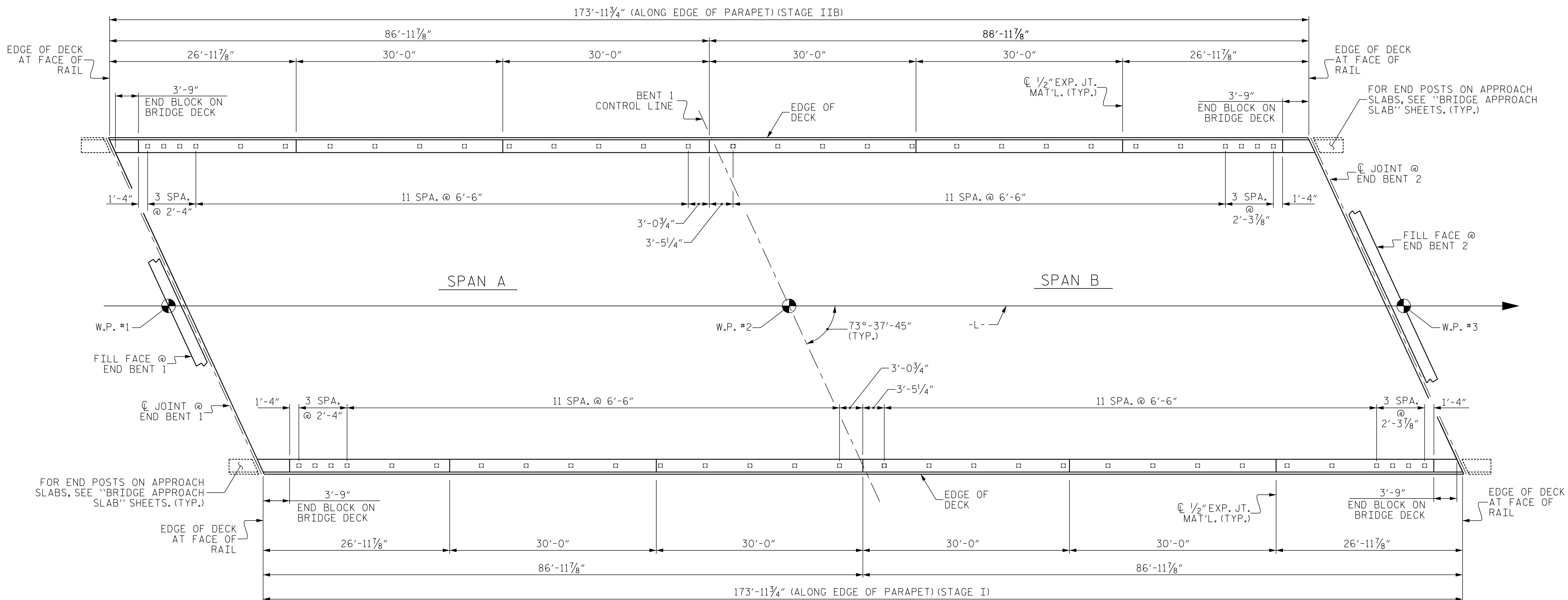
SHEET NO.	S2-36
TOTAL SHEETS	72

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15621.DWG 04/20/17 14:15:00 J-5717 - Replacement CAD Structures CADD 3-31-23 401_069_J-5717-SMUCPEL.S36.dgn
 TIME: 4/30/2024

DWN. BY: WDC DATE: 01/24
CHKD. BY: GFW DATE: 01/24
DES. EGR. OF RECORD: JMB DATE: 01/24



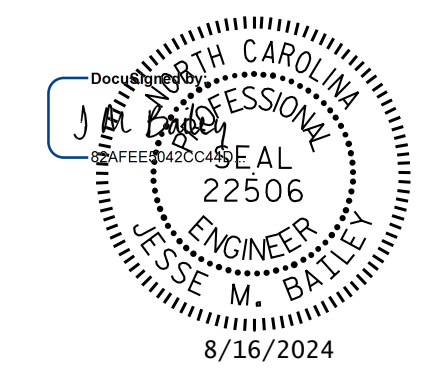
PLAN OF RAIL POST SPACINGS

PROJECT NO. I-5717

IREDELL COUNTY

STATION: 733+32.53 -L-

SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 RAIL POST SPACING**

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-37
1			3			TOTAL SHEETS
2			4			72

WDC:DWG 01/20/24 17:15:00 JMB - Replacement I-5717 - I-5717 - SMU - CPSS - S37.dgn
 DATE: 4/30/2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

NOTES

STRUCTURAL CONCRETE INSERT

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".
- B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

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

- A. 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

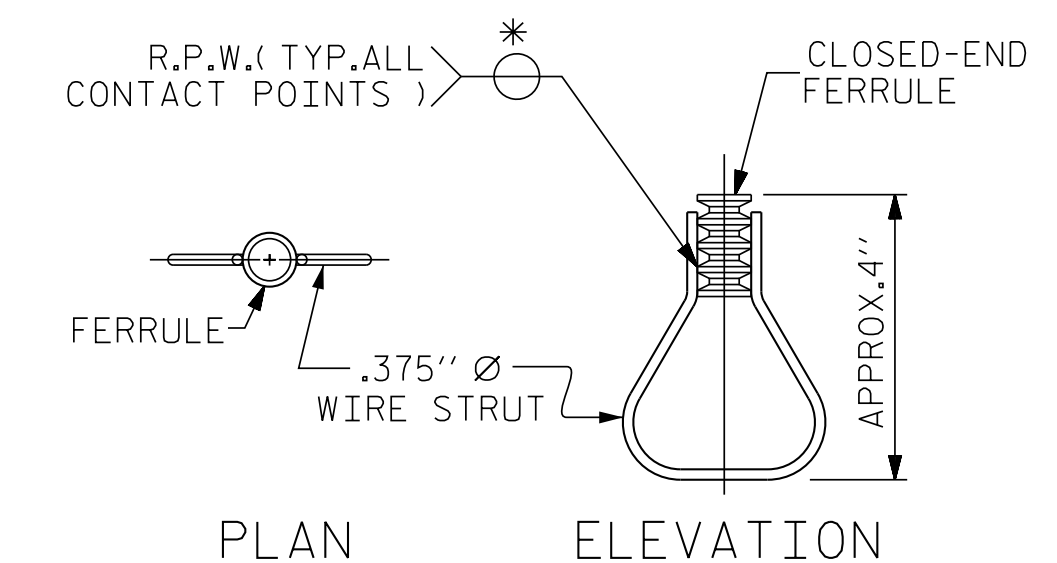
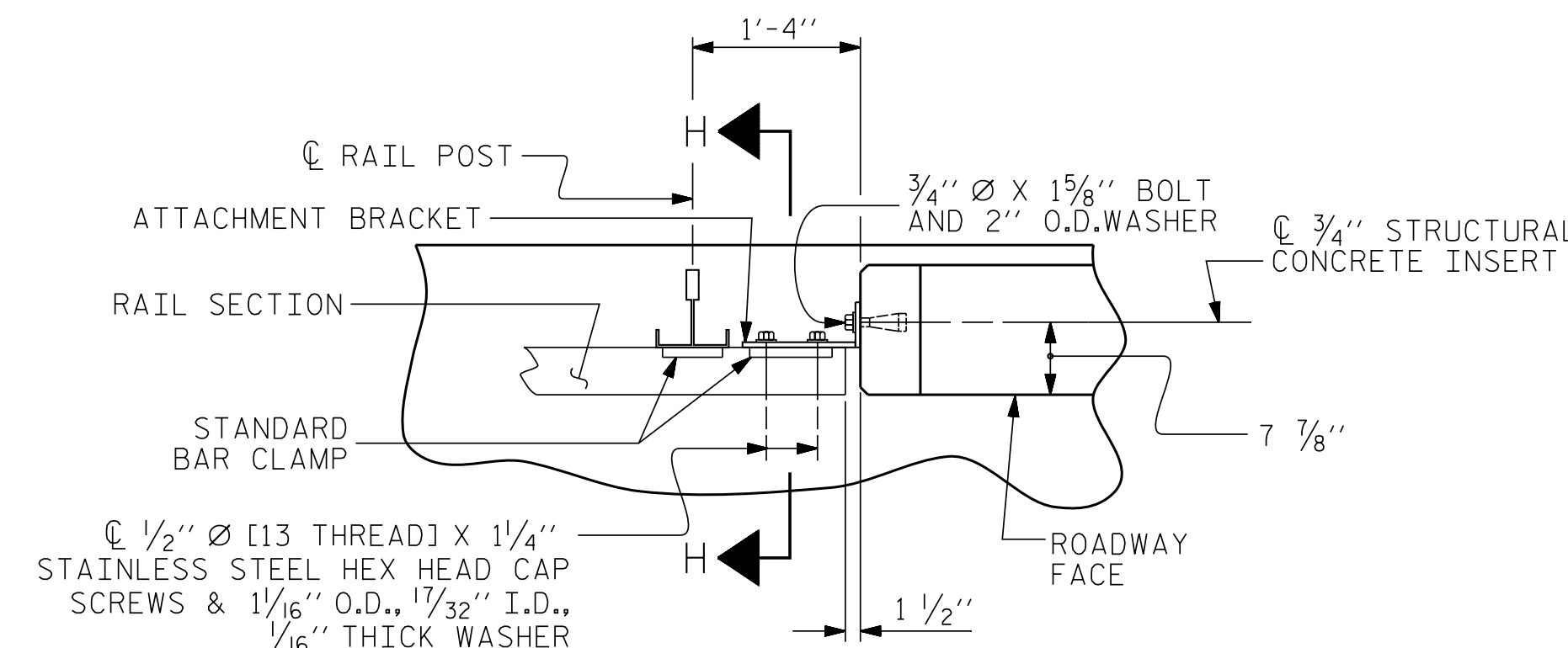
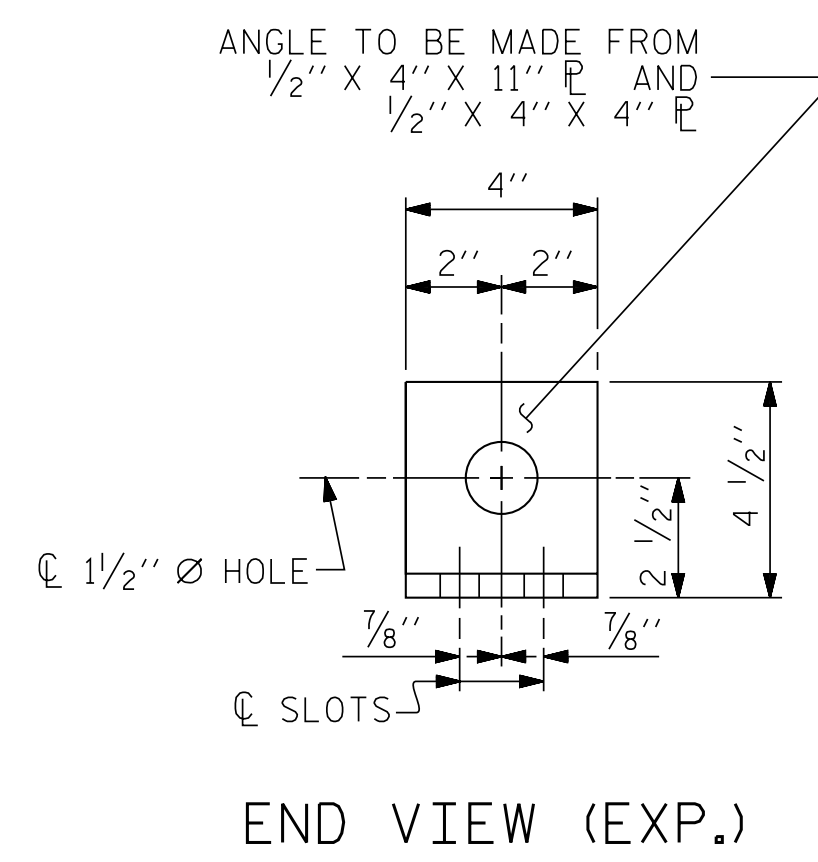
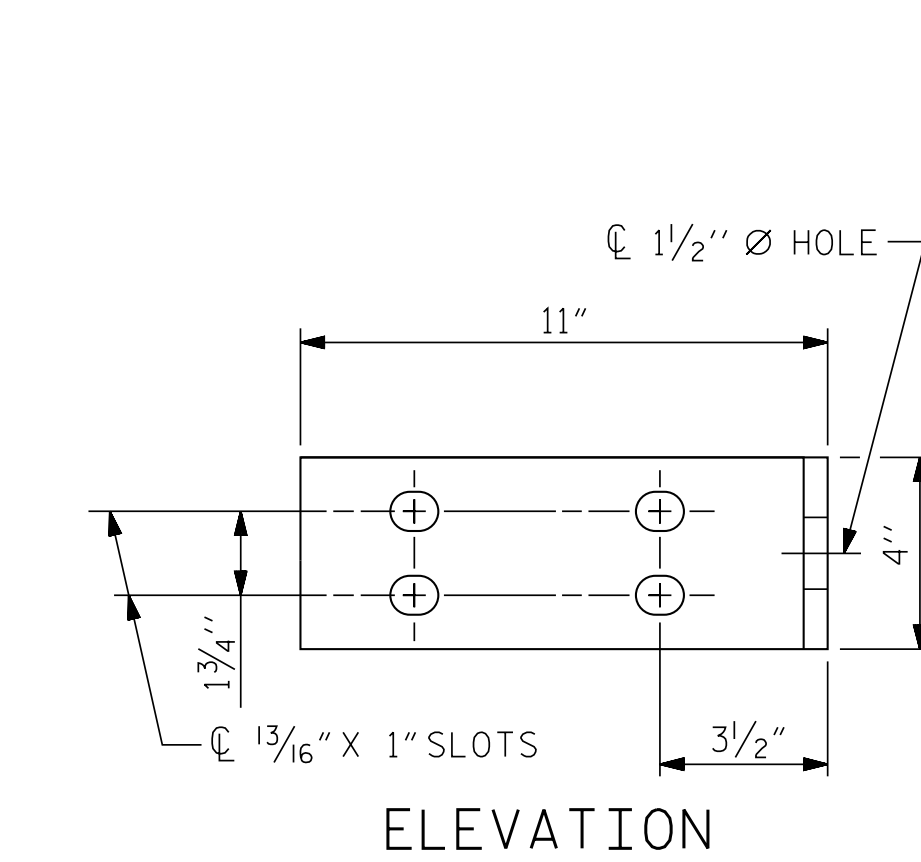
THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

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

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

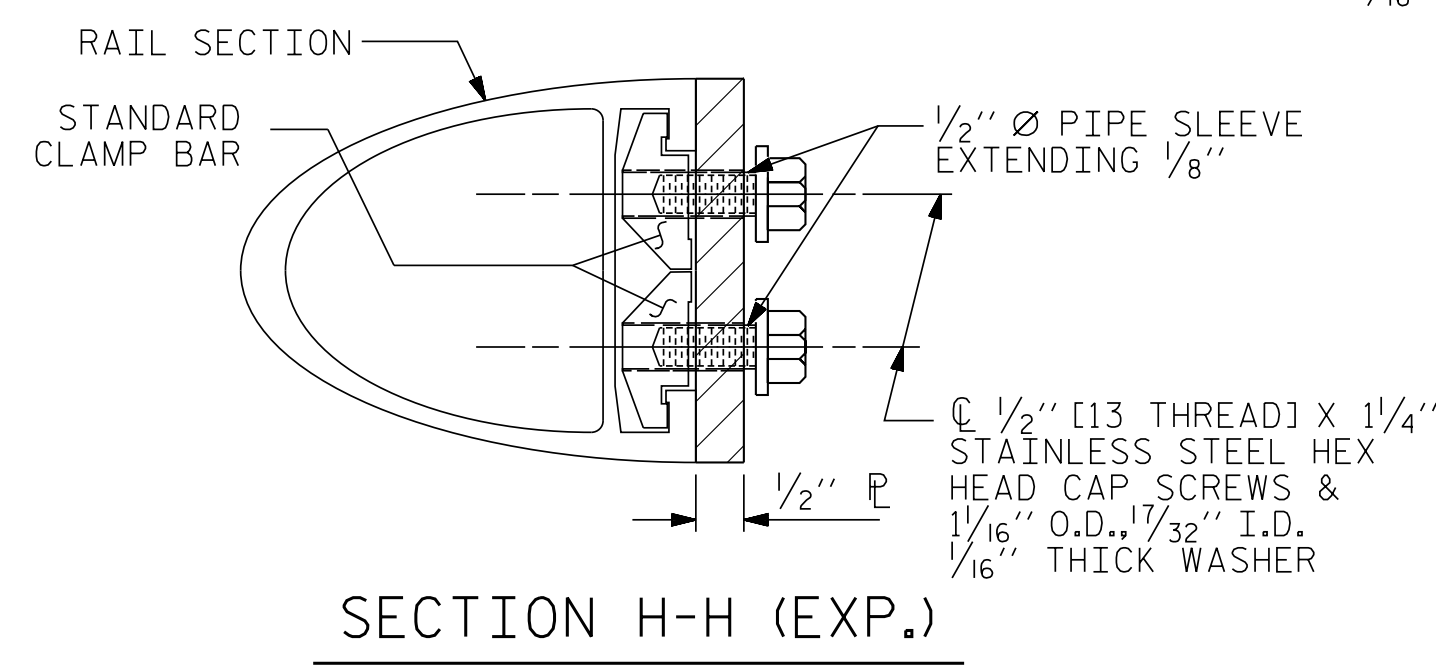
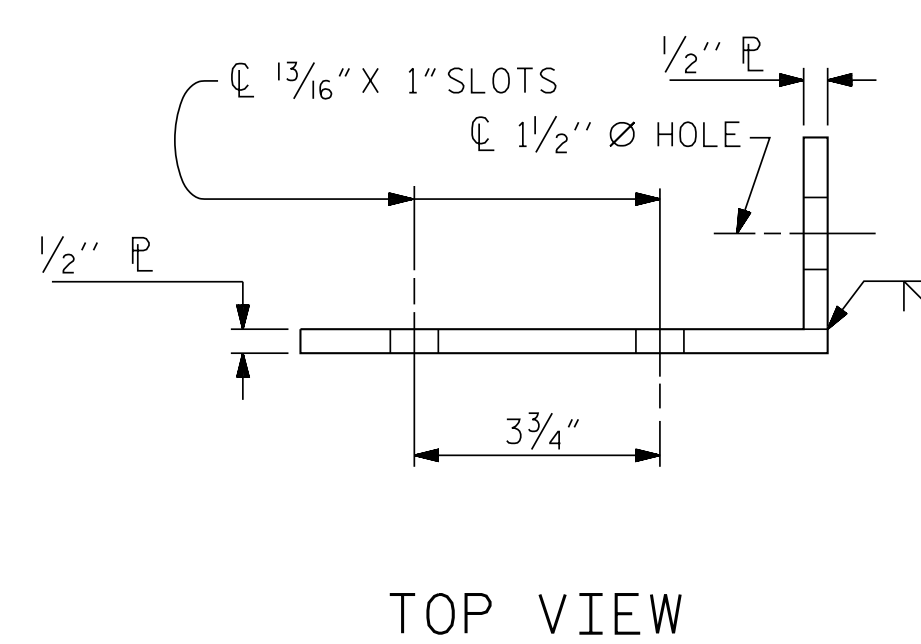
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT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

FOR RAIL POST SPACING,
SEE SHEET 1 OF 4.



STRUCTURAL CONCRETE INSERT

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



EXPANSION

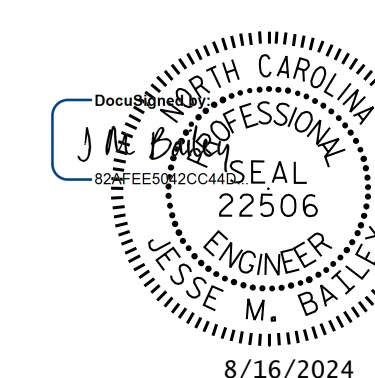
DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. I-5717

IREDELL COUNTY

STATION: 733+32.53 -L-

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

DOCUMENT NOT CONSIDERED FINAL
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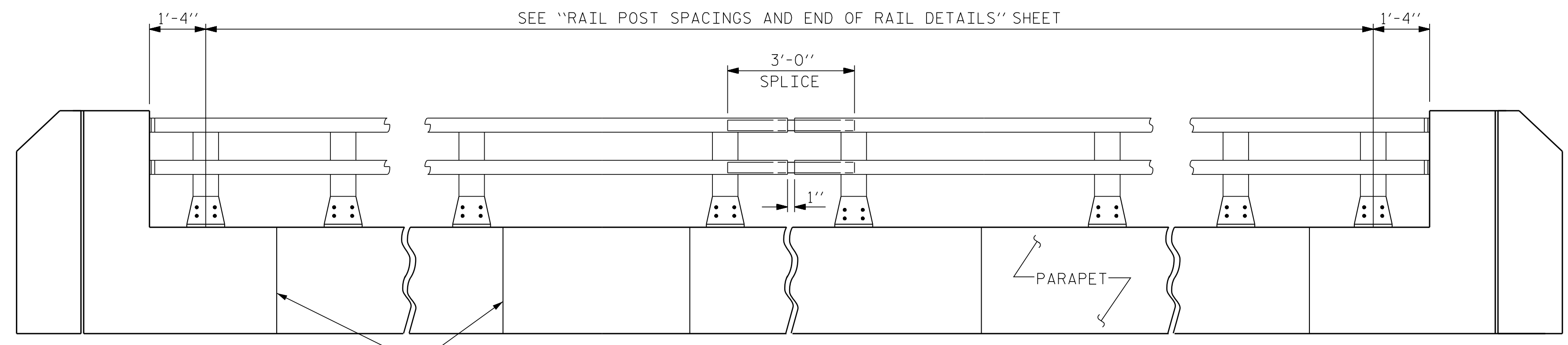


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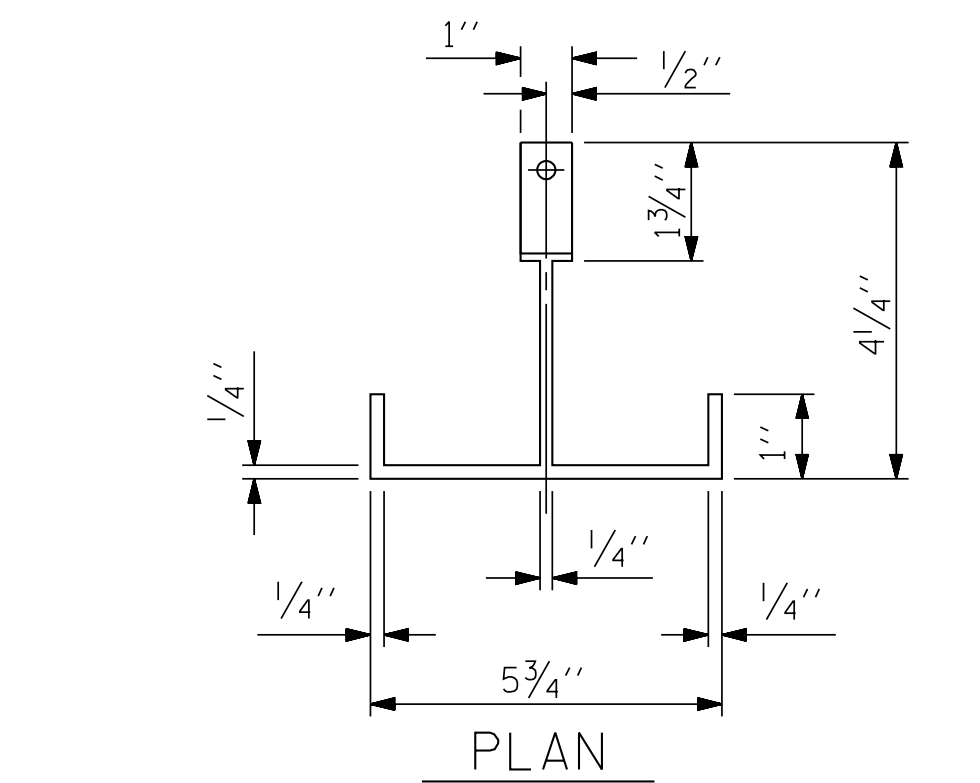
STD. NO. BMR2

16/01/03/09
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 TIME: 4/30/2024

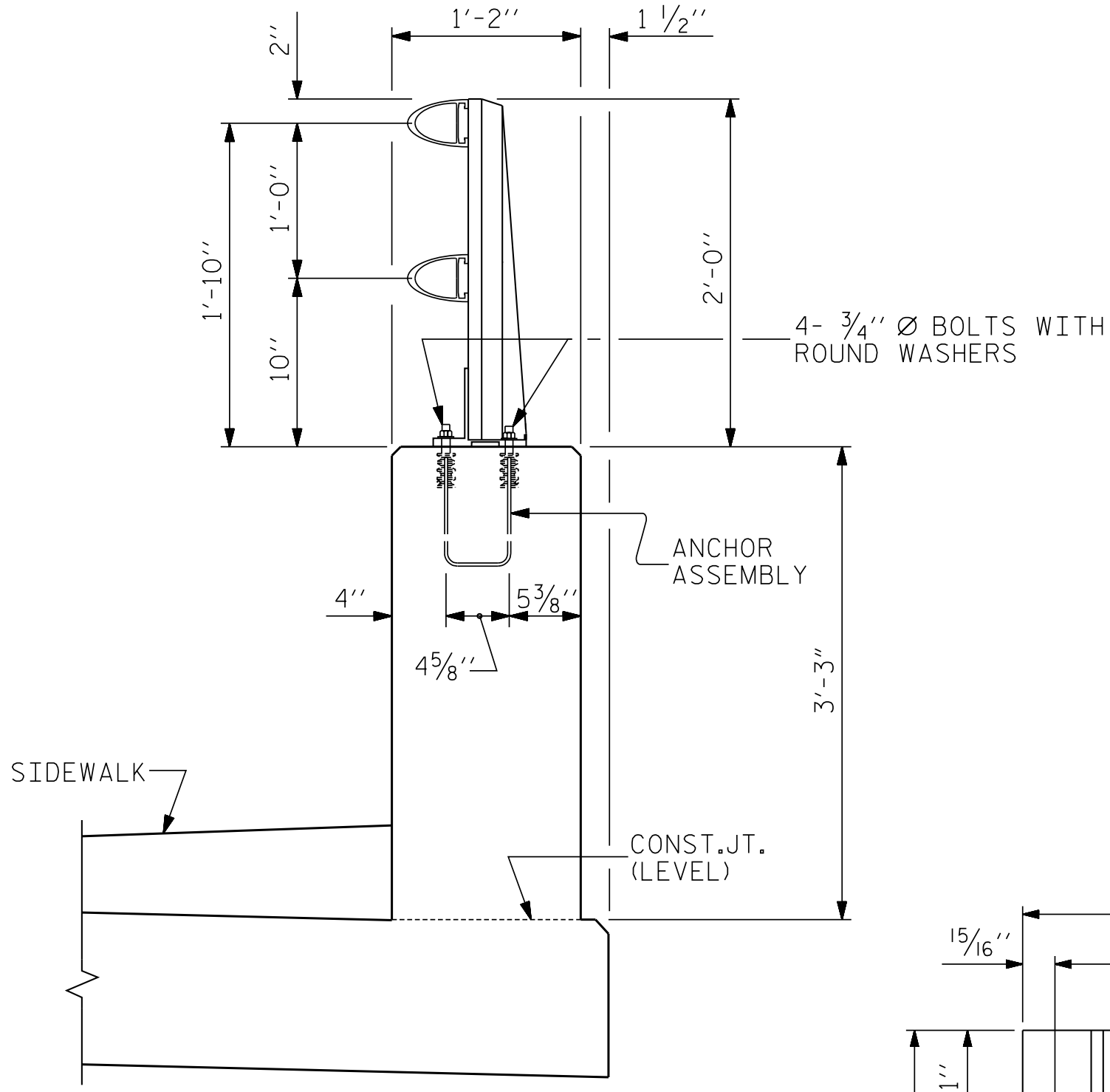
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DES. EGR. OF RECORD: JMB	DATE: 01/24		REV. 12/17	MAA/THC



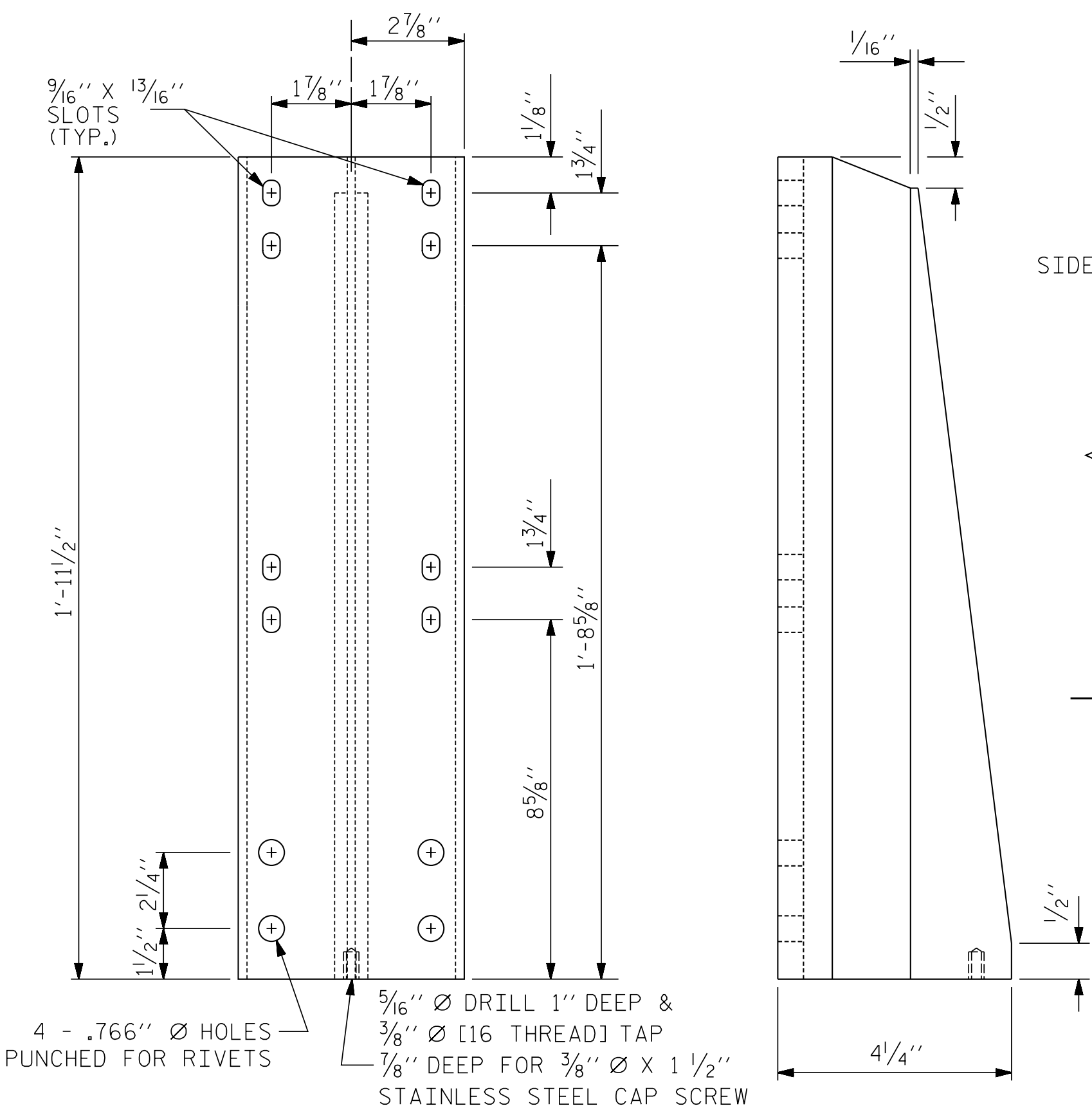
ELEVATION
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



