

**TIP PROJECT: B-5808**

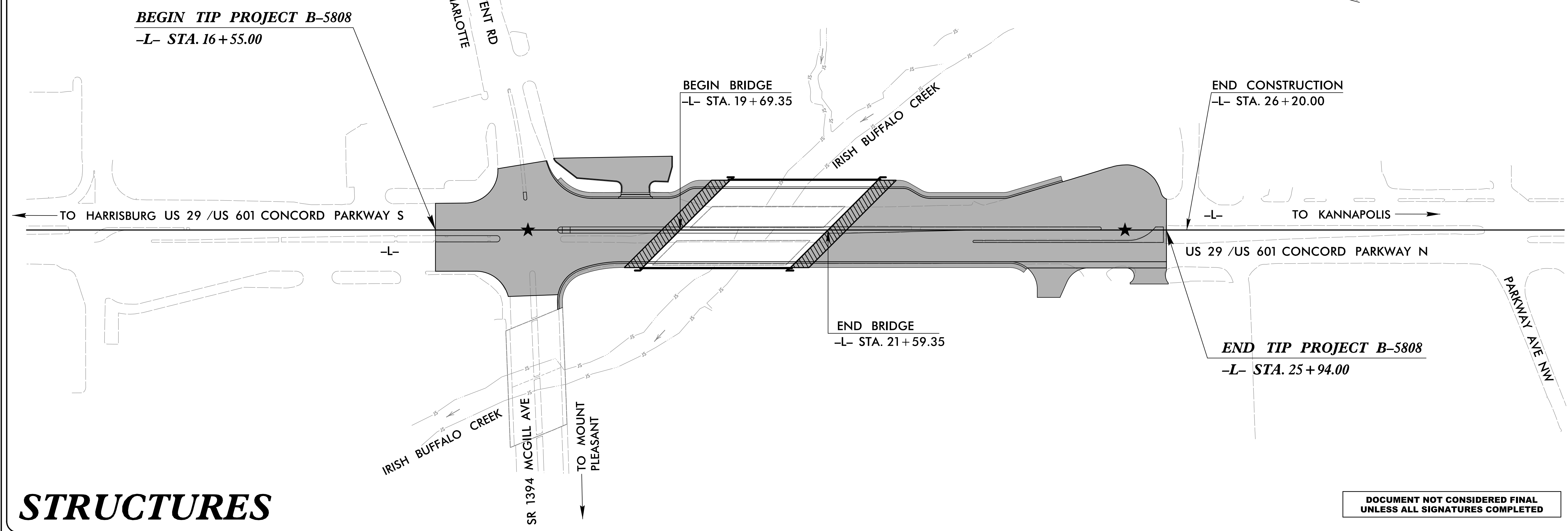
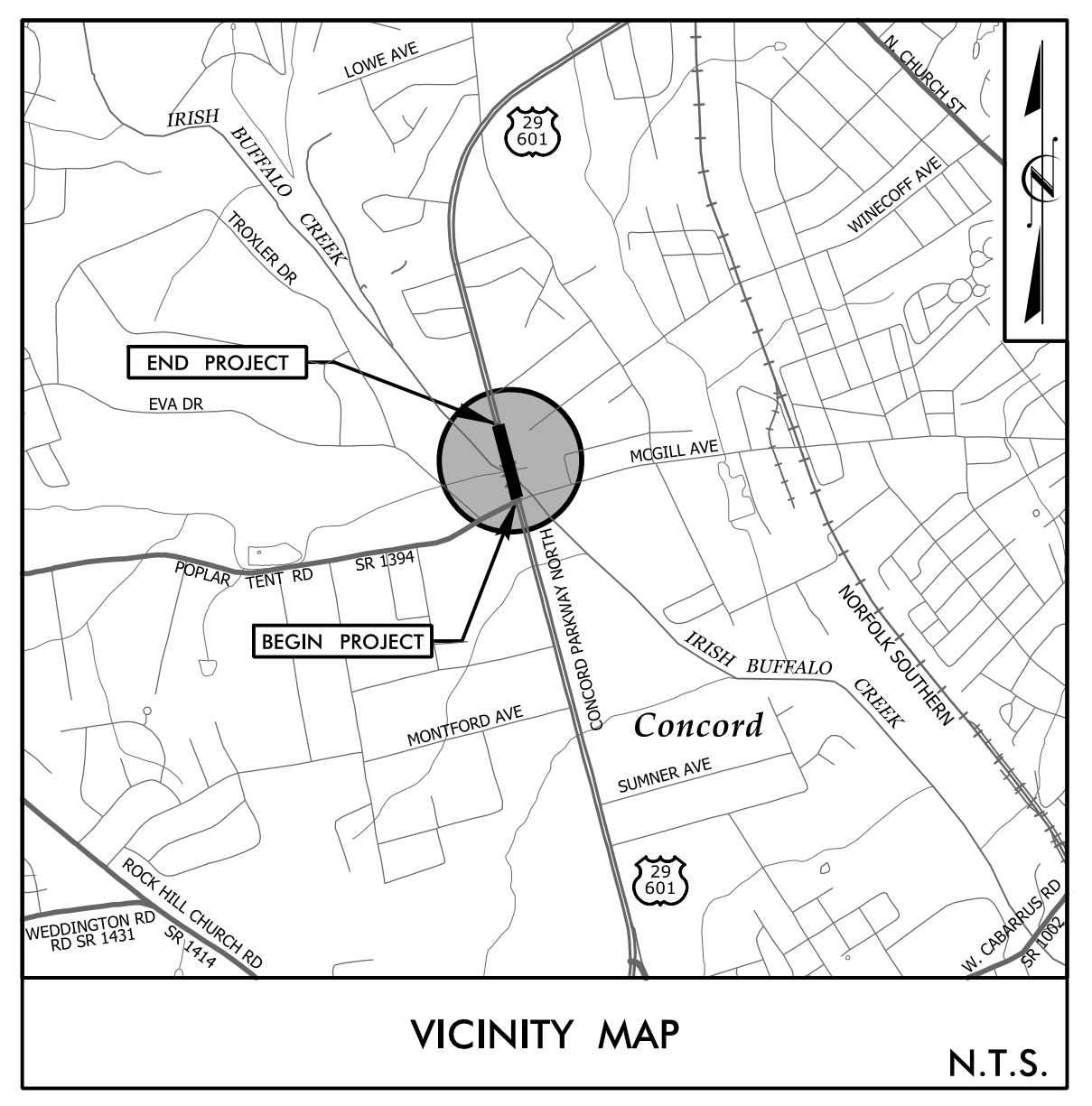
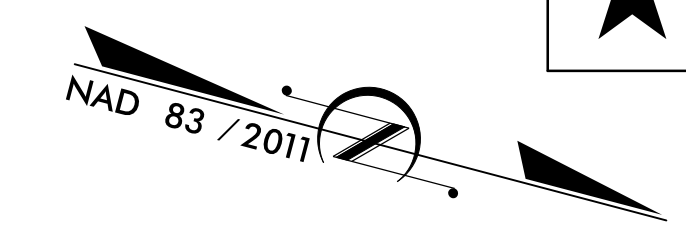
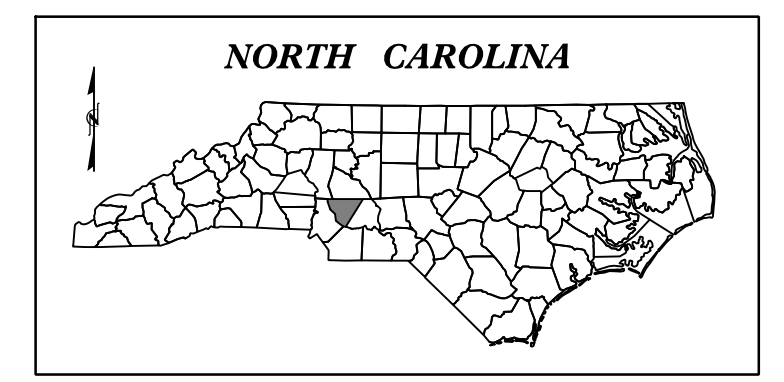
**CONTRACT: C204741**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CABARRUS COUNTY

**LOCATION: BRIDGES #120057 & #120059 OVER IRISH BUFFALO CREEK  
ON US 29 /US 601**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE & SIGNALS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-5808</b>	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45762.1.1	NHP-0029(062)	P.E.	
45762.2.1	NHP-0029(062)	RW & UTIL.	
45762.3.1	NHP-0029(062)	CONST.	



## STRUCTURES

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**DESIGN DATA**

ADT 2022 =	36,820
ADT 2042 =	53,020
K =	10%
D =	5.5%
T =	4%*
V =	50 MPH
FUNC. CLASSIFICATION: URBAN ARTERIAL	
* (TTST 1% + DUALS 3%)	
REGIONAL TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-5808 =	0.142 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5808 =	0.036 MILES
TOTAL LENGTH OF TIP PROJECT B-5808 =	0.178 MILES

NCDOT CONTACT: ADAM COLE, PE  
Structure Management Unit

PLANS PREPARED FOR THE NCDOT BY:

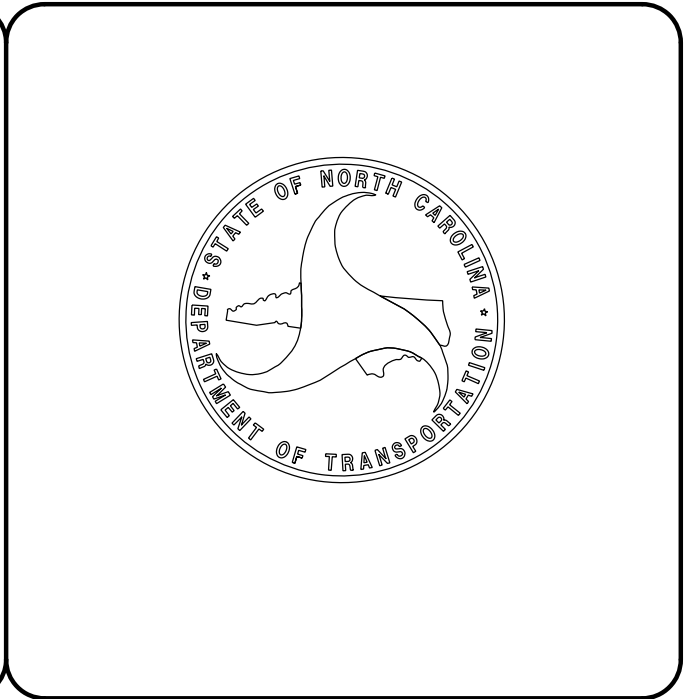
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STV Engineers, Inc.  
900 West Trade St., Suite 715  
Charlotte, NC 28202  
NC License Number F-0991

2018 STANDARD SPECIFICATIONS	RIGHT OF WAY DATE: JULY 13, 2021	JASON T. GRISCOM, PE PROJECT ENGINEER
	LETTING DATE: APRIL 18, 2023	NICOLE M. HEPNER, PE PROJECT DESIGNER

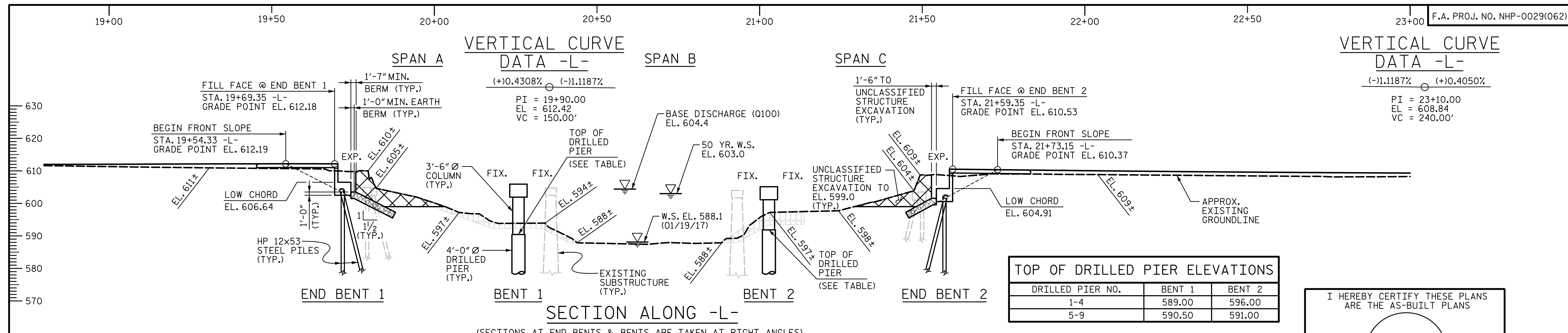
STRUCTURES ENGINEER

3/6/2023

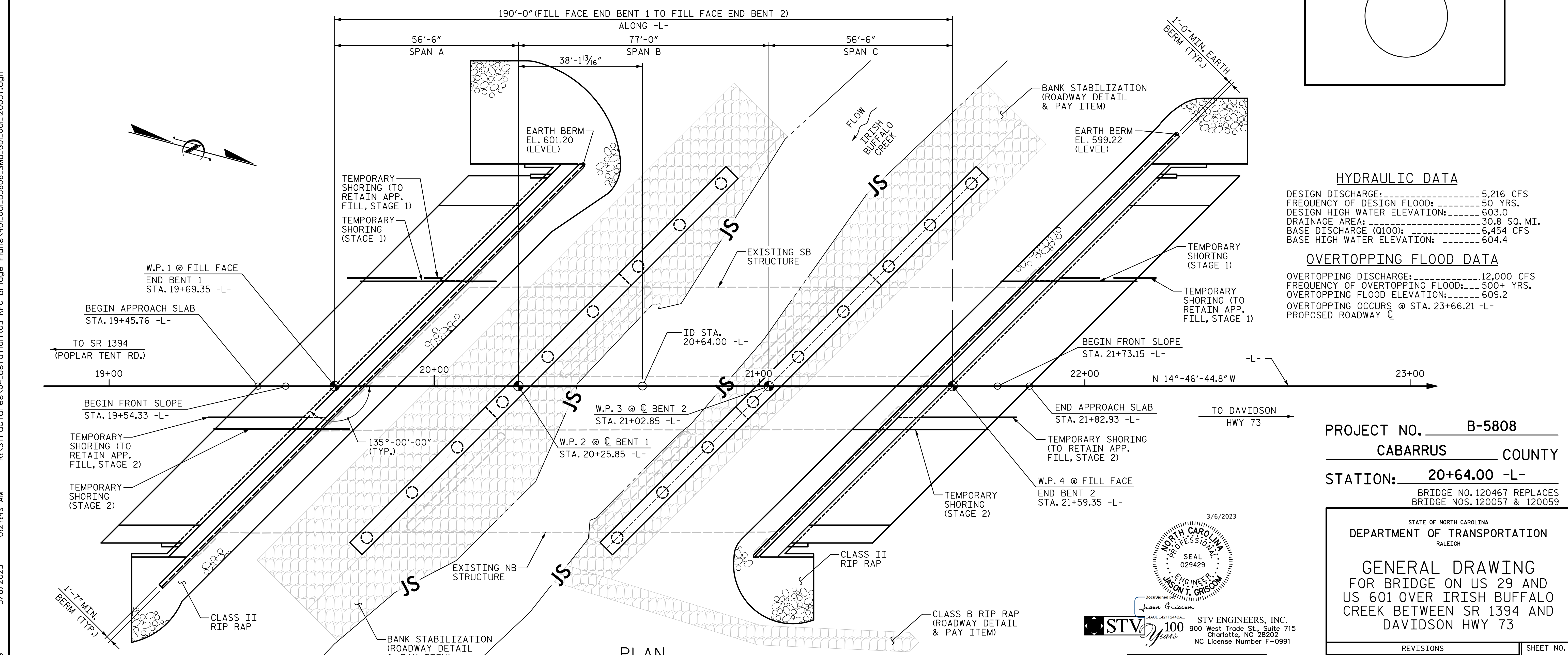
DocuSigned by:  
Jason Griscum  
SIGNATURE: P.E.







I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



**HYDRAULIC DATA**

DESIGN DISCHARGE: 5,216 CFS  
 FREQUENCY OF DESIGN FLOOD: 50 YRS.  
 DESIGN HIGH WATER ELEVATION: 603.0  
 DRAINAGE AREA: 30.8 SQ. MI.  
 BASE DISCHARGE (Q100): 6,454 CFS  
 BASE HIGH WATER ELEVATION: 604.4

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE: 12,000 CFS  
 FREQUENCY OF OVERTOPPING FLOOD: 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION: 609.2  
 OVERTOPPING OCCURS @ STA. 23+66.21 -L- PROPOSED ROADWAY

ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 11-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 BRIDGE NO. 120467 REPLACES BRIDGE NOS. 120057 & 120059

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

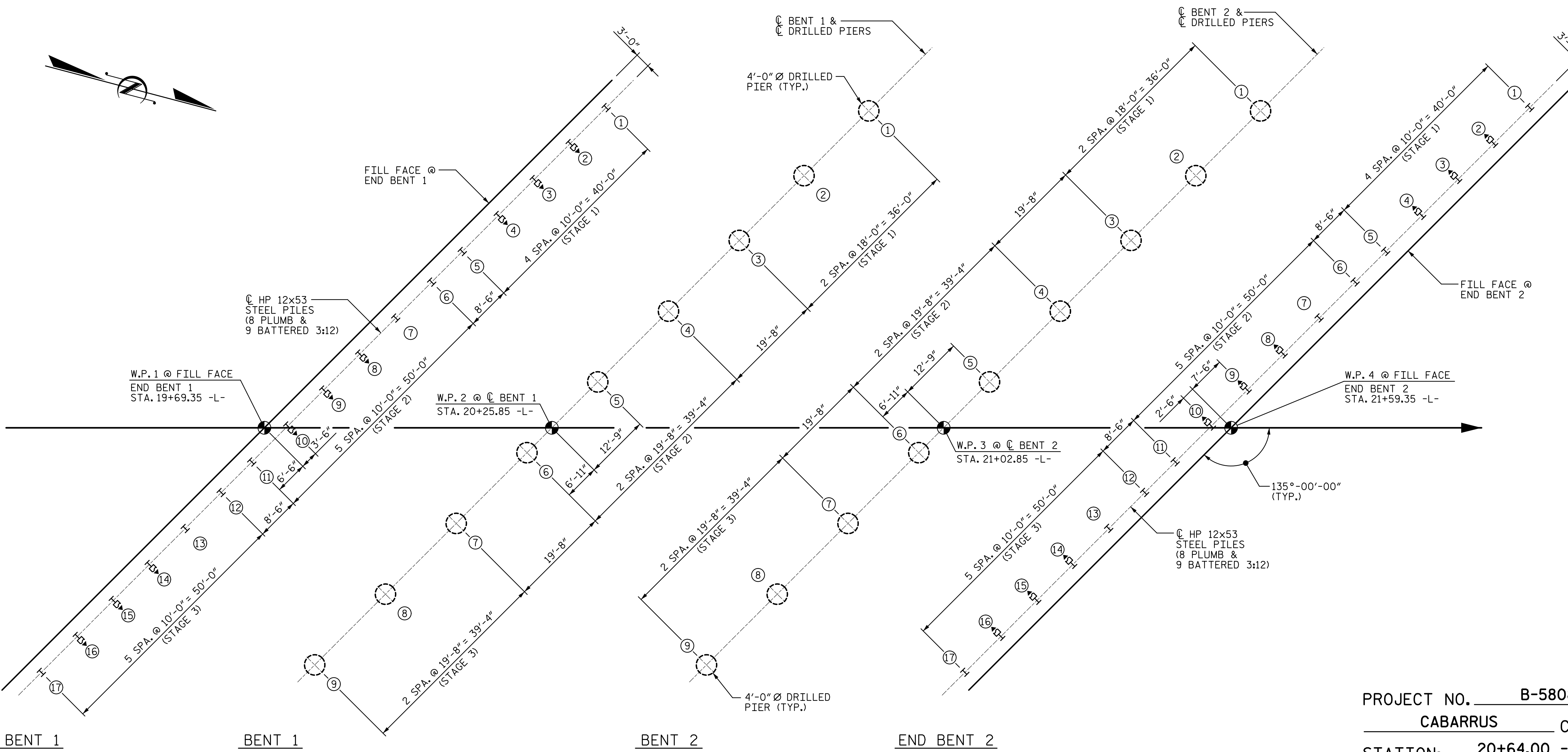
**GENERAL DRAWING FOR BRIDGE ON US 29 AND US 601 OVER IRISH BUFFALO CREEK BETWEEN SR 1394 AND DAVIDSON HWY 73**

REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-1
2			4			TOTAL SHEETS 65

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HensleSC



### FOUNDATION LAYOUT

⊕ - PILE/DRILLED PIER NO.  
 ▲ - INDICATES BATTERED PILE  
 ALL PILES SHALL BE HP 12x53 STEEL PILES.  
 DIMENSIONS TO PILES ARE TO Ⓞ PILE AT BOTTOM OF CAP.  
 DIMENSIONS TO DRILLED PIERS ARE TO Ⓞ DRILLED PIER.

**NOTES:**  
 FOR FOUNDATION NOTES AND INFORMATION SEE SHEET "PILE AND DRILLED PIER FOUNDATION TABLES AND NOTES".

ASSEMBLED BY :	SGH	DATE :	5-22
CHECKED BY :	MLO	DATE :	8-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

3/6/2023

**PROFESSIONAL SEAL**  
 SEAL 029429  
 ENGINEER  
 JASON T. GRISCOM

DocuSigned by:  
 Jason Griscorn

**STV** 100 YEARS  
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 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
FOUNDATION LAYOUT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 65
					S-2

**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) Elev FT	Estimated Pile Lenth 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 Elev (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
EB 1, Piles 1-14	93	See Structure Drawings	25			155							
EB 1, Piles 15-17	93		20			155							
EB 2, Piles 1-17	93		20				155						

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

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

**NOTES**

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer Michael H. Stephens, P.E., License No. 028893 on 01-14-2022.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing and Pipe Pile Plates when PDAs or plates may be required.

**FOUNDATION NOTES**

1. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

**SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION**

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) ## (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elev FT	Required Tip Resistance per Pier TSF	Scour Critical Elev FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Minimum Drilled Pier Penetration Into Weathered Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elev (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
Bent 1, Piers 1-4	355	568.0	20	576	8.0			8.0	13.3			
Bent 1, Piers 5-7	355	561.5	20	570	8.0			10.5	18.9			
Bent 1, Piers 8-9	355	570.0	20	578	8.0			8.0	12.0			
Bent 2, Piers 1-4	355	571.0	20	579	8.0			8.0	16.1			
Bent 2, Piers 5-7	355	562.5	30	571		8.0		11.5	17.9			
Bent 2, Piers 8-9	355	553.5	20	562	8.0			9.5	28.0			

\*Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation.

**SUMMARY OF DRILLED PIER TESTING**  
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) ## (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required? YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-4		Maybe	91		
Bent 1, Piers 5-7		Maybe	124		
Bent 1, Piers 8-9		Maybe	86		
Bent 2, Piers 1-4		Maybe	102		
Bent 2, Piers 5-7		Maybe	124		
Bent 2, Piers 8-9		Maybe	156		
<b>TOTAL QTY:</b>		6	2000	1	

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

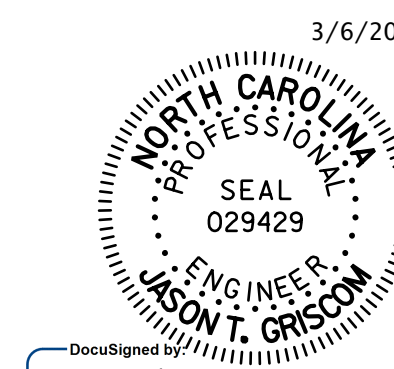
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ASSEMBLED BY : JTG DATE : 11-22  
 CHECKED BY : MLO DATE : 11-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

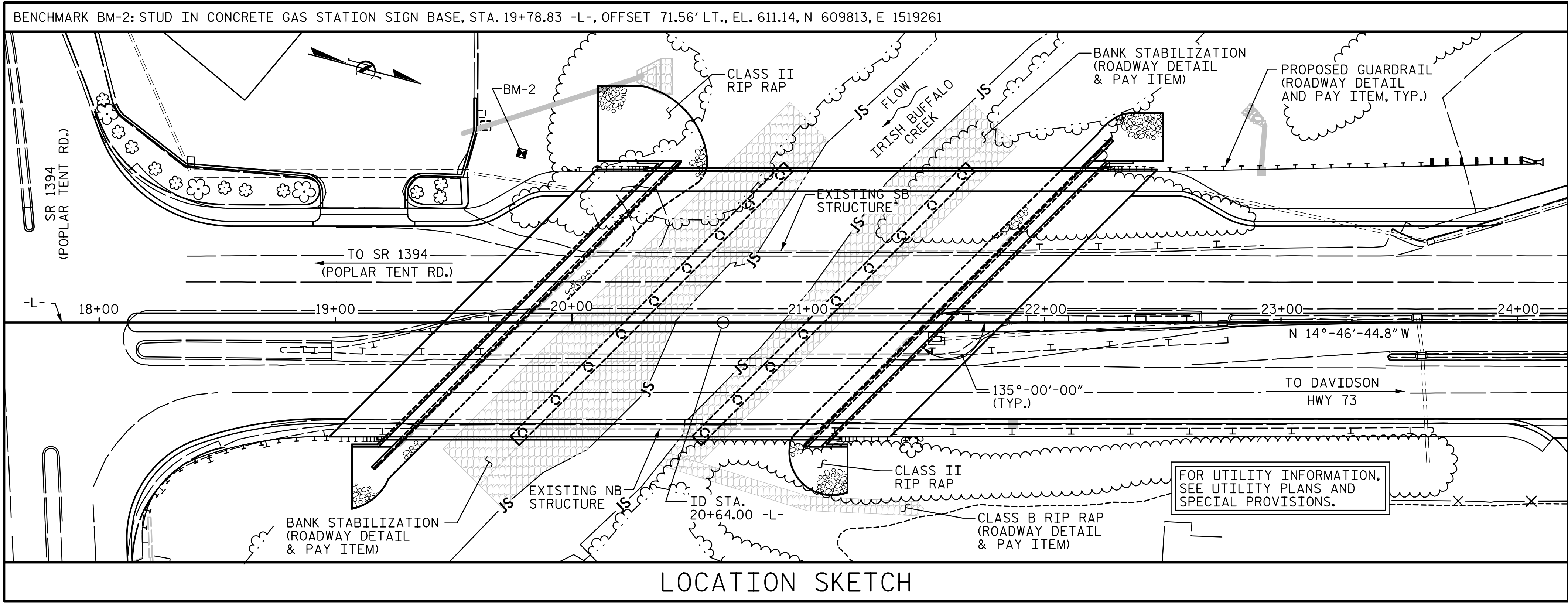


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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-3
PILE AND DRILLED PIER FOUNDATION TABLES AND NOTES						TOTAL SHEETS 65
REVISIONS						NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			





LOCATION SKETCH

BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 20+64.00 -L-	ASBESTOS ASSESSMENT	4'-0" DIA. DRILLED PIERS IN SOIL	4'-0" DIA. DRILLED PIERS NOT IN SOIL	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.
SUPERSTRUCTURE								21,466.5	24,217			
END BENT 1										181.4		20,392
BENT 1			133.9	79.5						204.0		45,891
BENT 2			174.1	85.5						193.9		45,431
END BENT 2										192.8		20,570
TOTAL	LUMP SUM	LUMP SUM	308.0	165.0	1	6	LUMP SUM	21,466.5	24,217	772.1	LUMP SUM	132,284

BILL OF MATERIAL (CONTINUED)

	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES	HP 12X53 STEEL PILES	2 BAR METAL RAIL	1'-2" X 3'-4 1/4" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINTS	36" PRESTRESSED CONCRETE FLORIDA I-BEAMS		
	LBS.	EA.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE					359.4	391.8					36	2,176.3
END BENT 1		17	17	410			395	445				
BENT 1	8,204											
BENT 2	8,396											
END BENT 2		17	17	340			270	300				
TOTAL	16,600	34	34	750	359.4	391.8	665	745	LUMP SUM	LUMP SUM	36	2,176.3

SAMPLE BAR REPLACEMENT

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

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

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 "STANDARD NOTES" SHEET.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING NB AND SB STRUCTURES CONSISTING OF (2) 57'-4" AND (1) 57'-2" SPANS AND (3) 57'-6" SPANS, RESPECTIVELY, WITH REINFORCED CONCRETE (RC) GIRDERS AND CLEAR ROADWAY WIDTHS OF 28.1' (NB) AND 25.8' (SB) SUPPORTED BY RC END BENT CAPS ON TIMBER PILES AND RC POST AND WEB INTERIOR BENTS SHALL BE REMOVED. THE EXISTING BRIDGES ARE PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGES DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON THE GENERAL DRAWING SHALL BE EXCAVATED FOR A DISTANCE FROM THE CENTERLINE OF ROADWAY OF 48'± (LEFT) AND 83'± (RIGHT) AT END BENT 1 AND 87'± (LEFT) AND 72'± (RIGHT) AT END BENT 2, TO EL. 599.0, AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, 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 REINFORCEMENT STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

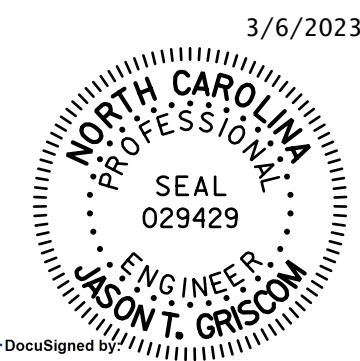
NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR IN THE PLANS OF APPROVED BY THE ENGINEER.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS, FOR PAY ITEM OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

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 THE SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR 36" PRESTRESSED CONCRETE FLORIDA I-BEAMS, SEE SPECIAL PROVISIONS.

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**



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1			3		
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

LOCATION SKETCH,  
 TOTAL BILL OF  
 MATERIAL AND  
 GENERAL NOTES

S-4  
 TOTAL SHEETS 65

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ASSEMBLED BY: SGH DATE: 12-22  
 CHECKED BY: MLO DATE: 12-22  
 DESIGN ENGINEER OF RECORD: J. GRISCOM DATE: 3-23



LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	MOMENT					SHEAR					LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.20	--	1.75	0.82	1.53	B	I	36.85	1.22	1.28	B	I	59.70	0.80	0.82	1.20	B	I	36.85		
	HL-93 (OPERATING)	N/A		1.82	--	1.35	0.82	1.98	B	I	36.85	1.22	1.82	B	I	59.70	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.59	57.24	1.75	0.82	2.02	B	I	36.85	1.22	1.75	B	I	14.00	0.80	0.82	1.59	B	I	36.85		
	HS-20 (OPERATING)	36.000		2.46	88.56	1.35	0.82	2.62	B	I	36.85	1.22	2.46	B	I	14.00	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.63	49.01	1.40	0.82	5.77	B	I	36.85	1.22	6.24	B	I	59.70	0.80	0.82	3.63	B	I	36.85	
		SNGARBS2	20.000		2.69	53.80	1.40	0.82	4.27	B	I	36.85	1.22	4.38	B	I	59.70	0.80	0.82	2.69	B	I	36.85	
		SNAGRIS2	22.000		2.54	55.88	1.40	0.82	4.04	B	I	36.85	1.22	4.04	B	I	59.70	0.80	0.82	2.54	B	I	36.85	
		SNCOTTS3	27.250		1.81	49.32	1.40	0.82	2.87	B	I	36.85	1.22	2.77	B	I	14.00	0.80	0.82	1.81	B	I	36.85	
		SNAGGRS4	34.925		1.50	52.39	1.40	0.82	2.39	B	I	36.85	1.22	2.42	B	I	14.00	0.80	0.82	1.50	B	I	36.85	
		SNS5A	35.550		1.47	52.26	1.40	0.82	2.34	B	I	36.85	1.22	2.38	B	I	59.70	0.80	0.82	1.47	B	I	36.85	
		SNS6A	39.950		1.35	53.93	1.40	0.82	2.14	B	I	36.85	1.22	2.20	B	I	59.70	0.80	0.82	1.35	B	I	36.85	
	SNS7B	42.000		1.28	53.76	1.40	0.82	2.04	B	I	36.85	1.22	2.07	B	I	59.70	0.80	0.82	1.28	B	I	36.85		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.64	54.12	1.40	0.82	2.61	B	I	36.85	1.22	2.86	B	I	59.70	0.80	0.82	1.64	B	I	36.85	
		TNT4A	33.075		1.65	54.57	1.40	0.82	2.62	B	I	36.85	1.22	2.48	B	I	59.70	0.80	0.82	1.65	B	I	36.85	
		TNT6A	41.600		1.35	56.16	1.40	0.82	2.14	B	I	36.85	1.22	2.21	B	I	14.00	0.80	0.82	1.35	B	I	36.85	
		TNT7A	42.000		1.35	56.70	1.40	0.82	2.15	B	I	36.85	1.22	2.20	B	I	59.70	0.80	0.82	1.35	B	I	36.85	
		TNT7B	42.000		1.39	58.38	1.40	0.82	2.21	B	I	36.85	1.22	2.02	B	I	59.70	0.80	0.82	1.39	B	I	36.85	
		TNAGRIT4	43.000		1.33	57.19	1.40	0.82	2.11	B	I	36.85	1.22	1.88	B	I	59.70	0.80	0.82	1.33	B	I	36.85	
TNAGT5A		45.000		1.25	56.25	1.40	0.82	1.99	B	I	36.85	1.22	1.87	B	I	59.70	0.80	0.82	1.25	B	I	36.85		
TNAGT5B	45.000	③	1.24	55.80	1.40	0.82	1.97	B	I	36.85	1.22	1.82	B	I	14.00	0.80	0.82	1.24	B	I	36.85			

NOTES:

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

COMMENTS:

- 
- 
- 
- 

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

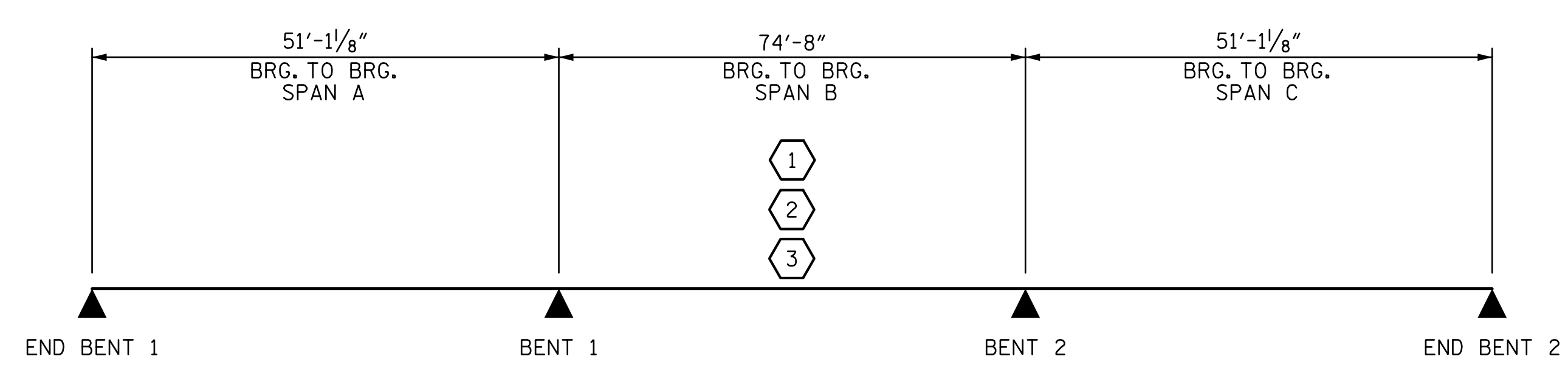
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

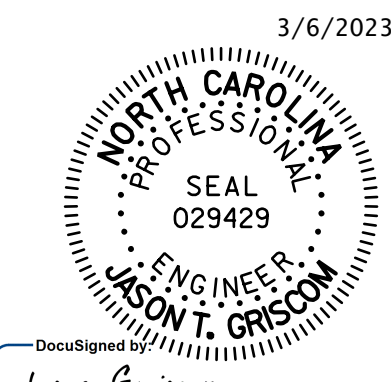
I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-

3/6/2023



STV ENGINEERS, INC.  
900 West Trade St., Suite 715  
Charlotte, NC 28202  
NC License Number F-0991

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STATE OF NORTH CAROLINA  
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RALEIGH

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

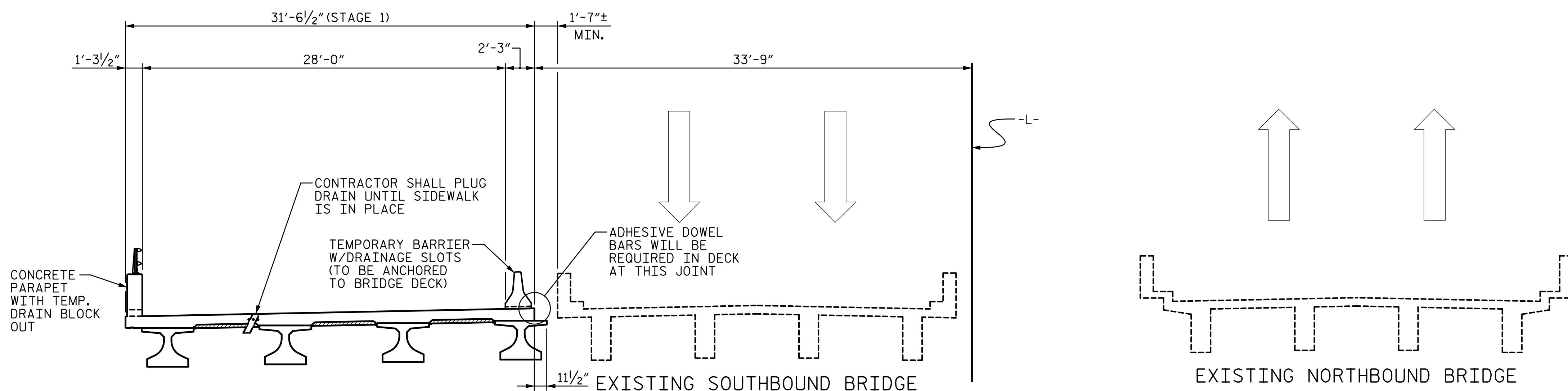
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
TOTAL SHEETS				65

ASSEMBLED BY : SGH DATE : 12-22  
CHECKED BY : MLO DATE : 12-22  
DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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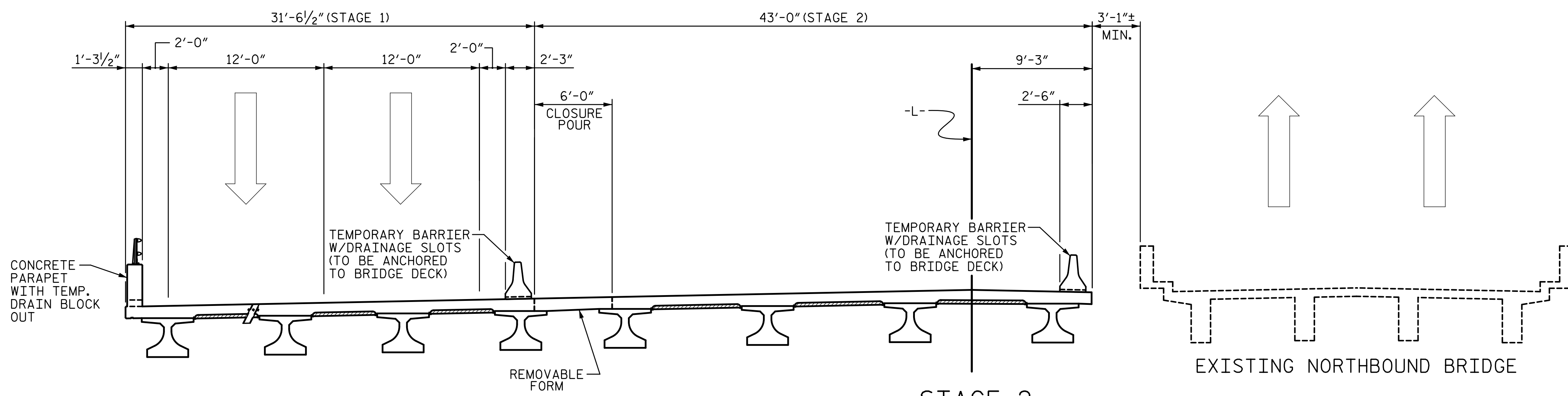


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**STAGE 1**

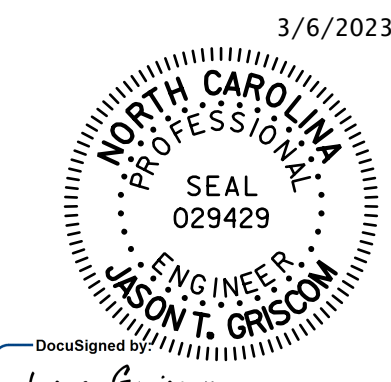
1. MAINTAIN EXISTING TRAFFIC PATTERN.
2. CONSTRUCT STAGE 1 OF PROPOSED BRIDGE EXCEPT SIDEWALK.



**STAGE 2**

1. SHIFT SOUTHBOUND TRAFFIC TO STAGE 1 OF PROPOSED BRIDGE AND DEMOLISH EXISTING SOUTHBOUND BRIDGE.
2. CONSTRUCT STAGE 2 OF PROPOSED BRIDGE EXCEPT CONCRETE MEDIAN STRIP.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 1 OF 2



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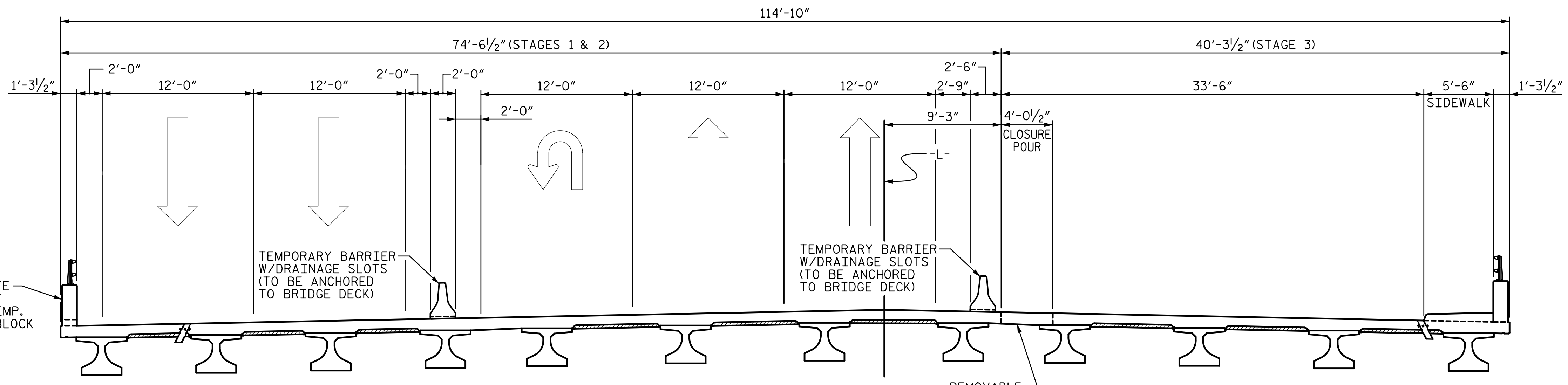
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE CONSTRUCTION SEQUENCE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-6
					TOTAL SHEETS 65

ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 6-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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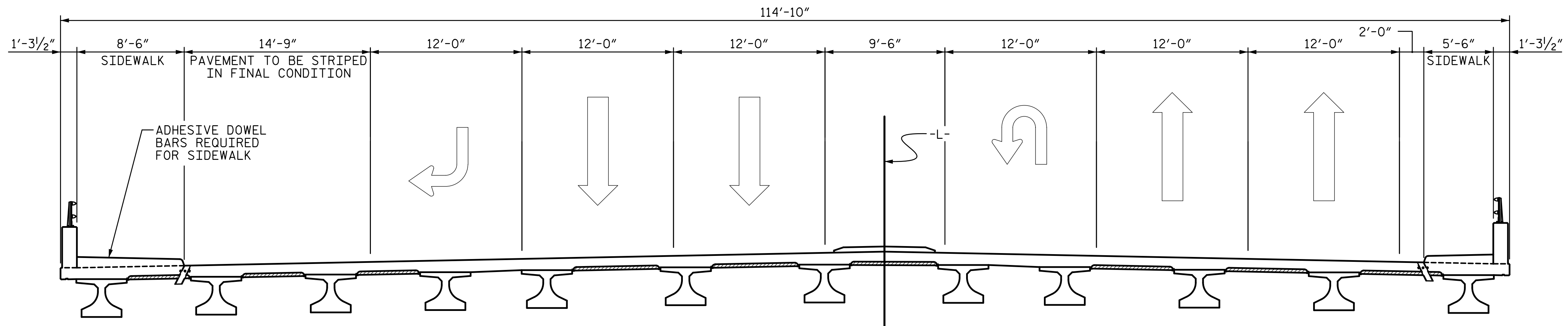


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### STAGE 3

1. SHIFT NORTHBOUND TRAFFIC TO STAGE 2 OF PROPOSED BRIDGE AND DEMOLISH EXISTING NORTHBOUND BRIDGE.
2. CONSTRUCT STAGE 3 OF PROPOSED BRIDGE.



### STAGE 4

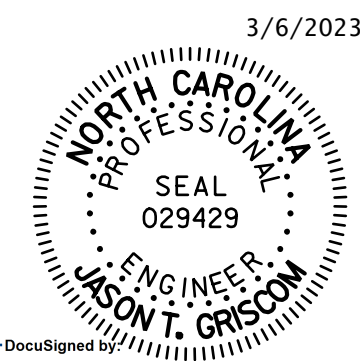
1. SHIFT TRAFFIC TO FINAL PATTERN.
2. FILL TEMPORARY DRAINAGE BLOCKOUTS WITH AN APPROVED GROUT.
3. CONSTRUCT SIDEWALK ON LEFT SIDE AND CONCRETE MEDIAN STRIP.
4. UNPLUG DECK DRAINS.
5. REMOVE TEMPORARY GLANDS IN JOINTS AND INSTALL FINAL CONTINUOUS GLAND.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
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## BRIDGE CONSTRUCTION SEQUENCE



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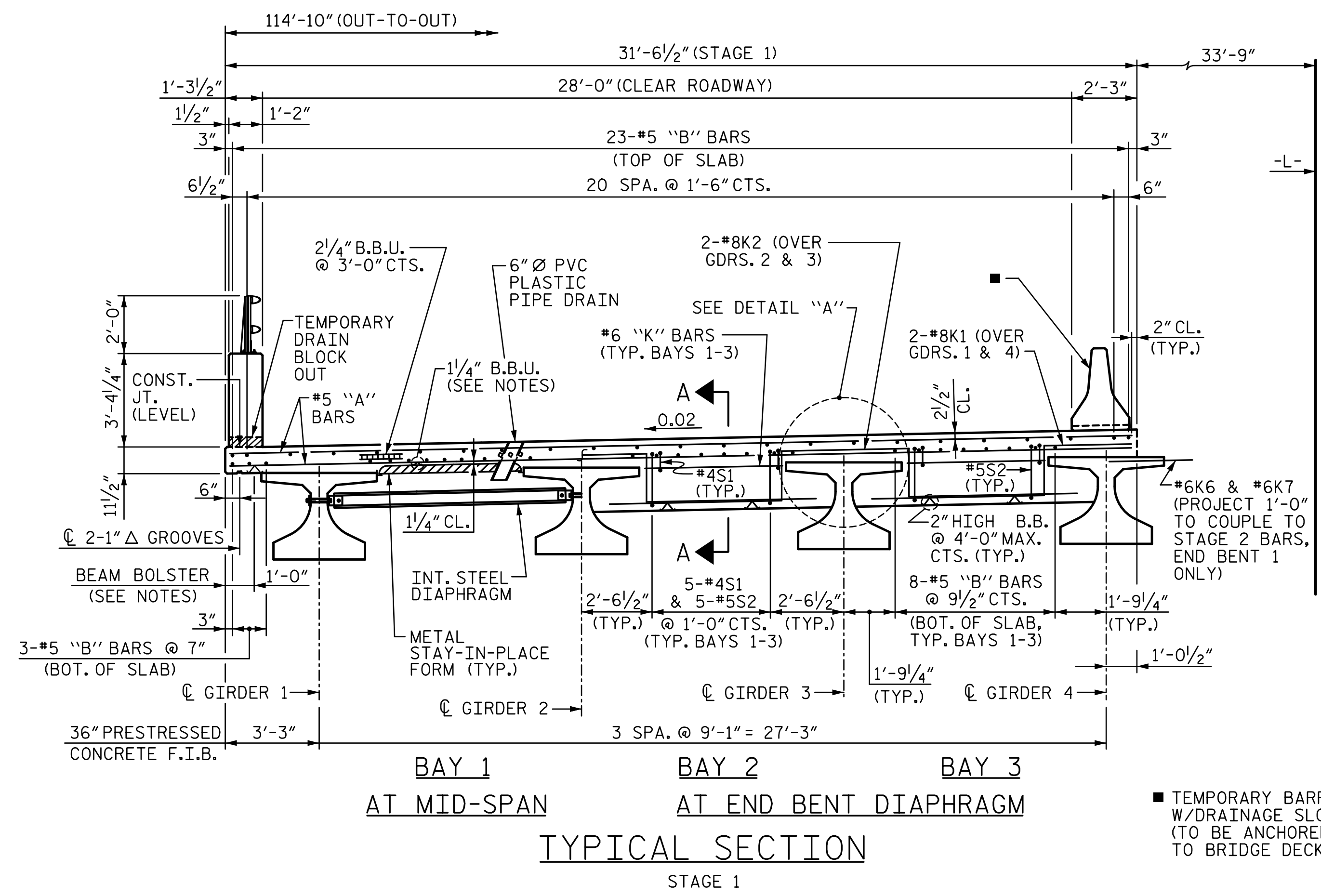
ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 6-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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

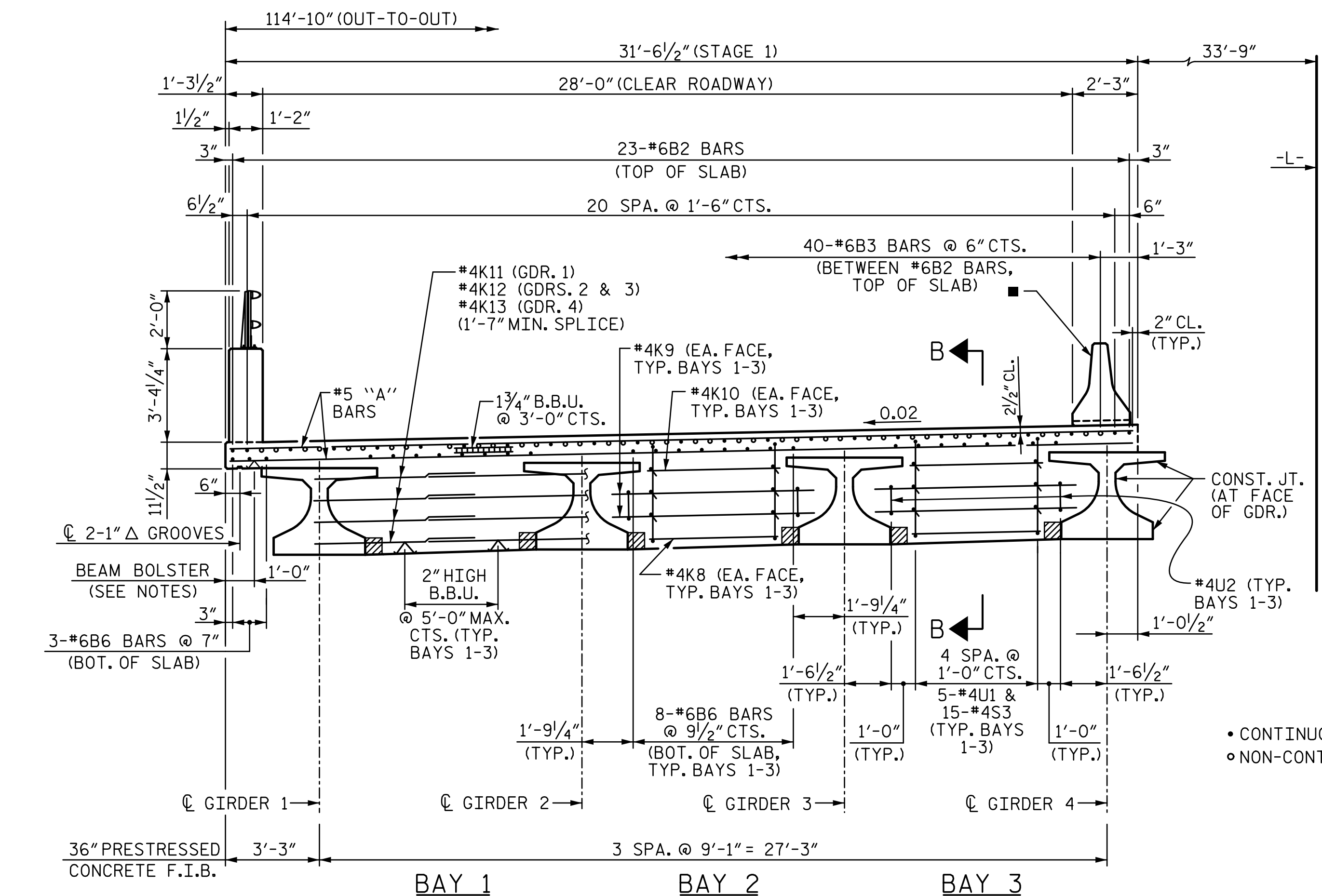
TOTAL SHEETS: 65



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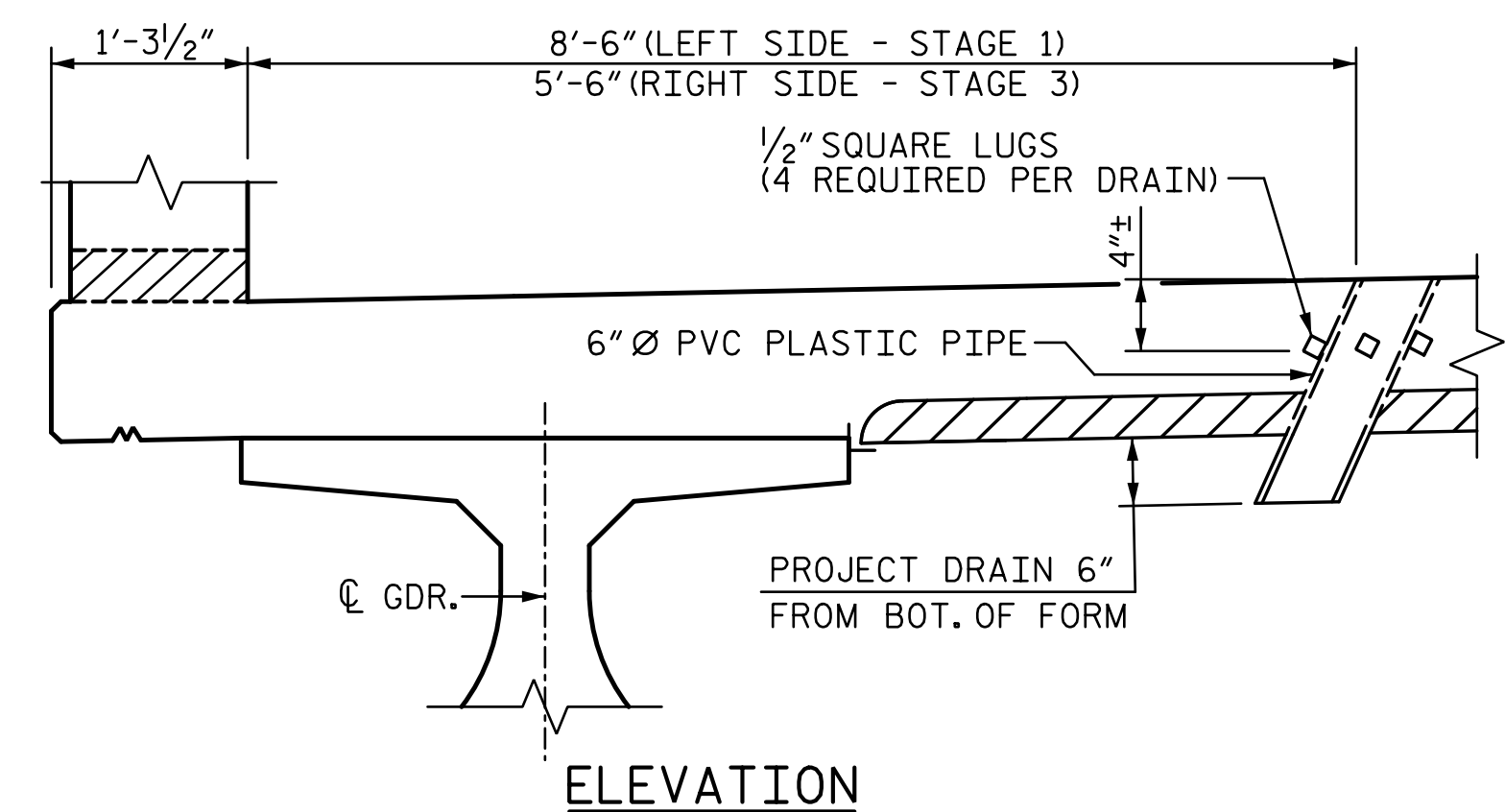
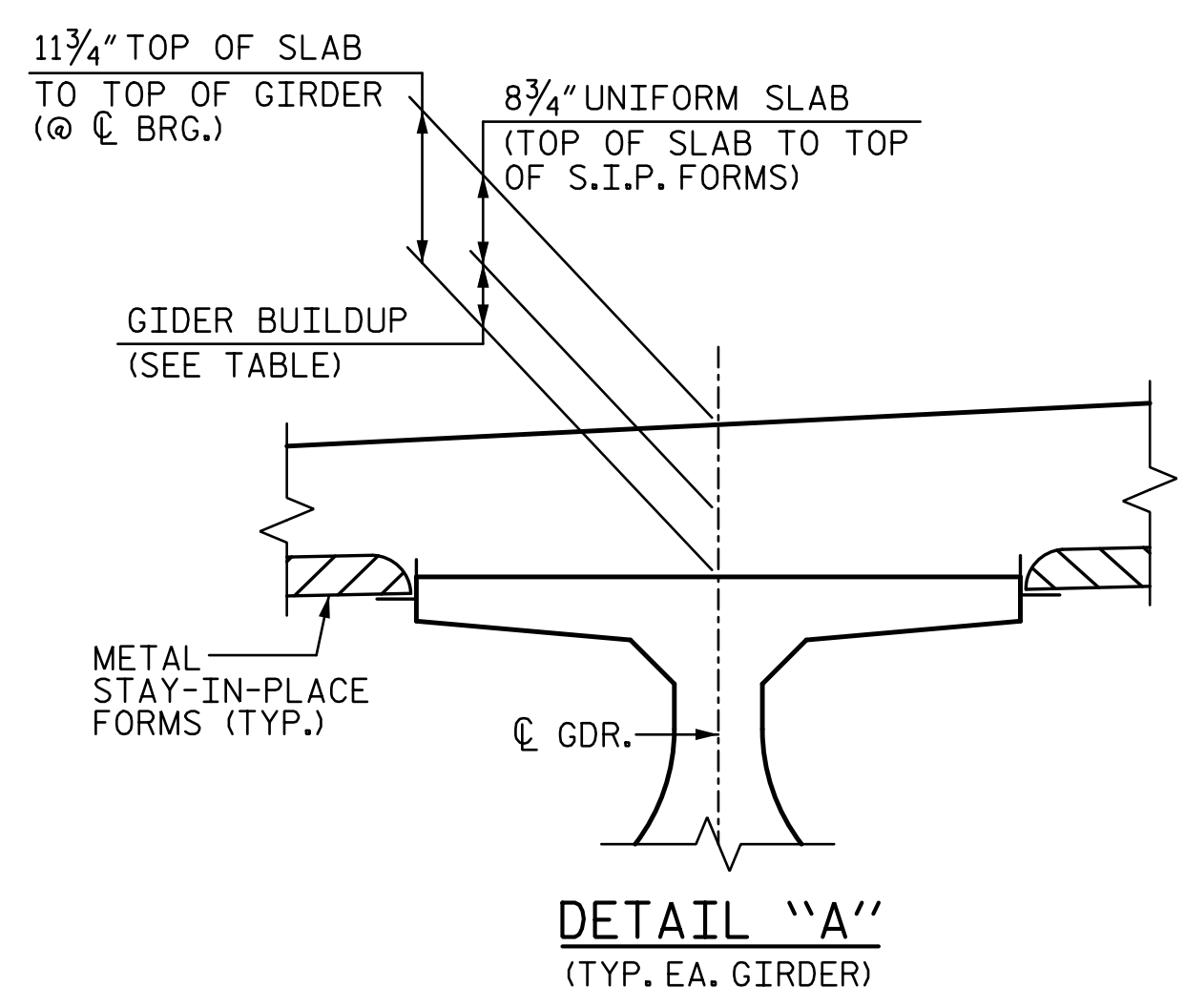
TYPICAL SECTION AT MID-SPAN STAGE 1



TYPICAL SECTION AT BENT DIAPHRAGM STAGE 1

**NOTES:**

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVEABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (CHCM) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVEABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND 6" PVC PLASTIC PIPE DRAINS.
- HEIGHT OF BEAM BOLSTER IN OVERHANG WILL VARY ALONG THE SPAN. CONTRACTOR SHALL DETERMINE HEIGHT REQUIRED TO MAINTAIN REQUIRED CLEARANCES.
- FOR SECTIONS A-A & B-B SEE "SUPERSTRUCTURE DETAILS" SHEETS.
- FOR CONCRETE PARAPET, SEE "1'-2" x 3'-4 1/4" CONCRETE PARAPET" SHEETS.
- FOR 2-BAR METAL RAIL, SEE "2-BAR METAL RAIL" SHEETS.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
- CONCRETE PARAPET SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- SIDEWALK SHALL BE PLACED IN STAGE 4. FOR DETAILS, SEE "SIDEWALK DETAILS" SHEETS.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 36" FIB" SHEET.



GIRDER BUILDUP		
	CL BRG.	MAX. @ MIDSPAN
SPAN A, GDRS. 3 & 5-12	3"	2 5/8"
SPAN B, GDRS. 10 & 11	3"	3"
SPAN C, GDRS. 6-7 & 10-12	3"	2 1/4"

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

\* TO BE SET TO MATCH SLOPE OF BOTTOM OF S.I.P. FORM (14 DRAINS REQUIRED)

PIPE DETAIL

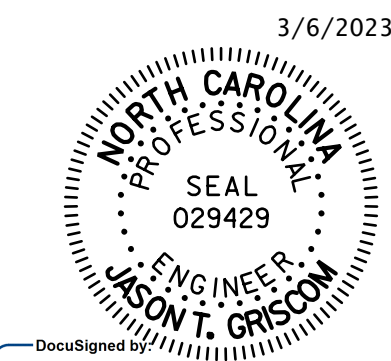
PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**TYPICAL SECTION STAGE 1**

REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 65
2			4			



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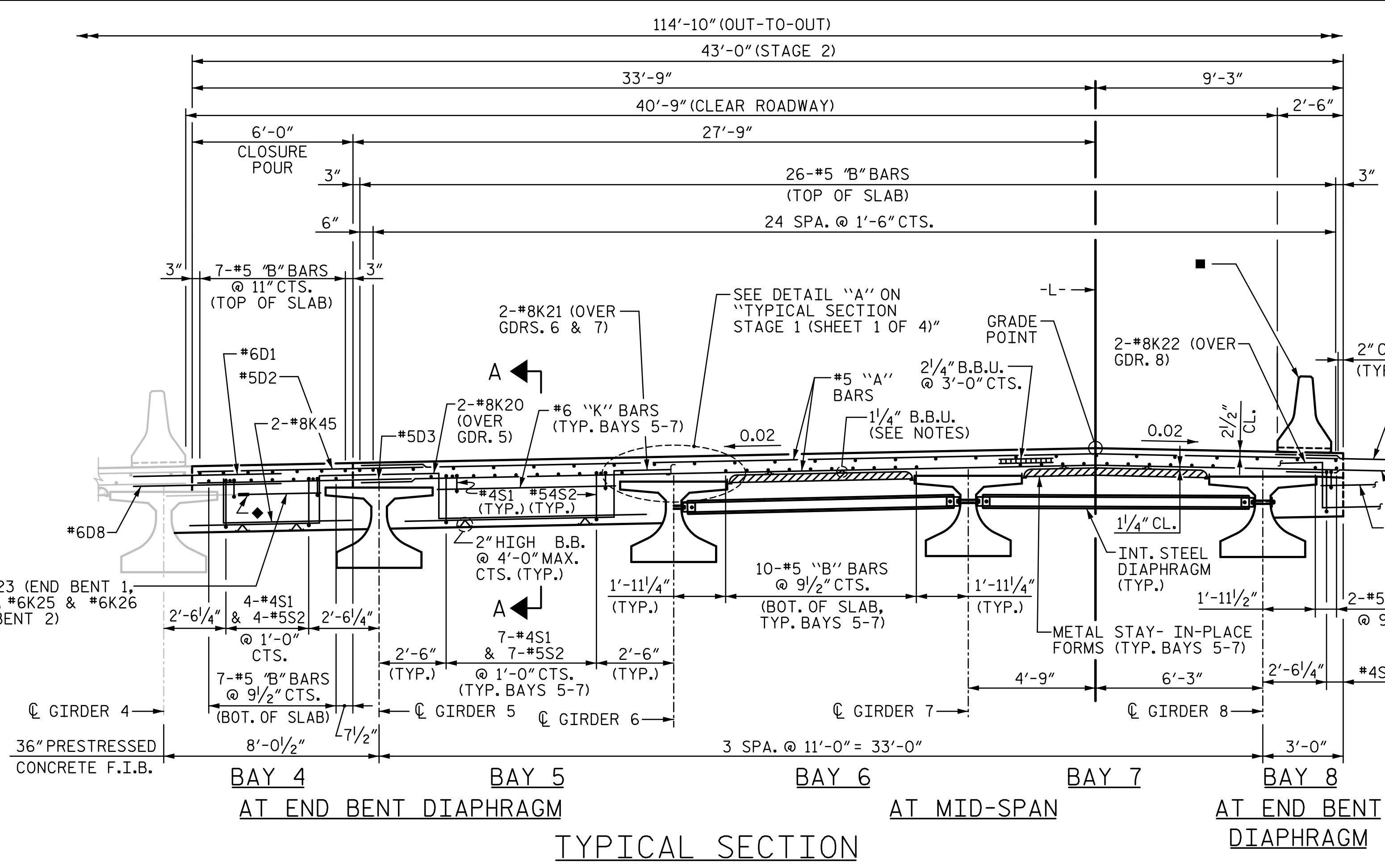
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY: SGH DATE: 7-21  
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 DESIGN ENGINEER OF RECORD: J. GRISCOM DATE: 3-23

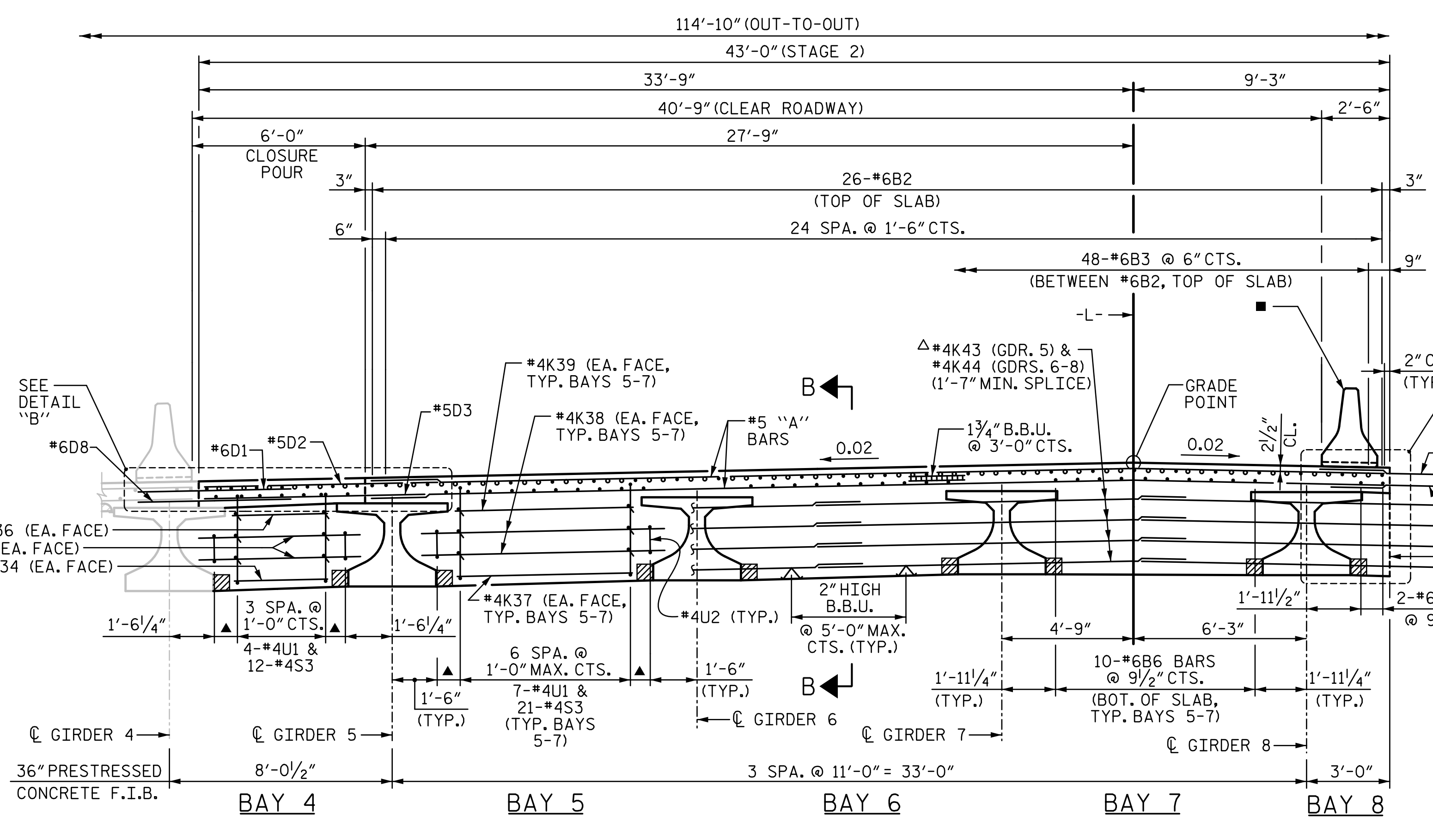
- CONTINUOUS BAR LINE
- NON-CONTINUOUS BAR LINE



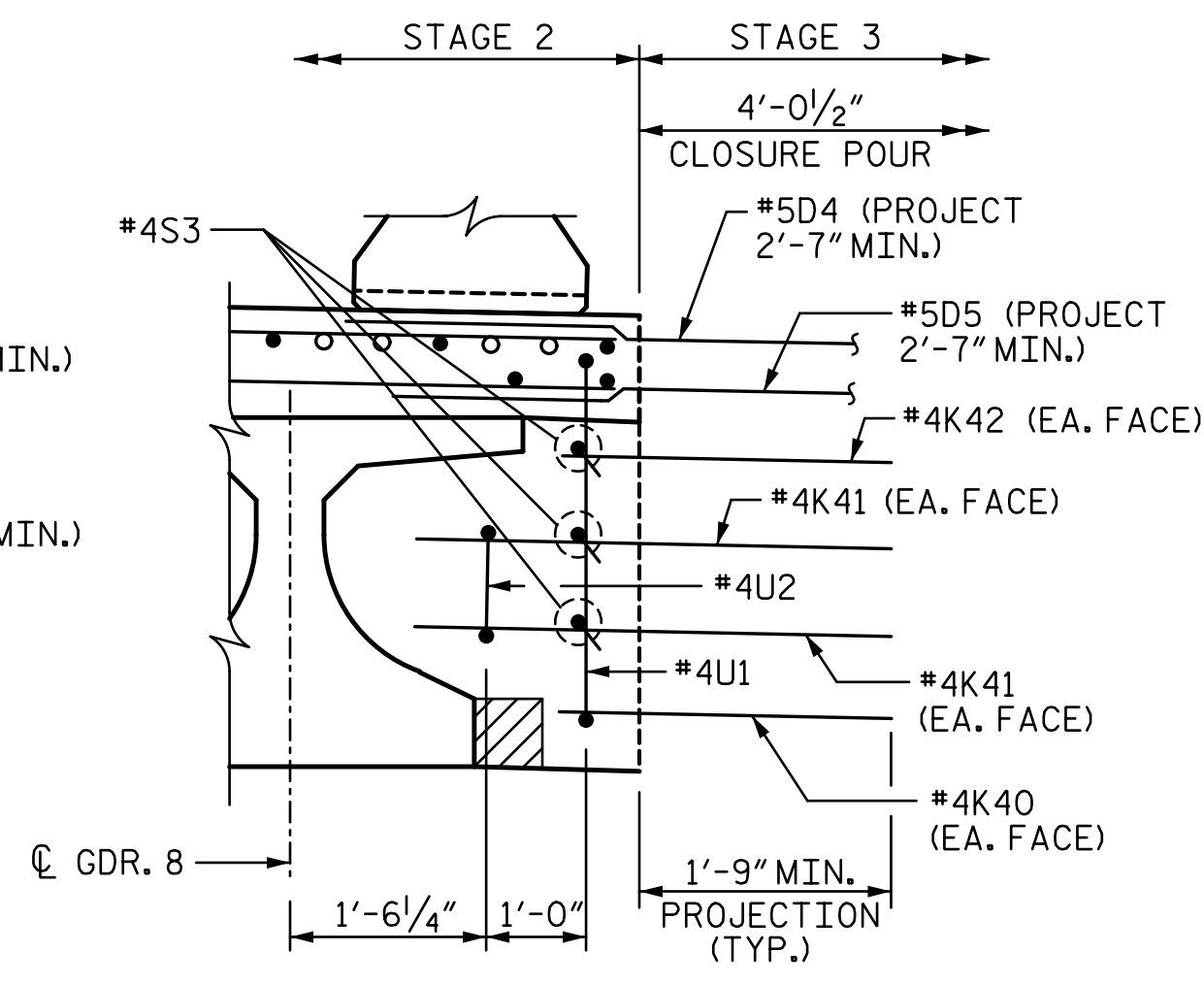
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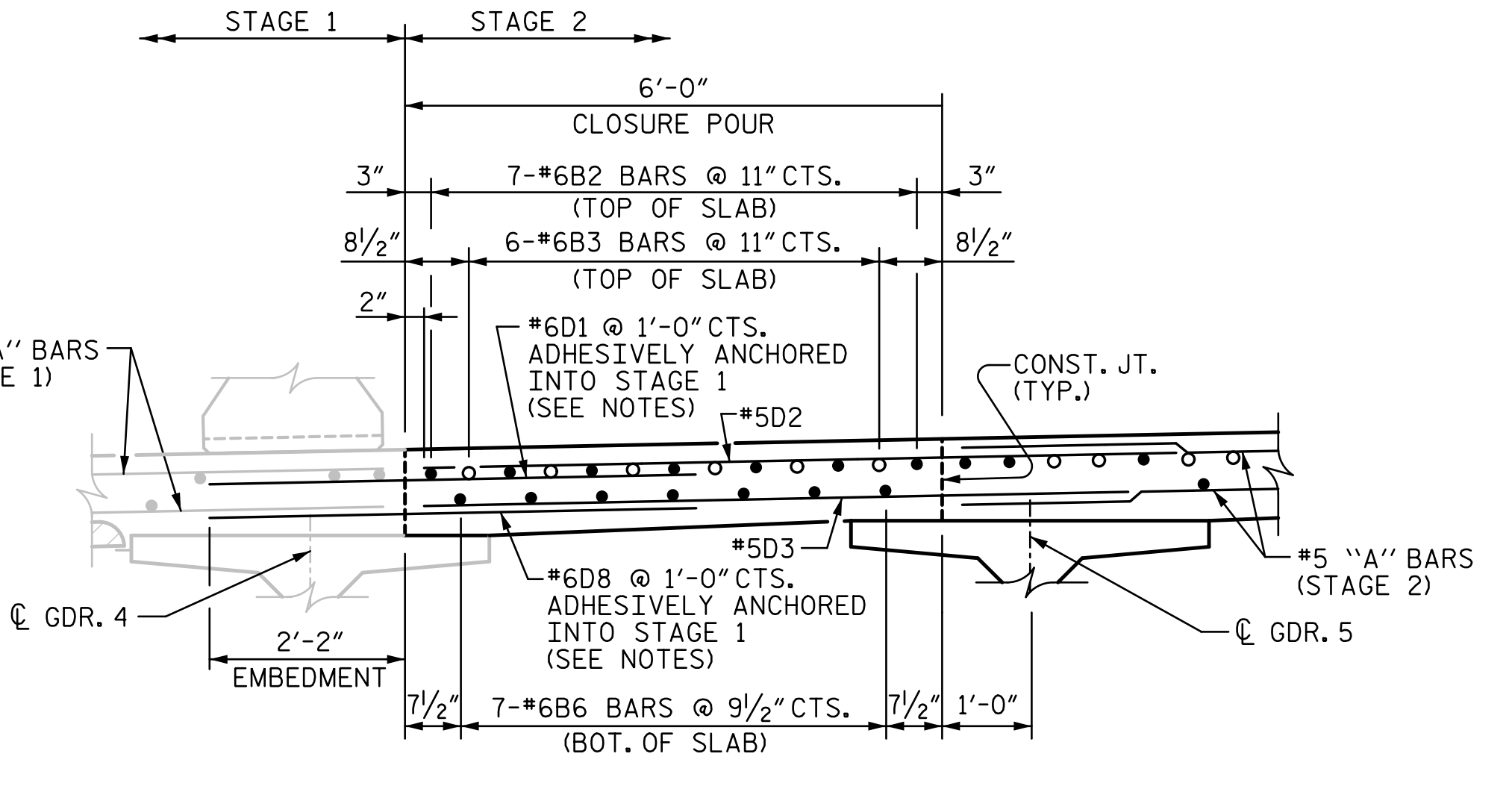
TYPICAL SECTION AT END BENT DIAPHRAGM STAGE 2



TYPICAL SECTION AT BENT DIAPHRAGM STAGE 2



DETAIL 'C' #4K44 BARS NOT SHOWN FOR CLARITY.



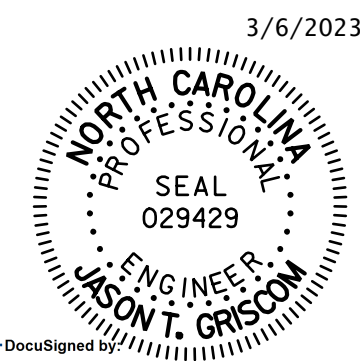
DETAIL 'B'

- TEMPORARY BARRIER W/DRAINAGE SLOTS (TO BE ANCHORED TO BRIDGE DECK)
- ◆ MECHANICAL COUPLERS
- △ FIELD BEND #4K13 BARS IN STAGE 1 TO SPLICE 1'-7" MIN. TO #4K43 BARS

- CONTINUOUS BAR LINE
- NON-CONTINUOUS BAR LINE
- ▲ 1'-0" (TYP.)

**NOTES:**  
 FOR ADDITIONAL NOTES, SEE 'TYPICAL SECTION STAGE 1 (SHEET 1 OF 4)'.  
 CONCRETE MEDIAN SHALL BE PLACED IN STAGE 4. FOR DETAILS, SEE 'TYPICAL SECTION STAGE 4 (SHEET 4 OF 4)'.  
 LEVEL ONE FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS REQUIRED. THE YIELD LOAD OF THE DOWEL IS 26.4 KIPS.  
 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.

PROJECT NO. B-5808  
 CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 4



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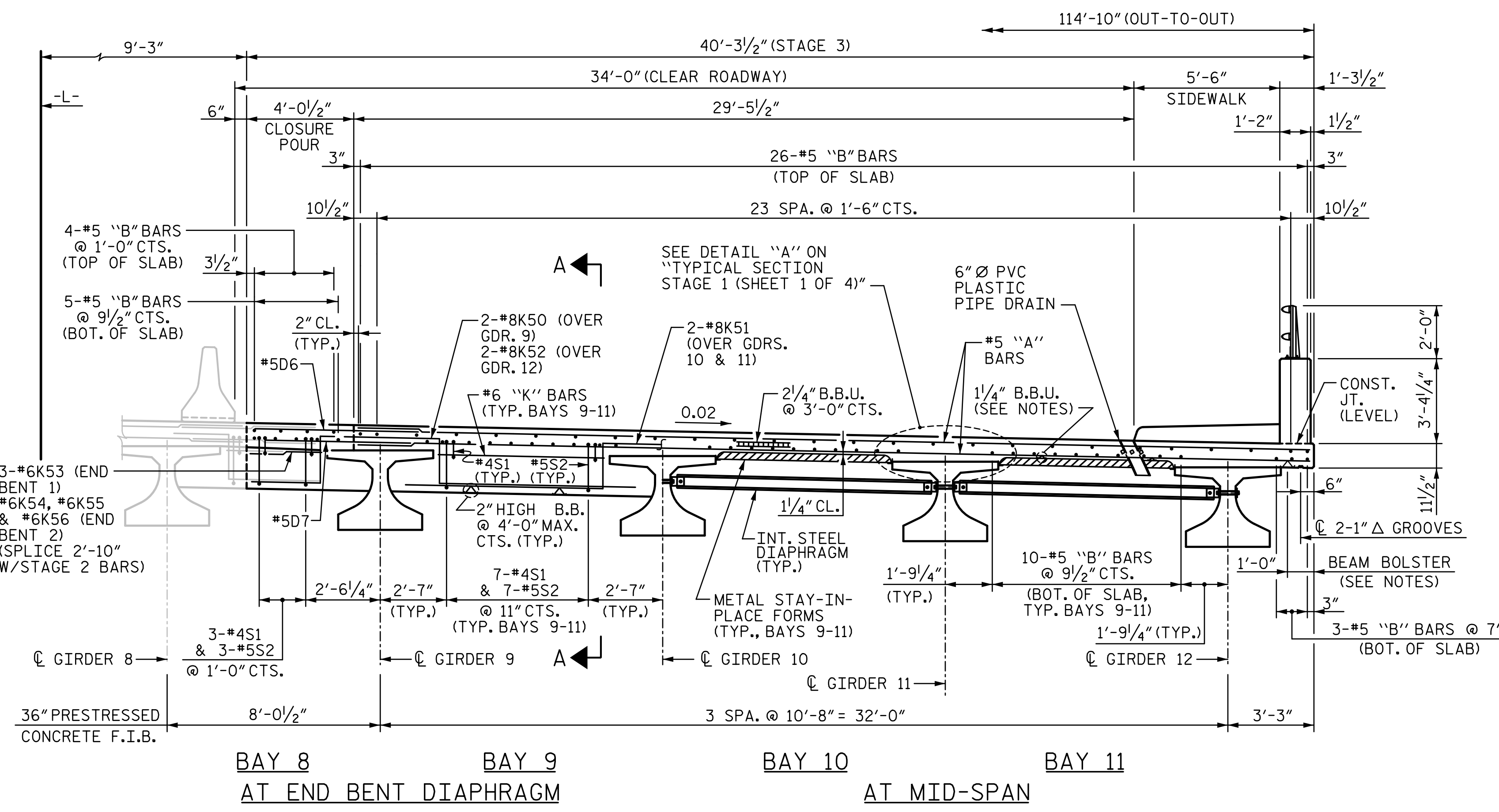
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
TYPICAL SECTION STAGE 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-9
					TOTAL SHEETS 65

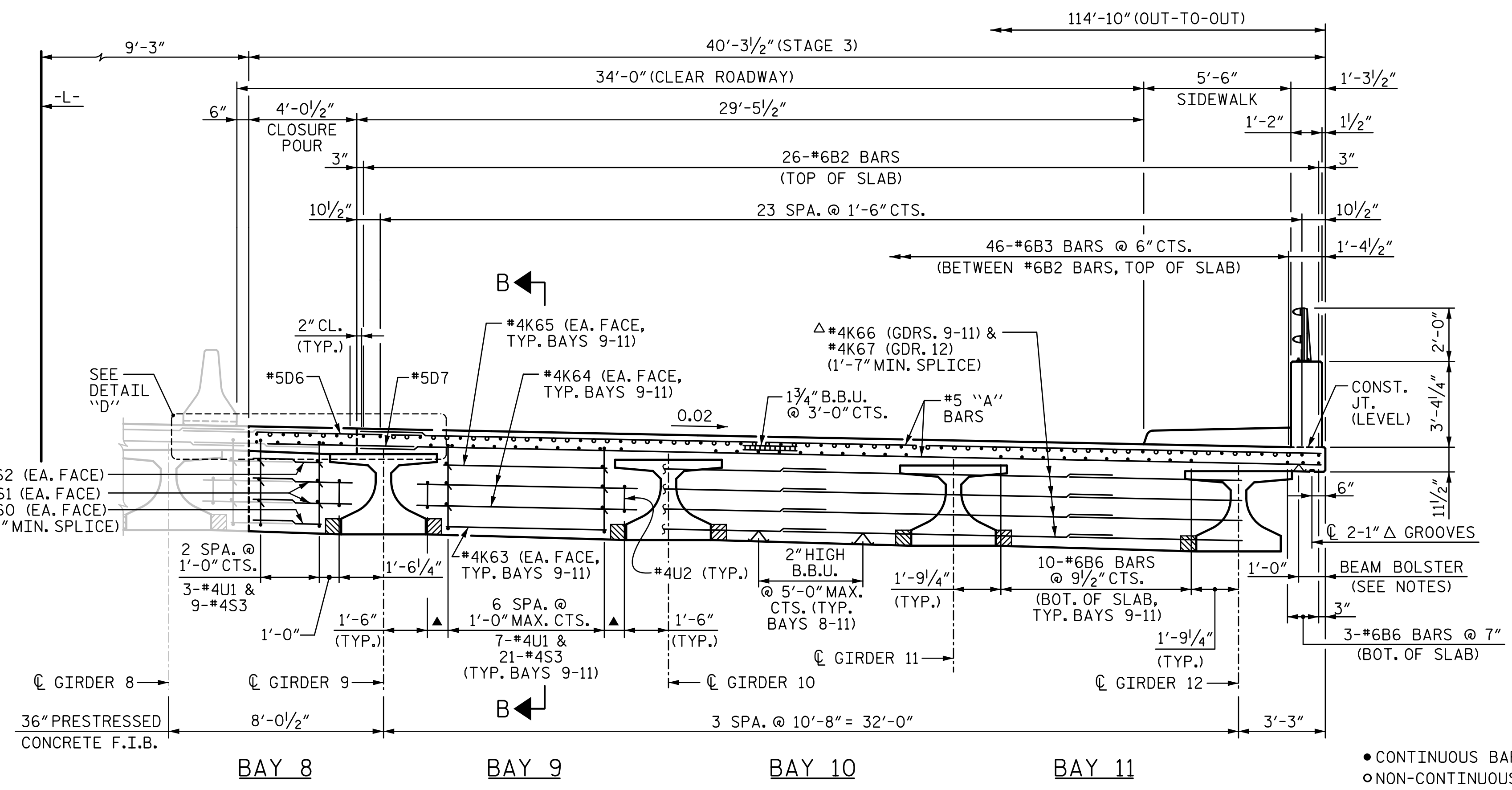
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TYPICAL SECTION  
STAGE 3



TYPICAL SECTION AT BENT DIAPHRAGM  
STAGE 3

- CONTINUOUS BAR LINE
- NON-CONTINUOUS BAR LINE
- ▲ 1'-0" (TYP.)

**NOTES:**

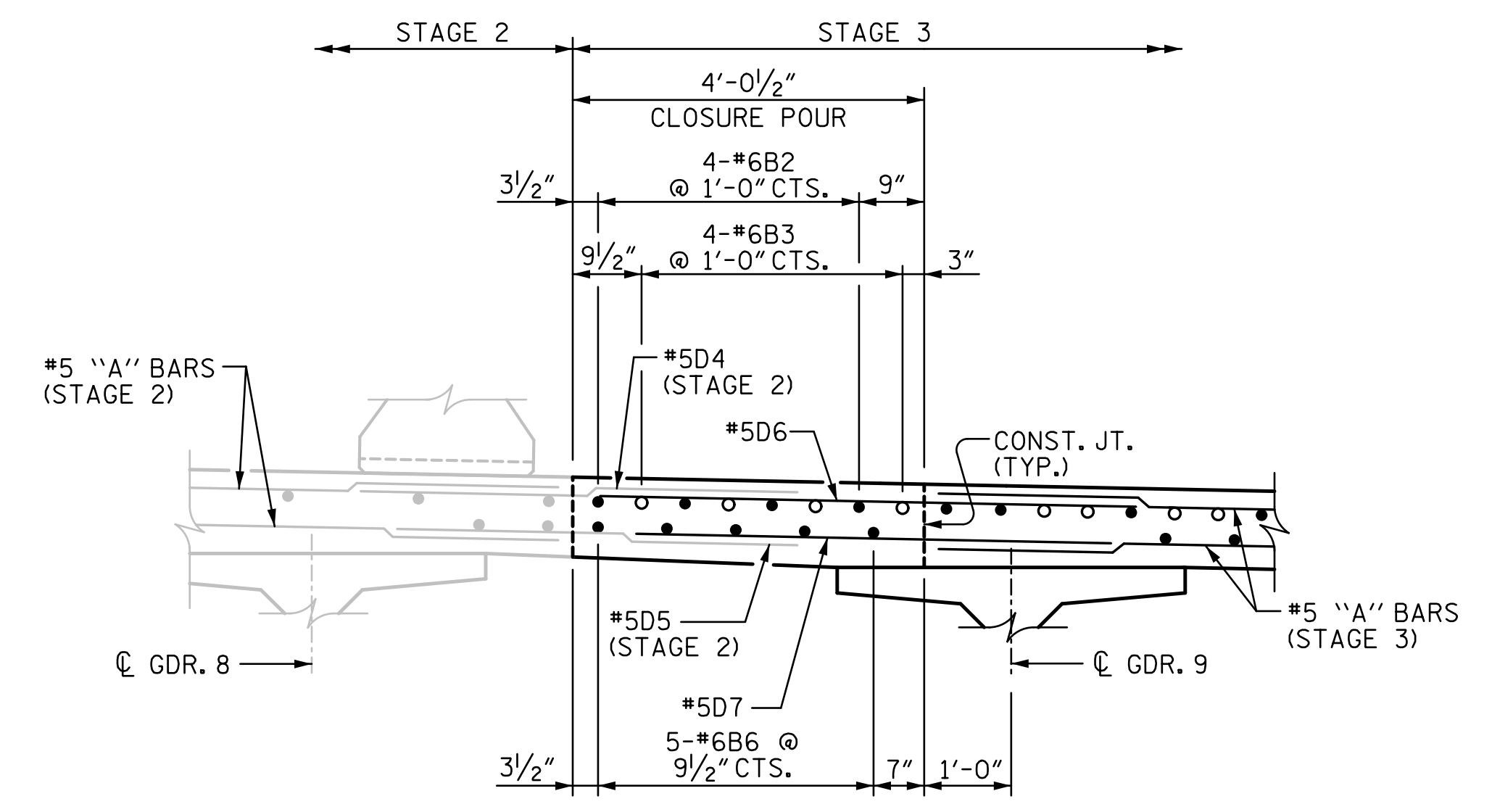
FOR ADDITIONAL NOTES, SEE "TYPICAL SECTION STAGE 1 (SHEET 1 OF 4)".

FOR 6" Ø PVC PLASTIC PIPE DRAIN DETAILS, SEE "TYPICAL SECTION STAGE 1 (SHEET 1 OF 4)".

FOR SIDEWALK DETAILS, SEE "SIDEWALK DETAILS" SHEET.

\*5D6 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.

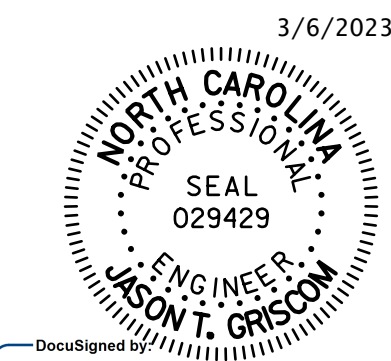
\*5D7 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE BOTTOM SLAB REINFORCING STEEL.



