

TIP PROJECT: 49218.26

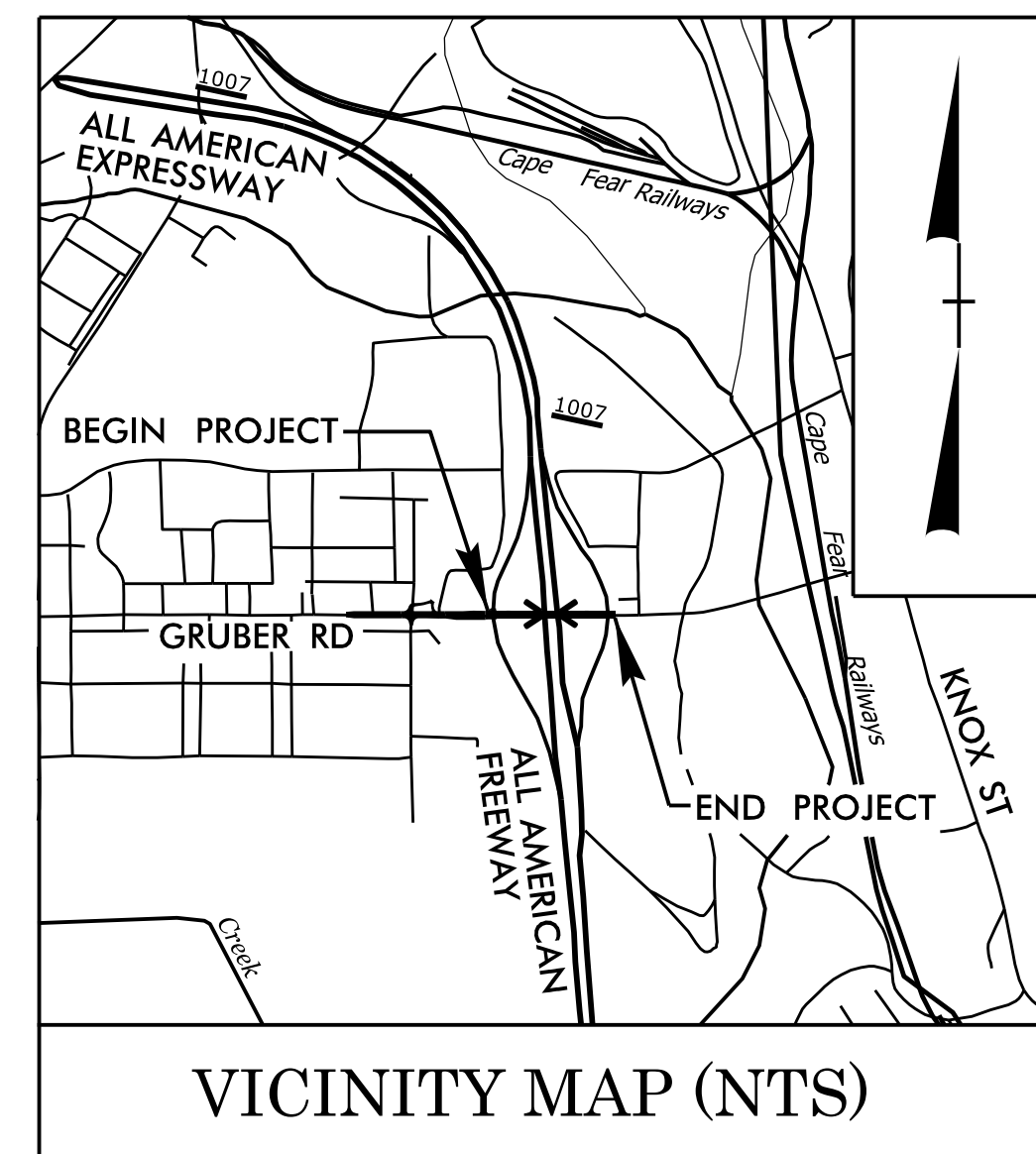
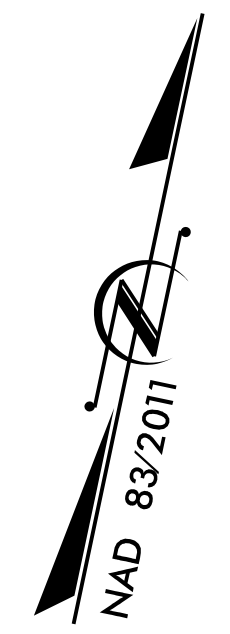
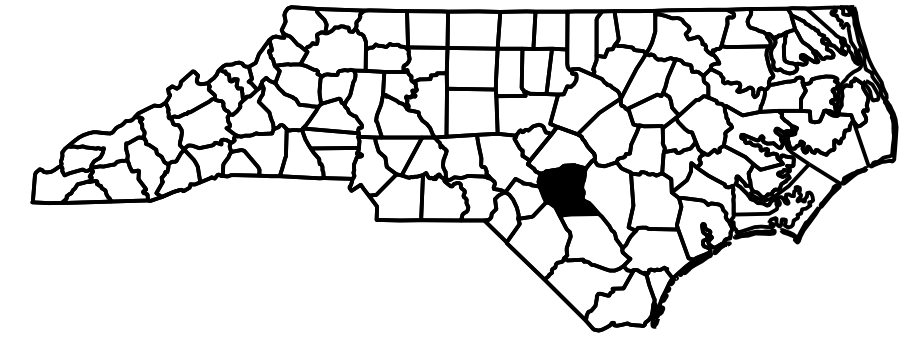
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

LOCATION: *GRUBER ROAD BRIDGE
OVER ALL AMERICAN FREEWAY
ON FORT BRAGG*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, AND
STRUCTURES*

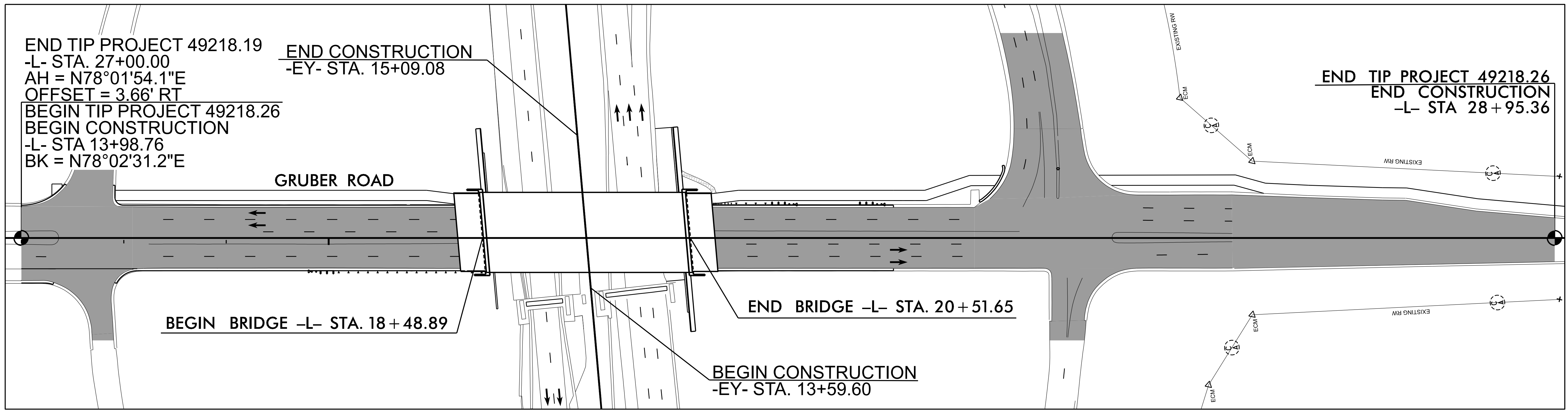
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	49218.26		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49218.26		PE, CONST.	



VICINITY MAP (NTS)

TO ROCK
MERITT AVE
←

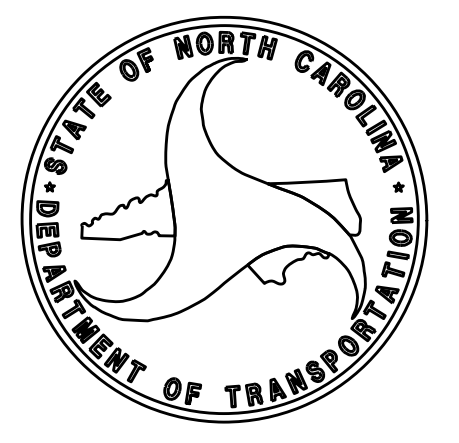
TO KNOX ST
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STRUCTURES

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DESIGN DATA

ADT 2025 =	4700
ADT 2045 =	6400
K =	N/A %
D =	N/A %
T =	6 % *
V =	40 MPH
* TTST =	3 DUAL 3
FUNC CLASS =	LOCAL SUBREGIONAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT 49218.26 =	0.245 MILES
LENGTH OF STRUCTURE TIP PROJECT 49218.26 =	0.038 MILE
TOTAL LENGTH OF TIP PROJECT 49218.26 =	0.283 MILES

PLANS PREPARED BY:
INFRASTRUCTURE
CONSULTING & ENGINEERING
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 919-856-0640
License #: F-1528

2024 STANDARD SPECIFICATIONS

LETTING DATE:
05/19/2026

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
HIGHWAY DIVISION 6
558 GILLESPIE ST.
FAYETTEVILLE, NC 28301

SAMER N. AL-JAMAL, P.E.
PROJECT ENGINEER

NICHOLAS D'AIUTO, P.E.
PROJECT DESIGN ENGINEER

STRUCTURES ENGINEER



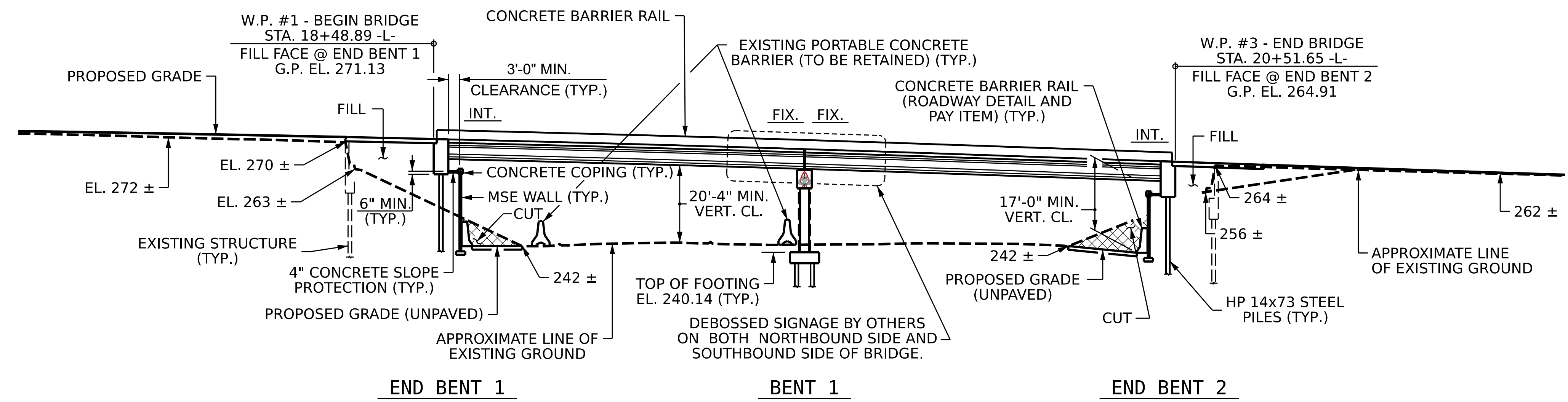
Signed by:
Nicholas D'Auto
88380C2473604C1... P.E.
SIGNATURE: 3/16/2026

17+00 18+00 19+00 20+00 21+00 22+00 23+00

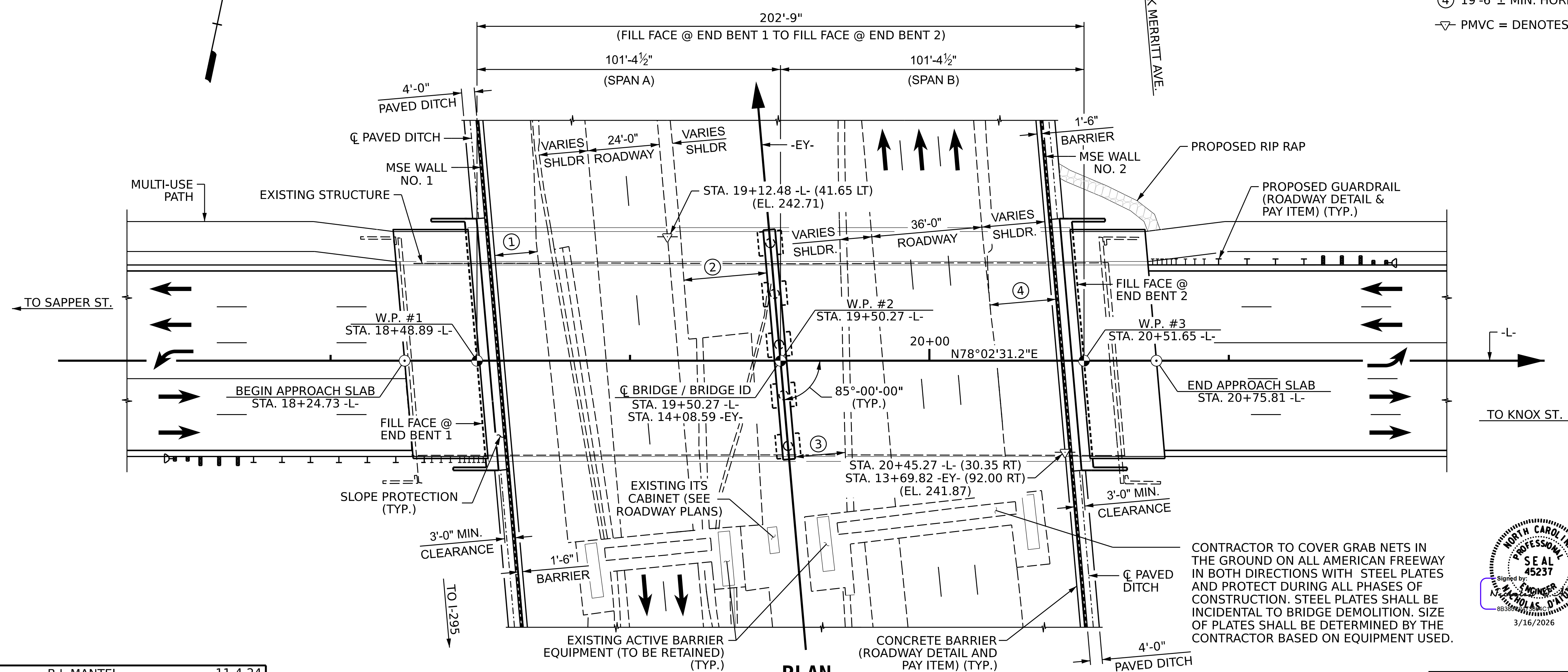
(-).0.4429% (-).3.4972%
 PI STA. = 18+00.00 -L-
 EL. = 273.71'
 VC = 400.00'
 -L- GRADE DATA

(-).3.4972% (-).2.8222%
 PI STA. = 21+60.00 -L-
 EL. = 261.12'
 VC = 180.00'
 -L- GRADE DATA

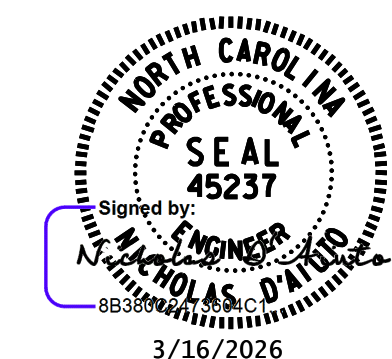
NOTES:
 THE EXISTING ACTIVE BARRIER EQUIPMENT SHALL NOT BE DISTURBED DURING CONSTRUCTION.
 CONTRACTOR SHALL PROTECT EXISTING ITS CABINET AND EXISTING ACTIVE BARRIER EQUIPMENT DURING CONSTRUCTION TO PREVENT DAMAGE.
 FOAM FILL UNDER EXISTING APPROACH SLABS AND SLOPE PROTECTION SHALL BE REMOVED.



- ① 15'-8"± MIN. HORIZ. CL. FROM E.O.P. TO MSE WALL
- ② 27'-8"± MIN. HORIZ. CL. FROM E.O.P. TO FACE OF BENT CAP
- ③ 16'-9"± MIN. HORIZ. CL. FROM E.O.P. TO FACE OF BENT CAP
- ④ 19'-6"± MIN. HORIZ. CL. FROM E.O.P. TO MSE WALL
- ▽ PMVC = DENOTES POINT OF MINIMUM VERTICAL CLEARANCE



CONTRACTOR TO COVER GRAB NETS IN THE GROUND ON ALL AMERICAN FREEWAY IN BOTH DIRECTIONS WITH STEEL PLATES AND PROTECT DURING ALL PHASES OF CONSTRUCTION. STEEL PLATES SHALL BE INCIDENTAL TO BRIDGE DEMOLITION. SIZE OF PLATES SHALL BE DETERMINED BY THE CONTRACTOR BASED ON EQUIPMENT USED.



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
14+08.59 -EY-
 SHEET 1 OF 4 REPLACES BRIDGE NO. H4072

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER ALL AMERICAN
 FREEWAY (SR 1007) BETWEEN
 SAPPER ST. AND KNOX RD.

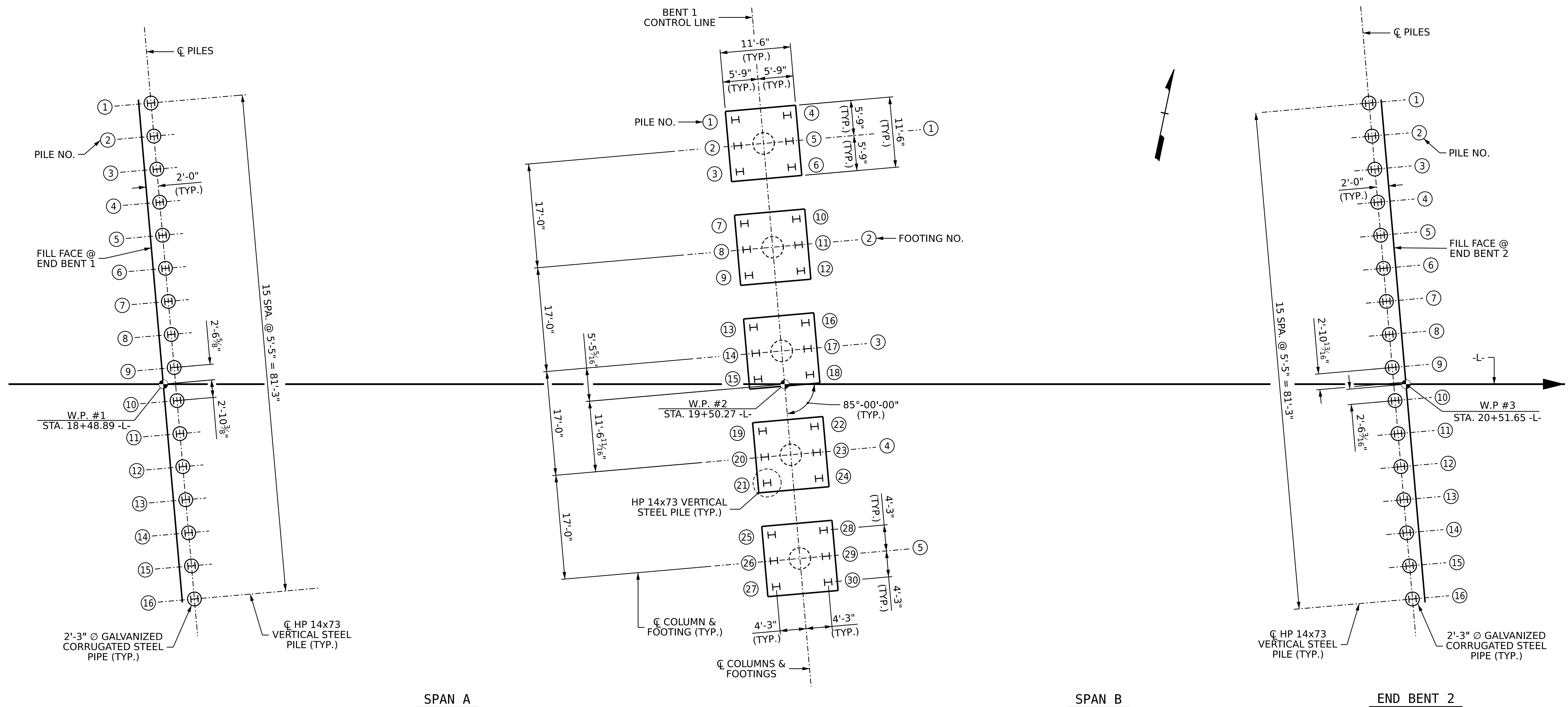
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NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

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DRAWN BY : B.J. MANTEI DATE : 11-4-24
 CHECKED BY : N. D'AIUTO DATE : 11-4-24
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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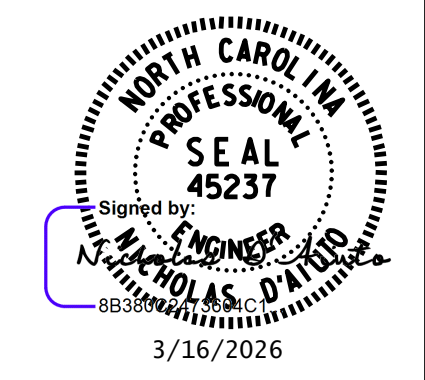
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LEGEND

	HP 14x73 VERTICAL STEEL PILES
	11'-6" X 11'-6" X 4'-0" FOOTING

FOUNDATION LAYOUT
 PILES ARE DIMENSIONED FROM W.P. TO CL PILE AT BOTTOM OF CAP ORIENT AS SHOWN



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER ALL AMERICAN FREEWAY (SR 1007) BETWEEN SAPPER ST. AND KNOX RD.

DRAWN BY :	B. J. MANTEI	DATE :	4-25-25
CHECKED BY :	N. D'AIUTO	DATE :	4-28-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

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

TOTAL SHEETS: 48

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 No. 1, Piles 1 - 16	16	305	262.73	90			440	8						
Bent No. 1, Piles 1 - 30	30	270	237.14	70			390	15						
End Bent No. 2, Piles 1 - 16	16	305	256.67	105			440	8						
TOTAL QUANTITY:	62			5220				31						

* 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 No. 1, Piles 1 - 16	305			0.70		
Bent No. 1, Piles 1 - 30	270			0.70		
End Bent No. 2, Piles 1 - 16	305			0.70		

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent No. 1	90	1
Bent No. 1	75	
End Bent No. 2	105	1
TOTAL QUANTITY:		2

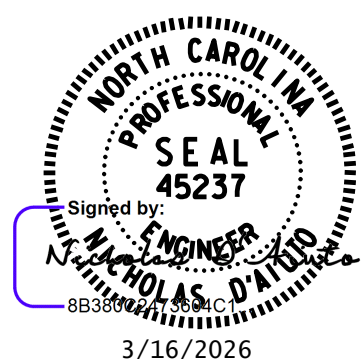
PILE FOUNDATION TABLES

NOTES:

1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS BY A NORTH CAROLINA PROFESSIONAL ENGINEER (MICHAEL J. SIMPSON, #032672) ON 06-02-25.
2. TOTAL PILE FRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E. THE NUMBER OF PILES WITH A DRIVING RESISTANCE.
3. THE ENGINEER MAY ADJUST THE QUANTITY FOR DPT TESTING AND PIPE PILE PLATES WHEN NECESSARY.
4. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. INSTALL PILE SLEEVES BEFORE CONSTRUCTING THE MECHANICALLY STABILIZED EARTH (MSE) WALL AT END BENT NO. 1 AND END BENT NO. 2.
6. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 35,000 TO 50,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1, BENT NO. 1, AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 49218.26
CUMBERLAND COUNTY
 STATION: 19+50.27 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER ALL AMERICAN
 FREEWAY (SR 1007) BETWEEN
 SAPPER ST. AND KNOX RD.

DRAWN BY : K. C. SAMUDRALA DATE : 5-7-25
 CHECKED BY : N. D'AIUTO DATE : 5-7-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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REVISIONS						SHEET NO.
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2			4			48

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NOTES

- ASSUMED LIVE LOAD = HL-93, HET-1070 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 "STANDARD NOTES".
- 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 ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

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

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE EXISTING STRUCTURE (BRIDGE #510231) CONSISTING OF (2 SPANS (1 @ 125'-6" AND 1 @ 112'-6") CONTINUOUS BEAM SPANS; CLEAR ROADWAY WIDTH = 64'-0" REINFORCED CONCRETE DECK ON STEEL BEAMS ON REINFORCED CONCRETE CAPS AND COLUMNS AND LOCATED @ THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIME MAY BE POSTED AND MAY BE REDUCED AS NECESSARY DURING THE LIFE OF THE PROJECT.

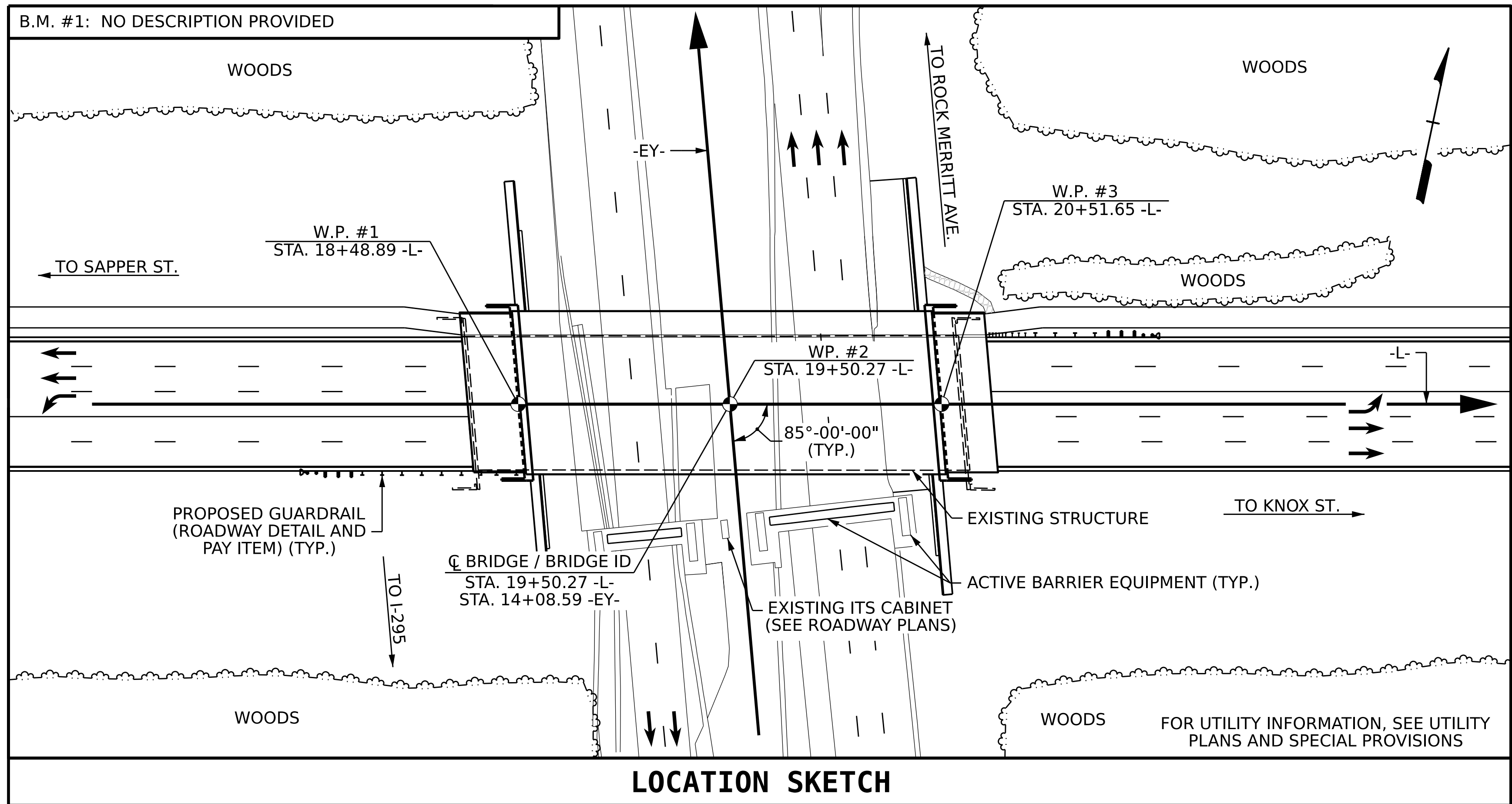
FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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 COST 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 19+50.27 -L-".

SEE MSE WALL PLANS FOR WALL QUANTITIES AND PAY ITEMS SUCH AS 4" CONCRETE SLOPE PROTECTION AND MSE WALL SQUARE FOOTAGE.

FOR WALL ENVELOPES AND DETAILS, SEE MSE WALL SHEETS W-1 THRU W-6.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 108 FT LEFT AND 92 FT RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 19+50.27 -L-	ASBESTOS ASSESMENT	FOUNDATION EXCAVATION FOR BENT 1 AT STA. 19+50.27 -L-	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 19+50.27 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STA. 19+50.27 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE					15,701	17,826					20	1,993.33
END BENT 1							58.3		10,387			
BENT 1							193.1		32,331	2,263		
END BENT 2							57.2		10,282			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	15,701	17,826	308.6	LUMP SUM	53,000	2,263	20	1,993.33

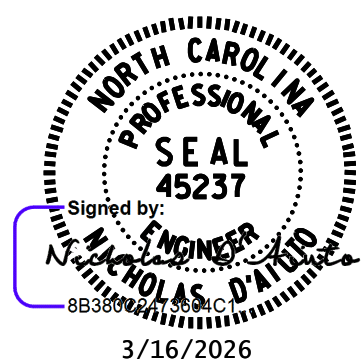
TOTAL BILL OF MATERIAL

	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 PILES	HP 14 X 73 STEEL PILES	PILE REDRIVES	DYNAMIC PILE TESTING	TWO BAR METAL RAIL	1 1/2" GALVANIZED STEEL PIPE RAIL	CONCRETE BARRIER RAIL	1'-2" X 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
	EACH	NO.	LIN. FT.	EA.	EA.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE						193.23	243.40	201.08	452.16		
END BENT 1	16	16	1,440	8					26		
BENT 1	30	30	2,100	15							
END BENT 2	16	16	1,680	8					26		
TOTAL	62	62	5,220	31	2	193.23	243.40	201.08	452.16	52	LUMP SUM

▲ QUANTITY INCLUDES BOTH PEDESTRIAN SAFETY RAIL AND TWO BAR METAL RAIL.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
14+08.59 -EY-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER ALL AMERICAN
 FREEWAY (SR 1007) BETWEEN
 SAPPER ST. AND KNOX RD.

DRAWN BY : **B. J. MANTEI** DATE : **5-7-25**
 CHECKED BY : **N. D'AIUTO** DATE : **5-7-25**
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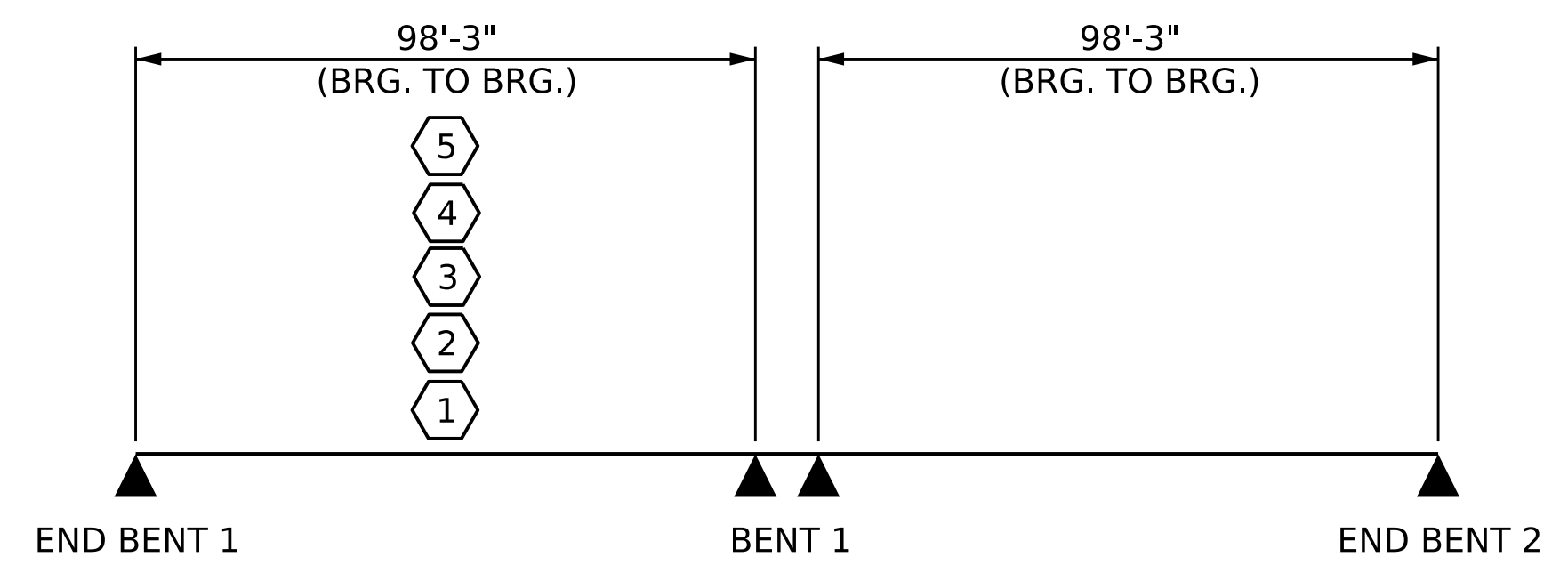
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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE								
						LIVE-LOAD FACTORS (%LU)	MOMENT					SHEAR					LIVE-LOAD FACTORS (%LU)	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		
DESIGN LOAD RATING	HL-93 (Inventory)	N/A	①	2.16	-	1.75	0.71	2.22	A	EL	49.13	0.84	4.03	A	I	88.99	0.80	0.67	2.16	A	I	49.13		
	HL-93 (Operating)	N/A		2.87	-	1.35	0.71	2.87	A	EL	49.13	0.84	5.27	A	I	88.99	N/A	-	-	-	-	-		
	HS-20 (Inventory)	36.000	②	3.00	108.000	1.75	0.71	3.08	A	EL	49.13	0.84	5.41	A	I	9.26	0.80	0.67	3.00	A	I	49.13		
	HS-20 (Operating)	36.000		3.99	143.640	1.35	0.71	3.99	A	EL	49.13	0.84	7.06	A	I	9.26	N/A	-	-	-	-	-		
	HET 1070 (Inventory)	137.800	⑤	1.02	140.556	1.75	0.71	1.02	A	EL	49.13	0.84	1.22	A	I	29.19	0.80	0.67	1.05	A	I	49.13		
	HET 1070 (Operating)	137.800		1.32	181.896	1.35	0.71	1.32	A	EL	39.16	0.84	1.41	A	I	0.00	N/A	-	-	-	-	-		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		7.12	96.120	1.40	0.71	9.12	A	EL	49.13	0.84	16.96	A	I	9.26	0.80	0.67	7.12	A	I	49.13	
		SNGARBS2	20.000		5.14	102.800	1.40	0.71	6.61	A	EL	49.13	0.84	11.84	A	I	88.99	0.80	0.71	5.14	A	EL	39.16	
		SNAGRIS2	22.000		4.78	105.160	1.40	0.71	6.17	A	EL	39.16	0.84	10.91	A	I	9.26	0.80	0.71	4.78	A	EL	39.16	
		SNCOTTS3	27.250		3.54	96.465	1.40	0.71	4.53	A	EL	49.13	0.84	8.37	A	I	9.26	0.80	0.67	3.54	A	I	49.13	
		SNAGGRS4	37.925		2.90	109.983	1.40	0.71	3.72	A	EL	49.13	0.84	6.80	A	I	9.26	0.80	0.67	2.90	A	I	49.13	
		SNS5A	35.550		2.84	100.962	1.40	0.71	3.64	A	EL	49.13	0.84	6.83	A	I	88.99	0.80	0.67	2.84	A	I	49.13	
		SNS6A	39.950		2.58	103.071	1.40	0.71	3.31	A	EL	49.13	0.84	6.17	A	I	88.99	0.80	0.67	2.58	A	I	49.13	
		SNS7B	42.000		2.46	103.320	1.40	0.71	3.15	A	EL	49.13	0.84	6.00	A	I	88.99	0.80	0.67	2.46	A	I	49.13	
		TNAGRIT3	33.000		3.14	103.620	1.40	0.71	4.03	A	EL	49.13	0.84	7.41	A	I	9.26	0.80	0.67	3.14	A	I	49.13	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNT4A	33.075		3.15	104.186	1.40	0.71	4.04	A	EL	49.13	0.84	7.27	A	I	88.99	0.80	0.67	3.15	A	I	49.13	
		TNT6A	41.600		2.55	106.080	1.40	0.71	3.27	A	EL	49.13	0.84	6.29	A	I	88.99	0.80	0.67	2.55	A	I	49.13	
		TNT7A	42.000		2.55	107.100	1.40	0.71	3.27	A	EL	49.13	0.84	6.18	A	I	88.99	0.80	0.67	2.55	A	I	49.13	
		TNT7B	42.000		2.60	109.200	1.40	0.71	3.35	A	EL	49.13	0.84	5.89	A	I	88.99	0.80	0.71	2.60	A	EL	39.16	
		TNAGRIT4	43.000		2.51	107.930	1.40	0.71	3.21	A	EL	49.13	0.84	5.72	A	I	9.26	0.80	0.67	2.51	A	I	49.13	
		TNAGT5A	45.000		2.37	106.650	1.40	0.71	3.04	A	EL	49.13	0.84	5.61	A	I	88.99	0.80	0.67	2.37	A	I	49.13	
		TNAGT5B	45.000	③	2.35	105.750	1.40	0.71	3.02	A	EL	49.13	0.84	5.44	A	I	88.99	0.80	0.67	2.35	A	I	49.13	
		EMERGENCY VEHICLE (EV)	EV2	28.750		3.61	103.788	1.30	0.71	5.01	A	EL	49.13	0.84	8.88	A	I	9.26	0.80	0.71	3.61	A	EL	39.16
		EV3	43.000	④	2.39	102.770	1.30	0.71	3.30	A	EL	49.13	0.84	5.92	A	I	88.99	0.80	0.67	2.39	A	I	49.13	



LRFR SUMMARY

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

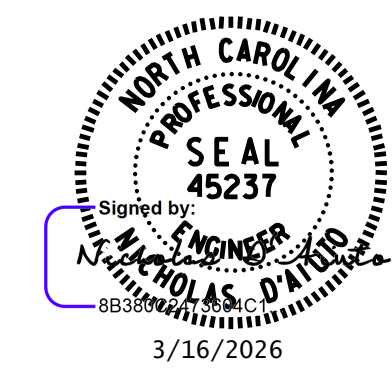
⑤ DESIGN LOAD RATING (HET-1070)

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS**

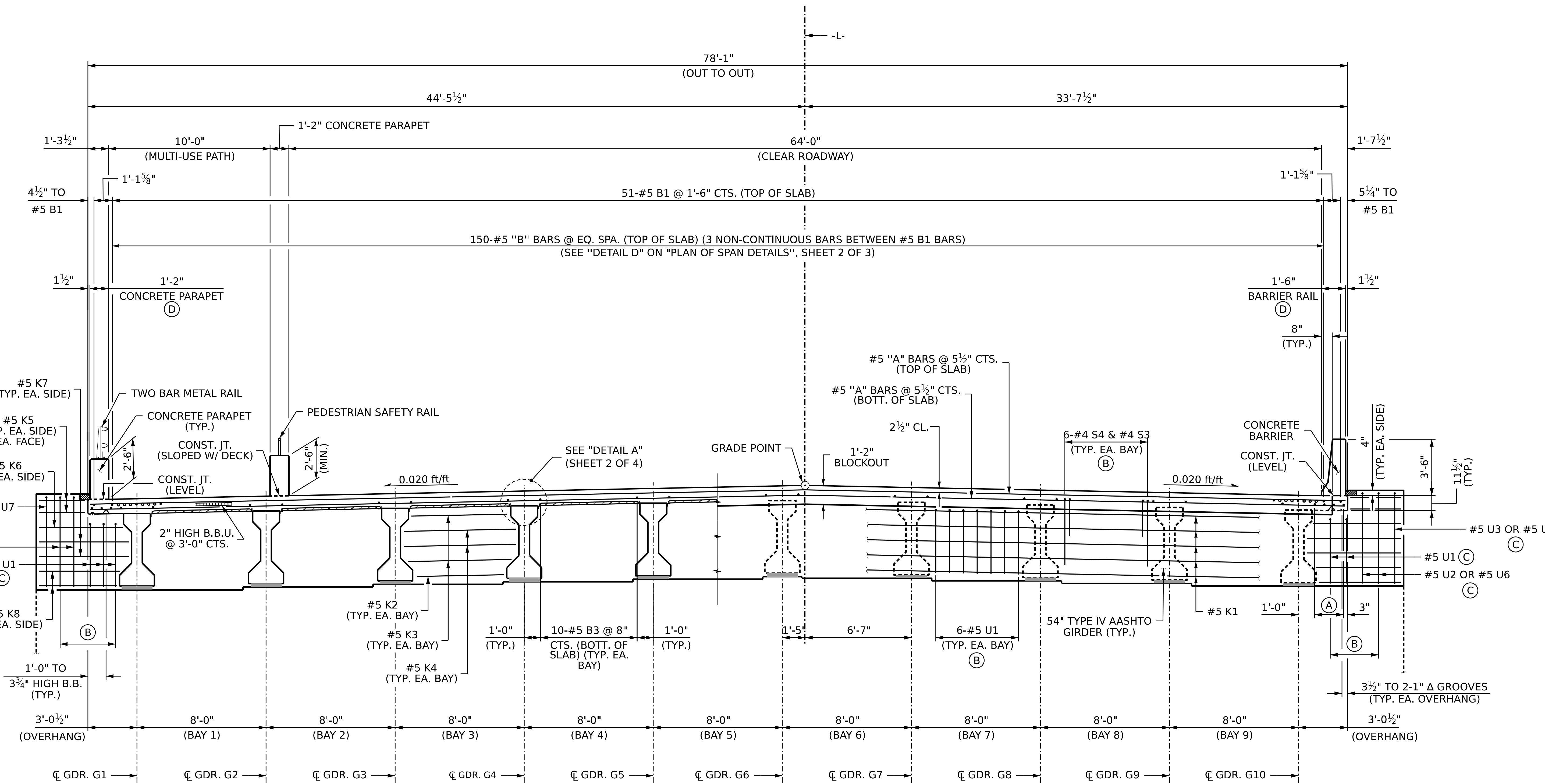
(NON-INTERSTATE TRAFFIC)

DRAWN BY : **B. J. MANTEI** DATE : **4-30-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-30-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
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2			4			48

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NOTES:

- (A) 4-#5 B3 @ EQ. SPA. (BOTT. OF SLAB) (TYP. EA. OVERHANG)
- (B) #5 'S' BARS AND/OR #5 'U' BARS TO MATCH #5 'V' BARS IN INTEGRAL END BENT. FOR ADDITIONAL DETAILS AND INFORMATION SEE "PLAN OF SPAN @ INTEGRAL END BENT" DETAIL ON "PLAN OF SPAN DETAILS" SHEET 3 OF 3.
- (C) FOR ADDITIONAL DETAILS AND INFORMATION SEE SHEET 5 OF 6, SHEET 6 OF 6, AND "PLAN OF SPAN @ INTEGRAL END BENT" DETAIL ON "PLAN OF SPAN DETAILS" SHEET 3 OF 3.
- (D) AESTHETICS NOT SHOWN. SEE "BRIDGE AESTHETICS DETAILS" SHEETS FOR ADDITIONAL INFORMATION & DETAILS.
- INDICATES CONTINUOUS REINFORCING STEEL.
- INDICATES NON-CONTINUOUS REINFORCING STEEL.

FOR NUMBER OF BAR RUNS FOR THE 'B' AND 'K' BARS, SEE "PLAN OF SPANS", SHEETS.

HALF-SECTION @ FRONT FACE

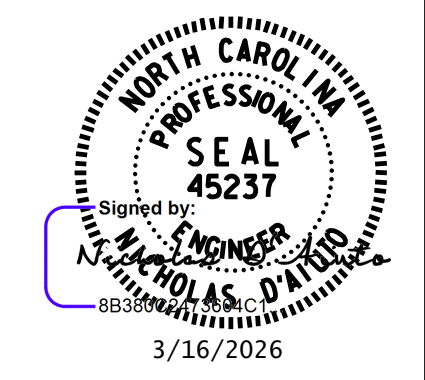
HALF-SECTION @ FILL FACE

TYPICAL SECTION @ INTEGRAL END BENT
 METAL STAY-IN-PLACE FORMS NOT SHOWN FOR CLARITY.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
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SHEET 1 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
TYPICAL SECTION



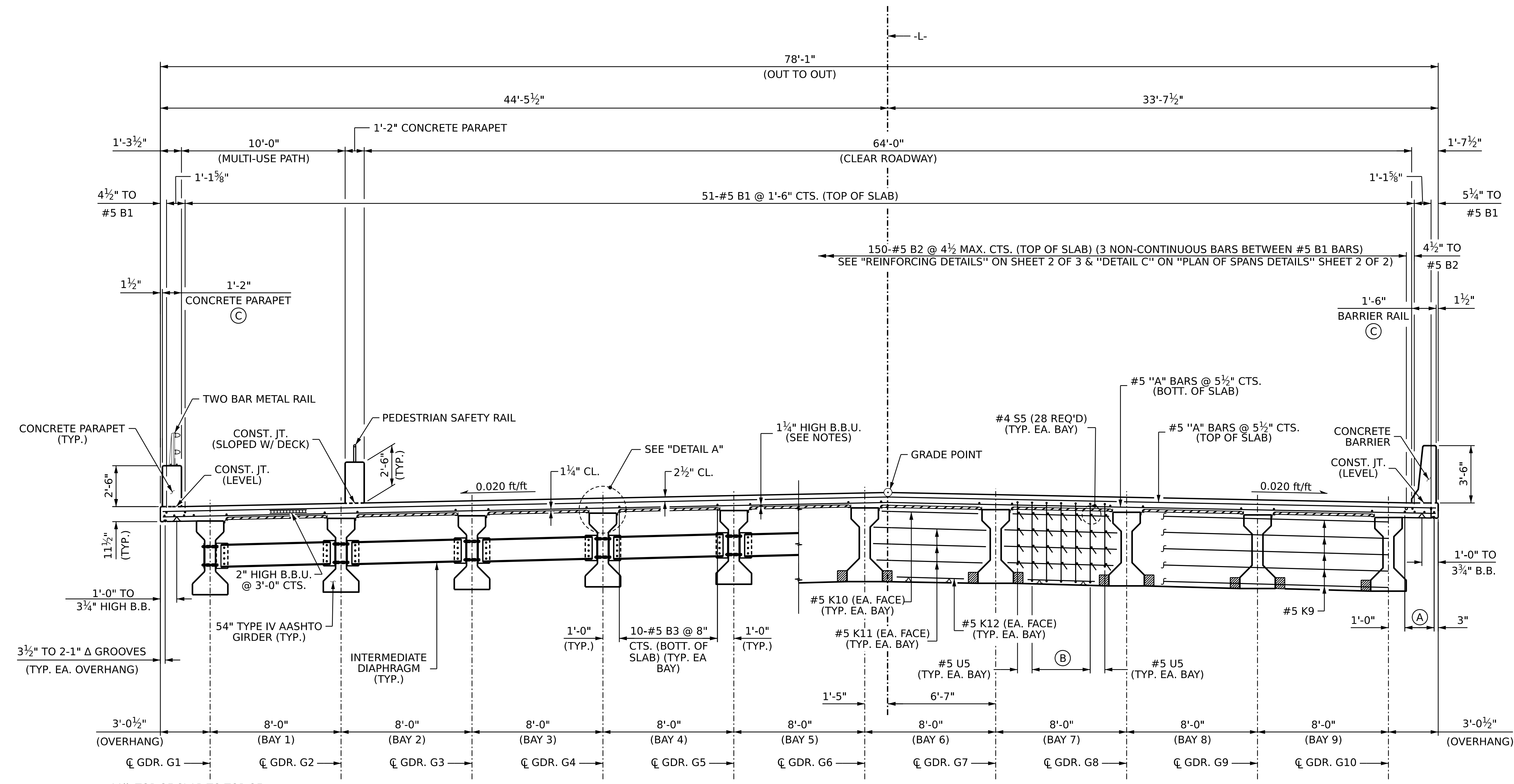
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CHECKED BY :	N. D'AIUTO	DATE :	4-4-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

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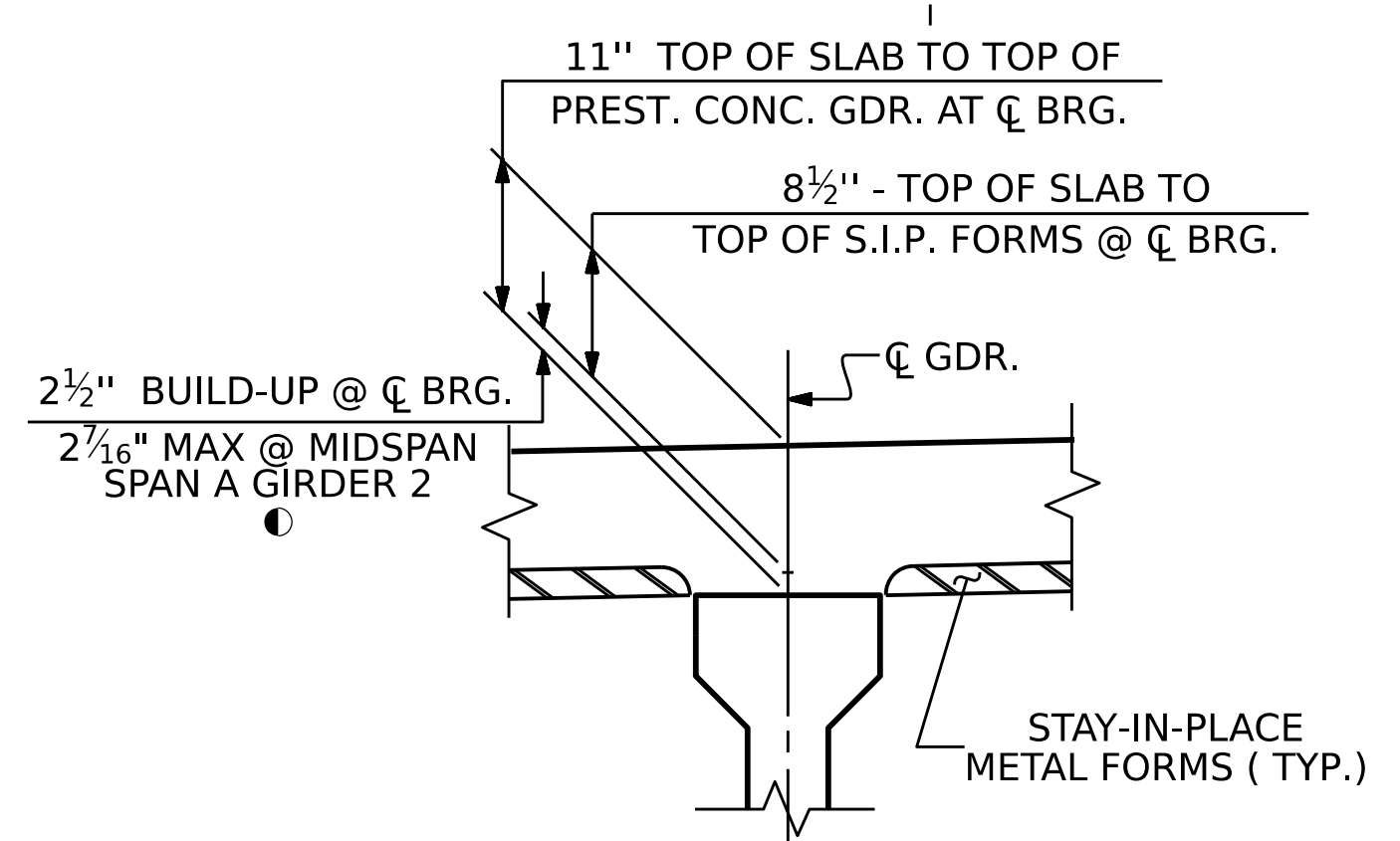
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HALF-SECTION @ INTERMEDIATE DIAPHRAGMS

HALF-SECTION @ BENT



DETAIL A

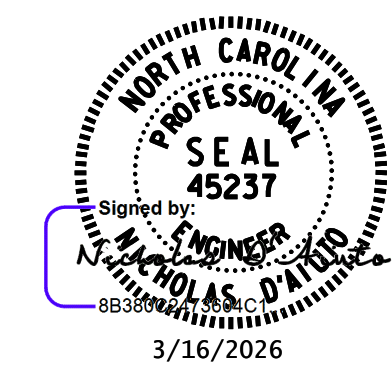
● BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

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.
 FOR NUMBER OF BAR RUNS FOR THE "B" BARS, SEE "PLAN OF SPANS" SHEETS.
 LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
 PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

TYPICAL SECTION

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.
 FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.
 ● INDICATES CONTINUOUS REINFORCING STEEL.
 ○ INDICATES NON-CONTINUOUS REINFORCING STEEL.
 (A) 4-#5 B3 @ EQ. SPA. (BOTT. OF SLAB) (TYP. EA. OVERHANG)
 (B) 5-#5 U4 @ 1'-0" MAX. CTS. (TYP. EA. BAY)
 (C) AESTHETICS NOT SHOWN SEE "BRIDGE AESTHETICS DETAILS" SHEETS FOR ADDITIONAL INFORMATION & DETAILS.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



SHEET 2 OF 6

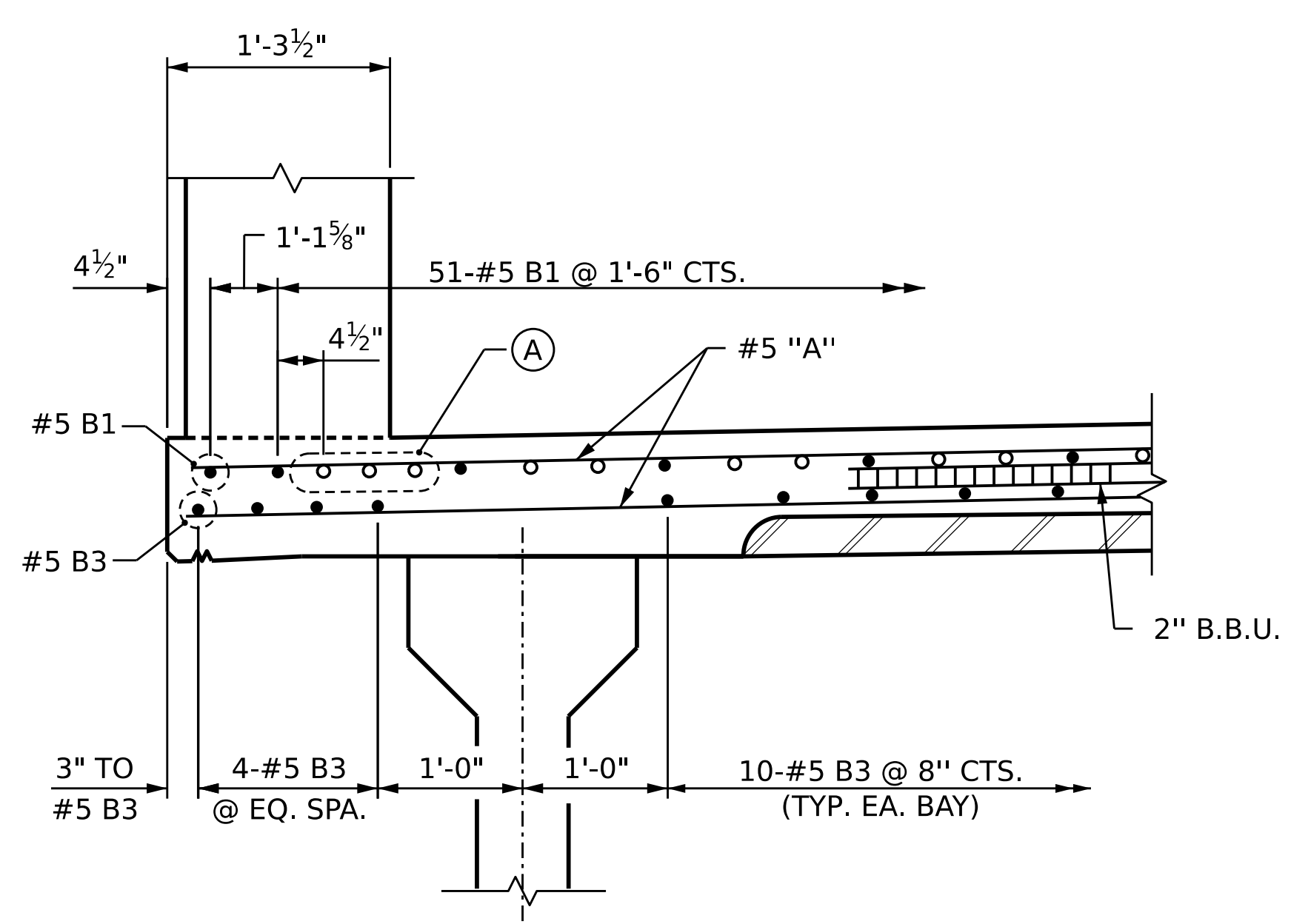
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
TYPICAL SECTION

DRAWN BY :	B.J. MANTEI	DATE :	3-2-25
CHECKED BY :	N. D'AIUTO	DATE :	4-5-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

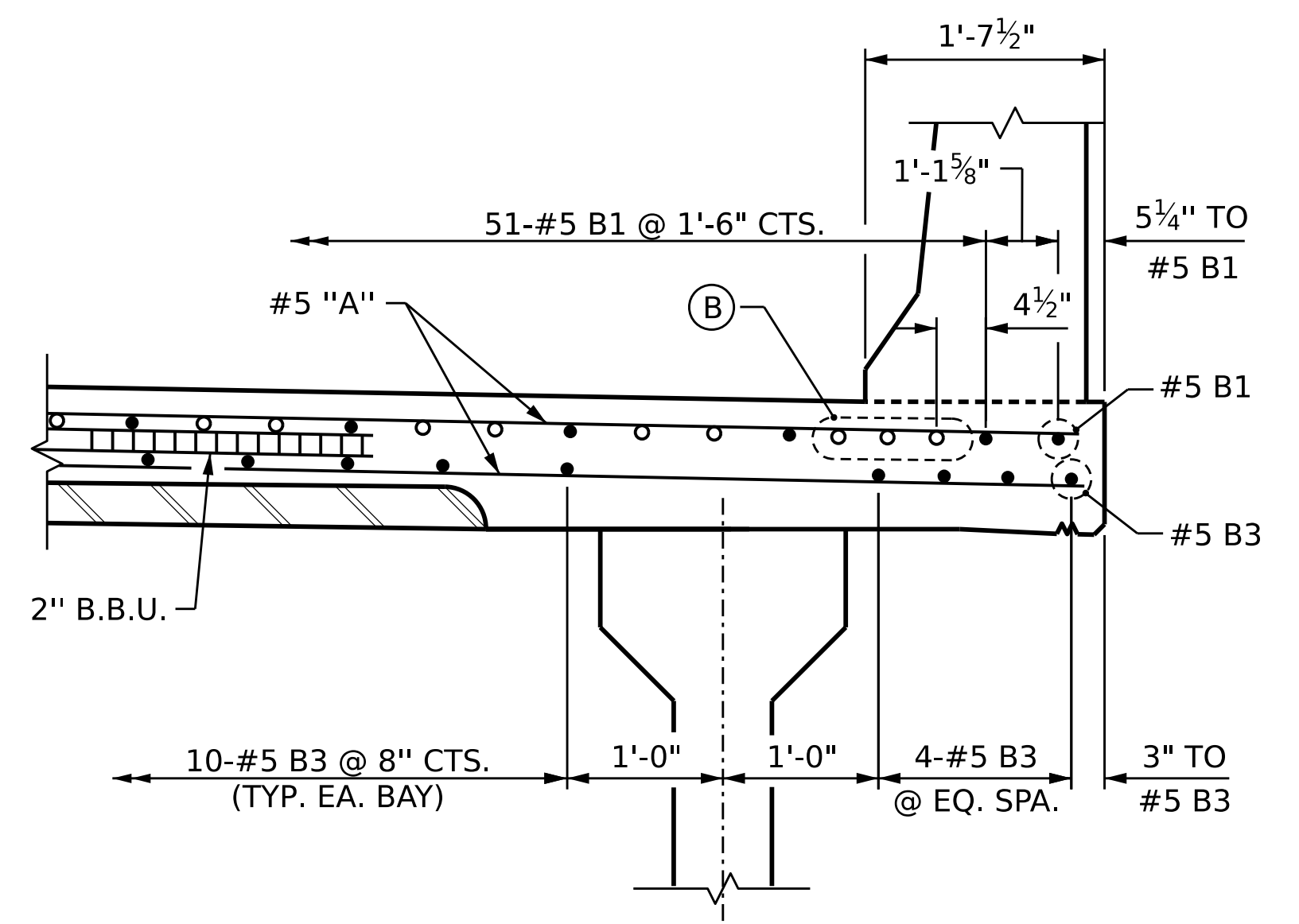
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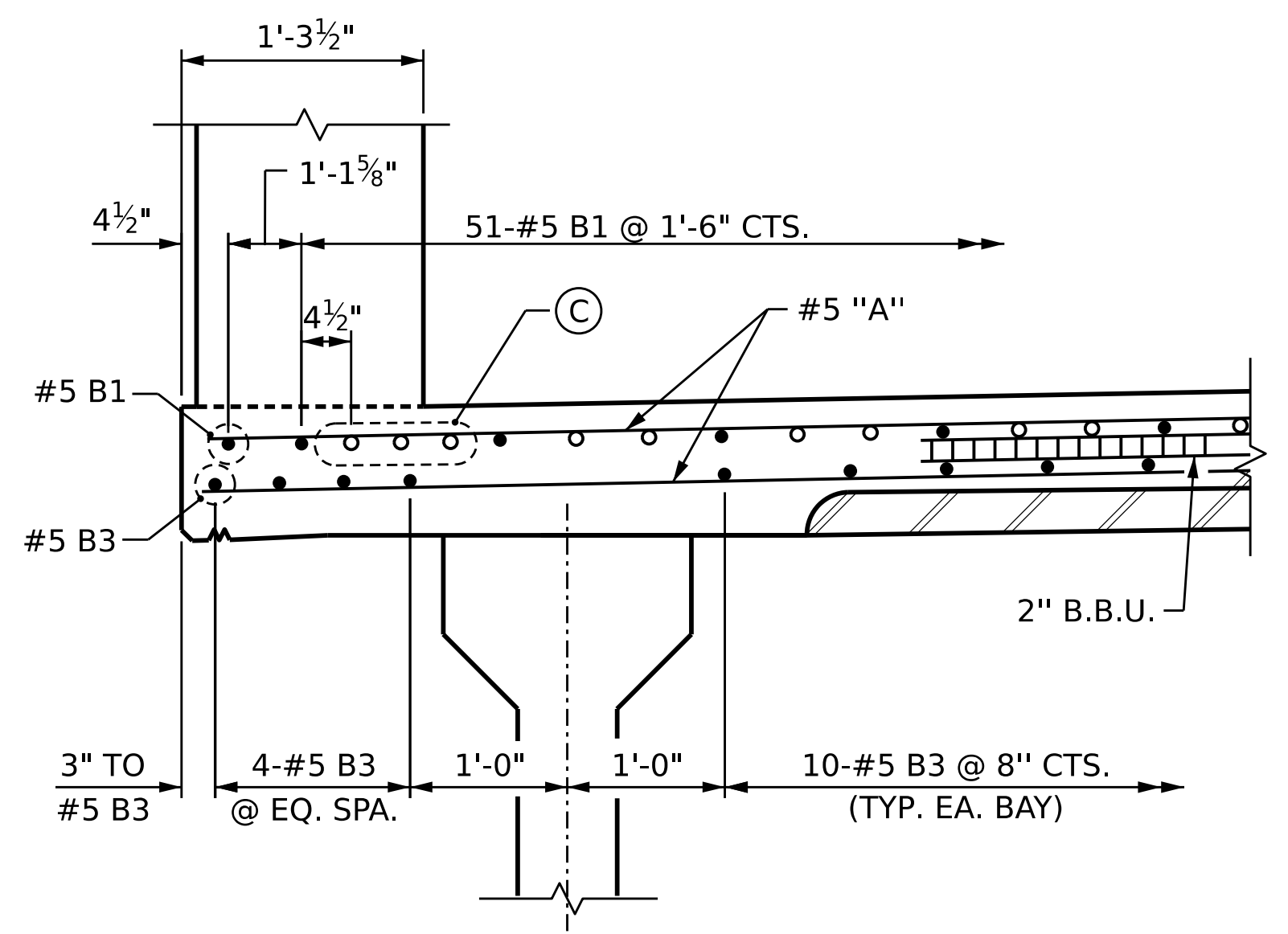
REINFORCING DETAIL @ INTEGRAL END BENT

LEFT OVERHANG SHOWN
 (A) 3-#5 "B" NON-CONTINUOUS REINFORCING BETWEEN #5 B1 CONTINUOUS REINF.
 AESTHETICS NOT SHOWN. SEE "BRIDGE AESTHETICS DETAILS" SHEETS FOR ADDITIONAL INFORMATION & DETAILS.



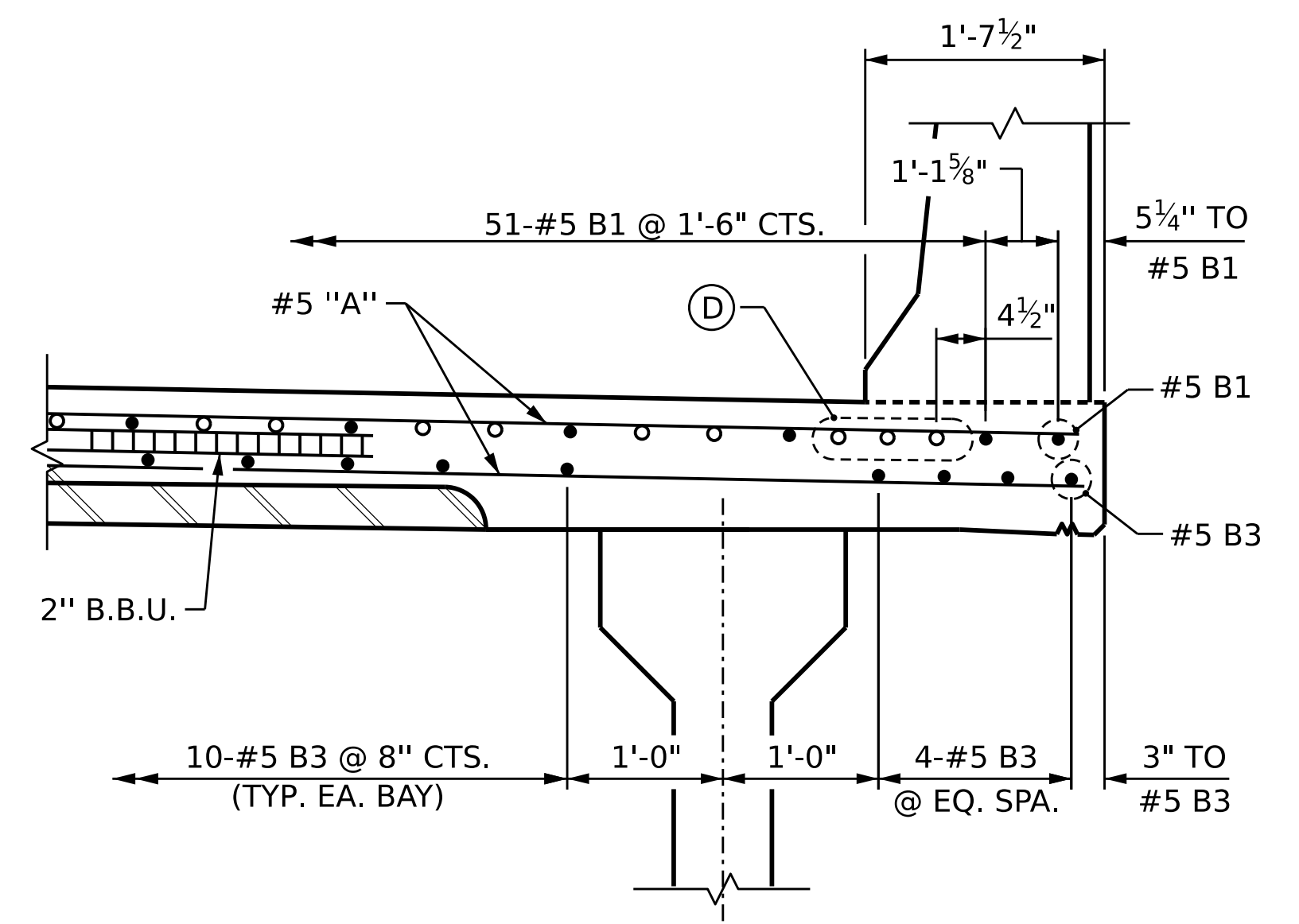
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 (B) 3-#5 "B" NON-CONTINUOUS REINFORCING BETWEEN #5 B1 CONTINUOUS REINF.
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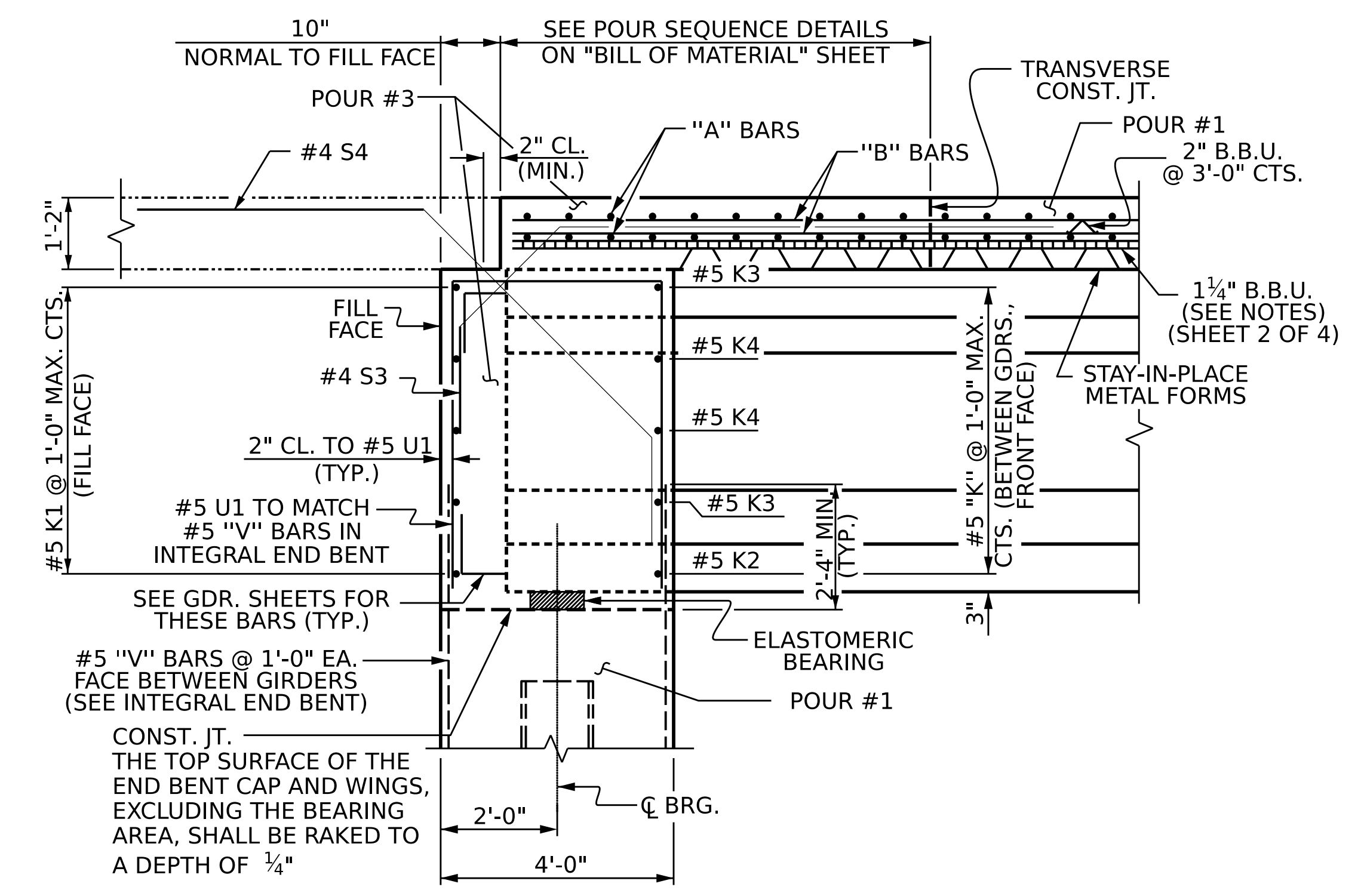
REINFORCING DETAIL @ BENT

LEFT OVERHANG SHOWN
 (C) 3-#5 B2 NON-CONTINUOUS REINFORCING BETWEEN #5 B1 CONTINUOUS REINF.
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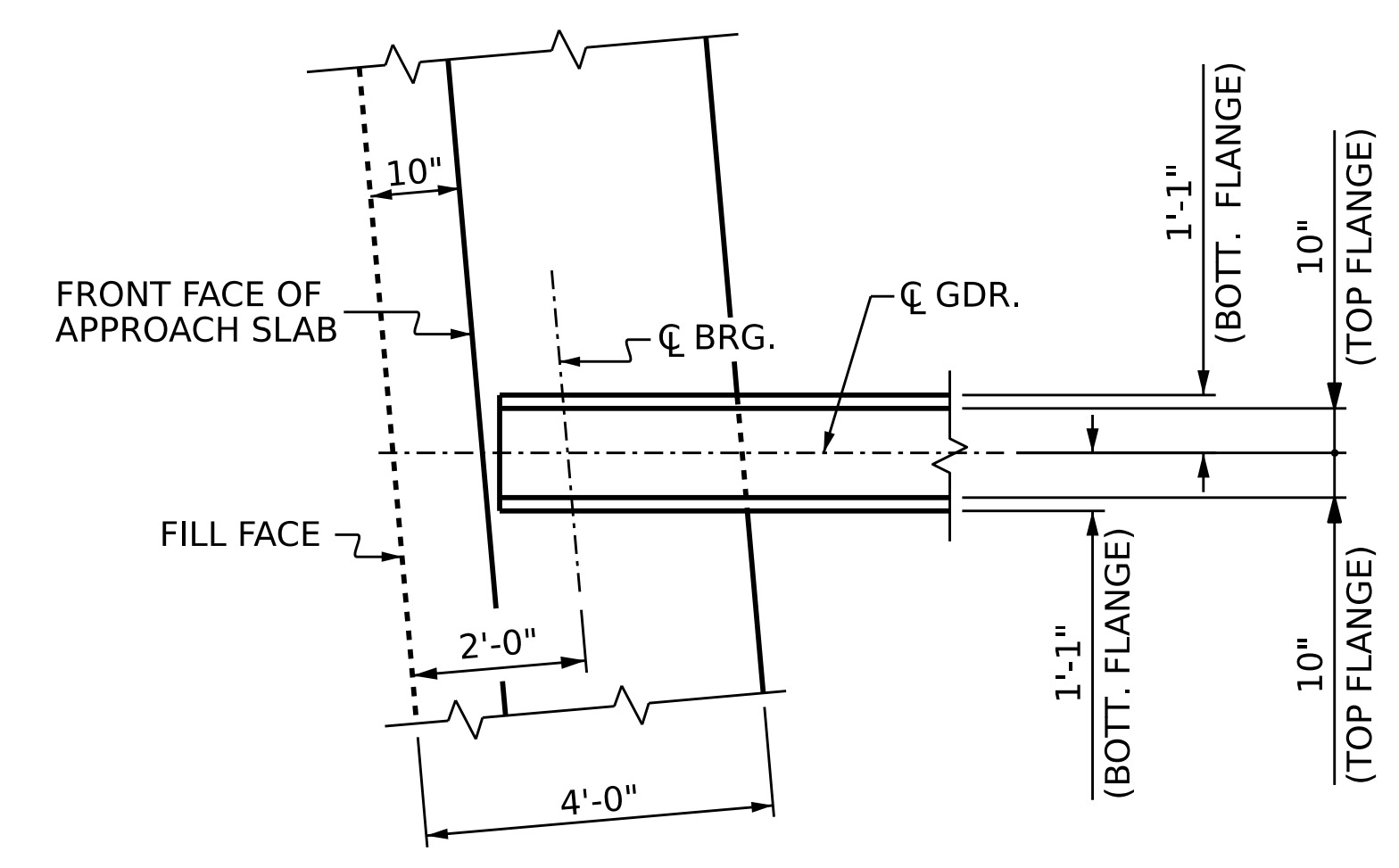


REINFORCING DETAIL @ BENT

RIGHT OVERHANG SHOWN
 (D) 3-#5 B2 NON-CONTINUOUS REINFORCING BETWEEN #5 B1 CONTINUOUS REINF.
 AESTHETICS NOT SHOWN. SEE "BRIDGE AESTHETICS DETAILS" SHEETS FOR ADDITIONAL INFORMATION & DETAILS.



