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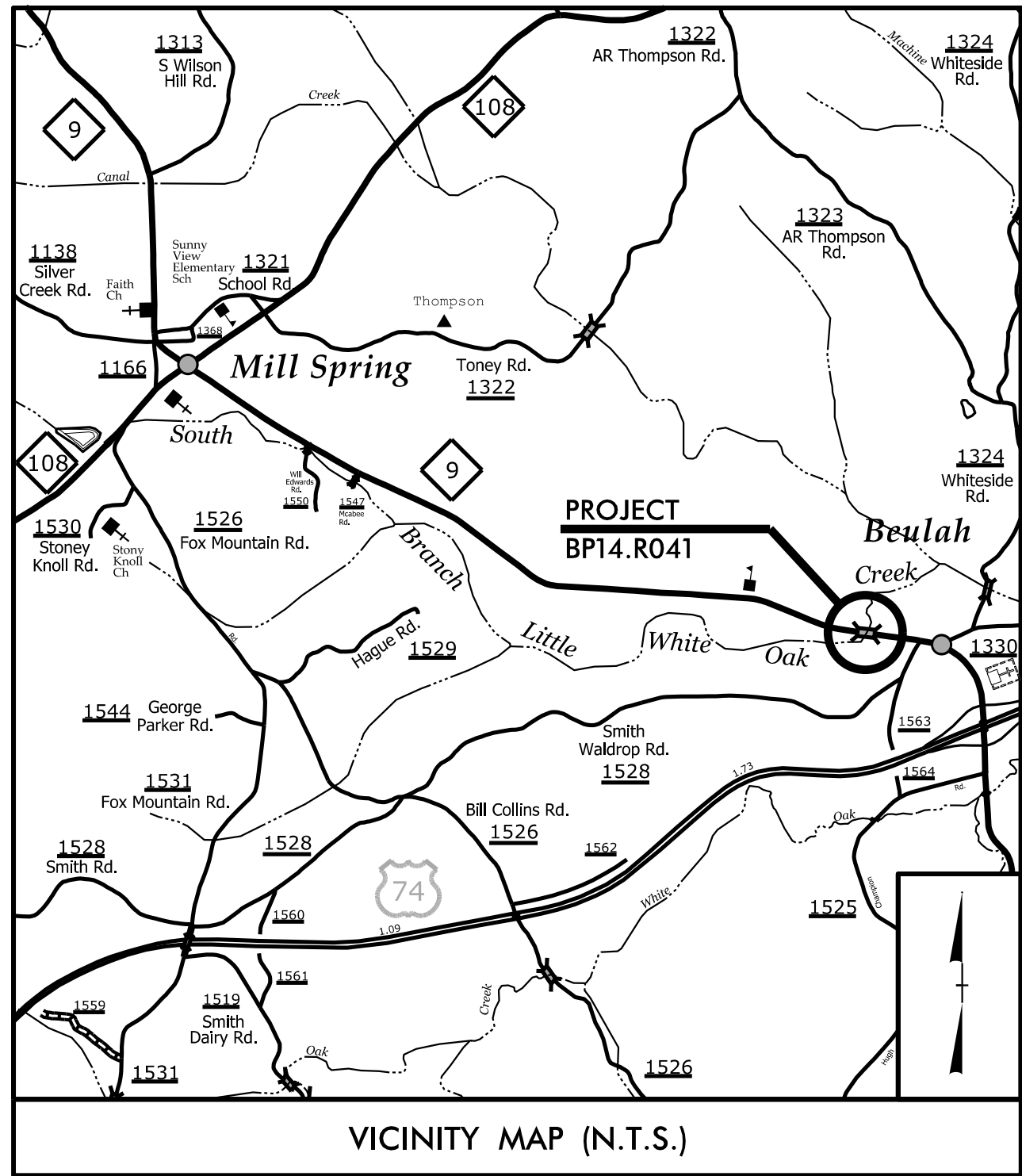
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PROJECT: **BR14.R041**

CONTRACT: **DN01112**



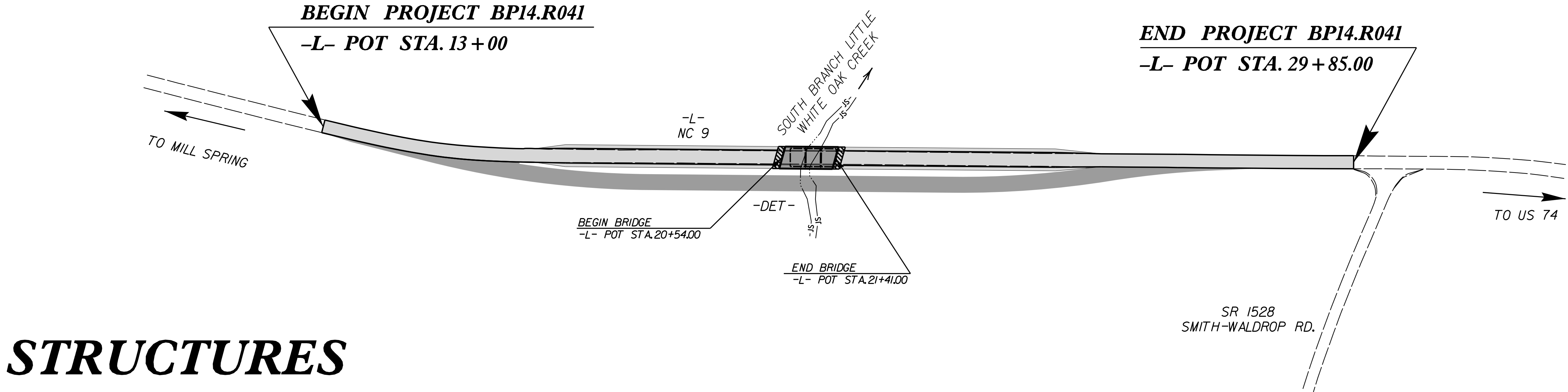
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

POLK COUNTY

**LOCATION: BRIDGE #740029 OVER SOUTH BRANCH
LITTLE WHITE OAK CREEK ON NC 9**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R041		
STATE PROJ. NO.	P. A. PROJ. NO.	DESCRIPTION	
BP14.R041.1		P. E.	
BP14.R041.2		RW & UTILITIES	
BP14.R041.3		CONST.	



STRUCTURES

DESIGN DATA
ADT 2017 = 2,700
T = 7 %
V = 45 MPH

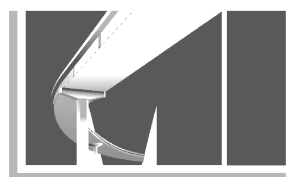
**FUNCTIONAL
CLASSIFICATION:**
COLLECTOR

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP14.R041 = 0.303 mile
LENGTH STRUCTURES PROJECT BP14.R041 = 0.016 mile
TOTAL LENGTH PROJECT BP14.R041 = 0.319 mile

Prepared In the Office of:



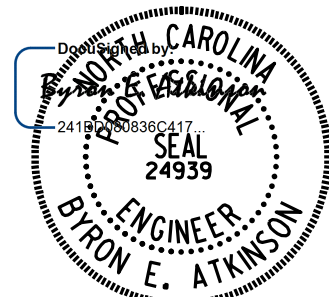
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

for the North Carolina Department of Transportation

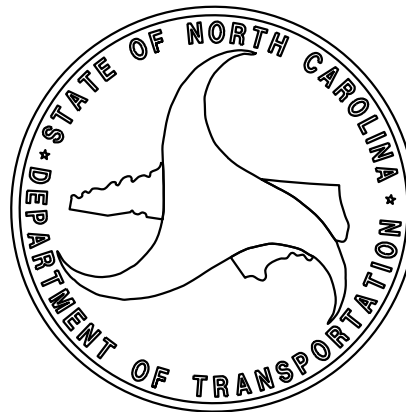
2024 STANDARD SPECIFICATIONS

LETTING DATE:
JULY 8, 2025

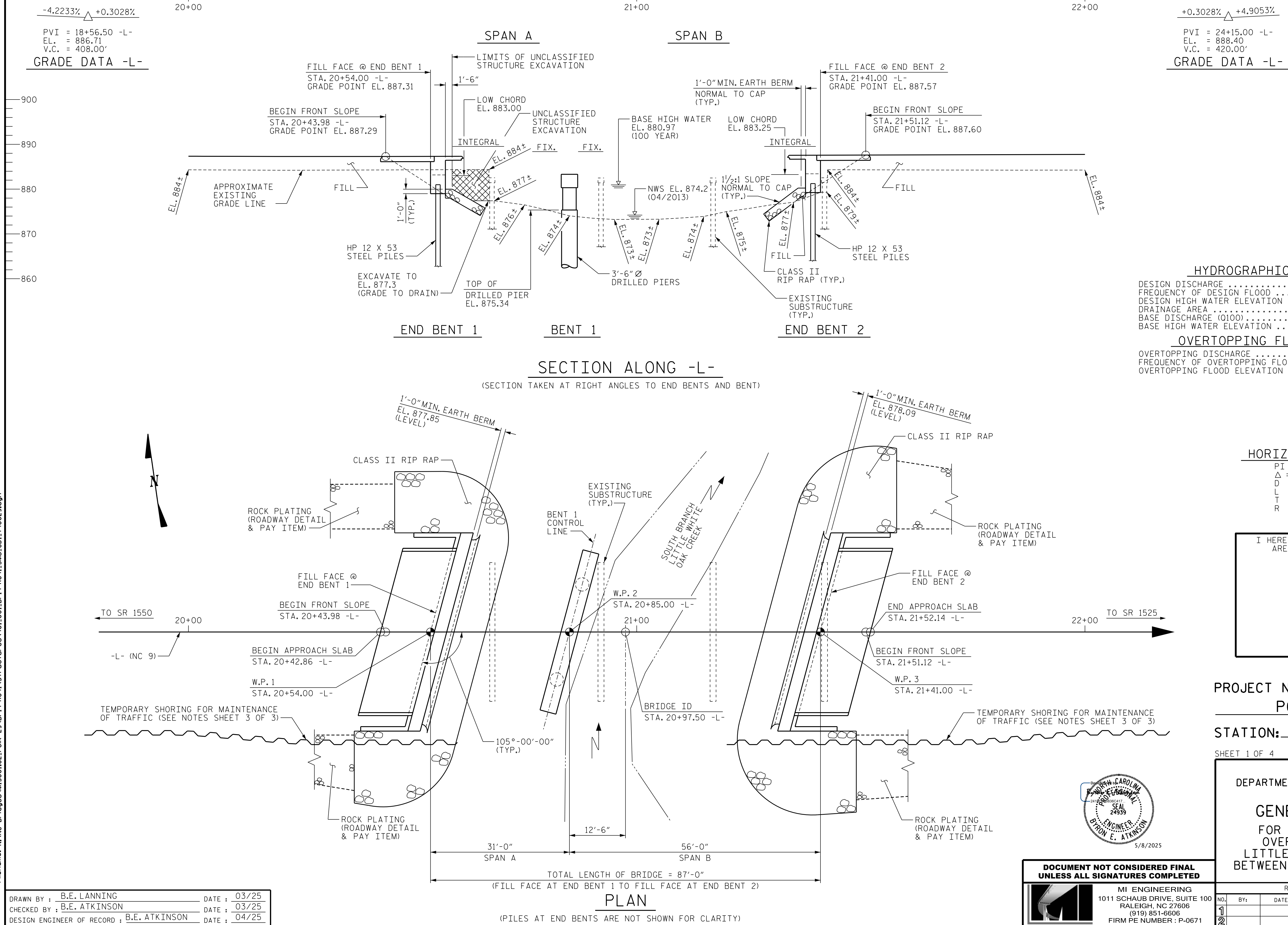
BYRON E. ATKINSON, PE
DESIGN ENGINEER OF RECORD

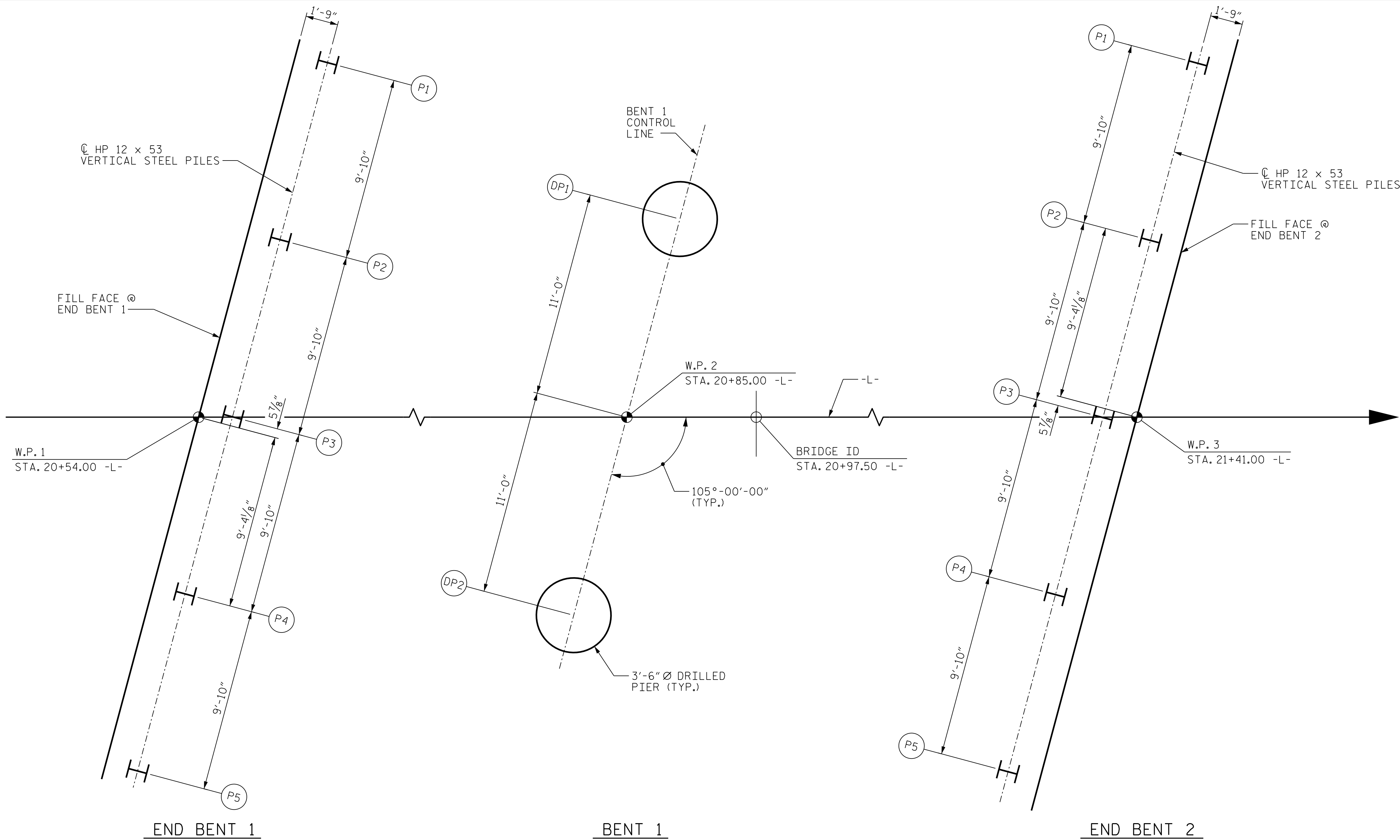


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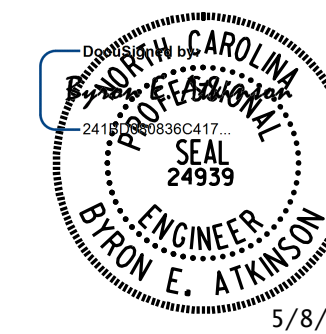
FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS
ARE SHOWN TO CENTERLINE PILES AND DRILLED PIERS.

FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 4



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 9
OVER SOUTH BRANCH
LITTLE WHITE OAK CREEK
BETWEEN SR 1550 & SR 1525

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

TOTAL
SHEETS
29

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-5	5	260	See Substructure Plans	45		838	435	0						
End Bent 2, Piles 1-2	2	260	See Substructure Plans	45		840	435	0						
End Bent 2, Piles 3-5	3	260	See Substructure Plans	55		830								
TOTAL QUANTITY:														

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	260			0.6		
End Bent 2, Piles 1-2	260			0.6		
End Bent 2, Piles 3-5	260			0.6		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

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

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock/ Weathered Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Piers 1-2	2	690	830	20	869	6	43.5			YES	855	18.5
TOTAL QUANTITY:							87.0					37.0

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "___Dia. Drilled Piers" or "___Dia. Drilled Piers Not in Soil" and "___Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "___Dia. Drilled Piers in Soil."

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

NOTES:

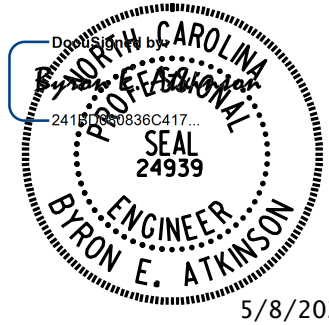
1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (JEREMY HAMM, #039779) ON 12-12-2018.
2. TOTAL PILE DRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.
3. THE ENGINEER MAY ADJUST THE QUANTITY FOR DPT TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTS, TIPS, CSL TESTING, SID INSPECTIONS AND PITS WHEN NECESSARY.
4. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP14.R041

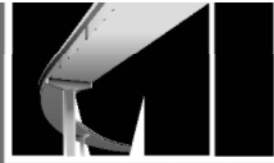
POLK COUNTY

STATION: 20+97.50 -L-

SHEET 3 OF 4



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER
FOUNDATION
TABLES

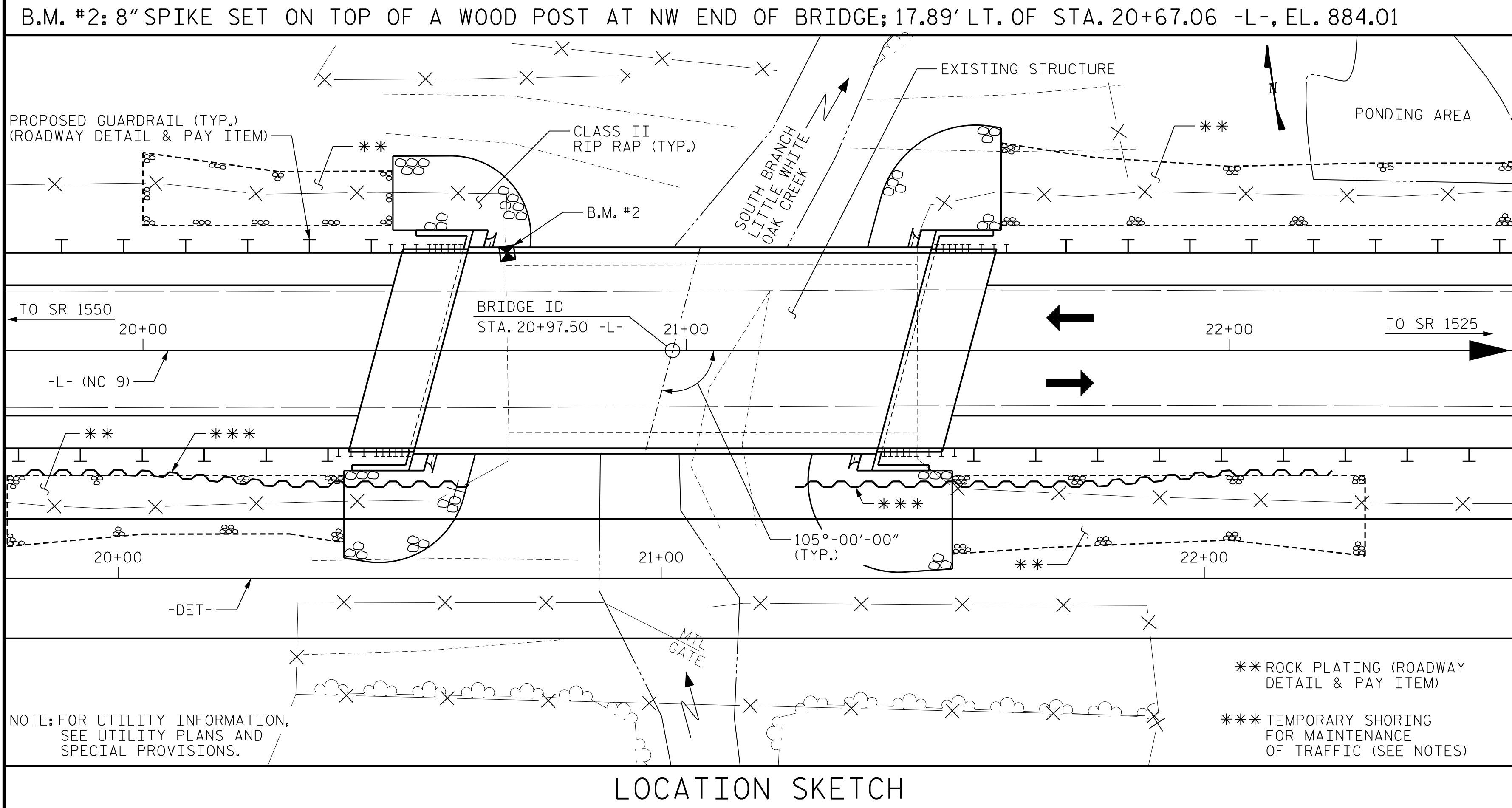
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2			4			

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CHECKED BY : B.E. ATKINSON DATE : 04/25

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NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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.

THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (2 @ 25'-5" AND 1 AT 25'-0"), WITH ASPHALT WEARING SURFACE ON PRESTRESSED CONCRETE CHANNELS AND A CLEAR ROADWAY WIDTH OF 29'-6" ON PRECAST CONCRETE CAP WITH TIMBER PILE END BENTS AND BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. EACH SIDE 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.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESMENT, SEE SPECIAL PROVISIONS.

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

FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.

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

TOTAL BILL OF MATERIAL										
	REMOVAL OF EXISTING STRUCTURE AT STA. 20+97.50 -L-	ASBESTOS ASSESMENT	3'-6" Ø DRILLED PIER	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 20+97.50 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE								3328	3539	
END BENT 1							LUMP SUM			32.1
BENT 1			91.0	41.0	1	1				20.2
END BENT 2										32.1
TOTAL	LUMP SUM	LUMP SUM	91.0	41.0	1	1	LUMP SUM	3328	3539	84.4

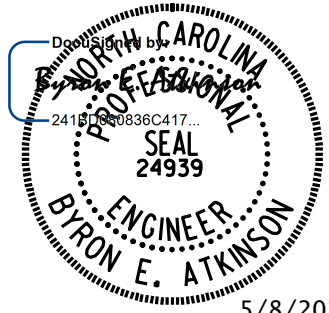
TOTAL BILL OF MATERIAL												
	BRIDGE APPROACH SLABS AT STA. 20+97.50 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDER	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	LUMP SUM			8	335.50			170.54			LUMP SUM	
END BENT 1		4375				5	225		118	131		
BENT 1		7994	2083									
END BENT 2		4375				5	255		142	157		
TOTAL	LUMP SUM	16,744	2083	8	335.50	10	480	170.54	260	288	LUMP SUM	

PROJECT NO. BP14.R041

POLK COUNTY

STATION: 20+97.50 -L-

SHEET 4 OF 4



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 **MI ENGINEERING**
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 9
OVER SOUTH BRANCH
LITTLE WHITE OAK CREEK
BETWEEN SR 1550 & SR 1525

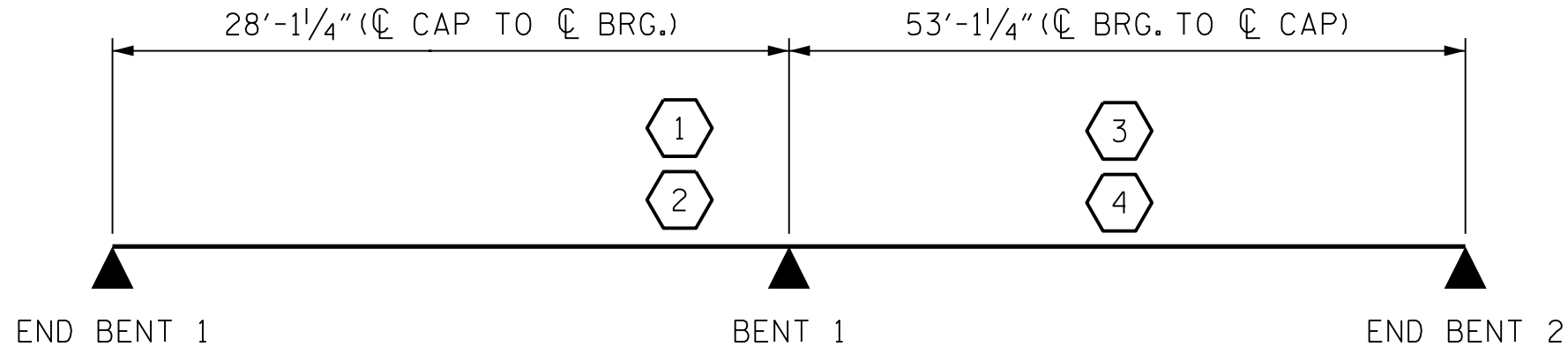
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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	⬡	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	⬡1	1.66	--	1.75	0.966	1.87	A	I	8.4	1.055	1.66	A	I	25.3	0.80	0.816	2.00	B	I	26.6		
	HL-93 (OPERATING)	N/A		2.19	--	1.35	0.966	2.42	A	I	8.4	1.055	2.19	A	I	25.3	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	⬡2	2.27	81.72	1.75	0.966	2.39	A	I	8.4	1.055	2.27	A	I	25.3	0.80	0.816	2.48	B	I	31.9		
	HS-20 (OPERATING)	36.000		2.94	105.84	1.35	0.966	3.10	A	I	8.4	1.055	2.94	A	I	25.3	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		5.11	68.99	1.40	0.966	5.33	A	I	8.4	1.055	5.44	A	I	19.7	0.80	0.816	5.11	B	I	26.6	
		SNGARBS2	20.000		3.97	79.40	1.40	0.966	4.39	A	I	8.4	1.055	4.36	A	I	19.7	0.80	0.816	3.97	B	I	31.9	
		SNAGRIS2	22.000		3.83	84.26	1.40	0.966	4.35	A	I	8.4	1.055	4.23	A	I	25.3	0.80	0.816	3.83	B	I	31.9	
		SNCOTTS3	27.250		2.55	69.49	1.40	0.966	2.61	A	I	8.4	1.055	2.71	A	I	19.7	0.80	0.816	2.55	B	I	31.9	
		SNAGGRS4	34.925		2.21	77.18	1.40	0.966	2.49	A	I	8.4	1.055	2.60	A	I	25.3	0.80	0.816	2.21	B	I	31.9	
		SNS5A	35.550		2.18	77.50	1.40	0.966	2.44	A	I	8.4	1.055	2.66	A	I	25.3	0.80	0.816	2.18	B	I	26.6	
		SNS6A	39.950		2.02	80.70	1.40	0.966	2.35	A	I	8.4	1.055	2.50	A	I	25.3	0.80	0.816	2.02	B	I	26.6	
		SNS7B	42.000		1.94	81.48	1.40	0.966	2.27	A	I	8.4	1.055	2.52	A	I	25.3	0.80	0.816	1.94	B	I	26.6	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.52	83.16	1.40	0.966	3.27	A	I	11.2	1.055	2.94	A	I	25.3	0.80	0.816	2.52	B	I	26.6	
		TNT4A	33.075		2.48	82.03	1.40	0.966	2.88	A	I	8.4	1.055	2.95	A	I	19.7	0.80	0.816	2.48	B	I	26.6	
		TNT6A	41.600		2.08	86.53	1.40	0.966	2.54	A	I	8.4	1.055	2.34	A	I	25.3	0.80	0.816	2.08	B	I	26.6	
		TNT7A	42.000		2.10	88.20	1.40	0.966	2.61	A	I	8.4	1.055	2.54	A	I	25.3	0.80	0.816	2.10	B	I	26.6	
		TNT7B	42.000		2.14	89.88	1.40	0.966	2.55	A	I	8.4	1.055	2.48	A	I	25.3	0.80	0.816	2.14	B	I	31.9	
		TNAGRIT4	43.000		2.07	89.01	1.40	0.966	2.52	A	I	8.4	1.065	2.53	B	I	15.9	0.80	0.816	2.07	B	I	31.9	
TNAGT5A		45.000		1.96	88.20	1.40	0.897	2.60	B	E	31.9	1.055	2.25	A	I	25.3	0.80	0.816	1.96	B	I	31.9		
TNAGT5B	45.000	⬡3	1.91	85.95	1.40	0.966	2.33	A	I	8.4	1.055	2.22	A	I	25.3	0.80	0.816	1.91	B	I	26.6			
EMERGENCY VEHICLE (EV)	TNAGT5A	28.750		2.82	81.08	1.30	0.966	3.29	A	I	8.4	1.055	3.25	A	I	25.3	0.80	0.816	2.82	B	I	31.9		
	TNAGT5B	43.000	⬡4	1.85	79.55	1.30	0.966	2.26	A	I	8.4	1.055	2.19	A	I	25.3	0.80	0.816	1.85	B	I	26.6		



LRFR SUMMARY

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

- LEFT AND RIGHT EXTERIOR GIRDER ARE IDENTICAL.
-
-
-

⬡# CONTROLLING LOAD RATING

⬡1 DESIGN LOAD RATING (HL-93)

⬡2 DESIGN LOAD RATING (HS-20)

⬡3 LEGAL LOAD RATING **

⬡4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

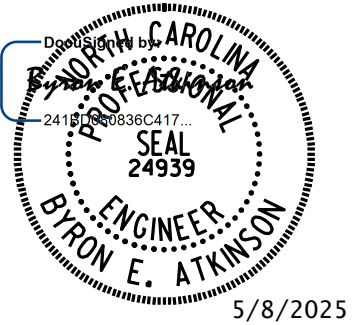
GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER

PROJECT NO. BP14.R041

POLK COUNTY

STATION: 20+97.50 -L-



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUß DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY : J.I. BREWER	DATE : 03/25
CHECKED BY : B.E. ATKINSON	DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 04/25

NOTES

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

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

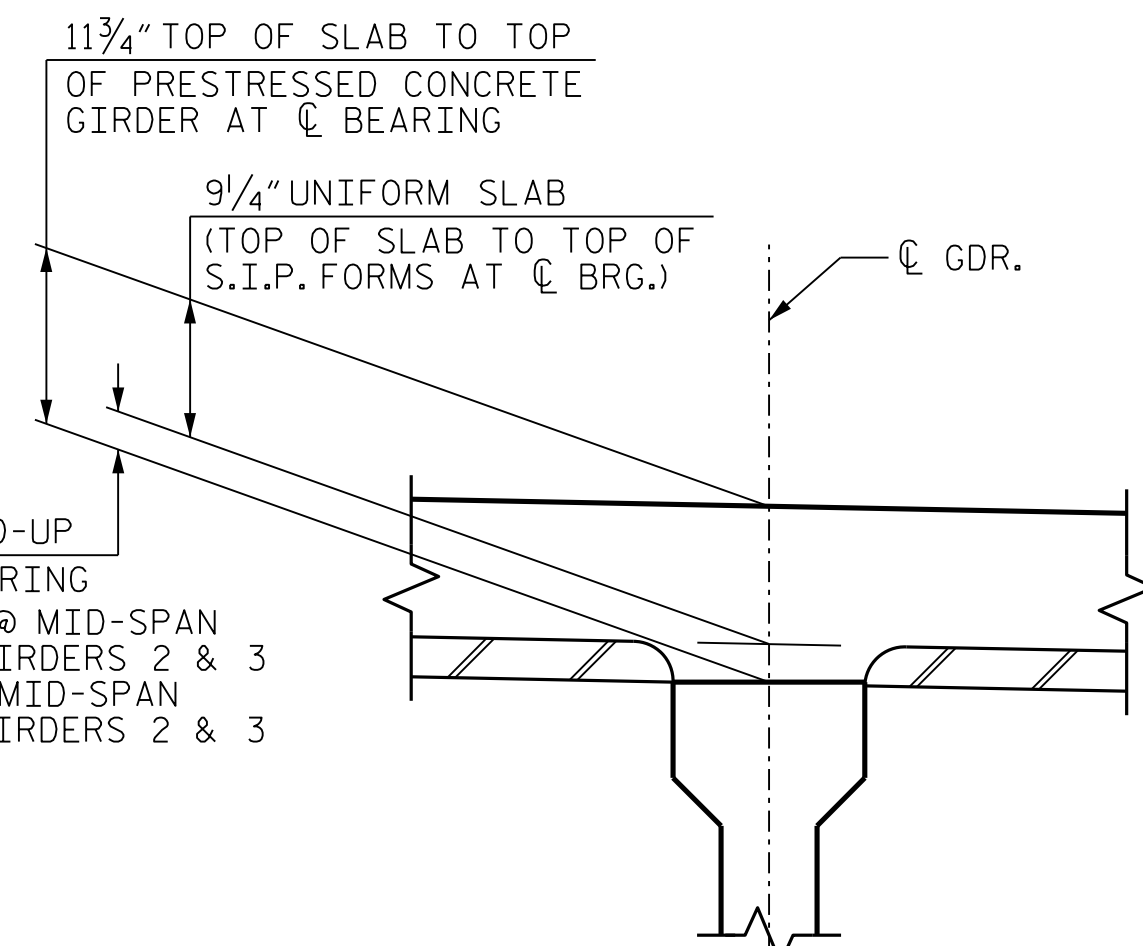
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS" SHEET.

THE SKEWED END CONDITIONS AT THE END BENTS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.



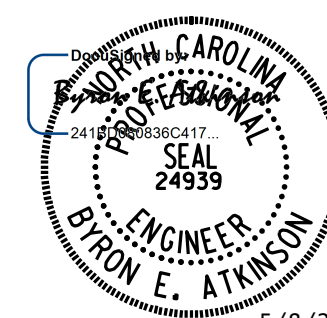
DETAIL "A"

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

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

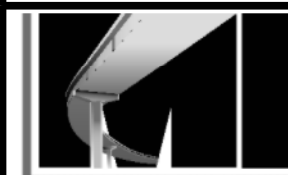
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

5/8/2025

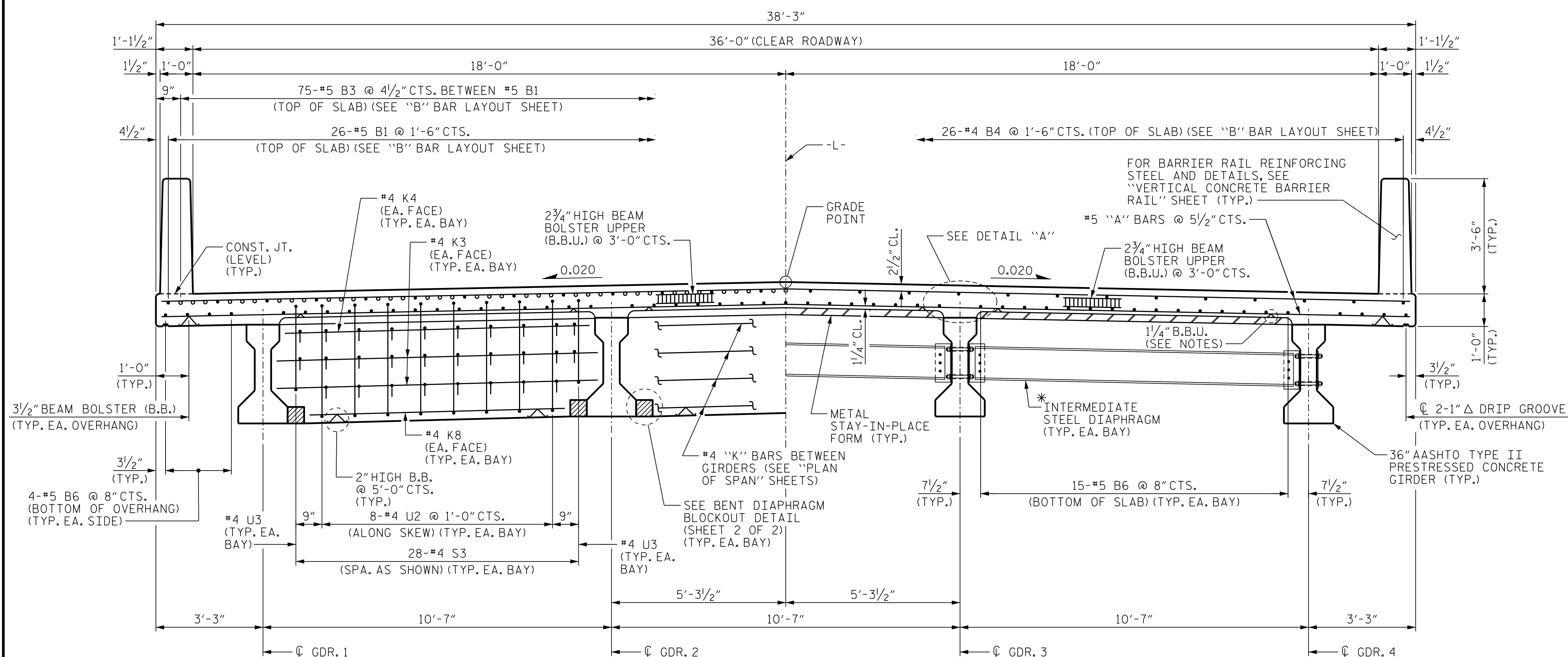
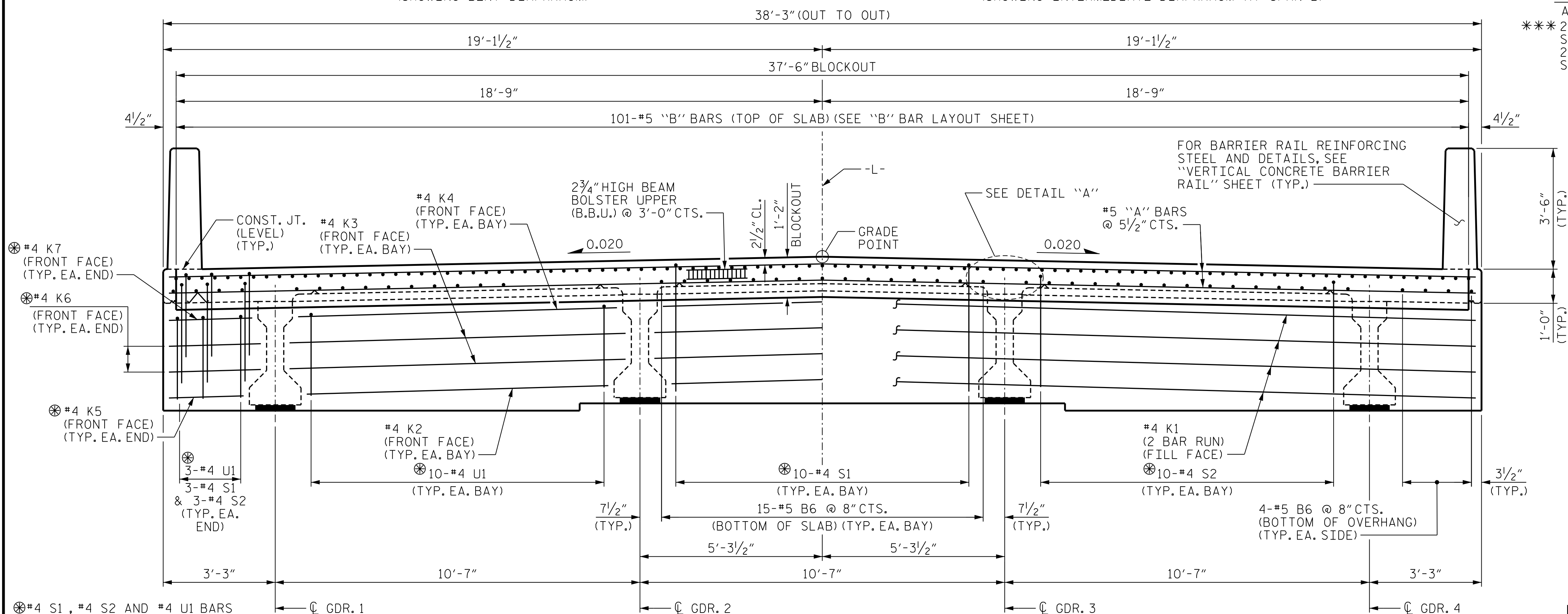
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-6
2			4			

TOTAL
SHEETS
29

TYPICAL SECTION
(SHOWING BENT DIAPHRAGM)TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGM AT SPAN B)TYPICAL SECTION AT INTEGRAL END BENT
(FOR ADDITIONAL DIMENSIONS, SEE TYPICAL SECTION ABOVE)

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

5/7/2025 7:21:59 PM
User: blanning
Filename: N:\NC Bridges\W3001.02_Polk 29\BP14-R041\Structures\01_01_BP14-R041_SML.TSI.740029.dgn

END OF GIRDER DETAIL AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PLAN OF GIRDER AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

SECTION A-A

** MEASURED ALONG CL GIRDER

SECTION B-B

BENT DIAPHRAGM BLOCK-OUT DETAIL

TRANSVERSE CONSTRUCTION JOINT DETAIL

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

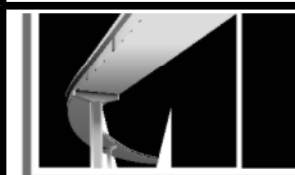
PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