DETAIL "D"

▲ FIELD BEND #4K44 BARS IN STAGE 2 TO SPLICE 1'-7" MIN. TO #4K66 BARS

PROJECT NO. B-5808  
CABARRUS COUNTY  
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 SHEET 3 OF 4



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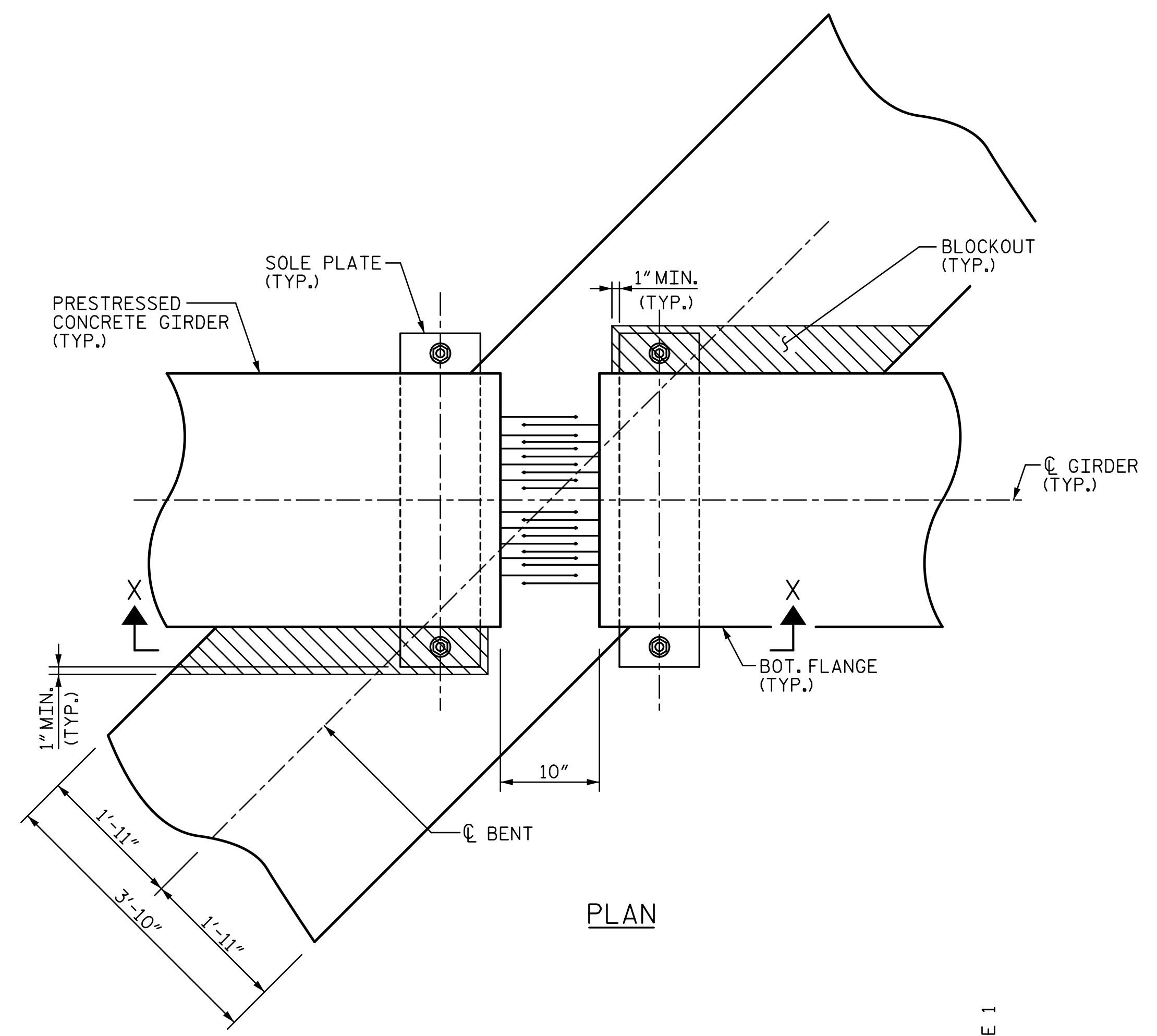
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NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS 65

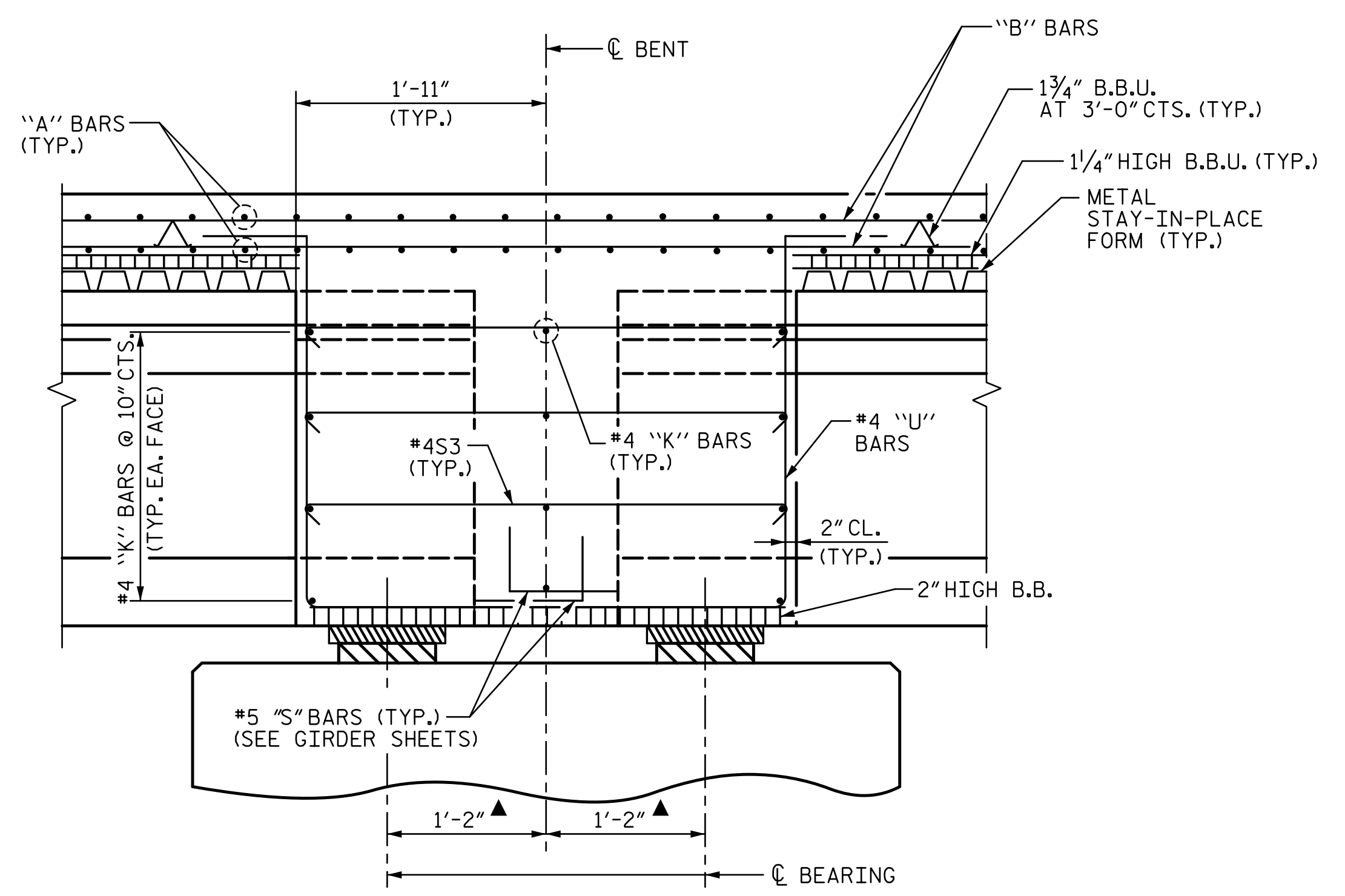




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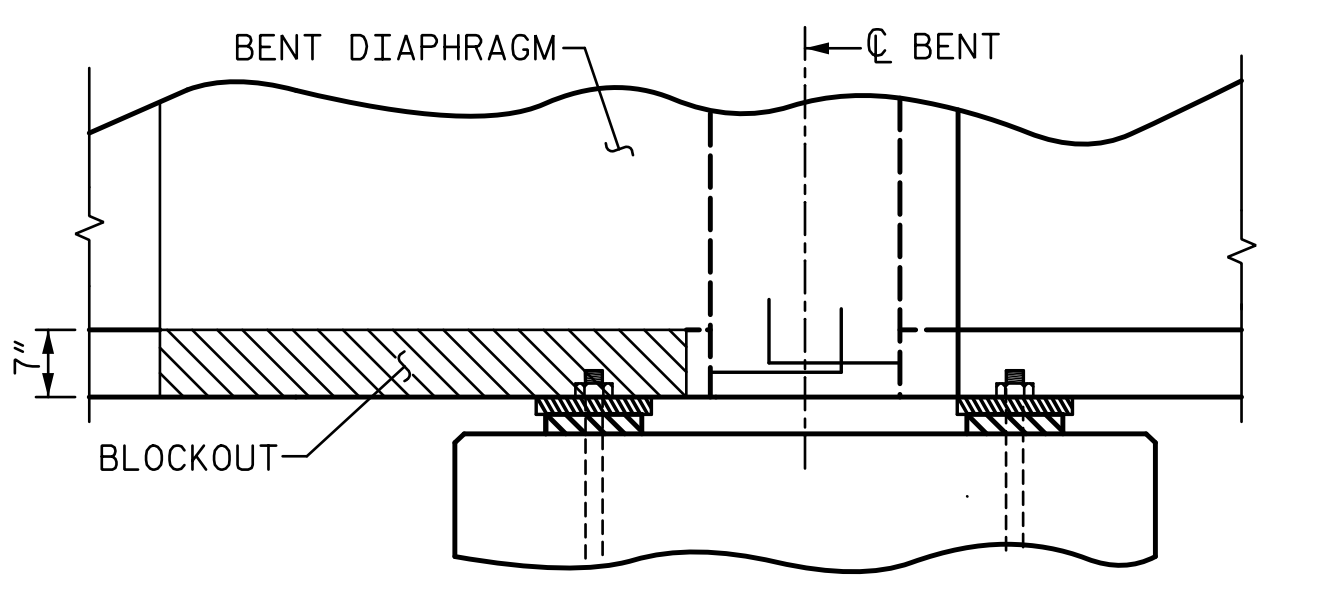


PLAN



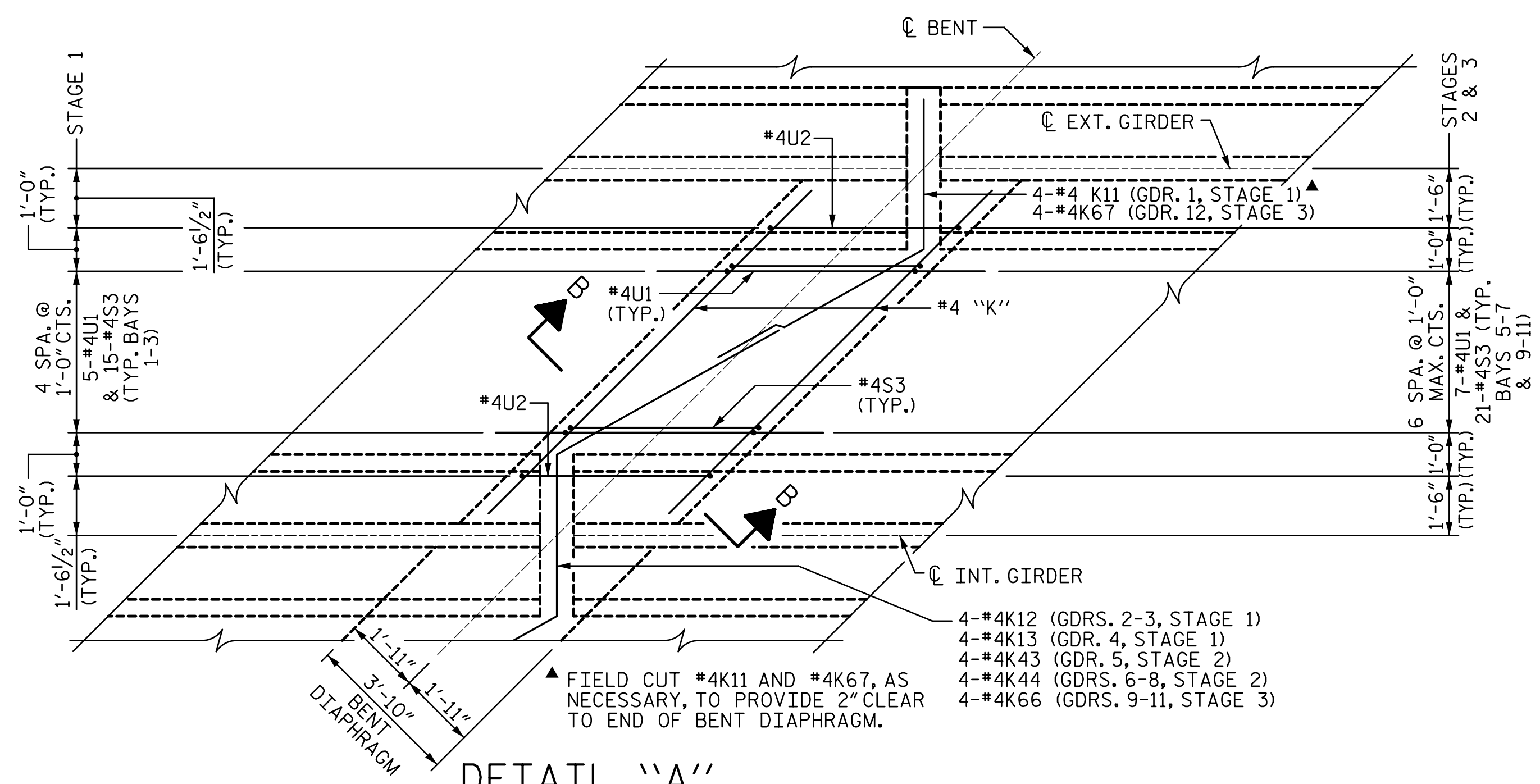
SECTION B-B

▲ DIMENSION ALONG CL GIRDER



SECTION X-X

BENT DIAPHRAGM BLOCKOUT DETAIL



DETAIL "A"

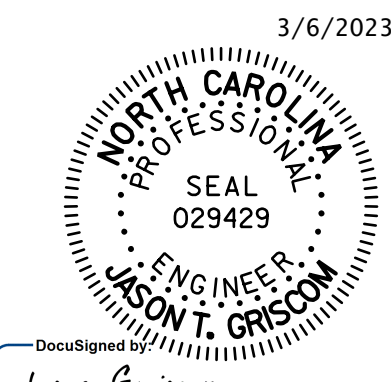
(FOR #4U1, #4U2, AND #4S3 SPACING IN BAYS 4 & 8, SEE "TYPICAL SECTION" SHEETS.)

▲ FIELD CUT #4K11 AND #4K67, AS NECESSARY, TO PROVIDE 2" CLEAR TO END OF BENT DIAPHRAGM.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
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 RALEIGH

SUPERSTRUCTURE  
 DETAILS



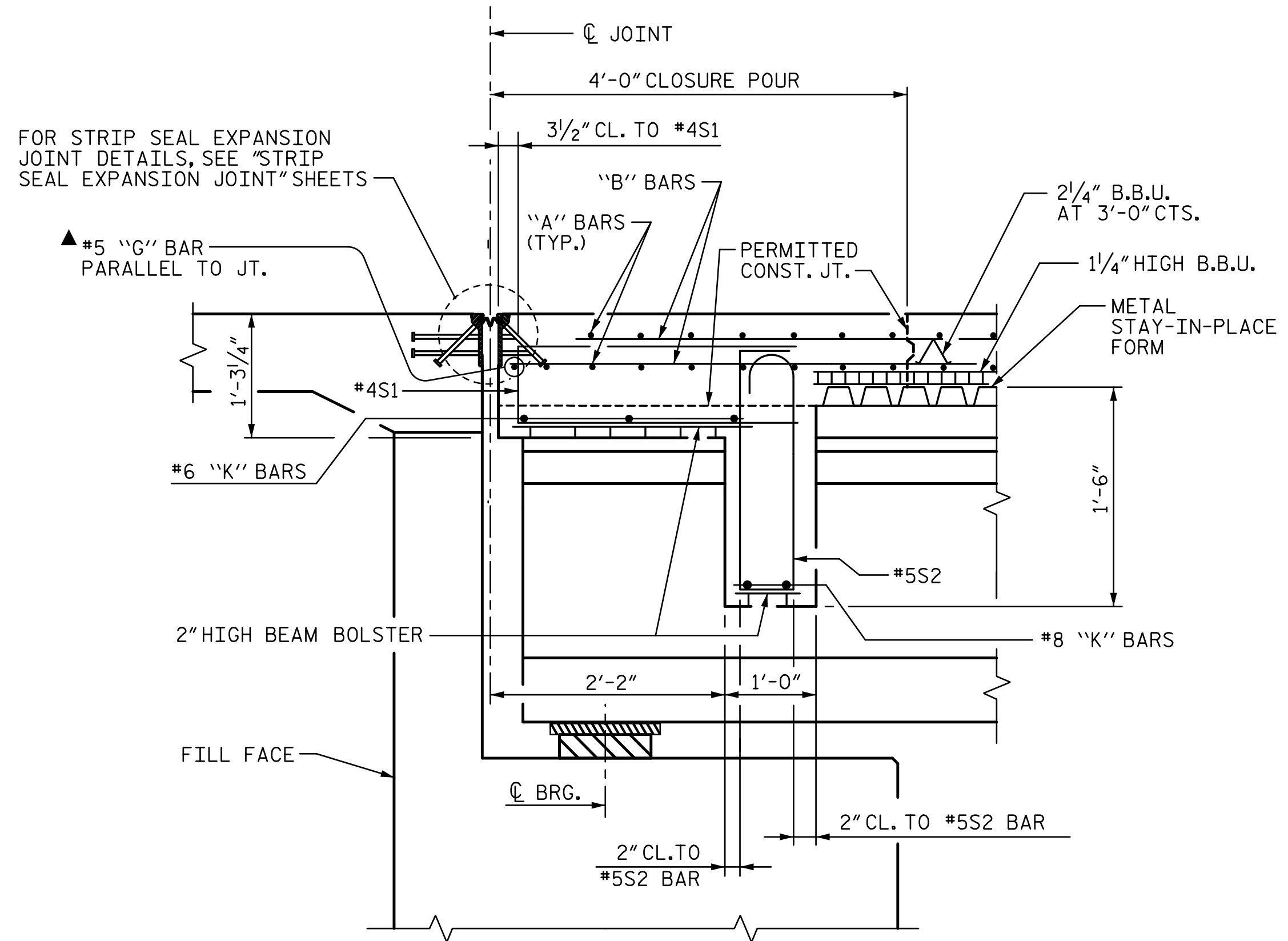
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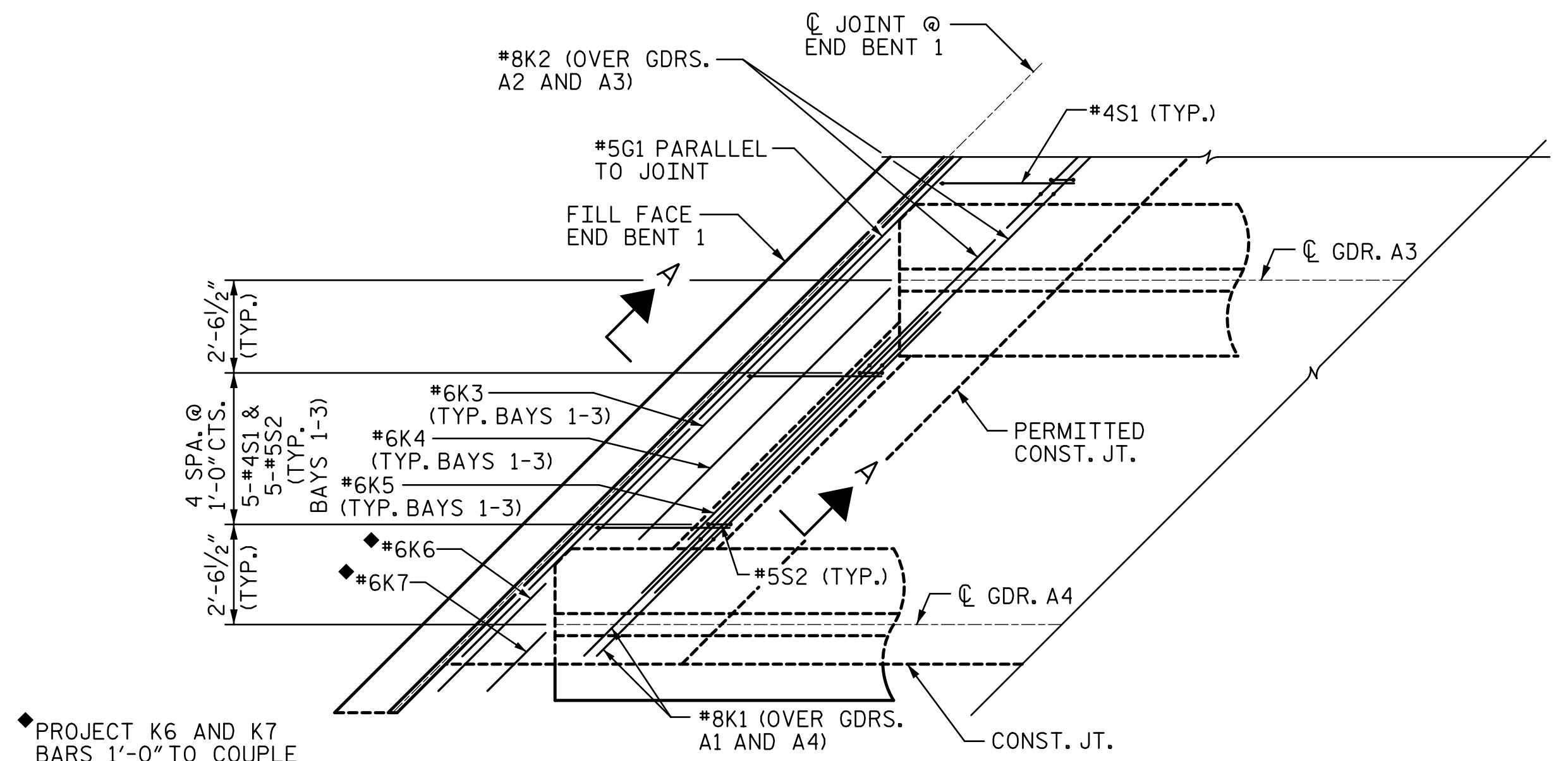
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-12  
TOTAL SHEETS 65



SECTION A-A

END BENT 1 SHOWN, END BENT 2 SIMILAR.  
 ▲ #5 "G" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



DETAIL "B"

◆ PROJECT K6 AND K7 BARS 1'-0" TO COUPLE TO STAGE 2 BARS, END BENT 1 ONLY

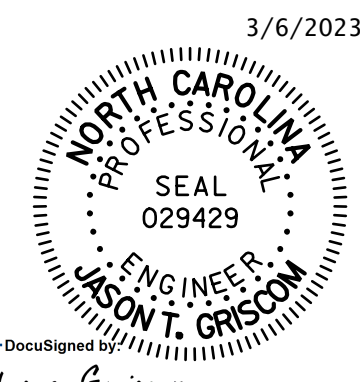
END DIAPHRAGM AT END BENT 1, STAGE 1 SHOWN.  
 END DIAPHRAGM AT END BENT 2 STAGE 1 SIMILAR, UNLESS NOTED OTHERWISE.

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PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
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**SUPERSTRUCTURE DETAILS**



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DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

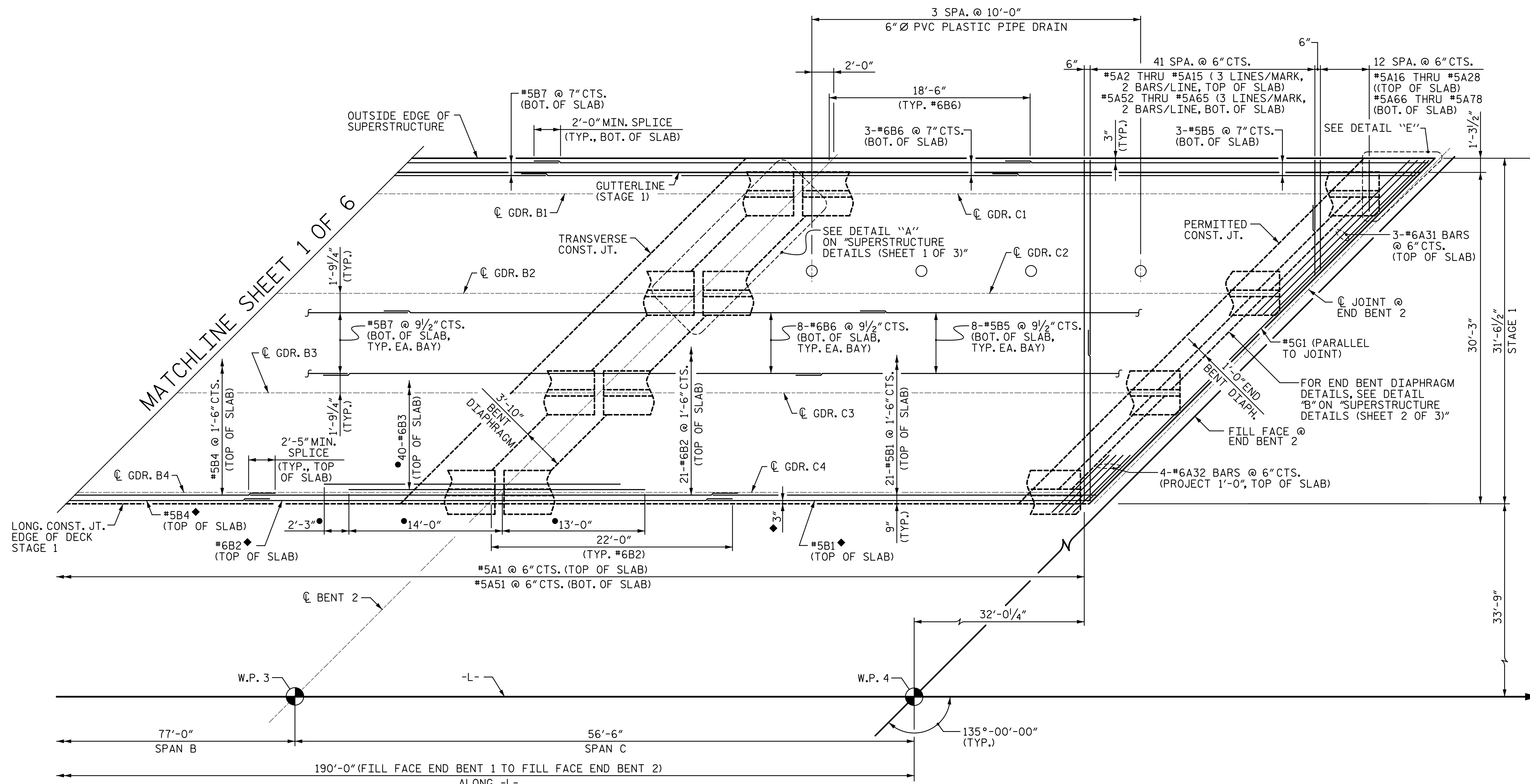




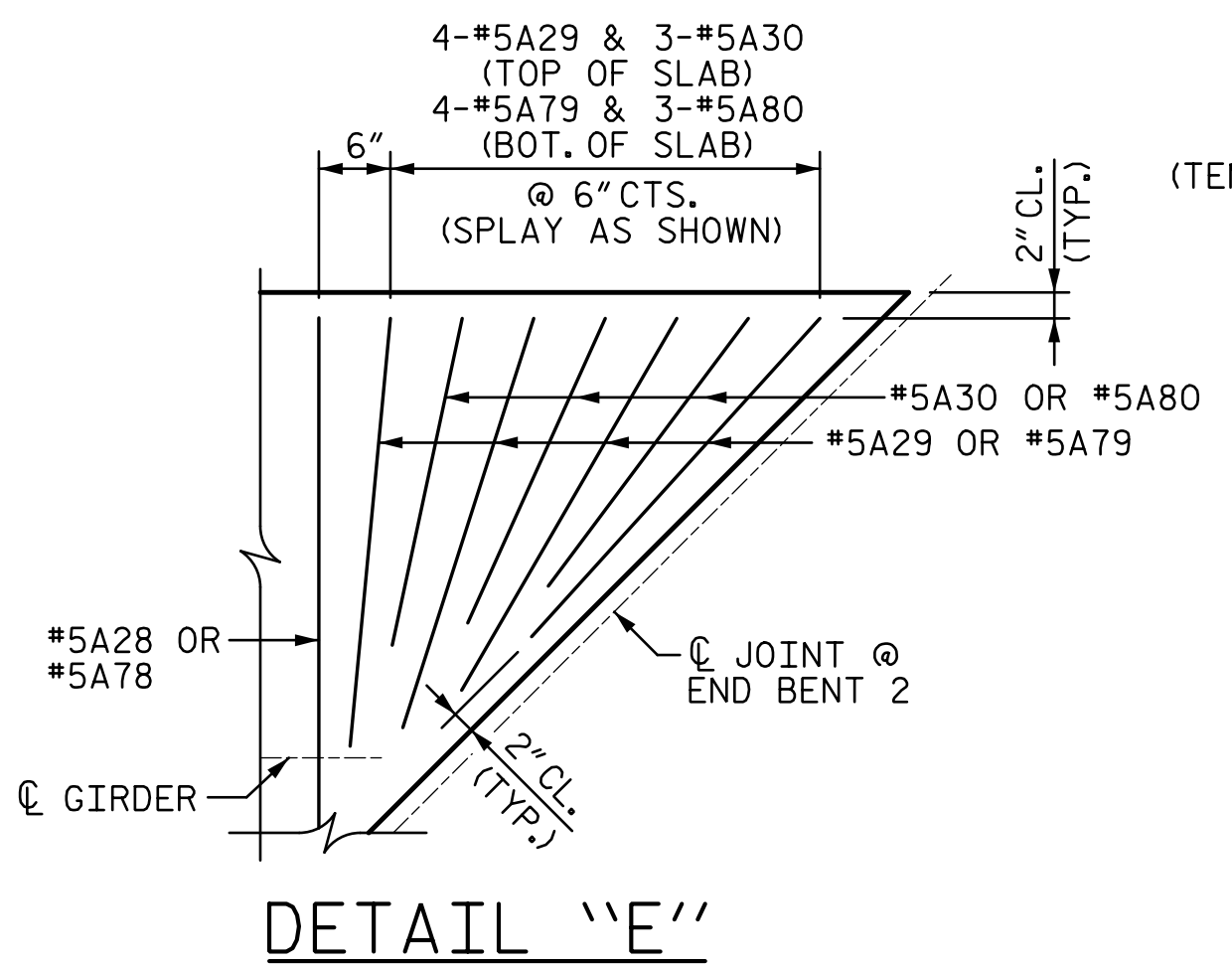




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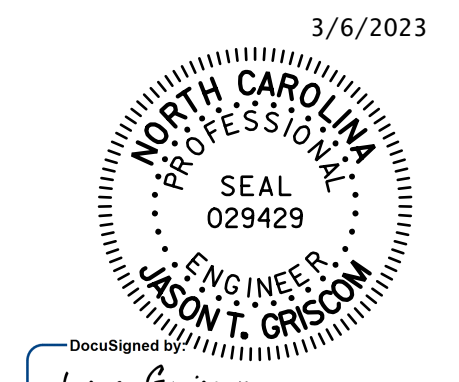
**PLAN OF SPANS**  
STAGE 1  
(TEMPORARY BARRIER NOT SHOWN FOR CLARITY.)



**NOTES:**  
FOR ADDITIONAL NOTES, SEE "PLAN OF SPANS (SHEET 1 OF 6)".

- #6B3 BARS SHALL BE PLACED BETWEEN #6B2 BARS AT 6" CTS. AND STAGGERED 2'-3" AS SHOWN.
- ◆ TYP. EA. SIDE

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 6



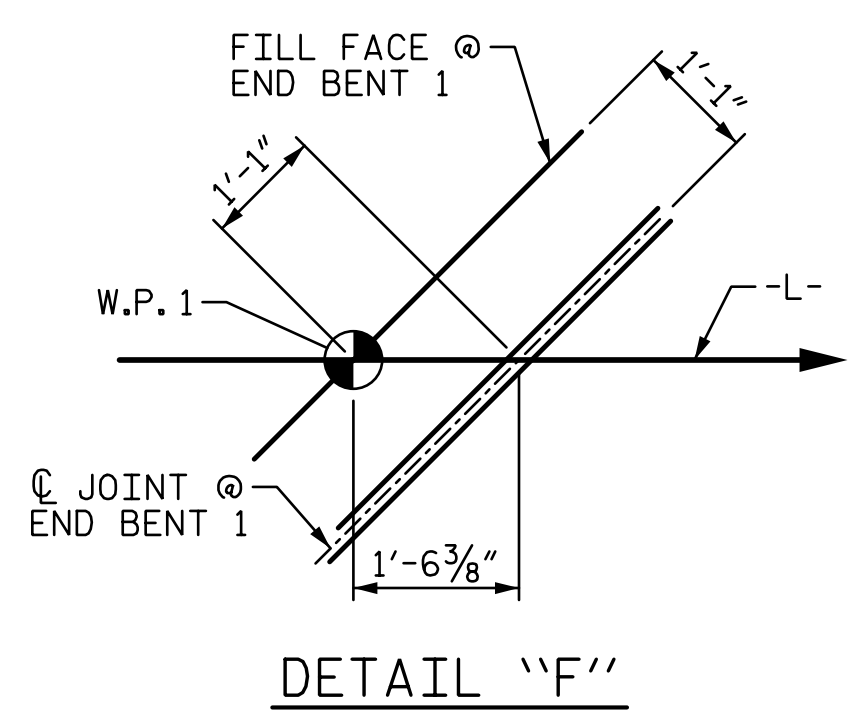
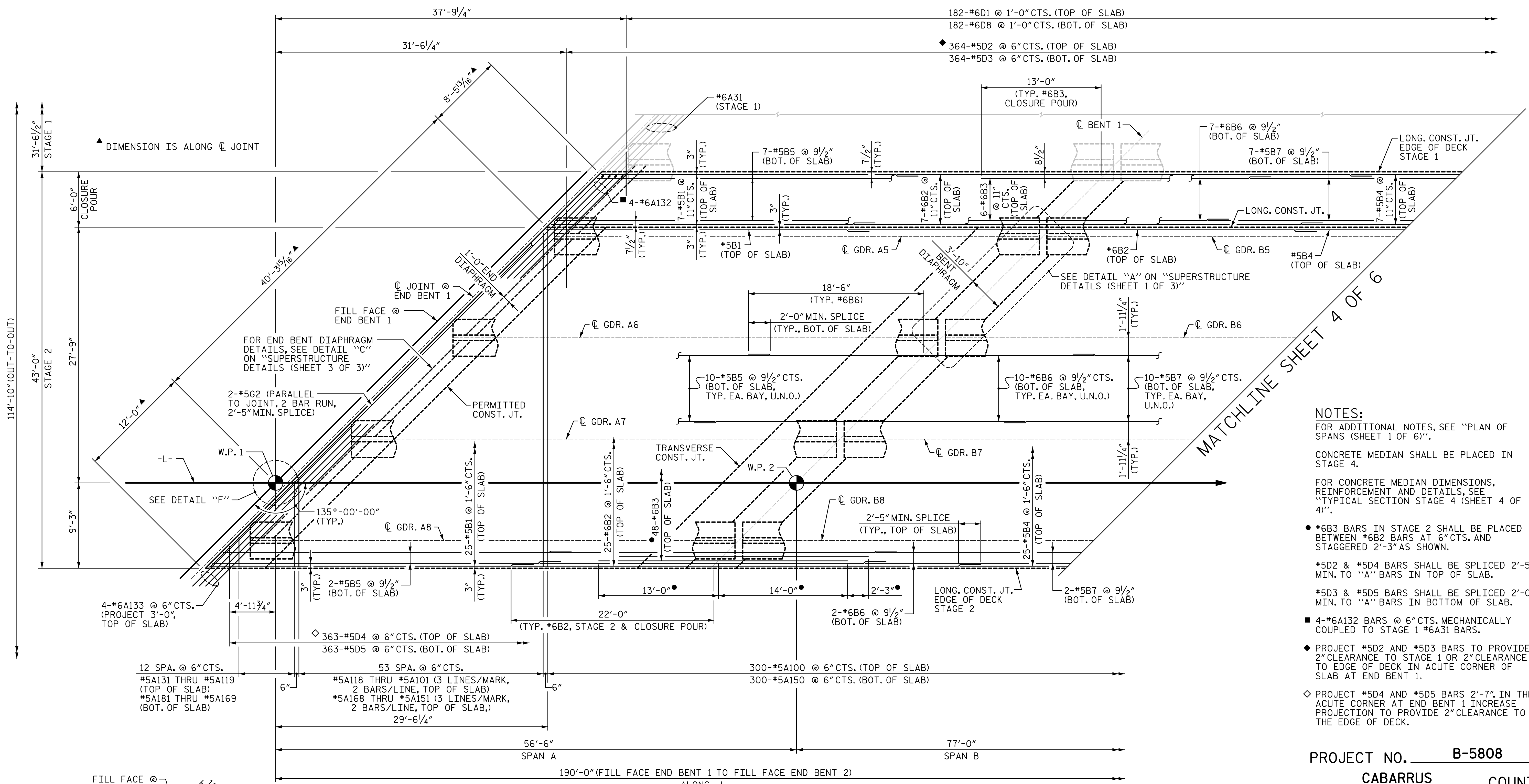
STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

DOCUMENT NOT CONSIDERED  
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ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 11-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS 65
2			4			

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### PLAN OF SPANS

STAGE 2  
(TEMPORARY BARRIER NOT SHOWN FOR CLARITY.)  
(U.N.O. - UNLESS NOTED OTHERWISE)

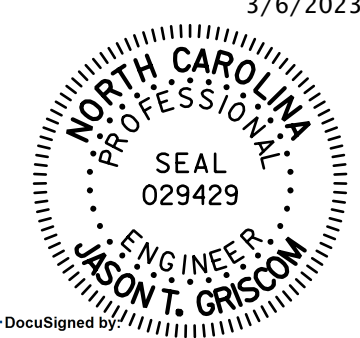
- NOTES:**
- FOR ADDITIONAL NOTES, SEE "PLAN OF SPANS (SHEET 1 OF 6)".
  - CONCRETE MEDIAN SHALL BE PLACED IN STAGE 4.
  - FOR CONCRETE MEDIAN DIMENSIONS, REINFORCEMENT AND DETAILS, SEE "TYPICAL SECTION STAGE 4 (SHEET 4 OF 4)".
  - #6B3 BARS IN STAGE 2 SHALL BE PLACED BETWEEN #6B2 BARS AT 6" CTS. AND STAGGERED 2'-3" AS SHOWN.
  - #5D2 & #5D4 BARS SHALL BE SPLICED 2'-5" MIN. TO "A" BARS IN TOP OF SLAB.
  - #5D3 & #5D5 BARS SHALL BE SPLICED 2'-0" MIN. TO "A" BARS IN BOTTOM OF SLAB.
  - 4-#6A132 BARS @ 6" CTS. MECHANICALLY COUPLED TO STAGE 1 #6A31 BARS.
  - PROJECT #5D2 AND #5D3 BARS TO PROVIDE 2" CLEARANCE TO STAGE 1 OR 2" CLEARANCE TO EDGE OF DECK IN ACUTE CORNER OF SLAB AT END BENT 1.
  - PROJECT #5D4 AND #5D5 BARS 2'-7" IN THE ACUTE CORNER AT END BENT 1 INCREASE PROJECTION TO PROVIDE 2" CLEARANCE TO THE EDGE OF DECK.

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**

SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### PLAN OF SPANS



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 Charlotte, NC 28202  
 NC License Number F-0991

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ASSEMBLED BY :	SGH	DATE :	8-22
CHECKED BY :	MLO	DATE :	11-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

TOTAL SHEETS: 65

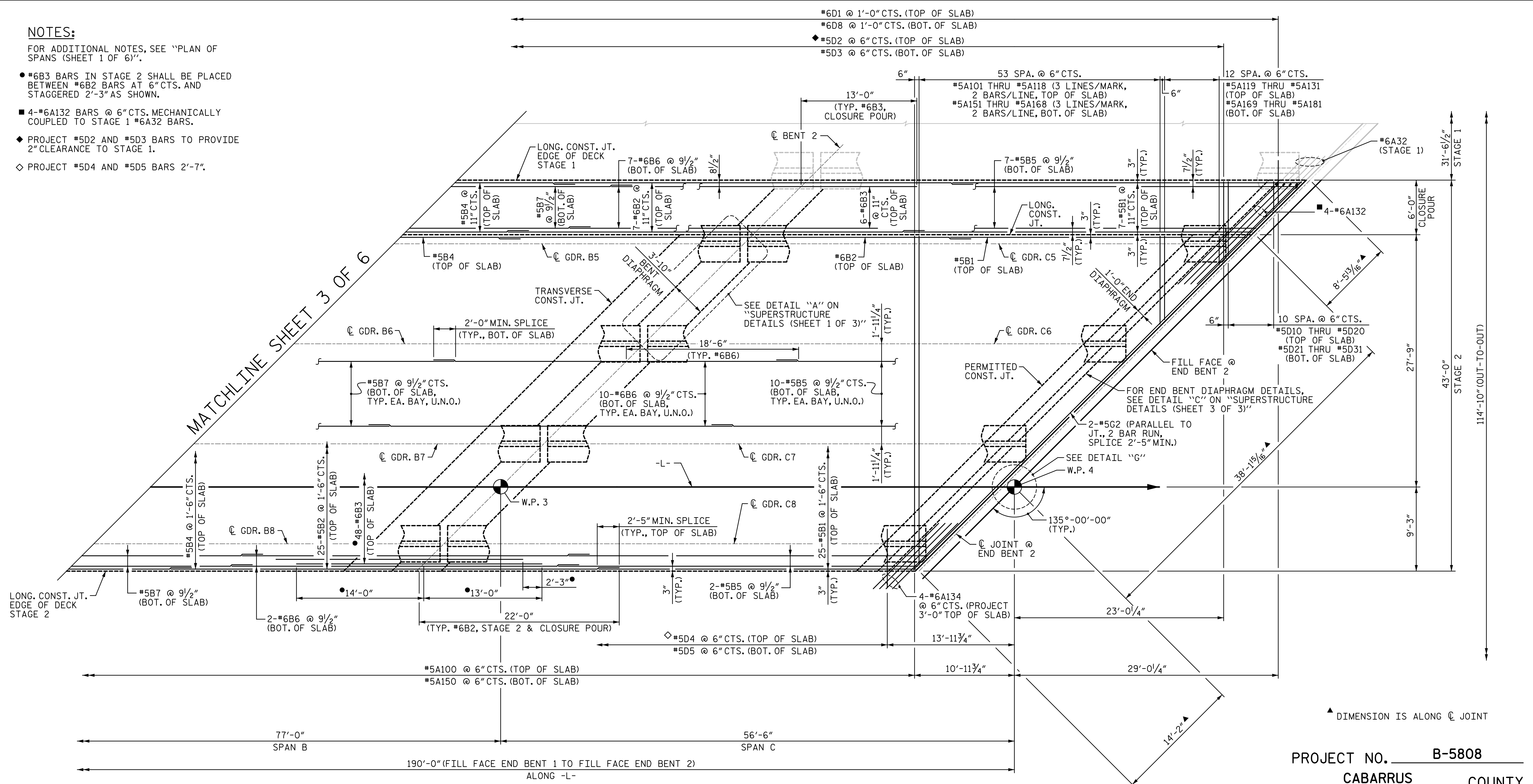


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**NOTES:**

FOR ADDITIONAL NOTES, SEE "PLAN OF SPANS (SHEET 1 OF 6)".

- #6B3 BARS IN STAGE 2 SHALL BE PLACED BETWEEN #6B2 BARS AT 6" CTS. AND STAGGERED 2'-3" AS SHOWN.
- 4-#6A132 BARS @ 6" CTS. MECHANICALLY COUPLED TO STAGE 1 #6A32 BARS.
- ◆ PROJECT #5D2 AND #5D3 BARS TO PROVIDE 2" CLEARANCE TO STAGE 1.
- ◇ PROJECT #5D4 AND #5D5 BARS 2'-7".

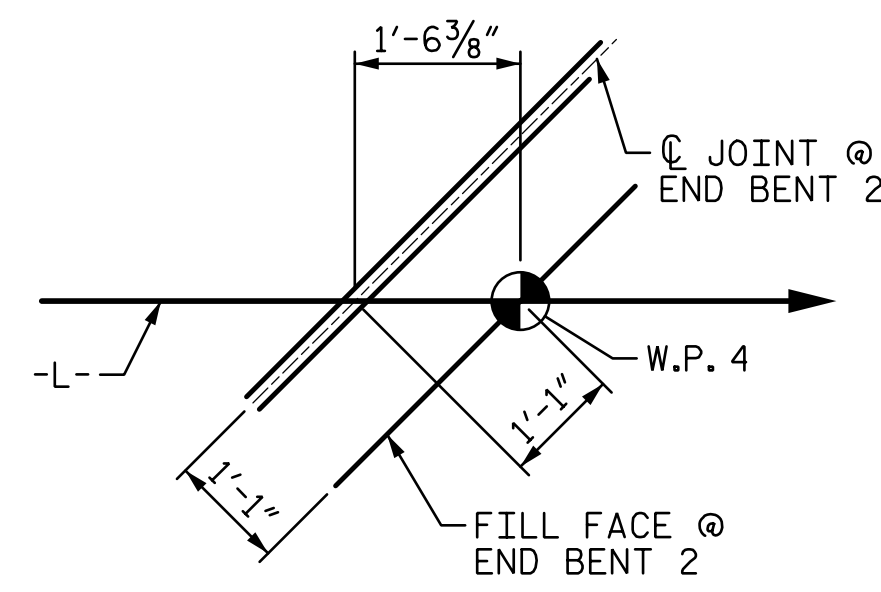


SPAN B

SPAN C

**PLAN OF SPANS**

STAGE 2  
(TEMPORARY BARRIER NOT SHOWN FOR CLARITY.)  
(U.N.O. - UNLESS NOTED OTHERWISE)



DETAIL "G"

PROJECT NO. B-5808

CABARRUS COUNTY

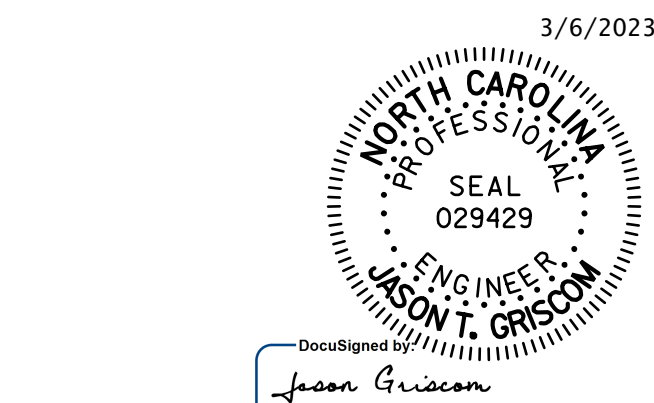
STATION: 20+64.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**PLAN OF SPANS**

ASSEMBLED BY :	SGH	DATE :	8-22
CHECKED BY :	MLO	DATE :	11-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23



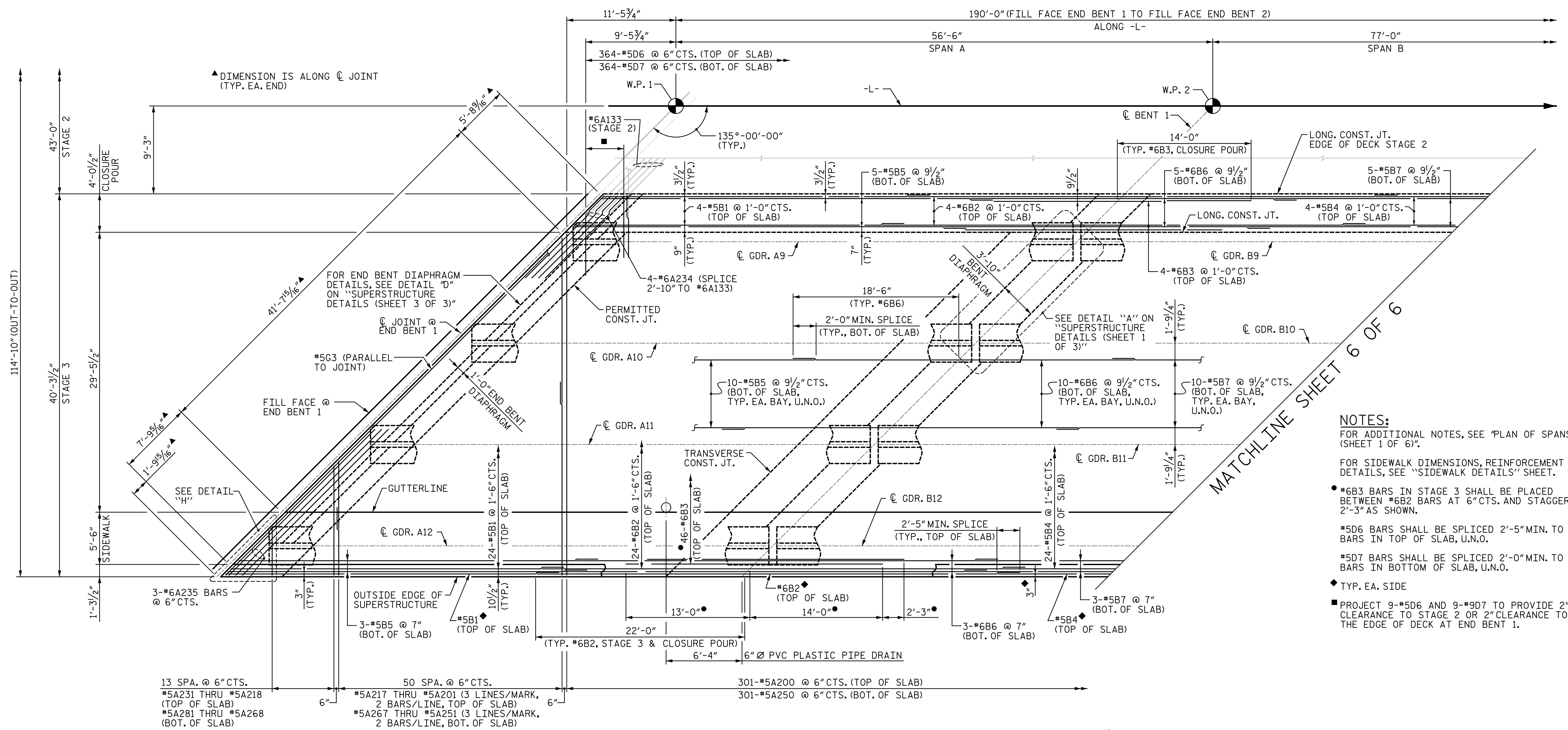
STV ENGINEERS, INC.  
900 West Trade St., Suite 715  
Charlotte, NC 28202  
NC License Number F-0991

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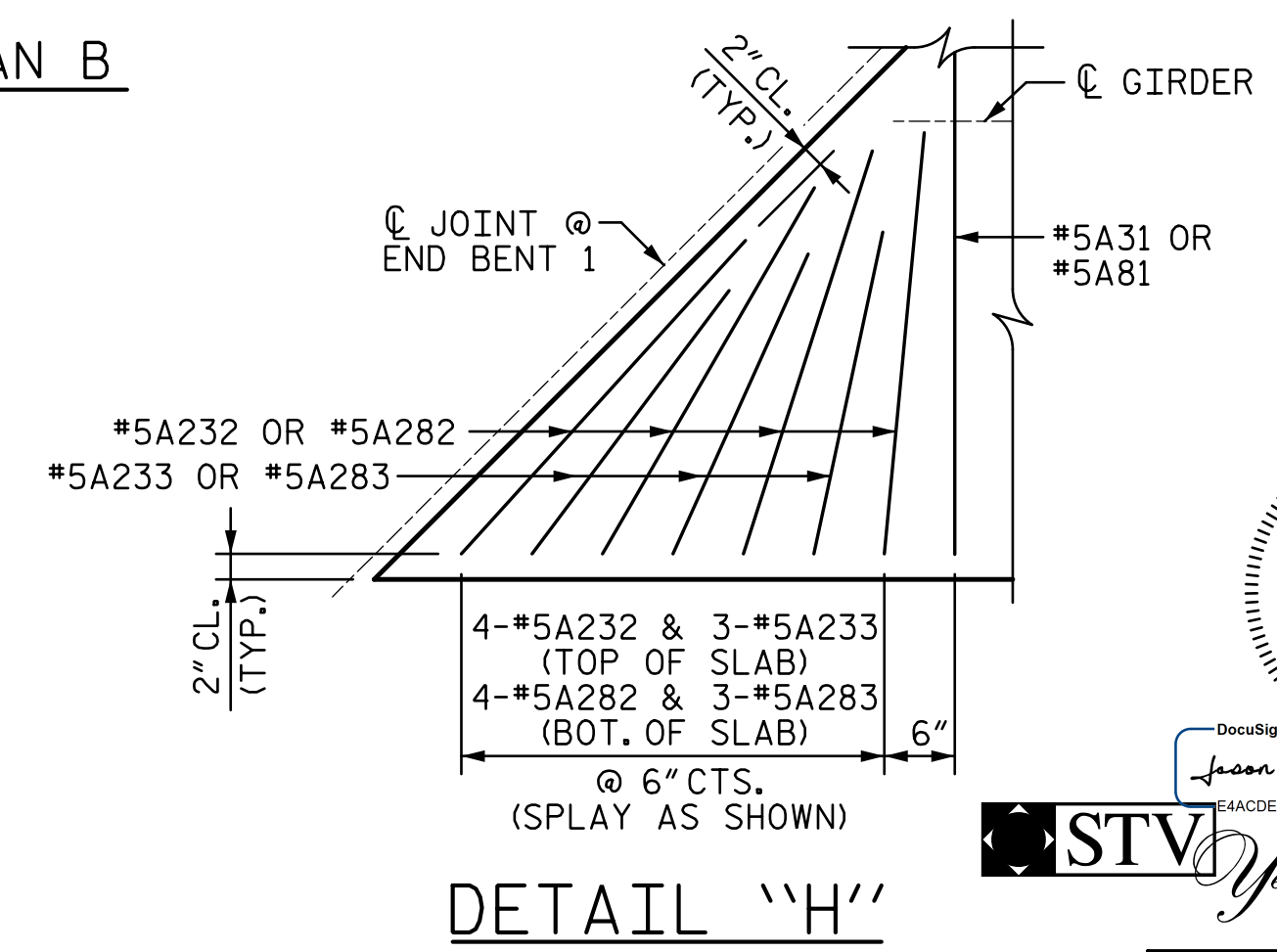
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 65

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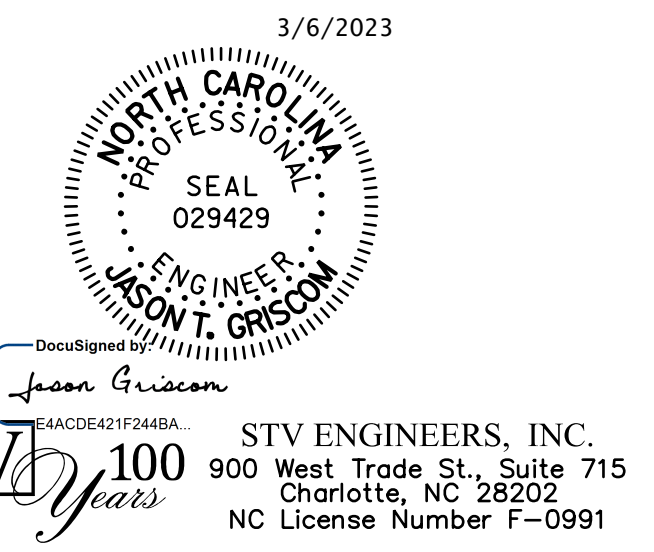
**PLAN OF SPANS**  
 STAGE 3  
 (TEMPORARY BARRIER NOT SHOWN FOR CLARITY.)  
 (U.N.O. - UNLESS NOTED OTHERWISE)



- NOTES:**
- FOR ADDITIONAL NOTES, SEE "PLAN OF SPANS (SHEET 1 OF 6)".
  - FOR SIDEWALK DIMENSIONS, REINFORCEMENT AND DETAILS, SEE "SIDEWALK DETAILS" SHEET.
  - #6B3 BARS IN STAGE 3 SHALL BE PLACED BETWEEN #6B2 BARS AT 6" CTS. AND STAGGERED 2'-3" AS SHOWN.
  - #5D6 BARS SHALL BE SPLICED 2'-5" MIN. TO "A" BARS IN TOP OF SLAB, U.N.O.
  - #5D7 BARS SHALL BE SPLICED 2'-0" MIN. TO "A" BARS IN BOTTOM OF SLAB, U.N.O.
  - TYP. EA. SIDE
  - PROJECT 9-#5D6 AND 9-#9D7 TO PROVIDE 2" CLEARANCE TO STAGE 2 OR 2" CLEARANCE TO THE EDGE OF DECK AT END BENT 1.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>PLAN OF SPANS</b>					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-19
					TOTAL SHEETS 65



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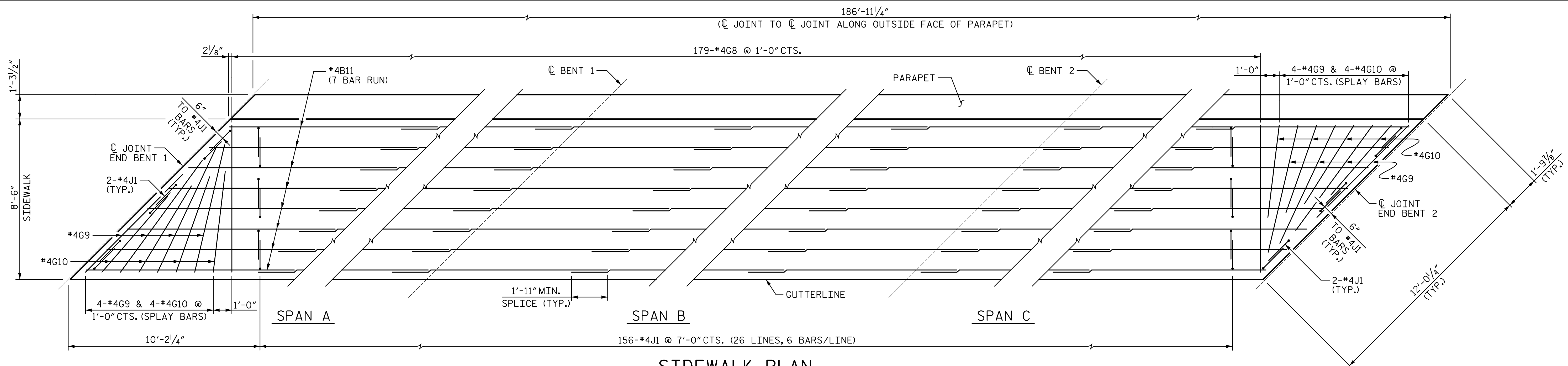
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : SGH DATE : 8-22  
 CHECKED BY : MLO DATE : 8-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23





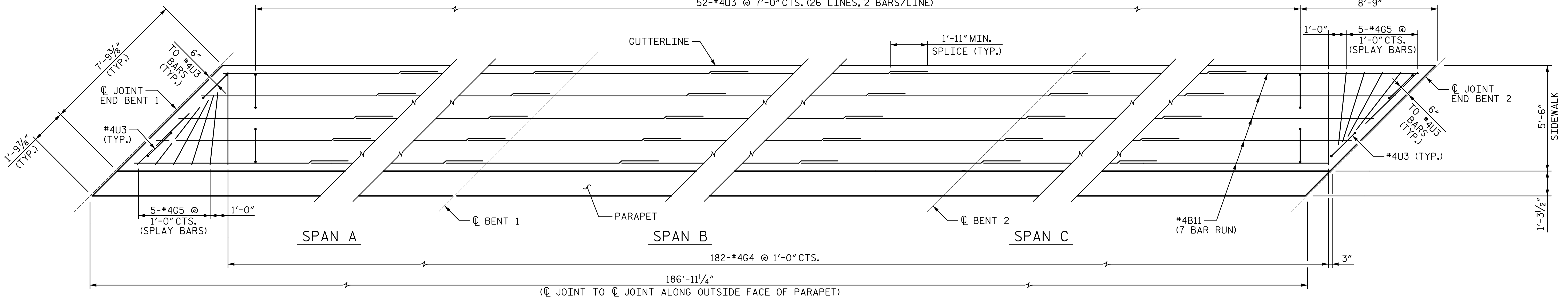
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**SIDEWALK PLAN**

STAGE 4 - LEFT SIDE

52-#4U3 @ 7'-0" CTS. (26 LINES, 2 BARS/LINE)



**SIDEWALK PLAN**

STAGE 3 - RIGHT SIDE

182-#4G4 @ 1'-0" CTS.

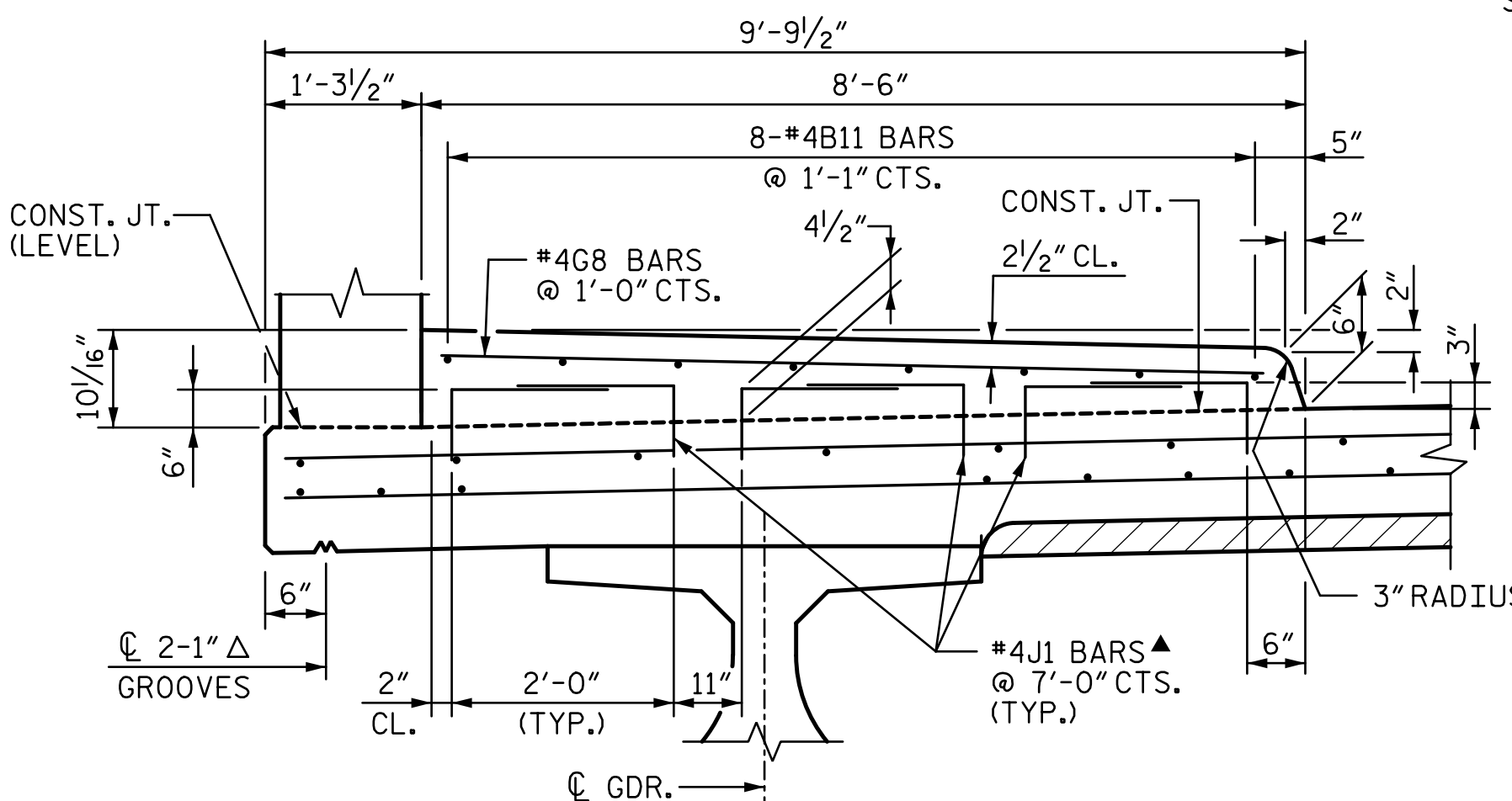
**NOTES:**

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 JOINT SHALL BE LOCATED AT A SPACING OF 8'-0" TO 10'-0" BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10'-0" IN LENGTH.

SIDEWALK SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

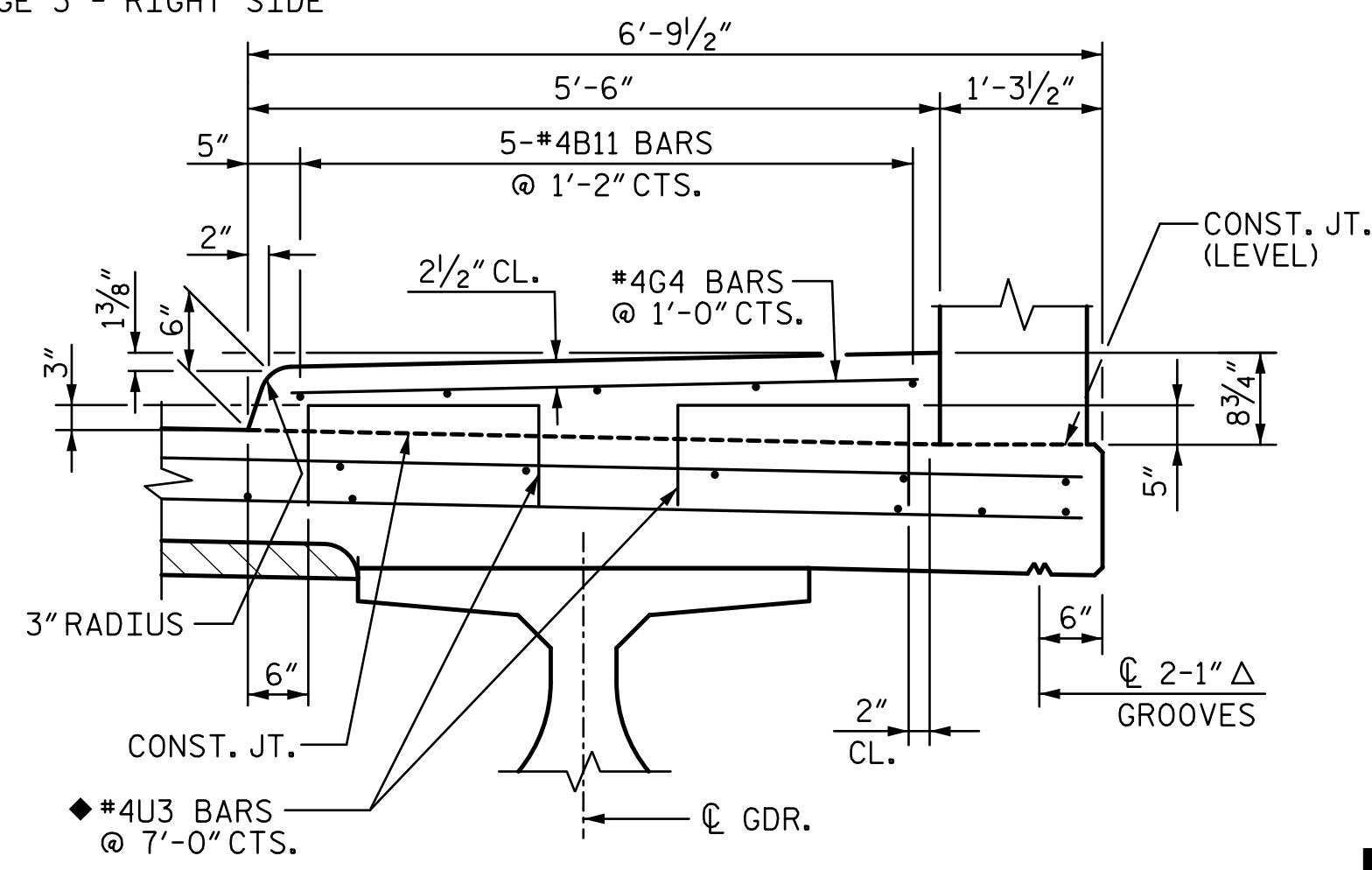
FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS NOT REQUIRED.



**SECTION THRU SIDEWALK LEFT SIDE**

STAGE 4

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

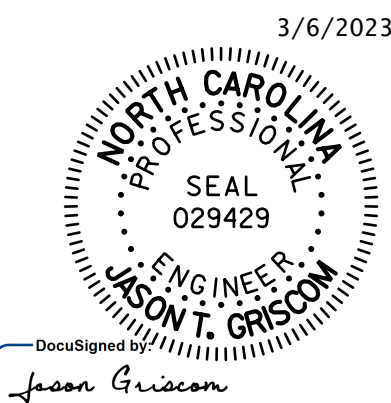


**SECTION THRU SIDEWALK RIGHT SIDE**

STAGE 3

◆ #4U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF. (RIGHT SIDE ONLY)

PROJECT NO. **B-5808**  
 CABARRUS COUNTY  
 STATION: **20+64.00 -L-**



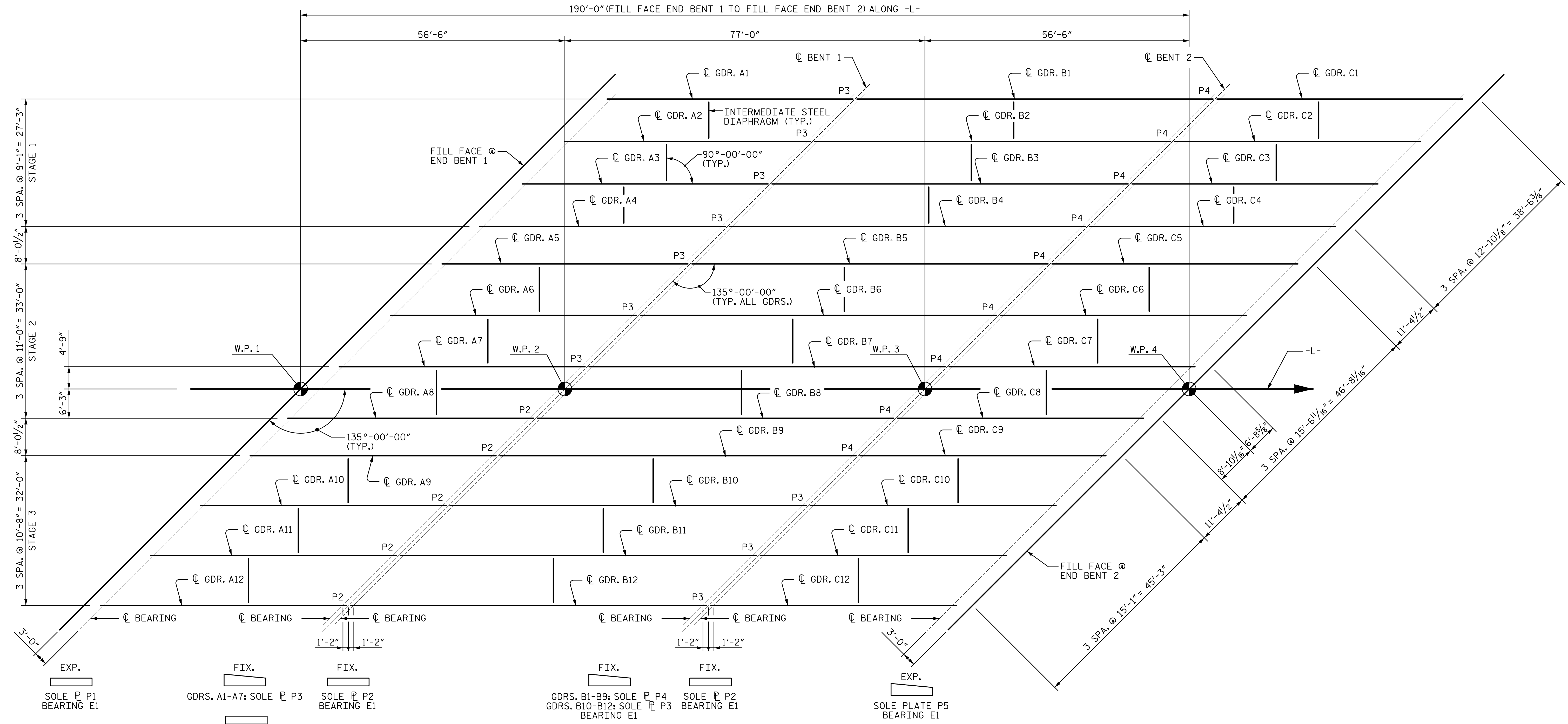
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 100 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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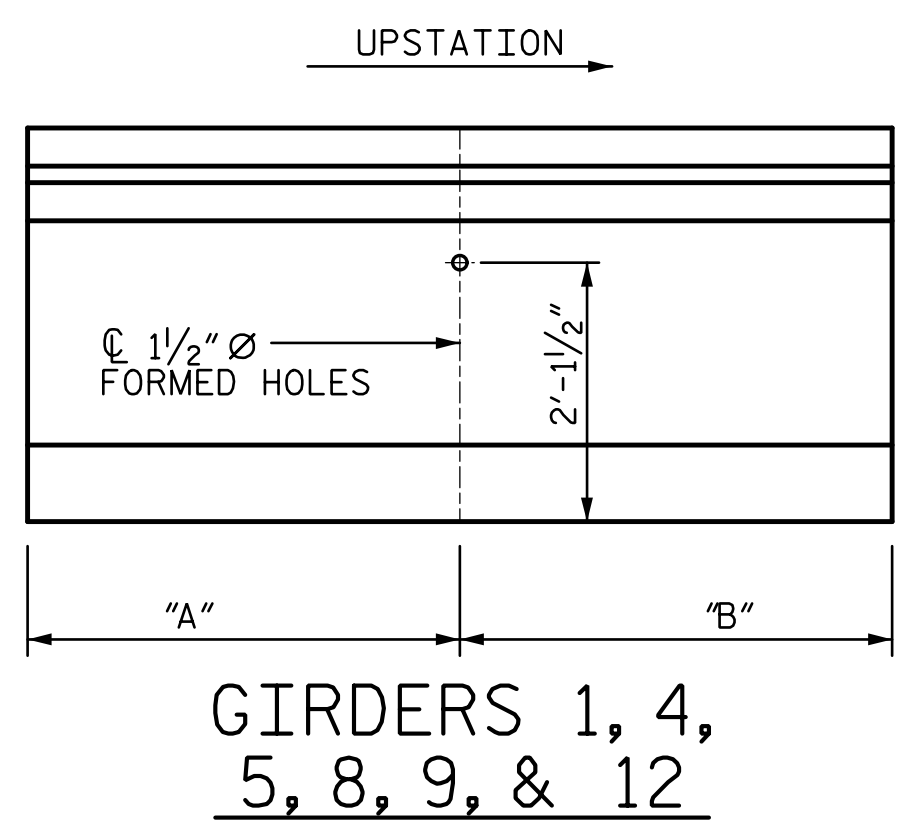
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>SIDEWALK DETAILS</b>					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-21
					TOTAL SHEETS 65



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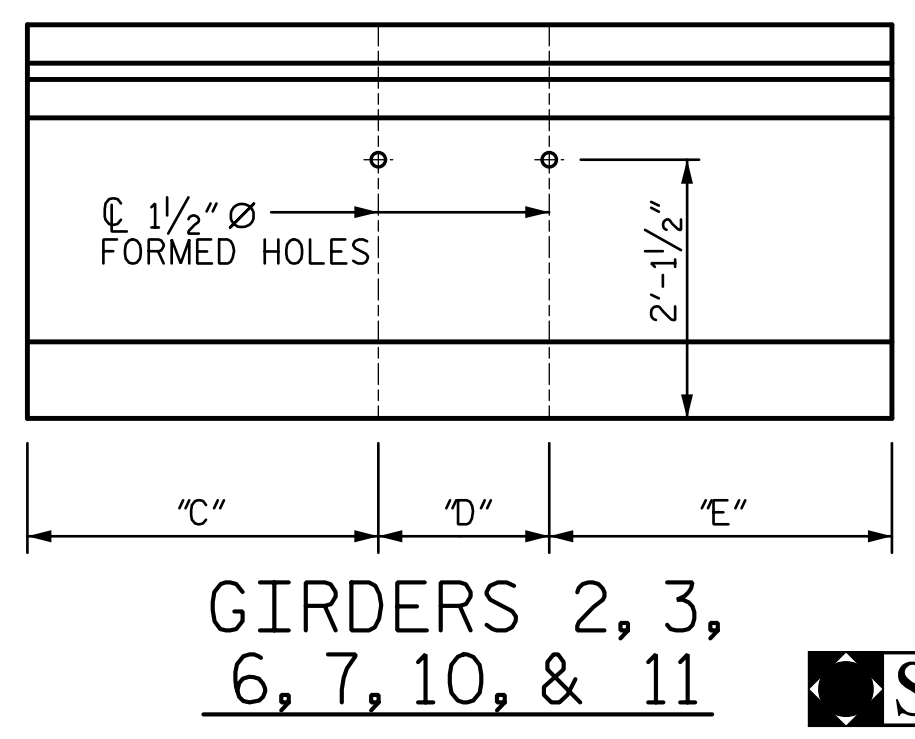


### FRAMING PLAN



GDR.	SPANS "A" & "C"				
	"A"	"B"	"C"	"D"	"E"
1	21'-9 <sup>1</sup> / <sub>16</sub> "	30'-10 <sup>1</sup> / <sub>16</sub> "	-	-	-
2	-	-	21'-9 <sup>1</sup> / <sub>16</sub> "	9'-1"	21'-9 <sup>1</sup> / <sub>16</sub> "
3	-	-	21'-9 <sup>1</sup> / <sub>16</sub> "	9'-1"	21'-9 <sup>1</sup> / <sub>16</sub> "
4	30'-10 <sup>1</sup> / <sub>16</sub> "	21'-9 <sup>1</sup> / <sub>16</sub> "	-	-	-
5	20'-9 <sup>9</sup> / <sub>16</sub> "	31'-9 <sup>9</sup> / <sub>16</sub> "	-	-	-
6	-	-	20'-9 <sup>9</sup> / <sub>16</sub> "	11'-0"	20'-9 <sup>9</sup> / <sub>16</sub> "
7	-	-	20'-9 <sup>9</sup> / <sub>16</sub> "	11'-0"	20'-9 <sup>9</sup> / <sub>16</sub> "
8	31'-9 <sup>9</sup> / <sub>16</sub> "	20'-9 <sup>9</sup> / <sub>16</sub> "	-	-	-
9	20'-11 <sup>9</sup> / <sub>16</sub> "	31'-7 <sup>9</sup> / <sub>16</sub> "	-	-	-
10	-	-	20'-11 <sup>9</sup> / <sub>16</sub> "	10'-8"	20'-11 <sup>9</sup> / <sub>16</sub> "
11	-	-	20'-11 <sup>9</sup> / <sub>16</sub> "	10'-8"	20'-11 <sup>9</sup> / <sub>16</sub> "
12	31'-7 <sup>9</sup> / <sub>16</sub> "	20'-11 <sup>9</sup> / <sub>16</sub> "	-	-	-

GDR.	SPAN "B"				
	"A"	"B"	"C"	"D"	"E"
1	33'-6 <sup>1</sup> / <sub>2</sub> "	42'-7 <sup>1</sup> / <sub>2</sub> "	-	-	-
2	-	-	33'-6 <sup>1</sup> / <sub>2</sub> "	9'-1"	33'-6 <sup>1</sup> / <sub>2</sub> "
3	-	-	33'-6 <sup>1</sup> / <sub>2</sub> "	9'-1"	33'-6 <sup>1</sup> / <sub>2</sub> "
4	42'-7 <sup>1</sup> / <sub>2</sub> "	33'-6 <sup>1</sup> / <sub>2</sub> "	-	-	-
5	32'-7"	43'-7"	-	-	-
6	-	-	32'-7"	11'-0"	32'-7"
7	-	-	32'-7"	11'-0"	32'-7"
8	43'-7"	32'-7"	-	-	-
9	32'-9"	43'-5"	-	-	-
10	-	-	32'-9"	10'-8"	32'-9"
11	-	-	32'-9"	10'-8"	32'-9"
12	43'-5"	32'-9"	-	-	-



ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 6-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

3/6/2023

**STV ENGINEERS, INC.**  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

Professional Engineer Seal for Jason T. Griscorn, No. 029429.

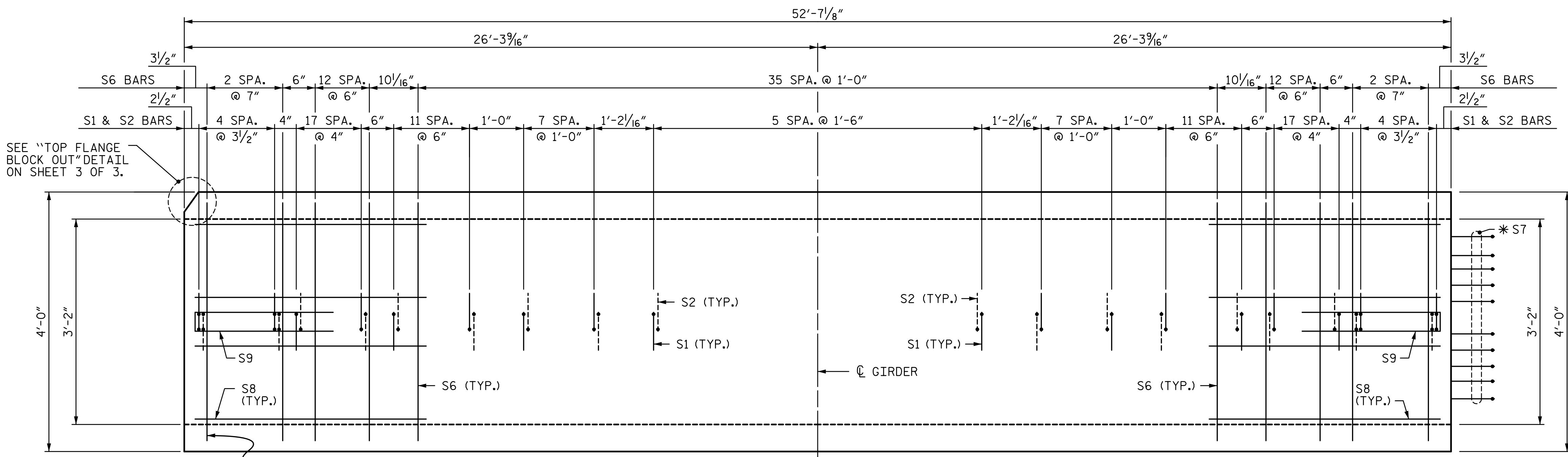
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**

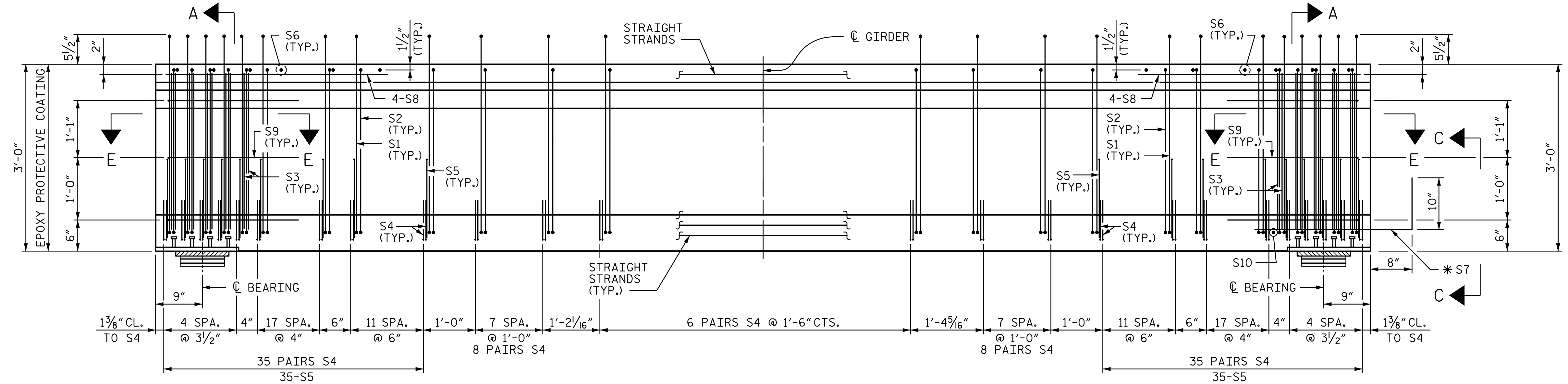
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 65

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PLAN OF GIRDER



ELEVATION OF GIRDER

1/2" Ø FORMED HOLES NOT SHOWN, SEE "FRAMING PLAN" FOR LOCATIONS

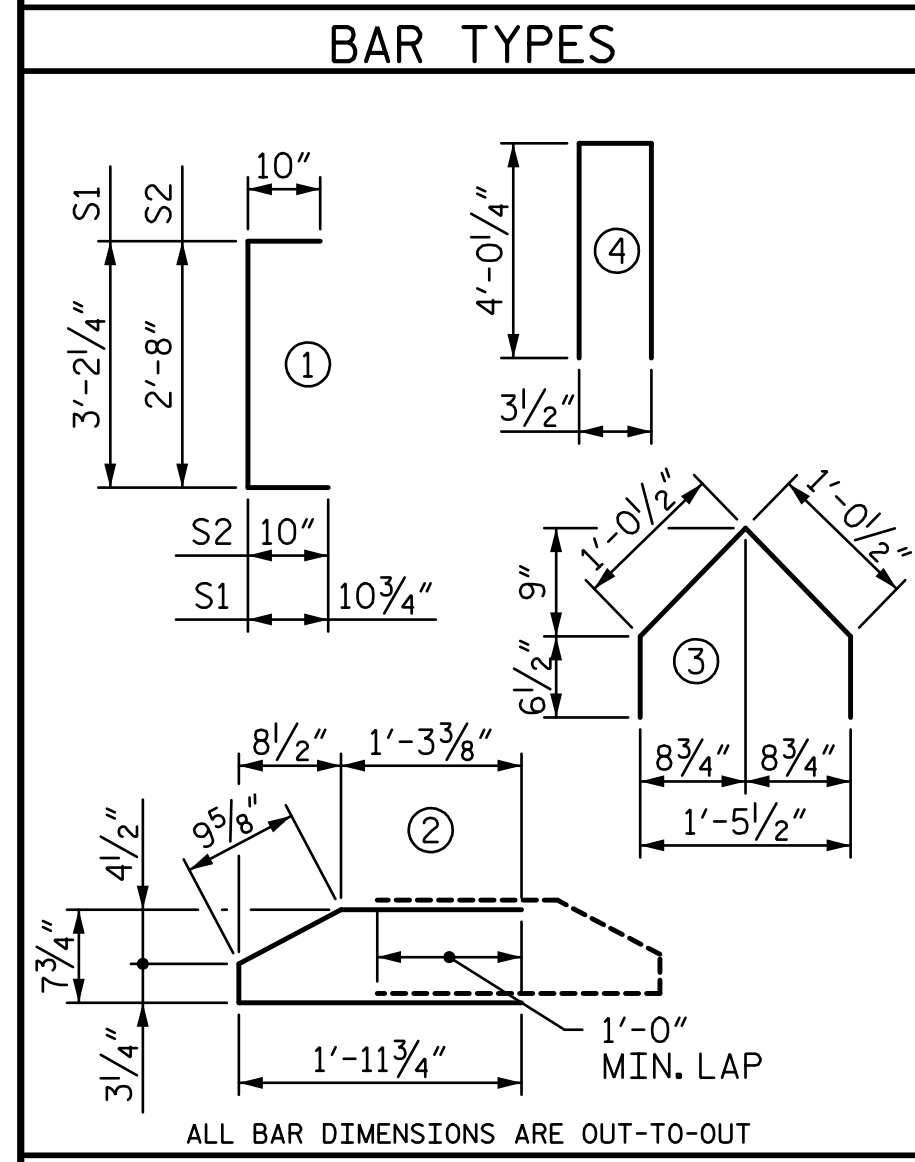
**NOTES:**  
 FOR SECTIONS AND DETAILS, SEE SHEET 3 OF 3.  
 FOR ADDITIONAL NOTES, SEE SHEET 3 OF 3.  
 ALTERNATE DIRECTION OF #5S1 AND #5S2 BARS.

ASSEMBLED BY :	SGH	DATE :	7-21
CHECKED BY :	MLO	DATE :	5-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

REINFORCING STEEL FOR ONE GDR.					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	92	#5	1	4'-11"	472
S2	92	#5	1	4'-4"	416
S3	20	#5	STR	2'-6"	52
S4	184	#3	2	4'-4"	300
S5	70	#3	3	3'-2"	83
S6	68	#4	STR	3'-8"	167
S7	10	#5	STR	3'-8"	38
S8	8	#5	STR	16'-0"	134
S9	6	#4	4	8'-4"	33
S10	1	#3	STR	2'-10"	1

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



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	1,696	10.9	33

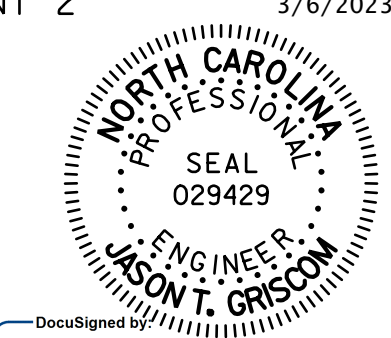
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
24	52'-7 1/8"	1,262'-3"

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

36" F.I.B.  
 PRESTRESSED  
 CONCRETE GIRDER  
 SPANS A & C



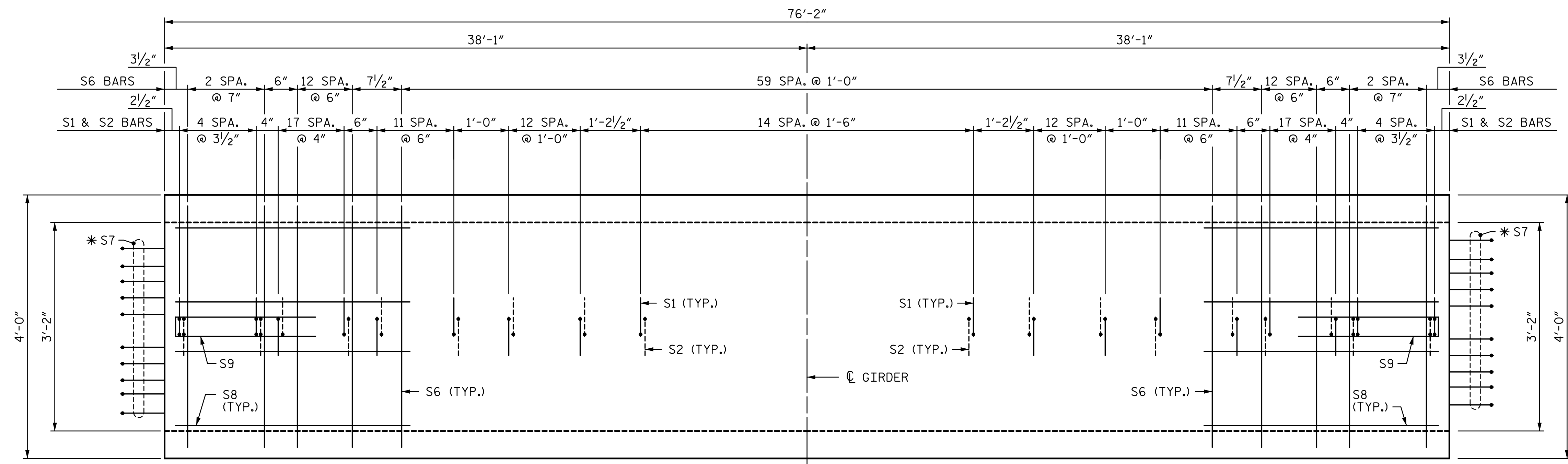
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 Charlotte, NC 28202  
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 SIGNATURES COMPLETED

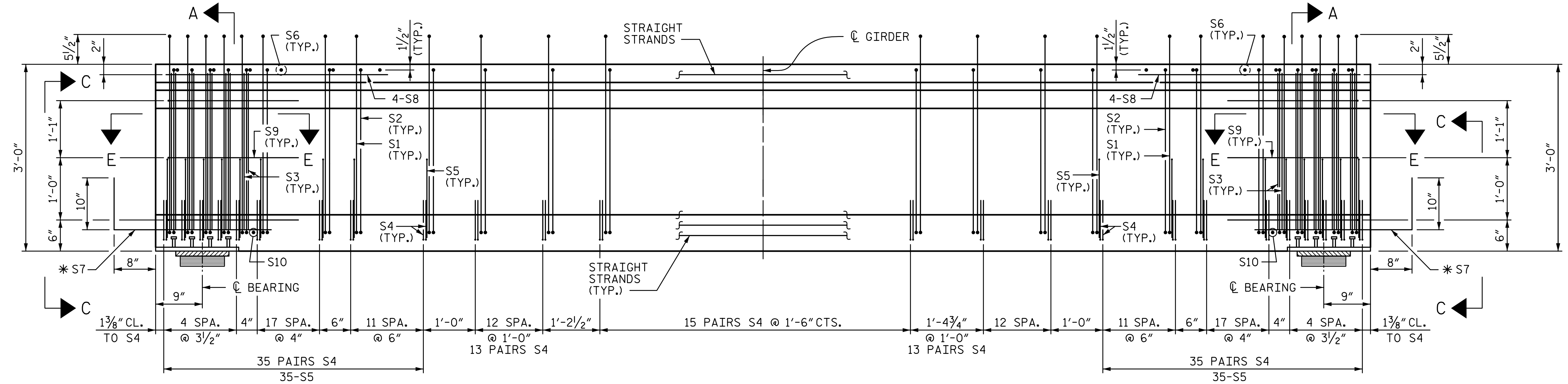
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 65



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PLAN OF GIRDER



ELEVATION OF GIRDER

1/2" Ø FORMED HOLES NOT SHOWN, SEE 'FRAMING PLAN' FOR LOCATIONS

**NOTES:**

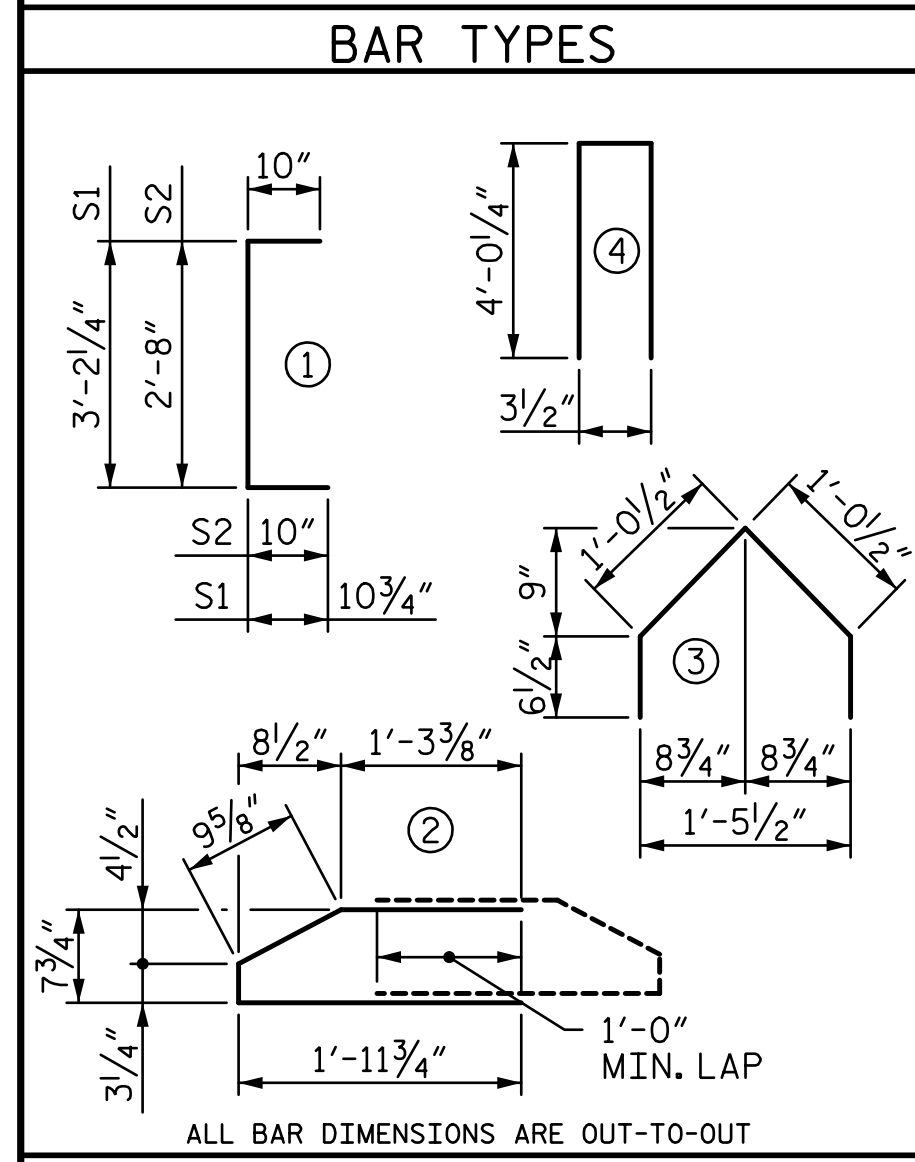
- FOR SECTIONS AND DETAILS, SEE SHEET 3 OF 3.
- FOR ADDITIONAL NOTES, SEE SHEET 3 OF 3.
- ALTERNATE DIRECTION OF #5S1 AND #5S2 BARS.

