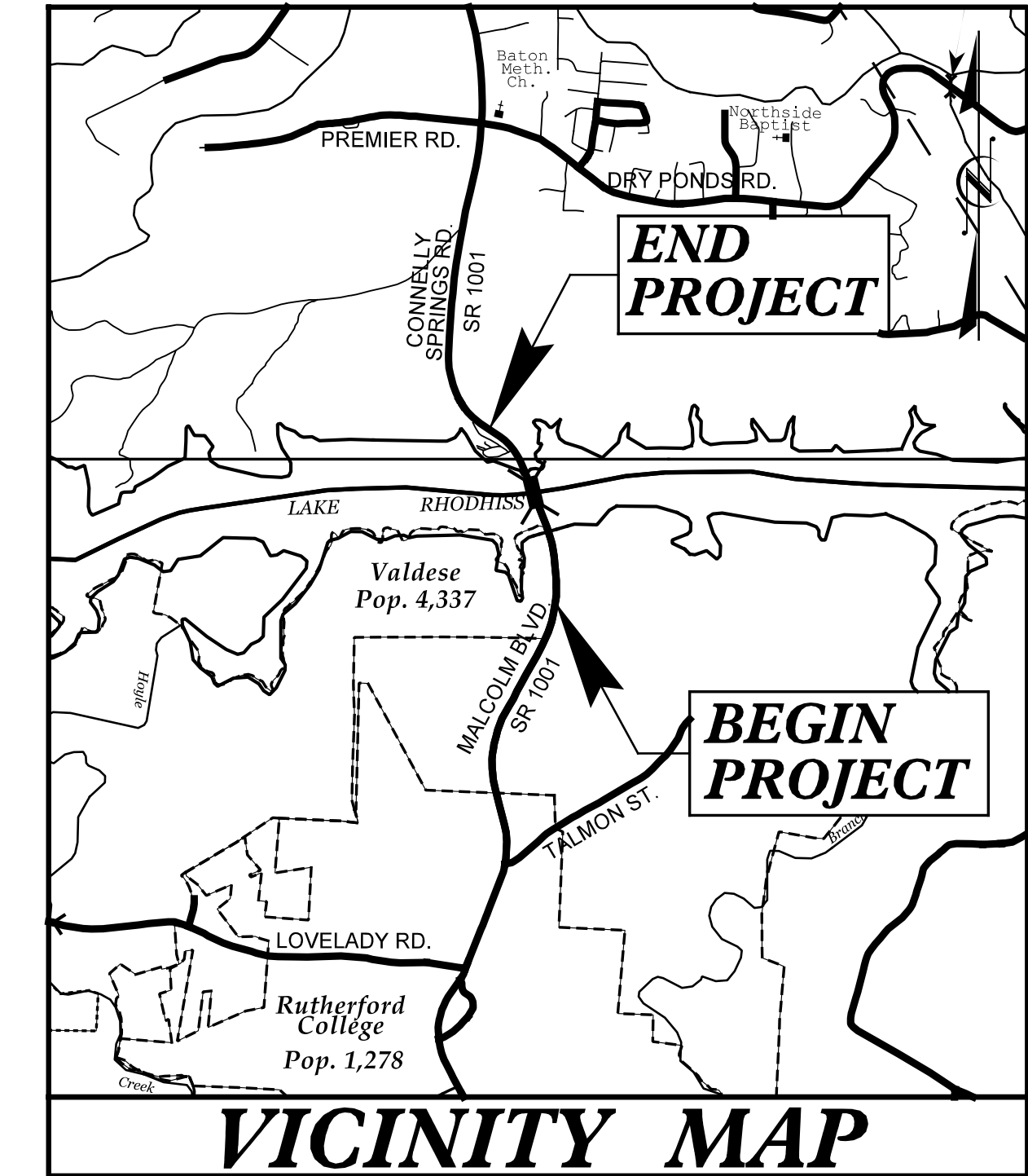
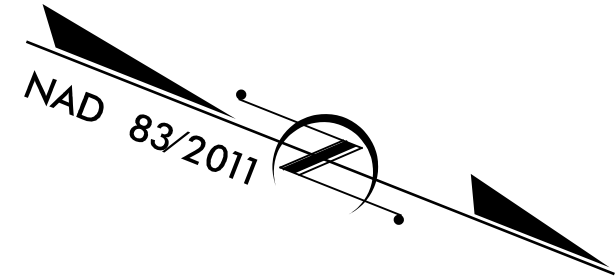
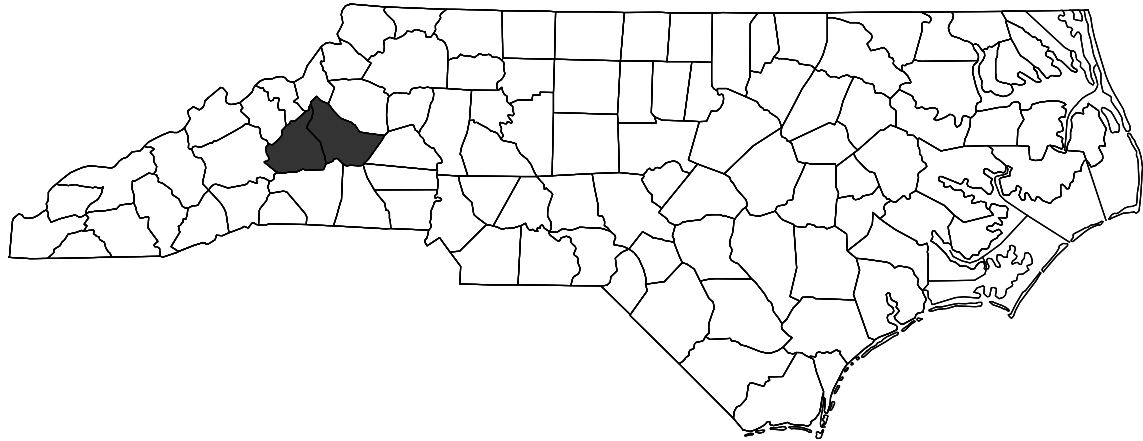


PROJECT: R-3430B

CONTRACT NO: C204956

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3430B		
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
34544.1.4	N/A	P.E.	
34544.2.3	N/A	ROW	
34544.2.5	N/A	UTILITIES	
34544.3.3	N/A	CONST.	

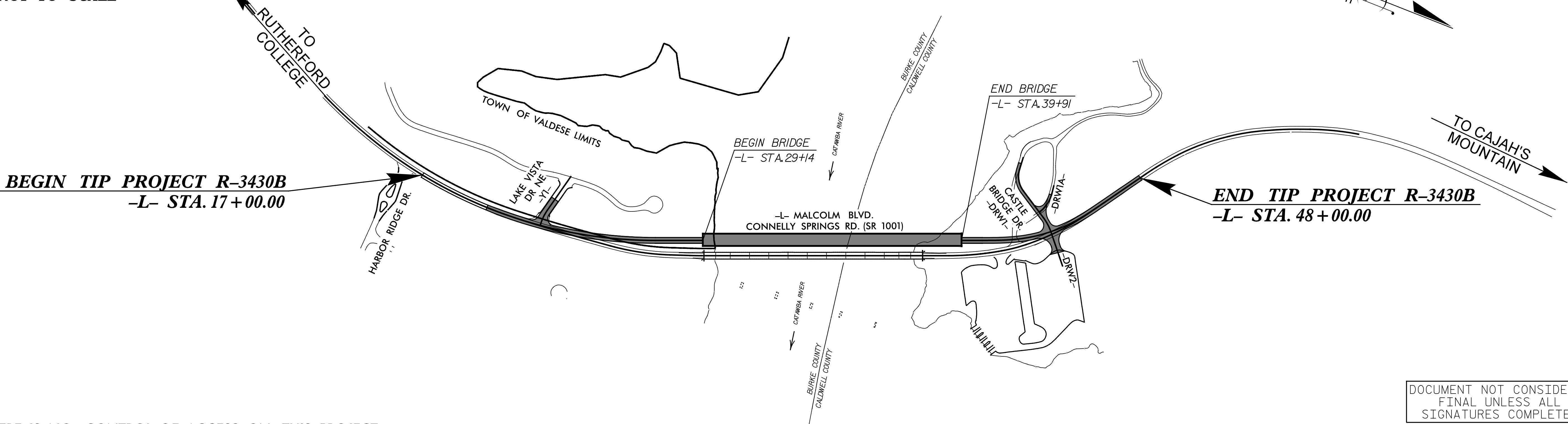


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BURKE/CALDWELL COUNTY
STRUCTURES

LOCATION: **BRIDGE #110010 OVER CATAWBA RIVER ON SR-1001 (CONNELLY SPRINGS RD.)**

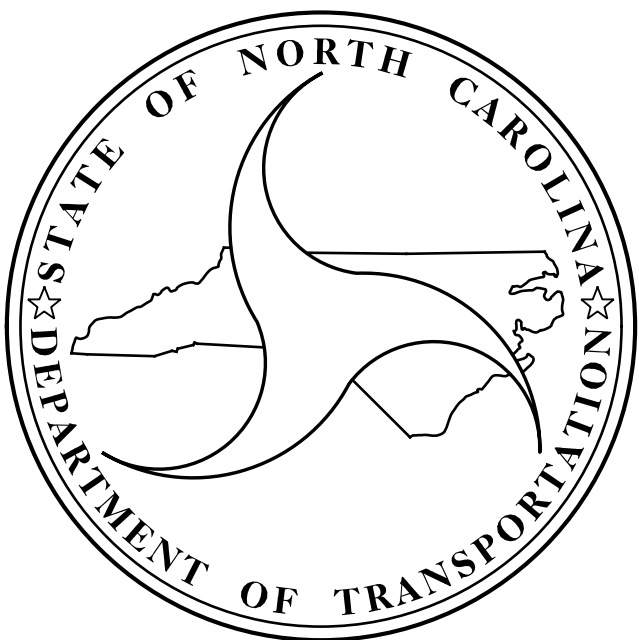
TYPE OF WORK: **GRADING, DRAINAGE, PAVING & STRUCTURE**

NOT TO SCALE



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



DESIGN DATA

ADT 2022 = 10,693
ADT 2045 = 12,100
K = 9 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST = 1% DUAL 4%
FUNC CLASS = MINOR ARTERIAL REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3430B = 0.383 MILES
LENGTH STRUCTURE TIP PROJECT R-3430B = 0.204 MILES
TOTAL LENGTH TIP PROJECT R-3430B = 0.587 MILES

NCDOT CONTACT: OLIVIA PILKINGTON, PE
DIVISION 13 CONTACT



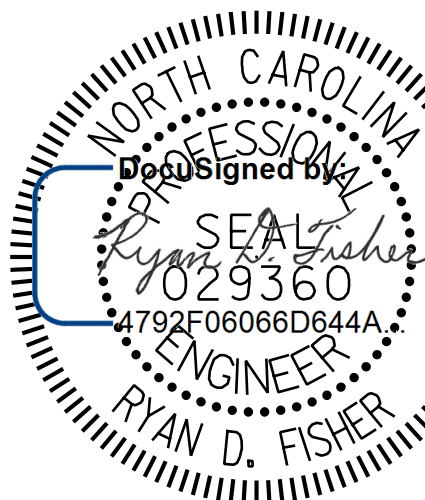
**GANNETT
FLEMING**

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

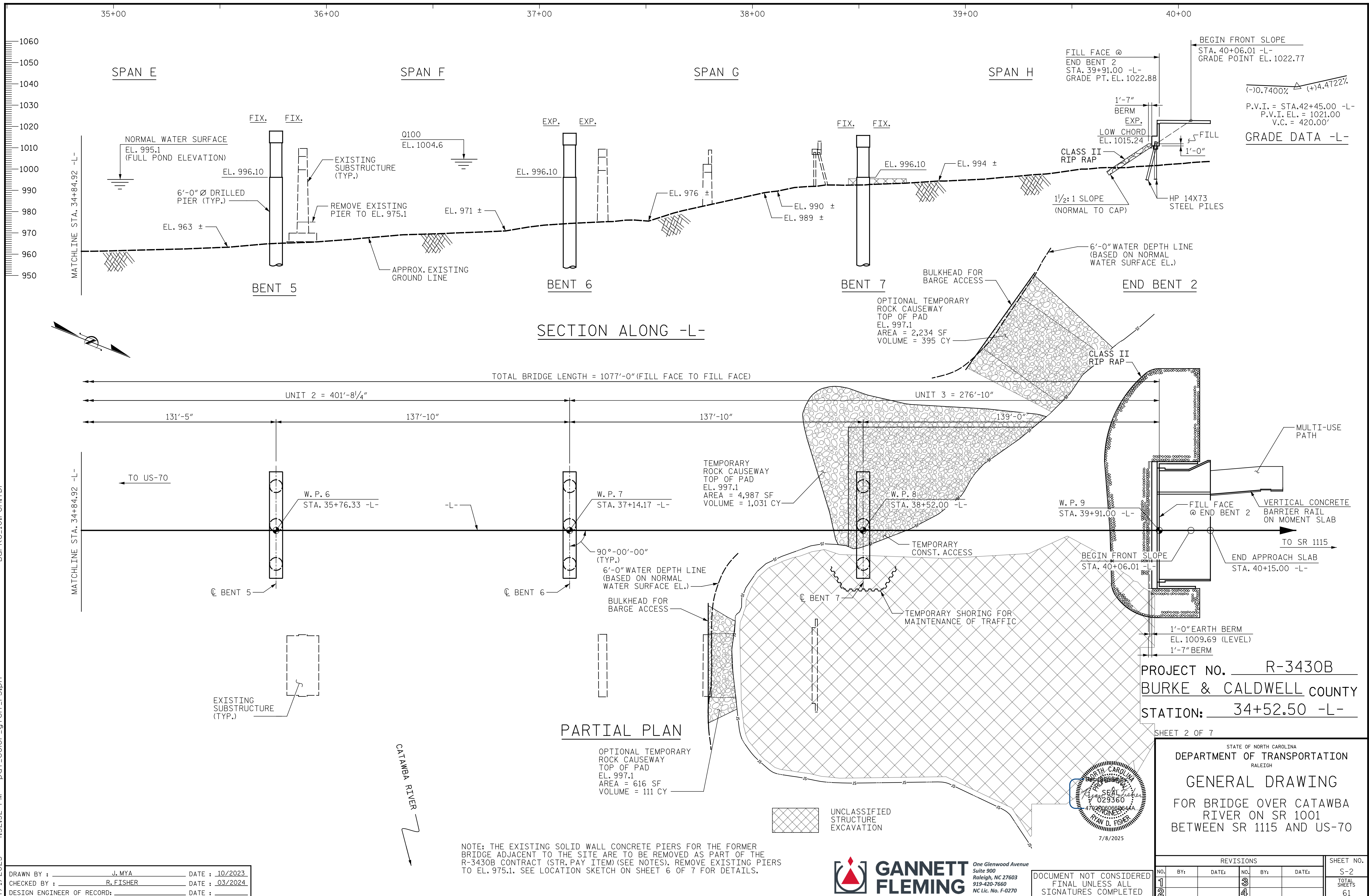
RYAN FISHER, P.E.
STRUCTURES DESIGN ENGINEER

2024 STANDARD SPECIFICATIONS

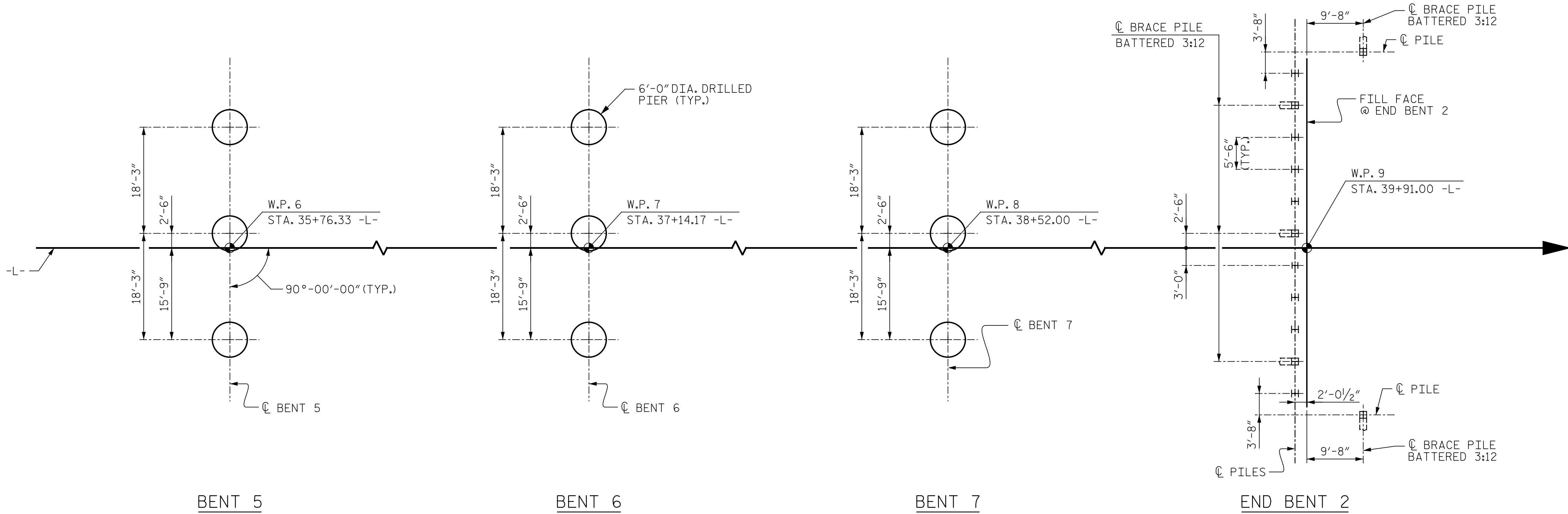
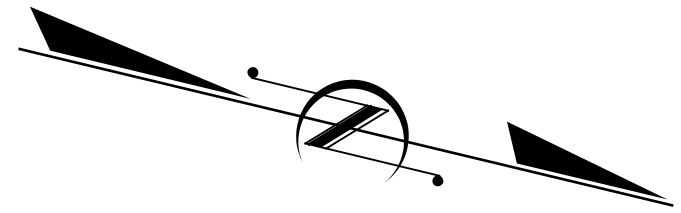
LETTING DATE: AUGUST 19, 2025



RYAN FISHER, P.E.
STRUCTURES DESIGN ENGINEER



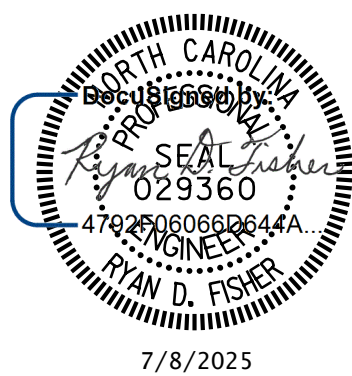
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FOUNDATION LAYOUT PLAN
ALL PILES ARE HP 14 X 73 STEEL PILES

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 4 OF 7



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
FOR BRIDGE OVER CATAWBA RIVER ON SR 1001 BETWEEN SR 1115 AND US-70					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-4
					TOTAL SHEETS
					61

DRAWN BY :	M. SPENCER	DATE :	10/2023
CHECKED BY :	R. FISHER	DATE :	03/2024
DESIGN ENGINEER OF RECORD:		DATE :	



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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SUMMARY OF PILE INFORMATION/INSTALLATION
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	EstImated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles *			Drilled-In Piles		
					Min. Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)**per Pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile LIN FT	Pile Exc In Soil per Pile LIN FT
End Bent 1, Piles 1-13	260	See Structure Drawings	20			435							
End Bent 2, Piles 1-13	260		75			435							

*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 = $\frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}}$ + Nominal Drag Load Resistance + Nominal Resistance from Scourable Material

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Weathered Rock (WR) and/or Rock (R) 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	Permanent Steel Casing Tip Elevation (Elev. Not To Extend Casing Below) FT	Permanent Steel Casing Length ** per Pier LIN FT
Bent No. 1, Piers 1-3	3	1620	936.00	20	948.00	12 (R)	60.1			YES	948.00	48.1
Bent No. 2, Piers 1-3	3	1620	927.50	20	939.50	12 (R)	68.6			YES	939.50	56.6
Bent No. 3, Piers 1-3	3	1620	921.50	20	933.50	12 (R)	74.6			YES	933.50	62.6
Bent No. 4, Piers 1-3	3	1620	918.50	20	936.50	18 (WR and R)	77.6			YES	936.50	59.6
Bent No. 5, Piers 1	1	1660	921.00	20	941.00	20 (WR and R)	75.1			YES	941.00	55.1
Bent No. 5, Piers 2-3	2	1660	917.00	20	935.00	18 (WR and R)	79.1			YES	935.00	61.1
Bent No. 6, Piers 1-2	2	1700	928.00	20	950.00	12 (R)	68.1			YES	950.00	46.1
Bent No. 6, Piers 3	1	1700	935.00	20	953.00	18 (WR and R)	61.1			YES	953.00	43.1
Bent No. 7, Piers 1-3	3	1700	933.00	20	954.00	12 (R)	63.1			YES	954.00	42.1
TOTAL QTY:							1462.6					1119.6

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

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

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent No. 1, Piers 1-3		3	3	3	
Bent No. 2, Piers 1-3		3	3	3	
Bent No. 3, Piers 1-3		3	3	3	
Bent No. 4, Piers 1-3		3	3	3	
Bent No. 5, Piers 1		1	1	1	
Bent No. 5, Piers 2-3		2	2	2	
Bent No. 6, Piers 1-2		2	2	2	
Bent No. 6, Piers 3		1	1	1	
Bent No. 7, Piers 1-3		3	3	3	
TOTAL QTY:		21	21	21	

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Drag Load per Pile KIPS	Factored Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-13	260			0.60		
End Bent 2, Piles 1-13	260			0.60		

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piles 1-3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent No. 1, Piles 1-13		1
TOTAL QUANTITY:		1

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

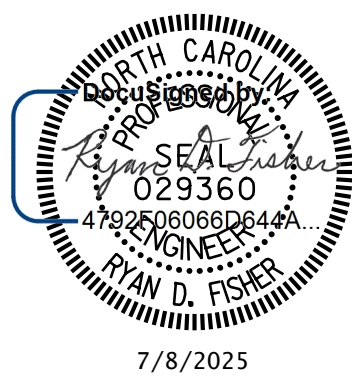
End Bent/ Bent No. Pile(s) *(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-13				13
TOTAL QTY:				13

NOTES:

- The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Michael H. Stephens, #028893) on 5/7/2025.
- Total Pile Driving Equipment Setup quantity (not shown in pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.
- The Engineer may adjust the quantity for Permanent Steel Casing, SPTs, TIPS, CSL Testing, SID Inspections and PITs when necessary.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 5 OF 7

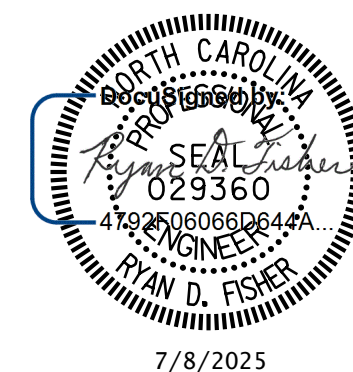


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOR BRIDGE OVER CATAWBA RIVER ON SR 1001 BETWEEN SR 1115 AND US-70					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					61

DRAWN BY : J. MYA	DATE : 03/2024
CHECKED BY : R. FISHER	DATE : 03/2024
DESIGN ENGINEER OF RECORD:	DATE :



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



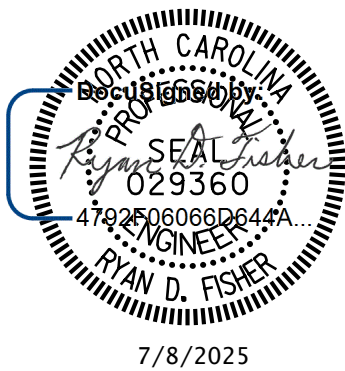
pww\gfnnet-pw.bentley.com\gfnnet-pw-01\Documents\Projects\63639\5-Working\Task 022 - R3430B (Old V81 Only)\Structures\CAD\2.0 90% Plans\401_013_R3430B_SMU_GD_007_110010
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TOTAL BILL OF MATERIAL															
	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURES	ASBESTOS ASSESSMENT	6'-0"DIA. DRILLED PIERS	PERMANENT STEEL CASING FOR 6'-0"DIA. DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIP. SETUP FOR HP 14X73 STEEL PILES
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	EACH
SUPERSTRUCTURE									57,591	49,446		LUMP SUM			
END BENT 1								LUMP SUM			63.8		9,661		13
BENT 1				180.30	144.30	3	3				118.2		51,657	9,973	
BENT 2				205.80	169.80	3	3				115.8		55,003	10,869	
BENT 3				223.80	187.80	3	3				113.1		57,236	11,463	
BENT 4				232.80	178.80	3	3				110.4		58,127	11,697	
BENT 5				233.30	177.30	3	3				108.0		57,792	11,598	
BENT 6				197.30	135.30	3	3				105.3		51,955	10,011	
BENT 7				189.30	126.30	3	3				102.6		50,318	9,561	
END BENT 2								LUMP SUM			63.2		9,616		13
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1,462.60	1,119.60	21	21	LUMP SUM	57,591	49,446	900.4	LUMP SUM	401,365	75,172	26

TOTAL BILL OF MATERIAL																
	HP 14 X 73 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	TWO BAR METAL RAIL	44" GALVANIZED STEEL PIPE RAIL	VERTICAL CONCRETE BARRIER RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINTS	MODIFIED 74" PRESTRESSED CONCRETE GIRDERS		VERTICAL CONCRETE BARRIER RAIL WITH MOMENT SLAB	THERMAL INTEGRITY PROFILER TEST (TIP)
	NO.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ.YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.	LIN. FT.	EACH
SUPERSTRUCTURE					2,134.17		1,125.00	2,165.00			LUMP SUM	LUMP SUM	48	6,432.02	68.00	
END BENT 1	13	260	13	1		17.00			189	207						
BENT 1																3
BENT 2																3
BENT 3																3
BENT 4																3
BENT 5																3
BENT 6																3
BENT 7																3
END BENT 2	13	975				16.50			328	364						
TOTAL	26	1,235	13	1	2,134.17	33.50	1,125.00	2,165.00	517	571	LUMP SUM	LUMP SUM	48	6,432.02	68.00	21

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 7 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER CATAWBA
RIVER ON SR 1001
BETWEEN SR 1115 AND US-70

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			61

DRAWN BY : J. MYA DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
DESIGN ENGINEER OF RECORD: DATE :

 **GANNETT
FLEMING**

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING Ⓢ	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
							LIVE-LOAD FACTORS (γ LL)	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ LL)	MOMENT					
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	Ⓢ1	1.09	--	1.75	0.93	1.36	A	ER	65.34	0.93	1.35	F	ER	40.82	0.80	0.93	1.09	F	ER	68.04	
		HL-93 (OPERATING)	N/A		1.77	--	1.35	0.93	1.77	A	ER	65.34	0.93	1.88	F	ER	27.22	N/A	-	-	-	-	-	
		HS-20 (INVENTORY)	36.000	Ⓢ2	1.65	59.40	1.75	0.93	2.04	A	ER	65.34	0.93	2.05	F	ER	27.22	0.80	0.93	1.65	F	ER	68.04	
		HS-20 (OPERATING)	36.000		2.65	95.40	1.35	0.93	2.65	A	ER	65.34	0.93	2.73	F	ER	27.22	N/A	-	-	-	-	-	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.05	54.68	1.40	0.93	6.24	A	ER	65.34	0.93	6.96	F	ER	27.22	0.80	0.93	4.05	F	ER	68.04	
		SNGARBS2	20.000		2.87	57.40	1.40	0.93	4.44	A	ER	65.34	0.93	4.76	F	ER	27.22	0.80	0.93	2.87	F	ER	68.04	
		SNAGRIS2	22.000		2.66	58.52	1.40	0.93	4.12	A	ER	65.34	0.93	4.36	F	ER	27.22	0.80	0.93	2.66	F	ER	68.04	
		SNCOTTS3	27.250		2.01	54.77	1.40	0.93	3.10	A	ER	65.34	0.93	3.34	F	ER	27.22	0.80	0.93	2.01	F	ER	68.04	
		SNAGGRS4	34.925		1.62	56.58	1.40	0.93	2.51	A	ER	65.34	0.93	2.65	F	ER	27.22	0.80	0.93	1.62	F	ER	68.04	
		SNS5A	35.550		1.59	56.52	1.40	0.93	2.46	A	ER	65.34	0.93	2.65	F	ER	27.22	0.80						

LOAD FACTORS:

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

NOTES:

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

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

SPAN F, G, AND H LENGTHS AND RATING FACTORS ARE EQUAL.

PRESTRESSED GIRDERS DESIGNED USING SIMPLE SPAN ANALYSIS.

RATINGS ARE BASED ON ANALYSIS EXCLUDING FUTURE WEARING SURFACE.

ALL DISTANCES ARE MEASURED FROM CENTERLINE OF BEARING AT THE LEFT OF SPAN.

Ⓢ CONTROLLING LOAD RATING

Ⓢ1 DESIGN LOAD RATING (HL-93)

Ⓢ2 DESIGN LOAD RATING (HS-20)

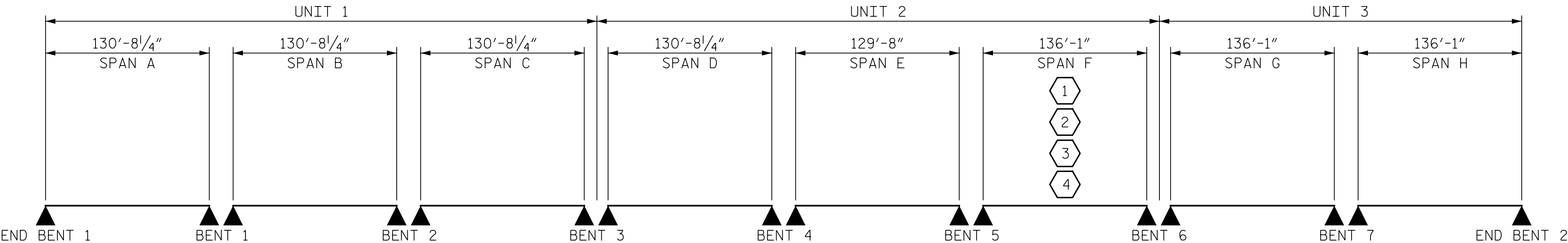
Ⓢ3 LEGAL LOAD RATING **

Ⓢ4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

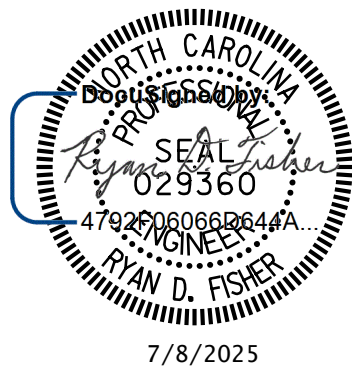
GIRDER LOCATION

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



LRFR SUMMARY
(SPAN DIMENSIONS ARE C/BRG. TO C/BRG.)

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS

(NON-INTERSTATE TRAFFIC)

DRAWN BY :	J. HARRIS	DATE :	10/2023
CHECKED BY :	R. FISHER	DATE :	03/2024
DESIGN ENGINEER OF RECORD:		DATE :	

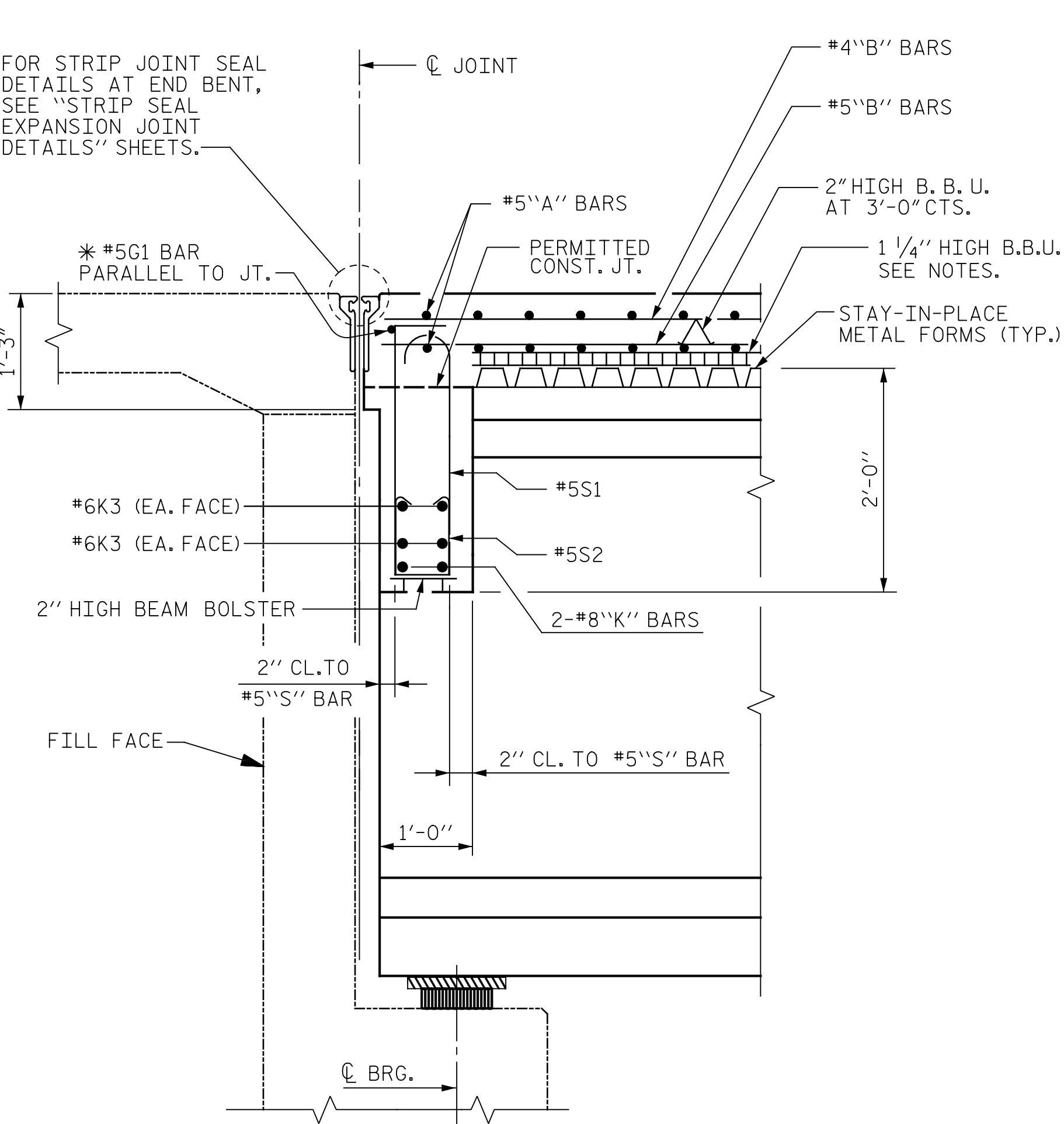
GANNETT
FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			61

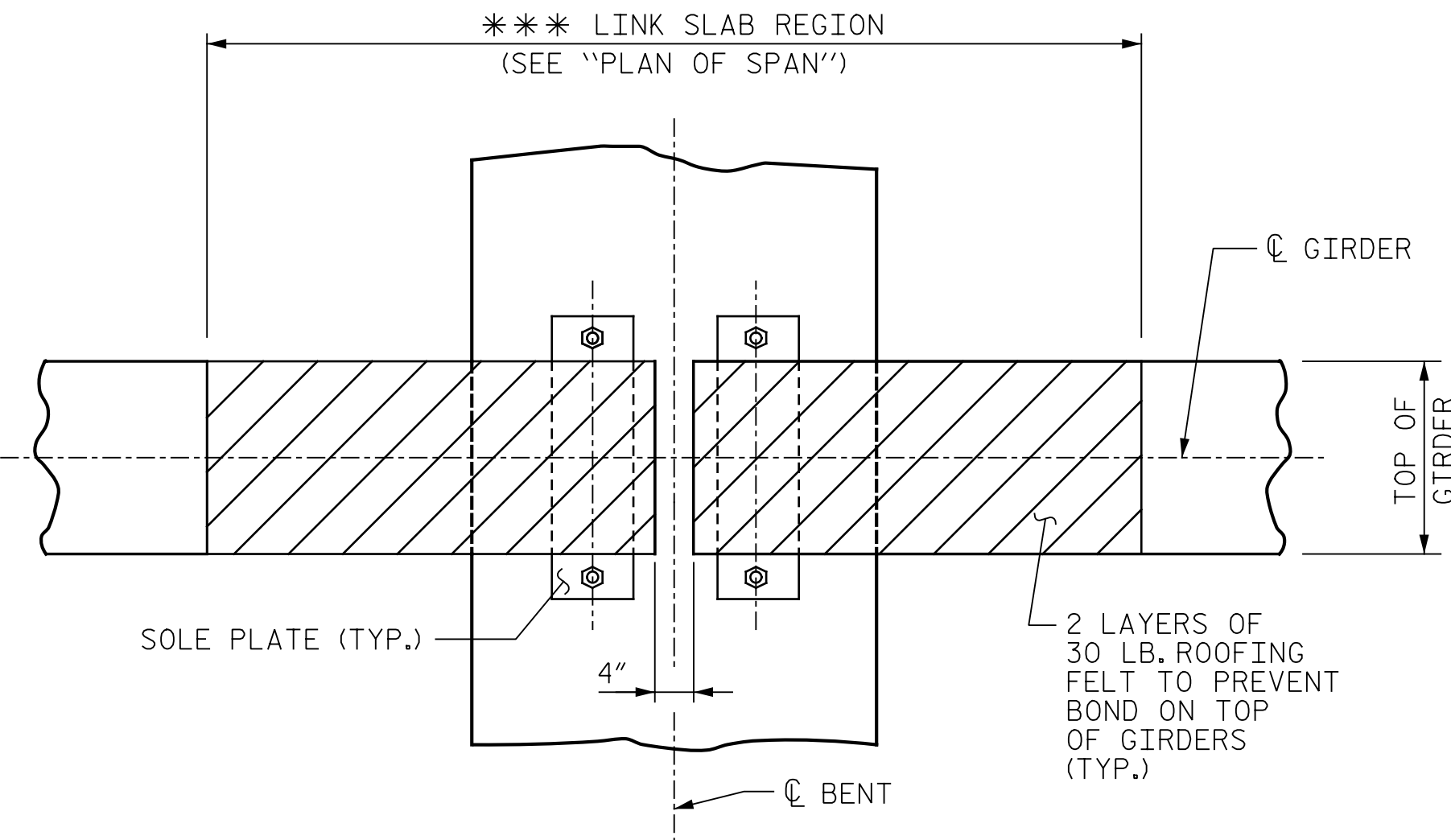
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SECTION THROUGH END BENT DIAPHRAGM

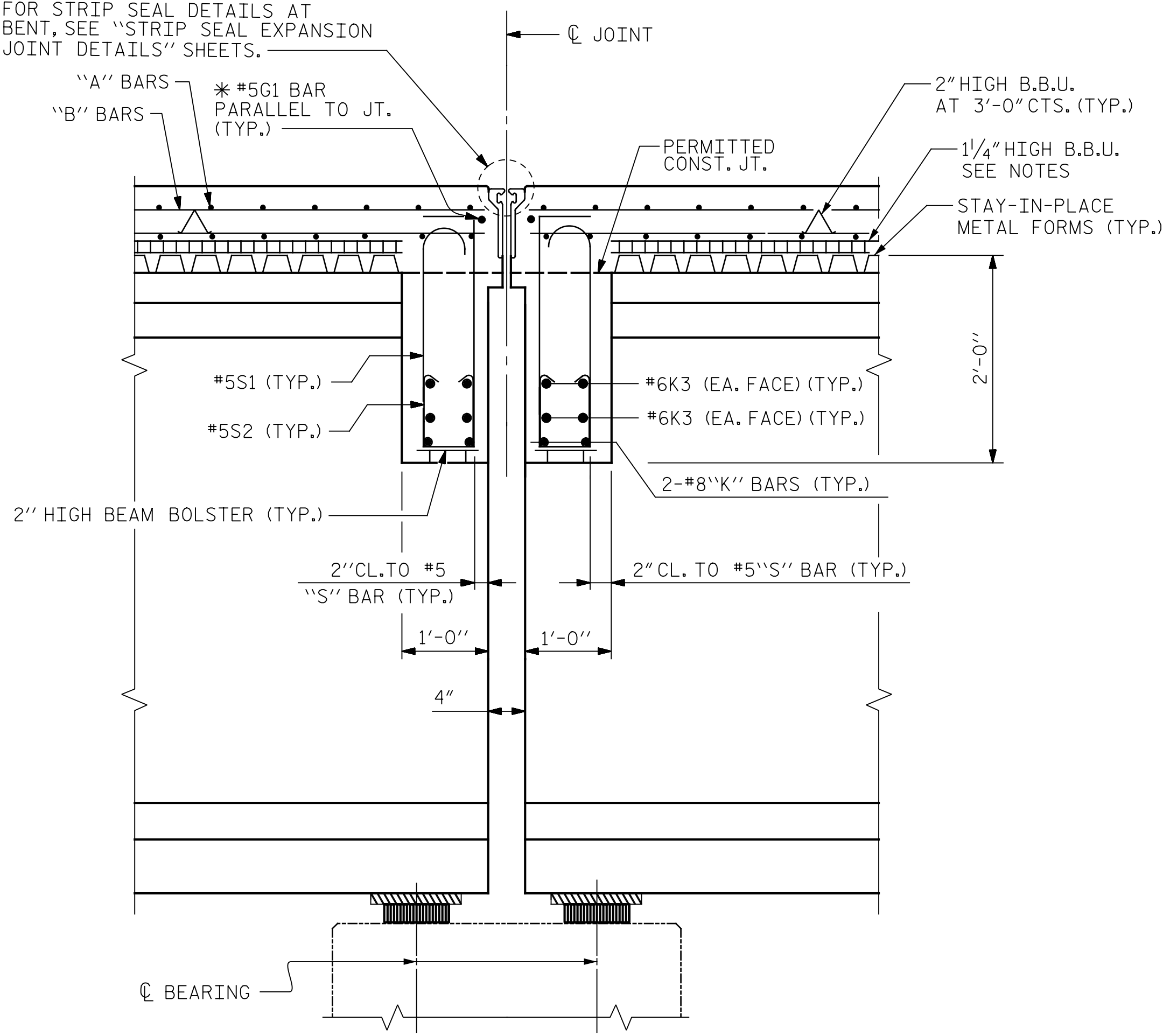
(END BENT 1 & 2)

* #5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



PLAN OF GIRDERS AT LINK SLAB BENT

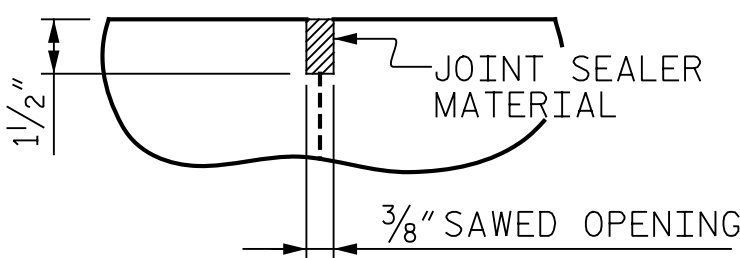
*** THE TOP OF THE GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.



SECTION THROUGH BENT DIAPHRAGM

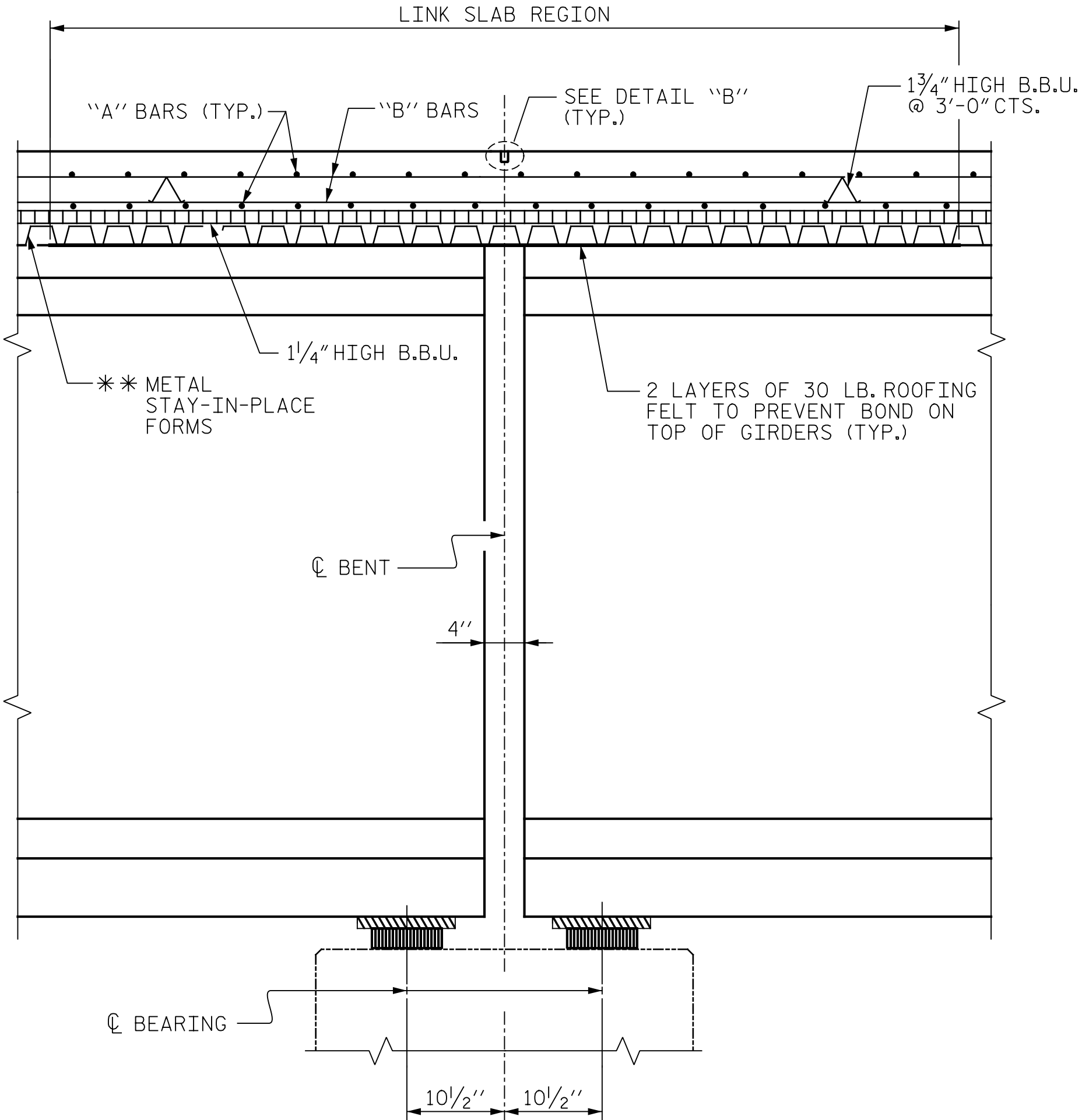
(BENT 3 & 6)

* #5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



DETAIL "B"

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



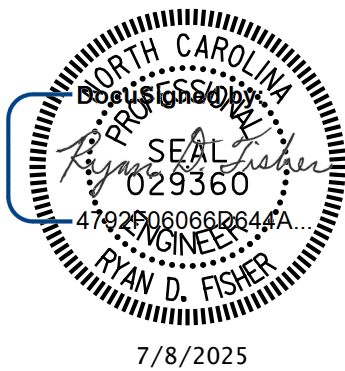
SECTION THROUGH LINK SLAB

(BENT 1, 2, 4, 5, & 7)

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

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 2



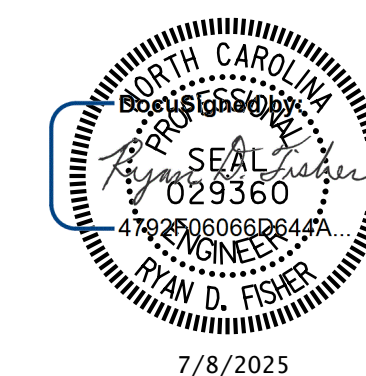
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY : M. SPENCER DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
DESIGN ENGINEER OF RECORD: DATE :

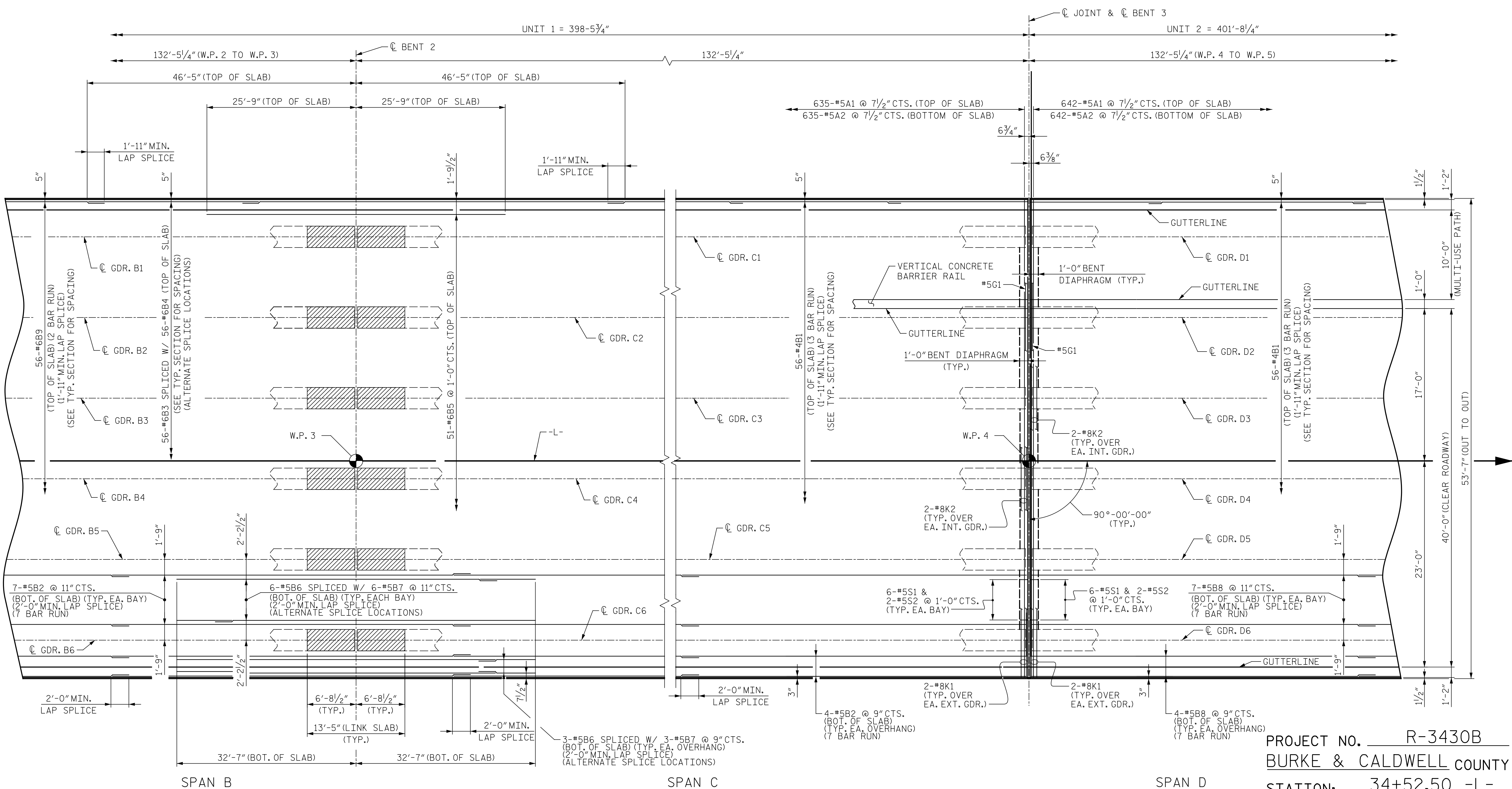
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Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	TOTAL SHEETS
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2			4				



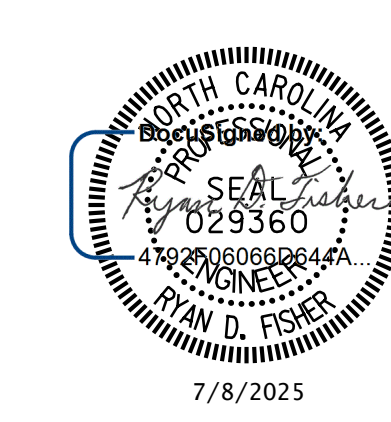
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PART PLAN OF SPAN B, PLAN OF SPAN C, & PART PLAN OF SPAN D
FOR CONCRETE PARAPET AND VERTICAL CONCRETE BARRIER DETAILS AND
REINFORCING STEEL, SEE "BARRIER RAIL DETAIL SHEETS"