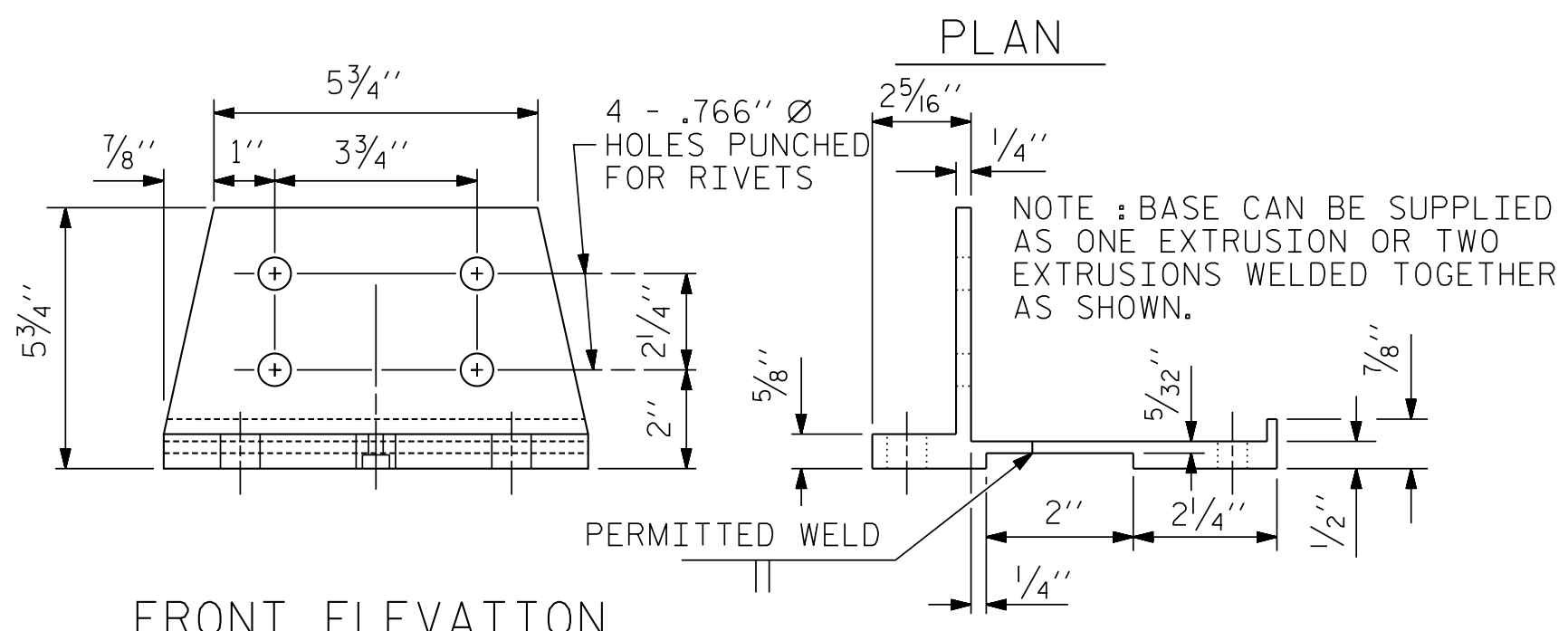
PLAN



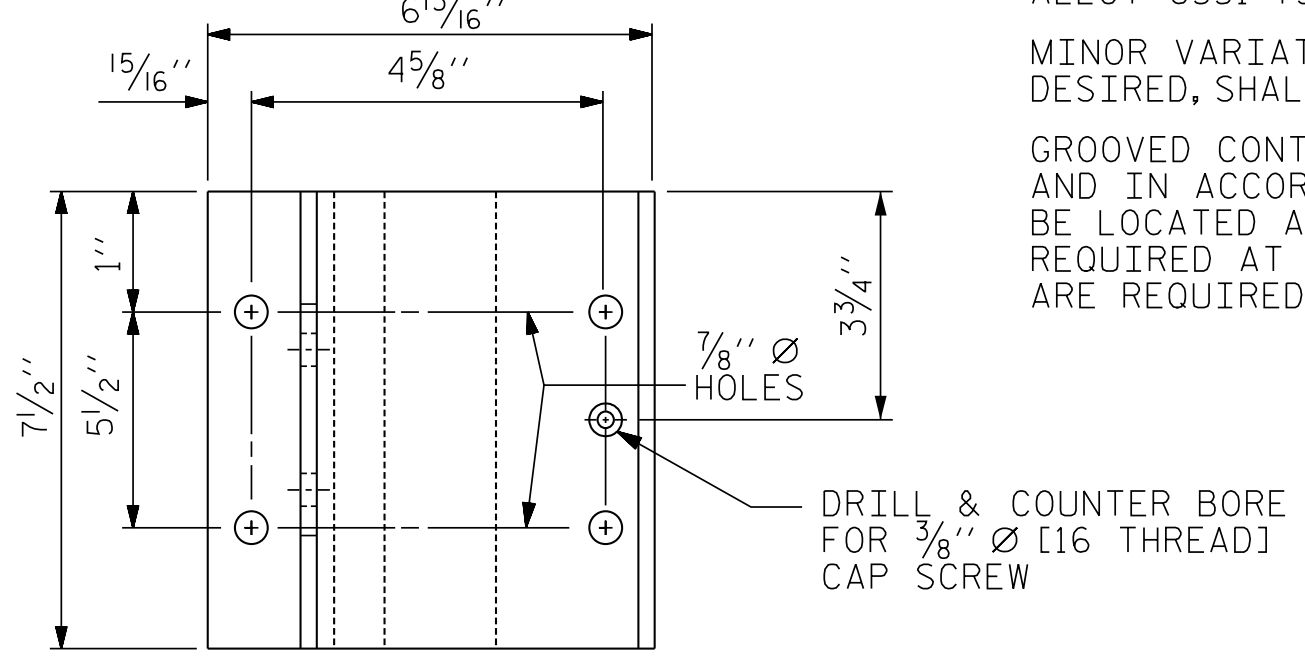
SECTION THRU PARAPET AND RAIL



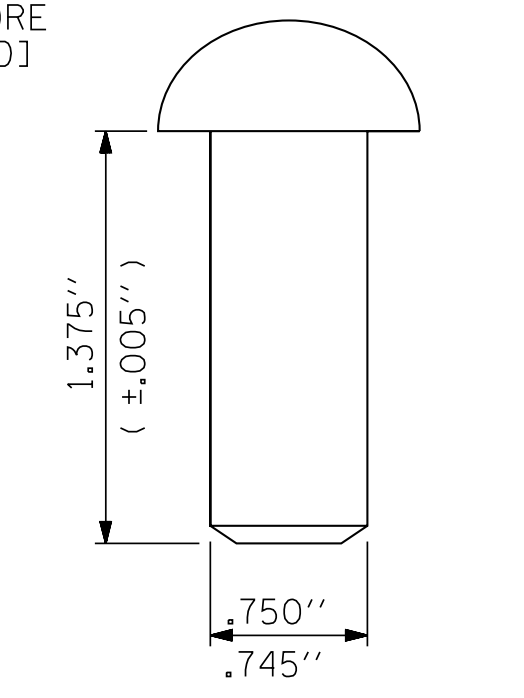
FRONT ELEVATION SIDE ELEVATION
DETAILS OF POST



FRONT ELEVATION SIDE ELEVATION
POST BASE DETAILS



PLAN



RIVET DETAIL

NOTES

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

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45, OR ASTM 1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

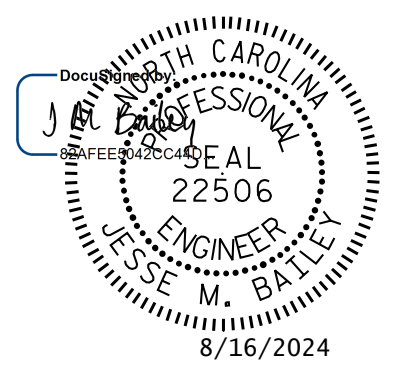
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

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

PAY LENGTH = 332.28 LIN. FT.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



SHEET 3 OF 4

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

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Raleigh, NC, 27609
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-39
1			3			TOTAL SHEETS
2			4			72

16/01/2024 09:20:17 AM I-5717 - Replacement CAD Structures CADD 3-31-23 V01_075_J-5717-SMUL_BMR3_S39.dgn
 DWG: 4/30/2024
 TIME: 4/30/2024

NOTES

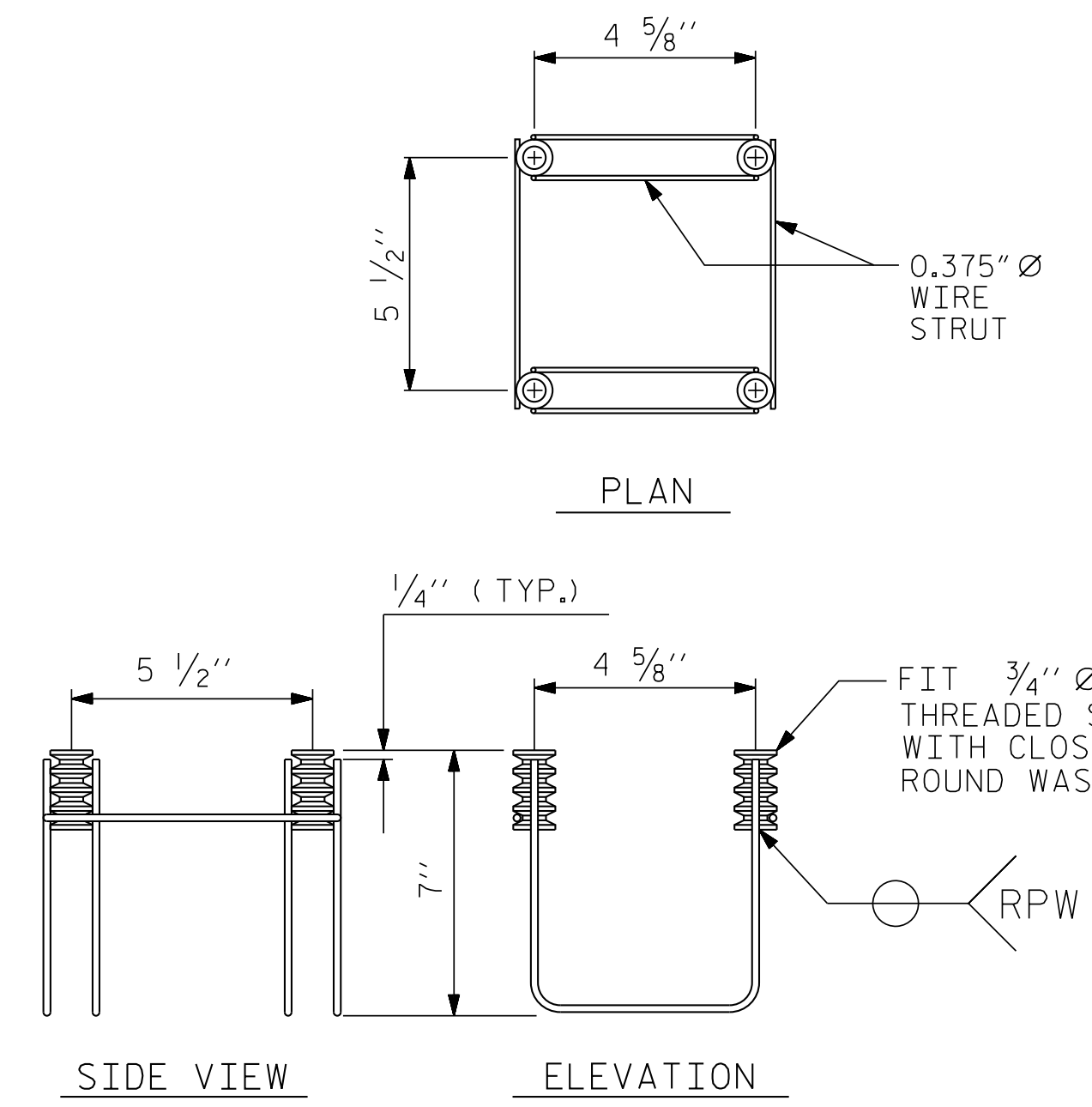
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

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

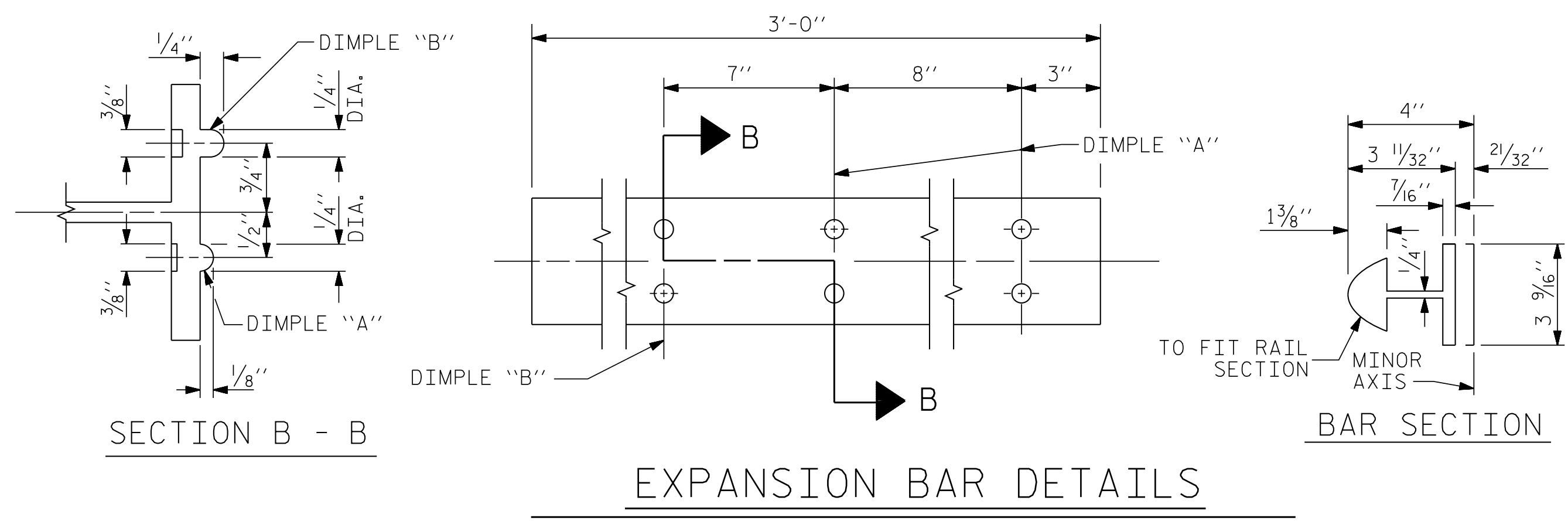
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

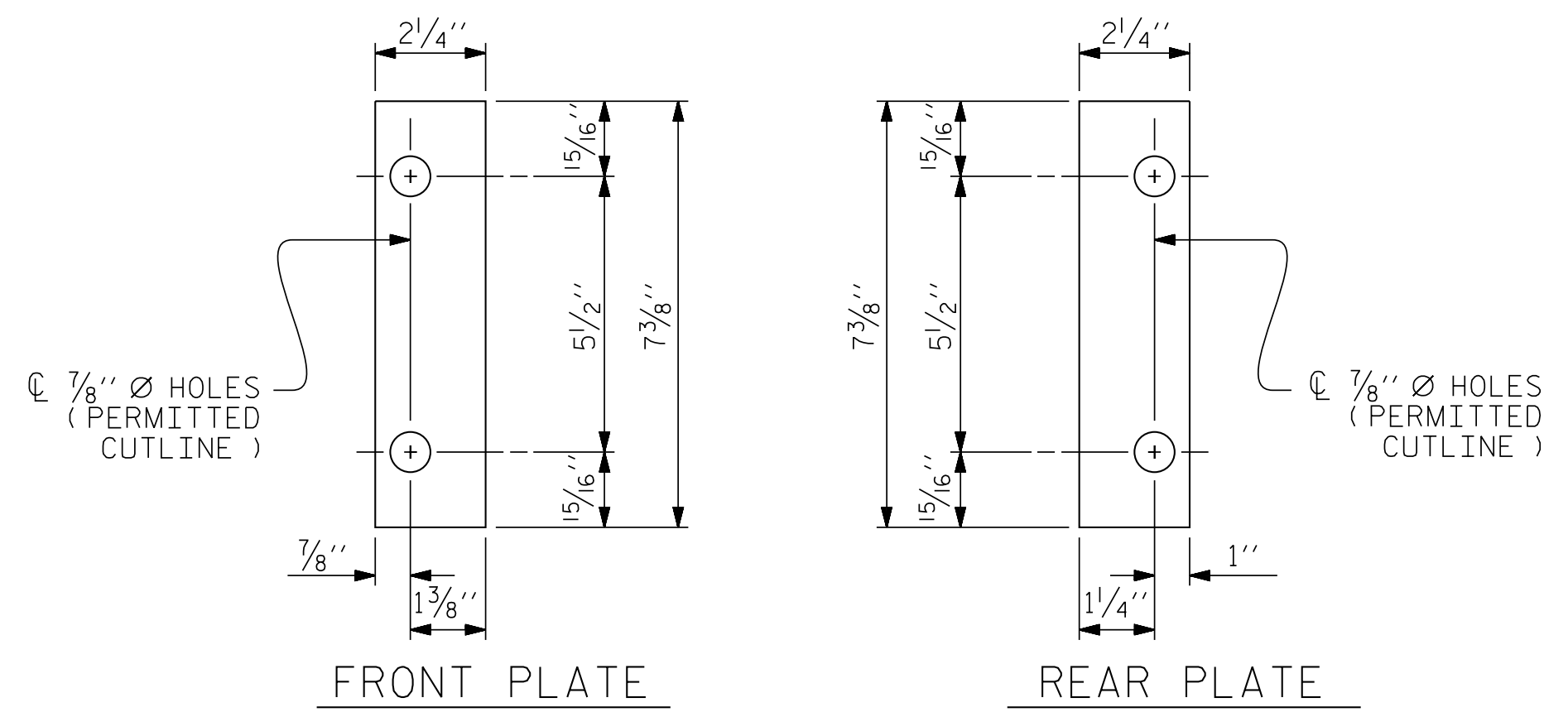


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(60 ASSEMBLIES REQUIRED)

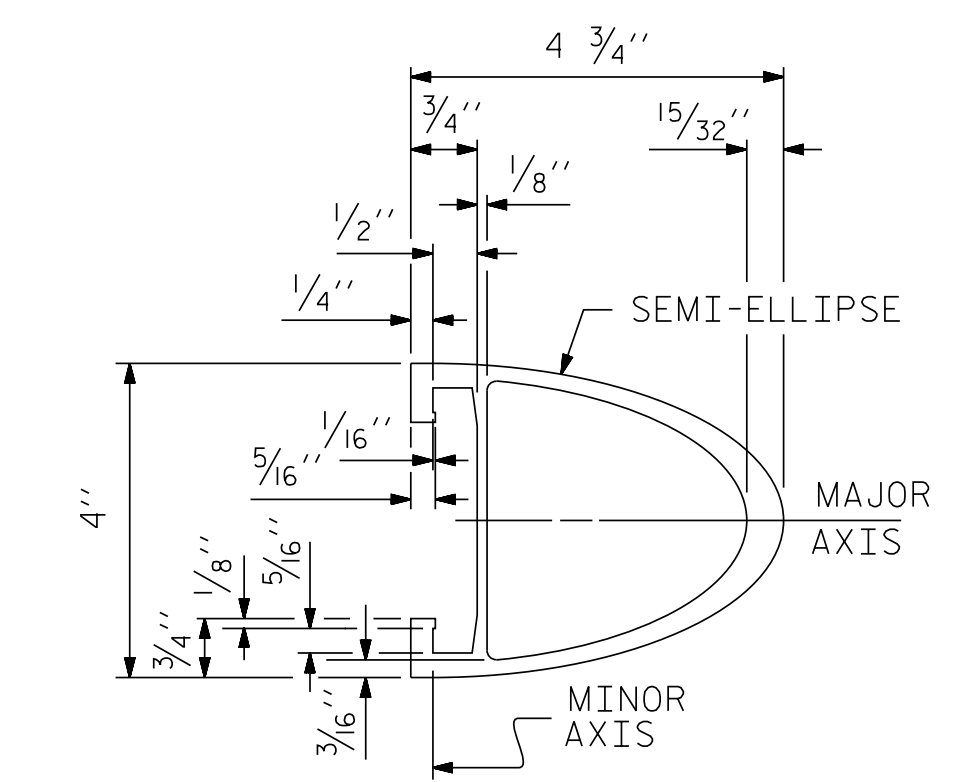


EXPANSION BAR DETAILS

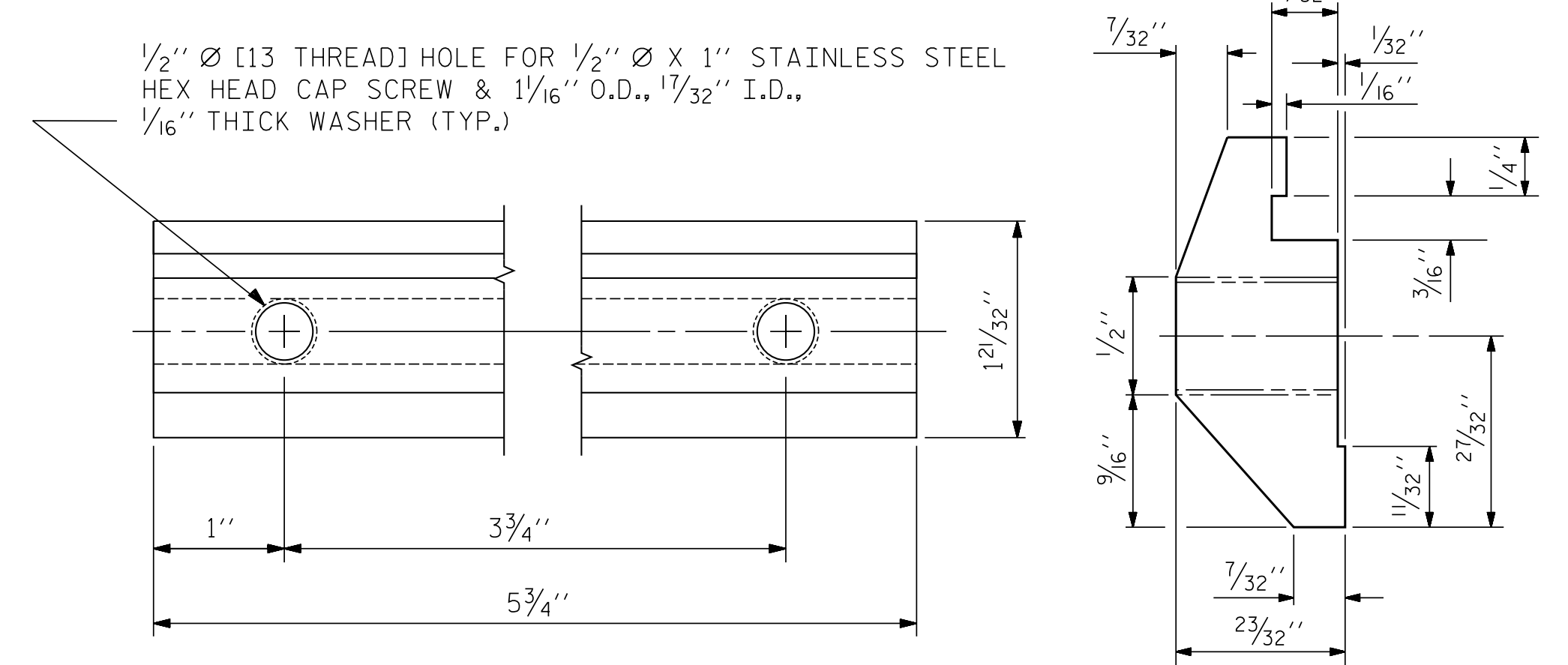


SHIM DETAILS

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

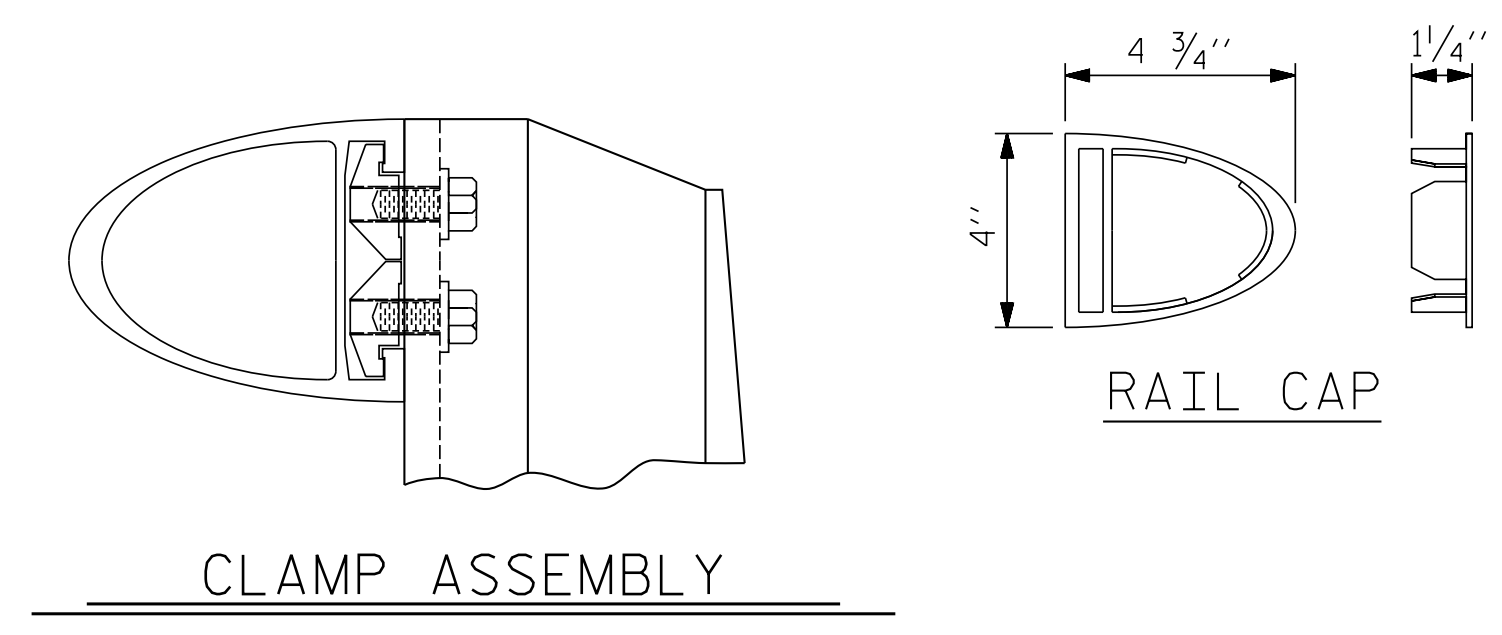


RAIL SECTION



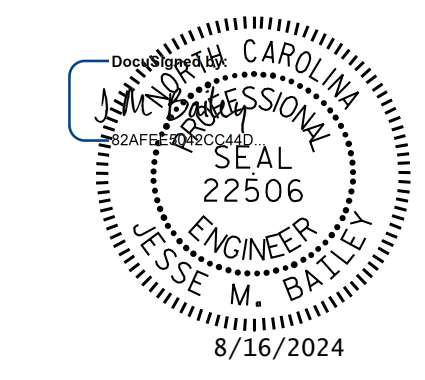
CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP



PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 4 OF 4

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

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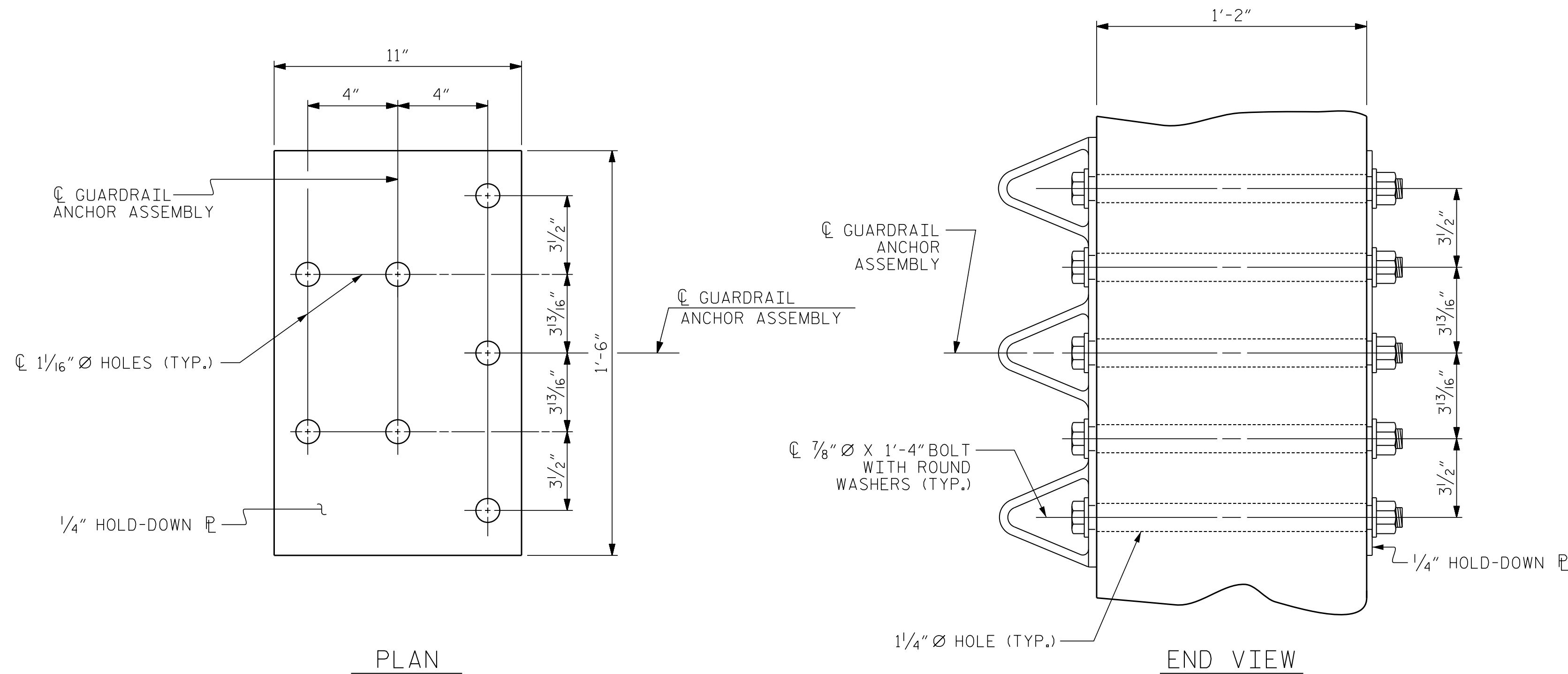
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-40	
1			3			TOTAL SHEETS 72	
2			4				

STD. NO. BMR4

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 TIME: 4:30:2024

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CHKD. BY: GFW	DATE: 01/24	CHECKED BY: RGW 6/94	REV. 10/1/11	MAA/GM
DES. EGR. OF RECORD: JMB	DATE: 01/24		REV. 12/17	MAA/THC



GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

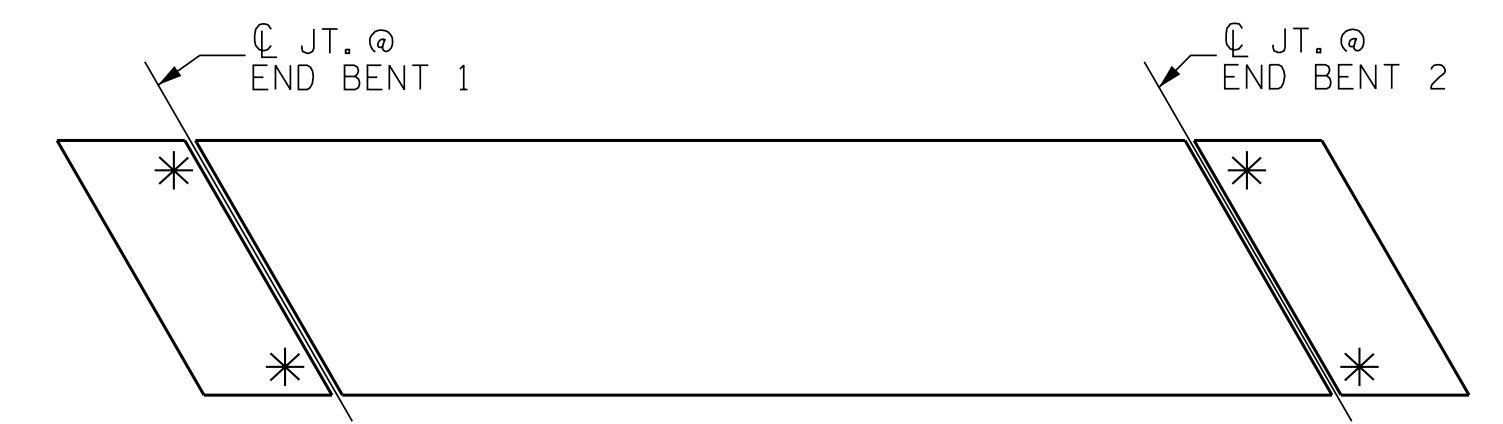
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

