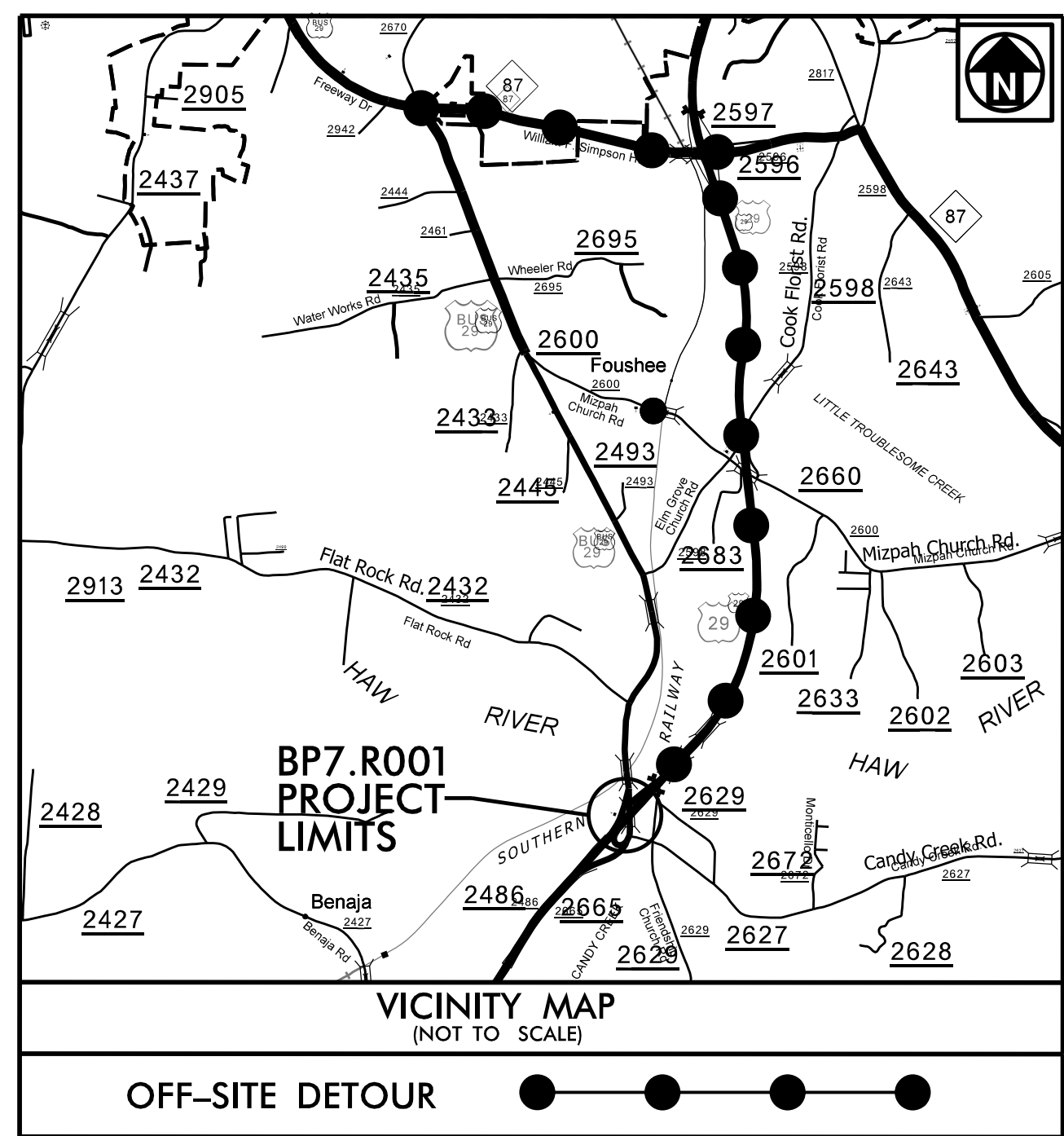


09/28/19

3/5/2026
 F:\Reign\Projects\2023\Div 7 (Mott MacDonald)\BP7R001\Rockingham_23\Structures\Drawings\Final\BP7R001_SMU_TSH_780023.dgn
 Thomads.Bankovich

PROJECT: BP7.R001

CONTRACT: C205186



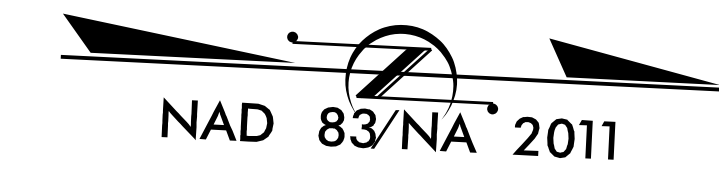
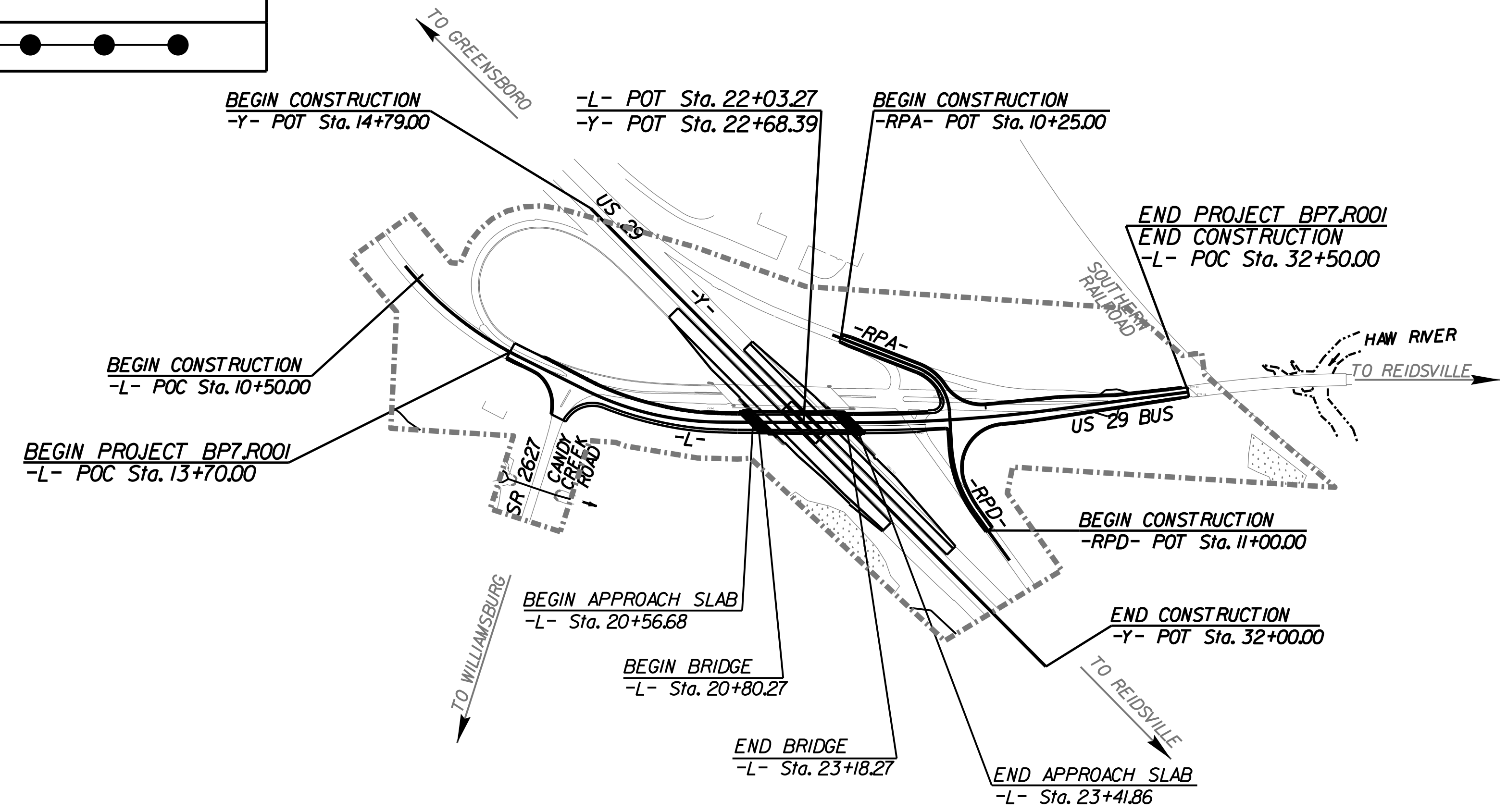
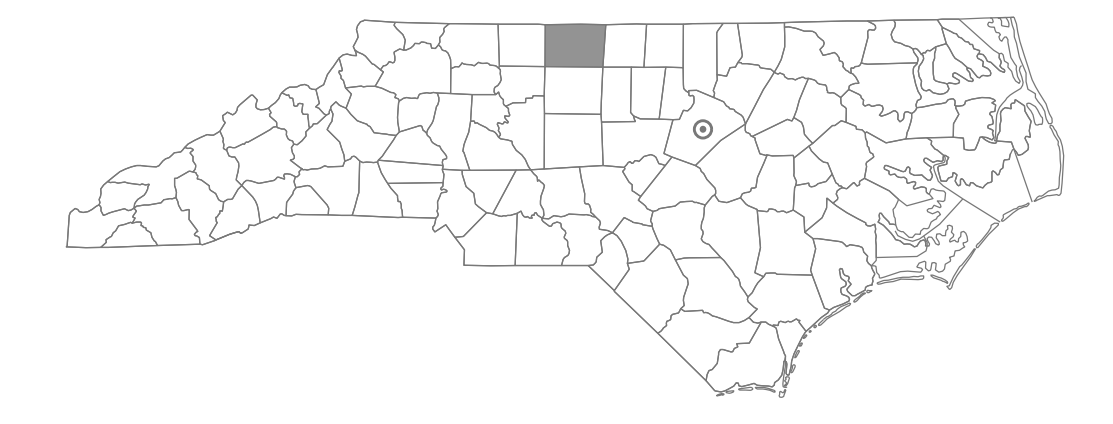
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

LOCATION: BRIDGE NO. 780023 OVER US 29 ON US 29 BUSINESS

TYPE OF WORK: DRAINAGE, GRADING, PAVING, STRUCTURE, AND RETAINING WALLS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP7.R001		
STATE PROJECT NO.	P.A. PROJ. NO.	DESCRIPTION	
BP7.R001.1		PE	
BP7.R001.2		ROW	
BP7.R001.3		CONSTR.	



STRUCTURE

DESIGN DATA
ADT 2026 = 9,720
ADT 2040 = 14,250
V = 45 MPH
SUB REGIONAL TIER MAJOR COLLECTOR

PROJECT LENGTH
LENGTH ROADWAY PROJECT = 0.311 MILES
LENGTH STRUCTURE PROJECT = 0.045 MILES
TOTAL LENGTH PROJECT = 0.356 MILES

Prepared In the Office of WGI for DIVISION 7 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: OCTOBER, 17, 2025	TIM JORDAN, PE PROJECT ENGINEER
LETTING DATE: JUNE, 16, 2026	TRENT J. CORMIER, PE HYDRAULIC ENGINEER
NCDOT CONTACT:	DANIEL DAGENHART DIVISION BRIDGE PROGRAM MANAGER

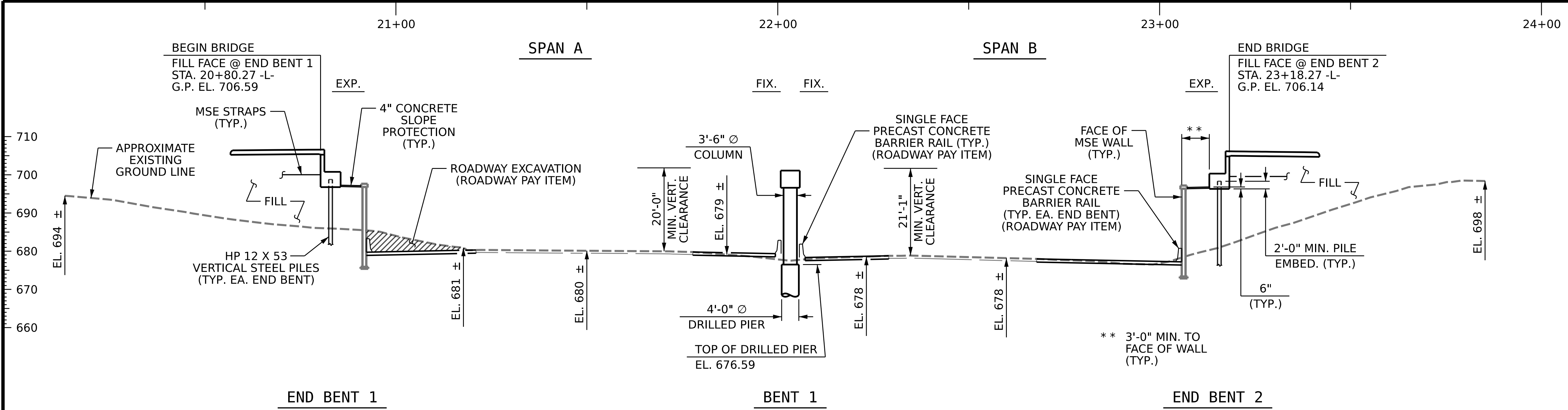
ENGINEER

3/5/2026 | 10:51 AM PST

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

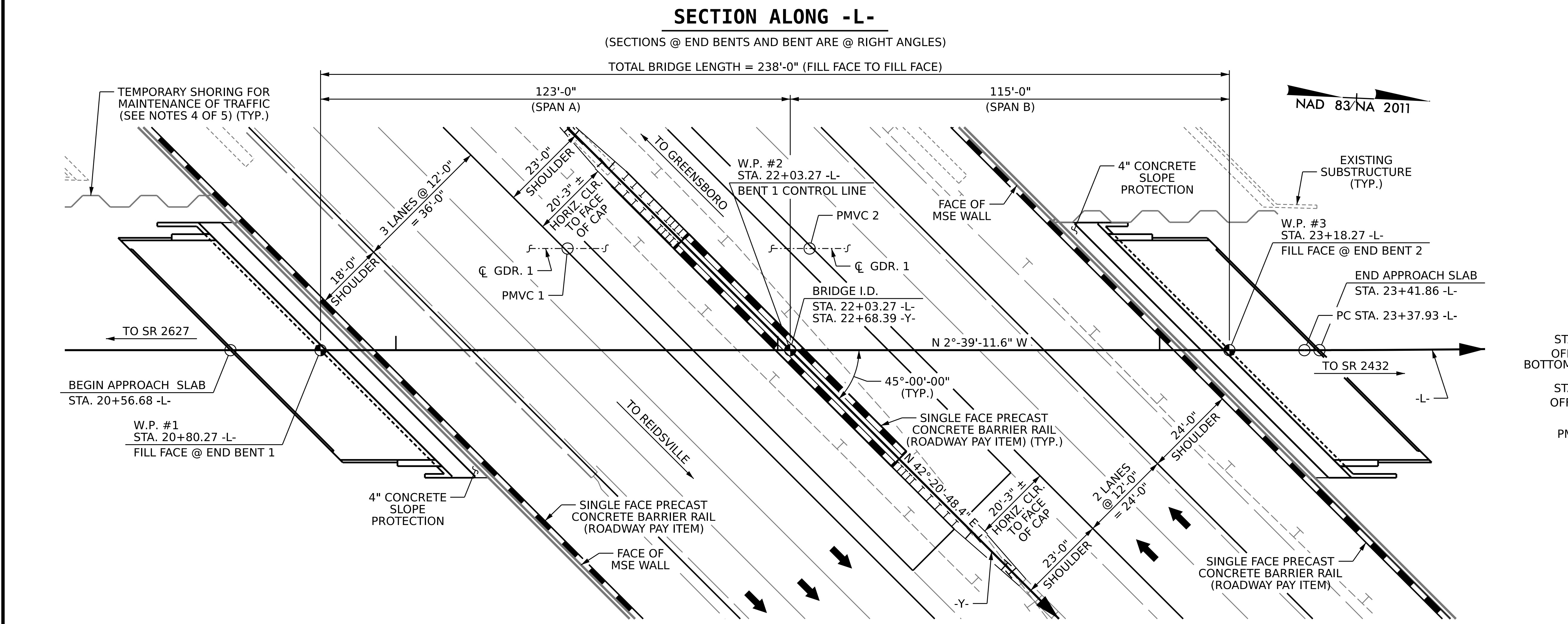
5640 Ollard Drive, Suite 200
Cory, NC 27518
LICENSURE NO. C-5315



(+) 1.0133% (-) 1.4000%

PVI STA. 22+00.00
 EL. = 707.84
 VC = 300'

GRADE DATA -L-



HORIZONTAL CURVE DATA

PI STA. 26+07.96 -L-
 $\Delta = 7^\circ-43'-26.2"$ (LT.)
 $D = 1^\circ-25'-56.6"$
 $L = 539.23'$
 $T = 270.03'$
 $R = 4,000.00'$

PMVC 1	PMVC 2
STA. 21+45.00 -L- OFFSET 26'-7½" LT. BOTTOM OF GDR. EL. 700.93	STA. 22+08.69 -L- OFFSET 26'-7½" LT. BOTTOM OF GDR. EL. 700.92
STA. 22+08.36 -Y- OFFSET 22'-4½" RT. EL. 680.90	STA. 22+53.40 -Y- OFFSET 22'-8" LT. EL. 679.80

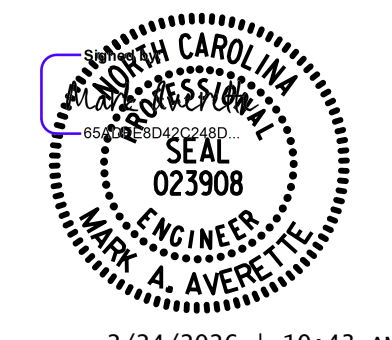
PMVC = POINT OF MINIMUM VERTICAL CLEARANCE

PROJECT NO. BP7.R001
 ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-
22+68.39 -Y-

SHEET 1 OF 5 REPLACES BRIDGE #780023

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 29 BUS.
 OVER US 29
 BETWEEN SR 2627 AND SR 2432



5640 Dillard Drive, Suite 200
 Cary, NC 27518
 LICENSURE NO. C-5315

2/24/2026 | 10:43 AM

DRAWN BY: T. BANKOVICH DATE: 9-25
 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

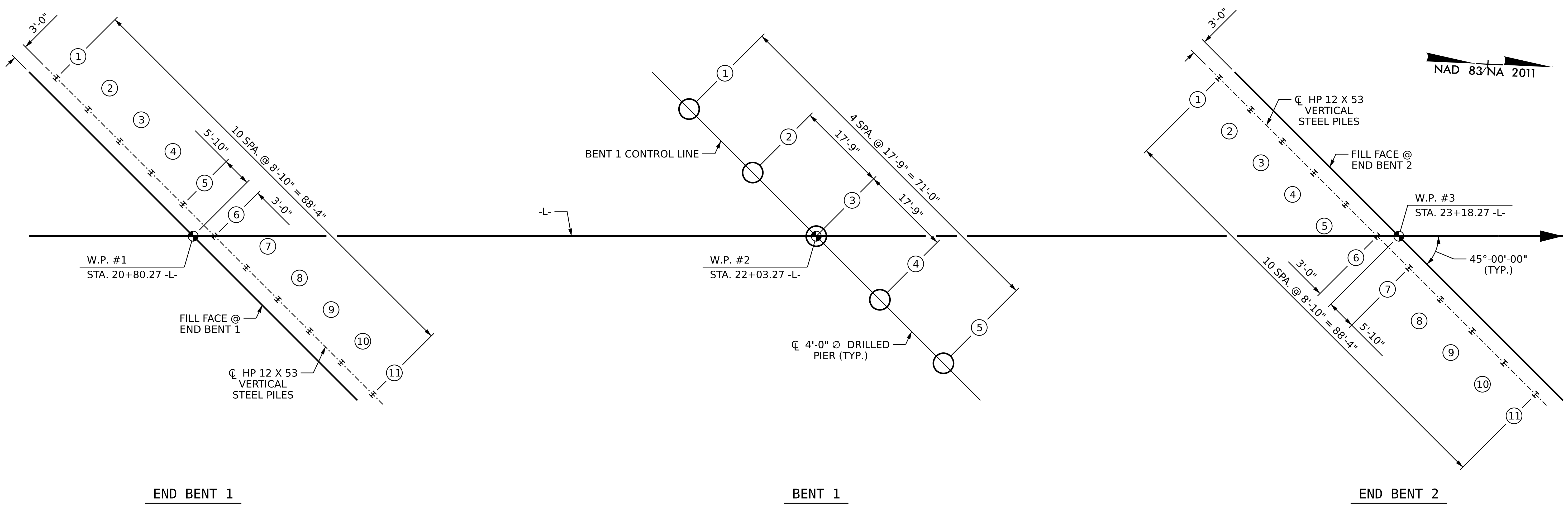
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

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

TOTAL SHEETS: 41

2/24/2026 1:23:54 PM P:\Raleigh\Projects\2023\Div 7 (Mott MacDonald)\BP7R001 Rockingham 23\Structures\Drawings\Final\BP7R001_SMU_GD01_780023.dgn

2/24/2026 1:23:59 PM P:\Raleigh\Projects\2023\Div 7 (Mott MacDonald)\BP7R001 Rockingham 23\Structures\Drawings\Final\BP7R001_SMU_FL_780023.dgn
 Docusign Envelope ID: 96818A31-BEC2-4E15-BF49-49D048AAF406



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO BE THE CENTERLINE OF PILES)

Ⓝ INDICATES PILE OR DRILLED PIER NUMBER

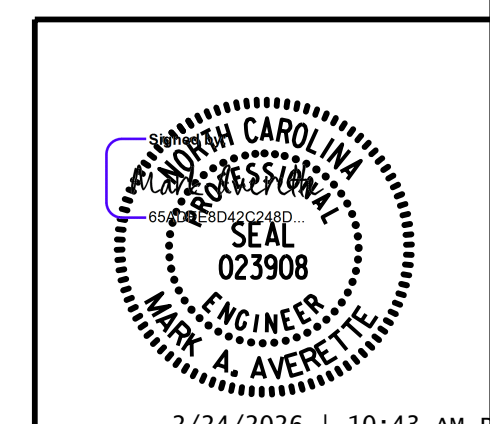
FOUNDATION NOTES:

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 29 BUS.
 OVER US 29
 BETWEEN SR 2627 AND SR 2432



LICENSURE NO. C-5315

2/24/2026 10:43 AM

DRAWN BY :	T. BANKOVICH	DATE :	9-25
CHECKED BY :	M.A. AVERETTE	DATE :	9-25
DESIGN ENGINEER OF RECORD :	M.A. AVERETTE	DATE :	9-25

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

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

TOTAL SHEETS	41
SHEET NO.	5-2

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")	Number of Piles per Line	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		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-11	11	245	Varies. See Structure Plans.	60			410							
End Bent 2, Piles 1-11	11	245	697.98	40			410							
TOTAL QUANTITY:									0					

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

** 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.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag 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 1-11	245			0.6		
End Bent 2, Piles 1-11	245			0.6		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-11				11
End Bent 2, Piles 1-11				11
TOTAL QUANTITY:				22

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)			Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH	End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT
End Bent 1	65	1		
End Bent 2	45			
TOTAL QUANTITY:		1		

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

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")	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 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	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Pier 1-2	2	950	644.0	100		6.0		7.9	24.1			
Bent 1, Piers 3-5	3	950	639.0	100		6.0		10.7	26.3			
TOTAL QUANTITY:								47.9	127.1			

* 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. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "___ Dia. Drilled Piers in Soil."

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

SUMMARY OF DRILLED PIER TESTING

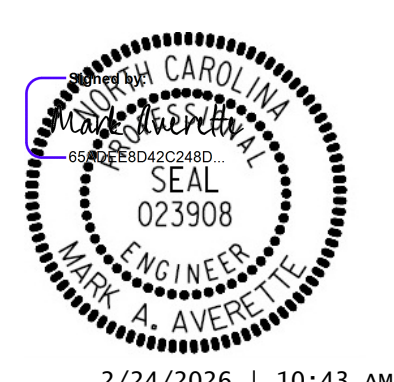
(Blank entries indicate item is not applicable to structure)

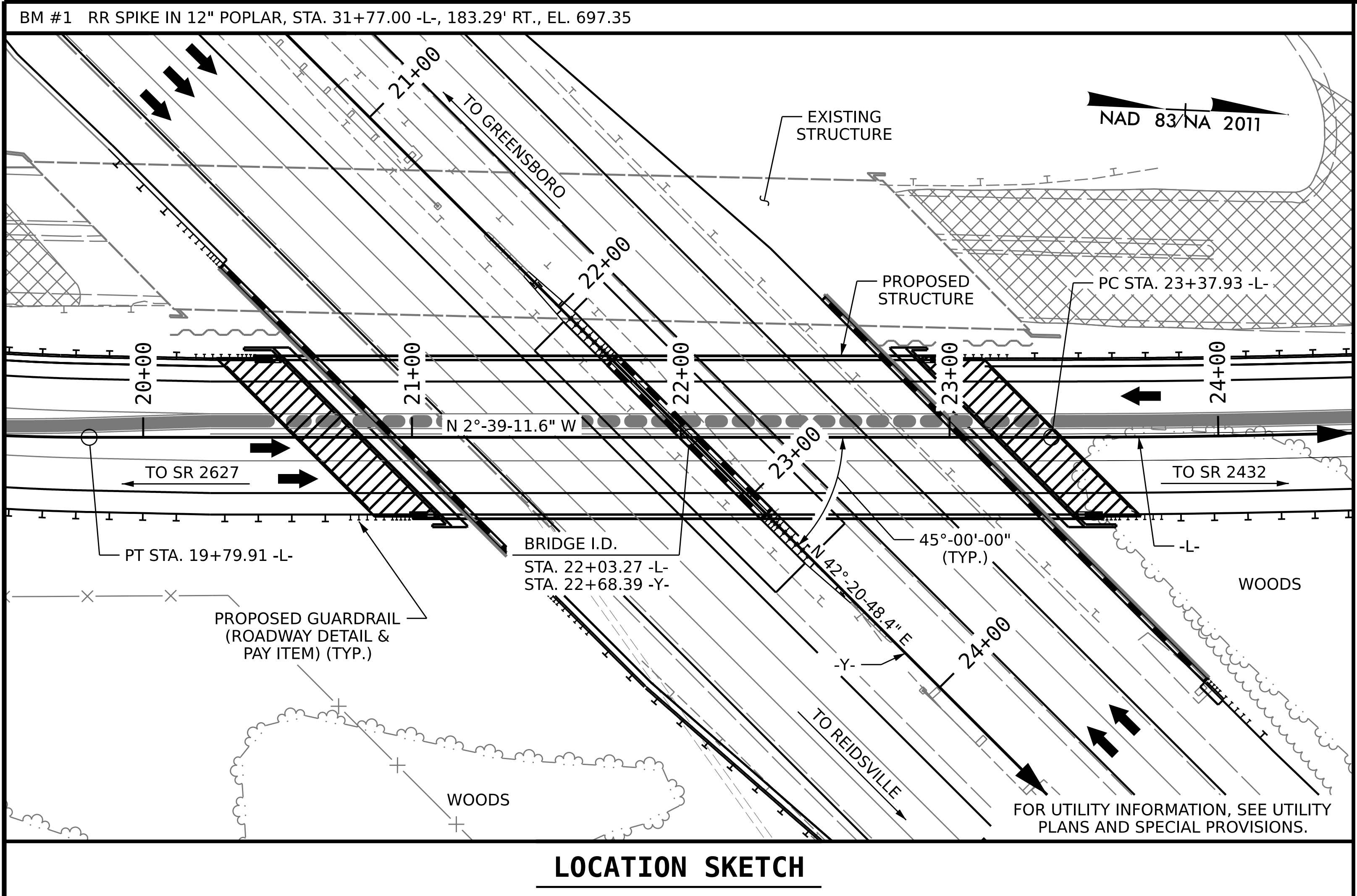
End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-5		1		1	
TOTAL QUANTITY:		1		1	

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Stephen C. Crockett, #048207) on 01-29-2026.
- 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, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-
 SHEET 3 OF 5

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		<h2>PILE AND DRILLED PIER FOUNDATION TABLES</h2>		SHEET NO. S-3 TOTAL SHEETS 41
	REVISIONS				
SIGNATURE _____ DATE _____		NO. 1	BY: _____	DATE: _____	TOTAL SHEETS 41
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		NO. 2	BY: _____	DATE: _____	



NOTES:

- ASSUMED LIVE LOAD - HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR 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.
- THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 22+03.27 -L-."
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY TEMPORARY WALL DETAILS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" DIA. DRILLED PIER IN SOIL	4'-0" DIA. DRILLED PIER NOT IN SOIL	SID INSPECTION	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS 22+03.27 -L-	REINFORCING STEEL
	LS	LS	LF	LF	EA	EA	SF	SF	CY	LS	LB
SUPERSTRUCTURE							14,269	14,044			
END BENT 1									105.7		12,589
BENT 1			130.4	47.9	1	1			123.5		24,917
END BENT 2									100.5		12,579
TOTAL	LS	LS	130.4	47.9	1	1	14,269	14,044	329.7	LS	50,085

TOTAL BILL OF MATERIAL

	SPIRAL COLUMN REINFORCING STEEL	FIB 54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	STRIP SEALS EXPANSION JOINTS	CONCRETE MEDALLION PANEL
	LB	NO.	LF	EA	NO.	LF	EA	EA	LF	SY	LS	LS	EA
SUPERSTRUCTURE		14	1,607.66						469.75		LS	LS	
END BENT 1				11	11	660	11	1		27			
BENT 1	6,994												2
END BENT 2				11	11	440	11			27			
TOTAL	6,994	14	1,607.66	22	22	1,100	22	1	469.75	54	LS	LS	2

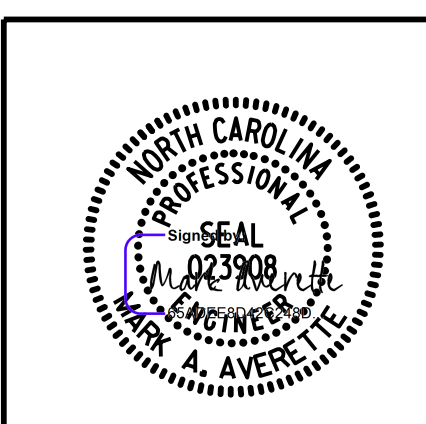
1 CONCRETE MEDALLION PANEL

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 29 BUS.
 OVER US 29
 BETWEEN SR 2627 AND SR 2432



DRAWN BY: T. BANKOVICH DATE: 9-25
 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

LICENSURE NO. C-5315
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1	M.A.A.	6-8-26	3	
2			4	

TOTAL SHEETS: 41

6/9/2026 11:26:02 AM P:\Raleigh\Projects\2023\Div 7 (Mott MacDonaid)\BP7.R001 Rockingham 23\Structures\Drawings\Final\BP7.R001_SMU_G004_780023.dgn

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

LOAD TYPE	VEHICLE	WEIGHT (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE - LOAD FACTORS (Y _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE - LOAD FACTORS (Y _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.35	--	1.75	0.74	1.51	A	ER	58.7	1.019	1.68	A	I	11.2	0.80	0.74	1.35	A	ER	58.7		
	HL-93 (OPERATING)	N/A		1.96	--	1.35	0.74	1.96	A	ER	58.7	1.019	2.18	A	I	11.2	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.96	70.6	1.75	0.74	2.20	A	ER	58.7	1.017	2.57	B	I	10.4	0.80	0.74	1.96	A	ER	58.7		
	HS-20 OPERATING	36.000		2.85	102.6	1.35	0.74	2.85	A	ER	58.7	1.017	3.33	B	I	10.4	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.74	64.0	1.40	0.74	6.65	A	ER	58.7	1.019	9.02	A	I	11.2	0.80	0.74	4.74	A	ER	58.7	
		SNGARBS2	20.000		3.39	67.8	1.40	0.74	4.76	A	ER	58.7	1.019	6.28	A	I	11.2	0.80	0.74	3.39	A	ER	58.7	
		SNAGRIS2	22.000		3.15	69.3	1.40	0.74	4.43	A	ER	58.7	1.019	5.77	A	I	11.2	0.80	0.74	3.15	A	ER	58.7	
		SNCOTTS3	27.250		2.35	64.0	1.40	0.74	3.30	A	ER	58.7	1.017	4.36	B	I	10.4	0.80	0.74	2.35	A	ER	58.7	
		SNAGGRS4	34.925		1.91	66.7	1.40	0.74	2.68	A	ER	58.7	1.017	3.41	B	I	10.4	0.80	0.74	1.91	A	ER	58.7	
		SNS5A	35.550		1.87	66.5	1.40	0.74	2.63	A	ER	58.7	1.017	3.42	B	I	10.4	0.80	0.74	1.87	A	ER	58.7	
		SNS6A	39.950		1.70	67.9	1.40	0.74	2.38	A	ER	58.7	1.017	3.02	B	I	10.4	0.80	0.74	1.70	A	ER	58.7	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	SNS7B	42.000		1.62	68.0	1.40	0.74	2.27	A	ER	58.7	1.017	2.91	B	I	10.4	0.80	0.74	1.62	A	ER	58.7	
		TNAGRIT3	33.000		2.06	68.0	1.40	0.74	2.90	A	ER	58.7	1.017	3.76	B	I	10.4	0.80	0.74	2.06	A	ER	58.7	
		TNT4A	33.075		2.07	68.5	1.40	0.74	2.90	A	ER	58.7	1.017	3.68	B	I	10.4	0.80	0.74	2.07	A	ER	58.7	
		TNT6A	41.600		1.67	69.5	1.40	0.74	2.34	A	ER	58.7	1.017	3.06	B	I	10.4	0.80	0.74	1.67	A	ER	58.7	
		TNT7A	42.000		1.67	70.1	1.40	0.74	2.34	A	ER	58.7	1.017	3.00	B	I	10.4	0.80	0.74	1.67	A	ER	58.7	
		TNT7B	42.000		1.70	71.4	1.40	0.74	2.39	A	EL	58.7	1.017	2.85	B	I	10.4	0.80	0.74	1.70	A	ER	58.7	
		TNAGRIT4	43.000		1.64	70.5	1.40	0.74	2.30	A	EL	58.7	1.017	2.75	B	I	10.4	0.80	0.74	1.64	A	ER	58.7	
EMERGENCY VEHICLE (EV)	TNAGT5A	45.000		1.55	69.8	1.40	0.74	2.18	A	EL	58.7	1.017	2.67	B	I	10.4	0.80	0.74	1.55	A	ER	58.7		
	TNAGT5B	45.000	③	1.54	69.3	1.40	0.74	2.16	A	ER	58.7	1.017	2.58	B	I	10.4	0.80	0.74	1.54	A	ER	58.7		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.38	68.4	1.30	0.74	3.60	A	ER	58.7	1.019	4.64	A	I	11.2	0.80	0.74	2.38	A	ER	58.7		
	EV3	43.000	④	1.57	67.5	1.30	0.74	2.38	A	ER	58.7	1.017	2.89	B	I	10.4	0.80	0.74	1.57	A	ER	58.7		

LOAD FACTORS:

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

NOTES:

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

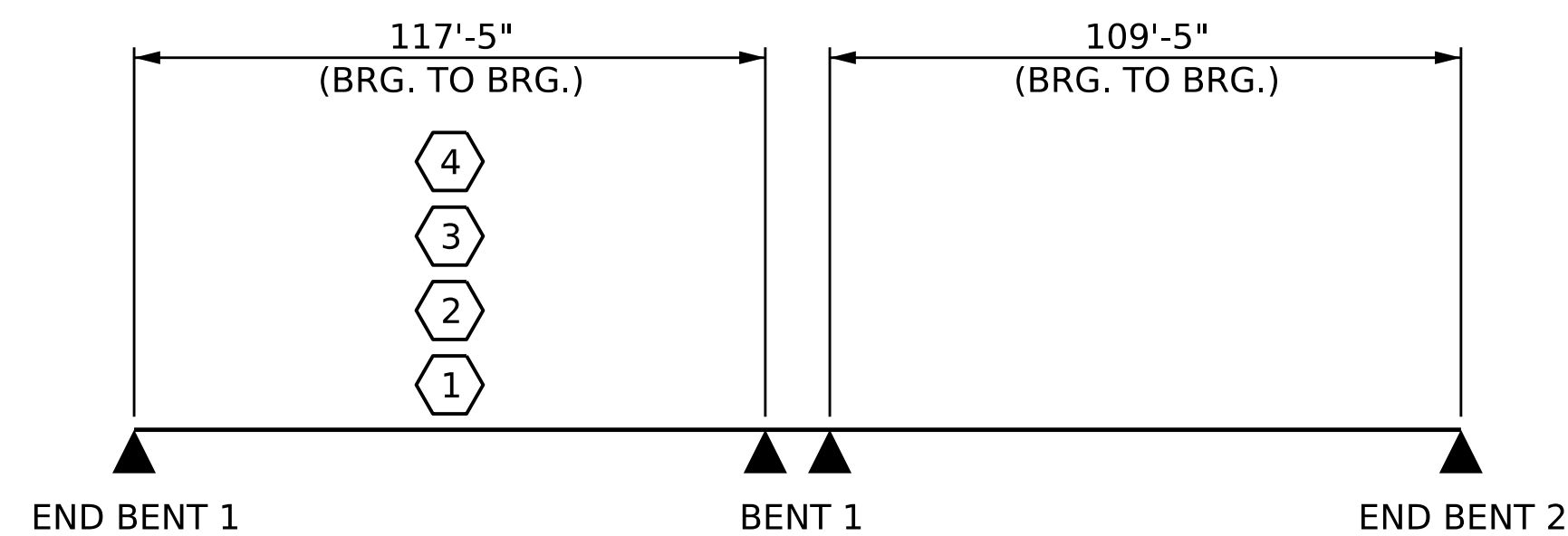
③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

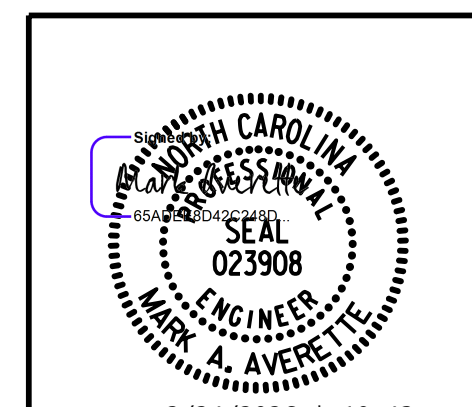
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

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



5640 Dilard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-5315



2/24/2026 | 10:43 AM EST

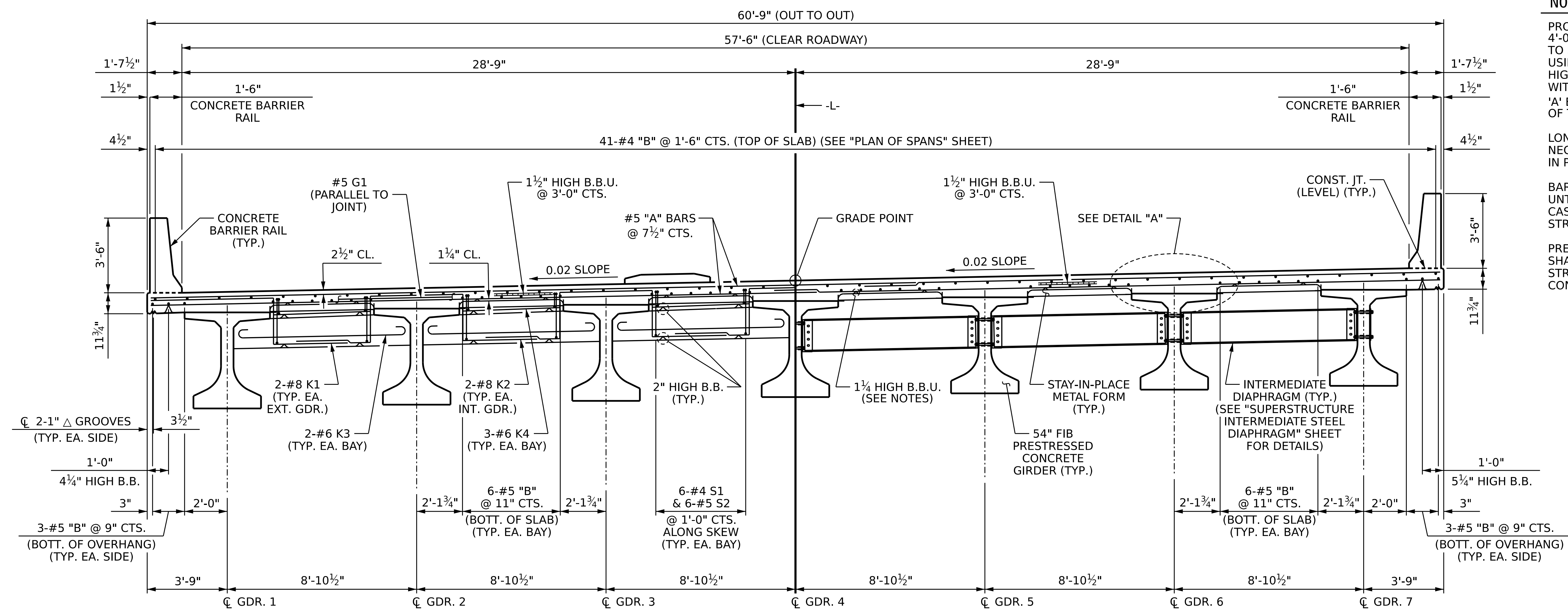
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TOTAL SHEETS
 41

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PARTIAL TYPICAL SECTION
(SHOWING END BENT DIAPHRAGM)

PARTIAL TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGM)

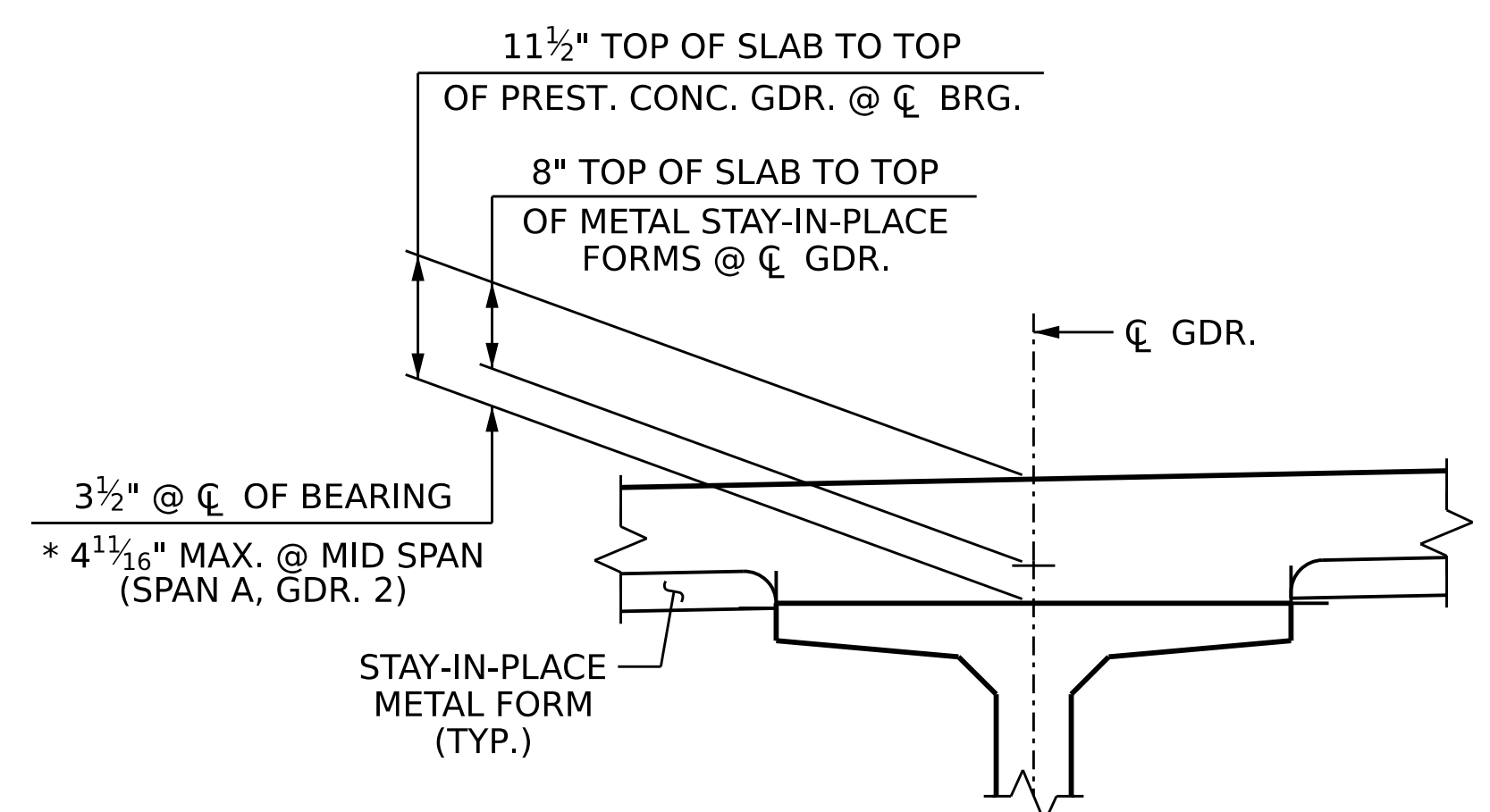
NOTES:

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

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

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

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.



DETAIL "A"
(TYP. EA. GDR.)

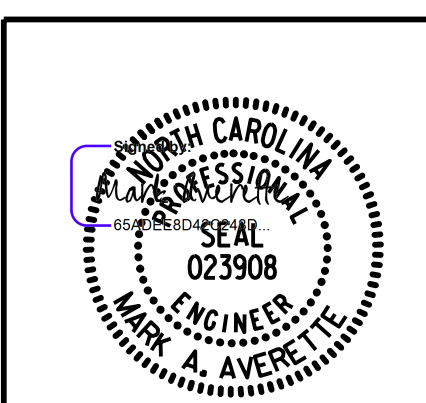
(* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS)

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

TYPICAL SECTION

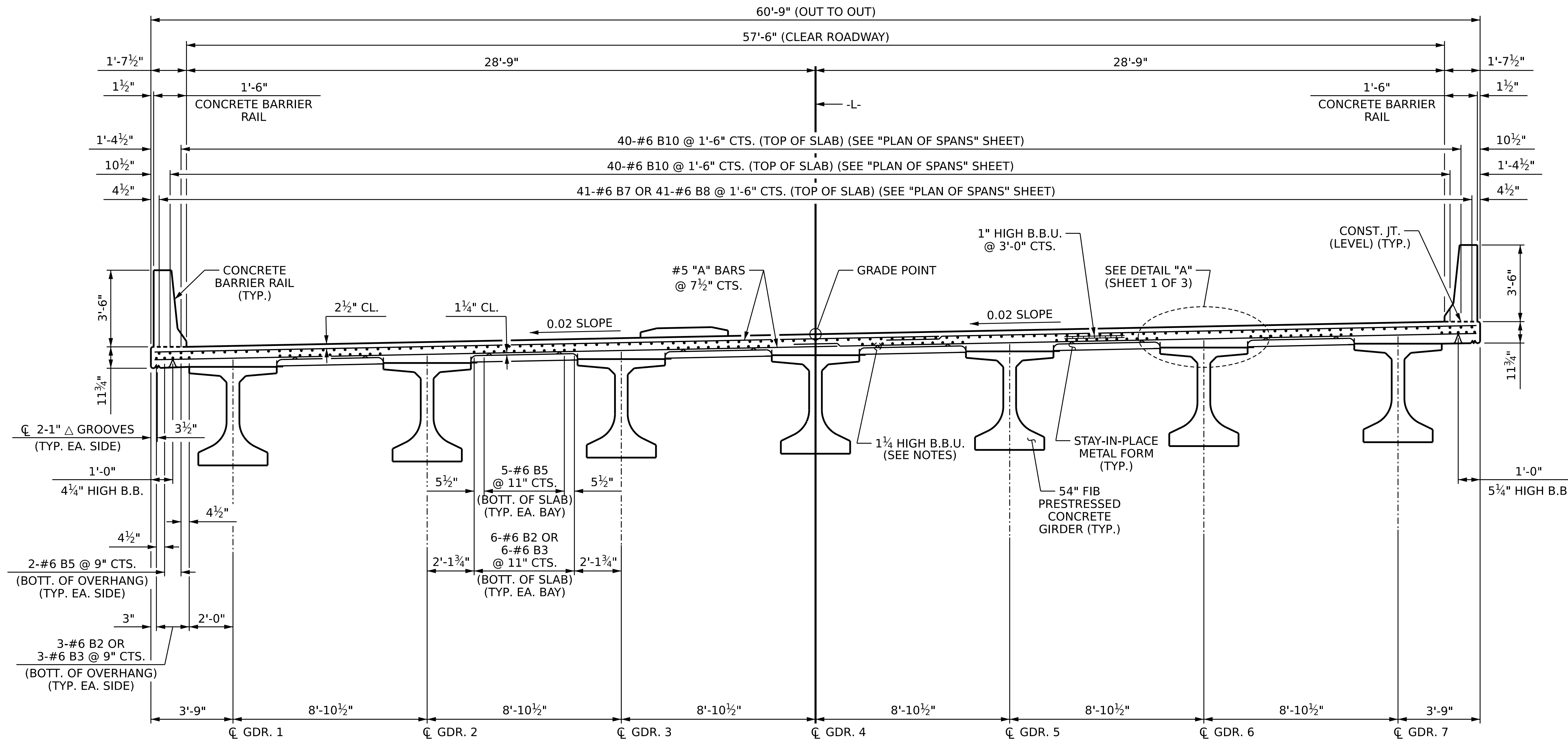


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2			4			41

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TYPICAL SECTION
 (SHOWING LINK SLAB REGION AT INTERIOR BENT)

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

TYPICAL SECTION



5640 Dillard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-5315



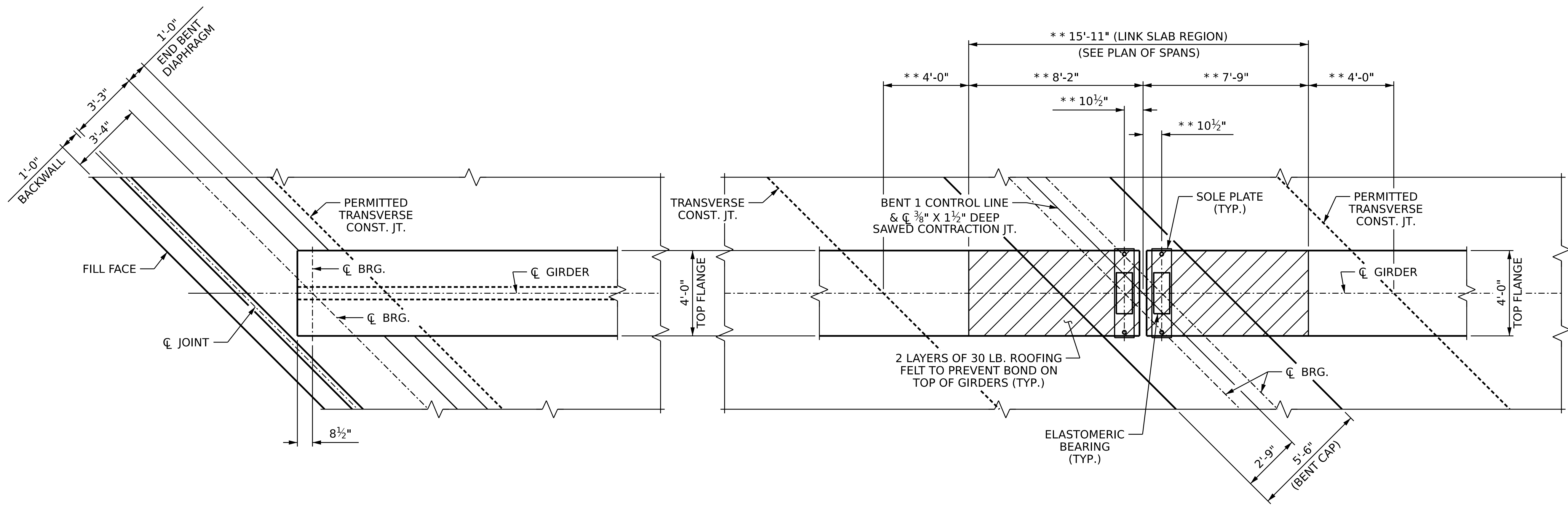
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 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-7
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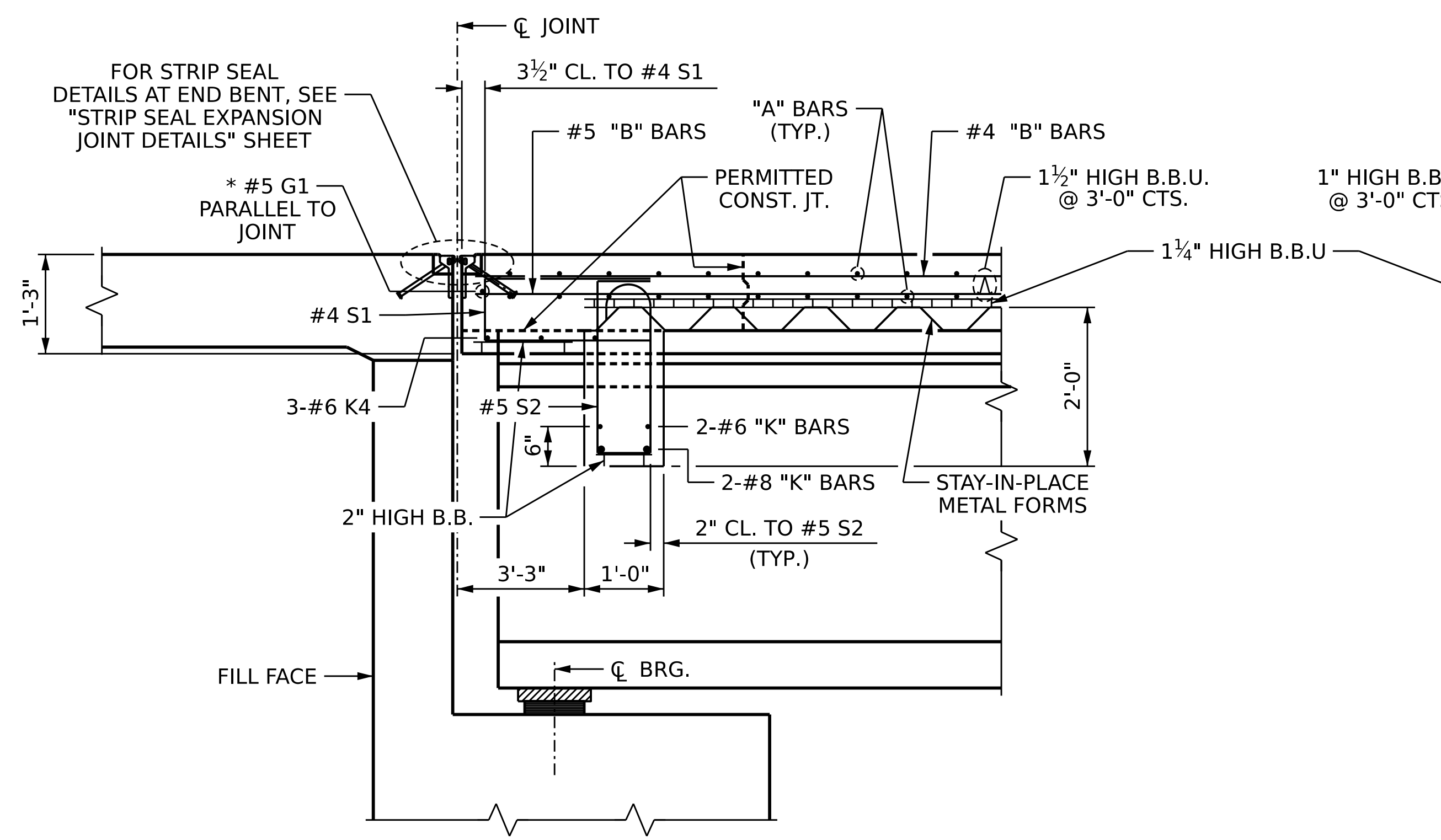
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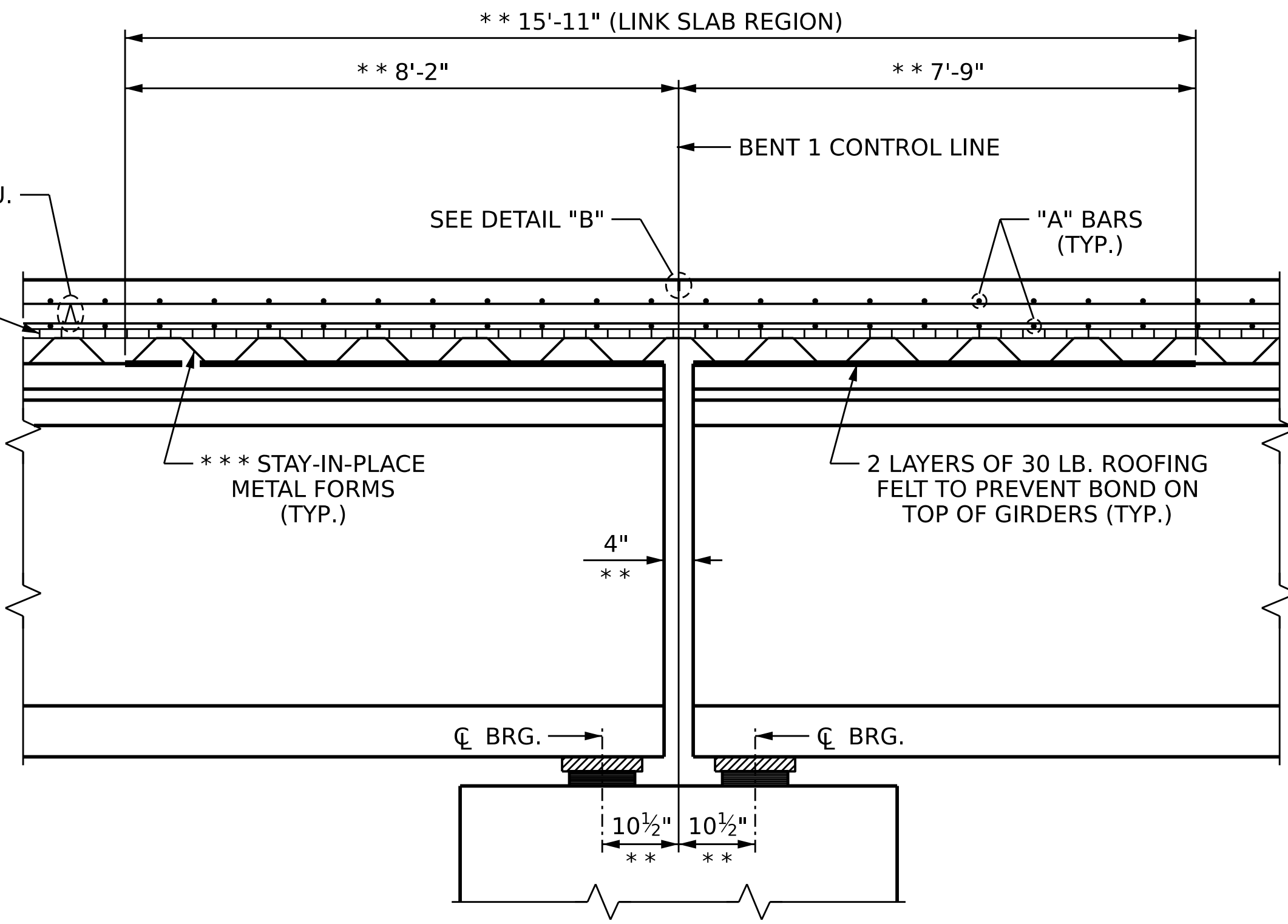
PLAN OF GIRDER AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PLAN OF GIRDER AT BENT - LINK SLAB

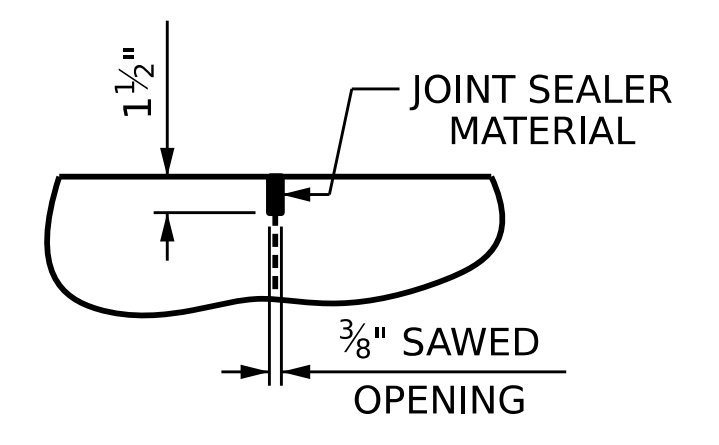
NOTES:
 ** MEASURED ALONG ϕ GIRDER.
 *** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.
 THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS).
 #5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



SECTION A-A
(DIMENSIONS SHOWN ARE NORMAL TO THE END BENT UNLESS OTHERWISE NOTED)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION B-B



DETAIL "B"

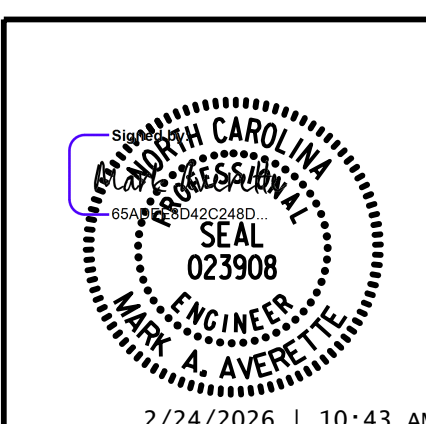
A $\frac{3}{8}$ " WIDE X $\frac{1}{2}$ " DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