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PART PLAN OF SPAN B,
PLAN OF SPAN C, &
PART PLAN OF SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
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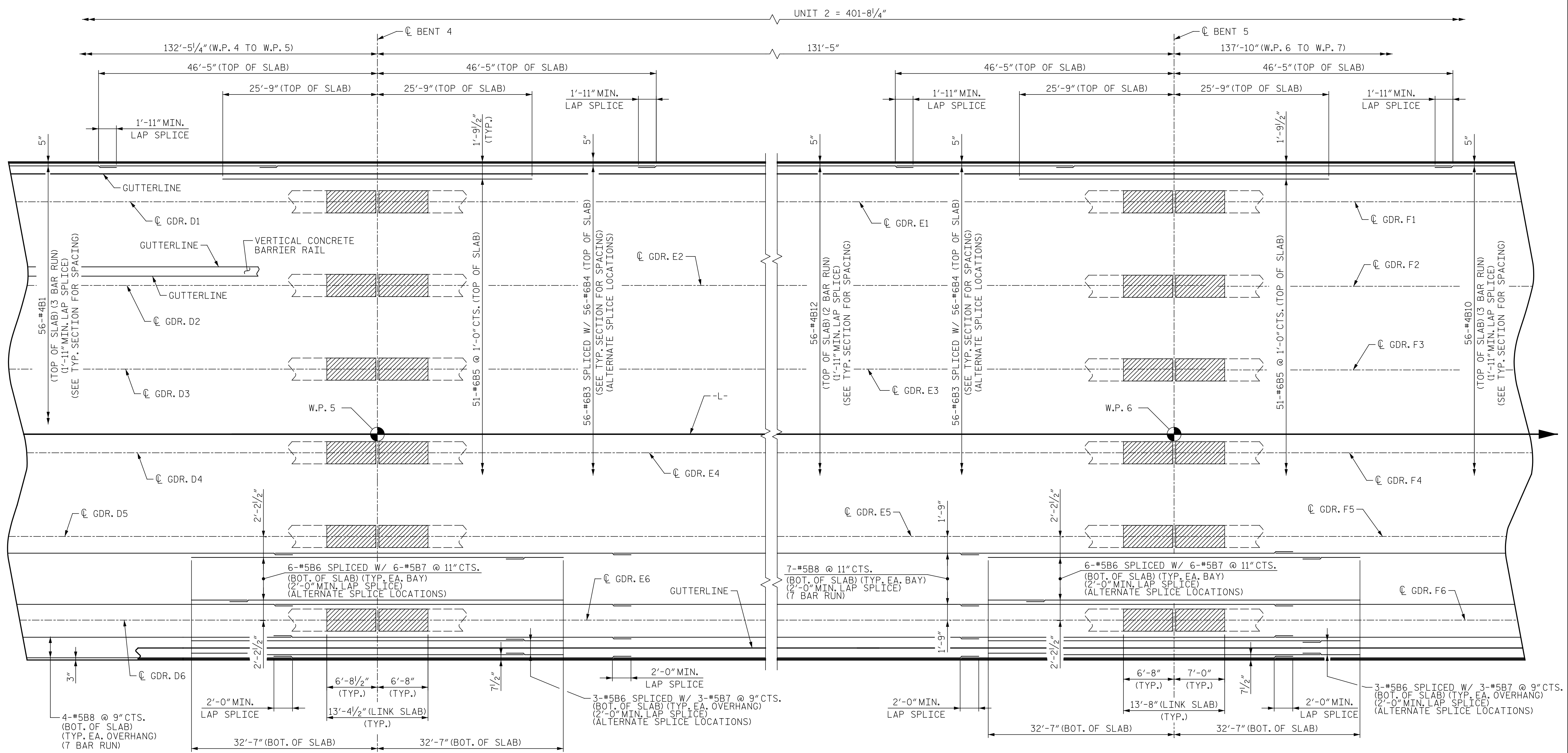
DRAWN BY : J. HARRIS DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
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SPAN D

SPAN E

SPAN F

PART PLAN OF SPAN D, PLAN OF SPAN E, & PART PLAN OF SPAN F
FOR CONCRETE PARAPET AND VERTICAL CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "BARRIER RAIL DETAIL SHEETS"

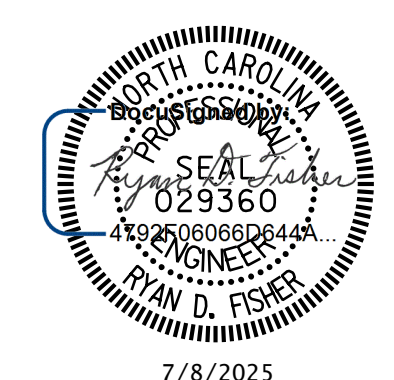
PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 3 OF 5

DRAWN BY : J. HARRIS DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
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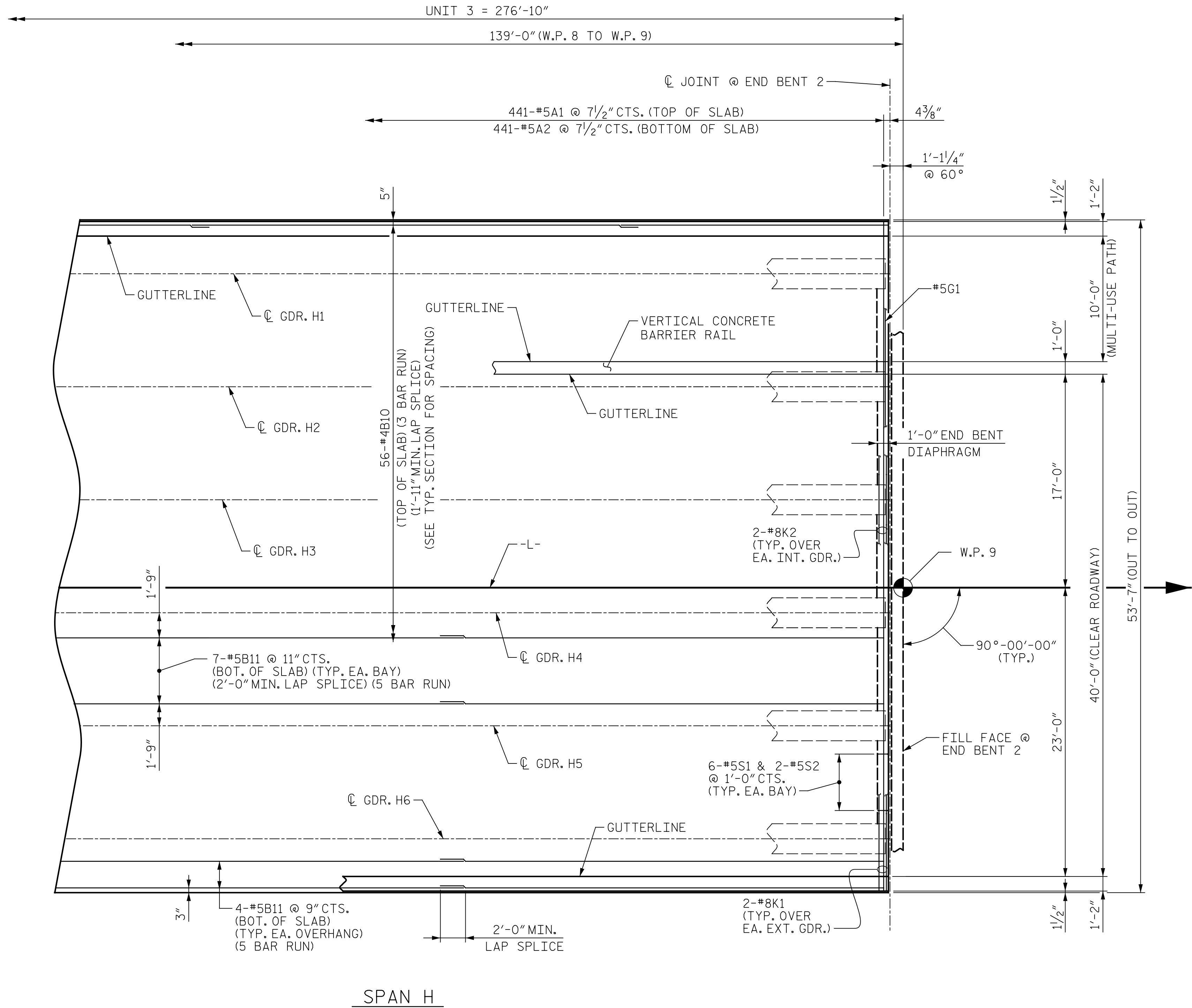


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PART PLAN OF SPAN D,
PLAN OF SPAN E, &
PART OF PLAN SPAN F

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13 TOTAL SHEETS 61
2			4			

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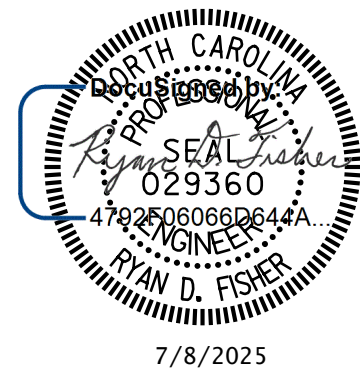


PART PLAN OF SPAN H

FOR CONCRETE PARAPET AND VERTICAL CONCRETE BARRIER DETAILS AND REINFORCING STEEL, SEE "BARRIER RAIL DETAIL SHEETS"

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 5 OF 5



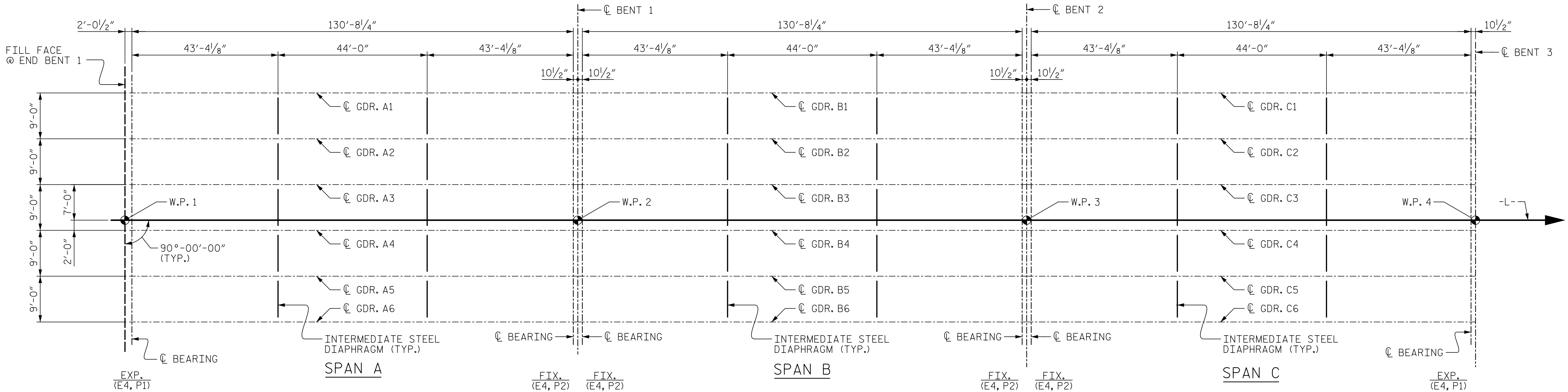
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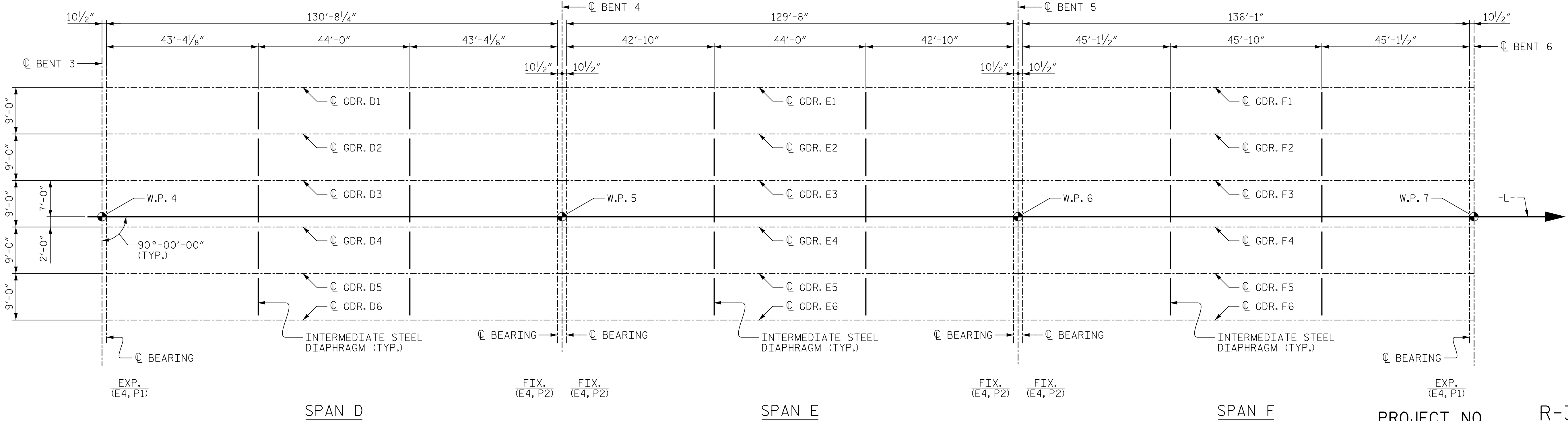
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CHECKED BY : R. FISHER DATE : 03/2024
DESIGN ENGINEER OF RECORD: DATE :

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FRAMING PLAN SPANS A THRU C

NOTE: GIRDERS ARE STRAIGHT AND PARALLEL TO ONE ANOTHER.

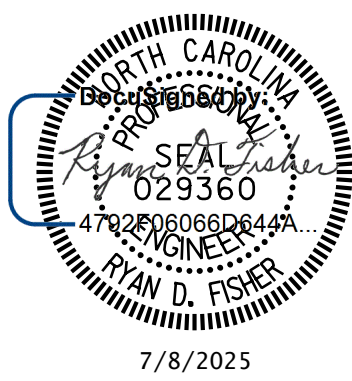


FRAMING PLAN SPANS D THRU F

NOTE: GIRDERS ARE STRAIGHT AND PARALLEL TO ONE ANOTHER.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 1 OF 2



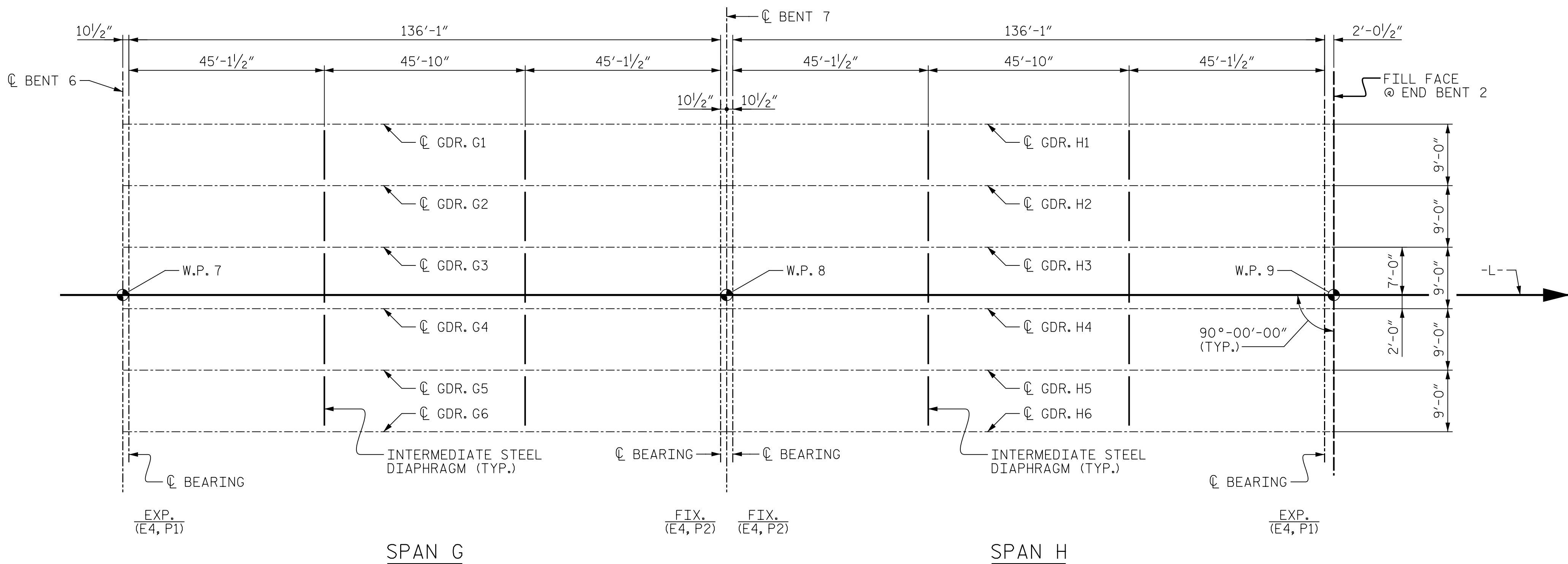
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DRAWN BY : J. HARRIS/J. MYA DATE : 10/2023
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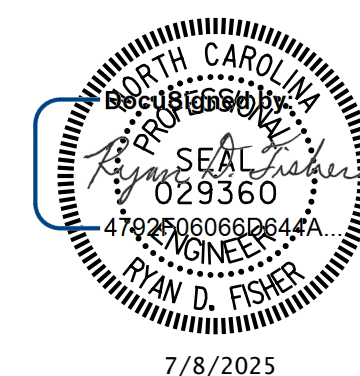
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FRAMING PLAN SPANS G & H
NOTE: GIRDERS ARE STRAIGHT AND PARALLEL TO ONE ANOTHER.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 2



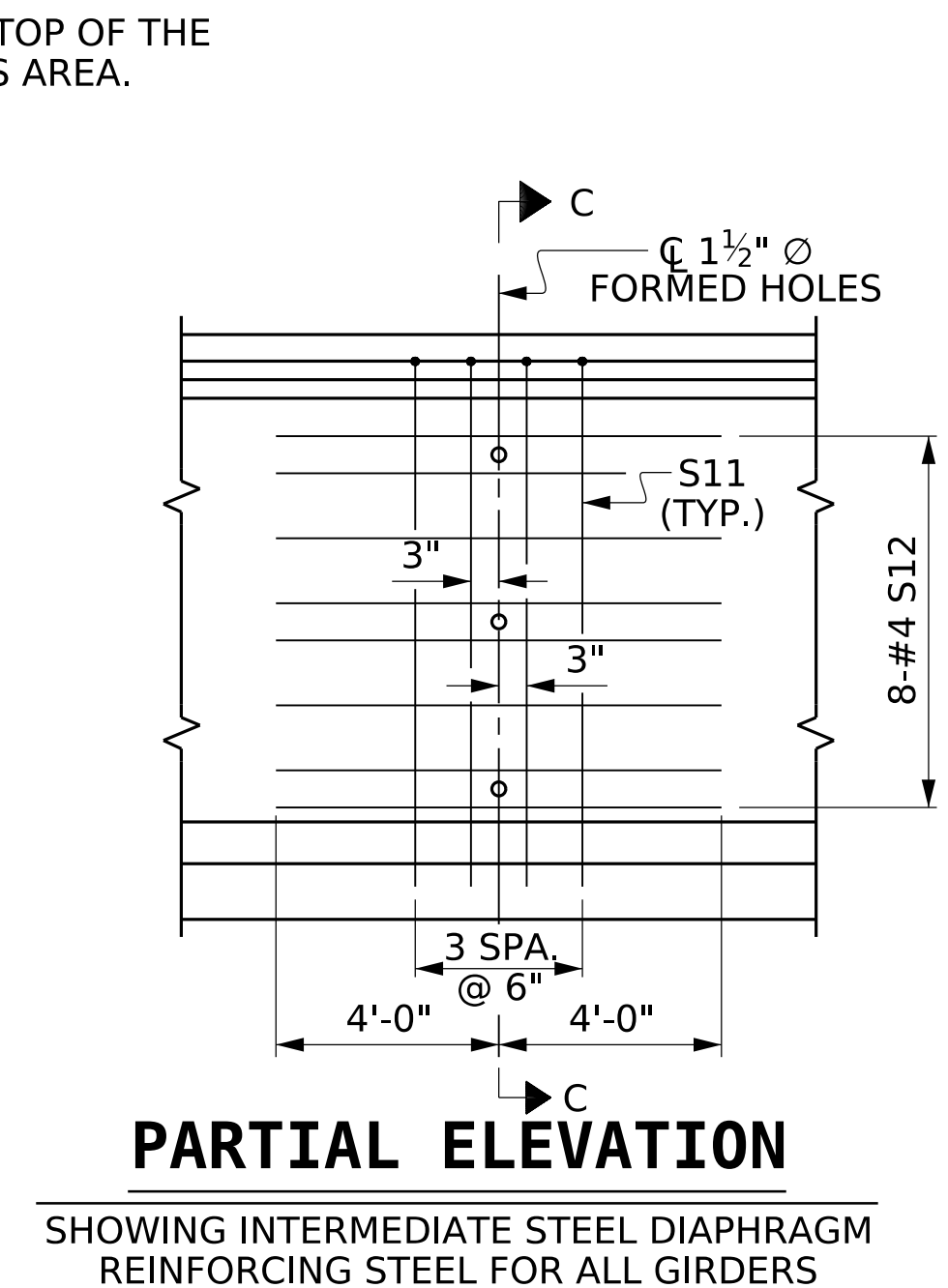
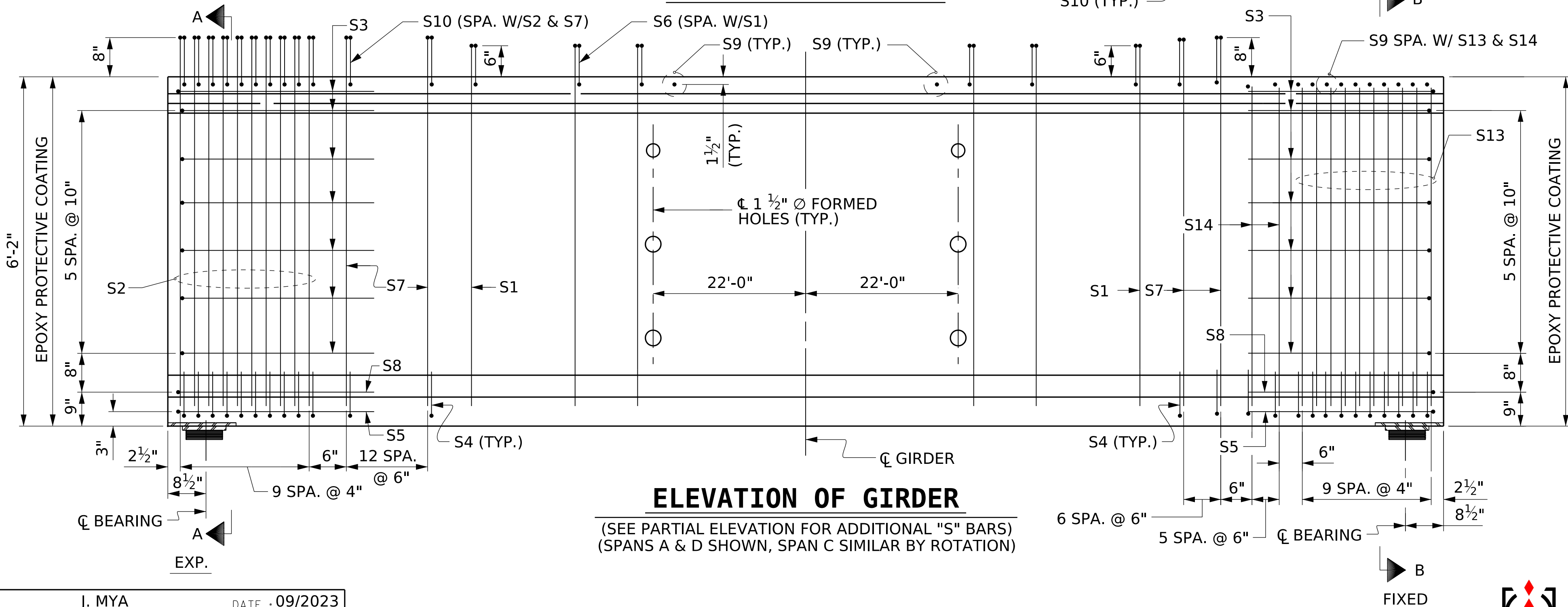
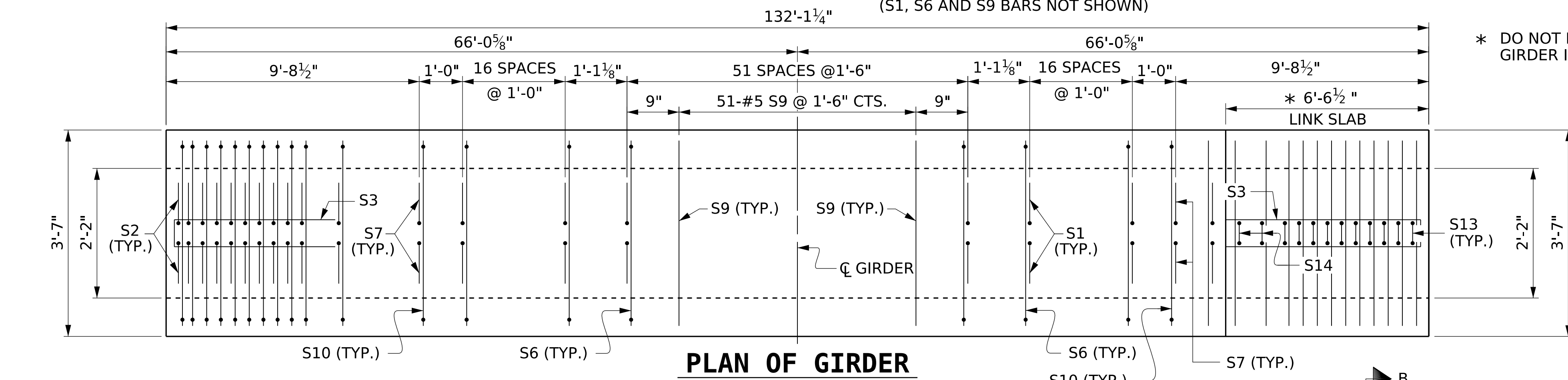
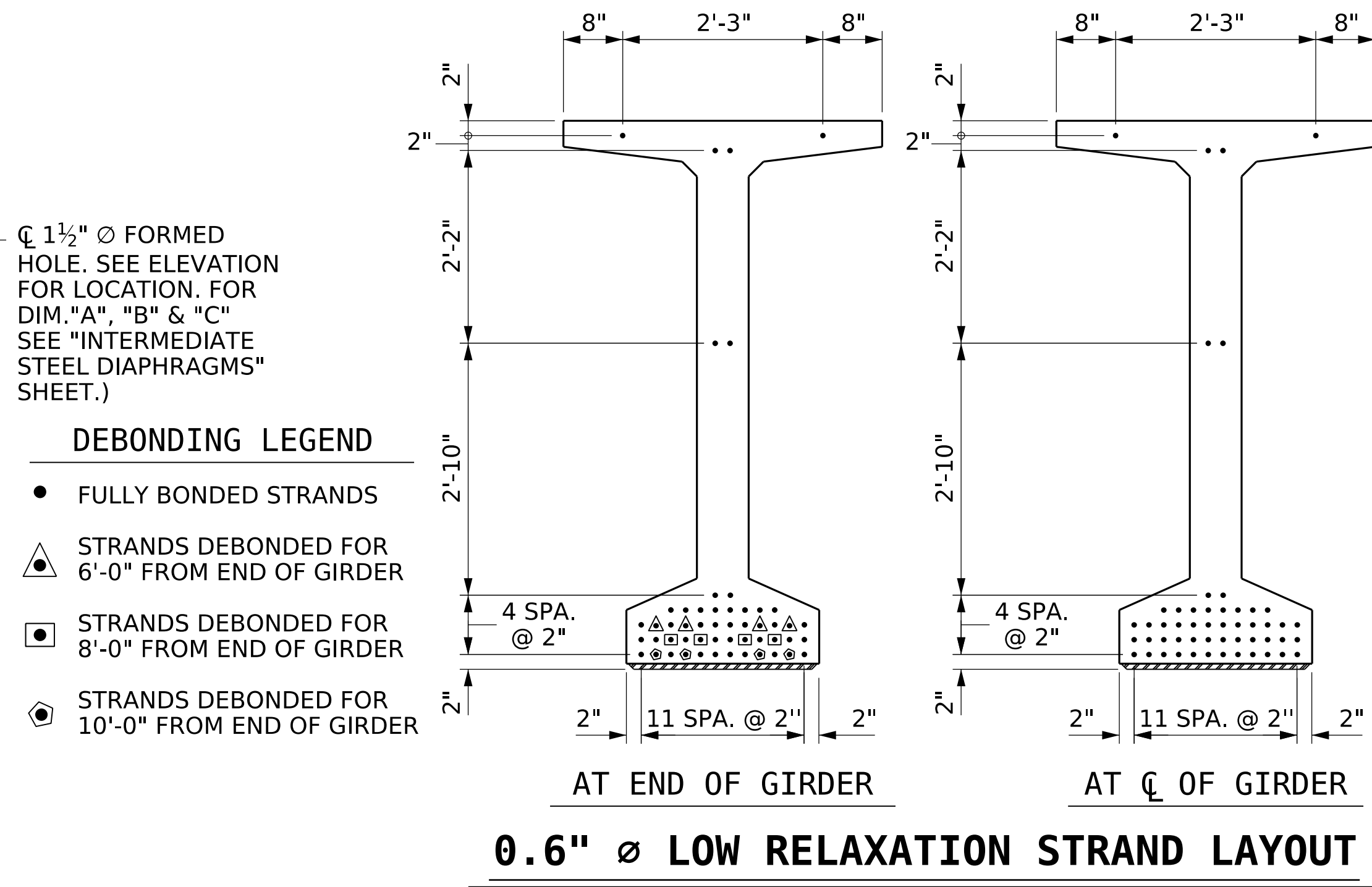
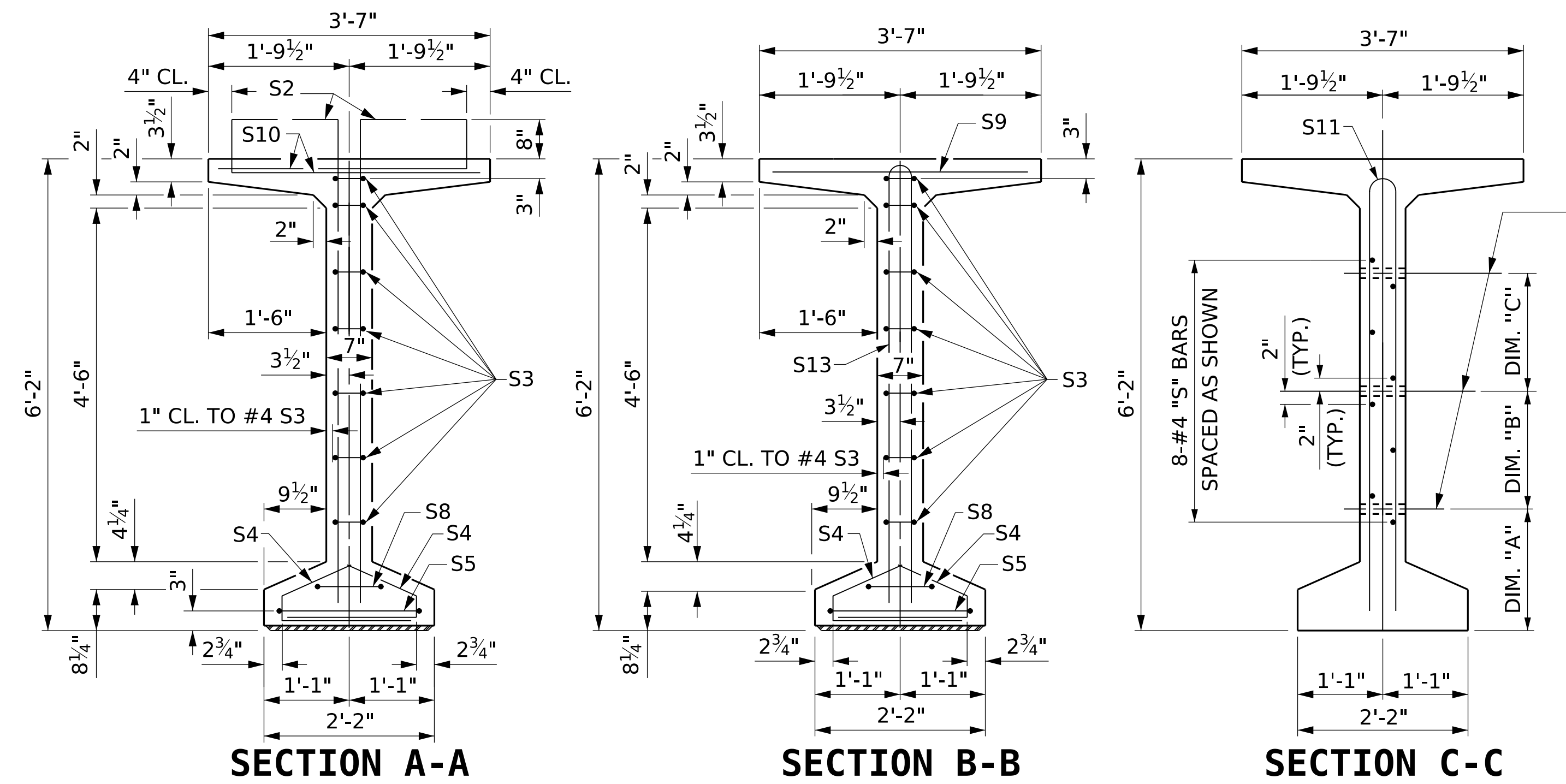
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DRAWN BY : J. HARRIS DATE : 10/2023
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	TOTAL SHEETS
1			3				61
2			4				



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	172	#4	1	7'-0"	804
S2	20	#6	1	7'-2"	215
S3	14	#4	2	8'-5"	79
S4	92	#4	3	3'-2"	195
S5	2	#5	2	9'-10"	21
S6	172	#5	4	4'-4"	777
S7	40	#4	1	7'-2"	192
S8	2	#5	2	9'-0"	19
S9	67	#5	STR	3'-3"	227
S10	60	#5	4	4'-6"	282
S11	8	#5	5	11'-10"	99
S12	16	#4	STR	8'-0"	86
S13	10	#6	5	11'-10"	178
S14	6	#4	5	11'-10"	47

BAR TYPES

ALL BAR DIMENSIONS
ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	3,221	30.1	52
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
6 (SPAN A)	132'-1 $\frac{1}{4}$ "	792.63'	
6 (SPAN C)	132'-1 $\frac{1}{4}$ "	792.63'	
6 (SPAN D)	132'-1 $\frac{1}{4}$ "	792.63'	

PROJECT NO. R-34308
BURKE & CALDWELL COUNTY
STATION 34+52.50 -L-
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

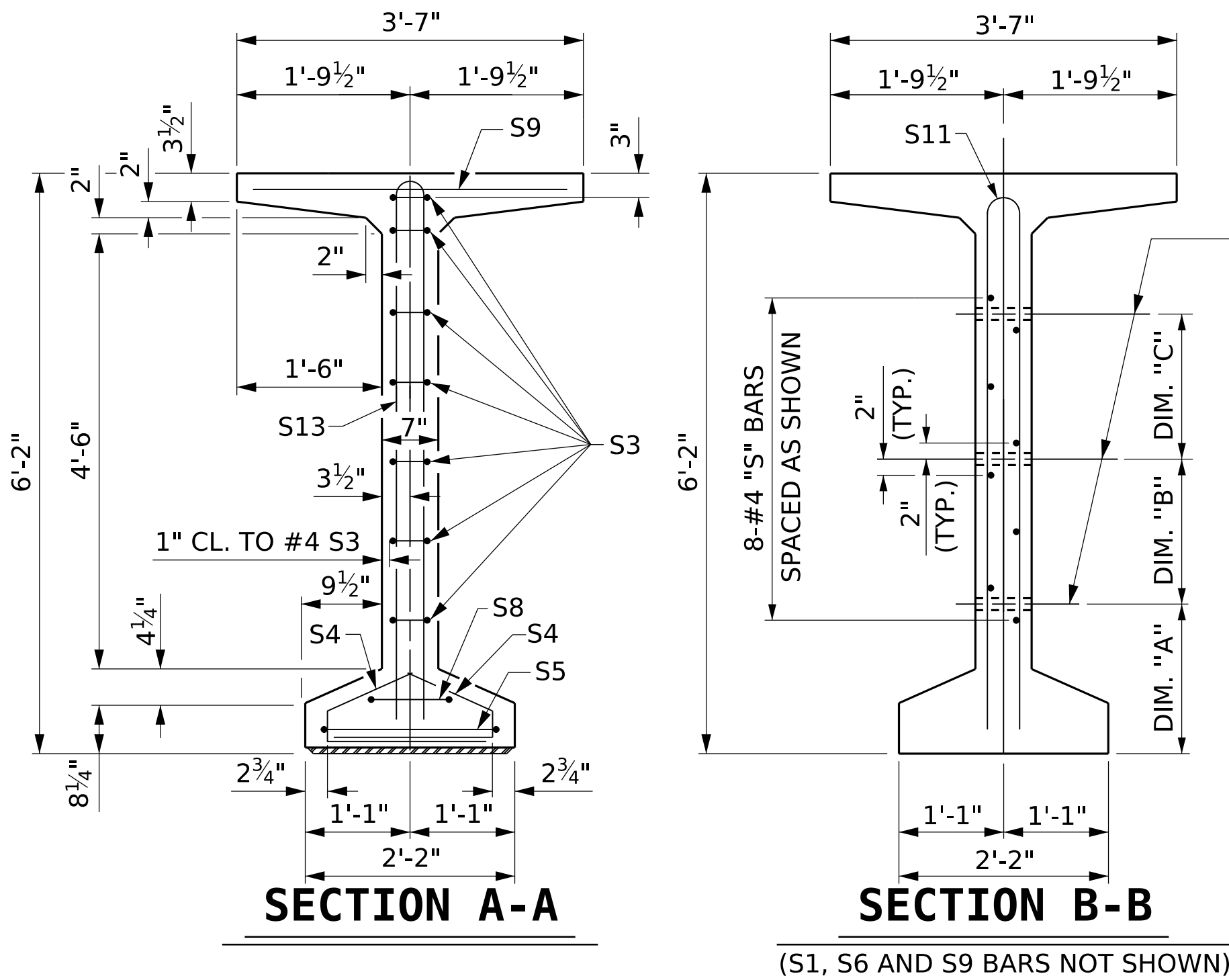
SUPERSTRUCTURE 74" PRESTRESSED CONCRETE MODIFIED BULB TEE SPANS A, C, & D

DRAWN BY : J. MYA DATE : 09/2023
 CHECKED BY : R. FISHER DATE : 03/2024
 DESIGN ENGINEER OF RECORD: _____ DATE : _____

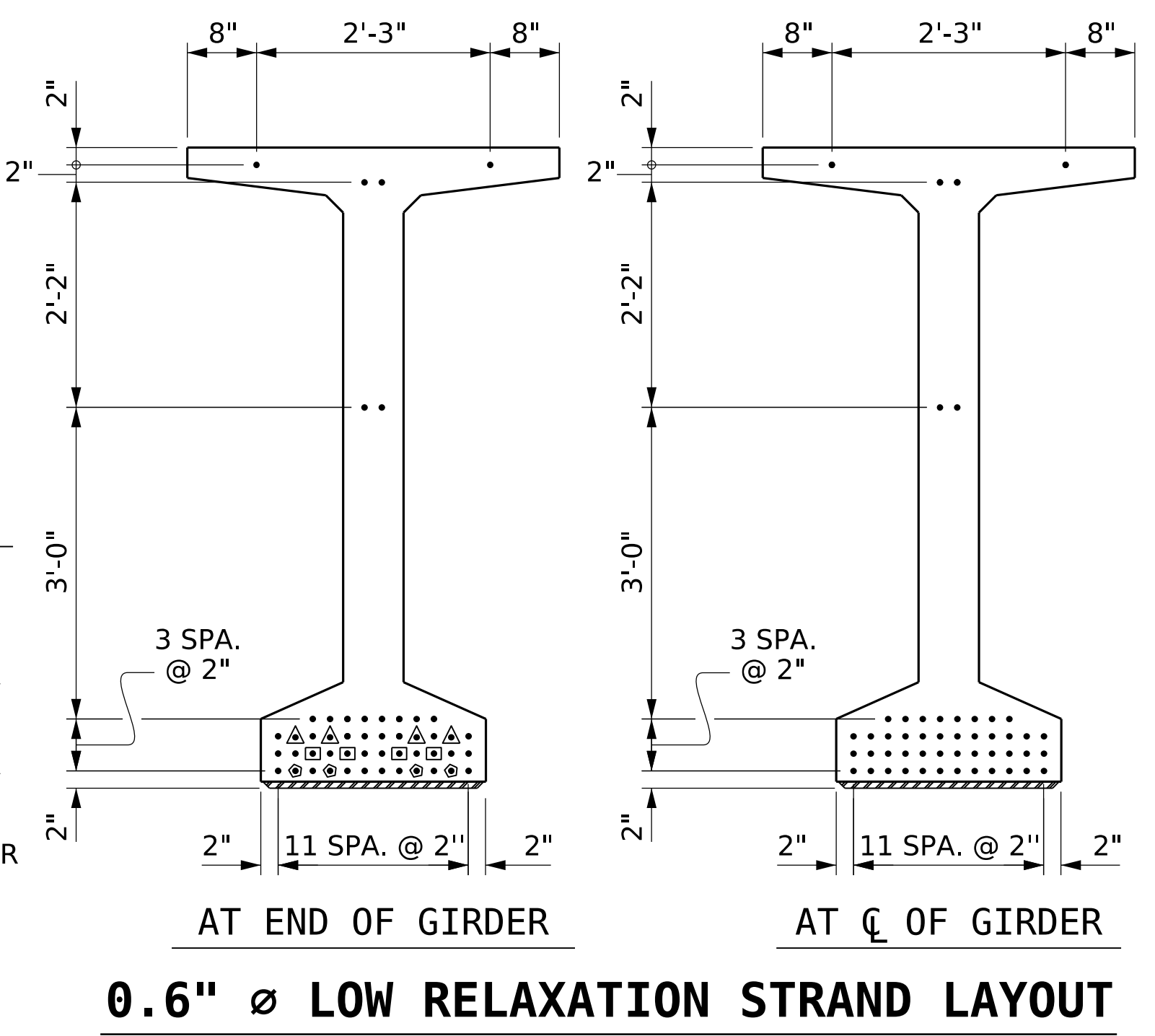
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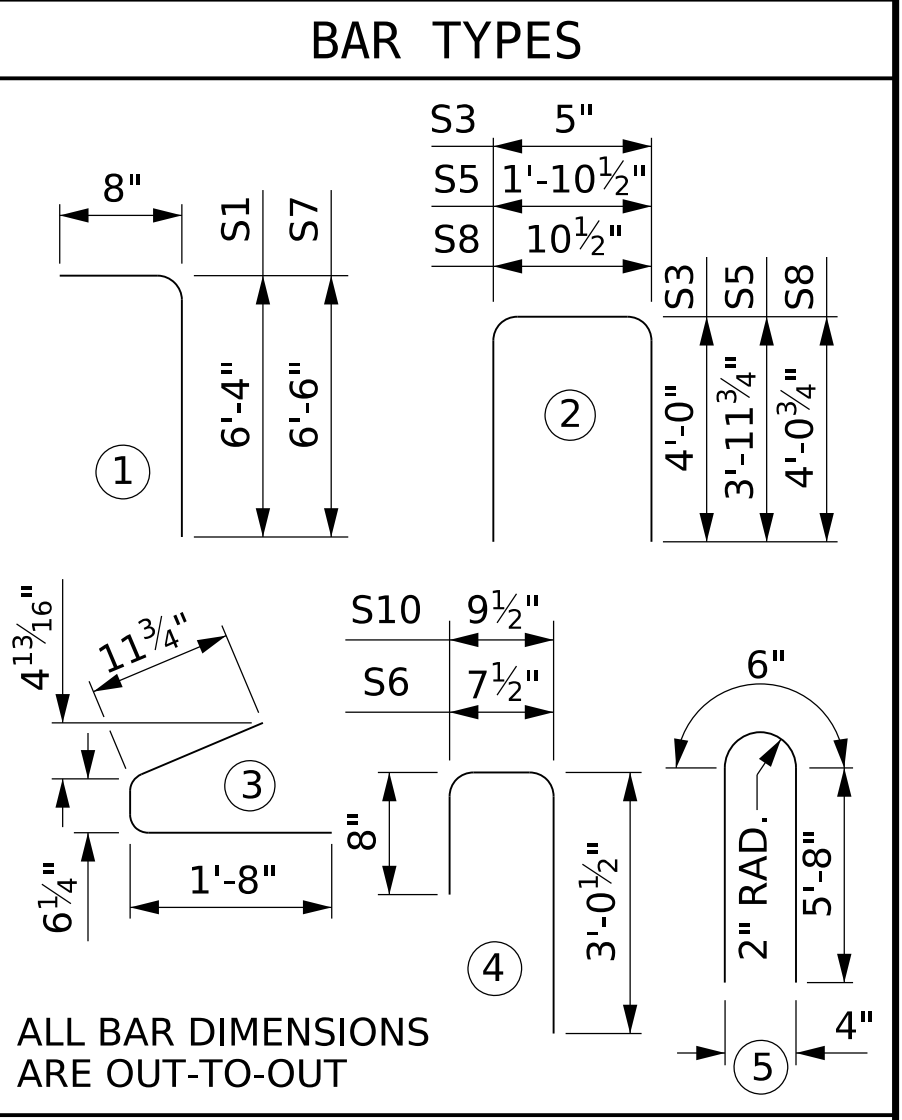
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			
2			4			TOTAL SHEETS 61



- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

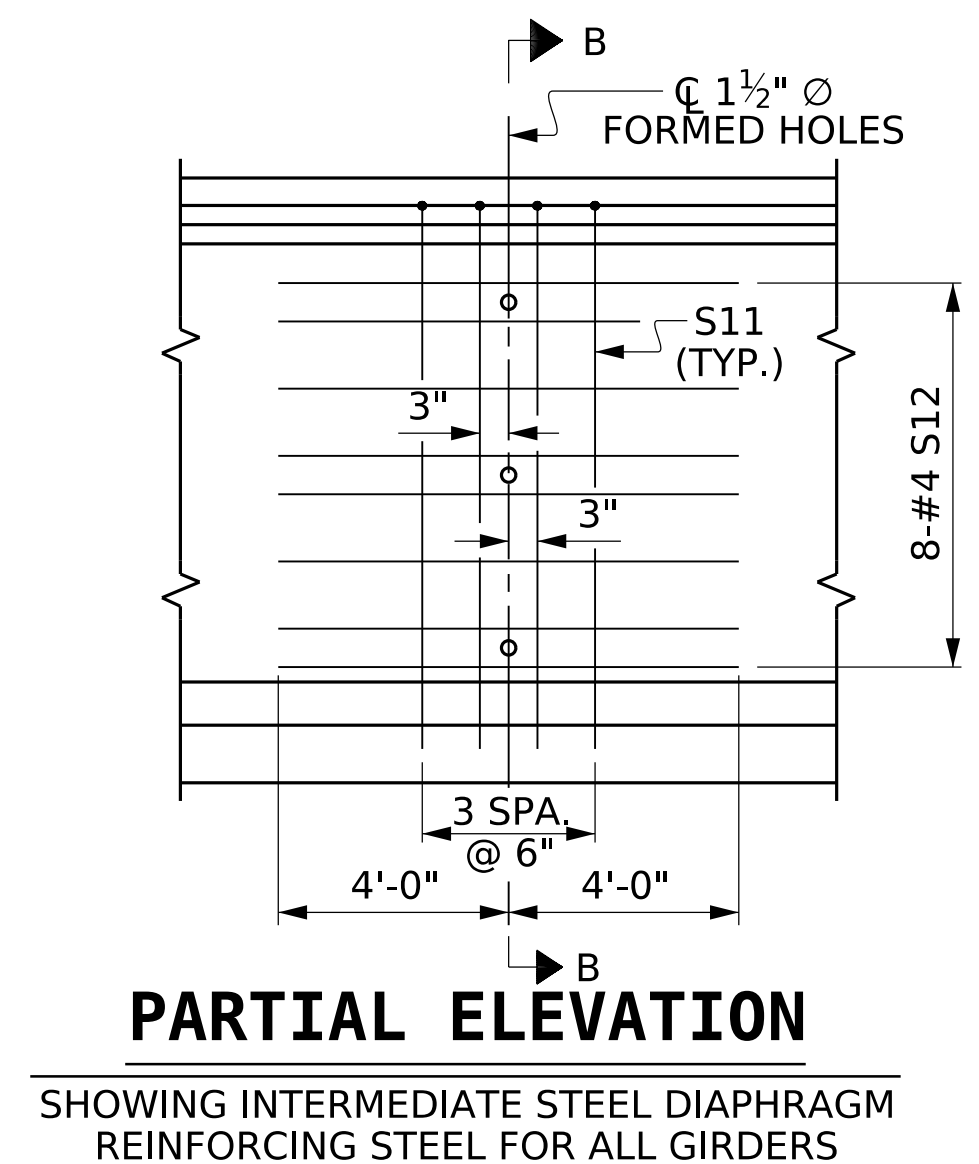
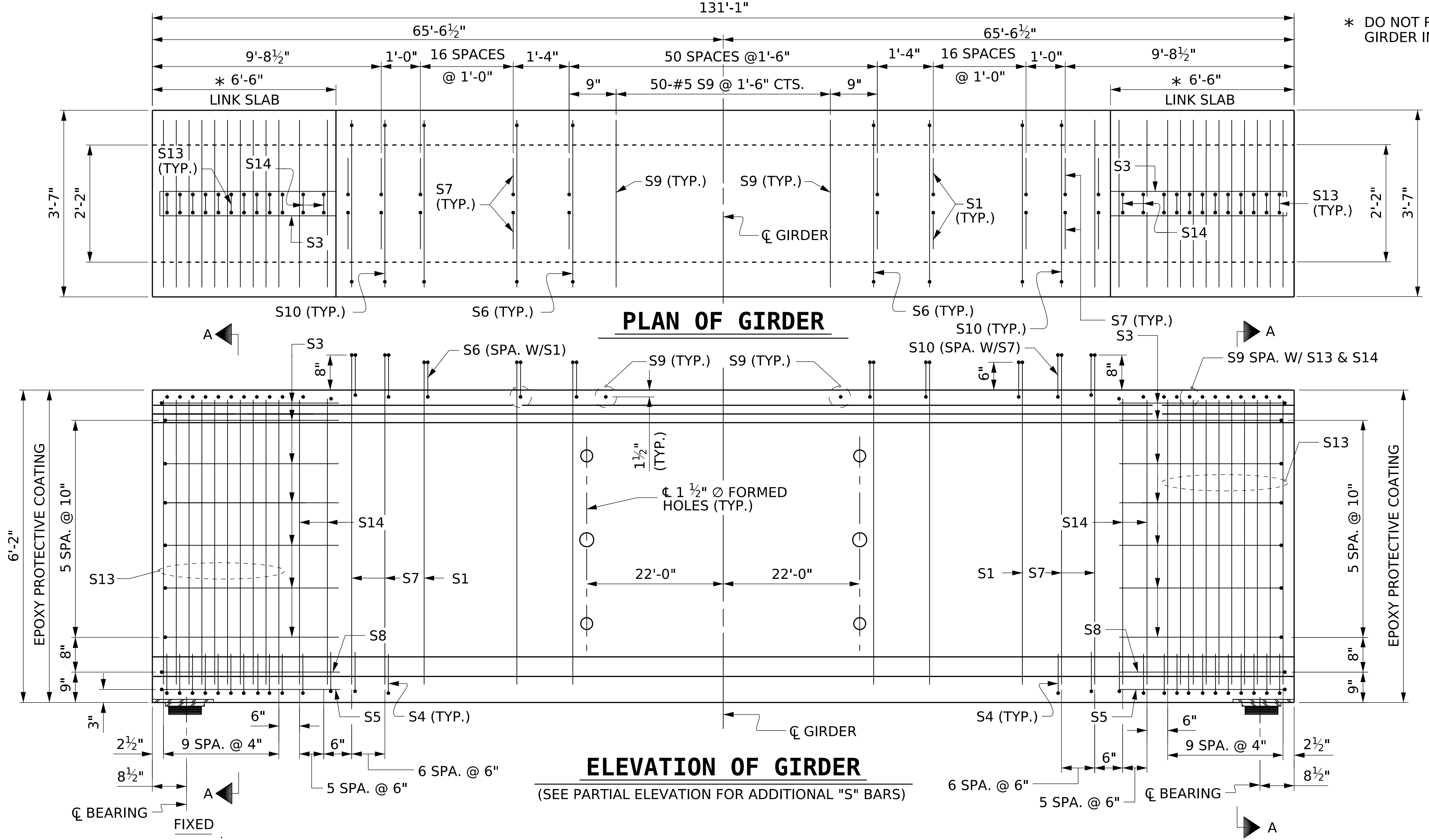


0.6"Ø L.R. GRADE 270 STRANDS					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	170	#4	1	7'-0"	795
S3	14	#4	2	8'-5"	79
S4	92	#4	3	3'-2"	195
S5	2	#5	2	9'-10"	21
S6	170	#5	4	4'-4"	768
S7	28	#4	1	7'-2"	134
S8	2	#5	2	9'-0"	19
S9	82	#5	STR	3'-3"	278
S10	28	#5	4	4'-6"	131
S11	8	#5	5	11'-10"	99
S12	16	#4	STR	8'-0"	86
S13	20	#6	5	11'-10"	355
S14	12	#4	5	11'-10"	95



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	3,055	29.8	50

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
6	131'-1"	786.50'



PROJECT NO. **R-34308**

BURKE & CALDWELL COUNTY

STATION **34+52.50 -L-**

SHEET 3 OF 6

STATE OF NORTH CAROLINA
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RALEIGH

**SUPERSTRUCTURE
74" PRESTRESSED
CONCRETE
MODIFIED BULB TEE
SPAN E**

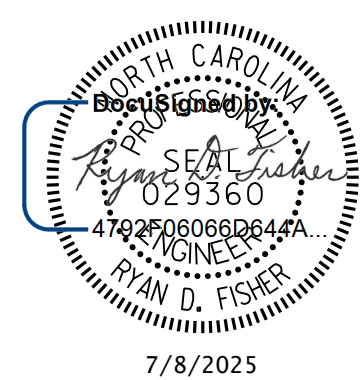
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NO.	BY:	DATE:	NO.	DATE:	
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DRAWN BY : **J. MYA** DATE : **09/2023**
CHECKED BY : **R. FISHER** DATE : **03/2024**
DESIGN ENGINEER OF RECORD: _____ DATE : _____