ASSEMBLED BY :	SGH	DATE :	7-21
CHECKED BY :	MLO	DATE :	5-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

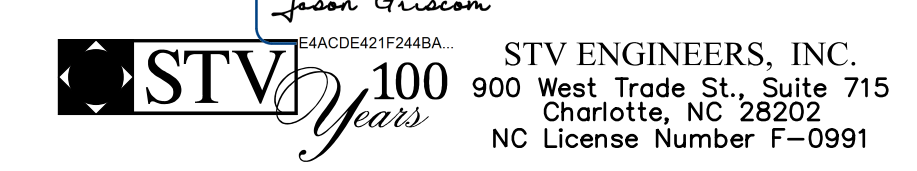
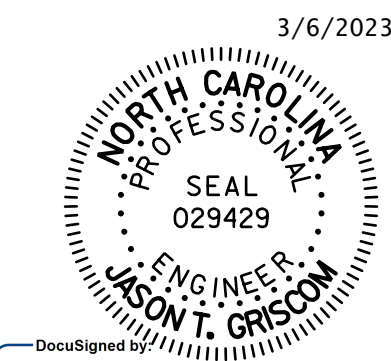
REINFORCING STEEL FOR ONE GDR.					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	111	#5	1	4'-11"	569
S2	111	#5	1	4'-4"	502
S3	20	#6	STR	2'-6"	75
S4	222	#3	2	4'-4"	362
S5	70	#3	3	3'-2"	83
S6	92	#4	STR	3'-8"	225
*S7	20	#5	STR	3'-8"	76
S8	8	#5	STR	16'-0"	134
S9	6	#4	4	8'-4"	33
S10	2	#3	STR	2'-10"	2

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



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	2,061	15.8	41
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
12	76'-2"	914'-0"	

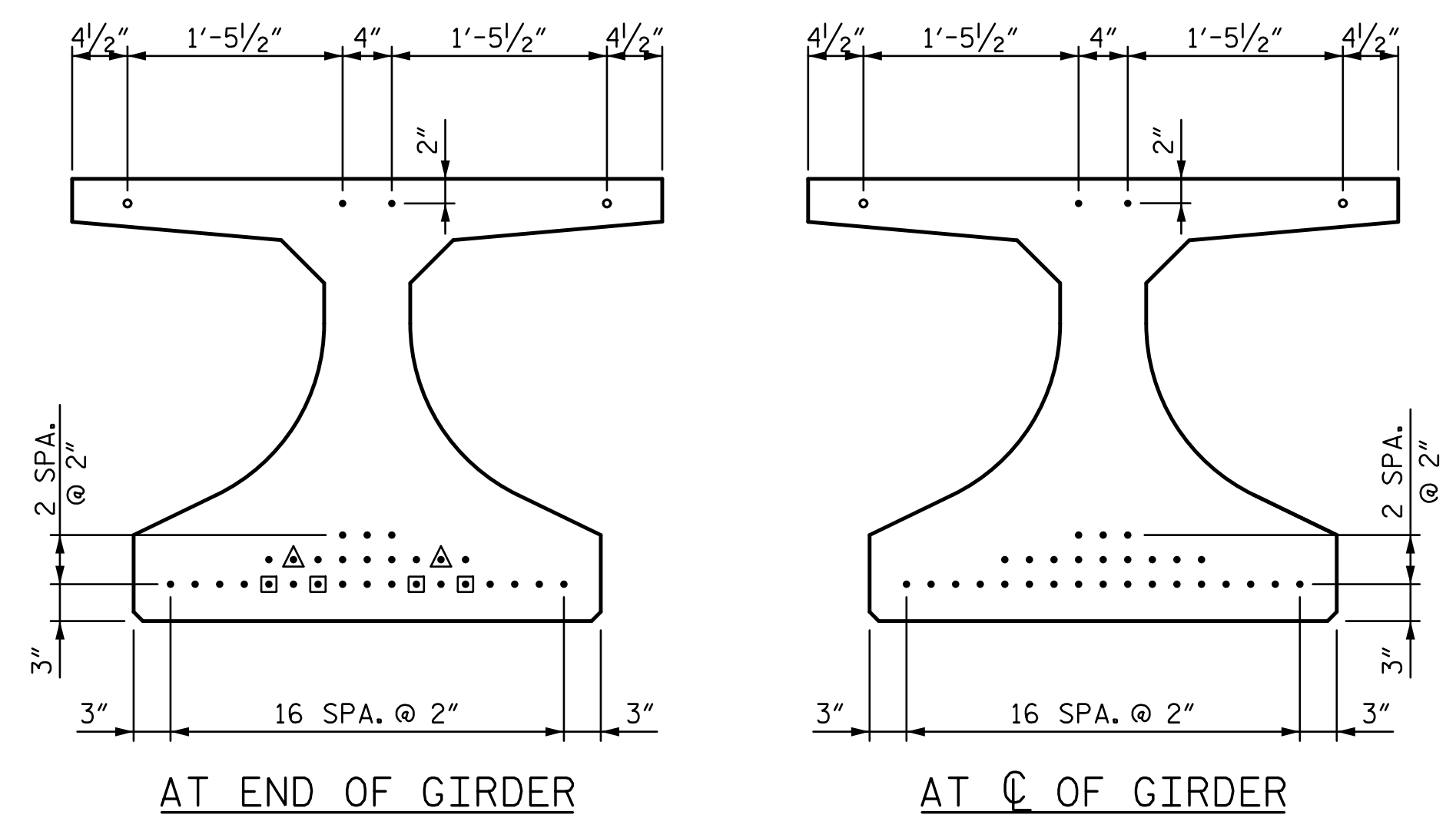
PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 3



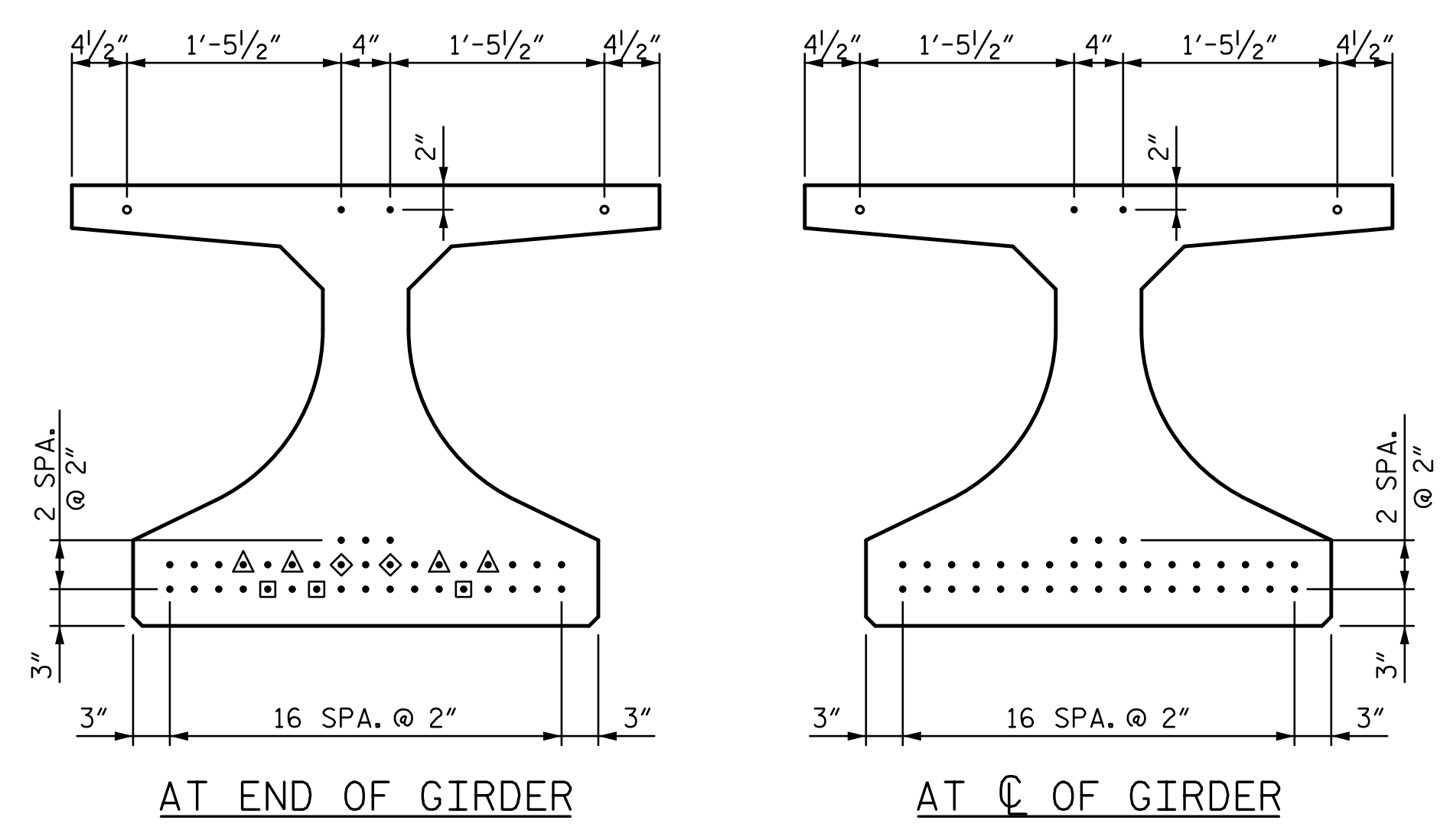
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
36" F.I.B. PRESTRESSED CONCRETE GIRDER SPAN B				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-24
				TOTAL SHEETS 65

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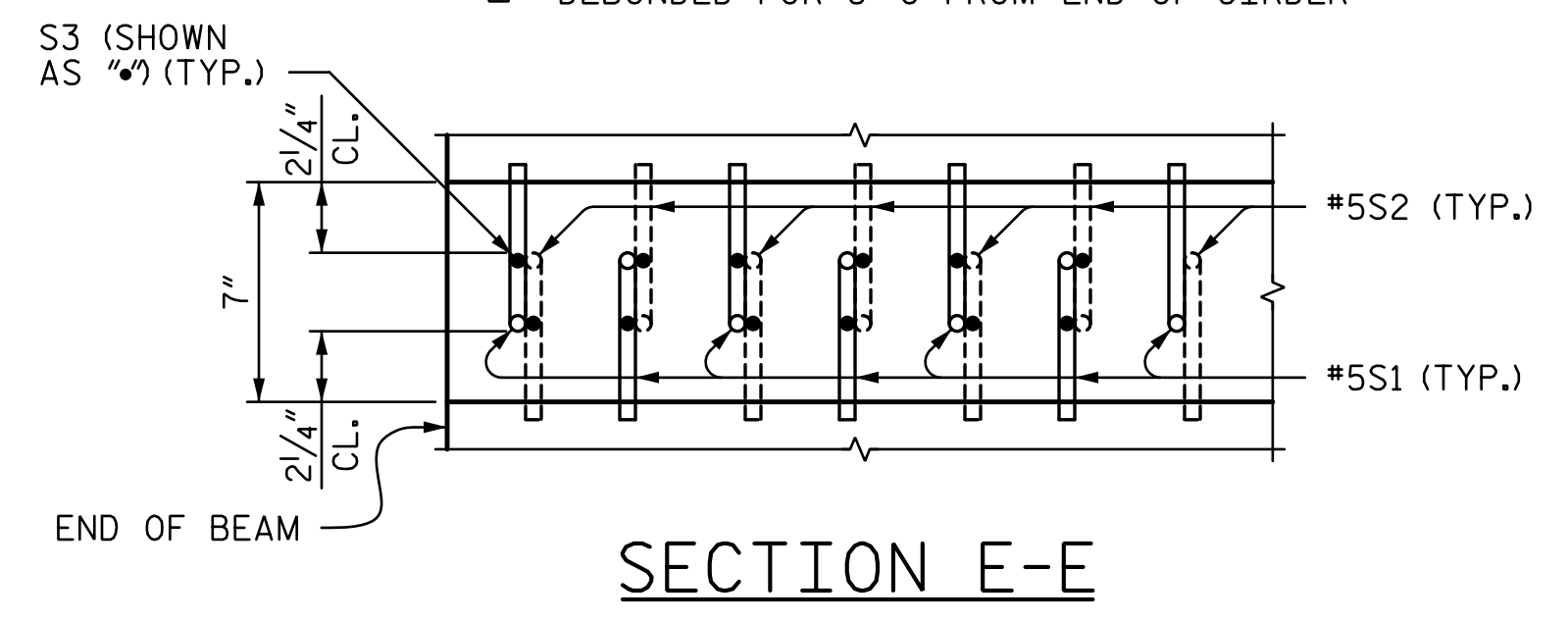
**0.6"  $\text{O}$  LOW RELAXATION STRAND LAYOUT**  
**SPANS A & C**  
 (33 - 0.6"  $\text{O}$  STRANDS REQUIRED)



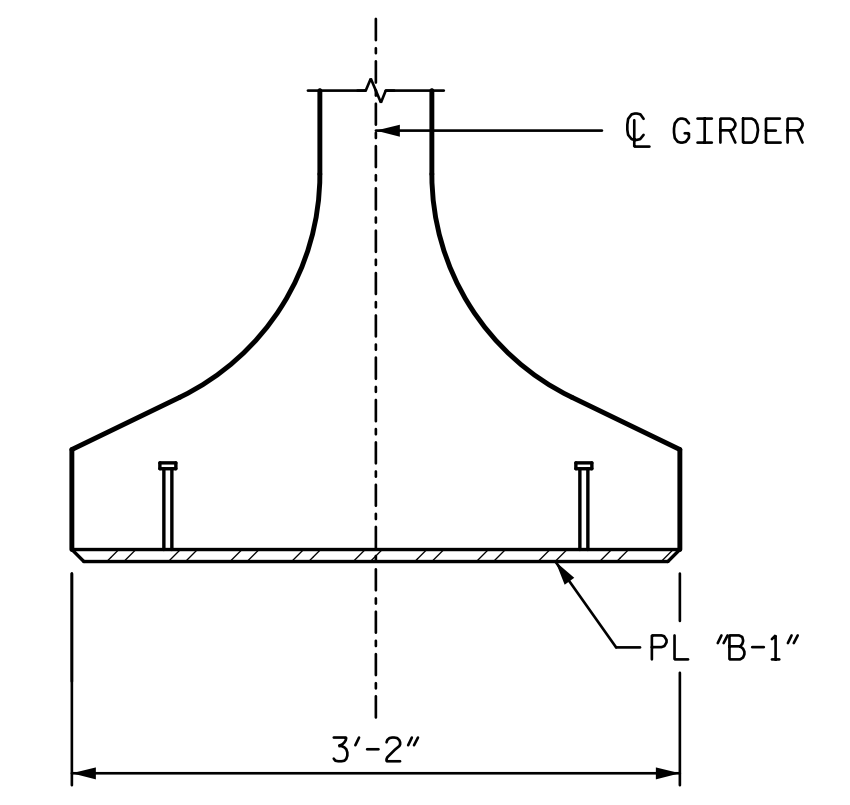
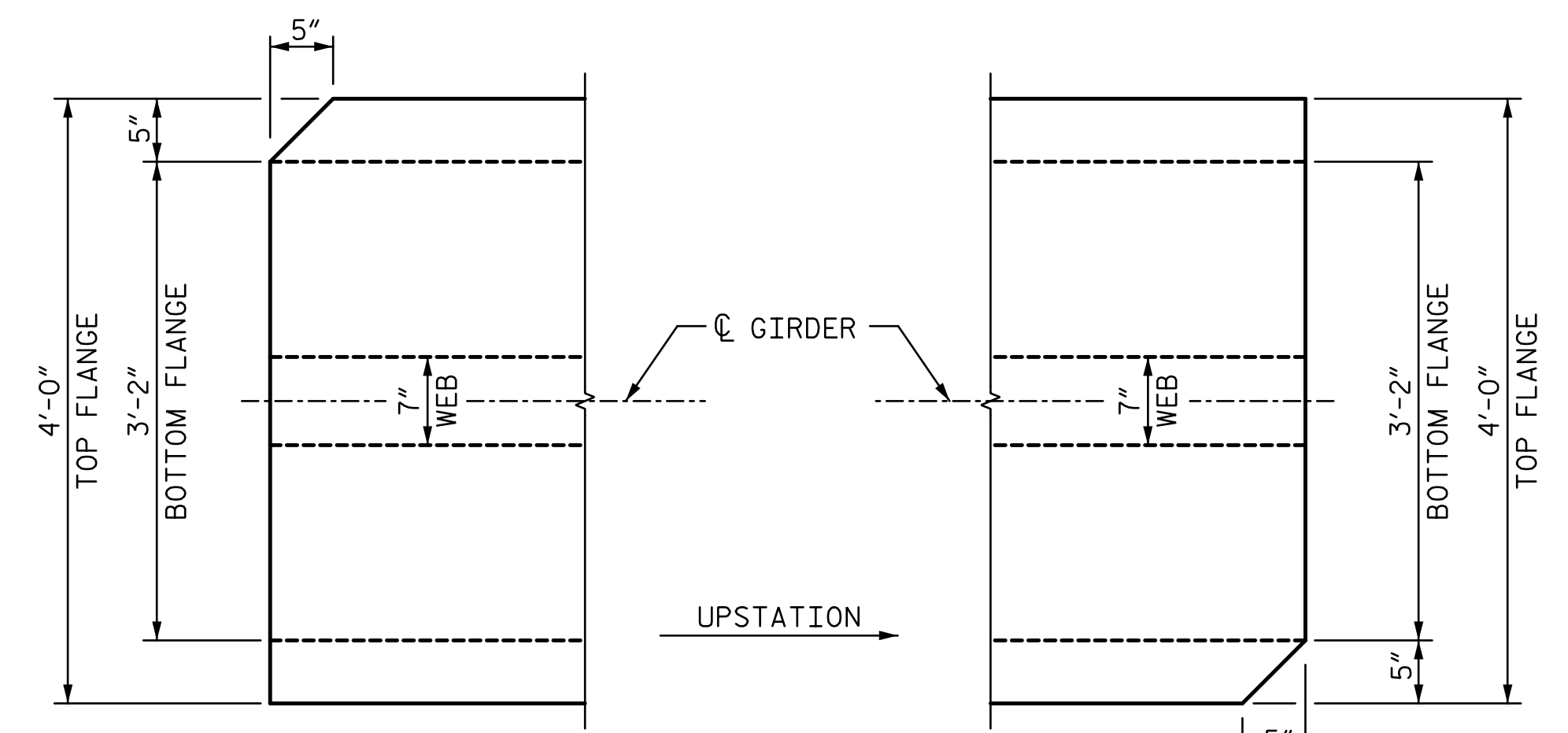
**0.6"  $\text{O}$  LOW RELAXATION STRAND LAYOUT**  
**SPAN B**  
 (41 - 0.6"  $\text{O}$  STRANDS REQUIRED)

**DEBONDING LEGEND**

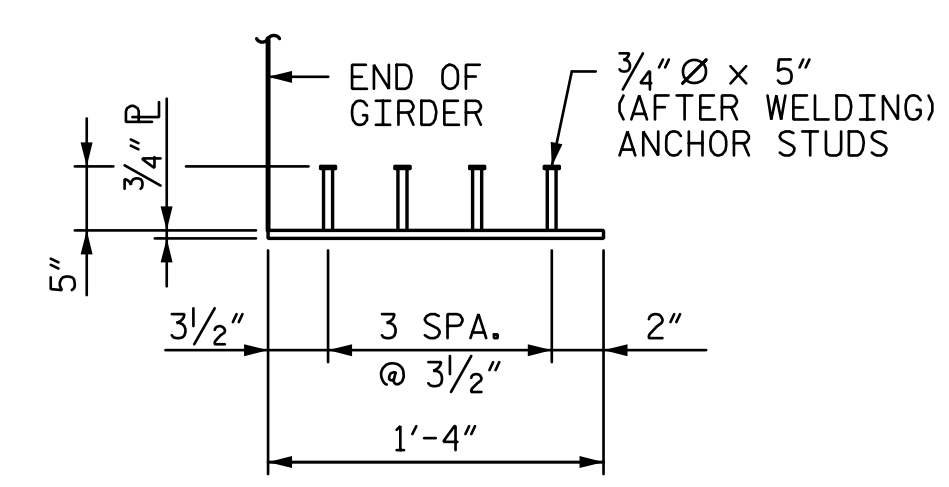
- FULLY BONDED STRANDS
- STRANDS PULLED TO 10,000 LBS.
- $\diamond$  - DEBONDED FOR 4'-0" FROM END OF GIRDER
- $\triangle$  - DEBONDED FOR 6'-0" FROM END OF GIRDER
- $\square$  - DEBONDED FOR 8'-0" FROM END OF GIRDER



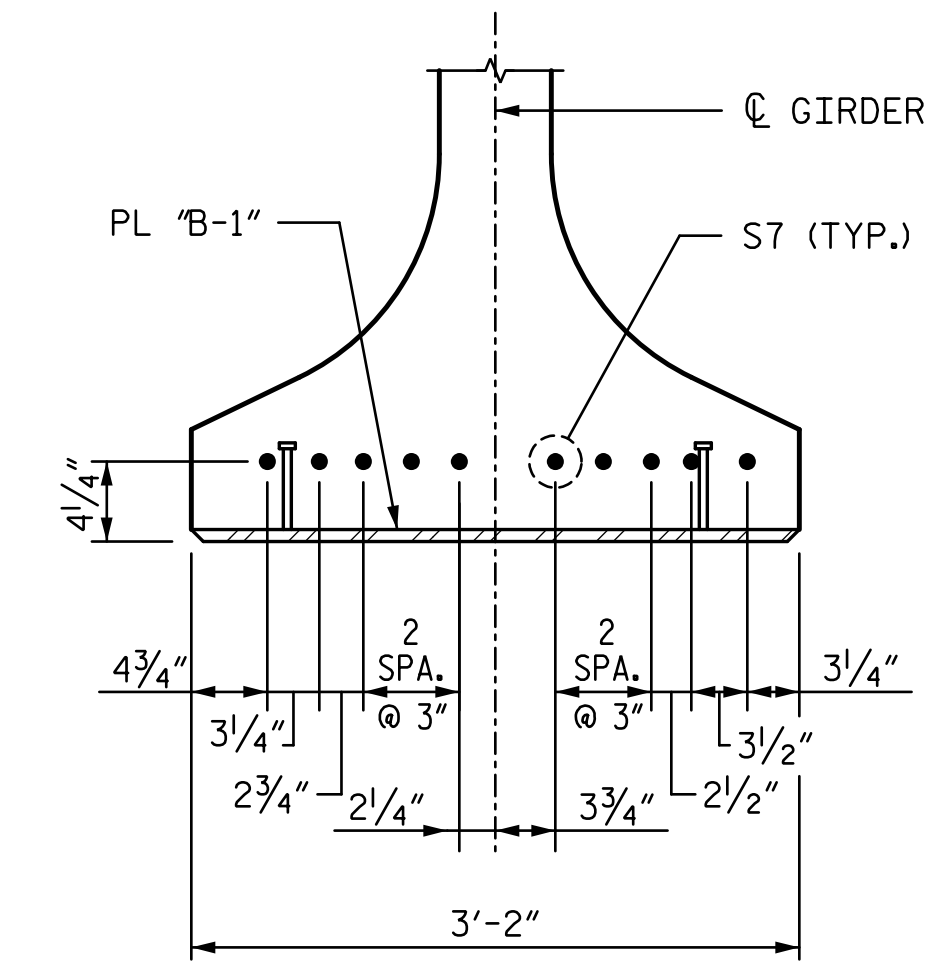
**SECTION E-E**



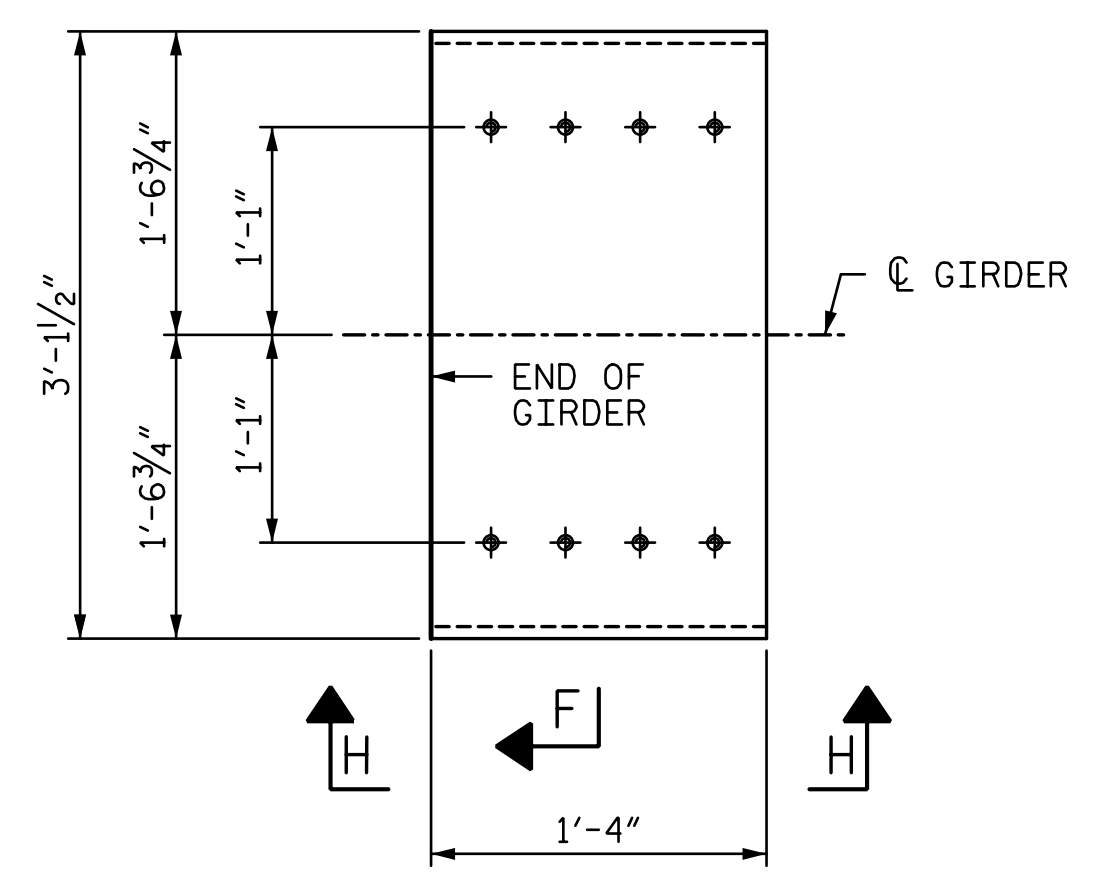
**DETAIL "D"**



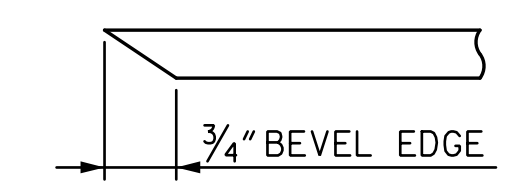
**VIEW H-H**



**VIEW C-C**



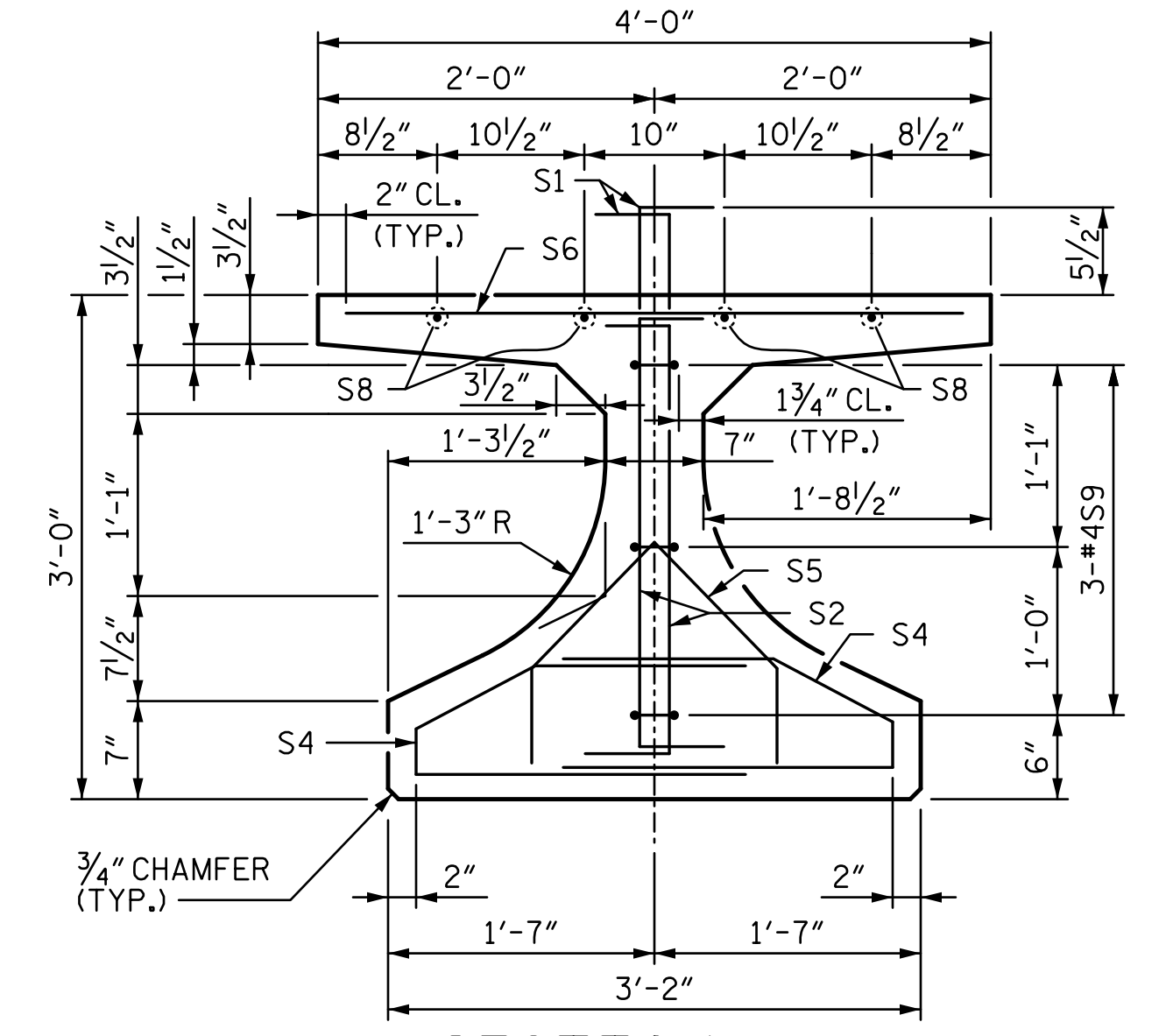
**EMBEDDED PLATE "B-1" DETAILS**  
 (2 REQ'D PER GIRDER)



**SECTION "F"**  
 (SEE NOTES)

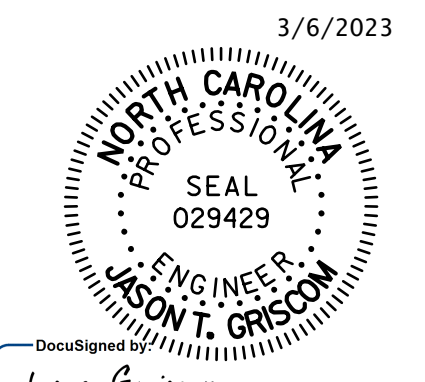
**NOTES**

- 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.
- TIE BARS S1 AND S2 TO THE FULLY BONDED STRANDS IN THE BOTTOM OR CENTER ROW.
- AT THE CONTRACTOR'S OPTION, THE LENGTH OF THE BOTTOM LEGS OF BARS S1 AND S2 MAY BE EXTENDED TO FACILITATE TYING.
- S4 BARS MAY BE FABRICATED AS A SINGLE BAR WITH A 1'-0" MINIMUM LAP SPLICE OF THE TOP LEGS, OR THE LENGTH OF THE BOTTOM LEGS MAY BE EXTENDED TO FACILITATE TYING TO THE EXTERIOR STRANDS.
- 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 6,000 PSI.
- DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.
- THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF  $\frac{1}{4}$ ".
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN THE ELEVATION VIEW ON SHEET 1 OF 3.
- IF CONTRACTOR ELECTS TO BOLT TEMPORARY BARRIER THROUGH THE DECK AND GIRDER FLANGE, THE FABRICATOR SHALL DETAIL SLOTS IN THE FLANGES FOR GIRDERS 4 AND 8 IN ALL SPANS. SLOTS SHALL BE DETAILED IN THE SHOP DRAWING FOR REVIEW BY THE ENGINEER.
- AT THE ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.



**SECTION A-A**  
 (S3 AND S7 BARS NOT SHOWN FOR CLARITY)

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 3 OF 3



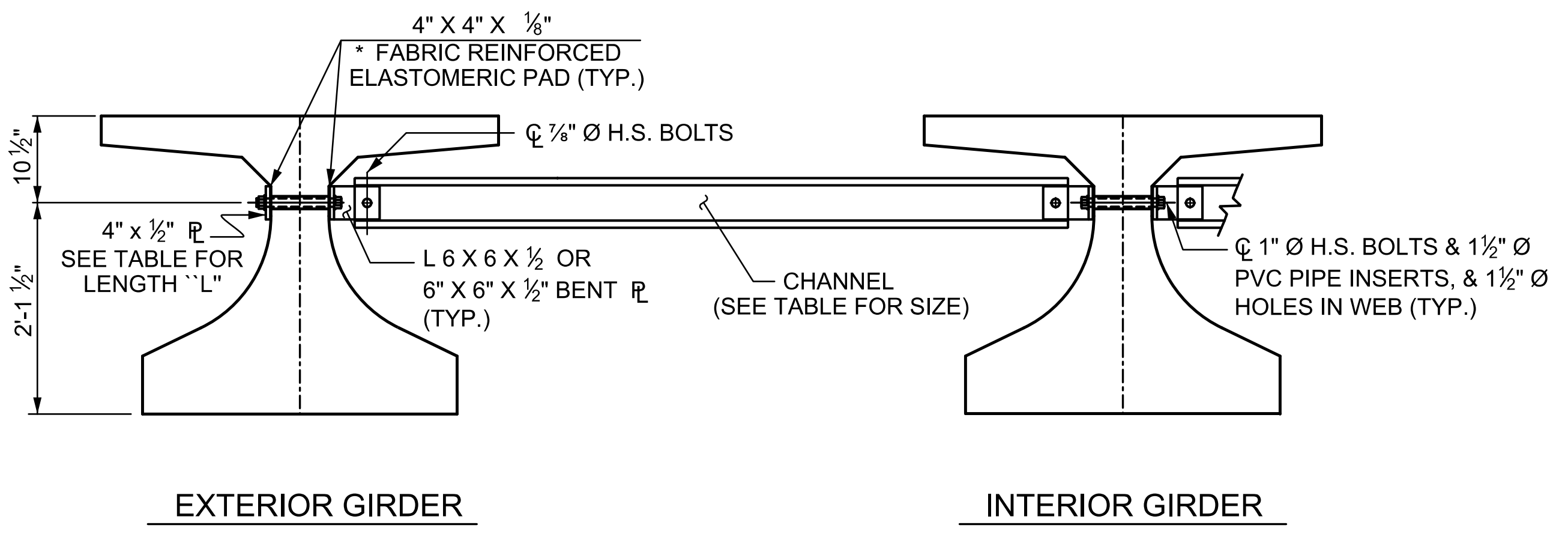
STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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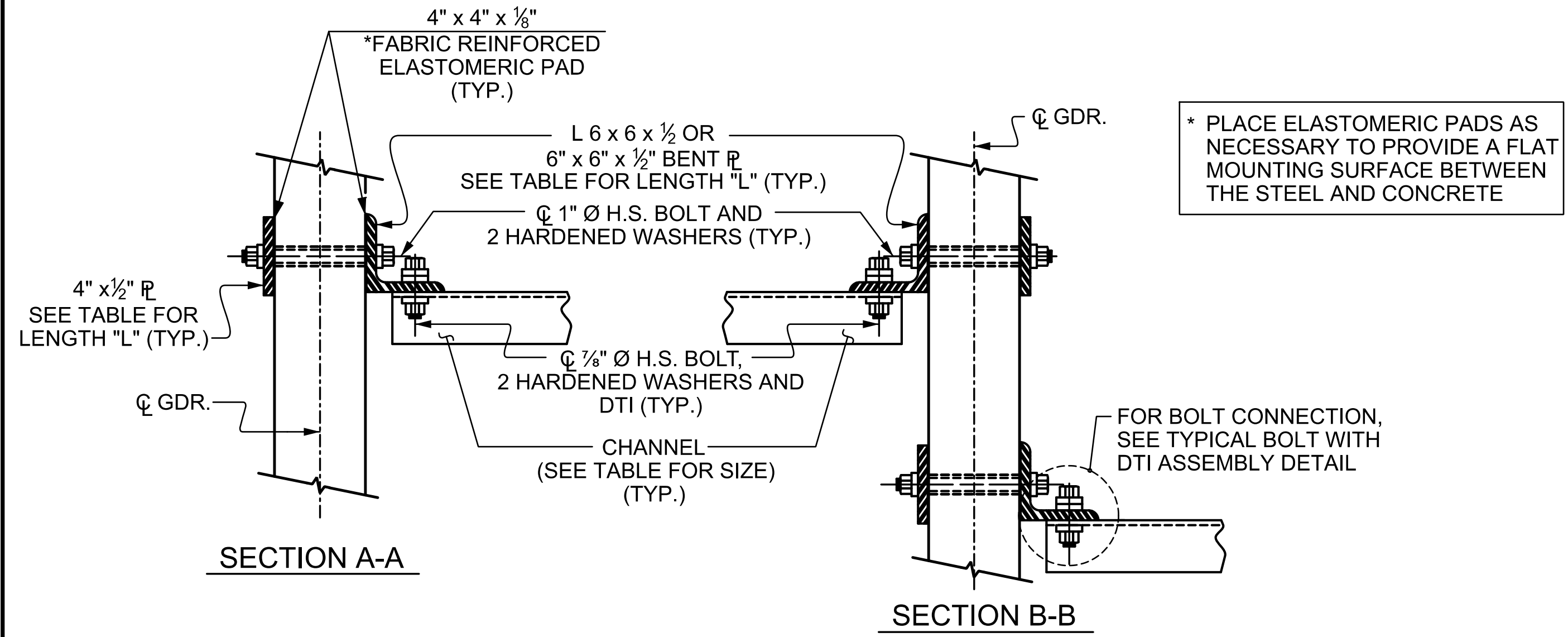
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
36" F.I.B. PRESTRESSED CONCRETE GIRDER DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-25
					TOTAL SHEETS 65



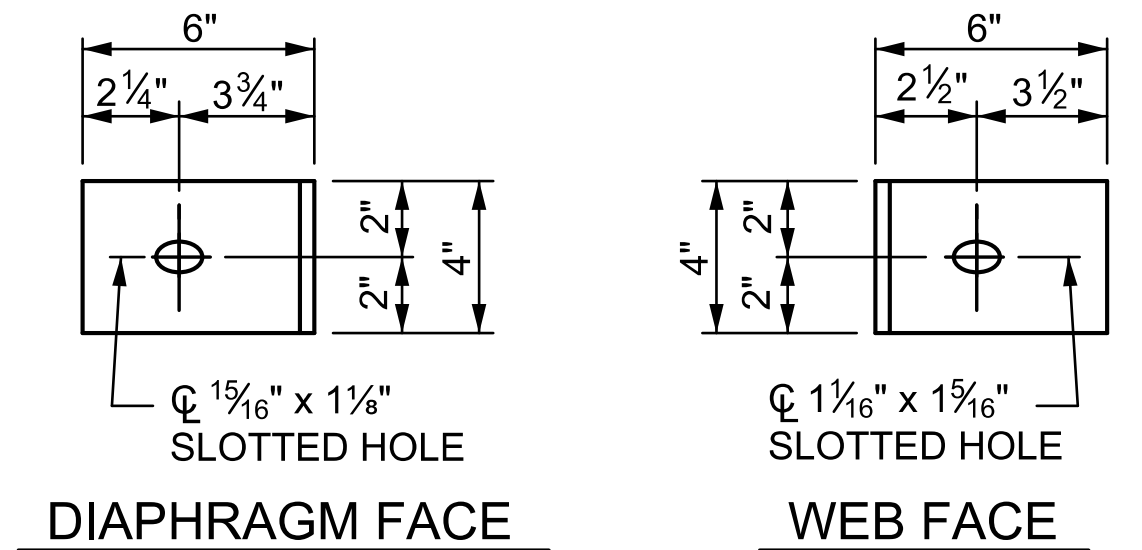
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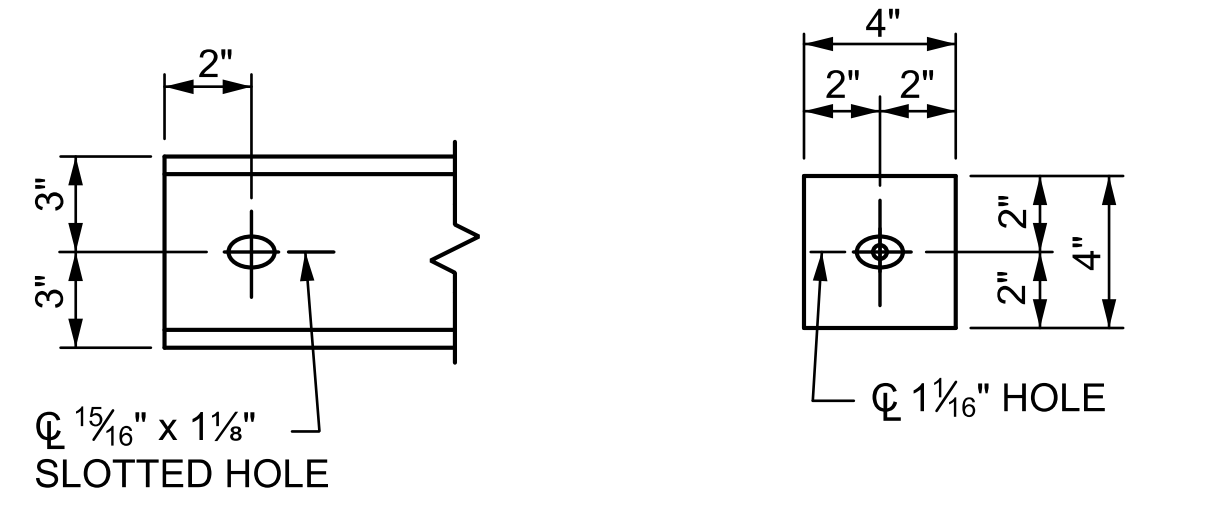
**PART SECTION AT INTERMEDIATE DIAPHRAGM**



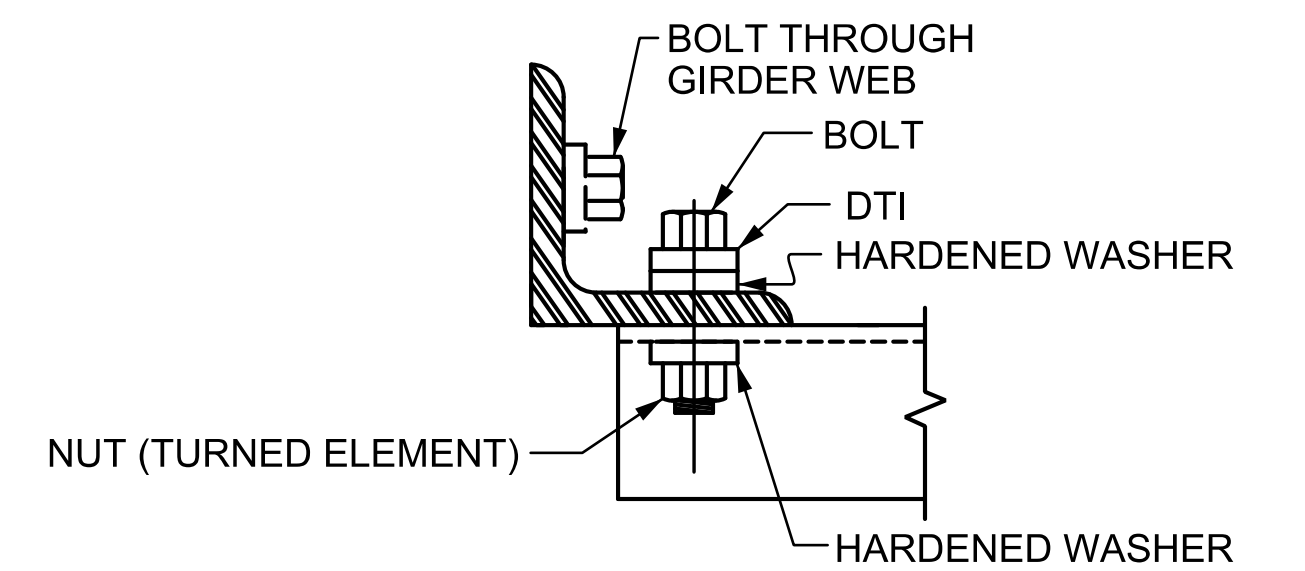
**CONNECTION DETAILS**



**CONNECTOR PLATE DETAILS**



**CHANNEL END PLATE DETAILS**



**BOLT WITH DTI ASSEMBLY DETAIL**

**STRUCTURAL STEEL NOTES**

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

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

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

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

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

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

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

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

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

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

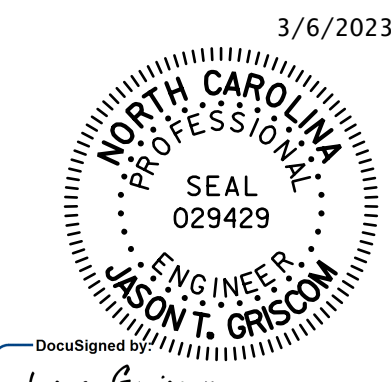
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "36" PRESTRESSED CONCRETE FLORIDA I-BEAMS".

**TABLE**

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
36" FIB	MC 6 x 15.3	10 1/2"	2'-1 1/2"	4"

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-



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 Charlotte, NC 28202  
 NC License Number F-0991

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**INTERMEDIATE STEEL DIAPHRAGMS FOR 36" FIB**

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

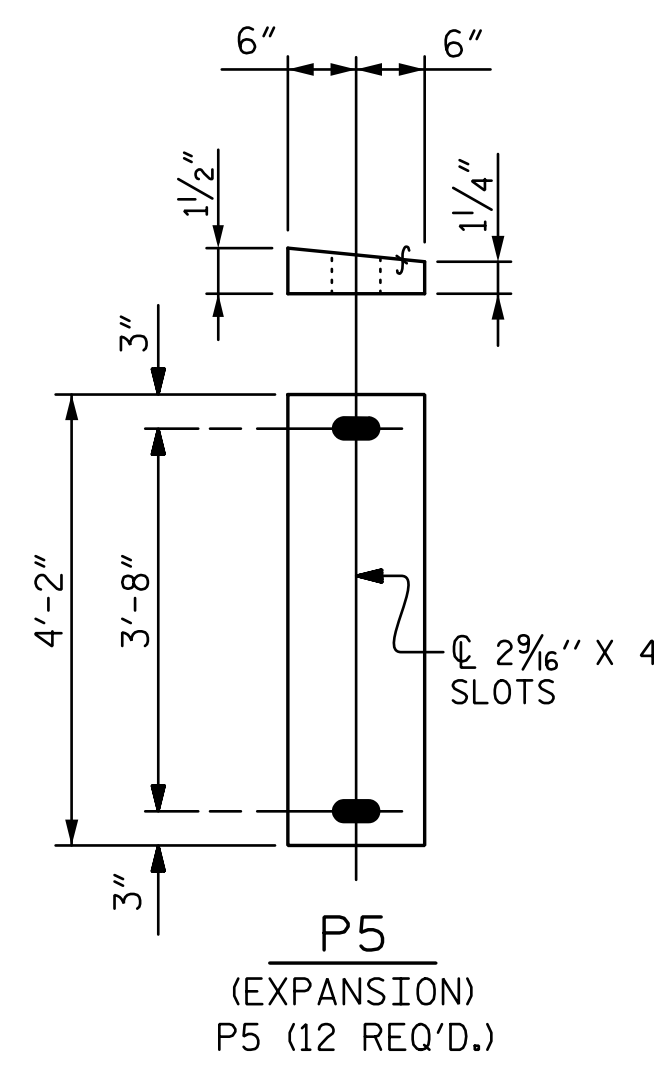
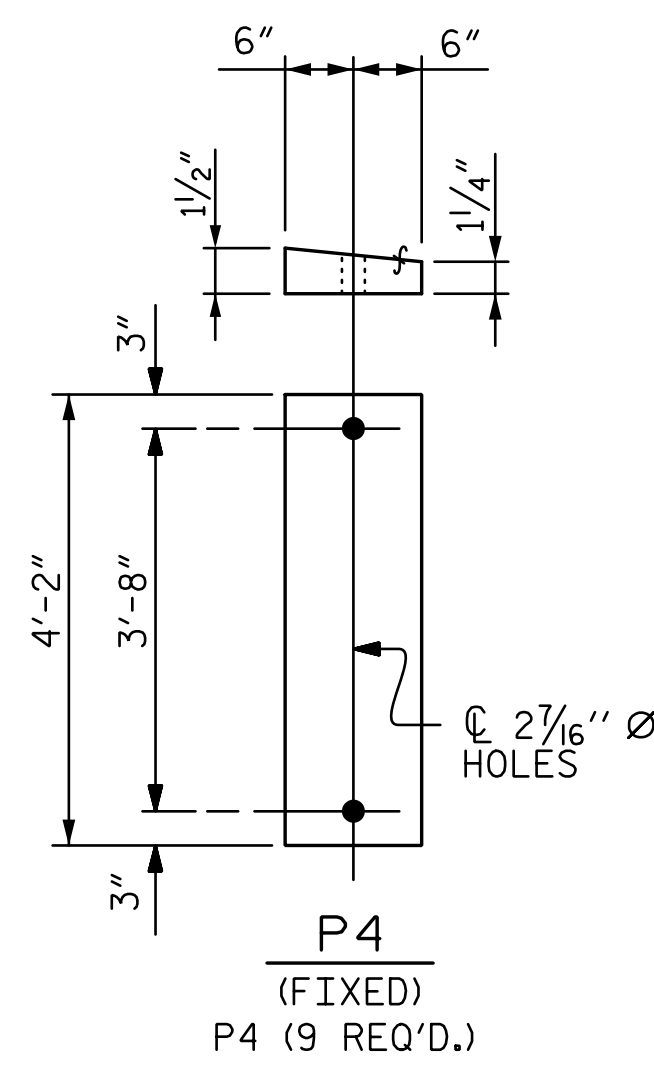
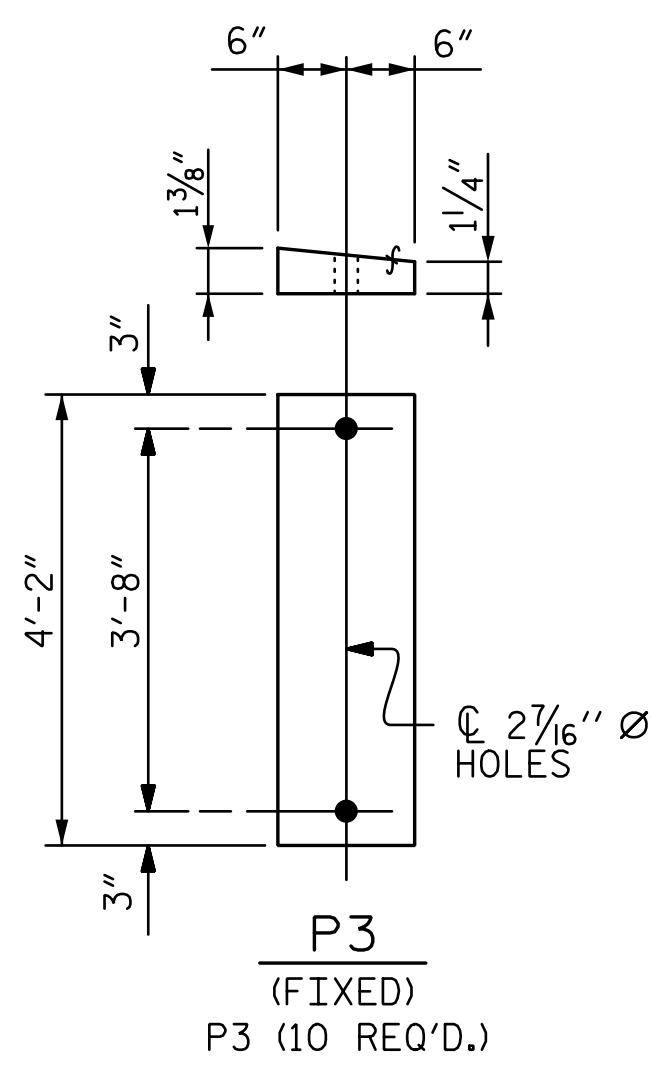
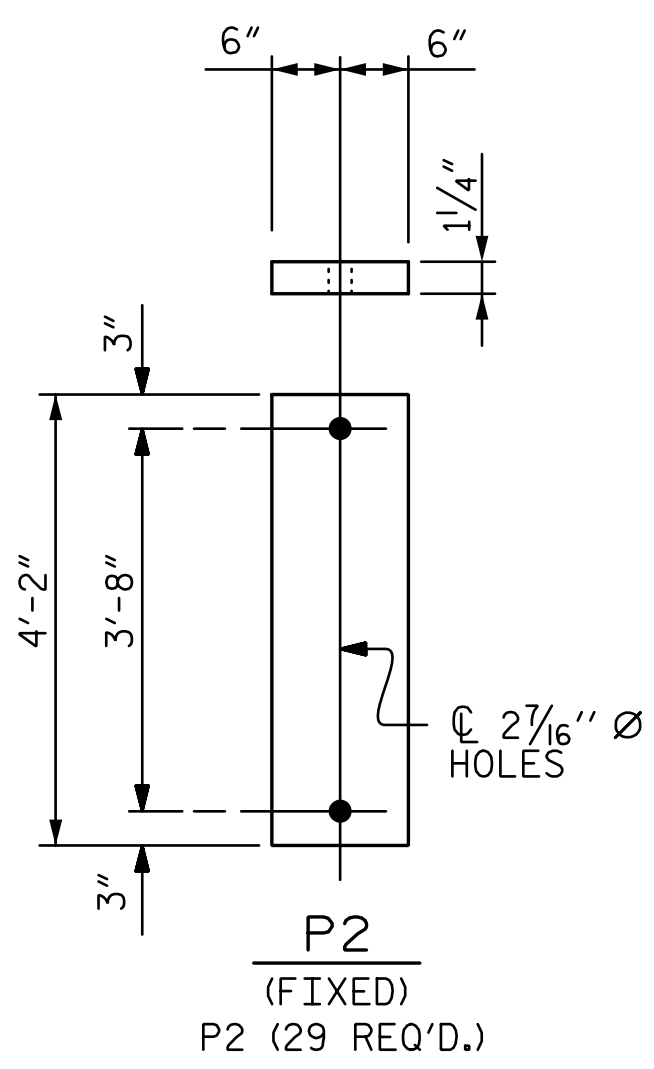
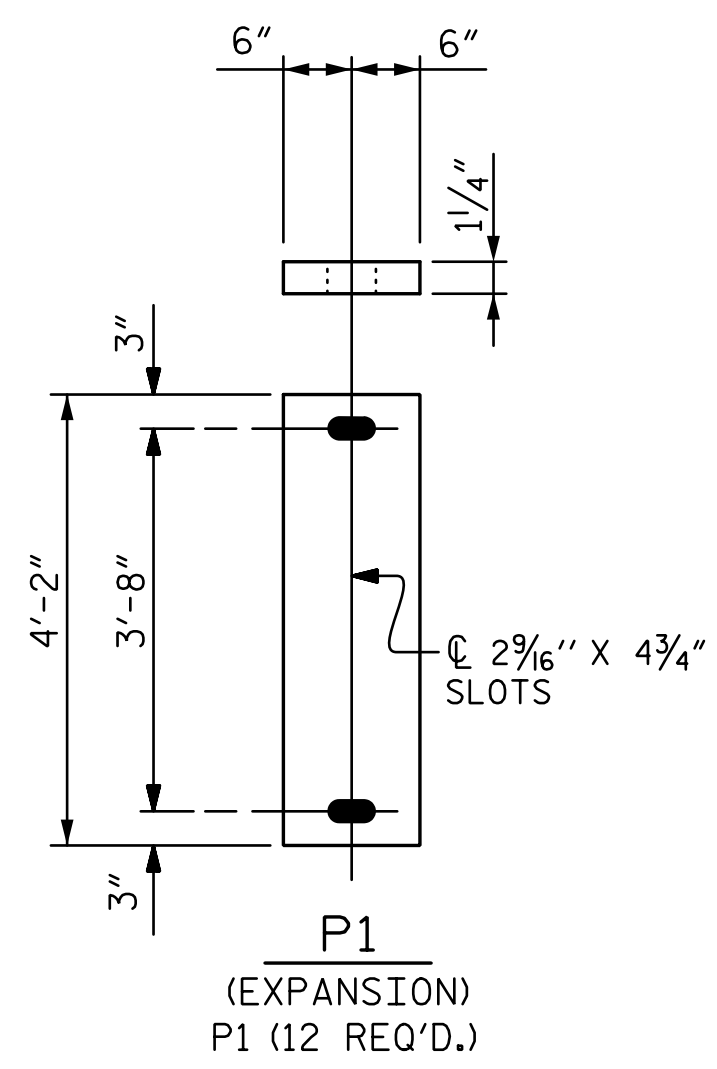
TOTAL SHEETS 65

ASSEMBLED BY : JTG DATE : 2-23  
 CHECKED BY : MLO DATE : 2-23  
 DESIGN ENGINEER OF RECORD : JTG DATE : 3-23





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UP-STATION →

SOLE PLATE DETAILS ("P")

PROJECT NO. B-5808

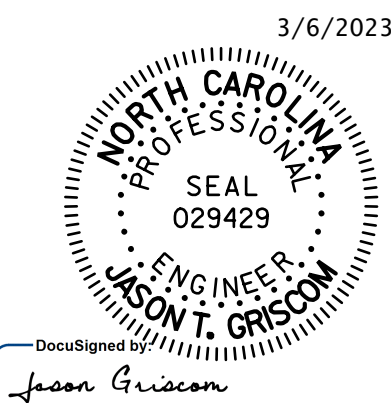
CABARRUS COUNTY

STATION: 20+64.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

ELASTOMERIC BEARING  
DETAILS



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ASSEMBLED BY :	SGH	DATE :	11-22
CHECKED BY :	MLO	DATE :	11-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

S-27
TOTAL SHEETS 65

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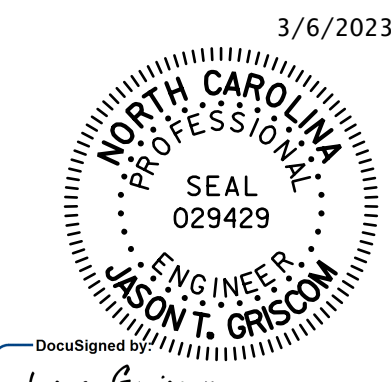
DEAD LOAD DEFLECTION TABLE FOR SPANS A & C																					
GIRDERS 1-4																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.018	0.036	0.051	0.067	0.078	0.089	0.095	0.102	0.105	0.107	0.105	0.102	0.095	0.089	0.078	0.067	0.051	0.036	0.018	0.000
◆▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.003	0.007	0.010	0.013	0.016	0.019	0.020	0.022	0.022	0.023	0.022	0.022	0.020	0.019	0.016	0.013	0.010	0.007	0.003	0.000
FINAL CAMBER	↑ 0"	0 <sup>3</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>8</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>15</sup> / <sub>16</sub> "	1"	1"	1"	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>3</sup> / <sub>8</sub> "	0 <sup>3</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPANS A & C																					
GIRDERS 5-8																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.018	0.036	0.051	0.067	0.078	0.089	0.095	0.102	0.105	0.107	0.105	0.102	0.095	0.089	0.078	0.067	0.051	0.036	0.018	0.000
◆▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.004	0.009	0.012	0.016	0.018	0.021	0.023	0.024	0.025	0.025	0.025	0.024	0.023	0.021	0.018	0.016	0.012	0.009	0.004	0.000
FINAL CAMBER	↑ 0"	0 <sup>3</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>15</sup> / <sub>16</sub> "	1"	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPANS A & C																					
GIRDERS 9-12																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.018	0.036	0.051	0.067	0.078	0.089	0.095	0.102	0.105	0.107	0.105	0.102	0.095	0.089	0.078	0.067	0.051	0.036	0.018	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.003	0.007	0.010	0.014	0.017	0.019	0.021	0.023	0.023	0.024	0.023	0.023	0.021	0.019	0.017	0.014	0.010	0.007	0.003	0.000
FINAL CAMBER	↑ 0"	0 <sup>3</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>8</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>15</sup> / <sub>16</sub> "	1"	1"	1"	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>3</sup> / <sub>8</sub> "	0 <sup>3</sup> / <sub>16</sub> "	0"

↑ - DENOTES UPWARD CAMBER  
 ↓ - DENOTES DOWNWARD DEFLECTION  
 ALL VALUES ARE SHOWN IN DECIMAL FEET EXCEPT FINAL CAMBER WHICH IS SHOWN IN INCHES (FRACTION FORM).  
 ◆ DUE TO STAGED CONSTRUCTION, THE DEFLECTION DUE TO SIDEWALK AND CONCRETE MEDIAN ARE NOT INCLUDED.  
 ▲ DUE TO STAGED CONSTRUCTION, THE DEFLECTION DUE TO FUTURE WEARING SURFACE IS NOT INCLUDED.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

DEAD LOAD DEFLECTIONS  
 SPANS A & C

ASSEMBLED BY : SGH DATE : 12-22  
 CHECKED BY : MLO DATE : 12-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS 65
2			4			



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DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDER 1																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.015	0.029	0.043	0.058	0.069	0.080	0.087	0.095	0.097	0.099	0.097	0.095	0.087	0.080	0.069	0.058	0.043	0.029	0.015	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>7</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>8</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDERS 2 & 3																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.016	0.033	0.049	0.065	0.078	0.090	0.098	0.106	0.109	0.112	0.109	0.106	0.098	0.090	0.078	0.065	0.049	0.033	0.016	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	1"	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>8</sub> "	1"	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDER 4																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.013	0.027	0.040	0.052	0.062	0.072	0.079	0.085	0.087	0.089	0.087	0.085	0.079	0.072	0.062	0.052	0.040	0.027	0.013	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>11</sup> / <sub>16</sub> "	1 <sup>11</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>11</sup> / <sub>16</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDER 5																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.016	0.032	0.047	0.062	0.074	0.085	0.093	0.100	0.103	0.106	0.103	0.100	0.093	0.085	0.074	0.062	0.047	0.032	0.016	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	1"	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>9</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1"	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDERS 6 & 7																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.019	0.037	0.055	0.074	0.088	0.103	0.112	0.121	0.124	0.128	0.124	0.121	0.112	0.103	0.088	0.074	0.055	0.037	0.019	0.000
FINAL CAMBER	↑ 0"	0 <sup>1</sup> / <sub>4</sub> "	0 <sup>3</sup> / <sub>16</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	1"	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	1"	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>16</sub> "	0 <sup>1</sup> / <sub>4</sub> "	0"

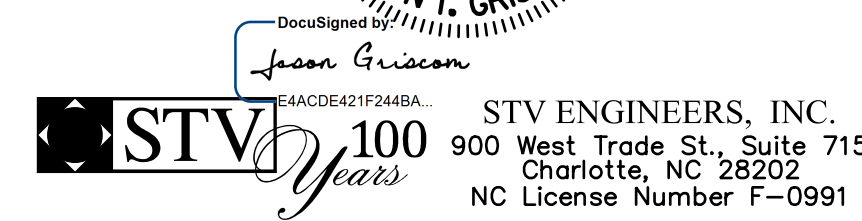
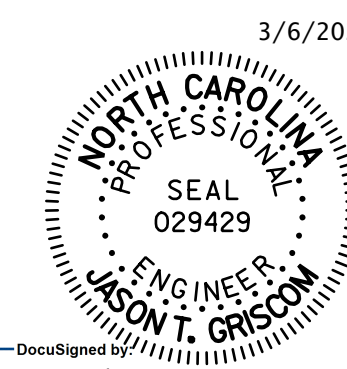
DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDERS 8 & 9																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.016	0.032	0.048	0.063	0.076	0.088	0.096	0.104	0.106	0.109	0.106	0.104	0.096	0.088	0.076	0.063	0.048	0.032	0.016	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>13</sup> / <sub>16</sub> "	1"	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>7</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	1"	0 <sup>13</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>8</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																						
GIRDERS 10 & 11																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000	
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.019	0.039	0.057	0.076	0.091	0.106	0.116	0.125	0.128	0.132	0.128	0.125	0.116	0.106	0.091	0.076	0.057	0.039	0.019	0.000	
FINAL CAMBER	↑ 0"	0 <sup>1</sup> / <sub>4</sub> "	0 <sup>1</sup> / <sub>2</sub> "	0 <sup>11</sup> / <sub>16</sub> "	0 <sup>7</sup> / <sub>8</sub> "	0 <sup>15</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>9</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
GIRDER 12																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.041	0.083	0.115	0.147	0.171	0.195	0.209	0.224	0.229	0.233	0.229	0.224	0.209	0.195	0.171	0.147	0.115	0.083	0.041	0.000
▲ DEFLECTION DUE TO SUPERIMPOSED D.L.	↓ 0.000	0.018	0.035	0.052	0.069	0.082	0.096	0.104	0.113	0.116	0.119	0.116	0.113	0.104	0.096	0.082	0.069	0.052	0.035	0.018	0.000
FINAL CAMBER	↑ 0"	0 <sup>5</sup> / <sub>16</sub> "	0 <sup>9</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>15</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>3</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>16</sub> "	0 <sup>15</sup> / <sub>16</sub> "	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>9</sup> / <sub>16</sub> "	0 <sup>5</sup> / <sub>16</sub> "	0"

↑ - DENOTES UPWARD CAMBER  
 ↓ - DENOTES DOWNWARD DEFLECTION  
 ALL VALUES ARE SHOWN IN DECIMAL FEET EXCEPT FINAL CAMBER WHICH IS SHOWN IN INCHES (FRACTION FORM).  
 ◆ DUE TO STAGED CONSTRUCTION, THE DEFLECTION DUE TO SIDEWALK AND CONCRETE MEDIAN ARE NOT INCLUDED.  
 ▲ DUE TO STAGED CONSTRUCTION, THE DEFLECTION DUE TO FUTURE WEARING SURFACE IS NOT INCLUDED.

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

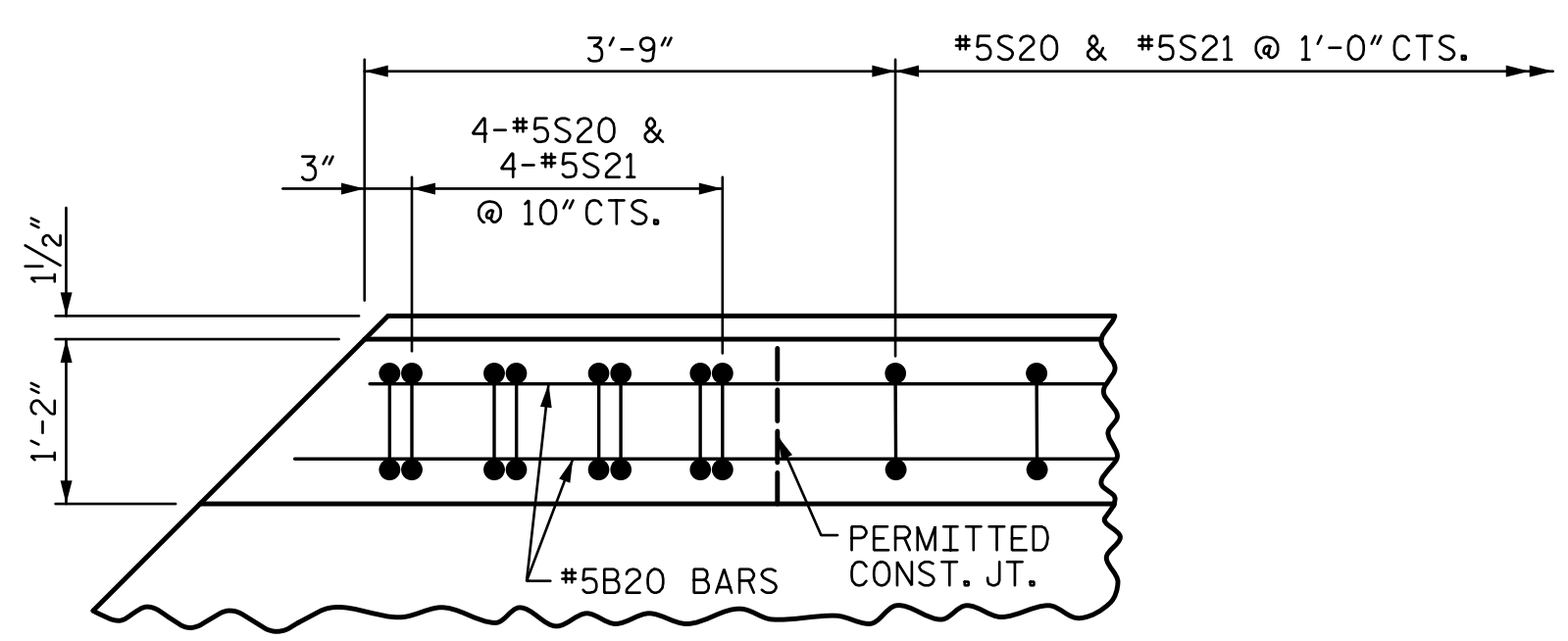


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

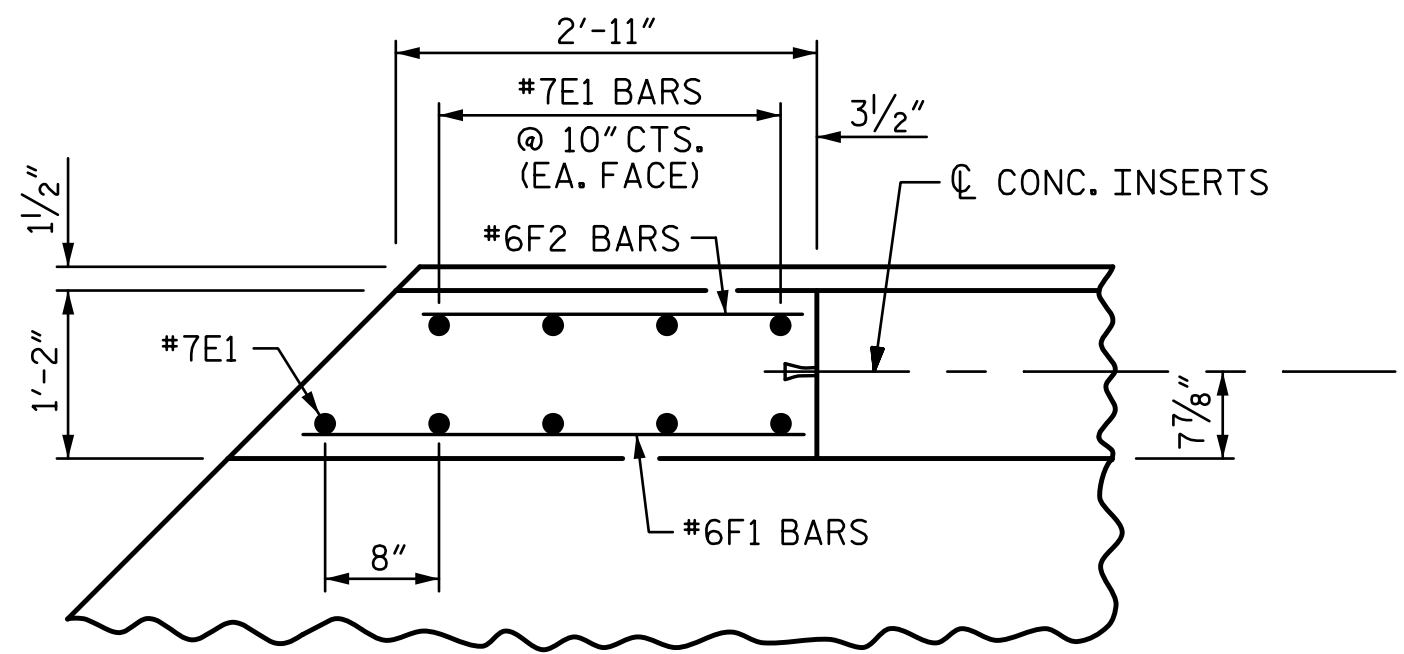
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DEAD LOAD DEFLECTIONS SPAN B					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 65

ASSEMBLED BY : SGH DATE : 12-22  
 CHECKED BY : MLO DATE : 12-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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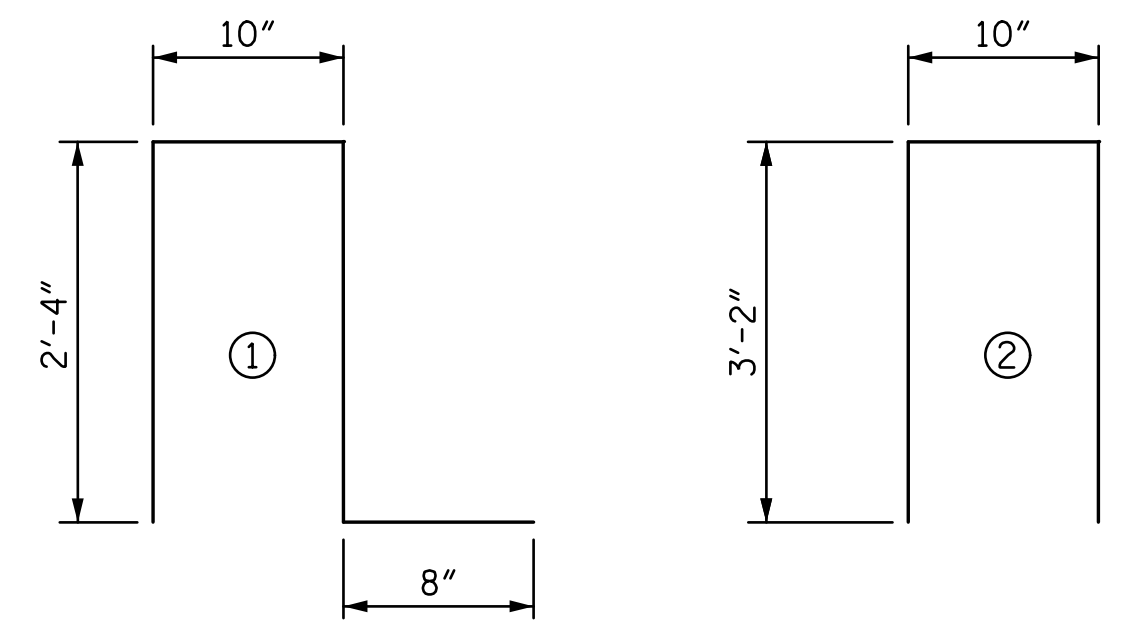


PLAN OF PARAPET



PLAN OF END BLOCK

BAR TYPES



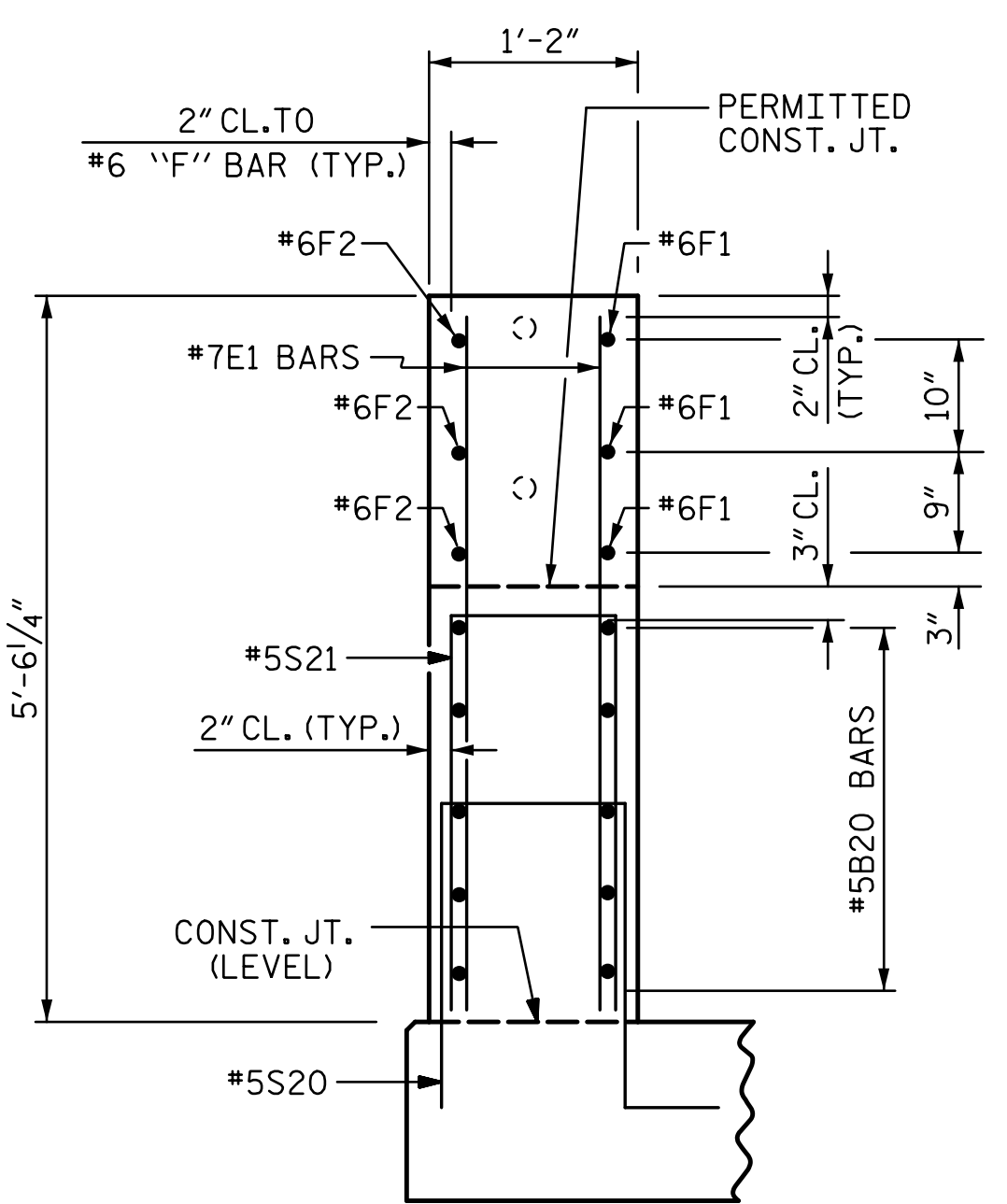
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL FOR CONCRETE PARAPET AND END BLOCKS PER STAGE (2 STAGES REQ'D.)					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B20	40	#5	STR	16'-1"	671
* B21	50	#5	STR	25'-4"	1,321
* E1	18	#7	STR	5'-2"	190
* F1	6	#6	STR	3'-4"	30
* F2	6	#6	STR	2'-8"	24
* S20	187	#5	1	6'-2"	1,203
* S21	187	#5	2	7'-2"	1,398
* EPOXY COATED REINFORCING STEEL				LBS.	4,837
CLASS AA CONCRETE				CU. YARDS	27.7
1'-2" X 3'-4 1/4" CONCRETE PARAPET				LIN. FT.	186.9

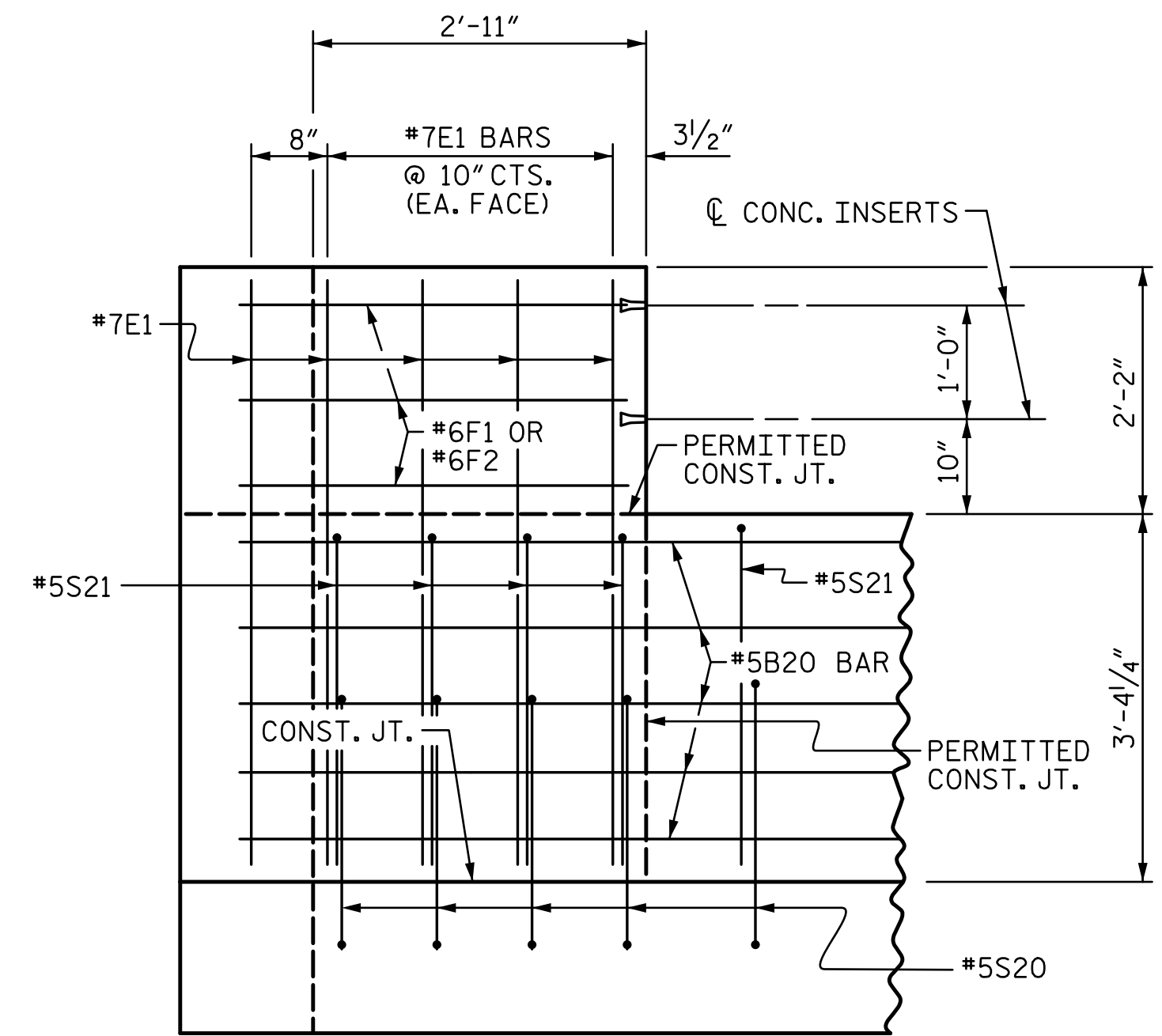
QUANTITIES DO NOT INCLUDE END POSTS ON THE APPROACH SLABS. FOR END POSTS ON APPROACH SLABS, SEE 'APPROACH SLAB DETAILS (SHEET 6 OF 6)'.  
 CONCRETE PARAPET AND END BLOCKS SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.  
 TEMPORARY DRAIN BLOCK OUTS ON LEFT SIDE SHALL BE FILLED WITH AN APPROVED GROUT IN STAGE 4.  
 ALL COSTS ASSOCIATED WITH PLACING AND FILLING THE TEMPORARY DRAIN BLOCK OUTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR '1'-2" X 3'-4 1/4" CONCRETE PARAPET'.  
 ALL COSTS ASSOCIATED WITH CONSTRUCTING THE END BLOCKS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR '1'-2" X 3'-4 1/4" CONCRETE PARAPET'.

NOTES:

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 SEGMENTS LESS THAN 10 FEET IN LENGTH.



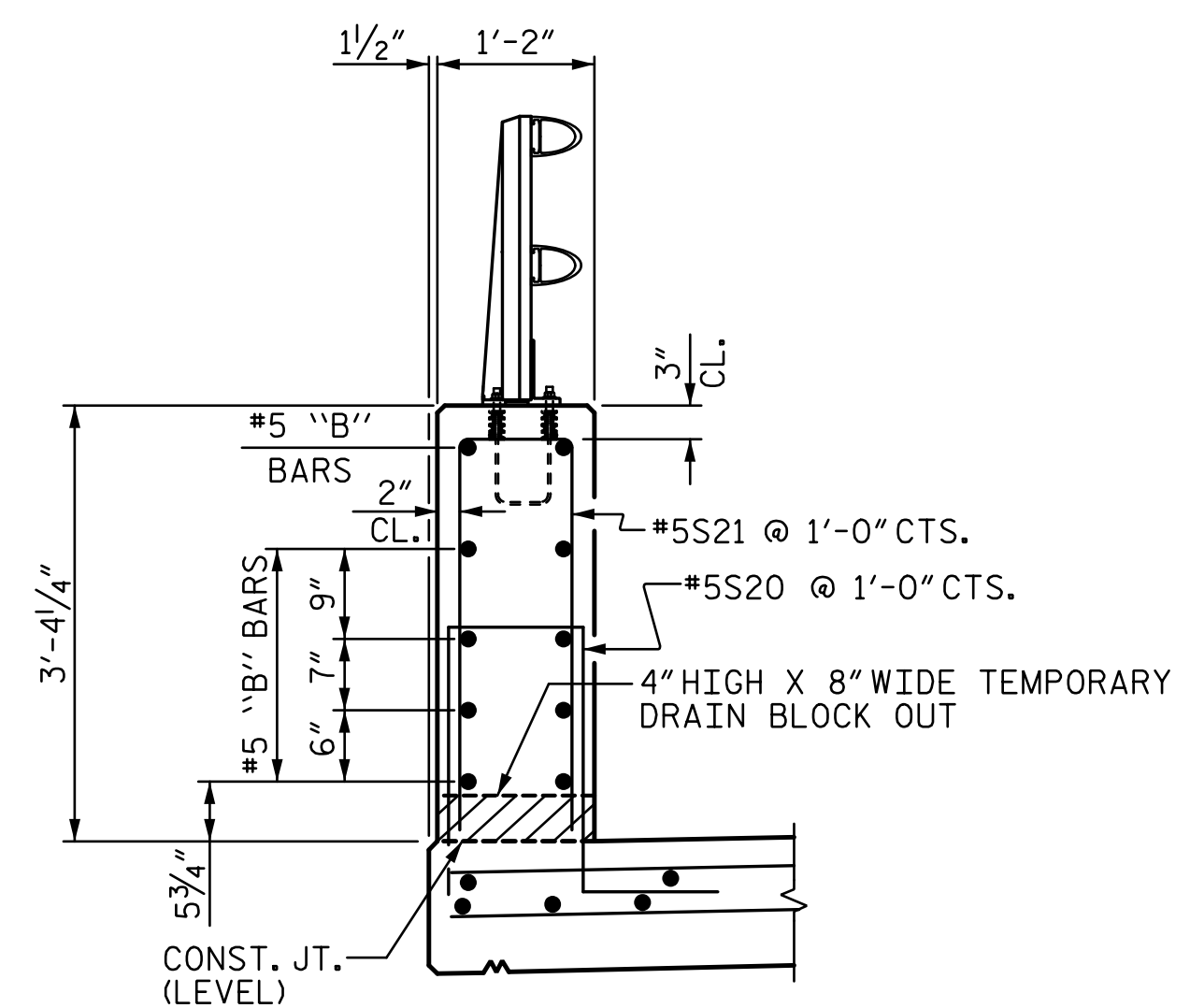
END VIEW



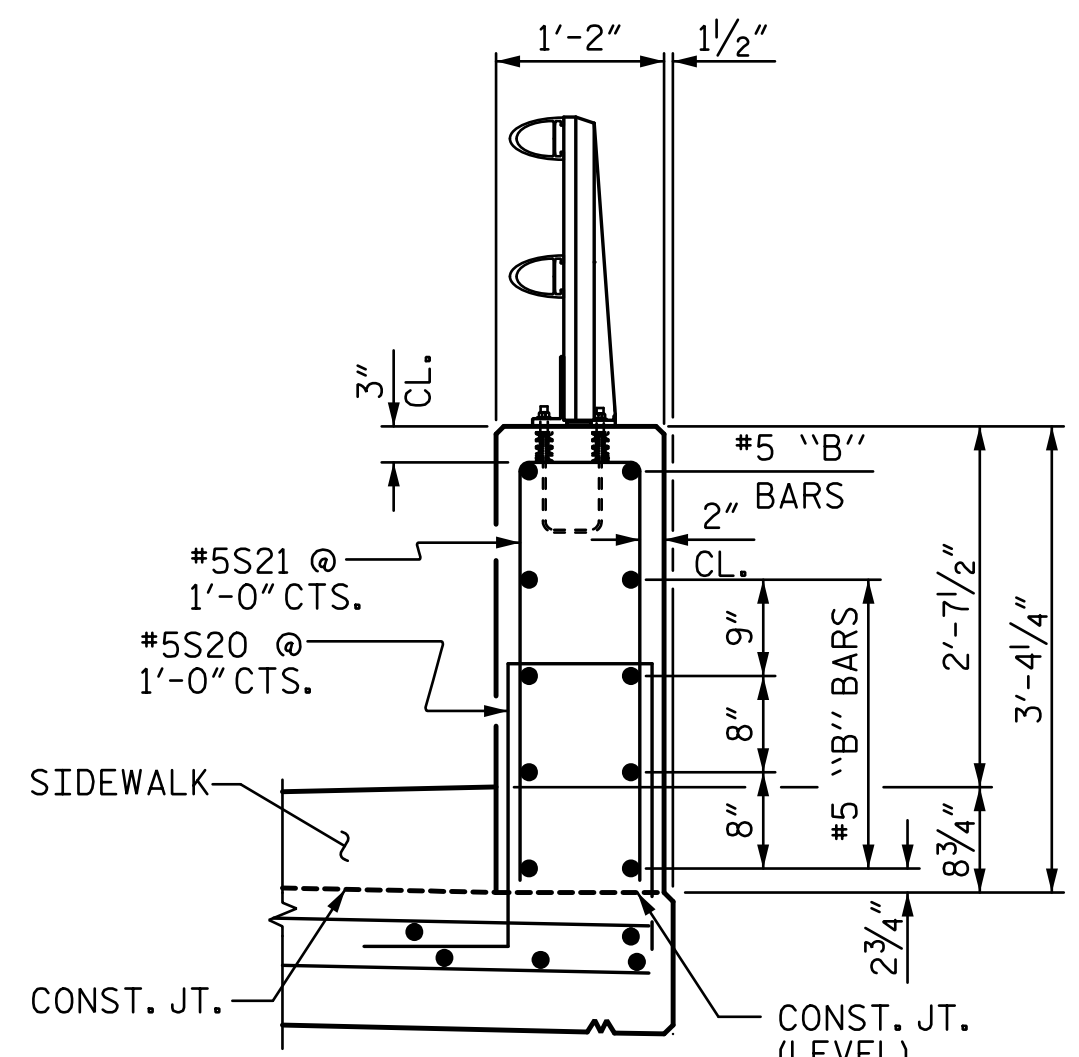
ELEVATION

PARAPET AND END BLOCK FOR TWO BAR RAIL

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR.)

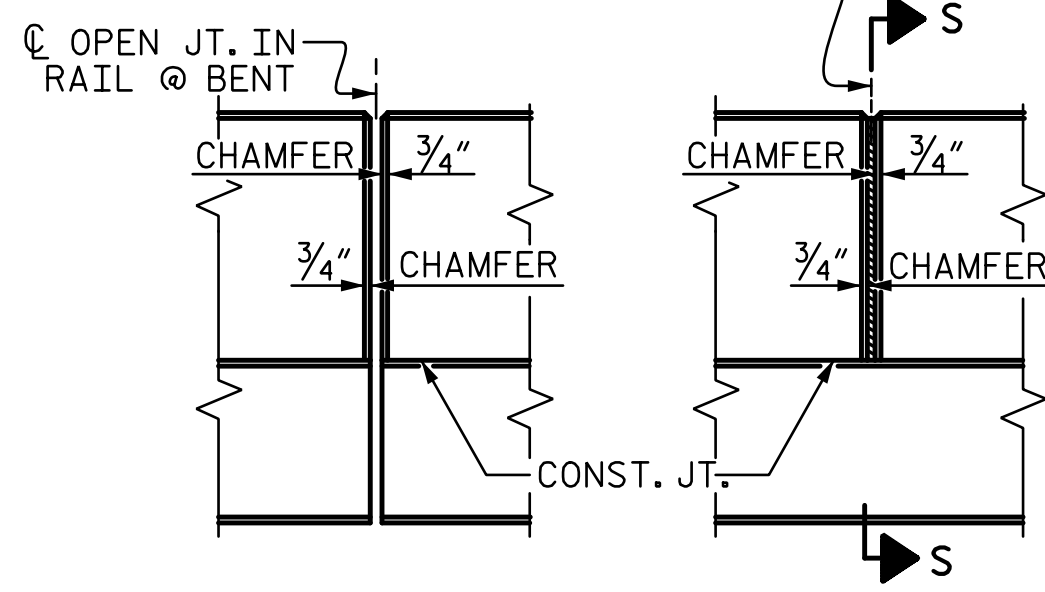


SECTION THRU CONCRETE PARAPET STAGE 1



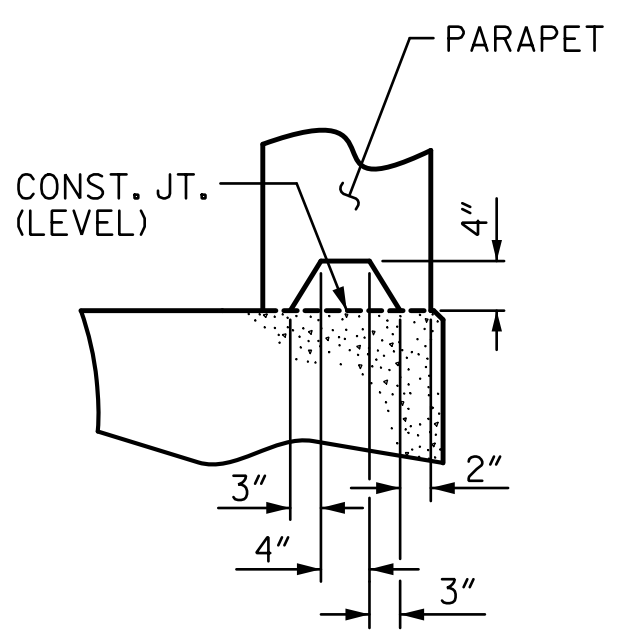
SECTION THRU CONCRETE PARAPET STAGE 3

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



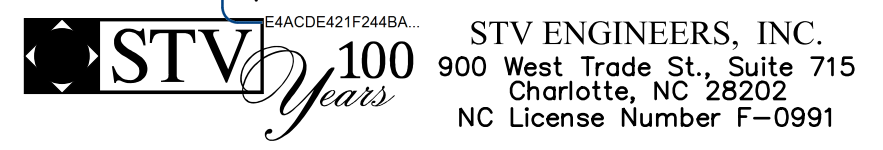
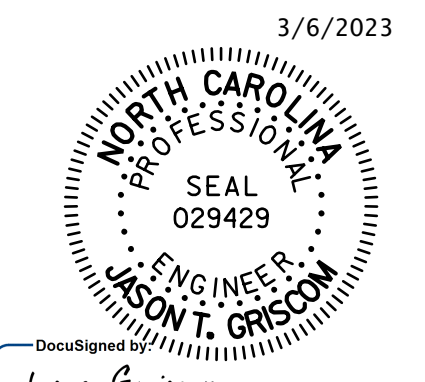
ELEVATION AT EXPANSION JOINTS

(SIDEWALK NOT SHOWN FOR CLARITY.)