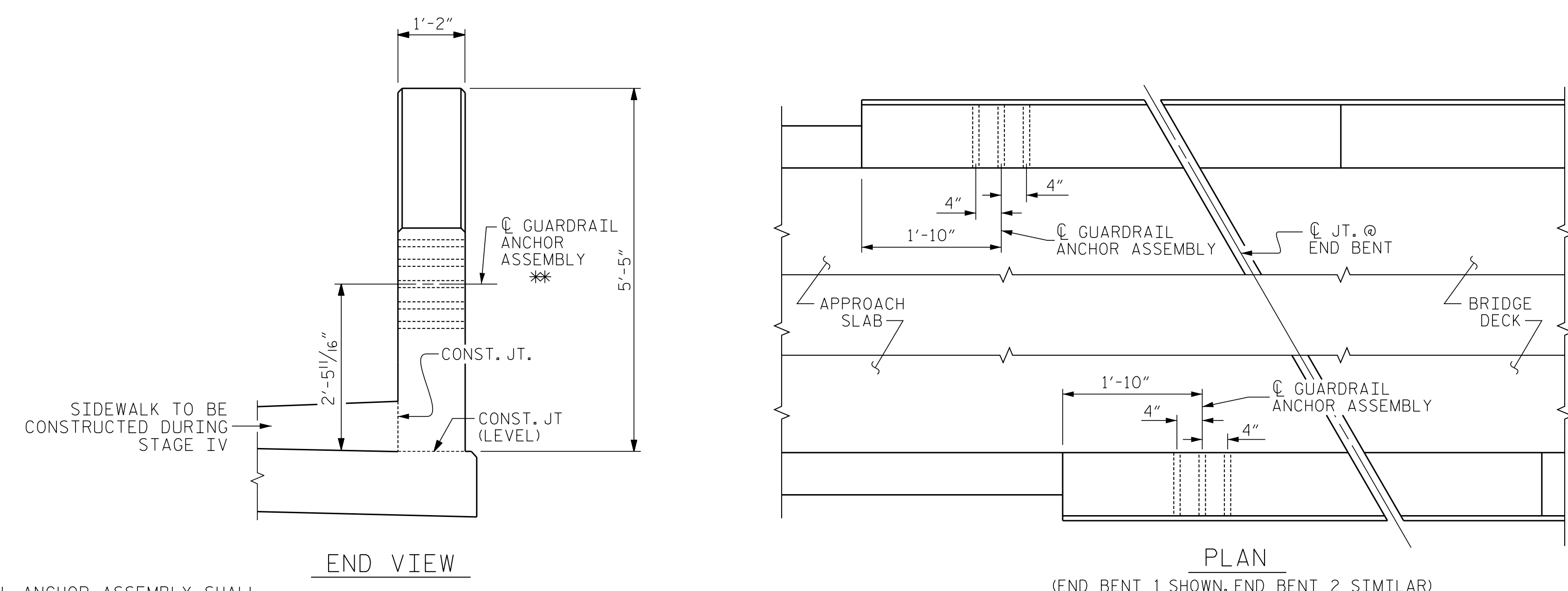
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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



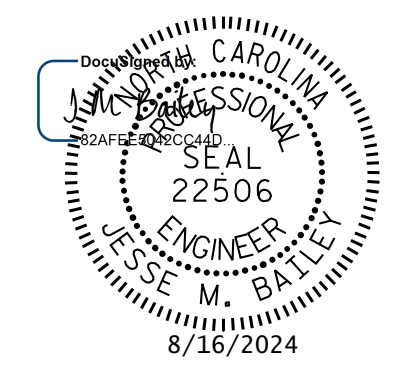
SKETCH SHOWING POINTS OF ATTACHMENT
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

* GUARDRAIL ANCHOR ASSEMBLY SHALL BE INSTALLED DURING STAGE I (RT. SIDE) AND STAGE IIB (LT. SIDE). THE 2'-5 11/16" DIMENSION PLACES THE GUARDRAIL ANCHOR ASSEMBLY 1'-9" ABOVE TOP OF SIDEWALK, WHICH WILL BE CONSTRUCTED DURING STAGE IV.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-



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

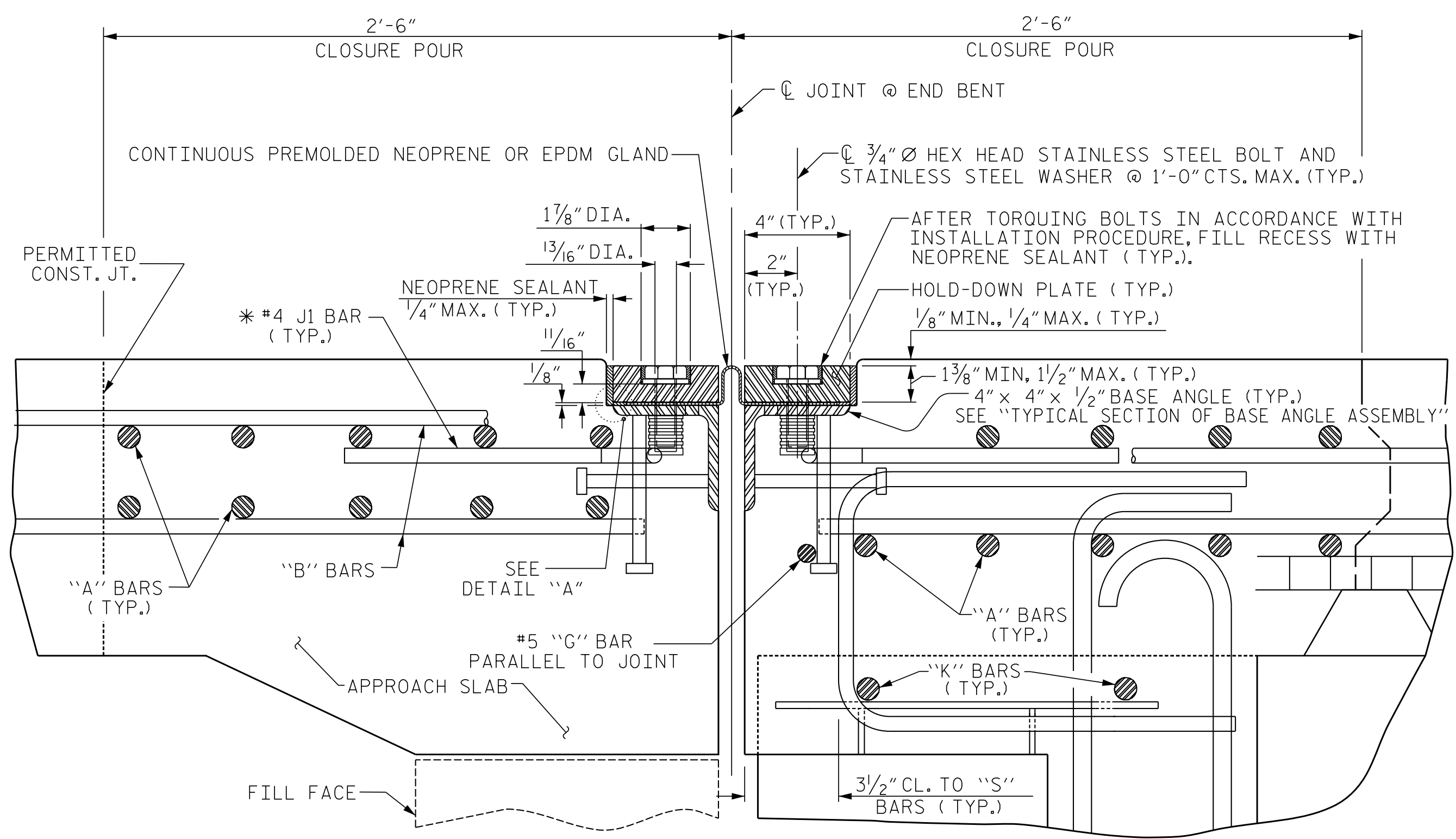
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-41
1			3			TOTAL SHEETS
2			4			72

DWN. BY: WDC	DATE: 01/24	DRAWN BY: MAA	5/10	REV. 1/15	MAA/TMG
CHKD. BY: GFW	DATE: 01/24	CHECKED BY: GM	5/10	REV. 12/17	MAA/THC
DES. EGR. OF RECORD: JMB	DATE: 01/24			REV. 5/18	MAA/THC

WDC:GFW: 08/20/2017 15:00:31 - Replacement CAD Structures CAD 3-31-23 V01_079_J-5717-SMUGRAIL_S4.dgn
 TIME: 4/30/2024



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

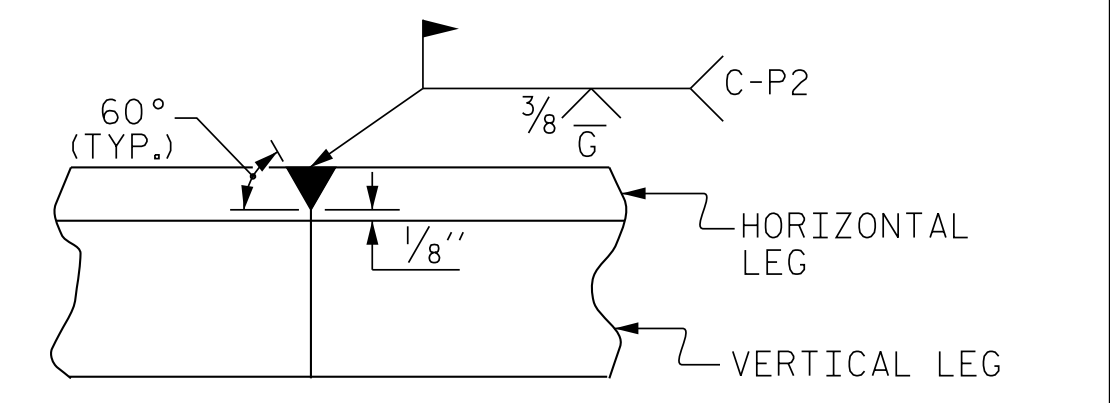
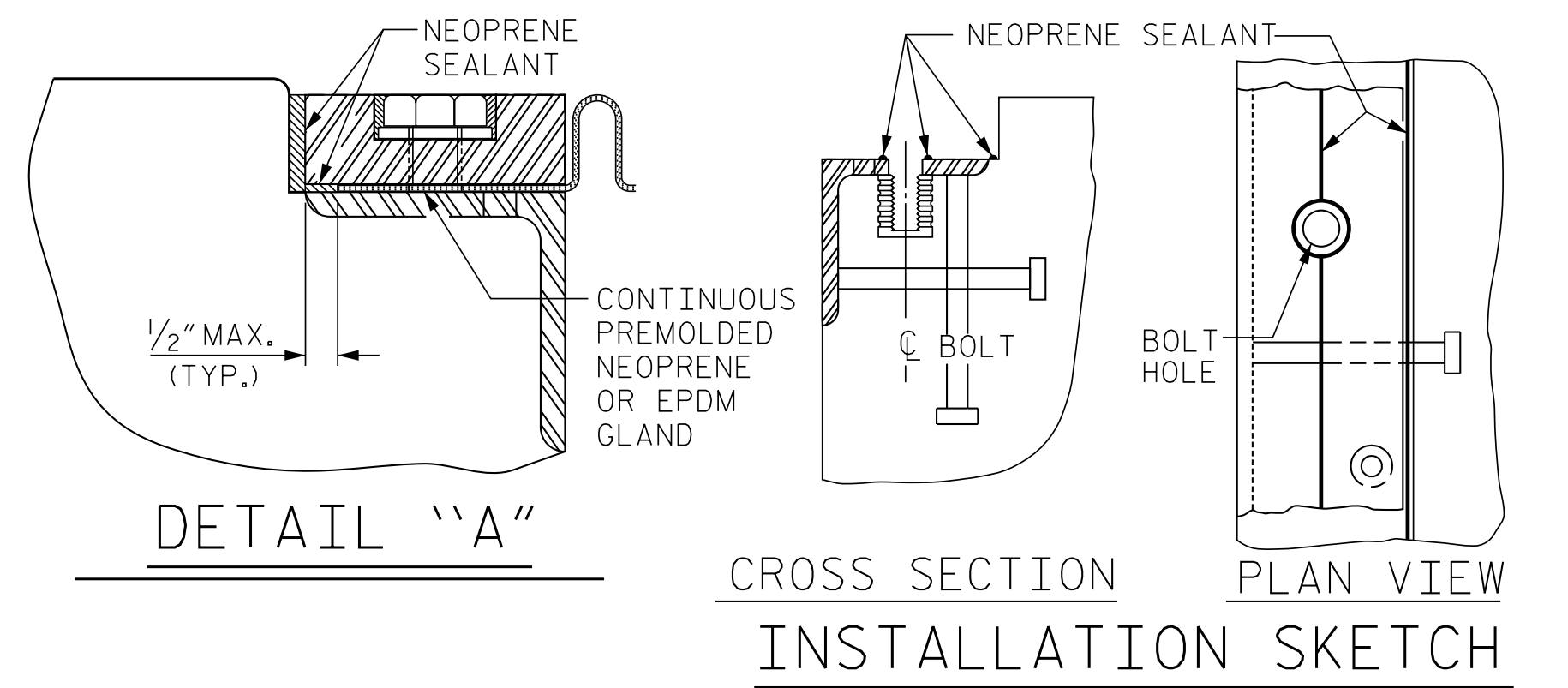
* THE QUANTITY OF #4 JI BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. JI BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF JI BARS SPECIFIED, ADDITIONAL JI BARS WILL NOT BE REQUIRED.

INSTALLATION PROCEDURE

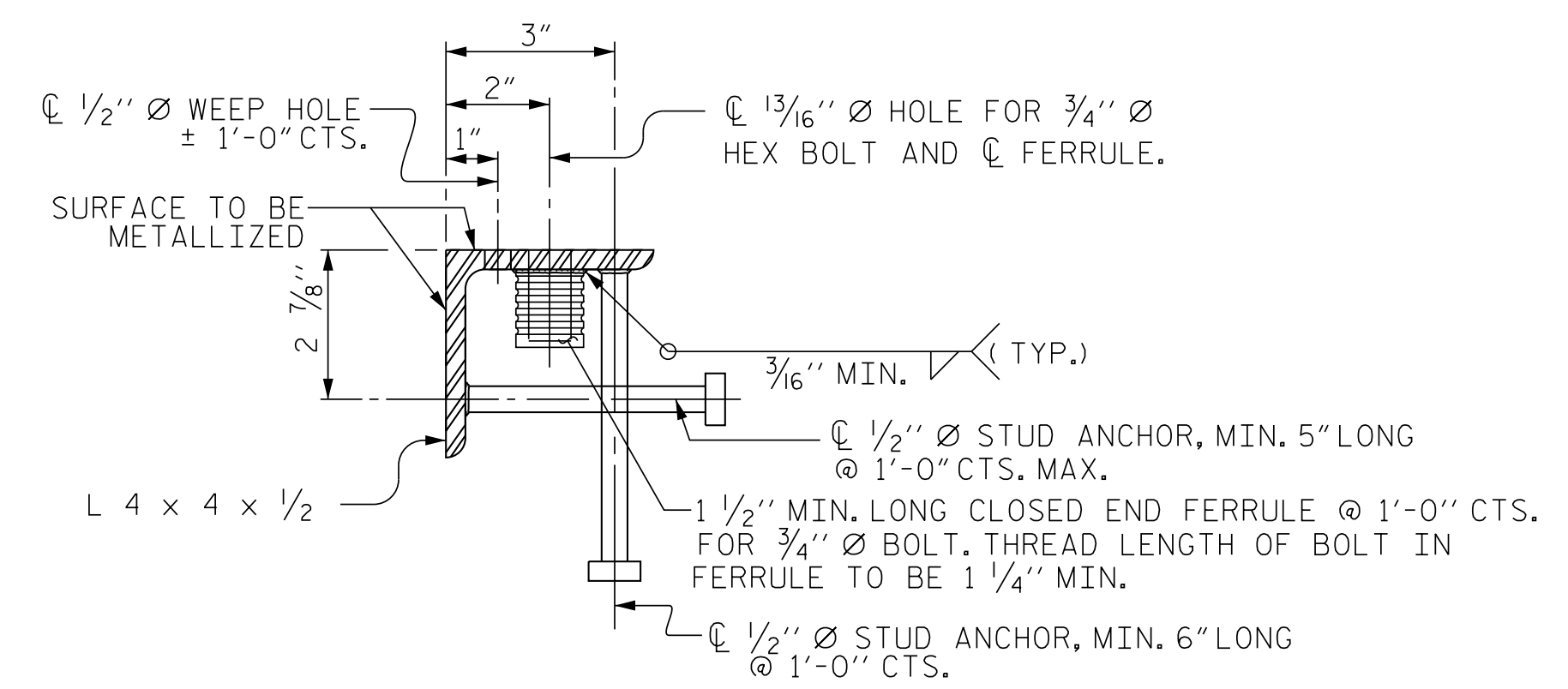
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4/8" TO 4/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO 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" 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 1/8" 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 TORQUE WRENCH 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 STAGE IIB. NO SEPARATE PAYMENT WILL BE MADE FOR THE TEMPORARY GLAND.

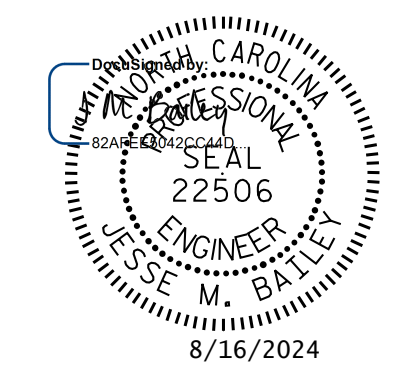


LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	MOVEMENT AND SETTING AT JOINT		
			PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	73°-37'-45"	9/16"	2 9/16"	2 1/2"	2 5/16"
END BENT 2	73°-37'-45"	9/16"	2 9/16"	2 1/2"	2 5/16"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT
 SEAL DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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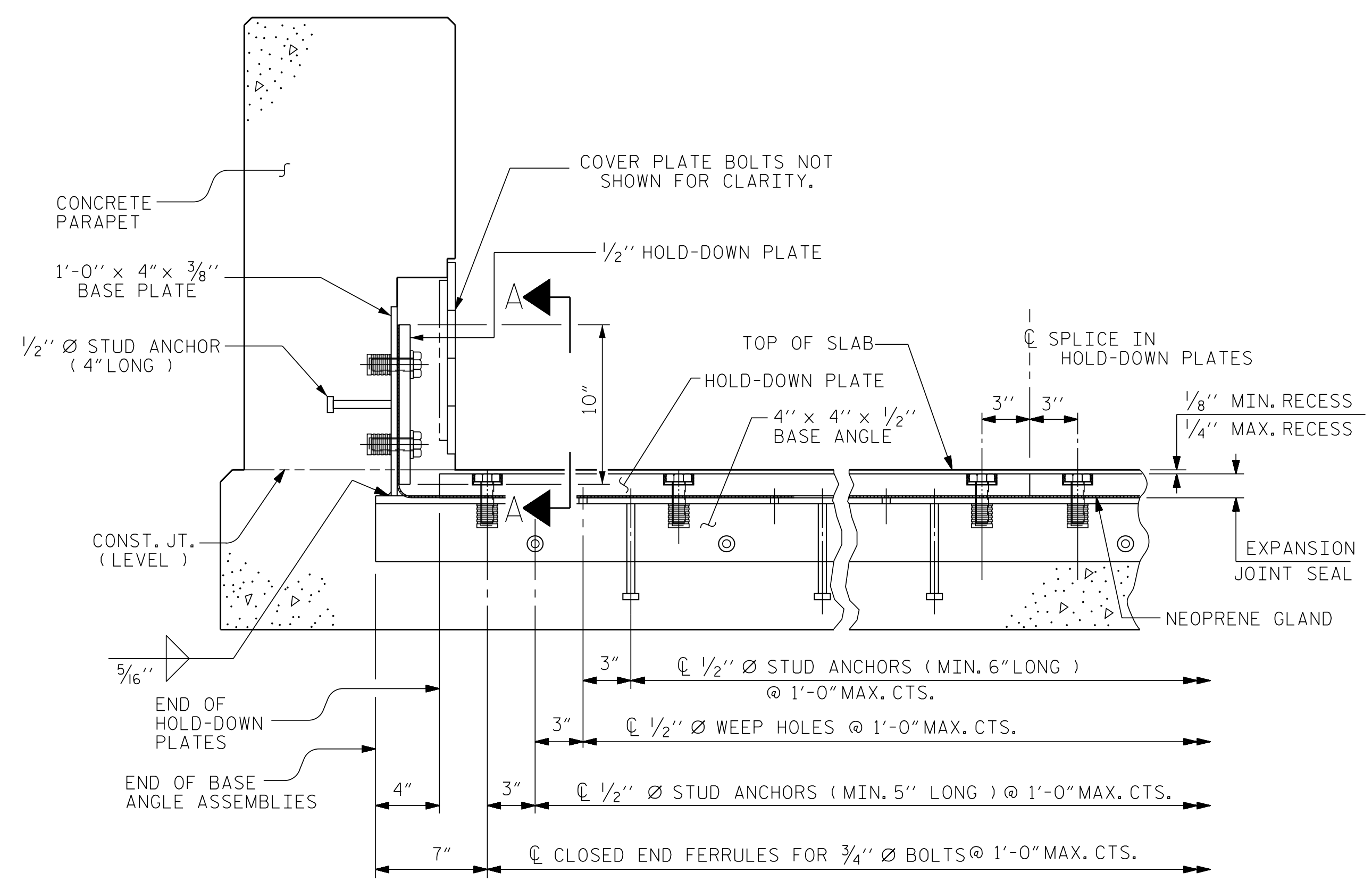
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-42
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2			4			

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 DATE: 7/30/2024

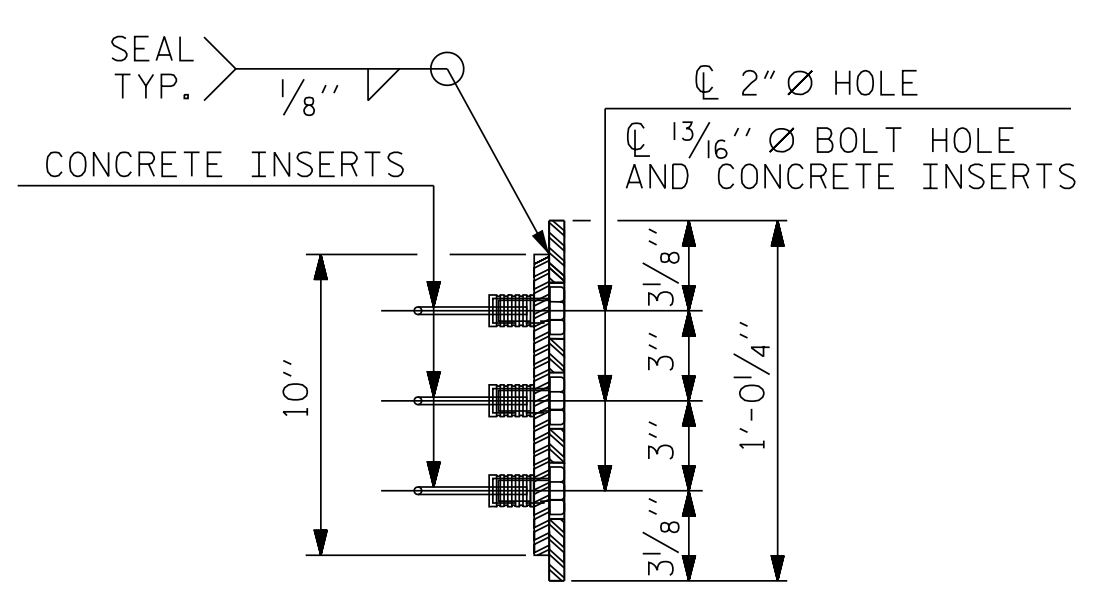
DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

DRAWN BY: REK 9/87
 CHECKED BY: CRK 10/87

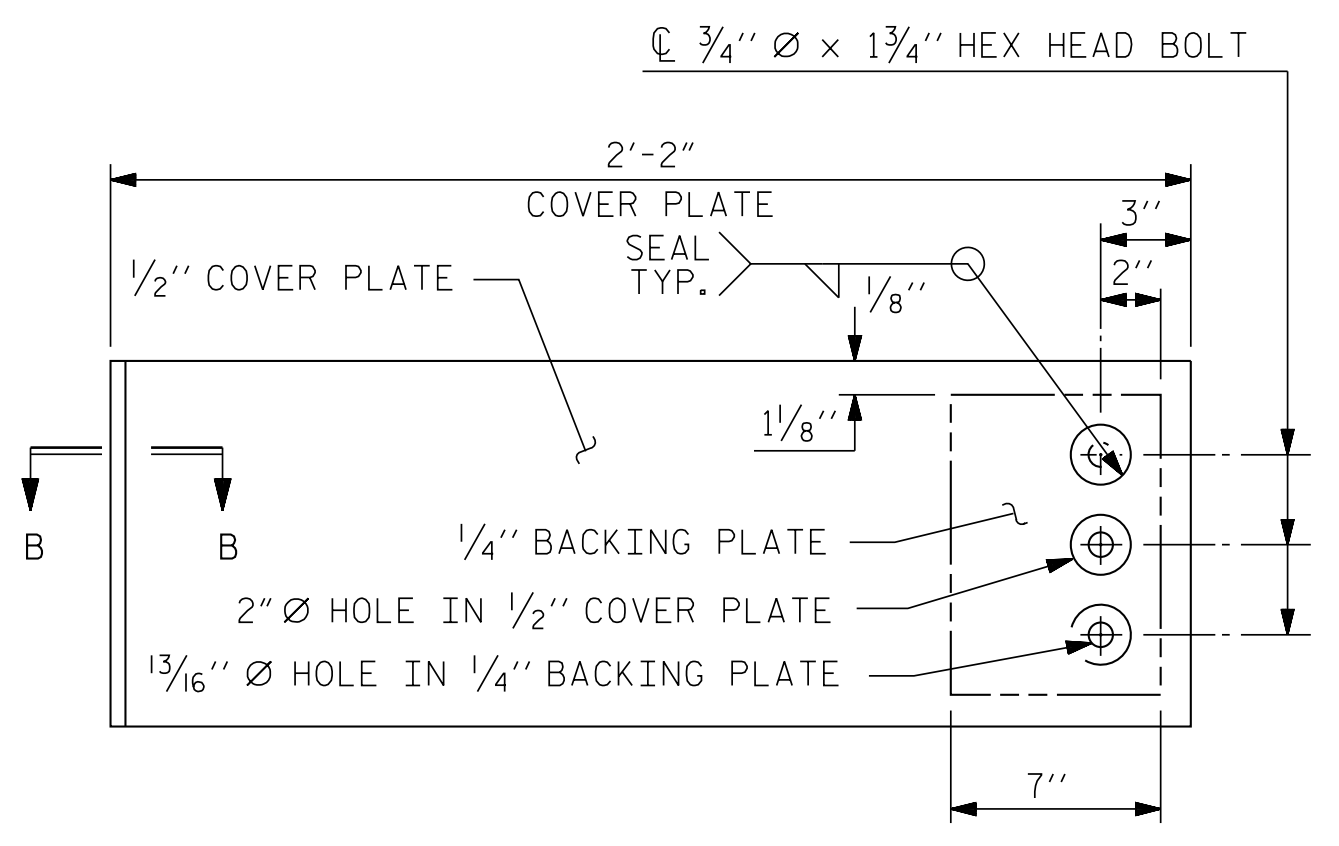
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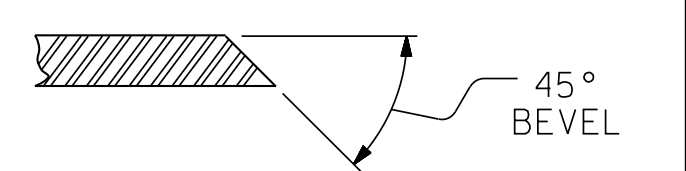
SECTION THRU RAIL NORMAL TO JOINT