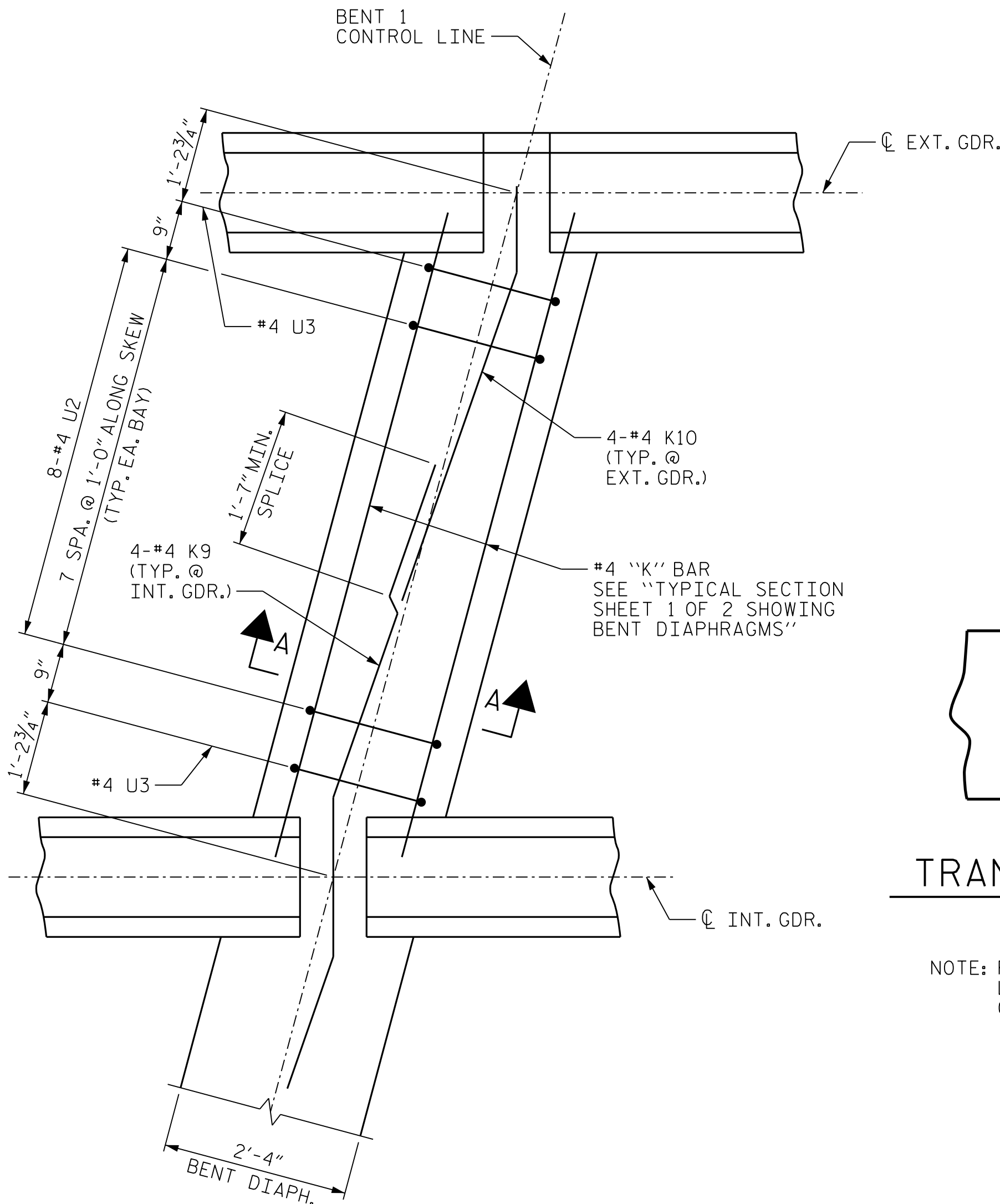
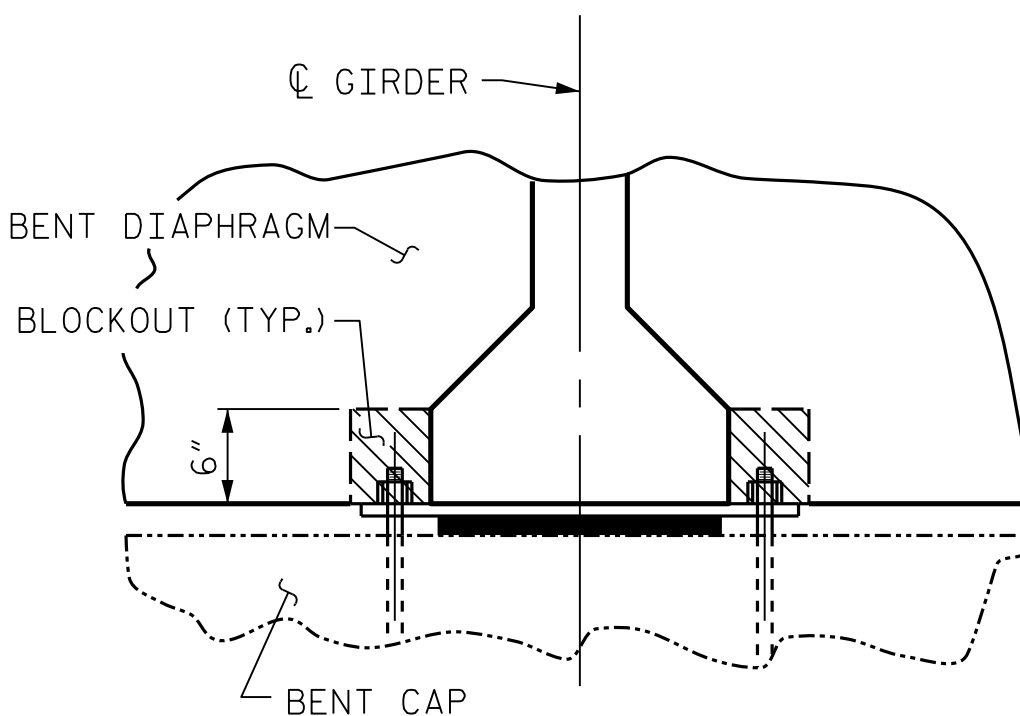
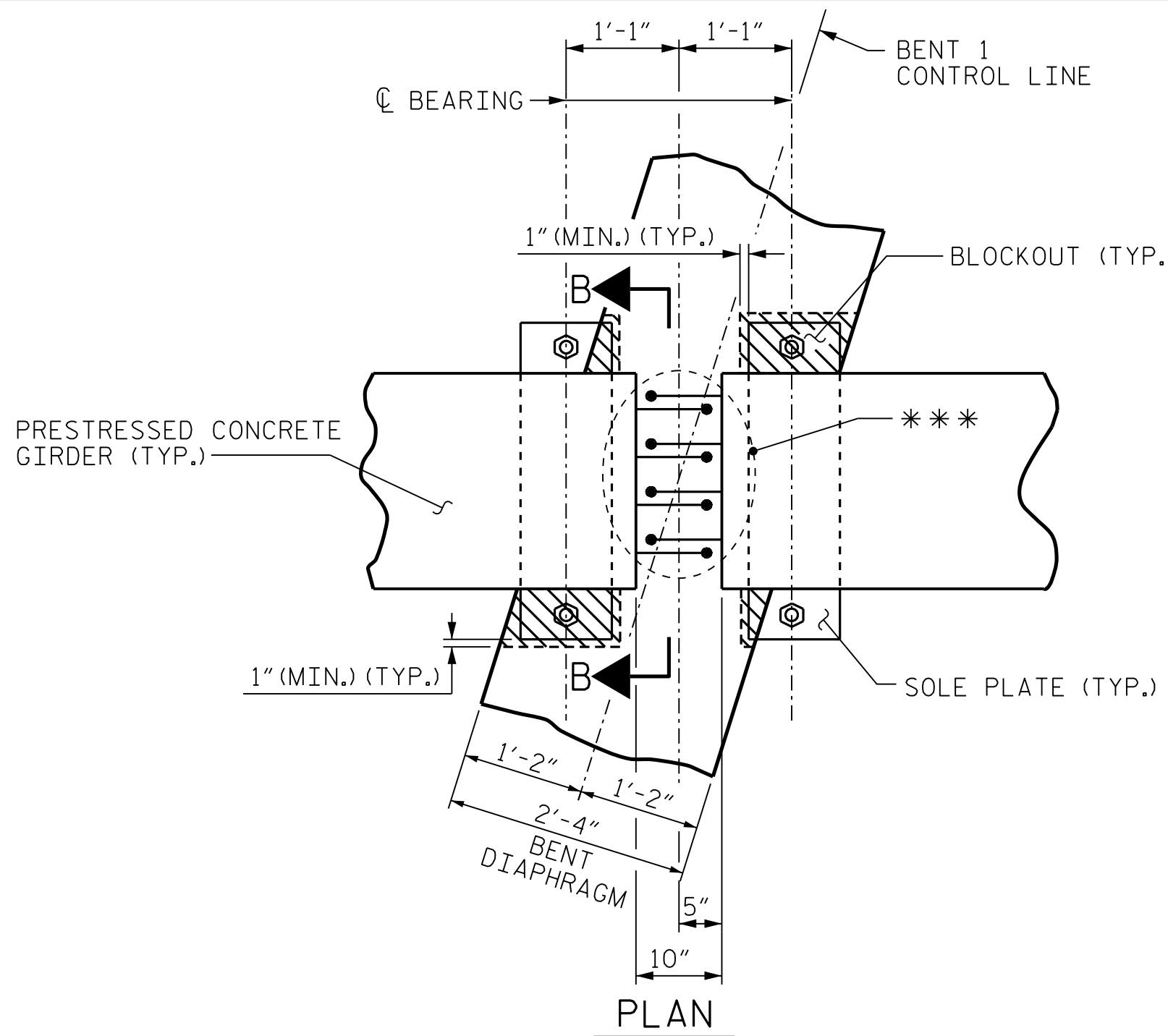
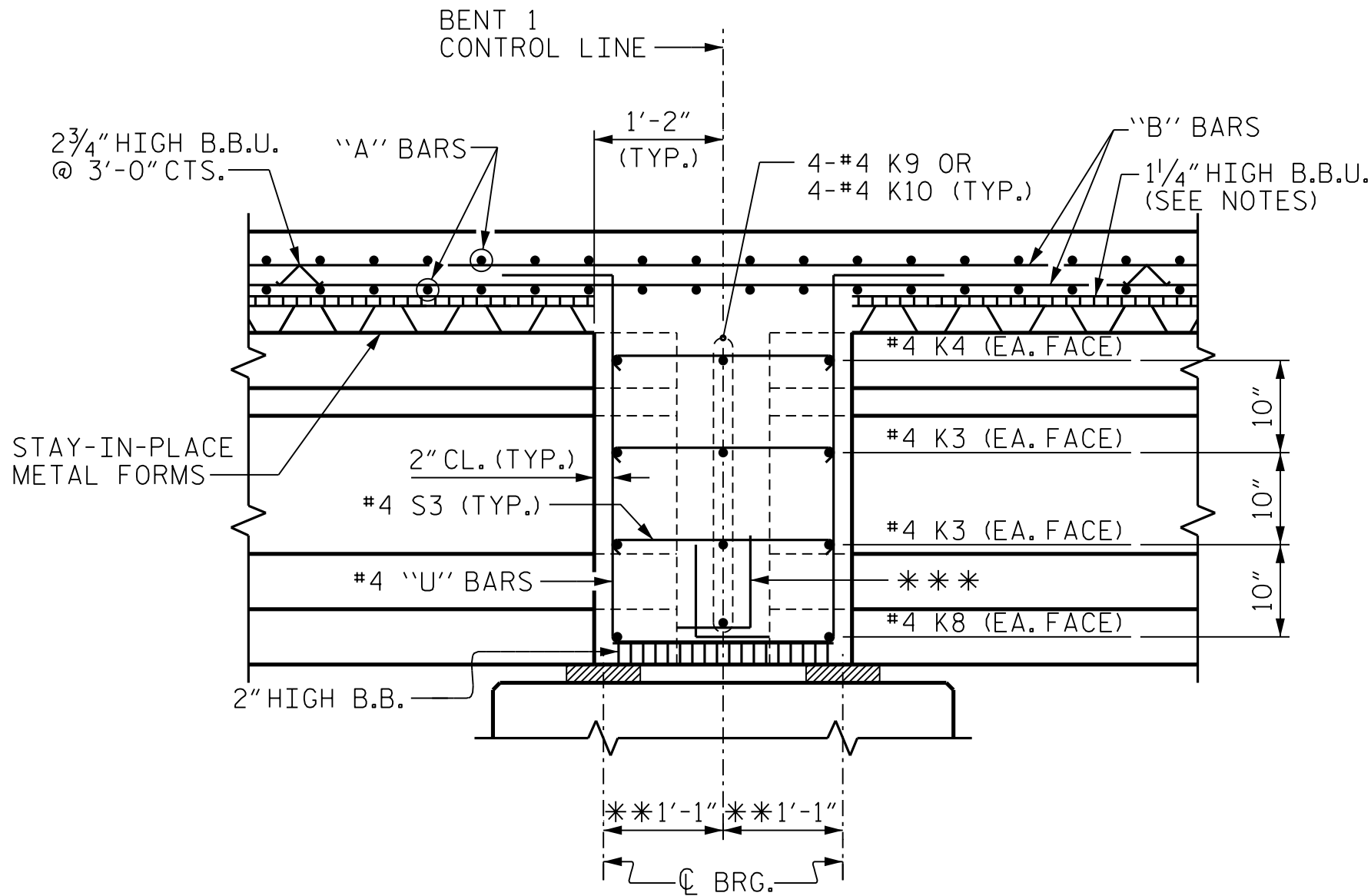
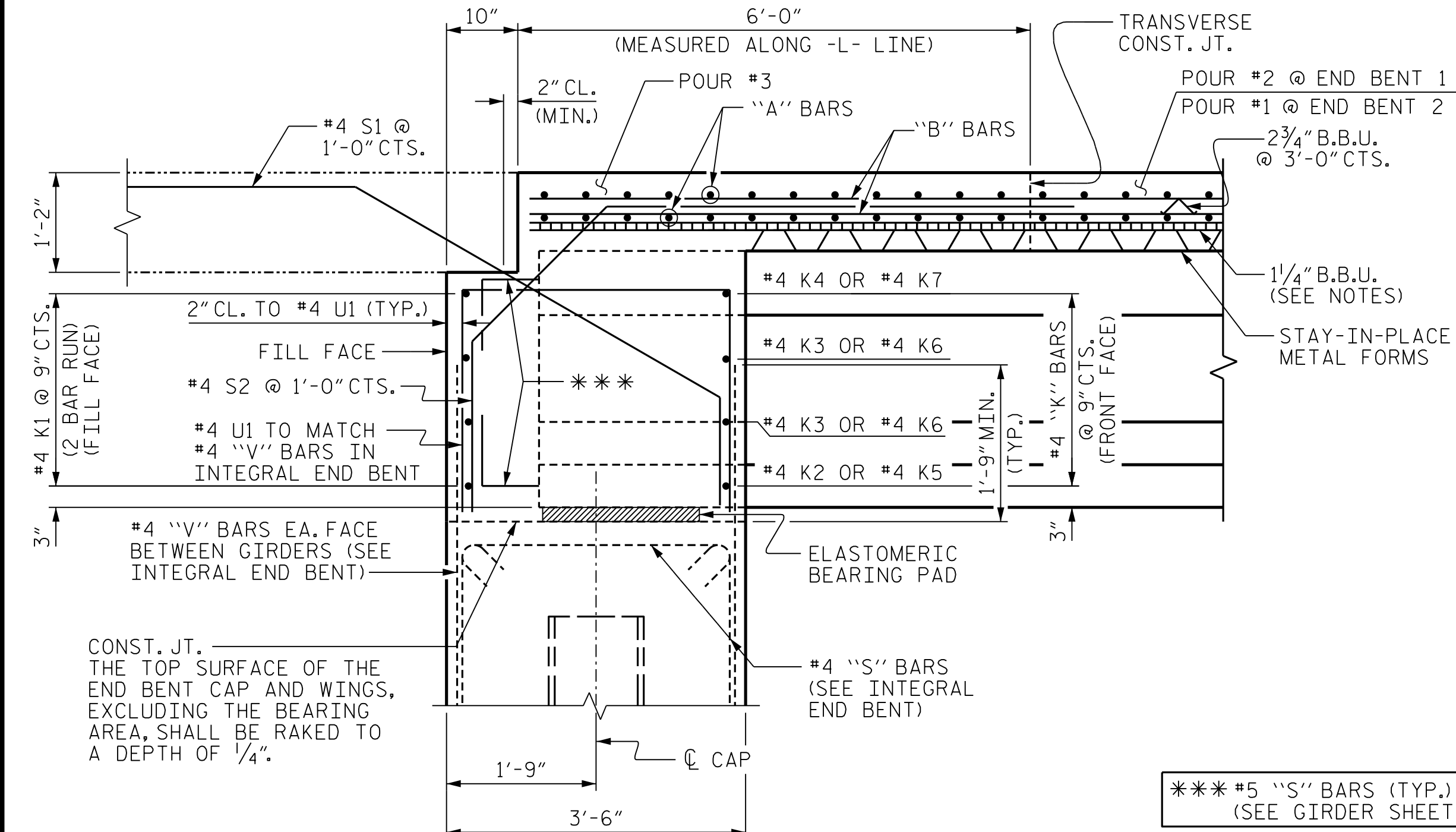
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

SHEET NO.
S-7
TOTAL
SHEETS
29



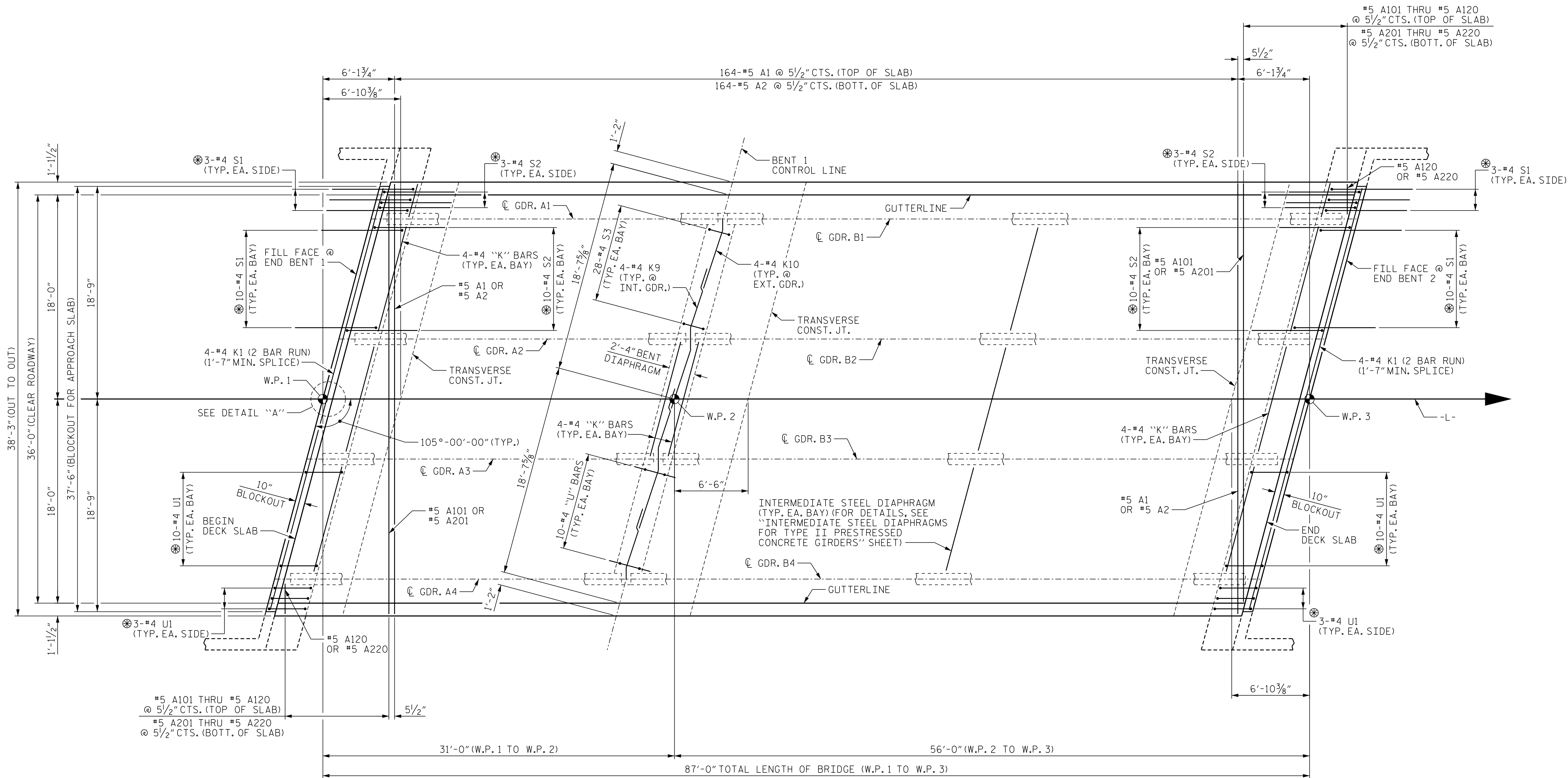
PLAN AT BENT DIAPHRAGM

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

5/7/2025
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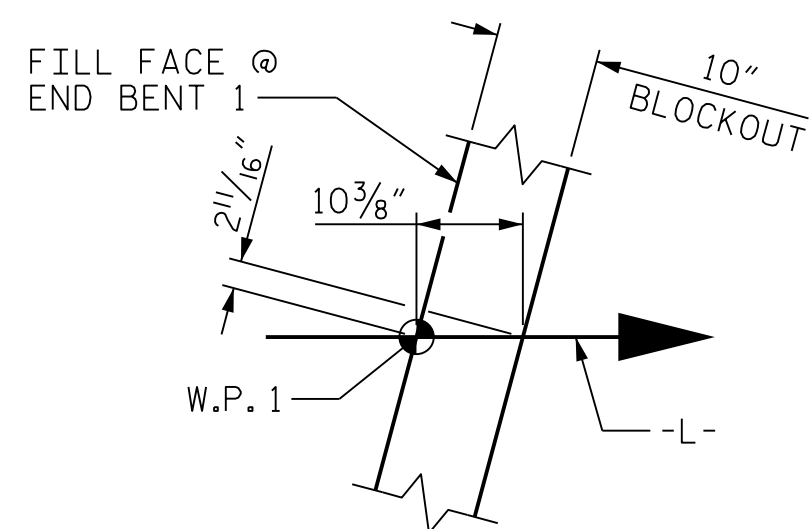
SPAN A

SPAN B

PLAN OF SPANS

NOTES

- FOR REINFORCING STEEL IN BARRIER RAIL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.
- FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT SHEET 2 OF 3.
- FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
- FOR LOCATION OF TRANSVERSE CONST. JT., SEE "SUPERSTRUCTURE BILL OF MATERIAL".
- #4 S1, #4 S2 & #4 U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.



DETAIL "A"

END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. BP14.R041

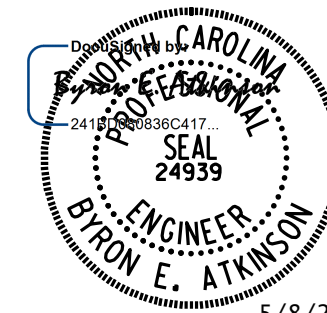
POLK COUNTY

STATION: 20+97.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
SPAN "A" AND "B"



5/8/2025

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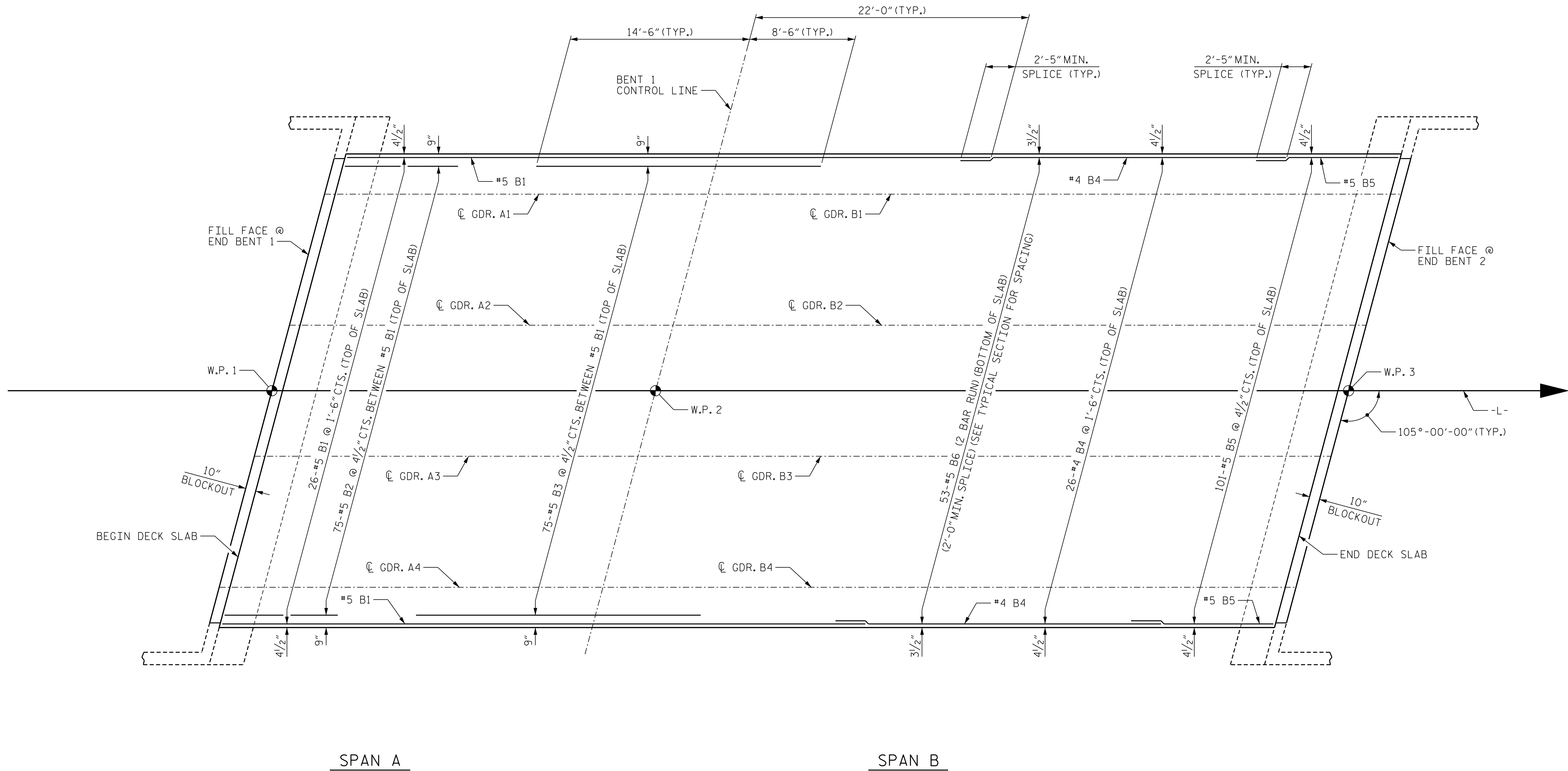


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8
2			4			TOTAL SHEETS 29

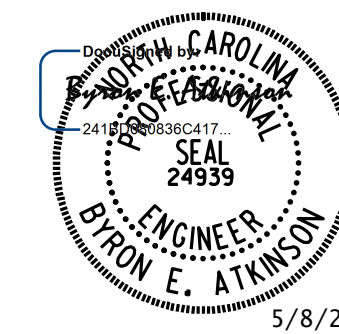
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PLAN OF "B" BAR LAYOUT

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 2



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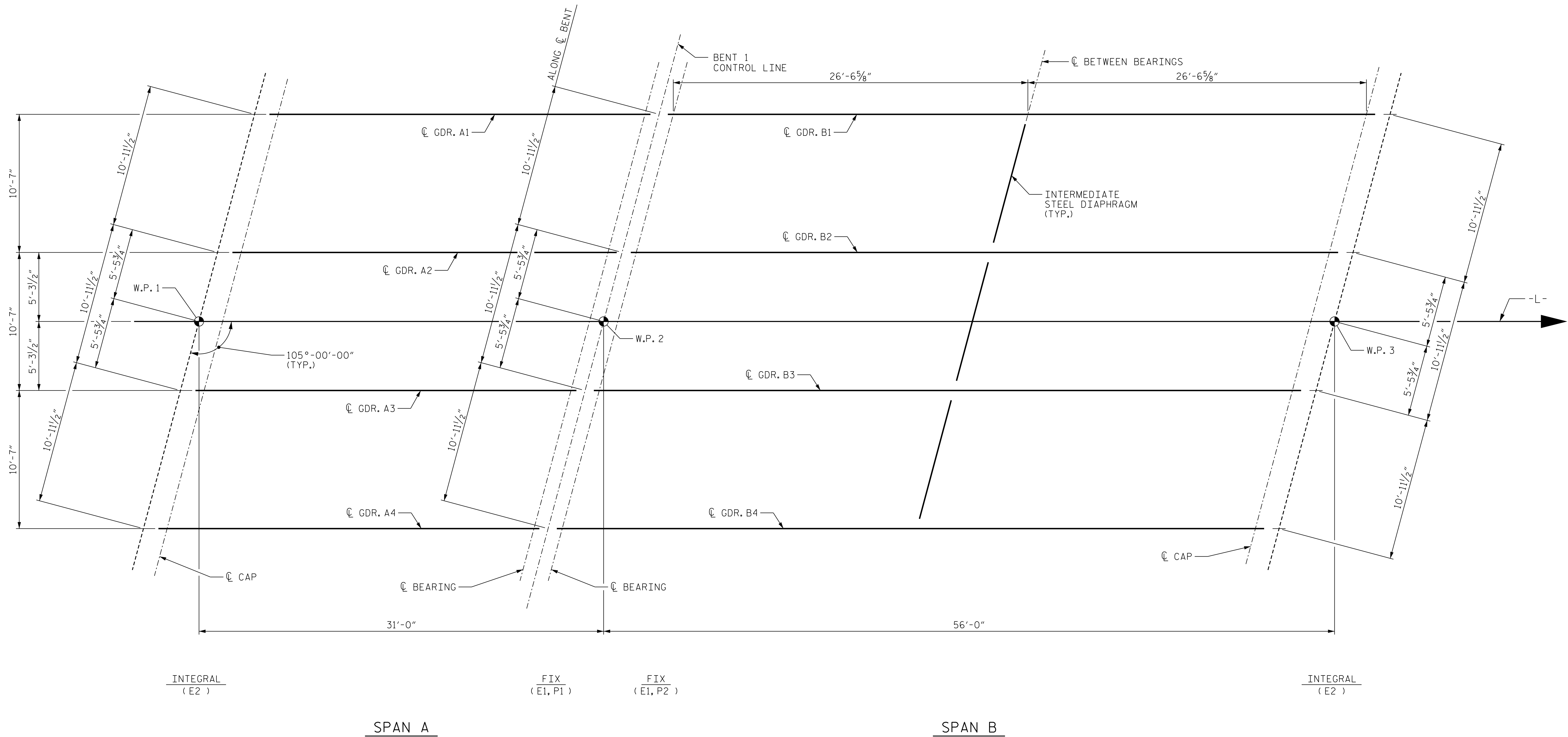
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-9
2			4			

TOTAL SHEETS: 29

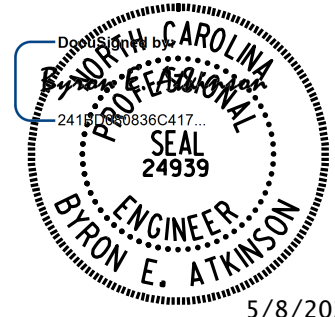
DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/25</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>

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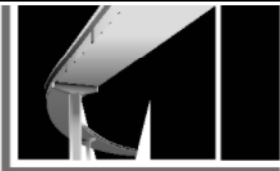
FRAMING PLAN

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-



5/8/2025

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UNLESS ALL SIGNATURES COMPLETED**

 **MI ENGINEERING**
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-10
2			4			

TOTAL SHEETS	29
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DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/25</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>



0.6" Ø LOW RELAXATION STRAND LAYOUT



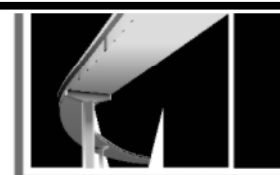
ELEVATION OF GIRDER

NO.	REVISIONS					SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:
	1			3		
	2			4		
						TOTAL SHEETS
						29

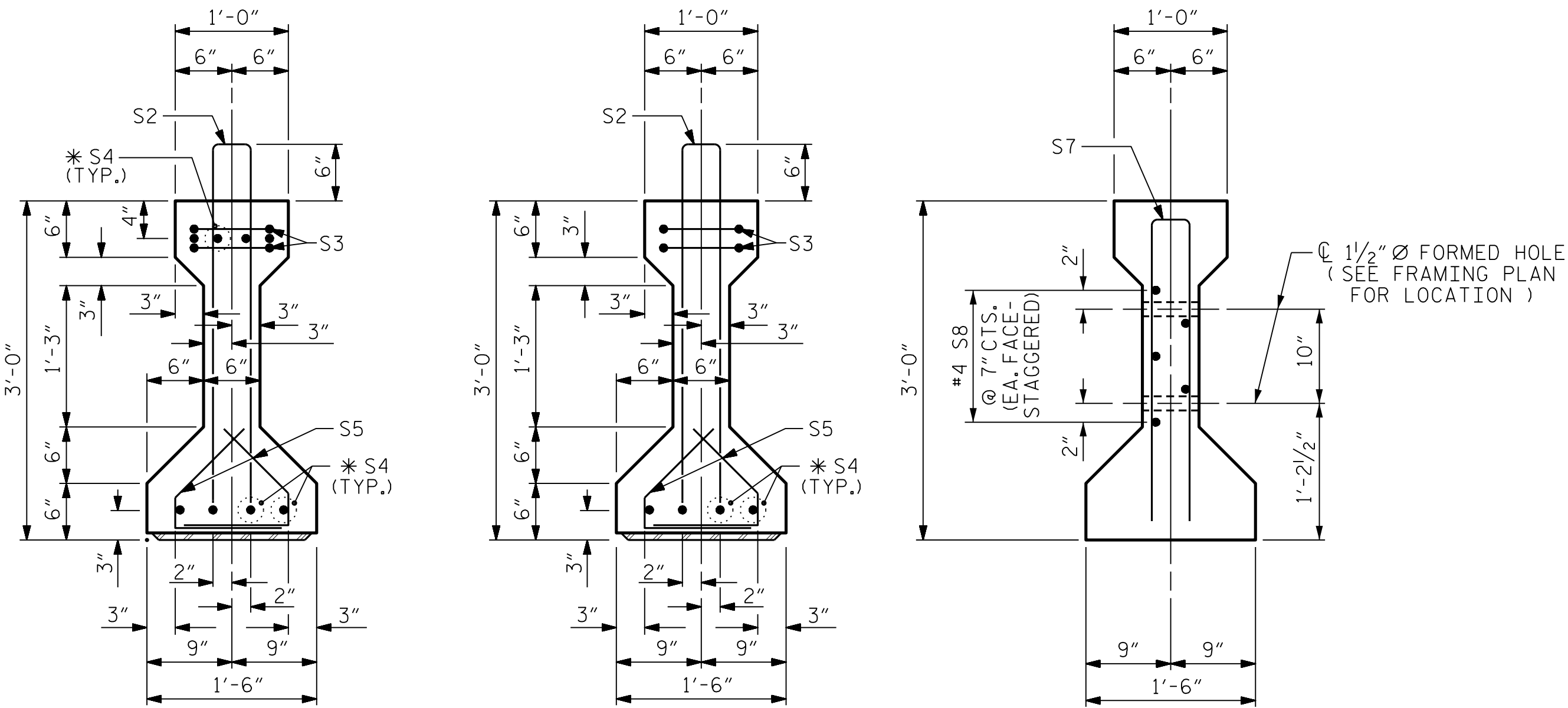
DRAWN BY :	J.I. BREWER	DATE :	03/25
CHECKED BY :	B.E. ATKINSON	DATE :	03/25
DESIGN ENGINEER OF RECORD :	B.E. ATKINSON	DATE :	04/25

Professional Engineer
2416102-8386417...
SEAL
24939
BYRON E. ATKINSON
5/8/2

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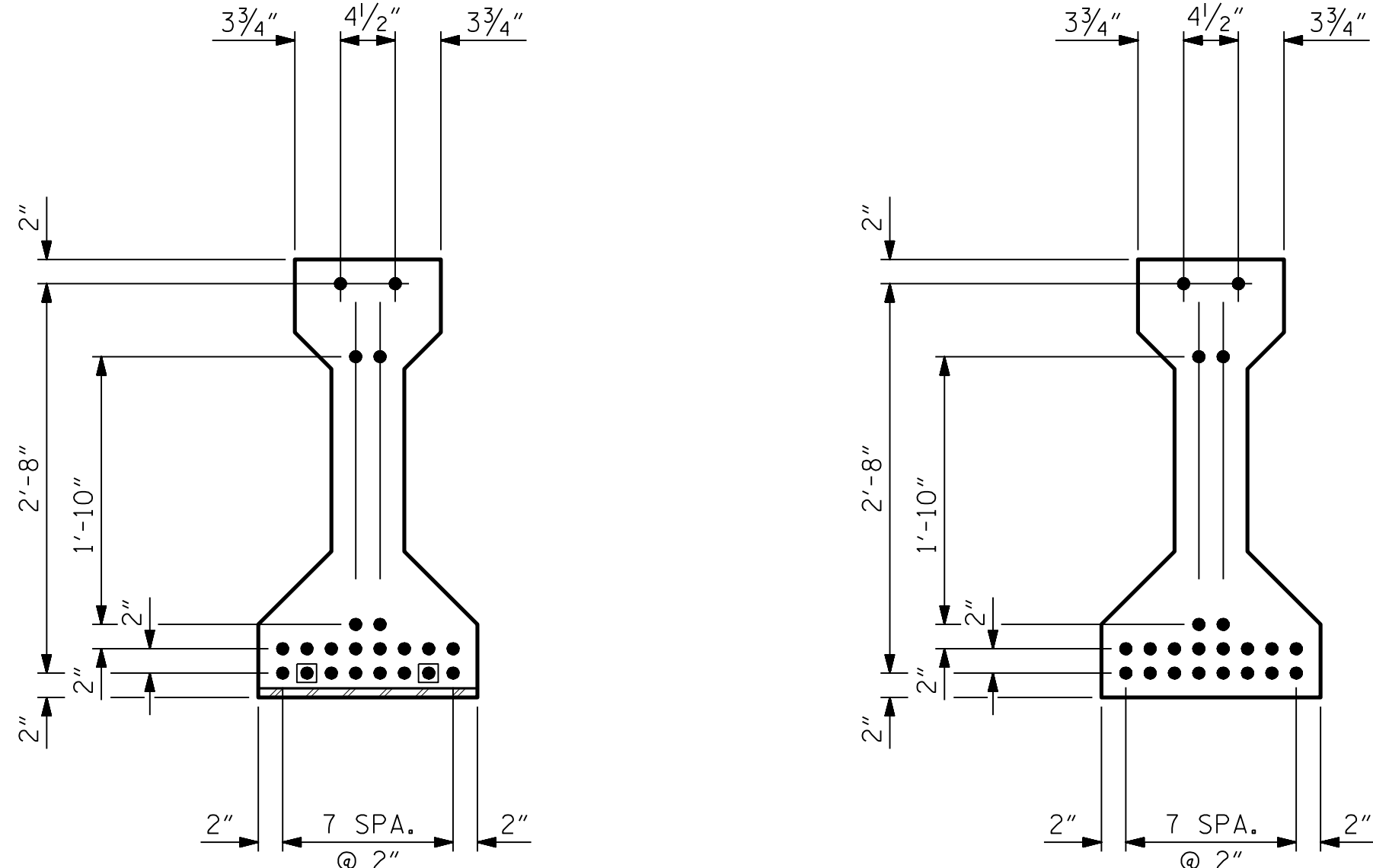
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



SECTION A-A

SECTION B-B

SECTION C-C
(S2 BARS NOT SHOWN)



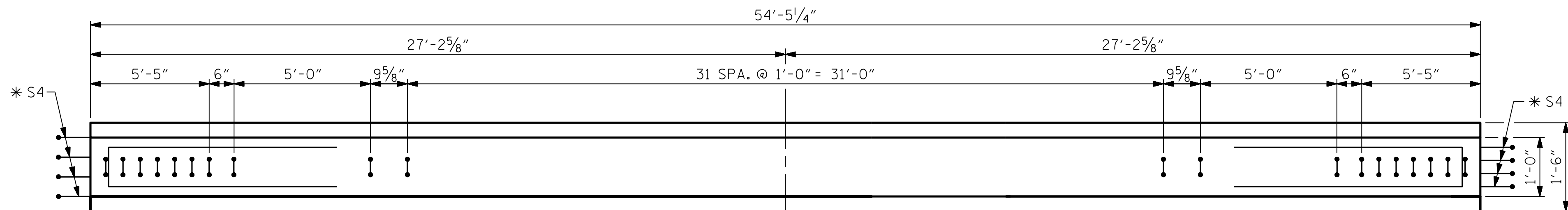
AT END OF GIRDER

AT C OF GIRDER

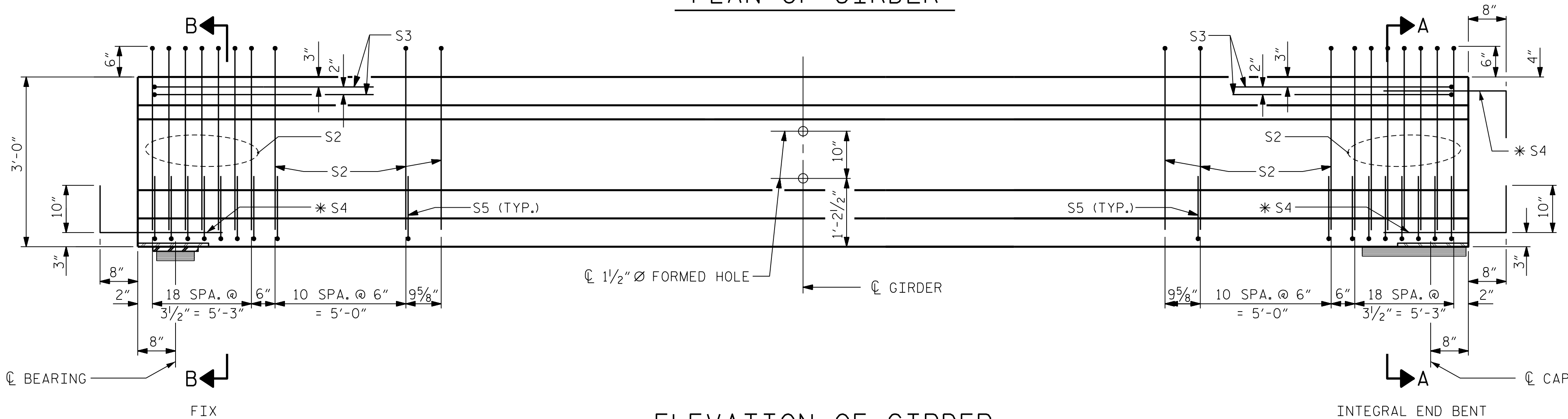
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

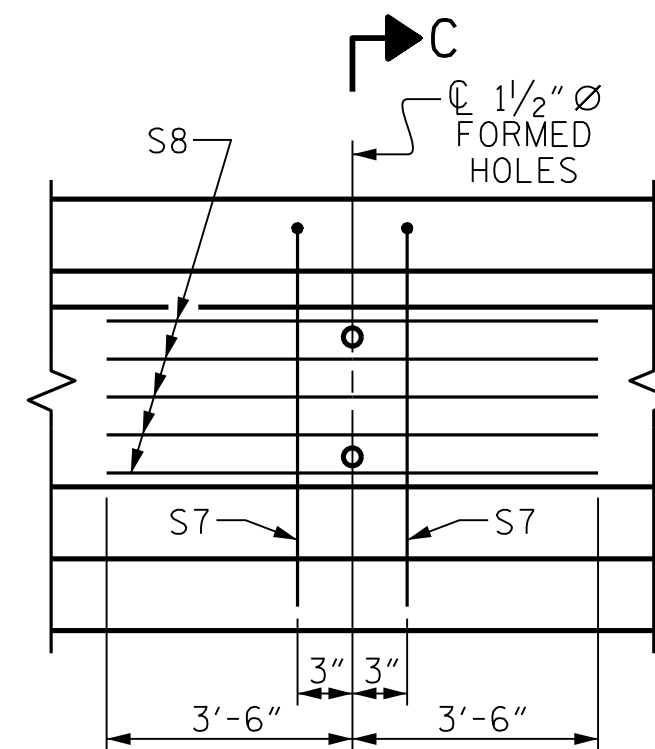


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER NOS. 1 THRU 4

0.6" Ø L. R. GRADE 270 STRANDS

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

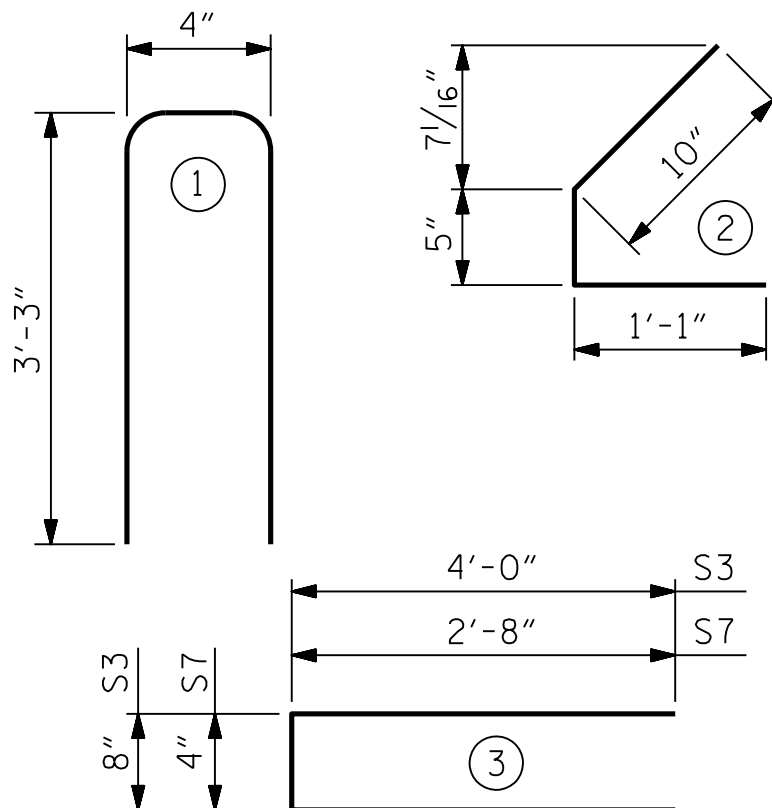
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S2	92	#5	1	6'-10"	656
S3	4	#4	3	8'-8"	23
* S4	12	#5	STR	3'-8"	46
S5	120	#4	2	2'-4"	187
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED. SEE DETAIL "A" ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET FOR LOCATION.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT.