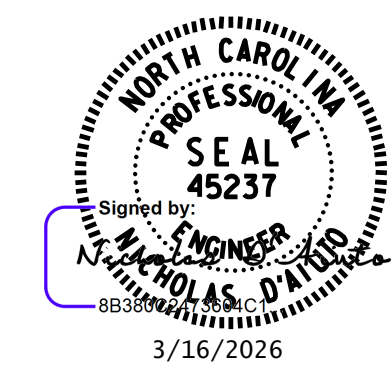
END OF GIRDER DETAIL AT INTEGRAL END BENT



PLAN OF GIRDER AT INTEGRAL END BENT

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 3 OF 6



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

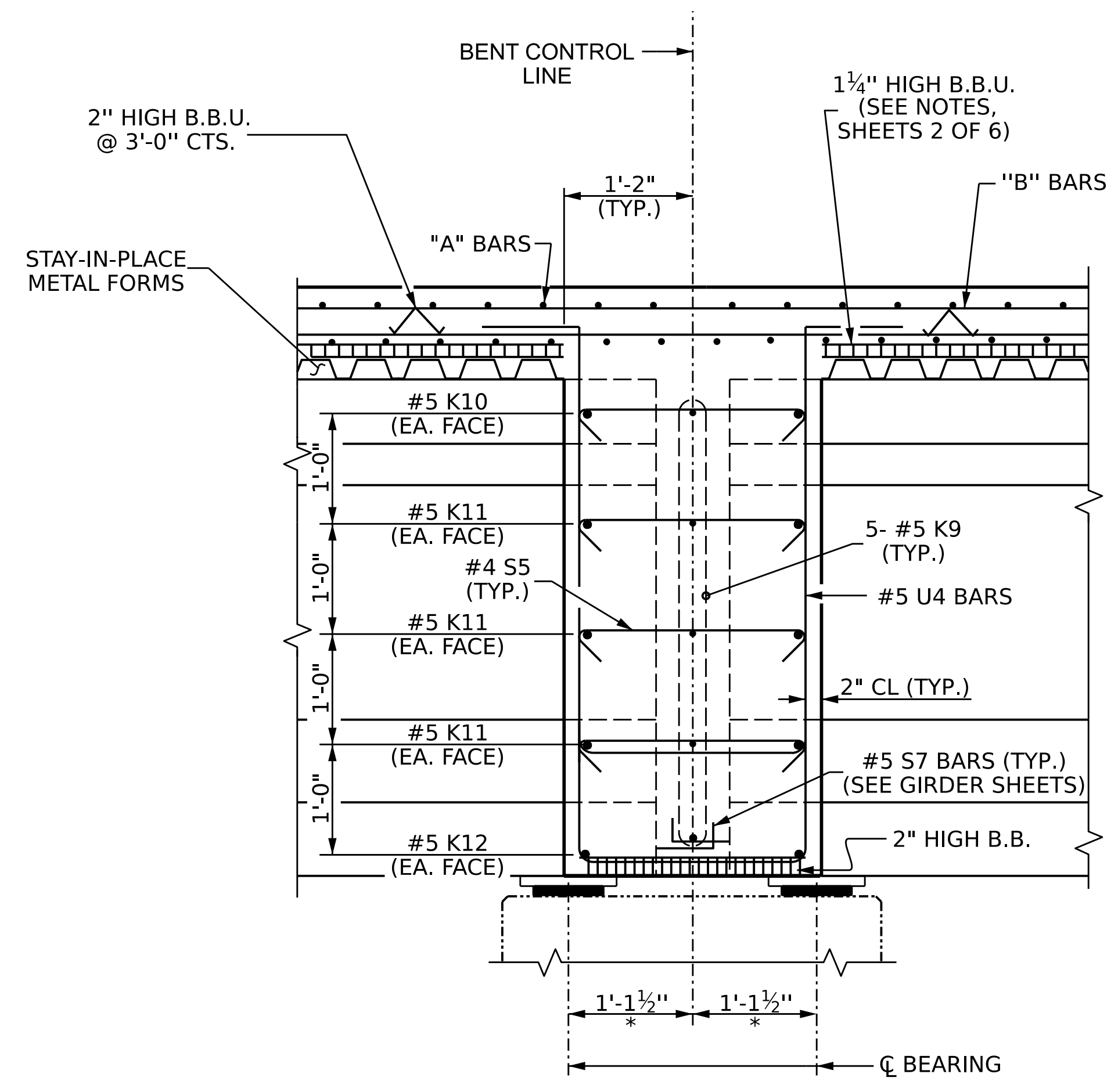
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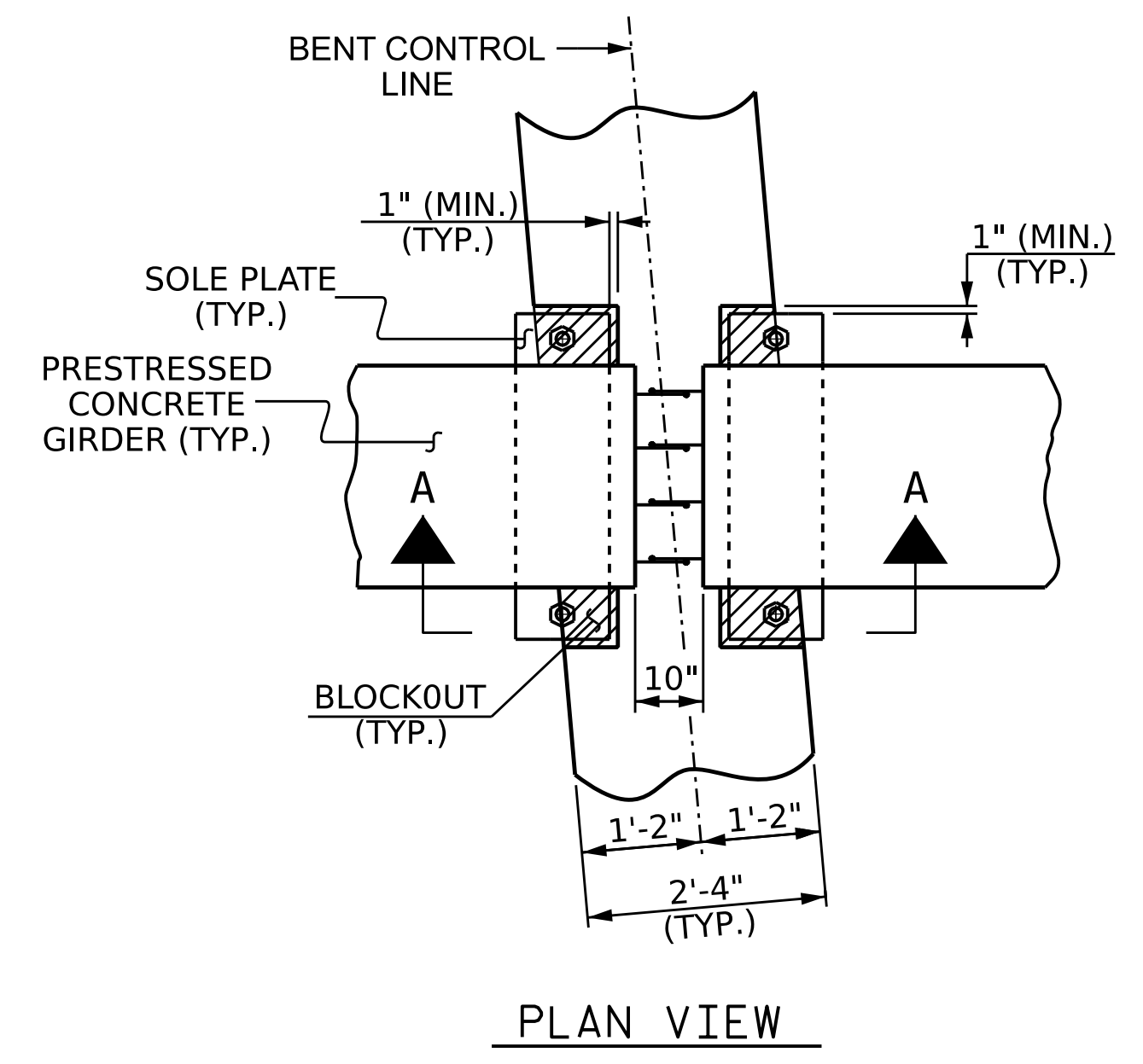
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 CHECKED BY : **N. D'AIUTO** DATE : **4-4-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

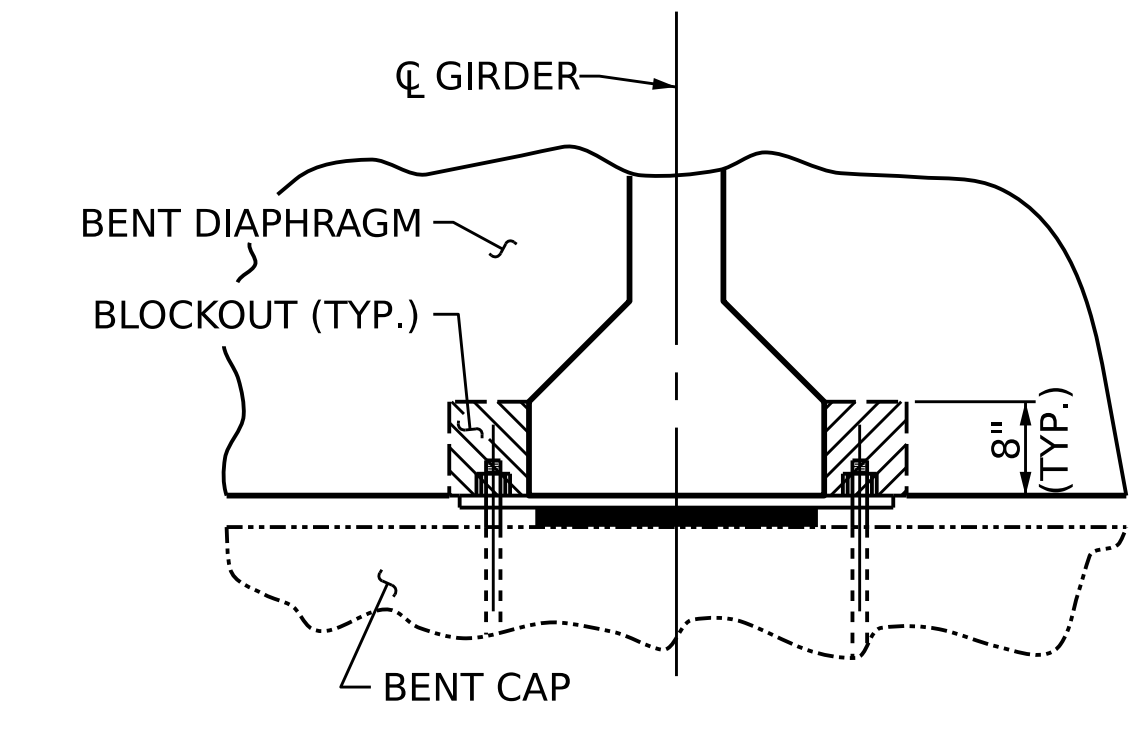
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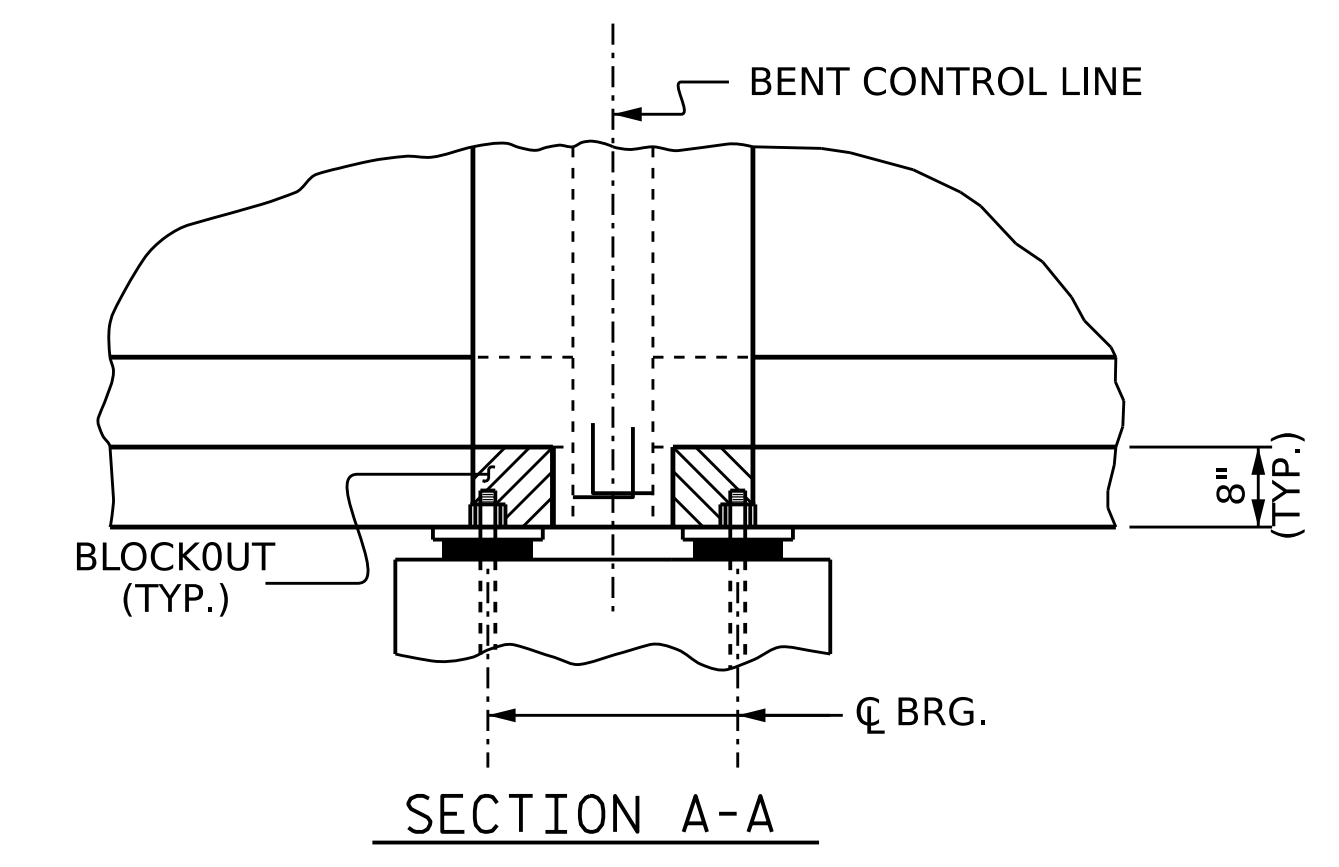
SECTION THRU CONTINUOUS BENT DIAPHRAGM
 * MEASURED ALONG CL GIRDER



PLAN VIEW



END VIEW



SECTION A-A

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. 49218.26
CUMBERLAND COUNTY
 STATION: 19+50.27 -L-

SHEET 4 OF 6



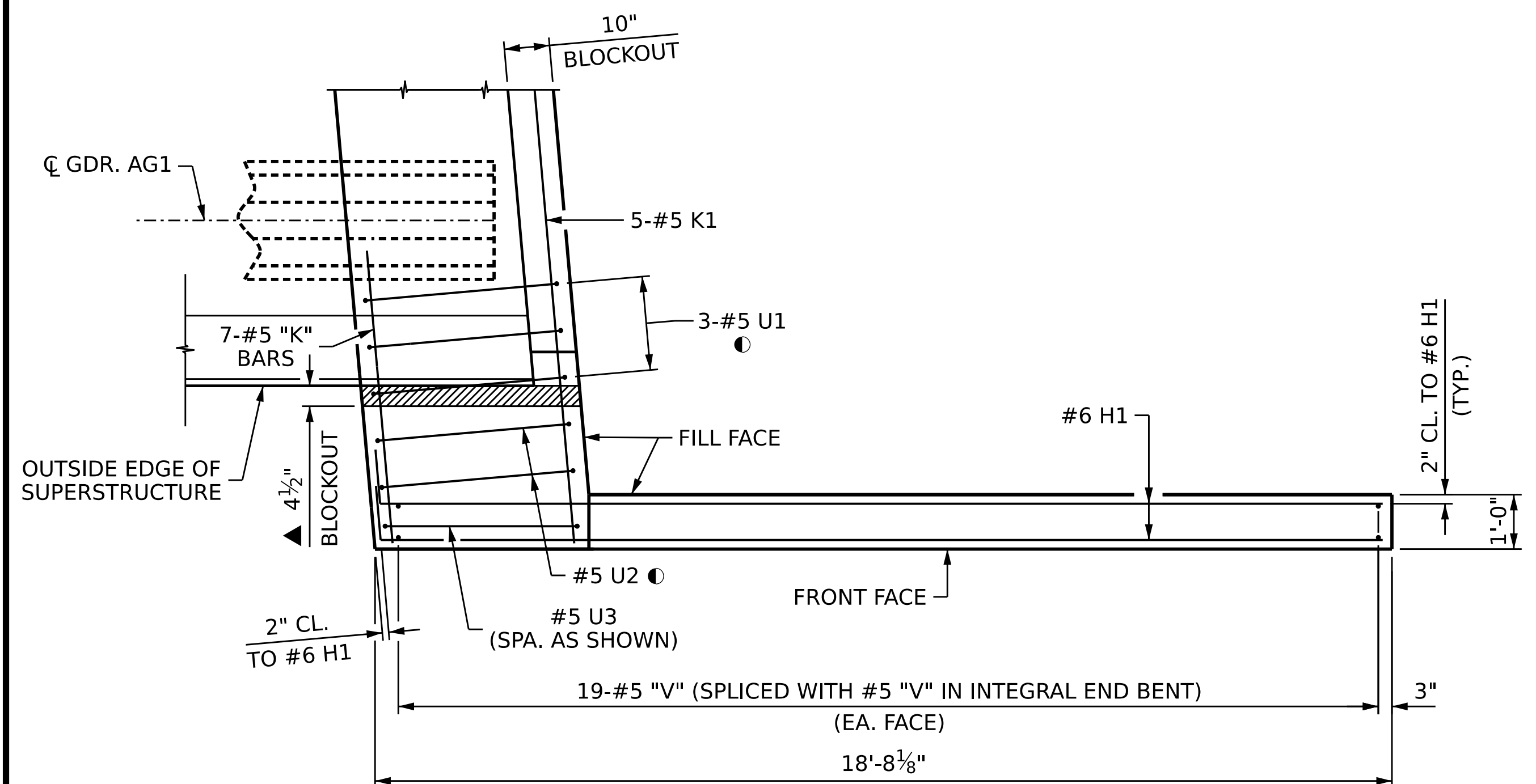
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**TYPICAL SECTION
 DETAILS**

DRAWN BY : B. J. MANTEI DATE : 4-28-25
 CHECKED BY : N. D'AIUTO DATE : 4-28-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

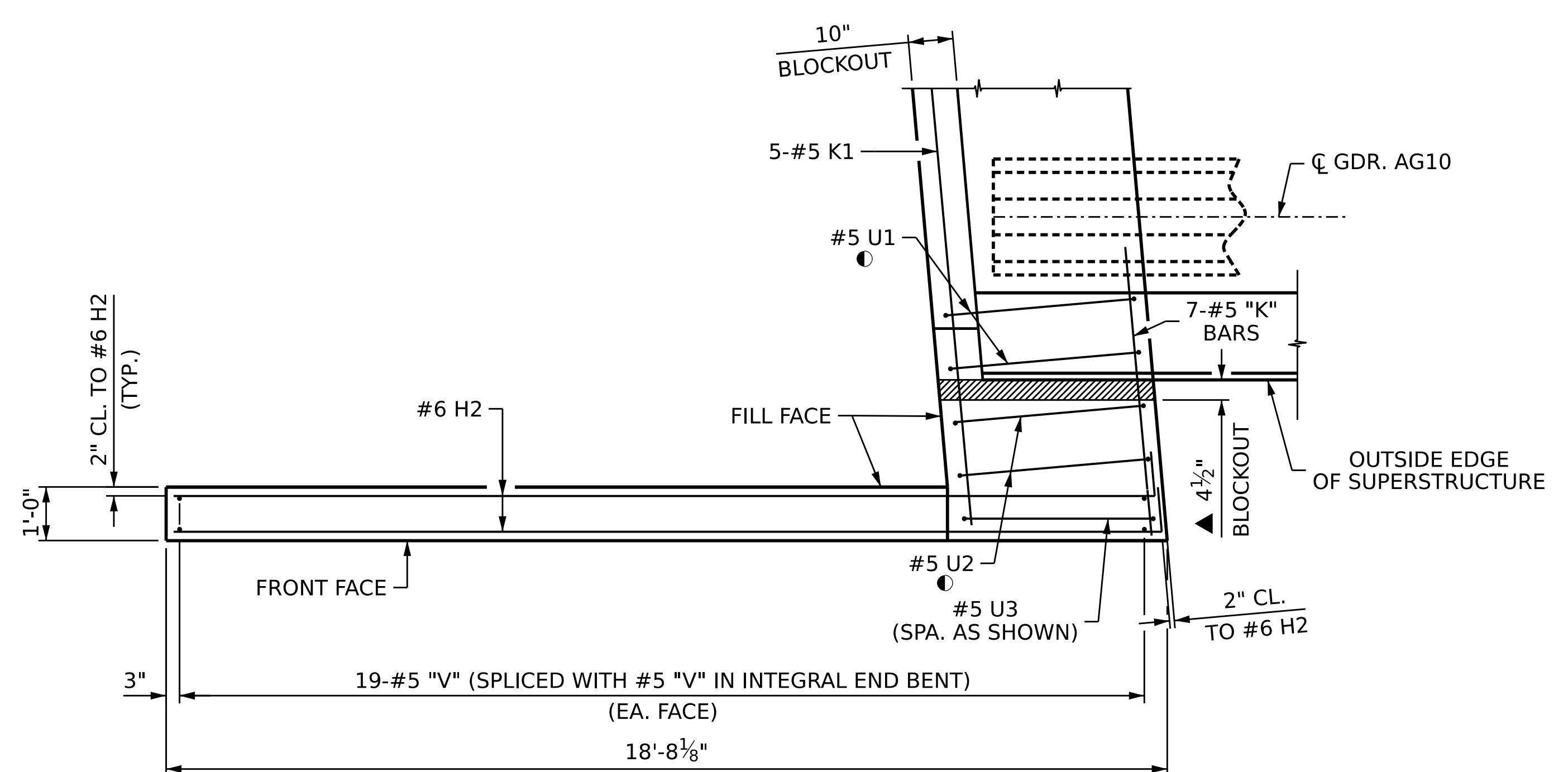
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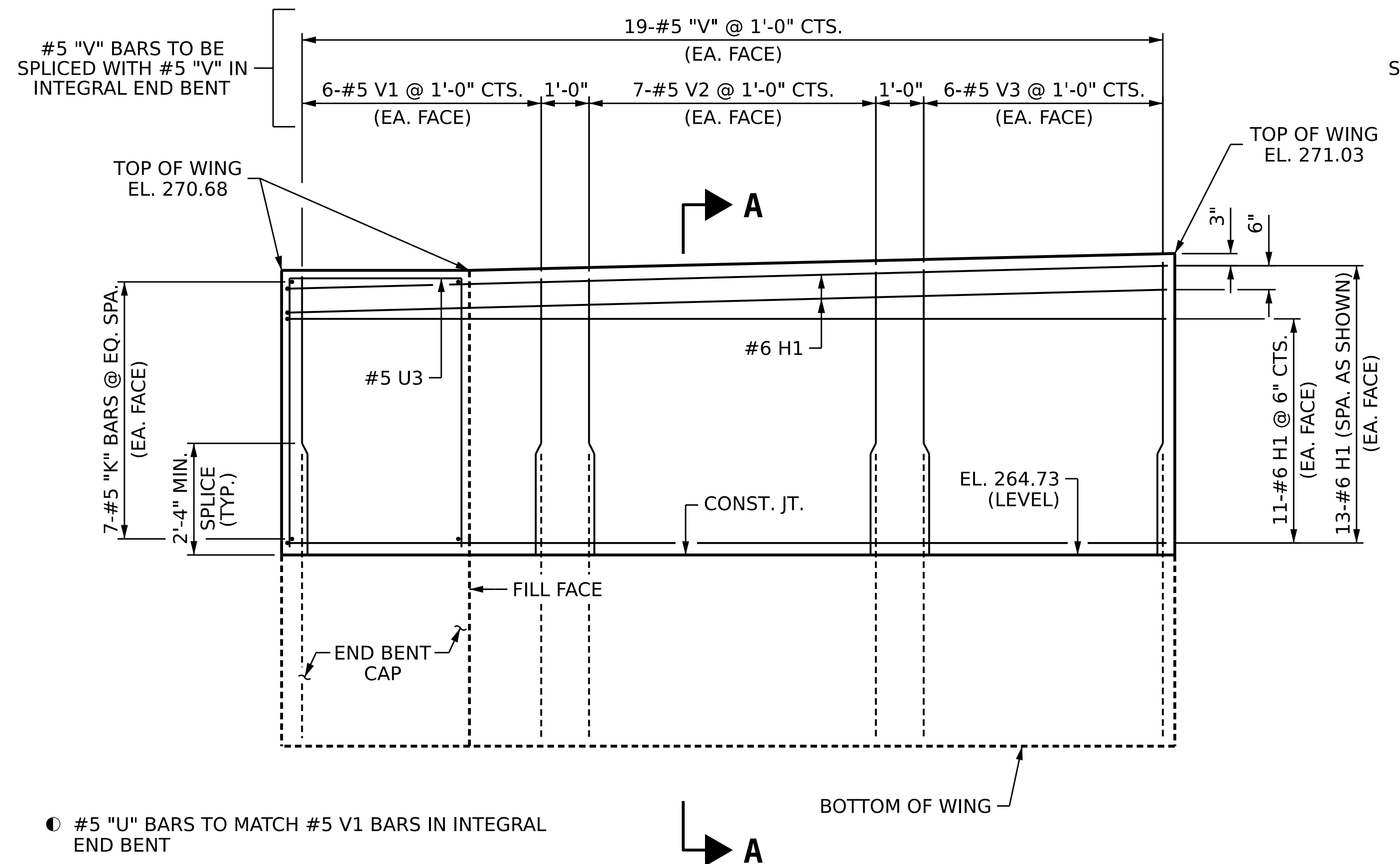
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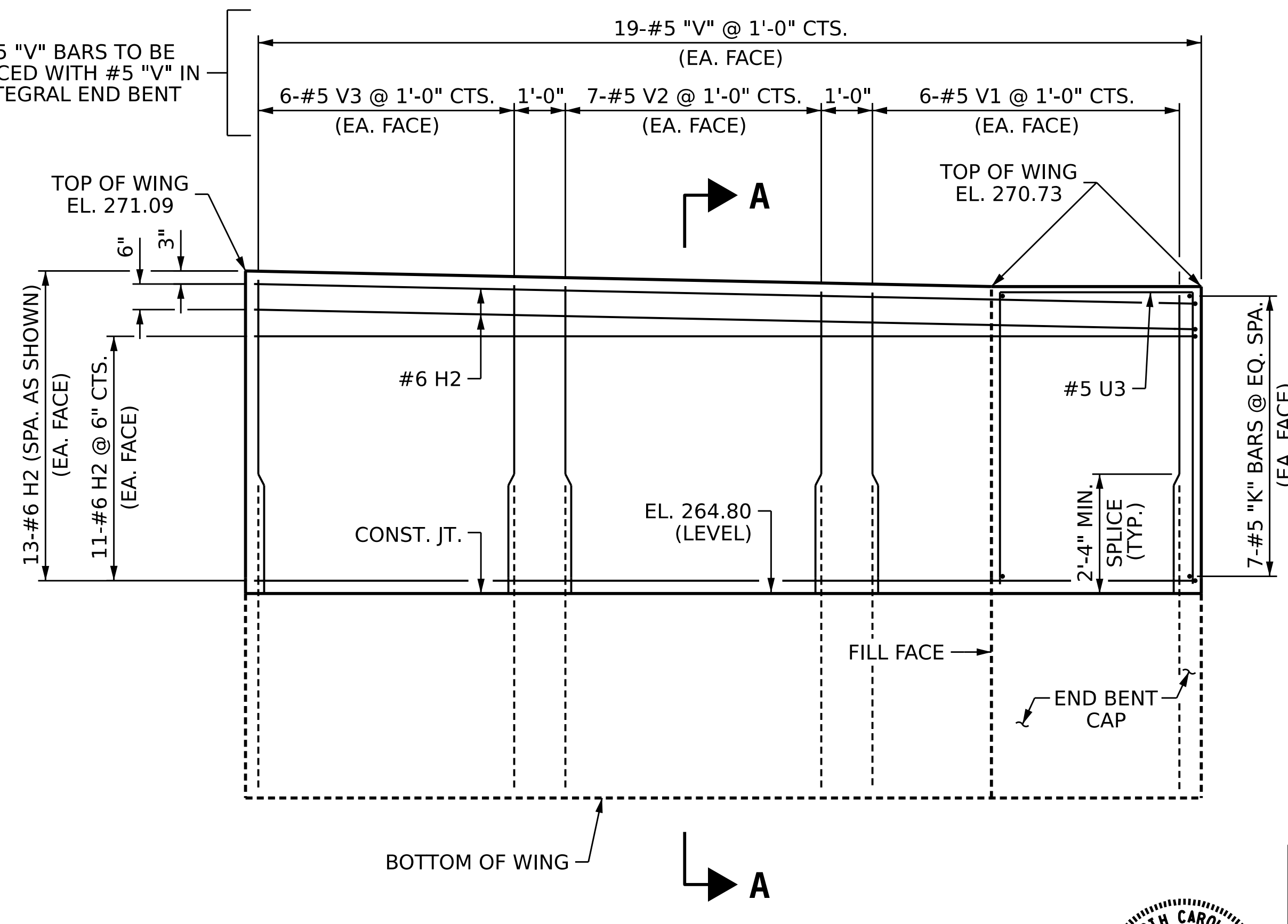
PLAN OF LEFT WING (W1)



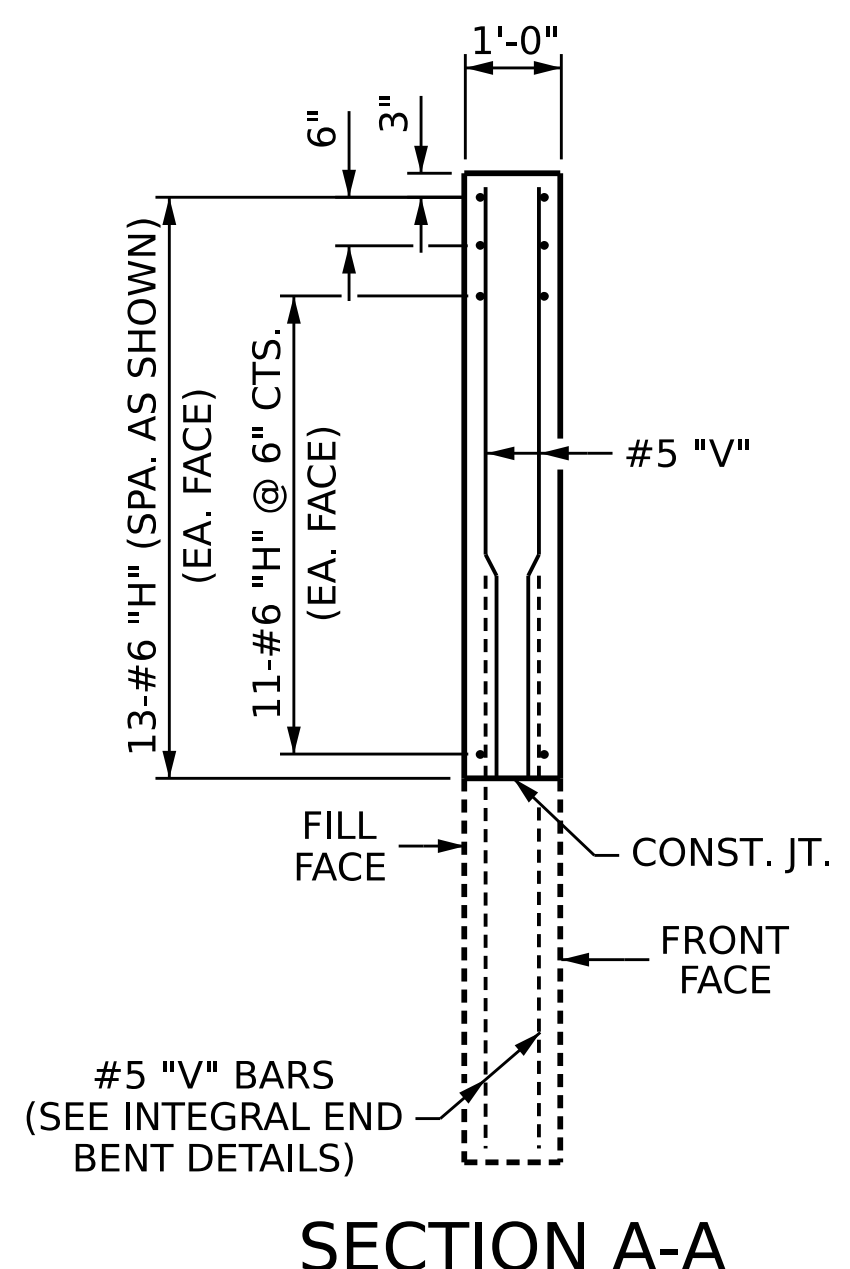
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)

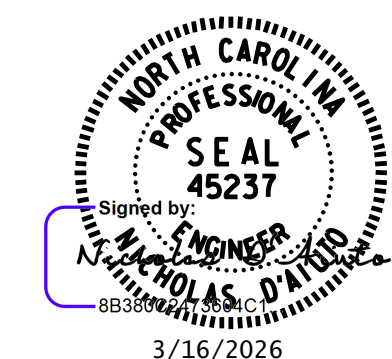


SECTION A-A

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 5 OF 6

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



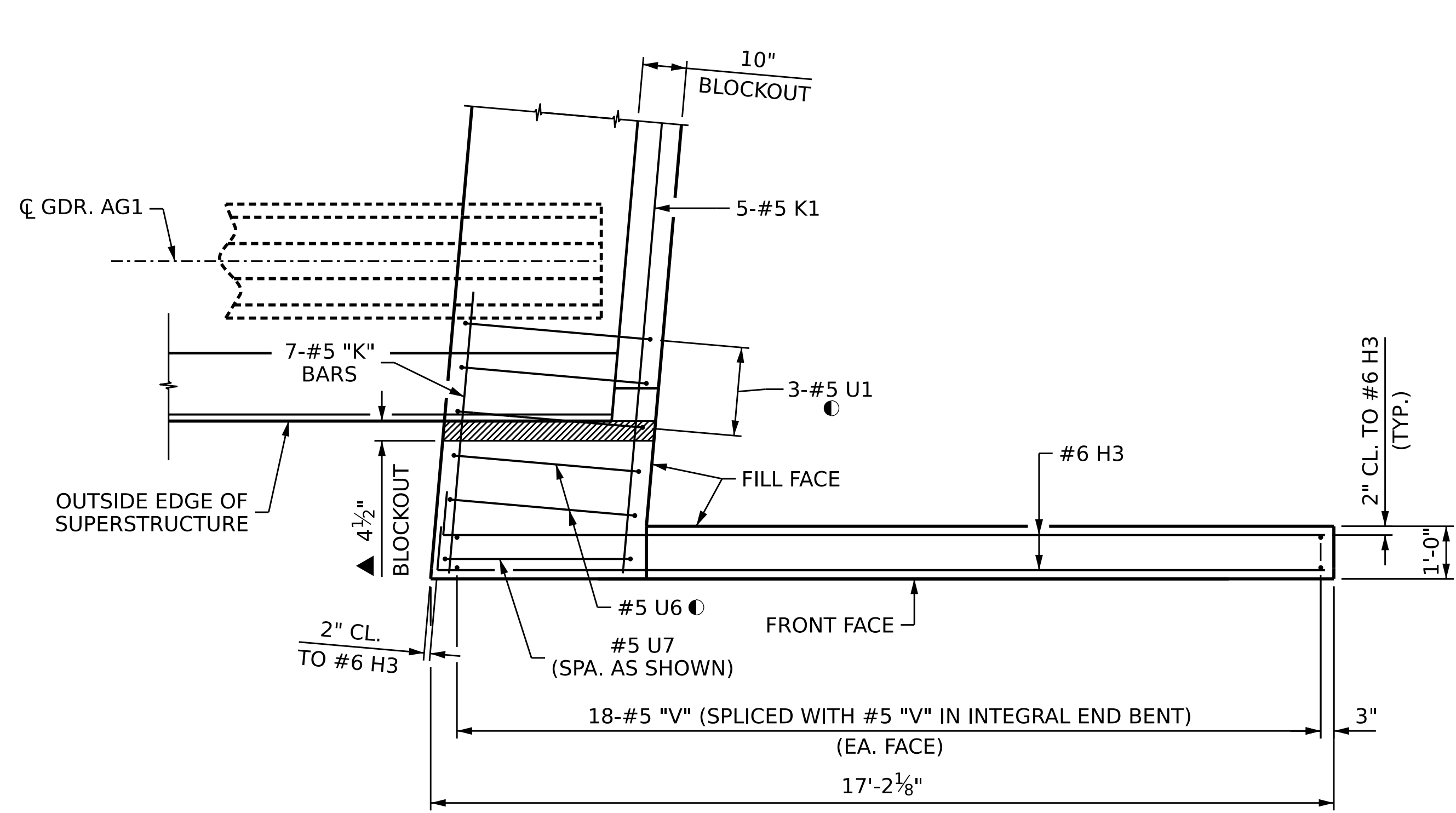
▲ THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET OR CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED

DRAWN BY :	B.J. MANTEI	DATE :	10-23-25
CHECKED BY :	N. D'AIUTO	DATE :	10-26-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

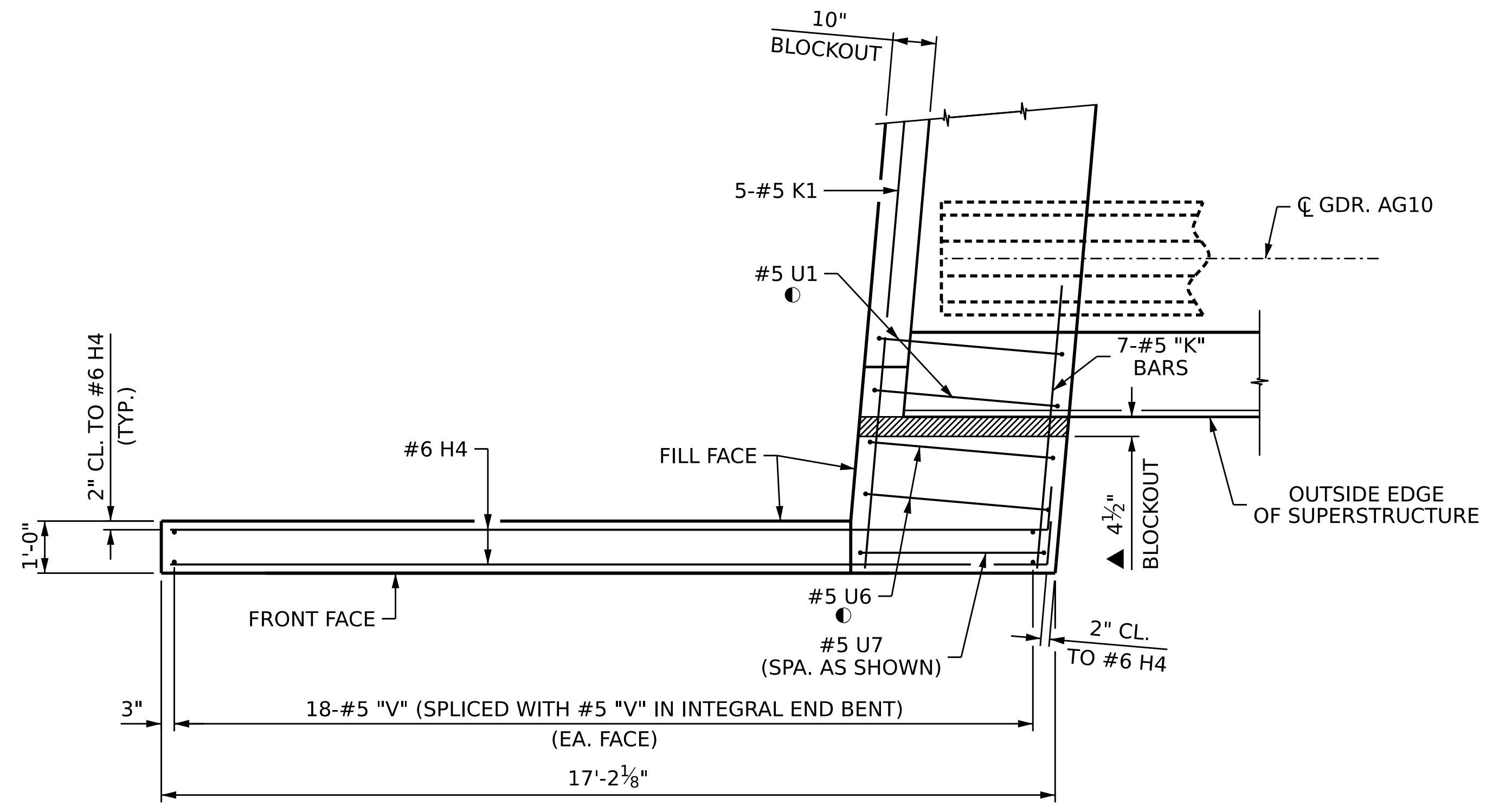
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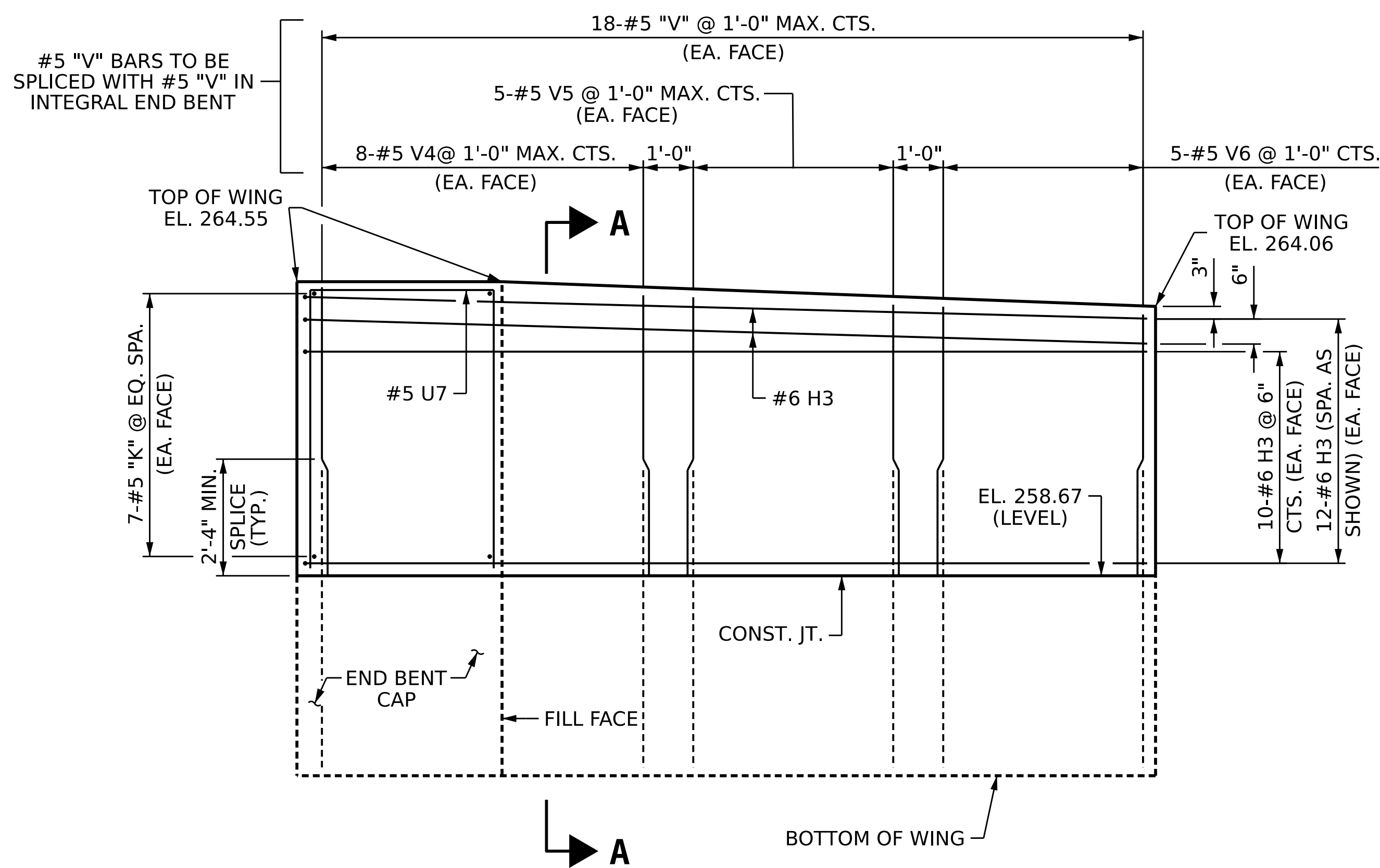
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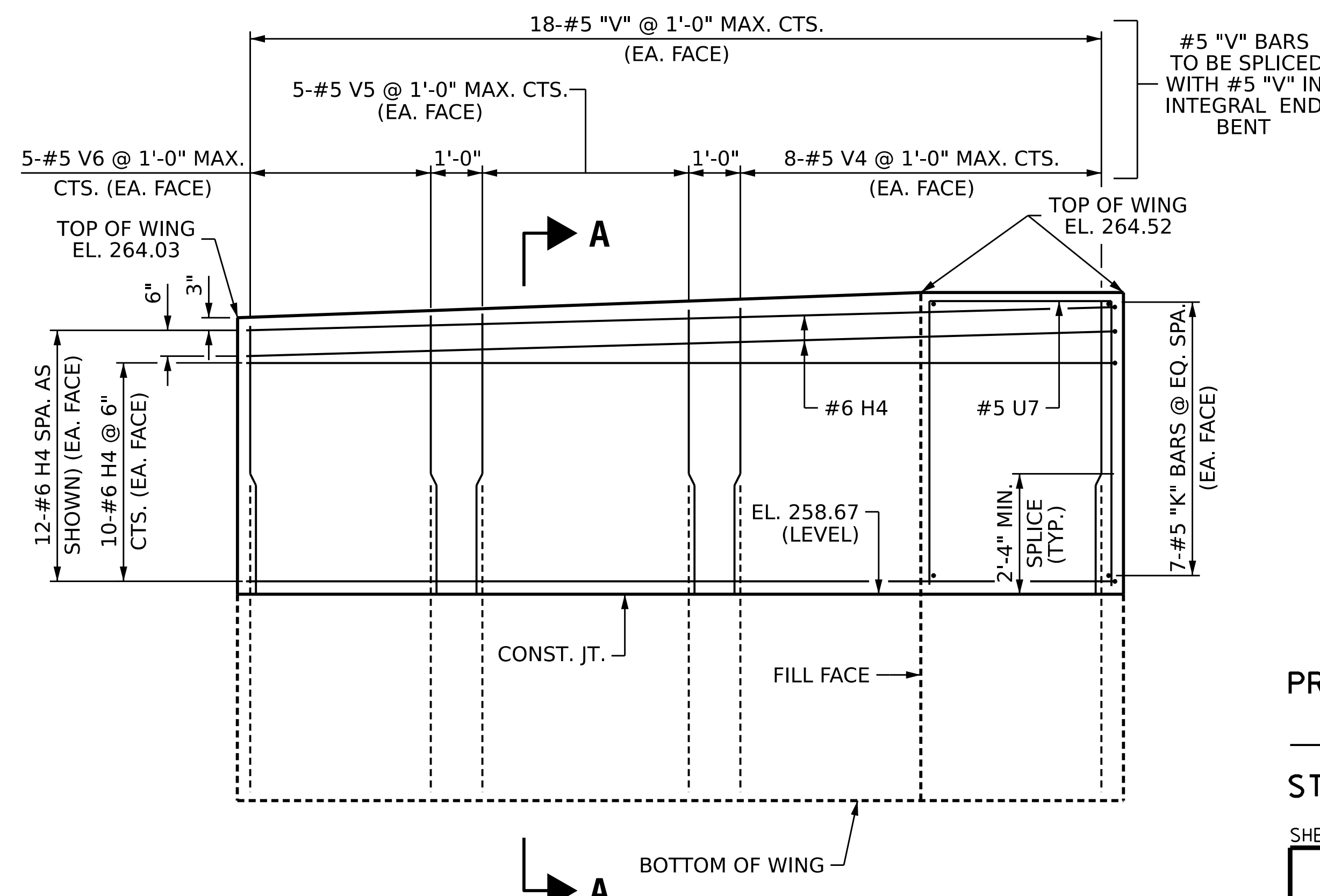
PLAN OF LEFT WING (W3)



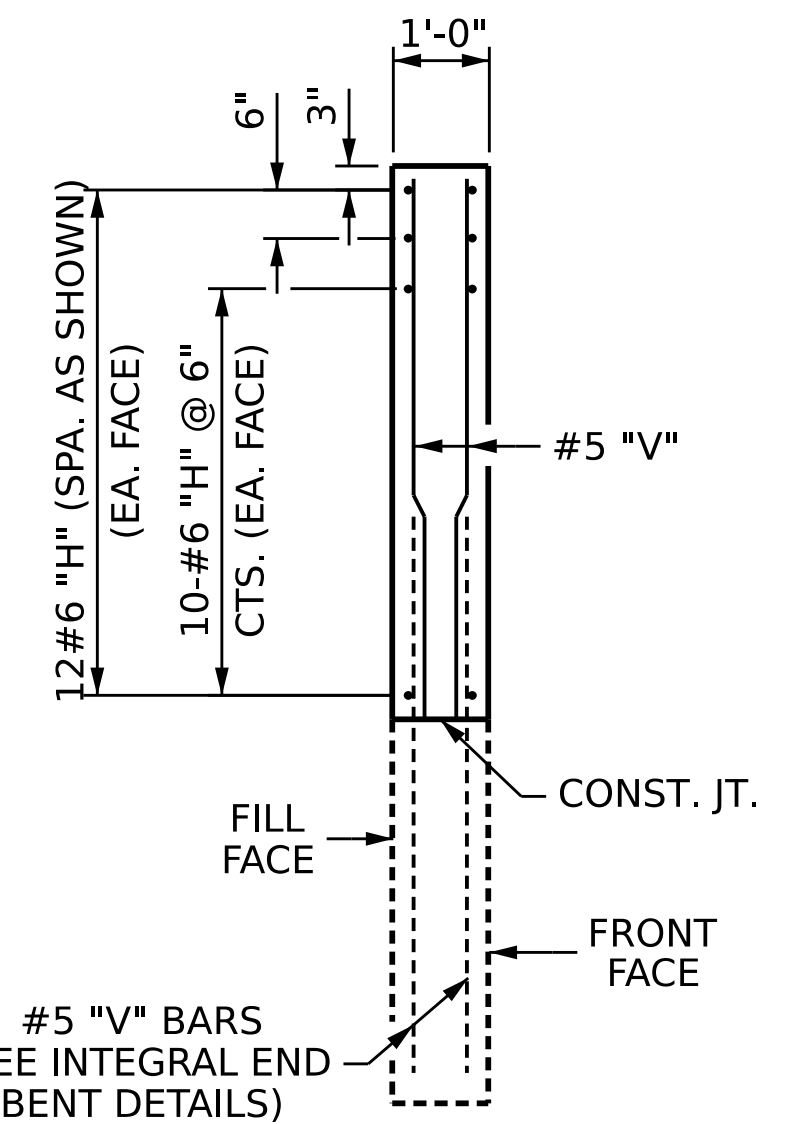
PLAN OF RIGHT WING (W4)



ELEVATION OF LEFT WING (W3)



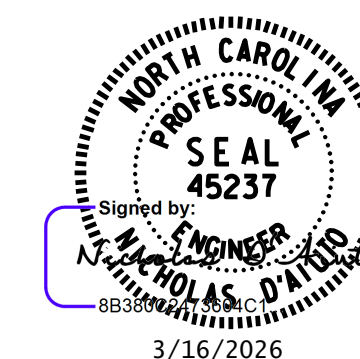
ELEVATION OF RIGHT WING (W4)



SECTION A-A

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 6 OF 6



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

● #5 "U" BARS TO MATCH #5 V1 BARS IN INTEGRAL END BENT

▲ THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET OR CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED

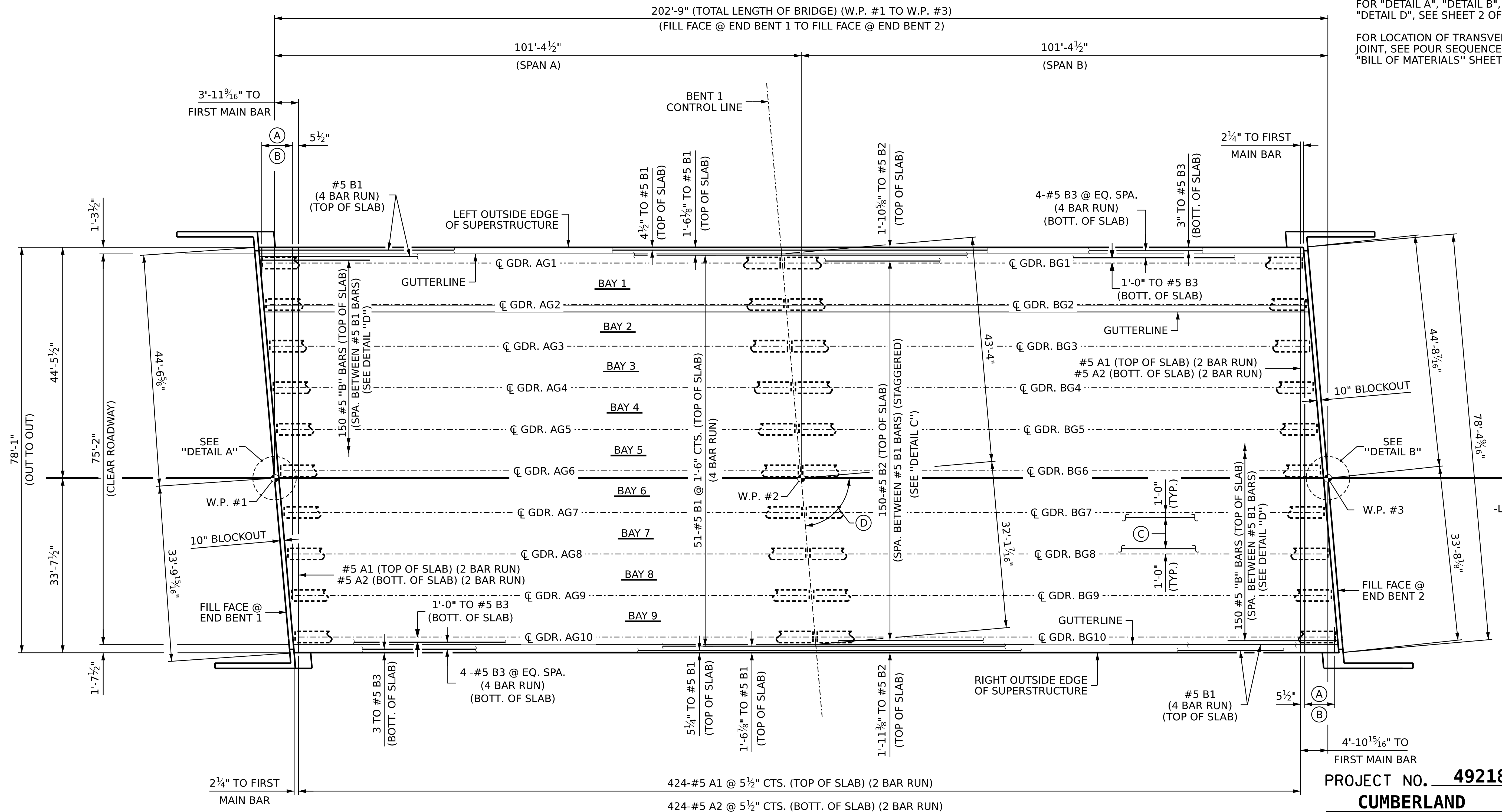
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NOTES:
FOR "DETAIL A", "DETAIL B", "DETAIL C" & "DETAIL D", SEE SHEET 2 OF 3.
FOR LOCATION OF TRANSVERSE CONST. JOINT, SEE POUR SEQUENCE DETAILS ON "BILL OF MATERIALS" SHEET

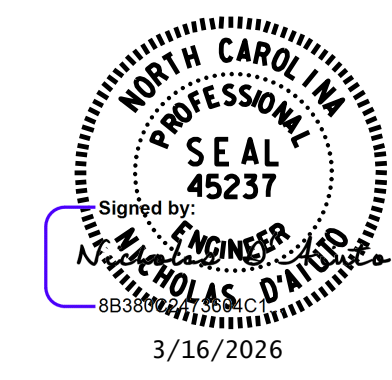


PLAN OF SPANS

- (A) #5 A101 THRU #5 A107 @ 5 1/2" CTS. (#5 A107 2 BAR RUN) (TOP OF SLAB) (2 BARS PER MARK)
- (B) #5 A201 THRU #5 A207 @ 5 1/2" CTS. (#5 A207 2 BAR RUN) (BOTT. OF SLAB) (2 BARS PER MARK)
- (C) 10-#5 B3 @ 8" CTS. (4 BAR RUN) (BOTT. OF SLAB) (TYP. EA. BAY)
- (D) 85°-00'-00" (TYP.)

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**

SHEET 1 OF 3



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

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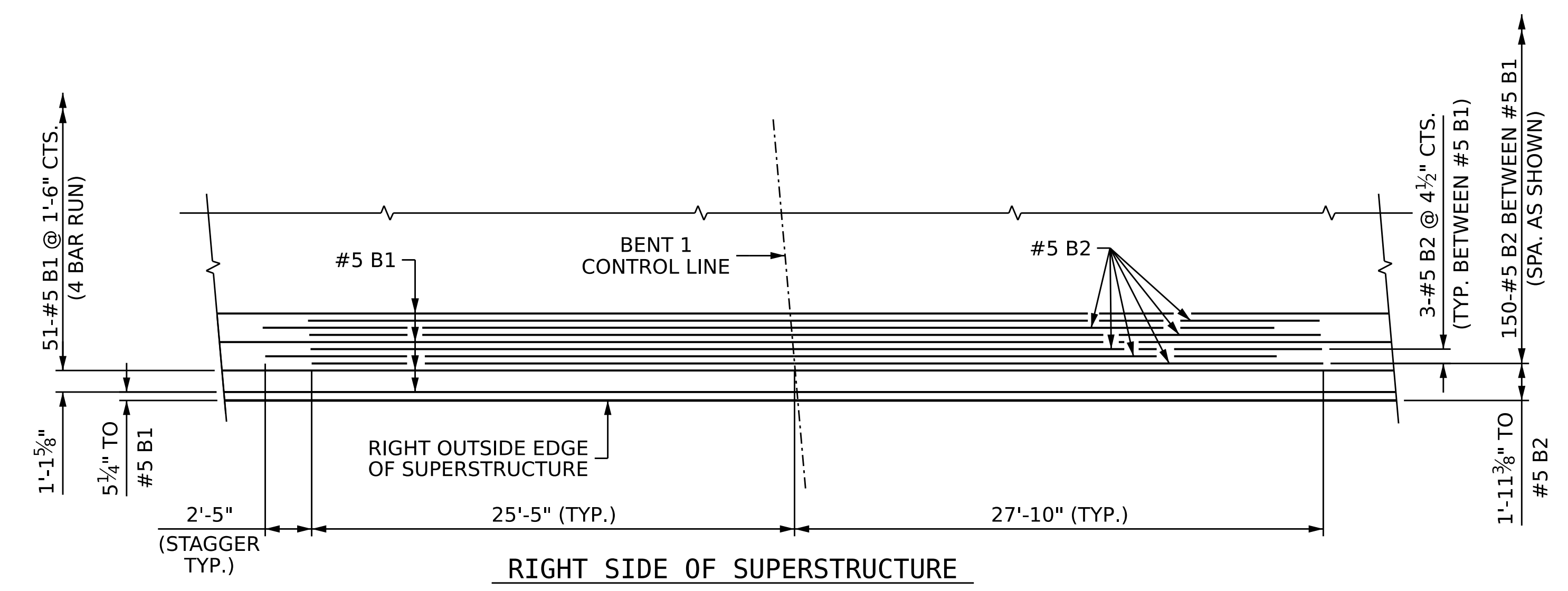
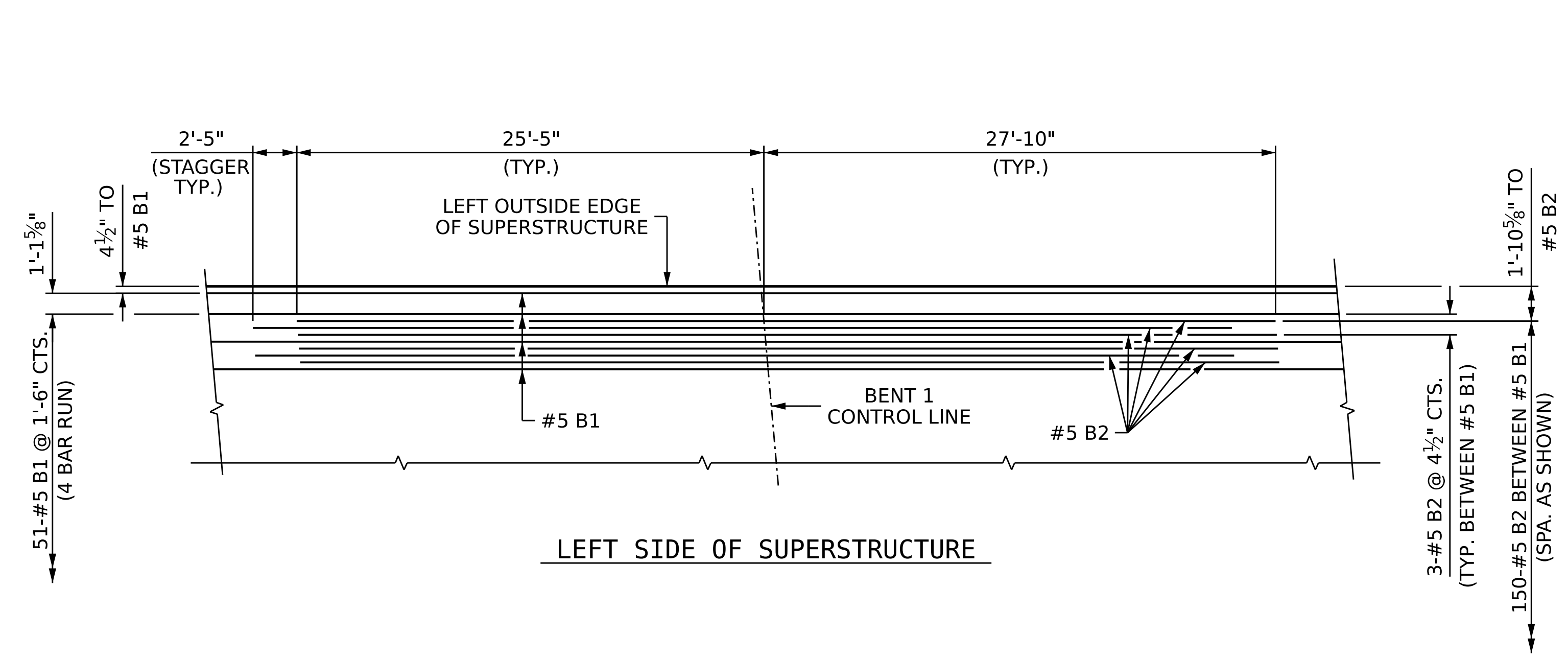
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CHECKED BY: **N. D'AIUTO** DATE: **4-4-25**
DESIGN E.O.R.: **N. D'AIUTO** DATE: **3-16-26**

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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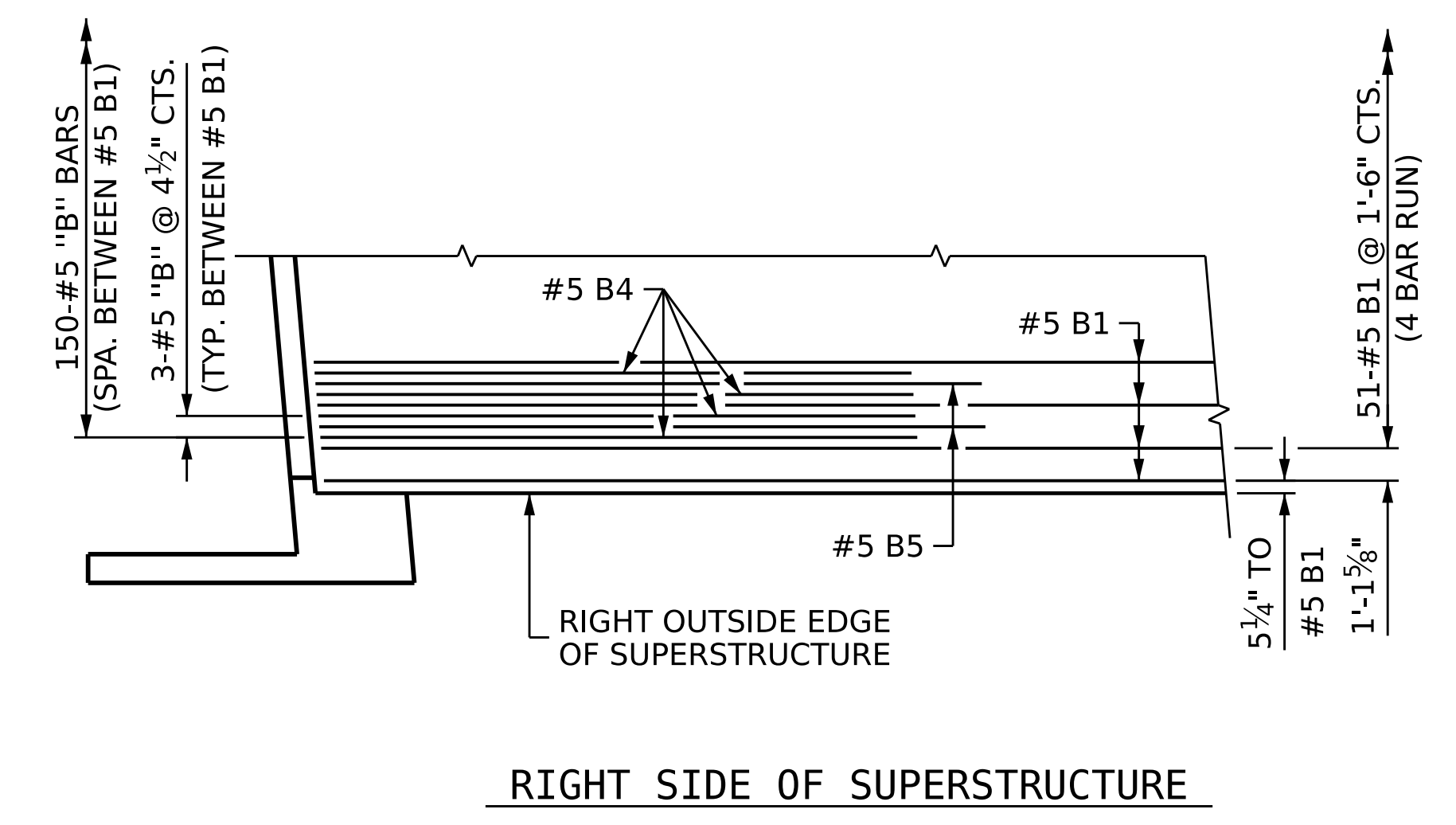
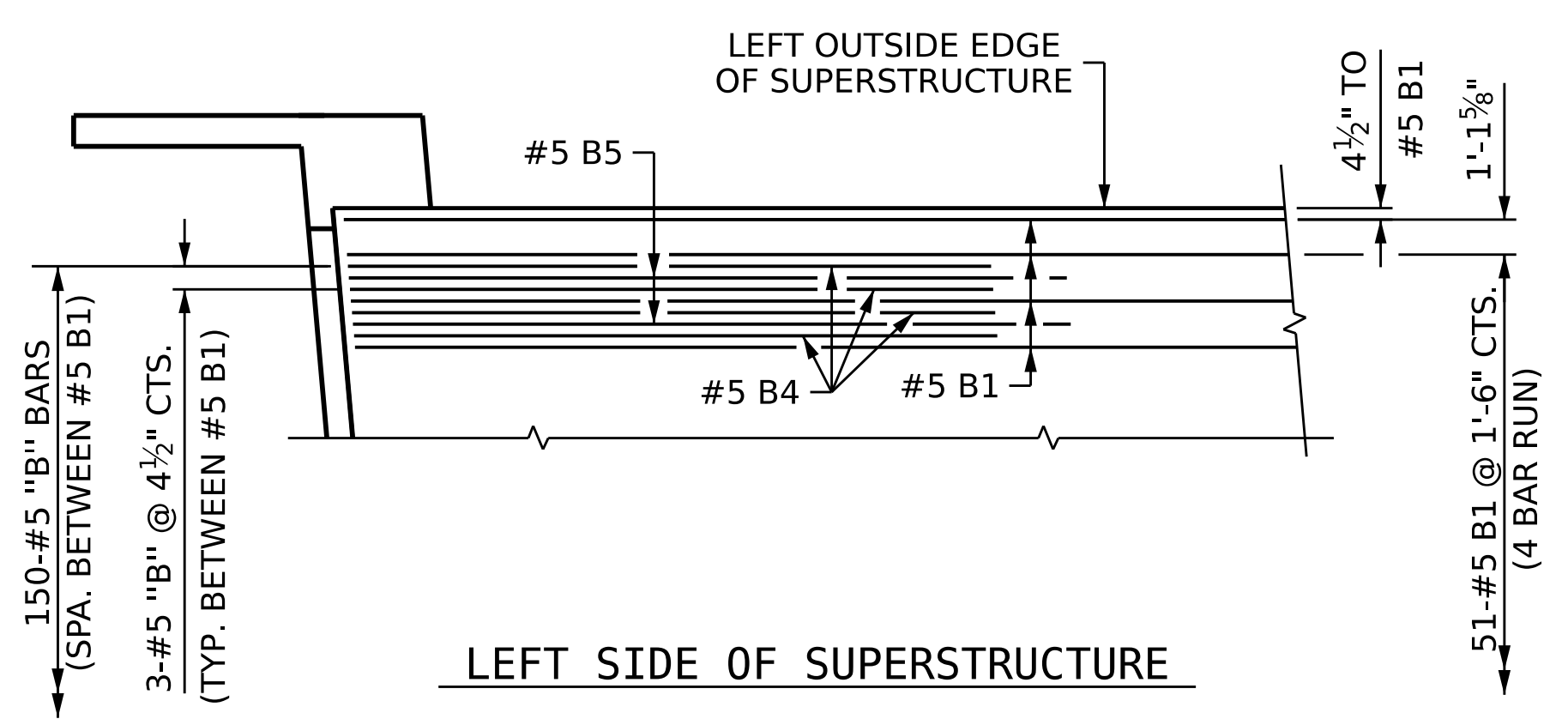
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 Date: 3-16-26