TYPICAL SECTION DETAILS



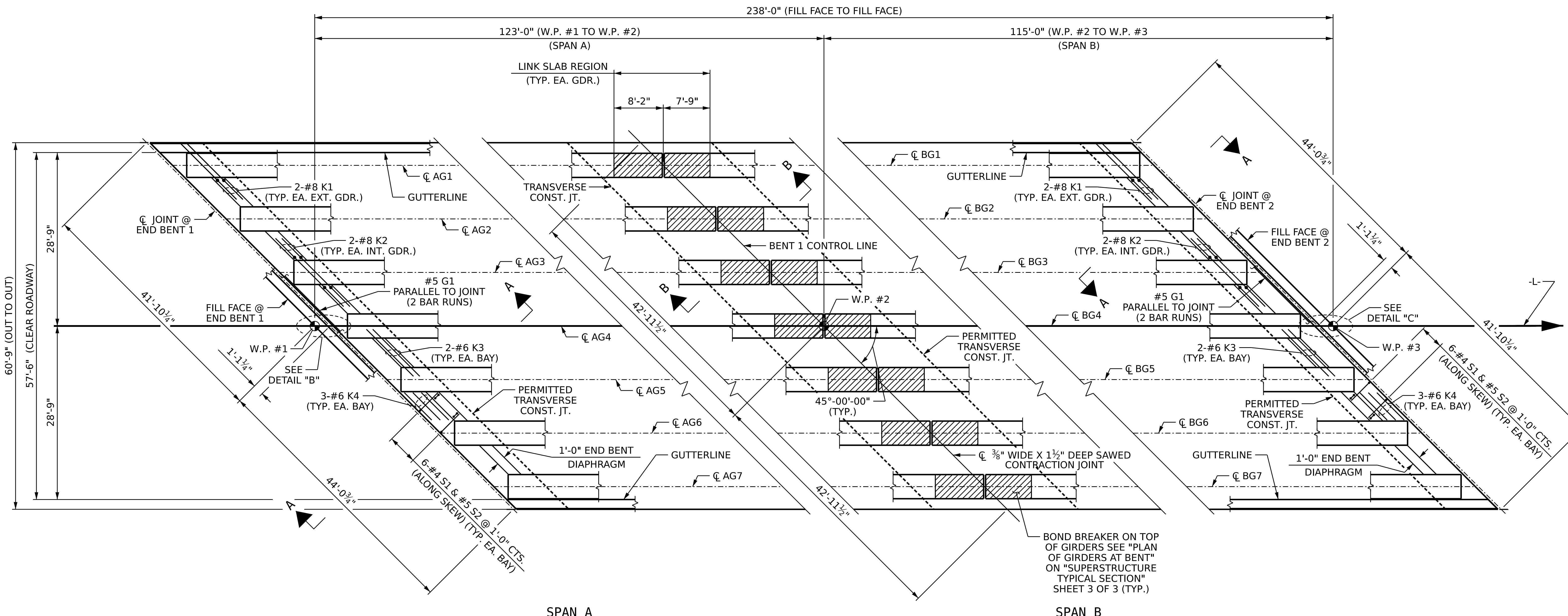
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CHECKED BY:	M.A. AVERETTE	DATE:	9-25
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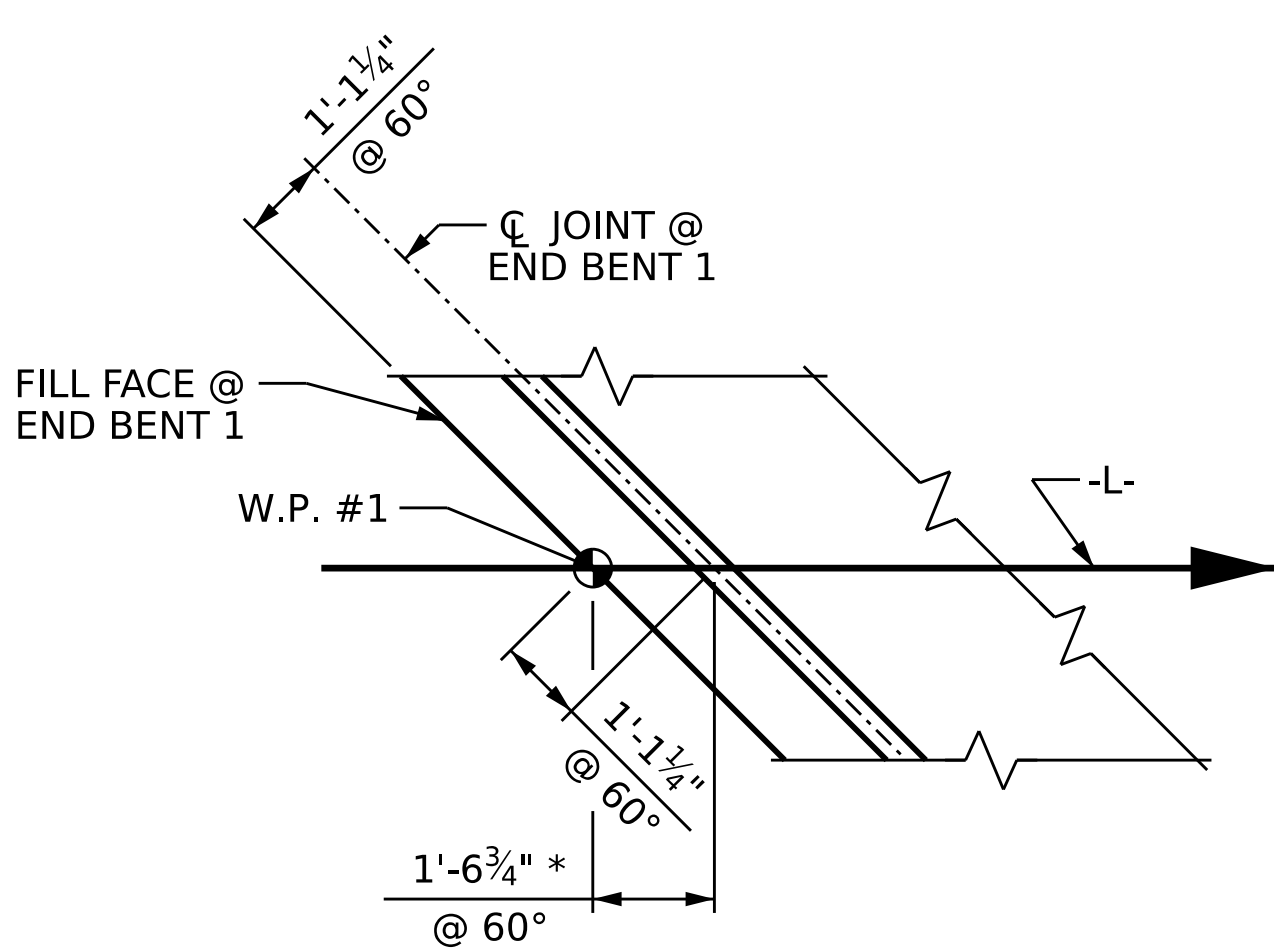
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NO.	BY:	DATE:	NO.	DATE:
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TOTAL SHEETS: 41

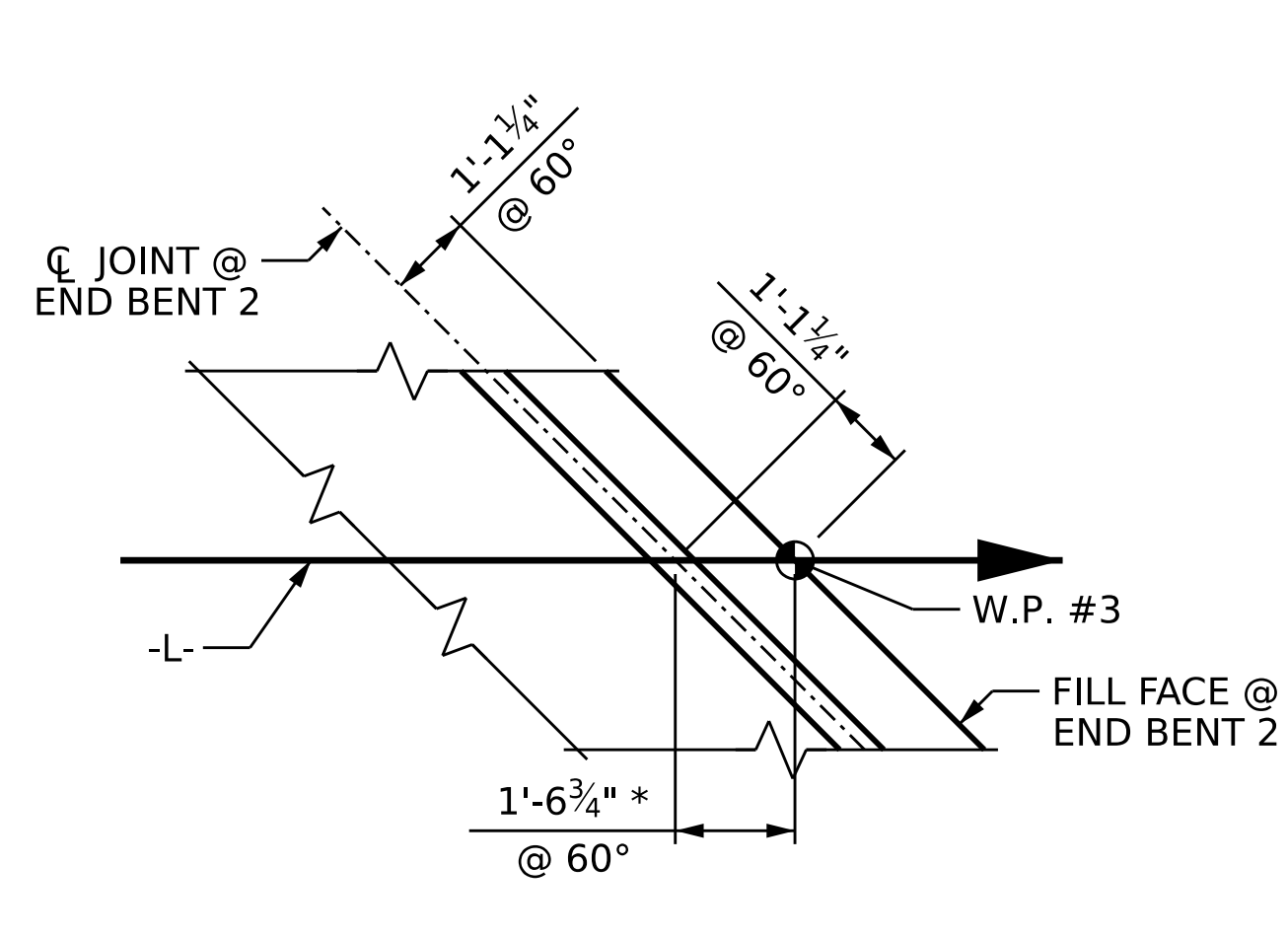
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PLAN OF SPANS



DETAIL "B"



DETAIL "C"

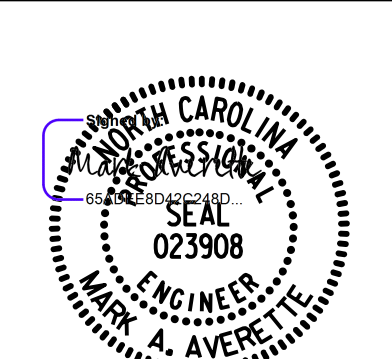
NOTES:

- FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 3 OF 3.
- FOR "A" BAR LAYOUT, SEE SHEET 2 OF 3.
- FOR "B" BAR LAYOUT, SEE SHEET 3 OF 3.
- SEE "SUPERSTRUCTURE CONCRETE BARRIER RAIL" SHEETS FOR ADDITIONAL REINFORCING STEEL IN DECK AND RAILS.

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
PLAN OF SPANS

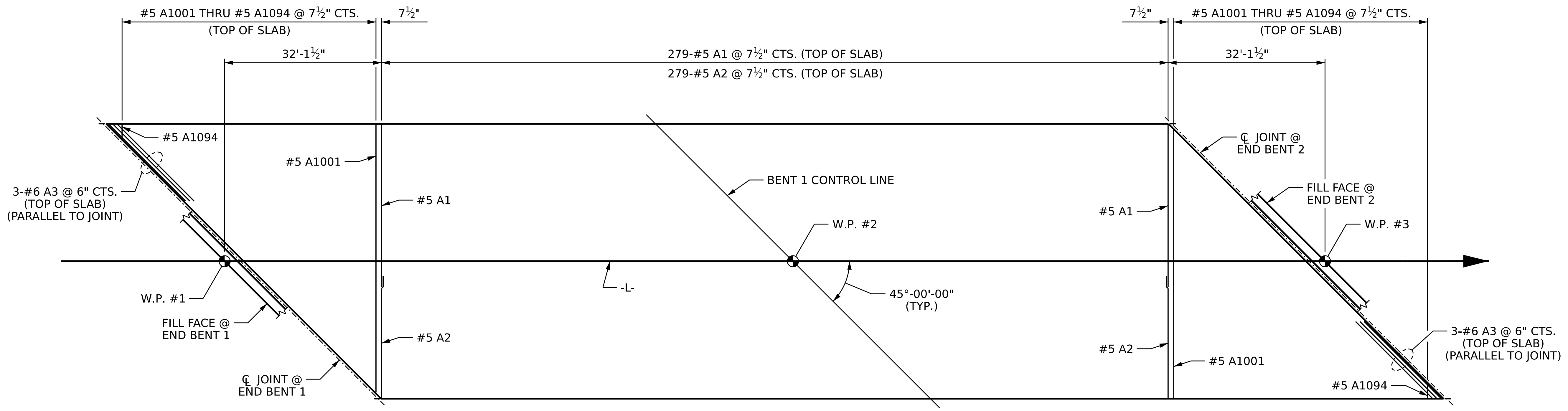


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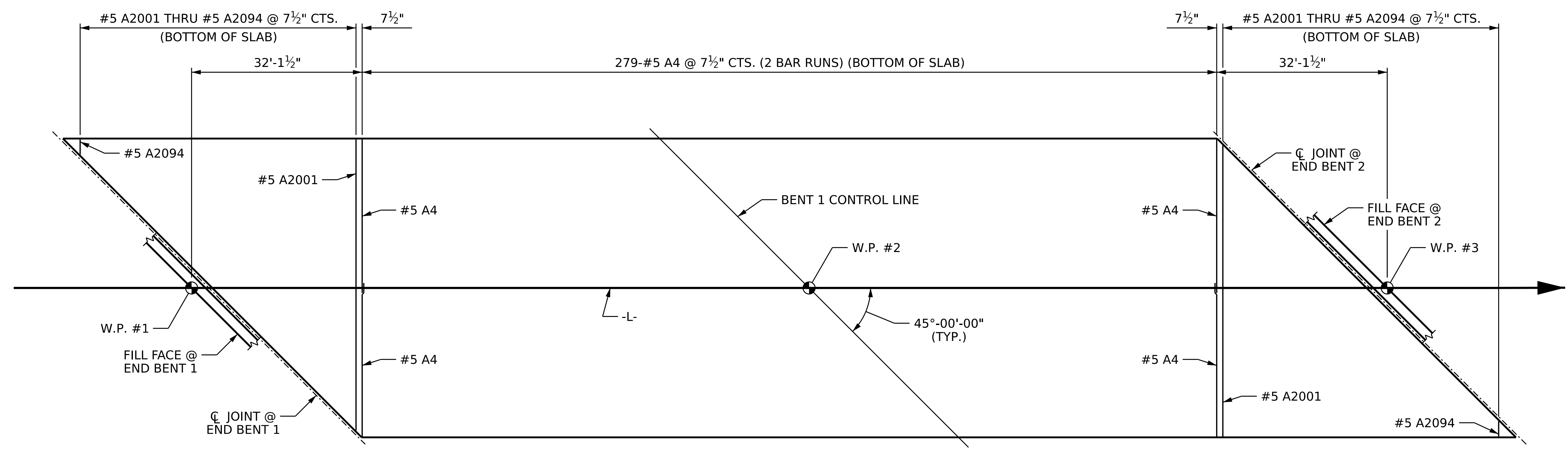
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2			4	41

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TOP "A" BAR LAYOUT



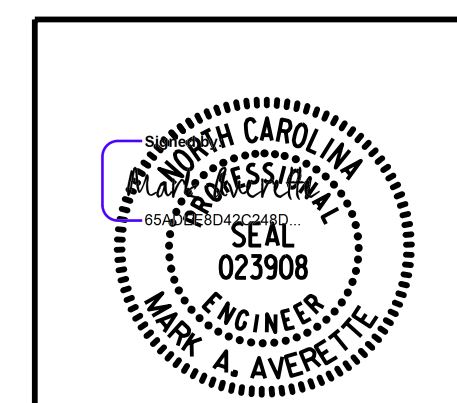
BOTTOM "A" BAR LAYOUT

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

"A" BAR LAYOUT



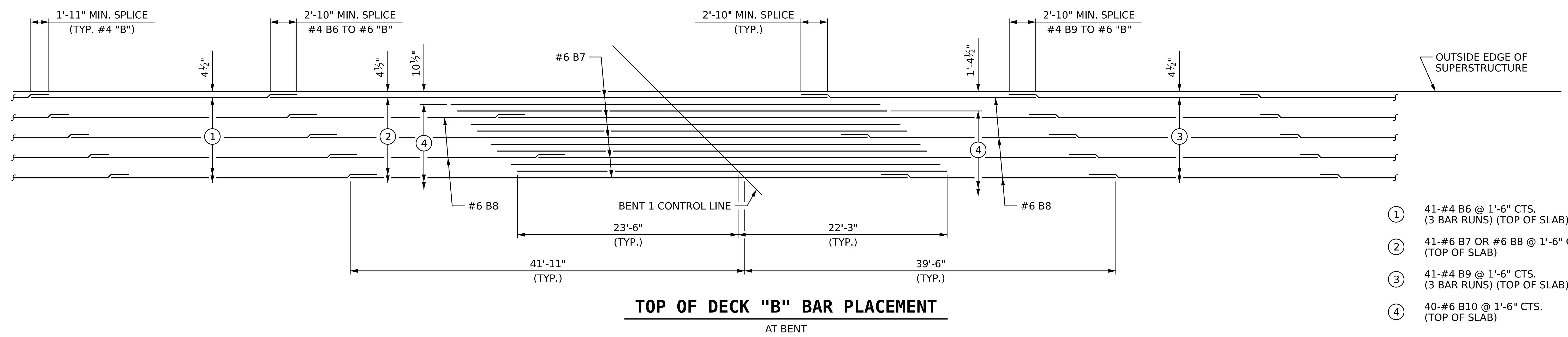
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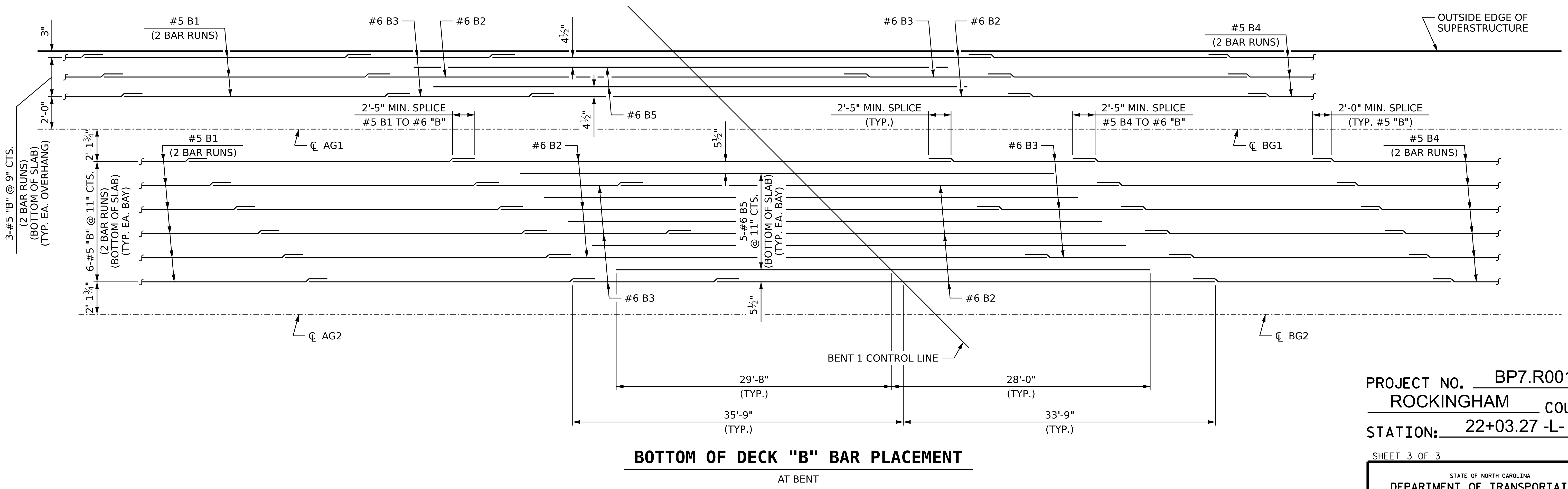
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- ① 41-#4 B6 @ 1'-6" CTS.
(3 BAR RUNS) (TOP OF SLAB)
- ② 41-#6 B7 OR #6 B8 @ 1'-6" CTS.
(TOP OF SLAB)
- ③ 41-#4 B9 @ 1'-6" CTS.
(3 BAR RUNS) (TOP OF SLAB)
- ④ 40-#6 B10 @ 1'-6" CTS.
(TOP OF SLAB)

TOP OF DECK "B" BAR PLACEMENT
AT BENT



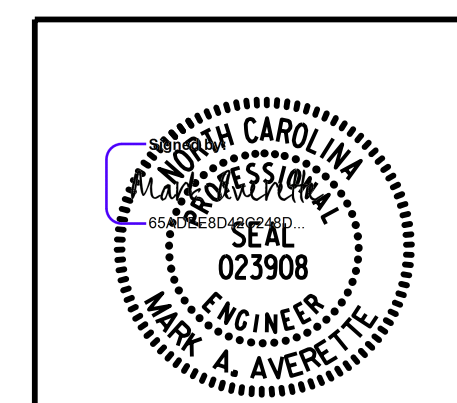
BOTTOM OF DECK "B" BAR PLACEMENT
AT BENT

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

"B" BAR LAYOUT



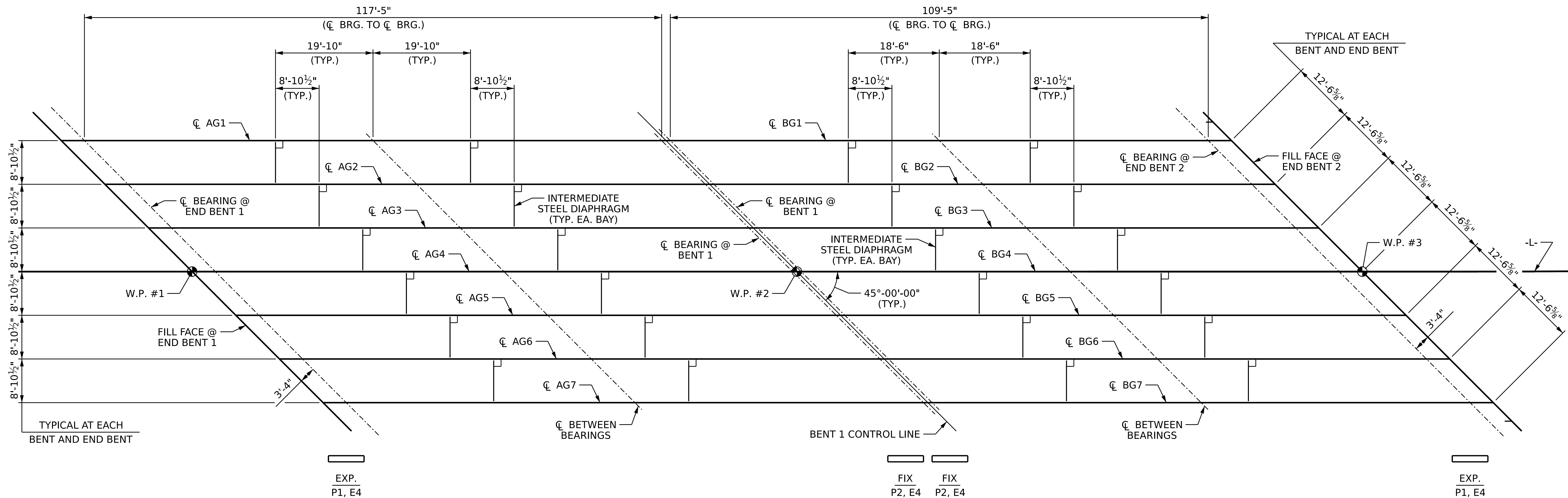
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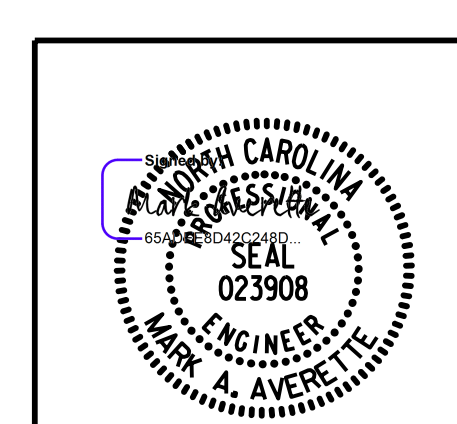
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FRAMING PLAN

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
FRAMING PLAN

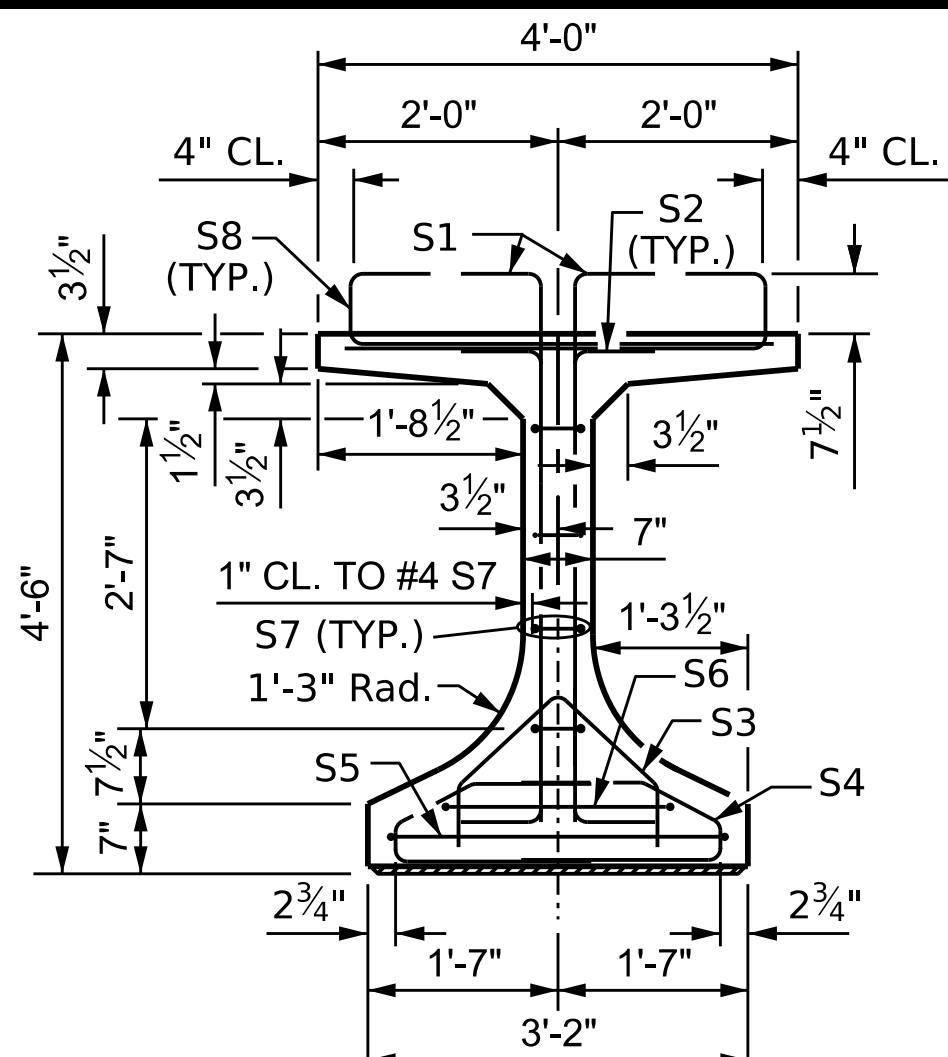


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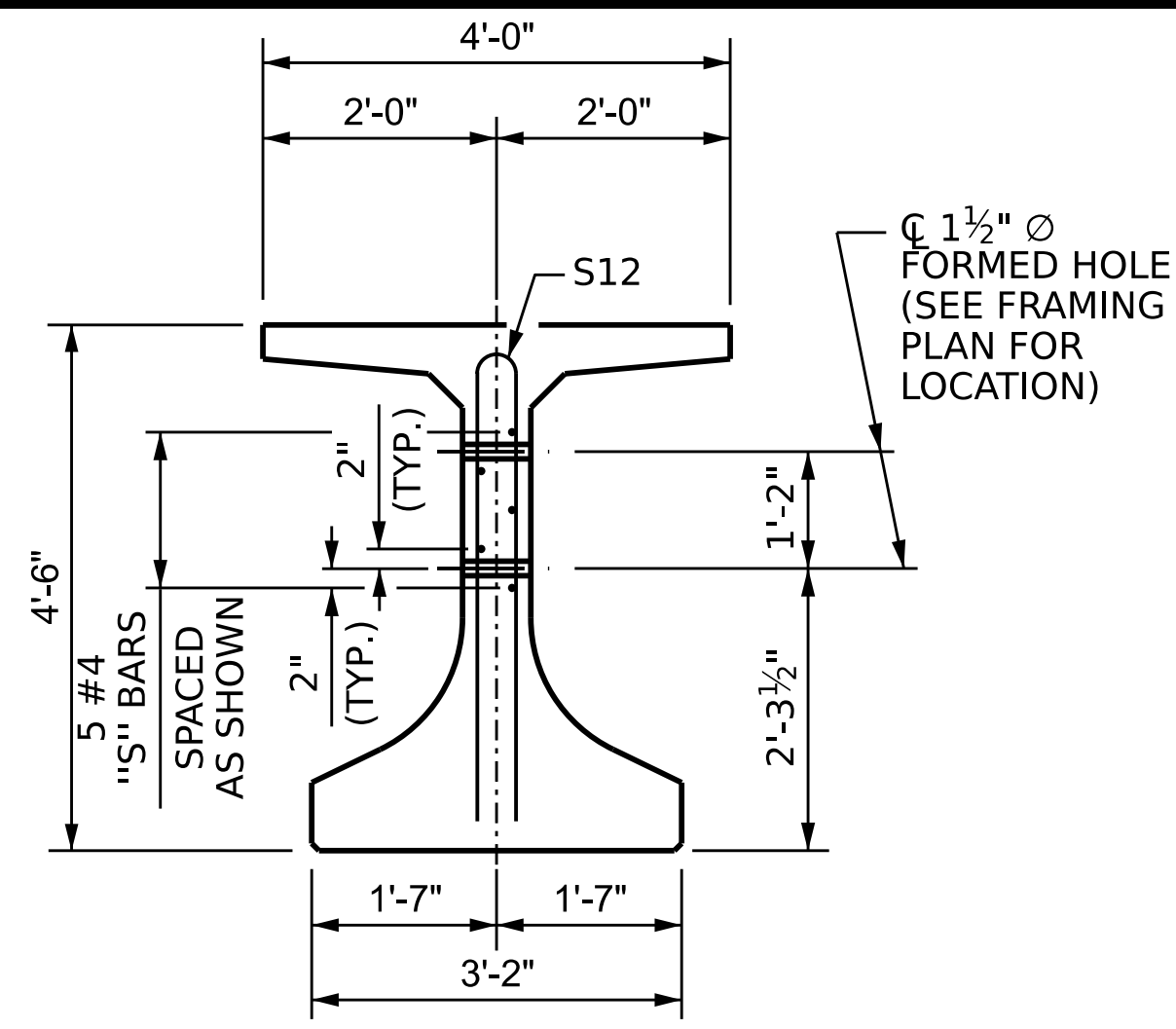
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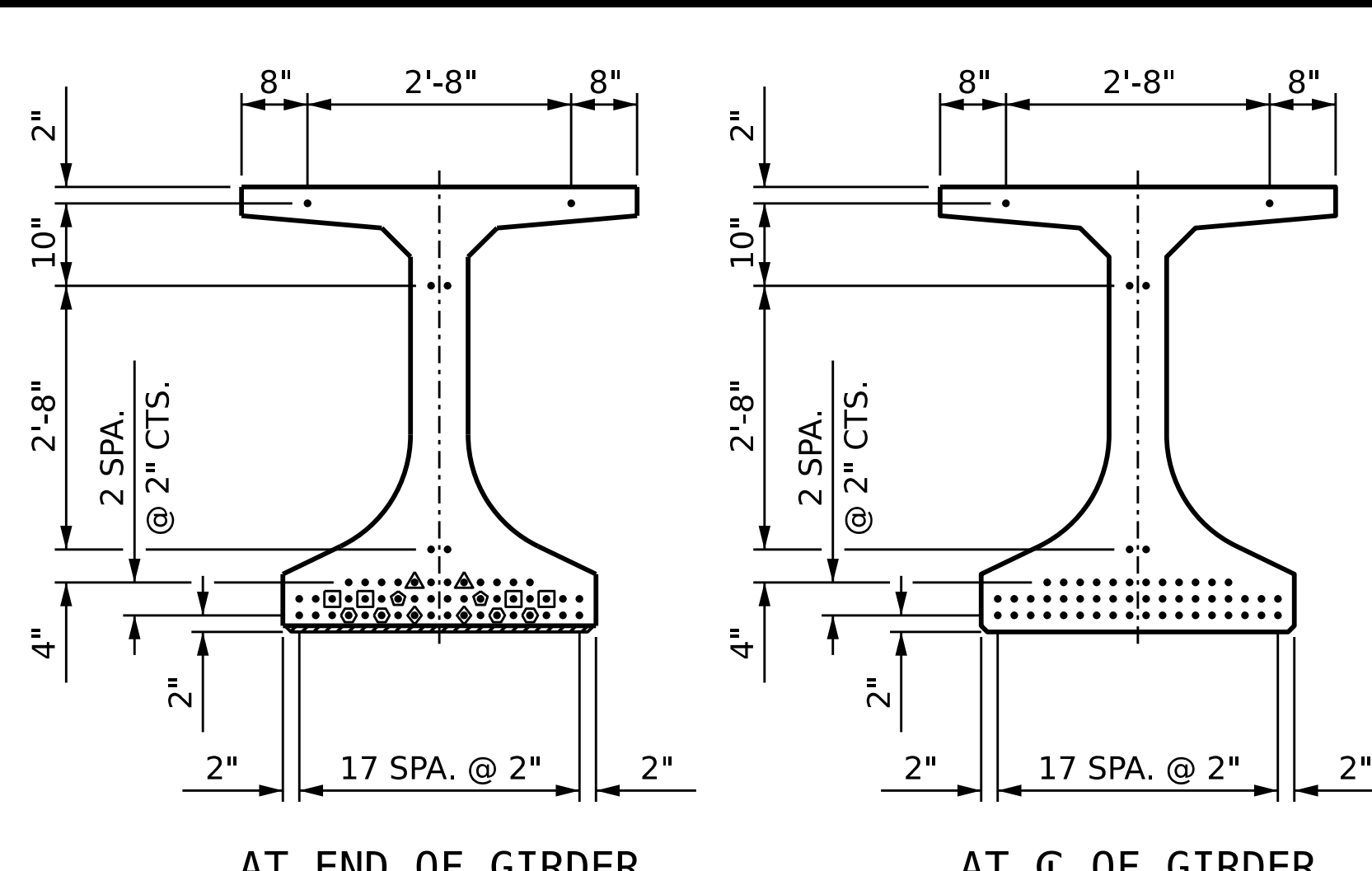


SECTION A-A



SECTION B-B

(S1, S8 AND S10 BARS NOT SHOWN)



AT END OF GIRDER **AT \bar{C} OF GIRDER**

0.6" $\bar{\phi}$ LOW RELAXATION STRAND LAYOUT

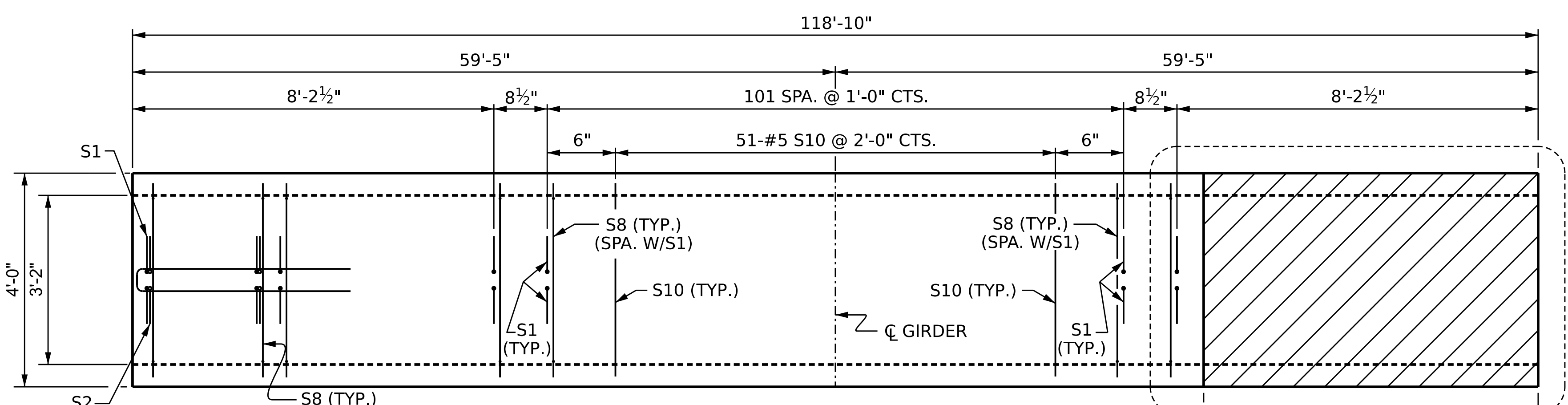
DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRAND DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRAND DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⊙ STRAND DEBONDED FOR 8'-0" FROM END OF GIRDER
- ⊕ STRAND DEBONDED FOR 10'-0" FROM END OF GIRDER
- ⊖ STRAND DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" $\bar{\phi}$ L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

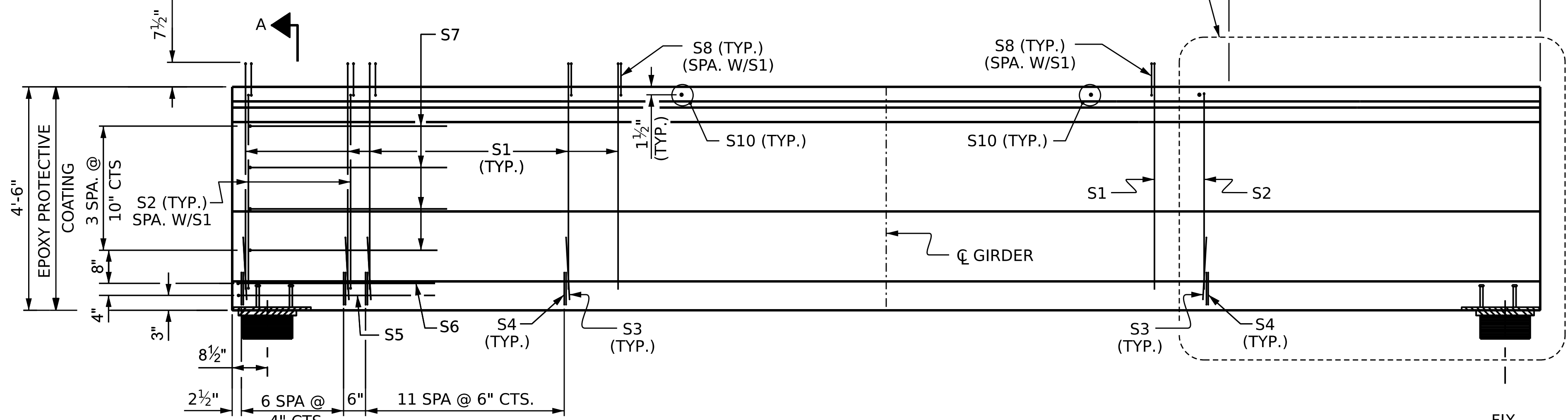
REINFORCING STEEL FOR ONE GDR						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
S1	242	#5	5	5'-4"	1346	
S2	52	#5	4	5'-4"	289	
S3	38	#3	2	3'-4"	48	
S4	76	#3	1	4'-3"	121	
S5	2	#5	3	10'-9"	22	
S6	2	#5	3	9'-9"	20	
S7	8	#4	3	8'-5"	45	
S8	242	#5	7	4'-10"	1220	
S10	70	#5	STR	3'-8"	268	
S12	23	#5	6	8'-6"	204	
EXTERIOR GDR.	S12	15	#5	6	8'-6"	133
INTERIOR GDR.	S13	10	#4	STR	16'-11"	113
EXTERIOR GDR.	S14	10	#4	STR	8'-0"	53

BAR TYPES					
1	2 1/2"	10 3/4"	9"	4 1/2"	4"
2	10"	1 1/2"	1 1/2"	1'-8"	6 1/2"
3	3'-11 1/4"	4'-0"	4'-0"	4'-0"	4'-8"
4	8"	8"	8"	8"	8"
5	8"	8"	8"	8"	8"
6	2" RAD.	4'-0"	4"	3'-4 1/2"	9 1/2"
7	8"	8"	8"	8"	8"



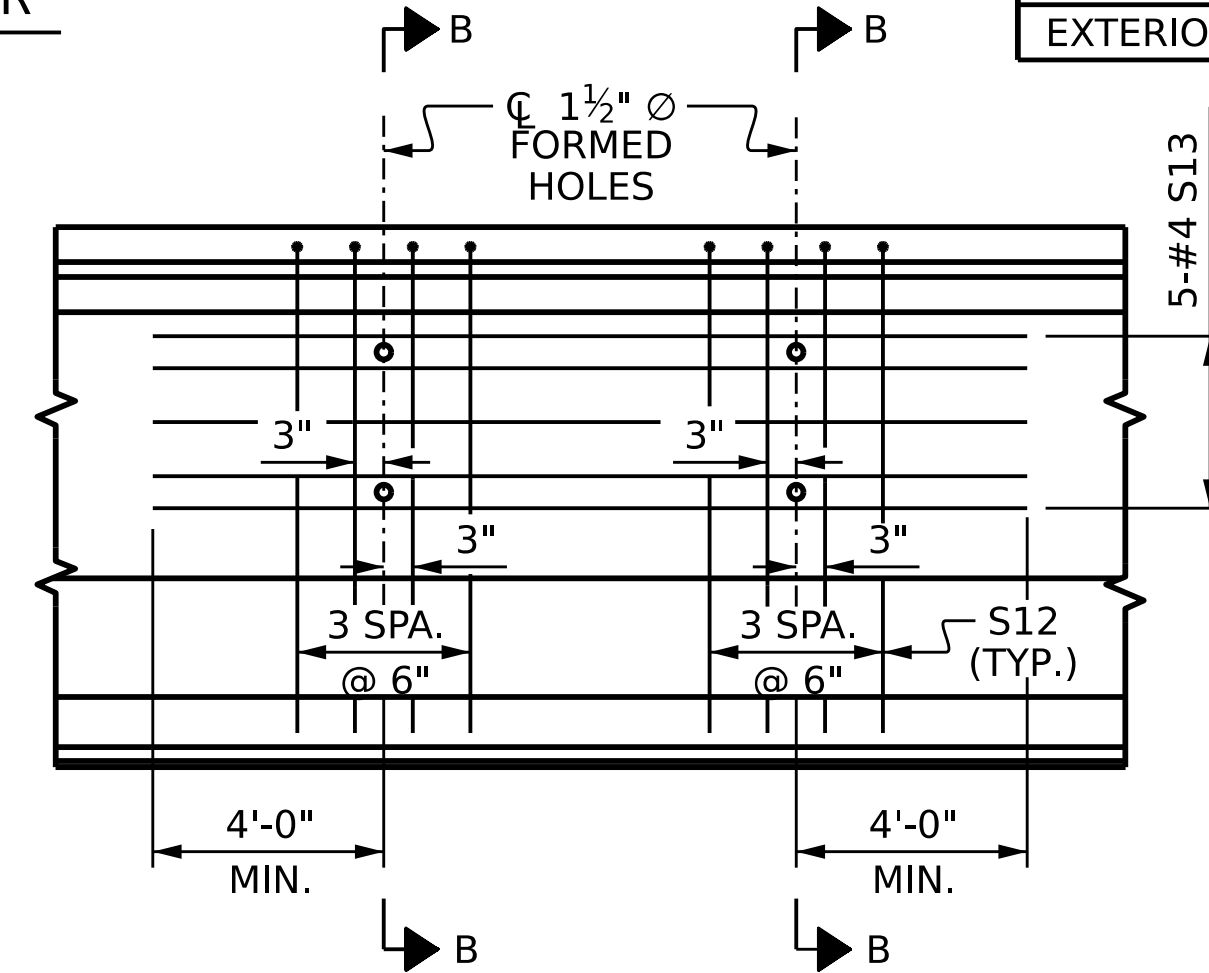
PLAN OF GIRDER

SEE DETAIL "B" SHEET 2 OF 5
** LINK SLAB



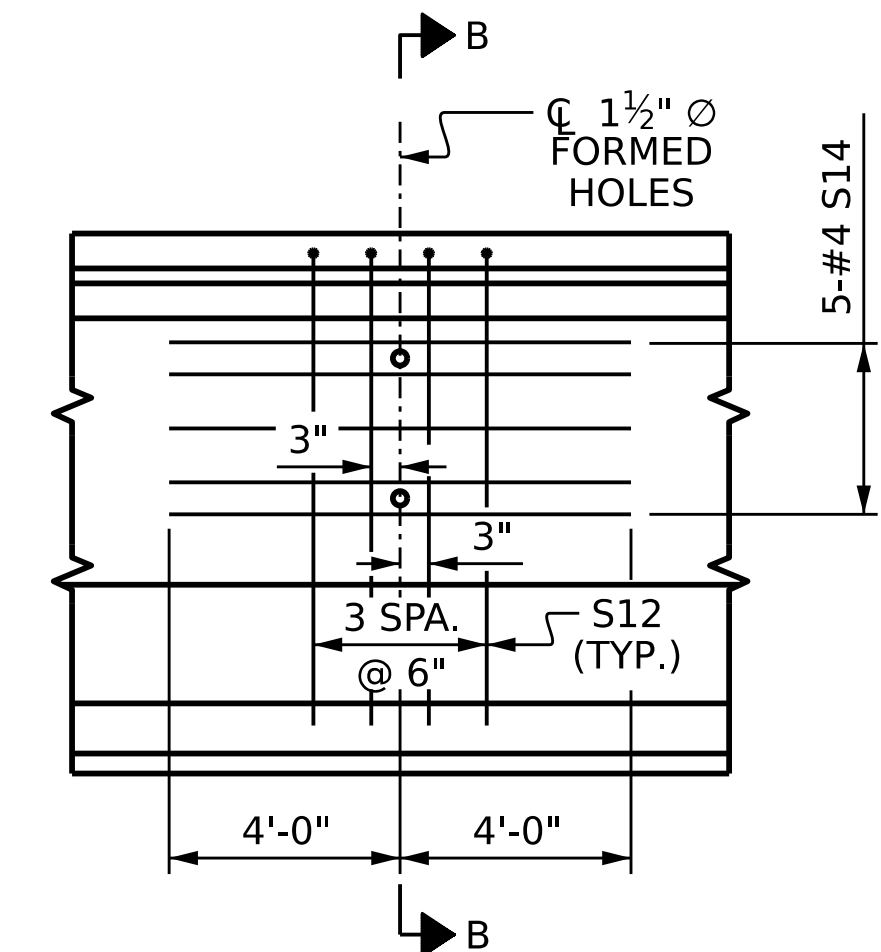
ELEVATION OF GIRDER

** DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA (SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 2 THRU 6.



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 1 & 7.

ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	9000 PSI CONCRETE	0.6" $\bar{\phi}$ L.R. STRANDS	
LB.	C.Y.	No.	
INTERIOR GDR.	3,696	28.5	54
EXTERIOR GDR.	3,565	28.5	54

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
7	118'-10"	831.83'

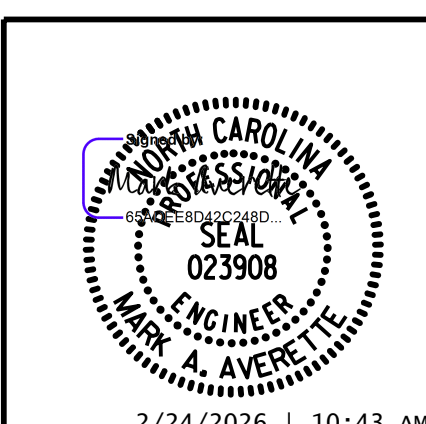
PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

54" FIB PRESTRESSED CONCRETE GIRDER

SPAN A



WVGI
 5640 Dillard Drive, Suite 200
 Cary, NC 27518
 LICENSURE NO. C-5315

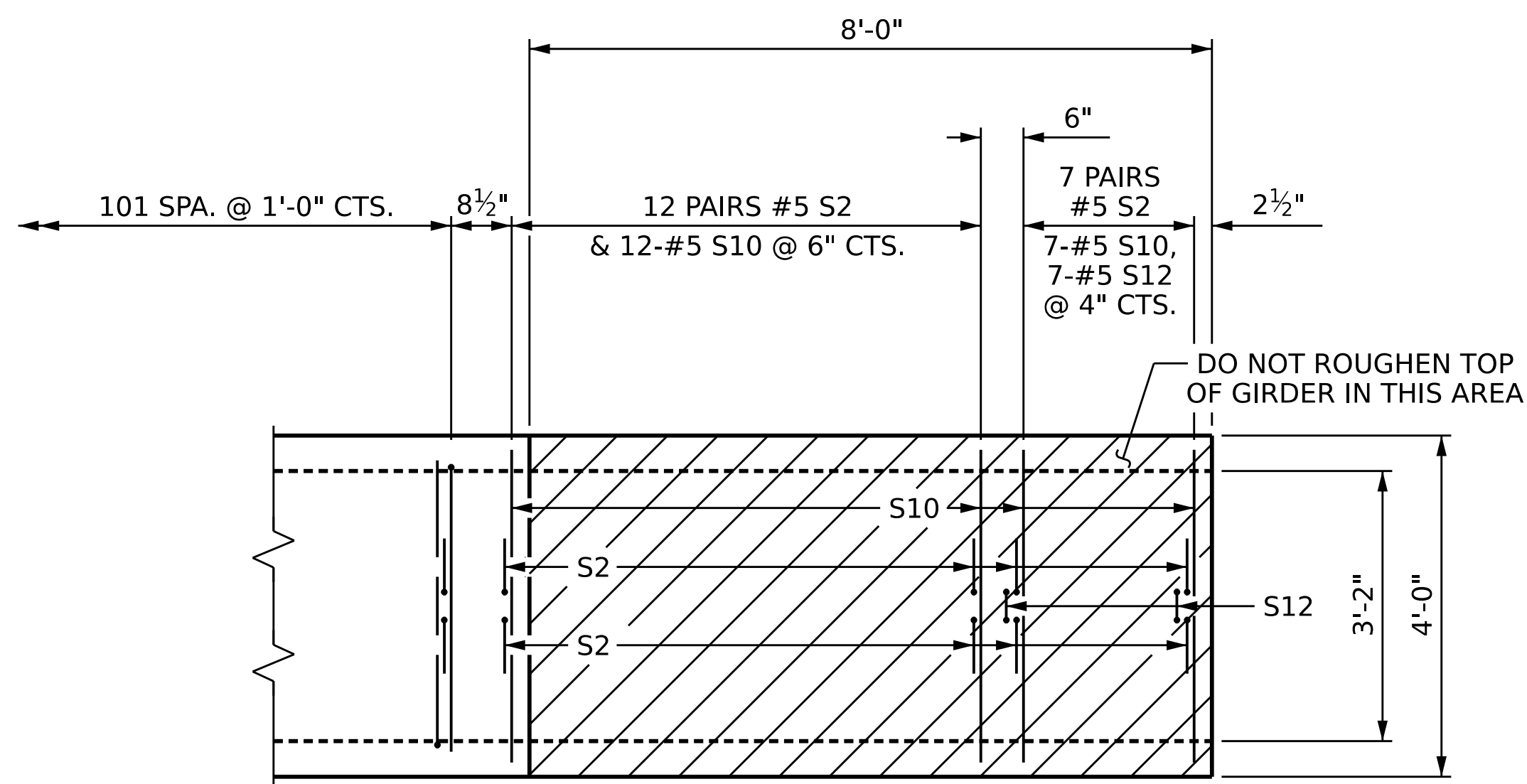
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CHECKED BY :	M.A. AVERETTE	DATE :	9-25
DESIGN ENGINEER OF RECORD :	M.A. AVERETTE	DATE :	9-25

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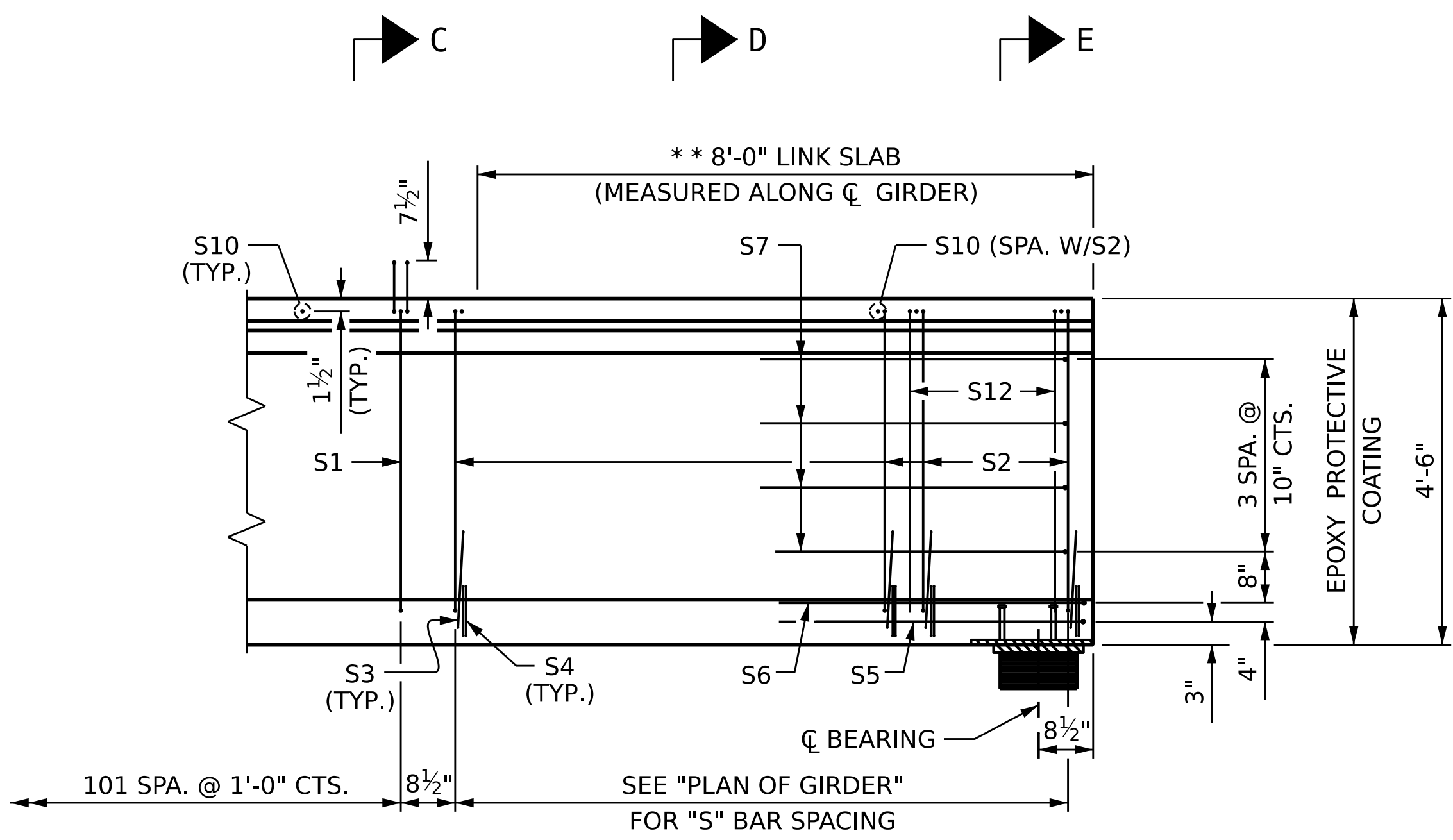
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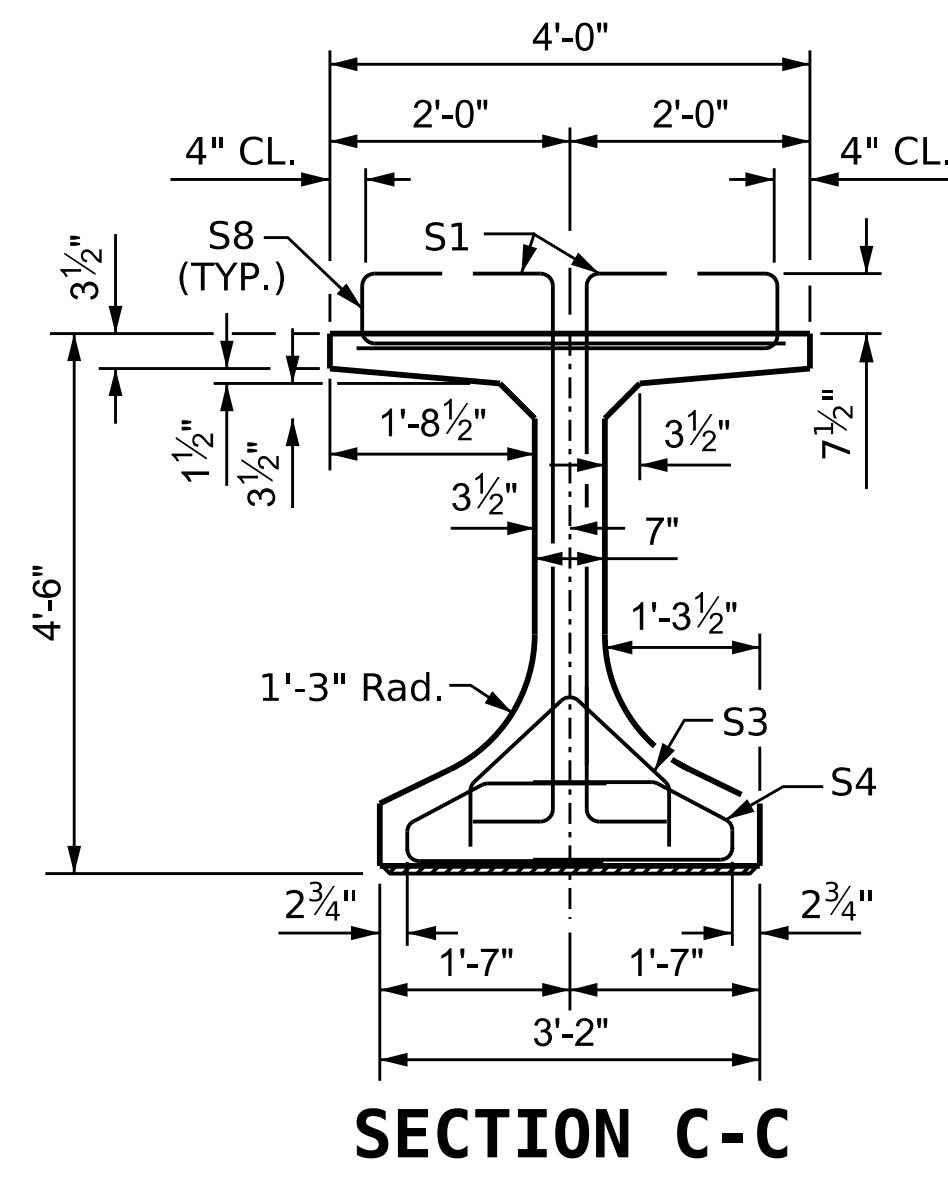
PLAN OF GIRDER



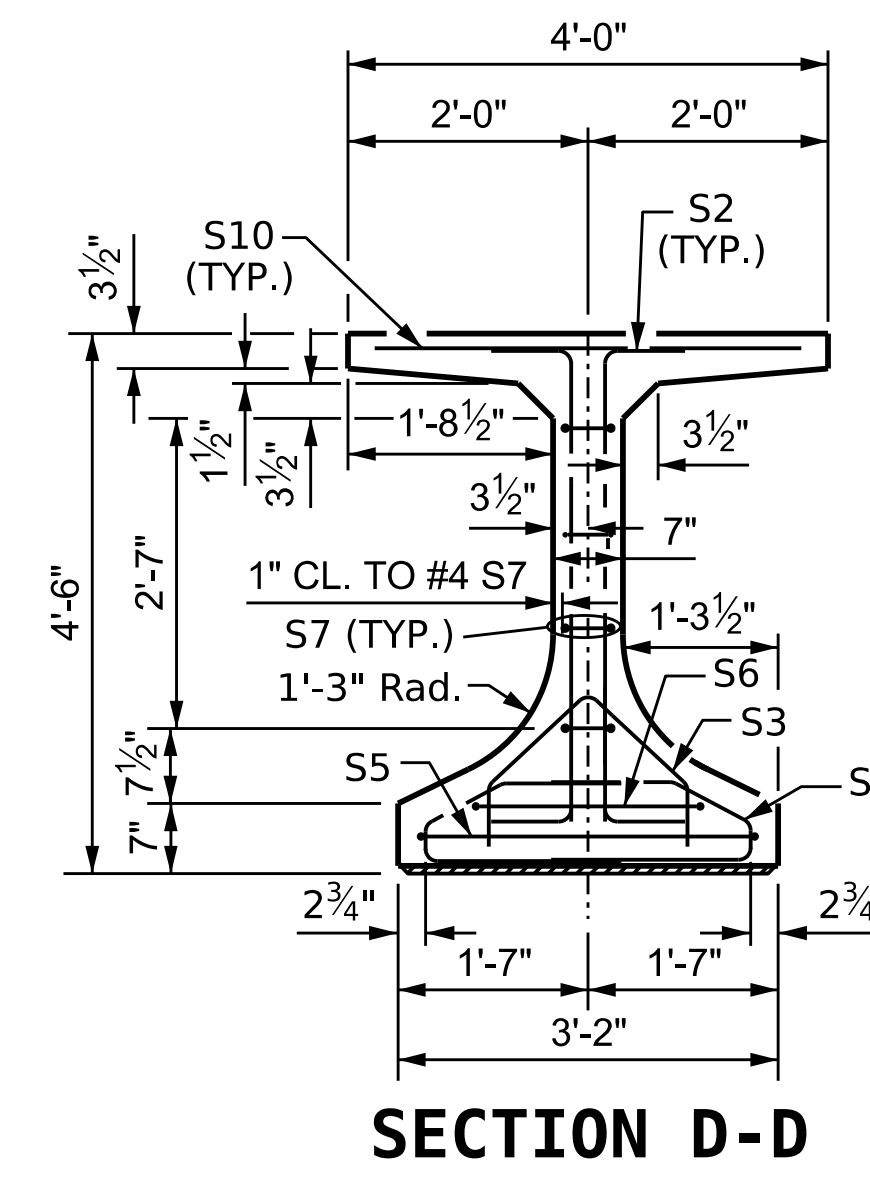
ELEVATION OF GIRDER

** DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA

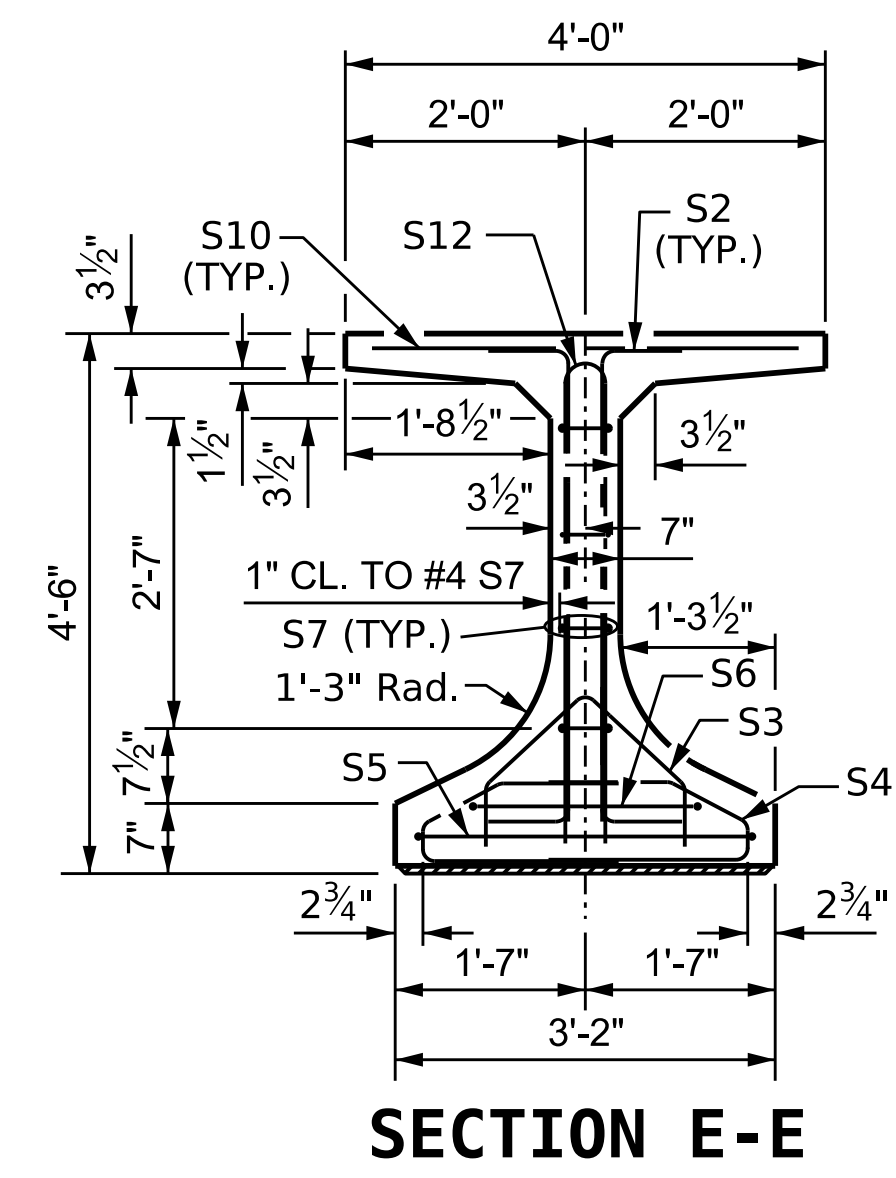
DETAIL "B"