SECTION S-S

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5808

CABARRUS COUNTY

STATION: 20+64.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

1'-2" X 3'-4 1/4" CONCRETE PARAPET

ASSEMBLED BY :	SGH	DATE :	11-22
CHECKED BY :	MLO	DATE :	11-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

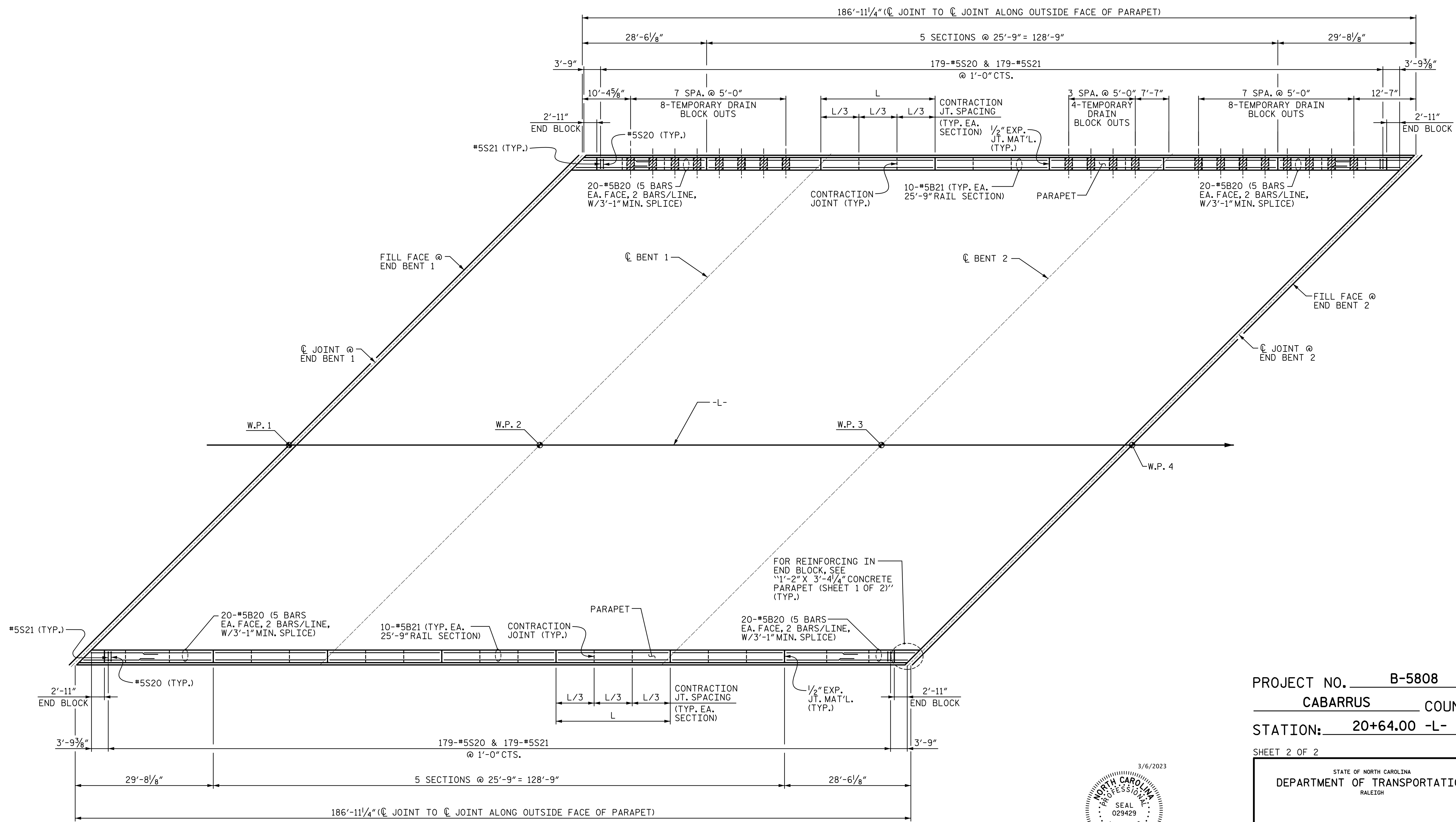
TOTAL SHEETS 65



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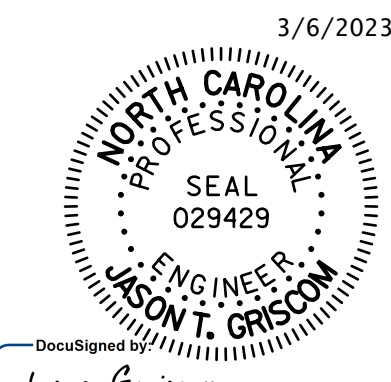
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3/6/2023



**PLAN**  
 (SIDEWALK NOT SHOWN FOR CLARITY)  
 (DIMENSIONS ARE ALONG OUTSIDE FACE OF PARAPET)

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 2



STV ENGINEERS, INC.  
 100 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

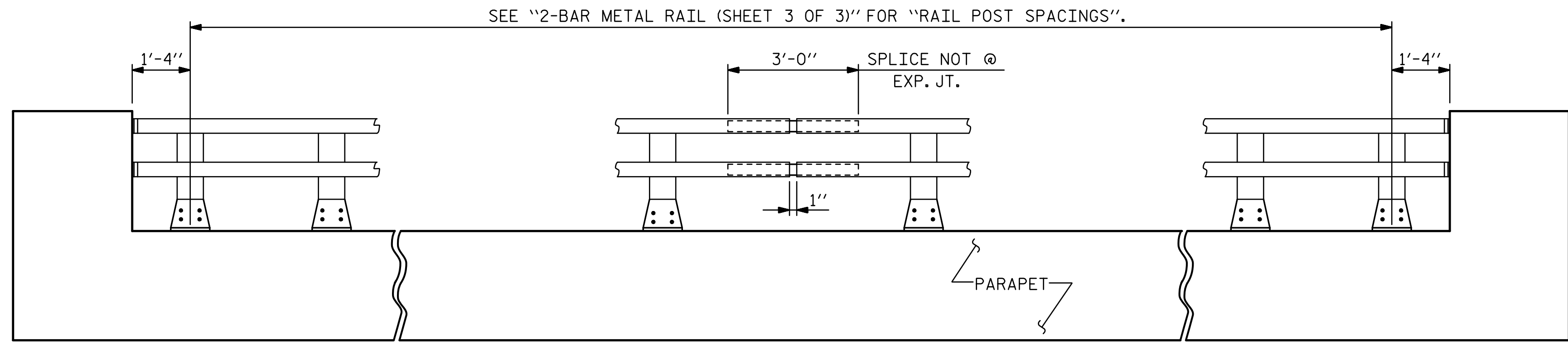
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

1'-2" X 3'-4 1/4"  
 CONCRETE PARAPET

ASSEMBLED BY :	SGH	DATE :	7-21
CHECKED BY :	MLO	DATE :	6-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

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

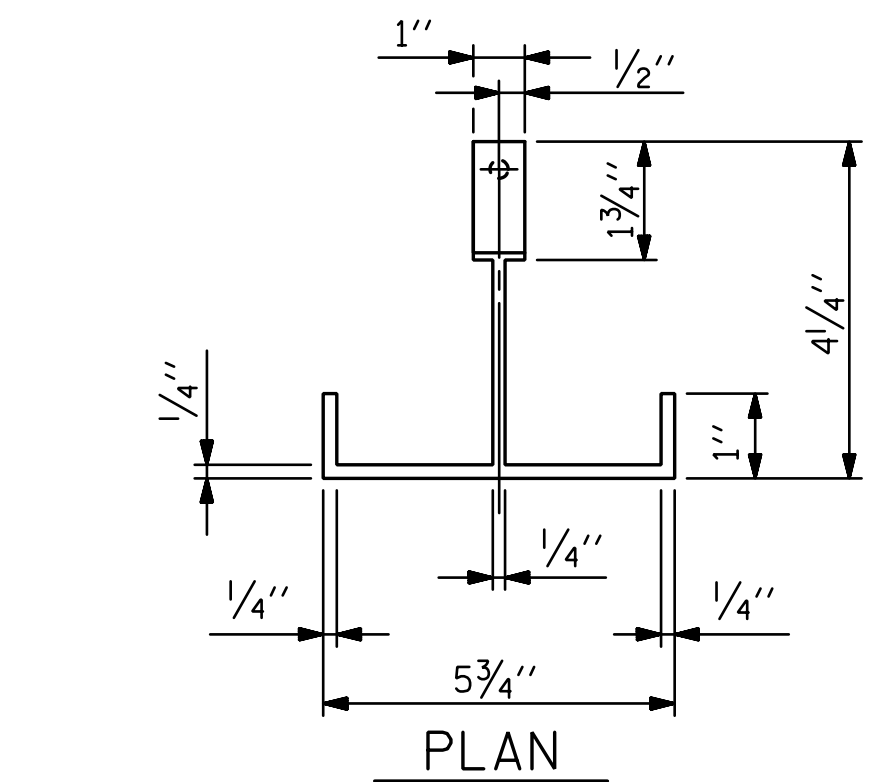
TOTAL SHEETS 65



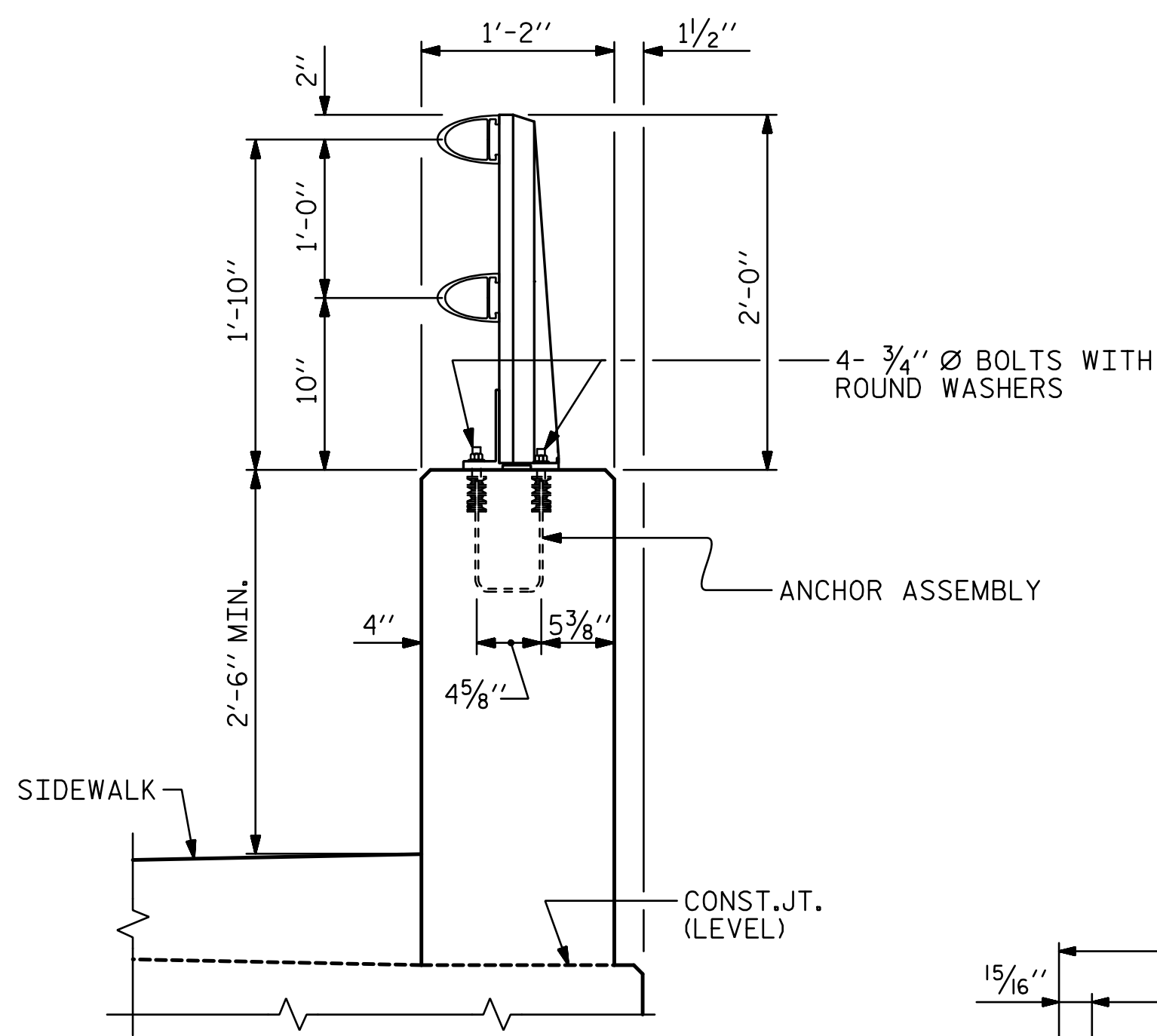
SEE "2-BAR METAL RAIL (SHEET 3 OF 3)" FOR "RAIL POST SPACINGS".

**ELEVATION**

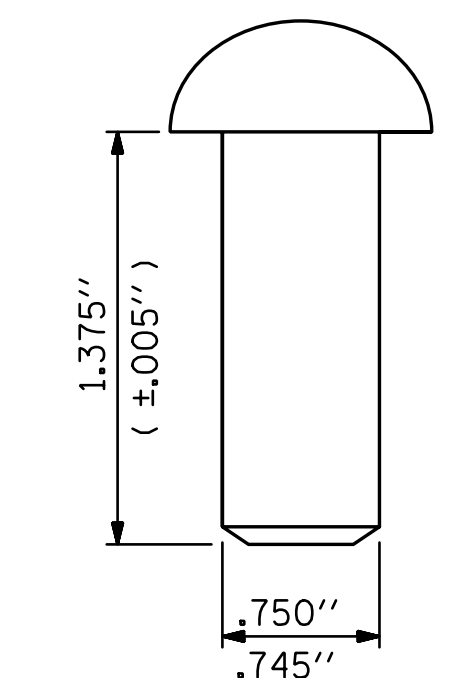
NOTE: FOR ATTACHMENT OF METAL RAIL TO END BLOCK, SEE SHEET "2-BAR METAL RAIL (SHEET 3 OF 3)".



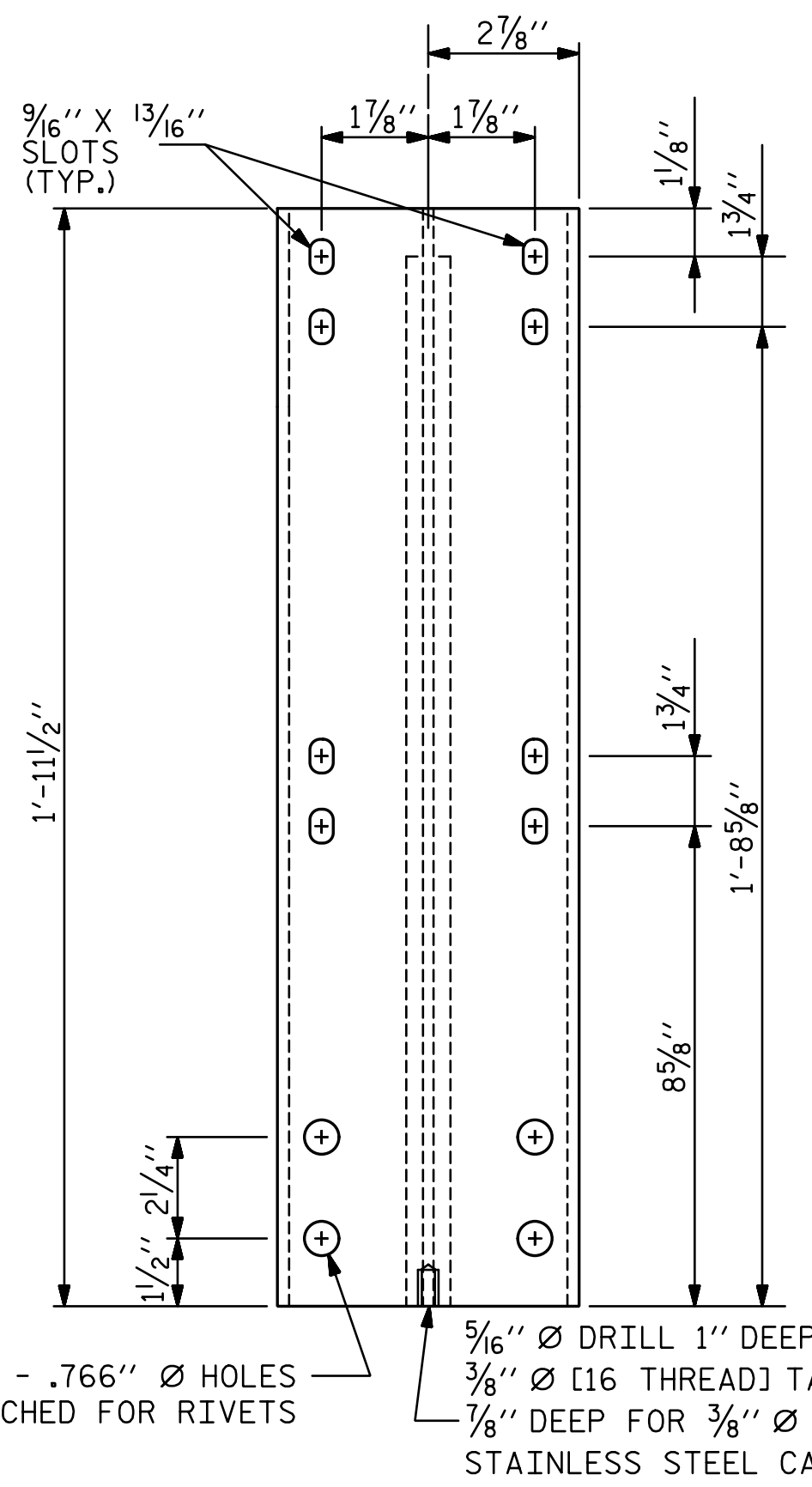
**PLAN**



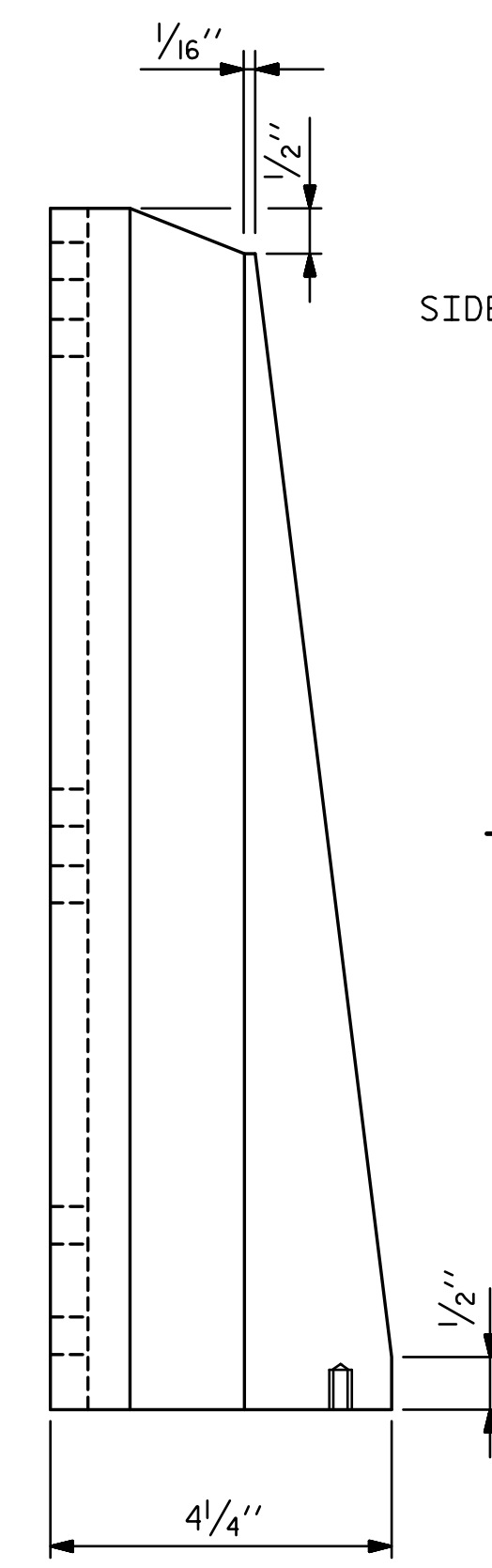
**SECTION THRU PARAPET AND RAIL**



**RIVET DETAIL**



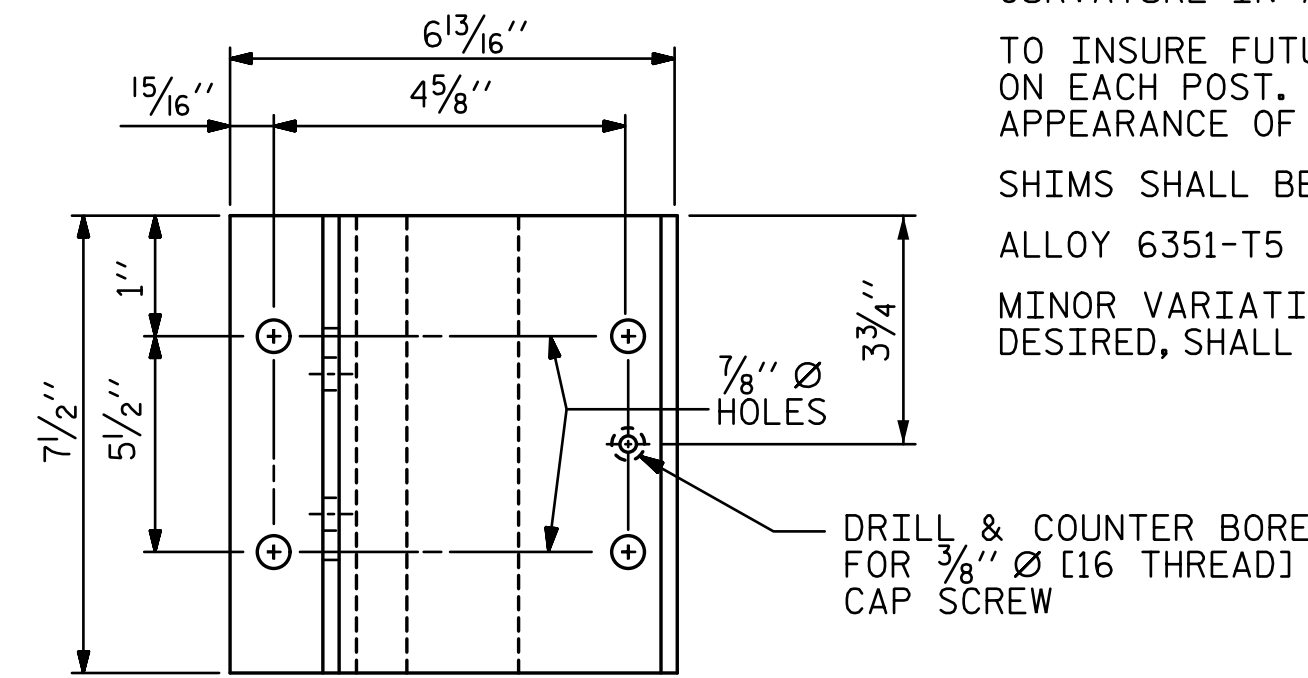
**FRONT ELEVATION**



**SIDE ELEVATION**

**DETAILS OF POST**

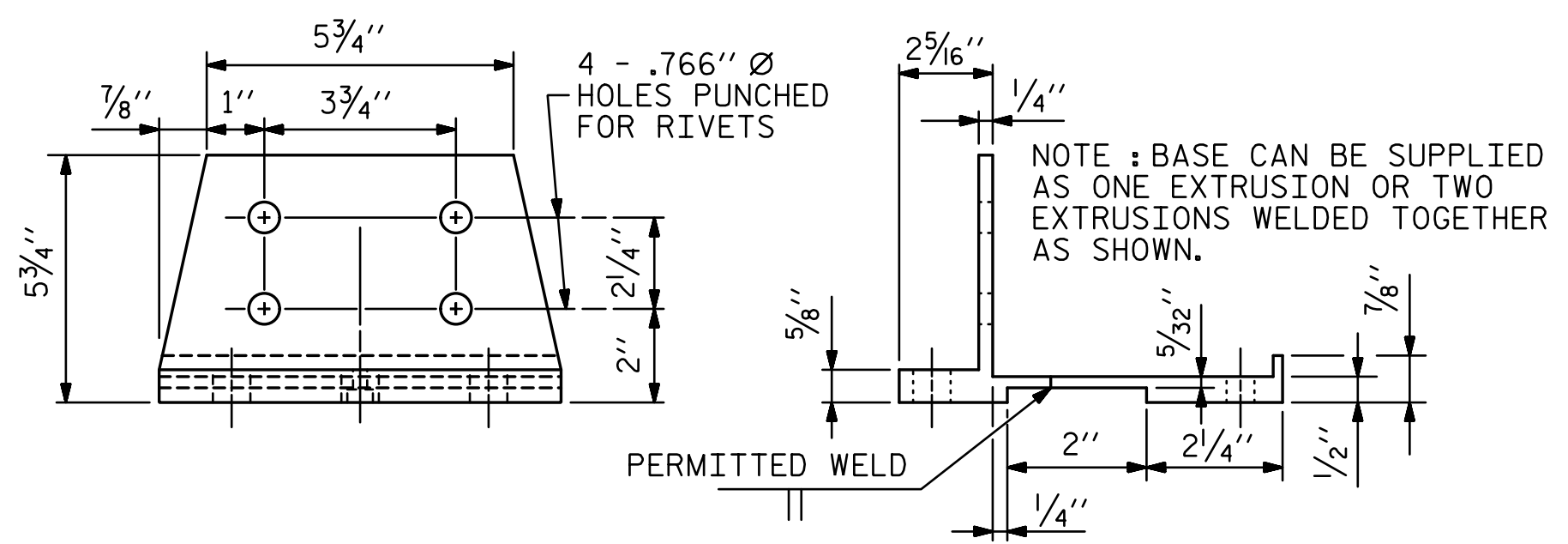
4 - .766" Ø HOLES PUNCHED FOR RIVETS  
 5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" Ø X 1 1/2" STAINLESS STEEL CAP SCREW



**PLAN**

DRILL & COUNTER BORE FOR 3/8" Ø [16 THREAD] CAP SCREW

PAY LENGTH = 359.4 LIN. FT.



**FRONT ELEVATION**

**SIDE ELEVATION**

**POST BASE DETAILS**

NOTE: BASE CAN BE SUPPLIED AS ONE EXTRUSION OR TWO EXTRUSIONS WELDED TOGETHER AS SHOWN.

ASSEMBLED BY : SGH DATE : 7-21  
 CHECKED BY : MLO DATE : 7-21  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

**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: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

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 A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

**GENERAL NOTES**

RAILING SHALL BE CONTINUOUS FROM END BLOCK TO END BLOCK 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 BLOCK DIMENSION, SEE "2-BAR METAL RAIL (SHEET 3 OF 3)".

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.

PROJECT NO. **B-5808**

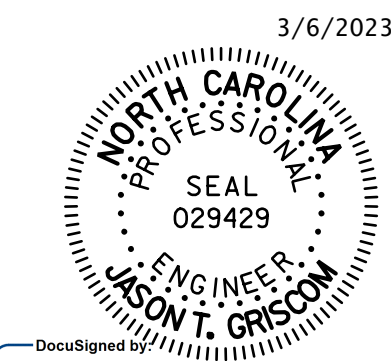
**CABARRUS** COUNTY

STATION: **20+64.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**2-BAR METAL RAIL**



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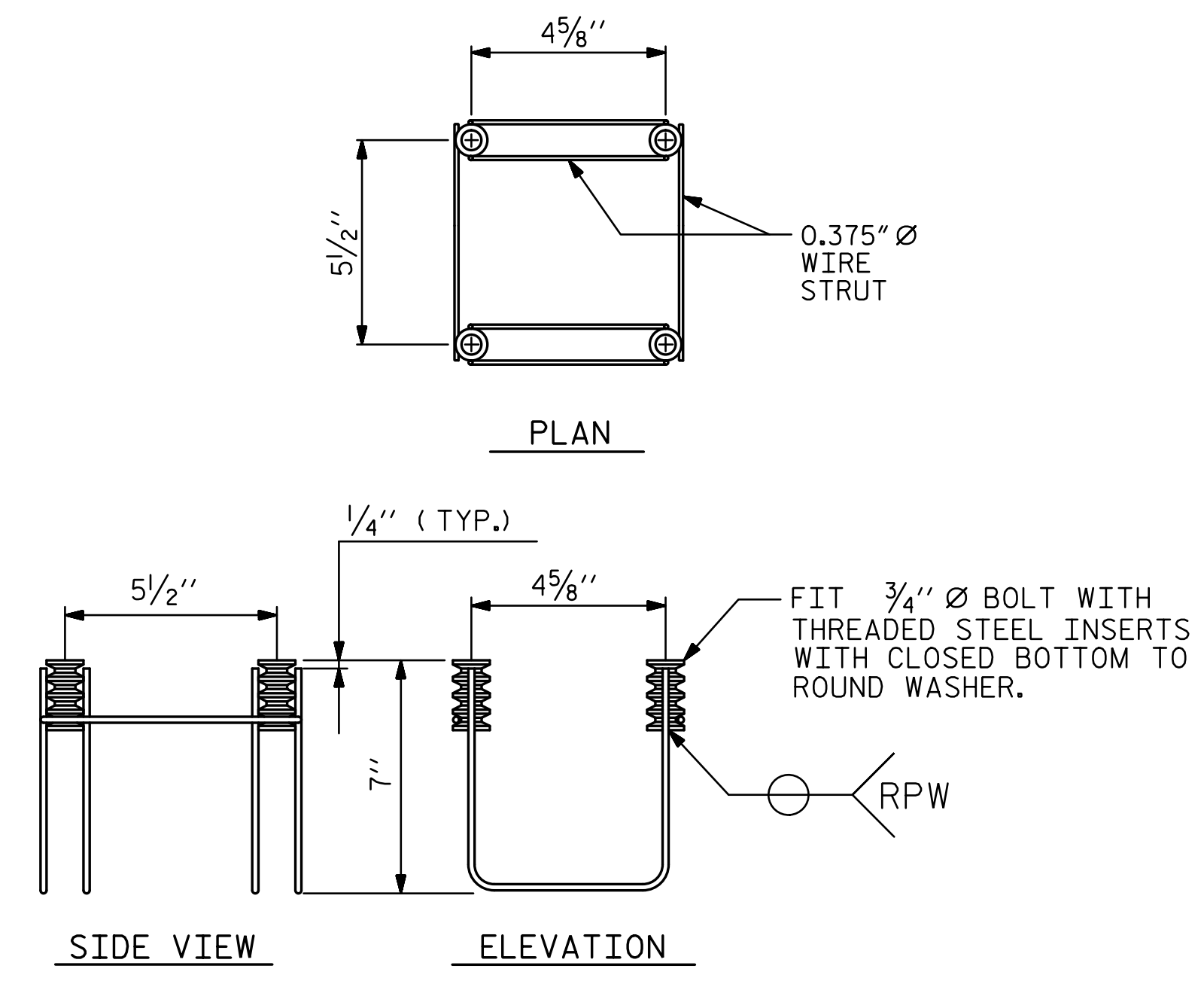
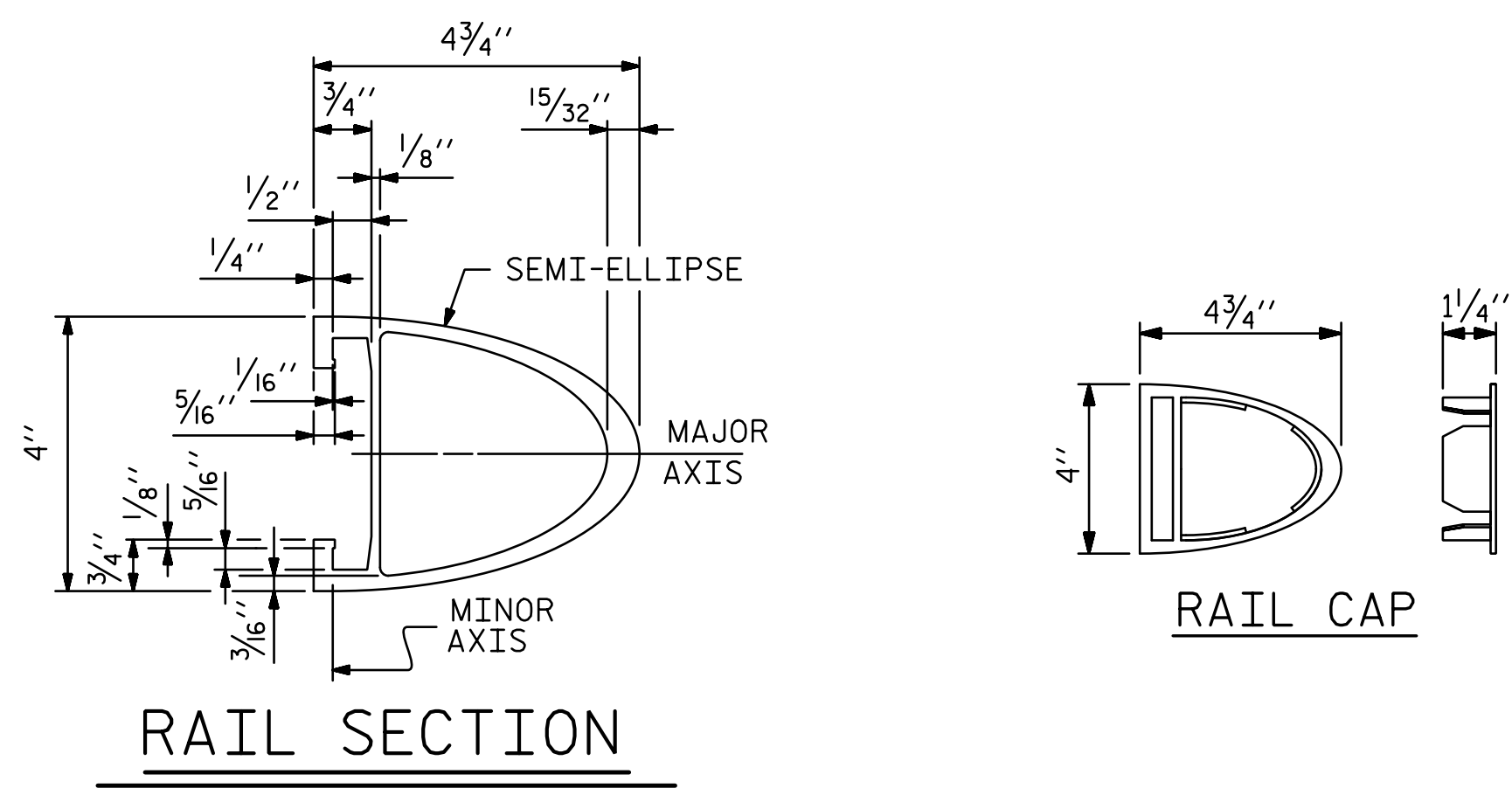
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TOTAL SHEETS 65

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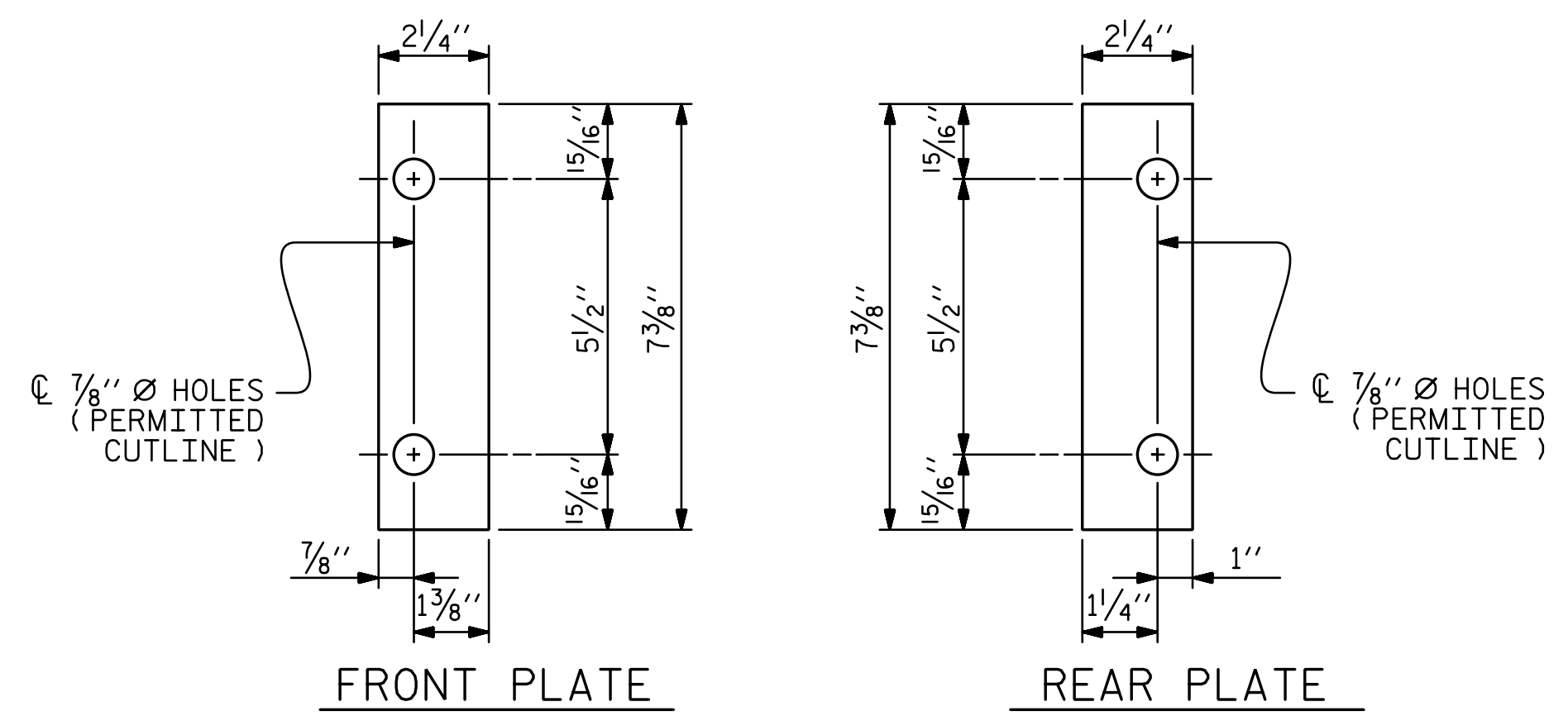
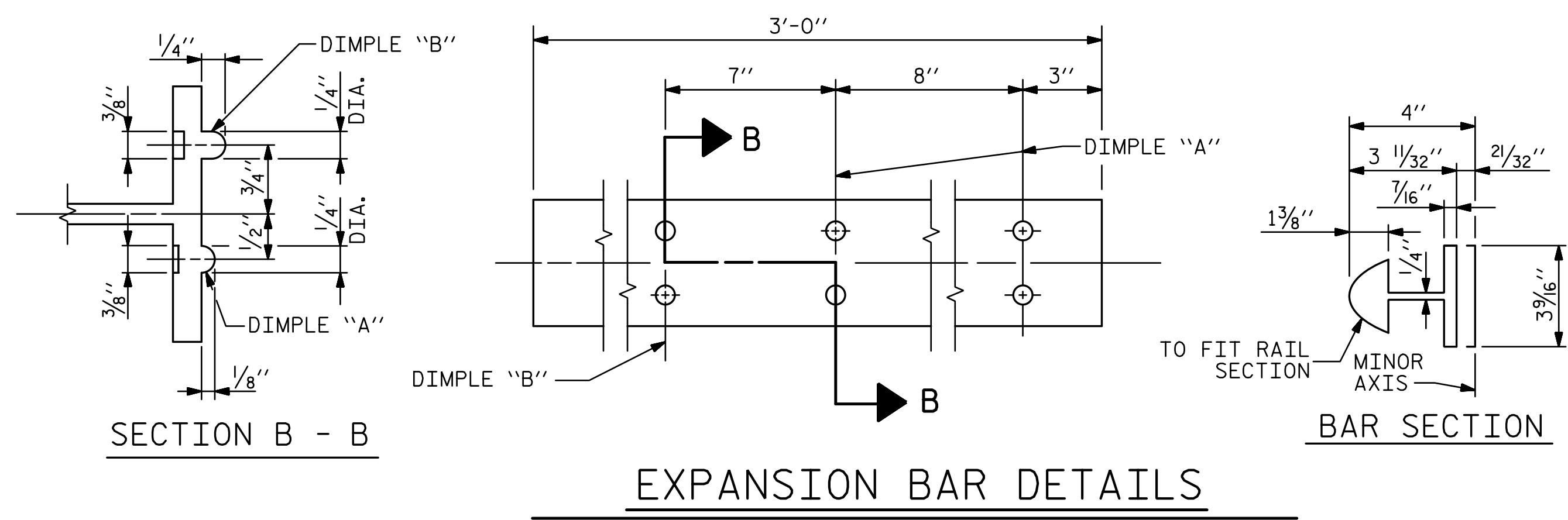


**4-BOLT METAL RAIL ANCHOR ASSEMBLY**  
 (64 ASSEMBLIES REQUIRED)

- NOTES**  
 STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
  - 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS AND WASHERS 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.
  - 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.
  - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
  - 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.
  - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

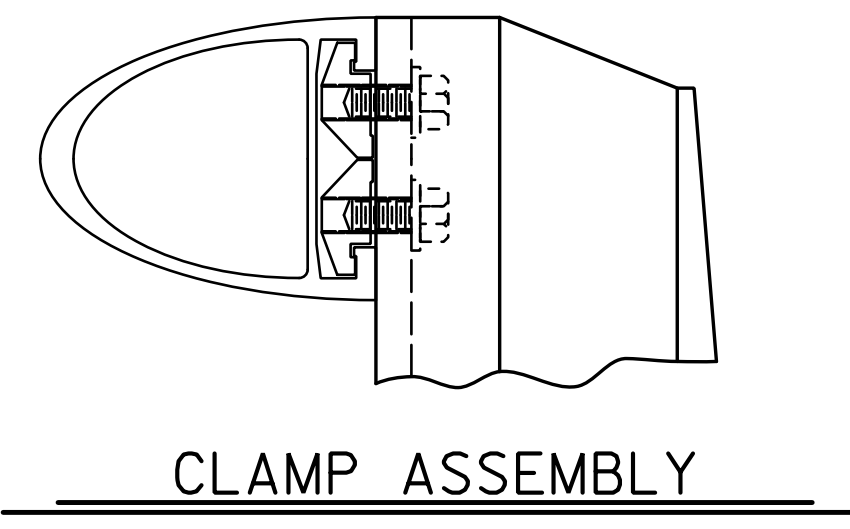
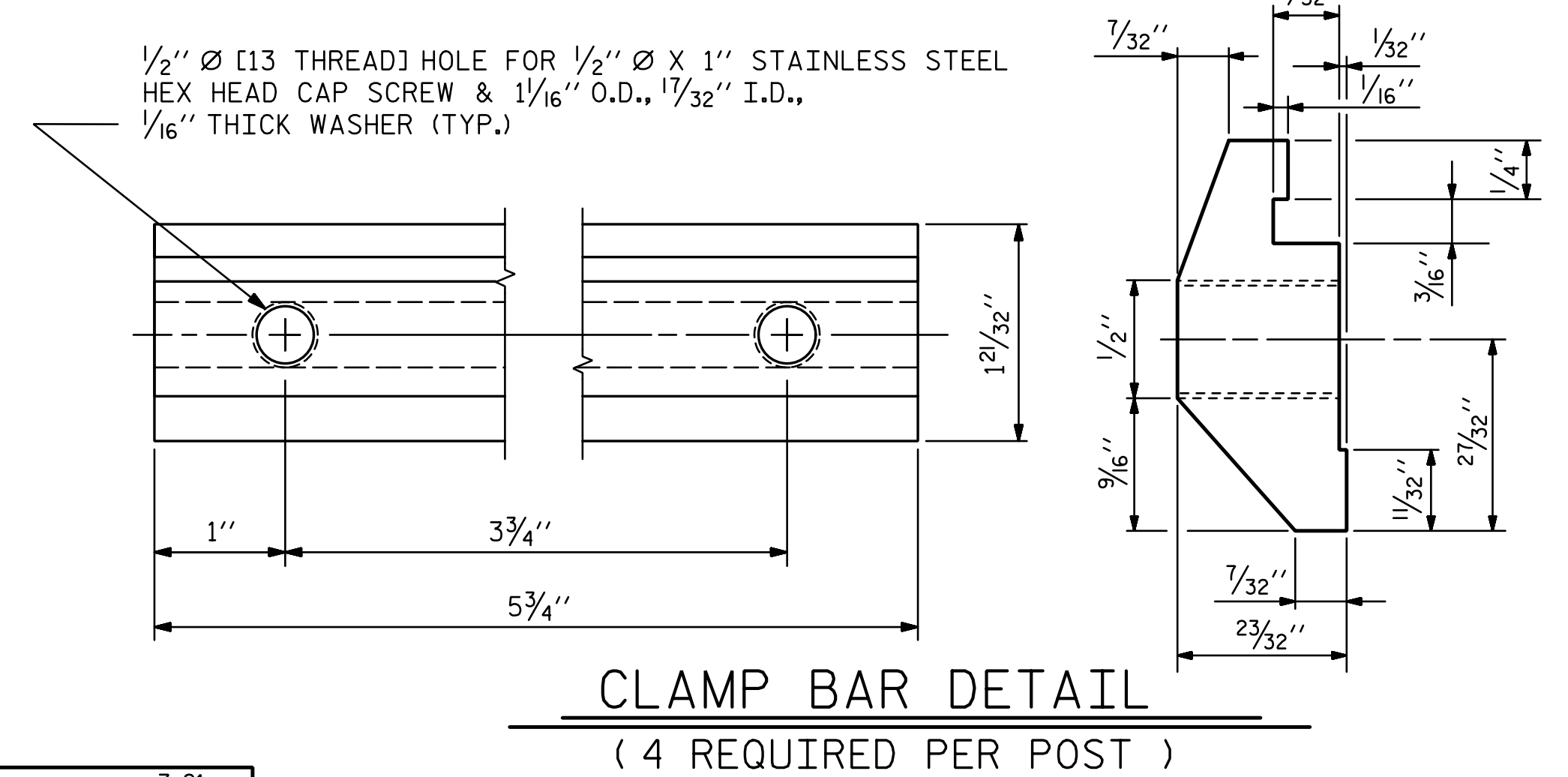
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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.



**SHIM DETAILS**

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



PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>2-BAR METAL RAIL</b>					
REVISIONS					SHEET NO.
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					TOTAL SHEETS 65
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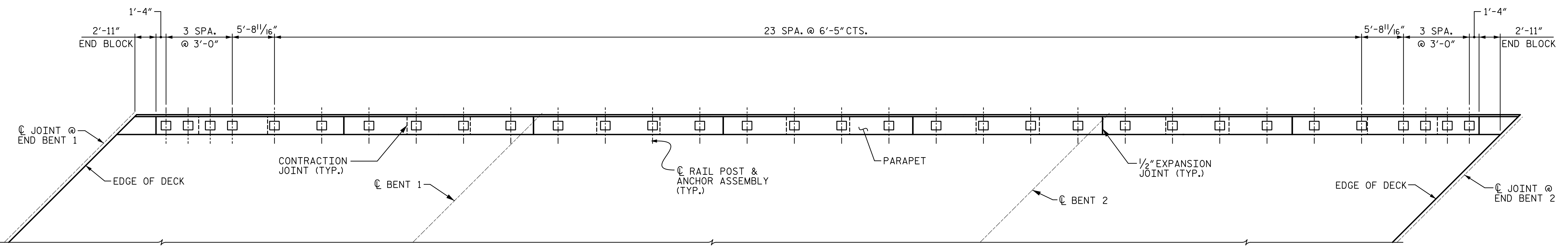
3/6/2023

SEAL 029429  
 ENGINEER  
 JASON T. GRISCOM  
 Documented by  
 Jason Grisco  
 EAAC0E421F244BA  
**STV** 100 YEARS  
 STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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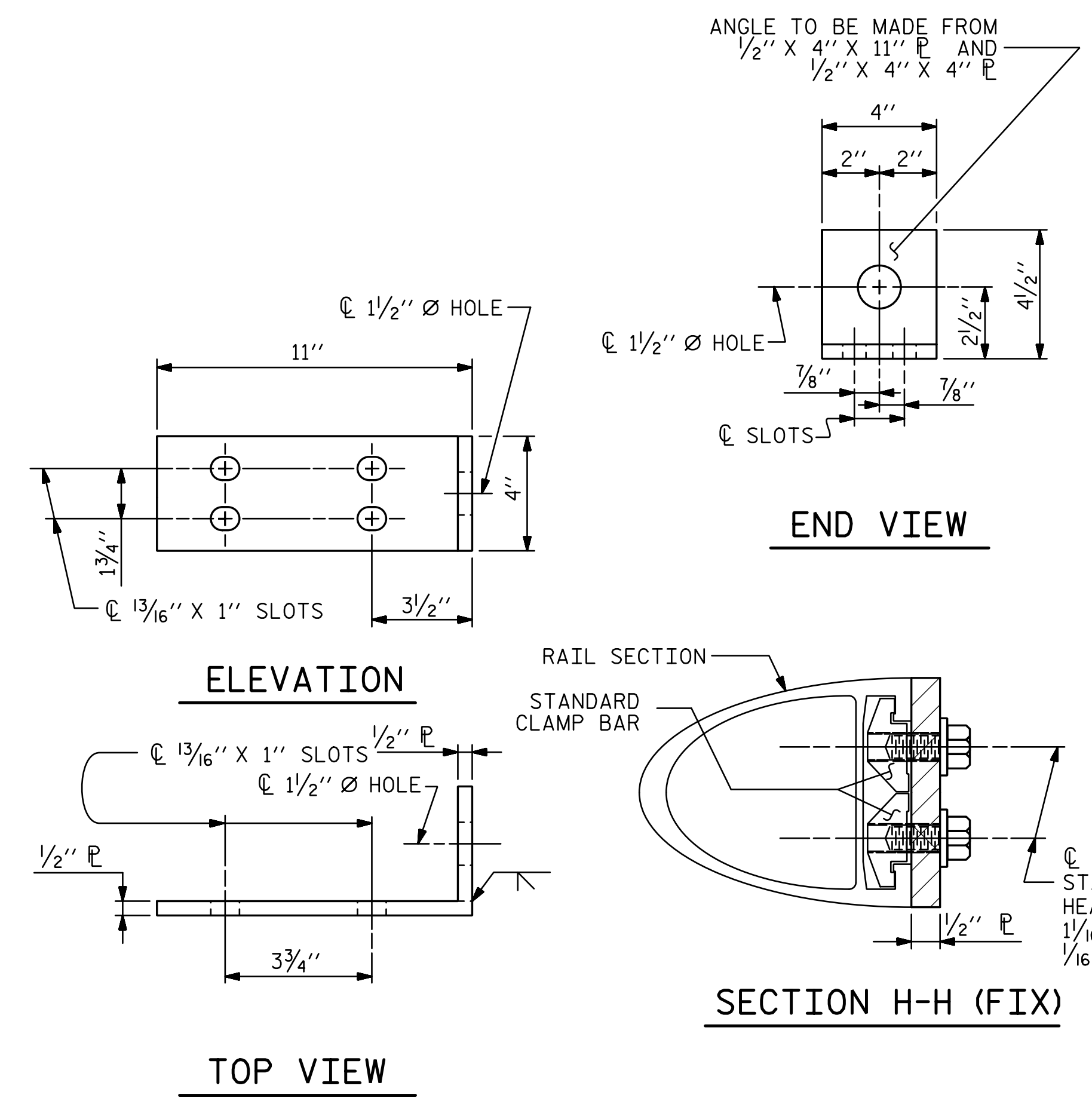
**PLAN OF RAIL POST SPACINGS**  
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

**NOTES**

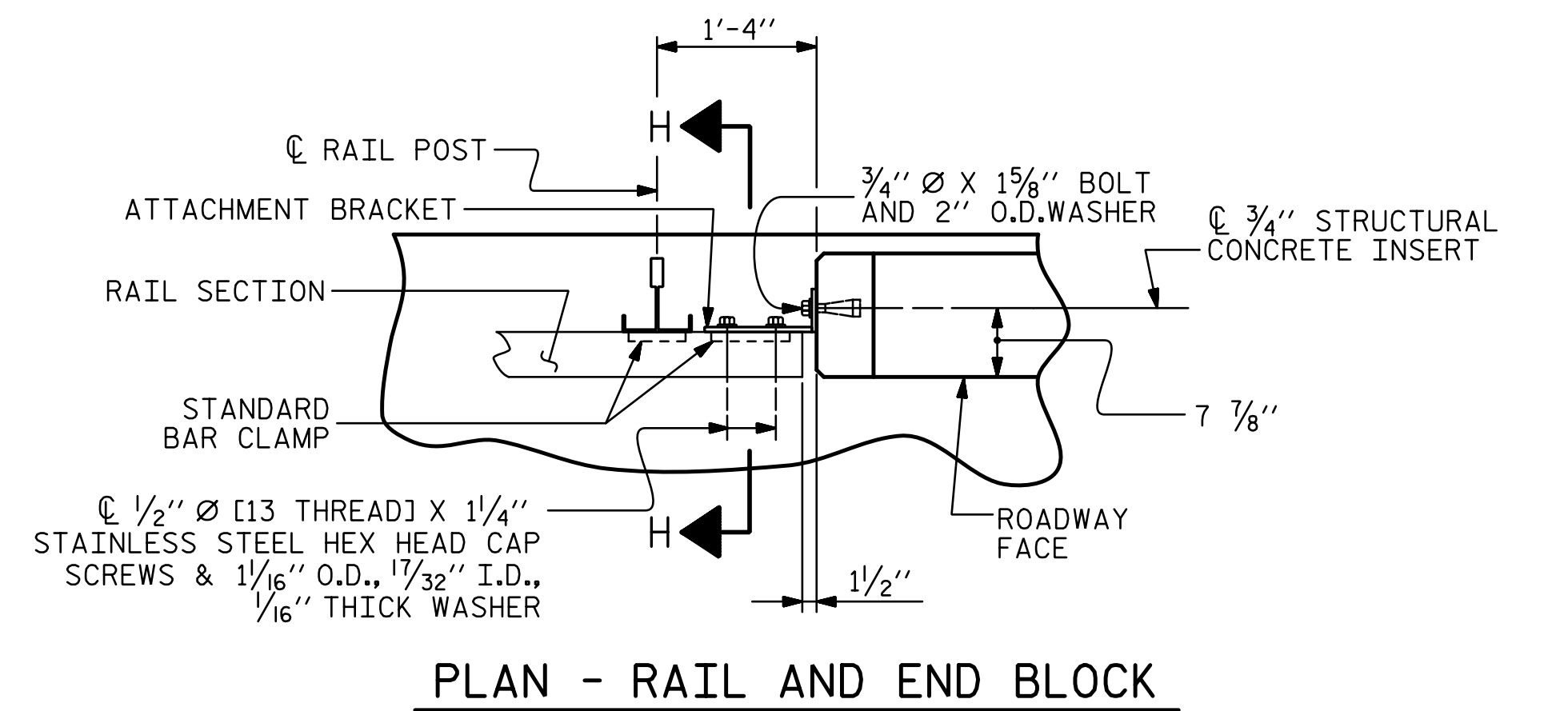
- STRUCTURAL CONCRETE INSERT
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
  - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. 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**

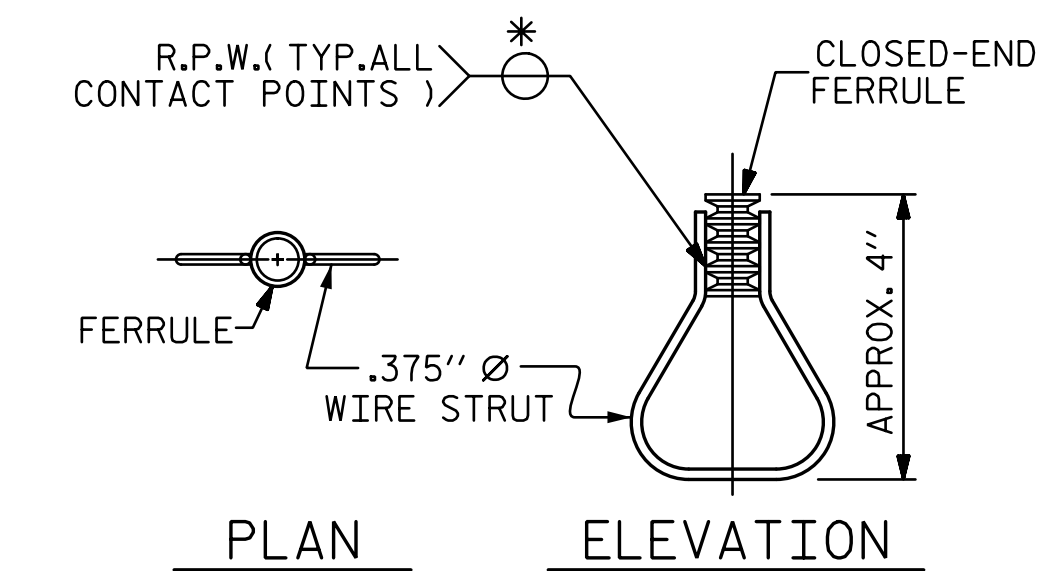
- METAL RAIL TO END BLOCK CONNECTION
- THE METAL RAIL TO END BLOCK CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
  - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 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 "2-BAR METAL RAIL (SHEET 2 OF 3)")
  - 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 BLOCK CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 2-BAR METAL RAILS.



**DETAILS FOR ATTACHING METAL RAIL TO END BLOCK**



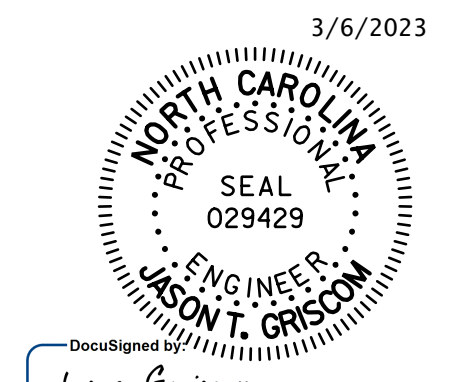
**PLAN - RAIL AND END BLOCK**



**STRUCTURAL CONCRETE INSERT**

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

PROJECT NO. **B-5808**  
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 SHEET 3 OF 3



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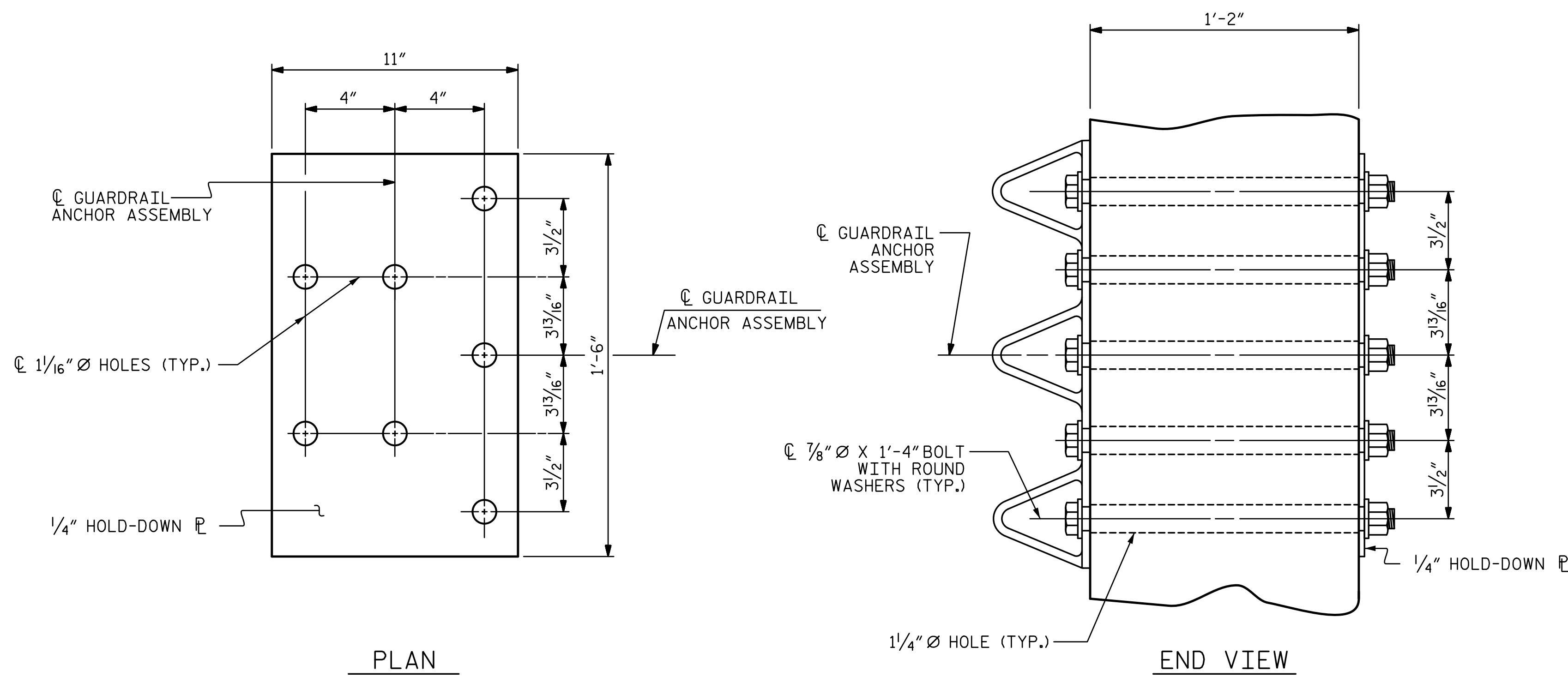
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>2-BAR METAL RAIL</b>					
REVISIONS					SHEET NO.
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					TOTAL SHEETS 65

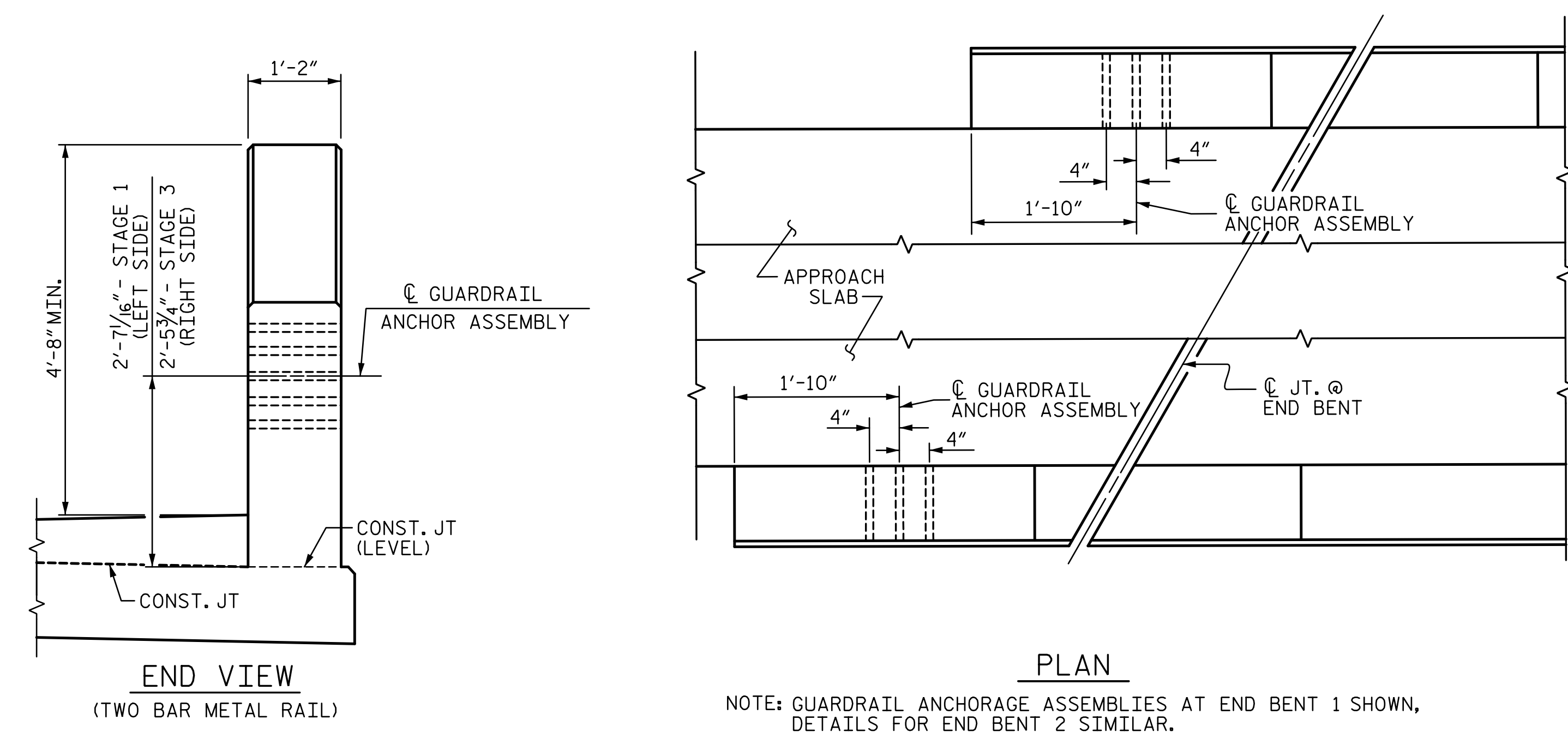
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DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23



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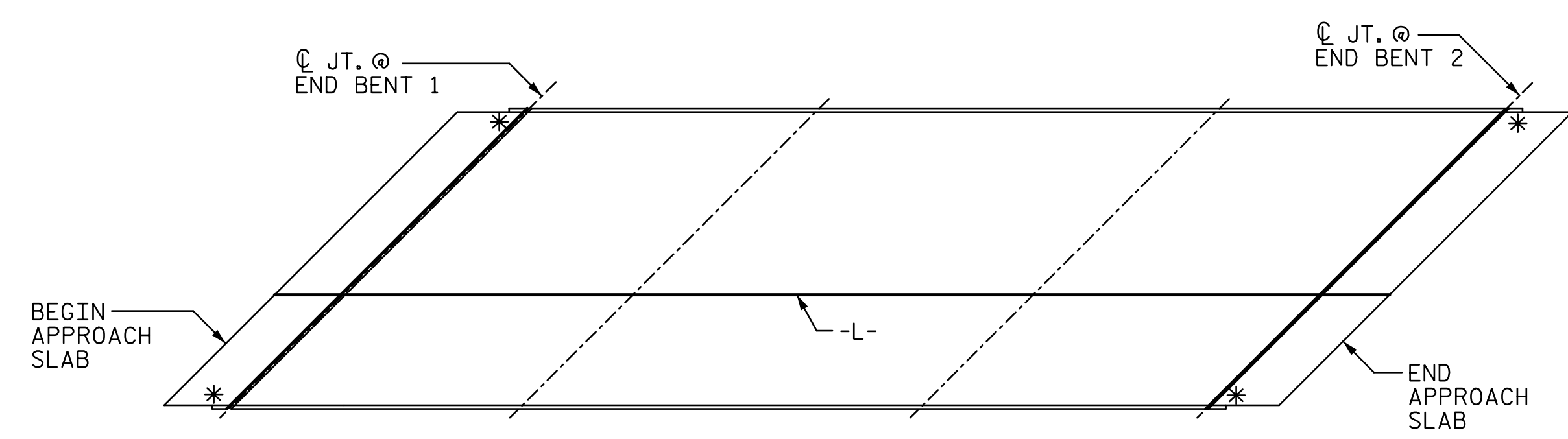


**GUARDRAIL ANCHOR ASSEMBLY DETAILS**



**LOCATION OF GUARDRAIL ANCHOR AT END POST**

NOTE: GUARDRAIL ANCHORAGE ASSEMBLIES AT END BENT 1 SHOWN, DETAILS FOR END BENT 2 SIMILAR.

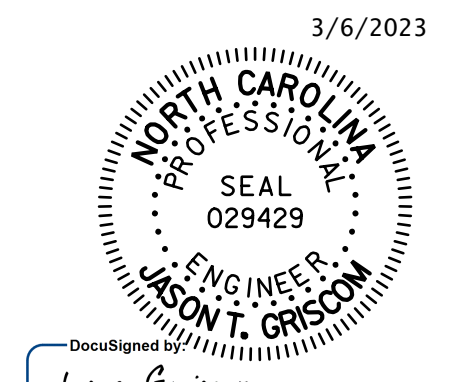


**SKETCH SHOWING POINTS OF ATTACHMENT**  
\* LOCATION OF GUARDRAIL ATTACHMENT

**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 1/4" 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.

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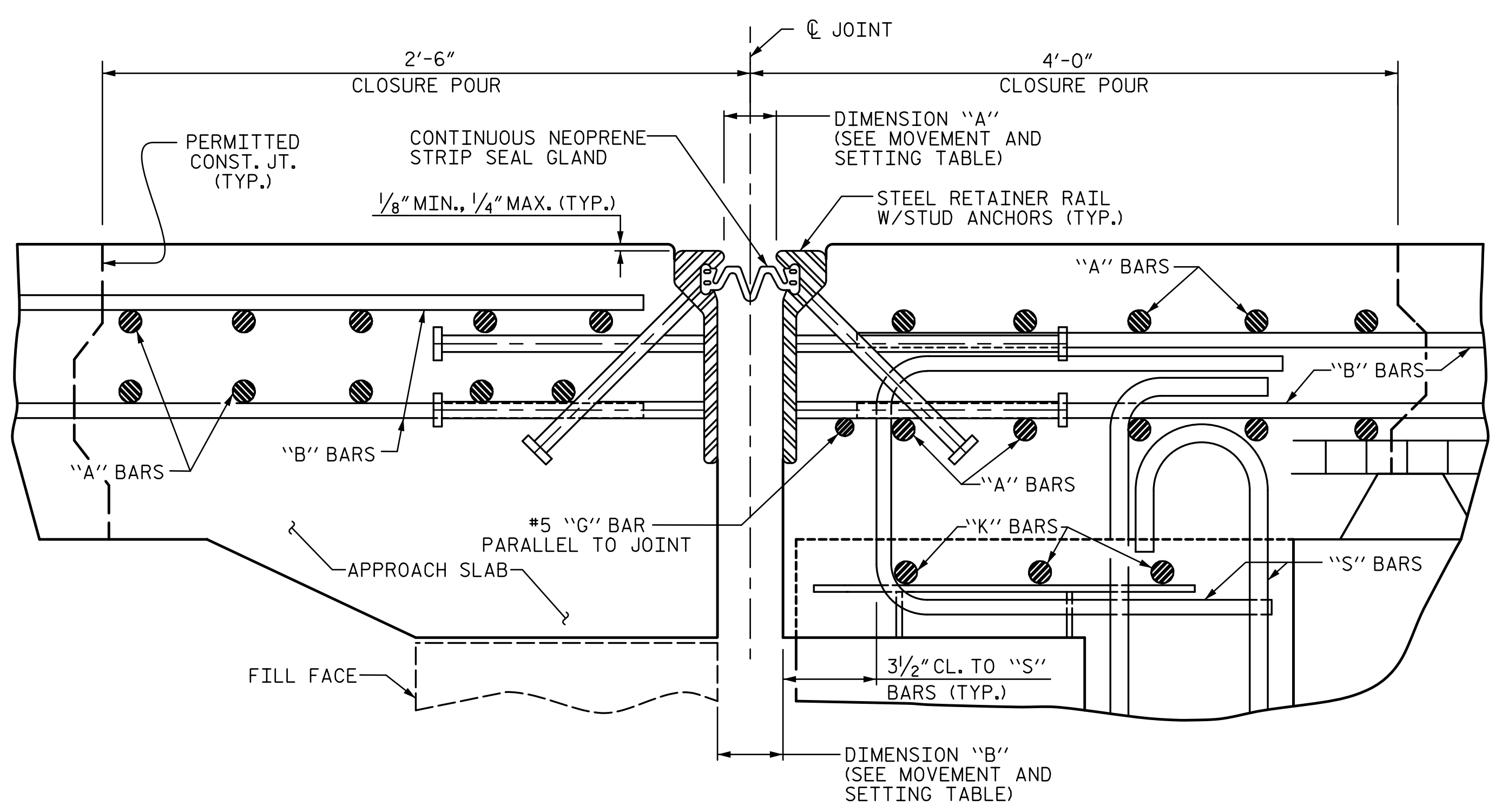
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS</b>					
REVISIONS					SHEET NO.
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					TOTAL SHEETS 65

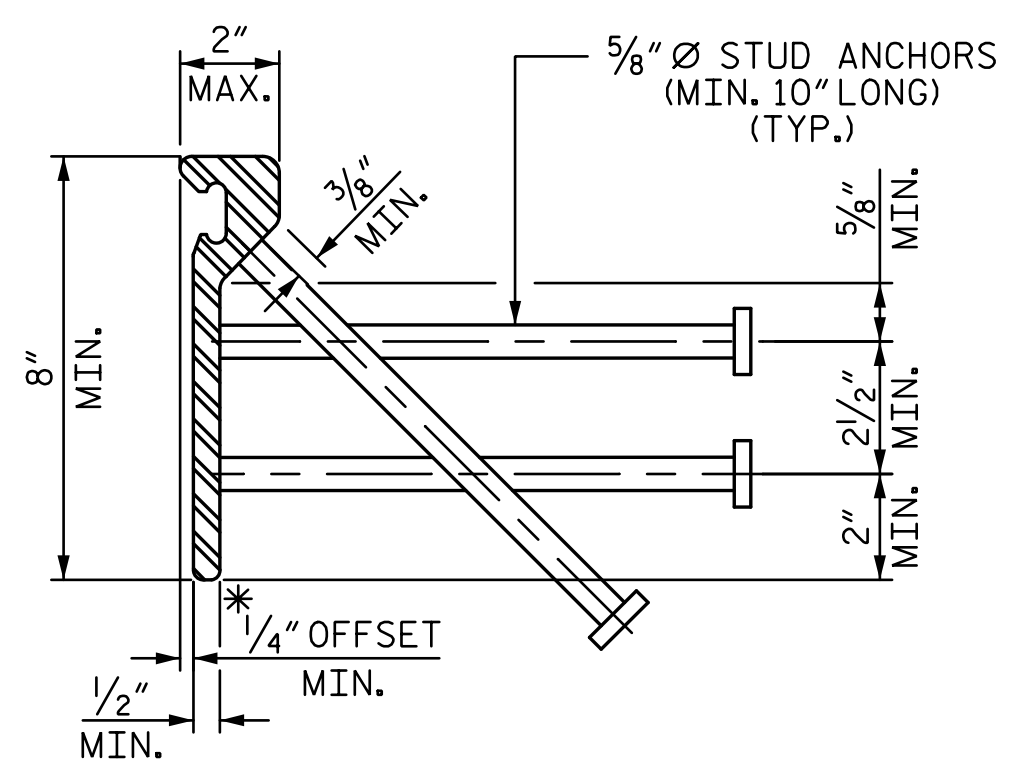
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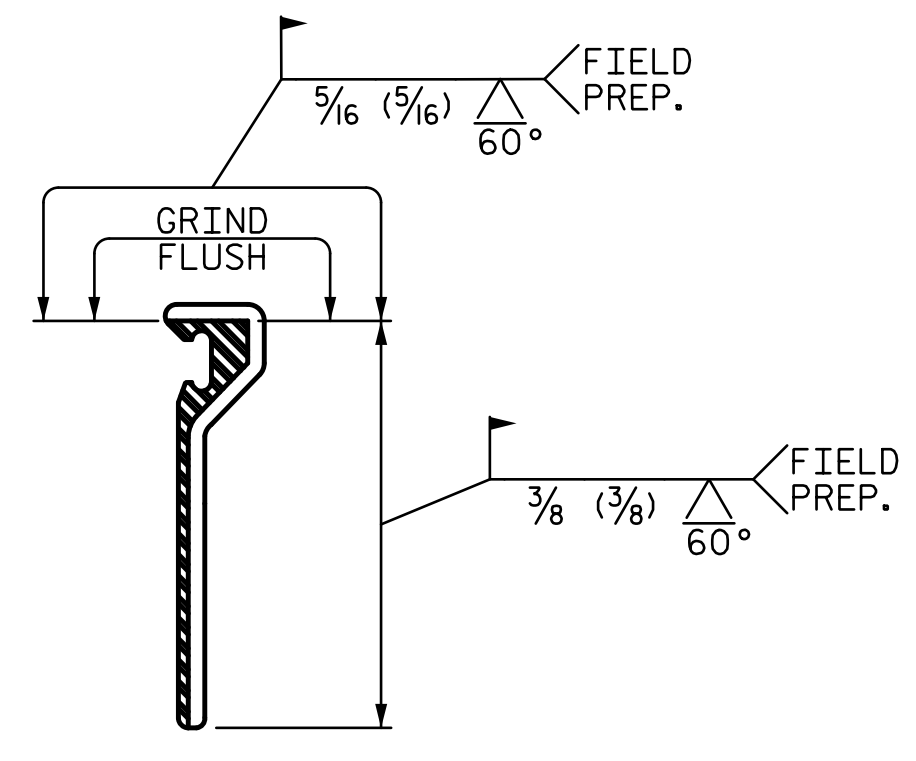
### STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT

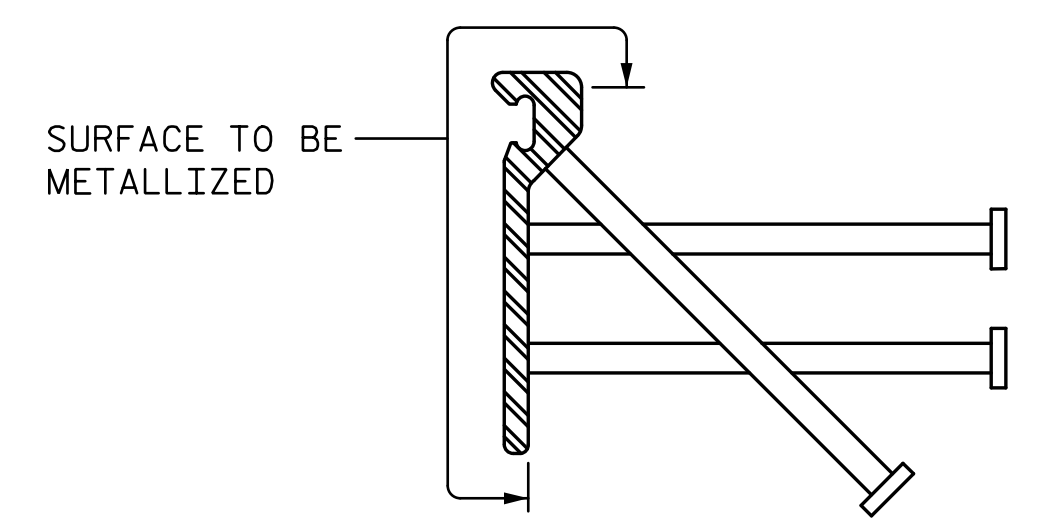


### TYPICAL SECTION STEEL RETAINER RAIL

\*DIMENSION "B" BASED ON STEEL RETAINER RAIL TOP OFFSET TO FACE OF RAIL OF 1/4" MINIMUM. IF ACTUAL OFFSET IS GREATER ADJUST DIMENSION "B" AS REQUIRED.



### STEEL RETAINER RAIL (FIELD SPLICE DETAIL)



### METALLIZING DETAIL

### JOINT INSTALLATION PROCEDURE:

1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO THE METALLIZED SURFACES OF THE STEEL RETAINER RAILS.
4. CONFLICTING REINFORCING STEEL MAY BE SHIFTED SLIGHTLY WHEN NECESSARY.
5. DECK SLAB CONCRETE PLACEMENT OPERATIONS SHALL COMMENCE PER THE POURING SEQUENCE AFTER FINAL JOINT ALIGNMENT IS SET.
6. PROTECT THE STEEL RETAINER RAILS FROM BEING FOULED BY CONCRETE SPILLOVER DURING THE DECK POUR.
7. LOOSEN THE STEEL RETAINER RAIL SUPPORT SYSTEM TO ALLOW MOVEMENT WHILE CONCRETE CURES.
8. RE-LEVEL AND RE-ALIGN STEEL RETAINER RAIL AS REQUIRED ON OPPOSITE SIDE OF JOINT.
9. PLACE APPROACH/DECK SLAB CONCRETE.
10. ONCE THE CONCRETE HAS HARDENED SUFFICIENTLY ON BOTH SIDES OF JOINT, STEEL RETAINER RAILS SHALL BE CLEANED THOROUGHLY AND SEAL CHANNELS SHALL BE INSPECTED TO ASCERTAIN THE ABSENCE OF CONCRETE AND DEBRIS.
11. COAT THE STRIP SEAL LUGS WITH LUBRICANT-ADHESIVE AND INSTALL THE NEOPRENE STRIP SEAL GLAND AS RECOMMENDED BY THE STRIP SEAL EXPANSION JOINT MANUFACTURER.

### GENERAL NOTES

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 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. MIN.

ONLY STEEL RETAINER RAILS OF ONE-PIECE CONSTRUCTION ARE PERMITTED. STEEL RETAINER RAILS CONSISTING OF TWO OR MORE COMPONENTS WELDED TOGETHER TO OBTAIN THEIR FINAL CROSS-SECTIONAL SHAPE ARE NOT PERMITTED.

STUD ANCHORS SHALL BE SHOP WELDED AND SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

SURFACES COMING IN CONTACT WITH STRIP SEAL GLAND SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.

UPON COMPLETION OF SHOP FABRICATION, THE STEEL RETAINER RAILS SHALL BE METALLIZED AS SHOWN IN THE 'METALLIZING DETAIL'. SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

NEOPRENE STRIP SEAL GLAND SHALL BE CONTINUOUS THROUGHOUT THE JOINT AND SHALL BE COMPATIBLE WITH THE STEEL RETAINER RAILS. FIELD SPLICING THE GLAND IS NOT PERMITTED.

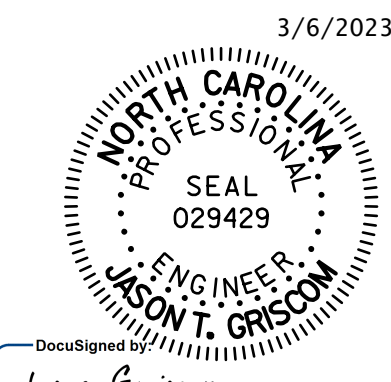
NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

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

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.

A TEMPORARY GLAND IS REQUIRED FOR STAGES 1, 2, & 3. NO SEPARATE PAYMENT WILL BE MADE FOR THE TEMPORARY GLANDS.

LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	MOVEMENT AND SETTING AT JOINT					
			DIMENSION "A"			DIMENSION "B"		
			PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	135°-00'-00"	9/16"	2 1/16"	2"	1 7/8"	2 3/16"	2 1/2"	2 3/8"
END BENT 2	135°-00'-00"	9/16"	2 1/16"	2"	1 7/8"	2 3/16"	2 1/2"	2 3/8"



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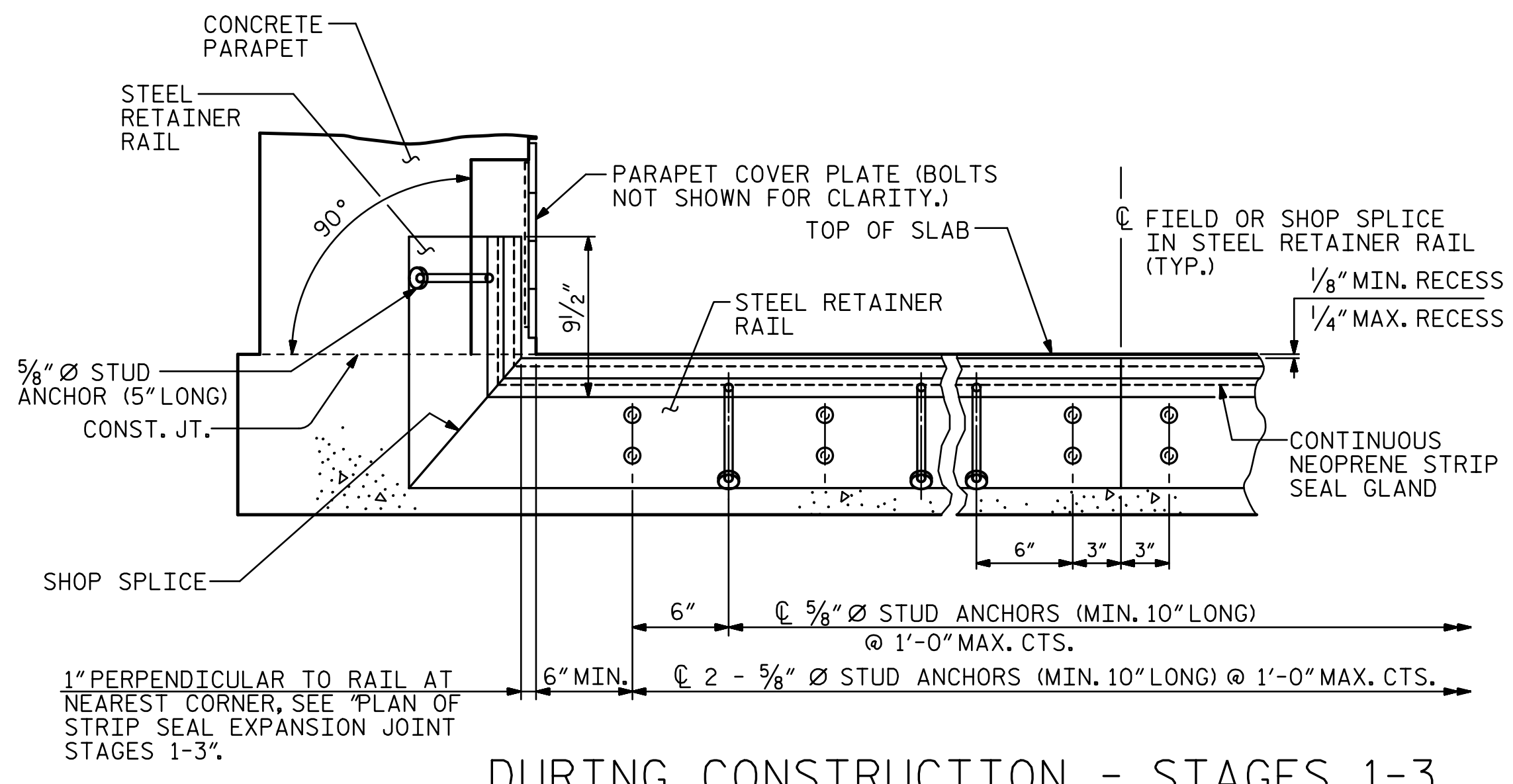
PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-  
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STRIP SEAL EXPANSION JOINT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-36
					TOTAL SHEETS 65

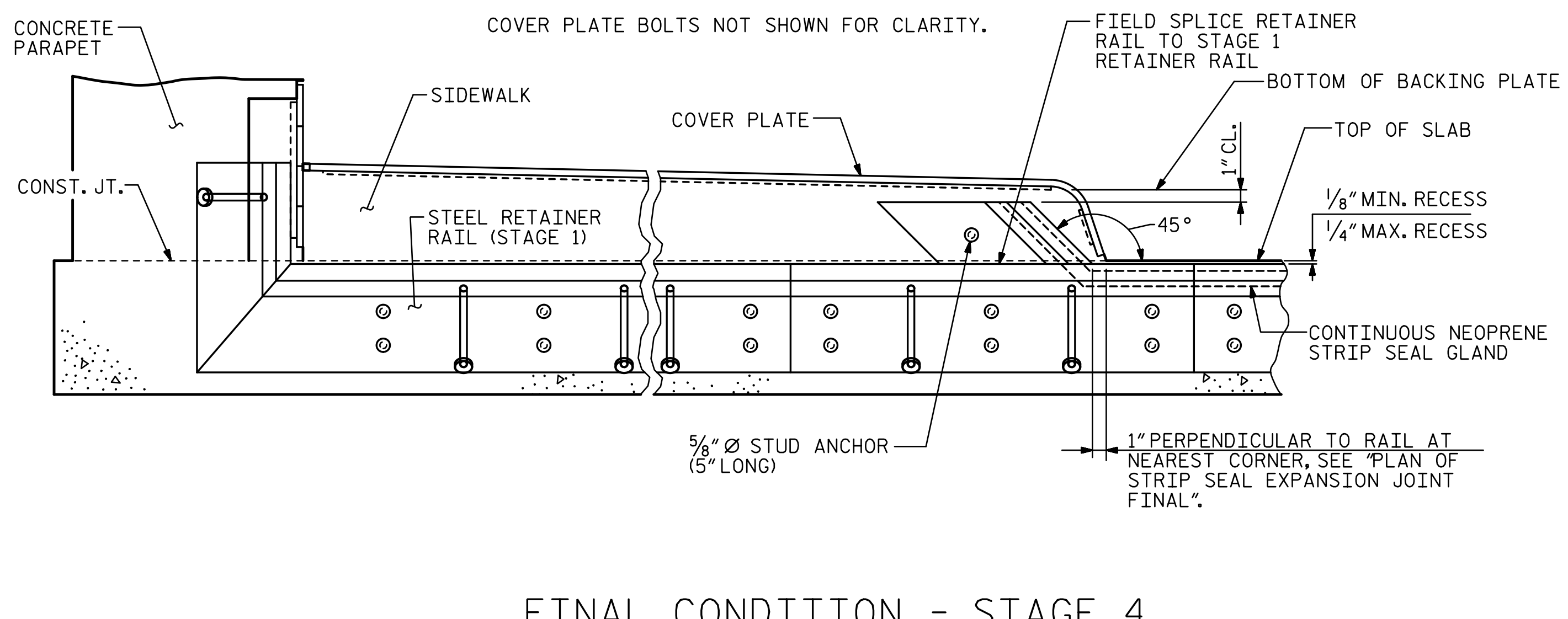
ASSEMBLED BY : SGH DATE : 4-22  
CHECKED BY : MLO DATE : 5-22  
DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23



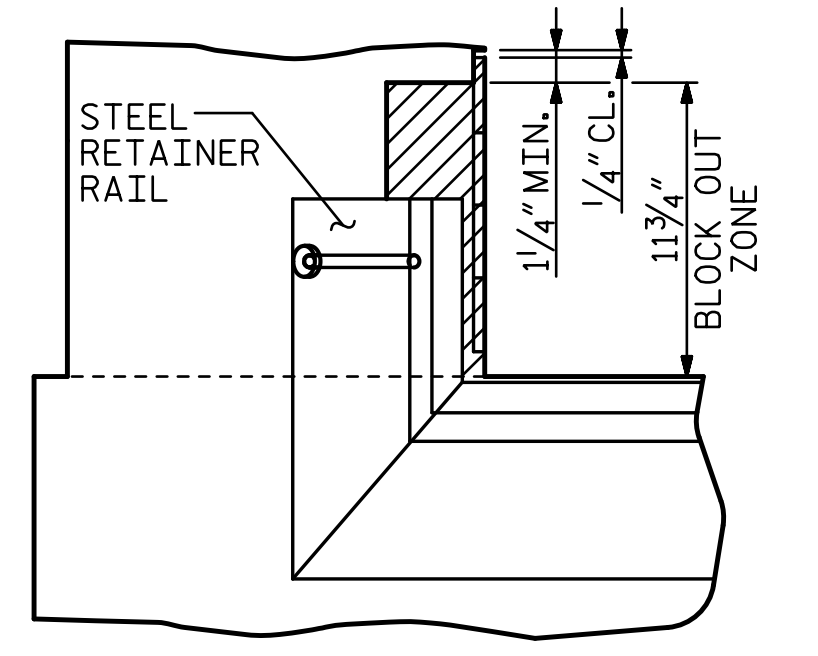
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DURING CONSTRUCTION - STAGES 1-3



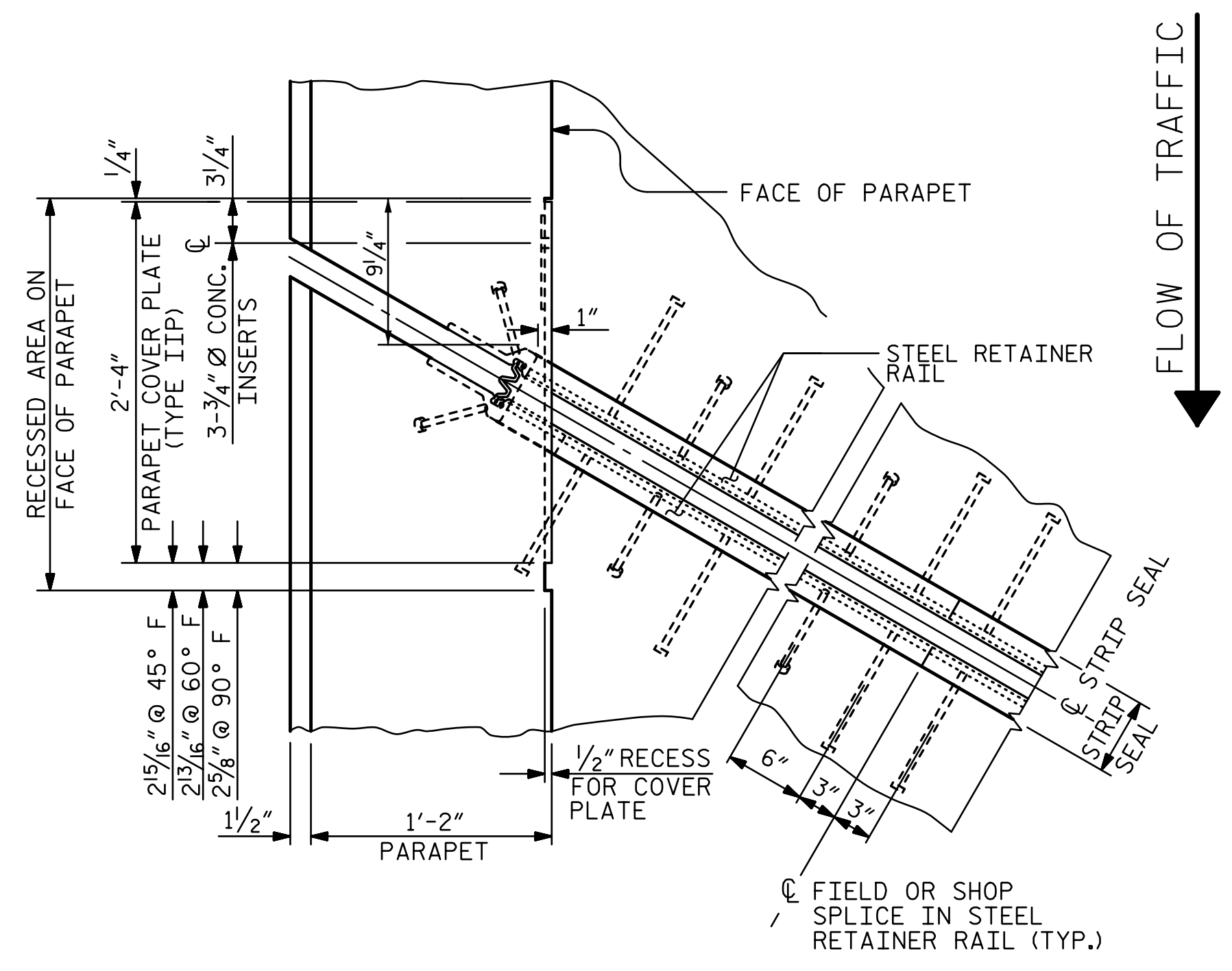
FINAL CONDITION - STAGE 4



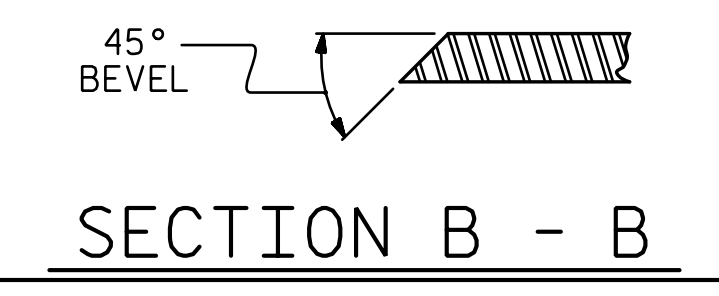
BLOCK OUT DETAIL LEFT SIDE STAGES 1-3

SECTION THRU SIDEWALK NORMAL TO JOINT

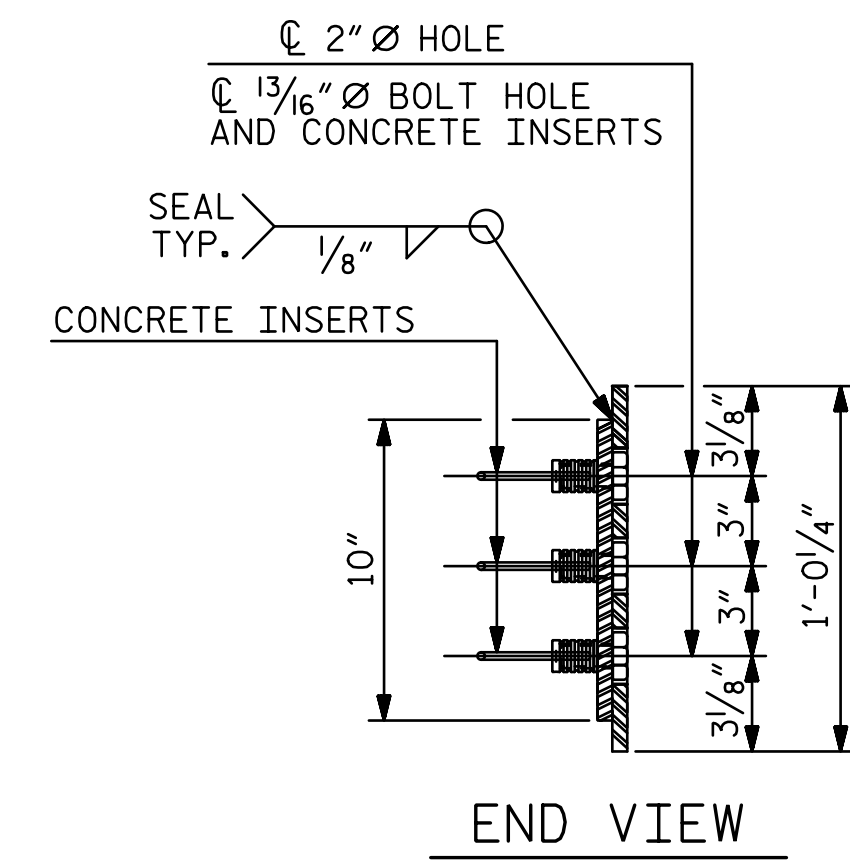
(LEFT SIDE ONLY)



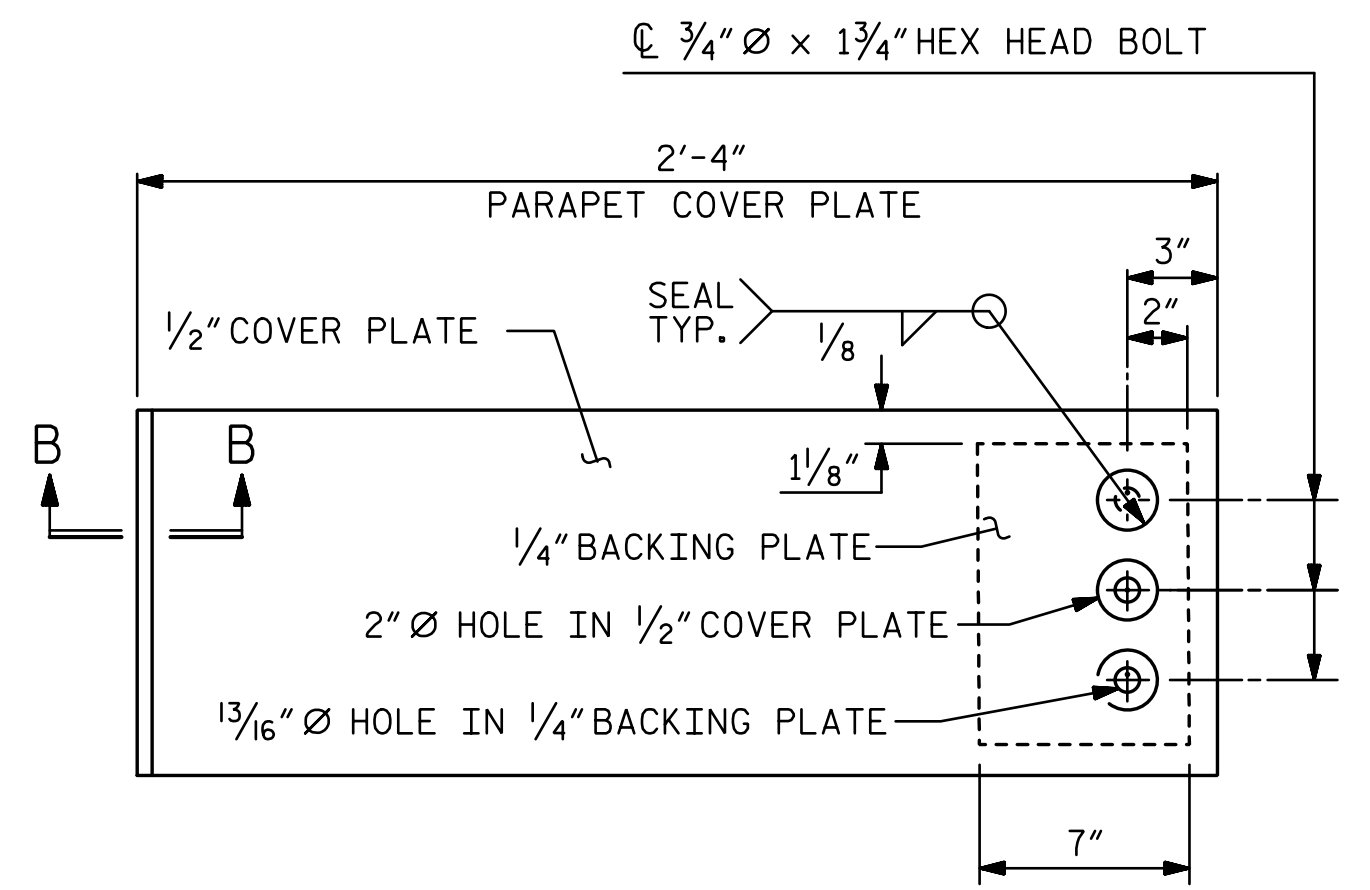
PLAN OF STRIP SEAL EXPANSION JOINT STAGES 1-3 (LEFT SIDE ONLY)



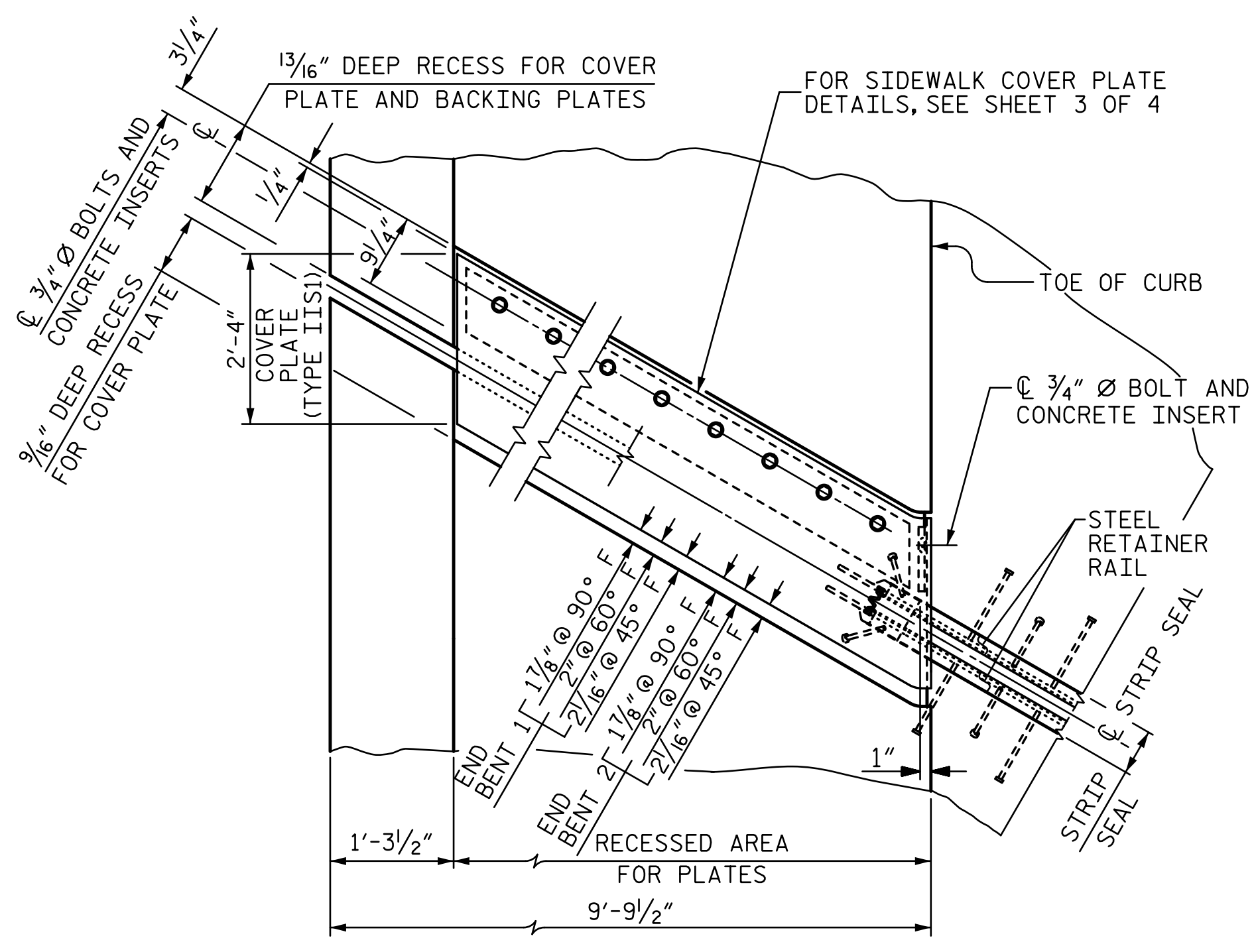
SECTION B - B



END VIEW



TYPE IIP - ELEVATION VIEW



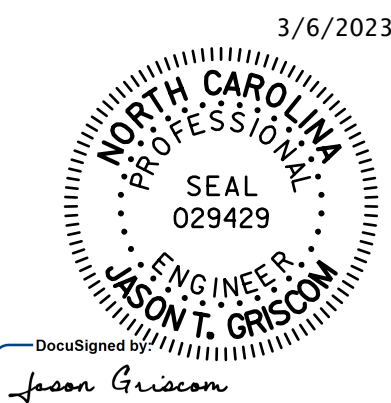
PLAN OF STRIP SEAL EXPANSION JOINT FINAL (LEFT SIDE ONLY)

PARAPET COVER PLATE AND RETAINER RAILS FROM STAGES 1-3 NOT SHOWN FOR CLARITY.