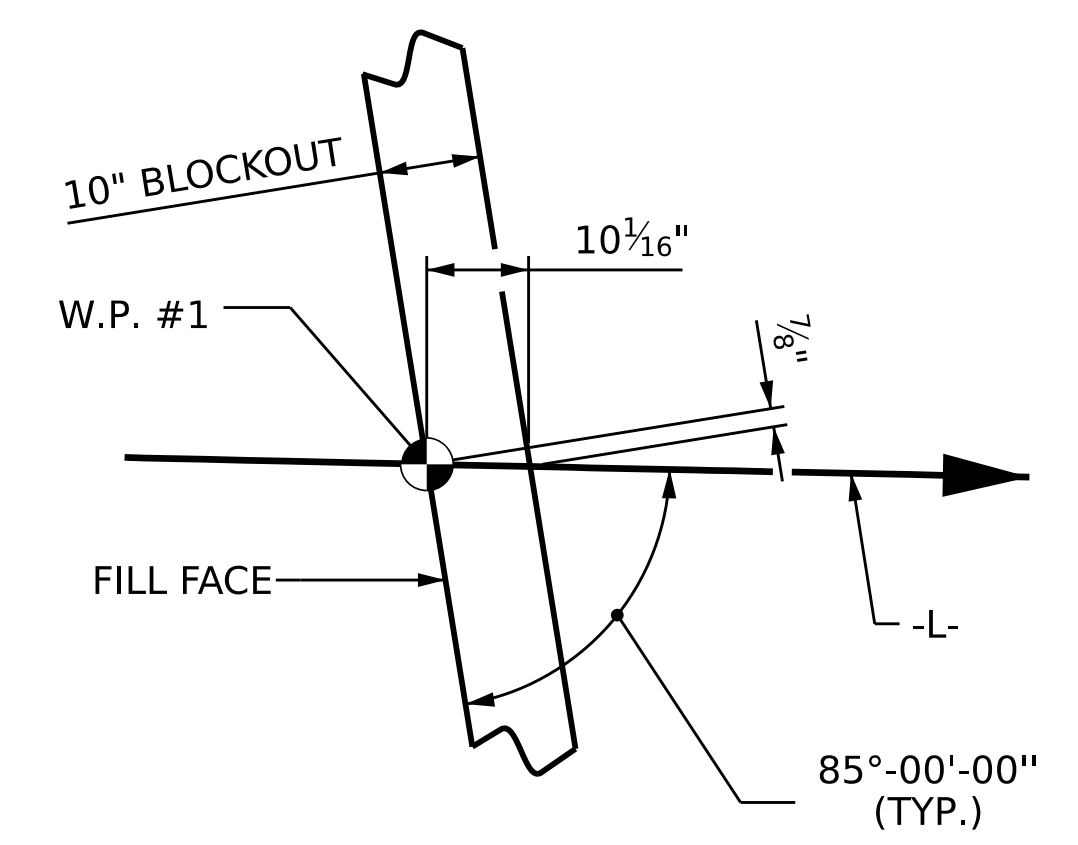
DETAIL C

LONGITUDINAL REINFORCING (TOP OF SLAB ONLY)
 #5 B2 ALTERNATE STAGGER ABOUT BENT 1 CONTROL LINE

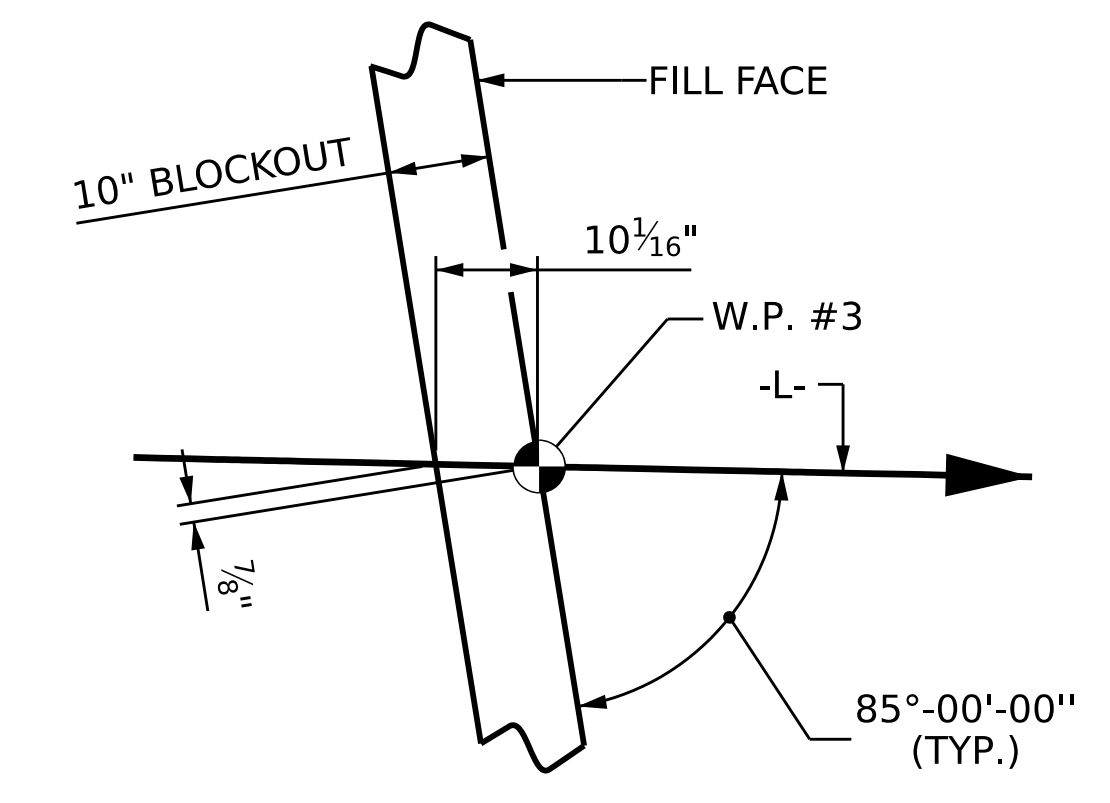


DETAIL D

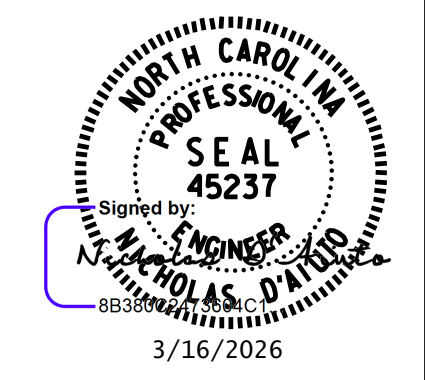
LONGITUDINAL REINFORCING (TOP OF SLAB ONLY)



DETAIL A



DETAIL B



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 2 OF 3

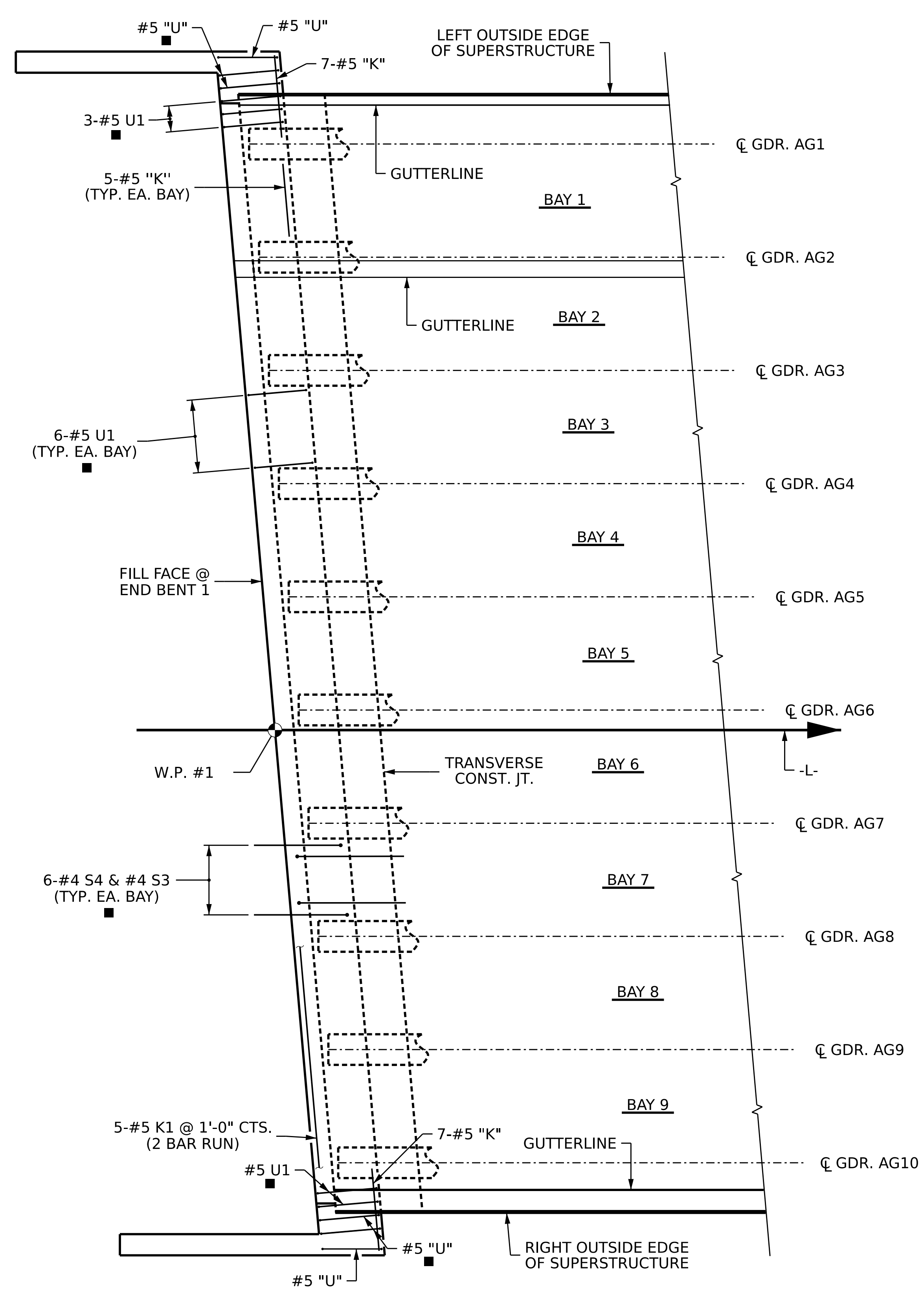
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
PLAN OF SPAN DETAILS

DRAWN BY :	B.J. MANTEI	DATE :	3-17-25
CHECKED BY :	N. D'AIUTO	DATE :	4-4-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

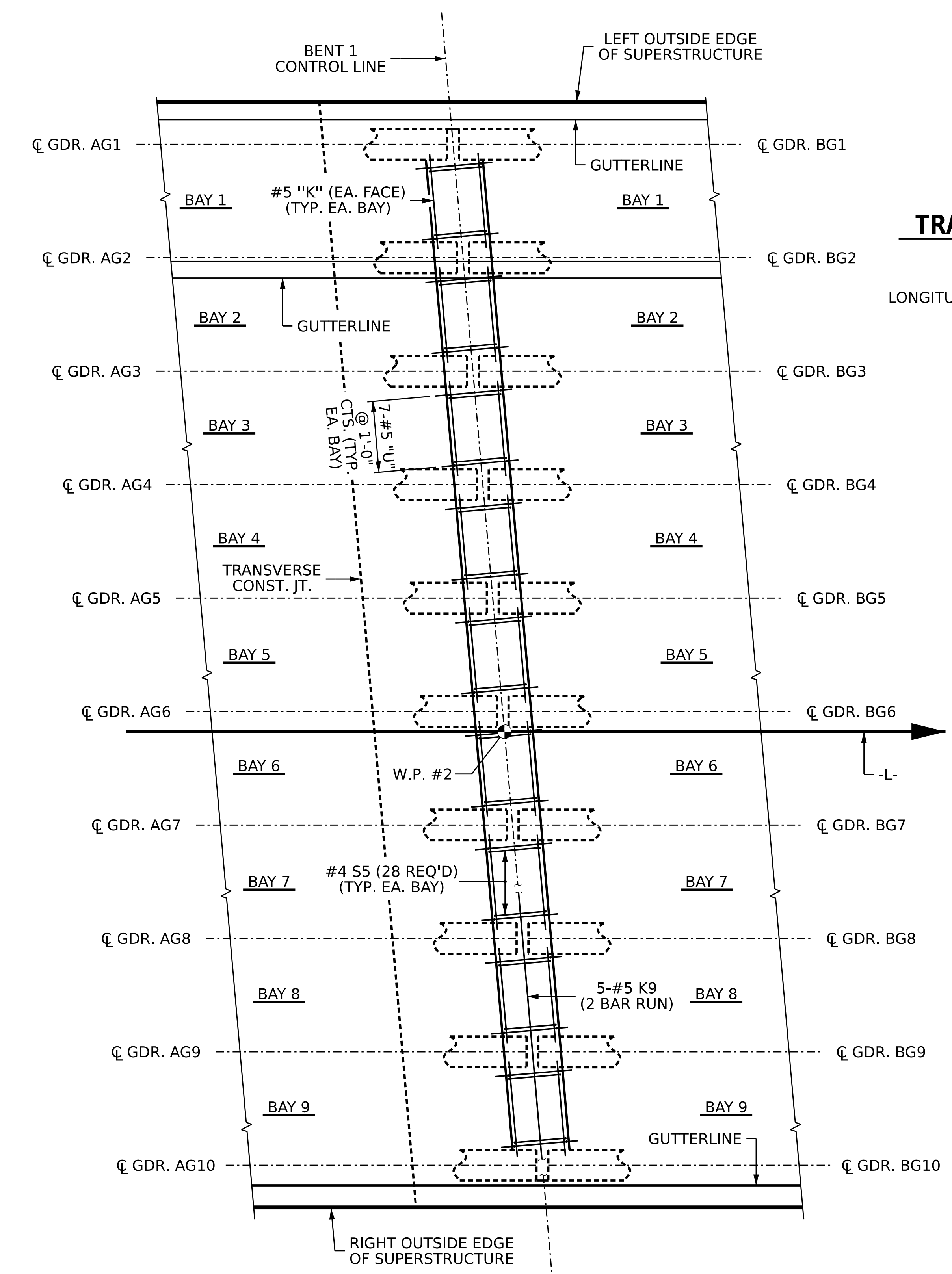
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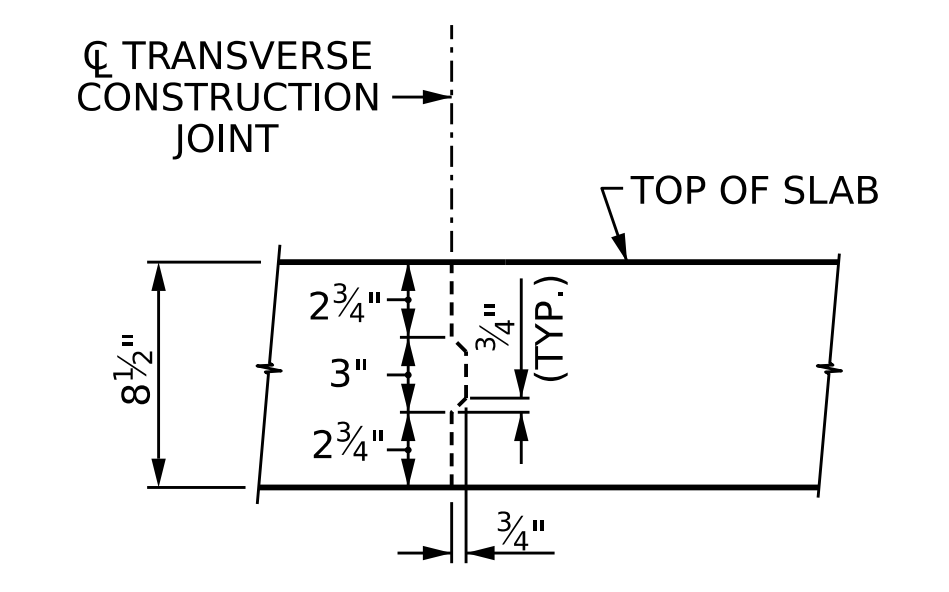
TOTAL SHEETS: 48



PLAN OF SPAN @ INTEGRAL END BENT
 INTEGRAL END BENT 1 SHOWN, INTEGRAL END BENT 2 SIMILIAR BY ROTATION
 ■ #4 "S" AND/OR #5 "U" TO MATCH #5 "V" BARS IN INTEGRAL END BENT

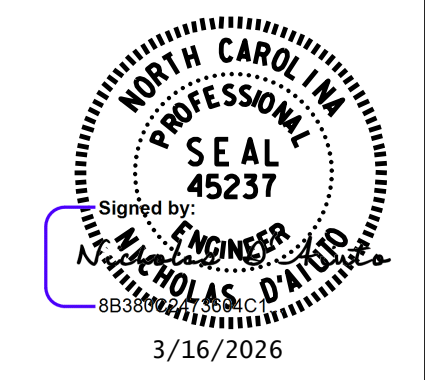


PLAN OF BENT DIAPHRAGM



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB
 REINFORCING STEEL IN SLAB NOT SHOWN.
 LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
PLAN OF SPAN DETAILS

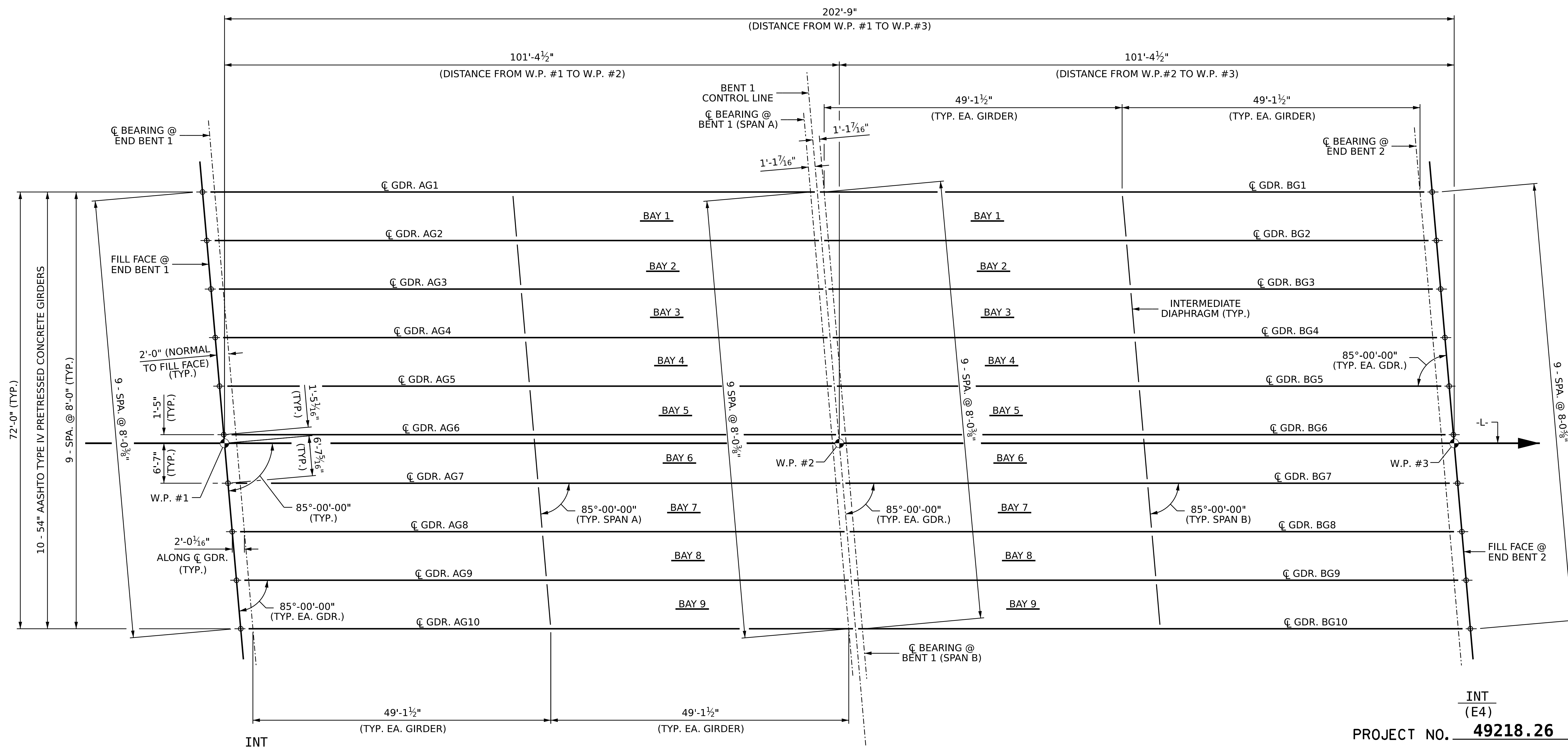
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CHECKED BY :	N. D'AIUTO	DATE :	4-4-25
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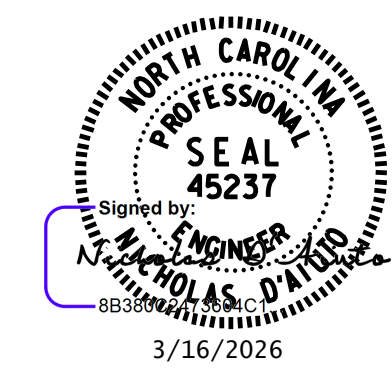
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FRAMING PLAN

INT (E4)
 PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

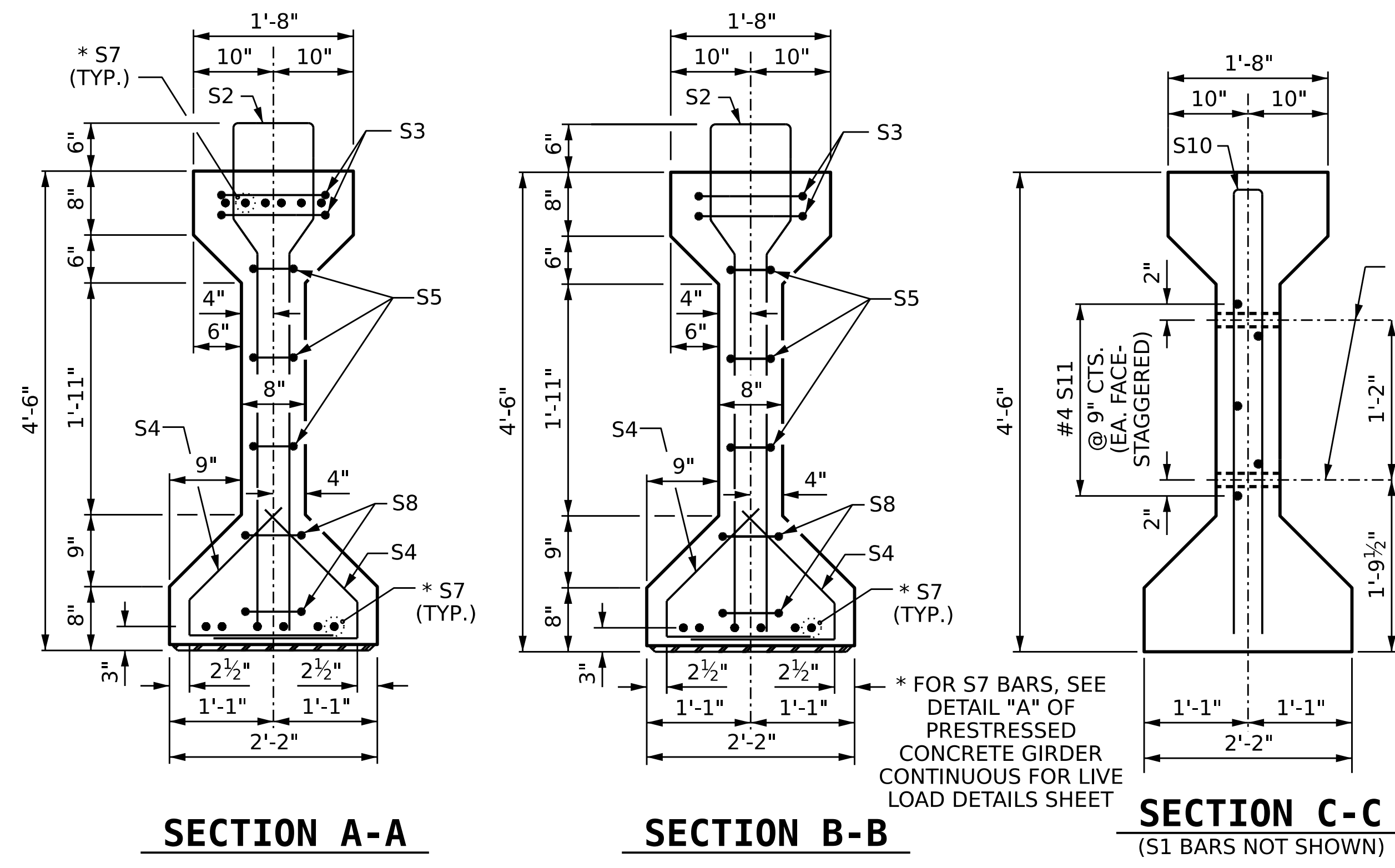


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
FRAMING PLAN

DRAWN BY : B.J. MANTEI DATE : 3-21-25
 CHECKED BY : N. D'AIUTO DATE : 4-8-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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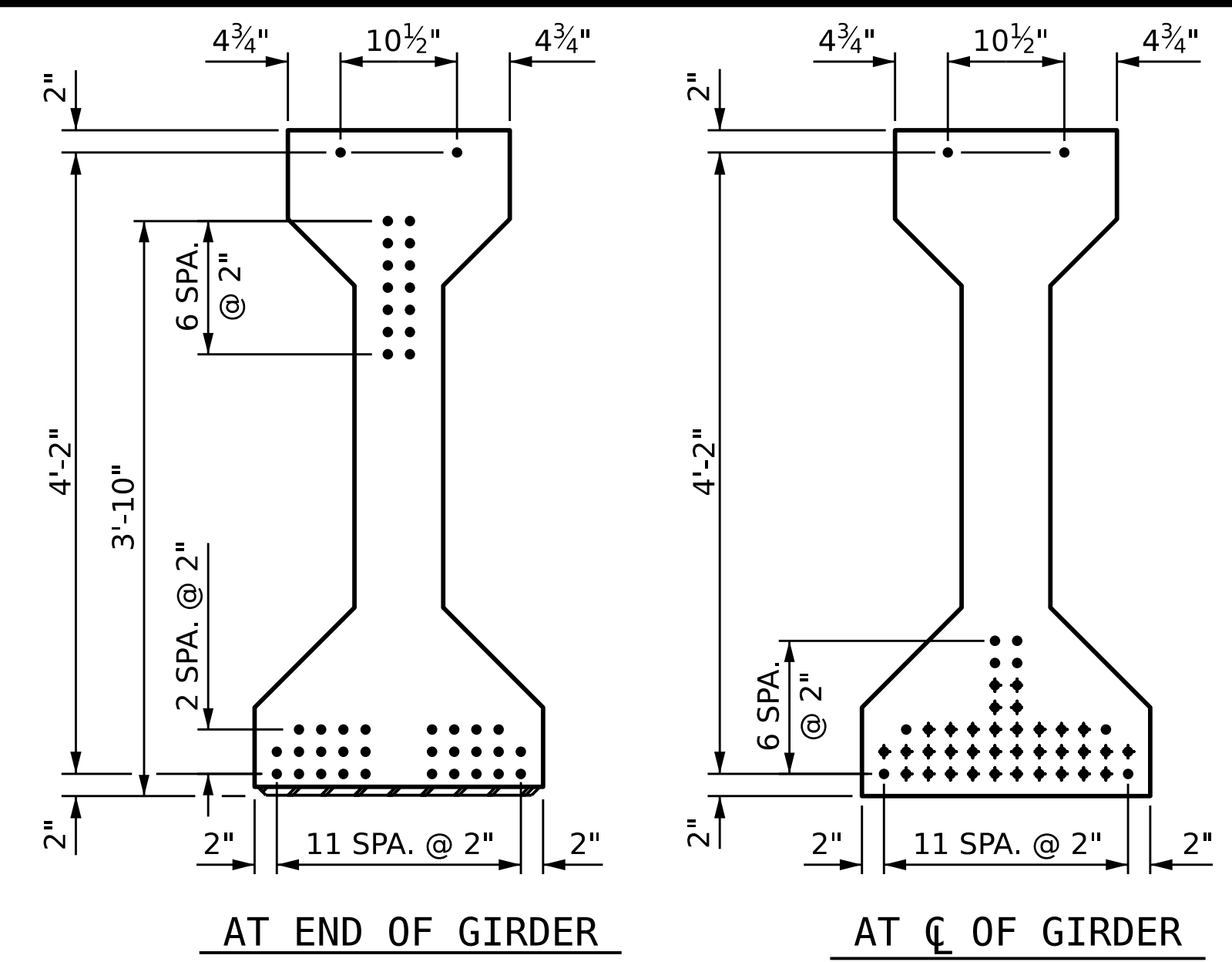


SECTION A-A

SECTION B-B

SECTION C-C
(S1 BARS NOT SHOWN)

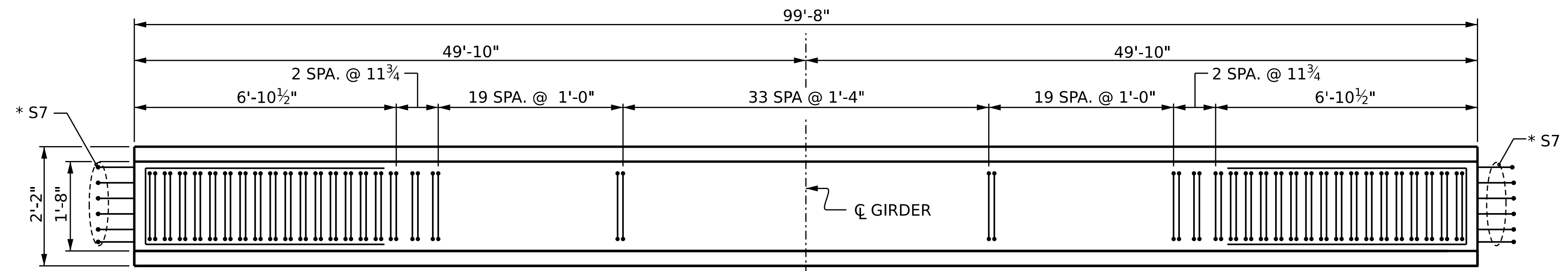
* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



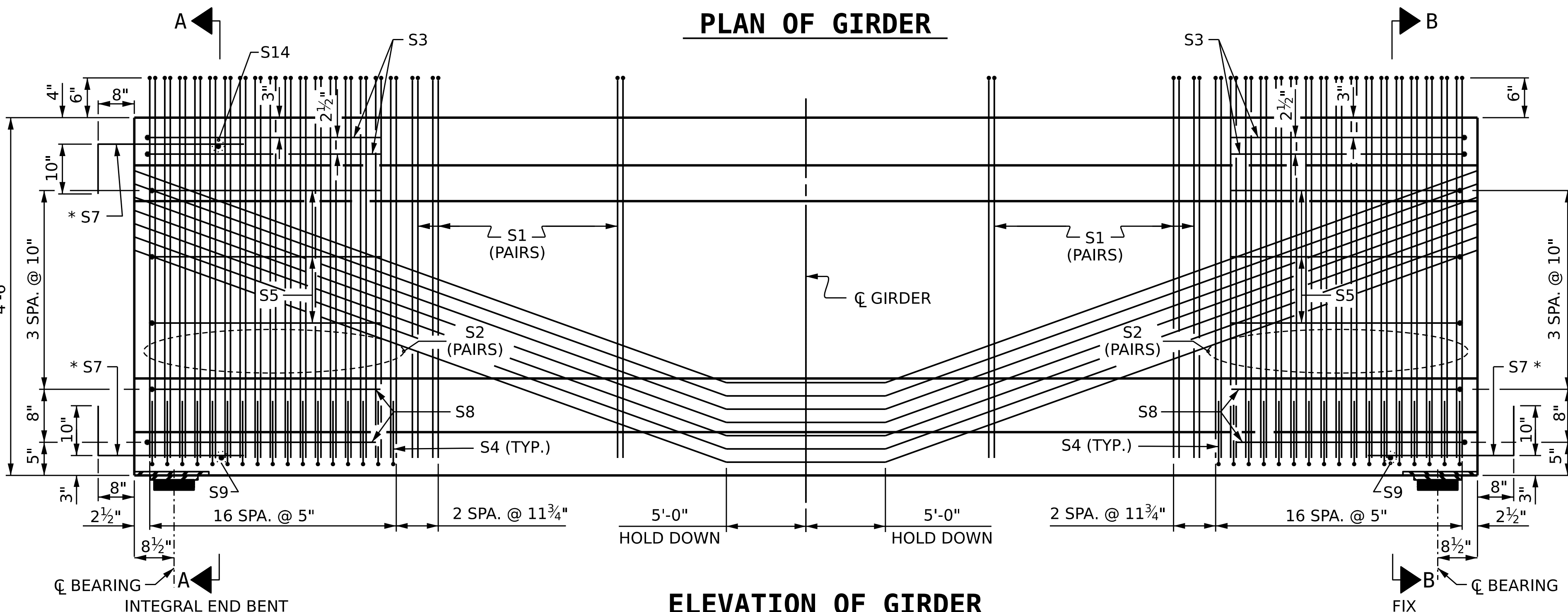
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS

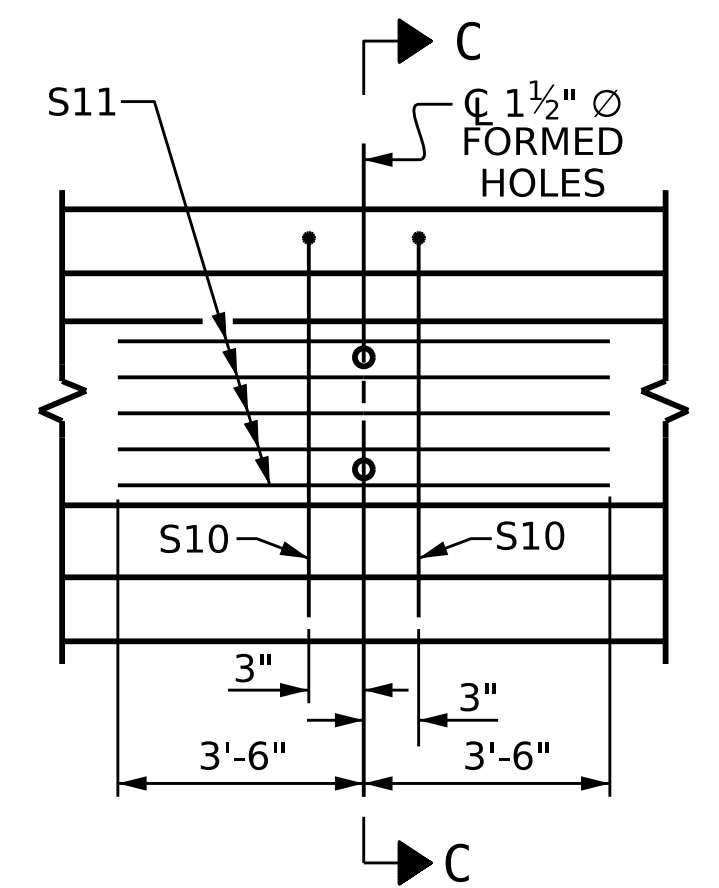


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)
(INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY.
SEE "FRAMING PLAN" SHEET FOR LOCATION)



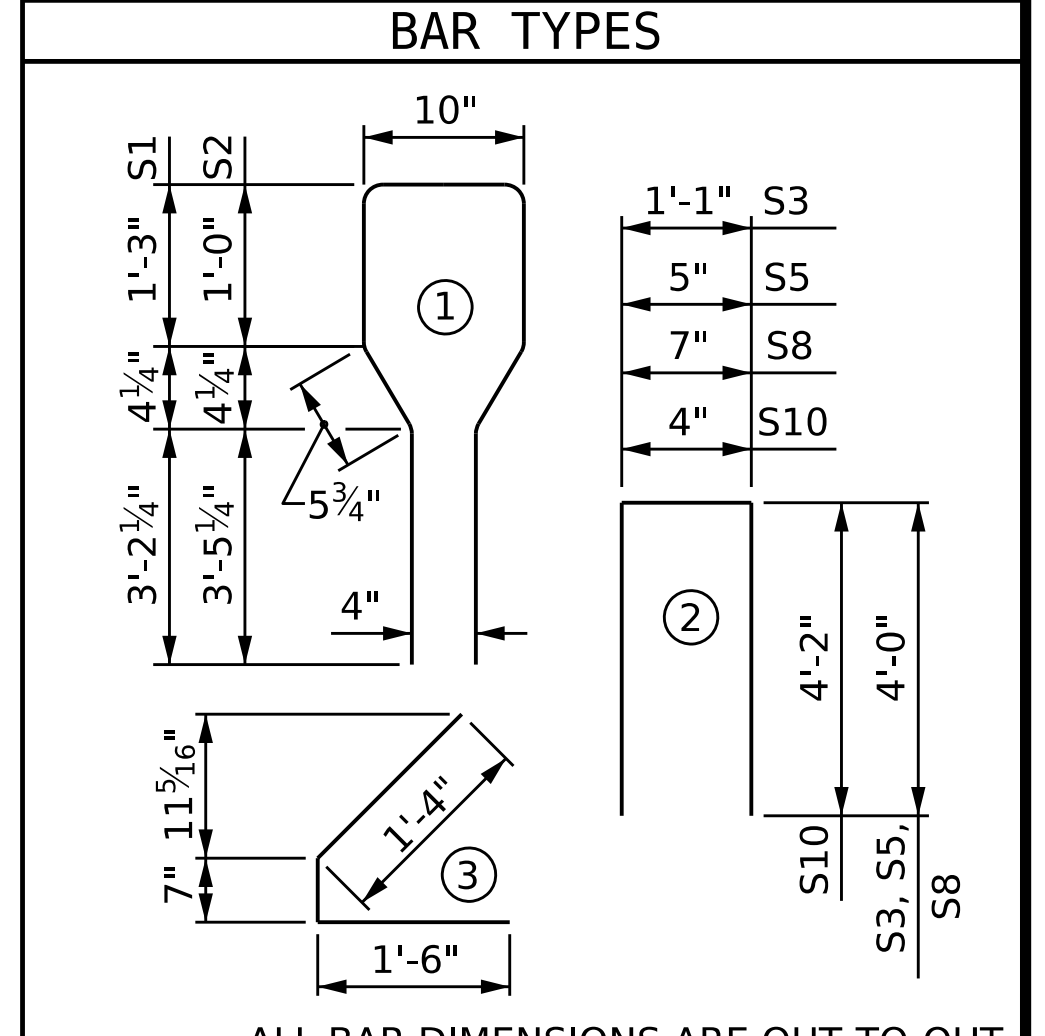
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER NOS.
AG1 THRU AG10

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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	148	#5	1	10'-8"	1,647
S2	68	#6	1	10'-8"	1,089
S3	4	#4	2	9'-1"	24
S4	68	#4	3	3'-5"	155
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	1	#3	STR	1'-4"	1

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



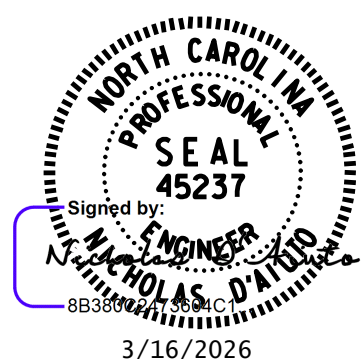
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
GIRDER	REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	3,084	20.3	44

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
10	99'-8"	996'-8"

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A

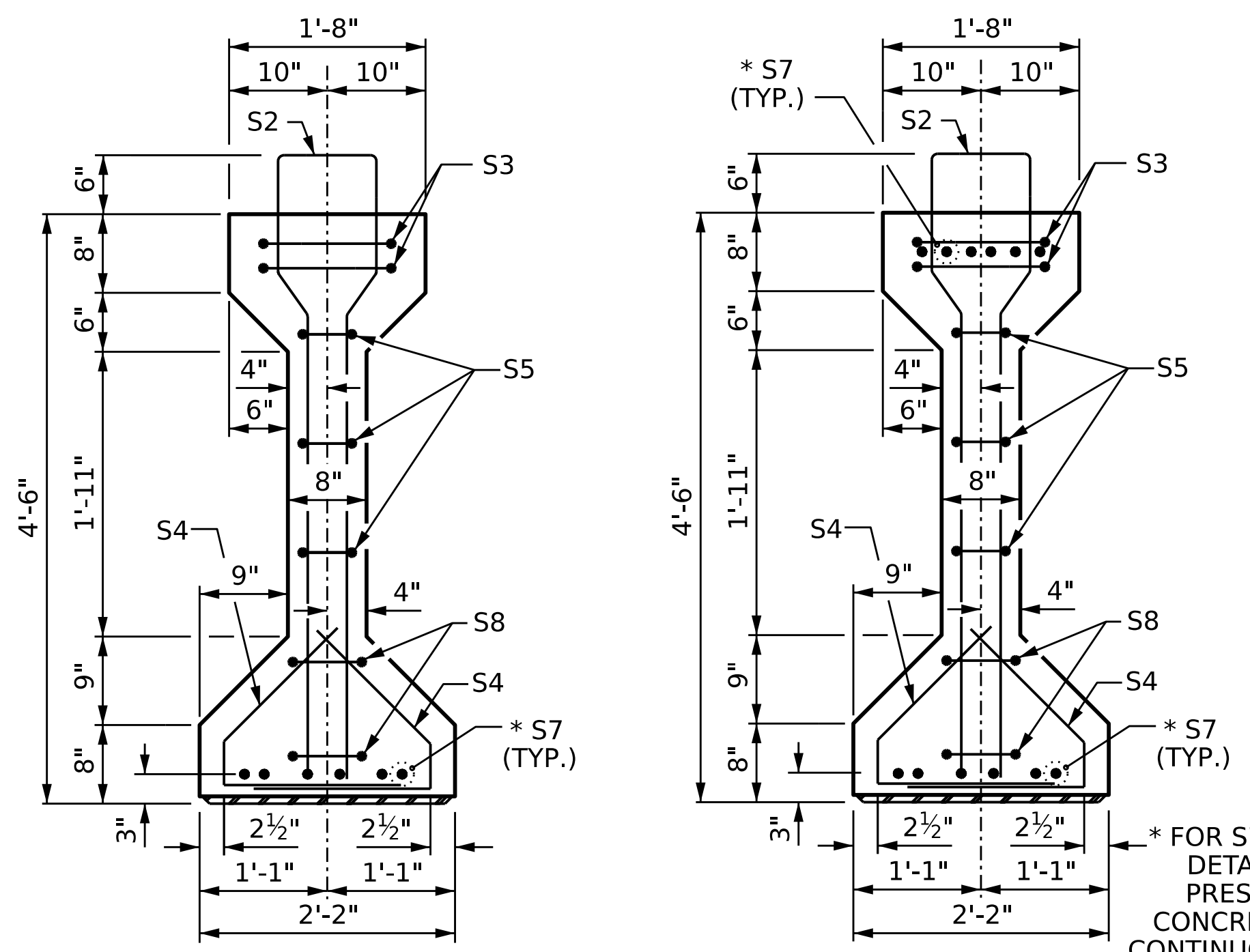


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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2			4		

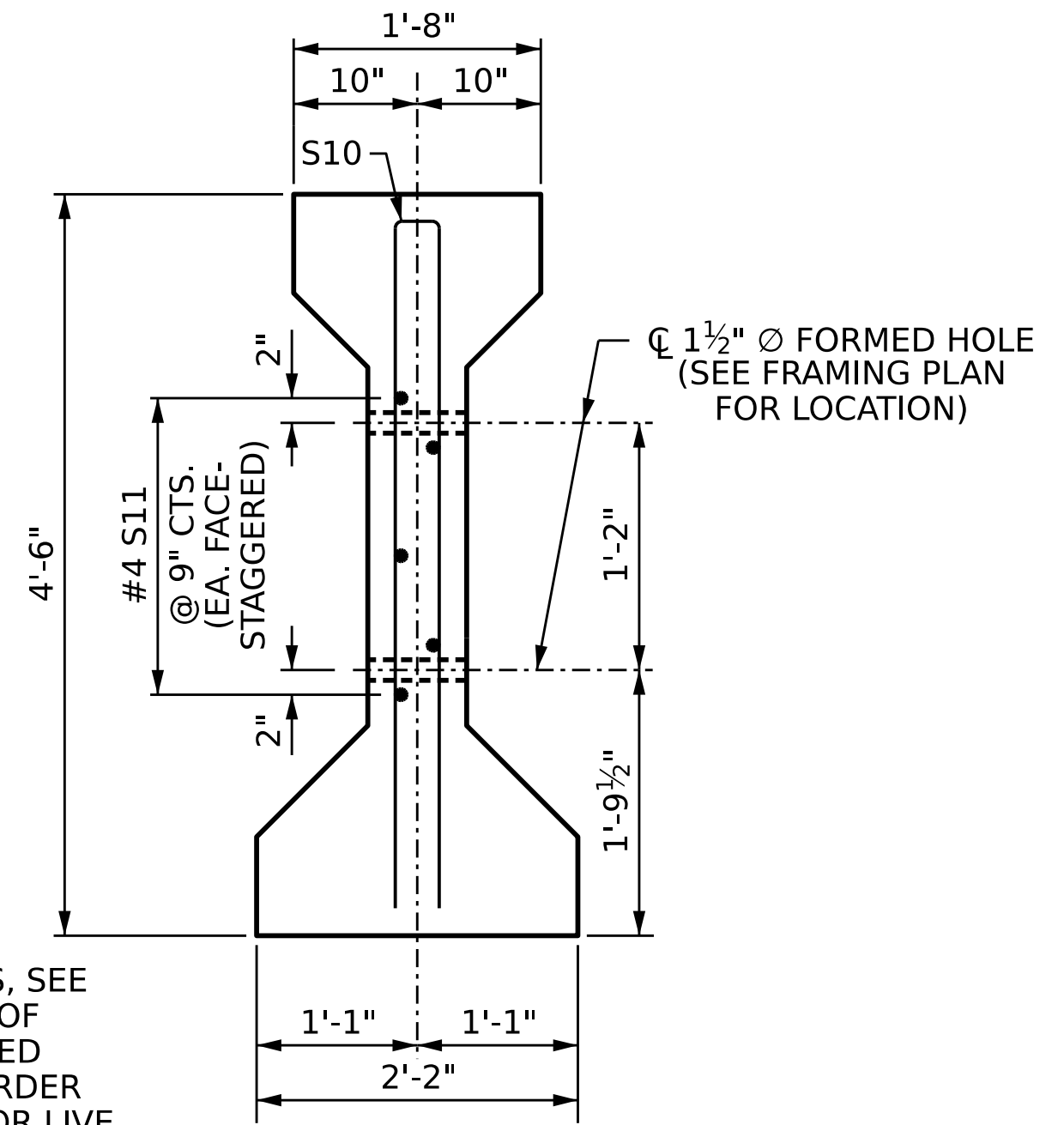
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DRAWN BY : **B.J. MANTEI** DATE : **3-28-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-8-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

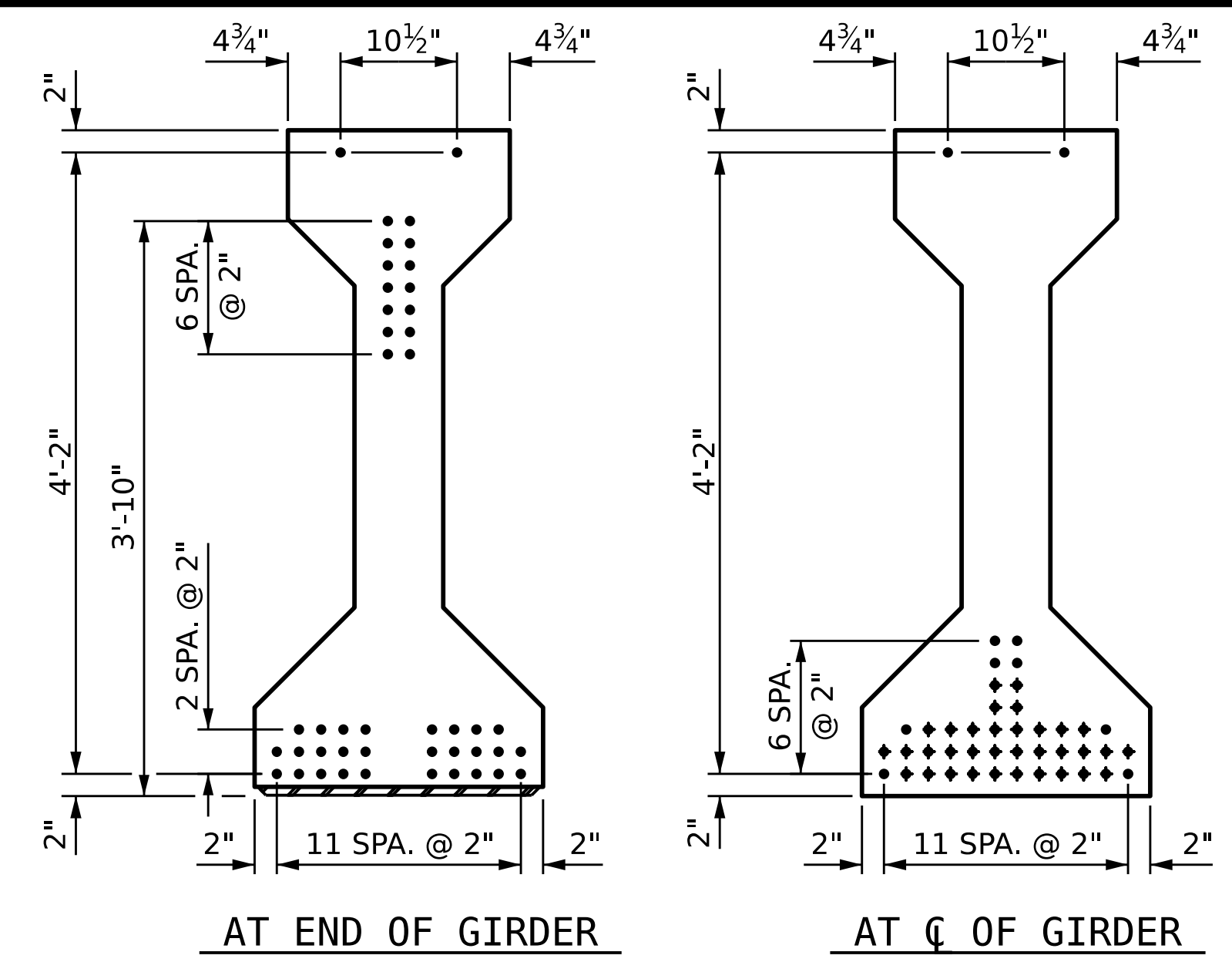


SECTION A-A

SECTION B-B



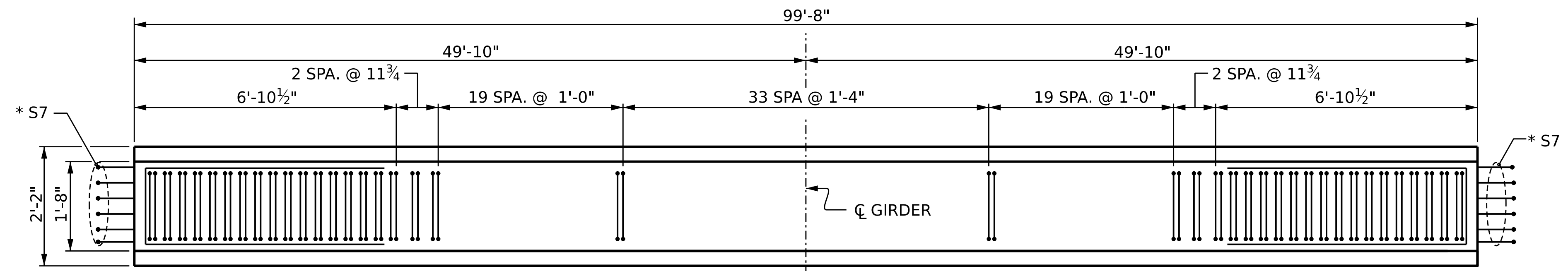
SECTION C-C
(S1 BARS NOT SHOWN)



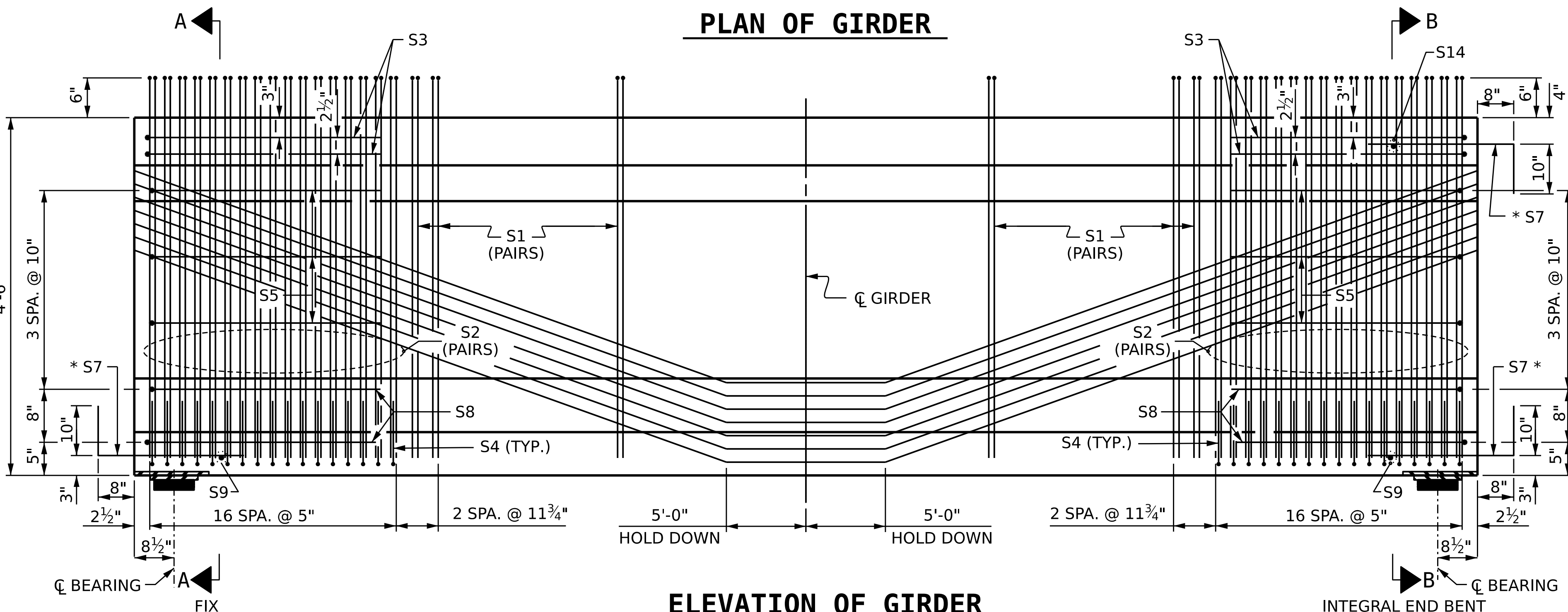
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS

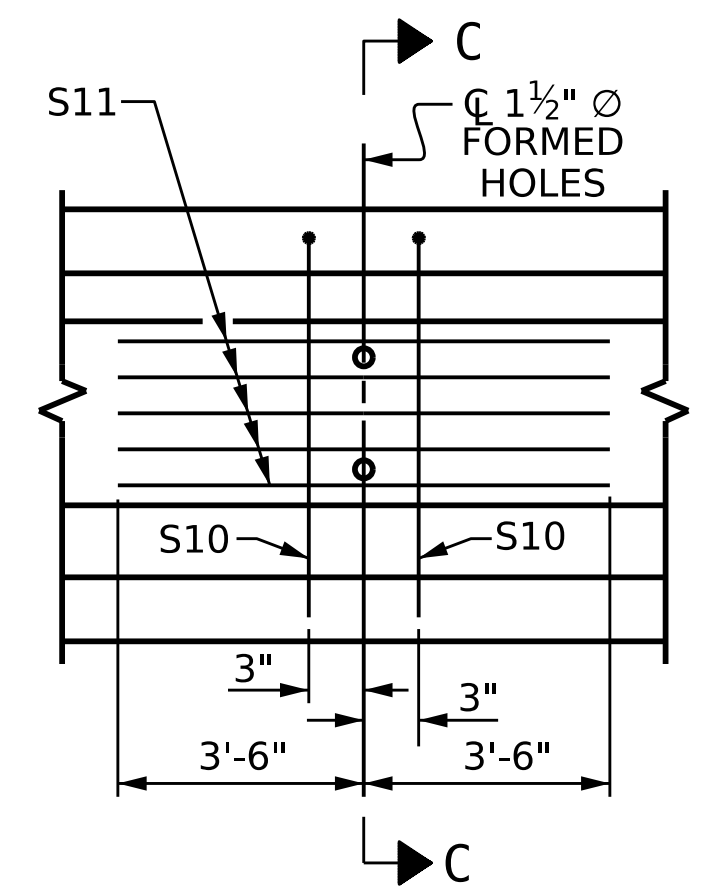


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)
(INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY.
SEE "FRAMING PLAN" SHEET FOR LOCATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER NOS.
BG1 THRU BG10

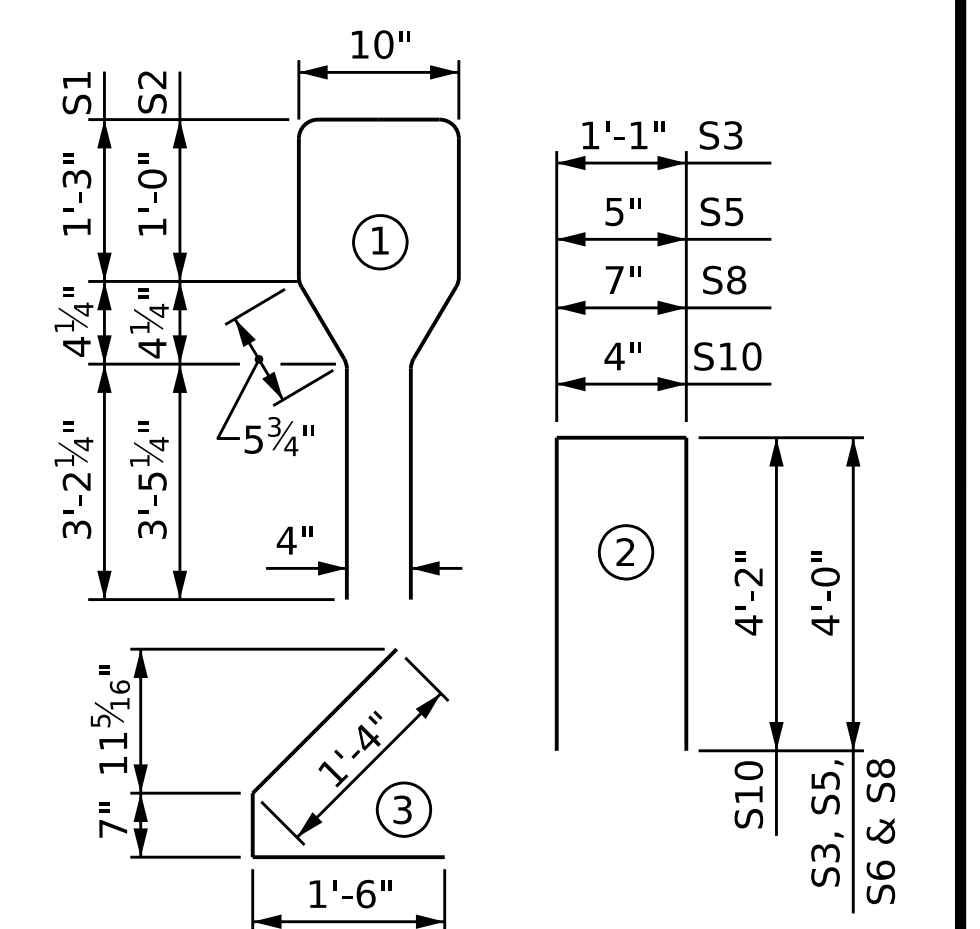
0.6" Ø L.R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	148	#5	1	10'-8"	1,647
S2	68	#6	1	10'-8"	1,089
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S4	68	#4	3	3'-5"	155
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S14	1	#3	STR	1'-4"	1

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

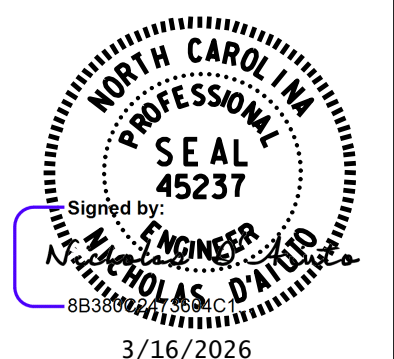
GIRDER	REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	3,084	20.3	44

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	99'-8"	996'-8"

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B

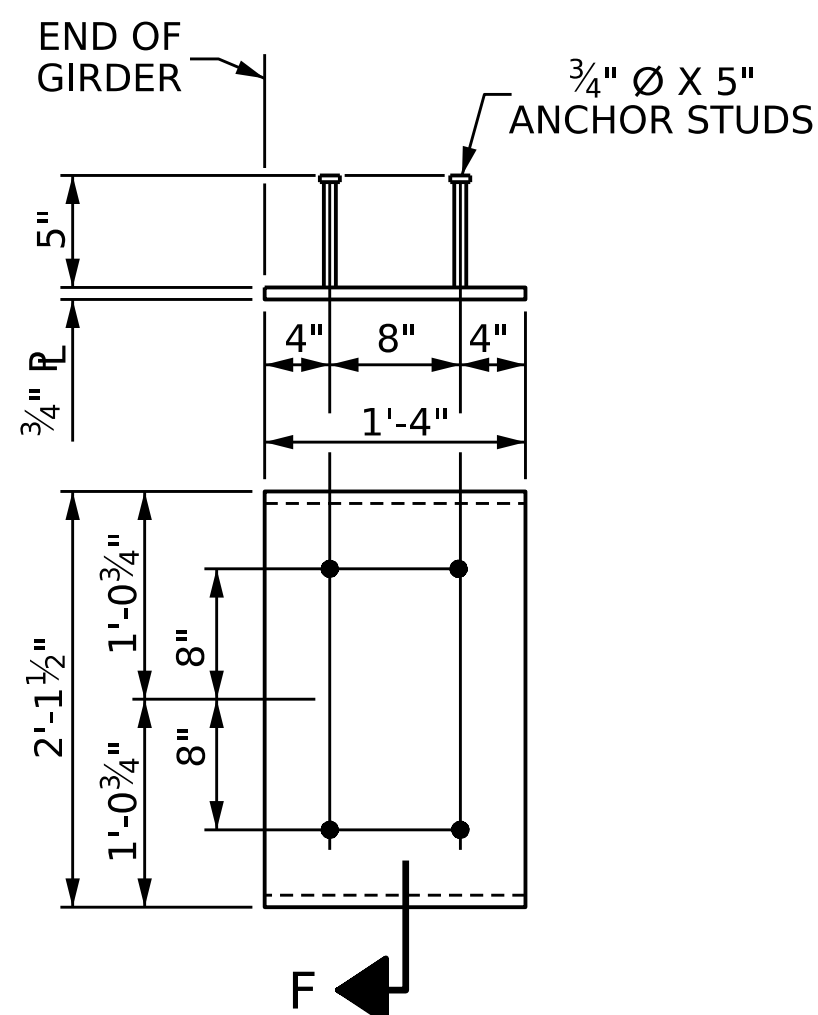
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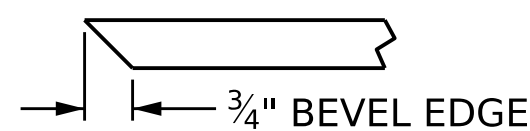
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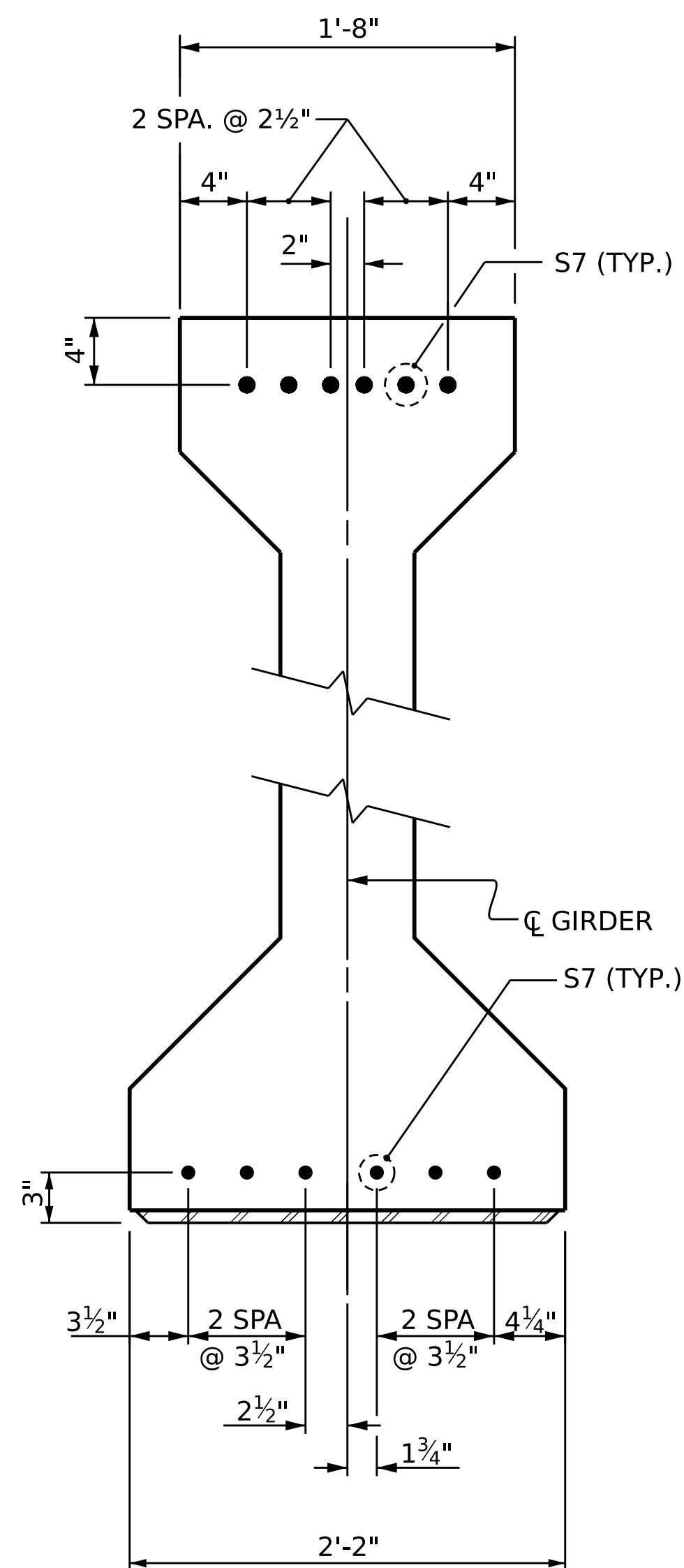
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER

(2 REQ'D PER GIRDER)



SECTION F

(SEE NOTES)



DETAIL A

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,500 PSI.

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

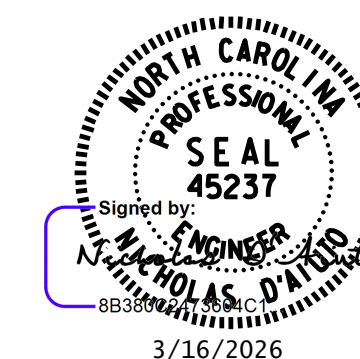
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

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.

THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 36.53 KIPS.