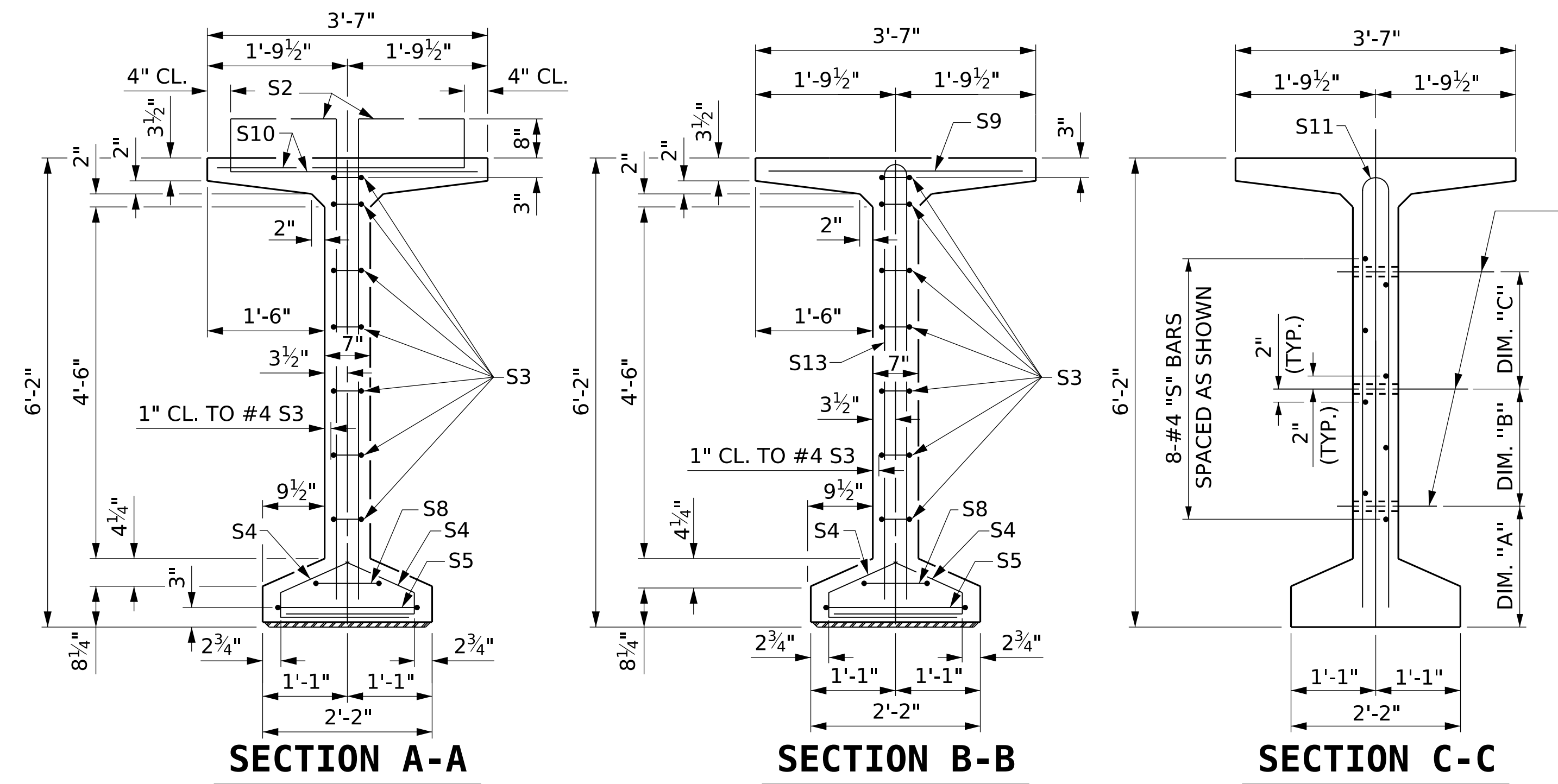


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FIXED



SECTION A-A

SECTION B-B

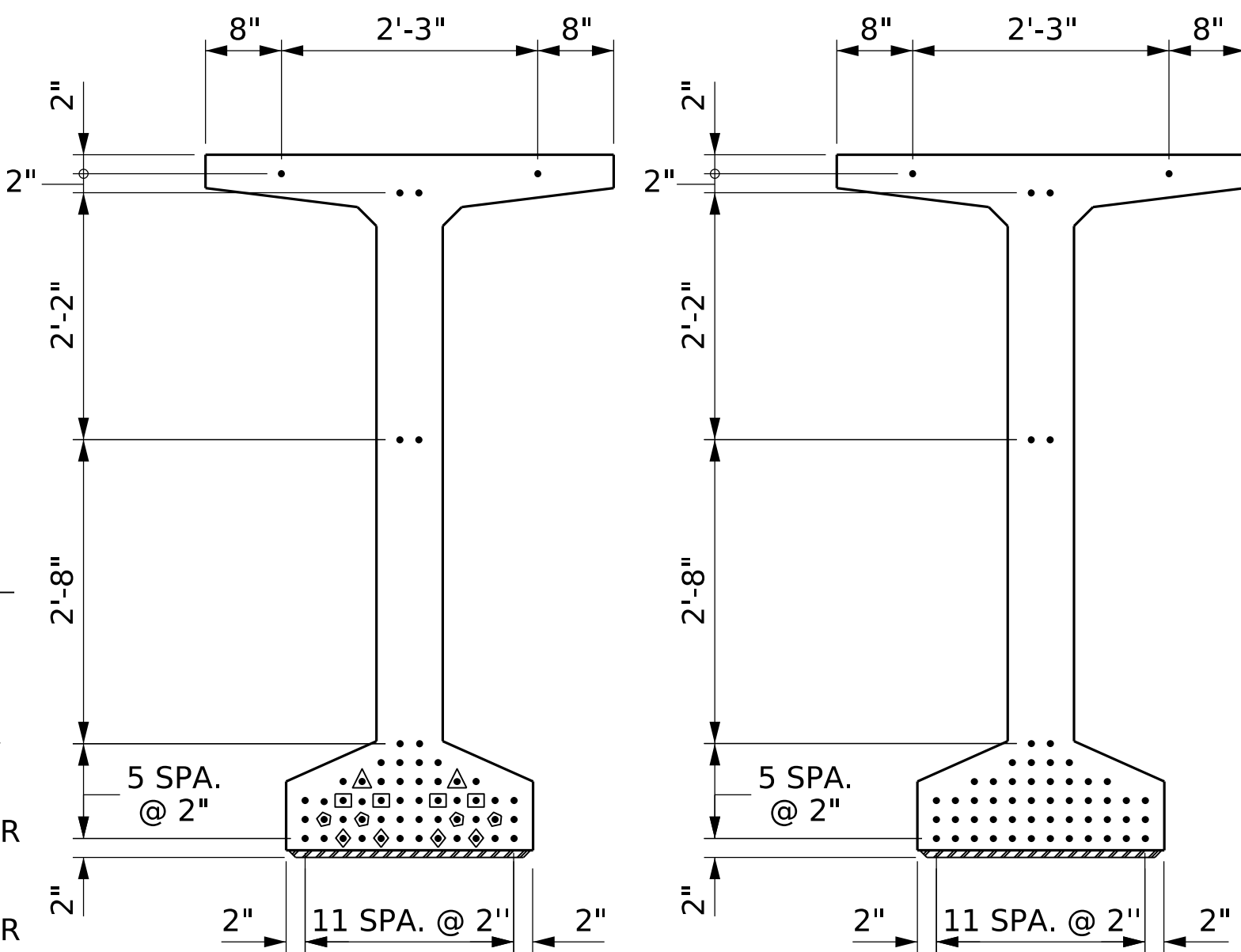
SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

1 1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER

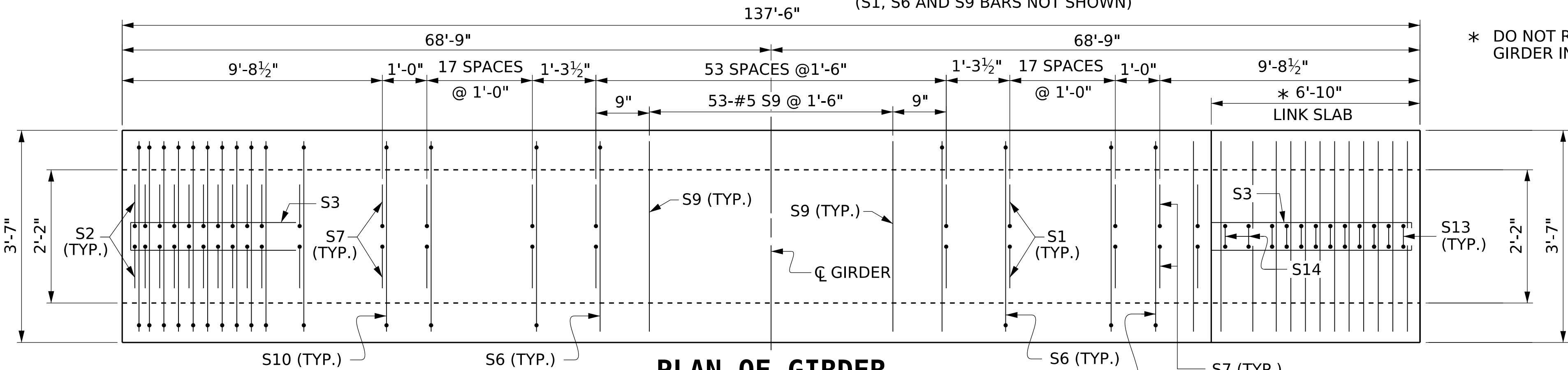


AT END OF GIRDER

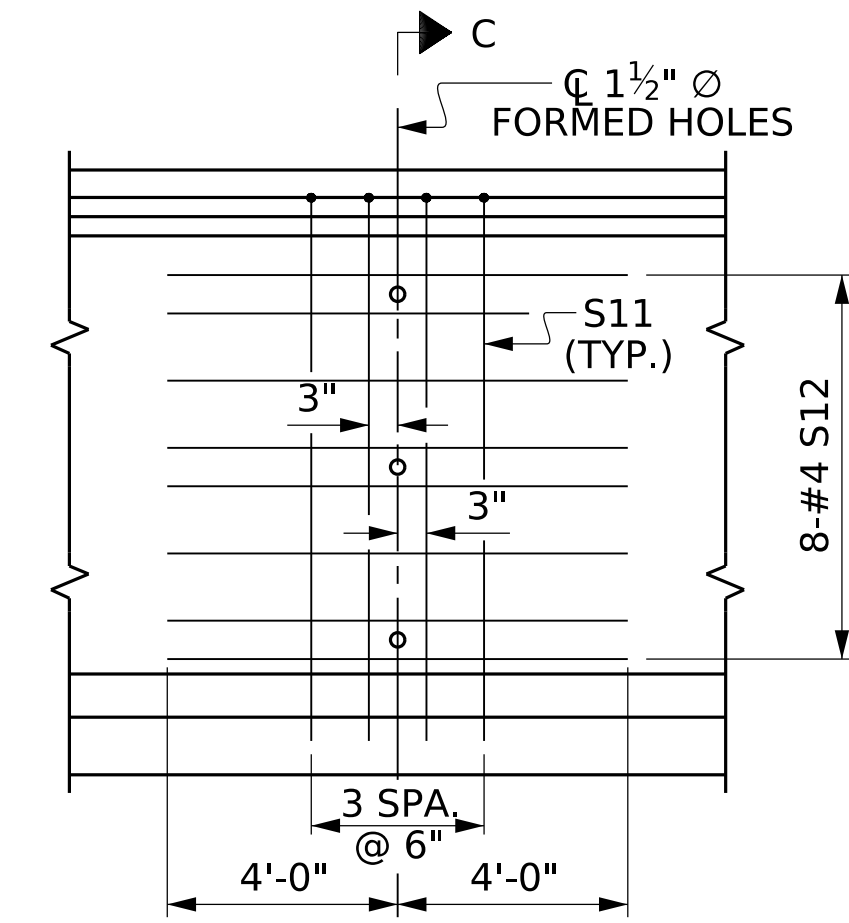
AT CL OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

* DO NOT RAKE TOP OF THE GIRDER IN THIS AREA.

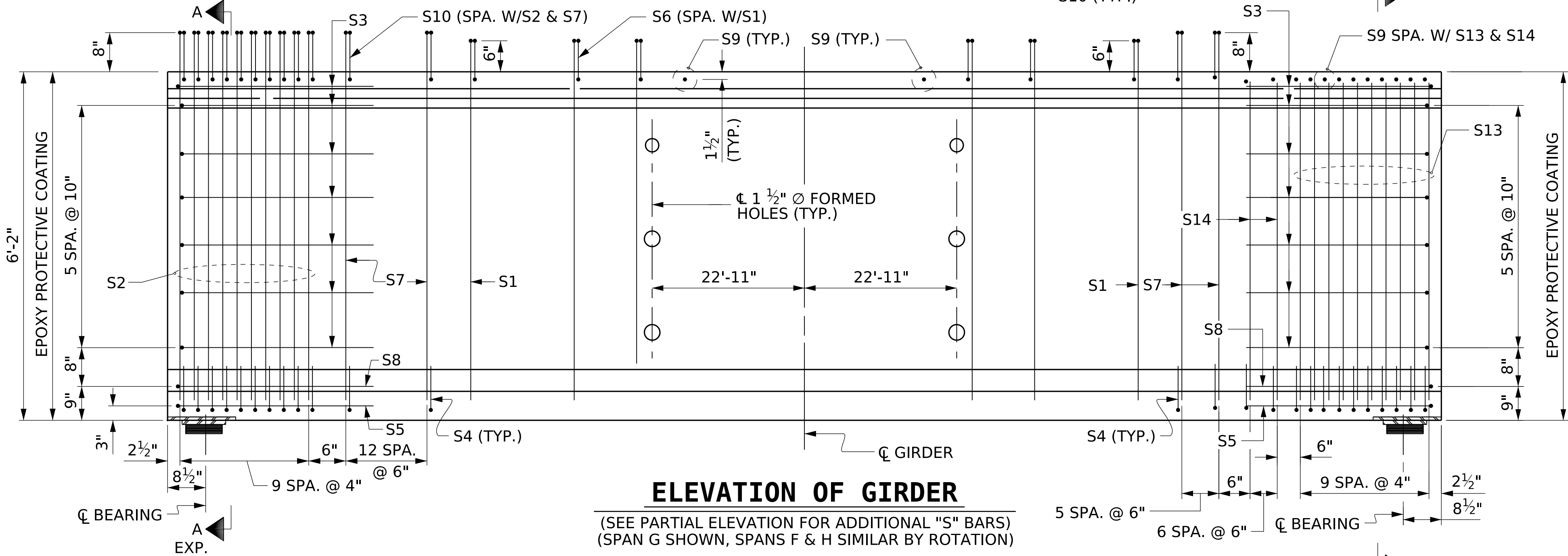


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS) (SPAN G SHOWN, SPANS F & H SIMILAR BY ROTATION)

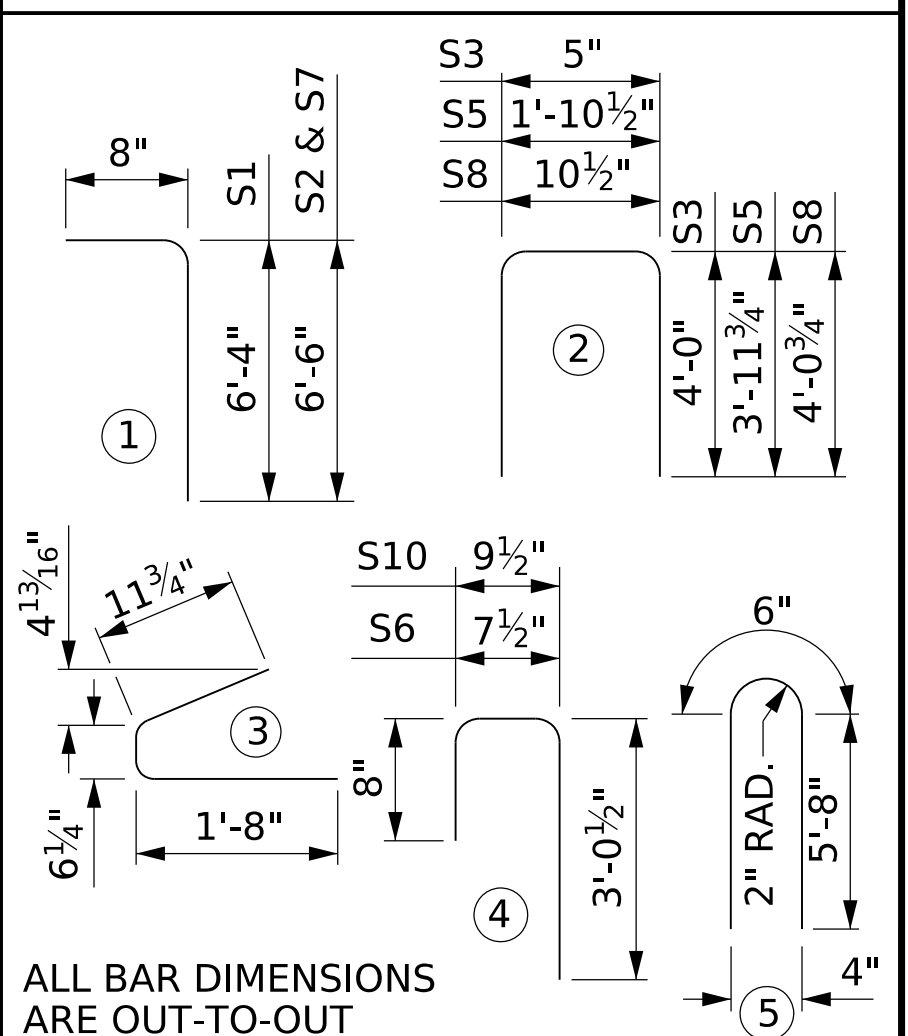
0.6"Ø L.R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	180	#4	1	7'-0"	842
S2	20	#6	1	7'-2"	215
S3	14	#4	2	8'-5"	79
S4	92	#4	3	3'-2"	195
S5	2	#5	2	9'-10"	21
S6	180	#5	4	4'-4"	814
S7	38	#4	1	7'-2"	182
S8	2	#5	2	9'-0"	19
S9	70	#5	STR	3'-3"	237
S10	58	#5	4	4'-6"	272
S11	8	#5	5	11'-10"	99
S12	16	#4	STR	8'-0"	86
S13	10	#6	5	11'-10"	178
S14	7	#4	5	11'-10"	55

BAR TYPES



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
3,294	31.3	56

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
6 (SPAN F)	137'-6"	825.00'
6 (SPAN G)	137'-6"	825.00'
6 (SPAN H)	137'-6"	825.00'

PROJECT NO. **R-34308**

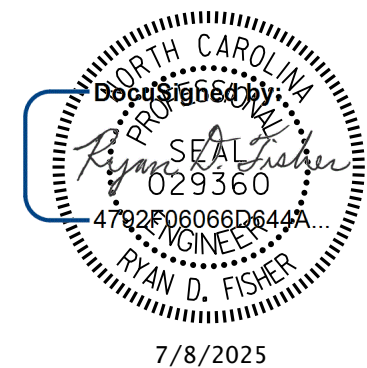
BURKE & CALDWELL COUNTY

STATION **34+52.50 -L-**

SHEET 7 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
74" PRESTRESSED
CONCRETE
MODIFIED BULB TEE
SPANS F, G, & H**



One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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SIGNATURES COMPLETED

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-21
2			4		
TOTAL SHEETS					61

DRAWN BY : J. MYA
CHECKED BY : R. FISHER
DESIGN ENGINEER OF RECORD:

DATE : 09/2023
DATE : 03/2024
DATE :

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NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES AS INDICATED IN ELEVATION VIEW.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,500 PSI.

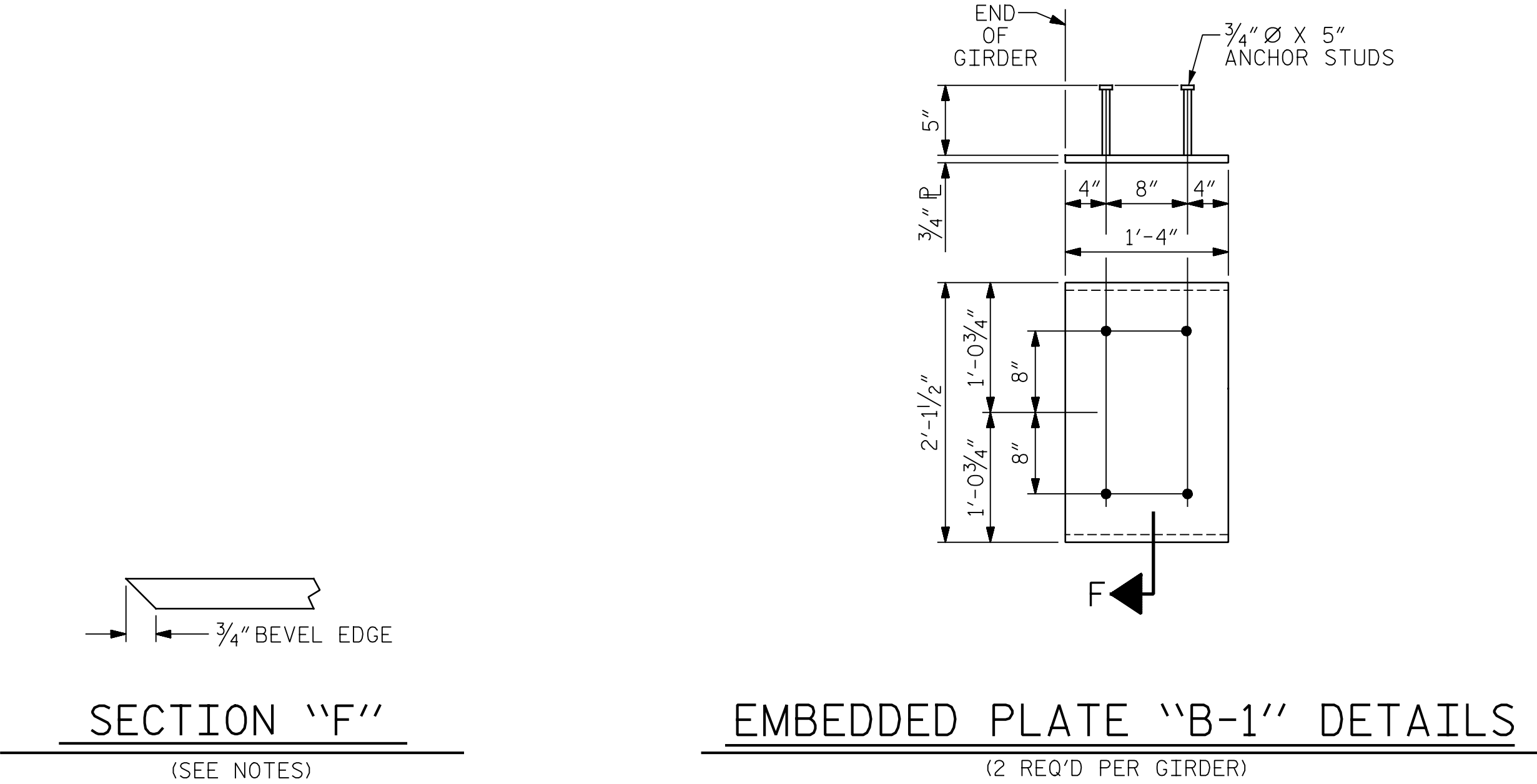
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 74" MODIFIED BULB TEES ONLY.

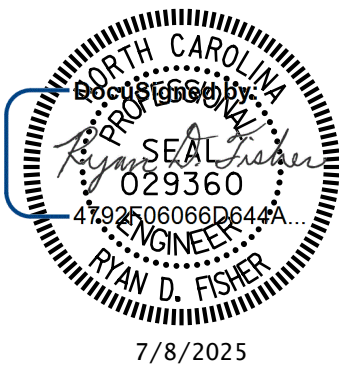
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

FOR MODIFIED 74" PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 5 OF 6



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD PRESTRESSED CONCRETE GIRDER DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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ASSEMBLED BY : J. MYA		DATE : 04/2024	
CHECKED BY : R. FISHER		DATE : 04/2024	
DESIGN ENGINEER OF RECORD :		DATE :	
DRAWN BY :	ELR 11/91	REV. 2/15	MAA/TMG
		REV. 12/17	MAA/THC
CHECKED BY :	GRP 11/91	REV. 10/23	BNB/AKP

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

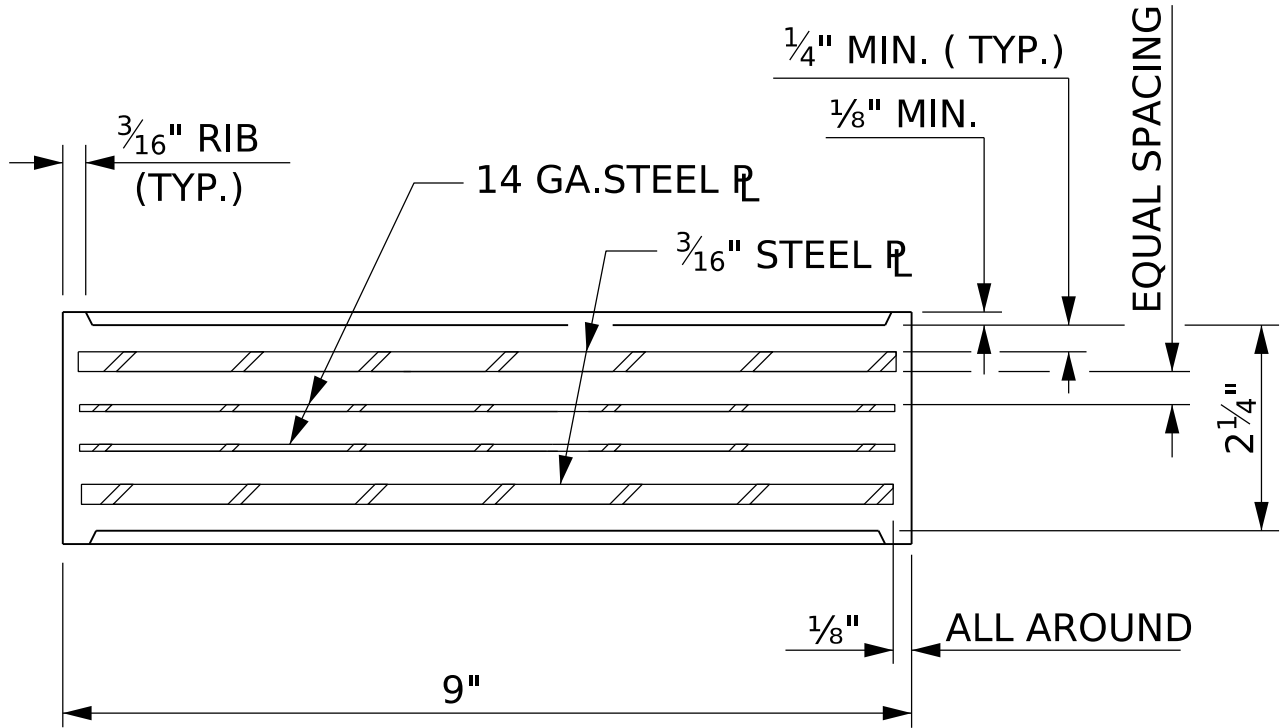
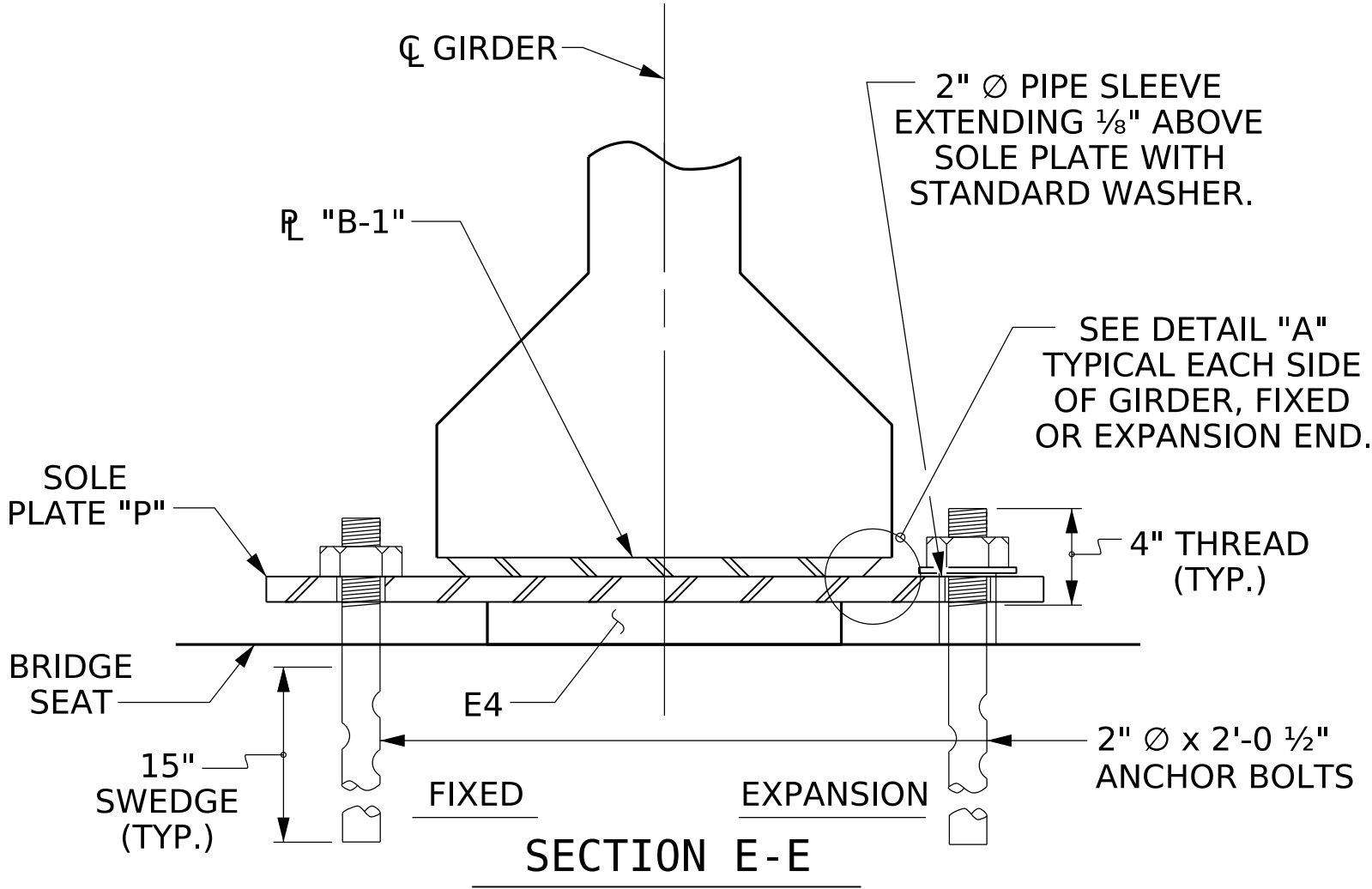
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

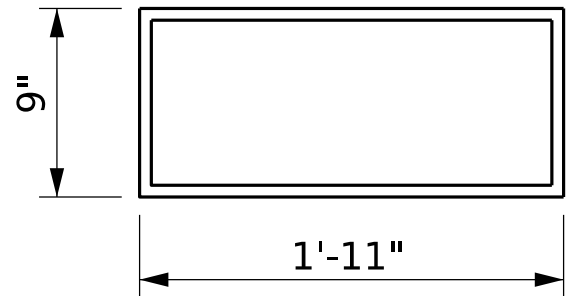
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



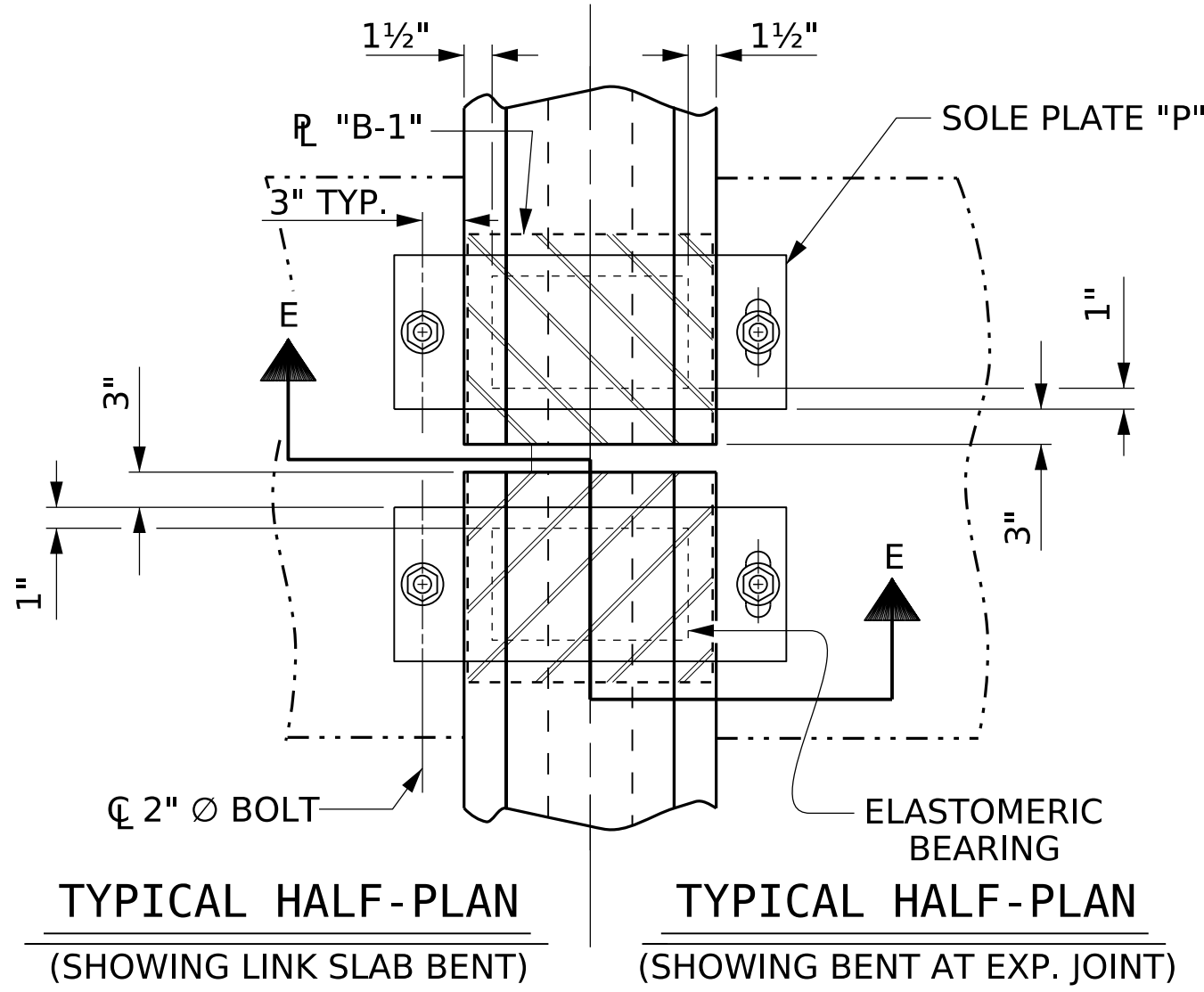
TYPICAL SECTION OF ELASTOMERIC BEARINGS



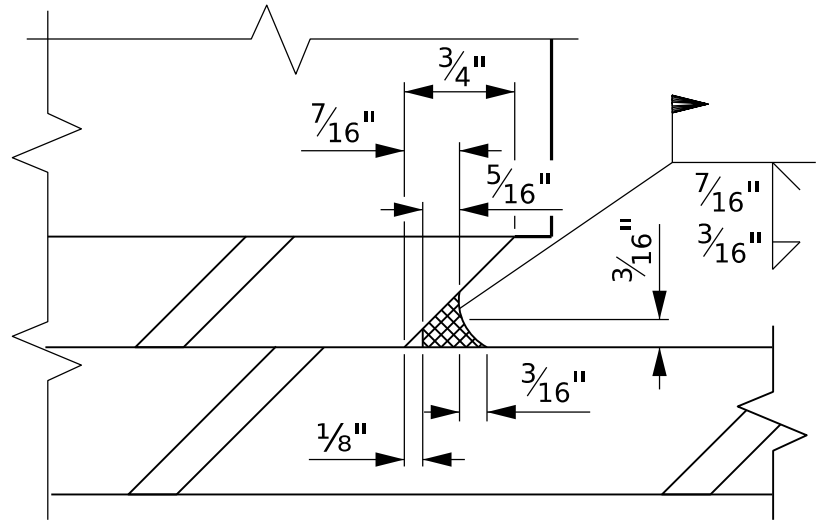
E4 (96 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

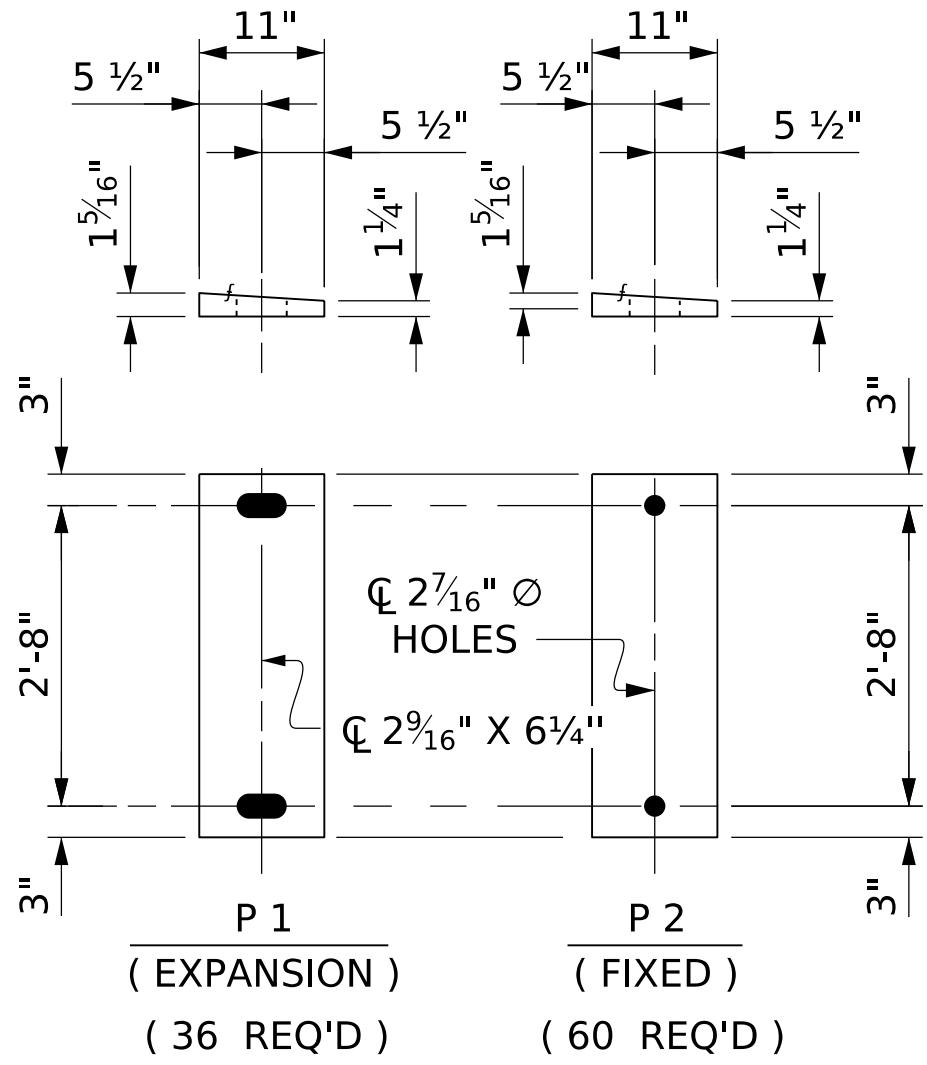
TYPE V



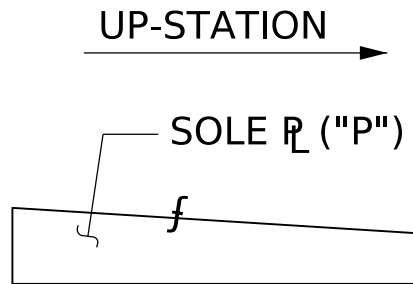
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k



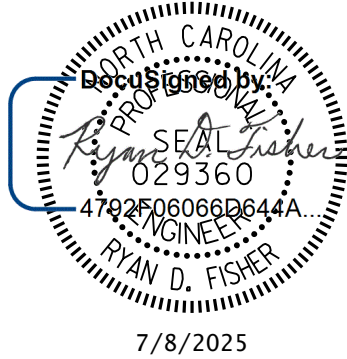
DETAIL "A"



SOLE PLATE DETAILS ("P")



SOLE PLATE PLACEMENT DETAILS



PROJECT NO. **R-3430B**
BURKE & CALDWELL COUNTY
STATION: **34+52.50 -L-**

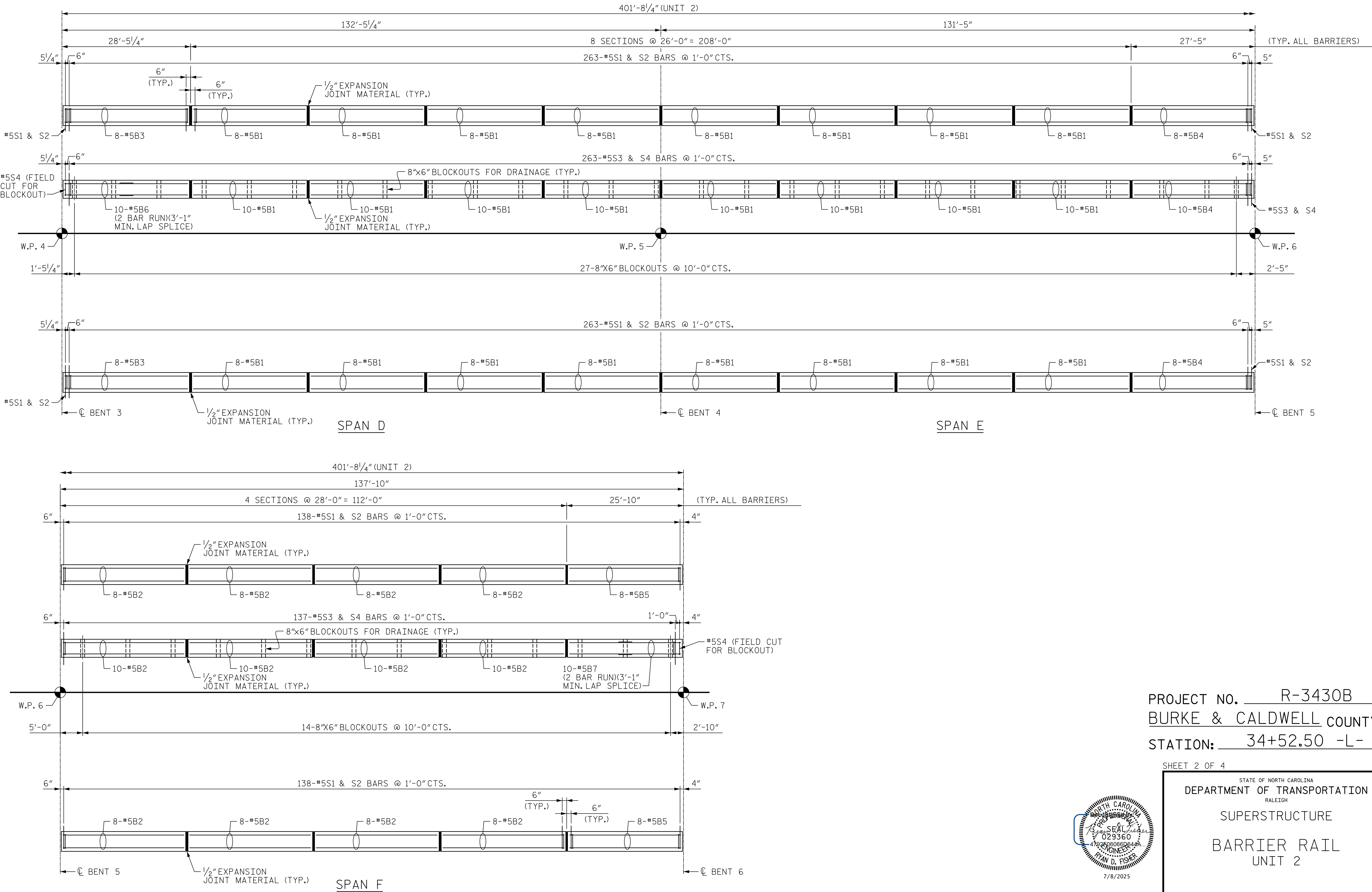
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REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		
TOTAL SHEETS					61

ASSEMBLED BY : J. MYA	DATE : 09/2023
CHECKED BY : R. FISHER	DATE : 03/2024
DRAWN BY : WJH 8/89	REV. 12/17 MAA/THC
CHECKED BY : CRK 8/89	REV. 10/21 BNB/AAI
	REV. 10/23 BNB/SNM



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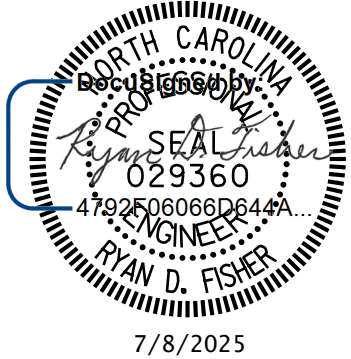
PLAN OF BARRIER RAILS



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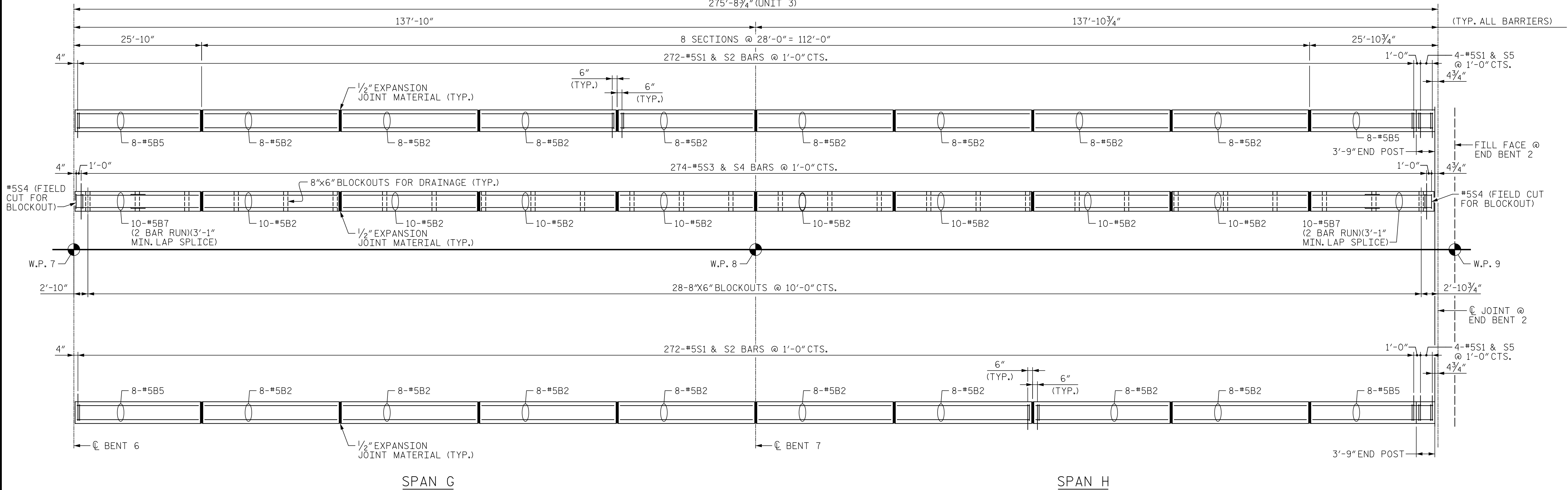
PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 4



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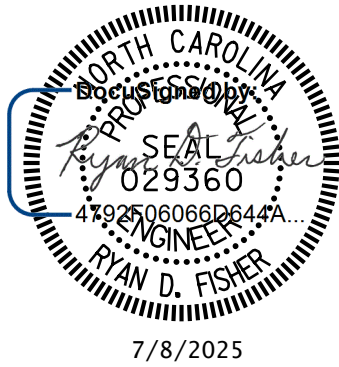
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PLAN OF BARRIER RAILS

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
BARRIER RAIL UNIT 3					
REVISIONS					
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TOTAL SHEETS					61

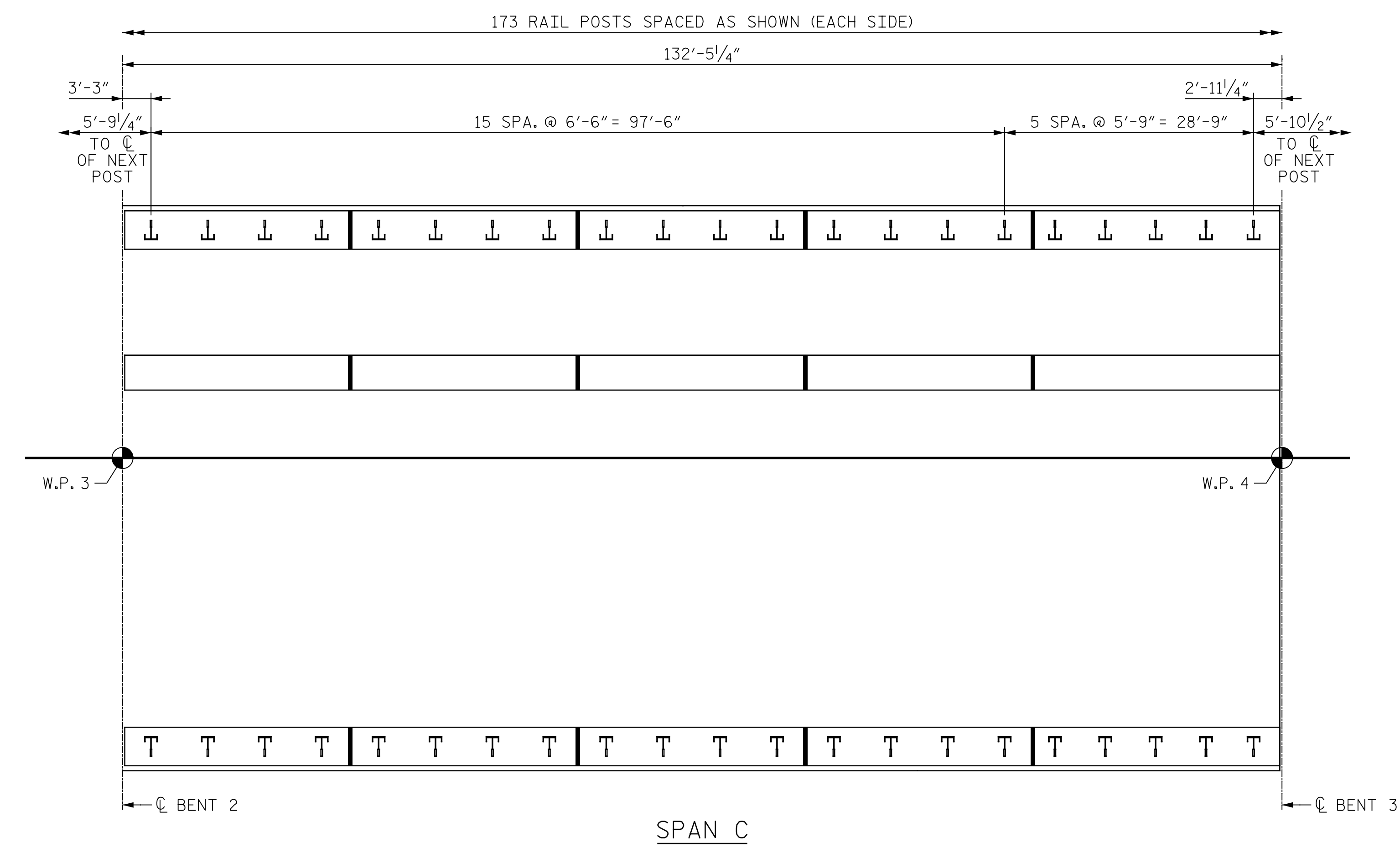
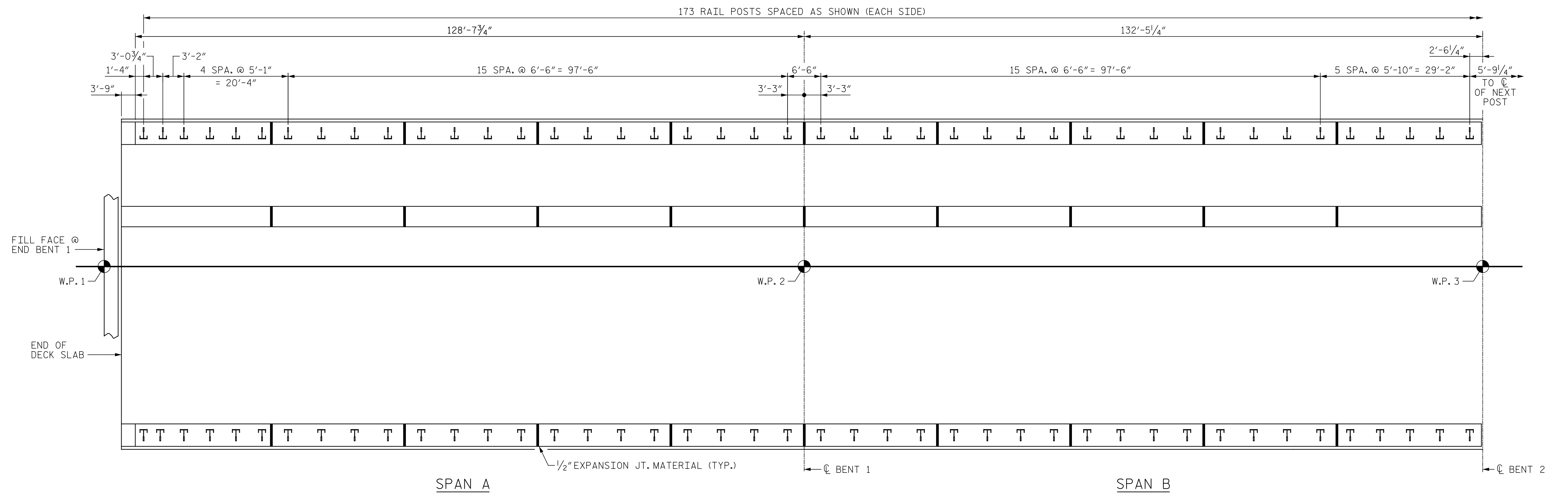
DRAWN BY :	M. SPENCER	DATE :	10/2023
CHECKED BY :	R. FISHER	DATE :	03/2024
DESIGN ENGINEER OF RECORD:		DATE :	