SECTION C-C



SECTION D-D



SECTION E-E

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

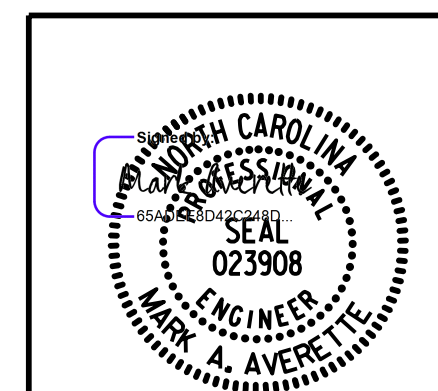
**54" FIB PRESTRESSED
 CONCRETE GIRDER**

SPAN A



5640 Dilard Drive, Suite 200
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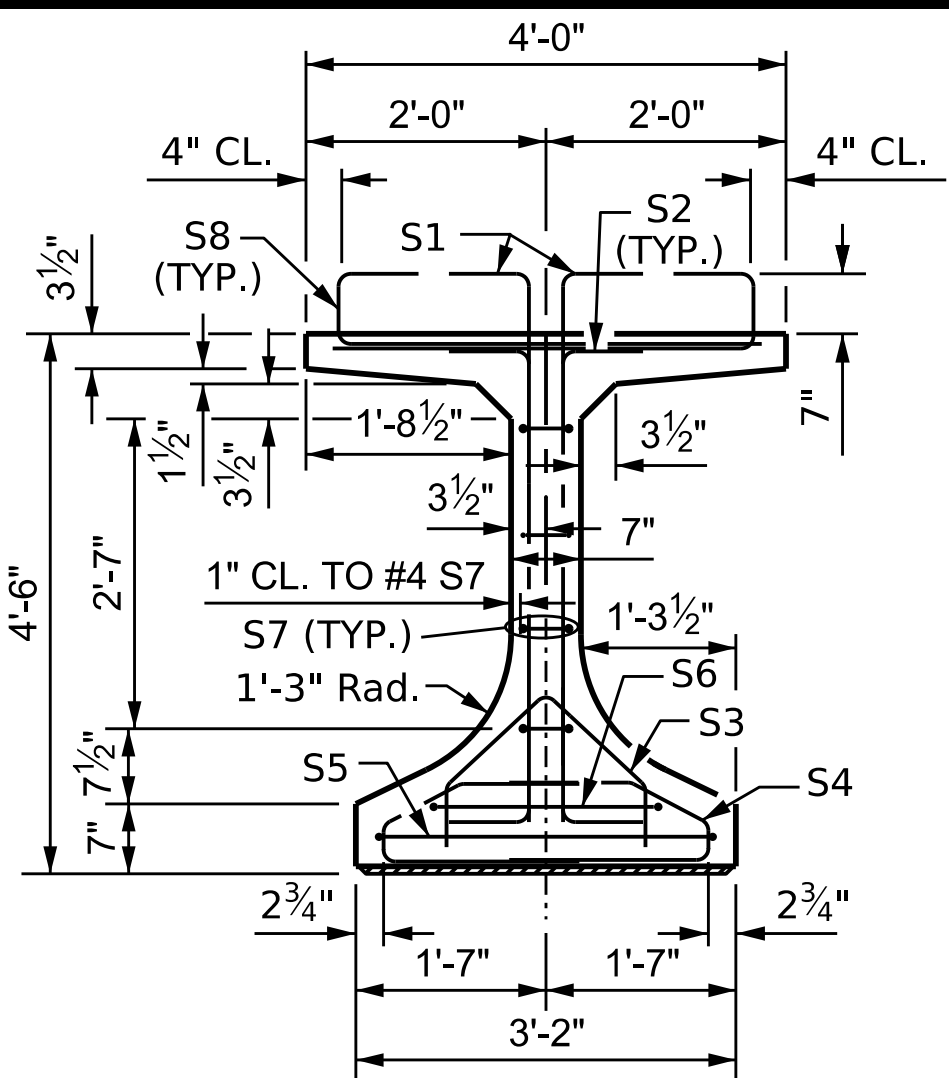
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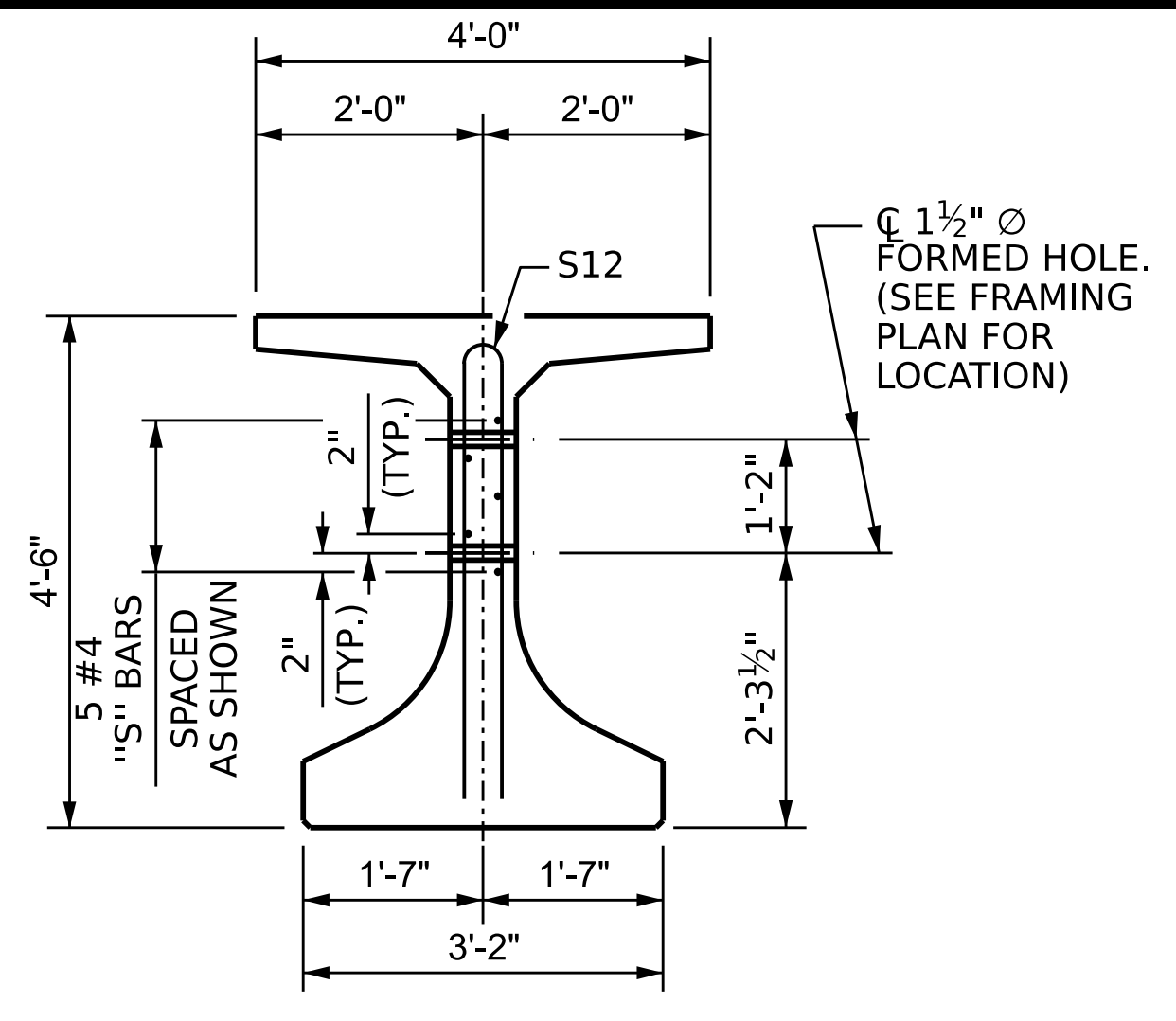
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1				3				1	S-14
2				4				TOTAL SHEETS	41

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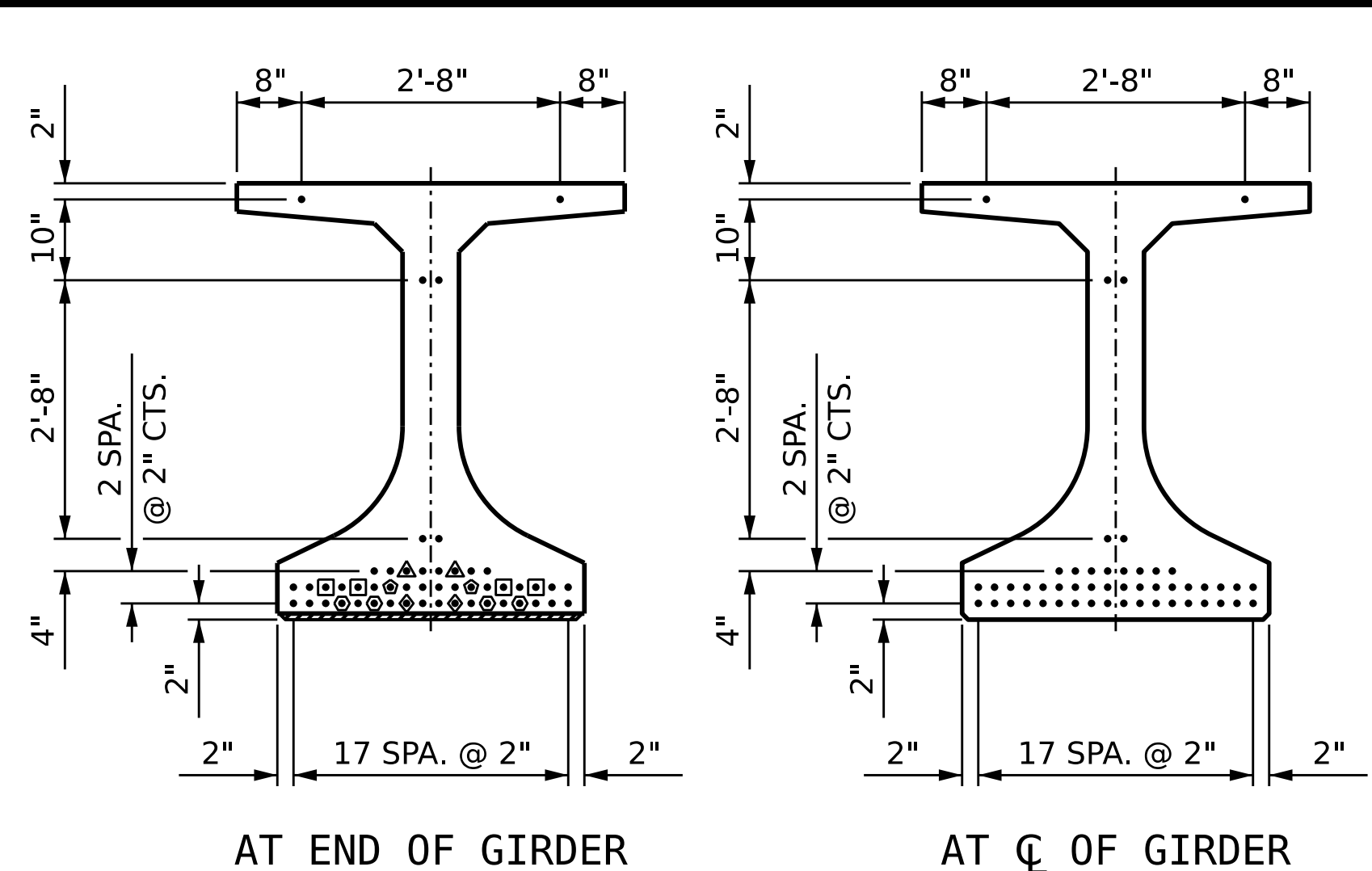


SECTION A-A



SECTION B-B

(S1, S8 AND S10 BARS NOT SHOWN)

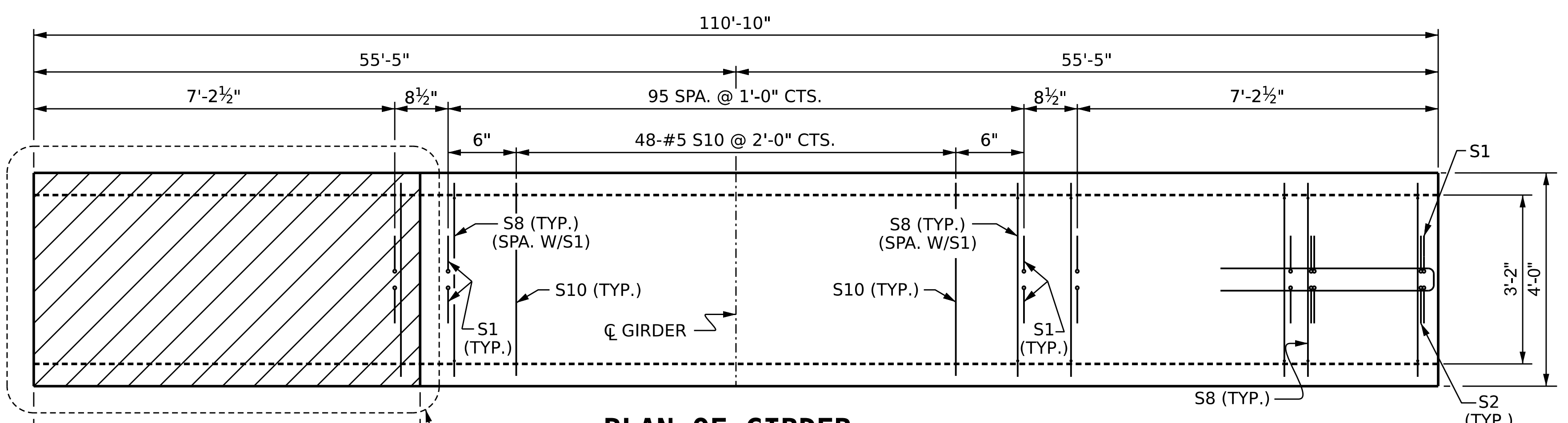


0.6" Ø LOW RELAXATION STRAND LAYOUT

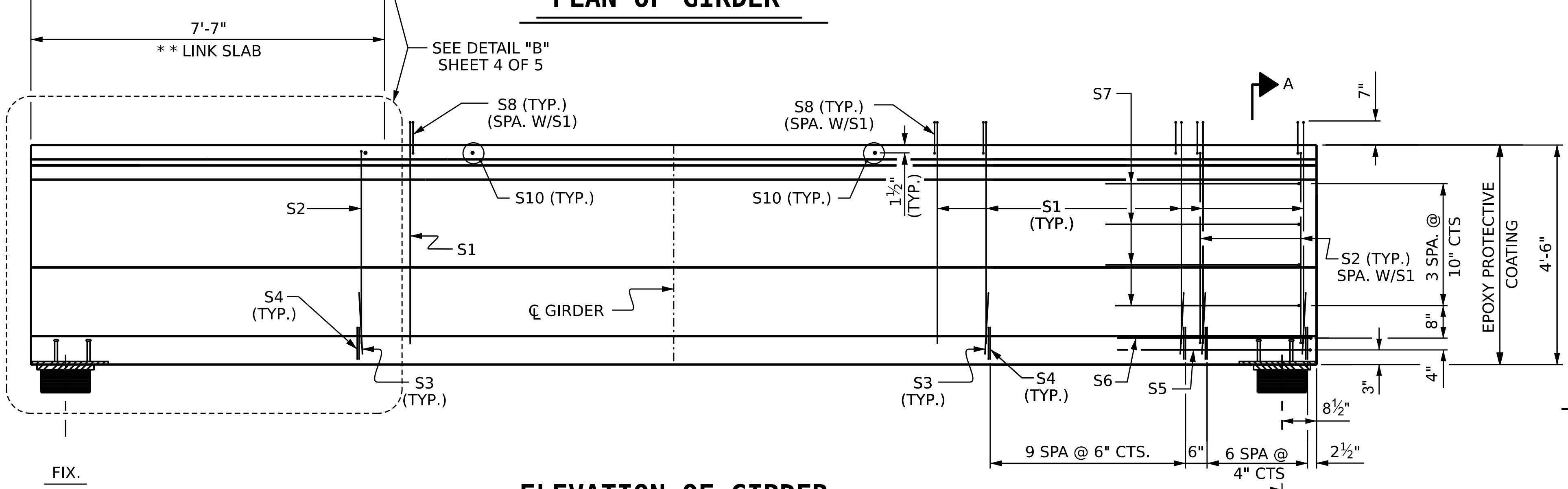
DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRAND DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRAND DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⊙ STRAND DEBONDED FOR 8'-0" FROM END OF GIRDER
- ⊕ STRAND DEBONDED FOR 10'-0" FROM END OF GIRDER
- ⊖ STRAND DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS						
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)				
0.217	58,600	43,950				
REINFORCING STEEL FOR ONE GDR						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
S1	226	#5	5	5'-4"	1257	
S2	48	#5	4	5'-4"	267	
S3	34	#3	2	3'-4"	43	
S4	68	#3	1	4'-3"	109	
S5	2	#5	3	10'-9"	22	
S6	2	#5	3	9'-9"	20	
S7	8	#4	3	8'-5"	45	
S8	226	#5	7	4'-9"	1120	
S10	65	#5	STR	3'-8"	249	
INTERIOR GDR.	S12	23	#5	6	8'-6"	204
EXTERIOR GDR.	S12	15	#5	6	8'-6"	133
INTERIOR GDR.	S13	10	#4	STR	16'-11"	113
EXTERIOR GDR.	S14	10	#4	STR	8'-0"	53

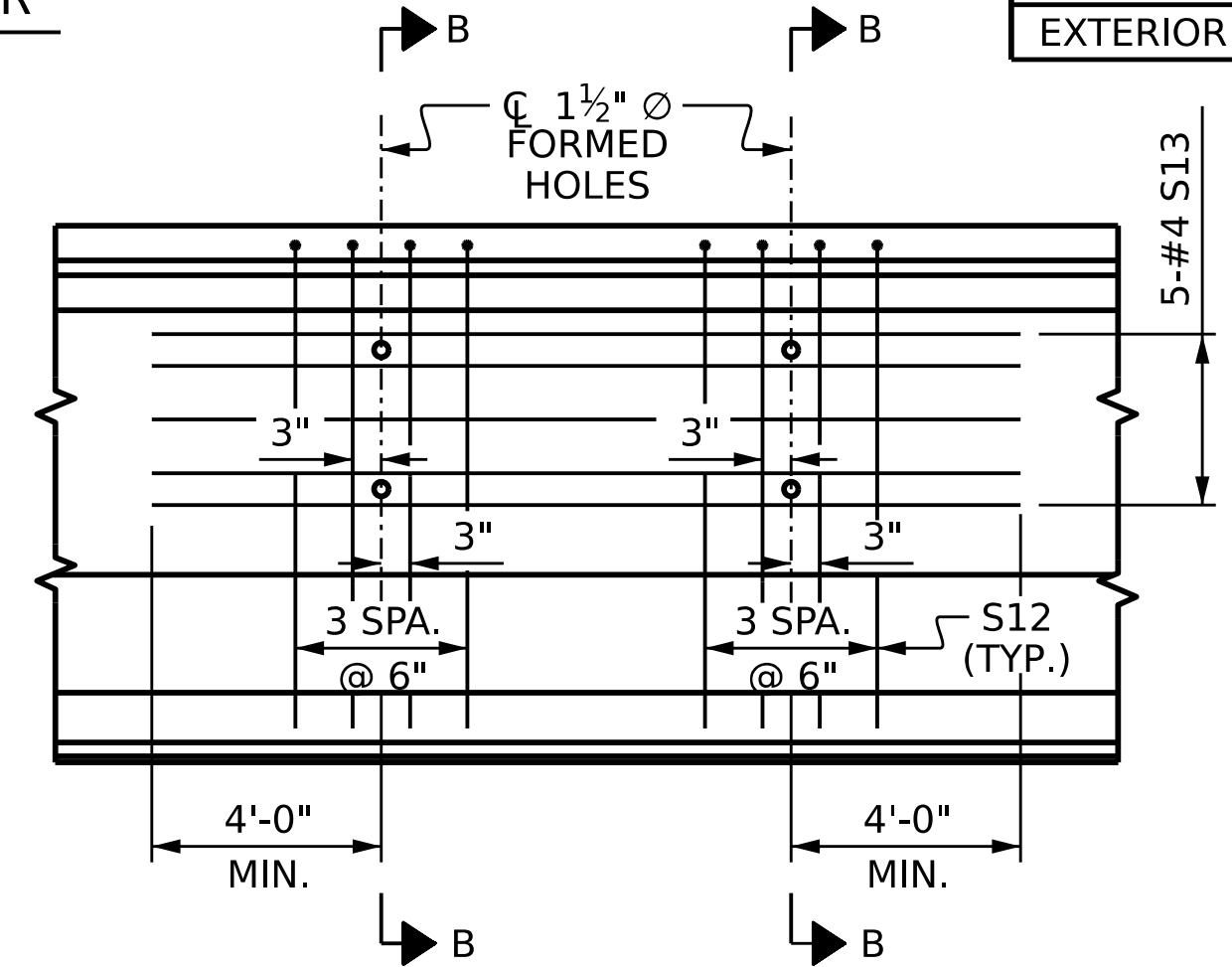


PLAN OF GIRDER



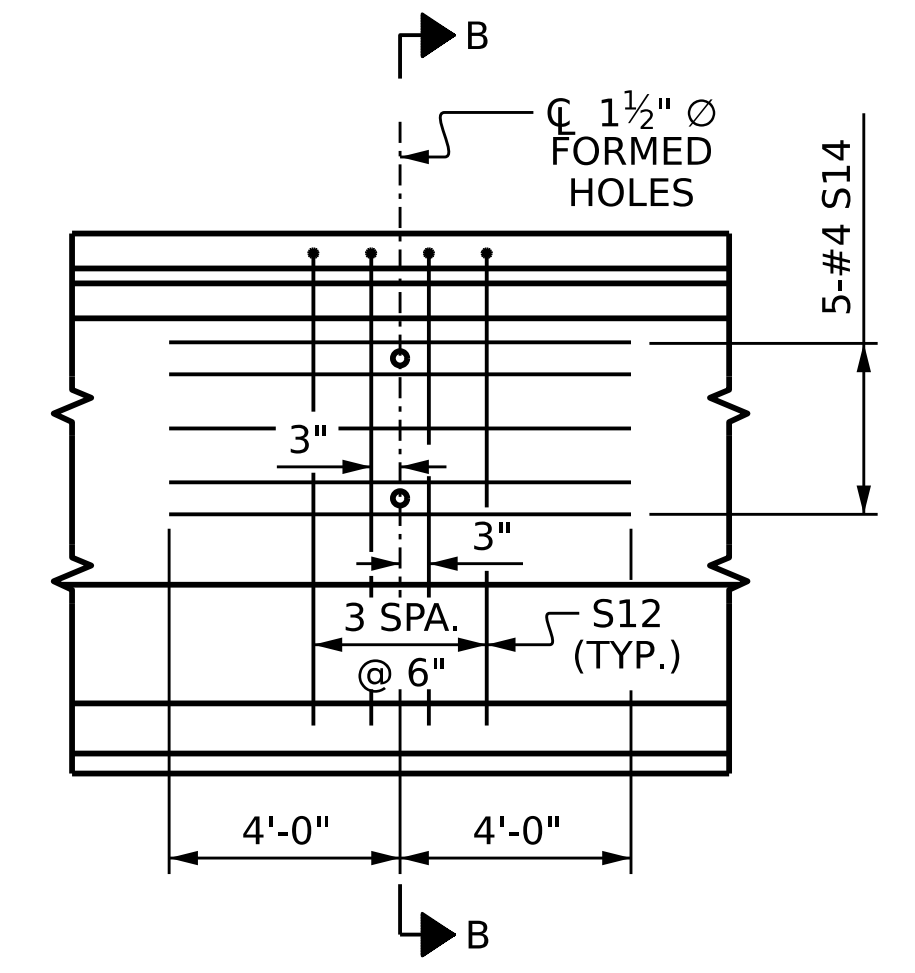
ELEVATION OF GIRDER

** DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA (SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



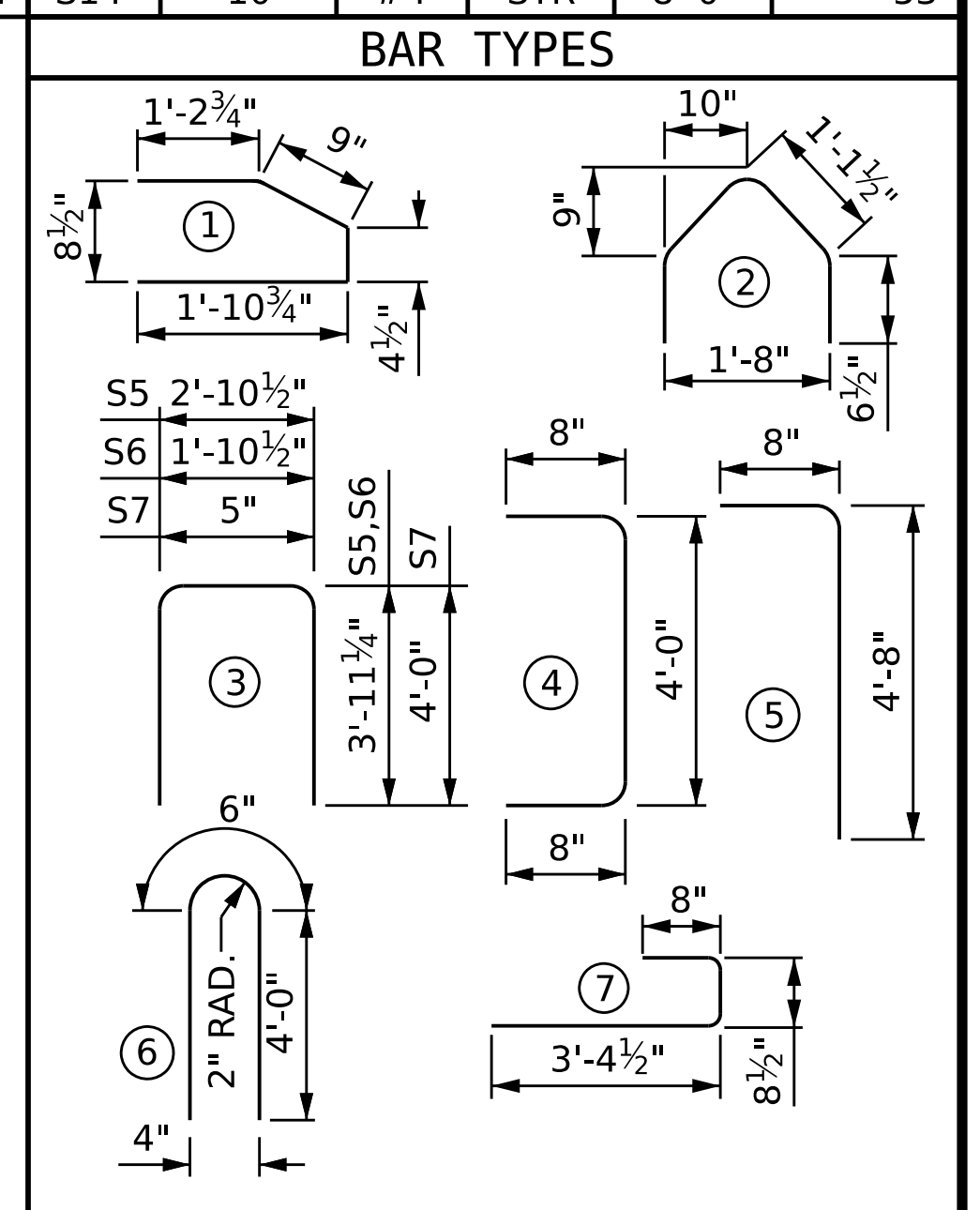
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 2 THRU 6.



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 1 & 7.



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS	
LB.	C.Y.	No.	
INTERIOR GDR.	3,449	26.6	50
EXTERIOR GDR.	3,318	26.6	50
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
7	110'-10"	775.83'	

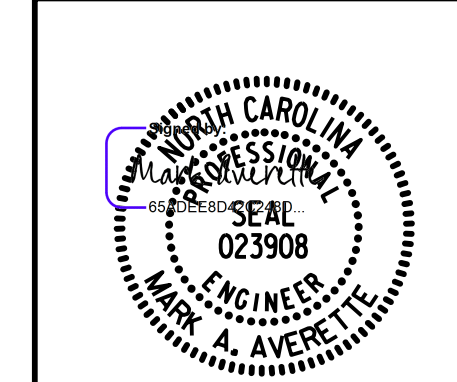
PROJECT NO. BP7.R001
 ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

54" FIB PRESTRESSED CONCRETE GIRDER

SPAN B



LICENSURE NO. C-5315

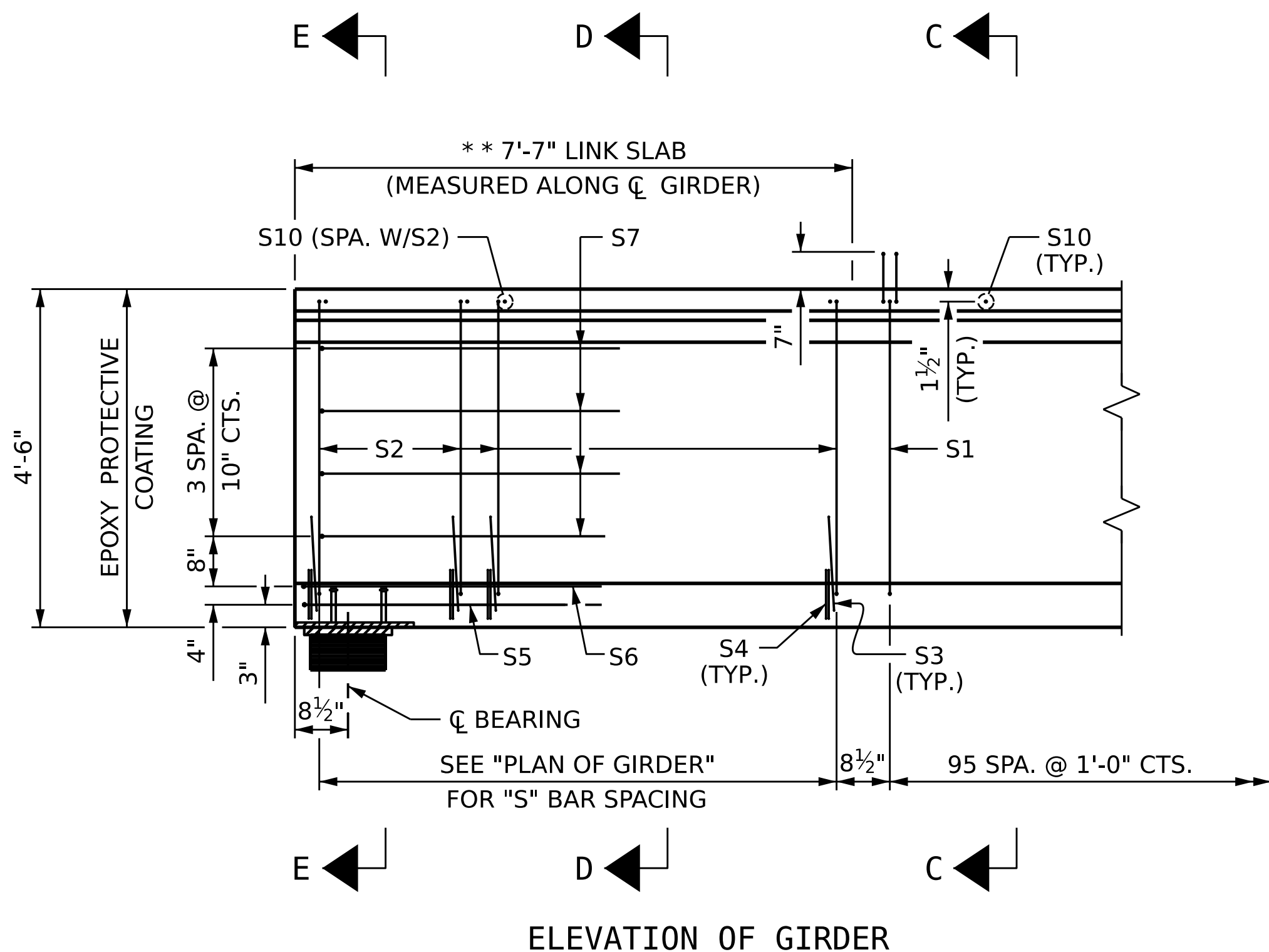
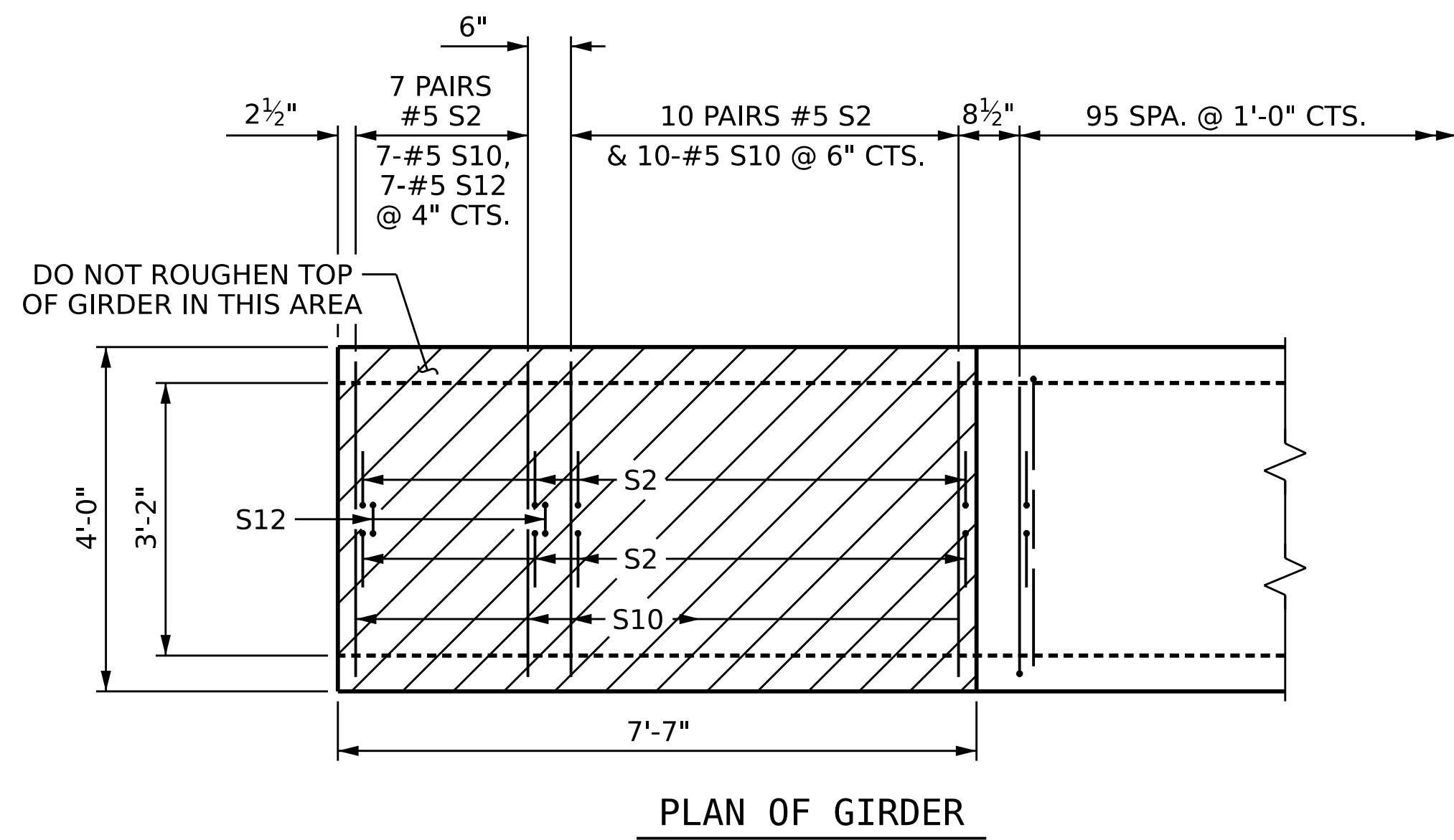
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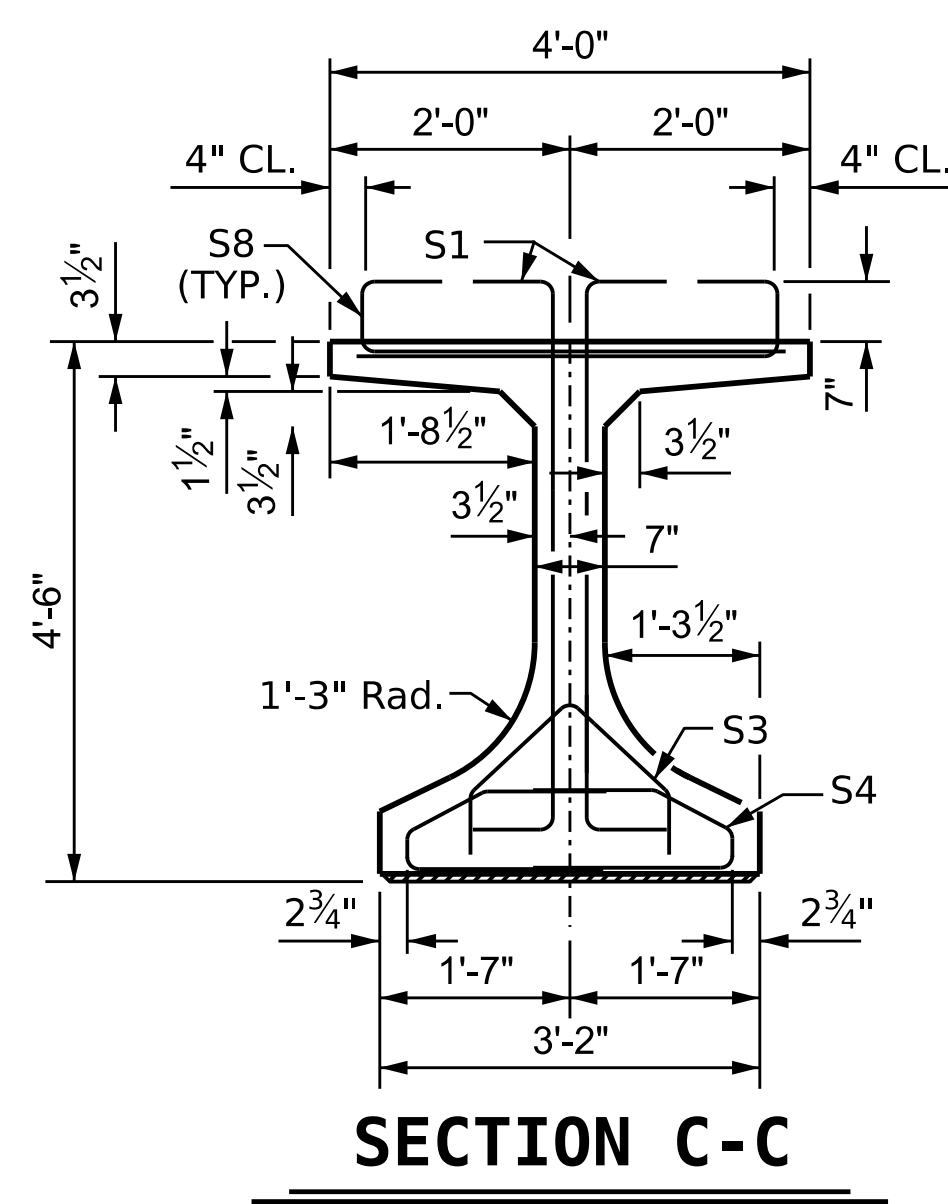
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TOTAL SHEETS: 41

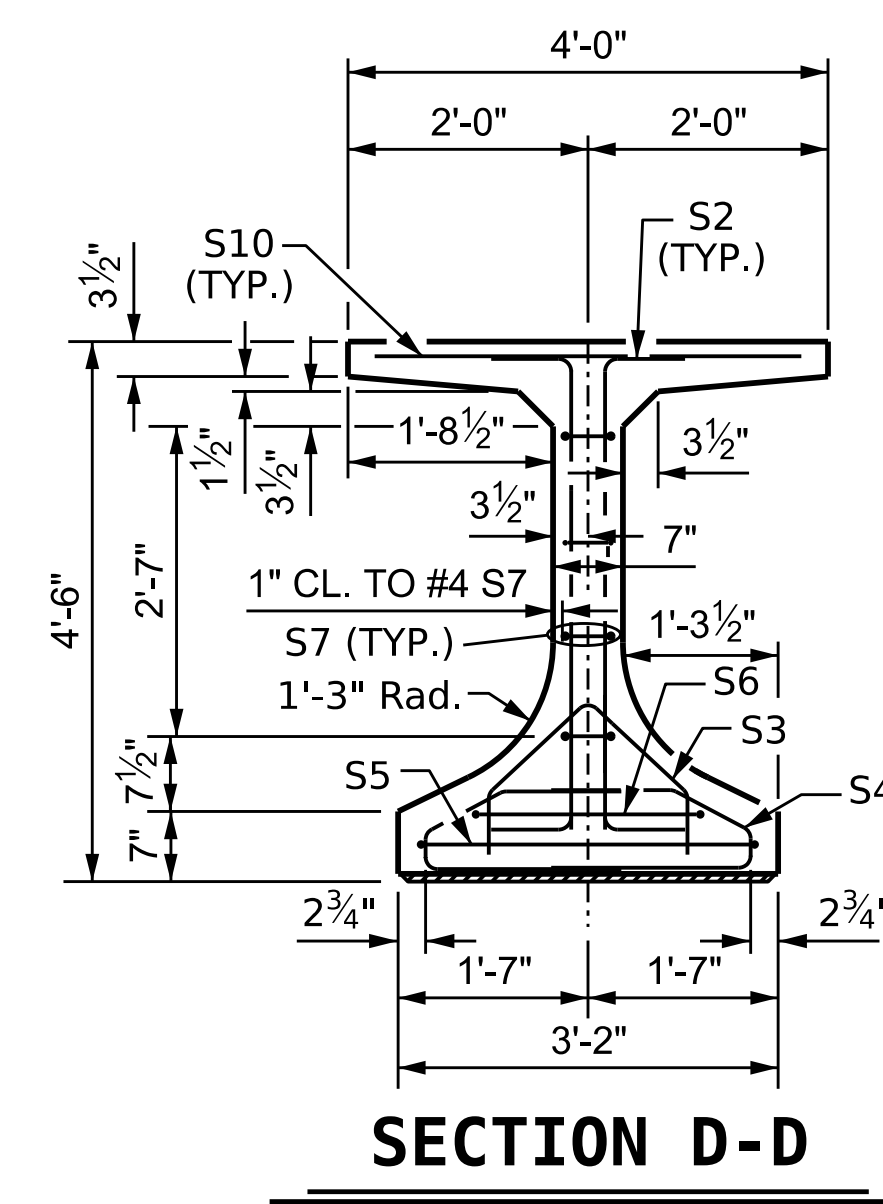
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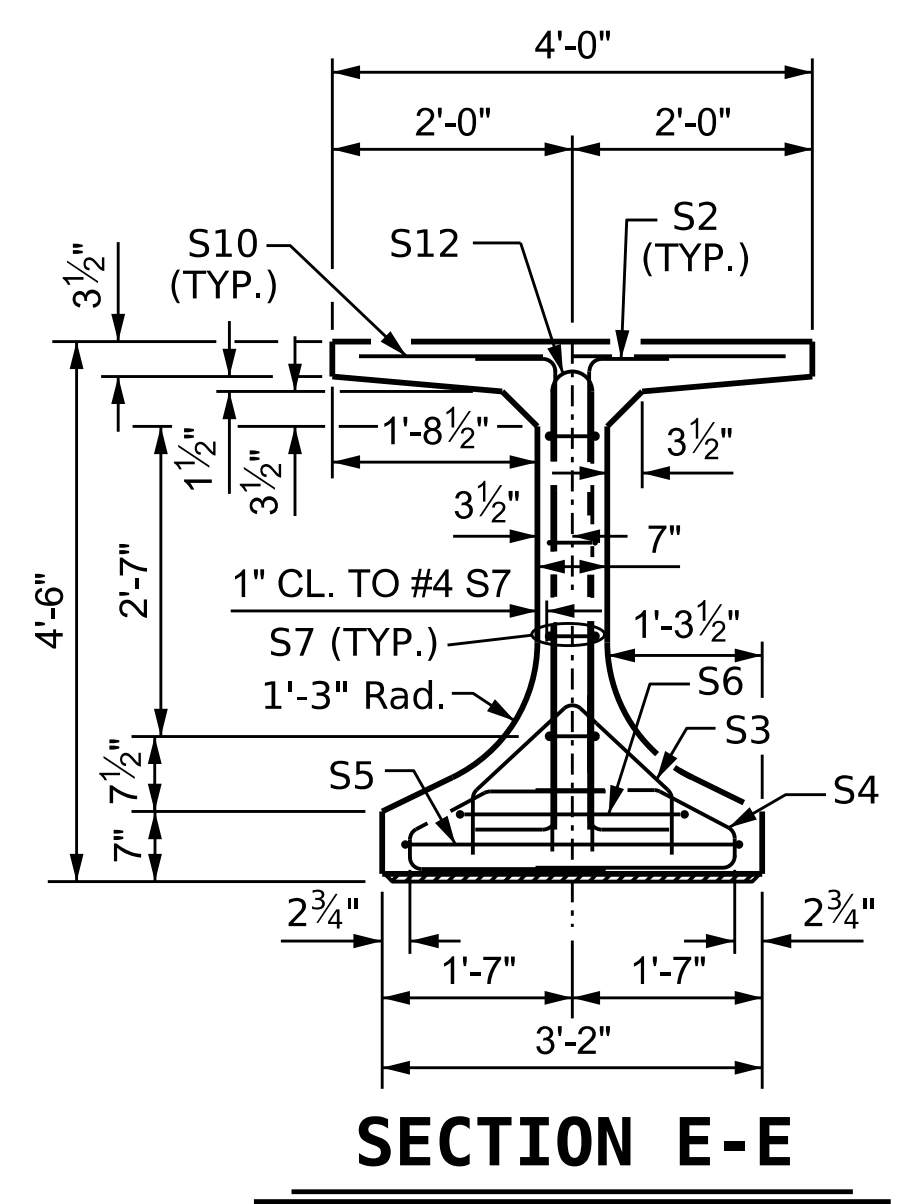
DETAIL "B"



SECTION C-C



SECTION D-D

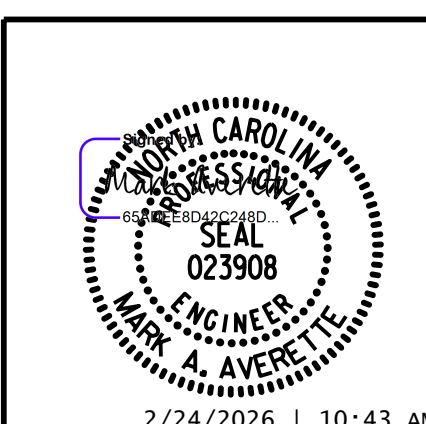


SECTION E-E

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**54" FIB PRESTRESSED
 CONCRETE GIRDER**
 SPAN B



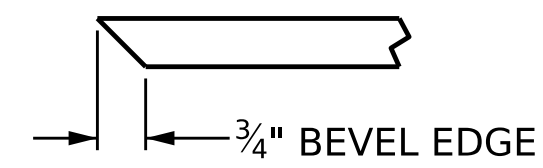
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 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

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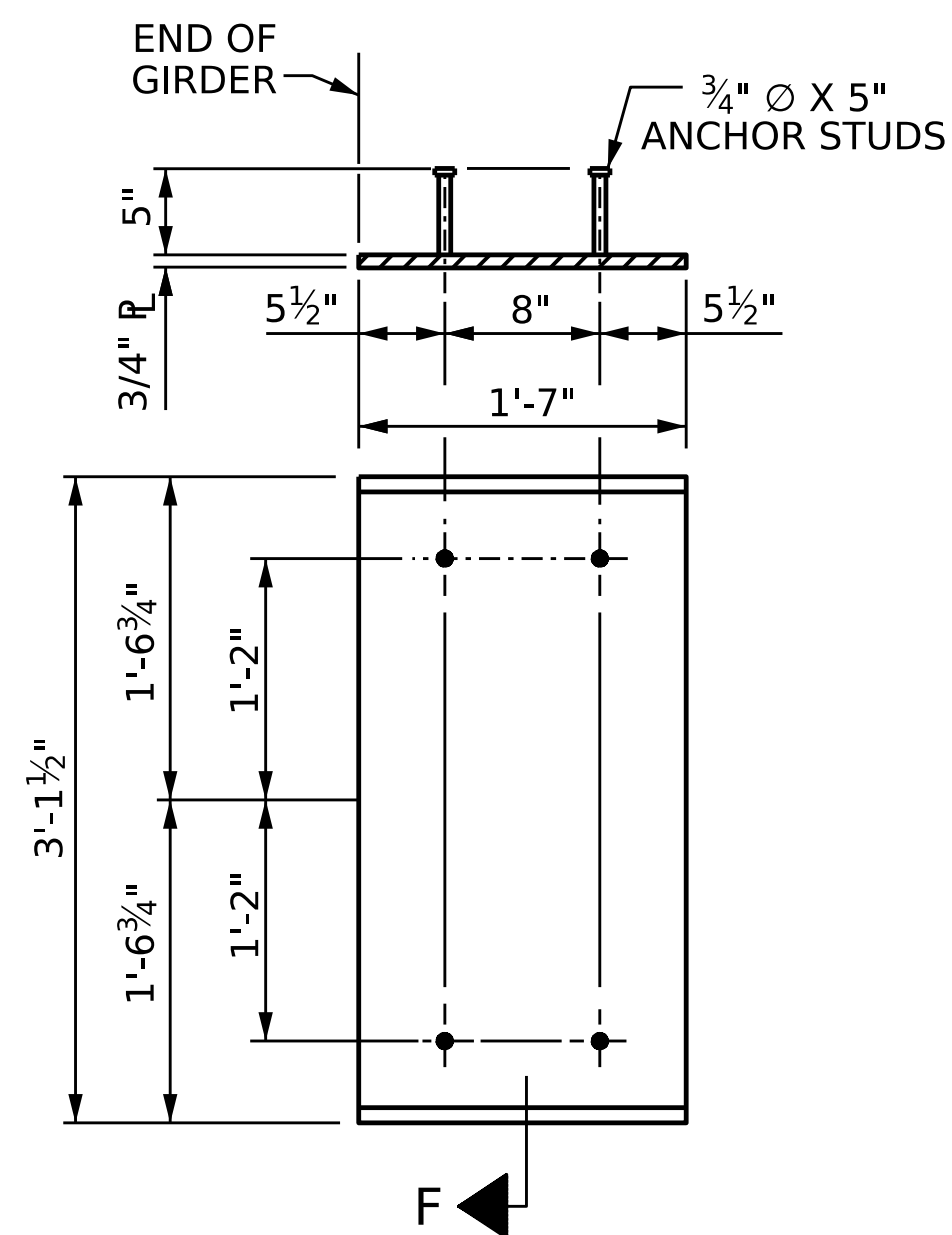
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SECTION "F"

(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS FOR FIB GIRDER

(2 REQ'D PER GIRDER)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES 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 7200 PSI (SPAN A) AND 6400 PSI (SPAN B).

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 3/4".