END VIEW

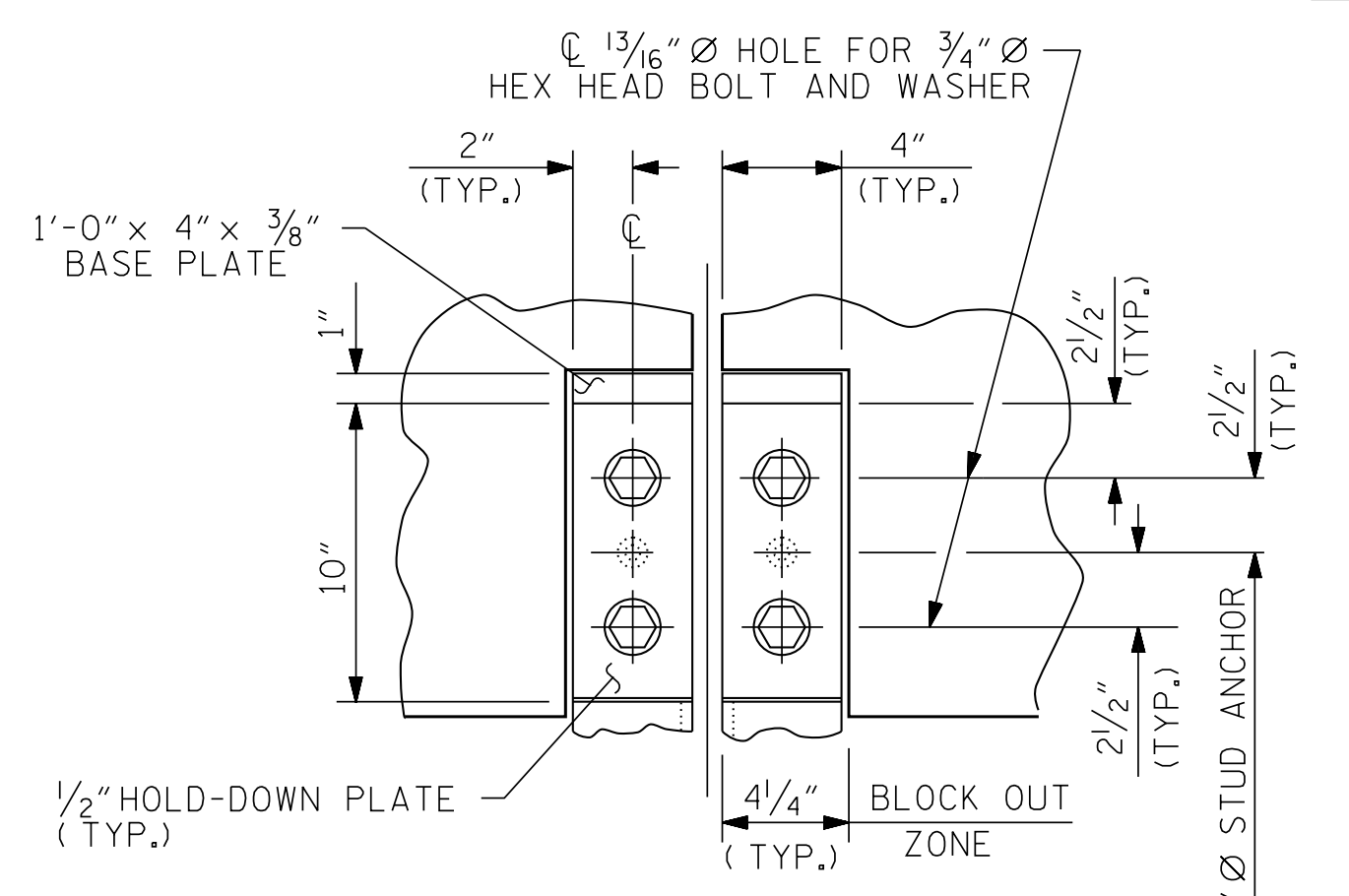


ELEVATION VIEW

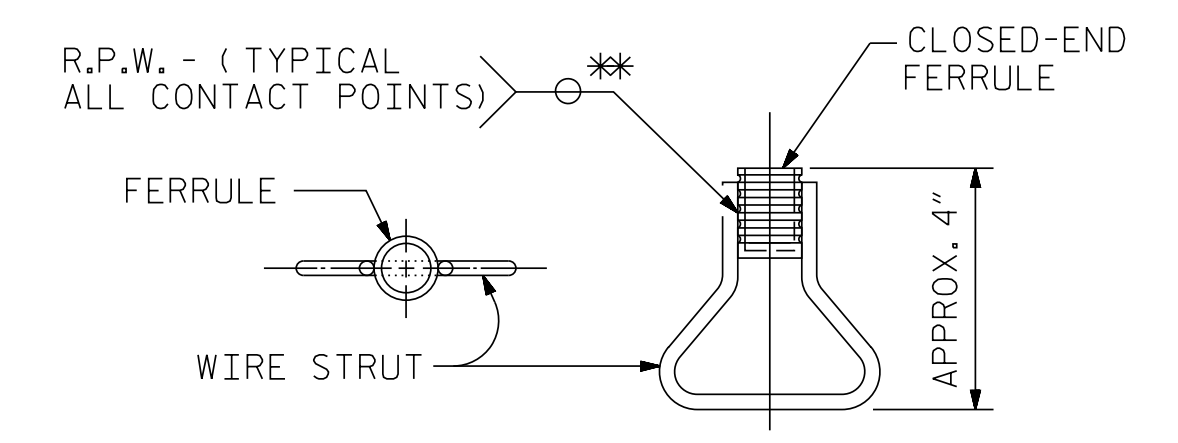


SECTION B-B

COVER PLATE DETAILS



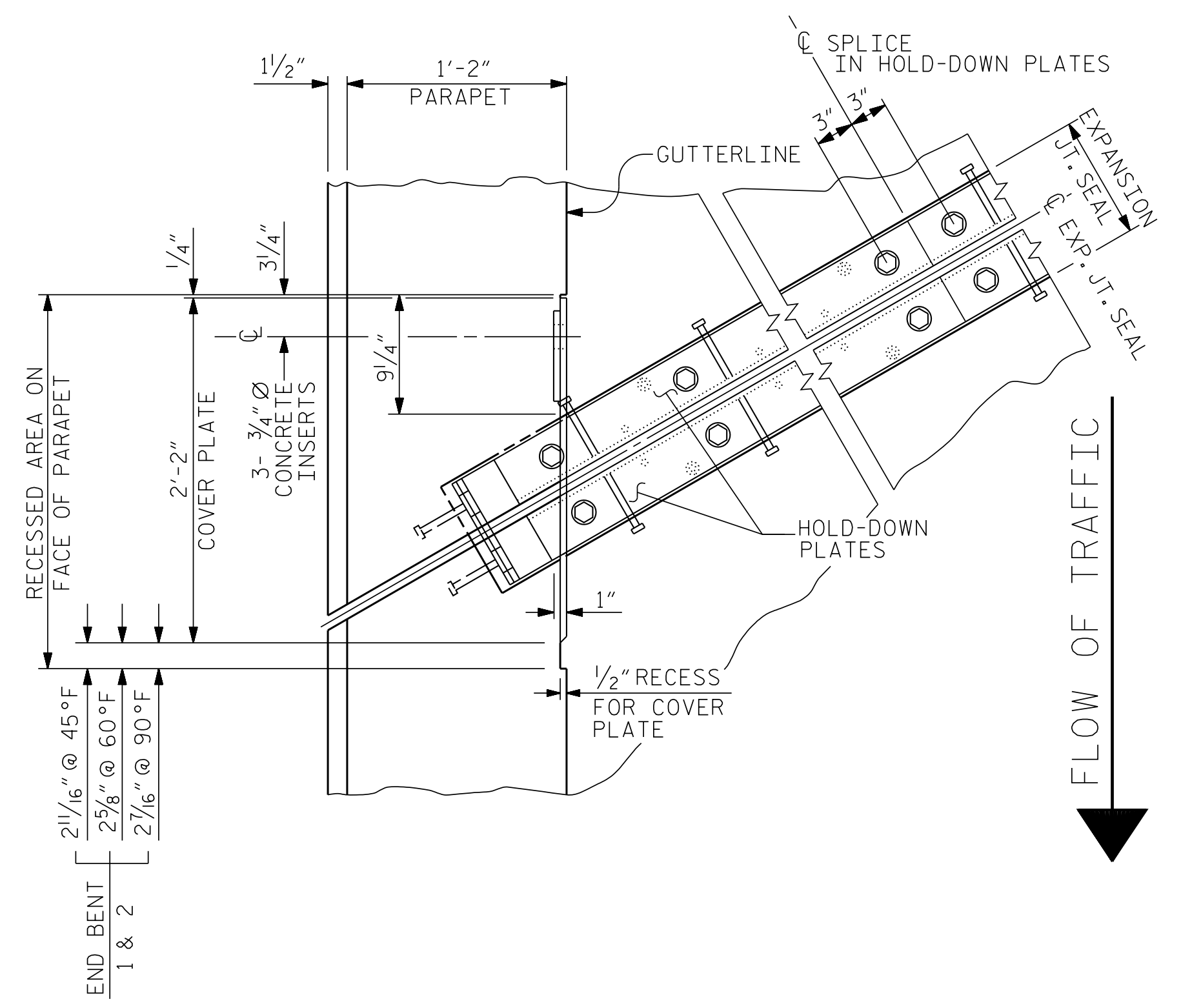
SECTION A-A



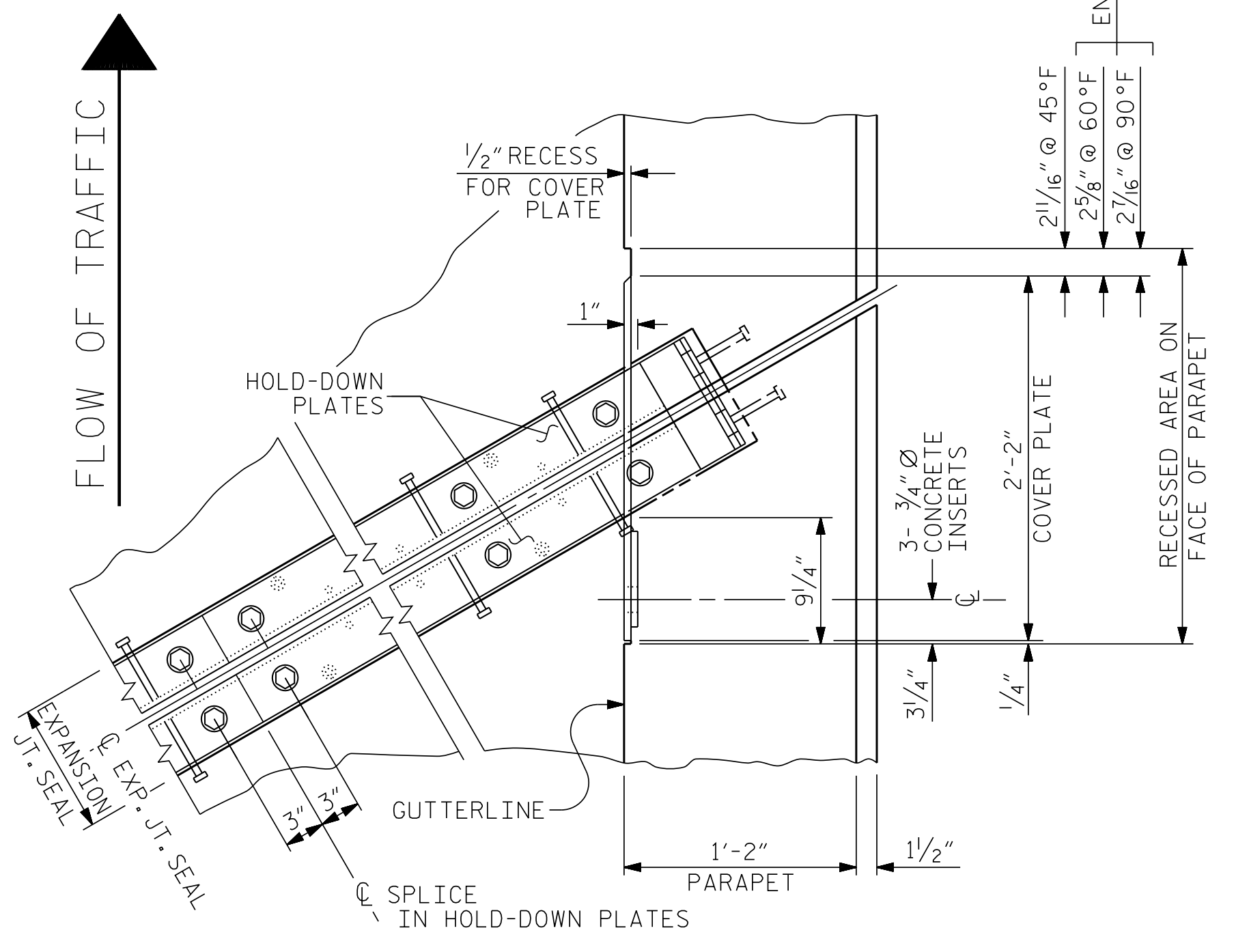
PLAN ELEVATION

CONCRETE INSERT

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

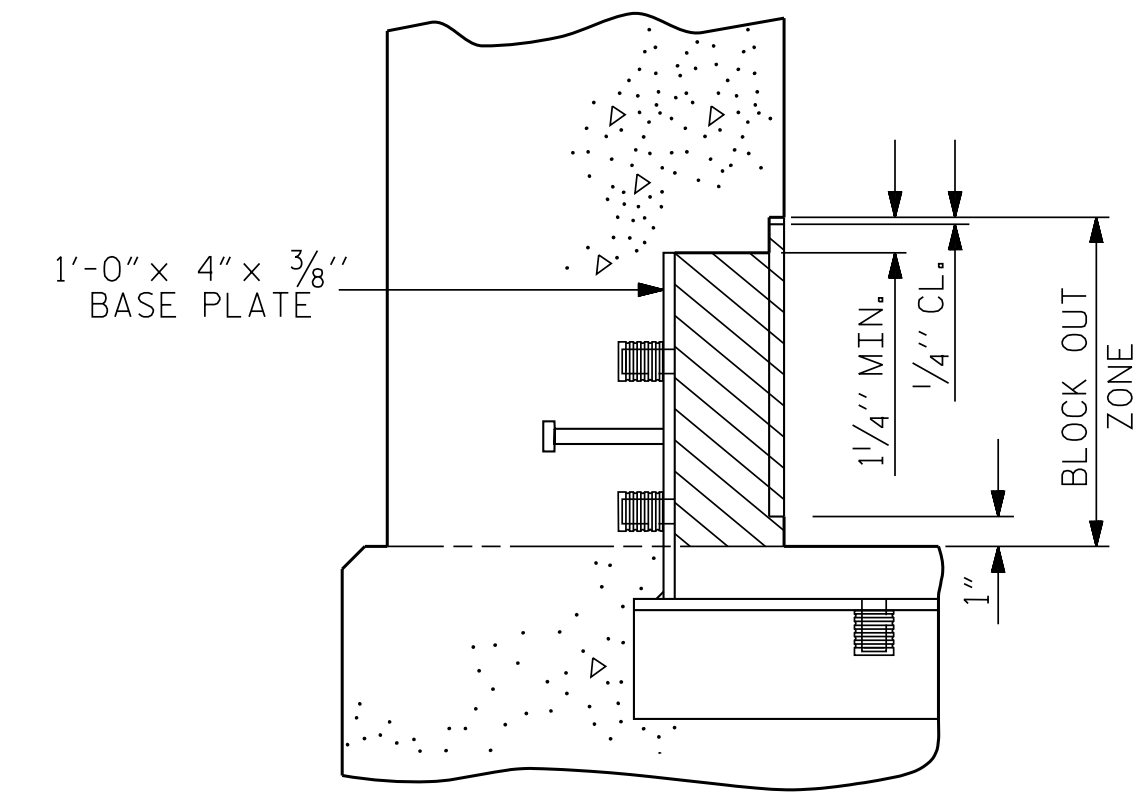


PLAN OF EXPANSION JOINT SEAL



BLOCK OUT DETAIL

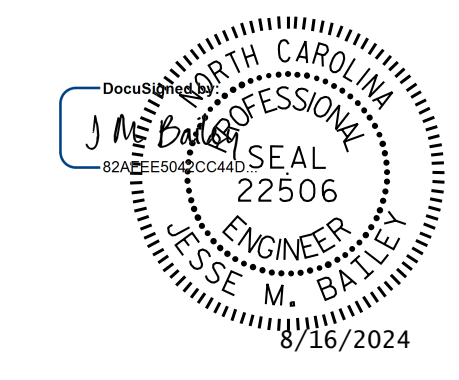
SEE "SECTION A-A" FOR OTHER DETAILS.



BLOCK OUT DETAIL

SEE "SECTION A-A" FOR OTHER DETAILS.

PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 3



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
EXPANSION JOINT SEAL DETAILS FOR 1'-2" CONCRETE PARAPET					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S2-43
TOTAL SHEETS 72

WDC:GDN
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 DES. EGR. OF RECORD: JMB

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

BILL OF MATERIAL

STAGE I

Table with columns: BAR, NO., SIZE, TYPE, LENGTH, WEIGHT. Rows include items *A1 through *A23 and A201 through A223.

REINFORCING STEEL 26,907 LBS.
*EPOXY COATED REINFORCING STEEL 28,413 LBS.

BILL OF MATERIAL

STAGE IIB

Table with columns: BAR, NO., SIZE, TYPE, LENGTH, WEIGHT. Rows include items *A3 through *A410 and A401 through A410.

REINFORCING STEEL 33,663 LBS.
*EPOXY COATED REINFORCING STEEL 34,966 LBS.

BILL OF MATERIAL

STAGE IIIB

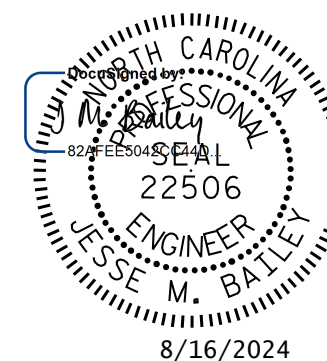
Table with columns: BAR, NO., SIZE, TYPE, LENGTH, WEIGHT. Rows include items *A5 through *A620 and A601 through A620.

REINFORCING STEEL 38,897 LBS.
*EPOXY COATED REINFORCING STEEL 43,507 LBS.

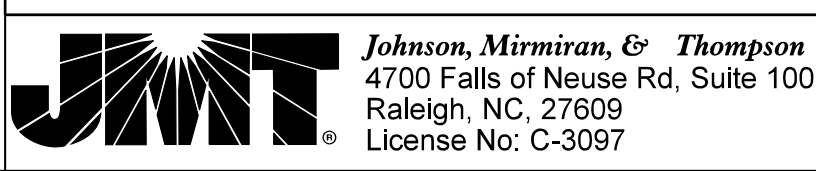
BILL OF MATERIAL

STAGE IV

Table with columns: BAR, NO., SIZE, TYPE, LENGTH, WEIGHT. Rows include items *B7, *G7, *G8, *L1 and summary rows for REINFORCING STEEL and *EPOXY COATED REINFORCING STEEL.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

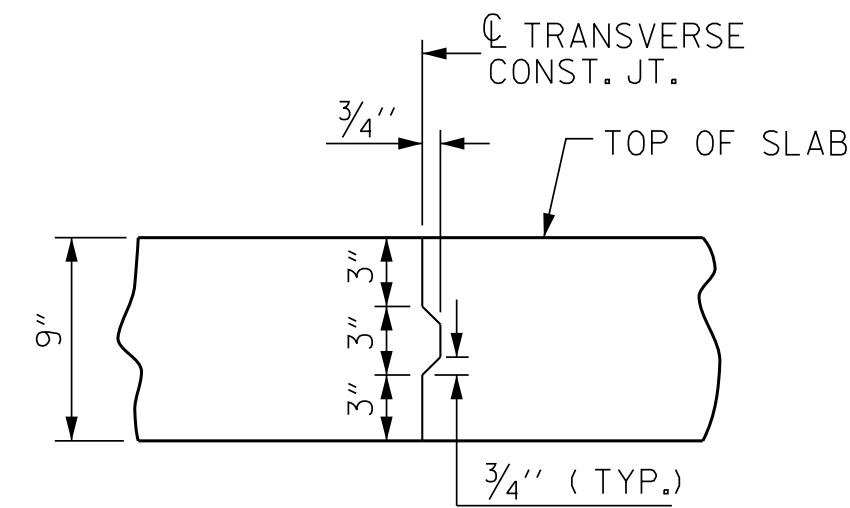


PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-

SHEET 1 OF 3

Table with columns: NO., BY:, DATE:, NO., BY:, DATE:, SHEET NO., TOTAL SHEETS. Includes revision table and sheet numbering (S2-45, 72).

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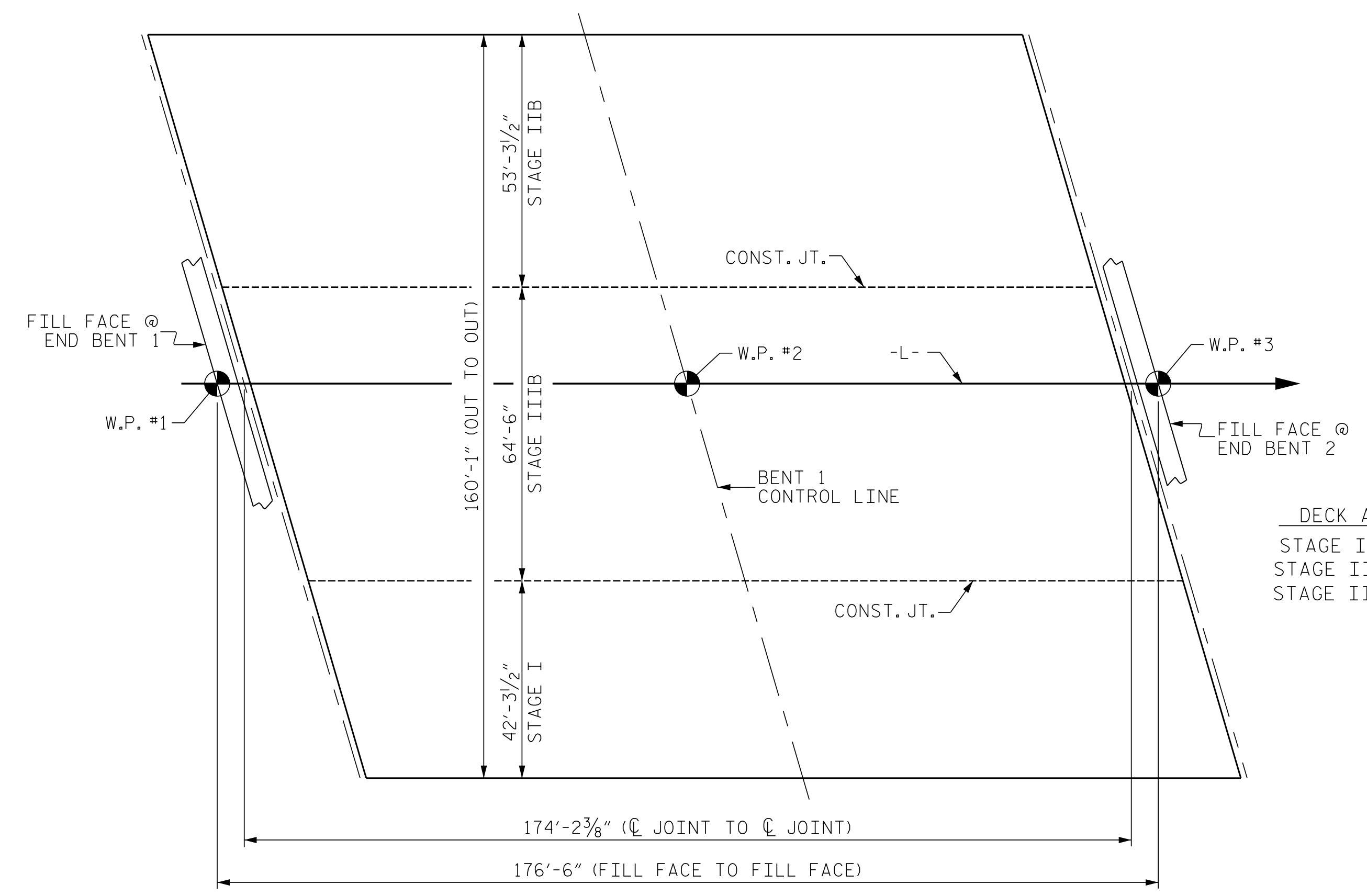
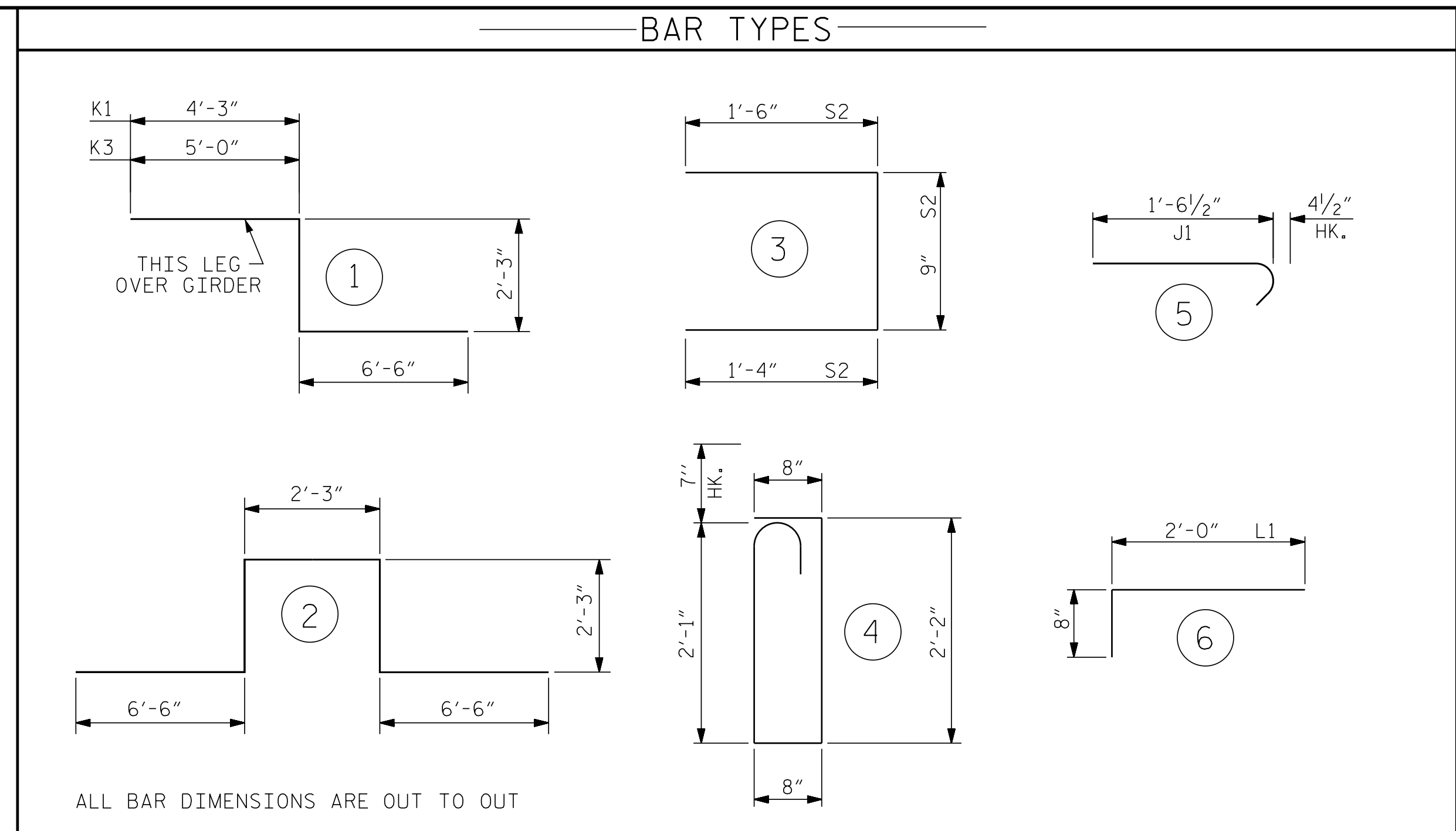


TRANSVERSE CONSTRUCTION JOINT DETAIL

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

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB

TOTAL = 27,886 SQ. FT.

GROOVING BRIDGE FLOORS	
STAGE I	
APPROACH SLABS	1834 SQ.FT.
BRIDGE DECK	6845 SQ.FT.
TOTAL	8679 SQ.FT.
STAGE IIB	
APPROACH SLABS	2365 SQ.FT.
BRIDGE DECK	8751 SQ.FT.
TOTAL	11116 SQ.FT.
STAGE IIIB	
APPROACH SLABS	2896 SQ.FT.
BRIDGE DECK	9877 SQ.FT.
TOTAL	12773 SQ.FT.
TOTAL	
APPROACH SLABS	7095 SQ.FT.
BRIDGE DECK	25473 SQ.FT.
TOTAL	32568 SQ.FT.

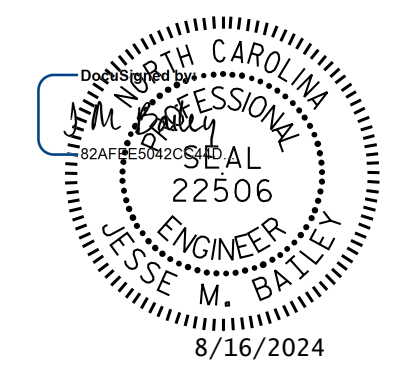
DECK AREA BREAKDOWN	
STAGE I	= 7367 SQ. FT.
STAGE IIB	= 9283 SQ. FT.
STAGE IIIB	= 11,236 SQ. FT.

CLASS AA CONCRETE BREAKDOWN	
STAGE I	
POUR 1	113.4 CU.YD.
POUR 2	139.1 CU.YD.
TOTAL	252.5 CU.YD.
STAGE IIB	
POUR 1	142.5 CU.YD.
POUR 2	174.7 CU.YD.
TOTAL	317.2 CU.YD.
STAGE IIIB	
POUR 1	155.9 CU.YD.
POUR 2	191.0 CU.YD.
TOTAL	346.9 CU.YD.
CONCRETE MEDIAN	11.1 CU.YD.
CLOSURE POUR (LT)	19.3 CU.YD.
CLOSURE POUR (RT)	19.3 CU.YD.
TOTAL	49.7 CU.YD.
STAGE IV	
SIDEWALK (LT)	21.3 CU.YD.
SIDEWALK (RT)	21.3 CU.YD.
TOTAL	42.6 CU.YD.

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
STAGE I	252.5	26,907	28,303
STAGE IIB	317.2	33,663	34,825
STAGE IIIB	396.6	38,897	43,333
STAGE IV	42.6	0	2,737
TOTAL **	1,008.9	99,467	109,198

** QUANTITIES FOR PARAPETS AND END POSTS ARE NOT INCLUDED.

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 3



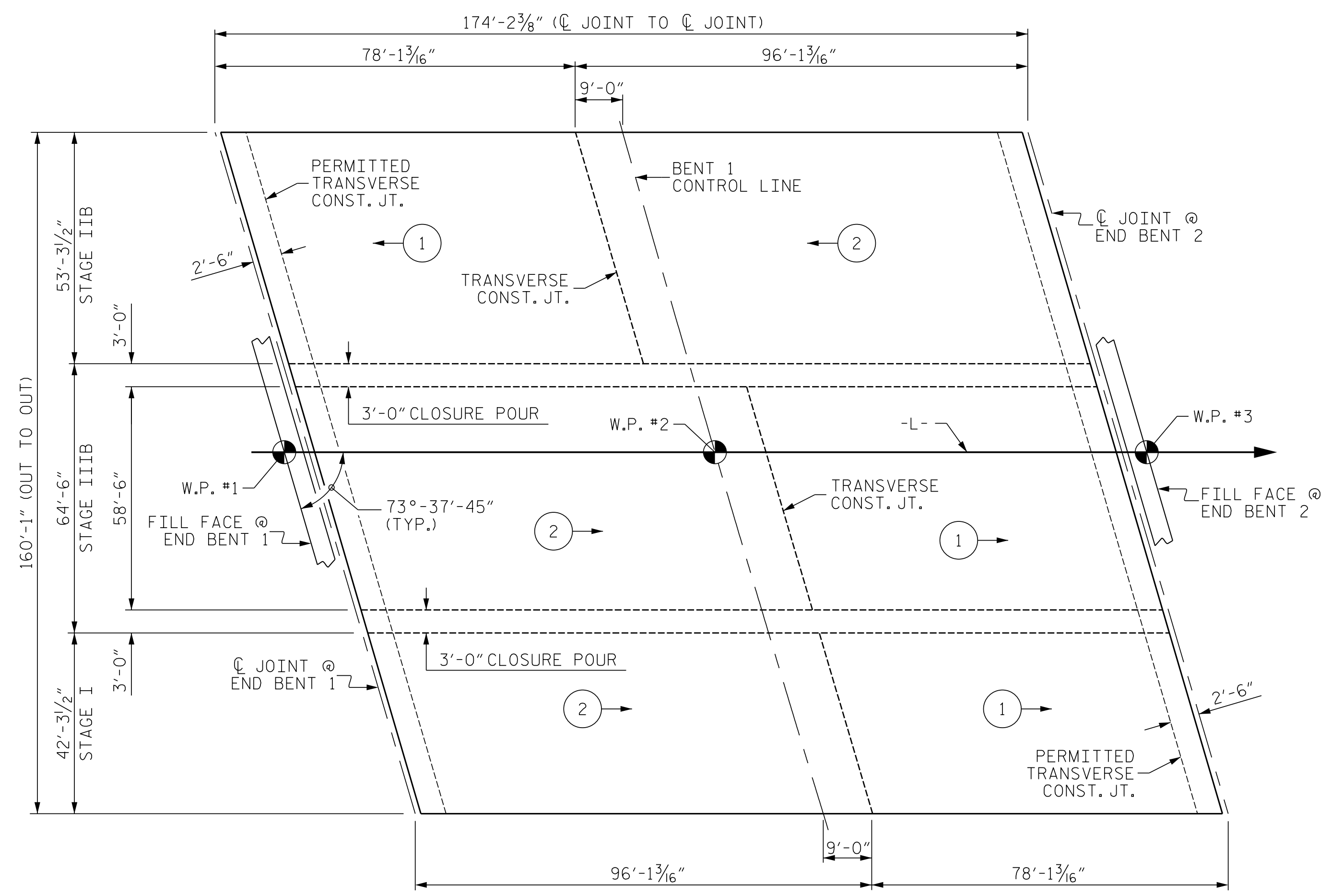
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL
 & LAYOUT FOR
 REINFORCED CONCRETE
 DECK SLAB AREA

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

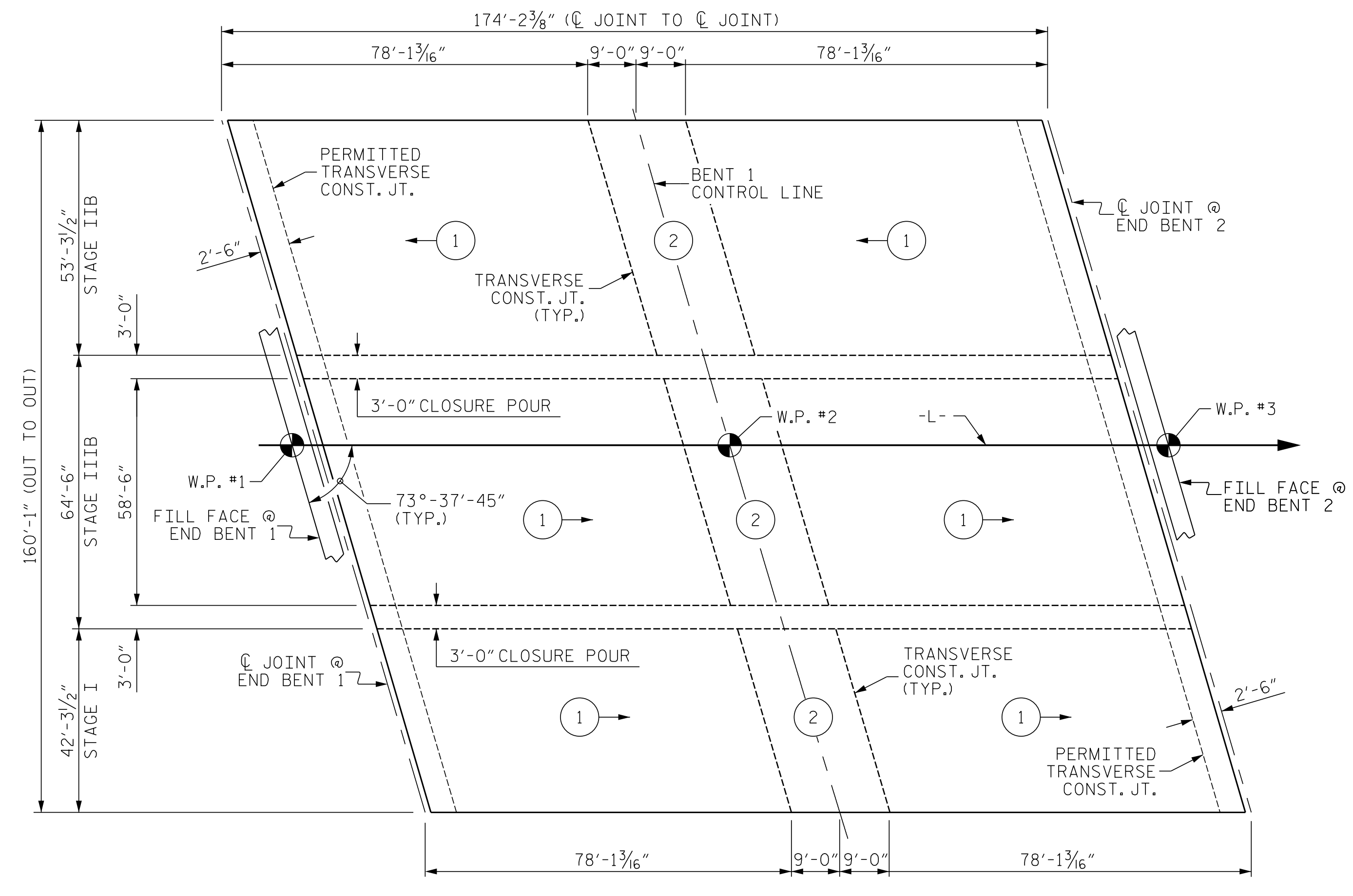
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-46
1			3			TOTAL SHEETS
2			4			72

WDC/CFW
 DATE: 01/24
 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: JMB
 DATE: 01/24



POURING SEQUENCE



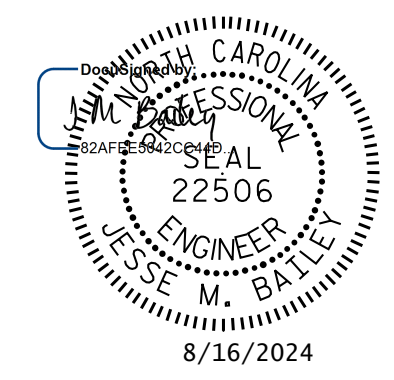
OPTIONAL POURING SEQUENCE

NOTE:
POUR 2 CANNOT BE POURED UNTIL
BOTH ADJACENT POURS REACH A
MINIMUM OF 3,000 PSI.