**GANNETT
FLEMING**

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

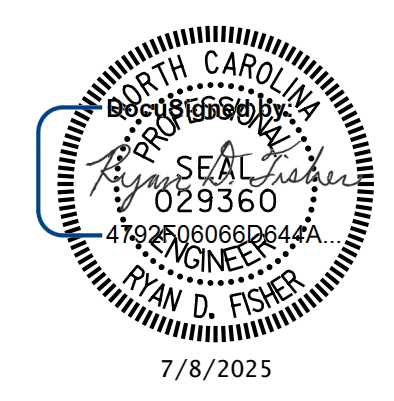
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PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 1 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL
RAIL POST SPACINGS
SPANS A, B, & C

DRAWN BY : M. SPENCER DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
DESIGN ENGINEER OF RECORD: _____ DATE : _____

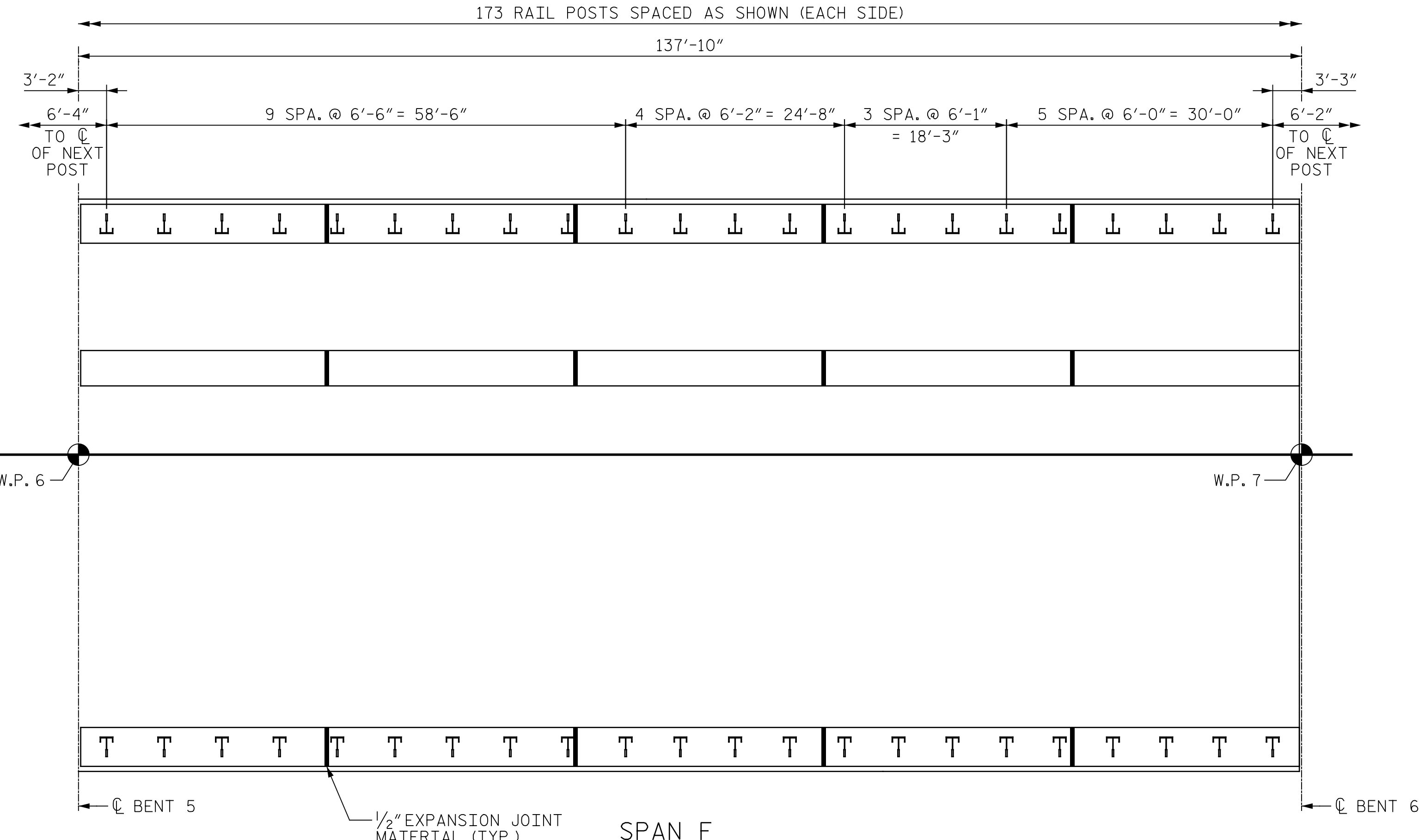
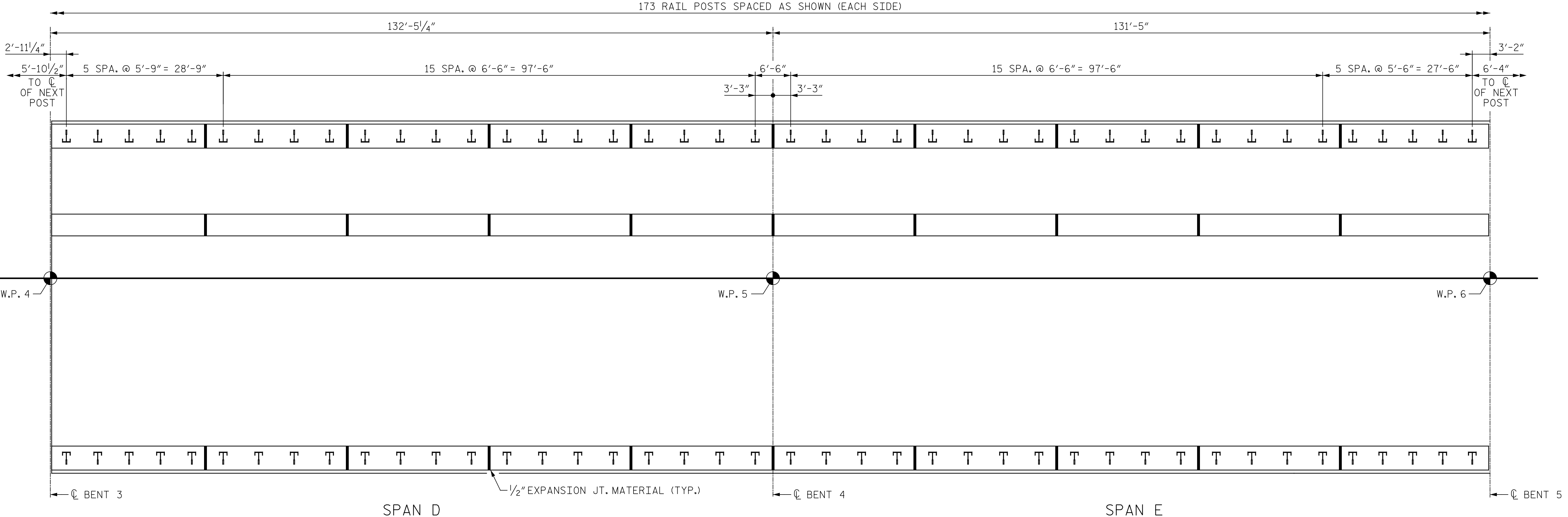
PLAN OF RAIL POST SPACINGS

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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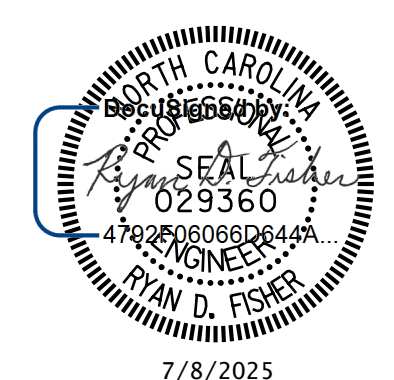
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PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 6



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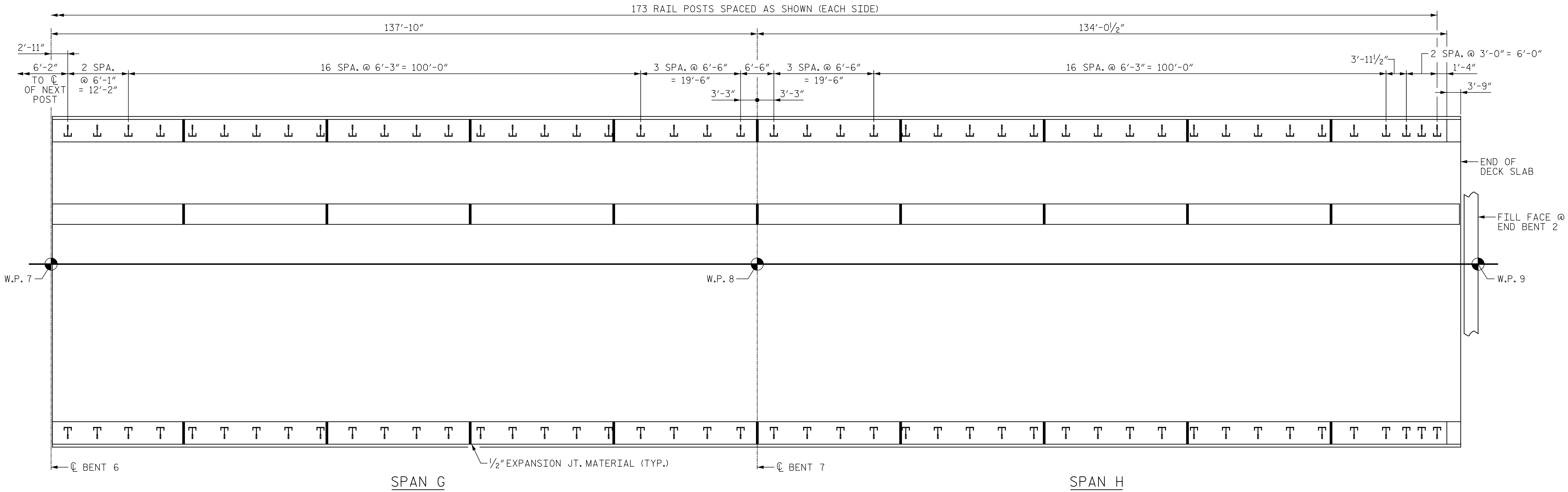
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PLAN OF RAIL POST SPACINGS



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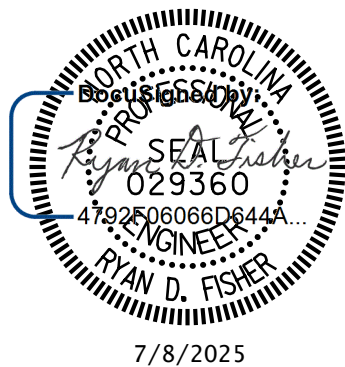
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PLAN OF RAIL POST SPACINGS

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BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 3 OF 6



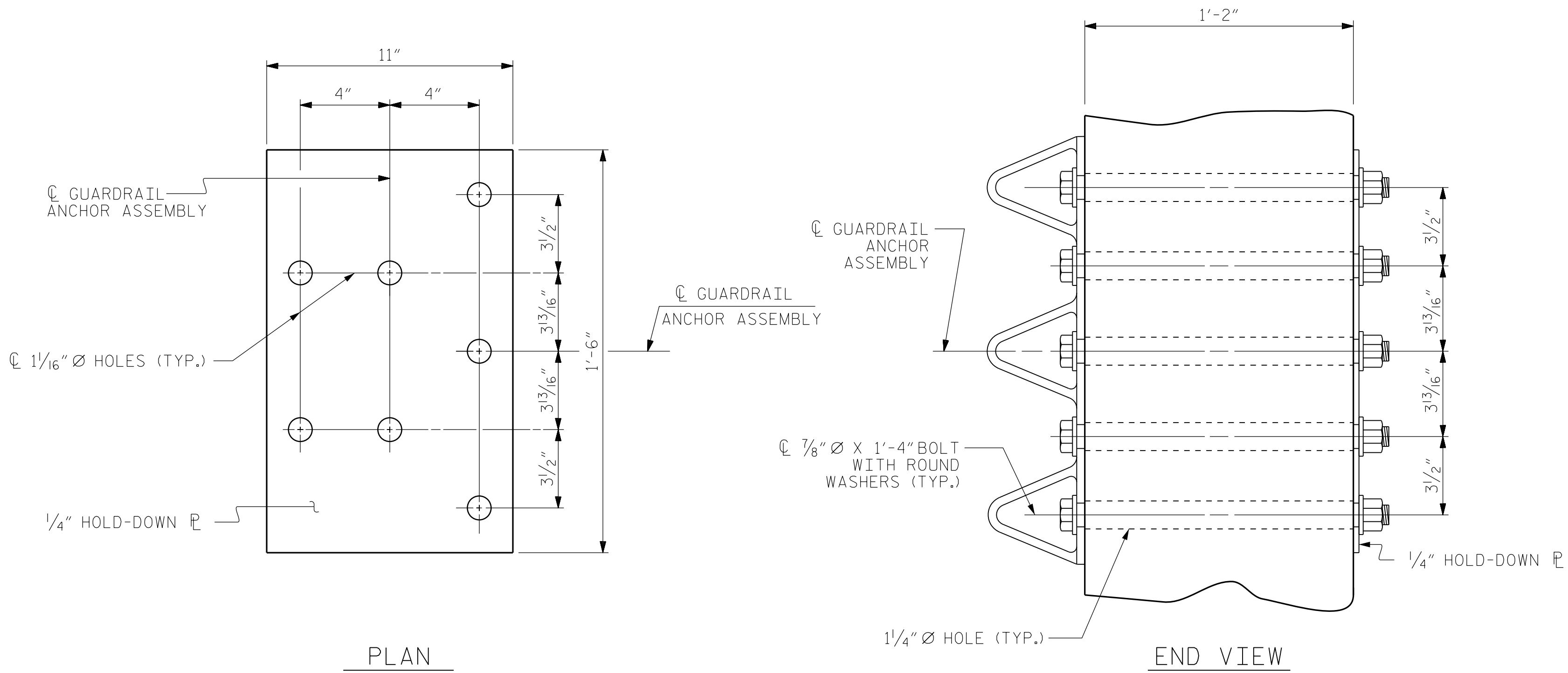
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REVISIONS					SHEET NO.
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TOTAL SHEETS					61

DRAWN BY :	M. SPENCER	DATE :	10/2023
CHECKED BY :	R. FISHER	DATE :	03/2024
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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" 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 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

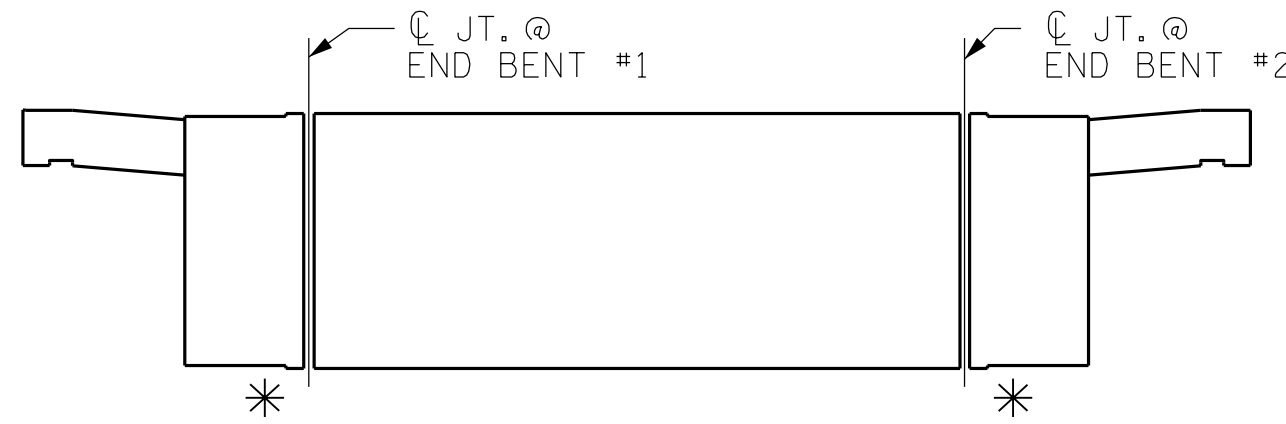
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

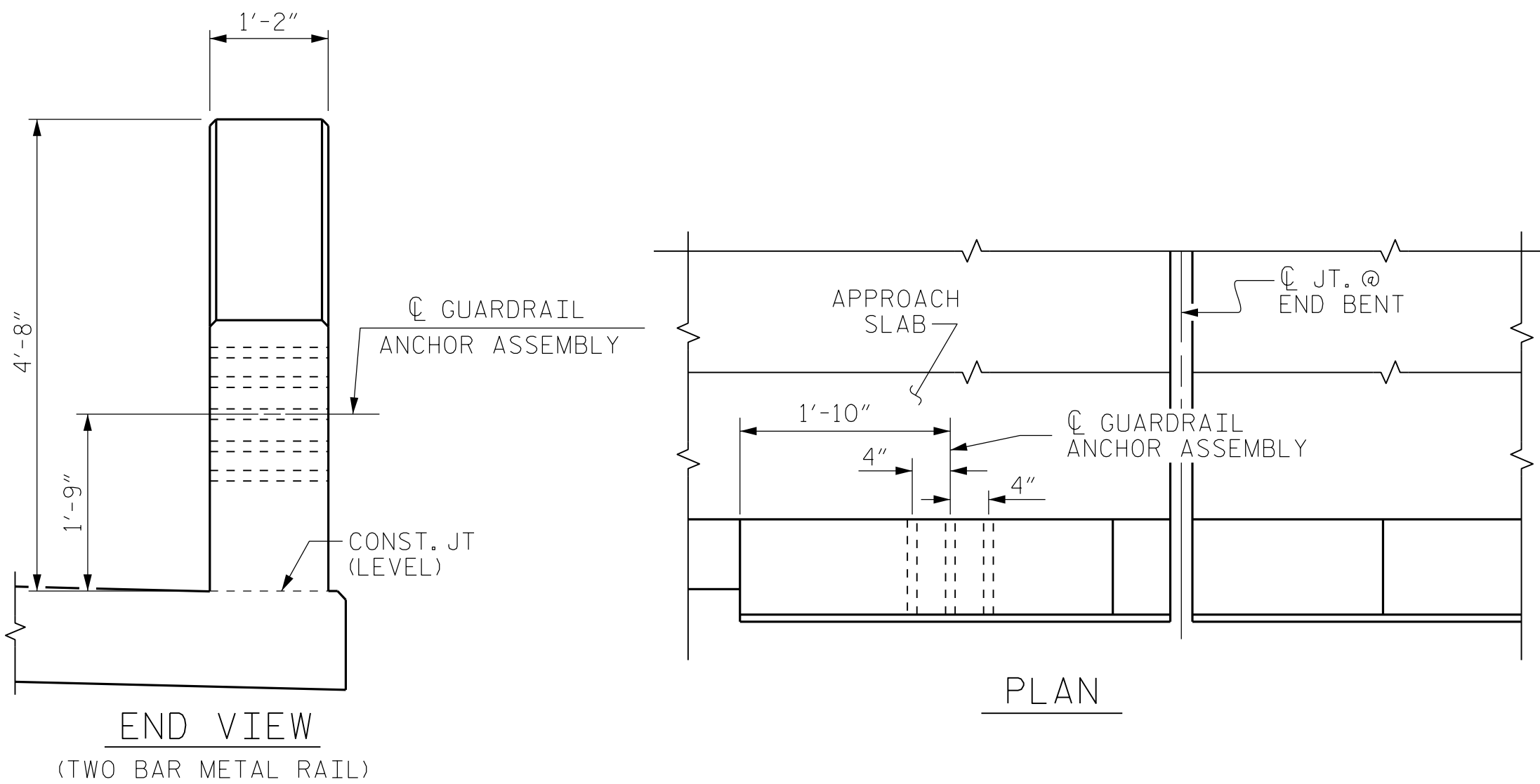
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



SKETCH SHOWING POINTS OF ATTACHMENT

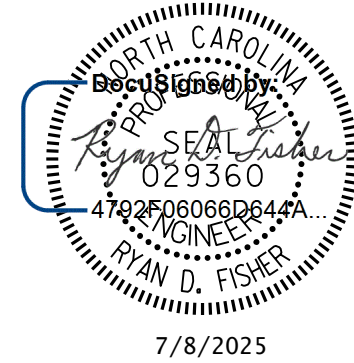
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-



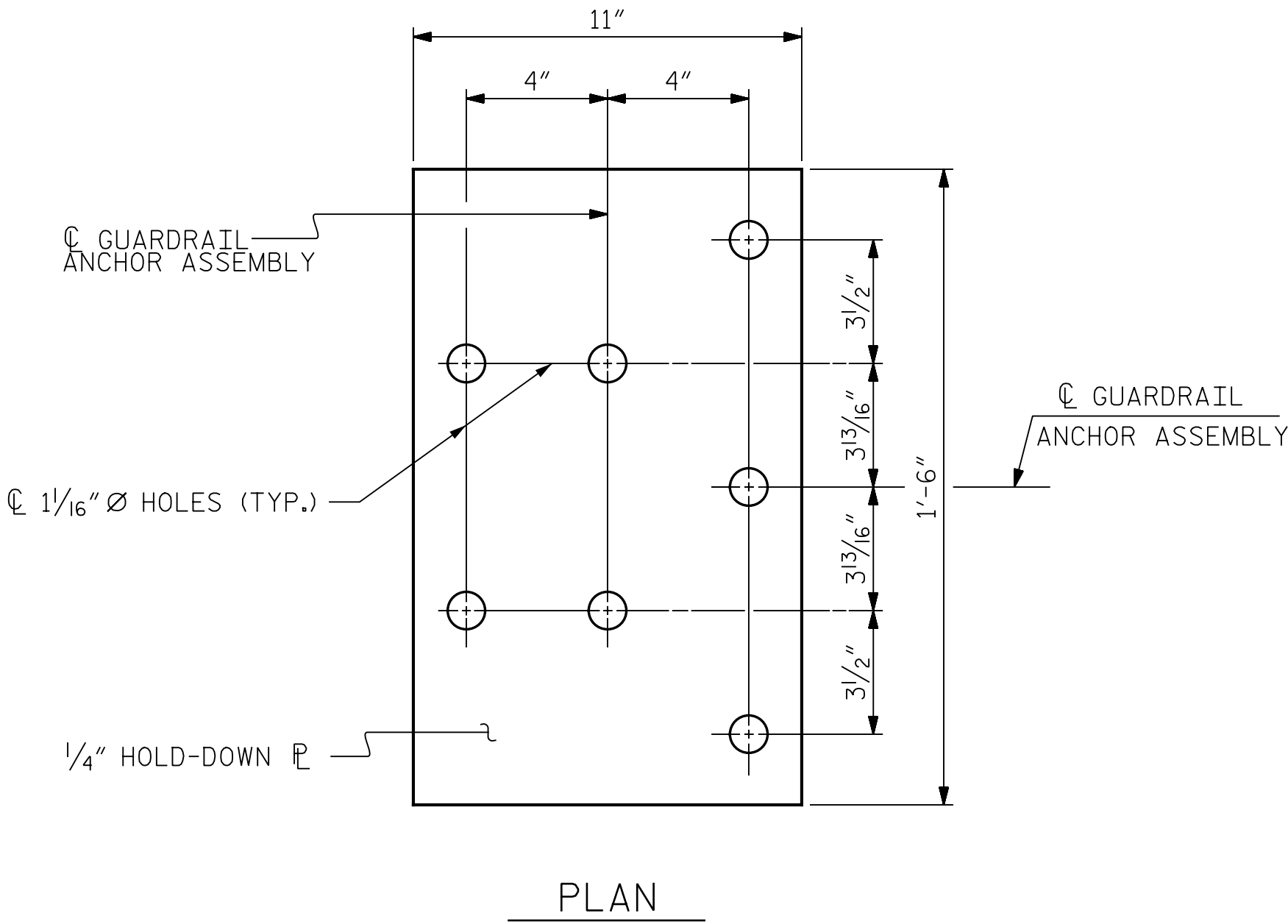
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STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
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SHEET NO.					S-37
TOTAL SHEETS					61



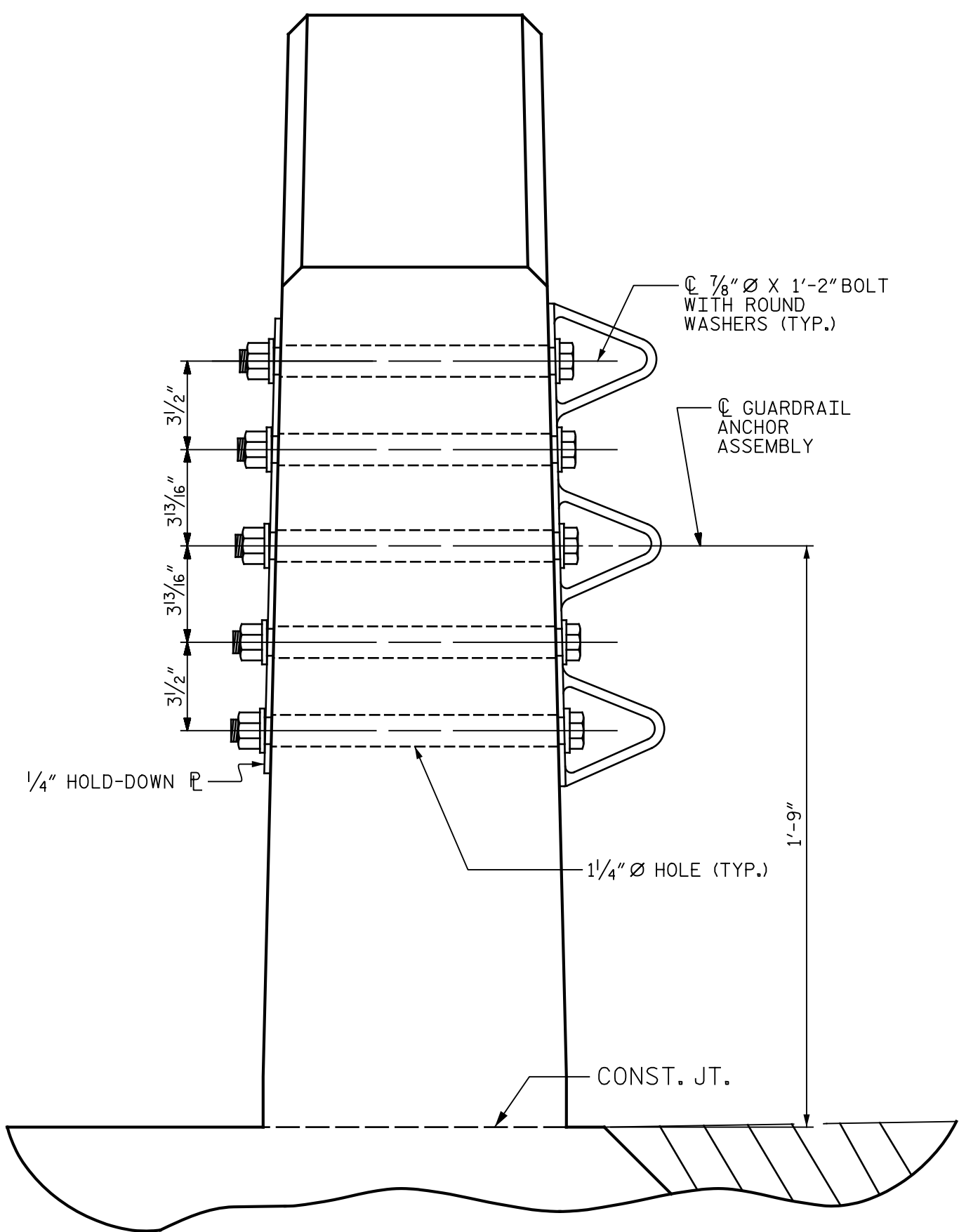
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CHECKED BY : <u>R. FISHER</u>	DATE : <u>04/2024</u>
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DRAWN BY : <u>MAA</u>	DATE : <u>05/2010</u>
CHECKED BY : <u>GM</u>	DATE : <u>05/2010</u>
REV. 01/2015	MAA/TMG
REV. 12/2017	MAA/THC
REV. 05/2018	MAA/THC

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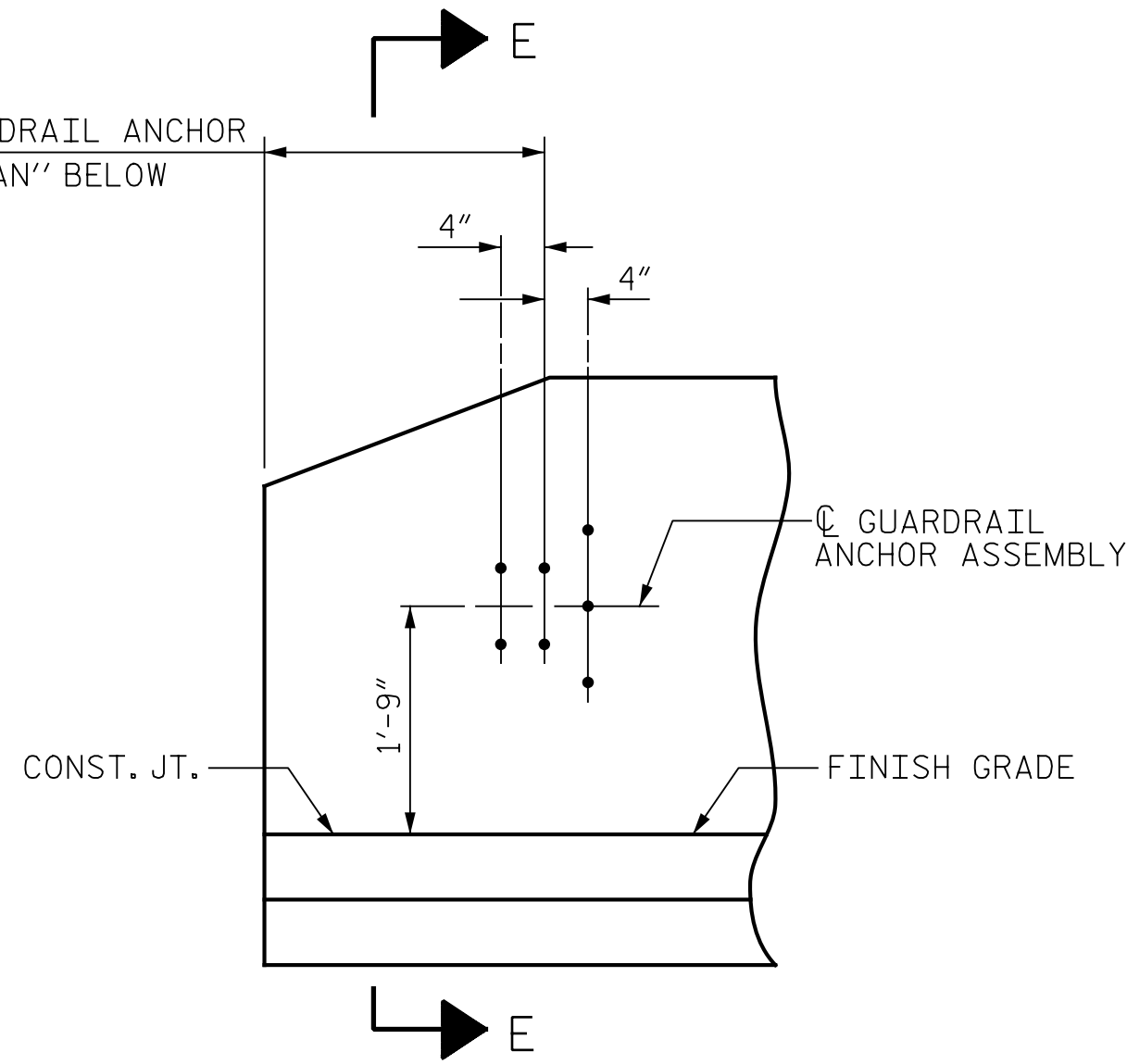
PLAN



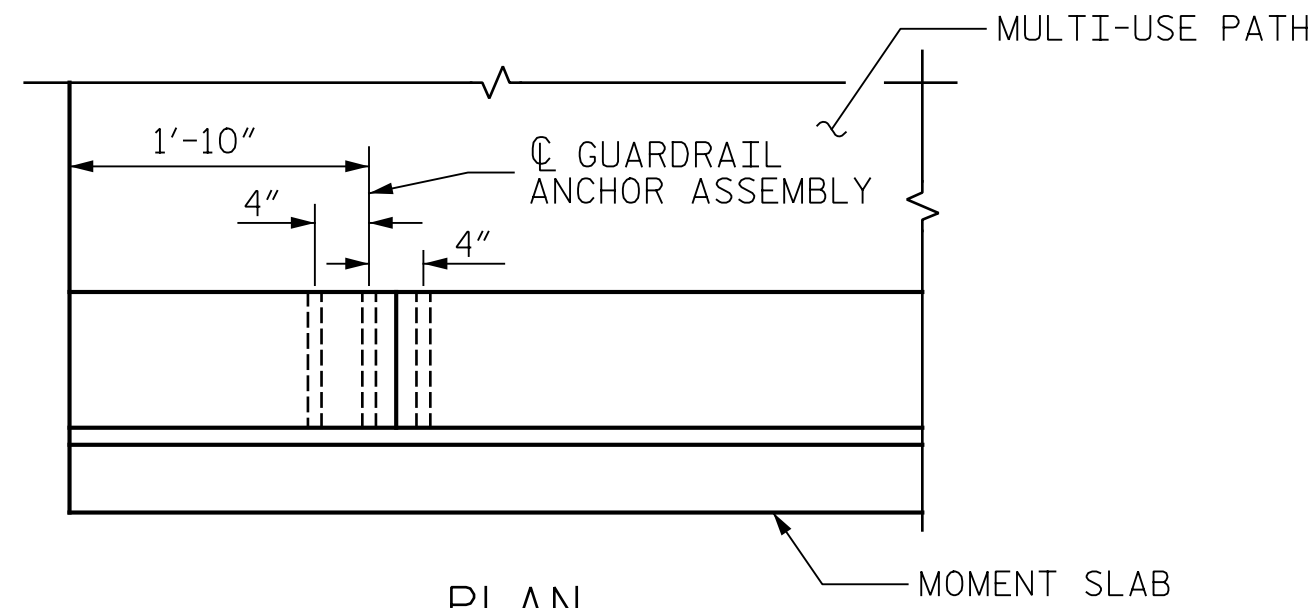
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



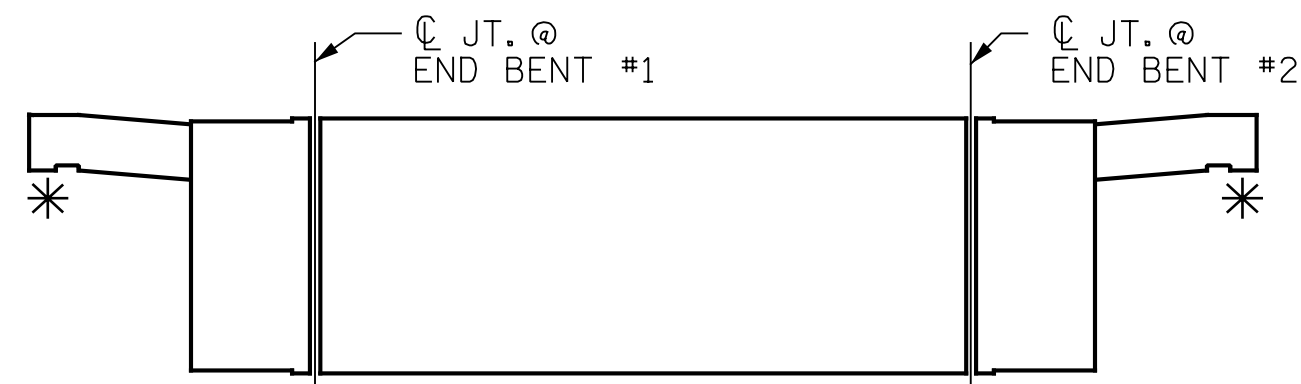
ELEVATION



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

MOMENT SLAB @ END BENT #1 SHOWN,
MOMENT SLAB @ END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

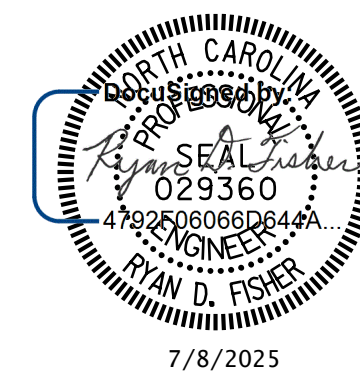
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL

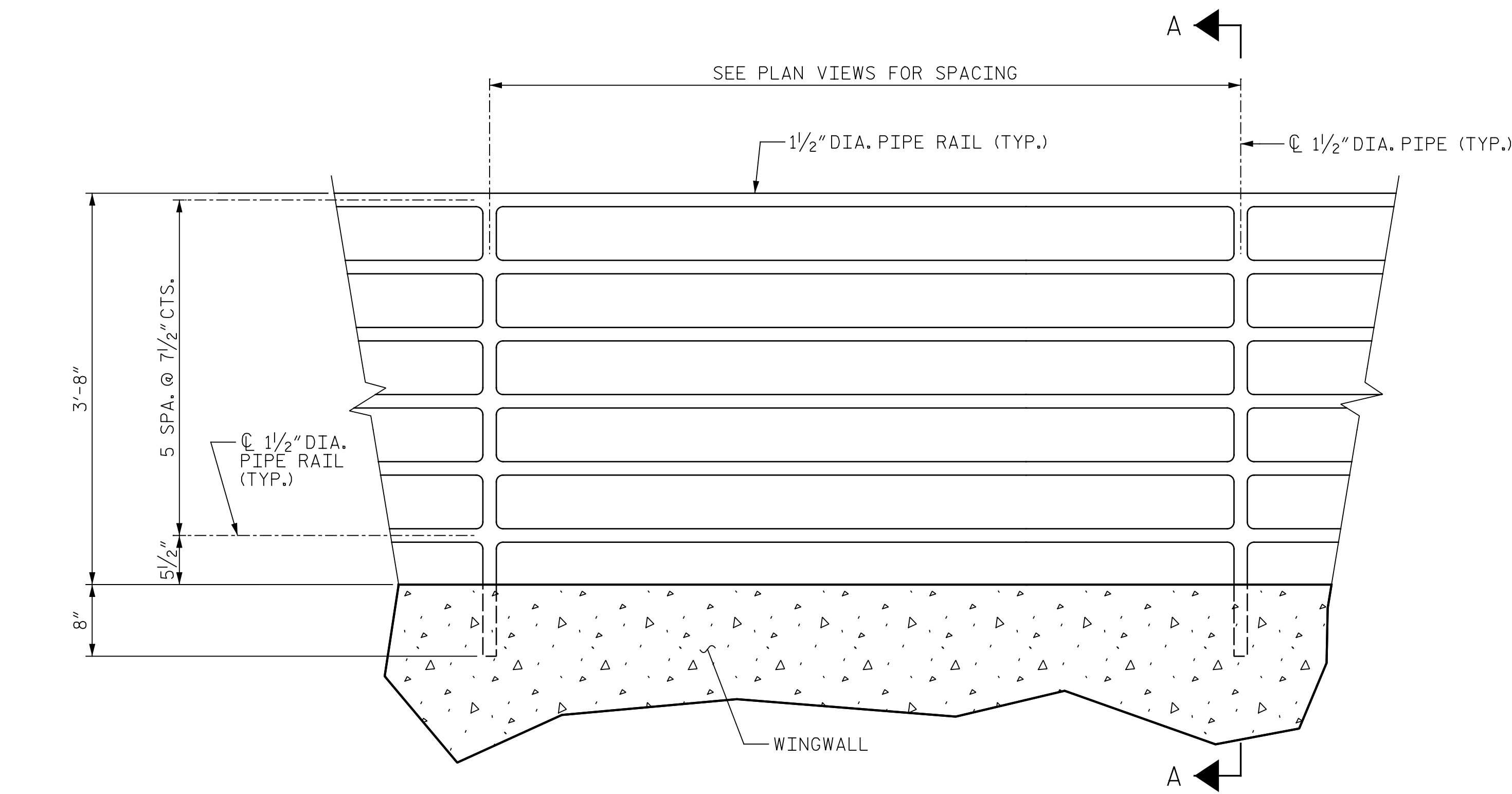
DRAWN BY : M. SPENCER DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
DESIGN ENGINEER OF RECORD: _____ DATE : _____

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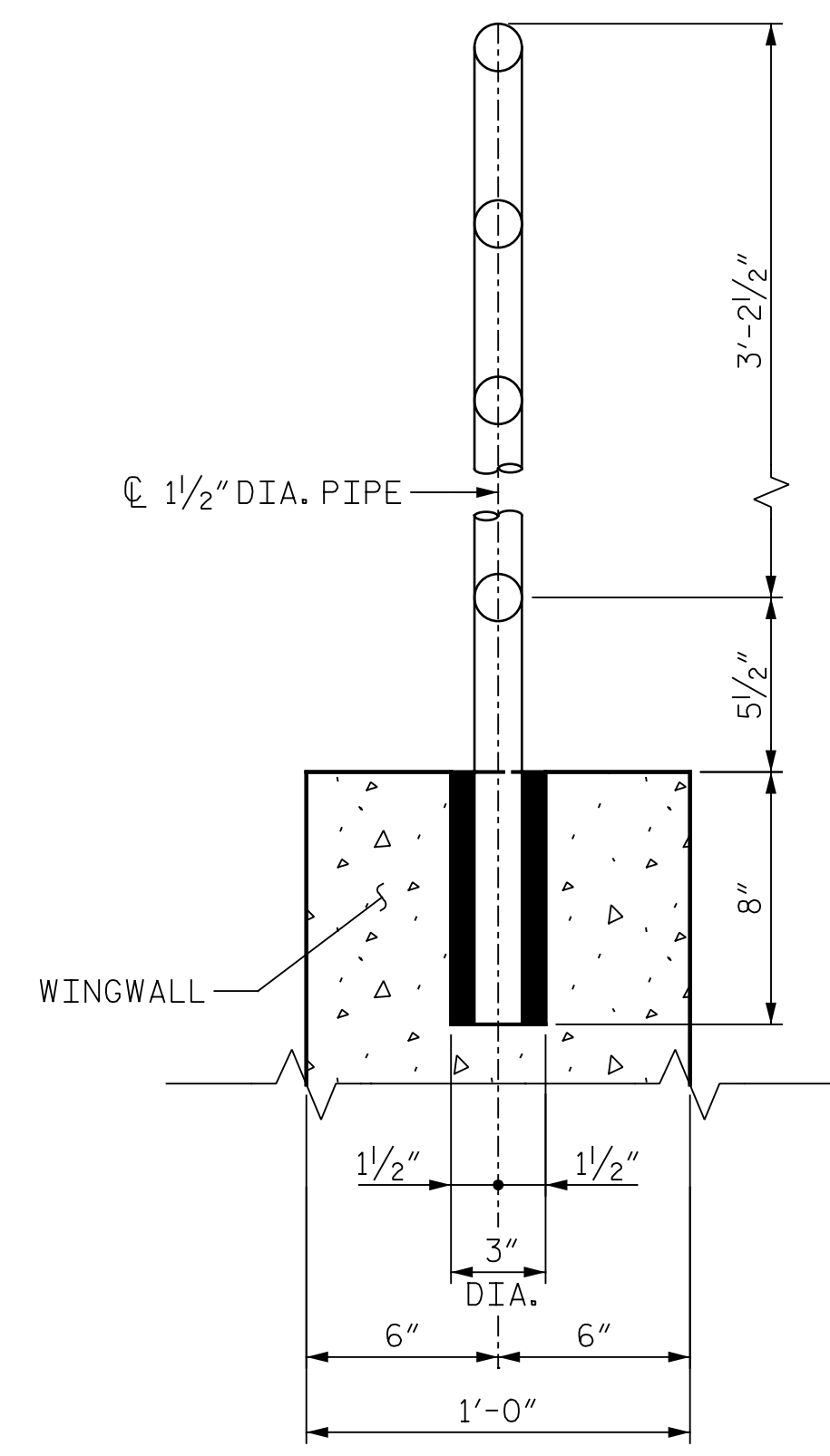
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2			4			61

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ELEVATION OF HANDRAIL



SECTION A-A

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL 1 1/2" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

EMBED PIPE RAIL 8" INTO PROPOSED WINGWALL WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM AS DIRECTED BY THE ENGINEER.

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

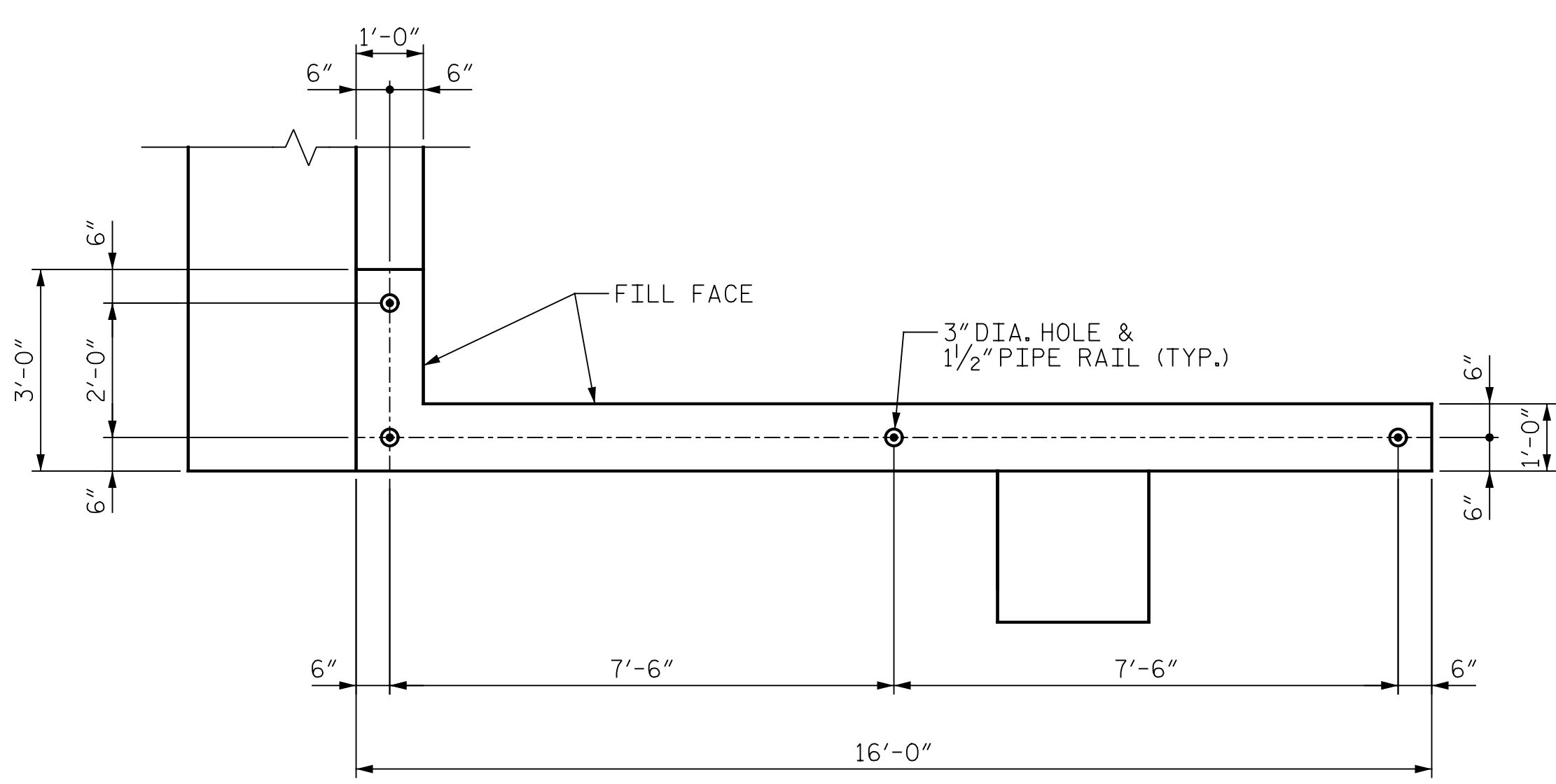
PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

CENTER THE PROPOSED RAILING ON TOP OF THE WINGWALL WITH POST SPACING SYMMETRICAL ABOUT THE CENTERLINE OF THE WALL.

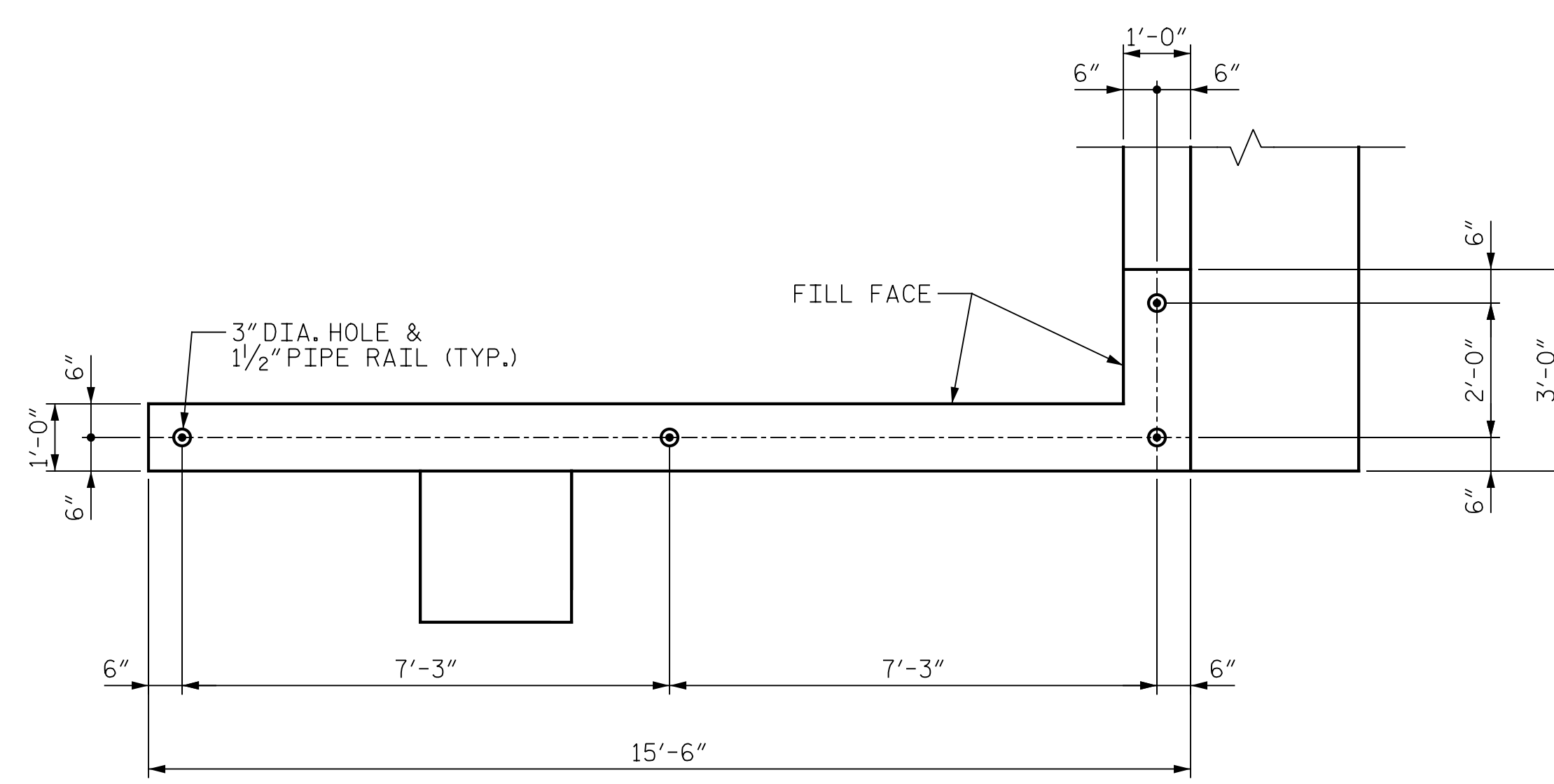
USE A ROTARY DRILL IF NEEDED FOR EMBEDMENT HOLES OF RAIL IN WALL. ROTARY DRILL ONLY (NO ROTARY-IMPACT DRILLS).

WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

PAY LENGTH = 33.50 LIN. FT.