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

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 5 OF 5

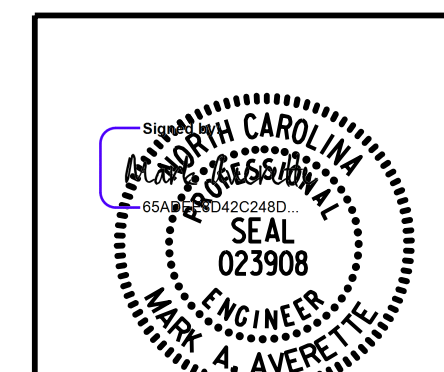
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
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PRESTRESSED CONCRETE GIRDER DETAILS



5640 Dillard Drive, Suite 200
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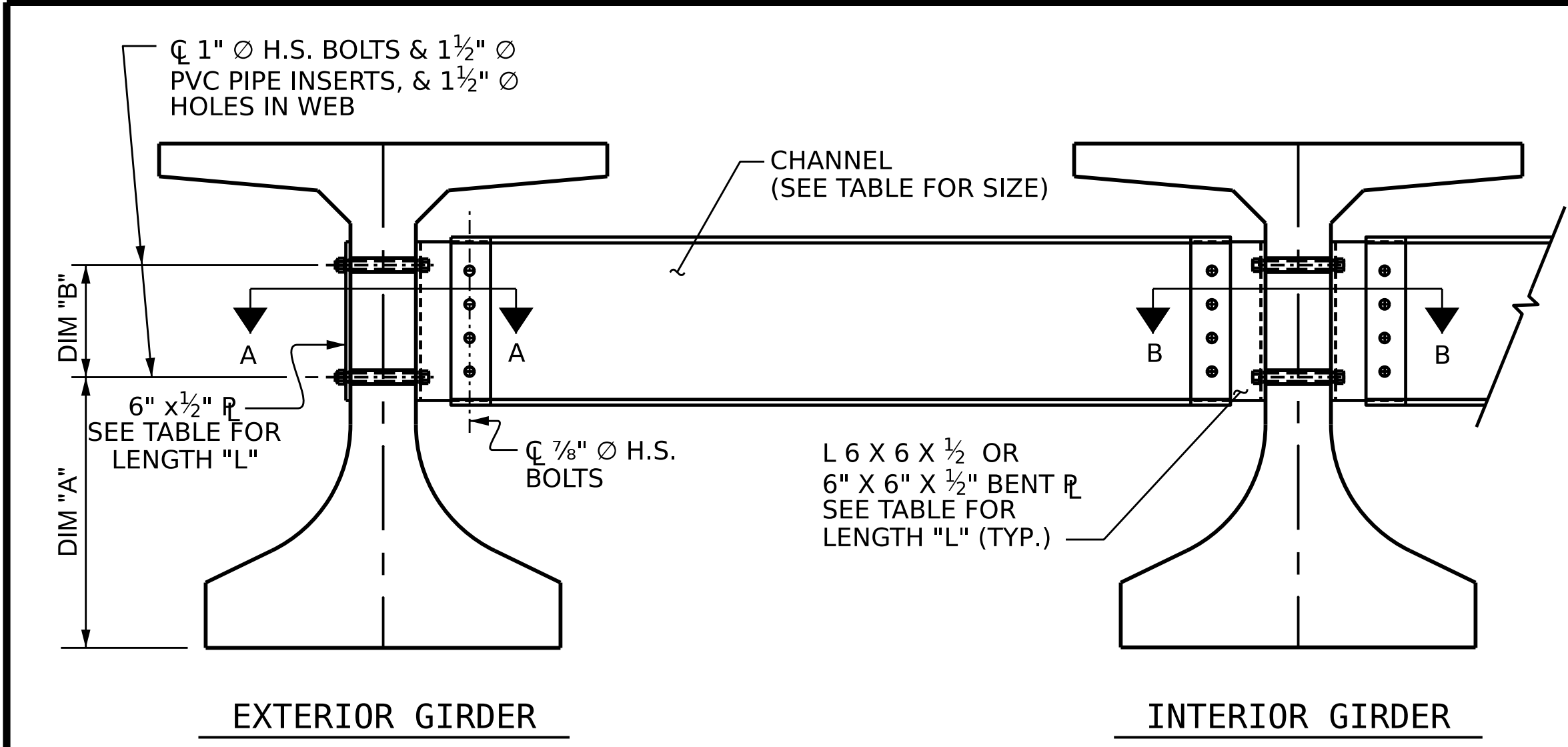


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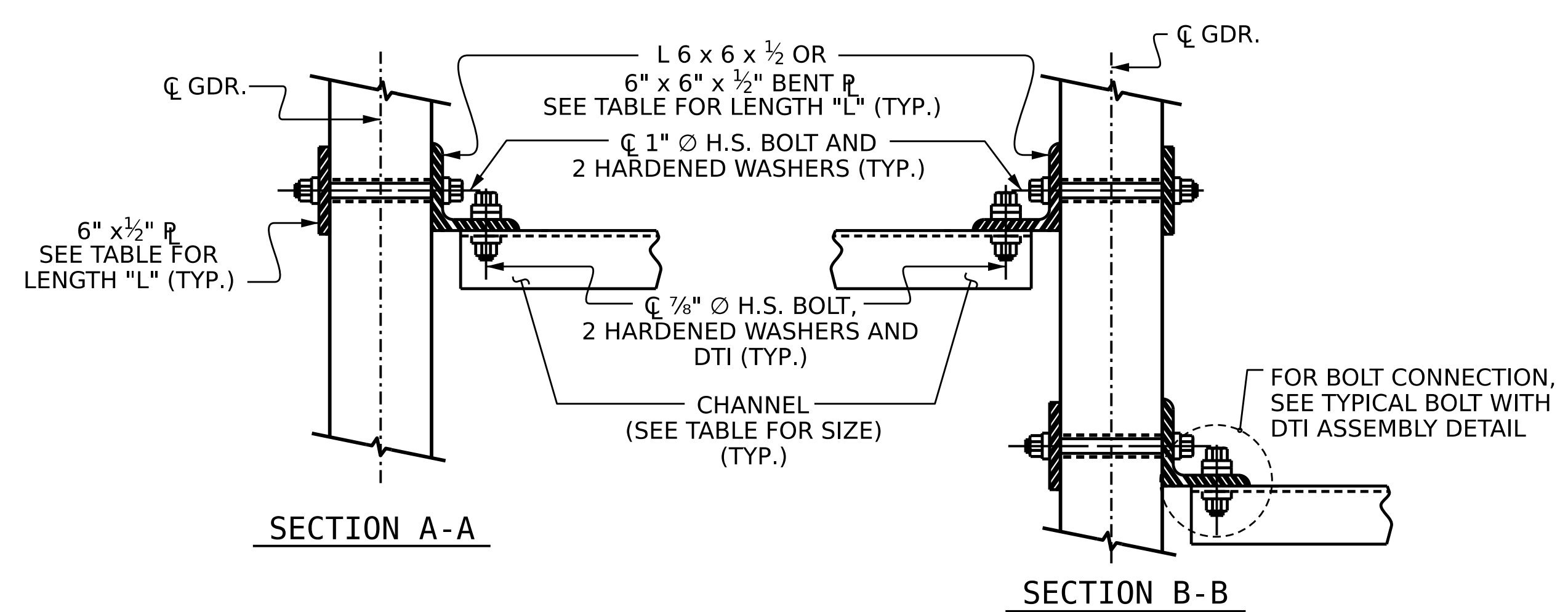
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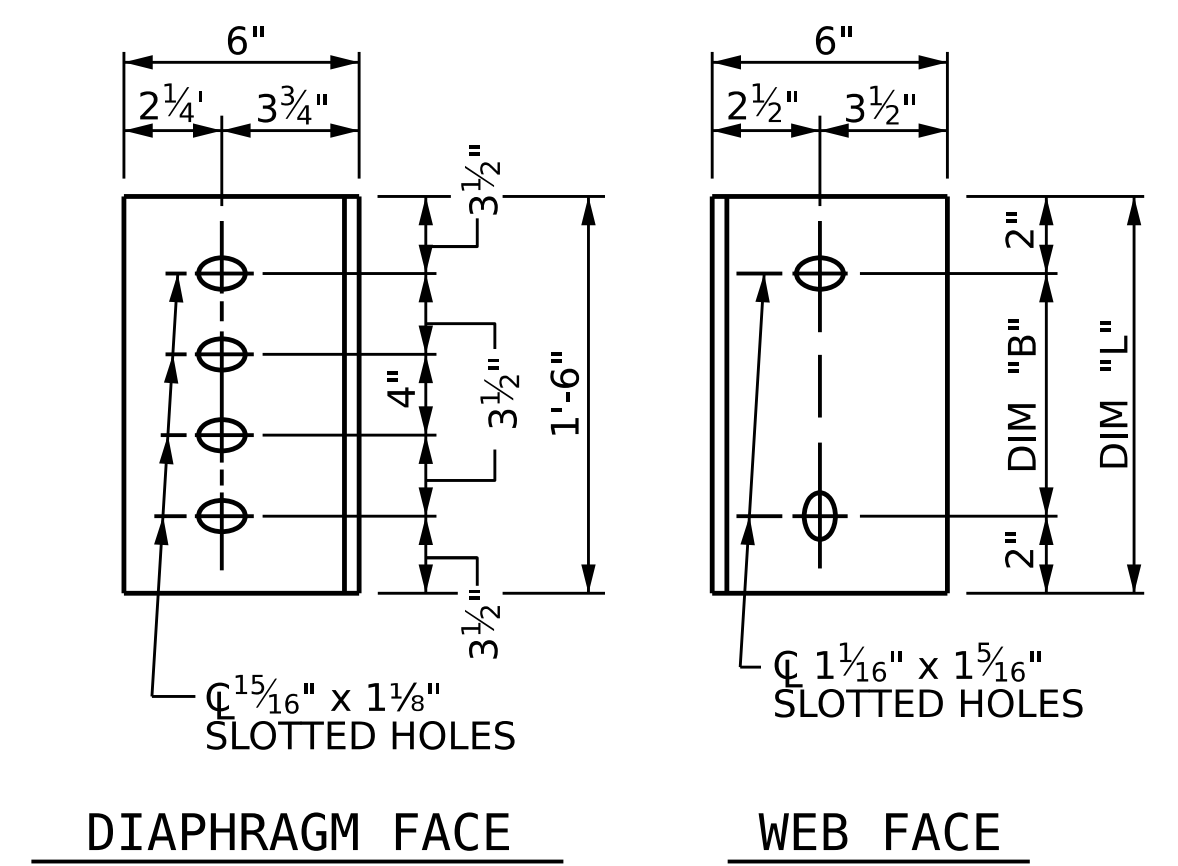
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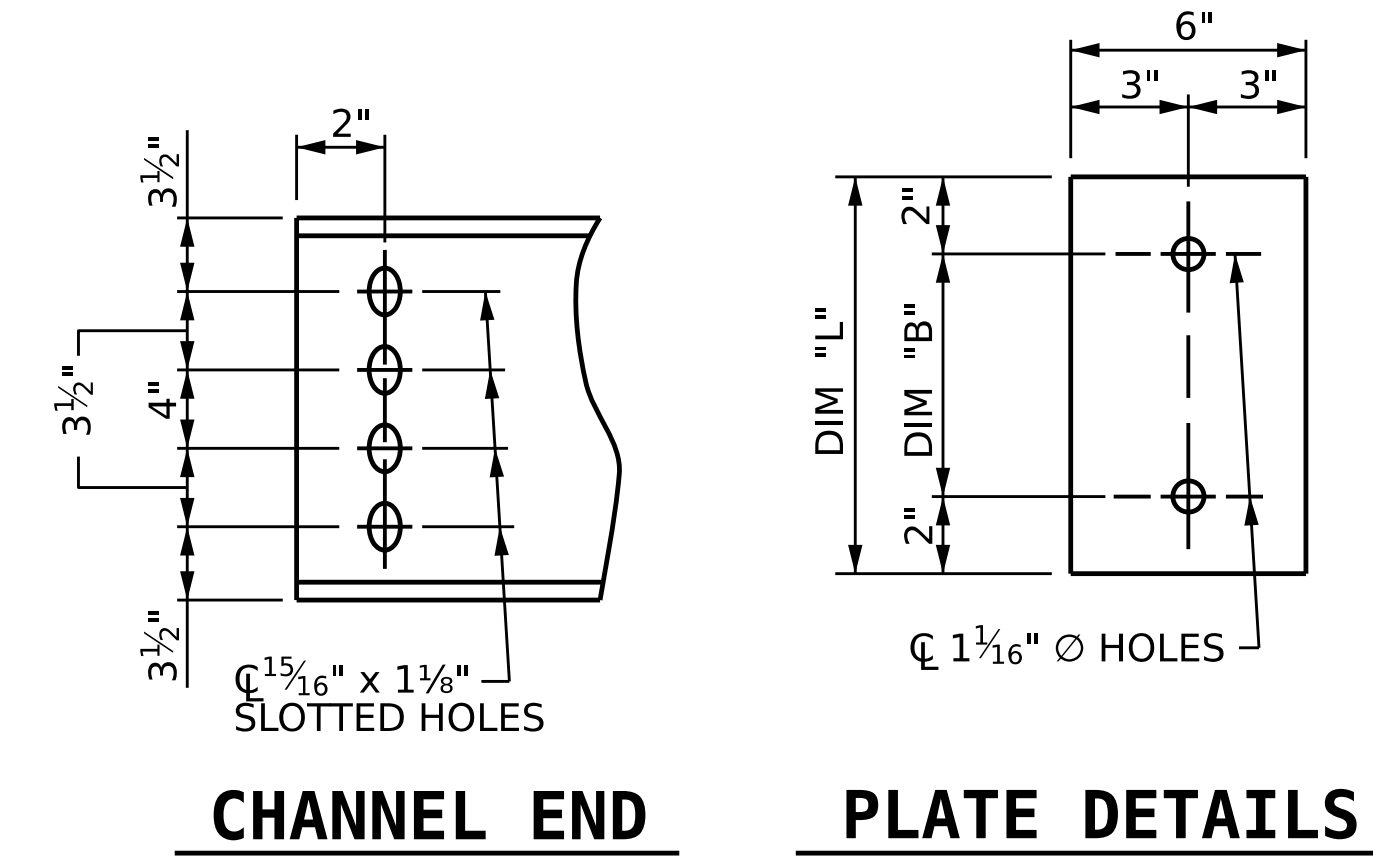
PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTION DETAILS
(SKEW > 110° SHOWN, SKEW < 70° SIM)



CONNECTOR PLATE DETAILS



STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.
 TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
 TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.
 THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
 FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
 USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

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

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

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

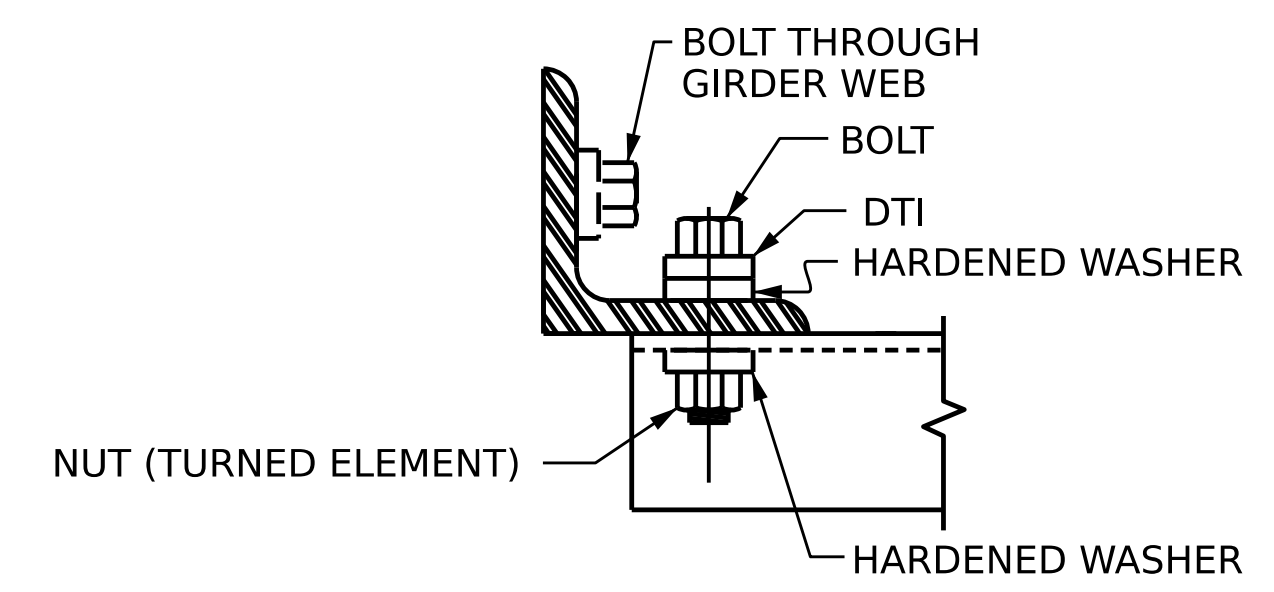
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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

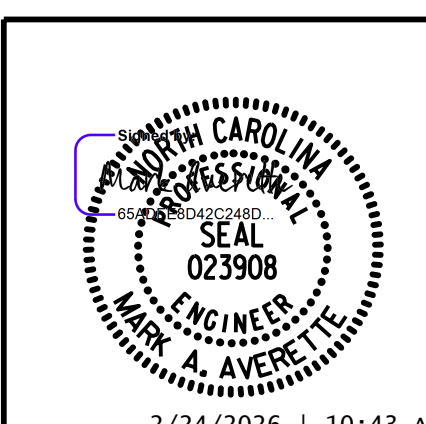
TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
54" FIB	MC 18 x 42.7	2'-3 1/2"	1'-2"	1'-6"

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-



BOLT WITH DTI ASSEMBLY DETAIL



STATE OF NORTH CAROLINA
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INTERMEDIATE STEEL DIAPHRAGMS FOR 54" FIB

DRAWN BY: T. BANKOVICH DATE: 9-25
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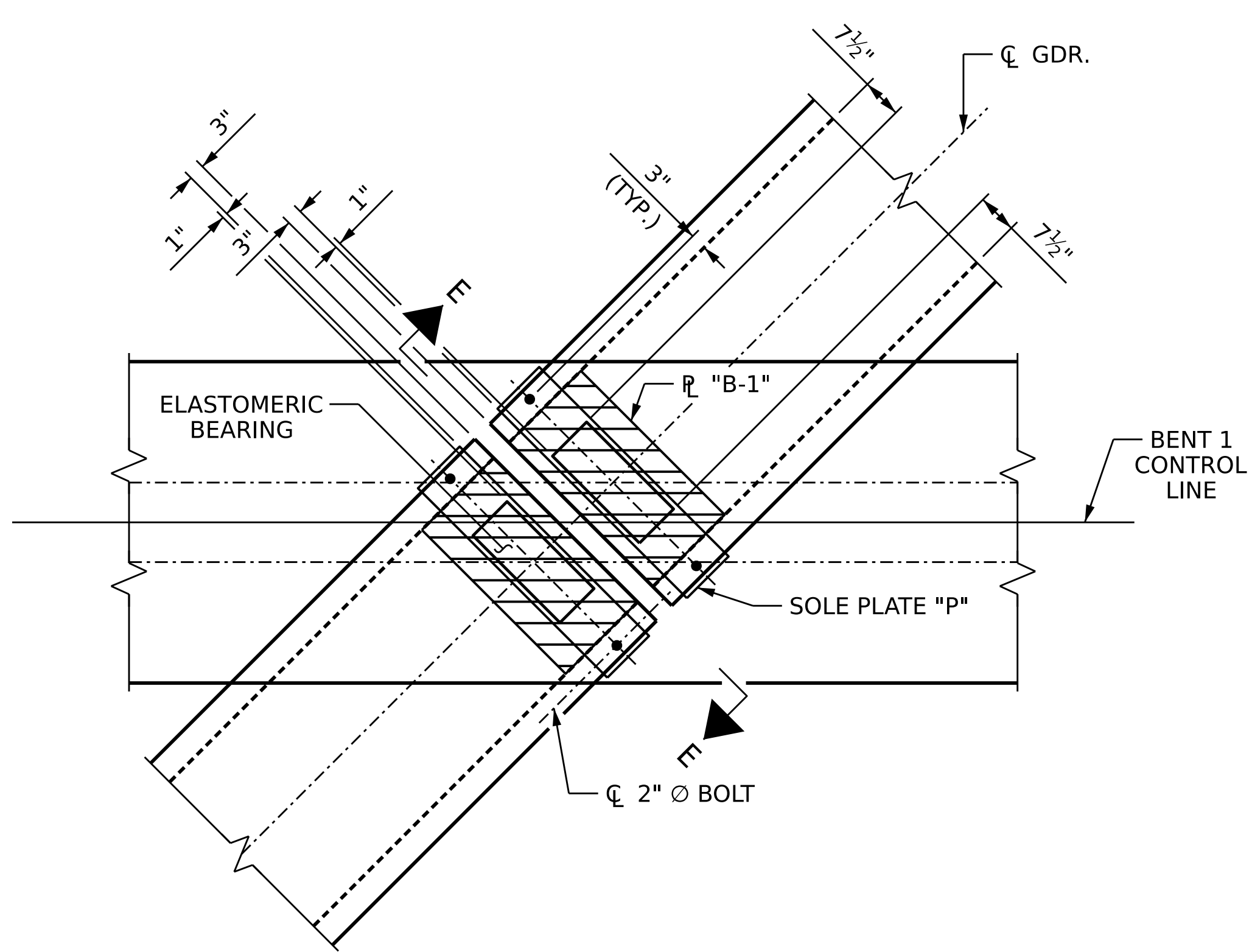
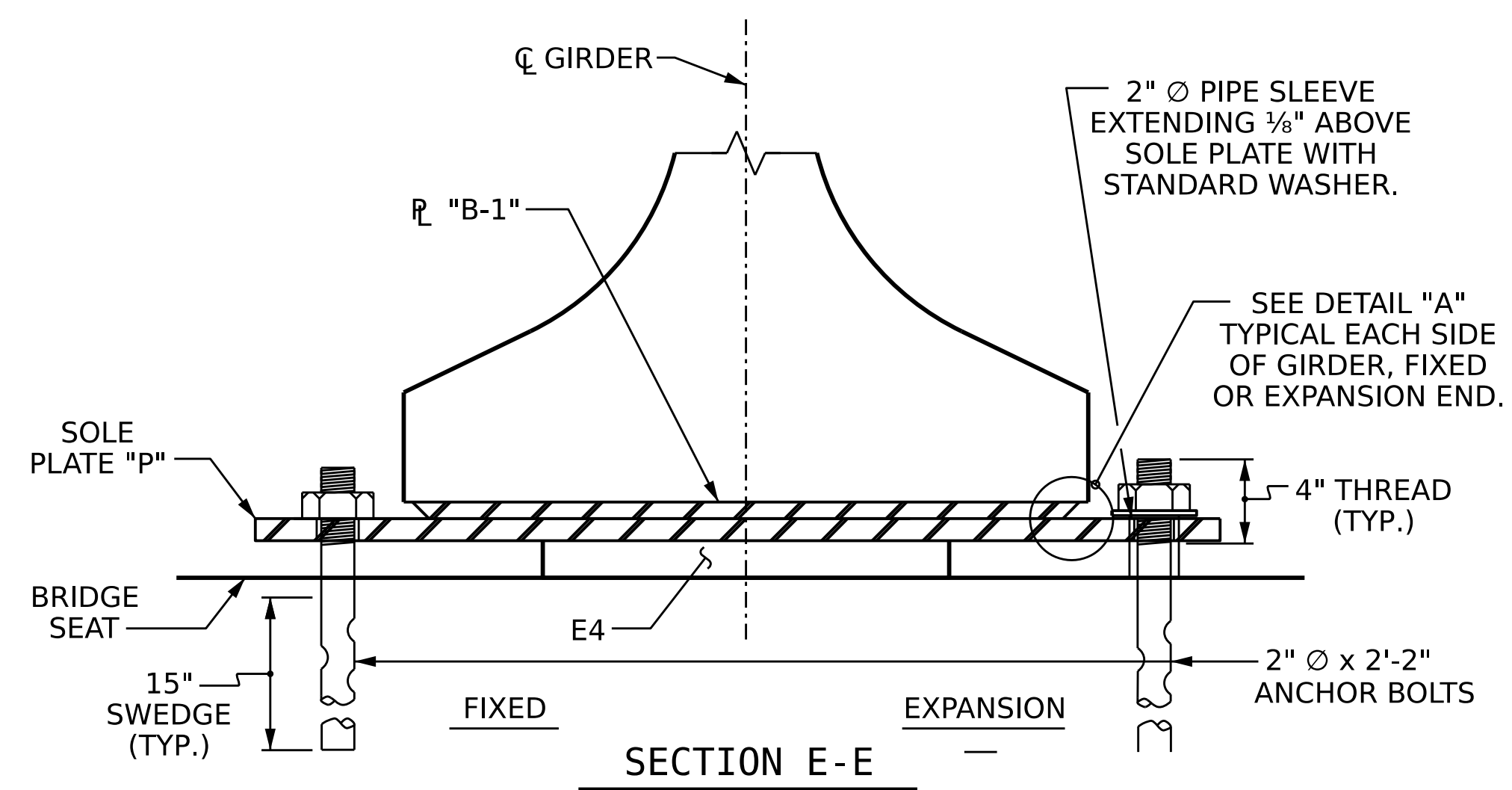
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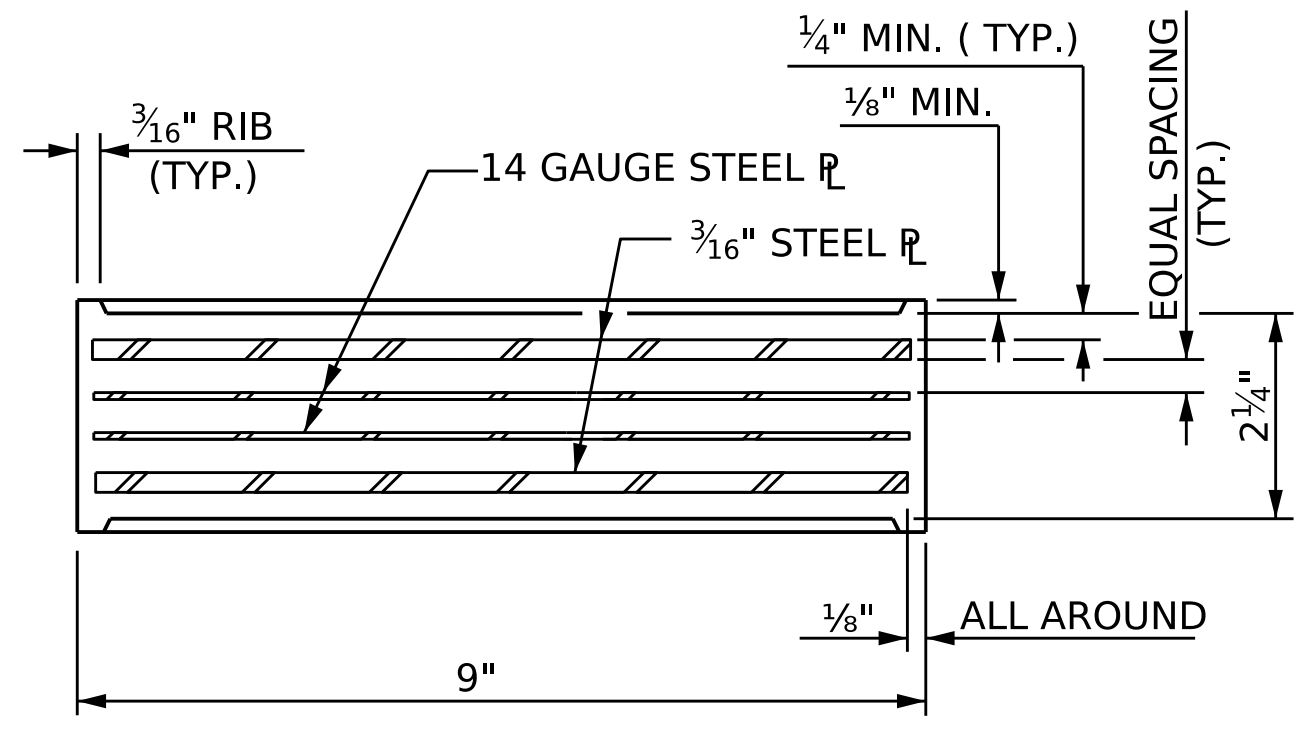
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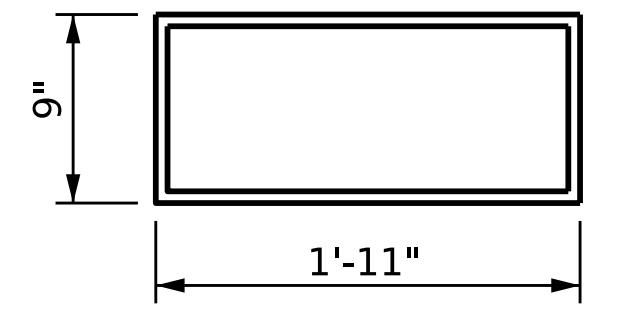
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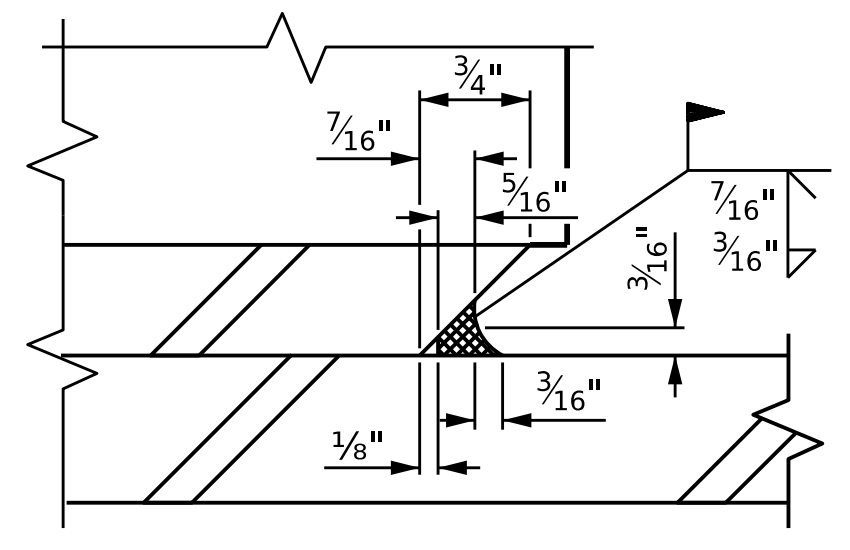
TYPICAL PLAN
(SHOWING LINK SLAB BENT)



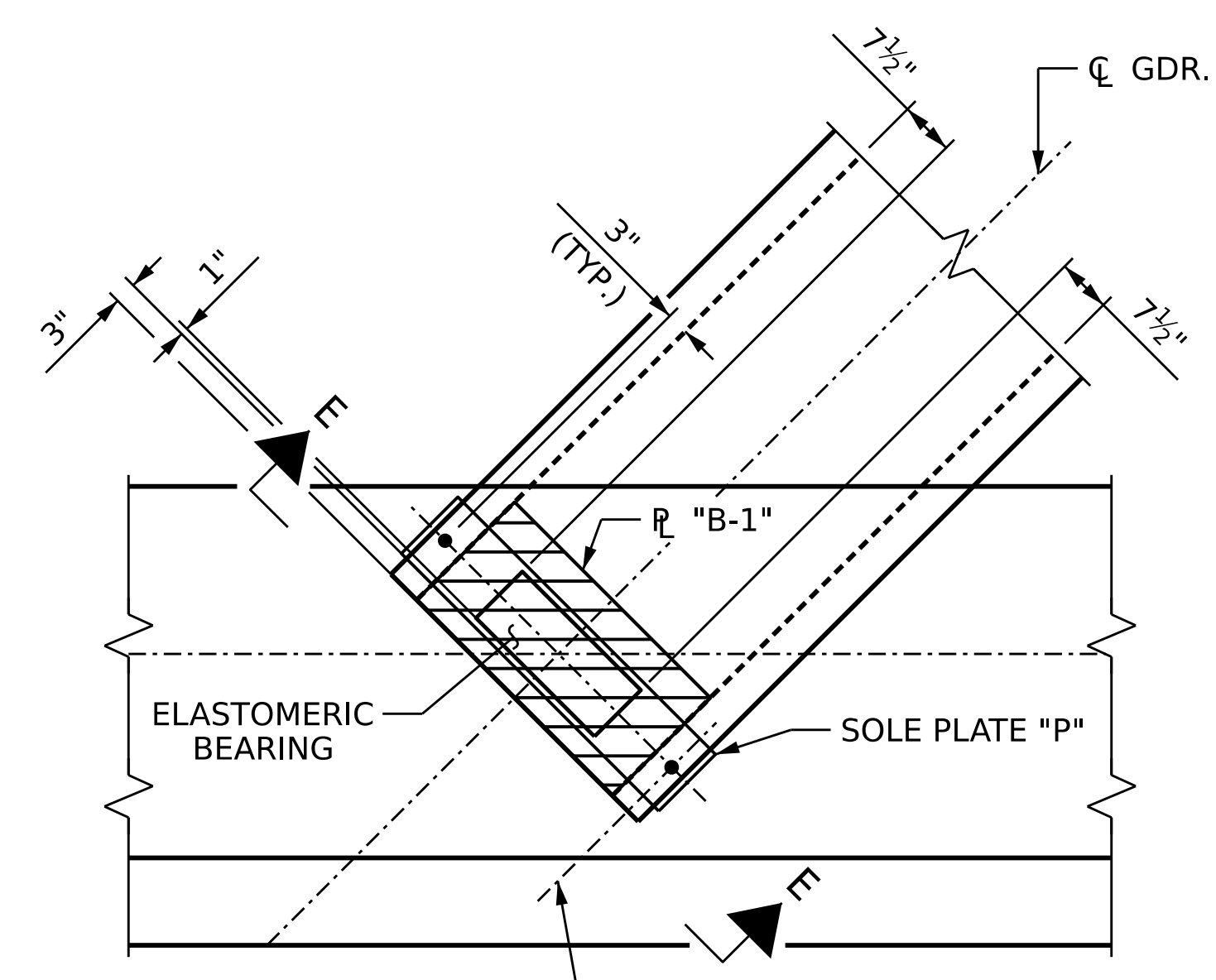
TYPICAL SECTION OF ELASTOMERIC BEARINGS



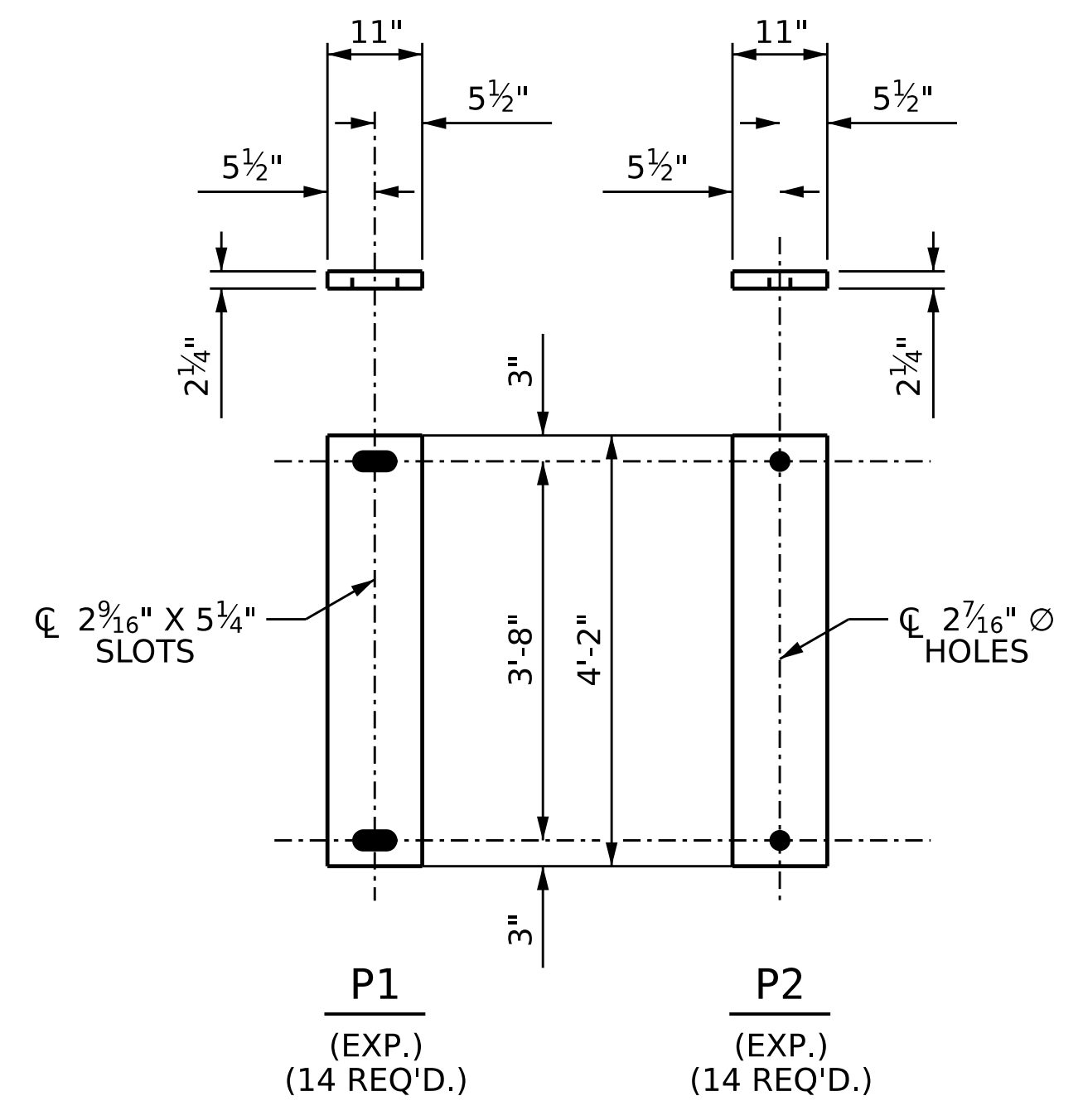
E4 (28 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



DETAIL "A"



TYPICAL PLAN
(SHOWING END BENT)

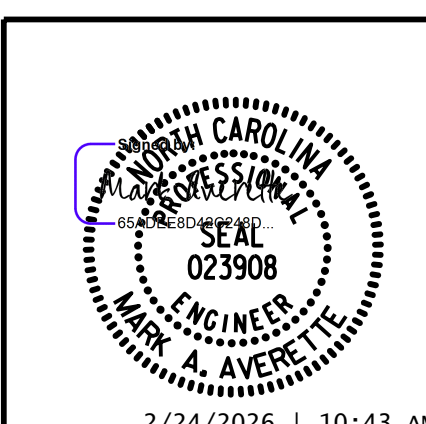


SOLE PLATE DETAILS ("P")
SEE FRAMING PLAN FOR SOLE PLATE ORIENTATION

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

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
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STATE OF NORTH CAROLINA
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ELASTOMERIC BEARING DETAILS



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REVISIONS			SHEET NO.
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1			TOTAL SHEETS
2			41

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN A																						
0.6 ∅ LOW RELAXATION																						
GIRDER AG1 (0 THRU .500)																						
FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.024	0.046	0.068	0.090	0.111	0.132	0.151	0.170	0.187	0.204	0.219	0.232	0.245	0.255	0.264	0.272	0.278	0.282	0.285	0.286
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.016	0.035	0.054	0.073	0.091	0.108	0.125	0.141	0.156	0.170	0.183	0.194	0.205	0.214	0.222	0.229	0.234	0.237	0.240	0.240
FINAL CAMBER	↑	0	1/16"	3/8"	3/16"	3/16"	1/4"	5/16"	3/16"	3/8"	3/8"	7/16"	7/16"	7/16"	1/2"	1/2"	1/2"	1/2"	9/16"	9/16"	9/16"	9/16"

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN A																						
0.6 ∅ LOW RELAXATION																						
GIRDER AG2-AG6 (0 THRU .500)																						
FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.024	0.046	0.068	0.090	0.111	0.132	0.151	0.170	0.187	0.204	0.219	0.232	0.245	0.255	0.264	0.272	0.278	0.282	0.285	0.286
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.016	0.036	0.055	0.075	0.094	0.112	0.129	0.146	0.161	0.175	0.189	0.201	0.212	0.221	0.229	0.236	0.241	0.245	0.247	0.248
FINAL CAMBER	↑	0	3/8"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	5/16"	5/16"	5/16"	3/8"	3/8"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"	7/16"

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN A																						
0.6 ∅ LOW RELAXATION																						
GIRDER AG7 (0 THRU .500)																						
FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.024	0.046	0.068	0.090	0.111	0.132	0.151	0.170	0.187	0.204	0.219	0.232	0.245	0.255	0.264	0.272	0.278	0.282	0.285	0.286
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.016	0.035	0.054	0.073	0.091	0.109	0.126	0.142	0.157	0.171	0.184	0.196	0.207	0.216	0.224	0.230	0.236	0.239	0.241	0.242
FINAL CAMBER	↑	0	1/16"	1/8"	3/16"	3/16"	1/4"	1/4"	5/16"	5/16"	3/8"	3/8"	7/16"	7/16"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"

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SHEET 1 OF 2

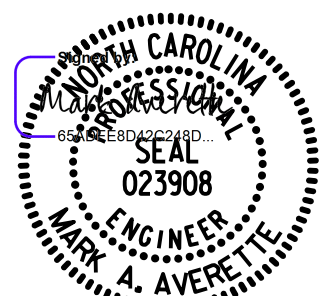
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GIRDER DEFLECTION AND CAMBER TABLES



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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
		SPAN B																				
0.6 ∅ LOW RELAXATION		GIRDER BG1 (0 THRU .500)																				
FORTIETH POINTS		0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.020	0.040	0.060	0.080	0.099	0.118	0.135	0.152	0.168	0.182	0.196	0.208	0.219	0.229	0.237	0.244	0.249	0.253	0.255	0.256
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.012	0.027	0.042	0.057	0.071	0.084	0.098	0.110	0.122	0.133	0.143	0.152	0.160	0.168	0.174	0.179	0.183	0.186	0.187	0.188
FINAL CAMBER	↑	0	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	11/16"	1 1/16"	3/4"	3/4"	13/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
		SPAN B																				
0.6 ∅ LOW RELAXATION		GIRDER BG2-BG6 (0 THRU .500)																				
FORTIETH POINTS		0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.020	0.040	0.060	0.080	0.099	0.118	0.135	0.152	0.168	0.182	0.196	0.208	0.219	0.229	0.237	0.244	0.249	0.253	0.255	0.256
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.012	0.028	0.043	0.058	0.073	0.087	0.101	0.114	0.126	0.137	0.148	0.157	0.166	0.173	0.180	0.185	0.189	0.192	0.194	0.194
FINAL CAMBER	↑	0	1/8"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	1 1/16"	1 1/16"	1 1/16"	3/4"	3/4"	3/4"	3/4"

* INCLUDES FUTURE WEARING SURFACE
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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
		SPAN B																				
0.6 ∅ LOW RELAXATION		GIRDER BG7 (0 THRU .500)																				
FORTIETH POINTS		0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.020	0.040	0.060	0.080	0.099	0.118	0.135	0.152	0.168	0.182	0.196	0.208	0.219	0.229	0.237	0.244	0.249	0.253	0.255	0.256
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.012	0.027	0.042	0.057	0.071	0.085	0.098	0.111	0.123	0.134	0.144	0.153	0.162	0.169	0.175	0.180	0.184	0.187	0.189	0.189
FINAL CAMBER	↑	0	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	1 1/16"	3/4"	3/4"	3/4"	3/4"	13/16"	1 1/16"	1 1/16"	1 1/16"

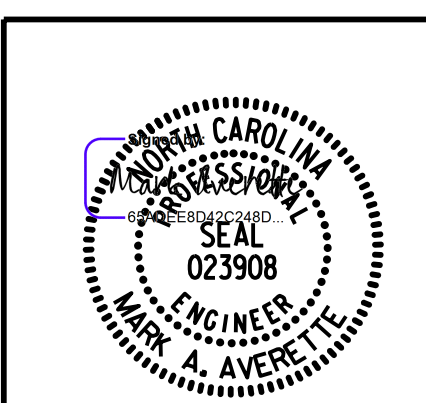
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SHEET 2 OF 2

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**GIRDER DEFLECTION
AND CAMBER TABLES**

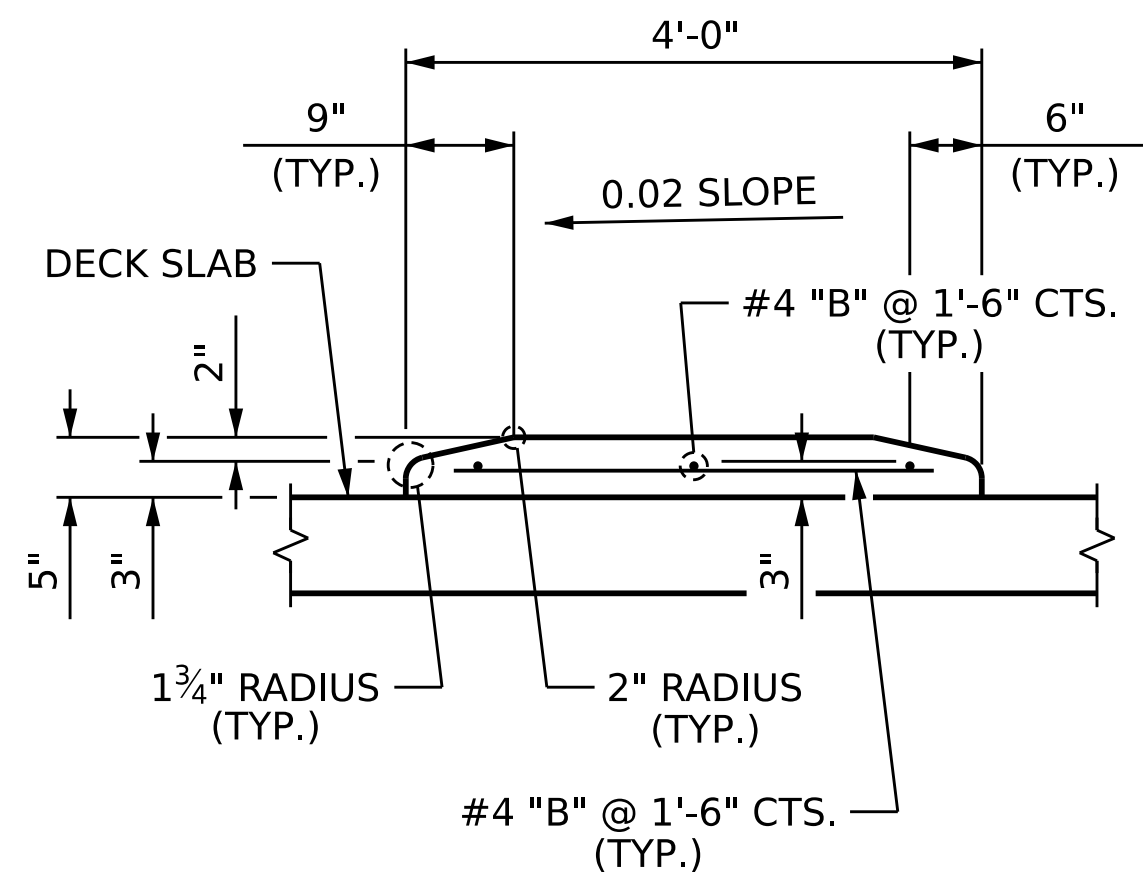


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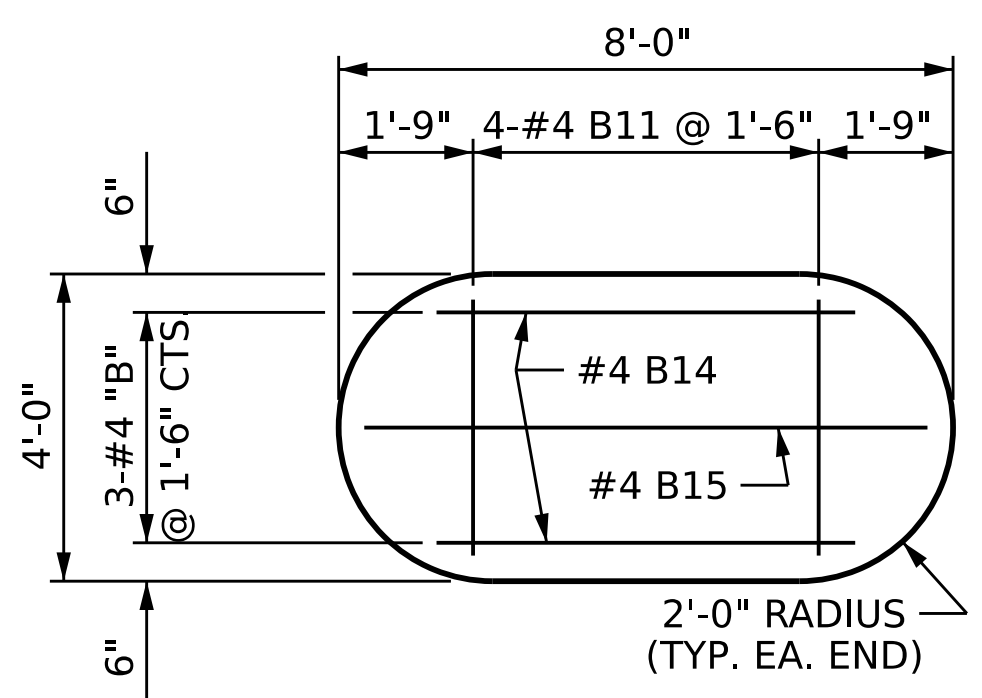
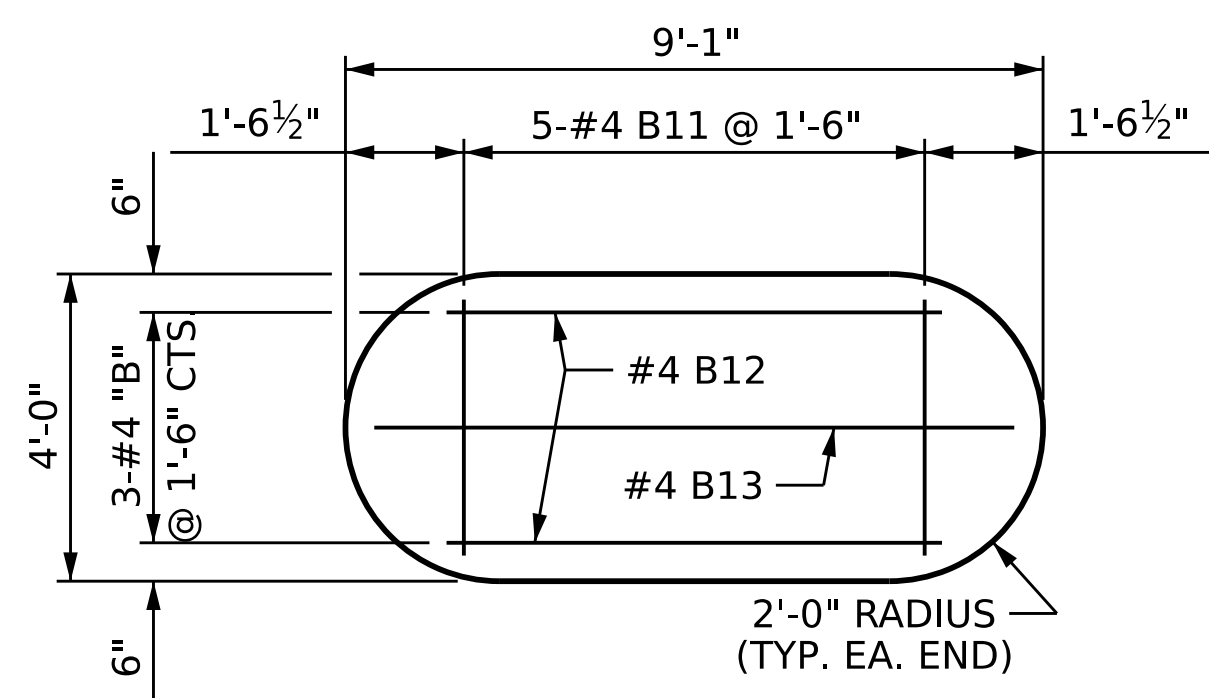
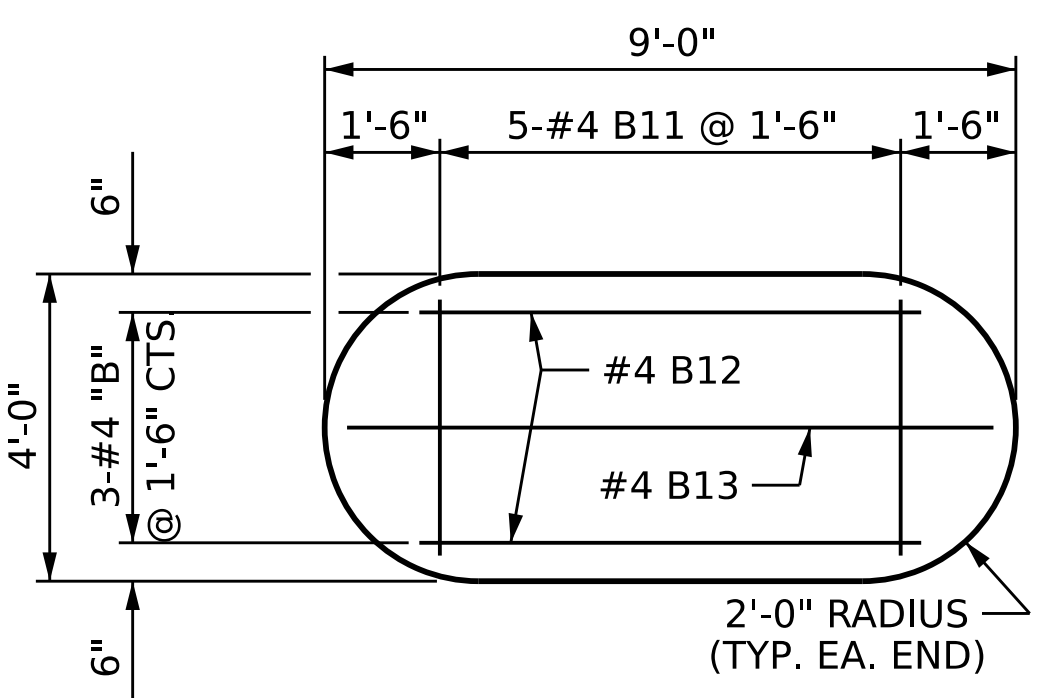
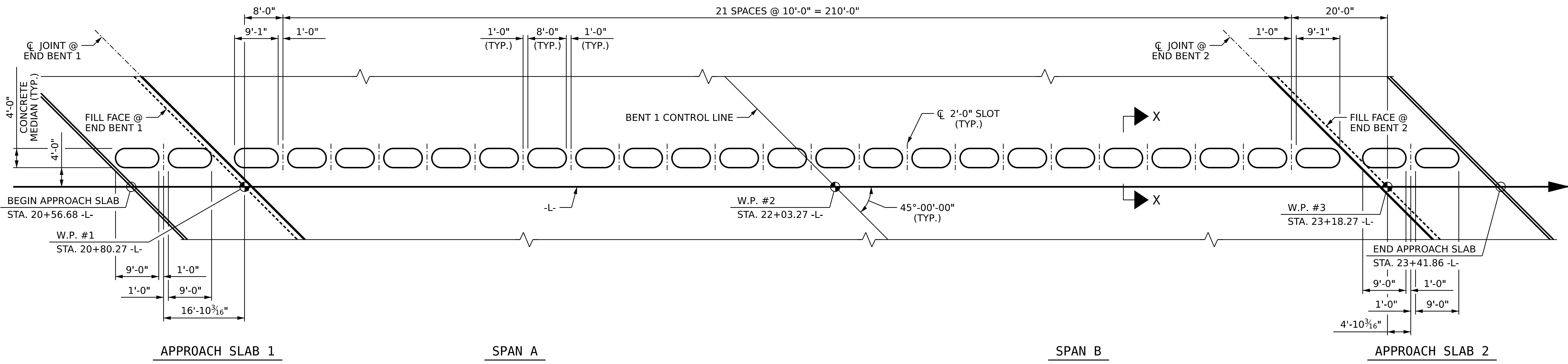
NOTES:

ALL REINFORCING STEEL IN CONCRETE MEDIANS SHALL BE EPOXY COATED.

THE CONCRETE MEDIAN STRIP IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

NO SEPERATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE CONCRETE MEDIAN STRIP. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE REINFORCED CONCRETE DECK SLAB.

FOR CONCRETE AND REINFORCEMENT STEEL QUANTITIES, SEE "BILL OF MATERIAL SHEET", SHEET 2 OF 2.



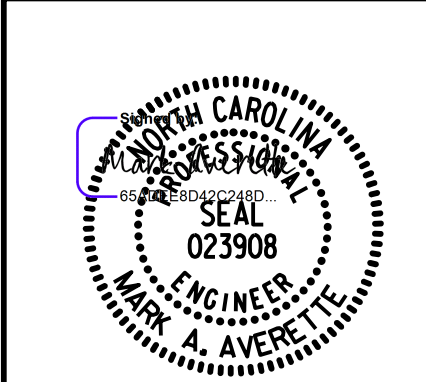
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CONCRETE MEDIAN STRIP



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DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

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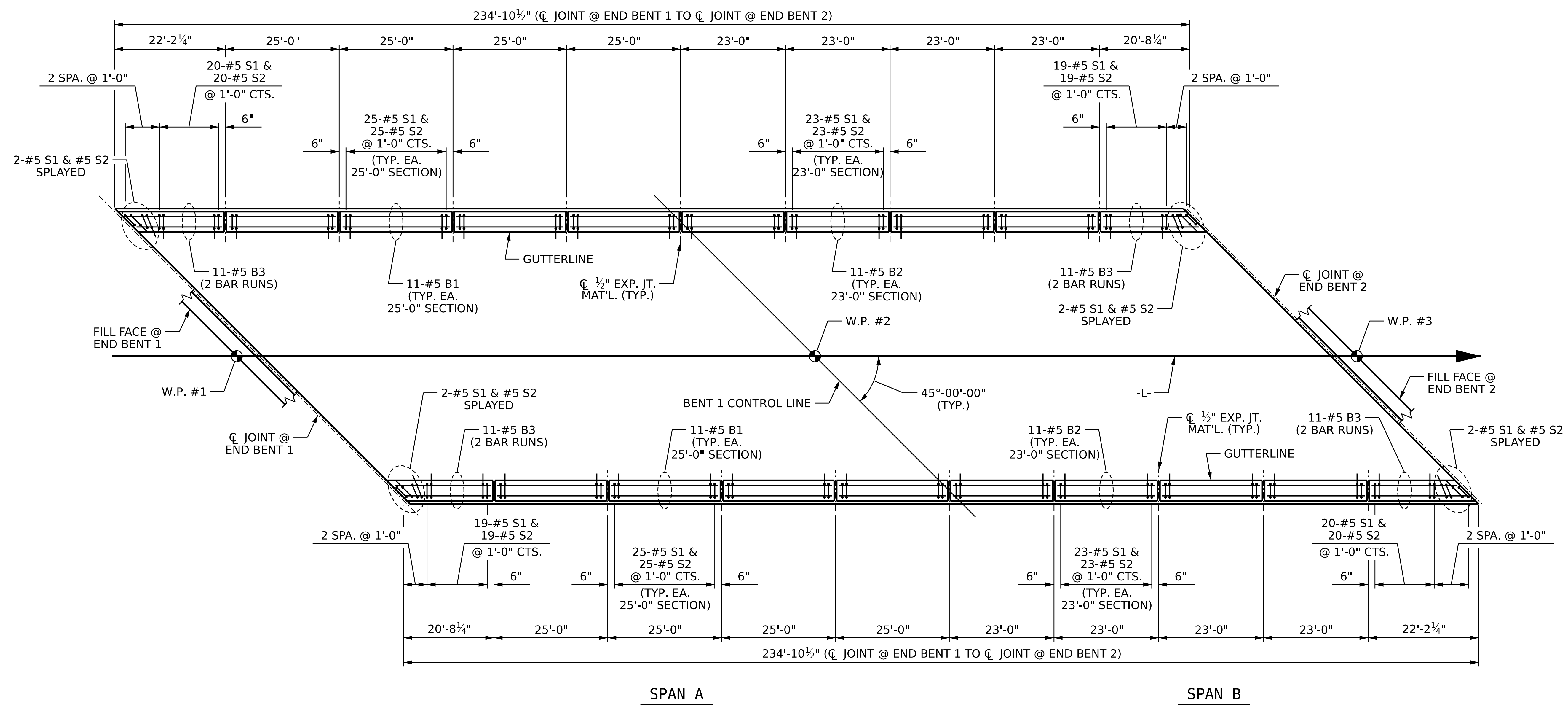
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PLAN OF BARRIER RAIL

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL

NOTES:

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-101(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

THE #5 S1 BARS MAY BE SHIFTED SLIGHTLY OR FIELD BENT AS NECESSARY IN ORDER TO CLEAR THE STRIP SEAL COVER PLATE ASSEMBLY IN THE CONCRETE BARRIER RAIL AT END BENTS.

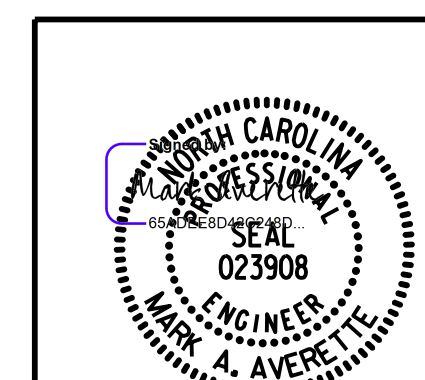
SEE "BRIDGE APPROACH SLAB DETAILS" SHEET FOR EPOXY COATED REINFORCING STEEL, CLASS AA CONCRETE AND LINEAR FEET QUANTIITIES FOR BARRIER RAILS ON THE APPROACH SLABS.

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SHEET 1 OF 2

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CONCRETE BARRIER RAIL



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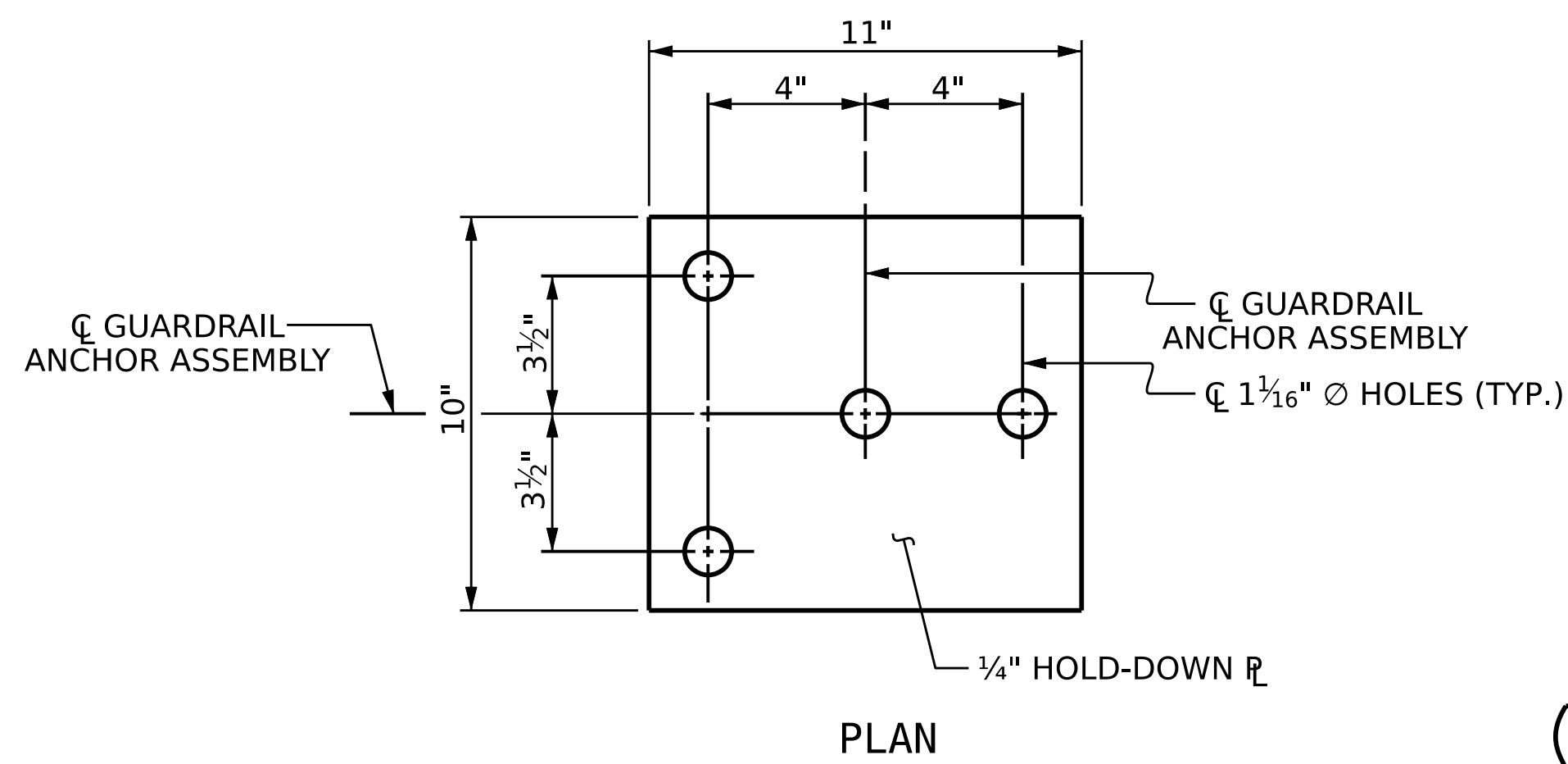
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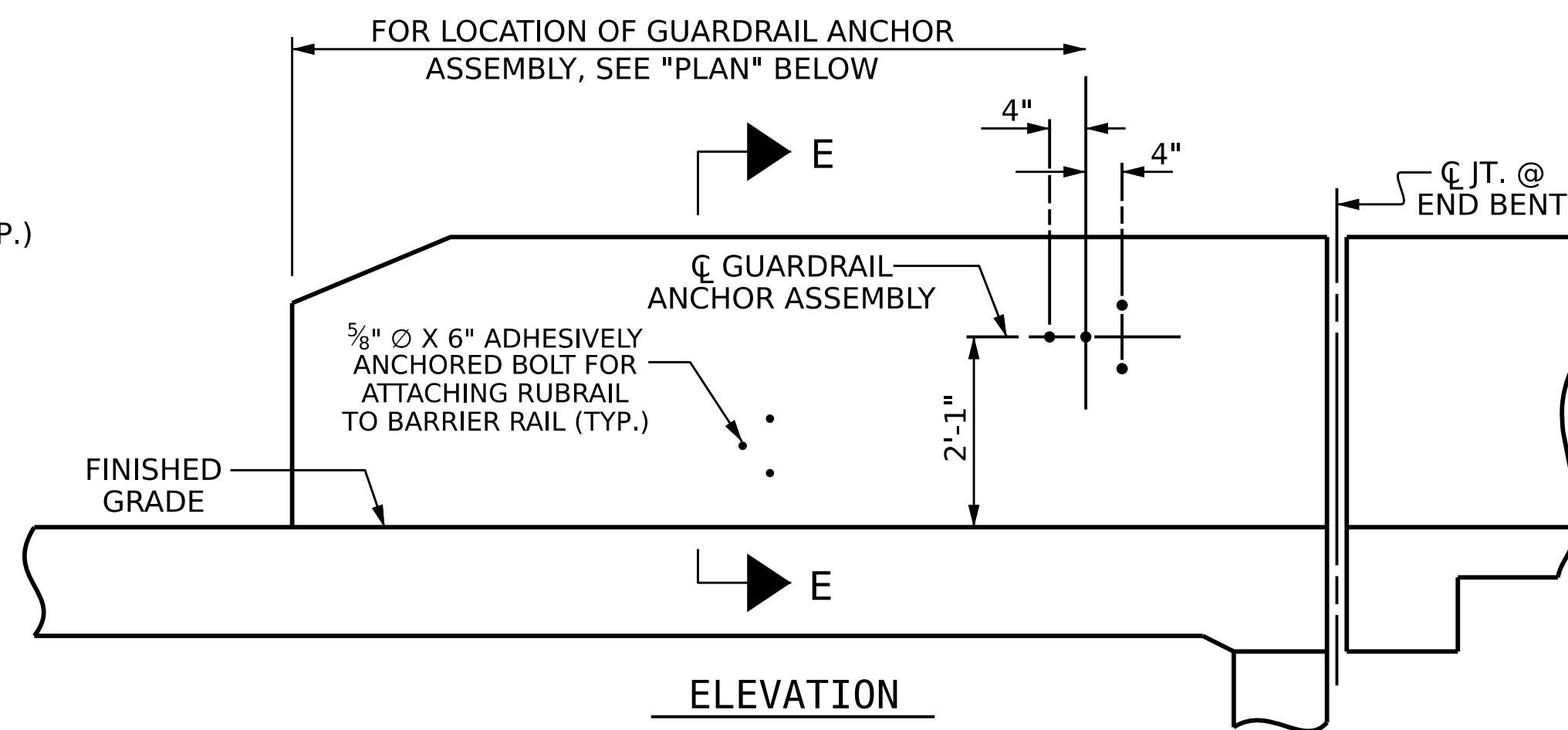
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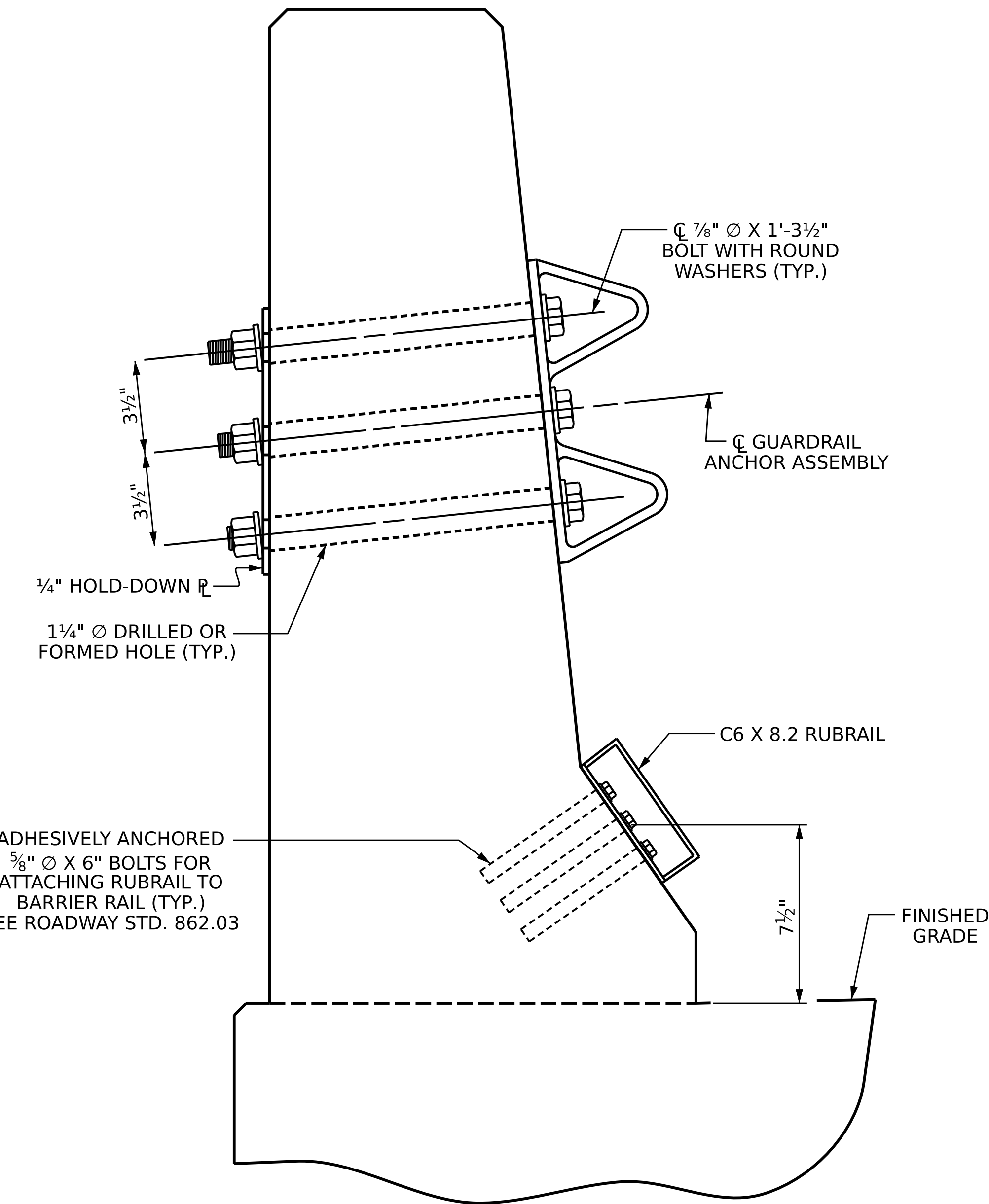
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PLAN