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
ALL	947	5.2	22

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	54'-5 1/4"	217'-9"

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE II
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B

REVISIONS

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

SHEET NO.

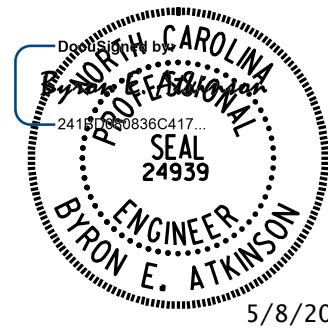
S-12

TOTAL SHEETS

29

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



5/8/2025

DRAWN BY : J.I. BREWER DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

5/7/2025 7:23:03 PM User: blanning Filename: N:\NC Bridges\W3001.02_Polk 29\BP14-R041\Structures\401_023_BP14-R041_SML_C2_740029.dgn

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.60"Ø LOW RELAXATION STRANDS	SPAN A																				
	GIRDERS 1 & 4																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.004	0.008	0.011	0.015	0.018	0.020	0.022	0.024	0.025	0.025	0.025	0.024	0.022	0.020	0.018	0.015	0.011	0.008	0.004	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.001	0.001	0.002	0.003	0.004	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0

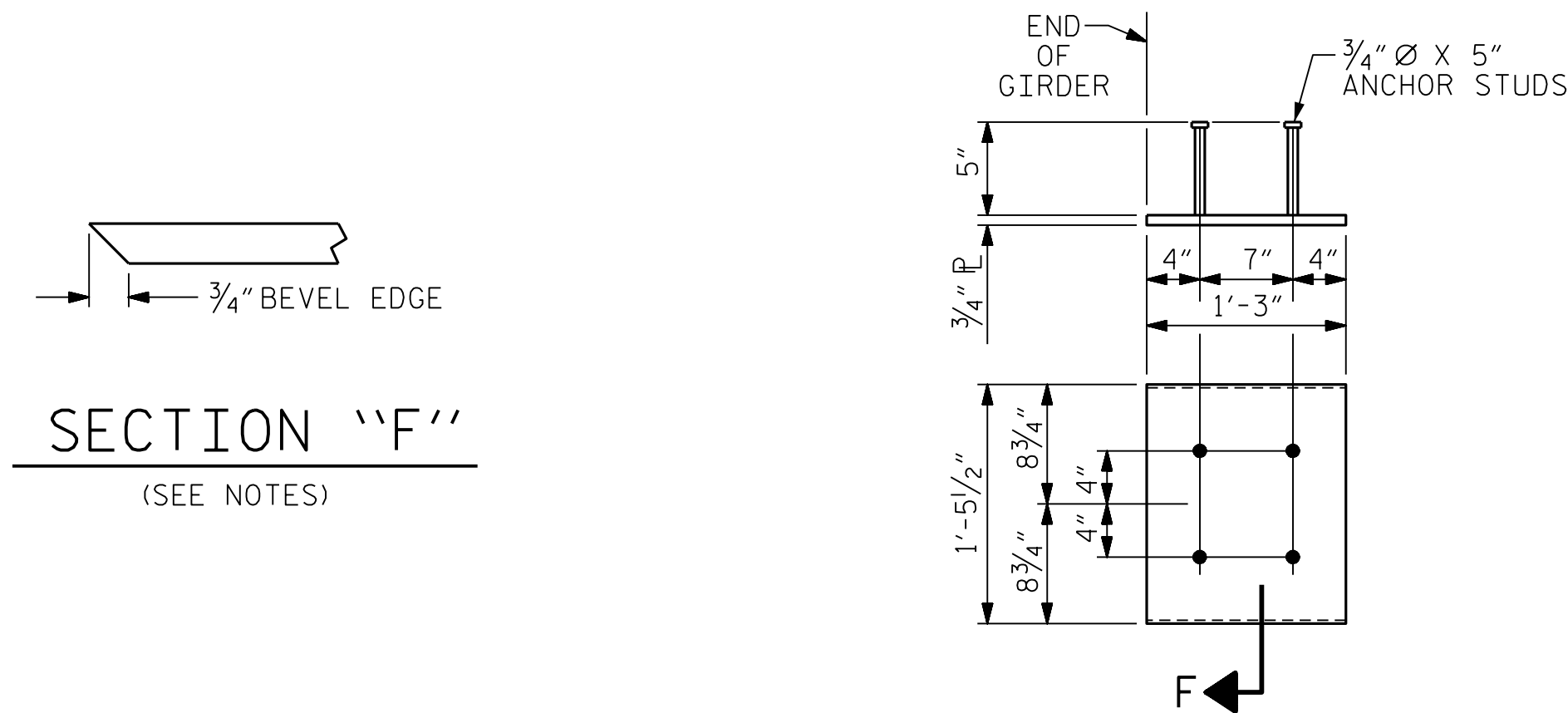
0.60"Ø LOW RELAXATION STRANDS	SPAN A																				
	GIRDERS 2 & 3																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.004	0.008	0.011	0.015	0.018	0.020	0.022	0.024	0.025	0.025	0.025	0.024	0.022	0.020	0.018	0.015	0.011	0.008	0.004	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0
FINAL CAMBER ↑	0	1/16"	1/8"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/4"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0

0.60"Ø LOW RELAXATION STRANDS	SPAN B																				
	GIRDERS 1 & 4																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.020	0.039	0.057	0.074	0.089	0.101	0.111	0.118	0.123	0.124	0.123	0.118	0.111	0.101	0.089	0.074	0.057	0.039	0.020	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.010	0.019	0.029	0.039	0.047	0.055	0.061	0.066	0.068	0.070	0.068	0.066	0.061	0.056	0.048	0.041	0.030	0.020	0.010	0
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	5/8"	11/16"	5/8"	5/8"	9/16"	1/2"	3/8"	5/16"	1/4"	1/8"	0

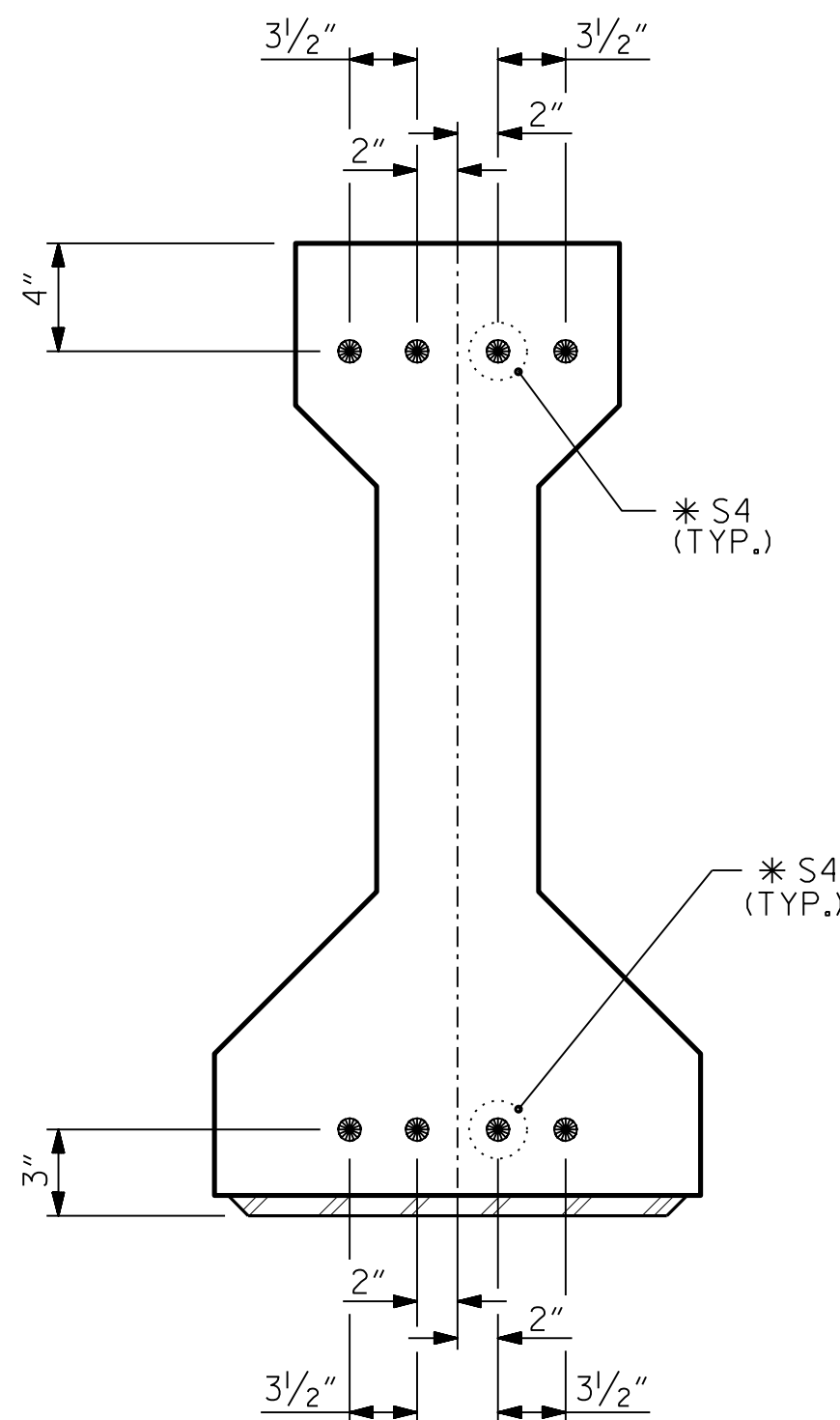
0.60"Ø LOW RELAXATION STRANDS	SPAN B																				
	GIRDERS 2 & 3																				
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.020	0.039	0.057	0.074	0.089	0.101	0.111	0.118	0.123	0.124	0.123	0.118	0.111	0.101	0.089	0.074	0.057	0.039	0.020	0
** DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.011	0.023	0.034	0.046	0.055	0.065	0.071	0.077	0.079	0.081	0.079	0.077	0.071	0.066	0.056	0.047	0.035	0.024	0.012	0
FINAL CAMBER ↑	0	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/8"	0

** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),
EXCEPT "FINAL CAMBER", WHICH IS SHOWN IN INCHES (FRACTION FORM).



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



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.

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 4000 PSI FOR SPAN A AND 6500 PSI FOR SPAN B.

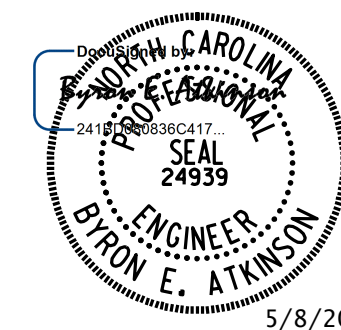
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

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POLK COUNTY
STATION: 20+97.50 -L-

SHEET 3 OF 3



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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

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.

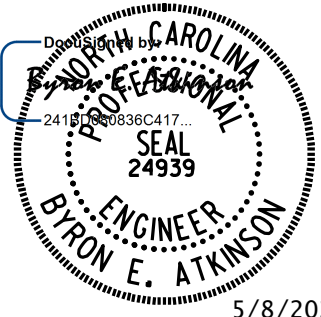
TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"

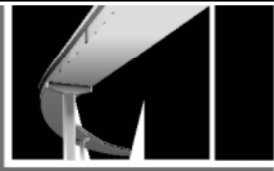
PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE II
PRESTRESSED CONCRETE
GIRDERS



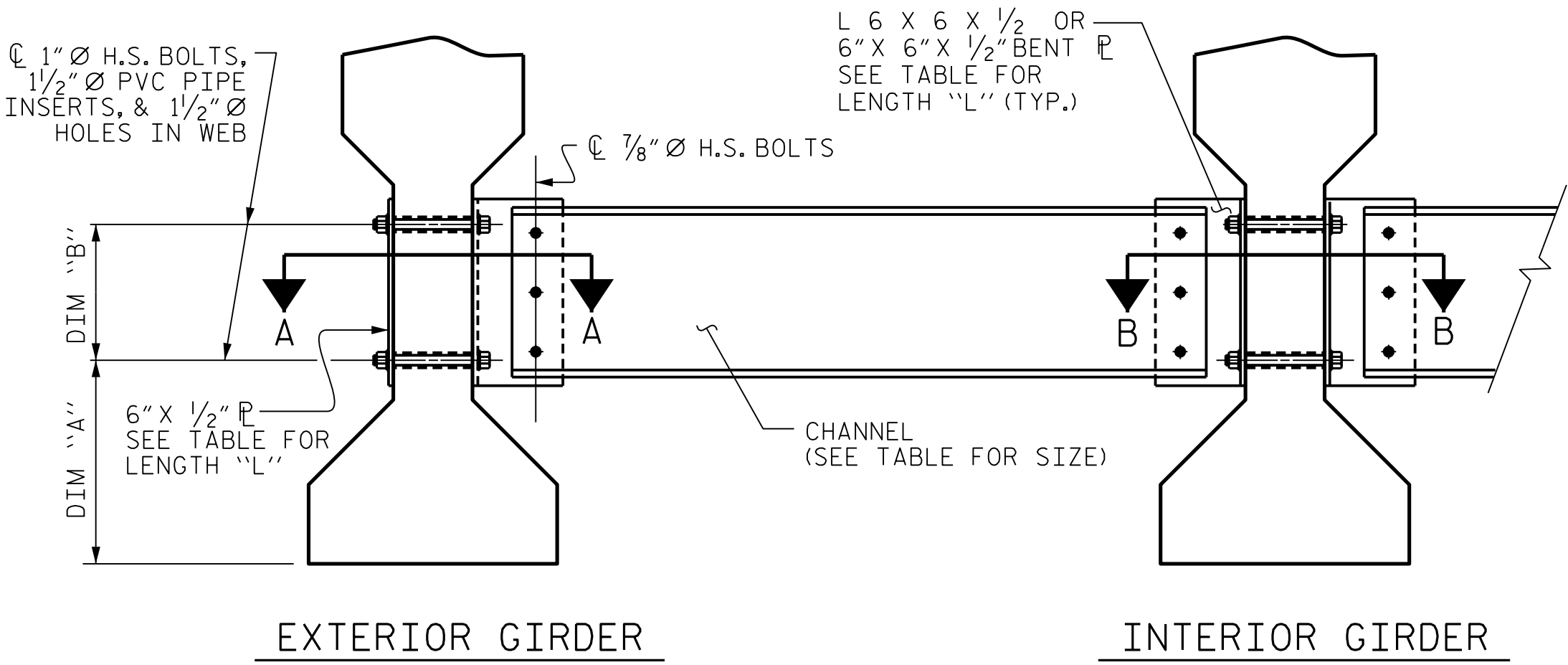
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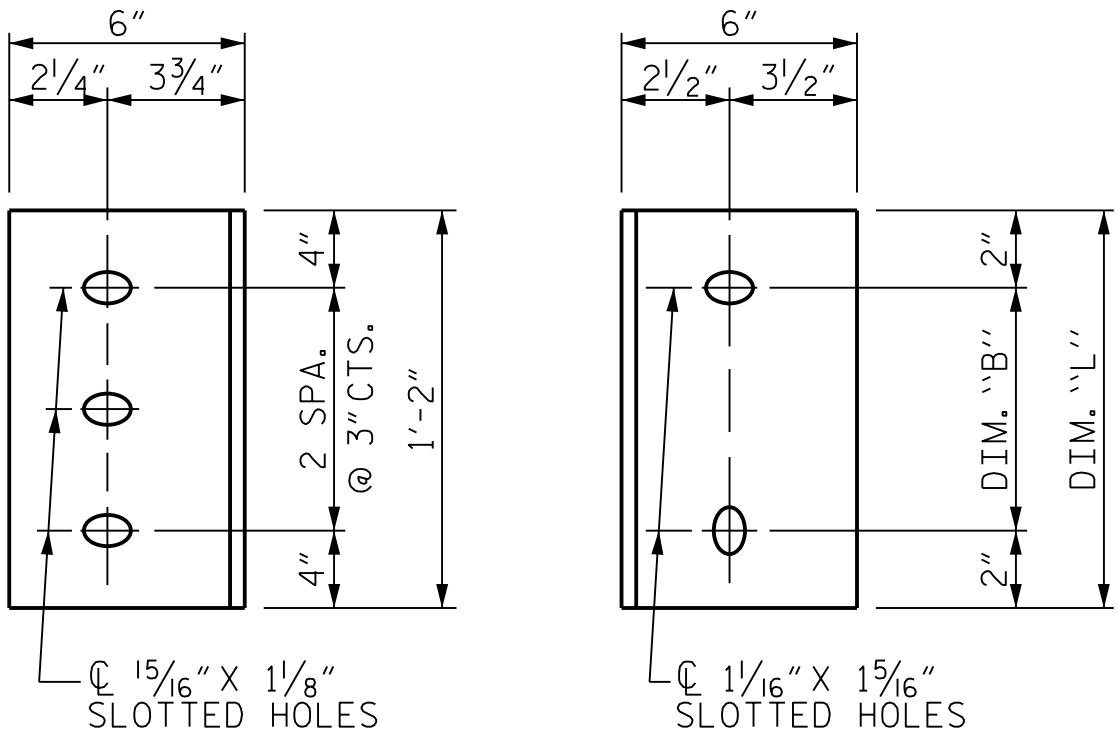
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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1			3		
2			4		

SHEET NO.
S-14
TOTAL SHEETS
29



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

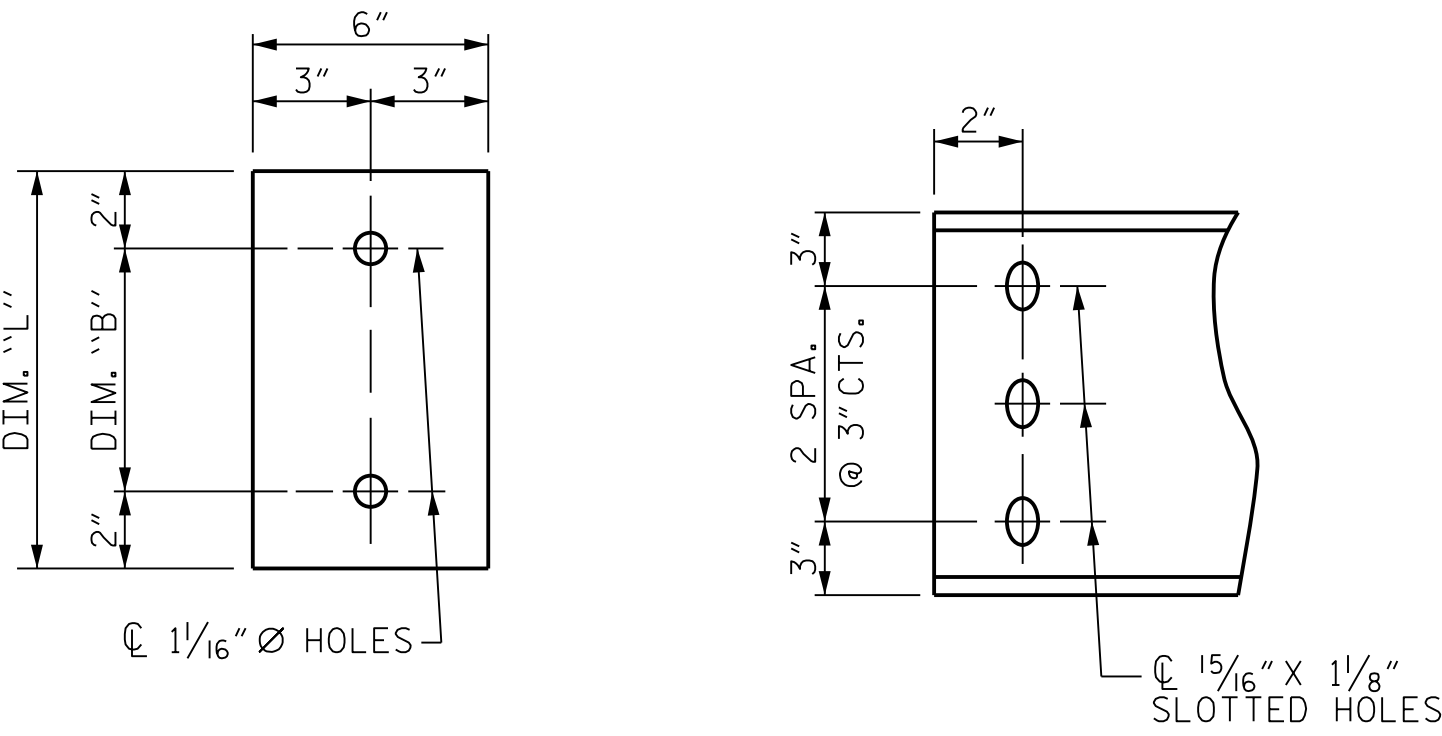
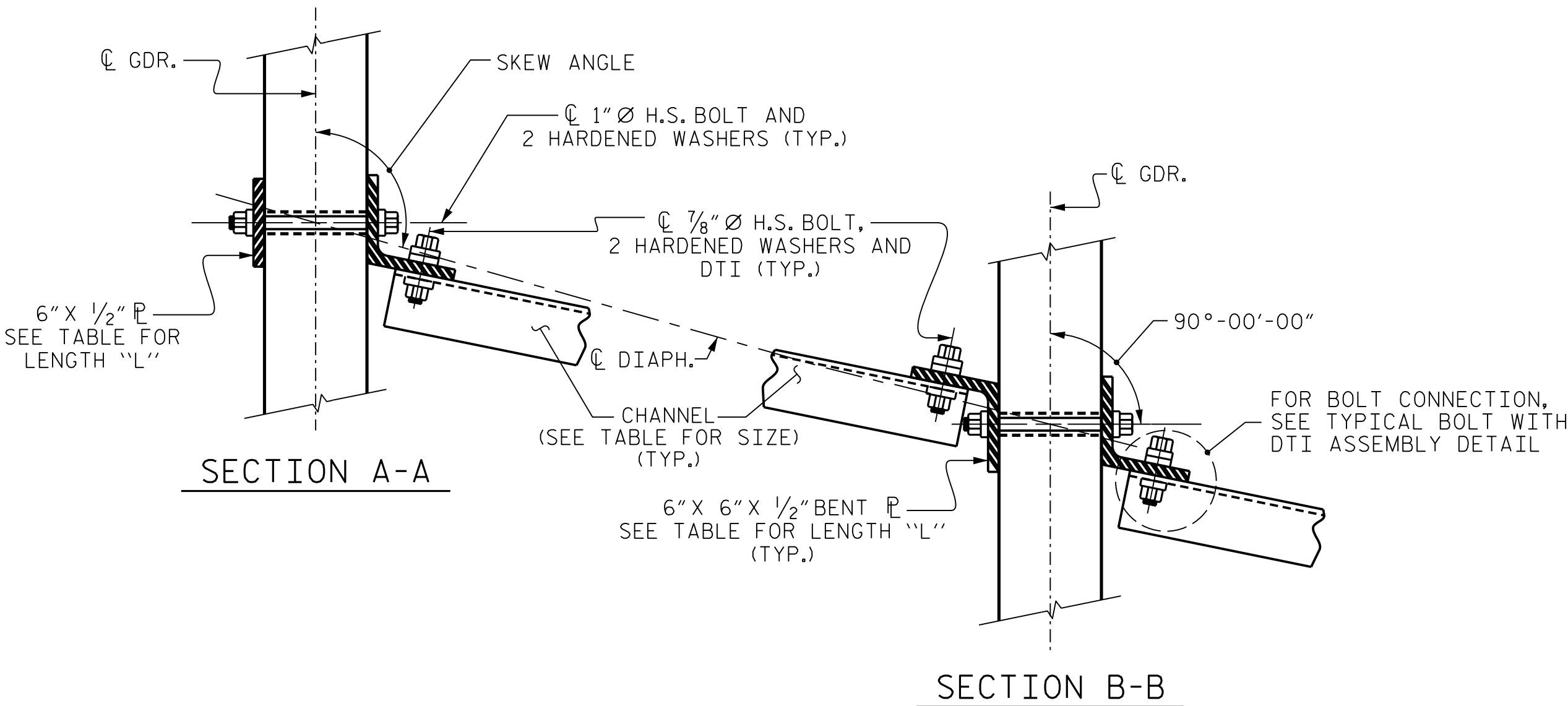
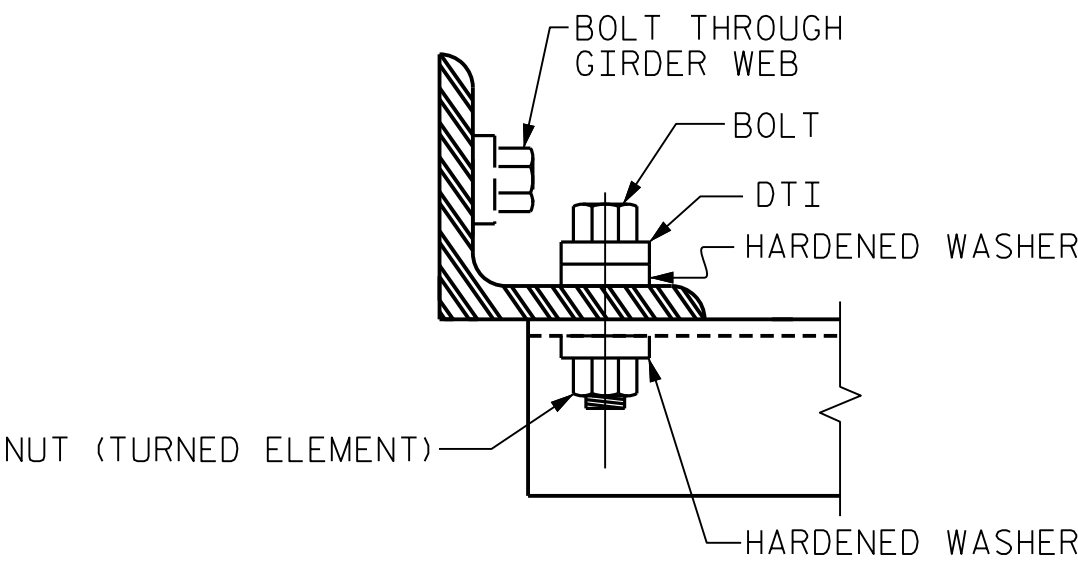


PLATE DETAILS CHANNEL END



CONNECTION DETAILS

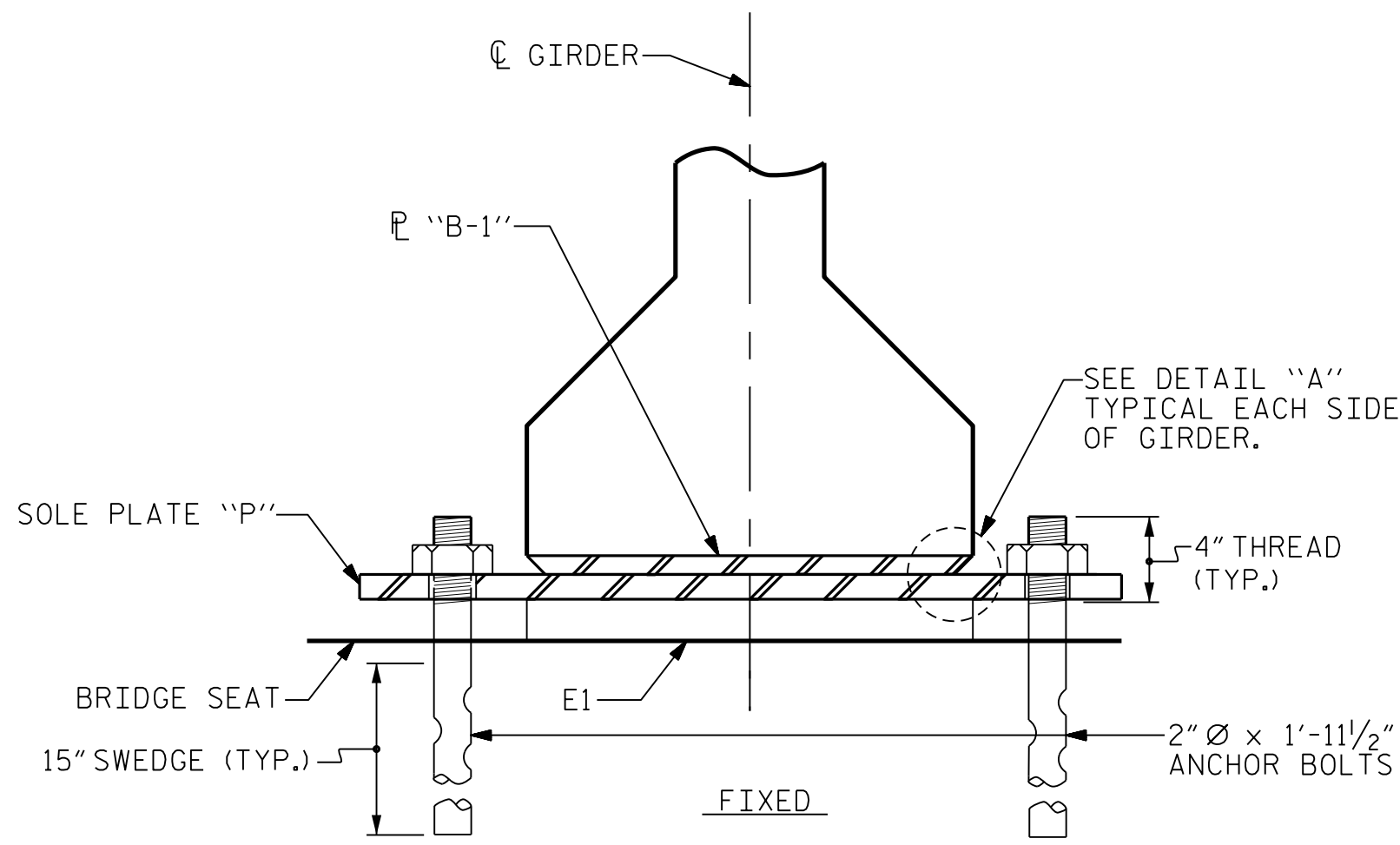


BOLT WITH DTI ASSEMBLY DETAIL

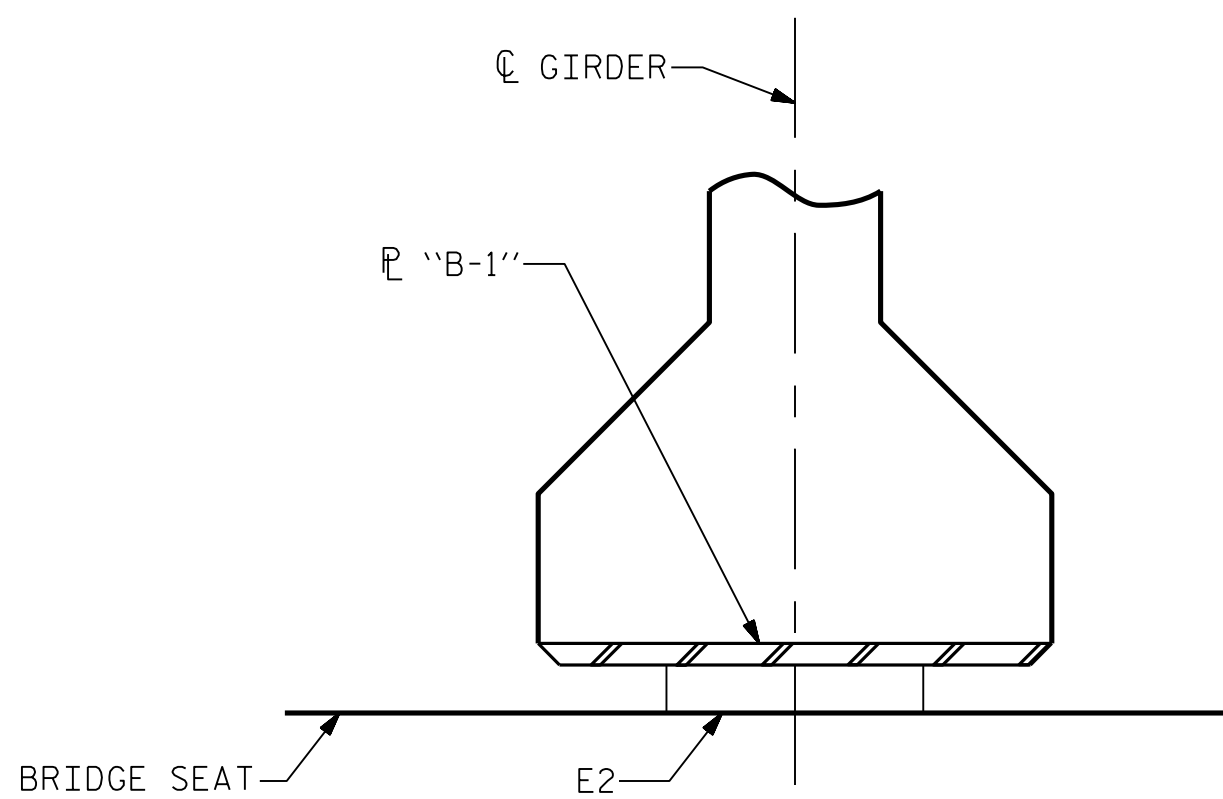
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CHECKED BY : B.E. ATKINSON	DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 04/25

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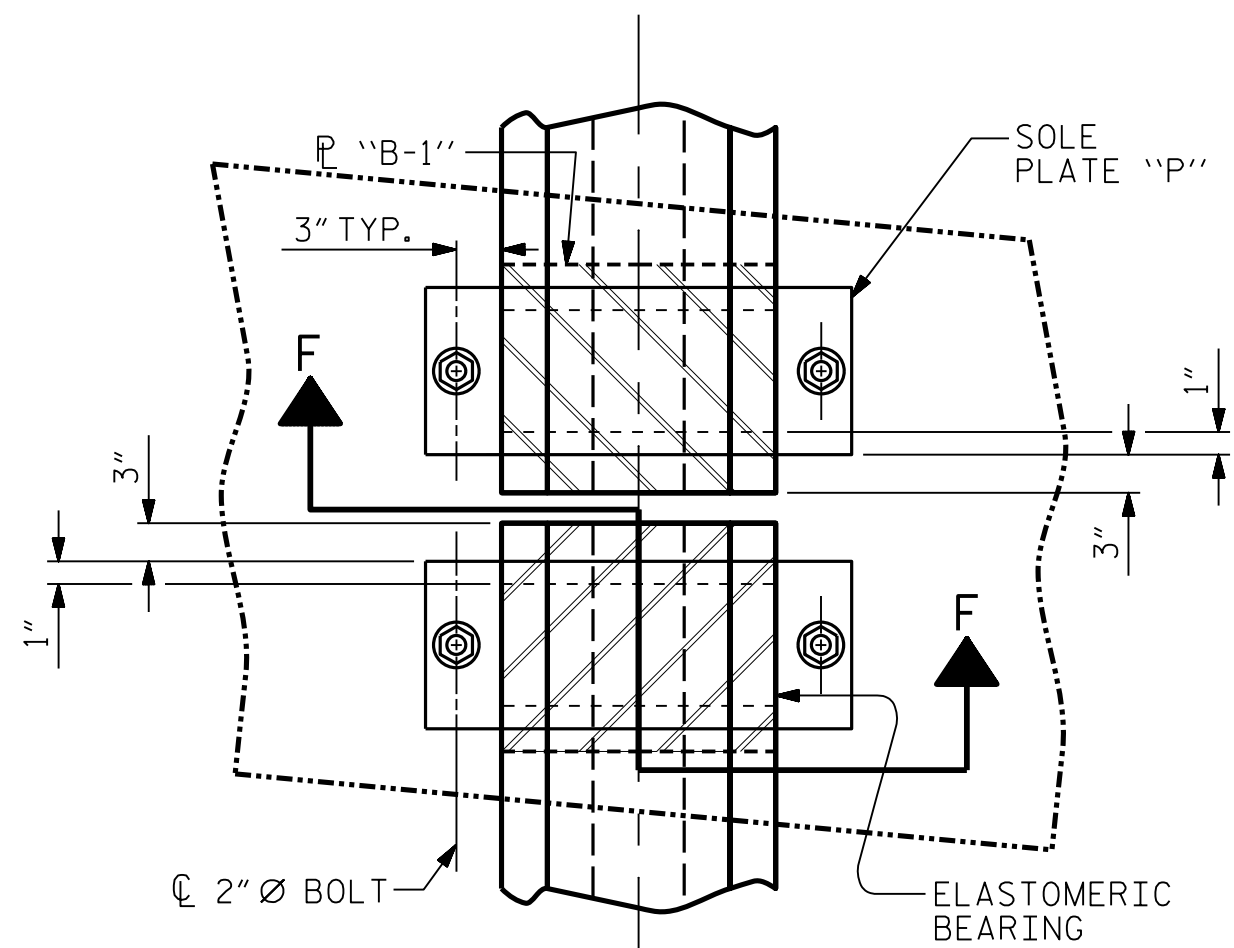
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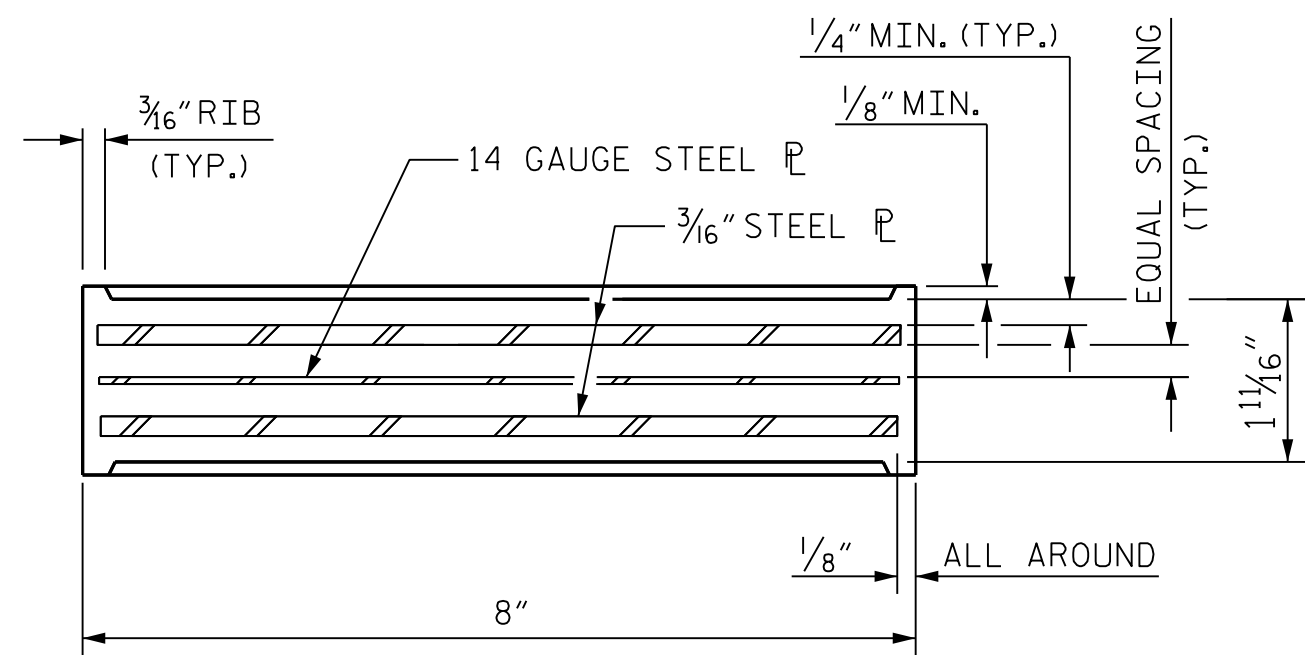
SECTION F-F



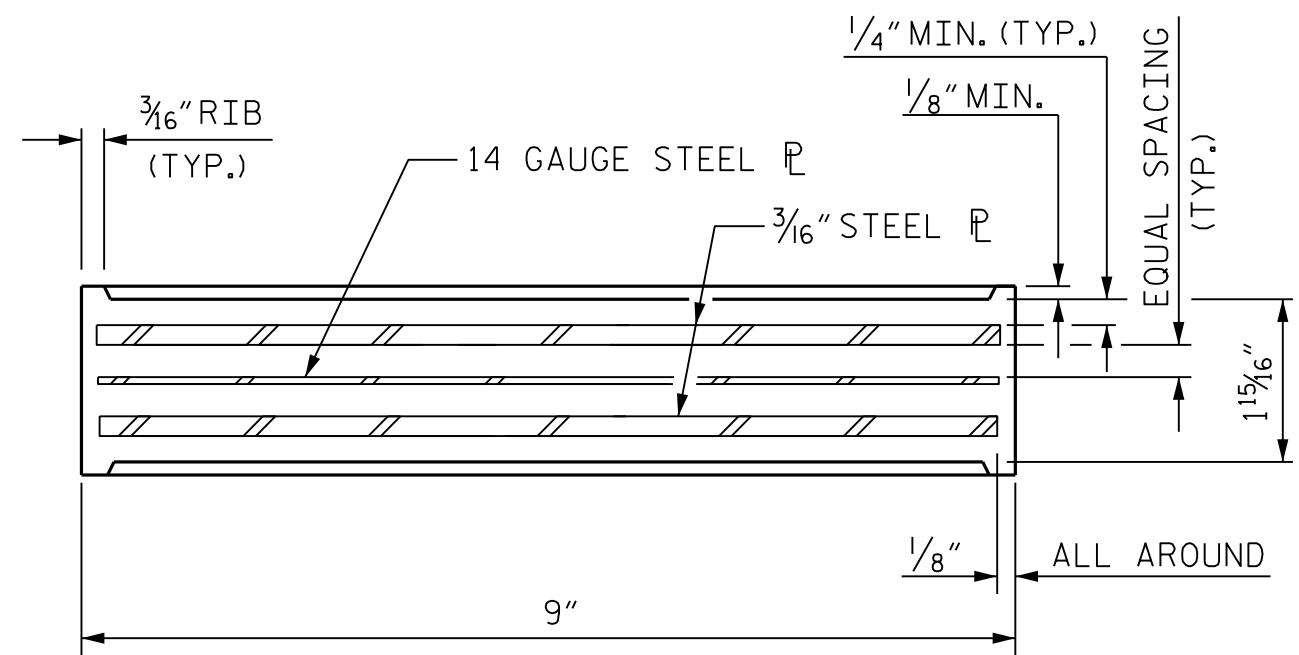
SECTION E-E



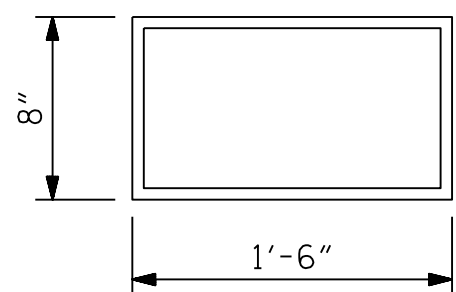
TYPICAL HALF-PLAN
(SHOWING CONTINUOUS BENT)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



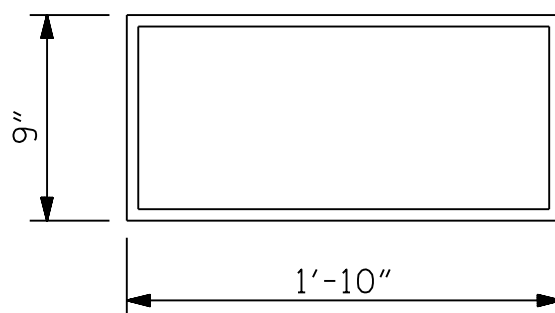
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (8 REQ'D.)