INDICATES POUR SEQUENCE NUMBER
AND POUR DIRECTION.

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
POURING SEQUENCE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-47
1			3			TOTAL SHEETS
2			4			72

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 TIME: 4/30/2024

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 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: JMB DATE: 01/24

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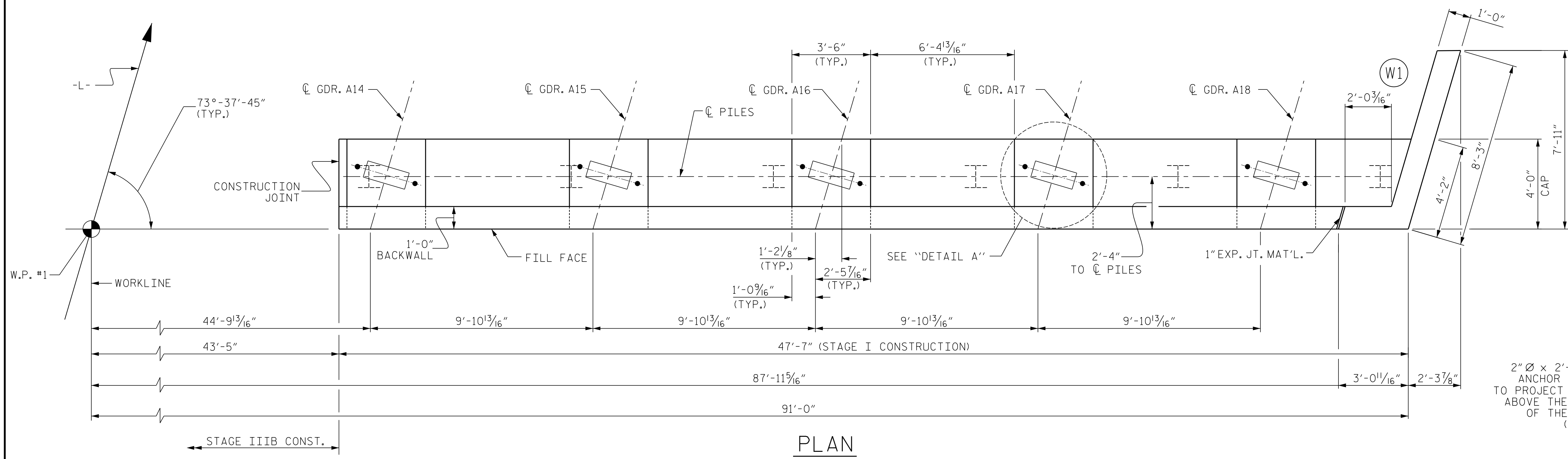
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

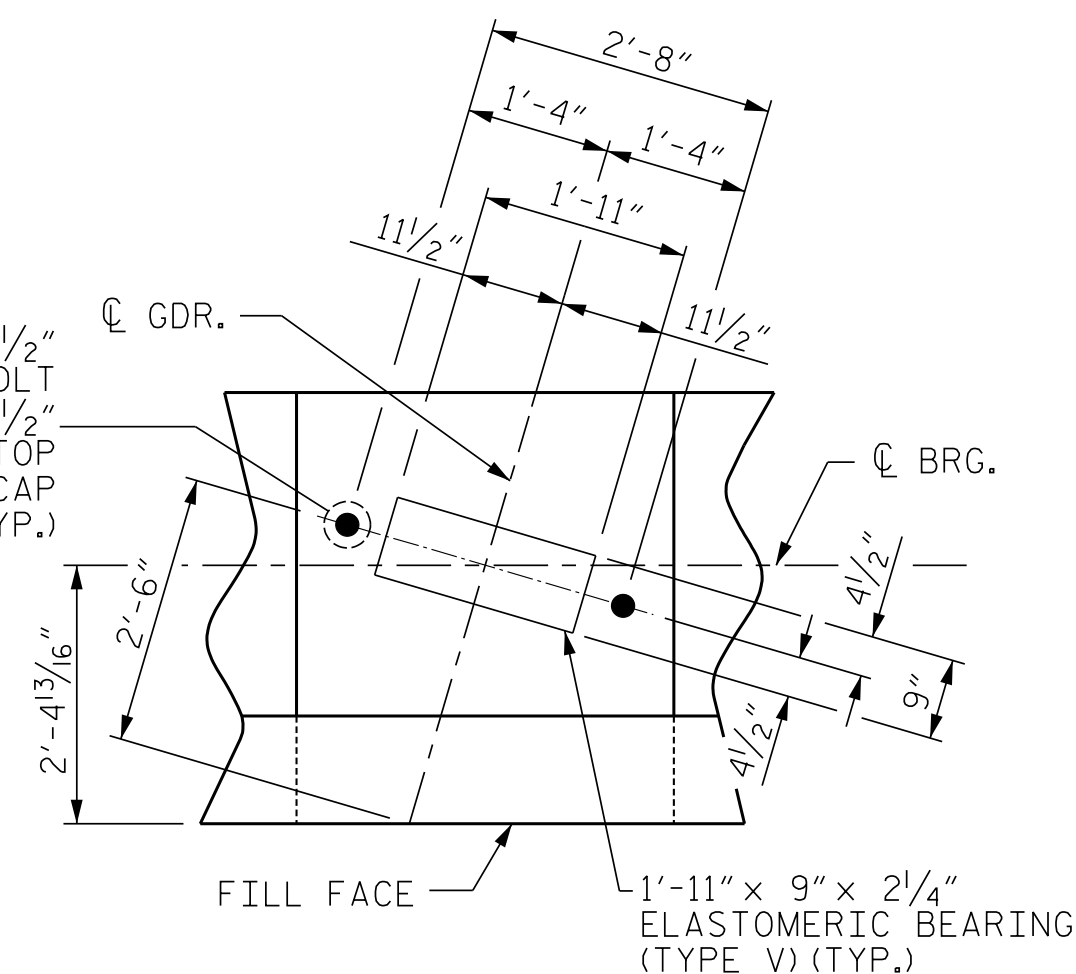
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

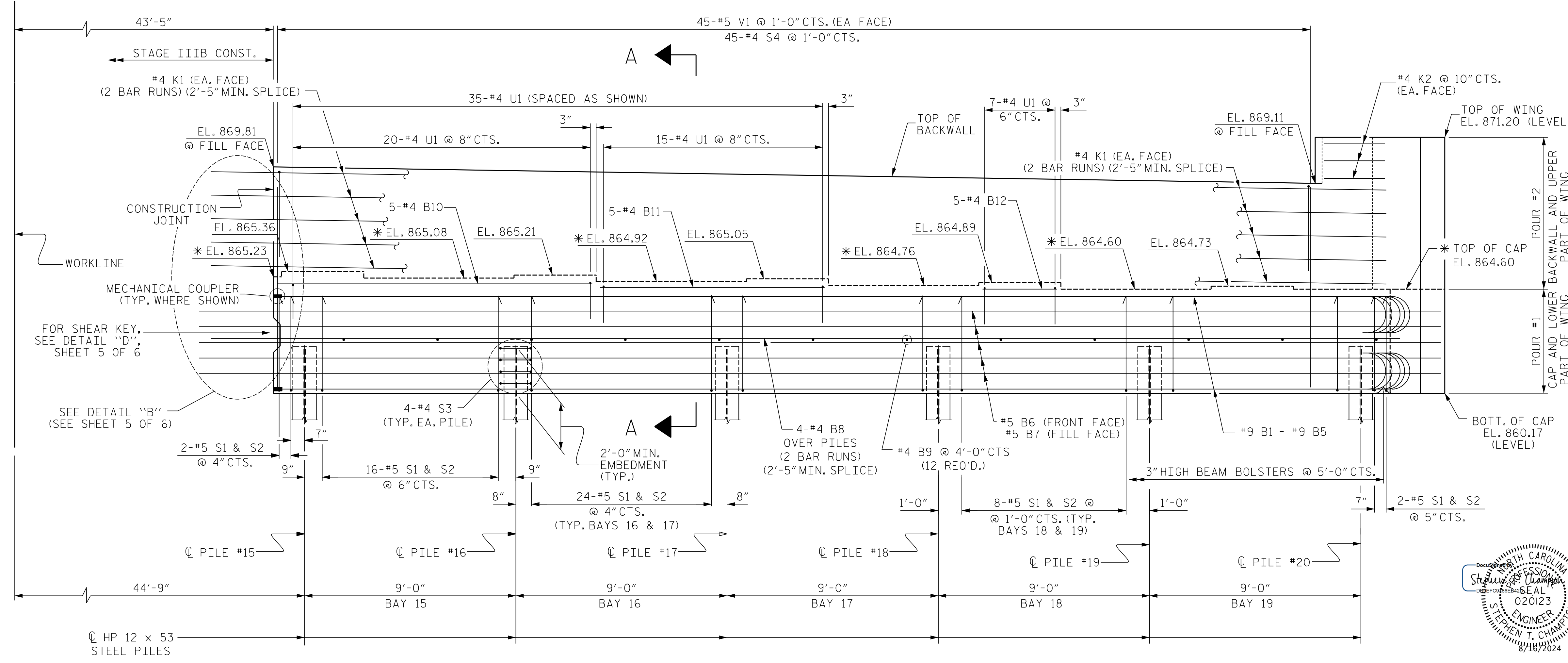
* FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTIONS A-A, B-B AND C-C ON SHEETS 5 OF 6.



PLAN

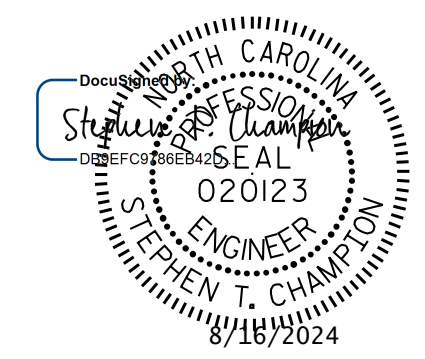


DETAIL "A"
STAGE I
(TYP. EACH GIRDER)



ELEVATION

PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1
 STAGE I**

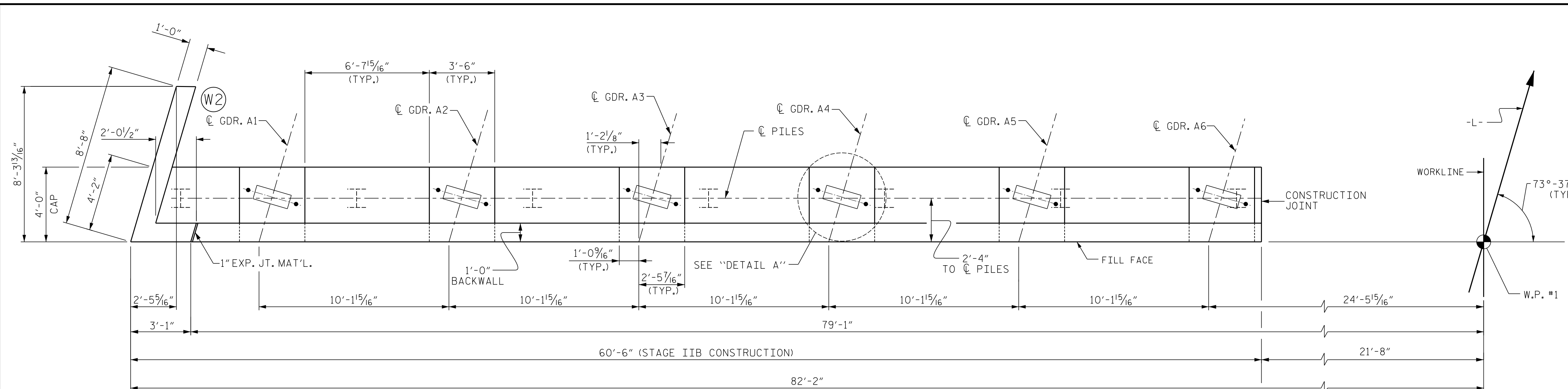
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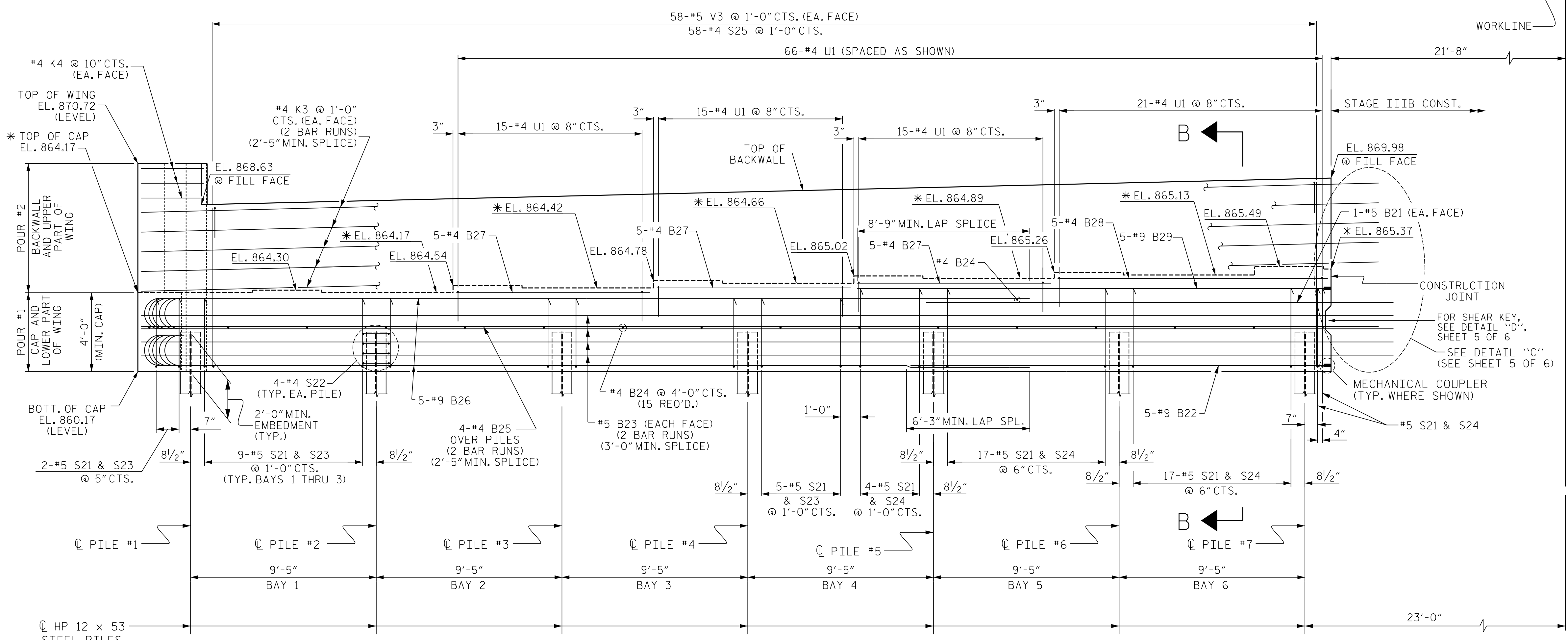
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-48	
1			3			TOTAL SHEETS	
2			4			72	

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 CHKD. BY: CFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24



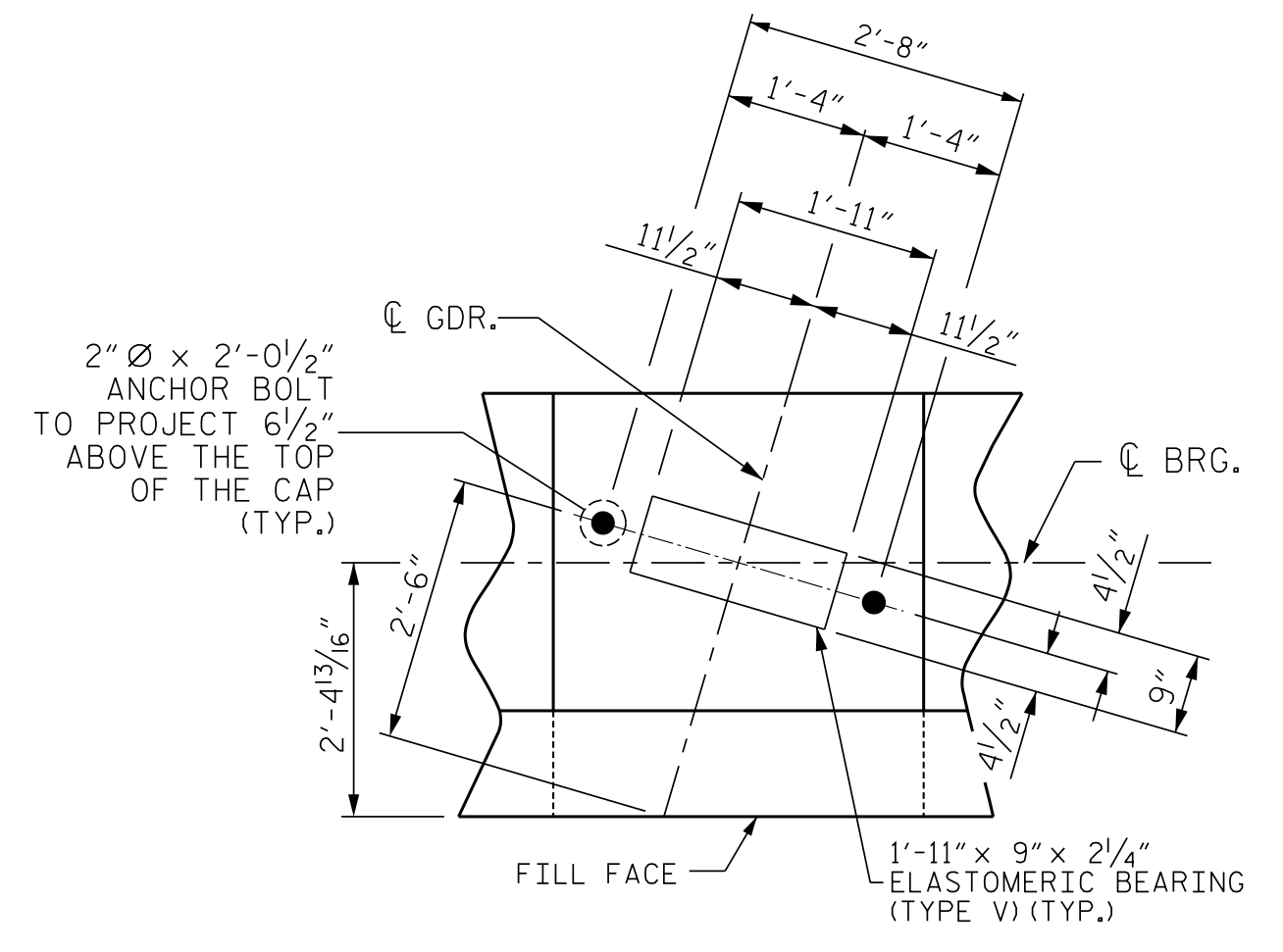
PLAN



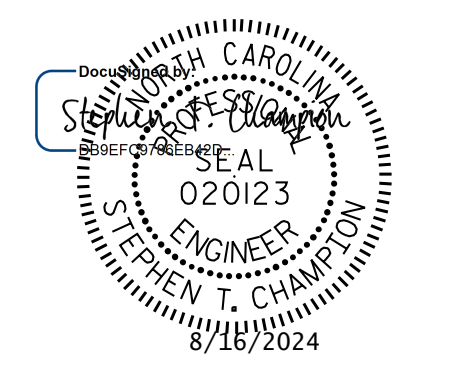
ELEVATION

NOTES

- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- * FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTIONS A-A, B-B AND C-C ON SHEETS 5 OF 6.



DETAIL "A"
STAGE IIB
(TYP. EACH GIRDER)



PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 STAGE IIB

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REVISIONS						SHEET NO. S2-49
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24

16/01/03/09
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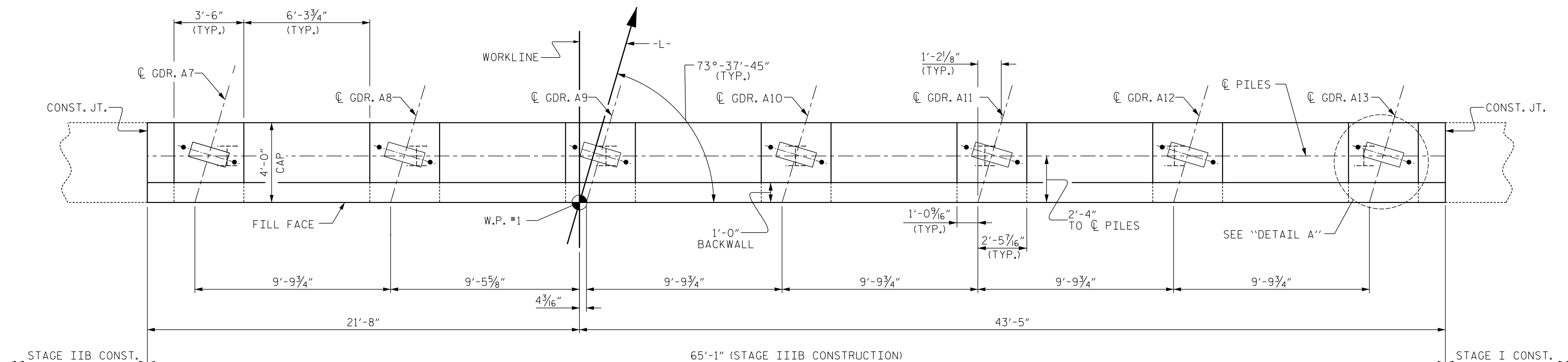
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

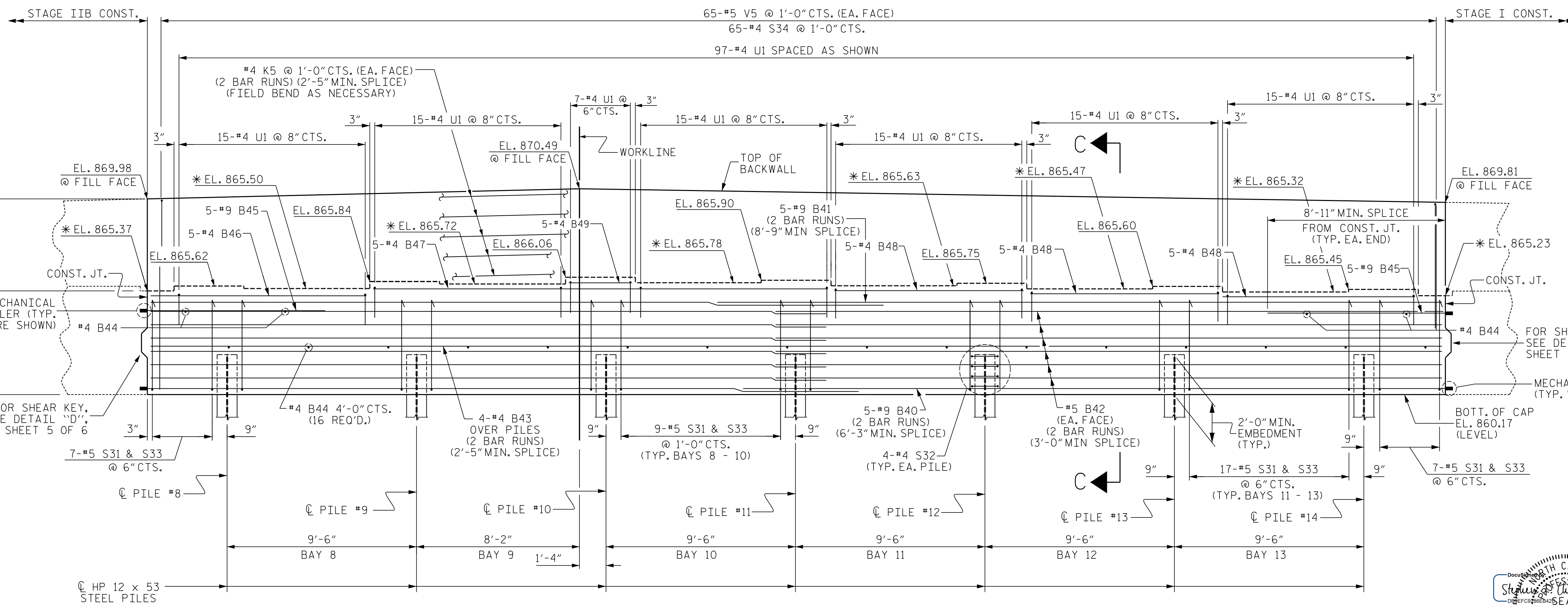
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

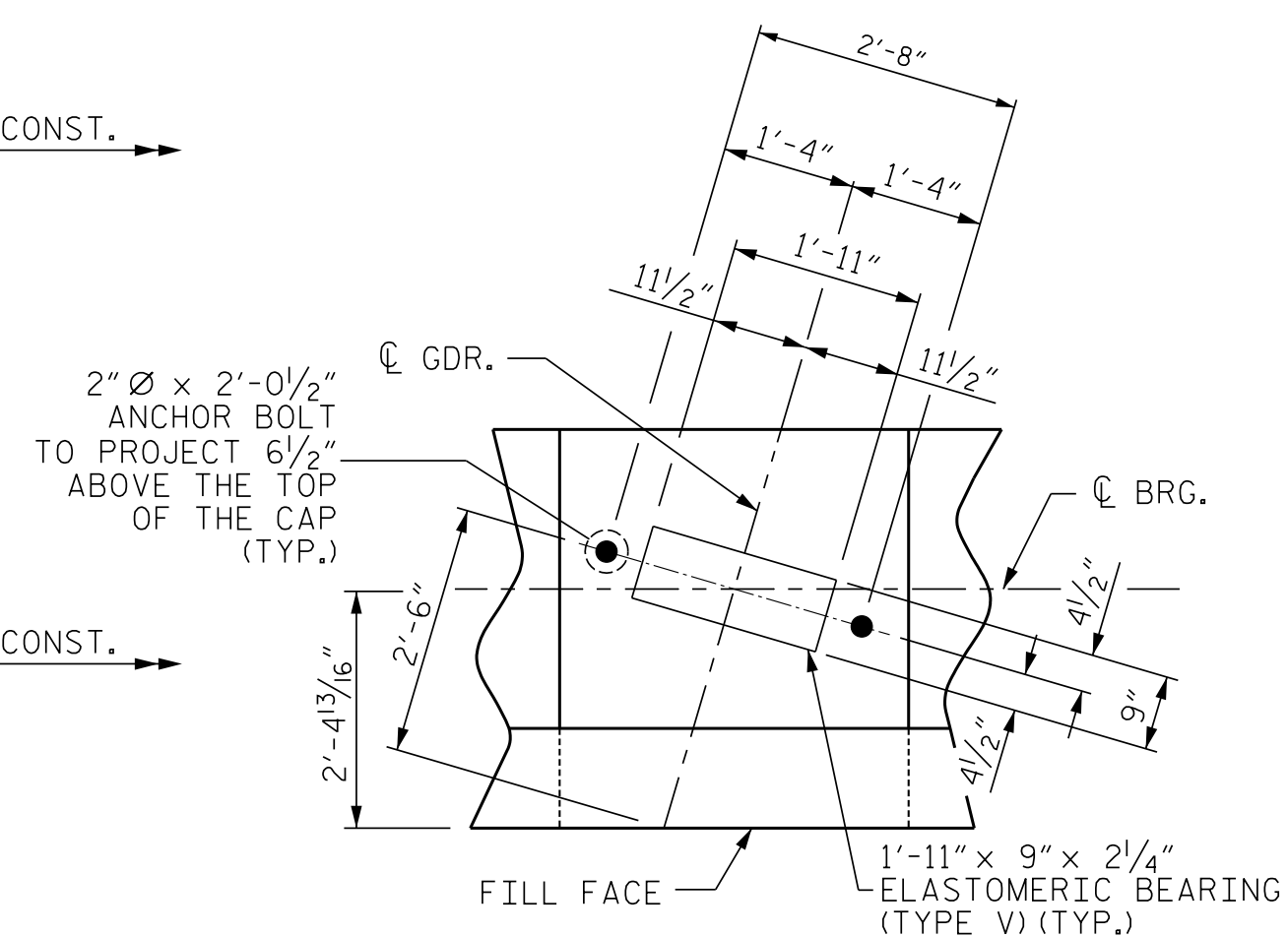
* FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTIONS A-A, B-B AND C-C ON SHEETS 5 OF 6.