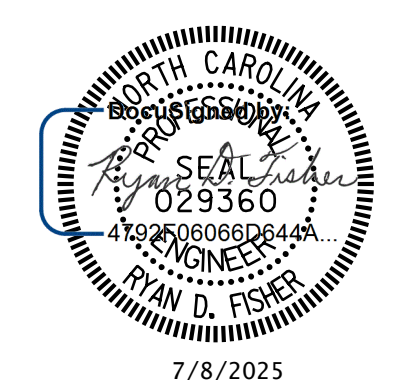


PLAN W1 @ END BENT 1



PLAN W1 @ END BENT 2

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BURKE & CALDWELL COUNTY
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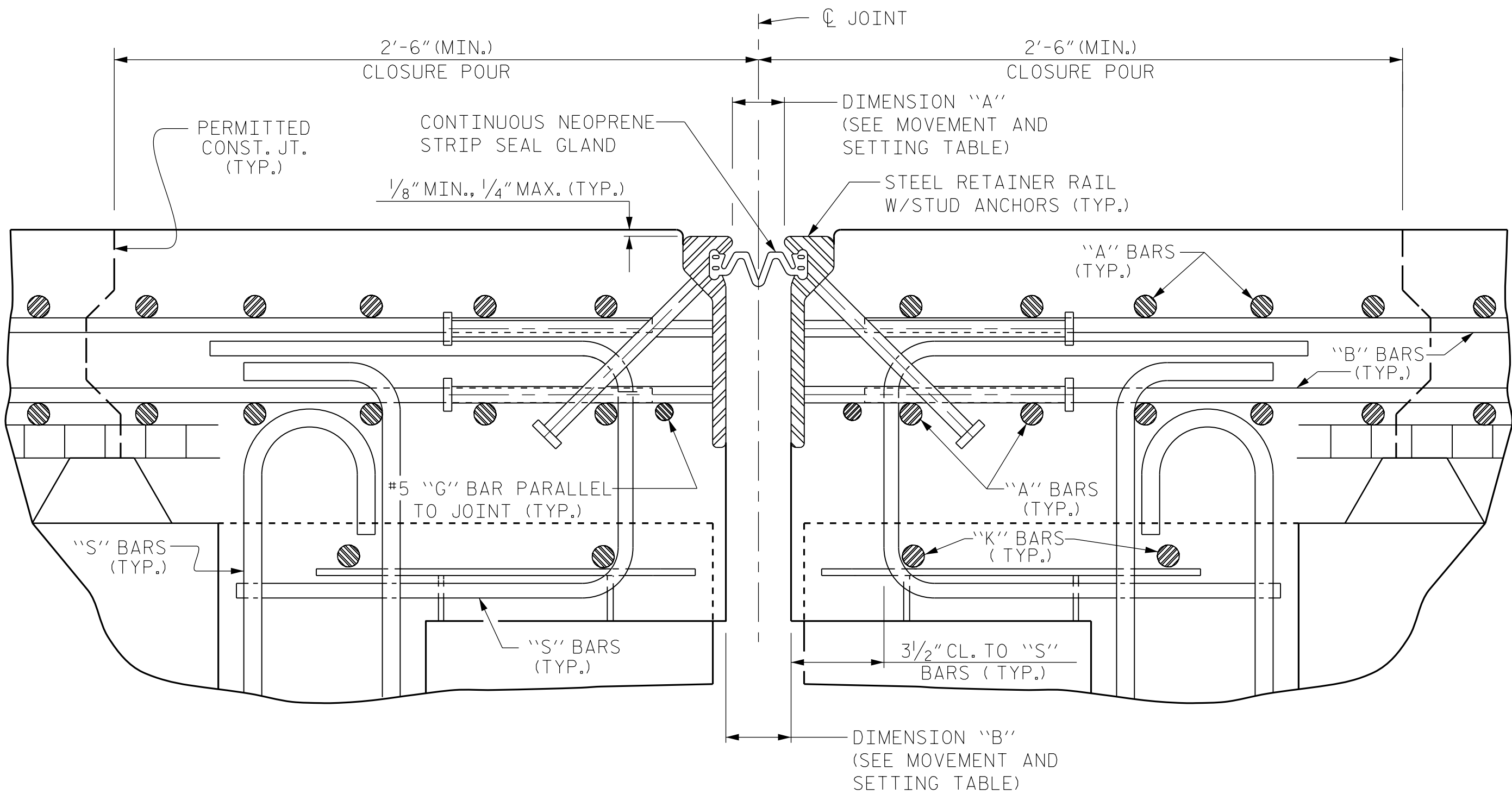
DRAWN BY : M. SPENCER DATE : 10/2023
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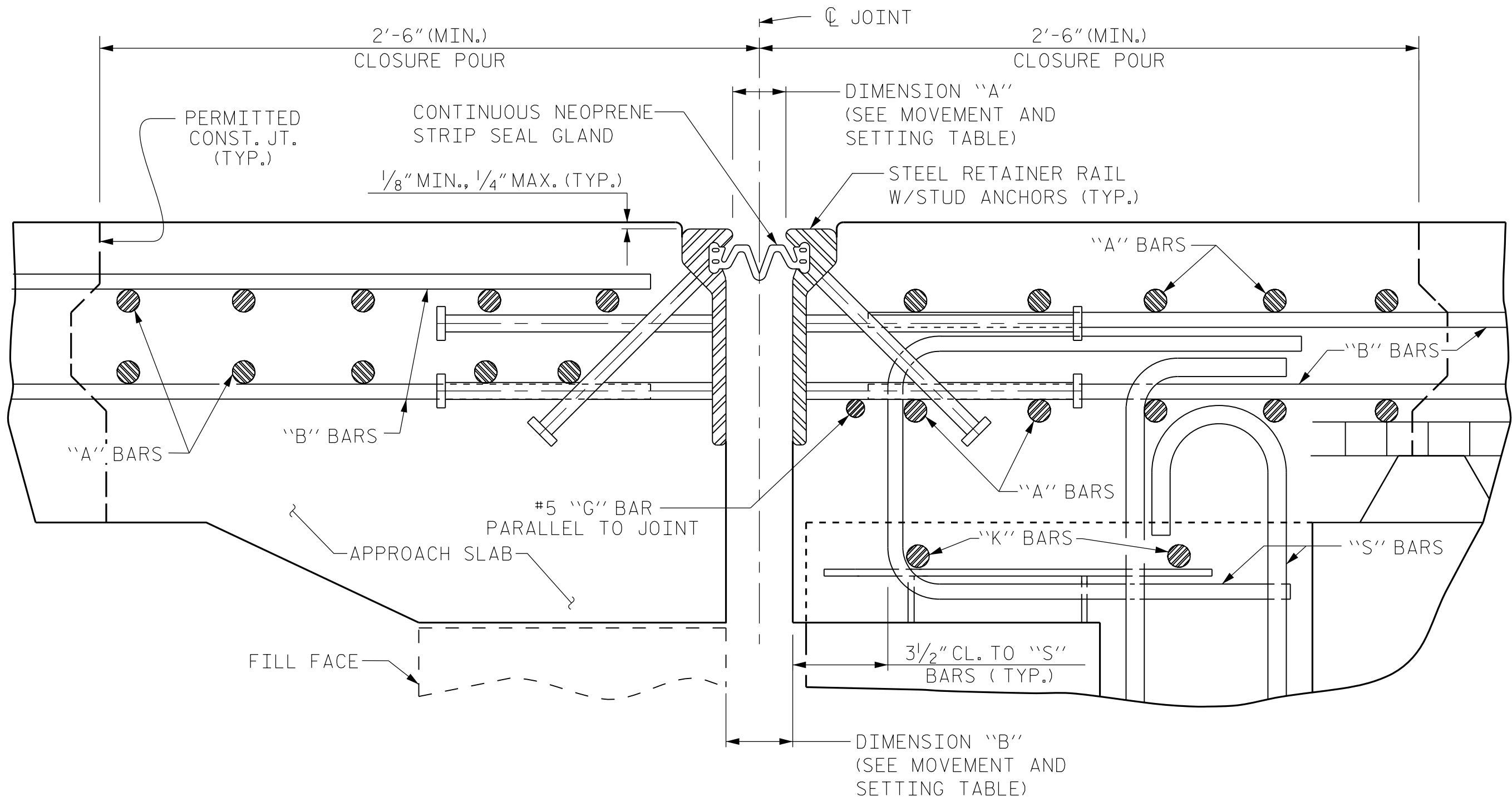
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2			4			61

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STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

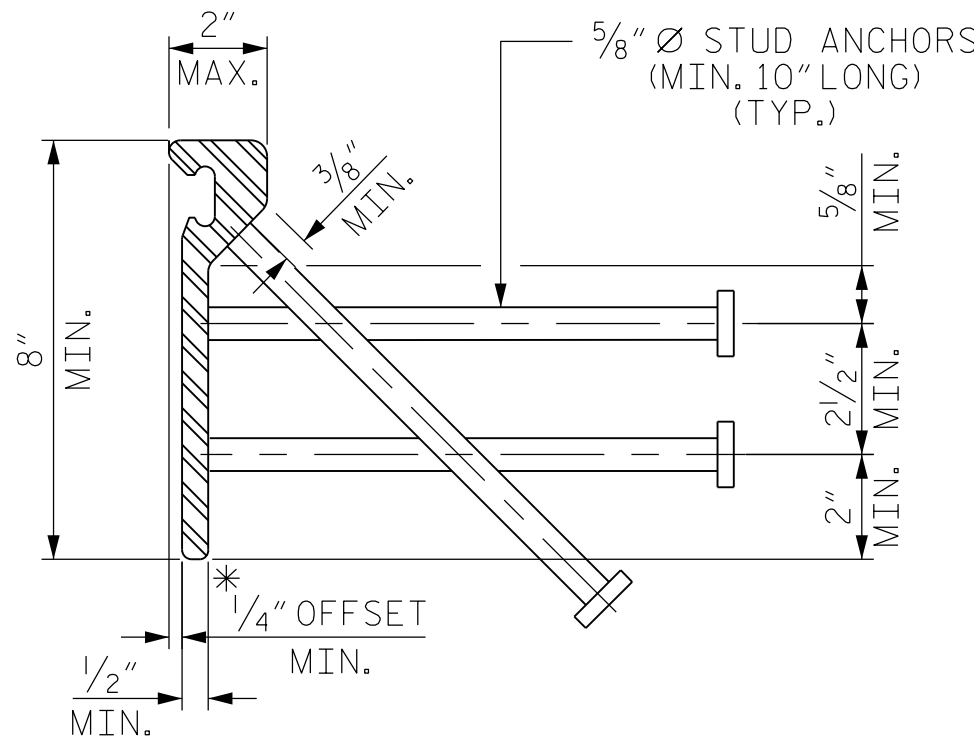


STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

JOINT INSTALLATION PROCEDURE:

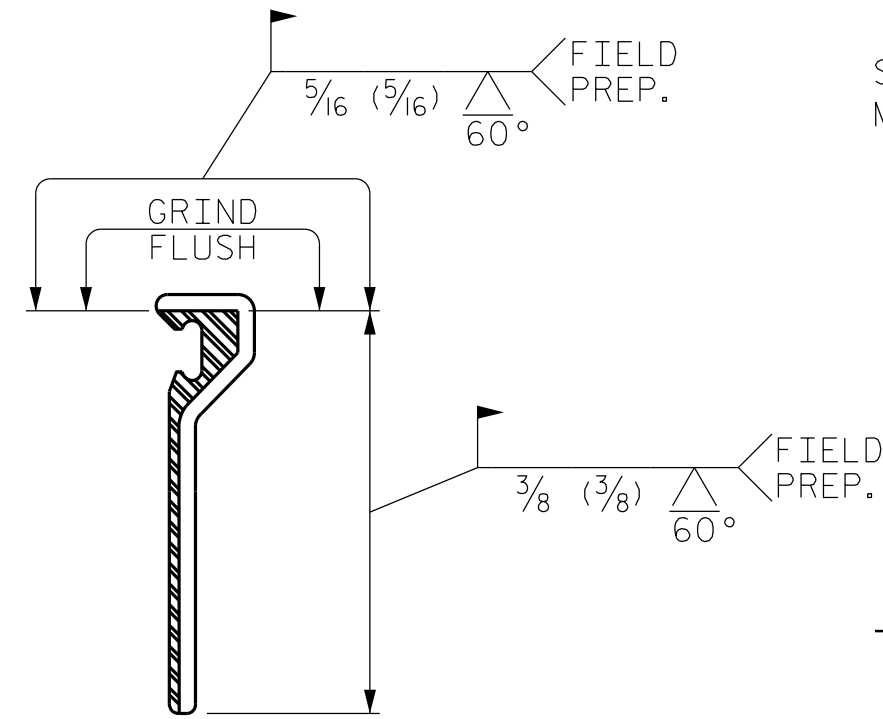
1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO 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.



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)



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.

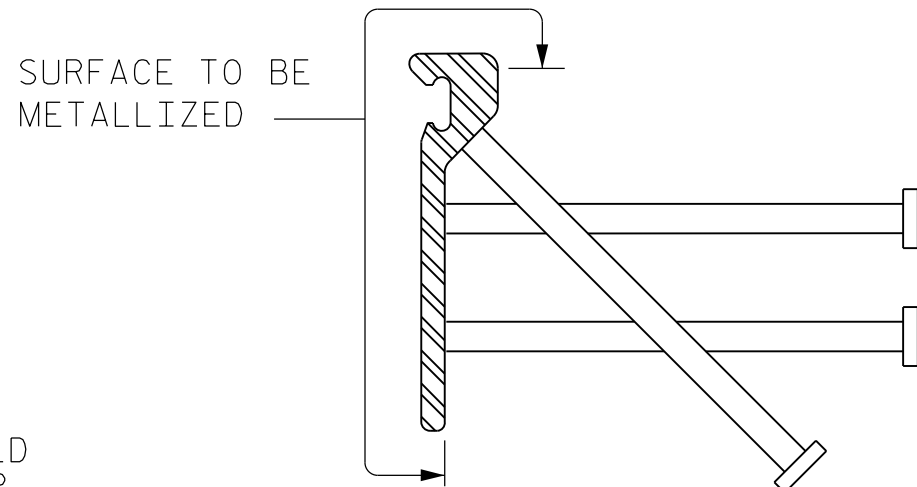
FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

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.



METALLIZING DETAIL

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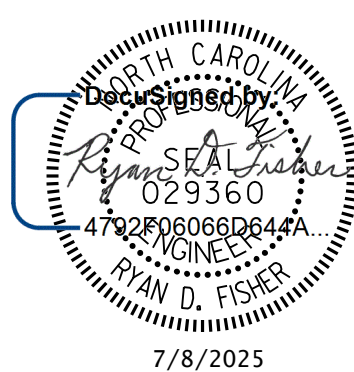
SHEET 1 OF 3

ASSEMBLED BY : M. SPENCER DATE : 10/2023
CHECKED BY : R. FISHER DATE : 10/2023
DESIGN ENGINEER OF RECORD : _____ DATE : _____
DRAWN BY : MAA DATE : 06/2020
CHECKED BY : BNB DATE : 06/2020

MOVEMENT AND SETTING AT JOINT								
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	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	90°-00'-00"	1 3/16"	2 3/16"	2"	1 1/16"	2 11/16"	2 1/2"	2 1/16"
BENT 3	90°-00'-00"	2 1/2"	2 3/4"	2 5/16"	1 1/16"	3 1/4"	2 13/16"	1 5/16"
BENT 6	90°-00'-00"	2 1/16"	2 1/2"	2 1/8"	1 3/8"	3"	2 5/8"	1 7/8"
END BENT 2	90°-00'-00"	1 3/16"	2 1/8"	2"	1 11/16"	2 5/8"	2 1/2"	2 3/16"

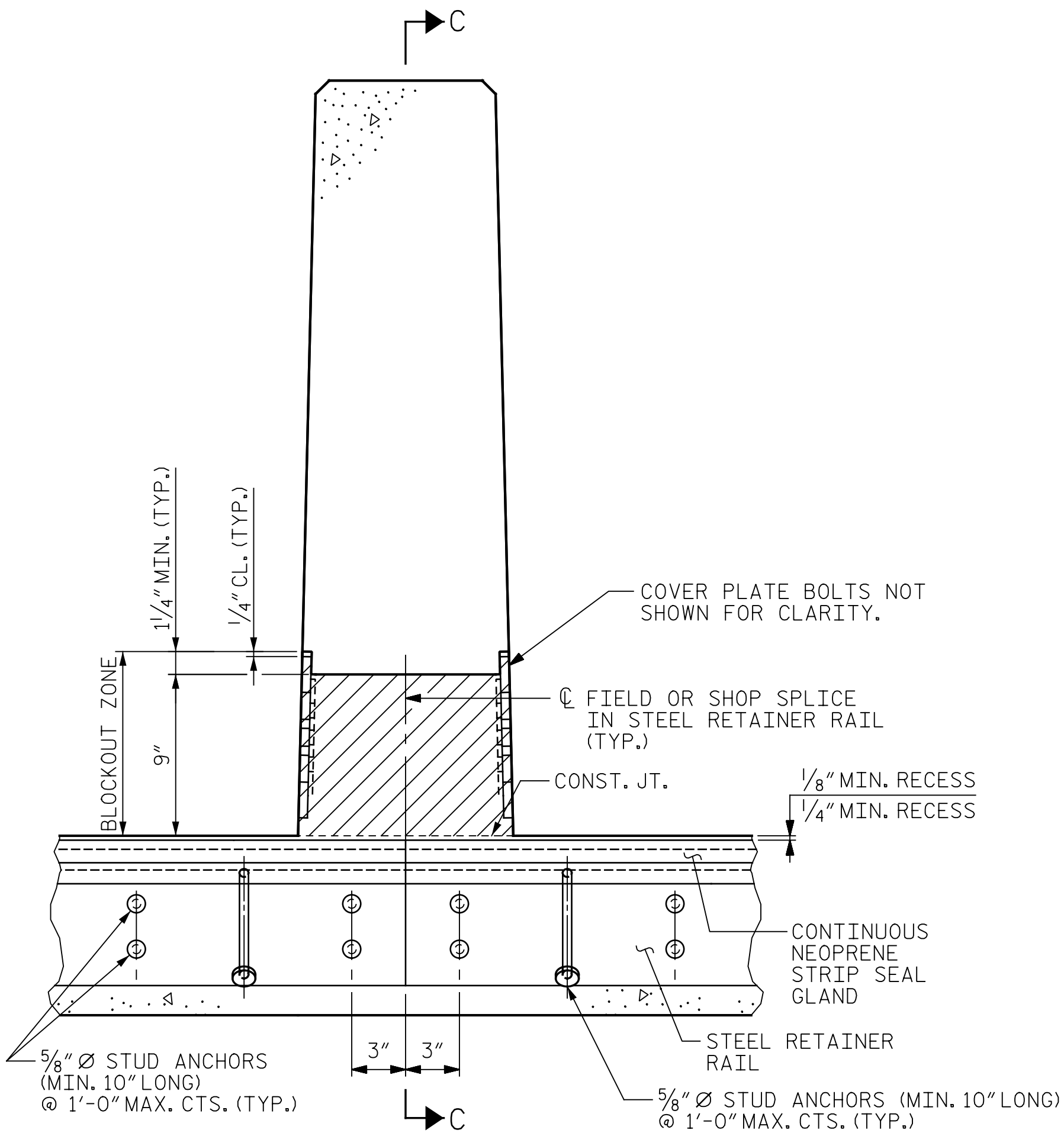
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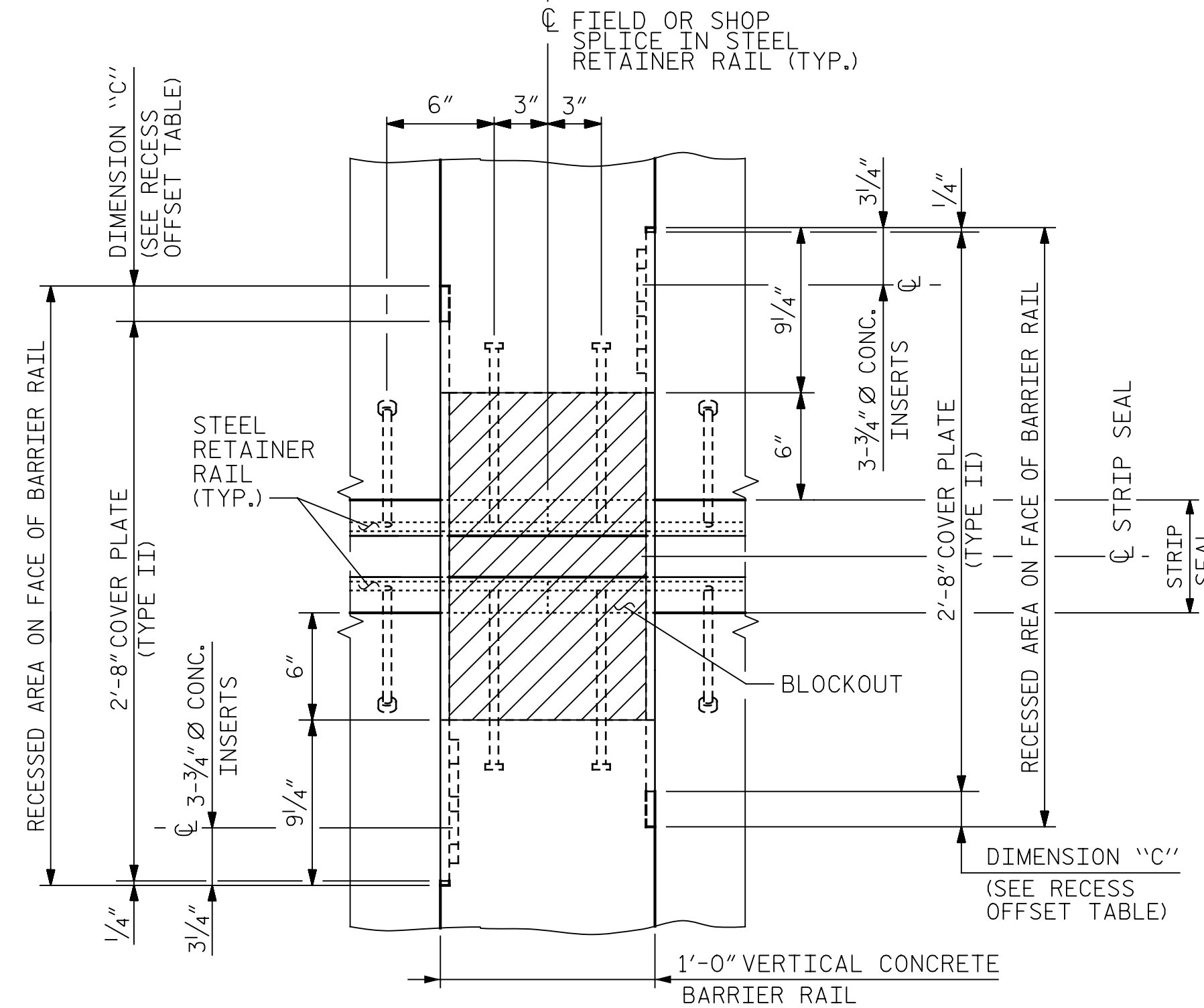
DEPARTMENT OF TRANSPORTATION RALEIGH								
STANDARD STRIP SEAL EXPANSION JOINT DETAILS								
REVISIONS								SHEET NO.
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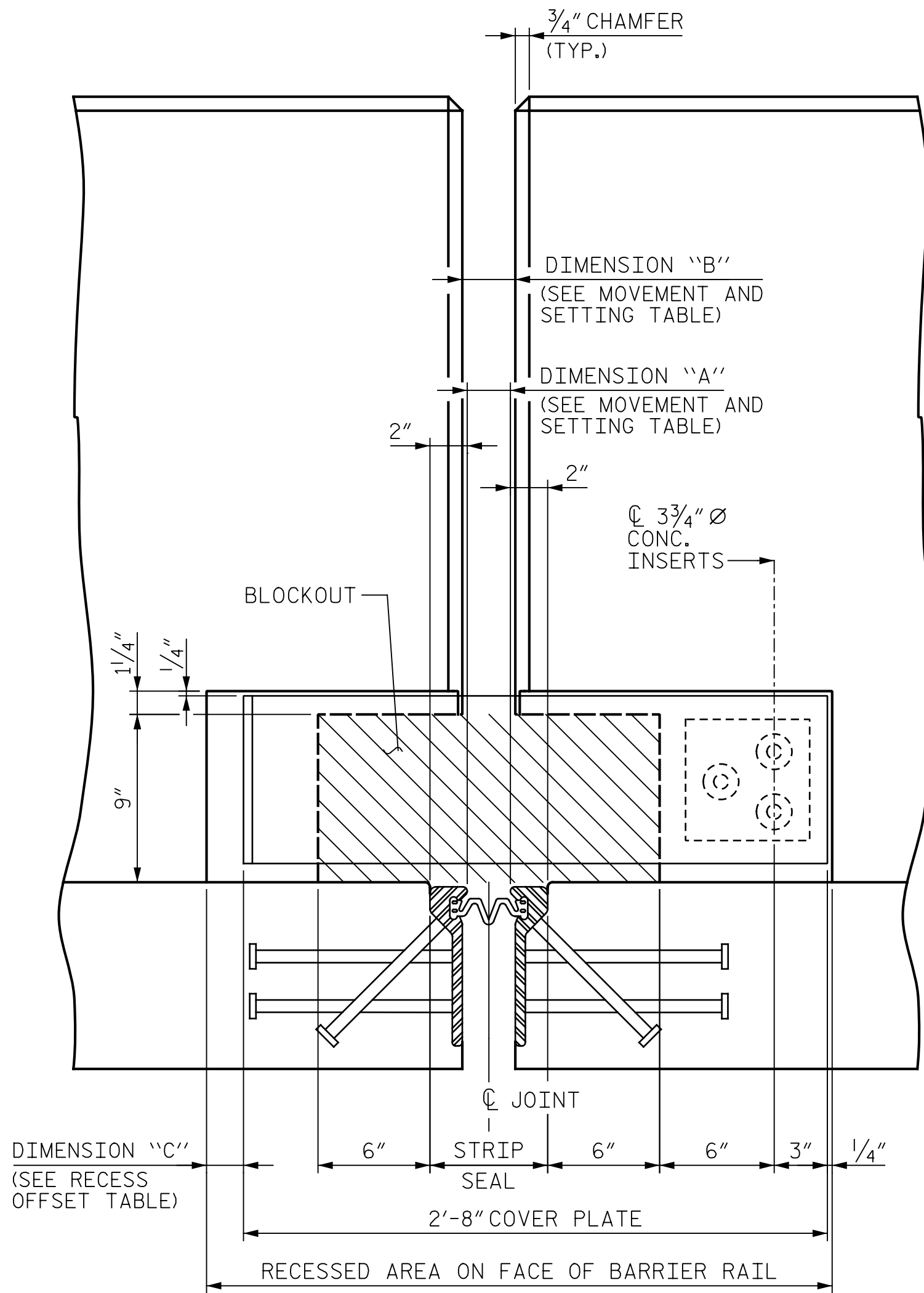
SECTION THRU RAIL NORMAL TO JOINT

NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "STRIP SEAL EXPANSION JOINTS".



PLAN OF STRIP SEAL EXPANSION JOINT

DRAWN BY : M. SPENCER DATE : 10/2023
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DESIGN ENGINEER OF RECORD: DATE :

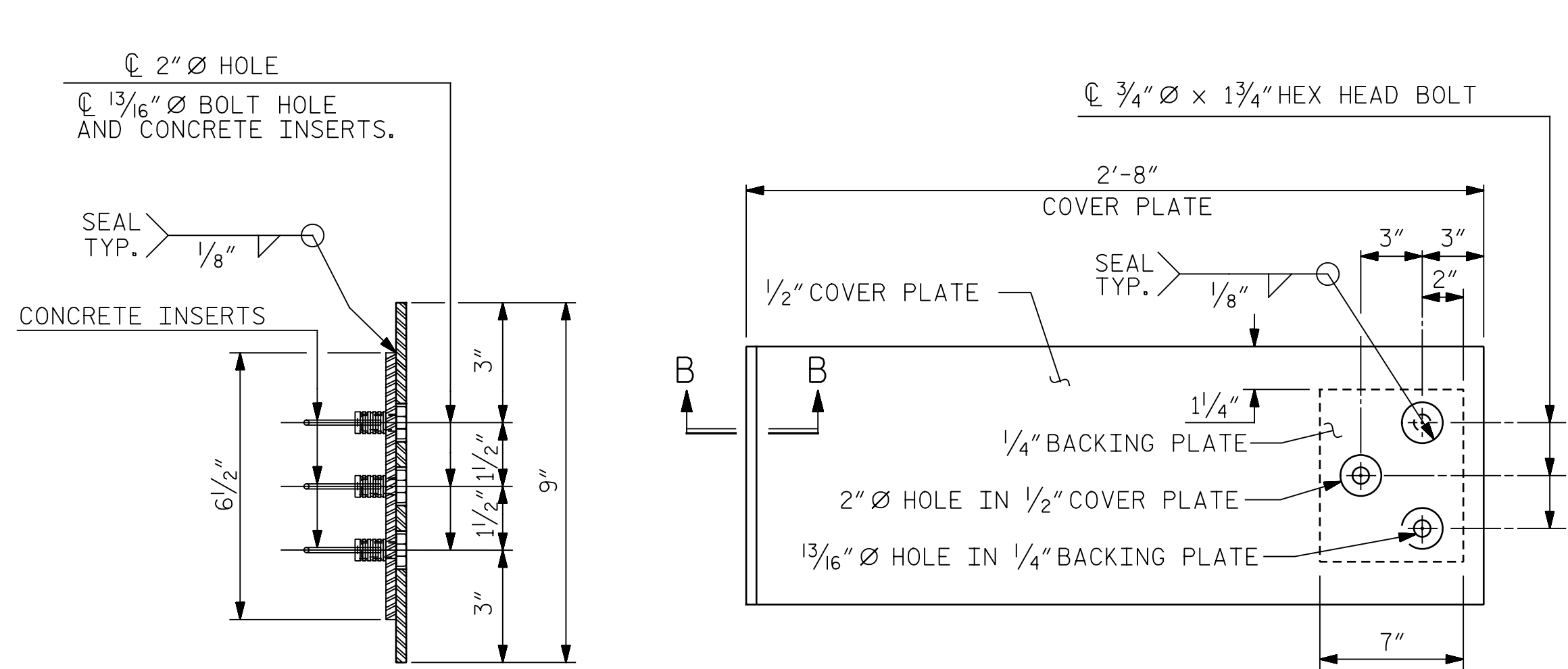


FLOW OF TRAFFIC

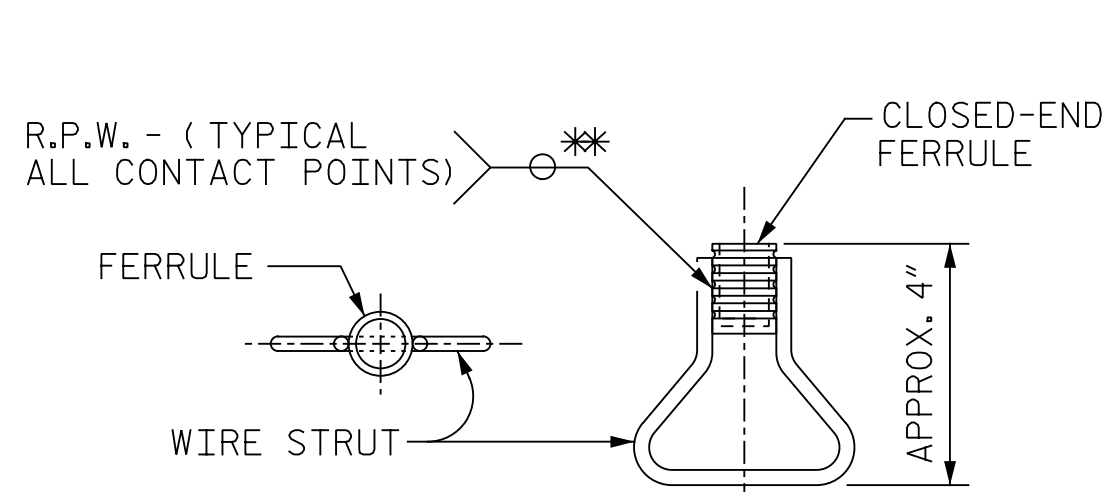
SECTION C-C

MOVEMENT AND SETTING AT JOINT						
LOCATION	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	2 3/16"	2"	1 9/16"	2 11/16"	2 1/2"	2 1/16"
BENT 3	2 3/4"	2 5/16"	1 7/16"	3 1/4"	2 13/16"	1 5/16"
BENT 6	2 1/2"	2 1/8"	1 3/8"	3"	2 5/8"	1 7/8"
END BENT 2	2 1/8"	2"	1 11/16"	2 5/8"	2 1/2"	2 3/16"

RECESS OFFSET			
LOCATION	DIMENSION "C"		
	RECESS OFFSET FROM COVERPLATE AT 45° F	RECESS OFFSET FROM COVERPLATE AT 60° F	RECESS OFFSET FROM COVERPLATE AT 90° F
END BENT 1	2 3/16"	2"	1 9/16"
BENT 3	2 3/4"	2 5/16"	1 7/16"
BENT 6	2 1/2"	2 1/8"	1 3/8"
END BENT 2	2 1/8"	2"	1 11/16"

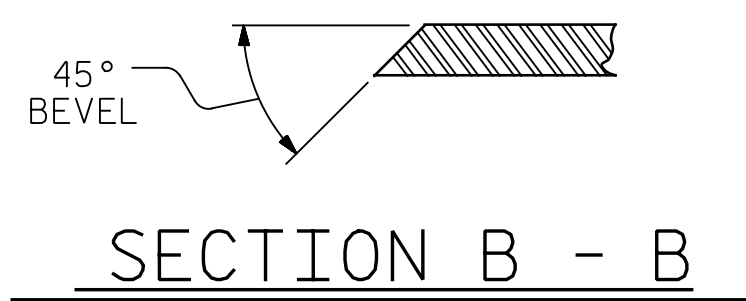


COVER PLATE DETAILS



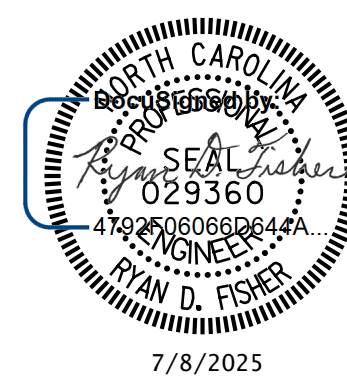
CONCRETE INSERT

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



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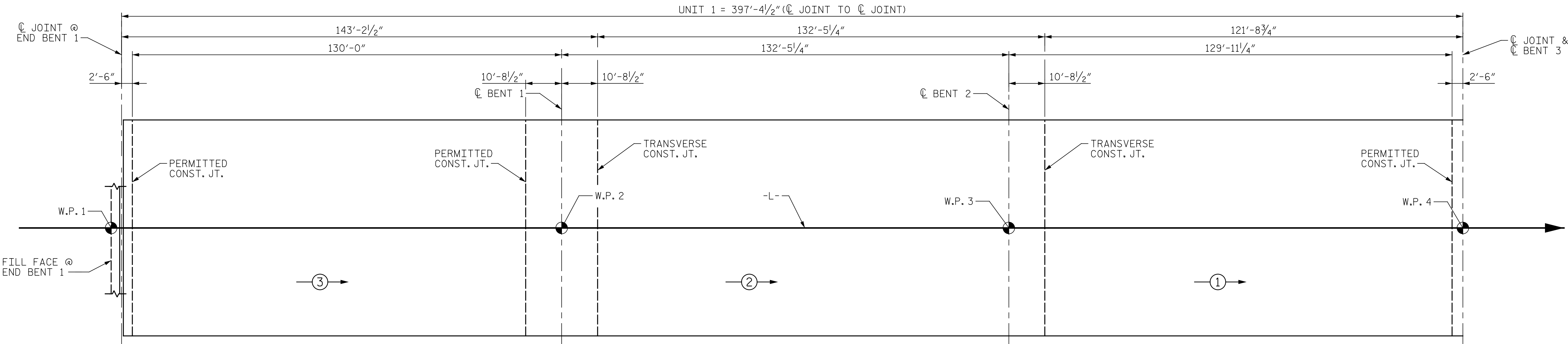
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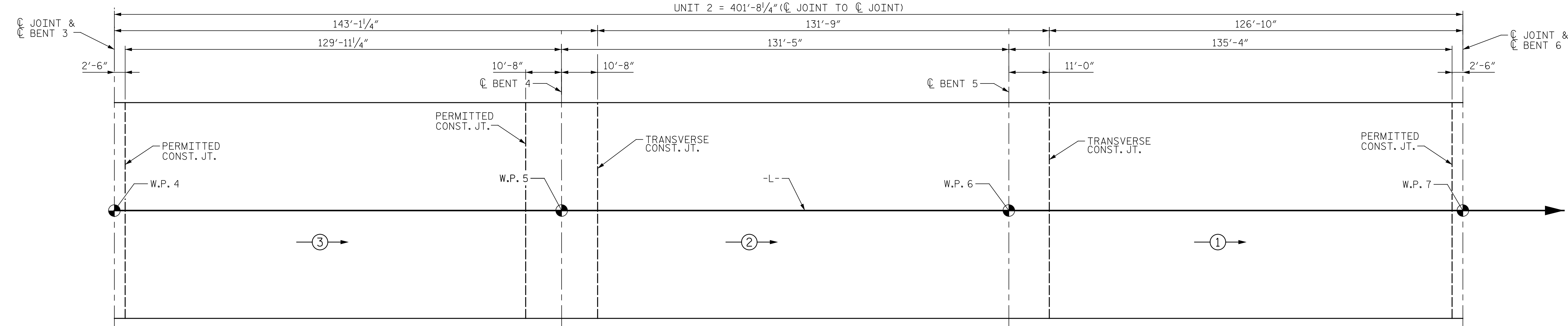
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DEPARTMENT OF TRANSPORTATION RALEIGH					
STRIP SEAL EXPANSION JOINT DETAILS FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
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2			4		
SHEET NO.					S-42
TOTAL SHEETS					61

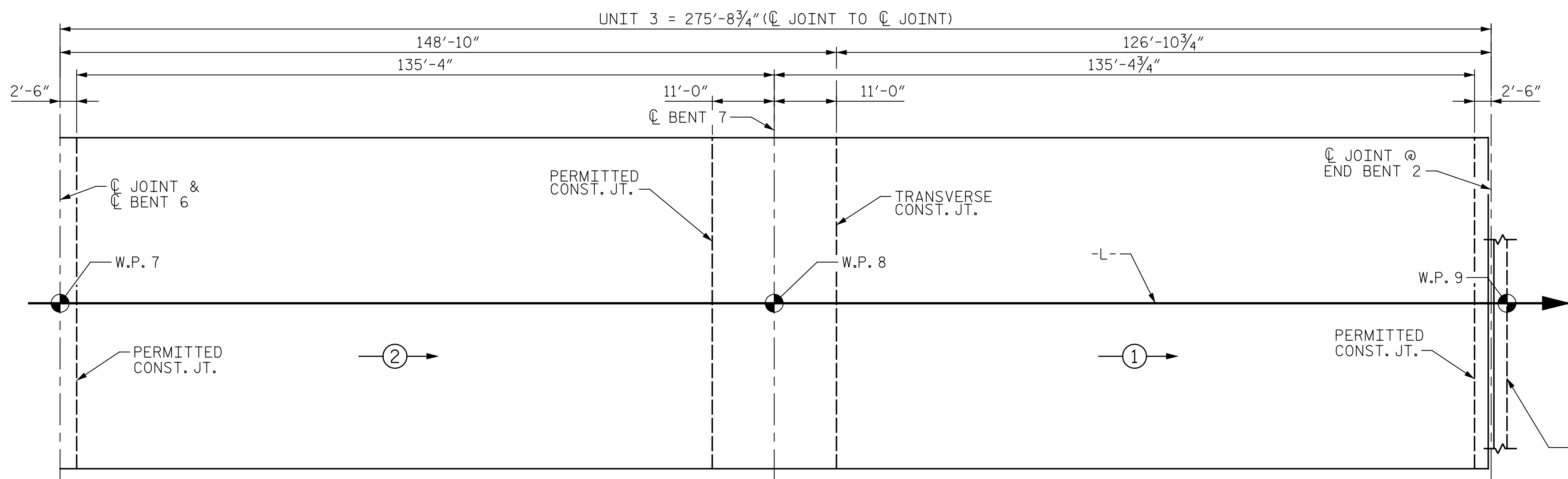
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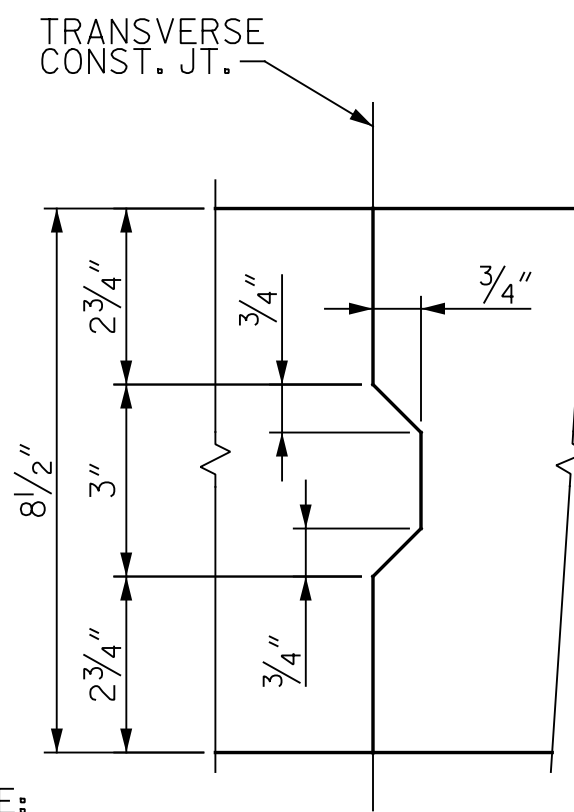
POURING SEQUENCE - UNIT 1



POURING SEQUENCE - UNIT 2



POURING SEQUENCE - UNIT 3



NOTE:

REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL AND TRANSVERSE REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT.

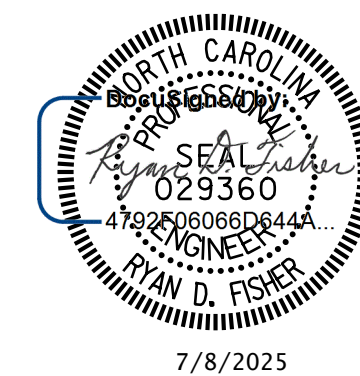
TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

NOTES:

ADJACENT POURS SHALL NOT BE CAST UNTIL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

⊕ → = INDICATES POUR NUMBER AND DIRECTION OF POUR

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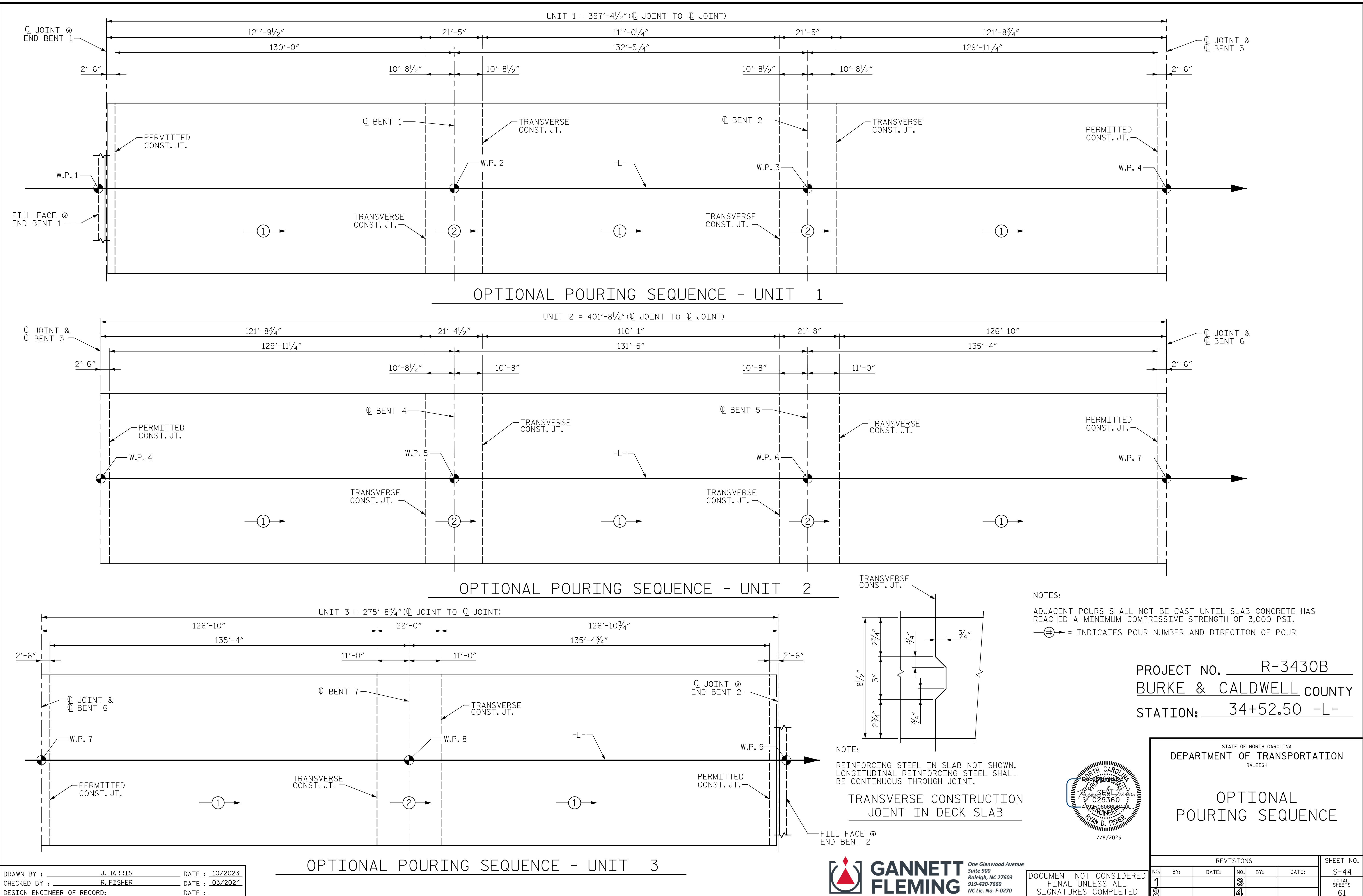
DRAWN BY : J. HARRIS DATE : 10/2023
CHECKED BY : R. FISHER DATE : 03/2024
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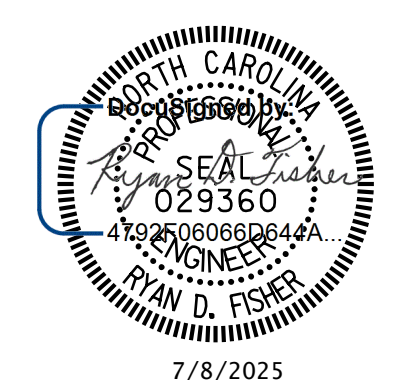
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NOTES:
ADJACENT POURS SHALL NOT BE CAST UNTIL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
⊕➡ = INDICATES POUR NUMBER AND DIRECTION OF POUR

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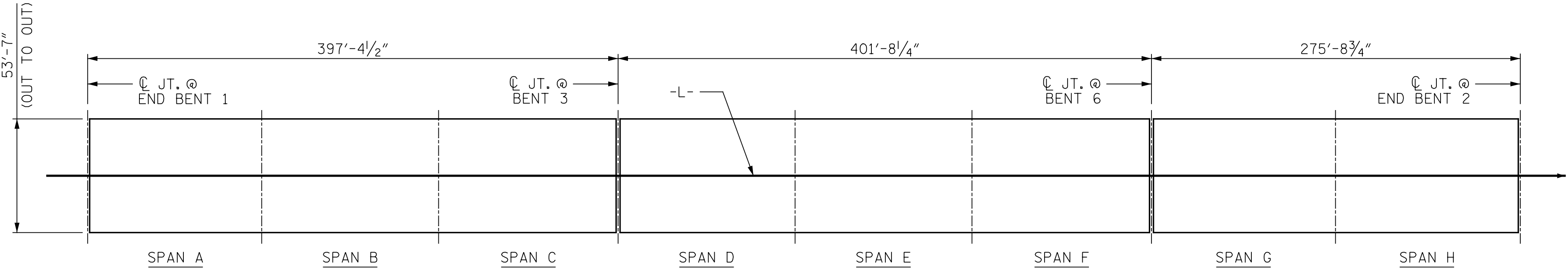
GROOVING BRIDGE FLOORS		
APPROACH SLABS	2,190	SQ. FT.
BRIDGE DECK	47,256	SQ. FT.
TOTAL	49,446	SQ. FT.

