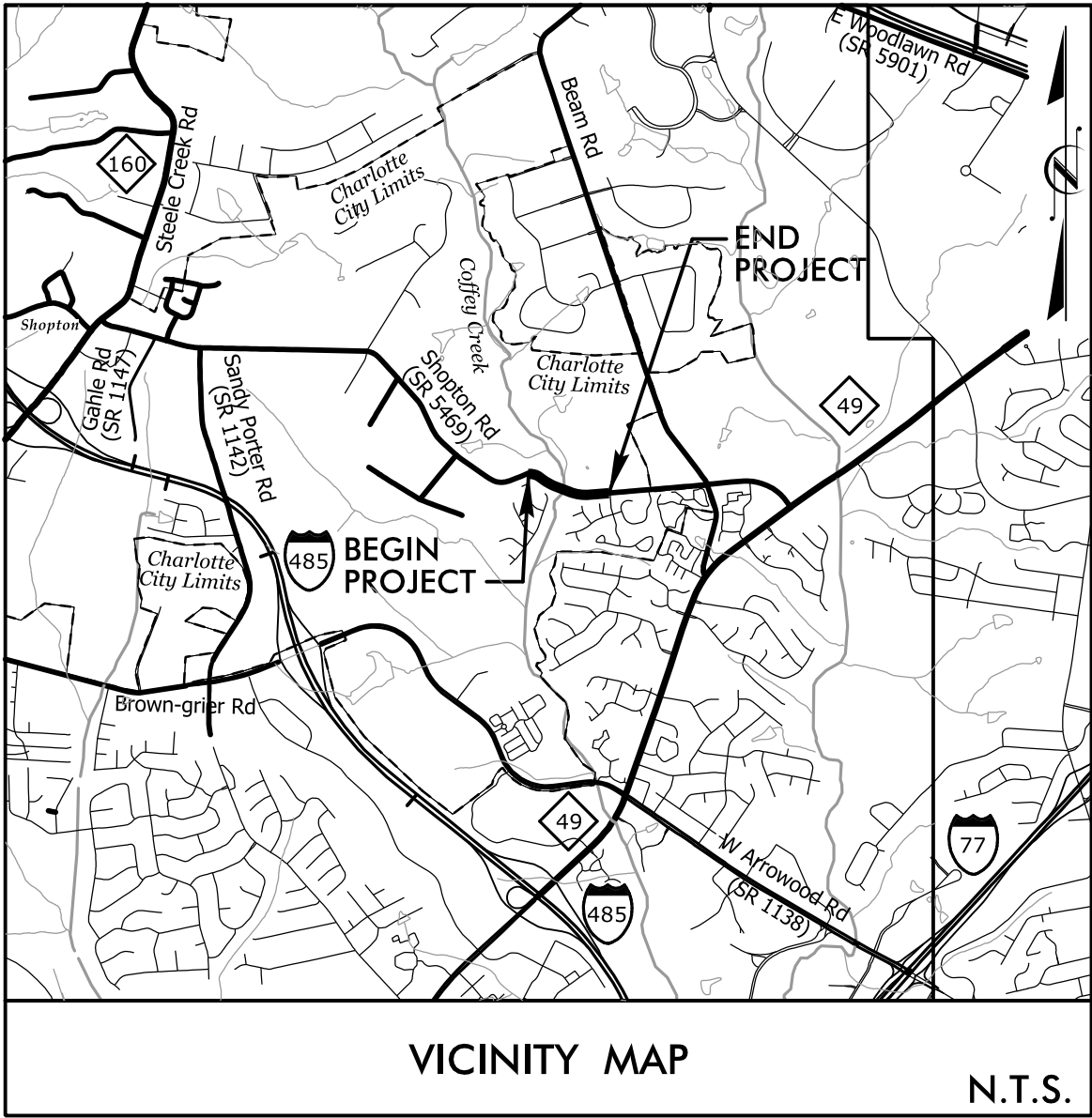


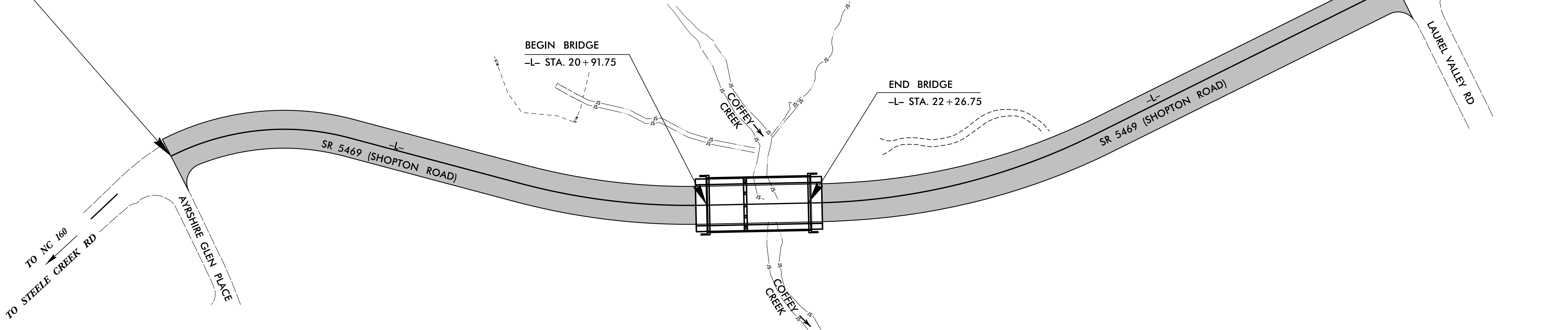
6/18/2025
R:\Structures\3.0 Ustation\6.0 RFC Bridge Plans\2024 Update\401_001_R138_SMU_TSH_001_330739.dgn
hensleyg

PROJECT WBS: BP10-R013

CONTRACT: C204991



BEGIN PROJECT WBS BP10-R013
-L- STA. 13+81.76



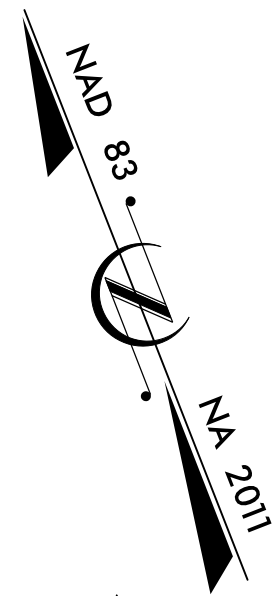
STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

LOCATION: BRIDGE #590165 COFFEY CREEK ON SR 5469 (SHOPTON RD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP10-R013	1	37
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP10.R013.1		P.E.	
BP10.R013.2		RW & UTILITY	
BP10.R013.3		CONSTRUCTION	



END PROJECT WBS BP10-R013
-L- STA. 30+43.05

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2025 = 12,200
ADT 2045 = 23,291
DHV = N/A
D = N/A
T = 7 %
V = 45 MPH

FUNC. CLASSIFICATION:
SUB REGIONAL TIER
COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT WBS BP10-R013 = .289 MILES
LENGTH OF STRUCTURE PROJECT WBS BP10-R013 = .026 MILES
TOTAL LENGTH OF PROJECT WBS BP10-R013 = .315 MILES

NCDOT CONTACT: Yanwei Ma, PE
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:



STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

2024 STANDARD SPECIFICATIONS

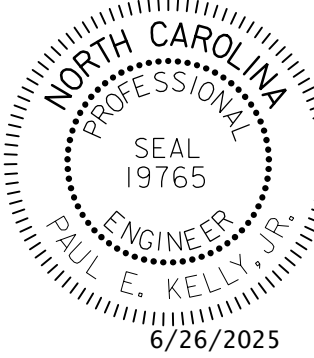
RIGHT OF WAY DATE:
AUGUST 11, 2021

LETTING DATE:
AUGUST 19, 2025

JASON T. GRISCOM, PE
PROJECT ENGINEER

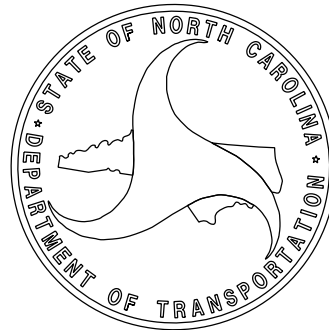
SPENCER G. HENSLEY, PE
PROJECT DESIGNER

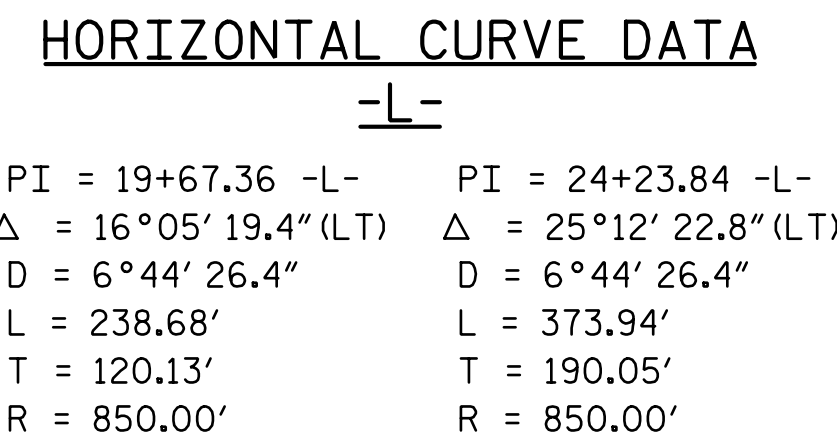
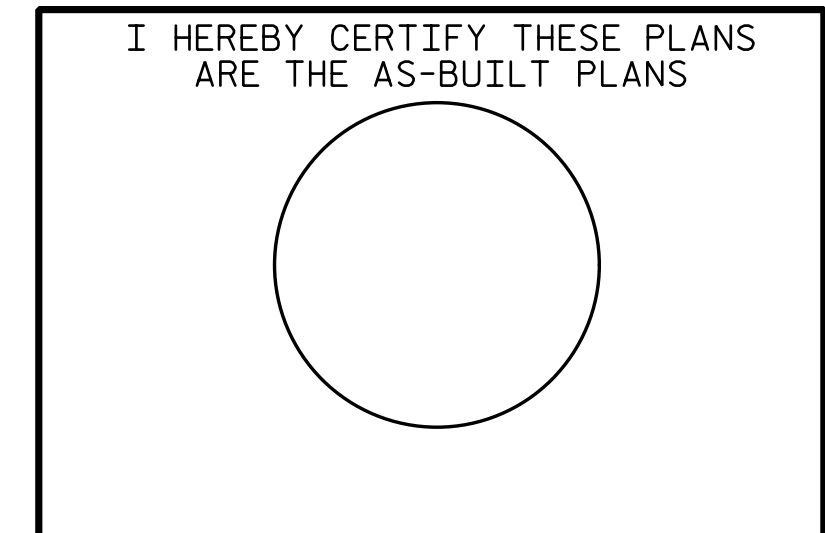
STRUCTURES
ENGINEER



Signed by:
Paul Kelly, Jr.
SIGNATURE:

P.E.






SHEET 1 OF 4 REPLACES BRIDGE NO. 590165

FOR BRIDGE ON SHOPTON RD
(SR 5469) OVER COFFEY CREEK
BETWEEN NC160 AND NC49

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02 TOTAL SHEETS 37
1			3			
2			4			

DRAWN BY : JMG DATE : 9-21
 CHECKED BY : TRL DATE : 9-21
 DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

Signed by:
Paul Kelly Jr.



The seal is circular with a dashed outer border. Inside, the text "NORTH CAROLINA" is at the top, "PROFESSIONAL" is on the right, "ENGINEER" is at the bottom, and "PAUL E. KELLY, JR." is on the left. In the center, it says "SEAL 19765".

6/26/2025

stv STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
NC License Number F-09991

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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3:42:50 PM

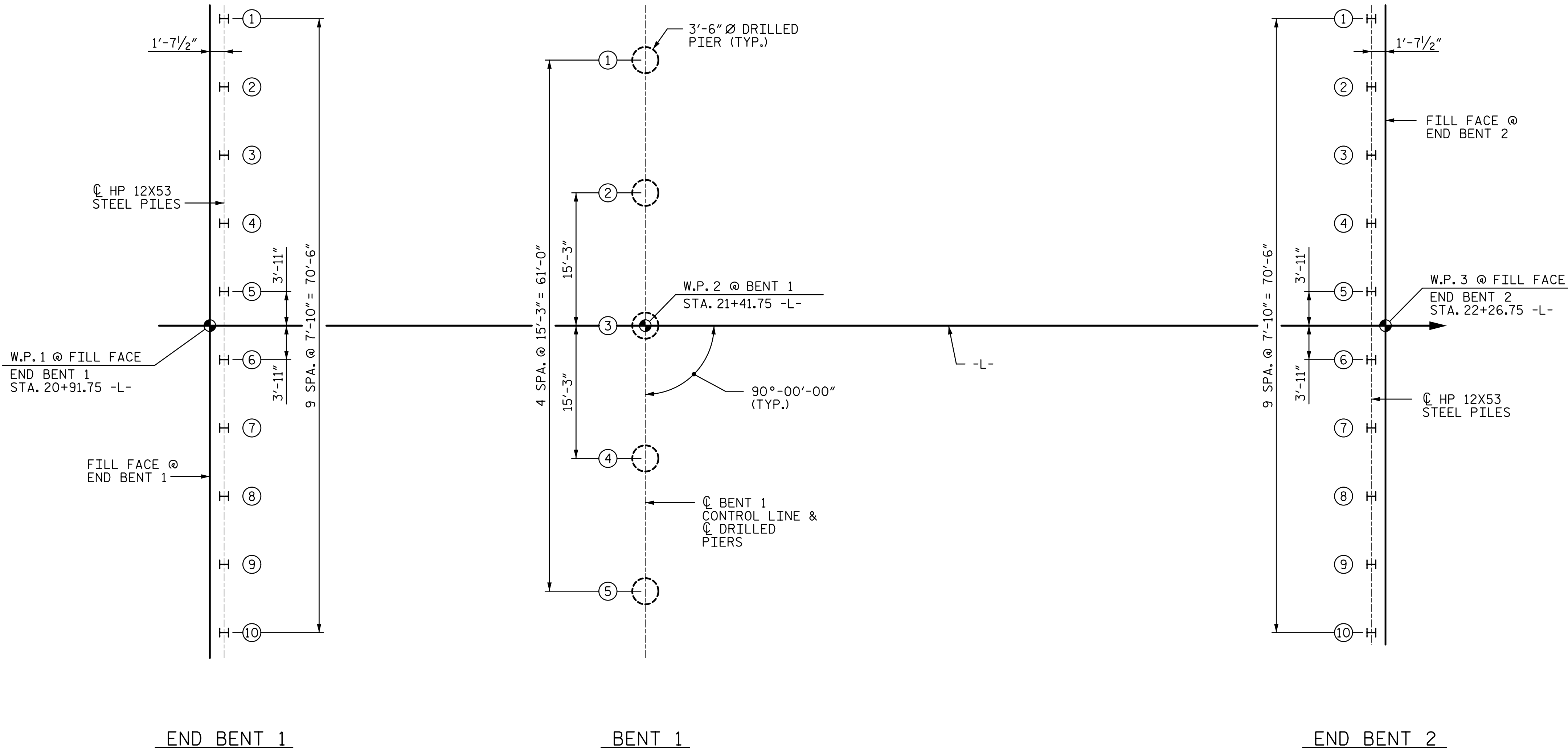
6/18/2025

henslesg

NOTES:

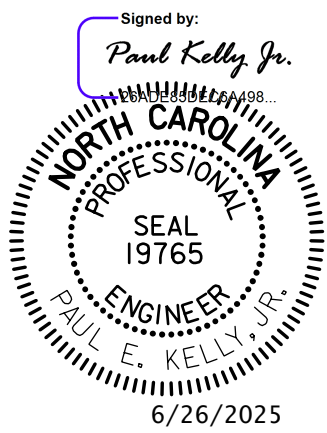
FOR FOUNDATION NOTES AND INFORMATION SEE SHEET "PILE AND DRILLED PIER FOUNDATION TABLES AND NOTES".

DRAWN BY :	JMG	DATE :	9-21
CHECKED BY :	TRL	DATE :	11-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25



FOUNDATION LAYOUT

⊙ - PILE/DRILLED PIER NO.



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2151 Howkins St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

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SIGNATURES COMPLETED

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

SHEET 2 OF 4

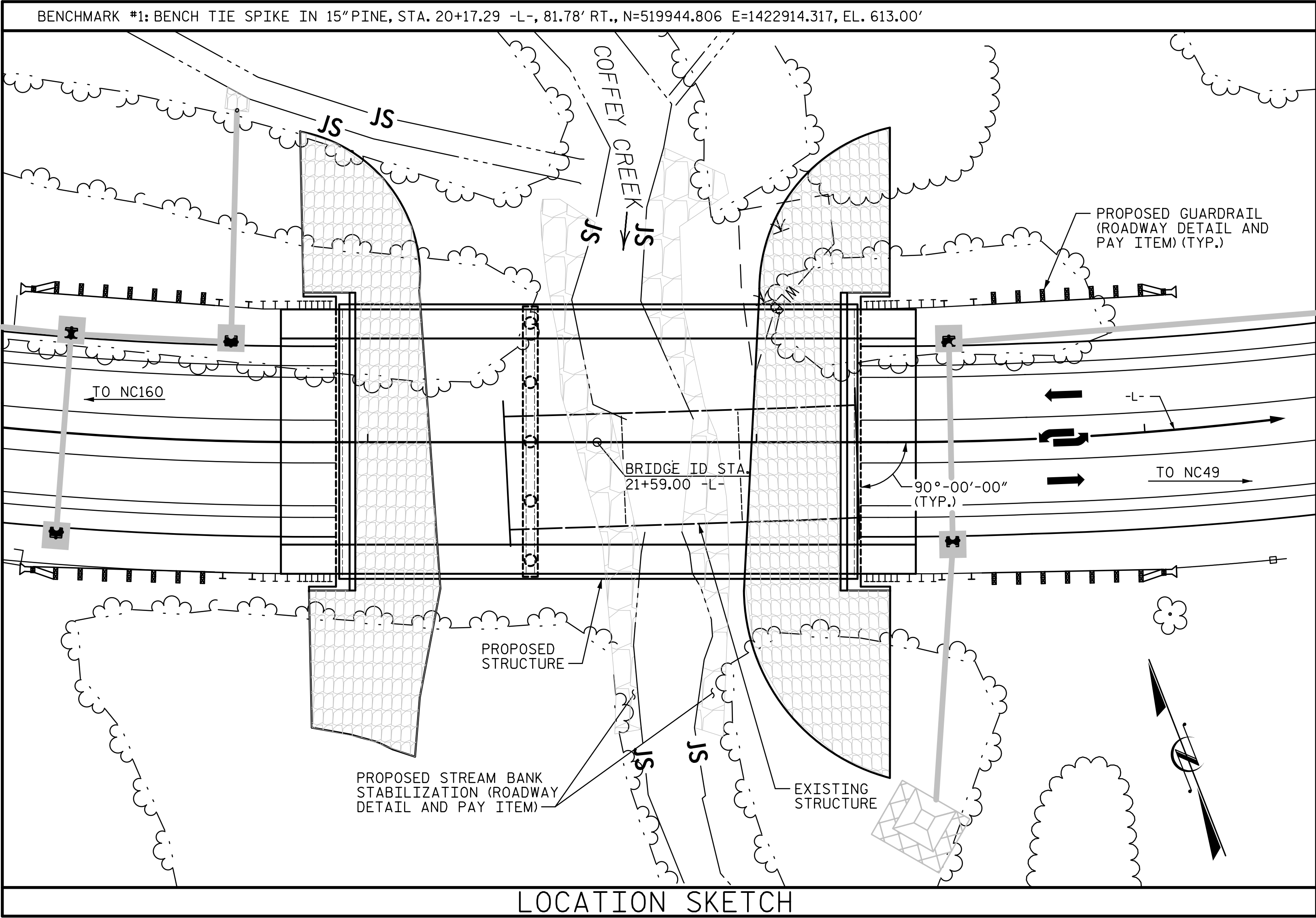
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					37

R:\Structures\3.0 Usstation\6.0 RFC Bridge Plans_2024 Update\401.009_R013_SMLGD04_005_330739.dgn

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8/4/2025

khnm



NOTES:

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR 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.

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 SECTION 420-3 OF THE STANDARD SPECIFICATIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 21+59.00 -L-.

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

MATERIAL SHOWN IN THE CROSS HATCHED AREA SHALL BE EXCAVATE FOR A DISTANCE OF 43 FT ON THE LEFT SIDE OF THE CENTERLINE ROADWAY AND 84 FT ON THE RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 1 AND 36 FT ON EACH SIDE OF THE CENTERLINE ROADWAY AT END BENT 2 OR AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THE 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.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FOUNDATION NOTES, SEE "FOUNDATION LAYOUT" SHEET.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE, SINCE THIS INFORMATION IS 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.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF (1) 30'-3", (1) 30'-0" AND (1) 30'-3" SPANS WITH STEEL PLANK DECK ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-0" SUPPORTED BY TIMBER ABUTMENTS AND LOCATED AT 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 LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 21+59.00 -L-	ASBESTOS ASSESSMENT	3'-6"DIA. DRILLED PIERS IN SOIL	3'-6"DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6"DIA. DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 21+59.00 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS STATION 21+59.00	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDER		PILE DRIVING EQUIP. SETUP FOR HP 12x53 STEEL PILES
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.
SUPERSTRUCTURE								9,411	8,067		LUMP SUM			20	1,327.5	
END BENT 1										44.1		6,483				10
BENT 1			57.0	48.0	55.0					55.8		22,316	3,643			
END BENT 2										44.1		6,483				10
TOTAL	LUMP SUM	LUMP SUM	57.0	48.0	55.0	1	LUMP SUM	9,411	8,067	144.0	LUMP SUM	35,282	3,643	20	1,327.5	20

HYDRAULIC DATA

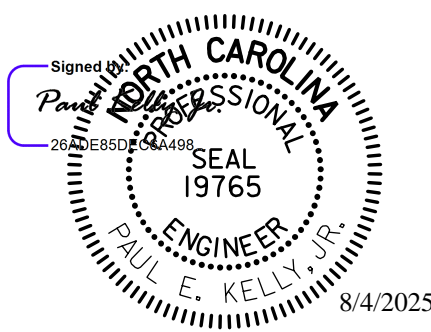
DESIGN DISCHARGE: ----- 2,632 CFS
FREQUENCY OF DESIGN FLOOD: ----- 25 YRS.
DESIGN HIGH WATER ELEVATION: ----- 593.5'
DRAINAGE AREA: ----- 6.4 SQ. MI.
BASE DISCHARGE (Q100): ----- 3,969 CFS
BASE HIGH WATER ELEVATION: ----- 595.1'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE: ----- 28,500 CFS
FREQUENCY OF OVERTOPPING FLOOD: --- 500+ YRS.
OVERTOPPING FLOOD ELEVATION: ----- 610.5'
OVERTOPPING OCCURS @ STA. 20+21.72 -L- PROPOSED ROADWAY

TOTAL BILL OF MATERIAL CONT'D

	HP 12x53 STEEL PILES		THREE BAR METAL RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	NO.	LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM
SUPERSTRUCTURE			251.7			LUMP SUM
END BENT 1	10	225		603	670	
BENT 1						
END BENT 2	10	300		531	590	
TOTAL	20	525	251.7	1,134	1,260	LUMP SUM



stv STV Engineers, Inc.
2151 Howling St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

⚠️ REVISED DRILLED PIER QUANTITIES

PROJECT NO. BP10-R013

MECKLENBURG COUNTY

STATION: 21+59.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

LOCATION SKETCH,
GENERAL NOTES AND TOTAL
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1	PEK	8/2025	3			TOTAL SHEETS
2			4			37

LOAD FACTORS:

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

NOTES:

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

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)		MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER	
							MOMENT				SHEAR						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		1.19	---	1.75	0.62	1.51	B	I	41.27	0.77	1.19	B	I	74.82	0.80	0.62	1.21	B	I	41.27		
	HL-93 (OPERATING)	N/A		1.75	---	1.35	0.62	1.96	B	I	41.27	0.77	1.75	B	I	74.82	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000		1.63	58.68	1.75	0.62	2.03	B	I	41.27	0.77	1.73	B	I	74.82	0.80	0.62	1.63	B	I	41.27		
	HS-20 (OPERATING)	36.000		2.38	85.68	1.35	0.62	2.63	B	I	41.27	0.77	2.38	B	I	74.82	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.78	51.03	1.40	0.62	5.89	B	I	41.27	0.77	5.73	B	I	74.82	0.80	0.62	3.78	B	I	41.27	
		SNGARBS2	20.000		2.77	55.40	1.40	0.62	4.31	B	I	41.27	0.77	4.01	B	I	74.82	0.80	0.62	2.77	B	I	41.27	
		SNAGRIS2	22.000		2.59	56.98	1.40	0.62	4.04	B	I	41.27	0.77	3.71	B	I	74.82	0.80	0.62	2.59	B	I	41.27	
		SNCOTTS3	27.250		1.87	50.96	1.40	0.62	2.91	B	I	41.27	0.77	2.80	B	I	74.82	0.80	0.62	1.87	B	I	41.27	
		SNAGGRS4	34.925		1.55	54.13	1.40	0.62	2.41	B	I	41.27	0.77	2.26	B	I	74.82	0.80	0.62	1.55	B	I	41.27	
		SNS5A	35.550		1.51	53.68	1.40	0.62	2.36	B	I	41.27	0.77	2.29	B	I	74.82	0.80	0.62	1.51	B	I	41.27	
		SNS6A	39.950		1.38	55.13	1.40	0.62	2.15	B	I	41.27	0.77	2.07	B	I	74.82	0.80	0.62	1.38	B	I	41.27	
		SNS7B	42.000		1.32	55.44	1.40	0.62	2.05	B	I	41.27	0.77	2.01	B	I	74.82	0.80	0.62	1.32	B	I	41.27	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.69	55.77	1.40	0.62	2.63	B	I	41.27	0.77	2.50	B	I	74.82	0.80	0.62	1.69	B	I	41.27	
		TNT4A	33.075		1.69	55.90	1.40	0.62	2.63	B	I	41.27	0.77	2.44	B	I	74.82	0.80	0.62	1.69	B	I	41.27	
		TNT6A	41.600		1.37	56.99	1.40	0.62	2.14	B	I	41.27	0.77	2.13	B	I	74.82	0.80	0.62	1.37	B	I	41.27	
		TNT7A	42.000		1.38	57.96	1.40	0.62	2.15	B	I	41.27	0.77	2.09	B	I	74.82	0.80	0.62	1.38	B	I	41.27	
		TNT7B	42.000		1.42	59.64	1.40	0.62	2.21	B	I	41.27	0.77	1.95	B	I	74.82	0.80	0.62	1.42	B	I	41.27	
		TNAGRIT4	43.000		1.35	58.05	1.40	0.62	2.11	B	I	41.27	0.77	1.87	B	I	74.82	0.80	0.62	1.35	B	I	41.27	
TNAGT5A		45.000		1.28	57.60	1.40	0.62	2.00	B	I	41.27	0.77	1.84	B	I	74.82	0.80	0.62	1.28	B	I	41.27		
TNAGT5B		45.000		1.27	57.15	1.40	0.62	1.97	B	I	41.27	0.77	1.73	B	I	74.82	0.80	0.62	1.27	B	I	41.27		
EMERGENCY VEHICLE (EV)	EV2	27.750		1.95	56.06	1.30	0.62	3.27	B	I	41.27	0.77	3.00	B	I	74.82	0.80	0.62	1.95	B	I	41.27		
	EV3	43.000		1.28	55.04	1.30	0.62	2.15	B	I	41.27	0.77	1.94	B	I	74.82	0.80	0.62	1.28	B	I	41.27		

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

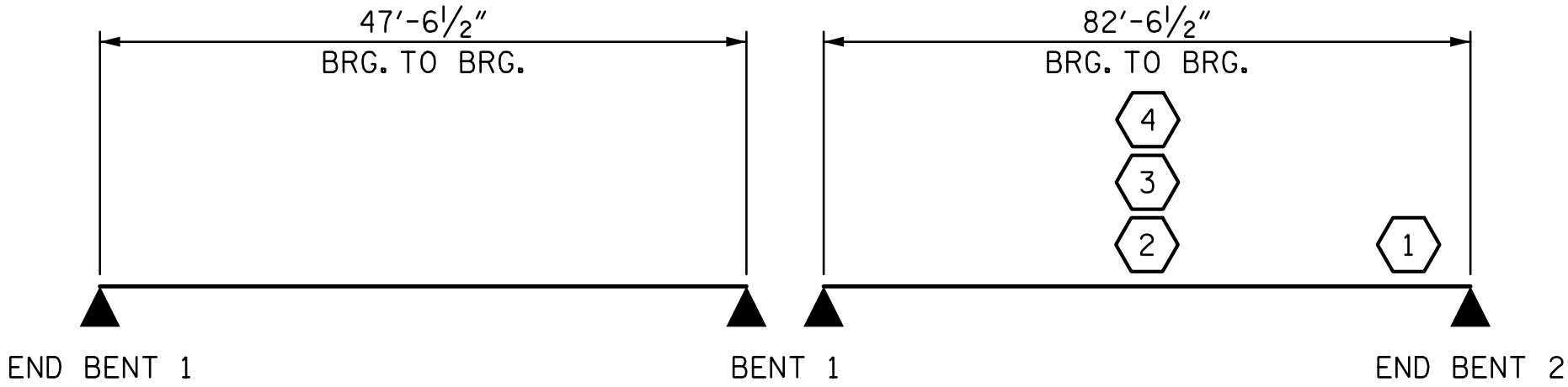
3 LEGAL LOAD RATING **

4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

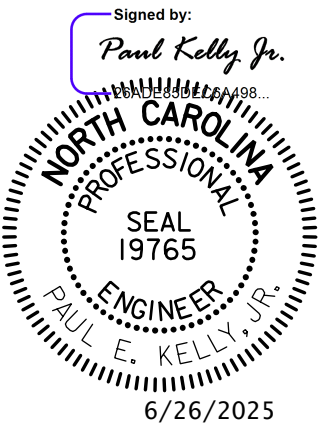


LRFR SUMMARY

PROJECT NO. BP10-R013

MECKLENBURG COUNTY

STATION: 21+59.00 -L-



STV Engineers, Inc.
2151 Howling St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

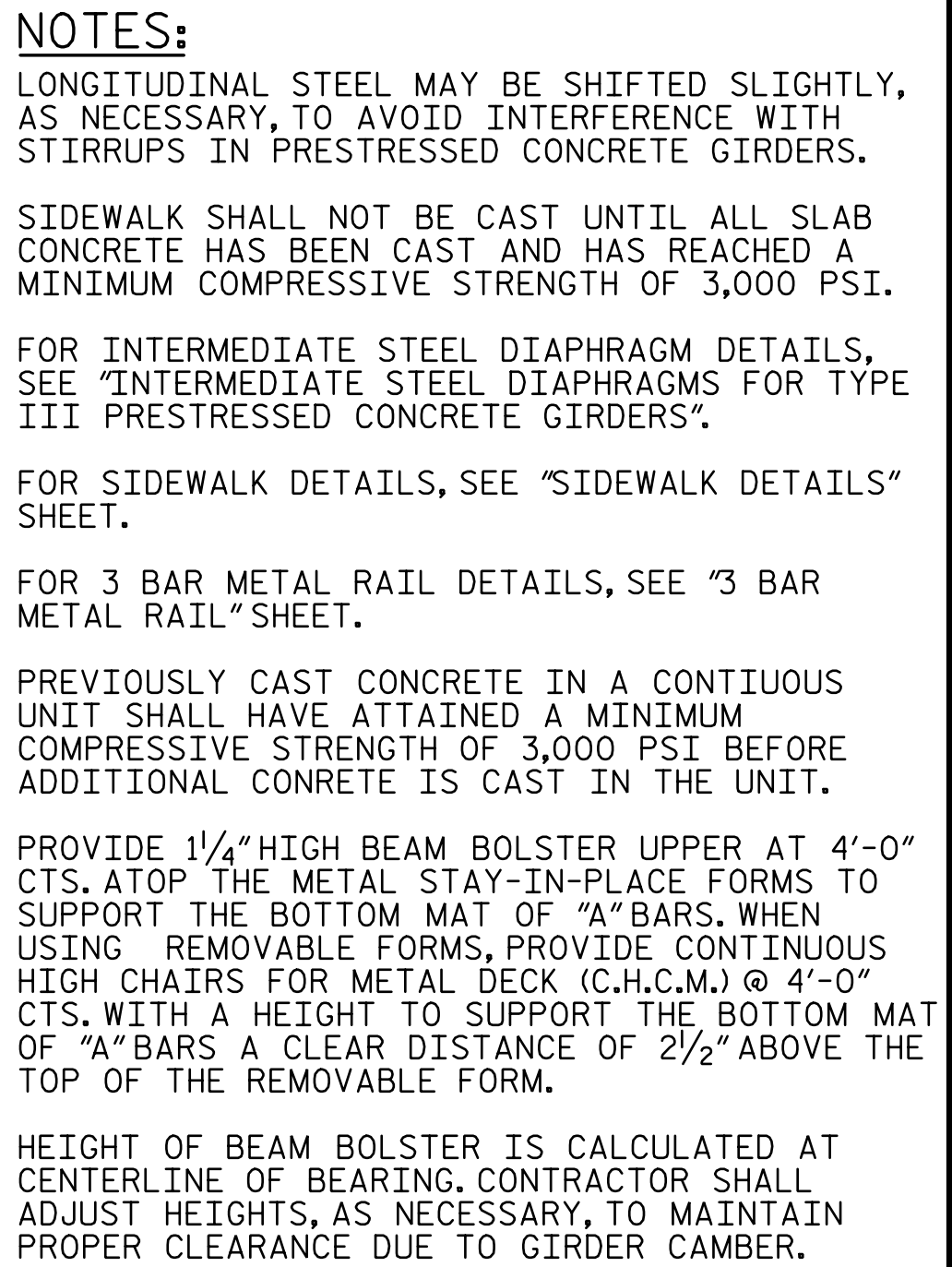
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FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

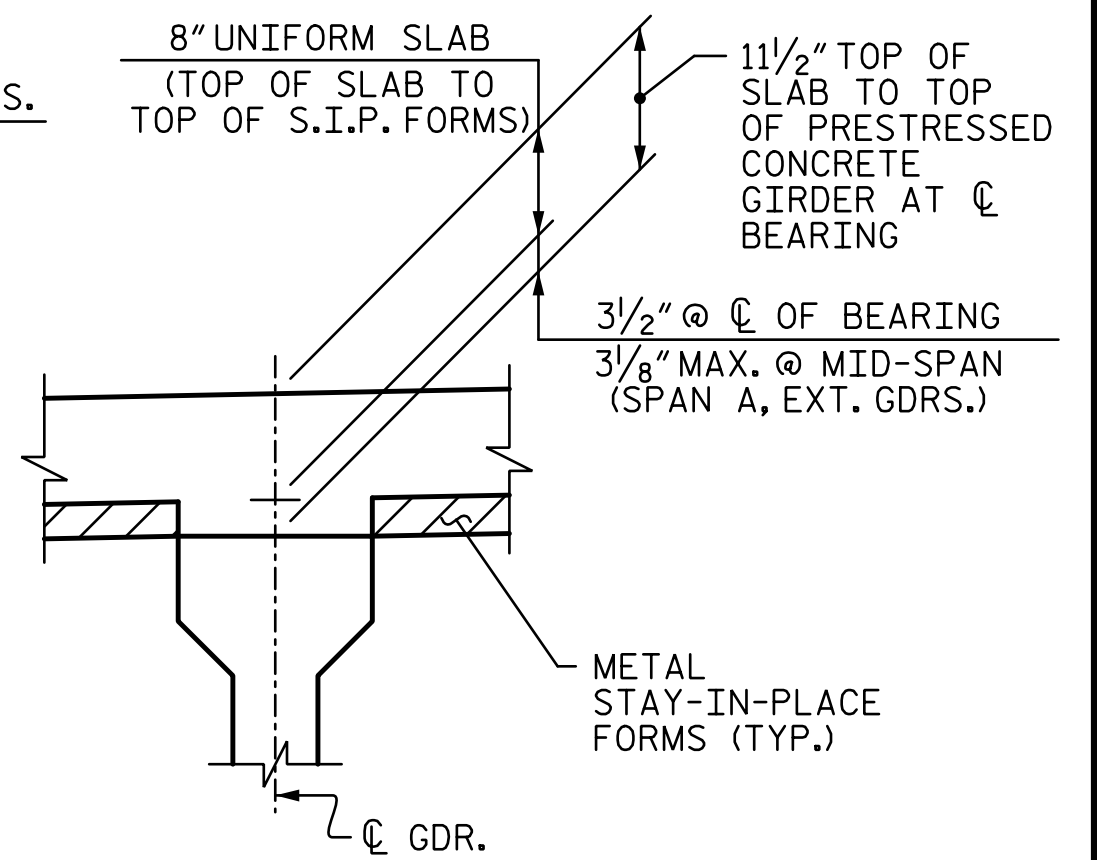
LRFD SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-06
2			4		TOTAL SHEETS 37

DRAWN BY : JMG	DATE : 9-21
CHECKED BY : TRL	DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY	DATE : 4-25



PARTIAL TYPICAL SECTION
AT LINK SLAB AT BENT



DETAIL "A"

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
 STATION: 21+59.00 -L-

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(LOOKING IN DIRECTION OF STATIONING)
(BARS EXTENDING FROM END BENT CAP NOT SHOWN FOR CLARITY)

Signed by:

Paul Kelly, Jr.

PAUL KELLY, JR., P.E.
NORTH CAROLINA
PROFESSIONAL
SEAL
19765
ENGINEER
PAUL E. KELLY, JR.

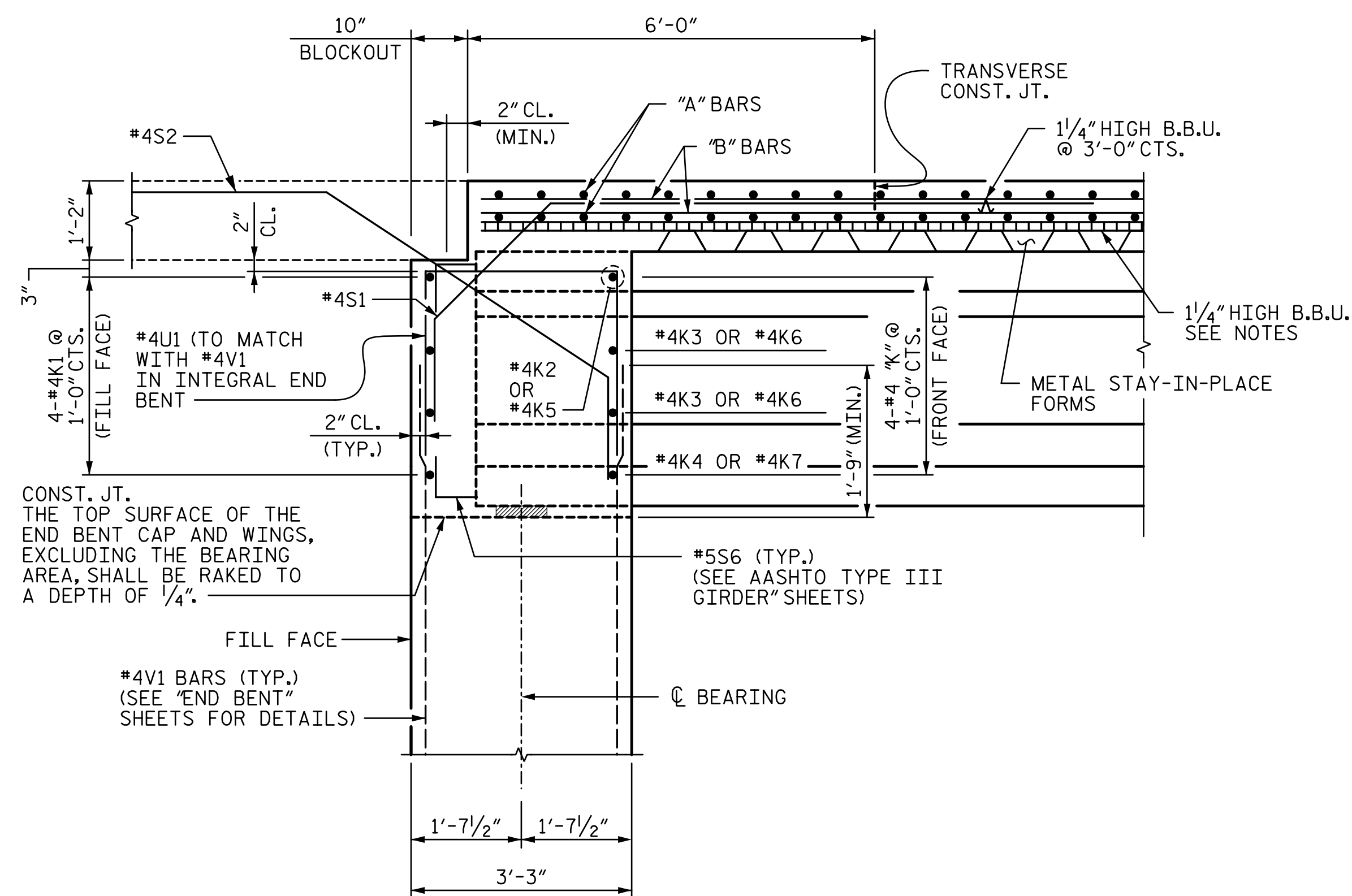
6/26/2025

STV STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

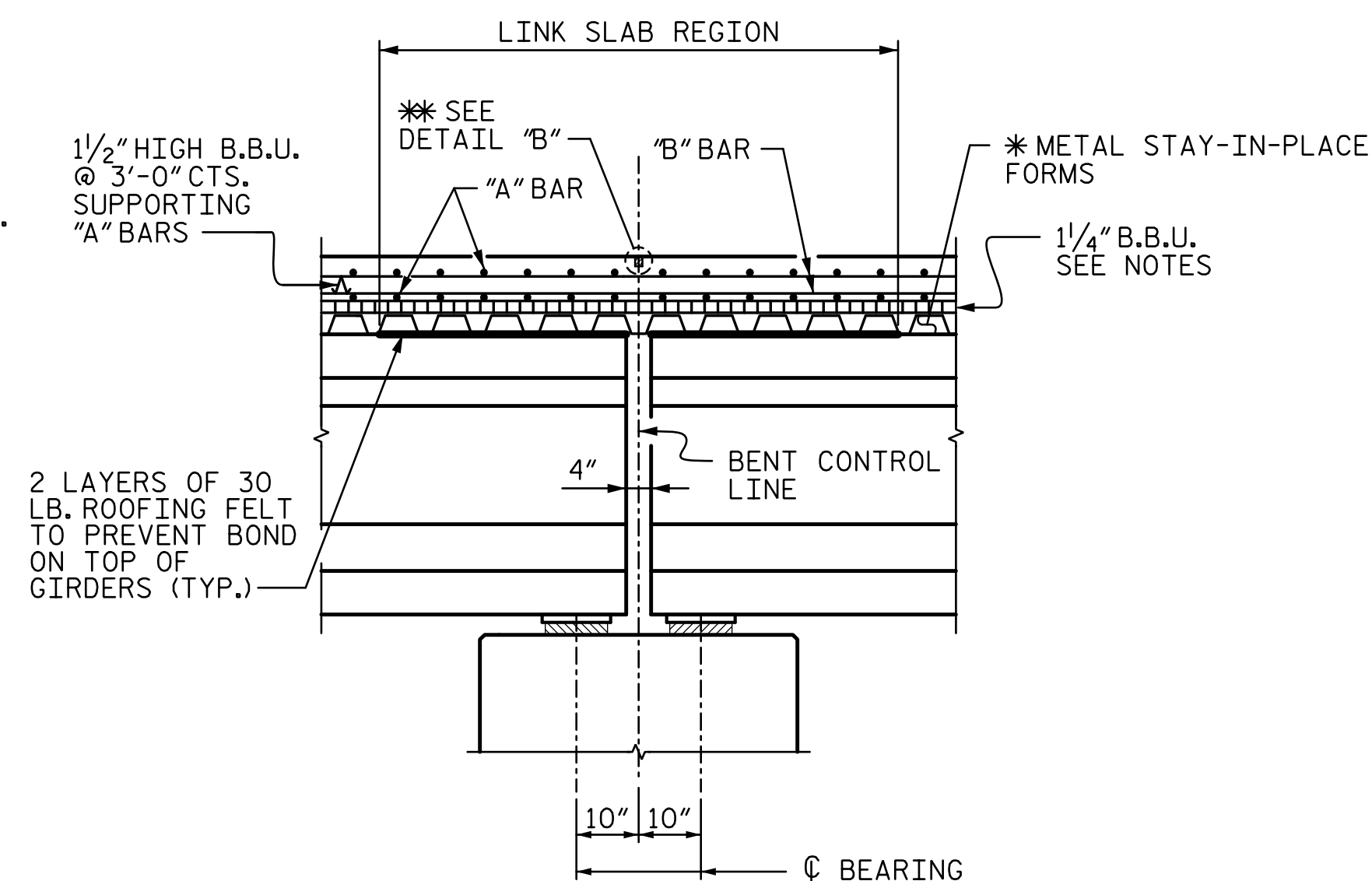
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : JMG DATE : 9-21
 CHECKED BY : TRL DATE : 9-21
 DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