PLAN VIEW OF ELASTOMERIC BEARING

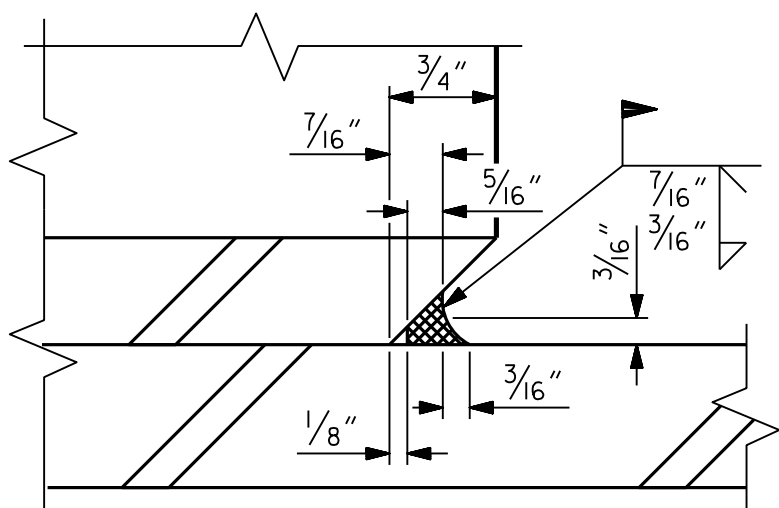
TYPE III



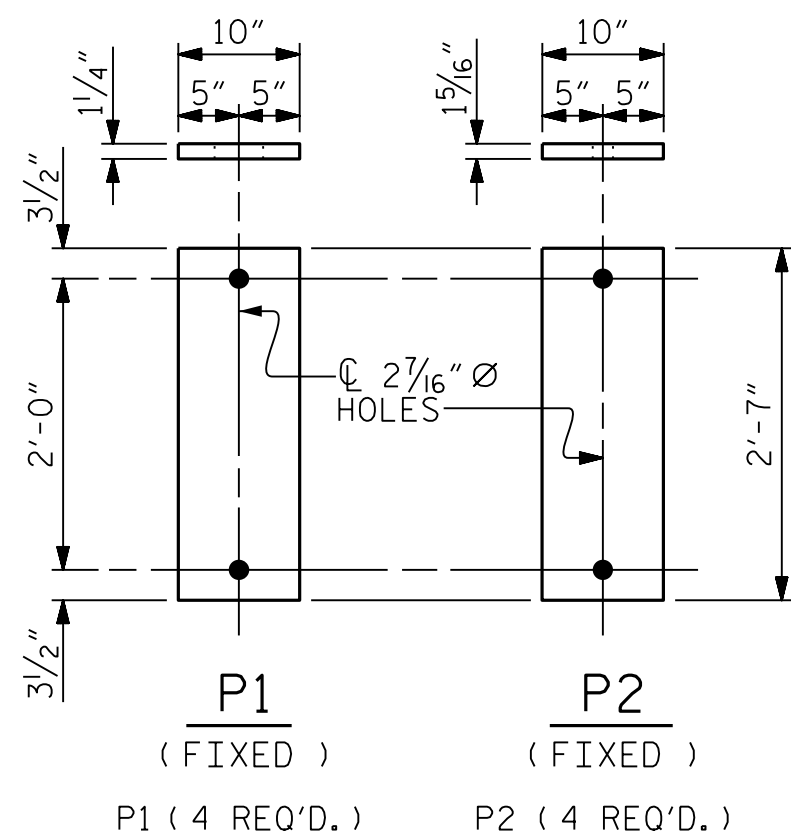
E2 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

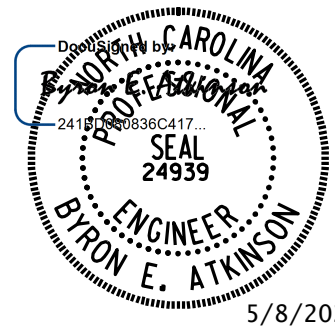


DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k
TYPE IV	225 k



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1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
ELASTOMERIC BEARING DETAILS					
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29

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, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

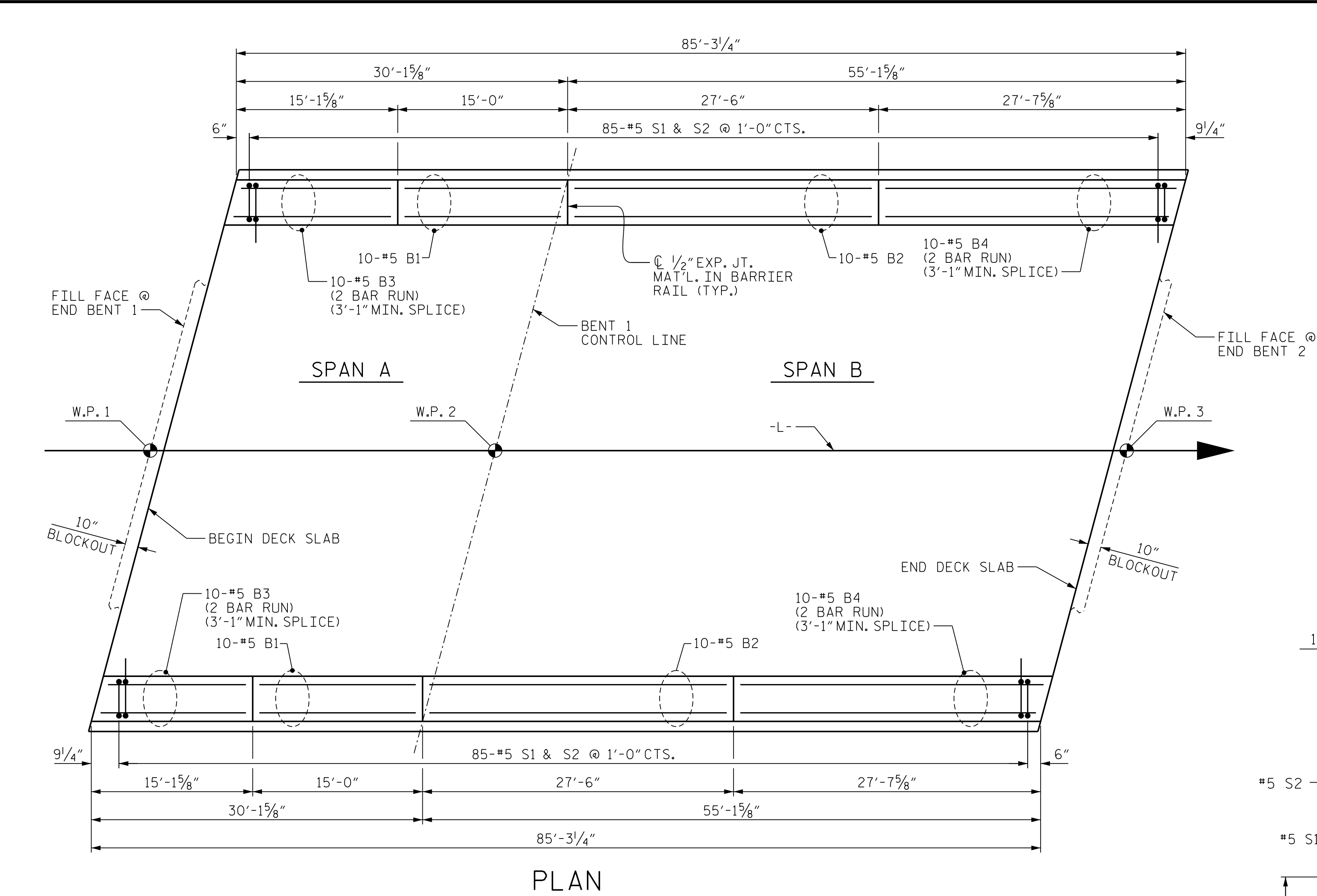
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

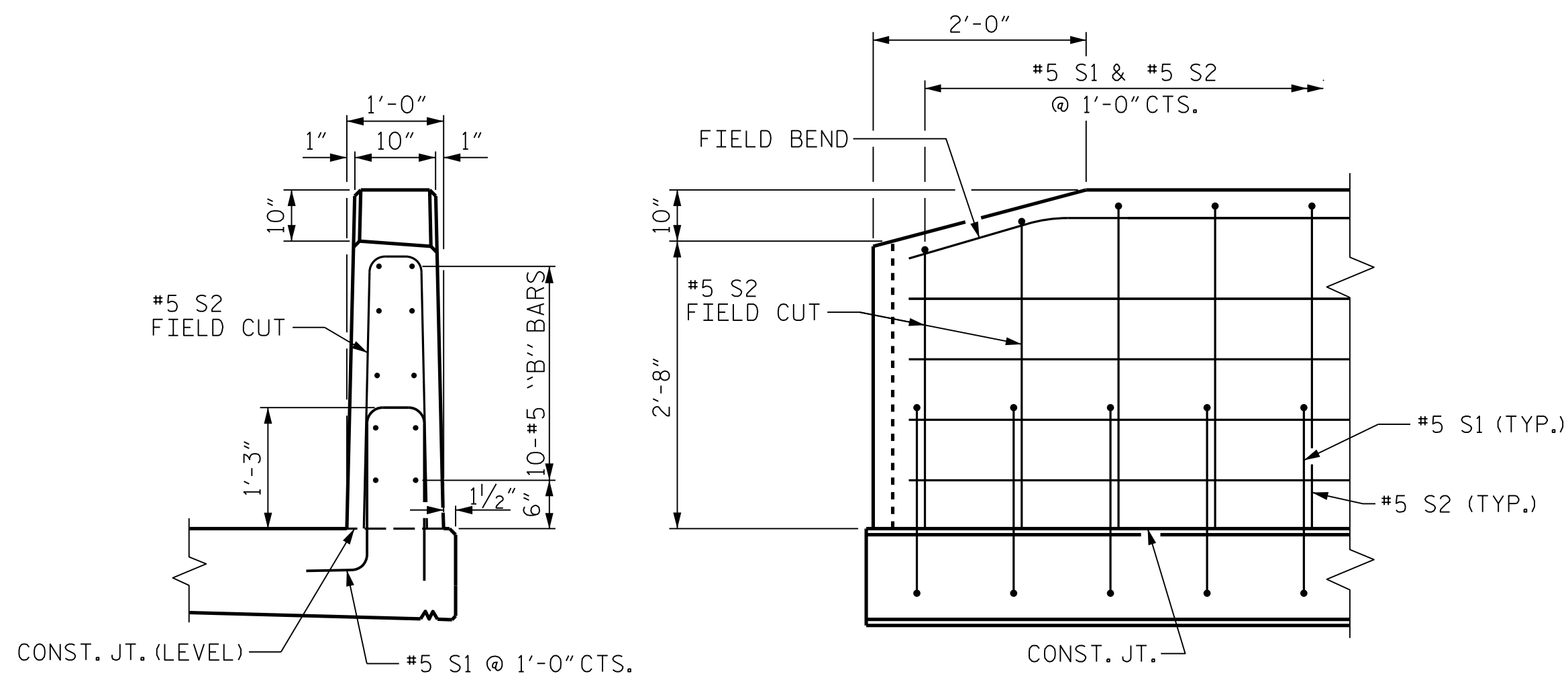
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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PLAN



END VIEW

SIDE VIEW

END OF RAIL DETAILS

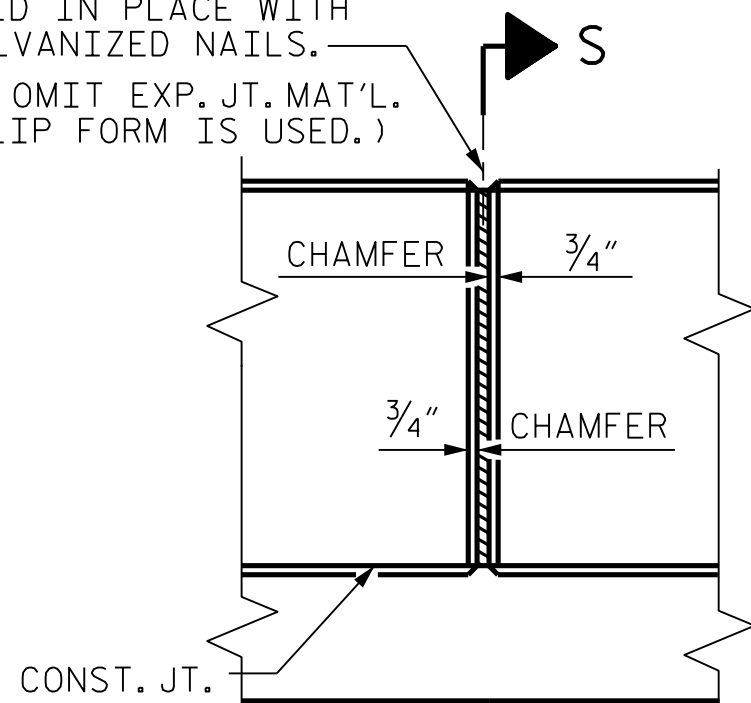
NOTES

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

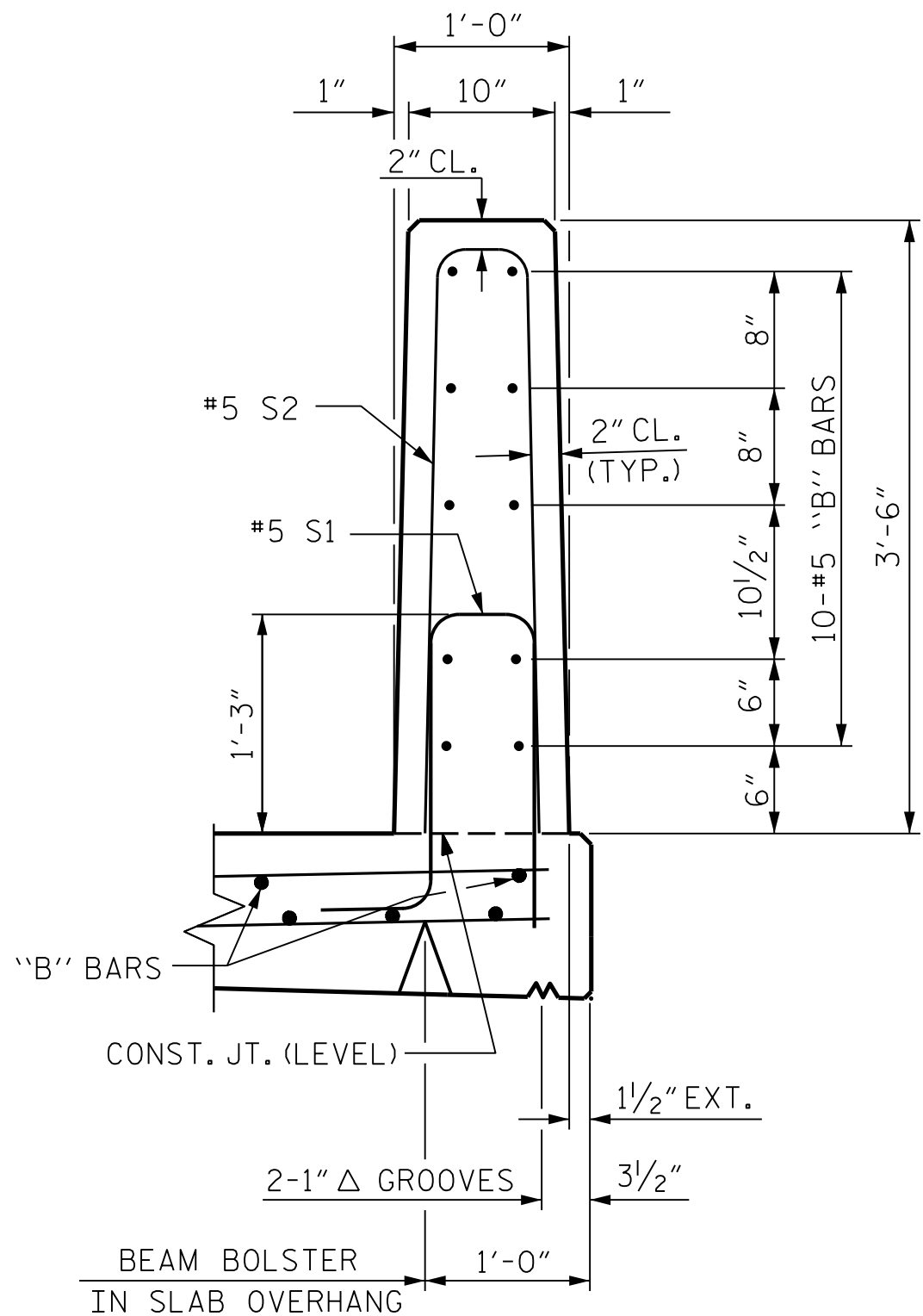
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(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.

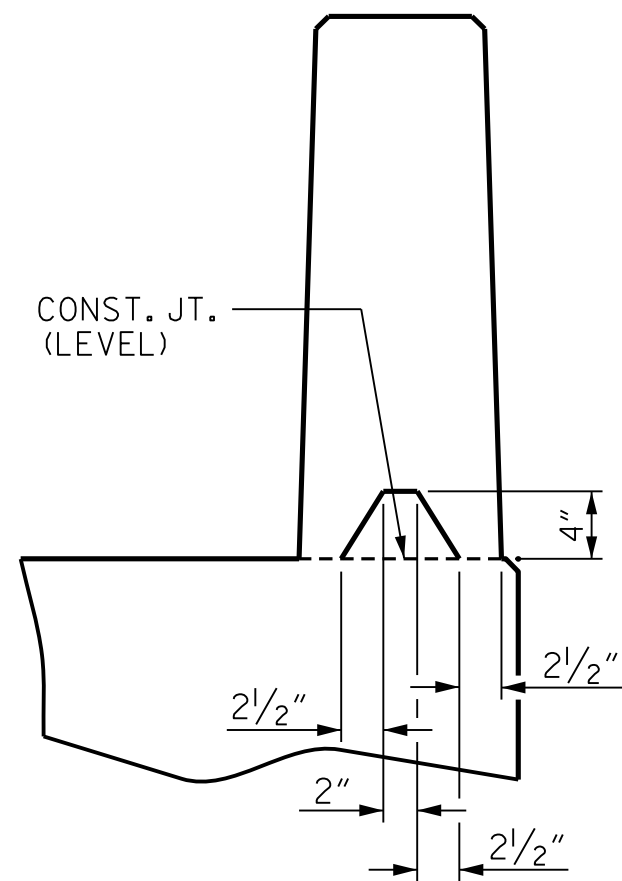
1/2" EXP. JT. MAT'L. HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS



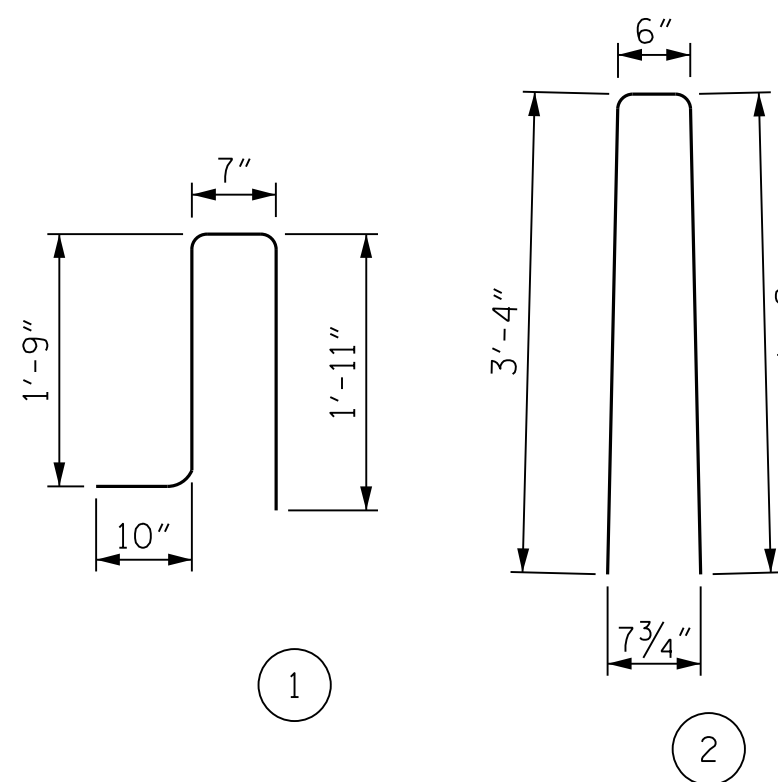
SECTION THRU RAIL



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

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY

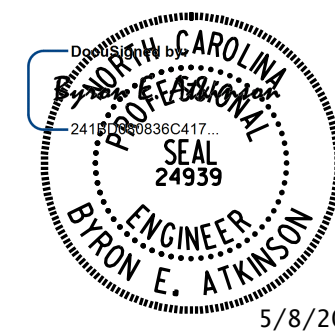
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	20	#5	STR	14'-7"	304
* B2	20	#5	STR	27'-1"	565
* B3	40	#5	STR	9'-3"	386
* B4	40	#5	STR	15'-6"	647
* S1	170	#5	1	5'-1"	901
* S2	170	#5	2	7'-2"	1271

* EPOXY COATED REINFORCING STEEL 4074 LBS.
CLASS AA CONCRETE 20.2 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL 170.54 LIN. FT.

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

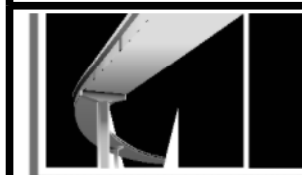
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

VERTICAL
CONCRETE
BARRIER RAIL



5/8/2025

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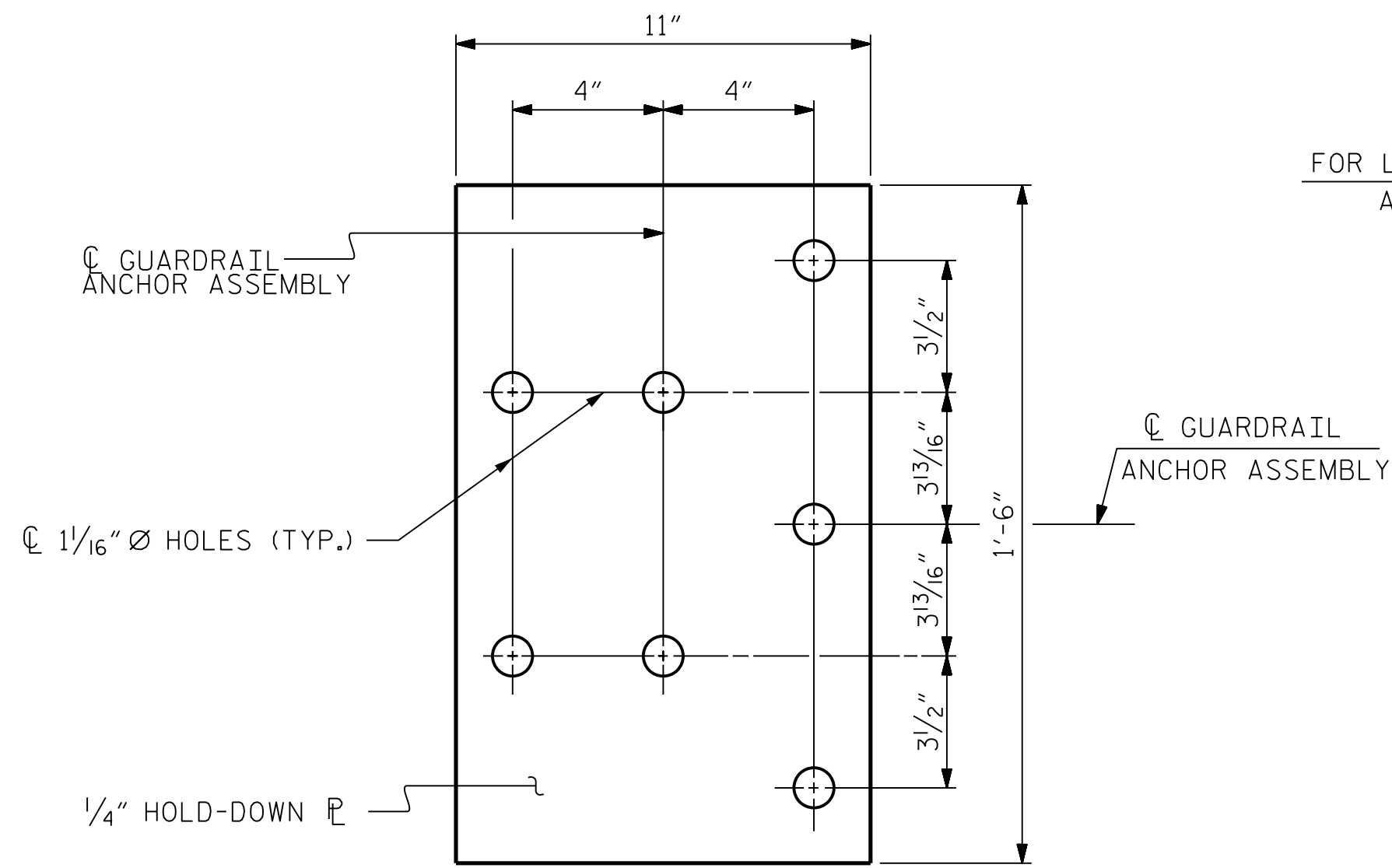
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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TOTAL SHEETS
29

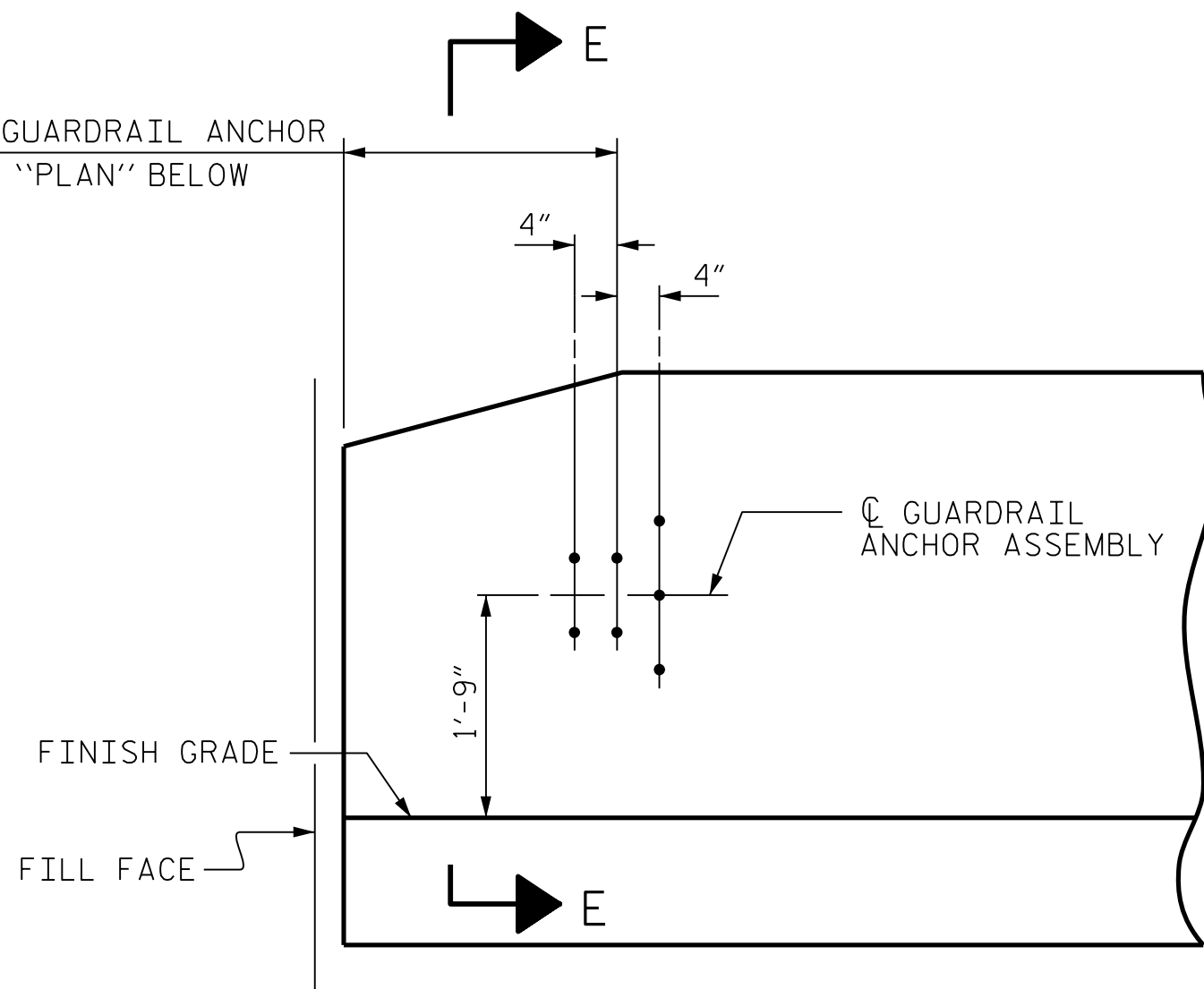
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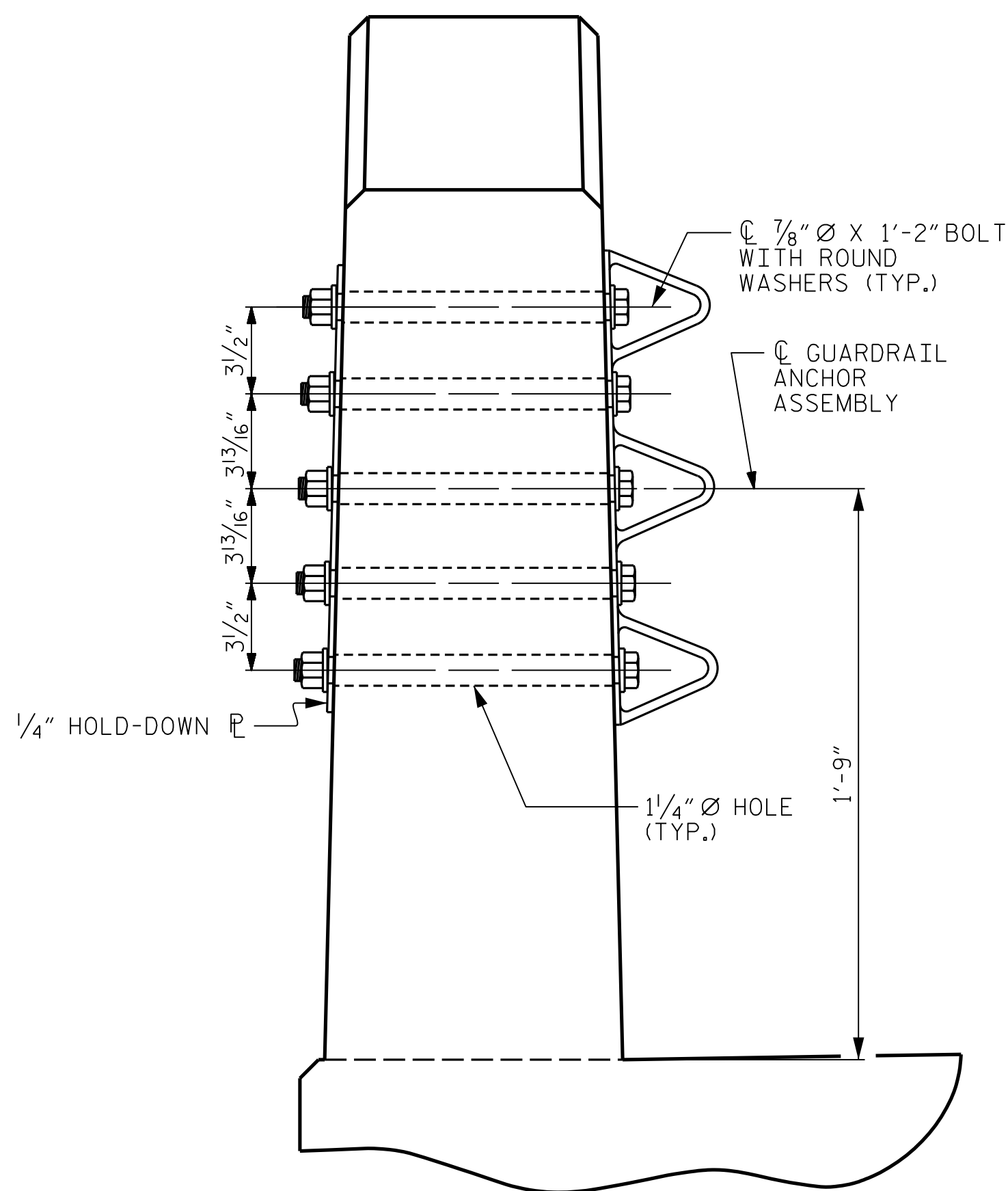


PLAN

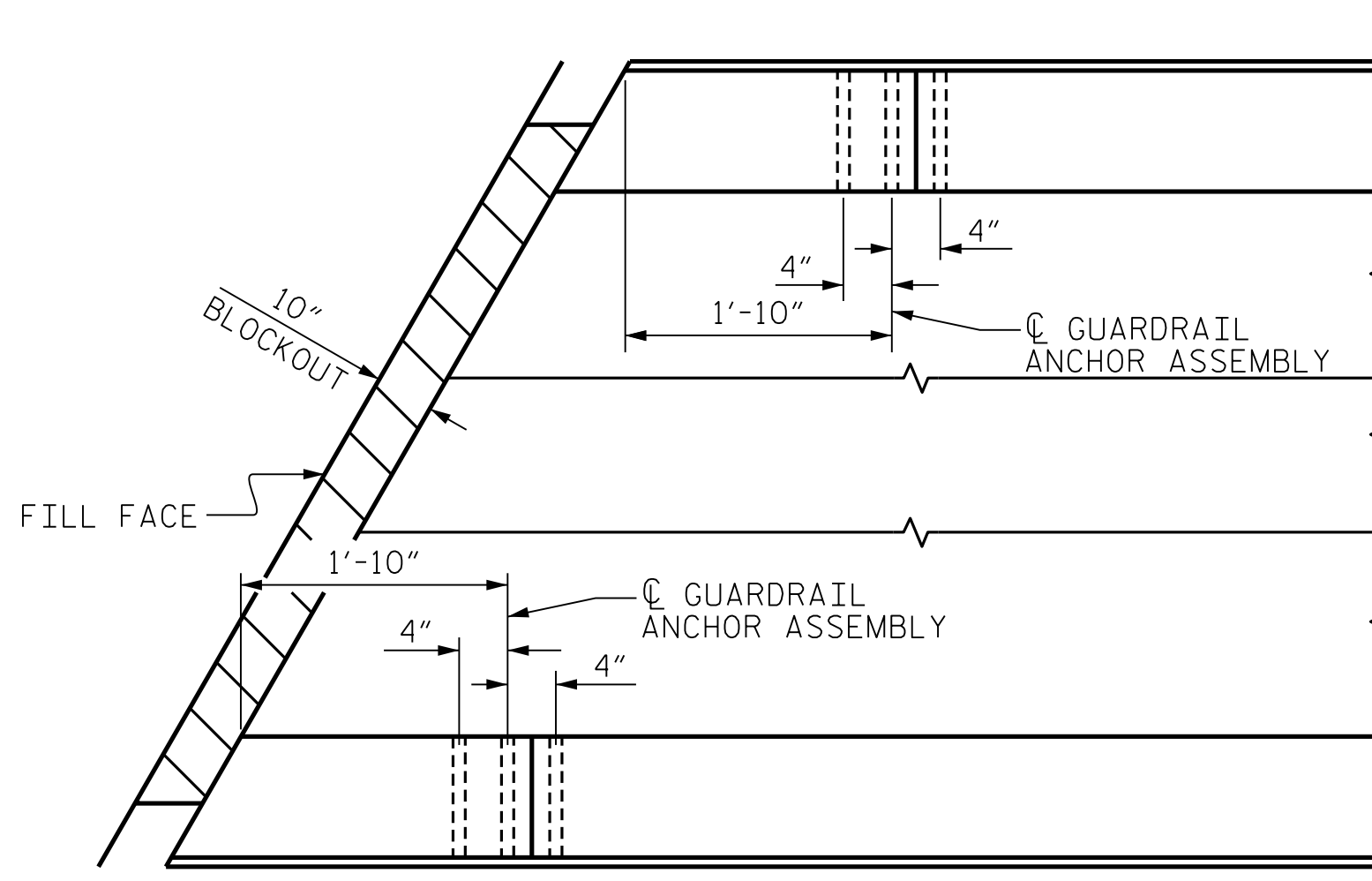
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



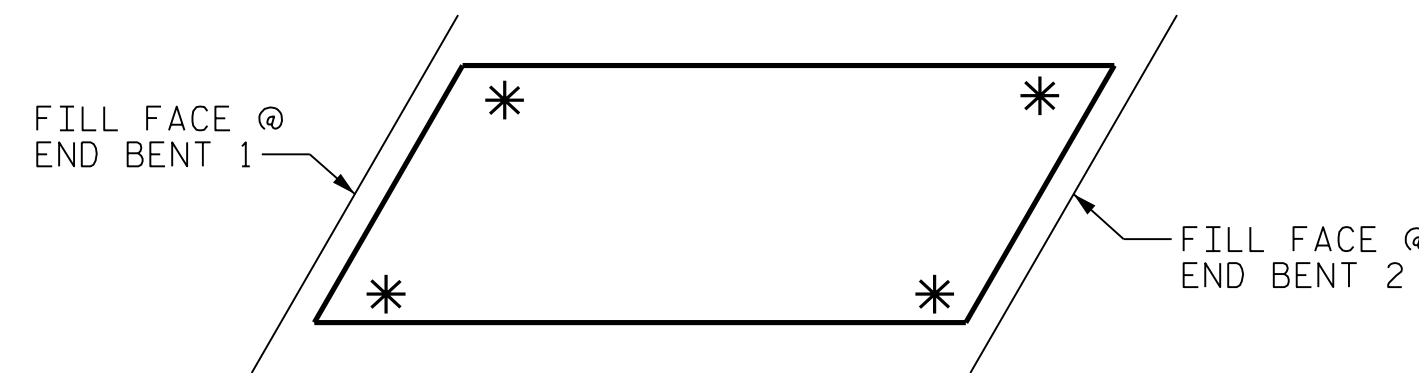
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF
ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING
POINTS FOR ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

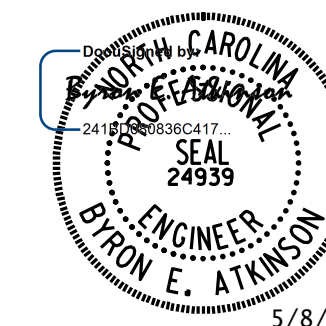
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

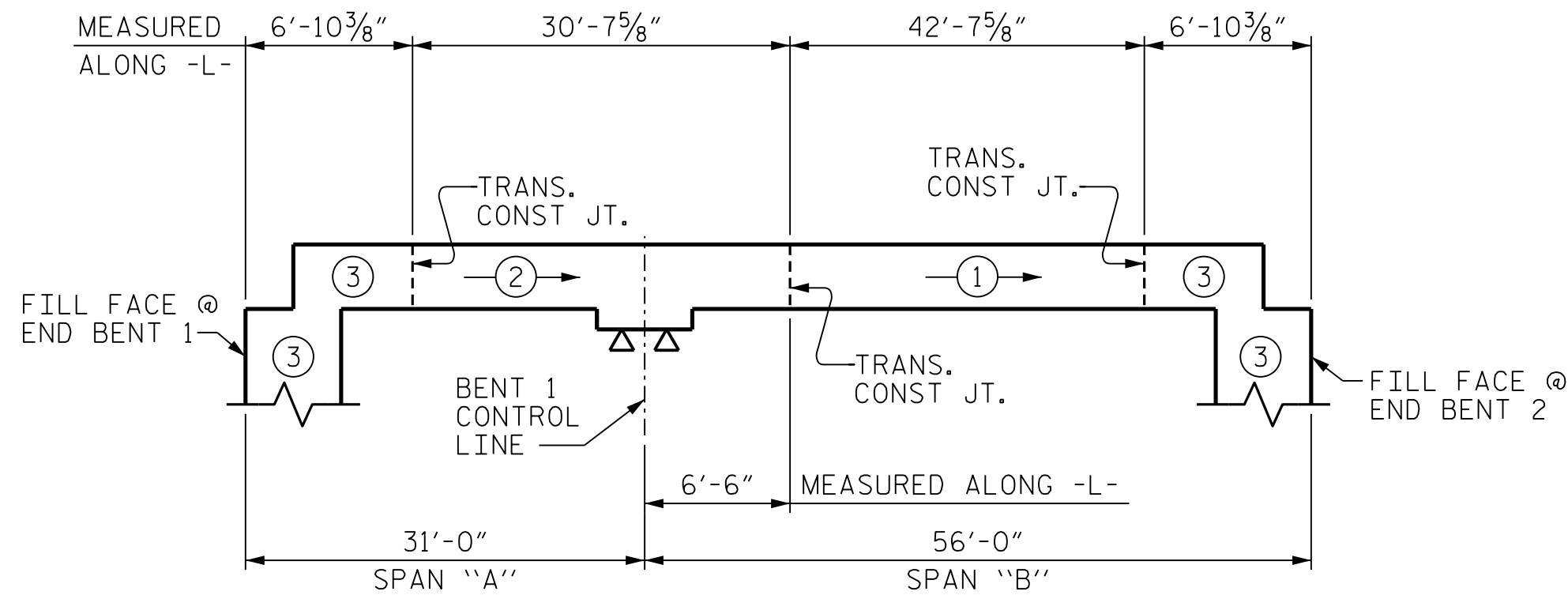
GUARDRAIL ANCHORAGE
FOR VERTICAL CONCRETE
BARRIER RAIL

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			

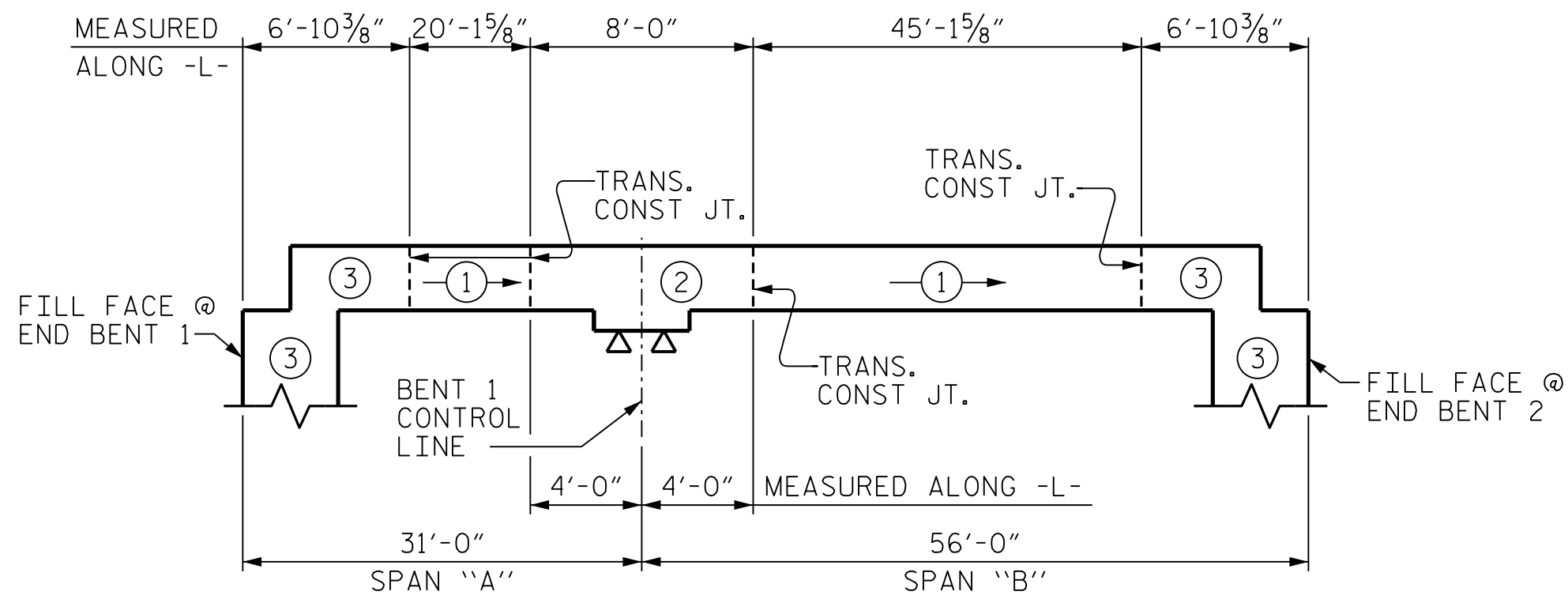
TOTAL
SHEETS
29

5/7/2025 7:24:12 PM User: blanning
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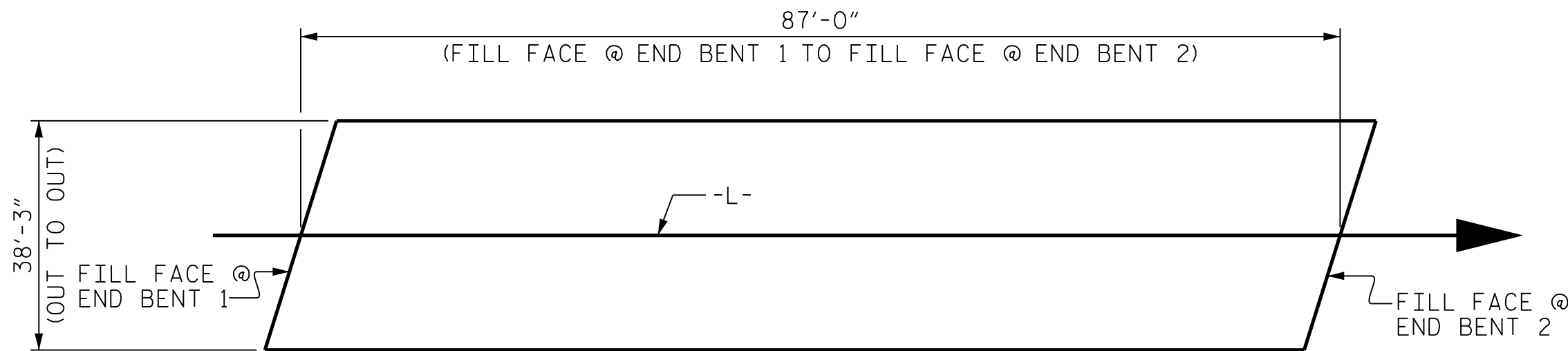
POURING SEQUENCE

⊕ INDICATES POUR NUMBER AND DIRECTION OF POUR



OPTIONAL POURING SEQUENCE

POUR ② SHALL NOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3,000 PSI.