PLAN

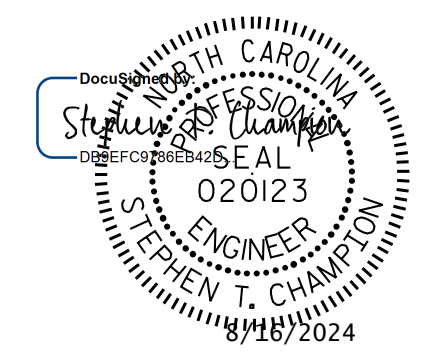


ELEVATION



DETAIL "A"
STAGE IIIB
(TYP. EACH GIRDER)

PROJECT NO. I-5717
IREDELL COUNTY
STATION: 733+32.53 -L-
SHEET 3 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
STAGE IIIB

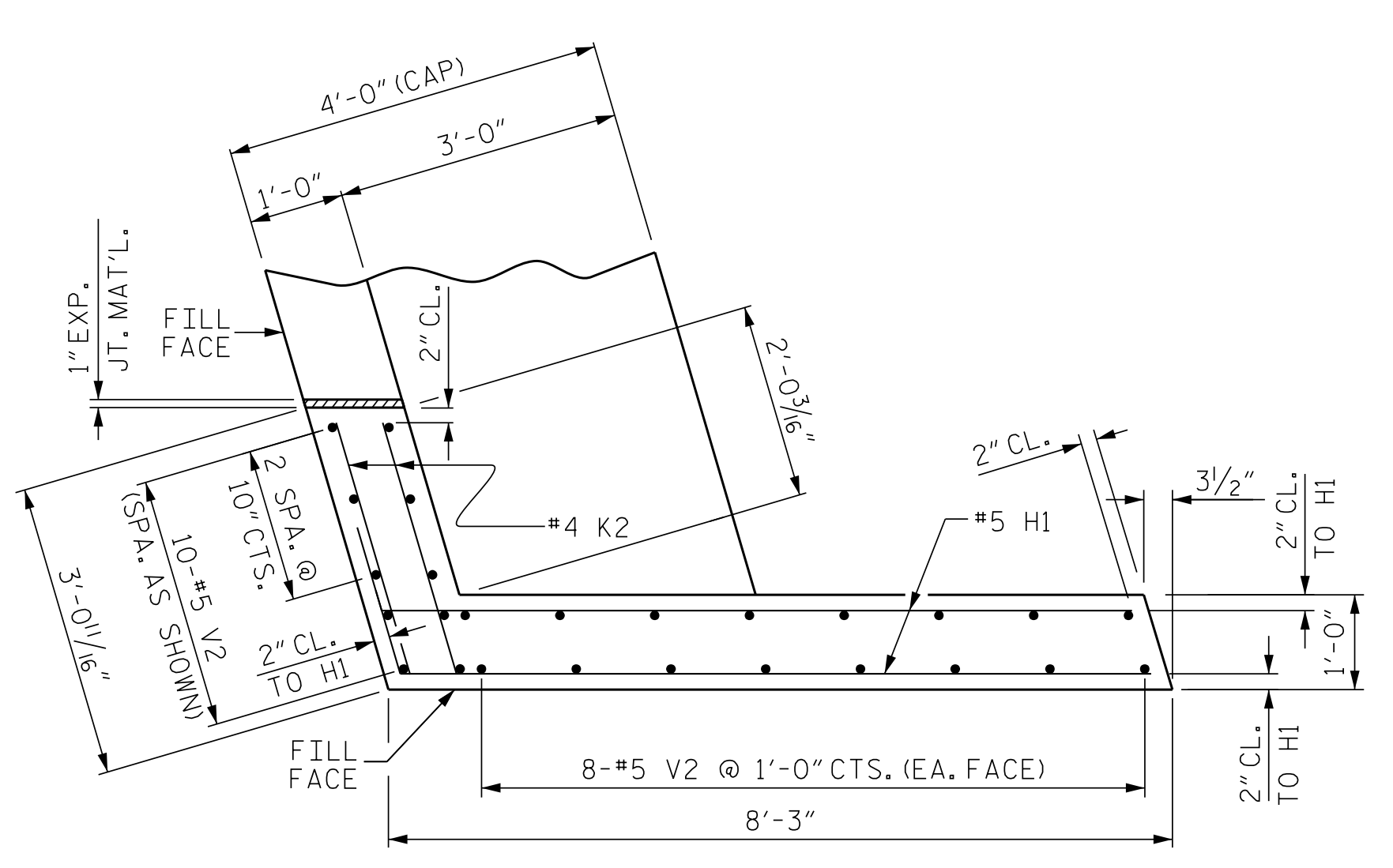
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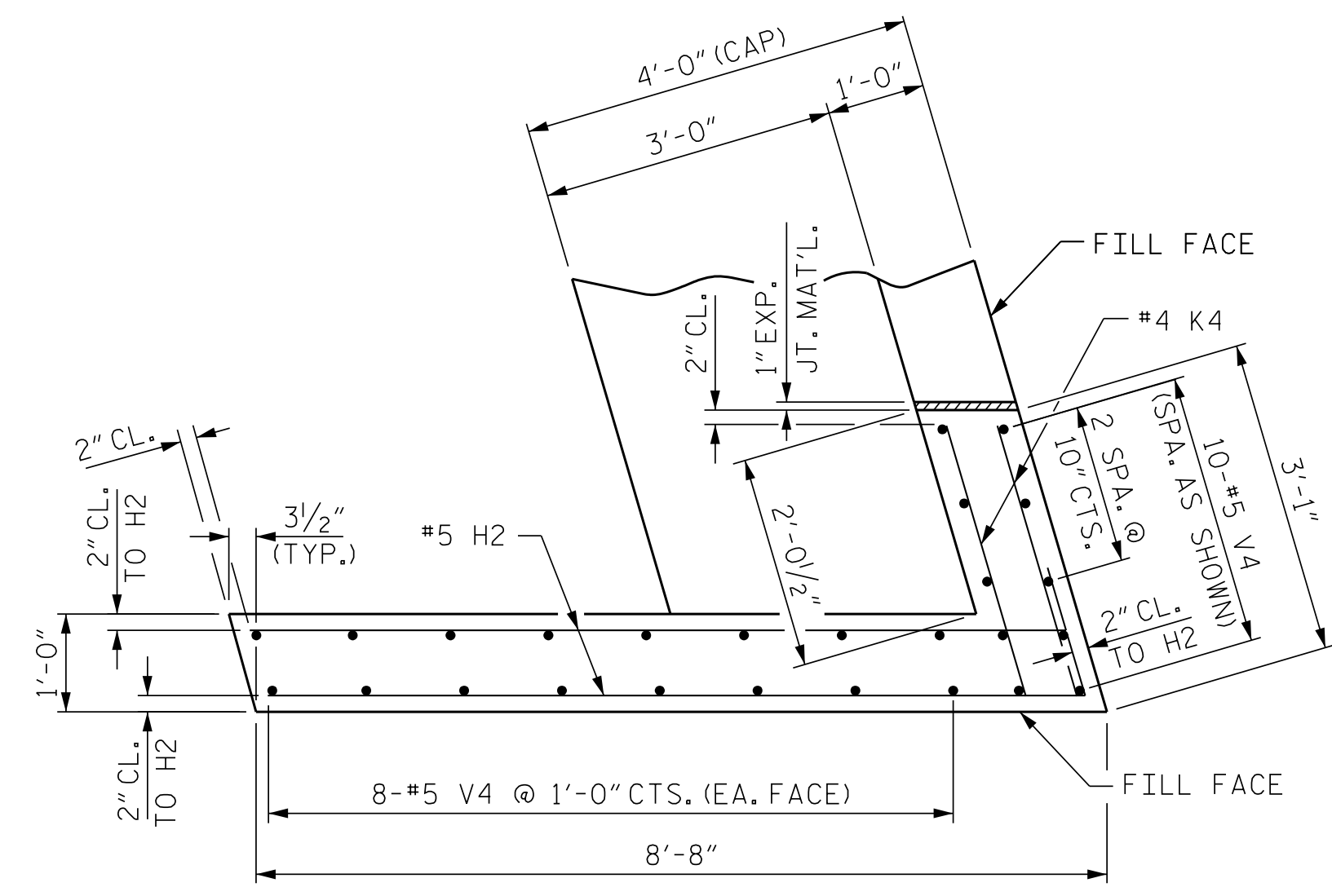
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-50	
1			3			TOTAL SHEETS	
2			4			72	

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CHKD. BY: GFW DATE: 01/24
DES. EGR. OF RECORD: STC DATE: 01/24

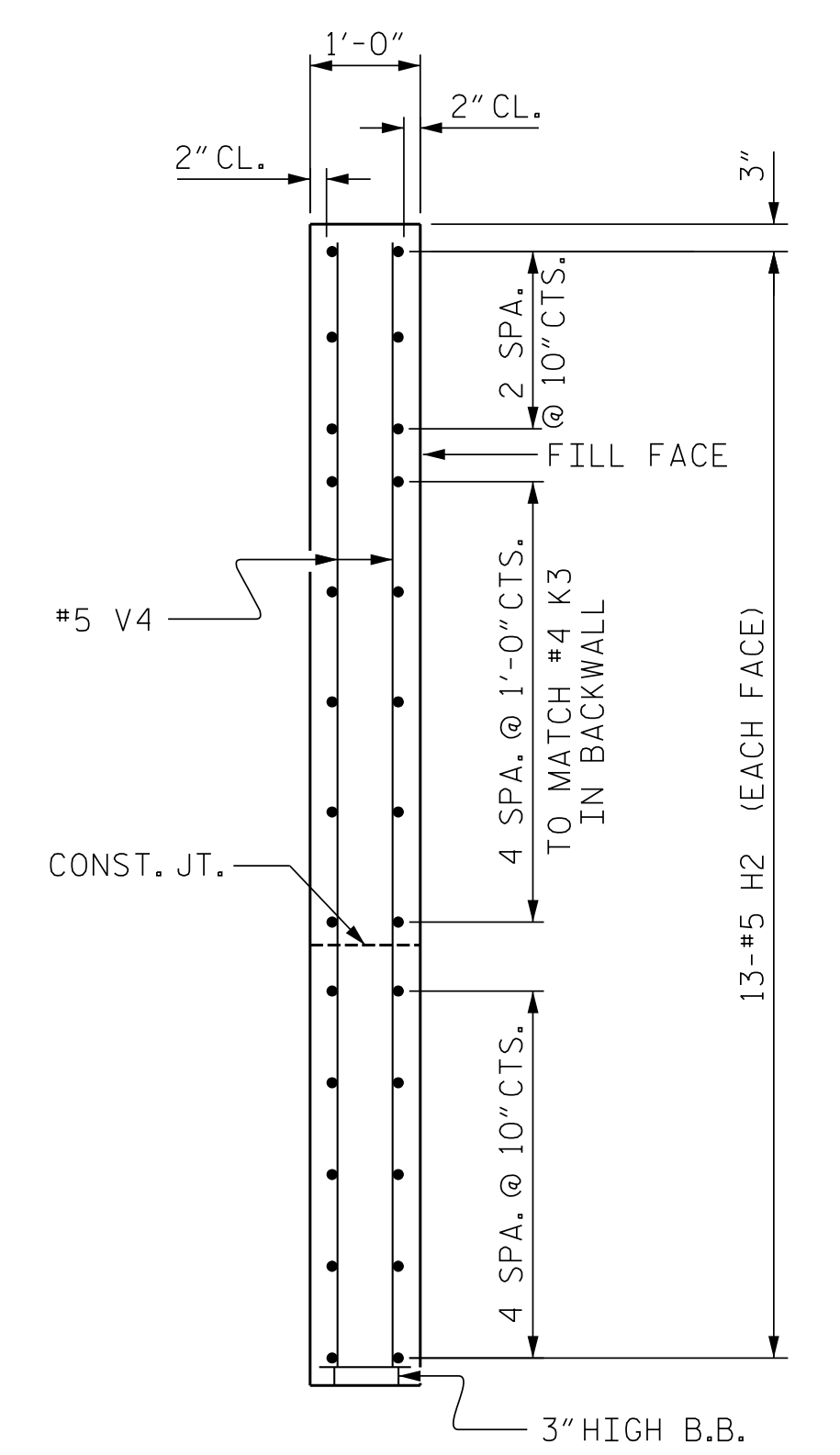
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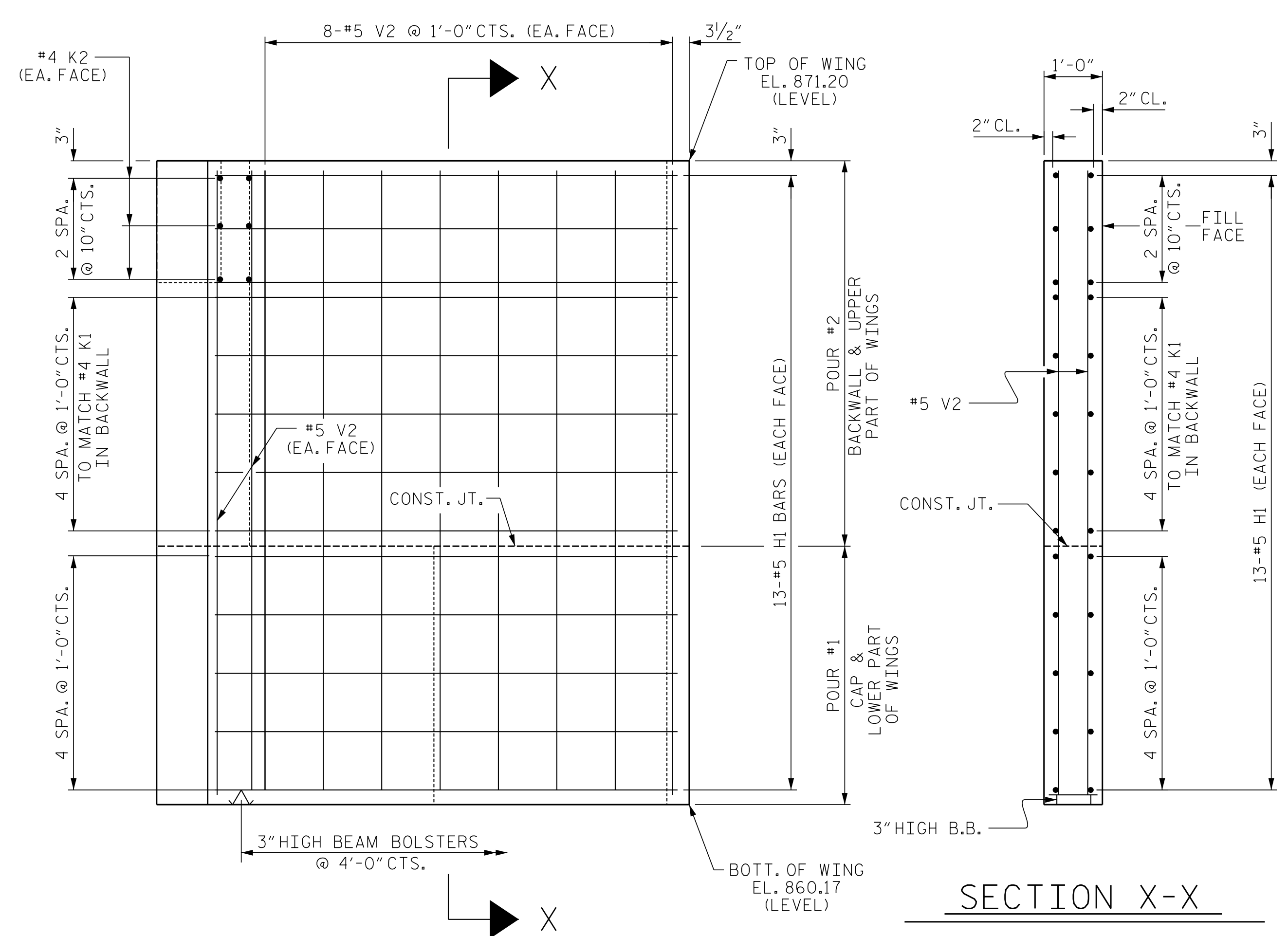
PLAN OF WING (W1)



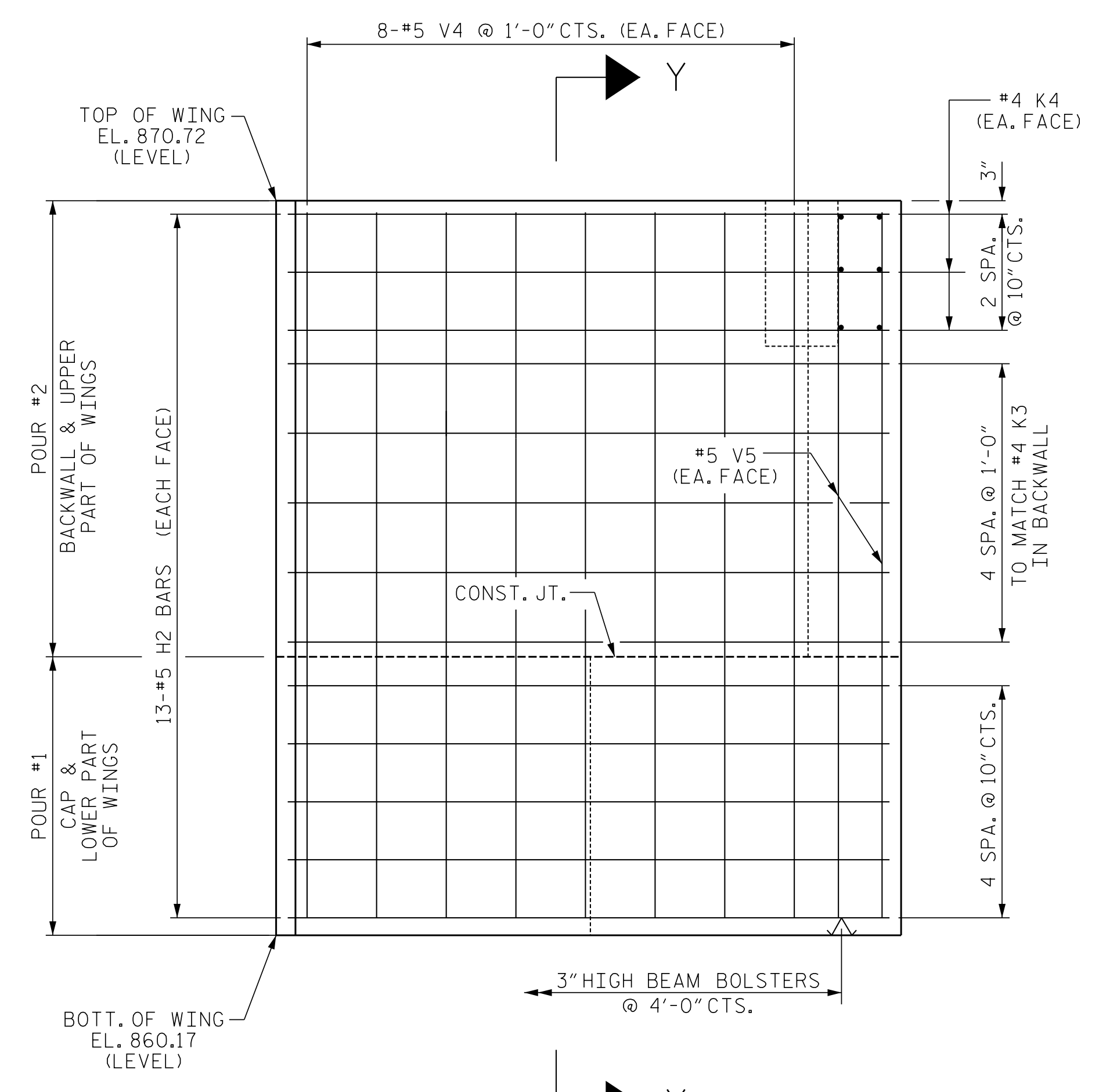
PLAN OF WING (W2)



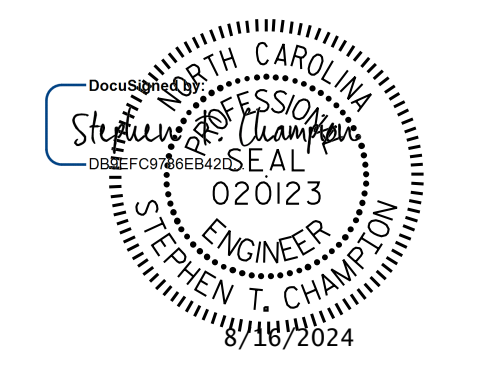
SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 4 OF 6

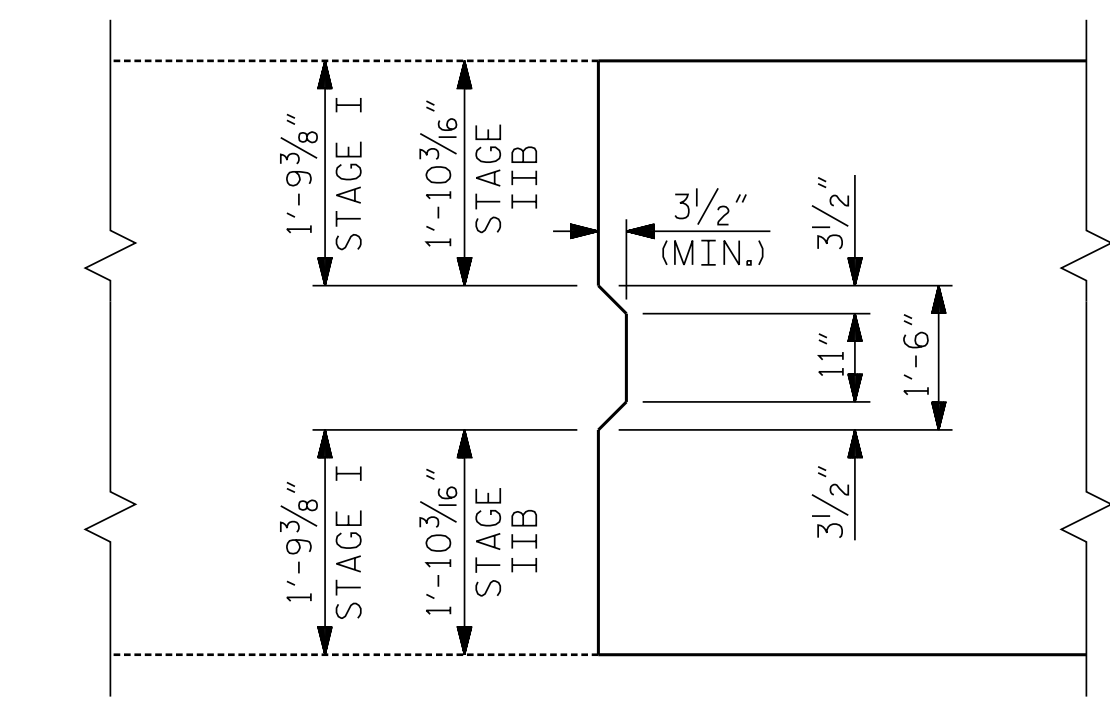
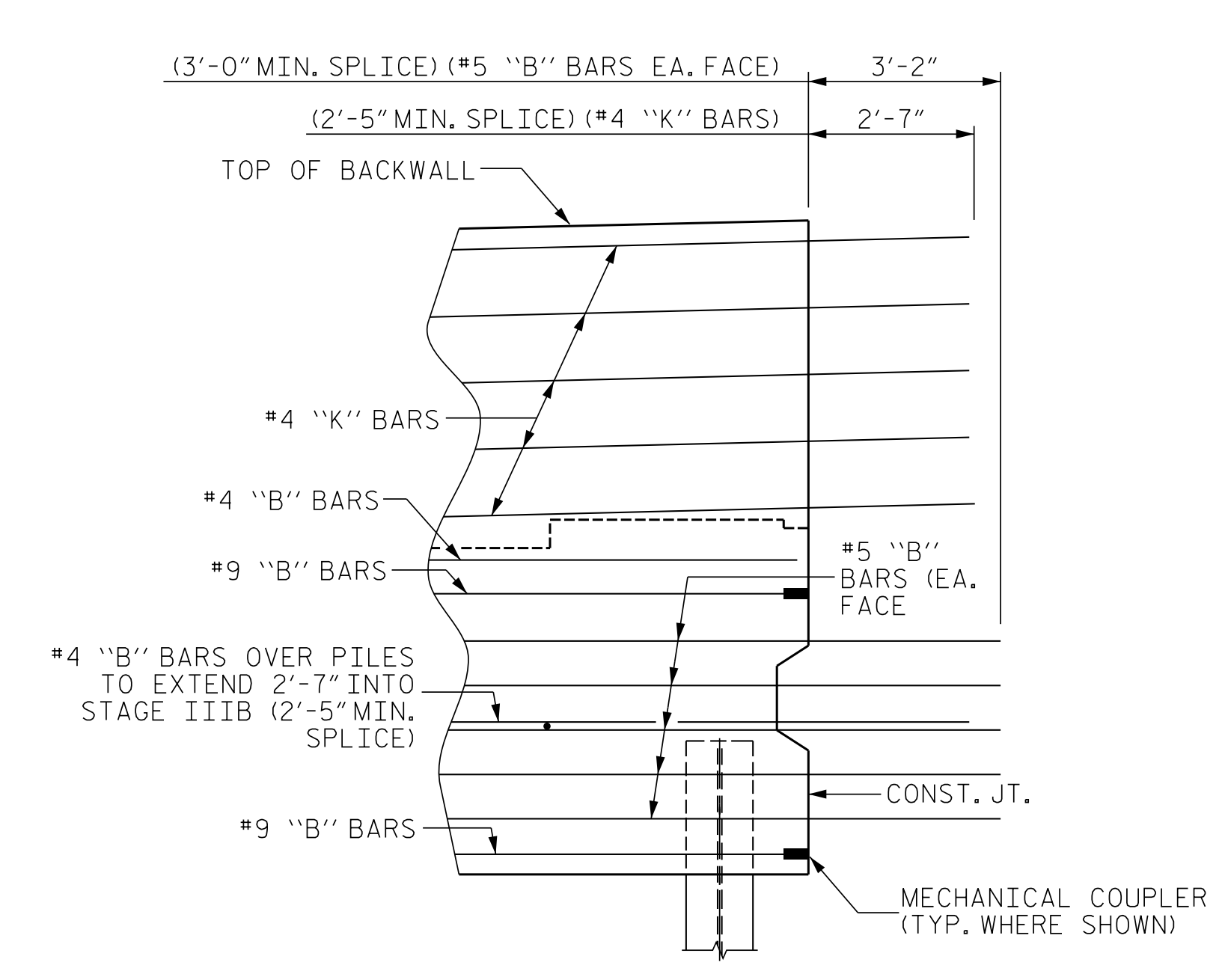
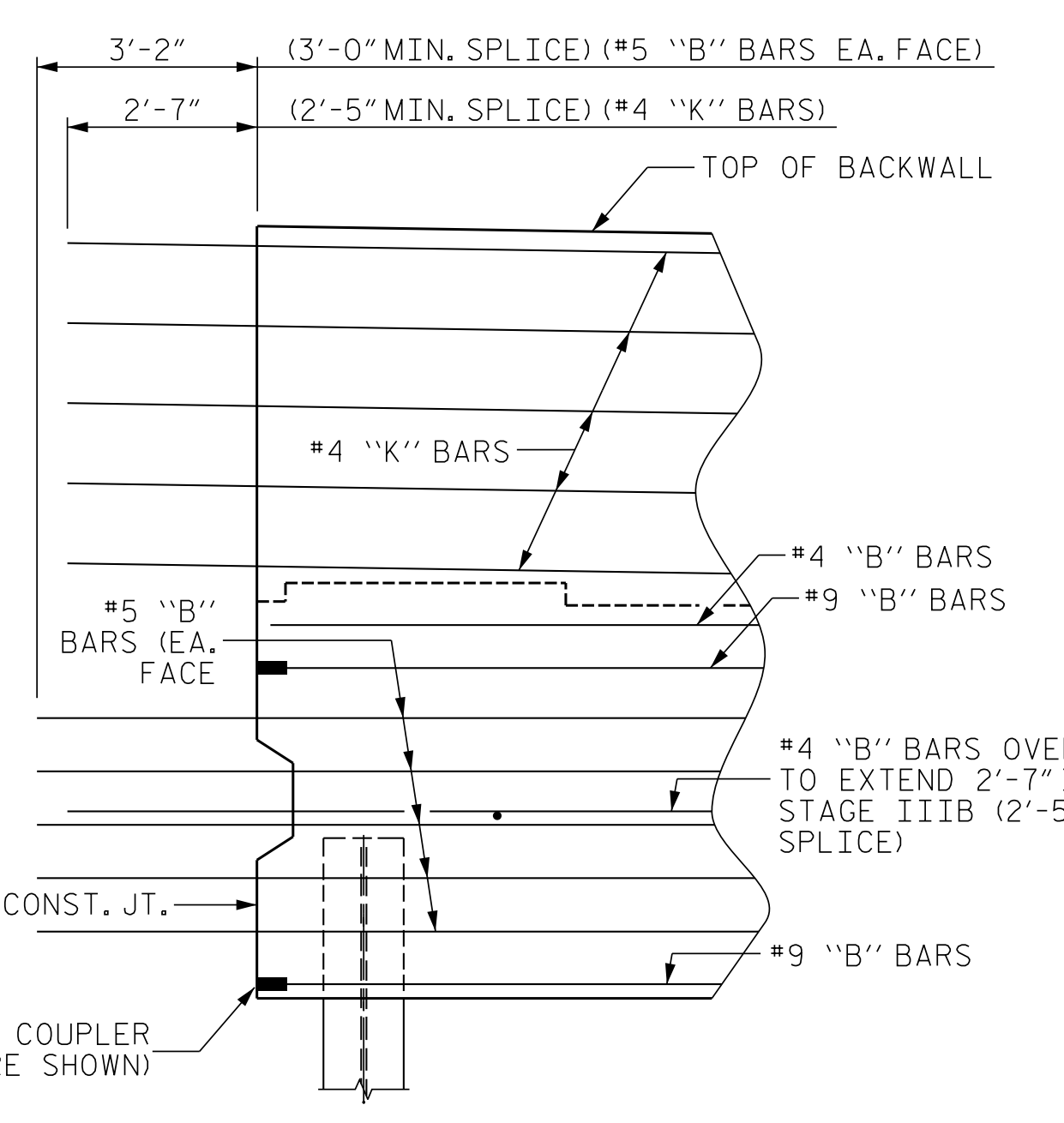
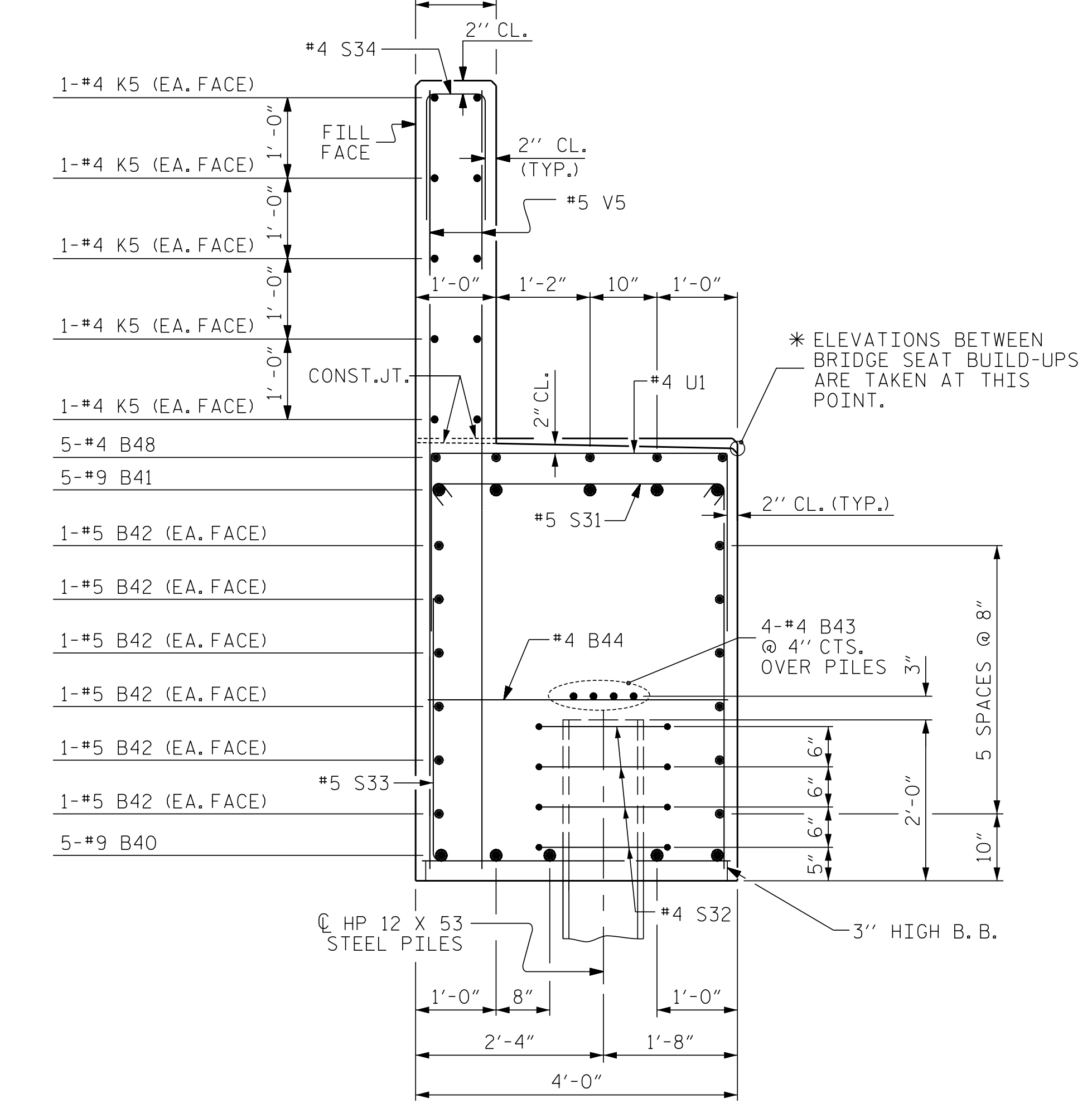
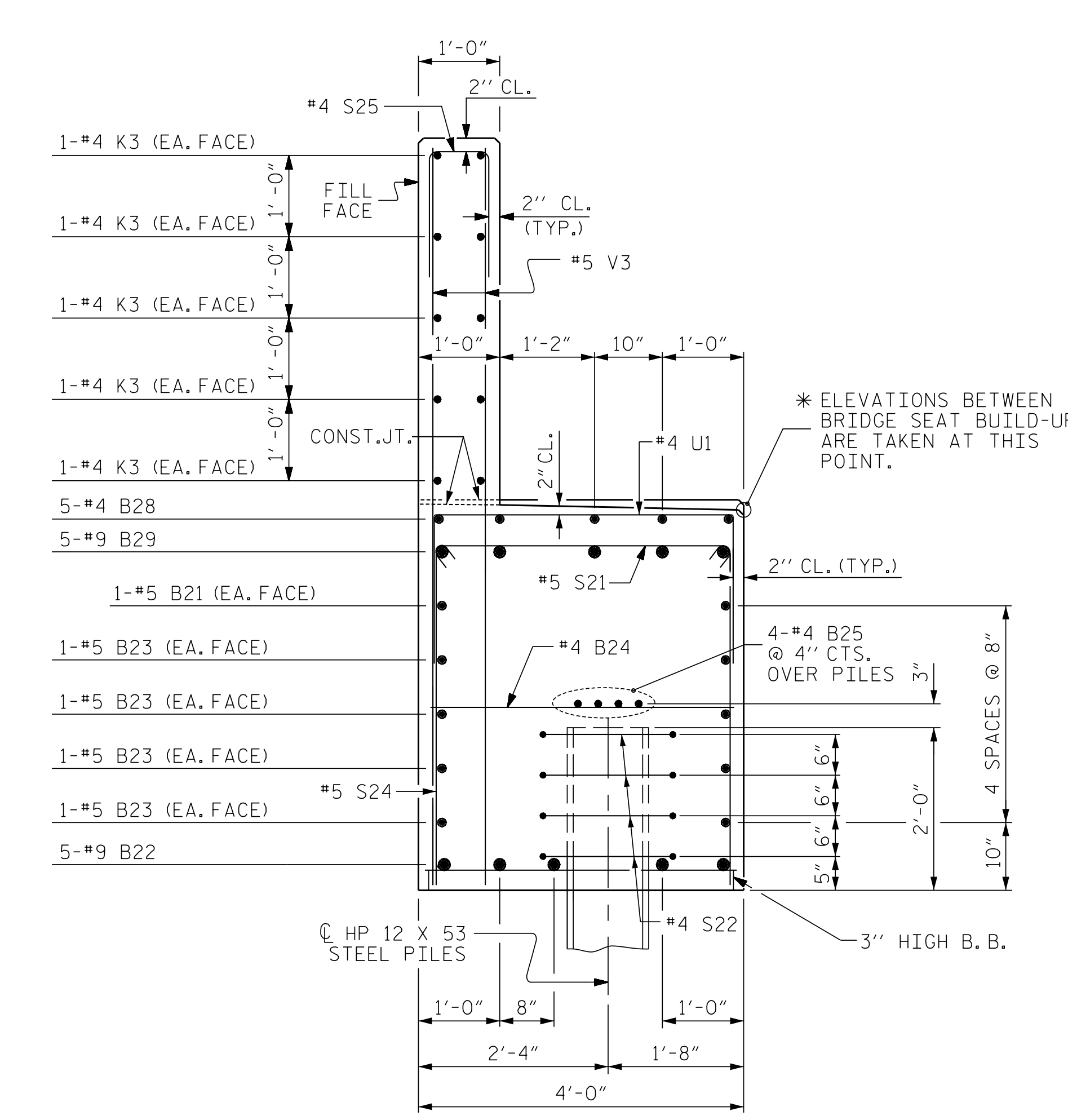
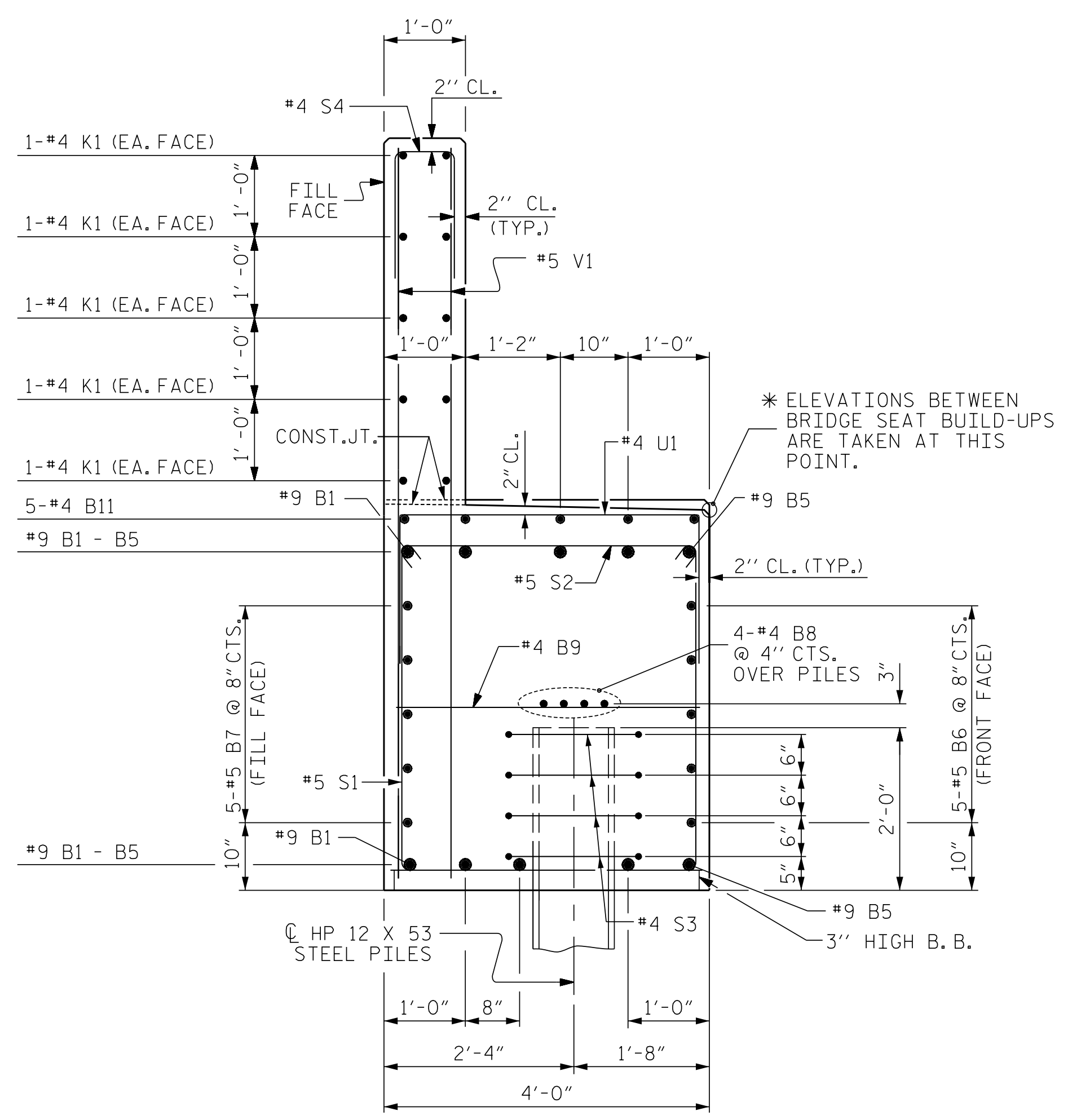
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 WING DETAILS