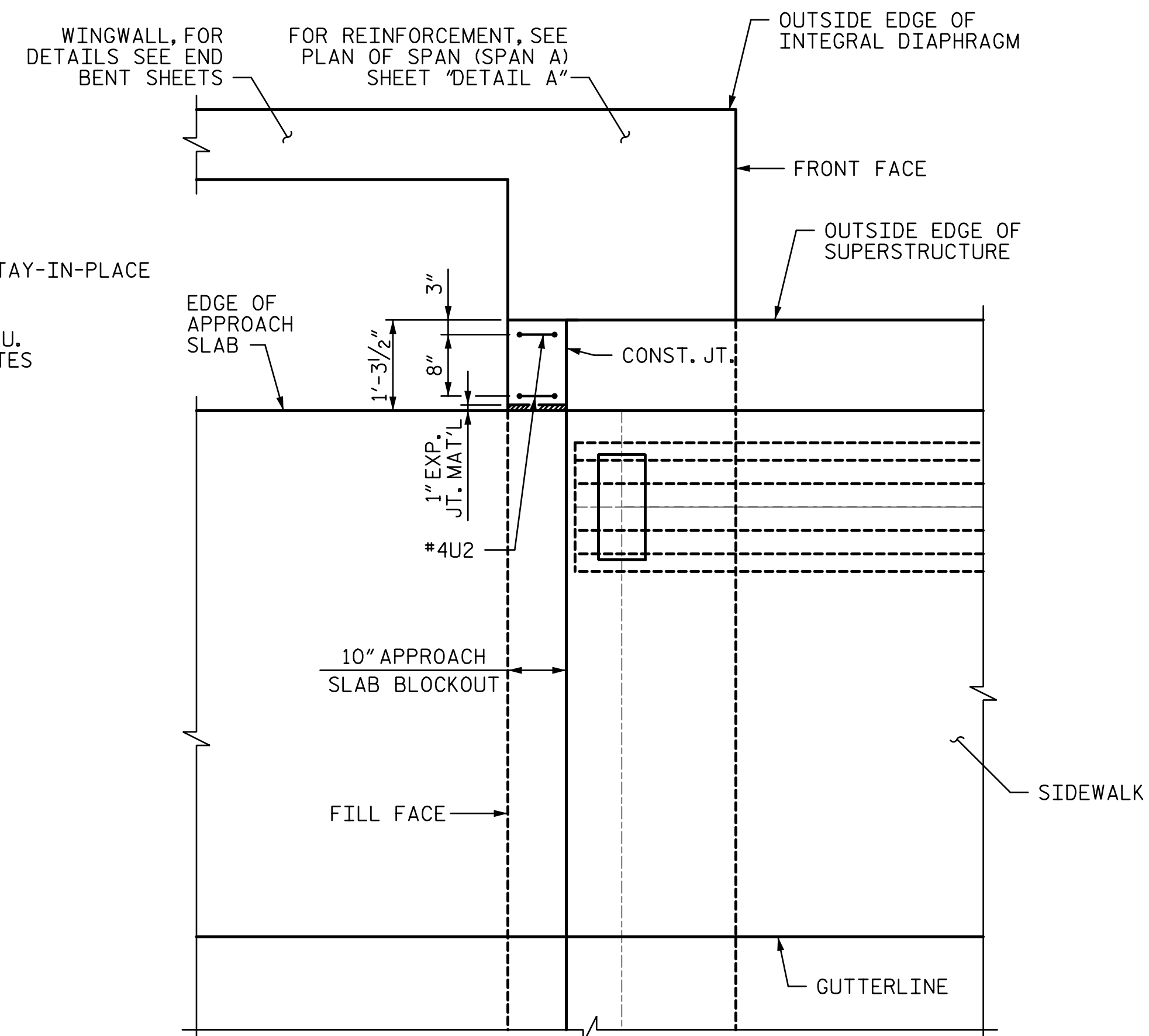
REVISIONS						SHEET NO. S-07
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 37
2			4			



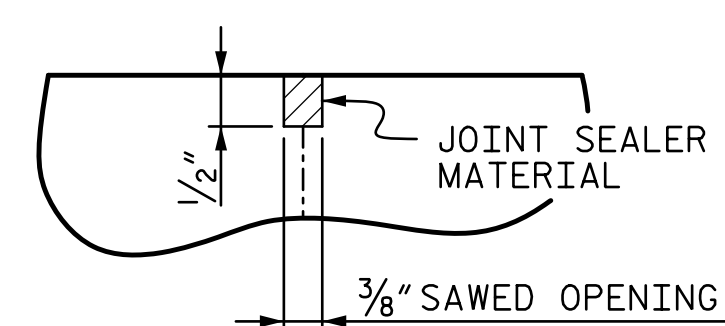
END OF GIRDER DETAIL AT INTEGRAL END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION THRU BENT

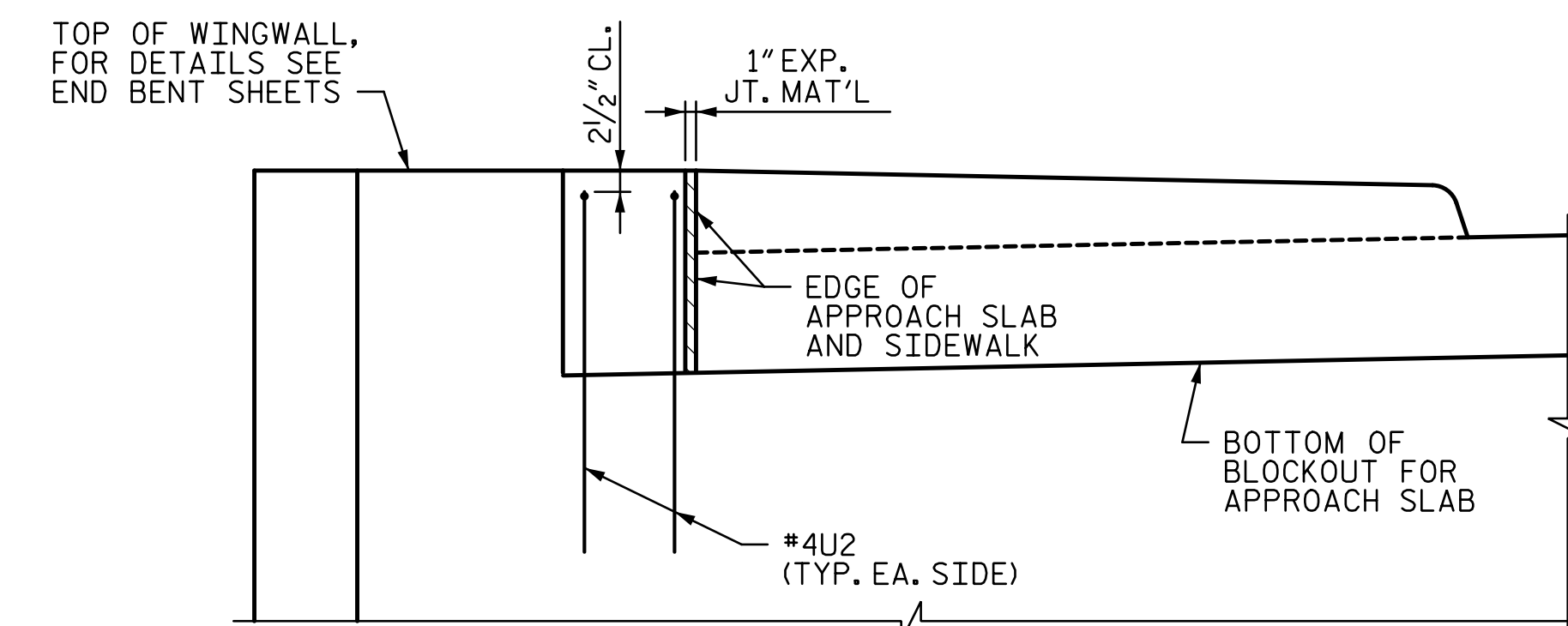


BLOCKOUT DETAIL - PLAN VIEW
(END BENT 1 LEFT SIDE SHOWN, OTHER CORNERS SIMILAR)

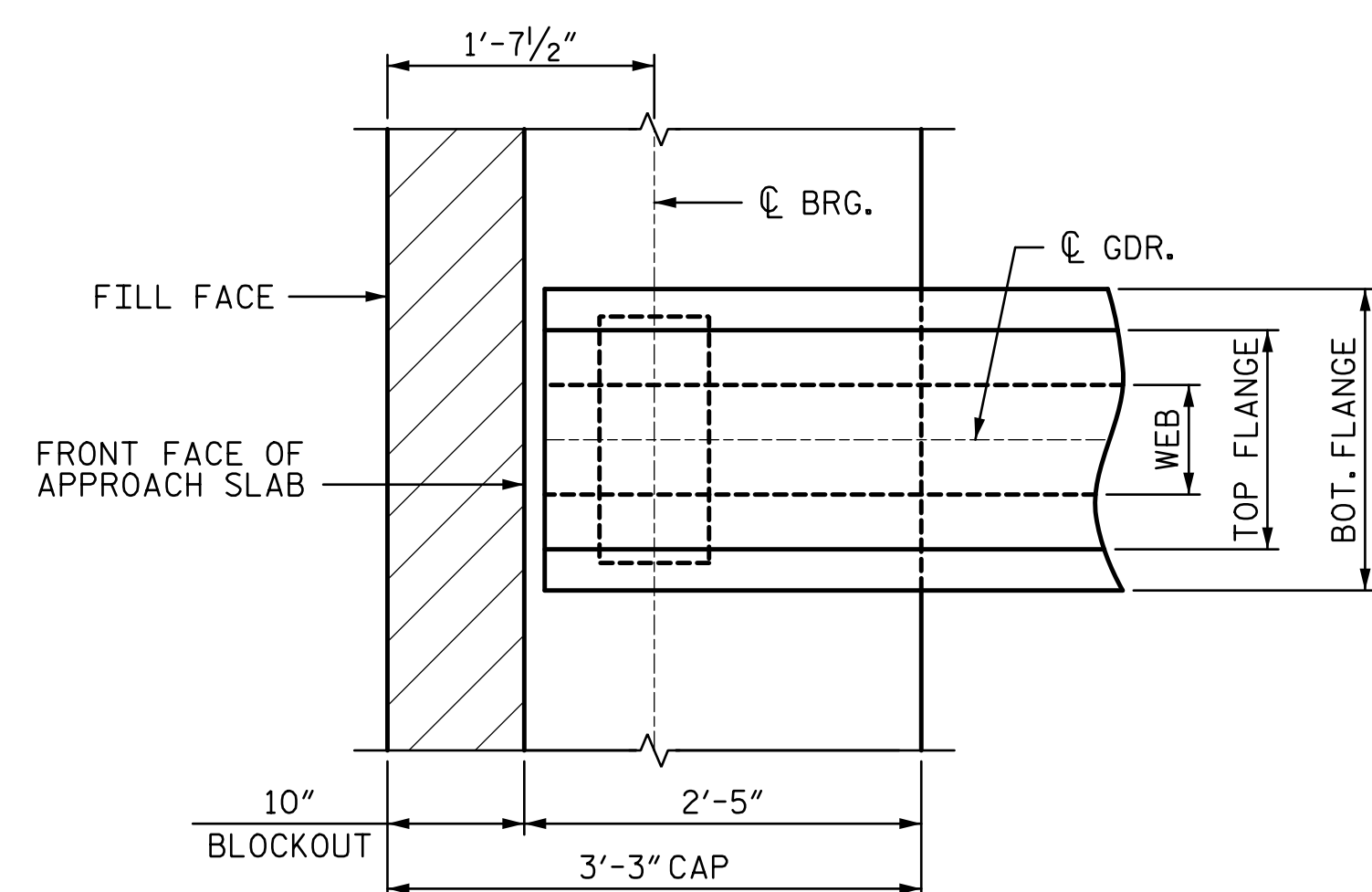


DETAIL "B"

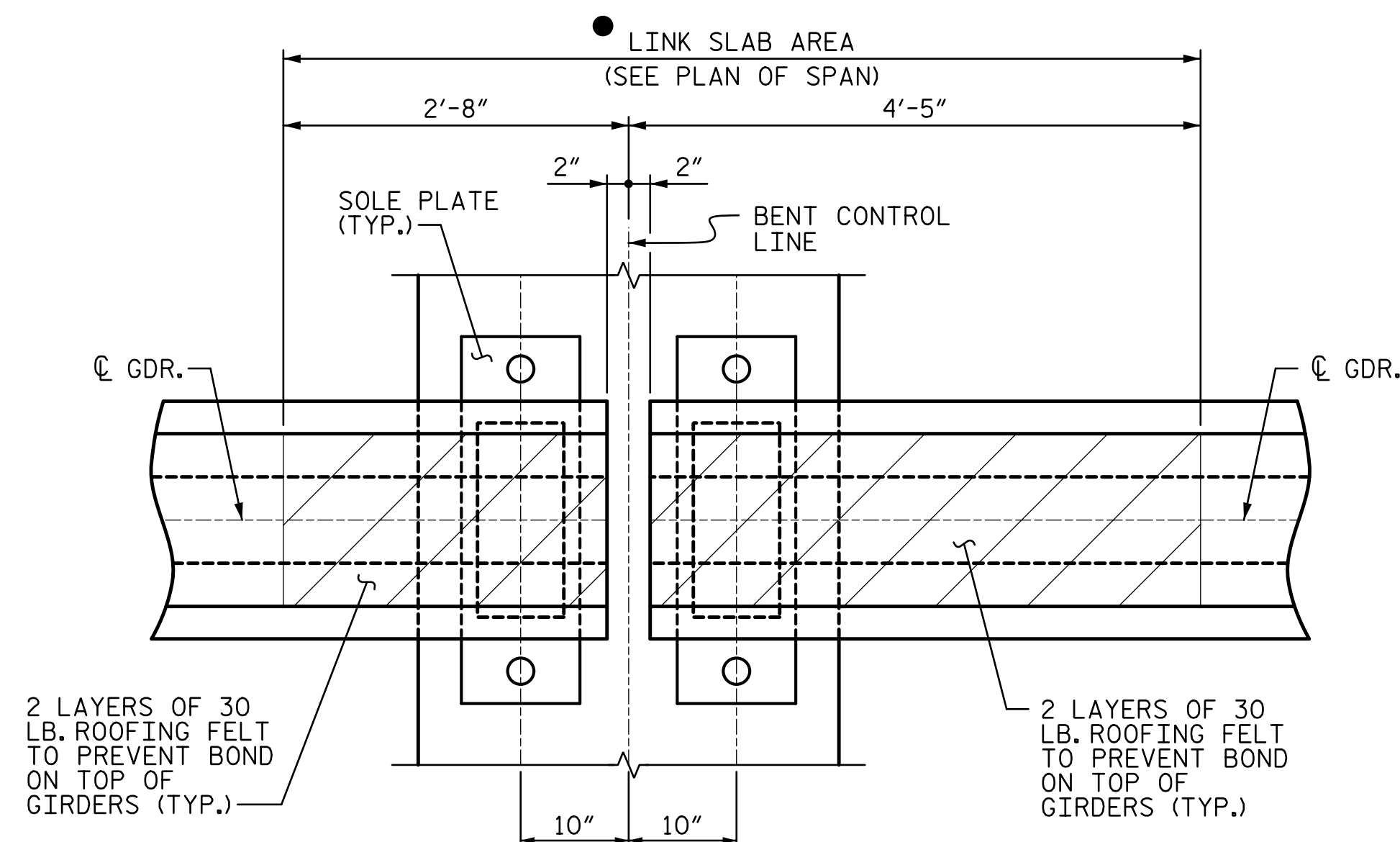
- * METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.
- * A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



BLOCKOUT DETAIL - ELEVATION VIEW
(END BENT 1 LEFT SIDE SHOWN, OTHER CORNERS SIMILAR)



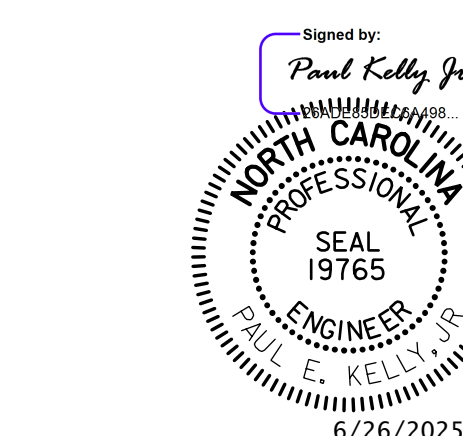
PLAN OF GIRDER AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



PLAN OF GIRDER AT BENT
(BENT CAP NOT SHOWN FOR CLARITY)

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

DRAWN BY : JMG	DATE : 9-21
CHECKED BY : TRL	DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY	DATE : 4-25



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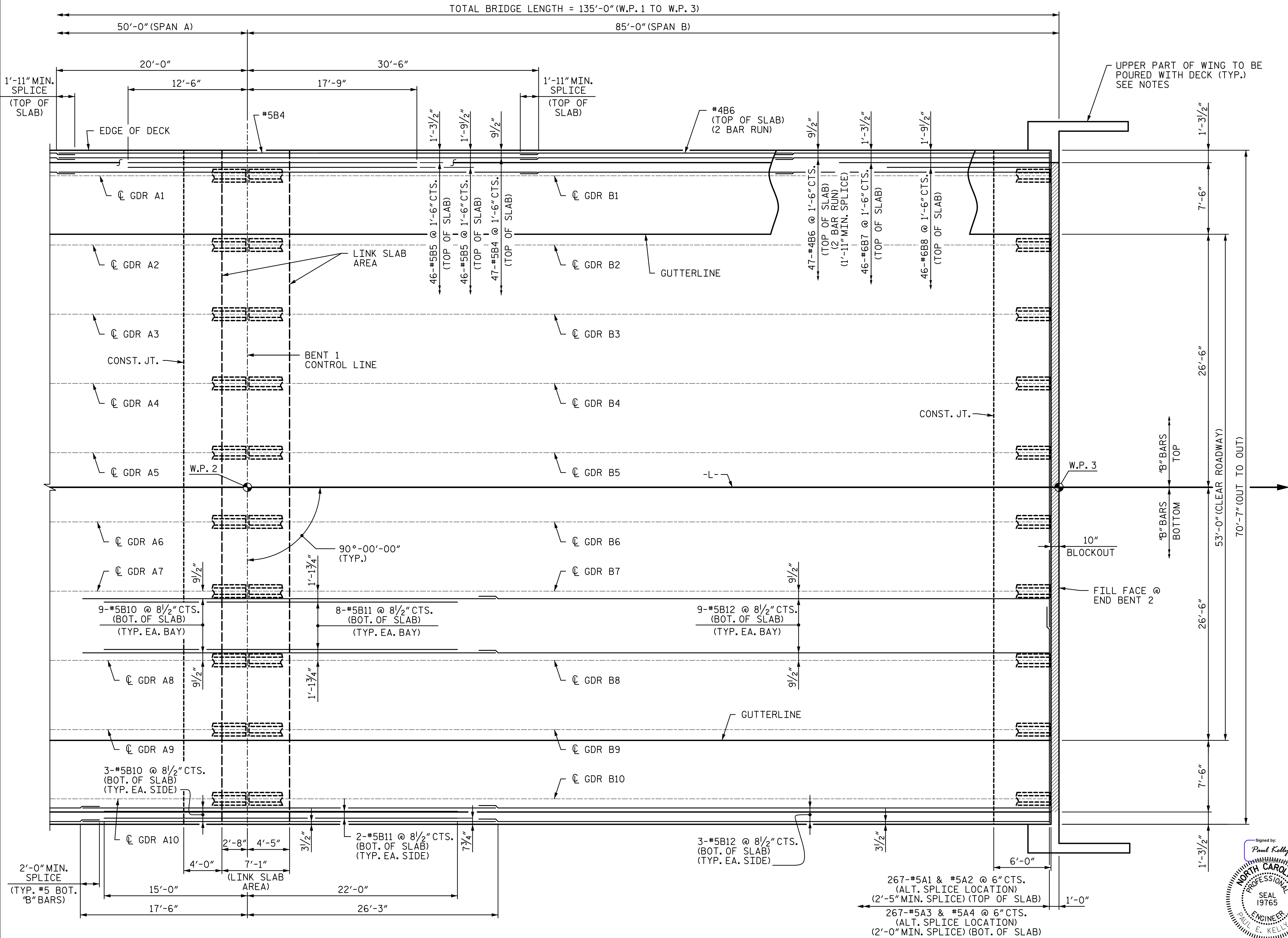
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
 STATION: 21+59.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
SUPERSTRUCTURE
DETAILS

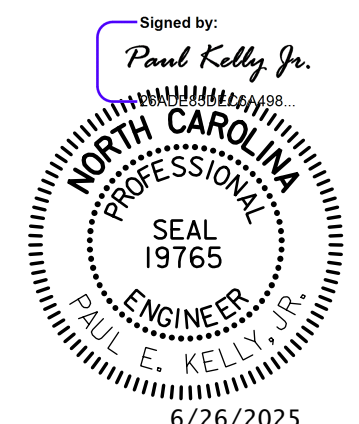
DRAWN BY : JMC	DATE : 9-21
CHECKED BY : TRL	DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY	DATE : 4-25

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NOTES:
1. FOR NOTES, SEE SHEET 1 OF 2.

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-



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DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

PLAN OF SPAN

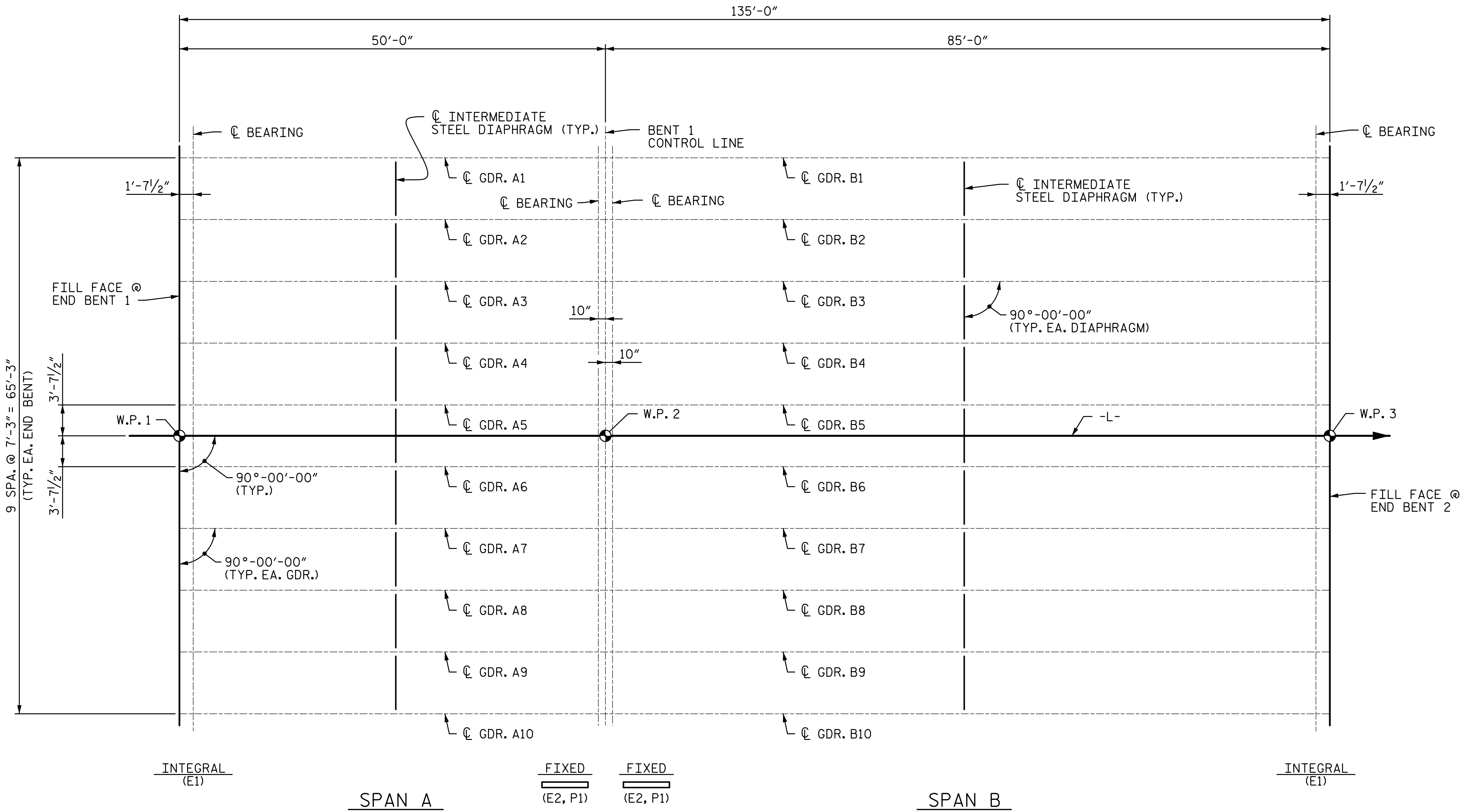
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-10
2			4			TOTAL SHEETS 37

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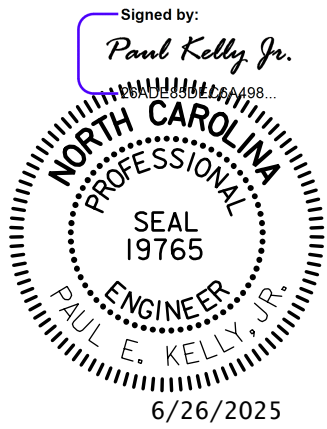
6/18/2025

henslesg



FRAMING PLAN

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-



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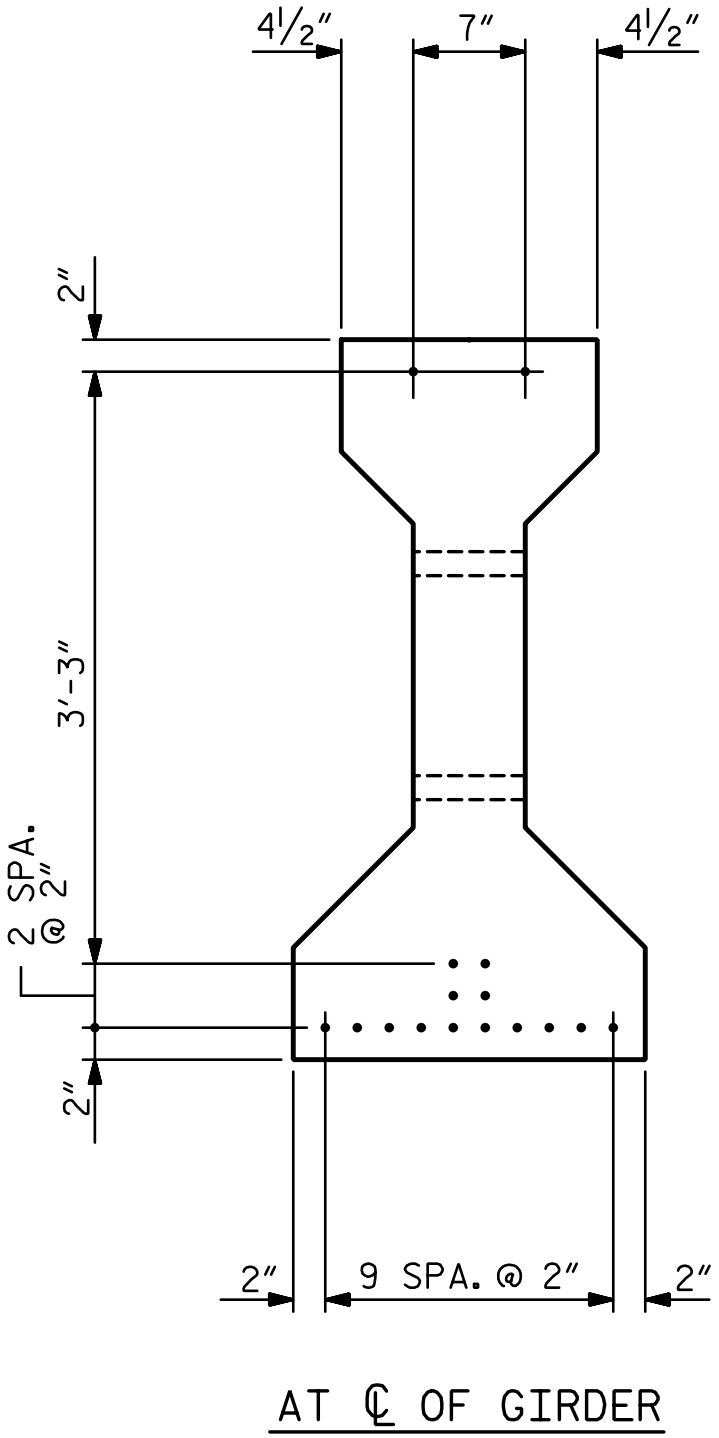
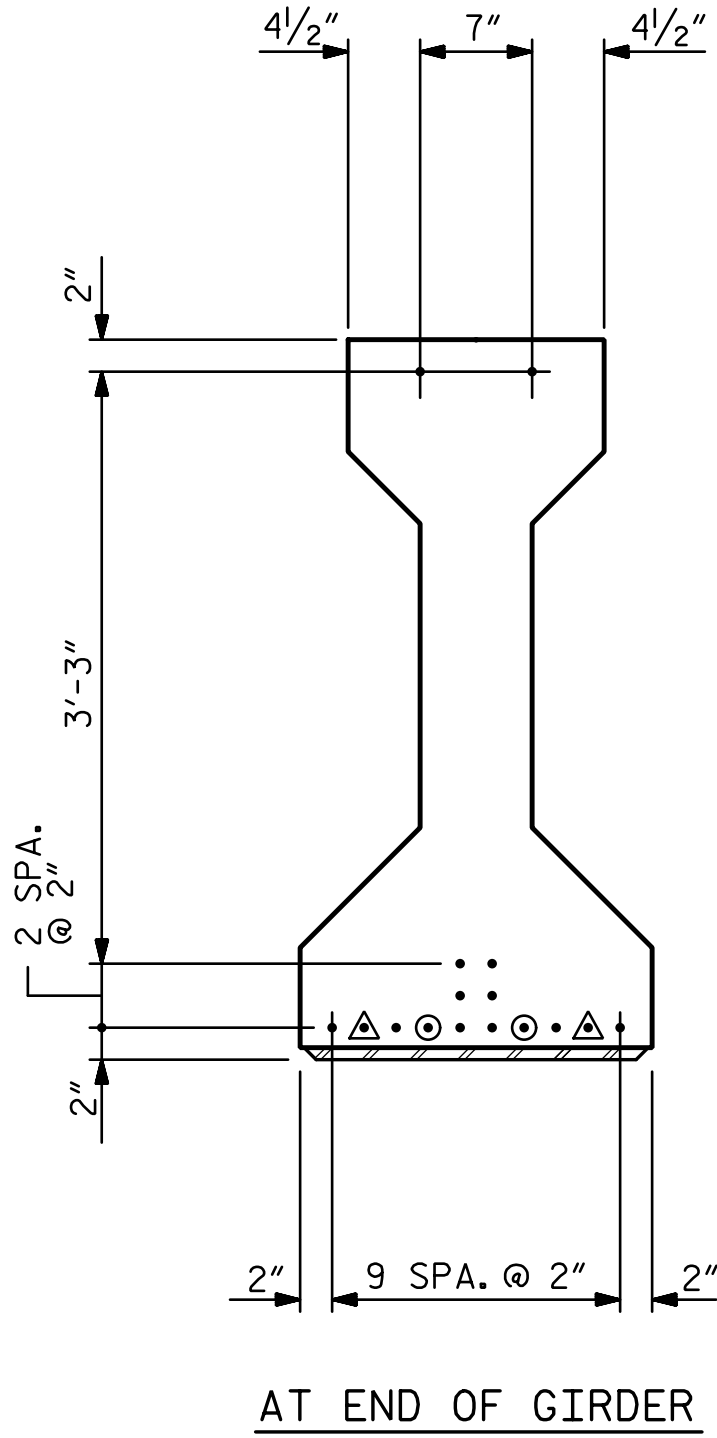
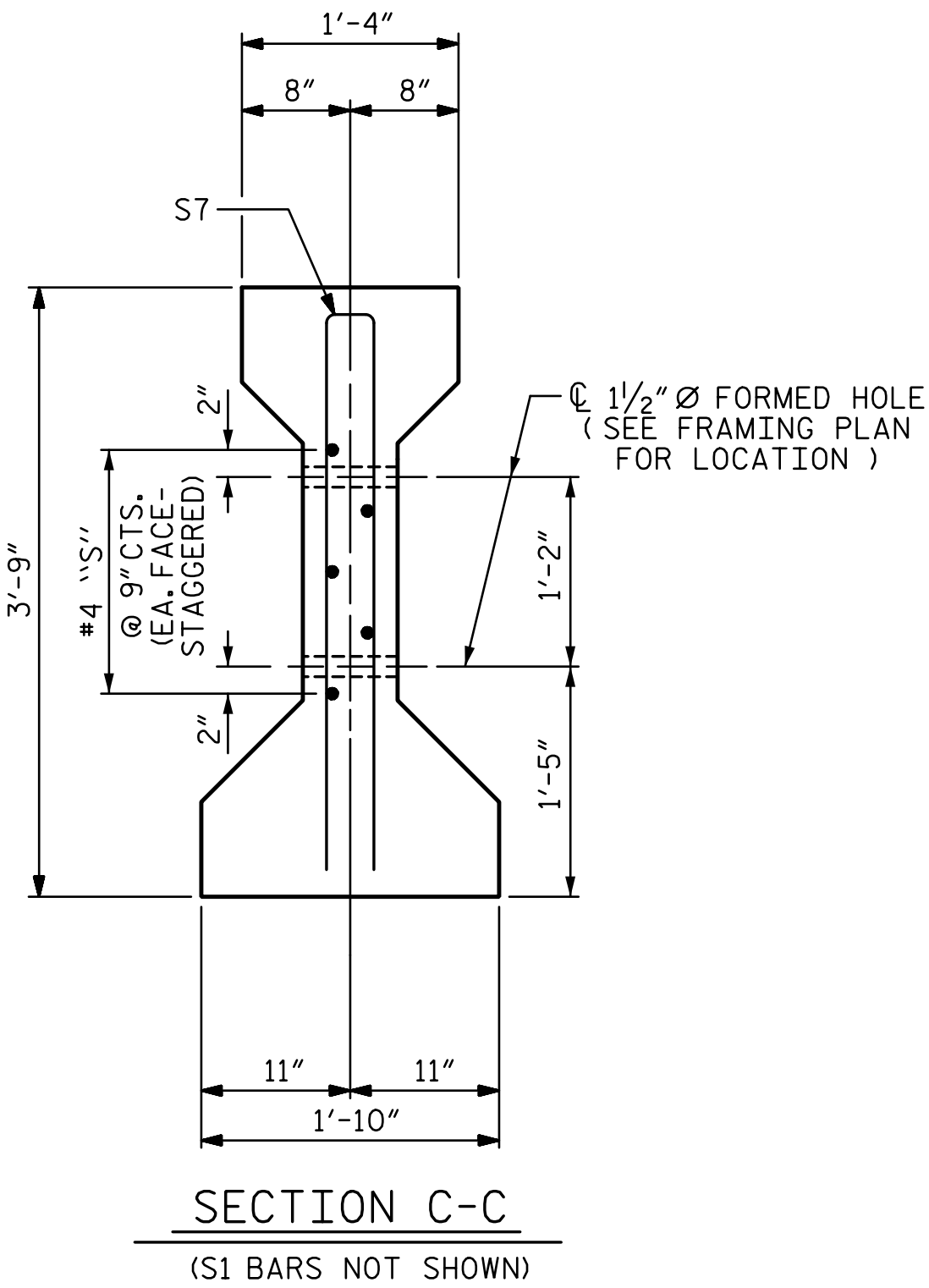
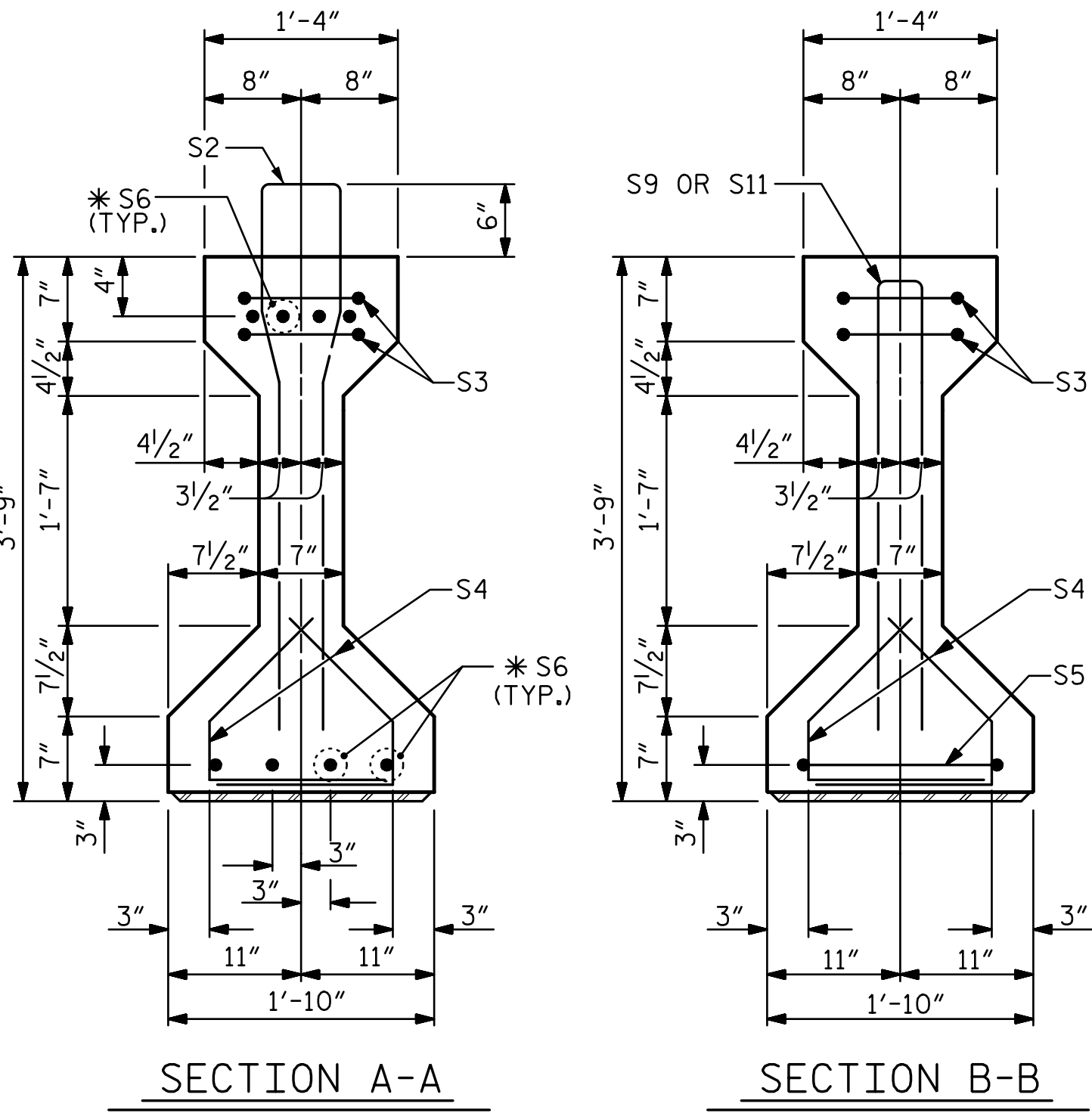
DOCUMENT NOT CONSIDERED
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

DRAWN BY :	JMG	DATE :	9-21
CHECKED BY :	TRL	DATE :	9-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25

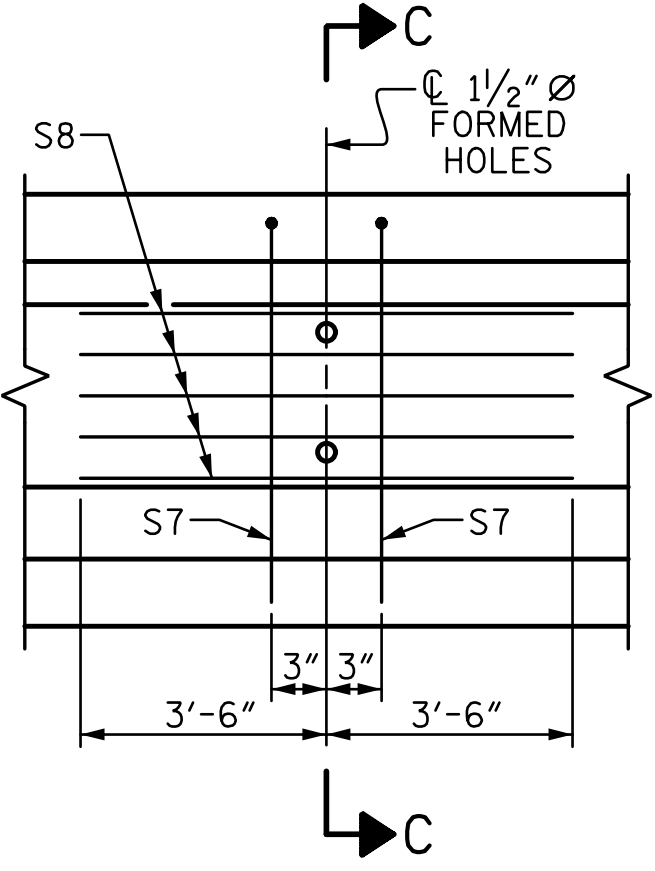
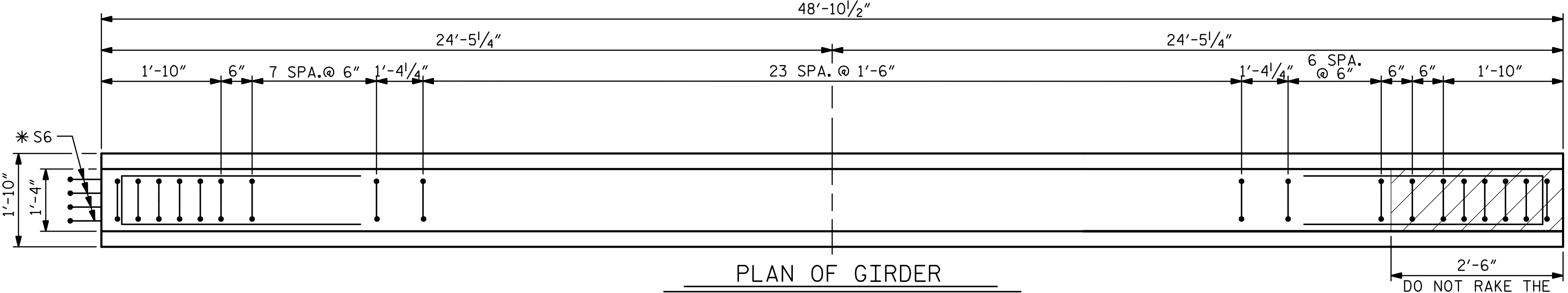
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-11	
				TOTAL SHEETS	37

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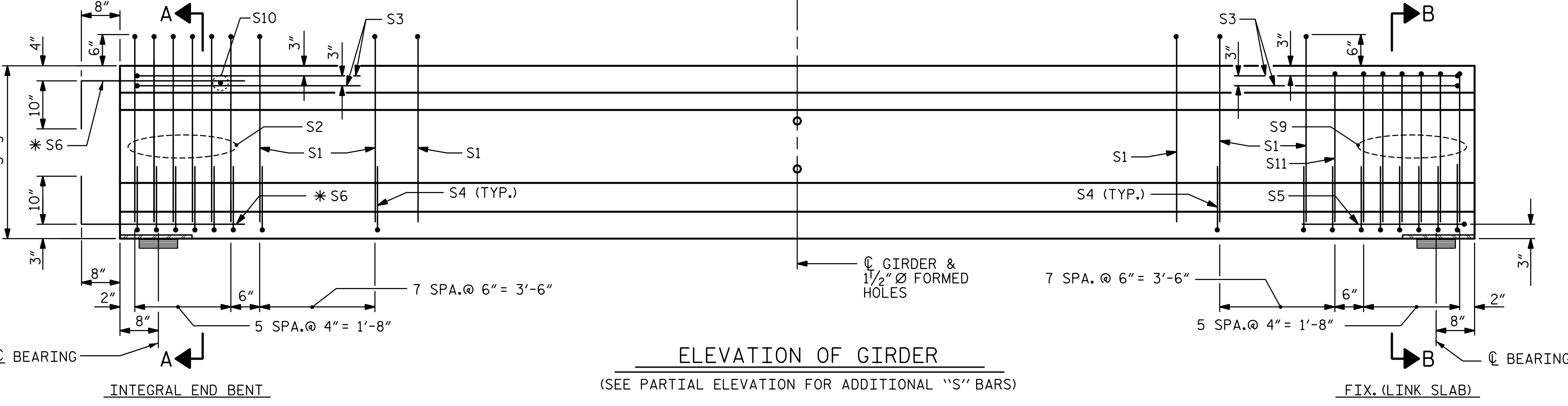


0.6" Ø LOW RELAXATION STRAND LAYOUT

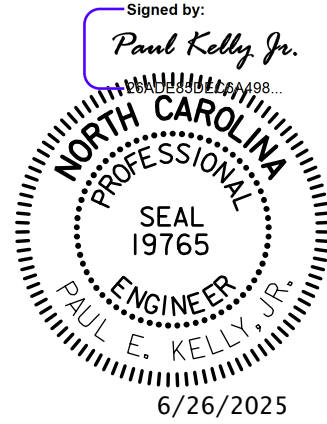
- FULLY BONDED STRANDS
- △- DEBONDED FOR 8'-0" FROM END OF GIRDER
- DEBONDED FOR 4'-0" FROM END OF GIRDER



SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDER



(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



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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

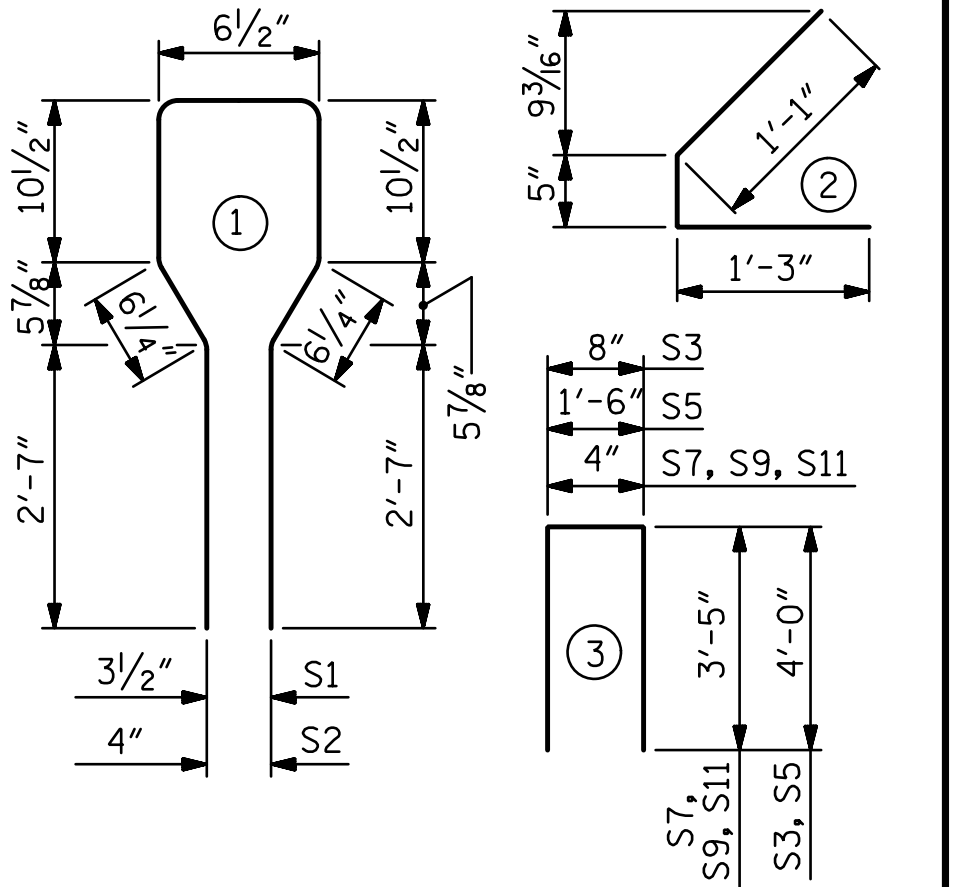
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	39	#4	1	8'-6"	221
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	1	#4	3	9'-6"	6
* S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S9	6	#6	3	7'-2"	65
S10	1	#3	STR	1'-0"	1
S11	1	#4	3	7'-2"	5