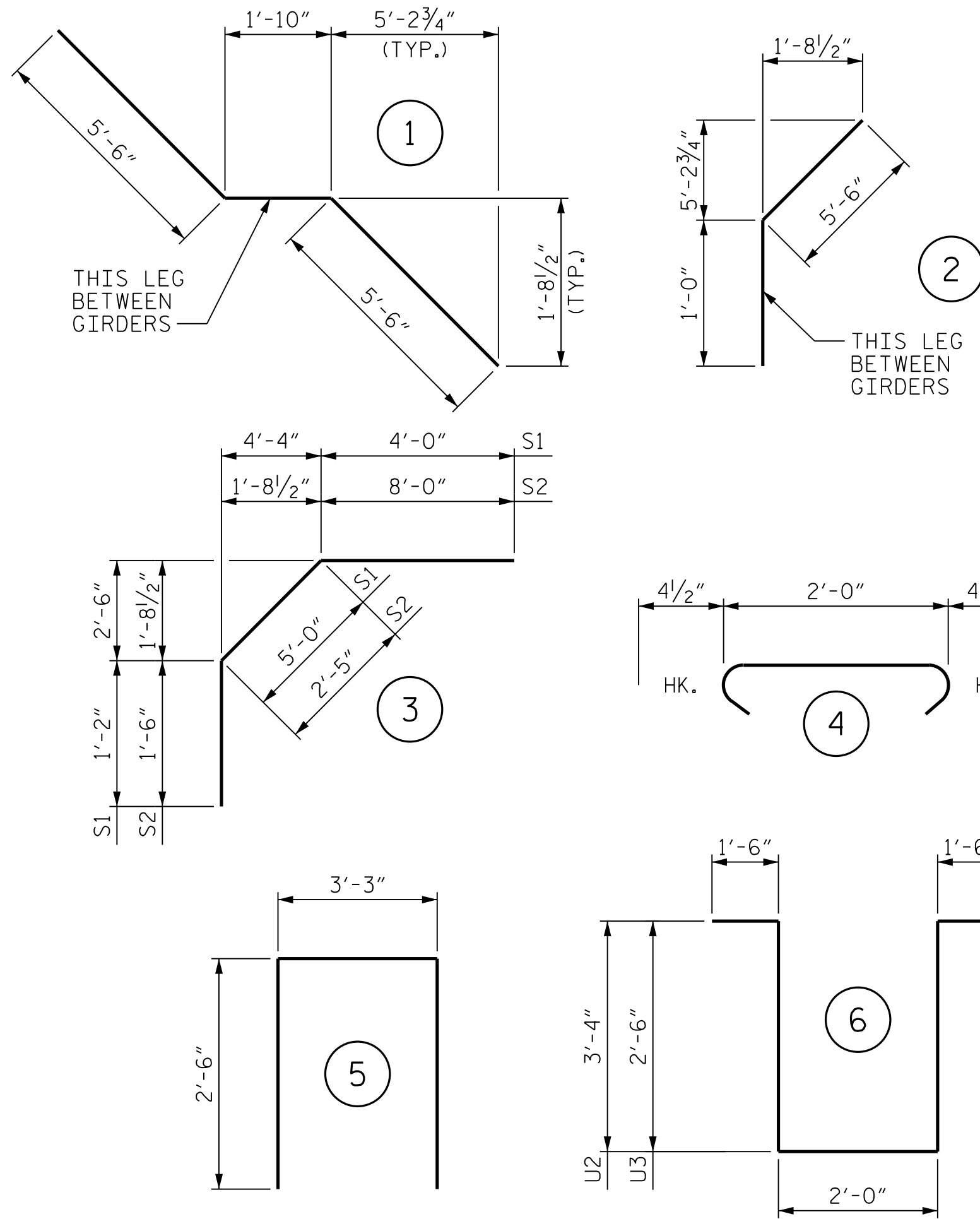


LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3328)

REINFORCING BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	164	#5	STR	37'-11"	6486	*B1	26	#5	STR	52'-0"	1410
A2	164	#5	STR	37'-11"	6486	*B2	75	#5	STR	9'-3"	724
						*B3	75	#5	STR	23'-0"	1799
*A101	2	#5	STR	36'-2"	75	*B4	26	#4	STR	27'-7"	479
*A102	2	#5	STR	34'-6"	72	*B5	101	#5	STR	11'-3"	1185
*A103	2	#5	STR	32'-9"	68	B6	106	#5	STR	43'-7"	4818
*A104	2	#5	STR	31'-1"	65						
*A105	2	#5	STR	29'-4"	61	K1	16	#4	STR	20'-7"	220
*A106	2	#5	STR	27'-7"	58	K2	6	#4	STR	9'-0"	36
*A107	2	#5	STR	25'-11"	54	K3	24	#4	STR	10'-1"	162
*A108	2	#5	STR	24'-2"	50	K4	12	#4	STR	9'-6"	76
*A109	2	#5	STR	22'-6"	47	K5	4	#4	STR	2'-2"	6
*A110	2	#5	STR	20'-9"	43	K6	8	#4	STR	2'-9"	15
*A111	2	#5	STR	19'-1"	40	K7	4	#4	STR	2'-6"	7
*A112	2	#5	STR	17'-4"	36	K8	6	#4	STR	8'-4"	33
*A113	2	#5	STR	15'-8"	33	K9	8	#4	1	12'-10"	69
*A114	2	#5	STR	13'-11"	29	K10	8	#4	2	6'-6"	35
*A115	2	#5	STR	12'-3"	26						
*A116	2	#5	STR	10'-6"	22	*S1	72	#4	3	10'-2"	489
*A117	2	#5	STR	8'-10"	18	*S2	72	#4	3	11'-11"	573
*A118	2	#5	STR	7'-1"	15	S3	84	#4	4	2'-9"	154
*A119	2	#5	STR	5'-5"	11						
*A120	2	#5	STR	3'-8"	8	U1	72	#4	5	8'-3"	397
						U2	24	#4	6	11'-8"	187
						U3	6	#4	6	10'-0"	40
A201	2	#5	STR	36'-2"	75						
A202	2	#5	STR	34'-6"	72						
A203	2	#5	STR	32'-9"	68						
A204	2	#5	STR	31'-1"	65						
A205	2	#5	STR	29'-4"	61						
A206	2	#5	STR	27'-7"	58						
A207	2	#5	STR	25'-11"	54						
A208	2	#5	STR	24'-2"	50						
A209	2	#5	STR	22'-6"	47						
A210	2	#5	STR	20'-9"	43						
A211	2	#5	STR	19'-1"	40						
A212	2	#5	STR	17'-4"	36						
A213	2	#5	STR	15'-8"	33						
A214	2	#5	STR	13'-11"	29						
A215	2	#5	STR	12'-3"	26						
A216	2	#5	STR	10'-6"	22						
A217	2	#5	STR	8'-10"	18						
A218	2	#5	STR	7'-1"	15						
A219	2	#5	STR	5'-5"	11						
A220	2	#5	STR	3'-8"	8						

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

GROOVING BRIDGE FLOORS

APPROACH SLABS	736 SQ.FT.
BRIDGE DECK	2803 SQ.FT.
TOTAL	3539 SQ.FT.

—SUPERSTRUCTURE BILL OF MATERIAL—

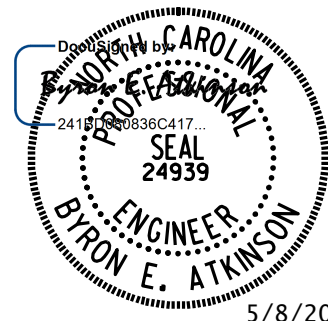
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	53.6	-	-
POUR #2	47.3	-	-
POUR #3	47.1	-	-
TOTALS**	148.0	13,572	13,976

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

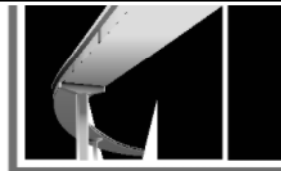
PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL



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MI ENGINEERING
1011 SCHAUH DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

SHEET NO.
S-18
TOTAL SHEETS
29

DRAWN BY : B.E. LANNING DATE : 03/2025
CHECKED BY : B.E. ATKINSON DATE : 03/2025
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

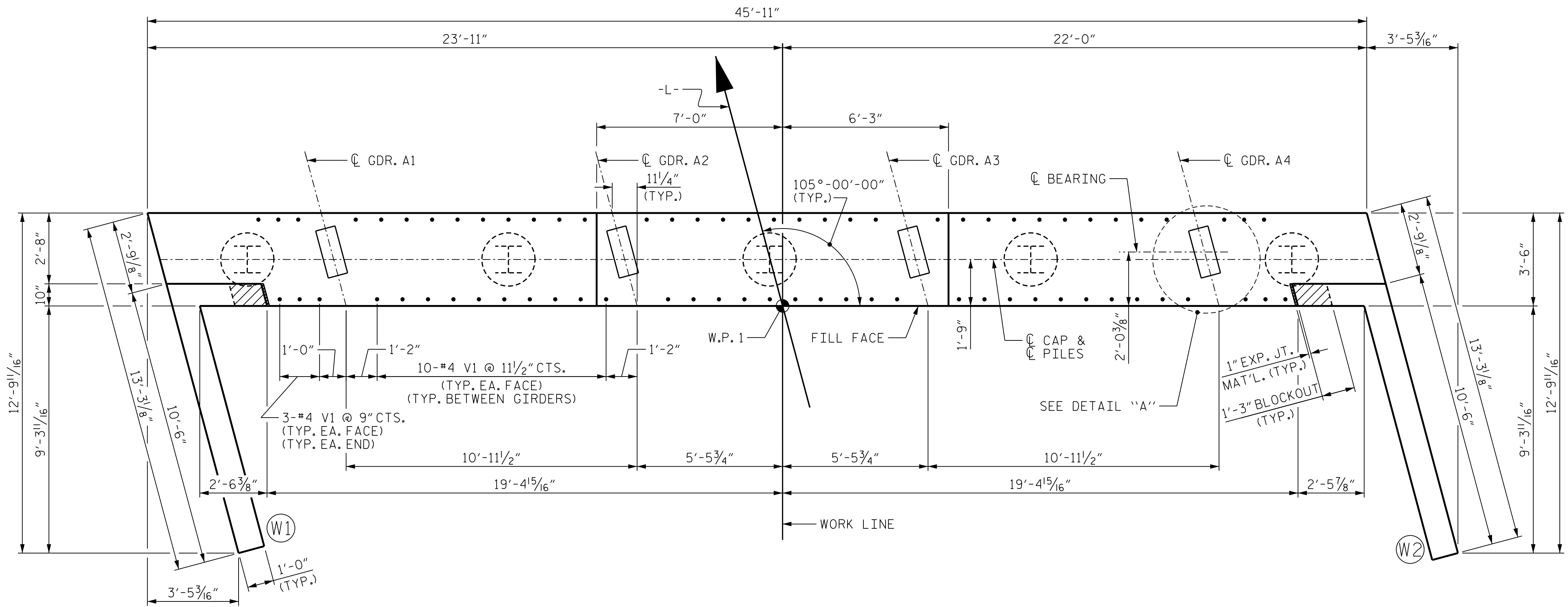
NOTES

THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA SHALL BE RAKED TO A DEPTH OF 1/4".

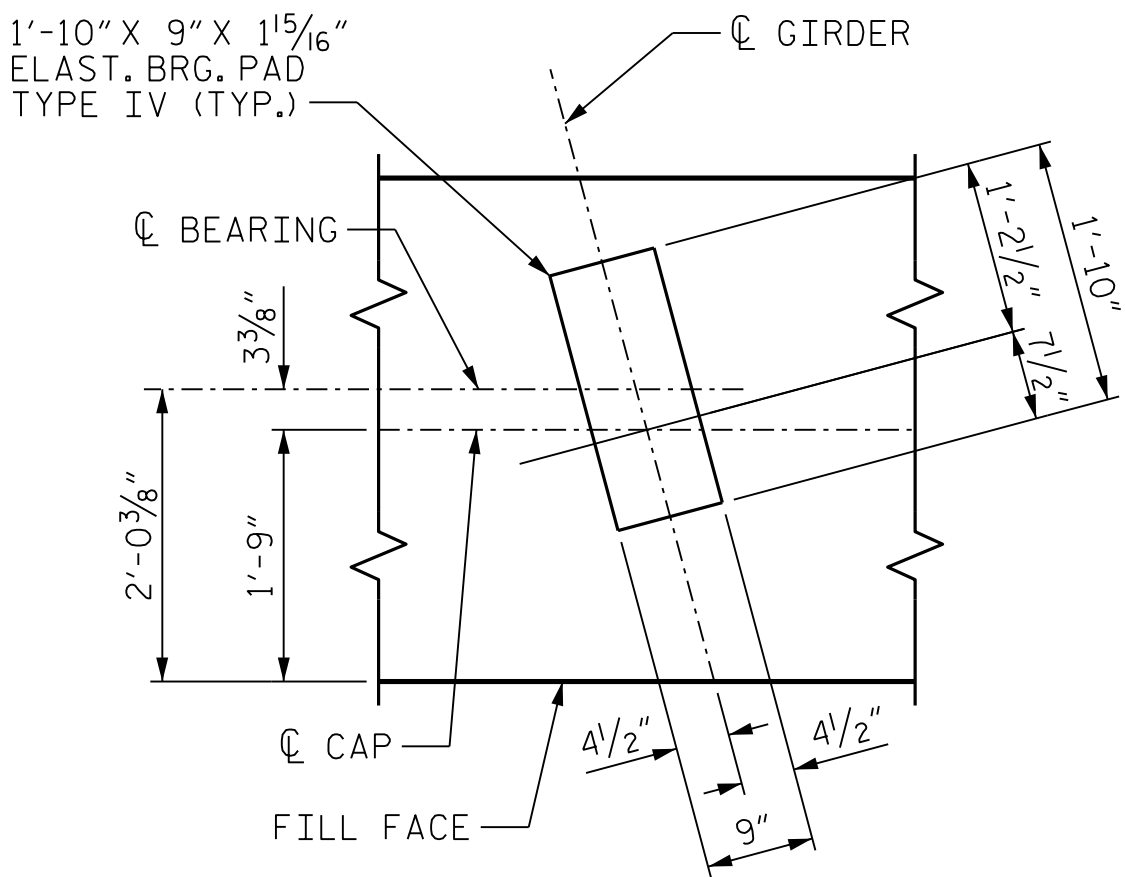
FOR SECTION A-A, PILE SPLICE DETAILS AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

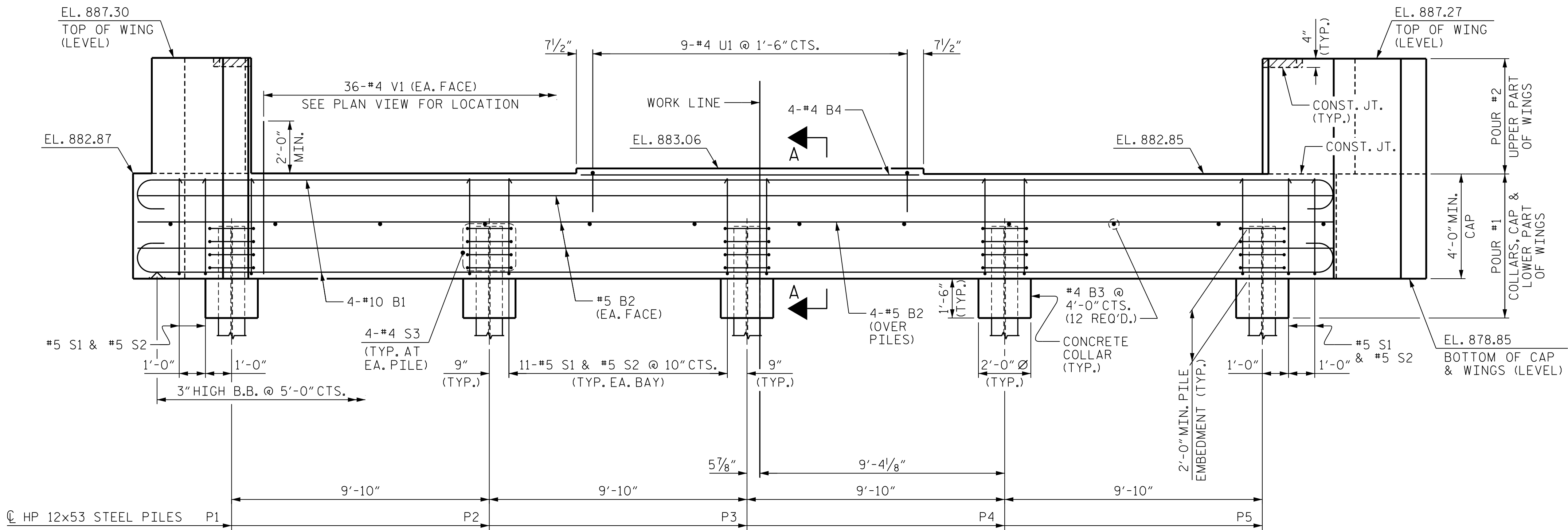
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.



PLAN



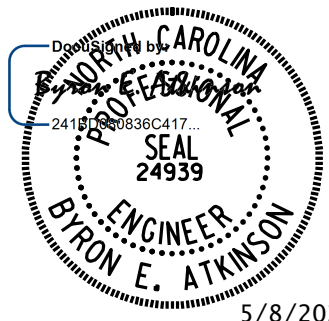
DETAIL "A"
(TYP. AT EACH BEARING)



ELEVATION

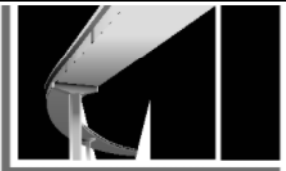
PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 1 OF 3



5/8/2025

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

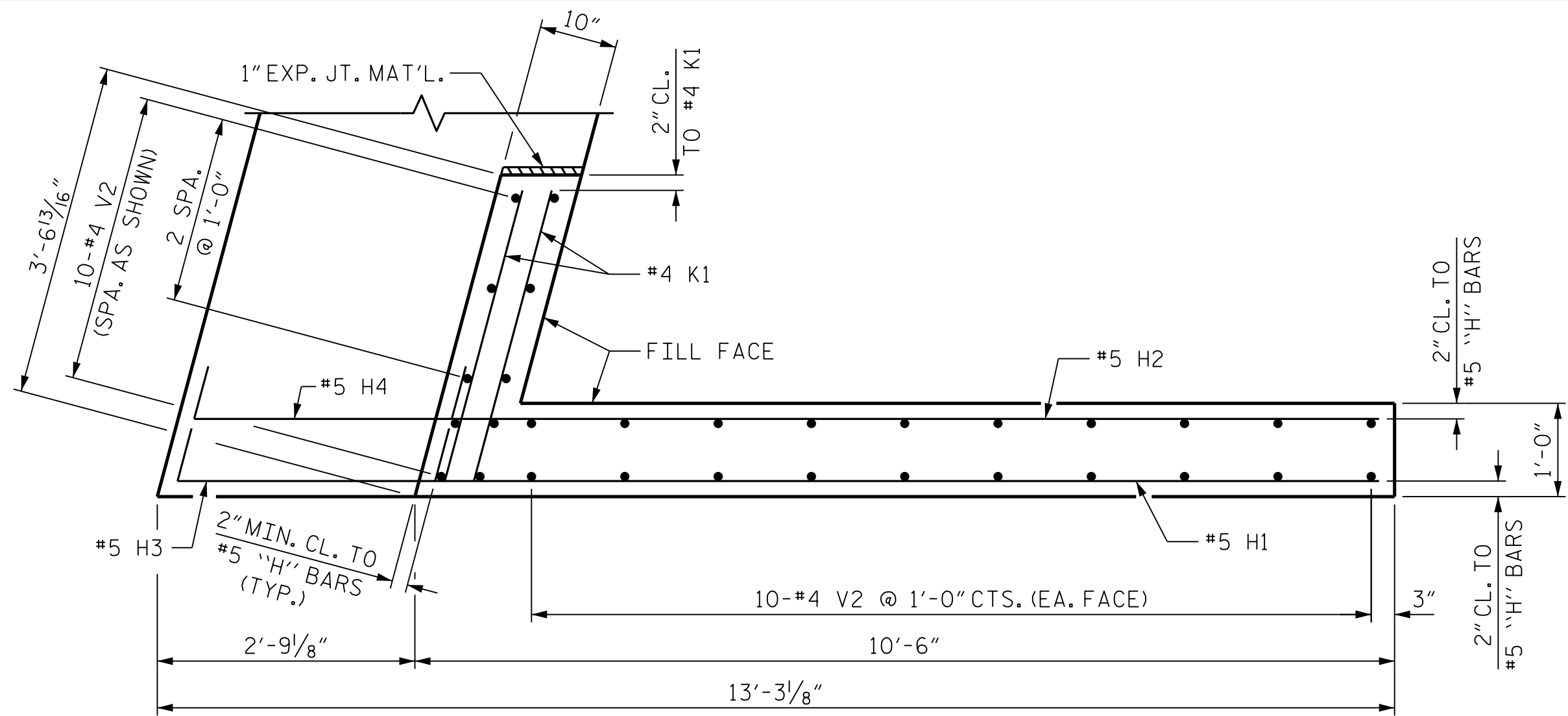
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION

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

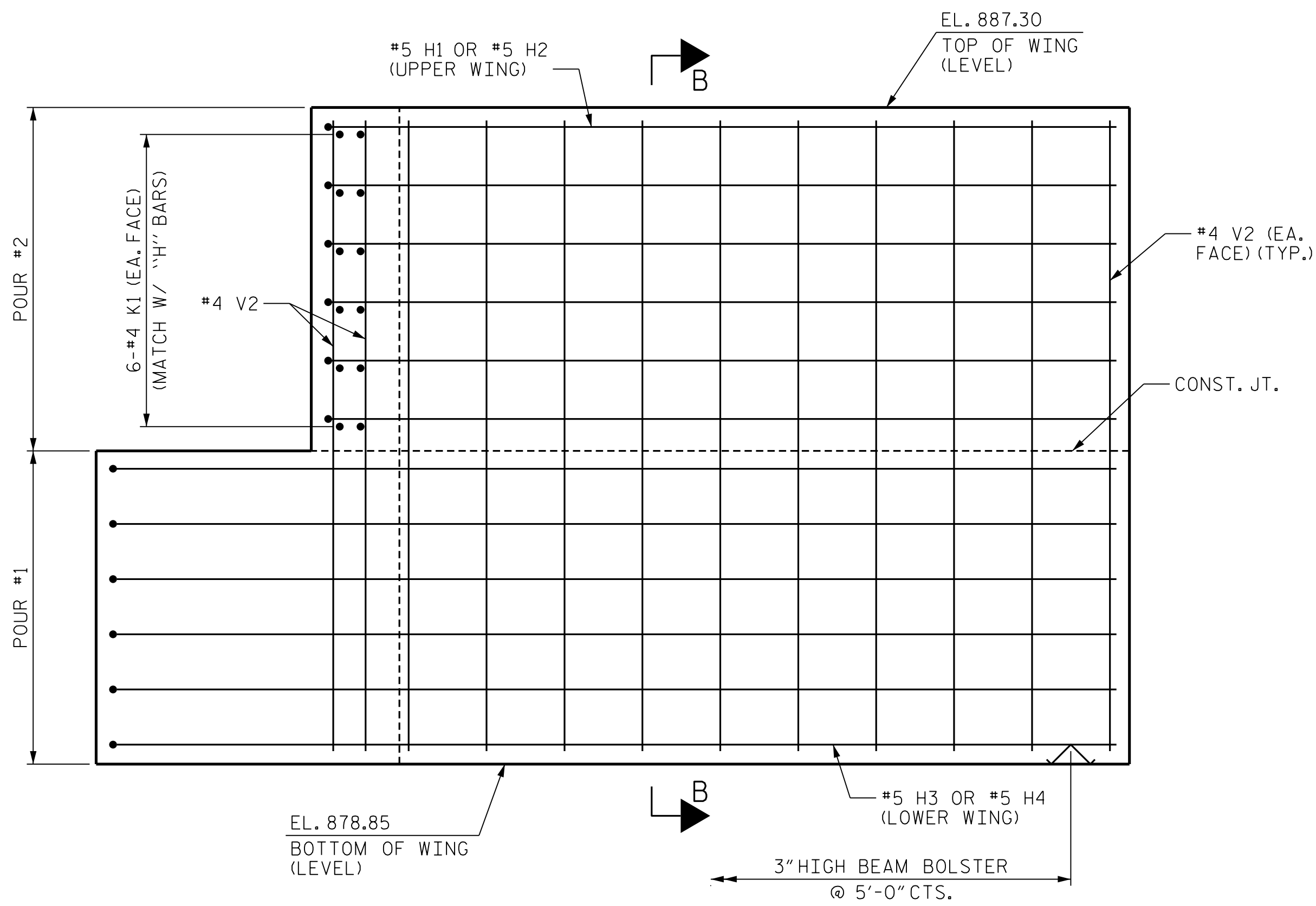
SHEET NO.
S-19
TOTAL
SHEETS
29

DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

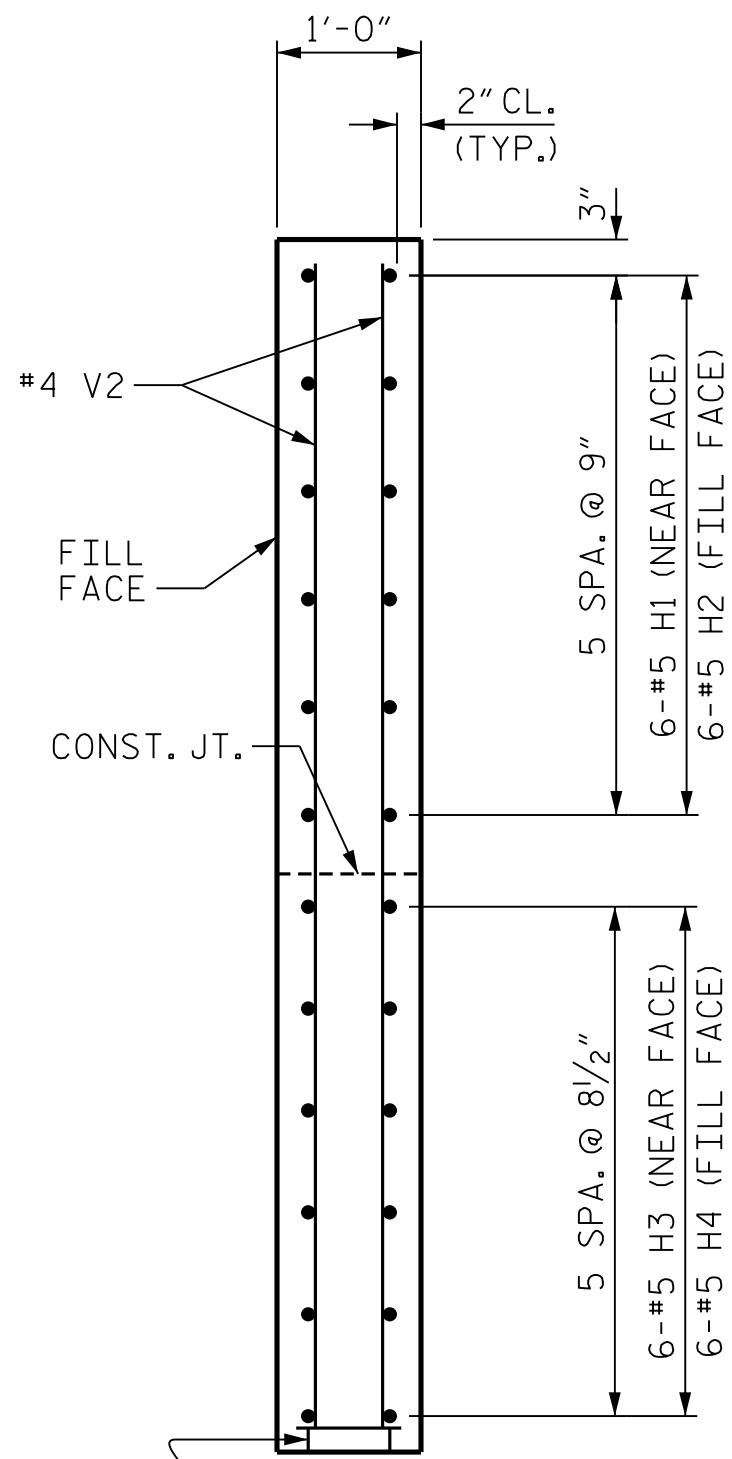
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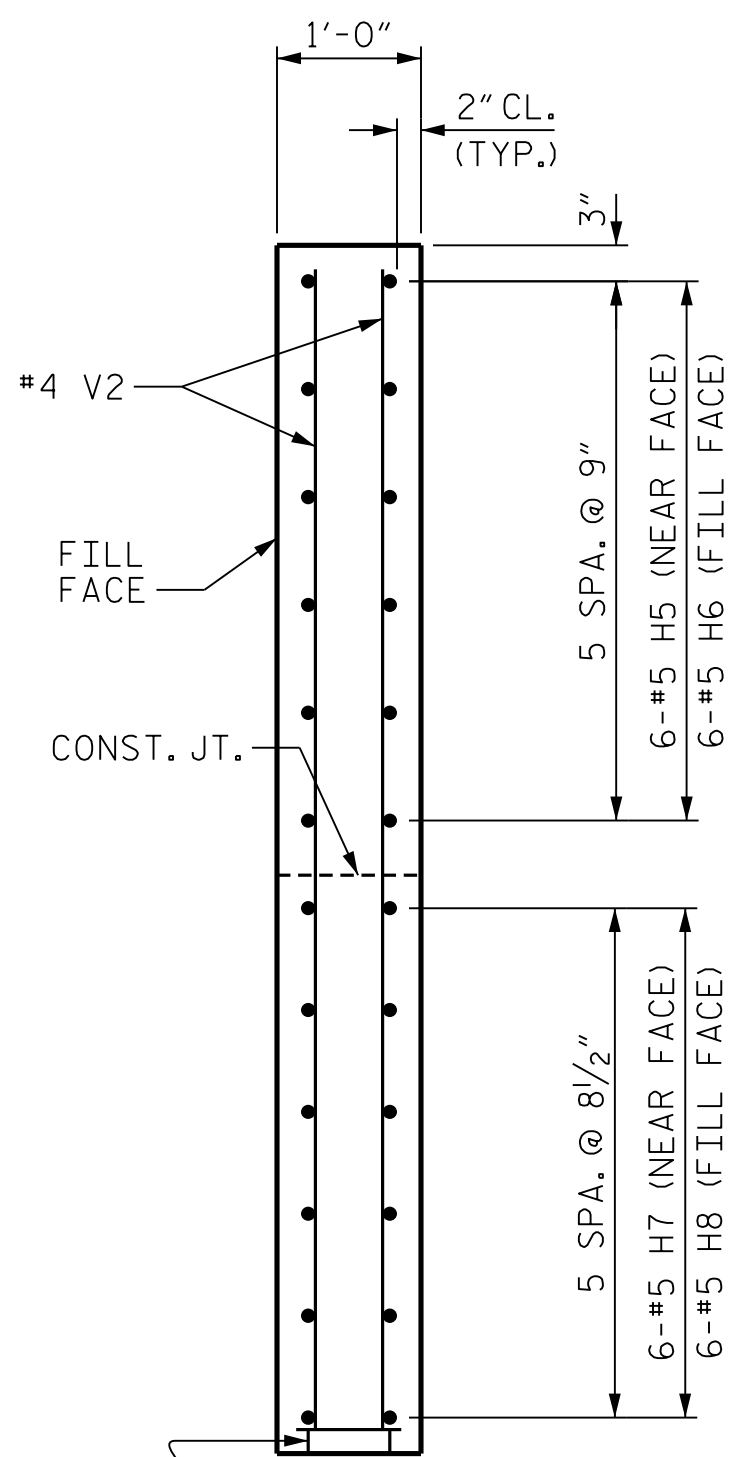
PLAN OF WING (W1)



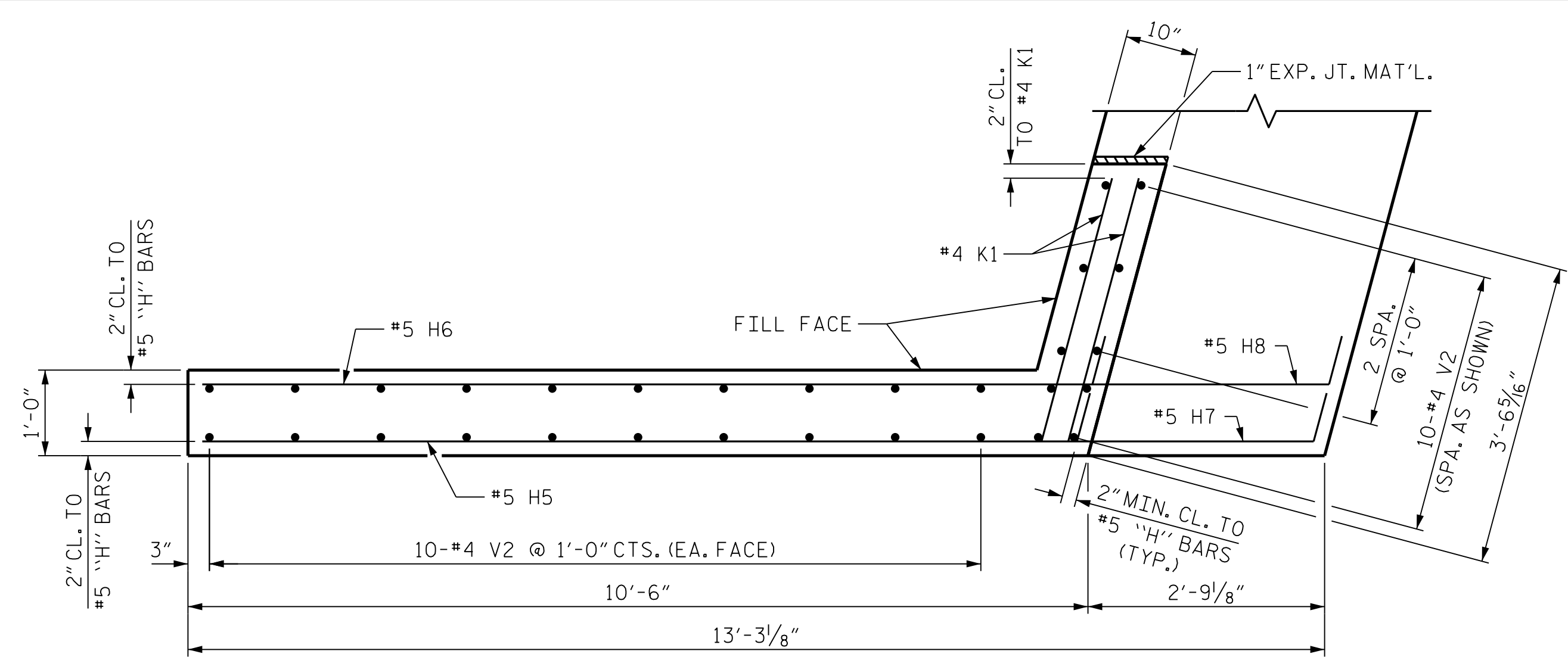
ELEVATION OF WING (W1)



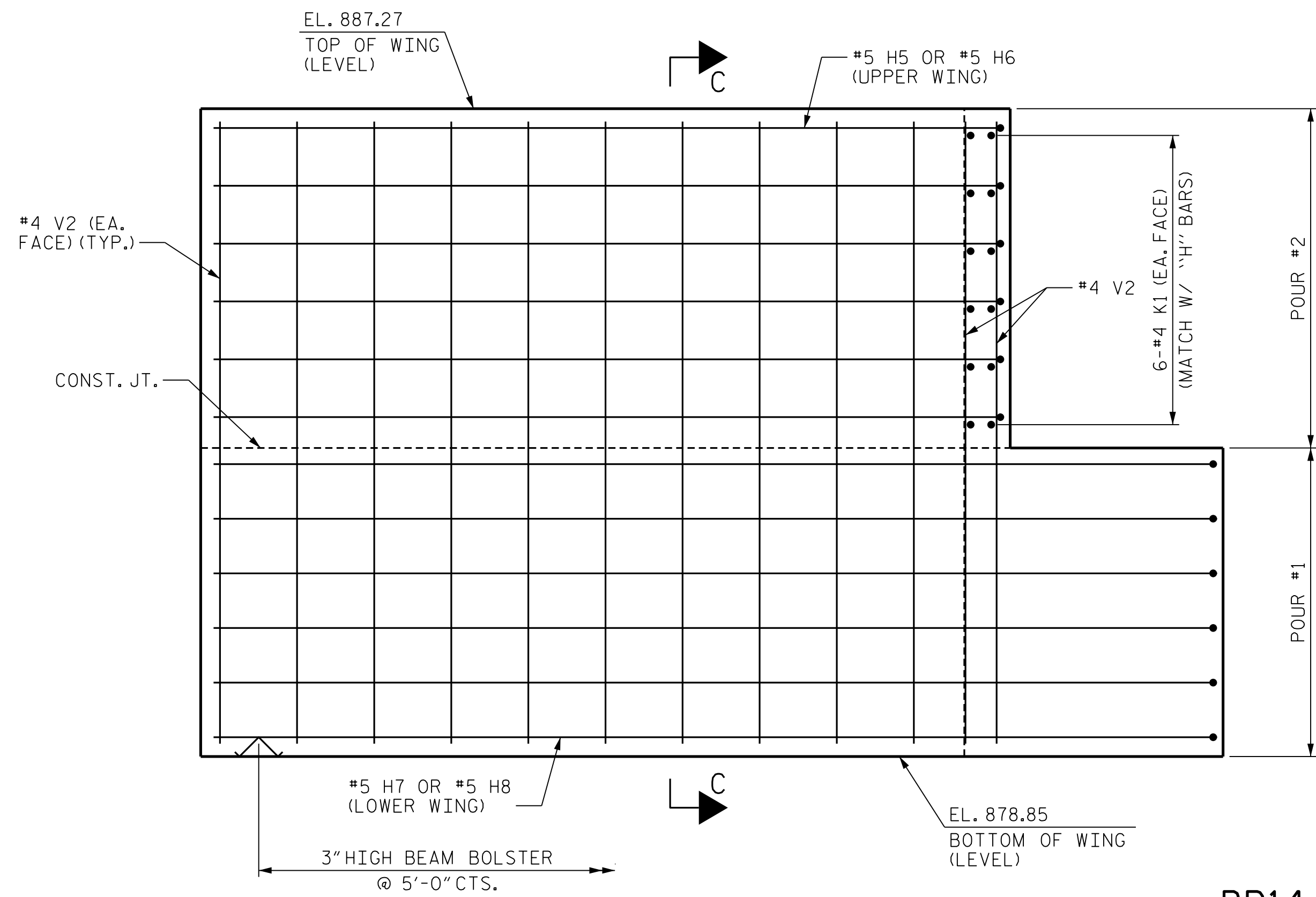
SECTION B-B



SECTION C-C



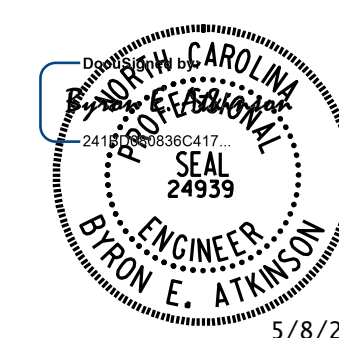
PLAN OF WING (W2)



ELEVATION OF WING (W2)

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 3



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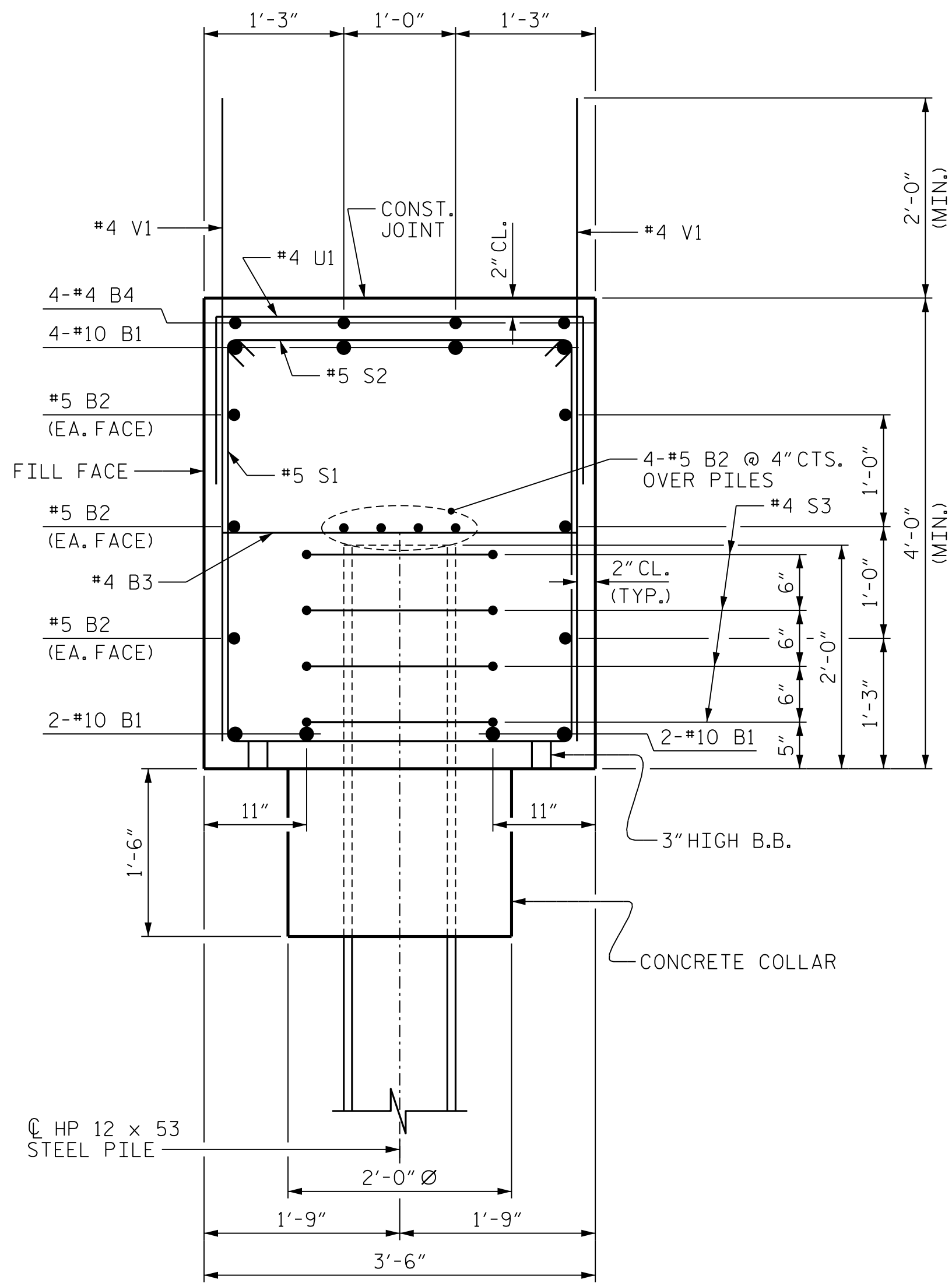
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-20
2			4			