PARAPET COVER PLATE DETAILS

FOR CONCRETE INSERT DETAILS, SEE SHEET 3 OF 4.

FLOW OF TRAFFIC



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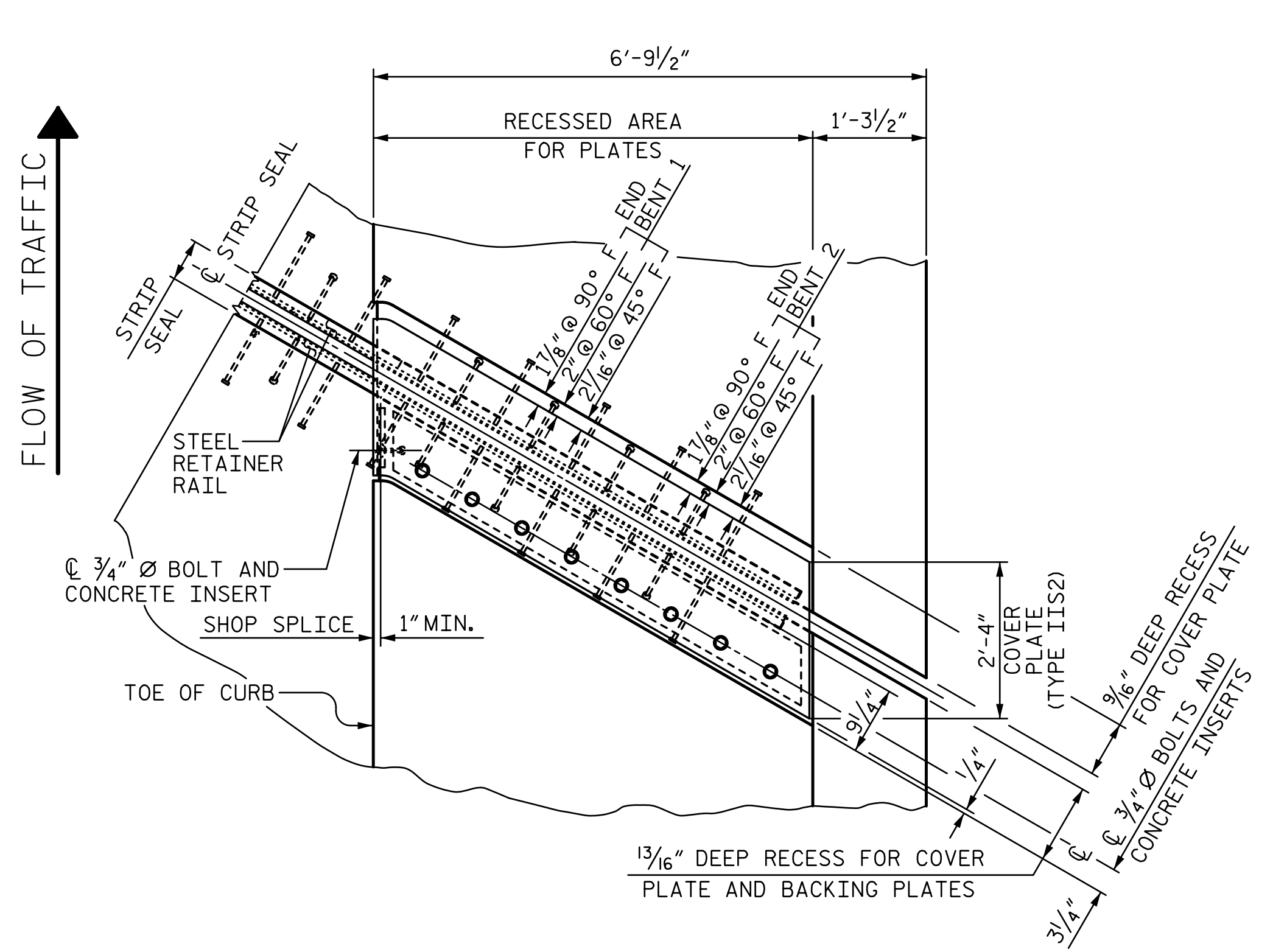
PROJECT NO. B-5808  
 COUNTY CABARRUS  
 STATION: 20+64.00 -L-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STRIP SEAL EXPANSION JOINT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-37
					TOTAL SHEETS 65

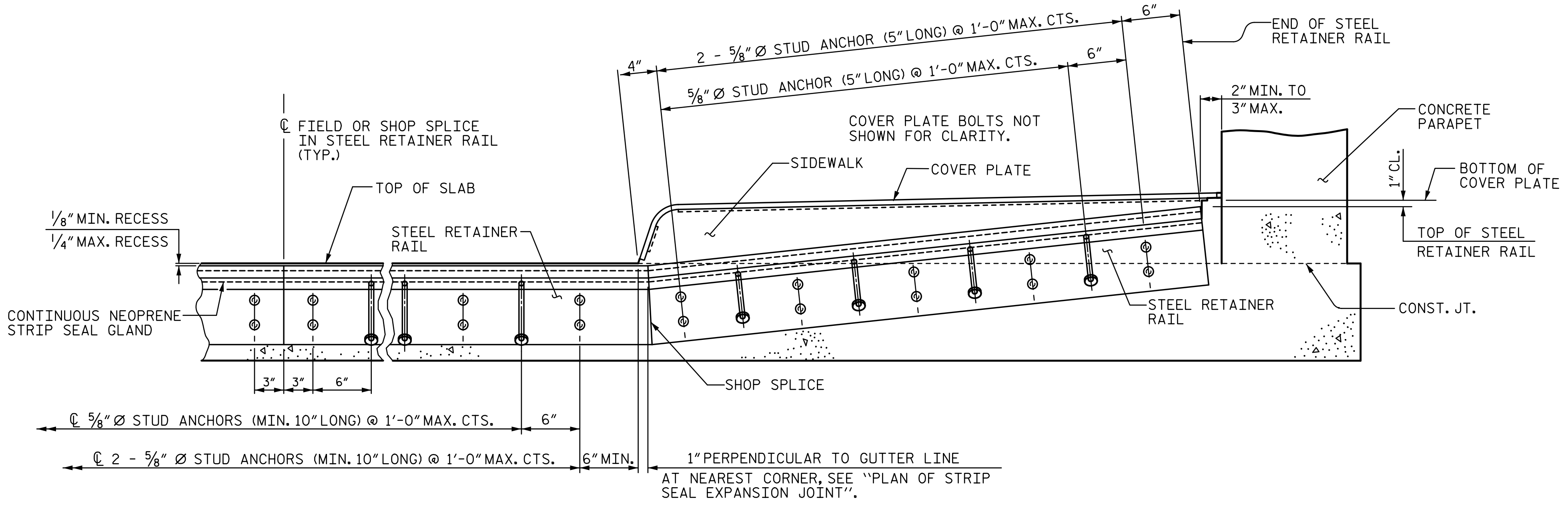
ASSEMBLED BY : SGH DATE : 4-22  
 CHECKED BY : MLO DATE : 7-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23



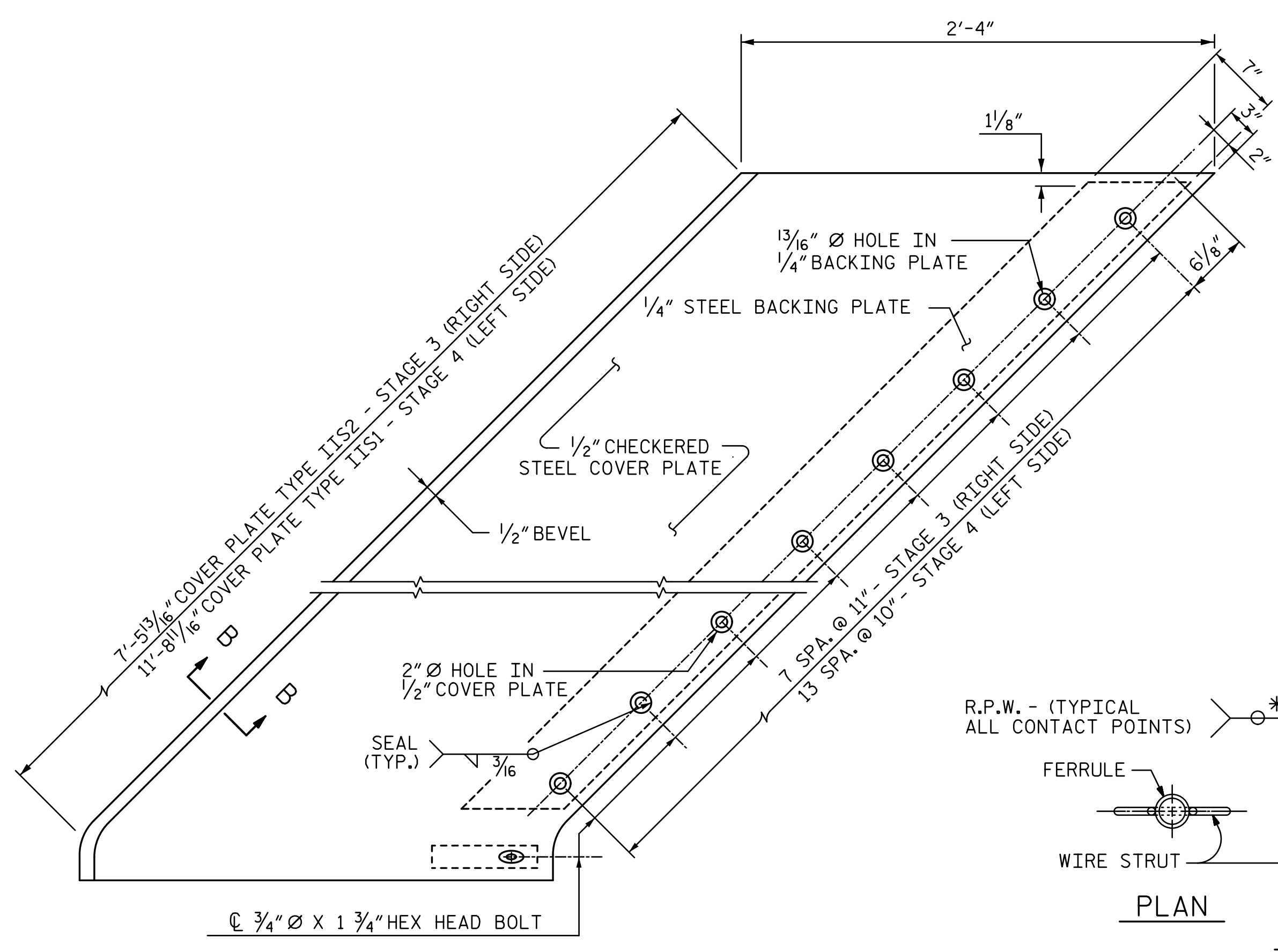
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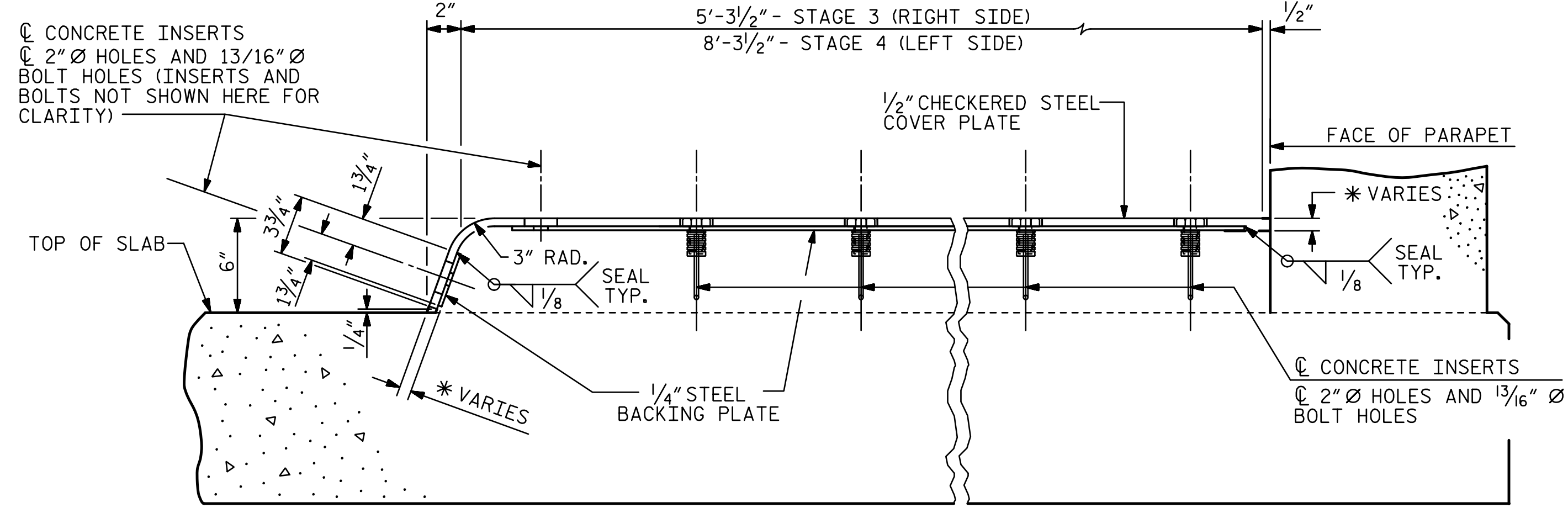
**PLAN OF STRIP SEAL EXPANSION JOINT**  
(RIGHT SIDE ONLY)



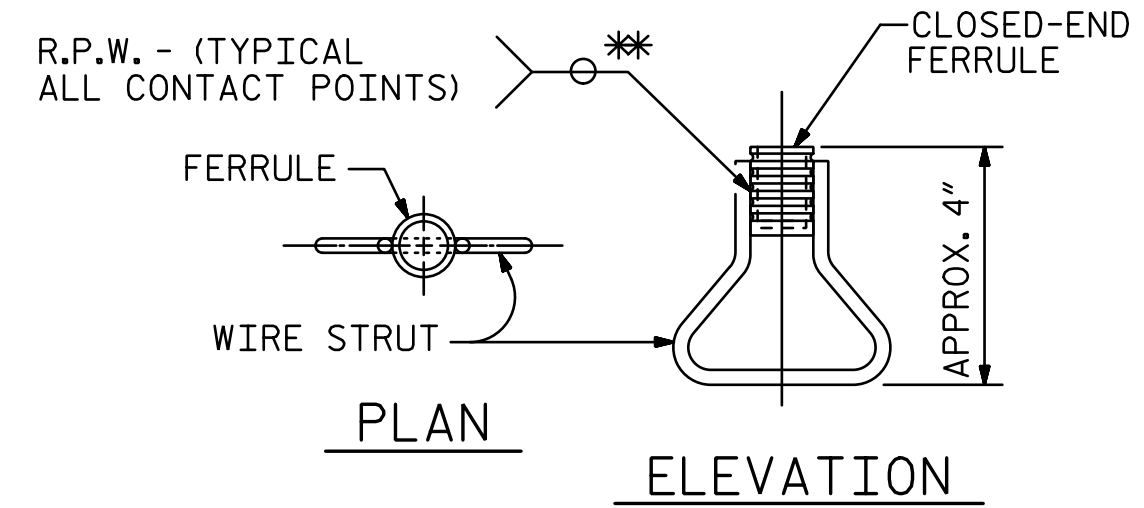
**SECTION THRU SIDEWALK NORMAL TO JOINT**  
(RIGHT SIDE ONLY)



**TYPE IIS - PLAN VIEW  
COVER PLATE DETAILS**



**END VIEW**  
(NORMAL TO SIDEWALK)  
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

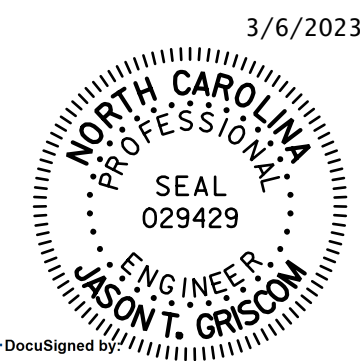


**CONCRETE INSERT**

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

\* CONCRETE RECESS DIMENSIONS:  
 13/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.  
 9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 3 OF 4



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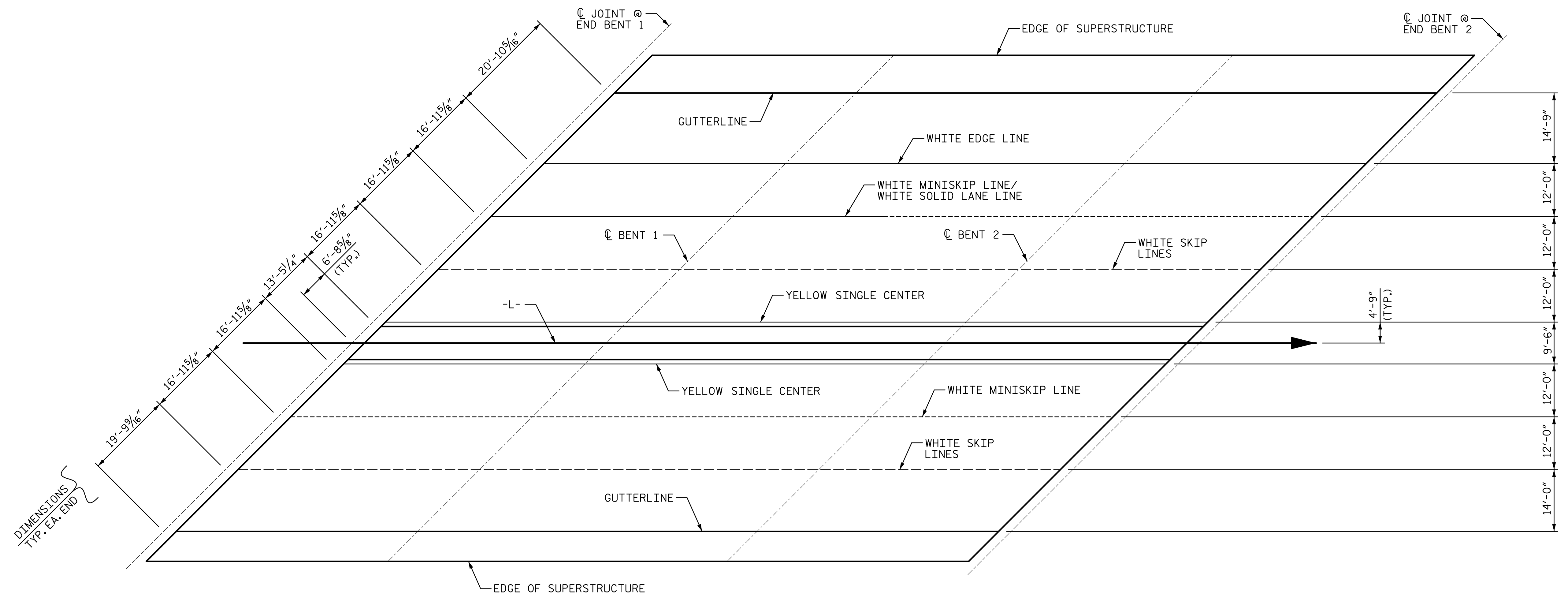
DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

ASSEMBLED BY : **SGH** DATE : **5-22**  
 CHECKED BY : **MLO** DATE : **6-22**  
 DESIGN ENGINEER OF RECORD : **J. GRISCOM** DATE : **3-23**

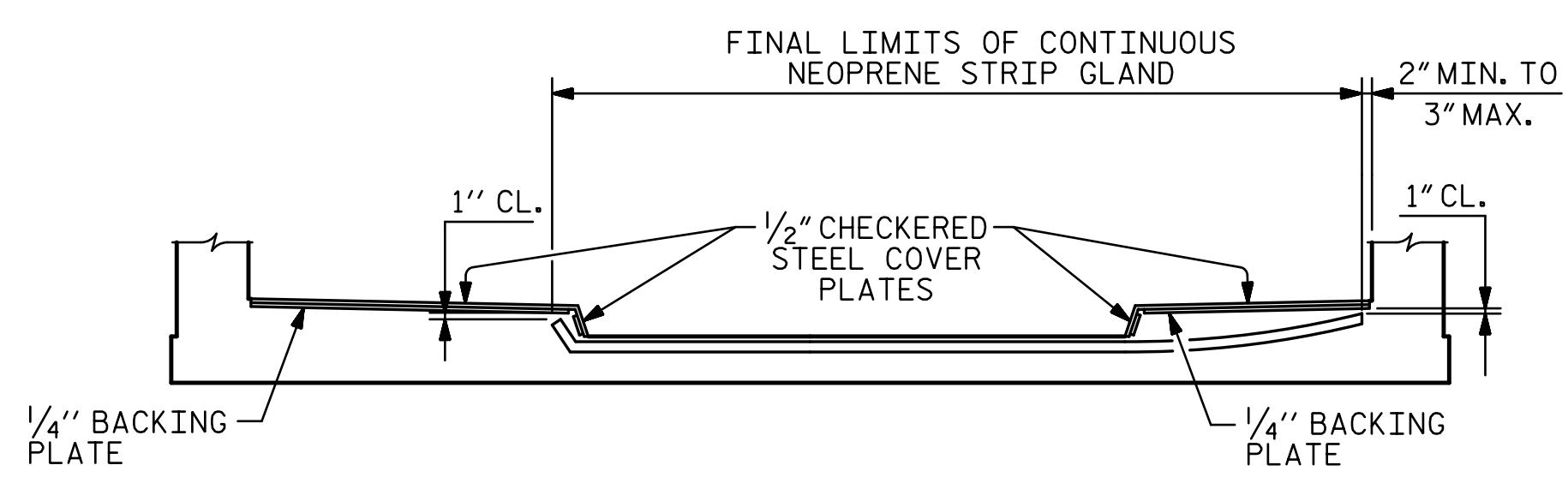
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STRIP SEAL EXPANSION JOINT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-38
					TOTAL SHEETS 65



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10:51:07 AM  
3/6/2023



### PAVEMENT MARKING ALIGNMENT



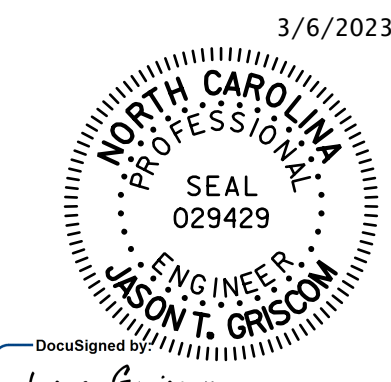
### SKETCH SHOWING LIMITS OF CONTINUOUS NEOPRENE STRIP GLAND

STAGE 4

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## STRIP SEAL EXPANSION JOINT



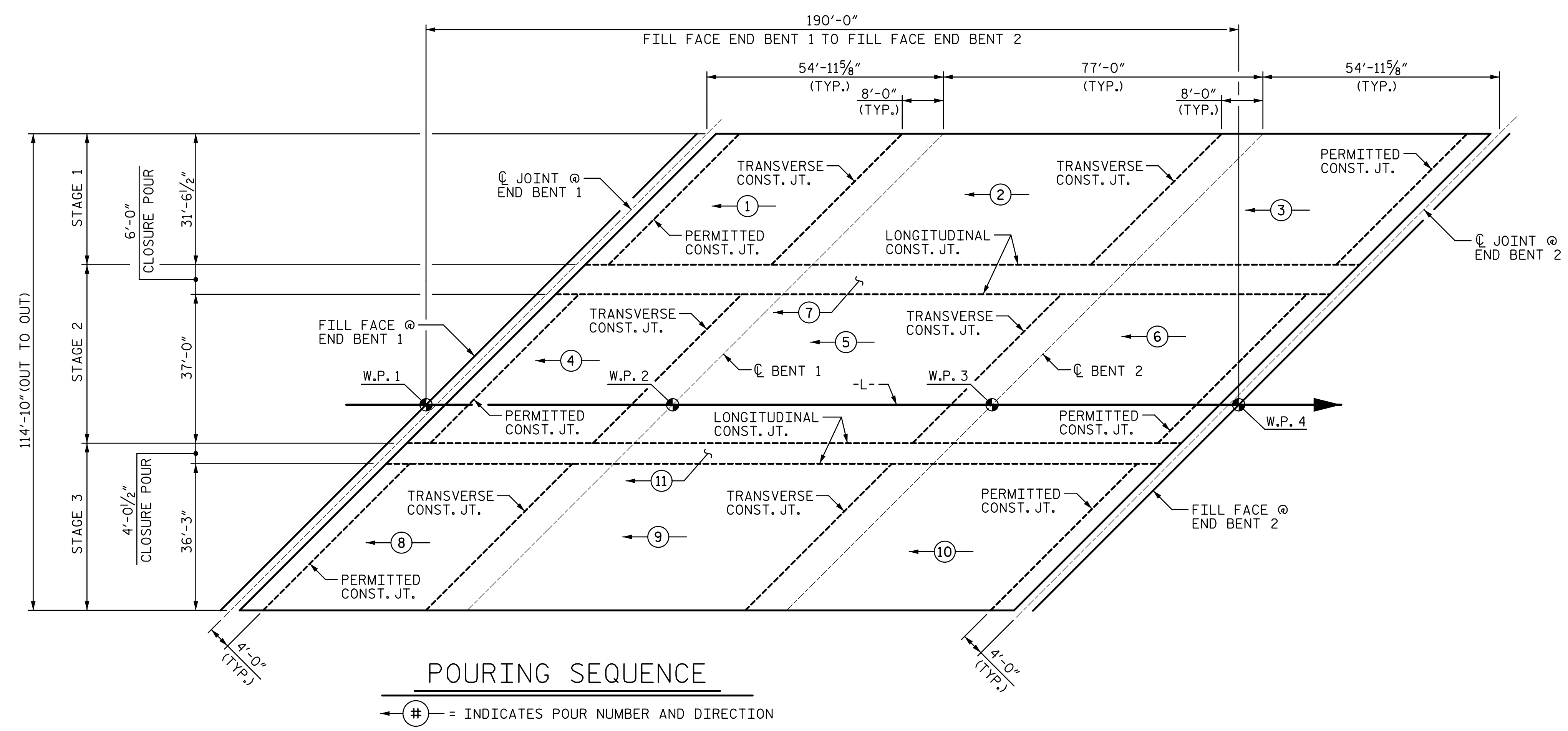
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DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

ASSEMBLED BY :	SGH	DATE :	5-22
CHECKED BY :	MLO	DATE :	6-22
DESIGN ENGINEER OF RECORD :	J. GRISCOM	DATE :	3-23

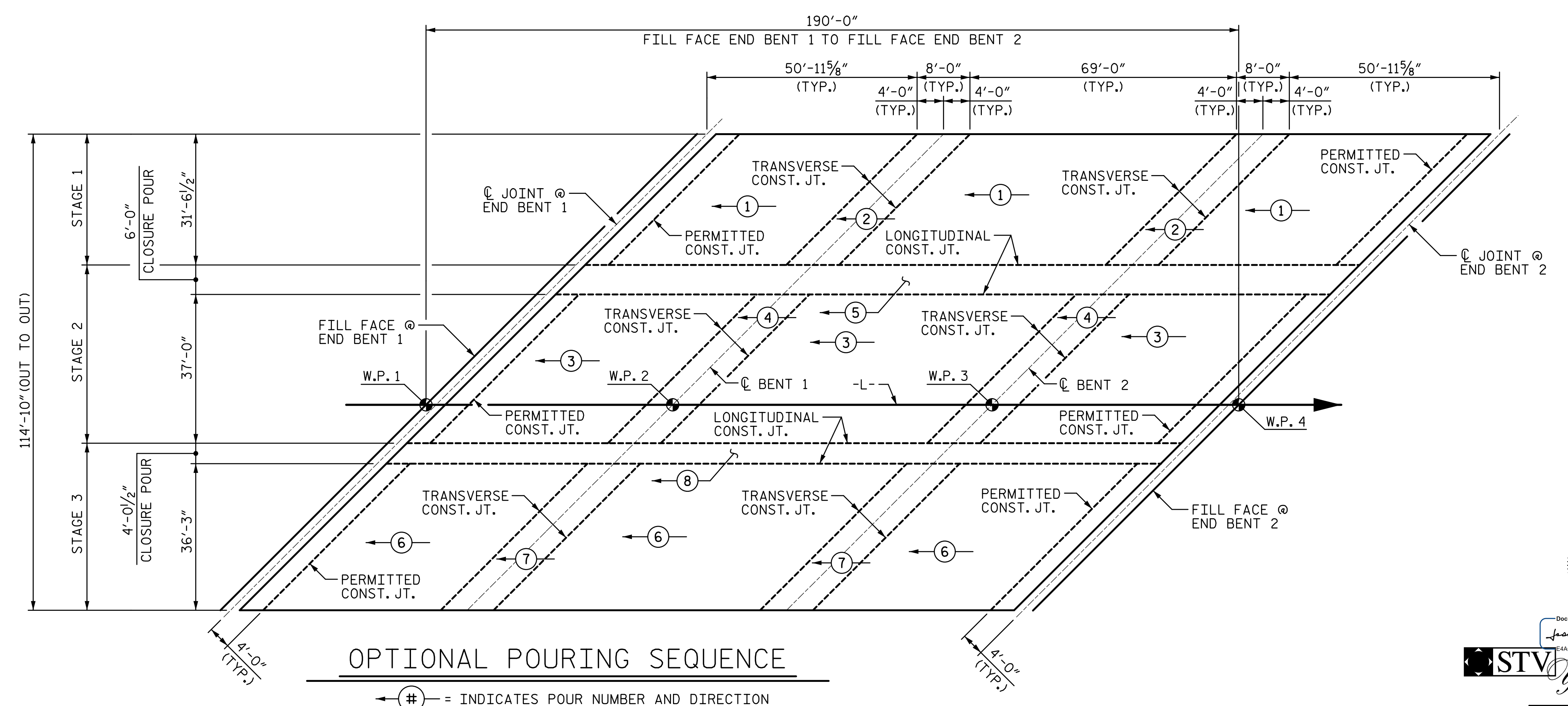
REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			65
2			4			65

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**POURING SEQUENCE**

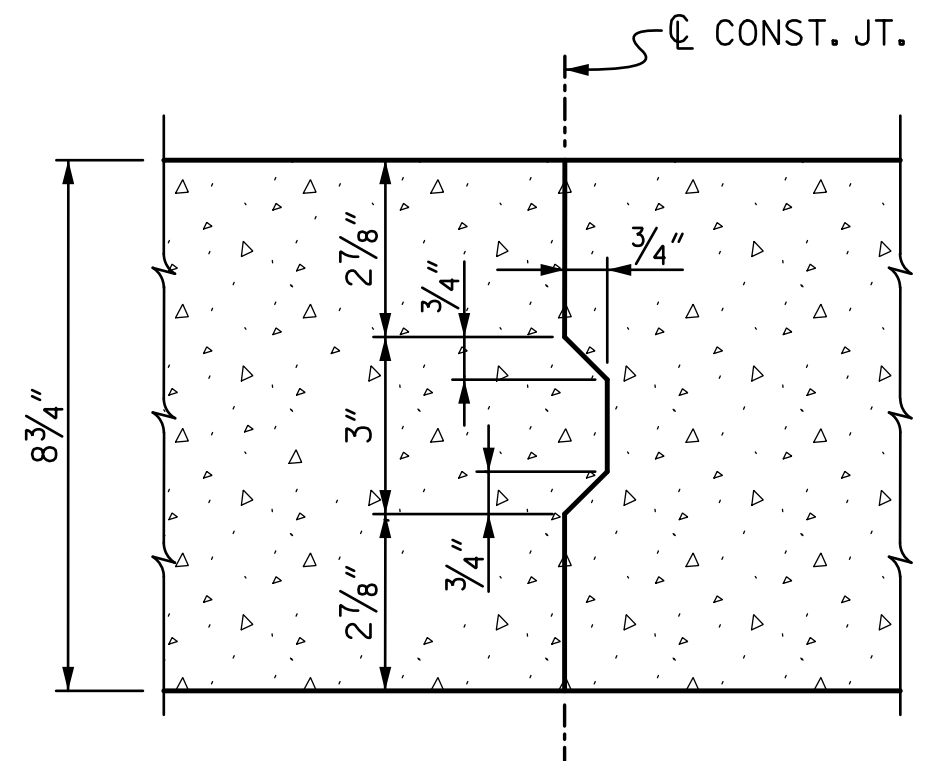
① = INDICATES POUR NUMBER AND DIRECTION



**OPTIONAL POURING SEQUENCE**

① = INDICATES POUR NUMBER AND DIRECTION

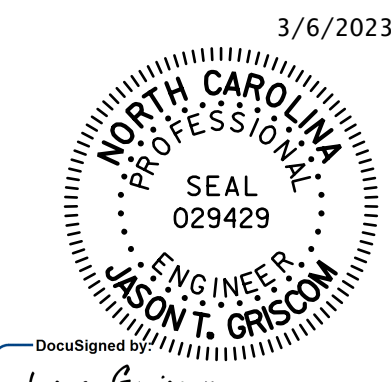
SUPERSTRUCTURE CONCRETE QUANTITIES		
		CLASS AA CONCRETE (CU. YDS.)
STAGE 1	POUR 1	50.4
	POUR 2	93.7
	POUR 3	82.2
	TOTAL	226.3
STAGE 2	POUR 4	59.0
	POUR 5	109.8
	POUR 6	97.0
	POUR 7	46.8
	TOTAL	312.6
STAGE 3	POUR 8	57.9
	POUR 9	107.4
	POUR 10	94.5
	POUR 11	32.1
	SIDEWALK	23.3
TOTAL	315.2	
STAGE 4	SIDEWALK	38.4
	CONCRETE MEDIAN	21.8
	TOTAL	60.2
GRAND TOTAL		914.3



**CONSTRUCTION JOINT DETAIL**

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

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**



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ASSEMBLED BY : SGH DATE : 12-22  
 CHECKED BY : MLO DATE : 12-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

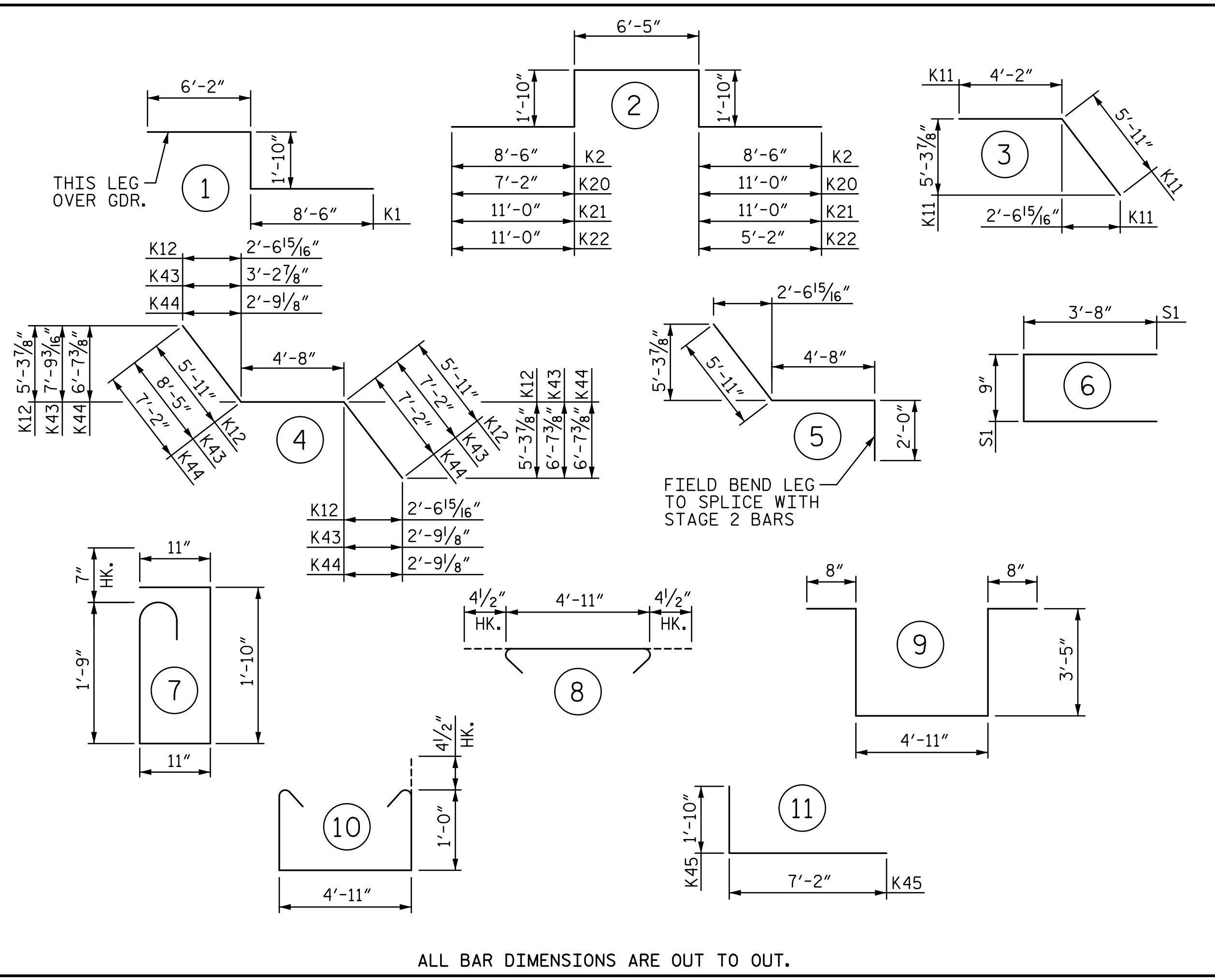
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
POURING SEQUENCE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-40
					TOTAL SHEETS 65



REINFORCING BAR SCHEDULE

STAGE 1											STAGE 2												
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT	MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT	MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT	MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	311	#5	STR	31'-2"	10,110	*K1	8	#8	1	16'-6"	352	*A100	300	#5	STR	36'-8"	11,473	*D1	182	#6	STR	4'-9"	1,298
*A2	12	#5	STR	16'-7"	208	*K2	8	#8	2	27'-1"	579	*A101	12	#5	STR	19'-4"	242	*D2	364	#5	STR	8'-6"	3,227
*A3	12	#5	STR	15'-10"	198	*K3	6	#6	STR	11'-2"	101	*A102	12	#5	STR	18'-7"	233	D3	364	#5	STR	8'-1"	3,069
*A4	12	#5	STR	15'-1"	189	*K4	6	#6	STR	9'-6"	86	*A103	12	#5	STR	17'-10"	223	*D4	363	#5	STR	5'-3"	1,988
*A5	12	#5	STR	14'-4"	179	*K5	6	#6	STR	7'-7"	68	*A104	12	#5	STR	17'-1"	214	D5	363	#5	STR	4'-10"	1,830
*A6	12	#5	STR	13'-7"	170	*K6	1	#6	STR	4'-1"	6	*A105	12	#5	STR	16'-4"	204	D8	182	#6	STR	4'-9"	1,298
*A7	12	#5	STR	12'-10"	161	*K7	1	#6	STR	2'-5"	4	*A106	12	#5	STR	15'-7"	195	*D10	1	#5	STR	8'-2"	9
*A8	12	#5	STR	12'-1"	151	K8	12	#4	STR	6'-1"	49	*A107	12	#5	STR	14'-10"	186	*D11	1	#5	STR	7'-8"	8
*A9	12	#5	STR	11'-4"	142	K9	24	#4	STR	9'-9"	156	*A108	12	#5	STR	14'-1"	176	*D12	1	#5	STR	7'-2"	7
*A10	12	#5	STR	10'-7"	132	K10	12	#4	STR	6'-7"	53	*A109	12	#5	STR	13'-4"	167	*D13	1	#5	STR	6'-8"	7
*A11	12	#5	STR	9'-10"	123	K11	8	#4	3	10'-1"	54	*A110	12	#5	STR	12'-7"	157	*D14	1	#5	STR	6'-2"	6
*A12	12	#5	STR	9'-1"	114	K12	16	#4	4	16'-6"	176	*A111	12	#5	STR	11'-10"	148	*D15	1	#5	STR	5'-8"	6
*A13	12	#5	STR	8'-4"	104	K13	8	#4	5	12'-7"	67	*A112	12	#5	STR	11'-1"	139	*D16	1	#5	STR	5'-2"	5
*A14	12	#5	STR	7'-7"	95							*A113	12	#5	STR	10'-4"	129	*D17	1	#5	STR	4'-8"	5
*A15	12	#5	STR	6'-10"	86	*S1	30	#4	6	8'-1"	162	*A114	12	#5	STR	9'-7"	120	*D18	1	#5	STR	4'-2"	4
*A16	2	#5	STR	9'-8"	20	*S2	30	#5	7	6'-0"	188	*A115	12	#5	STR	8'-10"	111	*D19	1	#5	STR	3'-8"	4
*A17	2	#5	STR	9'-2"	19	S3	90	#4	8	5'-8"	341	*A116	12	#5	STR	8'-1"	101	*D20	1	#5	STR	3'-2"	3
*A18	2	#5	STR	8'-8"	18							*A117	12	#5	STR	7'-4"	92	D21	1	#5	STR	8'-2"	9
*A19	2	#5	STR	8'-2"	17	U1	30	#4	9	13'-1"	262	*A118	12	#5	STR	6'-7"	82	D22	1	#5	STR	7'-8"	8
*A20	2	#5	STR	7'-8"	16	U2	12	#4	10	7'-8"	61	*A119	2	#5	STR	9'-2"	19	D23	1	#5	STR	7'-2"	7
*A21	2	#5	STR	7'-2"	15							*A120	2	#5	STR	8'-8"	18	D24	1	#5	STR	6'-8"	7
*A22	2	#5	STR	6'-8"	14	*EPOXY COATED REINF. STEEL (LBS.)					23,243	*A121	2	#5	STR	8'-2"	17	D25	1	#5	STR	6'-2"	6
*A23	2	#5	STR	6'-2"	13	REINFORCING STEEL (LBS.)					20,092	*A122	2	#5	STR	7'-8"	16	D26	1	#5	STR	5'-8"	6
*A24	2	#5	STR	5'-8"	12							*A123	2	#5	STR	7'-2"	15	D27	1	#5	STR	5'-2"	5
*A25	2	#5	STR	5'-2"	11							*A124	2	#5	STR	6'-8"	14	D28	1	#5	STR	4'-8"	5
*A26	2	#5	STR	4'-8"	10							*A125	2	#5	STR	6'-2"	13	D29	1	#5	STR	4'-2"	4
*A27	2	#5	STR	4'-2"	9							*A126	2	#5	STR	5'-8"	12	D30	1	#5	STR	3'-8"	4
*A28	2	#5	STR	3'-8"	8							*A127	2	#5	STR	5'-2"	11	D31	1	#5	STR	3'-2"	3
*A29	4	#5	STR	3'-0"	13							*A128	2	#5	STR	4'-8"	10						
*A30	3	#5	STR	2'-4"	7							*A129	2	#5	STR	4'-2"	9	*G2	4	#5	STR	31'-5"	131
*A31	7	#6	STR	19'-6"	205							*A130	2	#5	STR	3'-8"	8						
*A32	4	#6	STR	4'-9"	29							*A131	2	#5	STR	3'-2"	7	*K20	4	#8	2	28'-3"	302
A51	311	#5	STR	31'-2"	10,110							*A132	8	#6	STR	15'-3"	183	*K21	8	#8	2	32'-1"	685
A52	12	#5	STR	16'-5"	205							*A133	4	#6	STR	25'-2"	151	*K22	4	#8	2	26'-3"	280
A53	12	#5	STR	15'-8"	196							*A134	4	#6	STR	9'-8"	58	*K23	3	#6	STR	5'-7"	25
A54	12	#5	STR	14'-11"	187												*K24	1	#6	STR	9'-8"	15	
A55	12	#5	STR	14'-2"	177							A150	300	#5	STR	36'-8"	11,473	*K25	1	#6	STR	8'-2"	12
A56	12	#5	STR	13'-5"	168							A151	12	#5	STR	19'-2"	240	*K26	1	#6	STR	6'-1"	9
A57	12	#5	STR	12'-8"	159							A152	12	#5	STR	18'-5"	231	*K27	6	#6	STR	13'-10"	125
A58	12	#5	STR	11'-11"	149							A153	12	#5	STR	17'-8"	221	*K28	6	#6	STR	12'-2"	110
A59	12	#5	STR	11'-2"	140							A154	12	#5	STR	16'-11"	212	*K29	6	#6	STR	10'-3"	92
A60	12	#5	STR	10'-5"	130							A155	12	#5	STR	16'-2"	202	*K30	1	#6	STR	8'-8"	13
A61	12	#5	STR	9'-8"	121							A156	12	#5	STR	15'-5"	193	*K31	1	#6	STR	7'-0"	11
A62	12	#5	STR	8'-11"	112							A157	12	#5	STR	14'-8"	184	*K32	1	#6	STR	5'-1"	8
A63	12	#5	STR	8'-2"	102							A158	12	#5	STR	13'-11"	174	*K33	3	#6	STR	4'-3"	19
A64	12	#5	STR	7'-5"	93							A159	12	#5	STR	13'-2"	165	K34	4	#4	STR	4'-8"	12
A65	12	#5	STR	6'-8"	83							A160	12	#5	STR	12'-5"	155	K35	8	#4	STR	8'-3"	44
A66	2	#5	STR	9'-8"	20							A161	12	#5	STR	11'-8"	146	K36	4	#4	STR	5'-2"	14
A67	2	#5	STR	9'-2"	19							A162	12	#5	STR	10'-11"	137	K37	12	#4	STR	8'-10"	71
A68	2	#5	STR	8'-8"	18							A163	12	#5	STR	10'-2"	127	K38	24	#4	STR	12'-6"	200
A69	2	#5	STR	8'-2"	17							A164	12	#5	STR	9'-5"	118	K39	12	#4	STR	9'-5"	75
A70	2	#5	STR	7'-8"	16							A165	12	#5	STR	8'-8"	108	K40	4	#4	STR	2'-8"	7
A71	2	#5	STR	7'-2"	15							A166	12	#5	STR	7'-11"	99	K41	8	#4	STR	4'-5"	24
A72	2	#5	STR	6'-8"	14							A167	12	#5	STR	7'-2"	90	K42	4	#4	STR	2'-11"	8
A73	2	#5	STR	6'-2"	13							A168	12	#5	STR	6'-5"	80	K43	8	#4	4	20'-3"	108
A74	2	#5	STR	5'-8"	12							A169	2	#5	STR	9'-2"	19	K44	24	#4	4	19'-0"	305
A75	2	#5	STR	5'-2"	11							A170	2	#5	STR	8'-8"	18	*K45	4	#8	11	9'-0"	96
A76	2	#5	STR	4'-8"	10							A171	2	#5	STR	8'-2"	17						
A77	2	#5	STR	4'-2"	9							A172	2	#5	STR	7'-8"	16	*S1	52	#4	6	8'-1"	281
A78	2	#5	STR	3'-8"	8							A173	2	#5	STR	7'-2"	15	*S2	52	#5	7	6'-0"	325
A79	4	#5	STR	3'-0"	13							A174	2	#5	STR	6'-8"	14	S3	156	#4	8	5'-8"	591
A80	3	#5	STR	2'-4"	7							A175	2	#5	STR	6'-2"	13						
*B1	46	#5	STR	35'-1"	1,683							A176	2	#5	STR	5'-8"	12	U1	52	#4	9	13'-1"	454
*B2	46	#6	STR	50'-3"	3,472							A177	2	#5	STR	5'-2"	11	U2	18	#4	10	7'-8"	92
*B3	80	#6	STR	27'-0"	3,244							A178	2	#5	STR	4'-8"	10						
*B4	23	#5	STR	25'-4"	608							A179	2	#5	STR	4'-2"	9	*EPOXY COATED REINF. STEEL (LBS.)					36,717
B5	54	#5	STR	38'-2"	2,150							A180	2	#5	STR	3'-8"	8	REINFORCING STEEL (LBS.)					32,235
B6	54	#6	STR	43'-0"	3,488							A181	2	#5	STR	3'-2"	7						
B7	27	#5	STR	32'-0"	901							*B1	66	#5	STR	35'-1"	2,415						
*G1	2	#5	STR	44'-1"	92							*B2	66	#6	STR	50'-3"	4,981						
												*B3	108	#6	STR	27'-0"	4,380						
												*B4	33	#5	STR	25'-4"	872						
												B5	78	#5	STR	38'-2"	3,105						
												B6	78	#6	STR	43'-0"	5,038						
												B7	39	#5	STR	32'-0"	1,302						

BAR TYPES

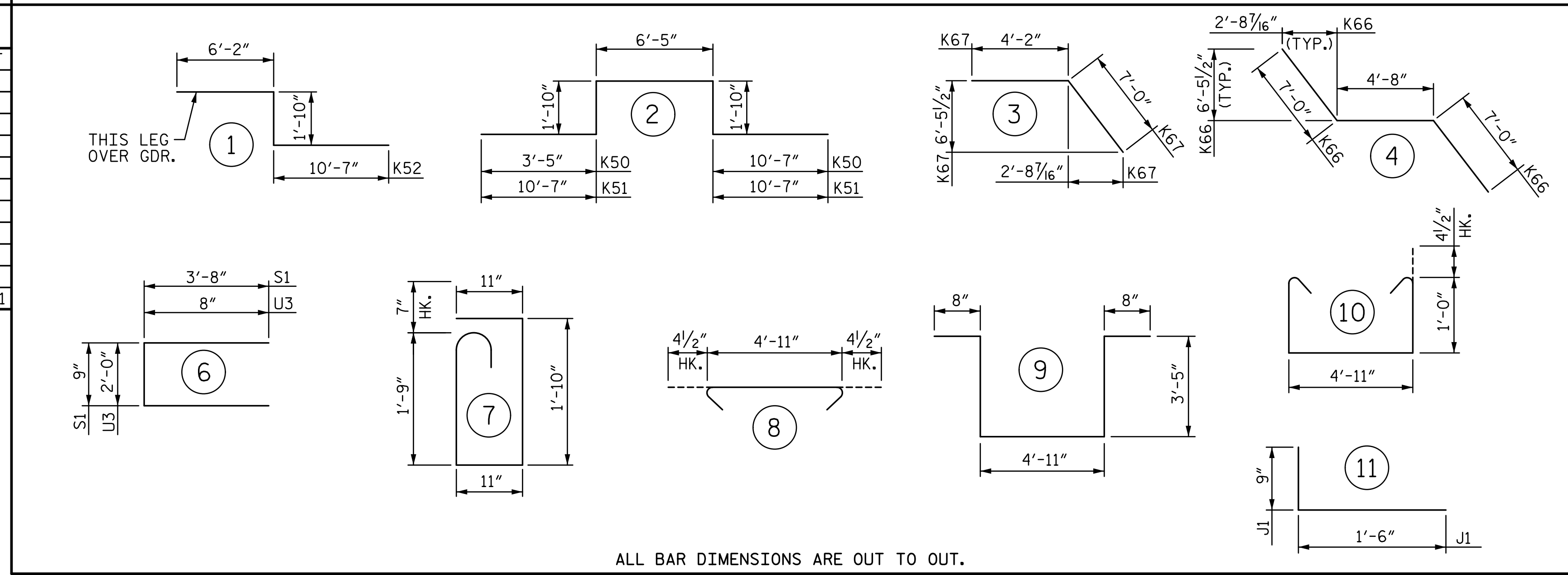




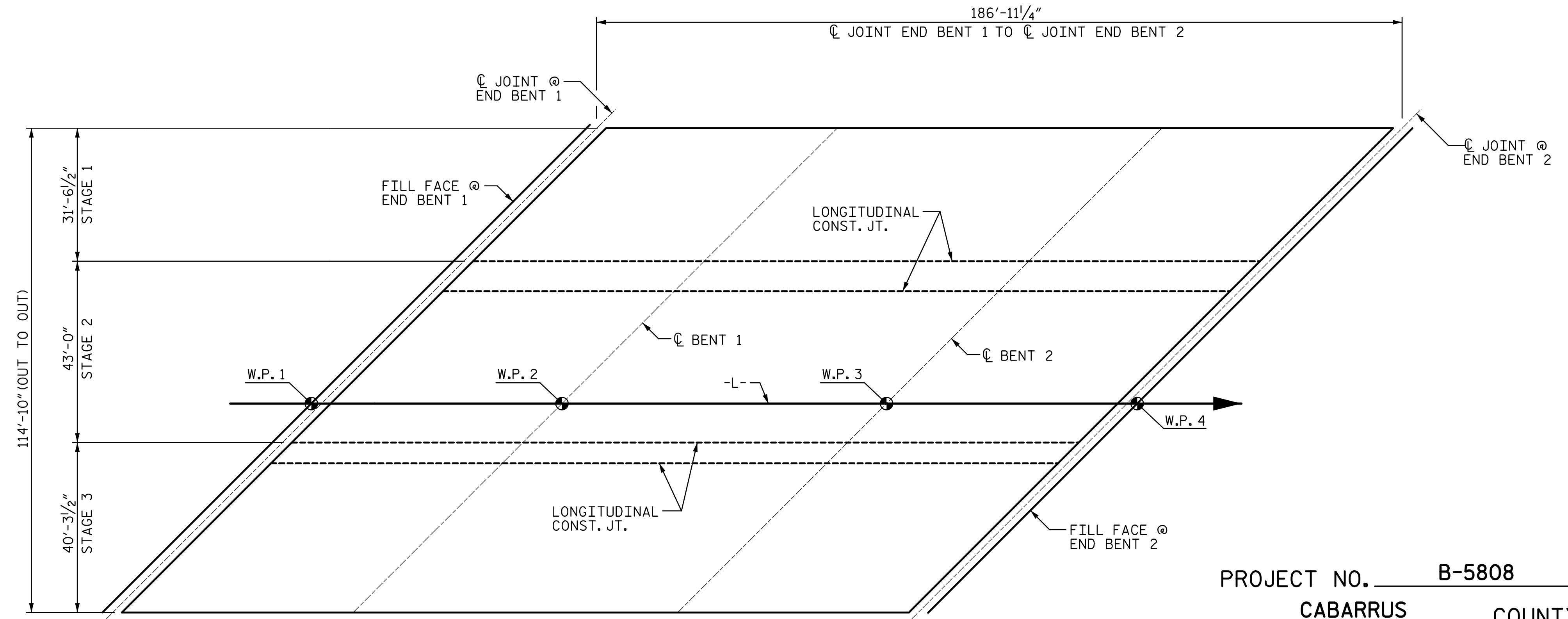
REINFORCING BAR SCHEDULE

STAGE 3						STAGE 4					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT	MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A200	301	#5	STR	35'-11"	11,276	*B1	60	#5	STR	35'-1"	2,196
*A201	12	#5	STR	19'-0"	238	*B2	60	#6	STR	50'-3"	4,529
*A202	12	#5	STR	18'-3"	228	*B3	100	#6	STR	27'-0"	4,055
*A203	12	#5	STR	17'-6"	219	*B4	30	#5	STR	25'-4"	793
*A204	12	#5	STR	16'-9"	210	B5	76	#5	STR	38'-2"	3,025
*A205	12	#5	STR	16'-0"	200	B6	76	#6	STR	43'-0"	4,909
*A206	12	#5	STR	15'-3"	191	B7	38	#5	STR	32'-0"	1,268
*A207	12	#5	STR	14'-6"	181						
*A208	12	#5	STR	13'-9"	172	*B11	35	#4	STR	28'-3"	660
*A209	12	#5	STR	13'-0"	163						
*A210	12	#5	STR	12'-3"	153	*D6	364	#5	STR	6'-6"	2,468
*A211	12	#5	STR	11'-6"	144	D7	364	#5	STR	6'-1"	2,310
*A212	12	#5	STR	10'-9"	135						
*A213	12	#5	STR	10'-0"	125	*D14	1	#5	STR	6'-2"	6
*A214	12	#5	STR	9'-3"	116	*D15	1	#5	STR	5'-8"	6
*A215	12	#5	STR	8'-6"	106	*D16	1	#5	STR	5'-2"	5
*A216	12	#5	STR	7'-9"	97	*D17	1	#5	STR	4'-8"	5
*A217	12	#5	STR	7'-0"	88	*D18	1	#5	STR	4'-2"	4
*A218	2	#5	STR	10'-0"	21	*D19	1	#5	STR	3'-8"	4
*A219	2	#5	STR	9'-6"	20	*D20	1	#5	STR	3'-2"	3
*A220	2	#5	STR	9'-0"	19						
*A221	2	#5	STR	8'-6"	18	D25	1	#5	STR	6'-2"	6
*A222	2	#5	STR	8'-0"	17	D26	1	#5	STR	5'-8"	6
*A223	2	#5	STR	7'-6"	16	D27	1	#5	STR	5'-2"	5
*A224	2	#5	STR	7'-0"	15	D28	1	#5	STR	4'-8"	5
*A225	2	#5	STR	6'-6"	14	D29	1	#5	STR	4'-2"	4
*A226	2	#5	STR	6'-0"	13	D30	1	#5	STR	3'-8"	4
*A227	2	#5	STR	5'-6"	11	D31	1	#5	STR	3'-2"	3
*A228	2	#5	STR	5'-0"	10						
*A229	2	#5	STR	4'-6"	9	*G3	2	#5	STR	56'-6"	118
*A230	2	#5	STR	4'-0"	8						
*A231	2	#5	STR	3'-6"	7	*G4	182	#4	STR	4'-11"	598
*A232	4	#5	STR	3'-0"	13	*G5	10	#4	STR	4'-6"	30
*A233	3	#5	STR	2'-4"	7						
*A234	8	#6	STR	13'-4"	160	*K50	4	#8	2	24'-1"	257
*A235	3	#6	STR	21'-9"	98	*K51	8	#8	2	31'-3"	668
						*K52	4	#8	1	18'-7"	198
A250	301	#5	STR	35'-11"	11,276	*K53	3	#6	STR	3'-10"	17
A251	12	#5	STR	18'-10"	236	*K54	1	#6	STR	8'-7"	13
A252	12	#5	STR	18'-1"	226	*K55	1	#6	STR	6'-11"	10
A253	12	#5	STR	17'-4"	217	*K56	1	#6	STR	5'-0"	8
A254	12	#5	STR	16'-7"	208	*K57	6	#6	STR	13'-5"	121
A255	12	#5	STR	15'-10"	198	*K58	6	#6	STR	11'-9"	106
A256	12	#5	STR	15'-1"	189	*K59	6	#6	STR	9'-10"	89
A257	12	#5	STR	14'-4"	179	K60	4	#4	STR	3'-7"	10
A258	12	#5	STR	13'-7"	170	K61	8	#4	STR	5'-5"	29
A259	12	#5	STR	12'-10"	161	K62	4	#4	STR	3'-10"	10
A260	12	#5	STR	12'-1"	151	K63	12	#4	STR	8'-4"	67
A261	12	#5	STR	11'-4"	142	K64	24	#4	STR	12'-0"	192
A262	12	#5	STR	10'-7"	132	K65	12	#4	STR	8'-10"	71
A263	12	#5	STR	9'-10"	123	K66	24	#4	4	18'-8"	299
A264	12	#5	STR	9'-1"	114	K67	8	#4	3	11'-2"	60
A265	12	#5	STR	8'-4"	104						
A266	12	#5	STR	7'-7"	95	*S1	48	#4	6	8'-1"	259
A267	12	#5	STR	6'-10"	86	*S2	48	#5	7	6'-0"	300
A268	2	#5	STR	10'-0"	21	S3	144	#4	8	5'-8"	545
A269	2	#5	STR	9'-6"	20						
A270	2	#5	STR	9'-0"	19	U1	48	#4	9	13'-1"	420
A271	2	#5	STR	8'-6"	18	U2	14	#4	10	7'-8"	72
A272	2	#5	STR	8'-0"	17	*U3	56	#4	6	3'-4"	125
A273	2	#5	STR	7'-6"	16						
A274	2	#5	STR	7'-0"	15						
A275	2	#5	STR	6'-6"	14	*EPOXY COATED REINF. STEEL (LBS.)					32,169
A276	2	#5	STR	6'-0"	13	REINFORCING STEEL (LBS.)					27,545
A277	2	#5	STR	5'-6"	11						
A278	2	#5	STR	5'-0"	10						
A279	2	#5	STR	4'-6"	9						
A280	2	#5	STR	4'-0"	8						
A281	2	#5	STR	3'-6"	7						
A282	4	#5	STR	3'-0"	13						
A283	3	#5	STR	2'-4"	7						

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

STAGE 1 = 5,896.3 SQ. FT.  
 STAGE 2 = 8,038.2 SQ. FT.  
 STAGE 3 = 7,532.0 SQ. FT.  
 TOTAL = 21,466.5 SQ. FT.

GROOVING BRIDGE FLOORS			
	APPROACH SLABS	BRIDGE DECK	TOTAL
STAGE 1 (SQ. FT.)	1,370	5,341	6,711
STAGE 2 (SQ. FT.)	2,049	7,988	10,037
STAGE 3 (SQ. FT.)	1,525	5,944	7,469
			24,217

PROJECT NO. **B-5808**

**CABARRUS** COUNTY

STATION: **20+64.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 BILL OF MATERIAL

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

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3/6/2023

**NORTH CAROLINA PROFESSIONAL ENGINEER**  
 SEAL 029429  
**JASON T. GRISCOM**  
 ENGINEER

STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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ASSEMBLED BY : **SGH** DATE : **12-22**  
 CHECKED BY : **MLO** DATE : **12-22**  
 DESIGN ENGINEER OF RECORD : **J. GRISCOM** DATE : **3-23**



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**NOTES:**  
 FOR NOTES, SEE "END BENT 1 (SHEET 6 OF 6)".  
 FOR SECTIONS A-A, B-B, & C-C, SEE "END BENT 1 (SHEET 4 OF 6)".  
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE  
 POURED AFTER THE CONCRETE PARAPET, END BLOCK AND END  
 POST ARE CAST IF SLIP FORMING IS USED.

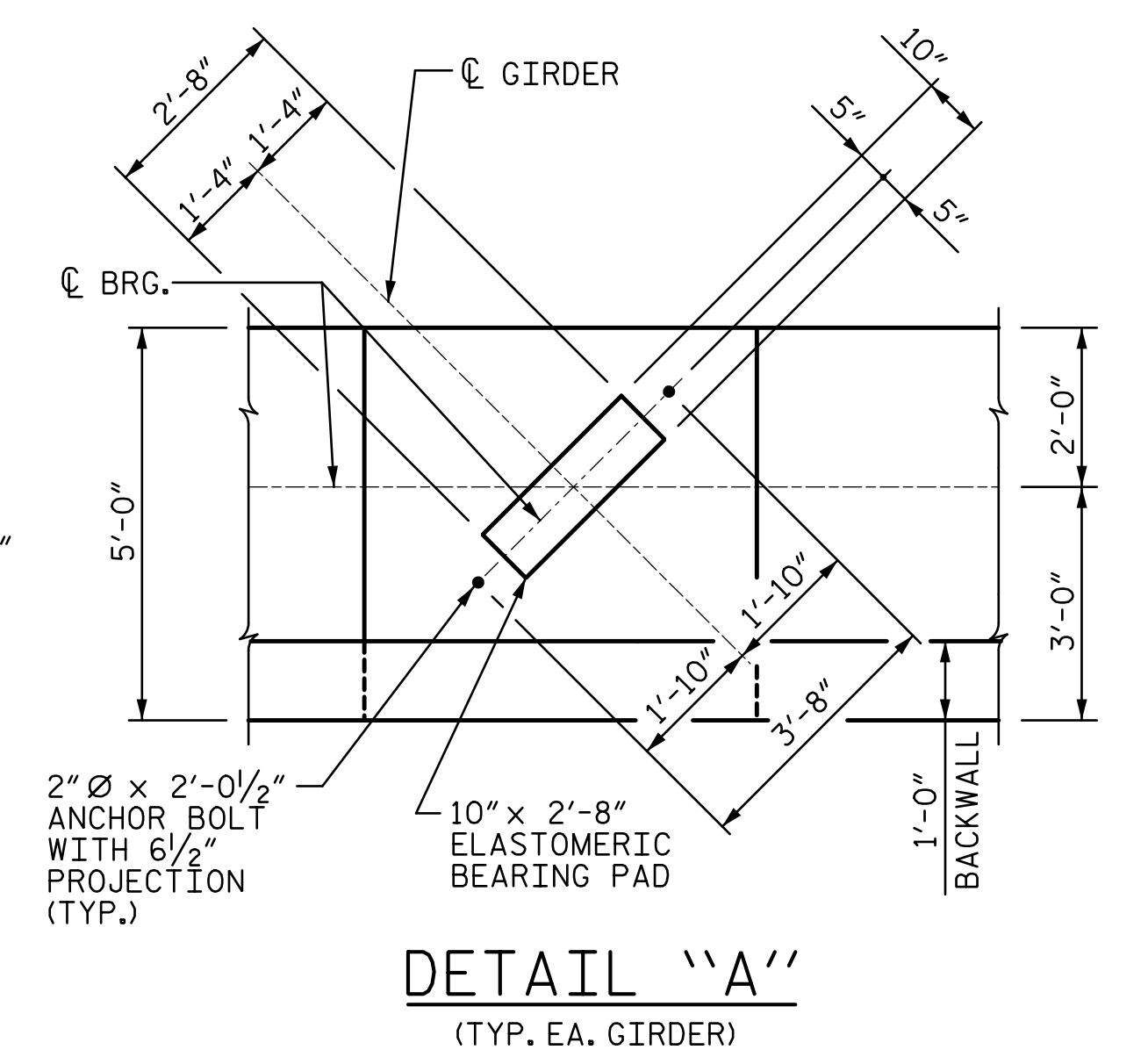
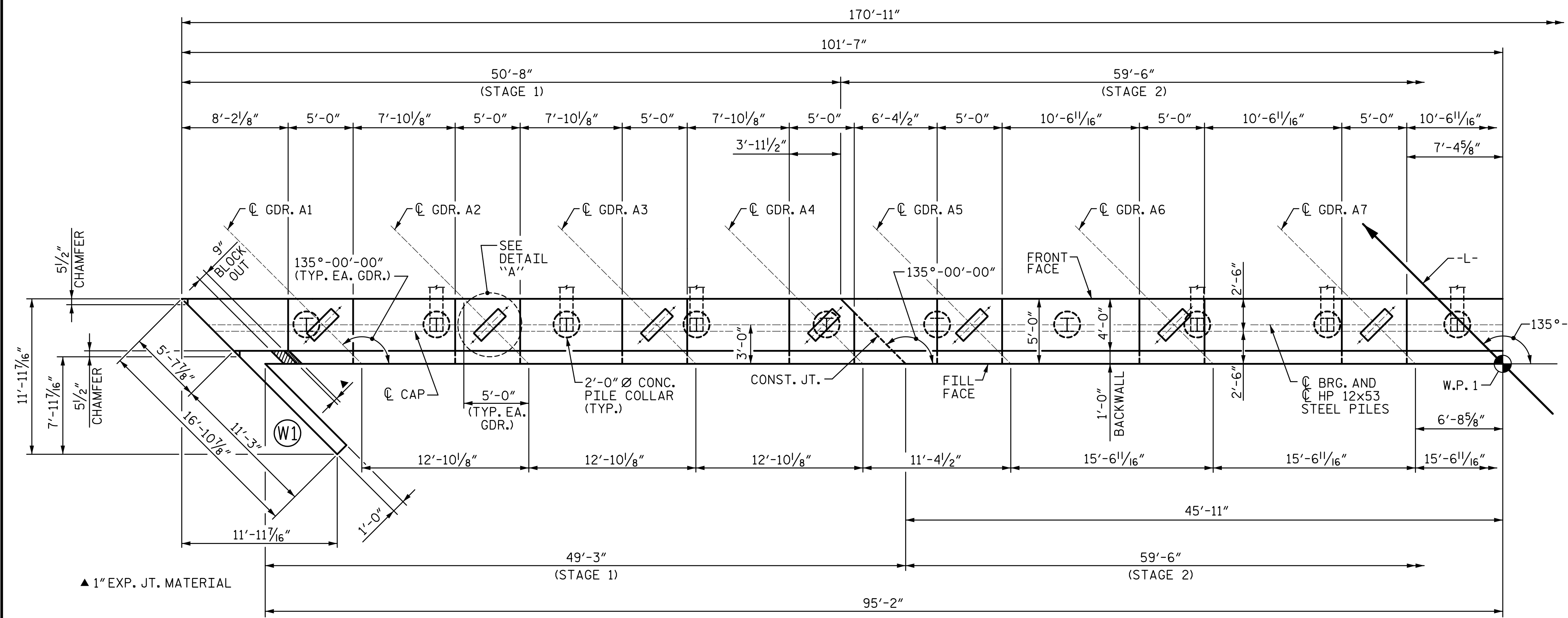
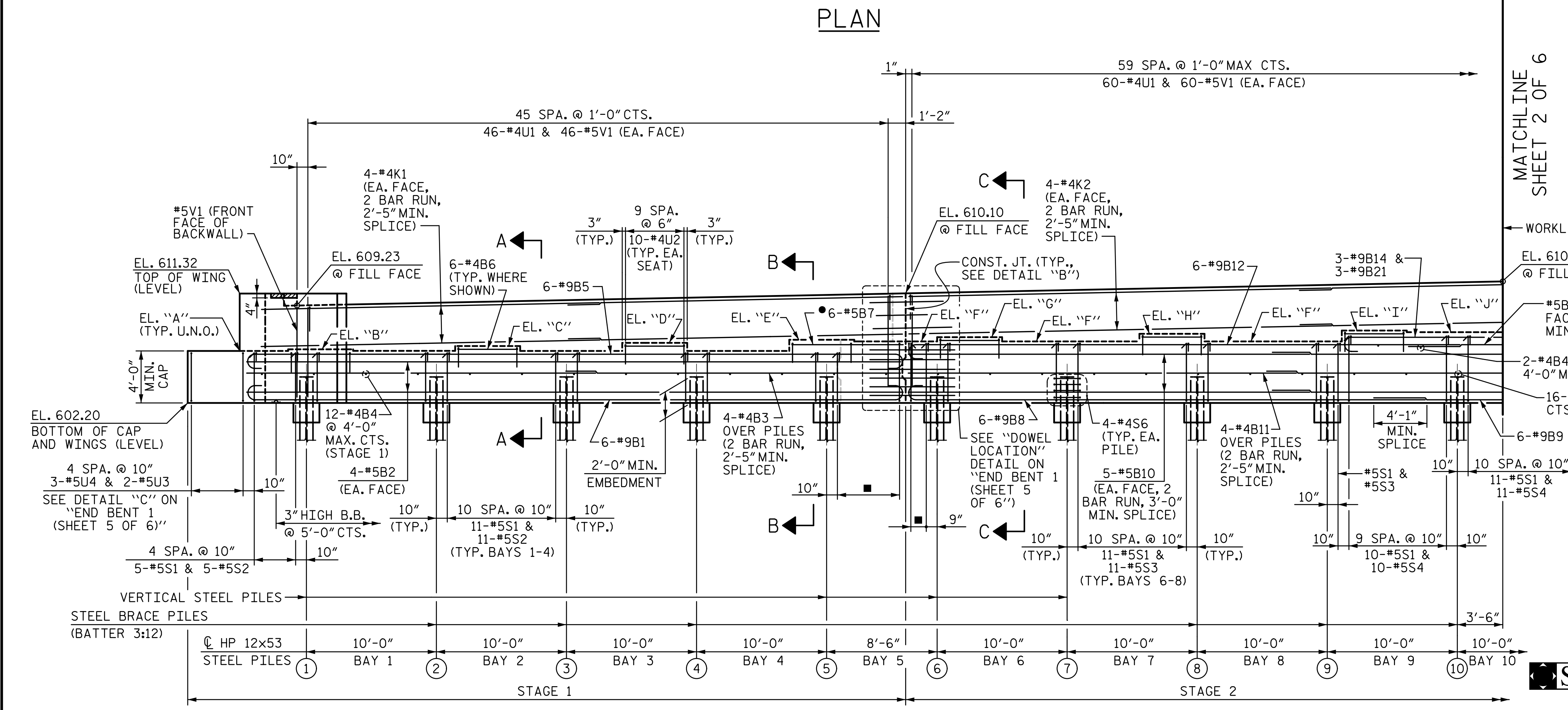
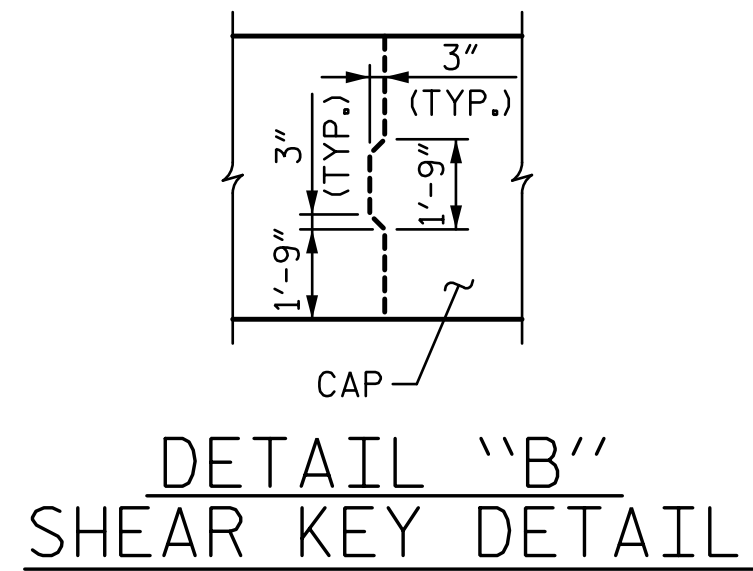


TABLE A ELEVATIONS	
	END BENT 1
"A"	606.20
"B"	606.33
"C"	606.58
"D"	606.82
"E"	607.06
"F"	606.93
"G"	607.26
"H"	607.52
"I"	607.77
"J"	607.47



■ SEE DETAIL "E" ON "END BENT 1 (SHEET 5 OF 6)".  
 ● FIELD CUT #5B7 & #4U2 BARS TO PROVIDE 2" CLEARANCE TO EDGE OF SEAT AND CONSTRUCTION JOINT.

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 1 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## END BENT 1

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

S-43  
TOTAL SHEETS 65

3/6/2023

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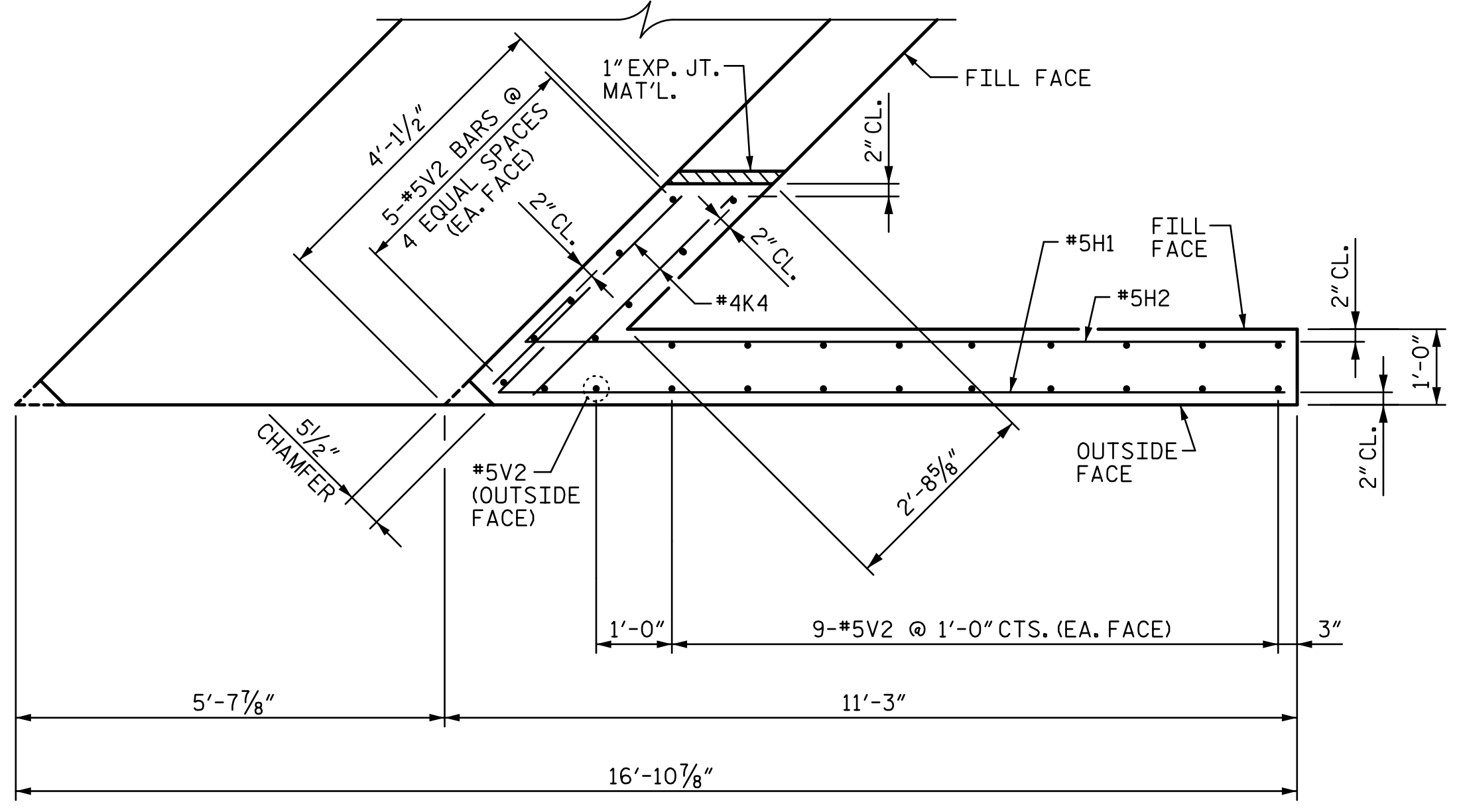
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 CHECKED BY : MLO      DATE : 10-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM      DATE : 3-23

DOCUMENT NOT CONSIDERED  
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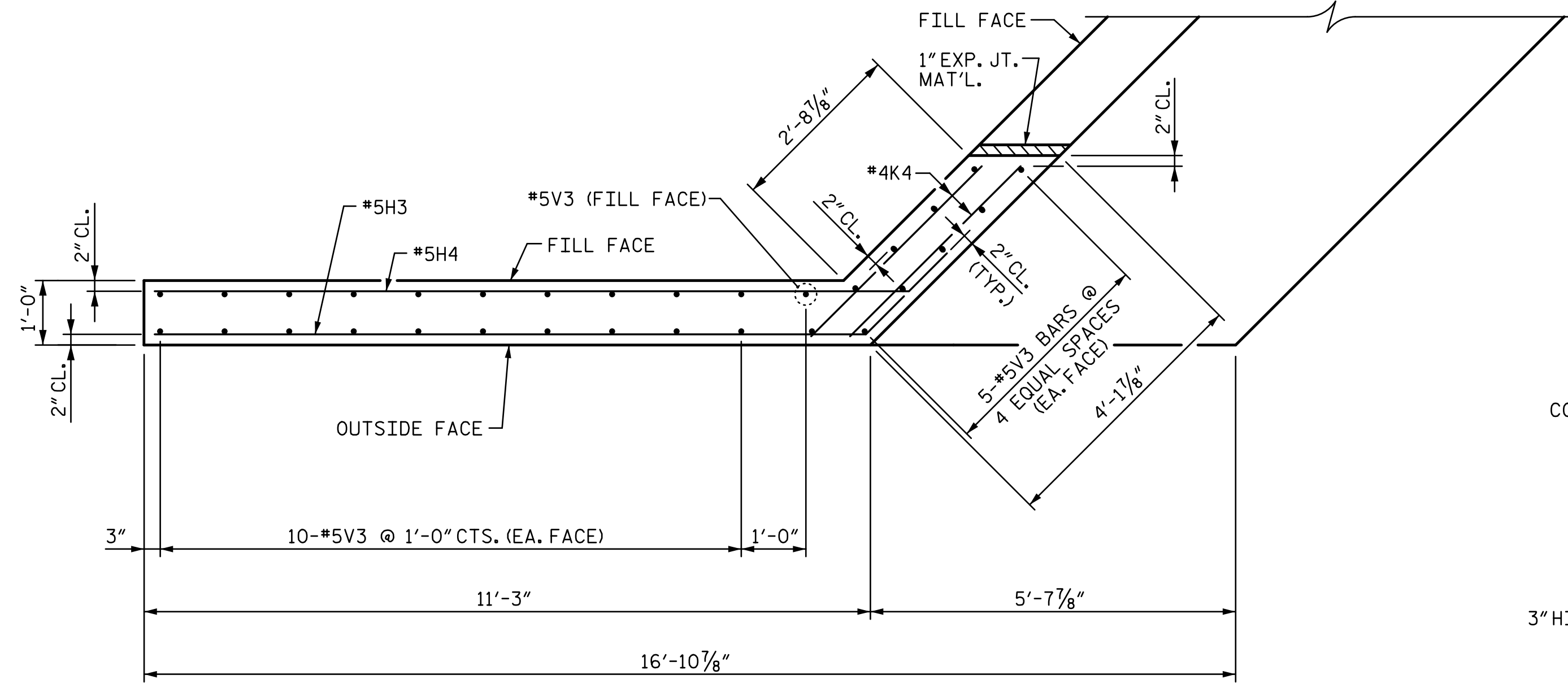




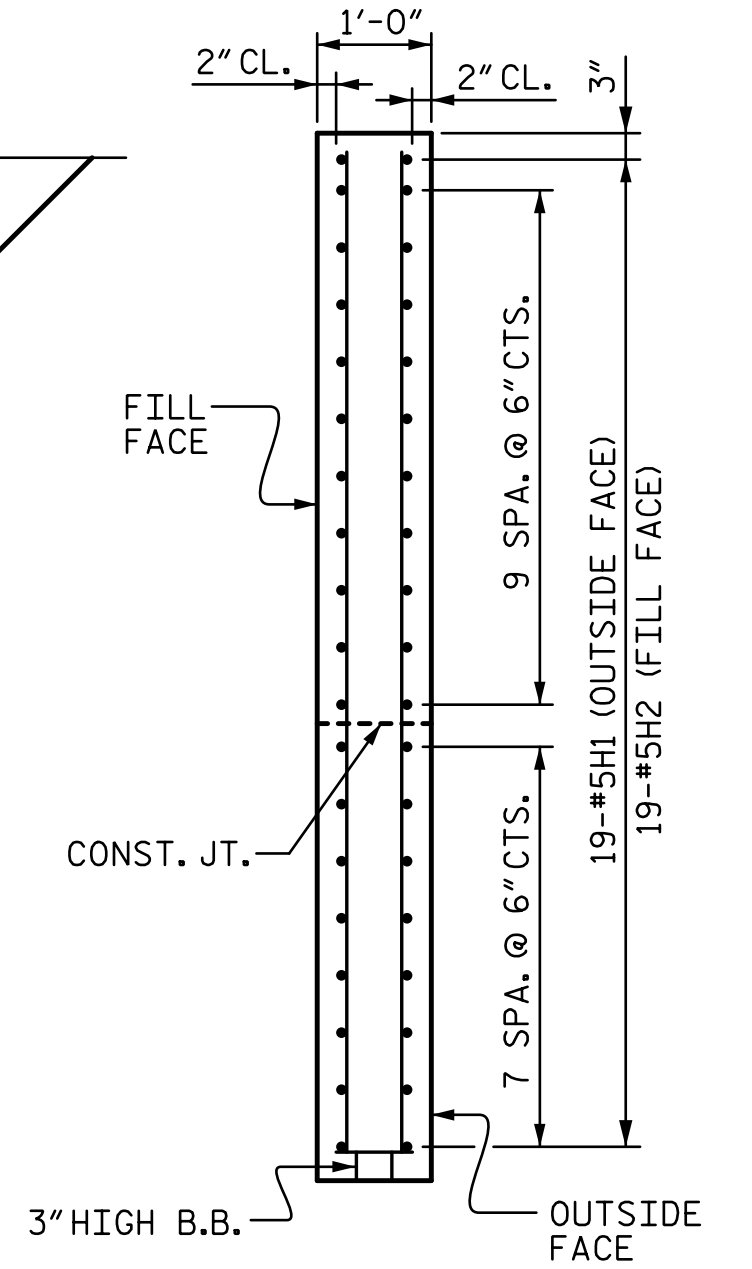
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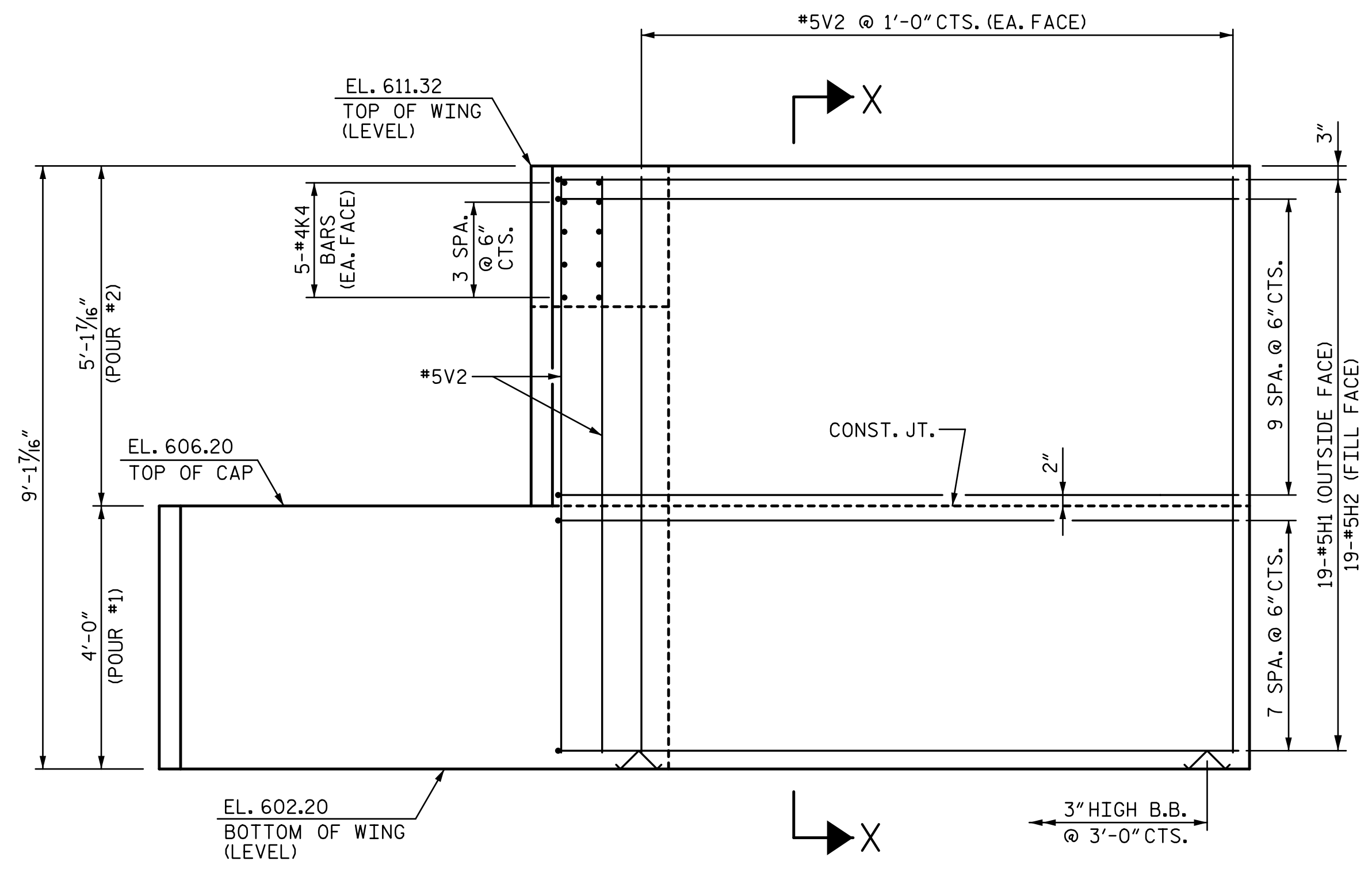
PLAN OF WING (W1)



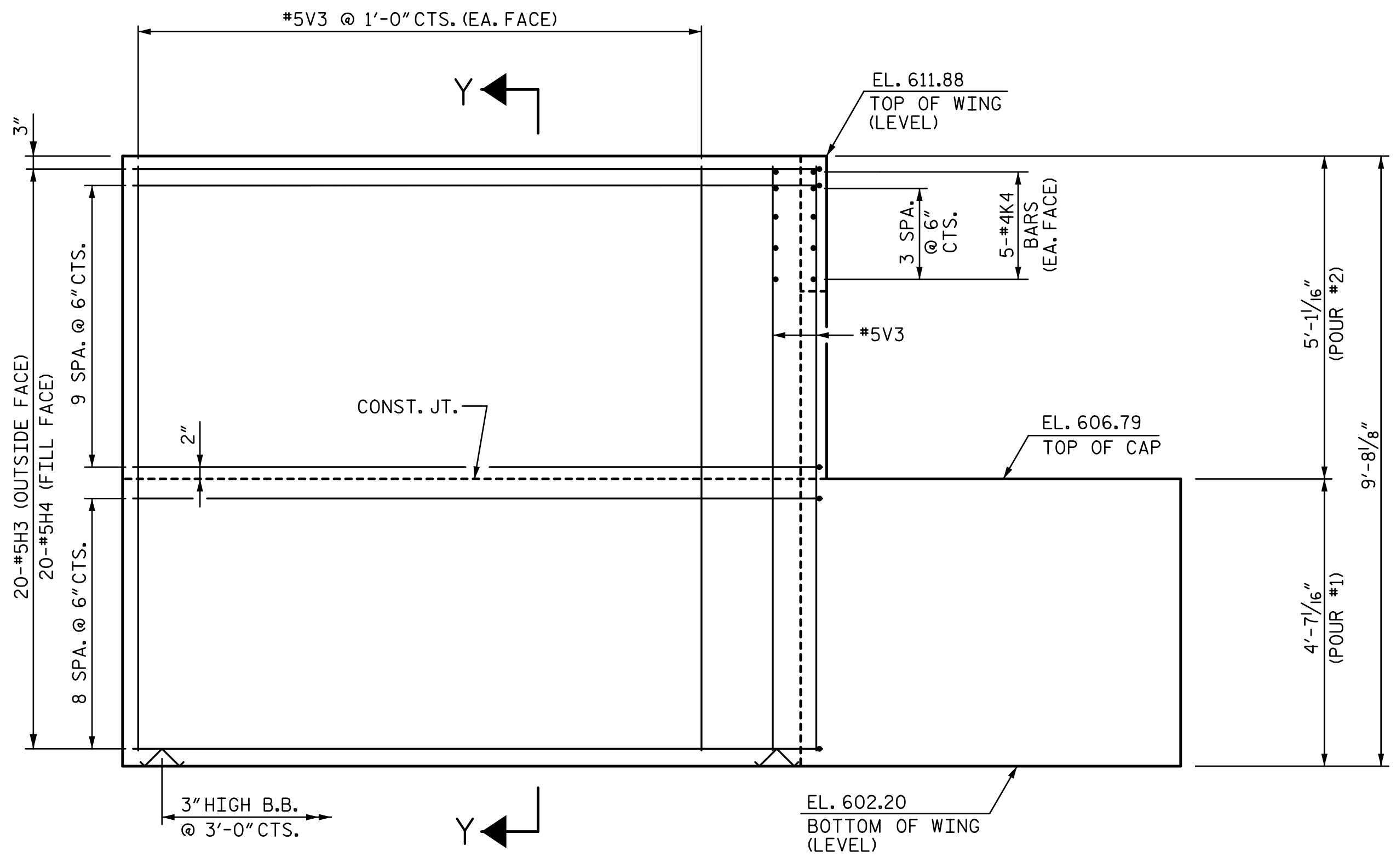
PLAN OF WING (W2)