* NOTE: S6 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

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GIRDER	570	7.0	16

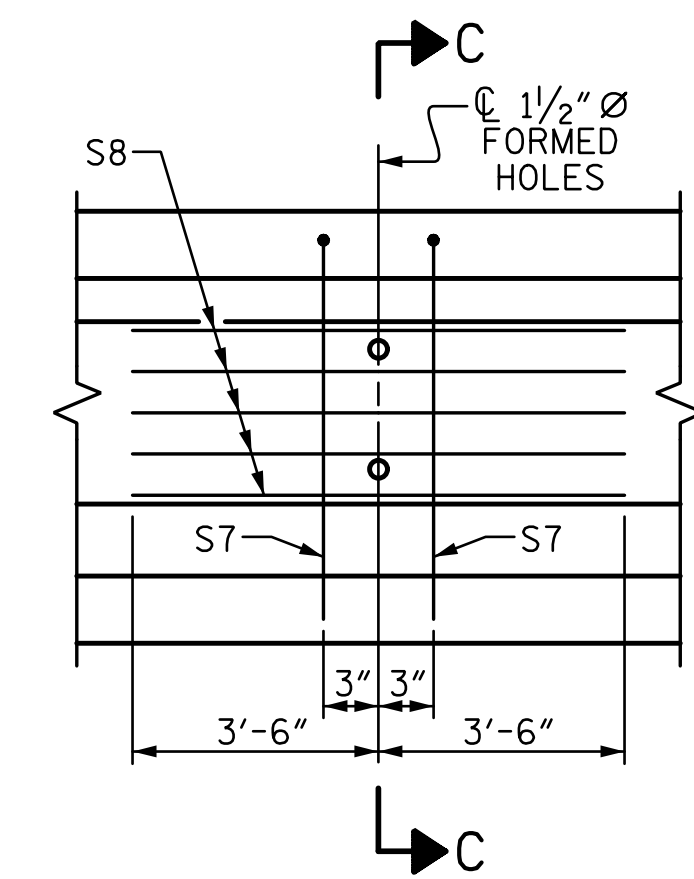
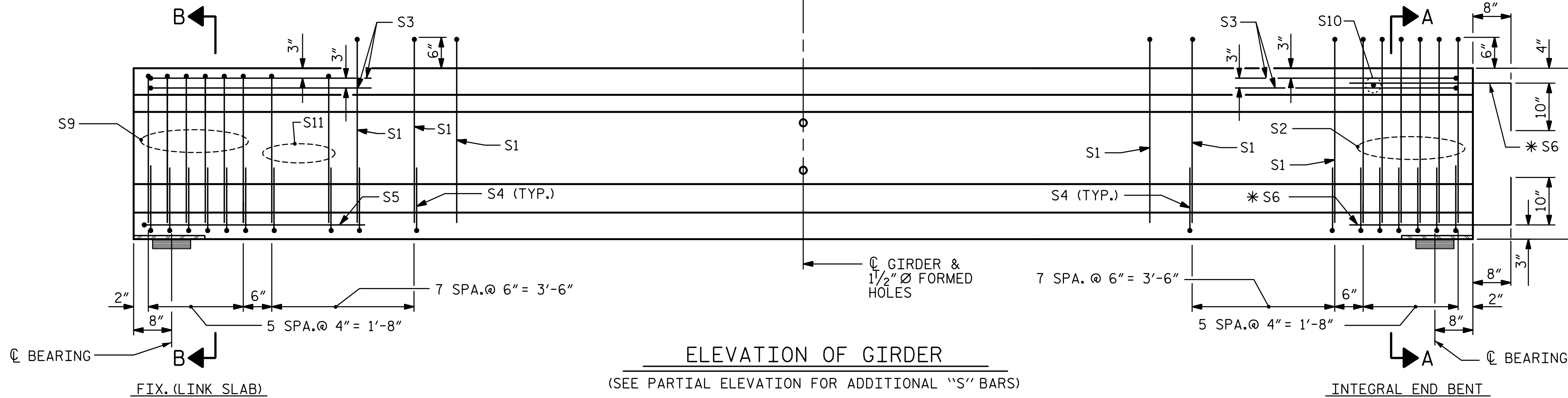
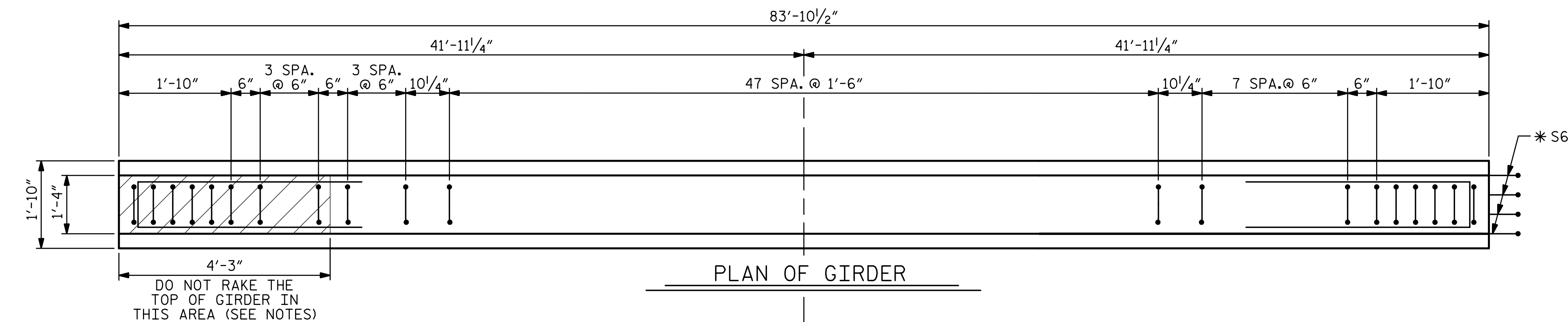
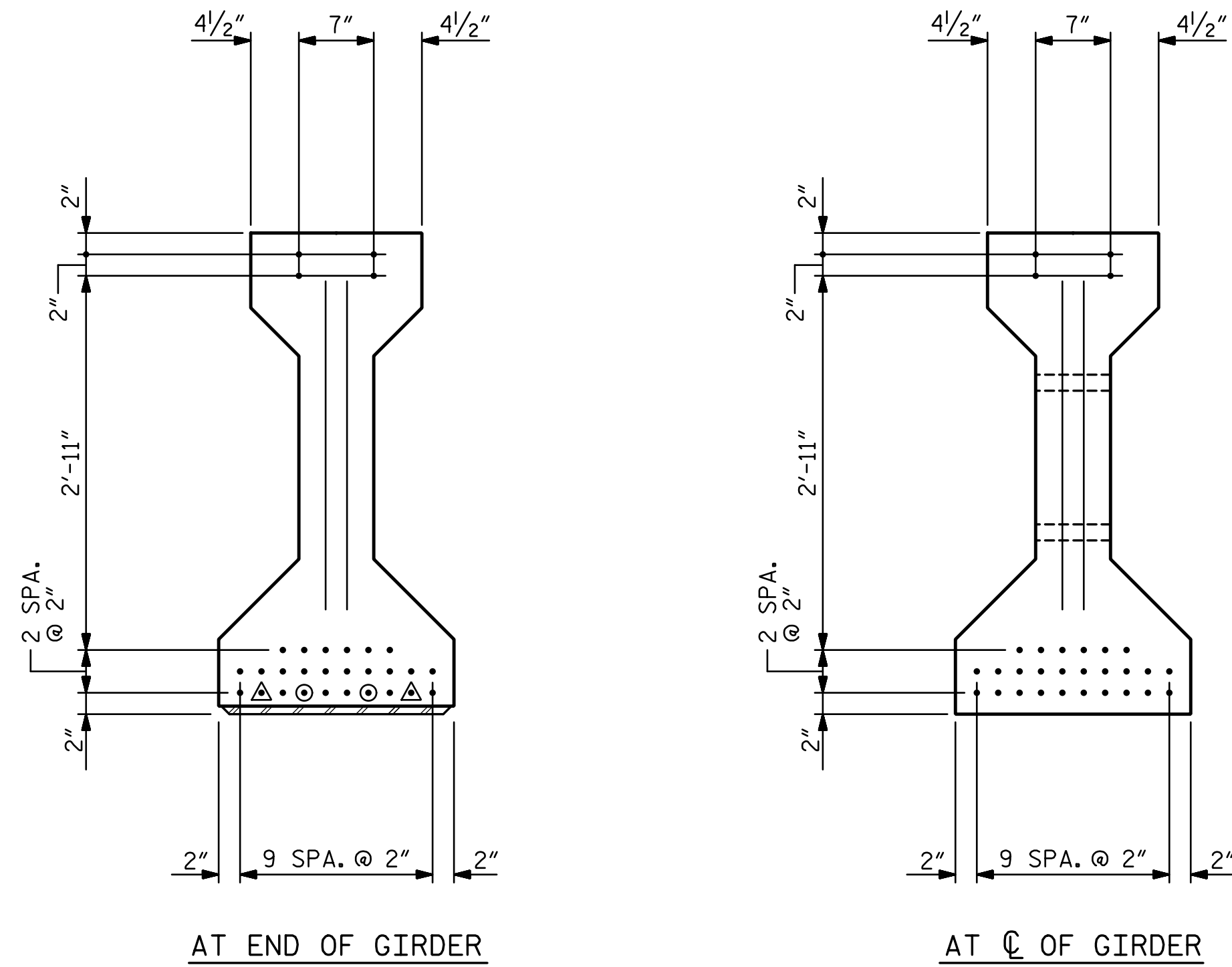
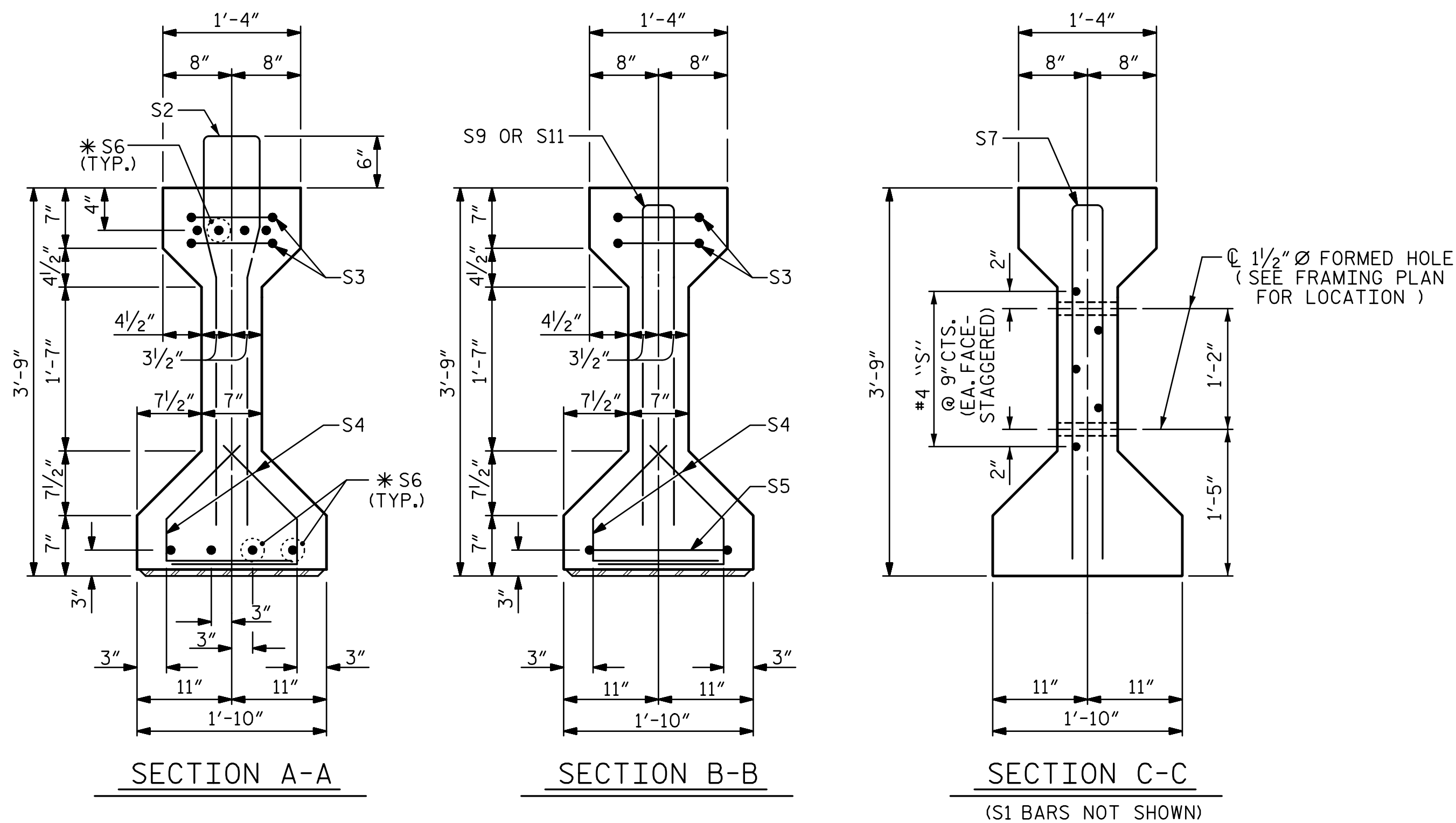
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	48'-10 1/2"	488'-9"

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE III
PRESTRESS CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN "A"

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-12	
				TOTAL SHEETS	37



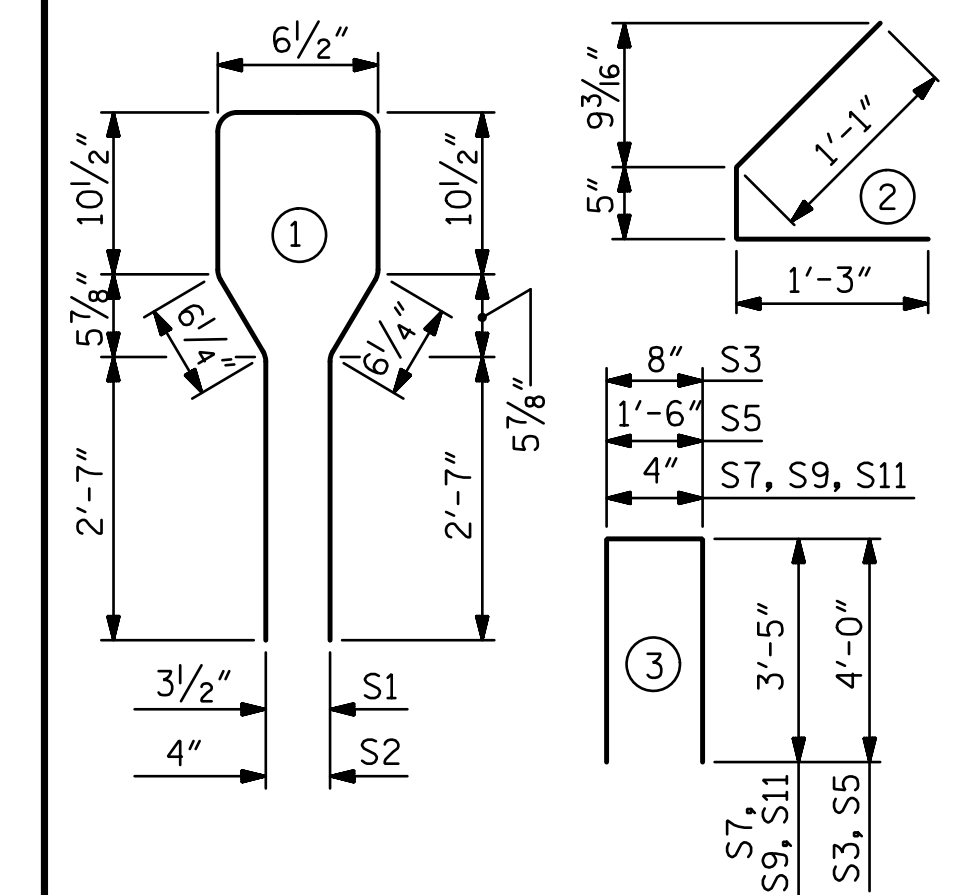
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	60	#4	1	8'-6"	341
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	1	#4	3	9'-6"	6
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S9	6	#6	3	7'-2"	65
S10	1	#3	STR	1'-0"	1
S11	4	#4	3	7'-2"	19

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



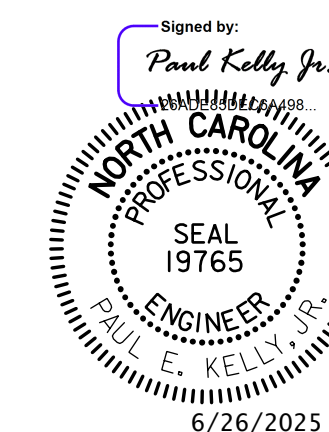
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GIRDER	704	12.1	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	83'-10 1/2"	838'-9"

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
 STATION: 21+59.00 -L-



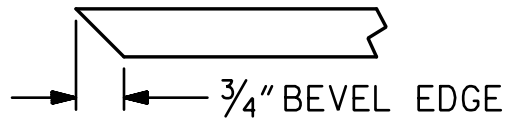
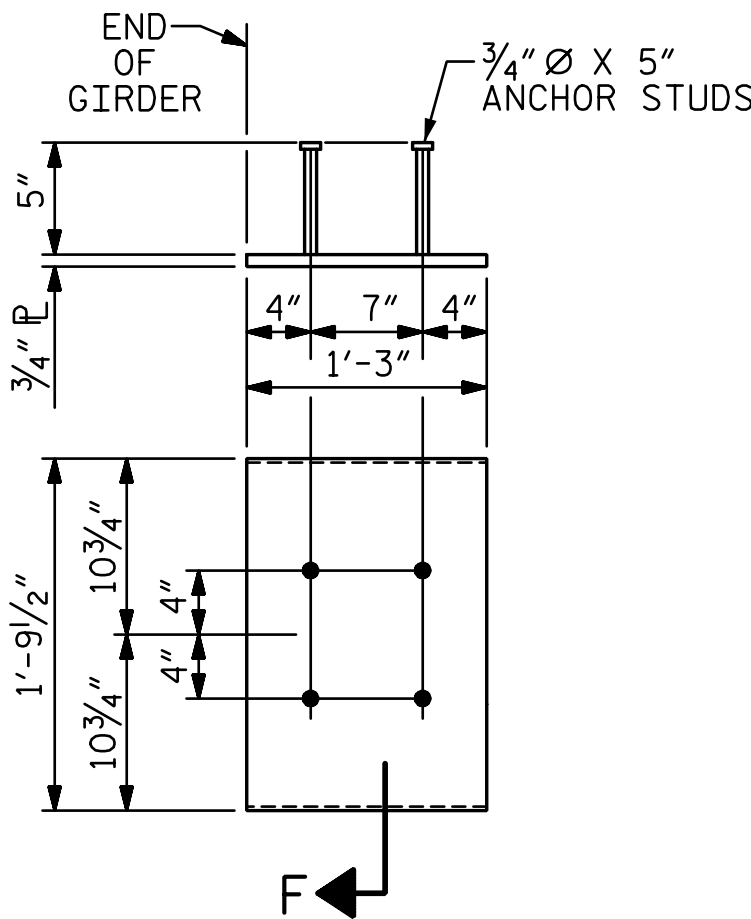
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Charlotte, NC 28203
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REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 37
2			4			

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DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

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SECTION "F"

(SEE NOTES)

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

(2 REQ'D PER GIRDER)

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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.

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS

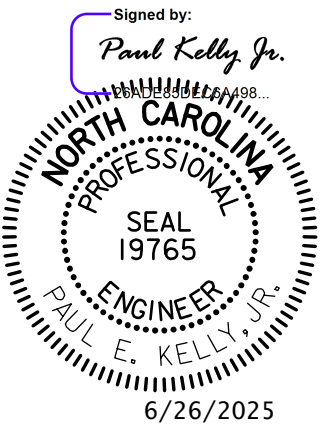
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE AREA SHOWN ON GIRDER SHEETS, 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.

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

DRAWN BY : JMG DATE : 9-21
CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					37
					S-14

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DEAD LOAD DEFLECTION TABLE FOR SPAN A																					
	GIRDERS 1 THRU 10																				
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	0.008	0.017	0.024	0.031	0.038	0.043	0.047	0.050	0.052	0.053	0.052	0.050	0.047	0.043	0.038	0.031	0.024	0.017	0.008	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.002	0.012	0.018	0.023	0.027	0.031	0.034	0.036	0.037	0.037	0.037	0.036	0.034	0.031	0.027	0.023	0.018	0.012	0.002	0.000
FINAL CAMBER	▲ 0"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	3/8"	5/16"	1/4"	3/16"	1/8"	1/16"	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
	GIRDERS 1 & 3																				
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	▲ 0.000	0.033	0.065	0.095	0.122	0.147	0.168	0.184	0.196	0.204	0.206	0.204	0.196	0.184	0.168	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.021	0.041	0.061	0.080	0.096	0.110	0.121	0.129	0.134	0.136	0.134	0.129	0.121	0.110	0.096	0.080	0.061	0.041	0.021	0.000
FINAL CAMBER	▲ 0"	1/8"	5/16"	3/8"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	13/16"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	3/8"	5/16"	1/8"	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
	GIRDERS 2																				
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	0.033	0.065	0.095	0.122	0.147	0.168	0.184	0.196	0.204	0.206	0.204	0.196	0.184	0.168	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.022	0.043	0.064	0.083	0.101	0.115	0.127	0.136	0.141	0.143	0.141	0.136	0.127	0.115	0.101	0.083	0.064	0.043	0.022	0.000
FINAL CAMBER	▲ 0"	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	3/4"	3/4"	3/4"	3/4"	3/4"	11/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0"

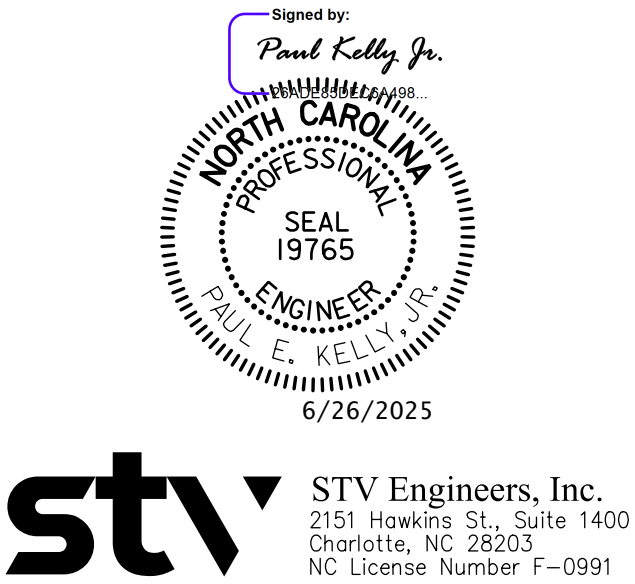
DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
	GIRDERS 4 THRU 7																				
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	▲ 0.000	0.033	0.065	0.095	0.122	0.147	0.168	0.184	0.196	0.204	0.206	0.204	0.196	0.184	0.168	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.019	0.037	0.056	0.073	0.088	0.101	0.111	0.119	0.124	0.125	0.124	0.119	0.111	0.101	0.088	0.073	0.056	0.037	0.019	0.000
FINAL CAMBER	▲ 0"	3/16"	5/16"	1/2"	5/8"	11/16"	13/16"	7/8"	15/16"	15/16"	1"	15/16"	15/16"	7/8"	13/16"	11/16"	5/8"	1/2"	5/16"	3/16"	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
	GIRDERS 8 & 9																				
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	▲ 0.000	0.033	0.065	0.095	0.122	0.147	0.168	0.184	0.196	0.204	0.206	0.204	0.196	0.184	0.168	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.020	0.039	0.059	0.077	0.093	0.107	0.118	0.125	0.130	0.132	0.130	0.125	0.118	0.107	0.093	0.077	0.059	0.039	0.020	0.000
FINAL CAMBER	▲ 0"	1/8"	5/16"	7/16"	9/16"	5/8"	3/4"	13/16"	7/8"	7/8"	7/8"	7/8"	7/8"	13/16"	3/4"	5/8"	9/16"	7/16"	5/16"	1/8"	0"

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
	GIRDERS 10																				
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	0.033	0.065	0.095	0.122	0.147	0.168	0.184	0.196	0.204	0.206	0.204	0.196	0.184	0.168	0.147	0.122	0.095	0.065	0.033	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	▼ 0.000	0.019	0.038	0.057	0.074	0.089	0.102	0.113	0.120	0.125	0.127	0.125	0.120	0.113	0.102	0.089	0.074	0.057	0.038	0.019	0.000
FINAL CAMBER	▲ 0"	3/16"	5/16"	7/16"	9/16"	11/16"	13/16"	7/8"	15/16"	15/16"	15/16"	15/16"	15/16"	7/8"	13/16"	11/16"	9/16"	7/16"	5/16"	3/16"	0"

▲ - DENOTES UPWARD CAMBER
▼ - DENOTES DOWNWARD DEFLECTION
ALL VALUES ARE SHOWN IN DECIMAL FEET EXCEPT FINAL CAMBER WHICH IS SHOWN IN INCHES (FRACTION FORM).
*- FUTURE WEARING SURFACE INCLUDED IN SUPERIMPOSED DEAD LOAD.
D.L. = DEAD LOAD

DRAWN BY :	JMG	DATE :	9-21
CHECKED BY :	TRL	DATE :	9-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25

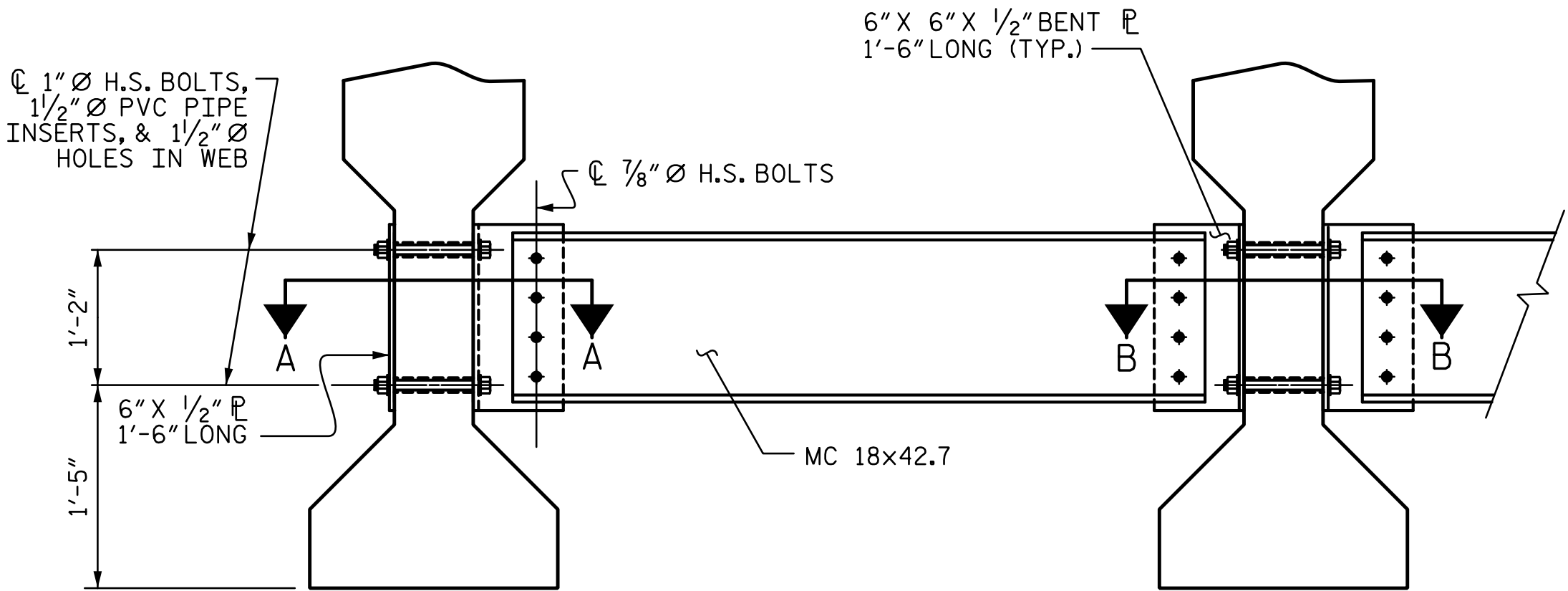


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REVISIONS					SHEET NO.
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					TOTAL SHEETS 37

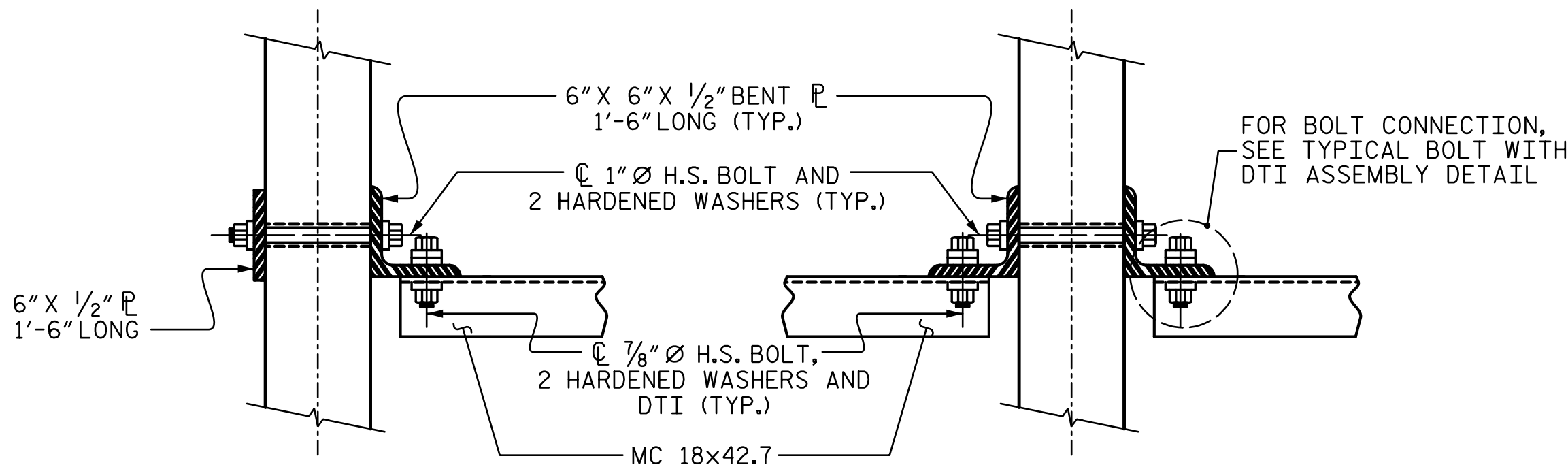
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EXTERIOR GIRDER

INTERIOR GIRDER

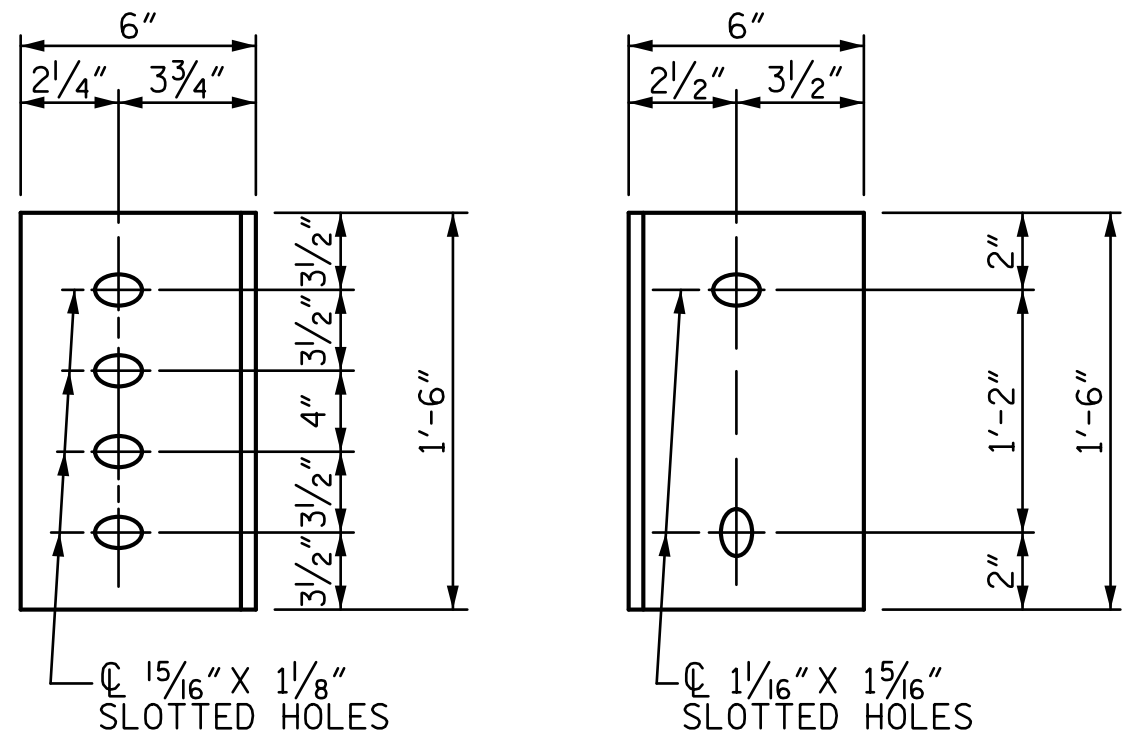
PART SECTION AT INTERMEDIATE DIAPHRAGM



SECTION A-A

SECTION B-B

CONNECTION DETAILS



DIAPHRAGM FACE

WEB FACE

CONNECTOR PLATE DETAILS

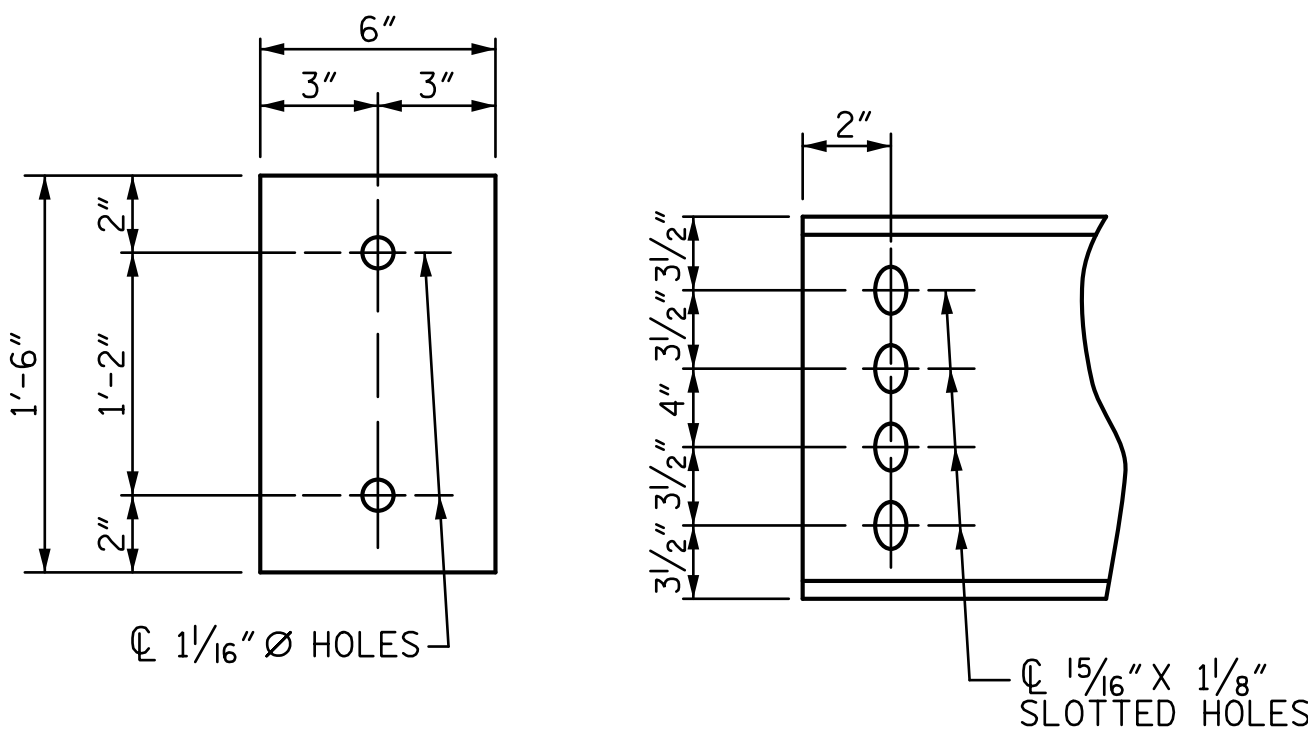
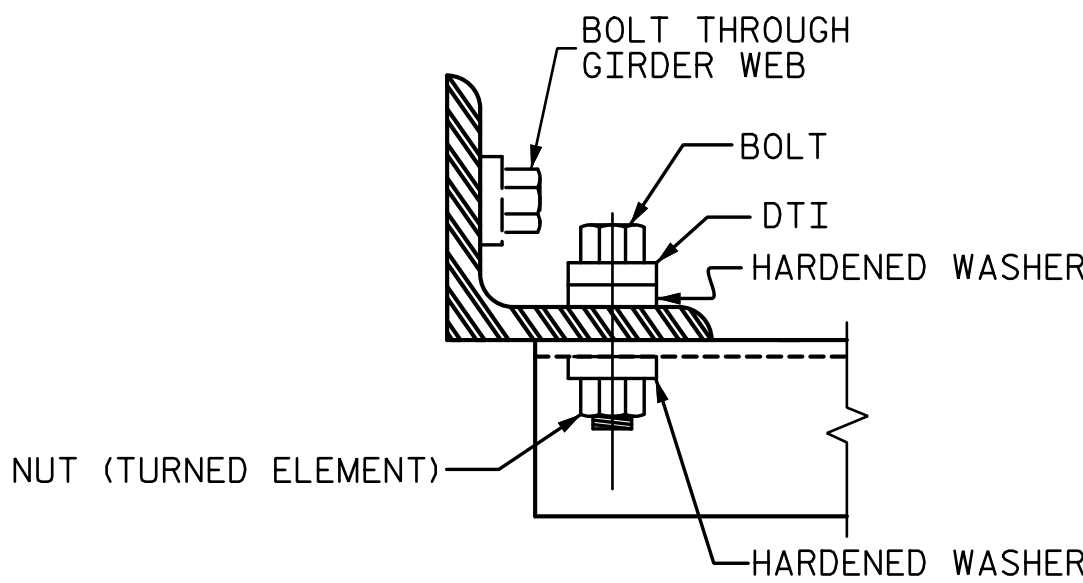


PLATE DETAILS

CHANNEL END



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.

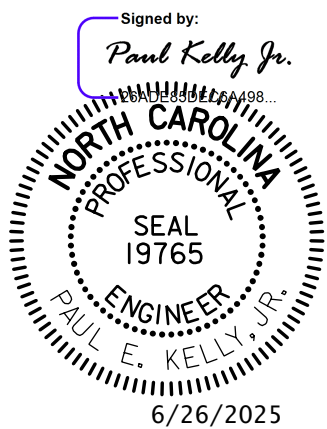
INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

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.