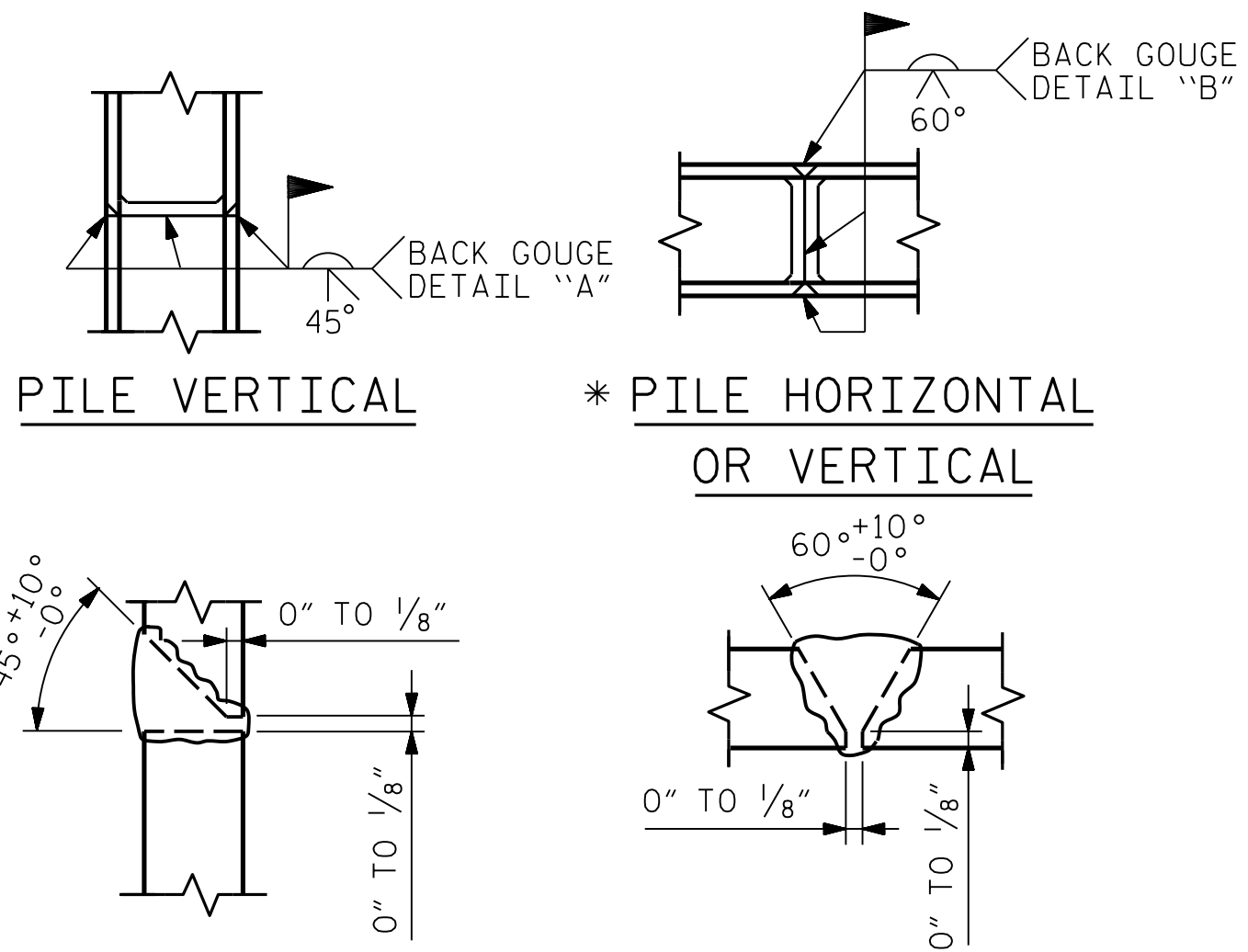
TOTAL SHEETS: 29

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/25</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>

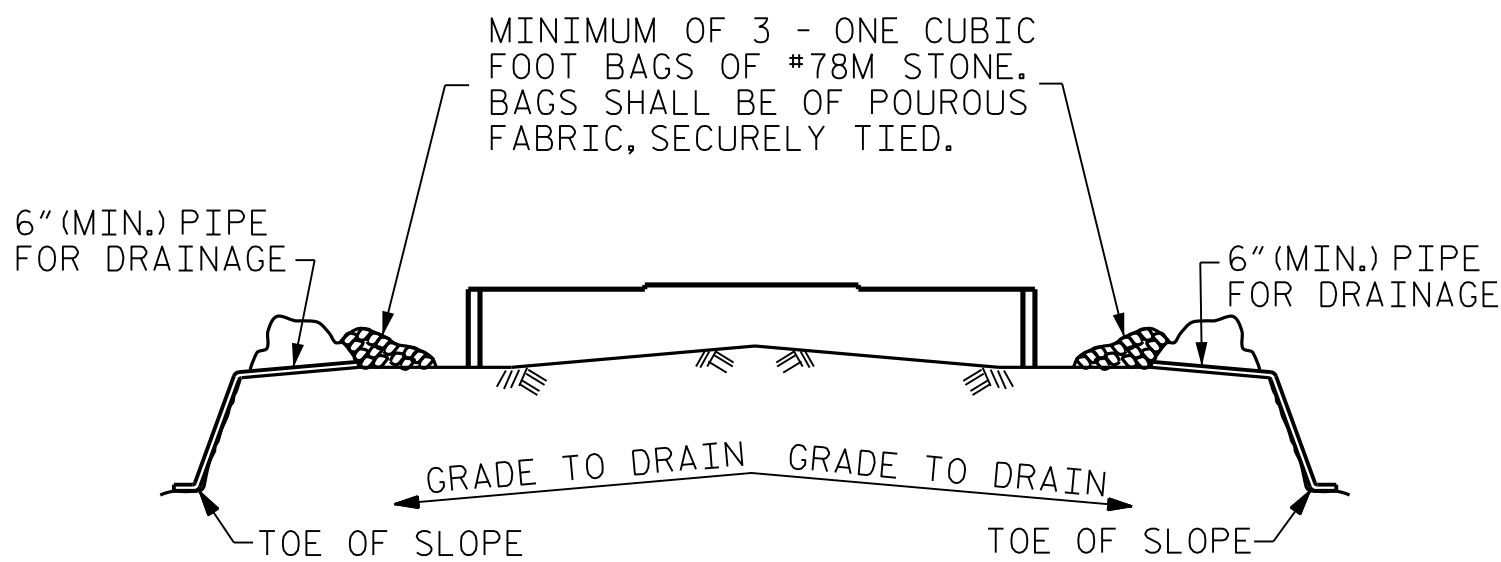
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SECTION A-A



PILE SPLICING DETAILS
* POSITION OF PILE DURING WELDING.



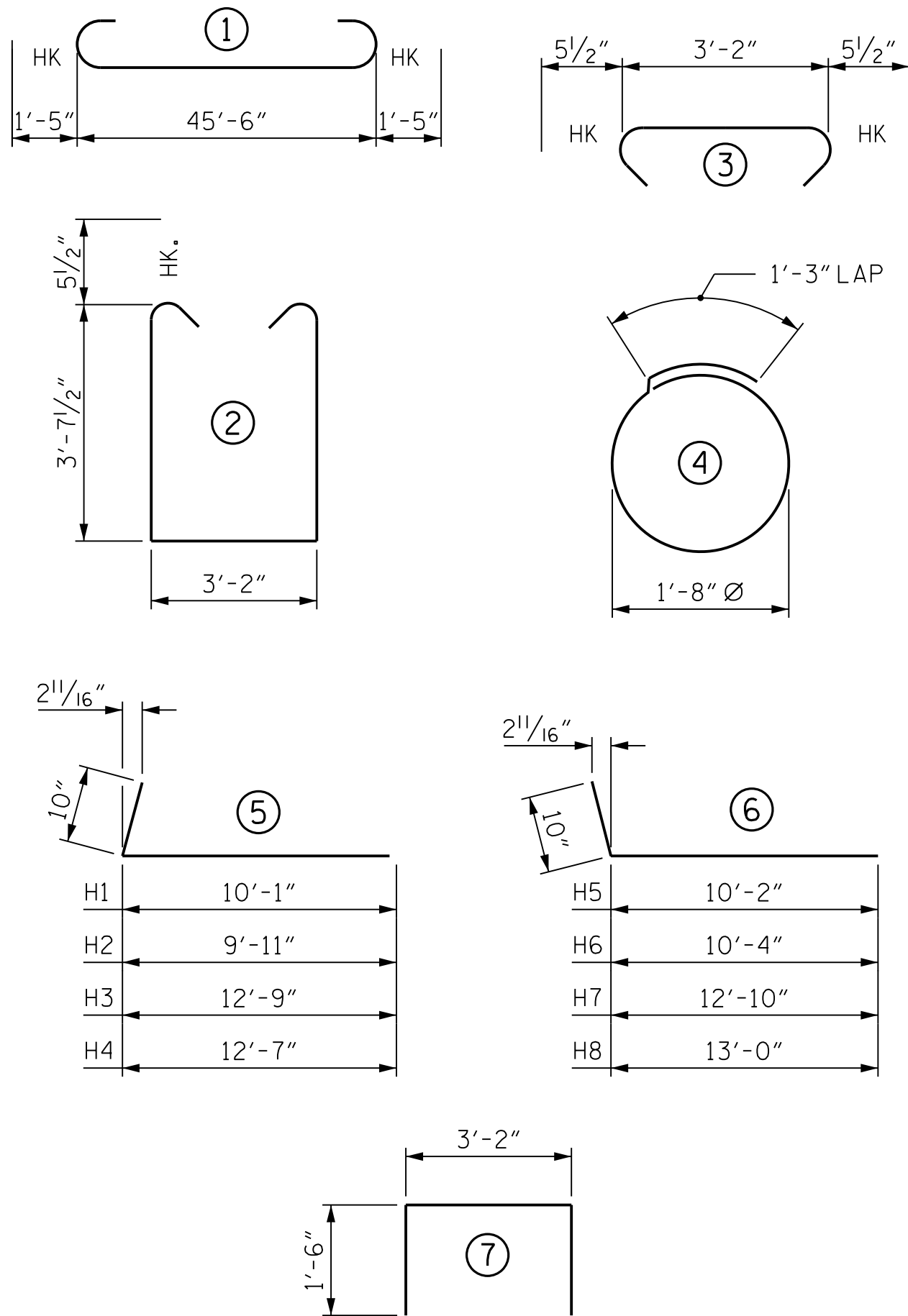
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	48'-4"	1664
B2	10	#5	STR	45'-6"	475
B3	12	#4	STR	3'-2"	25
B4	4	#4	STR	12'-11"	35
H1	6	#5	5	10'-11"	68
H2	6	#5	5	10'-9"	67
H3	6	#5	5	13'-7"	85
H4	6	#5	5	13'-5"	84
H5	6	#5	6	11'-0"	69
H6	6	#5	6	11'-2"	70
H7	6	#5	6	13'-8"	86
H8	6	#5	6	13'-10"	87

K1	24	#4	STR	3'-2"	51
S1	48	#5	2	11'-4"	567
S2	48	#5	3	4'-1"	204
S3	20	#4	4	6'-6"	87

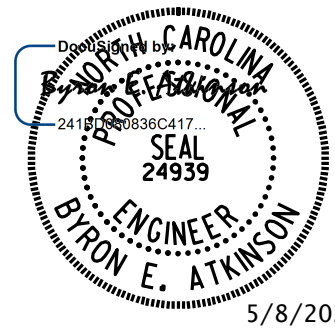
U1	9	#4	7	6'-2"	37
V1	72	#4	STR	6'-1"	293
V2	60	#4	STR	8'-0"	321

REINFORCING STEEL 4375 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, COLLARS & LOWER PART OF WINGS)	28.0 C.Y.
POUR #2 (UPPER PART OF WINGS)	4.1 C.Y.
TOTAL	32.1 C.Y.

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 3 OF 3



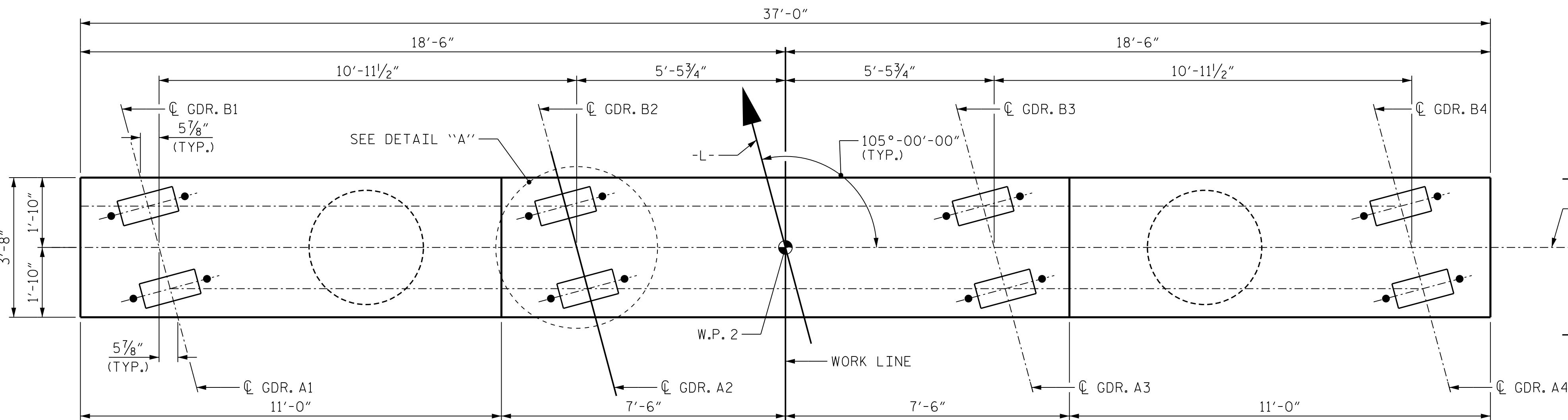
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

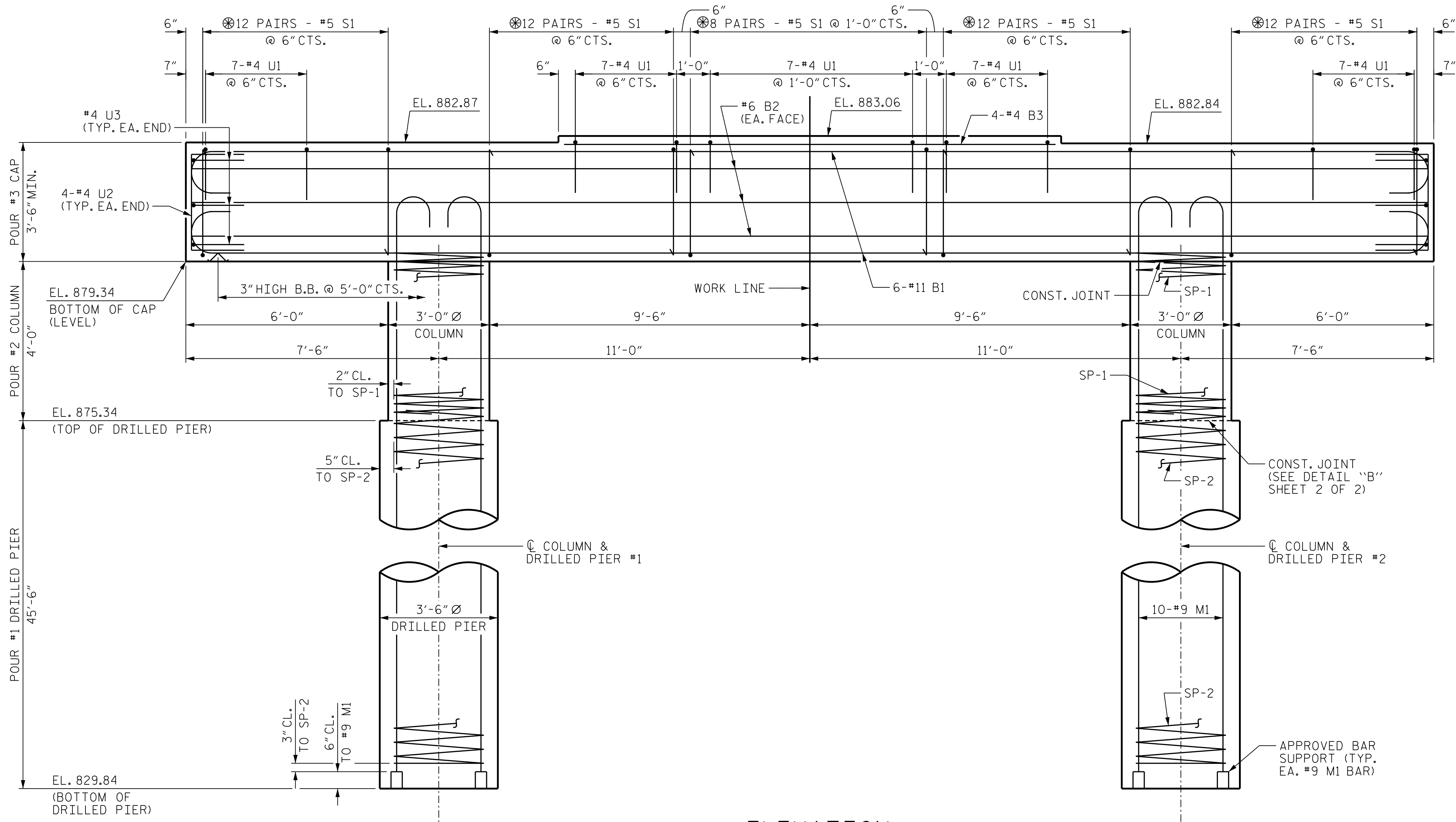
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1
DETAILS AND
BILL OF MATERIAL

REVISIONS						SHEET NO. S-21 TOTAL SHEETS 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/25</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

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

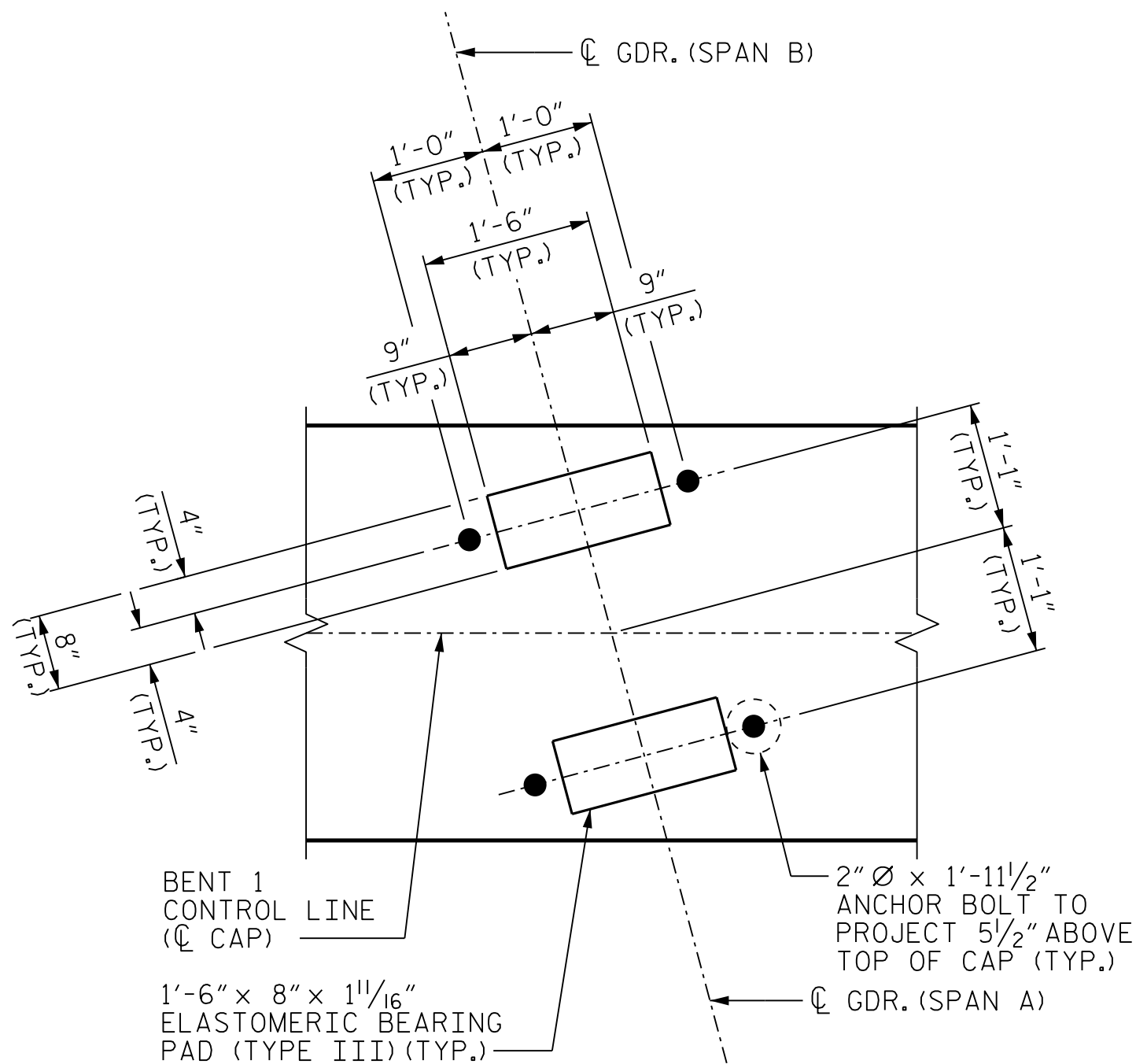
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

FOR SECTION THRU CAP, END OF CAP VIEW AND END ELEVATION SEE SHEET 2 OF 2.

INVERT ALTERNATE PAIRS OF STIRRUPS.

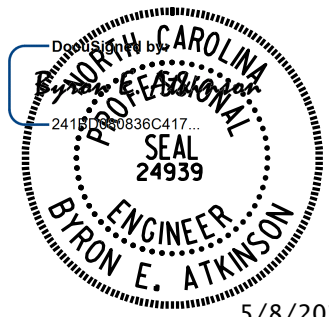


DETAIL "A"

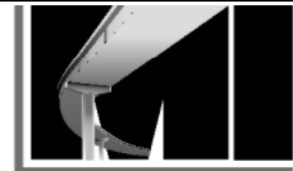
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 1 OF 2



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
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FIRM PE NUMBER : P-0671

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-22
2			4			

TOTAL SHEETS
29

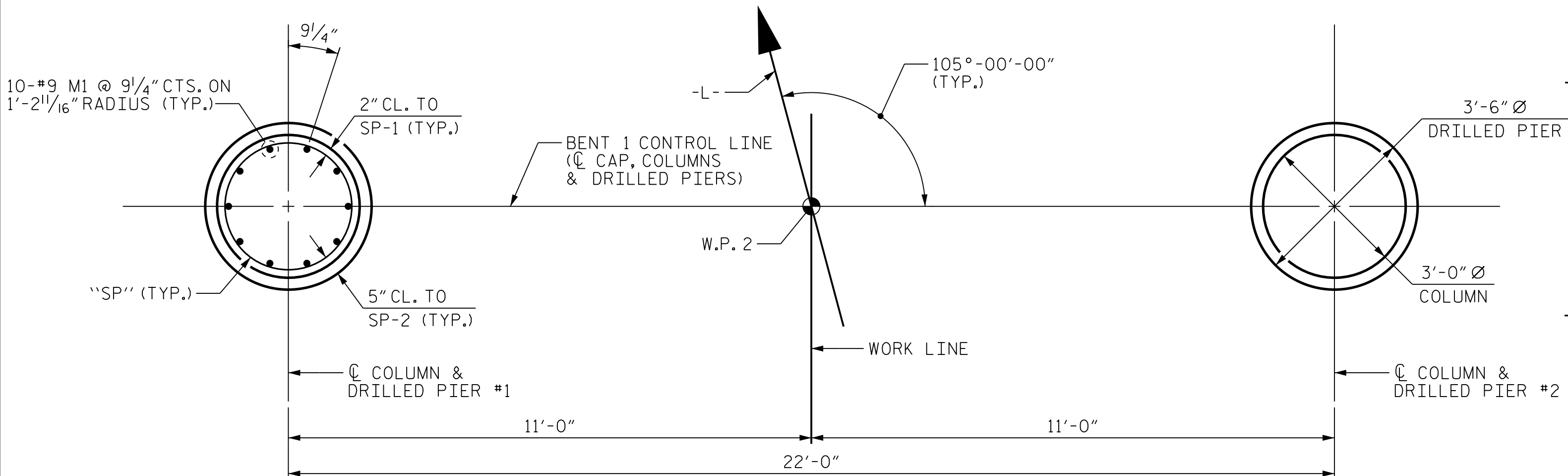
DRAWN BY : B.E. LANNING DATE : 03/25
CHECKED BY : B.E. ATKINSON DATE : 03/25
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

5/7/2025 7:24:44 PM
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5/7/2025
7:24:52 PM

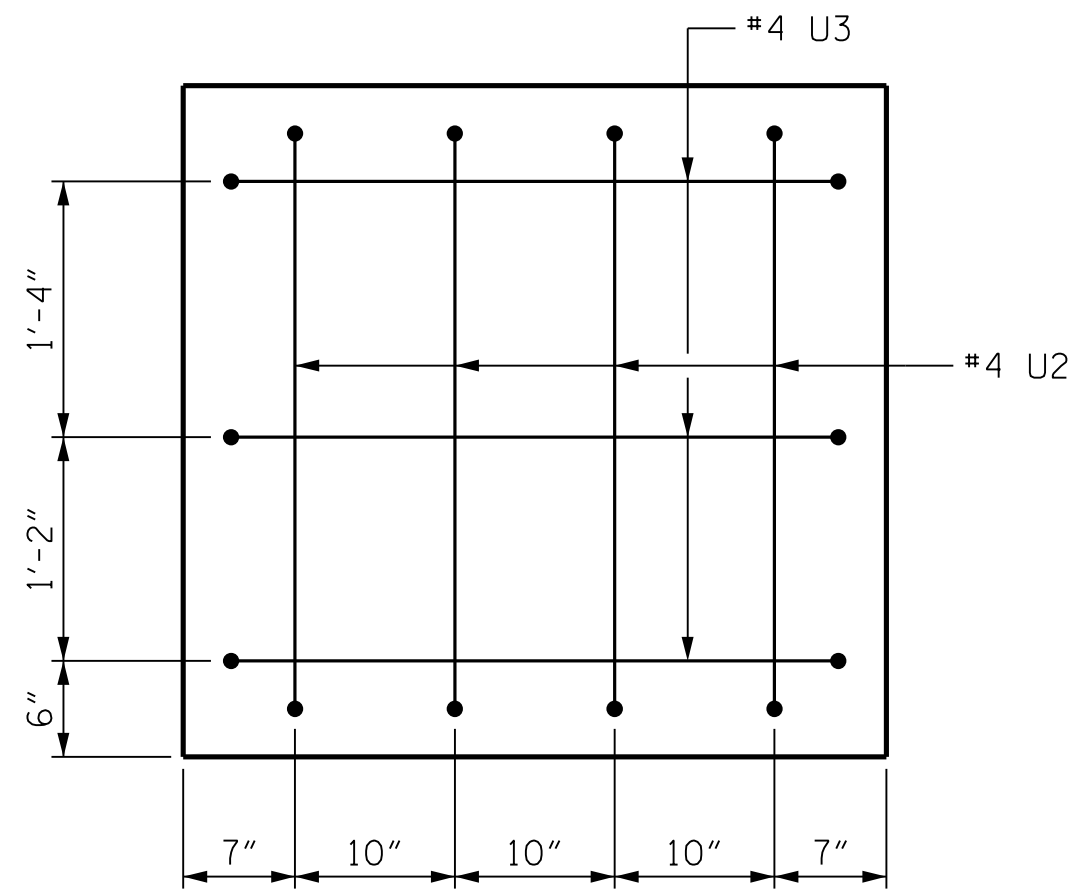
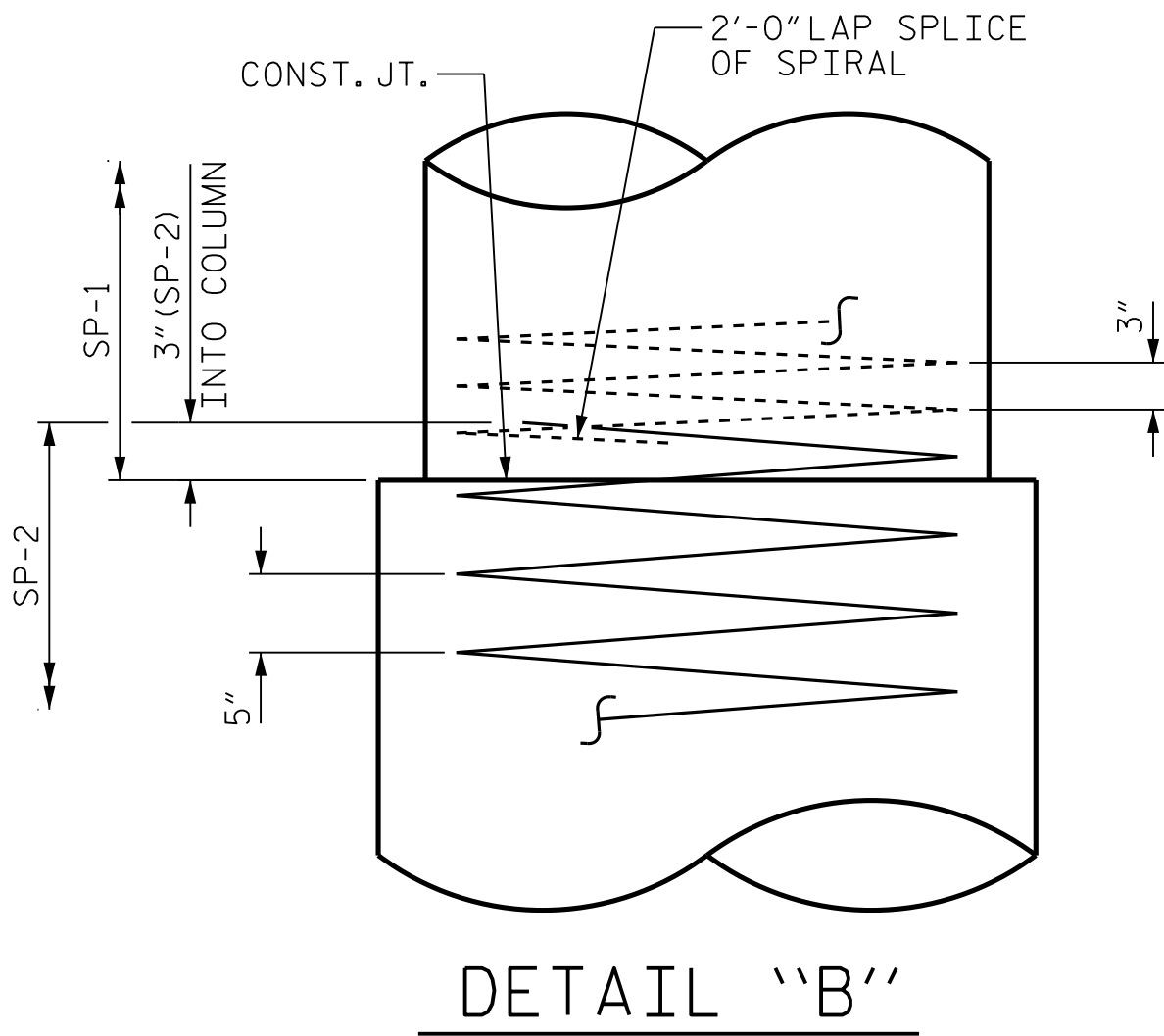
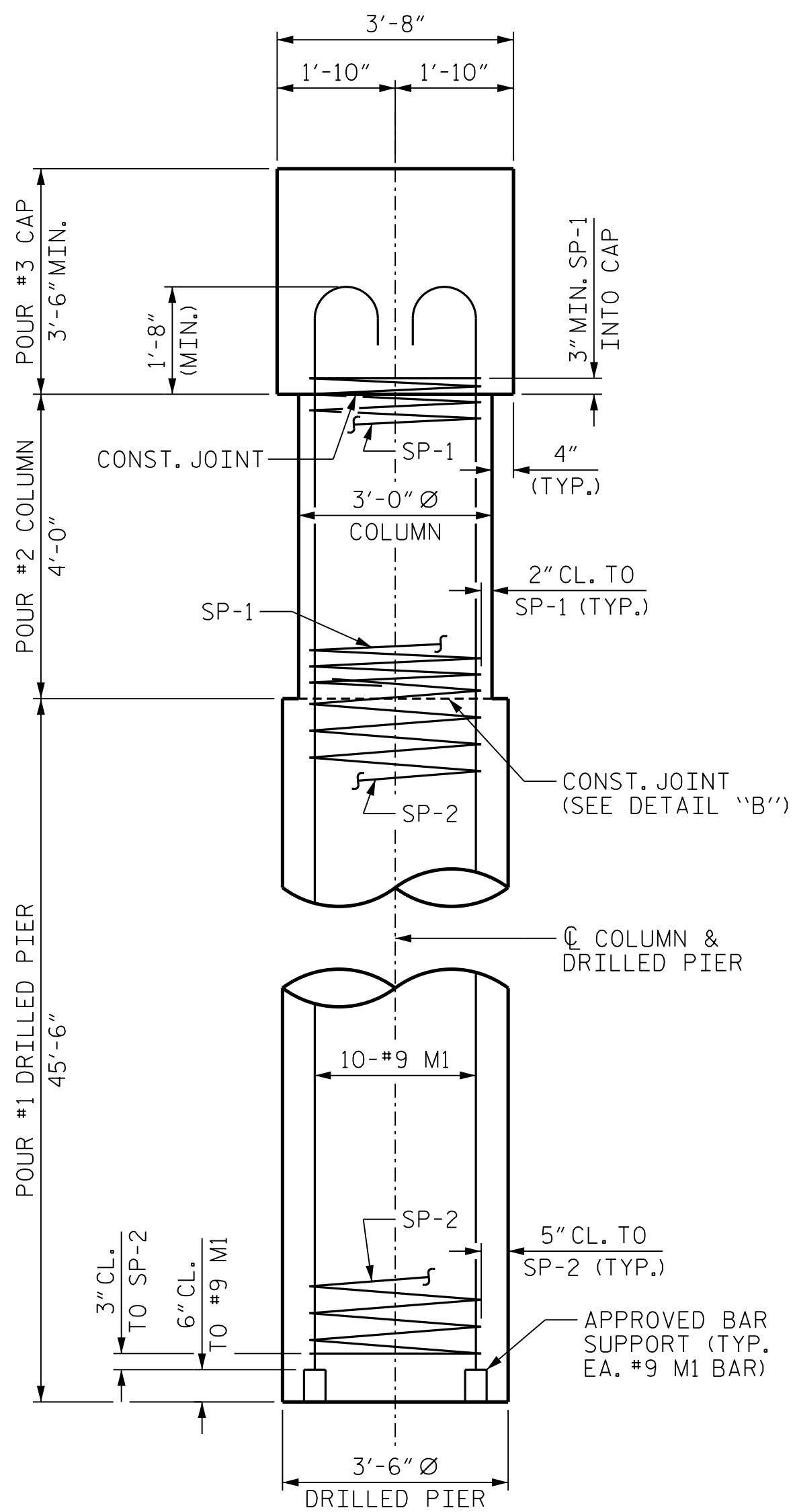
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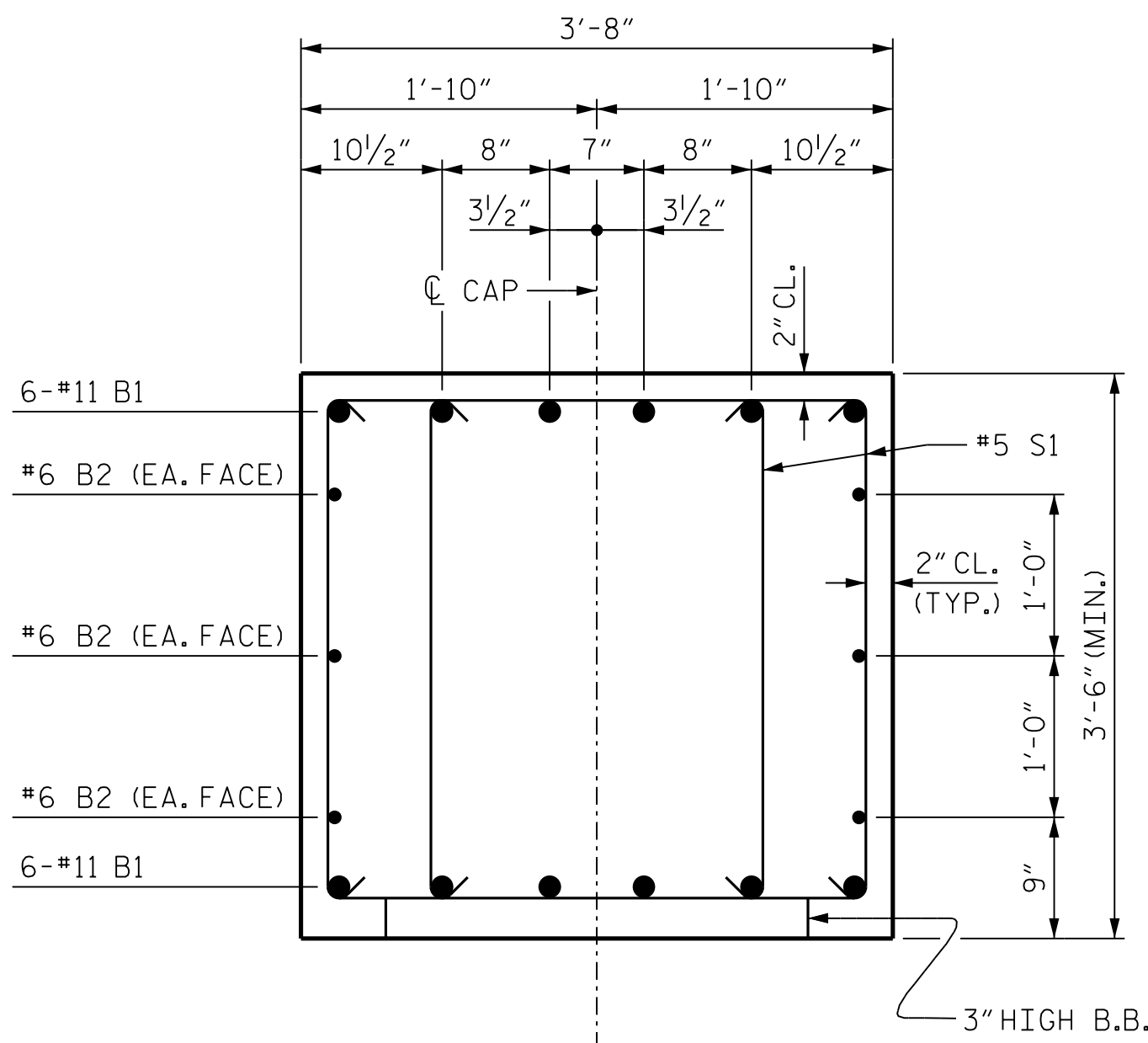
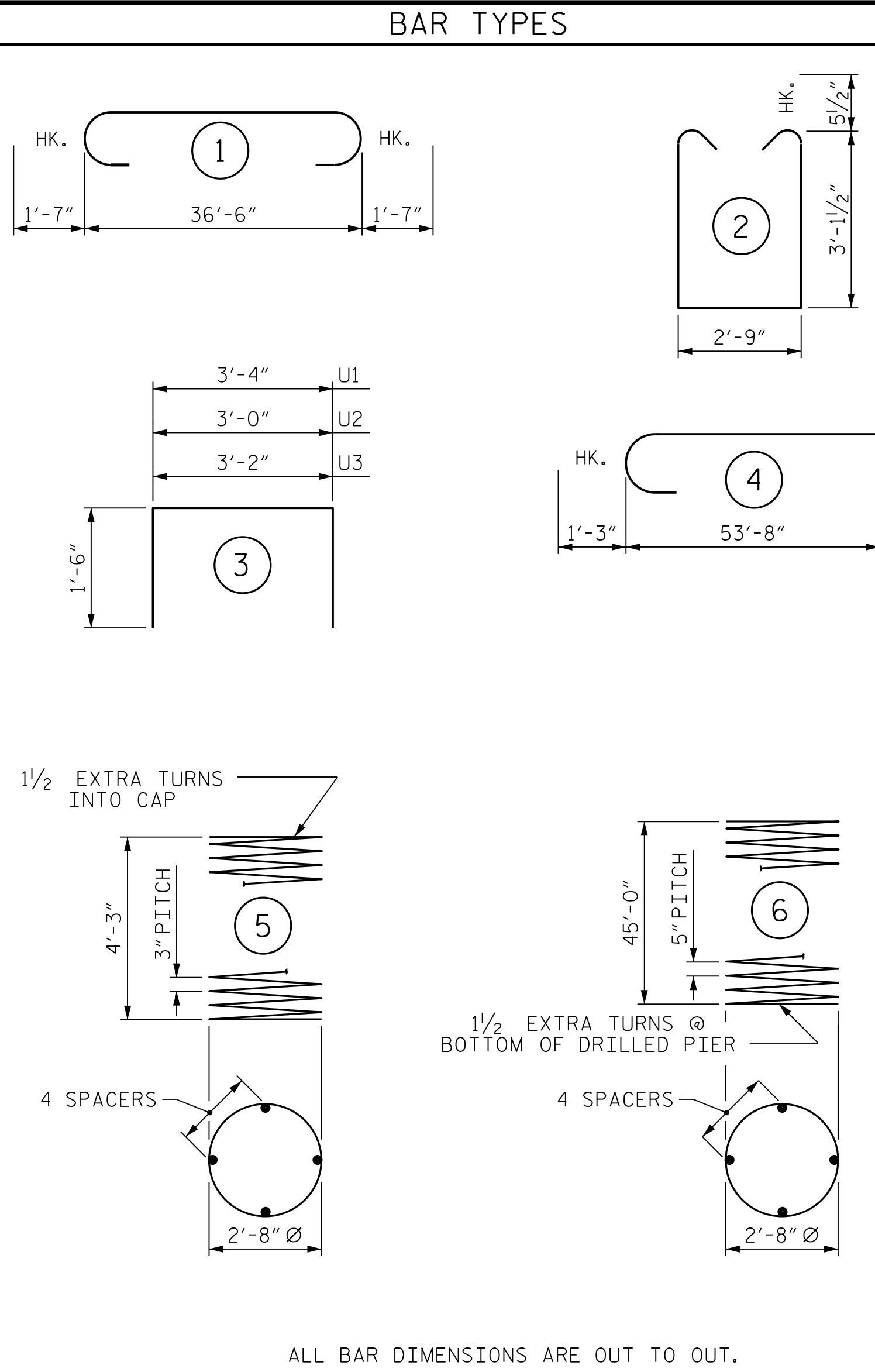
PLAN OF DRILLED PIERS & COLUMNS

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)



END OF CAP VIEW

(TYPICAL BOTH ENDS)



BAR TYPES

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11		39'-8"	2529
B2	6	#6	STR	36'-6"	329
B3	4	#4	STR	14'-8"	39

M1	20	#9	4	54'-11"	3734
----	----	----	---	---------	------

S1	112	#5	2	9'-11"	1158
----	-----	----	---	--------	------

U1	35	#4	3	6'-4"	148
----	----	----	---	-------	-----

U2	8	#4	3	6'-0"	32
----	---	----	---	-------	----

U3	6	#4	3	6'-2"	25
----	---	----	---	-------	----

REINFORCING STEEL					7,994 LBS.
-------------------	--	--	--	--	------------

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
-----	-----	------	------	--------	--------

SP-1	2	*	5	152'-8"	204
------	---	---	---	---------	-----

SP-2	2	**	6	900'-8"	1879
------	---	----	---	---------	------

SPIRAL COLUMN REINFORCING STEEL					2,083 LBS.
---------------------------------	--	--	--	--	------------

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

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMN)	2.1 C.Y.
------------------	----------

POUR #3 (CAP)	18.1 C.Y.
---------------	-----------

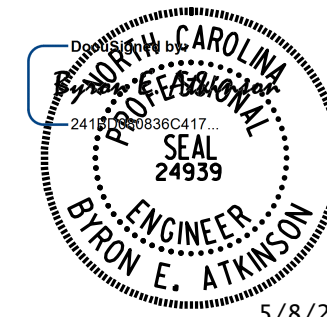
TOTAL	20.2 C.Y.
-------	-----------

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 2

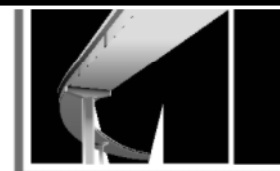
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1



5/8/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS

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

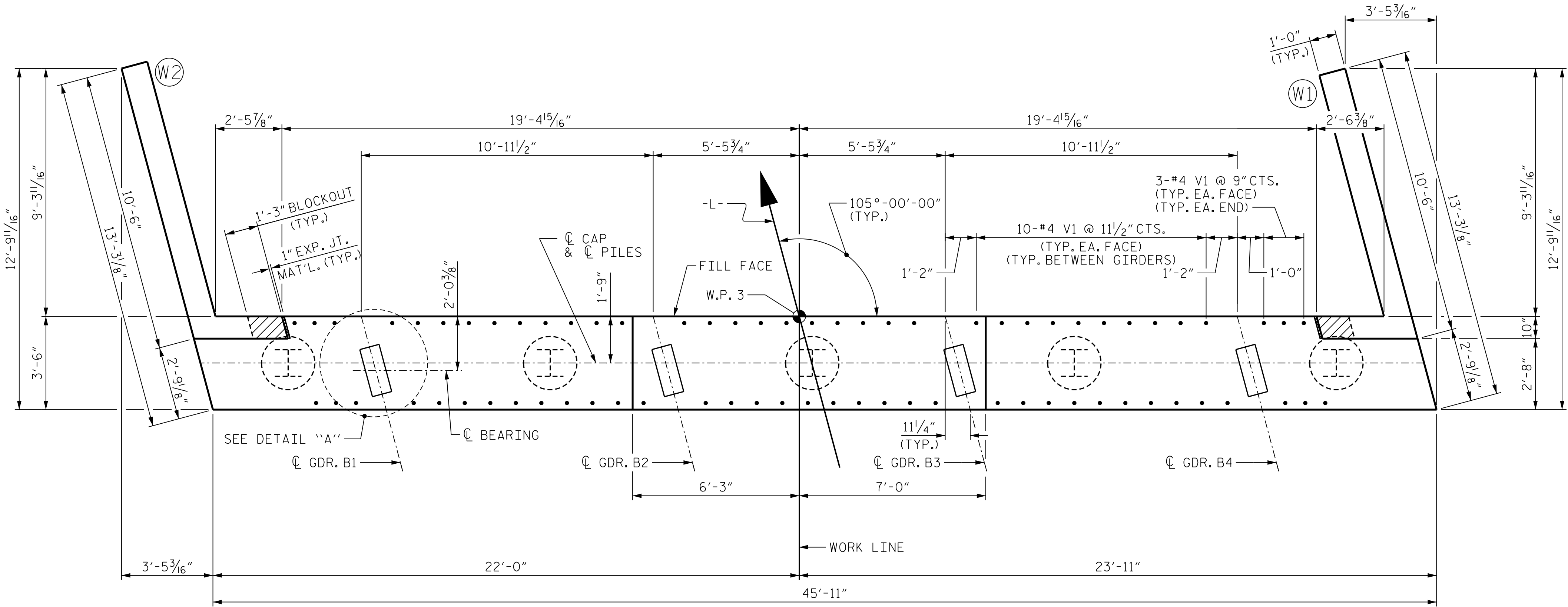
SHEET NO.