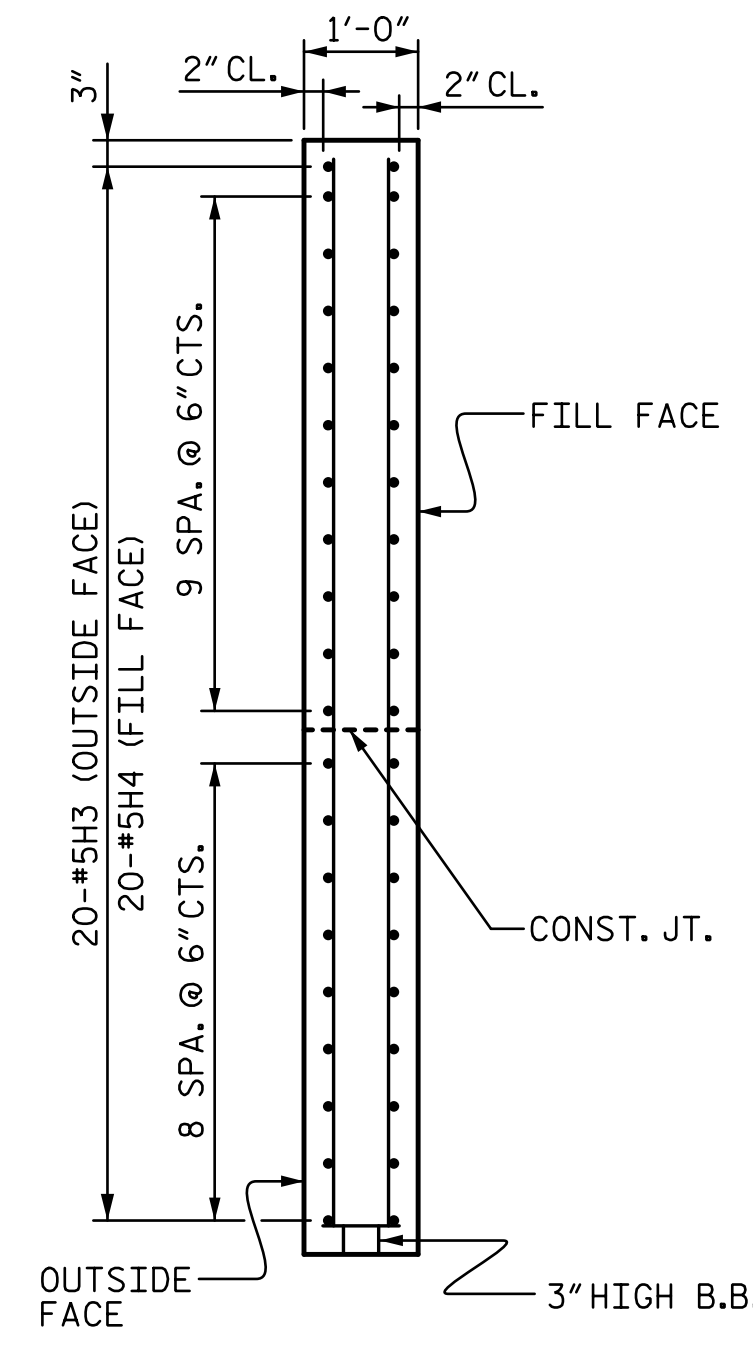
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

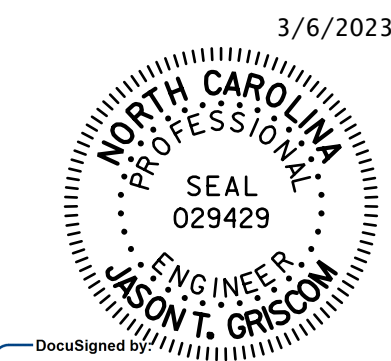


SECTION Y-Y

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

END BENT 1



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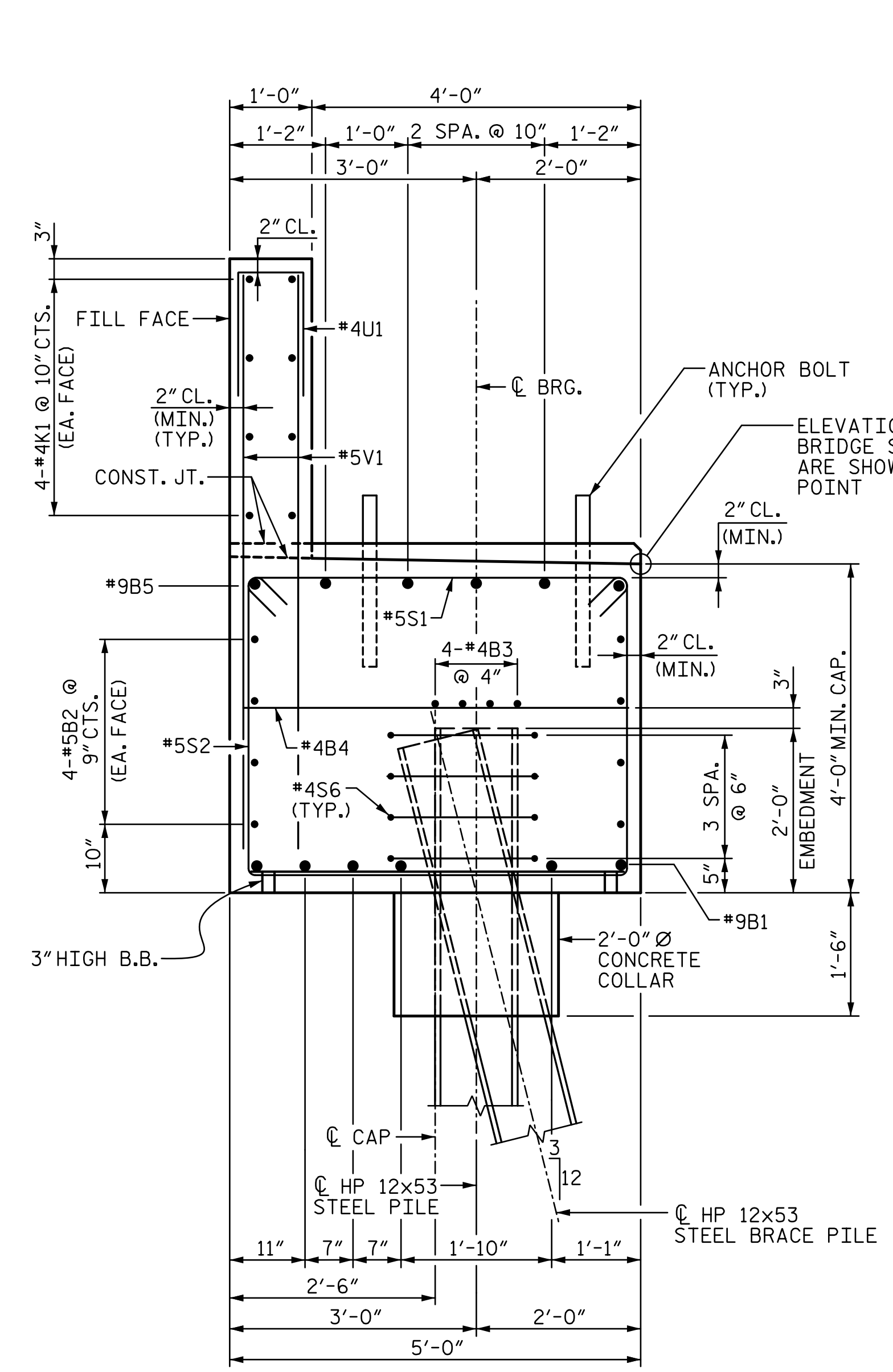
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ASSEMBLED BY : SGH DATE : 11-22  
 CHECKED BY : MLO DATE : 11-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

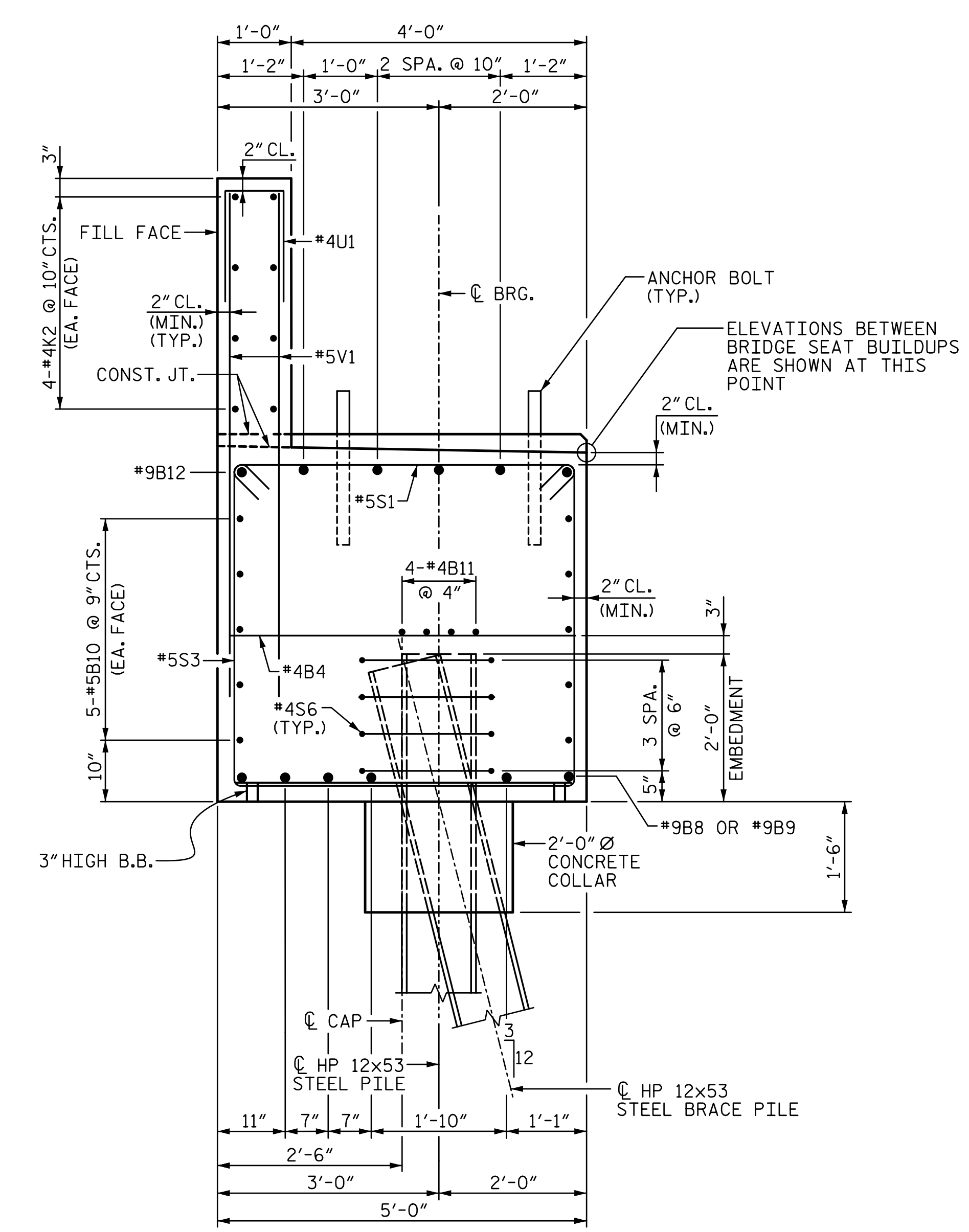
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 65

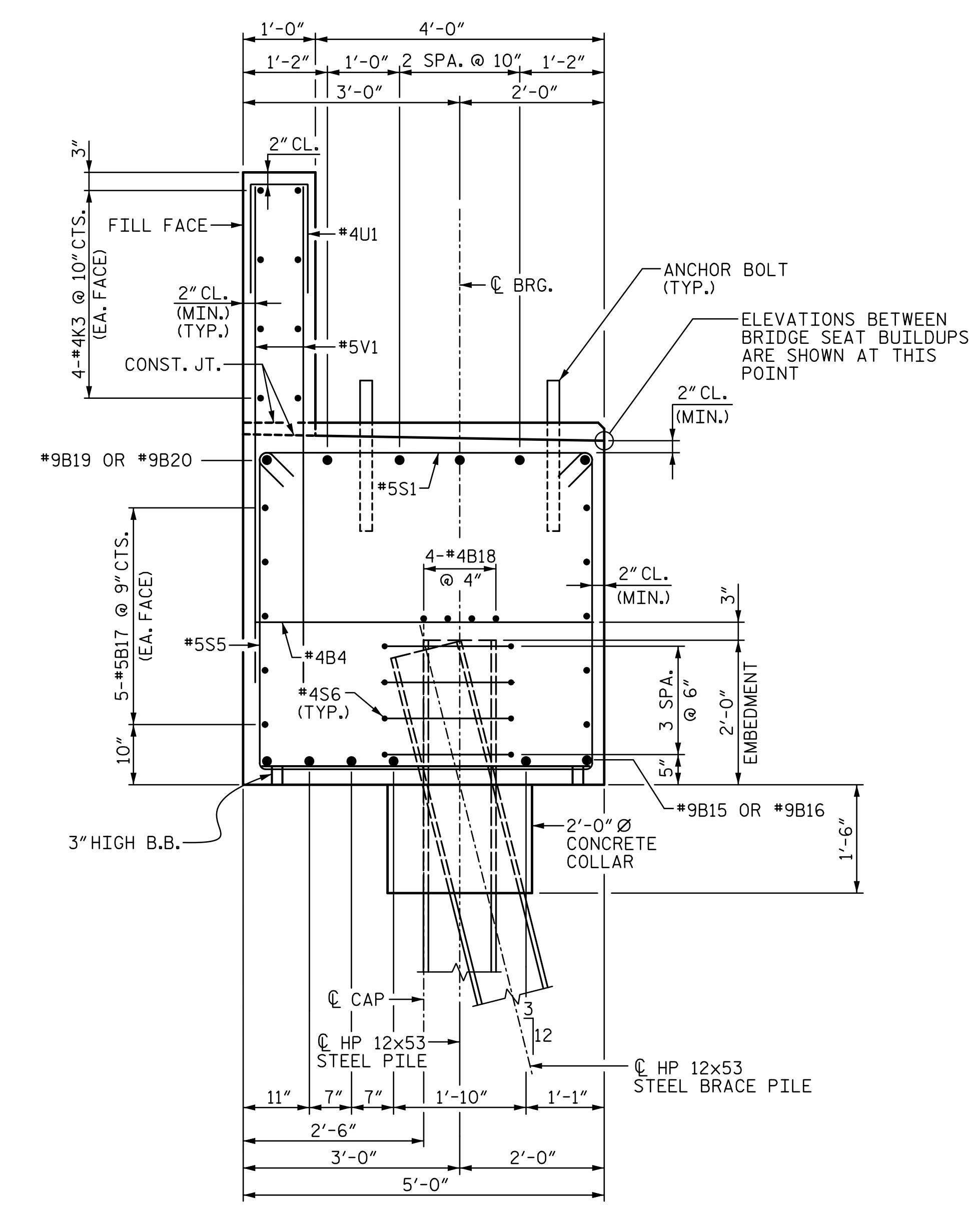
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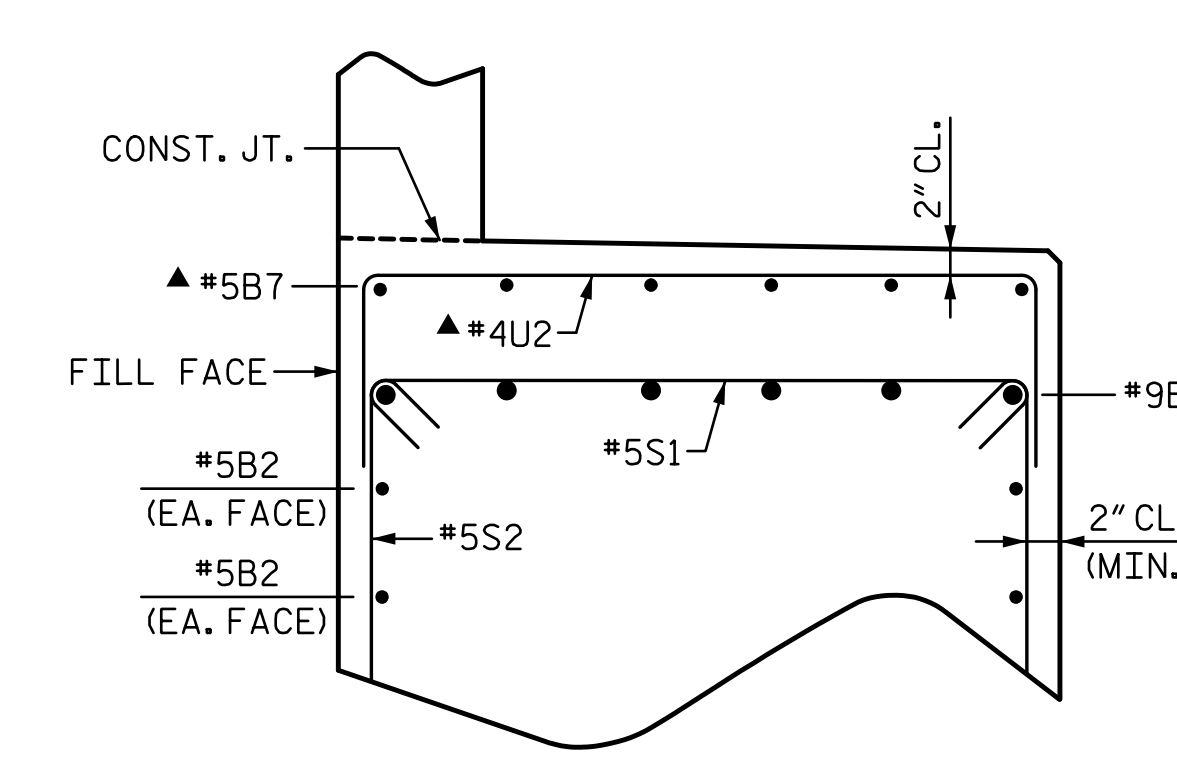
SECTION A-A  
STAGE 1



SECTION C-C  
STAGE 2

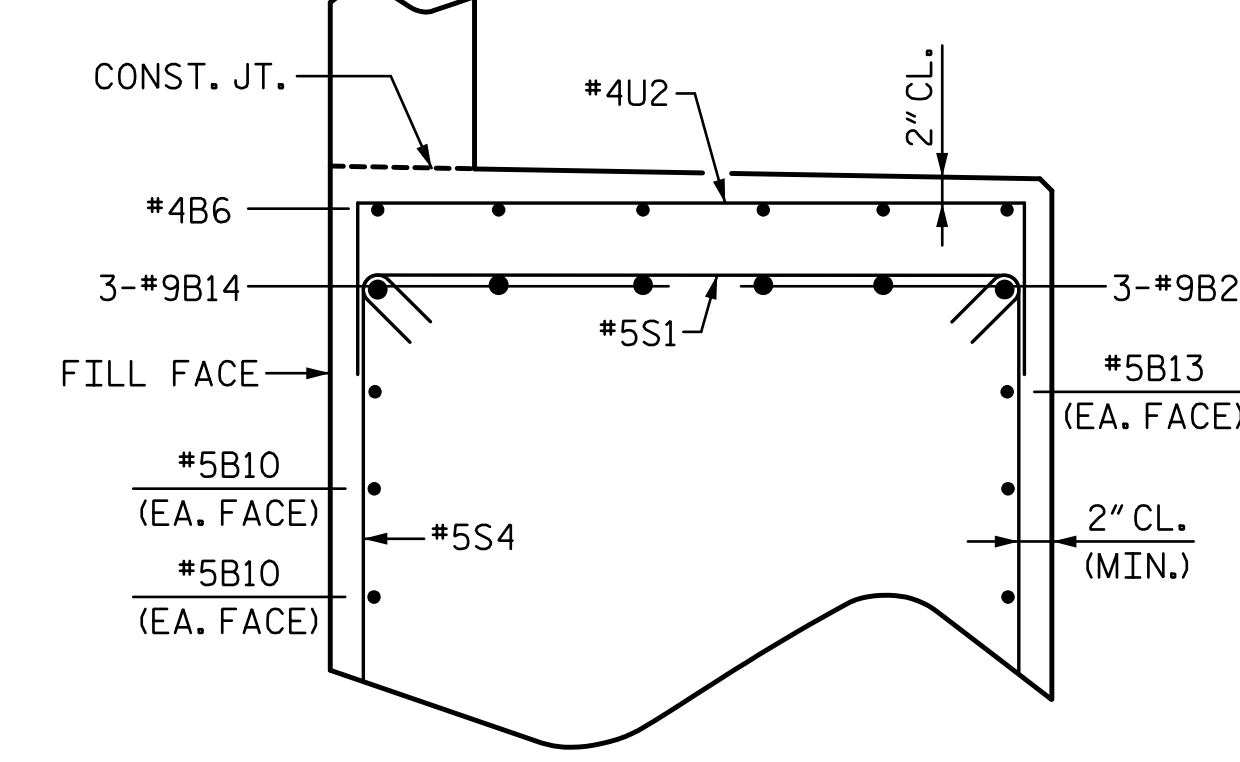


SECTION F-F  
STAGE 3



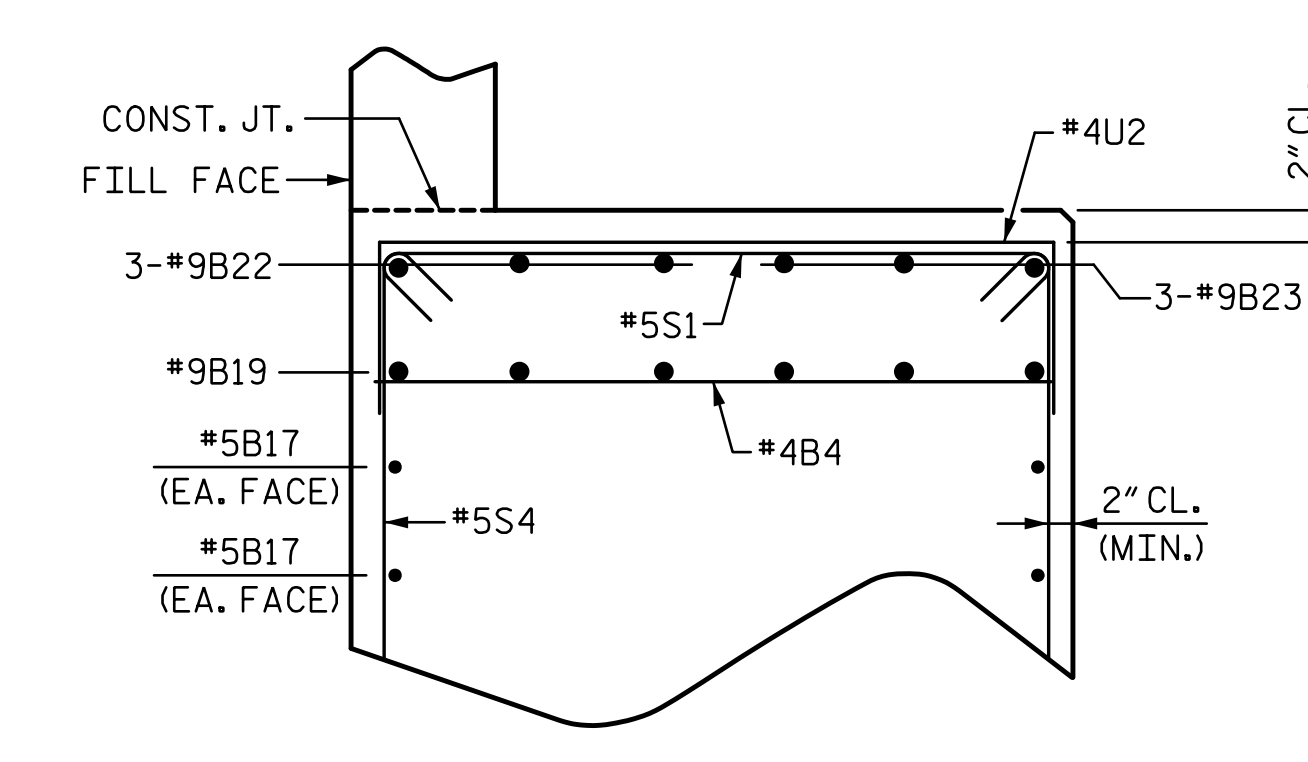
PARTIAL SECTION B-B  
STAGE 1

(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)  
▲ FIELD CUT #5B7 AND #4U2 BARS TO PROVIDE 2" CLEARANCE TO EDGE OF SEAT AND CONSTRUCTION JOINT.



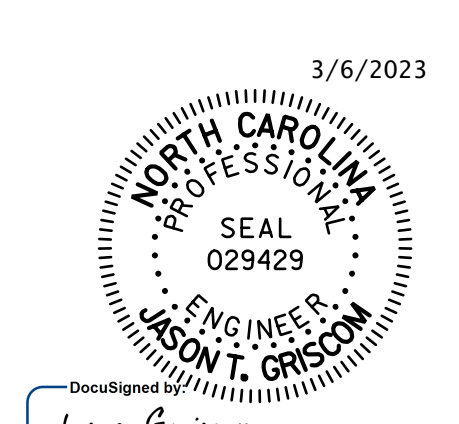
PARTIAL SECTION D-D  
STAGE 2

(SEE SECTION C-C FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)



PARTIAL SECTION E-E  
STAGE 3

(SEE SECTION F-F FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)



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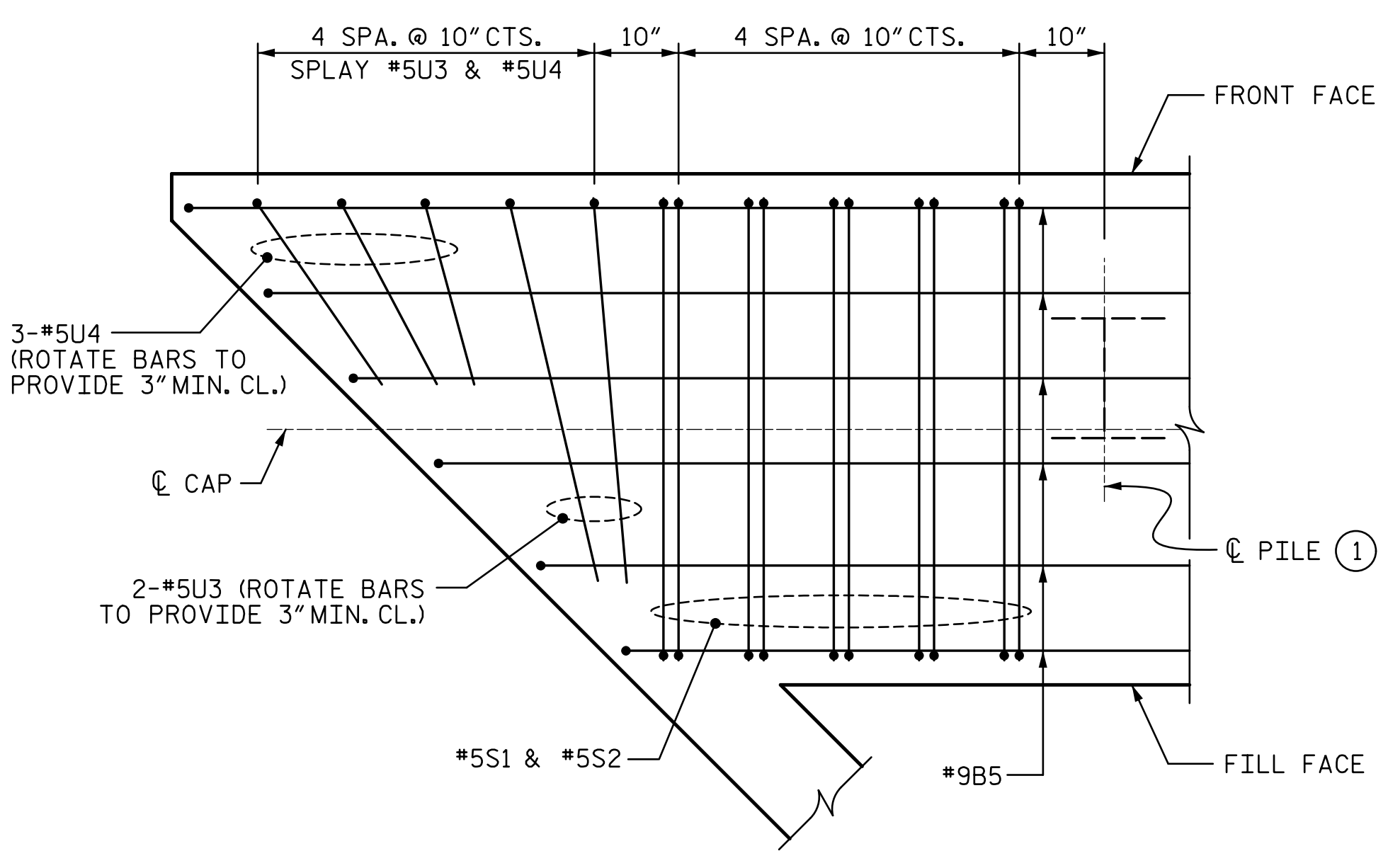
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PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 4 OF 6

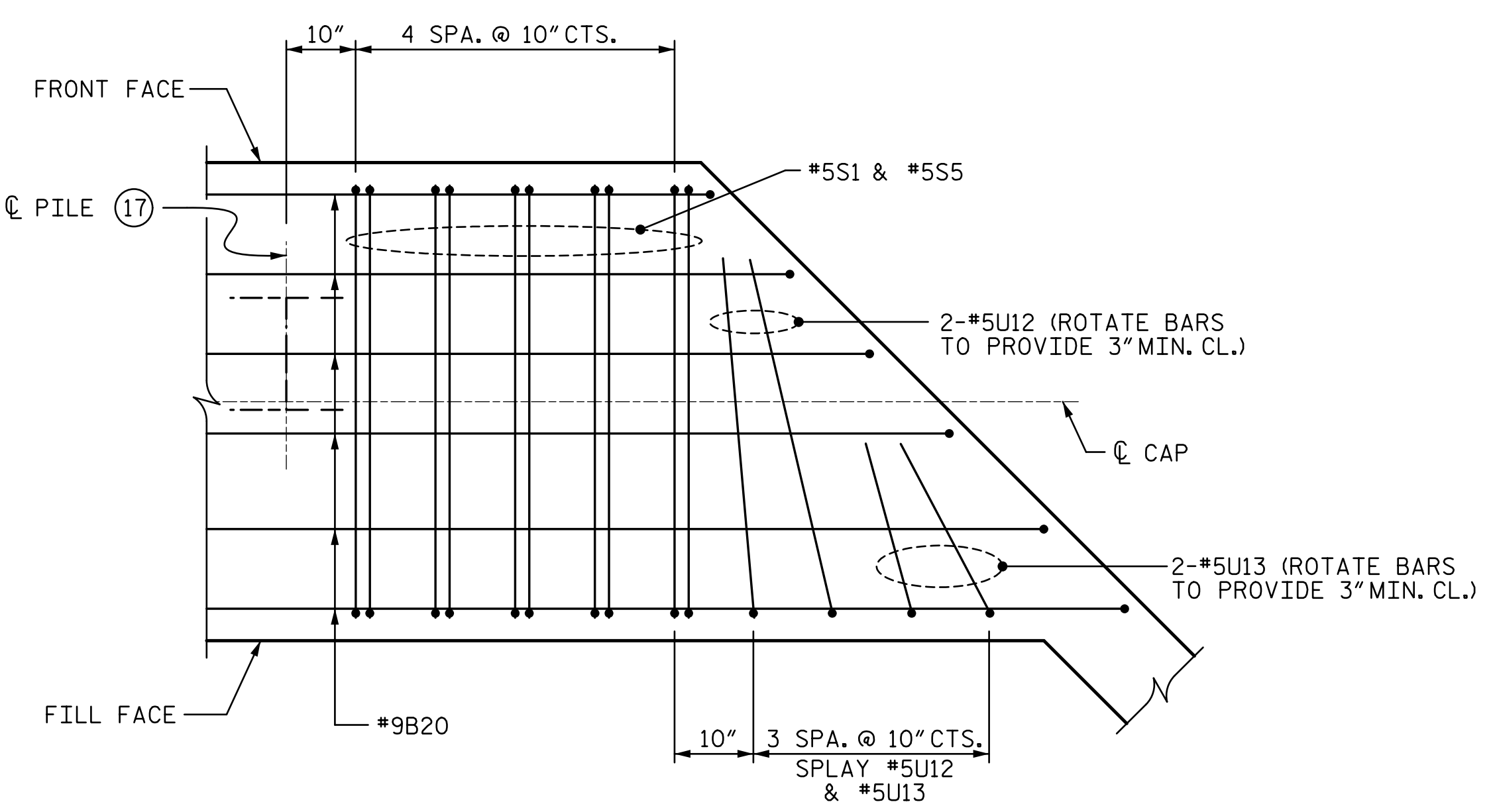
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-46
					TOTAL SHEETS 65



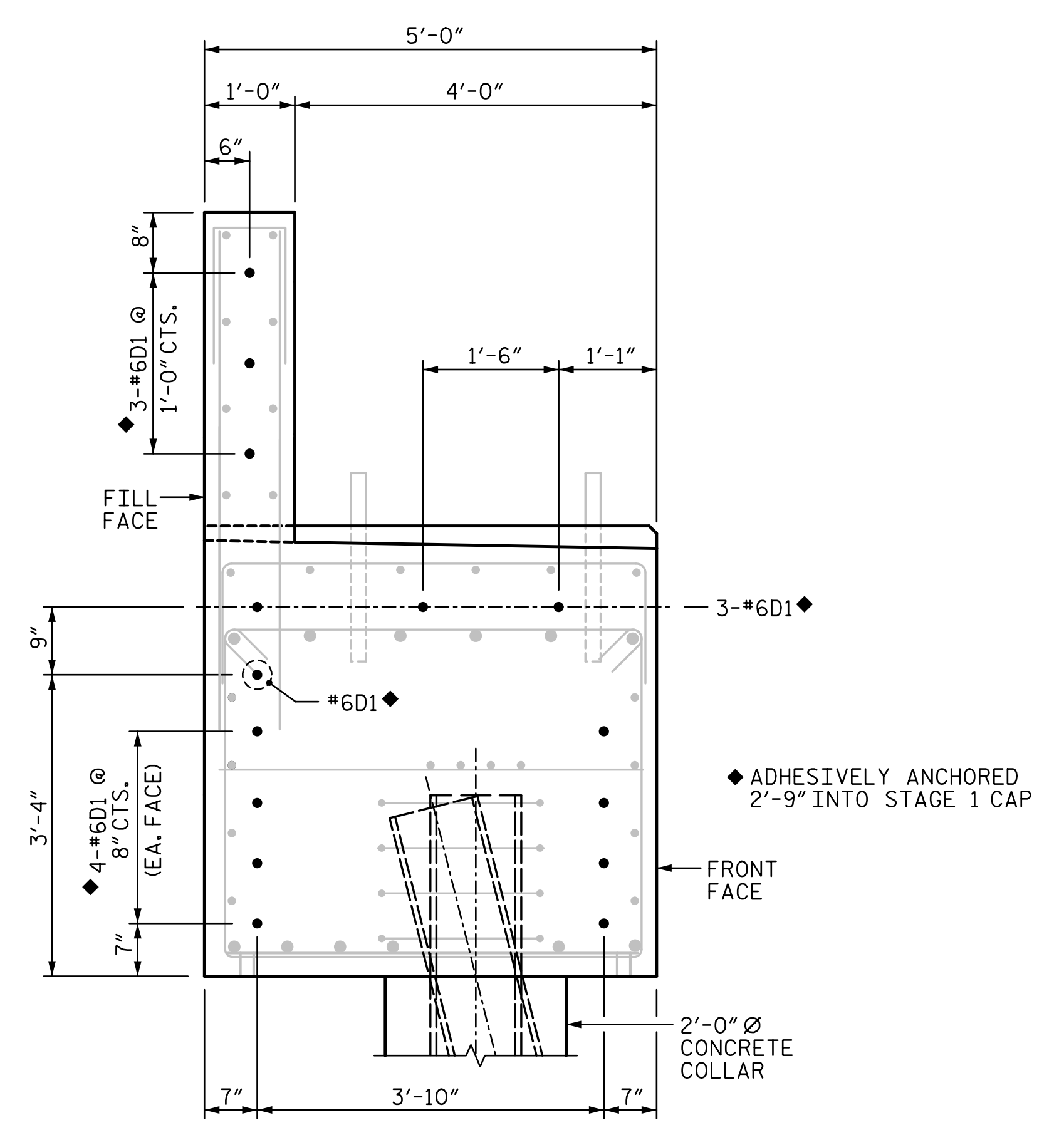
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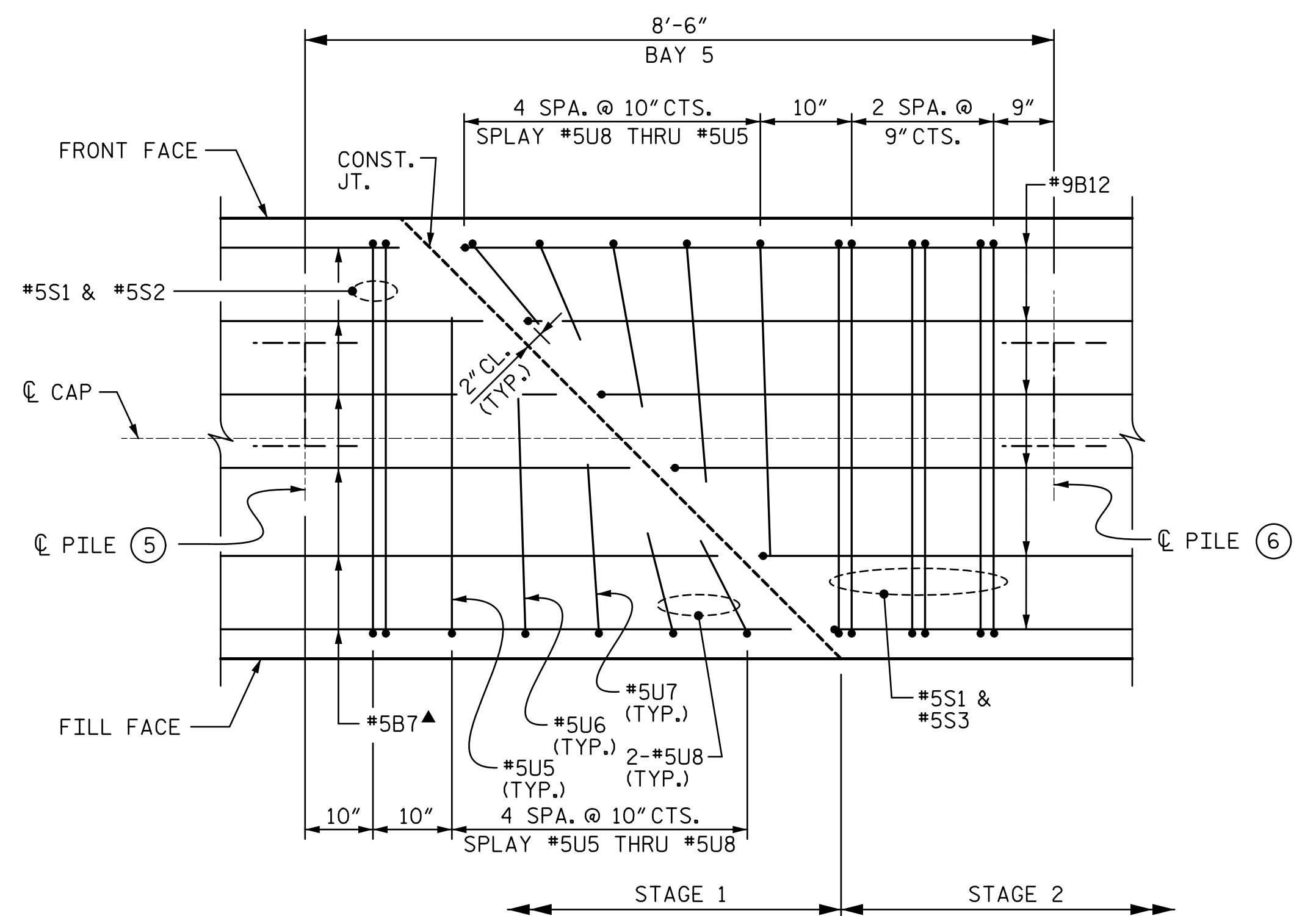
**DETAIL "C"**  
STAGE 1  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING AND WING REINFORCEMENT NOT SHOWN FOR CLARITY.)



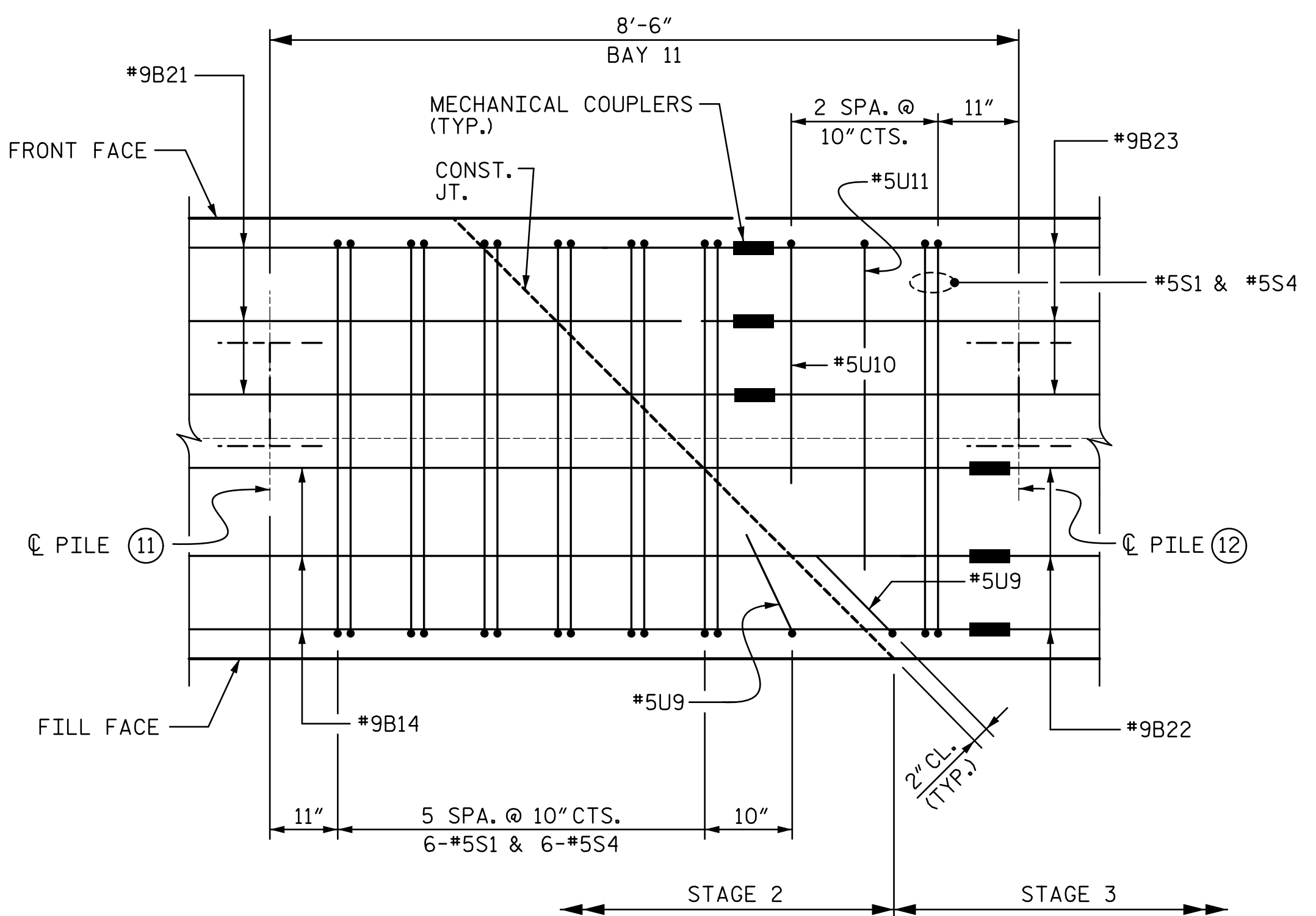
**DETAIL "D"**  
STAGE 3  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING AND WING REINFORCEMENT NOT SHOWN FOR CLARITY.)



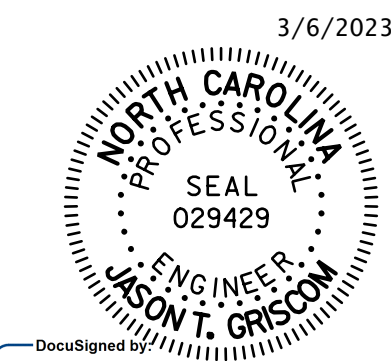
**DOWEL LOCATION**  
(CONSTRUCTION JOINT BETWEEN STAGE 1 AND STAGE 2 ONLY.)  
LEVEL ONE FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS REQUIRED. THE YIELD LOAD OF THE DOWEL IS 26.4 KIPS.



**DETAIL "E"**  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING NOT SHOWN FOR CLARITY.)  
▲ FIELD CUT #5B7 BARS TO PROVIDE 2" CLEARANCE TO EDGE OF SEAT AND CONSTRUCTION JOINT.



**DETAIL "F"**  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING NOT SHOWN FOR CLARITY.)



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Charlotte, NC 28202  
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PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-  
SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>END BENT 1</b>					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-47
					TOTAL SHEETS 65

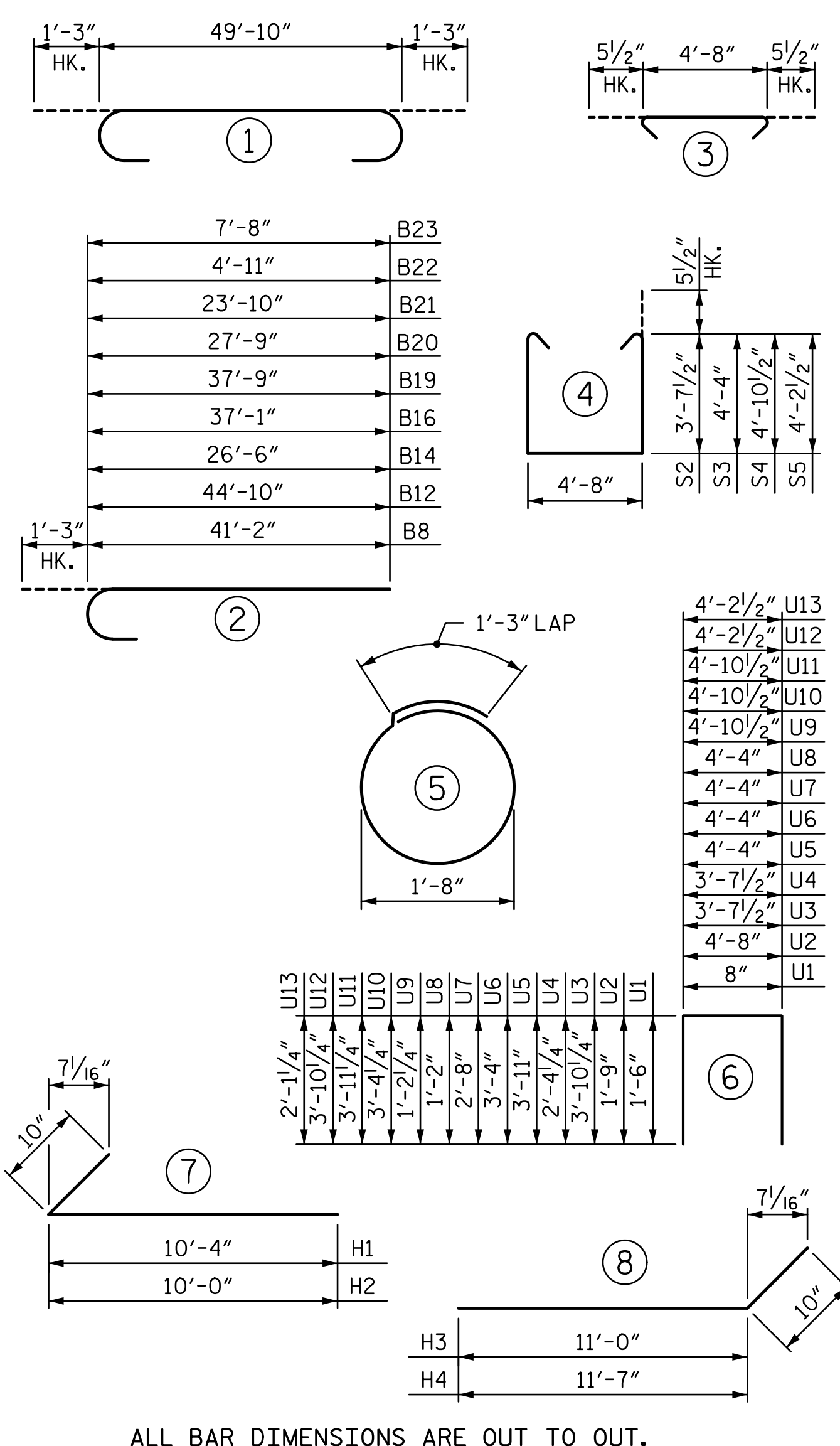
**NOTES:**

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL**

**STAGE 1**

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	52'-4"	1,068
B2	8	#5	STR	50'-0"	417
B3	8	#4	STR	26'-4"	141
B4	12	#4	STR	4'-8"	37
B5	6	#9	1	52'-4"	1,068
B6	12	#4	STR	4'-8"	37
B7	6	#5	STR	8'-4"	52
H1	19	#5	7	11'-2"	221
H2	19	#5	7	10'-10"	215
K1	16	#4	STR	26'-4"	281
K4	10	#4	STR	3'-5"	23
S1	50	#5	3	5'-7"	291
S2	50	#5	4	12'-10"	669
S6	20	#4	5	6'-6"	87
U1	46	#4	6	3'-8"	113
U2	40	#4	6	8'-2"	218
U3	2	#5	6	11'-4"	24
U4	3	#5	6	8'-4"	26
U5	1	#5	6	12'-2"	13
U6	1	#5	6	11'-0"	11
U7	1	#5	6	9'-8"	10
U8	2	#5	6	6'-8"	14
V1	93	#5	STR	6'-6"	630
V2	29	#5	STR	8'-9"	265

**BILL OF MATERIAL**

**STAGE 2**

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B4	18	#4	STR	4'-8"	56
B6	24	#4	STR	4'-8"	75
B8	6	#9	2	42'-5"	865
B9	6	#9	STR	23'-1"	471
B10	20	#5	STR	31'-8"	661
B11	8	#4	STR	31'-5"	168
B12	6	#9	2	46'-1"	940
B13	2	#5	STR	18'-2"	38
B14	3	#9	2	27'-9"	283
B21	3	#9	2	25'-1"	256
K2	16	#4	STR	31'-5"	336
S1	64	#5	3	5'-7"	373
S3	37	#5	4	14'-3"	550
S4	27	#5	4	15'-4"	432
S6	24	#4	5	6'-6"	104
U1	60	#4	6	3'-8"	147
U2	40	#4	6	8'-2"	218
U5	1	#5	6	12'-2"	13
U6	1	#5	6	11'-0"	11
U7	1	#5	6	9'-8"	10
U8	2	#5	6	6'-8"	14
U9	1	#5	6	7'-3"	8
V1	120	#5	STR	6'-6"	814

**BILL OF MATERIAL**

**STAGE 3**

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B4	17	#4	STR	4'-8"	53
B6	12	#4	STR	4'-8"	37
B15	6	#9	STR	26'-4"	537
B16	6	#9	2	38'-4"	782
B17	20	#5	STR	31'-4"	654
B18	8	#4	STR	31'-0"	166
B19	6	#9	STR	39'-0"	796
B20	6	#9	2	29'-0"	592
B22	3	#9	2	6'-2"	63
B23	3	#9	2	8'-11"	91
H3	20	#5	8	11'-10"	247
H4	20	#5	8	12'-5"	259
K3	16	#4	STR	31'-0"	331
K4	10	#4	STR	3'-5"	23
S1	61	#5	3	5'-7"	355
S4	6	#5	4	15'-4"	96
S5	55	#5	4	14'-0"	803
S6	24	#4	5	6'-6"	104
U1	56	#4	6	3'-8"	137
U2	40	#4	6	8'-2"	218
U9	1	#5	6	7'-3"	8
U10	1	#5	6	11'-7"	12
U11	1	#5	6	12'-9"	13
U12	2	#5	6	11'-11"	25
U13	2	#5	6	8'-5"	18
V1	113	#5	STR	6'-6"	766
V3	31	#5	STR	9'-4"	302

**QUANTITIES - STAGE 1**

REINFORCING STEEL	LBS.	5,931
CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.	41.8	
POUR 2: BACKWALL & UPPER WING C.Y.	8.3	
<b>TOTAL</b>	<b>C.Y.</b>	<b>50.1</b>

**QUANTITIES - STAGE 2**

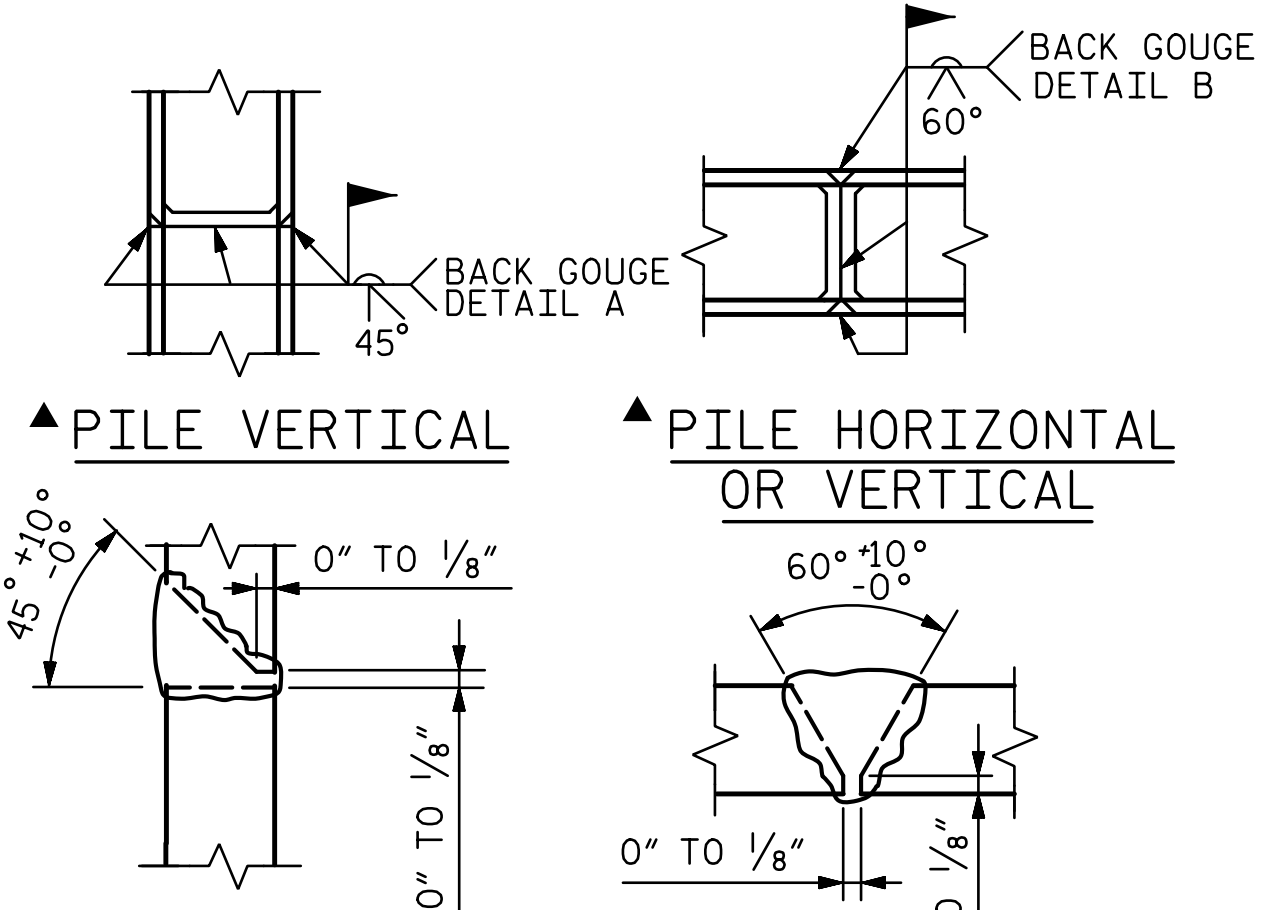
REINFORCING STEEL	LBS.	6,973
CLASS A CONCRETE:		
POUR 1: CAP & COLLARS C.Y.	56.9	
POUR 2: BACKWALL C.Y.	7.9	
<b>TOTAL</b>	<b>C.Y.</b>	<b>64.8</b>

**QUANTITIES - STAGE 3**

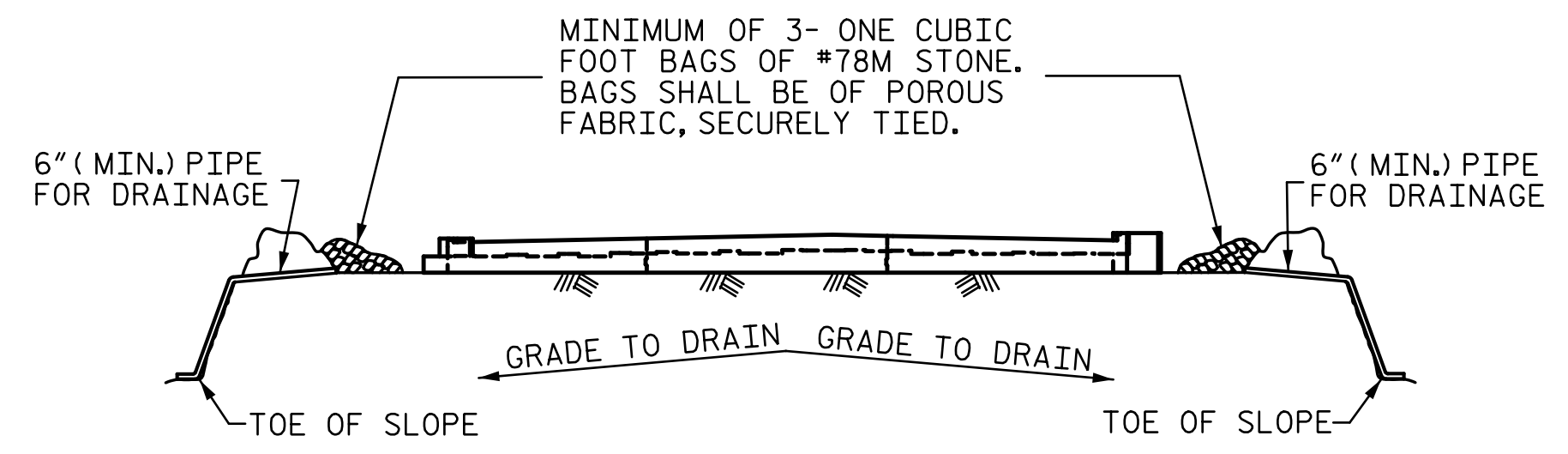
REINFORCING STEEL	LBS.	7,488
CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.	56.6	
POUR 2: BACKWALL & UPPER WING C.Y.	9.9	
<b>TOTAL</b>	<b>C.Y.</b>	<b>66.5</b>

**TOTAL END BENT QUANTITIES**

REINFORCING STEEL	LBS.	20,392
CLASS A CONCRETE:	C.Y.	181.4



**PILE SPLICING DETAILS**  
 ▲ POSITION OF PILE DURING WELDING.



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

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

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

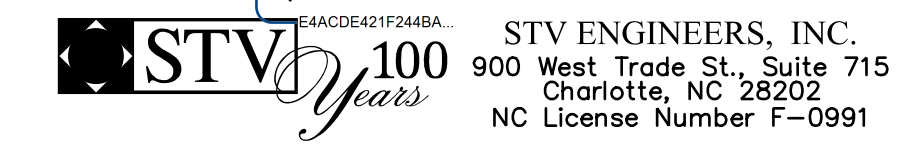
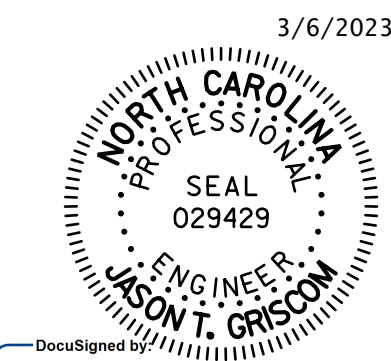
**TEMPORARY DRAINAGE AT END BENT**

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**

SHEET 6 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**END BENT 1**



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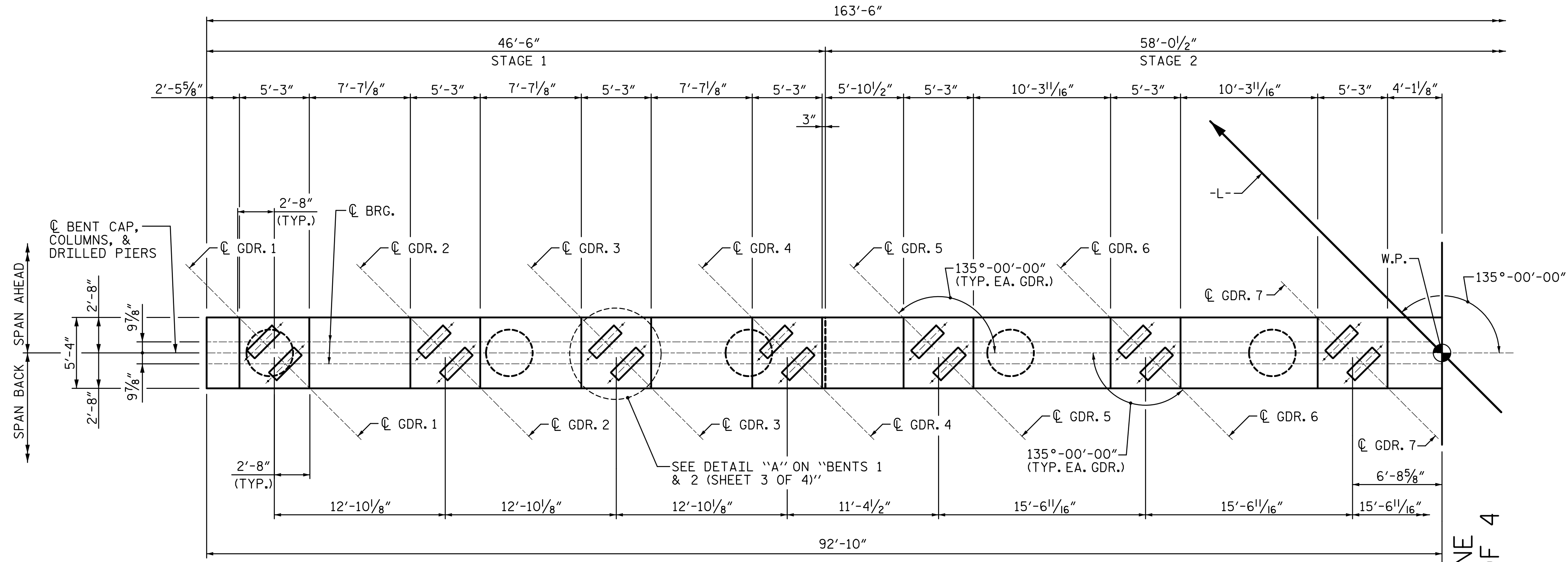
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 65

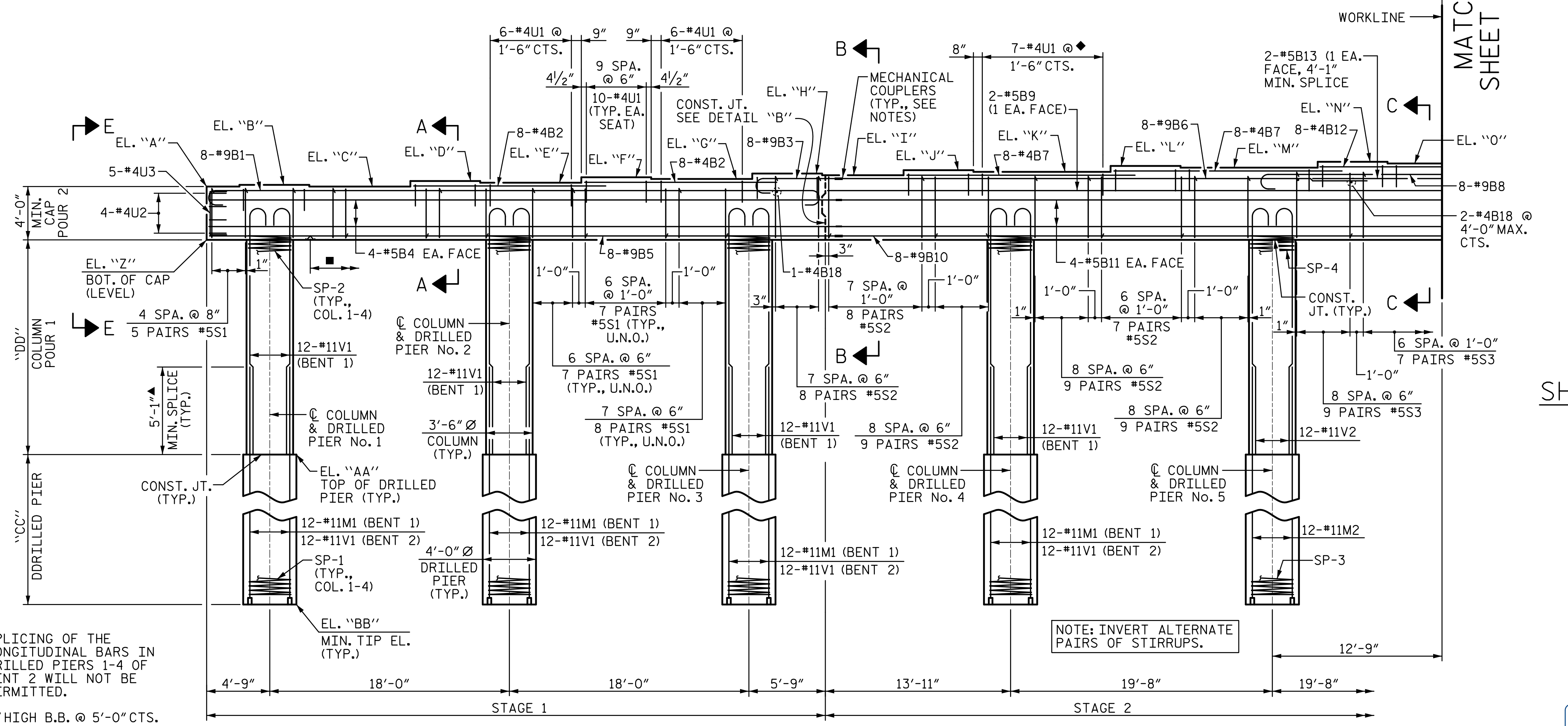
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PLAN



ELEVATION

(LOOKING IN DIRECTION OF STATIONING)  
(U.N.O. -UNLESS NOTED OTHERWISE)

**NOTES:**

- FOR 2" Ø ANCHOR BOLTS, SEE "ELASTOMERIC BEARING DETAILS (SHEET 1 OF 2)".
- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- ALL REINFORCING STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- PROJECT STAGE 1 AND STAGE 2 "B" BARS 1'-0" TO COUPLE TO STAGE 2 AND STAGE 3 "B" BARS, AS SHOWN.

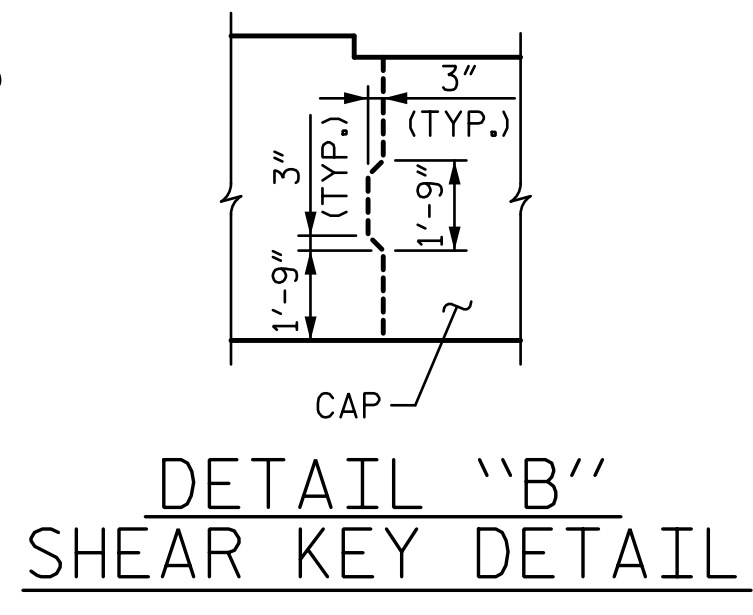
TABLE A		
ELEVATIONS		
	BENT 1	BENT 2
"A"	605.64	604.78
"B"	605.77	604.91
"C"	605.64	604.78
"D"	606.06	605.20
"E"	605.93	605.07
"F"	606.34	605.48
"G"	606.21	605.33
"H"	606.62	605.76
"I"	606.49	605.63
"J"	606.87	606.01
"K"	606.74	605.88
"L"	607.19	606.36
"M"	607.06	606.23
"N"	607.50	606.70
"O"	607.37	606.57
"Z"	601.64	600.78

TABLE B				
ELEVATIONS				
DRILLED PIER No.	BENT 1		BENT 2	
	"AA"	"BB"	"AA"	"BB"
1	589.00	568.00	596.00	571.00
2	589.00	568.00	596.00	571.00
3	589.00	568.00	596.00	571.00
4	589.00	568.00	596.00	571.00
5	590.50	561.50	591.00	562.50

TABLE C		
DIMENSIONS		
DRILLED PIER No.	BENT 1	BENT 2
	"CC"	"CC"
1	21'-0"	25'-0"
2	21'-0"	25'-0"
3	21'-0"	25'-0"
4	21'-0"	25'-0"
5	29'-0"	28'-6"

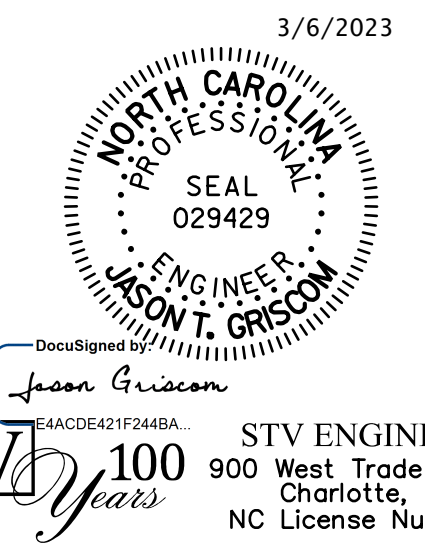
  

COLUMN No.	"DD"	"DD"
1	12'-7 7/8"	4'-9 3/8"
2	12'-7 7/8"	4'-9 3/8"
3	12'-7 7/8"	4'-9 3/8"
4	12'-7 7/8"	4'-9 3/8"
5	11'-1 5/8"	9'-9 3/8"



- ▲ SPLICING OF THE LONGITUDINAL BARS IN DRILLED PIERS 1-4 OF BENT 2 WILL NOT BE PERMITTED.
- 3" HIGH B.B. @ 5'-0" CTS.
- ◆ TYPICAL BETWEEN GDRS. 5-6, 6-7 & 7-8 (STAGE 2)

ASSEMBLED BY : SGH DATE : 11-22  
 CHECKED BY : MLO DATE : 11-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23



STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

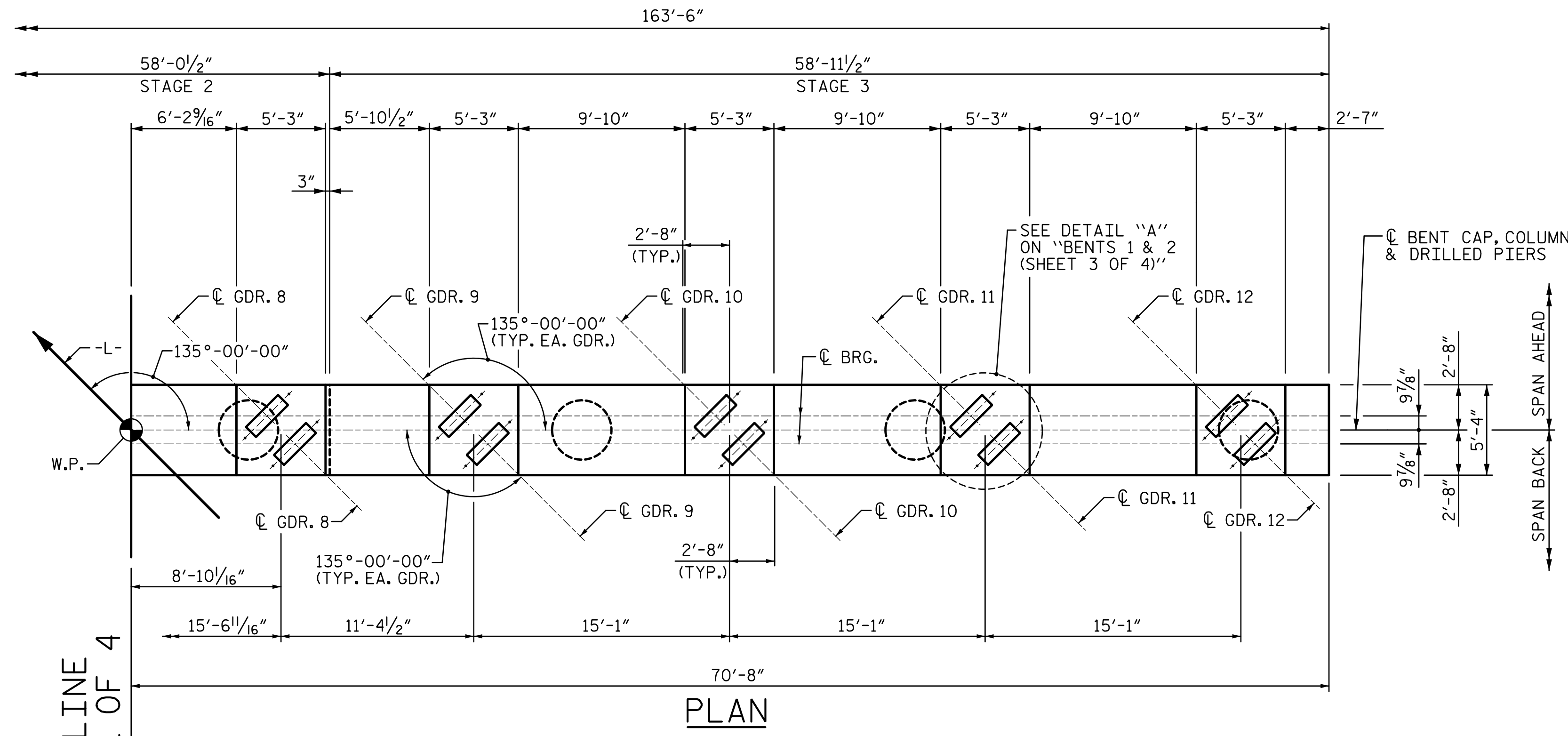
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 SIGNATURES COMPLETED

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
BENTS 1 & 2				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-49
				TOTAL SHEETS 65



**NOTES:**  
FOR NOTES, SEE "BENTS 1 & 2 (SHEET 1 OF 4)".



**TABLE A**  
ELEVATIONS

	BENT 1	BENT 2
"O"	607.37	606.57
"P"	607.55	606.79
"Q"	607.31	606.59
"R"	607.44	606.72
"S"	607.15	606.50
"T"	607.28	606.63
"U"	606.99	606.40
"V"	607.12	606.53
"W"	606.80	606.31
"X"	606.93	606.44
"Y"	606.80	606.31
"Z"	601.64	600.78

**TABLE B**  
ELEVATIONS

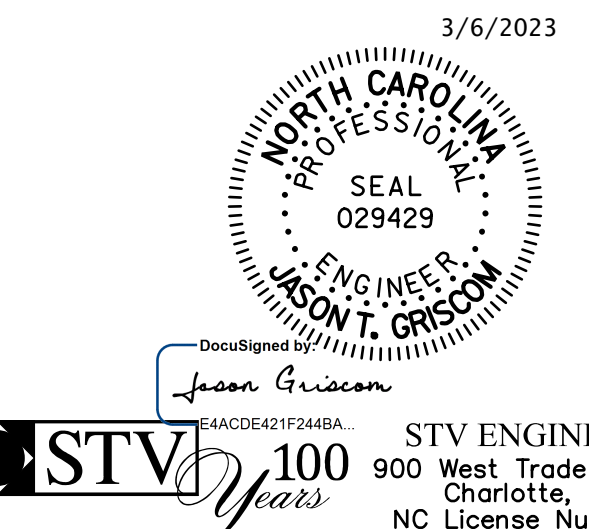
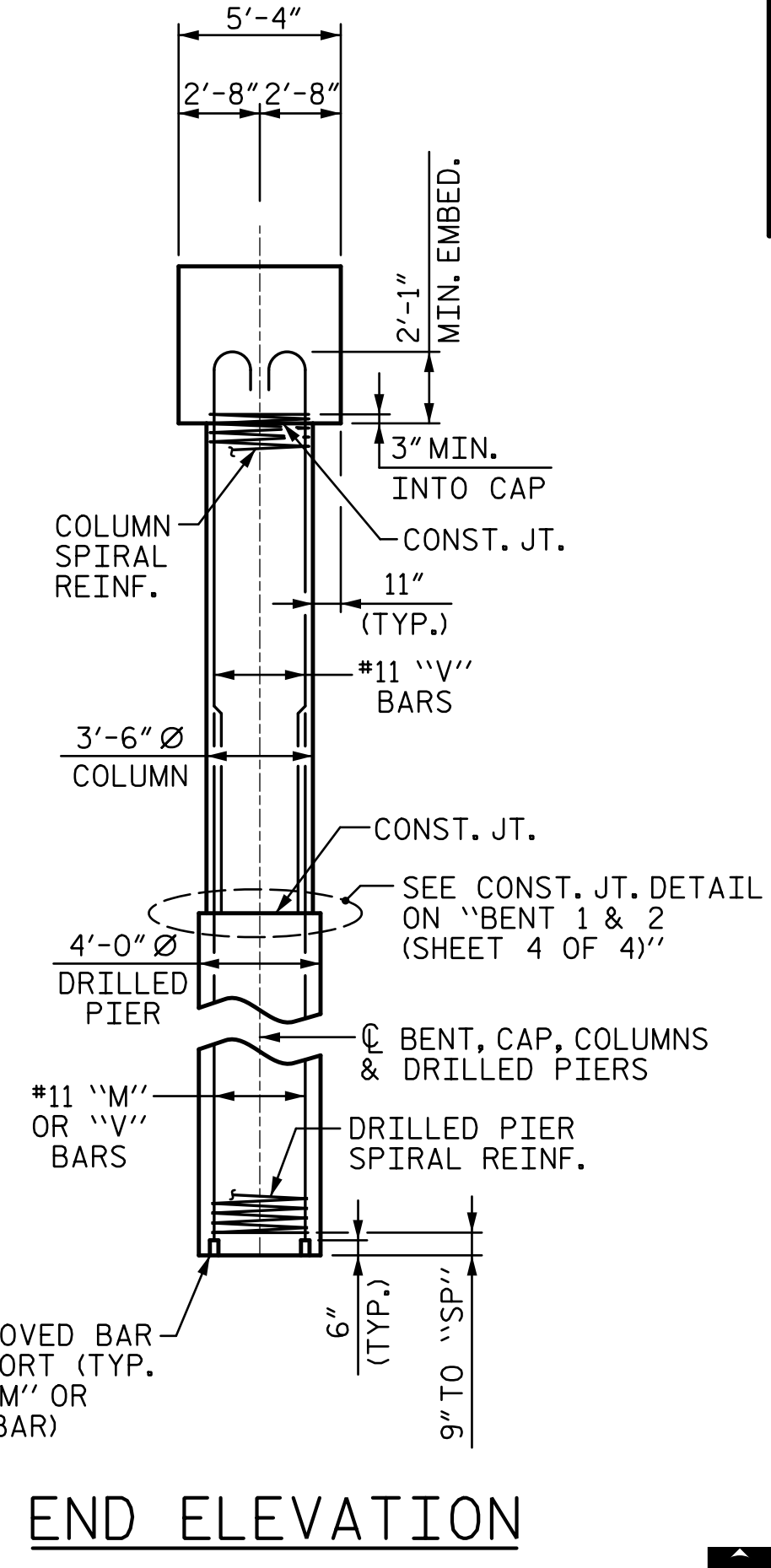
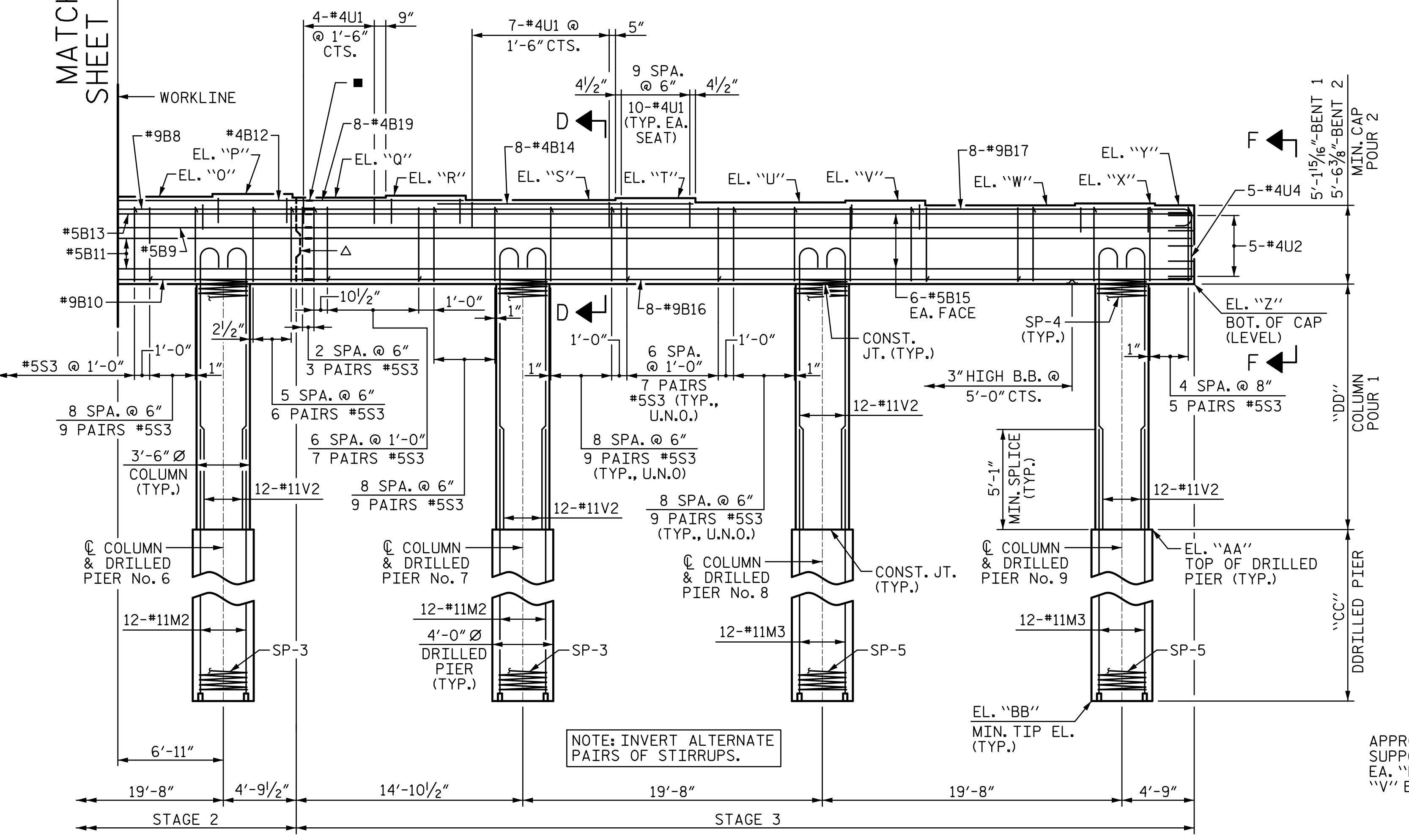
DRILLED PIER No.	BENT 1		BENT 2	
	"AA"	"BB"	"AA"	"BB"
6	590.50	561.50	591.00	562.50
7	590.50	561.50	591.00	562.50
8	590.50	570.00	591.00	553.50
9	590.50	570.00	591.00	553.50

**TABLE C**  
DIMENSIONS

DRILLED PIER No.	BENT 1	BENT 2
	6	29'-0"
7	29'-0"	28'-6"
8	20'-6"	37'-6"
9	20'-6"	37'-6"

COLUMN No.	"DD"	"DD"
	6	11'-1 5/8"
7	11'-1 5/8"	9'-9 3/8"
8	11'-1 5/8"	9'-9 3/8"
9	11'-1 5/8"	9'-9 3/8"



PROJECT NO. **B-5808**  
CABARRUS COUNTY  
STATION: **20+64.00 -L-**  
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**BENTS 1 & 2**

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

S-50  
TOTAL SHEETS 65

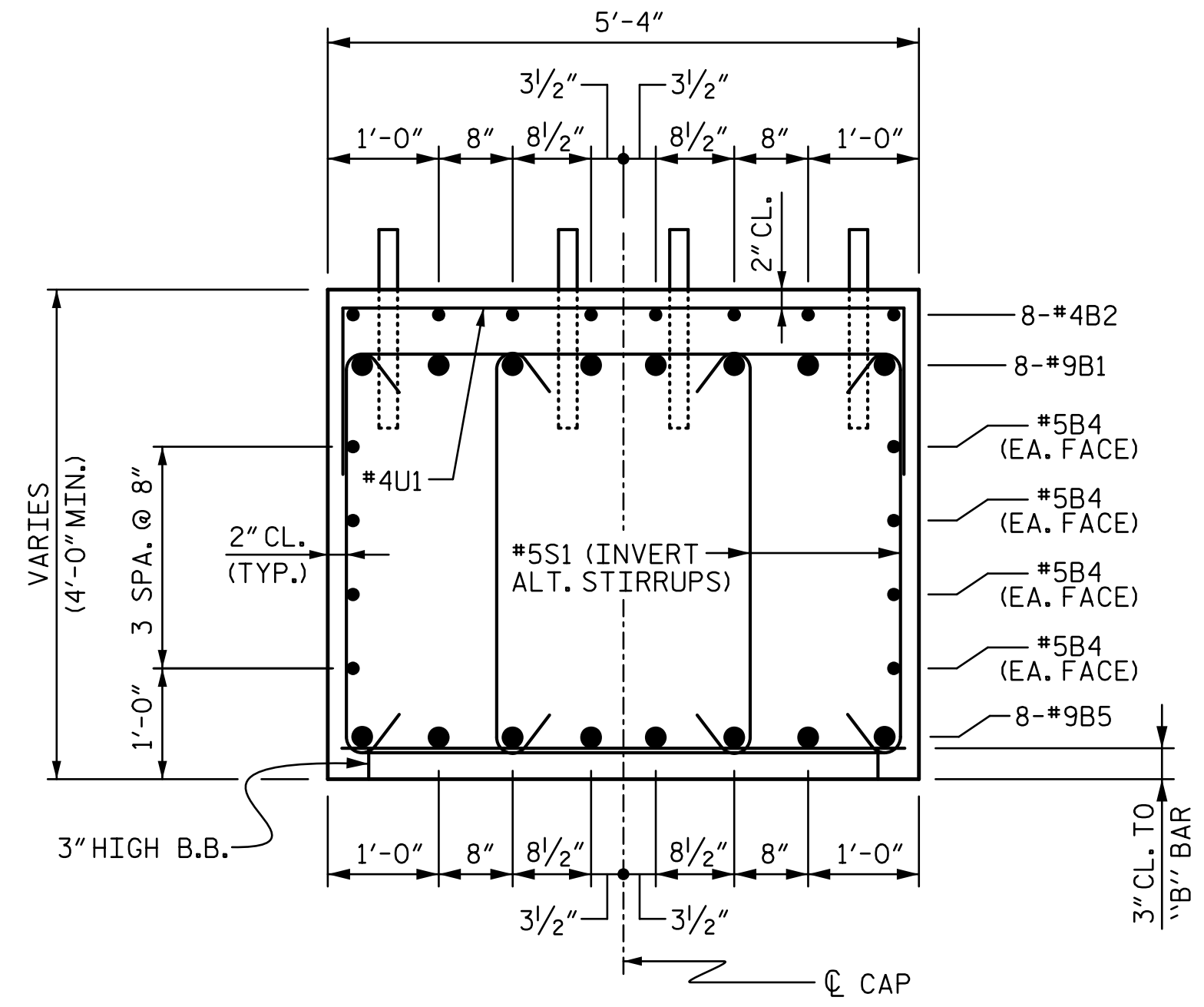
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CHECKED BY: MLO DATE: 11-22  
DESIGN ENGINEER OF RECORD: J. GRISCOM DATE: 3-23

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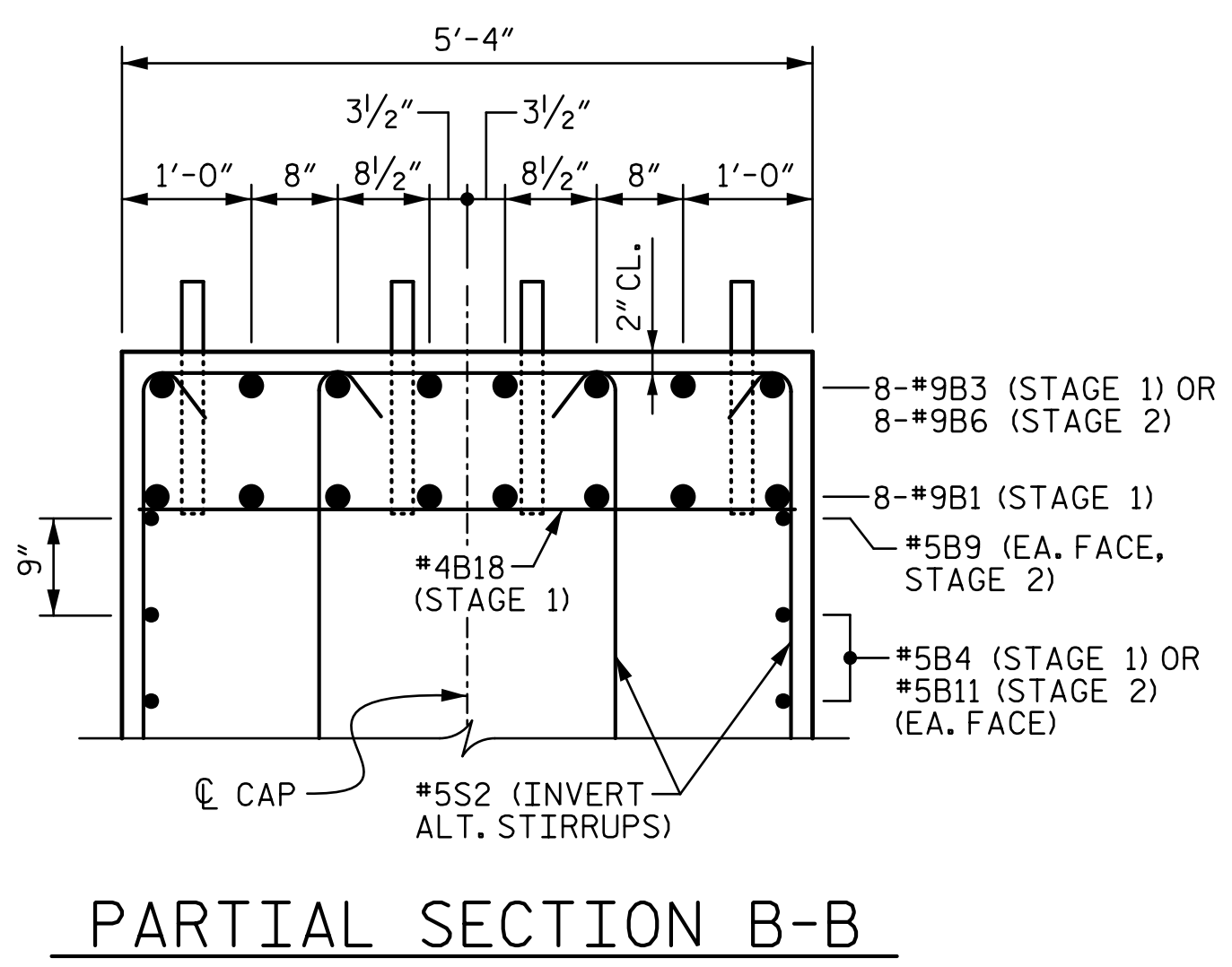
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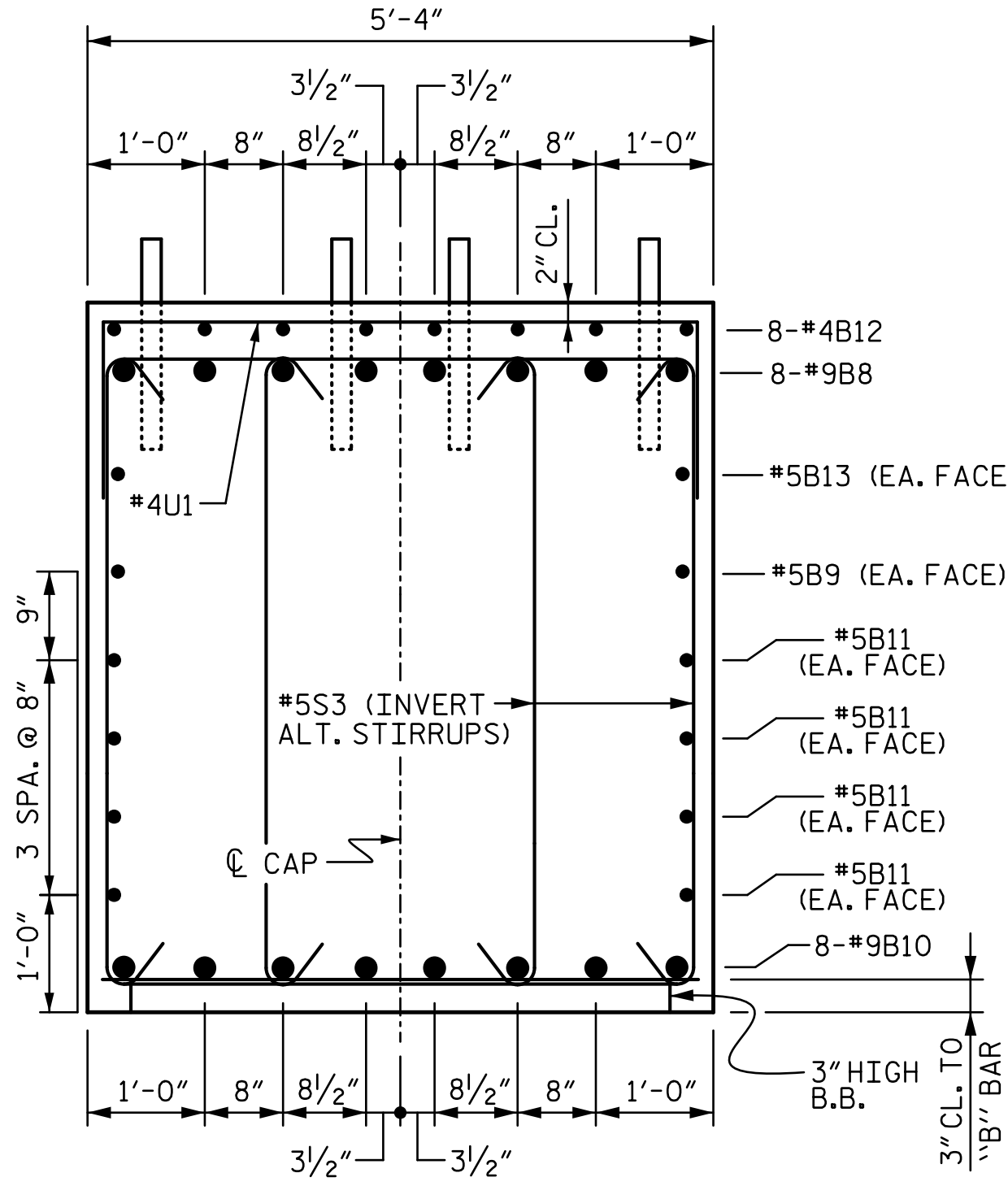
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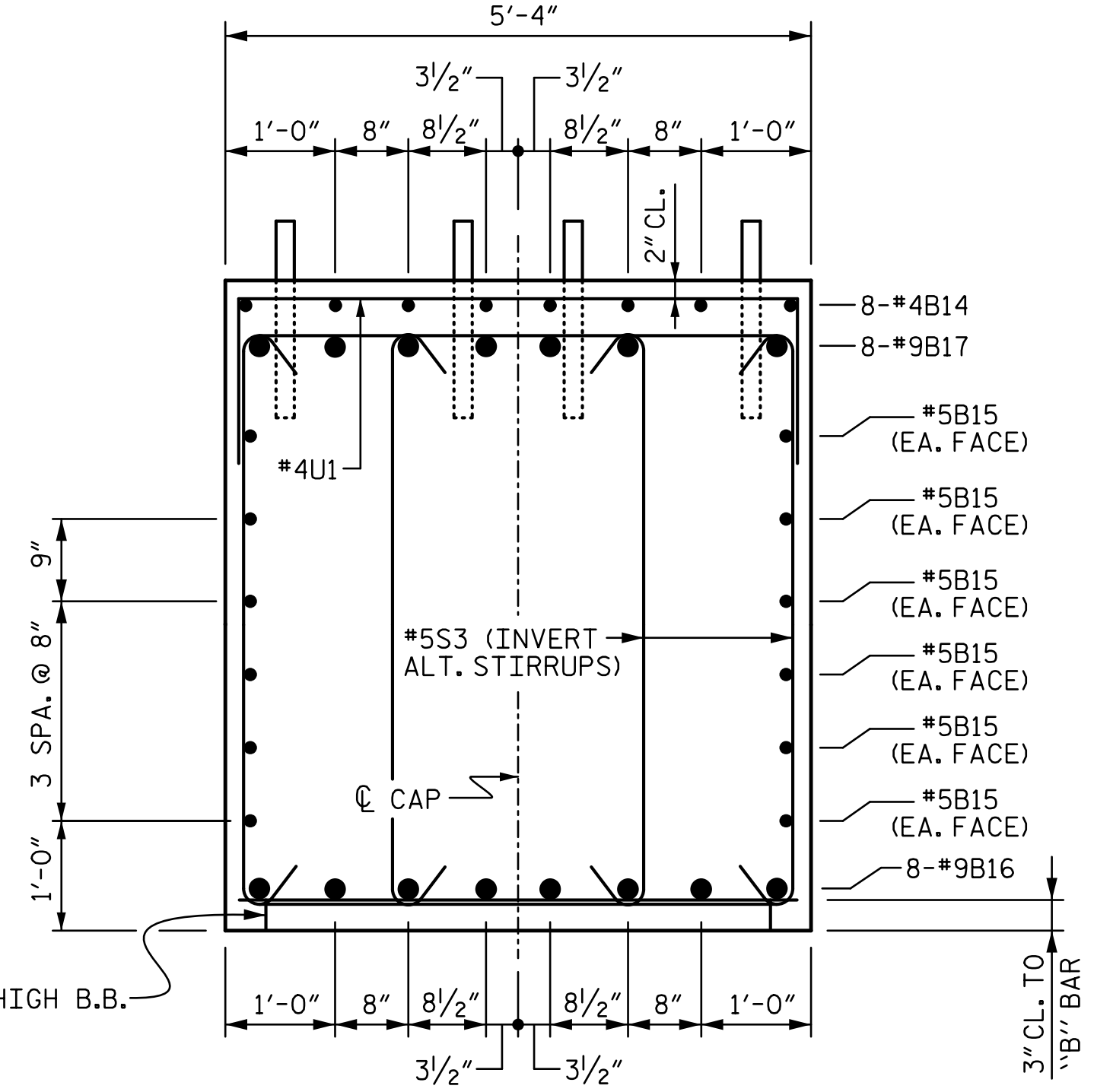
SECTION A-A