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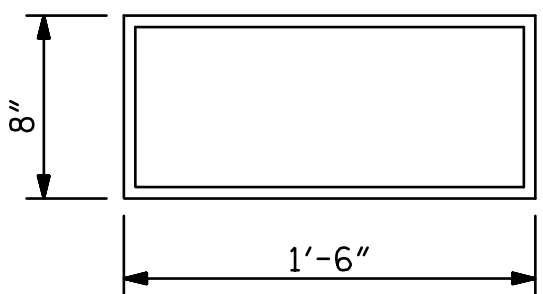
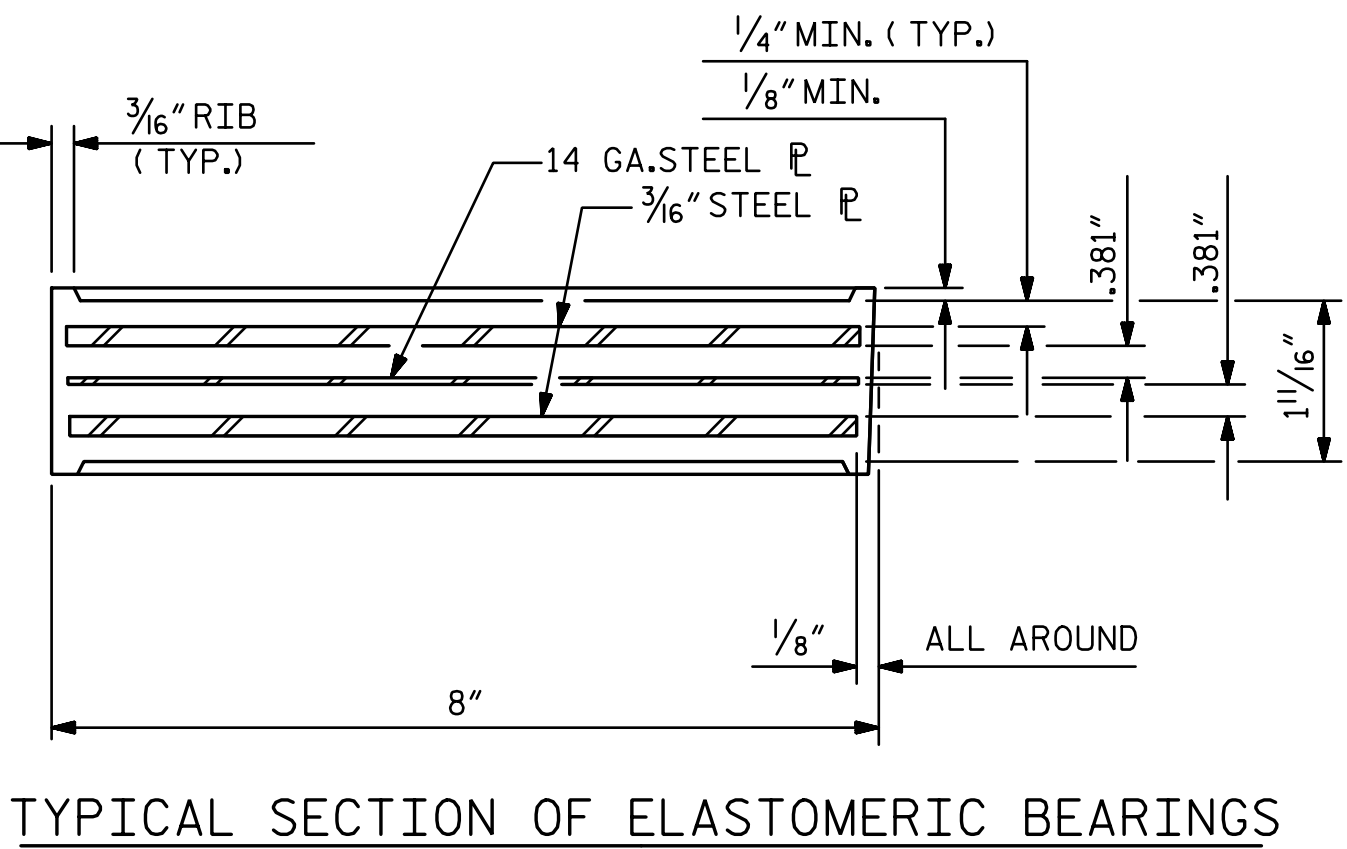
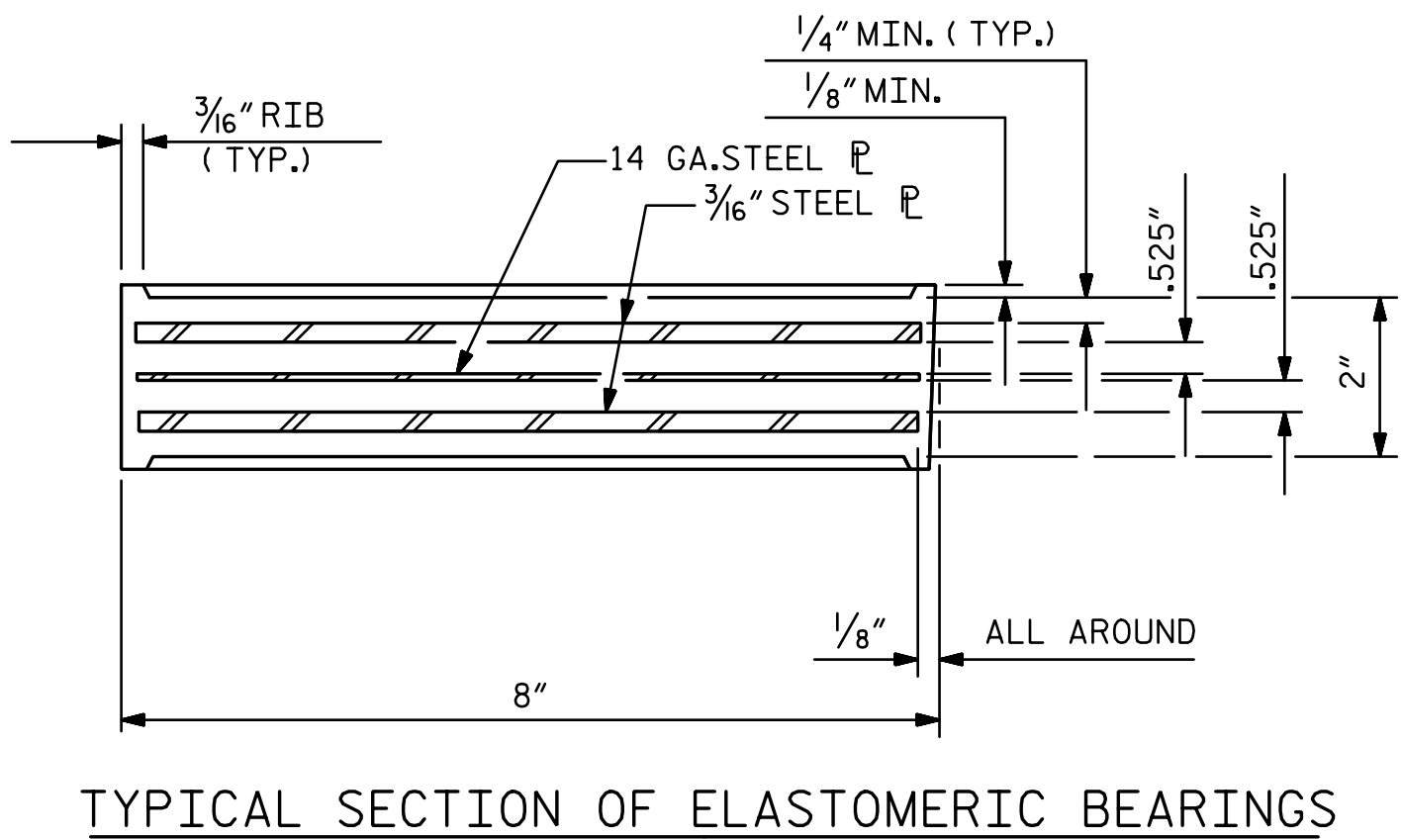
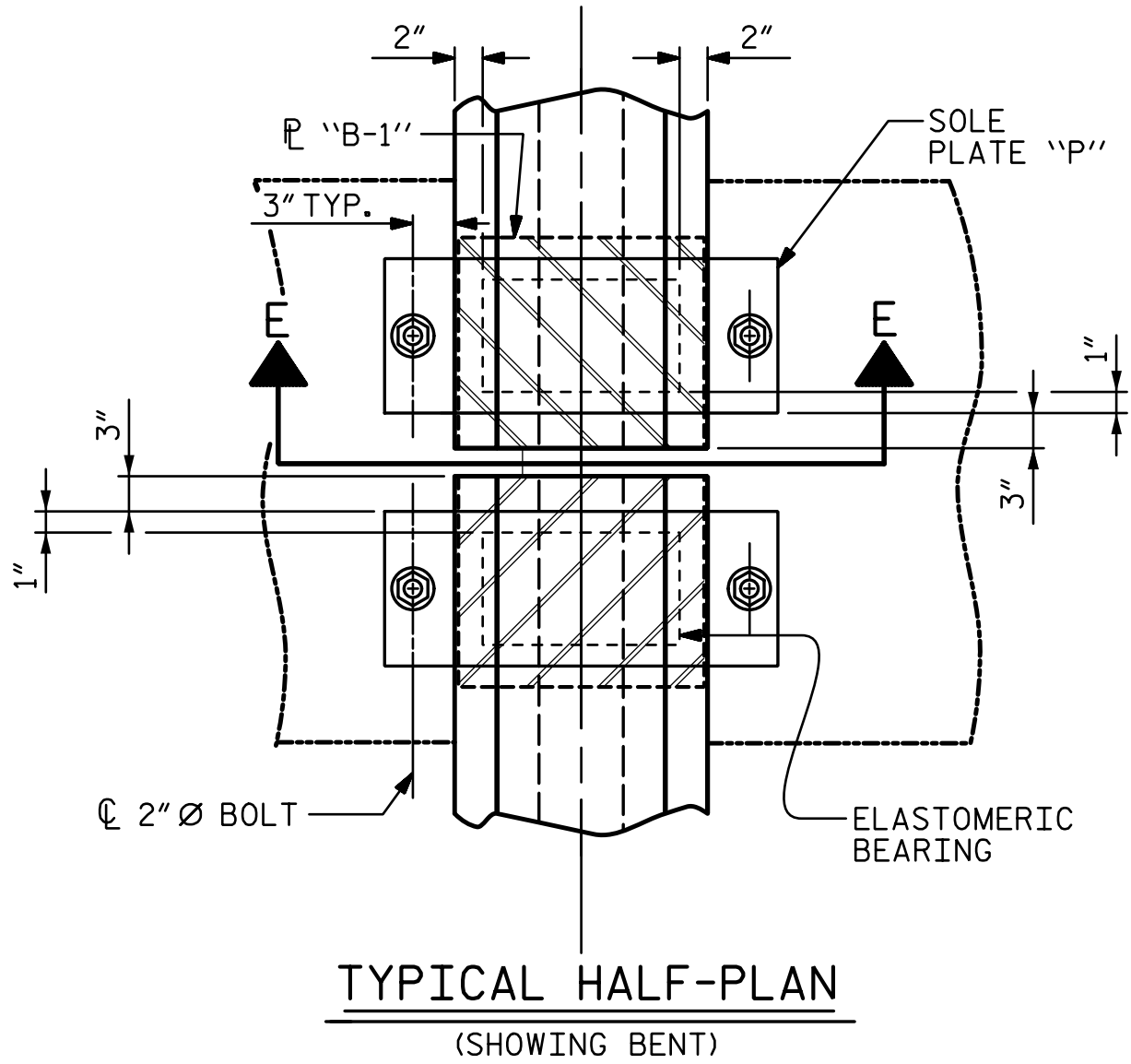
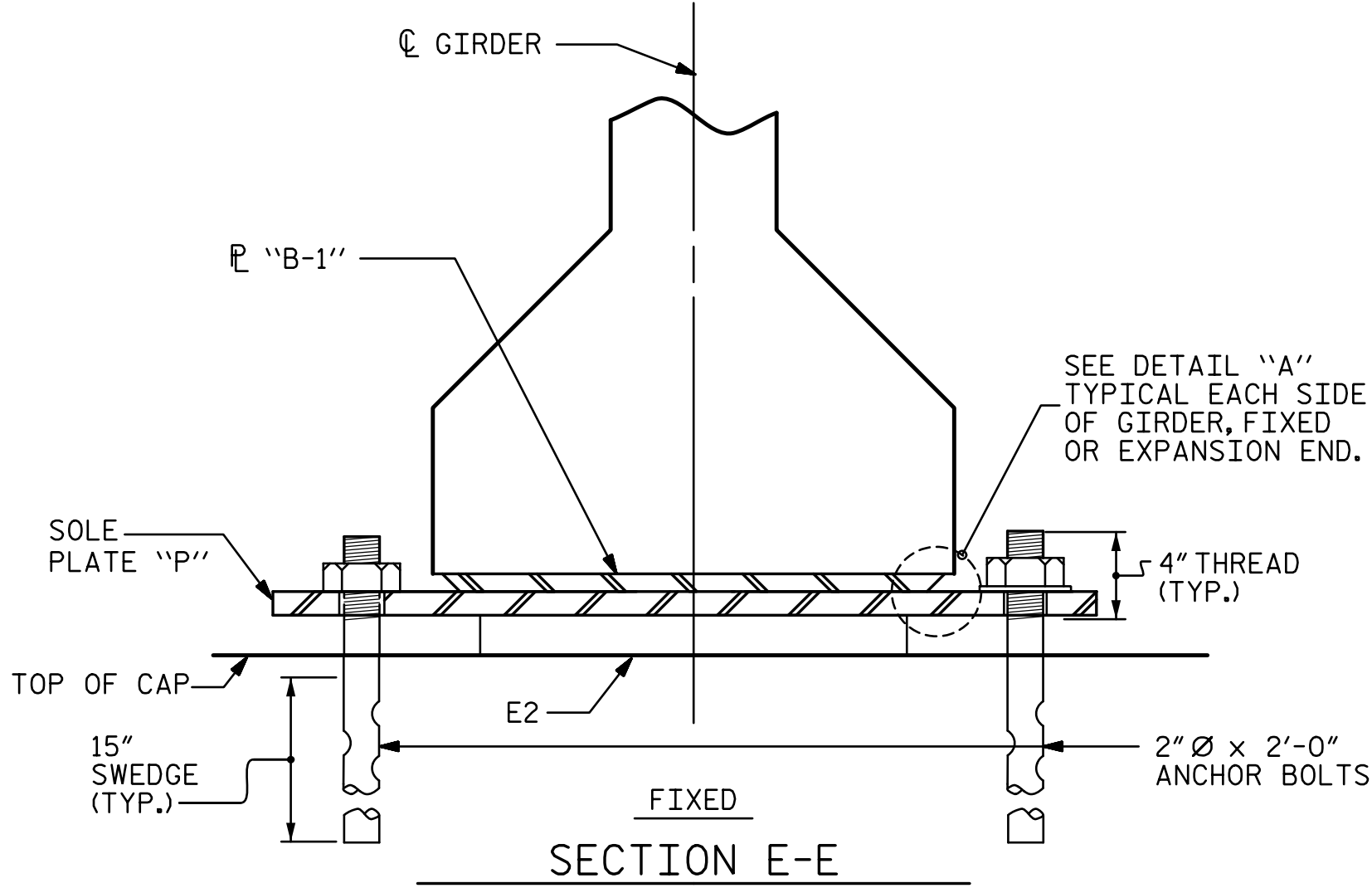
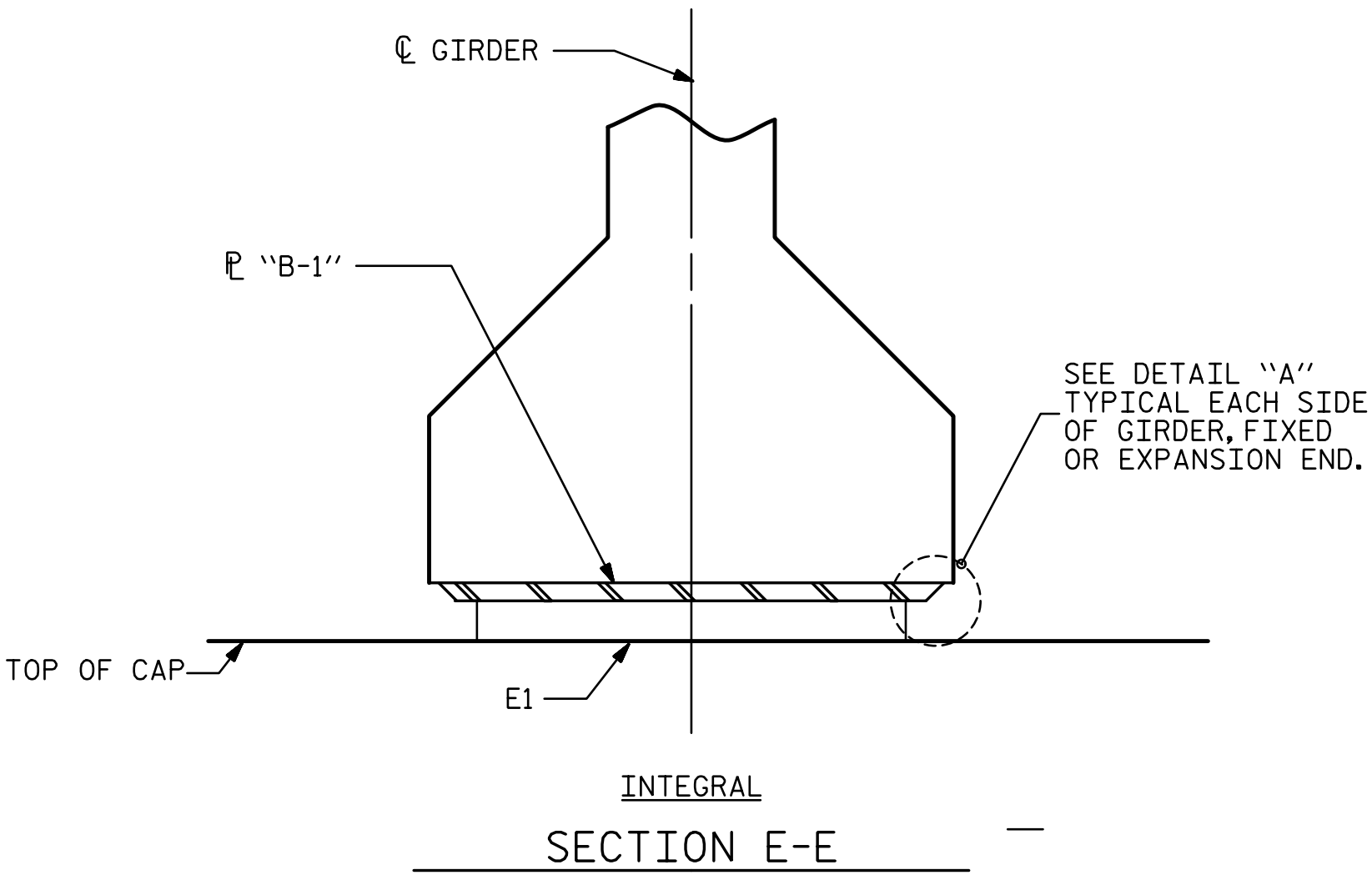
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SUPERSTRUCTURE
INTERMEDIATE
STEEL DIAPHRAGMS FOR
TYPE III PRESTRESSED
CONCRETE GIRDERS

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1			3		
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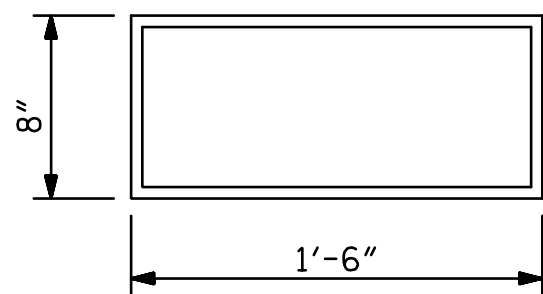
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E1 (20 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

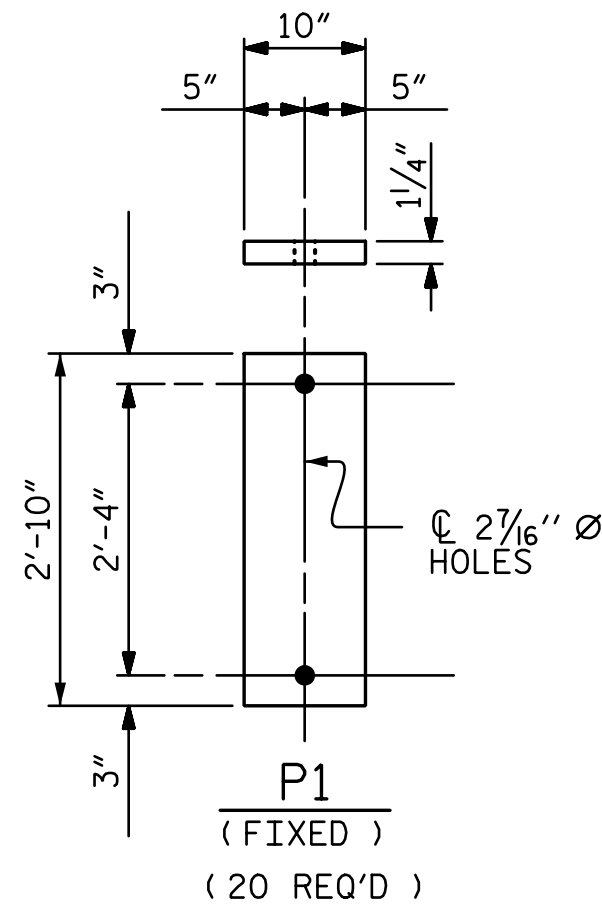
TYPE III MODIFIED



E2 (20 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE III



SOLE PLATE DETAILS ("P")

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.

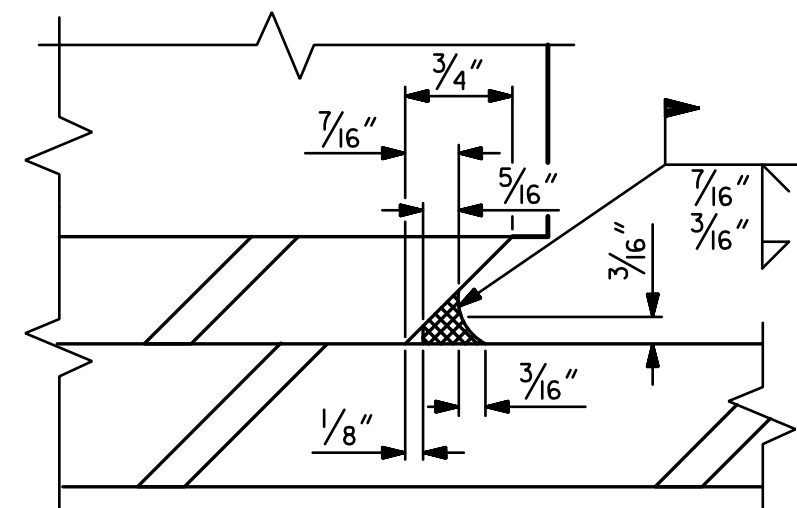
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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 STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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



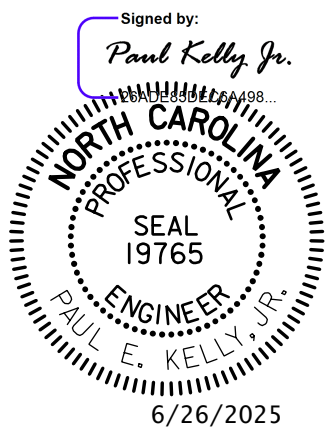
DETAIL "A"

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ELASTOMERIC BEARING
DETAILS

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TOTAL SHEETS					37

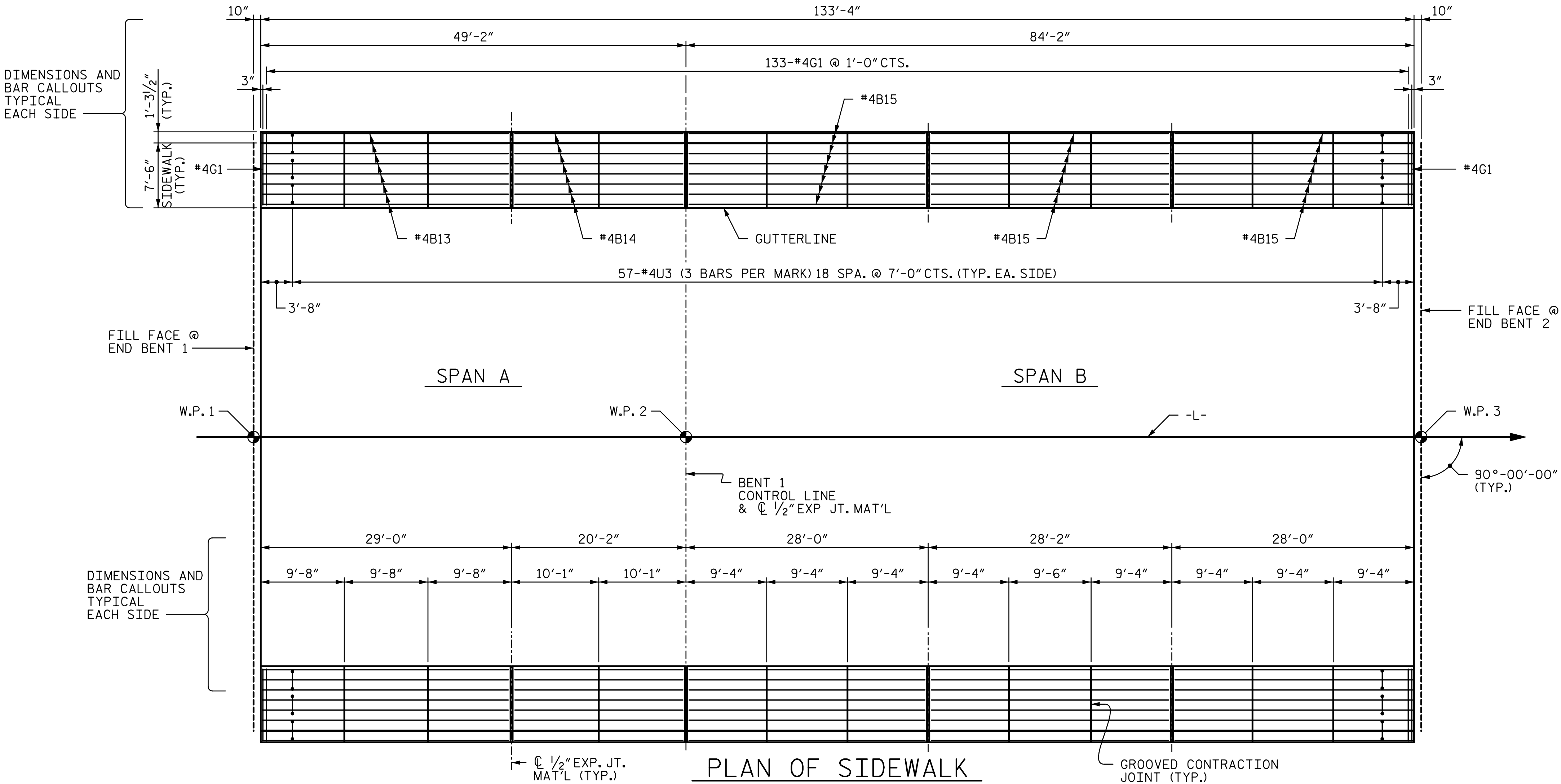


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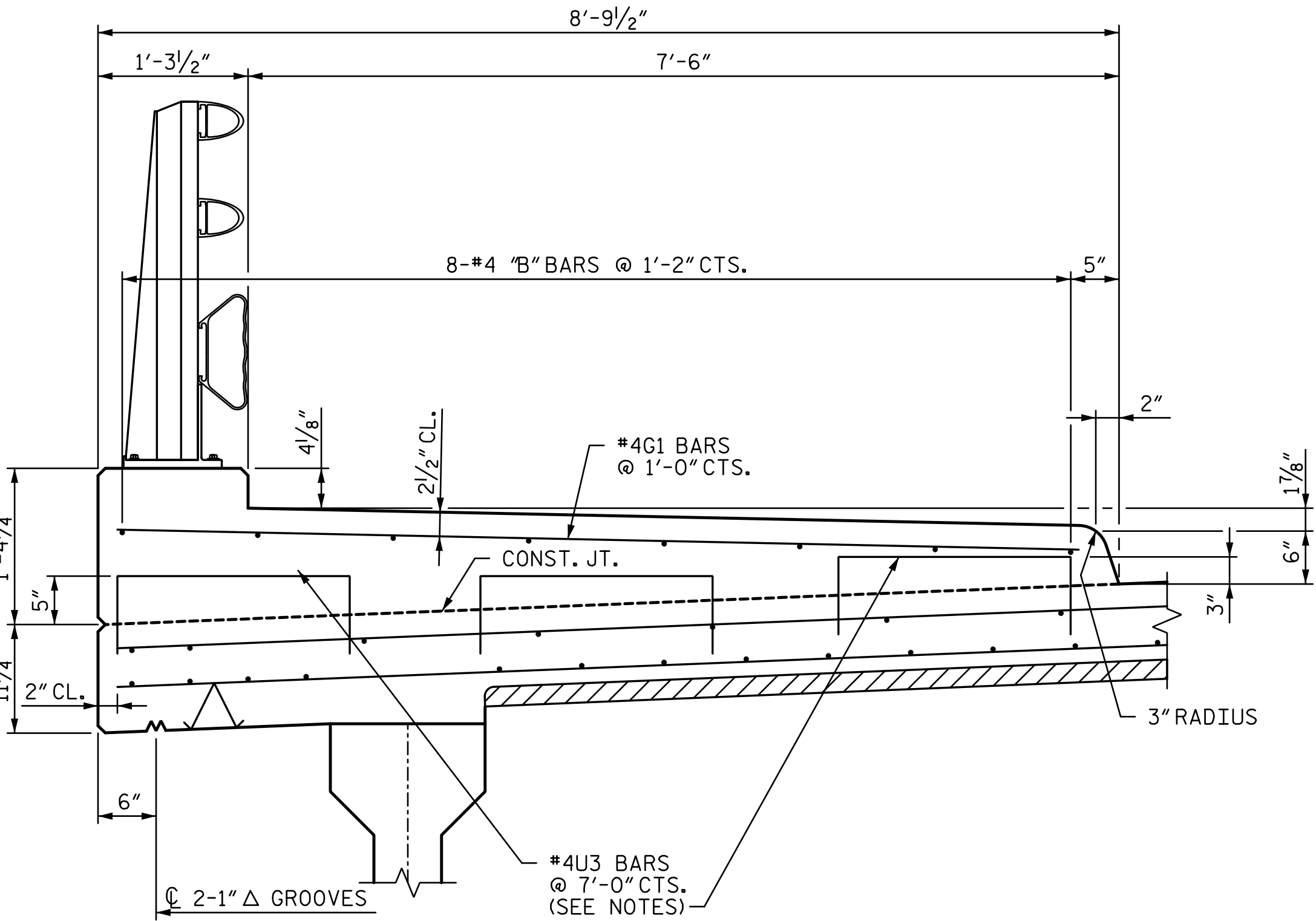
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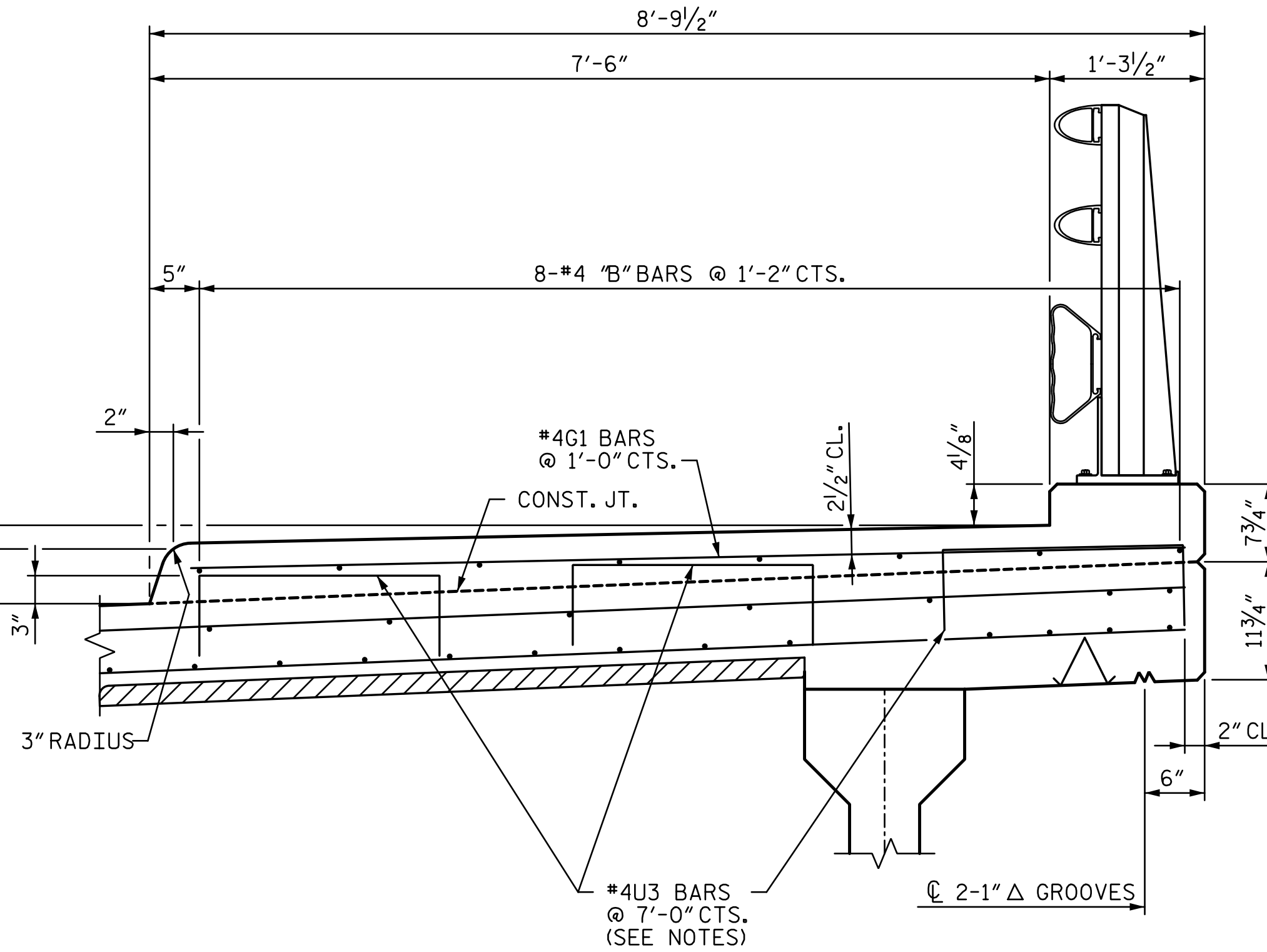
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PLAN OF SIDEWALK



SECTION THRU SIDEWALK LEFT SIDE



SECTION THRU SIDEWALK RIGHT SIDE

NOTES:

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

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

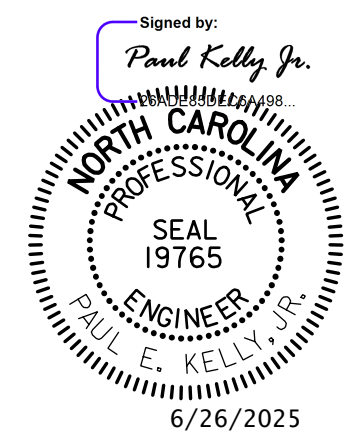
FOR SIDEWALK REINFORCING AND CONCRETE QUANTITIES SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.

U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

SEE APPROACH SLAB SHEETS FOR SIDEWALK ON THE APPROACH SLAB.

PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE PAY ITEM FOR THE "REINFORCED CONCRETE DECK SLAB". THIS SHALL INCLUDE MATERIALS, EQUIPMENT, TOOLS, LABOR AND INCIDENTALS NECESSARY TO PERFORM THE WORK. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE.

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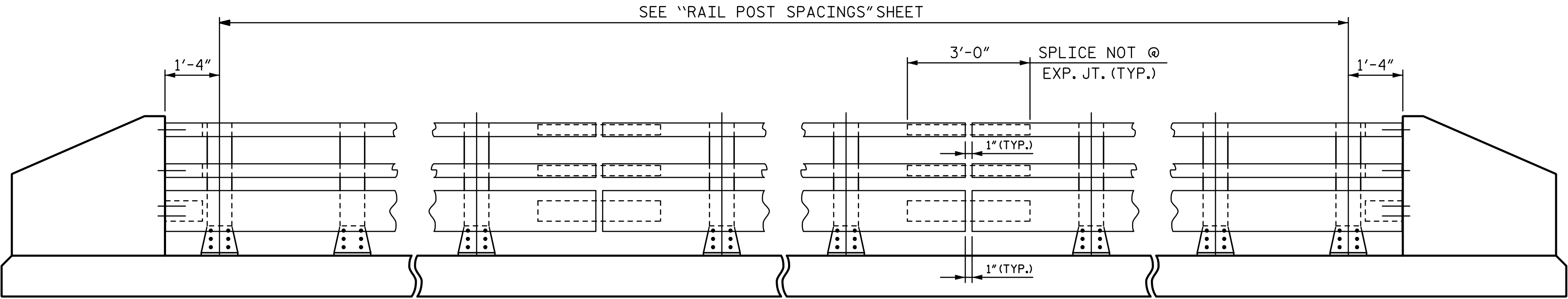


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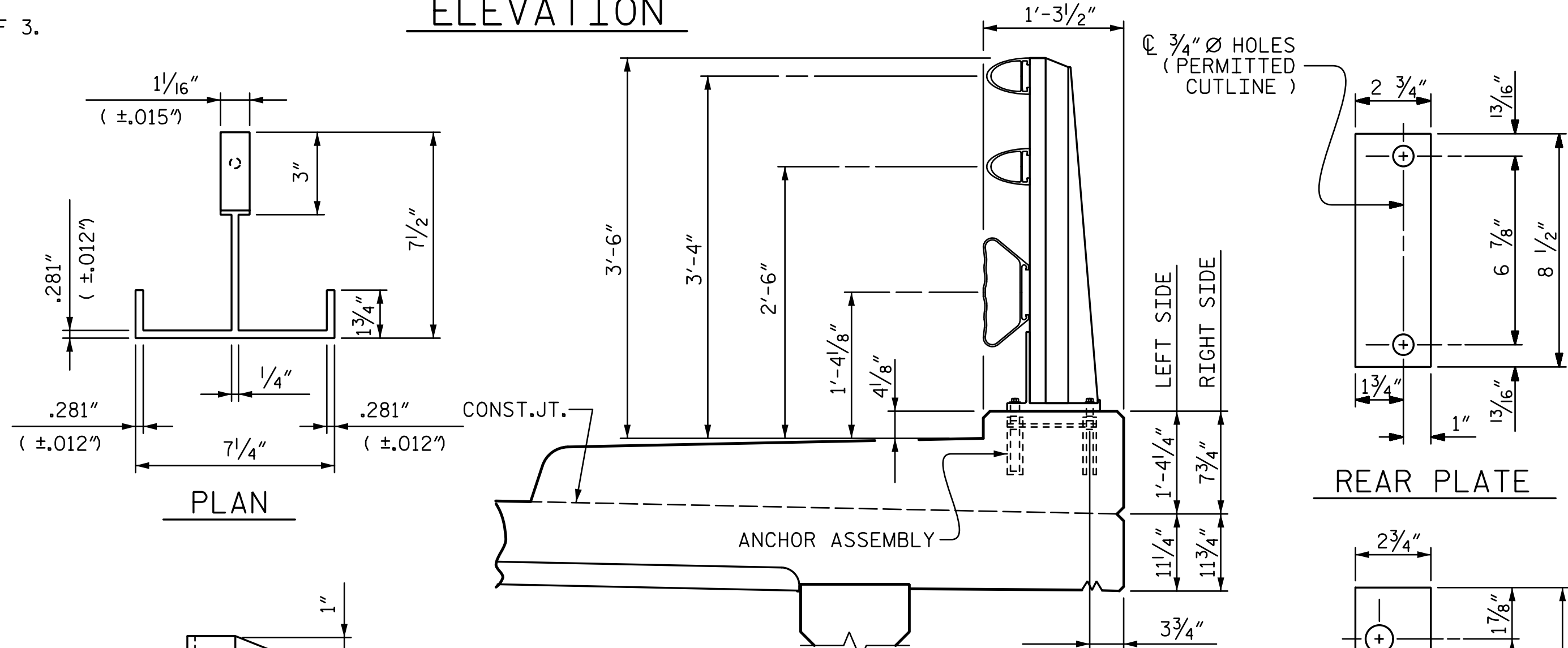
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE SIDEWALK DETAILS					
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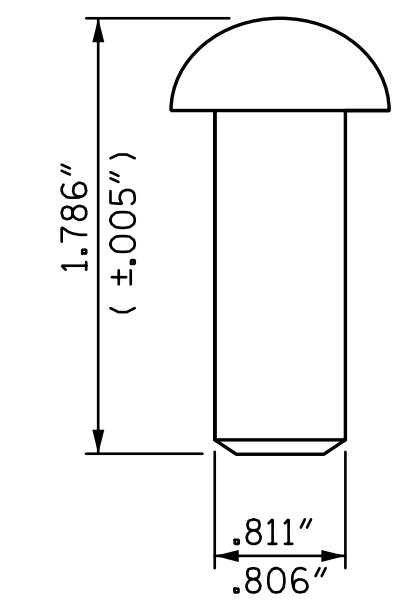
NOTE:
FOR ATTACHMENT OF METAL RAIL TO END
POST, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.

ELEVATION



SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL"
SHEET 2 OF 3



RIVET DETAIL

FRONT PLATE
SHIM DETAILS

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

PAY LENGTH = 251'-8" LIN.FT.

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.

ALUMINUM RAILS

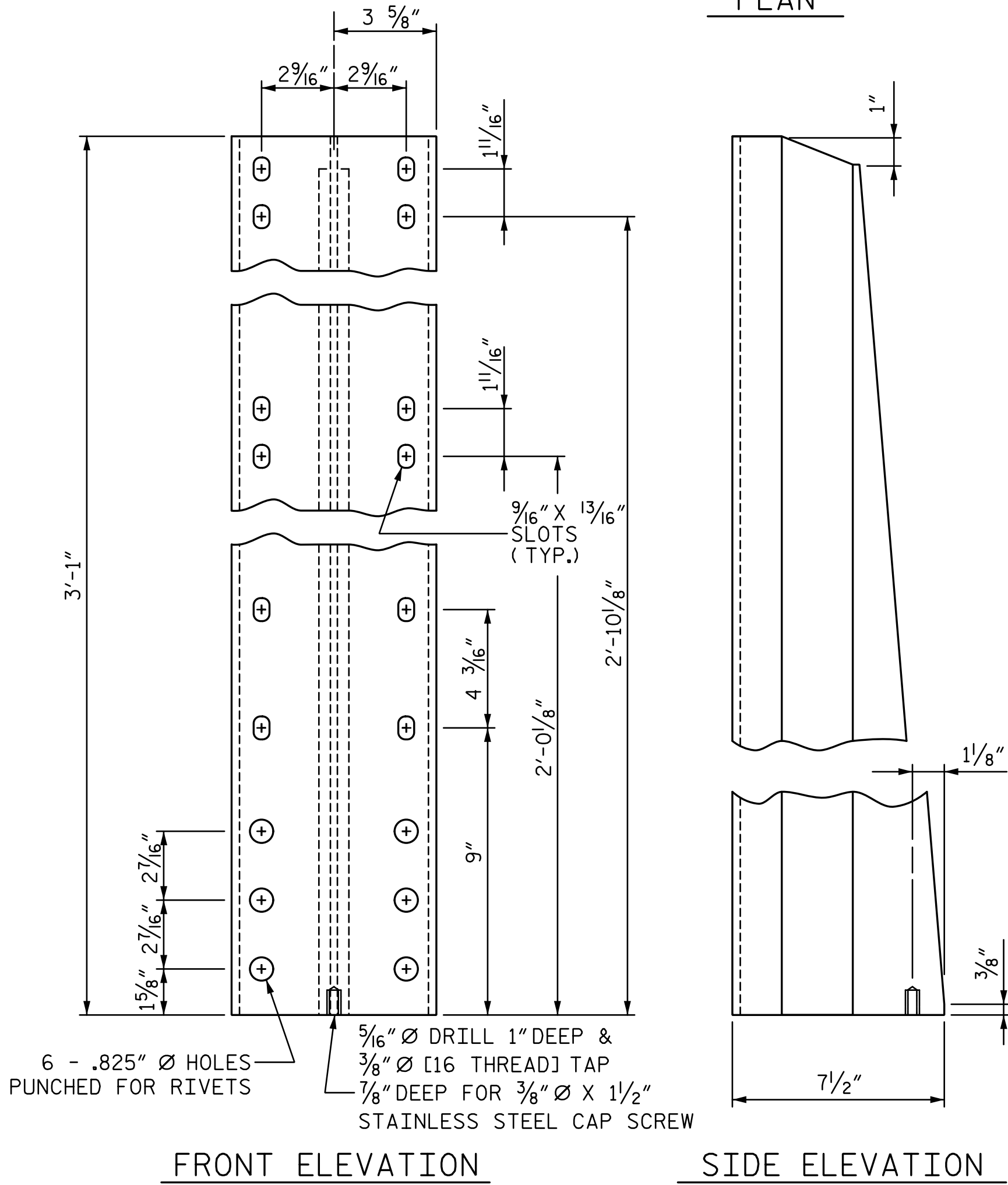
MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

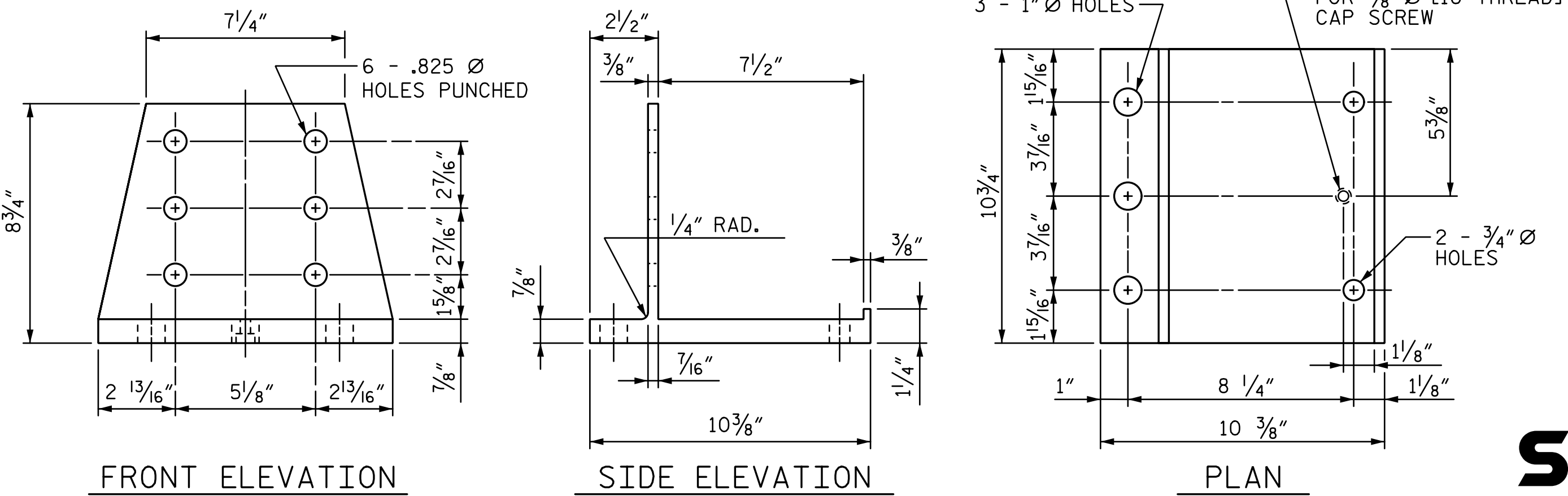
MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS: POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL GALVANIZED TO ASTM A123. RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS. THE CUT ENDS OF GALVANIZED STEEL RAILING, 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

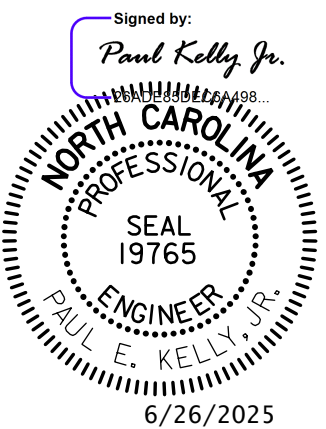
RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED. FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE "3 BAR METAL RAIL" SHEET 3 OF 3. CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT 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 REMAIN 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.