PROJECT NO. 49218.26
CUMBERLAND COUNTY
 STATION: 19+50.27 -L-



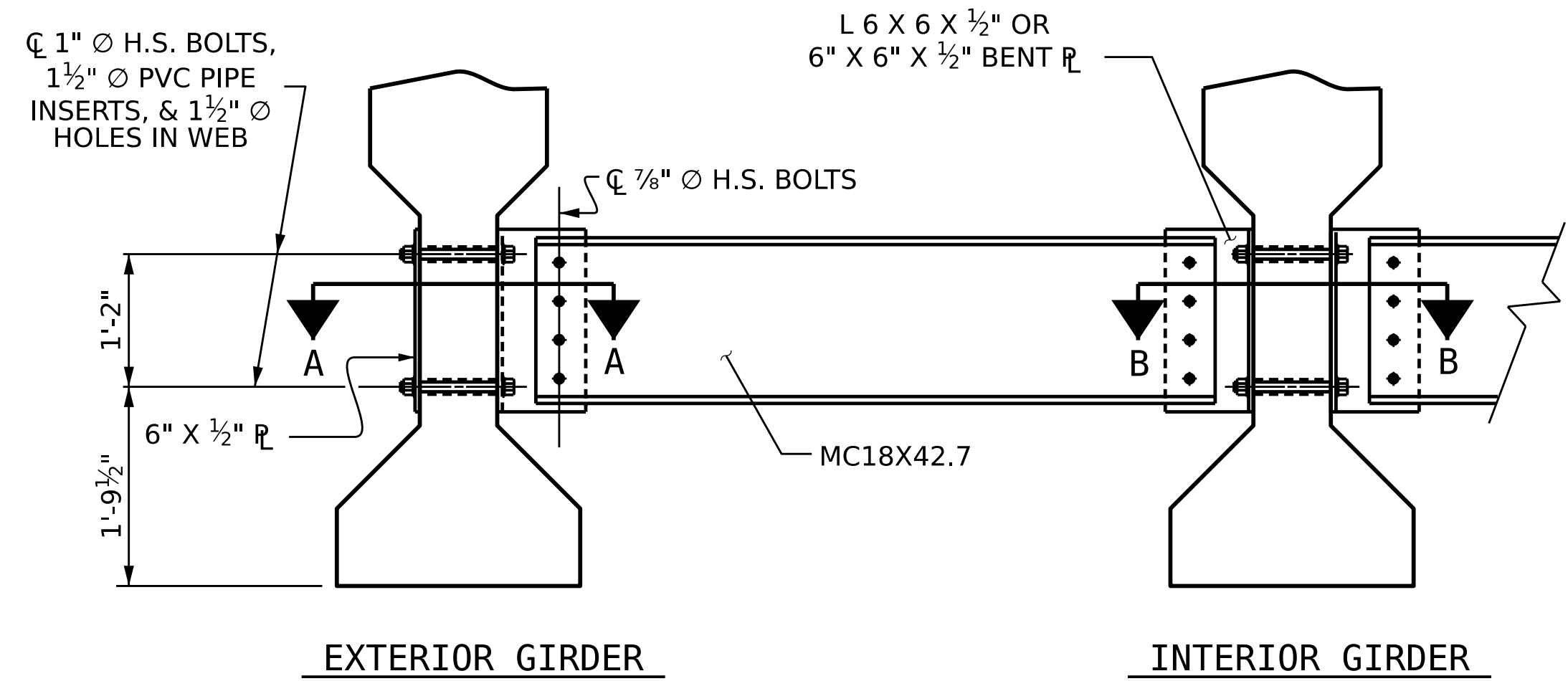
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
AASHTO TYPE IV GIRDER DETAILS

DRAWN BY : B.J. MANTEI DATE : 4-2-25
 CHECKED BY : N. D'AIUTO DATE : 4-8-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

DOCUMENT NOT CONSIDERED
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PART SECTION AT INTERMEDIATE DIAPHRAGM

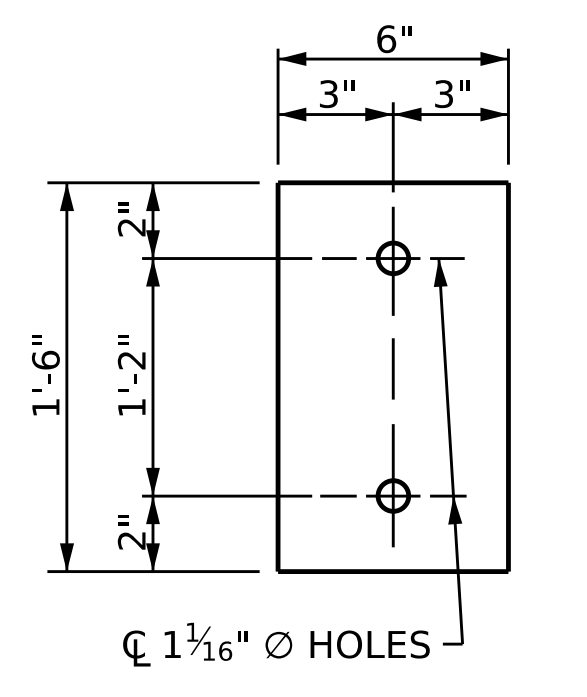
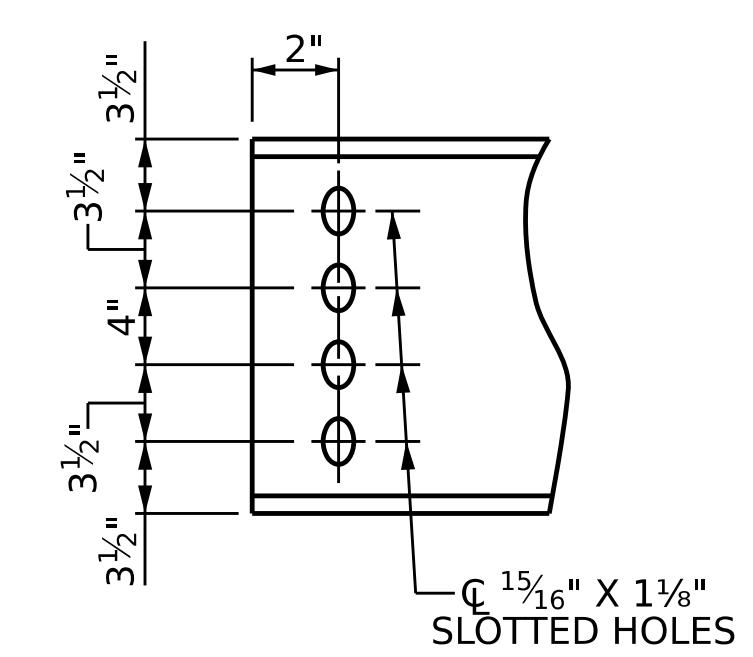
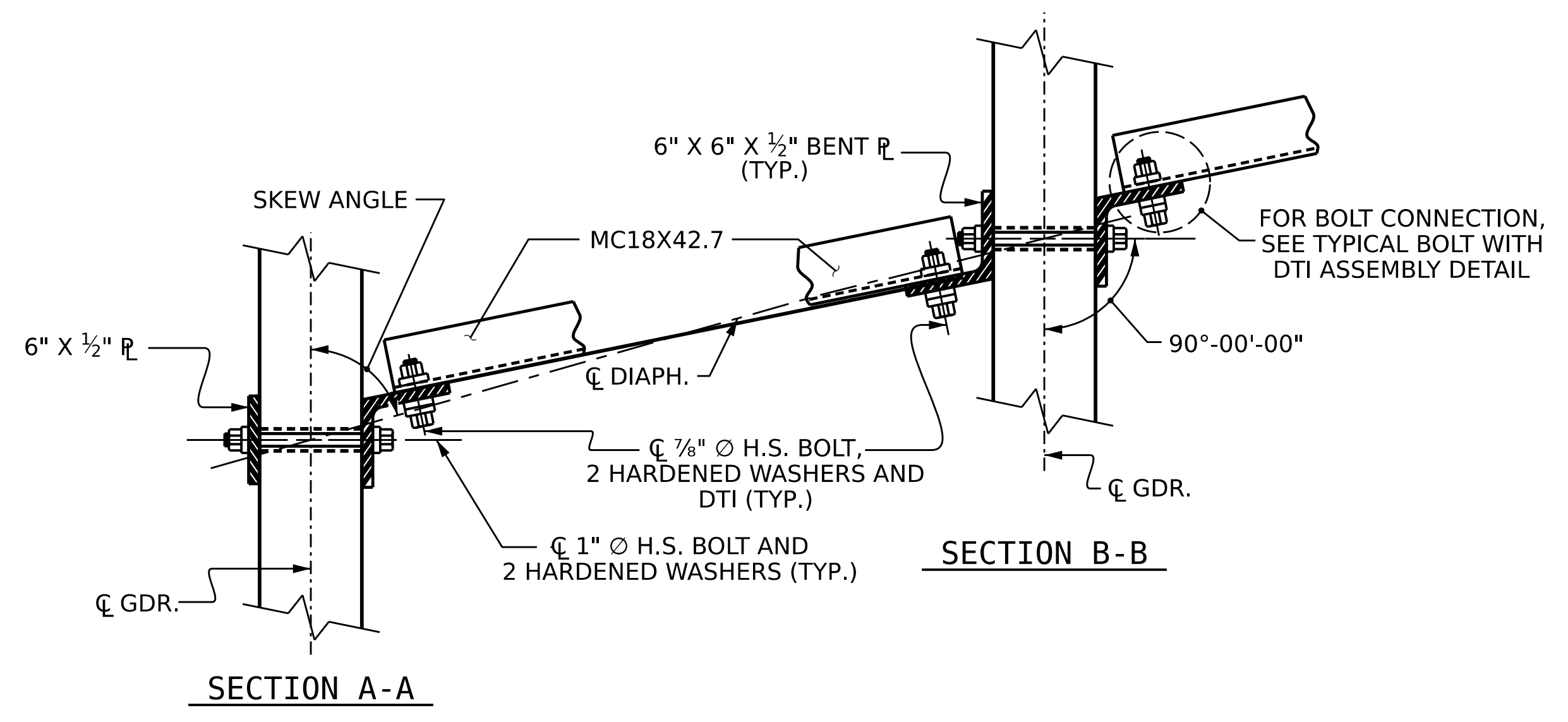


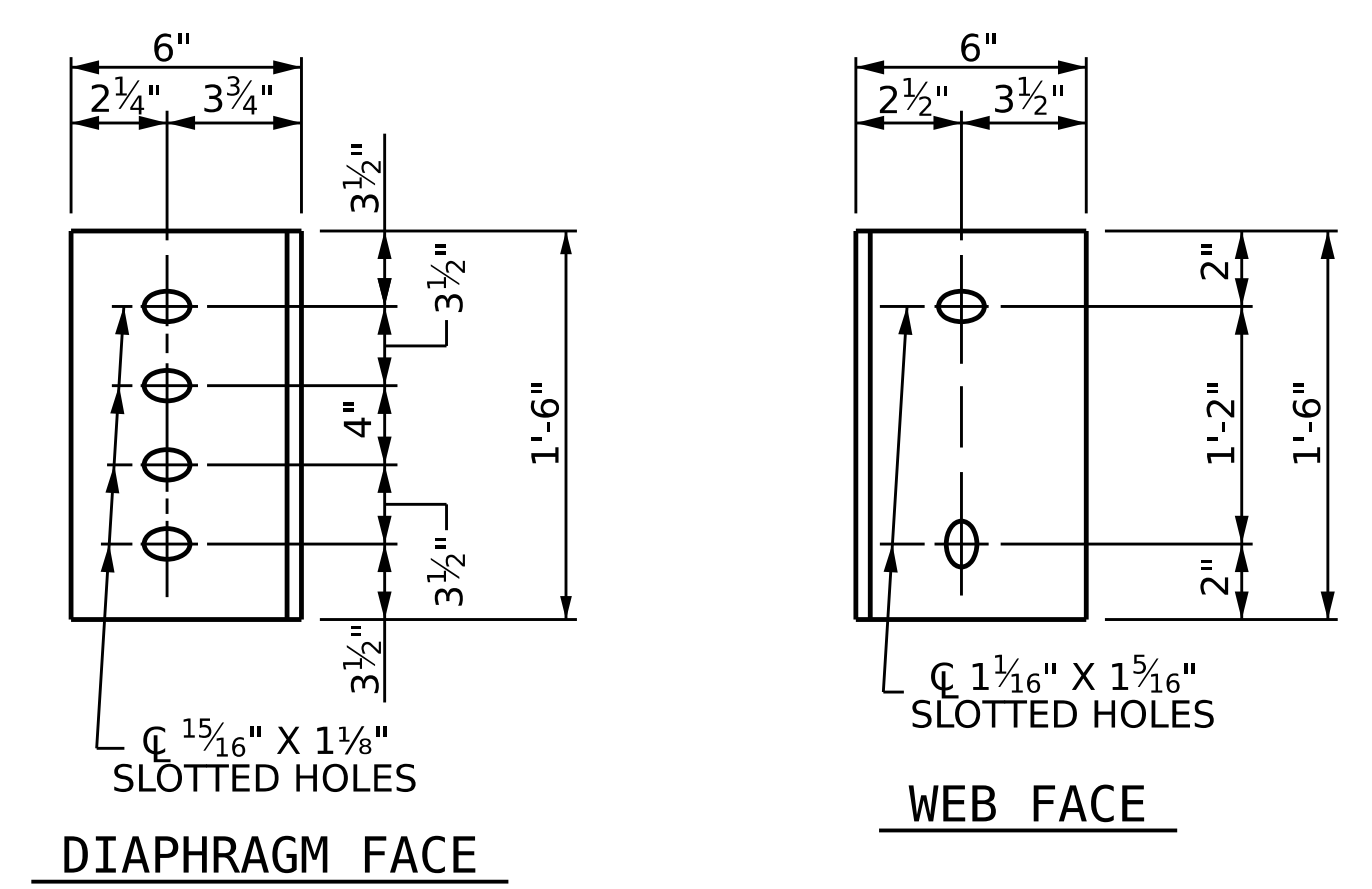
PLATE DETAILS



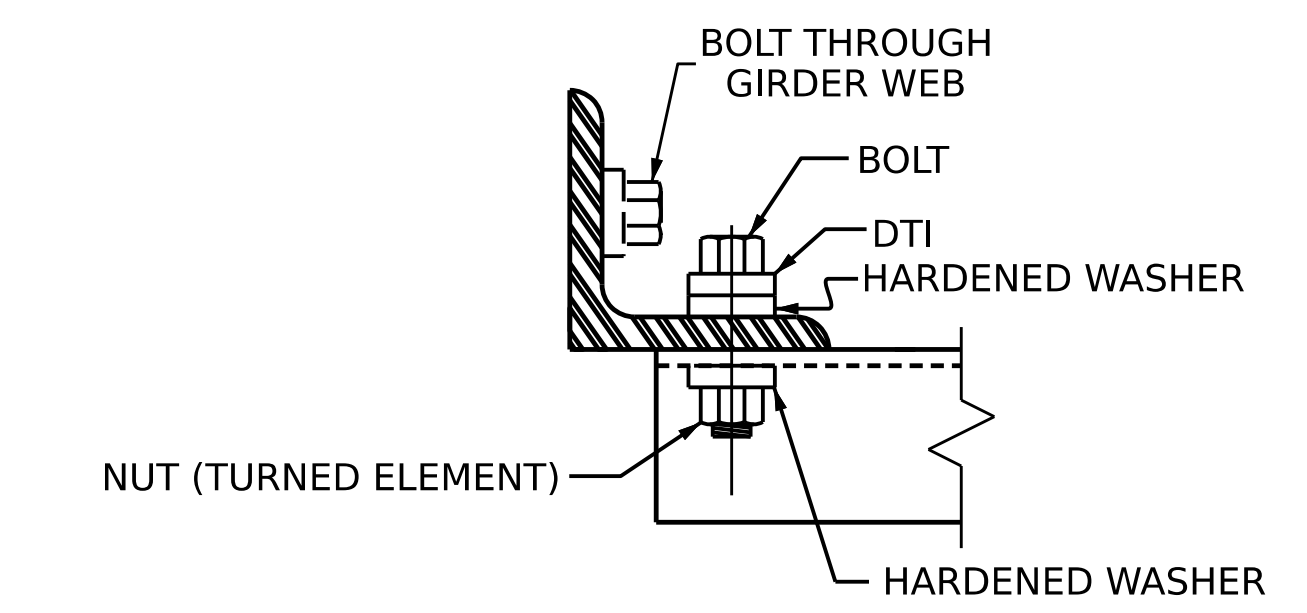
CHANNEL END



CONNECTION DETAILS



CONNECTOR PLATE DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

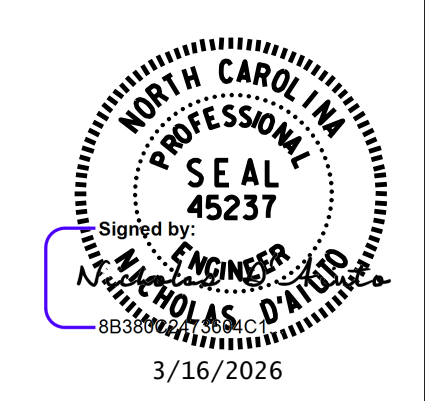
INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

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

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

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

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**INTERMEDIATE
 STEEL DIAPHRAGMS**

DRAWN BY :	B.J. MANTEI	DATE :	4-2-25
CHECKED BY :	N. D'AIUTO	DATE :	4-8-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

REVISIONS					SHEET NO. S-19 TOTAL SHEETS 48
NO.	BY:	DATE:	NO.	DATE:	
1			3		
2			4		

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NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

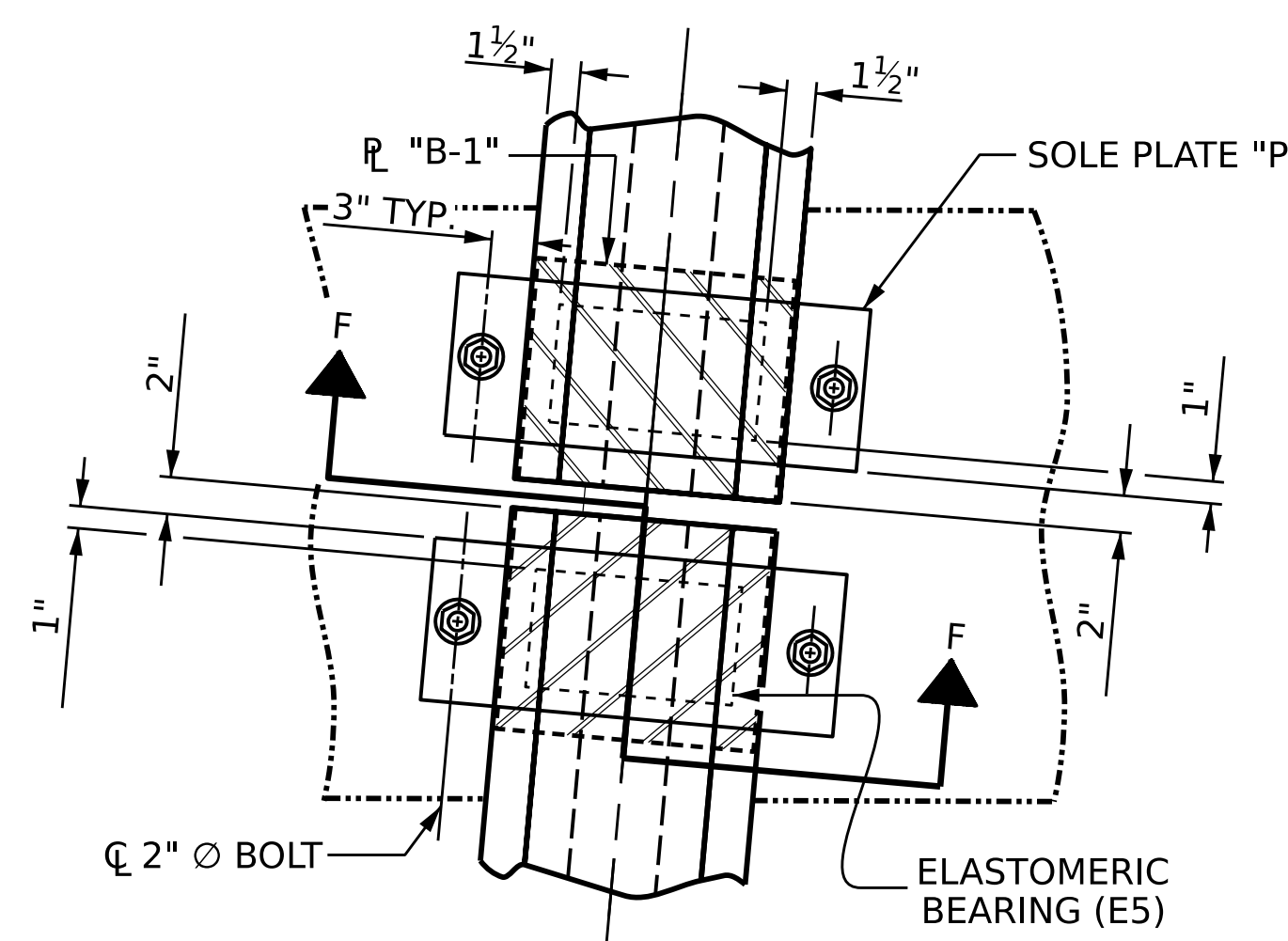
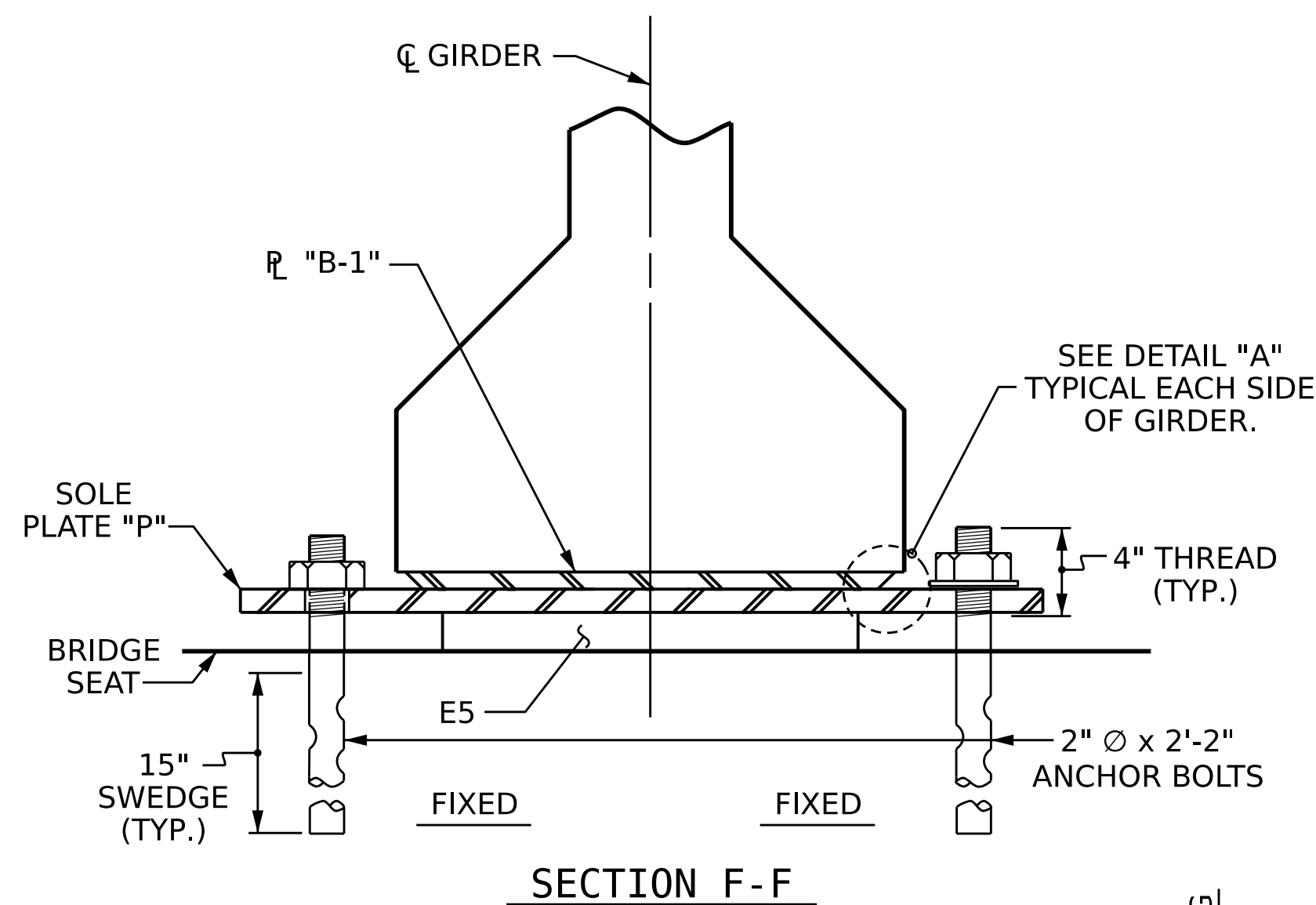
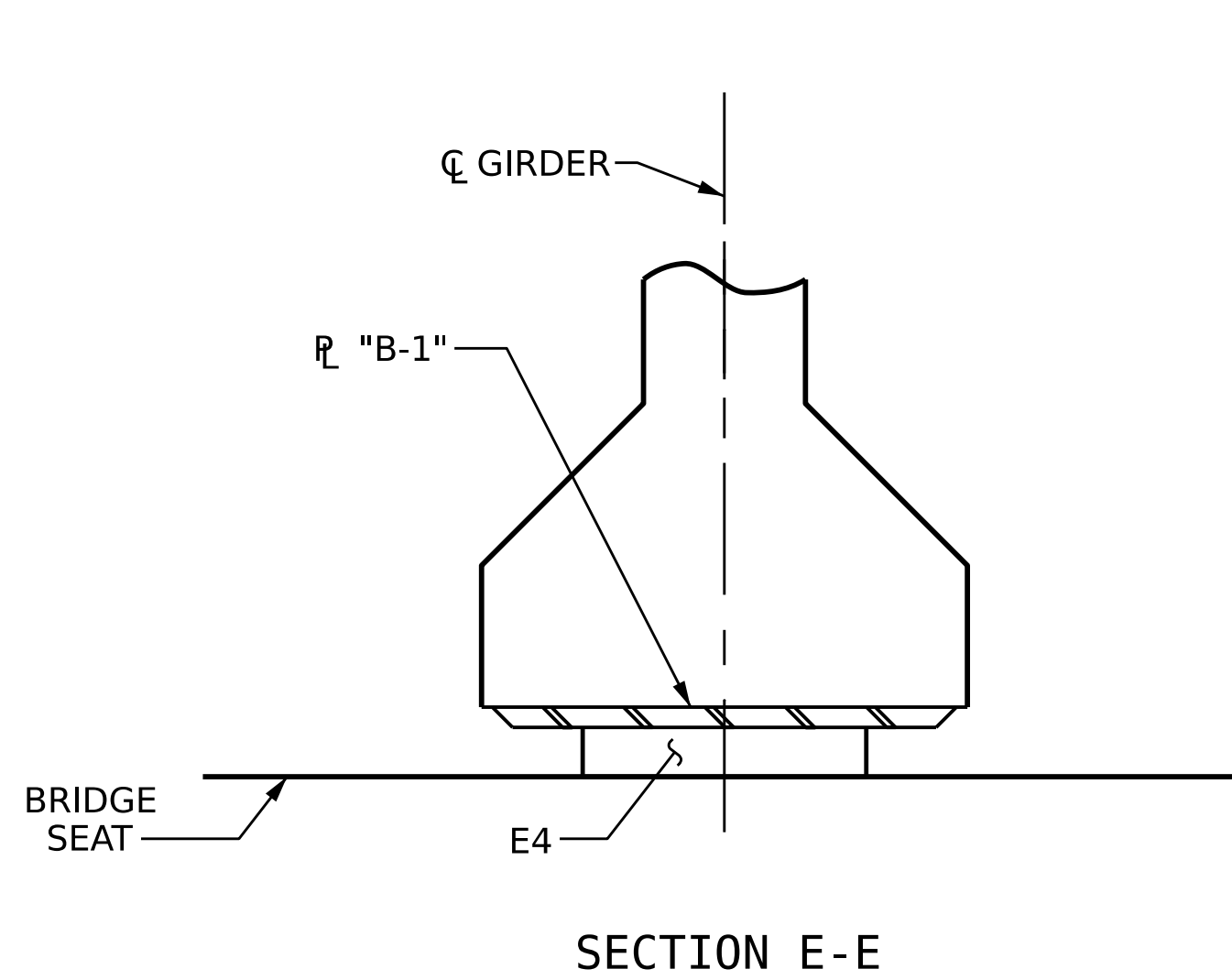
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

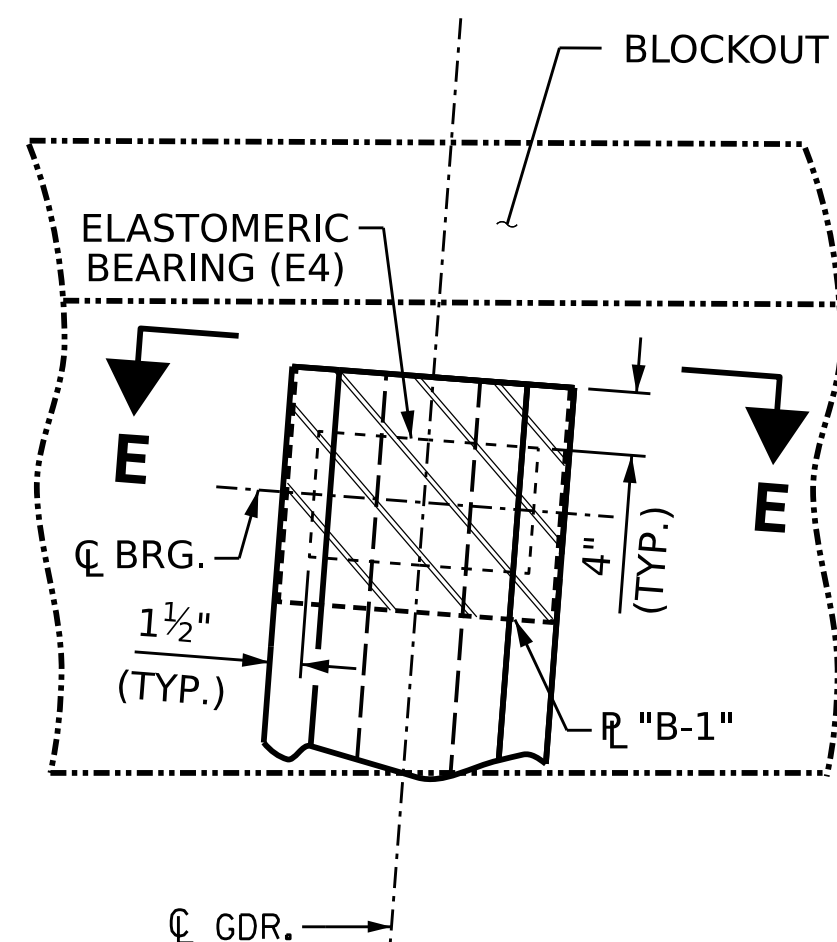
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

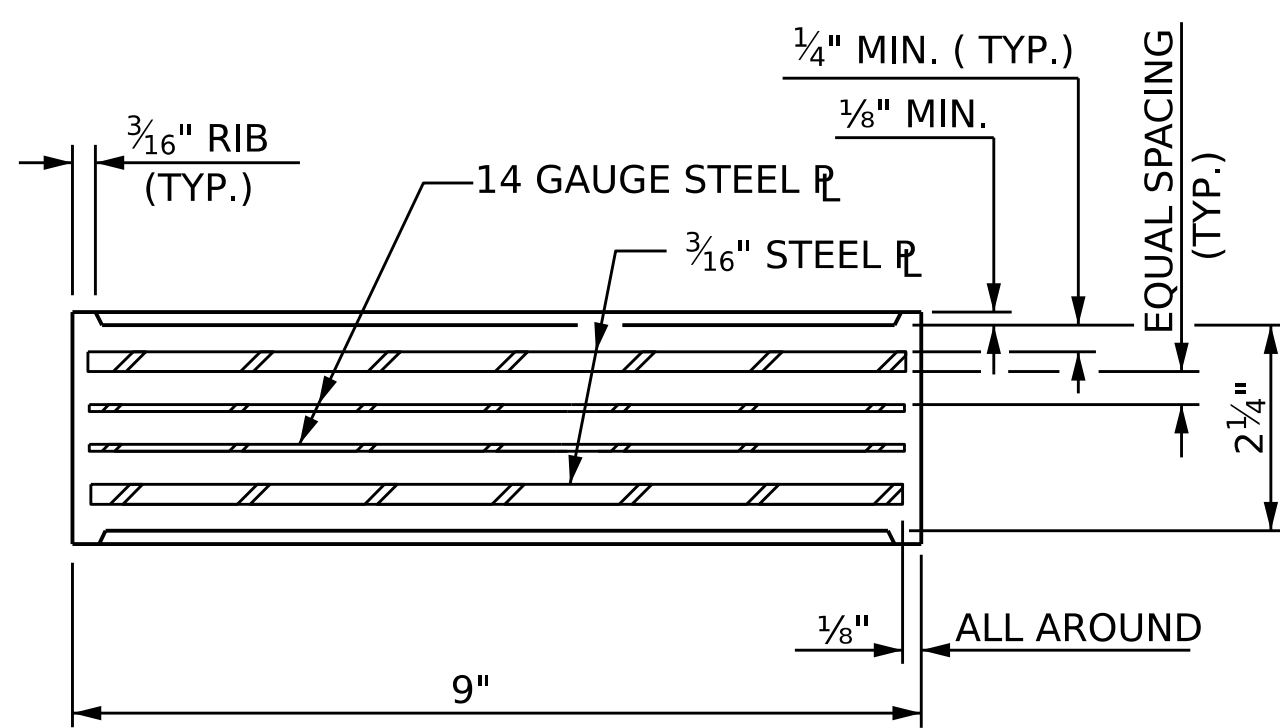
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



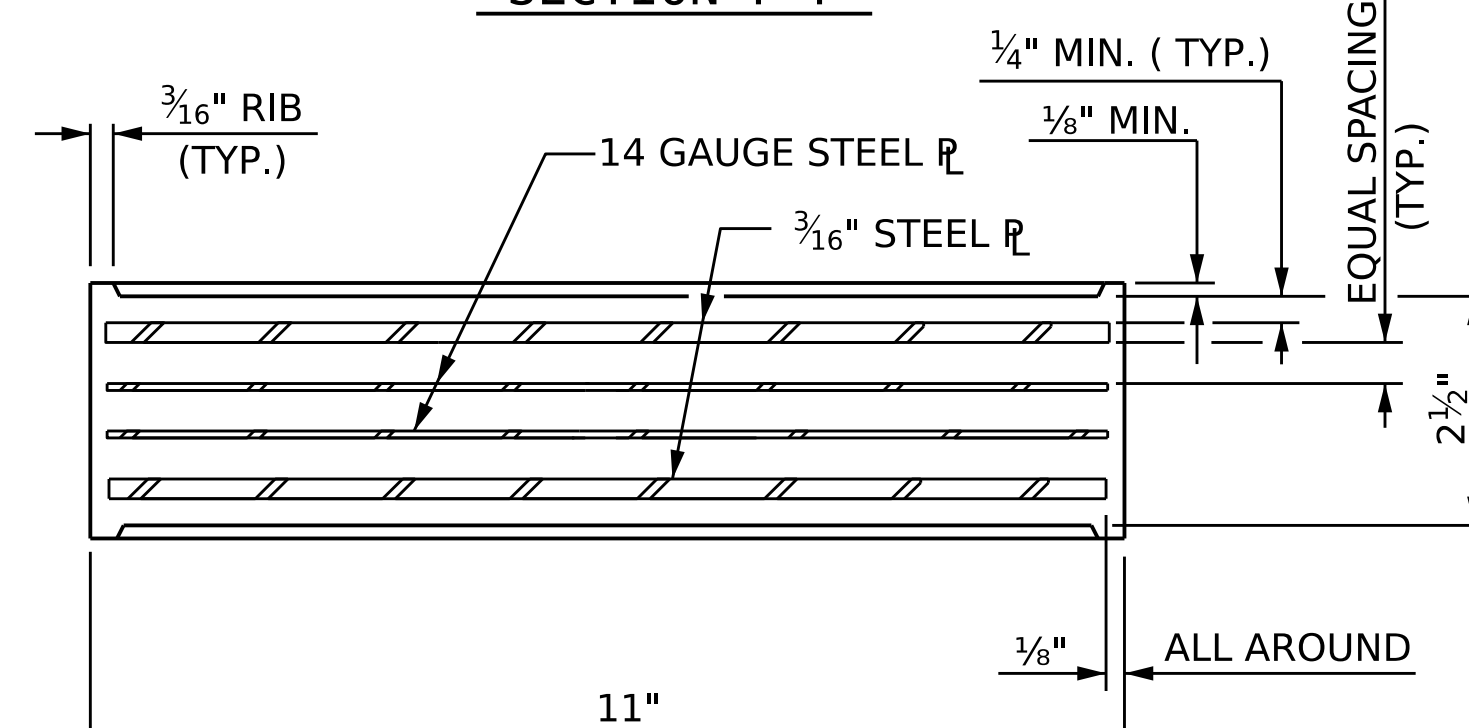
TYPICAL PLAN @ BENTS
(SHOWING CONTINUOUS BENT)



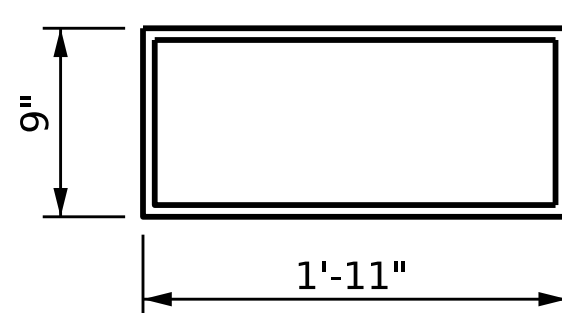
TYPICAL PLAN @ INTEGRAL END BENTS
END BENT 2 SHOWN, END BENT 1 SIMILAR.



TYPICAL SECTION OF ELASTOMERIC BEARINGS

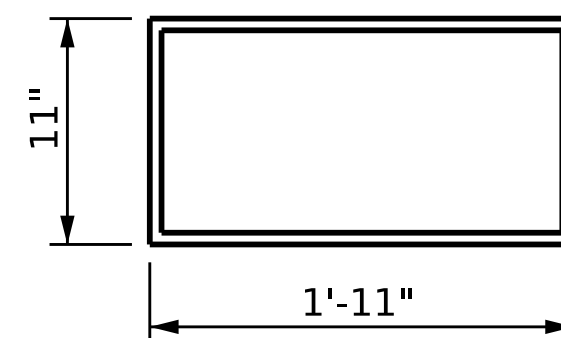


TYPICAL SECTION OF ELASTOMERIC BEARINGS



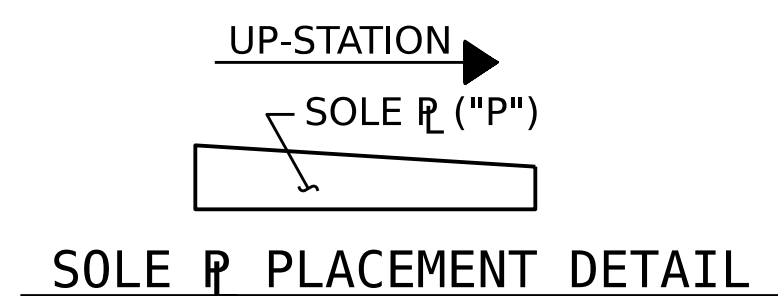
E4 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

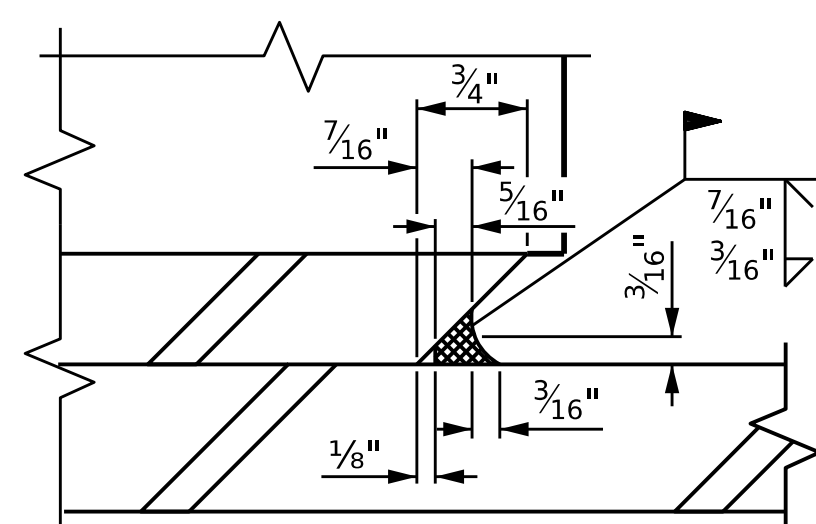


E5 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

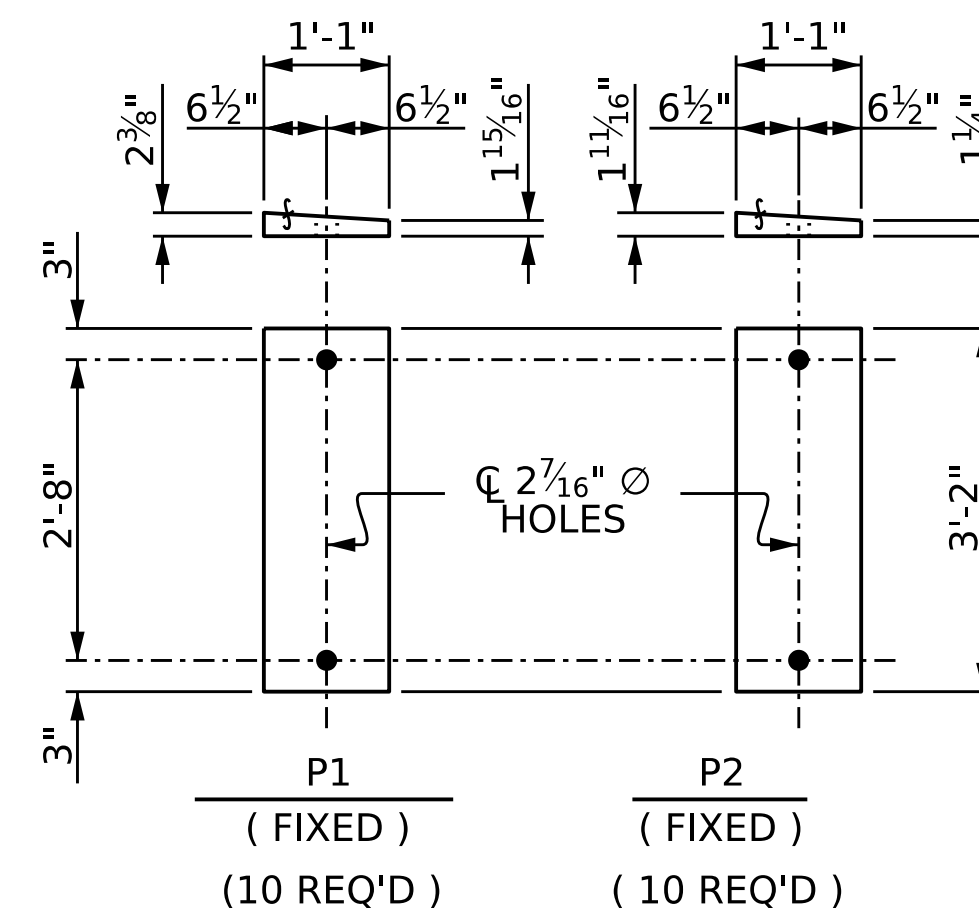
TYPE VI



SOLE PLATE PLACEMENT DETAIL



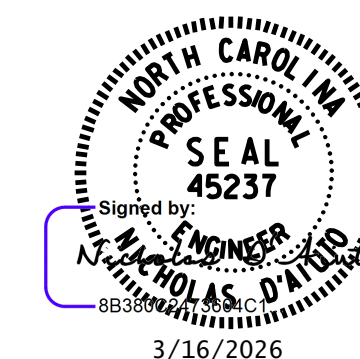
DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k
TYPE VI	420 K

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELASTOMERIC BEARING DETAILS

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

S-20
TOTAL SHEETS
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY : B. J. MANTEI DATE : 4-2-25
 CHECKED BY : N. D'AIUTO DATE : 4-8-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDER AG1																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.020	0.039	0.058	0.077	0.091	0.106	0.115	0.125	0.128	0.131	0.128	0.125	0.115	0.106	0.091	0.077	0.058	0.039	0.020	0.000
FINAL CAMBER	↑	0	¼"	⅞"	⅝"	13/16"	1"	1 1/8"	1 1/4"	1 5/16"	1 3/8"	1 3/8"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1"	13/16"	5/8"	7/16"	1/4"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND 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																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS AG2, AG3, & AG9																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.022	0.044	0.065	0.086	0.102	0.118	0.129	0.139	0.143	0.146	0.143	0.139	0.129	0.118	0.102	0.086	0.065	0.044	0.022	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	7/8"	15/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	15/16"	7/8"	1 1/16"	9/16"	3/8"	3/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND 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																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS AG4 & AG8																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.021	0.043	0.063	0.083	0.099	0.115	0.125	0.136	0.139	0.143	0.139	0.136	0.125	0.115	0.099	0.083	0.063	0.043	0.021	0.000
FINAL CAMBER	↑	0	3/16"	7/16"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/16"	1 1/4"	1 3/16"	1 1/8"	1"	7/8"	3/4"	9/16"	7/16"	3/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND 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																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS AG5, AG6, AG7 & AG10																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.020	0.041	0.061	0.080	0.096	0.111	0.121	0.131	0.134	0.137	0.134	0.131	0.121	0.111	0.096	0.080	0.061	0.041	0.020	0.000
FINAL CAMBER	↑	0	1/4"	7/16"	5/8"	3/4"	15/16"	1 1/16"	1 3/16"	1 3/16"	1 3/16"	1 5/16"	1 5/16"	1 3/16"	1 3/16"	1 1/16"	15/16"	3/4"	5/8"	7/16"	1/4"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT `` FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. **49218.26**

CUMBERLAND COUNTY

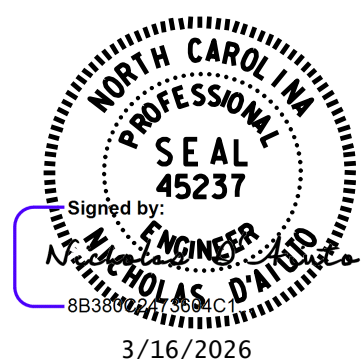
STATION: **19+50.27 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**GIRDER DEFLECTION
AND CAMBER**



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

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SIGNATURES COMPLETED

DRAWN BY : J. N. AUSTIN DATE : 4-9-25
 CHECKED BY : N. D'AIUTO DATE : 4-10-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN B																					
	GIRDER BG1																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.020	0.039	0.058	0.077	0.091	0.106	0.115	0.125	0.128	0.131	0.128	0.125	0.115	0.106	0.091	0.077	0.058	0.039	0.020	0.000
FINAL CAMBER	↑	0	¼"	⅞"	⅝"	13/16"	1"	1 1/8"	1 1/4"	1 5/16"	1 3/8"	1 3/8"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1"	13/16"	5/8"	7/16"	1/4"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT `` FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND FUTURE WEARING SURFACE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN B																					
	GIRDERS BG2, BG3, & BG9																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.022	0.044	0.065	0.086	0.102	0.118	0.129	0.139	0.143	0.146	0.143	0.139	0.129	0.118	0.102	0.086	0.065	0.044	0.022	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	7/8"	1 5/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1 5/16"	7/8"	1 1/16"	9/16"	3/8"	3/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND 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																						
0.6" Ø LOW RELAXATION STRANDS	SPAN B																					
	GIRDERS BG4 & BG8																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.021	0.043	0.063	0.083	0.099	0.115	0.125	0.136	0.139	0.143	0.139	0.136	0.125	0.115	0.099	0.083	0.063	0.043	0.021	0.000
FINAL CAMBER	↑	0	3/16"	7/16"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/16"	1 1/4"	1 3/16"	1 1/8"	1"	7/8"	3/4"	9/16"	7/16"	3/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND 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																						
0.6" Ø LOW RELAXATION STRANDS	SPAN B																					
	GIRDERS BG5, BG6, BG7 & BG10																					
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.077	0.112	0.144	0.174	0.198	0.218	0.232	0.241	0.244	0.241	0.232	0.218	0.198	0.174	0.144	0.112	0.077	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.020	0.041	0.061	0.080	0.096	0.111	0.121	0.131	0.134	0.137	0.134	0.131	0.121	0.111	0.096	0.080	0.061	0.041	0.020	0.000
FINAL CAMBER	↑	0	¼"	7/16"	5/8"	3/4"	15/16"	1 1/16"	1 3/16"	1 3/16"	1 3/16"	1 5/16"	1 3/16"	1 3/16"	1 1/16"	1 1/16"	15/16"	3/4"	5/8"	7/16"	1/4"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS, BARRIERS AND FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT `` FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. **49218.26**

CUMBERLAND COUNTY

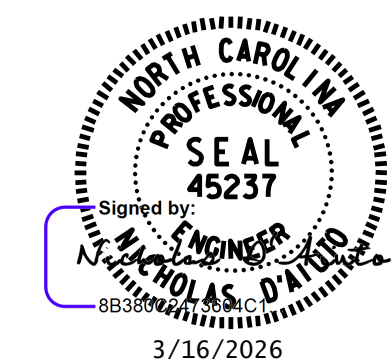
STATION: **19+50.27 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER DEFLECTION
AND CAMBER



DRAWN BY :	J. N. AUSTIN	DATE :	4-9-25
CHECKED BY :	N. D'AIUTO	DATE :	4-10-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

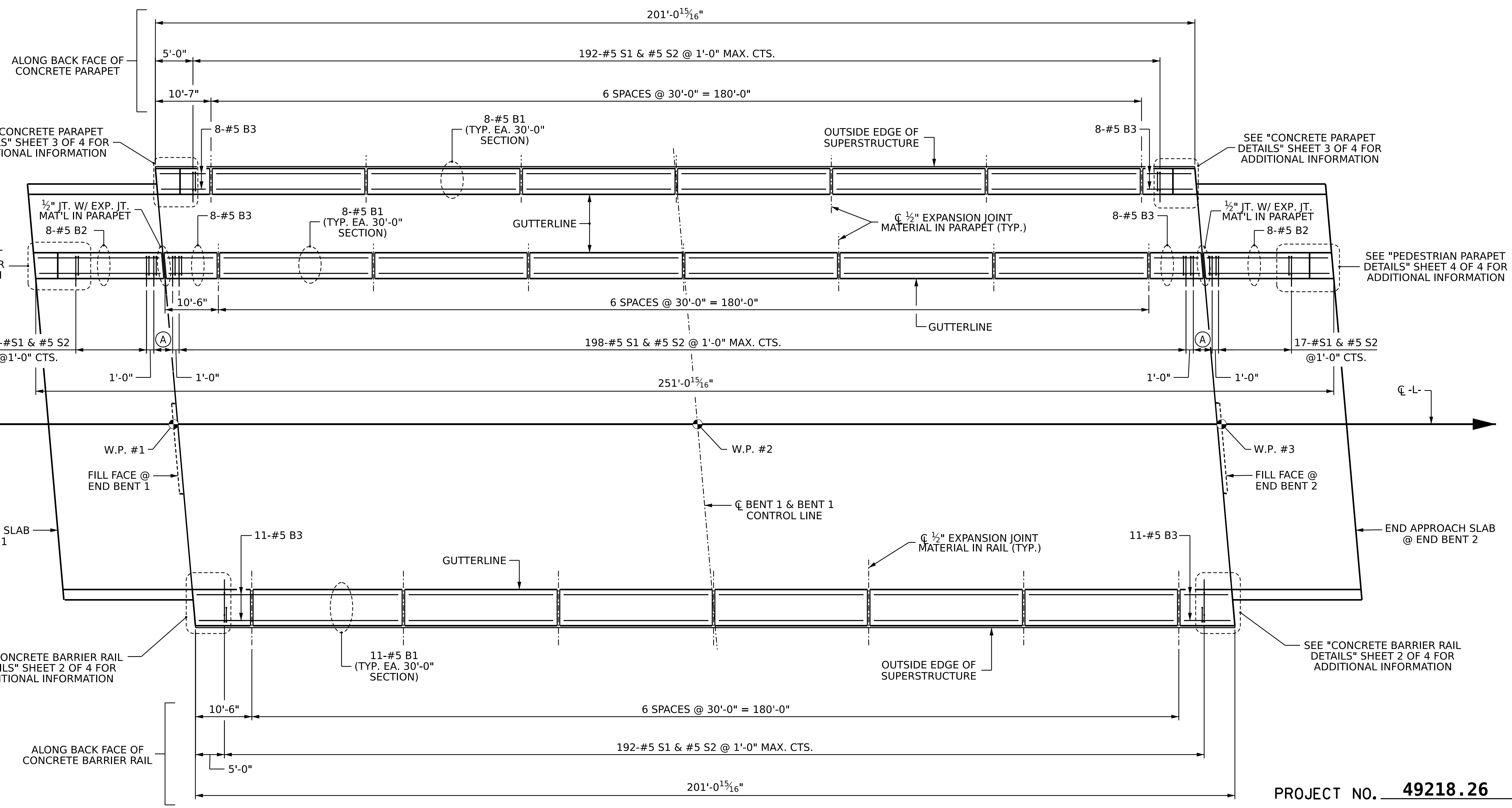
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SIGNATURES COMPLETED

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2			4		

S-22
TOTAL SHEETS
48

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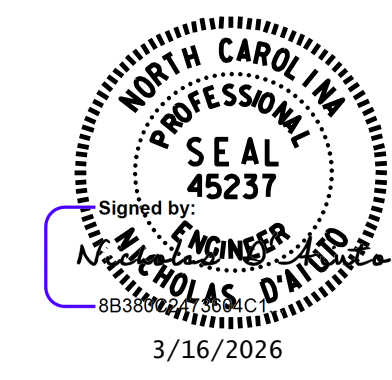


SPAN A
SPAN B

PLAN OF CONCRETE BARRIER AND PARAPETS

(A) 4-#5 S1 & S2 @ 8" CTS.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CONCRETE BARRIER RAIL
 AND PARAPETS**

DRAWN BY : J. N. AUSTIN DATE : 4-29-25
 CHECKED BY : N. D'AIUTO DATE : 5-2-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-23
2			4			TOTAL SHEETS 48

NOTES

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

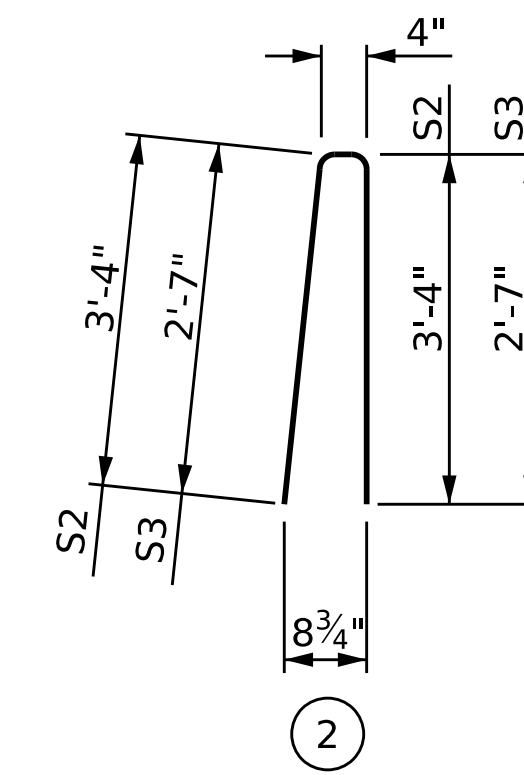
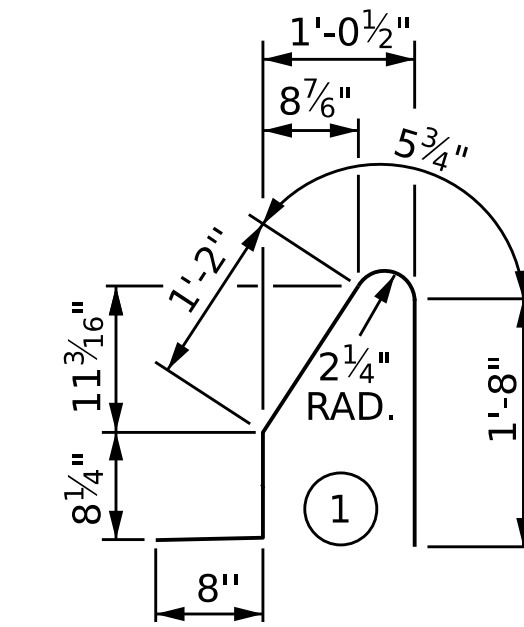
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THICKENING OF THE BARRIER RAIL IS REQUIRED IN THE AREA OF THE AESTHETIC ELEMENTS.

AESTHETICS ARE NOT SHOWN FOR CLARITY. SEE "BRIDGE AESTHETIC DETAILS" SHEETS FOR ADDITIONAL INFORMATION.

BAR TYPES



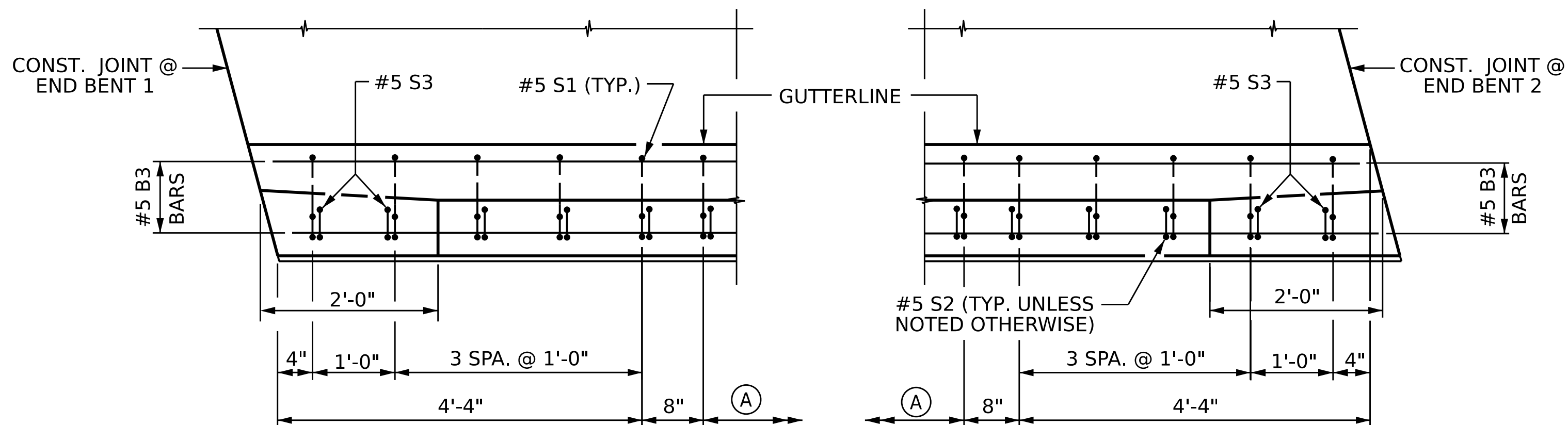
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

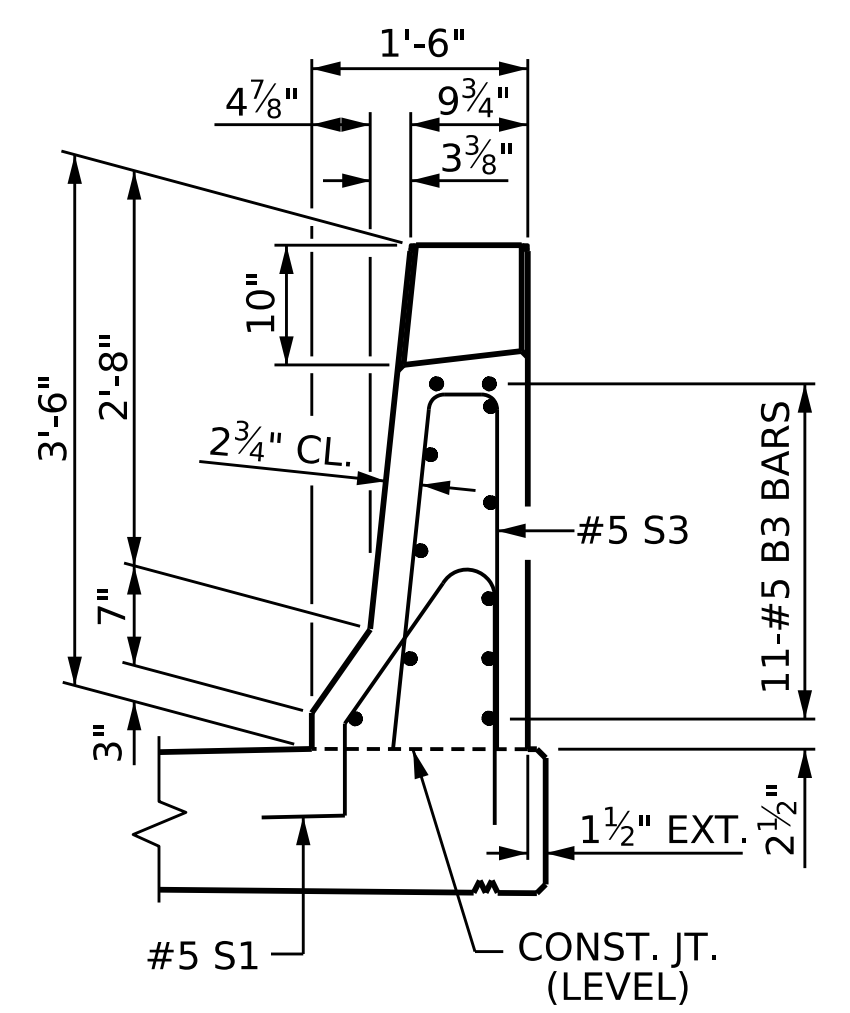
FOR CONCRETE BARRIER RAIL ONLY

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	66	5	STR	29' - 7"	2,036
B3	22	5	STR	10' - 1"	231
S1	202	5	STR	4' - 8"	983
S2	198	5	STR	7' - 0"	1,446
S3	4	5	STR	3' - 6"	15

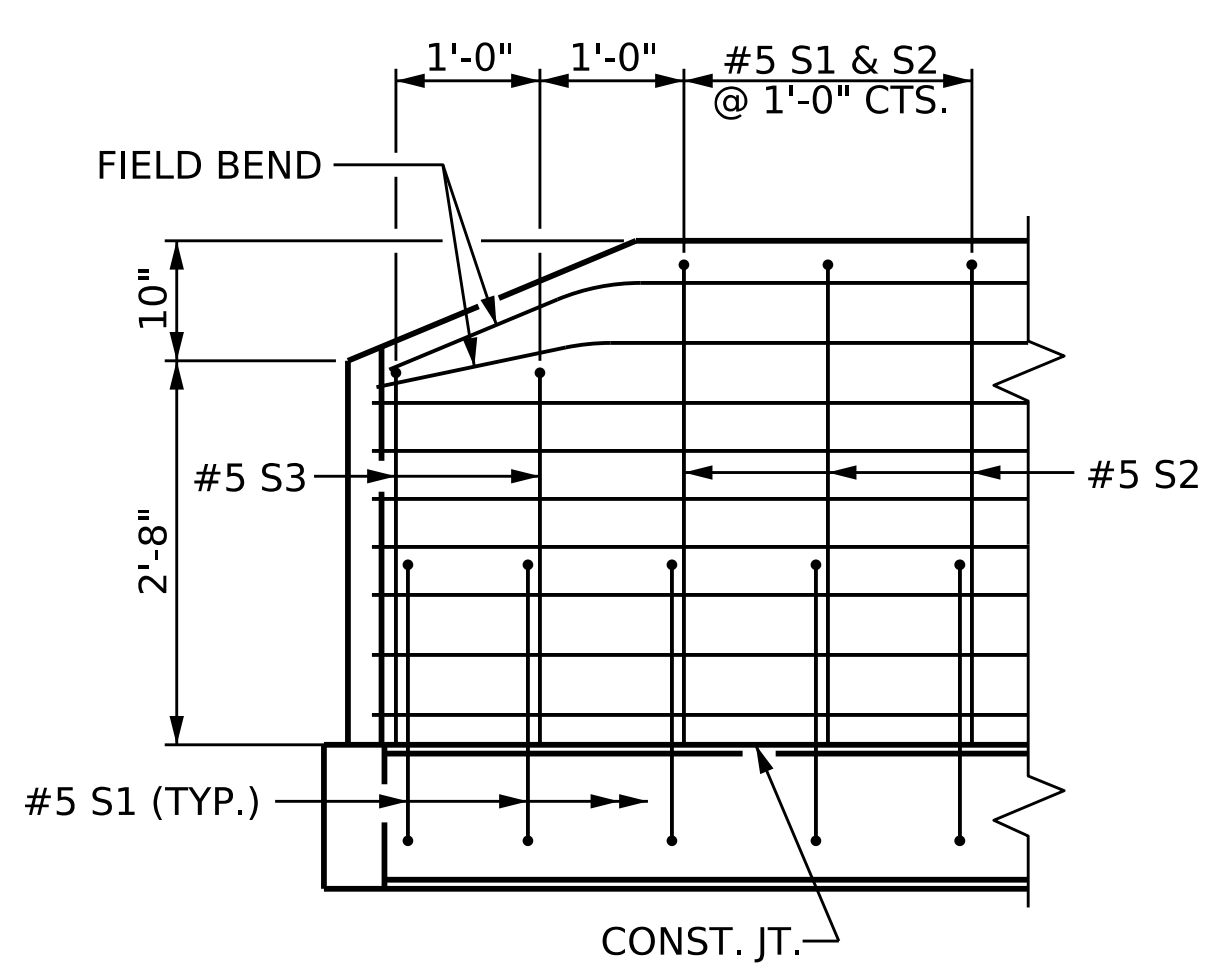
EPOXY COATED REINFORCING STEEL	LBS.	4,711
CLASS ``AA`` CONCRETE	C.Y.	26.9
CONCRETE BARRIER RAIL	LIN. FT.	201.08



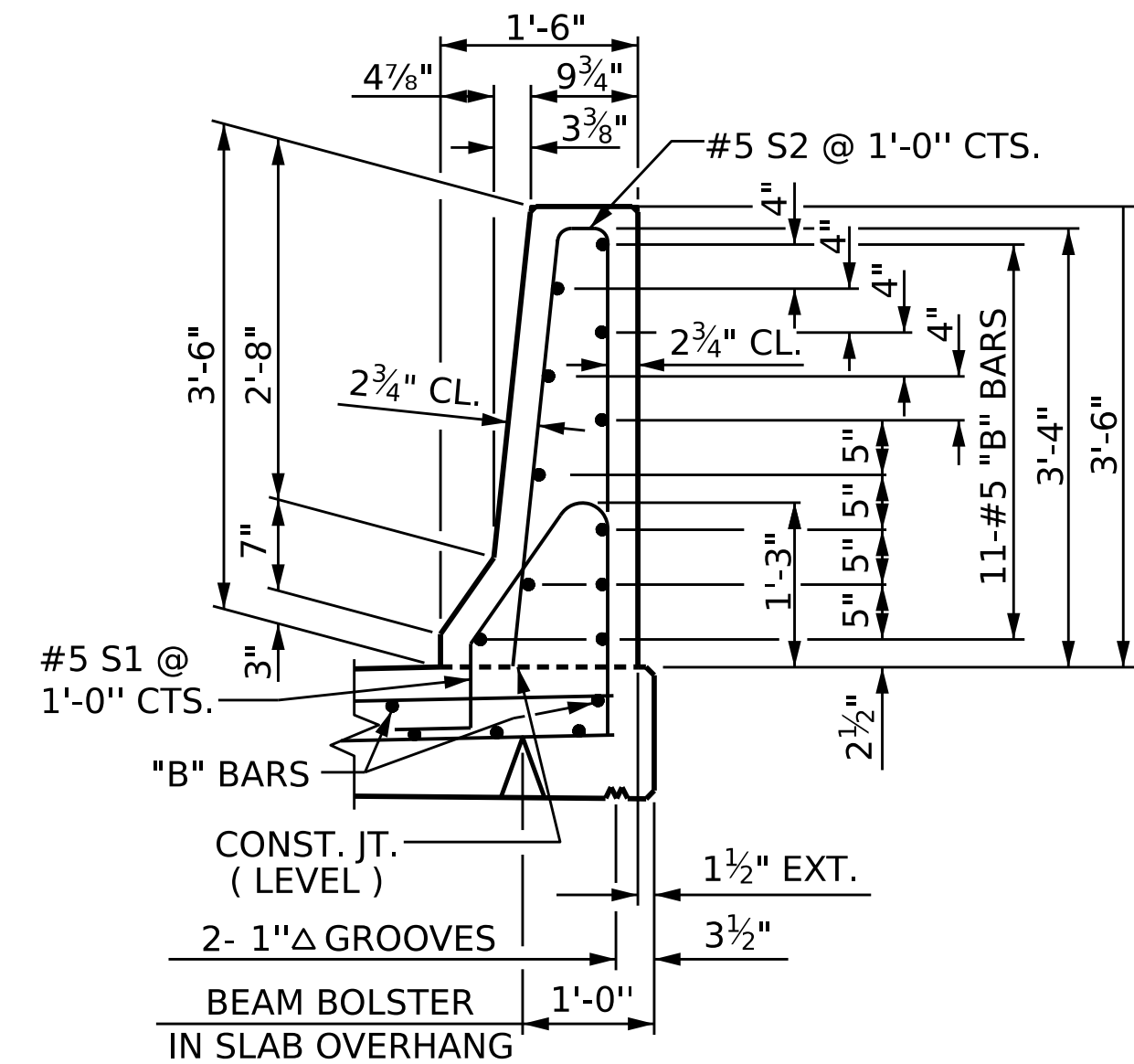
PLAN
 (A) 192-#5 S1 & #5 S2 @ 1'-0" MAX. CTS.



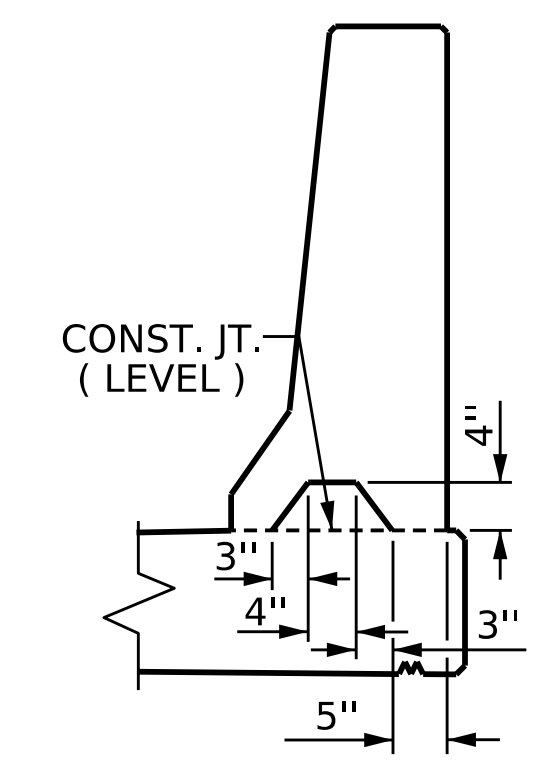
END VIEW



SIDE VIEW
END OF RAIL DETAILS



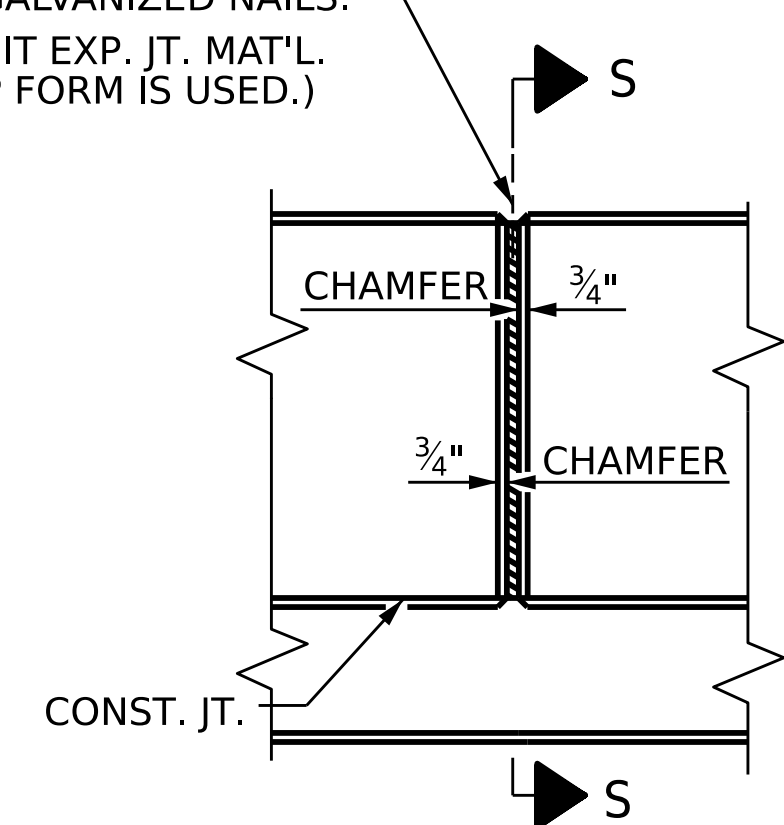
SECTION THRU RAIL



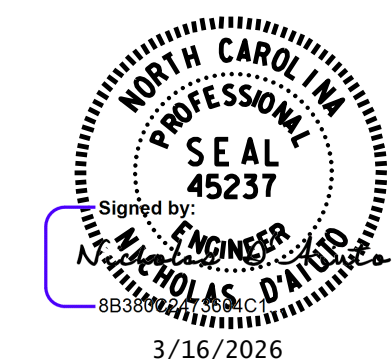
SECTION S-S

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

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



ELEVATION AT EXPANSION JOINTS



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CONCRETE BARRIER RAIL
 DETAILS**

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

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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

DRAWN BY :	J. N. AUSTIN	DATE :	4-25-25
CHECKED BY :	N. D'AIUTO	DATE :	5-2-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

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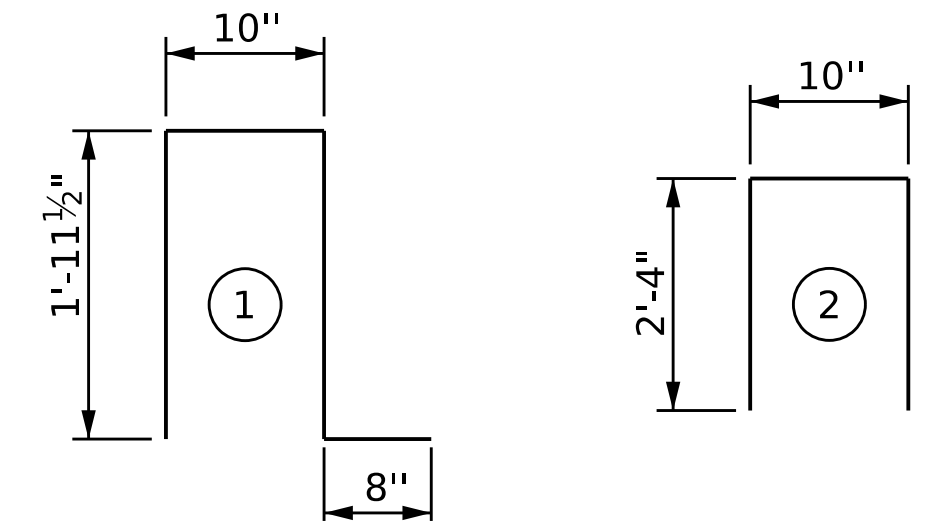
THE PARAPET IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

THICKENING OF THE CONCRETE PARAPET IS REQUIRED IN THE AREA OF THE AESTHETIC ELEMENTS.