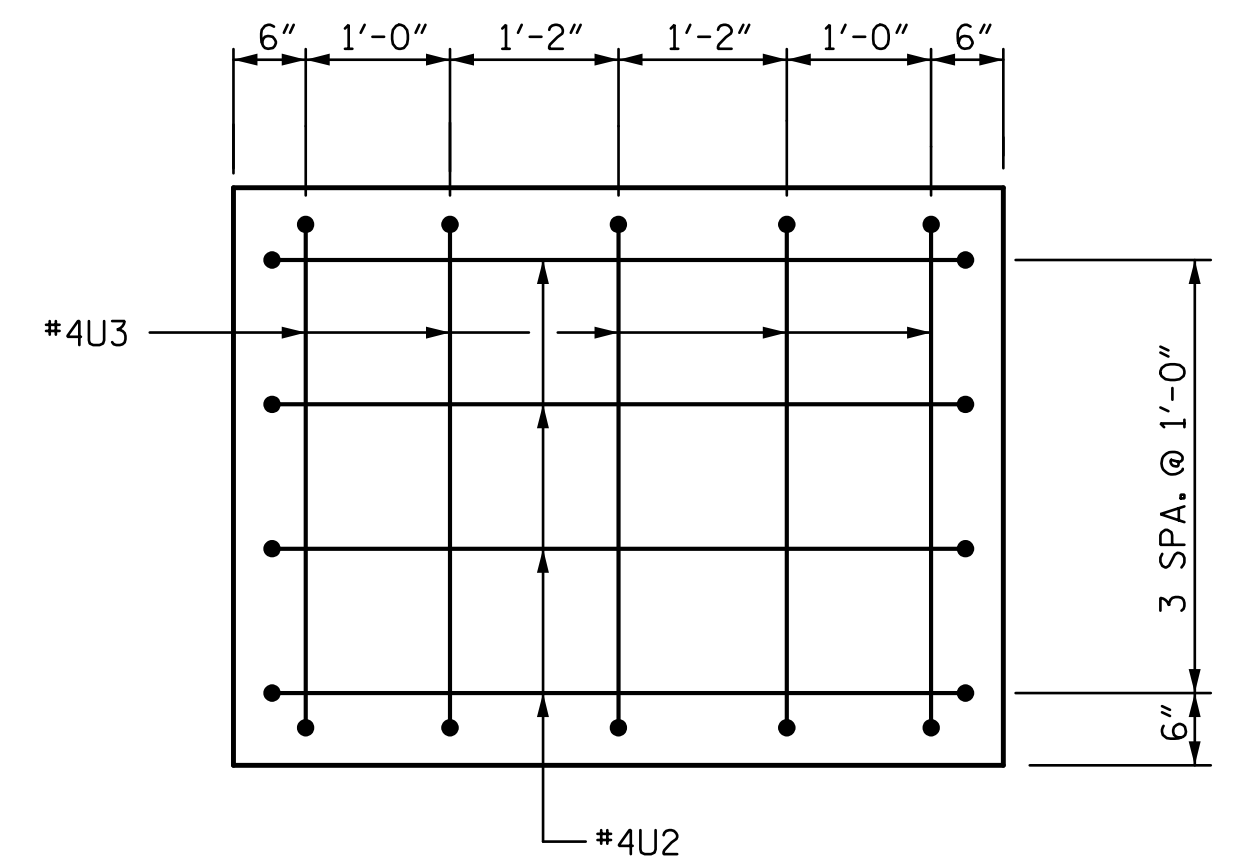
PARTIAL SECTION B-B



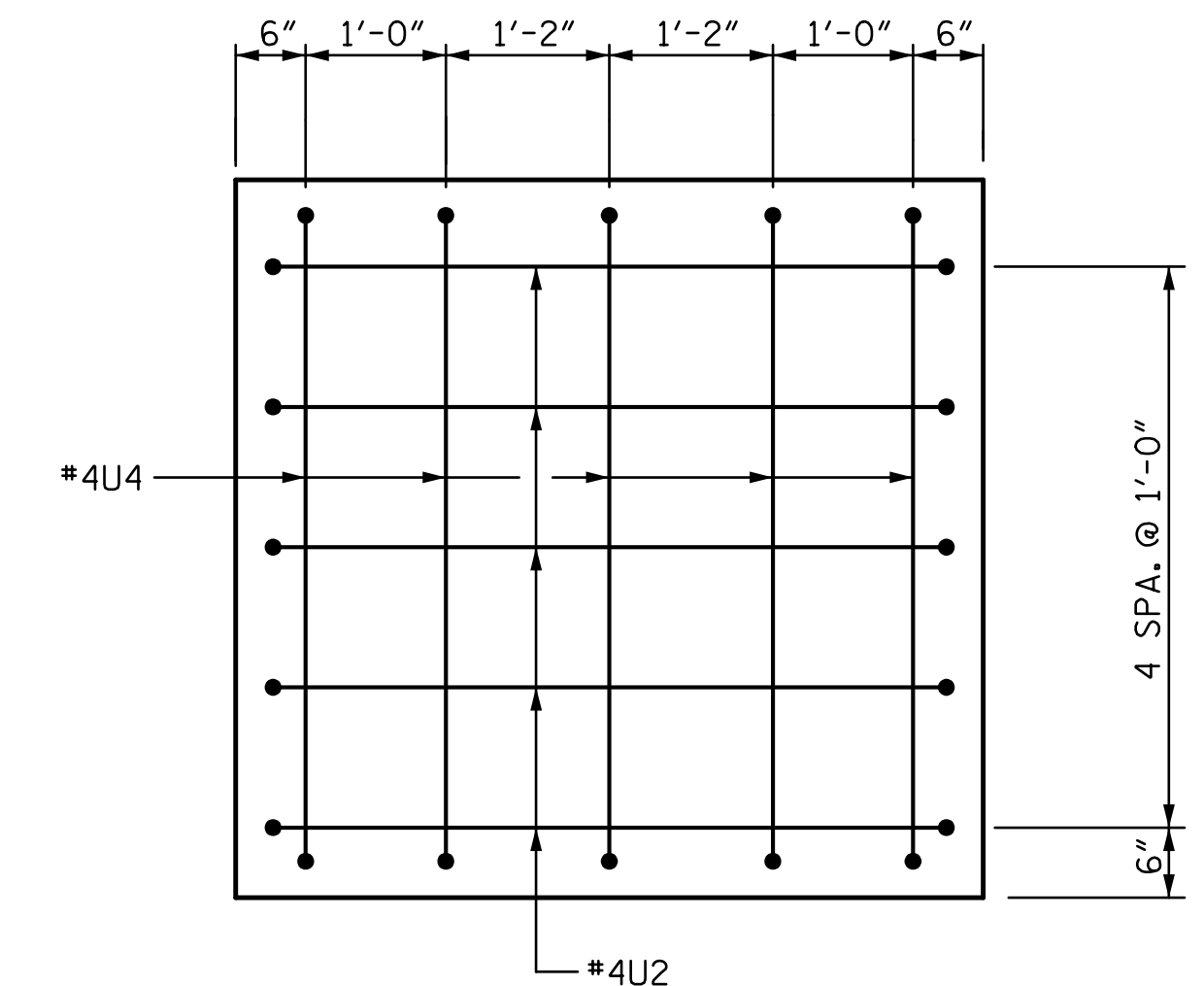
SECTION C-C



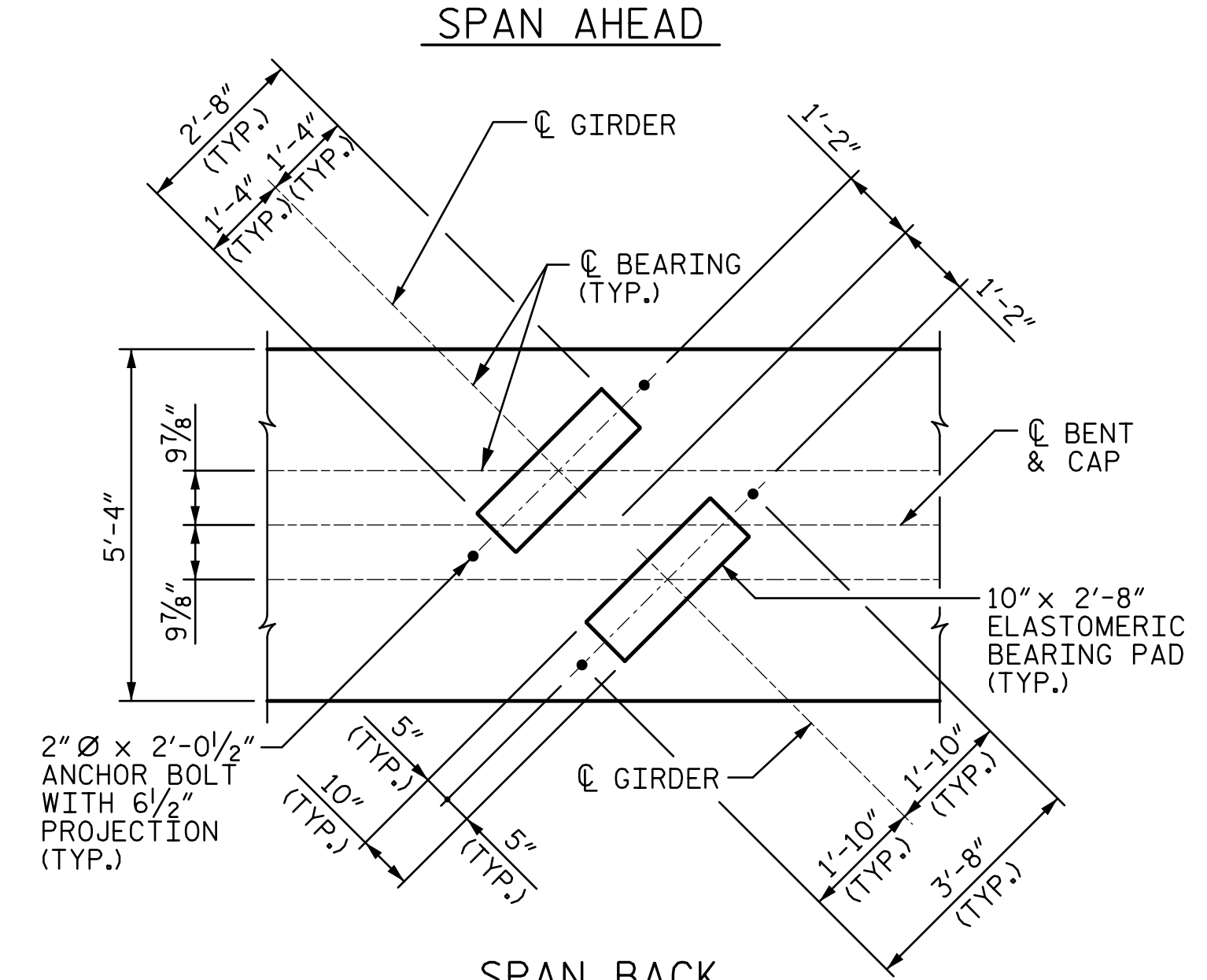
SECTION D-D



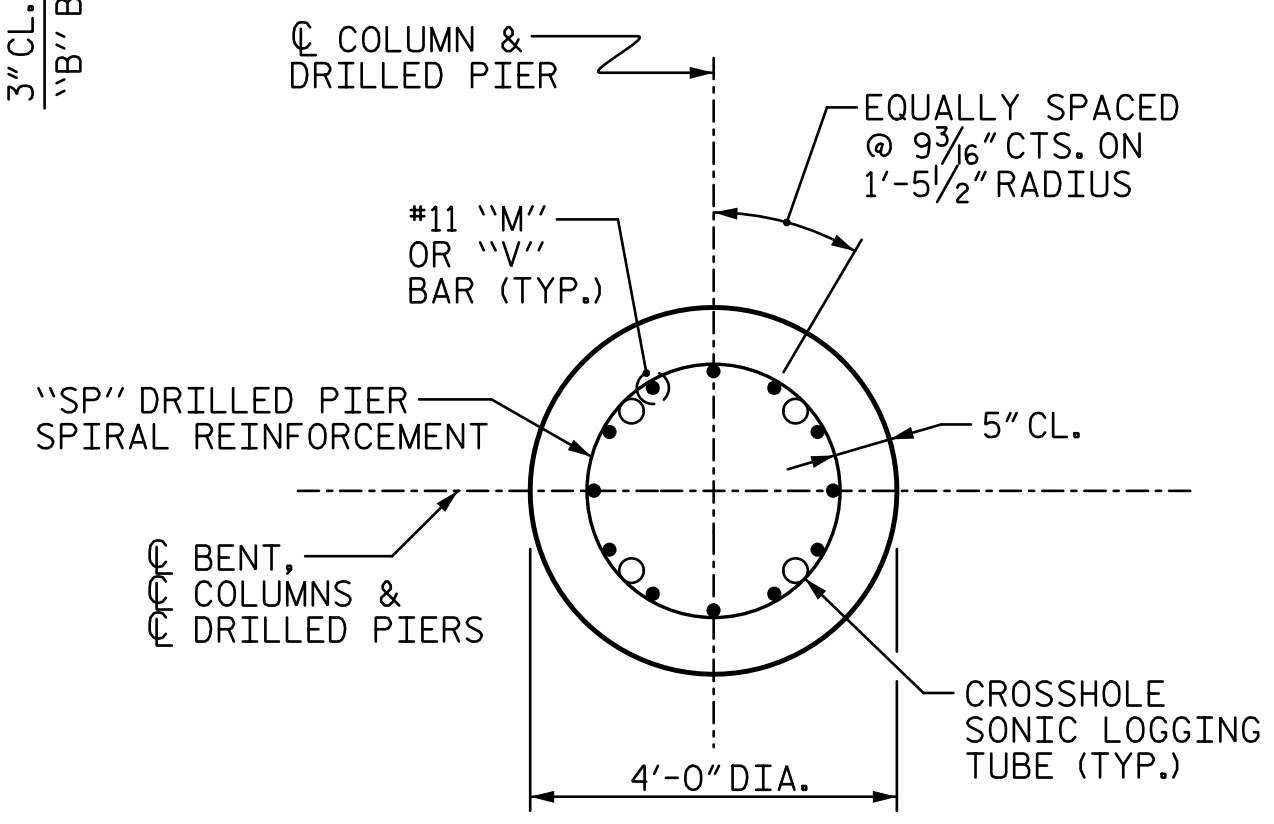
END VIEW E-E



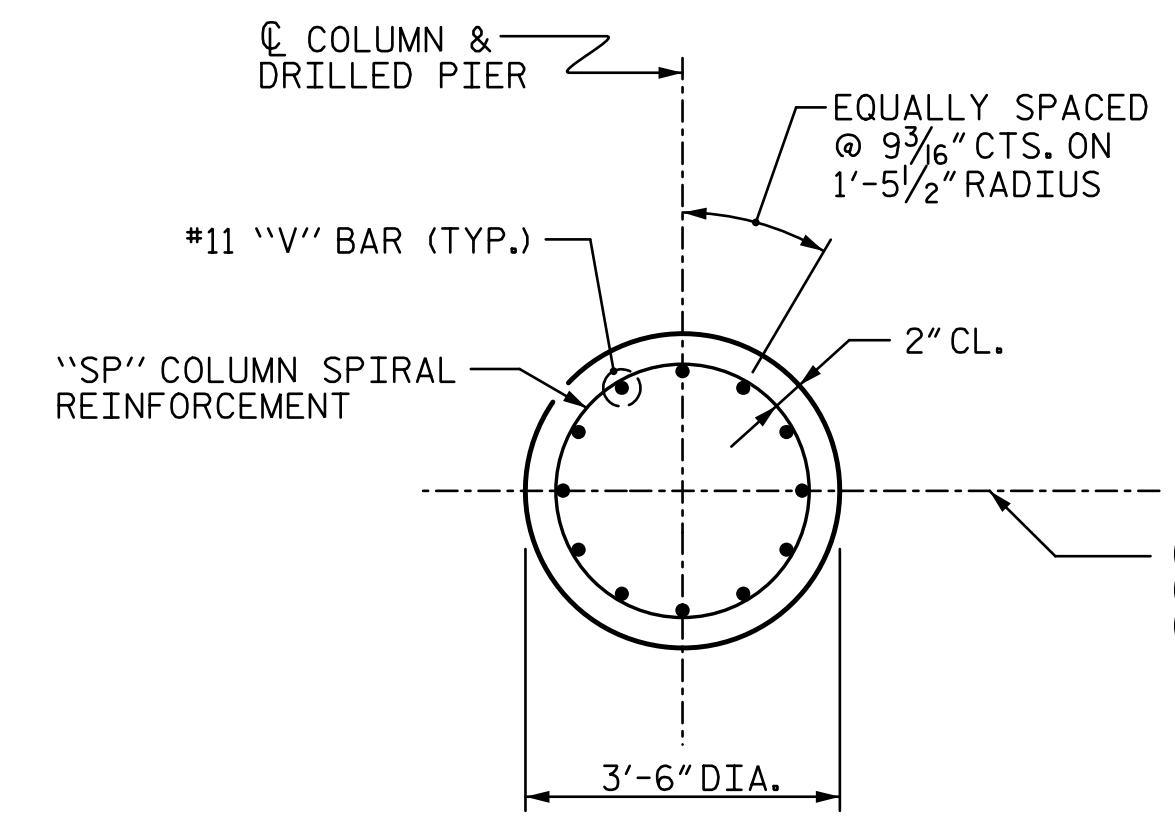
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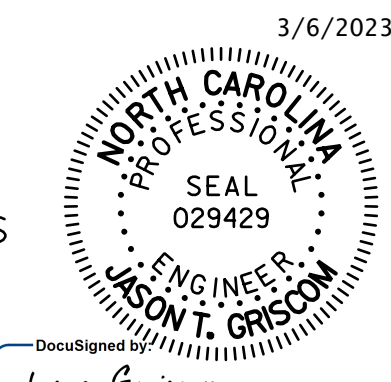
SPAN BACK  
DETAIL "A"  
(TYPICAL EACH GIRDER LINE)



TYPICAL SECTION  
THROUGH DRILLED PIER



TYPICAL SECTION  
THROUGH COLUMN



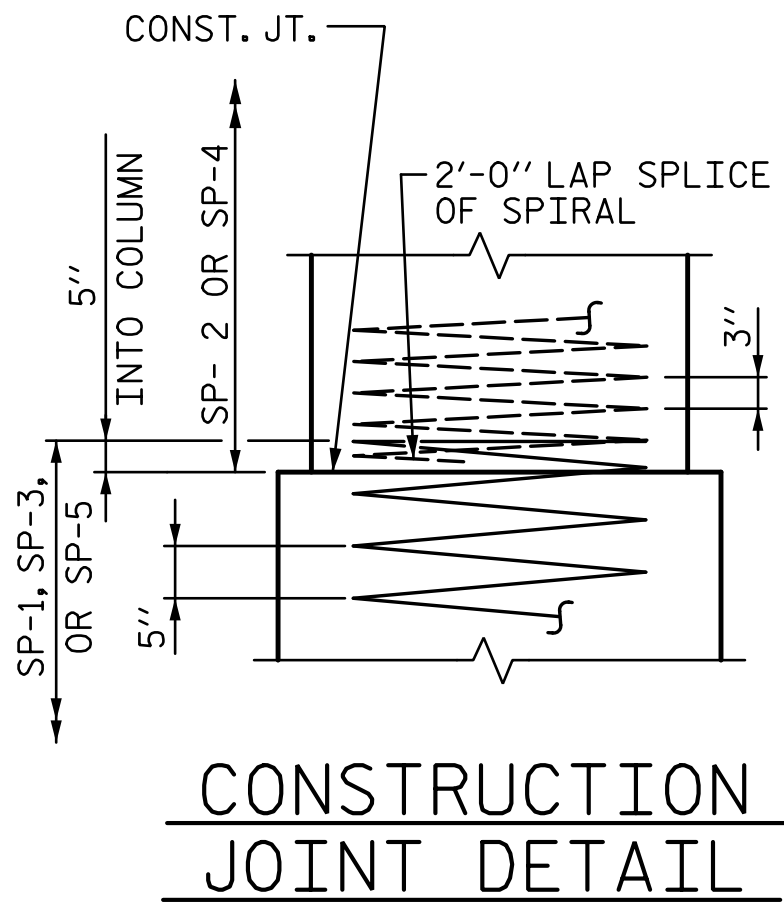
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NC License Number F-0991

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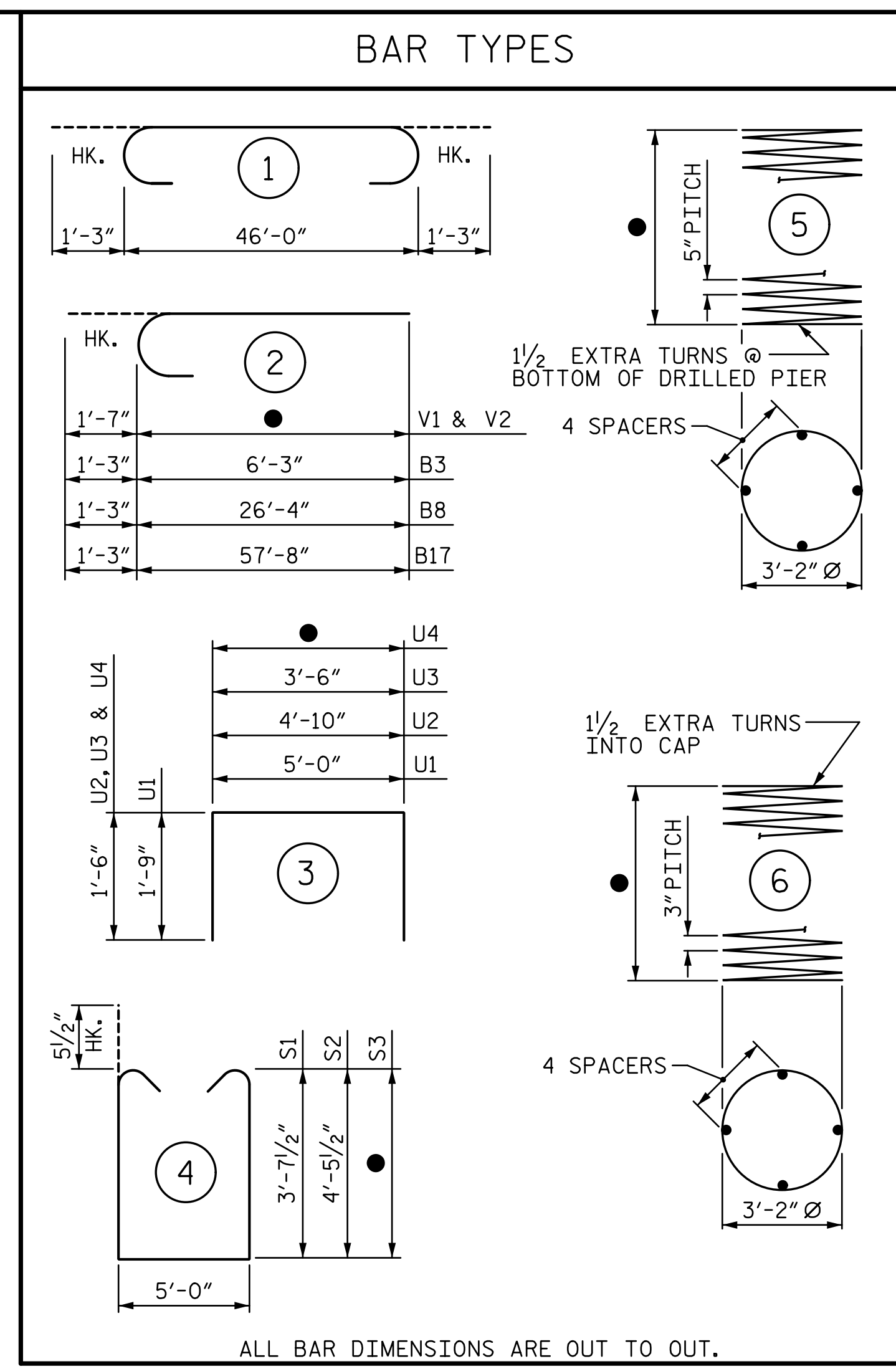
PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
STATION: **20+64.00 -L-**  
SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>BENTS 1 &amp; 2</b>					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-51
					TOTAL SHEETS 65

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**CONSTRUCTION JOINT DETAIL**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL FOR STAGE 1**

BENT 1						
BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B1	8	#9	1	48'-6"	1,319	
B2	16	#4	STR	14'-7"	156	
B3	8	#9	2	7'-6"	204	
B4	8	#5	STR	47'-4"	395	
B5	8	#9	STR	47'-3"	1,285	
B18	1	#4	STR	5'-0"	3	
M1	36	#11	STR	28'-7"	5,467	
S1	98	#5	4	13'-2"	1,346	
S2	16	#5	4	14'-10"	248	
U1	52	#4	3	8'-6"	295	
U2	4	#4	3	7'-10"	21	
U3	5	#4	3	6'-6"	22	
V1	36	#11	2	14'-9"	16'-4"	3,124
SP-1	3	*	5	20'-8"	500'-6"	1,566
SP-2	3	**	6	12'-11"	522'-2"	1,046

**BILL OF MATERIAL FOR STAGE 2**

BENT 1						
BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B6	8	#9	STR	41'-3"	1,122	
B7	16	#4	STR	17'-5"	186	
B8	8	#9	2	27'-7"	750	
B9	2	#5	STR	58'-11"	123	
B10	8	#9	STR	58'-1"	1,580	
B11	8	#5	STR	58'-1"	485	
B12	8	#4	STR	21'-11"	117	
B13	2	#5	STR	20'-11"	44	
B18	2	#4	STR	5'-0"	7	
M1	12	#11	STR	28'-7"	1,822	
M2	24	#11	STR	36'-7"	4,665	
S3	62	#5	4	4'-9 1/2"	15'-6"	1,002
U1	61	#4	3	8'-6"	346	
V1	12	#11	2	14'-9"	16'-4"	1,041
V2	24	#11	2	13'-3"	14'-10"	1,891
SP-1	1	*	5	20'-8"	500'-6"	522
SP-2	1	**	6	12'-11"	522'-2"	349
SP-3	2	*	5	28'-8"	688'-6"	1,436
SP-4	2	**	6	11'-5"	463'-3"	619

**BILL OF MATERIAL FOR STAGE 3**

BENT 1						
BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B14	8	#4	STR	16'-9"	90	
B15	12	#5	STR	57'-9"	723	
B16	8	#9	STR	57'-9"	1,571	
B17	8	#9	2	58'-11"	1,603	
B19	8	#4	STR	9'-11"	53	
M2	12	#11	STR	36'-7"	2,332	
M3	24	#11	STR	28'-1"	3,581	
S3	148	#5	4	4'-9 1/2"	15'-6"	2,393
U1	51	#4	3	8'-6"	290	
U2	5	#4	3	7'-10"	26	
U4	5	#4	3	4'-8"	7'-8"	26
V2	36	#11	2	13'-3"	14'-10"	2,837
SP-3	1	*	5	28'-8"	688'-6"	718
SP-4	3	**	6	11'-5"	463'-3"	928
SP-5	2	*	5	20'-2"	488'-9"	1,020

**BENT 2**

BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B1	8	#9	1	48'-6"	1,319	
B2	16	#4	STR	14'-7"	156	
B3	8	#9	2	7'-6"	204	
B4	8	#5	STR	47'-4"	395	
B5	8	#9	STR	47'-3"	1,285	
B18	1	#4	STR	5'-0"	3	
S1	98	#5	4	13'-2"	1,346	
S2	16	#5	4	14'-10"	248	
U1	52	#4	3	8'-6"	295	
U2	4	#4	3	7'-10"	21	
U3	5	#4	3	6'-6"	22	
V1	36	#11	2	34'-5"	36'-0"	6,886
SP-1	3	*	5	24'-8"	594'-6"	1,860
SP-2	3	**	6	5'-1"	214'-6"	430

**BENT 2**

BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B6	8	#9	STR	41'-3"	1,122	
B7	16	#4	STR	17'-5"	186	
B8	8	#9	2	27'-7"	750	
B9	2	#5	STR	58'-11"	123	
B10	8	#9	STR	58'-1"	1,580	
B11	8	#5	STR	58'-1"	485	
B12	8	#4	STR	21'-11"	117	
B13	2	#5	STR	20'-11"	44	
B18	2	#4	STR	5'-0"	7	
M2	24	#11	STR	36'-1"	4,601	
S2	84	#5	4	14'-10"	1,300	
S3	62	#5	4	5'-2"	16'-3"	1,051
U1	61	#4	3	8'-6"	346	
V1	12	#11	2	34'-5"	36'-0"	2,295
V2	24	#11	2	11'-11"	13'-6"	1,721
SP-1	1	*	5	24'-8"	594'-6"	620
SP-2	1	**	6	5'-1"	214'-6"	143
SP-3	2	*	5	28'-2"	676'-9"	1,412
SP-4	2	**	6	10'-1"	410'-10"	549

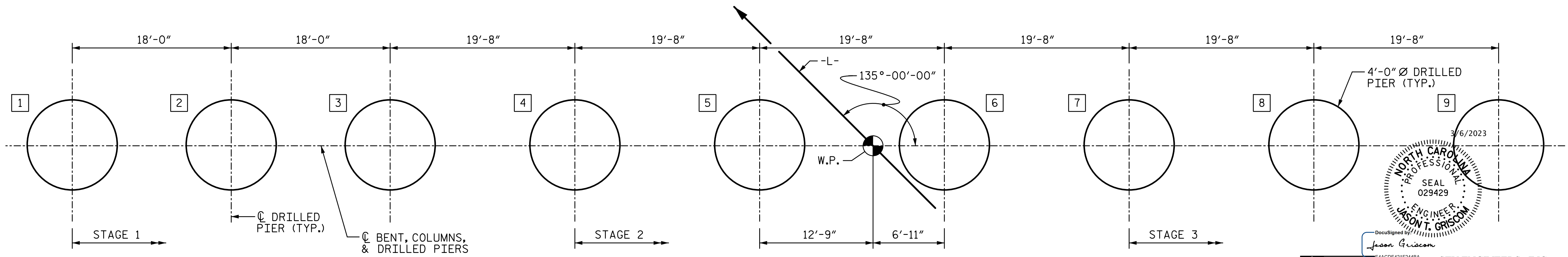
**BENT 2**

BAR NO.	SIZE	TYPE	●	LENGTH	WEIGHT	
B14	8	#4	STR	16'-9"	90	
B15	12	#5	STR	57'-9"	723	
B16	8	#9	STR	57'-9"	1,571	
B17	8	#9	2	58'-11"	1,603	
B19	8	#4	STR	9'-11"	53	
M2	12	#11	STR	36'-1"	2,301	
M3	24	#11	STR	45'-1"	5,749	
S3	148	#5	4	5'-2"	16'-3"	2,508
U1	51	#4	3	8'-6"	290	
U2	5	#4	3	7'-10"	26	
U4	5	#4	3	5'-0"	8'-0"	27
V2	36	#11	2	11'-11"	13'-6"	2,582
SP-3	1	*	5	28'-2"	676'-9"	706
SP-4	3	**	6	10'-1"	410'-10"	823
SP-5	2	*	5	37'-2"	888'-4"	1,853

**QUANTITIES**

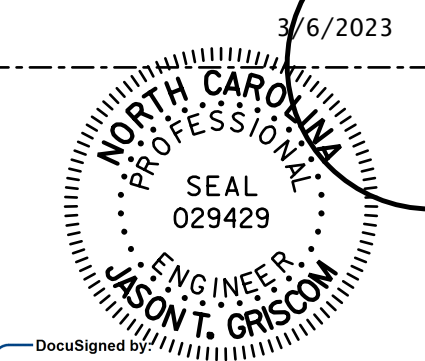
		BENT 1				BENT 2			
		STAGE 1	STAGE 2	STAGE 3	TOTAL	STAGE 1	STAGE 2	STAGE 3	TOTAL
REINFORCING STEEL	LBS.	13,885	16,481	15,525	45,891	12,180	15,728	17,523	45,431
SPIRAL REINFORCING STEEL	LBS.	2,612	2,926	2,666	8,204	2,290	2,724	3,382	8,396
CLASS A CONCRETE: CAP POUR	CU. YDS.	40.4	62.4	63.4	165.2	40.4	62.8	66.4	169.6
COLUMN POUR	CU. YDS.	13.5	12.4	11.9	37.8	5.1	8.7	10.5	24.3
TOTAL	CU. YDS.	53.9	74.8	75.3	204.0	45.5	71.5	76.9	193.9
DRILLED PIER CONCRETE	CU. YDS.	29.3	36.8	32.6	98.7	34.9	38.2	48.2	121.3

\* THE SP-1, SP-3 AND SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR WITH A 5" PITCH.  
 \*\* THE SP-2 AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR WITH A 3" PITCH.



**PLAN OF DRILLED PIERS**

Ⓜ = DRILLED PIER NUMBER



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 Charlotte, NC 28202  
 NC License Number F-0991

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PROJECT NO. **B-5808**  
 CABARRUS COUNTY  
 STATION: **20+64.00 -L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BENTS 1 & 2**

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

TOTAL SHEETS: 65

ASSEMBLED BY: SGH DATE: 12-22  
 CHECKED BY: MLO DATE: 12-22  
 DESIGN ENGINEER OF RECORD: J. GRISCOM DATE: 3-23

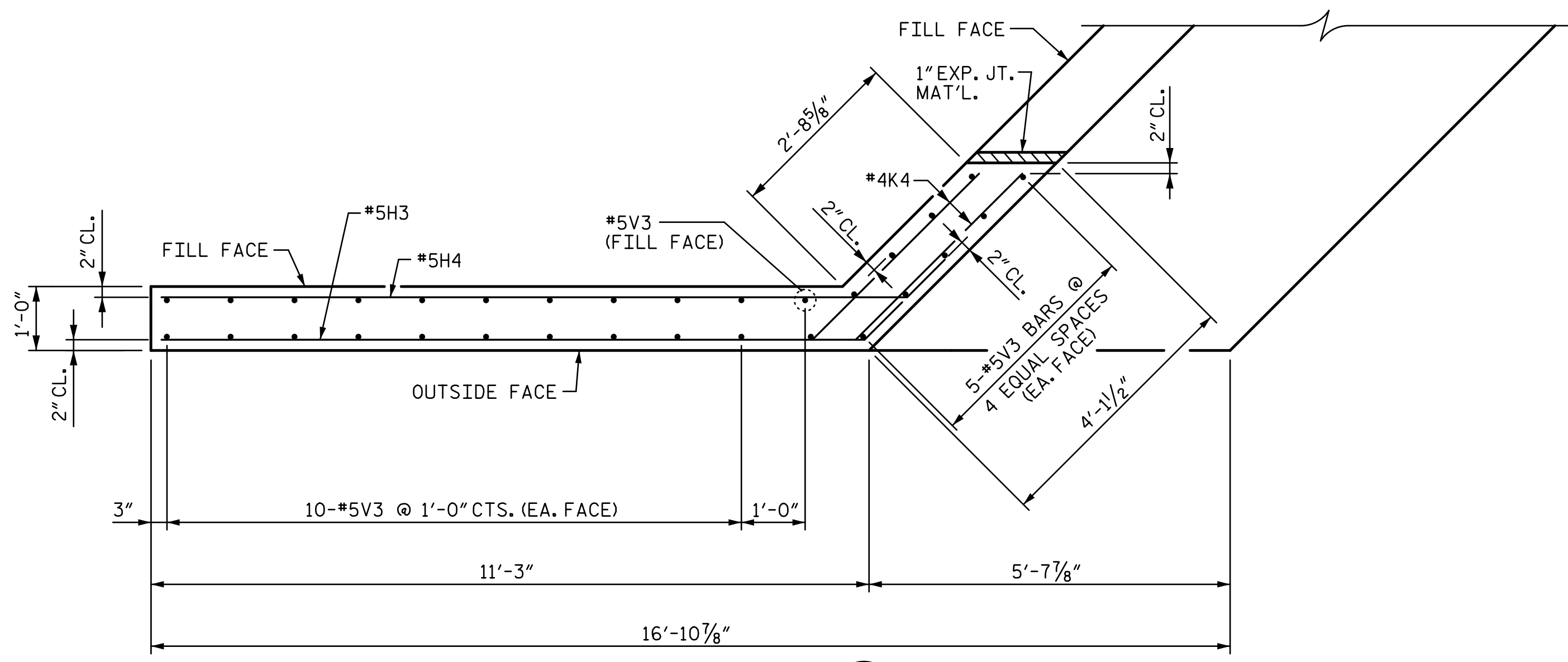




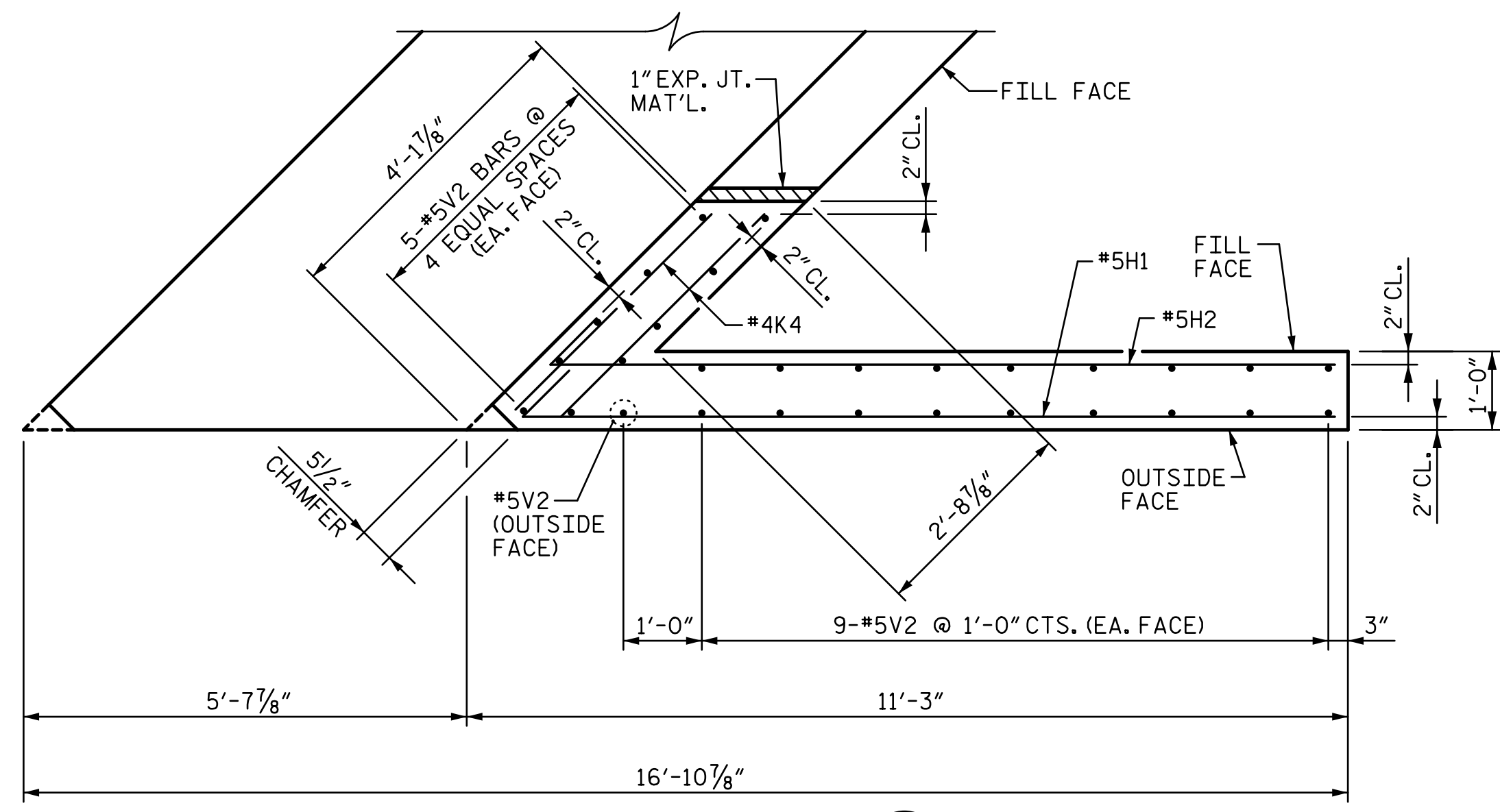




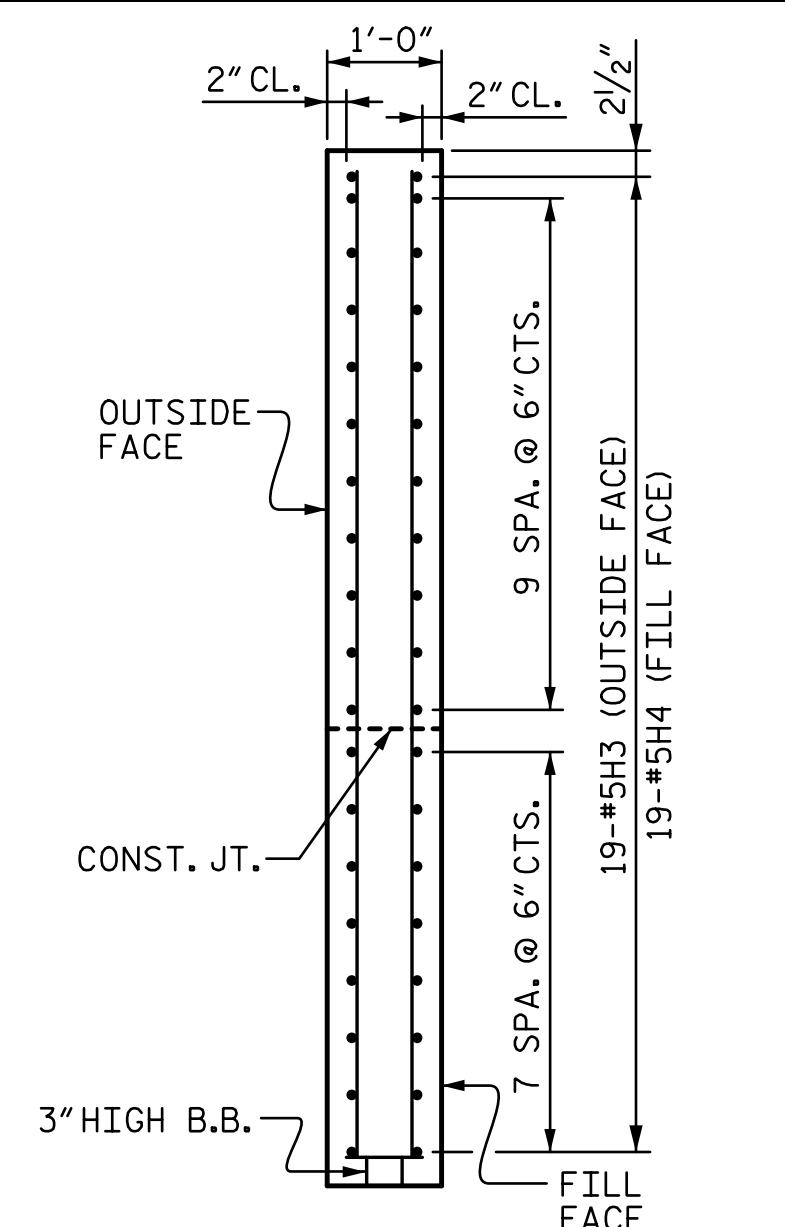
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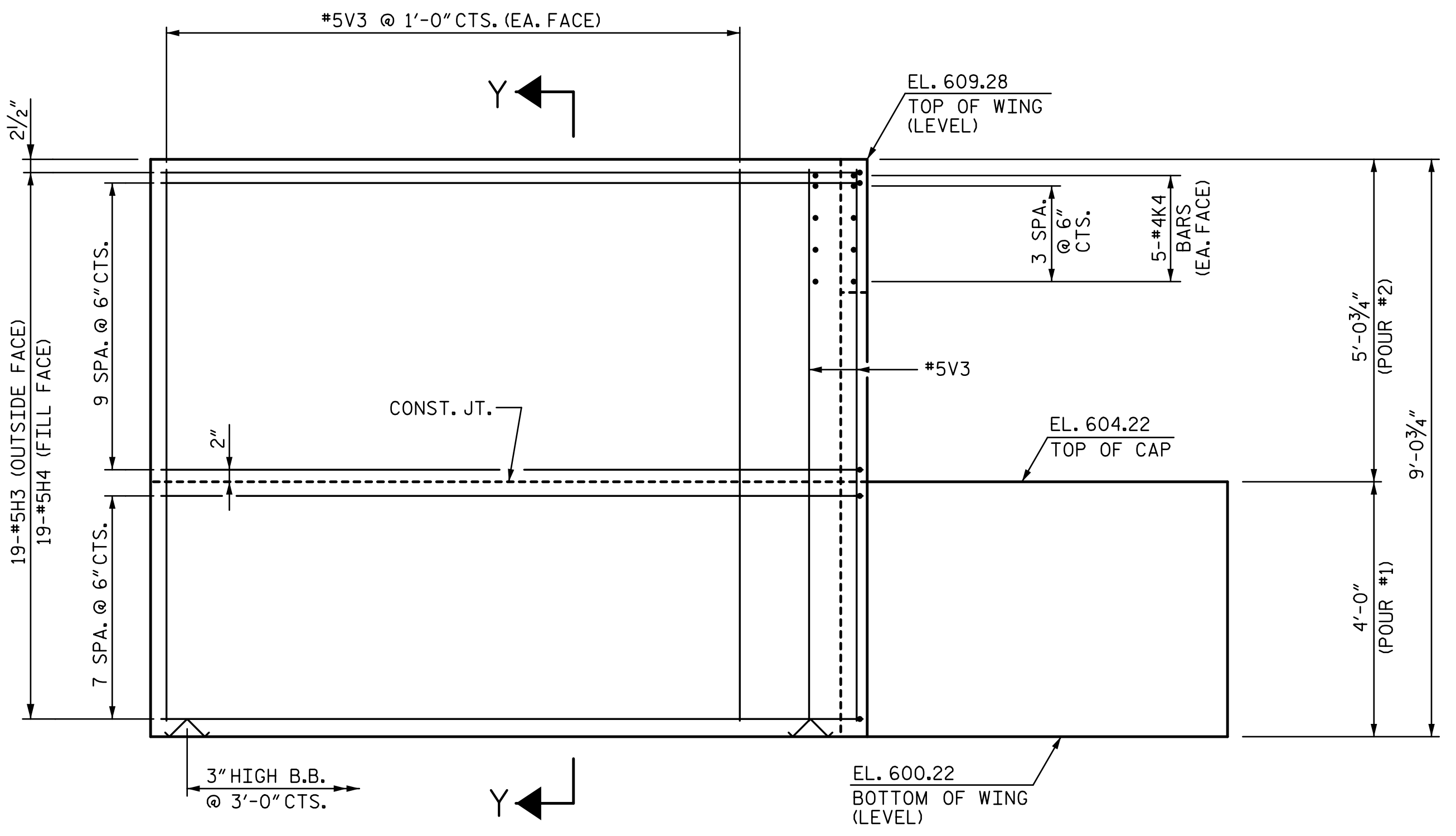
PLAN OF WING (W3)



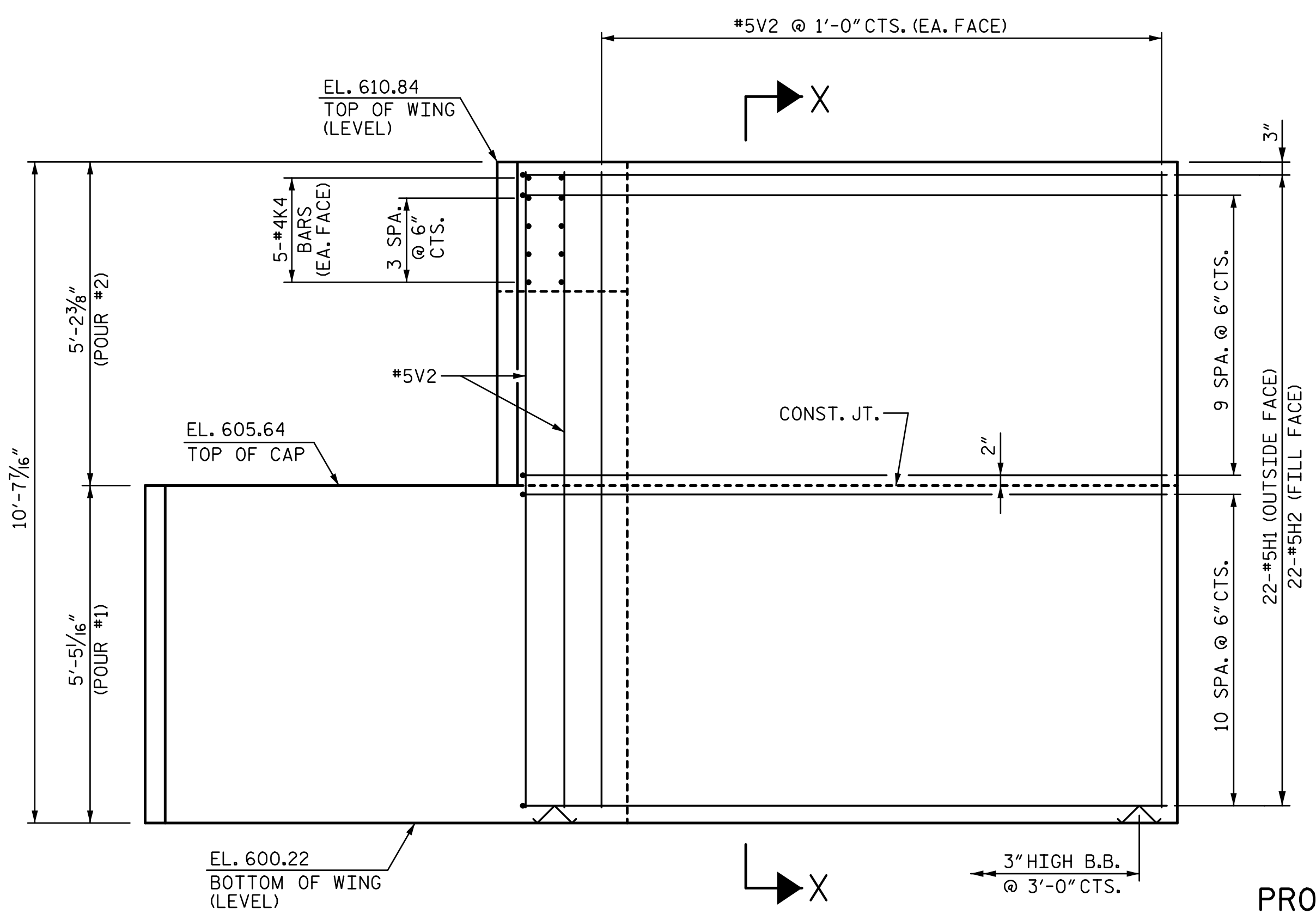
PLAN OF WING (W4)



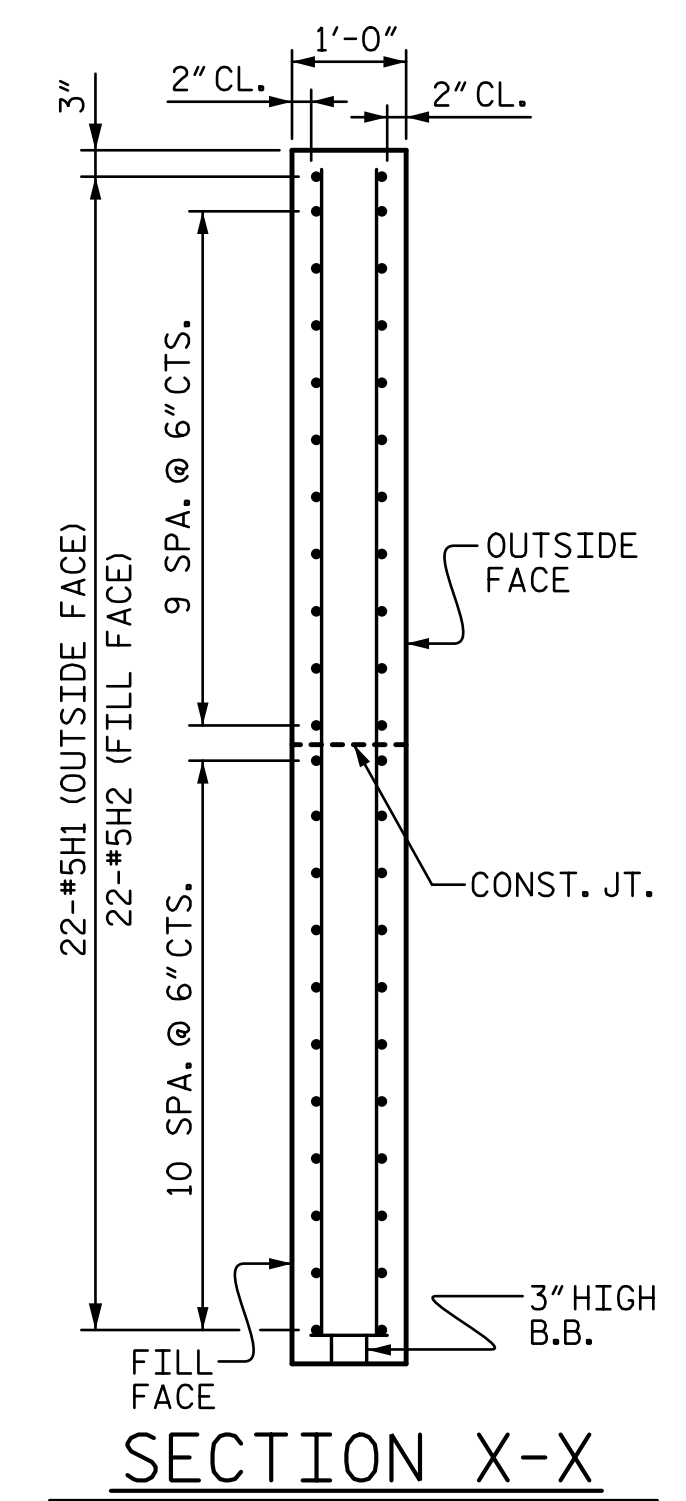
SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

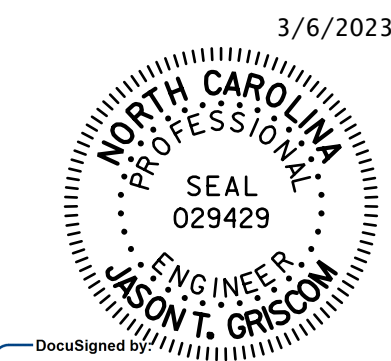


SECTION X-X

PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-  
SHEET 3 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

END BENT 2



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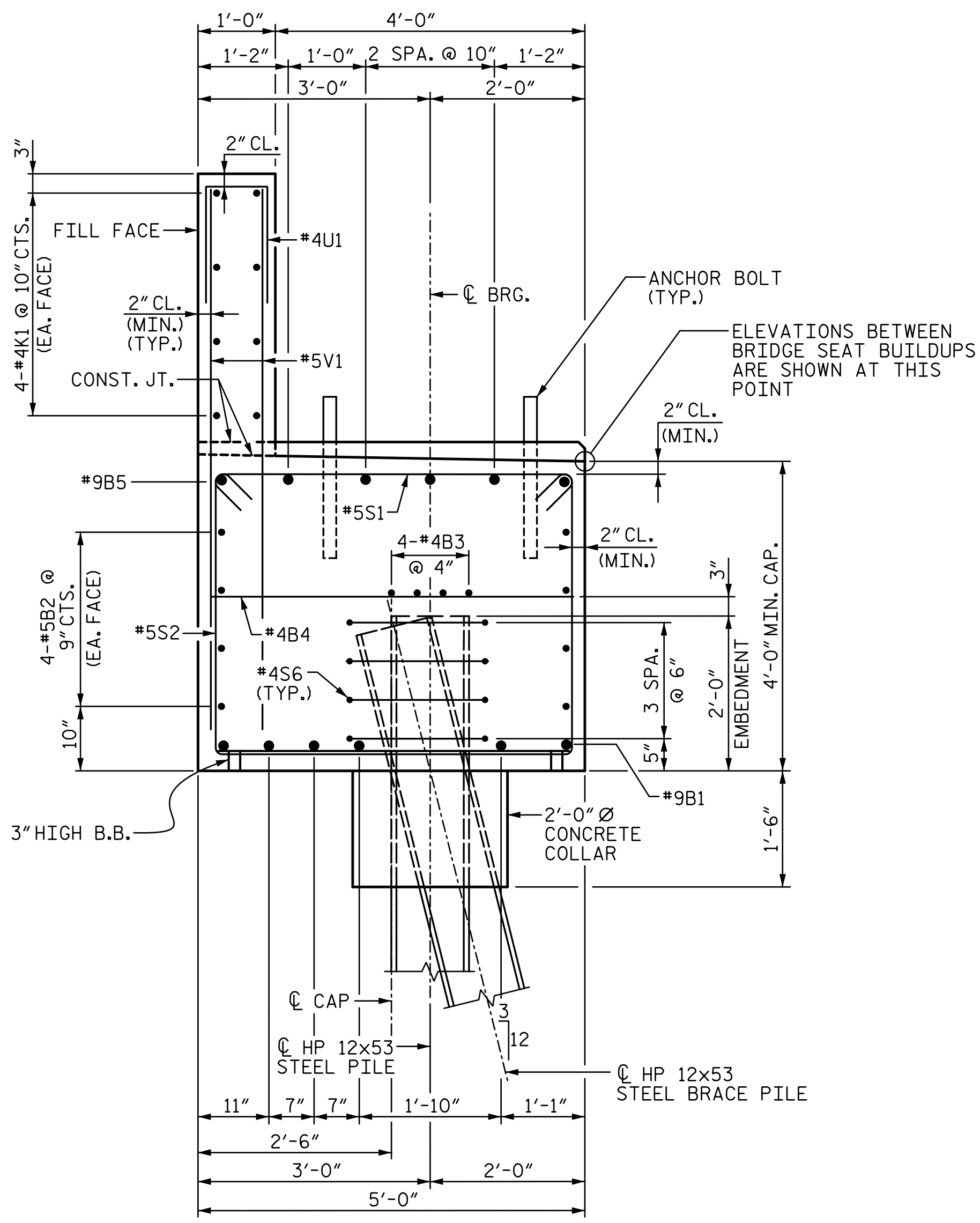
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DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

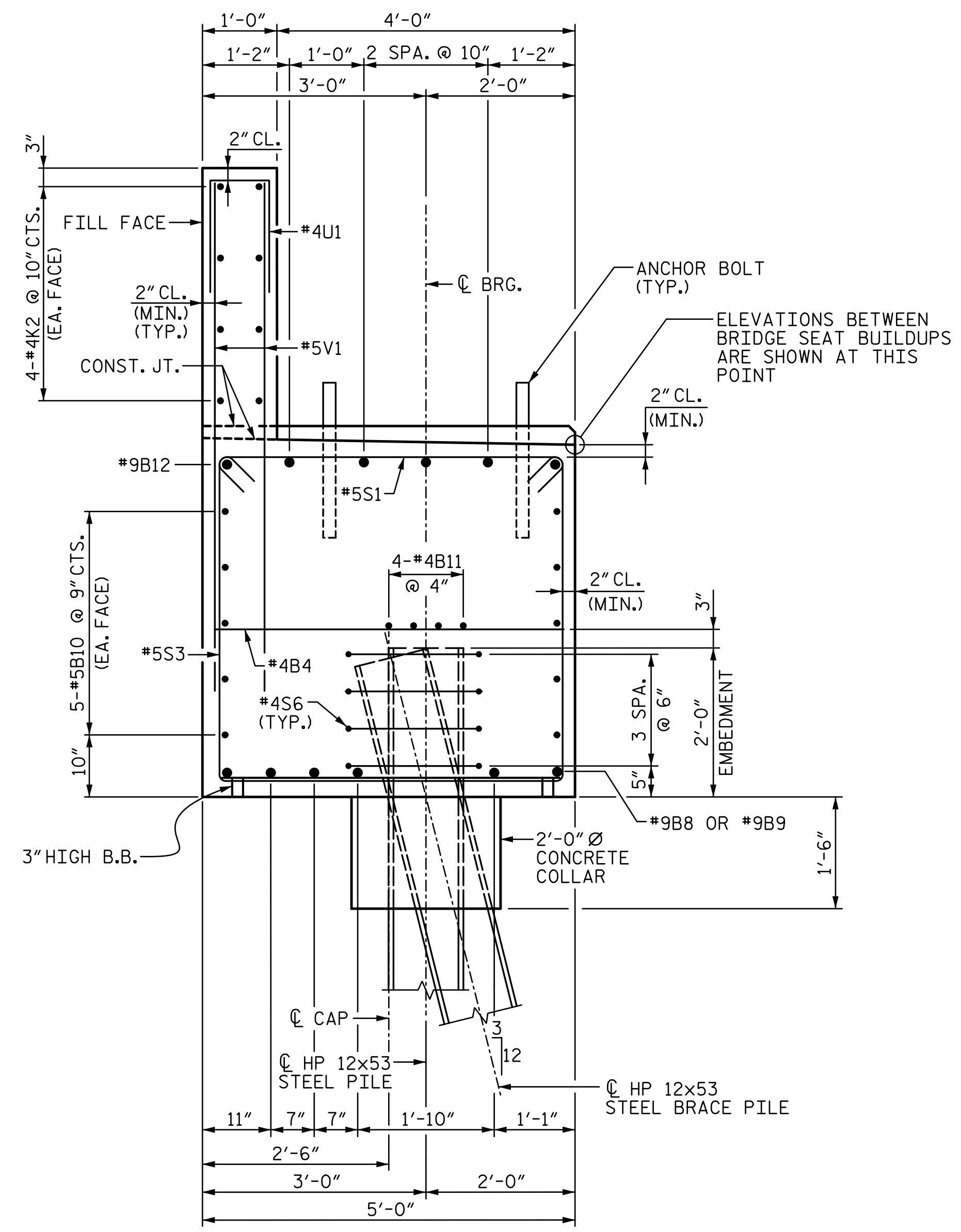
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1			3		
2			4		

TOTAL SHEETS 65

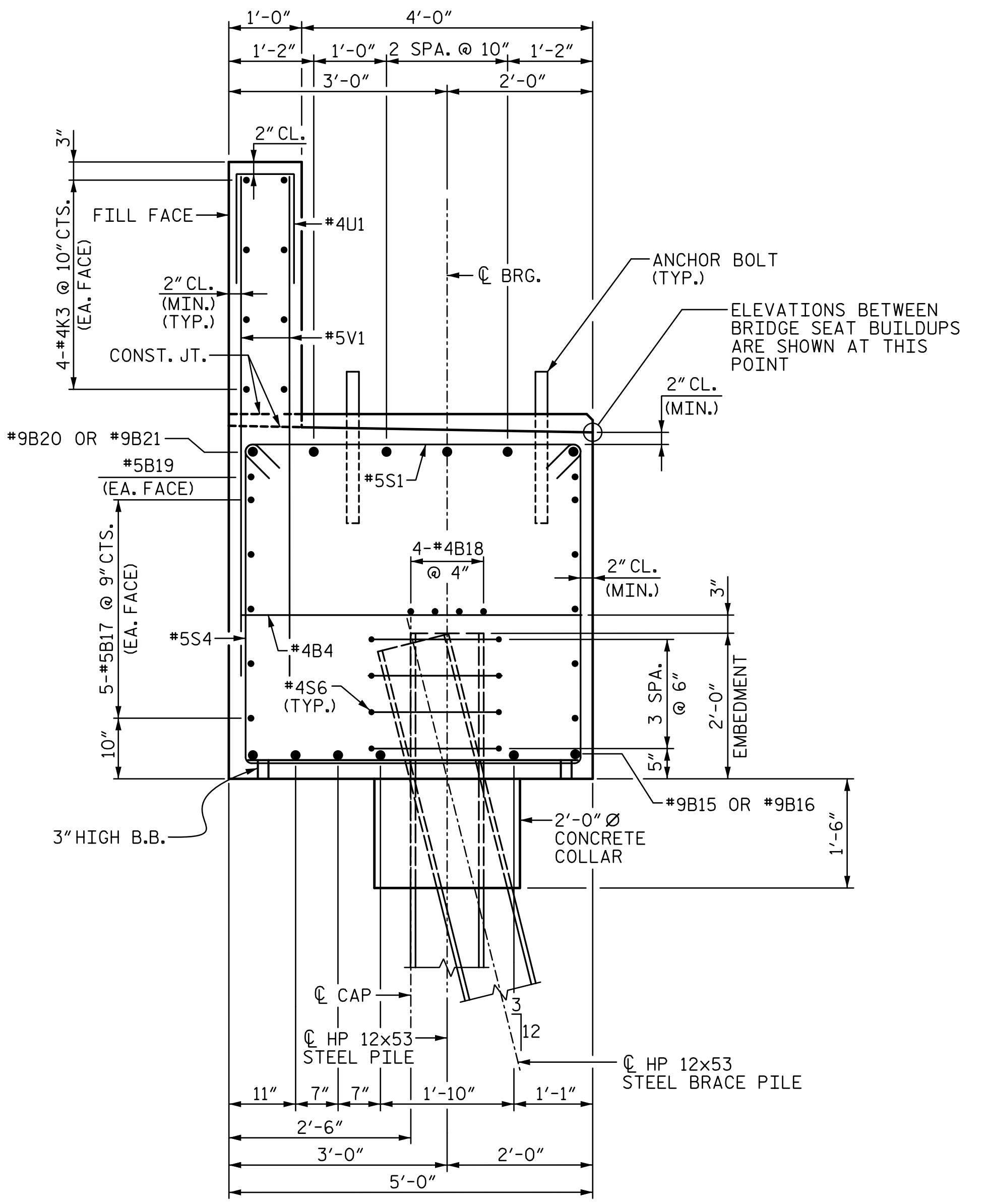
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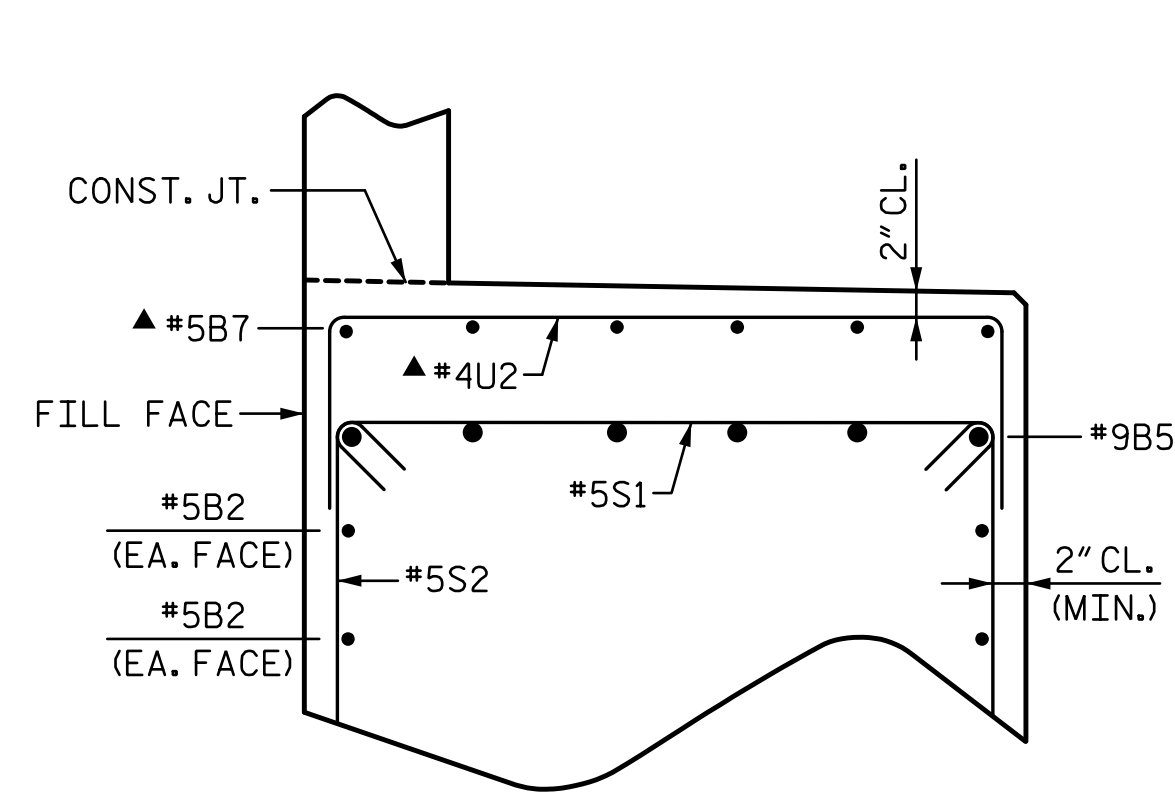
SECTION A-A  
STAGE 1



SECTION C-C  
STAGE 2

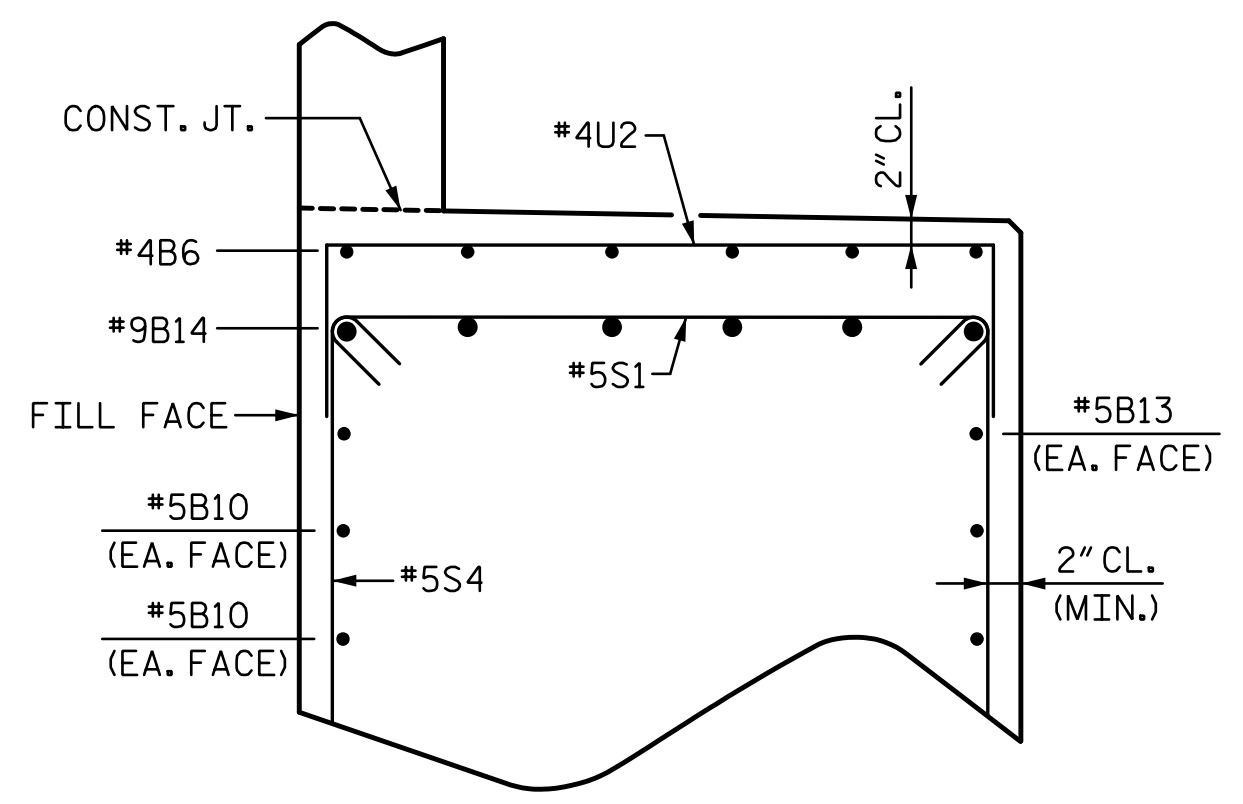


SECTION F-F  
STAGE 3



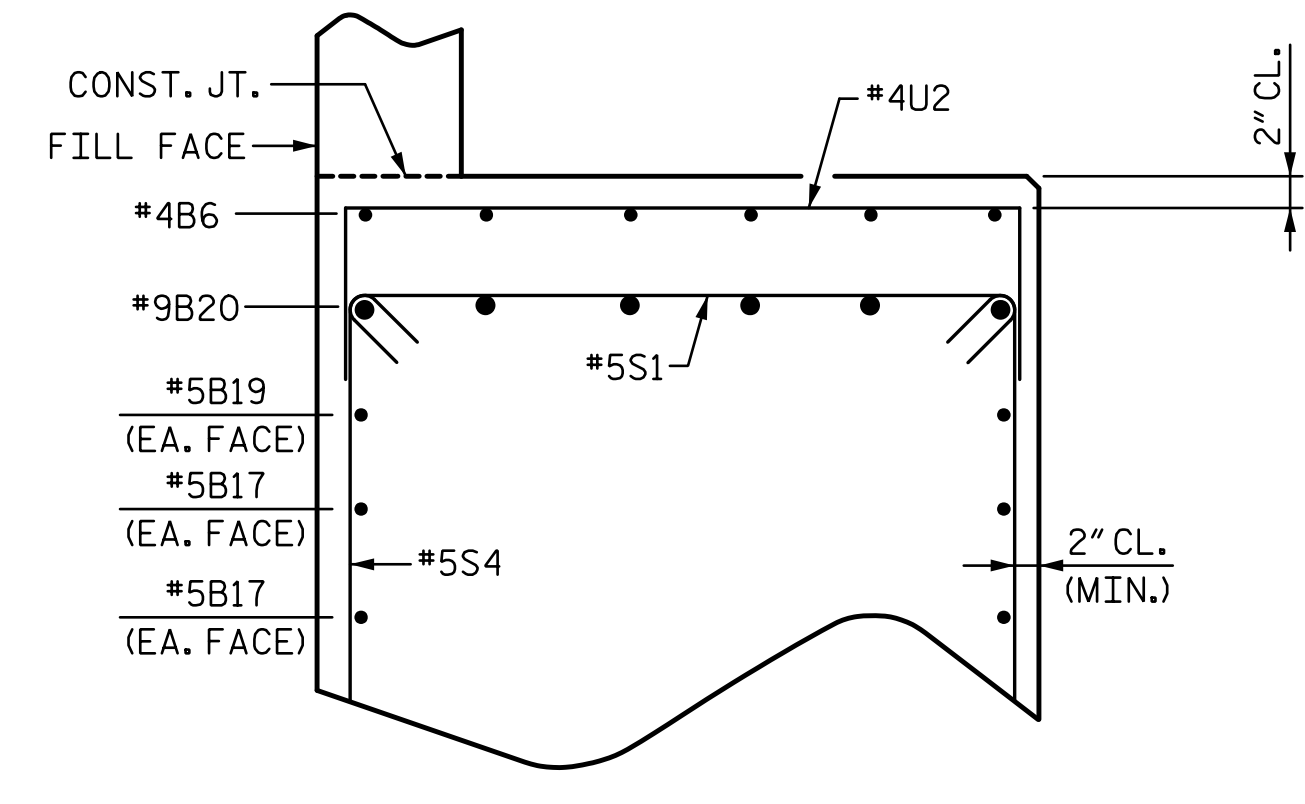
PARTIAL SECTION B-B  
STAGE 1

(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)  
▲ FIELD CUT #5B7 AND #4U2 BARS TO PROVIDE 2" CLEARANCE TO EDGE OF SEAT AND CONSTRUCTION JOINT.



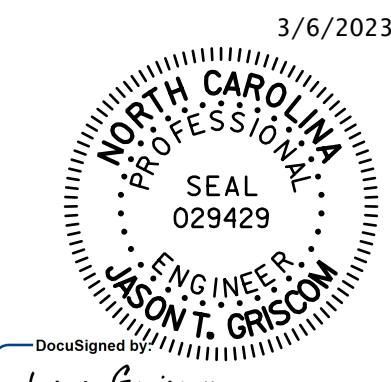
PARTIAL SECTION D-D  
STAGE 2

(SEE SECTION C-C FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)



PARTIAL SECTION E-E  
STAGE 3

(SEE SECTION F-F FOR ADDITIONAL INFORMATION NOT SHOWN HERE.)



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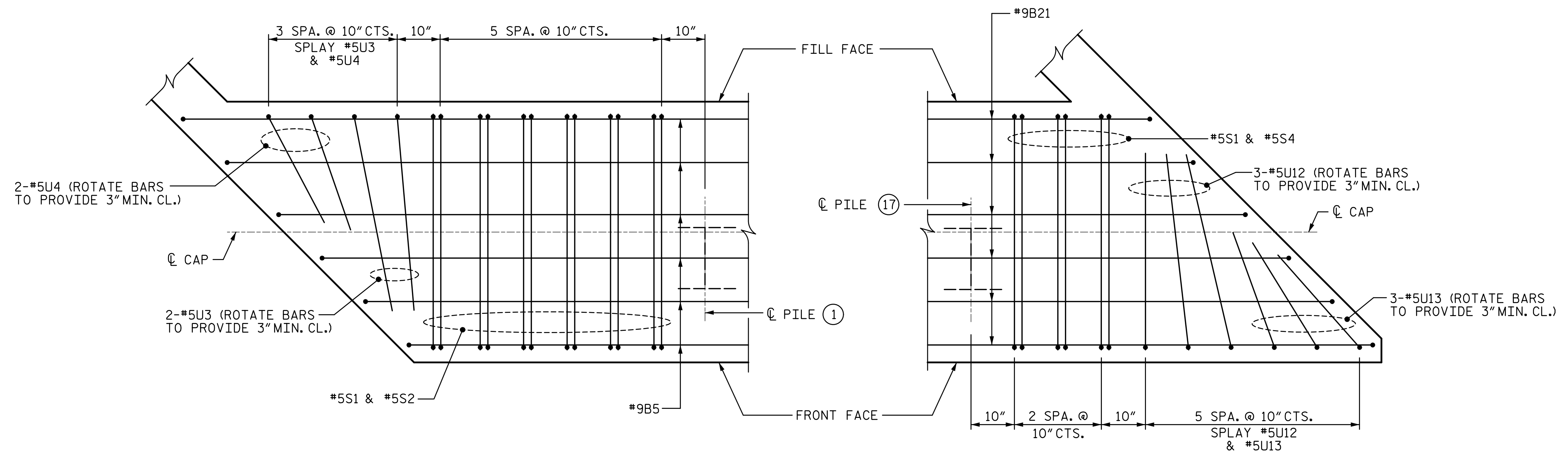
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PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-  
SHEET 4 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-56
					TOTAL SHEETS 65



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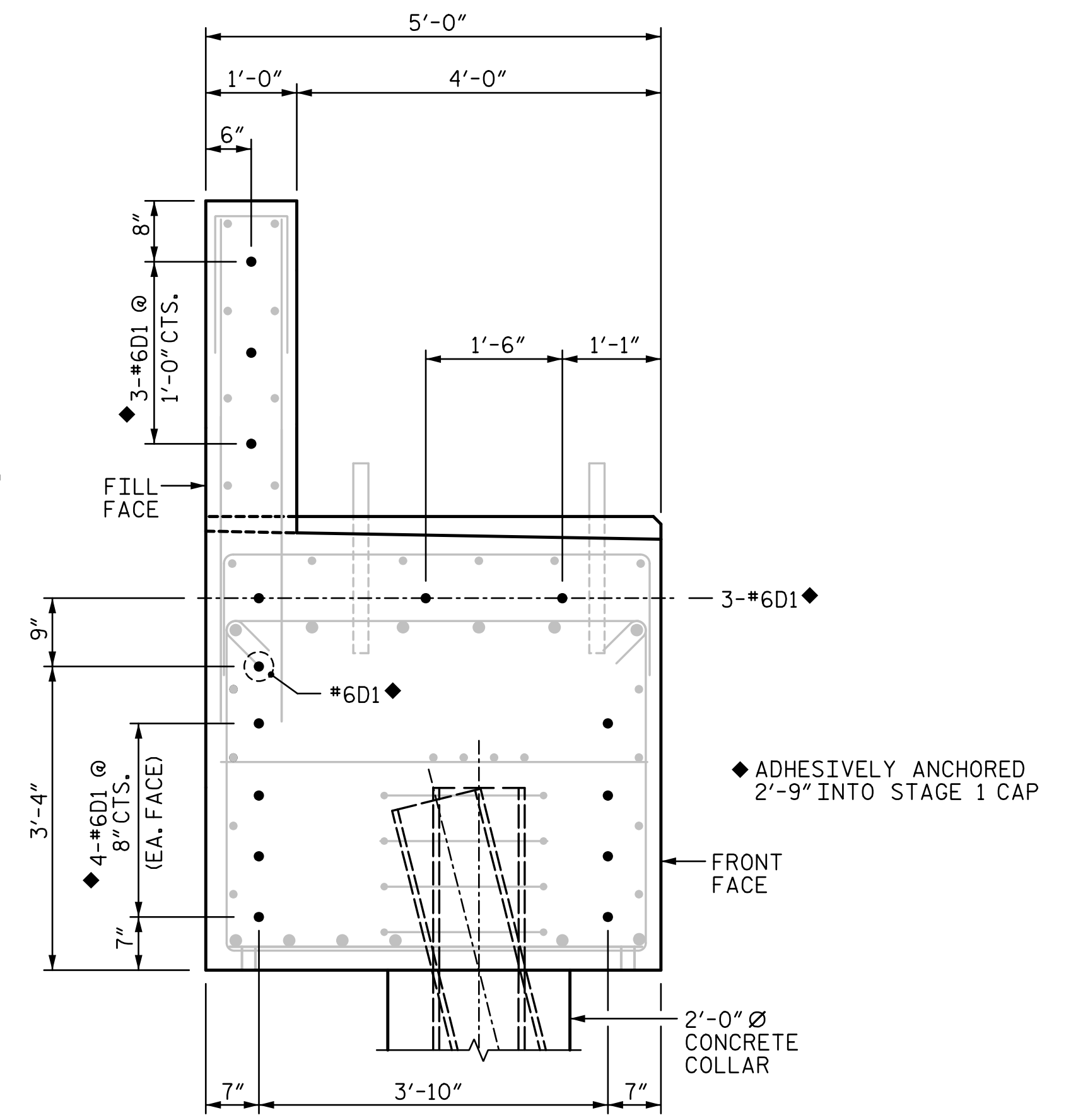


**DETAIL "C"**

STAGE 1  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING AND WING REINFORCEMENT NOT SHOWN FOR CLARITY.)

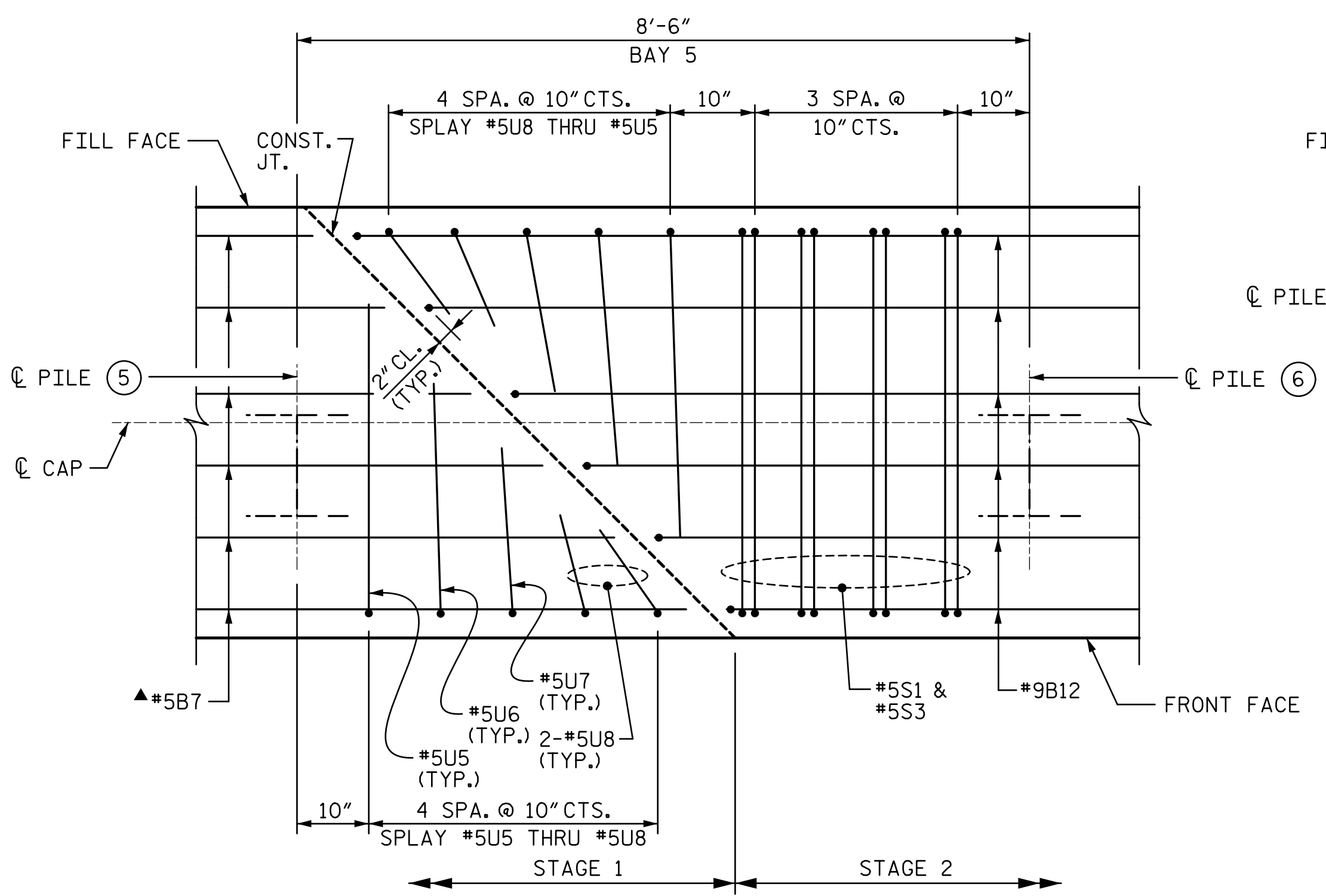
**DETAIL "D"**

STAGE 3  
(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING AND WING REINFORCEMENT NOT SHOWN FOR CLARITY.)



**DOWEL LOCATION**

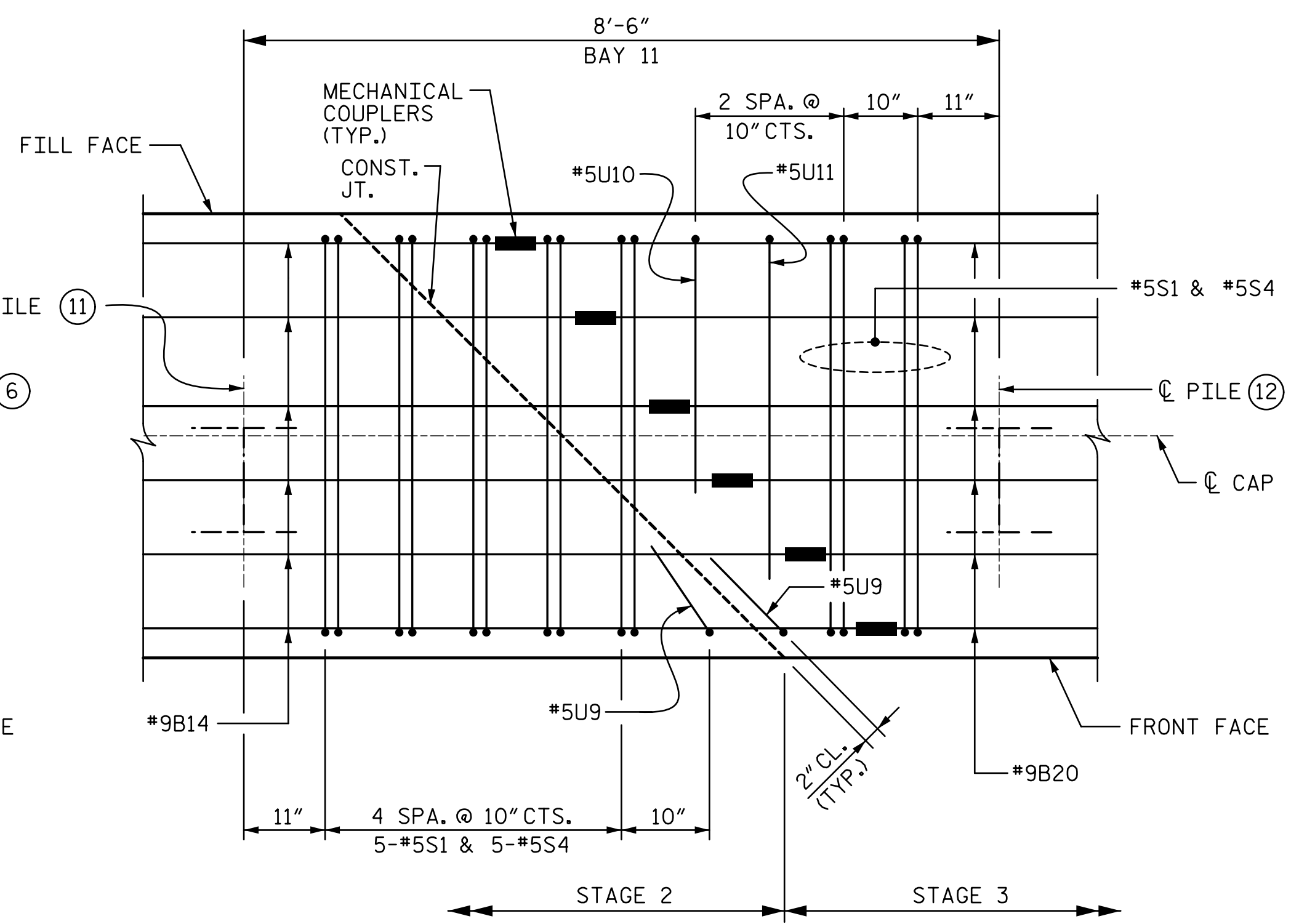
(CONSTRUCTION JOINT BETWEEN STAGE 1 AND STAGE 2 ONLY.)  
LEVEL ONE FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS REQUIRED. THE YIELD LOAD OF THE DOWEL IS 26.4 KIPS.



**DETAIL "E"**

(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING NOT SHOWN FOR CLARITY.)

▲ FIELD CUT #5B7 BARS TO PROVIDE 2" CLEARANCE TO EDGE OF SEAT AND CONSTRUCTION JOINT.



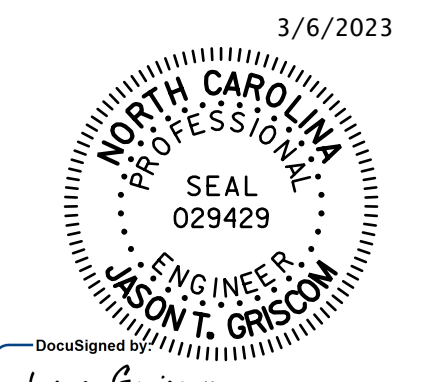
**DETAIL "F"**

(TOP "B" BARS & "S" BARS SHOWN. REMAINING CAP REINFORCING NOT SHOWN FOR CLARITY.)