DETAILS OF POST



POST BASE DETAILS



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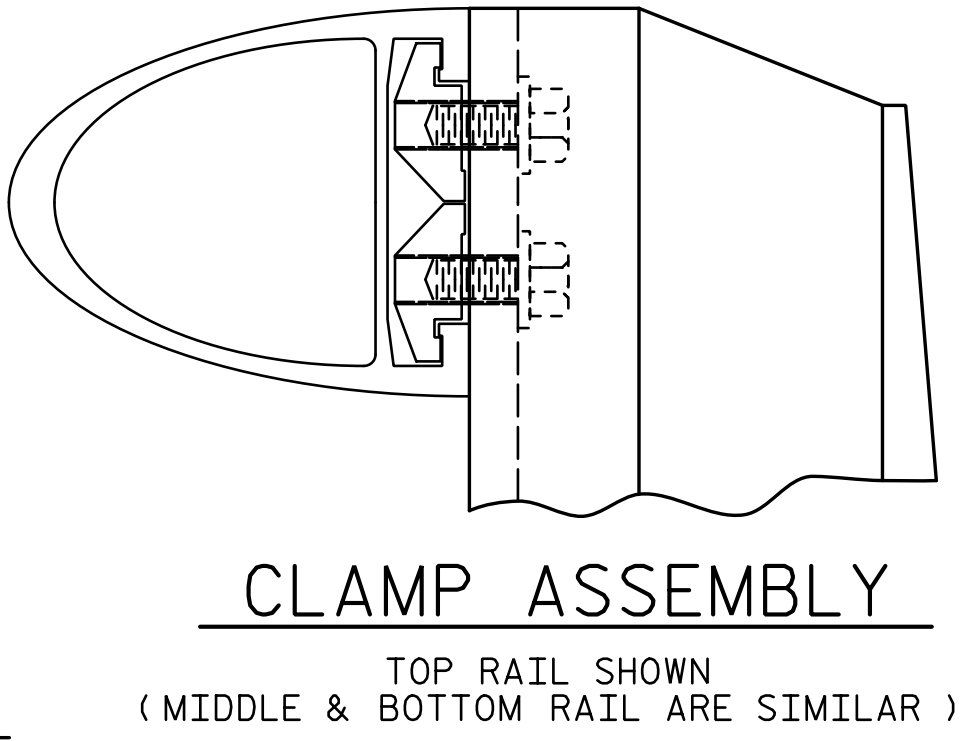
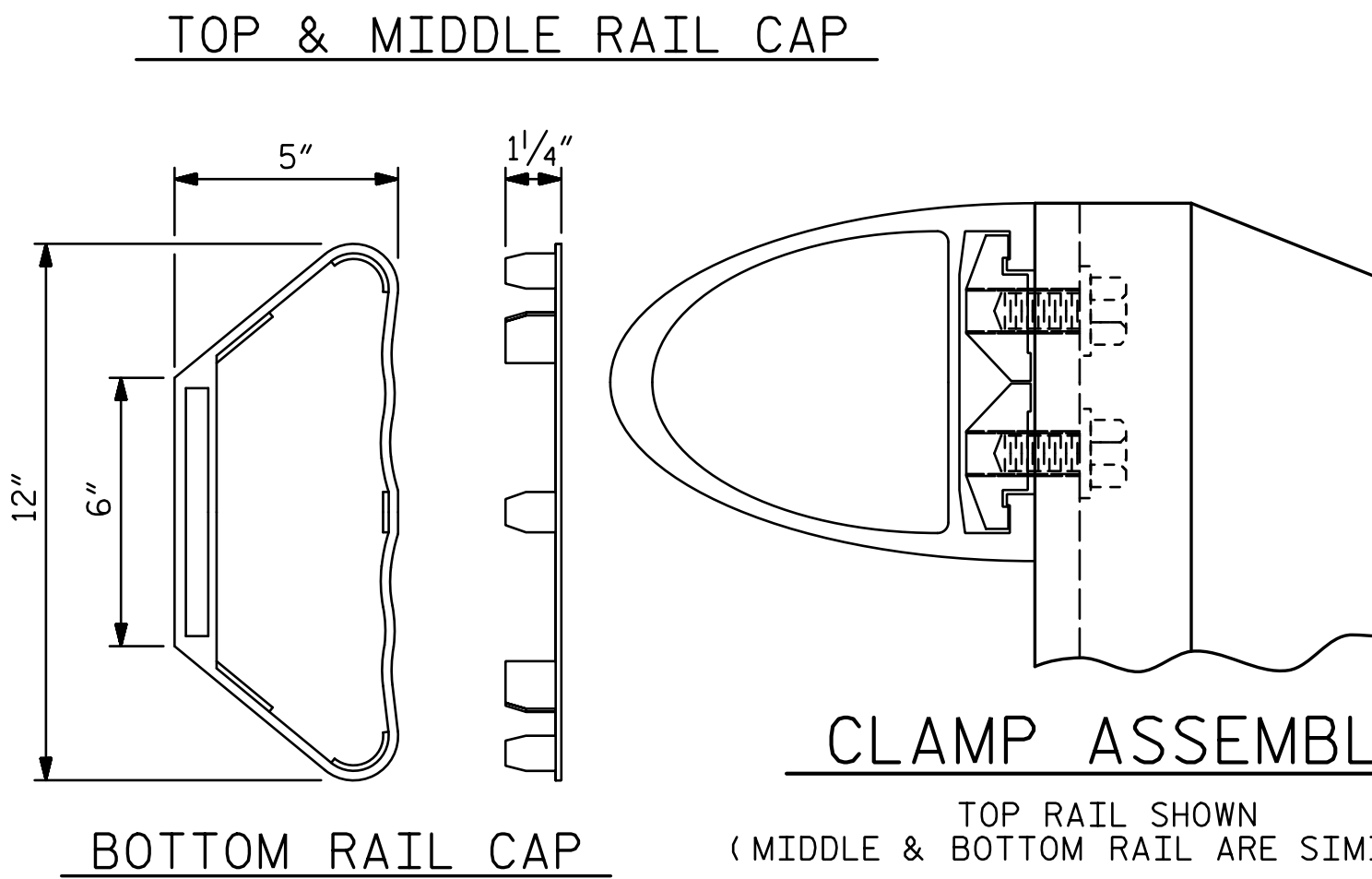
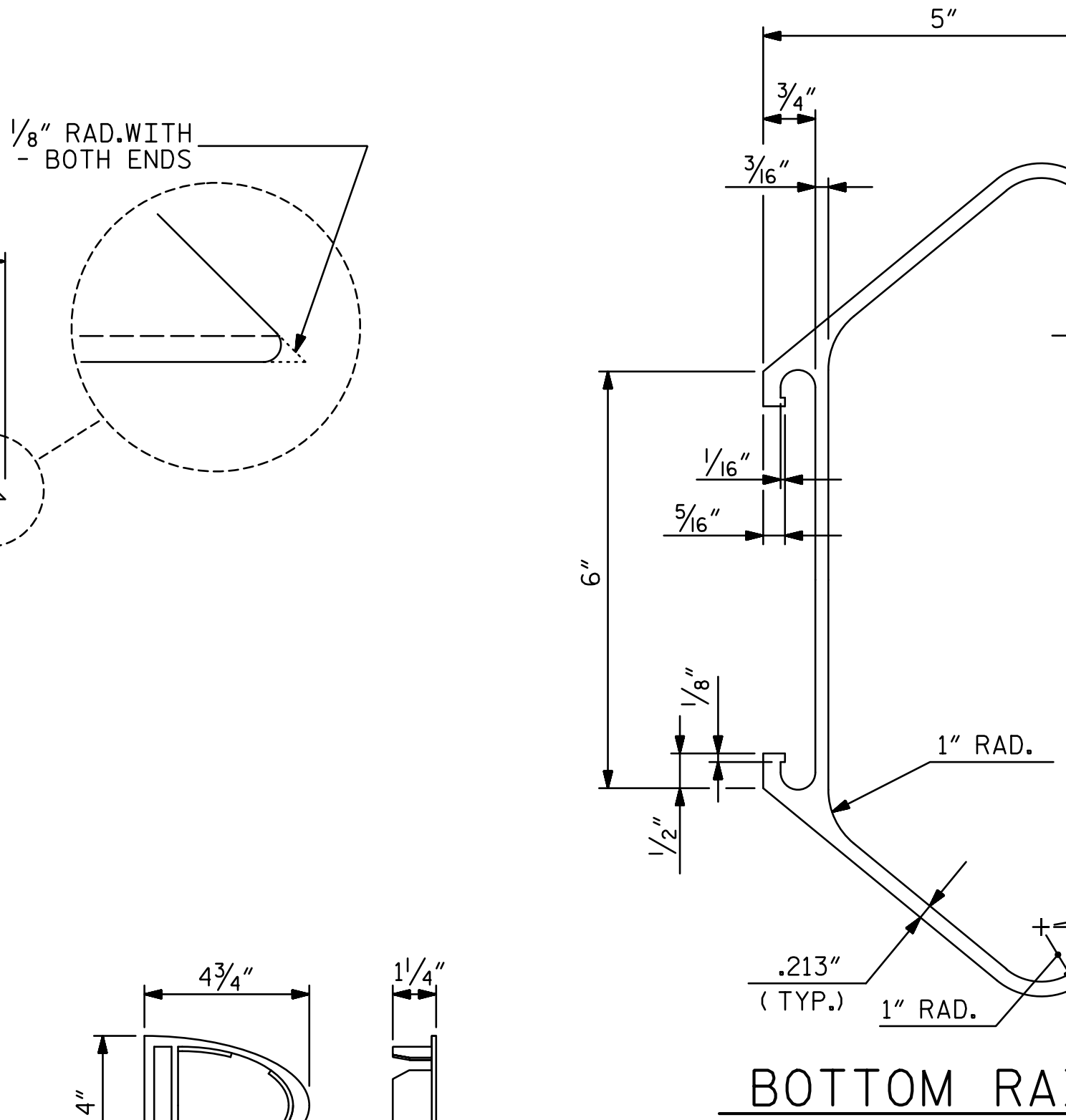
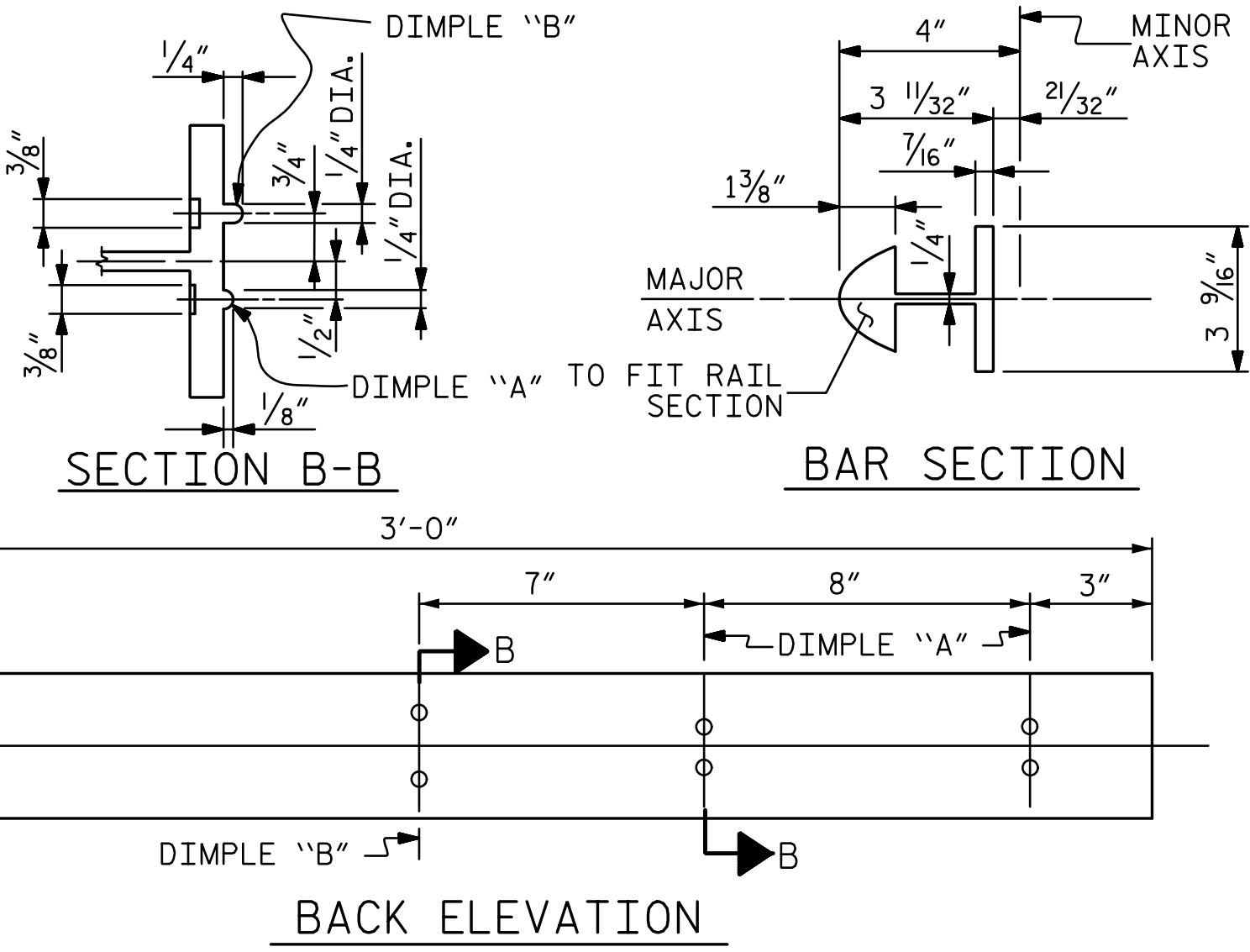
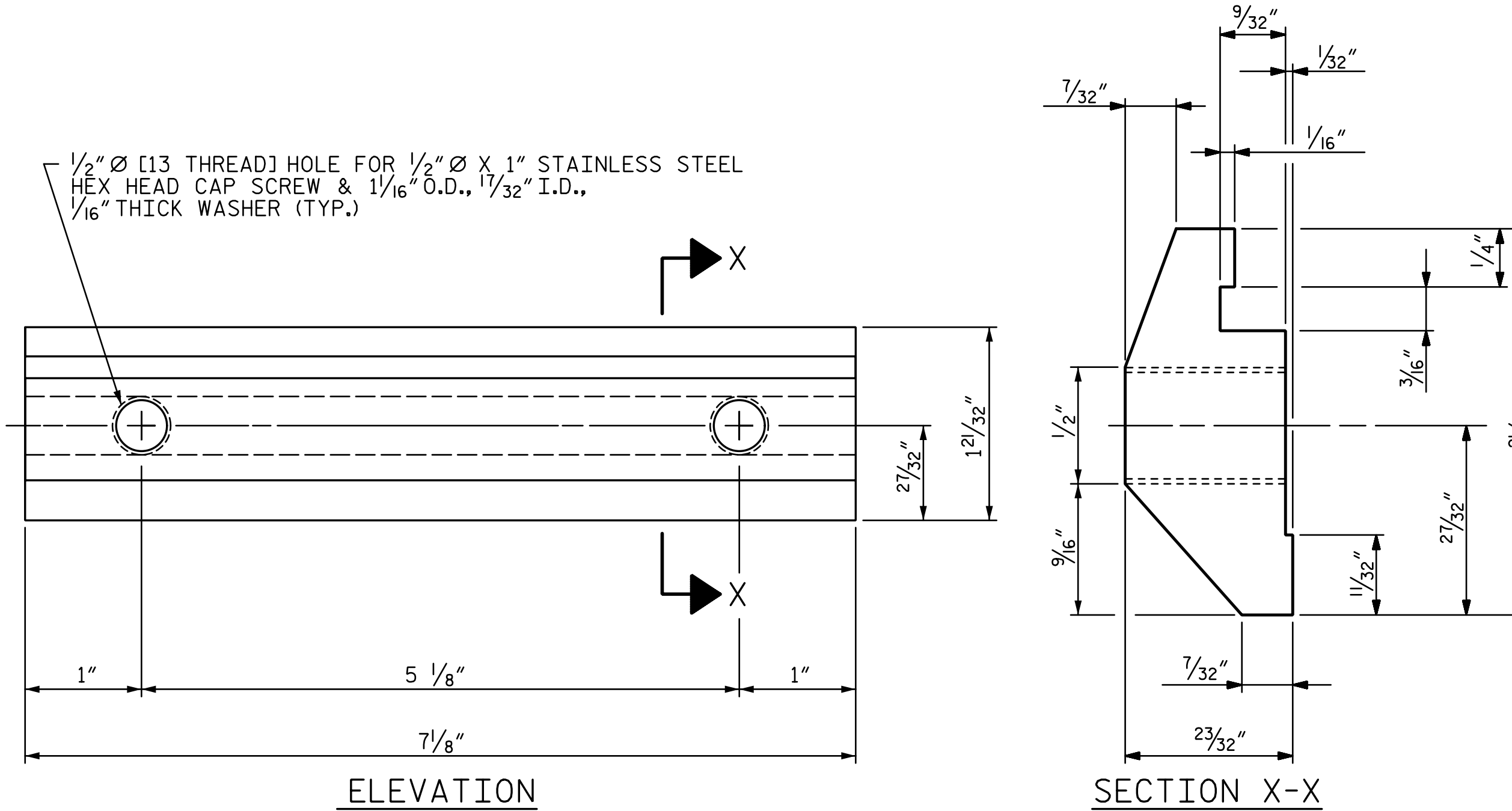
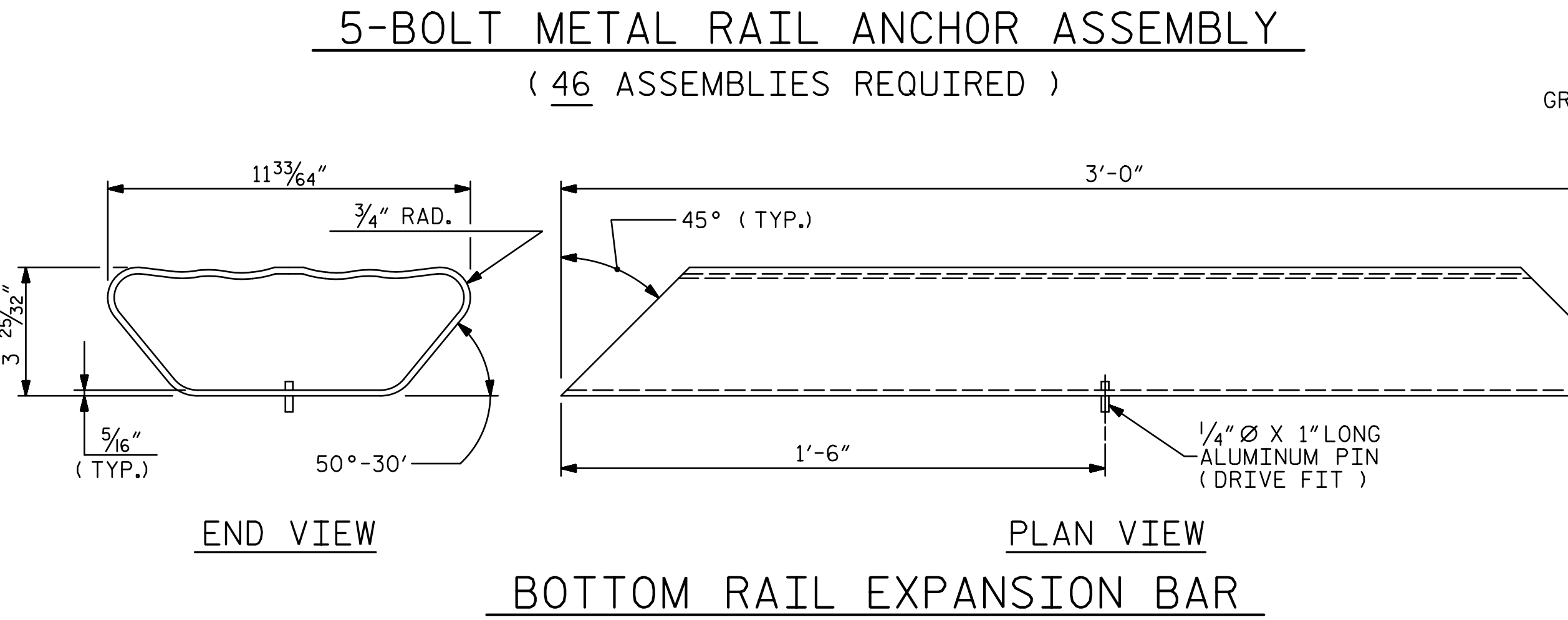
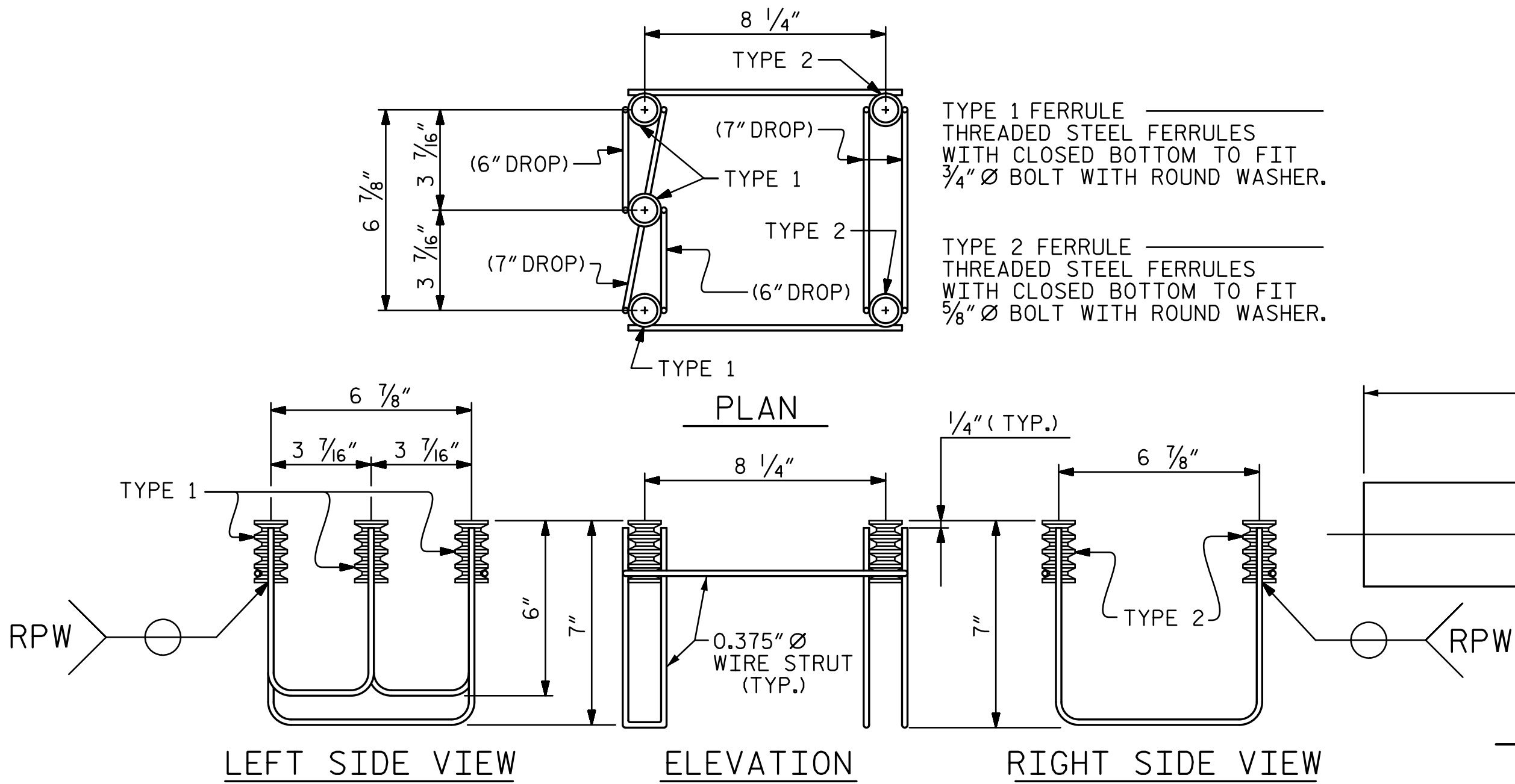
SHEET 1 OF 3

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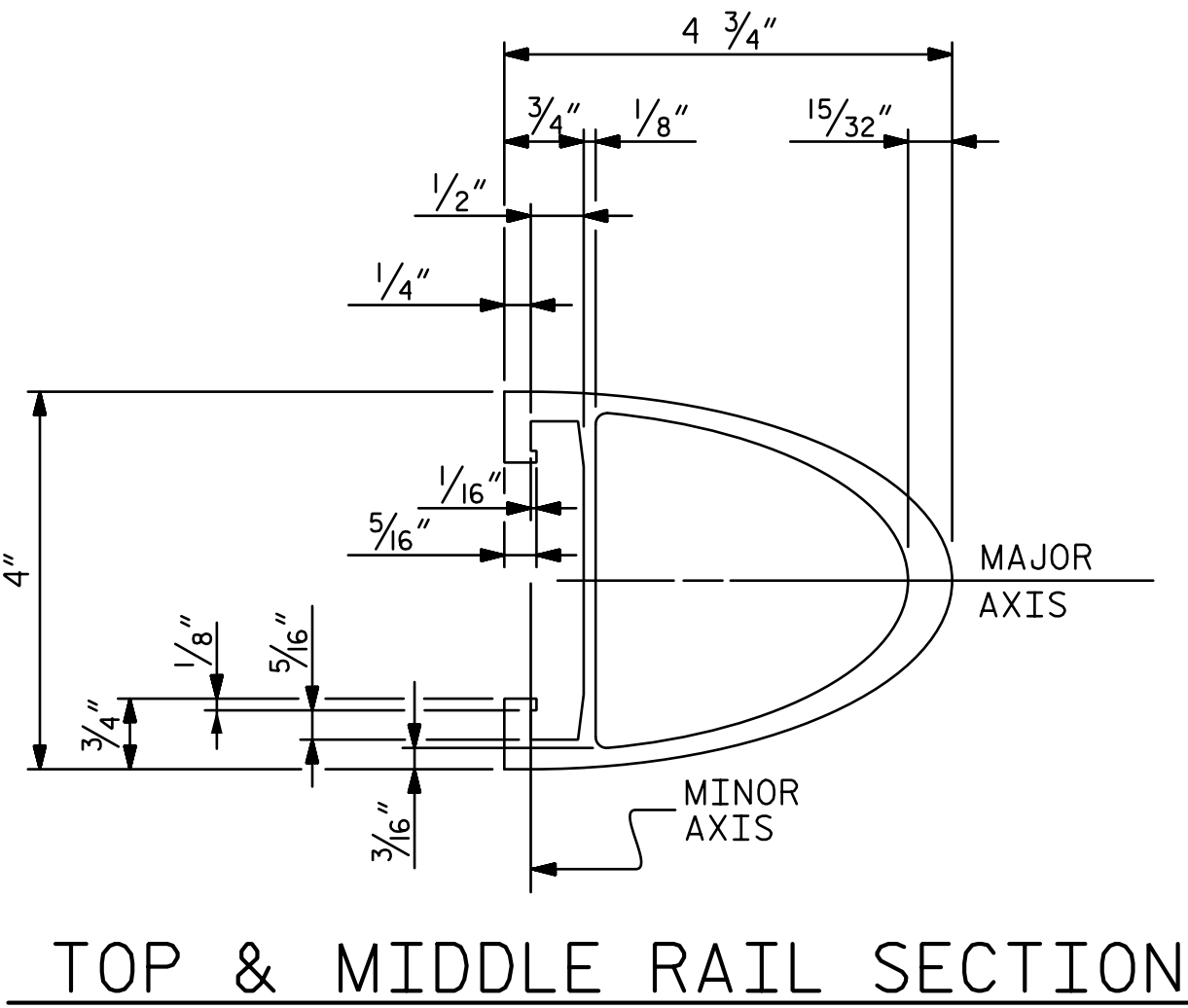
3 BAR METAL RAIL

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				TOTAL SHEETS	37

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- NOTES:**
- STRUCTURAL CONCRETE ANCHOR ASSEMBLY**
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 1/4" FOR 5/8" FERRULES.
 - 3 - 3/4" Ø 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" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - 2 - 5/8" Ø X 2 1/4" 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 5/8" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
 - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
 - THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
 - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



PROJECT NO. **BP10-R013**
MECKLENBURG COUNTY
STATION: **21+59.00 -L-**

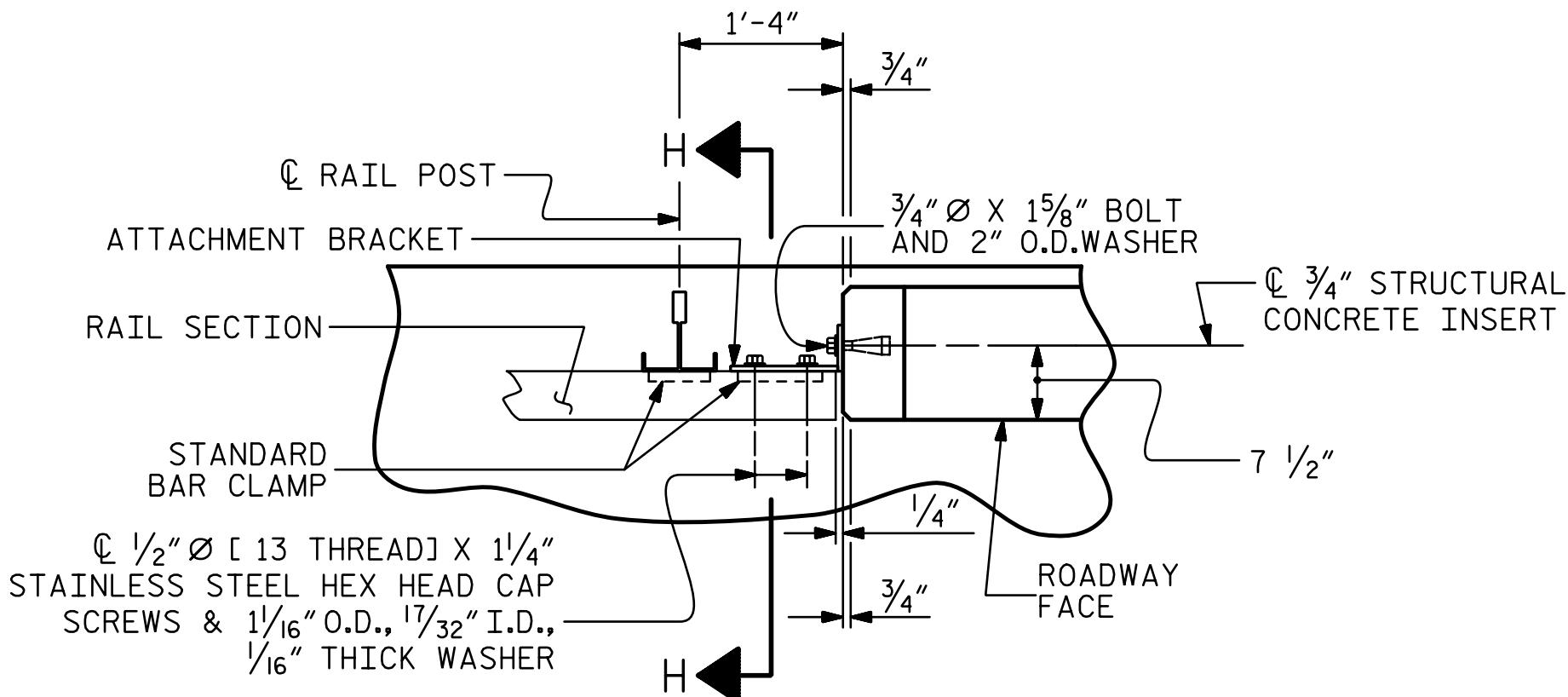
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			37

Signed by: **Paul Kelly Jr.**
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL 19765
PAUL E. KELLY JR.
6/26/2025

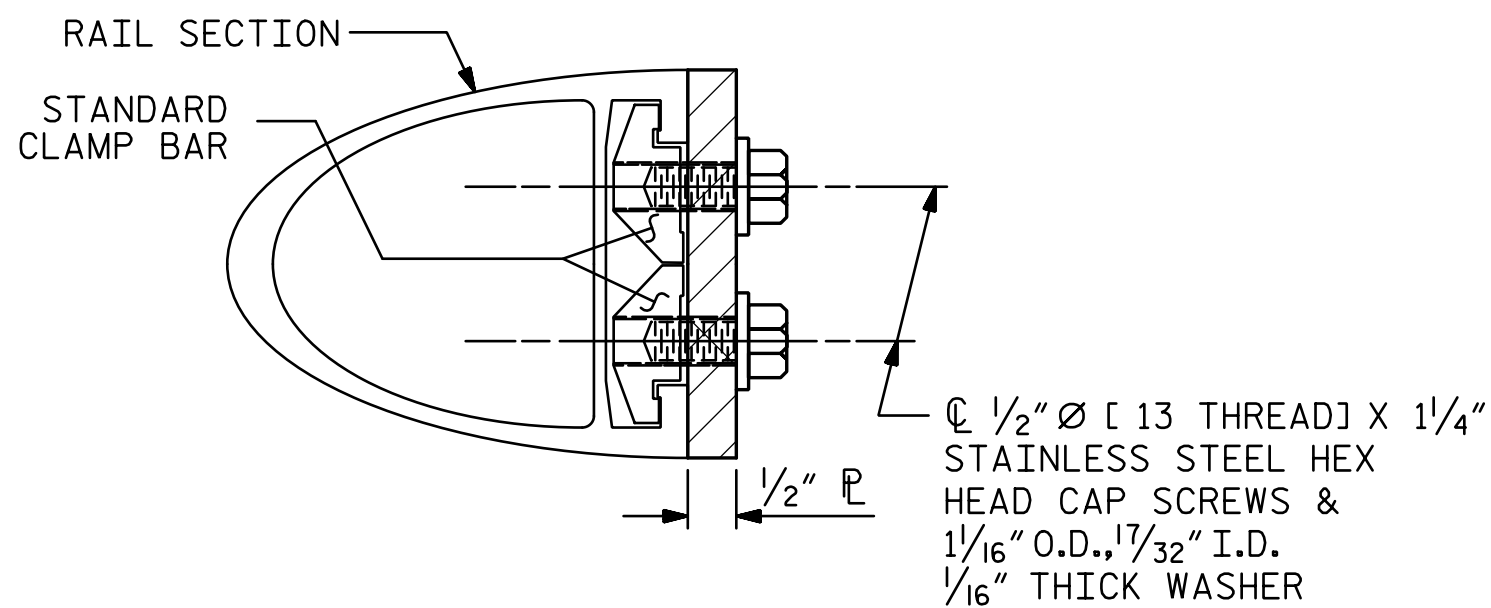
stv STV Engineers, Inc.
2151 Howling St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

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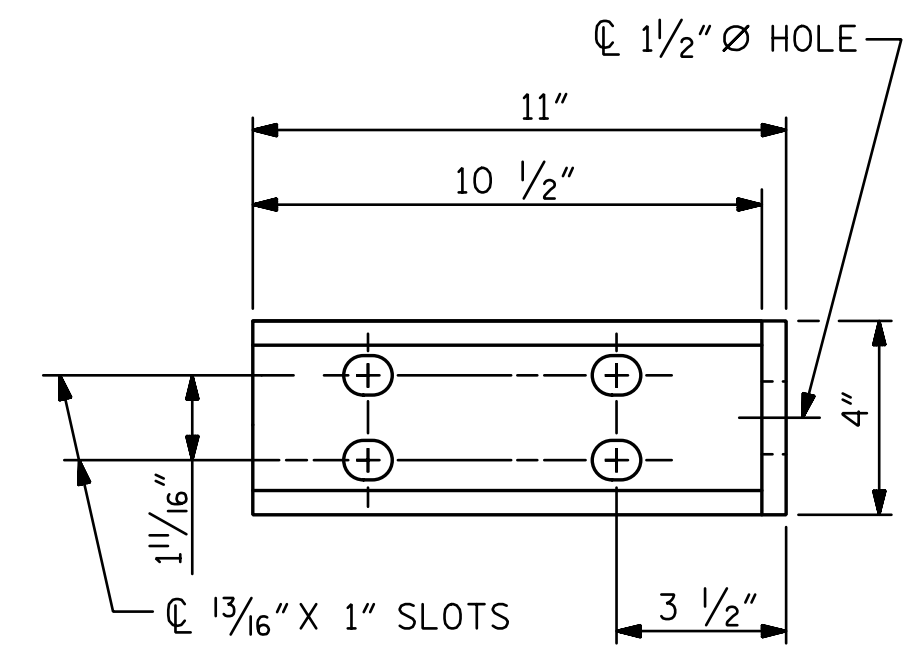
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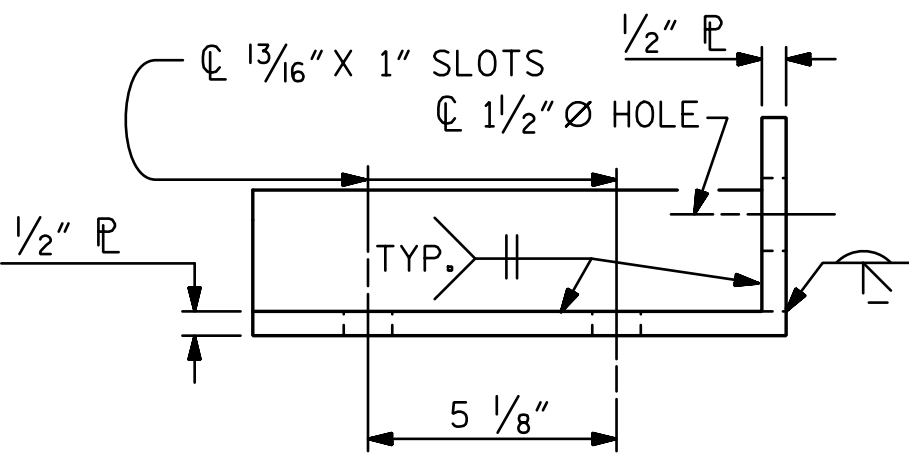
PLAN OF RAIL AND END POST
(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



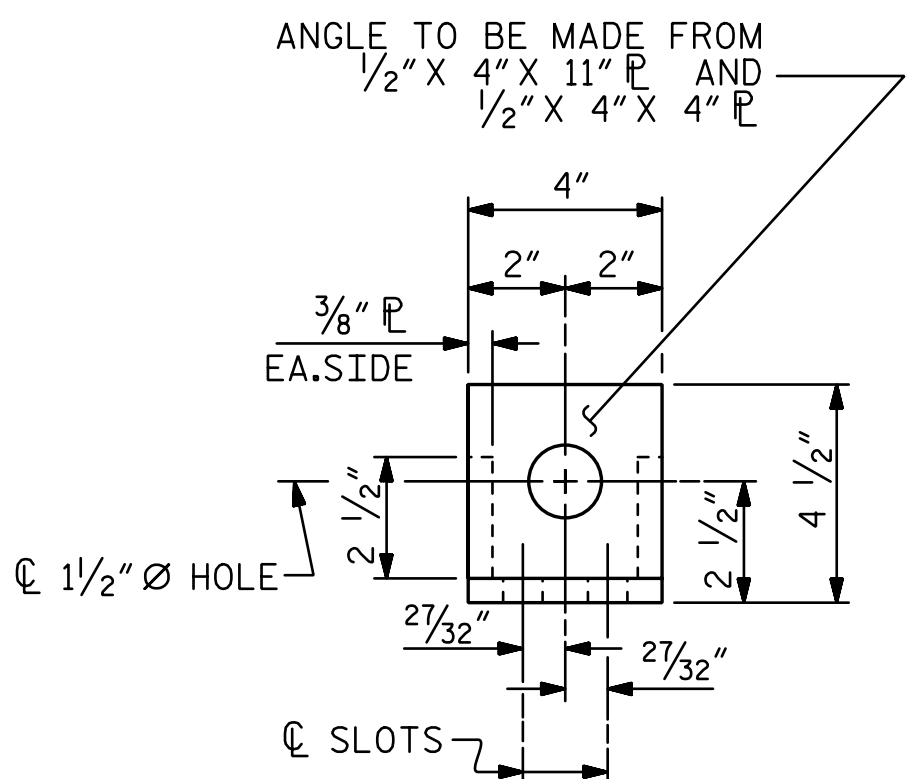
SECTION H-H
(FOR TOP & MIDDLE RAIL)



ELEVATION

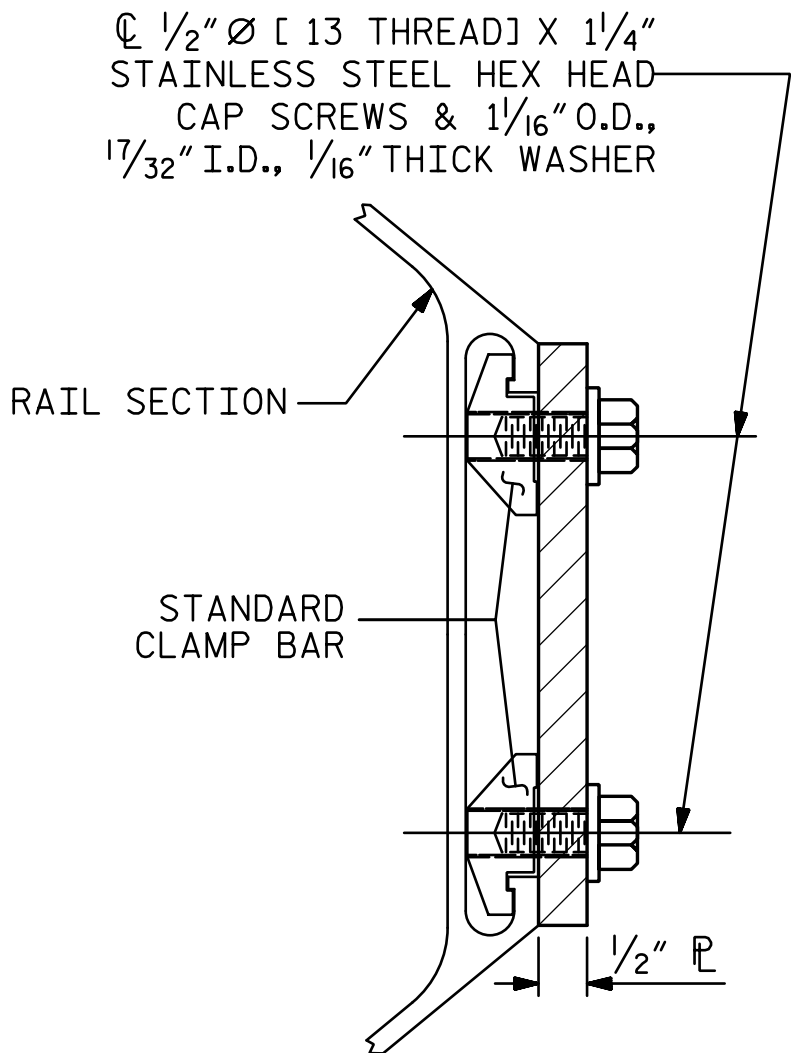


PLAN

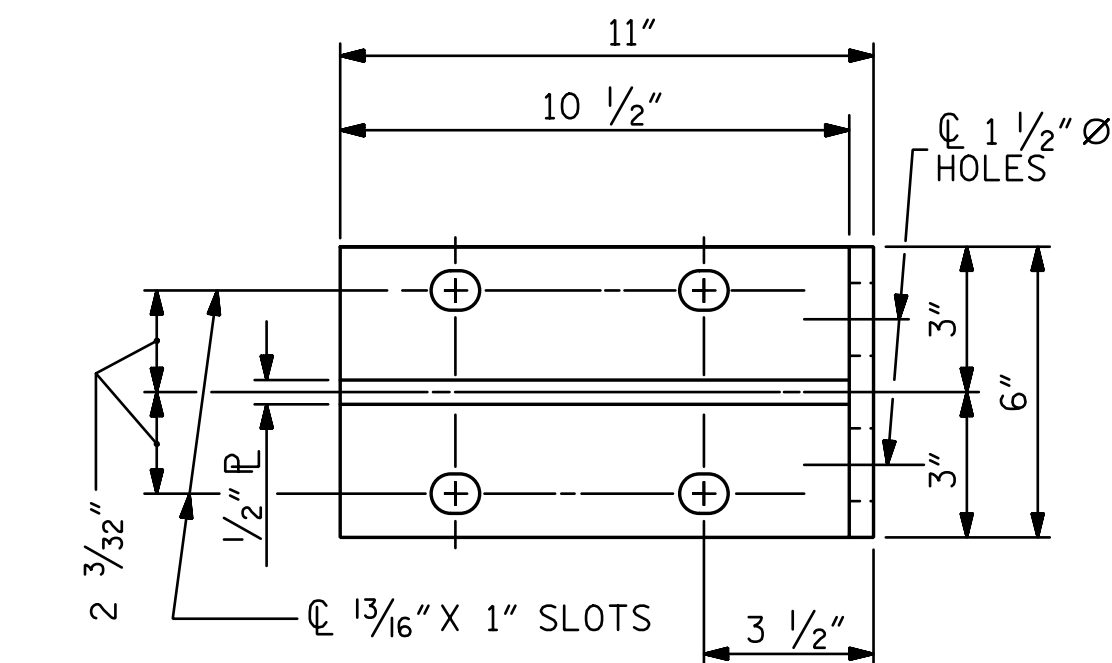


END VIEW
(FIX. AND EXP.)

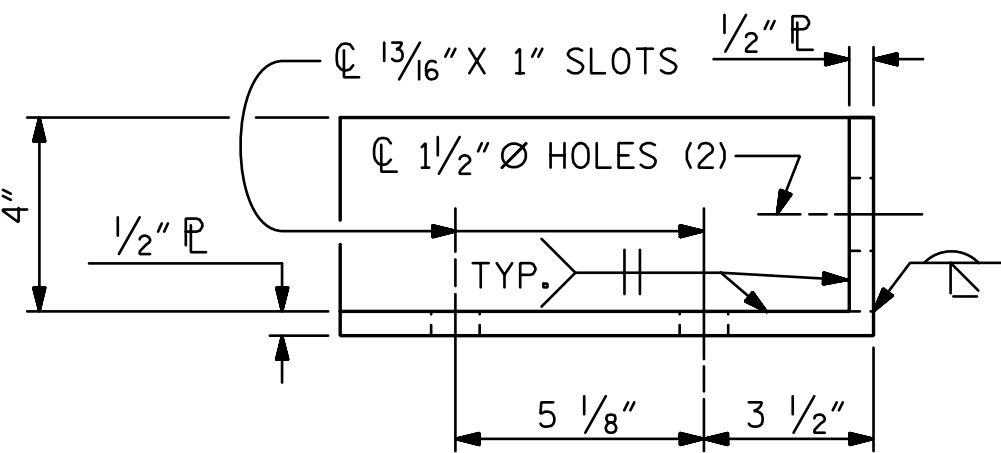
DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAIL ONLY)



SECTION H-H
(FOR BOTTOM RAIL)



ELEVATION



PLAN

DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)

NOTES:

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4,800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- STANDARD CLAMP BARS ("3 BAR METAL RAIL" SHEET 2 OF 3).