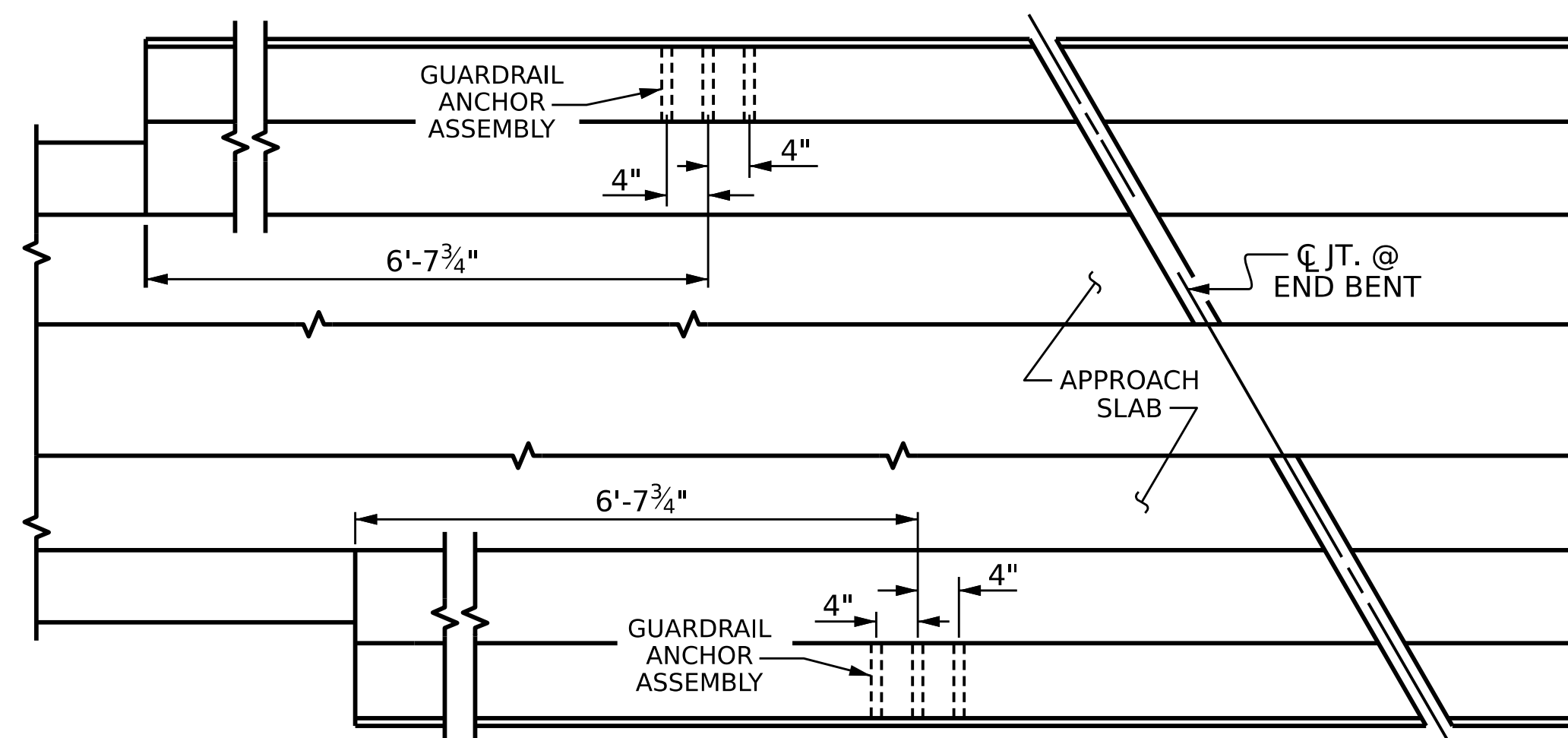


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

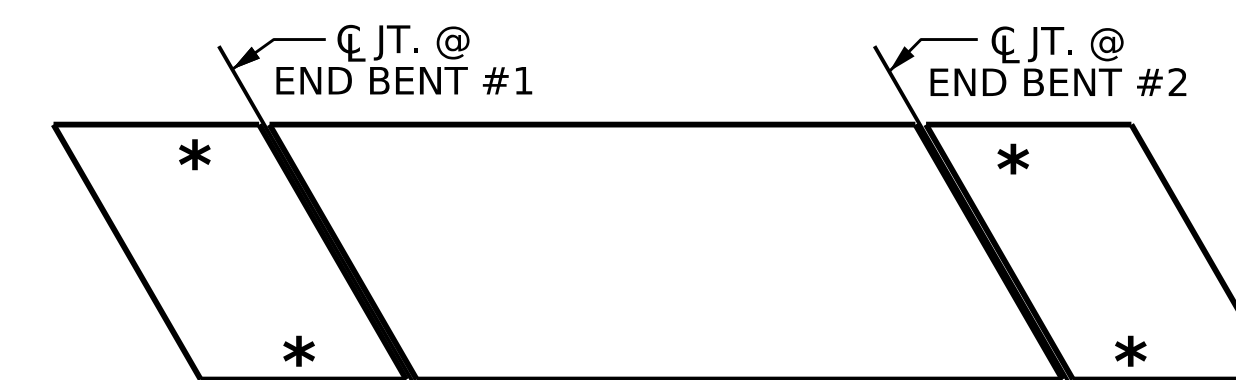
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 5/8" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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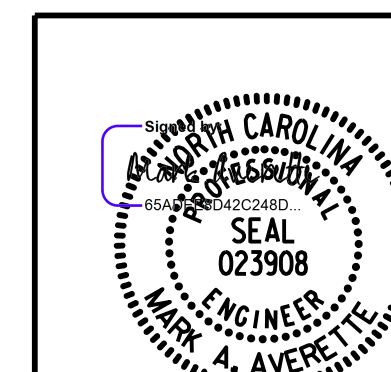
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GUARDRAIL ANCHORAGE FOR BARRIER RAIL



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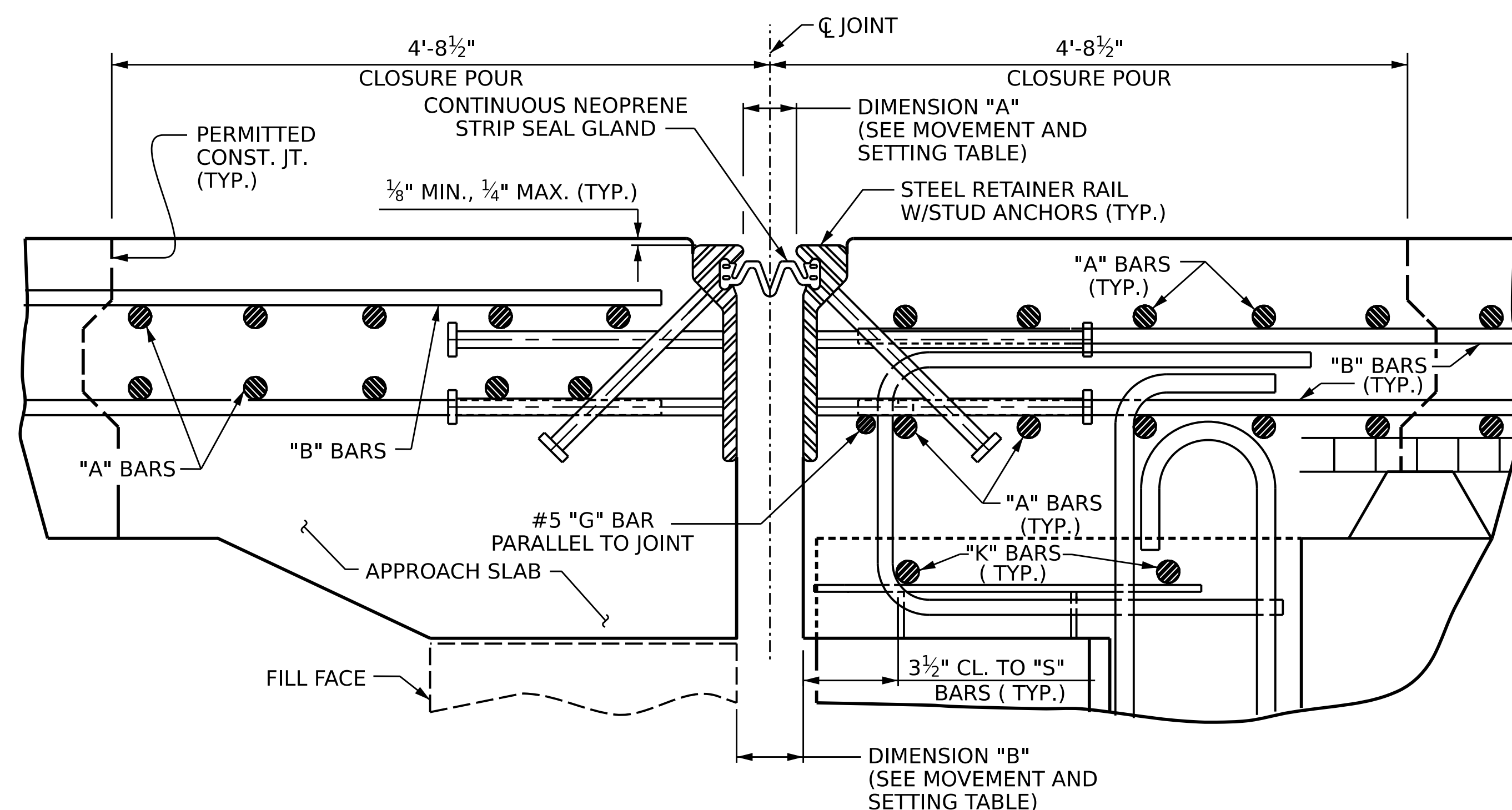
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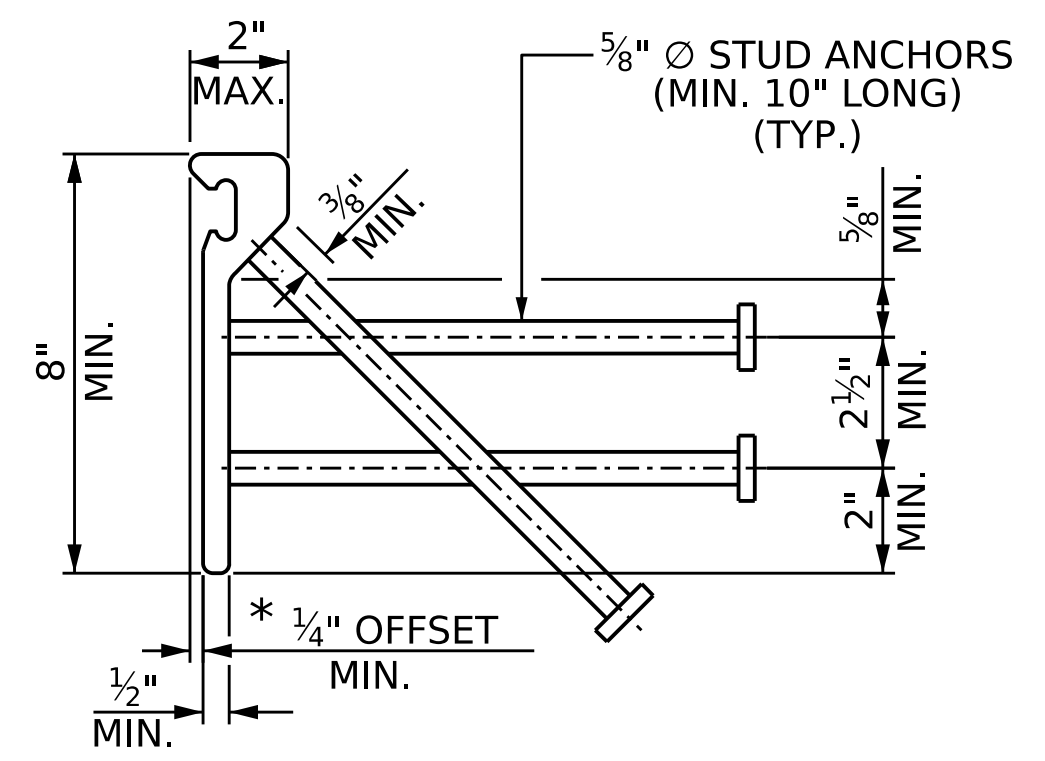
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STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE



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.

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.

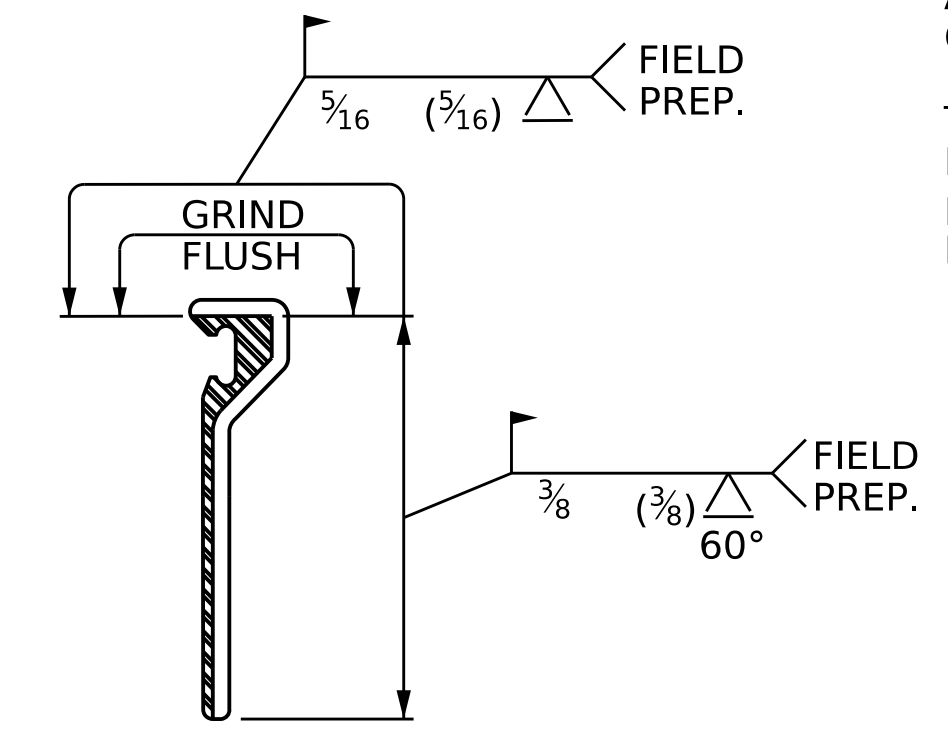
FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

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.

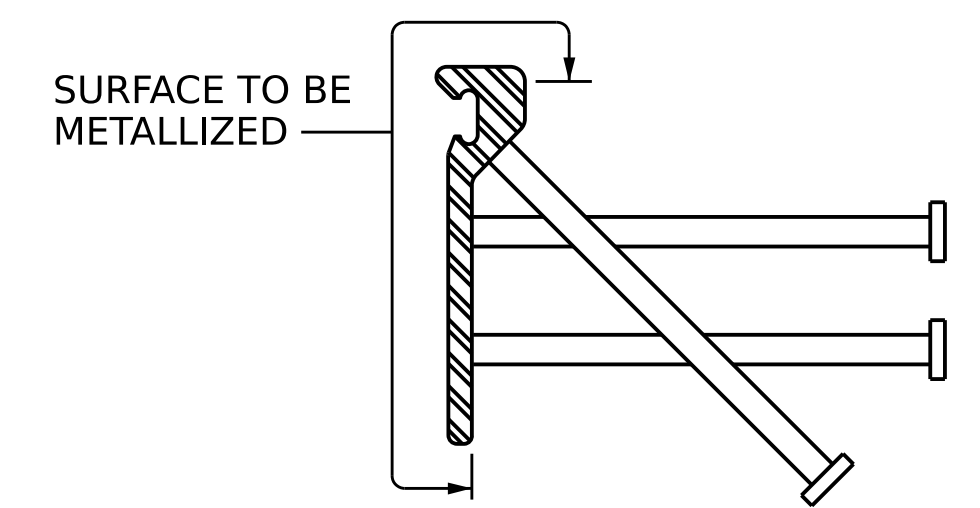
NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

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.



STEEL RETAINER RAIL (FIELD SPLICE DETAIL)



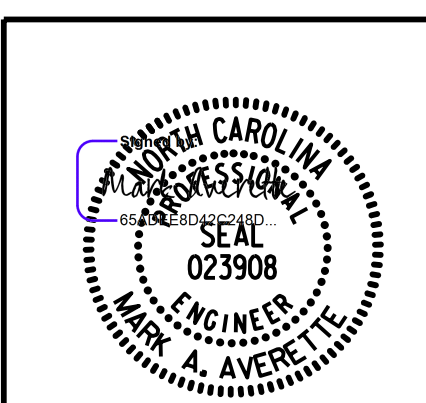
METALLIZING DETAIL

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	45°-00'-00"	3/4"	2 3/8"	2"	1 13/16"	2 5/8"	2 1/2"	2 5/16"
END BENT 2	45°-00'-00"	1 1/16"	2 1/16"	2"	1 13/16"	2 9/16"	2 1/2"	2 5/16"

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
STRIP SEAL EXPANSION JOINT DETAILS



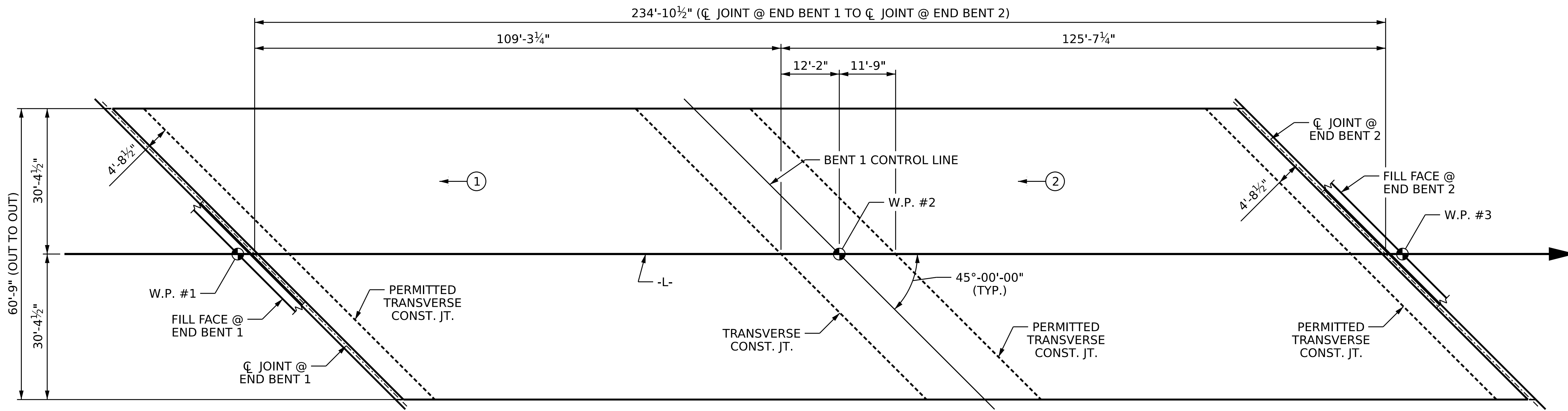
DRAWN BY: T. BANKOVICH DATE: 9-25
 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

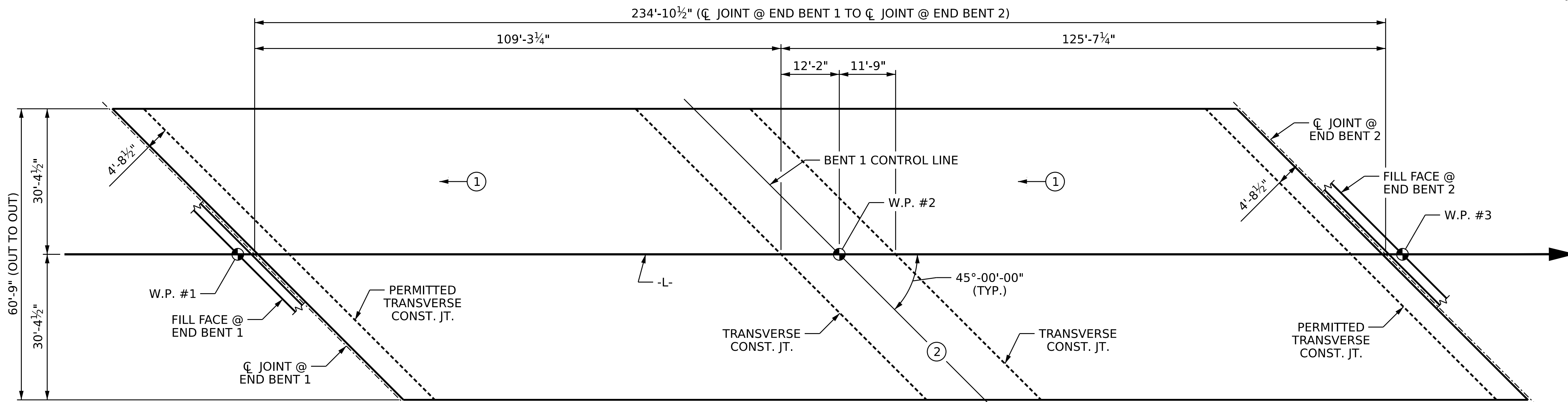
TOTAL SHEETS	41
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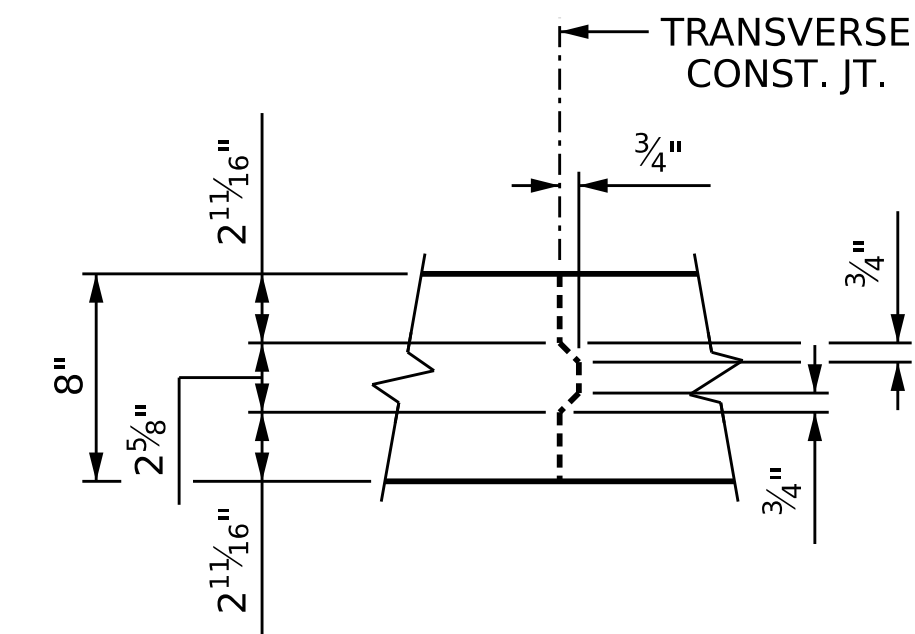
**POUR SEQUENCE AND LAYOUT FOR COMPUTING
 REINFORCING CONCRETE DECK SLAB AREA**
 (SQ. FT. 14,269)

← # INDICATED POUR NUMBER AND DIRECTION OF POUR



OPTIONAL POURING SEQUENCE

← # INDICATED POUR NUMBER AND DIRECTION OF POUR



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

**TRANSVERSE CONSTRUCTION
 JOINT DETAIL**

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 2

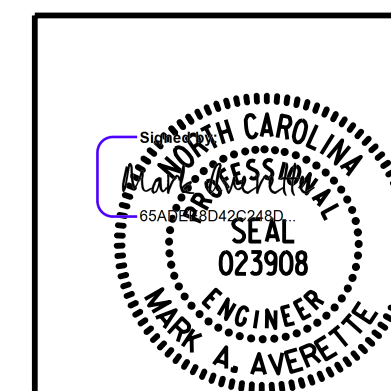
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

BILL OF MATERIAL



5640 Dillard Drive, Suite 200
Cary, NC 27518

LICENSURE NO. C-5315



2/24/2026 10:43 AM

DRAWN BY: T. BANKOVICH DATE: 9-25
 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

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

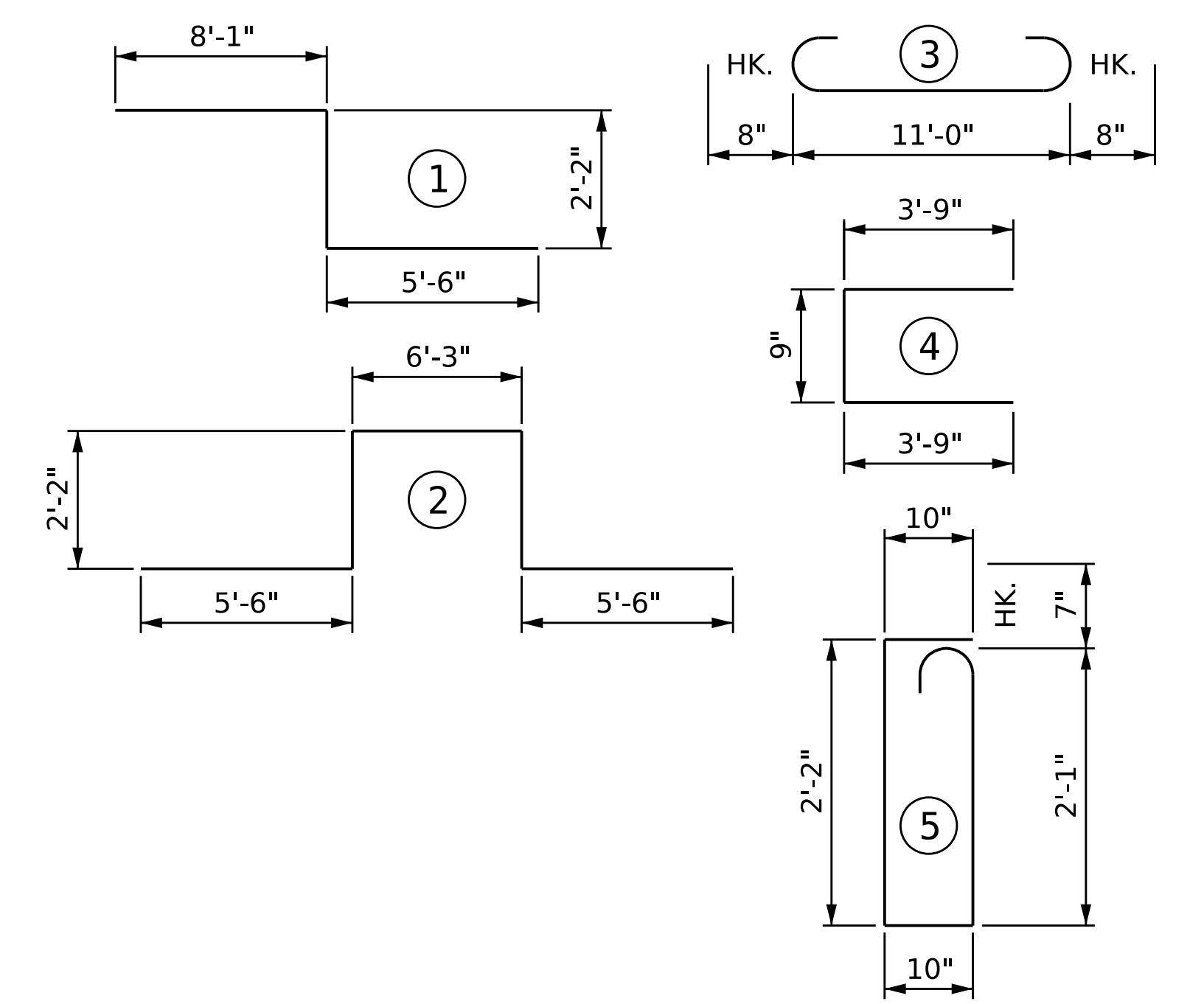
TOTAL SHEETS	41
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BILL OF MATERIAL

SPANS A & B

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	279	#5	STR	35'-11"	10452	* A1053	2	#5	STR	27'-3"	57	A2015	2	#5	STR	51'-0"	106	A2072	2	#5	STR	15'-5"	32	
* A2	279	#5	STR	27'-0"	7857	* A1054	2	#5	STR	26'-8"	56	A2016	2	#5	STR	50'-5"	105	A2073	2	#5	STR	14'-9"	31	
* A3	6	#6	STR	23'-11"	216	* A1055	2	#5	STR	26'-0"	54	A2017	2	#5	STR	49'-9"	104	A2074	2	#5	STR	14'-2"	30	
A4	558	#5	STR	31'-3"	18187	* A1056	2	#5	STR	25'-5"	53	A2018	2	#5	STR	49'-2"	103	A2075	2	#5	STR	13'-6"	28	
* A1001	2	#5	STR	59'-9"	125	* A1057	2	#5	STR	24'-9"	52	A2019	2	#5	STR	48'-6"	101	A2076	2	#5	STR	12'-11"	27	
* A1002	2	#5	STR	59'-2"	123	* A1058	2	#5	STR	24'-2"	50	A2020	2	#5	STR	47'-11"	100	A2077	2	#5	STR	12'-3"	26	
* A1003	2	#5	STR	58'-6"	122	* A1059	2	#5	STR	23'-6"	49	A2021	2	#5	STR	47'-3"	99	A2078	2	#5	STR	11'-8"	24	
* A1004	2	#5	STR	57'-11"	121	* A1060	2	#5	STR	22'-11"	48	A2022	2	#5	STR	46'-8"	97	A2079	2	#5	STR	11'-0"	23	
* A1005	2	#5	STR	57'-3"	119	* A1061	2	#5	STR	22'-3"	46	A2023	2	#5	STR	46'-0"	96	A2080	2	#5	STR	10'-5"	22	
* A1006	2	#5	STR	56'-8"	118	* A1062	2	#5	STR	21'-8"	45	A2024	2	#5	STR	45'-5"	95	A2081	2	#5	STR	9'-9"	20	
* A1007	2	#5	STR	56'-0"	117	* A1063	2	#5	STR	21'-0"	44	A2025	2	#5	STR	44'-9"	93	A2082	2	#5	STR	9'-2"	19	
* A1008	2	#5	STR	55'-5"	116	* A1064	2	#5	STR	20'-5"	43	A2026	2	#5	STR	44'-2"	92	A2083	2	#5	STR	8'-6"	18	
* A1009	2	#5	STR	54'-9"	114	* A1065	2	#5	STR	19'-9"	41	A2027	2	#5	STR	43'-6"	91	A2084	2	#5	STR	7'-11"	17	
* A1010	2	#5	STR	54'-2"	113	* A1066	2	#5	STR	19'-2"	40	A2028	2	#5	STR	42'-11"	90	A2085	2	#5	STR	7'-3"	15	
* A1011	2	#5	STR	53'-6"	112	* A1067	2	#5	STR	18'-6"	39	A2029	2	#5	STR	42'-3"	88	A2086	2	#5	STR	6'-8"	14	
* A1012	2	#5	STR	52'-11"	110	* A1068	2	#5	STR	17'-11"	37	A2030	2	#5	STR	41'-8"	87	A2087	2	#5	STR	6'-0"	13	
* A1013	2	#5	STR	52'-3"	109	* A1069	2	#5	STR	17'-3"	36	A2031	2	#5	STR	41'-0"	86	A2088	2	#5	STR	5'-5"	11	
* A1014	2	#5	STR	51'-8"	108	* A1070	2	#5	STR	16'-8"	35	A2032	2	#5	STR	40'-9"	84	A2089	2	#5	STR	4'-9"	10	
* A1015	2	#5	STR	51'-0"	106	* A1071	2	#5	STR	16'-0"	33	A2033	2	#5	STR	39'-9"	83	A2090	2	#5	STR	4'-2"	9	
* A1016	2	#5	STR	50'-5"	105	* A1072	2	#5	STR	15'-5"	32	A2034	2	#5	STR	39'-2"	82	A2091	2	#5	STR	3'-6"	7	
* A1017	2	#5	STR	49'-9"	104	* A1073	2	#5	STR	14'-9"	31	A2035	2	#5	STR	38'-6"	80	A2092	2	#5	STR	2'-11"	6	
* A1018	2	#5	STR	49'-2"	103	* A1074	2	#5	STR	14'-2"	30	A2036	2	#5	STR	37'-11"	79	A2093	2	#5	STR	2'-3"	5	
* A1019	2	#5	STR	48'-6"	101	* A1075	2	#5	STR	13'-6"	28	A2037	2	#5	STR	37'-3"	78	A2094	2	#5	STR	1'-8"	3	
* A1020	2	#5	STR	47'-11"	100	* A1076	2	#5	STR	12'-11"	27	A2038	2	#5	STR	36'-8"	76							
* A1021	2	#5	STR	47'-3"	99	* A1077	2	#5	STR	12'-3"	26	A2039	2	#5	STR	36'-0"	75	B1	84	#5	STR	44'-11"	3935	
* A1022	2	#5	STR	46'-8"	97	* A1078	2	#5	STR	11'-8"	24	A2040	2	#5	STR	35'-5"	74	B2	42	#6	STR	53'-11"	3401	
* A1023	2	#5	STR	46'-0"	96	* A1079	2	#5	STR	11'-0"	23	A2041	2	#5	STR	34'-9"	72	B3	42	#6	STR	18'-0"	1136	
* A1024	2	#5	STR	45'-5"	95	* A1080	2	#5	STR	10'-5"	22	A2042	2	#5	STR	34'-2"	71	B4	84	#5	STR	42'-0"	3680	
* A1025	2	#5	STR	44'-9"	93	* A1081	2	#5	STR	9'-9"	20	A2043	2	#5	STR	33'-5"	70	B5	34	#6	STR	57'-8"	2945	
* A1026	2	#5	STR	44'-2"	92	* A1082	2	#5	STR	9'-2"	19	A2044	2	#5	STR	32'-11"	69	* B6	123	#4	STR	28'-8"	2355	
* A1027	2	#5	STR	43'-6"	91	* A1083	2	#5	STR	8'-6"	18	A2045	2	#5	STR	32'-3"	67	* B7	41	#6	STR	59'-3"	3649	
* A1028	2	#5	STR	42'-11"	90	* A1084	2	#5	STR	7'-11"	17	A2046	2	#5	STR	31'-6"	66	* B8	41	#6	STR	25'-0"	1540	
* A1029	2	#5	STR	42'-3"	88	* A1085	2	#5	STR	7'-3"	15	A2047	2	#5	STR	31'-0"	65	* B9	123	#4	STR	26'-10"	2205	
* A1030	2	#5	STR	41'-8"	87	* A1086	2	#5	STR	6'-8"	14	A2048	2	#5	STR	30'-5"	63	* B10	80	#6	STR	45'-9"	5497	
* A1031	2	#5	STR	41'-0"	86	* A1087	2	#5	STR	6'-0"	13	A2049	2	#5	STR	29'-9"	62	* B11	114	#4	STR	3'-4"	254	
* A1032	2	#5	STR	40'-5"	84	* A1088	2	#5	STR	5'-5"	11	A2050	2	#5	STR	29'-2"	61	* B12	12	#4	STR	6'-5"	51	
* A1033	2	#5	STR	39'-9"	83	* A1089	2	#5	STR	4'-9"	10	A2051	2	#5	STR	28'-6"	59	* B13	6	#4	STR	8'-4"	33	
* A1034	2	#5	STR	39'-2"	82	* A1090	2	#5	STR	4'-2"	9	A2052	2	#5	STR	27'-11"	58	* B14	42	#4	STR	5'-5"	152	
* A1035	2	#5	STR	38'-6"	80	* A1091	2	#5	STR	3'-6"	7	A2053	2	#5	STR	27'-3"	57	* B15	21	#4	STR	7'-4"	103	
* A1036	2	#5	STR	37'-11"	79	* A1092	2	#5	STR	2'-11"	6	A2054	2	#5	STR	26'-8"	56							
* A1037	2	#5	STR	37'-3"	78	* A1093	2	#5	STR	2'-3"	5	A2055	2	#5	STR	26'-0"	54	* G1	4	#5	STR	44'-0"	184	
* A1038	2	#5	STR	36'-8"	76	* A1094	2	#5	STR	1'-8"	3	A2056	2	#5	STR	25'-5"	53							
* A1039	2	#5	STR	36'-0"	75	A2001	2	#5	STR	59'-9"	125	A2057	2	#5	STR	24'-9"	52	* K1	8	#8	1	15'-9"	336	
* A1040	2	#5	STR	35'-5"	74	A2002	2	#5	STR	59'-2"	123	A2058	2	#5	STR	24'-2"	50	* K2	20	#8	2	21'-7"	1153	
* A1041	2	#5	STR	34'-9"	72	A2003	2	#5	STR	58'-6"	122	A2059	2	#5	STR	23'-6"	49	* K3	24	#6	3	12'-4"	445	
* A1042	2	#5	STR	34'-2"	71	A2004	2	#5	STR	57'-11"	121	A2060	2	#5	STR	22'-11"	48	* K4	36	#6	STR	6'-5"	347	
* A1043	2	#5	STR	33'-6"	70	A2005	2	#5	STR	57'-3"	119	A2061	2	#5	STR	22'-3"	46							
* A1044	2	#5	STR	32'-11"	69	A2006	2	#5	STR	56'-8"	118	A2062	2	#5	STR	21'-8"	45	* S1	72	#4	4	8'-3"	397	
* A1045	2	#5	STR	32'-3"	67	A2007	2	#5	STR	56'-0"	117	A2063	2	#5	STR	21'-0"	44	* S2	72	#5	5	6'-6"	488	
* A1046	2	#5	STR	31'-8"	66	A2008	2	#5	STR	55'-5"	116	A2064	2	#5	STR	20'-5"	43							
* A1047	2	#5	STR	31'-0"	65	A2009	2	#5	STR	54'-9"	114	A2065	2	#5	STR	19'-9"	41	REINFORCING STEEL						39306 LB
* A1048	2	#5	STR	30'-5"	63	A2010	2	#5	STR	54'-2"	113	A2066	2	#5	STR	19'-2"	40							
* A1049	2	#5	STR	29'-9"	62	A2011	2	#5	STR	53'-6"	112	A2067	2	#5	STR	18'-6"	39	EPOXY COATED						
* A1050	2	#5	STR	29'-2"	61	A2012	2	#5	STR	52'-11"	110	A2068	2	#5	STR	17'-11"	37	REINFORCING STEEL						43736 LB
* A1051	2	#5	STR	28'-6"	59	A2013	2	#5	STR	52'-3"	109	A2069	2	#5	STR	17'-3"	36							
* A1052	2	#5	STR	27'-11"	58	A2014	2	#5	STR	51'-8"	108	A2070	2	#5	STR	16'-8"	35	* INDICATES EPOXY COATED REINFORCING STEEL						
												A2071	2	#5	STR	16'-0"	33							

BAR TYPES



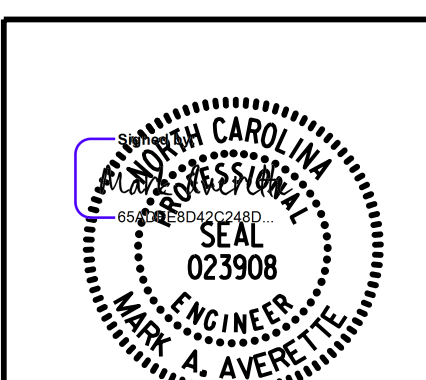
ALL BAR DIMENSIONS ARE OUT TO OUT

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

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 2

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



LICENSURE NO. C-5315

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS: 41

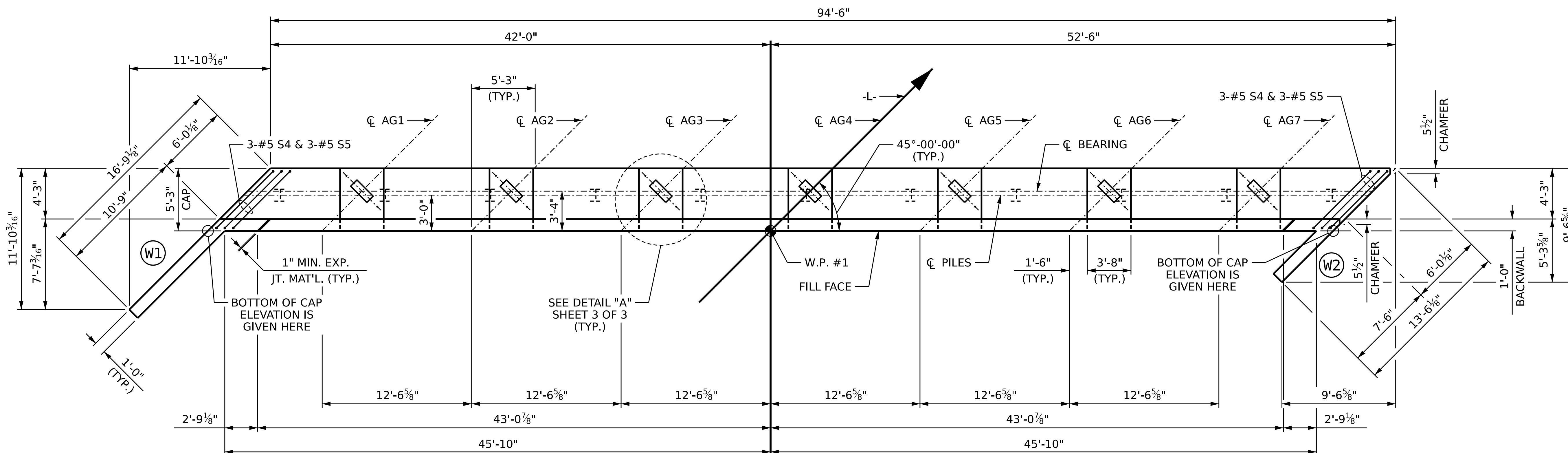
SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	CY	LB	LB
POUR 1	219.1	--	--
POUR 2	251.1	--	--
MEDIAN	12.7		
TOTAL **	482.9	39,306	43,736

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,304 SQ. FT.
BRIDGE DECK	12,740 SQ. FT.
TOTAL	14,044 SQ. FT.

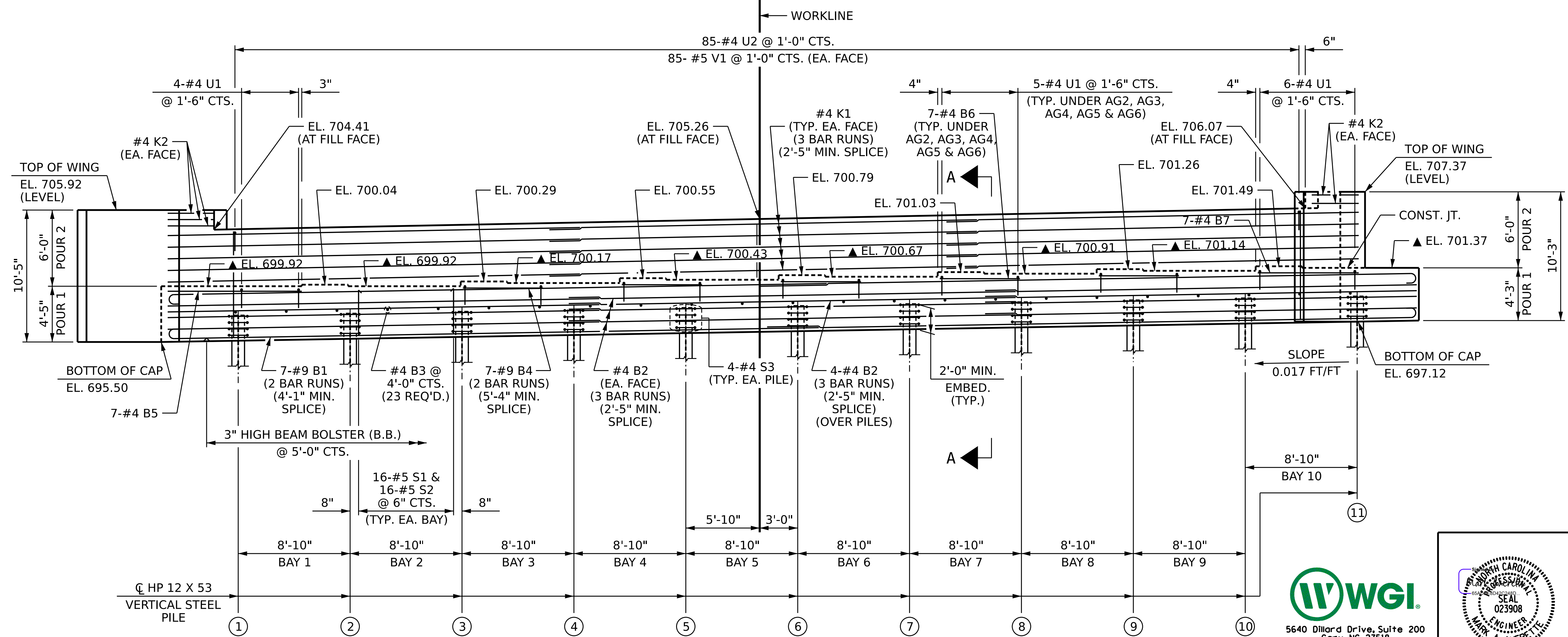
** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

DRAWN BY: T

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PLAN



ELEVATION

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

SEE THE GENERAL DRAWING "FOUNDATION LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

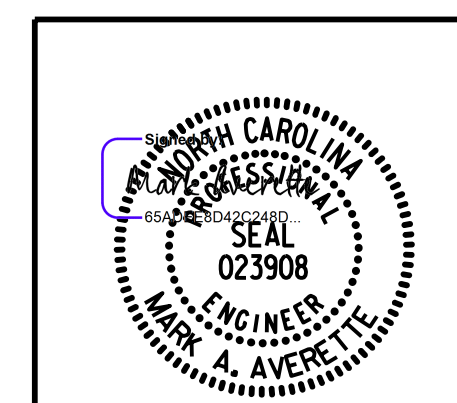
TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	697.62
2	697.77
3	697.92
4	698.07
5	698.22
6	698.37
7	698.52
8	698.67
9	698.82
10	698.97
11	699.12

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 ROCKINGHAM COUNTY
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SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1



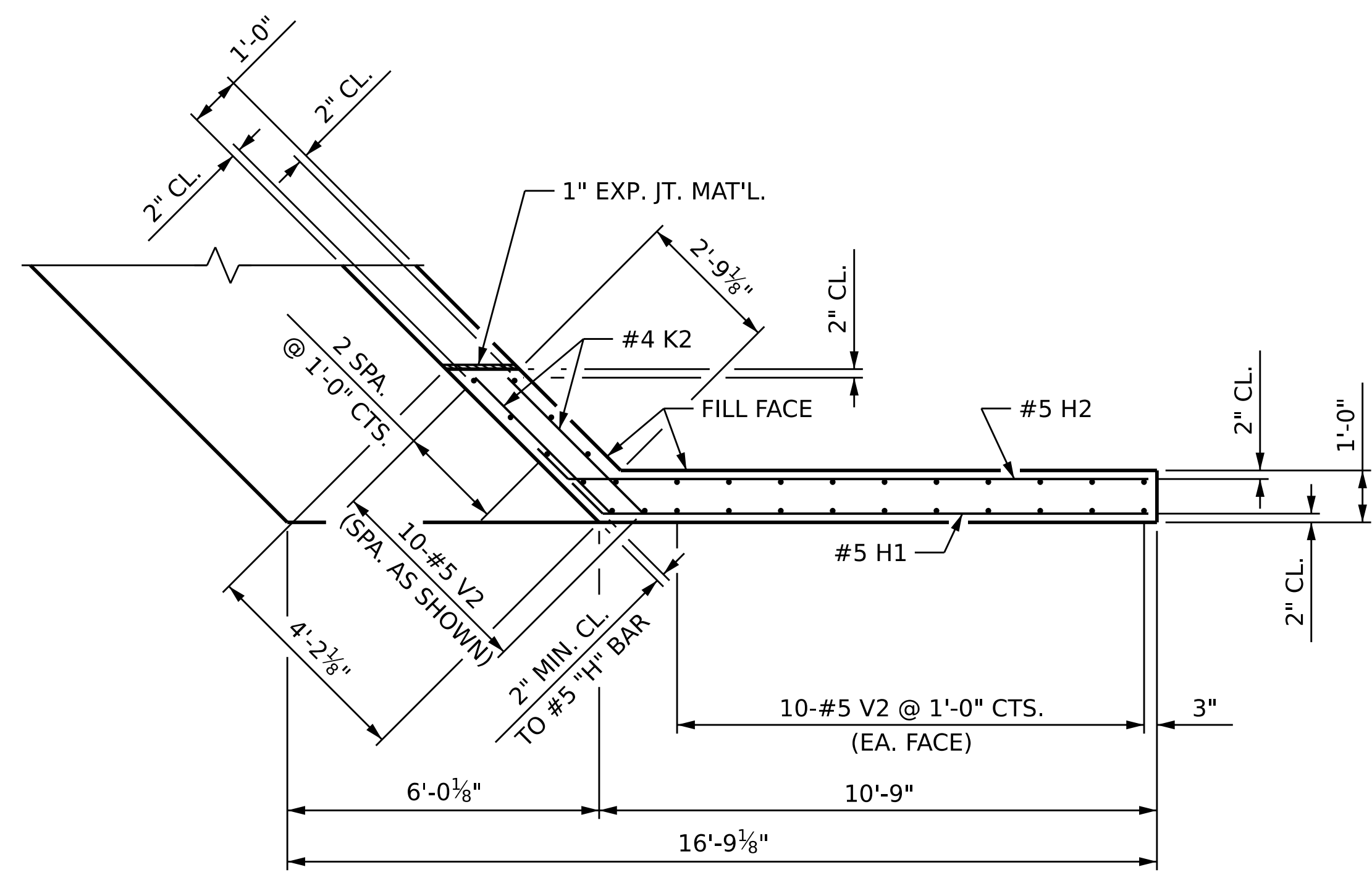
DRAWN BY: T. BANKOVICH DATE: 9-25
 CHECKED BY: M.A. AVERETTE DATE: 9-25
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25

REVISIONS				SHEET NO.
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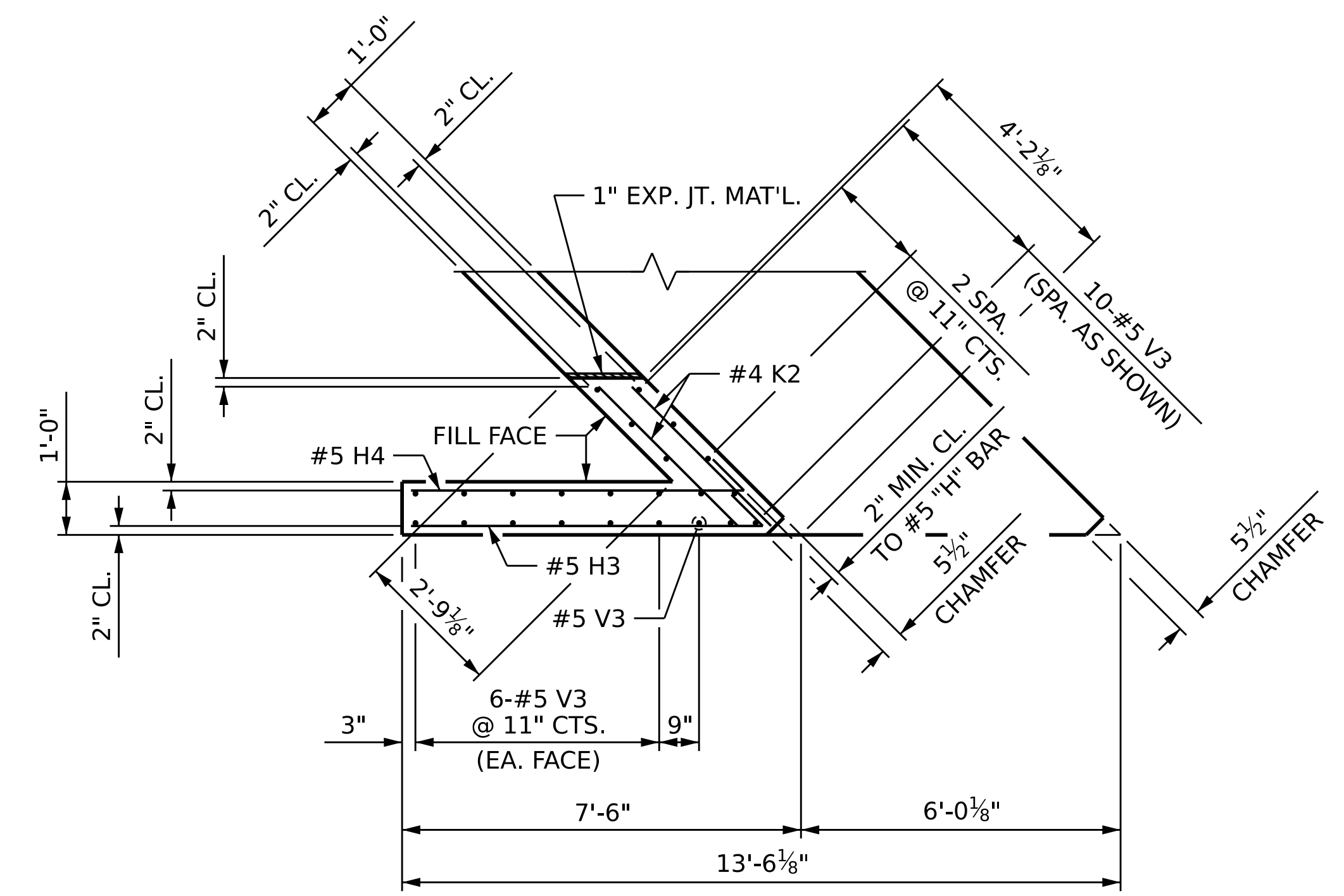
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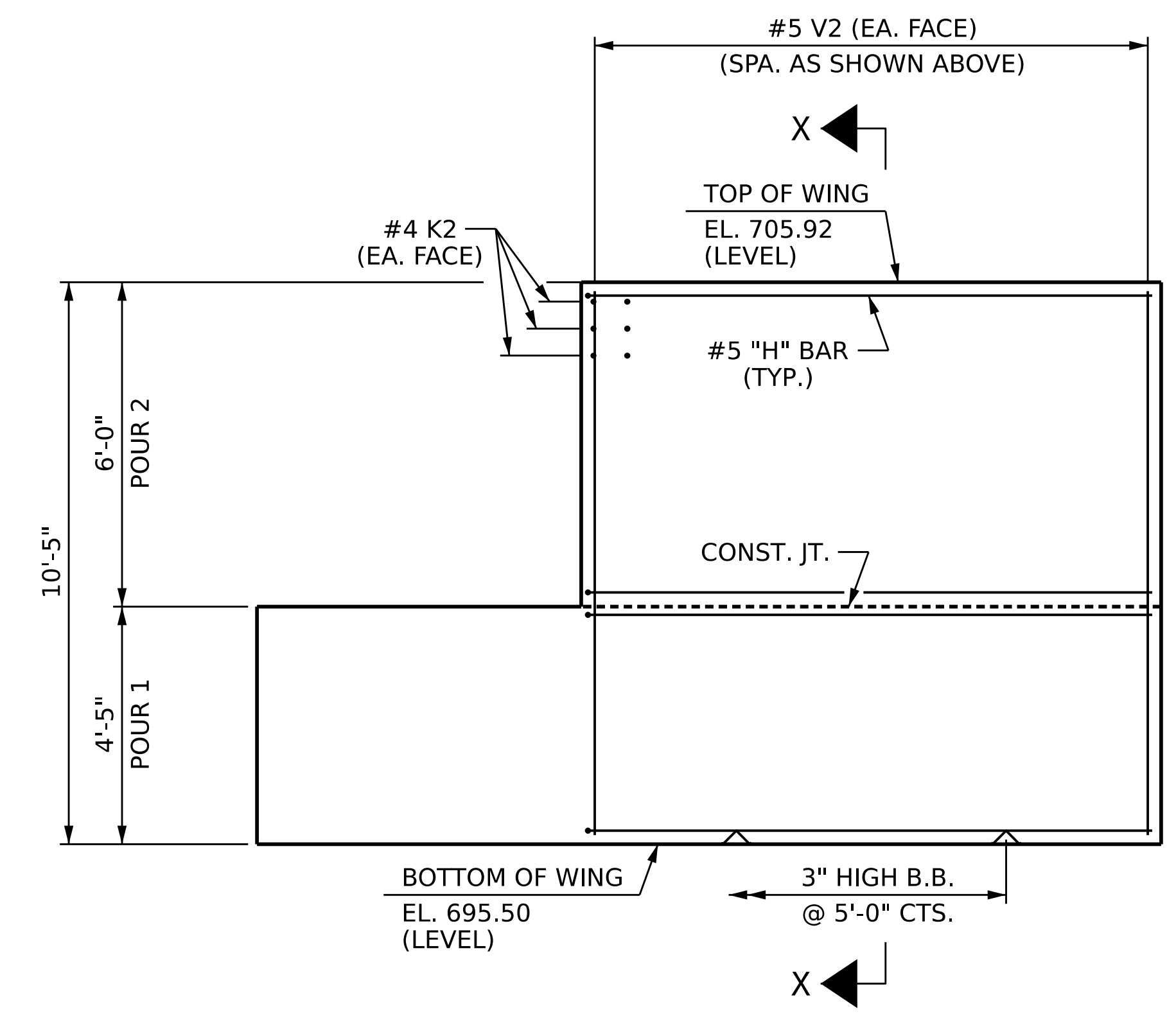
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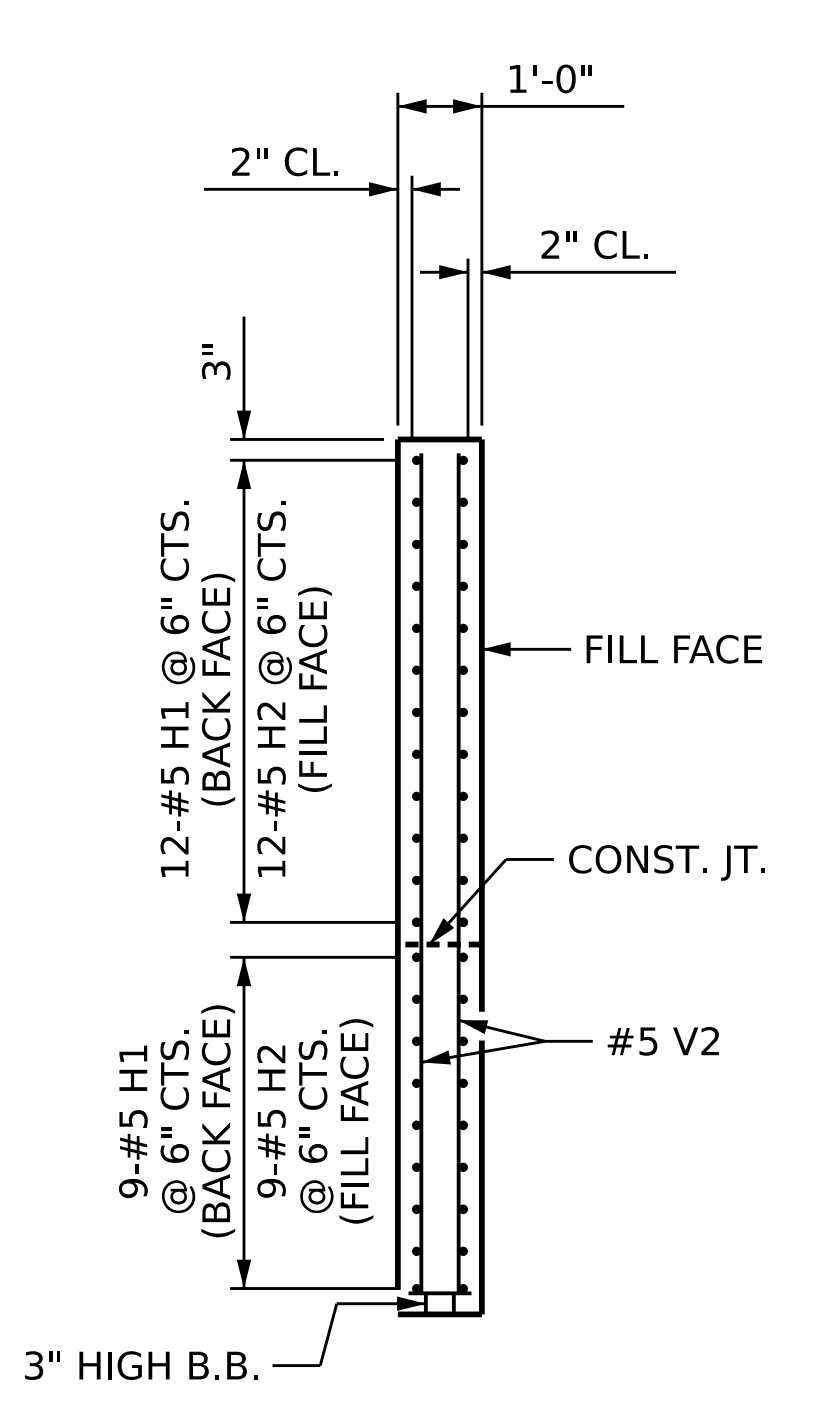
PLAN OF WING (W1)