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

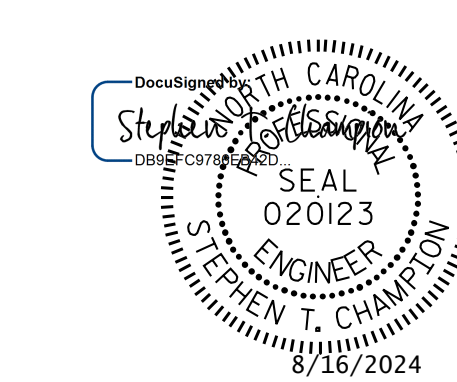
JMT Johnson, Mirmiran, & Thompson, Inc.
 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO. S2-51
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 72
2			4			

WDC/CFW
 DATE: 01/24
 CHKD. BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: STC
 DATE: 01/24
 TIME: 4:30/2024



PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 5 OF 6



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

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

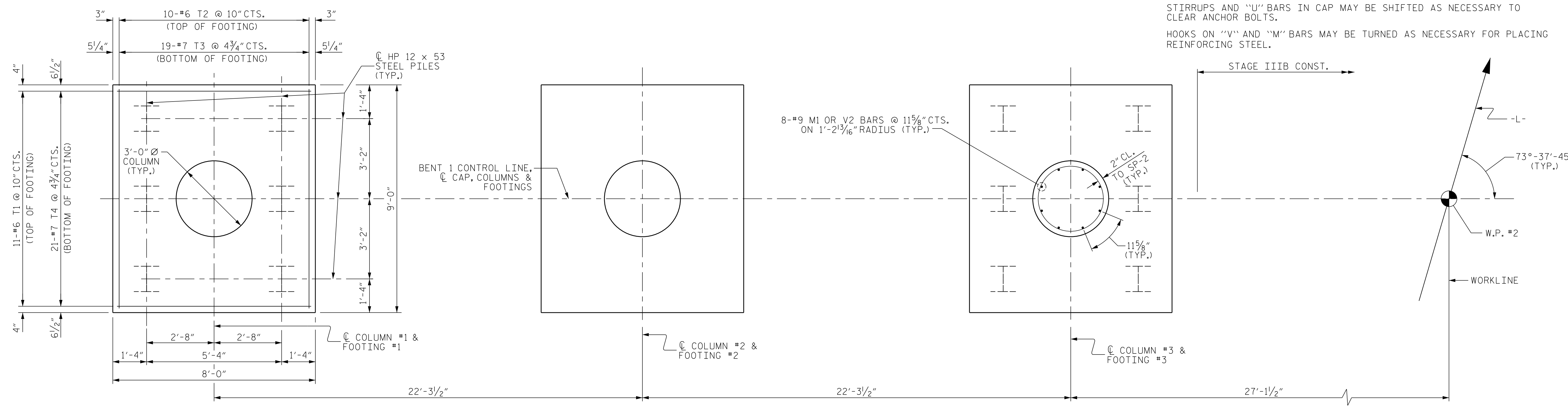
JMT Johnson, Mirmiran, & Thompson Inc.
 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-52	
1			3			TOTAL SHEETS	
2			4			72	

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24
 1/24/2024 10:20:17 AM I-5717 - Replacement CAD Structures CAD 3-31-23 V01.DWG - SHU_E.05-552.dgn
 TIME: 4:30:2024

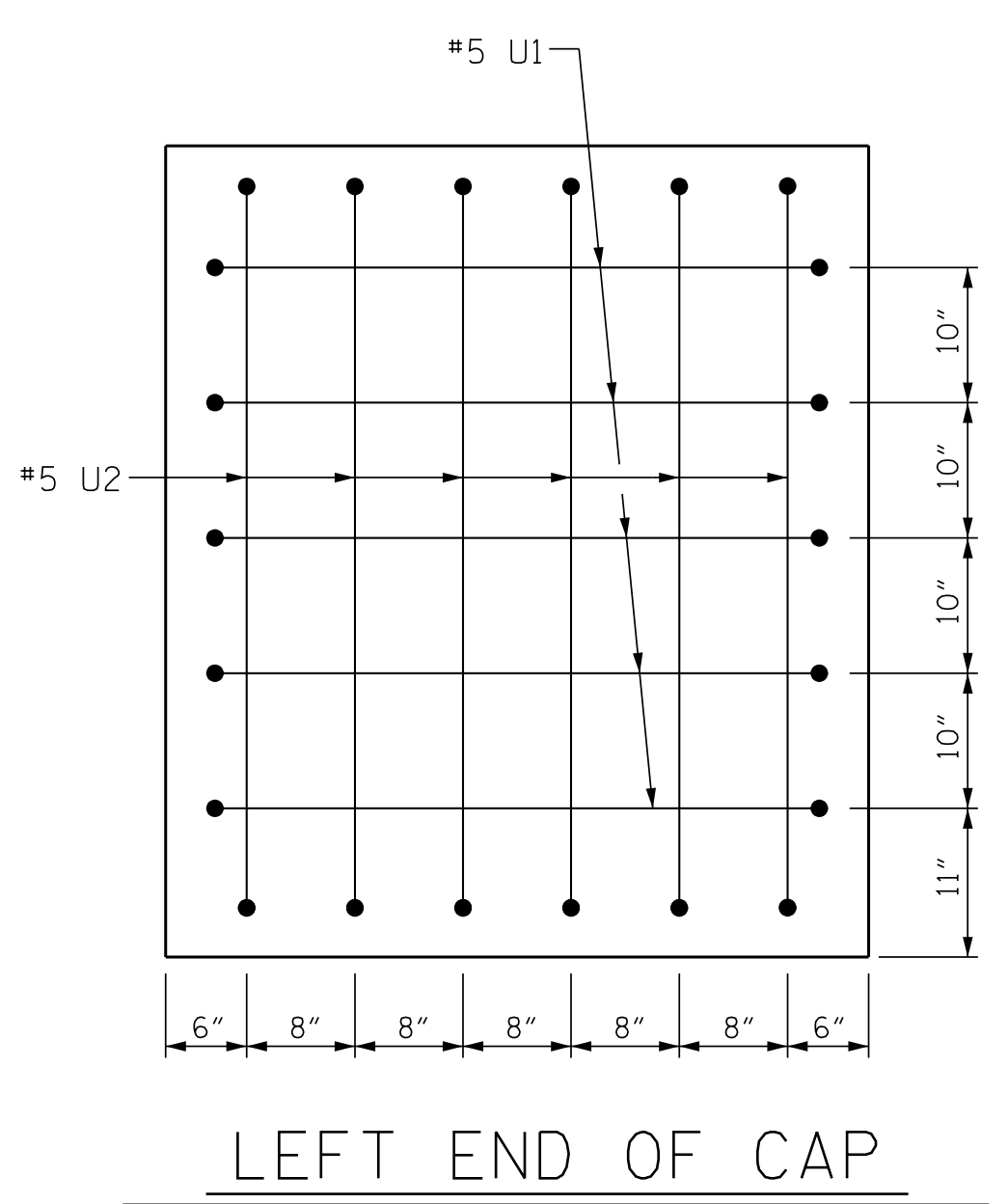
NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

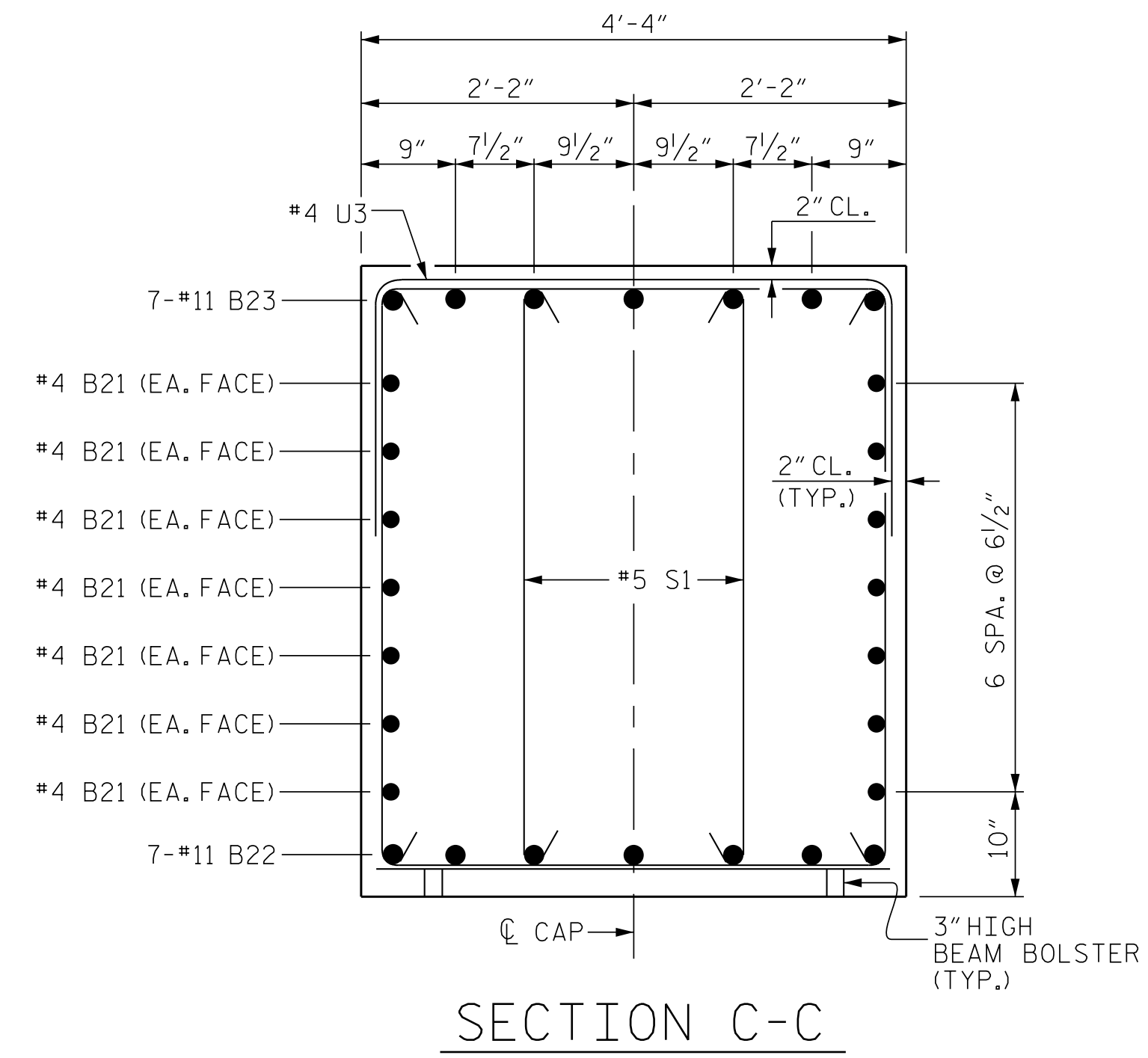


PLAN OF COLUMNS AND FOOTINGS

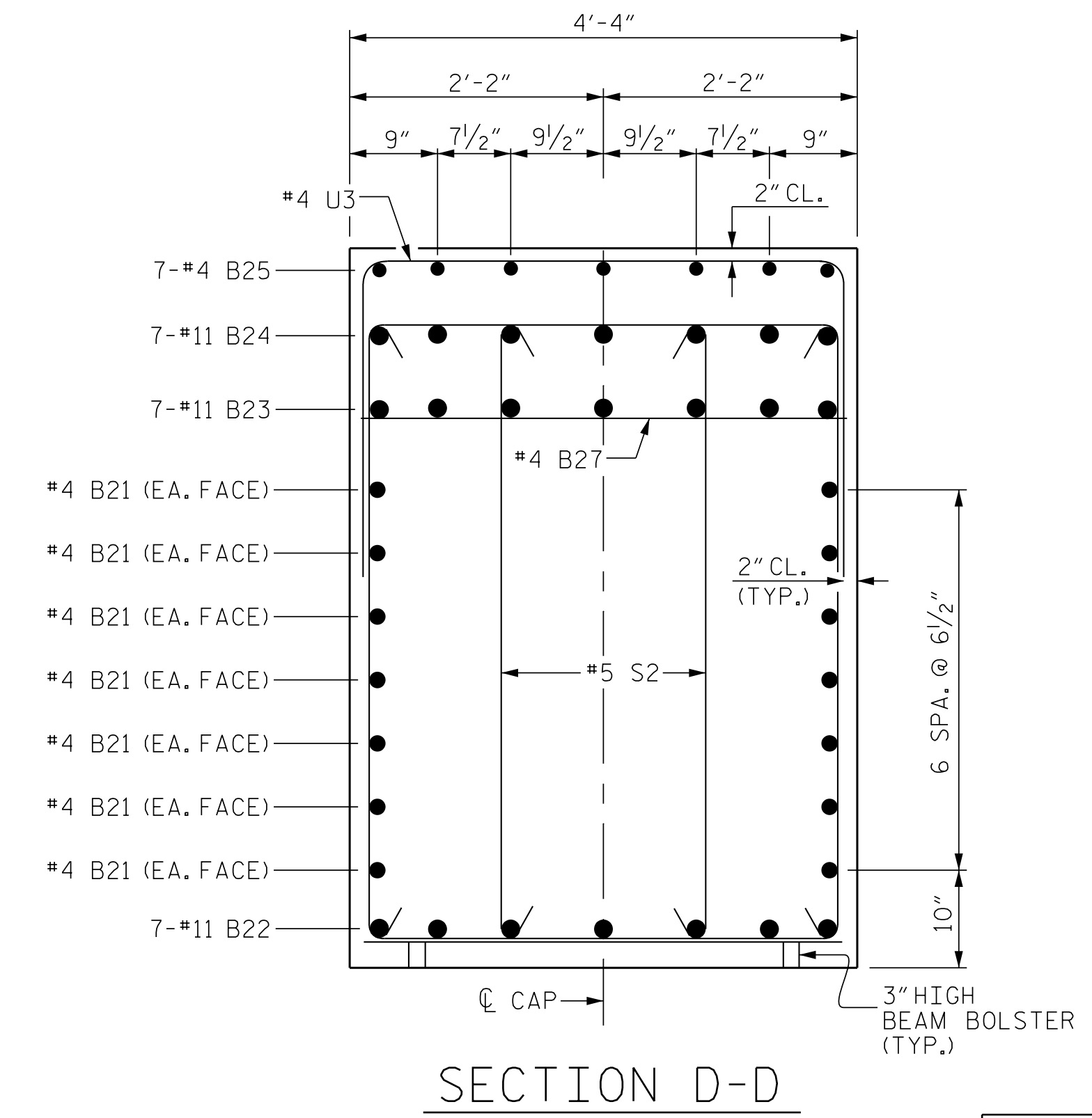
STAGE IIB CONSTRUCTION.
 DIMENSIONS AND REINFORCING ARE TYPICAL FOR EACH COLUMN AND FOOTING.



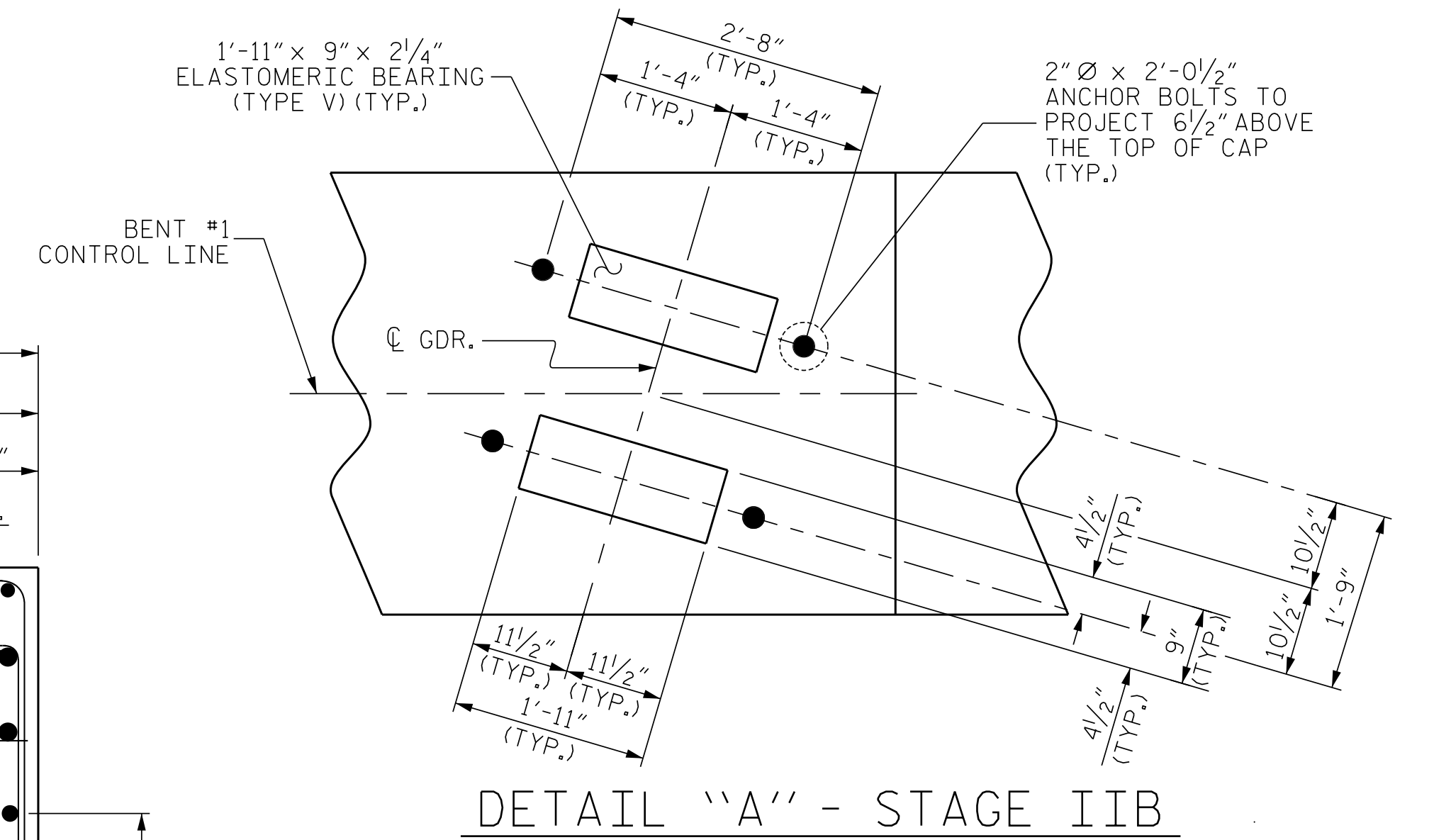
LEFT END OF CAP



SECTION C-C

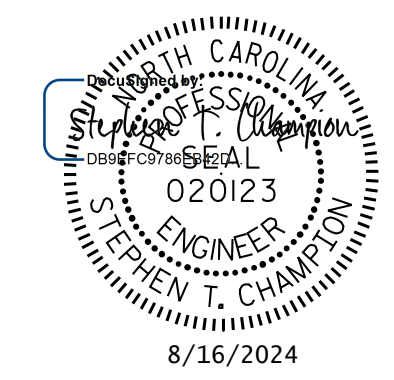


SECTION D-D



DETAIL "A" - STAGE IIB

(TYP. EA. BEARING)
 PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 4 OF 7



8/16/2024

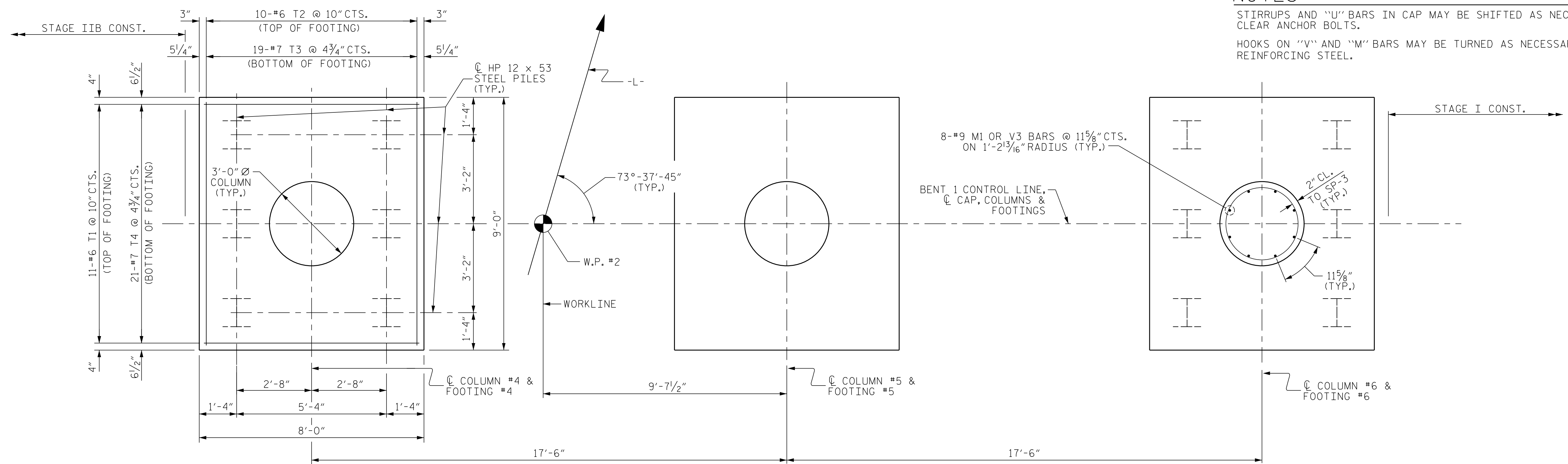
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT 1
STAGE IIB

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
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 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-57	
1			3			TOTAL SHEETS	
2			4			72	

WDC/CFW
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 TIME: 4:30:2024

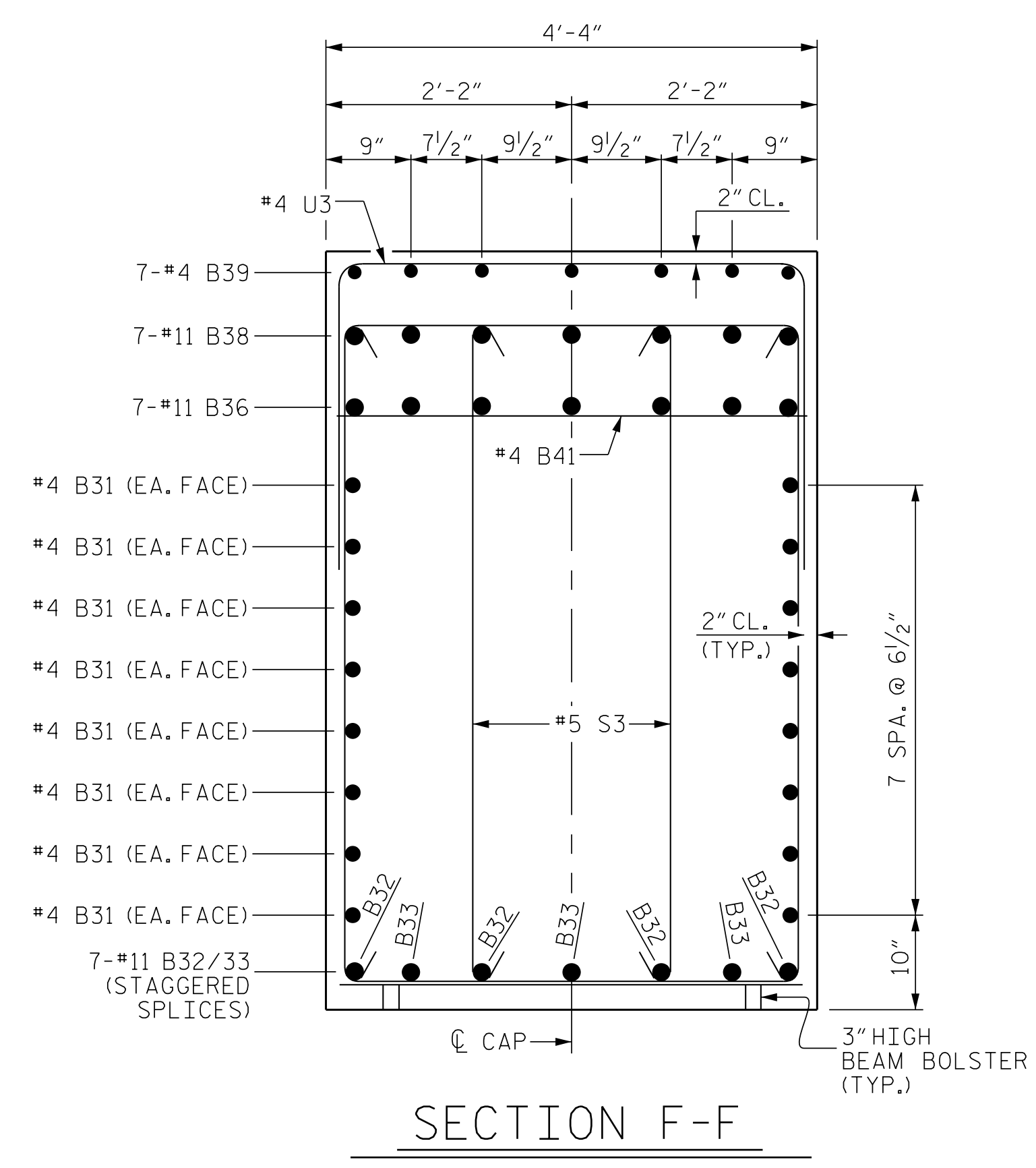
DWN. BY: WDC DATE: 01/24
 CHKD. BY: CFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24