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

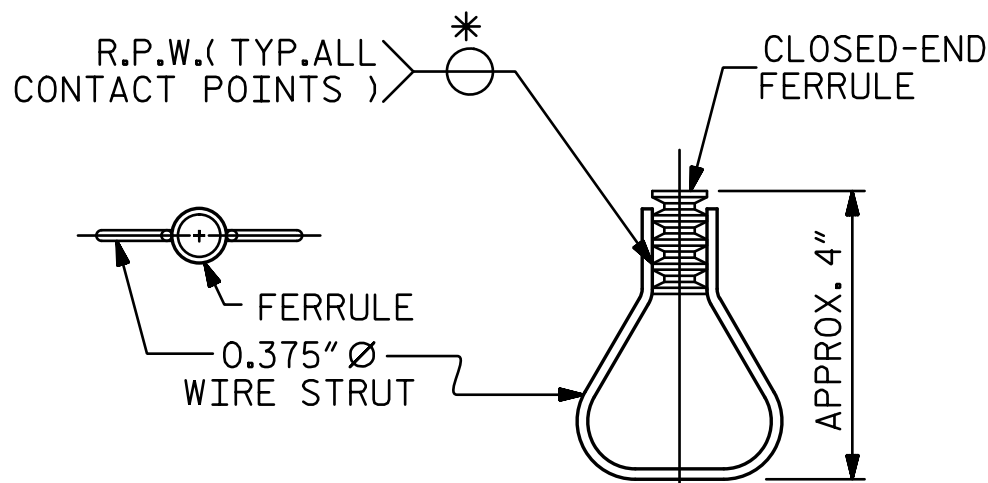
THE CONTRACTOR, AT THEIR OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES:

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".
- 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



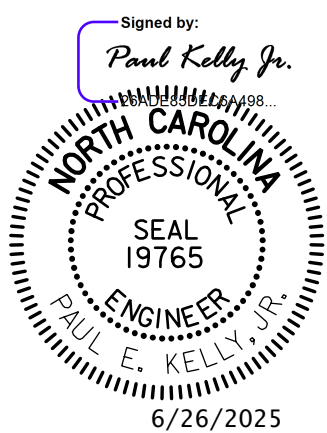
PLAN ELEVATION

STRUCTURAL CONCRETE
INSERT

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

PROJECT NO. **BP10-R013**
MECKLENBURG COUNTY
STATION: **21+59.00 -L-**

SHEET 3 OF 3



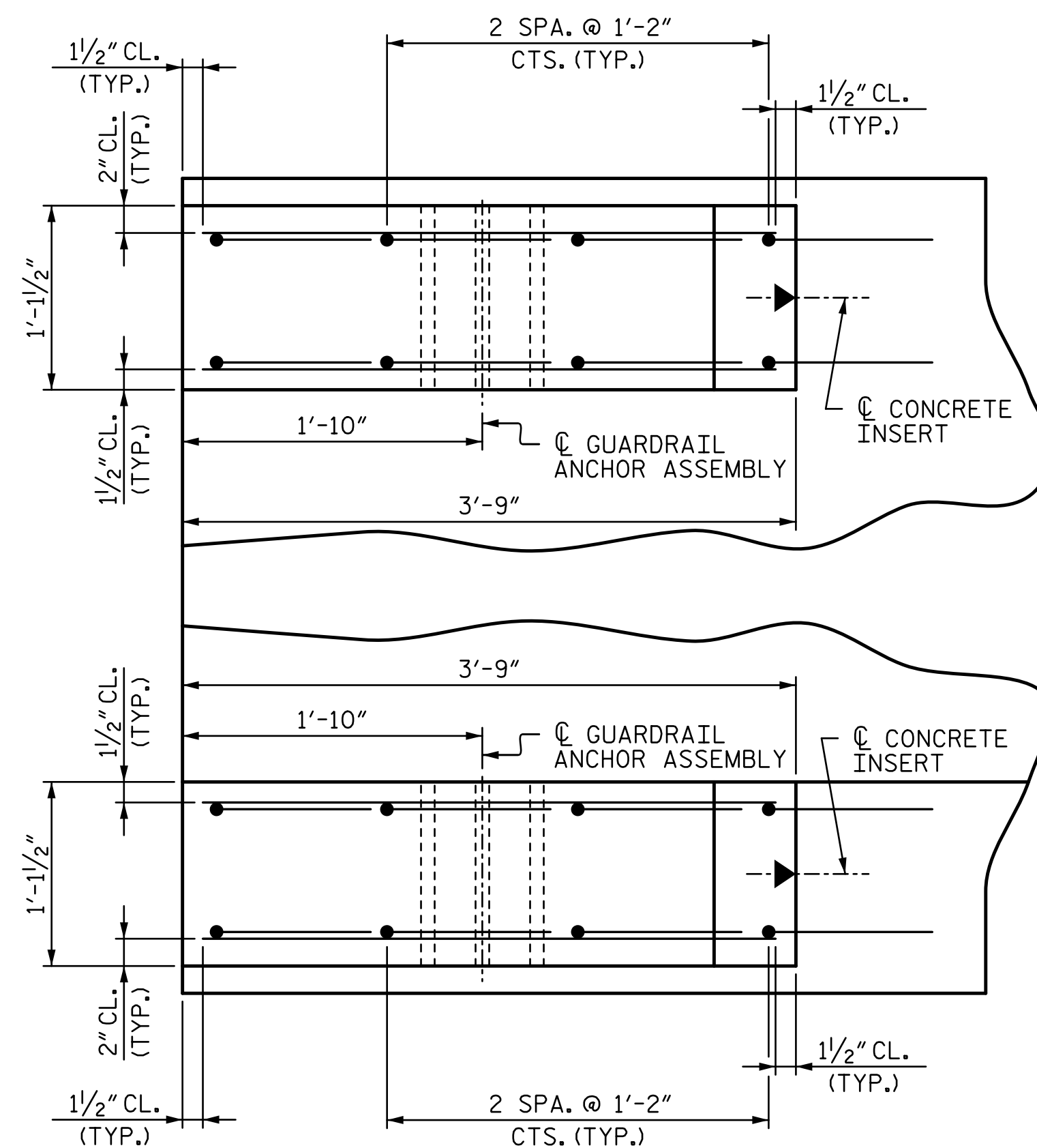
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NC License Number F-0991

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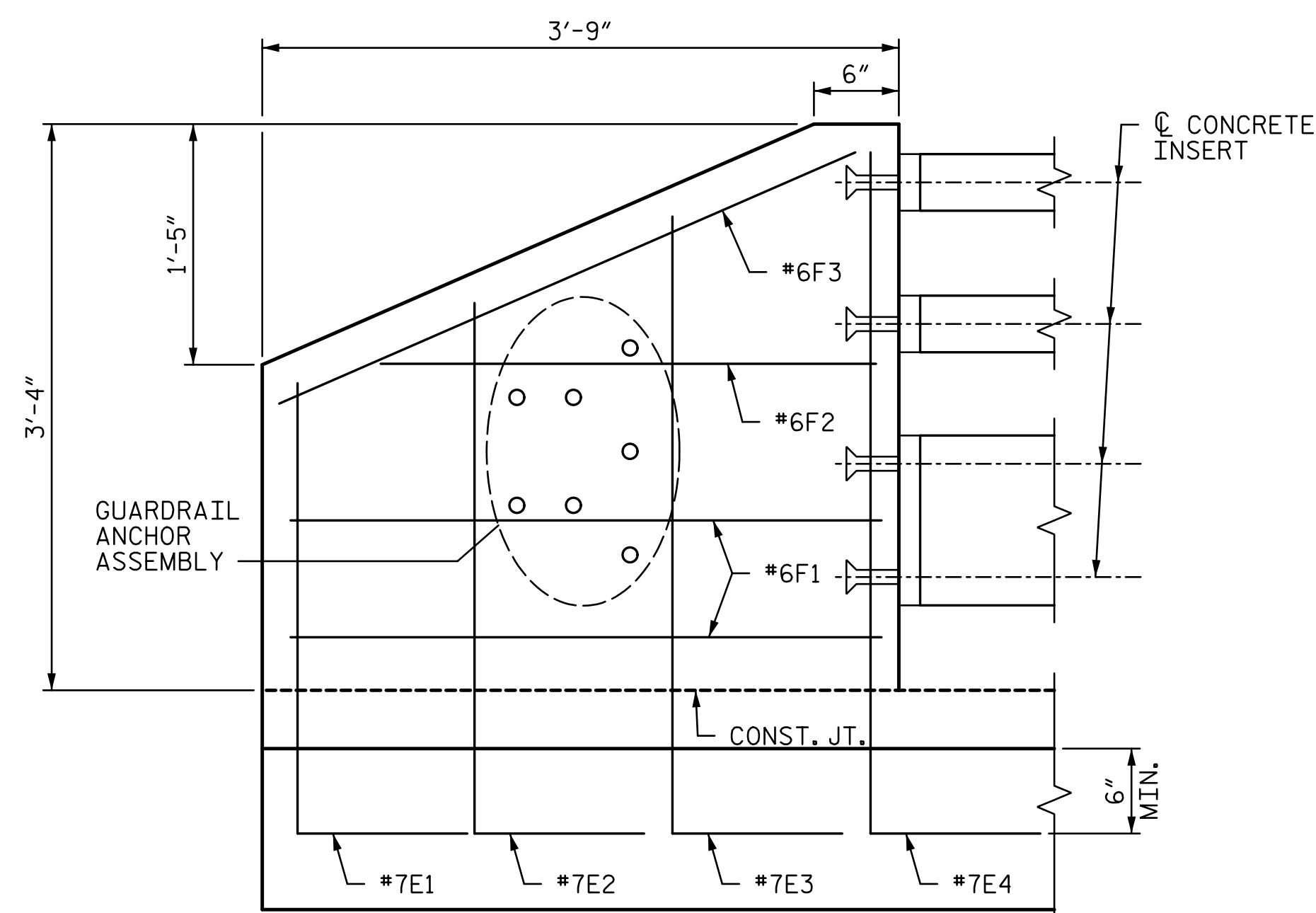
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
3 BAR METAL RAIL

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					37

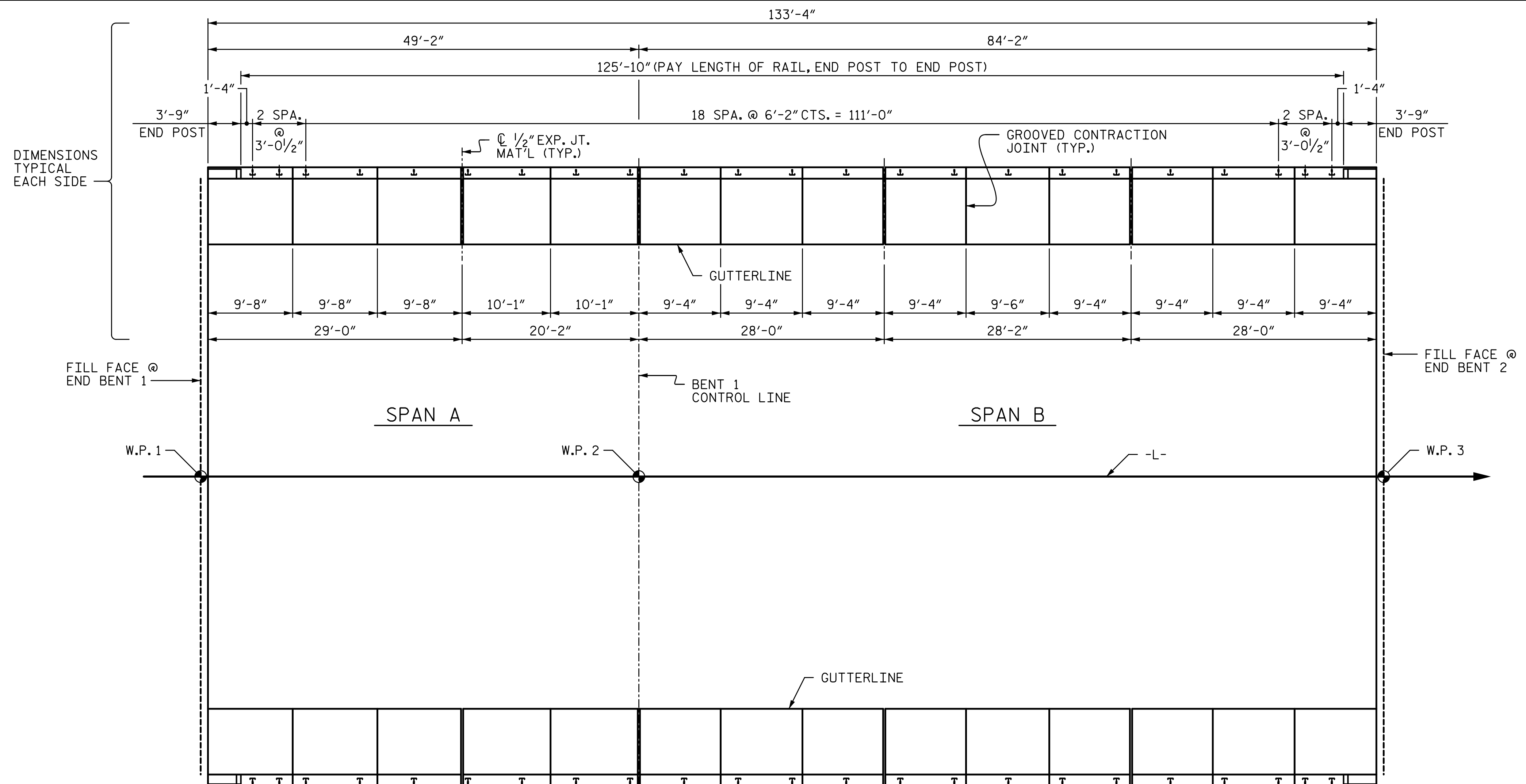
DRAWN BY : MBC DATE : 9-21
CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25



PLAN



ELEVATION



PLAN OF RAIL POST SPACINGS

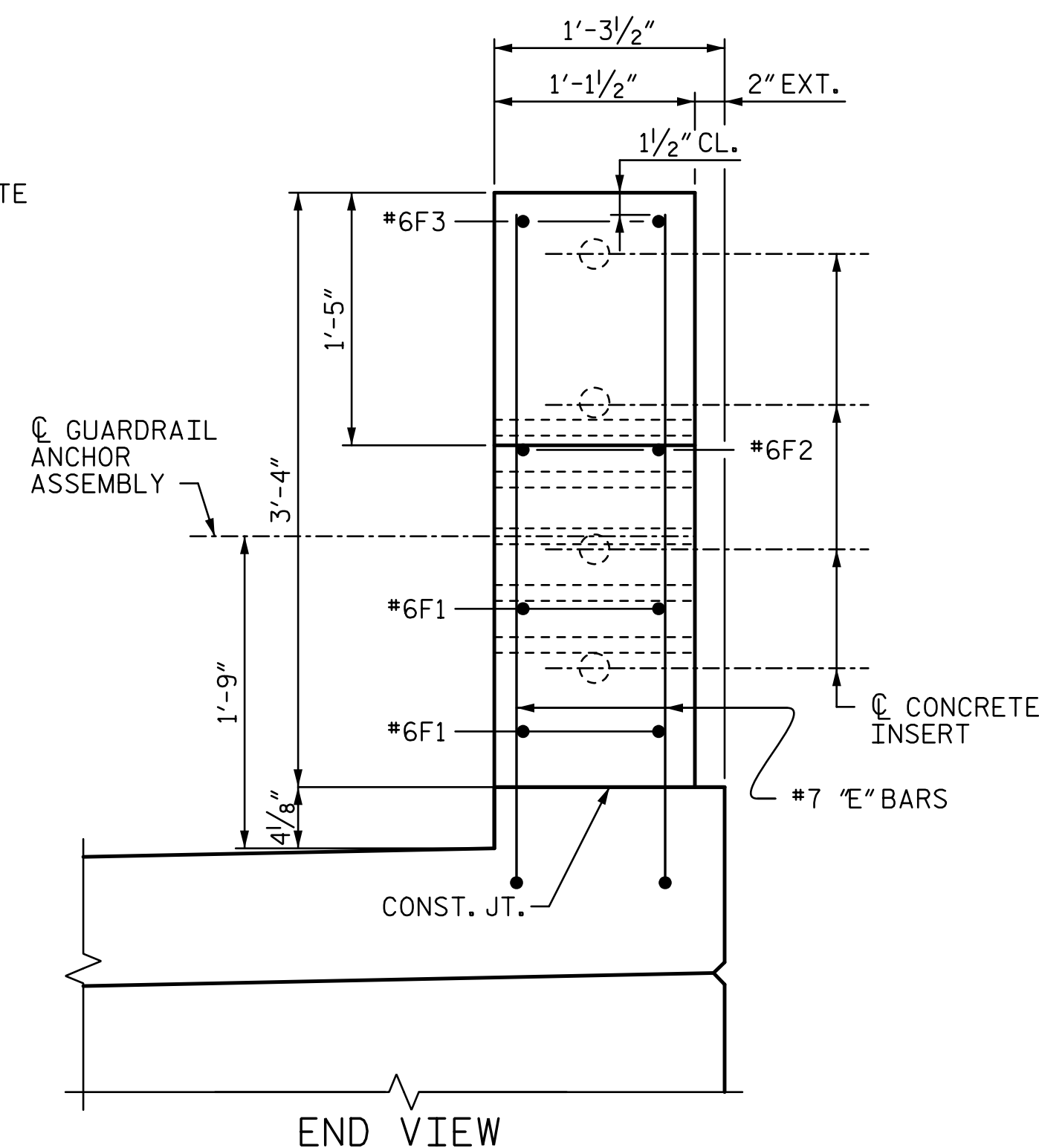
NOTES:

FOR DETAILS OF GUARDRAIL ANCHORAGE ASSEMBLIES, SEE
"GUARDRAIL ANCHORAGE DETAILS" SHEET.

FOR REINFORCING STEEL AND CONCRETE IN END POSTS.
SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.

FOR SIDEWALK DETAILS, SEE "SIDEWALK DETAILS" SHEET.

PAYMENT FOR THE END POST SHALL BE INCLUDED IN THE PAY ITEM FOR THE "3 BAR METAL RAIL." THIS SHALL INCLUDE MATERIALS, EQUIPMENT, TOOLS, LABOR AND INCIDENTALS NECESSARY TO PERFORM THE WORK. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE.




END VIEW

END POST FOR THREE BAR METAL RAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

DRAWN BY :	MBC	DATE :	9-21
CHECKED BY :	TRL	DATE :	9-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25

Signed by:
Paul Kelly Jr.



The seal is circular with a double-lined border. The outer ring contains the text "NORTH CAROLINA" at the top and "PAUL E. KELLY, JR." at the bottom. The inner ring contains the text "PROFESSIONAL" at the top and "ENGINEER" at the bottom. In the center, it says "SEAL 19765". Below the seal, the date "6/26/2025" is stamped.

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Charlotte, NC 28203
NC License Number F-09991

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PROJECT NO. BP10-R013
MECKLENBURG COUNTY
 STATION: 21+59.00 -L-

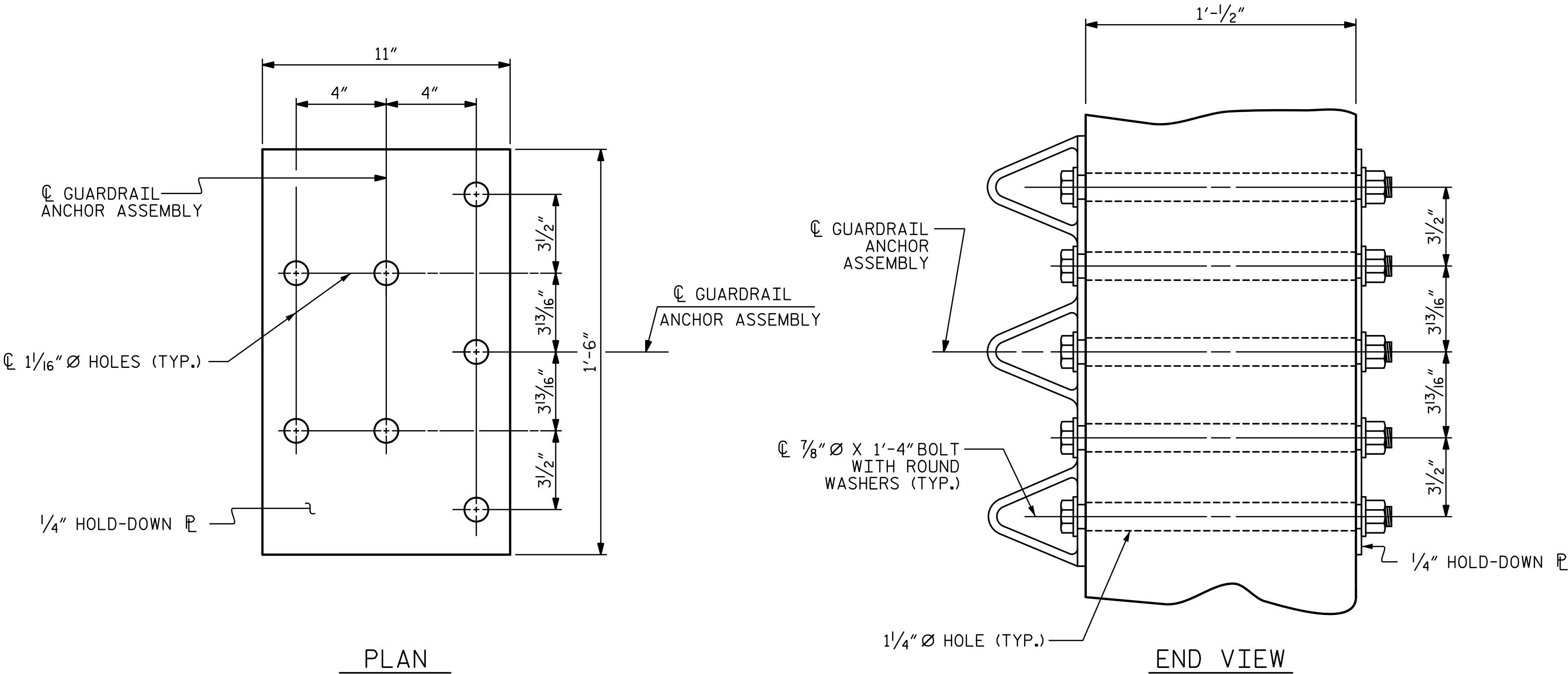
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

RALEIGH
SUPERSTRUCTURE

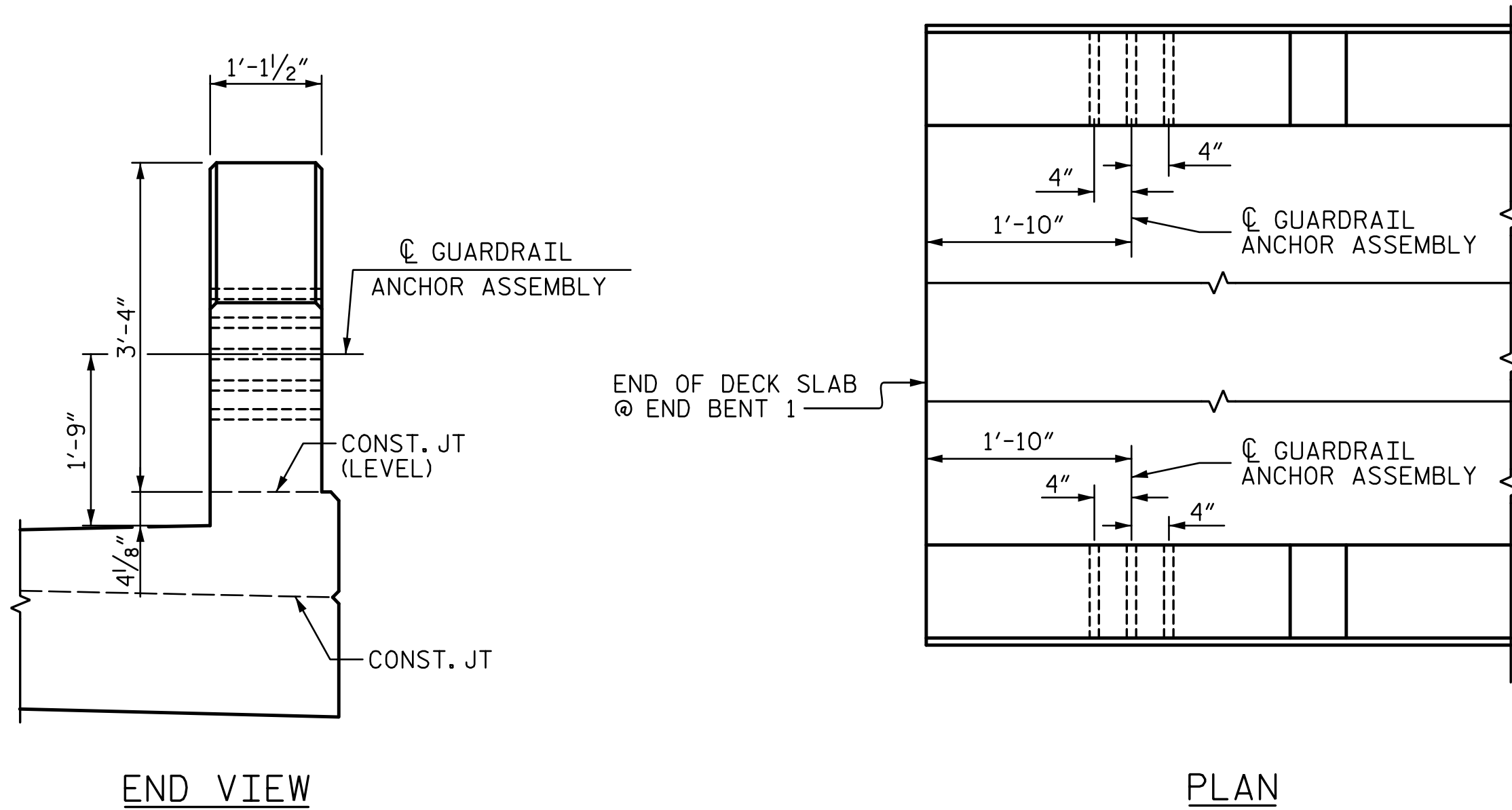
PLAN OF RAIL AND
END POST DETAILS
(3 BAR METAL RAIL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 37
2			4			

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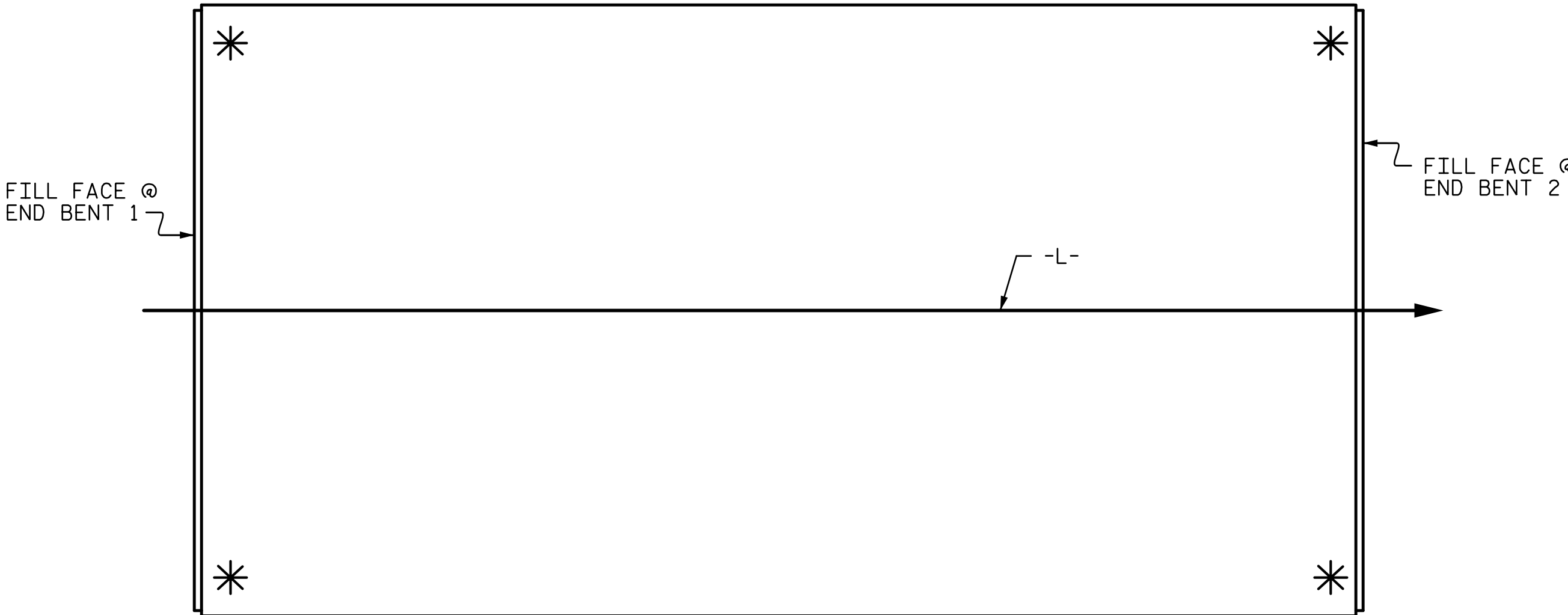


GUARDRAIL ANCHOR ASSEMBLY DETAILS



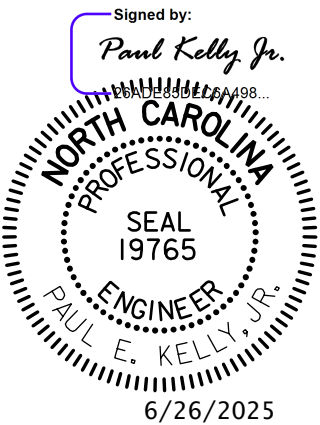
LOCATION OF GUARDRAIL ANCHOR AT END POST
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

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 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

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

DRAWN BY : MBC DATE : 9-21
CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			37

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	* EPOXY COATED STEEL REINFORCING	STEEL REINFORCING
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	176.5		
POUR 2	76.0		
POUR 3	138.6		
SIDEWALK	54.8		
END POST	1.7		
TOTAL	447.6	38,107	38,886



OPTIONAL POURING SEQUENCE
PRESTRESSED CONCRETE SUPERSTRUCTURE

DRAWN BY :	JMG	DATE :	9-21
CHECKED BY :	TRL	DATE :	9-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	267	#5	STR.	50'-0"	13,924
* A2	267	#5	STR.	22'-8"	6,312
A3	267	#5	STR.	50'-0"	13,924
A4	267	#5	STR.	22'-3"	6,196
* B1	49	#4	STR.	31'-0"	1,015
* B2	46	#6	STR.	15'-0"	1,036
* B3	46	#6	STR.	10'-0"	691
* B4	49	#5	STR.	50'-6"	2,581
* B5	92	#5	STR.	30'-3"	2,903
* B6	98	#4	STR.	28'-9"	1,882
* B7	46	#6	STR.	22'-0"	1,520
* B8	46	#6	STR.	17'-0"	1,175
B9	87	#5	STR.	33'-6"	3,040
B10	87	#5	STR.	43'-9"	3,970
B11	76	#5	STR.	37'-0"	2,933
B12	87	#5	STR.	59'-9"	5,422
* B13	16	#4	STR.	28'-7"	305
* B14	16	#4	STR.	19'-9"	211
* B15	48	#4	STR.	27'-7"	884
* E1	8	#7	3	3'-8"	60
* E2	8	#7	3	4'-1"	67
* E3	8	#7	3	4'-5"	72
* E4	8	#7	3	5'-0"	82
* F1	16	#6	STR.	3'-5"	82
* F2	8	#6	STR.	3'-1"	37
* F3	8	#6	STR.	3'-7"	43

* G1	266	#4	STR.	8'-5"	1,496
K1	16	#4	STR.	39'-0"	417
K2	18	#4	STR.	5'-7"	67
K3	36	#4	STR.	6'-4"	152
K4	18	#4	STR.	5'-1"	61
K5	4	#4	STR.	4'-7"	12
K6	8	#4	STR.	5'-0"	27
K7	4	#4	STR.	4'-5"	12
K8	8	#4	STR.	2'-8"	14

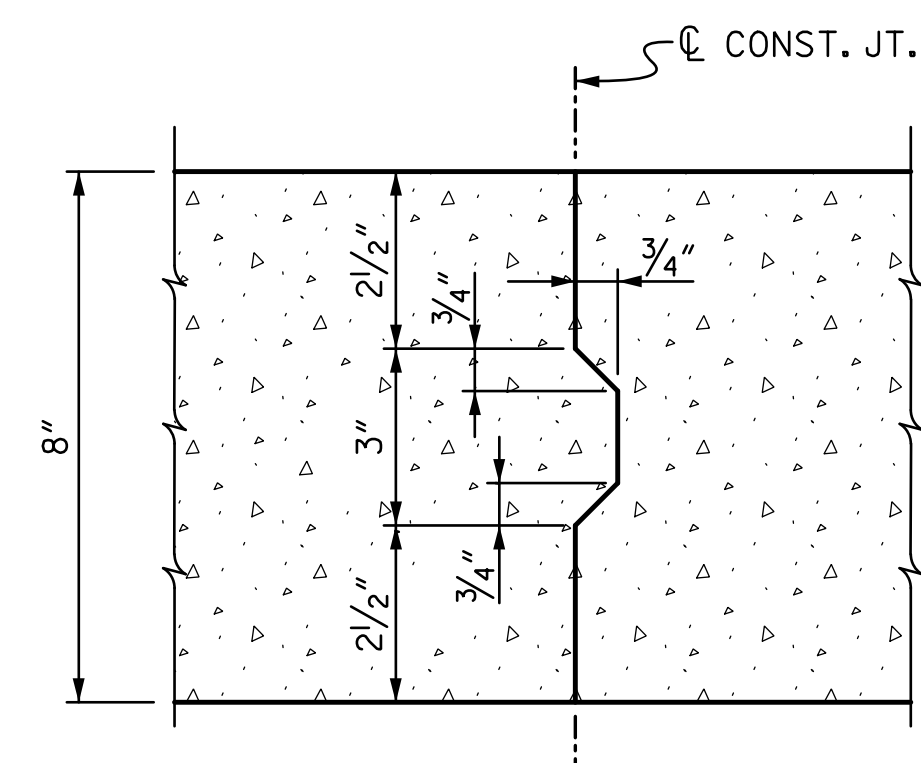
* S1	98	#4	2	11'-11"	780
* S2	98	#4	2	10'-0"	655

U1	98	#4	1	9'-7"	627
U2	8	#4	1	5'-0"	27
* U3	114	#4	1	3'-4"	254
* U4	16	#4	1	13'-11"	149
U5	12	#4	1	6'-10"	55
U6	24	#4	1	4'-3"	68

H1	24	#6	3	16'-4"	589
H2	24	#6	3	14'-3"	514
H3	22	#5	3	15'-0"	344
H4	22	#5	3	12'-9"	293


* EPOXY COATED REINF. STEEL (LBS.)	38,094
REINFORCING STEEL (LBS.)	38,886

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



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

Signed by:
Paul Kelly, Jr.
198...



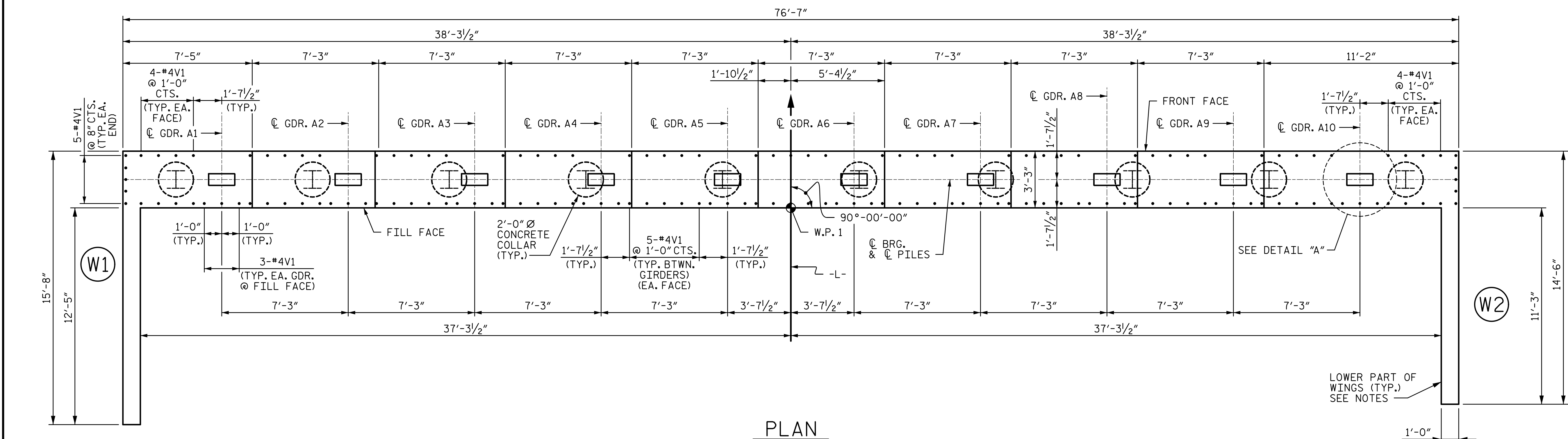
NORTH CAROLINA
PROFESSIONAL
SEAL
19765
ENGINEER
PAUL E. KELLY, JR.
6/26/2025

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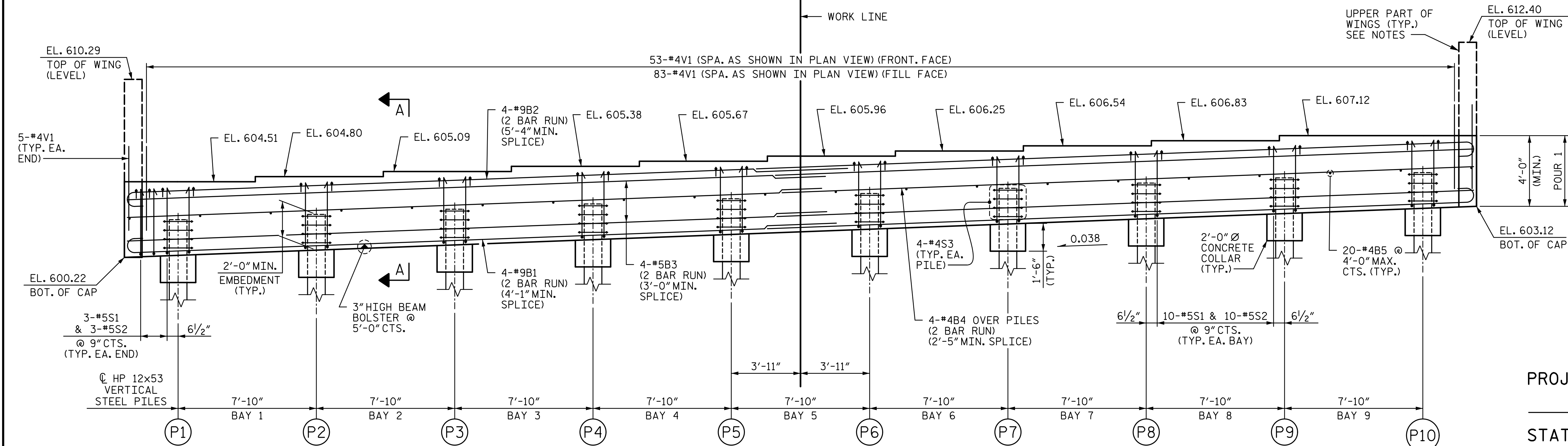
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

BILL OF MATERIAL

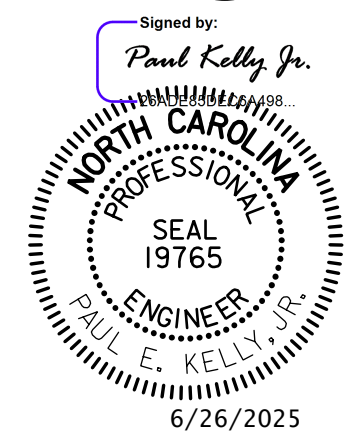


PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
P1	602.34
P2	602.63
P3	602.93
P4	603.23
P5	603.53
P6	603.82
P7	604.12
P8	604.42
P9	604.72
P10	605.01



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NOTES:

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

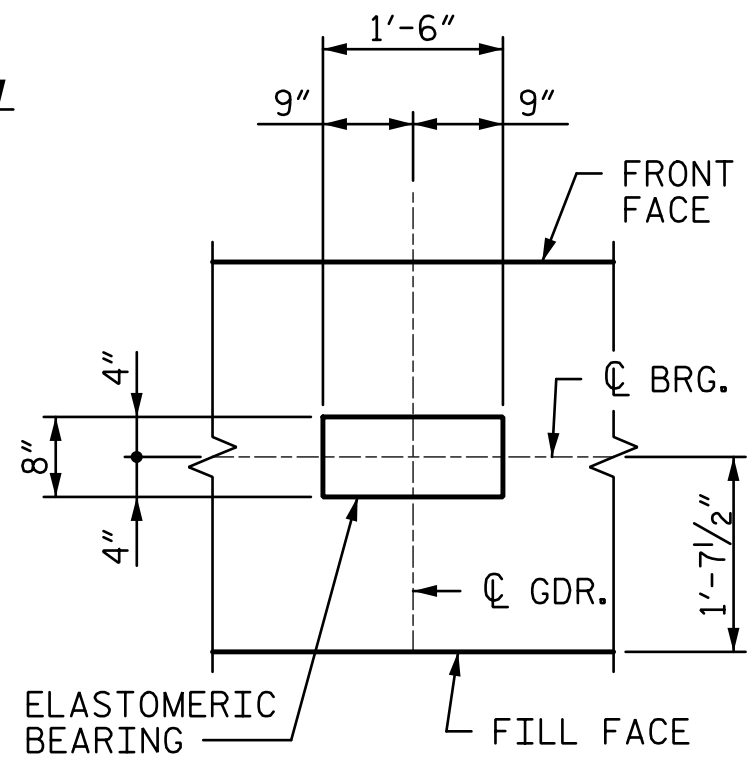
*4V1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP.

FOR SECTIONS A-A, SEE "SUBSTRUCTURE END BENT 1 SECTIONS AND DETAILS" SHEET.

FOR INTEGRAL BACKWALL REINFORCEMENT, SEE "SUPERSTRUCTURE DETAILS" SHEET.

POUR LOWER PART OF WINGS WITH END BENT. SEE "WING WALLS" SHEET FOR WING DETAILS.

POUR UPPER PART OF WINGS DURING DECK POUR. SEE POUR SEQUENCE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.



DETAIL "A"

(DIMENSIONS ARE TYPICAL FOR EACH GIRDER)

PROJECT NO. BP10-R013

MECKLENBURG COUNTY

STATION: 21+59.00 -L-

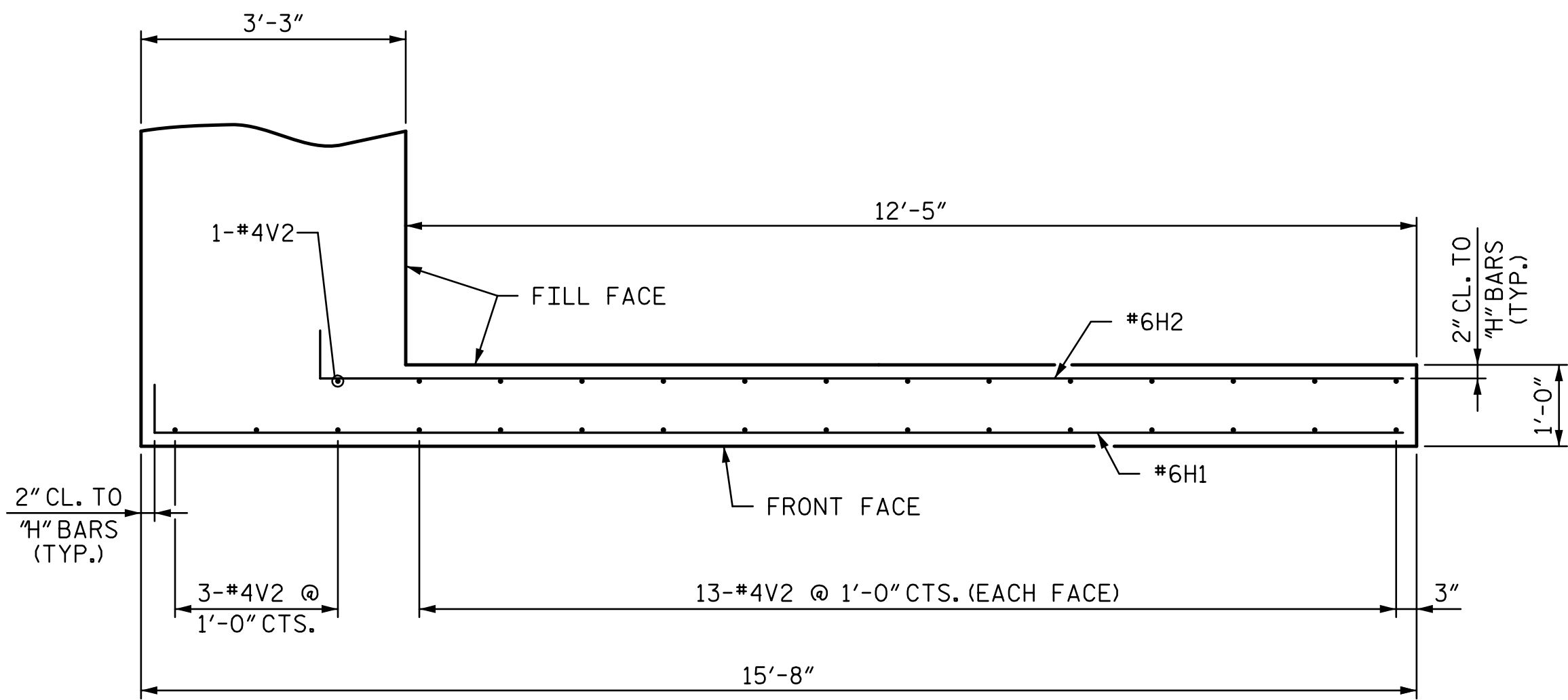
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

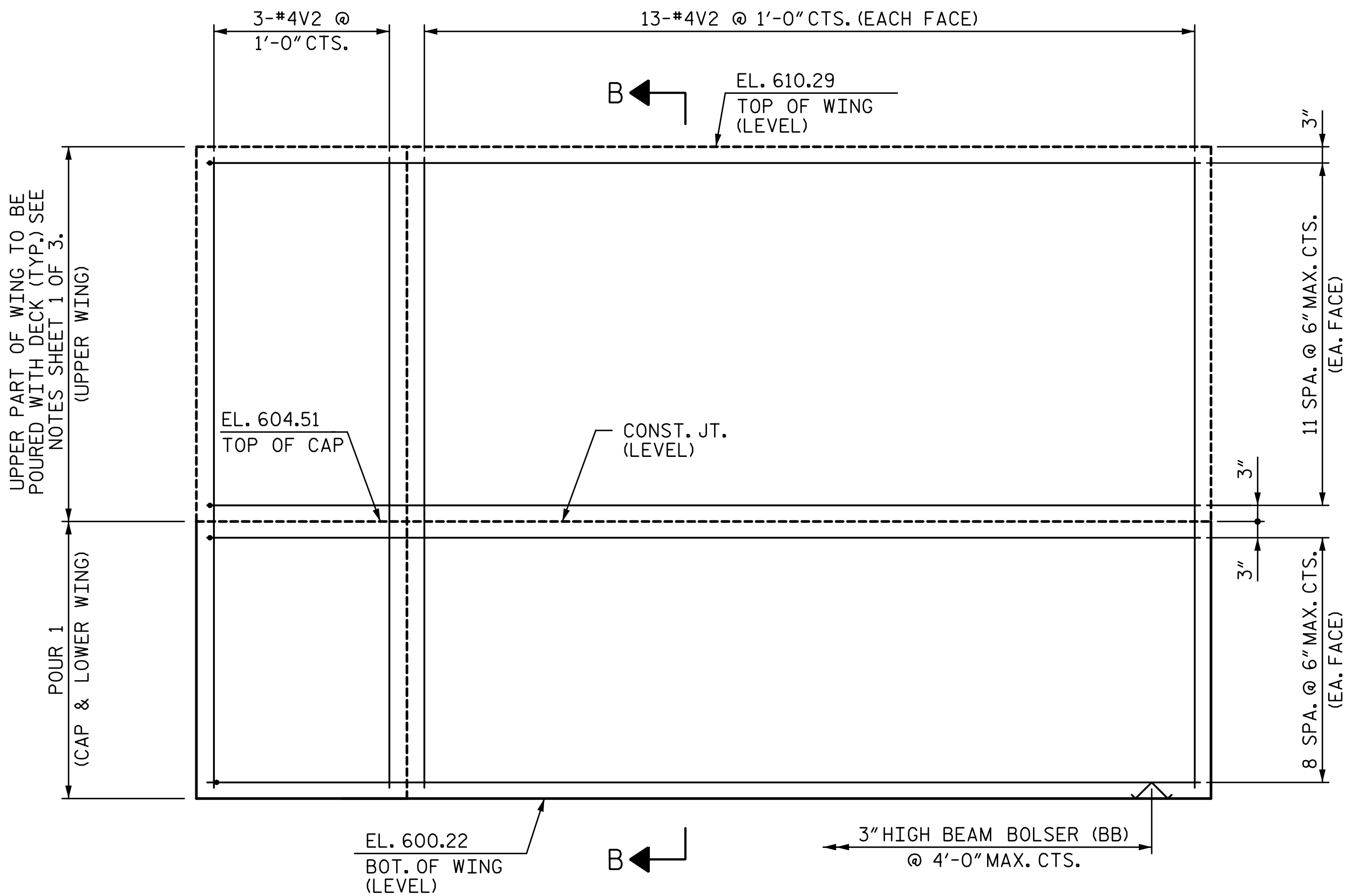
END BENT 1
PLAN AND ELEVATION

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-25	
				TOTAL SHEETS	37

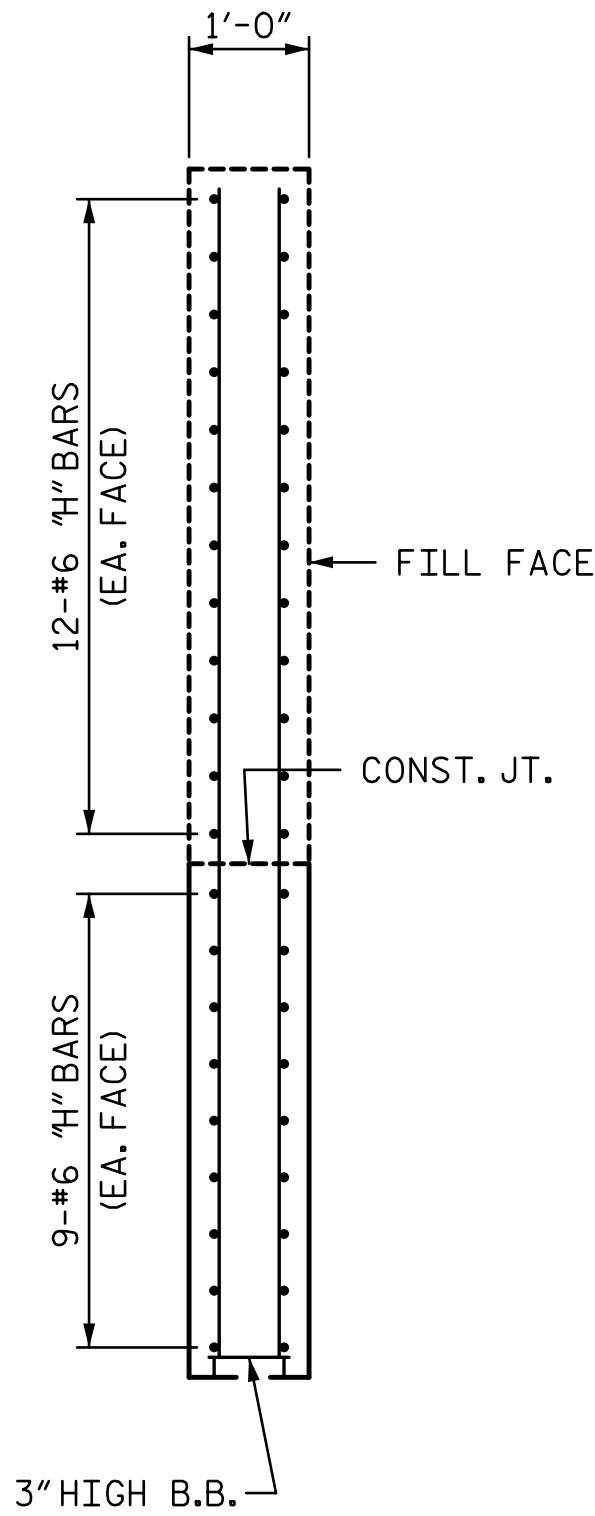
DRAWN BY : MBC DATE : 9-21
CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25