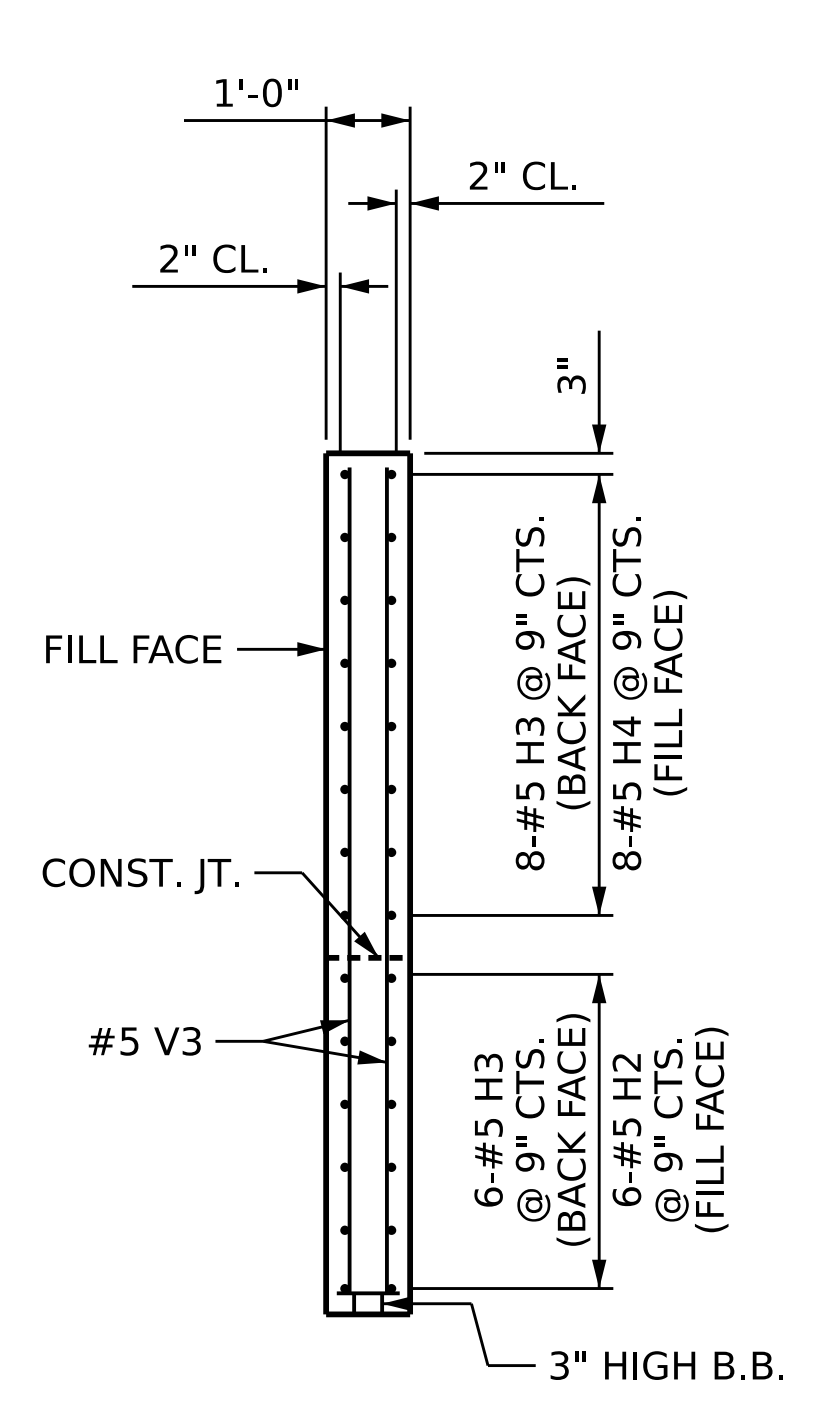
PLAN OF WING (W2)



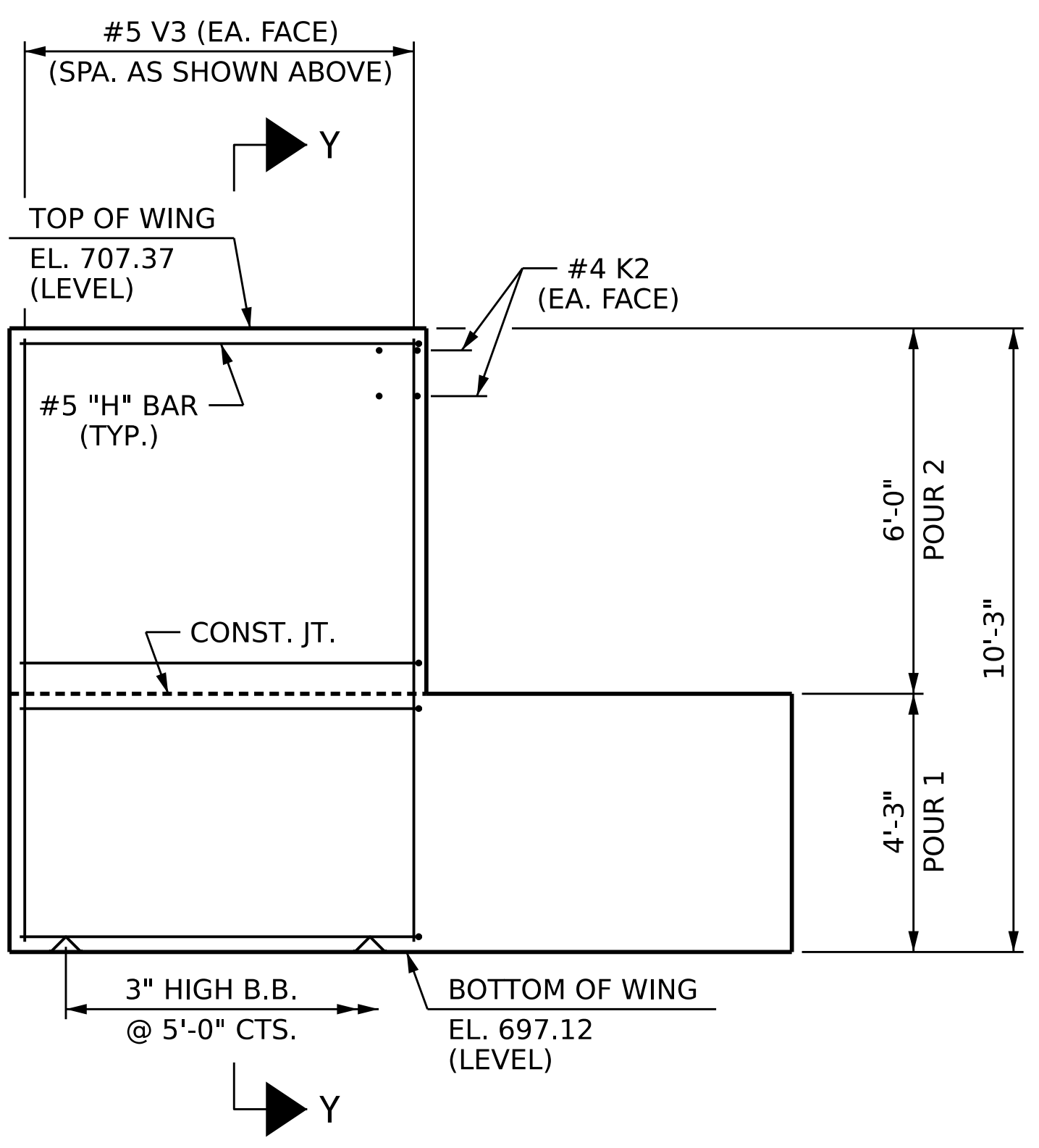
ELEVATION OF WING (W1)



SECTION X-X



SECTION Y-Y

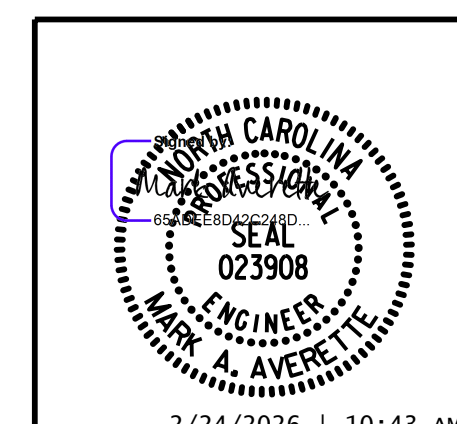


ELEVATION OF WING (W2)

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ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 3

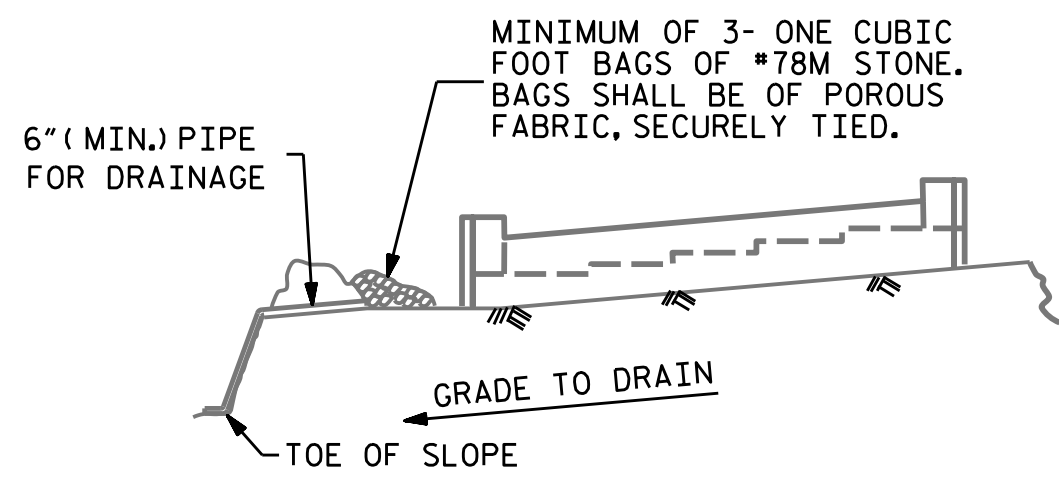
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 1



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 CHECKED BY: M.A. AVERETTE DATE: 9-25
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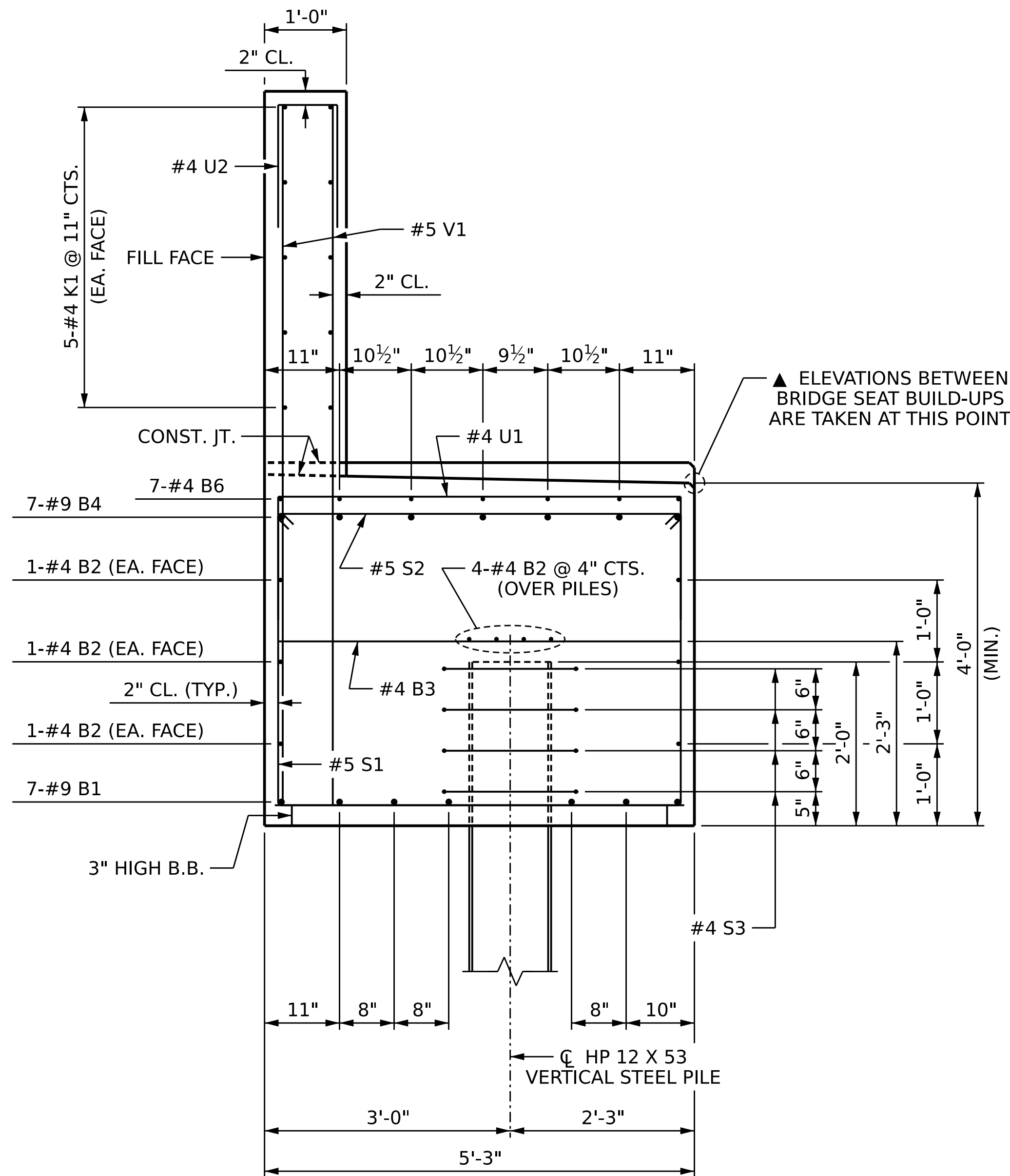


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

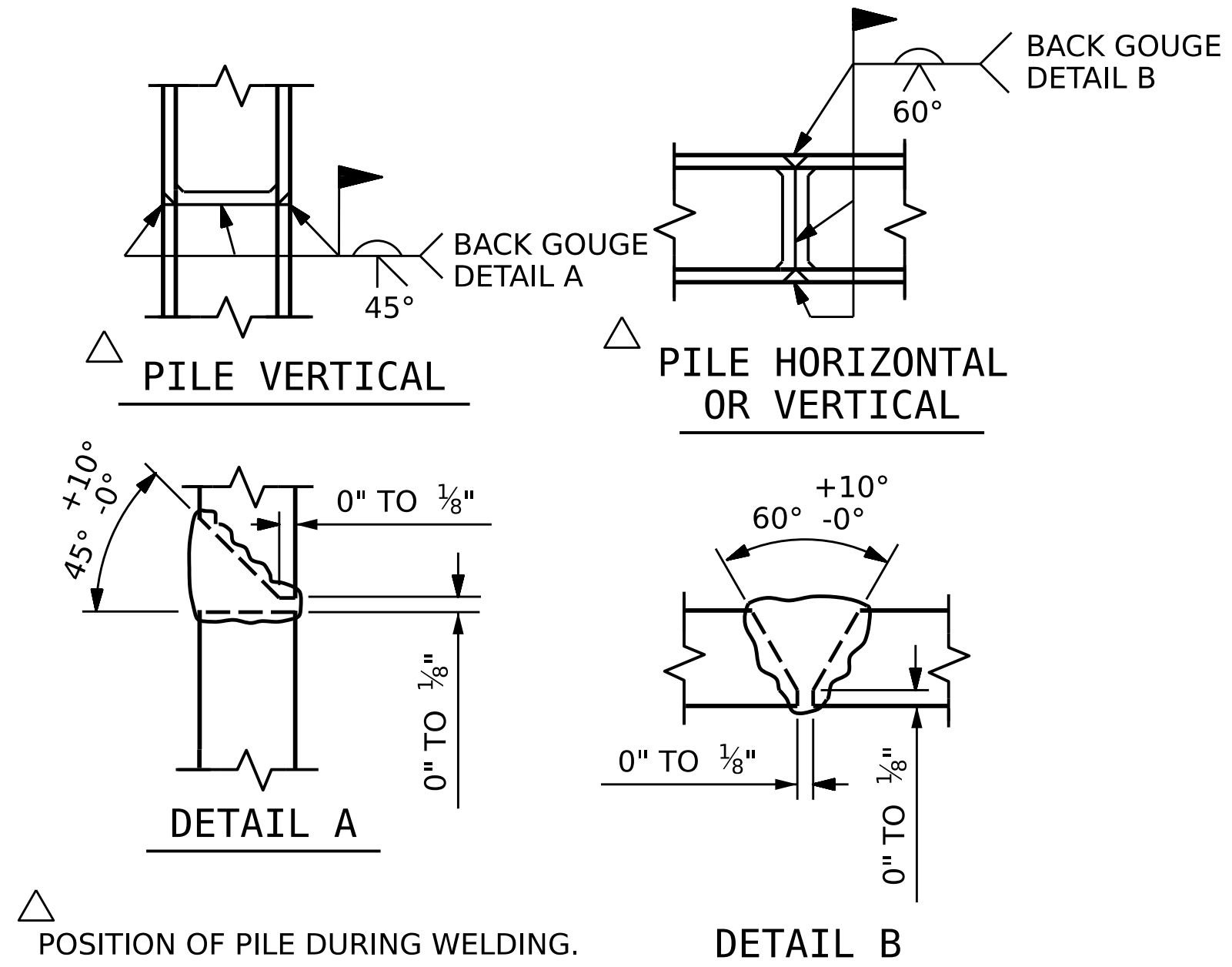
TEMPORARY DRAINAGE AT END BENT



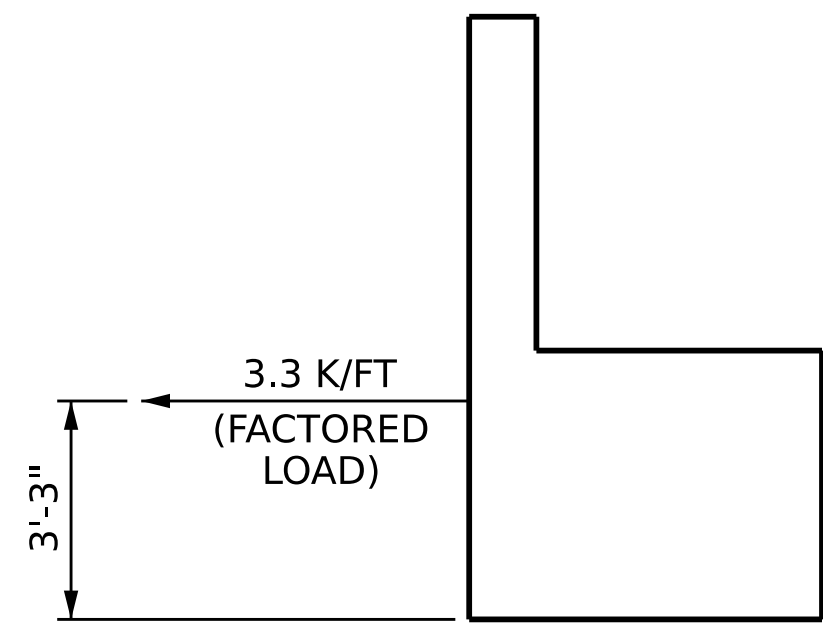
SECTION A-A

(TIEBACKS NOT SHOWN FOR CLARITY)

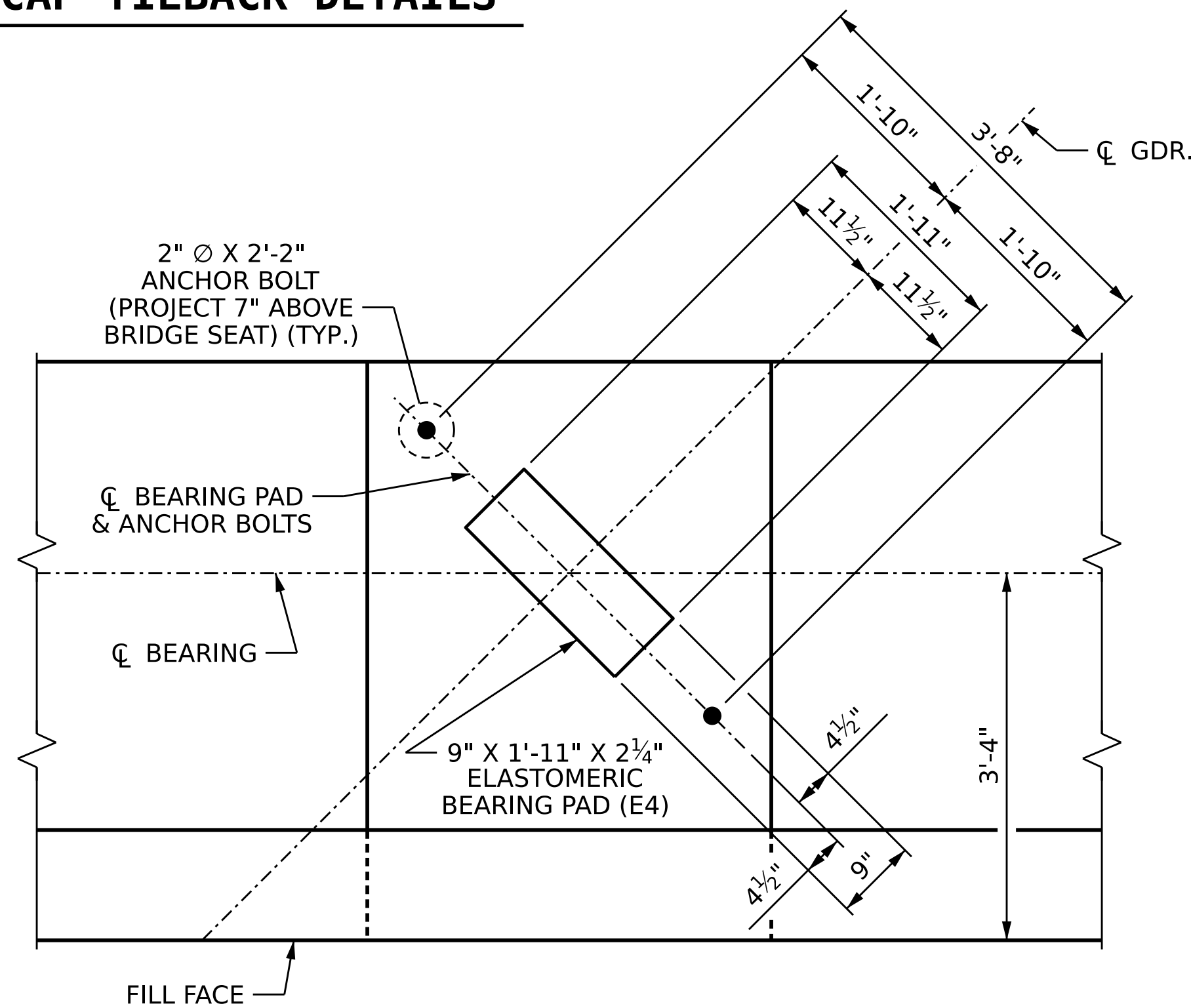
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PILE SPLICE DETAIL



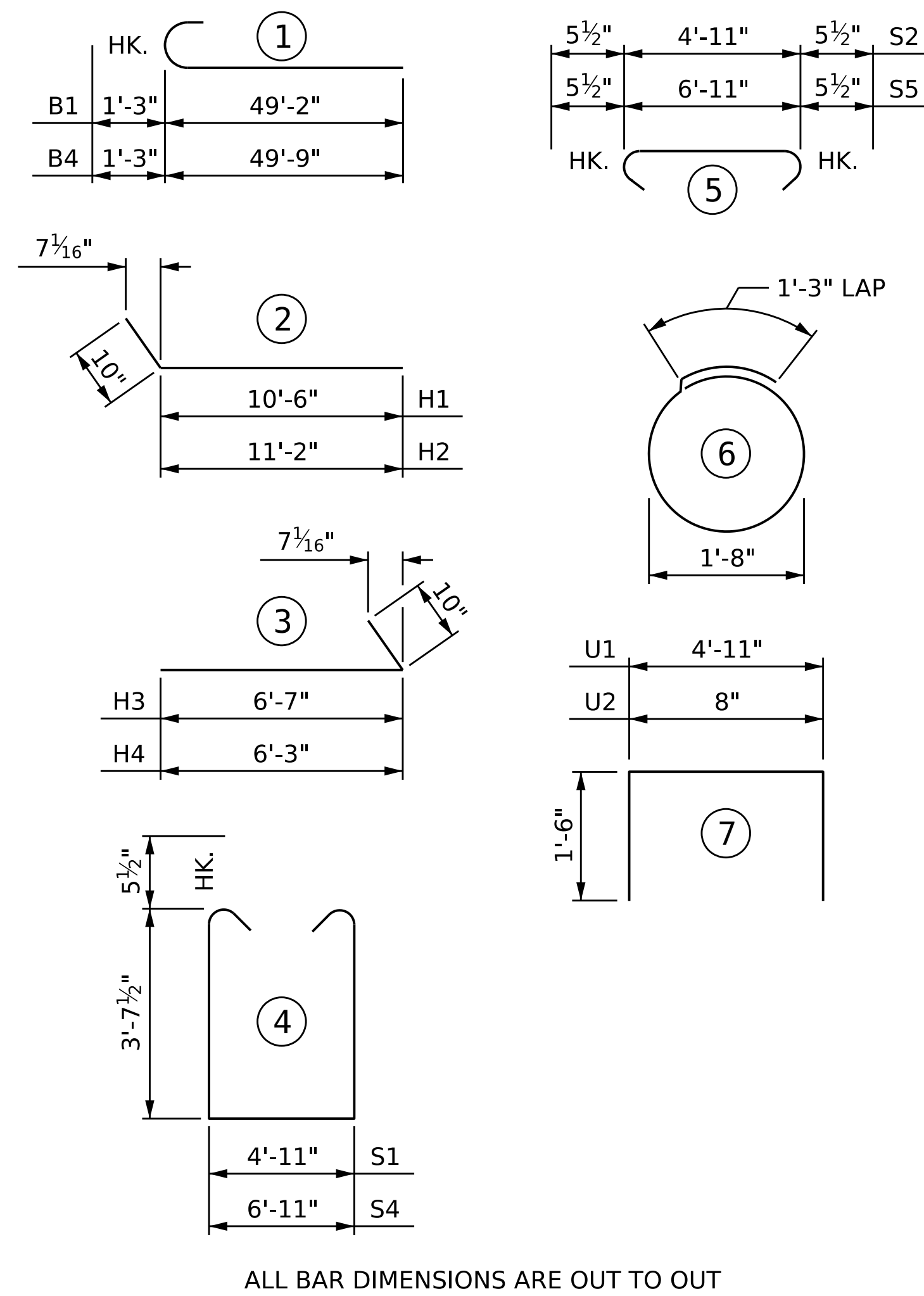
CAP TIEBACK DETAILS



DETAIL "A"

(TYP. EA. GIRDER)

BAR TYPES



BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#9	1	50'-5"	2400
B2	30	#4	STR	33'-0"	661
B3	23	#4	STR	4'-11"	76
B4	14	#9	1	51'-0"	2428
B5	7	#4	STR	10'-7"	49
B6	35	#4	STR	6'-4"	148
B7	7	#4	STR	7'-11"	37
H1	21	#5	2	11'-4"	248
H2	21	#5	2	12'-0"	263
H3	14	#5	3	7'-5"	108
H4	14	#5	3	7'-1"	103
K1	30	#4	STR	33'-0"	661
K2	10	#4	STR	3'-8"	24
S1	160	#5	4	13'-1"	2183
S2	160	#5	5	5'-10"	973
S3	44	#4	6	6'-6"	191
S4	6	#5	4	15'-1"	94
S5	6	#5	5	7'-10"	49
U1	35	#4	7	7'-11"	185
U2	85	#4	7	3'-8"	208
V1	170	#4	STR	8'-4"	946
V2	30	#5	STR	10'-1"	316
V3	23	#5	STR	9'-11"	238
TOTAL REINFORCING STEEL					12589 LB
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP & LOWER WINGS)					85.0 CY
POUR 2 (BACKWALL & UPPER WINGS)					20.7 CY
TOTAL					105.7 CY

PROJECT NO. BP7.R001
 ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 3 OF 3

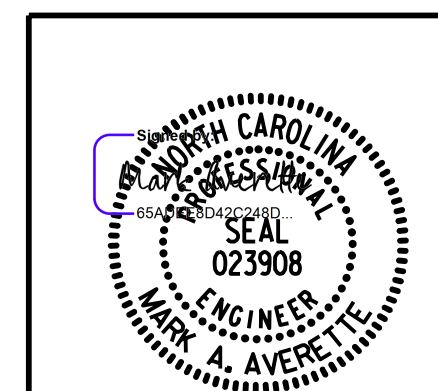
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1



5640 Dilard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-5315



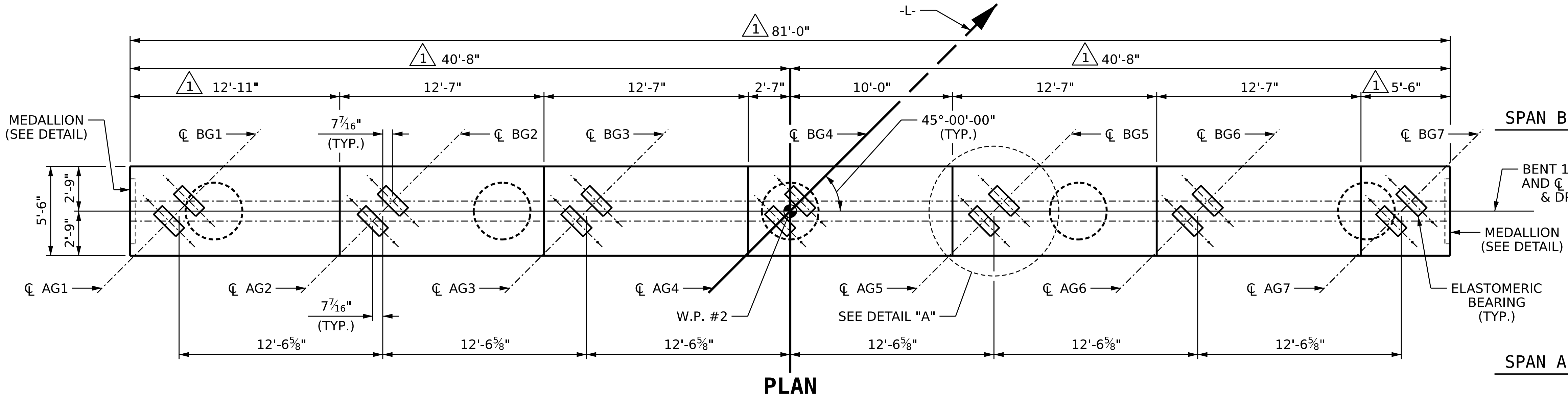
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2			4			TOTAL SHEETS 41

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NOTES:

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

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

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

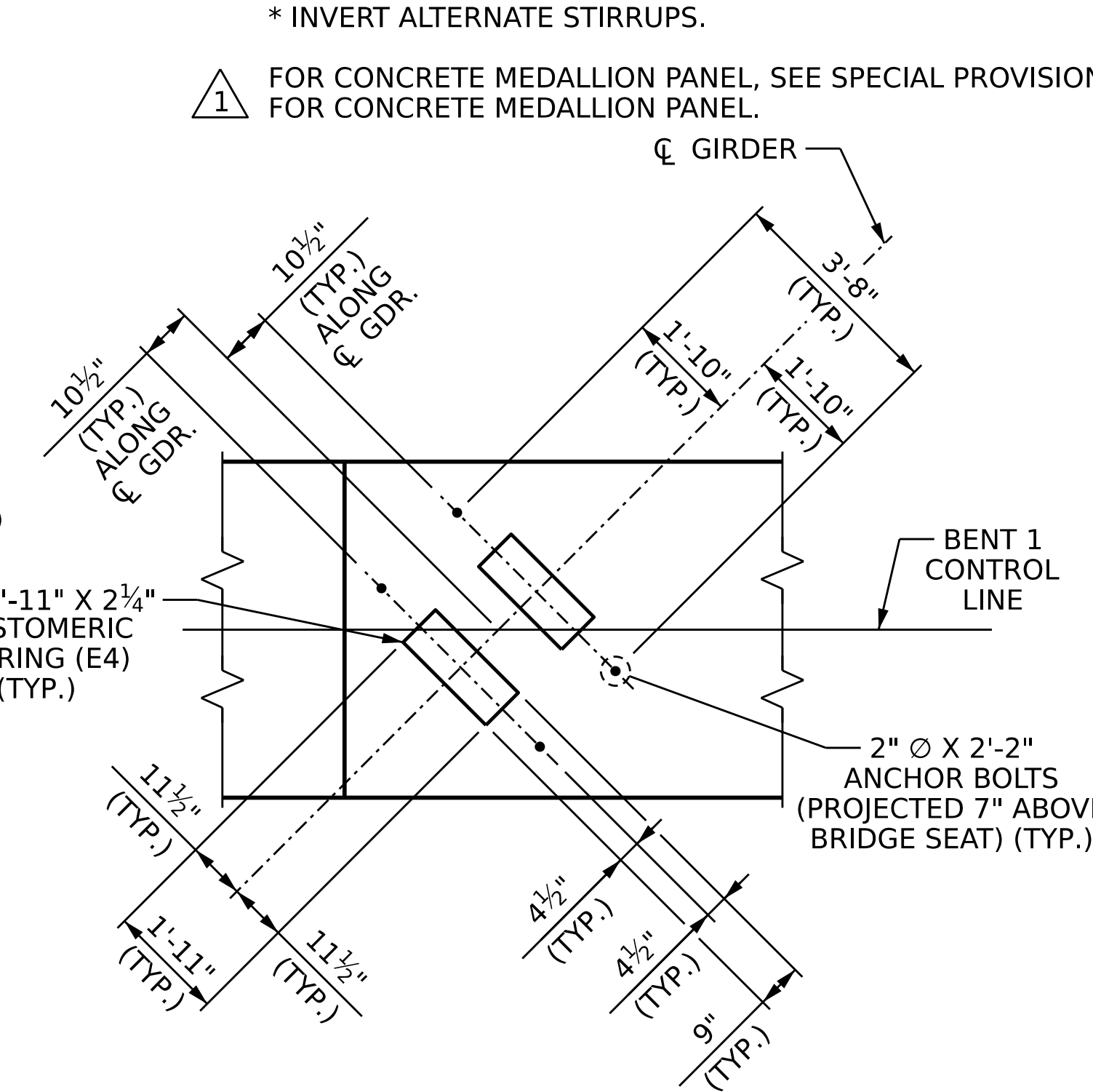
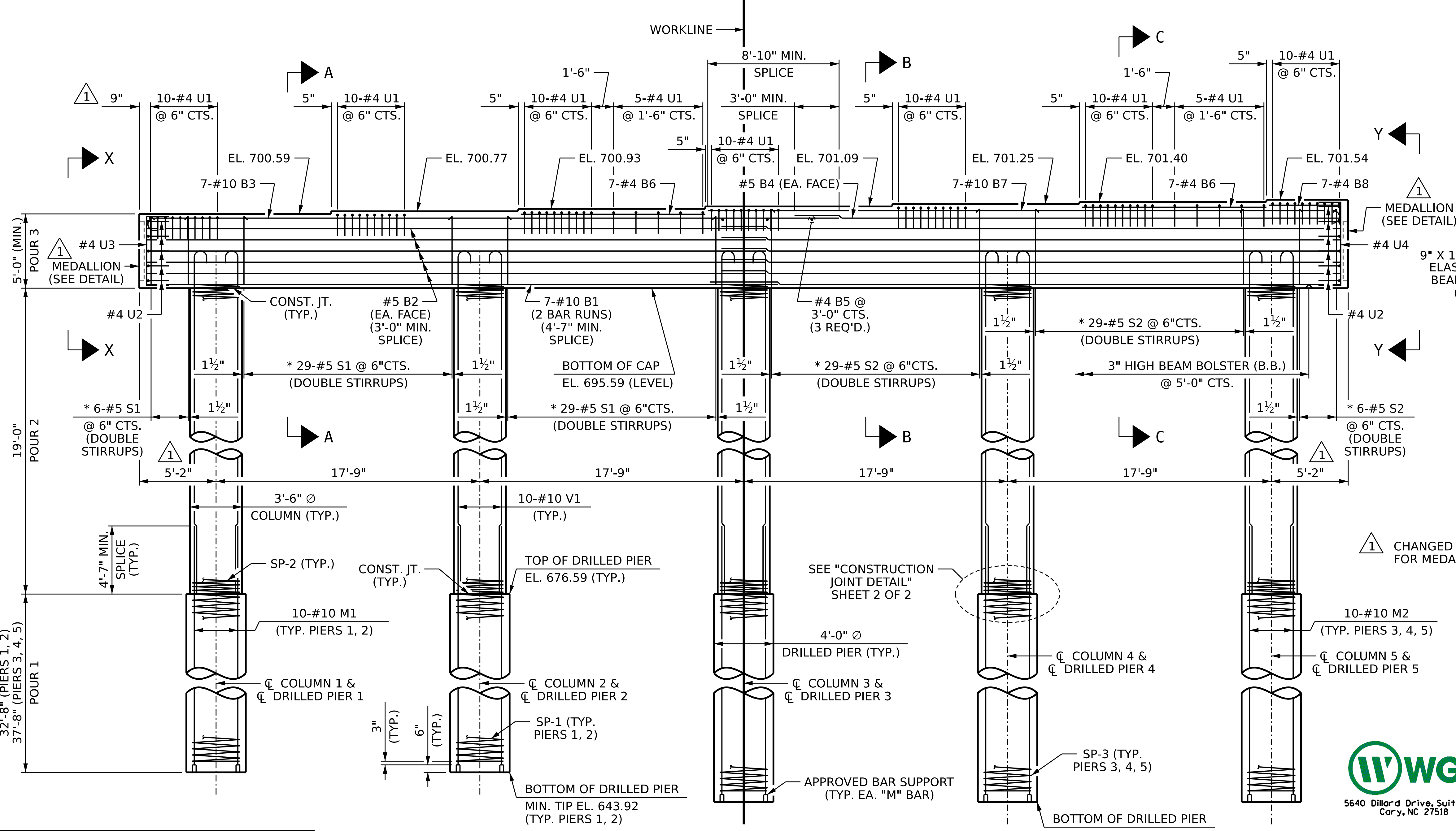
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED OFF THE APPROXIMATE MEDIAN ELEVATIONS. THE TOP OF DRILLED PIER SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN THE DRILLED PIER 1 FOOT BELOW THE MEDIAN ELEVATION.

* INVERT ALTERNATE STIRRUPS.

1 FOR CONCRETE MEDALLION PANEL, SEE SPECIAL PROVISION FOR CONCRETE MEDALLION PANEL.



DETAIL "A"
(TYP. EA. GIRDER)

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 ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

BENT 1

REVISIONS				SHEET NO.
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2			4	

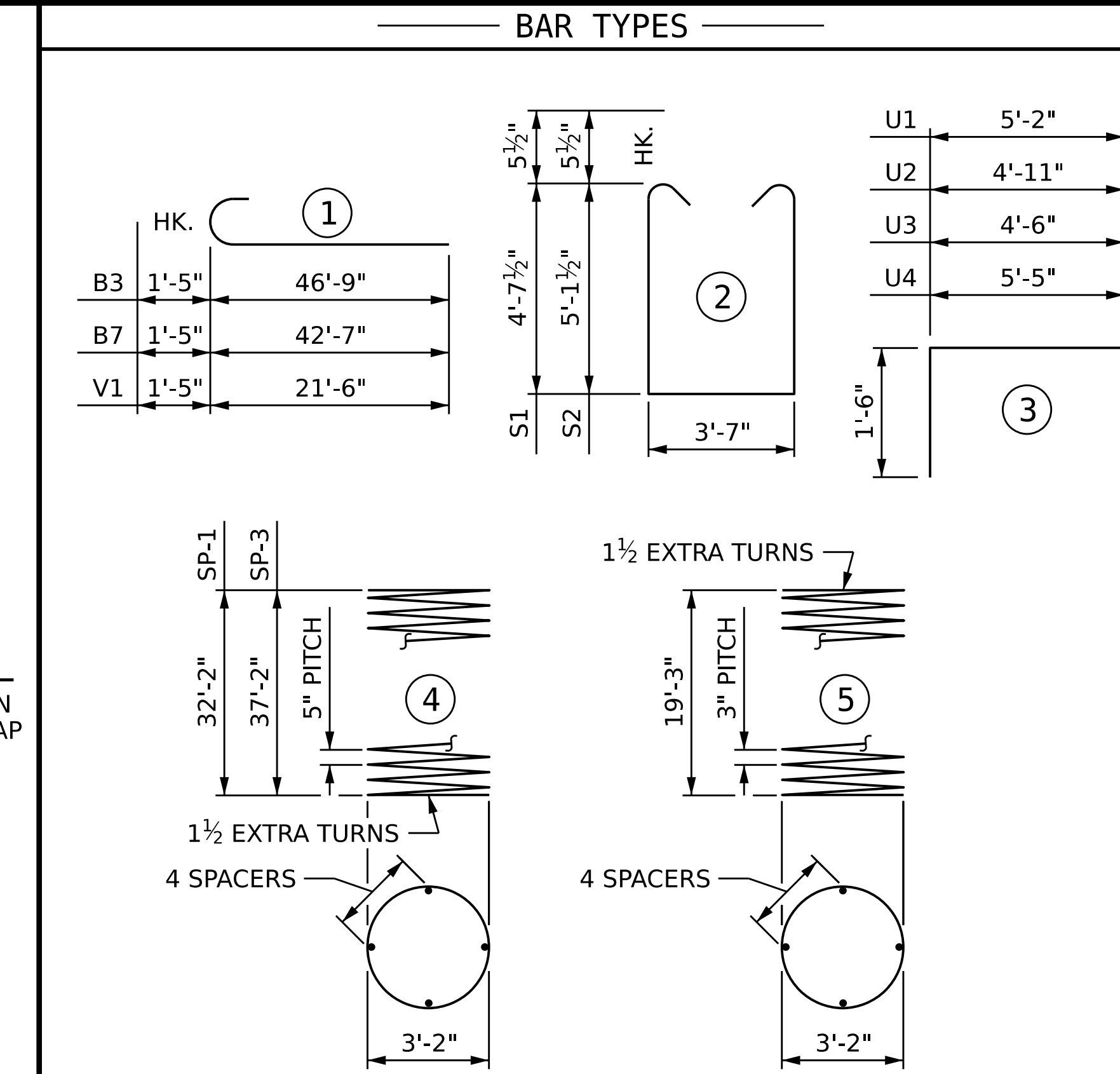
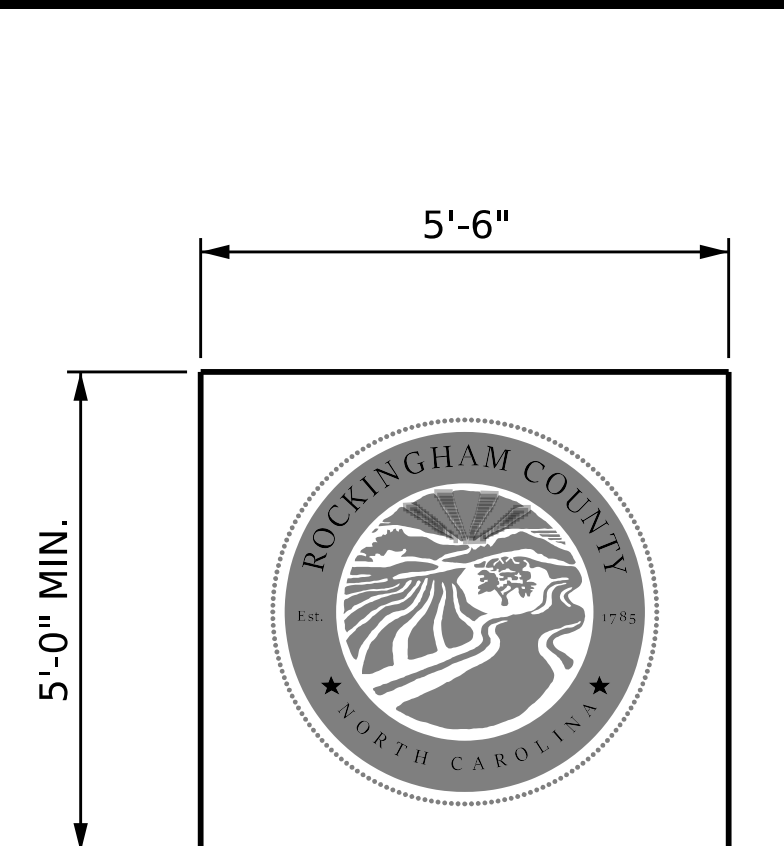
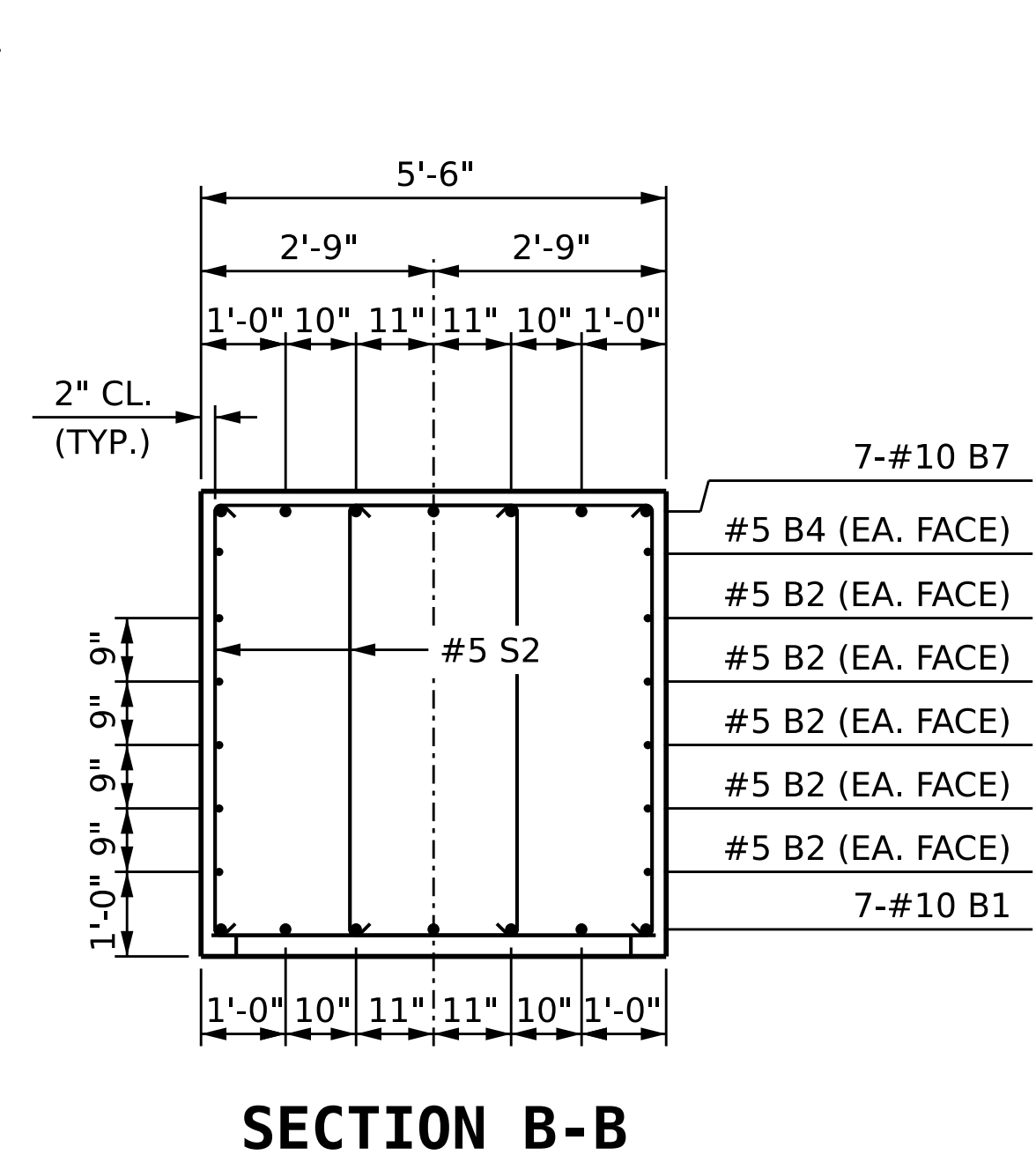
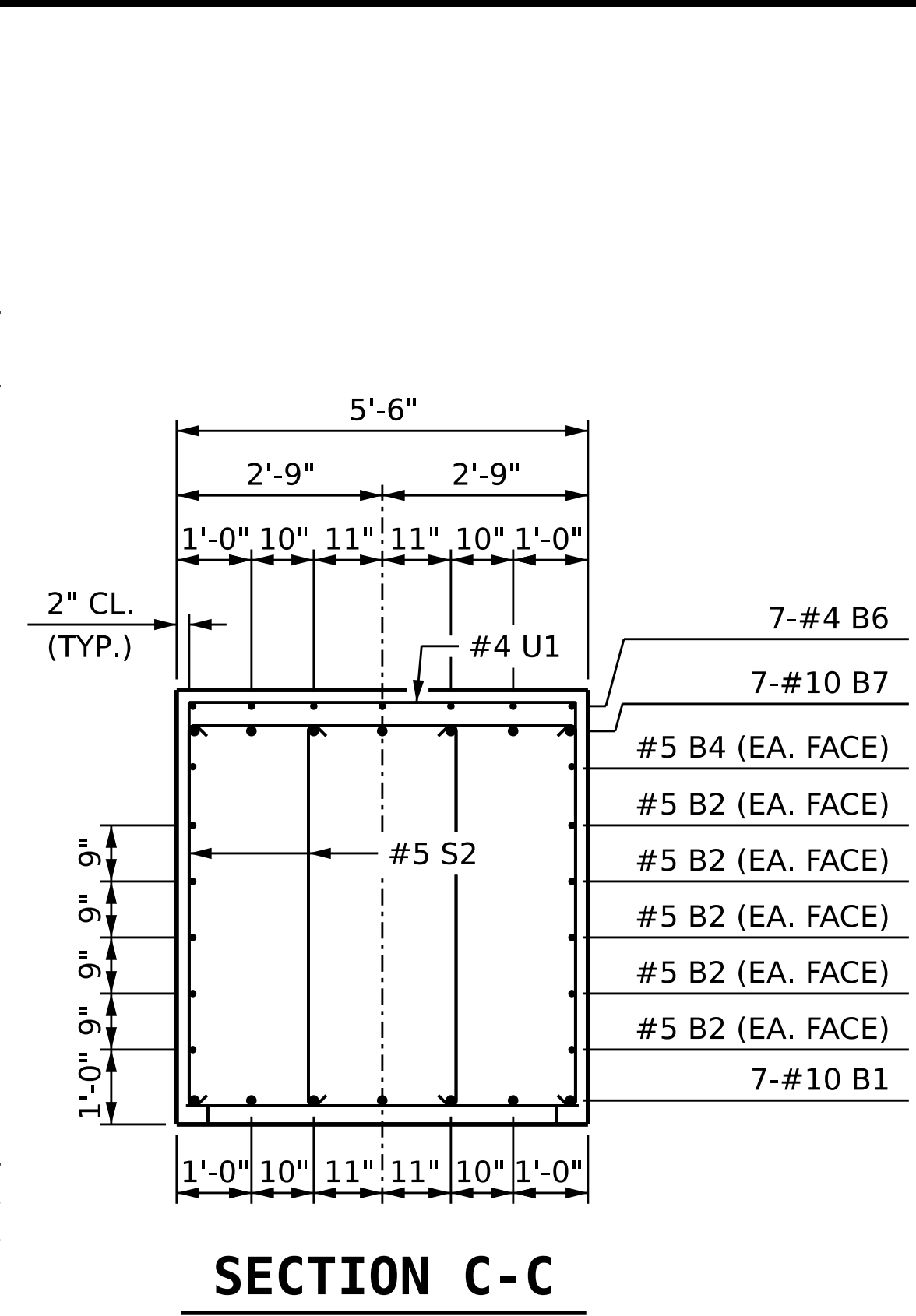
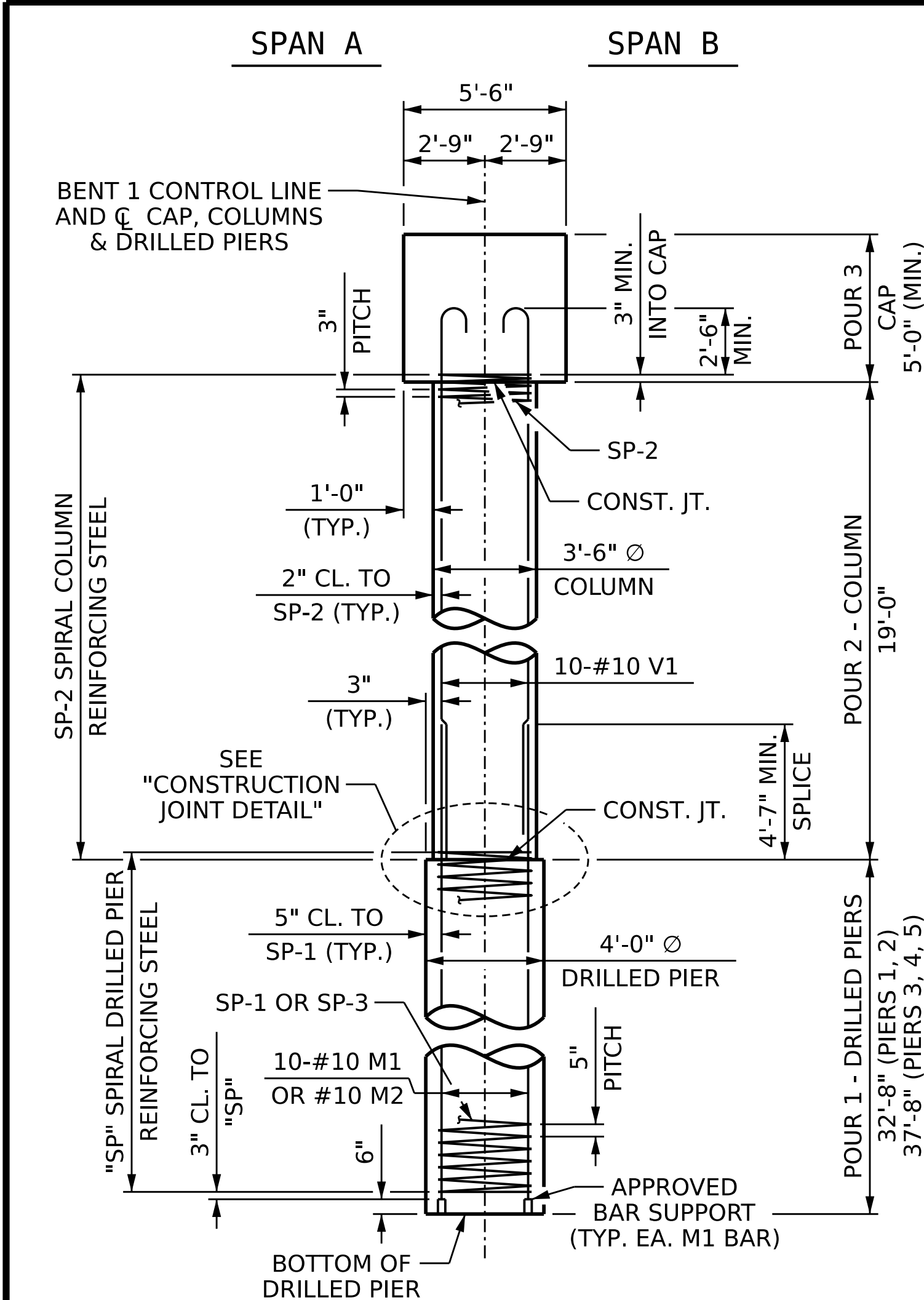
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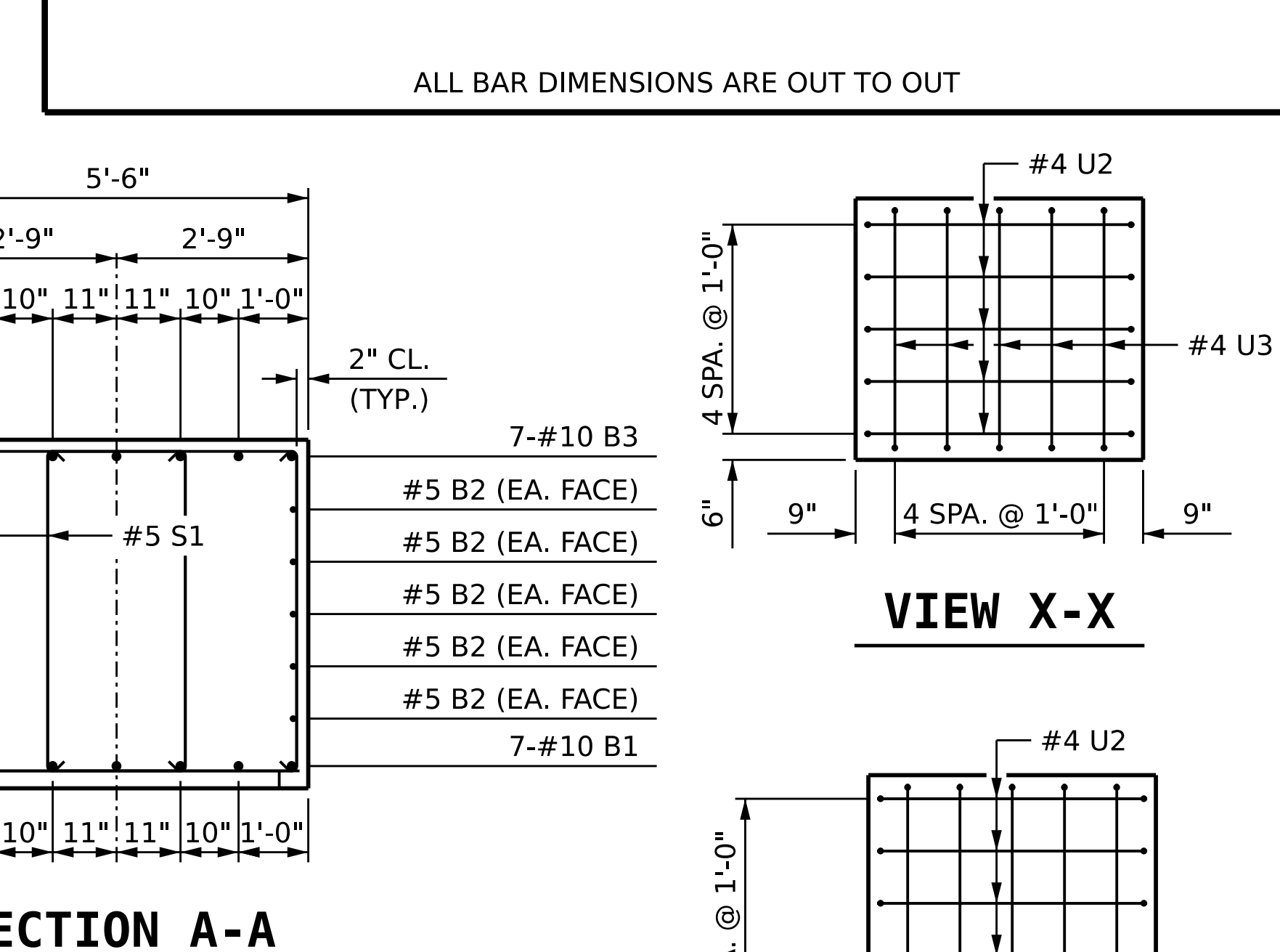
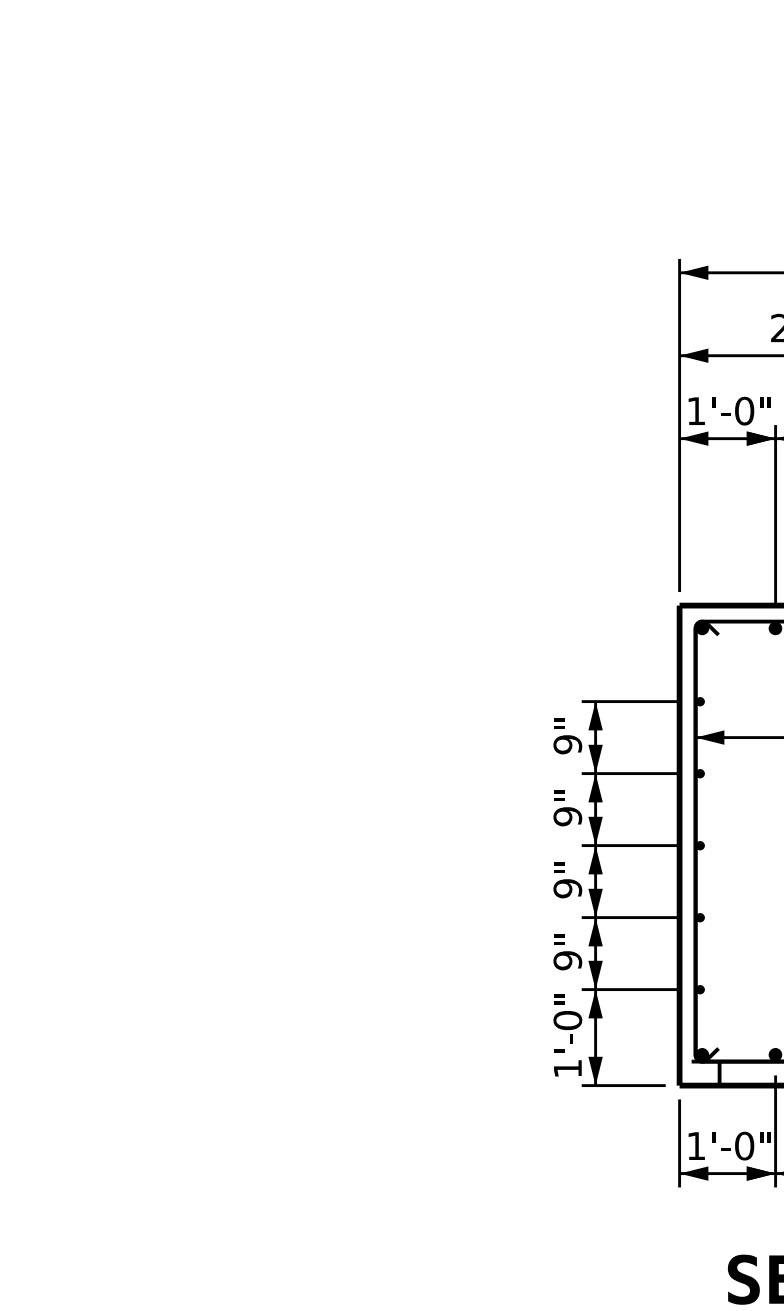
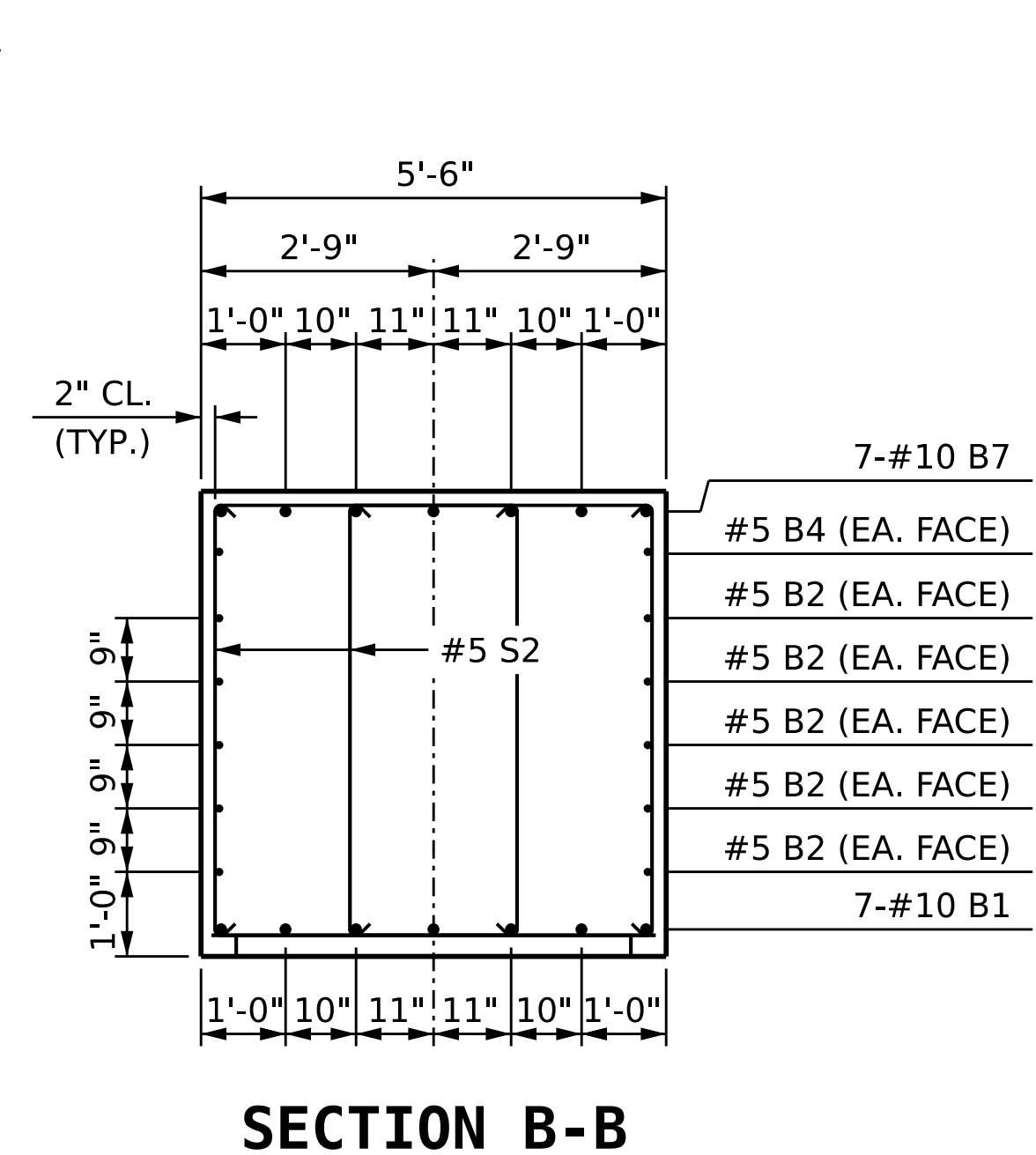
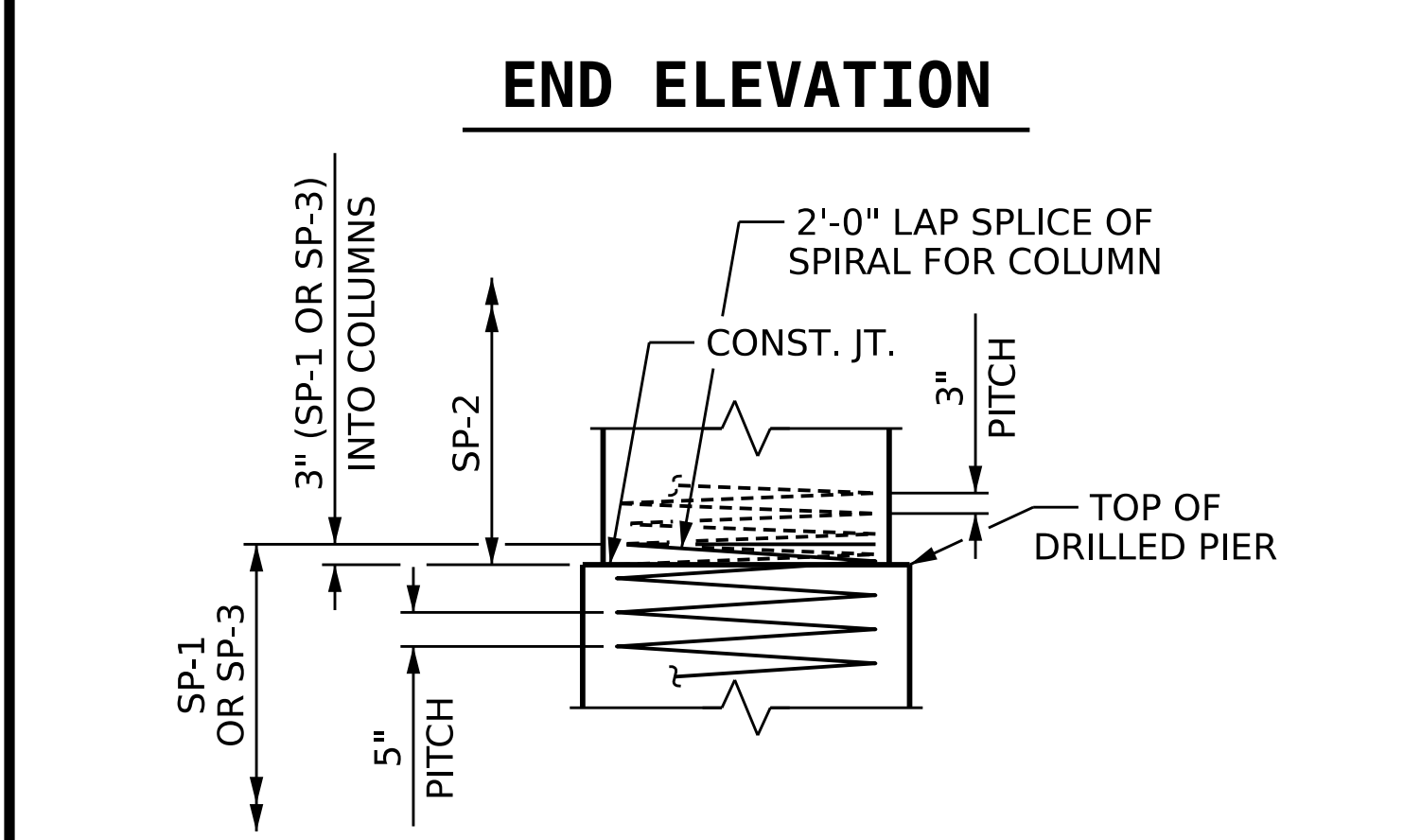
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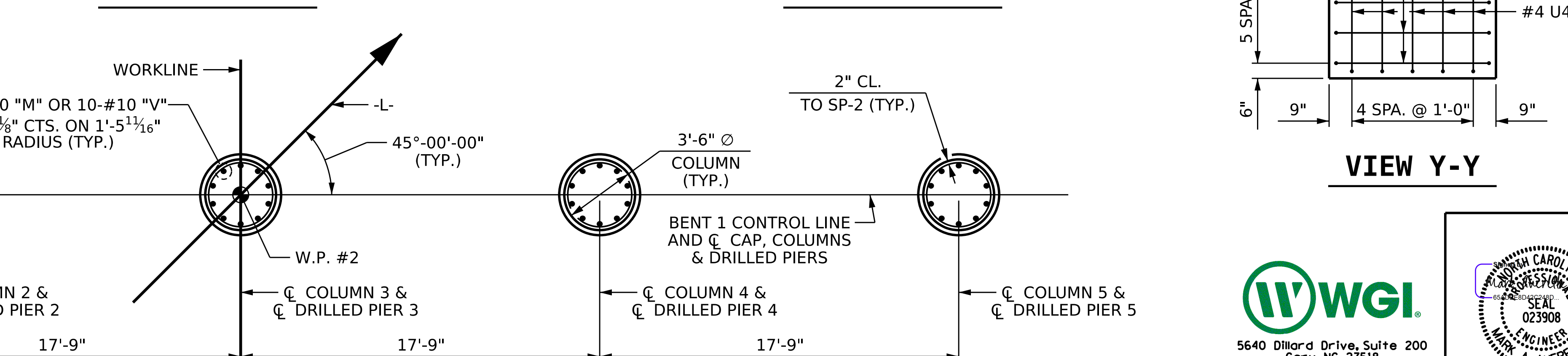
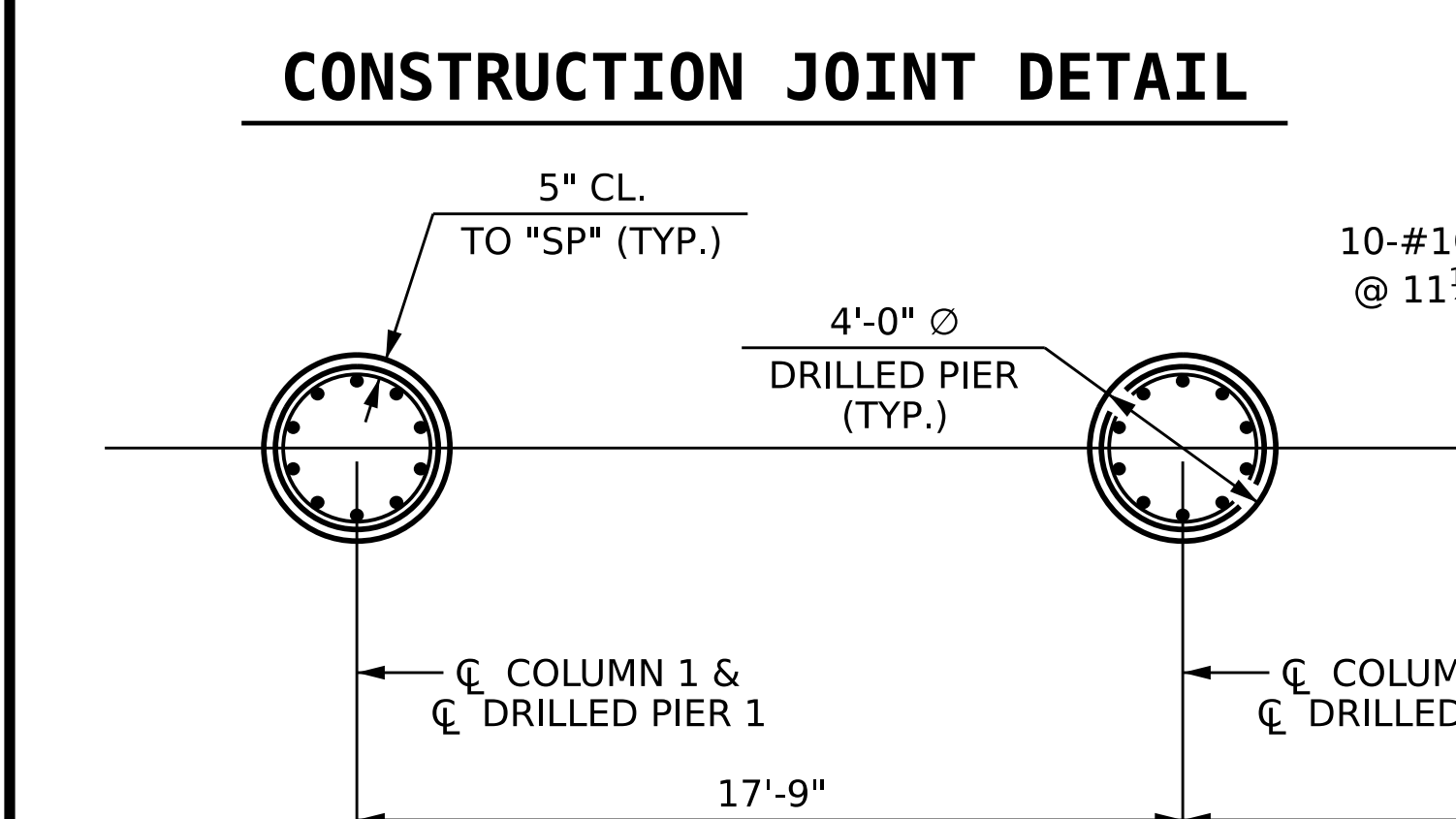


BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#10	STR	42'-7"	2566
B2	20	#5	STR	41'-8"	869
B3	7	#10	1	48'-2"	1451
B4	2	#5	STR	36'-7"	76
B5	3	#4	STR	5'-2"	10
B6	14	#4	STR	12'-5"	116
B7	7	#10	1	44'-0"	1325
B8	7	#4	STR	4'-10"	23
M1	20	#10	STR	39'-9"	3421
M2	30	#10	STR	44'-9"	5777
S1	128	#5	2	13'-9"	1836
S2	128	#5	2	14'-9"	1969
U1	80	#4	3	8'-2"	436
U2	11	#4	3	7'-11"	58
U3	5	#4	3	7'-6"	25
U4	5	#4	3	8'-5"	28
V1	50	#10	1	22'-11"	4931
SP-1	2	**	4	773'-9"	1614
SP-2	5	*	5	775'-10"	2591
SP-3	3	**	4	891'-3"	2789
REINFORCING STEEL					24917 LB
SPIRAL COL. REINF. STEEL					6994 LB



CLASS A CONCRETE BREAKDOWN	
POUR 2 (COLUMNS)	33.9 CY
POUR 3 (CAP)	89.6 CY
TOTAL	123.5 CY
DRILLED PIERS:	
DRILLED PIER CONCRETE	
POUR 1 (DRILLED PIERS)	83.0 CY

** THE SP-1 OR SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



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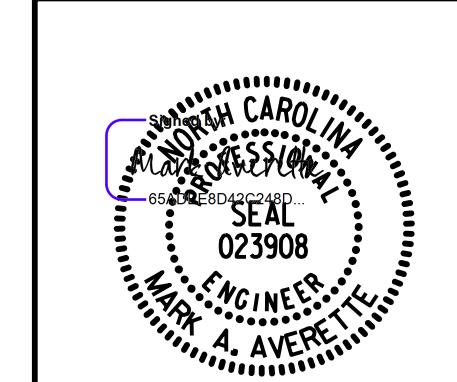
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STATE OF NORTH CAROLINA
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RALEIGH
SUBSTRUCTURE
BENT 1

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PLAN OF DRILLED PIERS AND COLUMNS

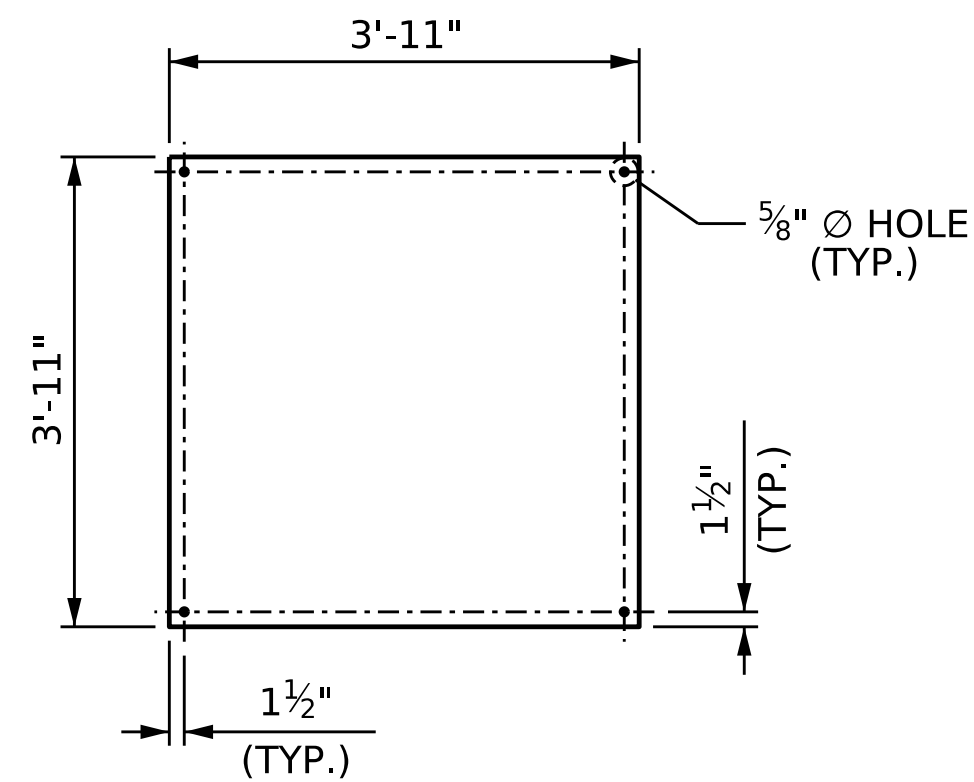
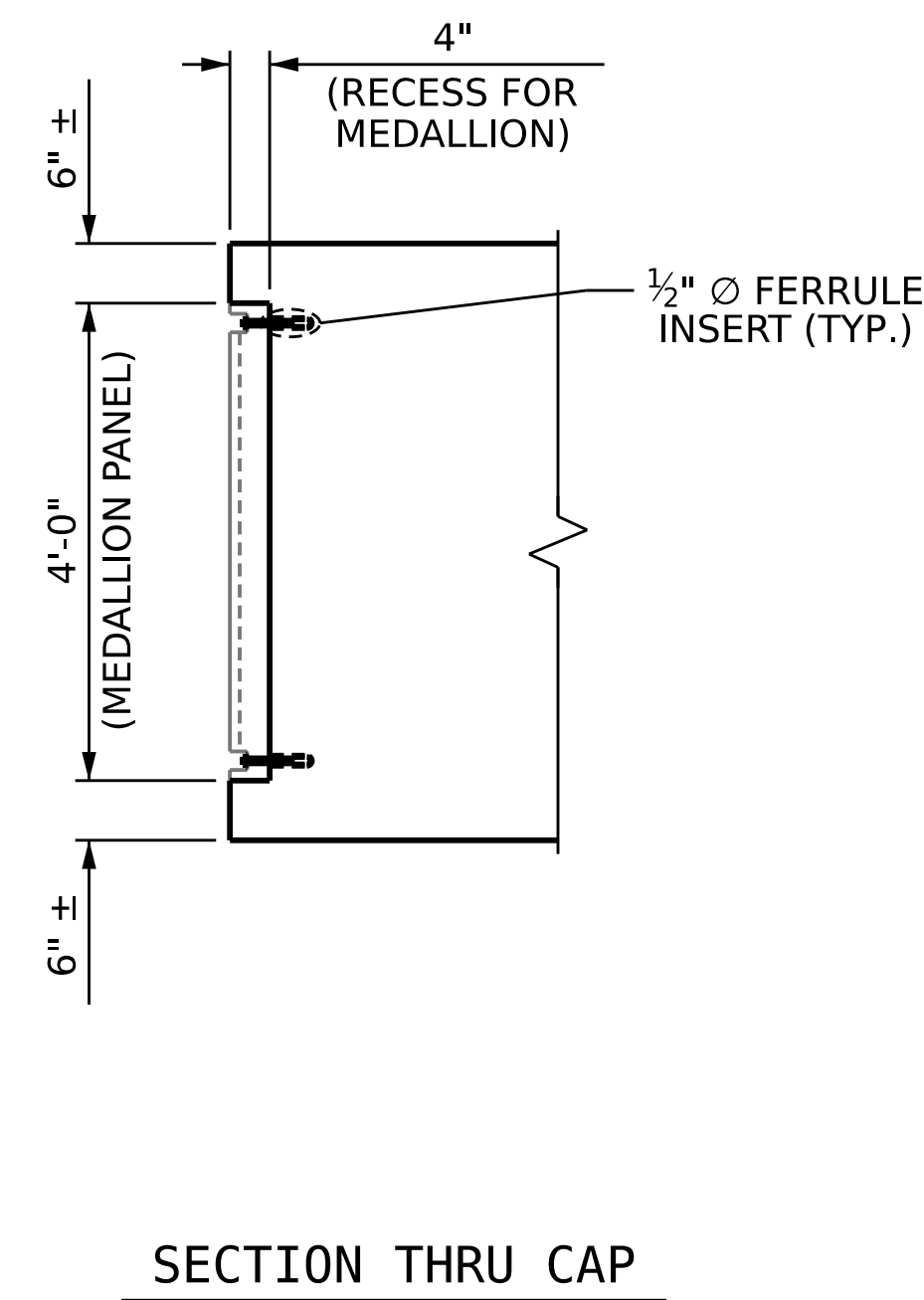
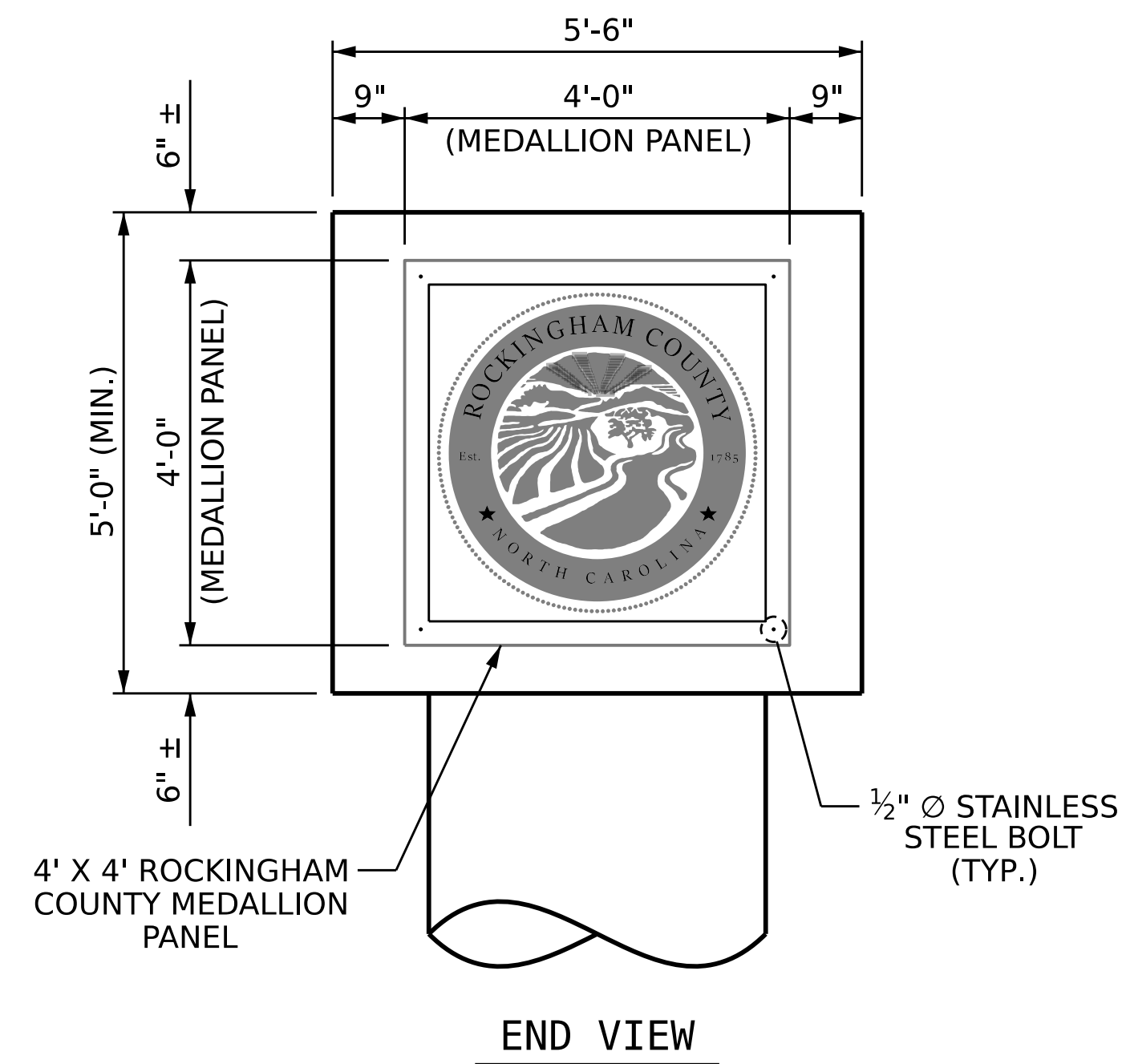
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1/4" PERFORMED BEARING PAD

NOTES:

ADJUST DIMENSIONS AS NECESSARY TO CENTER PANEL ON END OF BENT CAP AND ALIGN PANEL WITHIN RECESS.

USE CLASS "A" CONCRETE WITH PEA GRAVEL AGGREGATE IN THAT DECORATIVE PANELS. IN ADDITION TO THE #3 REINFORCING BARS. CONCRETE TO BE REINFORCED WITH POLYPROPYLENE FIBERS PER THE MANUFACTURERS' RECOMMENDATIONS.

PERFORMED BEARING PAD SHALL COMFORM TO SECTION 1079-1 OF THE STANDARD SPECIFICATIONS. AT THE CONTRACTOR'S OPTION, AN UNREINFORCED PLAIN ELASTOMERIC PAD MAY BE USED.

FERRULES SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 11#2" FOR 1#2" DIAMETER FERRULES.

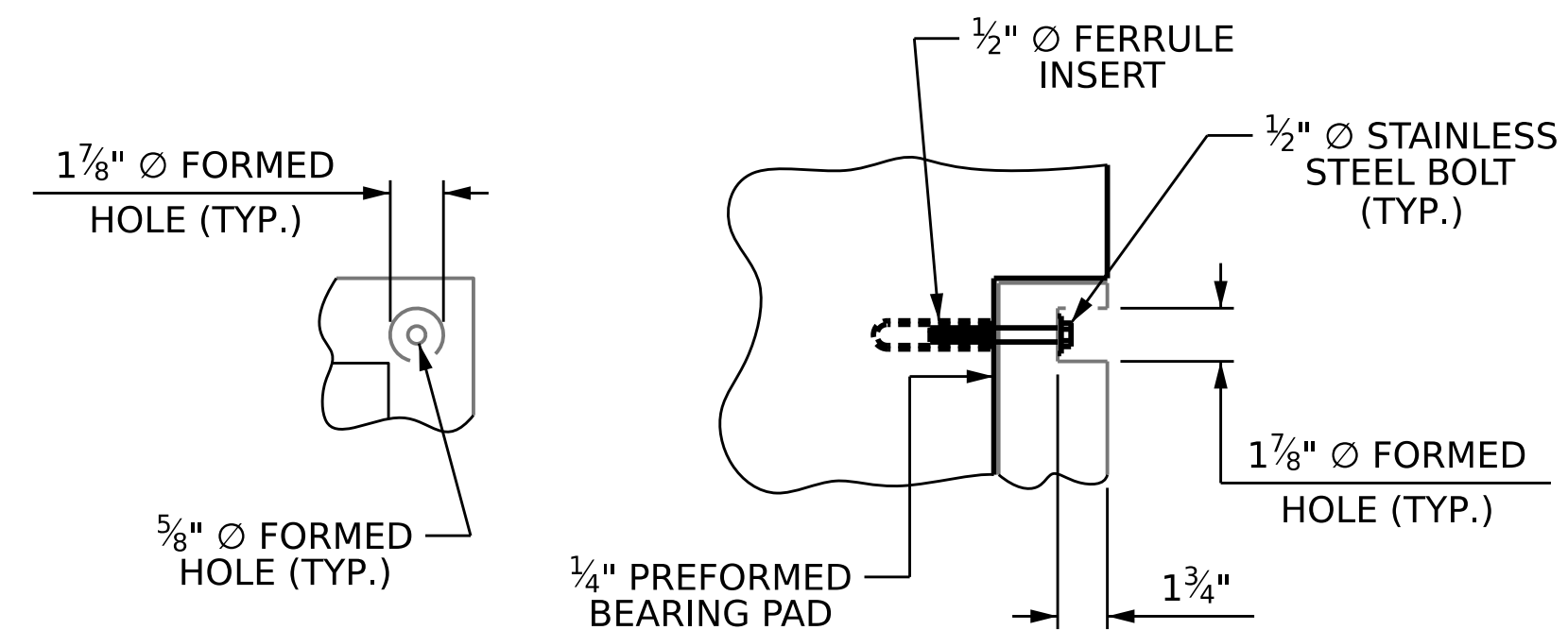
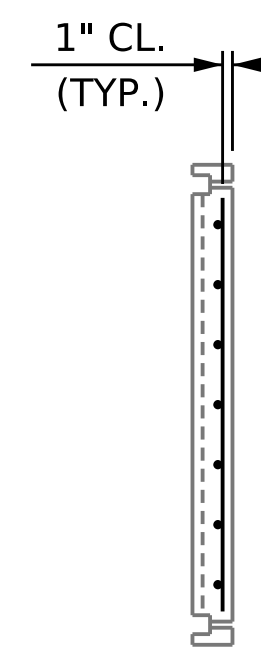
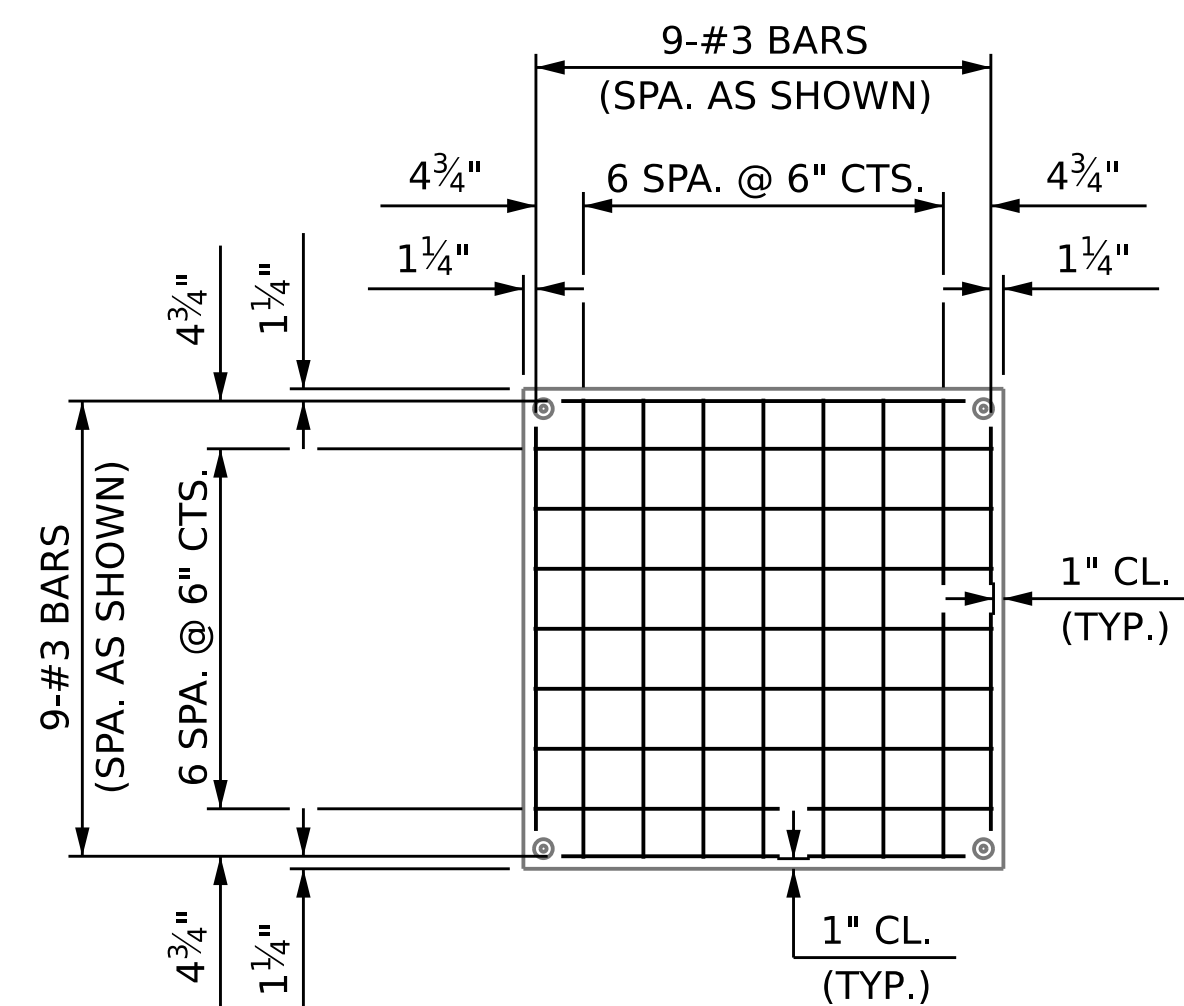
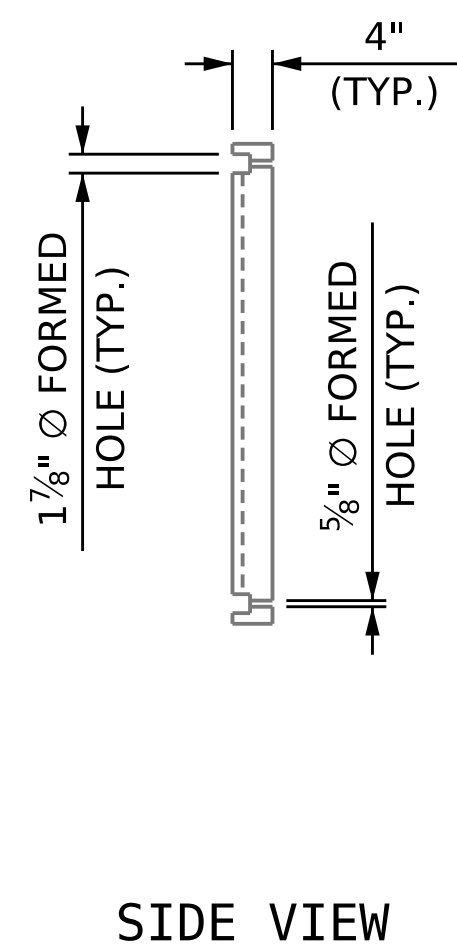
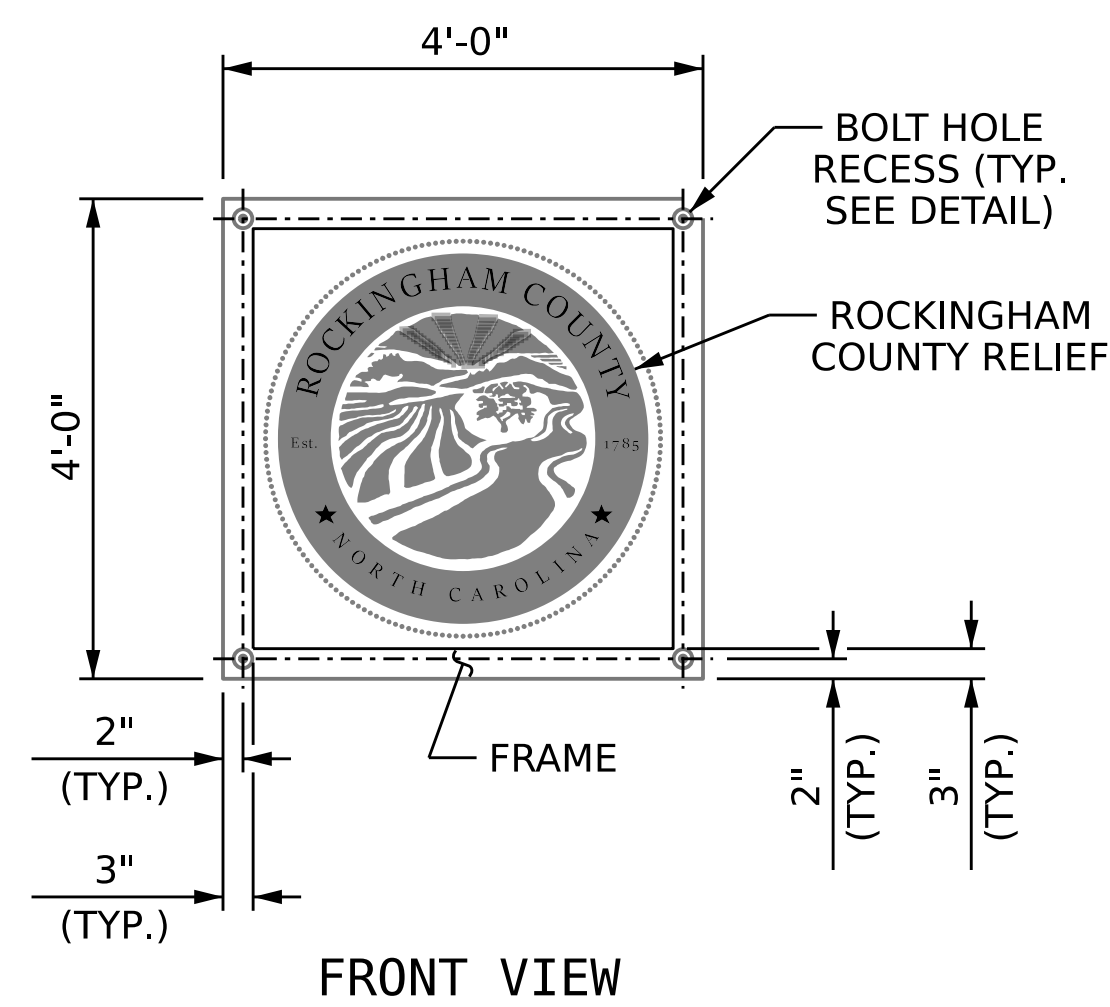
BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI TENSILE STRENGTH, AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

THE CONTRACTOR MAY USE 1#2" DIAMETER ADHESIVELY ANCHORED THREADED ROD IN PLACE OF THE FERRULE ANCHOR INSERTS. FIELD TESTING OF THE ADHESIVE ANCHORS IS NOT REQUIRED.

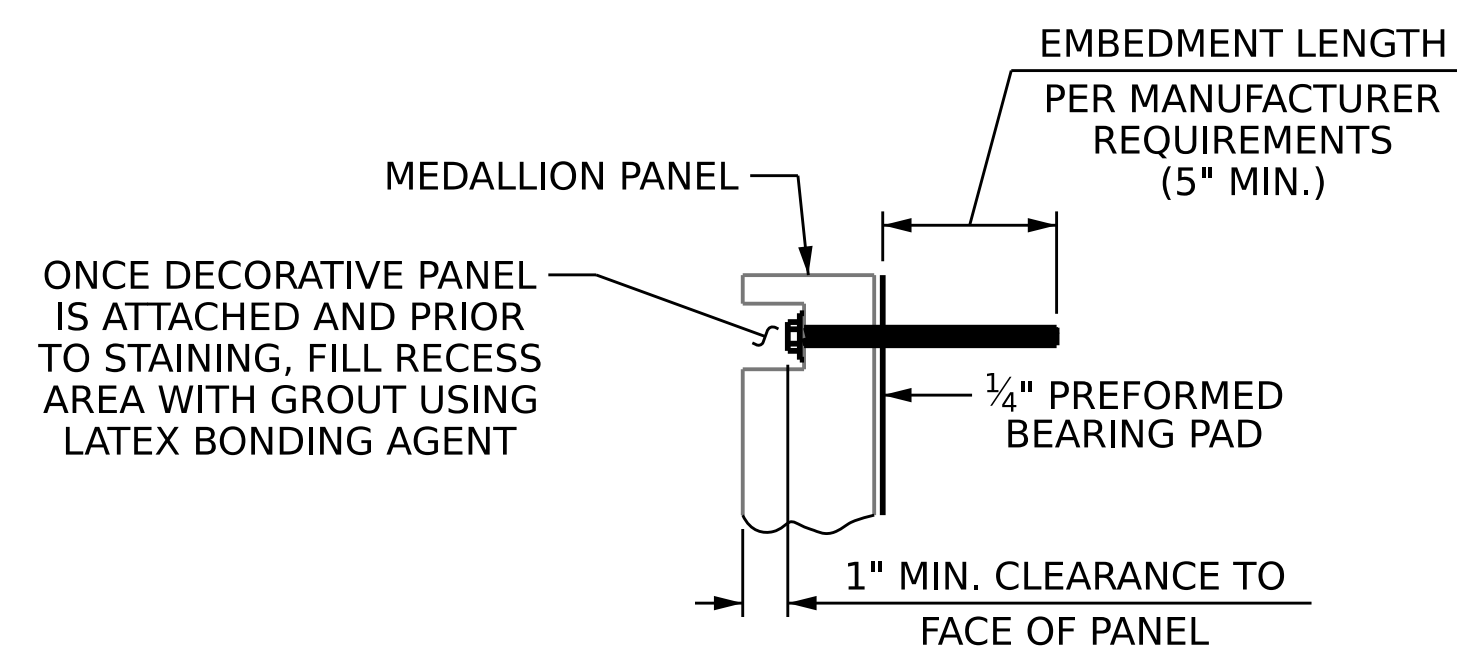
WHEN ADHESIVELY ANCHORED THREADED RODS ARE USED, RODS SHALL MEET THE REQUIREMENTS OF ASTM A276, ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI TENSILE STRENGTH, NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

THE COST OF THE ATTACHMENT ANCHORS WITH BOLTS AND WASHER IN PLACE SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR THE CONCRETE MEDALLION PANEL.

ATTACHMENT OF MEDALLION TO BENT



ROCKINGHAM COUNTY MEDALLION PANEL DETAILS



OPTIONAL ATTACHMENT DETAIL

(SEE NOTES)

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ROCKINGHAM COUNTY
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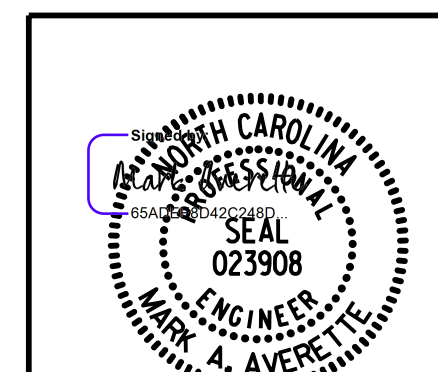
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**DECORATIVE PANEL
 DETAILS**



5640 Dillard Drive, Suite 200
 Cary, NC 27518

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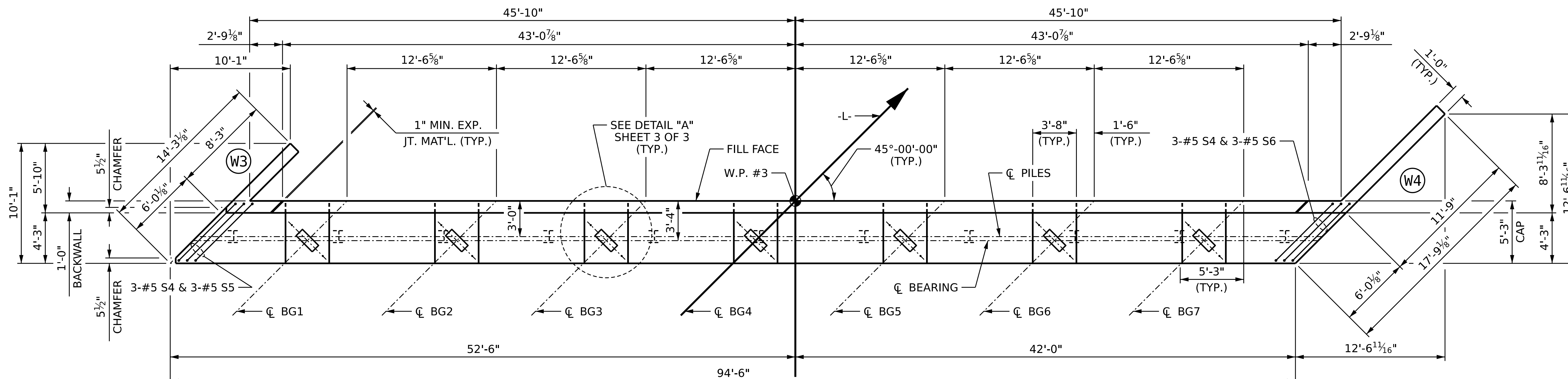
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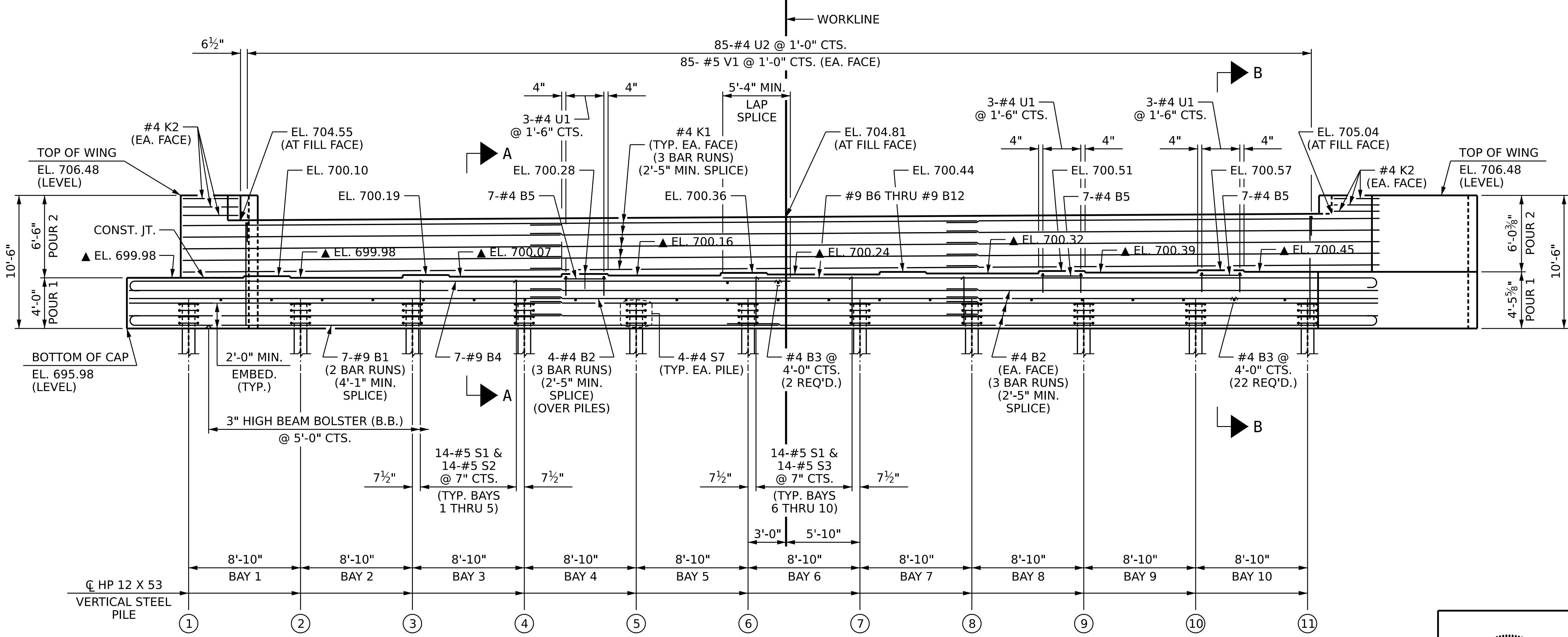
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PLAN



ELEVATION

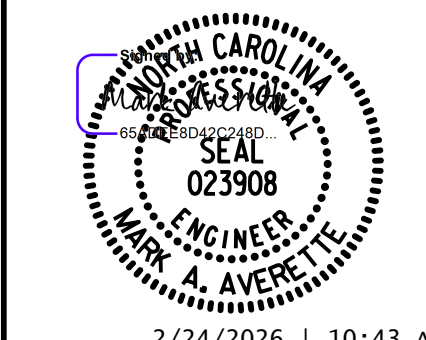
NOTES:

- 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 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 CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE 2%.
- SEE THE GENERAL DRAWING "FOUNDATION LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.
- ▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.
- FOR "PILE SPLICE DETAILS", SEE END BENT 1 SHEET 3 OF 3.
- STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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SHEET 1 OF 3

STATE OF NORTH CAROLINA
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 RALEIGH
 SUBSTRUCTURE
END BENT 2

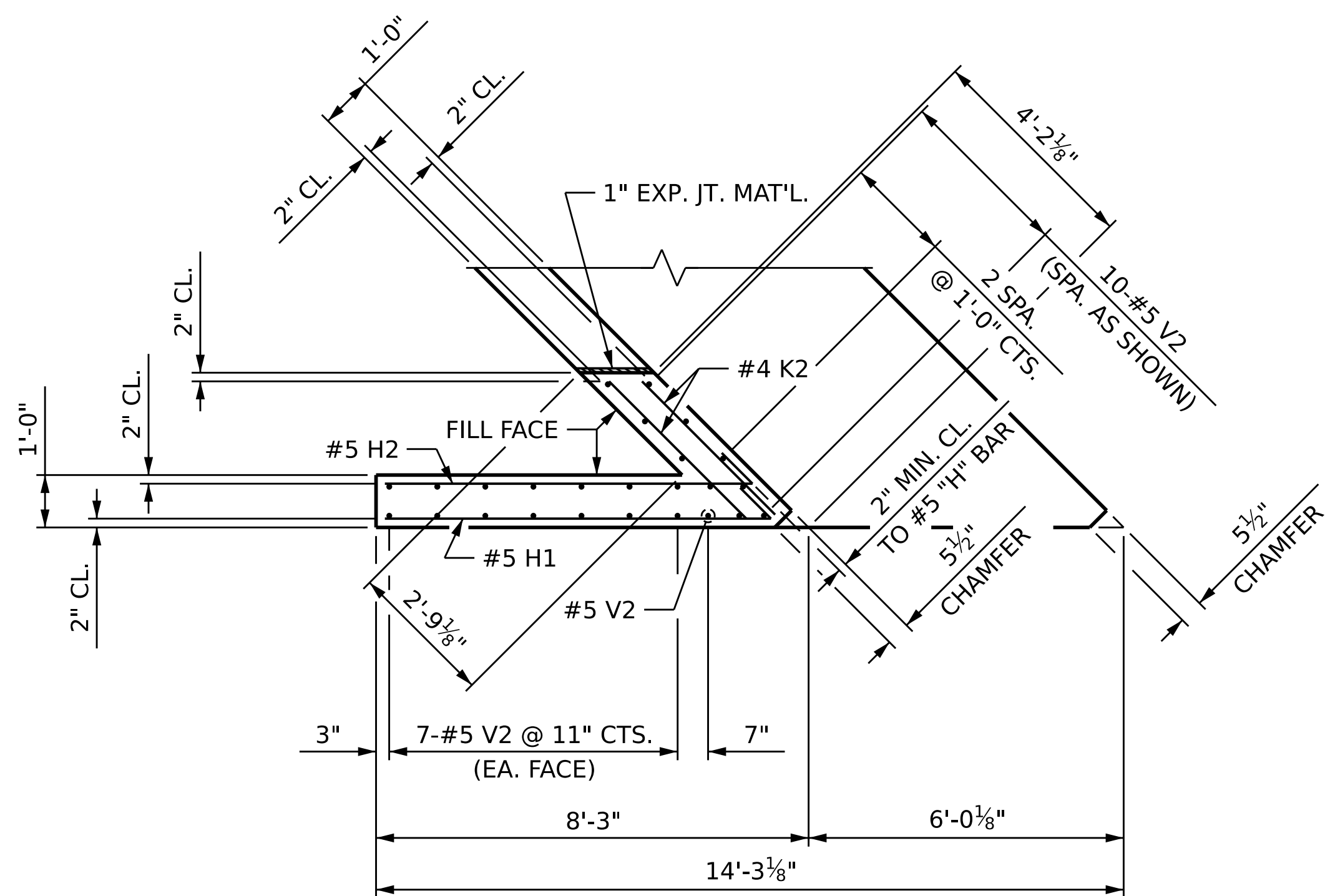


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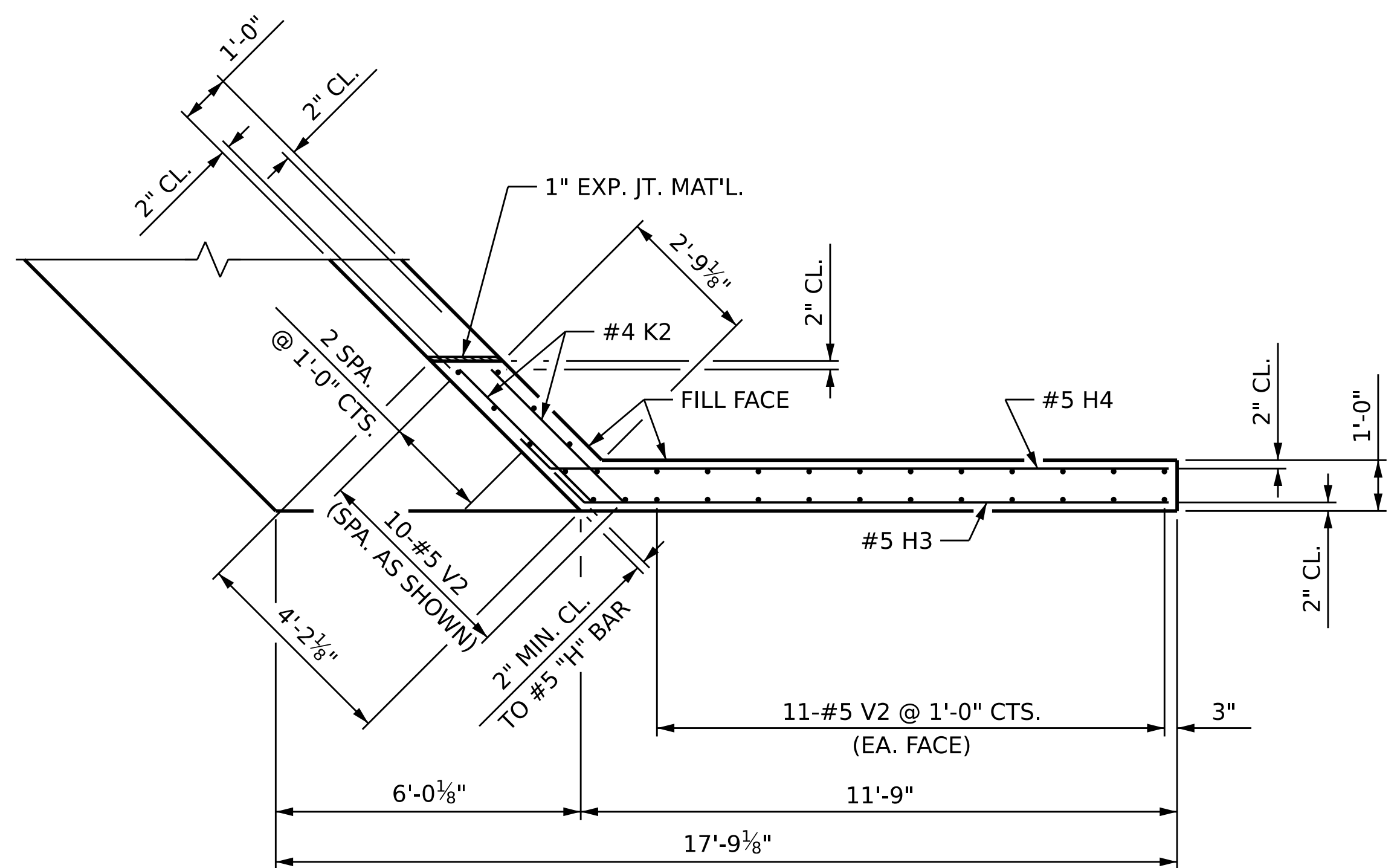
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		TOTAL SHEETS: 41	

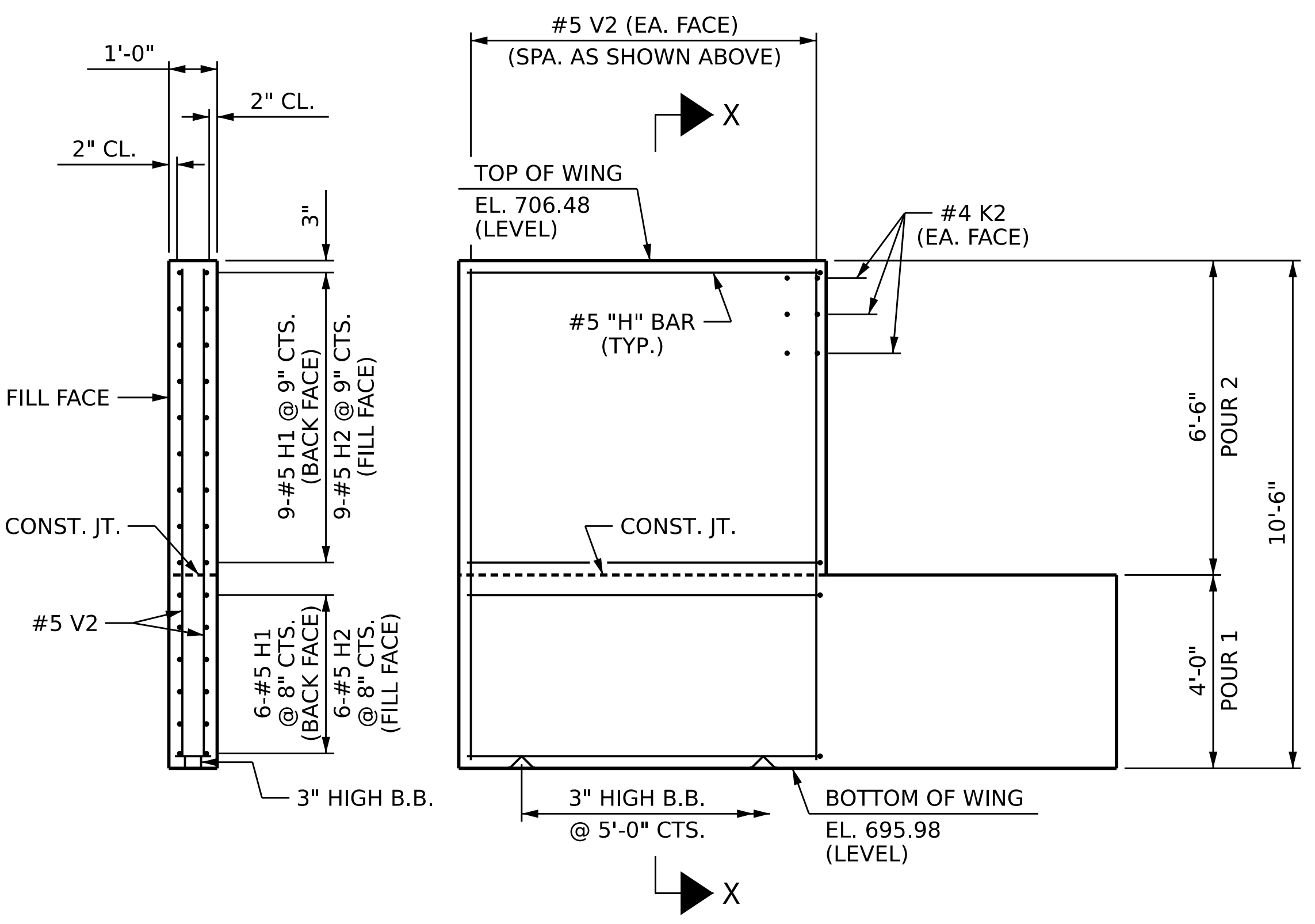
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PLAN OF WING W3