PROJECT NO. B-5808  
CABARRUS COUNTY  
STATION: 20+64.00 -L-  
SHEET 5 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**END BENT 2**



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1			3		
2			4		

TOTAL SHEETS: 65

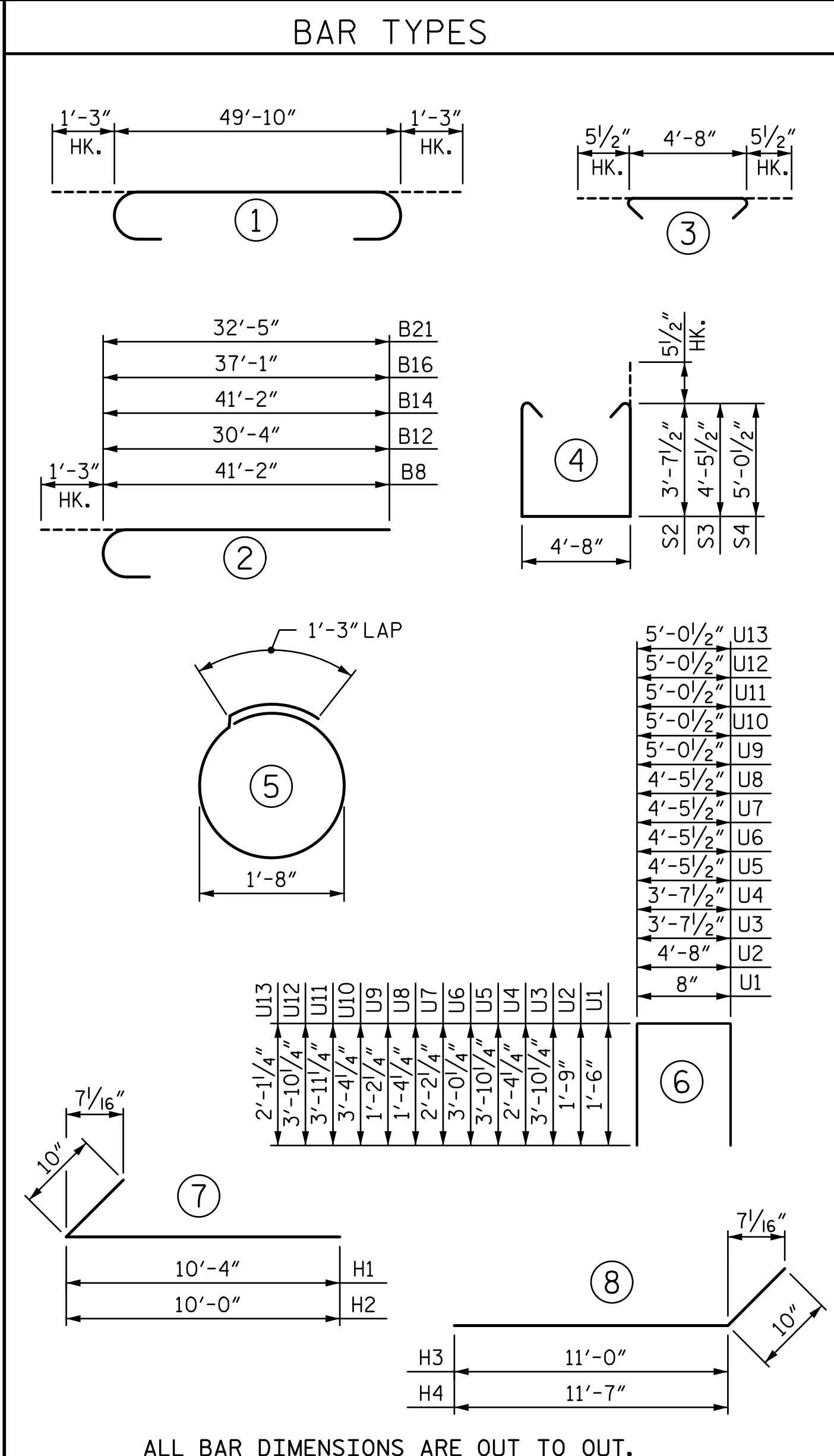
ASSEMBLED BY : SGH DATE : 11-22  
CHECKED BY : MLO DATE : 11-22  
DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

**NOTES:**

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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



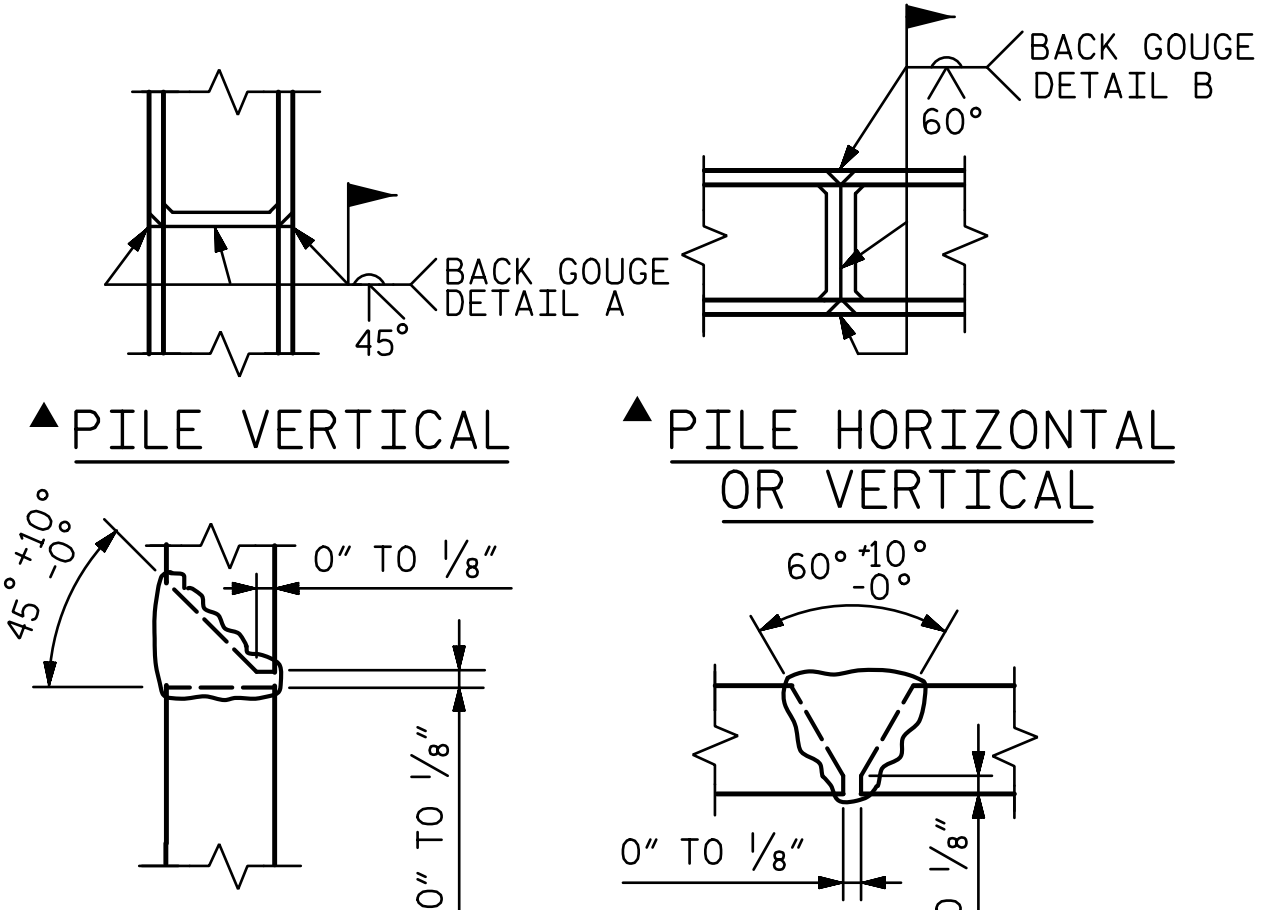
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL						BILL OF MATERIAL						BILL OF MATERIAL					
STAGE 1						STAGE 2						STAGE 3					
BAR	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	52'-4"	1,068	B4	18	#4	STR	4'-8"	56	B4	15	#4	STR	4'-8"	47
B2	8	#5	STR	50'-0"	417	B6	18	#4	STR	4'-8"	56	B6	18	#4	STR	4'-8"	56
B3	8	#4	STR	26'-4"	141	B8	6	#9	2	42'-5"	865	B15	6	#9	STR	26'-4"	537
B4	12	#4	STR	4'-8"	37	B9	6	#9	STR	23'-1"	471	B16	6	#9	2	38'-4"	782
B5	6	#9	1	52'-4"	1,068	B10	20	#5	STR	31'-8"	661	B17	20	#5	STR	31'-4"	654
B6	12	#4	STR	4'-8"	37	B11	8	#4	STR	31'-5"	168	B18	8	#4	STR	31'-0"	166
B7	6	#5	STR	7'-3"	45	B12	6	#9	2	31'-7"	644	B19	4	#5	STR	31'-4"	131
						B13	2	#5	STR	33'-11"	71	B20	6	#9	STR	32'-5"	661
						B14	6	#9	2	42'-5"	865	B21	6	#9	2	33'-8"	687
H3	19	#5	8	11'-10"	235												
H4	19	#5	8	12'-5"	246												
						D1	15	#6	STR	5'-9"	130	H1	22	#5	7	11'-2"	256
K1	16	#4	STR	26'-4"	281							H2	22	#5	7	10'-10"	249
K4	10	#4	STR	3'-5"	23												
S1	50	#5	3	5'-7"	291	S1	64	#5	3	5'-7"	373						
S2	50	#5	4	12'-10"	669	S3	26	#5	4	14'-6"	393						
S6	20	#4	5	6'-6"	87	S4	38	#5	4	15'-8"	621	S1	60	#5	3	5'-7"	349
						S6	24	#4	5	6'-6"	104	S4	60	#5	4	15'-8"	980
												S6	24	#4	5	6'-6"	104
U1	46	#4	6	3'-8"	113												
U2	40	#4	6	8'-2"	218	U1	60	#4	6	3'-8"	147						
U3	2	#5	6	11'-4"	24	U2	40	#4	6	8'-2"	218	U1	56	#4	6	3'-8"	137
U4	2	#5	6	8'-4"	17	U5	1	#5	6	12'-2"	13	U2	40	#4	6	8'-2"	218
U5	1	#5	6	12'-2"	13	U6	1	#5	6	10'-6"	11	U9	1	#5	6	7'-5"	8
U6	1	#5	6	10'-6"	11	U7	1	#5	6	8'-10"	9	U10	1	#5	6	11'-9"	12
U7	1	#5	6	8'-10"	9	U8	2	#5	6	7'-2"	15	U11	1	#5	6	12'-11"	13
U8	2	#5	6	7'-2"	15	U9	1	#5	6	7'-5"	8	U12	3	#5	6	12'-9"	40
												U13	3	#5	6	9'-3"	29
V1	93	#5	STR	6'-6"	630												
V3	31	#5	STR	8'-8"	280												

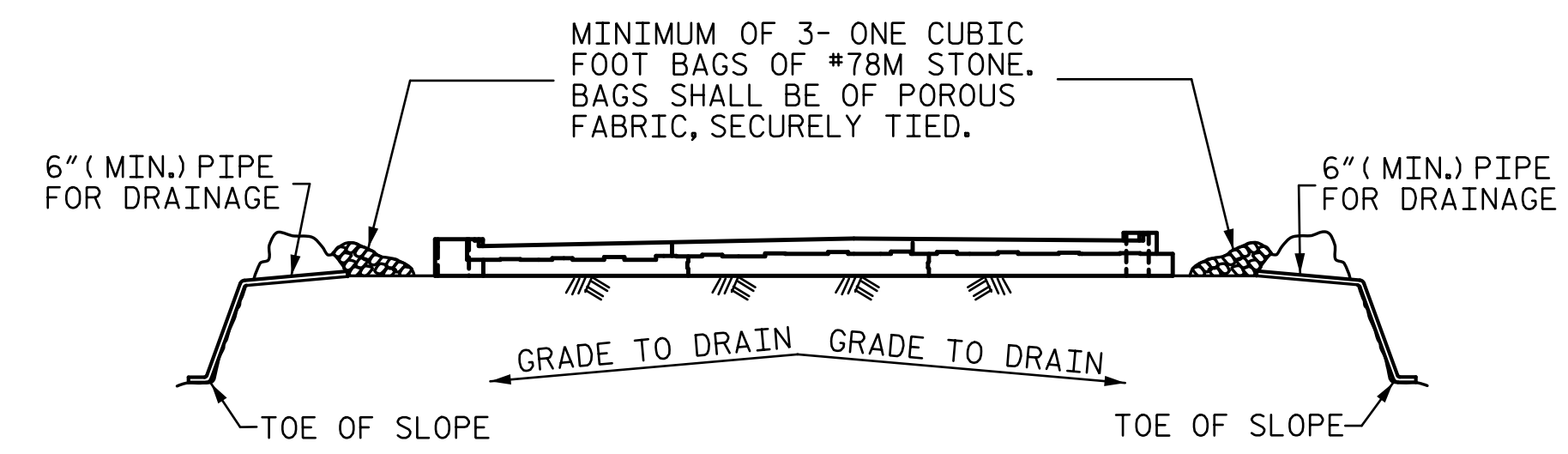
QUANTITIES - STAGE 1		QUANTITIES - STAGE 2		QUANTITIES - STAGE 3	
REINFORCING STEEL	LBS.	5,975	REINFORCING STEEL	LBS.	7,049
CLASS A CONCRETE:			CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.	42.0		POUR 1: CAP & COLLARS	C.Y.	59.9
POUR 2: BACKWALL & UPPER WING	8.7		POUR 2: BACKWALL	C.Y.	7.5
TOTAL	C.Y.	50.7	TOTAL	C.Y.	67.4

QUANTITIES - STAGE 2		QUANTITIES - STAGE 3			
REINFORCING STEEL	LBS.	7,049	REINFORCING STEEL	LBS.	7,546
CLASS A CONCRETE:			CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.	59.9		POUR 1: CAP, LOWER WINGS & COLLARS C.Y.	65.2	
POUR 2: BACKWALL & UPPER WING	7.5		POUR 2: BACKWALL & UPPER WING	9.5	
TOTAL	C.Y.	67.4	TOTAL	C.Y.	74.7

TOTAL END BENT QUANTITIES	
REINFORCING STEEL	LBS. 20,570
CLASS A CONCRETE:	C.Y. 192.8



DETAIL A  
 ▲ POSITION OF PILE DURING WELDING.  
 PILE SPLICE DETAILS



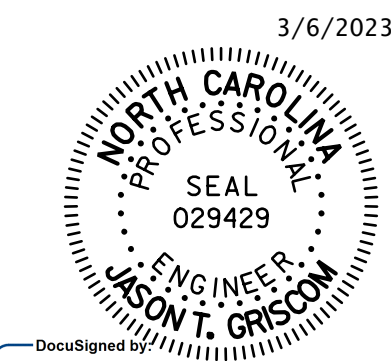
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

**TEMPORARY DRAINAGE AT END BENT**

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-  
 SHEET 6 OF 6



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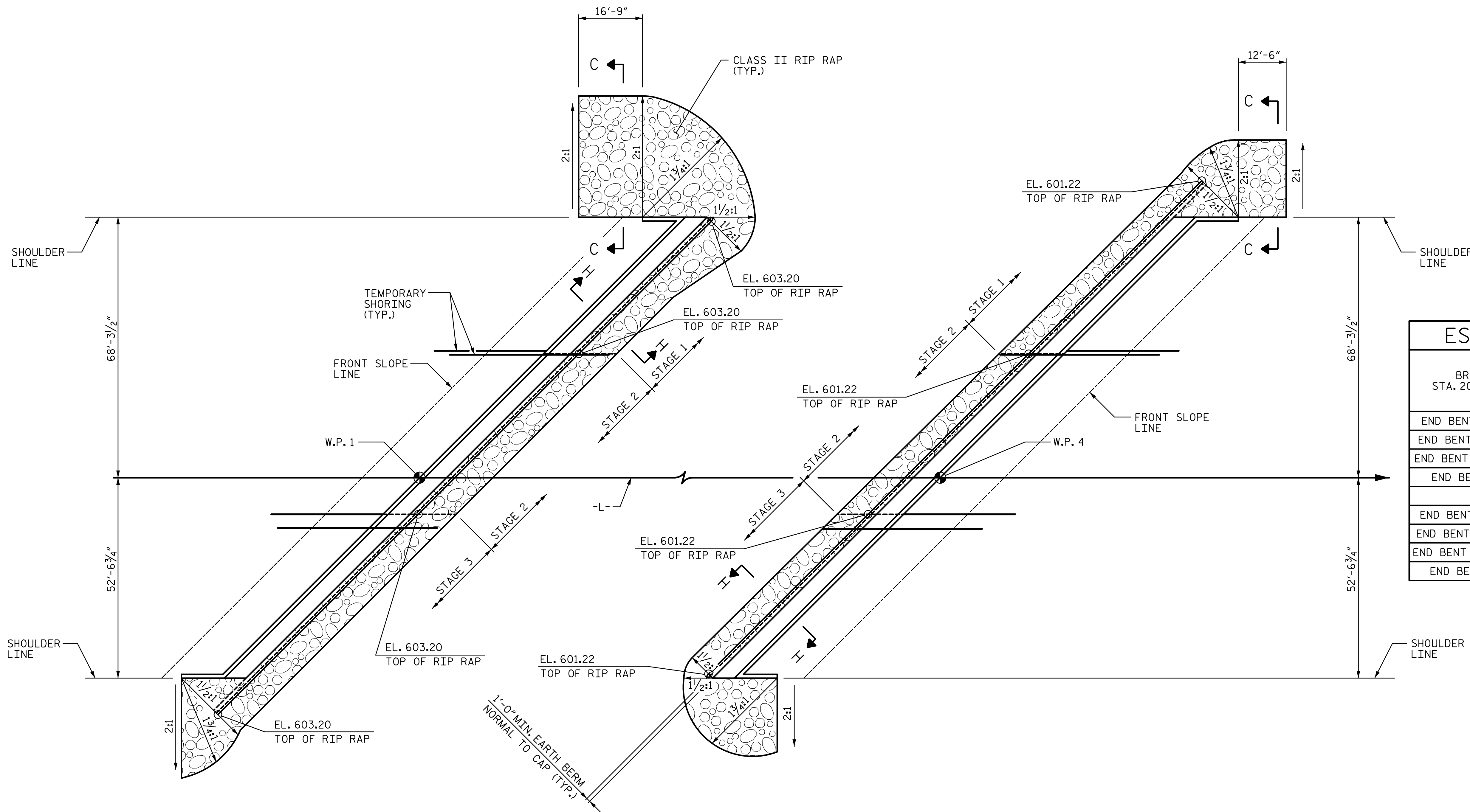
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END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-58
					TOTAL SHEETS 65

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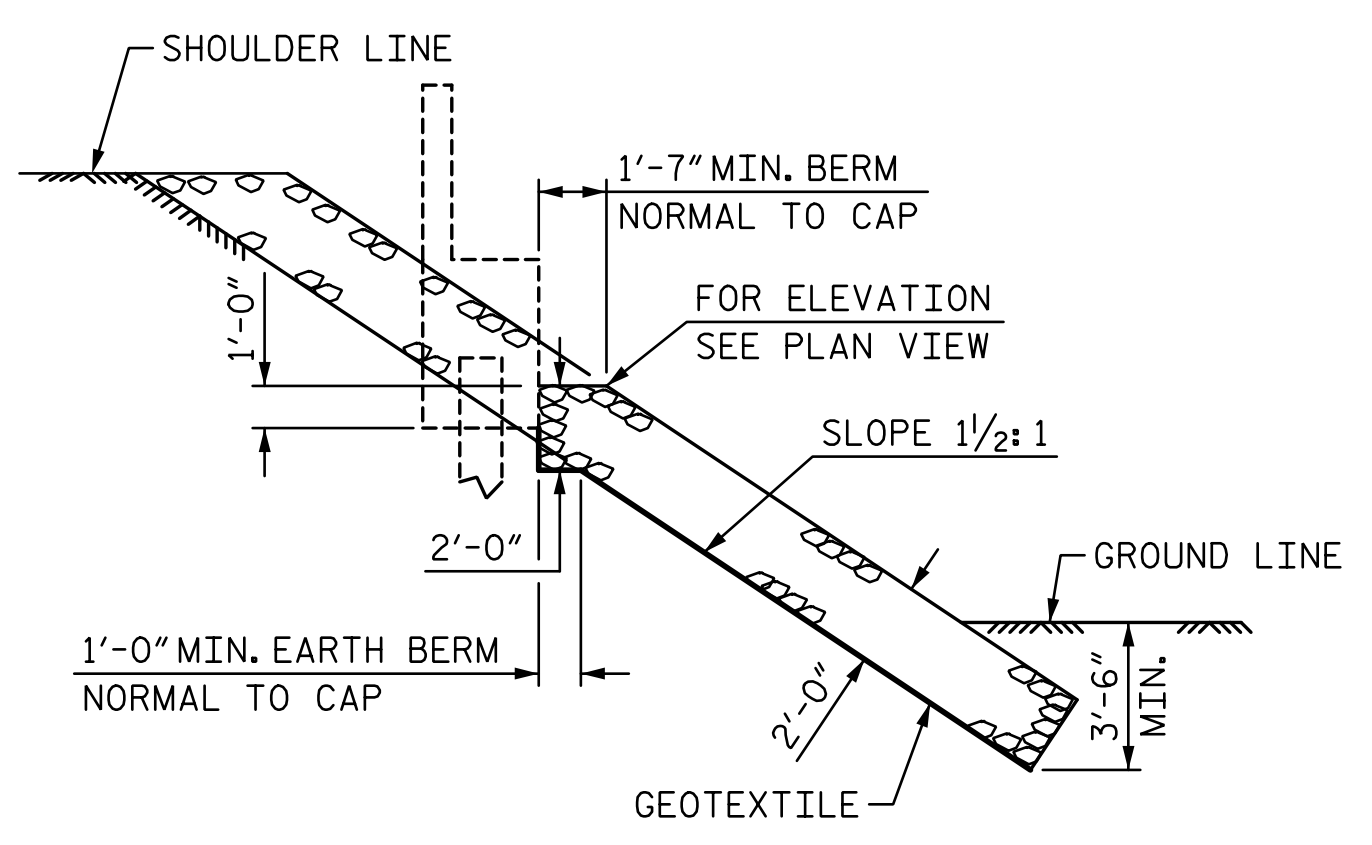
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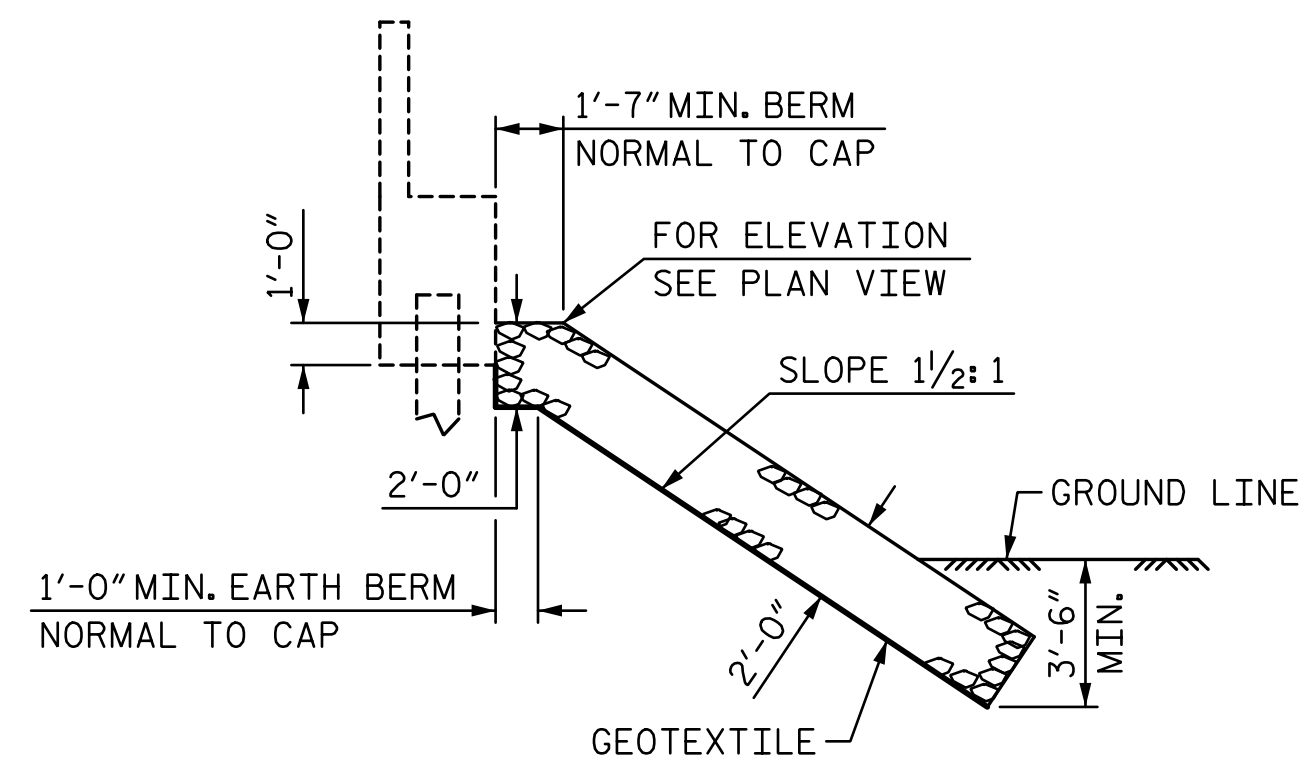
ESTIMATED QUANTITIES		
BRIDGE @ STA. 20+64.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1 (STAGE I)	200	225
END BENT 1 (STAGE II)	65	75
END BENT 1 (STAGE III)	130	145
<b>END BENT 1 TOTAL</b>	<b>395</b>	<b>445</b>
END BENT 2 (STAGE I)	120	130
END BENT 2 (STAGE II)	45	50
END BENT 2 (STAGE III)	105	120
<b>END BENT 2 TOTAL</b>	<b>270</b>	<b>300</b>

PLAN - END BENT 1

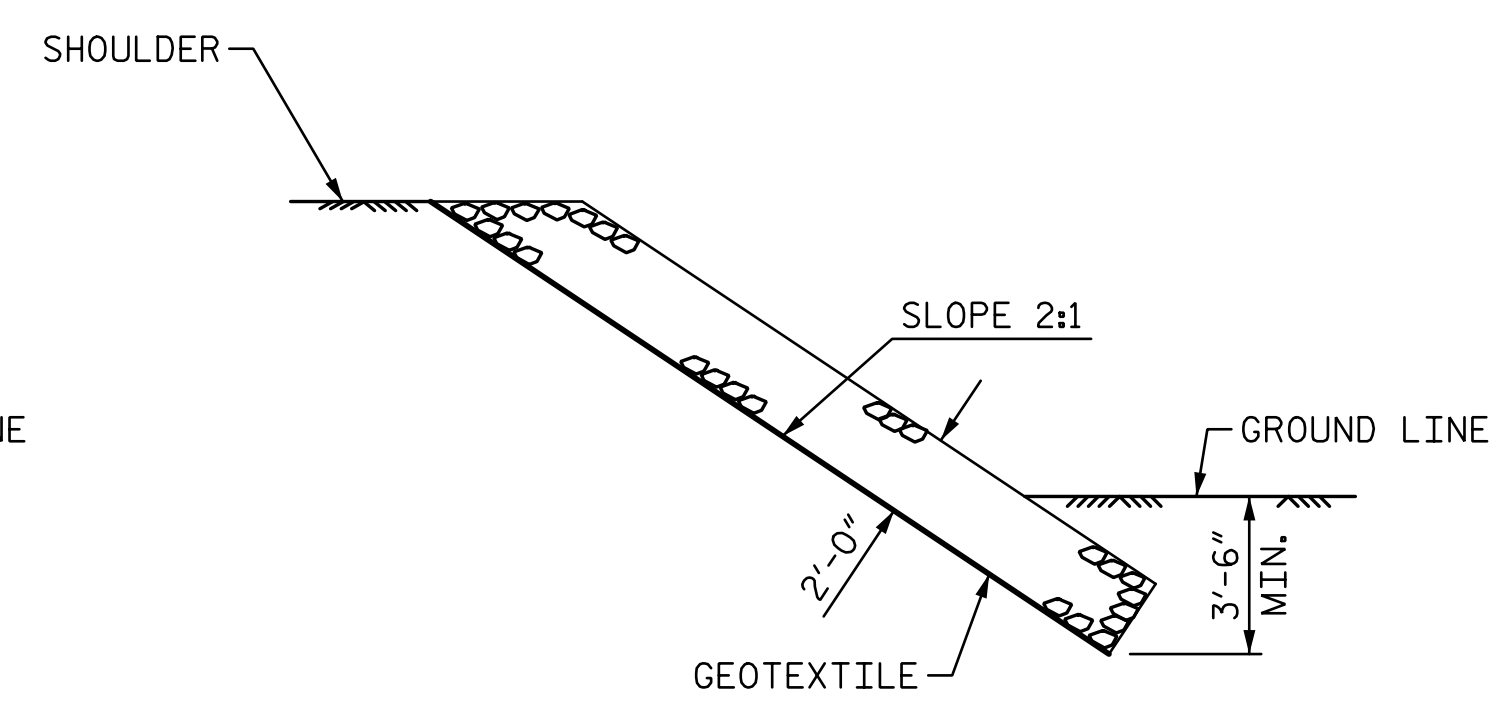
PLAN - END BENT 2



SECTION H-H



SECTION C-C

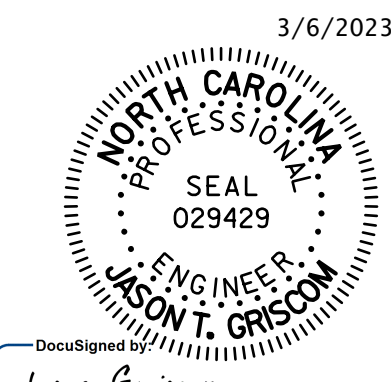


SECTION C-C  
BERM RIP RAPPED

PROJECT NO. B-5808  
CABARRUS COUNTY  
 STATION: 20+64.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**RIP RAP DETAILS**



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 Charlotte, NC 28202  
 NC License Number F-0991

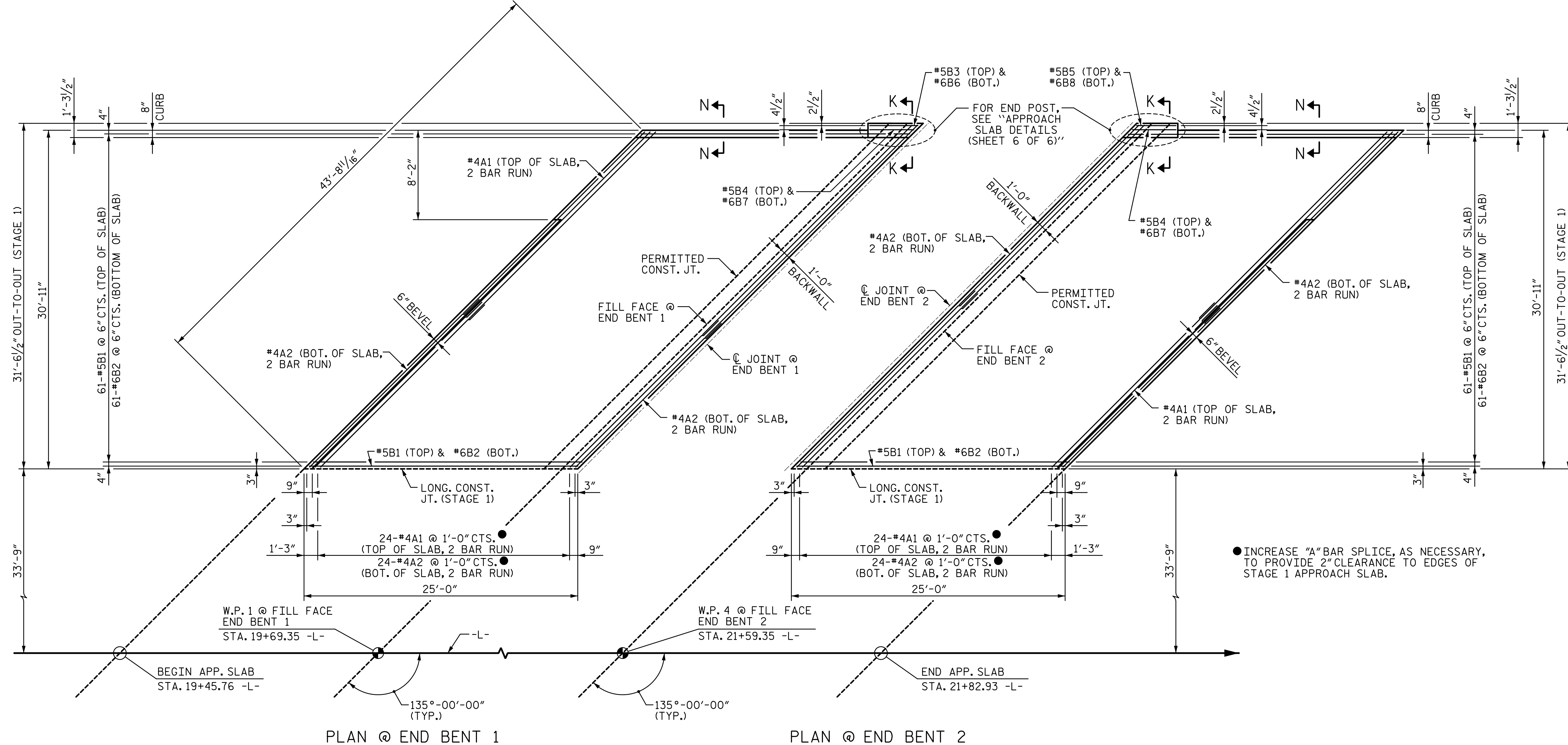
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 CHECKED BY : MLO DATE : 10-22  
 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23

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

TOTAL SHEETS: 65

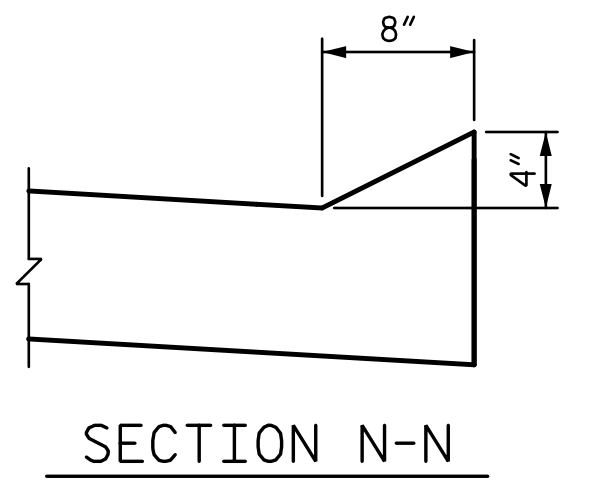
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PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. FOR SECTION K-K, SEE "APPROACH SLAB STAGE 3 (SHEET 3 OF 6)".



BILL OF MATERIAL					
FOR END BENT 1 APPROACH SLAB STAGE 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	23'-1"	771
A2	52	#4	STR	22'-11"	796
*B1	62	#5	STR	23'-9"	1,536
B2	62	#6	STR	24'-6"	2,282
*B3	1	#5	STR	4'-4"	5
*B4	1	#5	STR	3'-11"	4
B6	1	#6	STR	4'-4"	7
B7	1	#6	STR	3'-11"	6
REINFORCING STEEL **					LBS. 3,091
*EPOXY COATED REINFORCING STEEL **					LBS. 2,316
CLASS AA CONCRETE **					C. Y. 33.6
FOR END BENT 2 APPROACH SLAB STAGE 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	23'-1"	771
A2	52	#4	STR	22'-11"	796
*B1	62	#5	STR	23'-9"	1,536
B2	62	#6	STR	24'-6"	2,282
*B4	1	#5	STR	3'-11"	4
*B5	1	#5	STR	3'-6"	4
B7	1	#6	STR	3'-11"	6
B8	1	#6	STR	3'-6"	5
REINFORCING STEEL **					LBS. 3,089
*EPOXY COATED REINFORCING STEEL **					LBS. 2,315
CLASS AA CONCRETE **					C. Y. 33.7

\*\* QUANTITIES FOR CONCRETE END POST AND SIDEWALK NOT INCLUDED.

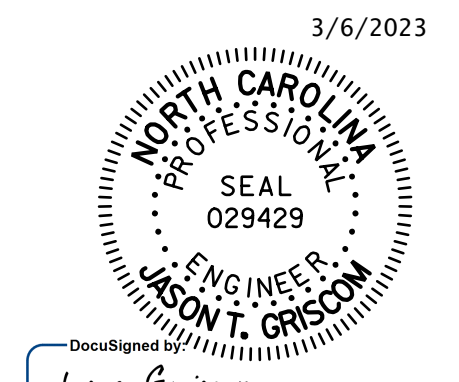
**NOTES:**

FOR NOTES AND SECTION THROUGH APPROACH SLAB, SEE "APPROACH SLAB DETAILS (SHEET 5 OF 6)".

FOR SIDEWALK DETAILS (STAGE 4), SEE "APPROACH SLAB (SHEET 4 OF 6)".

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

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 SHEET 1 OF 6



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
APPROACH SLAB STAGE 1					
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-60	
				TOTAL SHEETS 65	

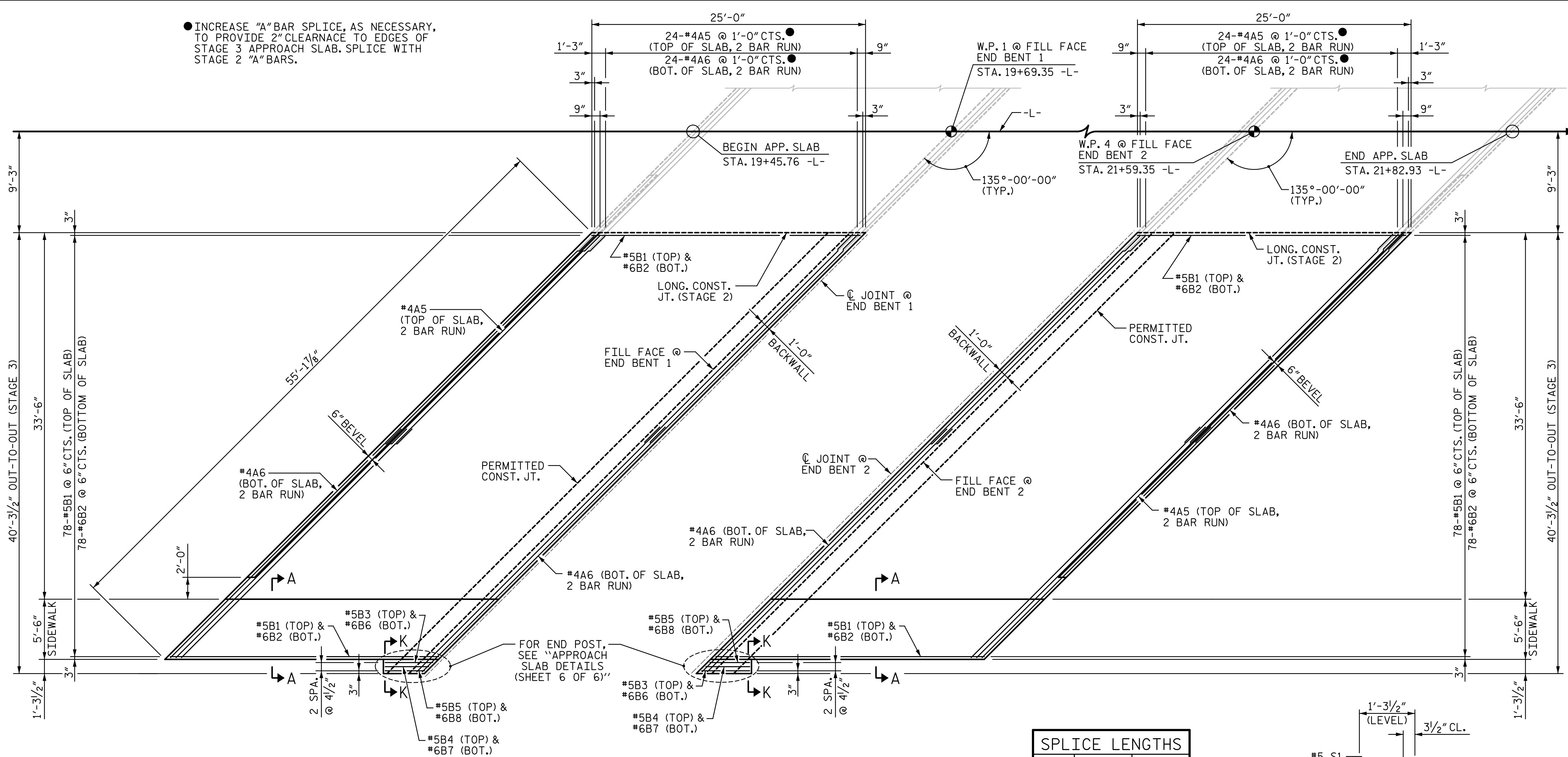
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 DESIGN ENGINEER OF RECORD : J. GRISCOM DATE : 3-23





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● INCREASE "A" BAR SPLICE, AS NECESSARY, TO PROVIDE 2" CLEARANCE TO EDGES OF STAGE 3 APPROACH SLAB. SPLICE WITH STAGE 2 "A" BARS.

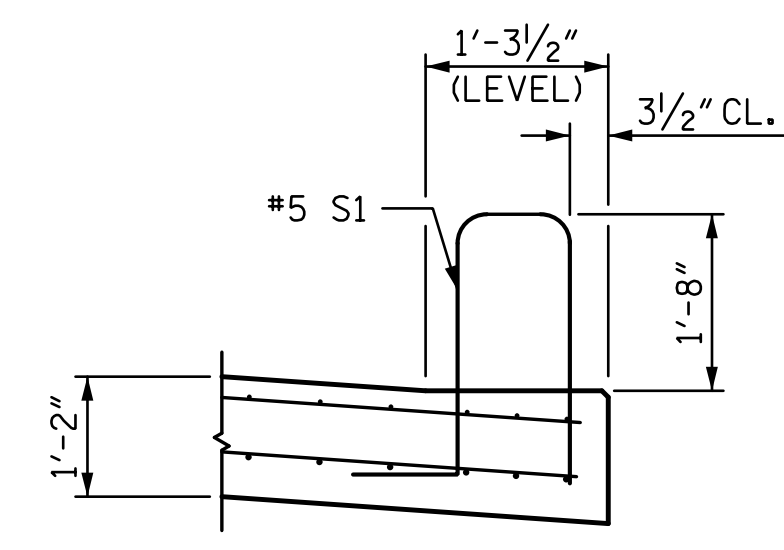


PLAN @ END BENT 1

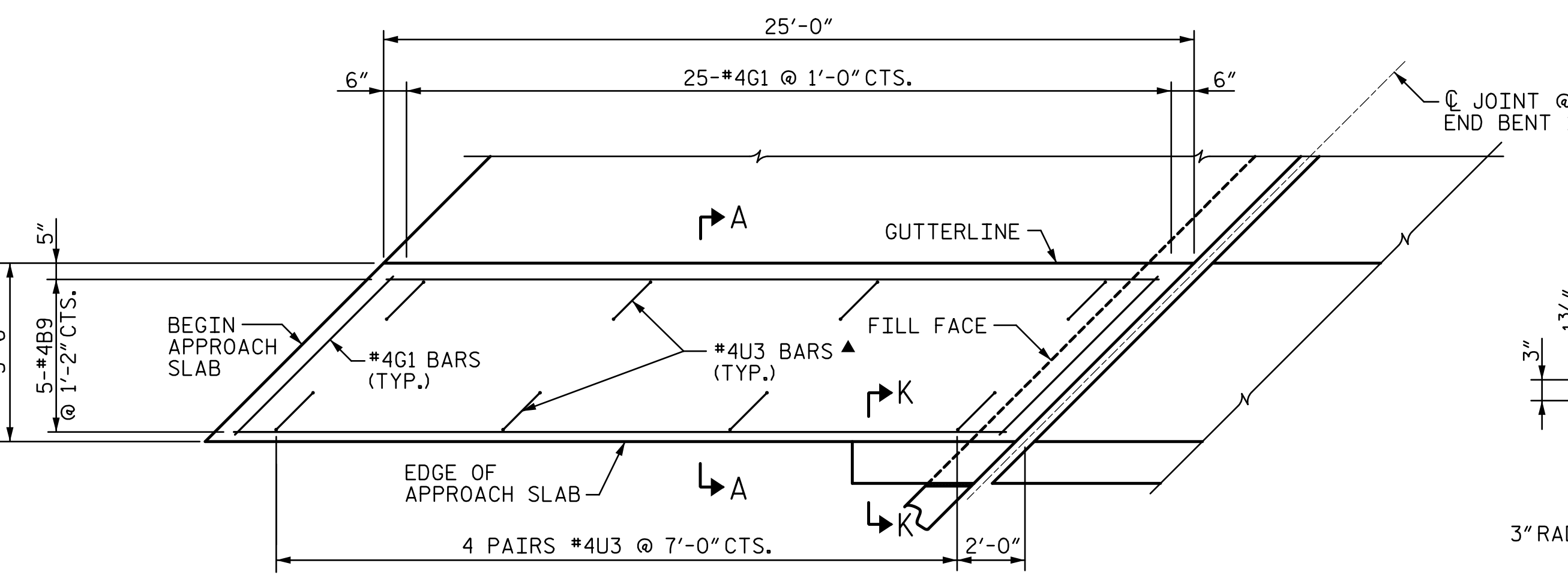
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

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

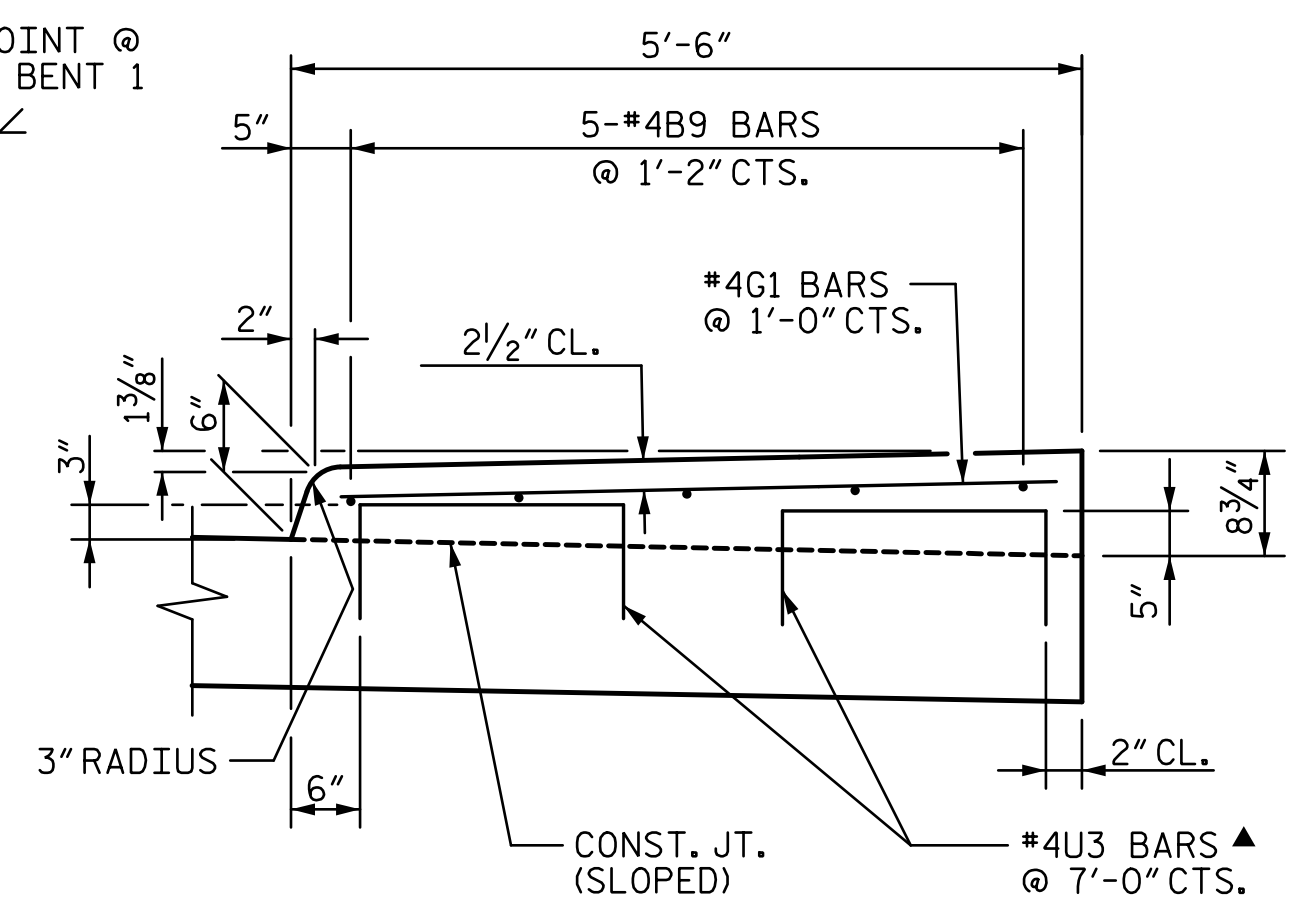


SECTION K-K



PLAN OF SIDEWALK - STAGE 3

(SIDEWALK AT END BENT 1 SHOWN, SIDEWALK AT END BENT 2 SIMILAR.)



SECTION A-A

BILL OF MATERIAL						
FOR ONE APPROACH SLAB STAGE 3 (2 REQ'D.)						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A5	50	#4	STR	29'-2"	974	
A6	52	#4	STR	29'-0"	1,007	
*B1	78	#5	STR	23'-9"	1,932	
B2	78	#6	STR	24'-6"	2,870	
*B3	1	#5	STR	4'-4"	5	
*B4	1	#5	STR	3'-11"	4	
*B5	1	#5	STR	3'-7"	4	
B6	1	#6	STR	4'-4"	7	
B7	1	#6	STR	3'-11"	6	
B8	1	#6	STR	3'-7"	5	
*B9	5	#4	STR	24'-6"	82	
*G1	25	#4	STR	6'-11"	116	
*U3	8	#4	1	4'-4"	23	
REINFORCING STEEL **				LBS.	3,895	
*EPOXY COATED REINFORCING STEEL **				LBS.	3,140	
CLASS AA CONCRETE (APPROACH SLAB) **				C. Y.	42.6	
CLASS AA CONCRETE (SIDEWALK) **				C. Y.	3.1	
BAR TYPE						
ALL BAR DIMENSIONS ARE OUT TO OUT						
** QUANTITIES FOR CONCRETE END POST NOT INCLUDED.						

NOTES:

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 JOINT SHALL BE LOCATED AT A SPACING OF 8'-0" TO 10'-0" BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10'-0" IN LENGTH.

FOR NOTES AND SECTION THROUGH APPROACH SLAB, SEE "APPROACH SLAB DETAILS (SHEET 5 OF 6)".

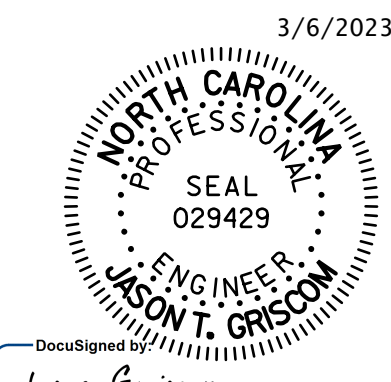
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 CABARRUS COUNTY  
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 SHEET 3 OF 6

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 RALEIGH

**APPROACH SLAB STAGE 3**

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

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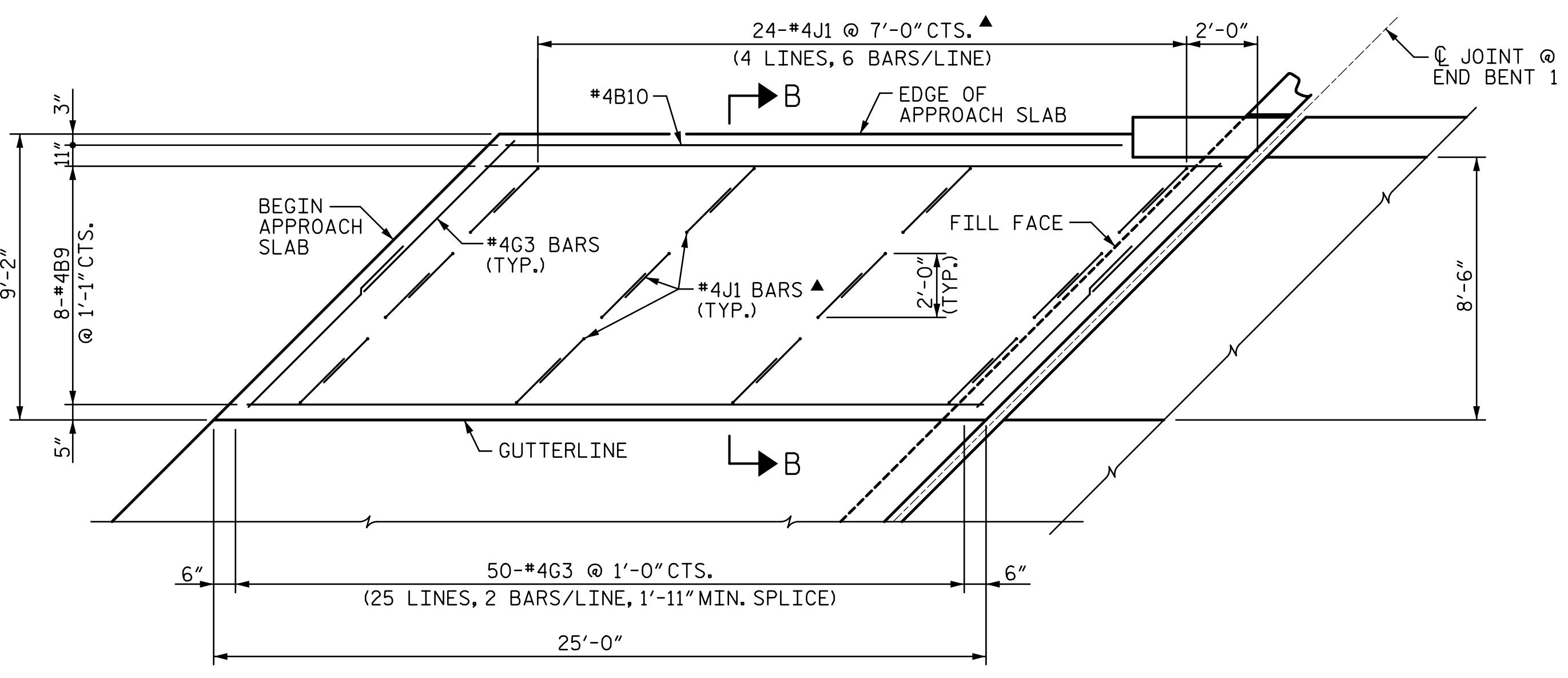
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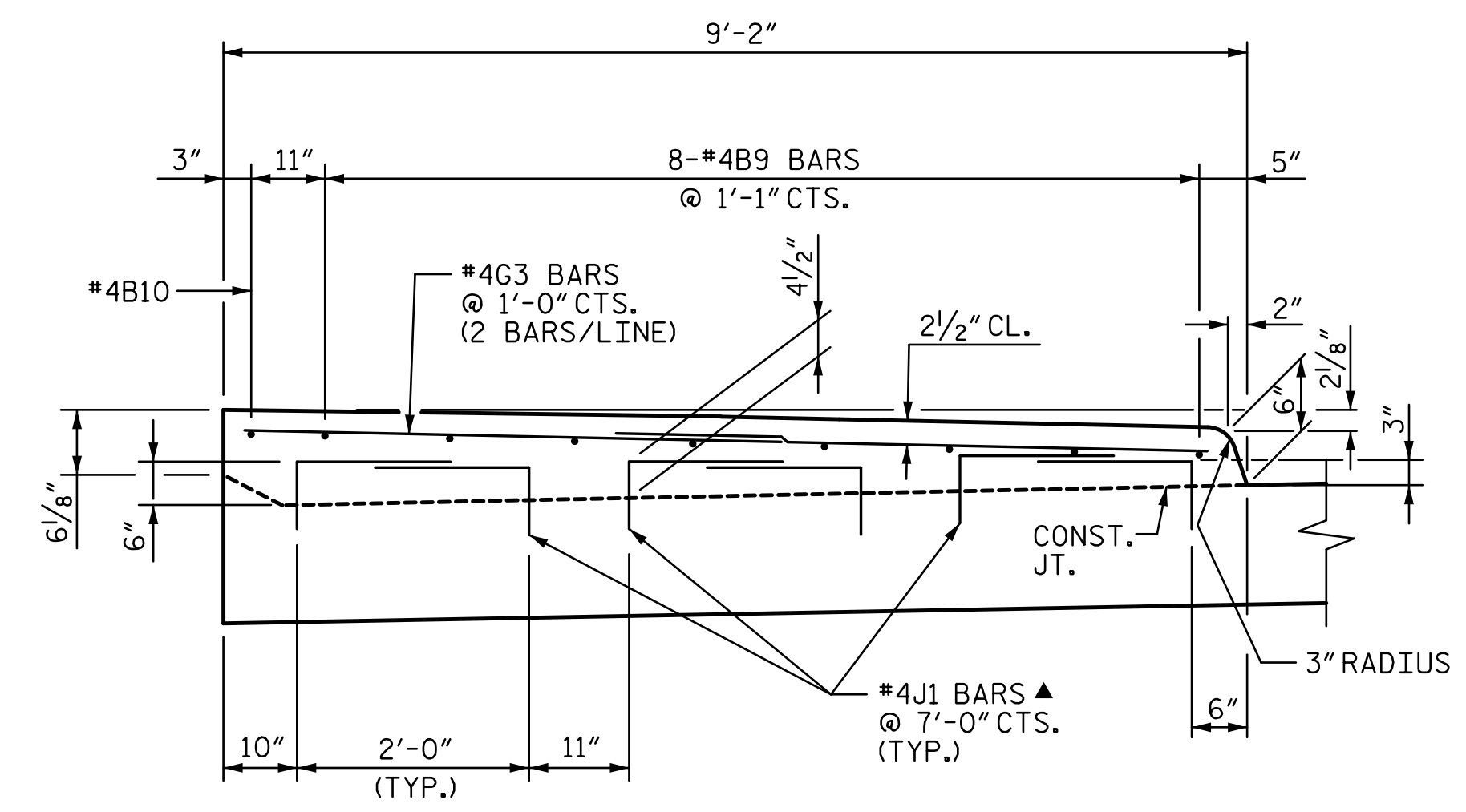
▲ #4U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER APPROACH SLAB HAS BEEN SCREEDDED OFF.



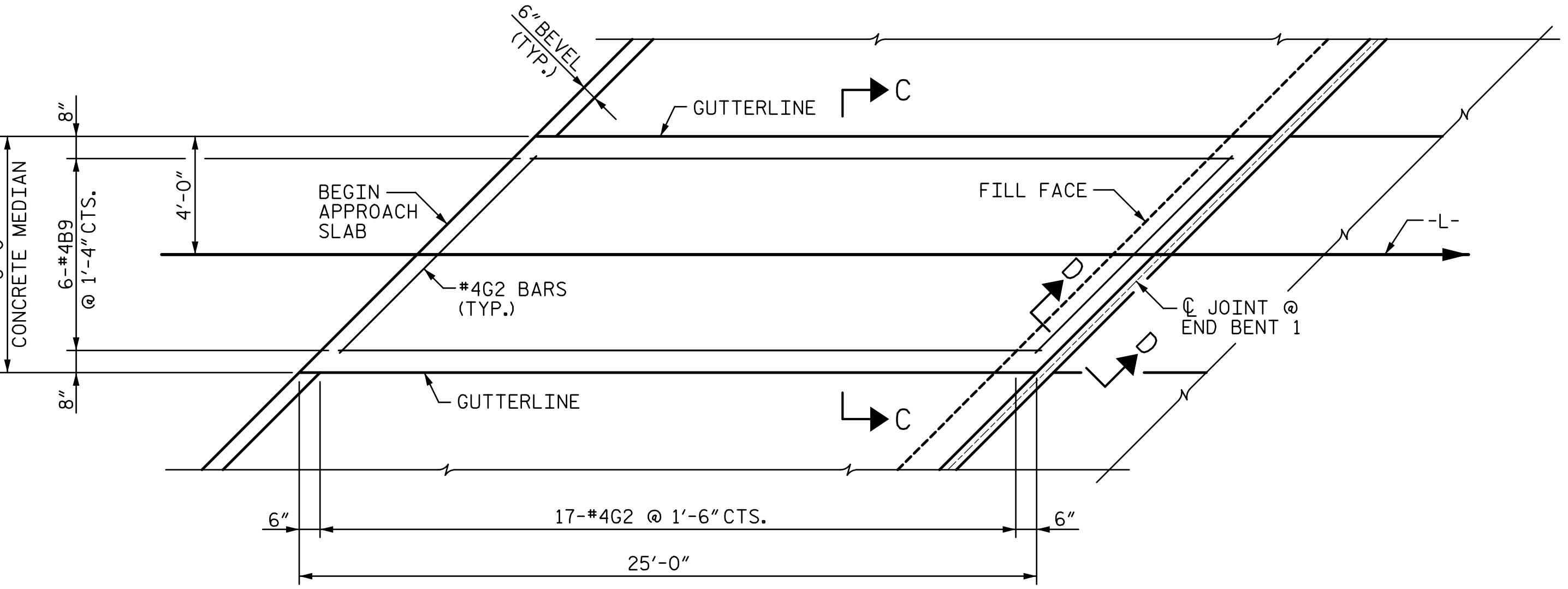
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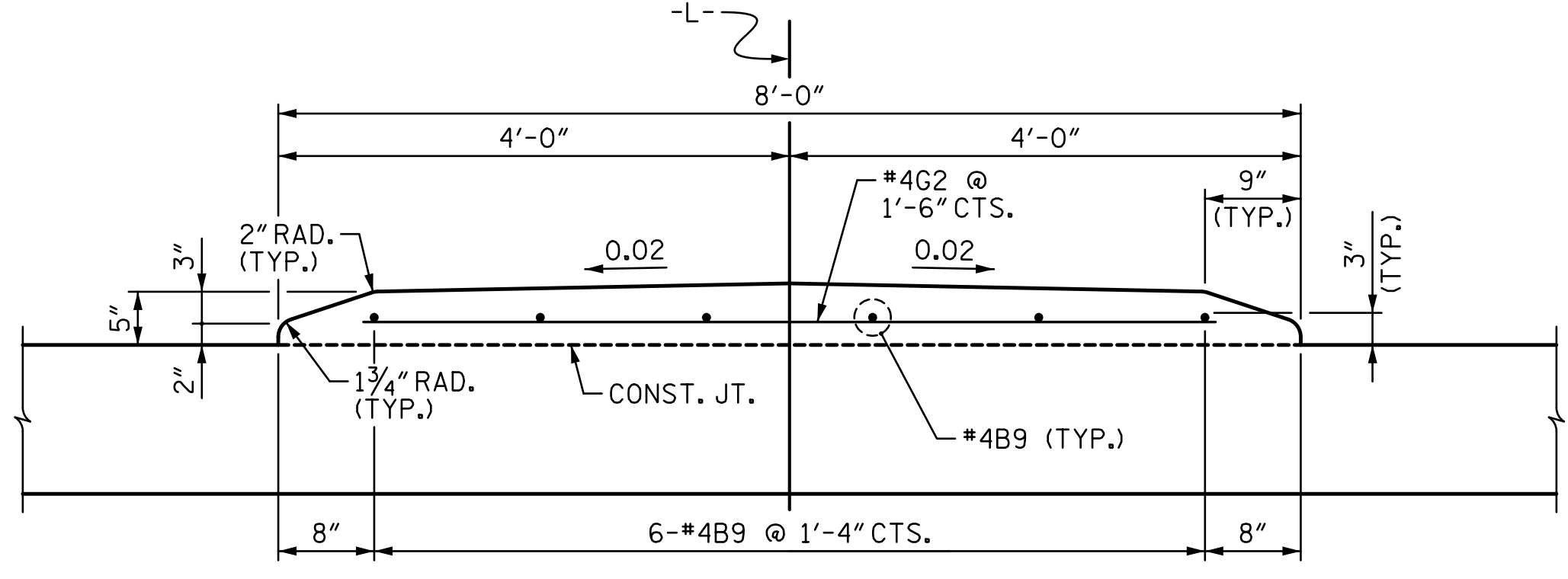
**PLAN OF SIDEWALK - STAGE 4**  
(SIDEWALK AT END BENT 1 SHOWN, SIDEWALK AT END BENT 2 SIMILAR.)



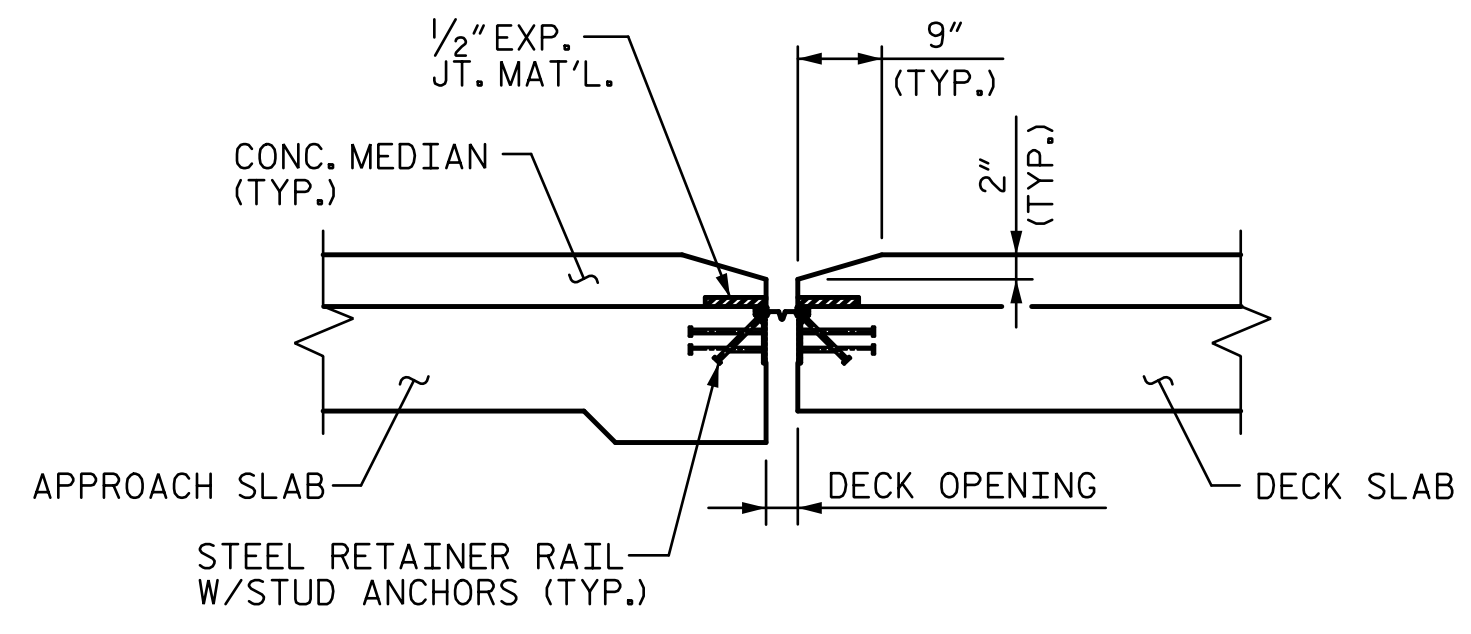
**SECTION B-B**



**PLAN OF CONCRETE MEDIAN - STAGE 4**  
(CONCRETE MEDIAN AT END BENT 1 SHOWN, CONCRETE MEDIAN AT END BENT 2 SIMILAR.)



**SECTION C-C**



**SECTION D-D**

**BILL OF MATERIAL**

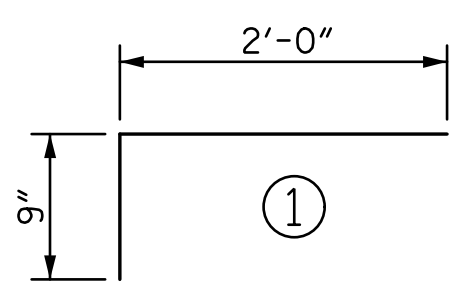
**FOR ONE APPROACH SLAB STAGE 4 (2 REQ'D.)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B9	14	#4	STR	24'-6"	229
*B10	1	#4	STR	20'-5"	14
*G2	17	#4	STR	9'-9"	111
*G3	50	#4	STR	7'-2"	239
*J1	24	#4	1	2'-9"	44

\* EPOXY COATED REINFORCING STEEL LBS. 637

CLASS AA CONCRETE (SIDEWALK) C. Y. 5.6  
CLASS AA CONCRETE (RAISED MEDIAN) C. Y. 2.9

**BAR TYPE**



ALL BAR DIMENSIONS ARE OUT TO OUT

**NOTES:**

NO FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS REQUIRED.

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 JOINT SHALL BE LOCATED AT A SPACING OF 8'-0" TO 10'-0" BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10'-0" IN LENGTH.

PROJECT NO. **B-5808**

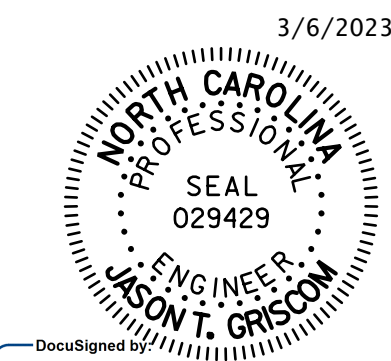
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SHEET 4 OF 6

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**APPROACH SLAB STAGE 4**



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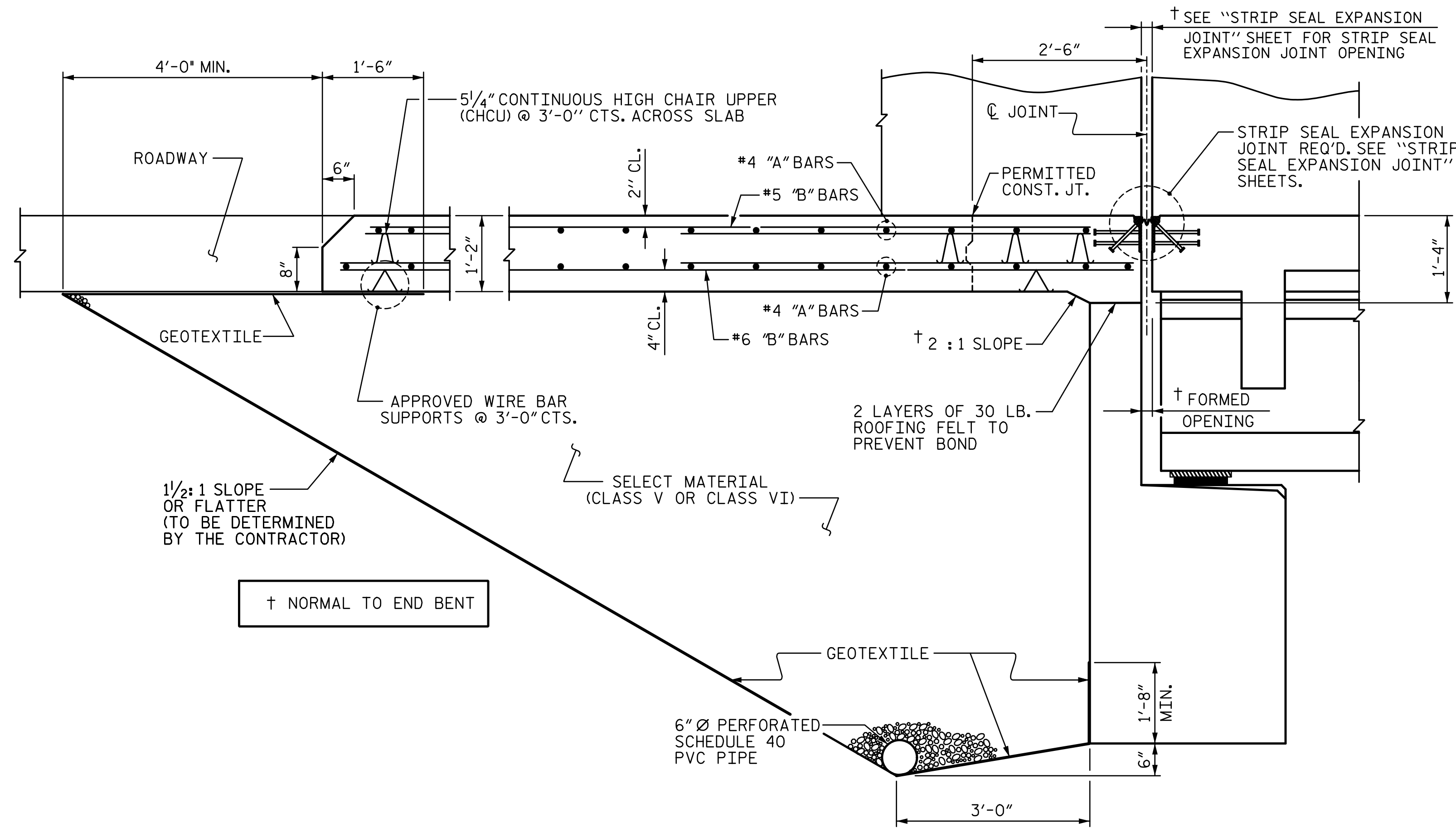
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 65

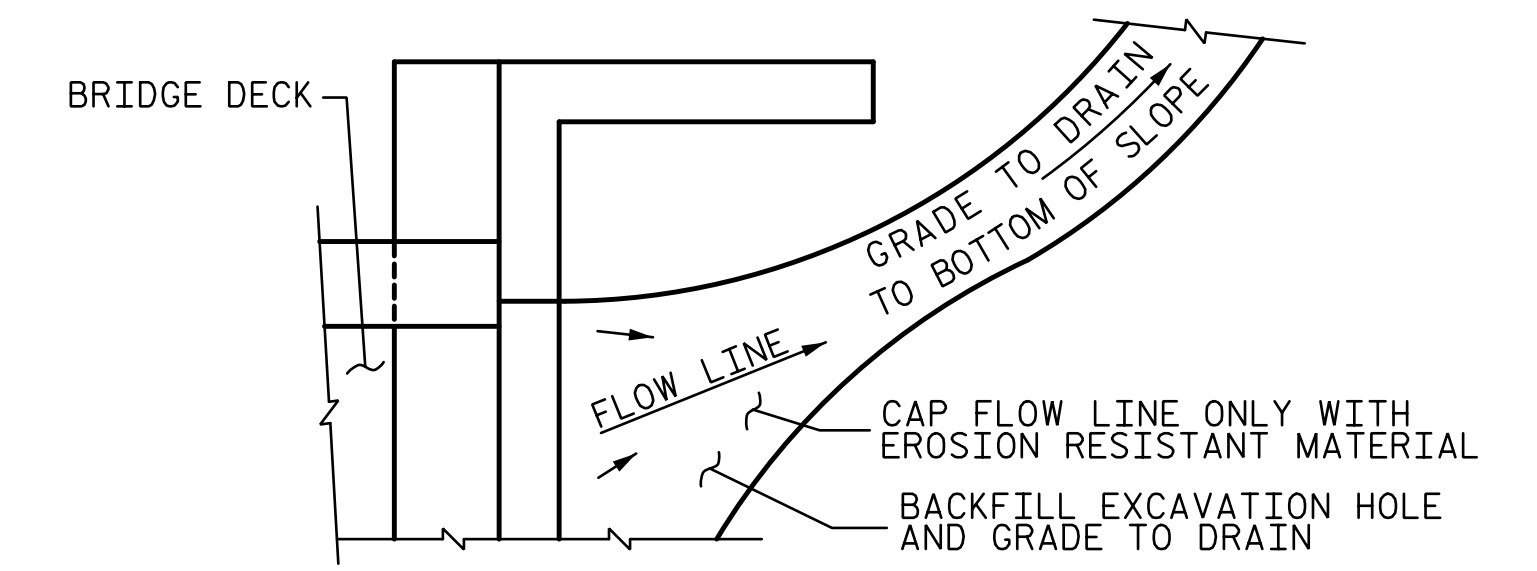
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### NOTES

- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO THE COMPLETION OF THE BRIDGE DECK.
- FOR THE 6"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

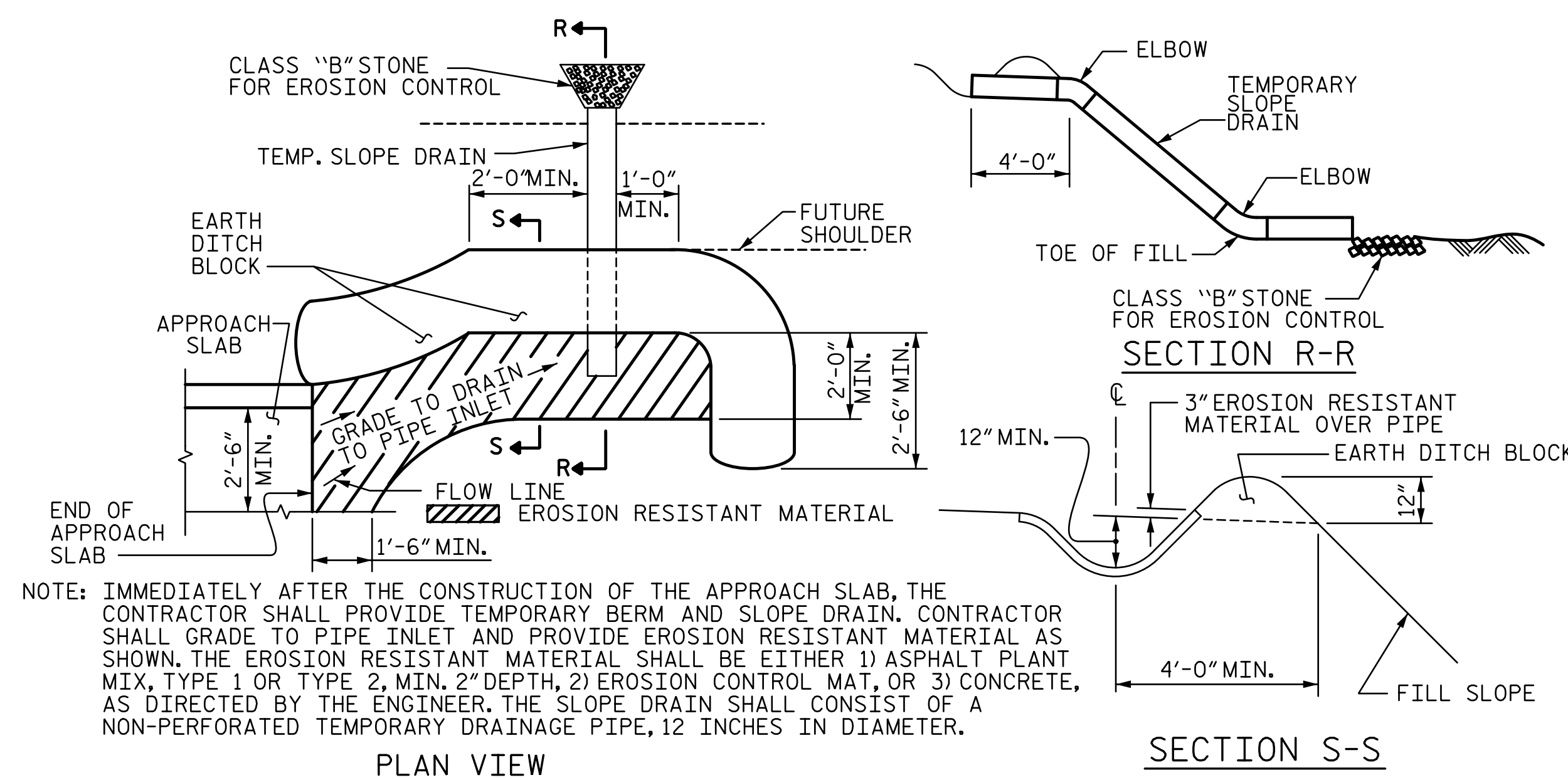


**SECTION THRU SLAB**  
(TYPE I - STANDARD APPROACH FILL)



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

**TEMPORARY DRAINAGE DETAIL**



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2\"/>

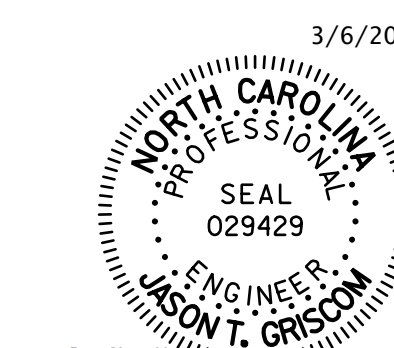
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. **B-5808**  
**CABARRUS** COUNTY  
 STATION: **20+64.00 -L-**  
 SHEET 5 OF 6

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### APPROACH SLAB DETAILS



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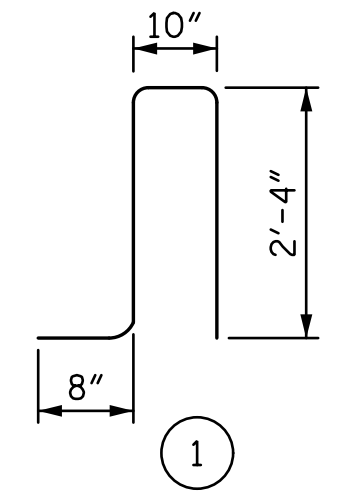
**NOTES**

THE COST OF THE END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" X 3'-4 1/4" CONCRETE PARAPET".

THE END POST ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN END POSTS SHALL BE EPOXY COATED.

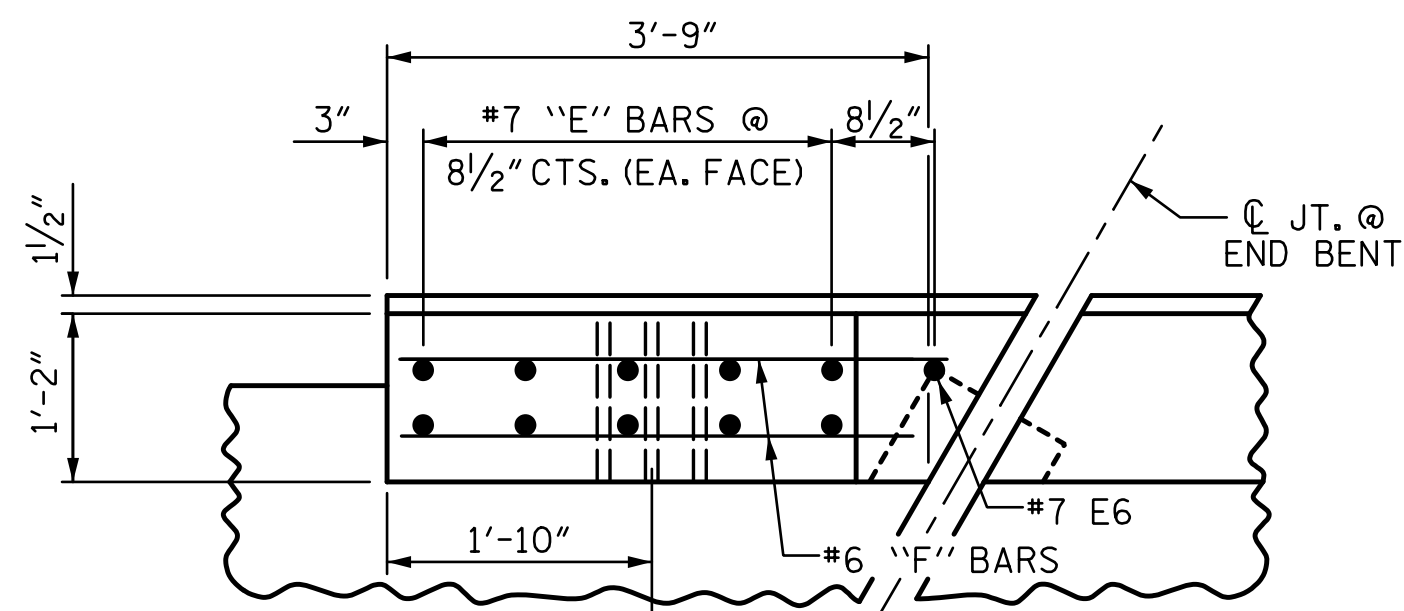
**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

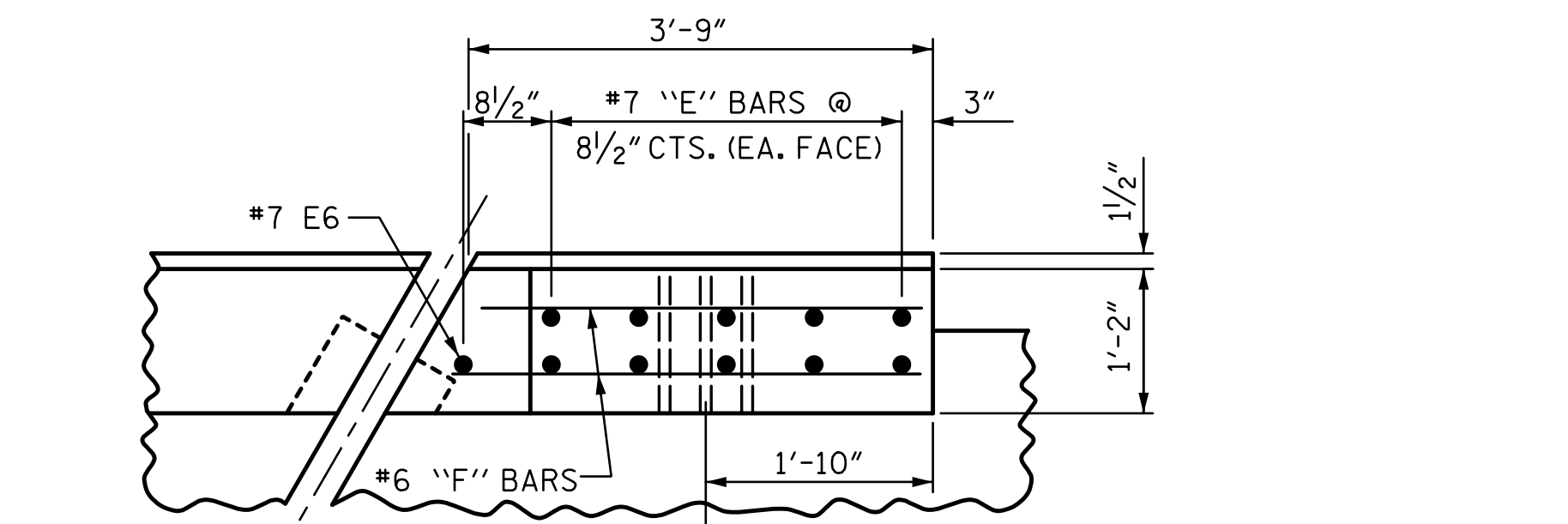
**BILL OF MATERIAL FOR 2 END POSTS PER STAGE (2 STAGES REQ'D.)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	4	#7	STR	3'-2"	26
*E2	4	#7	STR	3'-8"	30
*E3	4	#7	STR	4'-1"	33
*E4	4	#7	STR	4'-7"	37
*E5	4	#7	STR	5'-0"	41
*E6	2	#7	STR	5'-2"	21
*F1	10	#6	STR	3'-5"	51
*F2	2	#6	STR	2'-8"	8
*F3	2	#6	STR	1'-6"	5
*F4	2	#6	STR	3'-8"	11
*F5	10	#6	STR	4'-2"	63
*F6	2	#6	STR	3'-5"	10
*F7	2	#6	STR	2'-3"	7
*F8	2	#6	STR	4'-2"	13
*S1	8	#5	1	6'-2"	51
* EPOXY COATED REINFORCING STEEL					LBS. 407
CLASS AA CONCRETE				CU. YDS.	1.9
TOTAL LIN. FT. OF CONCRETE PARAPET					9.0



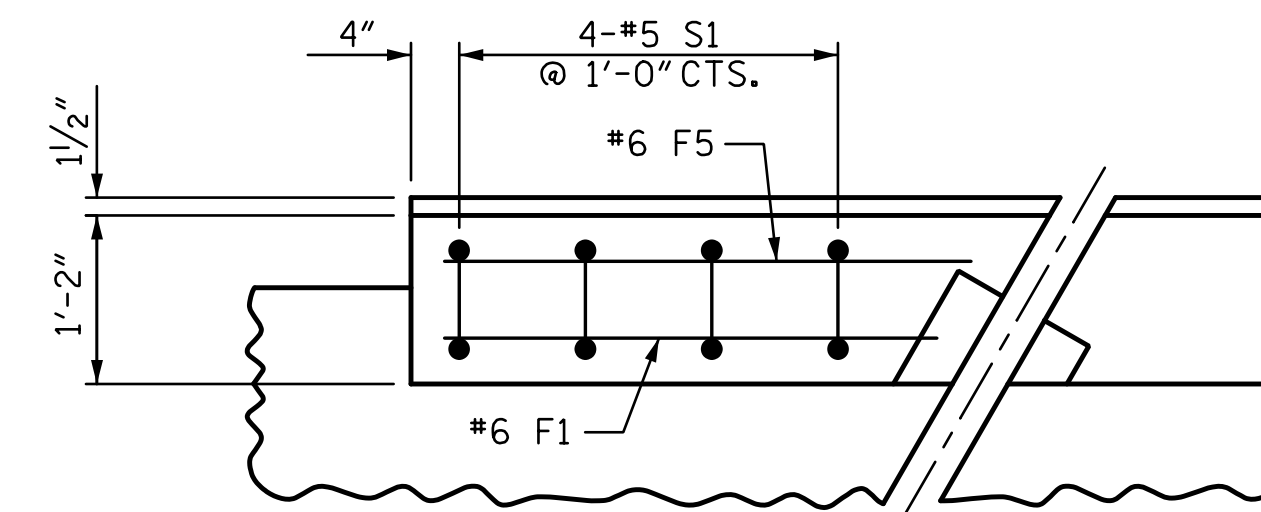
**PLAN OF END POST**

END BENT 1 STAGE 1 SHOWN, END BENT 2 STAGE 3 SIMILAR.



**PLAN OF END POST**

END BENT 2 STAGE 1 SHOWN, END BENT 1 STAGE 3 SIMILAR.

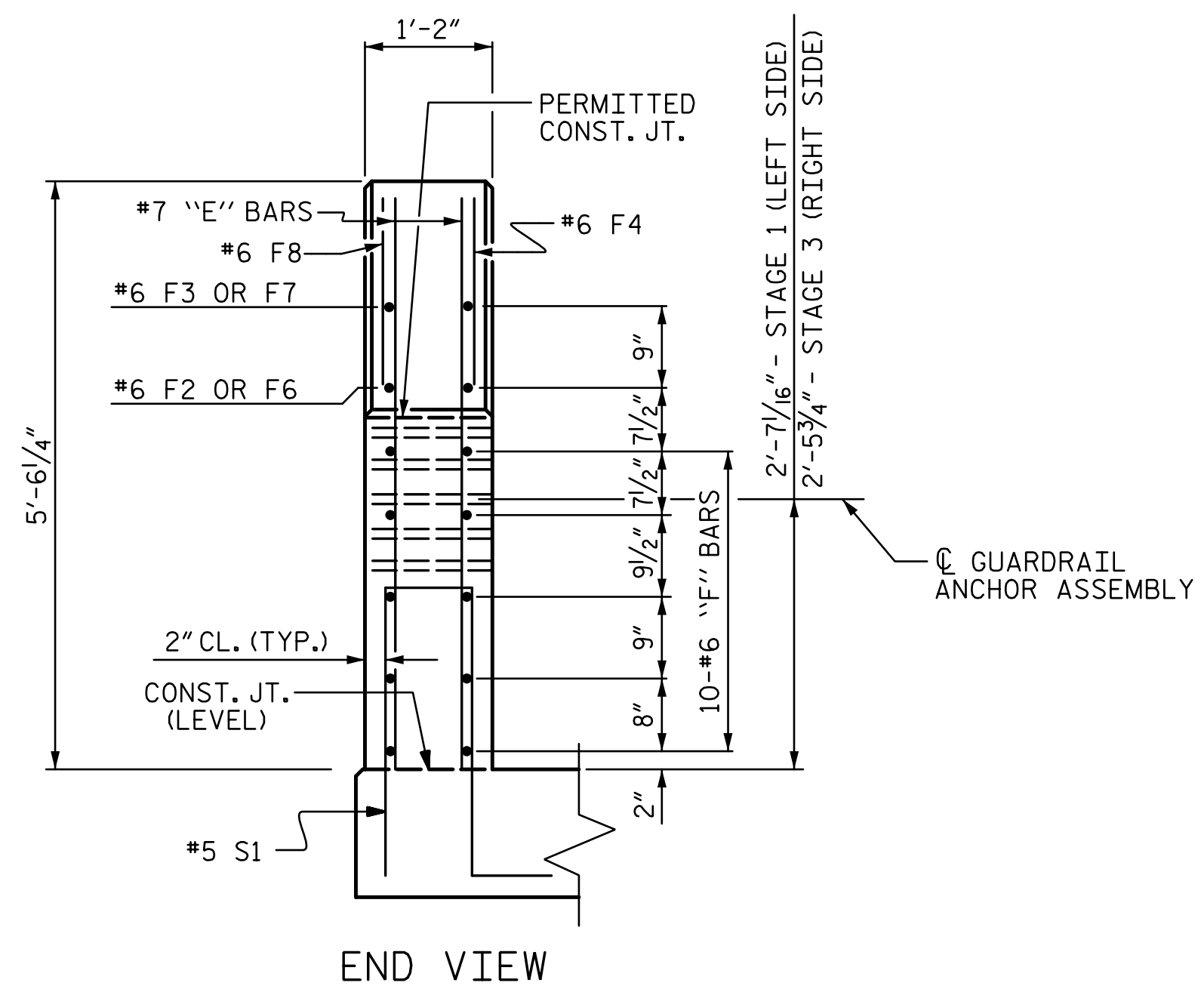


**PLAN OF PARAPET**

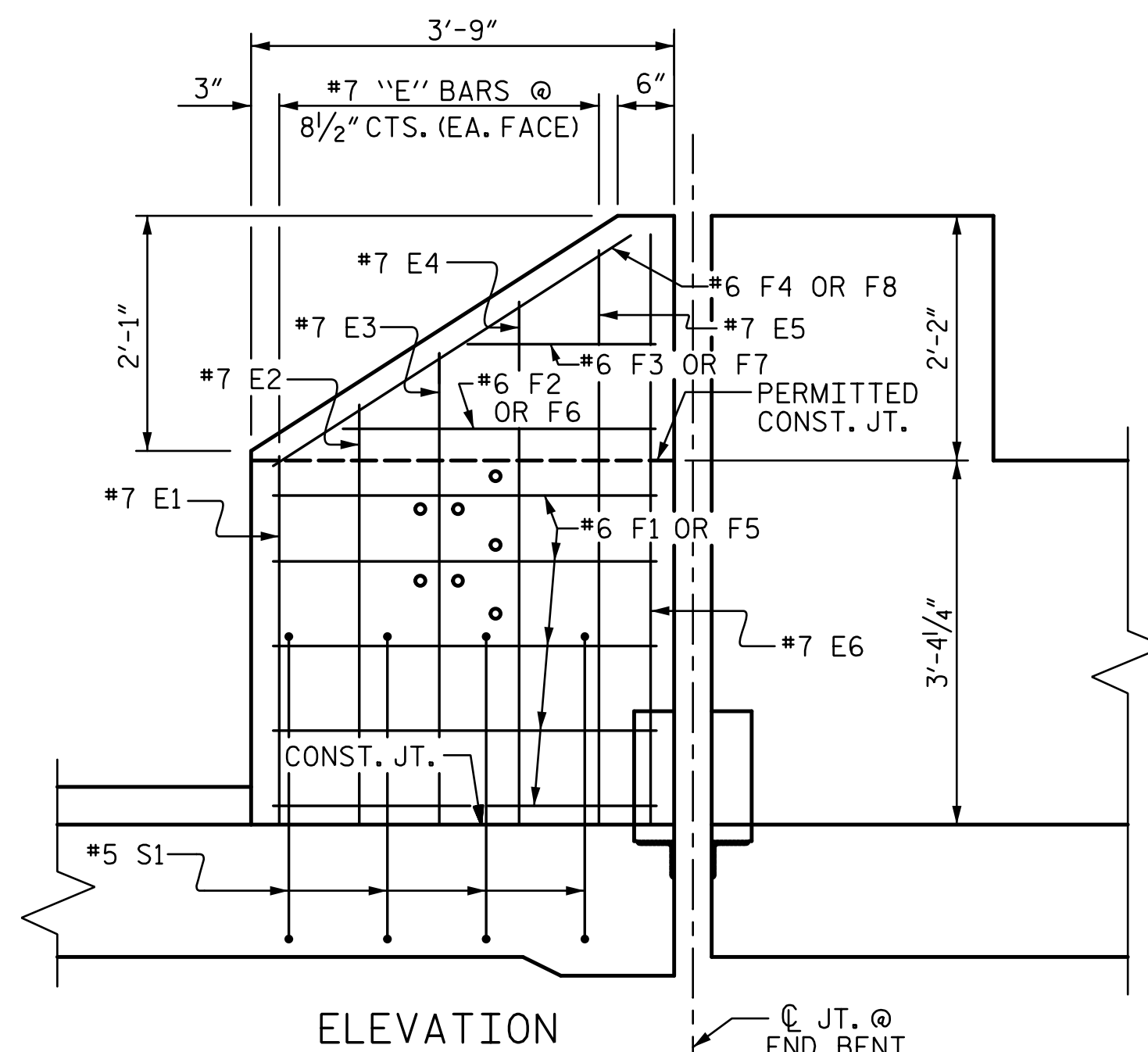
© GUARDRAIL ANCHOR ASSEMBLY SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET

© GUARDRAIL ANCHOR ASSEMBLY SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET

© JT. @ END BENT



**END VIEW**



**ELEVATION**

© JT. @ END BENT

**END POST FOR TWO BAR RAIL**

(SIDEWALK NOT SHOWN FOR CLARITY.)

PROJECT NO. **B-5808**

**CABARRUS** COUNTY

STATION: **20+64.00 -L-**

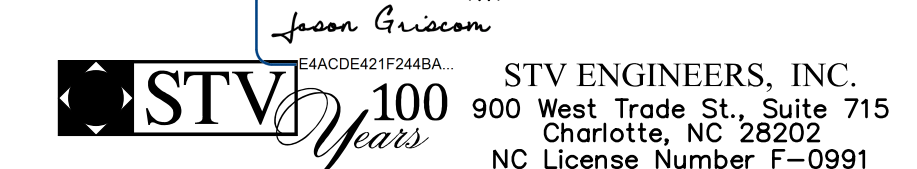
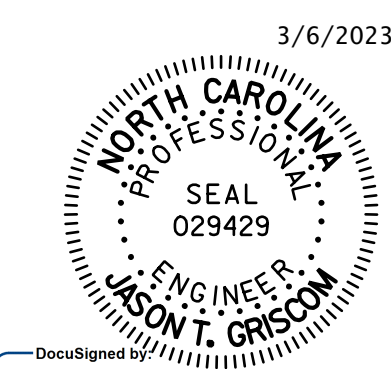
SHEET 6 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**APPROACH SLAB DETAILS**

REVISIONS				SHEET NO.	
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S-65  
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## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{5}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

# ENGLISH

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