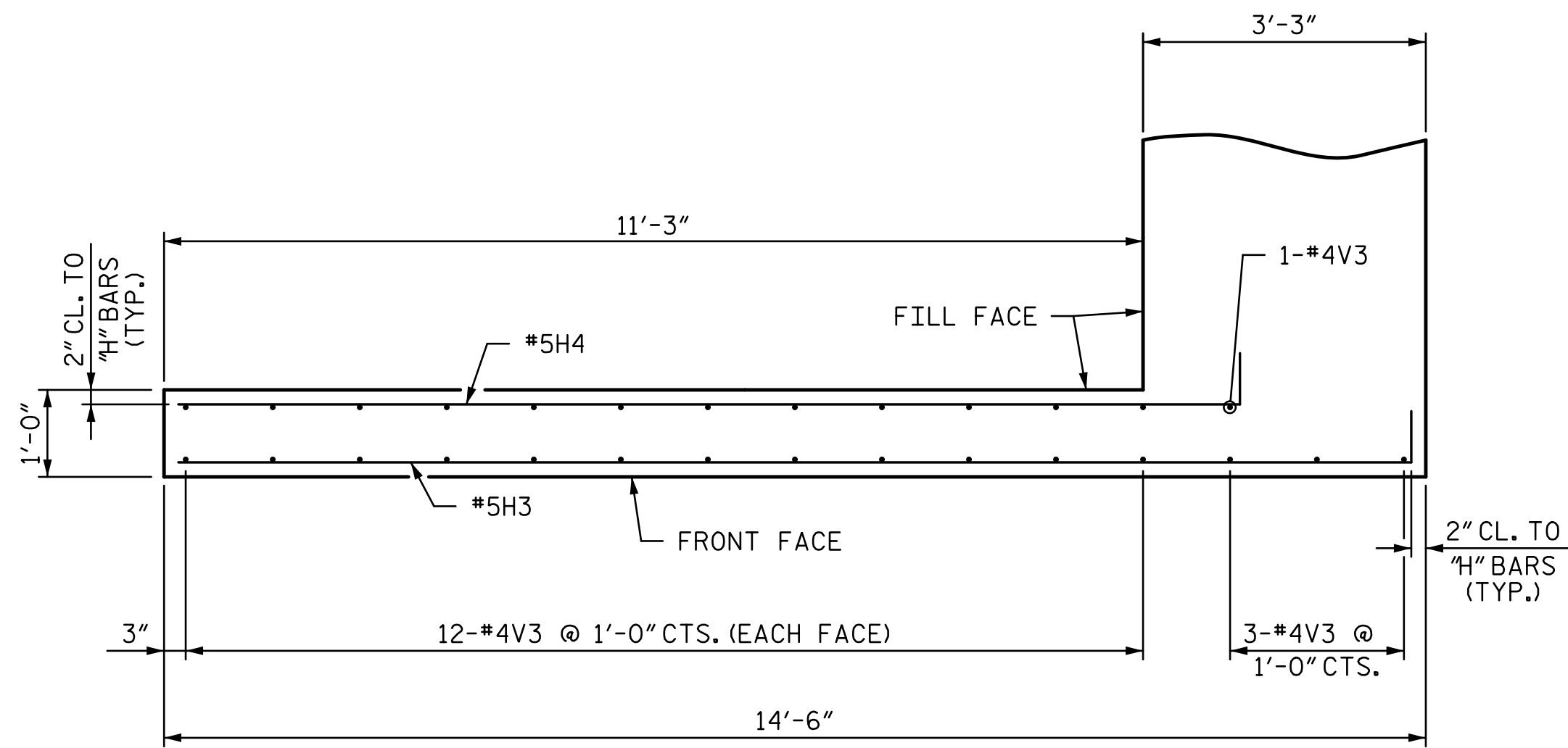
PLAN OF WING (W1)



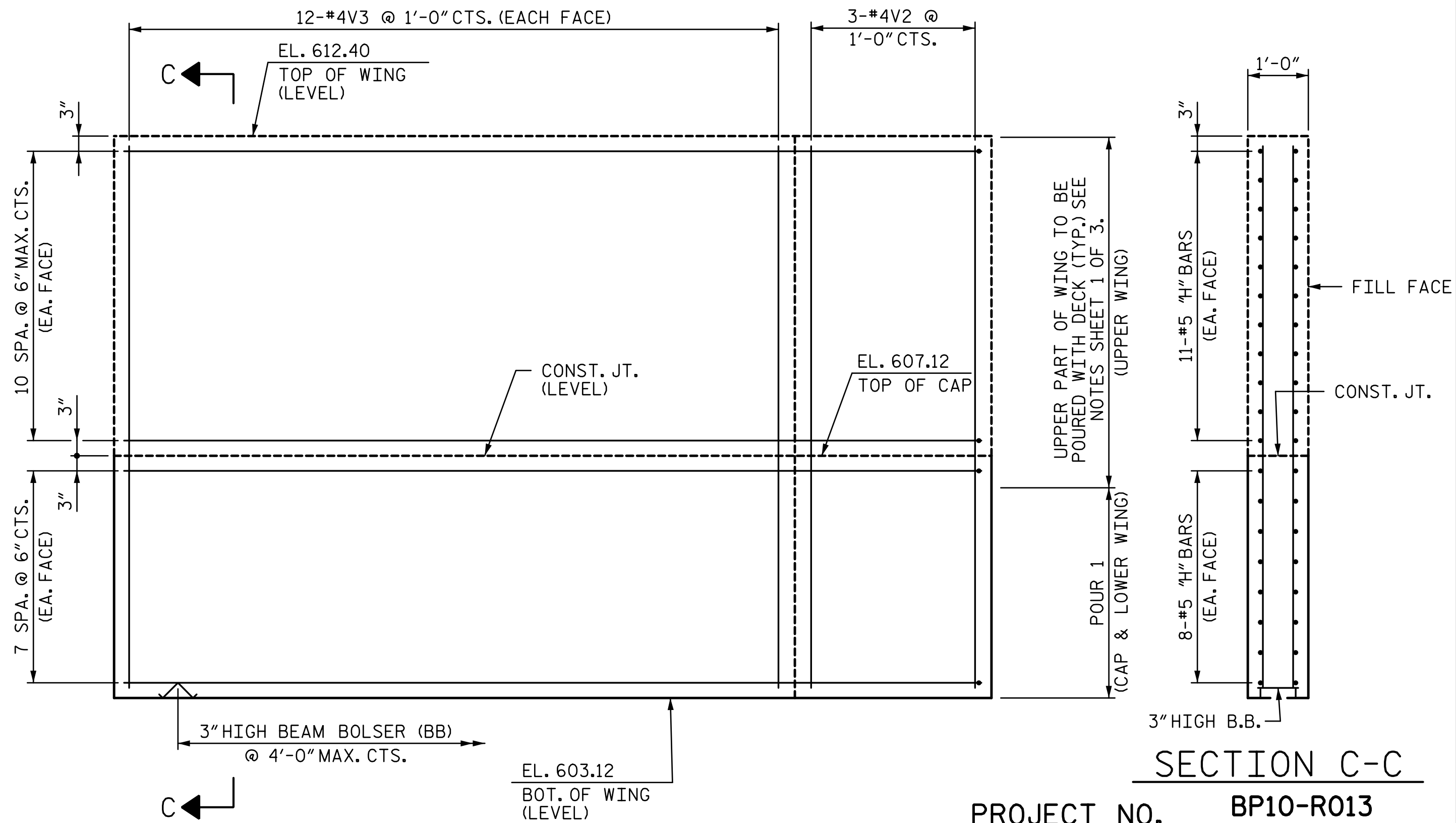
ELEVATION OF WING (W1)



SECTION B-B



PLAN OF WING (W2)

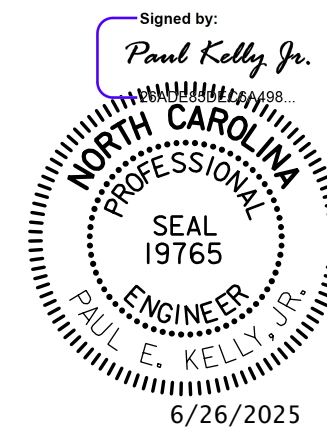


ELEVATION OF WING (W2)

SECTION C-C

PROJECT NO. **BP10-R013**
MECKLENBURG COUNTY
STATION: **21+59.00 -L-**

SHEET 2 OF 3



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NC License Number F-0991

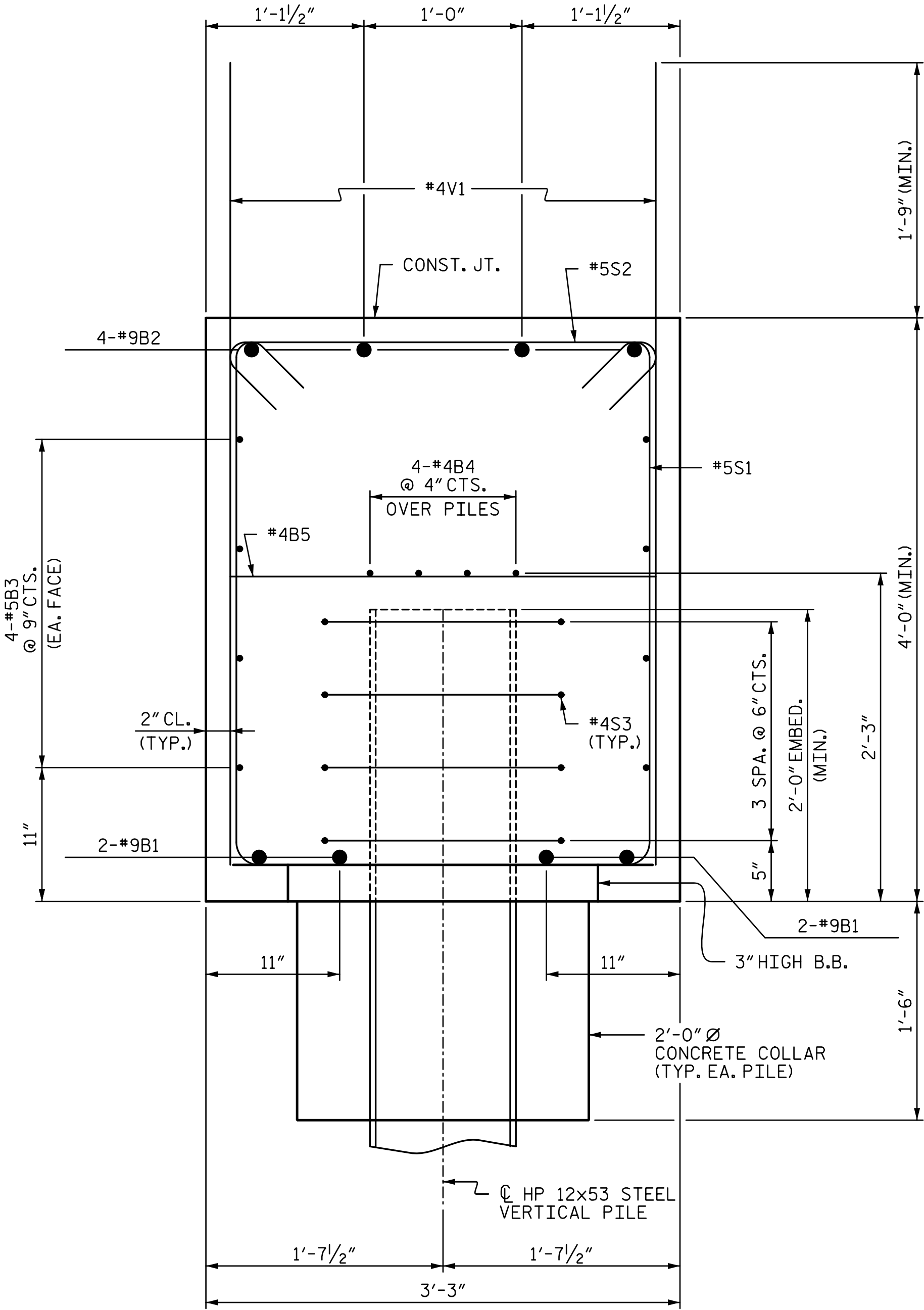
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FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

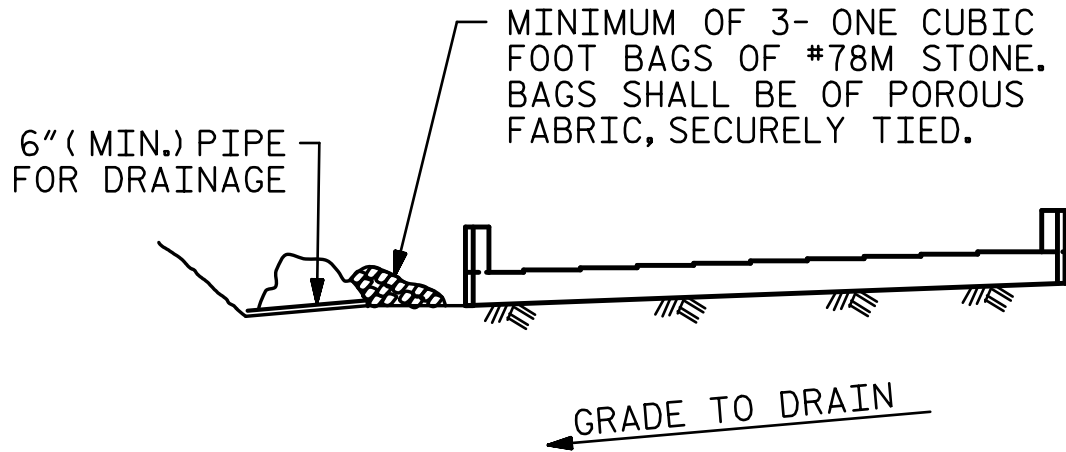
END BENT 1
WING WALLS

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-26	
				TOTAL SHEETS	37

DRAWN BY : MBC DATE : 9-21
CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25



SECTION A-A

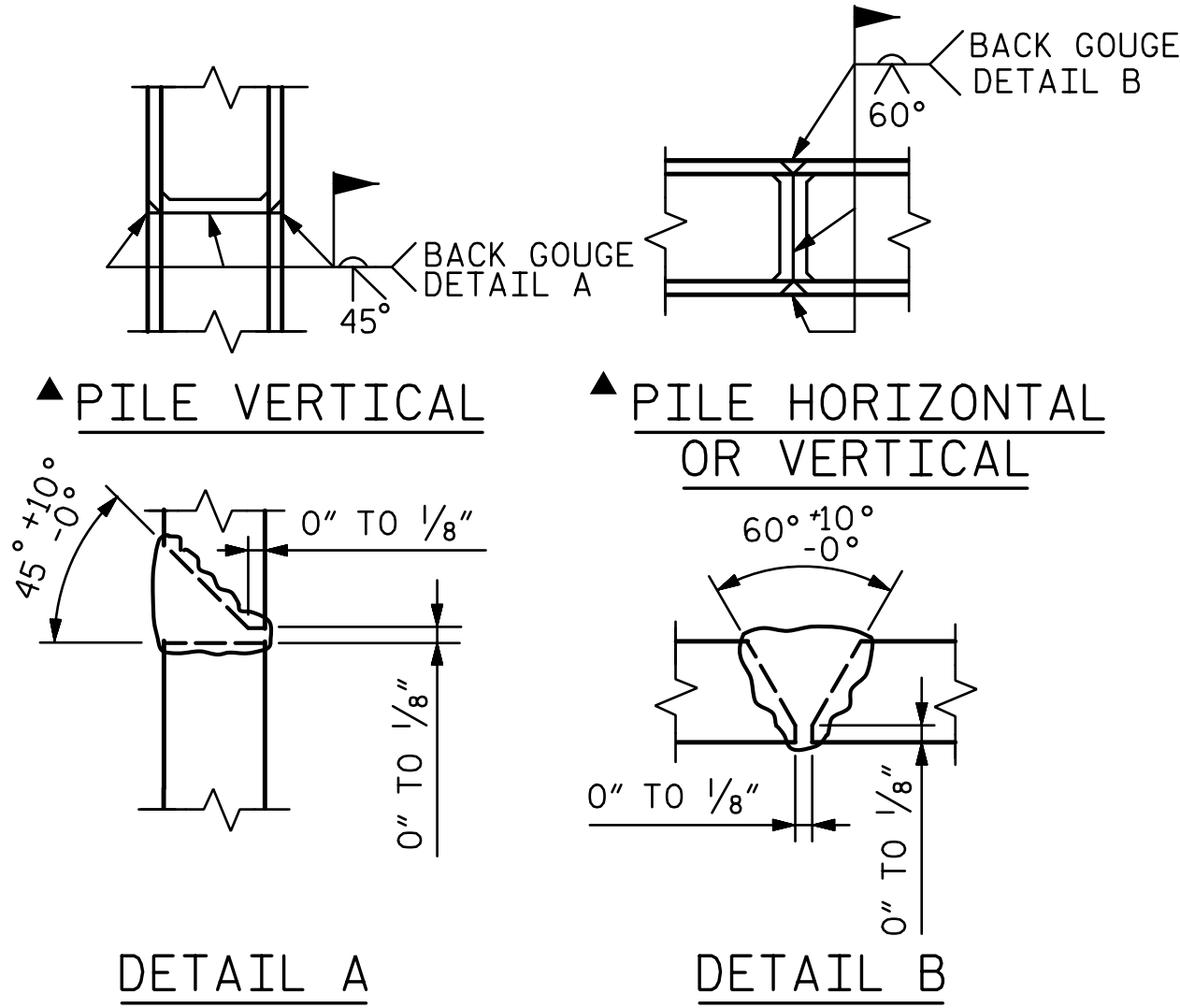


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

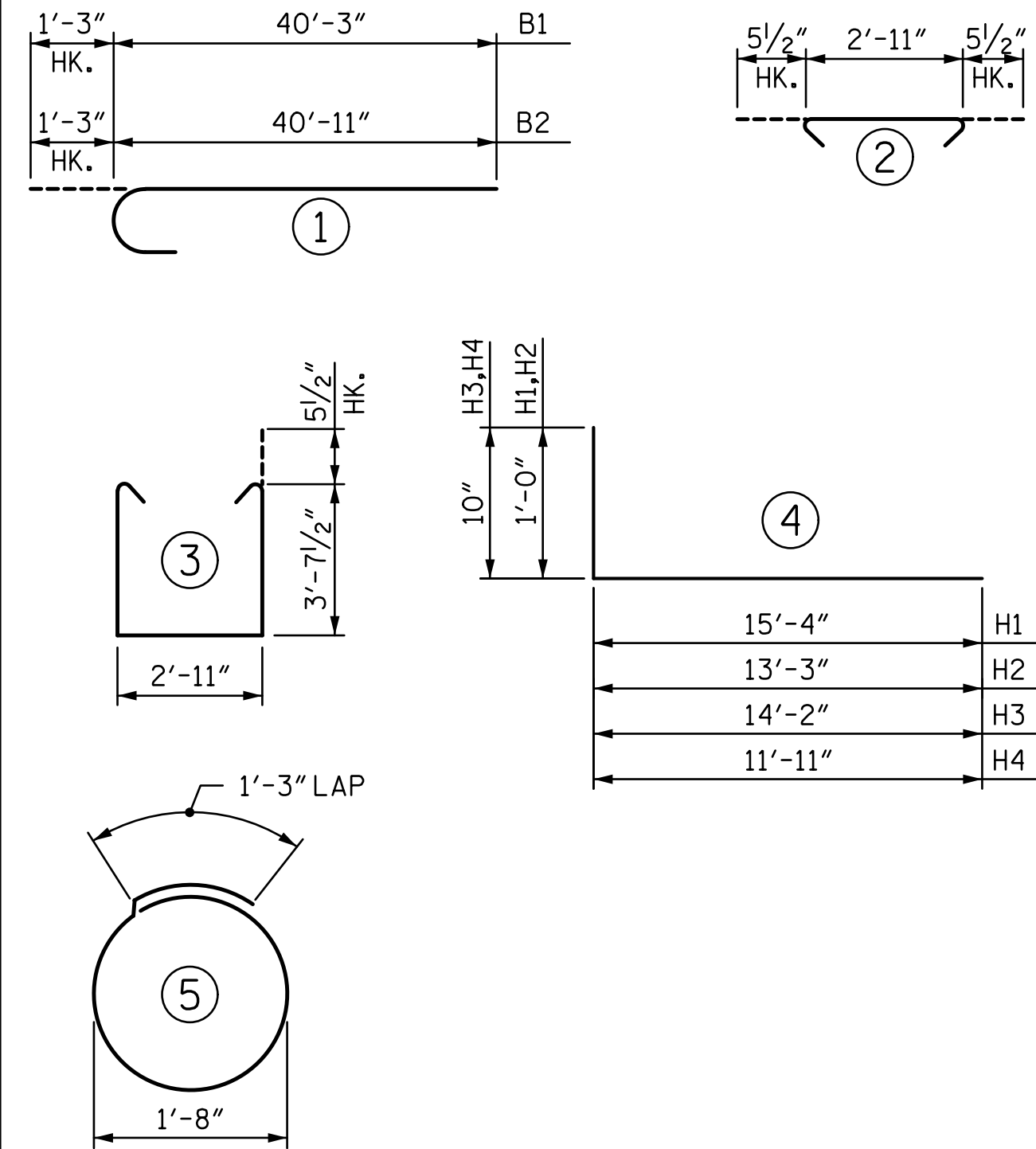
TEMPORARY DRAINAGE AT END BENT



▲ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	①	41'-6"	1,129
B2	8	#9	①	42'-2"	1,147
B3	16	#5	STR	39'-10"	665
B4	8	#4	STR	39'-6"	211
B5	20	#4	STR	2'-11"	39
H1	9	#6	④	16'-4"	221
H2	9	#6	④	14'-3"	193
H3	8	#5	④	15'-0"	125
H4	8	#5	④	12'-9"	106
K1	46	#4	STR	2'-8"	82
S1	96	#5	③	11'-1"	1,110
S2	96	#5	②	3'-10"	384
S3	40	#4	⑤	6'-6"	174
V1	146	#4	STR	5'-6"	536
V2	30	#4	STR	9'-8"	194
V3	28	#4	STR	8'-11"	167

QUANTITIES

REINFORCING STEEL	LBS.	6,483
CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.		44.1
TOTAL	C.Y.	44.1

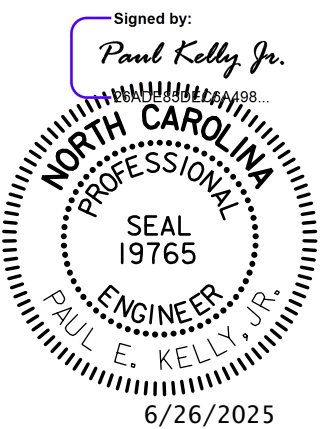
PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1
SECTION AND DETAILS

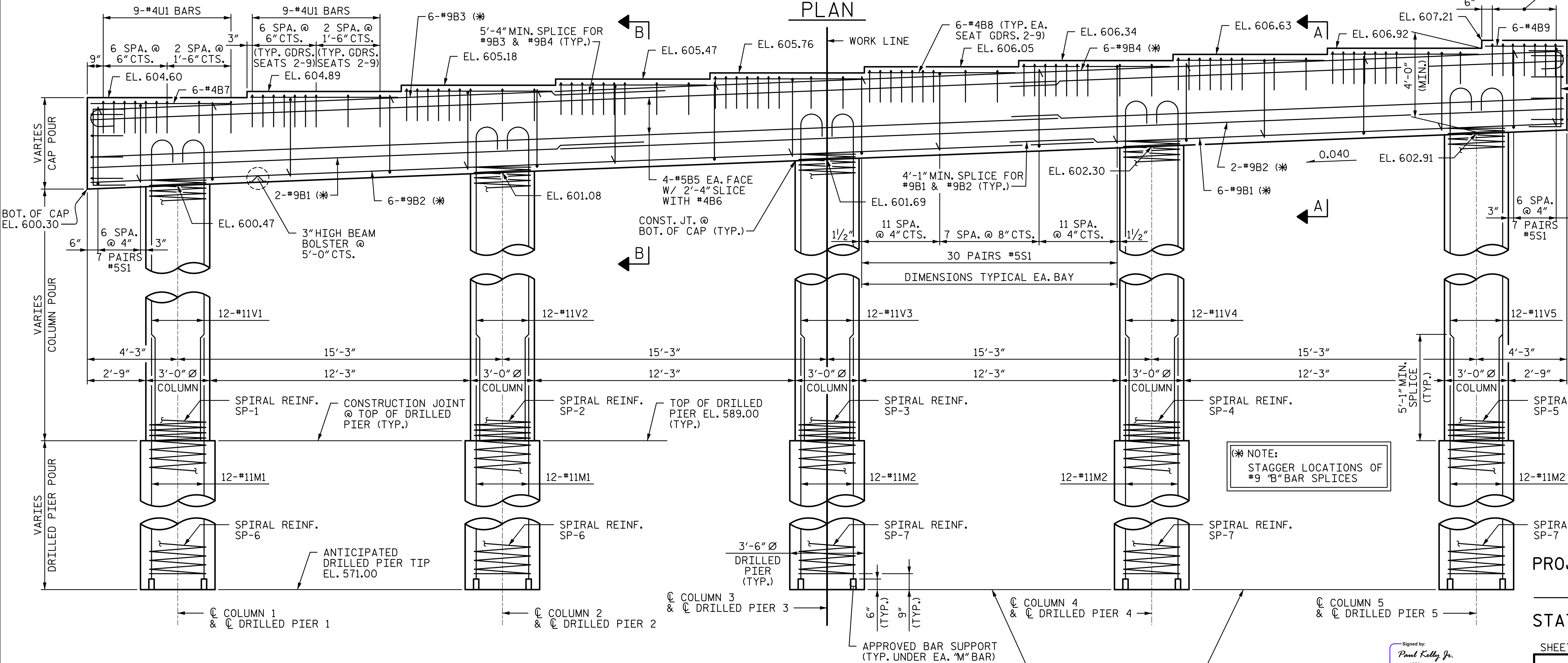
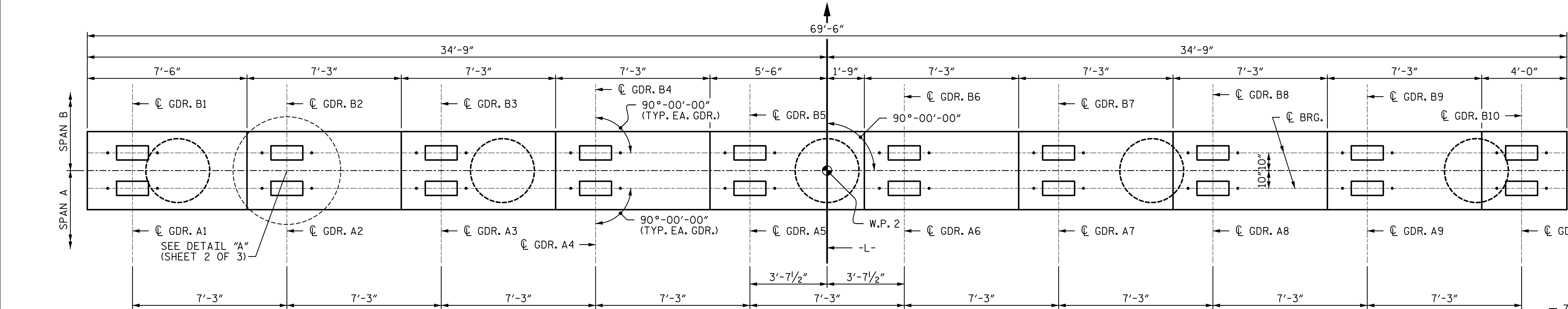
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				TOTAL SHEETS	37



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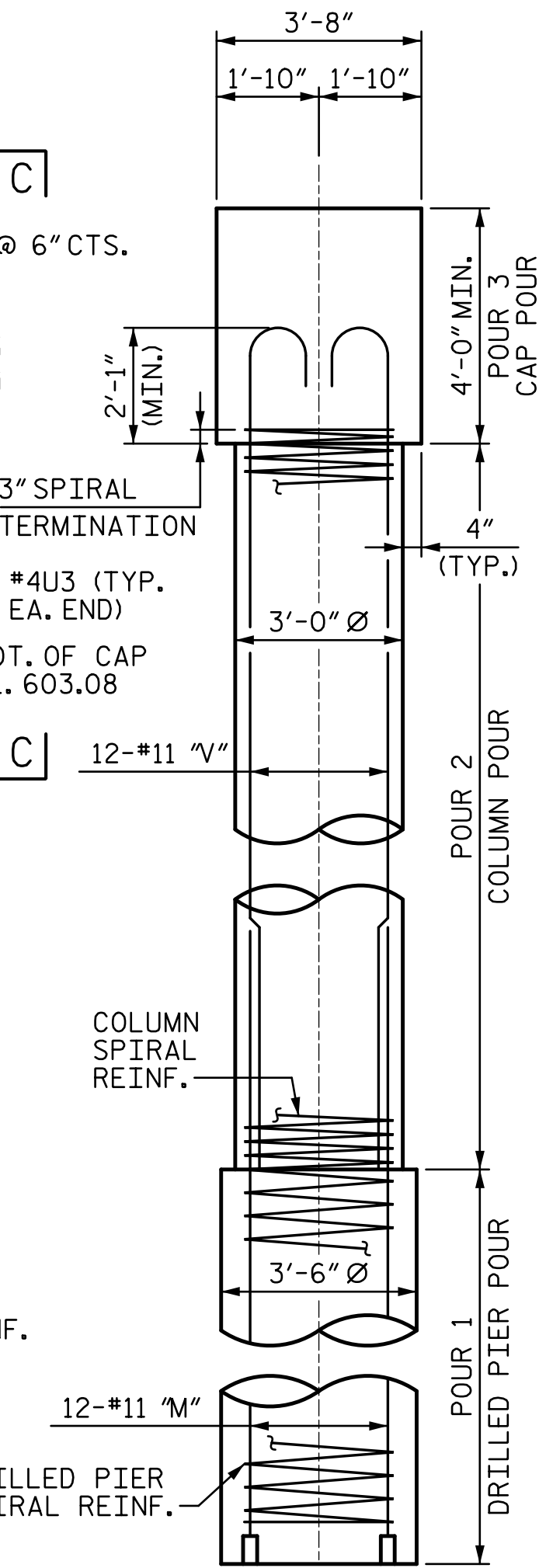
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SIGNATURES COMPLETED

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CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25



NOTES:
FOR SECTION VIEWS SEE SHEET 2 OF 3.
FOR ADDITIONAL NOTES SEE SHEET 3 OF 3.

CL CAP, COLUMNS,
DRILLED SHAFTS &
BENT CONTROL LINE



PROJECT NO. **BP10-R013**
MECKLENBURG COUNTY
STATION: **21+59.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1
PLAN & ELEVATION

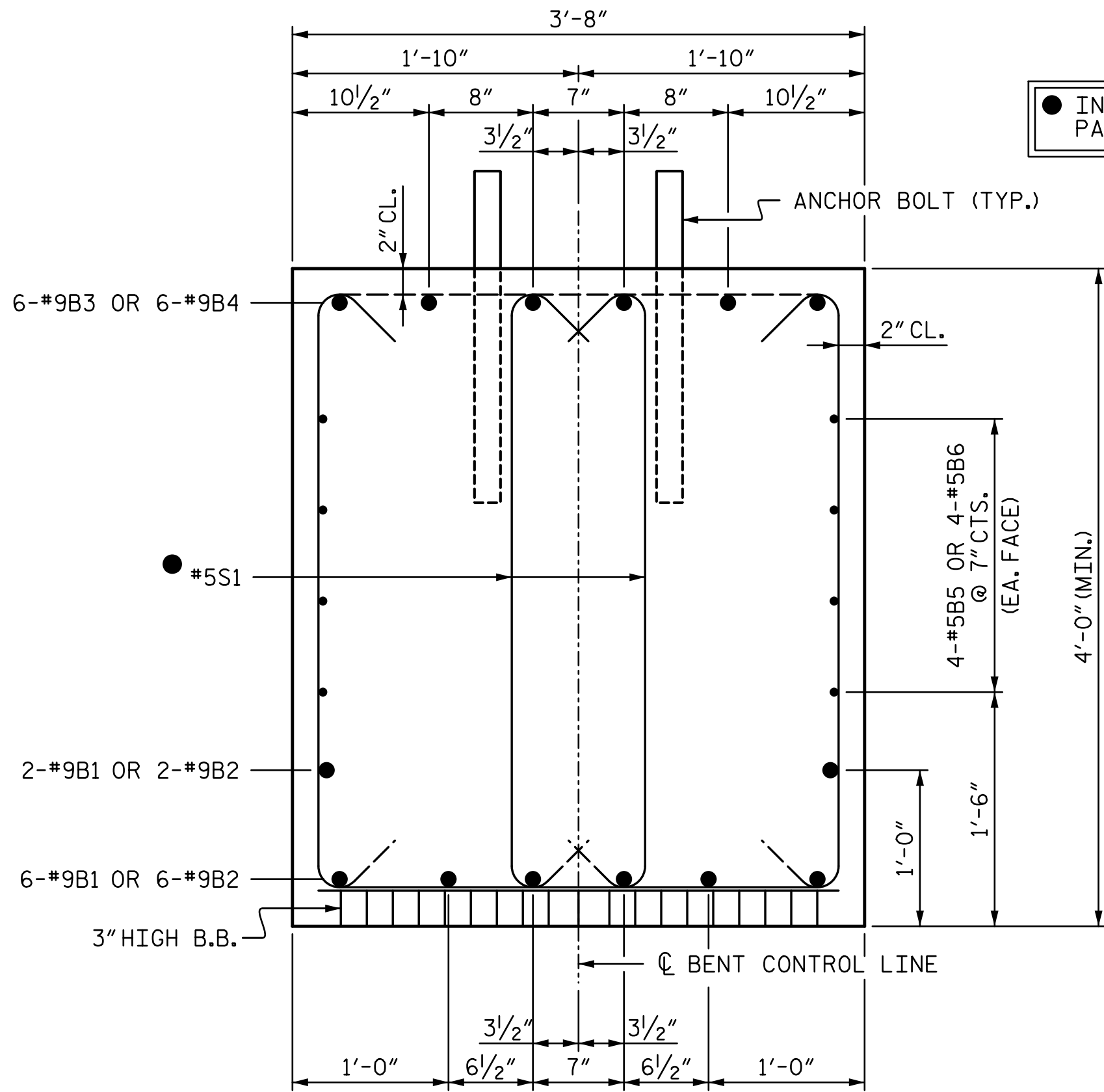
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CHECKED BY : **TRL** DATE : **9-21**
DESIGN ENGINEER OF RECORD : **P. KELLY** DATE : **4-25**

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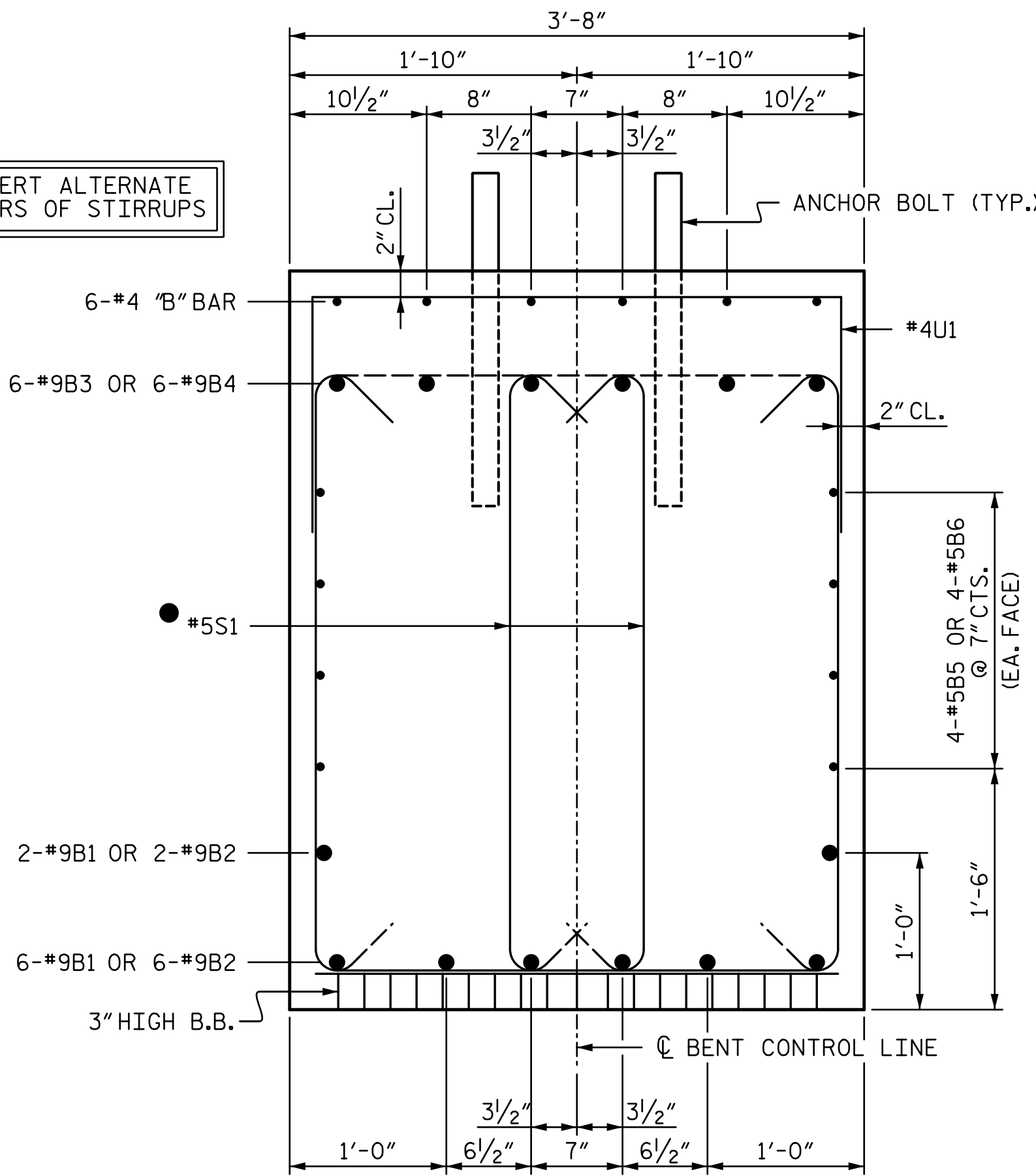
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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-28	
				TOTAL SHEETS	37

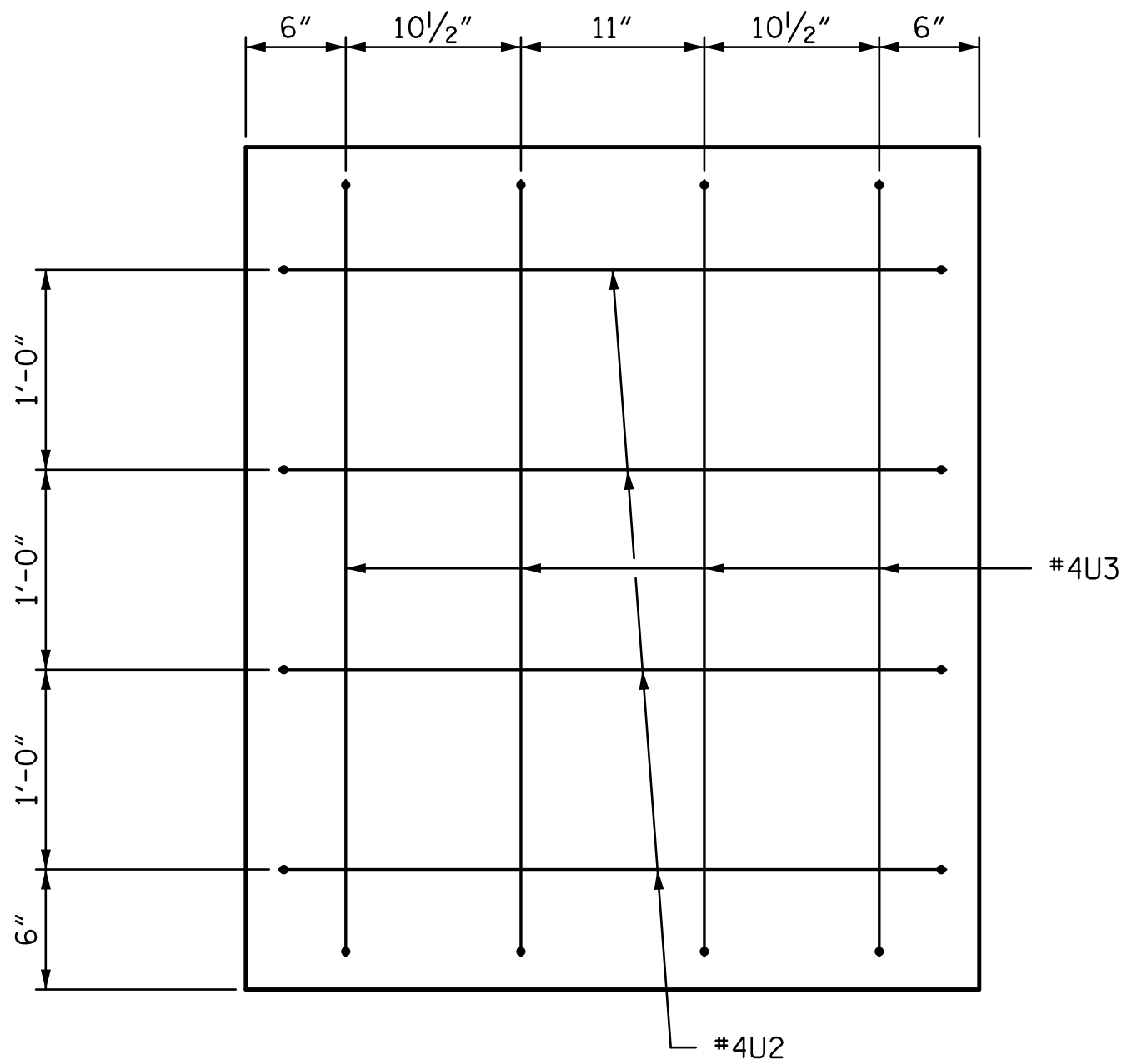
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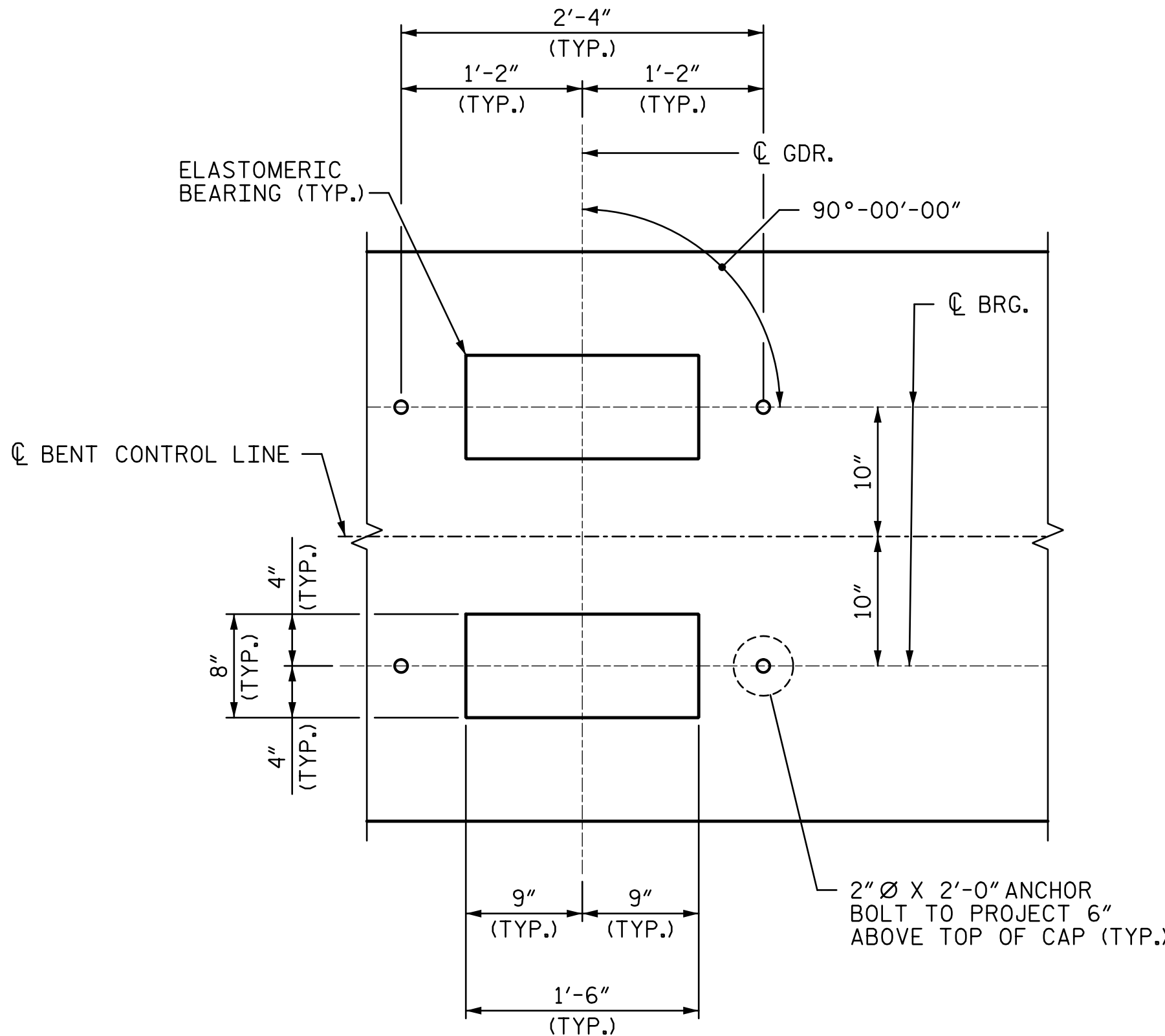
SECTION A-A



SECTION B-B

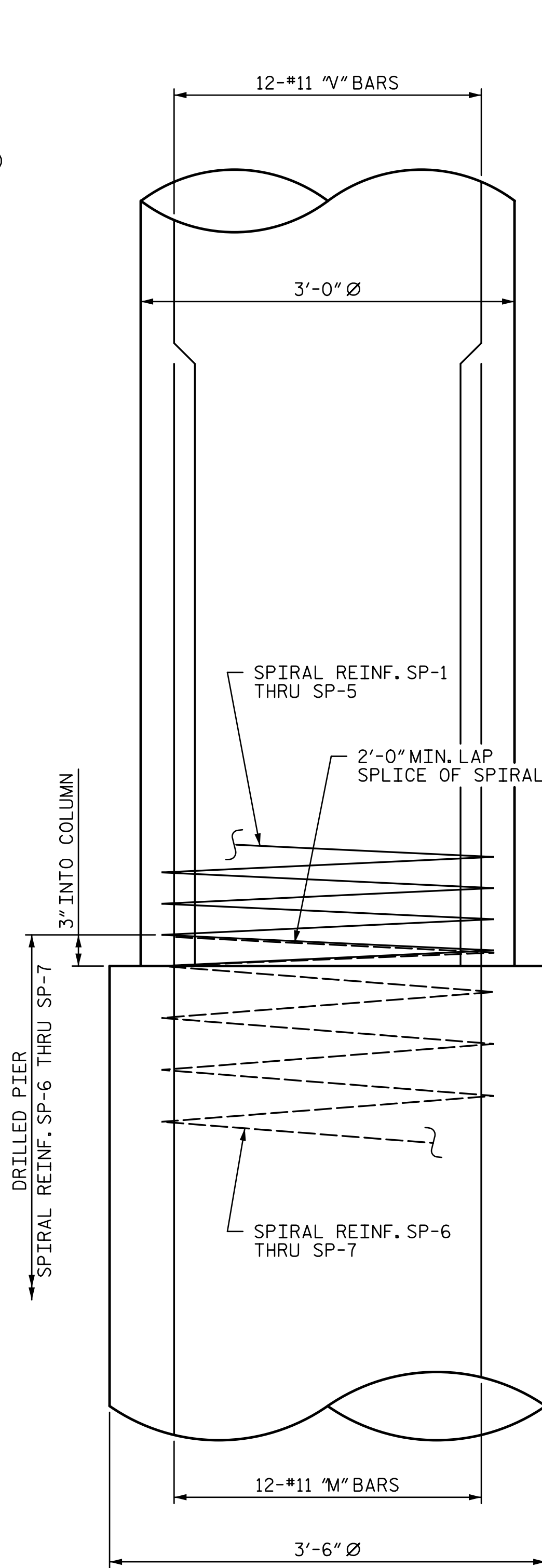


END VIEW C-C
(TYP. EA. END)