AESTHETICS ARE NOT SHOWN FOR CLARITY. SEE "BRIDGE AESTHETIC DETAILS" SHEETS FOR ADDITIONAL INFORMATION.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

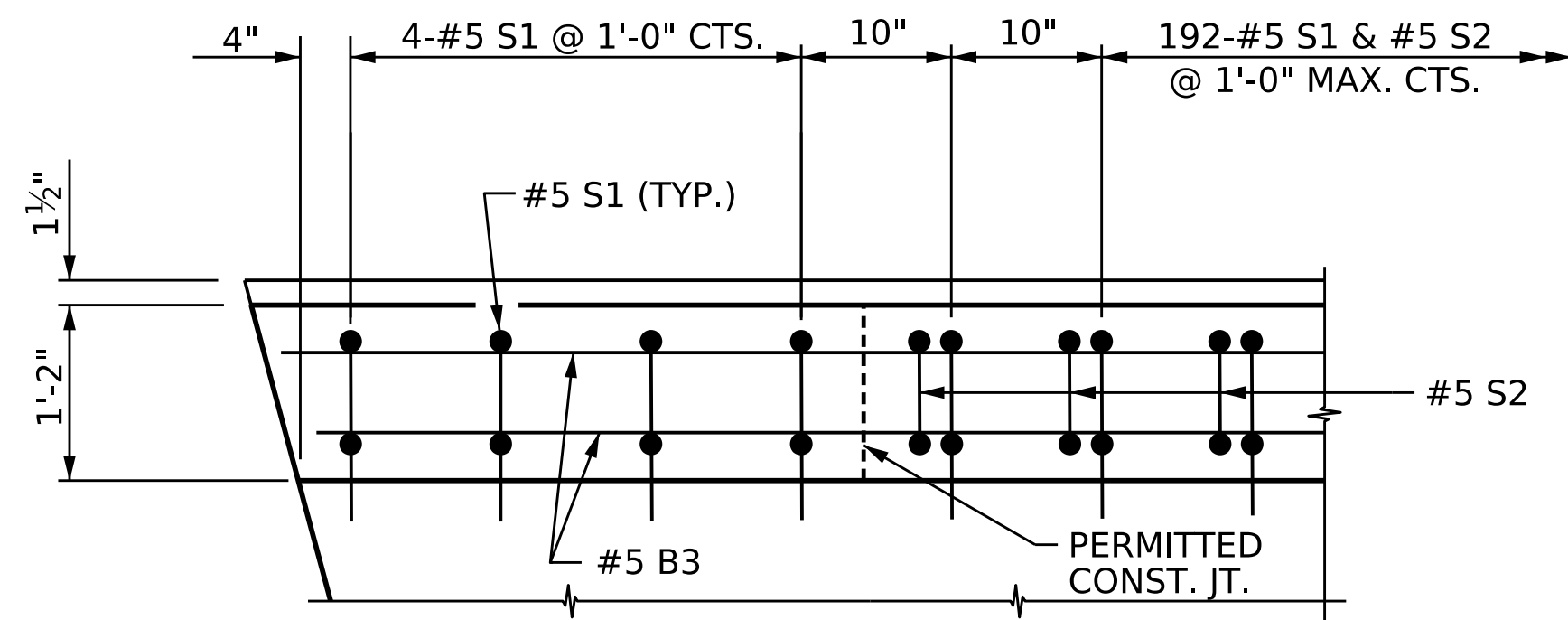
FOR CONCRETE PARAPET

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	48	5	STR	29' - 7"	1,481
*B3	16	5	STR	10' - 1"	168
*S1	202	5	1	5' - 5"	1,141
*S2	194	5	2	5' - 6"	1,113
*E1	4	7	STR	2' - 6"	20
*E2	4	7	STR	3' - 0"	25
*E3	4	7	STR	3' - 6"	29
*E4	4	7	STR	4' - 0"	33
*E5	4	7	STR	4' - 4"	35
*F1	4	6	STR	3' - 1"	19
*F2	4	6	STR	1' - 10"	11
*F3	4	6	STR	3' - 5"	21

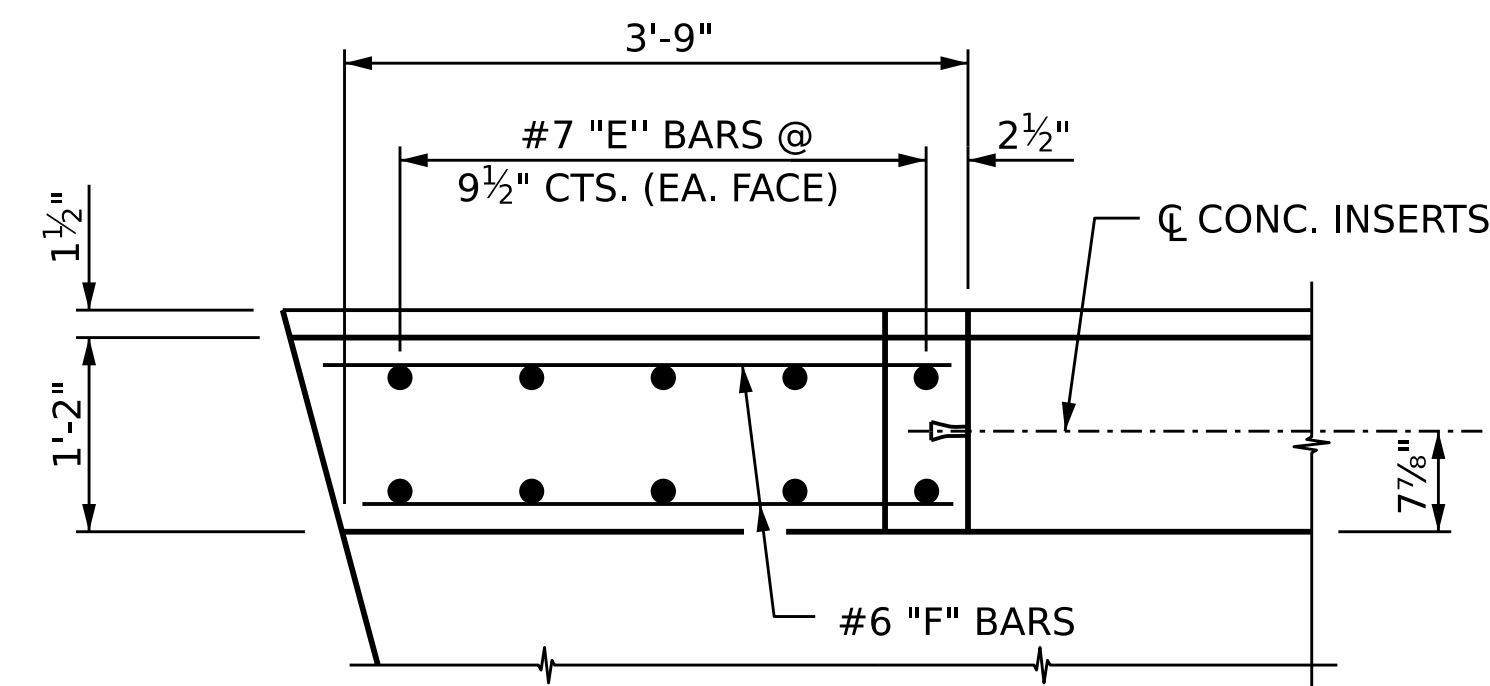
*EPOXY COATED REINFORCING STEEL LBS. 4,096

CLASS ``AA`` CONCRETE C.Y. 22.2

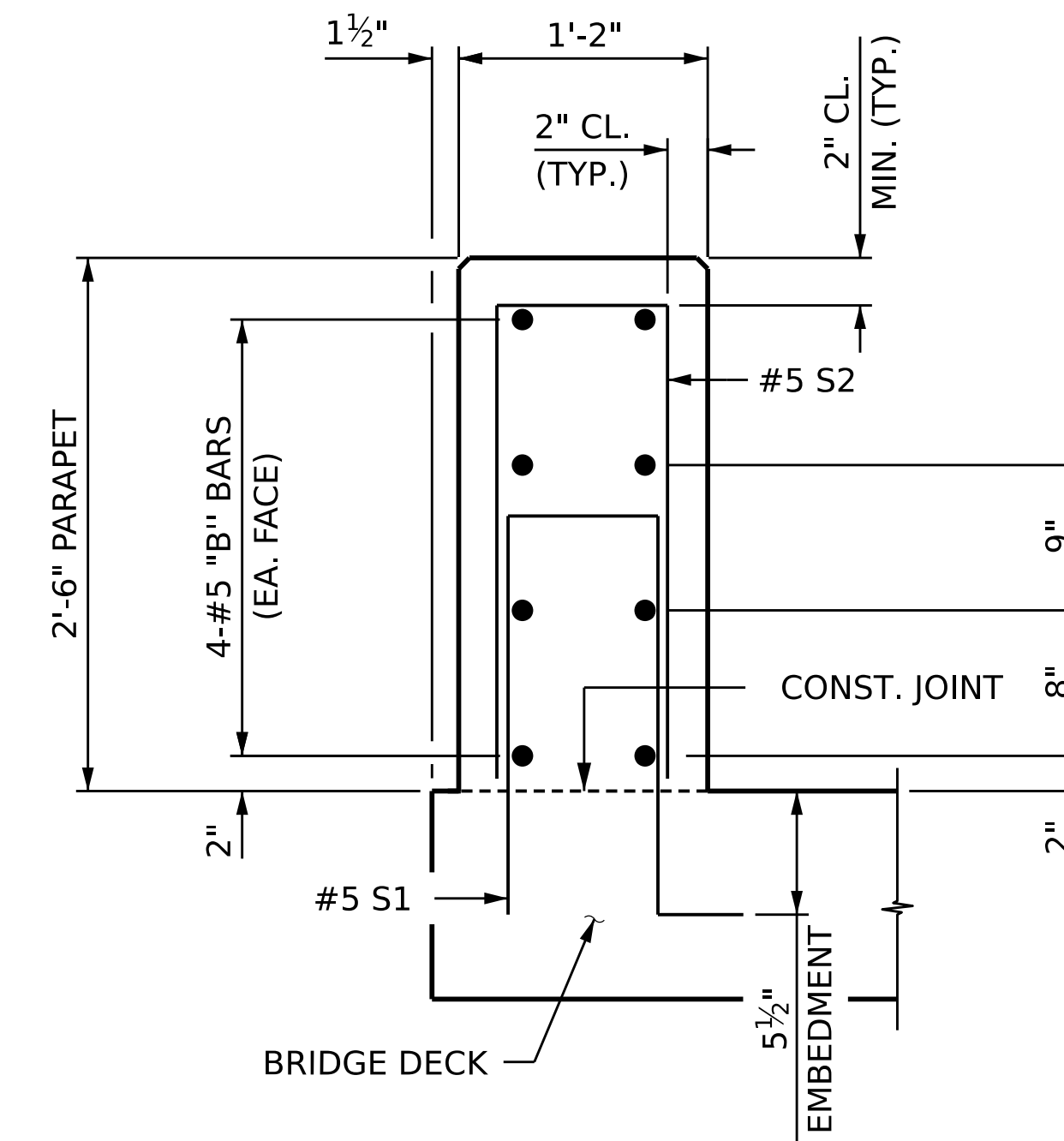
1'-2" x 2'-6" CONCRETE PARAPET LIN. FT. 201.08



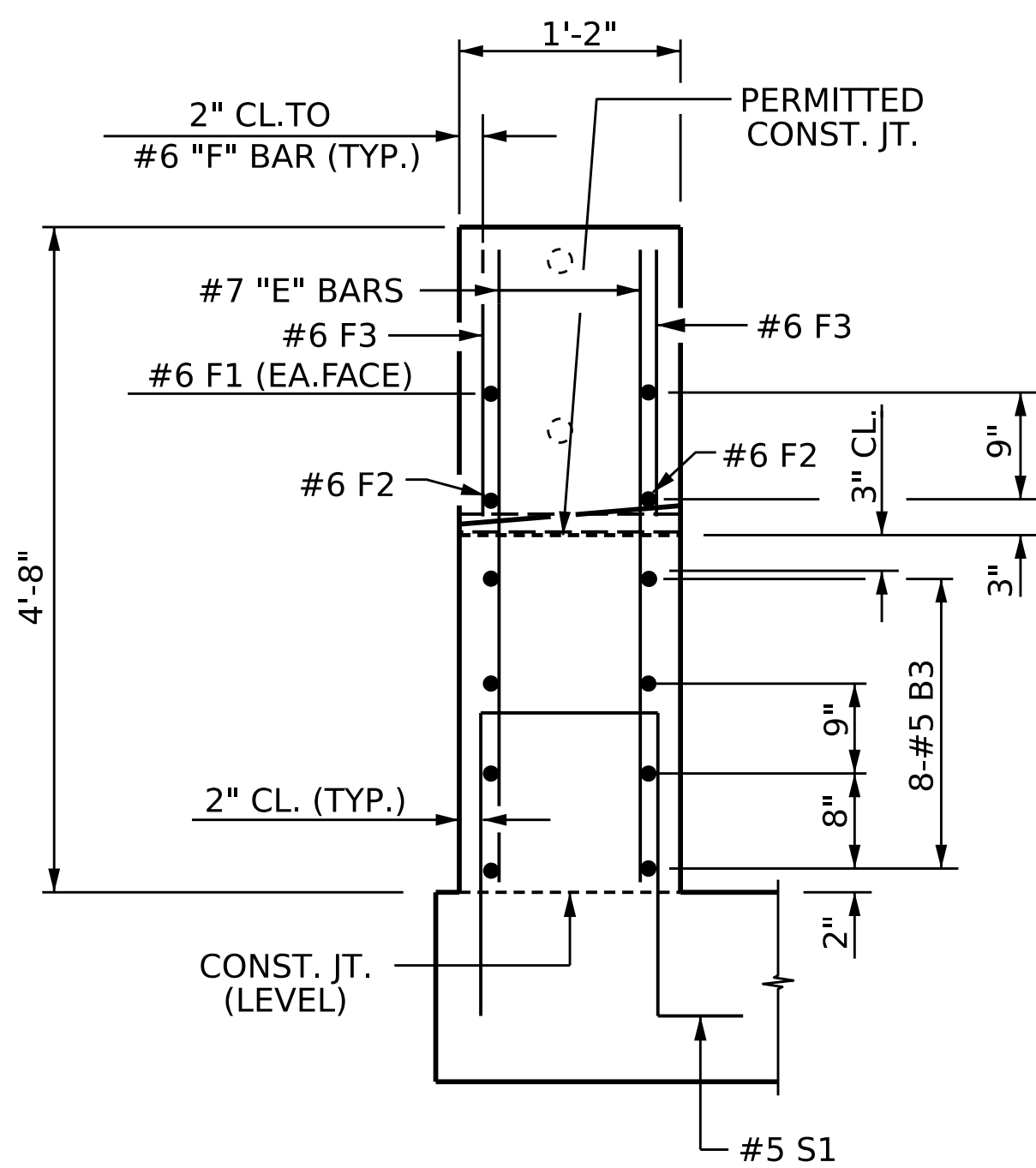
PLAN OF PARAPET



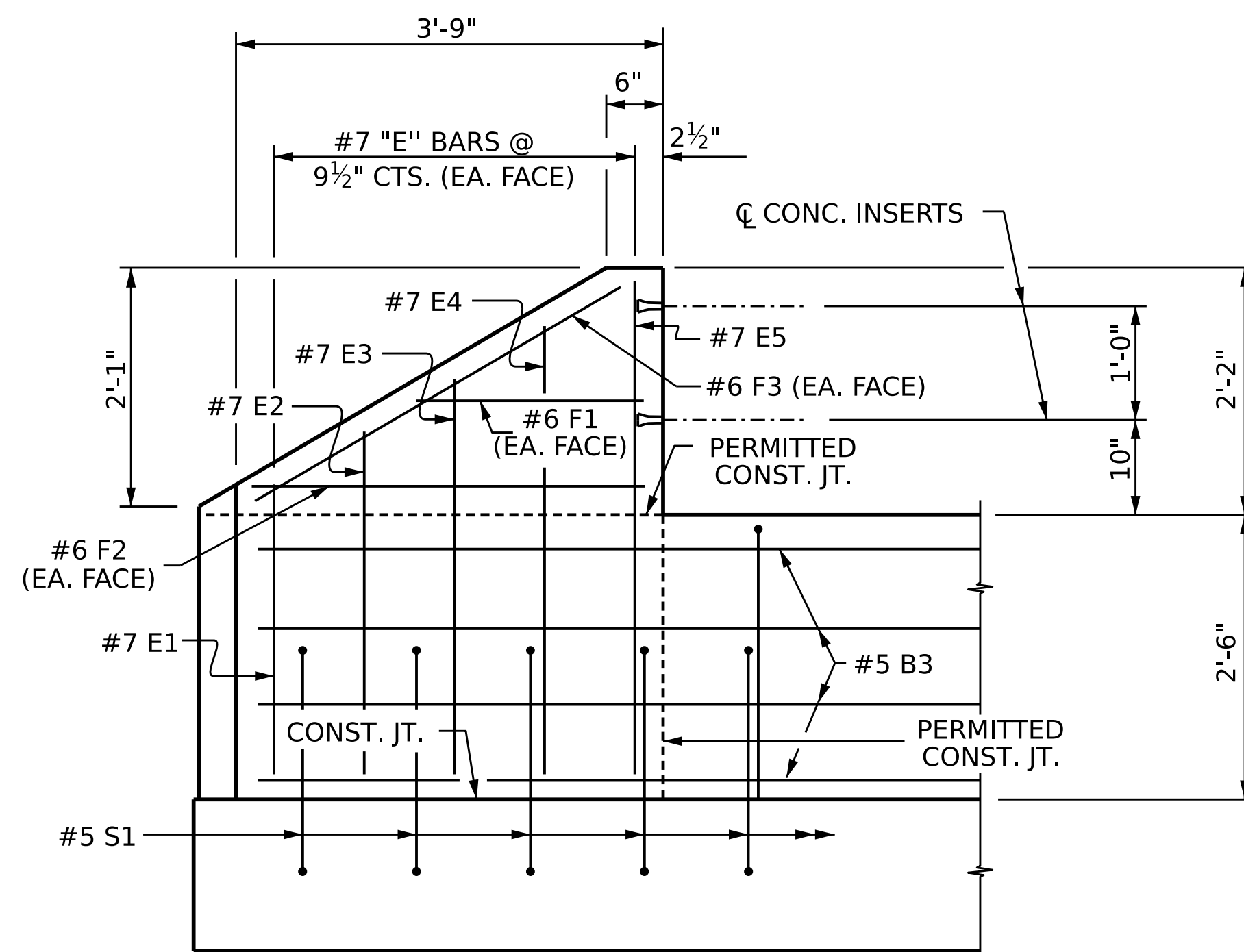
PLAN OF END POST



SECTION THRU PARAPET



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. **49218.26**

CUMBERLAND COUNTY

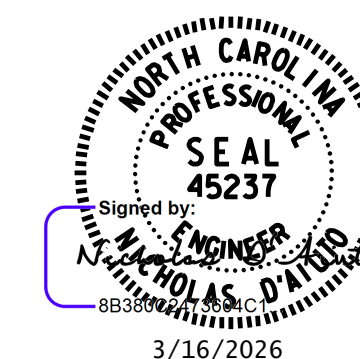
STATION: **19+50.27 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**CONCRETE PARAPET
DETAILS**



REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-25
2			4			TOTAL SHEETS 48

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DRAWN BY : J. N. AUSTIN DATE : 4-28-25
 CHECKED BY : N. D'AIUTO DATE : 5-2-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

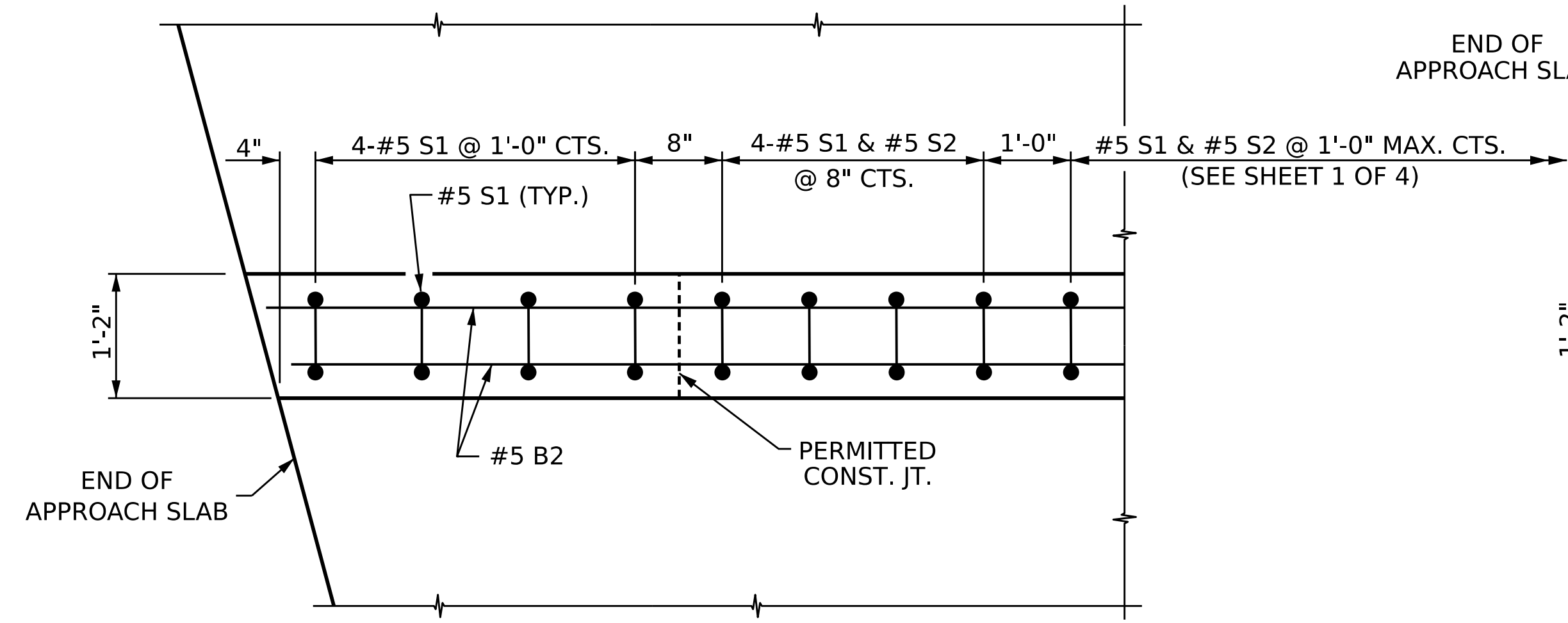
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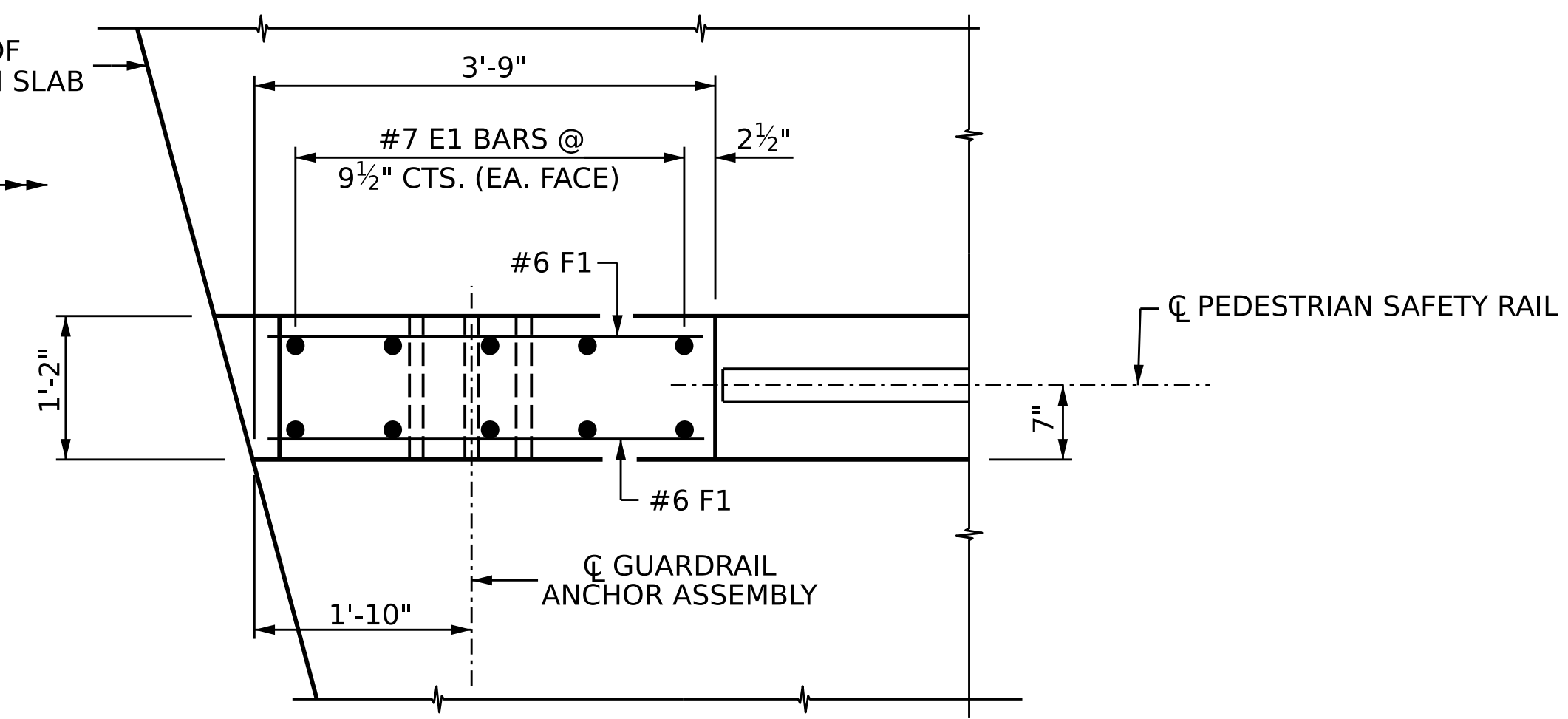
THE PARAPET IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

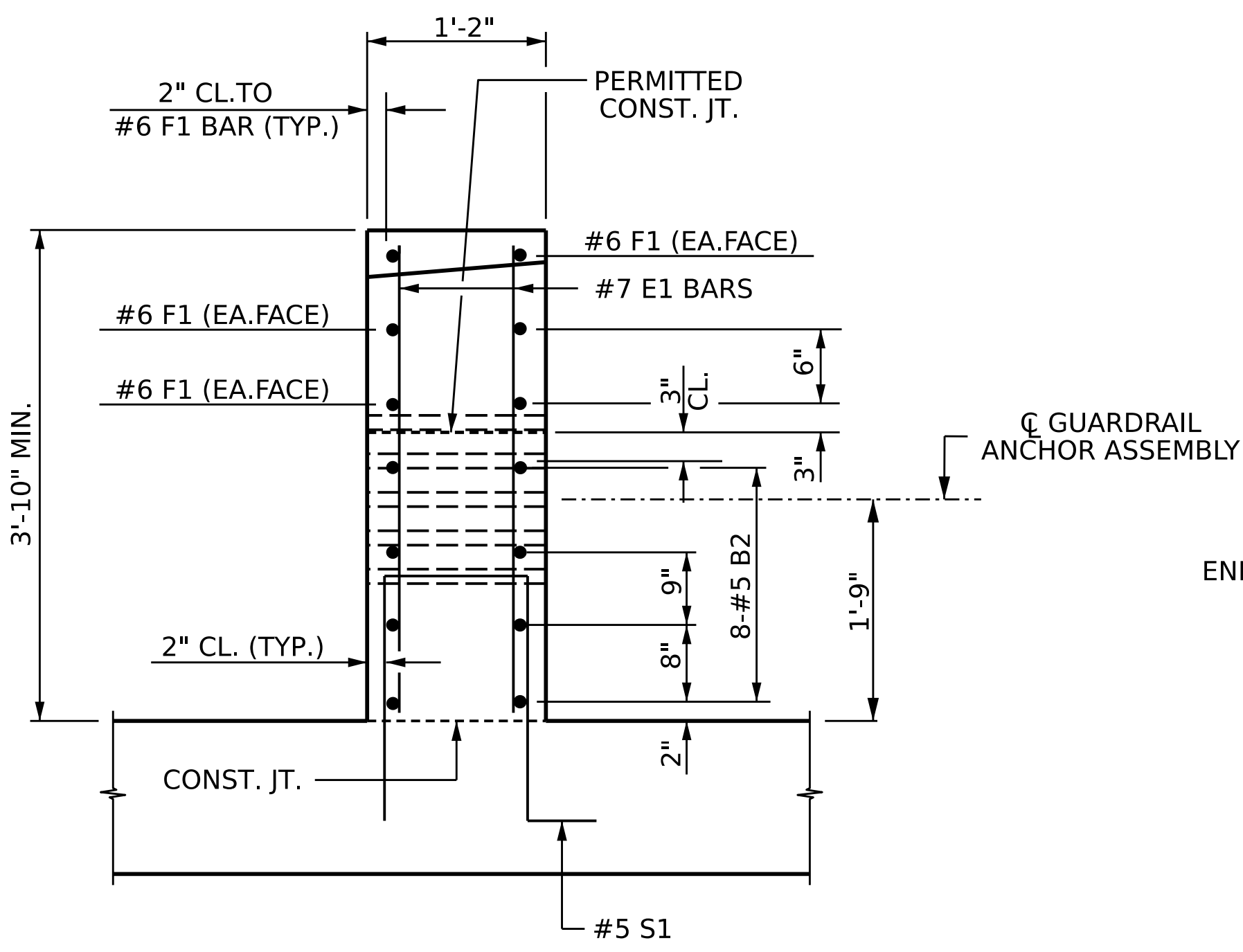
BAR TYPES		BILL OF MATERIAL				
		FOR MULTI-USE PATH				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	48	5	STR	29' - 7"	1,481	
*B2	16	5	STR	24' - 8"	412	
*B3	16	5	STR	10' - 1"	168	
*E1	20	7	STR	3' - 8"	150	
F1	12	6	STR	3' - 5"	62	
*S1	256	5	1	5' - 5"	1,446	
*S2	248	5	2	5' - 6"	1,423	
*EPOXY COATED REINFORCING STEEL				LBS.	5,142	
CLASS ``AA`` CONCRETE				C.Y.	27.7	
1'-2" x 2'-6" CONCRETE PARAPET				LIN. FT.	251.08	



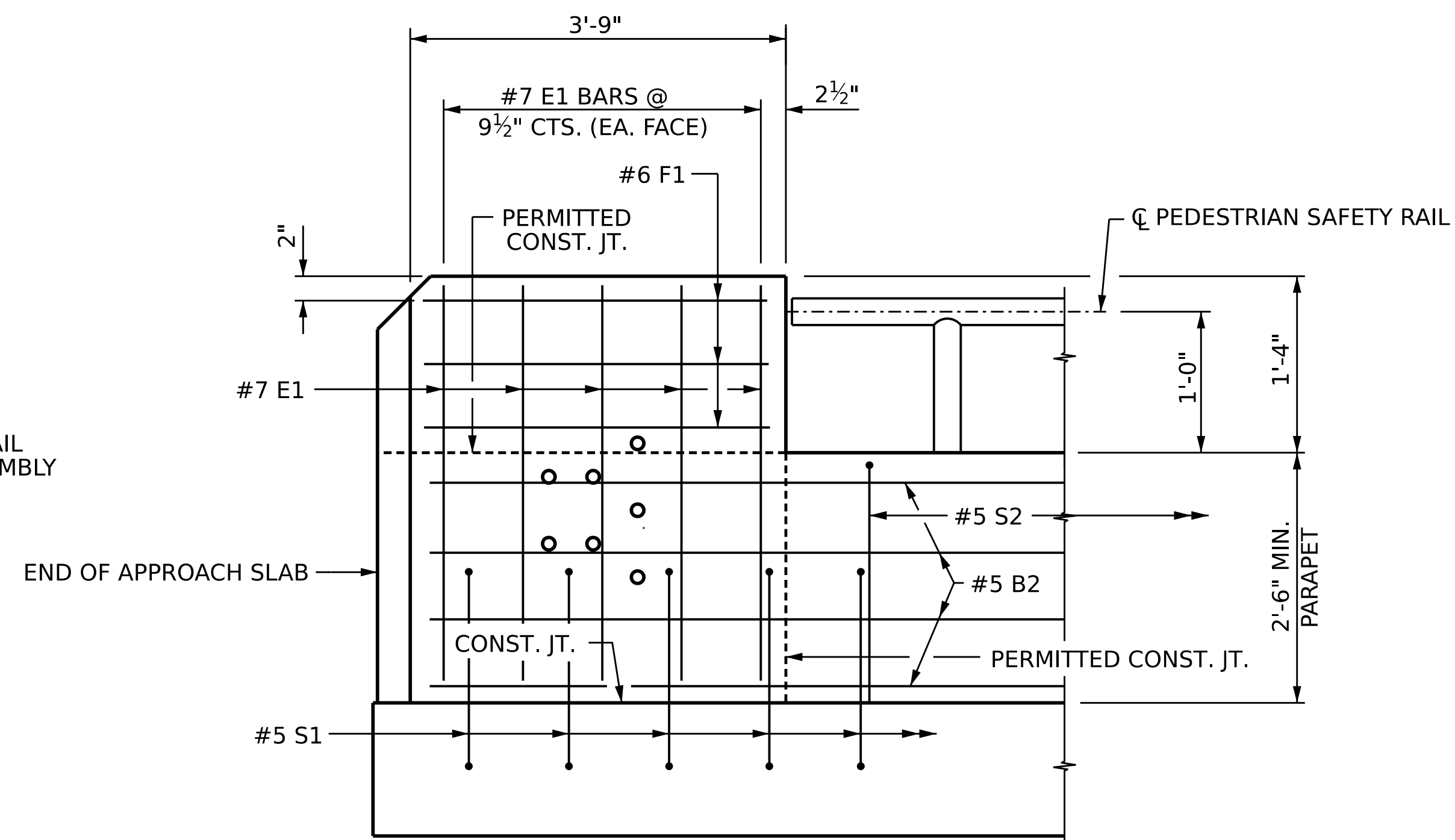
PLAN OF MULTI-USE PATH PARAPET



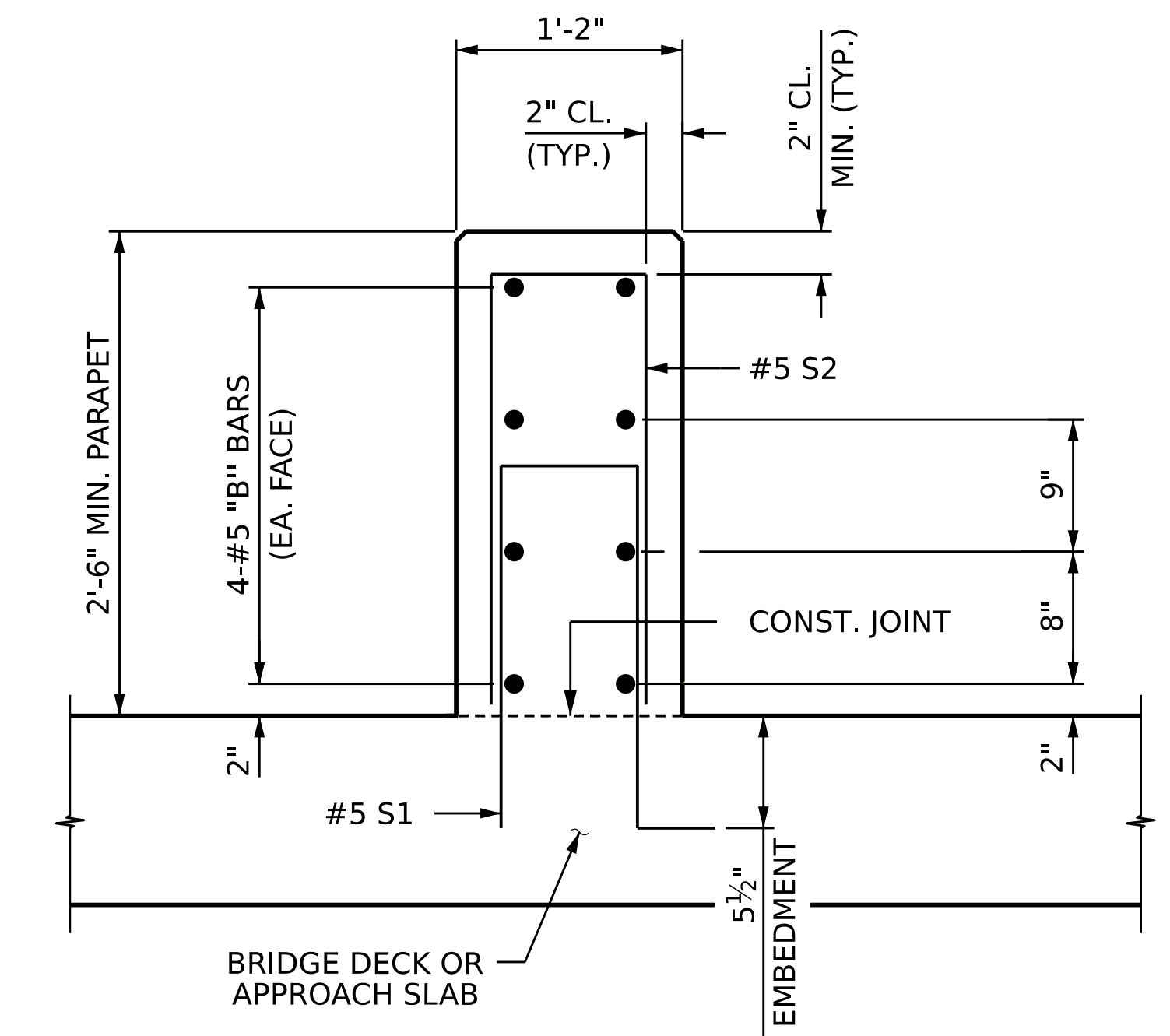
PLAN OF END POST



END VIEW



ELEVATION



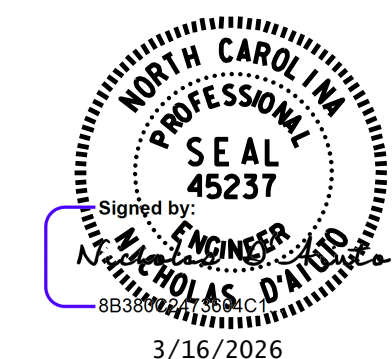
SECTION THRU MULTI-USE PATH PARAPET

MULTI-USE PATH PARAPET AND END POST FOR PEDESTRIAN SAFETY RAIL

FOR GUARDRAIL ANCHOR ASSEMBLY AND LOCATION, SEE "GUARDRAIL ANCHORAGE DETAILS" SHEET 2 OF 2

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
MULTI-USE PATH PARAPET DETAILS

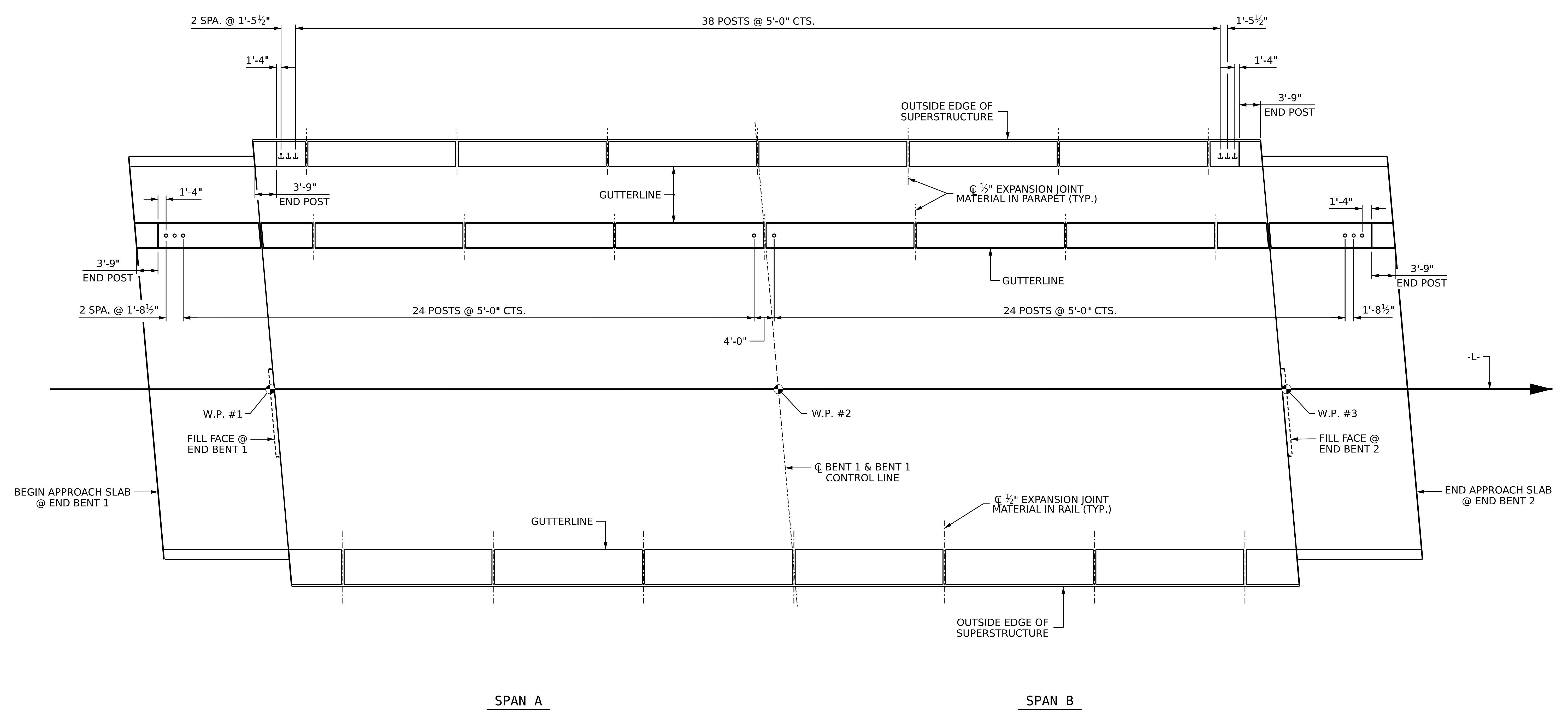
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NO.	BY:	DATE:	NO.	DATE:
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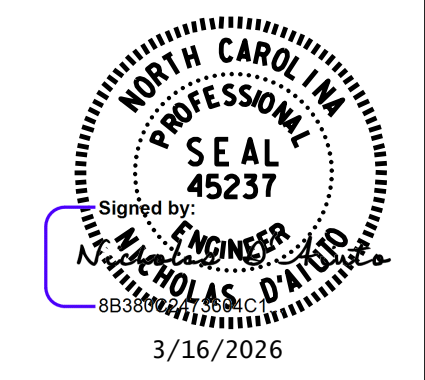
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 CHECKED BY : N. D'AIUTO DATE : 5-2-25
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PLAN OF METAL AND PEDESTRIAN SAFETY RAIL POST SPACING

PROJECT NO. 49218.26
CUMBERLAND COUNTY
 STATION: 19+50.27 -L-

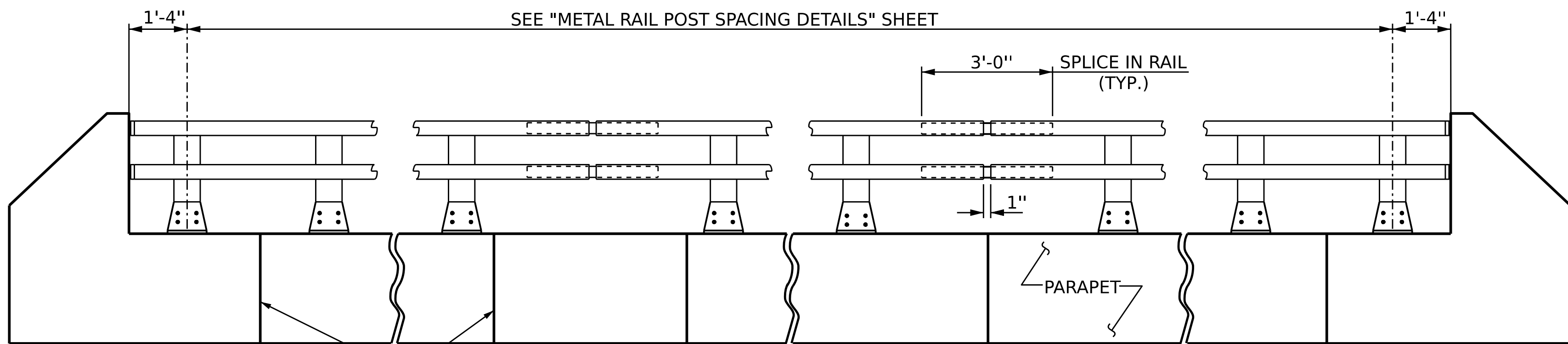


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
METAL RAIL POST SPACING DETAILS

DRAWN BY : J. N. AUSTIN DATE : 4-25-25
 CHECKED BY : N. D'AIUTO DATE : 5-2-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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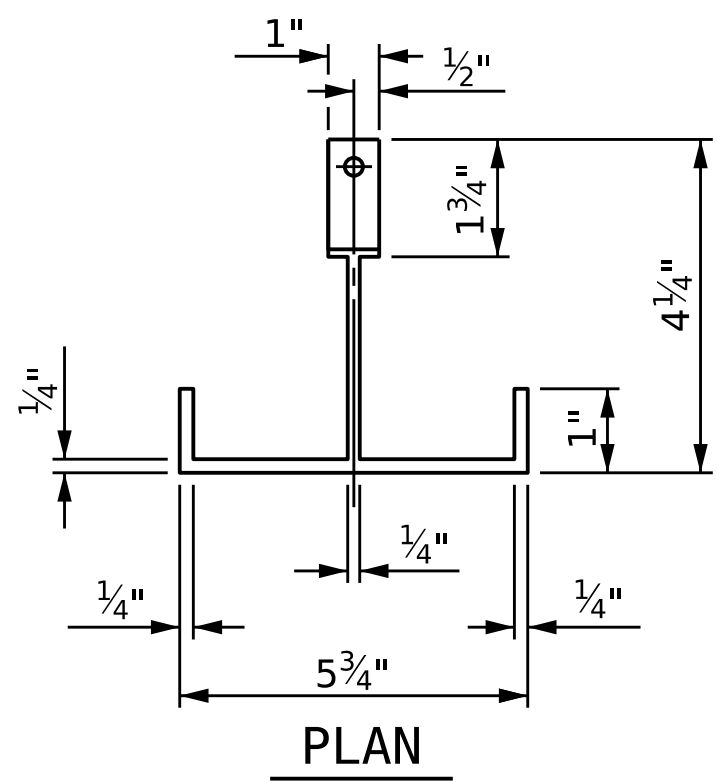
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			48



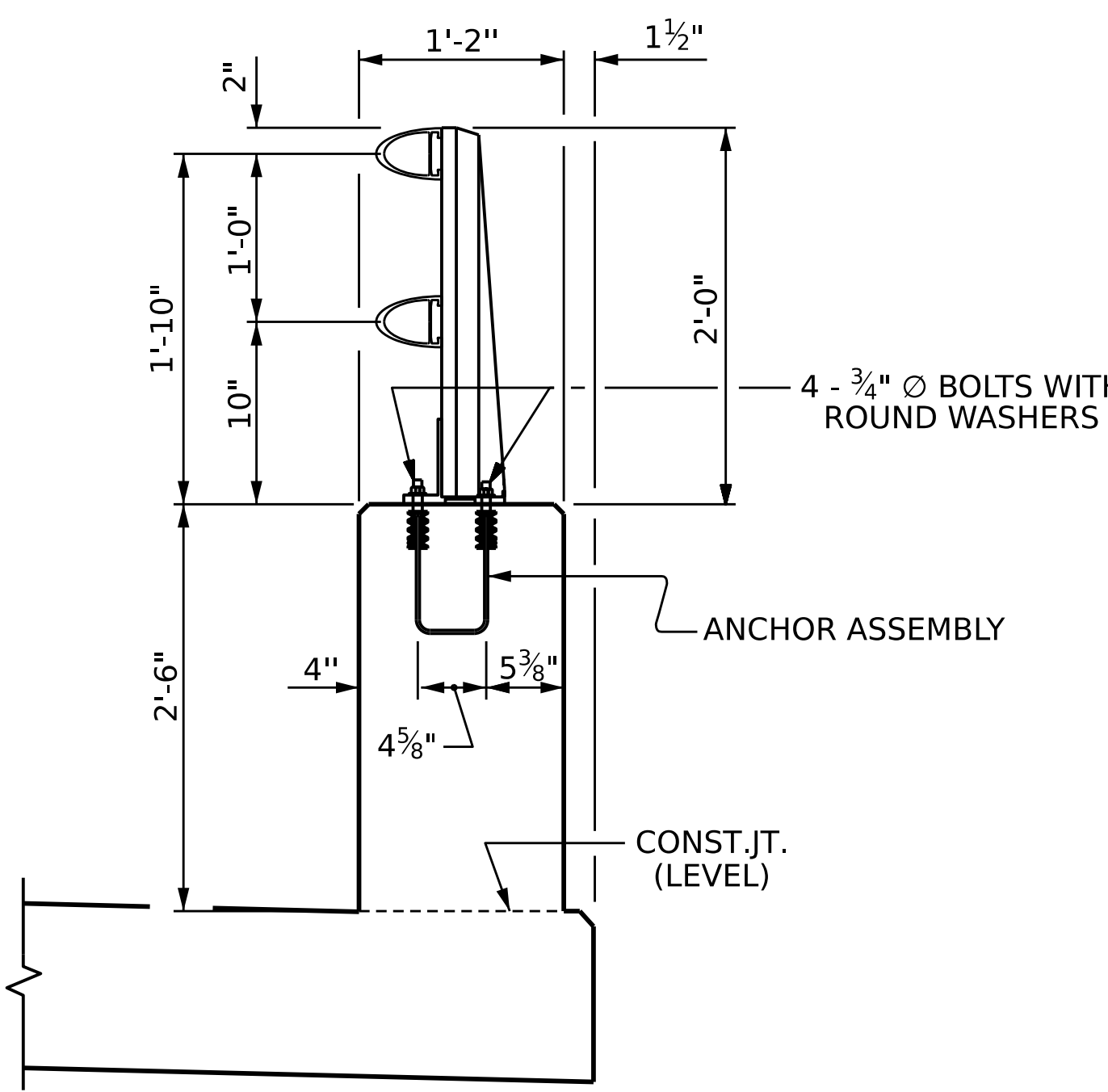
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "END OF RAIL DETAILS" SHEET.

TOOLED CONTRACTION JT. (SEE NOTES)

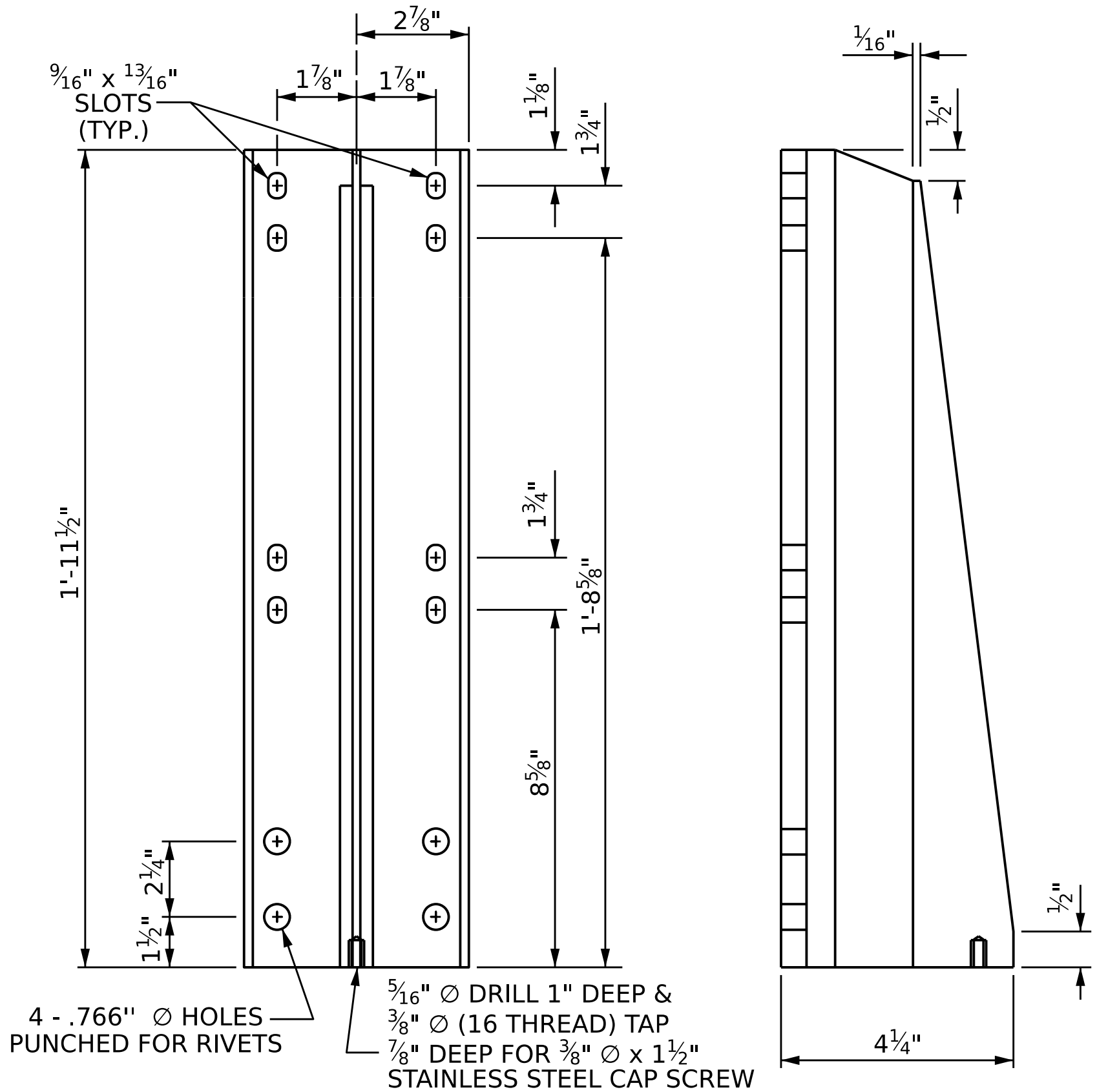
ELEVATION



PLAN



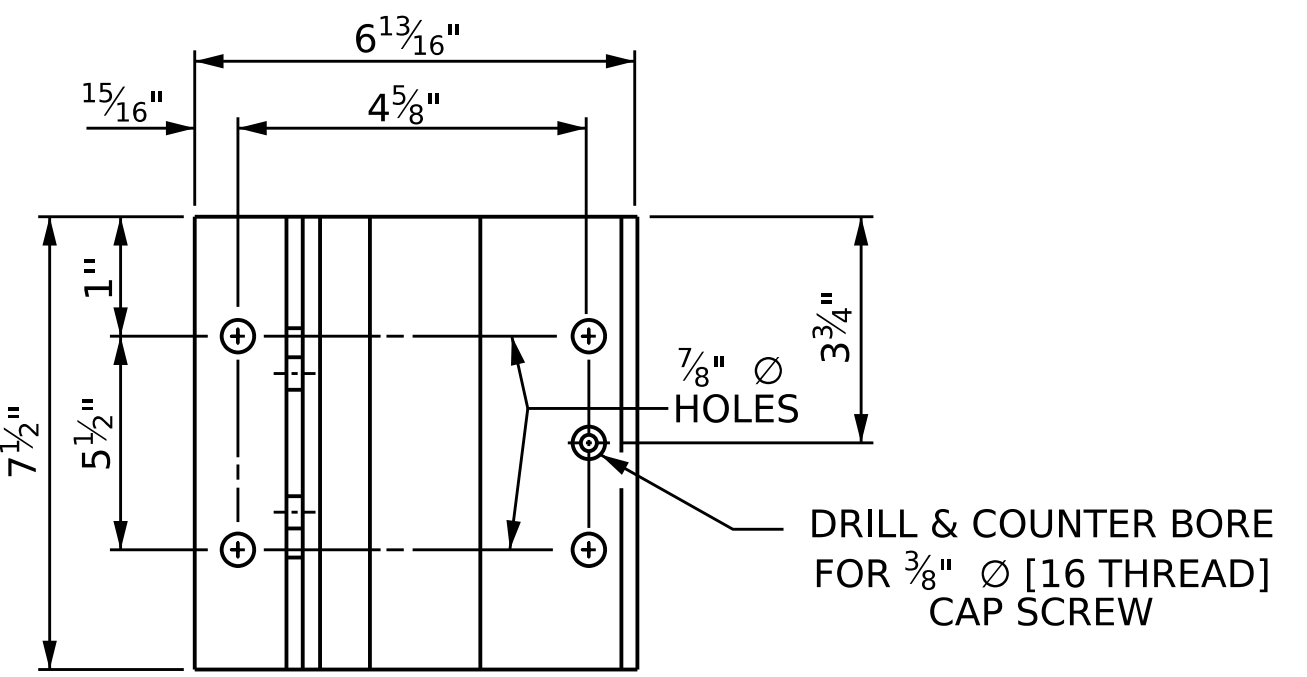
SECTION THRU PARAPET AND RAIL



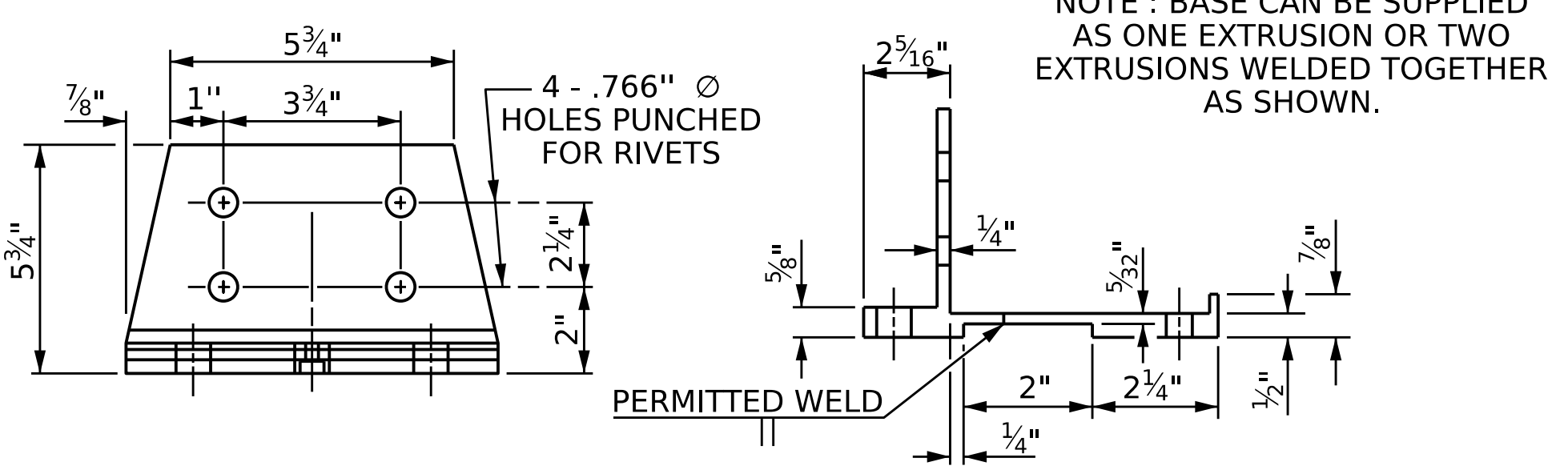
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS

NOTES

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

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE "END OF RAIL DETAILS" SHEET.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

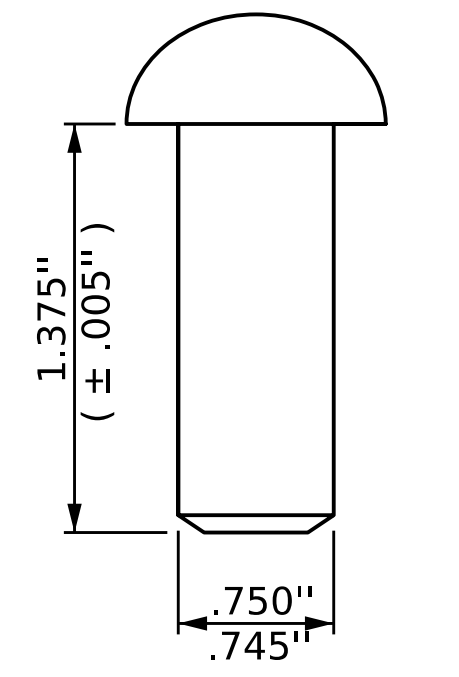
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

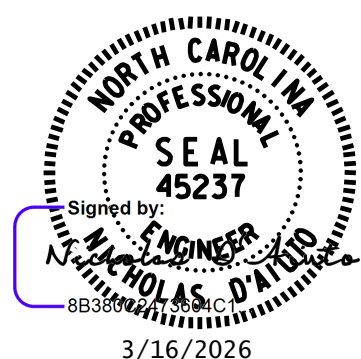
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

PAY LENGTH = 193.23 LIN. FT.



RIVET DETAIL

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

2 BAR METAL RAIL

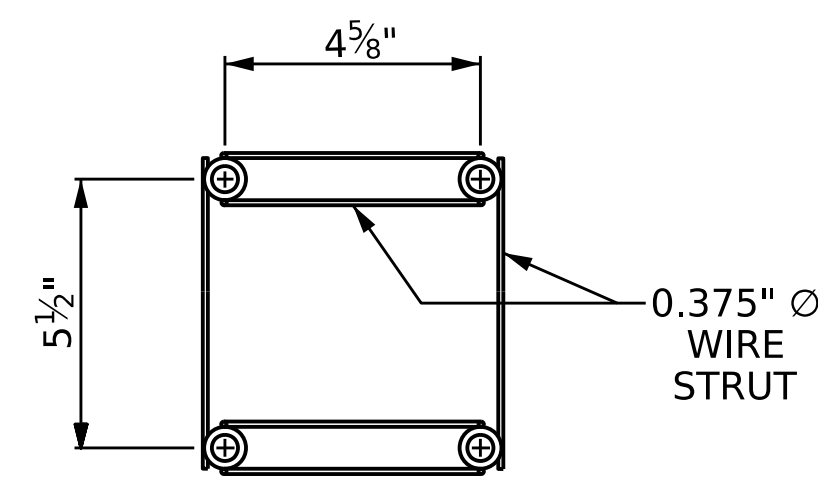
CONCRETE PARAPET

DRAWN BY :	J. N. AUSTIN	DATE :	4-11-25
CHECKED BY :	N. D'AIUTO	DATE :	5-2-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

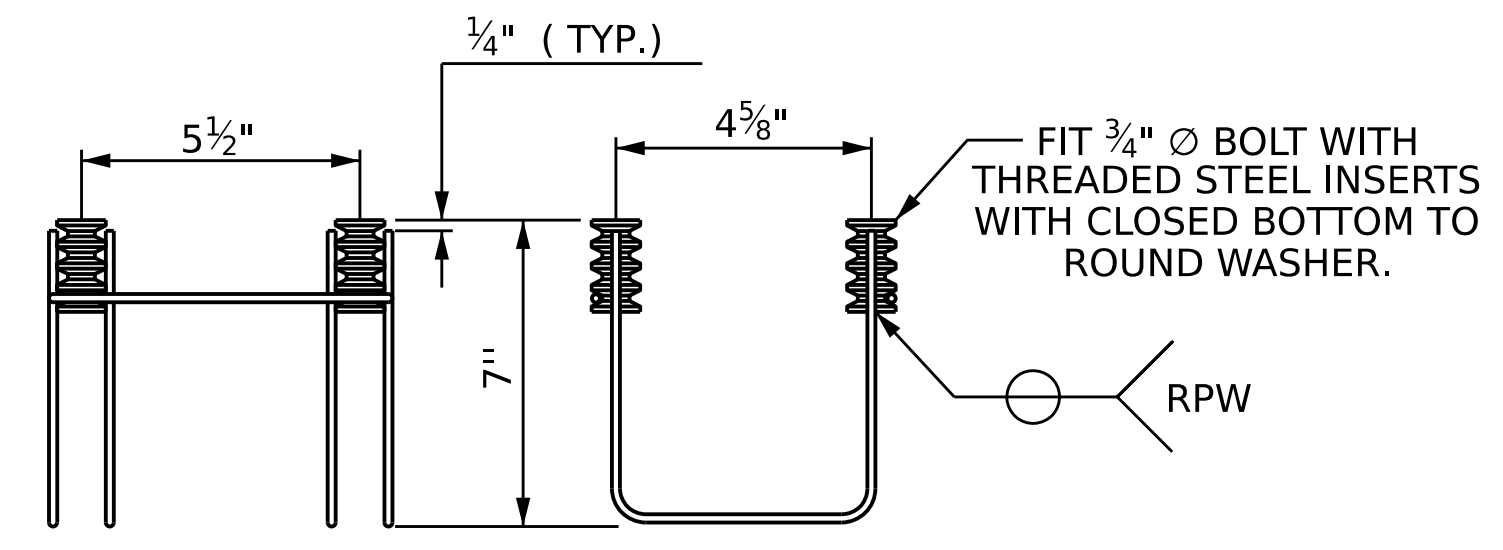
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS: 48



PLAN



SIDE VIEW ELEVATION

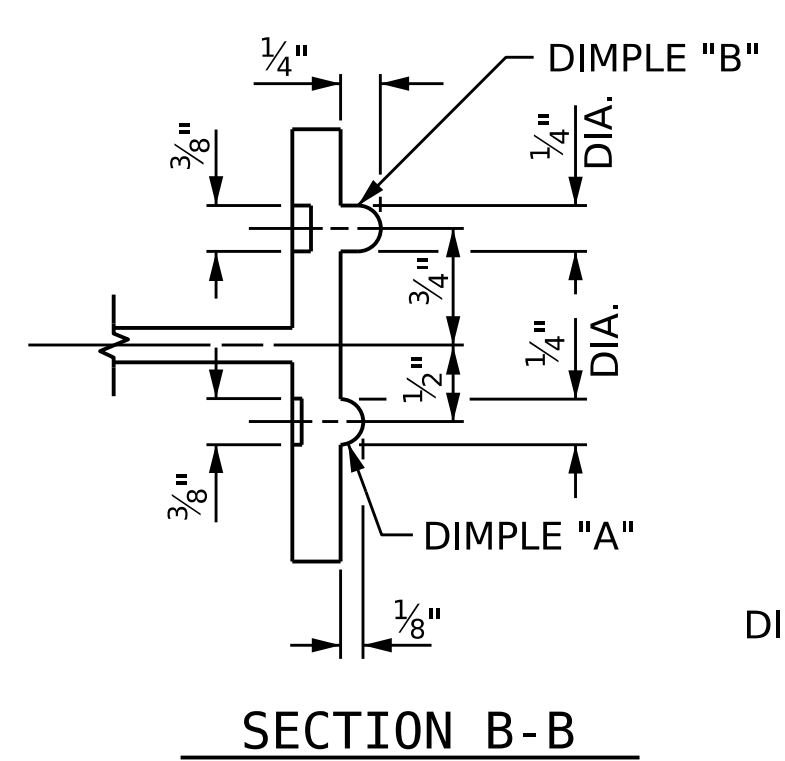
4-BOLT METAL RAIL ANCHOR ASSEMBLY
(42 ASSEMBLIES REQUIRED)

NOTES
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

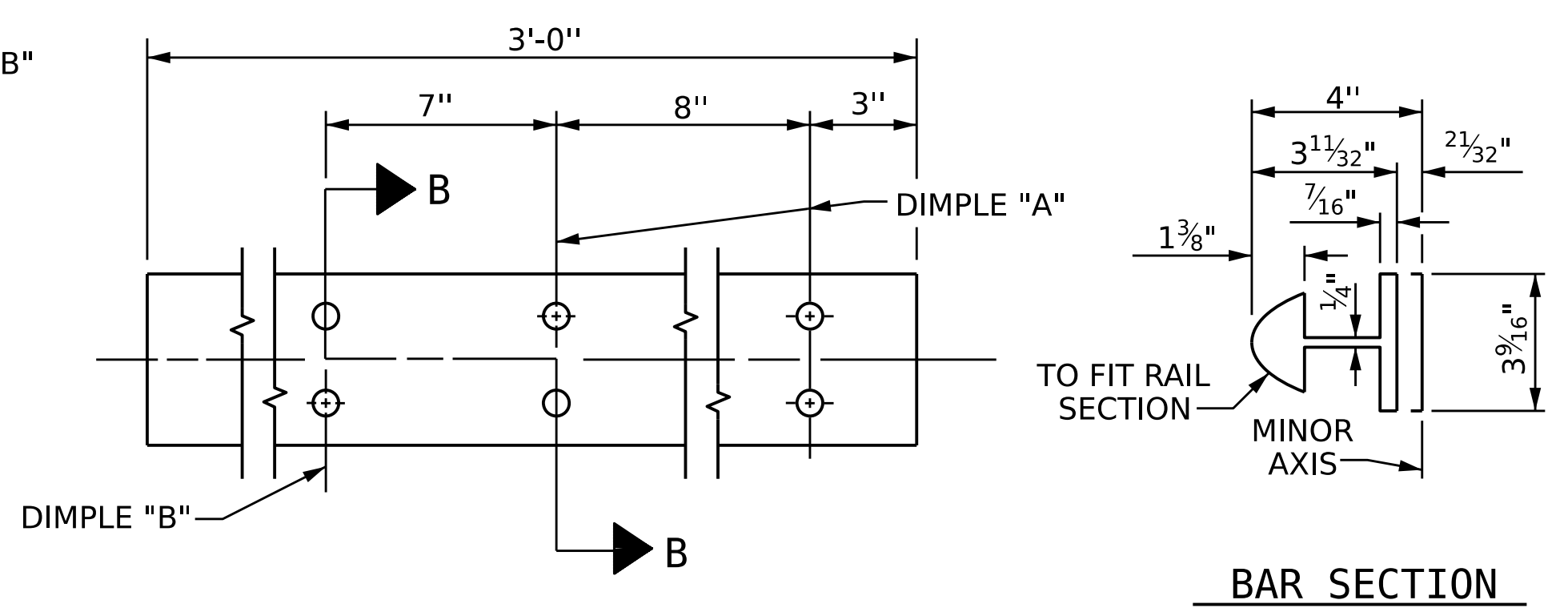
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
 - B. 4 - 3/4" x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL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

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

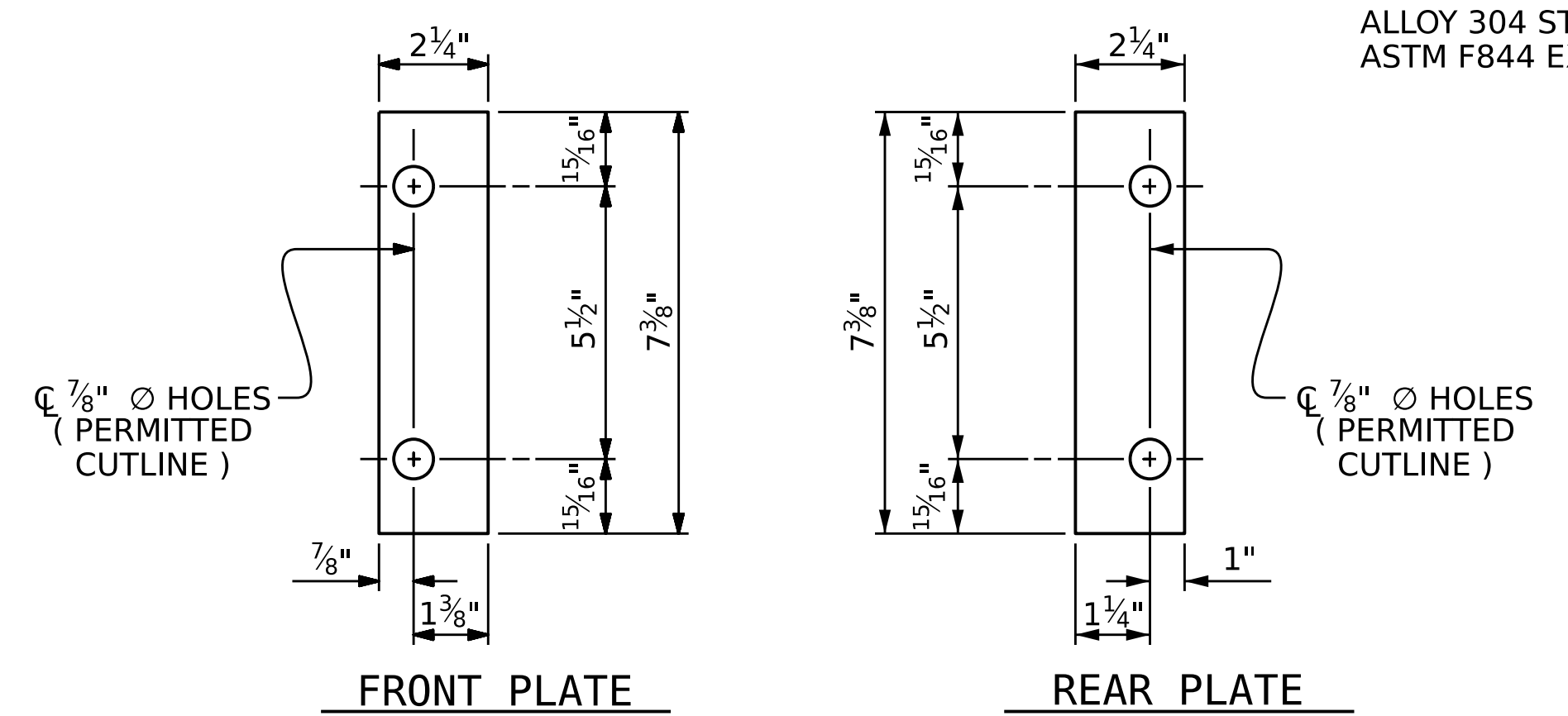
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



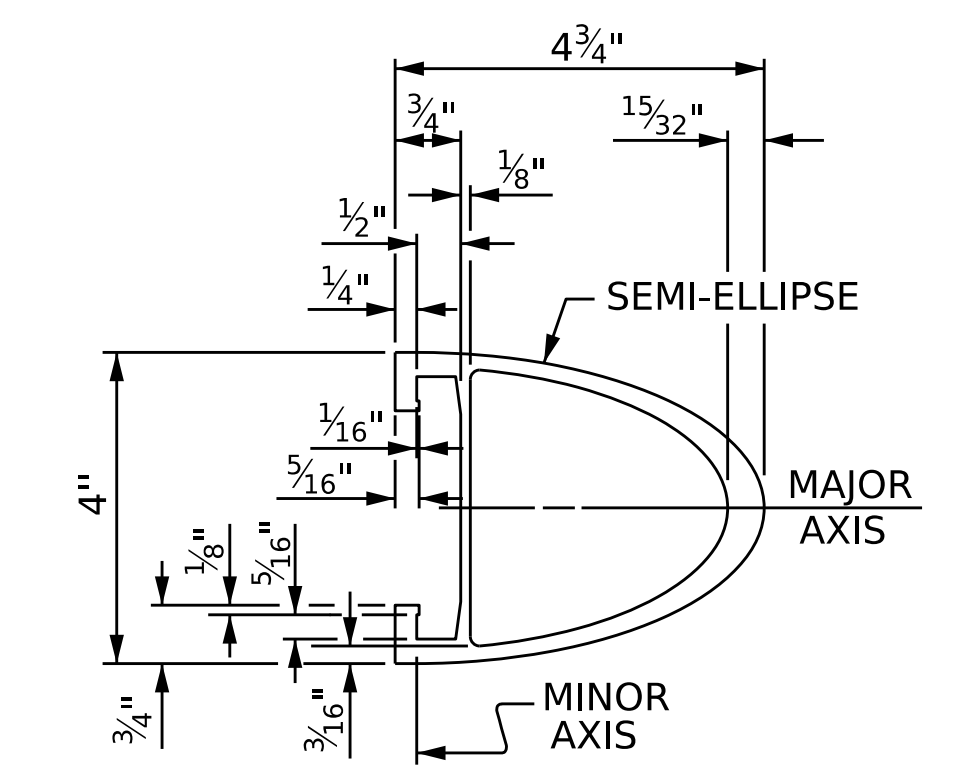
SECTION B-B



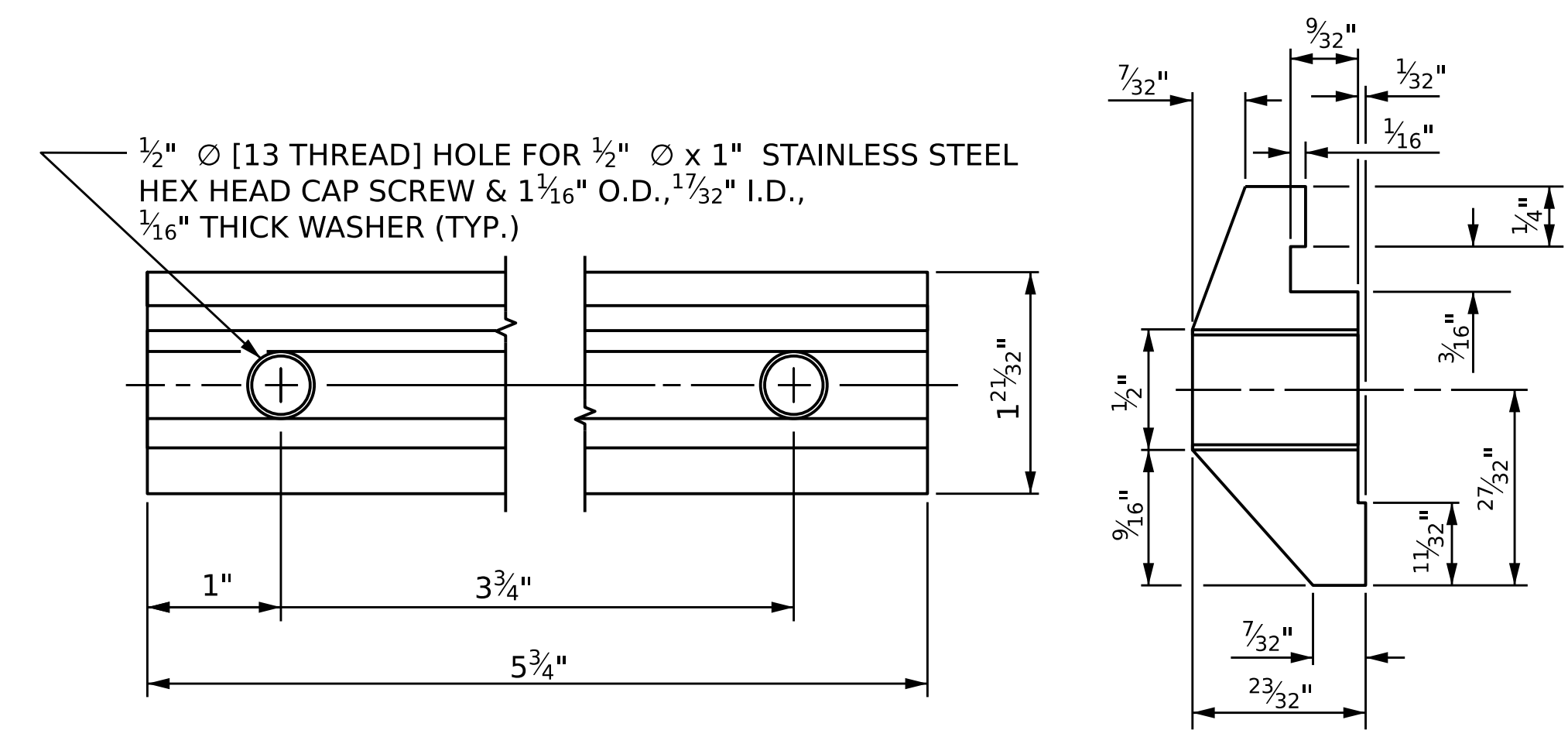
EXPANSION BAR DETAILS



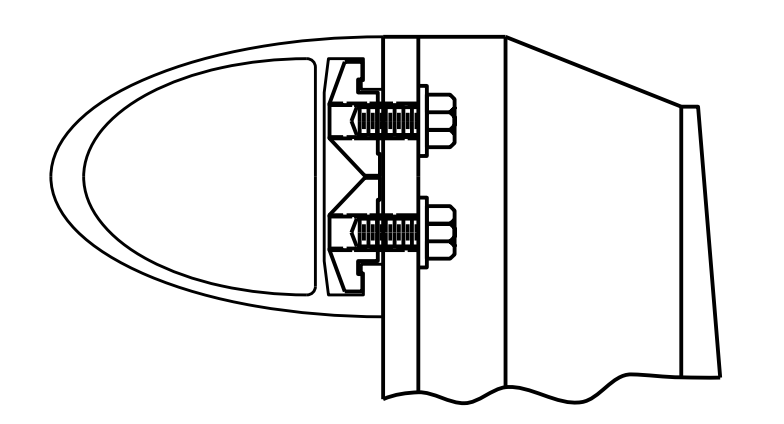
SHIM DETAILS



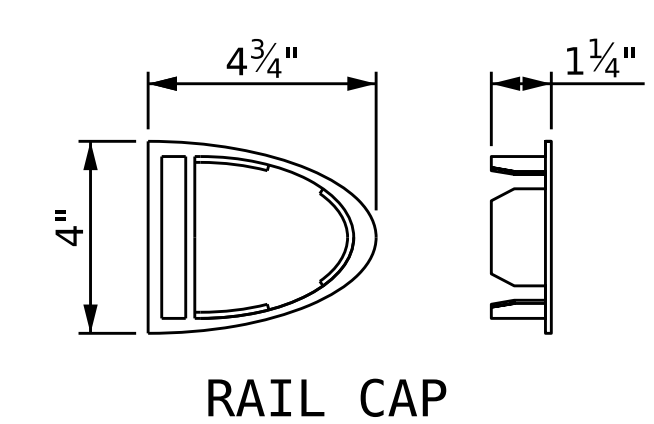
RAIL SECTION



CLAMP BAR DETAIL
(4 REQUIRED PER POST)



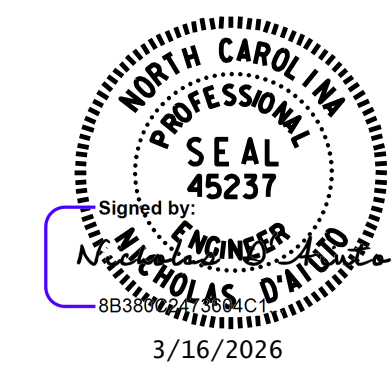
CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**

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



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DRAWN BY :	J. N. AUSTIN	DATE :	4-11-25
CHECKED BY :	N. D'AIUTO	DATE :	5-2-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

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

TOTAL SHEETS: 48

NOTES

GALVANIZED STEEL RAILS

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

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

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

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

GENERAL NOTES

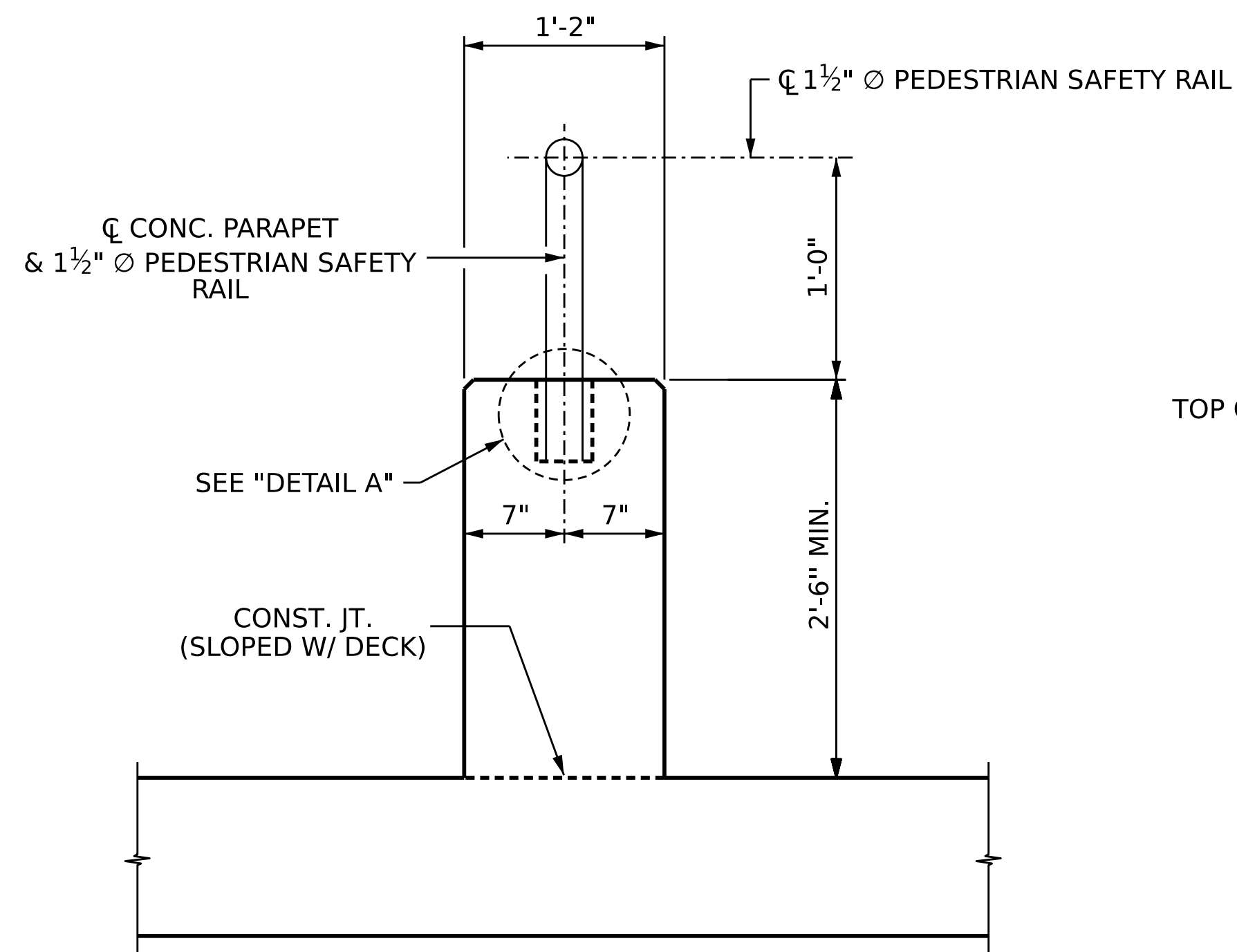
PEDESTRIAN SAFETY RAIL SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPliced AS DETAILED. SEGMENT LENGTHS OF PEDESTRIAN SAFETY RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

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

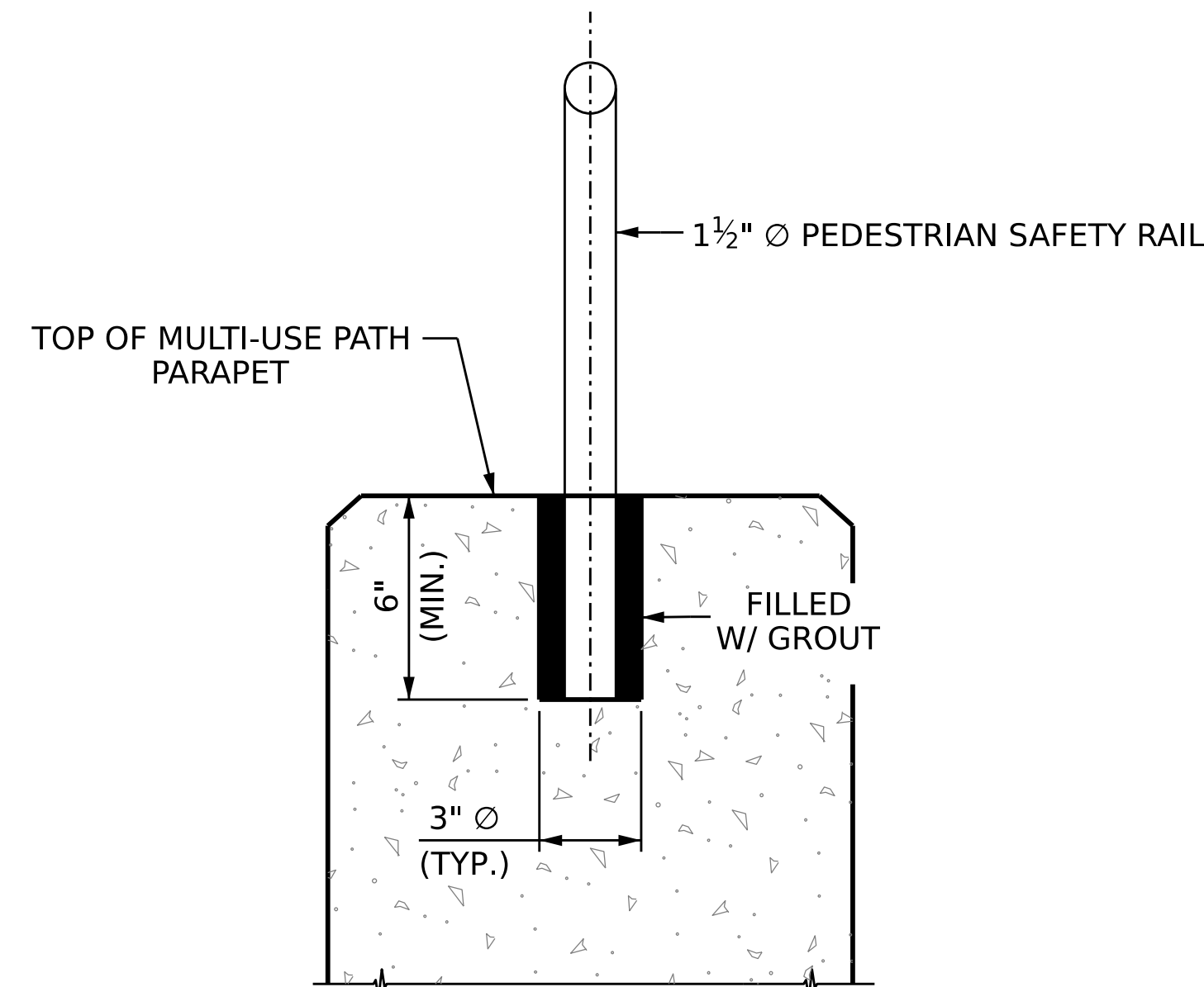
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

GROUT SHALL HAVE A MINIMUM STRENGTH OF 3,000 PSI.

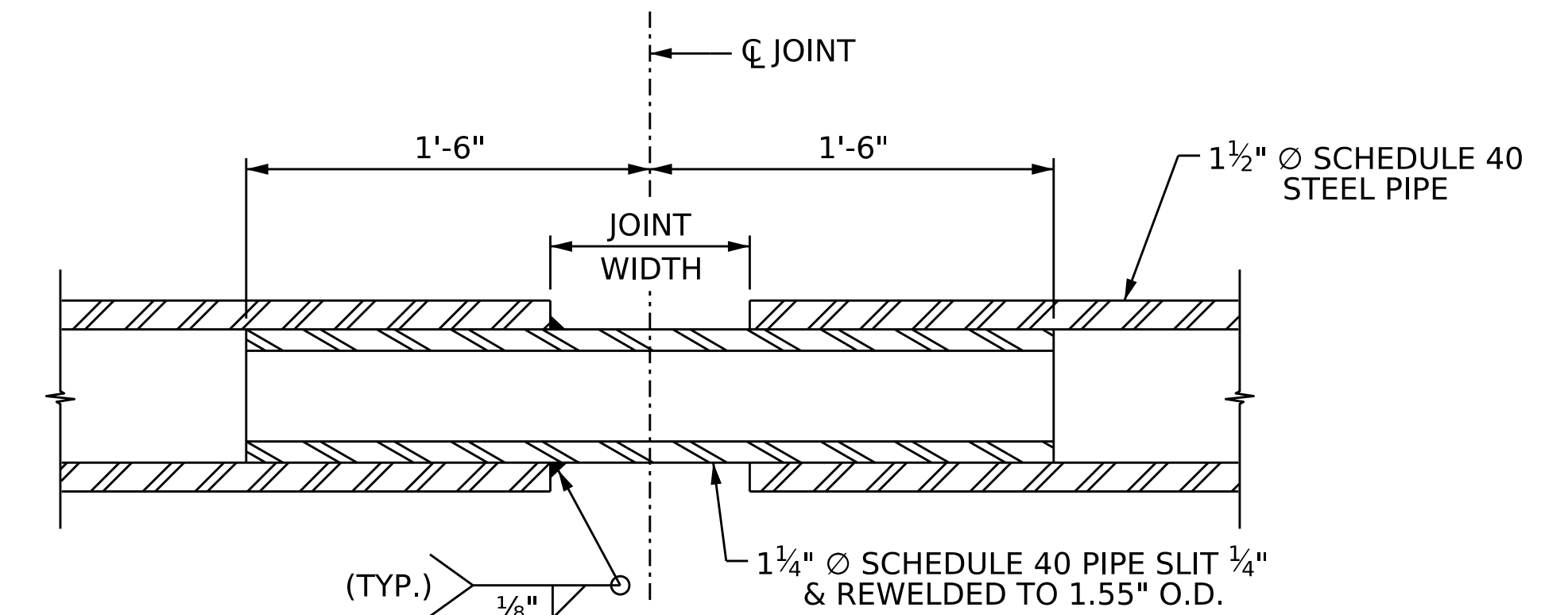
TOTAL PAY LENGTH = 243.40



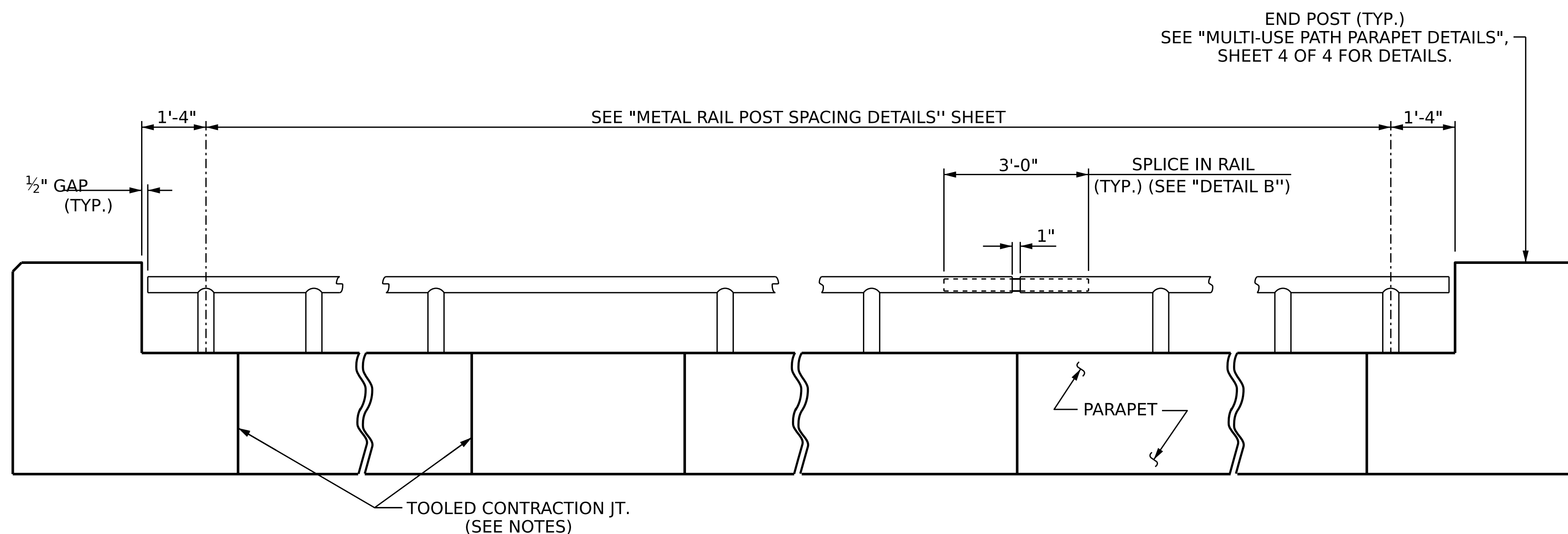
SECTION THRU MULTI-USE PATH PARAPET AND PEDESTRIAN SAFETY RAIL



DETAIL A (TYP. EA. INSERT)

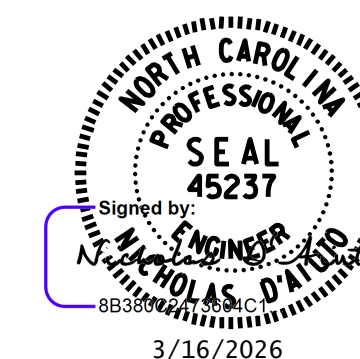


DETAIL B



ELEVATION

PROJECT NO. 49218.26
CUMBERLAND COUNTY
STATION: 19+50.27 -L-



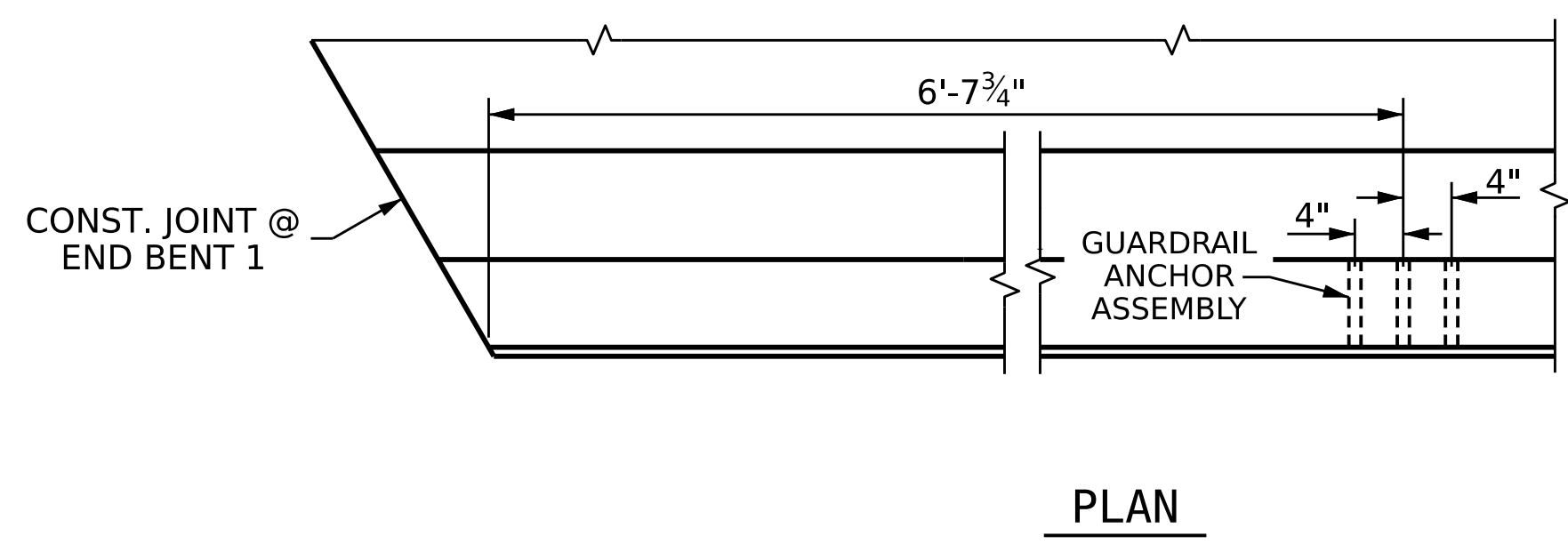
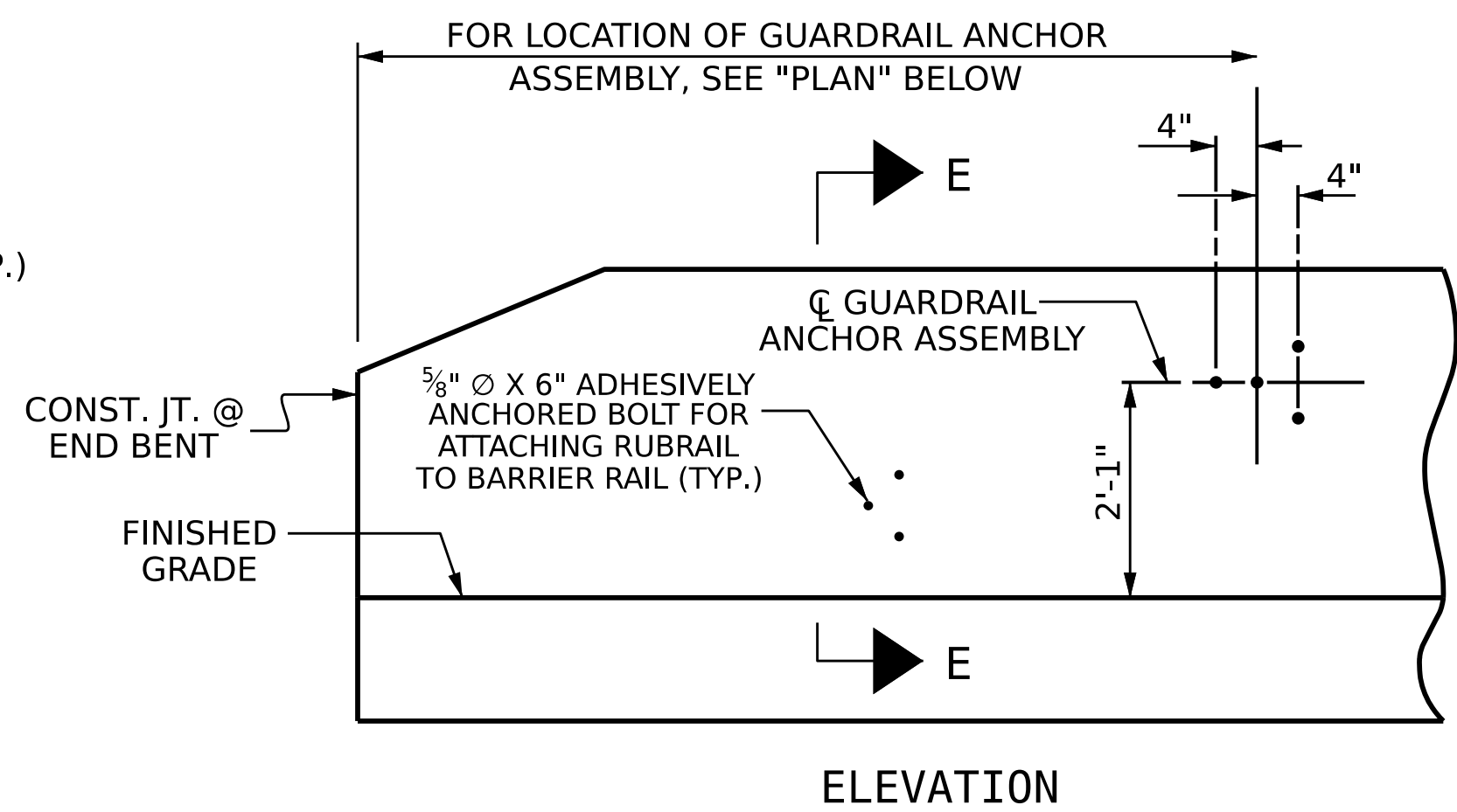
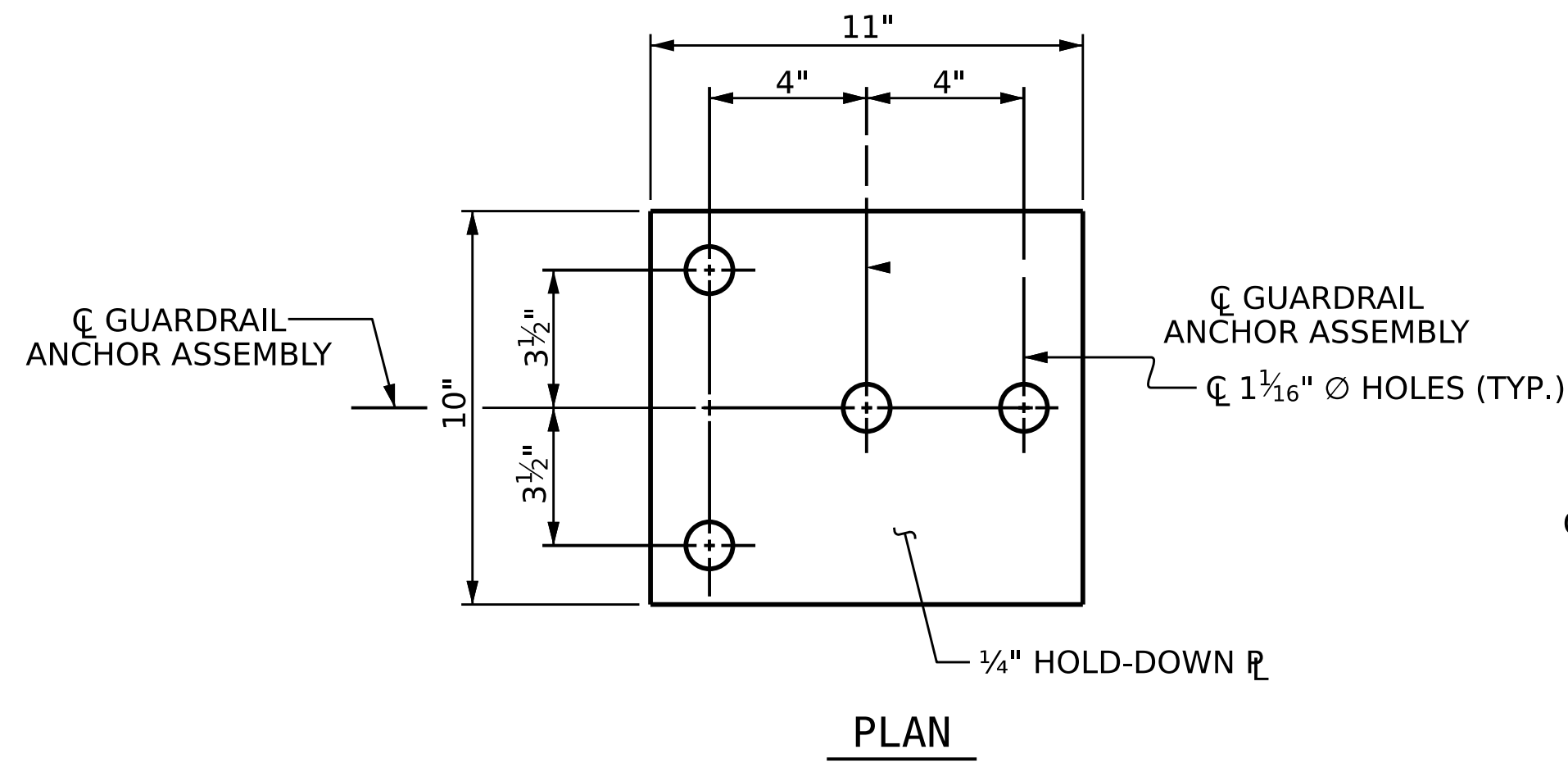
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PEDESTRIAN SAFETY RAIL DETAILS
FOR MULTI-USE PATH PARAPET

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	DATE:	S-31
1			3		TOTAL SHEETS
2			4		48

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DRAWN BY : J. N. AUSTIN DATE : 4-30-25
CHECKED BY : N. D'AIUTO DATE : 5-2-25
DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

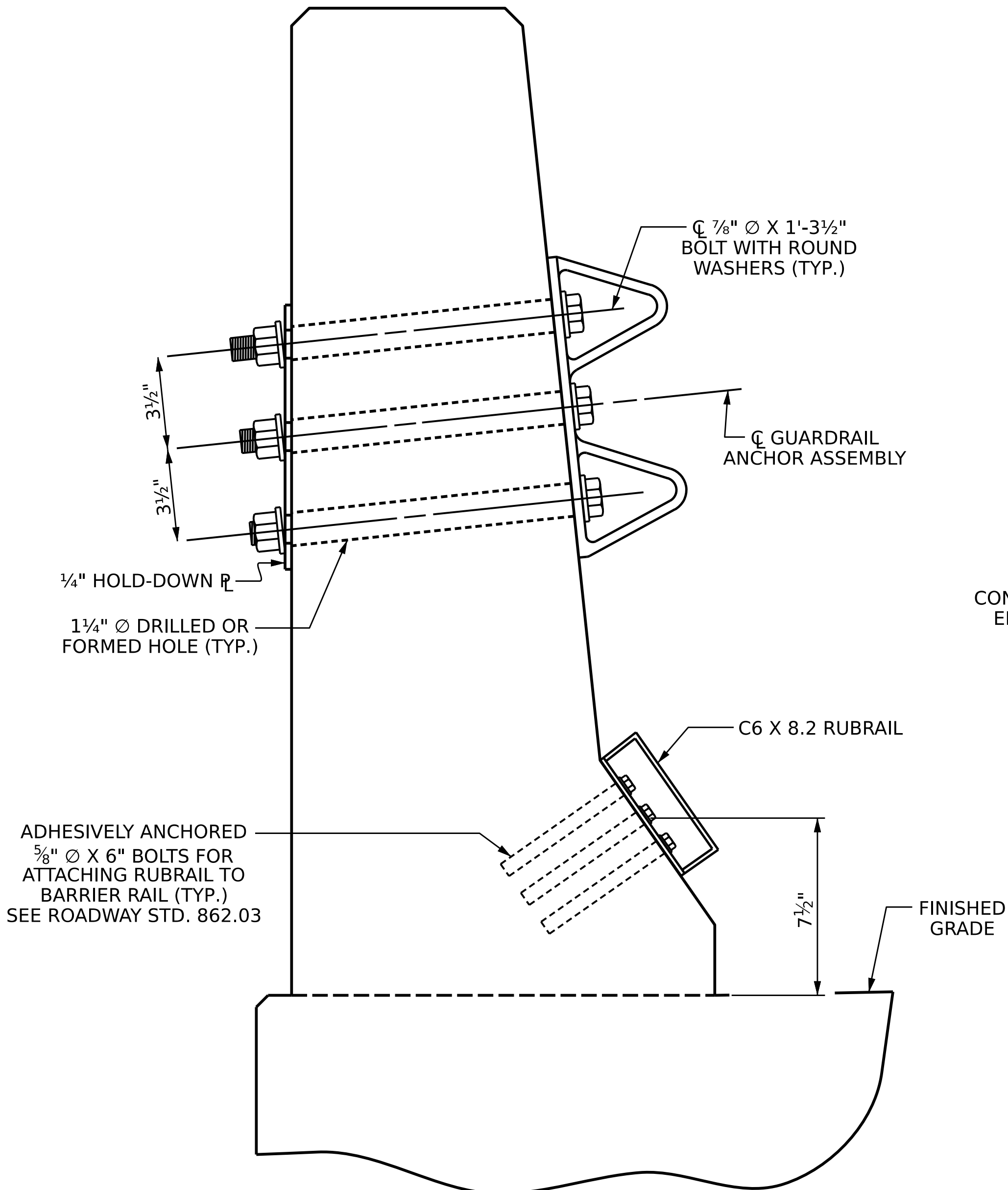
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LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 7/8" O 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" O 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.)

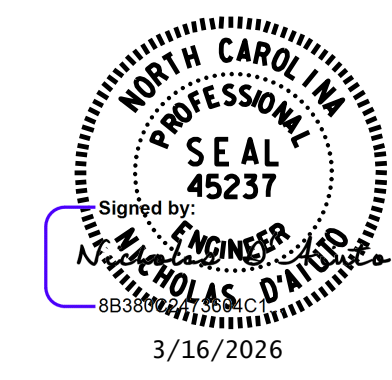
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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" O 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" O X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 5/8" O 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.



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
STATION: **19+50.27 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**GUARDRAIL ANCHORAGE
FOR BARRIER RAIL**

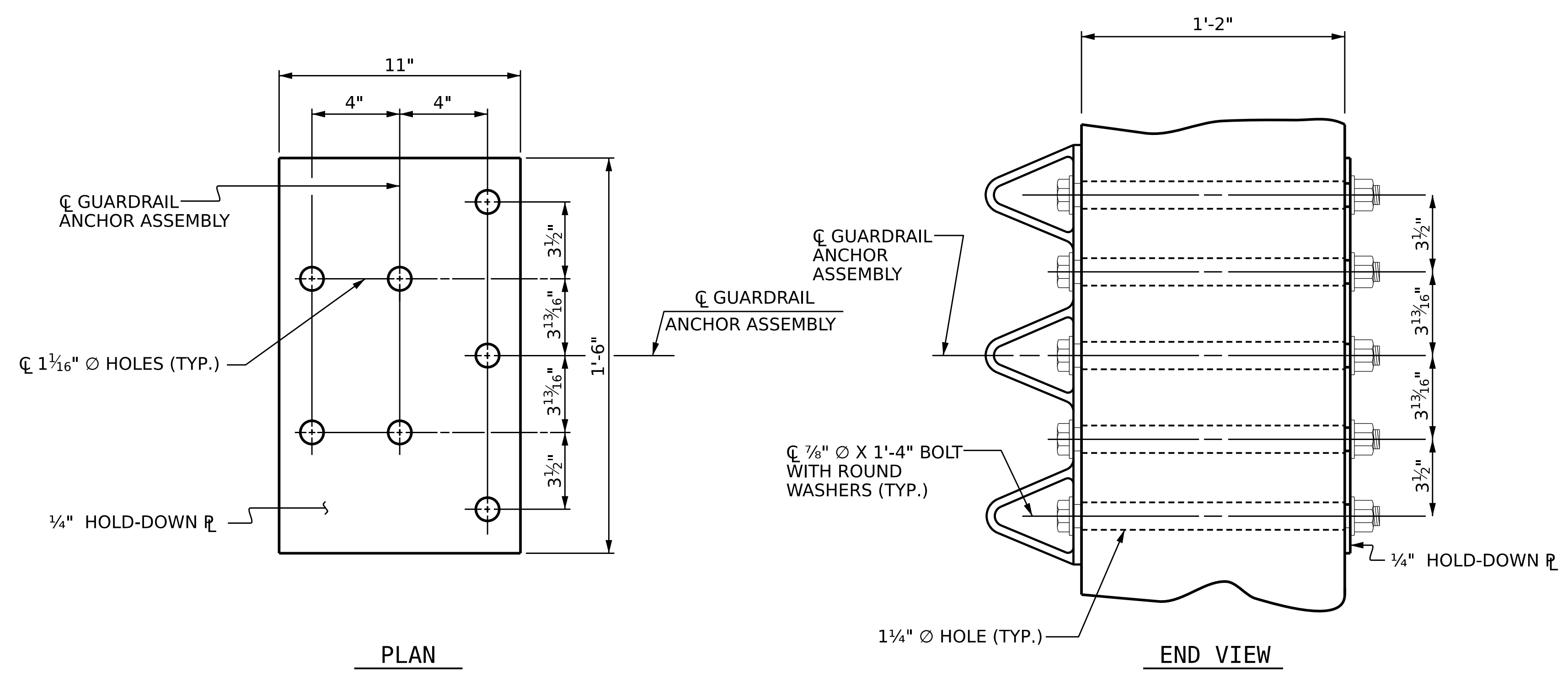
CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			48

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DRAWN BY : **B. J. MANTEI** DATE : **4-25-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-26-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**



GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

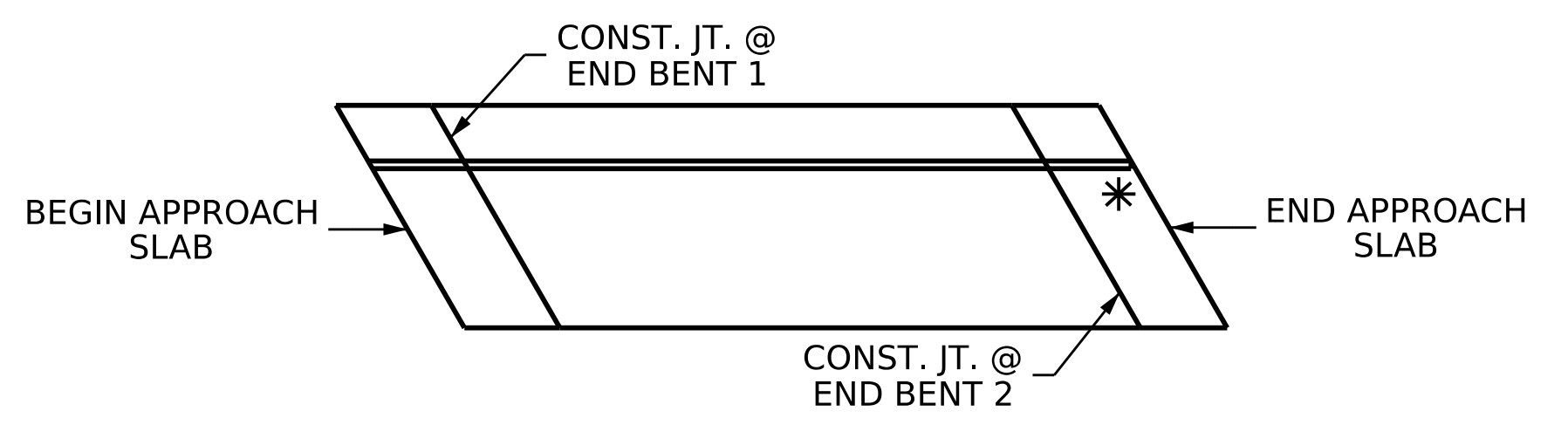
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

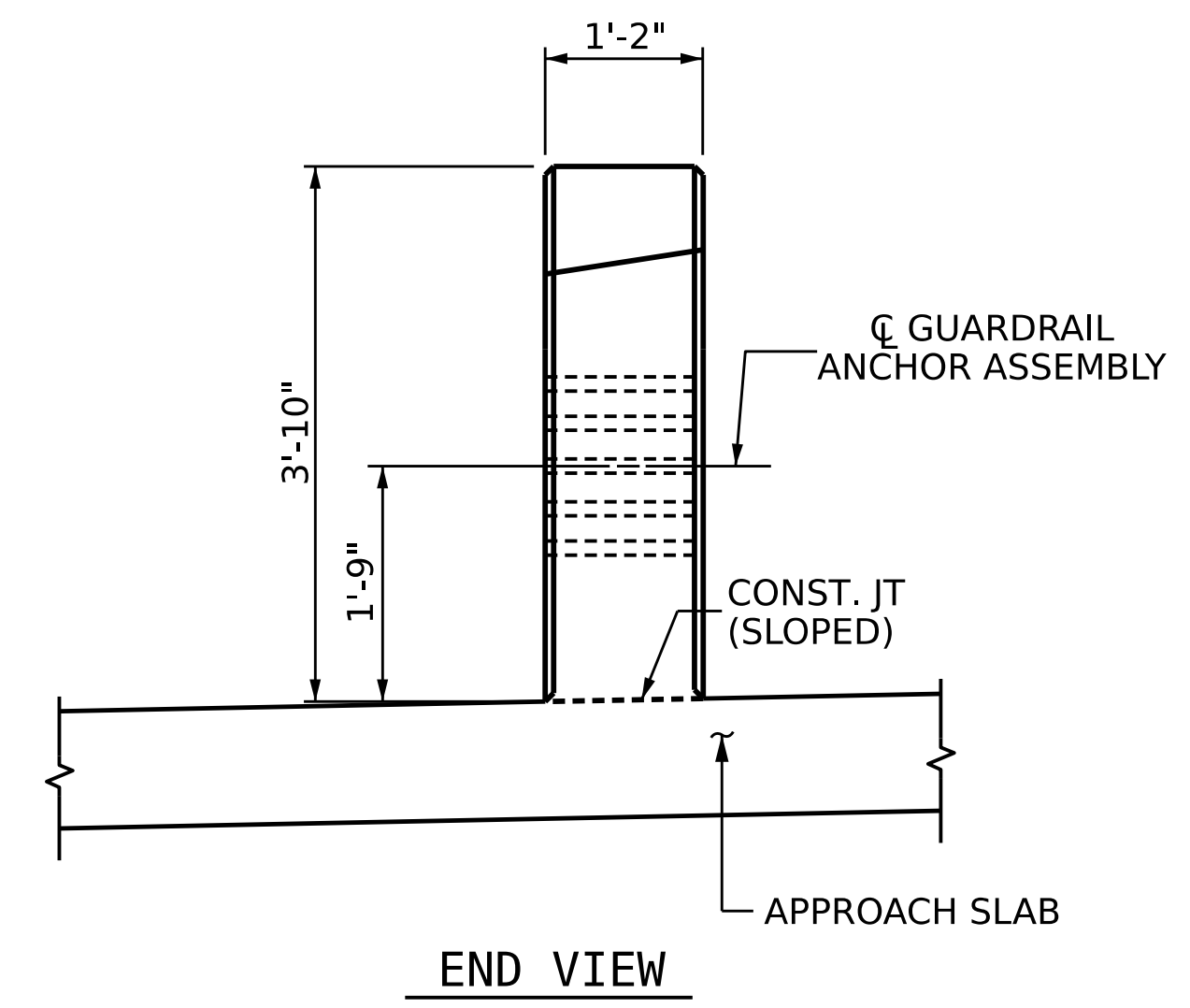
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

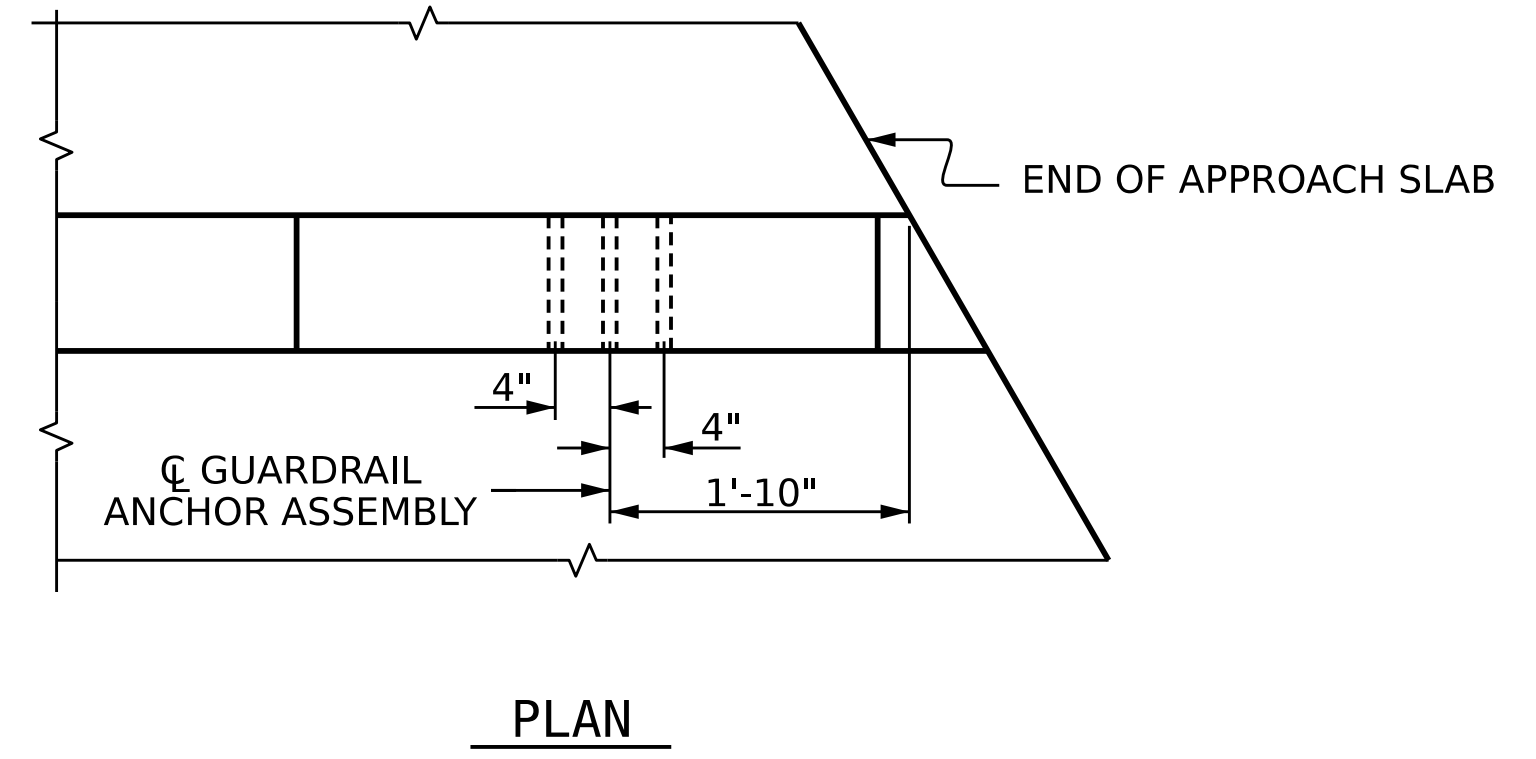


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

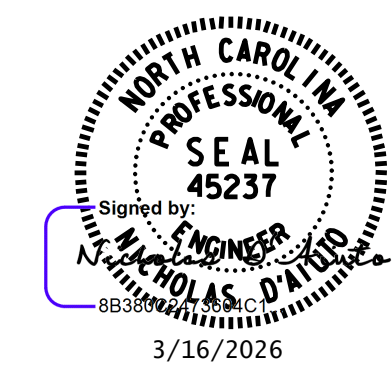


LOCATION OF GUARDRAIL ANCHOR AT END POST



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GUARDRAIL ANCHORAGE DETAILS

MULTI-USE PATH PARAPET

DRAWN BY : **B. J. MANTEI** DATE : **4-28-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-29-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

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1			3		
2			4		

TOTAL SHEETS: 48

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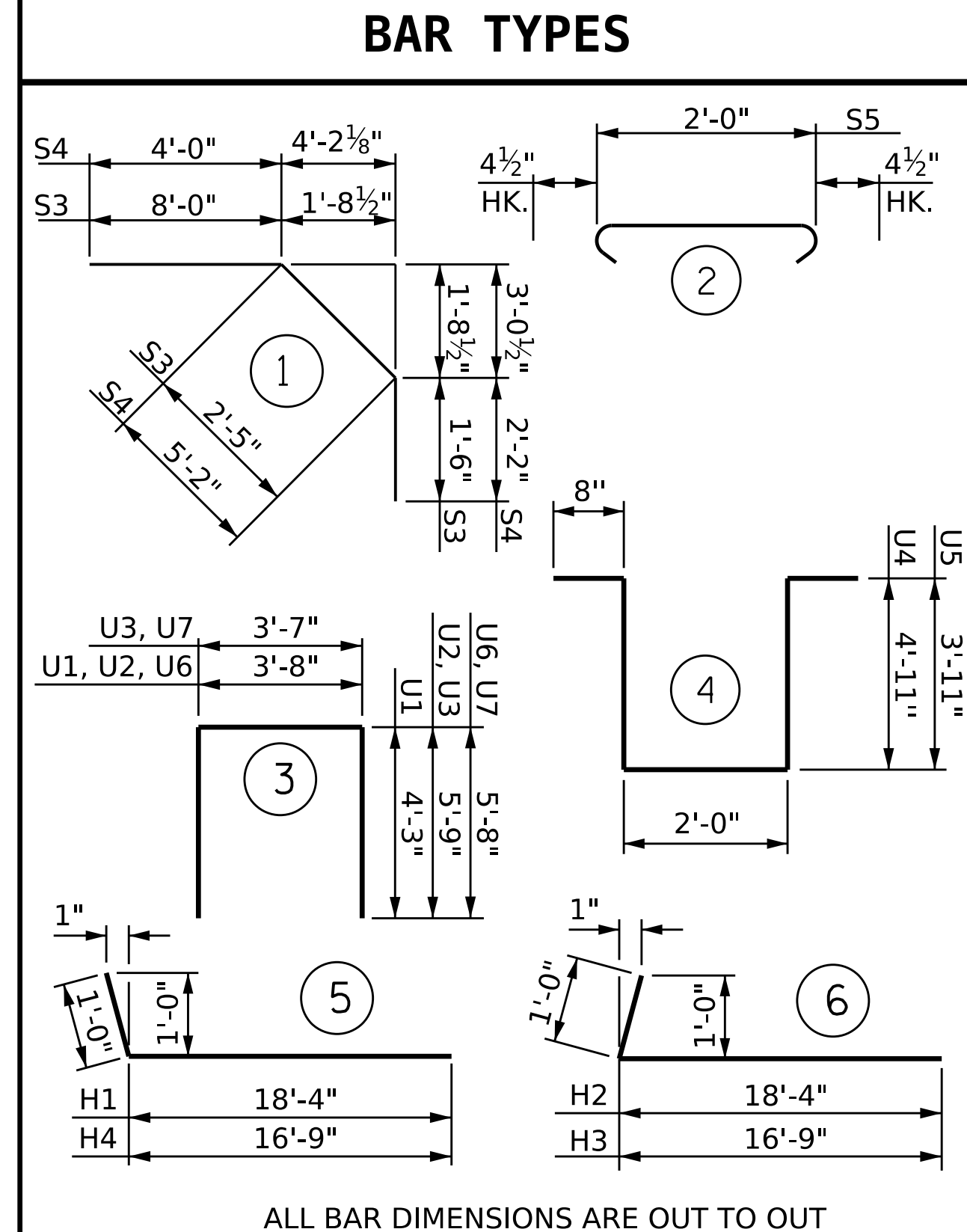
REINFORCING BAR SCHEDULE

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	848	5	STR	40' - 1"	35,452
* A101	4	5	STR	4' - 9"	20
* A102	4	5	STR	15' - 3"	64
* A103	4	5	STR	25' - 9"	107
* A104	4	5	STR	36' - 2"	151
* A105	4	5	STR	46' - 8"	195
* A106	4	5	STR	57' - 2"	238
* A107	8	5	STR	35' - 2"	293
A2	848	5	STR	39' - 11"	35,305
A201	4	5	STR	4' - 9"	20
A202	4	5	STR	15' - 3"	64
A203	4	5	STR	25' - 9"	107
A204	4	5	STR	36' - 2"	151
A205	4	5	STR	46' - 8"	195
A206	4	5	STR	57' - 2"	238
A207	8	5	STR	34' - 10"	291
* B1	212	5	STR	52' - 0"	11,498
* B2	150	5	STR	53' - 3"	8,331
B3	392	5	STR	51' - 9"	21,158
* B4	200	5	STR	21' - 0"	4,381
* B5	100	5	STR	23' - 5"	2,442
H1	26	6	5	19' - 4"	755
H2	26	6	6	19' - 4"	755
H3	24	6	6	17' - 9"	640
H4	24	6	5	17' - 9"	640
K1	20	5	STR	43' - 1"	899
K2	18	5	STR	5' - 6"	103
K3	36	5	STR	6' - 0"	225
K4	36	5	STR	7' - 0"	263
K5	16	5	STR	2' - 8"	45
K6	4	5	STR	4' - 10"	20
K7	8	5	STR	5' - 4"	45
K8	8	5	STR	4' - 7"	38
K9	10	5	STR	38' - 1"	397
K10	18	5	STR	6' - 1"	114
K11	54	5	STR	6' - 8"	375
K12	18	5	STR	4' - 4"	81
* S3	108	4	1	11' - 11"	860
* S4	108	4	1	11' - 4"	818
S5	252	4	2	2' - 9"	463
U1	118	5	3	12' - 2"	1,497
U2	4	5	3	15' - 2"	63
U3	2	5	3	15' - 1"	31
U4	45	5	4	13' - 2"	618
U5	18	5	4	11' - 3"	211
U6	4	5	3	15' - 0"	63
U7	2	5	3	14' - 11"	31
V1	24	5	STR	5' - 9"	144
V2	28	5	STR	5' - 10"	170
V3	24	5	STR	6' - 0"	150
V4	32	5	STR	5' - 6"	184
V5	20	5	STR	5' - 4"	111
V6	20	5	STR	5' - 2"	108
* EPOXY COATED REINFORCING STEEL				LBS.	64,850
REINFORCING STEEL				LBS.	66,768

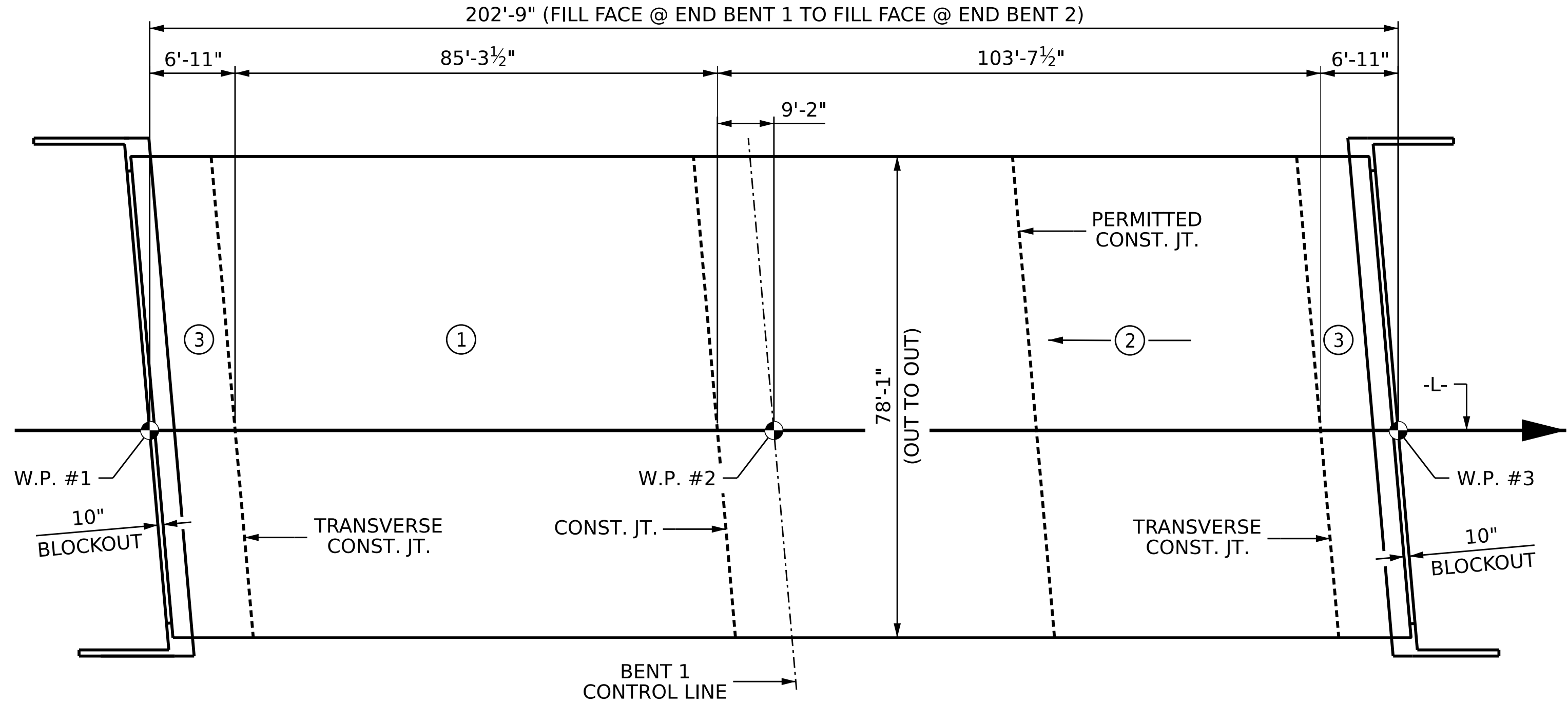
CONCRETE BREAKDOWN

CLASS AA CONCRETE

POUR #1	C.Y.	205.3
POUR #2	C.Y.	275.2
POUR #3	C.Y.	151.2
TOTAL	C.Y.	631.7



* - DENOTES EPOXY COATED REBAR
 ▲ QUANTITY INCLUDES INTEGRAL DIAPHRAGMS FROM THE CONST. JT. IN END BENT.



POUR SEQUENCE & LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB

ALL DIMENSIONS ARE MEASURED ALONG THE SURVEY LINE
 # DENOTES POUR NUMBER & DIRECTION OF POUR

TOTAL = 15,701 SQ. FT

GROOVING BRIDGE FLOORS

APPROACH SLABS	3,454	SQ.FT.
BRIDGE DECK	14,372	SQ.FT.
TOTAL	17,826	SQ.FT.

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

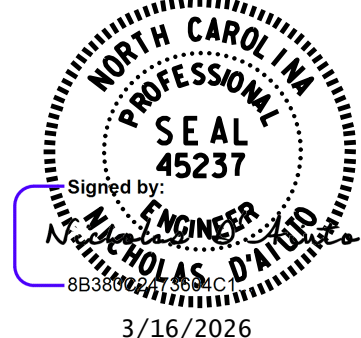
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
TOTALS **	631.7	66,768	64,850

** QUANTITIES FOR CONCRETE BARRIERS ARE NOT INCLUDED

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



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

DRAWN BY: **B.J. MANTEI** DATE: **3-20-25**
 CHECKED BY: **N. D'AIUTO** DATE: **4-4-25**
 DESIGN E.O.R.: **N. D'AIUTO** DATE: **3-16-26**

OPTIONAL POUR SEQUENCE

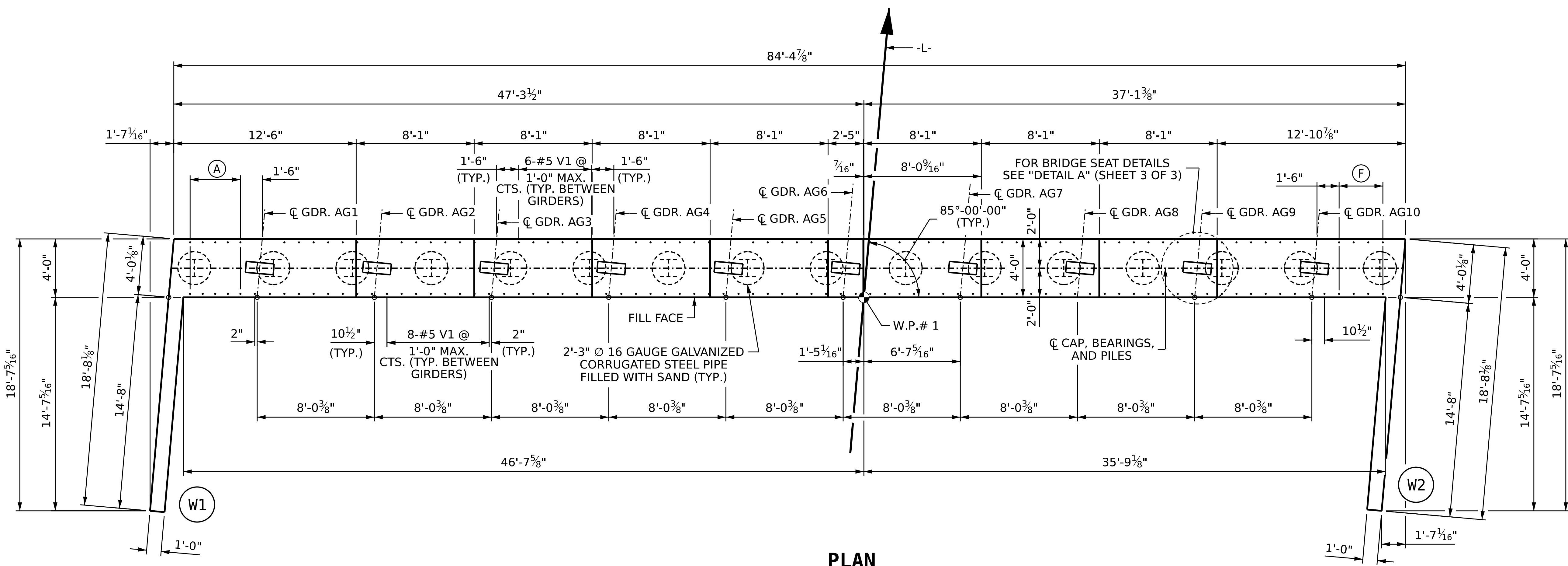
POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

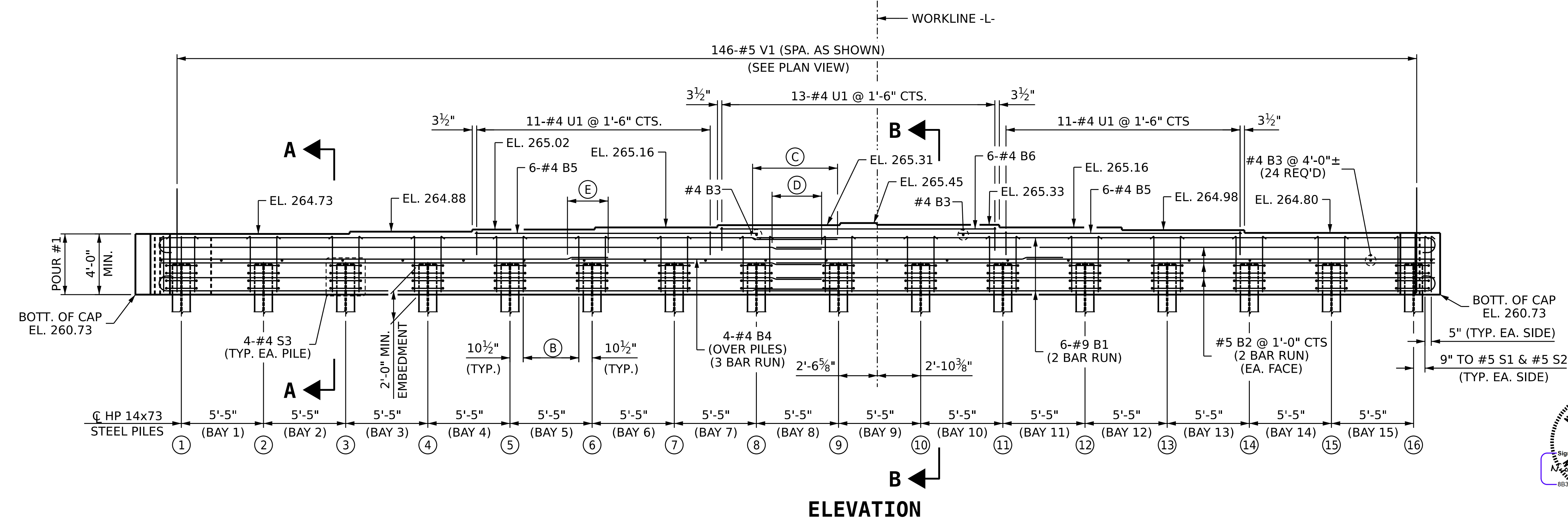
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	
1			3		S-34
2			4		TOTAL SHEETS 48

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User: jim.custin
 File: c:\bms\ice-eng-pw-01\d0107548\400_35.Gruber_SMU.EB.01.01.254072.dgn
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 Design E.O.R.: N. D'AIUTO
 Date: 3-16-26



PLAN



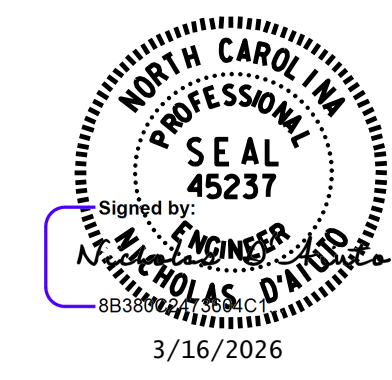
ELEVATION

GALVANIZED CORRUGATED STEEL PIPES NOT SHOWN FOR CLARITY

NOTES:
 SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA AND EXPOSED AREA OF CAP OUTSIDE INTEGRAL DIAPHRAGM LIMITS, SHALL BE RAKED TO A DEPTH OF 1/4\"/>

- (A) 5-#5 V1 @ 1'-0" CTS.
- (B) 9-#5 S1 & #5 S2 @ 5 1/2" CTS. (TYP. EA. BAY)
- (C) 5'-4 MIN. SPLICE (#9 B1)
- (D) 3'-0" MIN. SPLICE (#5 B2)
- (E) 2'-5" MIN. SPLICE (#4 B4)
- (F) 4-#5 V1 @ 1'-0" CTS.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 1 OF 3



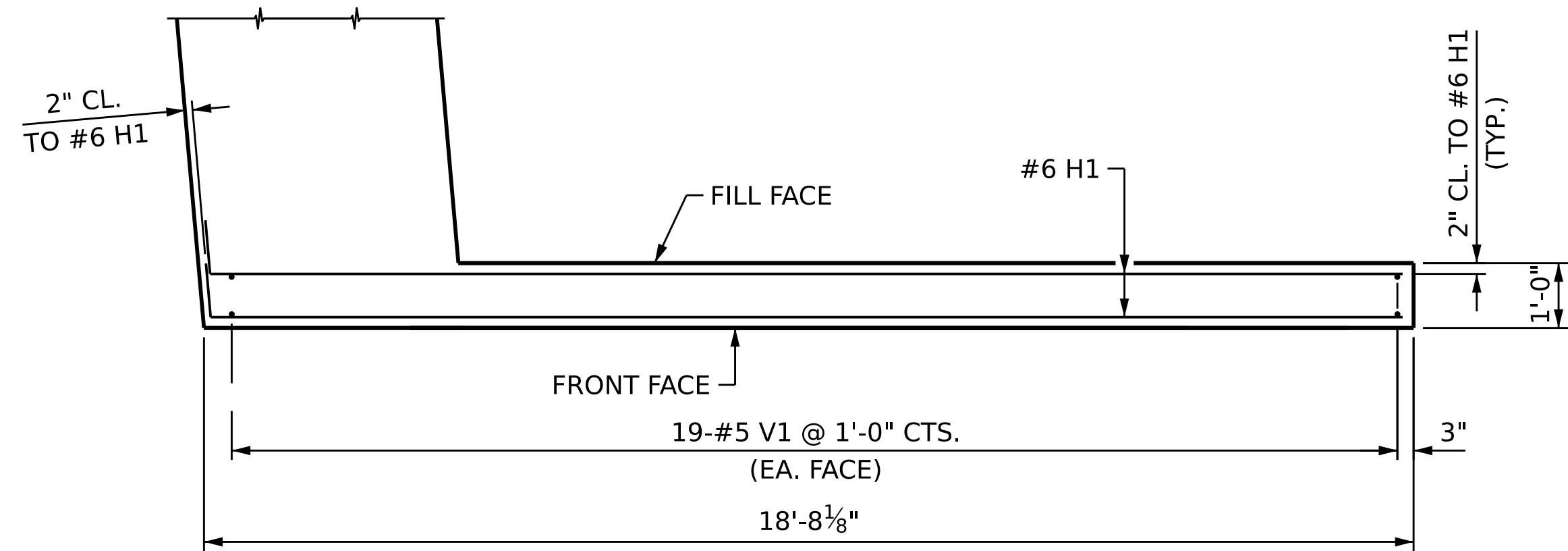
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 1

DRAWN BY : B.J. MANTEI DATE : 4-14-25
 CHECKED BY : N. D'AIUTO DATE : 4-17-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

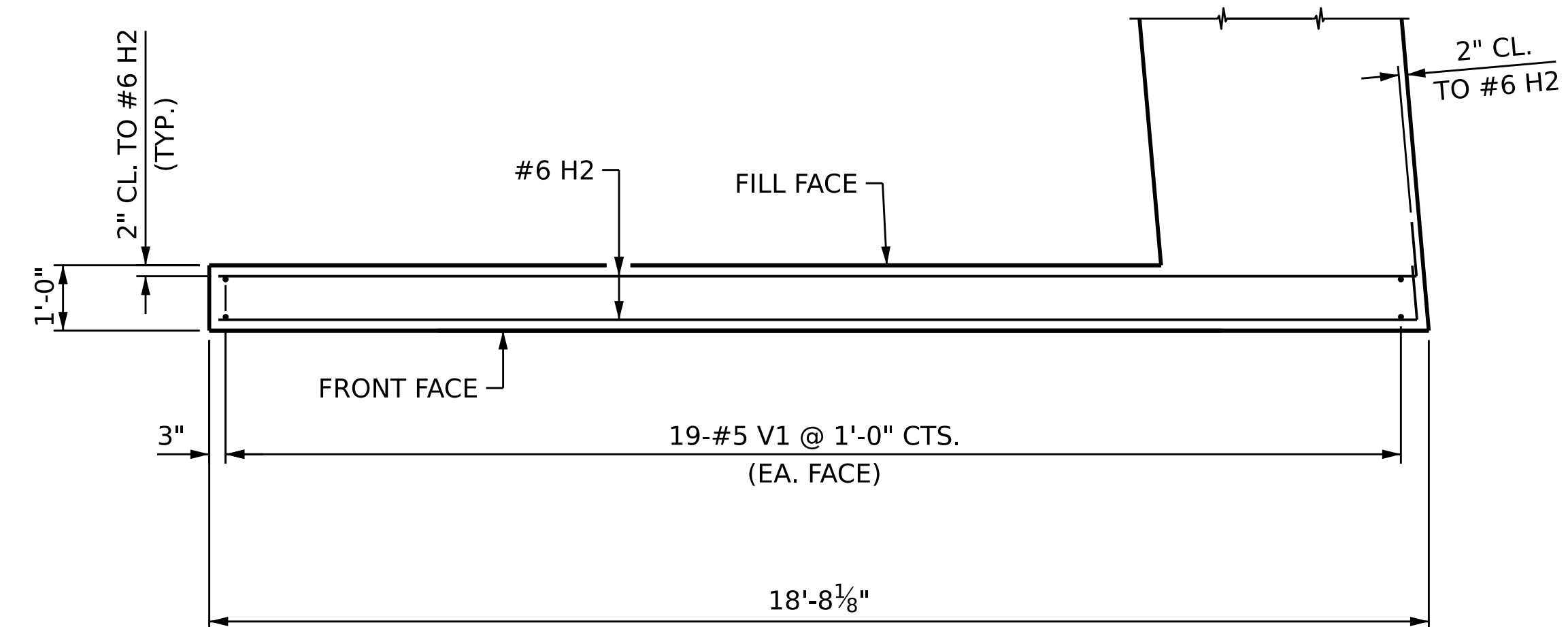
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			48

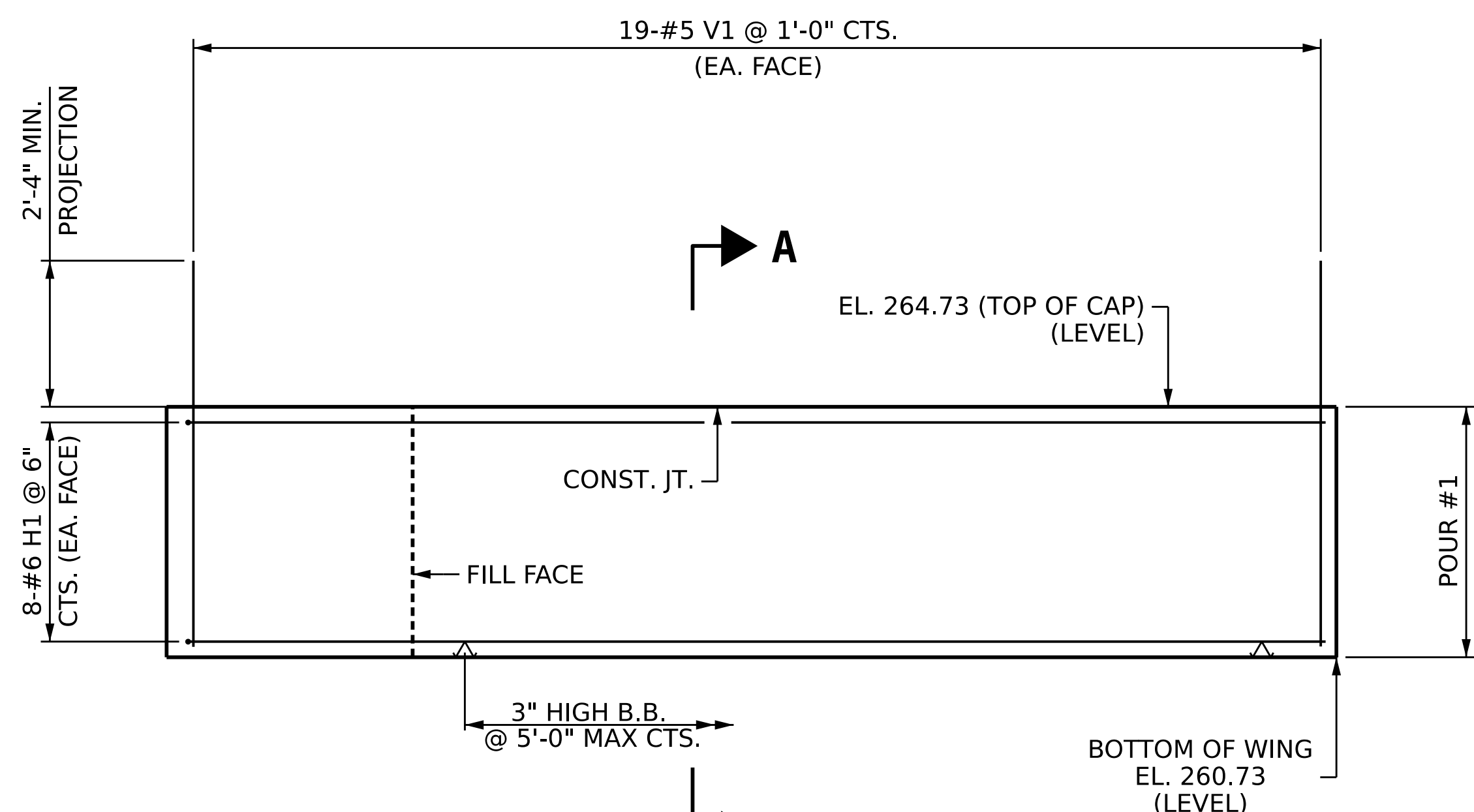
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 3/16/2026
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 User: jim.custin
 Filename: c:\Users\jlee-eng-pw-01\d0107548\400_36_0\user_SMU\EB_01_02_254072.cgn



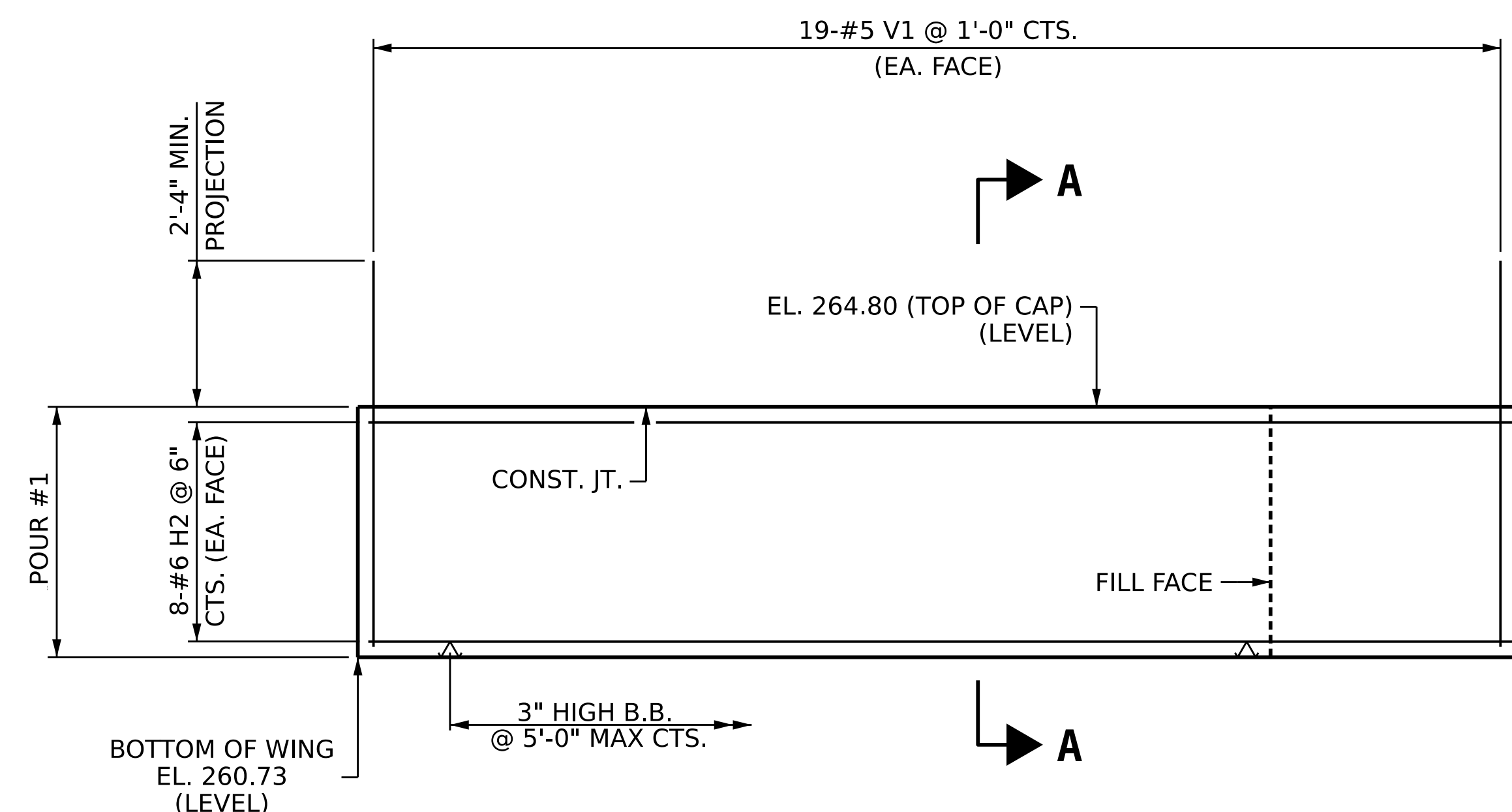
PLAN OF LEFT WING (W1)