S-23

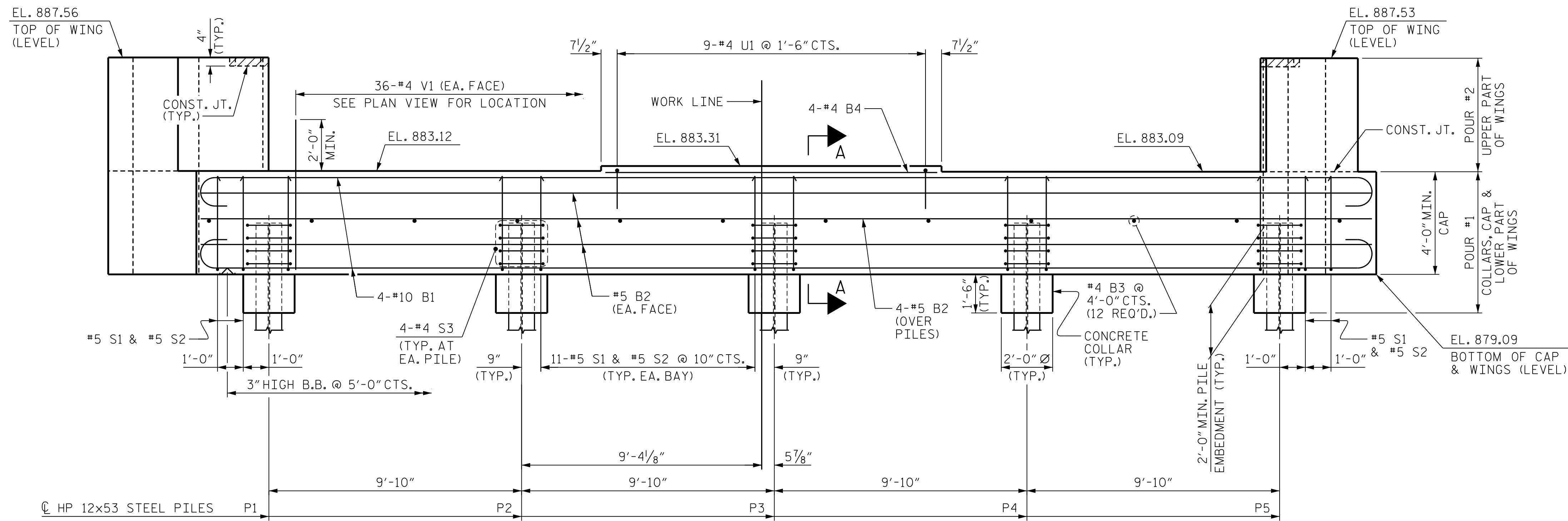
TOTAL SHEETS

29

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PLAN



ELEVATION

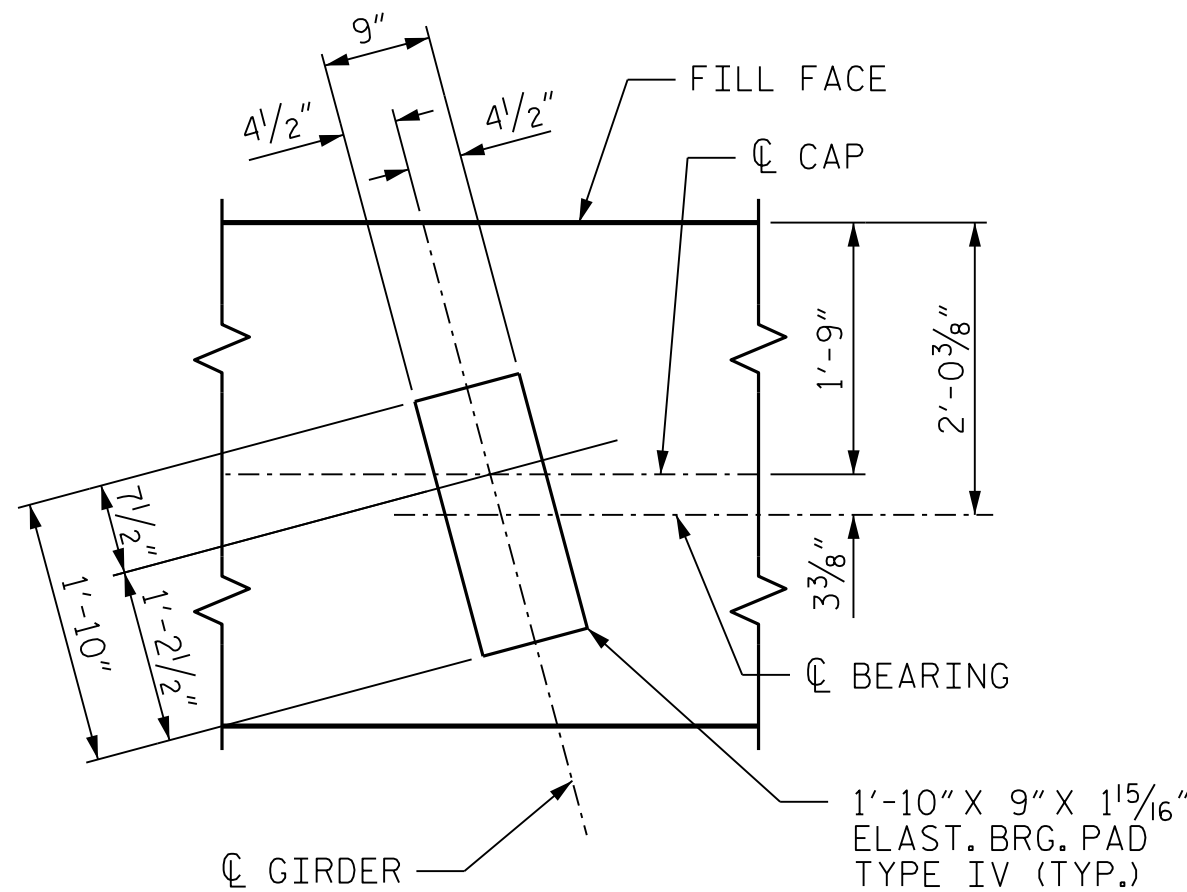
NOTES

THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA SHALL BE RAKED TO A DEPTH OF 1/4".

FOR SECTION A-A, PILE SPLICE DETAILS AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

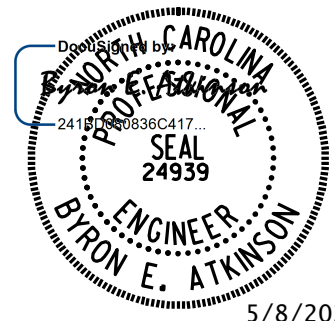
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.



DETAIL "A"
(TYP. AT EACH BEARING)

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 1 OF 3



5/8/2025

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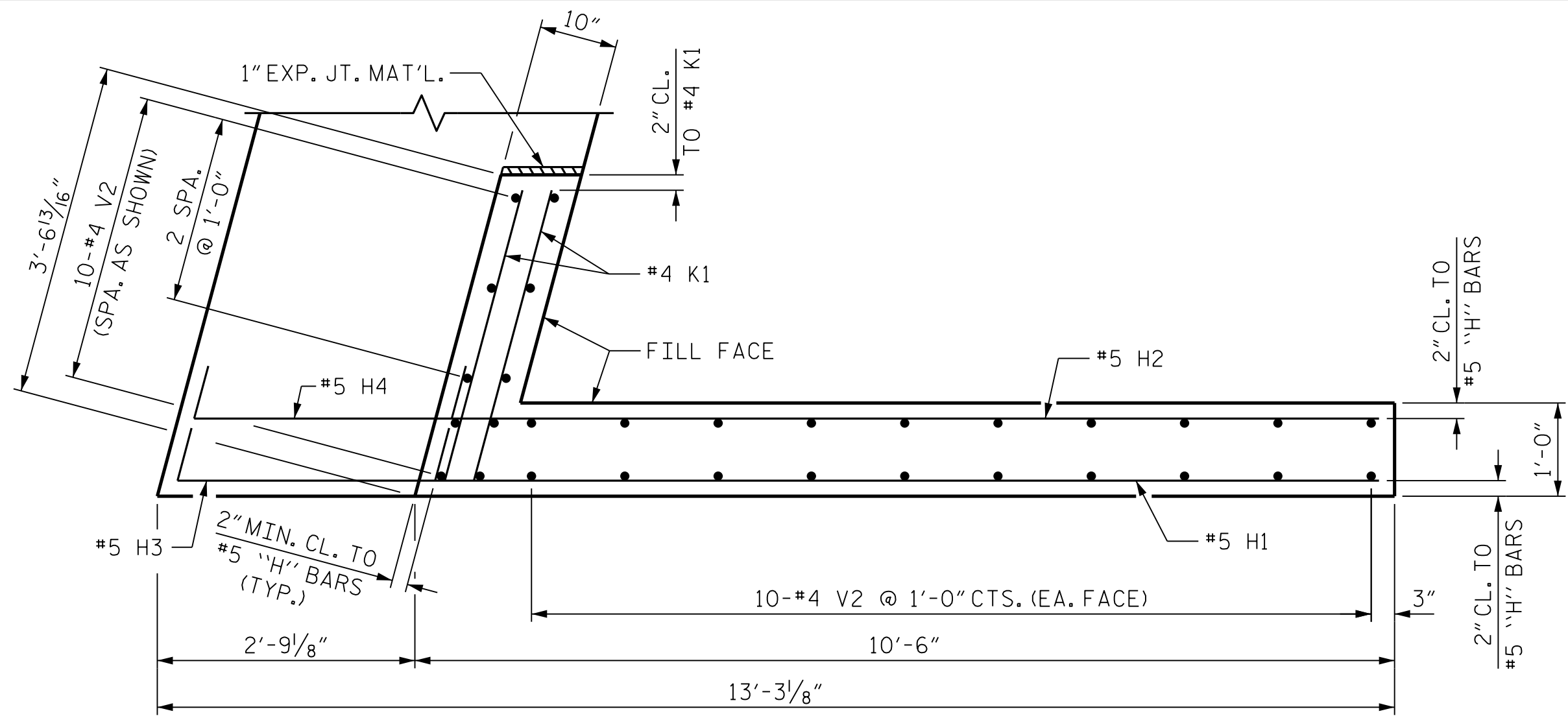
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION

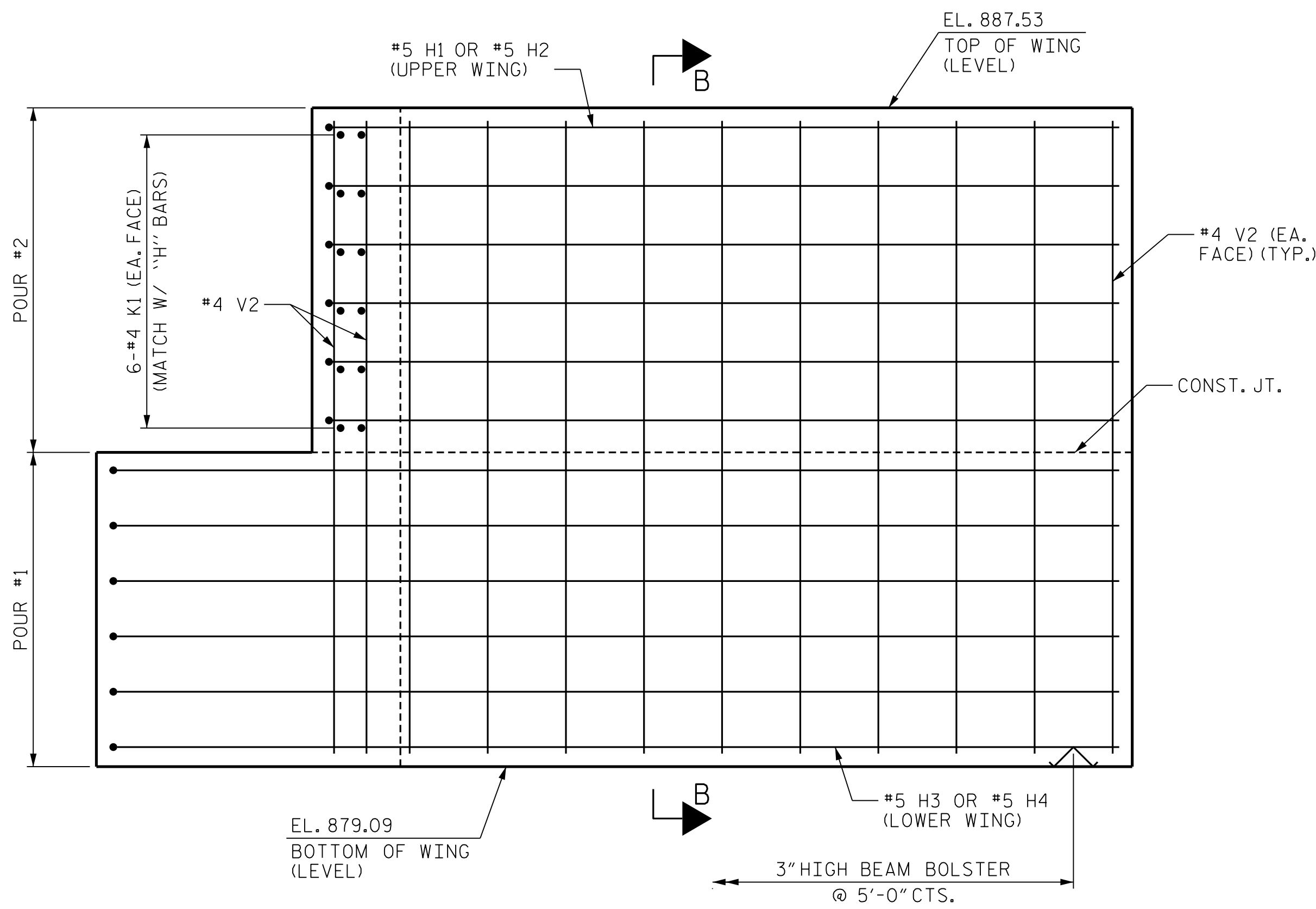
REVISIONS						SHEET NO. S-24 TOTAL SHEETS 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 04/25

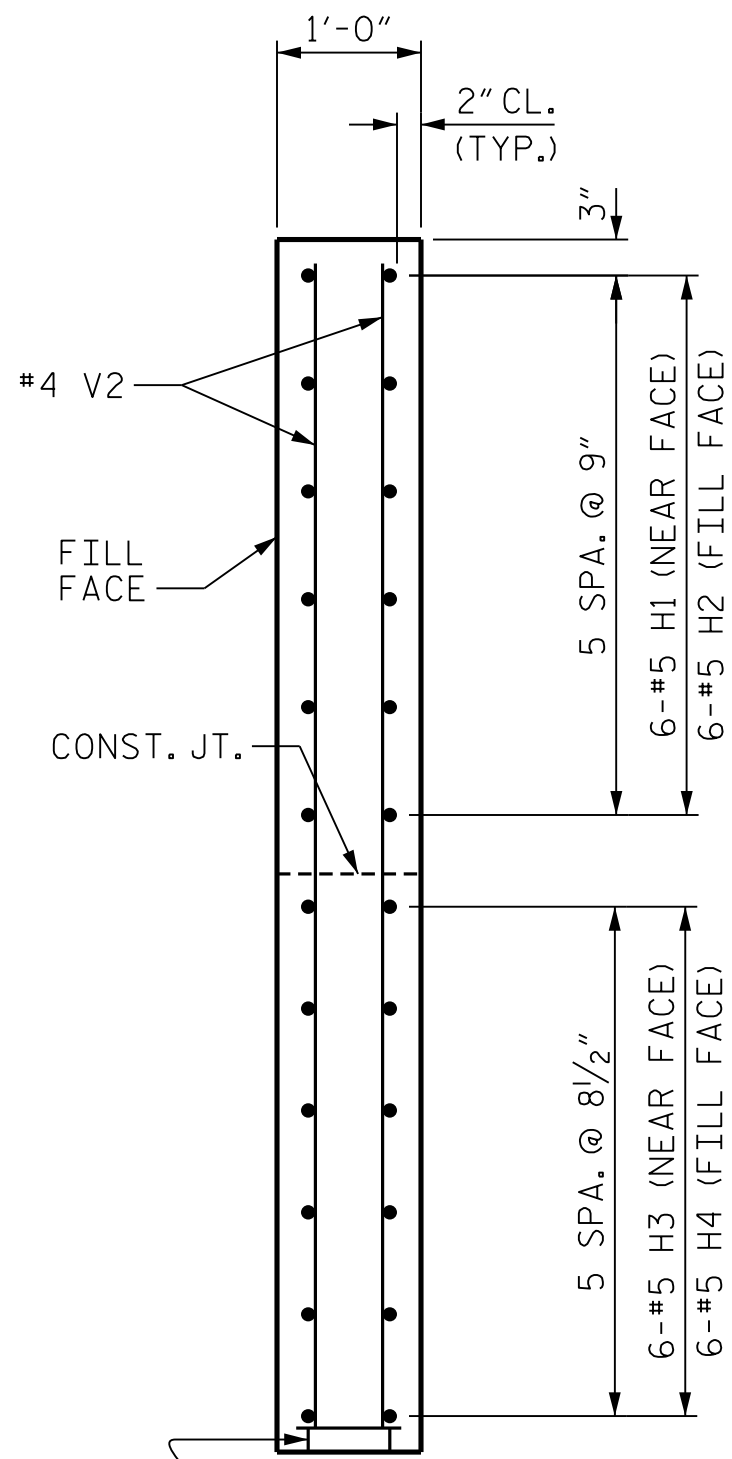
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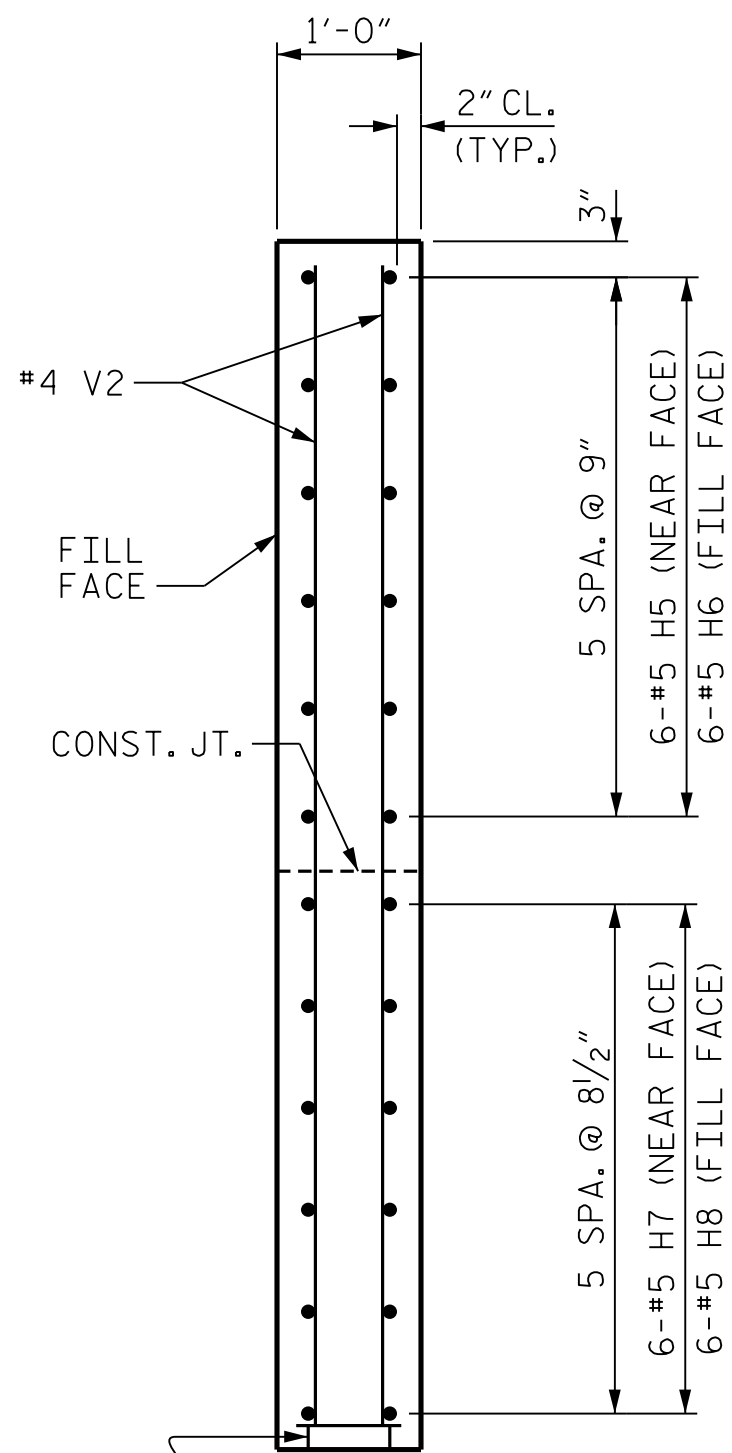
PLAN OF WING (W1)



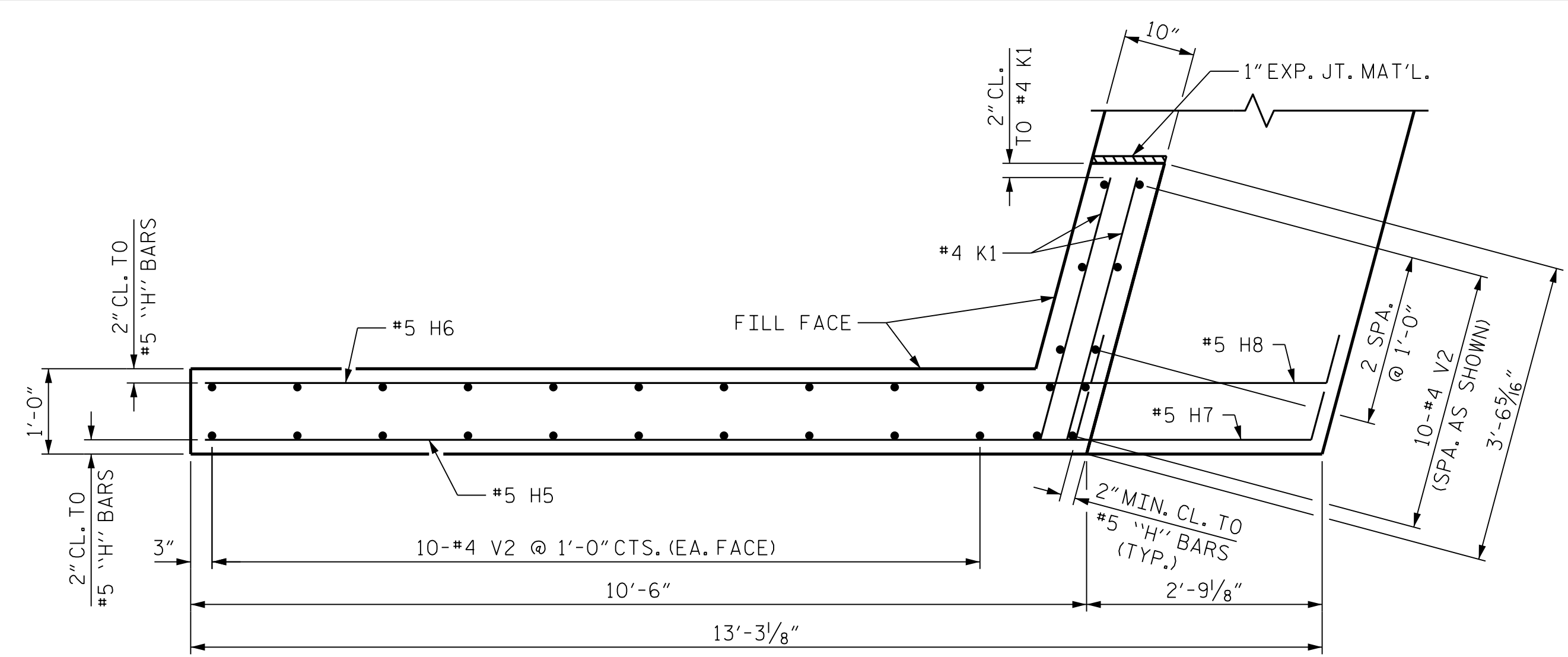
ELEVATION OF WING (W1)



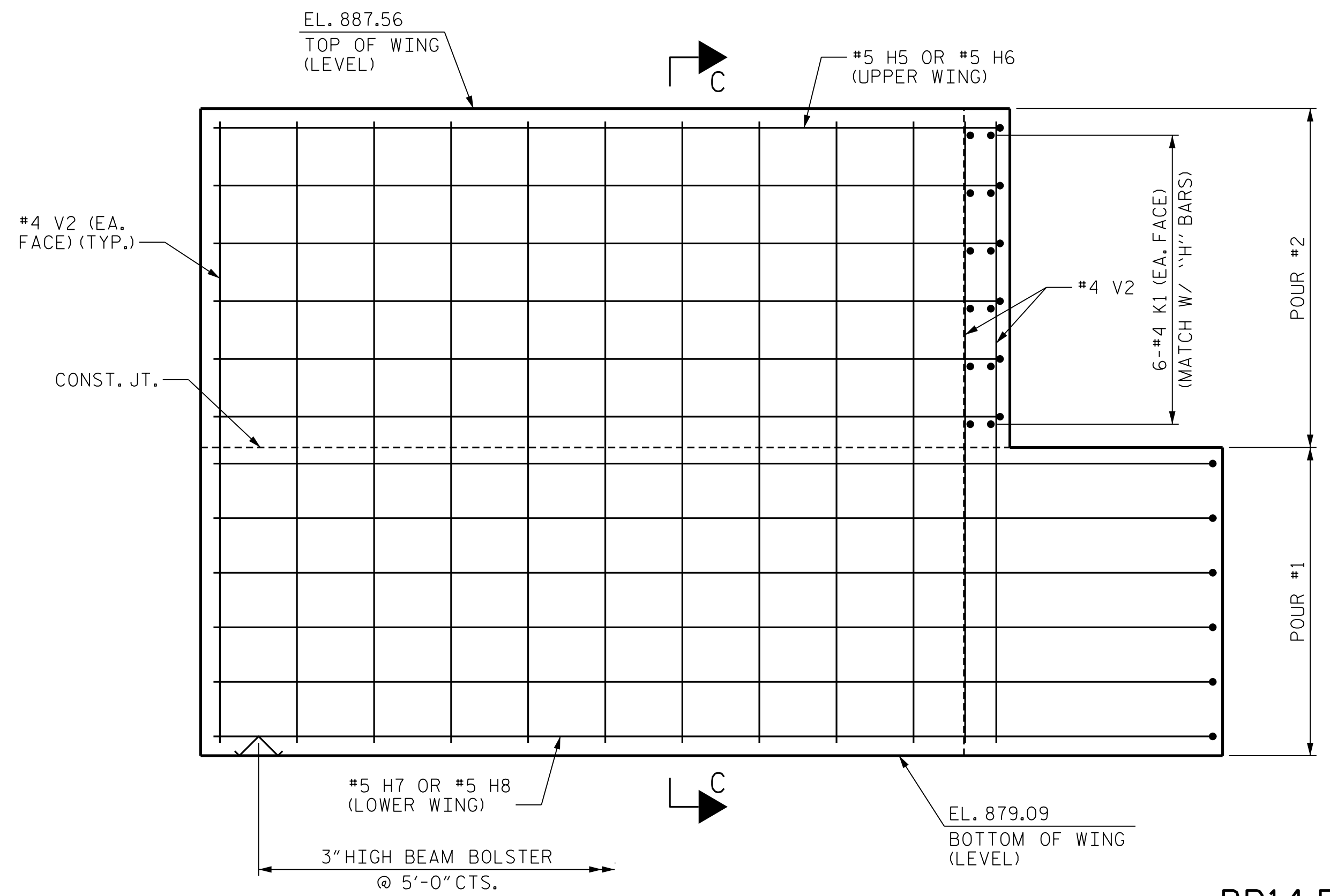
SECTION B-B



SECTION C-C



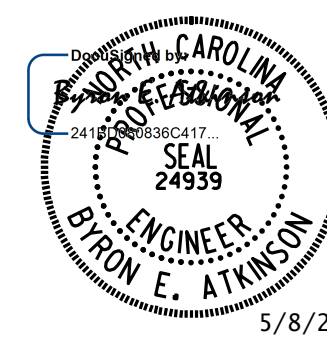
PLAN OF WING (W2)



ELEVATION OF WING (W2)

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 3



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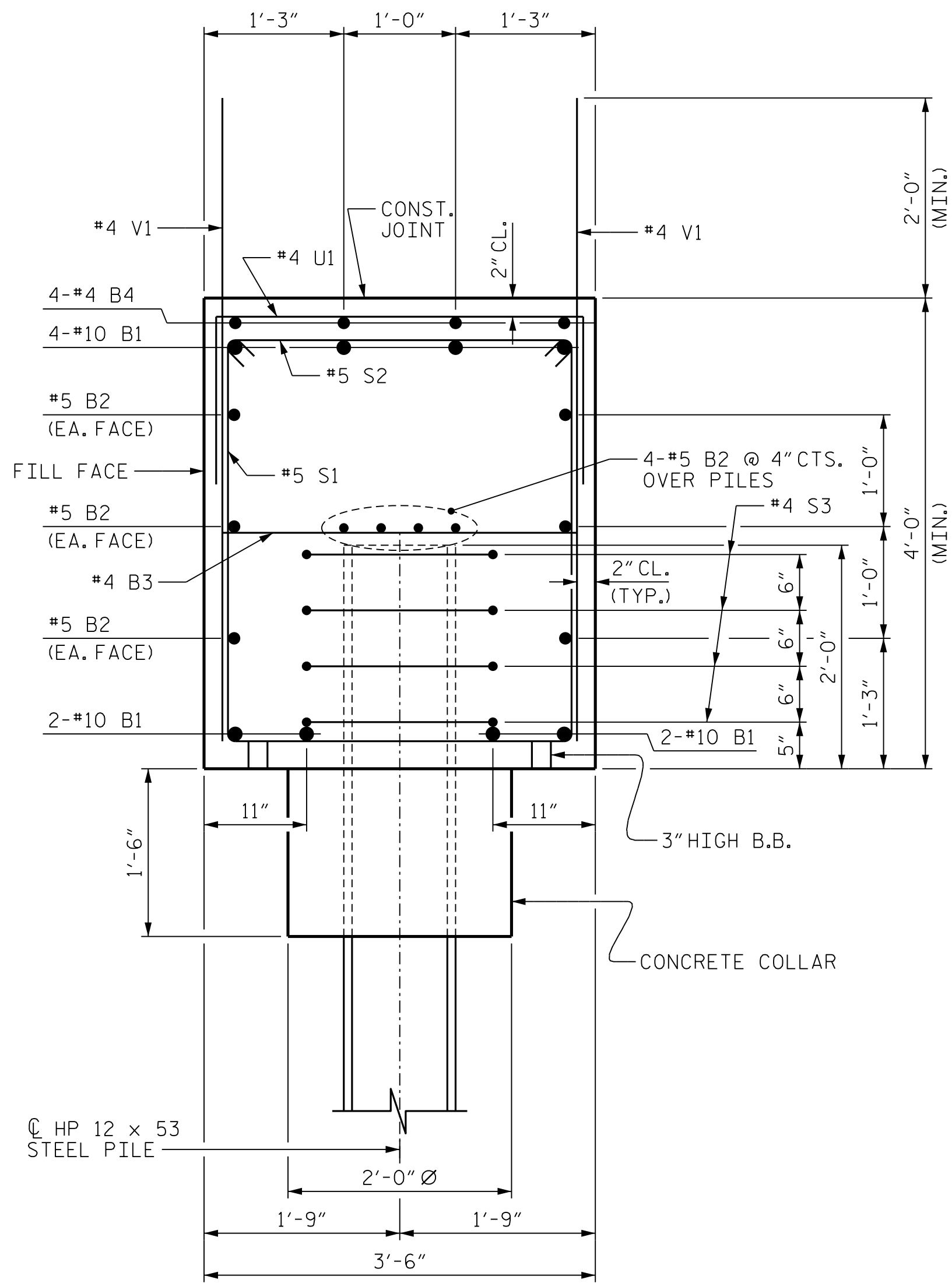
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-25
2			4			

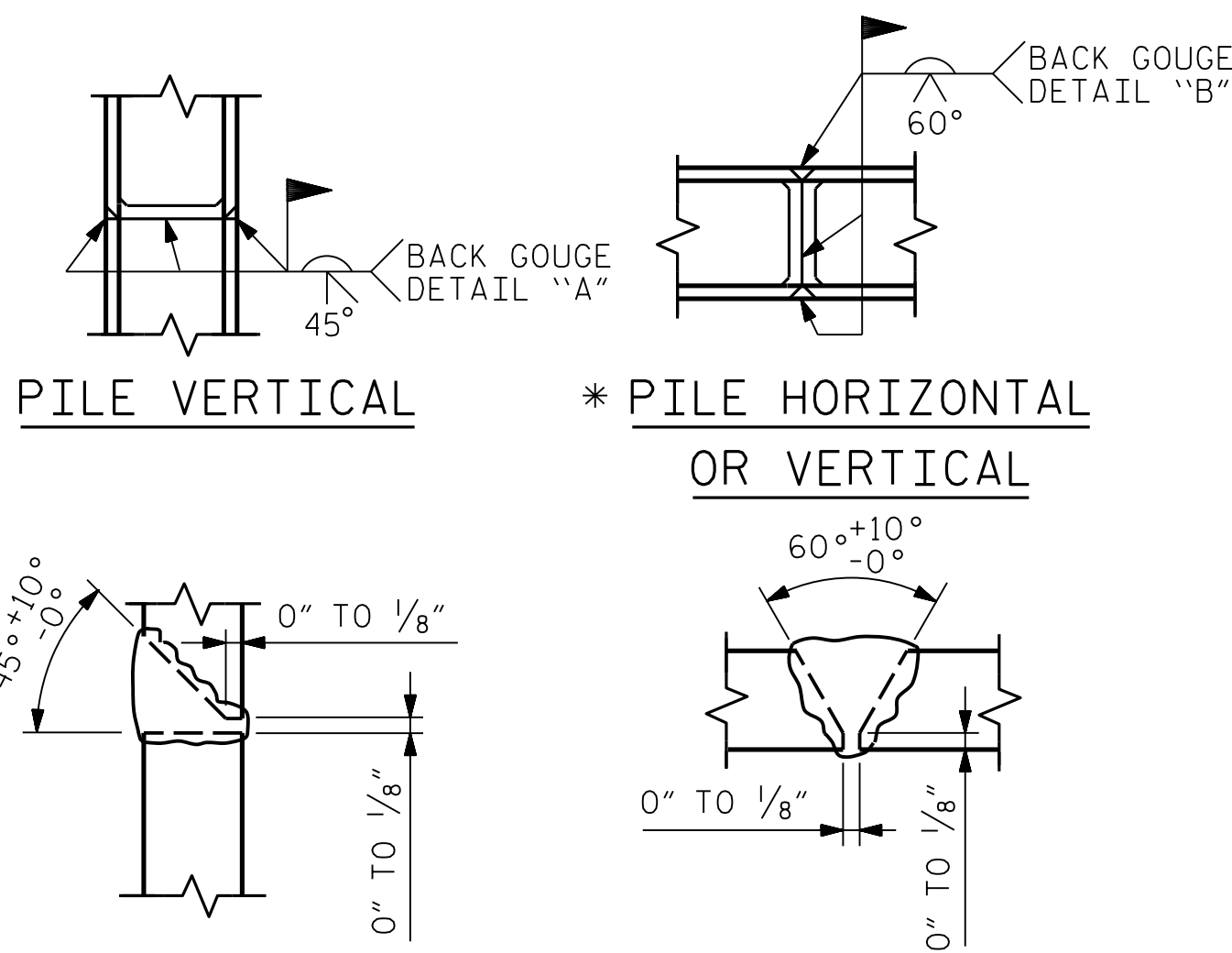
TOTAL SHEETS: 29

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DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>

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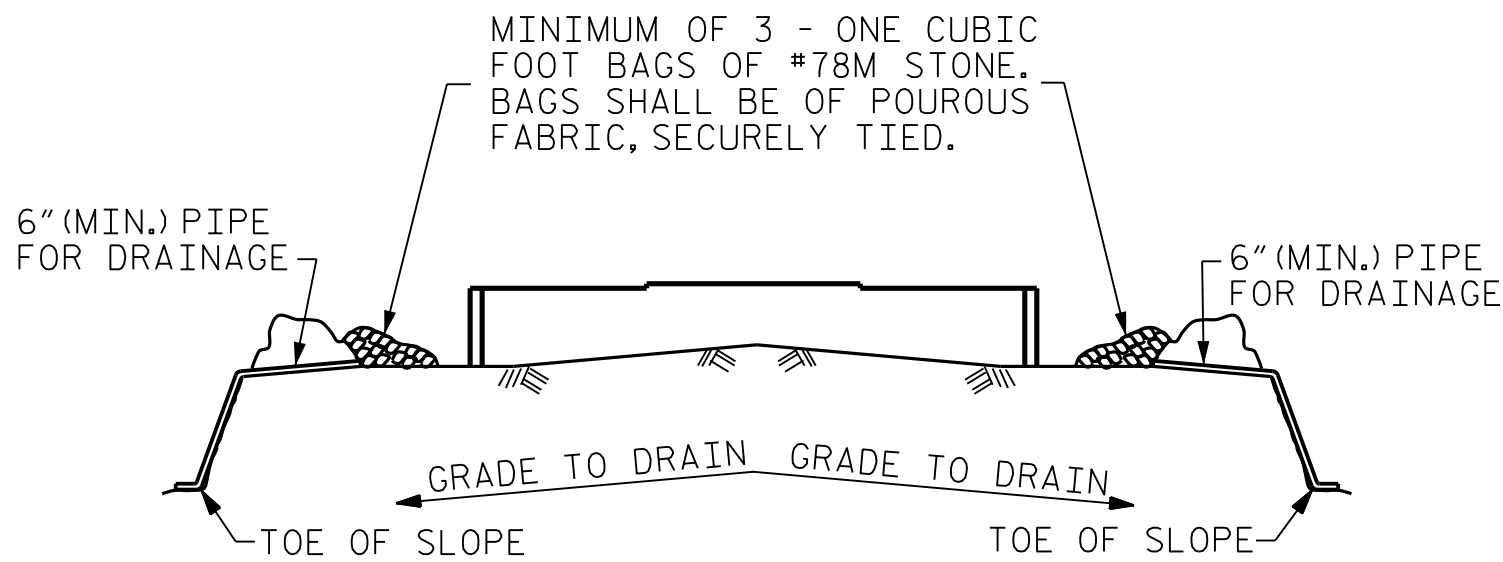


SECTION A-A



PILE SPLICING DETAILS

* POSITION OF PILE DURING WELDING.