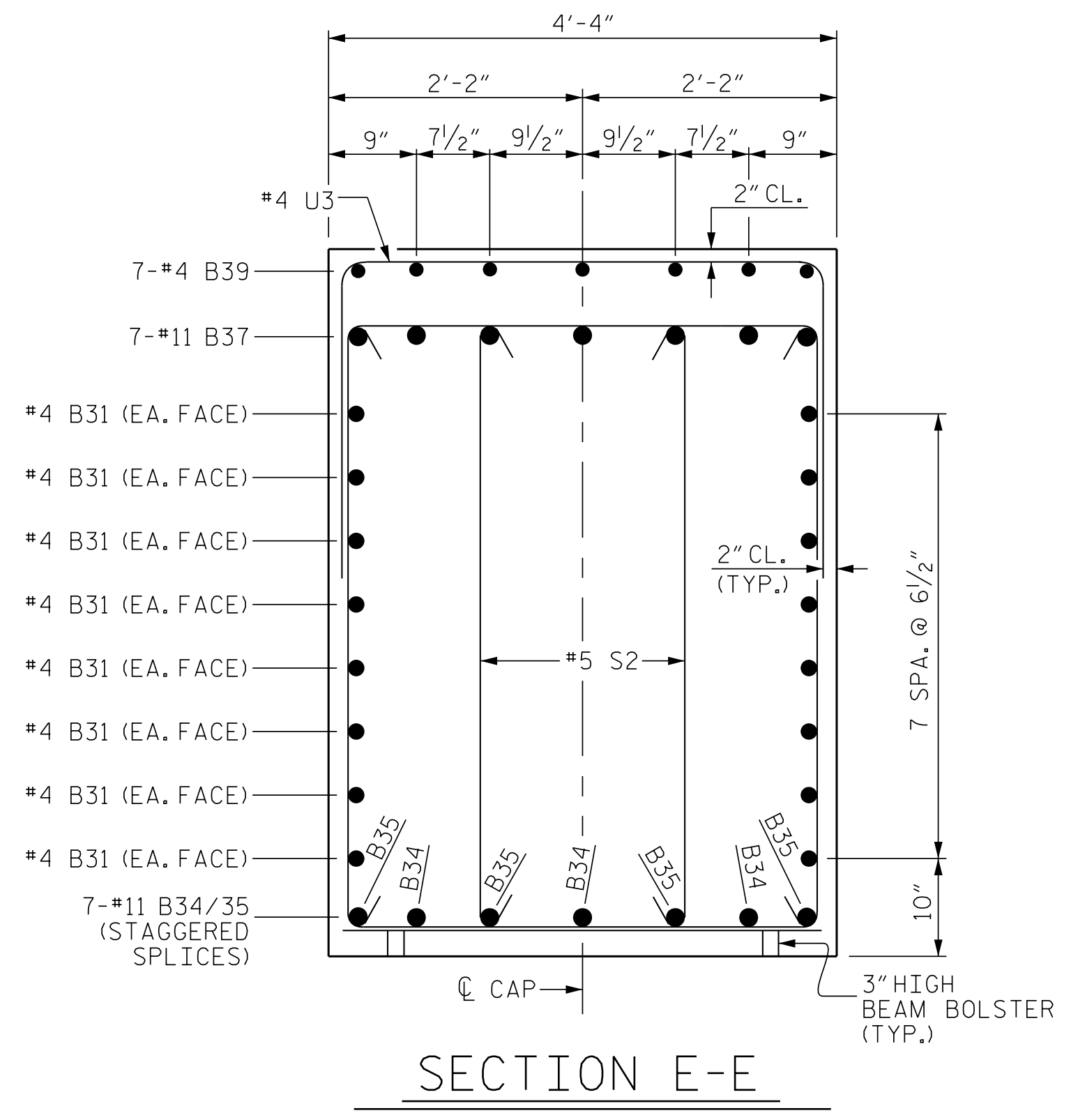
NOTES
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

PLAN OF COLUMNS AND FOOTINGS

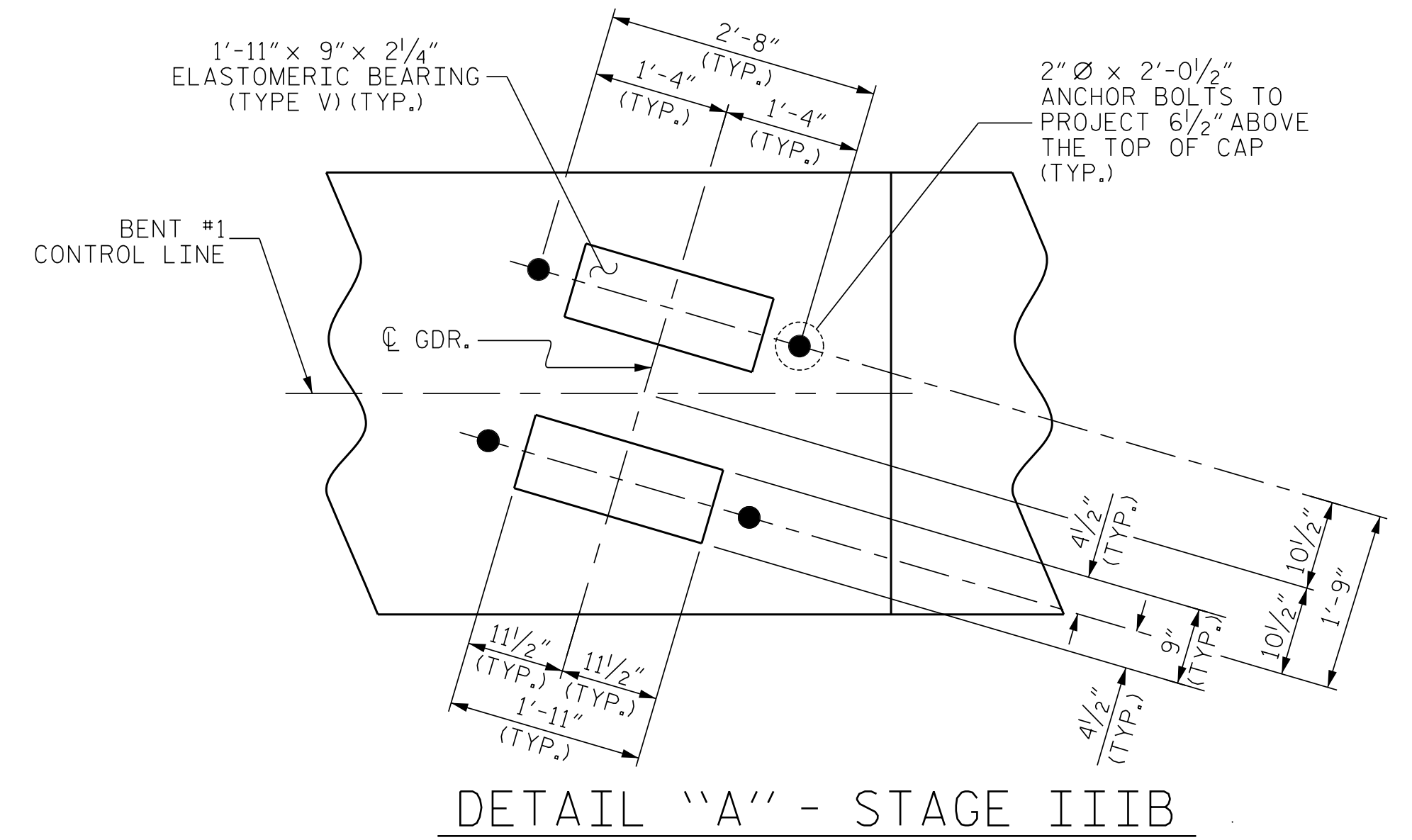
STAGE IIB CONSTRUCTION.
 DIMENSIONS AND REINFORCING ARE TYPICAL FOR EACH COLUMN AND FOOTING.



SECTION F-F

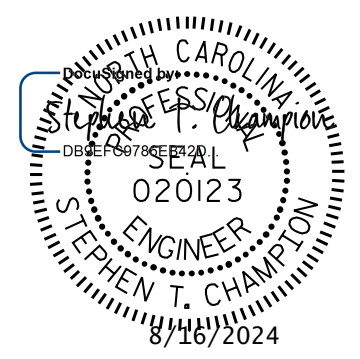


SECTION E-E



DETAIL "A" - STAGE IIB

(TYP. EA. BEARING)
 PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 6 OF 7



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 1
 STAGE IIB**

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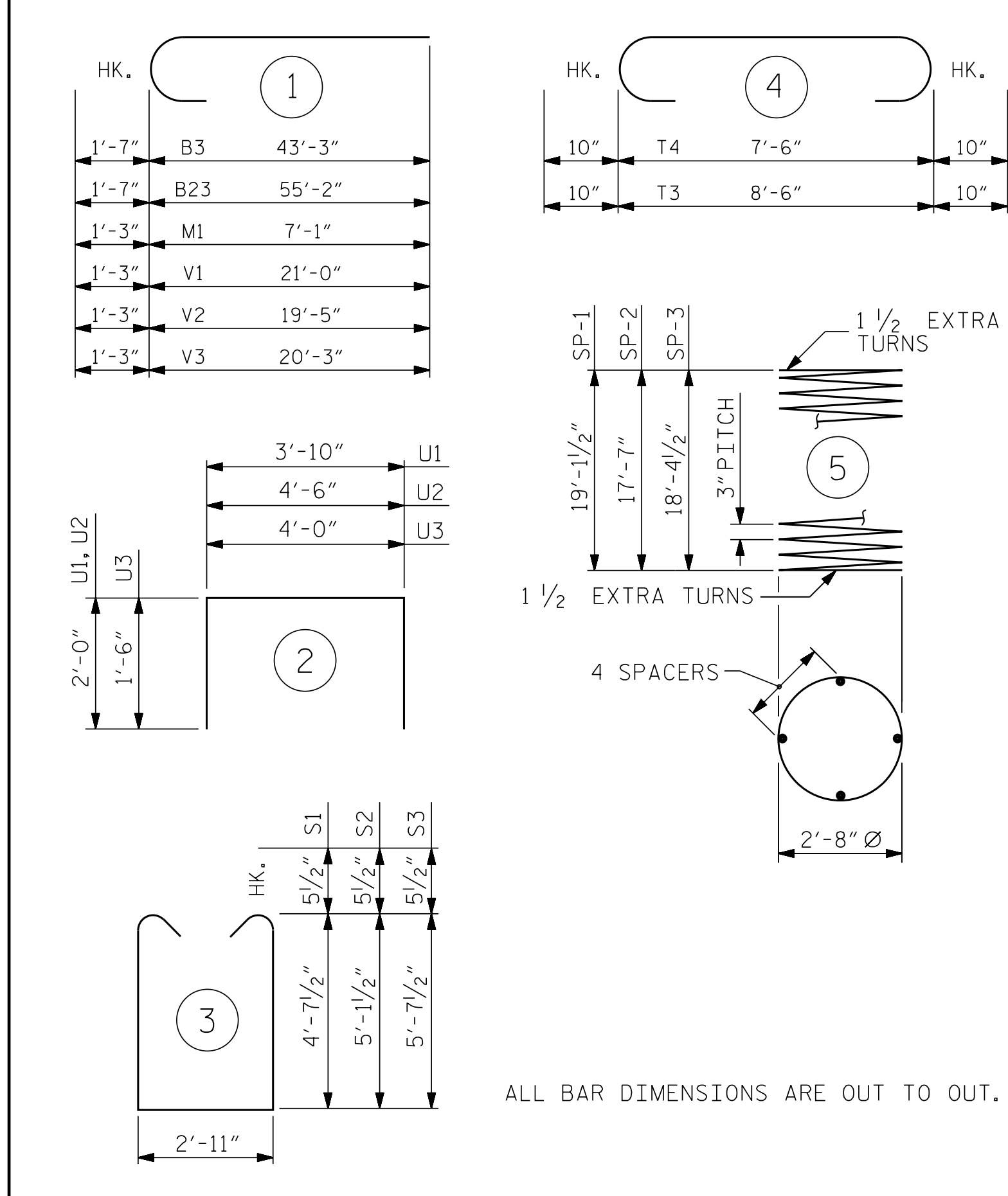
JWT Johnson, Mirmiran, & Thompson Inc.
 4700 Falls of Neuse Rd, Suite 100,
 Raleigh, NC, 27609
 License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-59
1			3			TOTAL SHEETS
2			4			72

WDC/CFW
 DATE: 01/24
 CHKD BY: GFW
 DATE: 01/24
 DES. EGR. OF RECORD: STC
 DATE: 01/24
 2564_04_2017/1/15_003_L1-5717_-_Replacement/CADD/Structures/CADD_3-31-23/401/115-J-5717_SMU_B302-559.dgn
 TIME: 4:30:2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24

BAR TYPES

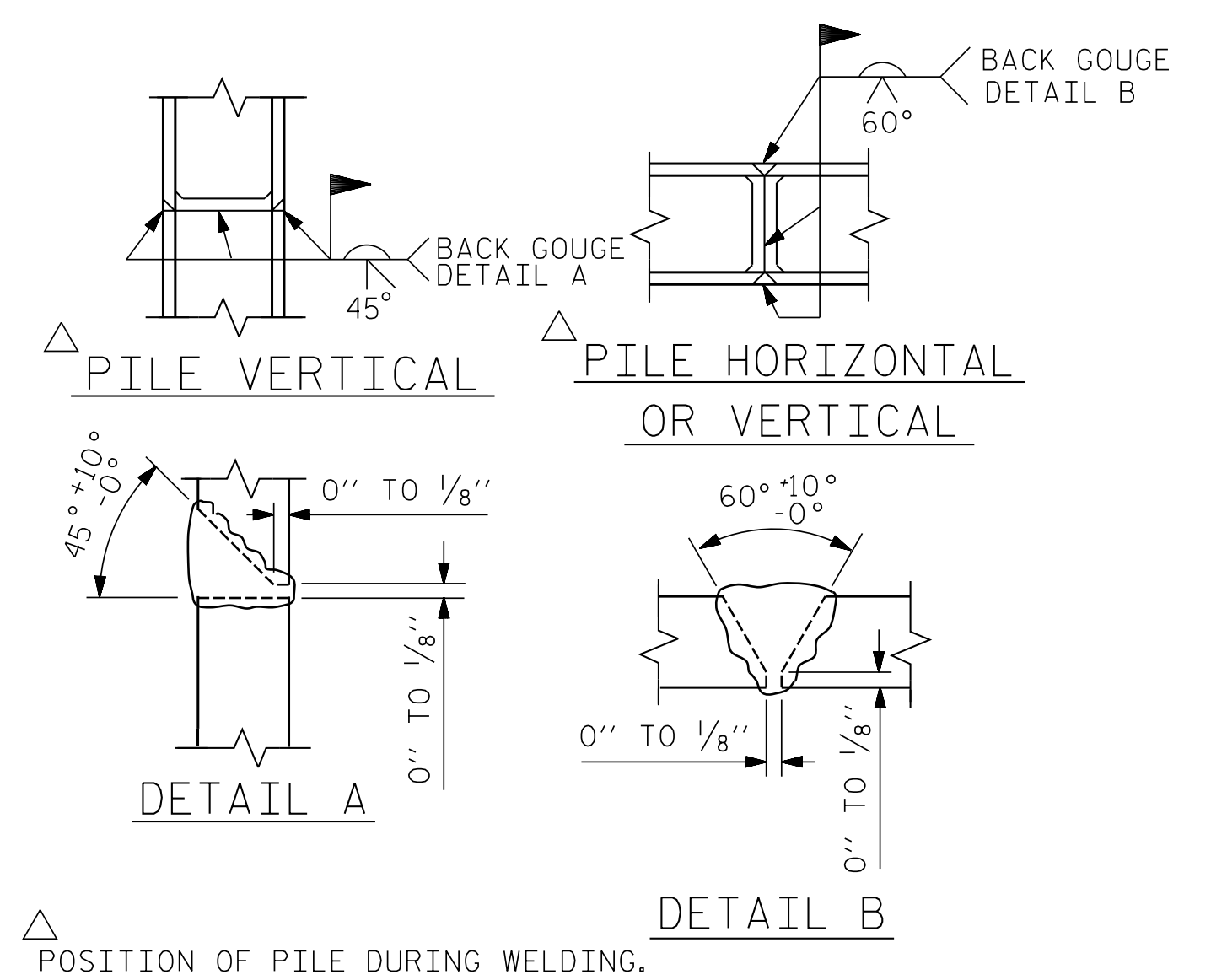


ALL BAR DIMENSIONS ARE OUT TO OUT.

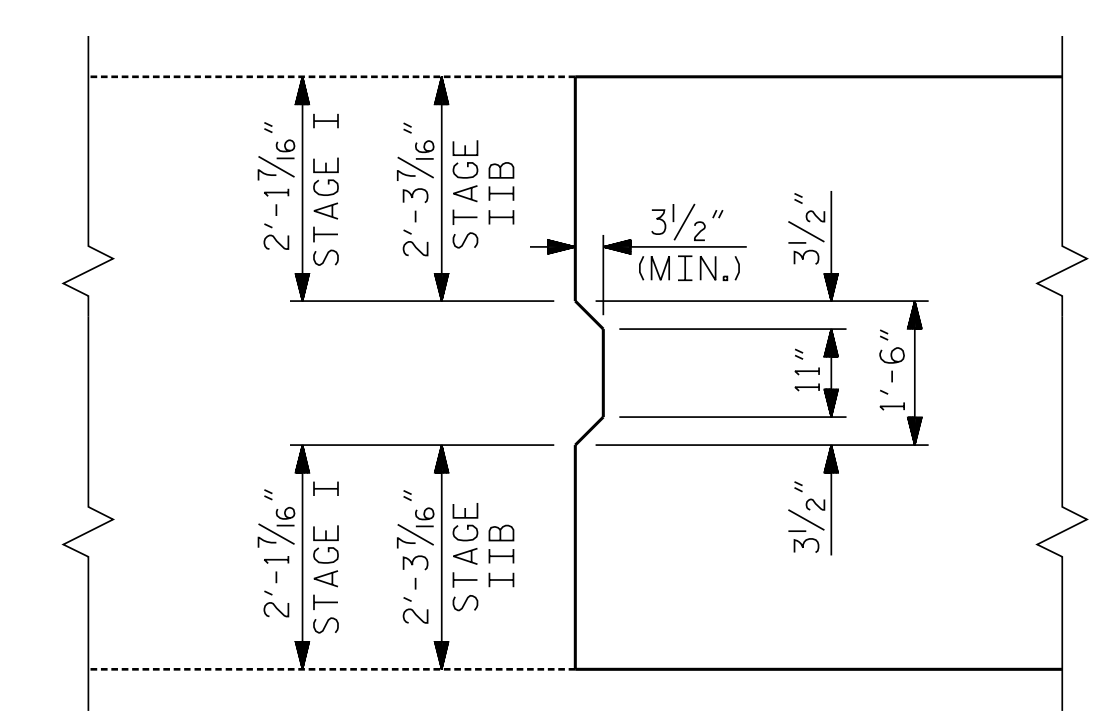
BILL OF MATERIAL

STAGE I						STAGE IIB						STAGE IIIB					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	28	#4	STR	24'-7"	460	B21	28	#4	STR	30'-3"	566	B31	32	#4	STR	33'-4"	713
B2	7	#11	STR	44'-0"	1636	B22	7	#11	STR	55'-2"	2052	B32	4	#11	STR	40'-8"	864
B3	7	#11	1	44'-10"	1667	B23	7	#11	1	56'-9"	2111	B33	3	#11	STR	23'-2"	369
B4	7	#11	STR	14'-4"	533	B24	7	#11	STR	13'-7"	505	B34	3	#11	STR	41'-9"	665
B5	14	#4	STR	9'-9"	91	B25	28	#4	STR	9'-9"	182	B35	4	#11	STR	24'-3"	515
B6	7	#4	STR	4'-3"	20	B26	7	#4	STR	4'-3"	20	B36	7	#11	STR	13'-11"	518
B7	4	#4	STR	4'-0"	11	B27	4	#4	STR	4'-0"	11	B37	7	#11	STR	24'-2"	899
M1	24	#9	1	8'-4"	680	M1	24	#9	1	8'-4"	680	B38	7	#11	STR	54'-0"	2008
S1	92	#5	3	13'-1"	1255	S1	128	#5	3	13'-1"	1747	B39	28	#4	STR	9'-9"	182
S2	48	#5	3	14'-1"	705	S2	48	#5	3	14'-1"	705	B40	7	#4	STR	4'-3"	20
T1	33	#6	STR	7'-6"	372	T1	33	#6	STR	7'-6"	372	B41	8	#4	STR	4'-0"	21
T2	30	#6	STR	8'-6"	383	T2	30	#6	STR	8'-6"	383	B42	2	#4	STR	31'-8"	42
T3	57	#7	4	10'-2"	1184	T3	57	#7	4	10'-2"	1184	S2	38	#5	3	14'-1"	558
T4	63	#7	4	9'-2"	1180	T4	63	#7	4	9'-2"	1180	S3	174	#5	3	15'-1"	2737
U1	5	#5	2	7'-10"	41	U1	5	#5	2	7'-10"	41	T1	33	#6	STR	7'-6"	372
U2	6	#5	2	8'-6"	53	U2	6	#5	2	8'-6"	53	T2	30	#6	STR	8'-6"	383
U3	63	#4	2	7'-0"	295	U3	88	#4	2	7'-0"	411	T3	57	#7	4	10'-2"	1184
V1	24	#9	1	22'-3"	1816	V2	24	#9	1	20'-8"	1686	T4	63	#7	4	9'-2"	1180
REINFORCING STEEL = 12,382 LBS.						REINFORCING STEEL = 13,889 LBS.						U3 94 #4 2 7'-0" 440					
SP-1	3	**	5	655'-11"	1,314	SP-2	3	**	5	605'-1"	1,213	V3	24	#9	1	21'-6"	1754
SPIRAL COLUMN REINFORCING STEEL = 1,314 LBS.						SPIRAL COLUMN REINFORCING STEEL = 1,213 LBS.						REINFORCING STEEL = 16,104 LBS.					
CLASS A CONCRETE BREAKDOWN:						CLASS A CONCRETE BREAKDOWN:						SPIRAL COLUMN REINFORCING STEEL = 1,265 LBS.					
POUR #1 (FOOTINGS) = 26.0 C.Y.						POUR #1 (FOOTINGS) = 26.0 C.Y.						CLASS A CONCRETE BREAKDOWN:					
POUR #2 (COLUMNS) = 14.8 C.Y.						POUR #2 (COLUMNS) = 13.6 C.Y.						POUR #1 (FOOTINGS) = 26.0 C.Y.					
POUR #3 (CAP) = 37.9 C.Y.						POUR #3 (CAP) = 49.0 C.Y.						POUR #2 (COLUMNS) = 14.2 C.Y.					
TOTAL = 78.7 C.Y.						TOTAL = 88.6 C.Y.						POUR #3 (CAP) = 64.2 C.Y.					
												TOTAL = 104.4 C.Y.					

** THE SP-1, SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

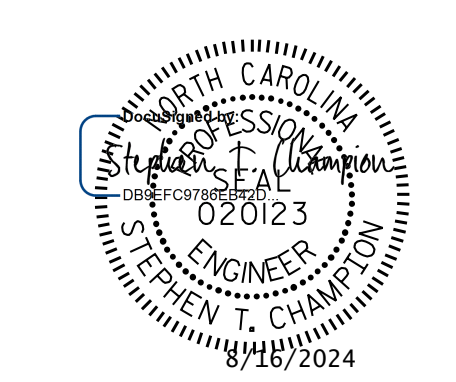


PILE SPLICE DETAILS



DETAIL "B" SHEAR KEY DETAIL

PROJECT NO. I-5717
 IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 7 OF 7



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 BILL OF MATERIAL

DOCUMENT NOT CONSIDERED FINAL
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-60	
1			3			TOTAL SHEETS 72	
2			4				

WDC:GJK
 DATE: 01/24/2024
 TIME: 4:30:2024
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DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24

NOTES

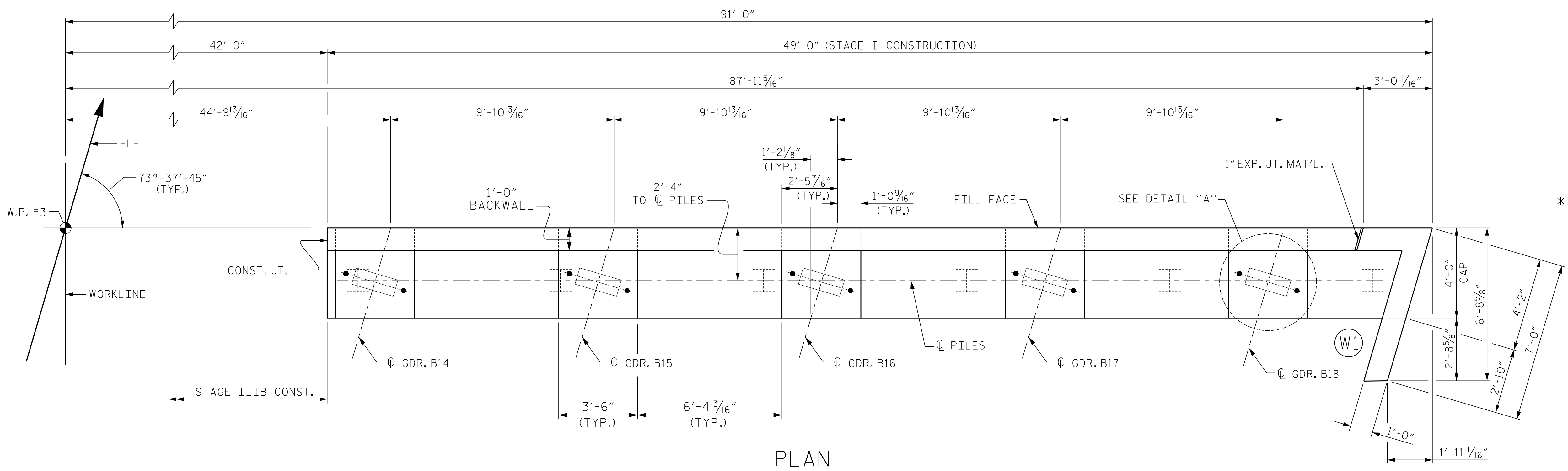
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

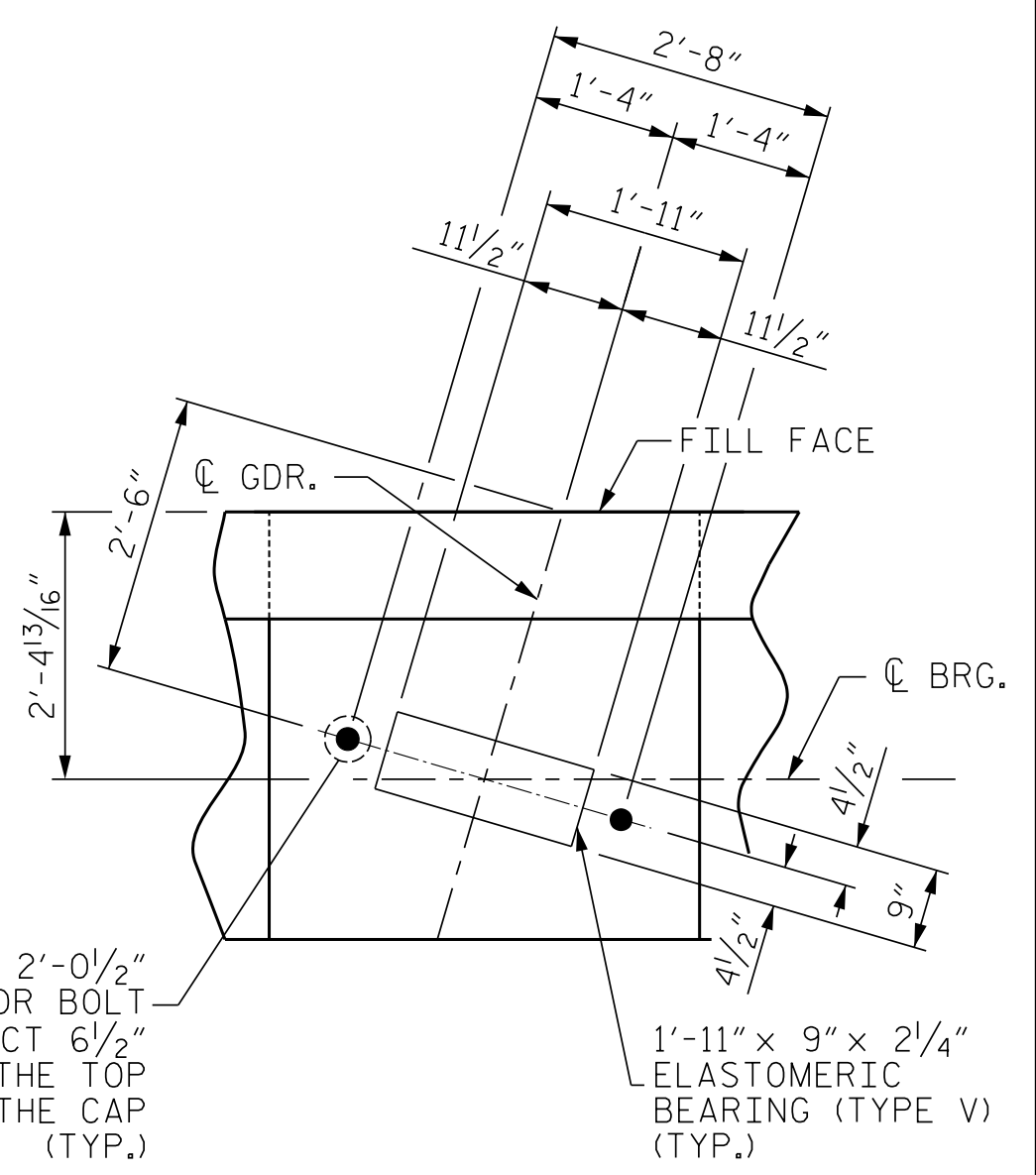
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

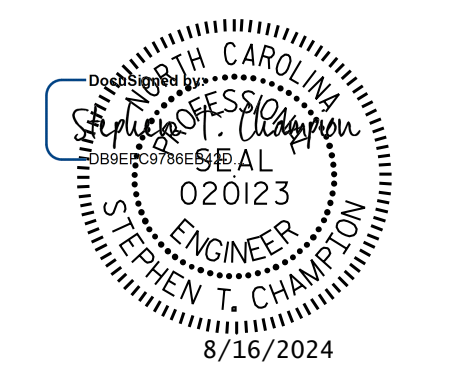
* FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTIONS A-A, B-B AND C-C ON SHEETS 5 OF 6.



PLAN



DETAIL "A"
 STAGE I
 (TYP. EACH GIRDER)

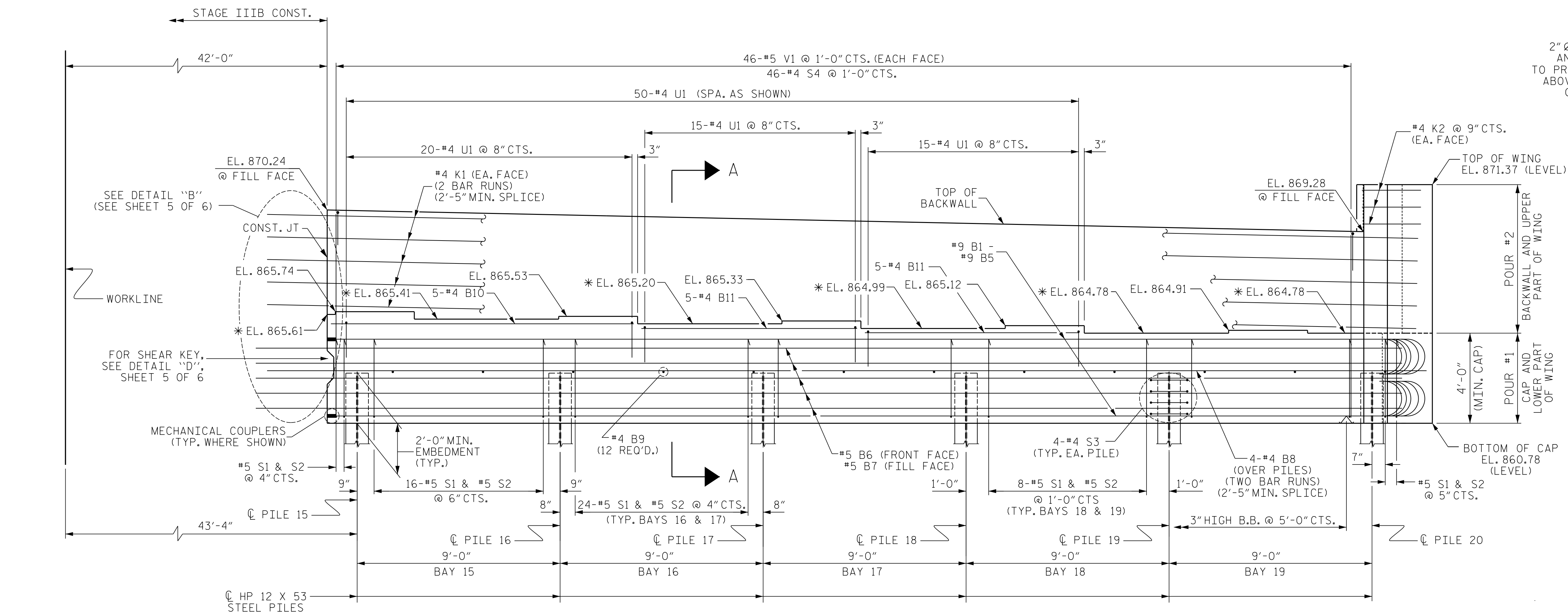


PROJECT NO. I-5717
IREDELL COUNTY
 STATION: 733+32.53 -L-
 SHEET 1 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 STAGE I					
SHEET NO. S2-61					
TOTAL SHEETS 72					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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ELEVATION

15/02/2024 09:20:17 AM 15_002_L1-5717 - Replacement CAD Structures CAD 3-31-23 V01_119_J-5717_SMO_E201_561.dgn
 TIME: 4:30:2024

DWN. BY: WDC DATE: 01/24
 CHKD. BY: GFW DATE: 01/24
 DES. EGR. OF RECORD: STC DATE: 01/24