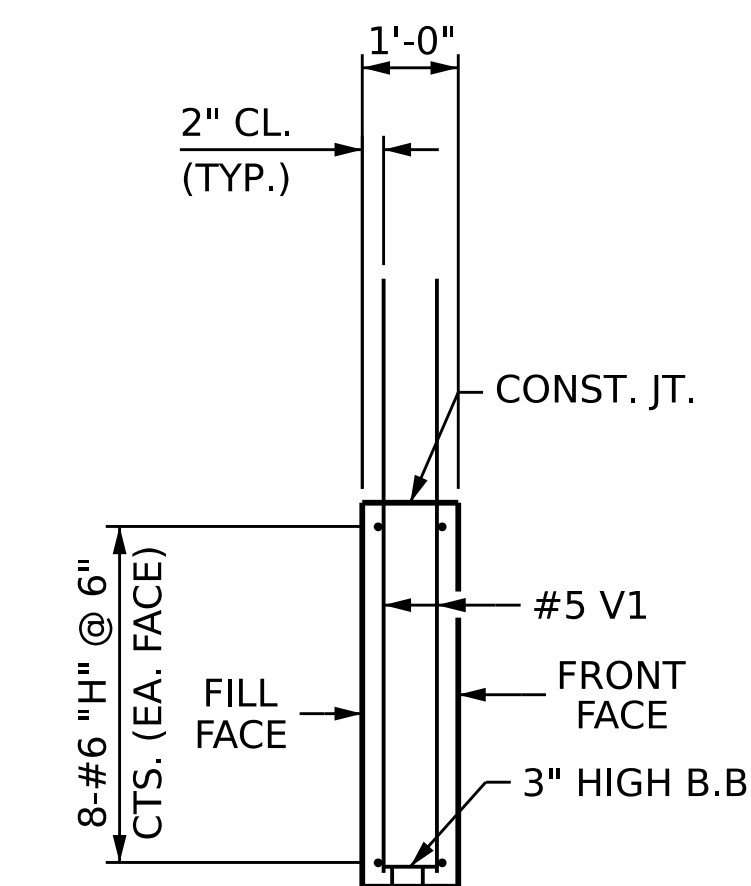
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



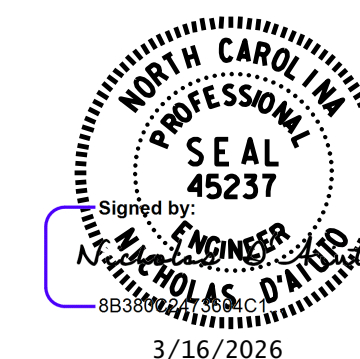
ELEVATION OF RIGHT WING (W2)



SECTION A-A

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 3



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

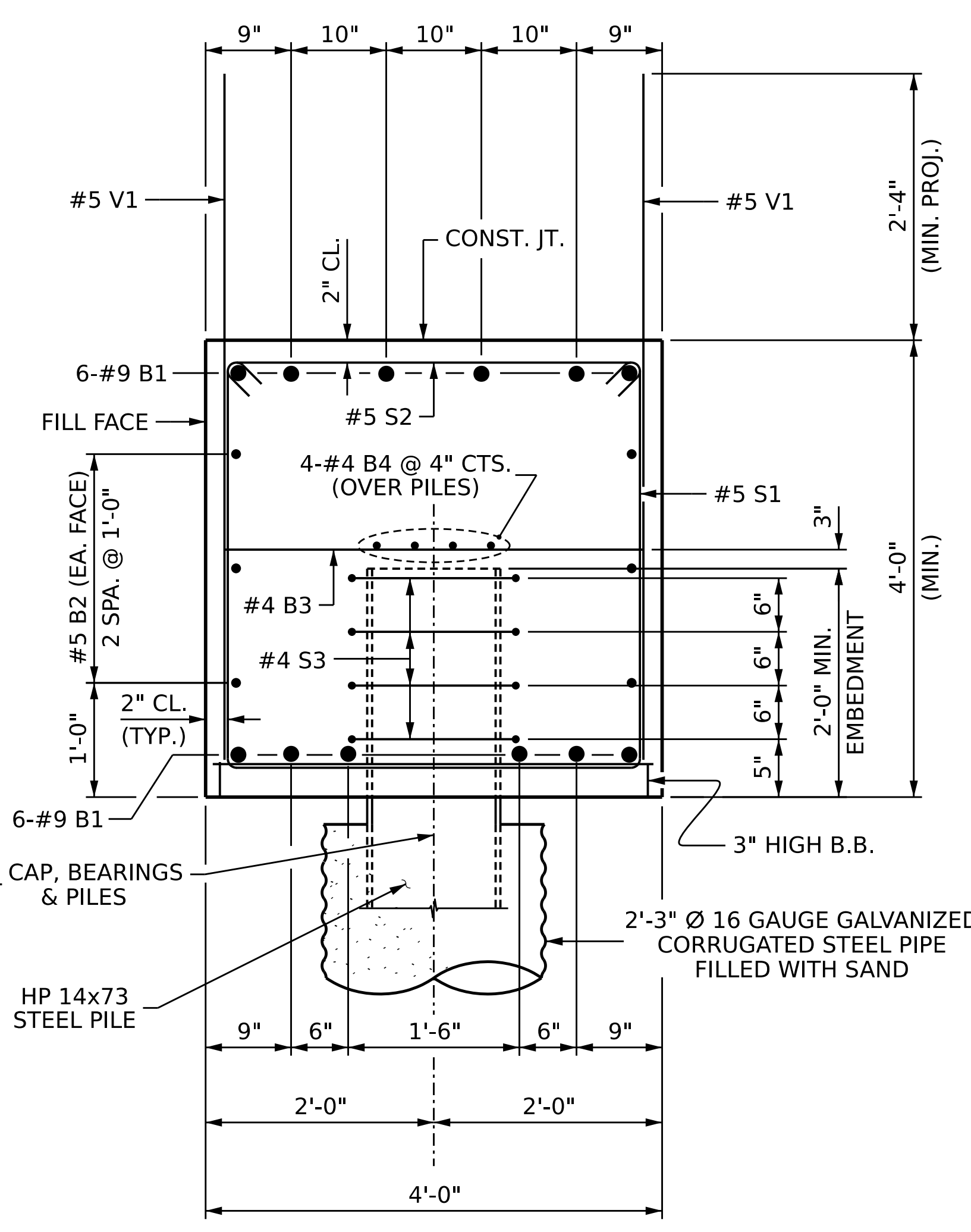
DRAWN BY : **B.J. MANTEI** DATE : **4-15-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-16-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

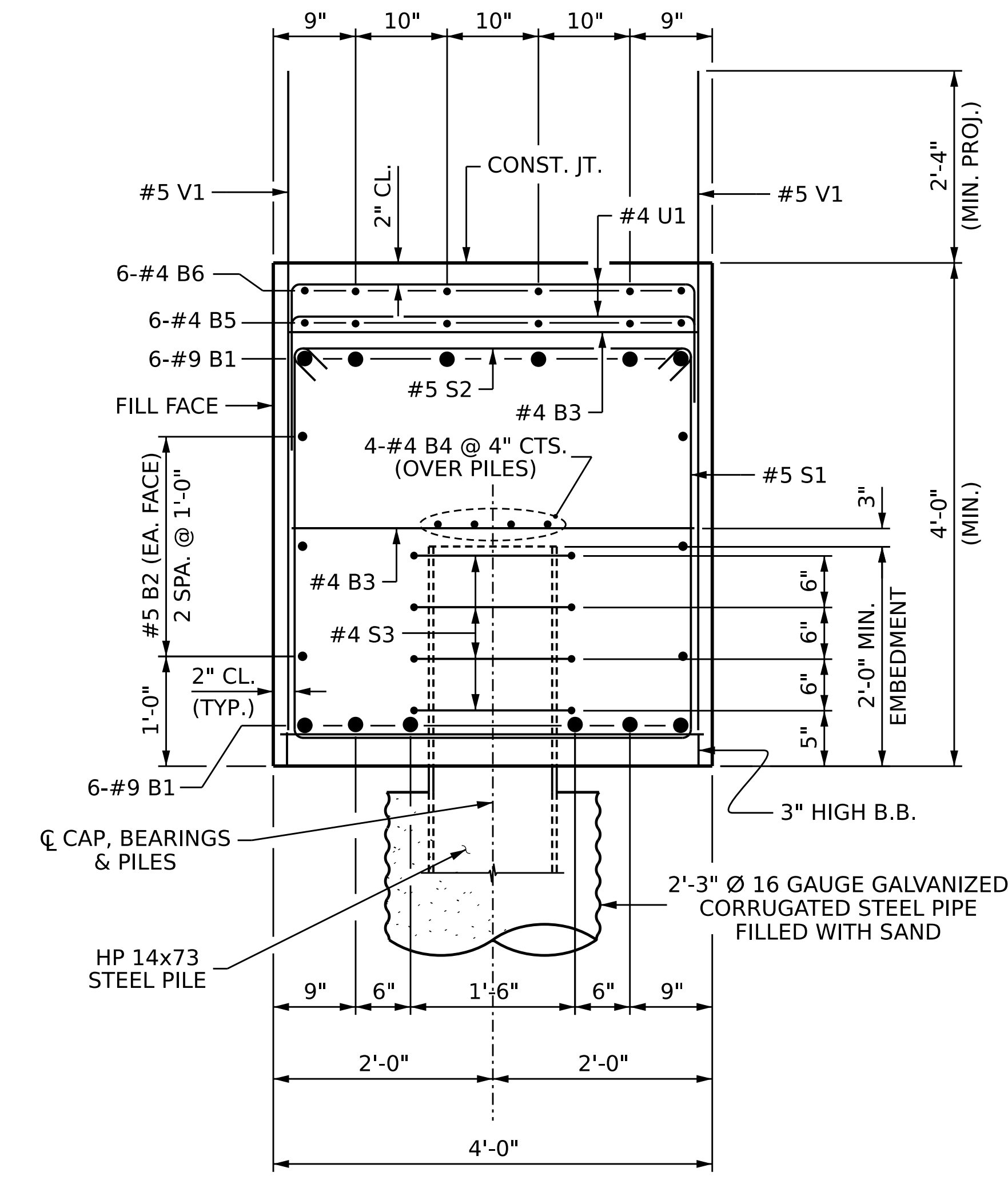
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 48

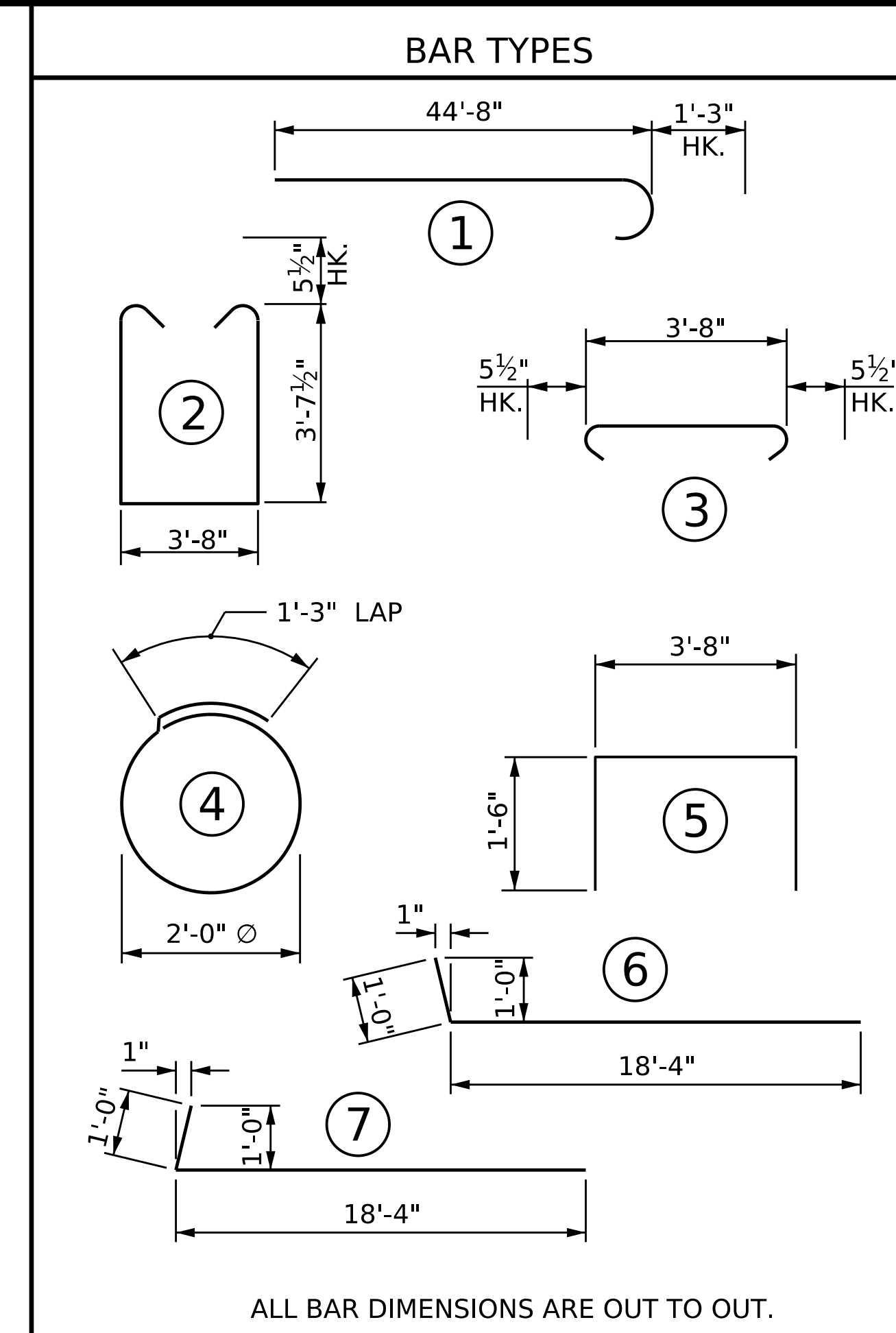
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 Design E.O.R.: N. D'AIUTO DATE: 3-16-26
 Checked by: N. D'AIUTO DATE: 4-16-25
 Drawn by: B.J. MANTEI DATE: 4-16-25



SECTION A-A

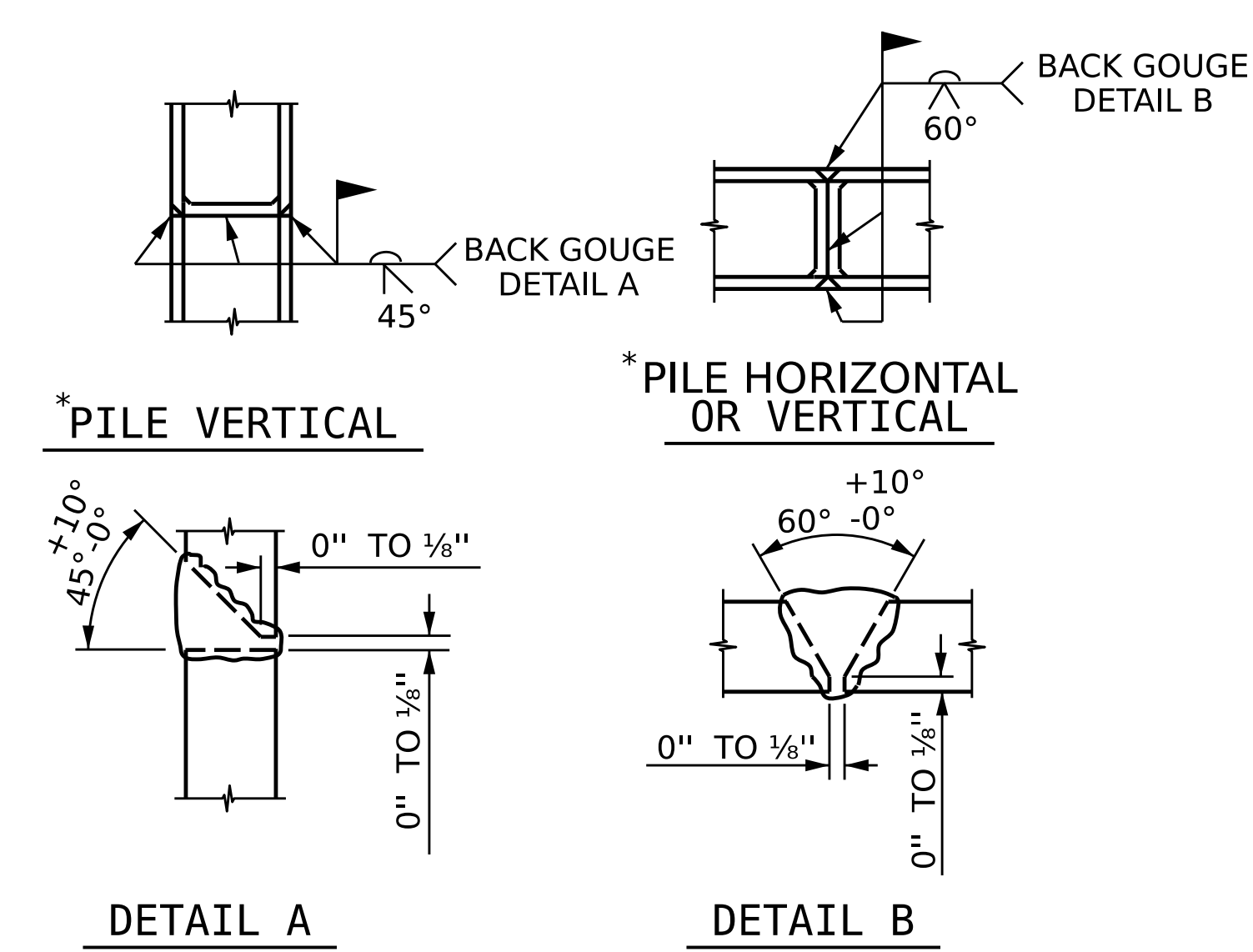


SECTION B-B



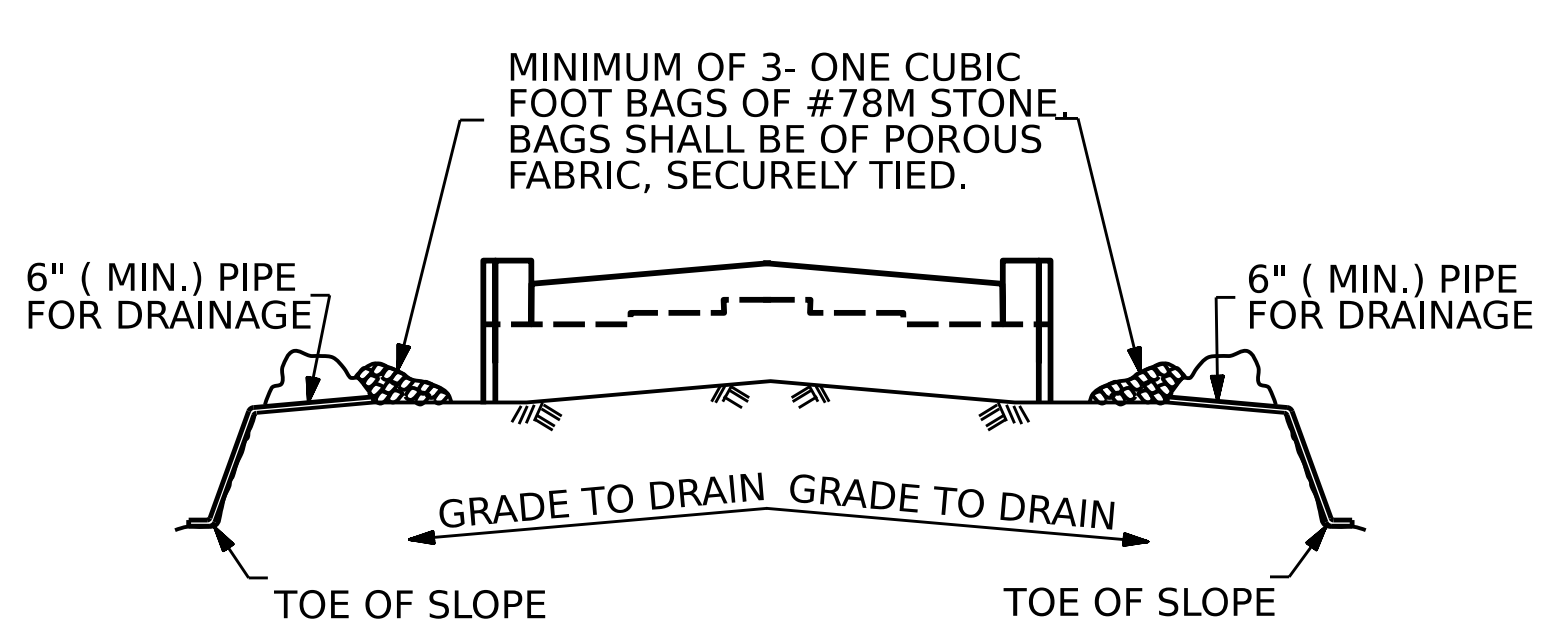
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	9	1	45'-11"	3,747
B2	12	5	STR	43'-8"	547
B3	24	4	STR	3'-8"	59
B4	12	4	STR	29'-7"	237
B5	12	4	STR	18'-8"	150
B6	6	4	STR	18'-2"	73
H1	16	6	6	19'-4"	465
H2	16	6	7	19'-4"	465
S1	139	5	2	11'-10"	1,716
S2	139	5	3	4'-7"	664
S3	64	5	4	7'-7"	506
U1	35	4	5	6'-8"	156
V1	222	5	STR	6'-11"	1,602
REINFORCING STEEL				LBS.	10,387
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 - CAP & LOWER WING WALLS				C.Y.	58.3
TOTAL CLASS "A" CONCRETE				C.Y.	58.3



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

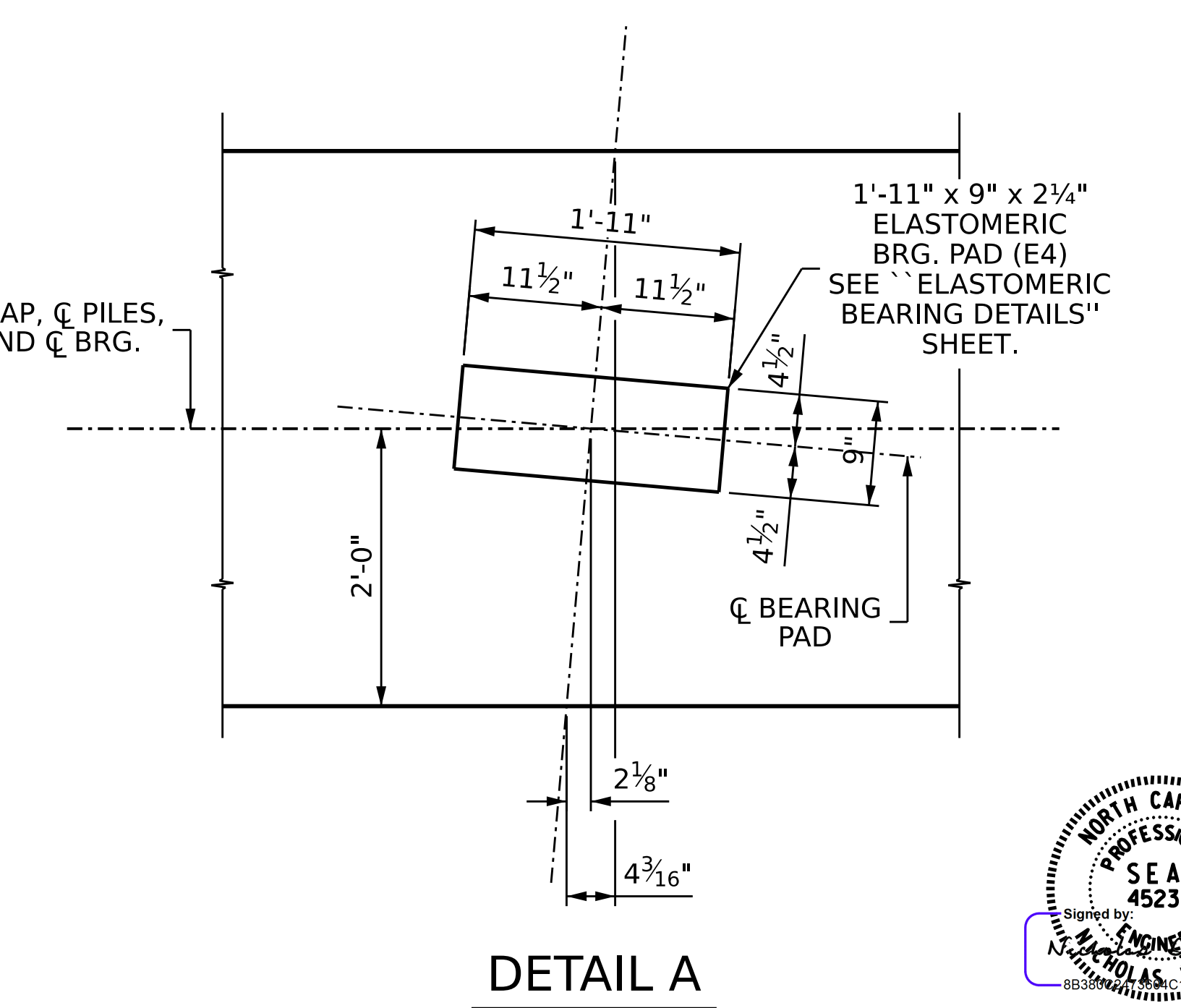


TEMPORARY DRAINAGE AT END BENT

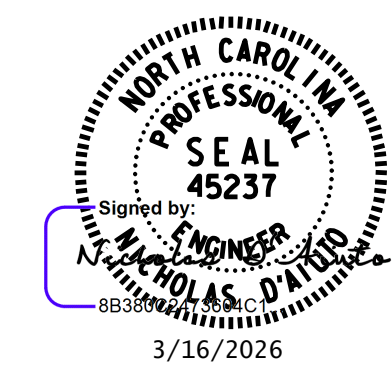
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.



DETAIL A



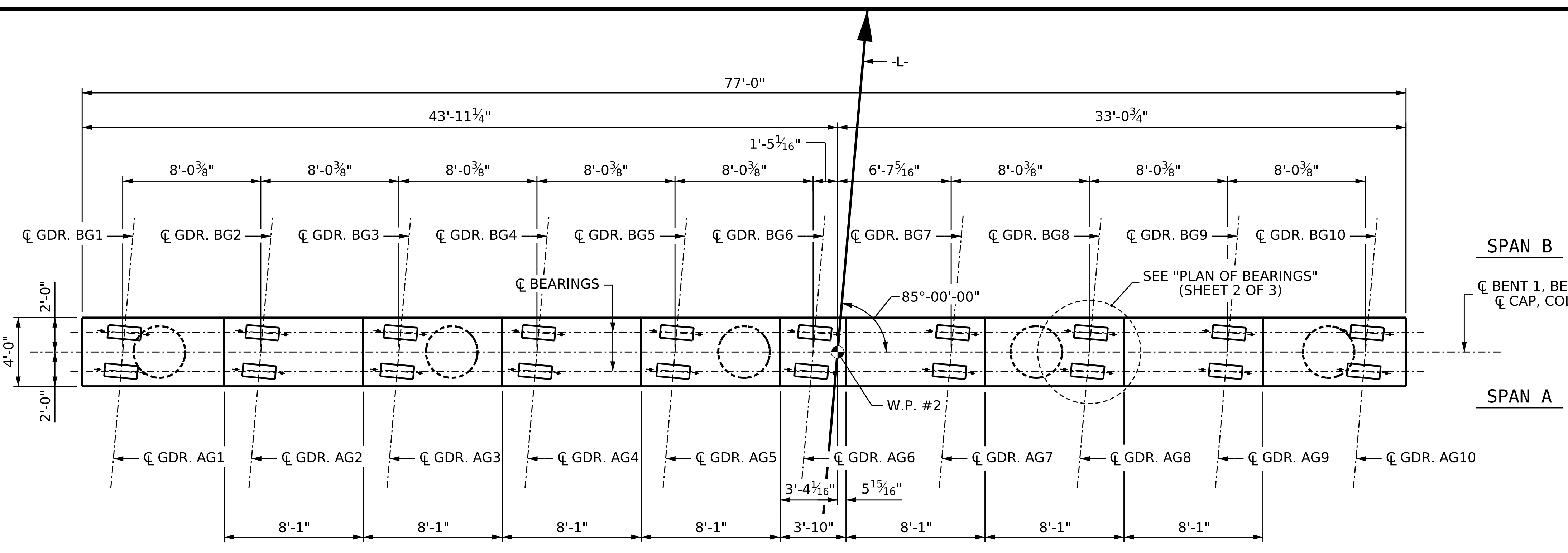
PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 3 OF 3

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

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

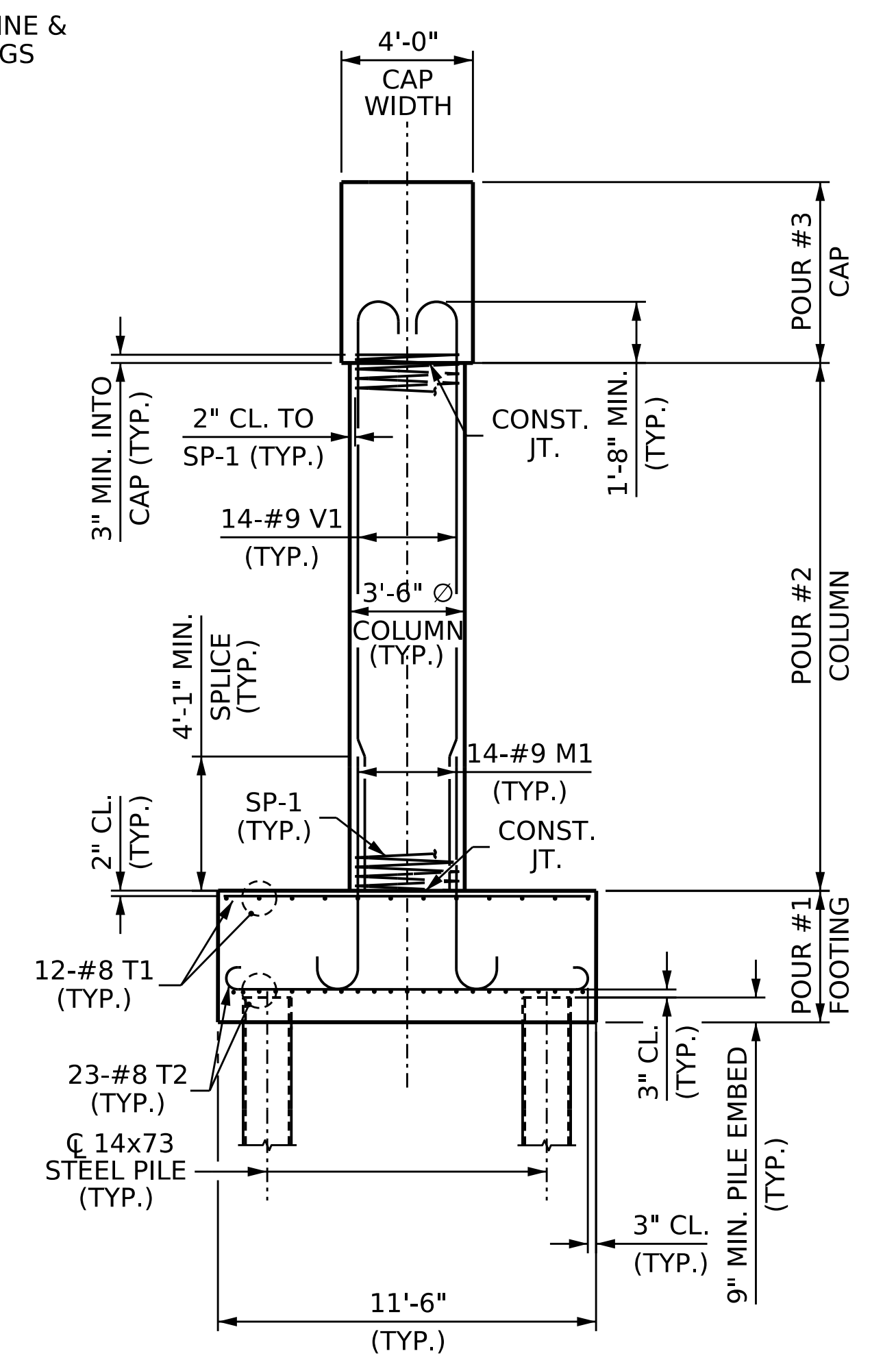
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

S-37
 TOTAL SHEETS
 48

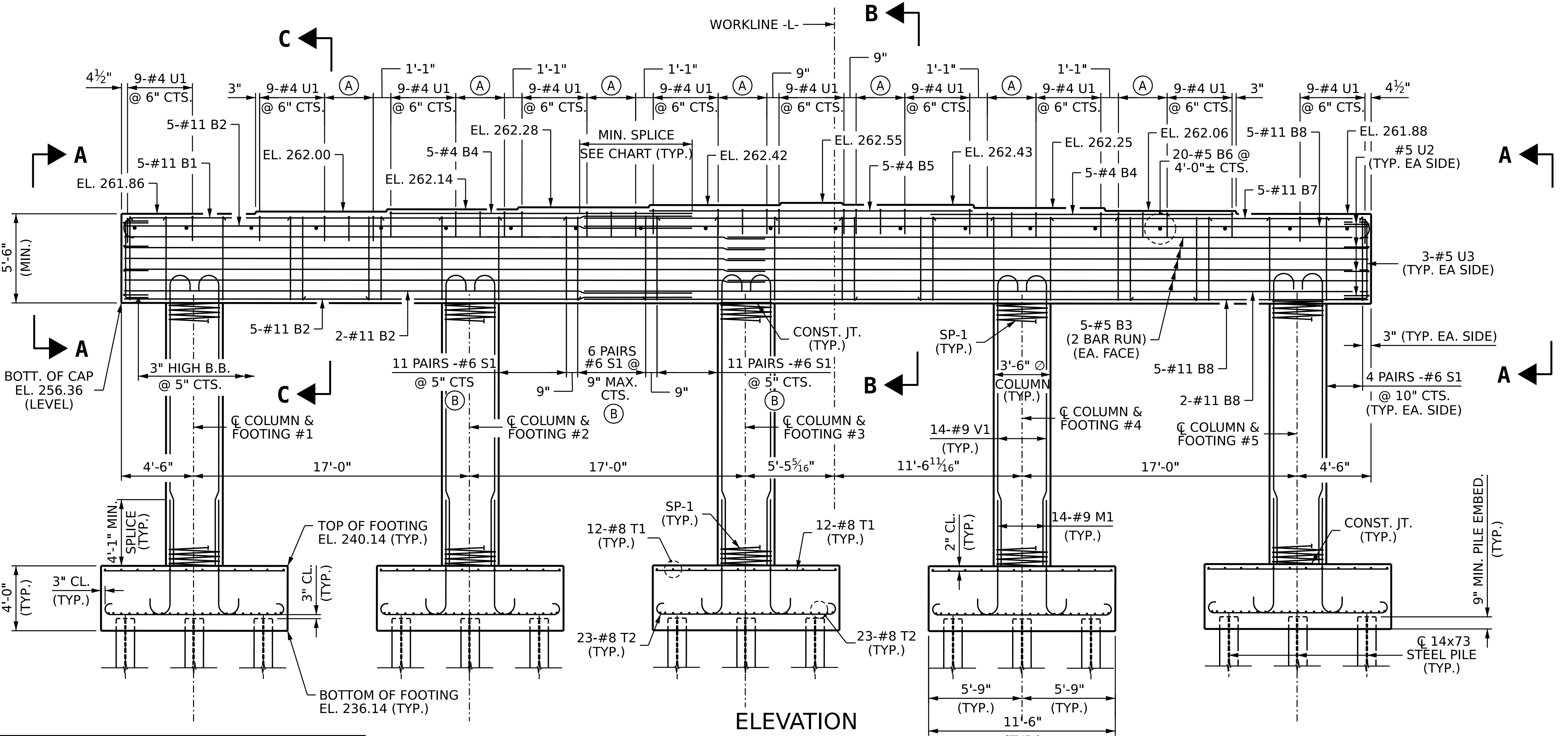


PLAN

NOTES:
 FOR ADDITIONAL NOTES SEE "BENT 1 DETAILS", SHEET 3 OF 3.
 FOR "VIEW A-A" SEE "BENT 1 DETAILS", SHEET 2 OF 3.
 FOR "SECTION B-B & C-C", SEE "BENT 1 DETAILS", SHEET 3 OF 3.
 MEDALLION NOT SHOWN FOR CLARITY. SEE "BRIDGE AESTHETIC DETAILS" SHEETS.



END ELEVATION

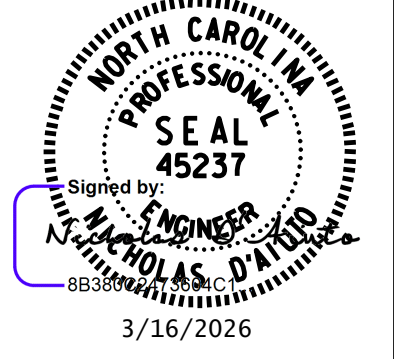


ELEVATION

MIN. SPLICE CHART	
#11 "B"	6'-8"
#5 B3	3'-0"

- (A) 2 SPA. @ 1'-6" CTS.
- (B) TYP. BETWEEN COLUMNS (INVERT ALTERNATE STIRRUPS)

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
**BENT 1
 PLAN & ELEVATION**

DRAWN BY : **B. J. MANTEI** DATE : **4-18-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-24-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

SEE "END ELEVATION" FOR ANY REINFORCING STEEL DETAILS NOT SHOWN IN THE ELEVATION VIEW.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

S-38
 TOTAL SHEETS 48

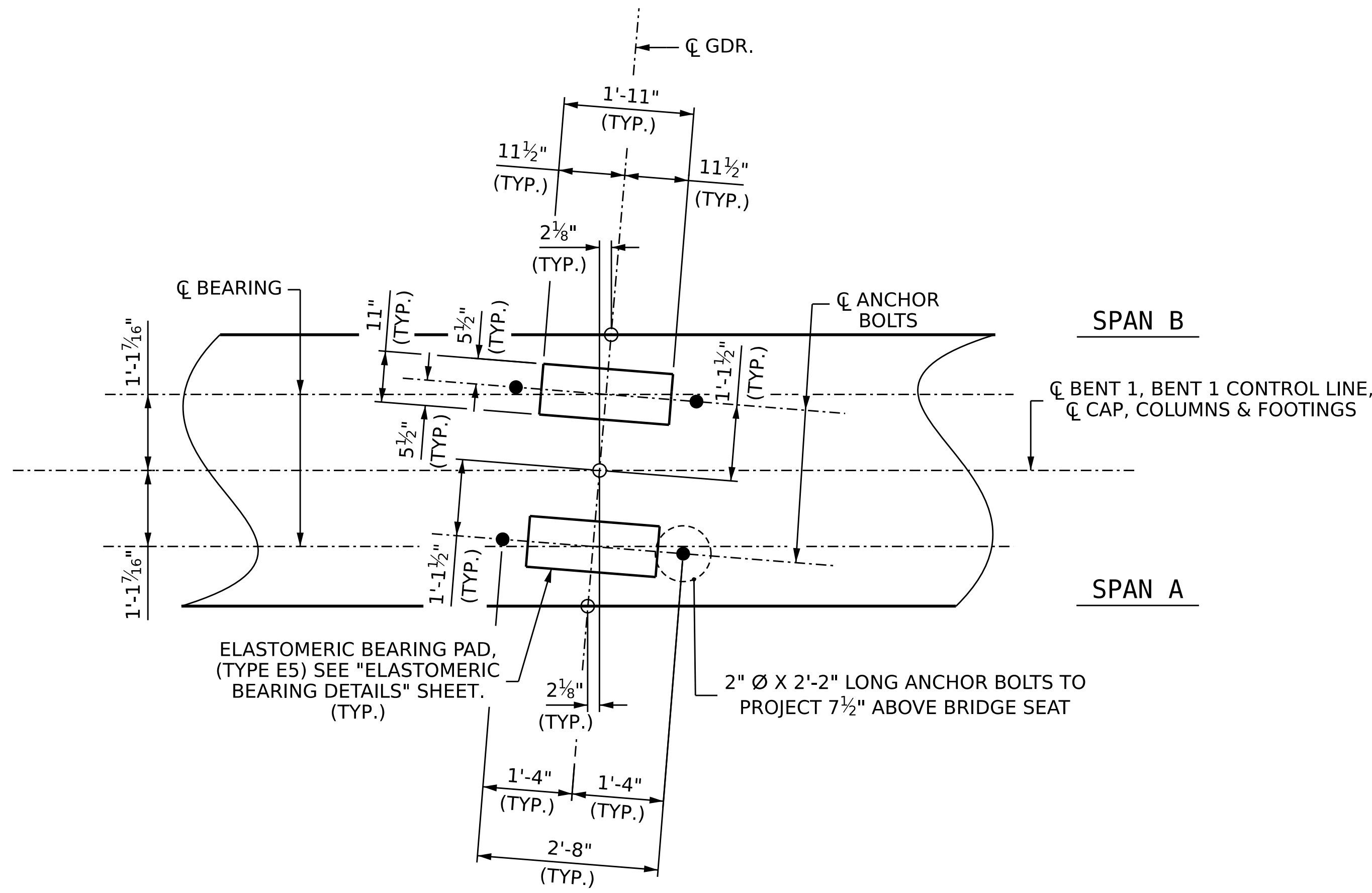
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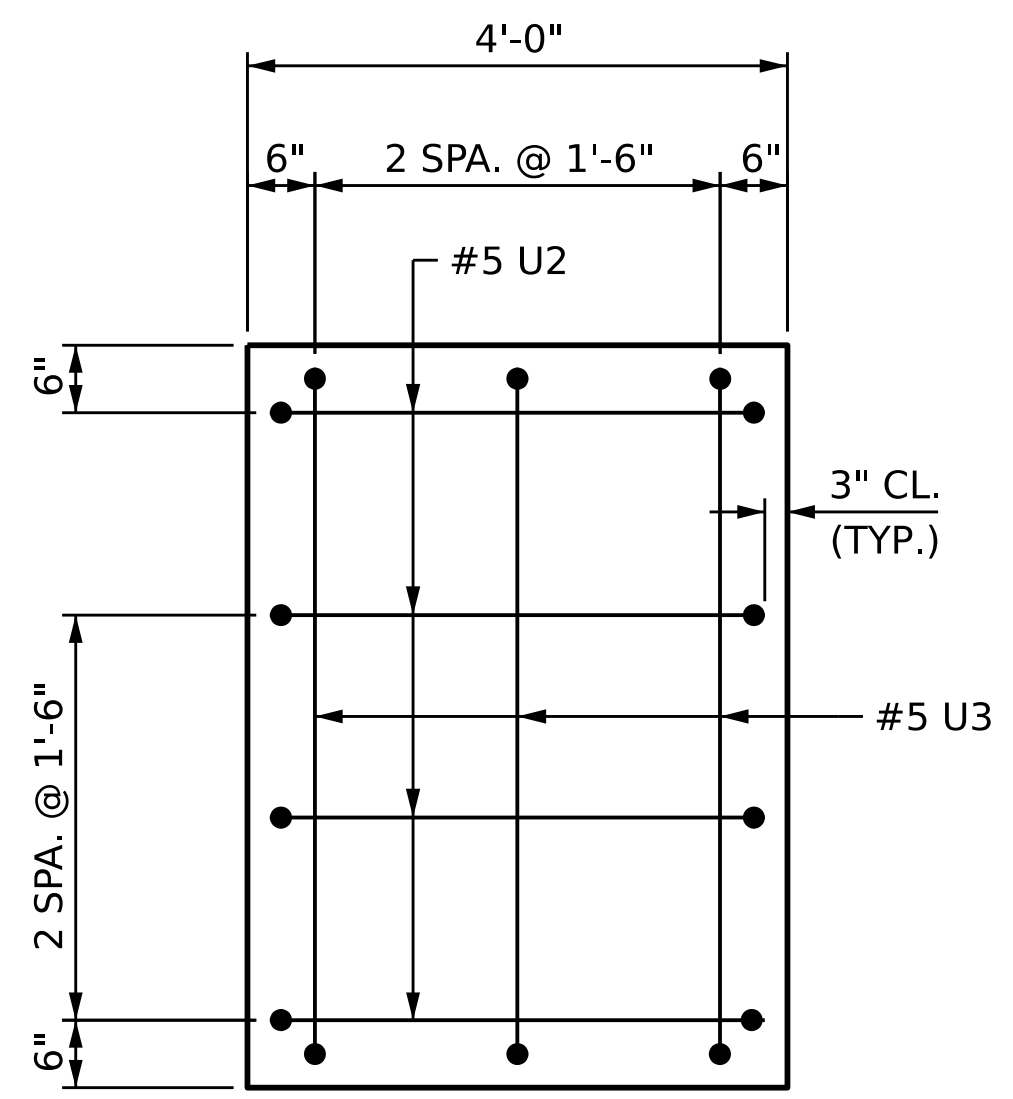
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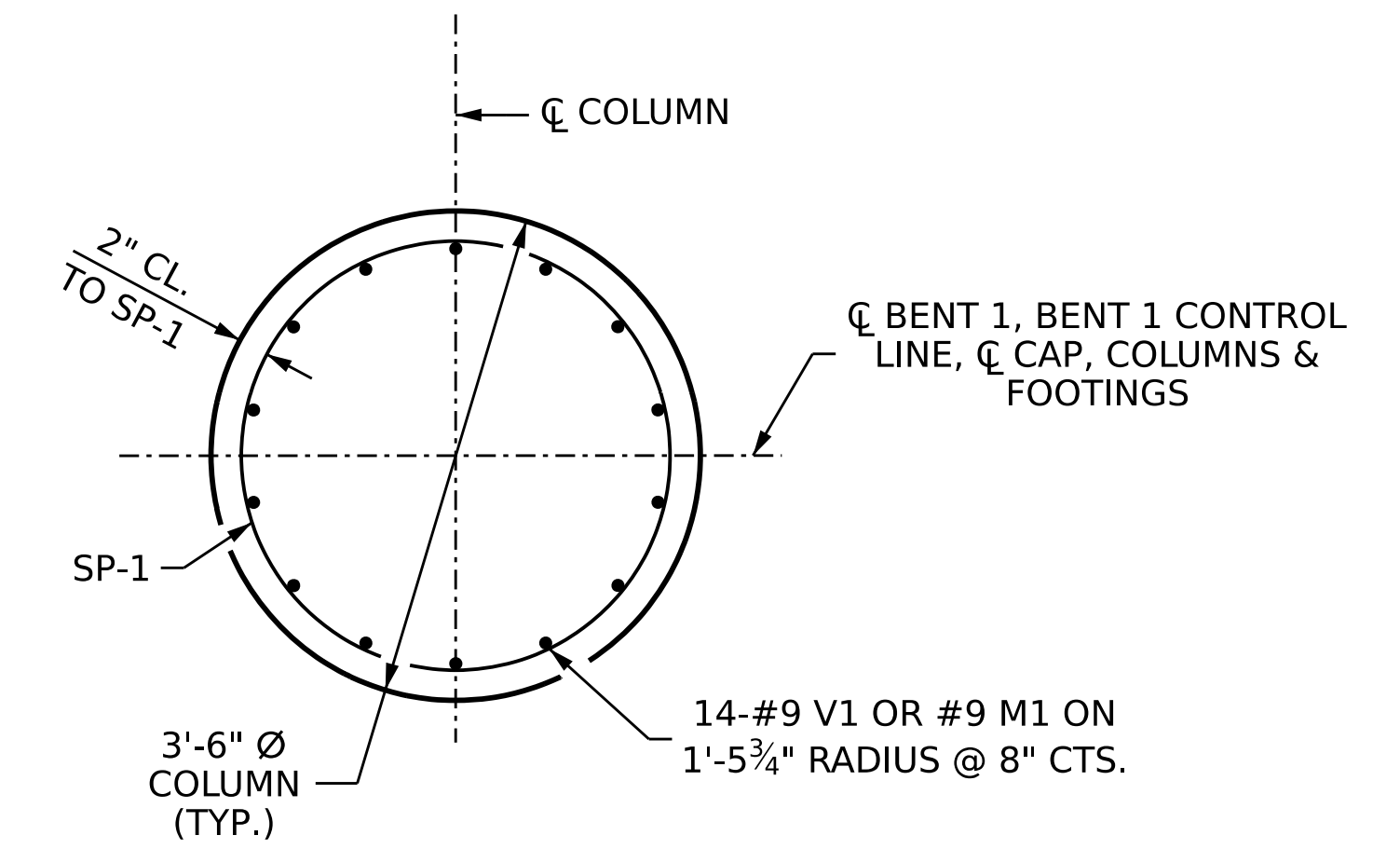
User Name: jim.custin



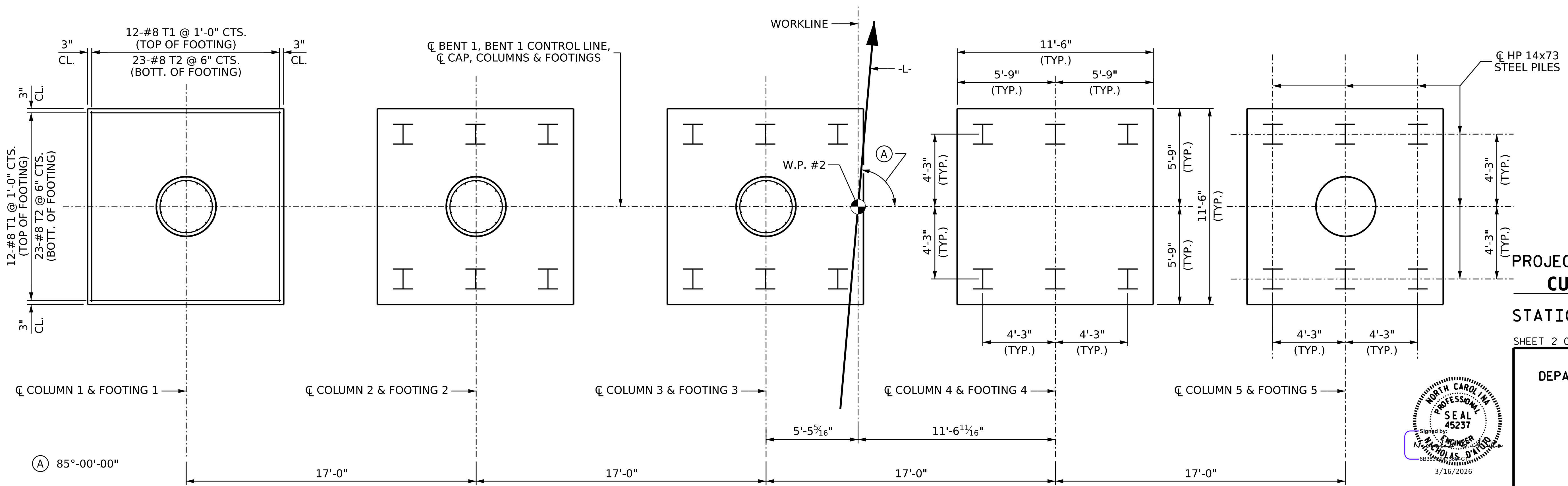
PLAN OF BEARINGS



VIEW A-A



SECTION THRU COLUMN



PLAN OF FOOTINGS & COLUMNS

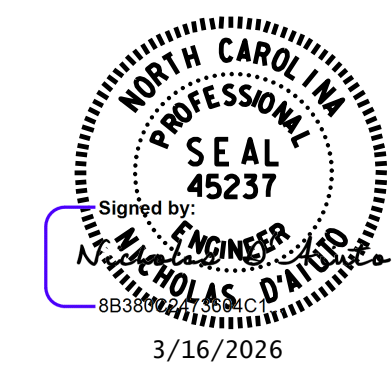
(TYPICAL EA. FOOTING)

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

BENT 1 DETAILS



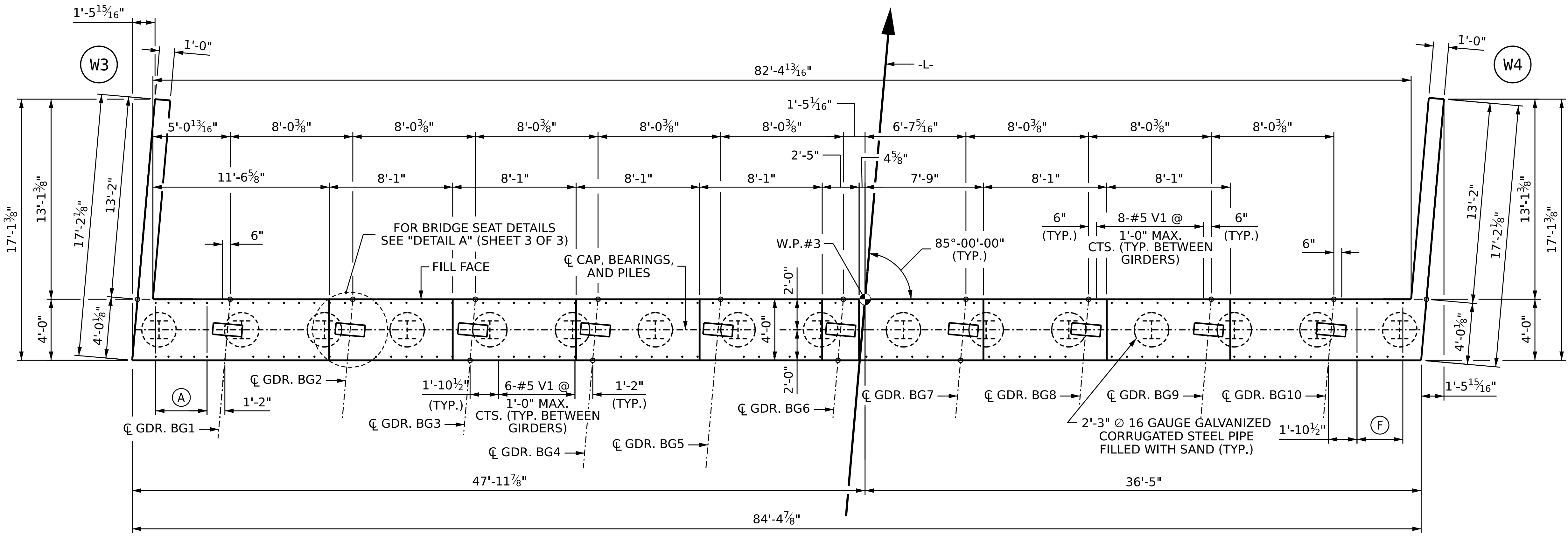
DRAWN BY :	B. J. MANTEI	DATE :	4-24-25
CHECKED BY :	N. D'AIUTO	DATE :	4-24-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

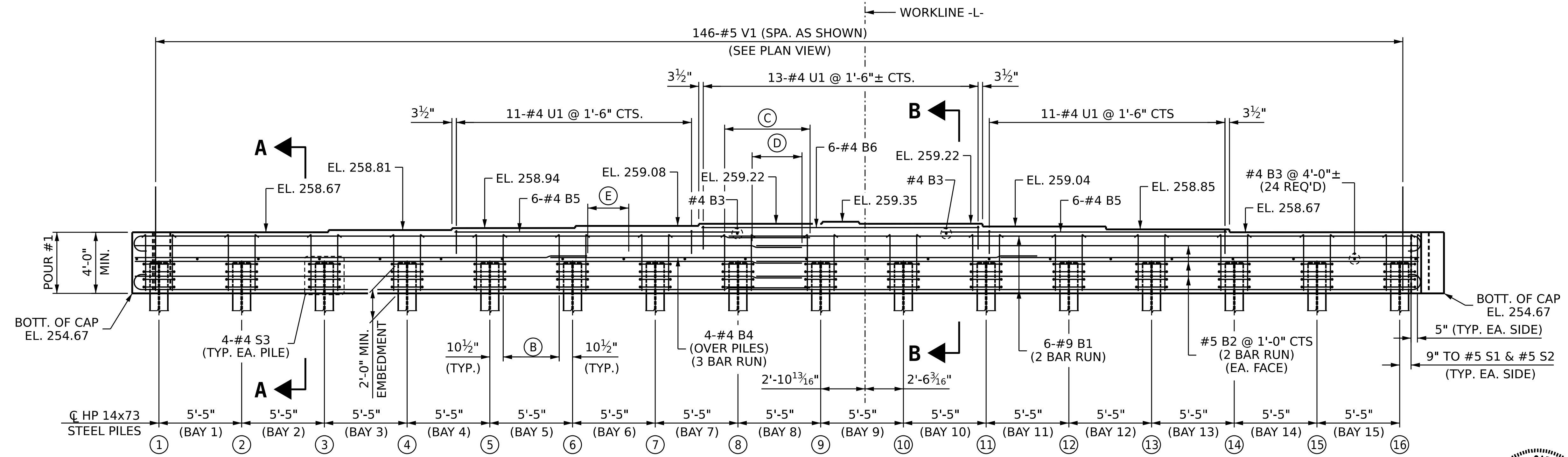
TOTAL SHEETS: 48

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User: jim.custin



PLAN

NOTES:
 SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA AND EXPOSED AREA OF CAP OUTSIDE INTEGRAL DIAPHRAGM LIMITS, SHALL BE RAKED TO A DEPTH OF 1/4".
 FOR TEMPORARY DRAINAGE & PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 FOR "SECTION A-A" & "SECTION B-B", SEE SHEET 3 OF 3.
 #5 V1 MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.



ELEVATION

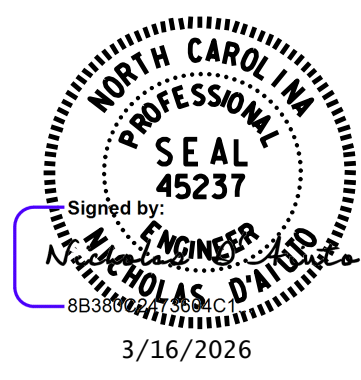
GALVANIZED CORRUGATED STEEL PIPES NOT SHOWN FOR CLARITY

- (A) 5-#5 V1 @ 1'-0" CTS.
- (B) 9-#5 S1 & #5 S2 @ 5 1/2" CTS. (TYP. EA. BAY)
- (C) 5'-4" MIN. SPLICE (#9 B1)
- (D) 3'-0" MIN. SPLICE (#5 B2)
- (E) 2'-5" MIN. SPLICE (#4 B4)
- (F) 4-#5 V1 @ 1'-0" CTS.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 1 OF 3

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

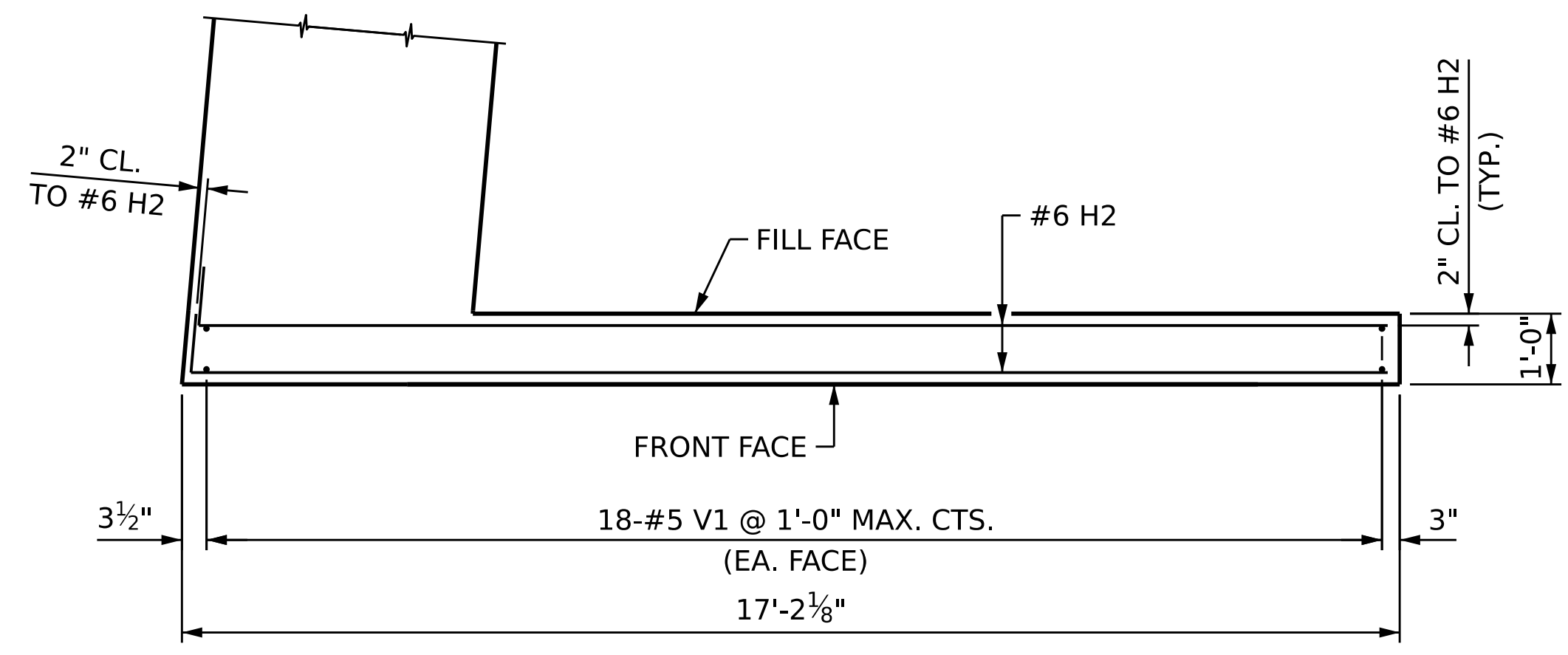


DRAWN BY : B.J. MANTEI DATE : 4-18-25
 CHECKED BY : N. D'AIUTO DATE : 4-22-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

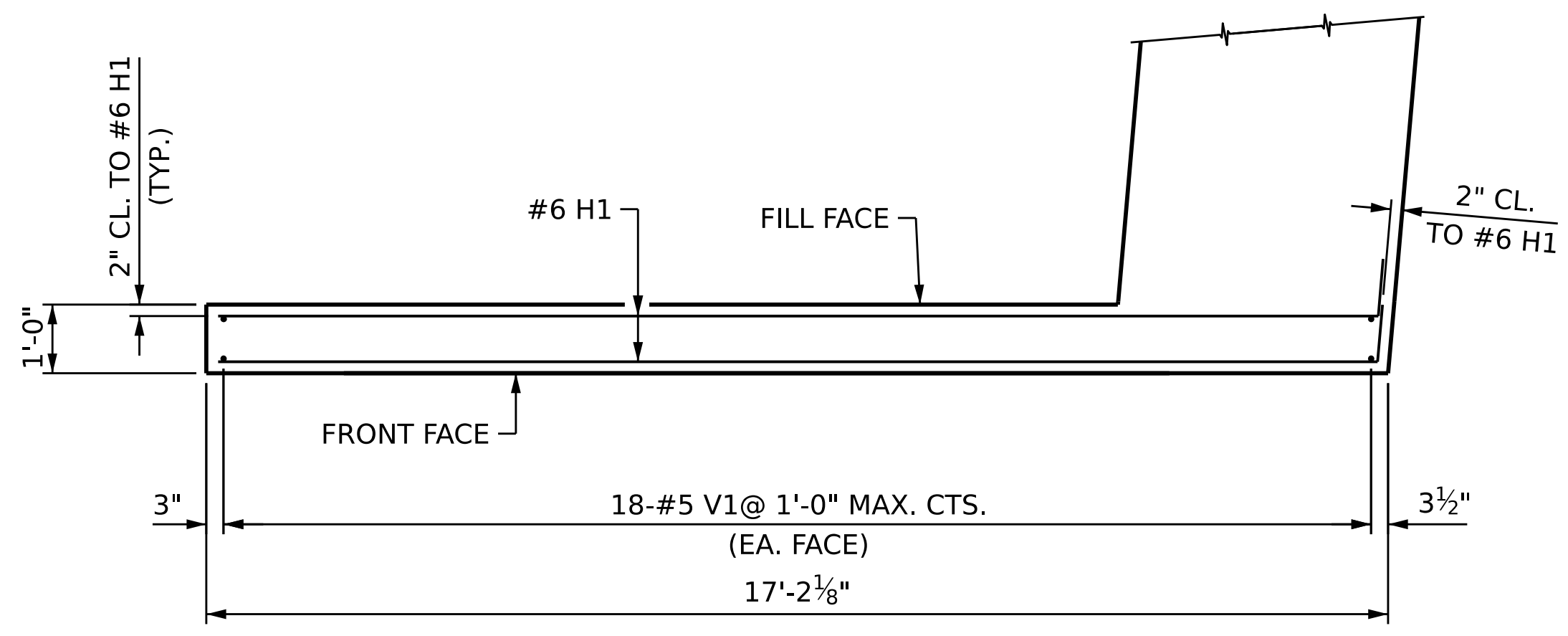
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

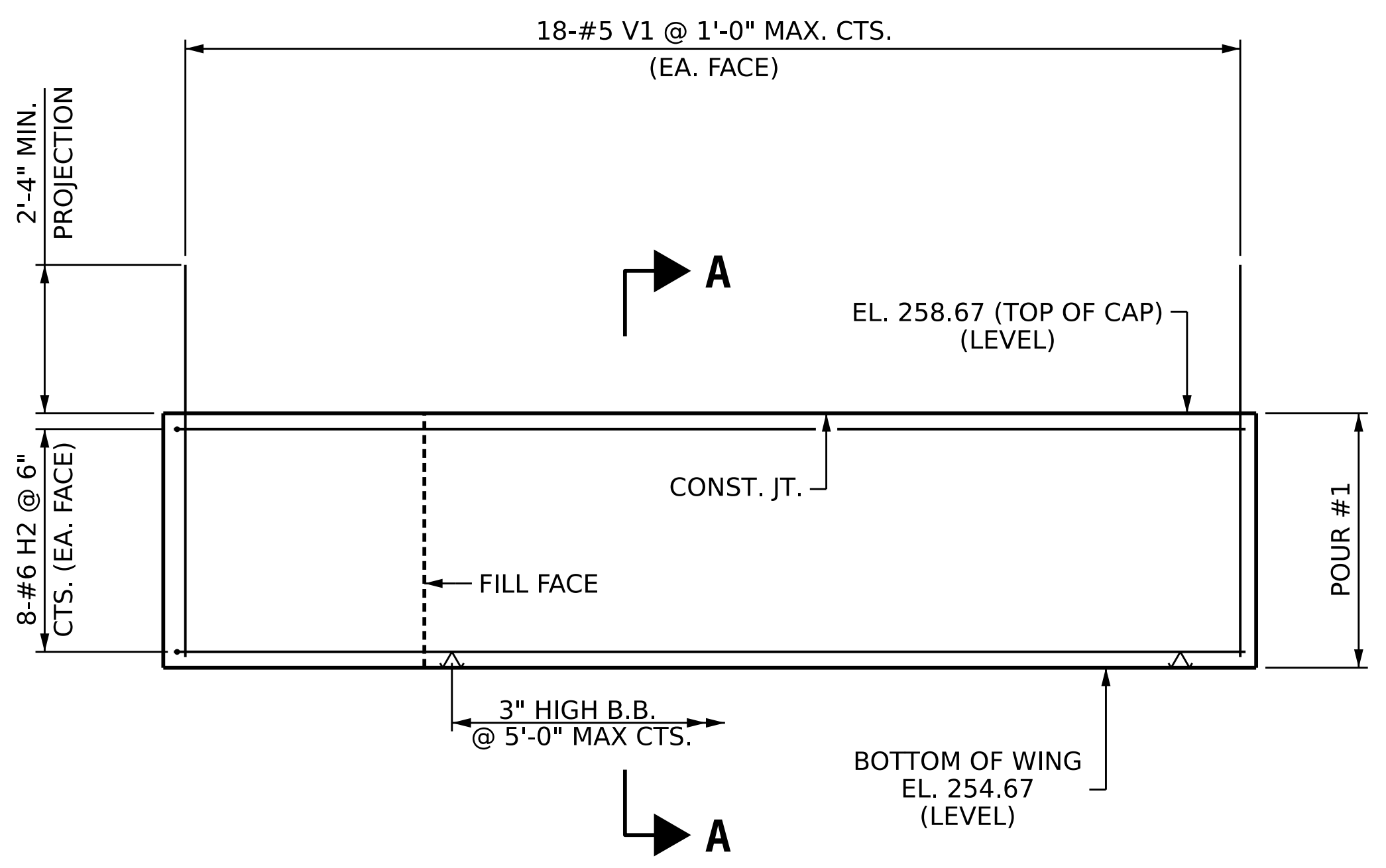
TOTAL SHEETS: 48



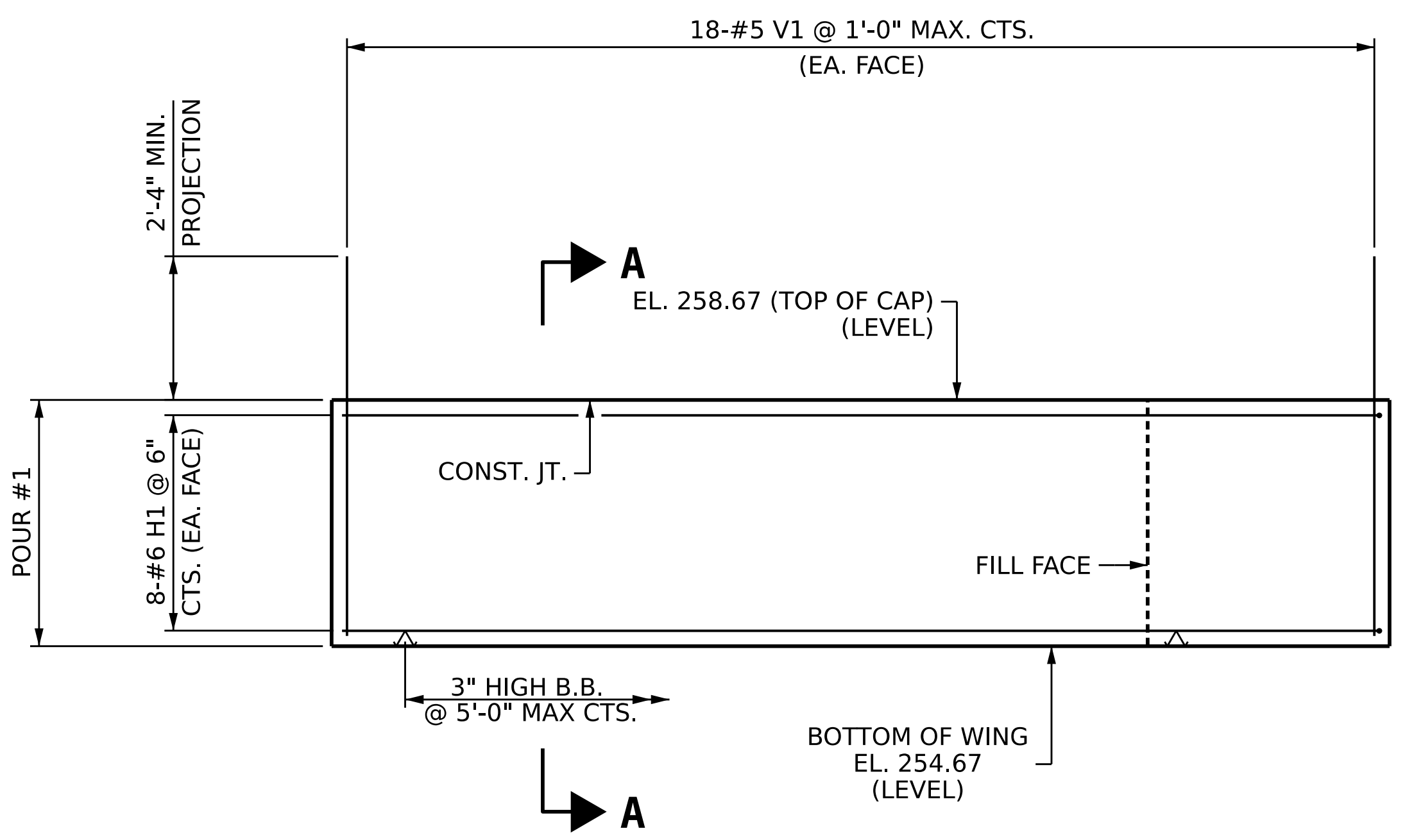
PLAN OF LEFT WING (W3)



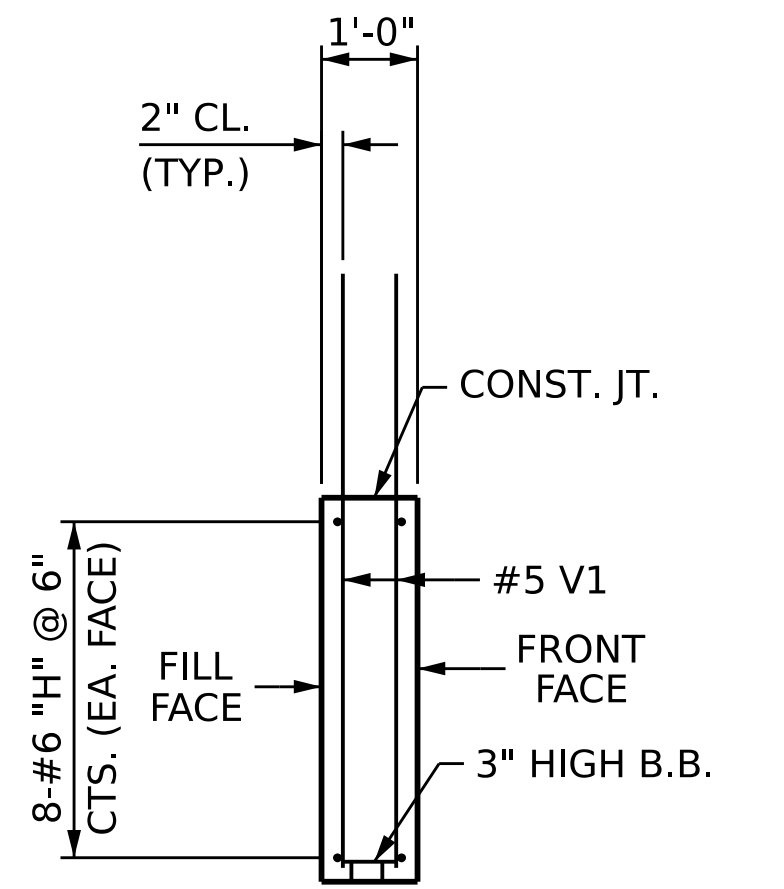
PLAN OF RIGHT WING (W4)



ELEVATION OF LEFT WING (W3)