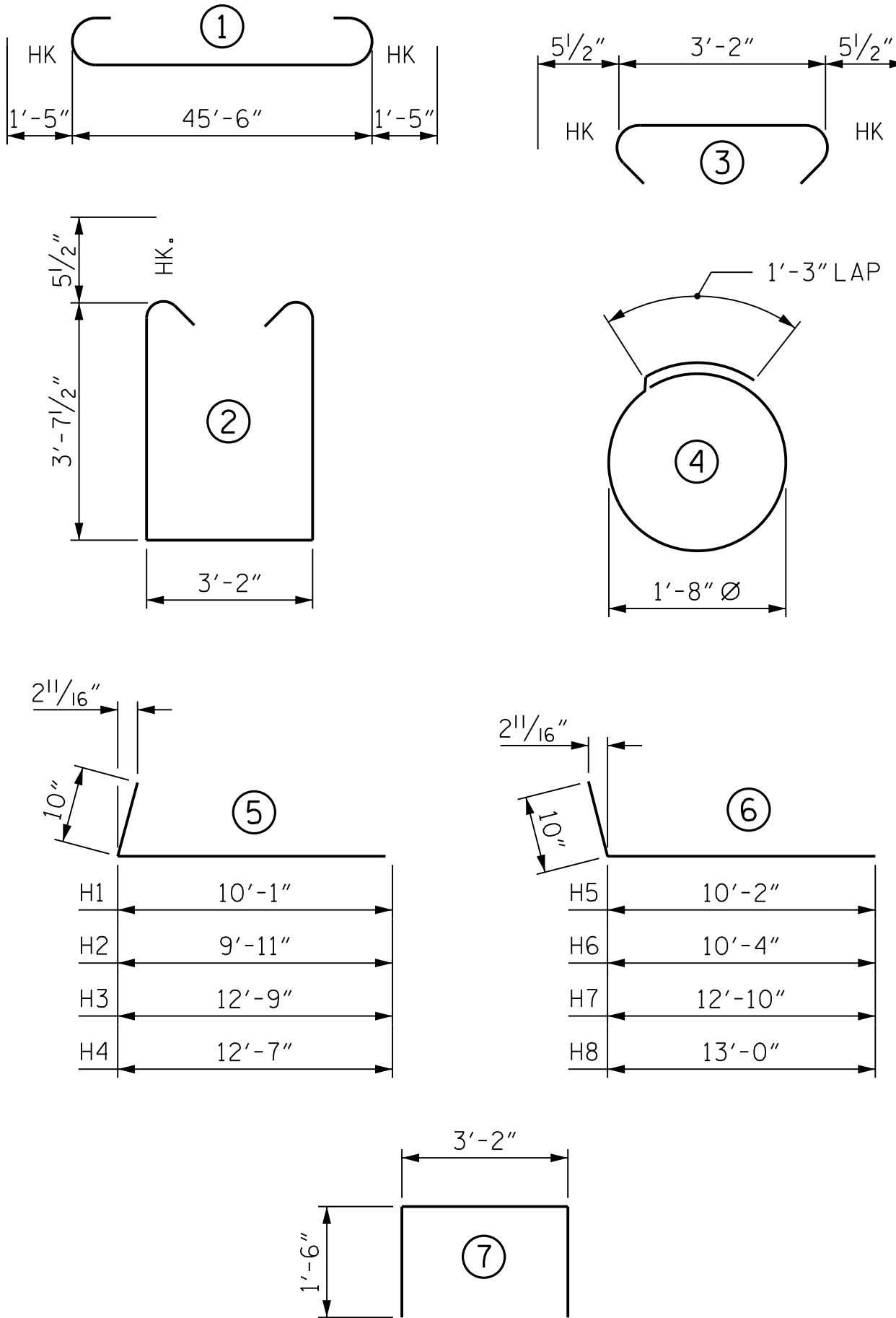
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	48'-4"	1664
B2	10	#5	STR	45'-6"	475
B3	12	#4	STR	3'-2"	25
B4	4	#4	STR	12'-11"	35
H1	6	#5	5	10'-11"	68
H2	6	#5	5	10'-9"	67
H3	6	#5	5	13'-7"	85
H4	6	#5	5	13'-5"	84
H5	6	#5	6	11'-0"	69
H6	6	#5	6	11'-2"	70
H7	6	#5	6	13'-8"	86
H8	6	#5	6	13'-10"	87
K1	24	#4	STR	3'-2"	51
S1	48	#5	2	11'-4"	567
S2	48	#5	3	4'-1"	204
S3	20	#4	4	6'-6"	87
U1	9	#4	7	6'-2"	37
V1	72	#4	STR	6'-1"	293
V2	60	#4	STR	8'-0"	321

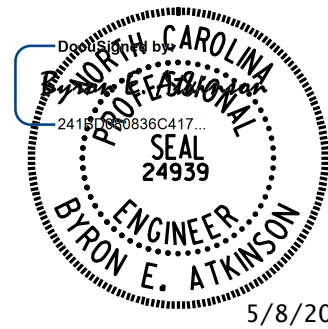
REINFORCING STEEL 4375 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 (CAP, COLLARS & LOWER PART OF WINGS)	28.0 C.Y.
POUR #2 (UPPER PART OF WINGS)	4.1 C.Y.
TOTAL	32.1 C.Y.

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 3 OF 3



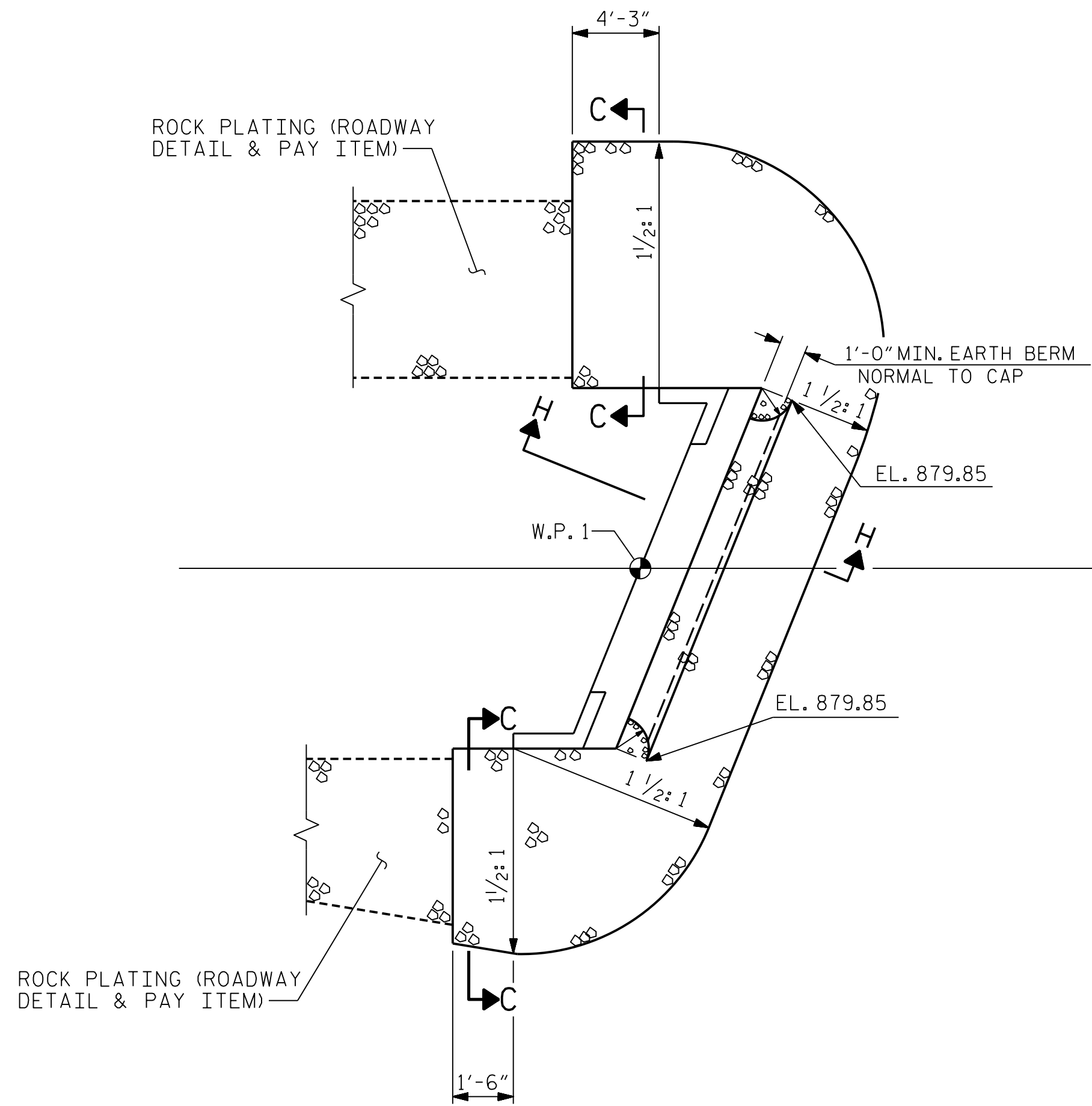
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

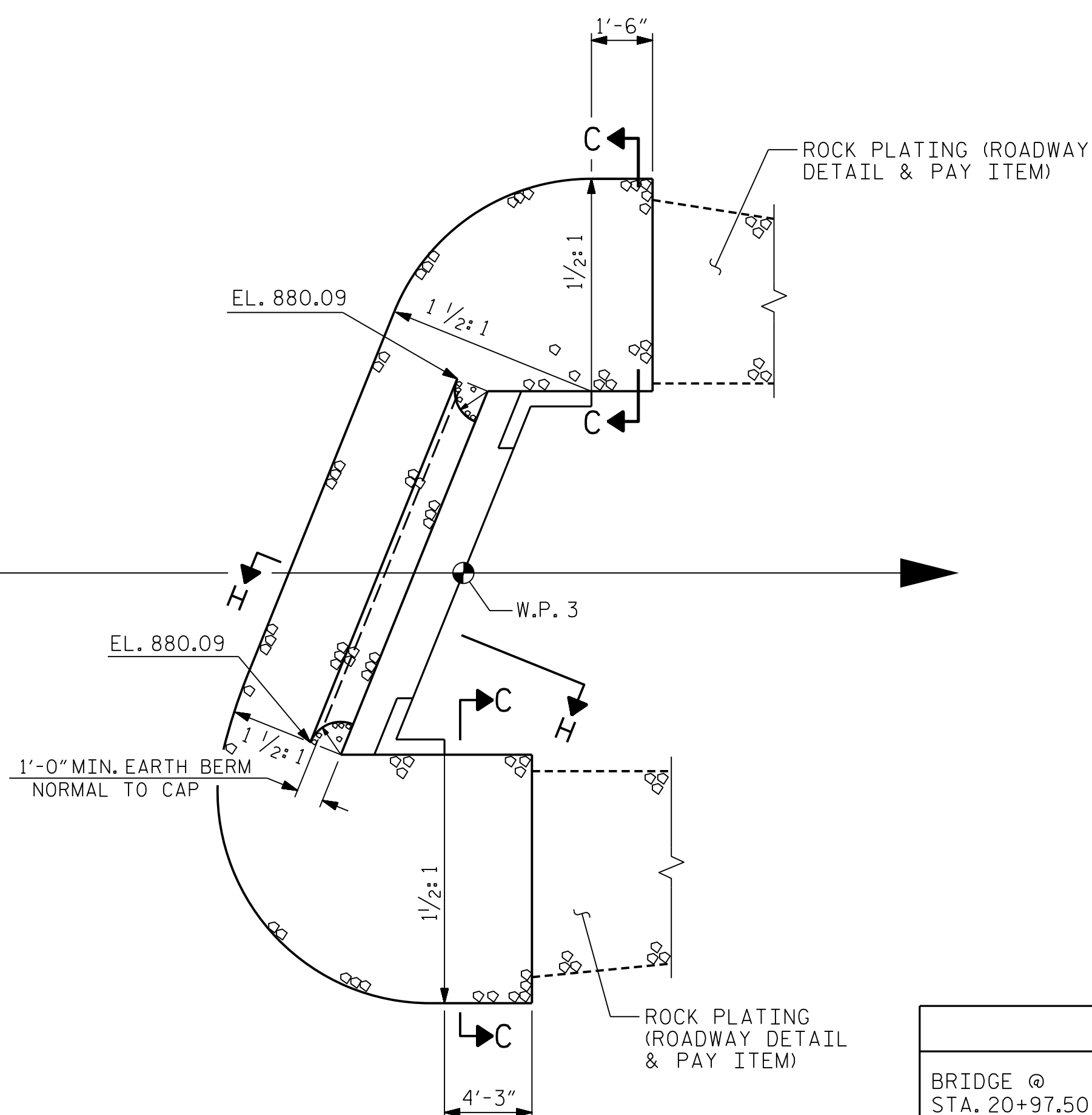
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
DETAILS AND
BILL OF MATERIAL

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
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DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>

REVISIONS						SHEET NO. S-26 TOTAL SHEETS 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
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<u>2</u>			<u>4</u>			

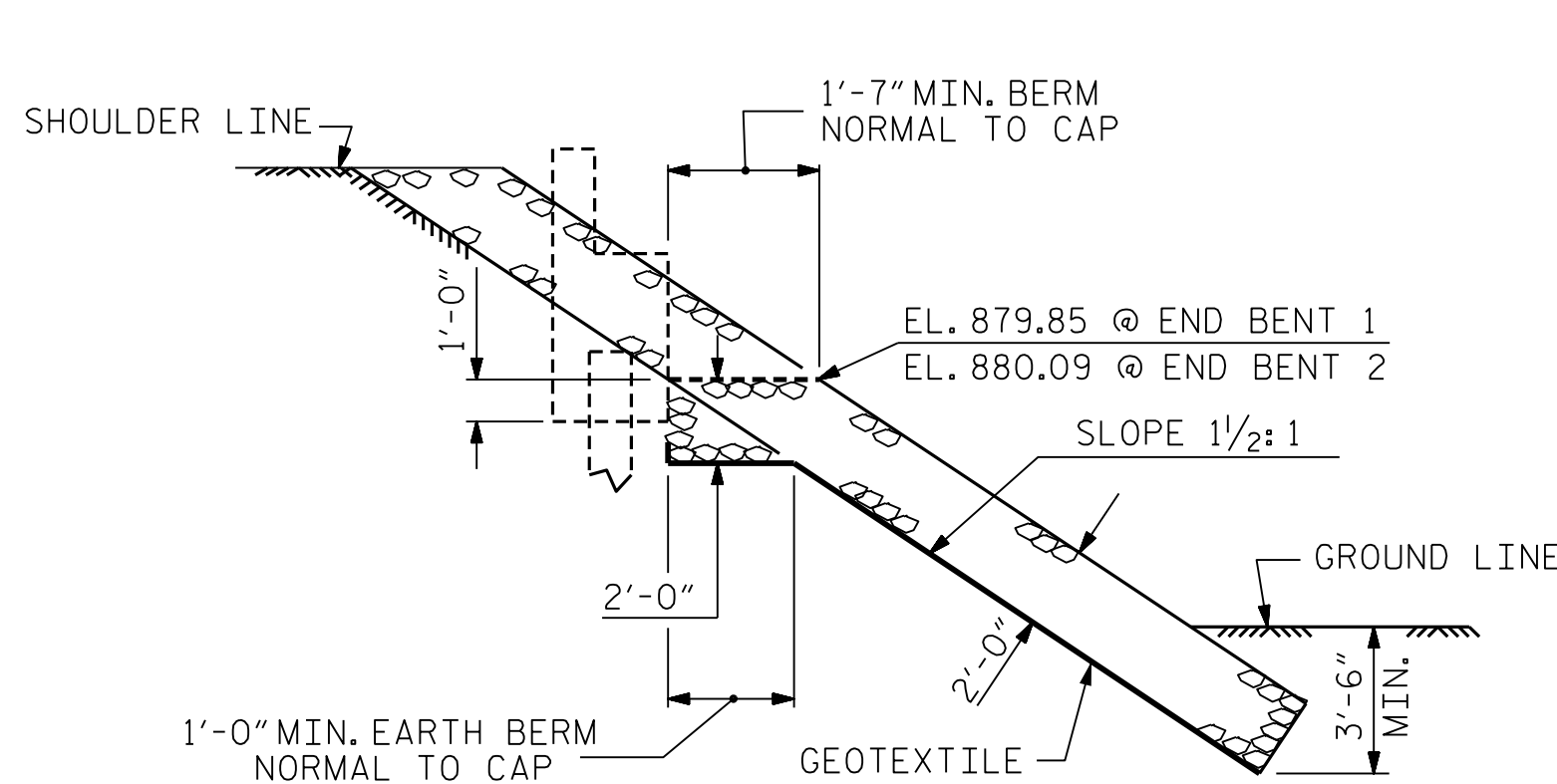


AT END BENT 1

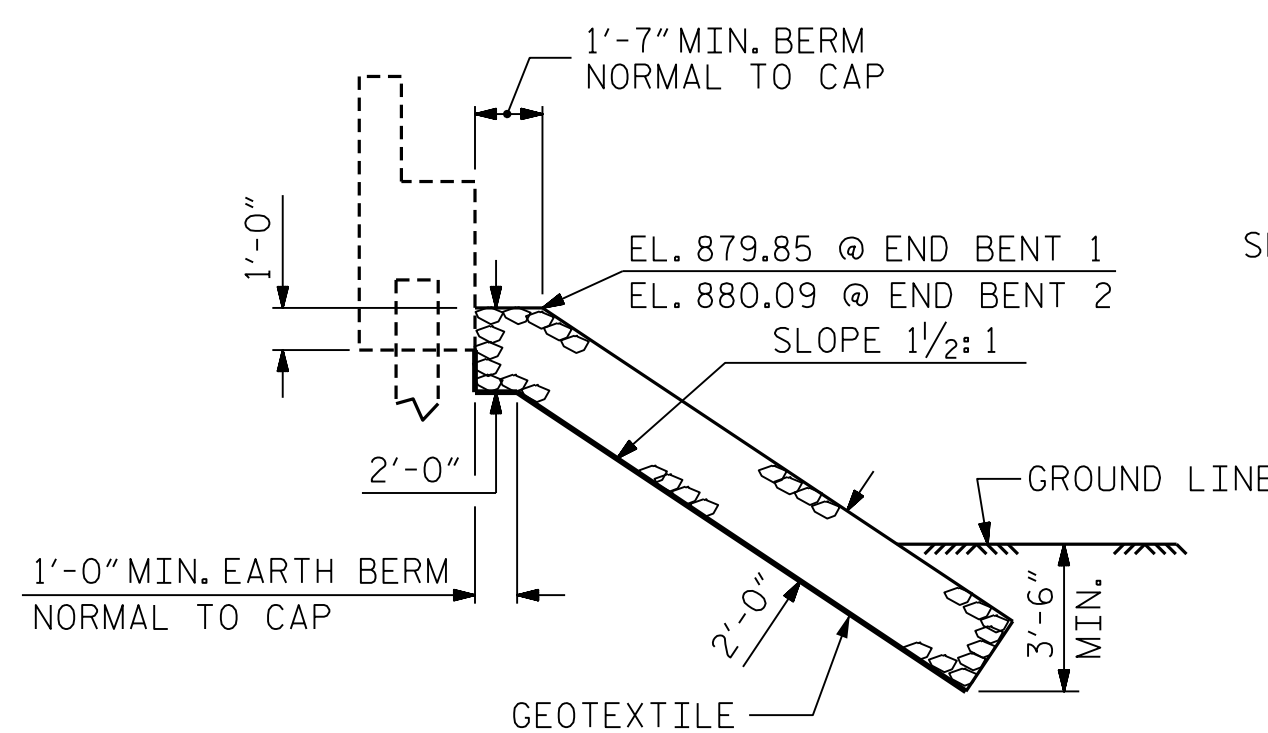


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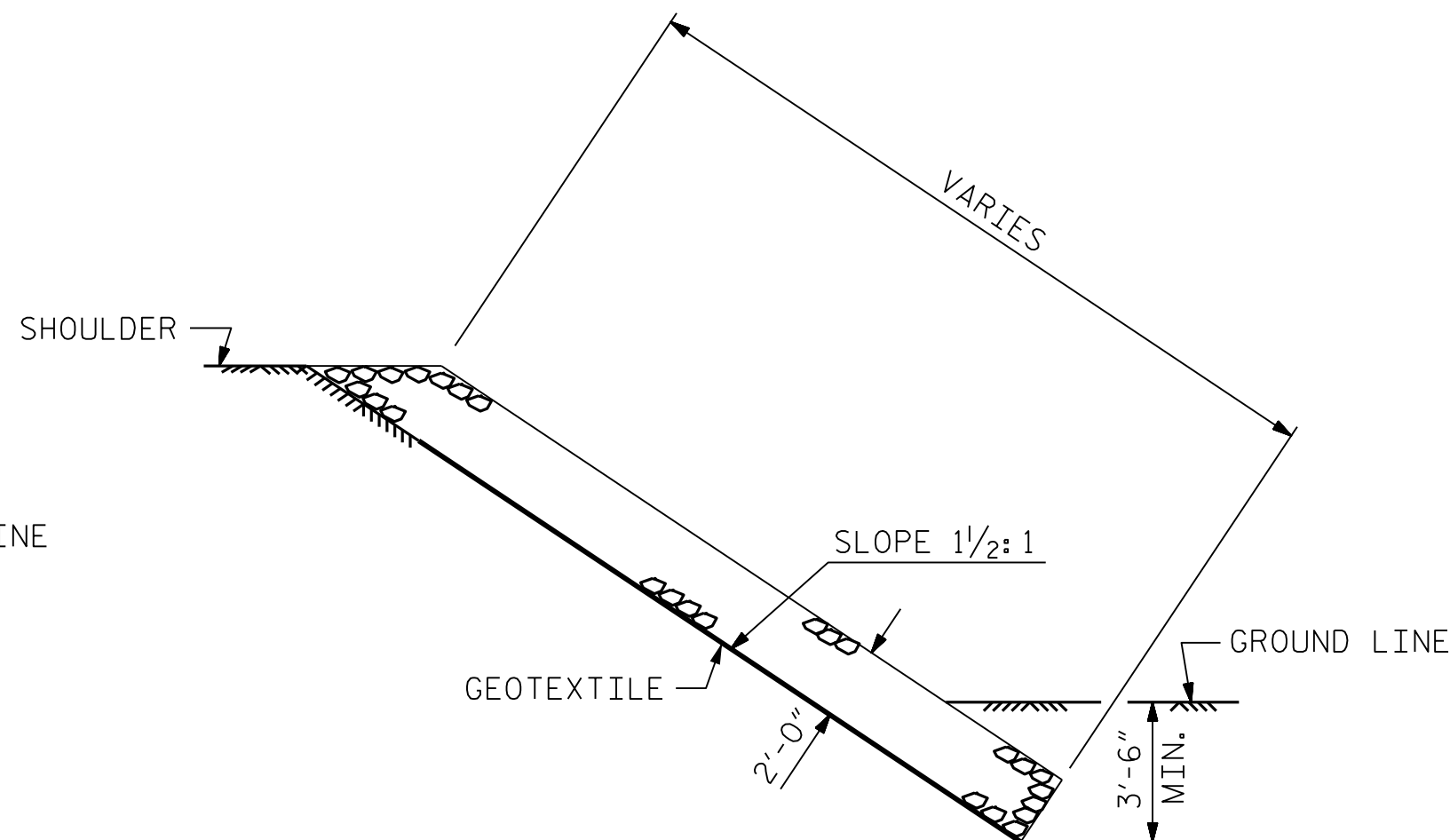
ESTIMATED QUANTITIES		
BRIDGE @ STA. 20+97.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	118	131
END BENT 2	142	157



SECTION H-H

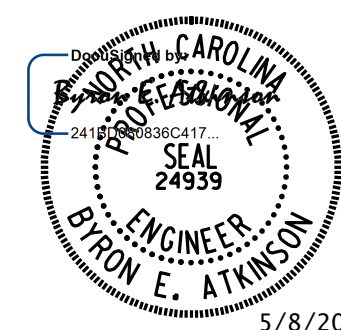


SECTION C-C



SECTION C-C

PROJECT NO. BP14.R041
POLK COUNTY
 STATION: 20+97.50 -L-



5/8/2025

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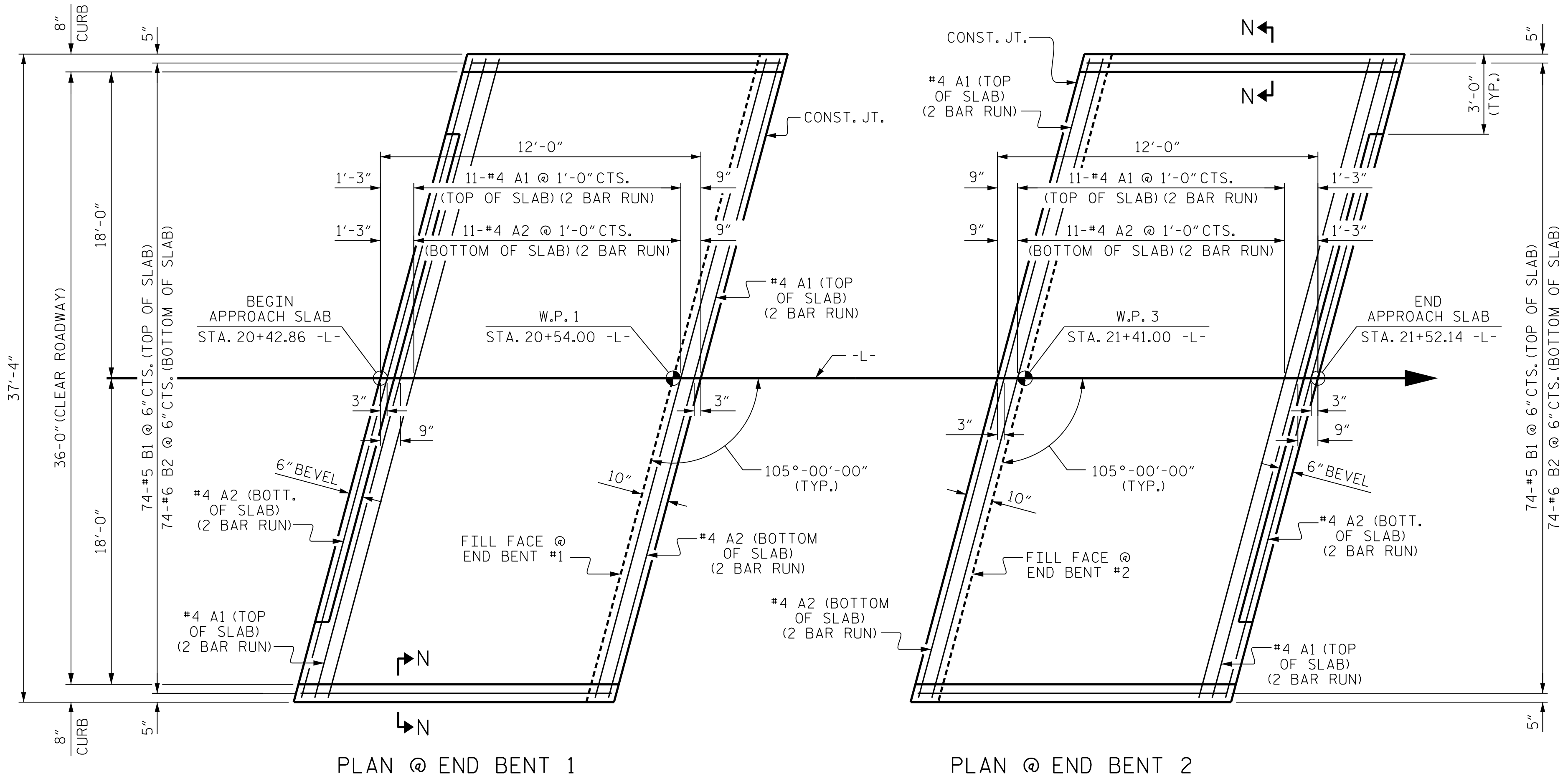
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-27
2			4			
TOTAL SHEETS						29

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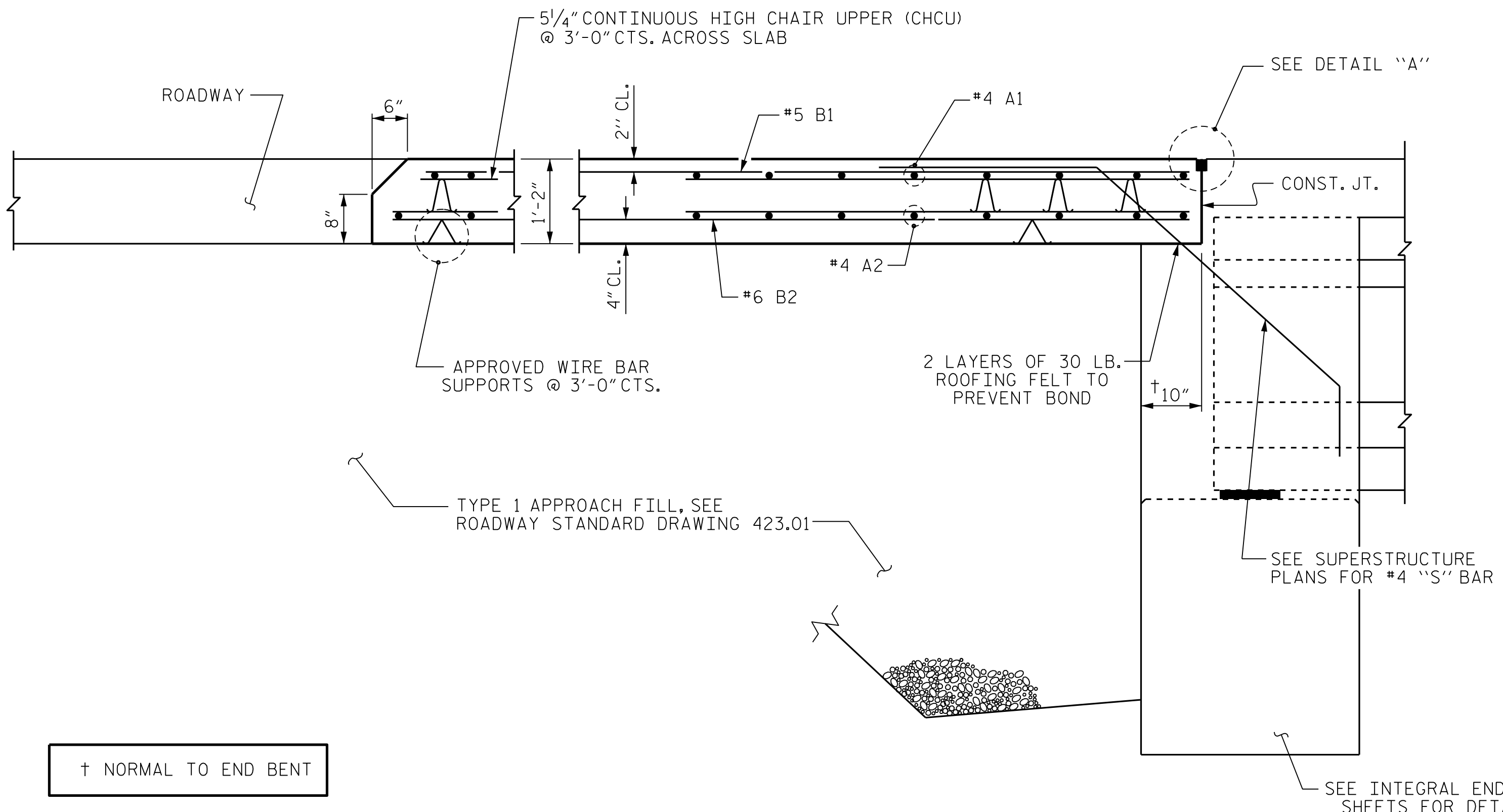
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PLAN @ END BENT 1

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.)

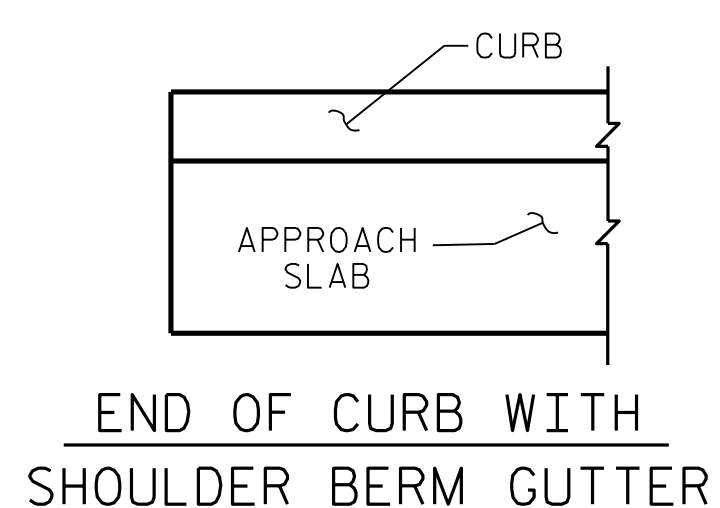
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	20'-2"	350
A2	26	#4	STR	20'-1"	349
* B1	74	#5	STR	11'-1"	855
B2	74	#6	STR	11'-7"	1287

REINFORCING STEEL LBS. 1636
* EPOXY COATED REINFORCING STEEL LBS. 1205

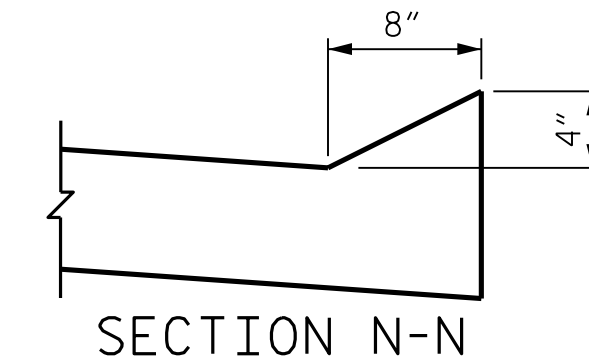
CLASS AA CONCRETE C. Y. 19.3

SPLICE LENGTHS

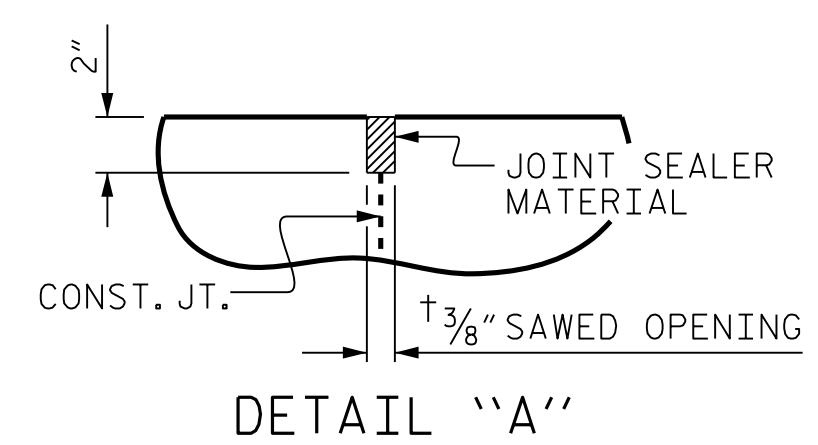
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



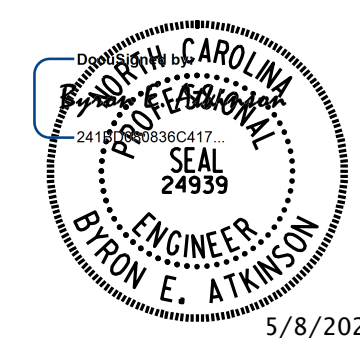
CURB DETAILS



SECTION N-N



DETAIL "A"



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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 1 OF 2

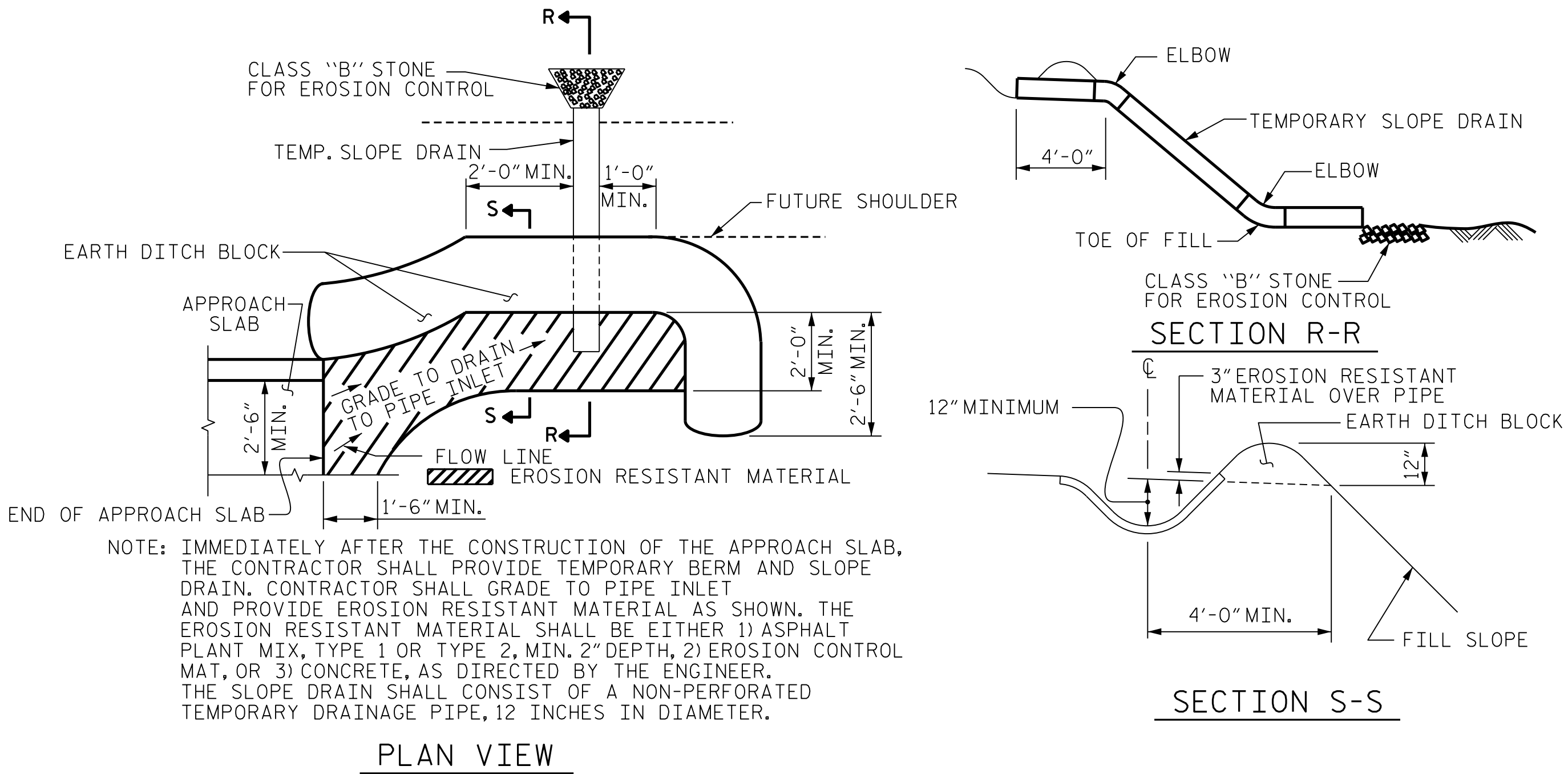
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
WITH FLEXIBLE PAVEMENT

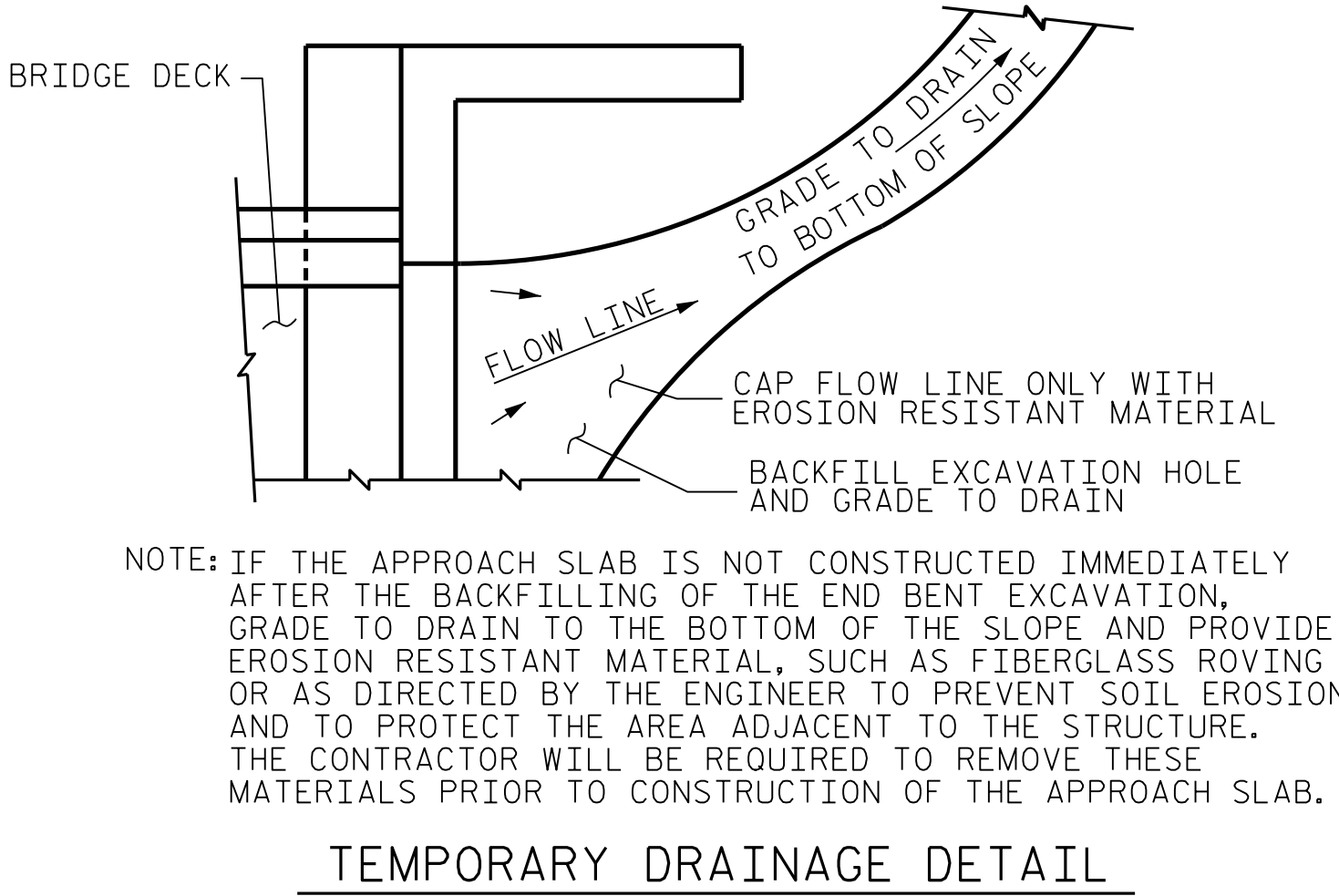
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-28
2			4			

TOTAL SHEETS
29

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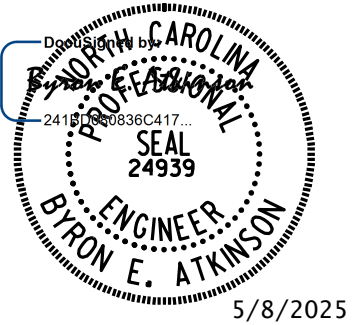
TEMPORARY BERM AND SLOPE DRAIN DETAILS



TEMPORARY DRAINAGE DETAIL

PROJECT NO. BP14.R041
POLK COUNTY
STATION: 20+97.50 -L-

SHEET 2 OF 2



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1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-29
TOTAL SHEETS					29

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/25</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/25</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>04/25</u>

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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