DECK POUR CONCRETE QUANTITIES			
	UNIT 1	UNIT 2	UNIT 3
	CU. YARDS	CU. YARDS	CU. YARDS
POUR 1	230.6	240.3	240.4
POUR 2	250.9	249.6	282.0
POUR 3	271.3	271.1	-
TOTALS	752.8	761.0	522.4

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	CU. YARDS	LBS.	LBS.
UNIT 1	752.8	58,652	69,967
UNIT 2	761.0	59,250	70,516
UNIT 3	522.4	39,722	45,892
TOTALS **	2,036.2	157,624	186,375

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 57,591)

DRAWN BY :	J. HARRIS	DATE :	10/2023
CHECKED BY :	R. FISHER	DATE :	03/2024
DESIGN ENGINEER OF RECORD:		DATE :	



**GANNETT
FLEMING**

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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6'-2"

THIS LEG
OVER
GIRDER

2'-3"

5'-1"

1

4'-1"

2'-3"

5'-1"

5'-1"

2

7"

2'-2"

8"

2'-3"

8"

3

5 1/2"

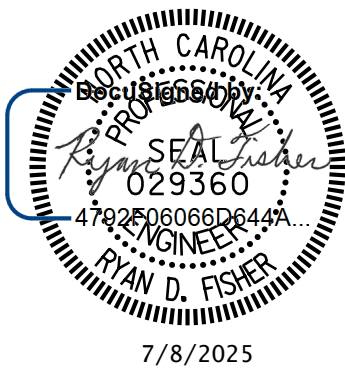
10"

8"

4

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-



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		
					S-45
					TOTAL SHEETS 61

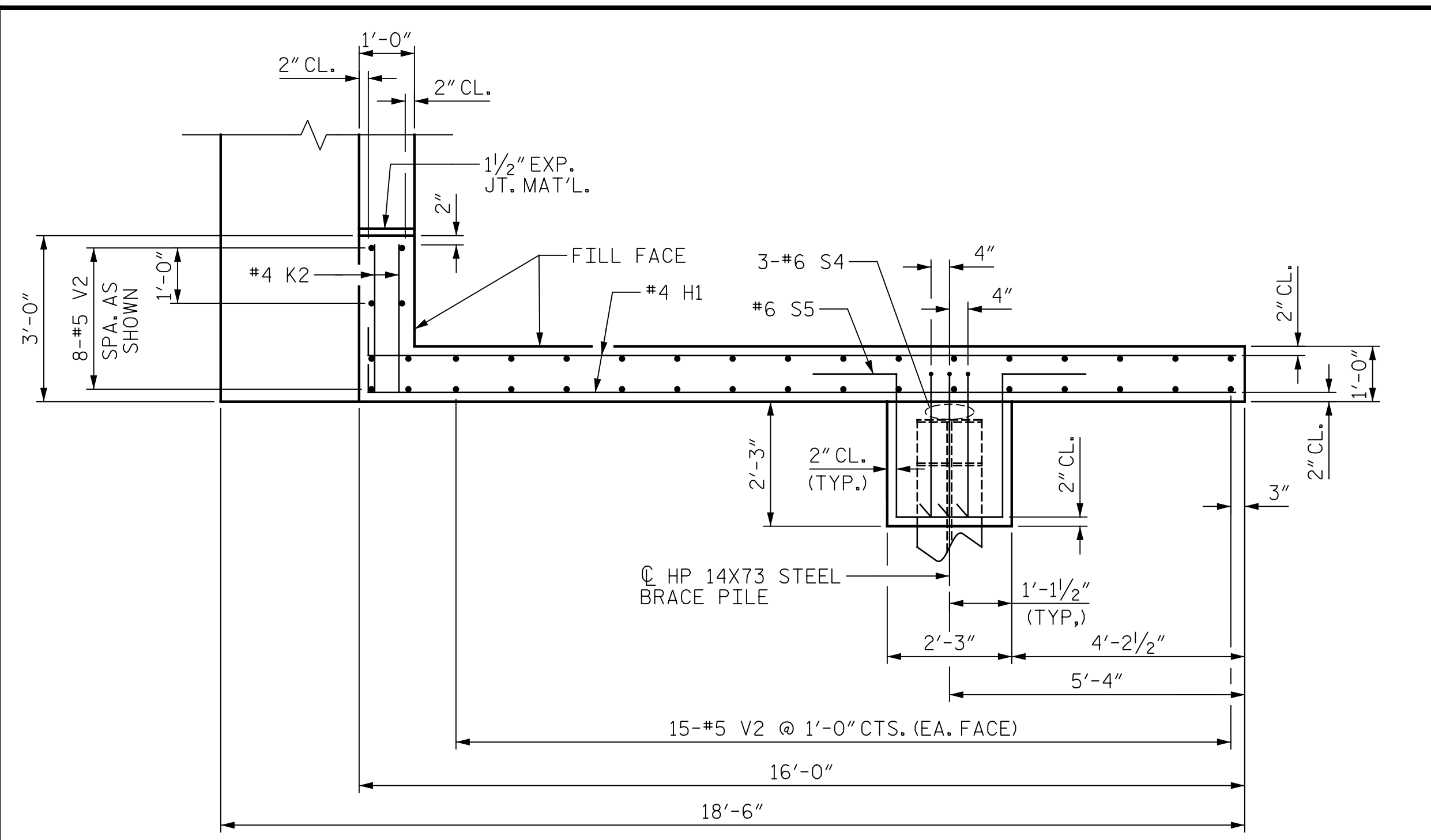


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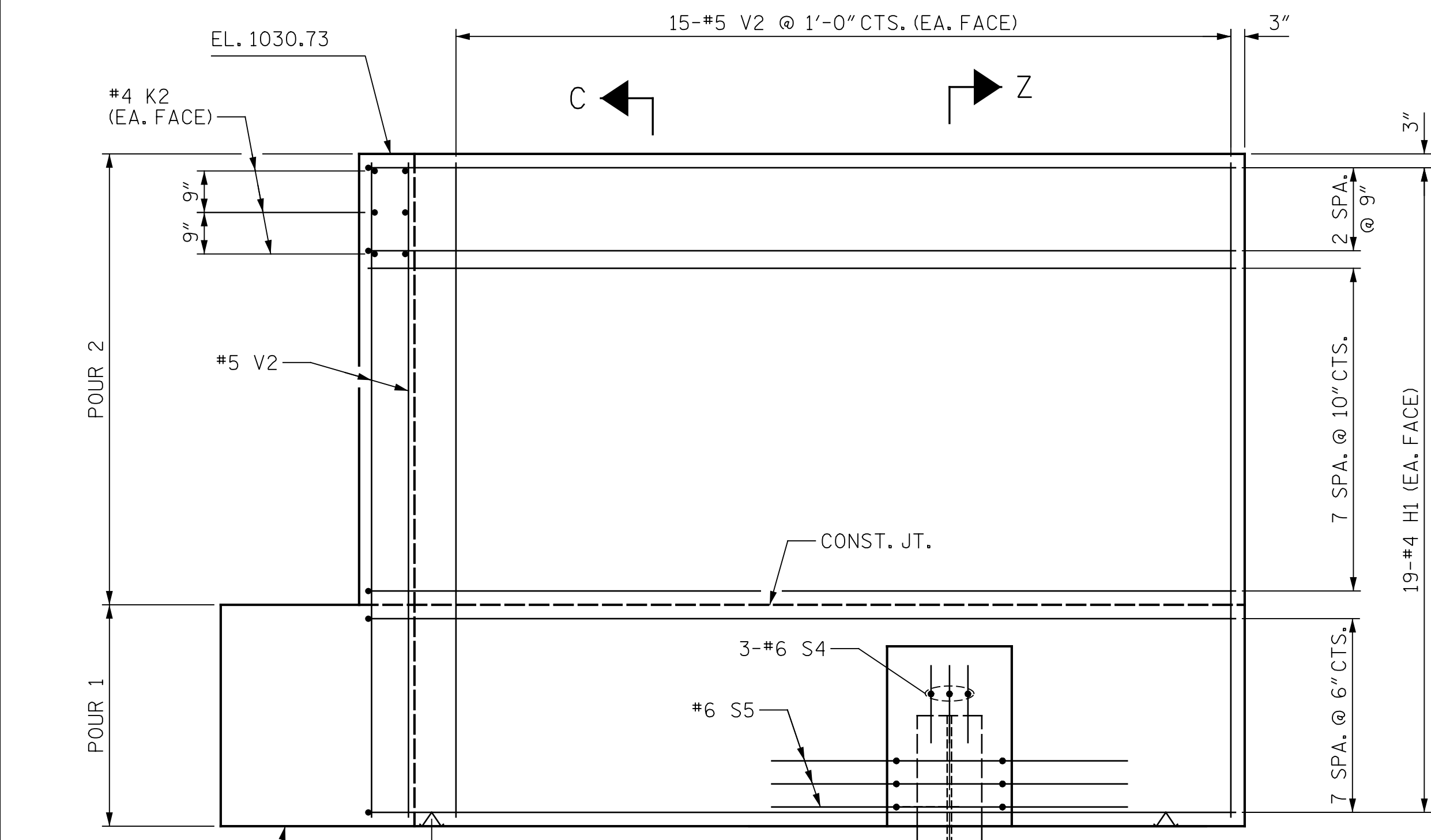
DETAIL A

SHEETS
C1

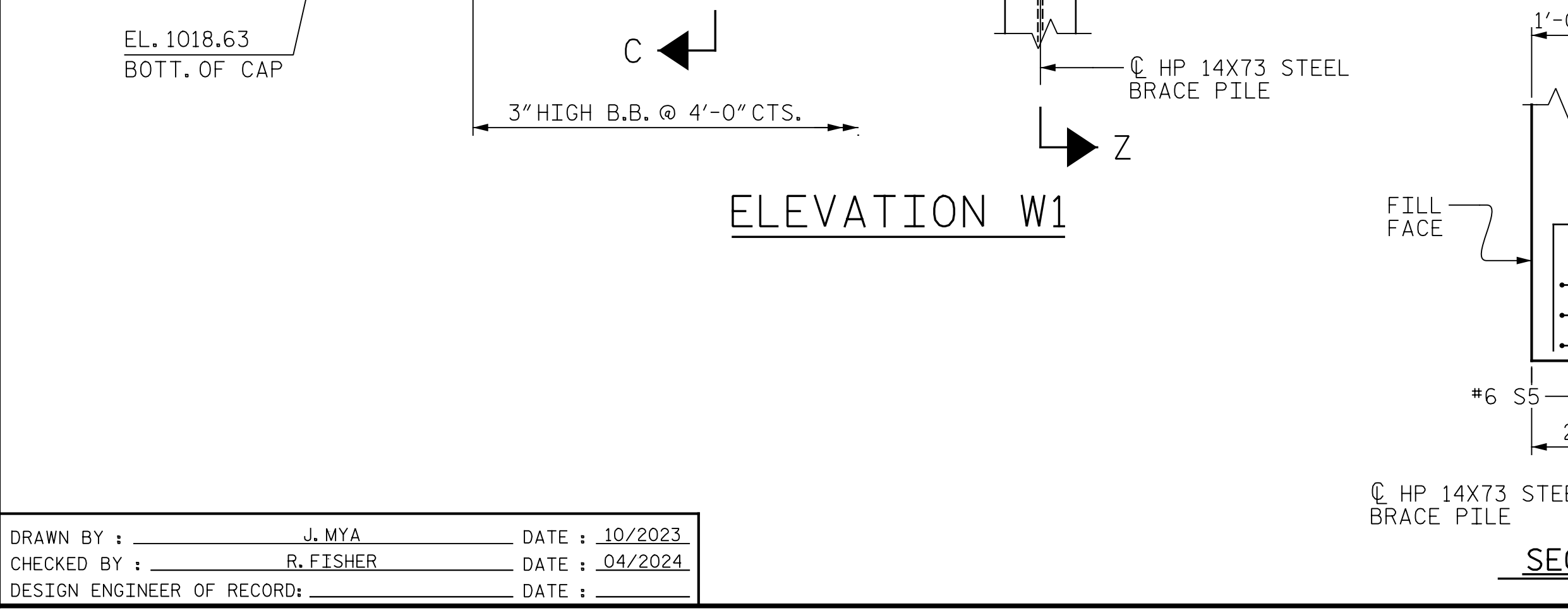
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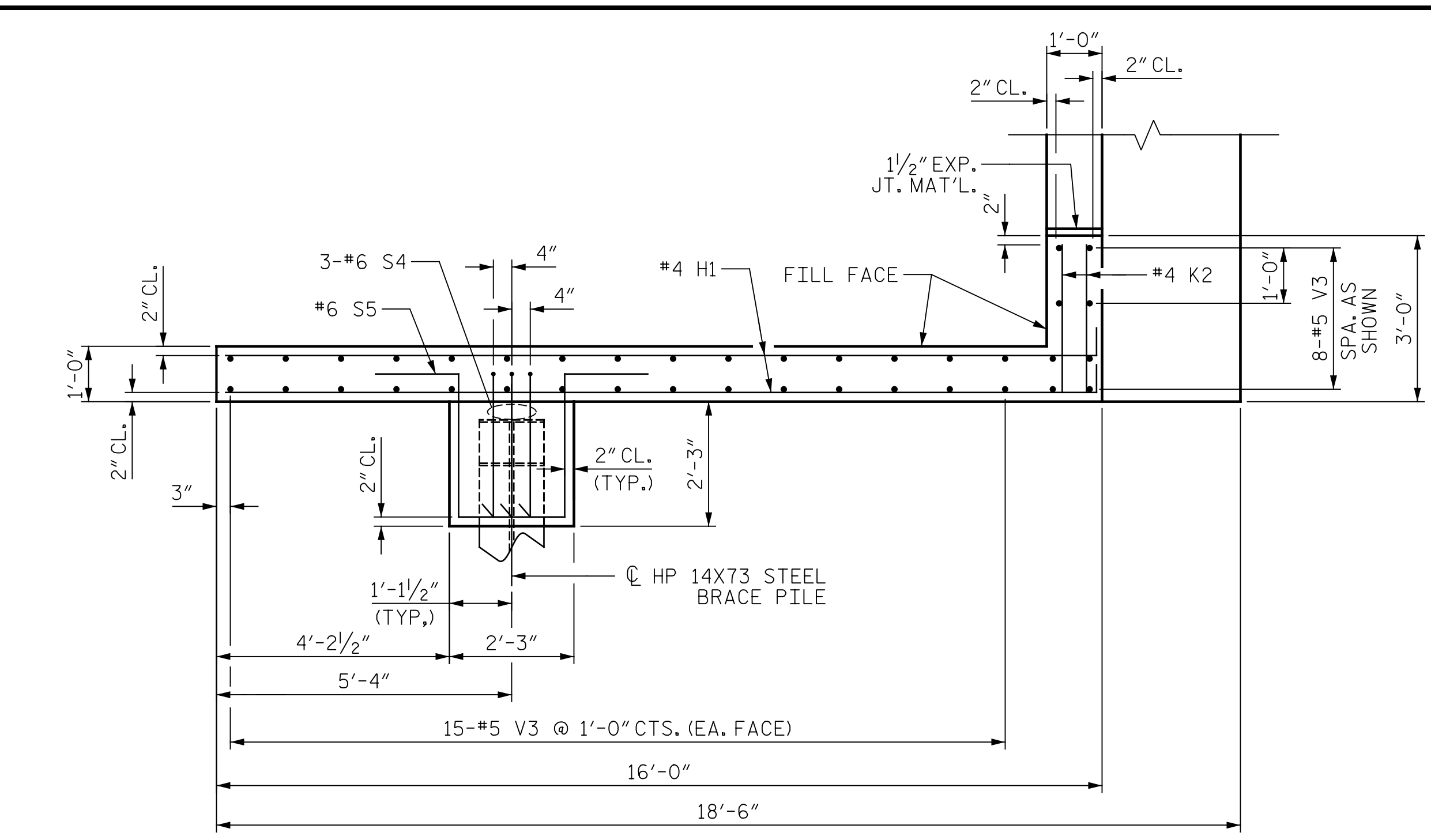
PLAN W1



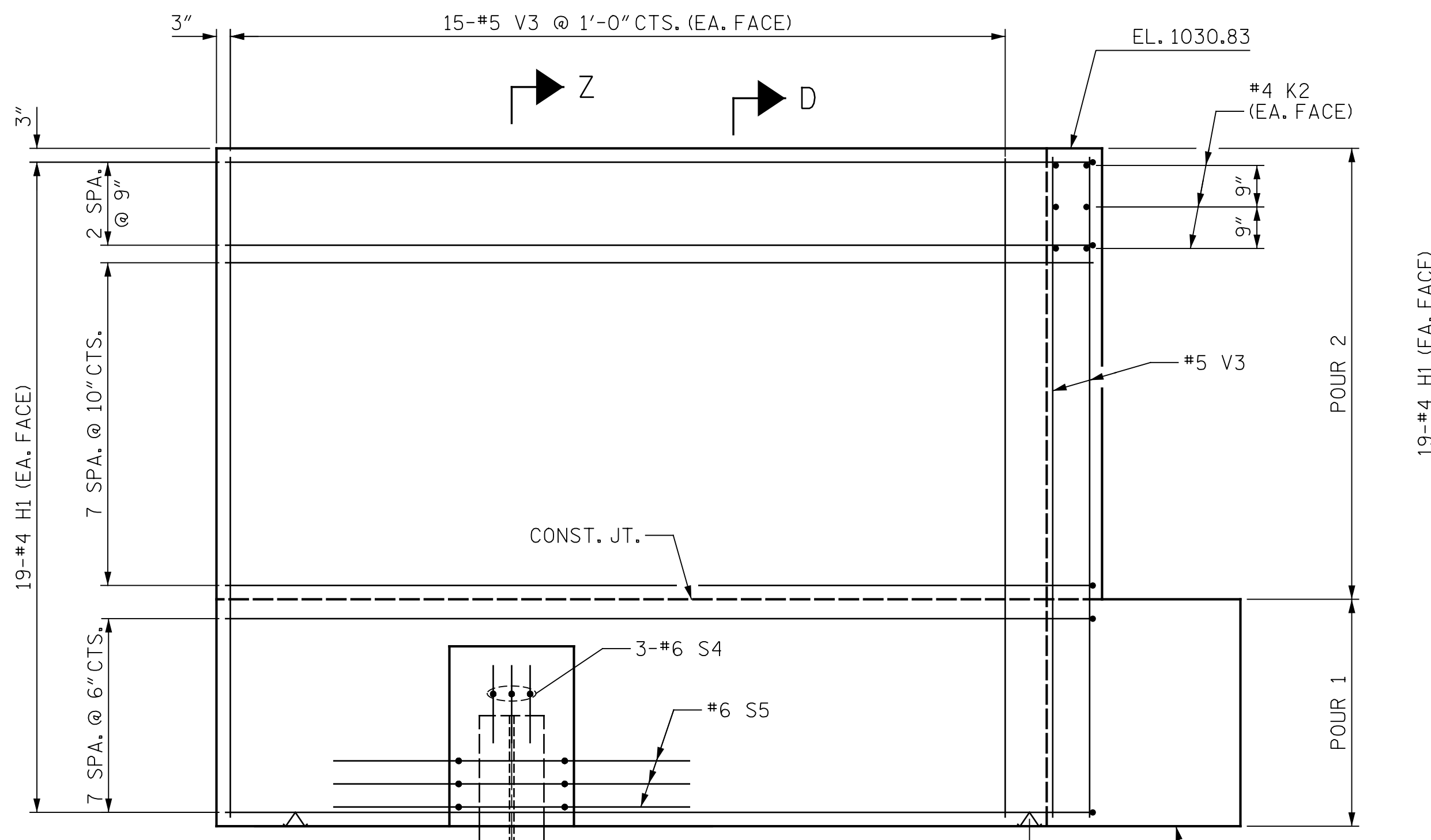
ELEVATION W1



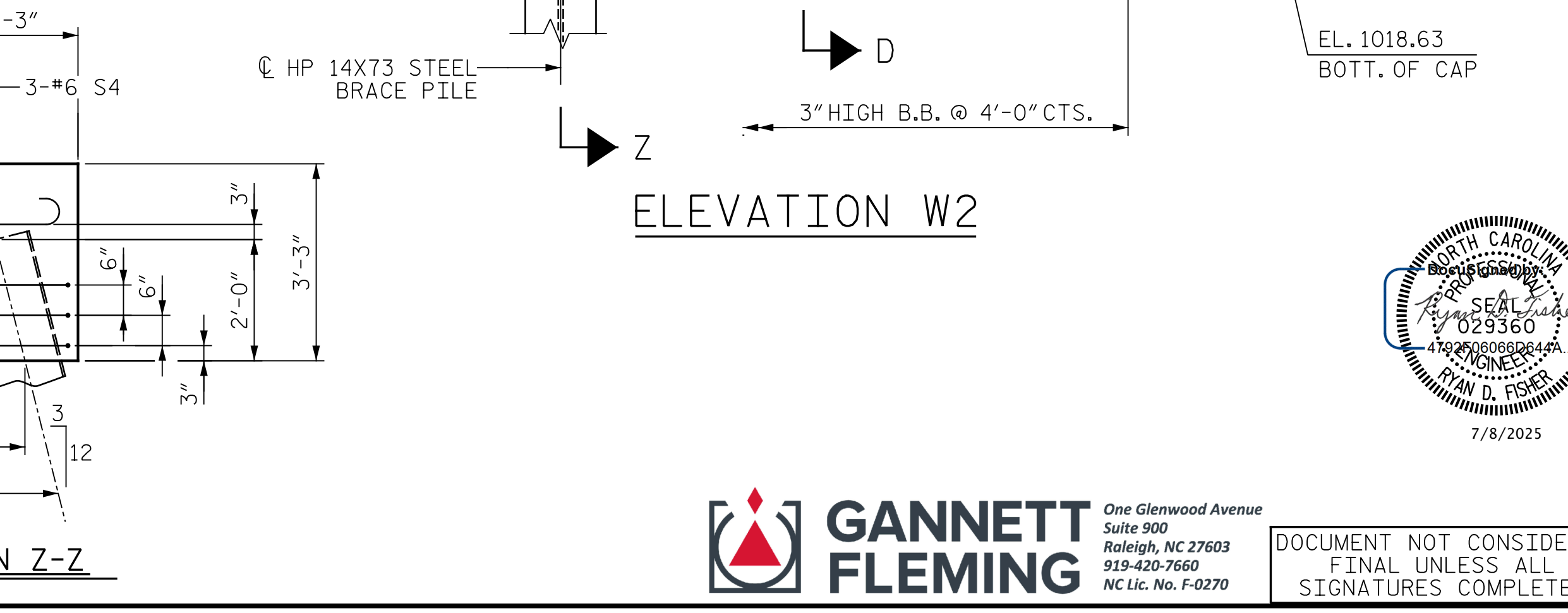
SECTION Z-Z



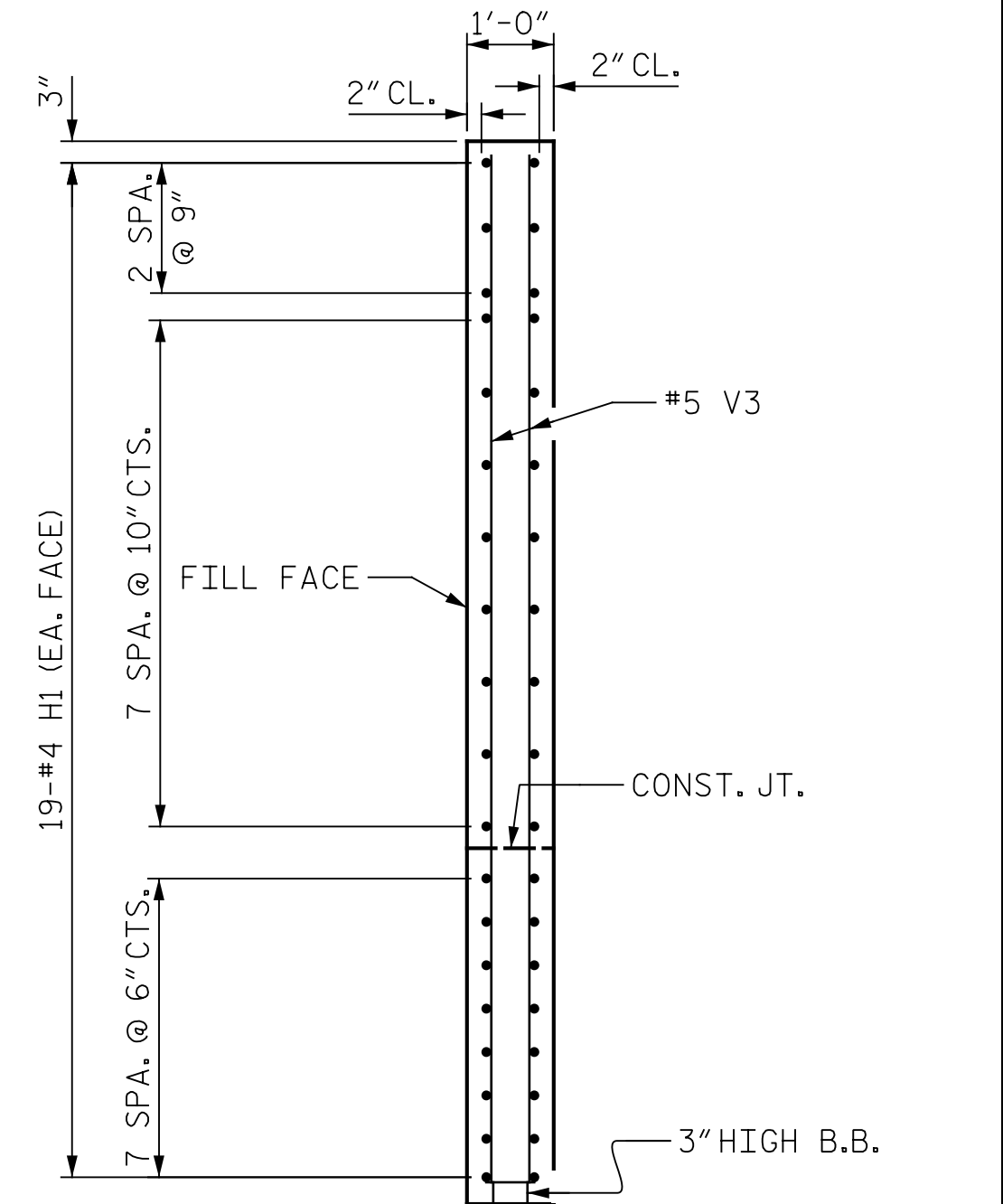
PLAN W2



ELEVATION W2



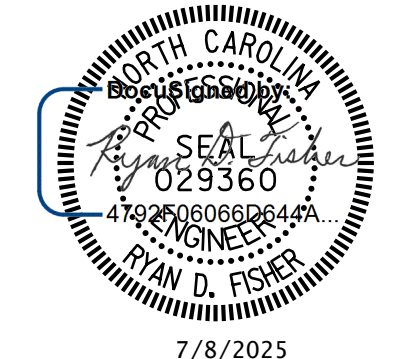
SECTION C-C



SECTION D-D

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
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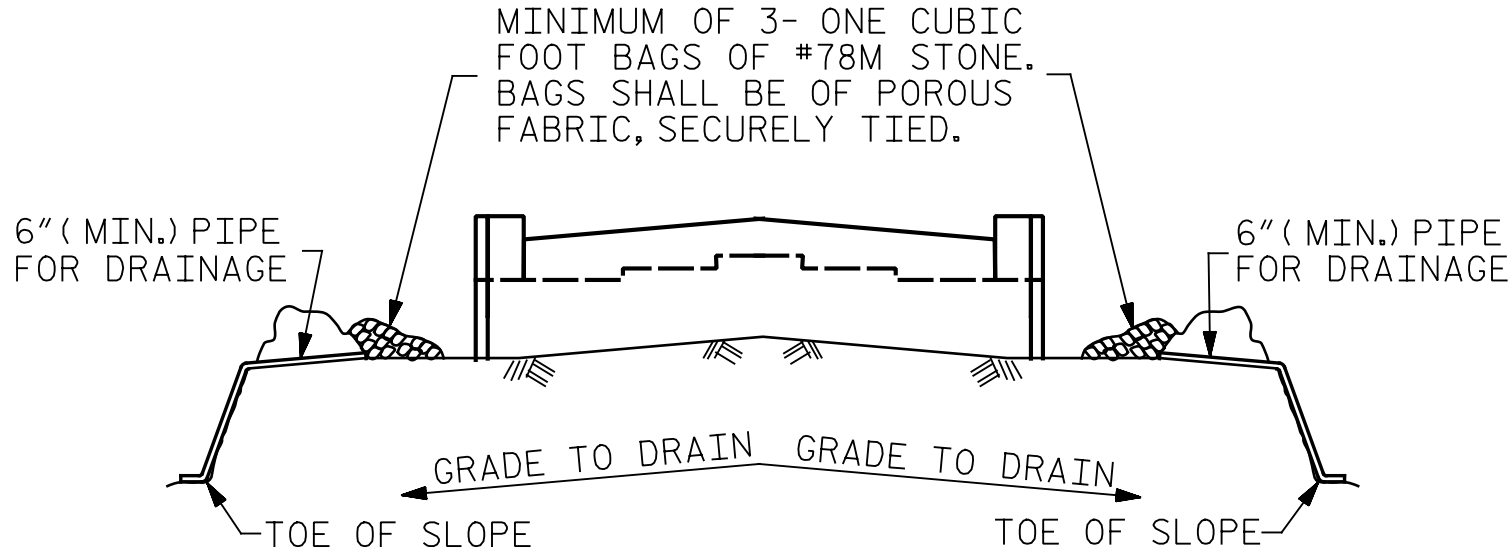
SHEET 2 OF 3



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2			4			TOTAL SHEETS 61

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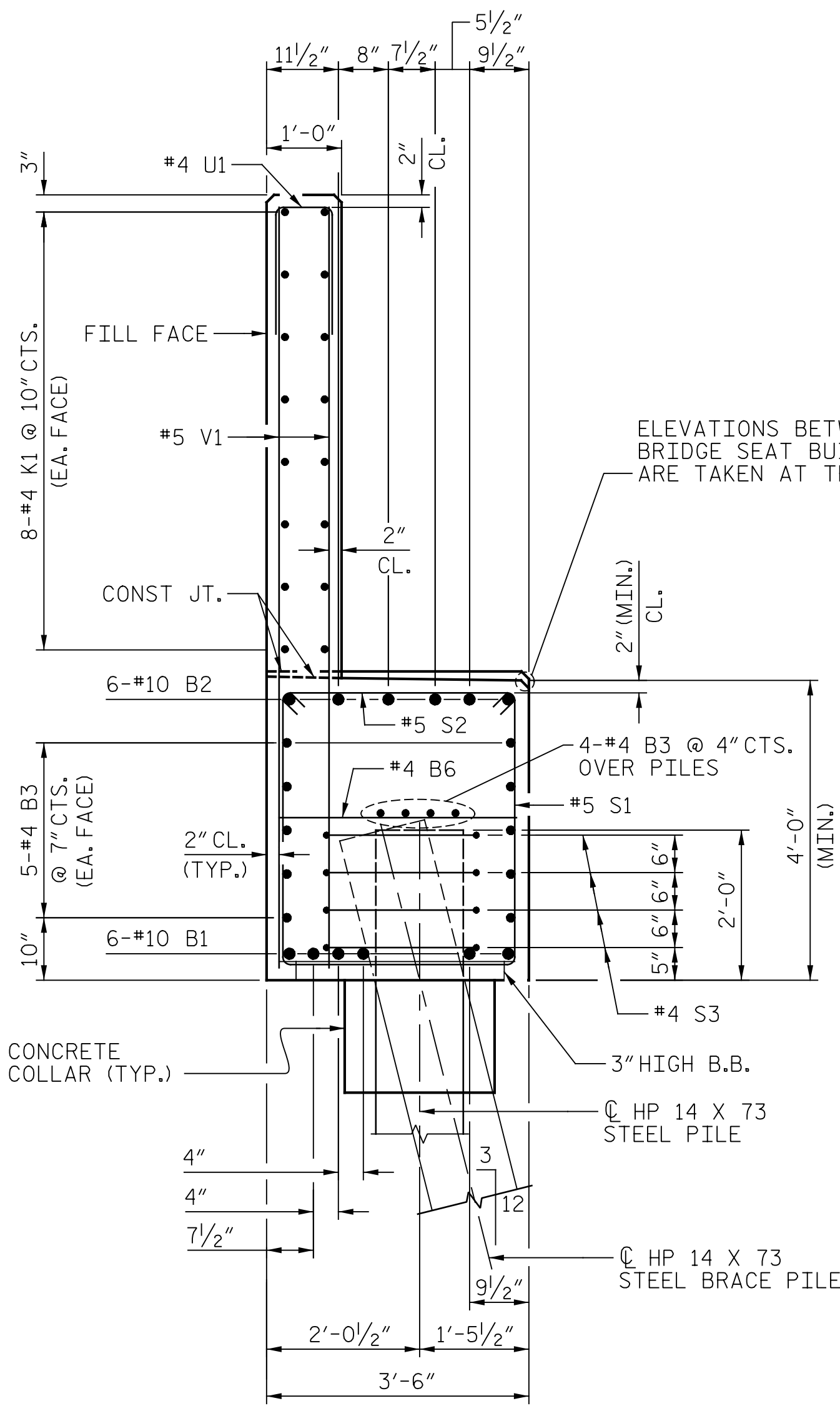


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

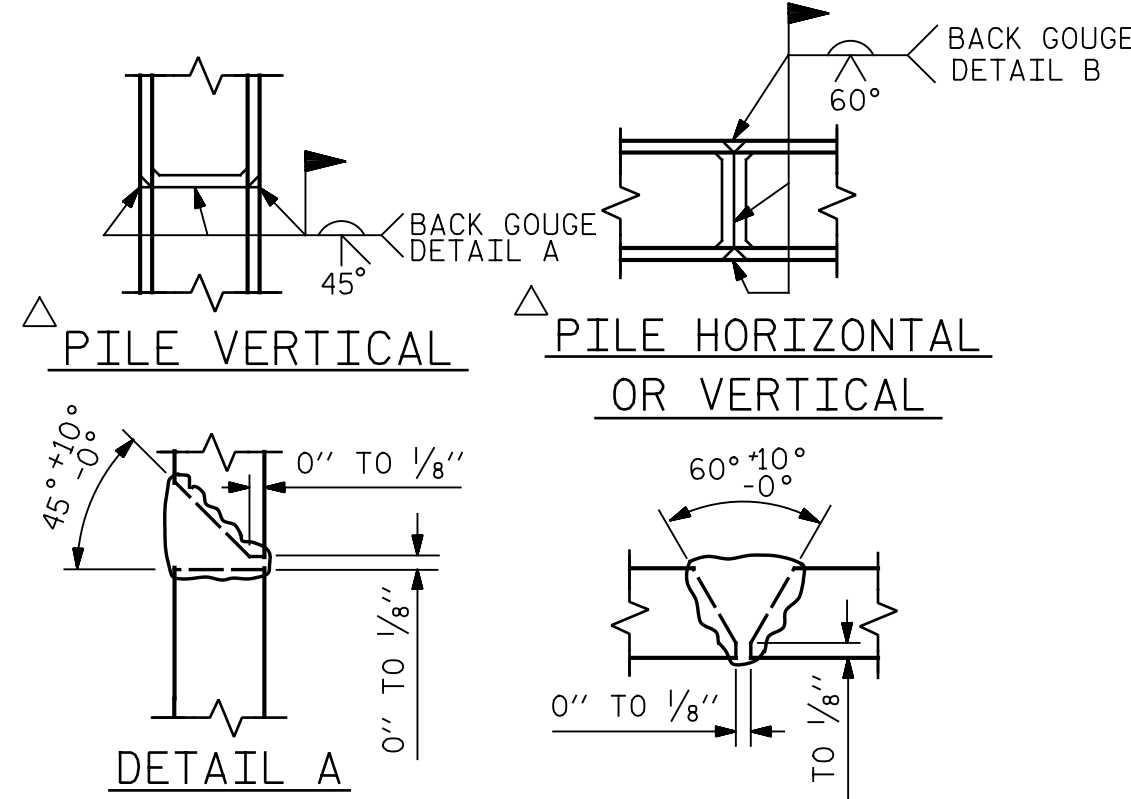
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

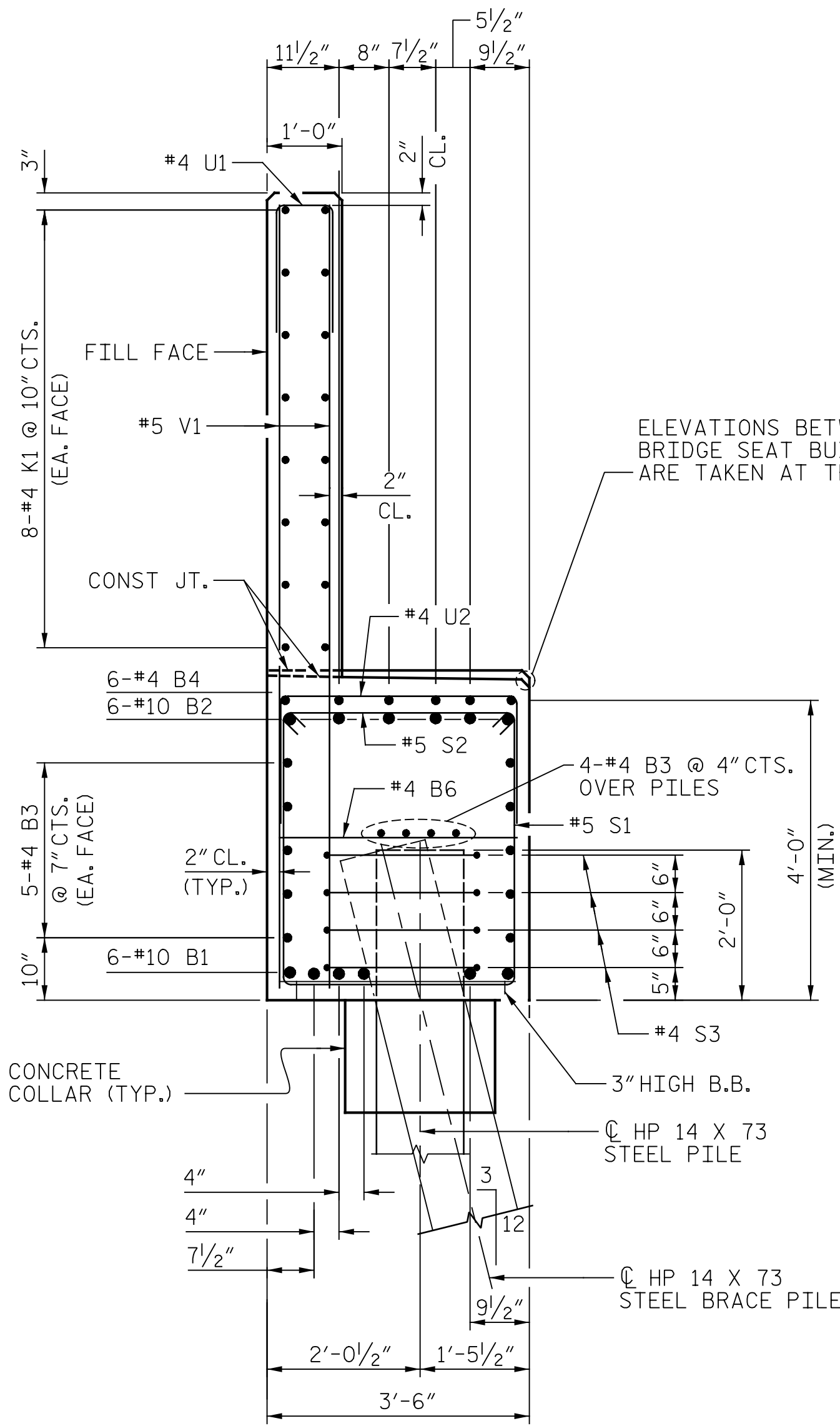


SECTION A-A

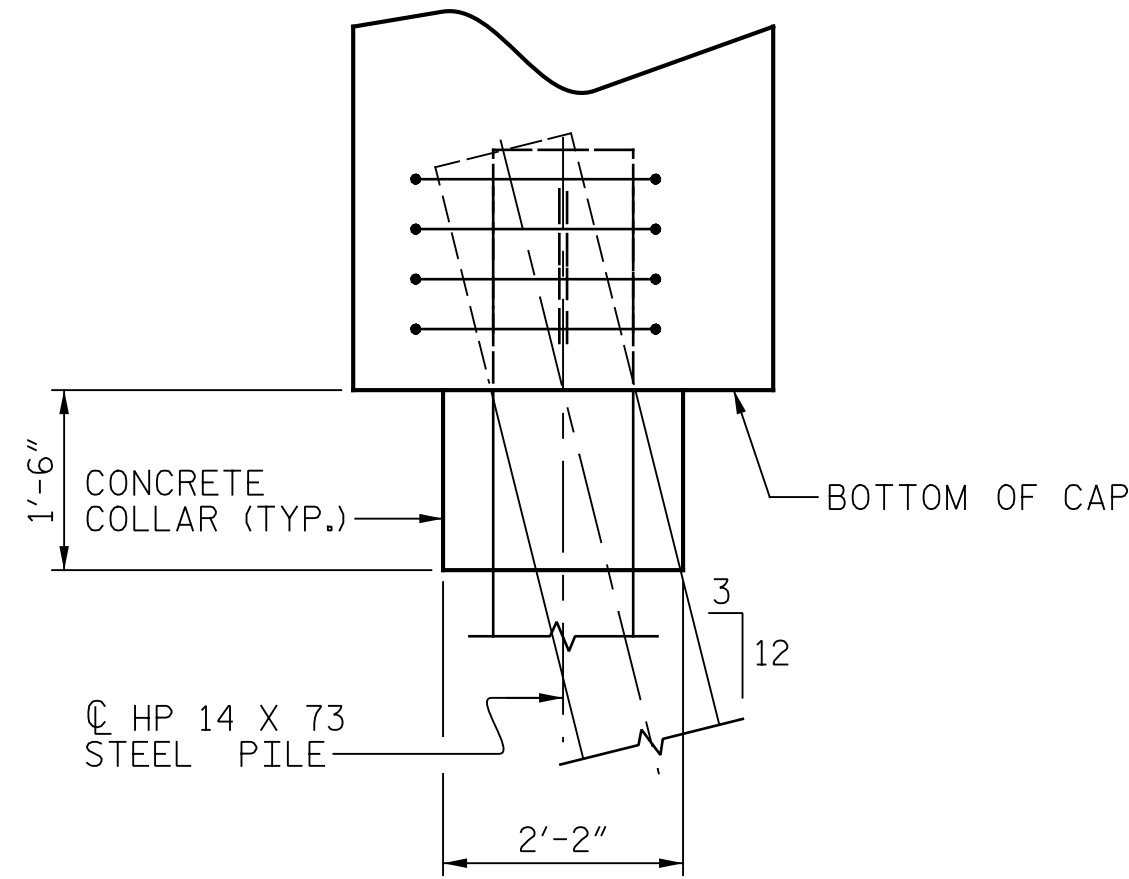
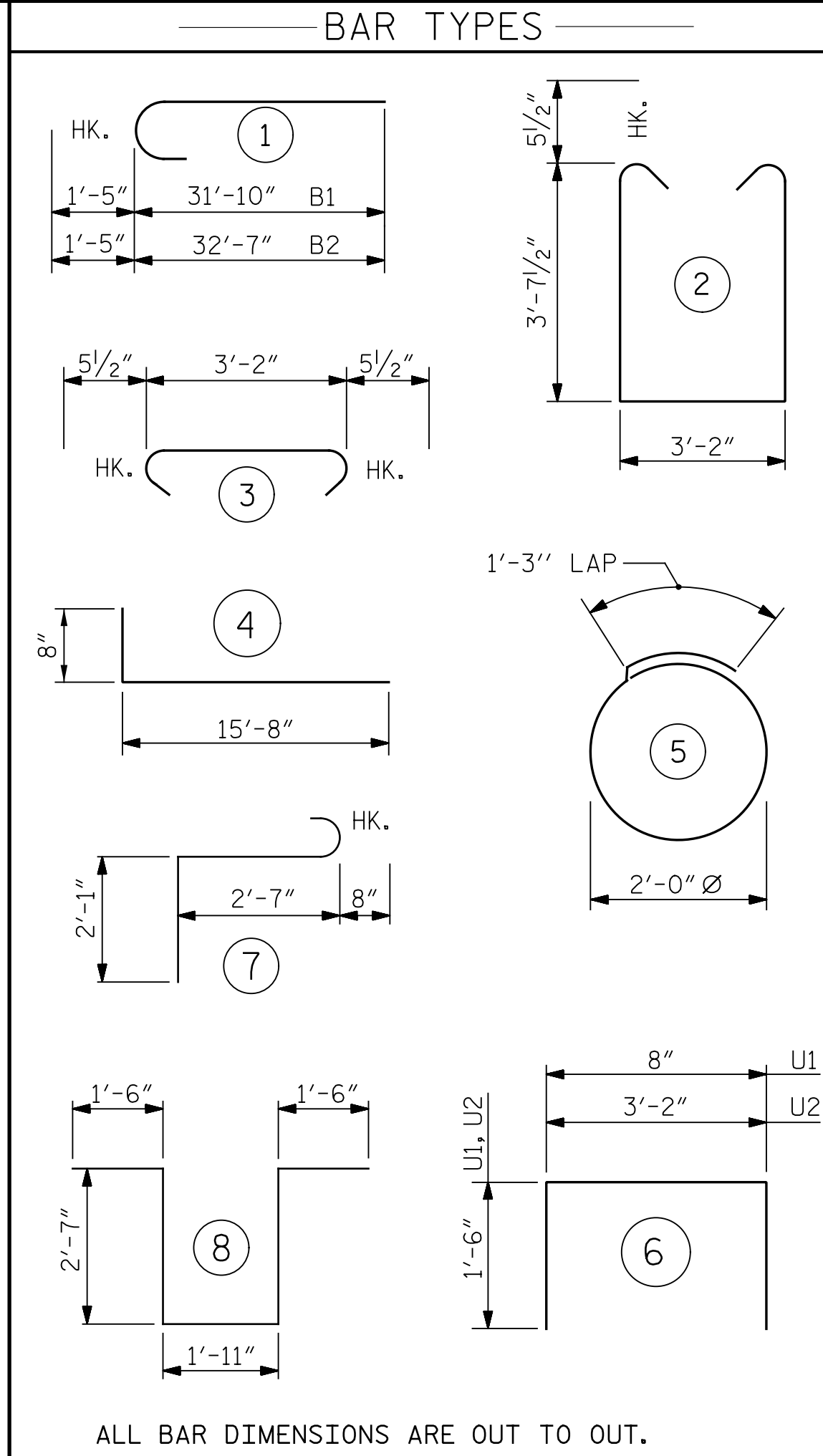


POSITION OF PILE DURING WELDING.

PILE SPlice DETAILS



SECTION B-B



COLLAR DETAIL

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#10	1	33'-3"	1,717
B2	12	#10	1	34'-0"	1,756
B3	28	#4	STR.	30'-10"	577
B4	6	#4	STR.	21'-3"	85
B5	6	#4	STR.	3'-3"	13
B6	15	#4	STR.	3'-3"	33
H1	76	#4	4	16'-4"	829
K1	32	#4	STR.	30'-10"	659
K2	12	#4	STR.	2'-8"	21
S1	84	#5	2	11'-4"	993
S2	84	#5	3	4'-1"	358
S3	44	#4	5	7'-7"	223
S4	6	#6	7	5'-4"	48
S5	6	#6	8	10'-1"	91
U1	54	#4	6	3'-8"	132
U2	18	#4	6	6'-2"	74
V1	108	#5	STR.	9'-11"	1,117
V2	38	#5	STR.	11'-9"	466
V3	38	#5	STR.	11'-10"	469

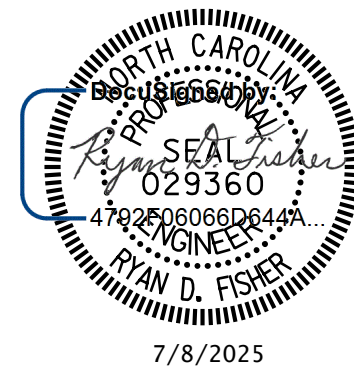
TOTAL REINFORCING STEEL 9,661 LBS.

CLASS "A" CONCRETE BREAKDOWN

POUR 1 (CAP, COLLARS & LOWER PART OF WINGS)	40.3 C.Y.
POUR 2 (BACKWALL & UPPER PART OF WINGS)	23.5 C.Y.
TOTAL CLASS "A" CONCRETE	63.8 C.Y.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

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2			4			TOTAL SHEETS 61



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NOTES:

THE TOP SURFACE AREAS OF CAPS AT BENT 3 AND BENT 6 SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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.

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

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

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

FOR ADDITIONAL NOTES, SEE "GENERAL DRAWING." SHEET 3 & 5 OF 7.

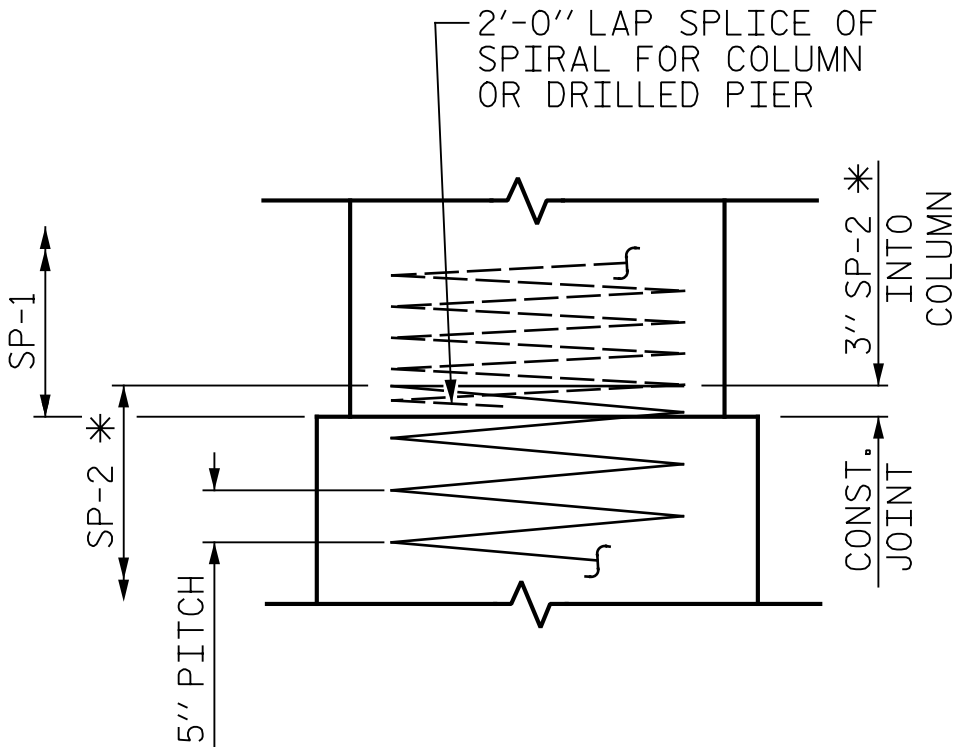
FOR THERMAL INTEGRITY PROFILER TEST (TIP), SEE GEOTECHNICAL SPECIAL PROVISION.

BENT QUANTITIES

BENT		1	2	3	4	5	6	7
REINFORCING STEEL	LBS.	51,657	55,003	57,236	58,127	57,792	51,955	50,318
SPIRAL COLUMN REINFORCING STEEL	LBS.	9,973	10,869	11,463	11,697	11,598	10,011	9,561
CLASS A CONCRETE : POUR 2 - (COLUMNS)	CU. YDS.	53.1	50.7	48.0	45.3	42.9	40.2	37.5
CLASS A CONCRETE : POUR 3 - (CAP)	CU. YDS.	65.1	65.1	65.1	65.1	65.1	65.1	65.1
TOTAL	CU. YDS.	118.2	115.8	113.1	110.4	108.0	105.3	102.6
DRILLED PIER CONCRETE : POUR 1	CU. YDS.	188.8	215.5	234.4	243.8	244.3	206.6	198.2

TABLE "A"

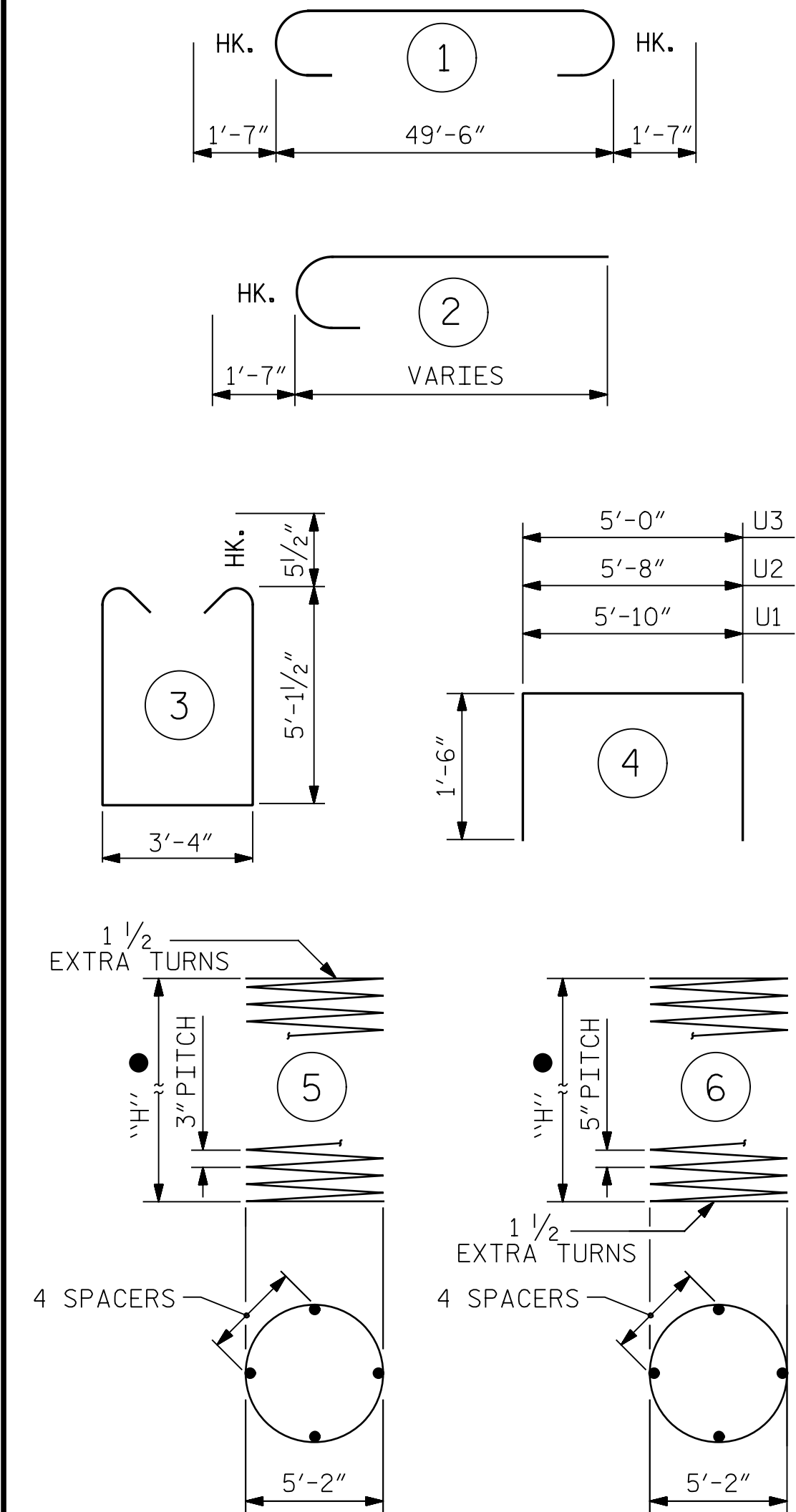
BENT								
BAR	●	1	2	3	4	5	6	7
M1	LENGTH	36'-5"	40'-8"	43'-8"	45'-2"	43'-11"	40'-5"	37'-11"
	WEIGHT	10,835	12,099	12,992	13,438	13,066	12,025	11,281
M2	LENGTH	36'-5"	40'-8"	43'-8"	45'-2"	45'-11"	40'-5"	37'-11"
	WEIGHT	10,835	12,099	12,992	13,438	13,661	12,025	11,281
M3	LENGTH	36'-5"	40'-8"	43'-8"	45'-2"	45'-11"	36'-11"	37'-11"
	WEIGHT	10,835	12,099	12,992	13,438	13,661	10,984	11,281
V1	LENGTH	24'-7"	23'-7"	22'-7"	21'-7"	20'-8"	19'-7"	18'-7"
	WEIGHT	10,971	10,525	10,079	9,632	9,223	8,740	8,294
SP-1	"H"	20'-6"	19'-6"	18'-6"	17'-6"	16'-7"	15'-6"	14'-6"
	LENGTH	1,344'-7"	1,280'-2"	1,215'-9"	1,151'-5"	1,092'-4"	1,022'-7"	958'-2"
SP-2	WEIGHT	2,695	2,565	2,436	2,307	2,189	2,049	1,920
	"H"	59'-8"	68'-2"	74'-2"	77'-2"	74'-8"	67'-8"	62'-8"
SP-3	LENGTH	2,325'-10"	2,653'-9"	2,885'-2"	3,000'-11"	2,904'-6"	2,634'-6"	2,441'-7"
	WEIGHT	2,426	2,768	3,009	3,130	3,029	2,748	2,547
SP-4	"H"	59'-8"	68'-2"	74'-2"	77'-2"	78'-8"	67'-8"	62'-8"
	LENGTH	2,325'-10"	2,653'-9"	2,885'-2"	3,000'-11"	3,058'-10"	2,364'-5"	2,441'-7"
	WEIGHT	2,426	2,768	3,009	3,130	3,190	2,466	2,547



* SP-3 AND SP-4 SIMILAR

CONSTRUCTION JOINT DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

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

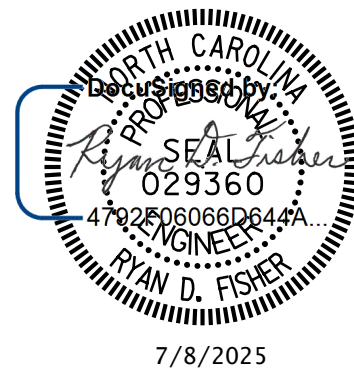
BILL OF MATERIAL

BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	52'-8"	2798
B2	10	#11	STR	49'-8"	2639
B3	10	#6	STR	49'-8"	746
B4	10	#4	STR	21'-4"	143
M1	56	#11	STR	●	●
M2	56	#11	STR	●	●
M3	56	#11	STR	●	●
S1	108	#5	3	14'-6"	1633
U1	15	#4	4	8'-10"	89
U2	12	#4	4	8'-8"	69
U3	12	#4	4	8'-0"	64
V1	84	#11	2	●	●
SP-1	3	*	5	●	●
SP-2	1	**	6	●	●
SP-3	1	**	6	●	●
SP-4	1	**	6	●	●

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
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SHEET 3 OF 3



STATE OF NORTH CAROLINA
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RALEIGH
SUBSTRUCTURE
BENTS 1-7
BILL OF MATERIAL

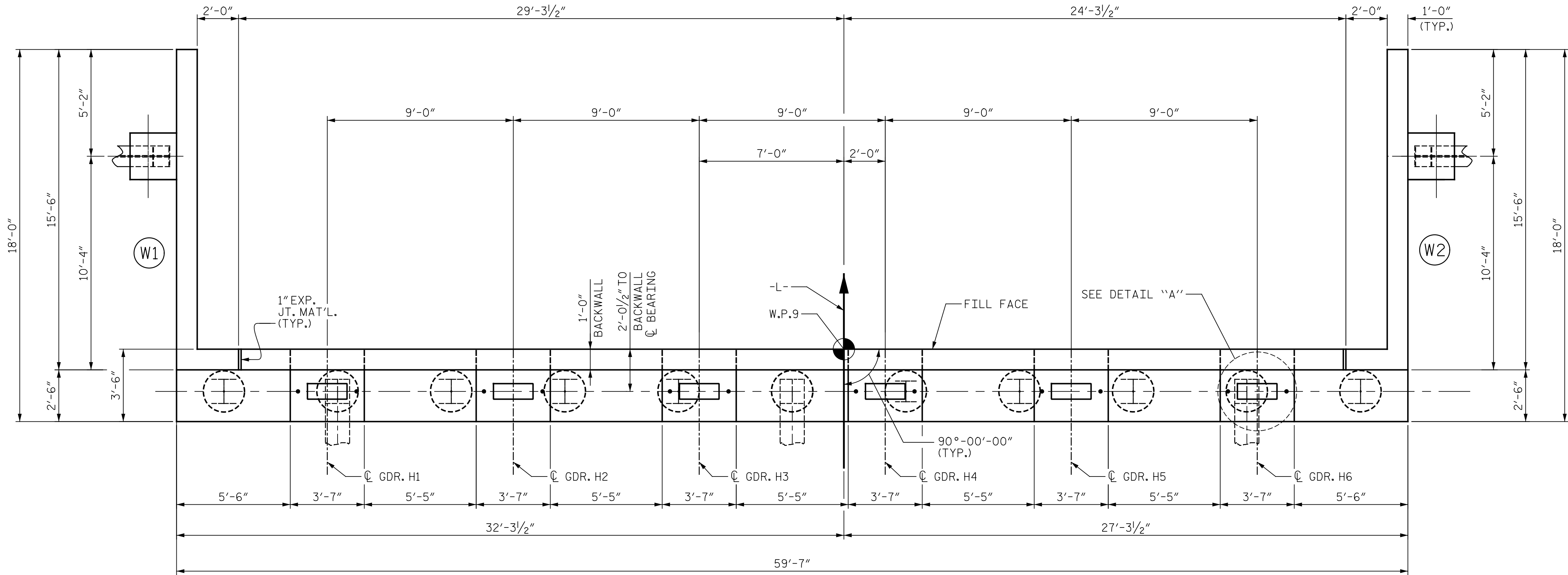
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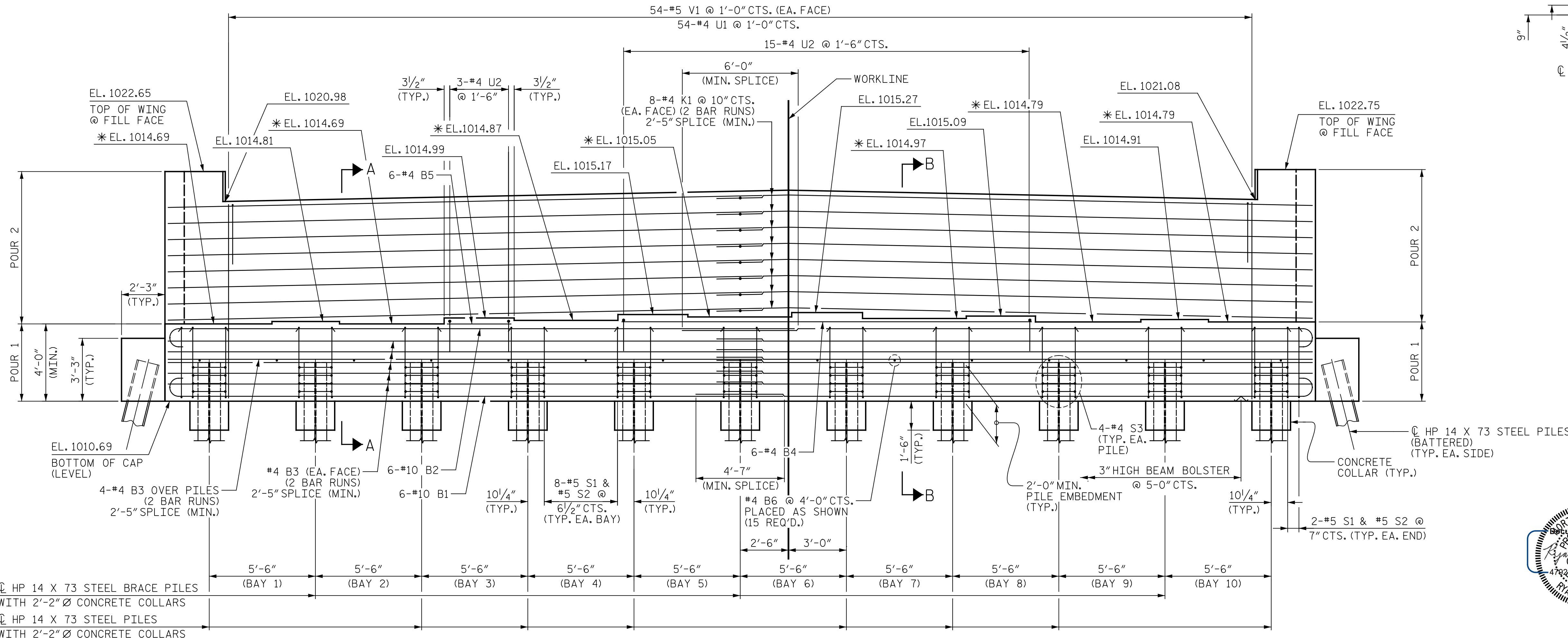
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2			4			61

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PLAN



ELEVATION

NOTES:

STIRRUPS 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 CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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

INSTALL THE 6"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR TYPE I - STANDARD BRIDGE APPROACH FILLS (ROADWAY STANDARD DRAWING 422.01), SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

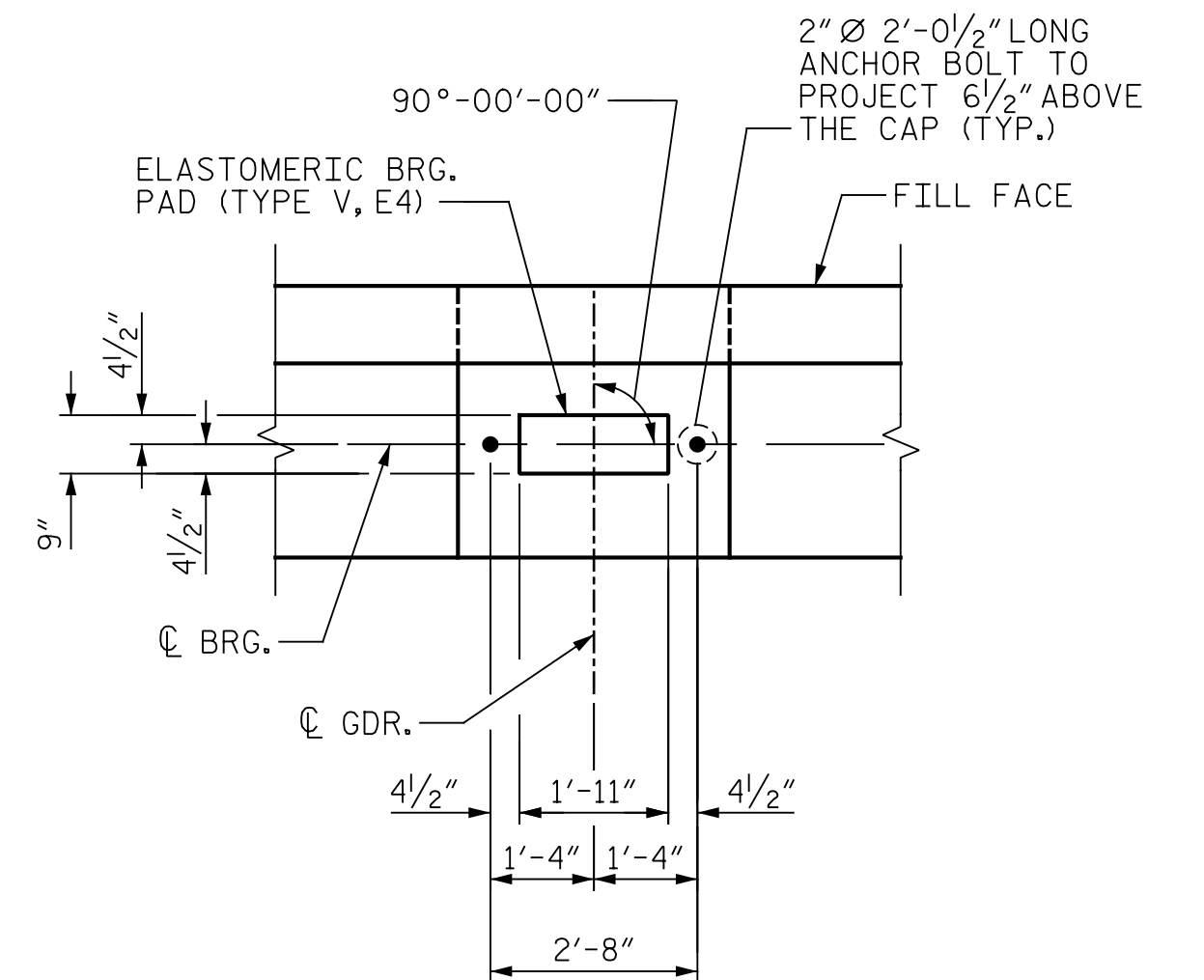
FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE SECTION A-A ON SHEET 3 OF 3.

FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE AT END BENT DETAIL, SEE SHEET 3 OF 3.

FOR PILE SPLICE DETAIL, SEE END BENT 1 SHEET 3 OF 3.

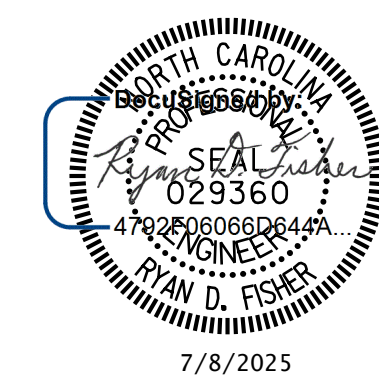
FOR LOCATION OF 3"Ø HOLE IN WING WALL FOR PIPE RAIL, SEE 'DETAIL OF PIPE HANDRAIL MOUNTED ON WING WALL' SHEET.



DETAIL A
(TYP. EA. GIRDER)

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
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SHEET 1 OF 3



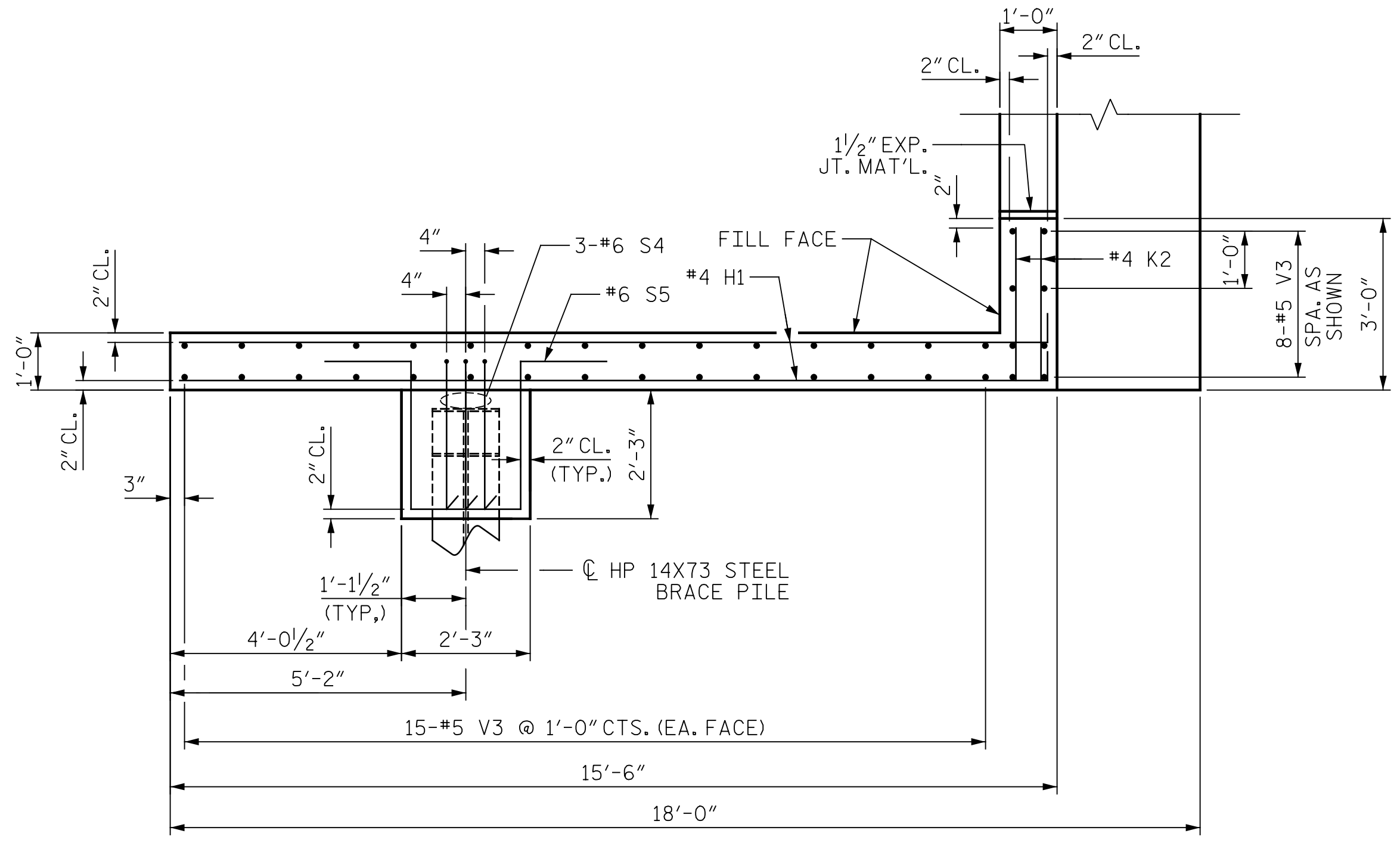
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END BENT 2					
REVISIONS					
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2			4		
SHEET NO.					
S-52					TOTAL SHEETS
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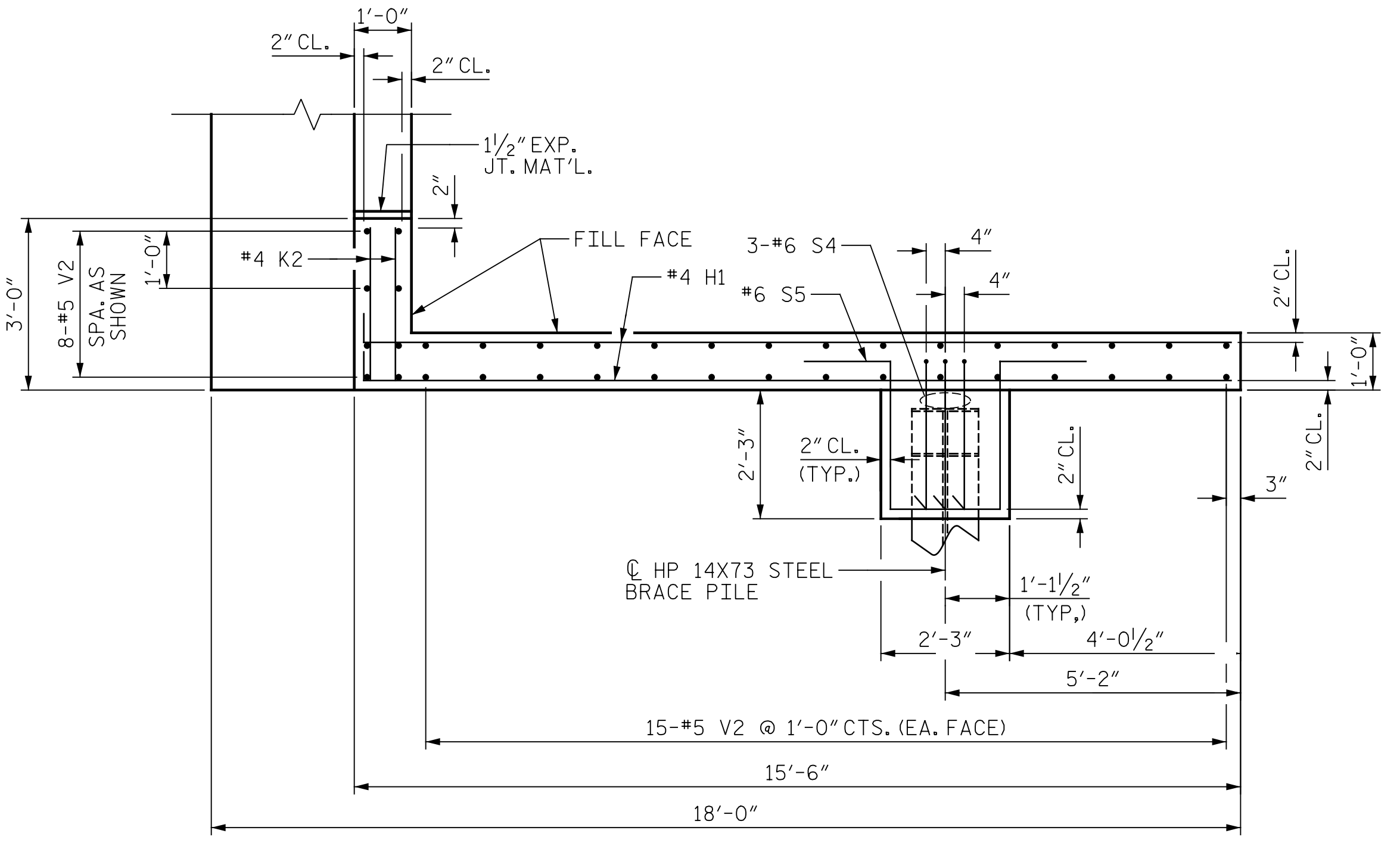


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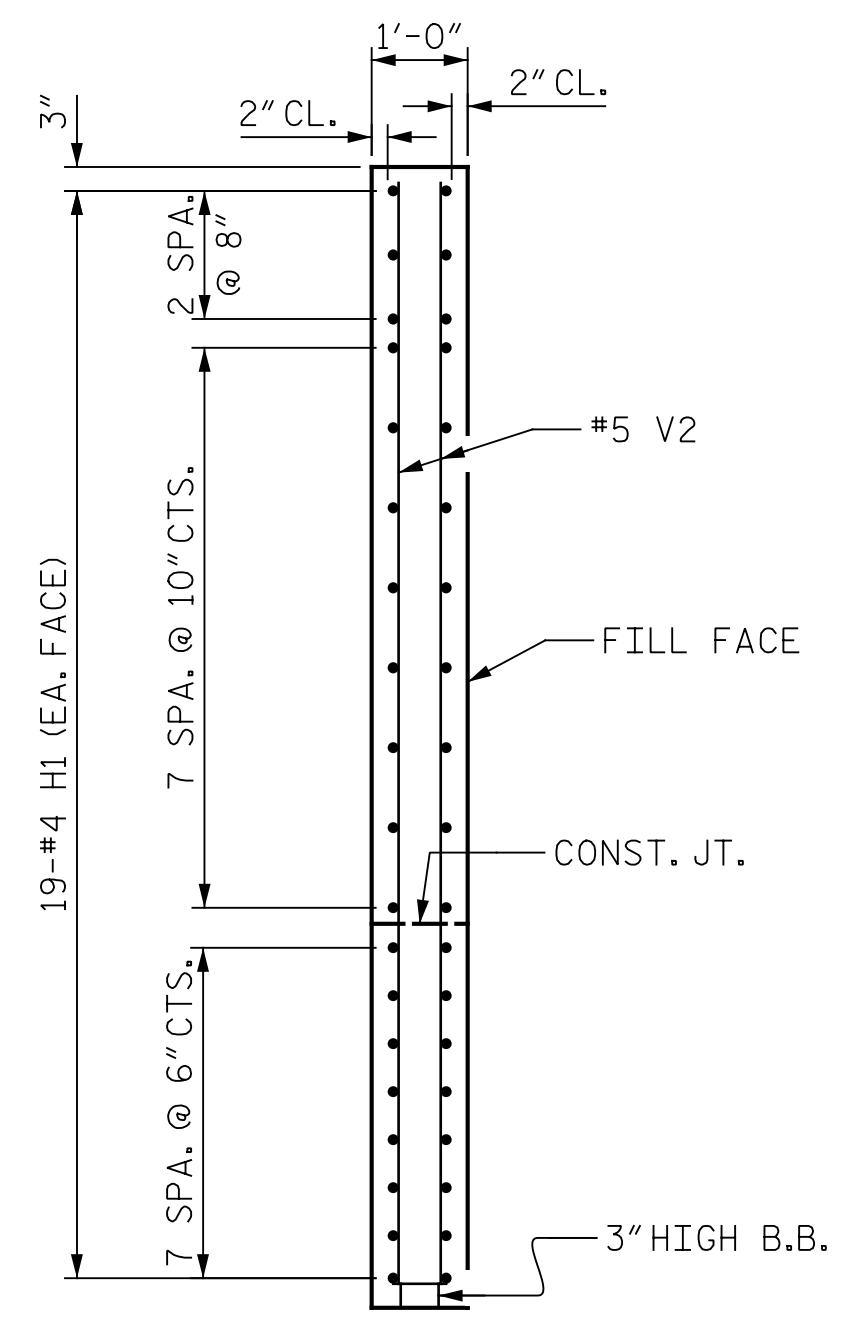
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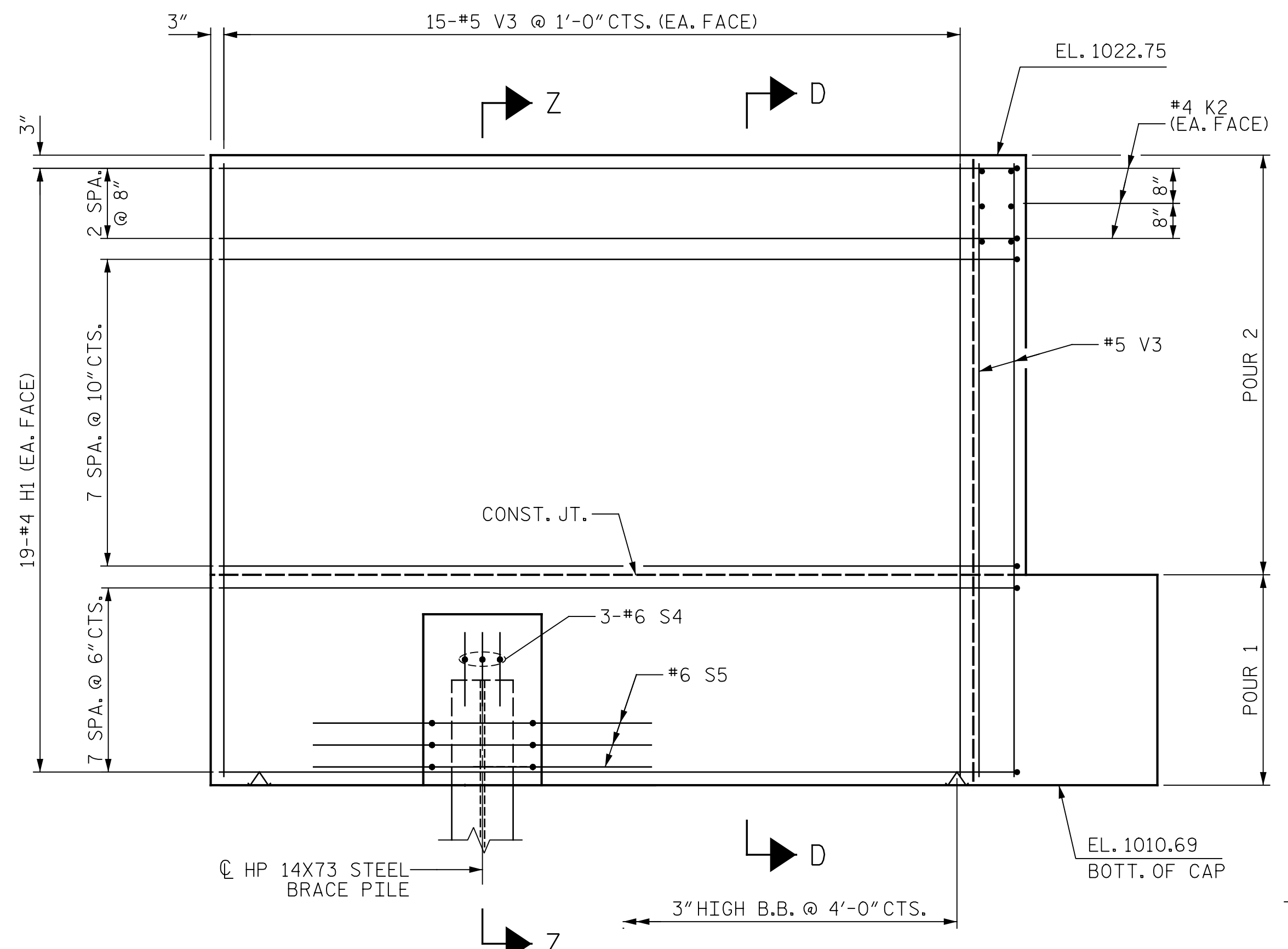
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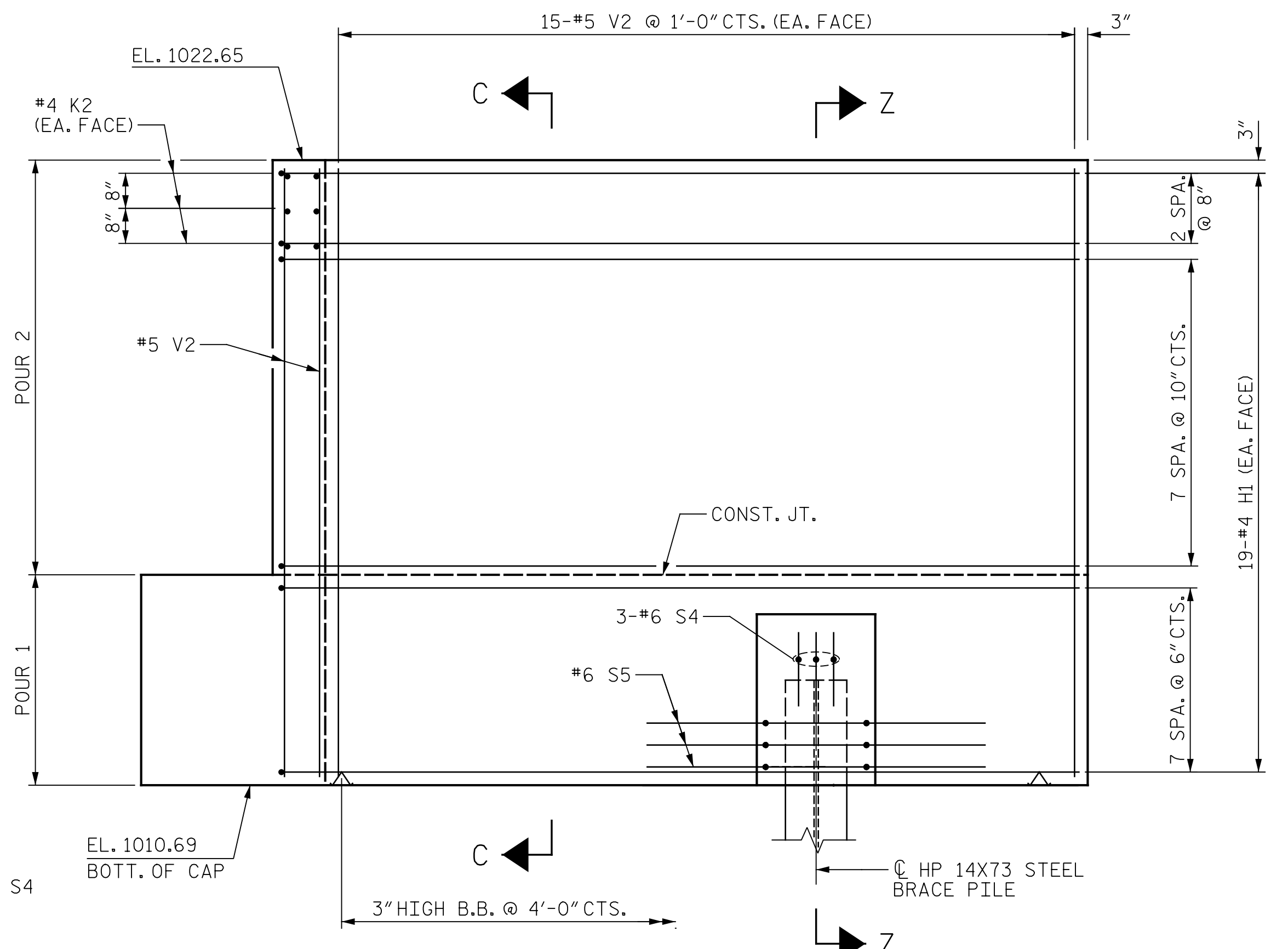
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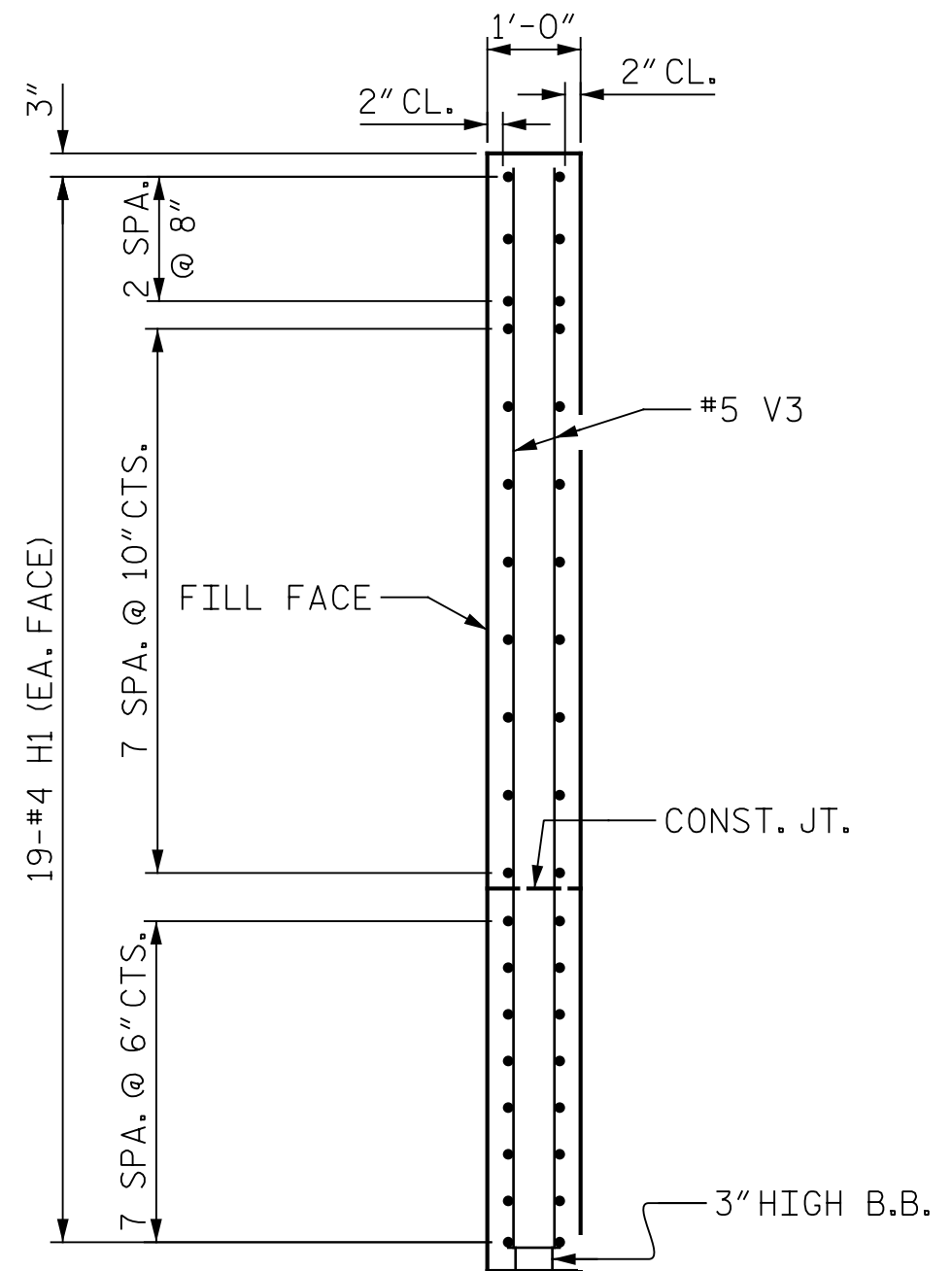
SECTION C-C



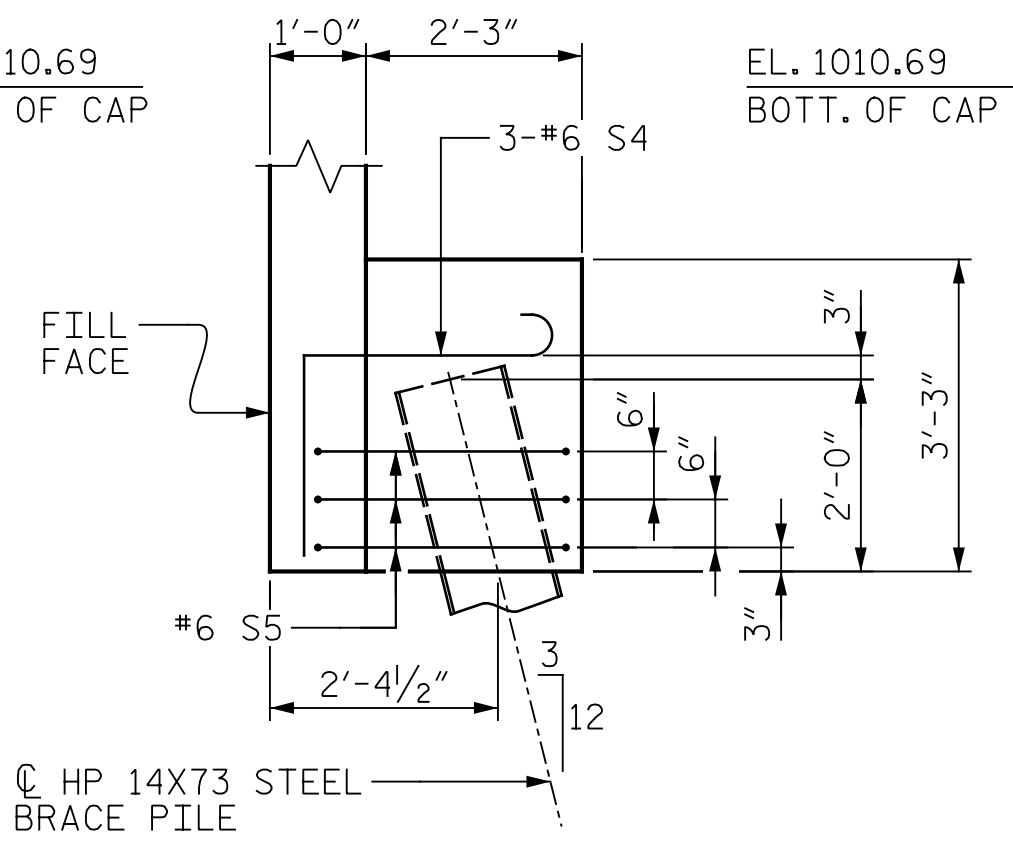
ELEVATION W1



ELEVATION W2



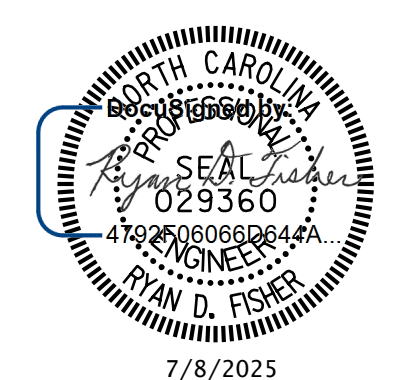
SECTION D-D



SECTION Z-Z

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 3



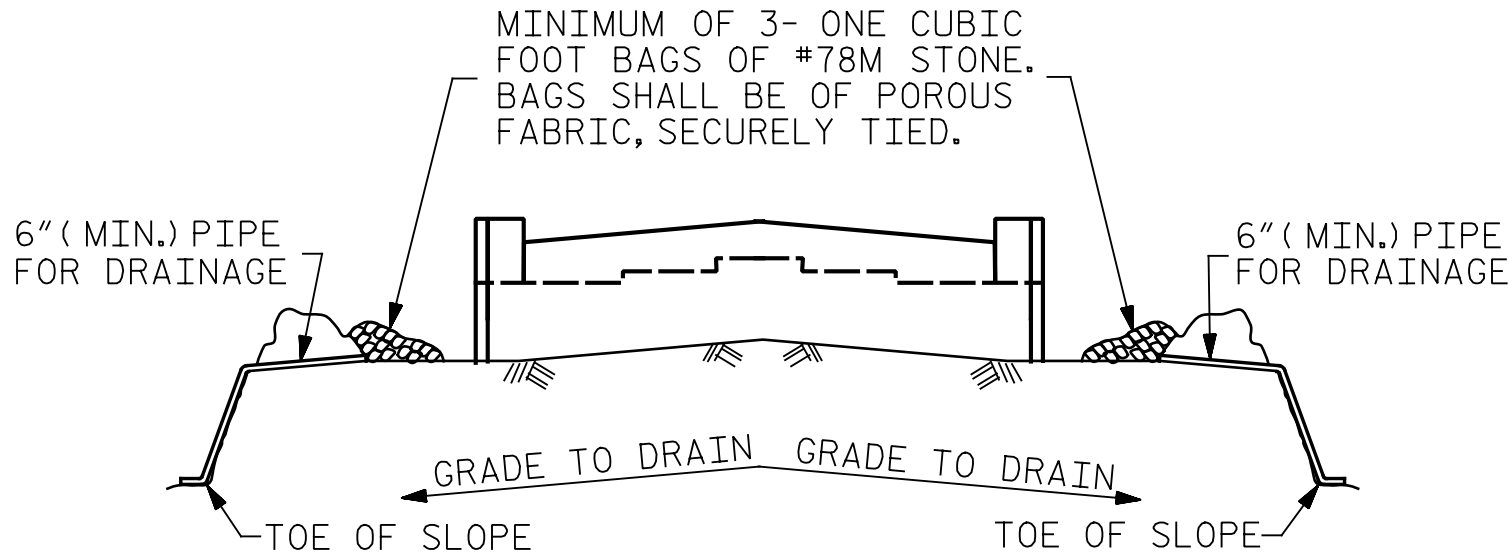
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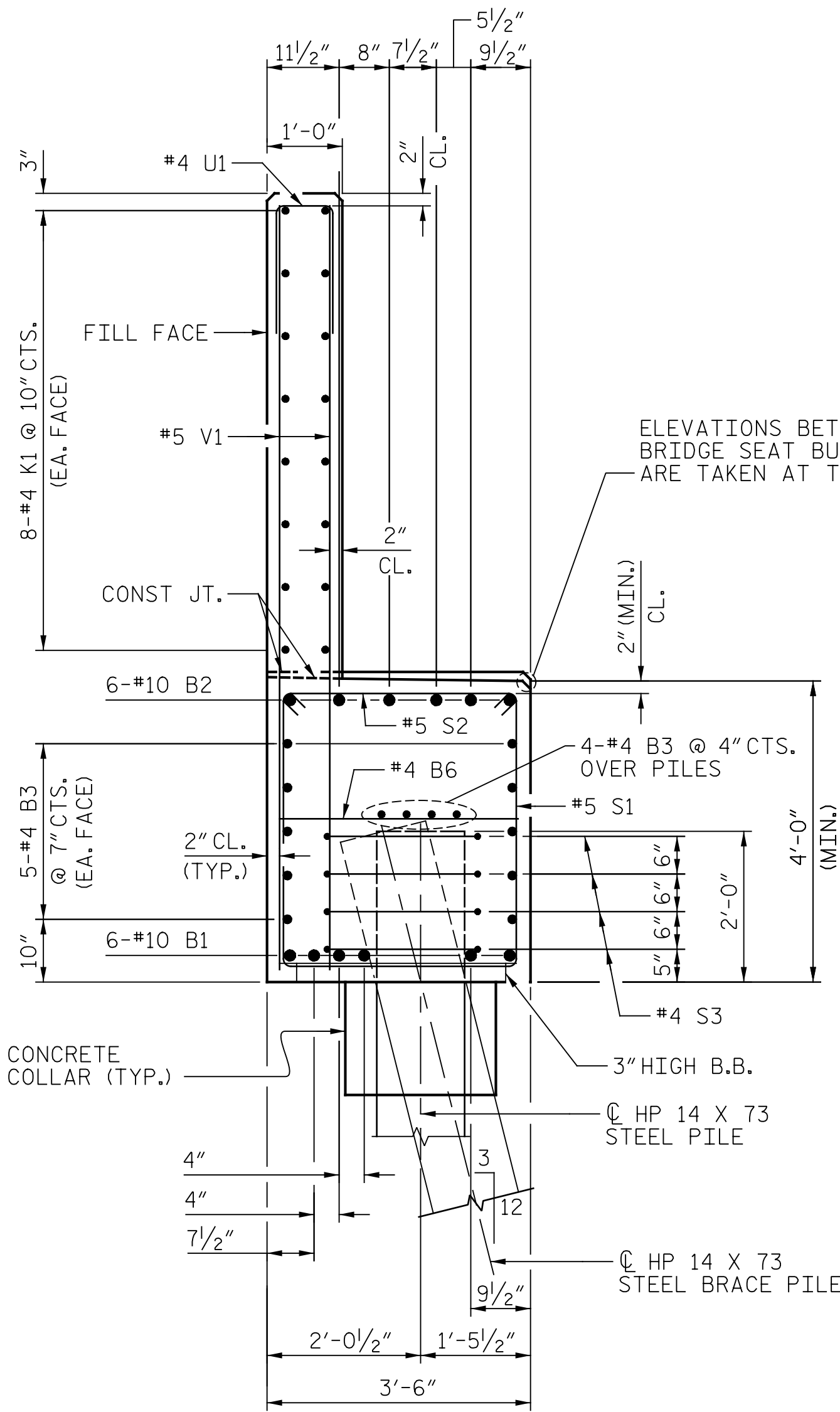


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

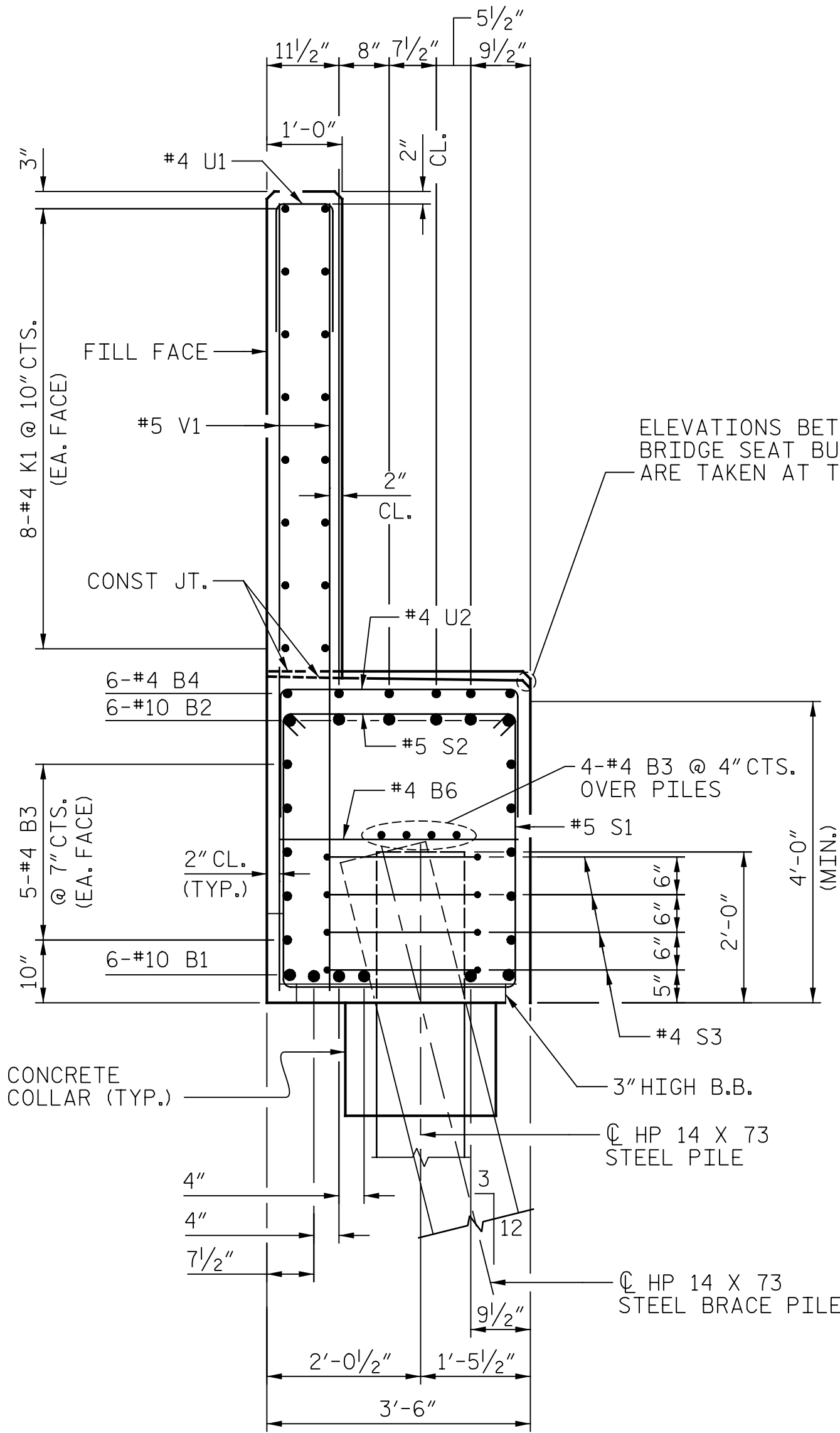
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

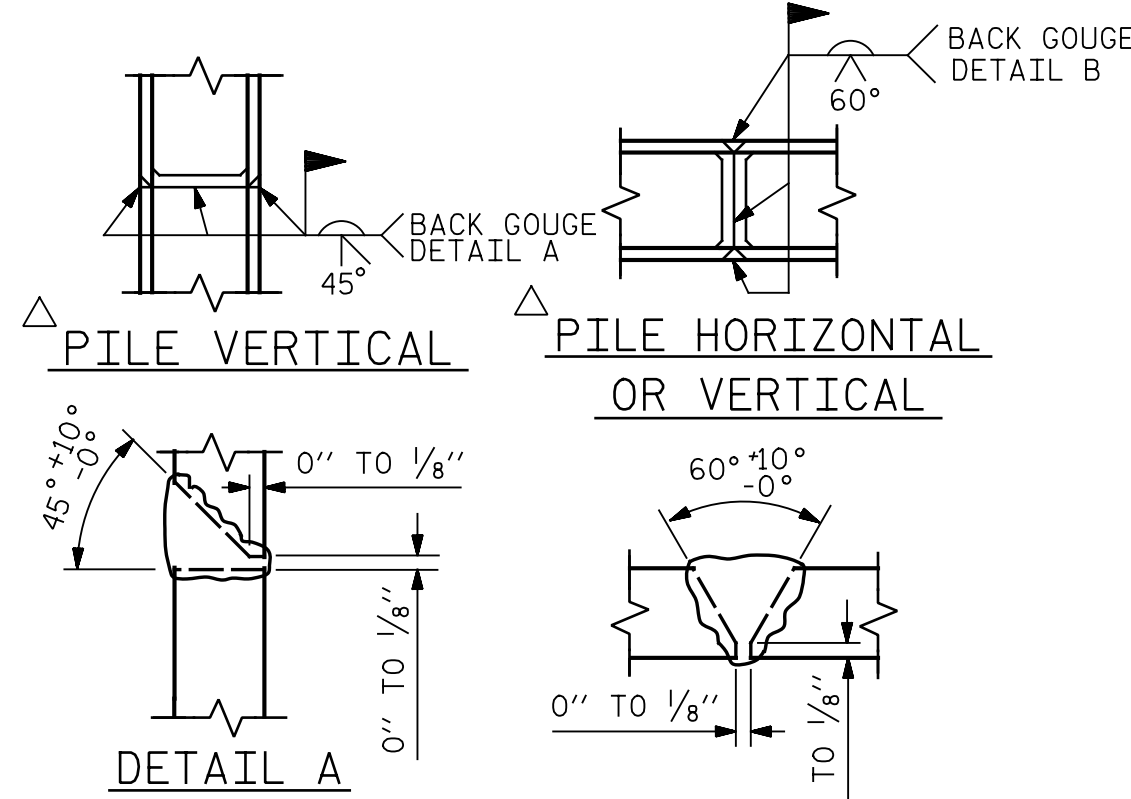
TEMPORARY DRAINAGE AT END BENT



SECTION A-A

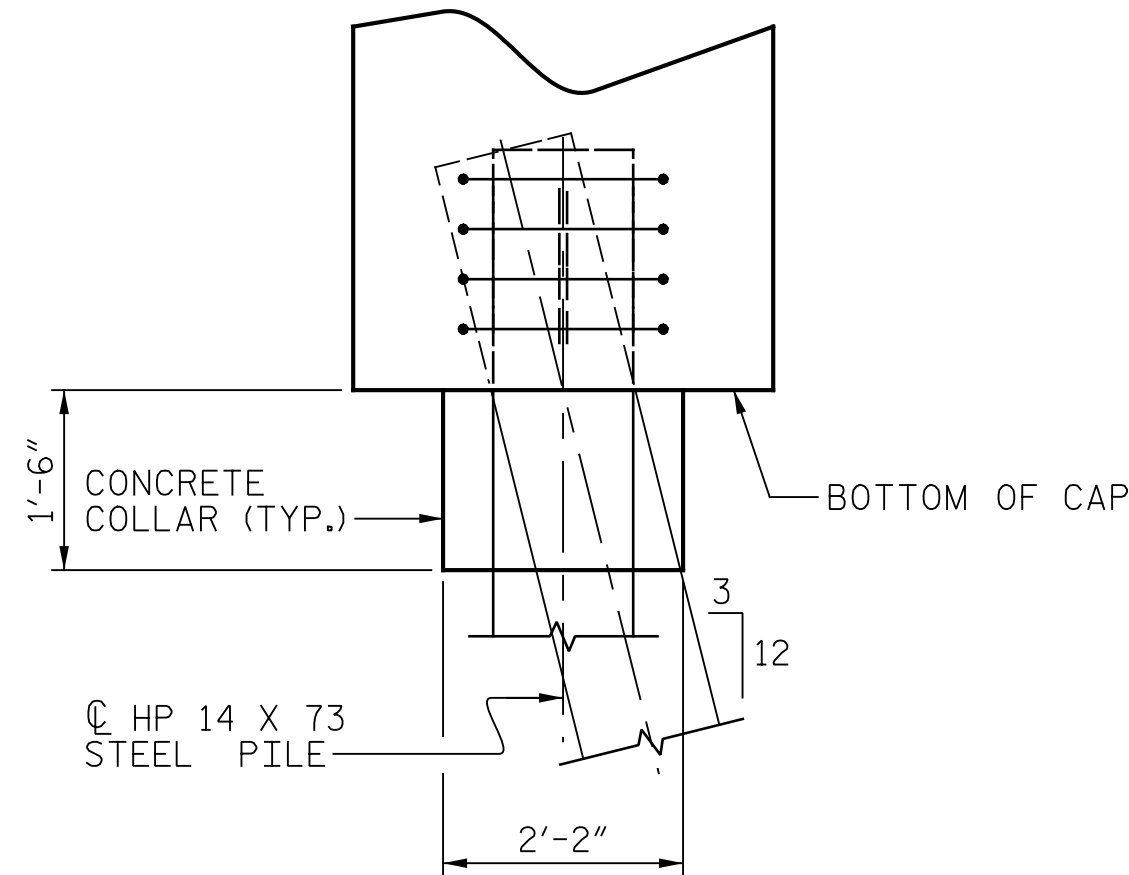
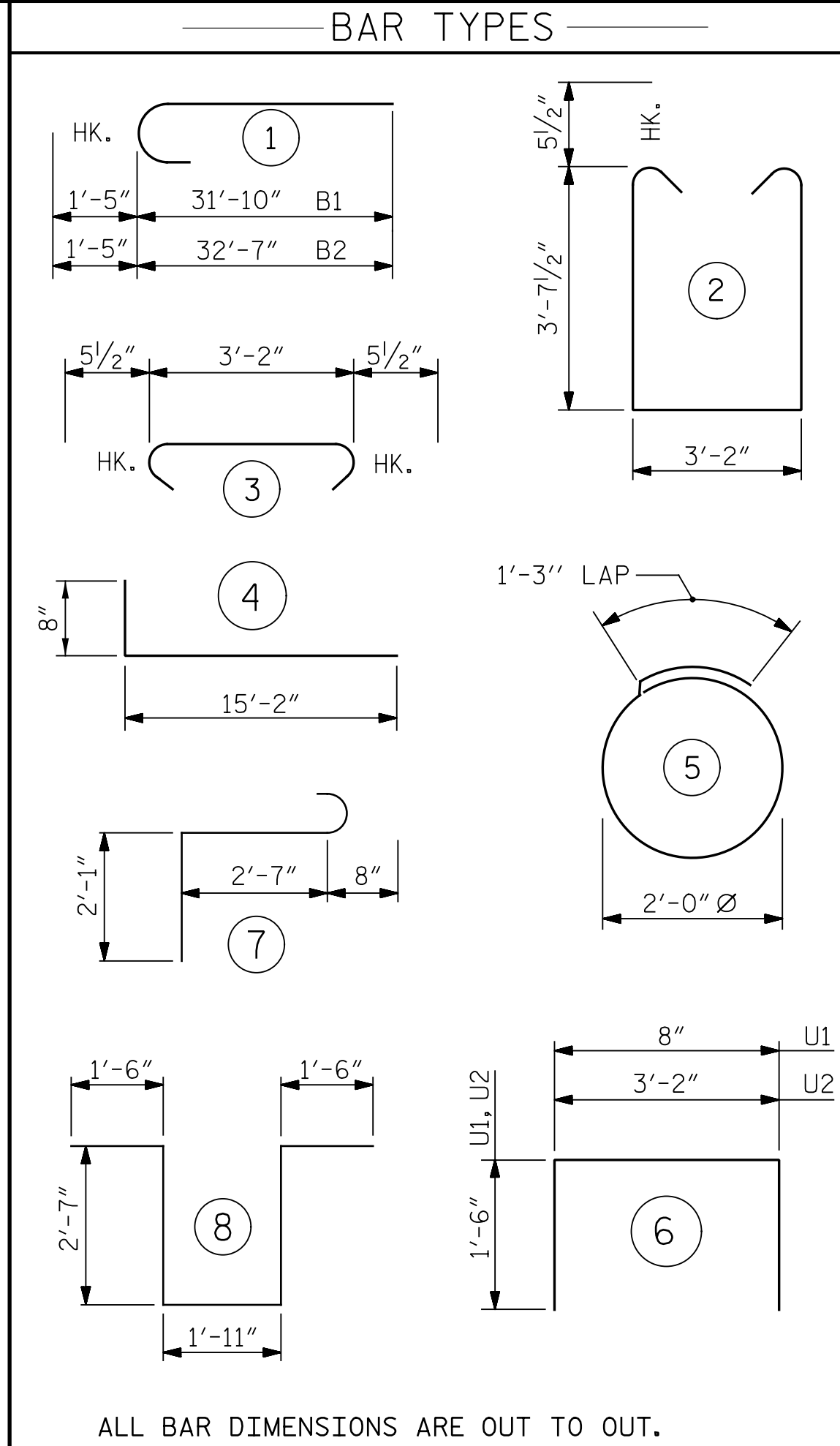


SECTION B-B



POSITION OF PILE DURING WELDING.