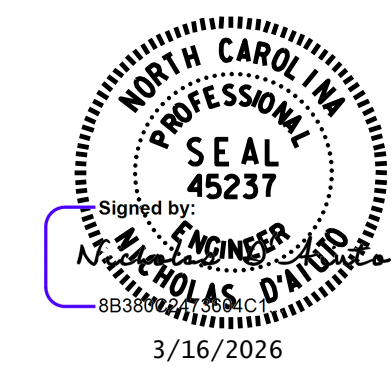
ELEVATION OF RIGHT WING (W4)



SECTION A-A

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 2
 WING WALLS

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

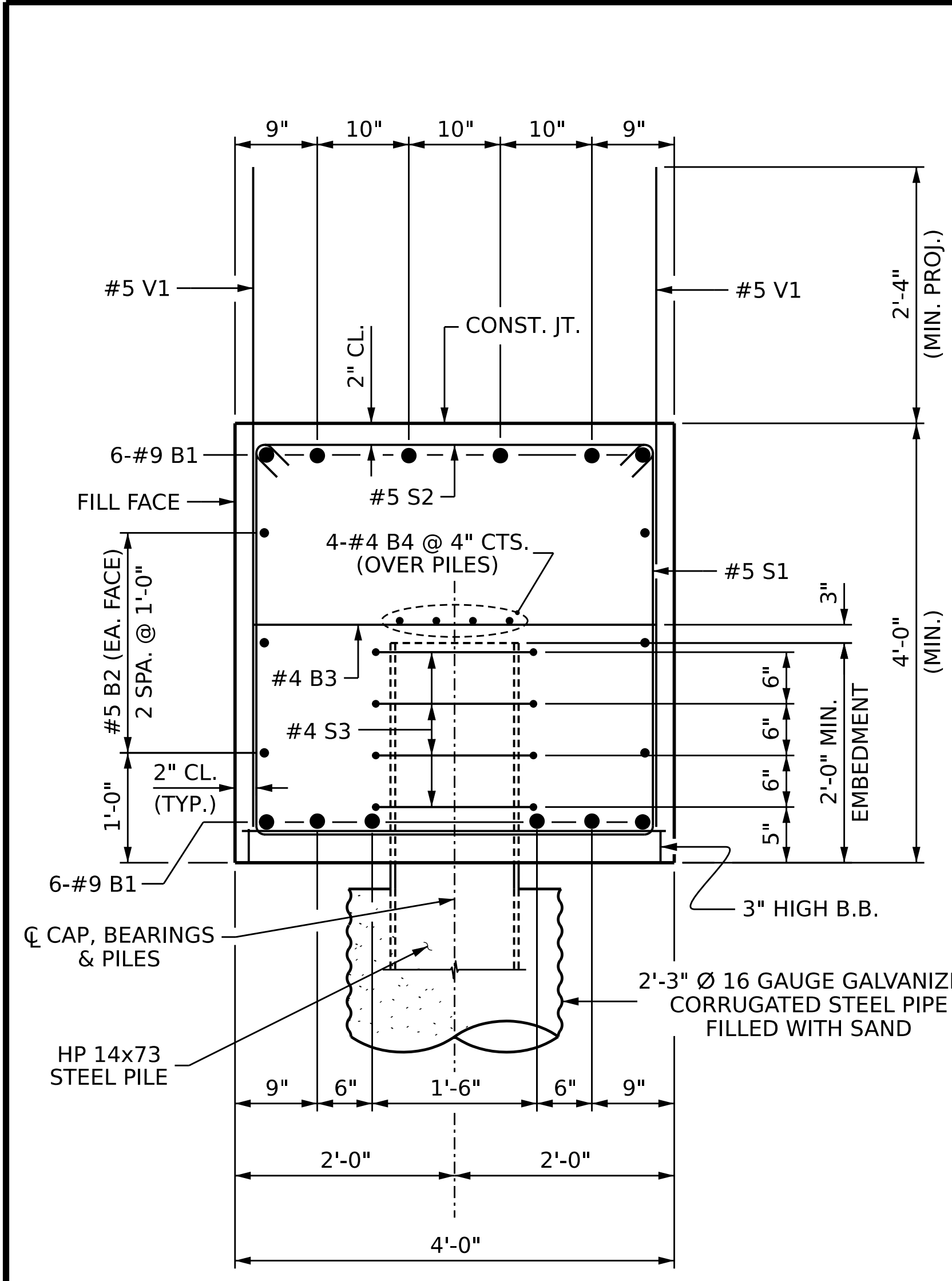
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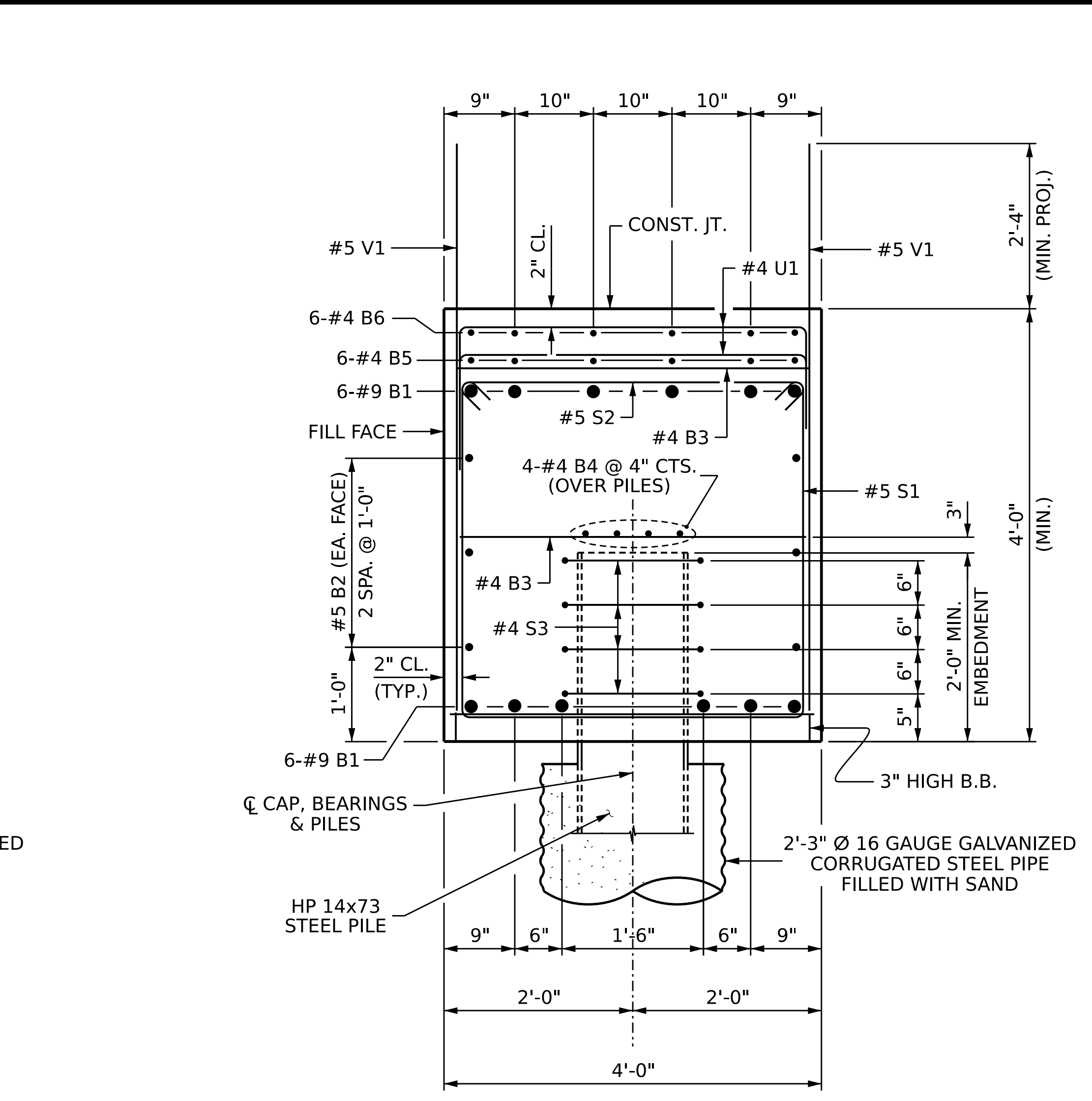
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 CHECKED BY : **N. D'AIUTO** DATE : **4-21-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

SHEET NO. **S-42**
 TOTAL SHEETS **48**

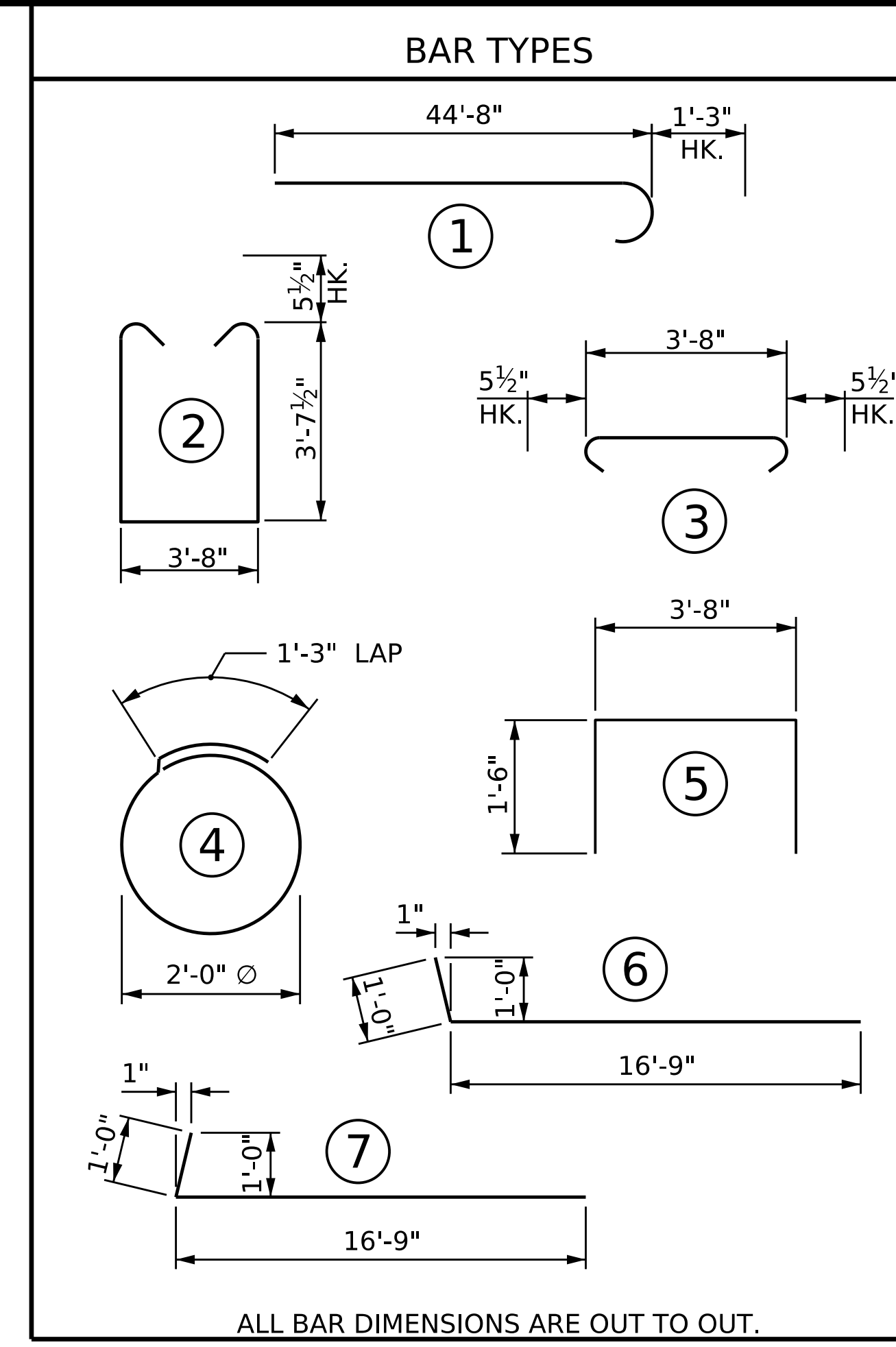
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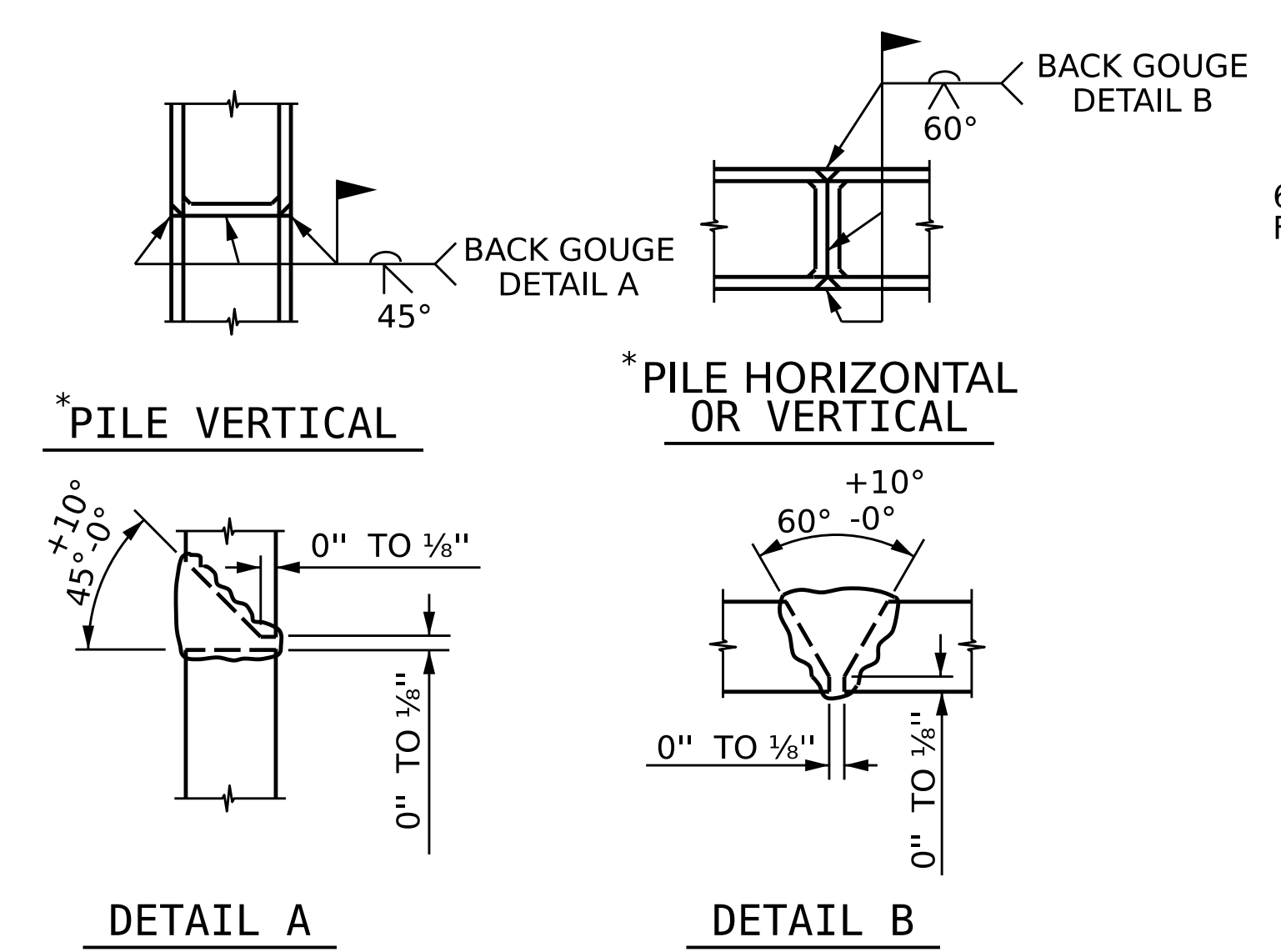
SECTION A-A



SECTION B-B

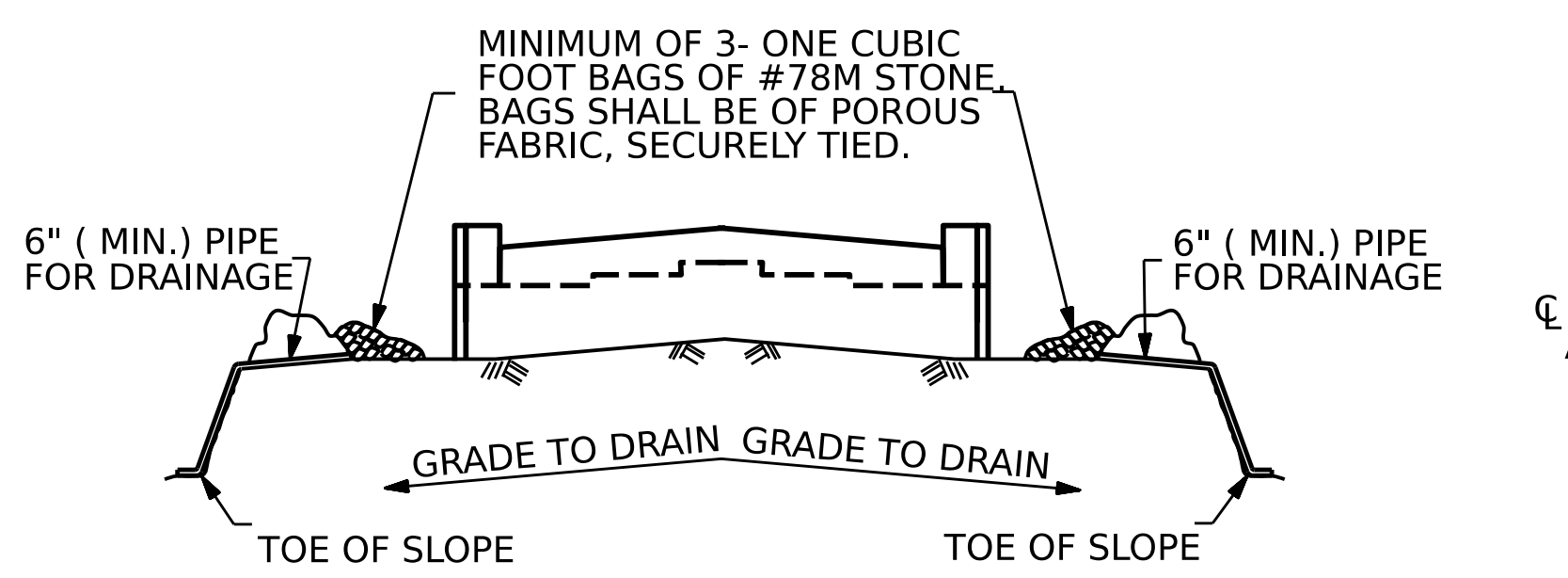


BILL OF MATERIAL					
END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	9	1	45' - 11"	3,747
B2	12	5	STR	43' - 8"	547
B3	24	4	STR	3' - 8"	59
B4	12	4	STR	29' - 7"	237
B5	12	4	STR	18' - 8"	150
B6	6	4	STR	18' - 3"	73
H1	16	6	6	17' - 9"	427
H2	16	6	7	17' - 9"	427
S1	139	5	2	11' - 10"	1,716
S2	139	5	3	4' - 7"	664
S3	64	5	4	7' - 7"	506
U1	35	4	5	6' - 8"	156
V1	218	5	STR	6' - 11"	1,573
REINFORCING STEEL				LBS.	10,282
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 - CAP & LOWER WING WALLS				C.Y.	57.2
TOTAL CLASS "A" CONCRETE				C.Y.	57.2



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

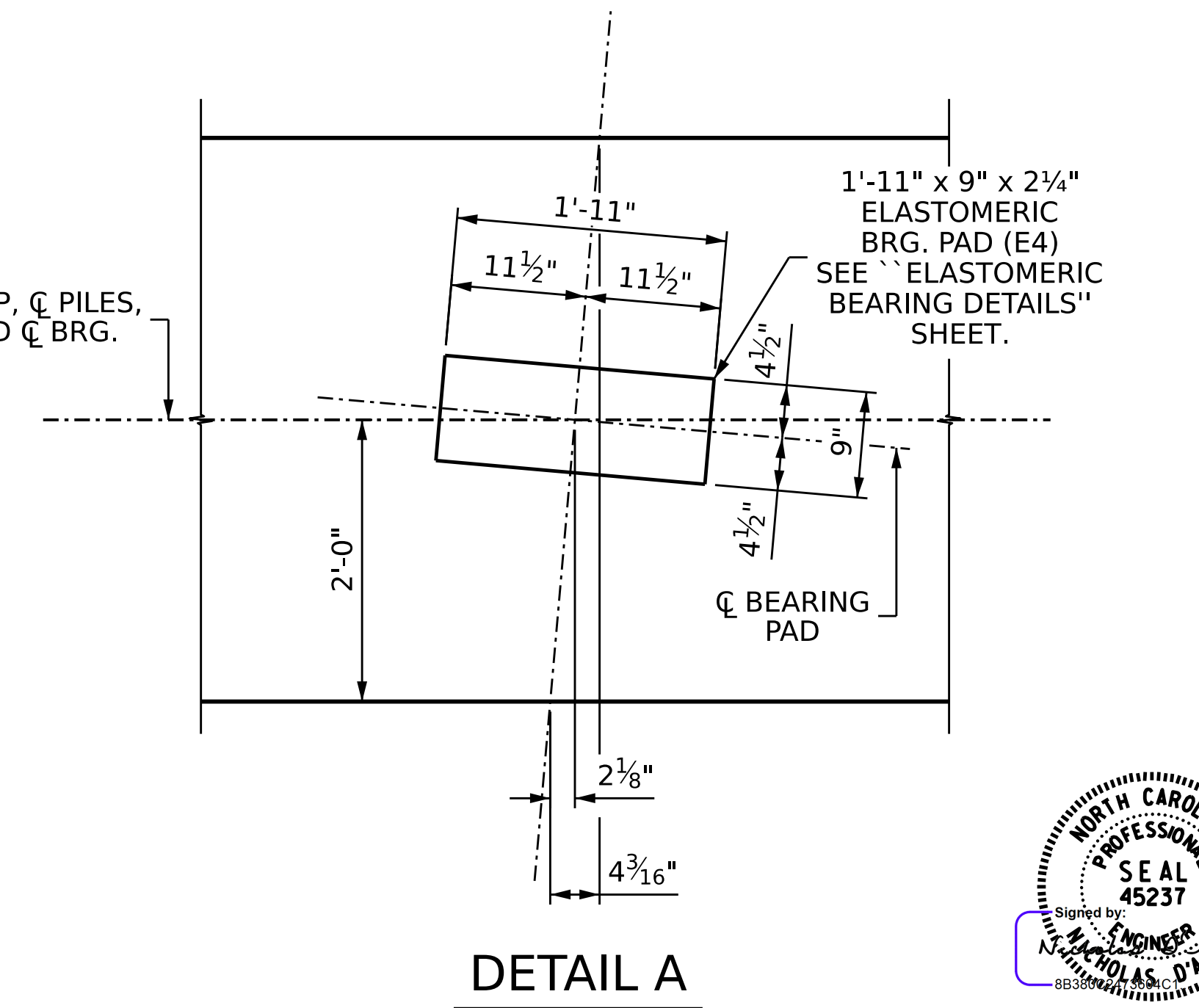


TEMPORARY DRAINAGE AT END BENT

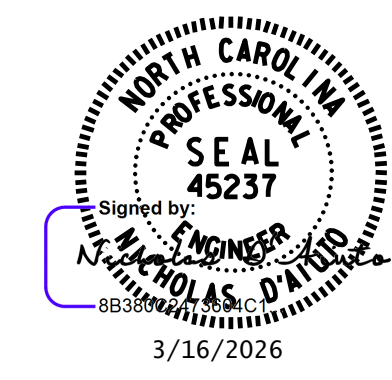
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.



DETAIL A



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**
 SHEET 3 OF 3

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

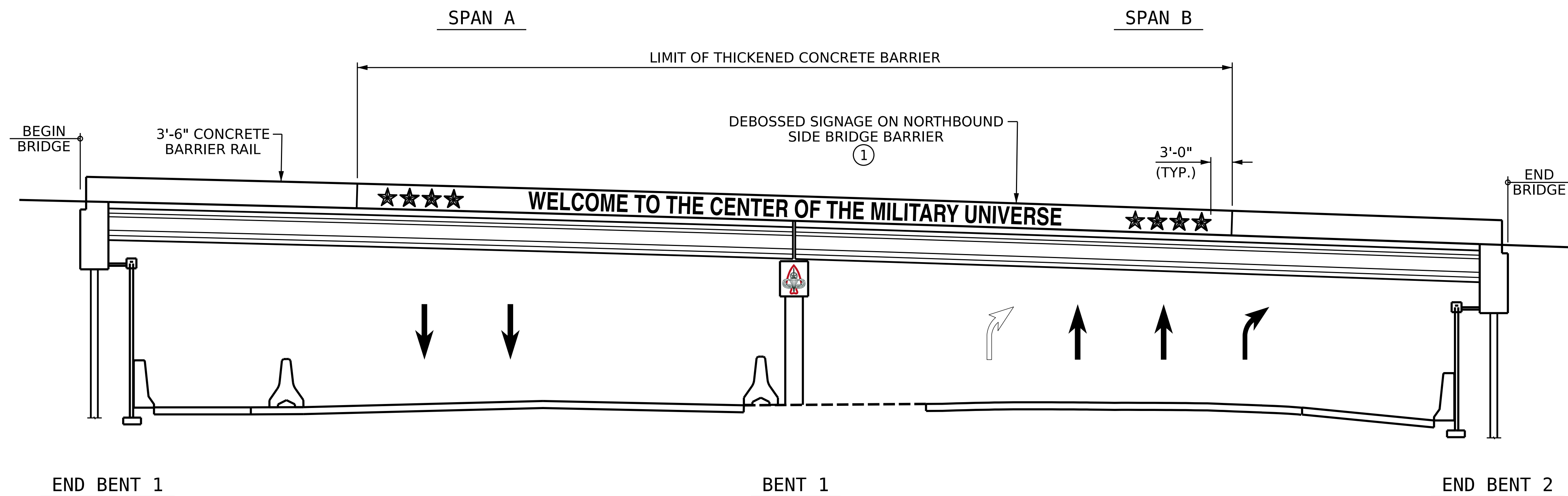
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CHECKED BY :	N. D'AIUTO	DATE :	4-22-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

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REVISIONS				SHEET NO.
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1			3	
2			4	

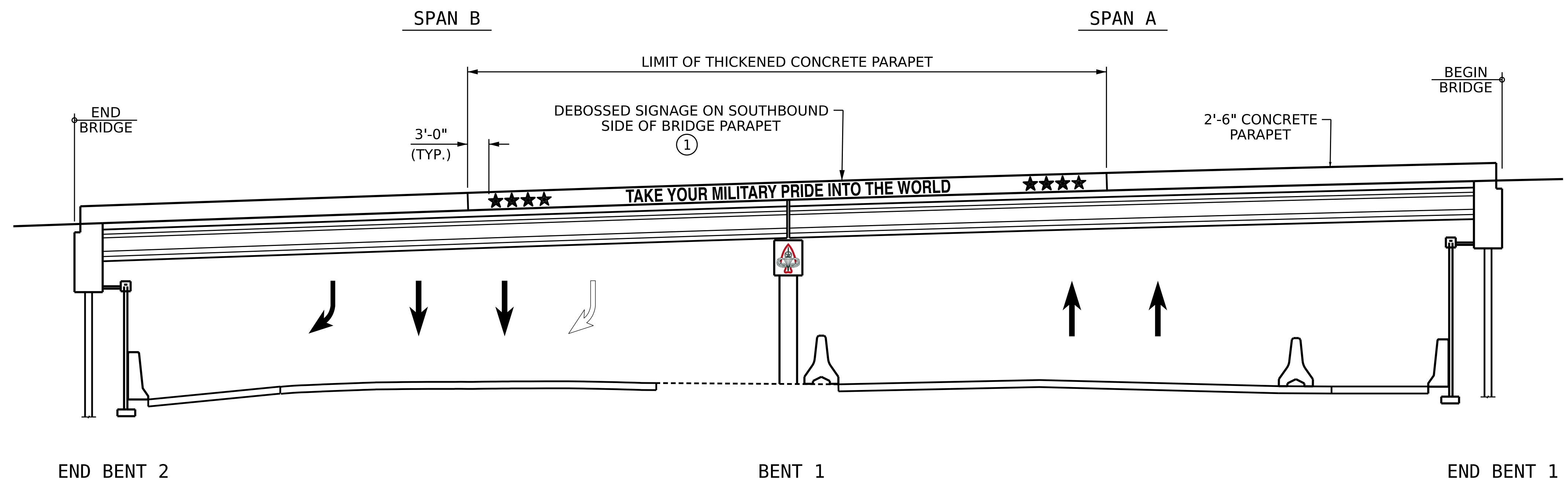
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① DEBOSSSED SIGNAGE TO BE CENTERED OVER INTERIOR BENT CAP.
(TYP. EACH SIDE OF BRIDGE)

LOOKING NORTHWARD
BENTS ON SECTION AT RIGHT ANGLES TO BENTS



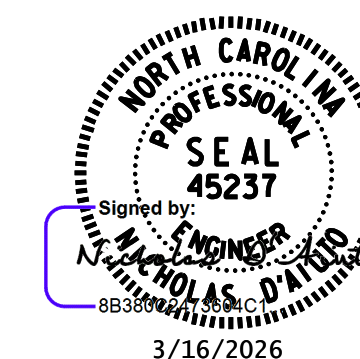
LOOKING SOUTHWARD
BENTS ON SECTION AT RIGHT ANGLES TO BENTS

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

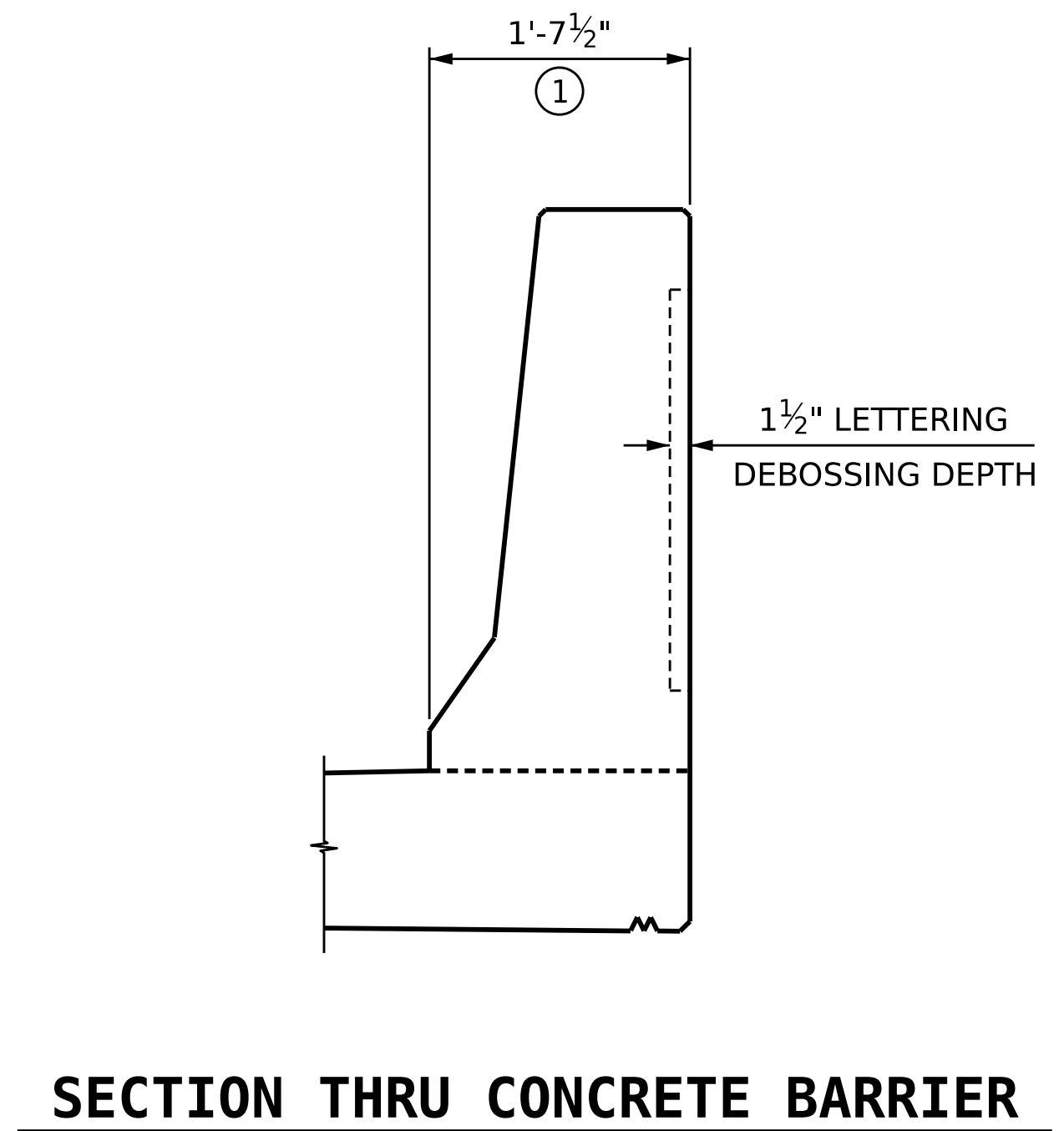
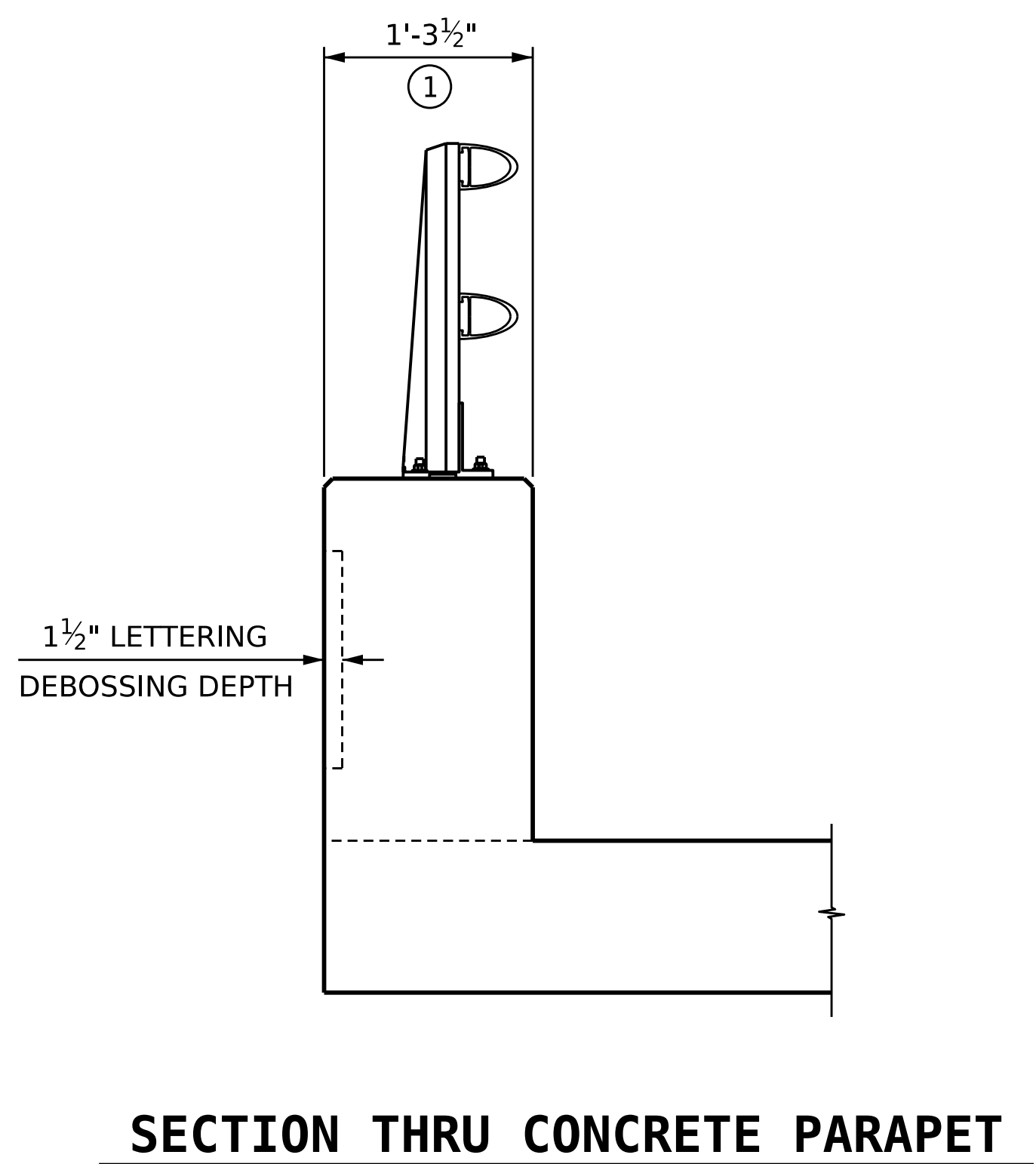
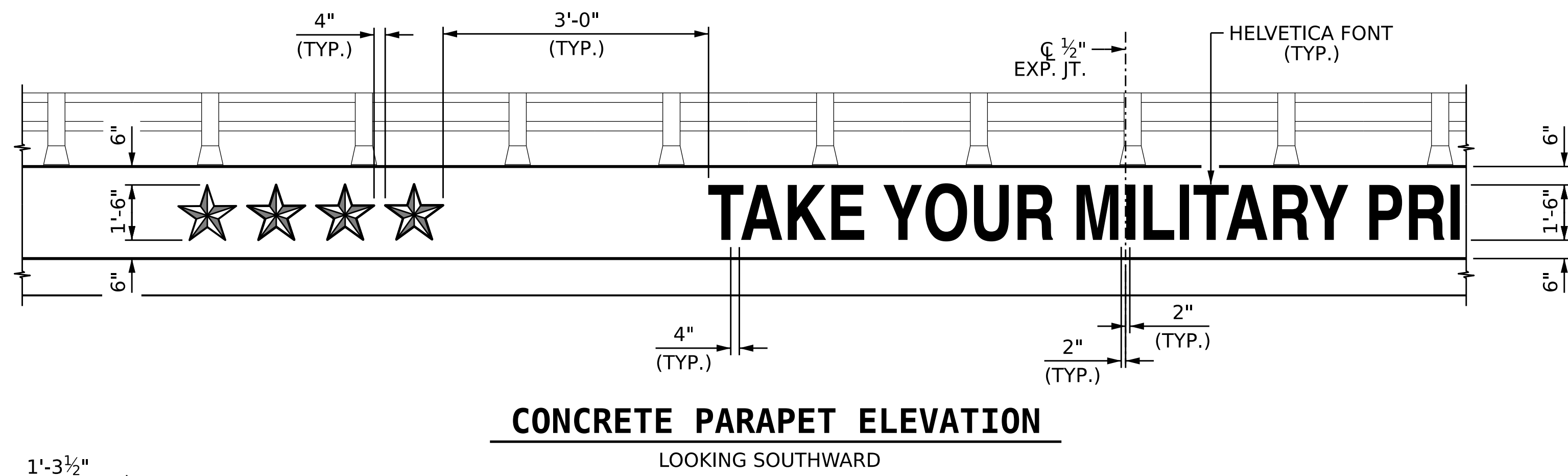
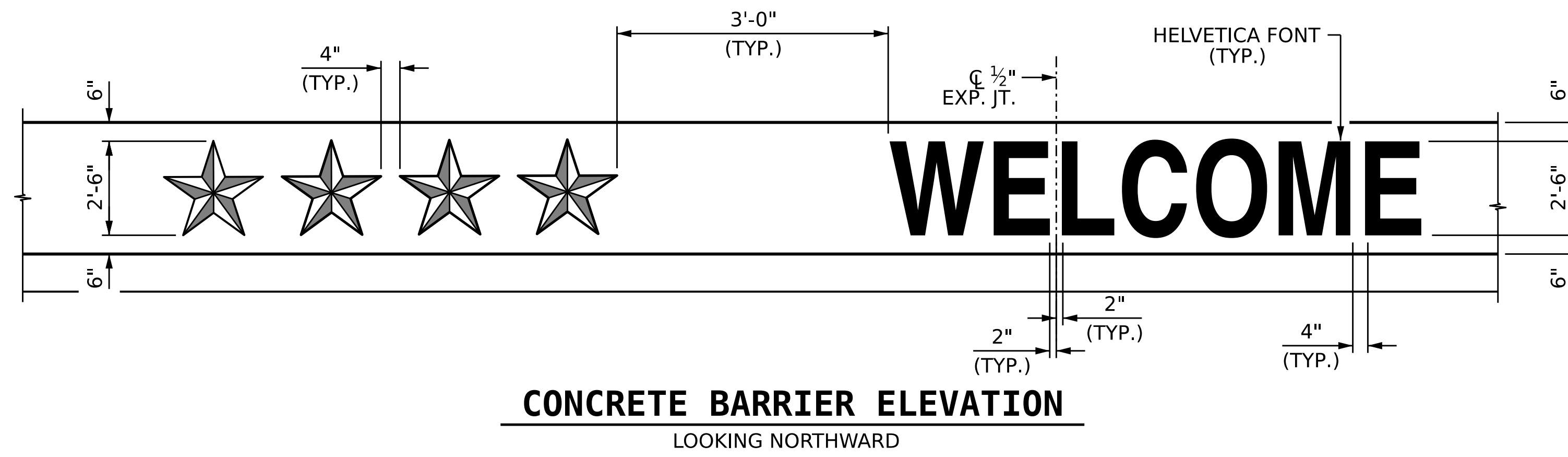
**BRIDGE AESTHETIC
 DETAILS**



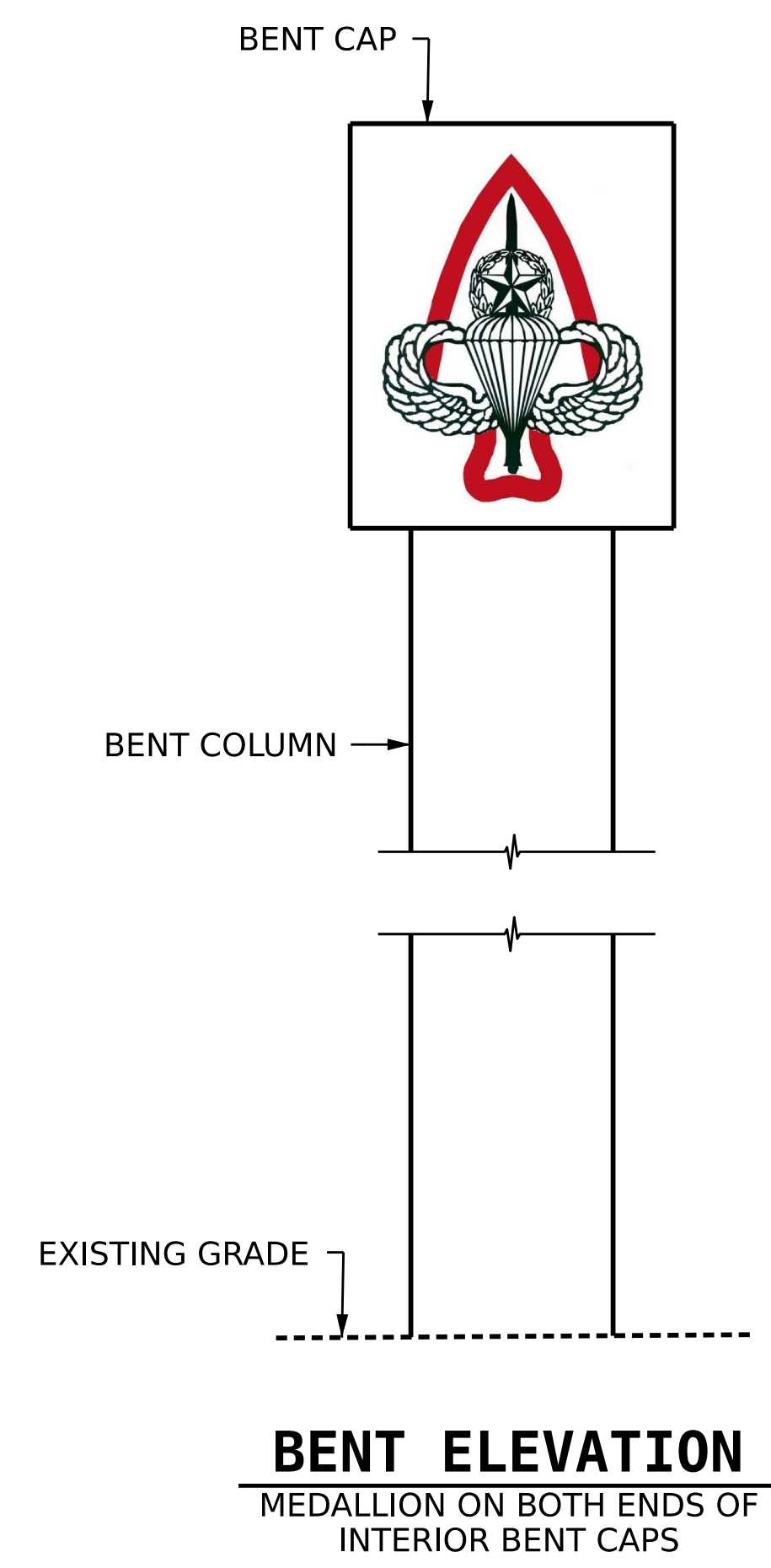
DRAWN BY : J. N. AUSTIN DATE : 4-23-25
 CHECKED BY : N. D'AIUTO DATE : 5-6-25
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			48



① CONCRETE PARAPET AND BARRIER TO BE THICKENED 1/2" TO ACCOMODATE DEBOSSING OF LETTERING INTO PARAPET AND RAIL



NOTES

MEDALLION SHALL BE CENTERED ON BOTH ENDS OF THE INTERIOR BENT CAP FACES

MEDALLION SPECIFICATIONS, COLORS, AND INSTALLATION DETAILS TO BE PROVIDED BY OTHERS. CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS OF THE MANUFACTURER SPECIFICATIONS FOR INSTALLATION AND CONSTRUCTION OF THE MEDALLION AS NECESSARY.

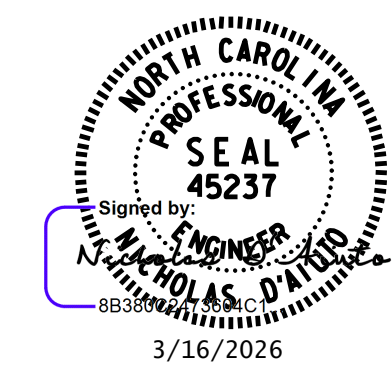
TEXT AND STARS TO BE DEBOSSD BY OTHERS. VERBIAGE AND IMAGES SHALL BE PAINTED IN SUCH A WAY THAT THEY ARE CLEARLY VISIBLE FROM THE ROAD BELOW. CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS OF THE MANUFACTURER SPECIFICATIONS FOR INSTALLATION AND CONSTRUCTION OF THE DEBOSSD TEXT AND STARS AS NECESSARY.

CONTRACTOR SHALL OBTAIN APPROVED COLORS FOR THE MEDALLION COMPONENTS THROUGH CORRESPONDENCE WITH THE FORT.

FOR CONCRETE PARAPET & CONCRETE BARRIER DETAILS, SEE "CONCRETE PARAPET DETAILS" & "CONCRETE BARRIER RAIL DETAILS" SHEETS FOR ADDITIONAL INFORMATION.

DEBOSSD TEXT AND STARS SHALL BE INCIDENTAL TO THE "CONCRETE BARRIER RAIL" PAY ITEM AND THE "1'-2" X 2'-6" CONCRETE PARAPET" PAY ITEM FOR TWO BAR METAL RAIL .

THE MEDALLION SHALL BE INCIDENTAL TO BENT 1 "CLASS A CONCRETE" PAY ITEM.



PROJECT NO. 49218.26
CUMBERLAND COUNTY
 STATION: 19+50.27 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**BRIDGE AESTHETIC
 DETAILS**

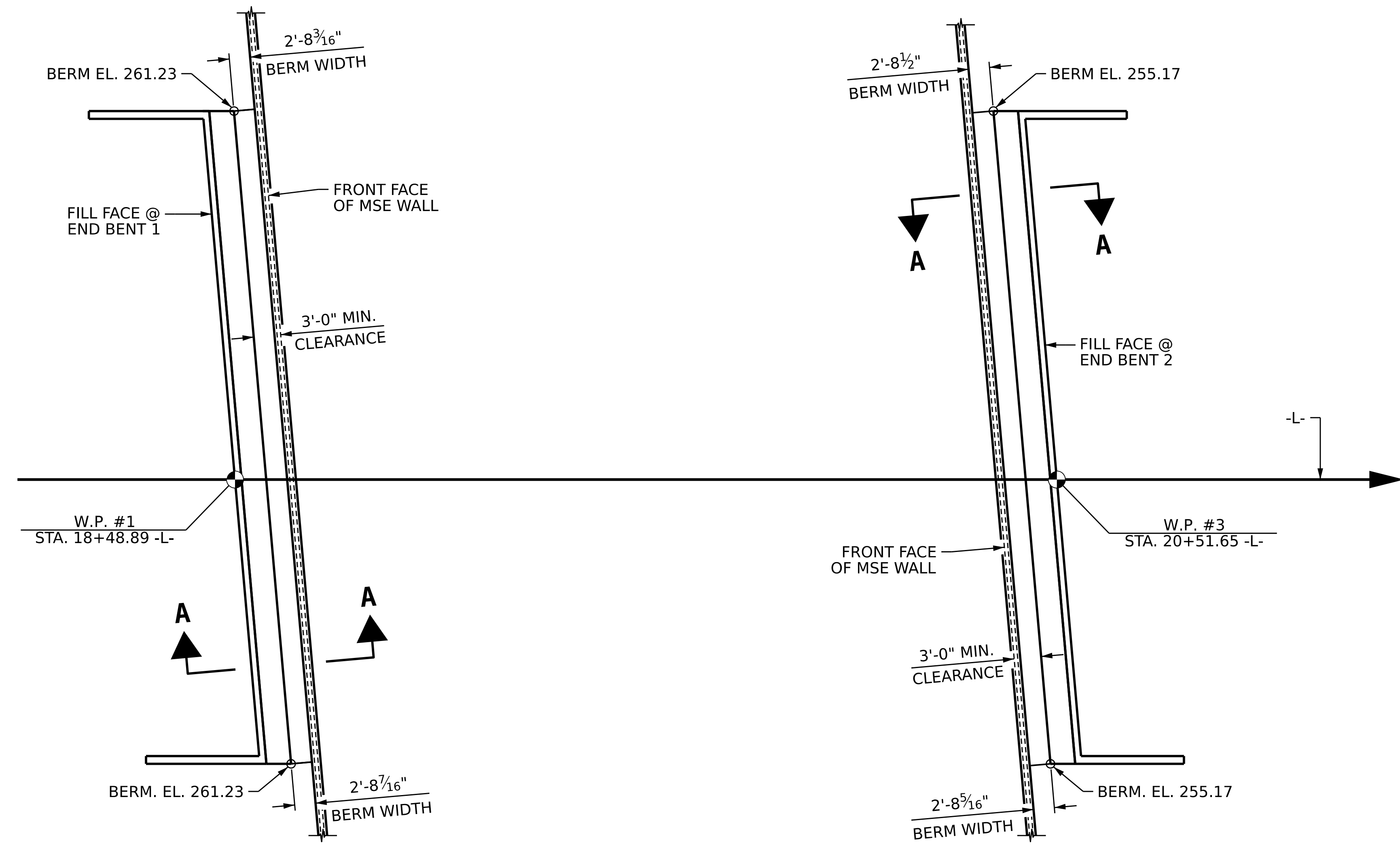
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DRAWN BY :	J. N. AUSTIN	DATE :	4-23-25
CHECKED BY :	N. D'AIUTO	DATE :	5-6-25
DESIGN E.O.R. :	N. D'AIUTO	DATE :	3-16-26

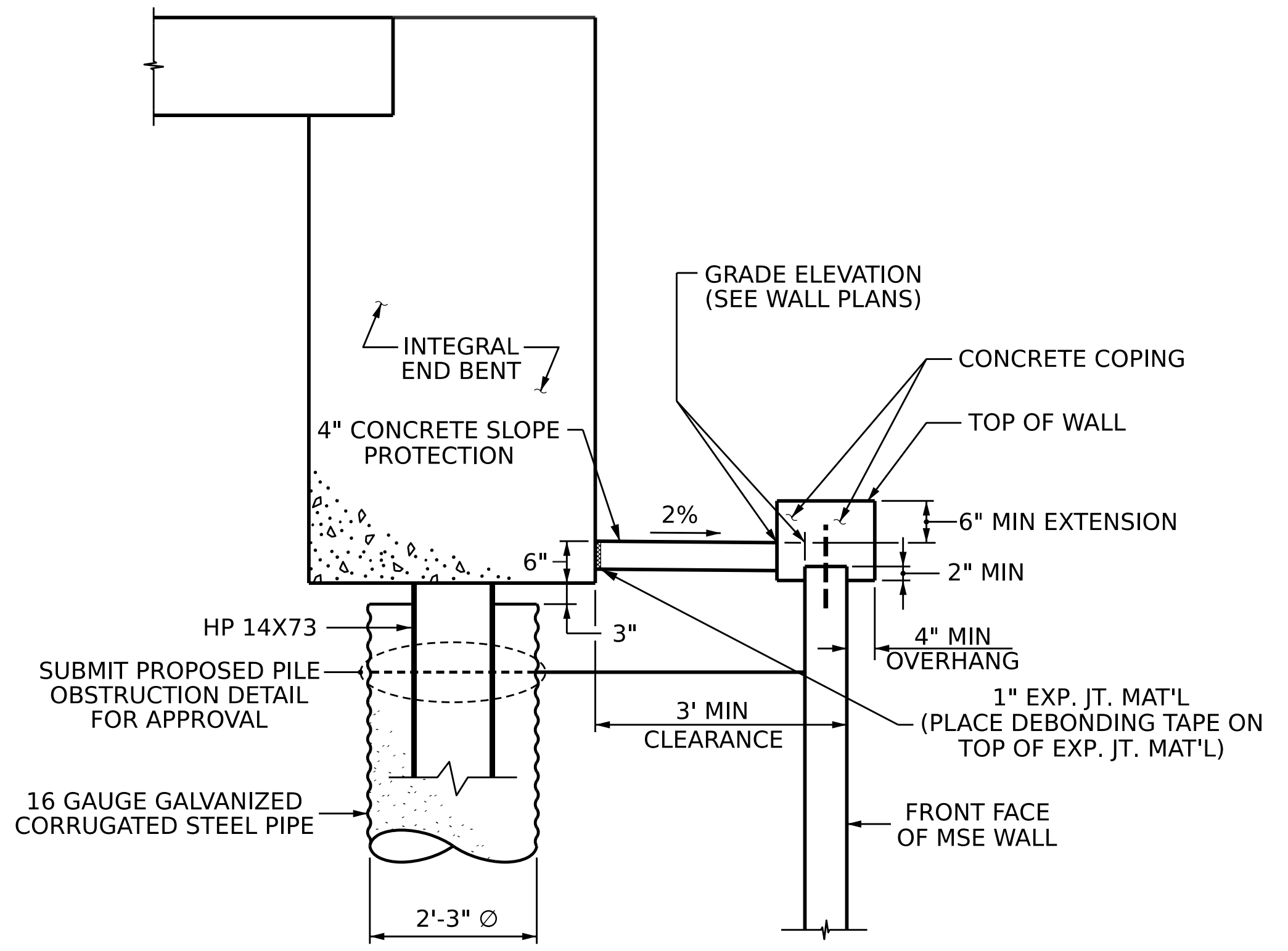
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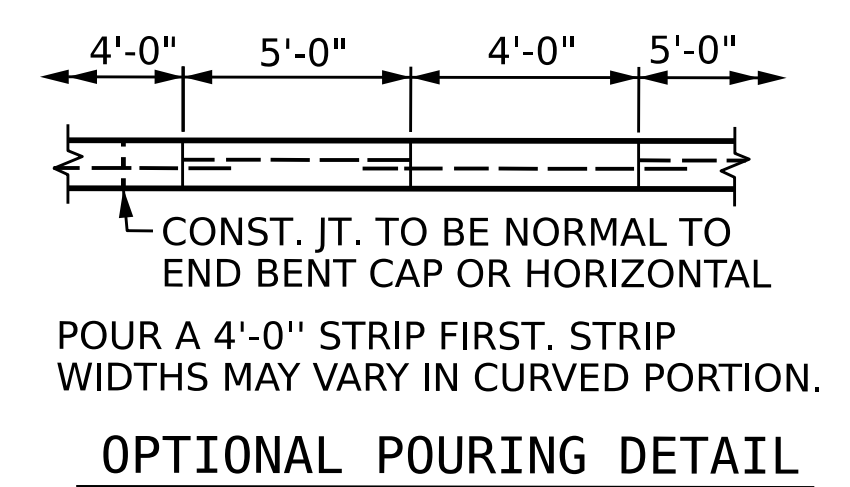
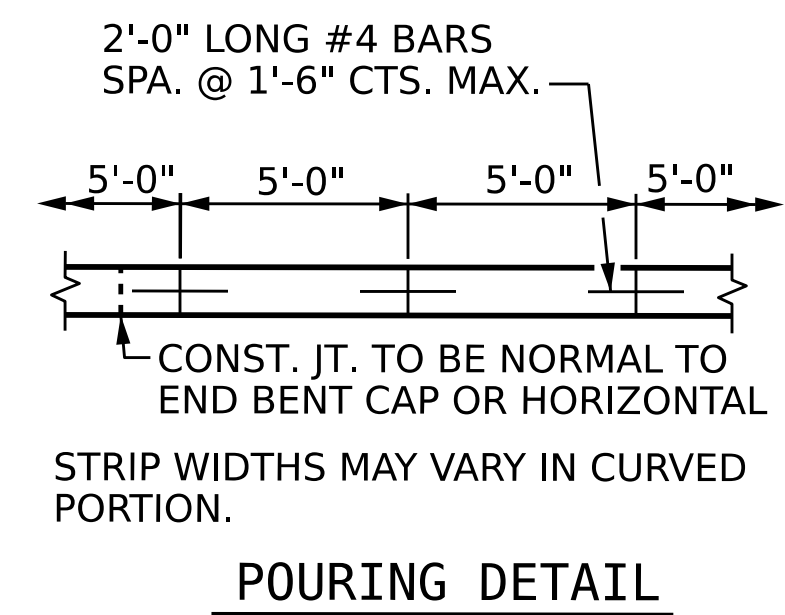
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. 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.

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.



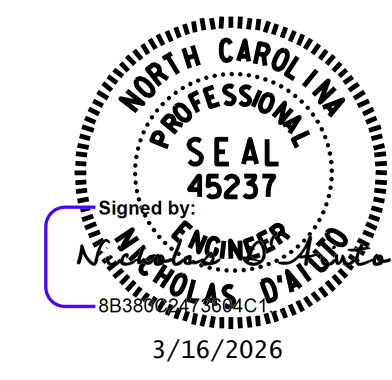
SECTION A-A



BRIDGE @ STA. 19+50.27 -L-	4" INCH SLOPE PROTECTION	WELDED * WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	26	52
END BENT 2	26	52

* QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

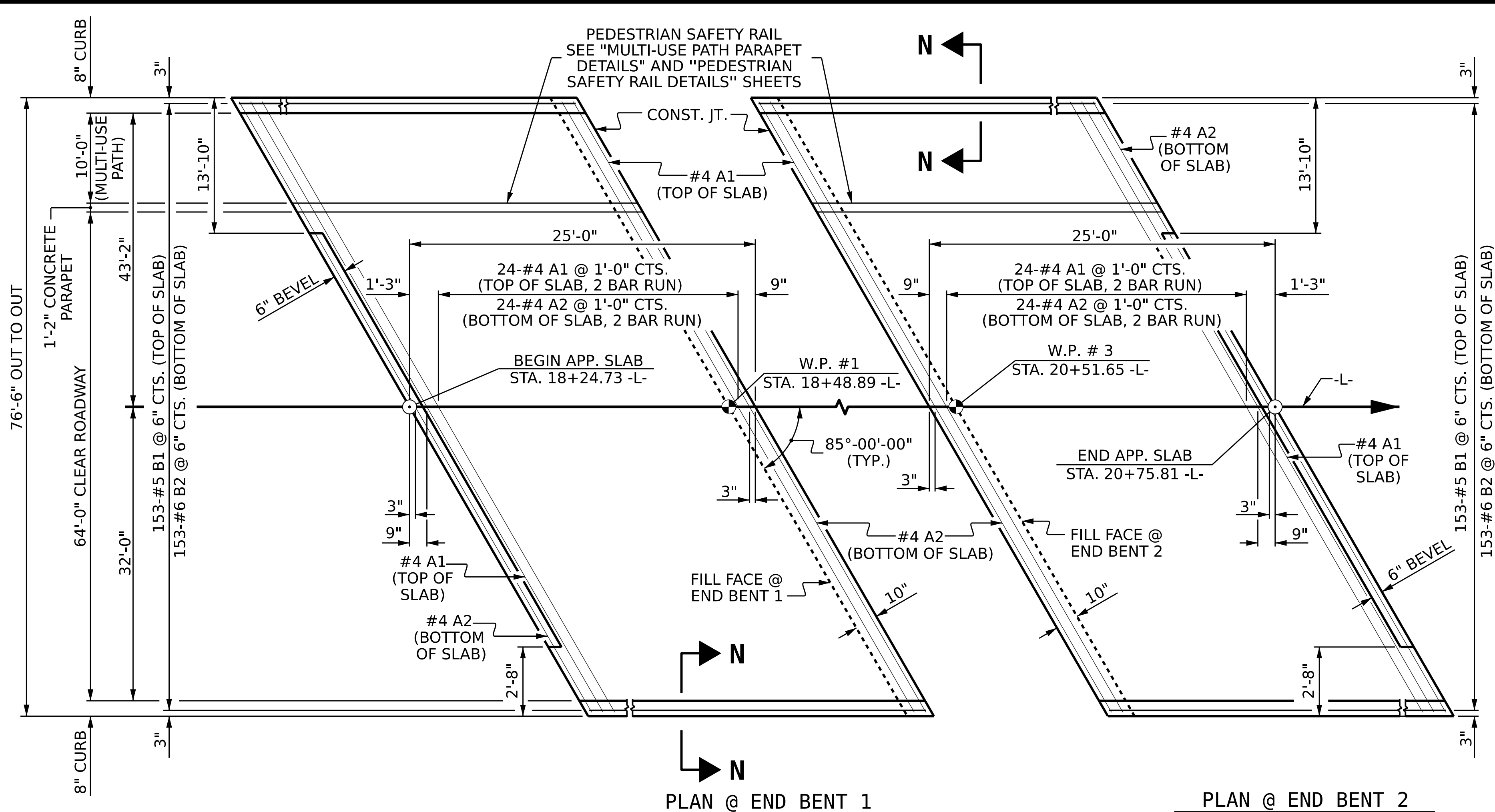
SLOPE PROTECTION

DRAWN BY : J. N. AUSTIN DATE : 1-23-26
 CHECKED BY : N. D'AIUTO DATE : 1-27-26
 DESIGN E.O.R. : N. D'AIUTO DATE : 3-16-26

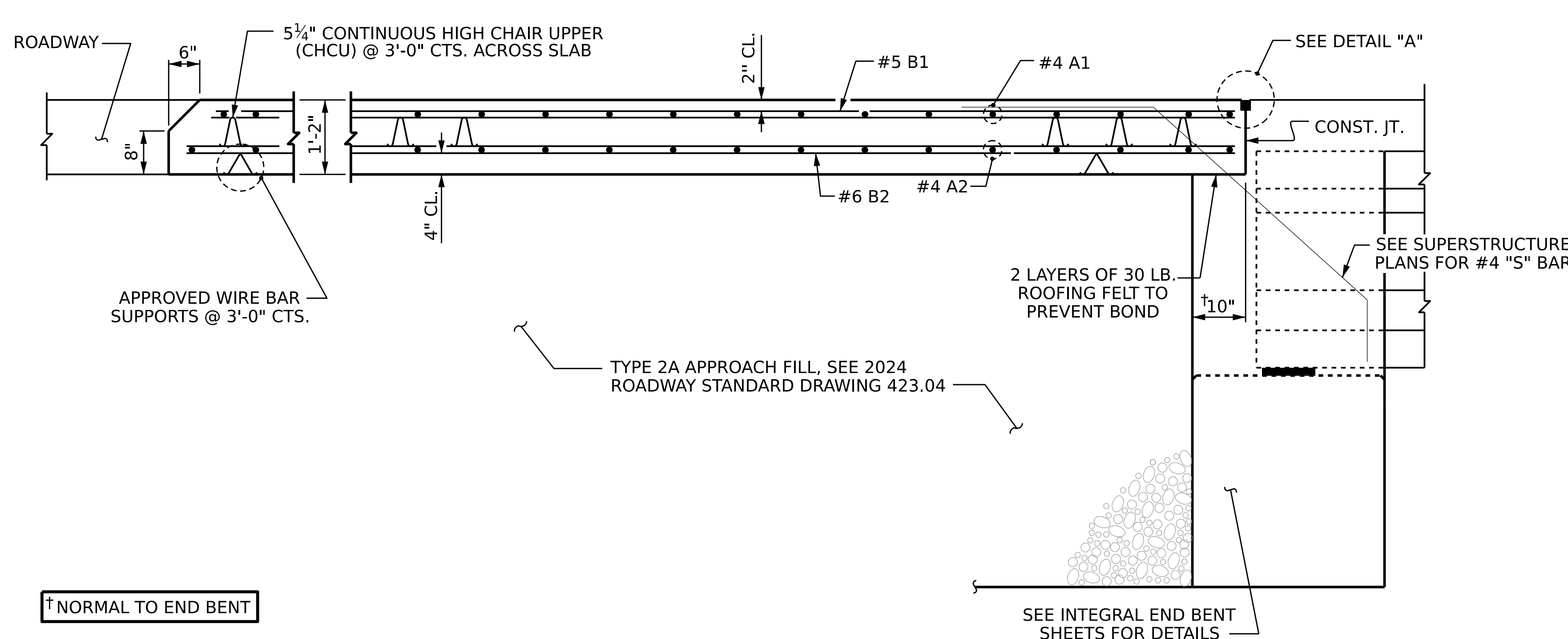
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2			4			48

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PLAN @ END BENT 1 PLAN @ END BENT 2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

BILL OF MATERIAL
 FOR ONE APPROACH SLAB
 (2 REQ'D)

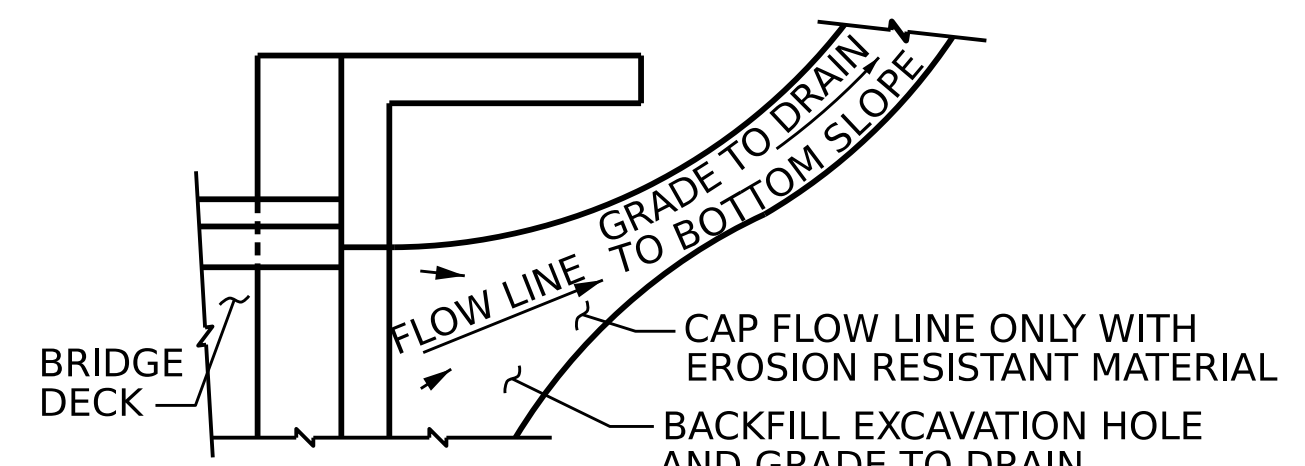
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	52	#4	STR	39'-2"	1,360
A2	52	#4	STR	39'-0"	1,355
*B1	153	#5	STR	24'-2"	3,856
B2	153	#6	STR	24'-8"	5,669

REINFORCING STEEL LBS. 7,024
 * EPOXY COATED REINFORCING STEEL LBS. 5,216

CLASS AA CONCRETE C. Y. 82.7
 * - DENOTES EPOXY COATED REBAR

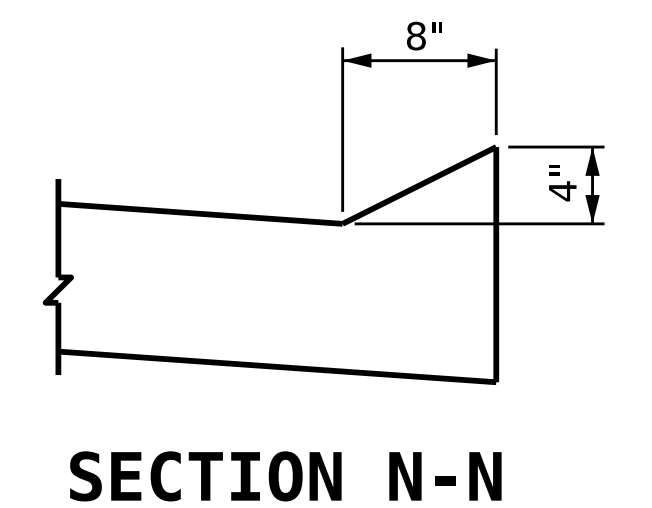
SPLICE LENGTHS

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

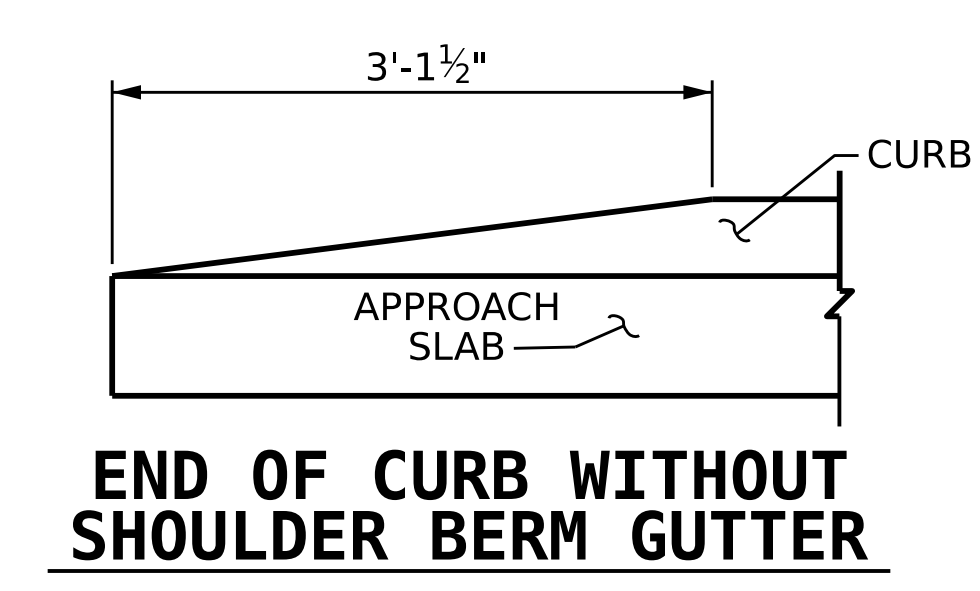


TEMPORARY DRAINAGE DETAIL

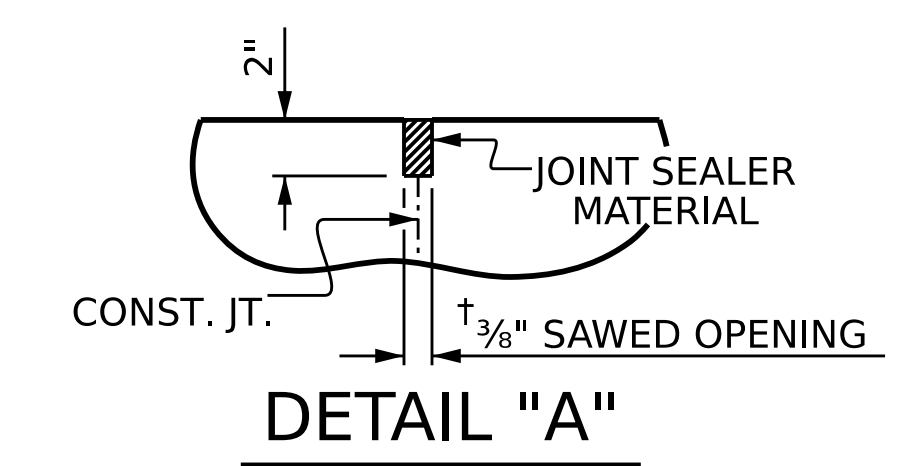
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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



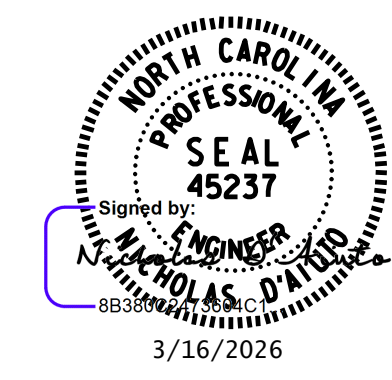
SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER



DETAIL "A"



PROJECT NO. **49218.26**
CUMBERLAND COUNTY
 STATION: **19+50.27 -L-**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB

DRAWN BY : **B. J. MANTEI** DATE : **4-25-25**
 CHECKED BY : **N. D'AIUTO** DATE : **4-25-25**
 DESIGN E.O.R. : **N. D'AIUTO** DATE : **3-16-26**

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

TOTAL SHEETS: **48**

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W ...	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

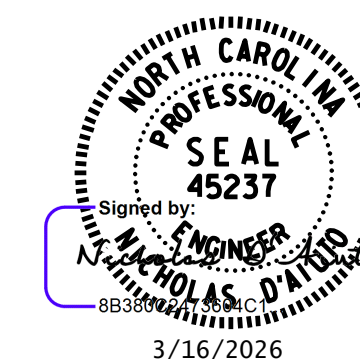
METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

SPECIAL NOTES:

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

PROJECT NO. 49218.26
CUMBERLAND COUNTY
STATION: 19+50.27 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

DRAWN BY : <u>J. N. AUSTIN</u>	DATE : <u>4-23-25</u>
CHECKED BY : <u>N. D'AIUTO</u>	DATE : <u>4-23-25</u>
DESIGN E.O.R. : <u>N. D'AIUTO</u>	DATE : <u>3-16-26</u>

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-48
1			3			TOTAL SHEETS
2			4			48

User name: jim.austin
File name: c:\bms\ice-eng-pw-01\d0107548-400_48-Gruber-SMU-SN-01_254072.dgn
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Print Driver: SMU_pdf.plt.ctb