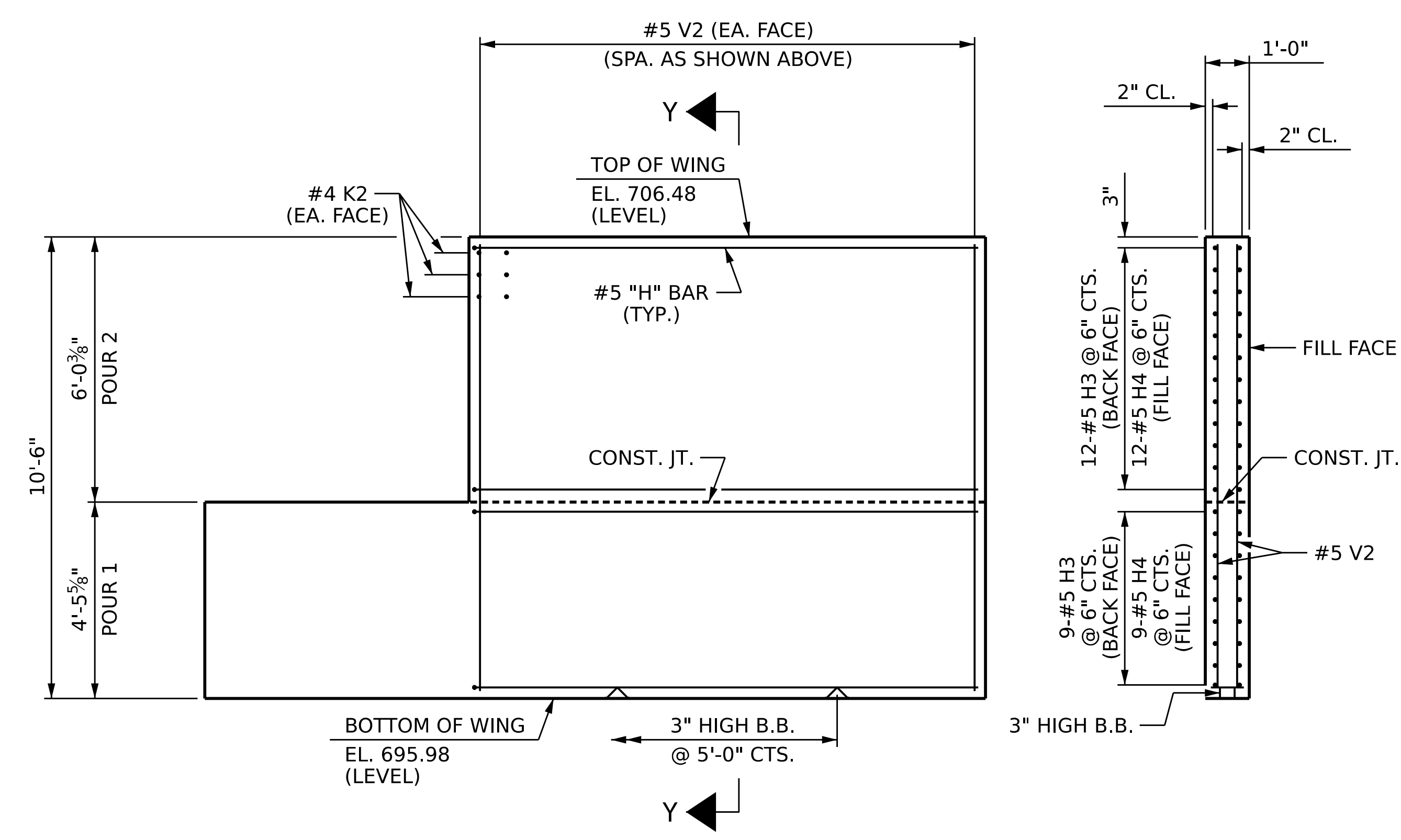


PLAN OF WING W4



SECTION X-X

ELEVATION OF WING W3



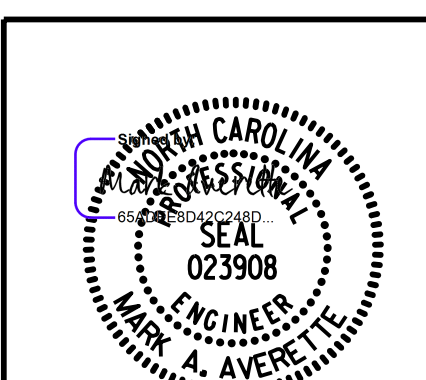
ELEVATION OF WING W4

SECTION Y-Y

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 2 OF 3

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

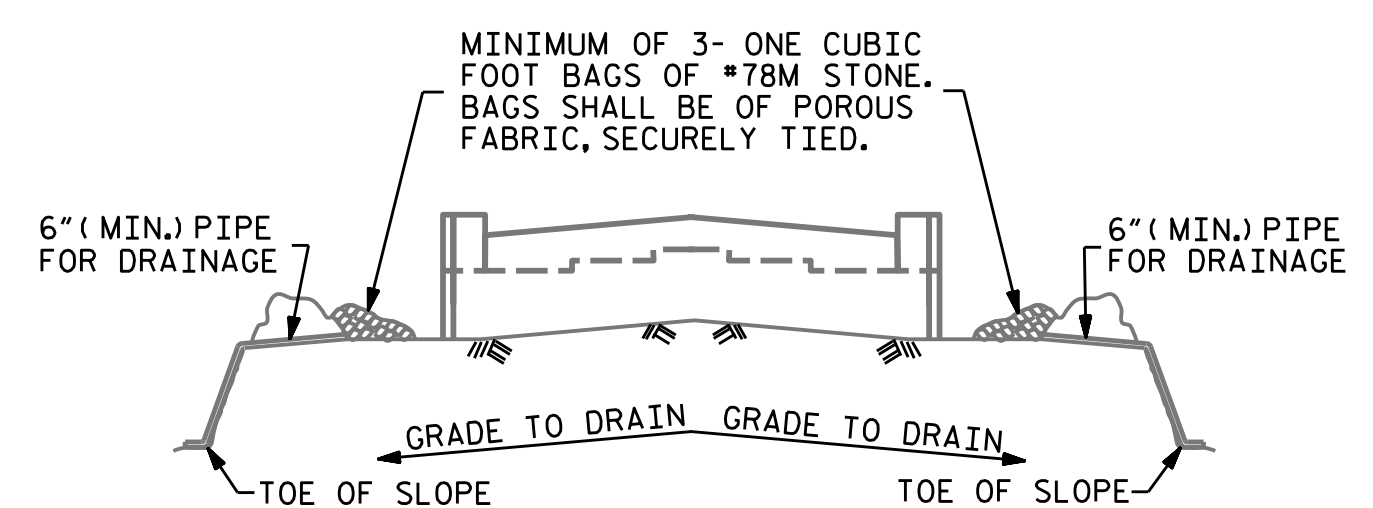


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TOTAL SHEETS: 41

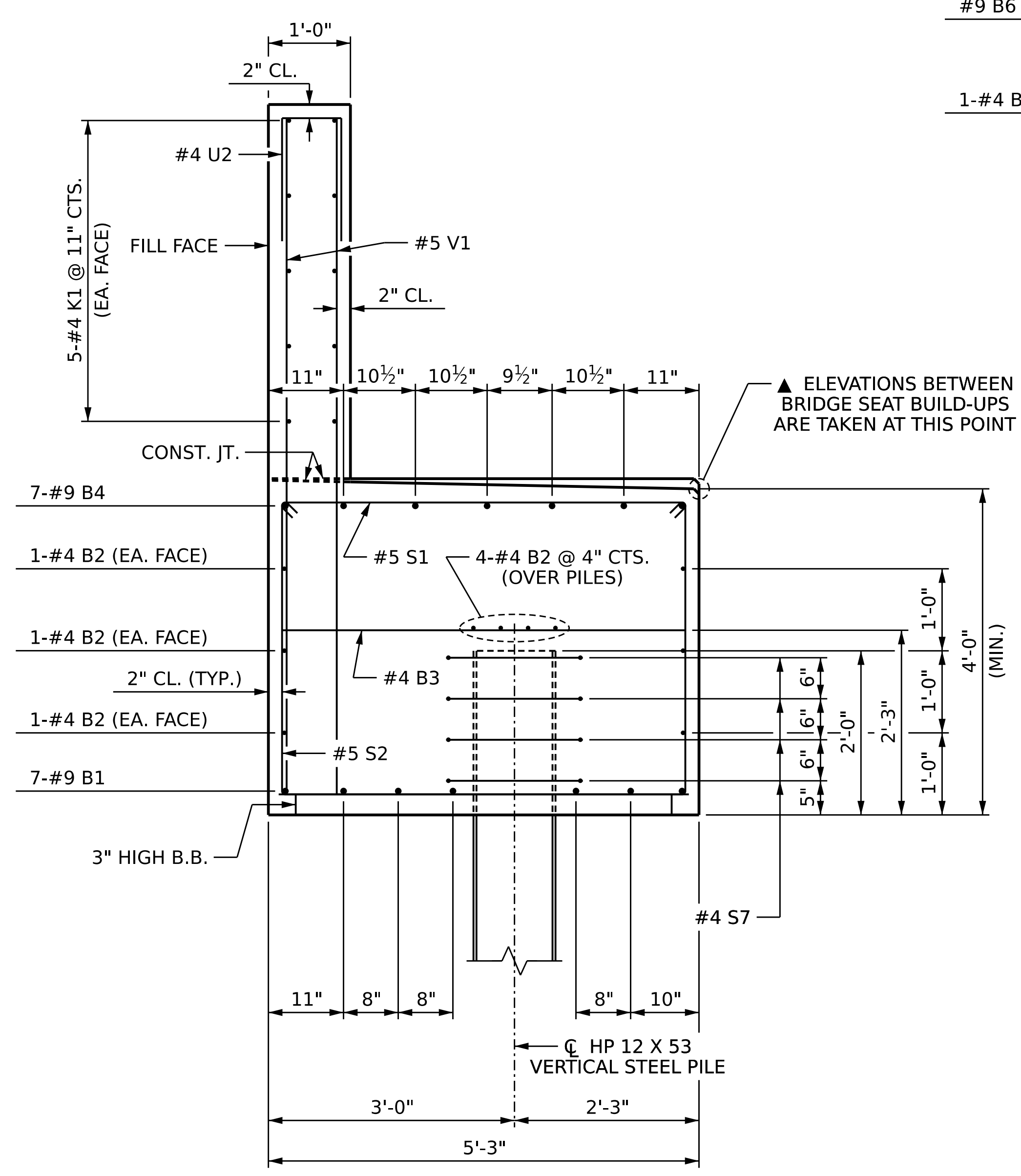


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

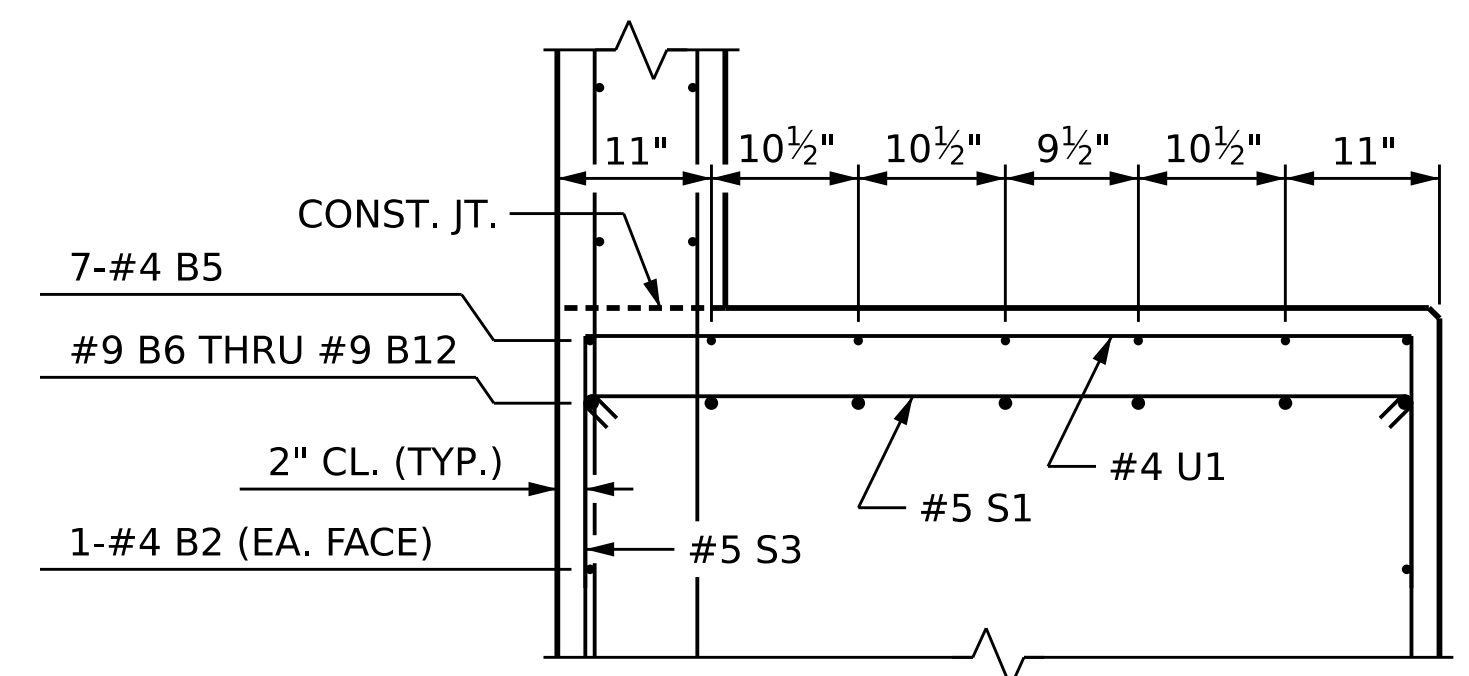
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

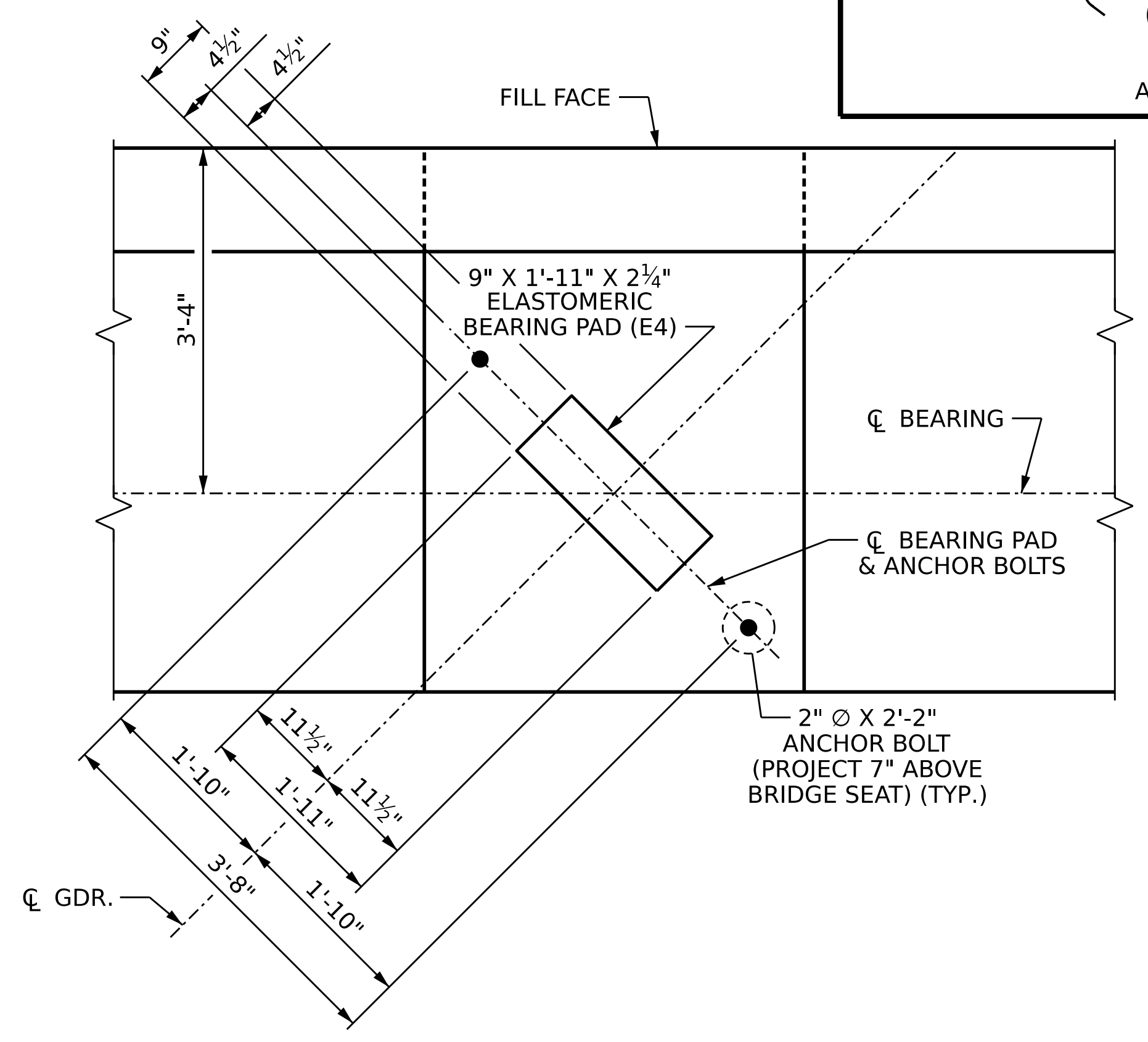


SECTION A-A
(TIEBACKS NOT SHOWN FOR CLARITY)

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 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 9-25



PARTIAL SECTION B-B



DETAIL "A"
(TYP. EA. GIRDER)

BAR TYPES

B1	1'-3"	49'-0"
B4	1'-3"	52'-3"
B6	1'-3"	46'-11"
B7	1'-3"	47'-6"
B8	1'-3"	48'-5"
B9	1'-3"	49'-3"
B10	1'-3"	50'-1"
B11	1'-3"	50'-11"
B12	1'-3"	51'-8"

H1	7'-4"
H2	7'-0"
H3	11'-6"
H4	12'-2"
S1	4'-11"
S4	6'-11"

S3, S6	3'-10 1/2"
S2, S5	3'-7 1/2"

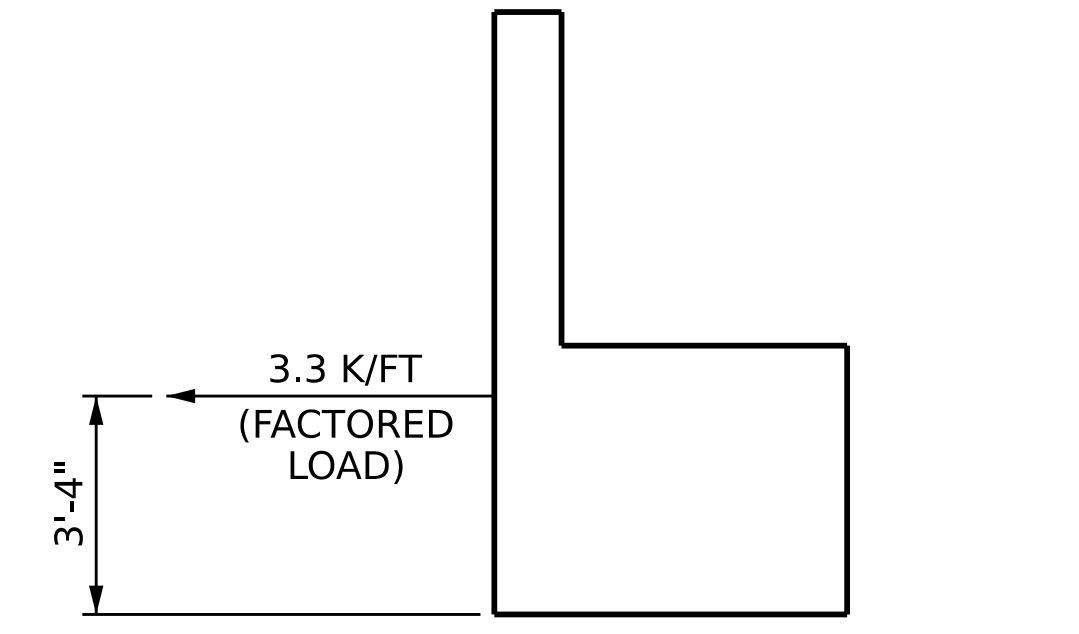
U1	4'-11"
U2	8"

ALL BAR DIMENSIONS ARE OUT TO OUT

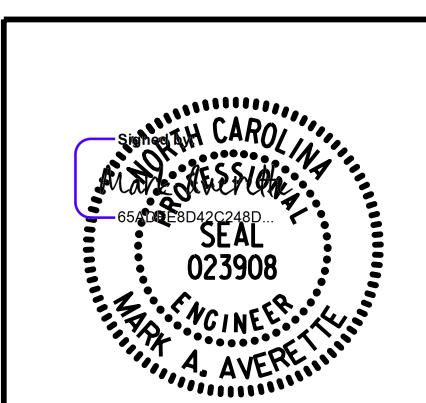
BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#9	1	50'-3"	2392
B2	30	#4	STR	33'-0"	661
B3	24	#4	STR	4'-11"	79
B4	7	#9	1	53'-6"	1273
B5	21	#4	STR	3'-4"	47
B6	1	#9	1	48'-2"	164
B7	1	#9	1	48'-9"	166
B8	1	#9	1	49'-8"	169
B9	1	#9	1	50'-6"	172
B10	1	#9	1	51'-4"	175
B11	1	#9	1	52'-2"	177
B12	1	#9	1	52'-11"	180
H1	15	#5	2	8'-2"	128
H2	15	#5	2	7'-10"	123
H3	21	#5	3	12'-4"	270
H4	21	#5	3	13'-0"	285
K1	30	#4	STR	33'-0"	661
K2	12	#4	STR	3'-8"	29
S1	140	#5	4	5'-10"	852
S2	70	#5	5	13'-1"	955
S3	70	#5	5	13'-7"	992
S4	6	#5	4	7'-10"	49
S5	3	#5	5	15'-1"	47
S6	3	#5	5	15'-7"	49
S7	44	#4	6	6'-6"	191
U1	9	#4	7	7'-11"	48
U2	85	#4	7	3'-8"	208
V1	170	#5	STR	8'-1"	1433
V2	57	#5	STR	10'-2"	604
TOTAL REINFORCING STEEL					12579 LB
CLASS A CONCRETE BREAKDOWN					
POUR 1					
(CAP & LOWER WINGS)					80.8 CY
POUR 2					
(BACKWALL & UPPER WINGS)					19.7 CY
TOTAL					100.5 CY



CAP TIEBACK DETAILS



PROJECT NO. BP7.R001
 ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE					
END BENT 2					
SHEET NO. S-37					
TOTAL SHEETS 41					
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2			4		

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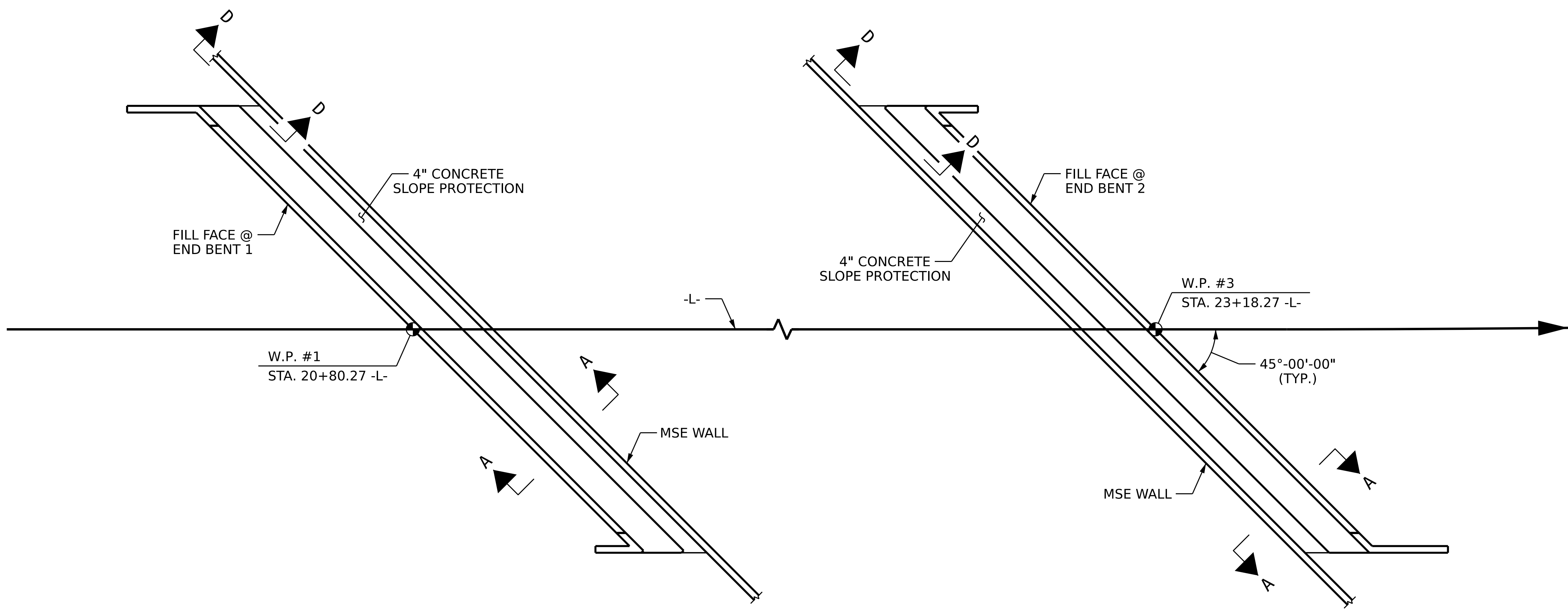
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GENERAL NOTES

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

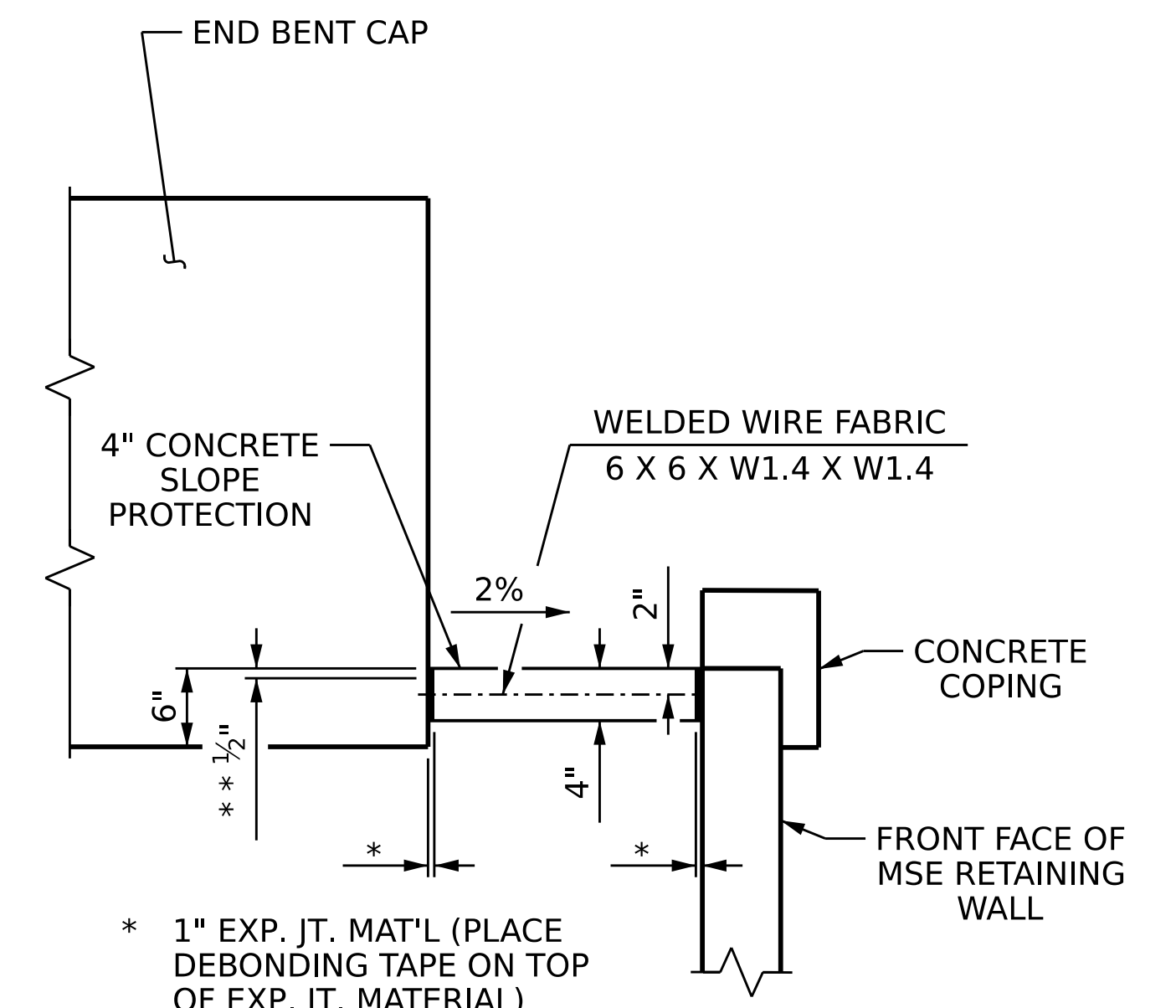
FOR BERM WIDTH, SEE GENERAL DRAWING.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE SLOPE PROTECTION AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

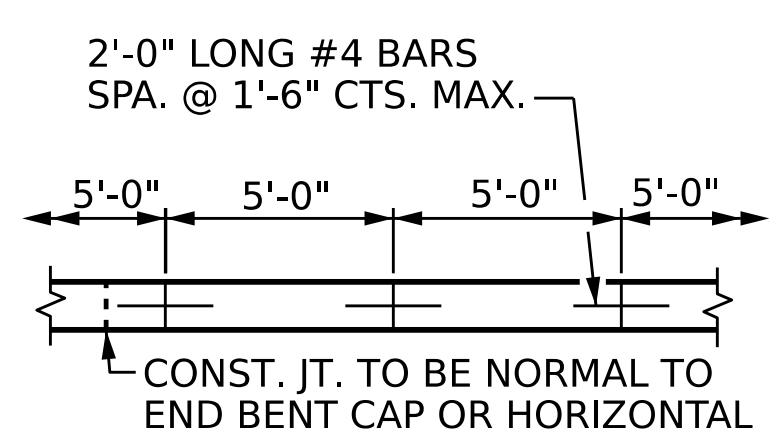


PLAN @ END BENT 1

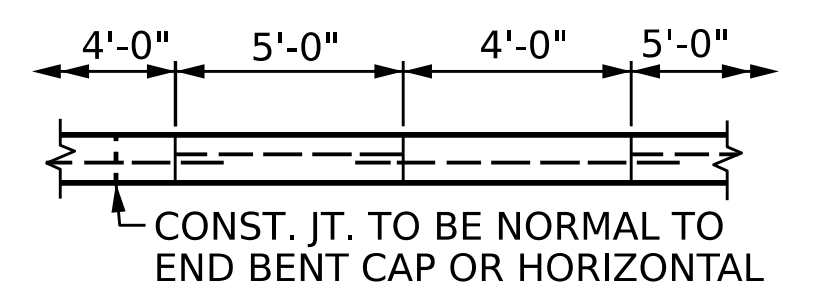
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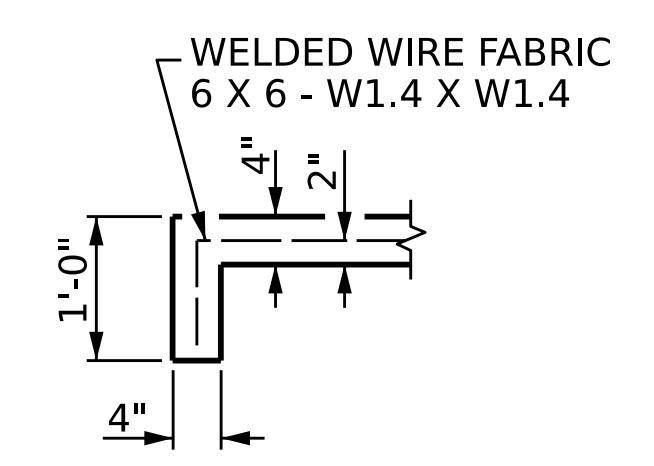
SECTION A-A



POURING DETAIL



OPTIONAL POURING DETAIL



SECTION D-D

- * 1" EXP. JT. MAT'L (PLACE DEBONDING TAPE ON TOP OF EXP. JT. MATERIAL)
- ** KEEP FREE OF CONCRETE AND SEAL WITH JOINT SEALER OR GREY LOW MODULUS SILICONE SEALANT

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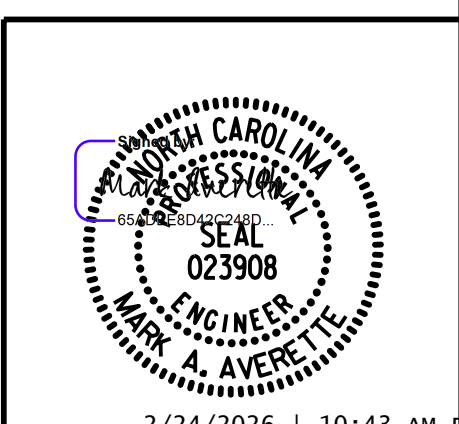
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RALEIGH

SLOPE PROTECTION

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

BRIDGE @ STA. 22+03.27 -L-	4" SLOPE PROTECTION	*** WELDED WIRE FABRIC 60 INCH WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	27	49
END BENT 2	27	49

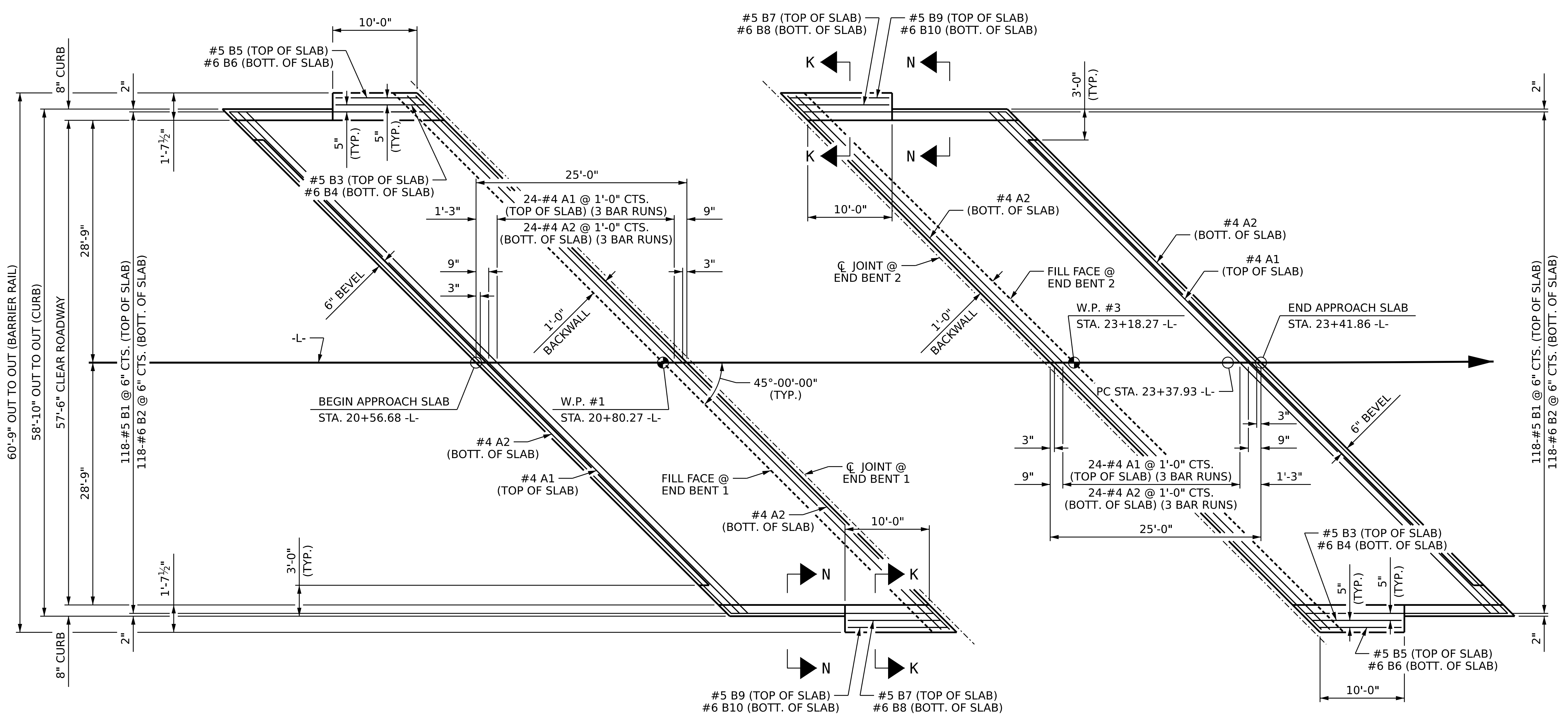
*** QUANTITIES SHOWN ARE BASED ON 5' POURS



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PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

THE EFFECTS OF THE HORIZONTAL CURVE SHALL BE NEGLECTED IN THE CONSTRUCTION OF THE APPROACH SLAB AT END BENT 2.

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

PROJECT NO. BP7.R001
ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 1 OF 3

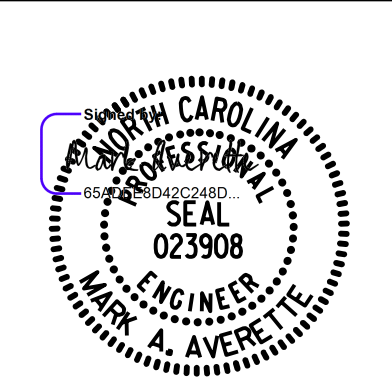
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT



5640 Dilard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-5315



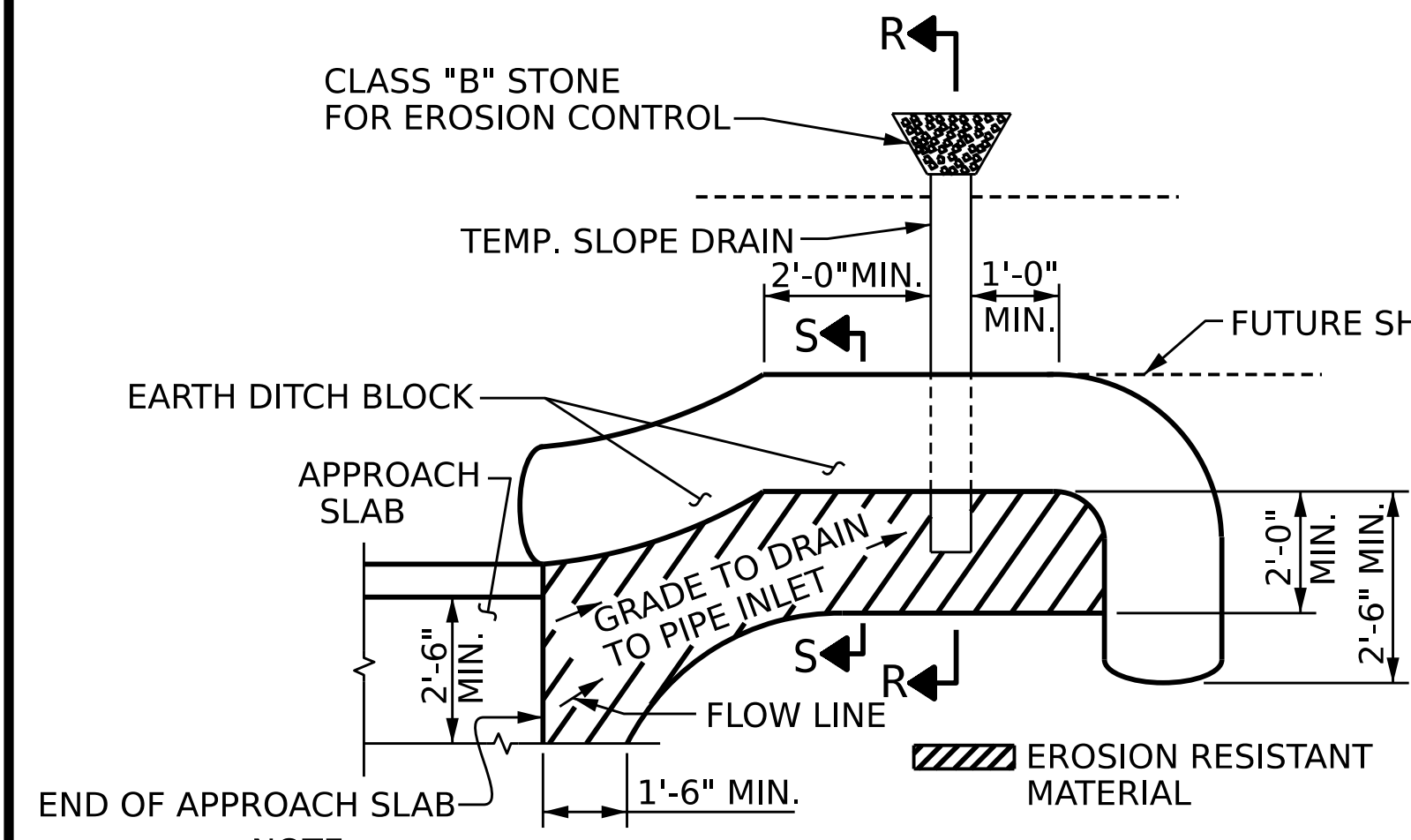
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
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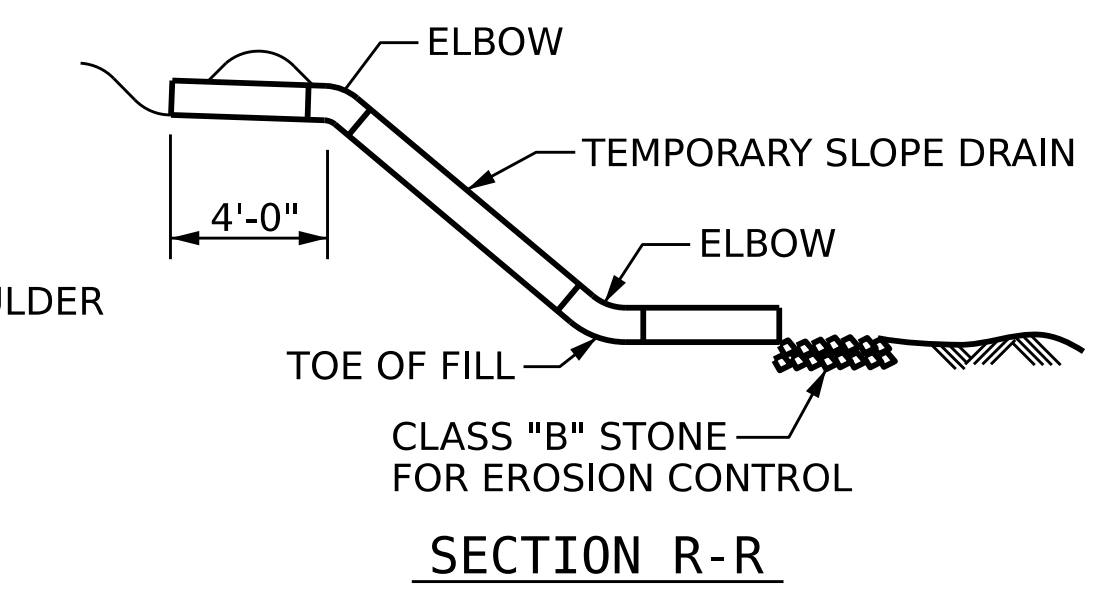
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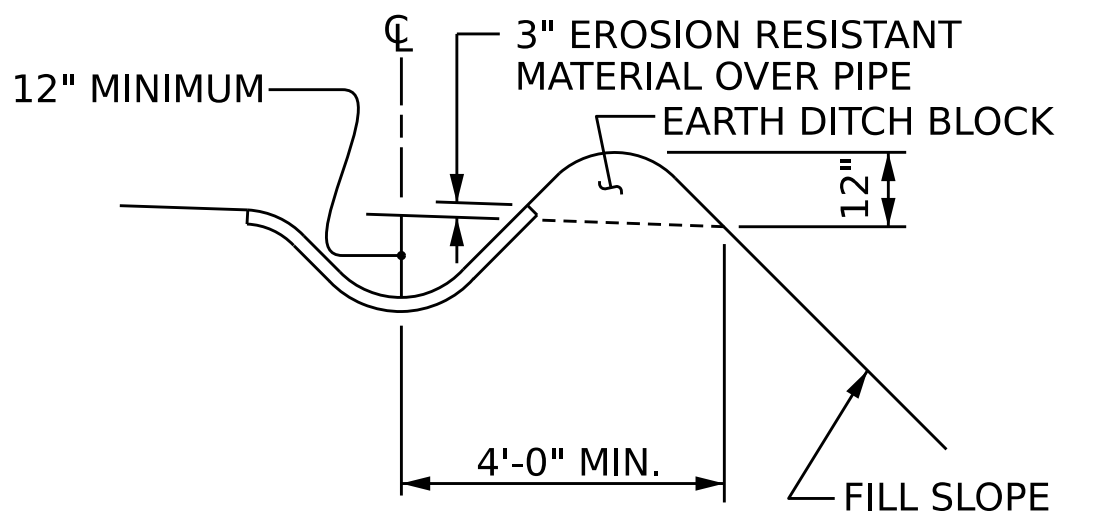


NOTE:
IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



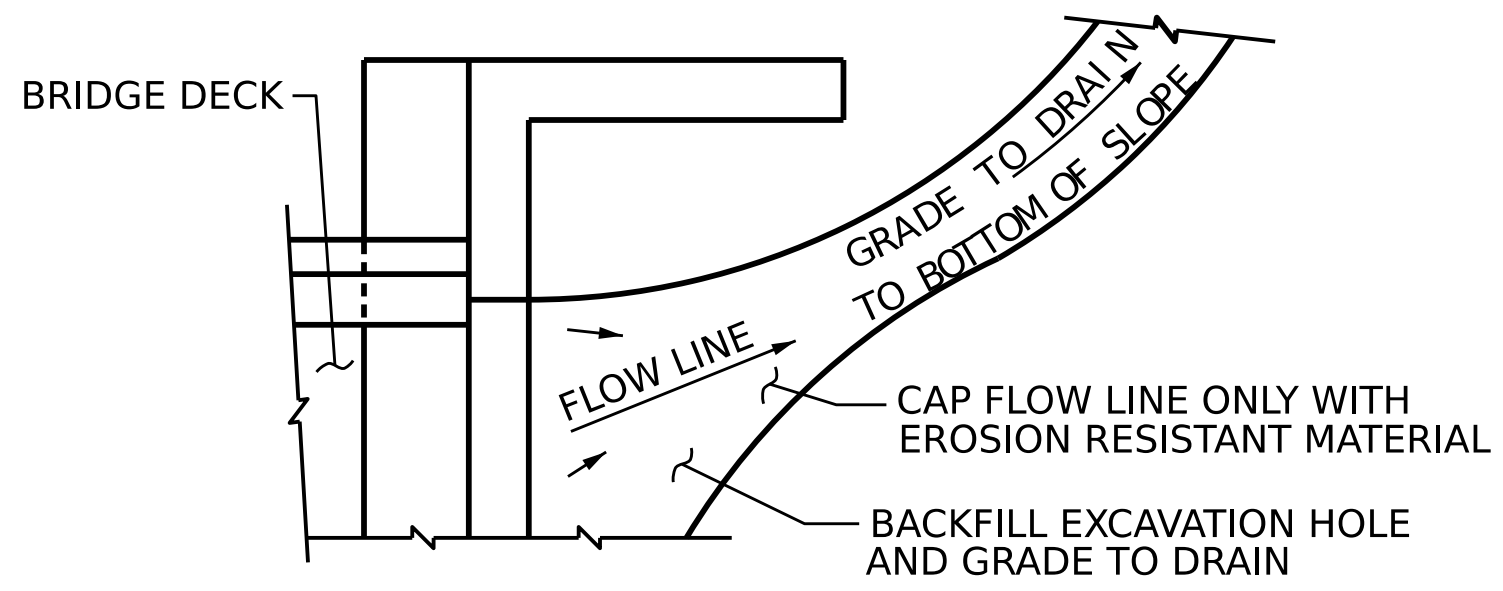
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

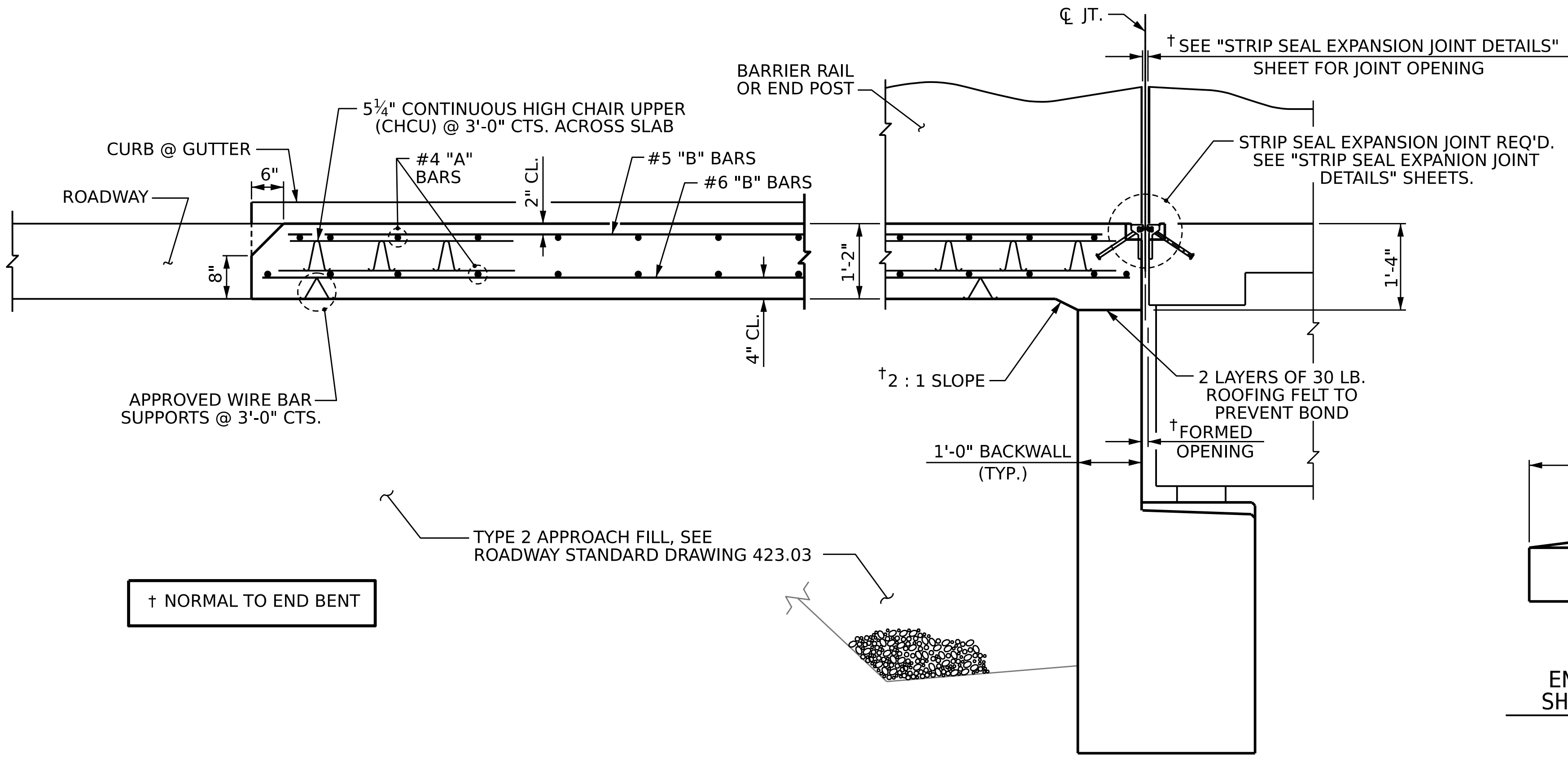


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

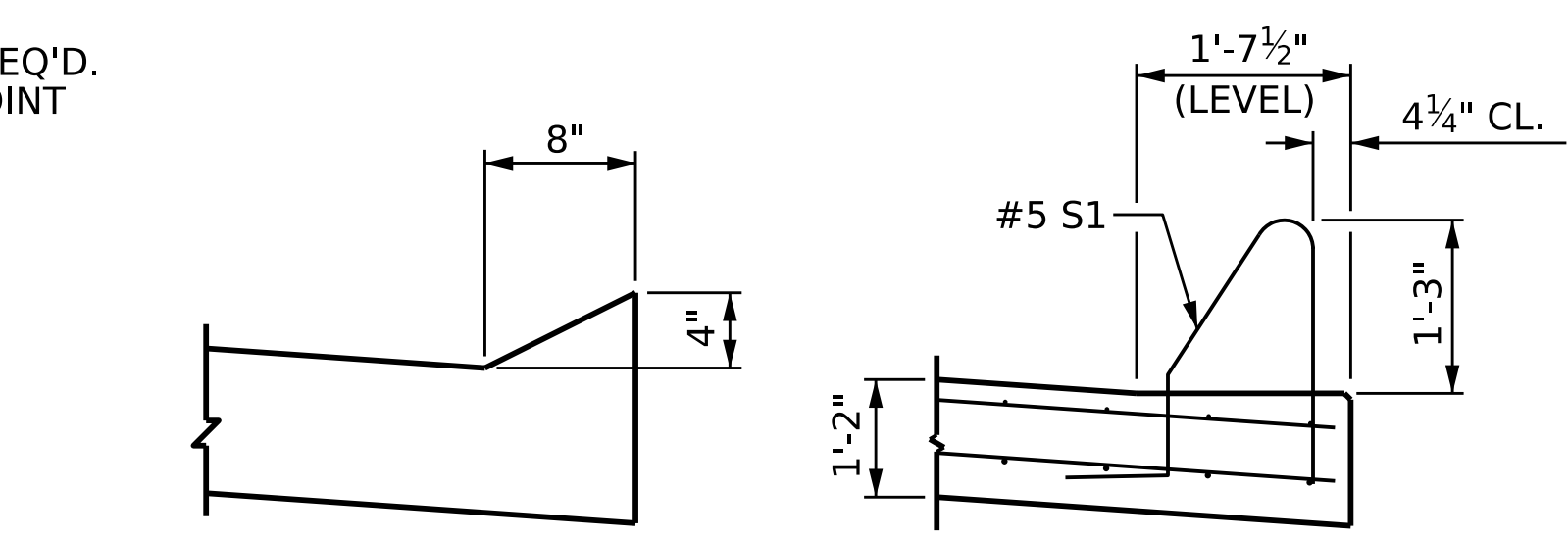
TEMPORARY DRAINAGE DETAIL

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

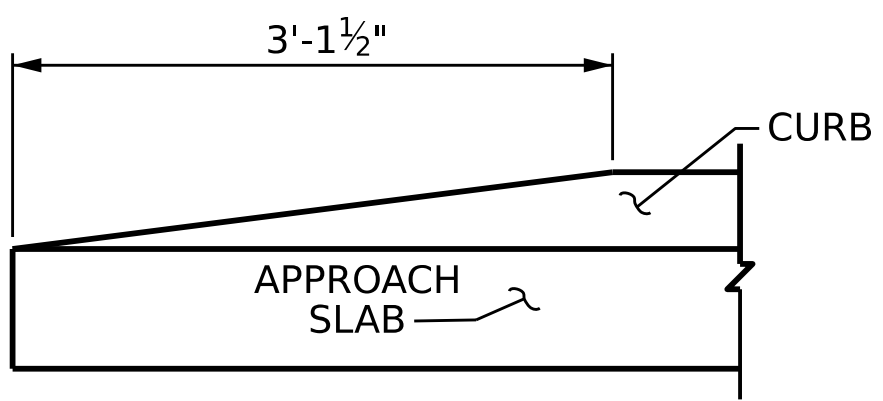


SECTION THRU SLAB



SECTION N-N

SECTION K-K



CURB DETAILS

BILL OF MATERIAL					
APPROACH SLAB @ END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	75	#4	STR	29'-10"	1495
A2	78	#4	STR	29'-8"	1546
REINFORCING STEEL					5950 LB
EPOXY COATED REINFORCING STEEL					4420 LB
CLASS AA CONCRETE					65.7 CY
APPROACH SLAB @ END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	75	#4	STR	29'-10"	1495
A2	78	#4	STR	29'-8"	1546
REINFORCING STEEL					5950 LB
EPOXY COATED REINFORCING STEEL					4420 LB
CLASS AA CONCRETE					65.7 CY

* INDICATES EPOXY COATED REINFORCING STEEL

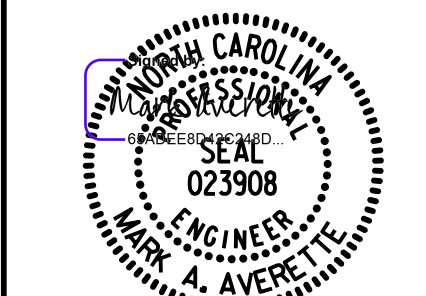
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SHEET 2 OF 3

STATE OF NORTH CAROLINA
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BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

DRAWN BY: T. BANKOVICH DATE: 9-25
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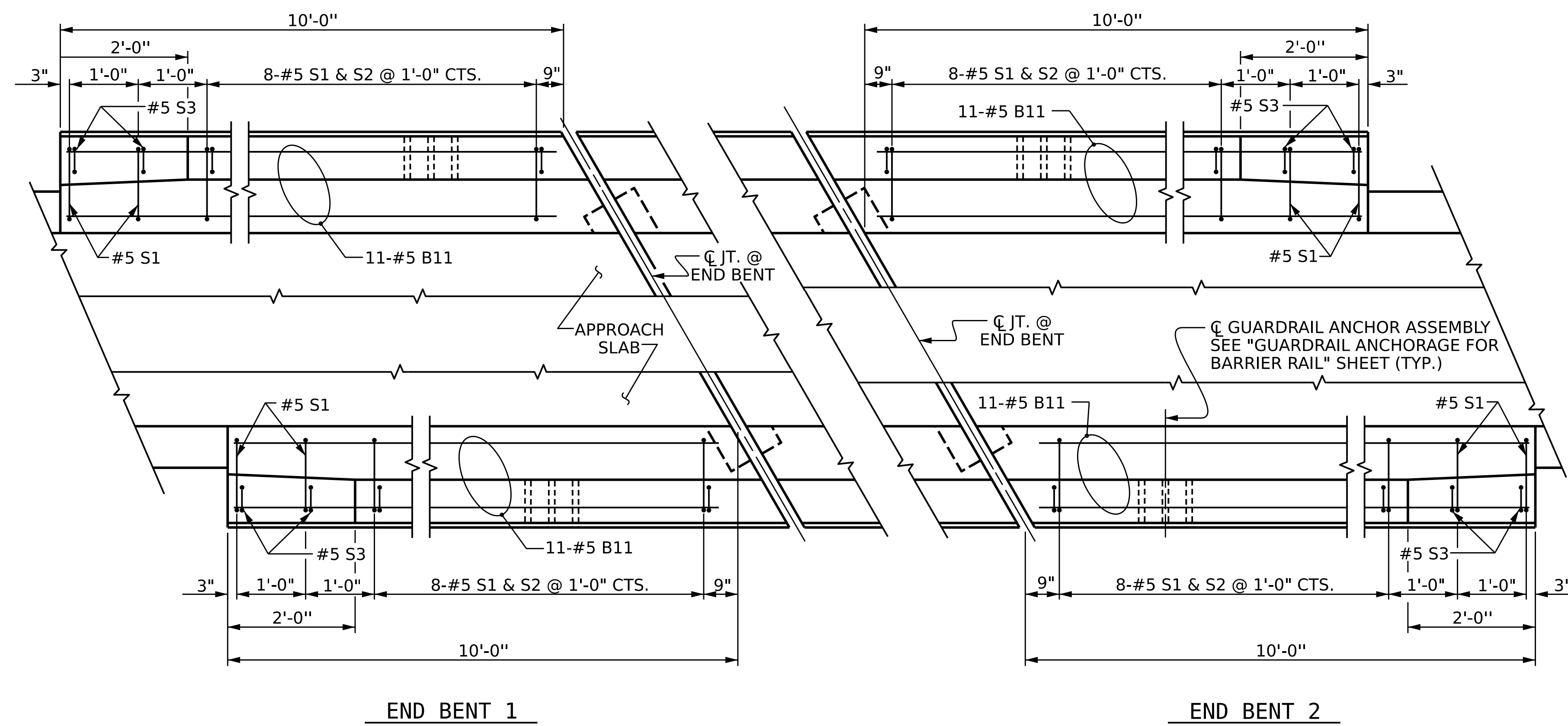


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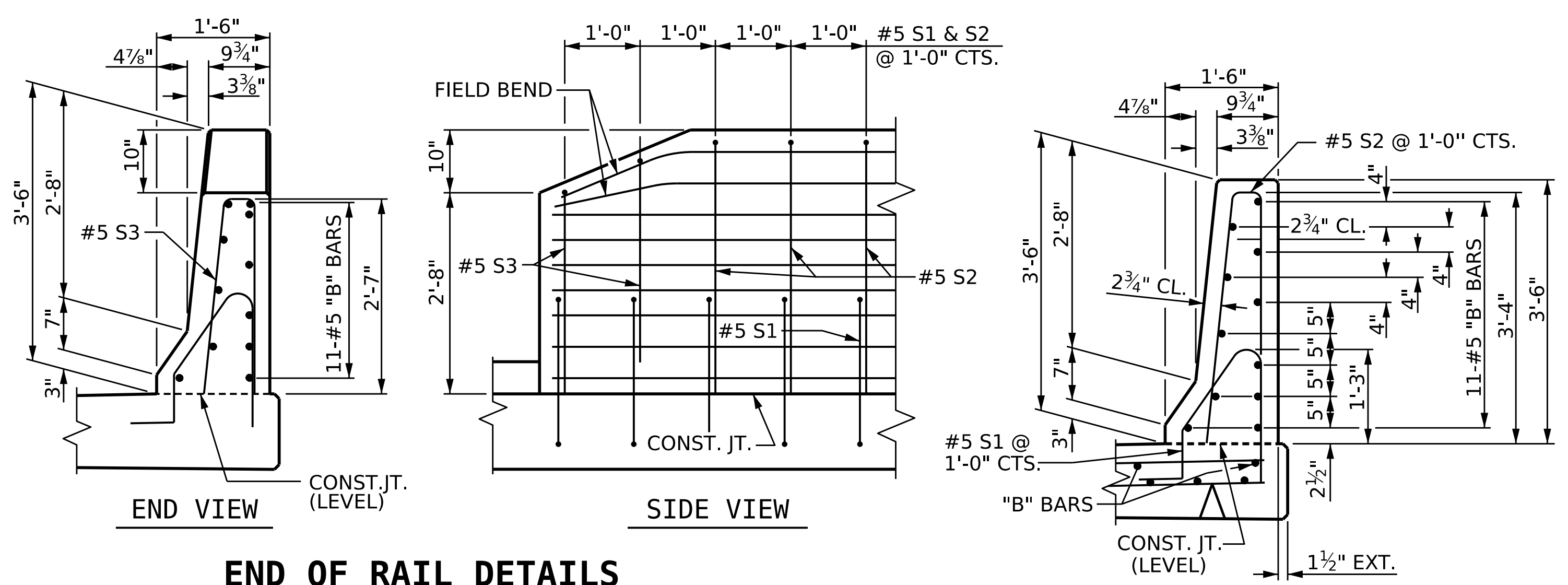
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PLAN OF BARRIER RAIL



END OF RAIL DETAILS

SECTION THRU RAIL

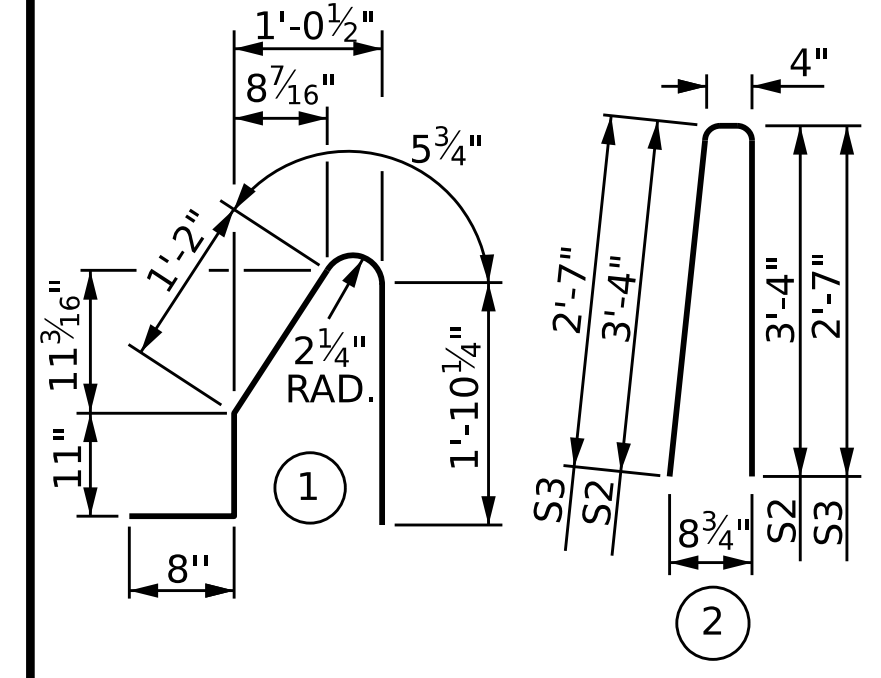
NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

THE BARRIER RAIL 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 BARRIER RAILS SHALL BE EPOXY COATED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B11	44	#5	STR	9'-11"	455
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL					947 LB
CLASS AA CONCRETE					5.4 C Y
CONCRETE BARRIER RAIL					43.0 LF

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ROCKINGHAM COUNTY
 STATION: 22+03.27 -L-

SHEET 3 OF 3

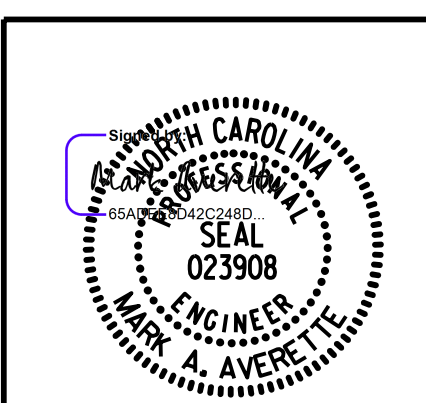
STATE OF NORTH CAROLINA
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BRIDGE APPROACH SLAB DETAILS



5640 Dillard Drive, Suite 200
 Cary, NC 27518

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