PILE SPlice DETAILS



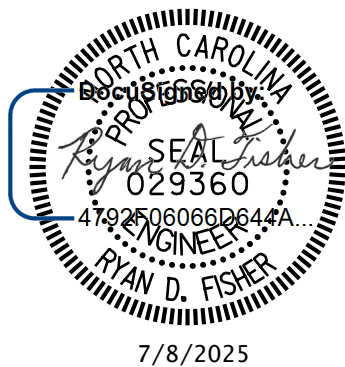
COLLAR DETAIL

BILL OF MATERIAL						
END BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	12	#10	1	33'-3"	1,717	
B2	12	#10	1	34'-0"	1,756	
B3	28	#4	STR.	30'-10"	577	
B4	6	#4	STR.	21'-3"	85	
B5	6	#4	STR.	3'-3"	13	
B6	15	#4	STR.	3'-3"	33	
H1	76	#4	4	15'-10"	804	
K1	32	#4	STR.	30'-10"	659	
K2	12	#4	STR.	2'-8"	21	
S1	84	#5	2	11'-4"	993	
S2	84	#5	3	4'-1"	358	
S3	44	#4	5	7'-7"	223	
S4	6	#6	7	5'-4"	48	
S5	6	#6	8	10'-1"	91	
U1	54	#4	6	3'-8"	132	
U2	18	#4	6	6'-2"	74	
V1	108	#5	STR.	9'-11"	1,117	
V2	38	#5	STR.	11'-6"	456	
V3	38	#5	STR.	11'-7"	459	

TOTAL REINFORCING STEEL				9,616 LBS.
CLASS "A" CONCRETE BREAKDOWN				
POUR 1 (CAP, COLLARS & LOWER PART OF WINGS)				40.3 C.Y.
POUR 2 (BACKWALL & UPPER PART OF WINGS)				22.9 C.Y.
TOTAL CLASS "A" CONCRETE				63.2 C.Y.

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STATION: 34+52.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE
END BENT 2

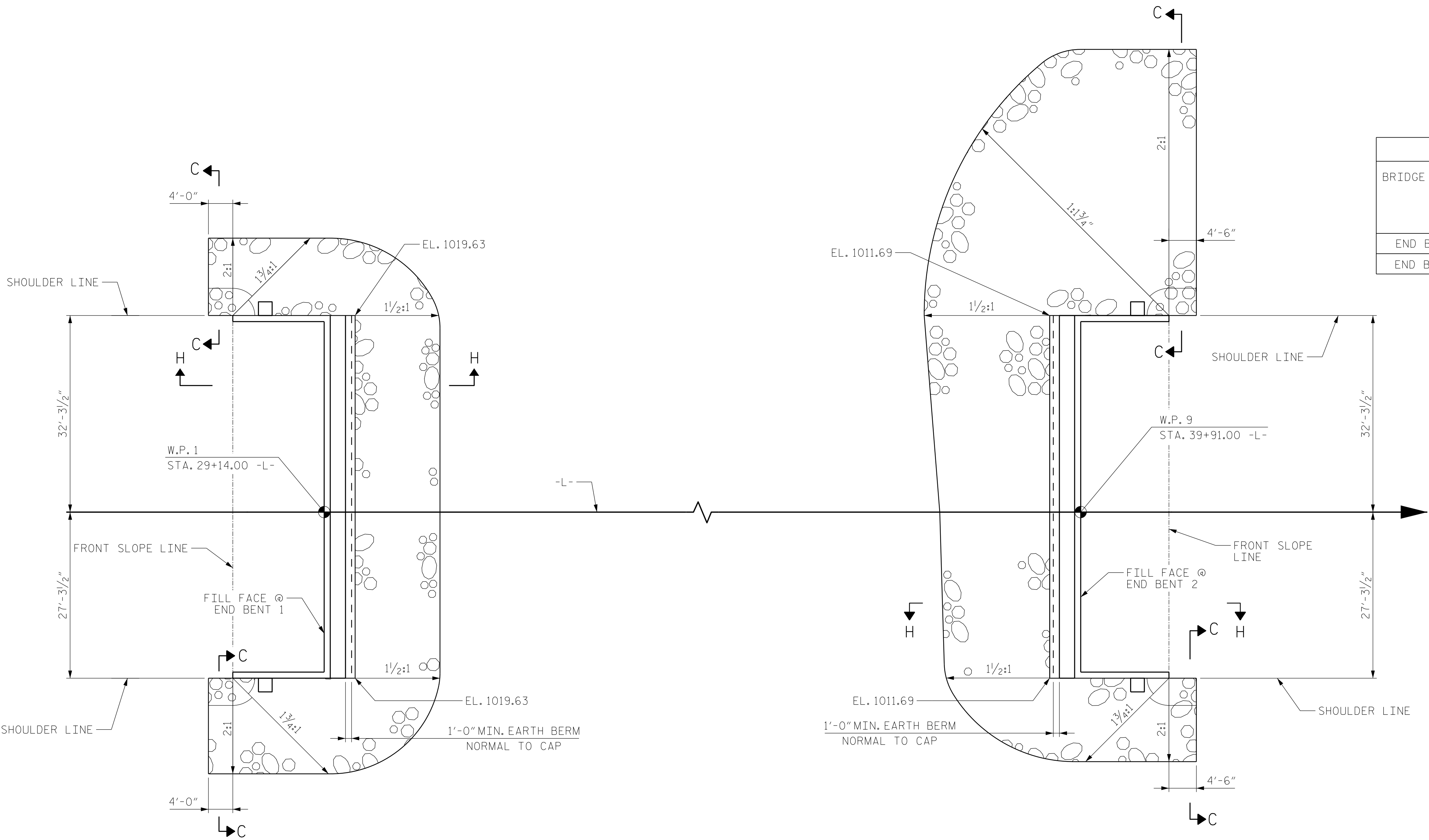
DRAWN BY : J. MYA DATE : 10/2023
CHECKED BY : R. FISHER DATE : 04/2024
DESIGN ENGINEER OF RECORD: DATE :

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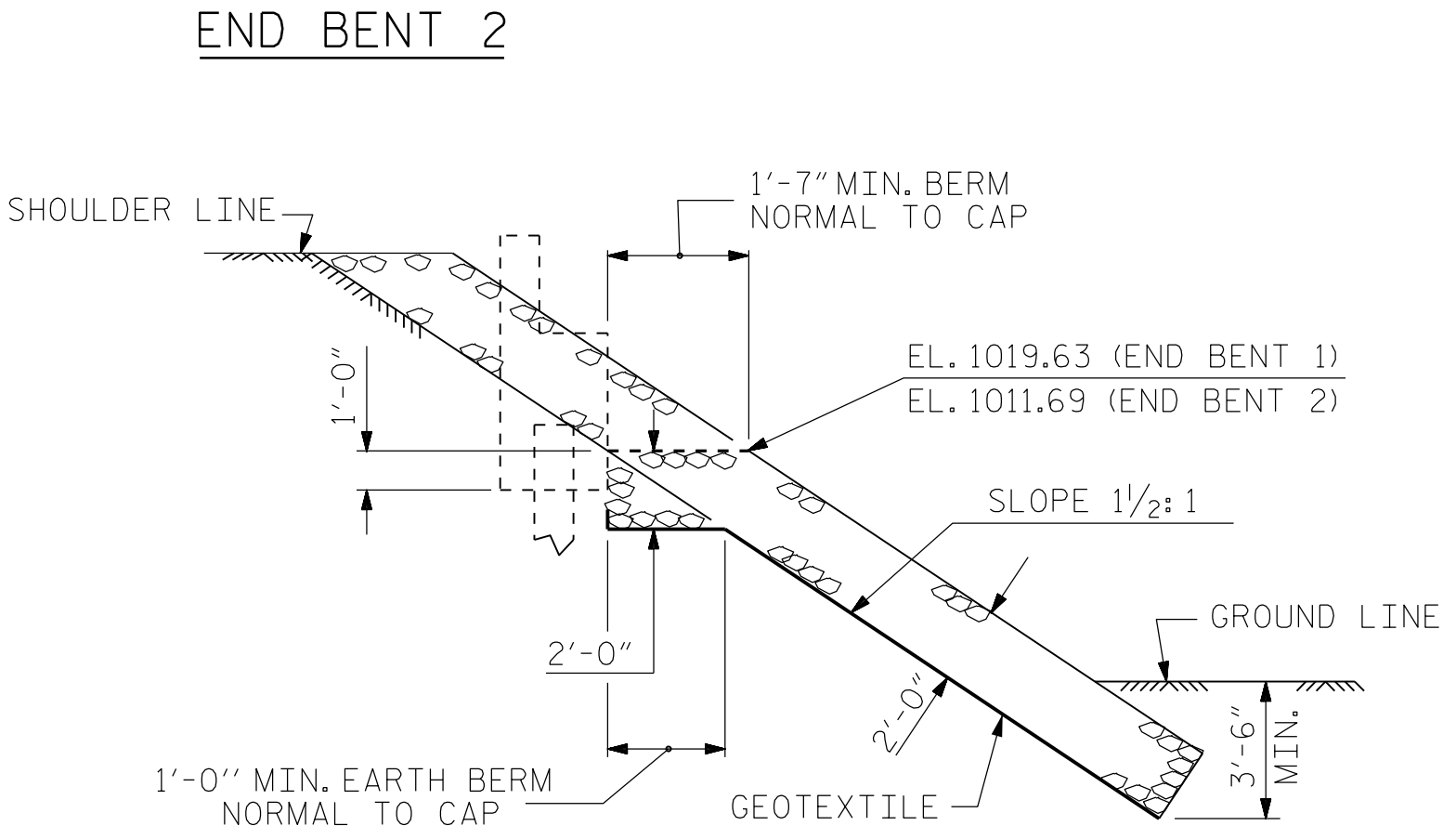
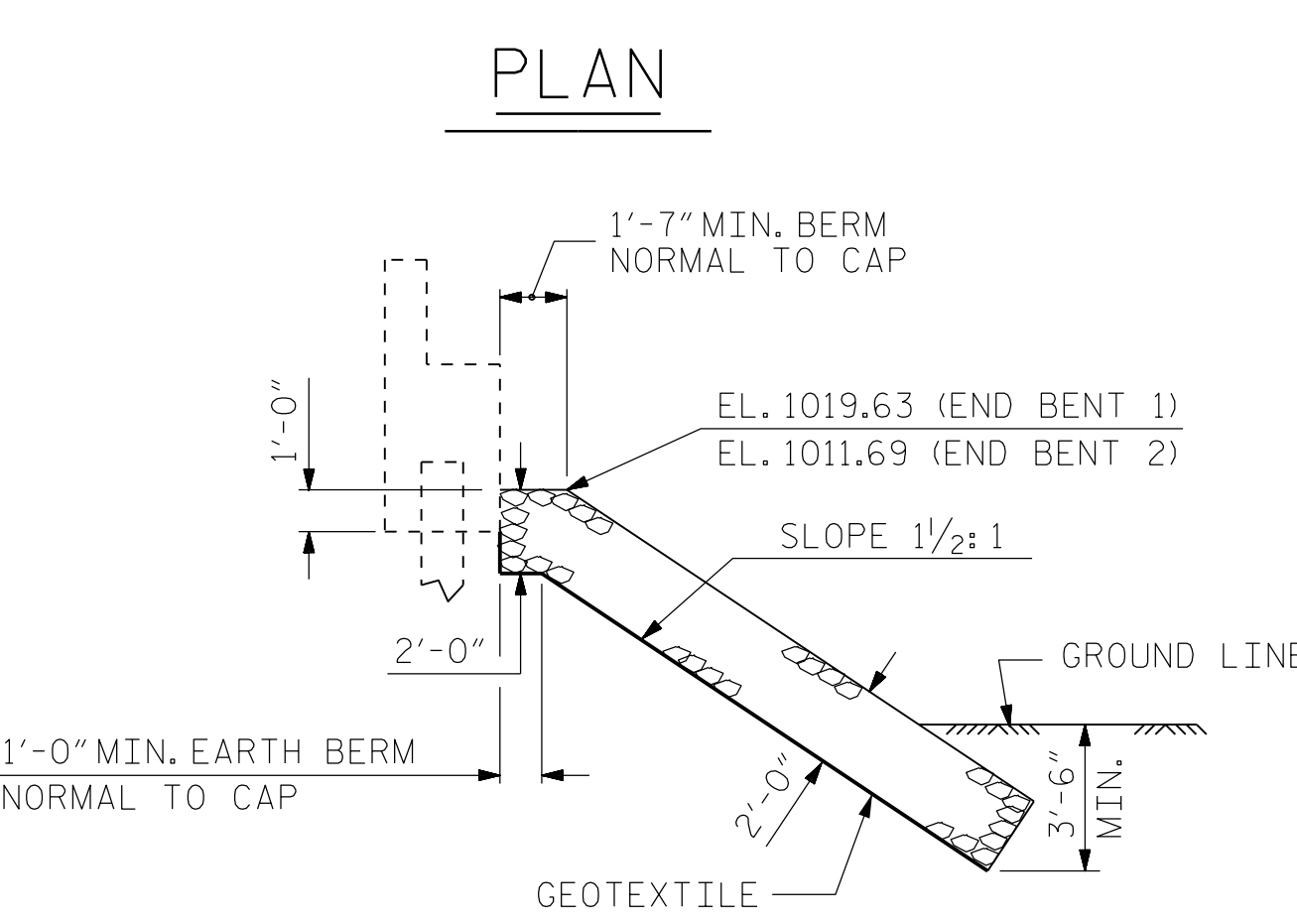
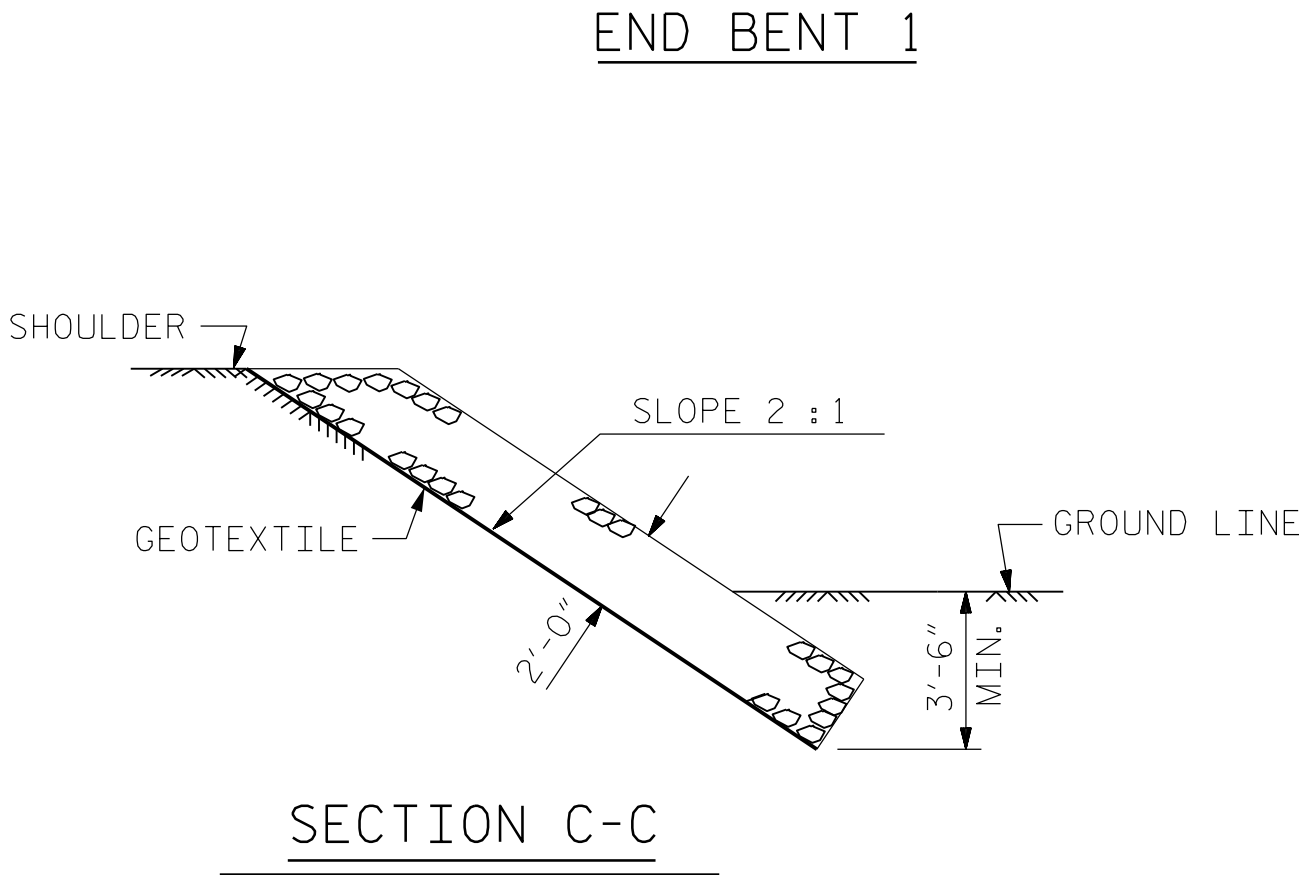
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2			4			TOTAL SHEETS 61

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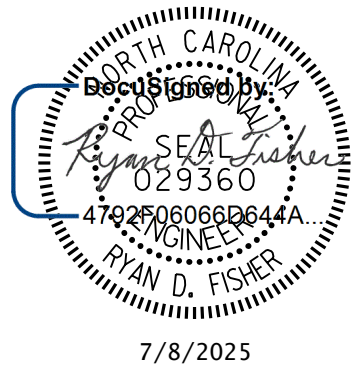


NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA.34+52.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	189	207
END BENT 2	328	364



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STATION: 34+52.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-55					TOTAL SHEETS 61

ASSEMBLED BY : <u>M.SPENCER</u>	DATE : <u>10/2023</u>
CHECKED BY : <u>R.FISHER</u>	DATE : <u>03/2024</u>
DESIGN ENGINEER OF RECORD : _____	DATE : _____
DRAWN BY : <u>REK</u>	DATE : <u>01/1984</u>
CHECKED BY : <u>RDU</u>	DATE : <u>01/1984</u>
REV. MAA/GM	10/2011
REV. MAA/GM	12/2011
REV. MAA/THC	12/2017

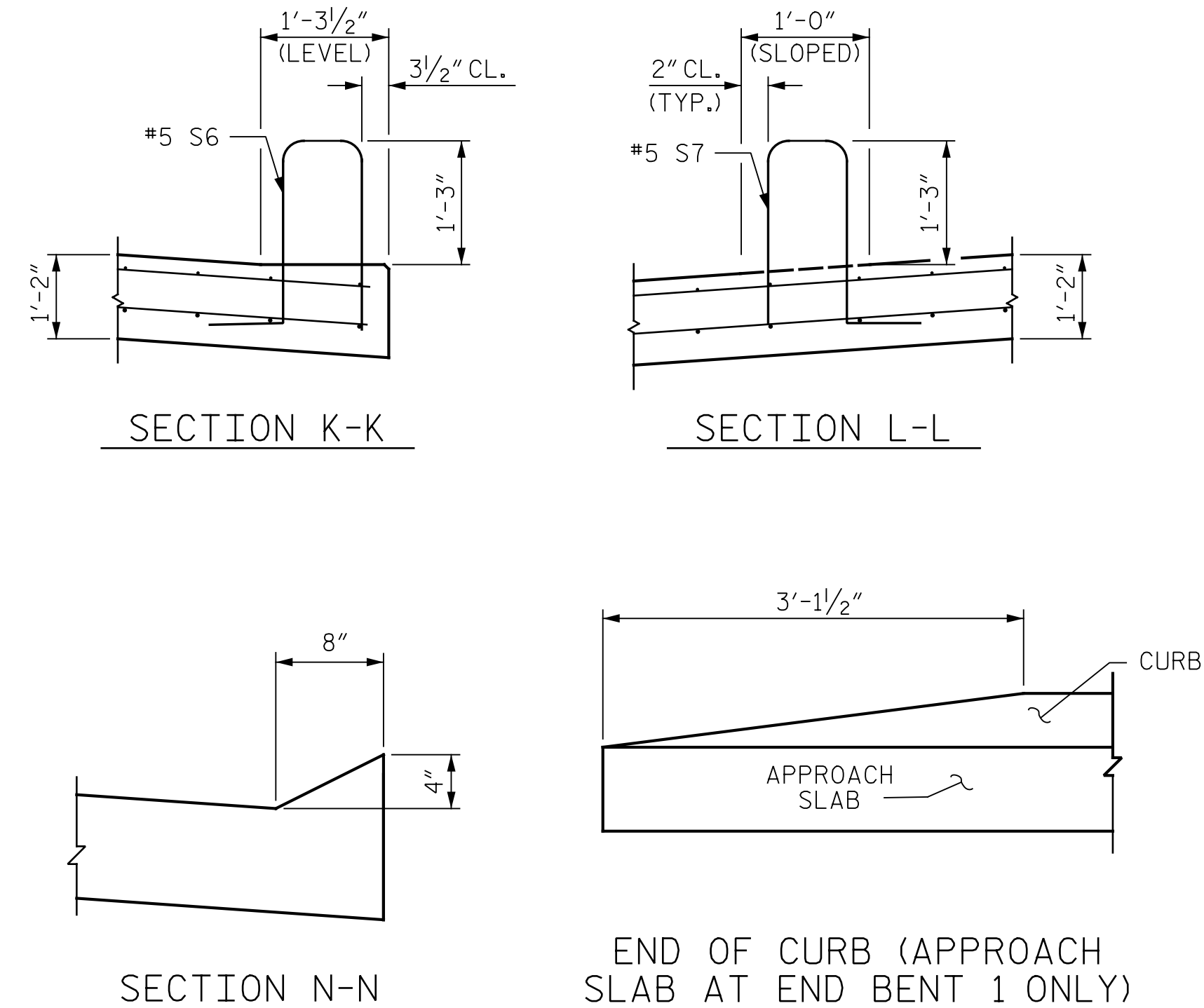


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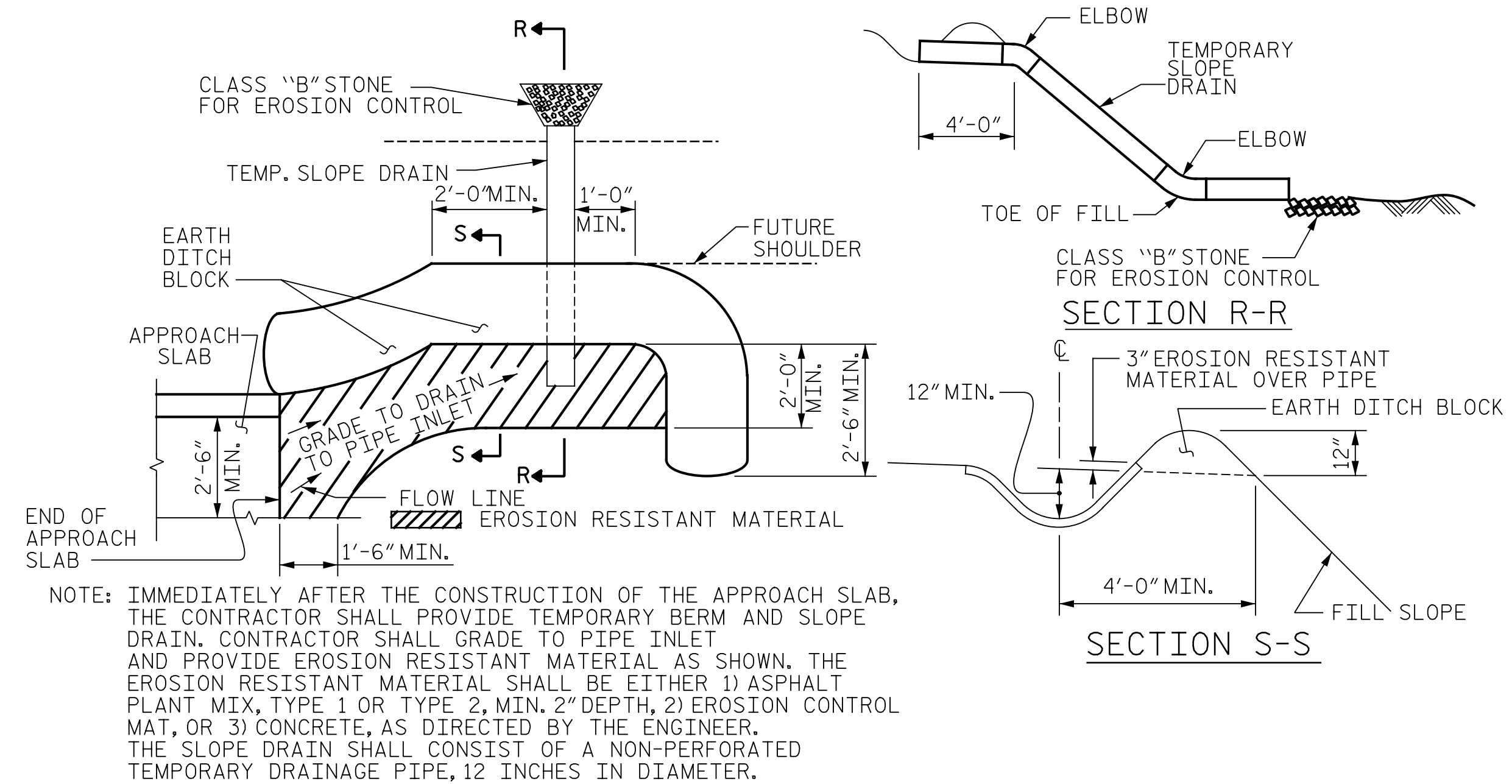
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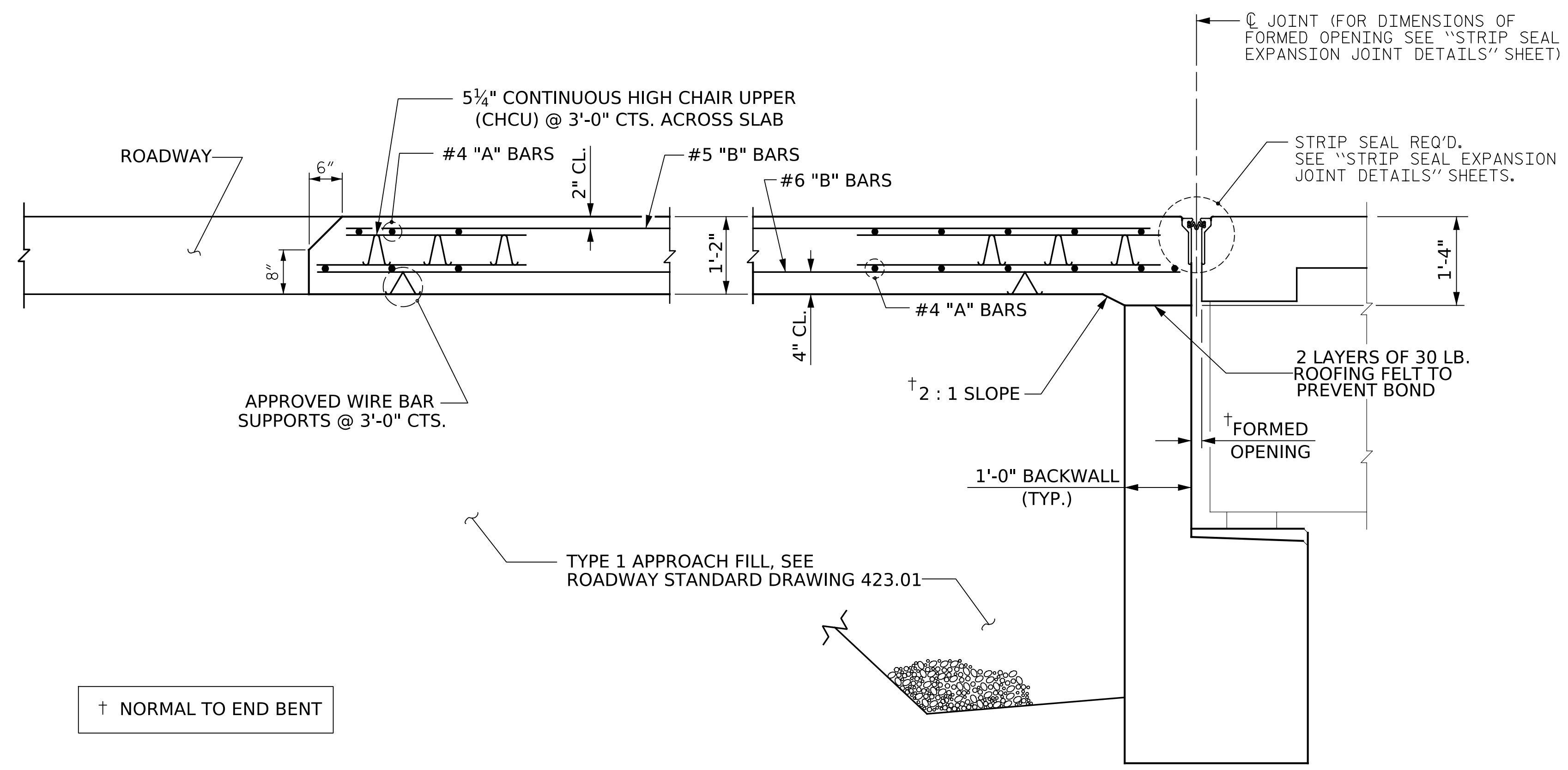


CURB DETAILS

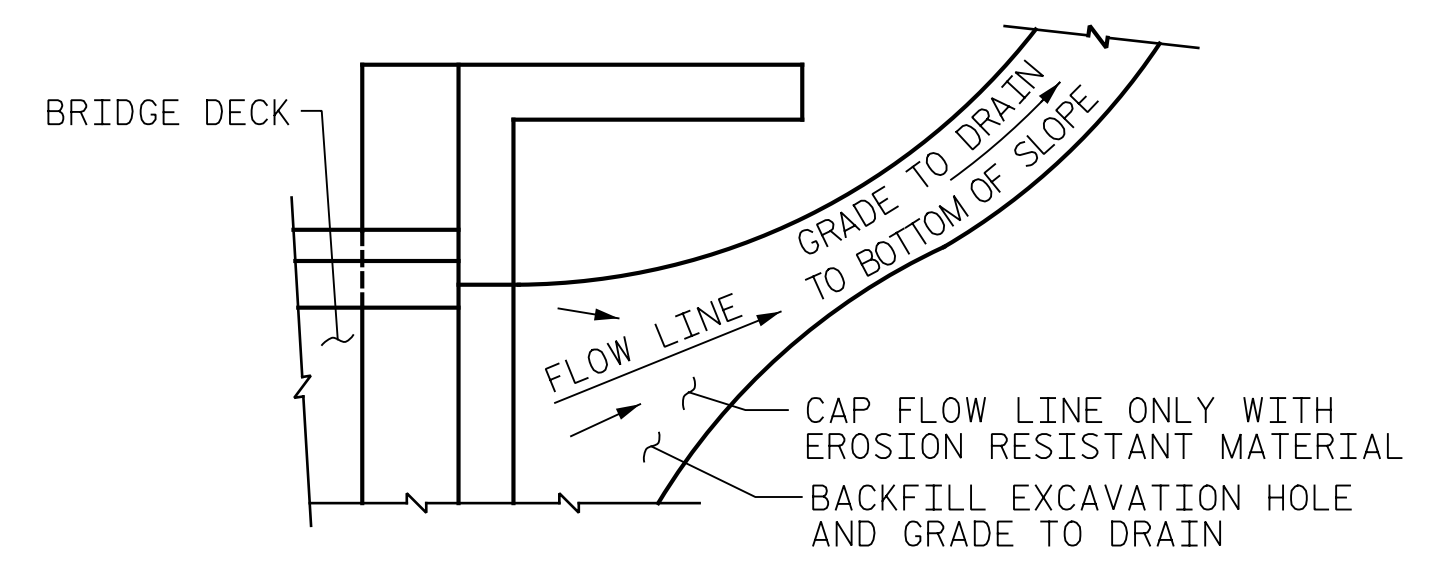


TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB

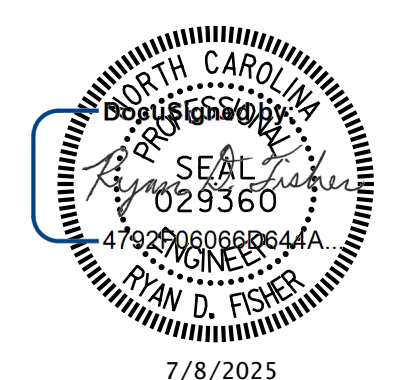


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 2 OF 3



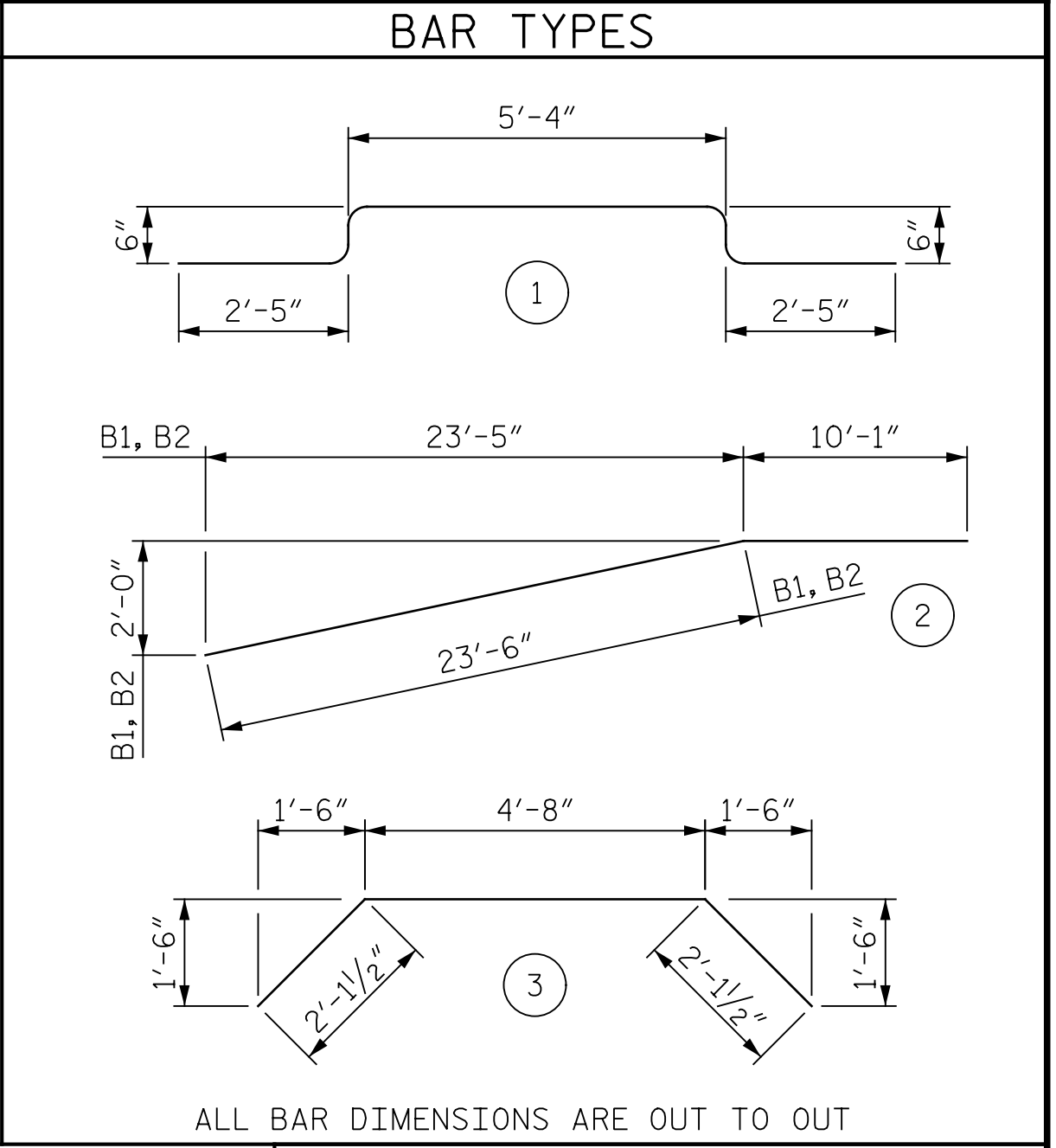
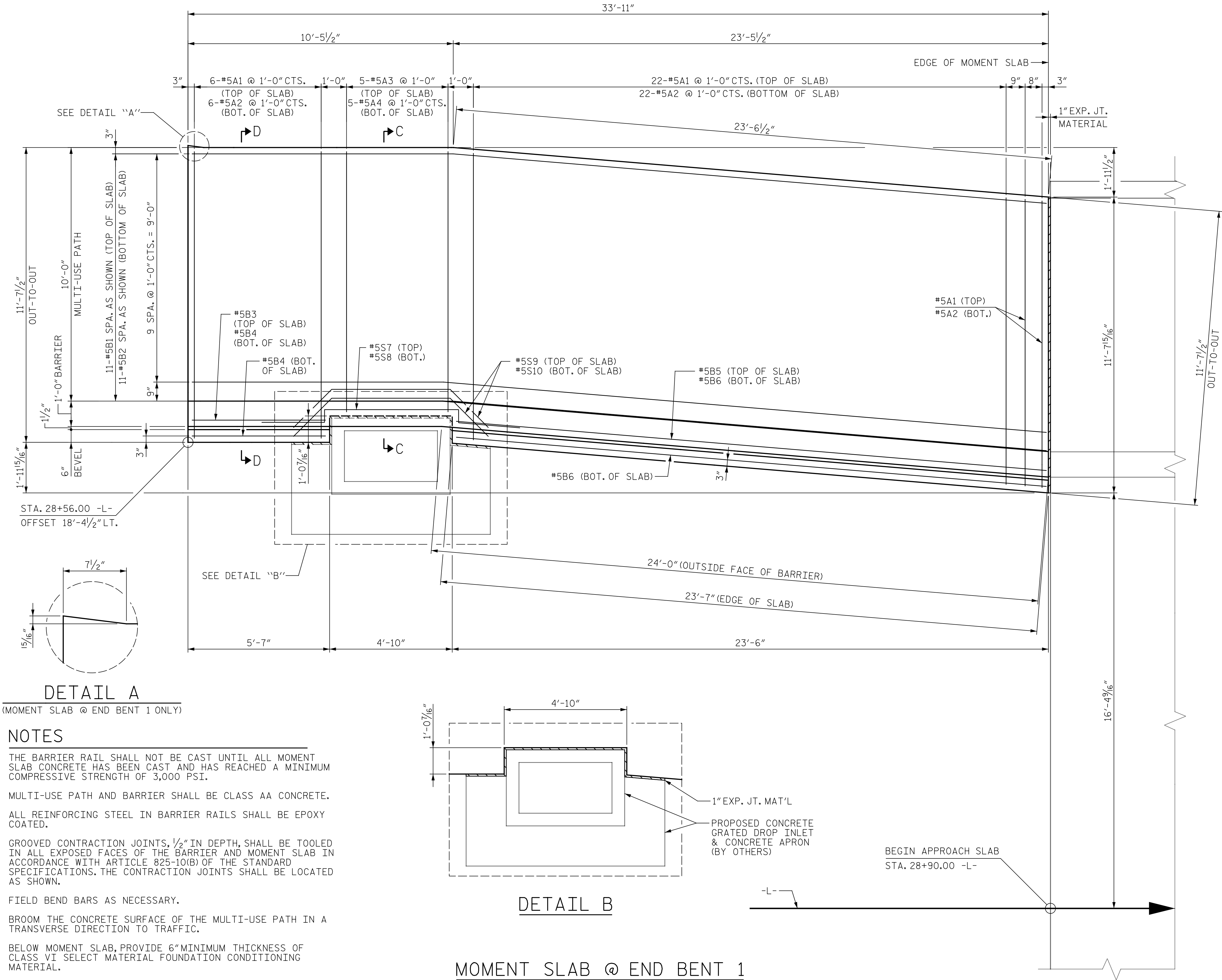
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			TOTAL SHEETS 61

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ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR MOMENT SLAB @ END BENT 1 ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	12	#5	STR.	11'-3"	141
A2	12	#5	STR.	11'-3"	141
* A3	5	#5	STR.	10'-3"	53
A4	5	#5	STR.	10'-3"	53
* B1	11	#5	2	33'-7"	385
B2	11	#5	2	33'-7"	385
* B3	1	#5	STR.	5'-3"	5
B4	2	#5	STR.	5'-3"	11
* B5	1	#5	STR.	23'-2"	24
B6	2	#5	STR.	23'-2"	48
* S7	1	#5	1	11'-2"	12
S8	1	#5	1	11'-2"	12
* S9	2	#5	3	8'-11"	19
S10	2	#5	3	8'-11"	19

REINFORCING STEEL ** 669 LBS.

* EPOXY COATED
REINFORCING STEEL ** 639 LBS.

CLASS AA CONCRETE ** 14.3 CU. YDS.

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 3 OF 3.

PROJECT NO. R-3430B
BURKE & CALDWELL COUNTY
STATION: 34+52.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
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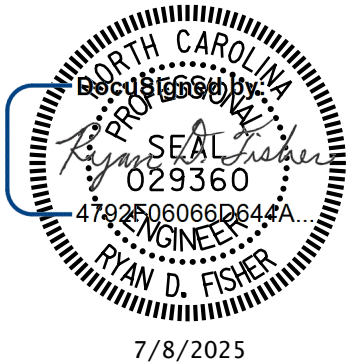
MOMENT SLABS

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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-59
2			4			TOTAL SHEETS 61

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DETAIL A (MOMENT SLAB @ END BENT 1 ONLY)

NOTES

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

MULTI-USE PATH AND BARRIER SHALL BE CLASS AA CONCRETE.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER AND MOMENT SLAB IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AS SHOWN.

FIELD BEND BARS AS NECESSARY.

BROOM THE CONCRETE SURFACE OF THE MULTI-USE PATH IN A TRANSVERSE DIRECTION TO TRAFFIC.

BELOW MOMENT SLAB, PROVIDE 6" MINIMUM THICKNESS OF CLASS VI SELECT MATERIAL FOUNDATION CONDITIONING MATERIAL.

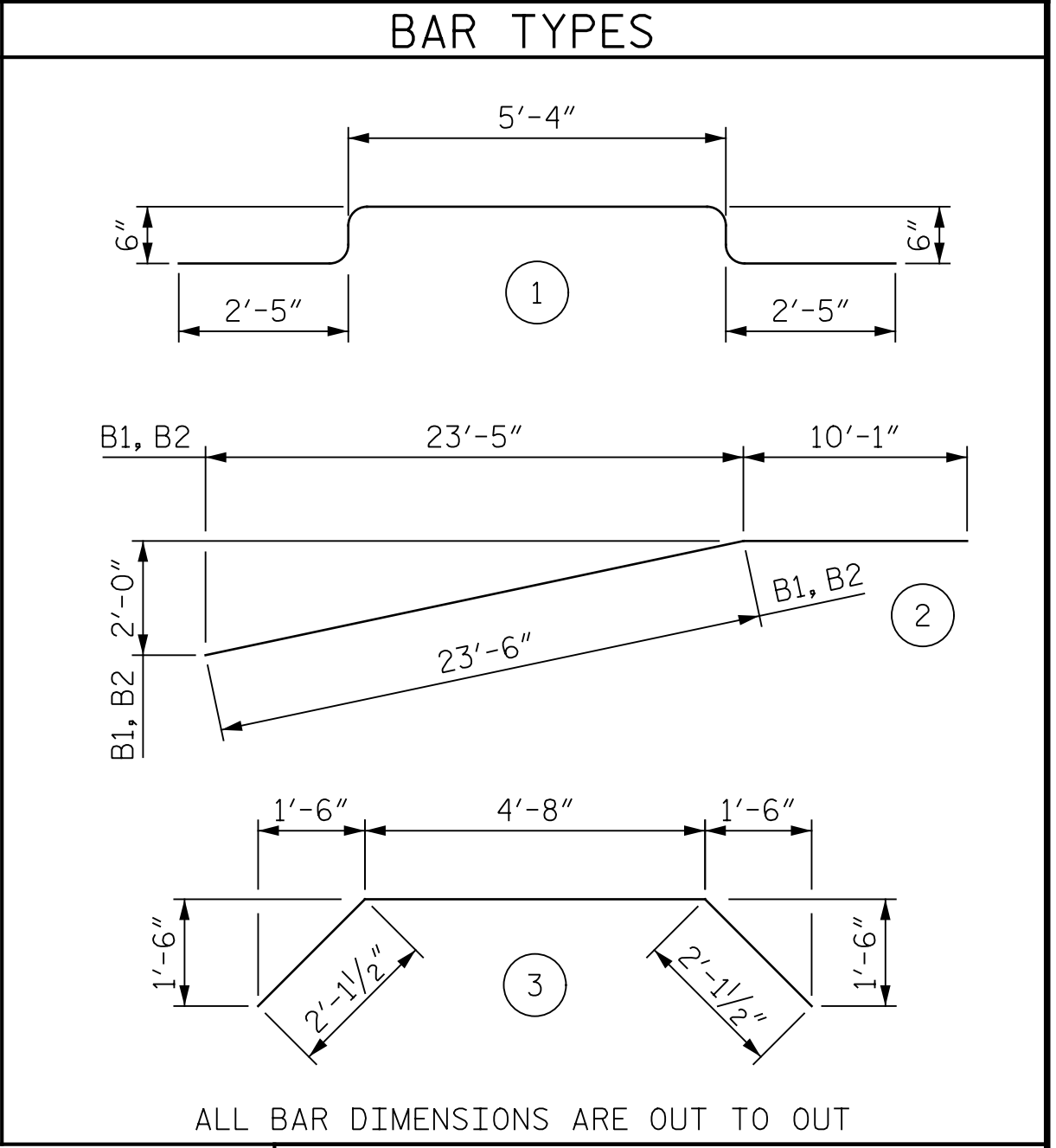
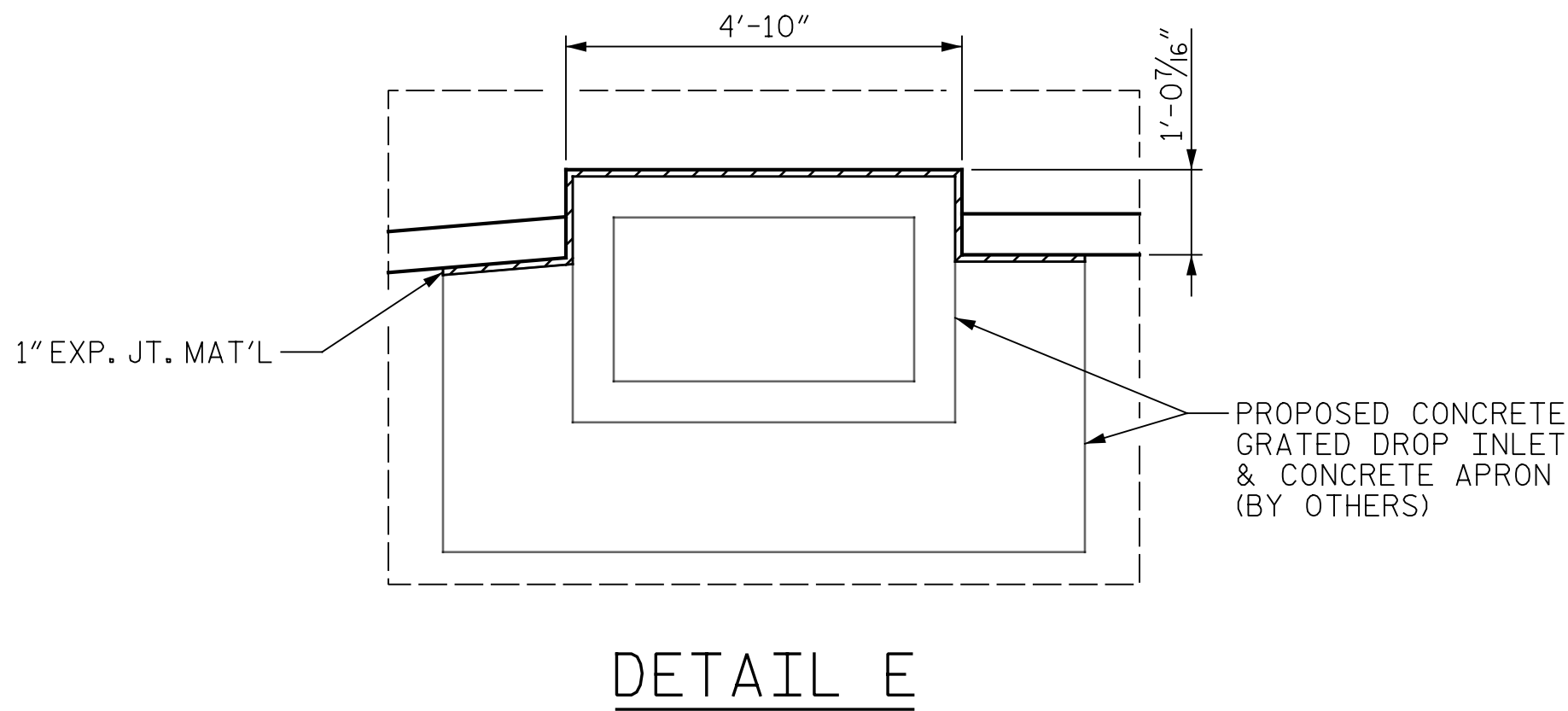
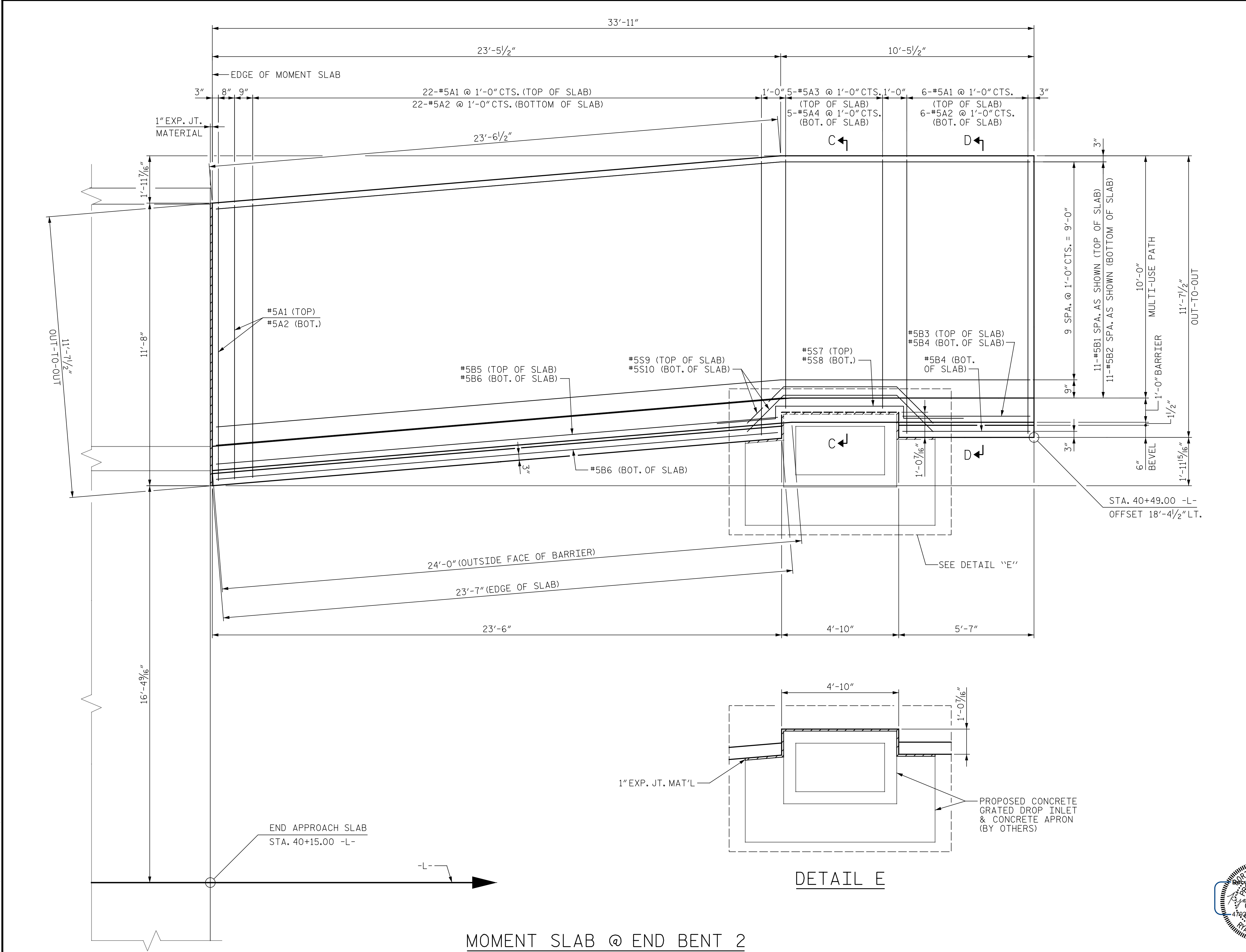
FOR VERTICAL CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SPECIAL PROVISIONS.

DRAWN BY : M. SPENCER DATE : 09/2023
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DETAIL B

MOMENT SLAB @ END BENT 1

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ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR MOMENT SLAB @ END BENT 2 ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	12	#5	STR.	11'-3"	141
A2	12	#5	STR.	11'-3"	141
* A3	5	#5	STR.	10'-3"	53
A4	5	#5	STR.	10'-3"	53
* B1	11	#5	2	33'-7"	385
B2	11	#5	2	33'-7"	385
* B3	1	#5	STR.	5'-3"	5
B4	2	#5	STR.	5'-3"	11
* B5	1	#5	STR.	23'-2"	24
B6	2	#5	STR.	23'-2"	48
* S7	1	#5	1	11'-2"	12
S8	1	#5	1	11'-2"	12
* S9	2	#5	3	8'-11"	19
S10	2	#5	3	8'-11"	19

REINFORCING STEEL ** 669 LBS.

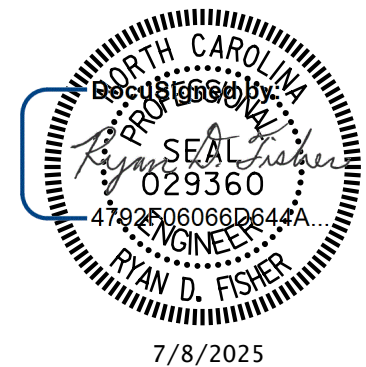
* EPOXY COATED
REINFORCING STEEL ** 639 LBS.

CLASS AA CONCRETE ** 14.3 CU. YDS.

** QUANTITIES FOR BARRIER RAIL ARE
NOT INCLUDED. SEE SHEET 3 OF 3.

PROJECT NO. R-3430B
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SHEET 2 OF 3



STATE OF NORTH CAROLINA
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MOMENT SLABS

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2			4			TOTAL SHEETS 61