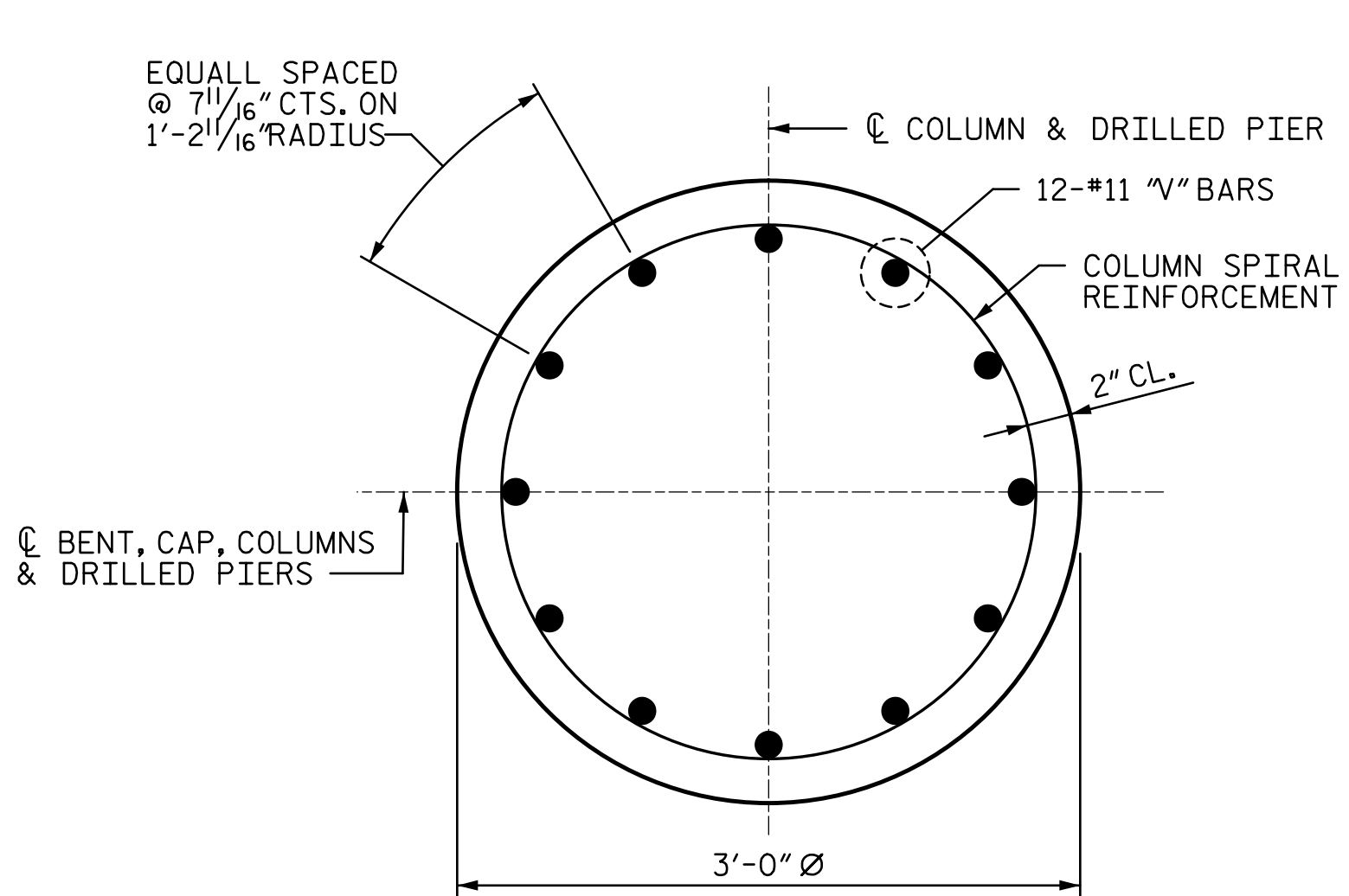


DETAIL A

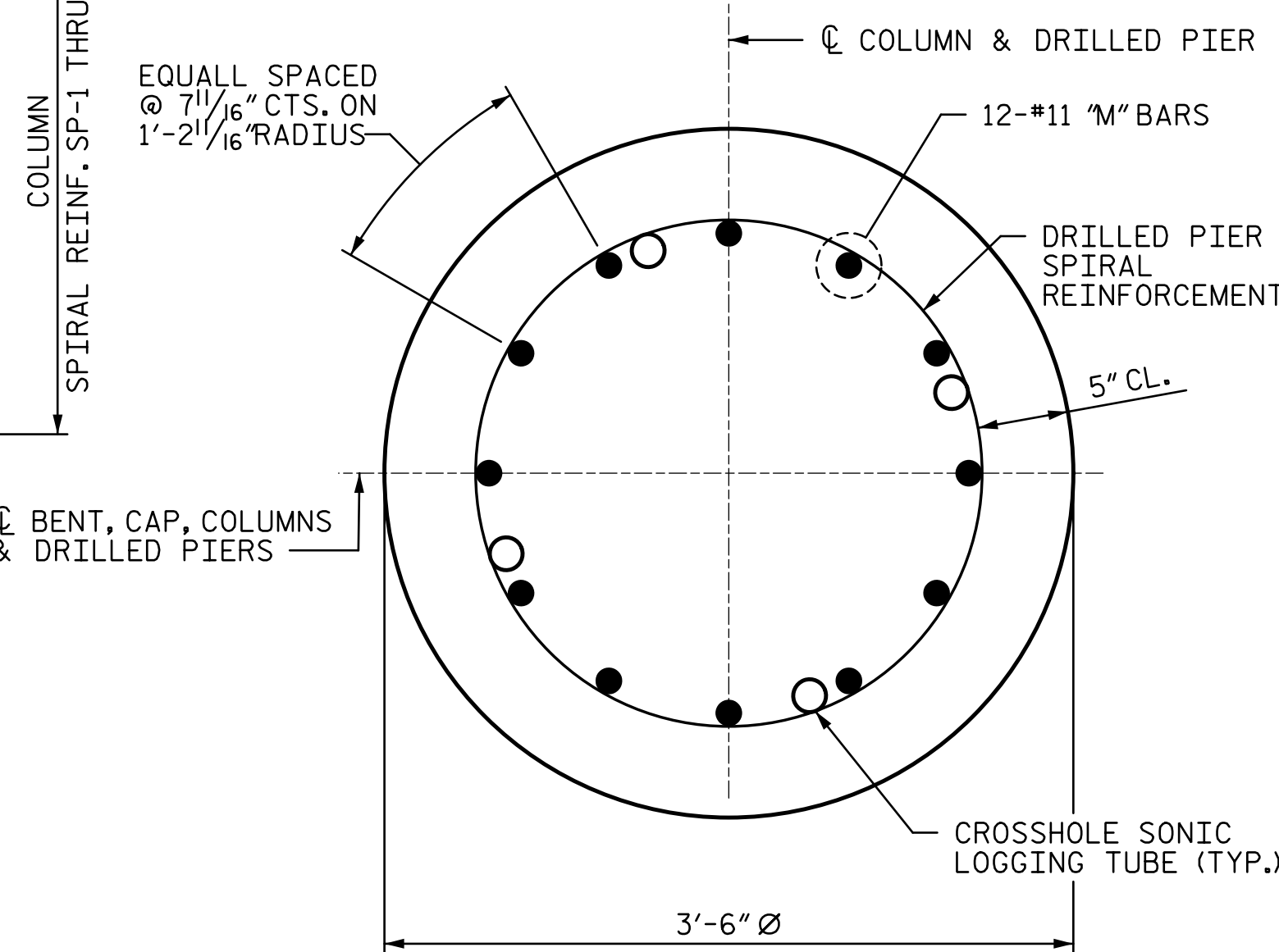
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CONSTRUCTION JOINT DETAIL



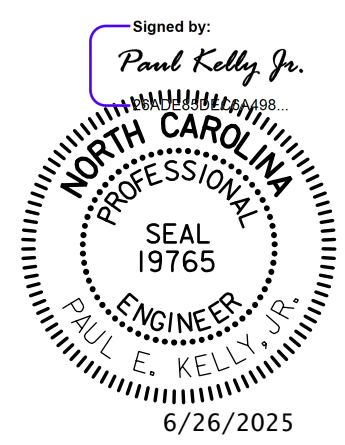
TYPICAL SECTION
THROUGH COLUMN



TYPICAL SECTION
THROUGH DRILLED PIER

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

SHEET 2 OF 3



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DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
**BENT 1
DETAILS**

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-29	
				TOTAL SHEETS	37

NOTES:

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

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

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

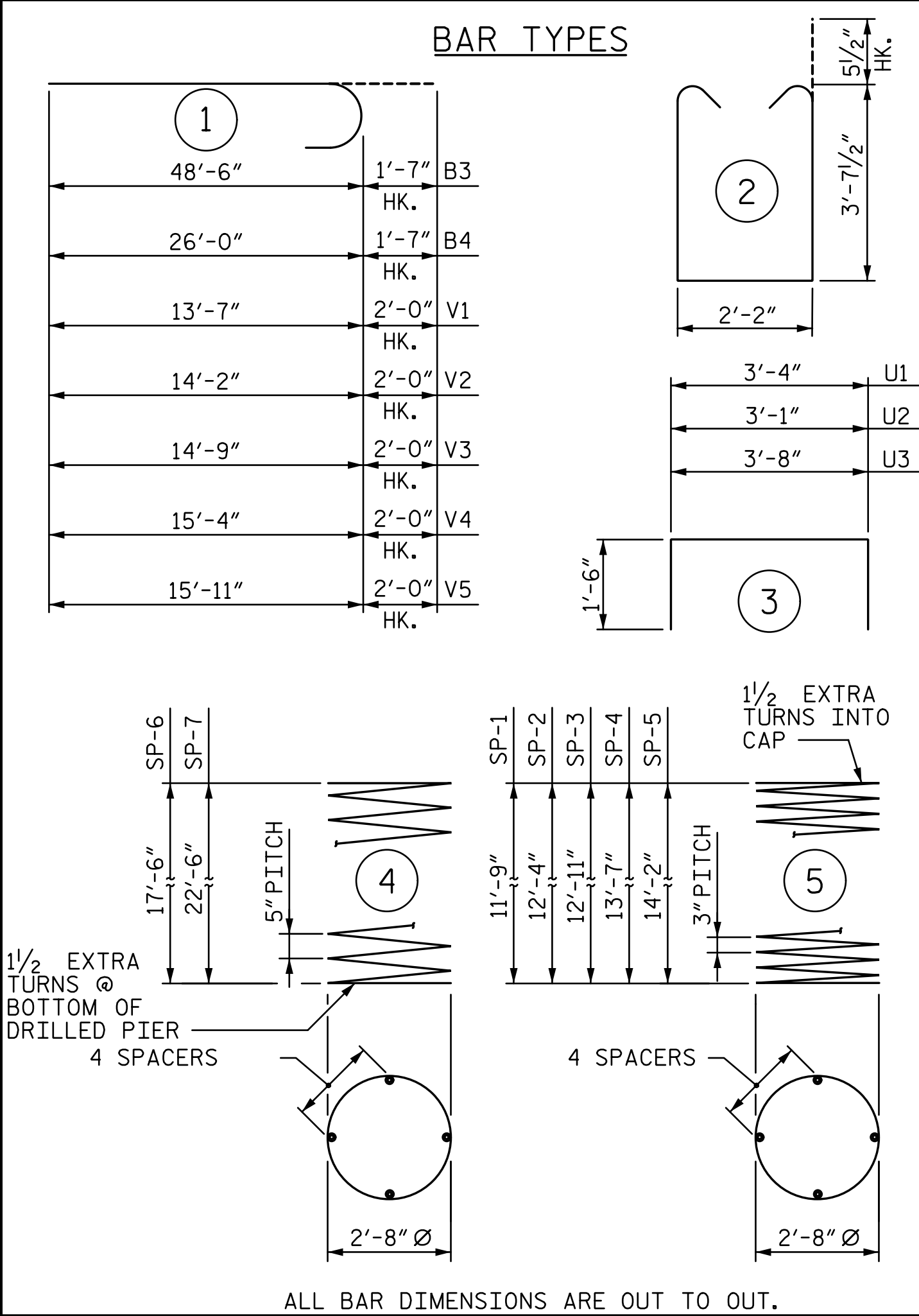
SEE "GENERAL DRAWING FOUNDATION LAYOUT" SHEET FOR ADDITIONAL NOTES.

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

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

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

FOR 2" DIAMETER ANCHOR BOLTS, SEE SHEET "ELASTOMERIC BEARING DETAILS".

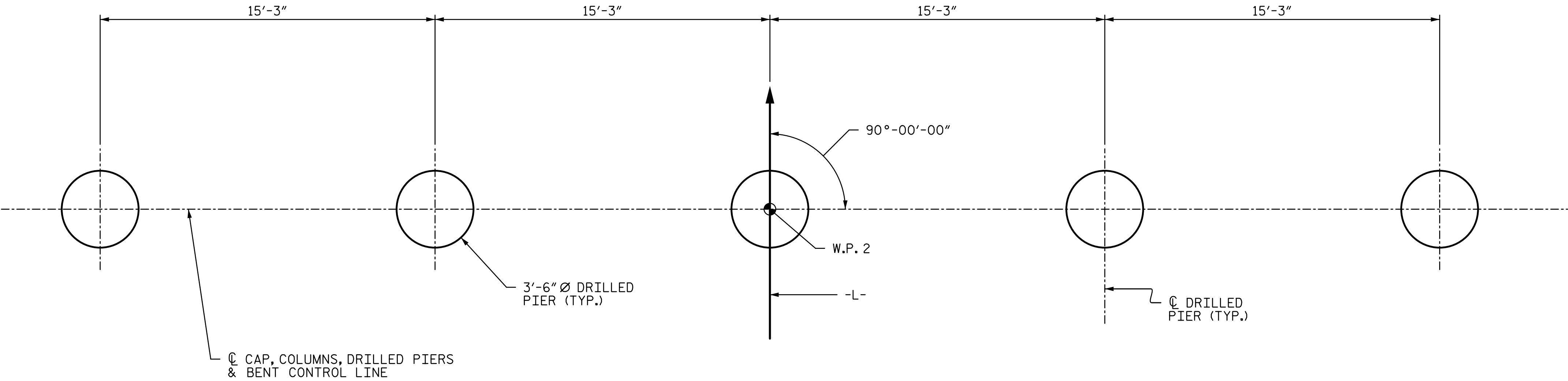


BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	STR	47'-3"	1,285
B2	8	#9	STR	26'-0"	707
B3	6	#9	①	50'-1"	1,022
B4	6	#9	①	27'-7"	563
B5	8	#5	STR	45'-6"	380
B6	8	#5	STR	26'-0"	217
B7	6	#4	STR	7'-2"	29
B8	48	#4	STR	6'-11"	222
B9	6	#4	STR	3'-8"	15
M1	24	#11	STR	25'-10"	3,294
M2	36	#11	STR	30'-10"	5,897
S1	268	#5	②	10'-4"	2,888
U1	88	#4	③	6'-4"	372
U2	8	#4	③	6'-1"	33
U3	8	#4	③	6'-8"	36
V1	12	#11	①	15'-7"	994
V2	12	#11	①	16'-2"	1,031
V3	12	#11	①	16'-10"	1,073
V4	12	#11	①	17'-7"	1,110
V5	12	#11	①	18'-2"	1,148
* SP-1	1	#4	⑤	400'-2"	267
* SP-2	1	#4	⑤	419'-5"	280
* SP-3	1	#4	⑤	438'-8"	293
* SP-4	1	#4	⑤	460'-8"	308
* SP-5	1	#4	⑤	479'-11"	321
** SP-6	2	#5	④	357'-10"	746
** SP-7	3	#5	④	456'-6"	1,428

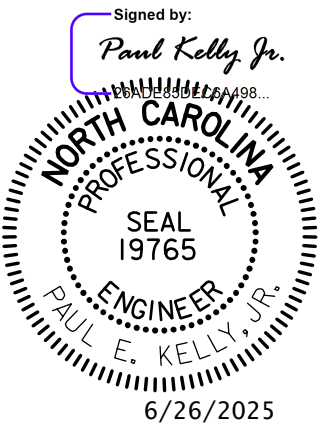
QUANTITIES

			BENT 1
REINFORCING STEEL			LBS. 22,316
SPIRAL COLUMN REINFORCING STEEL			LBS. 3,643
CLASS A CONCRETE:			
POUR 2 - COLUMNS			CU. YDS 16.6
POUR 3 - CAP			CU. YDS 39.2
TOTAL			CU. YDS 55.8
DRILLED PIER CONCRETE: POUR 1			CU. YDS 37.4

- * THE SP-1 THRU SP-5 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
- ** THE SP-6 AND SP-7 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.



PLAN OF DRILLED PIERS



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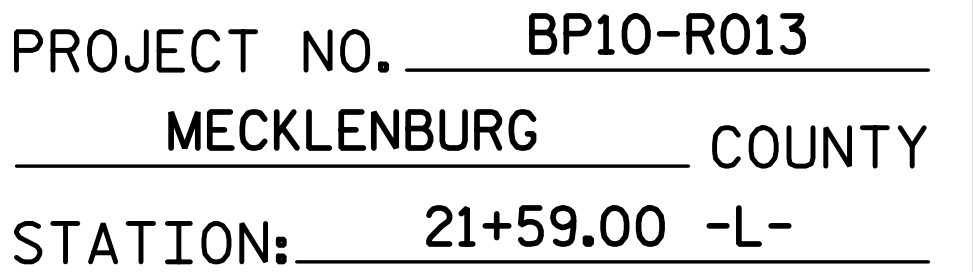
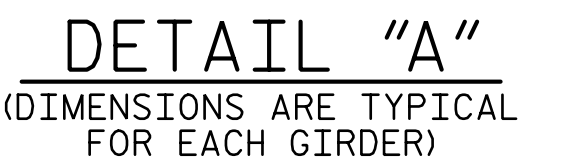
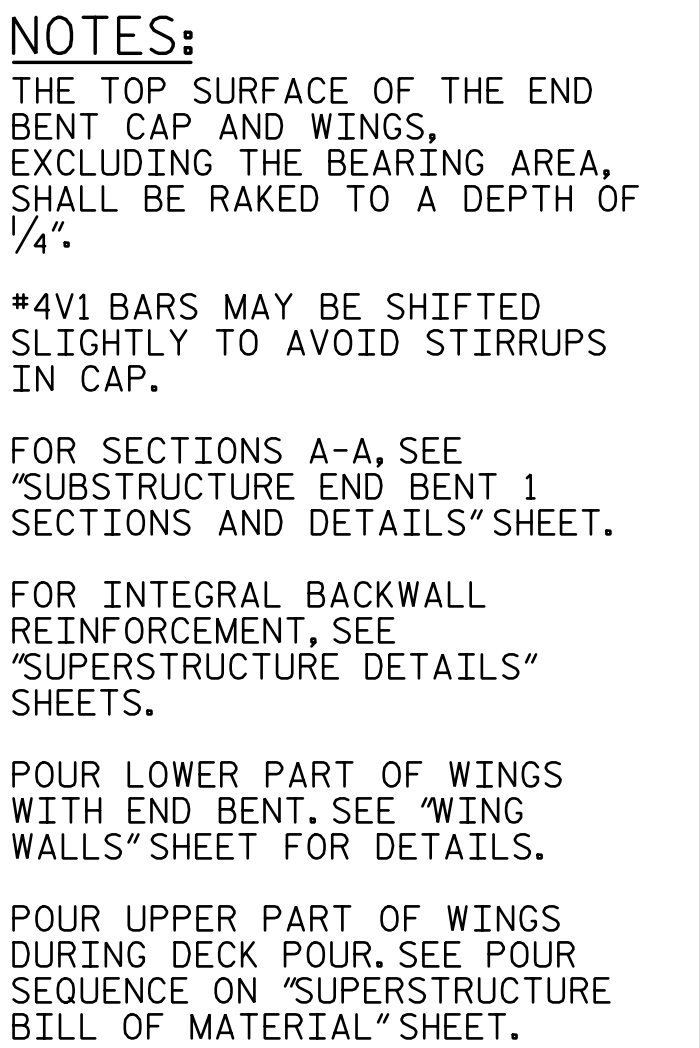
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FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

SHEET 3 OF 3

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

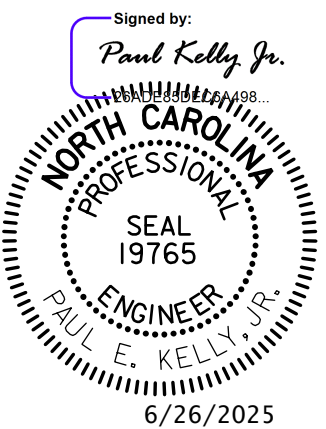
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS 37
2			4			



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			37

TOP OF PILE ELEVATIONS	
P1	602.80
P2	603.09
P3	603.39
P4	603.69
P5	603.99
P6	604.28
P7	604.58
P8	604.88
P9	605.18
P10	605.47



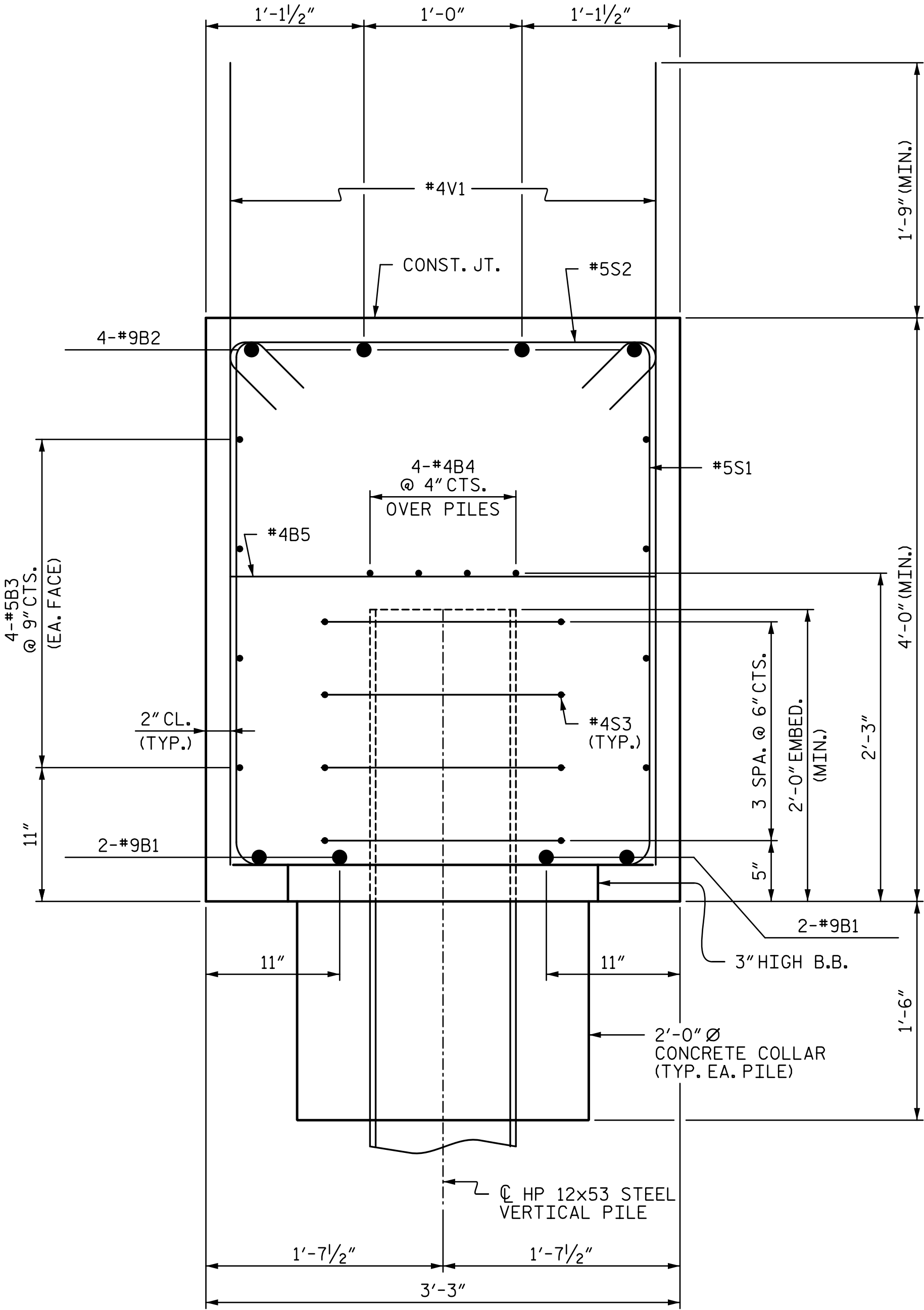
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SIGNATURES COMPLETED

DRAWN BY :	MBC	DATE :	9-21
CHECKED BY :	TRL	DATE :	9-21
DESIGN ENGINEER OF RECORD :	P. KELLY	DATE :	4-25

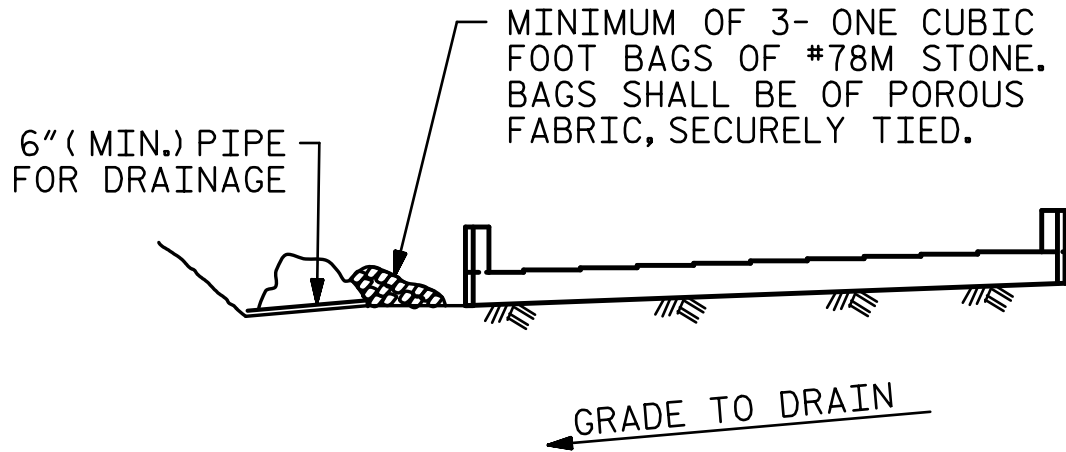
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2
WING WALLS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	<div style="font-size: 1.5em; font-weight: bold;">S-32</div> <div style="font-size: 0.8em;">TOTAL SHEETS</div> <div style="font-size: 1.5em; font-weight: bold;">37</div>
1			3			
2			4			



SECTION A-A

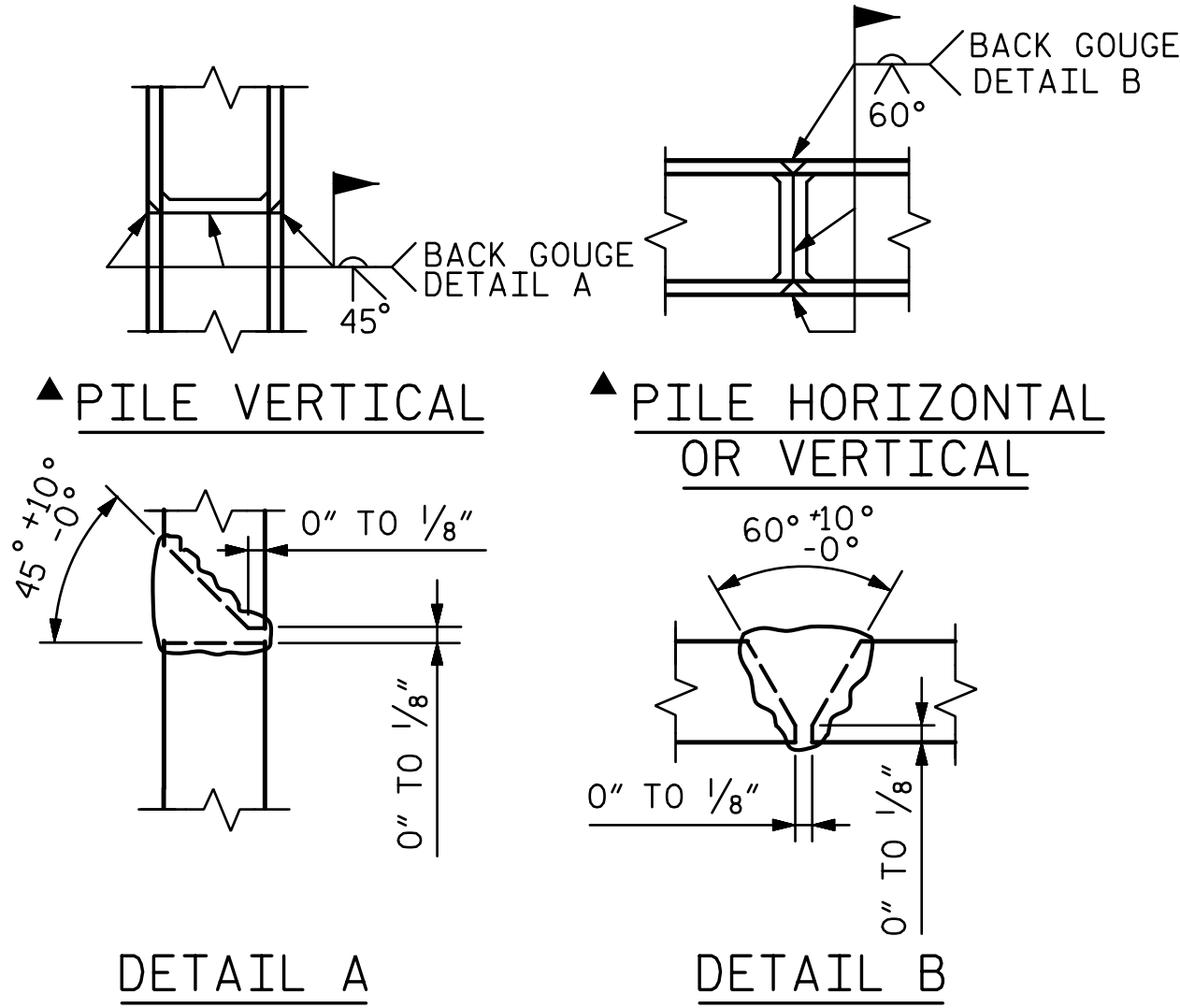


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BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER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

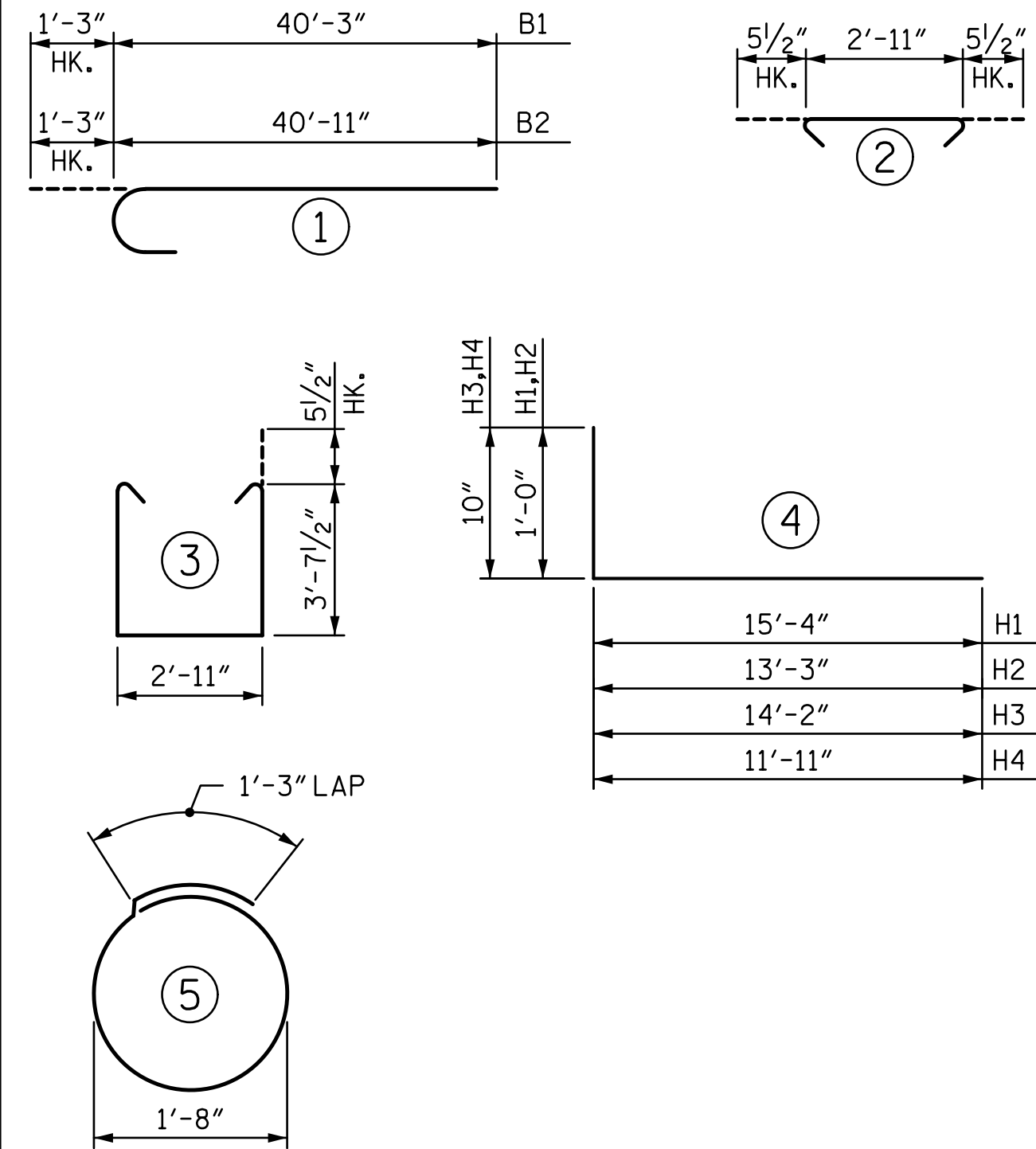
TEMPORARY DRAINAGE AT END BENT



▲ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	①	41'-6"	1,129
B2	8	#9	①	42'-2"	1,147
B3	16	#5	STR	39'-10"	665
B4	8	#4	STR	39'-6"	211
B5	20	#4	STR	2'-11"	39
H1	9	#6	④	16'-4"	221
H2	9	#6	④	14'-3"	193
H3	8	#5	④	15'-0"	125
H4	8	#5	④	12'-9"	106
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S3	40	#4	⑤	6'-6"	174
V1	146	#4	STR	5'-6"	536
V2	30	#4	STR	9'-8"	194
V3	28	#4	STR	8'-11"	167

QUANTITIES

REINFORCING STEEL	LBS.	6,483
CLASS A CONCRETE:		
POUR 1: CAP, LOWER WINGS & COLLARS C.Y.		44.1
TOTAL	C.Y.	44.1

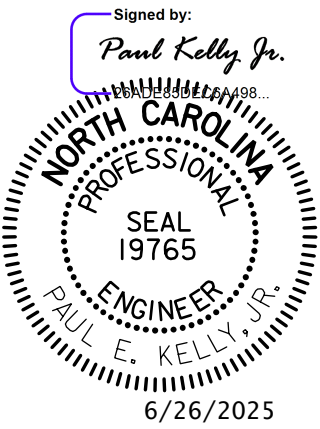
PROJECT NO. BP10-R013
MECKLENBURG COUNTY
STATION: 21+59.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2
SECTION AND DETAILS

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					37

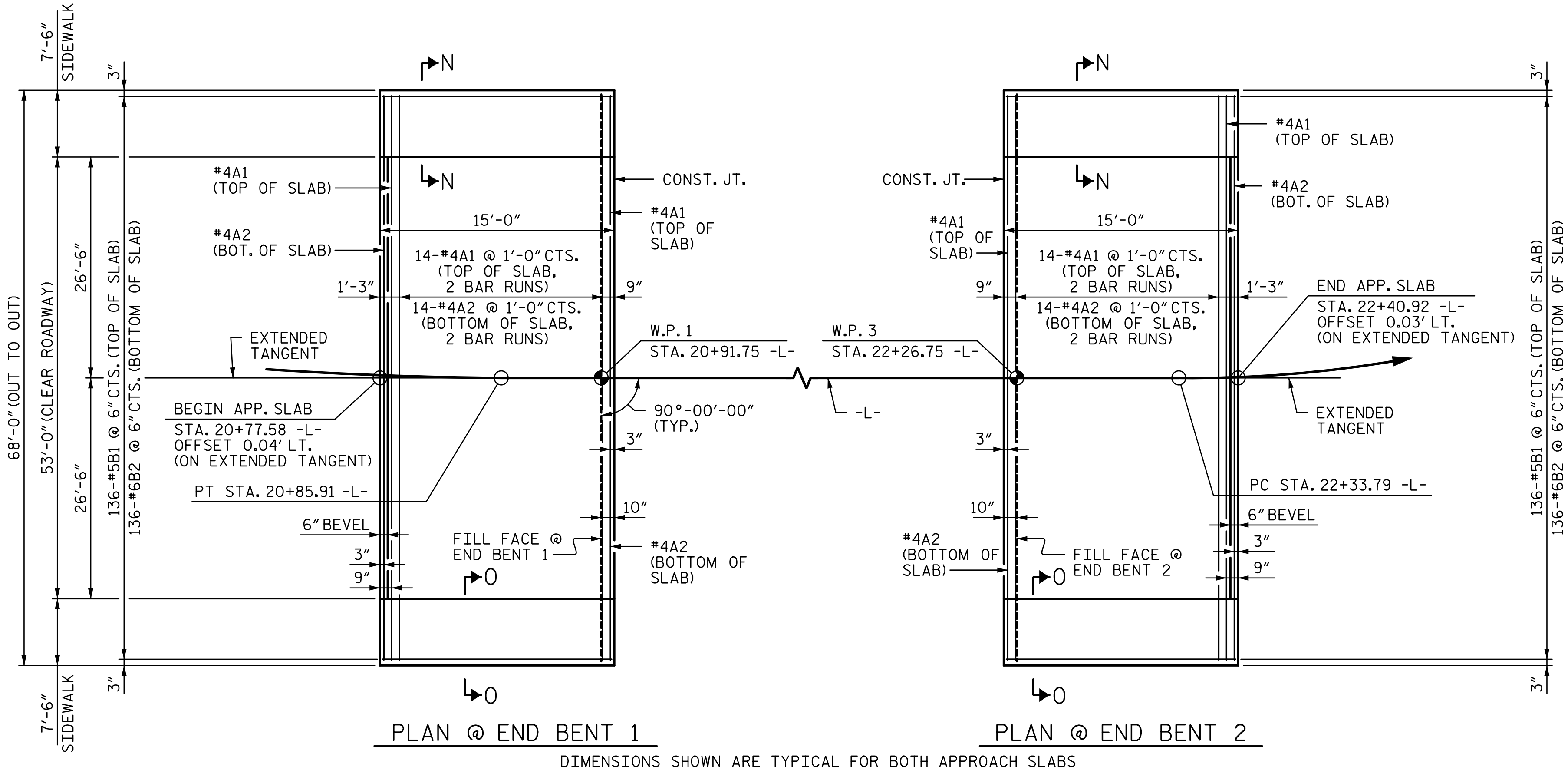


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CHECKED BY : TRL DATE : 9-21
DESIGN ENGINEER OF RECORD : P. KELLY DATE : 4-25

R:\Structures\3.0 Station\6.0 RFC Bridge Plans\2024 Update\401.069_R138_SML_AS_035_330739.dgn 6/18/2025 5:15:53 PM henslesg



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.

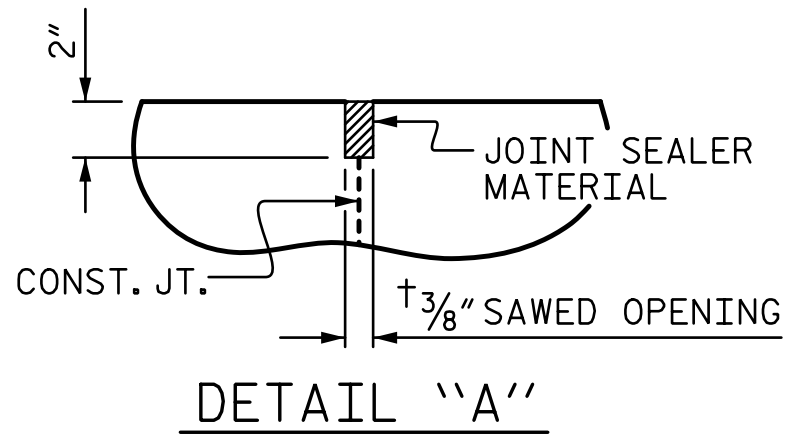
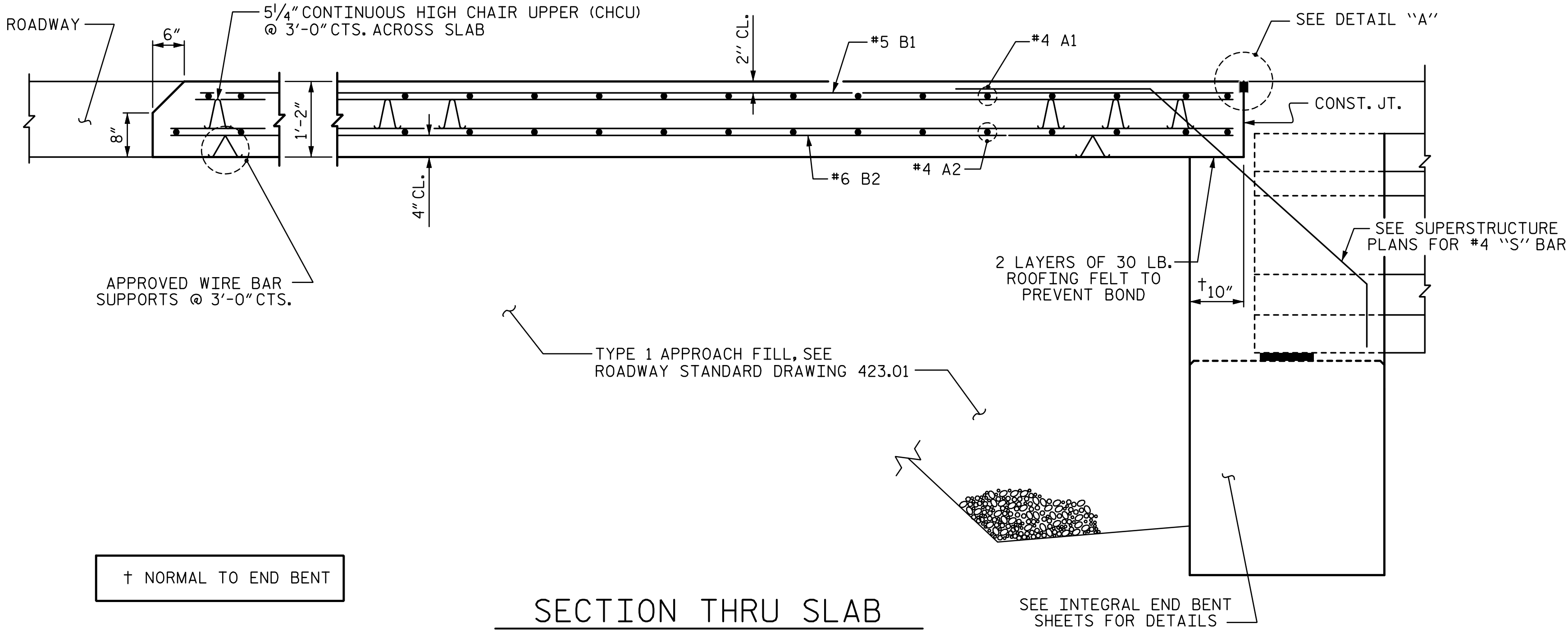
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

SEE SIDEWALK AND SECTION N-N, SEE SHEET 3 OF 3.

PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE LUMP SUMP PAY ITEM FOR THE APPROACH SLAB. THIS SHALL INCLUDE MATERIALS, EQUIPMENT, TOOLS, LABOR AND INCIDENTALS NECESSARY TO PERFORM THE WORK. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE.

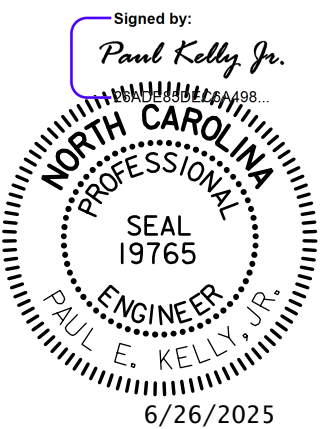
AT THE CONTRACTORS OPTION "TYPE 1A - ALTERNATE APPROACH FILL (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL"

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	34'-10"	745
A2	32	#4	STR	34'-8"	741
* B1	136	#5	STR	14'-6"	2,057
B2	136	#6	STR	14'-6"	2,962
* B3	14	#4	STR	14'-6"	136
* G1	30	#4	STR	7'-2"	144
* U1	18	#4	1	3'-4"	40
REINFORCING STEEL				LBS.	3,703
* EPOXY COATED REINFORCING STEEL				LBS.	3,122
CLASS AA CONCRETE					
POUR 1 (SLAB)				C. Y.	43.8
POUR 2 (SIDEWALK)				C. Y.	4.8
TOTAL				C. Y.	48.6
BAR TYPES					
BAR DIMENSIONS ARE OUT TO OUT					



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

PROJECT NO. **BP10-R013**
MECKLENBURG COUNTY
STATION: **21+59.00 -L-**



stv STV Engineers, Inc.
2151 Howling St., Suite 1400
Charlotte, NC 28203
NC License Number F-0991

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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		
2			4		
					TOTAL SHEETS
					37

DRAWN BY : **MBC** DATE : **9-21**
CHECKED BY : **TRL** DATE : **9-21**
DESIGN ENGINEER OF RECORD : **P. KELLY** DATE : **4-25**

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN