

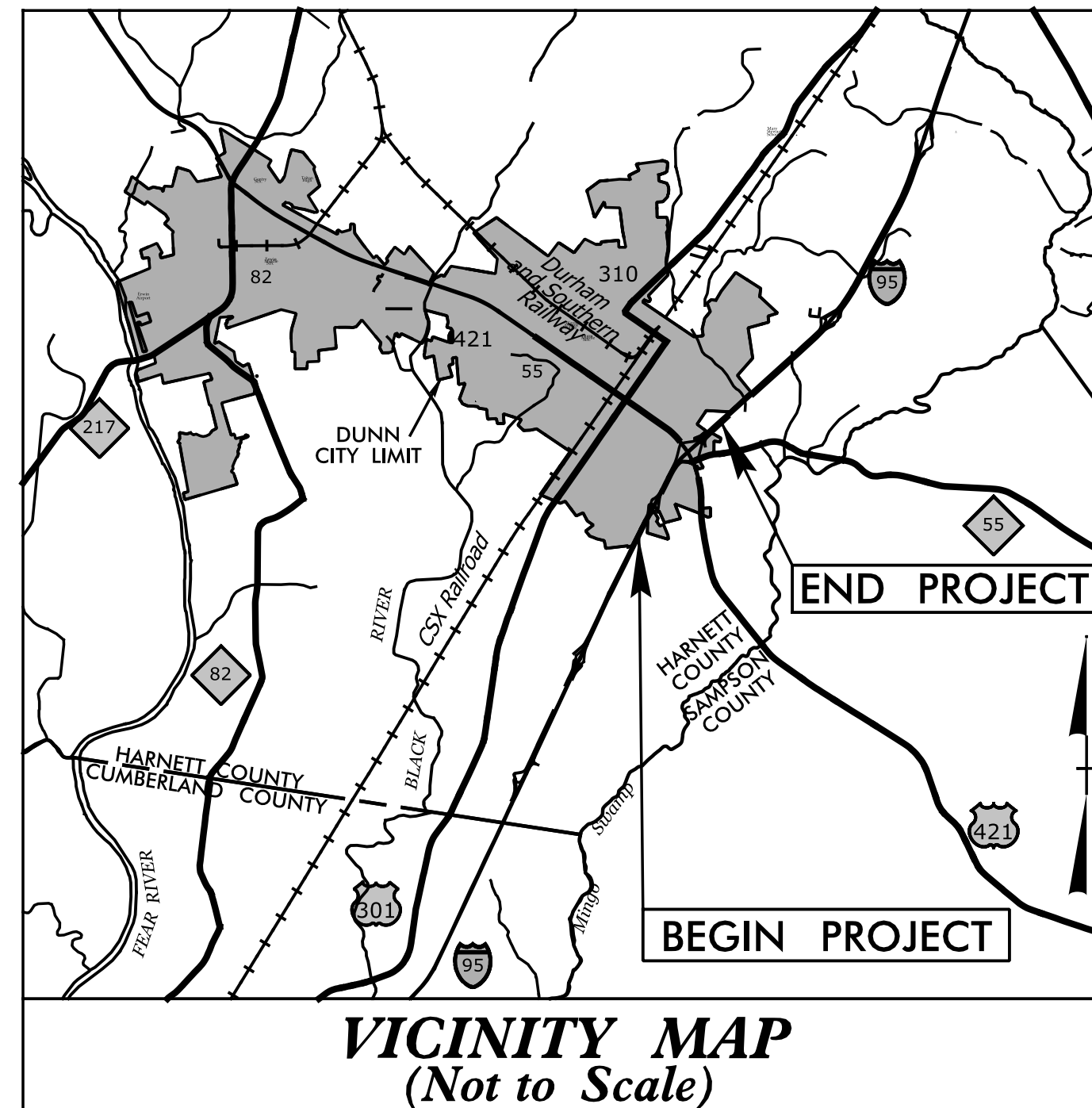
TIP PROJECT: I-5878

CONTRACT: 204543

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

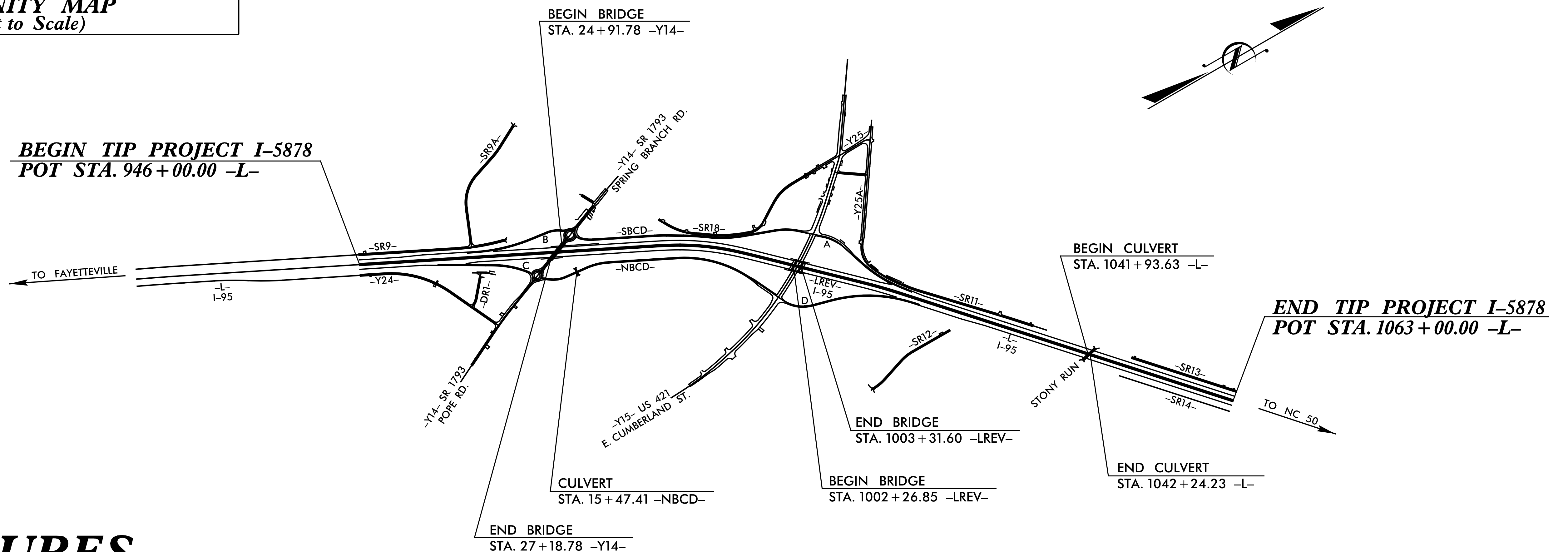
HARNETT COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5878		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
53078.1.1	NHP-0095(007)73	P.E.	
53078.1.2		P.E.	
53078.2.2	NHP-0095(017)73	R/W & UTILITIES	
47532.3.3		CONST.	



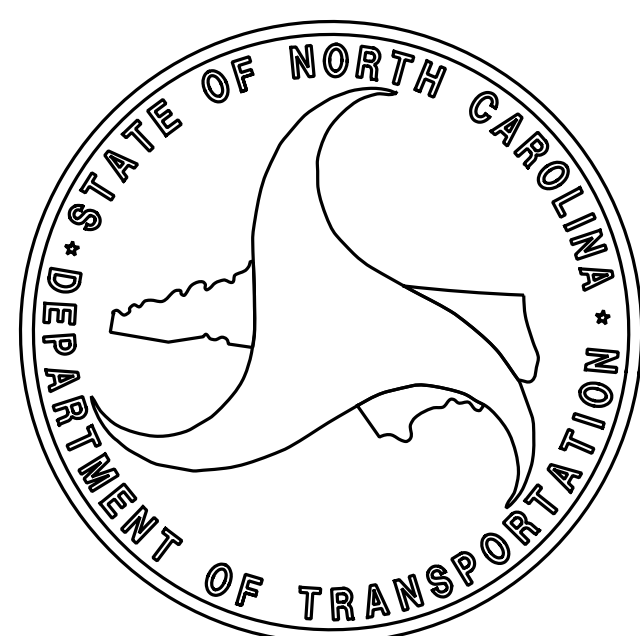
LOCATION: I-95 AT US 421 (EXIT 73) AND SR 1793 (POPE ROAD) (EXIT 72).
IMPROVE INTERCHANGES. WIDEN TO EIGHT LANES.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERT
AND STRUCTURES



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA	
ADT 2020 =	61,400
ADT 2040 =	83,400
K =	7 %
D =	55 %
T =	18 % *
V =	70 MPH
* (13% TTST + 5% DUALS)	
FUNC CLASS = INTERSTATE	
STATEWIDE TIER	

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT I-5878	2.190 MILES
LENGTH STRUCTURE TIP PROJECT I-5878	0.026 MILES
TOTAL LENGTH OF TIP PROJECT I-5878	2.216 MILES

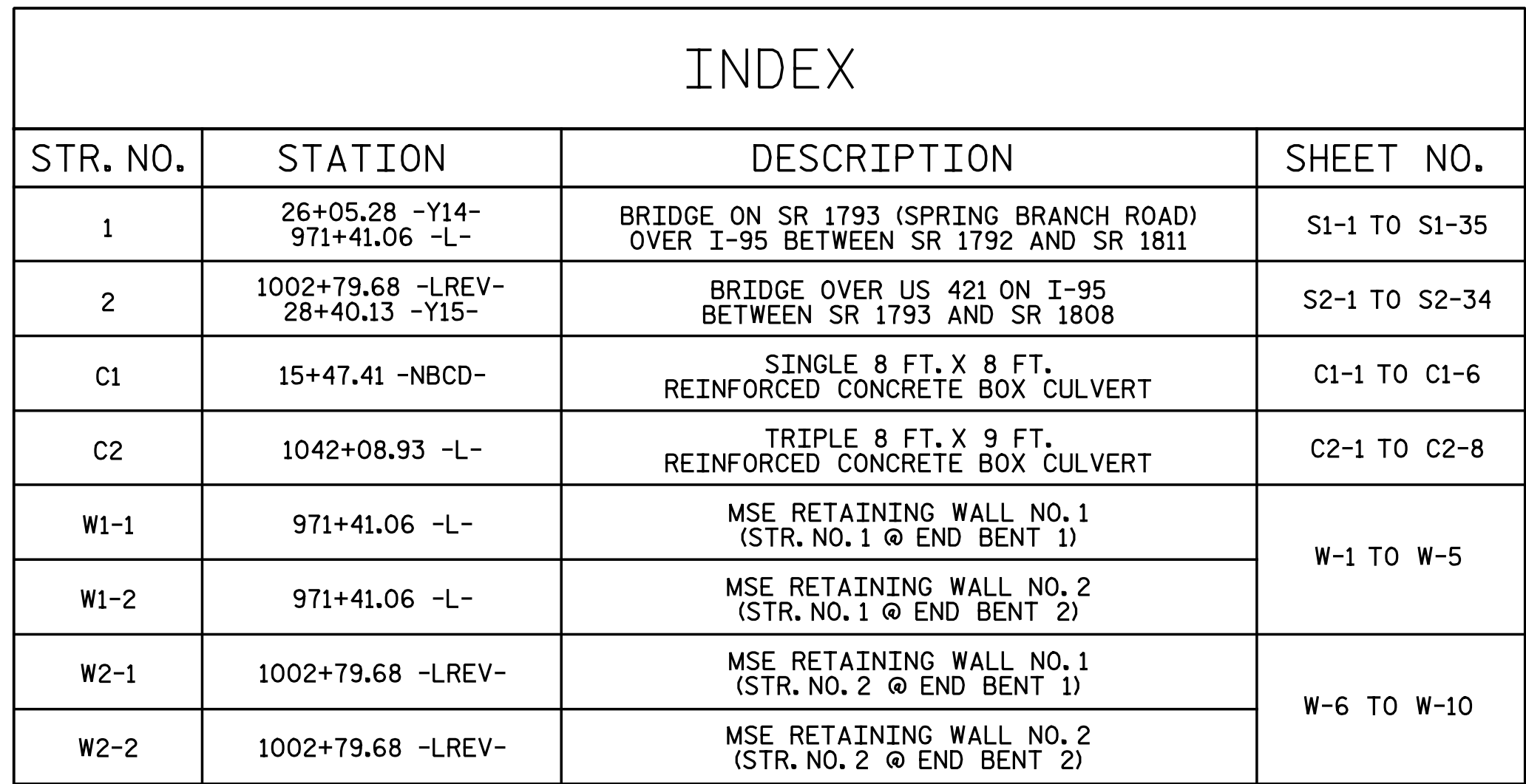
Prepared In the Office of:
Michael Baker International
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number:
F-1084

2018 STANDARD SPECIFICATIONS

LETTING DATE:
JULY 20, 2021

Prepared for:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

BRADLEY J. BELL, P.E.
PROJECT ENGINEER



PROJECT NO. I-5878
HARNETT COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX SHEET

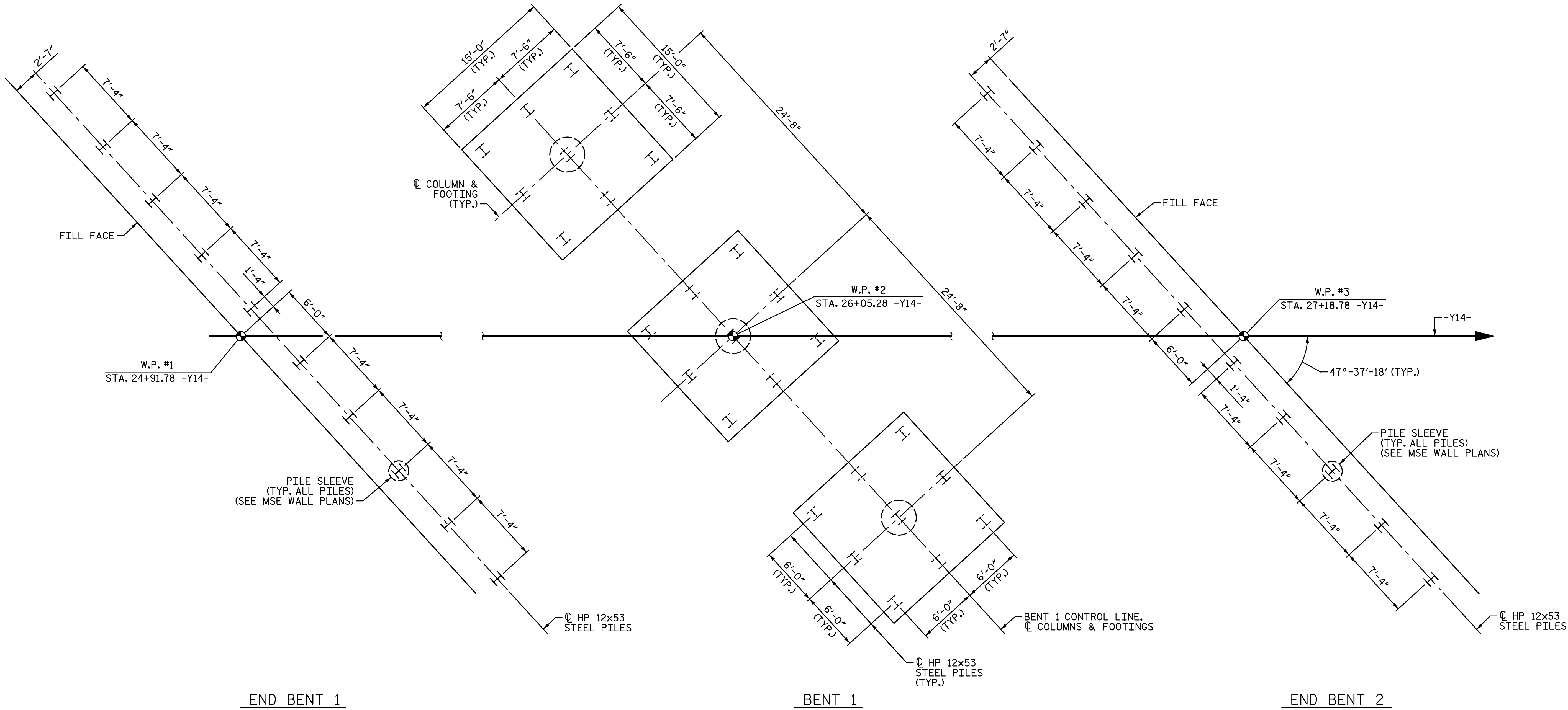
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Michael Baker
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NC License No. : F-1084

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

DRAWN BY : C. E. MAYHEW DATE : 4-21-21
CHECKED BY : B. J. BELL DATE : 4-21-21



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 118 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT END BENT NO. 2 AND BENT NO.1. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

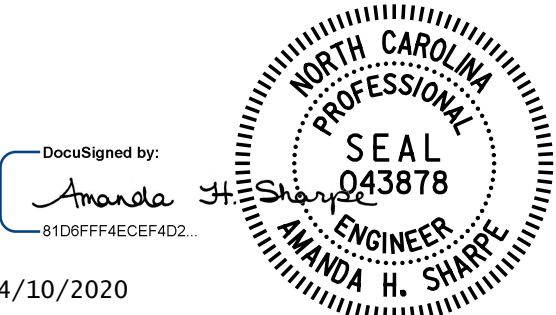
PROJECT NO. I-5878

HARNETT COUNTY

STATION: 26+05.28 -Y14-

971+41.06 -L-

SHEET 2 OF 3



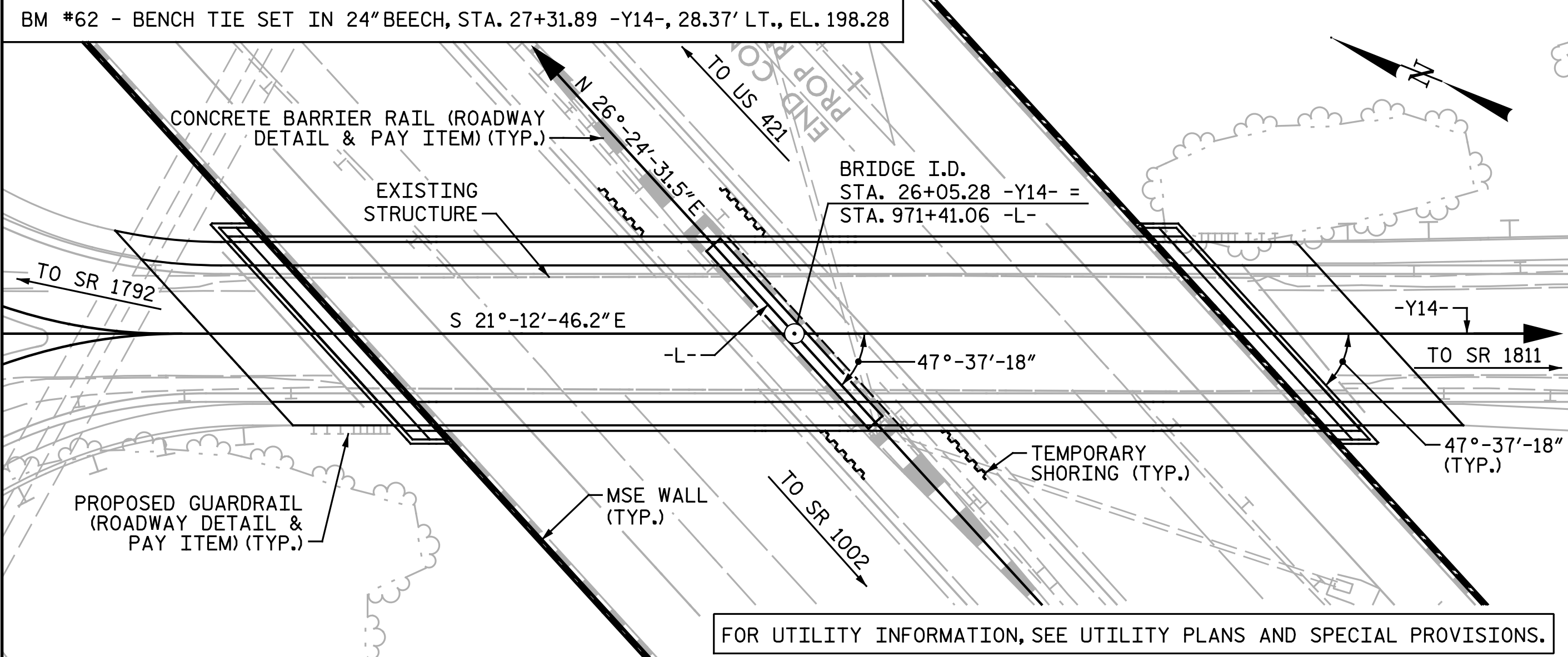
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REVISIONS						SHEET NO. SI-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : C. E. MAYHEW DATE : 7-8-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20



LOCATION SKETCH

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 SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 26+05.28 -Y14-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 47'-4", 2 @ 70'-1" & 1 @ 47'-10") WITH STEEL I-BEAMS & REINFORCED CONCRETE DECK WITH 24'-0" CLEAR ROADWAY WIDTH ON REINFORCED CONCRETE END BENT AND INTERIOR BENT CAPS ON PRESTRESSED CONCRETE PILES AND LOCATED ALONG THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR MSE WALL, MSE REINFORCING STRAPS ATTACHED TO END BENTS AND PILE SLEEVES, SEE MSE WALL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR BENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	THREE BAR METAL RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
	LUMP SUM	LUMP SUM	LUMP SUM	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	EA.
SUPERSTRUCTURE						10,219	7,816					10	1,102.92					431.00		LUMP SUM	LUMP SUM		
END BENT 1								66.1		12,186				10	10	700	5		18				
BENT 1			LUMP SUM					198.0		24,745	1,221			27	27	1,890	14						
END BENT 2								66.3		12,186				10	10	750	5		18				
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	2	LUMP SUM	10,219	7,816	330.4	LUMP SUM	49,117	1,221	10	1,102.92	47	47	3,340	24	431.00	36	LUMP SUM	LUMP SUM	LUMP SUM	2

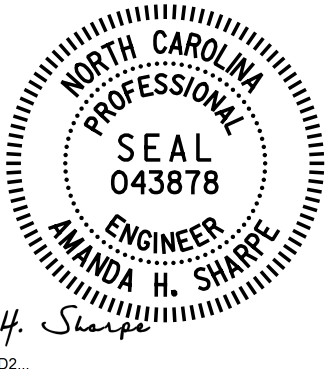
PROJECT NO. I-5878

HARNETT COUNTY

STATION: 26+05.28 -Y14-

971+41.06 -L-

SHEET 3 OF 3



DocuSigned by:
Amanda H. Sharpe
8106FFFAEDEF4D2
4/27/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GENERAL DRAWING
FOR BRIDGE ON SR 1793
(SPRING BRANCH ROAD) OVER I-95
BETWEEN SR 1792 AND SR 1811

REVISIONS

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

SHEET NO.
SI-3

TOTAL
SHEETS
35

DRAWN BY : C. E. MAYHEW DATE : 7-8-19
CHECKED BY : A. H. SHARPE DATE : 4-26-21

LOAD FACTORS:

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

NOTES:

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

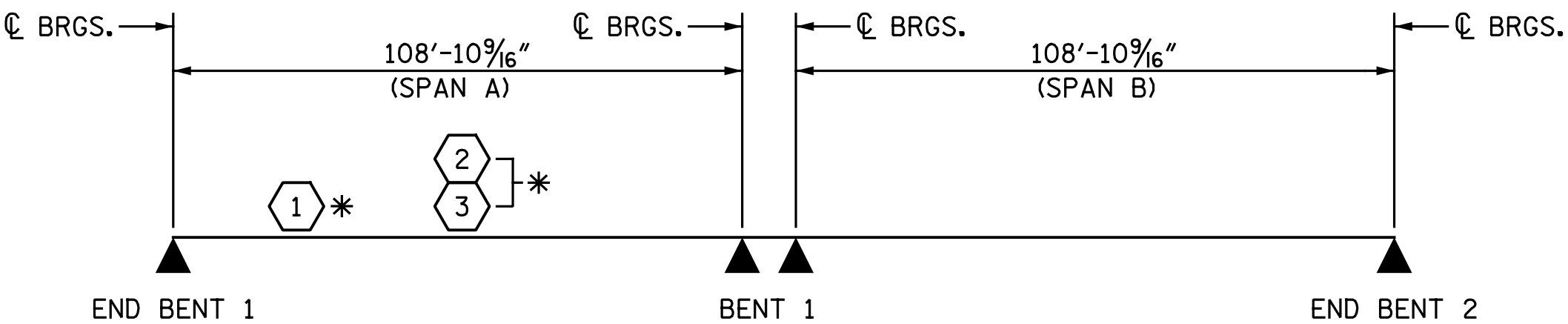
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO THE CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.	

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡ #	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬡ 1	1.02	--	1.75	0.921	1.40	A & B	1	54.44	1.051	1.02	A & B	1	32.38	1.00	0.921	1.04	A & B	1	54.44	1, 2	
	HL-93 (OPERATING)	N/A		1.68	--	1.35	0.921	1.81	A & B	1	54.44	1.051	1.68	A & B	1	98.56	N/A	-	-	-	-	-	2	
	HS-20 (INVENTORY)	36.000	⬡ 2	1.48	53.28	1.75	0.921	1.99	A & B	1	54.44	1.049	1.77	A & B	3	98.56	1.00	0.921	1.48	A & B	1	54.44	1, 2	
	HS-20 (OPERATING)	36.000		2.33	83.88	1.35	0.921	2.58	A & B	1	54.44	1.049	2.33	A & B	3	98.56	N/A	-	-	-	-	-	2	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.54	47.79	1.40	0.921	5.96	A & B	1	54.44	1.049	5.73	A & B	3	98.56	1.00	0.921	3.54	A & B	1	54.44	1, 2
		SNGARBS2	20.000		2.55	51.00	1.40	0.921	4.29	A & B	1	54.44	1.049	3.97	A & B	3	10.32	1.00	0.921	2.55	A & B	1	54.44	1, 2
		SNAGRIS2	22.000		2.37	52.14	1.40	0.921	4.00	A & B	1	54.44	1.049	3.64	A & B	3	98.56	1.00	0.921	2.37	A & B	1	54.44	1, 2
		SNCOTTS3	27.250		1.76	47.96	1.40	0.921	2.96	A & B	1	54.44	1.049	2.79	A & B	3	10.32	1.00	0.921	1.76	A & B	1	54.44	1, 2
		SNAGGRS4	34.925		1.43	49.94	1.40	0.921	2.42	A & B	1	54.44	1.049	2.25	A & B	3	98.56	1.00	0.921	1.43	A & B	1	54.44	1, 2
		SNS5A	35.550		1.40	49.77	1.40	0.921	2.37	A & B	1	54.44	1.049	2.25	A & B	3	98.56	1.00	0.921	1.40	A & B	1	54.44	1, 2
		SNS6A	39.950		1.27	50.74	1.40	0.921	2.15	A & B	1	54.44	1.049	2.02	A & B	3	98.56	1.00	0.921	1.27	A & B	1	54.44	1, 2
		SNS7B	42.000		1.21	50.82	1.40	0.921	2.04	A & B	1	54.44	1.049	1.96	A & B	3	98.56	1.00	0.921	1.21	A & B	1	54.44	1, 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.55	51.15	1.40	0.921	2.61	A & B	1	54.44	1.049	2.45	A & B	3	10.32	1.00	0.921	1.55	A & B	1	54.44	1, 2
		TNT4A	33.075		1.55	51.27	1.40	0.921	2.62	A & B	1	54.44	1.049	2.40	A & B	3	98.56	1.00	0.921	1.55	A & B	1	54.44	1, 2
		TNT6A	41.600		1.26	52.42	1.40	0.921	2.12	A & B	1	54.44	1.049	2.05	A & B	3	10.32	1.00	0.921	1.26	A & B	1	54.44	1, 2
		TNT7A	42.000		1.26	52.92	1.40	0.921	2.11	A & B	1	54.44	1.049	2.02	A & B	3	98.56	1.00	0.921	1.26	A & B	1	54.44	1, 2
		TNT7B	42.000		1.28	53.76	1.40	0.921	2.16	A & B	1	54.44	1.049	1.93	A & B	3	98.56	1.00	0.921	1.28	A & B	1	54.44	1, 2
		TNAGRIT4	43.000		1.23	52.89	1.40	0.921	2.08	A & B	1	54.44	1.049	1.87	A & B	3	98.56	1.00	0.921	1.23	A & B	1	54.44	1, 2
		TNAGT5A	45.000		1.17	52.65	1.40	0.921	1.97	A & B	1	54.44	1.051	1.83	A & B	1	98.56	1.00	0.921	1.17	A & B	1	54.44	1, 2
		TNAGT5B	45.000	⬡ 3	1.16	52.20	1.40	0.921	1.95	A & B	1	54.44	1.049	1.78	A & B	3	98.56	1.00	0.921	1.16	A & B	1	54.44	1, 2



LRFR SUMMARY

* TYPICAL SPANS A & B

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

ASSEMBLED BY : N. B. SPEAKS	DATE : 7-9-19
CHECKED BY : A. H. SHARPE	DATE : 8-30-19
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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

STD. NO. LRFR1

NOTES:

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

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF SIDEWALK REINFORCEMENT.

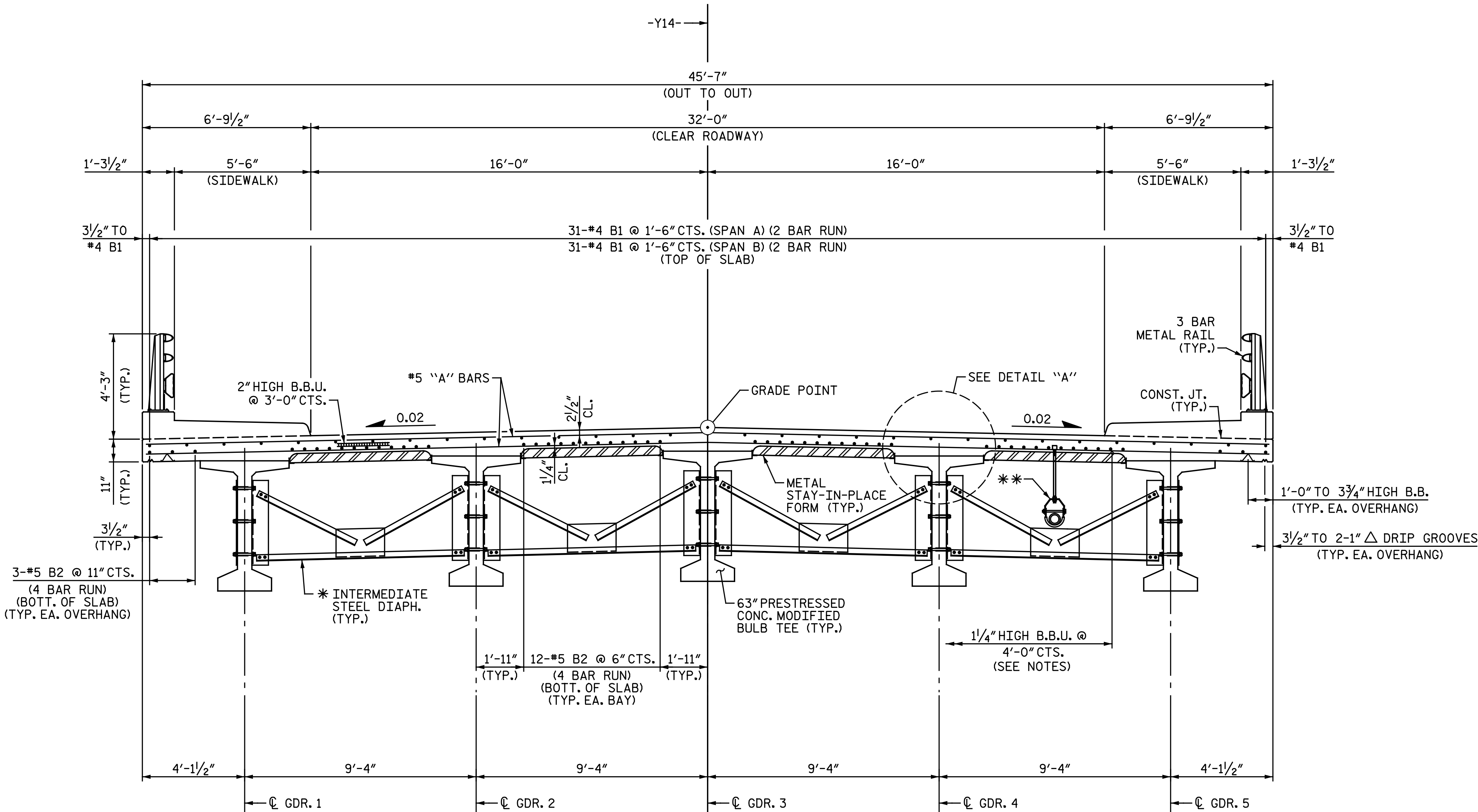
FOR 3 BAR METAL RAIL DETAILS, SEE "3 BAR METAL RAIL" SHEET.

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

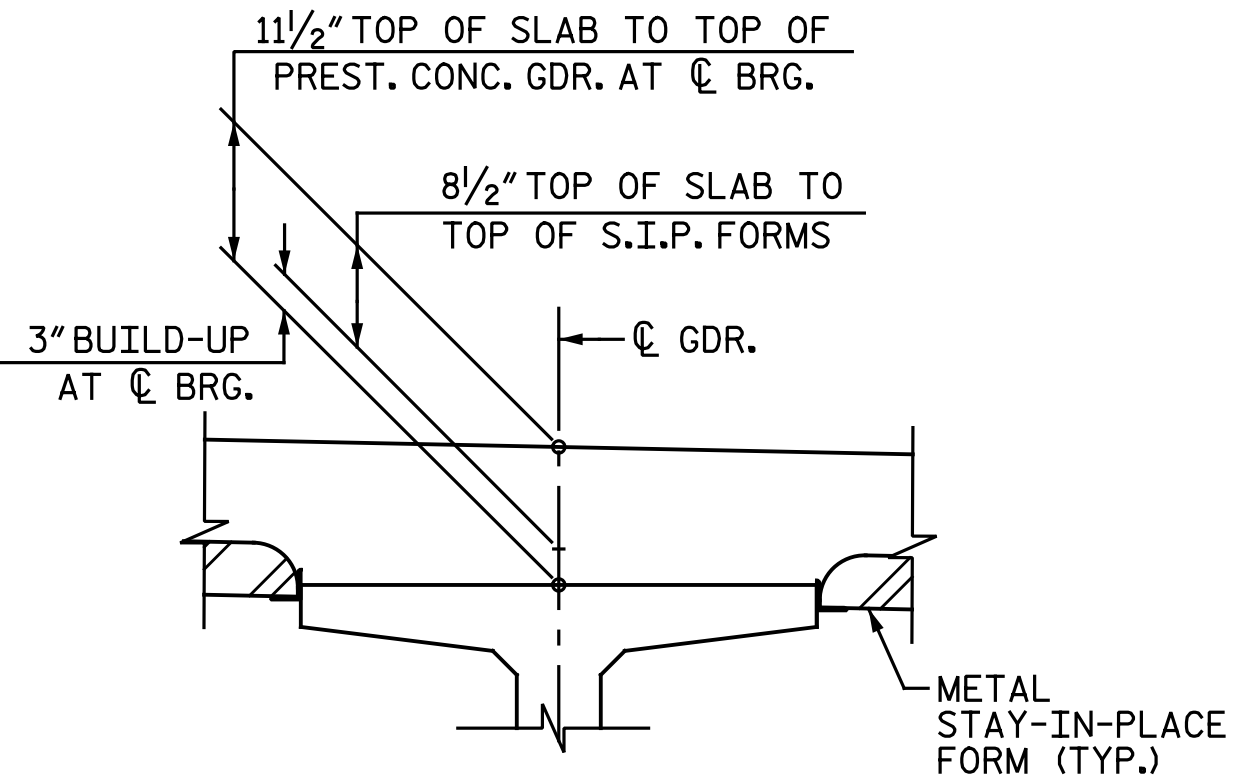
* FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

FOR SIDEWALK DETAILS, SEE "SIDEWALK DETAILS" SHEET.

** FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE "ELECTRICAL CONDUIT SYSTEM FOR SIGNALS" SHEET.



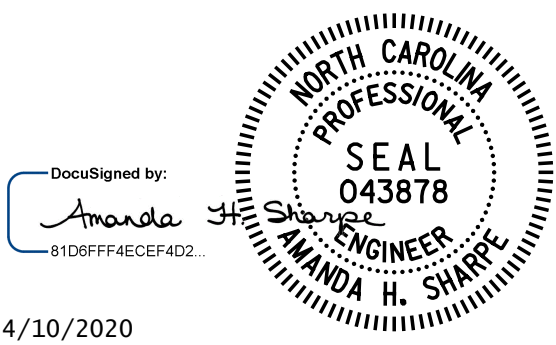
TYPICAL SECTION @ INTERMEDIATE DIAPHRAGM



DETAIL "A"

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 1 OF 3



4/10/2020

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. SI-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : C. W. LAFFERTY DATE : 05-09-19
CHECKED BY : A.H. SHARPE DATE : 12-23-19

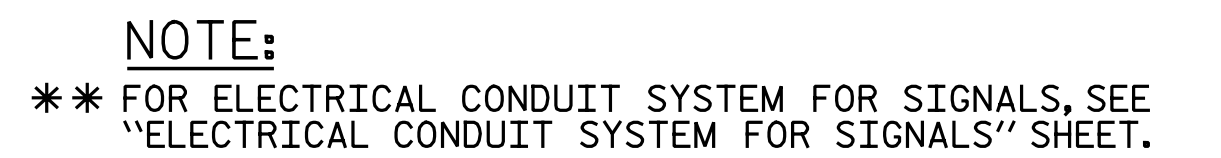
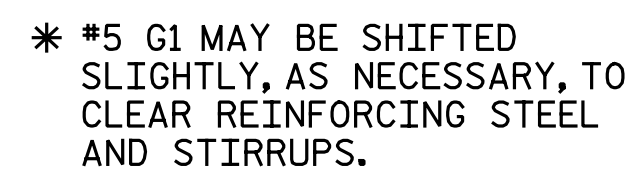


Diagram illustrating the elevation view of a bridge structure. Key components and dimensions shown include:

- CL JT.** (Centerline of Joint)
- 1'-0" BACKWALL**
- 2'-7"** (Dimension from CL JT. to the start of the 10" end bent diaphragm)
- 2'-4"** (Dimension from the start of the 10" end bent diaphragm to the centerline of the girder)
- 10" END BENT DIAPHRAGM**
- 8 1/2"** (Dimension from the centerline of the girder to the centerline of the bearing)
- FILL FACE**
- CL GIRDER** (Centerline of Girder)
- CL BEARING** (Centerline of Bearing)
- TOP OF GIRDER**

END BENT 1 SHOWN, END BENT 2 SIMILAR



END BENT 1 SHOWN, END BENT 2 SIMILAR

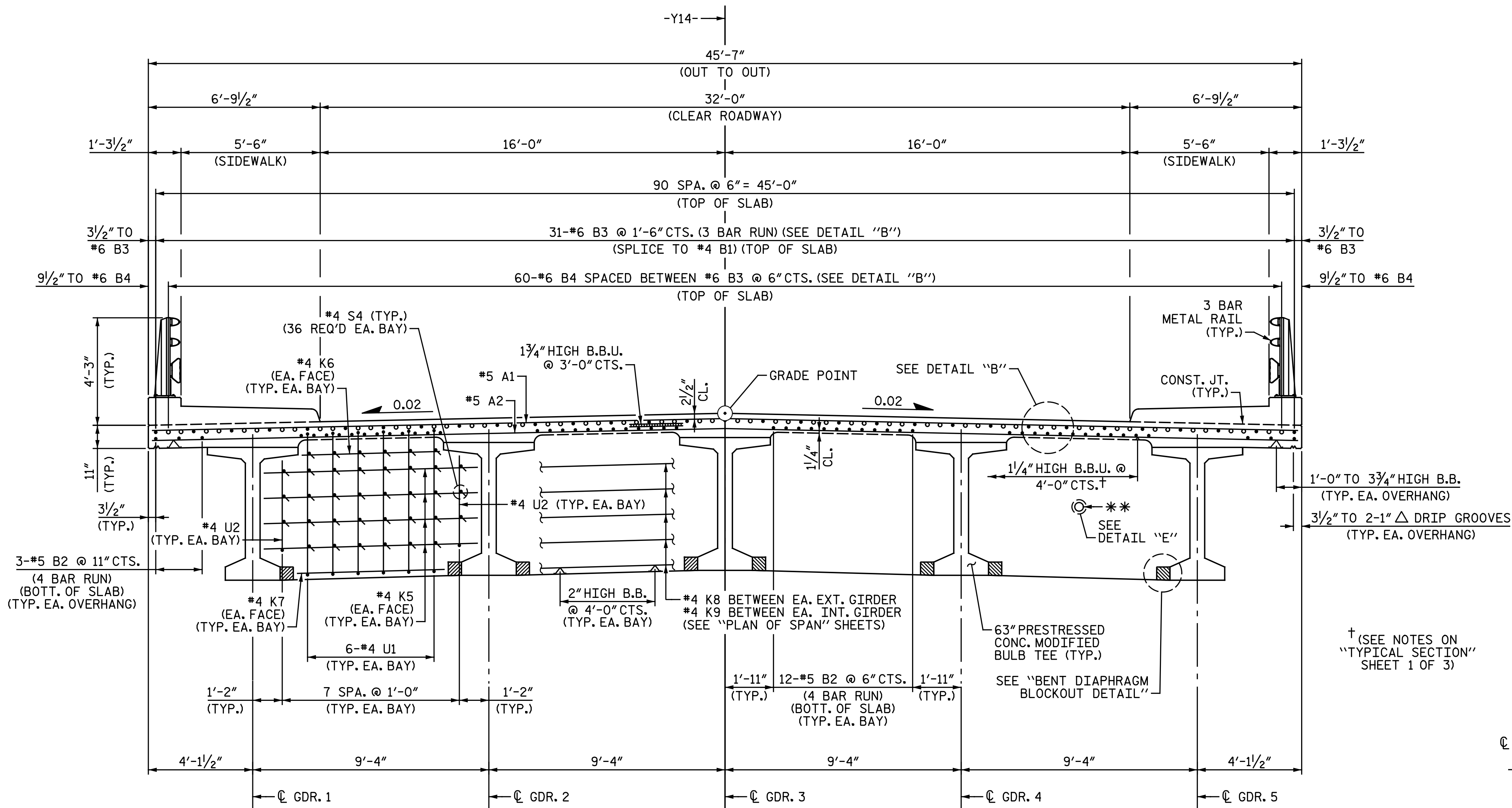
SHEET 2 OF 3

TYPICAL SECTION

Michael Baker
INTERNATIONAL

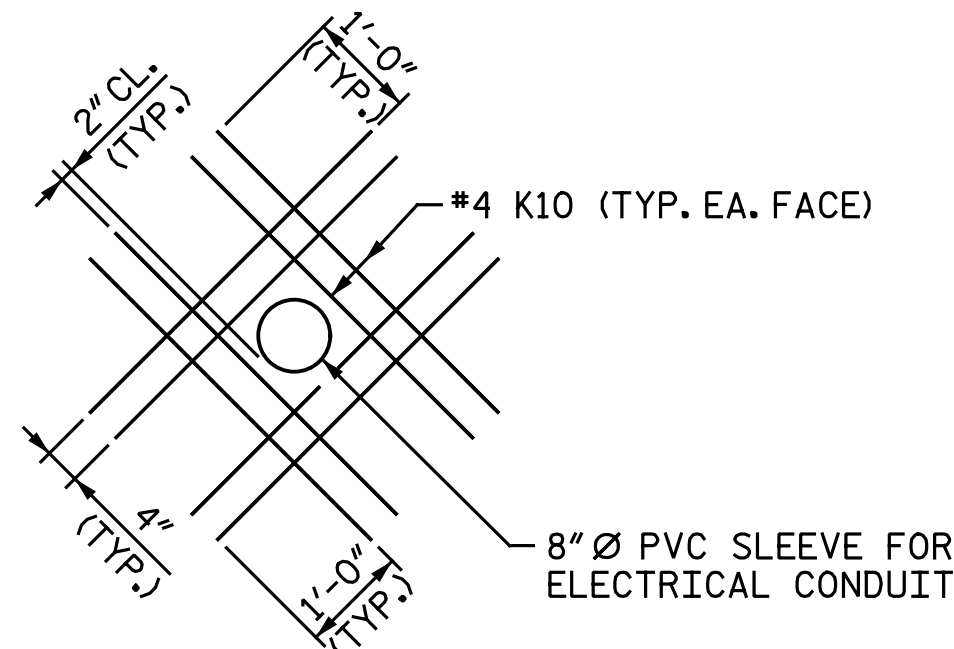
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Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO. SI-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



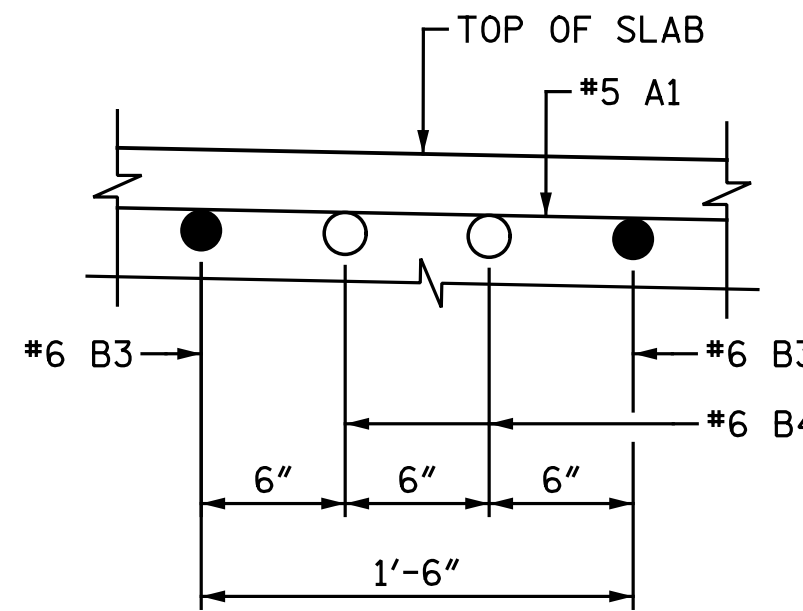
TYPICAL SECTION @ BENT DIAPHRAGM

** FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE "ELECTRICAL CONDUIT SYSTEM FOR SIGNALS" SHEET.

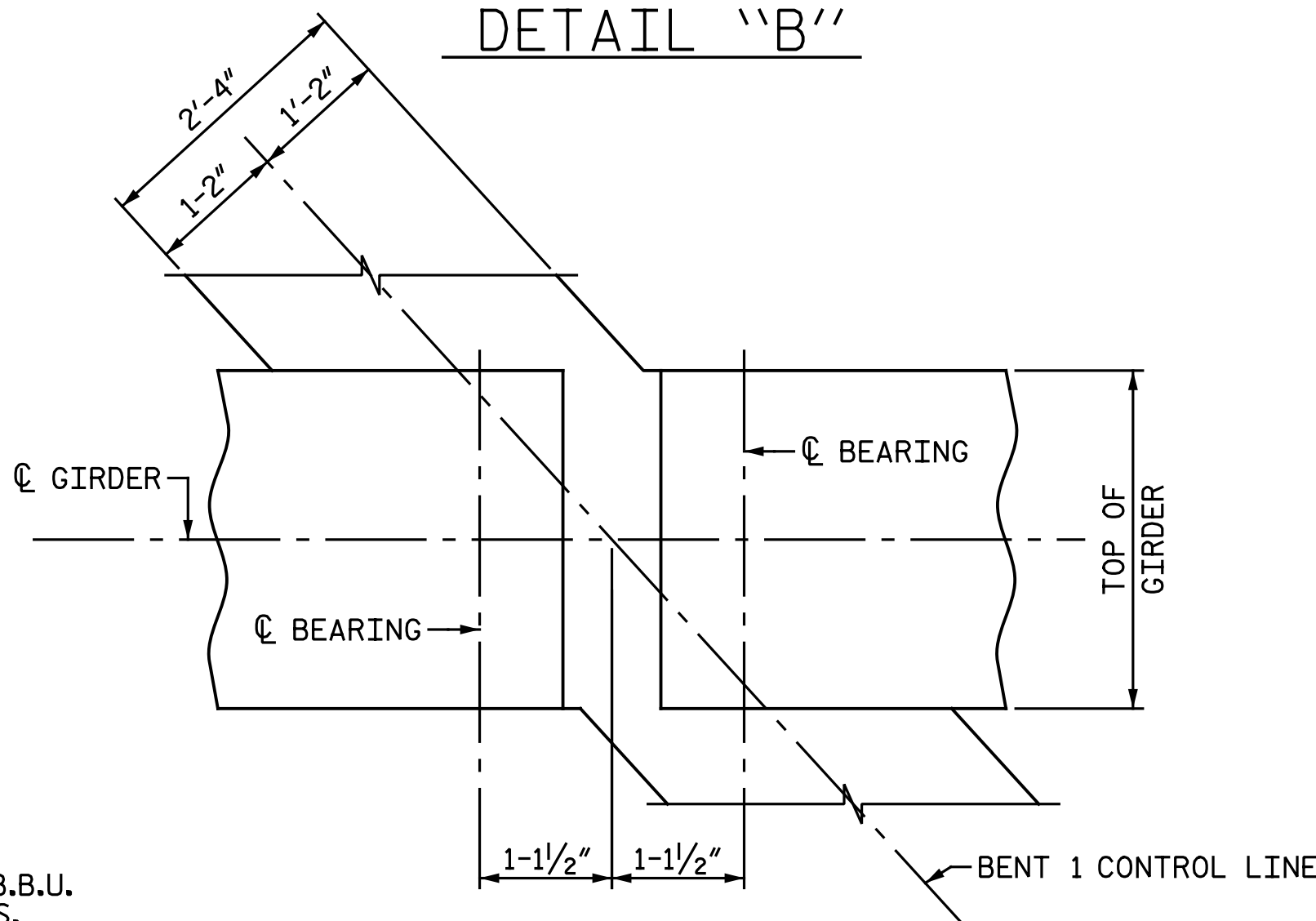


DETAIL "E"

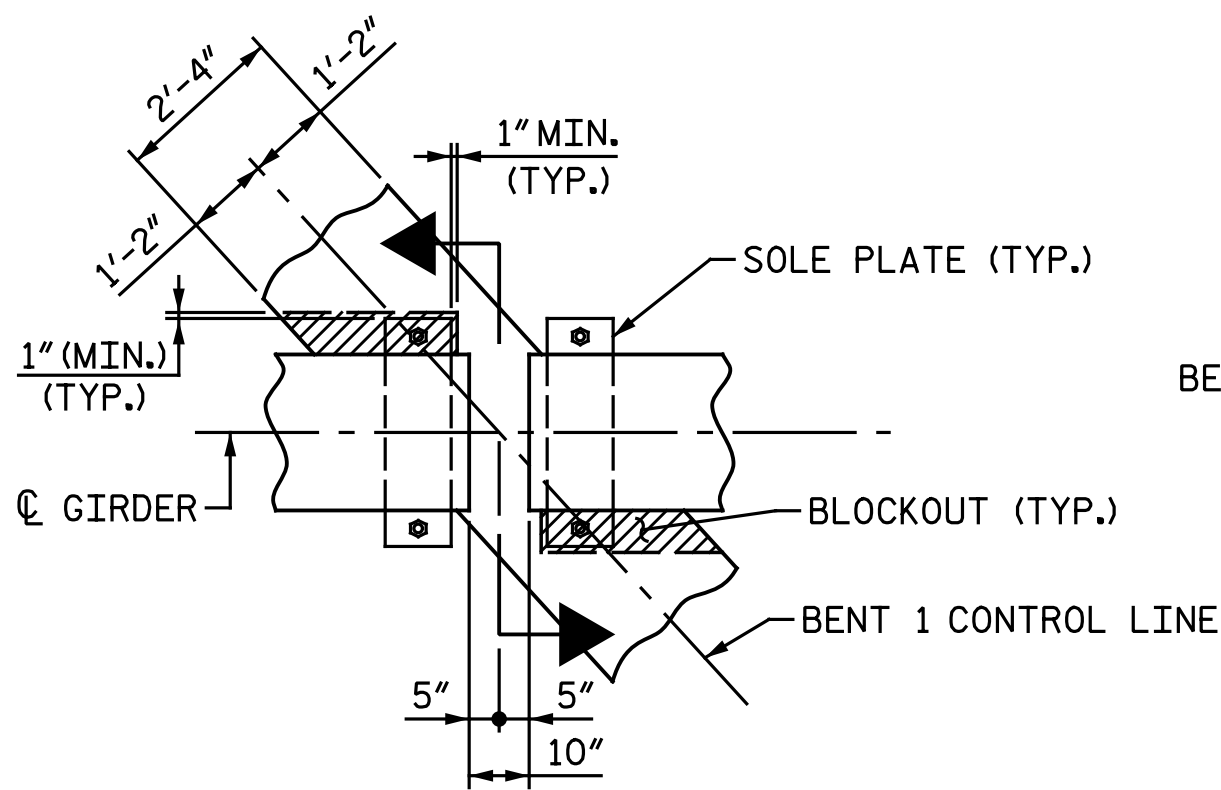
THE PVC SLEEVE THROUGH THE DIAPHRAGM SHALL BE LOCATED BY THE ENGINEER.



DETAIL "B"

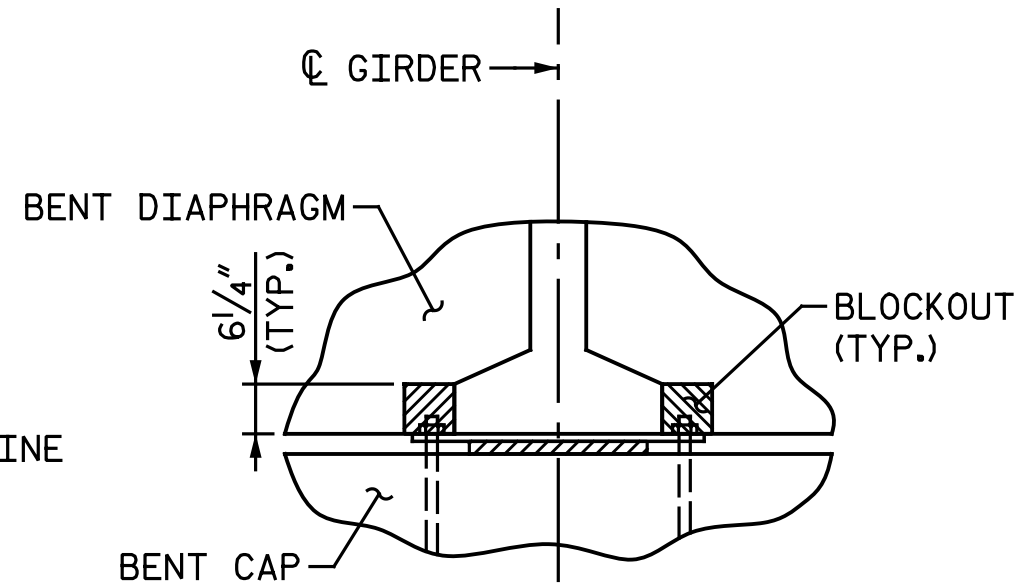


PLAN AT BENT DIAPHRAGM

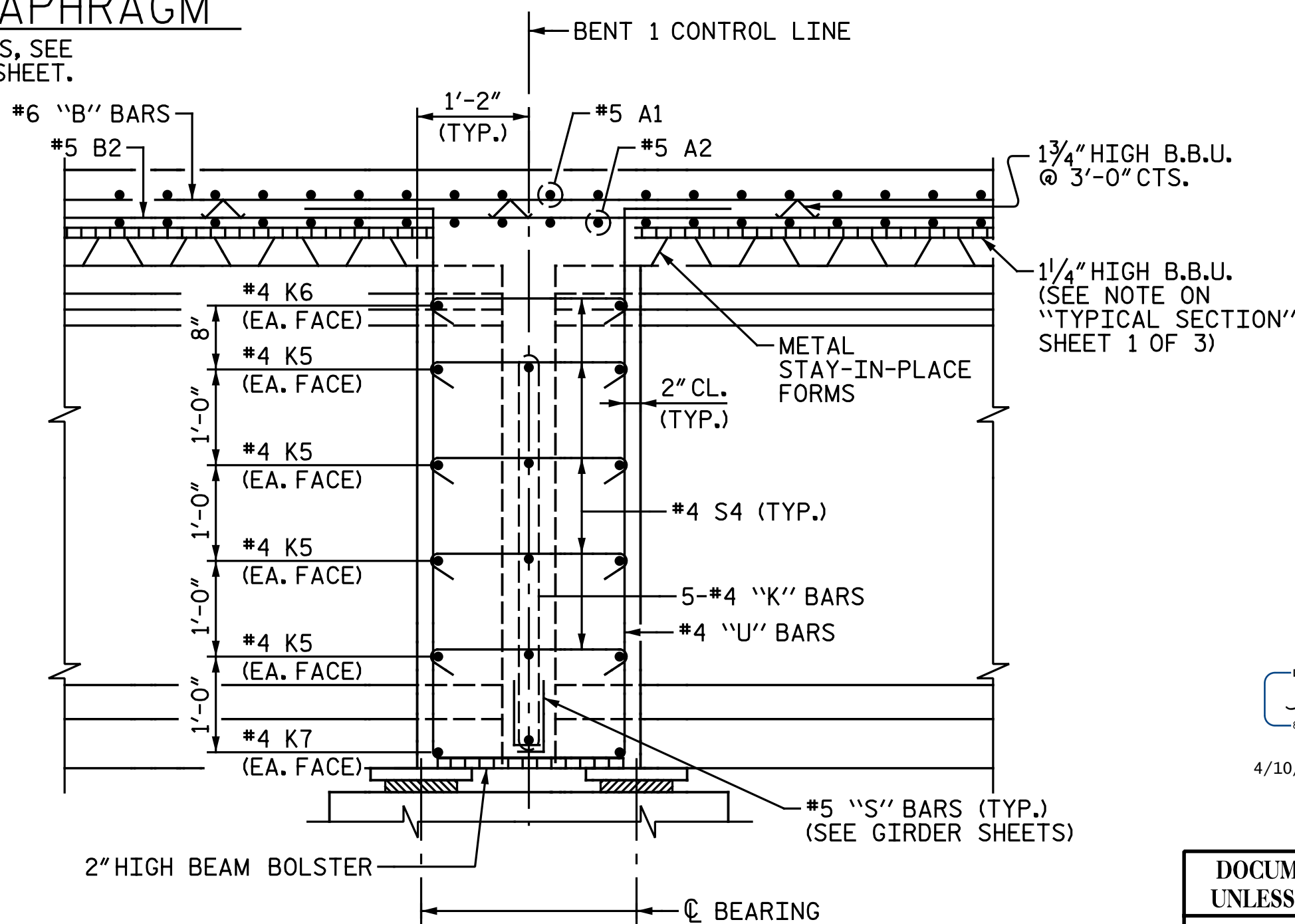


PLAN

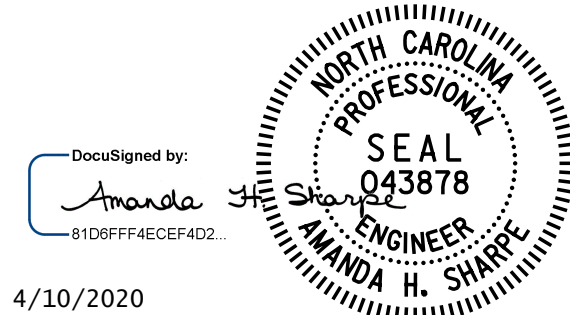
BENT DIAPHRAGM BLOCKOUT DETAIL



SECTION



SECTION THRU BENT DIAPHRAGM



4/10/2020

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PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

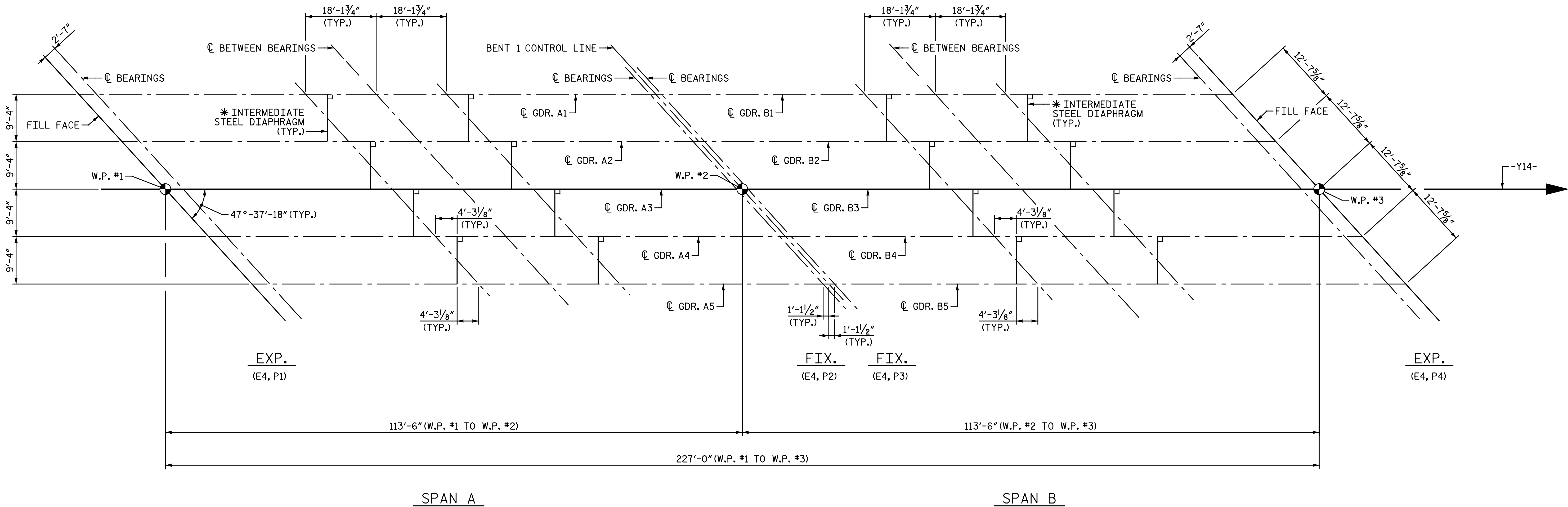
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO. SI-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

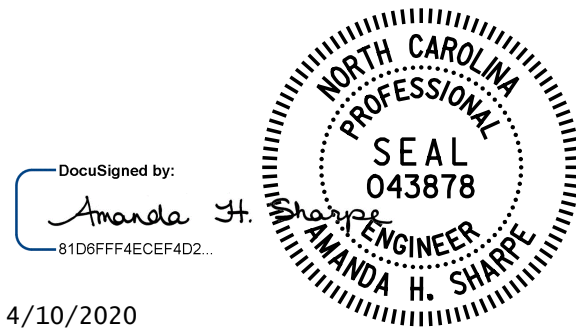
DRAWN BY : C. W. LAFFERTY DATE : 05-13-19
CHECKED BY : A. H. SHARPE DATE : 12-23-19



GIRDER LAYOUT

* SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED
BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



4/10/2020

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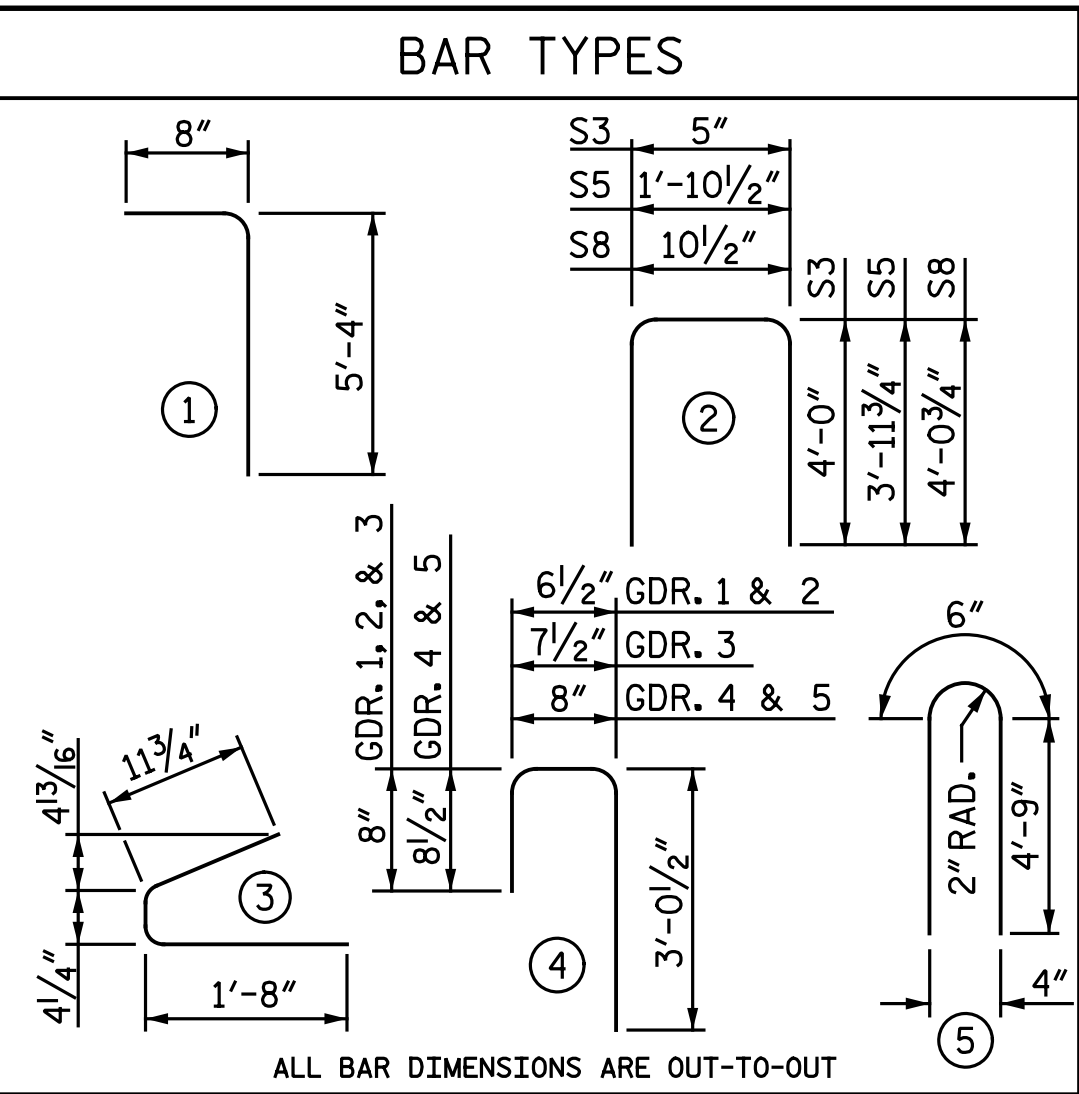
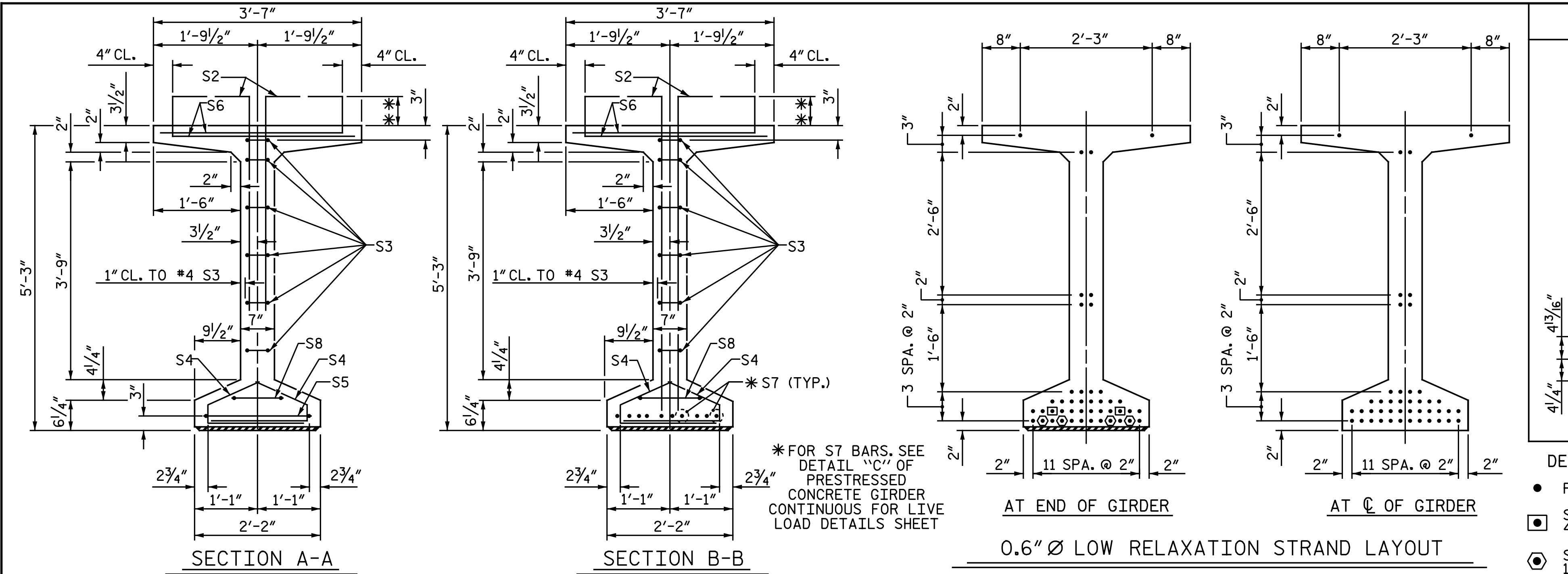
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER LAYOUT

REVISIONS						SHEET NO. SI-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : C. E. MAYHEW DATE : 7-8-19
CHECKED BY : A. H. SHARPE DATE : 10-16-19



- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

GIRDER 1 & 2	S6	224	#5	4	4' - 3"	993
GIRDER 3	S6	224	#5	4	4' - 4"	1,012
GIRDER 4 & 5	S6	224	#5	4	4' - 7"	1,071

* S7	10	#5	STR.	3' - 8"	38
S8	2	#5	2	9' - 0"	19
S9	27	#5	STR.	3' - 3"	92
S10	1	#3	STR.	1' - 10"	1
S11	8	#5	5	10' - 0"	83
S11	16	#5	5	10' - 0"	167
S12	16	#4	STR.	8' - 0"	86
S13	16	#4	STR.	16' - 7"	177

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

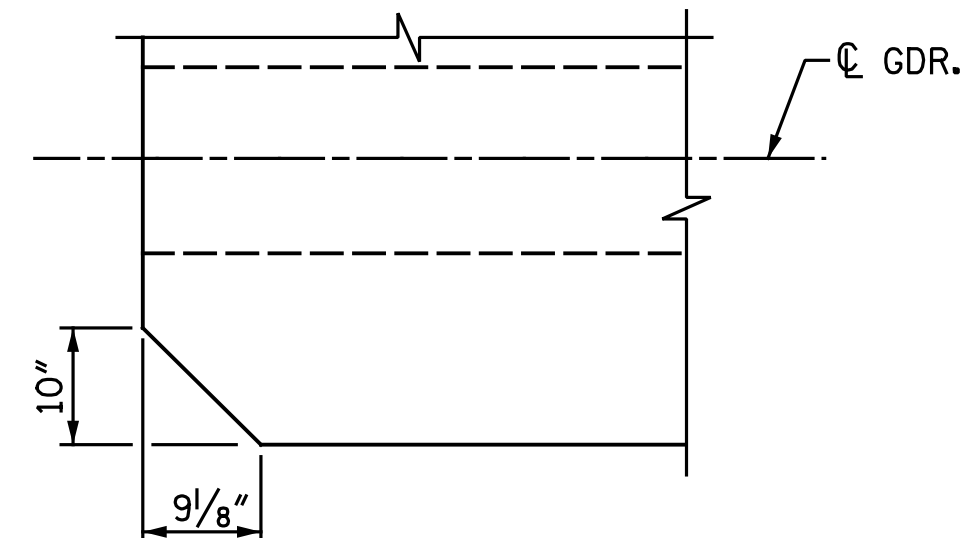
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER 1	2,586	21.8	44
GIRDER 2	2,761	21.8	44
GIRDER 3	2,780	21.8	44
GIRDER 4	2,839	21.8	44
GIRDER 5	2,664	21.8	44

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	110.29'	551.46'

NOTE:
FOR "PARTIAL ELEVATION" SEE PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET.

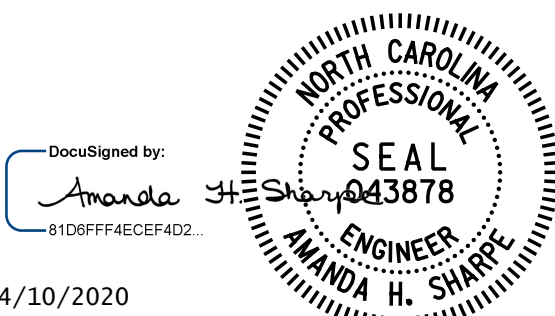


TOP FLANGE CLIP DETAIL
▲ HORIZONTAL LEG OF FIRST 3 S6 BARS CAN BE TRIMMED TO FIT.

FORMED HOLE LOCATIONS				
GIRDER	"D"	"E"	"F"	"G"
1	N/A	4'-3/8"	N/A	4'-3/8"
2, 3 & 4	4'-3/8"	4'-3/8"	4'-3/8"	4'-3/8"
5	4'-3/8"	N/A	4'-3/8"	N/A

** BAR PROJECTION	
GIRDER	PROJECTION
1, 2	5"
3	6"
4, 5	6 1/2"

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



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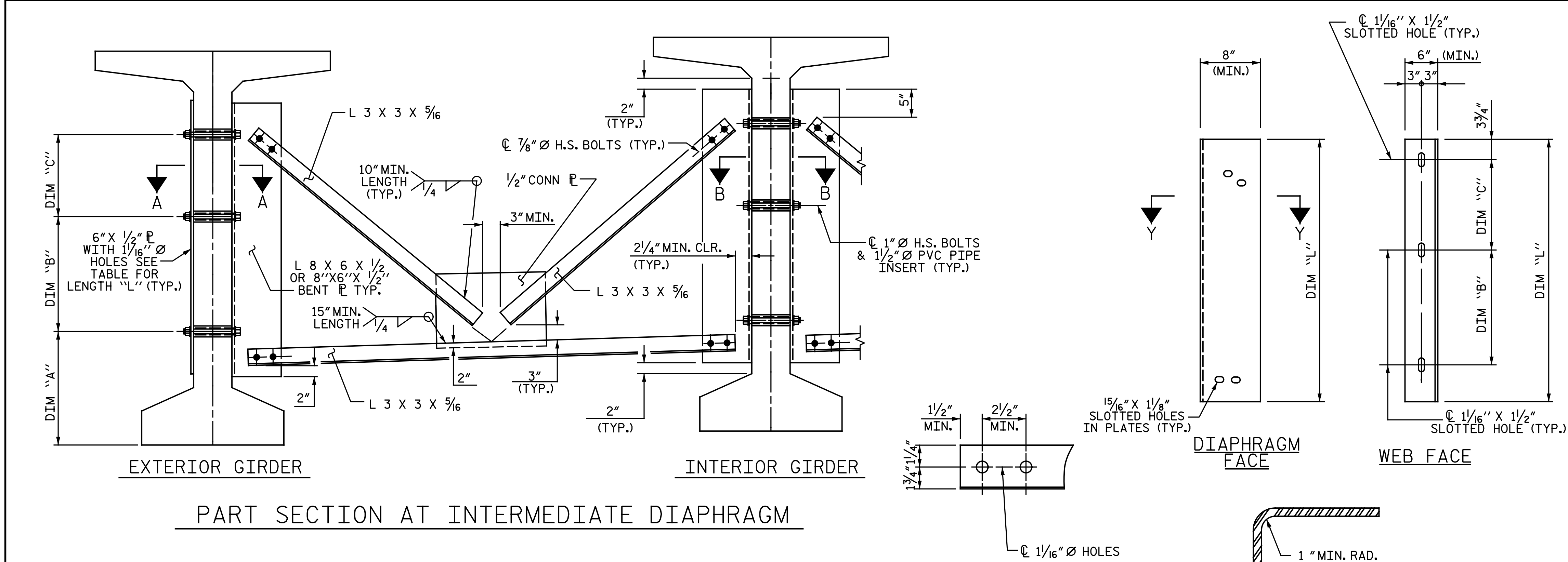
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN A

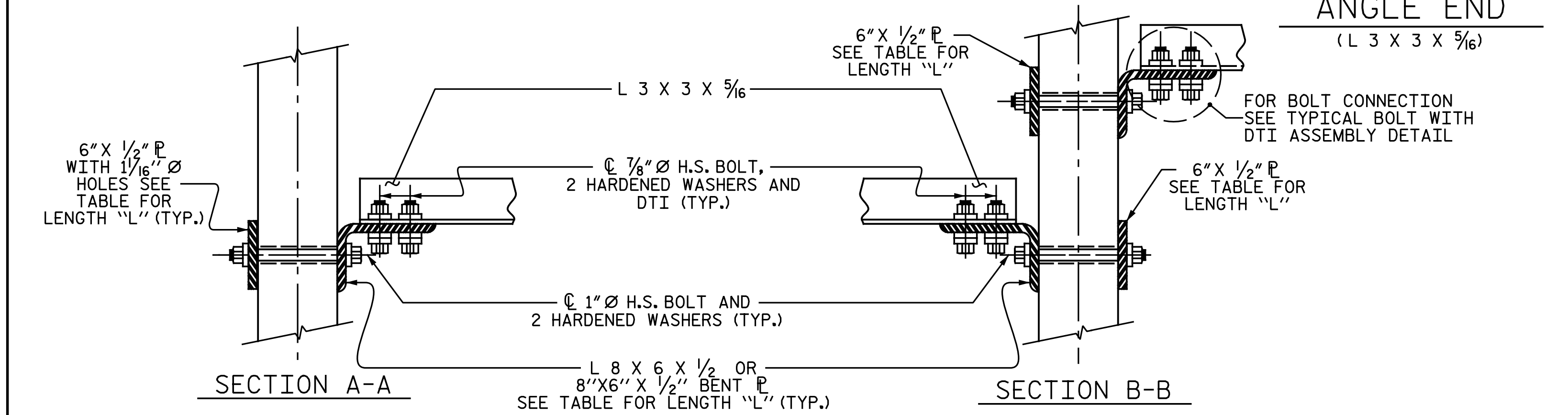
REVISIONS						SHEET NO. SI-II
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

ASSEMBLED BY : N. B. SPEAKS	DATE : 5-22-19
CHECKED BY : A. H. SHARPE	DATE : 8-28-19
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

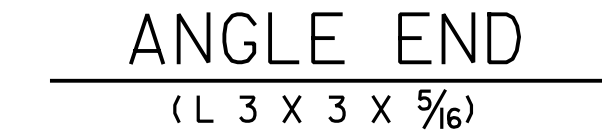
ELEVATION OF GIRDER



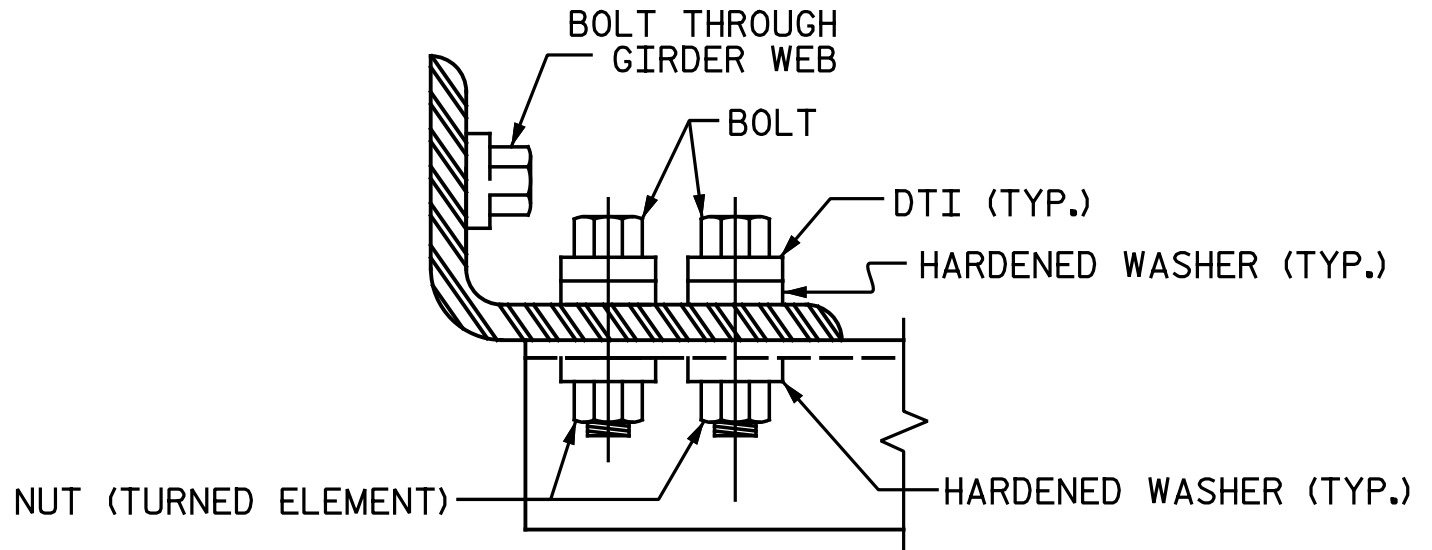
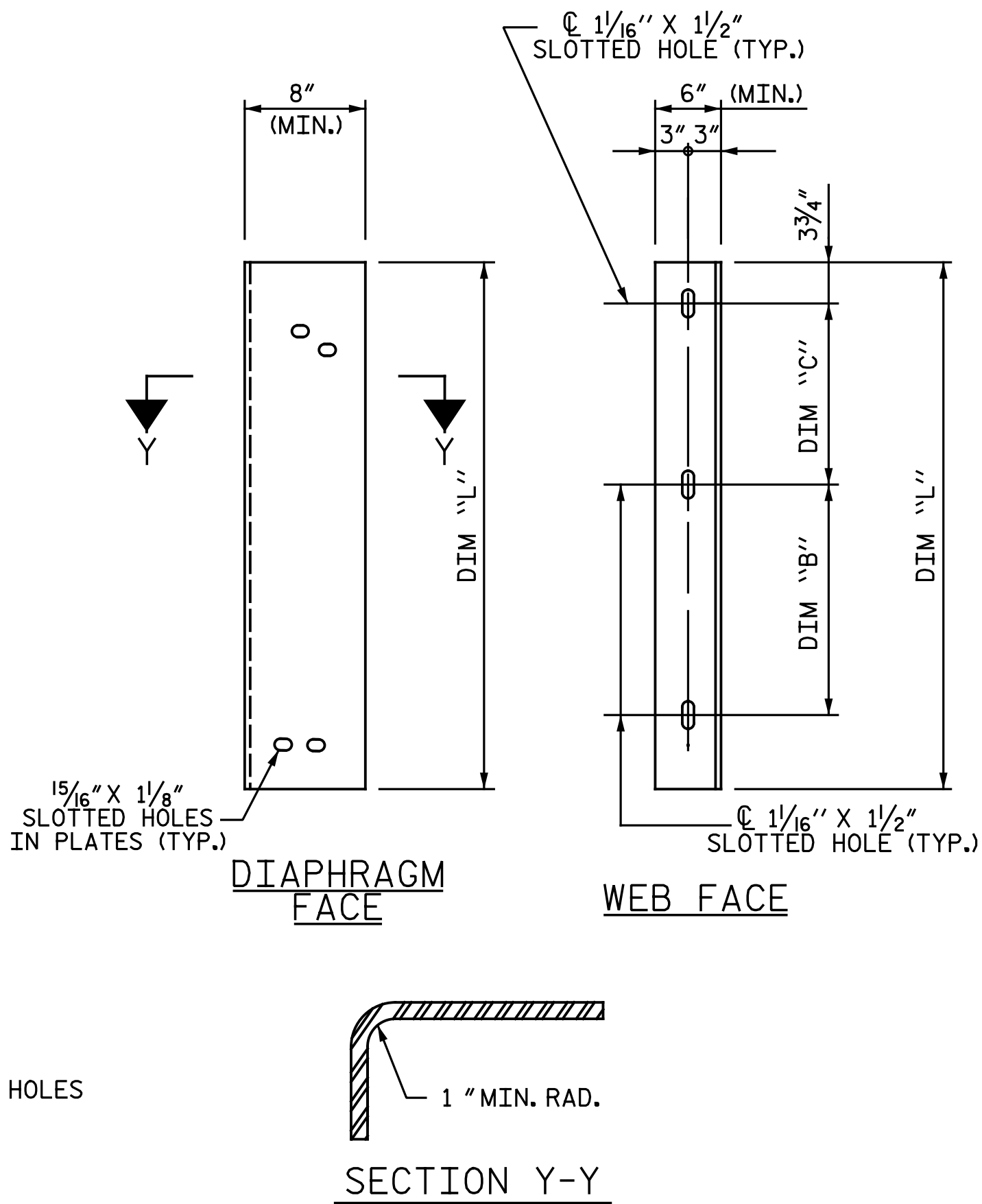
PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTION DETAILS



CONNECTOR PLATE DETAIL



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 ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

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

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

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

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

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

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

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

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

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-5 3/4"	1'-4"	1'-4"	3'-5"

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

ASSEMBLED BY : N.B. SPEAKS	DATE : 8-9-19
CHECKED BY : A. H. SHARPE	DATE : 8-30-19
DRAWN BY : RWW 11/09	REV. 10/1/11 MAA/GM
CHECKED BY : GM 11/09	REV. 12/17 MAA/THC

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2			4			

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D15 BRIDGE WELDING CODE.

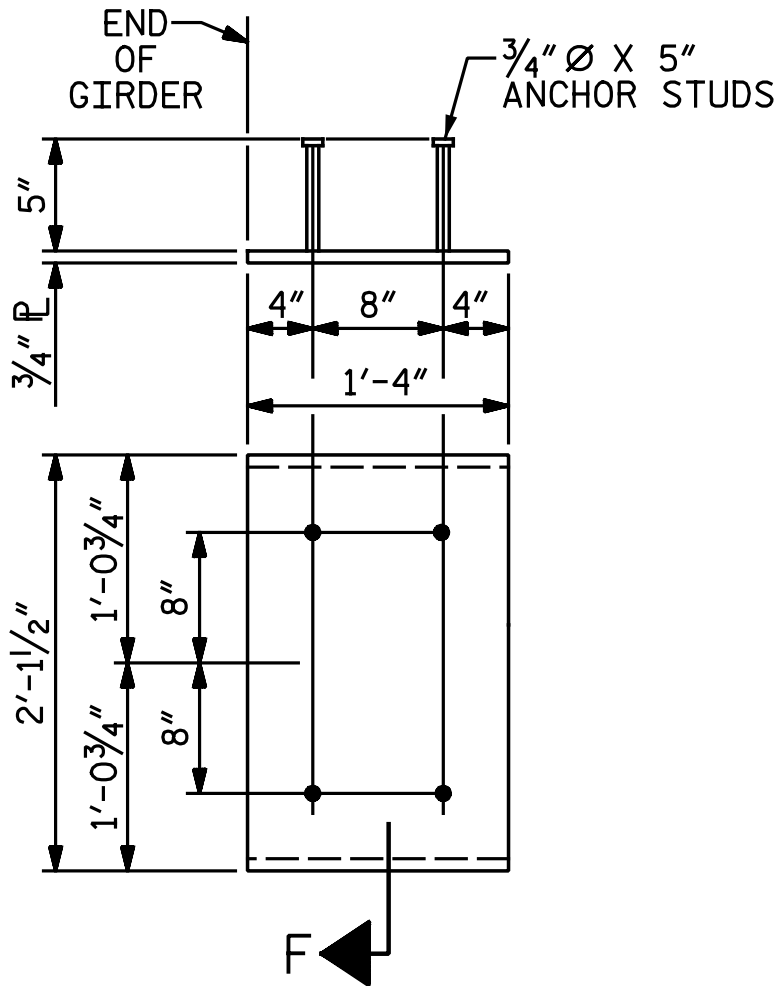
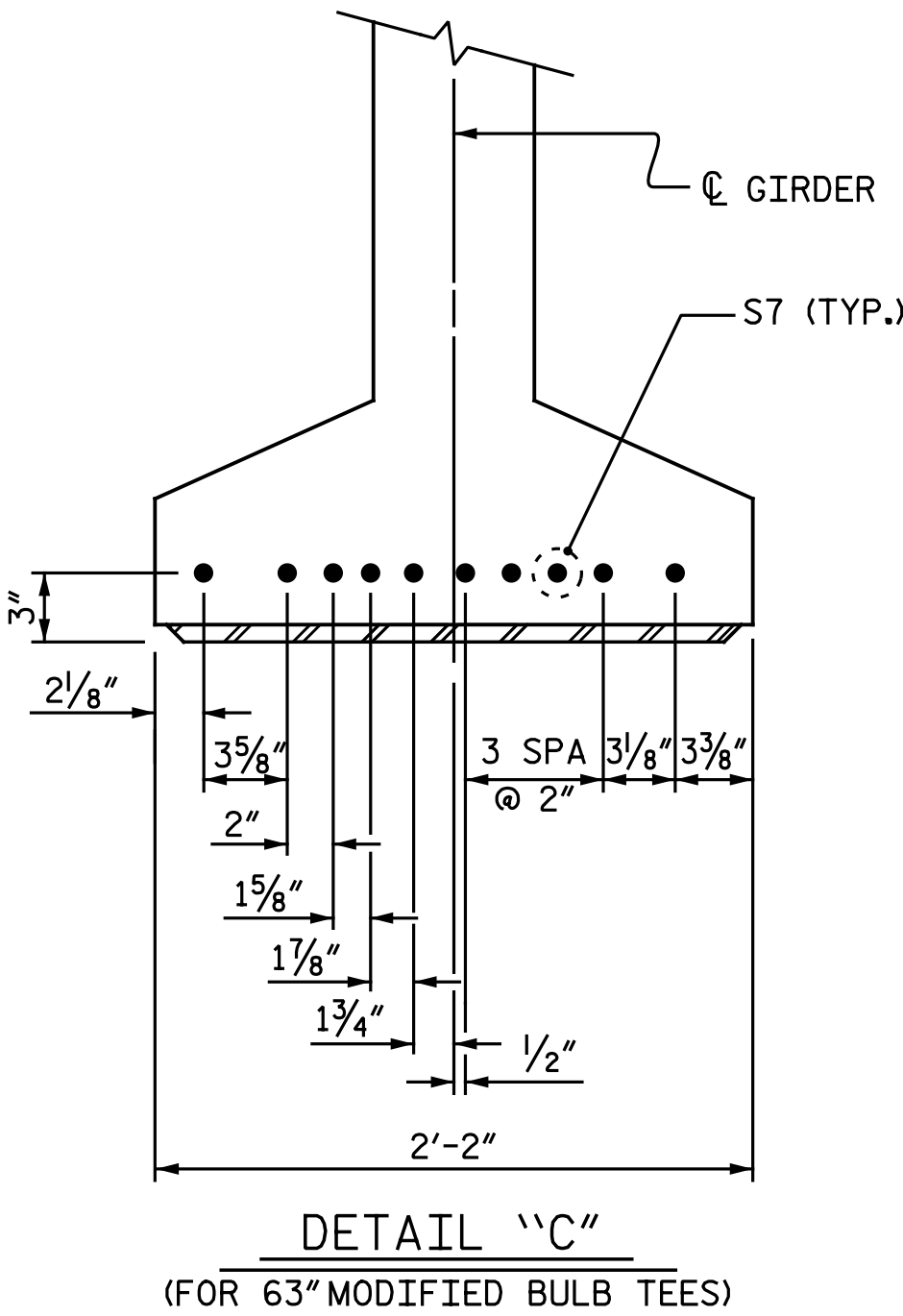
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,000 PSI.

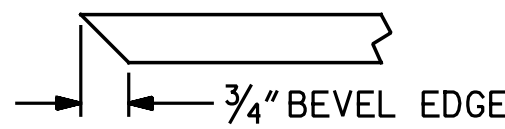
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.



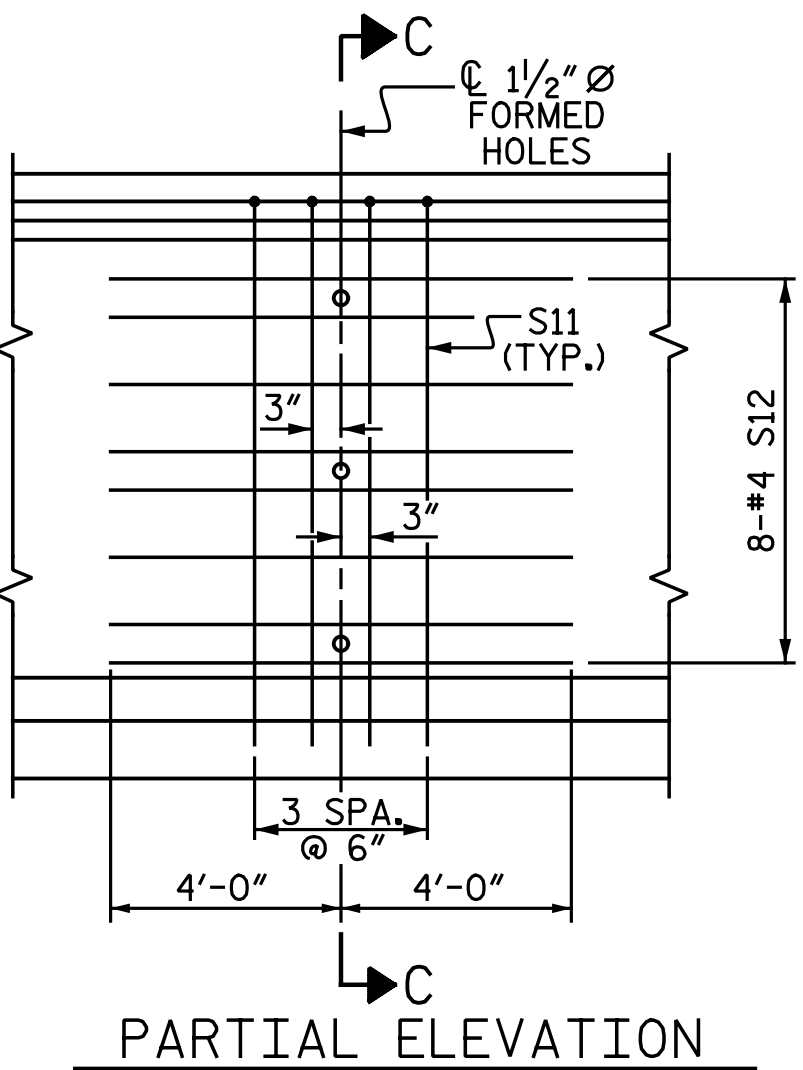
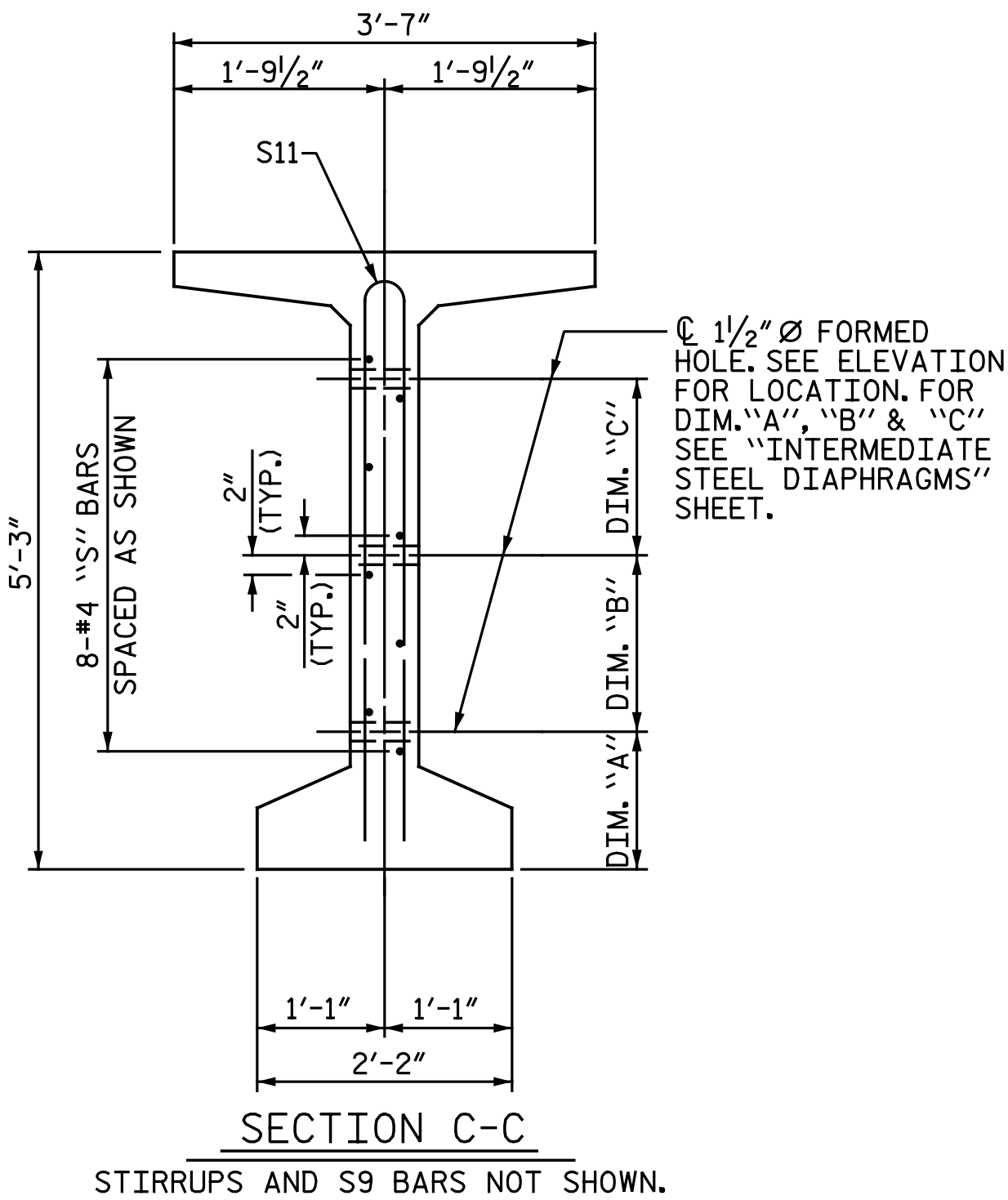
EMBEDDED PLATE "B-1" DETAILS
FOR 63" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



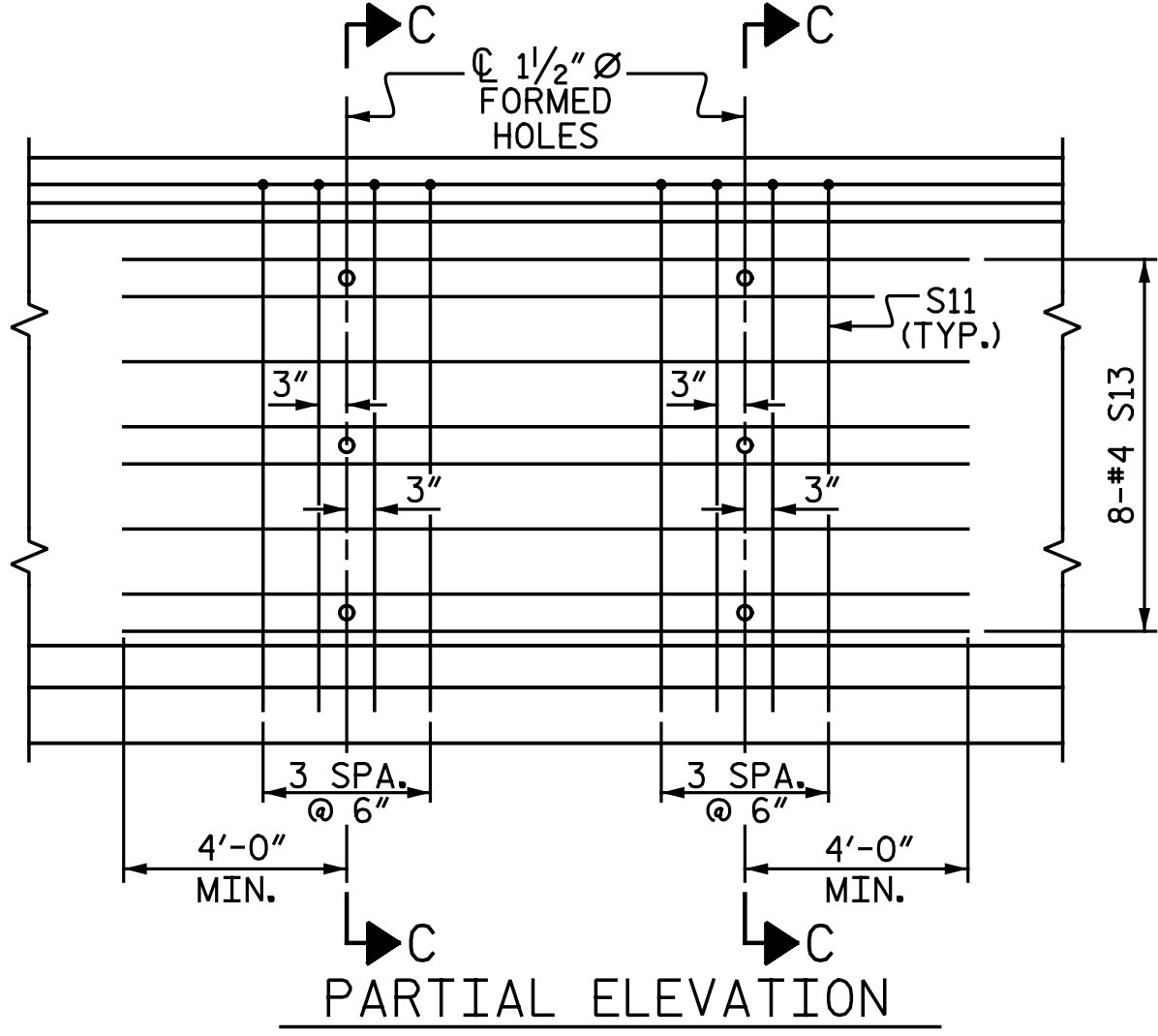
SECTION "F"
(SEE NOTES)

DEAD LOAD DEFLECTION TABLE FOR SPAN A & B																					
0.6" Ø LOW RELAXATION	GIRDER 1 - 5																				
20TH 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	0.046	0.092	0.134	0.174	0.208	0.237	0.261	0.278	0.289	0.292	0.289	0.278	0.261	0.237	0.208	0.174	0.134	0.092	0.046	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.027	0.051	0.078	0.099	0.121	0.137	0.152	0.162	0.168	0.170	0.168	0.162	0.152	0.137	0.121	0.099	0.078	0.051	0.027	0.000
FINAL CAMBER ↑	0"0	1/4"	1/2"	11/16"	7/8"	1 1/16"	1 3/16"	1 5/16"	1 3/8"	1 7/16"	1 7/16"	1 7/16"	1 3/8"	1 5/16"	1 3/16"	1 1/16"	7/8"	11/16"	1/2"	1/4"	0"

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

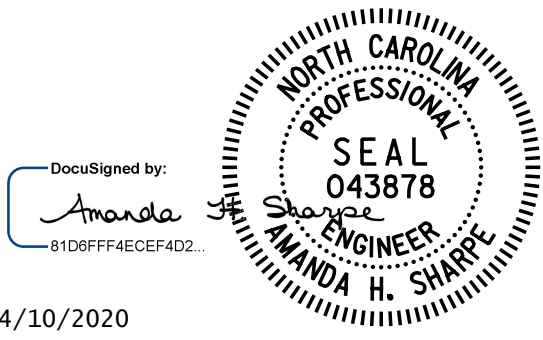


SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER 1 & 5.



SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER 2, 3 & 4.

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



4/10/2020

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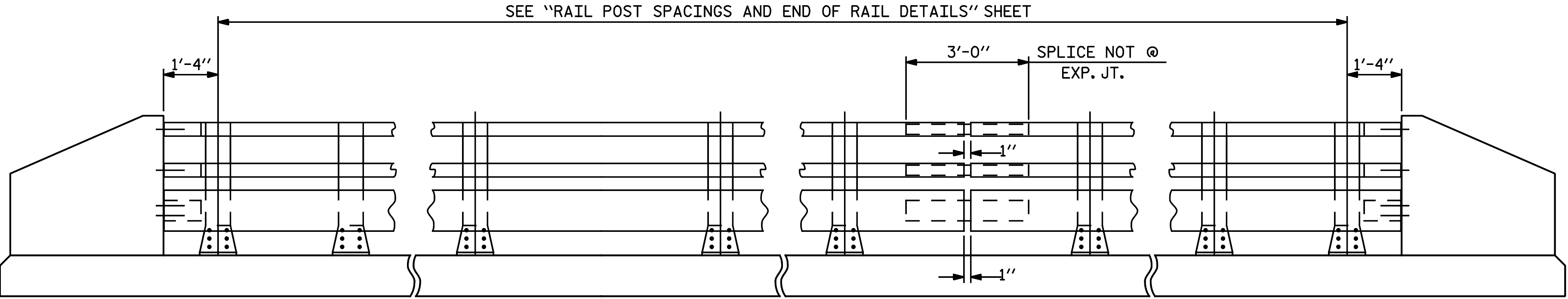
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR
LIVE LOAD DETAILS

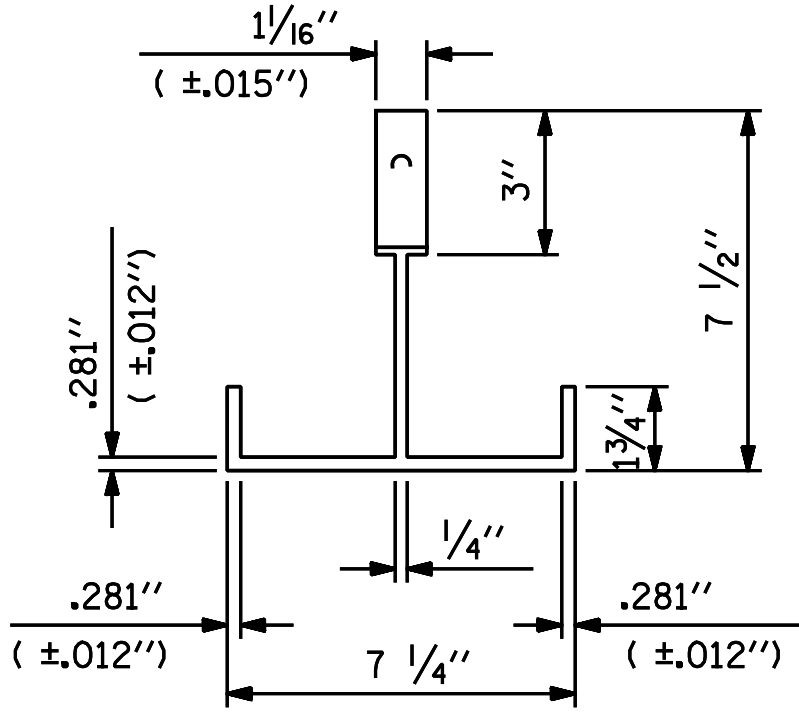
REVISIONS						SHEET NO. SI-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : N. B. SPEAKS DATE : 5-24-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

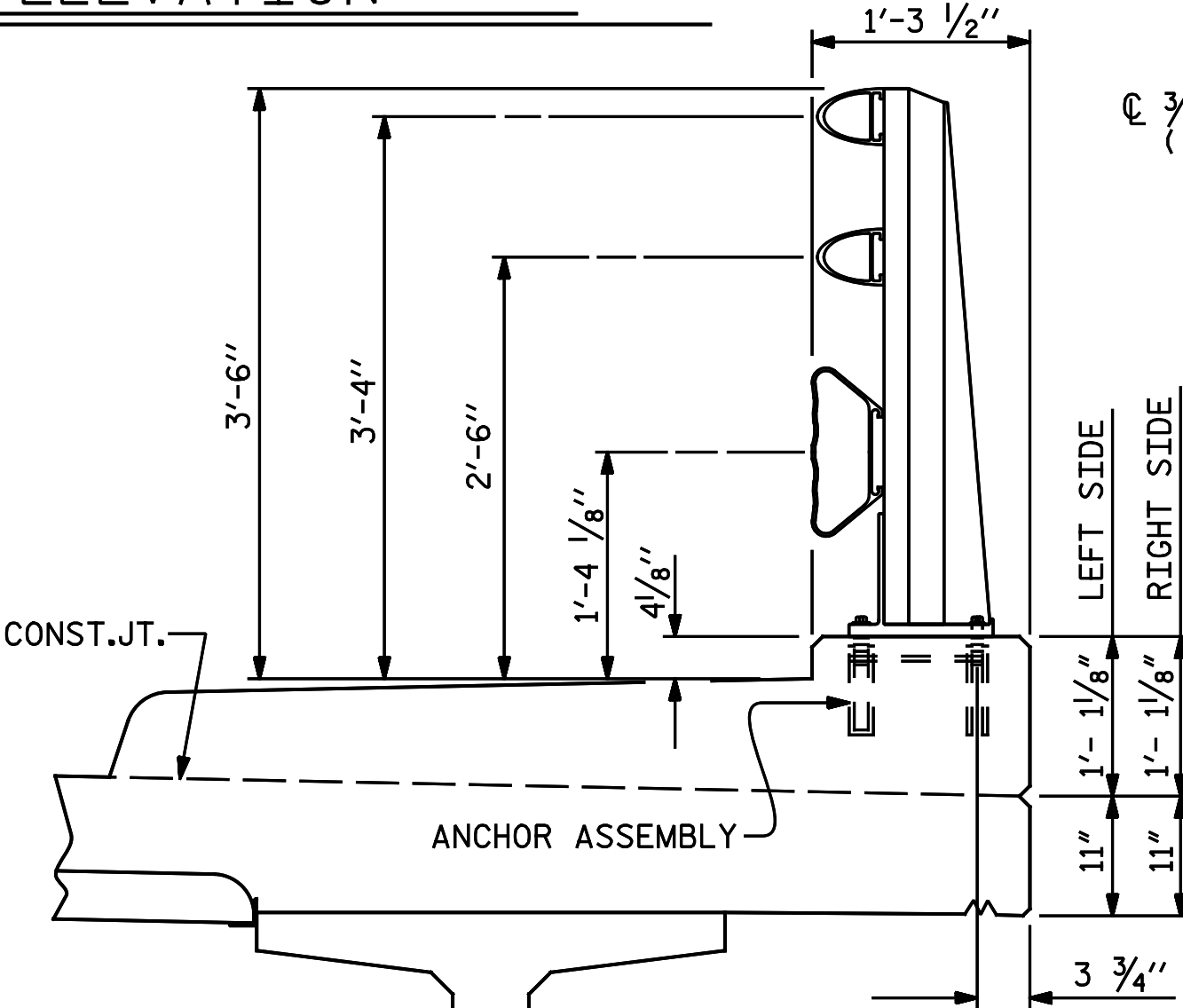


NOTE:
FOR ATTACHMENT OF METAL RAIL TO END
POST, SEE STANDARD NO. BMR7.

ELEVATION

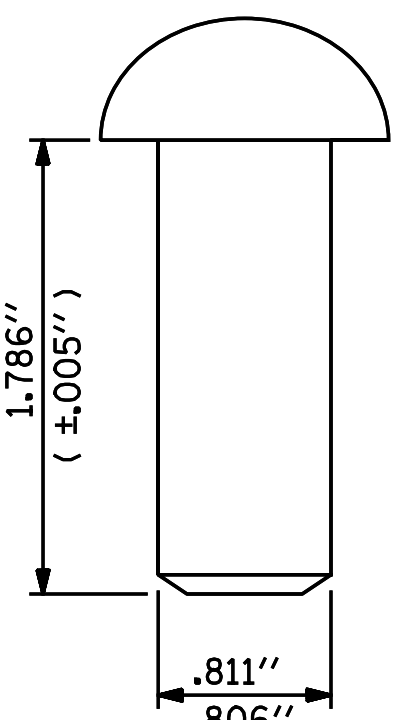


PLAN

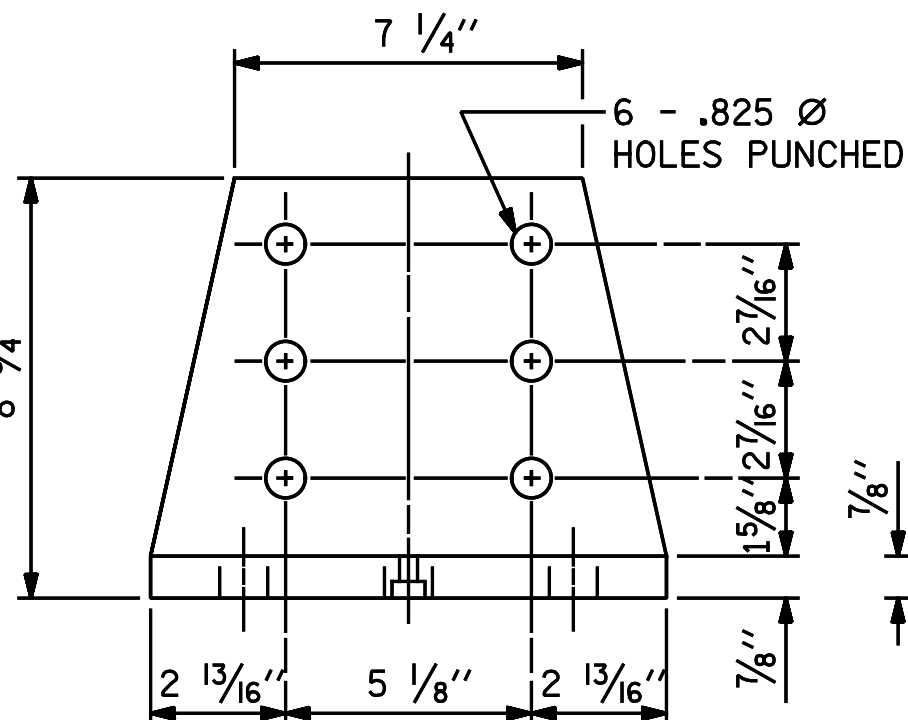


SECTION THRU RAIL

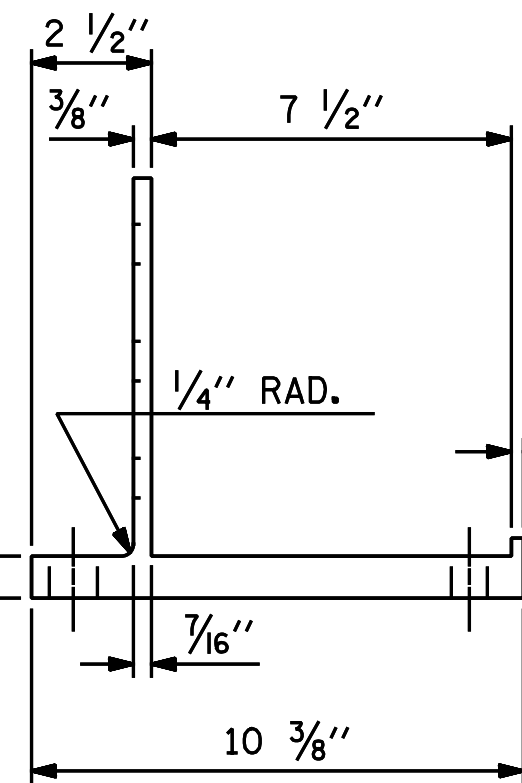
FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL"
STD.No.BMR6



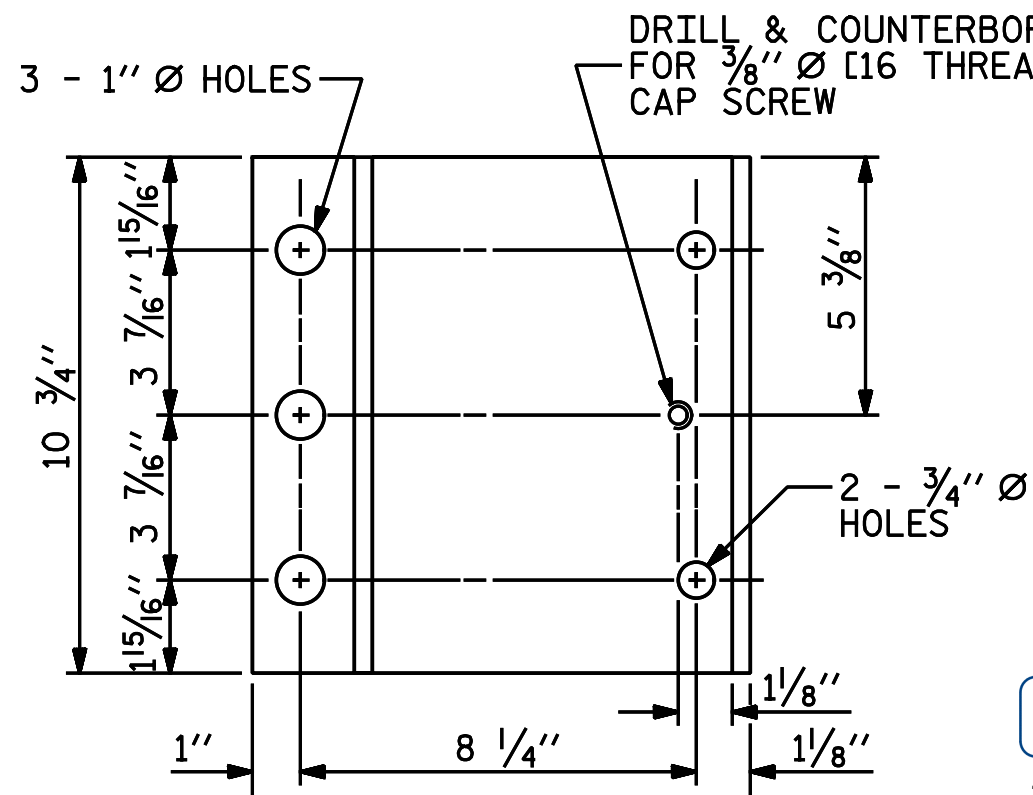
RIVET DETAIL



FRONT ELEVATION



SIDE ELEVATION



PLAN

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 : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

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 A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPliced AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE 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 STANDARD NO. BMR7.

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 INSURE 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.

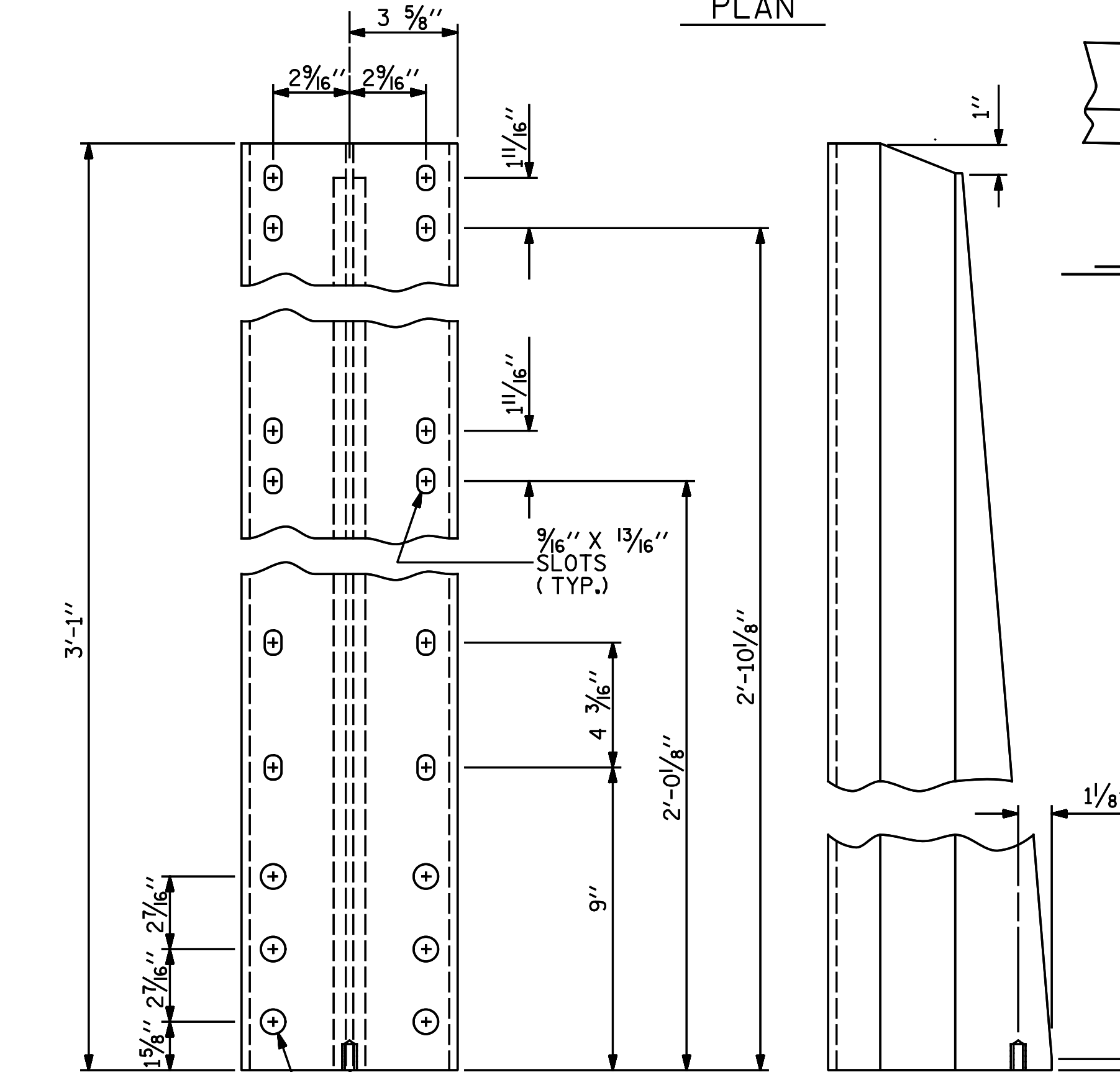
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

PAY LENGTH = 431.00 LIN.FT.

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

FRONT PLATE
SHIM DETAILS



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

ASSEMBLED BY : N. B. SPEAKS	DATE : 6-28-19
CHECKED BY : A. H. SHARPE	DATE : 4-26-21
DRAWN BY : JMB 1/88	REV. 5/1/06
CHECKED BY : GGH 1/88	REV. 10/1/11
	REV. 12/17
TLA/GM	MAA/GM
MAA/THC	

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UNLESS ALL SIGNATURES COMPLETED

Michael Baker
INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
NC License No. : F-1084



PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 1 OF 3

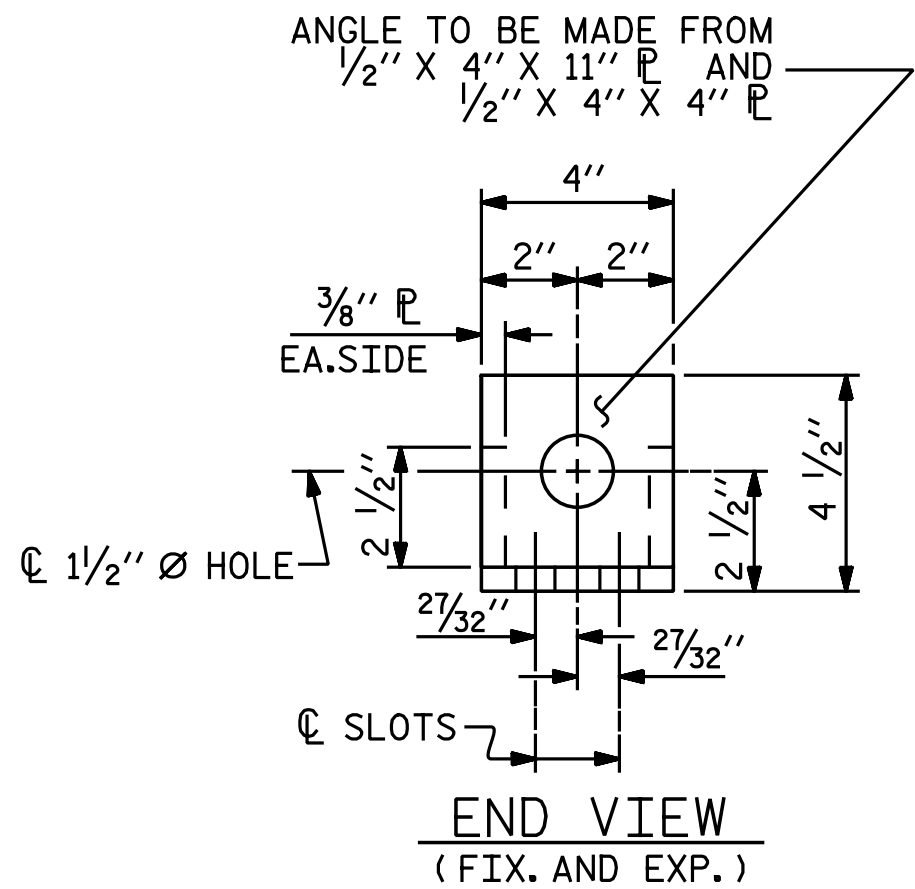
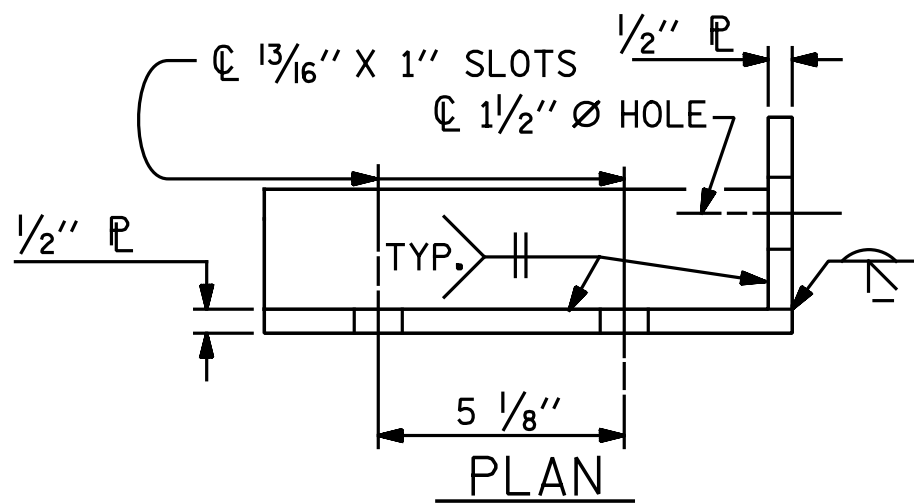
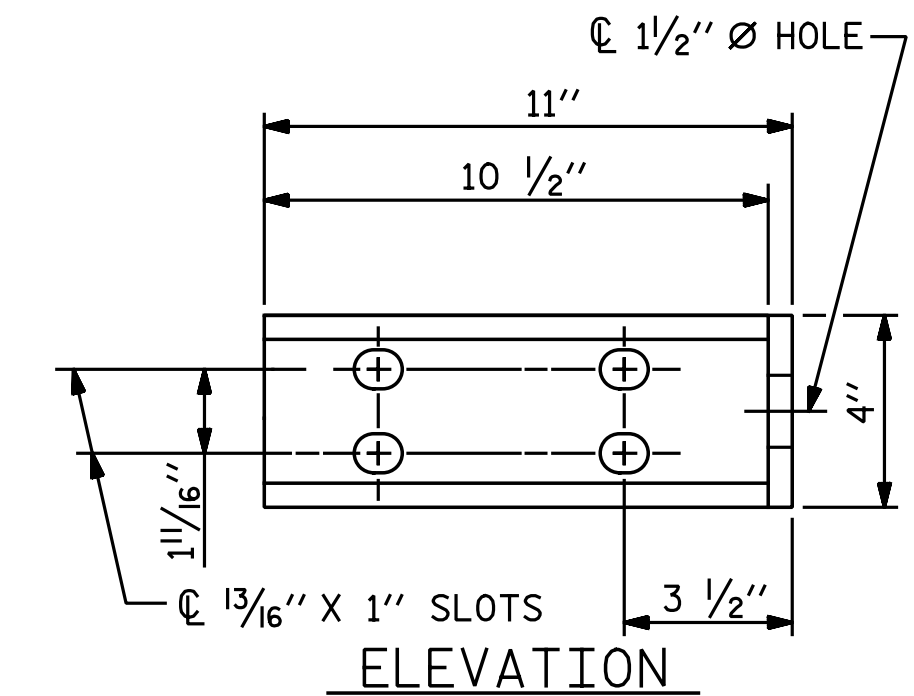
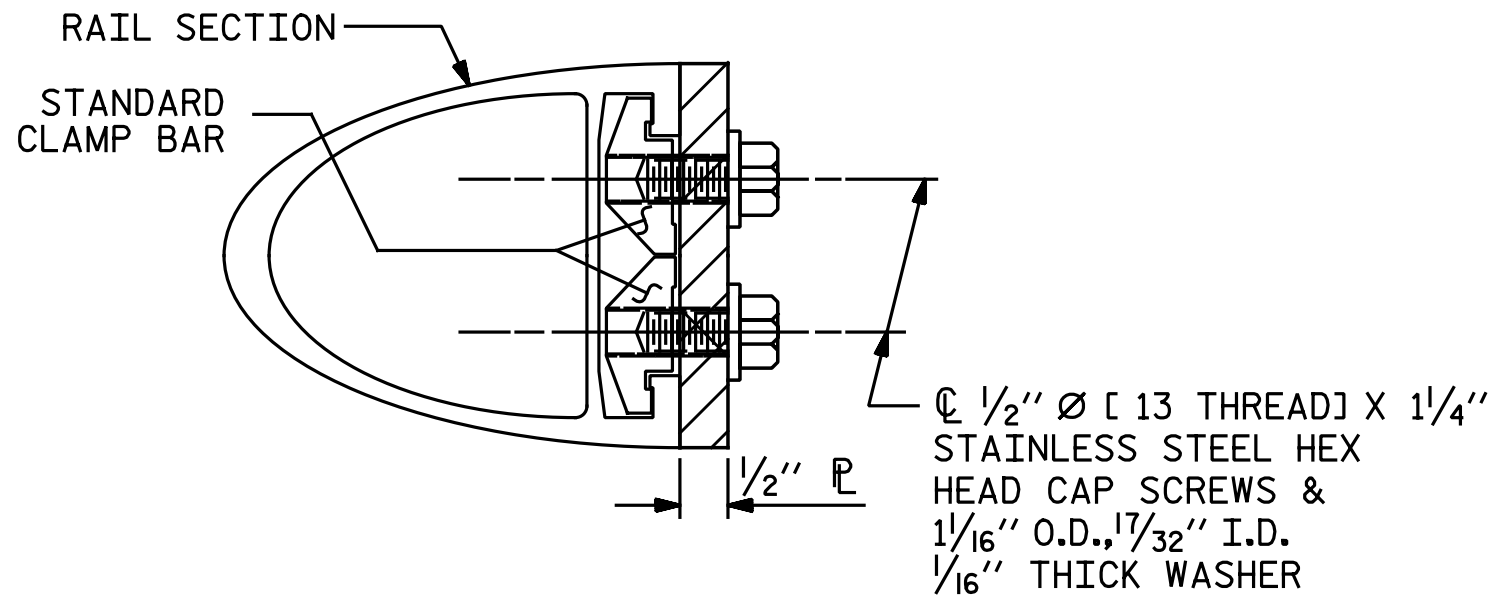
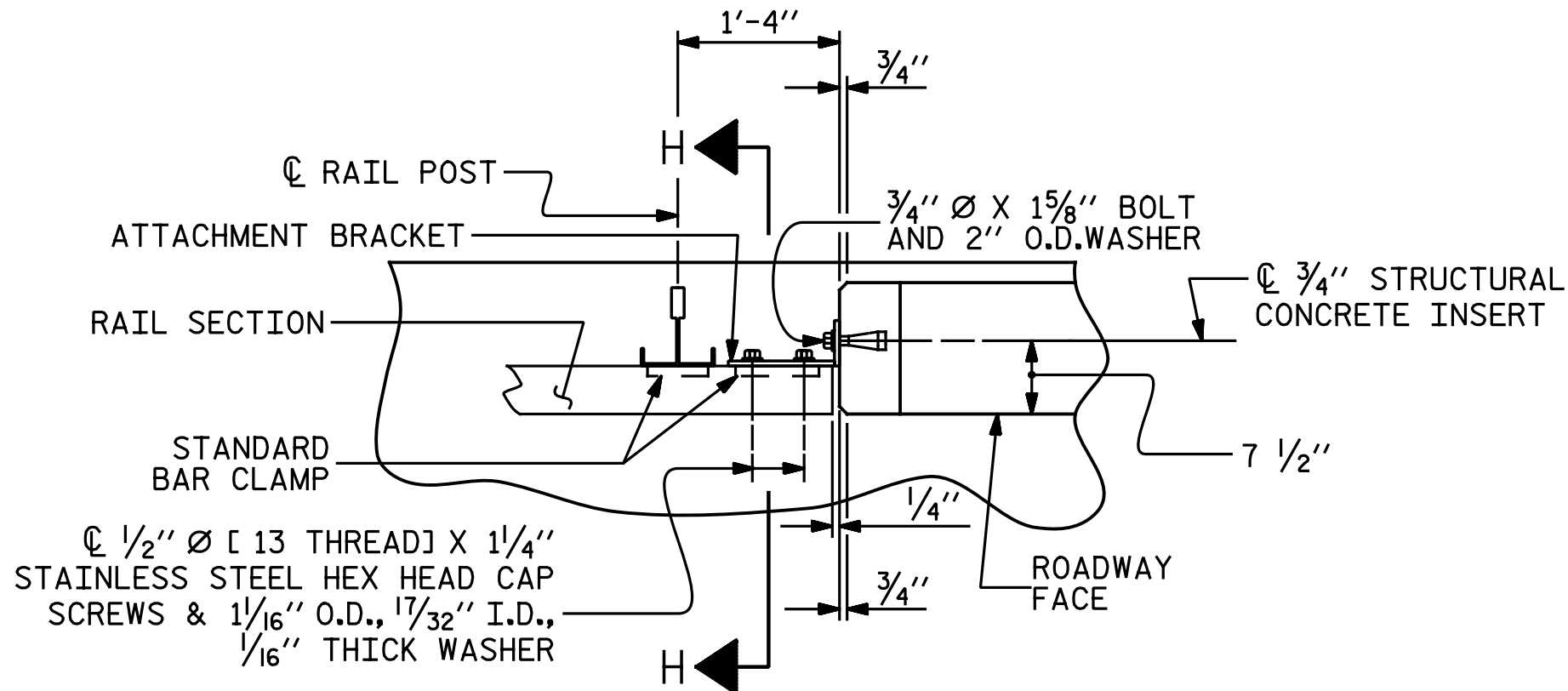
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

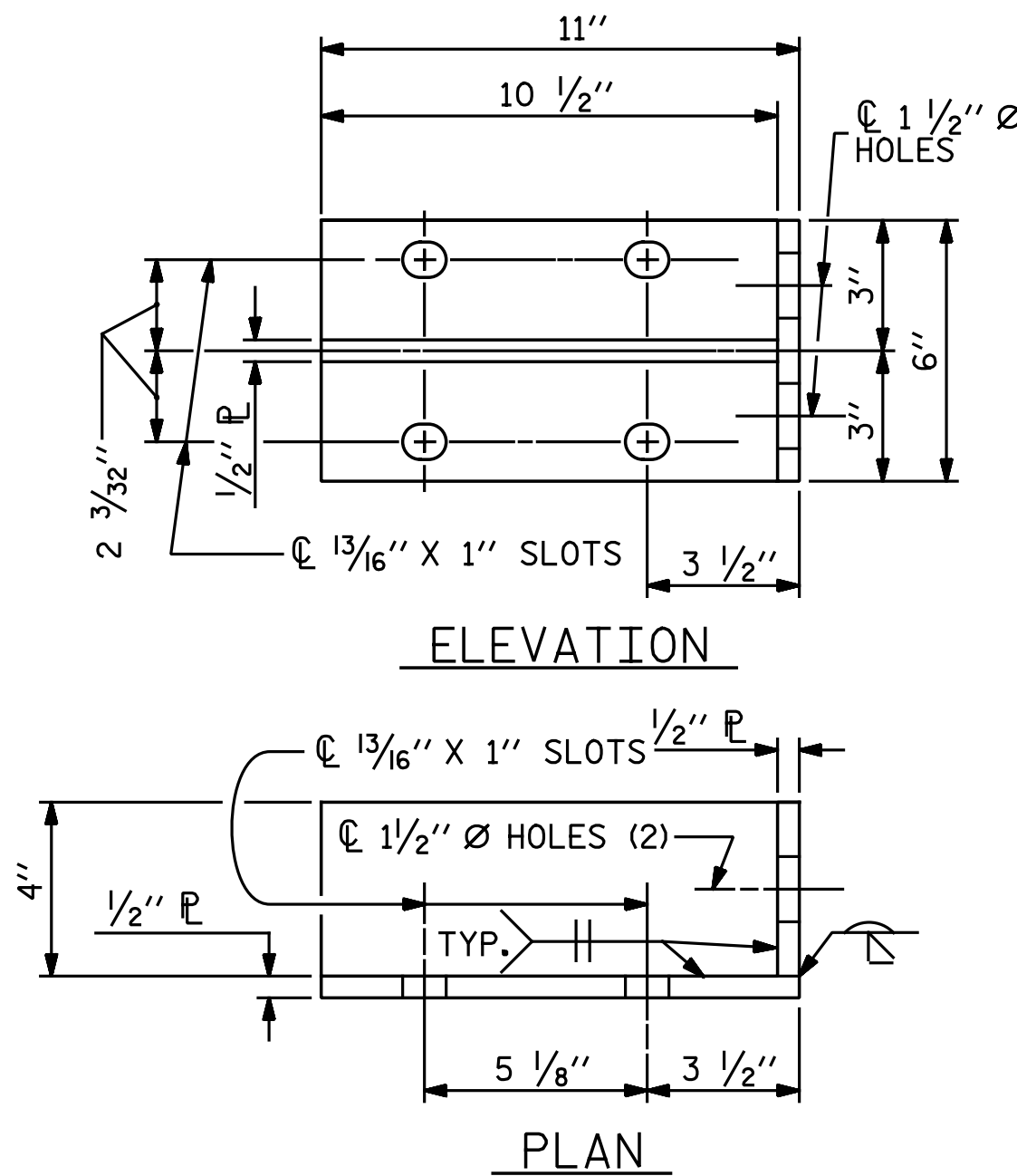
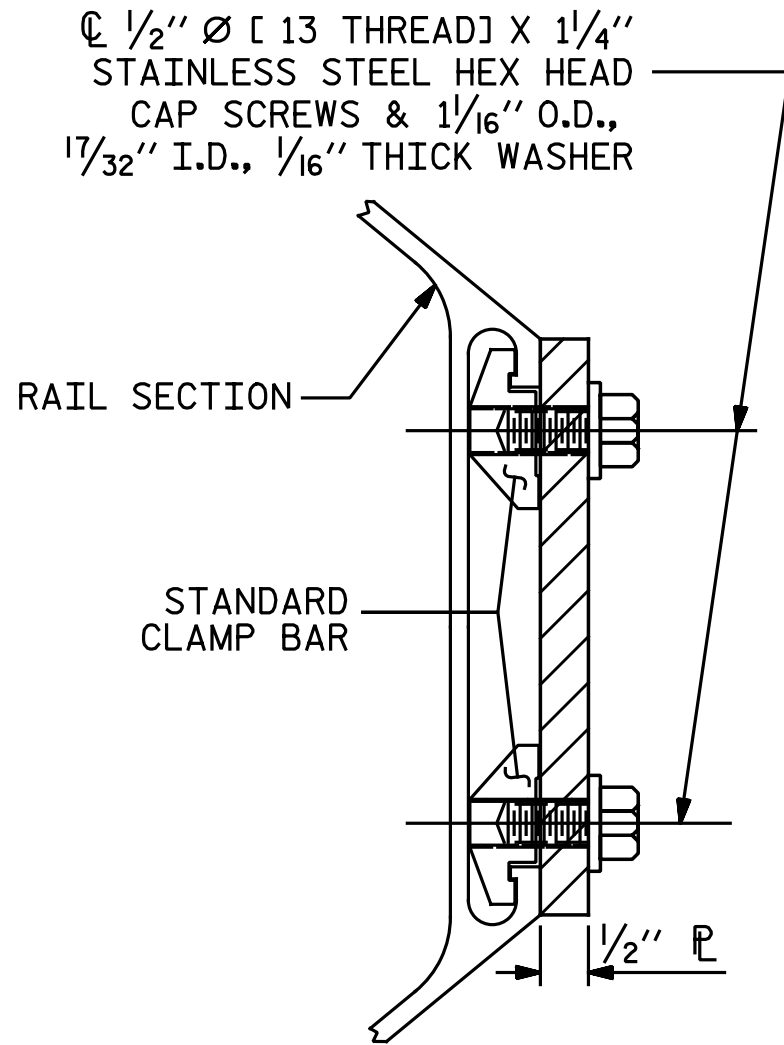
3 BAR METAL RAIL

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		SI-16
2			4		
TOTAL SHEETS					35

STD. NO. BMR5



DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAIL ONLY)



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 AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 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 (STD. No. BMR6).
- 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.

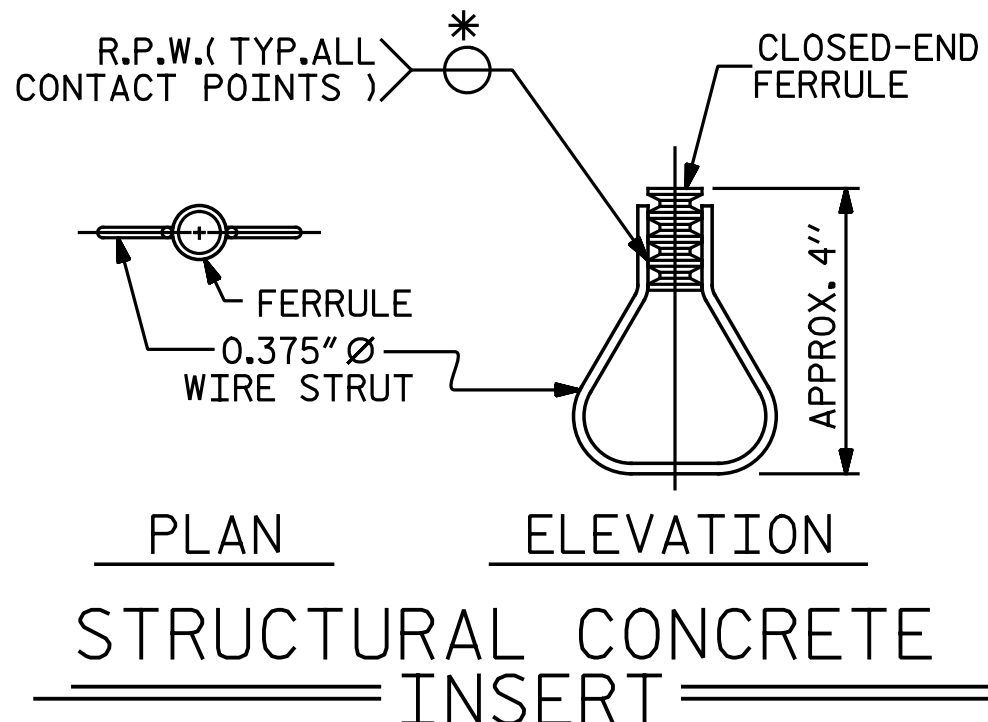
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT 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 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.



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

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3 BAR METAL RAIL

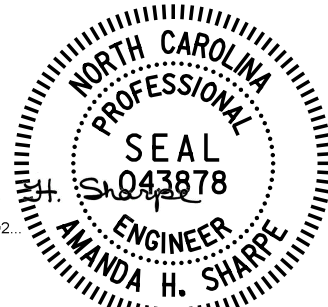
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INTERNATIONAL

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Cary, North Carolina 27518
NC License No.: F-1084

DocuSigned by:
Amanda H. Sharpe
81D6FF4E4CE4D2

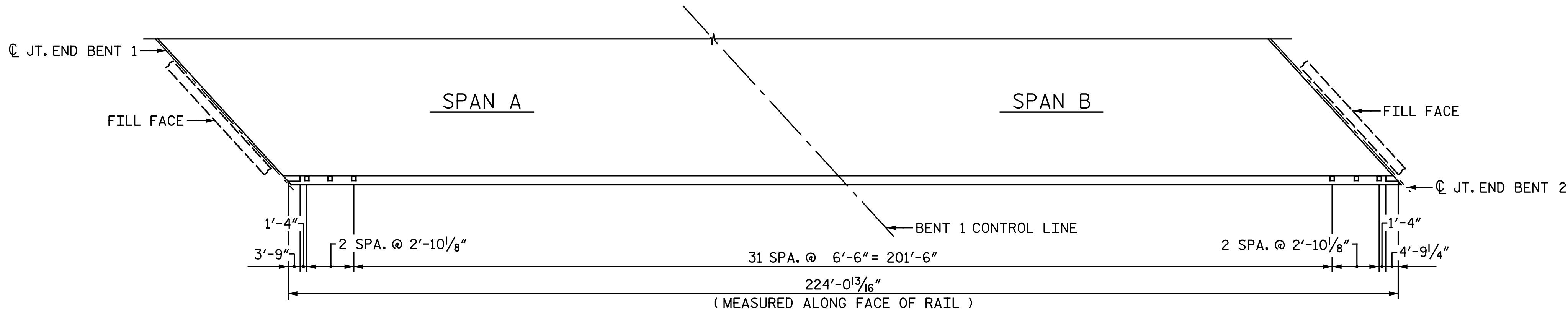
4/10/2020



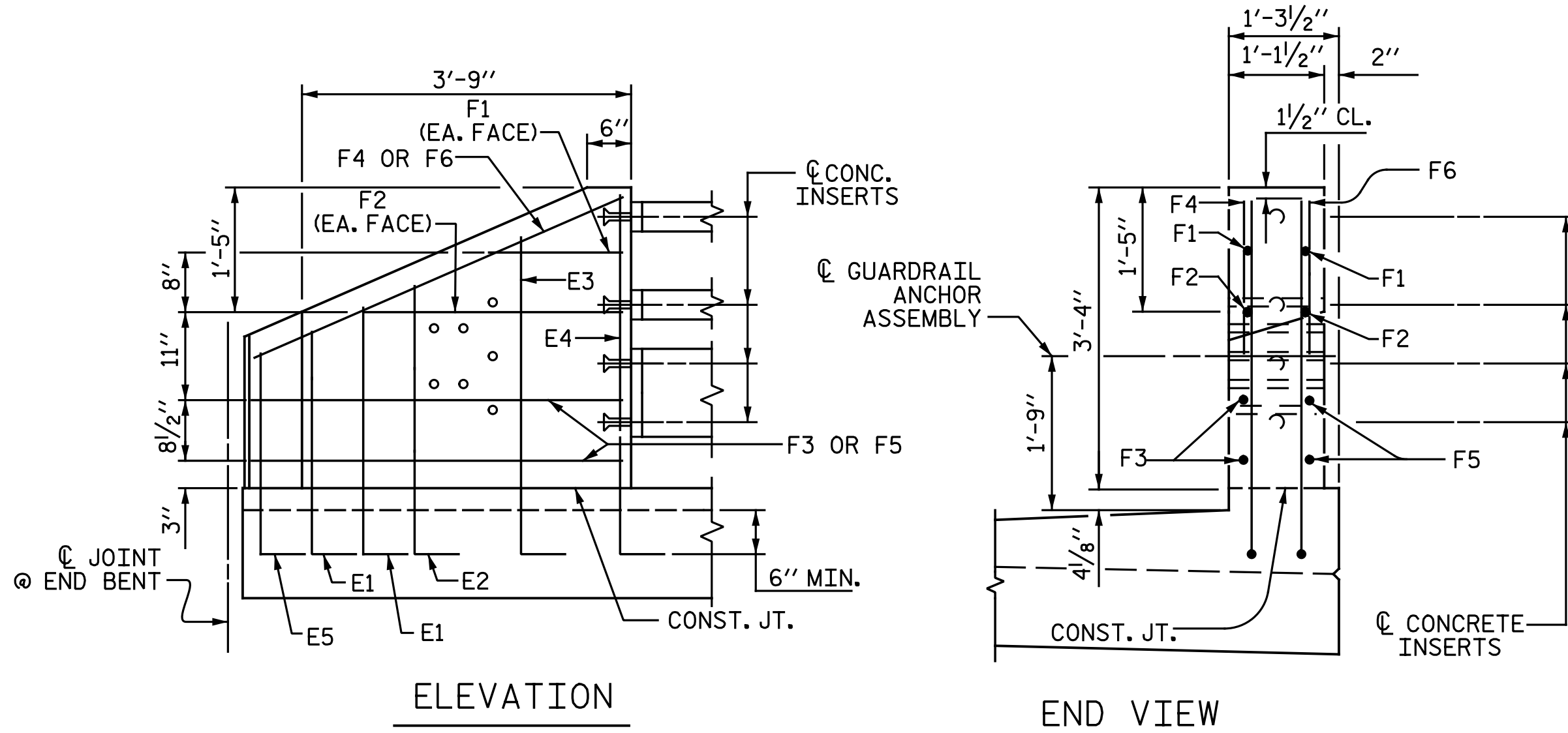
REVISIONS						SHEET NO. SI-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STD. NO. BMR7

ASSEMBLED BY : N. B. SPEAKS		DATE : 6-28-19	
CHECKED BY : A. H. SHARPE		DATE : 8-30-19	
DRAWN BY :	JMB 1/88	REV. 5/1/06	TLA/GM
CHECKED BY :	GGH 1/88	REV. 10/1/11	MAA/GM
		REV. 12/17	MAA/THC



PLAN OF RAIL POST SPACING
RIGHT SIDE SHOWN. LEFT SIDE SIMILAR BY ROTATION.



NOTES:

FOR DETAIL OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET 3 OF 3.

FOR DETAILS OF CONCRETE INSERT, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.

ALL REINFORCING STEEL IN SIDEWALK AND END POSTS SHALL BE EPOXY COATED.

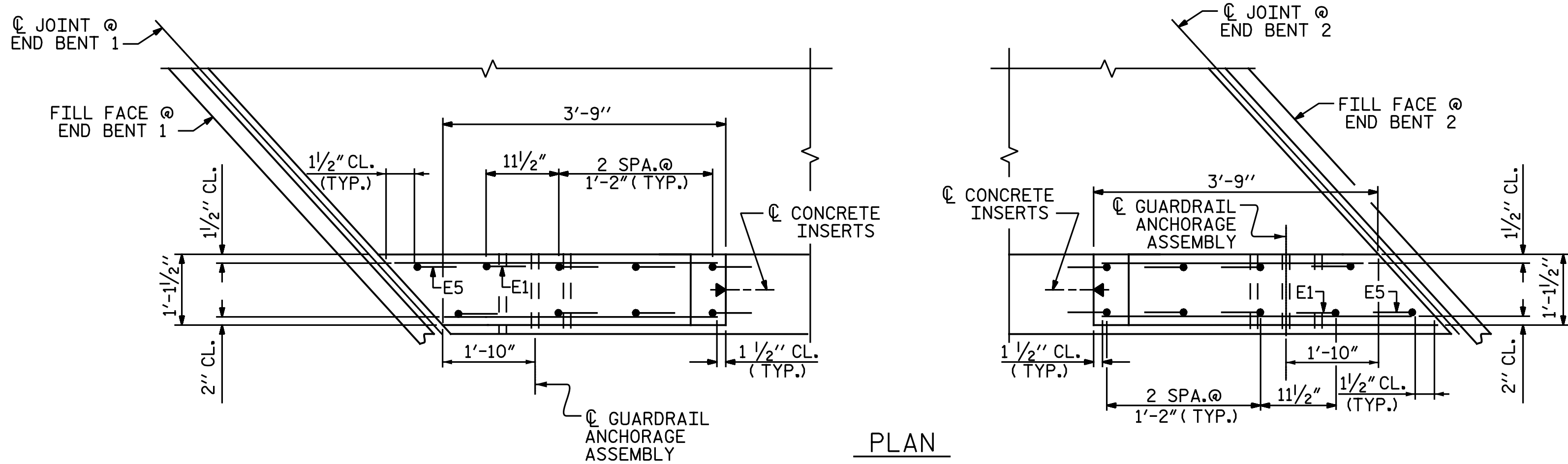
NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 3 BAR METAL RAIL.

BILL OF MATERIAL					
ONE END POST (4 REQ'D)					
BILL FOR ONE END POST					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	2	#7	1	3' - 5"	14
*E2	2	#7	1	4' - 0"	16
*E3	2	#7	1	4' - 7"	19
*E4	2	#7	1	5' - 0"	20
*E5	1	#7	1	3' - 3"	7
*F1	2	#6	STR.	1' - 10"	6
*F2	2	#6	STR.	3' - 4"	10
*F3	2	#6	STR.	4' - 3"	13
*F4	1	#6	STR.	4' - 8"	7
*F5	2	#6	STR.	3' - 8"	11
*F6	1	#6	STR.	3' - 9"	6

*EPOXY COATED REINFORCING STEEL	LBS.	129
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CLASS AA CONCRETE	C.Y.	0.5
-------------------	------	-----

BAR TYPE					
E1	E2	E3	E4	E5	
2'-5"	3'-0"	3'-7"	4'-0"	2'-3"	1
					1'-0"
ALL BAR DIMENSIONS ARE OUT TO OUT.					



END POST DETAILS

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



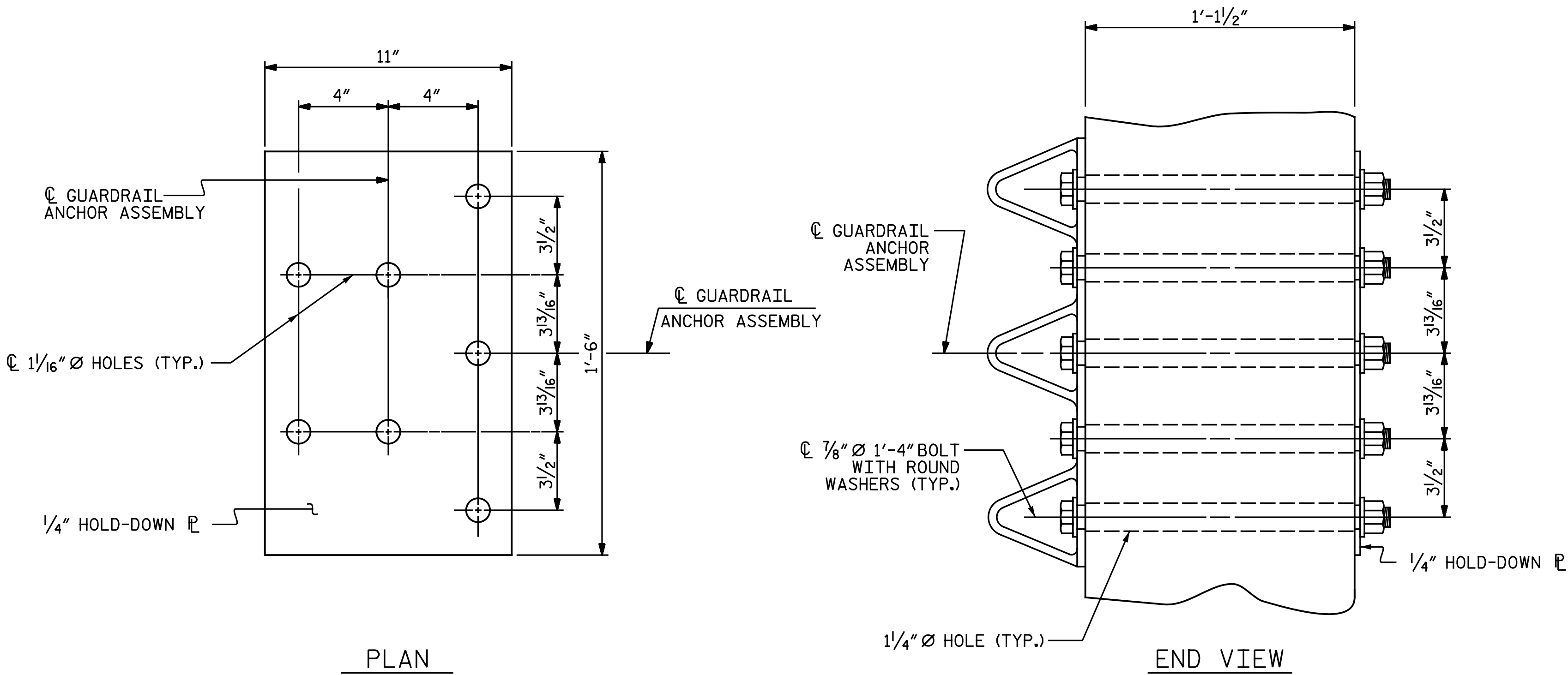
4/10/2020

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Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE RAIL POST SPACINGS AND END OF RAIL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SI-19
					TOTAL SHEETS
					35

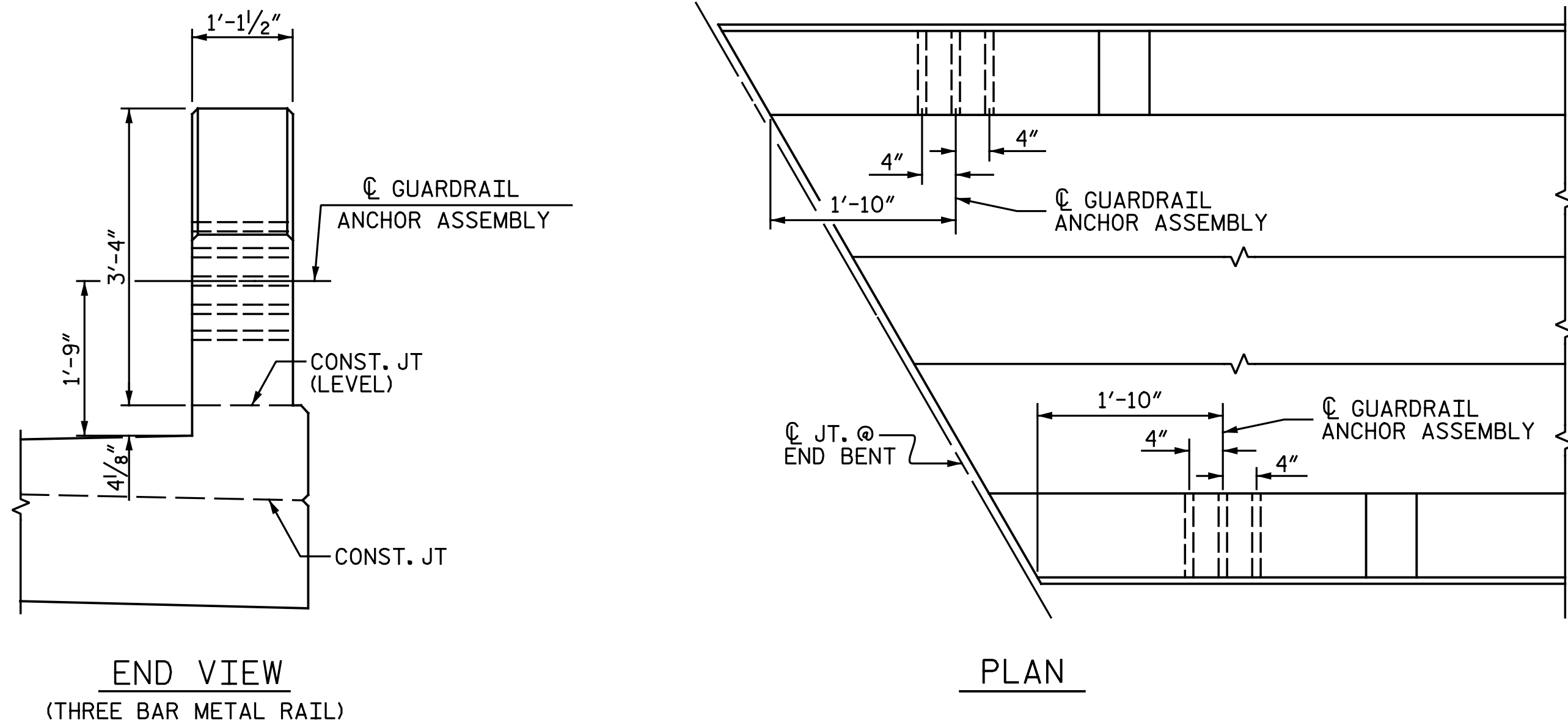
DRAWN BY : N. B. SPEAKS DATE : 6-28-19
CHECKED BY : A. H. SHARPE DATE : 10-17-19



GUARDRAIL ANCHOR ASSEMBLY DETAILS

SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

NOTES

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

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

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

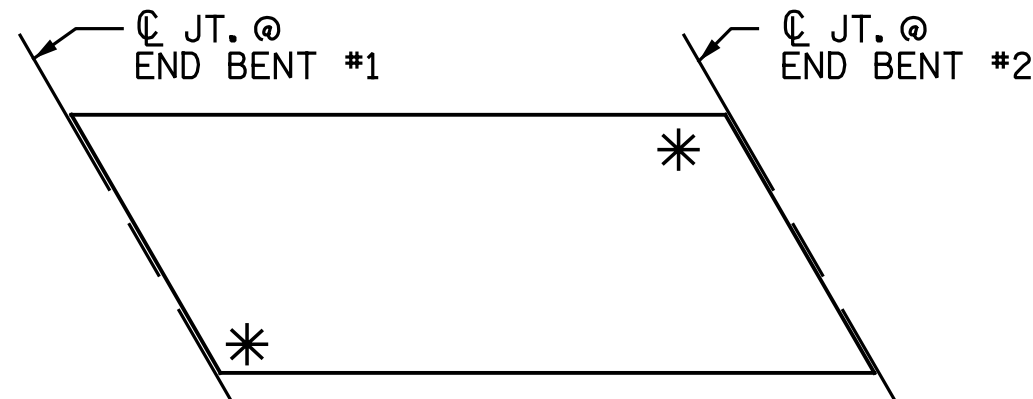
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

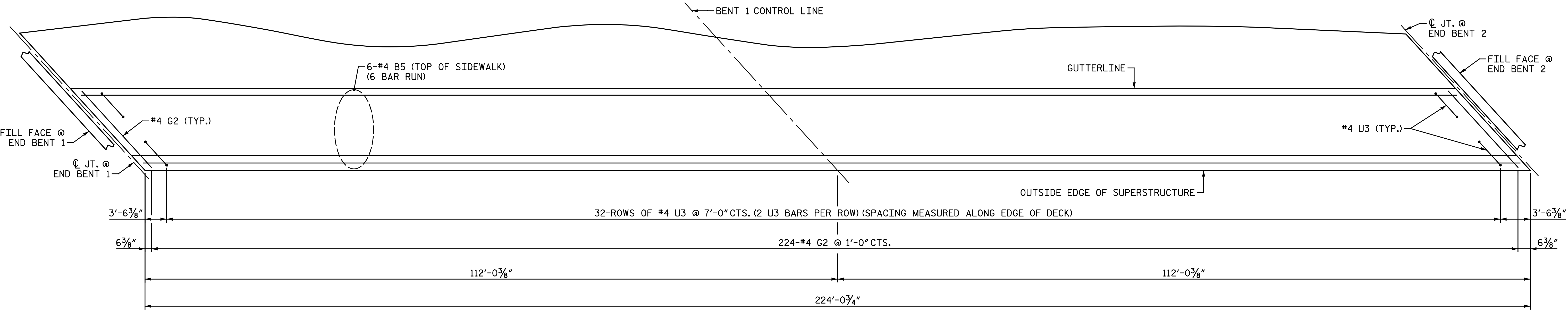
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



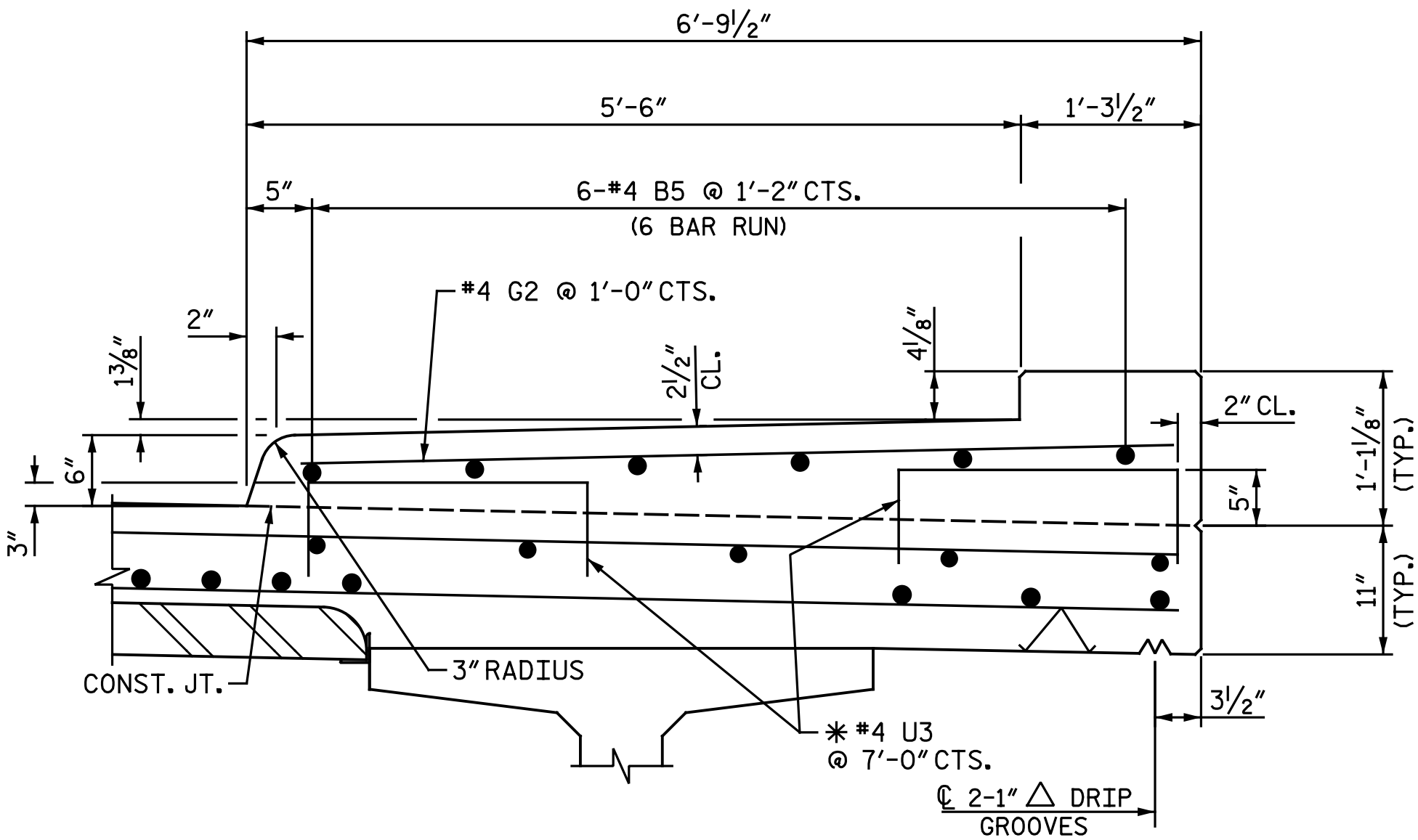
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS						SHEET NO.	
Michael Baker International						NO.	BY:	DATE:	NO.	BY:	DATE:	SI-20	
1						1			3			TOTAL SHEETS	
2						2			4			35	



PLAN OF SIDEWALK
RIGHT SIDE SHOWN, LEFT SIDE SIMILAR BY ROTATION.

NOTES:

- FOR END POST DETAILS AND REINFORCING STEEL, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.
- SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- ALL REINFORCING STEEL IN SIDEWALKS SHALL BE EPOXY COATED.
- SIDEWALK REINFORCING STEEL AND CONCRETE ON BRIDGE SHALL BE INCLUDED IN THE PAY ITEM FOR THE "REINFORCED CONCRETE DECK SLAB".
- 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 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.



SECTION THRU SIDEWALK
* U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	-



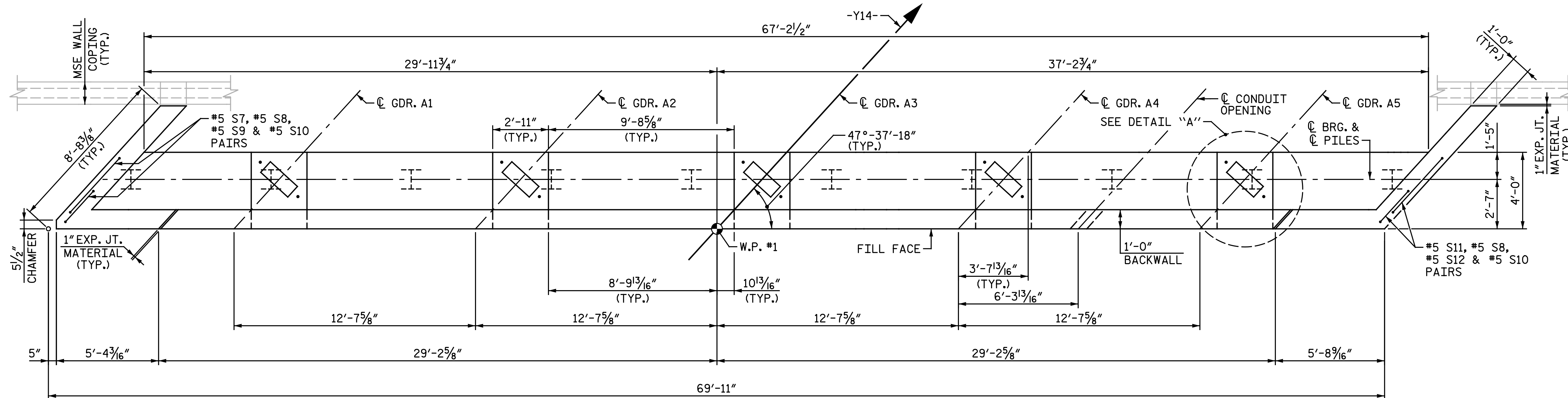
PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
SIDEWALK DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					35

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Michael Baker Engineering
8000 Regency Parkway, Suite 600
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NOTES:

FOR "SECTION A-A", "PARTIAL SECTION B-B",
"PARTIAL SECTION C-C", AND "PARTIAL
SECTION D-D", SEE "END BENT 1 DETAILS"
SHEET.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

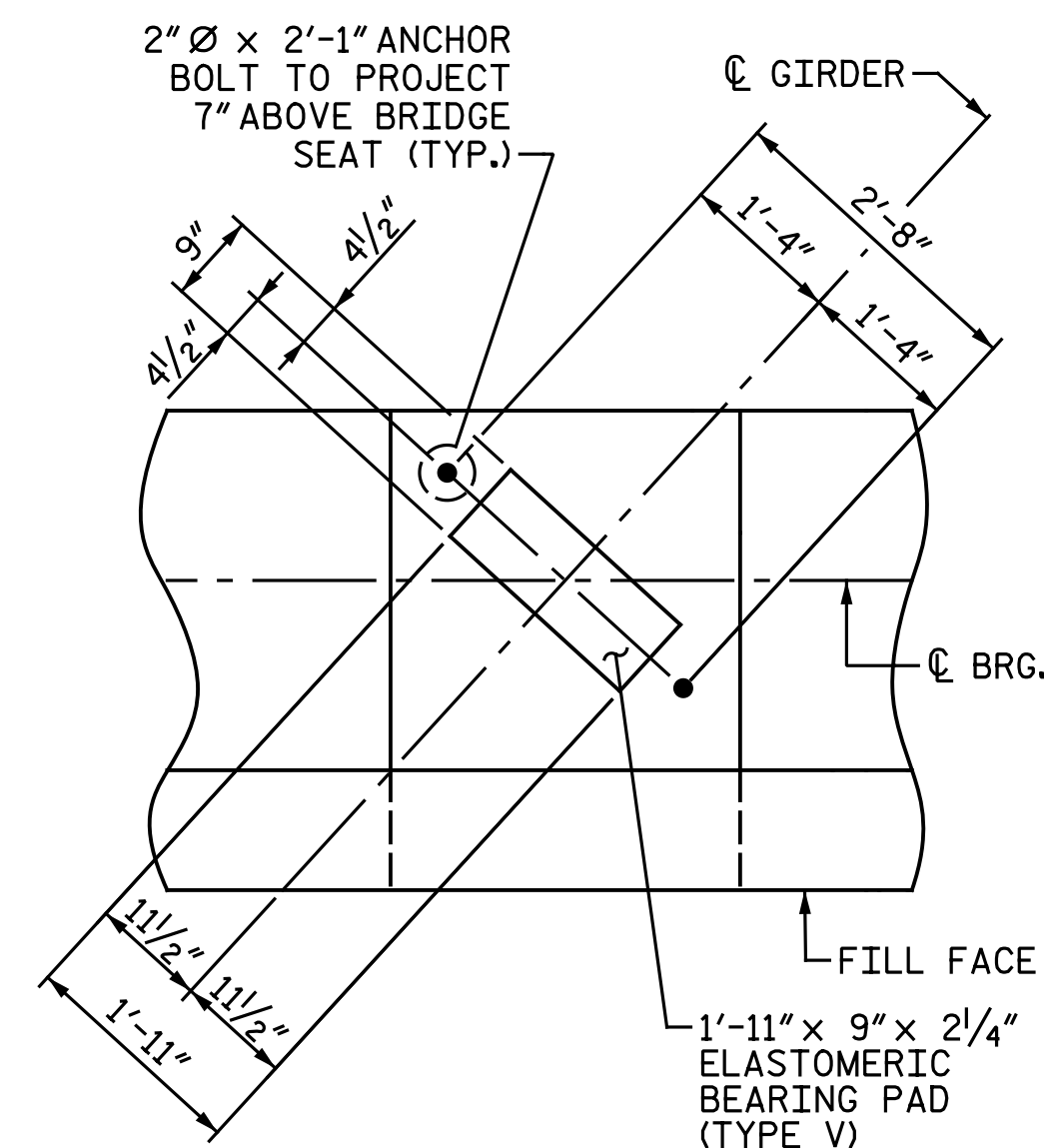
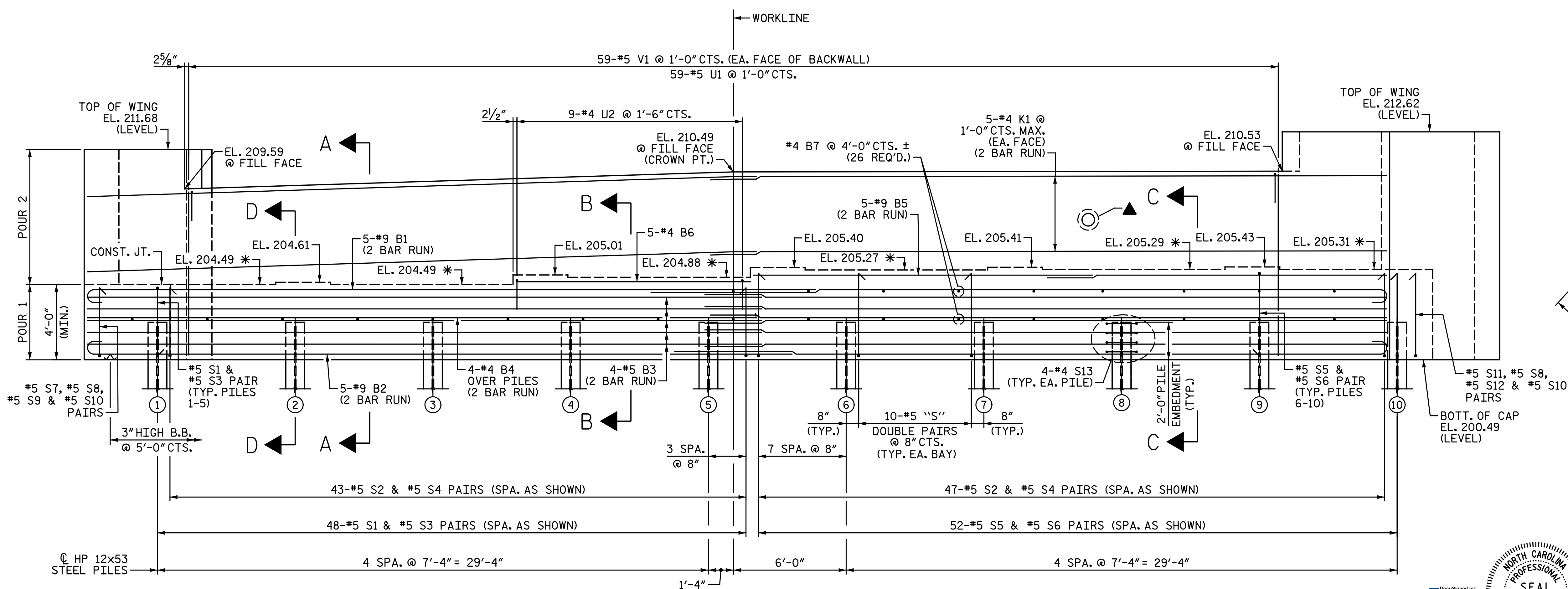
THE TOP SURFACE OF THE CAP EXCEPT THE
BRIDGE SEAT BUILDUPS SHALL BE SLOPED
TRANSVERSELY FROM THE FILL FACE TO THE
BACK FACE AT THE RATE OF 2%.

FOR MSE WALLS, SEE SPECIAL PROVISIONS.

FOR LOCATION OF MSE WALLS AND PILE
SLEEVES, SEE MSE WALL PLANS.

LENGTH OF EACH WING SHALL BE FIELD
ADJUSTED AS REQUIRED TO PROVIDE 1"
EXPANSION JOINT MATERIAL AS SHOWN
BETWEEN THIS COMPONENT AND THE MSE WALL
COPING.

V1 & K1 BARS IN BACKWALL MAY BE SHIFTED
AS NECESSARY TO CLEAR CONDUIT OPENING.



DETAIL "A"

(TYP. EA. BRIDGE SEAT)

PROJECT NO. I-5878
HARNETT COUNTY
 STATION: 26+05.28 -Y14-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1

REVISIONS						SHEET NO. SI-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

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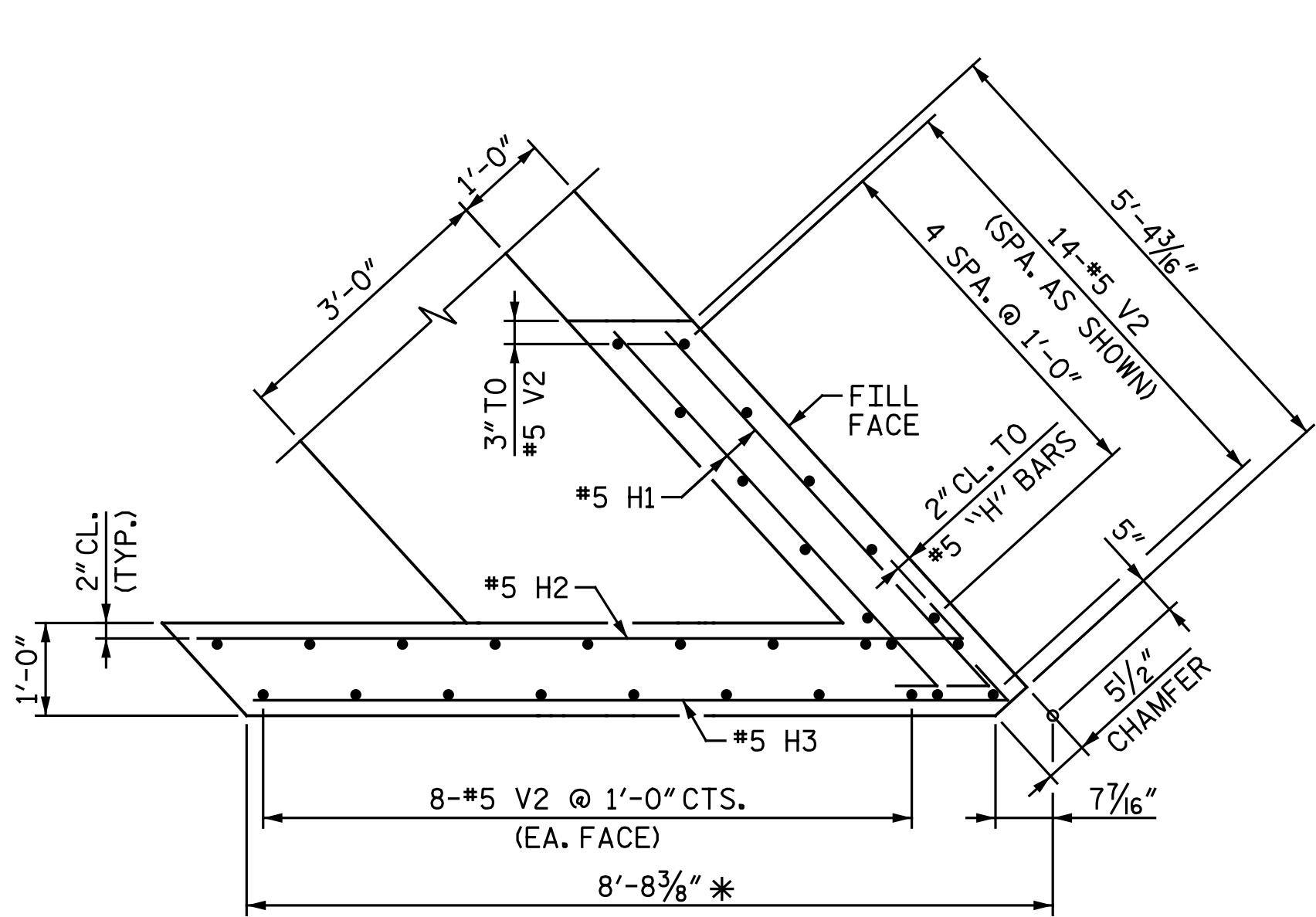
Michael Baker
INTERNATIONAL

DRAWN BY : M. D. MAYHEW DATE : 9-12-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

MIN. SPLICE LENGTHS	
BAR SIZE	UNCOATED
#4	2'-5"
#5	3'-0"
#9 B1 & B5	8'-9"
#9 B2	6'-3"

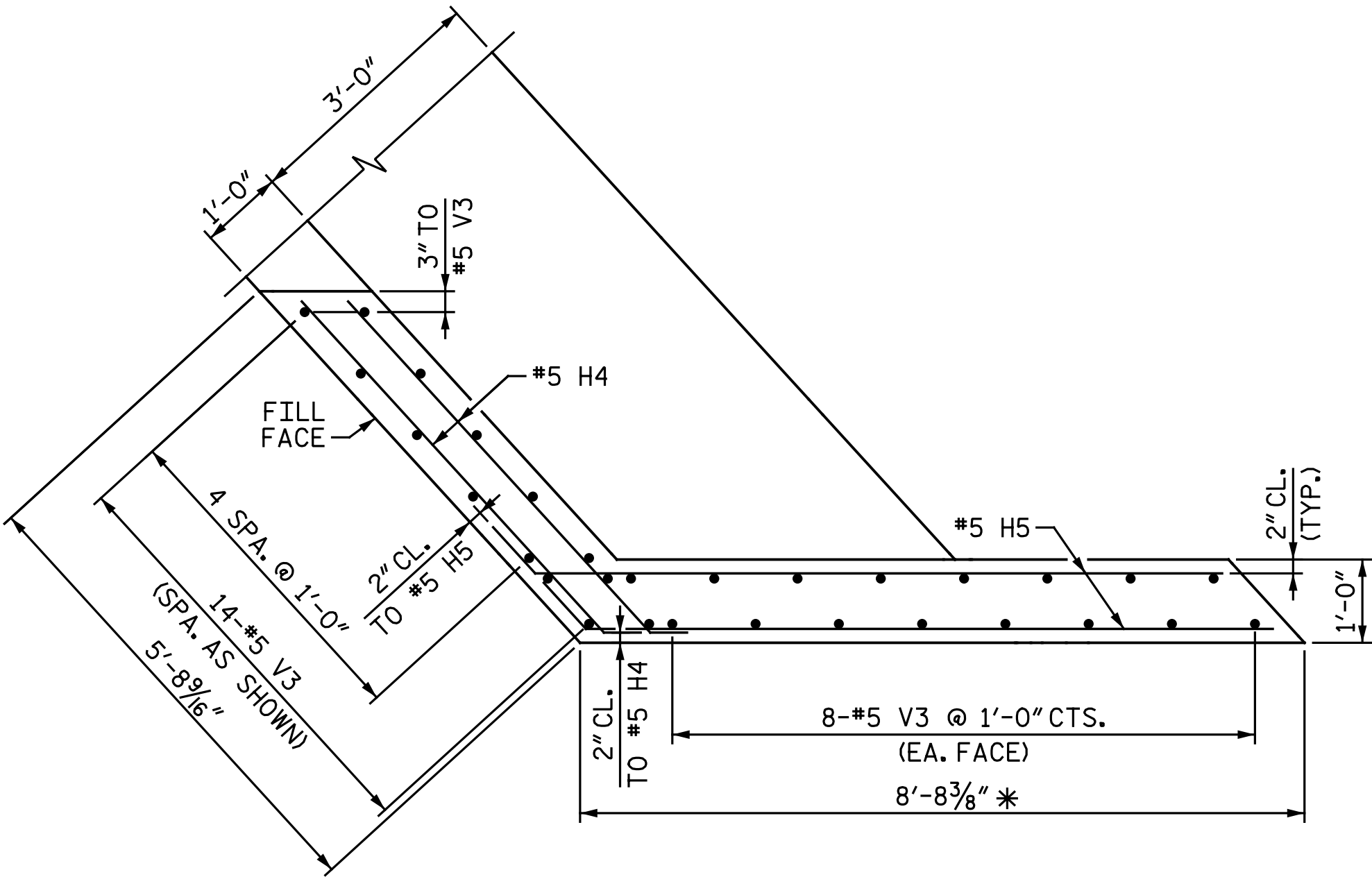
* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE "END BENT 1 DETAILS" SHEET.

▲ CONDUIT OPENING. SEE DETAIL "E" ON "END BENT 1 DETAILS" SHEET.



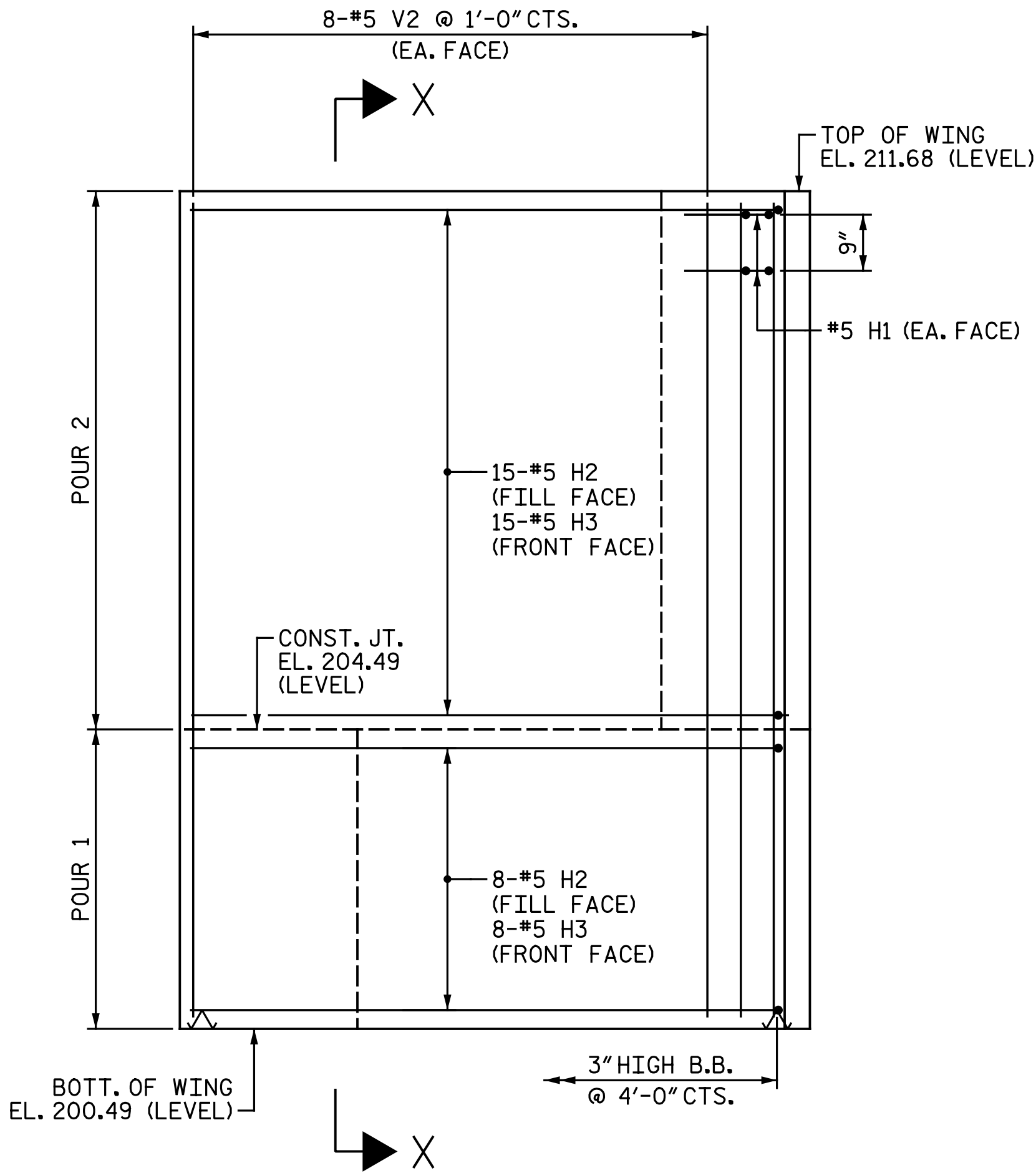
PLAN OF LEFT WING

* SEE NOTE REGARDING LENGTH OF WING ON
"END BENT 1" SHEET 1 OF 2.

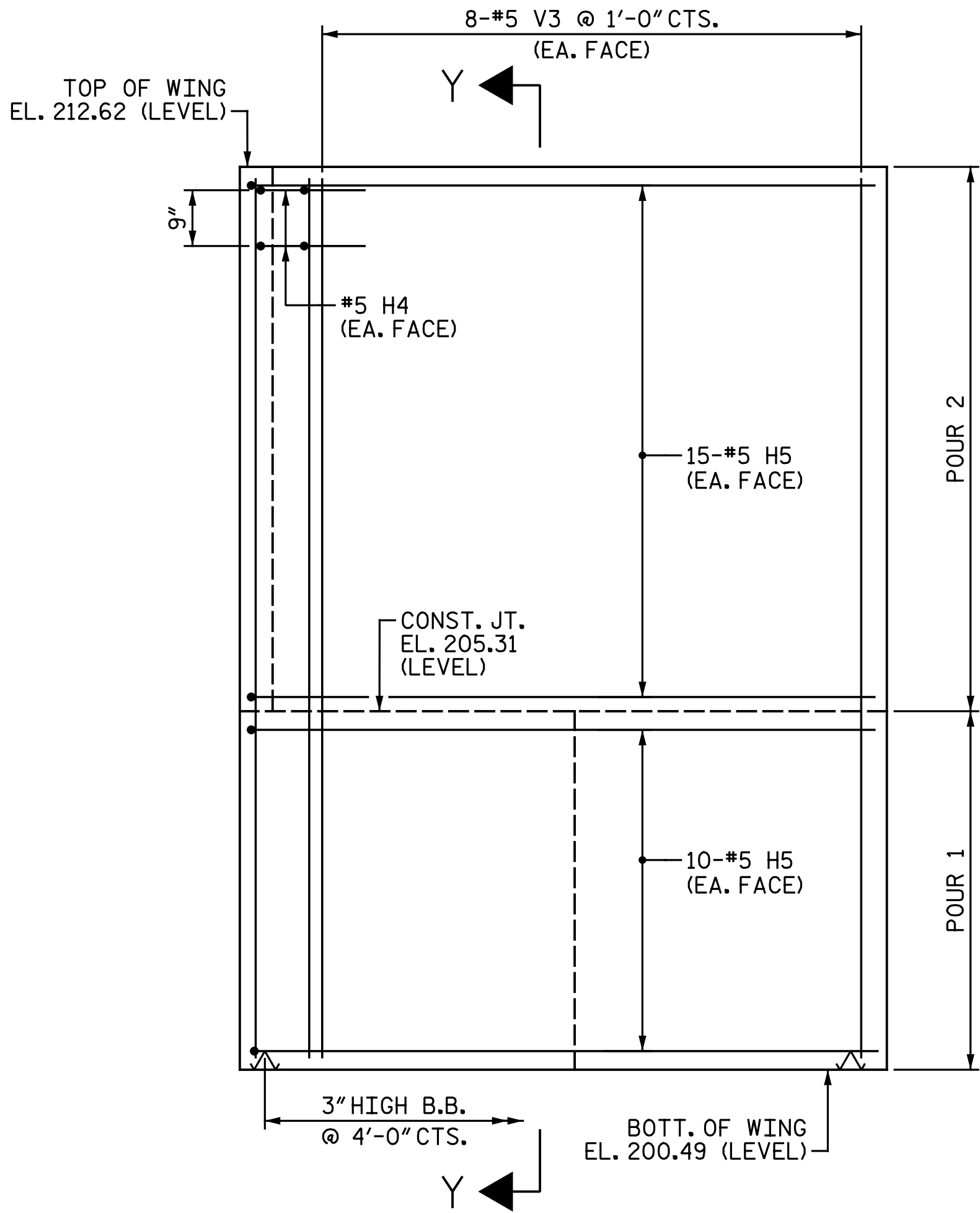


PLAN OF RIGHT WING

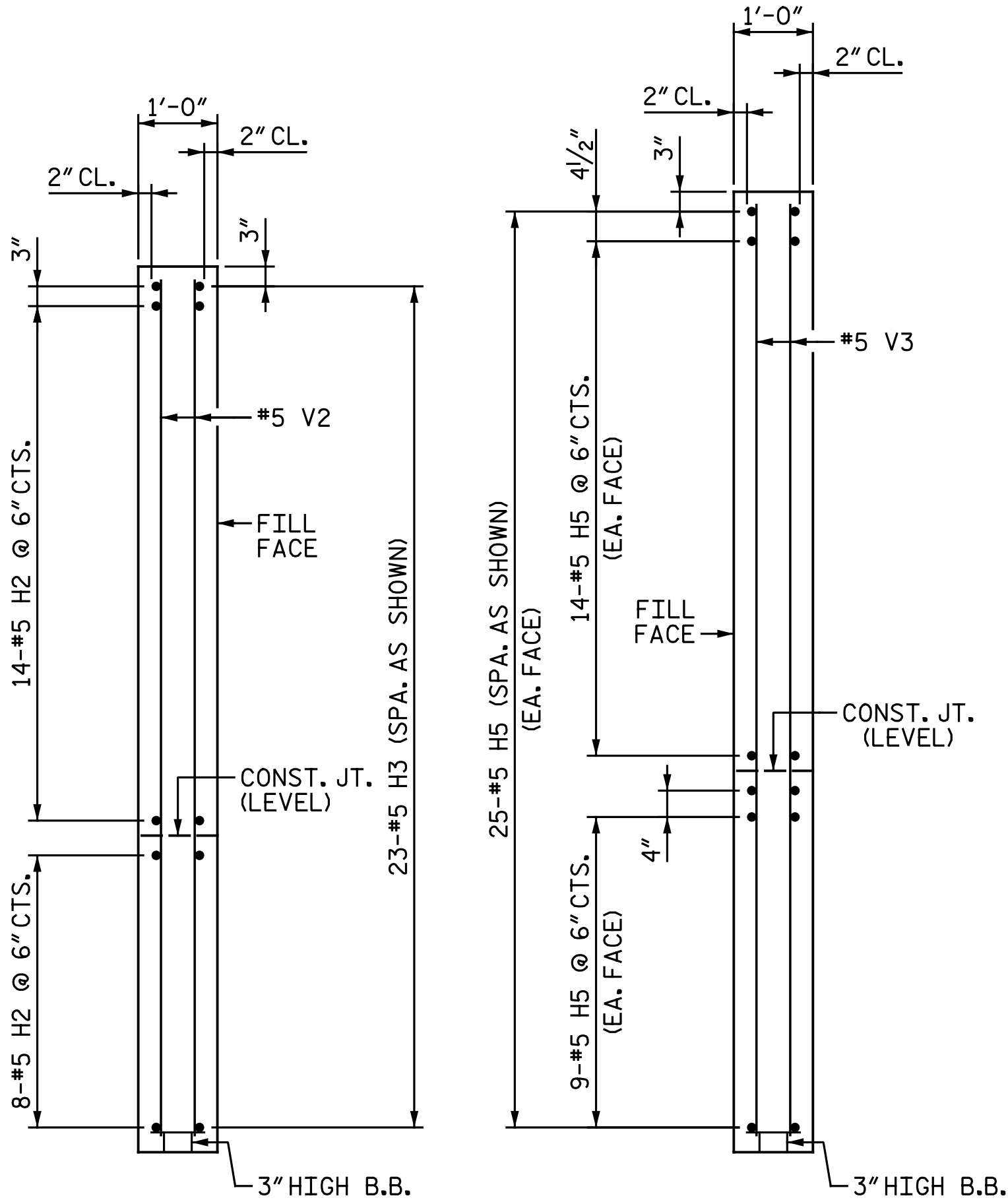
* SEE NOTE REGARDING LENGTH OF WING ON
"END BENT 1" SHEET 1 OF 2.



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X

SECTION Y-Y

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 2 OF 2



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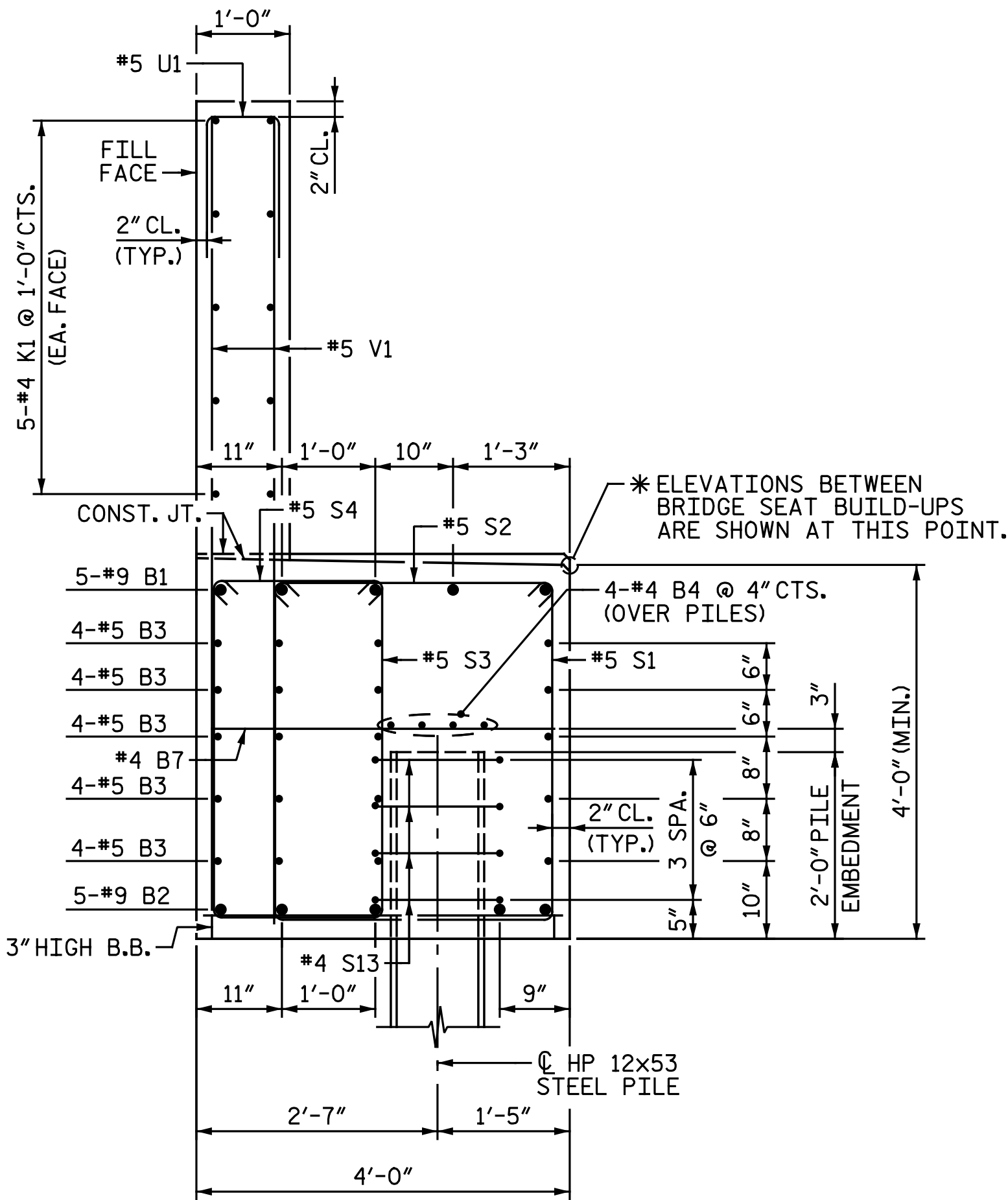
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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

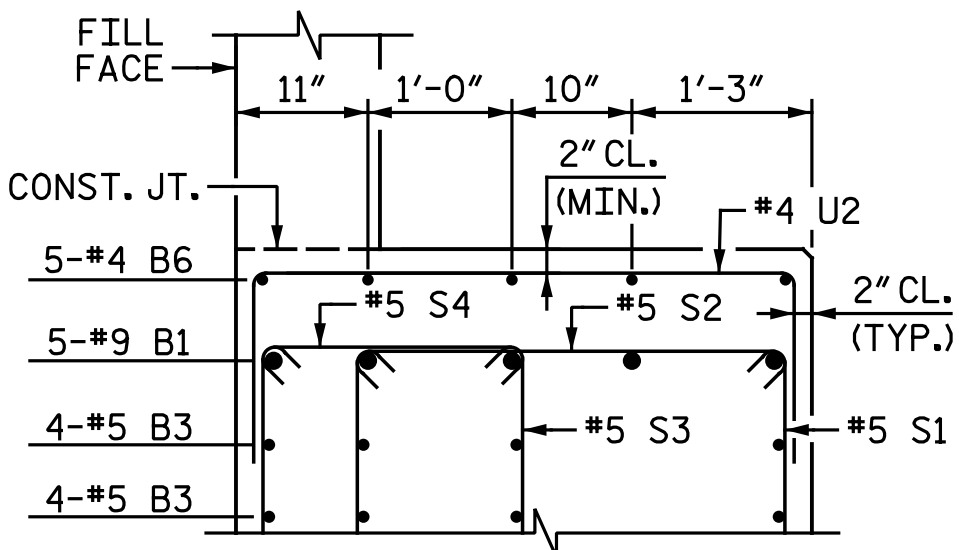
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO. SI-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : M. D. MAYHEW DATE : 10-1-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

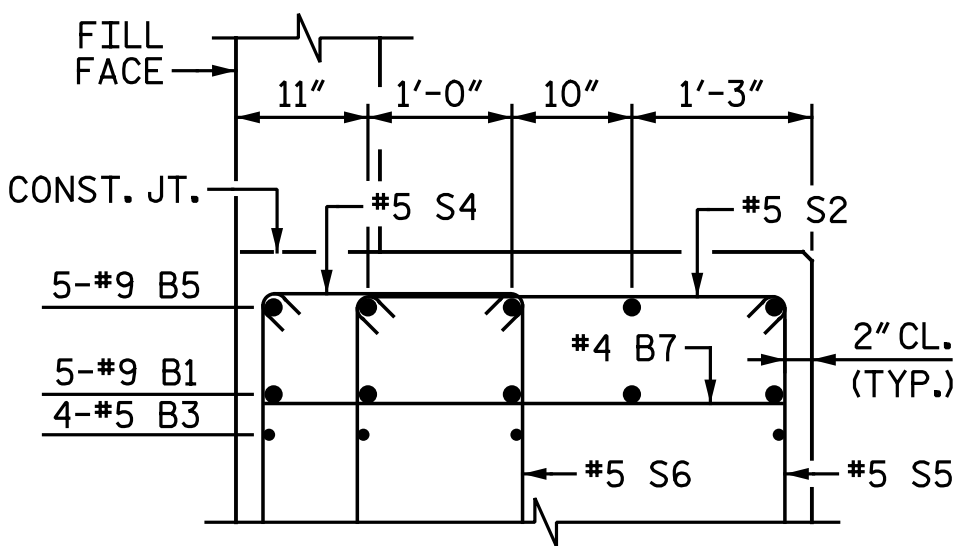


SECTION A-A



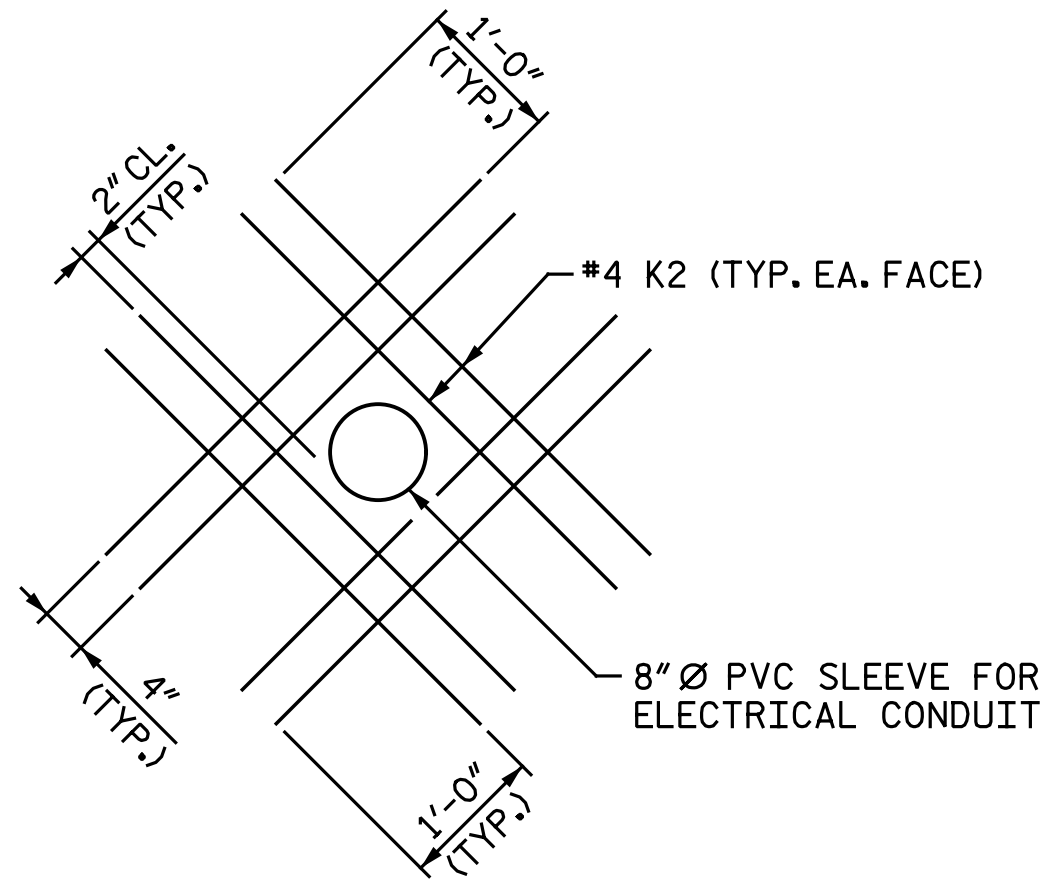
PARTIAL SECTION B-B

"K" & "V" BARS NOT SHOWN FOR CLARITY



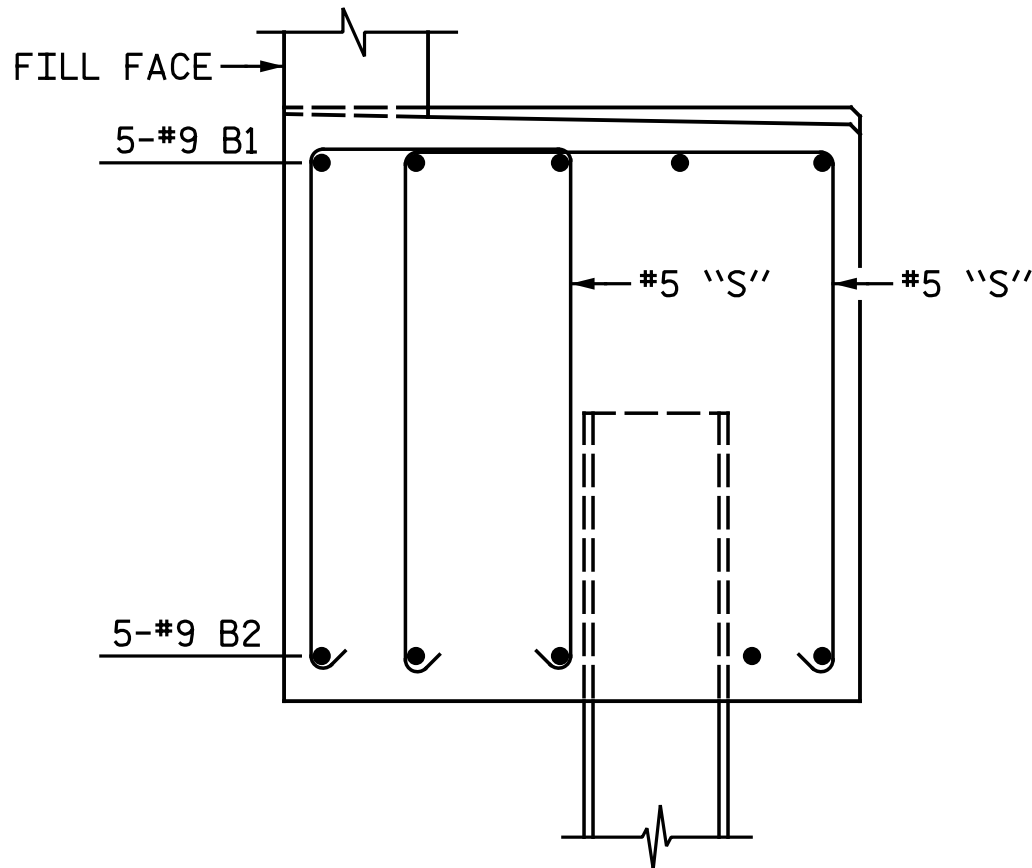
PARTIAL SECTION C-C

"K" & "V" BARS NOT SHOWN FOR CLARITY



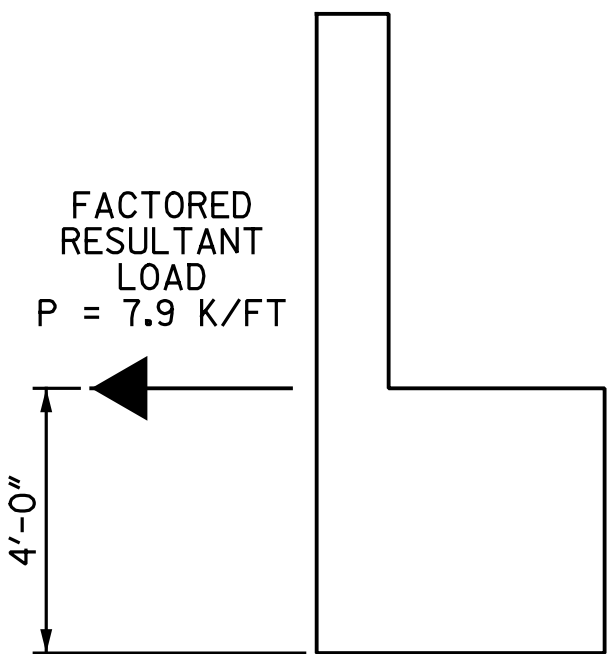
DETAIL "E"

THE PVC SLEEVE THROUGH THE BACKWALL SHALL BE LOCATED BY THE ENGINEER.



PARTIAL SECTION D-D

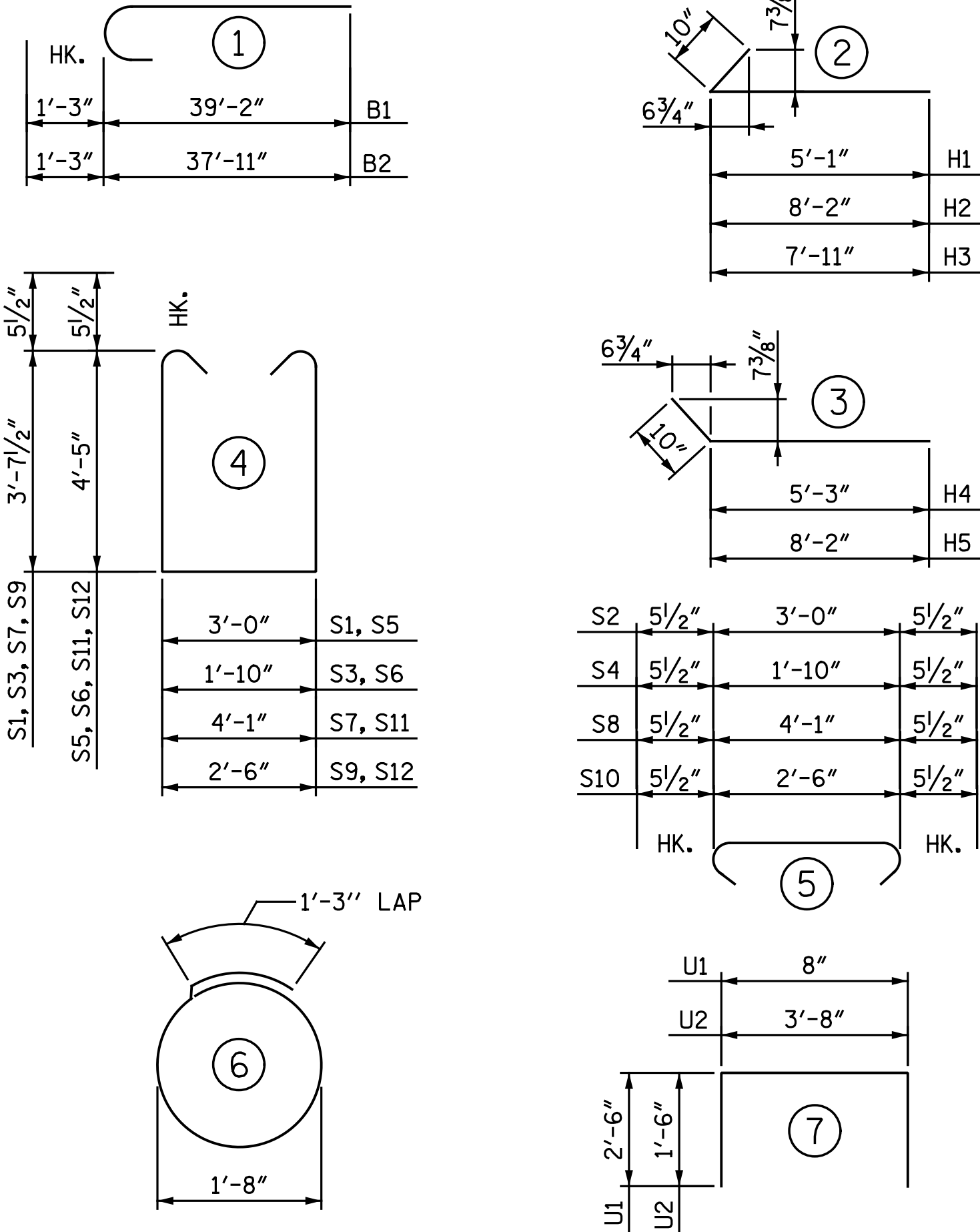
ONLY #9 "B" & "S" BARS SHOWN FOR CLARITY (TYP. EA. PILE)



MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTE:

FOR "PILE SPLICE DETAILS", SEE "END BENT 2 DETAILS" SHEET.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	40' - 5"	1,374
B2	10	#9	1	39' - 2"	1,332
B3	40	#5	STR.	36' - 3"	1,512
B4	8	#4	STR.	36' - 0"	192
B5	10	#9	STR.	23' - 1"	785
B6	5	#4	STR.	12' - 5"	41
B7	26	#4	STR.	3' - 8"	64
H1	4	#5	2	5' - 11"	25
H2	23	#5	2	9' - 0"	216
H3	23	#5	2	8' - 9"	210
H4	4	#5	3	6' - 1"	25
H5	50	#5	3	9' - 0"	469
K1	20	#4	STR.	36' - 0"	481
K2	16	#4	STR.	3' - 8"	39
S1	48	#5	4	11' - 2"	559
S2	90	#5	5	3' - 11"	368
S3	48	#5	4	10' - 0"	501
S4	90	#5	5	2' - 9"	258
S5	52	#5	4	12' - 9"	692
S6	52	#5	4	11' - 7"	628
S7	1	#5	4	12' - 3"	13
S8	2	#5	5	5' - 0"	10
S9	1	#5	4	10' - 8"	11
S10	2	#5	5	3' - 5"	7
S11	1	#5	4	13' - 10"	14
S12	1	#5	4	12' - 3"	13
S13	40	#4	6	6' - 6"	174
U1	59	#5	7	5' - 8"	349
U2	9	#4	7	6' - 8"	40
V1	118	#5	STR.	8' - 9"	1,077
V2	30	#5	STR.	10' - 10"	339
V3	30	#5	STR.	11' - 9"	368
REINFORCING STEEL					LBS. 12,186
CLASS A CONCRETE					
POUR 1 - CAP & LOWER PART OF WINGS				C.Y.	47.7
POUR 2 - BACKWALL & UPPER PART OF WINGS				C.Y.	18.4
TOTAL				C.Y.	66.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					
EA.					10
HP 12x53 STEEL PILES					
NO. 10				LIN. FT.	700
PILE REDRIVES					EA. 5

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-



4/10/2020

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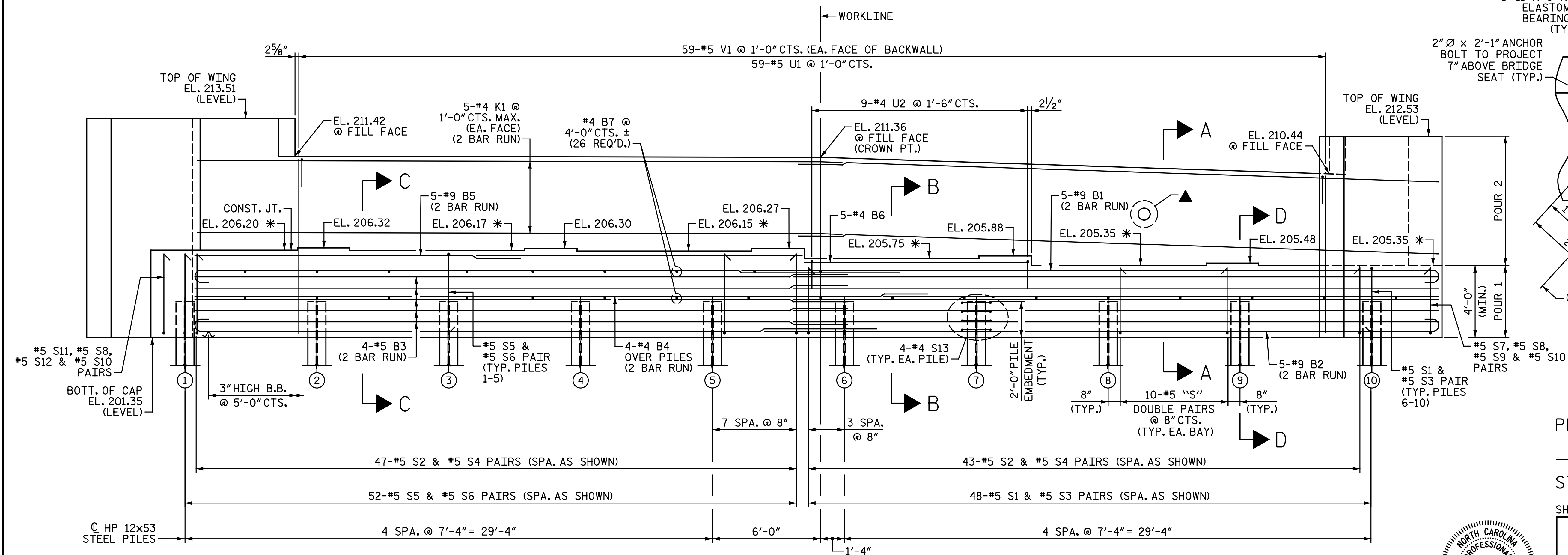
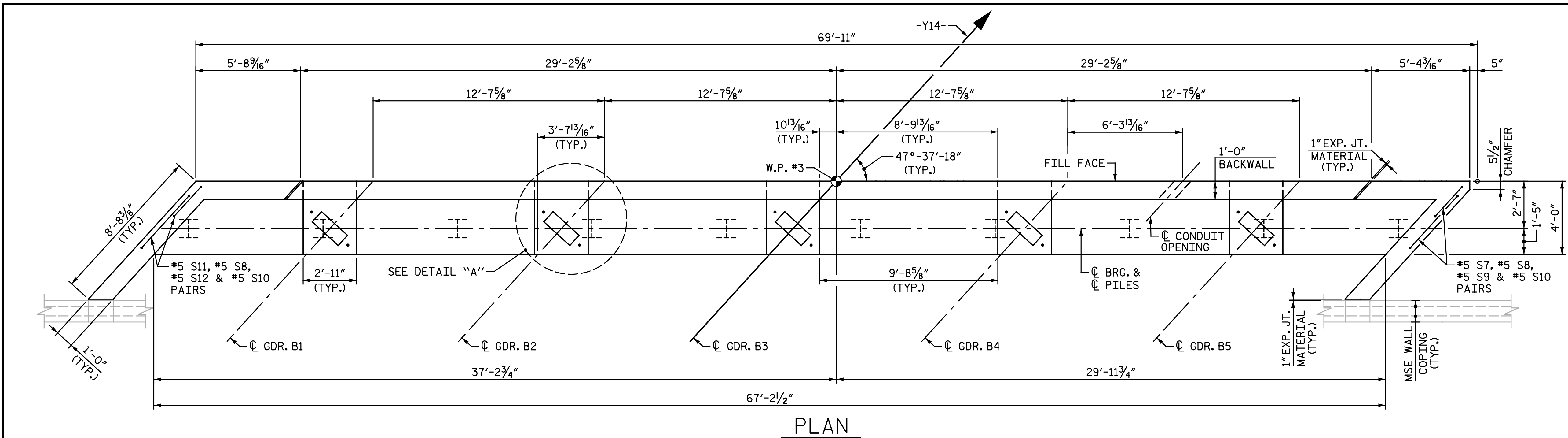
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1 DETAILS

REVISIONS						SHEET NO. SI-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : M. D. MAYHEW DATE : 10-1-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

REVISIONS						SHEET NO. SI-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



NOTES:
FOR "SECTION A-A", "PARTIAL SECTION B-B",
"PARTIAL SECTION C-C", AND "PARTIAL
SECTION D-D", SEE "END BENT 2 DETAILS"
SHEET.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING
THE EPOXY PROTECTIVE COATING.

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

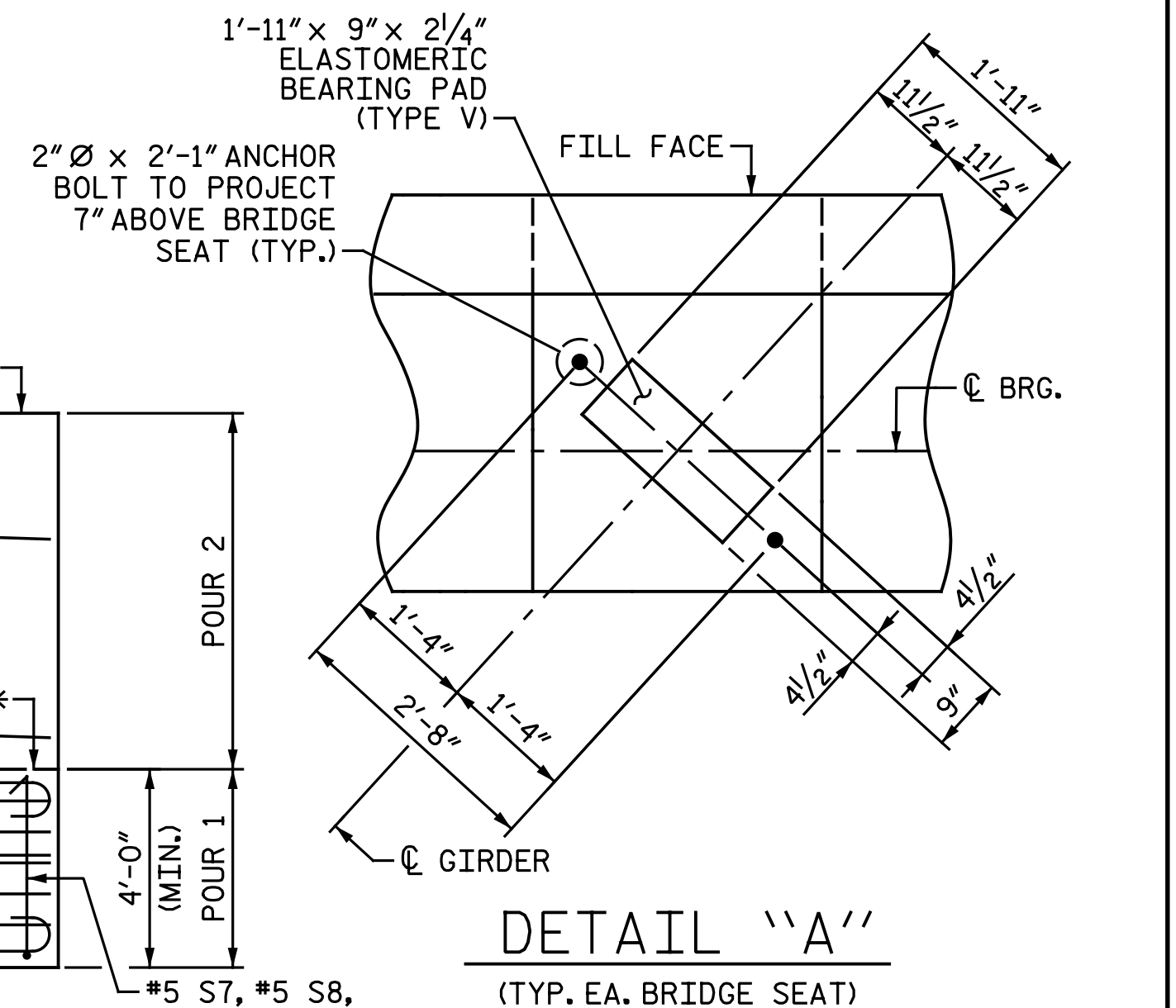
THE TOP SURFACE OF THE CAP EXCEPT THE
BRIDGE SEAT BUILDUPS SHALL BE SLOPED
TRANSVERSELY FROM THE FILL FACE TO THE
BACK FACE AT THE RATE OF 2%.

FOR MSE WALLS, SEE SPECIAL PROVISIONS.

FOR LOCATION OF MSE WALLS AND PILE
SLEEVES, SEE MSE WALL PLANS.

LENGTH OF EACH WING SHALL BE FIELD
ADJUSTED AS REQUIRED TO PROVIDE 1"
EXPANSION JOINT MATERIAL AS SHOWN
BETWEEN THIS COMPONENT AND THE MSE WALL
COPING.

V1 & K1 BARS IN BACKWALL MAY BE SHIFTED
AS NECESSARY TO CLEAR CONDUIT OPENING.



PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					SI-28
TOTAL SHEETS					35

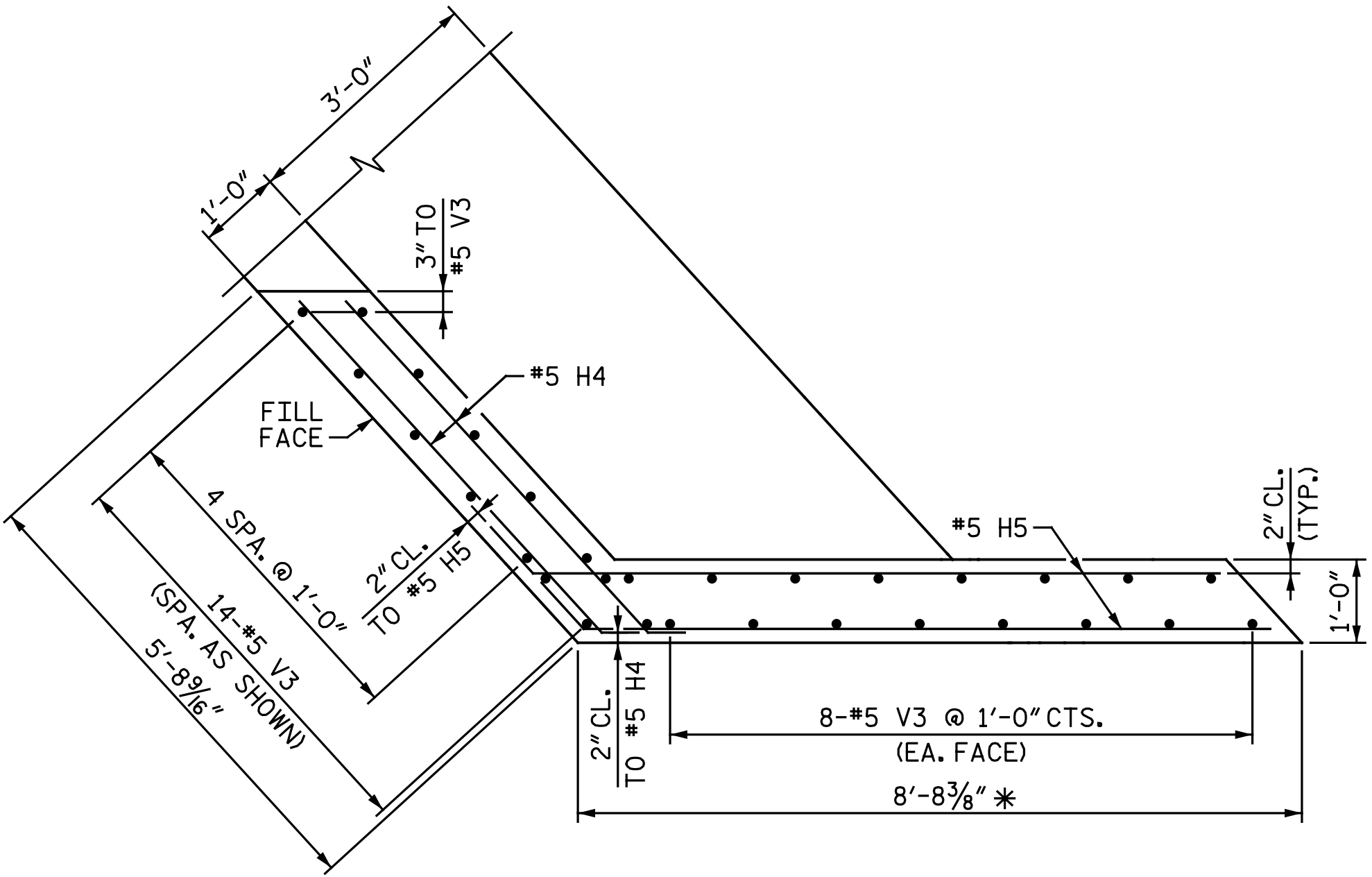
DRAWN BY : M. D. MAYHEW DATE : 10-21-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

MIN. SPLICE LENGTHS	
BAR SIZE	UNCOATED
#4	2'-5"
#5	3'-0"
#9 B1 & B5	8'-9"
#9 B2	6'-3"

* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT
BUILD-UPS, SEE "END BENT 2 DETAILS" SHEET.
▲ CONDUIT OPENING. SEE DETAIL "E" ON "END BENT 1 DETAILS" SHEET.

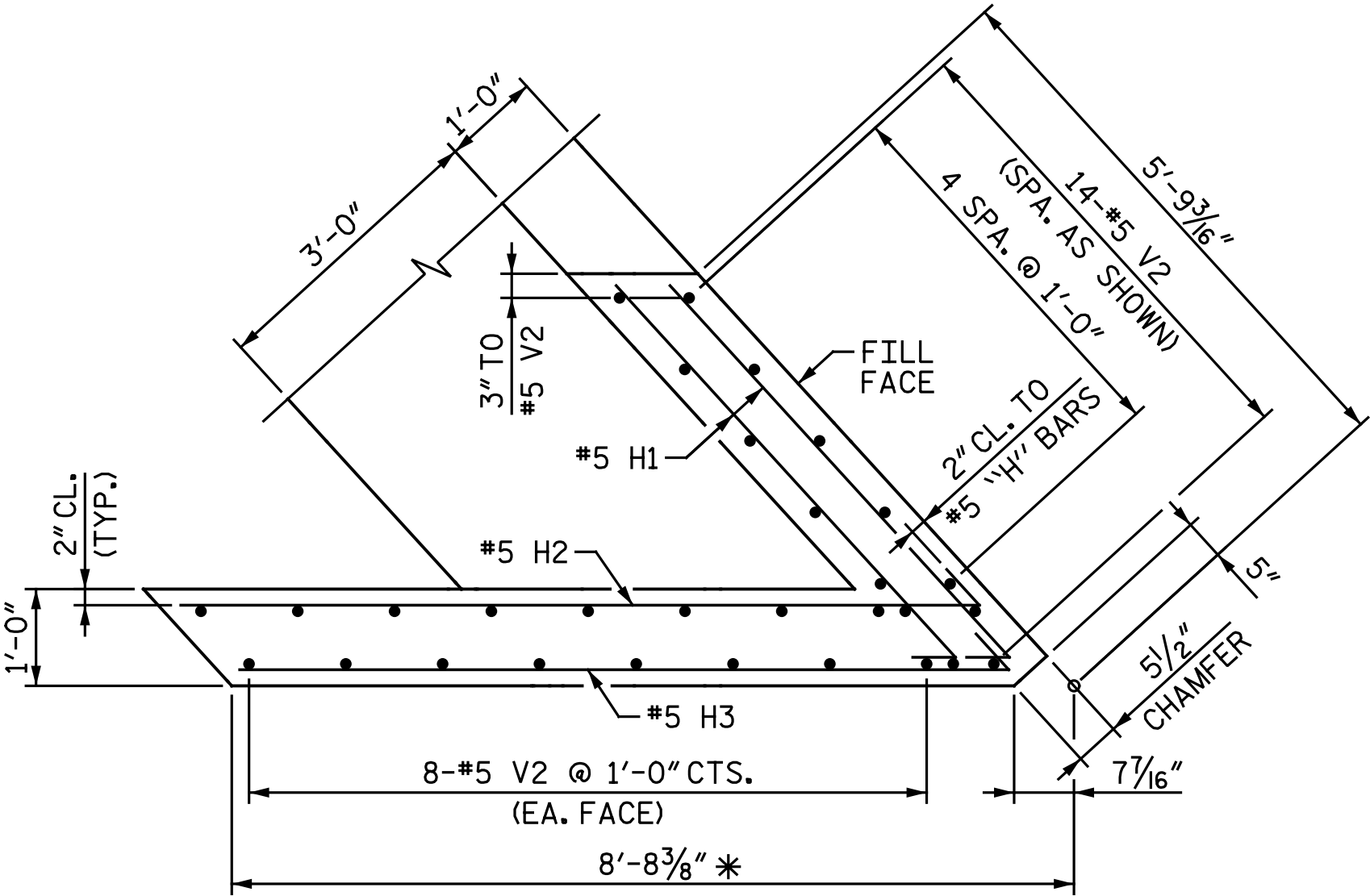
DocuSigned by:
Amanda H. Sharpe
8100FF14E6EF402
4/10/2020
NORTH CAROLINA
PROFESSIONAL
SEAL
043878
ENGINEER
AMANDA H. SHARPE

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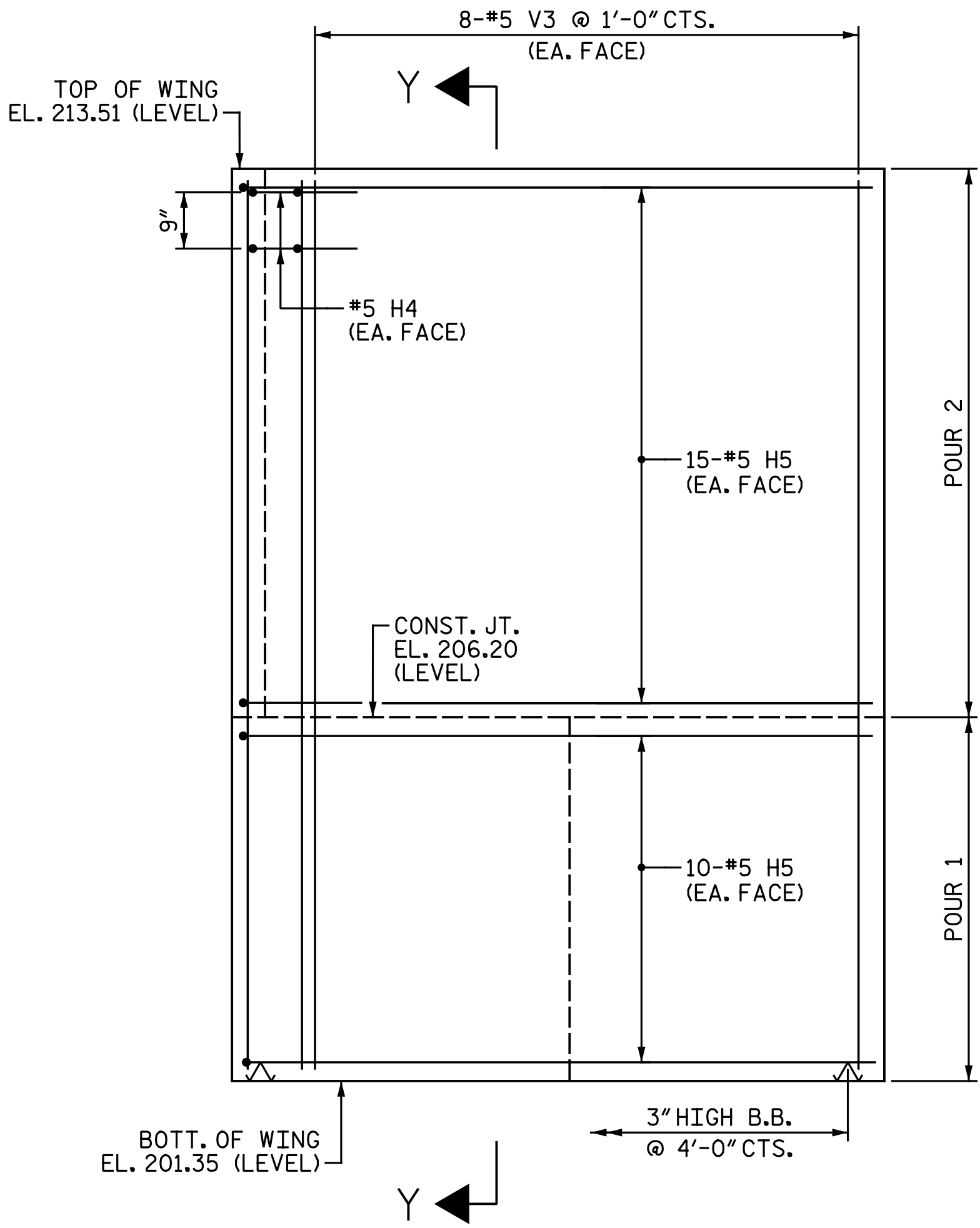
PLAN OF LEFT WING

* SEE NOTE REGARDING LENGTH OF WING ON
"END BENT 2" SHEET 1 OF 2.

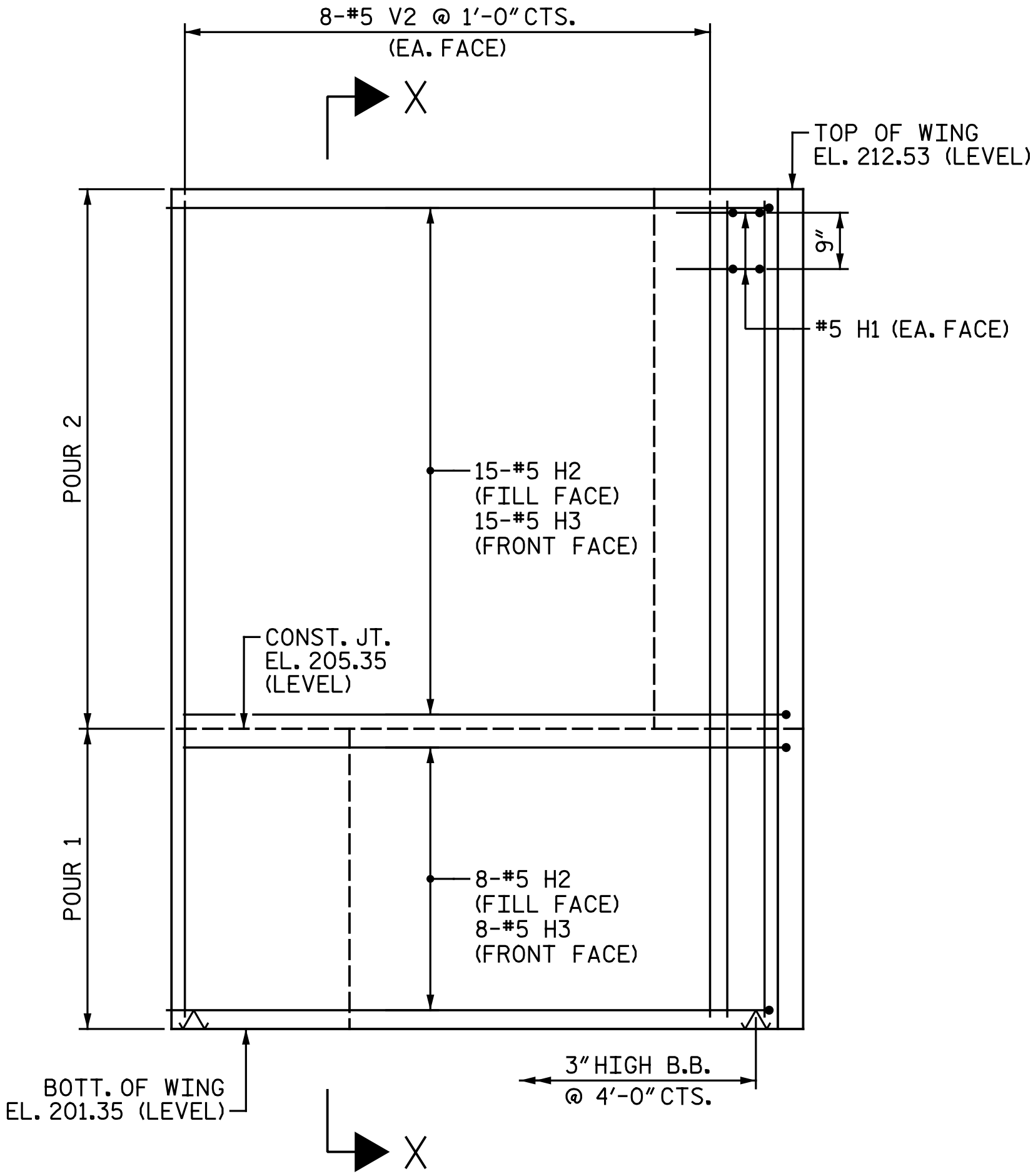


PLAN OF RIGHT WING

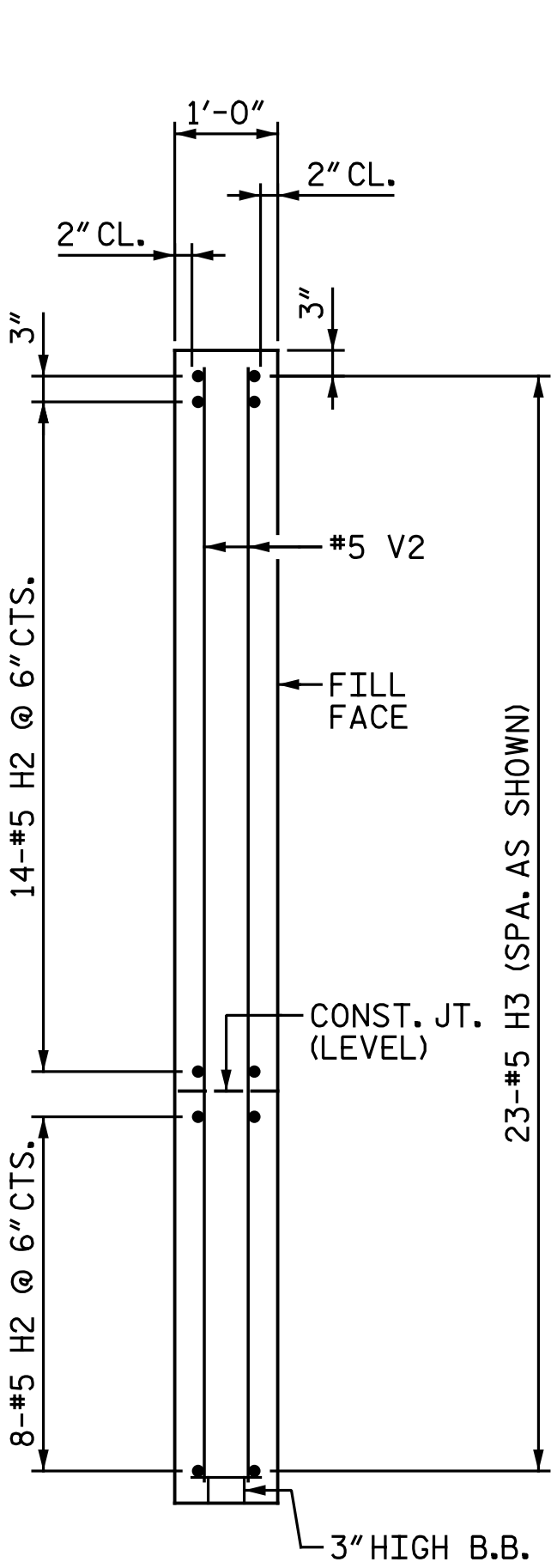
* SEE NOTE REGARDING LENGTH OF WING ON
"END BENT 2" SHEET 1 OF 2.



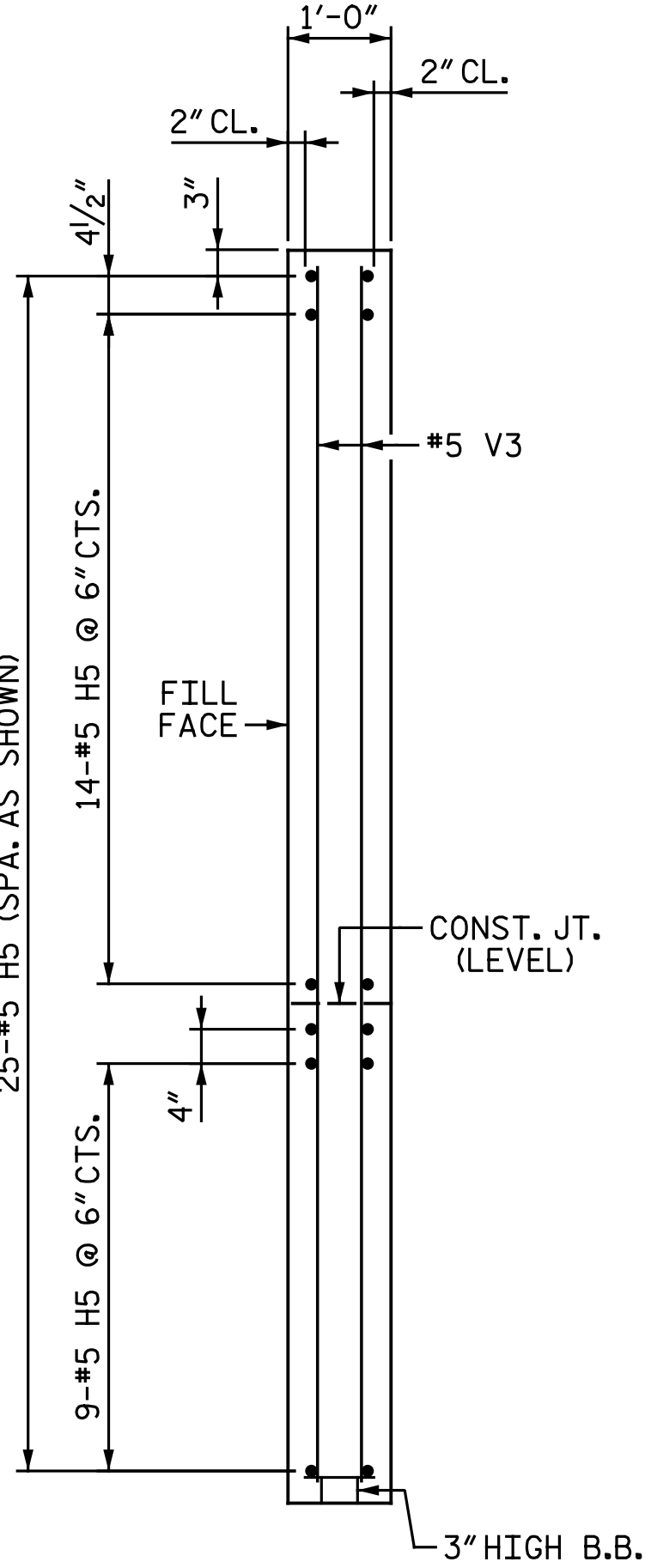
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



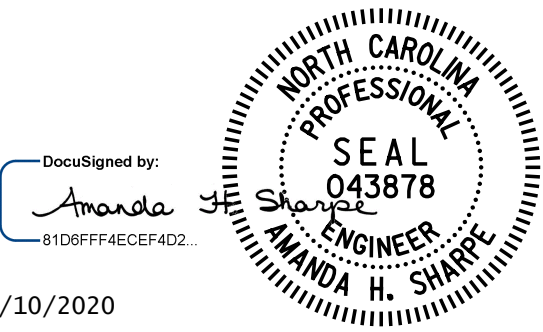
SECTION X-X



SECTION Y-Y

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

SHEET 2 OF 2



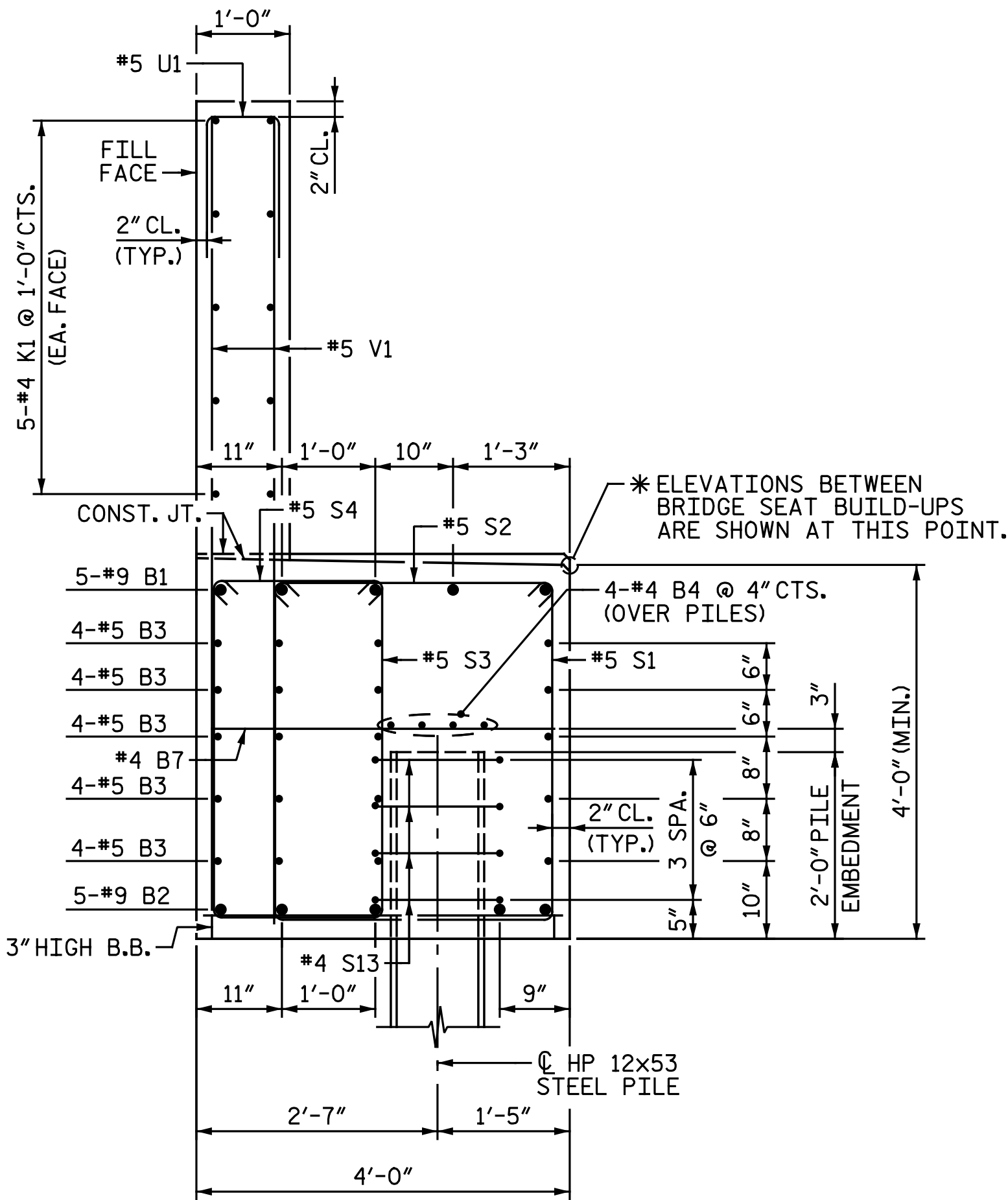
4/10/2020

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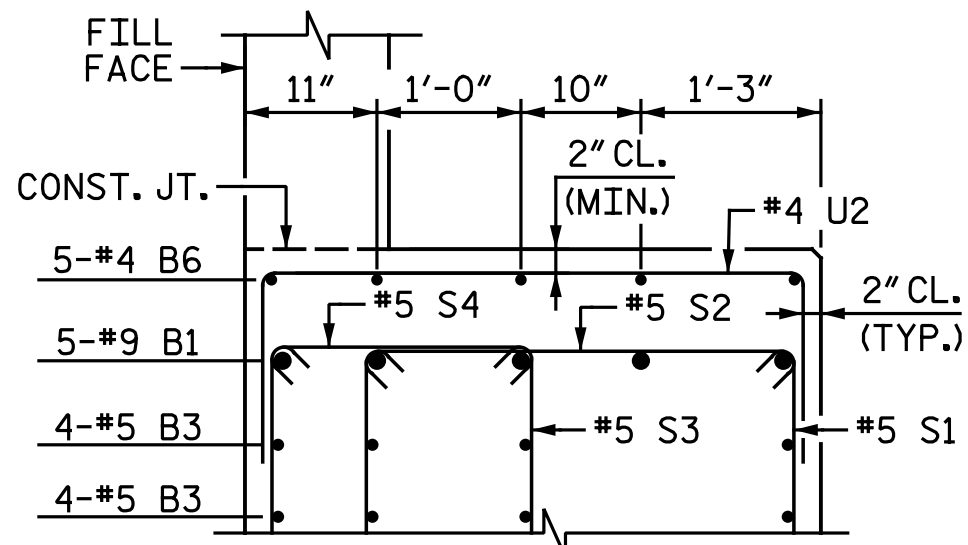
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REVISIONS						SHEET NO. SI-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : M. D. MAYHEW DATE : 10-21-19
CHECKED BY : A. H. SHARPE DATE : 3-2-20

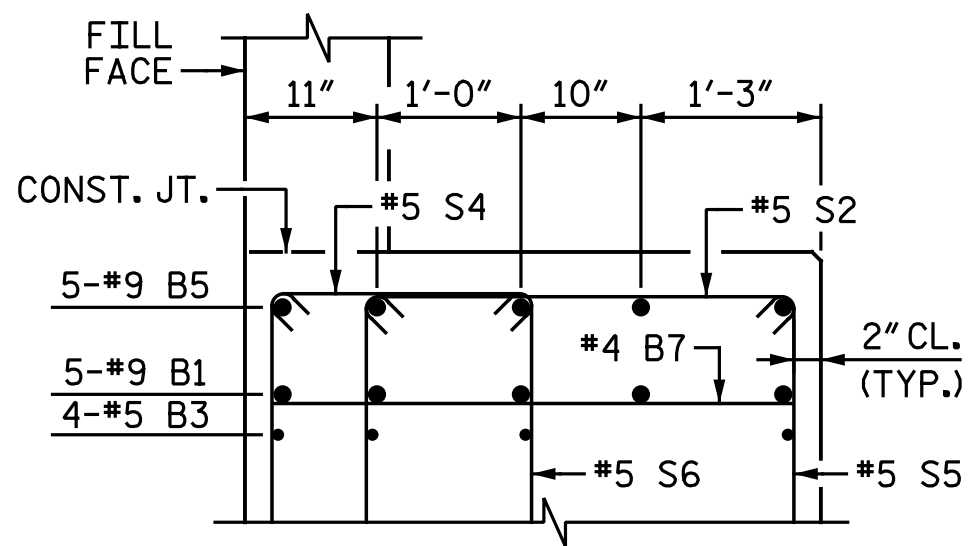


SECTION A-A



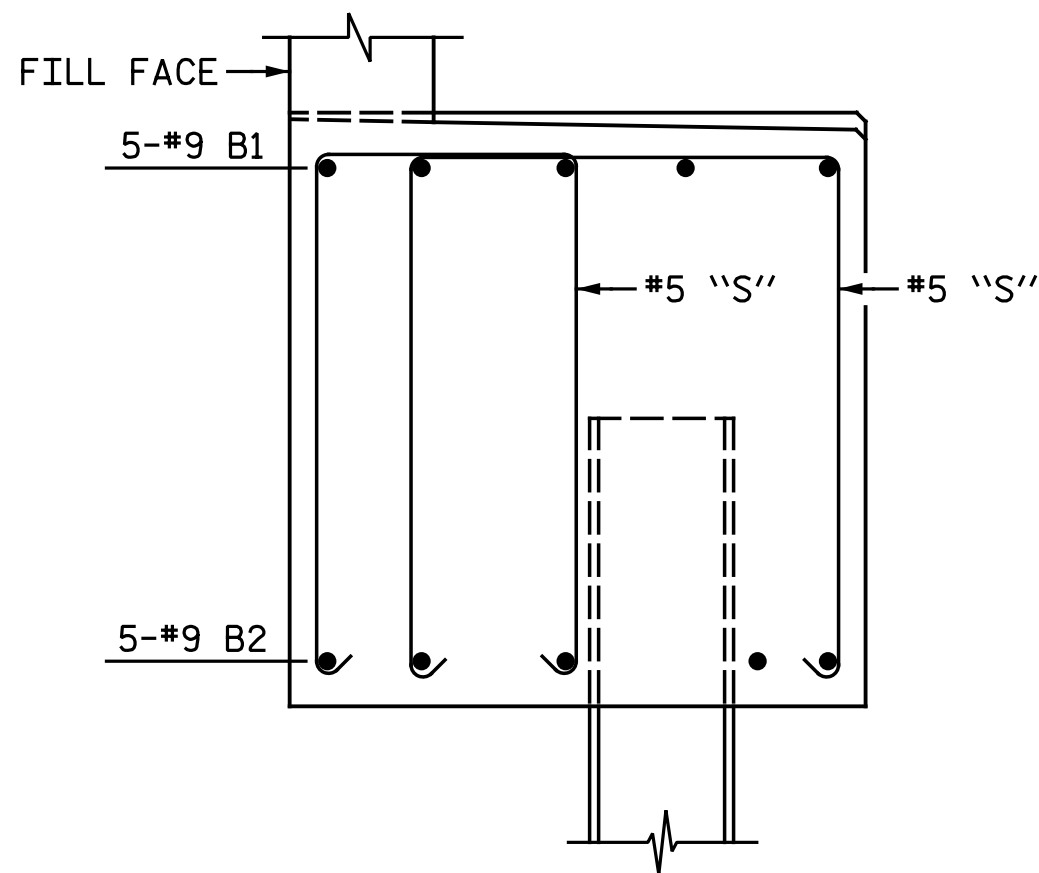
PARTIAL SECTION B-B

"K" & "V" BARS NOT SHOWN FOR CLARITY



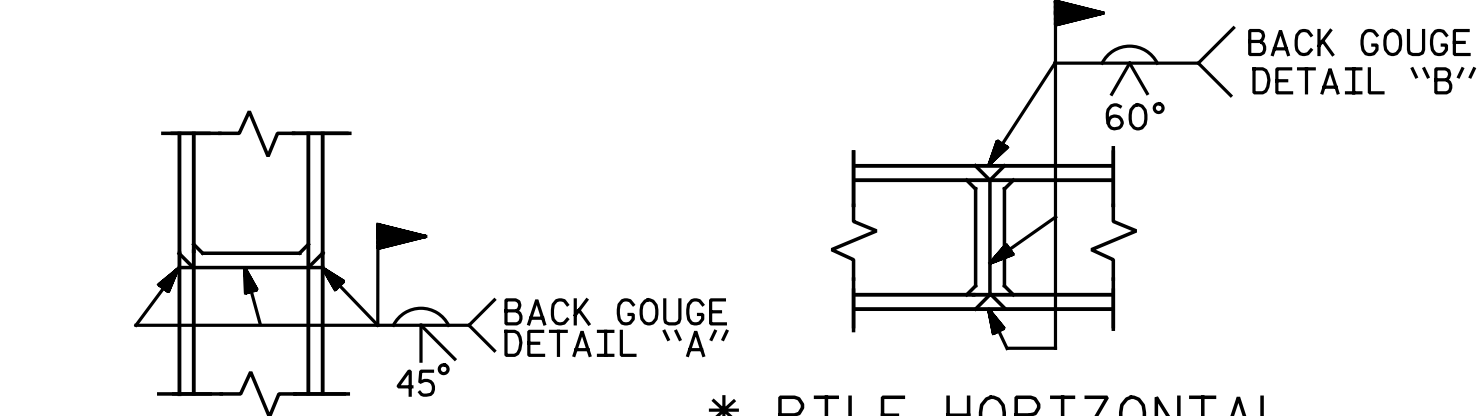
PARTIAL SECTION C-C

"K" & "V" BARS NOT SHOWN FOR CLARITY



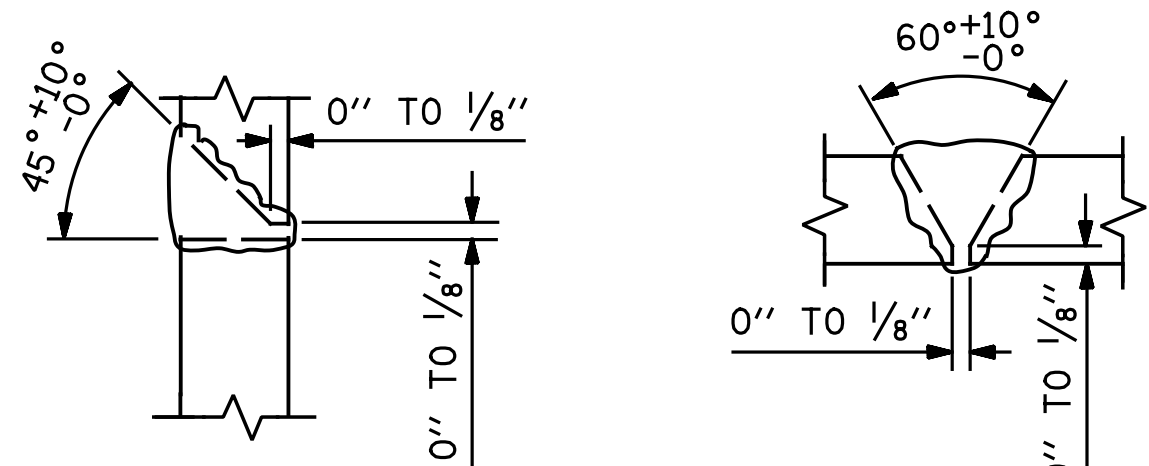
PARTIAL SECTION D-D

ONLY #9 "B" & "S" BARS SHOWN FOR CLARITY
(TYP. EA. PILE)



* PILE VERTICAL

* PILE HORIZONTAL
OR VERTICAL



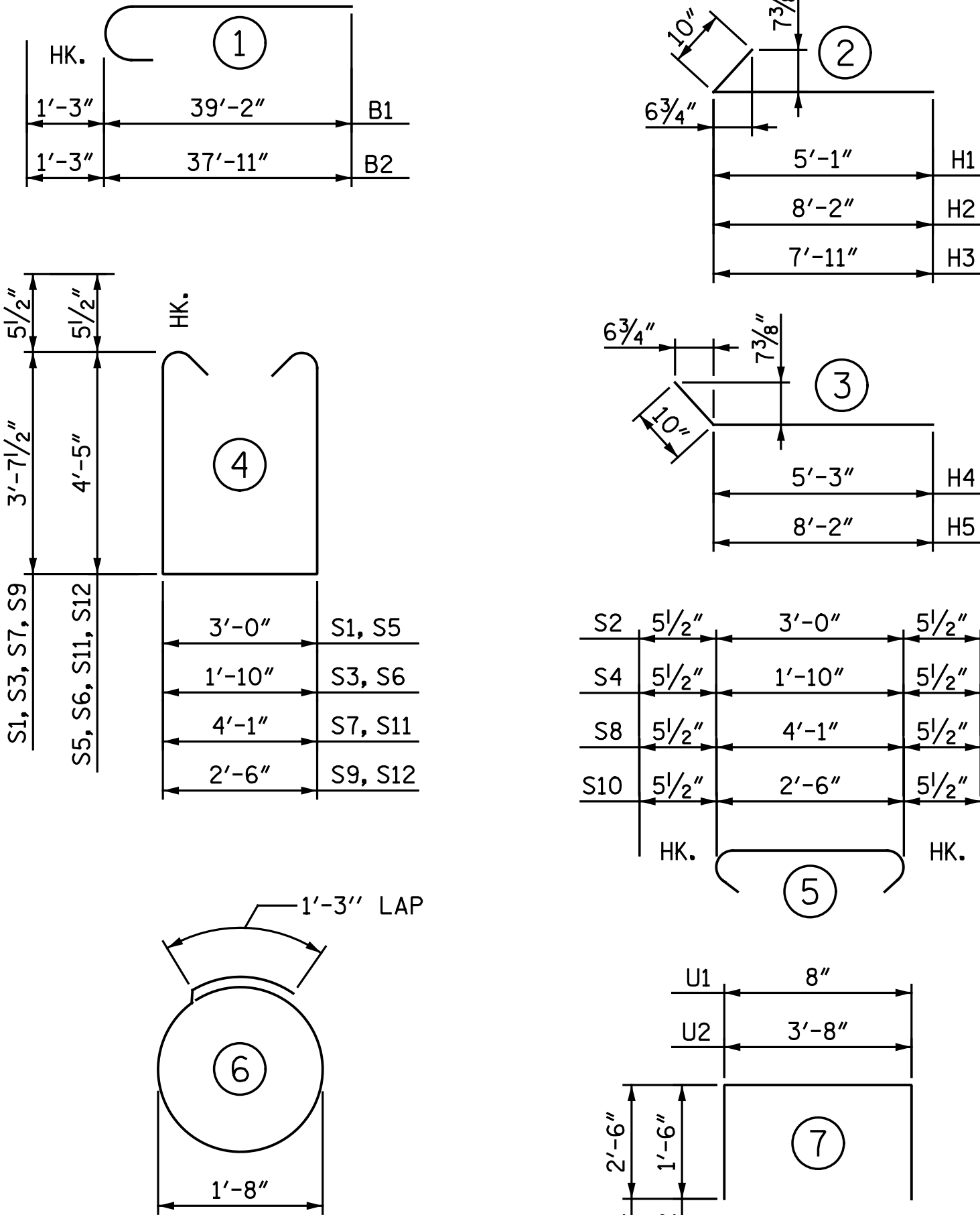
DETAIL "A"

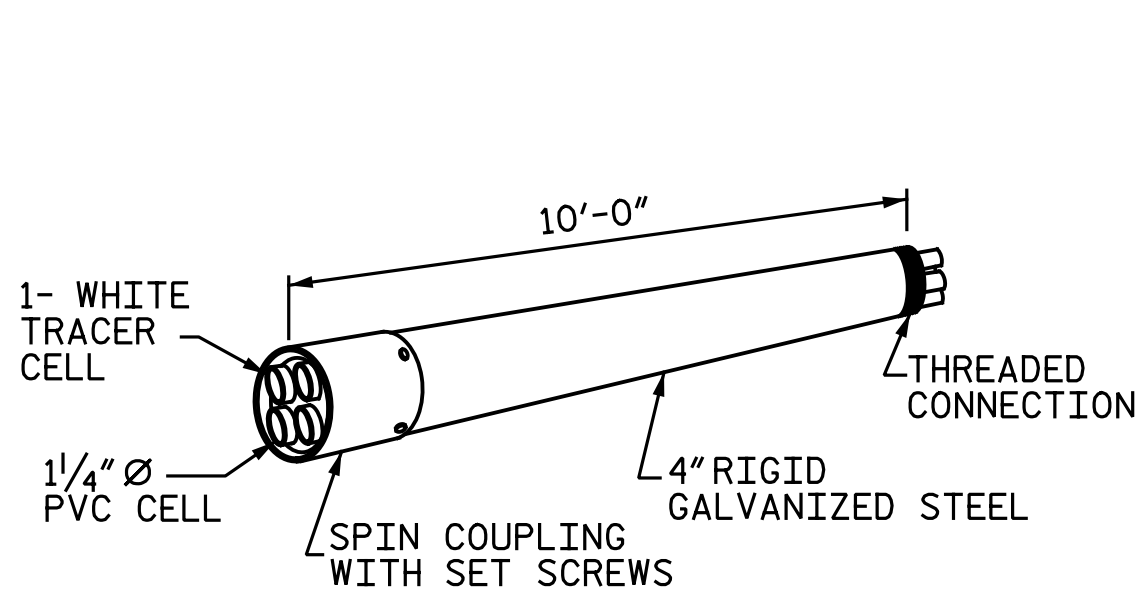
DETAIL "B"

PILE SPLICE DETAILS

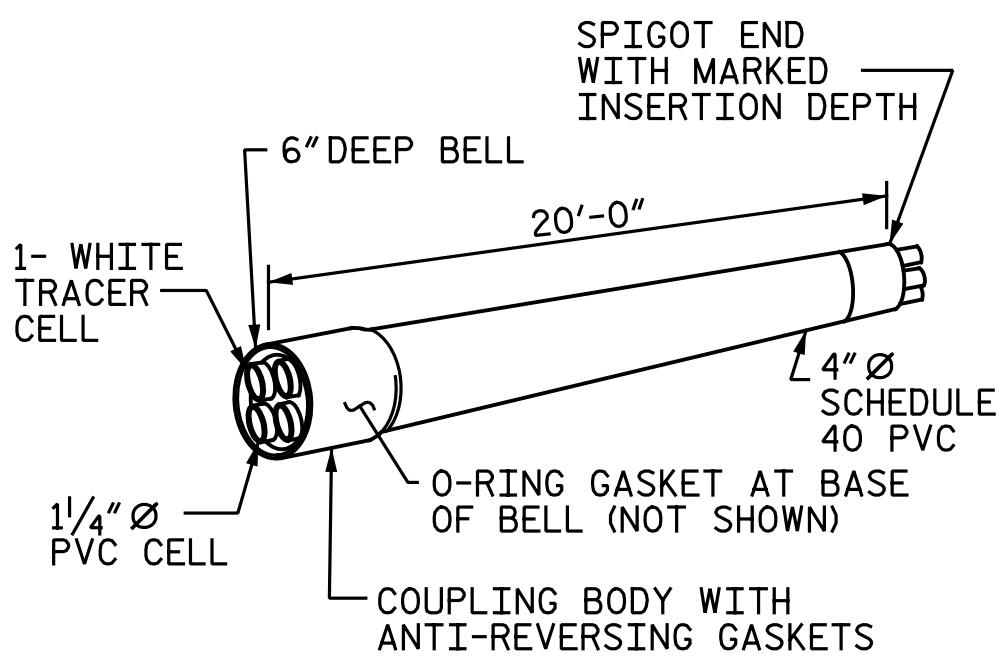
* POSITION OF PILE DURING WELDING

BAR TYPES

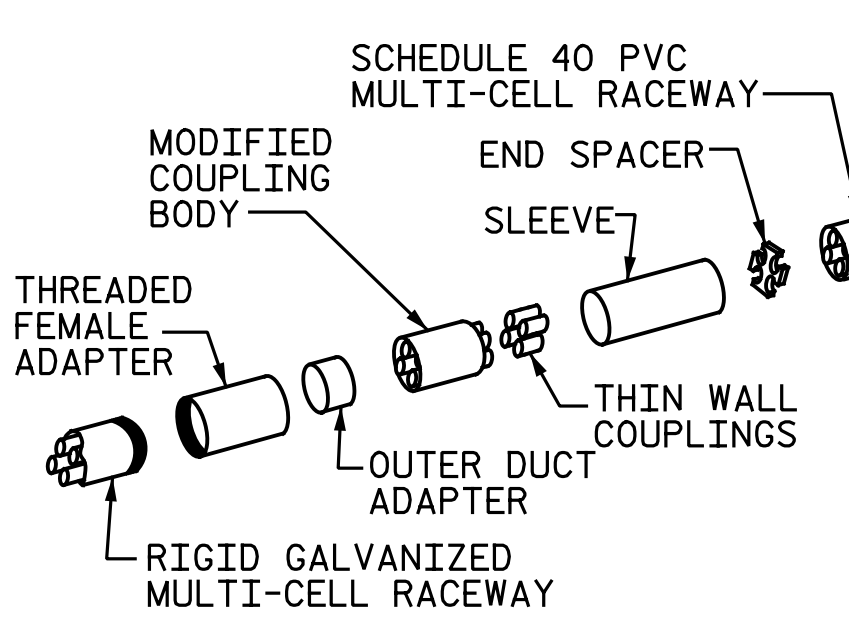




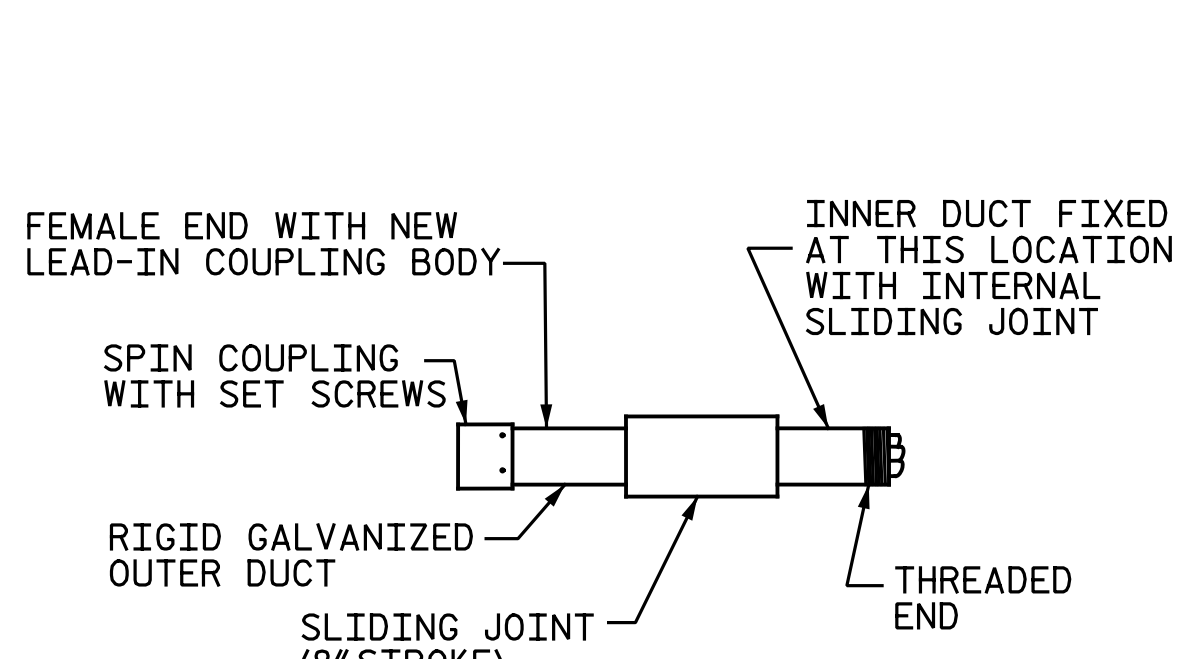
RIGID GALVANIZED (RGC)
MULTI-CELL RACEWAY



SCHEDULE 40 PVC
MULTI-CELL RACEWAY



TRANSITION ADAPTER



EXPANSION JOINT FITTING

NOTES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

SEE DETAIL "C" FOR HANGER ASSEMBLY INSTALLATION.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

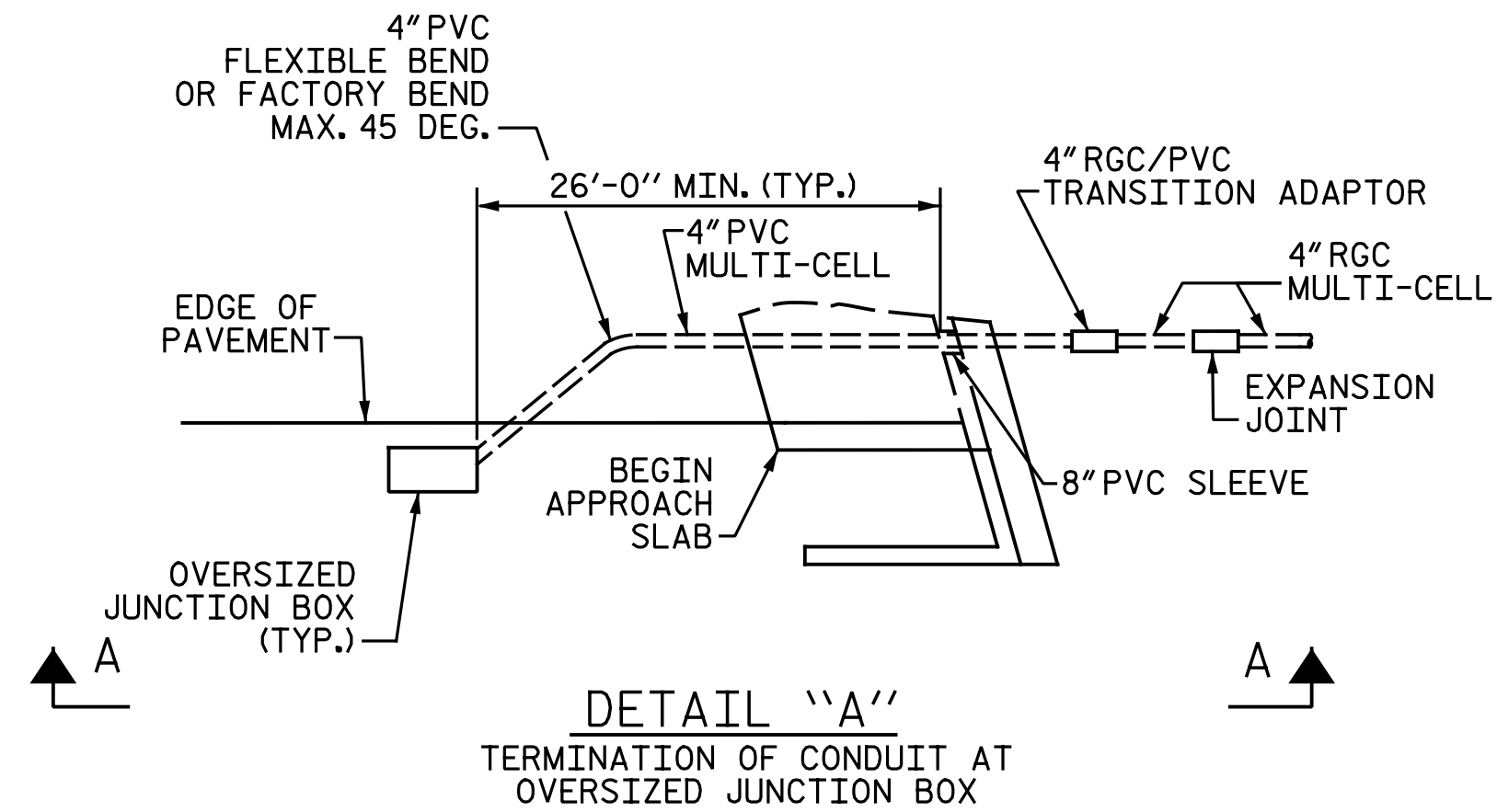
PROVIDE TRANSITION ADAPTOR AND EXPANSION JOINT FOR CONDUIT AT END BENT 1 AND END BENT 2.

INSTALL STABILIZERS MIDWAY BETWEEN DECK EXPANSION JOINTS. STABILIZER CAN NOT BE USED INSTEAD OF A HANGER ASSEMBLY.

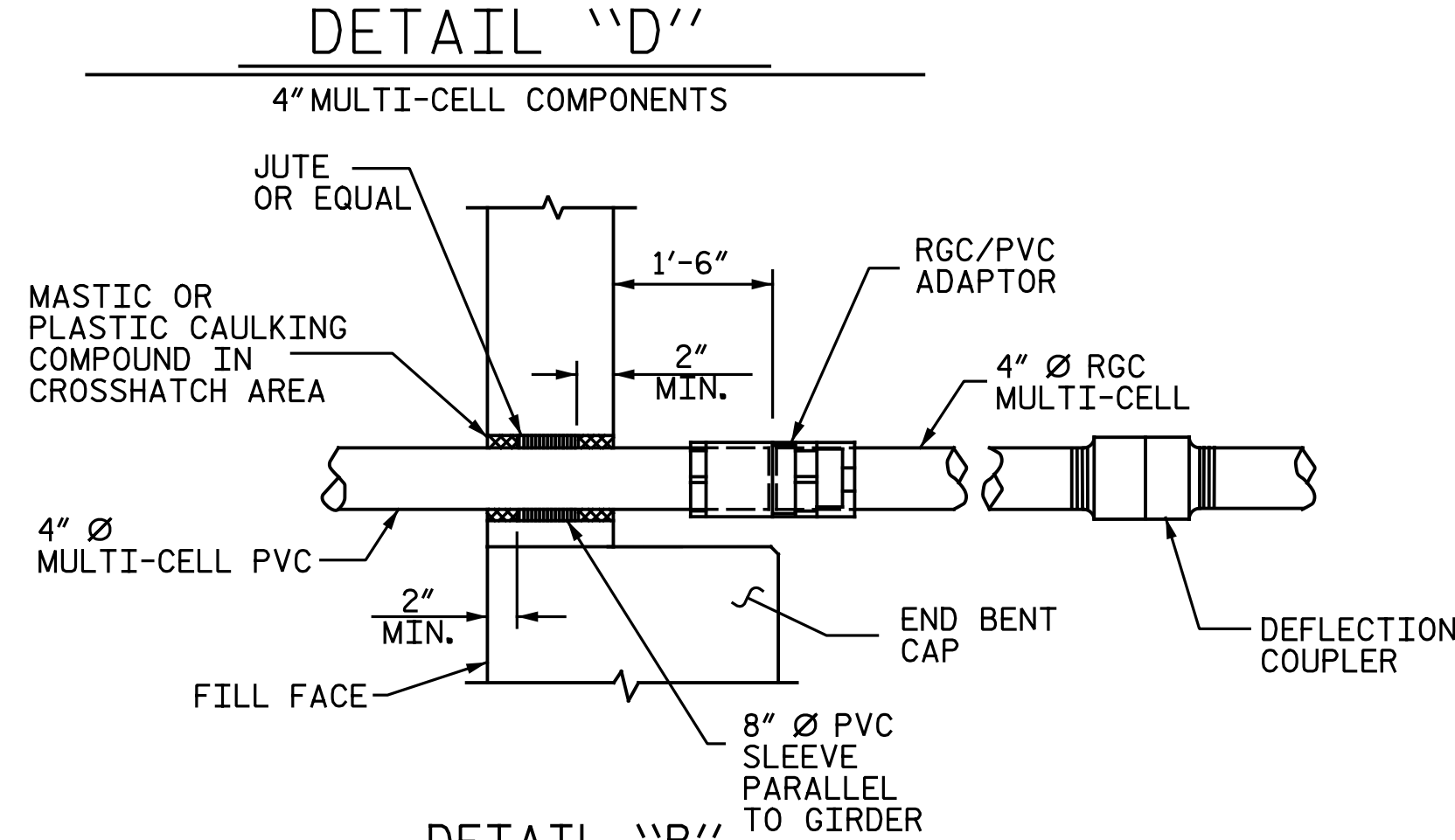
THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8 inch AND A PULL FORCE OF 1260 lbs.

FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE SPECIAL PROVISIONS.

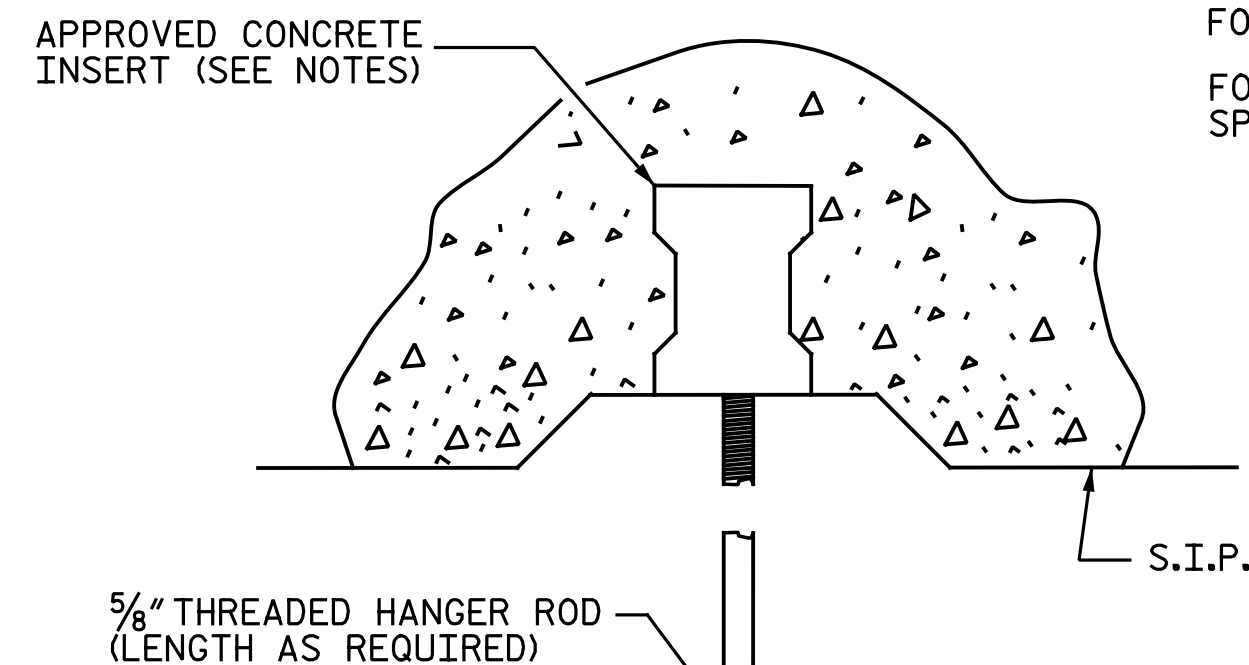
FOR OVERSIZED JUNCTION BOX, SEE ARTICLE 1098-5 OF THE STANDARD SPECIFICATIONS.



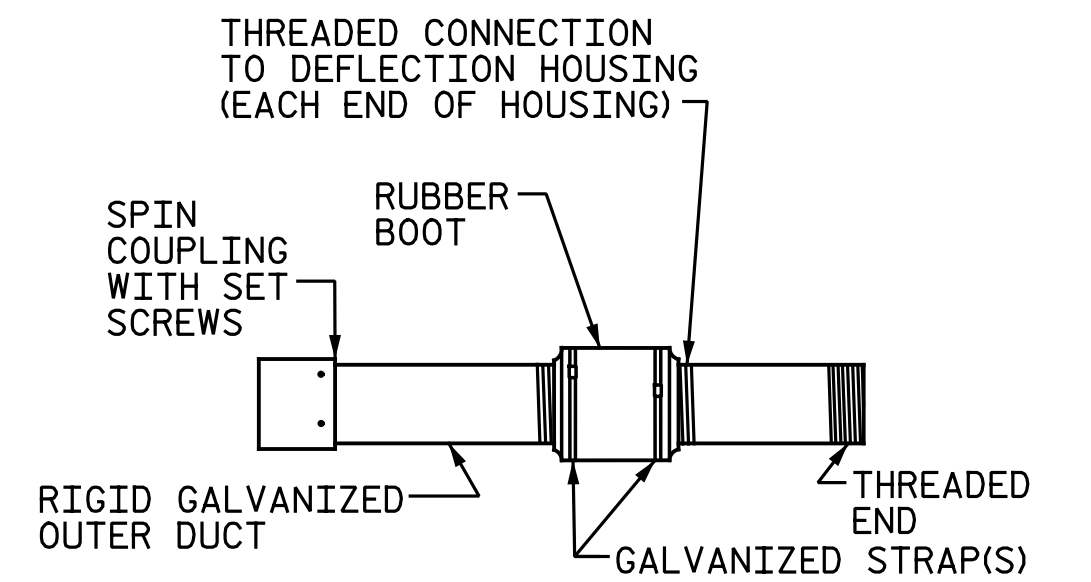
DETAIL "A"
TERMINATION OF CONDUIT AT
OVERSIZED JUNCTION BOX



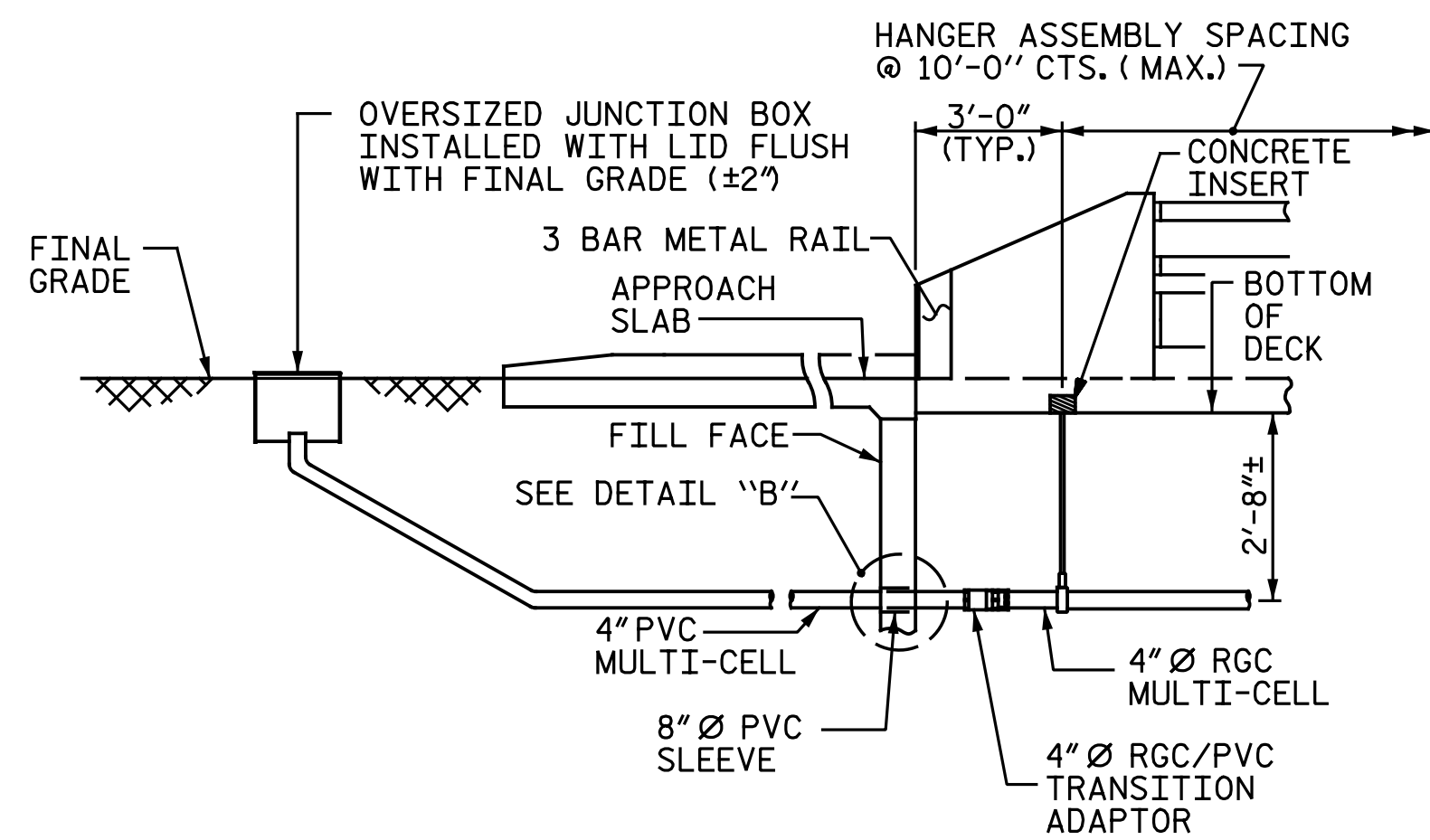
DETAIL "D"
4" MULTI-CELL COMPONENTS



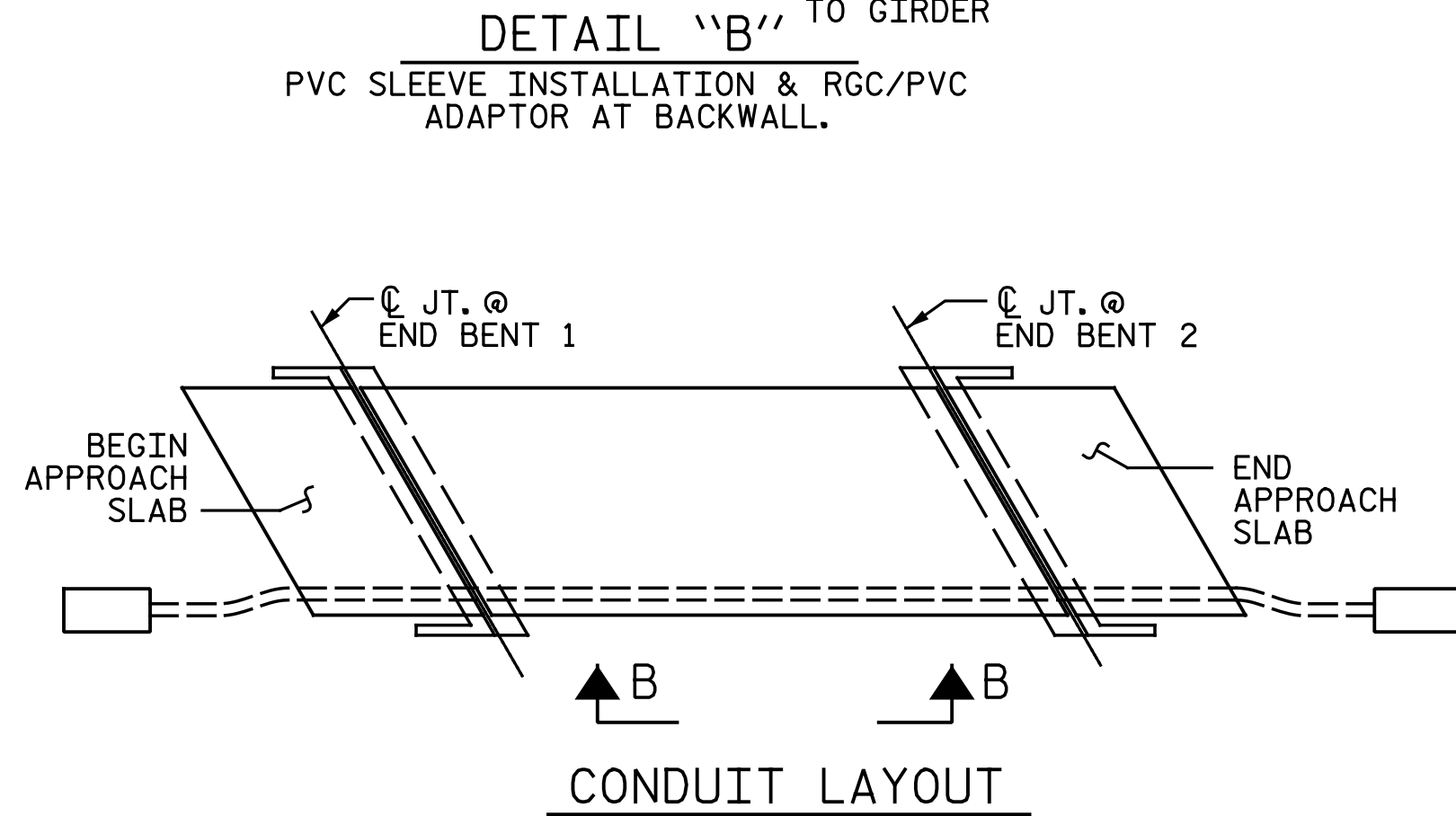
DETAIL "C"
HANGER ASSEMBLY



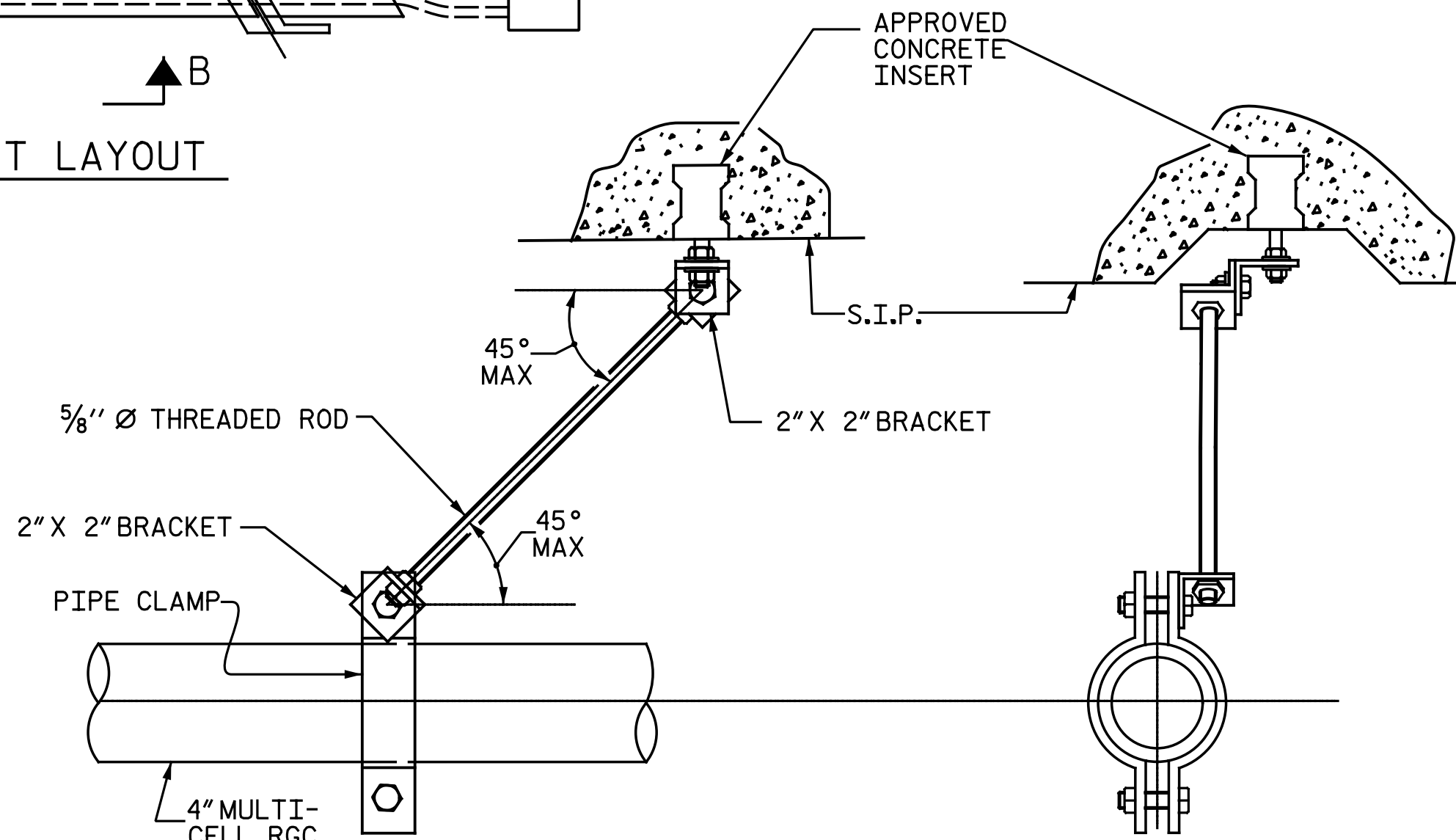
DETAIL "F"
DEFLECTION COUPLING



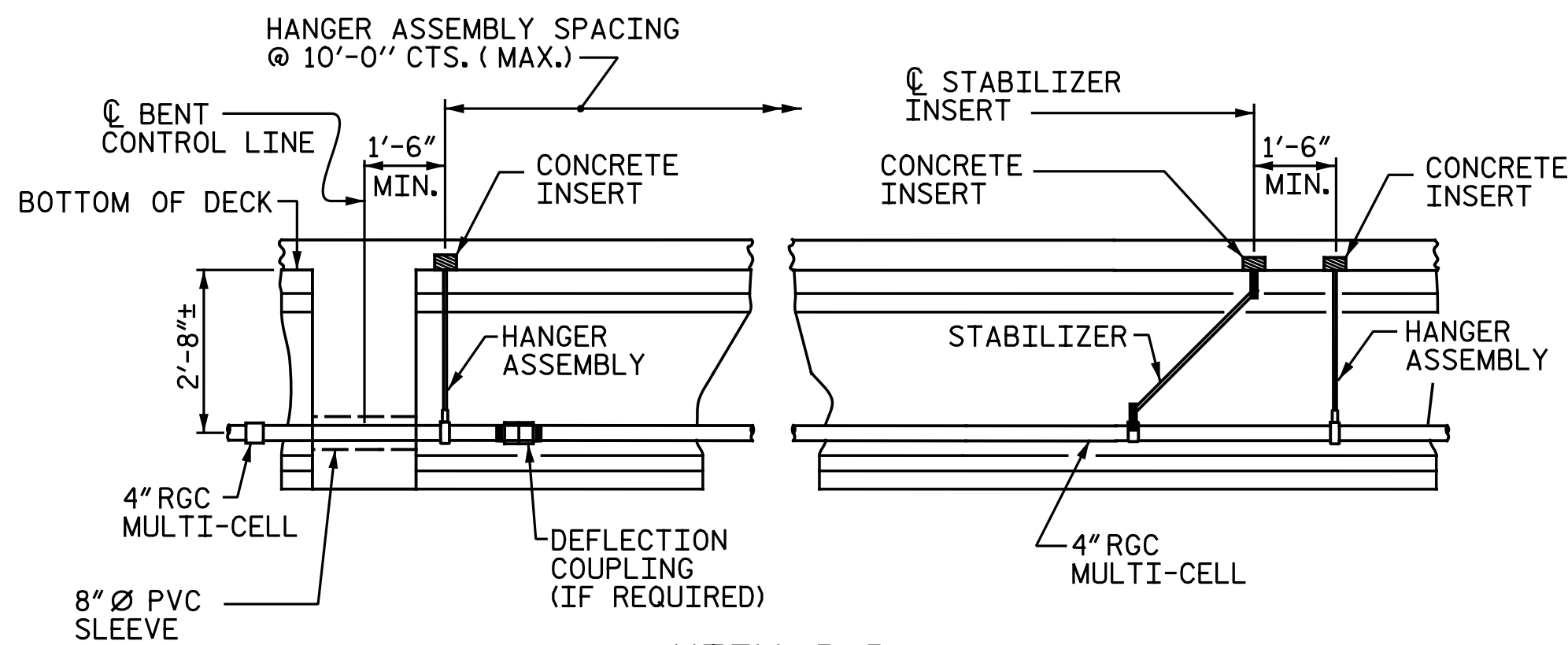
VIEW A-A



CONDUIT LAYOUT



DETAIL "E"
STABILIZER



VIEW B-B
PRESTRESSED GIRDERS
CONTINUOUS FOR LIVE LOAD

ASSEMBLED BY : N.B. SPEAKS	DATE : 12-20-19
CHECKED BY : A.H. SHARPE	DATE : 12-23-19
DRAWN BY : RWW	2-4-03
CHECKED BY : DBM	2-4-03
REV. 5/1/06	TLA/GM
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC

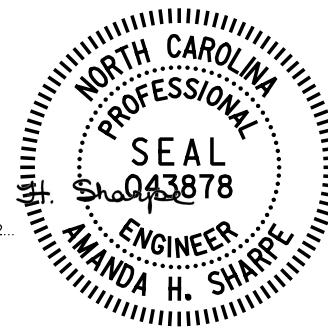
ELECTRIC CONDUIT DETAILS

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DocuSigned by:
Amanda
81D6FF4E4CE4D2
4/10/2020



PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

ELECTRICAL CONDUIT
SYSTEM FOR SIGNALS

REVISIONS						SHEET NO. SI-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

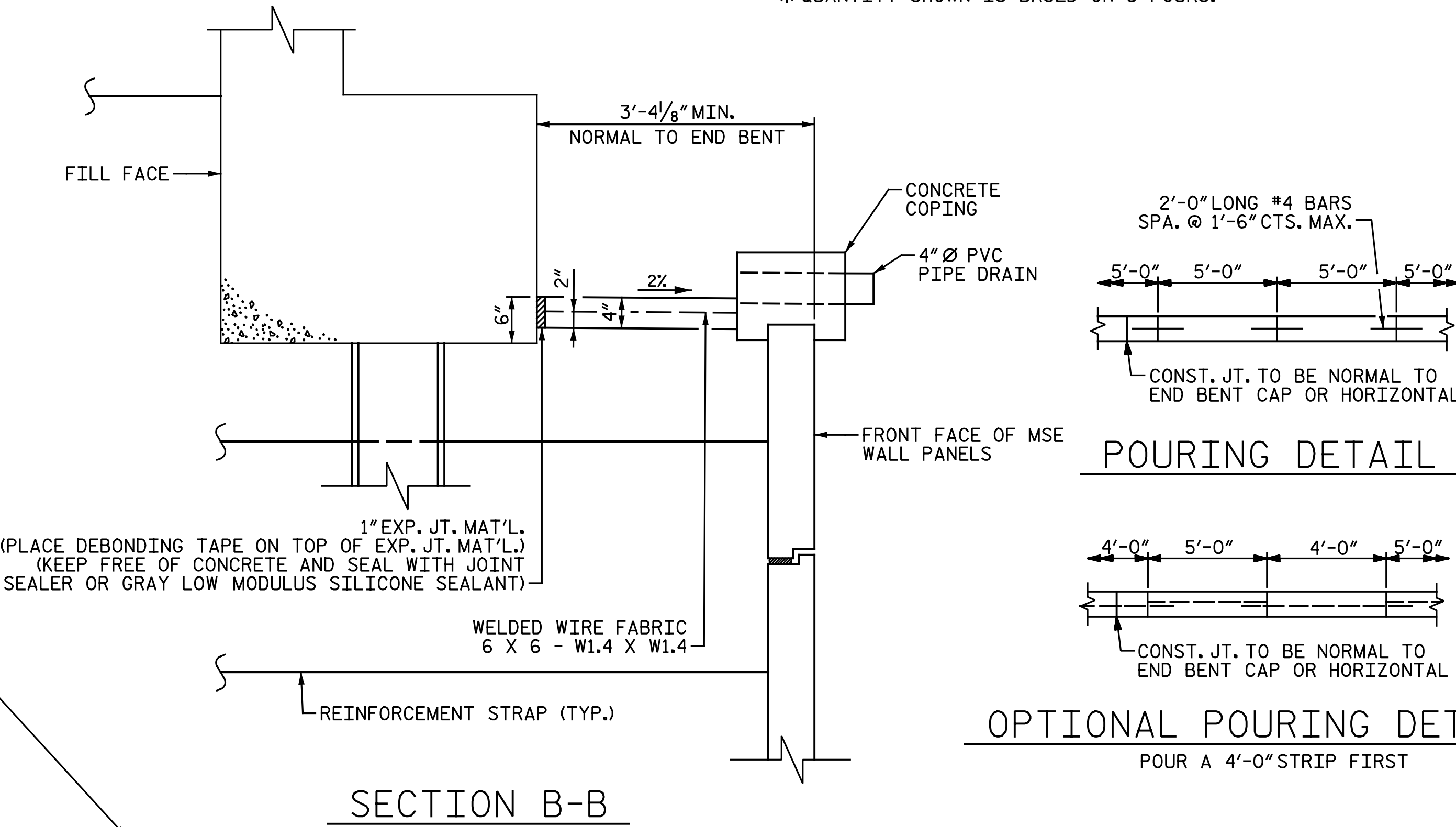
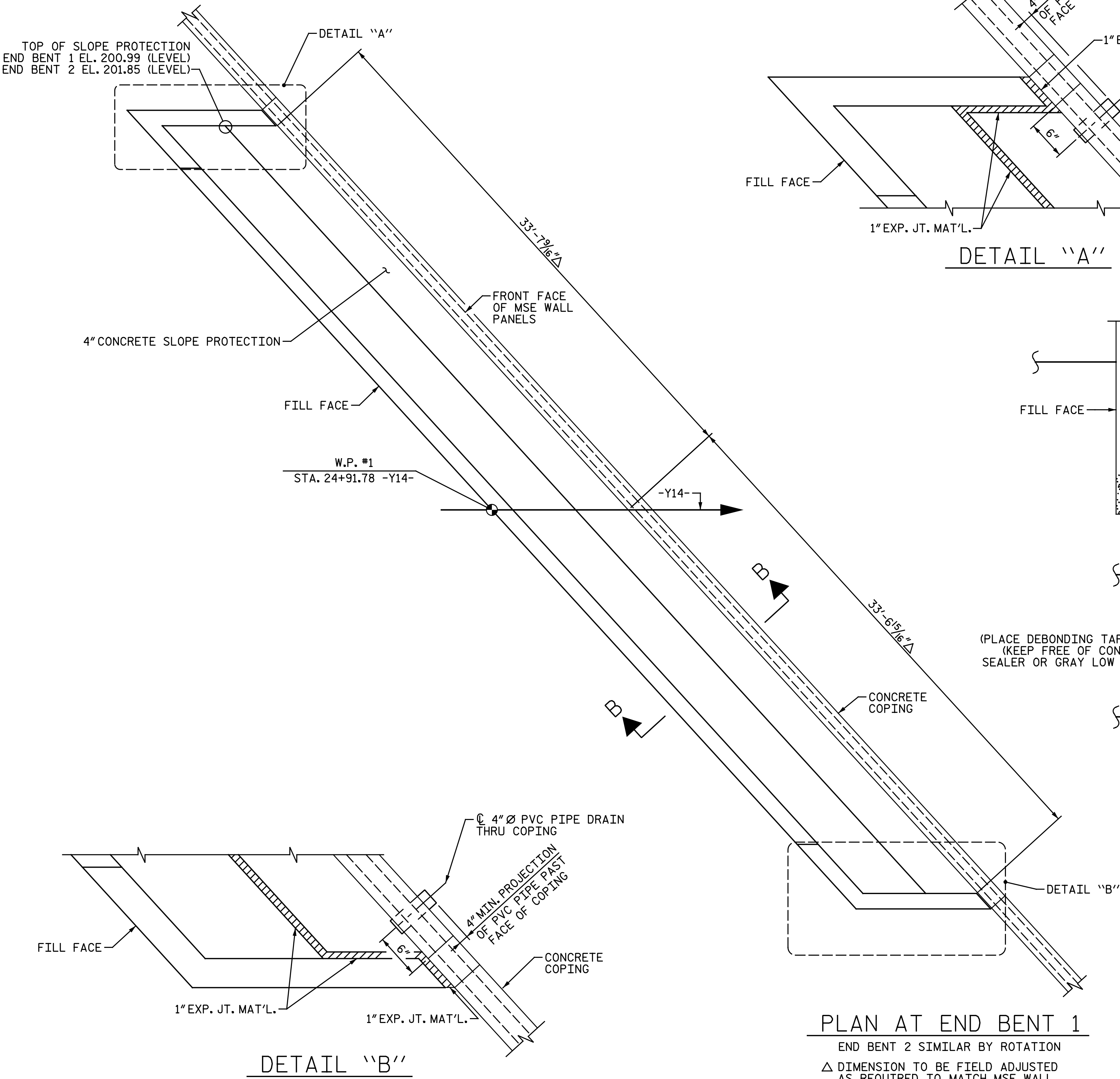
NOTES:

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

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

BRIDGE @ STA. 26+05.28 -Y14-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	18	33
END BENT 2	18	33

* QUANTITY SHOWN IS BASED ON 5' POURS.



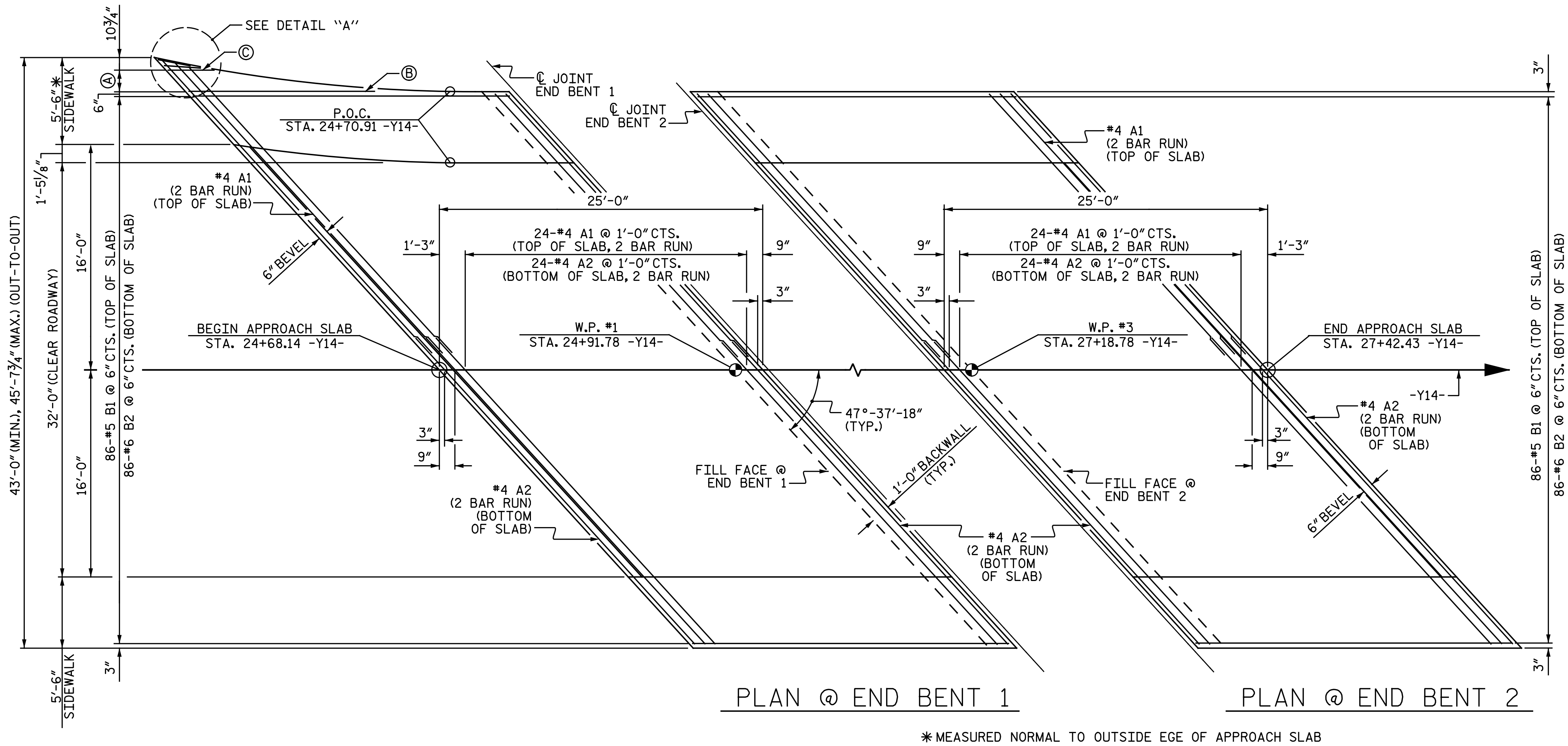
PLAN AT END BENT 1
END BENT 2 SIMILAR BY ROTATION
Δ DIMENSION TO BE FIELD ADJUSTED AS REQUIRED TO MATCH MSE WALL.

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

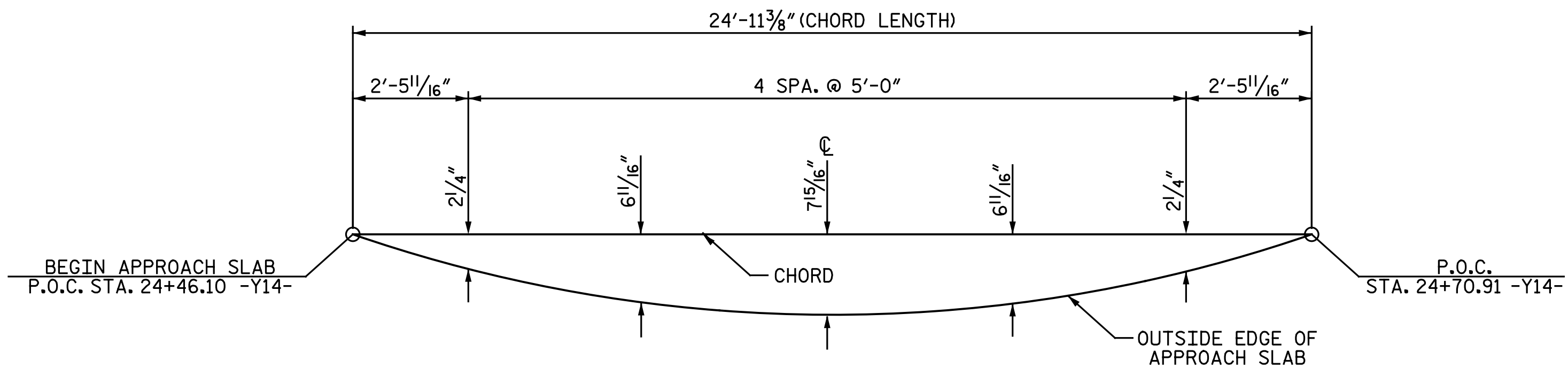
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Amanda H. Sharpe
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ENGINEER
AMANDA H. SHARPE
4/10/2020

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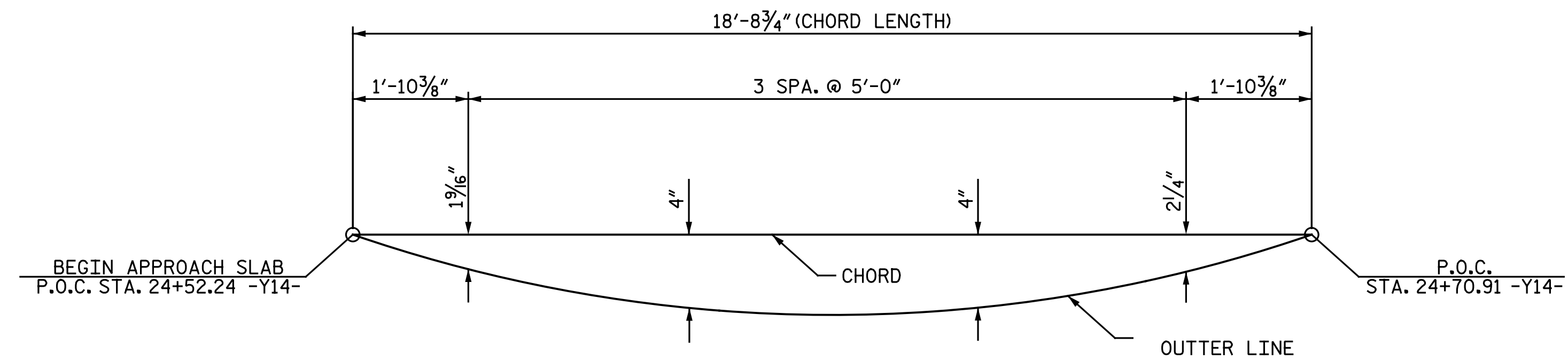
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SLOPE PROTECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. SI-32					TOTAL SHEETS 35



* MEASURED NORMAL TO OUTSIDE EGE OF APPROACH SLAB



ARC OFFSET-LEFT EDGE OF APPROACH SLAB @ END BENT 1



ARC OFFSET-LEFT GUTTERLINE OF APPROACH SLAB @ END BENT 1

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK OR PARAPET AND END POST.

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.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

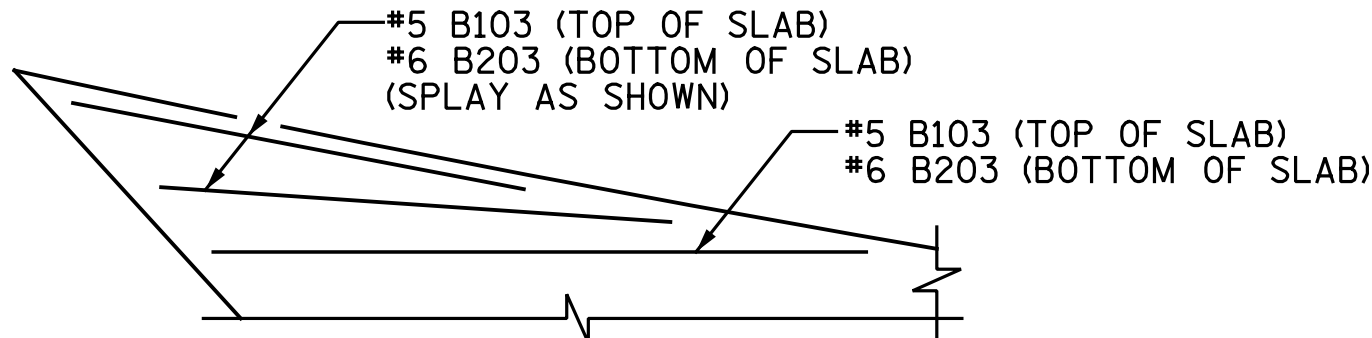
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

Ⓐ #5 B101 THRU B103 @ 6" CTS. (TOP OF SLAB)
#6 B201 THRU B203 @ 6" CTS. (BOTTOM OF SLAB)

Ⓑ #5 B101 (TOP OF SLAB)
#6 B201 (BOTTOM OF SLAB)

Ⓒ #5 B103 (TOP OF SLAB)
#6 B203 (BOTTOM OF SLAB)



DETAIL "A"

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 26+05.28 -Y14-

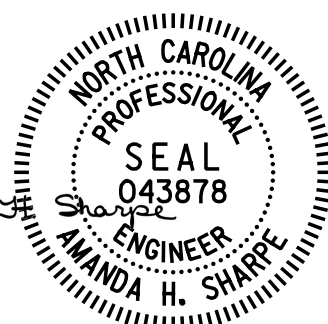
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB FOR
FLEXIBLE PAVEMENT

DocuSigned by:
Amanda H. Sharpe
4106FFFAEDEF4D2...

4/10/2020



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REVISIONS

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

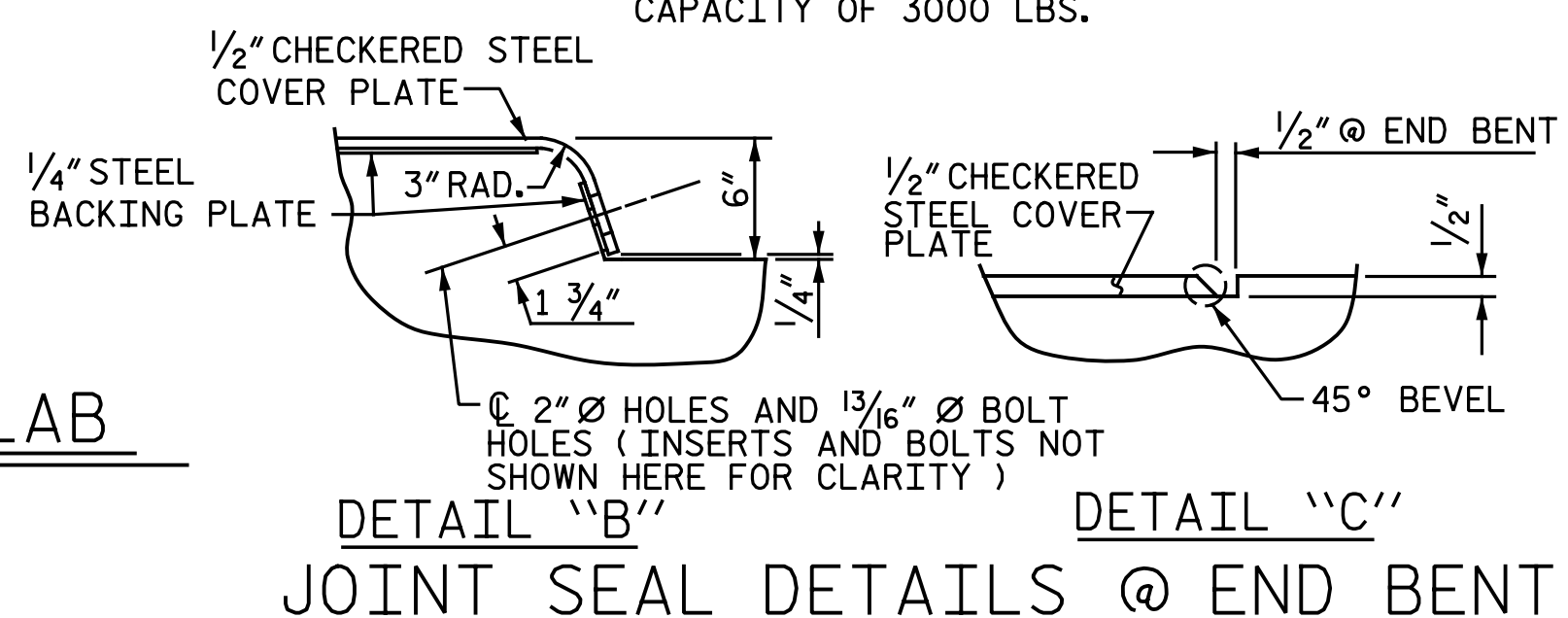
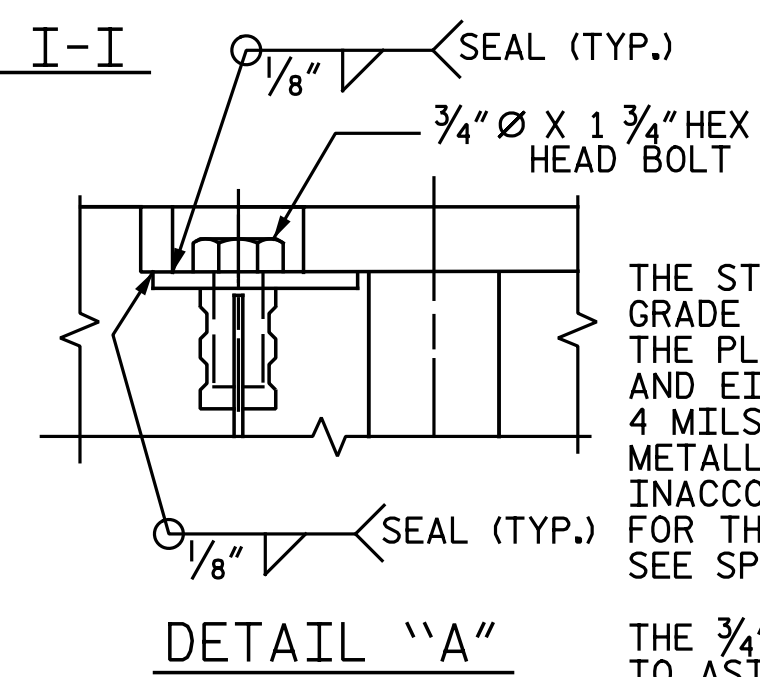
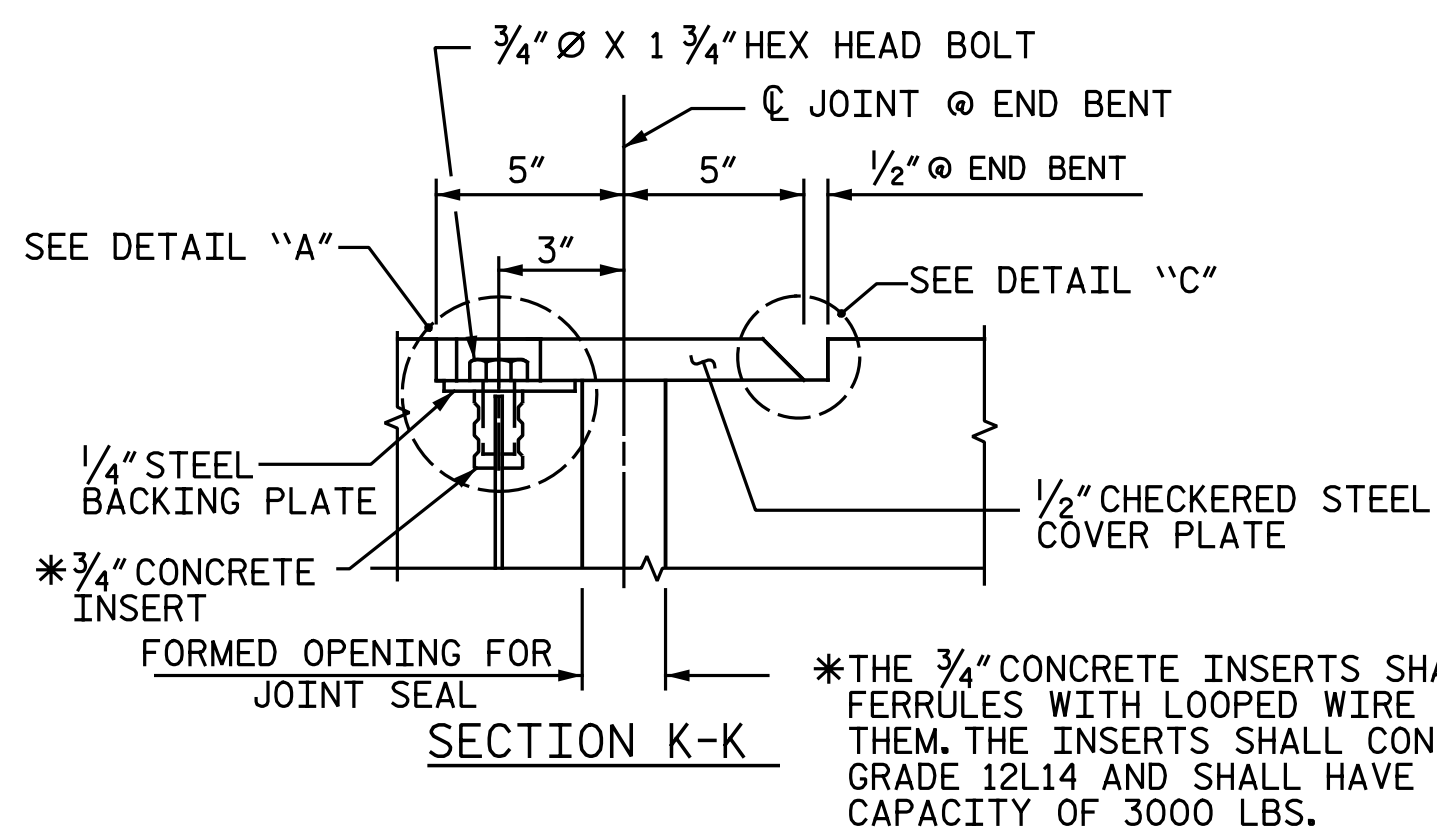
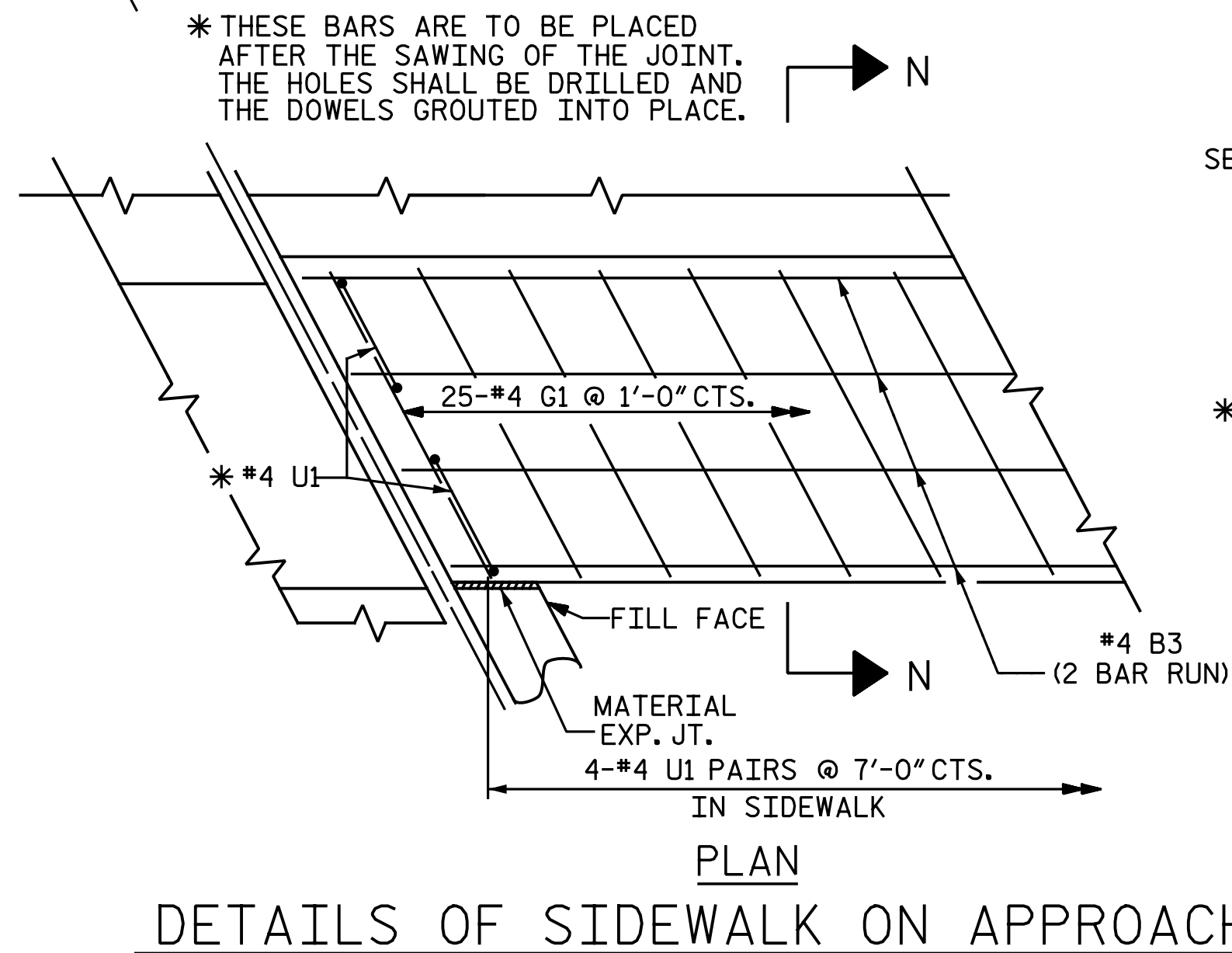
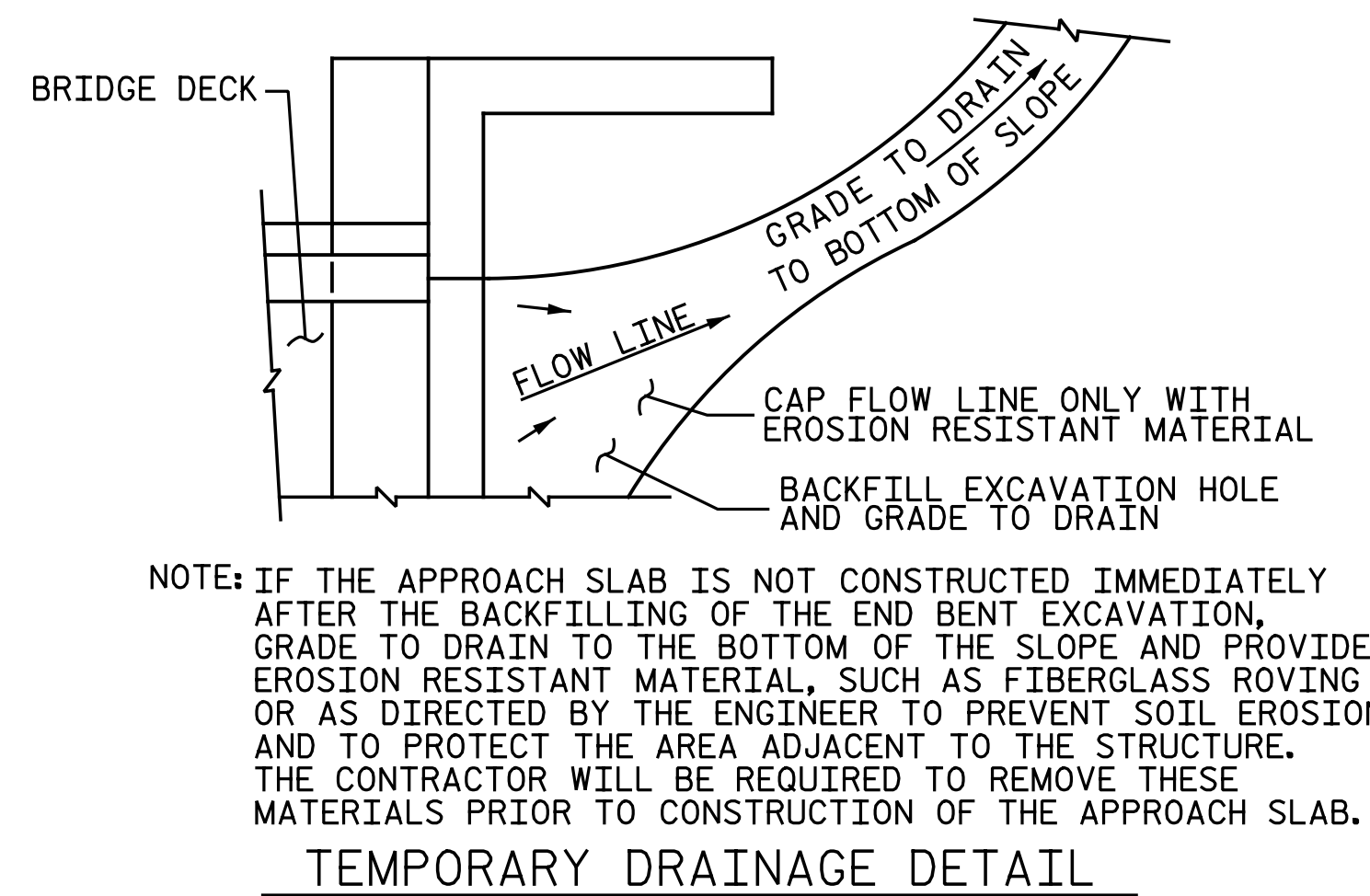
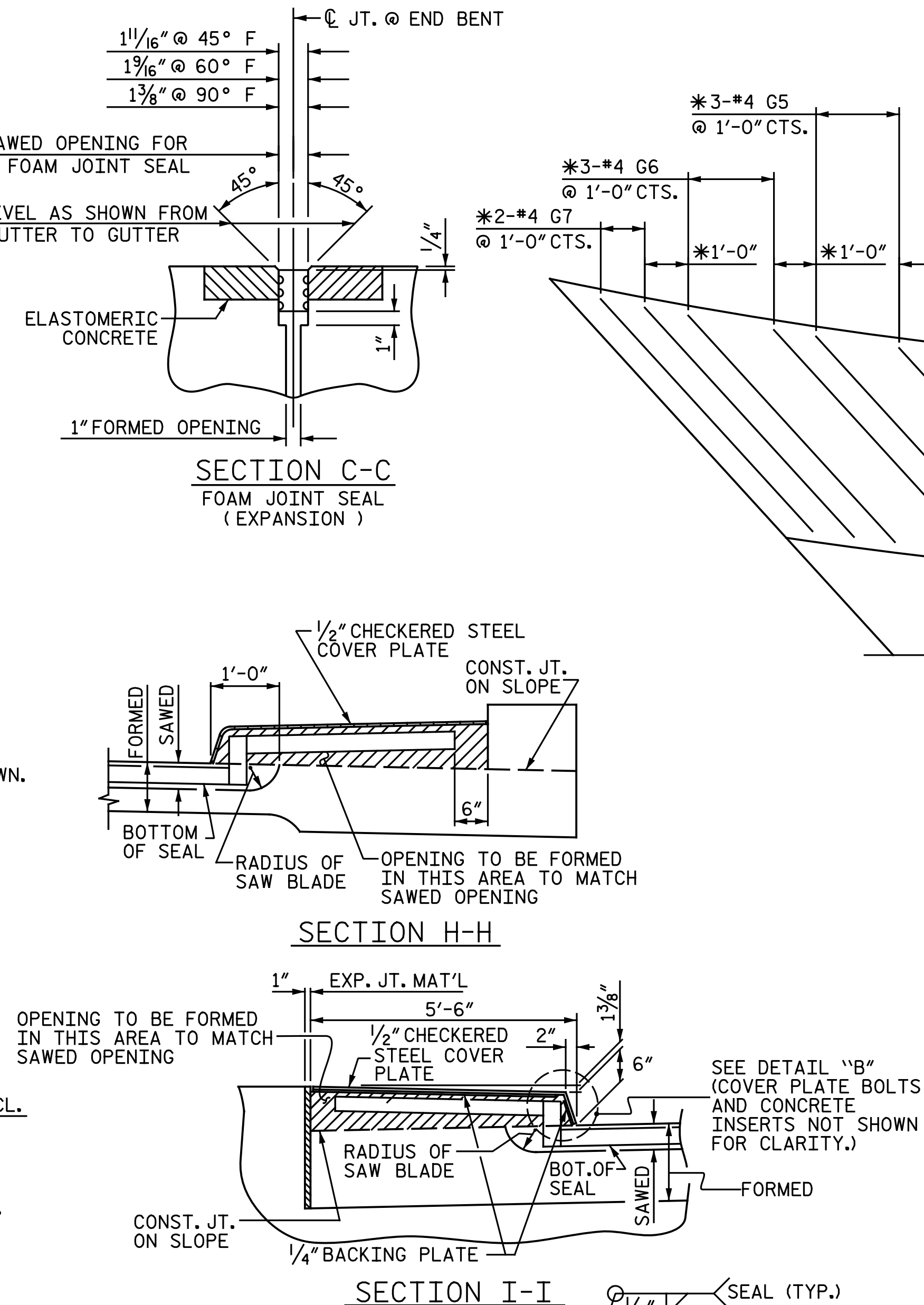
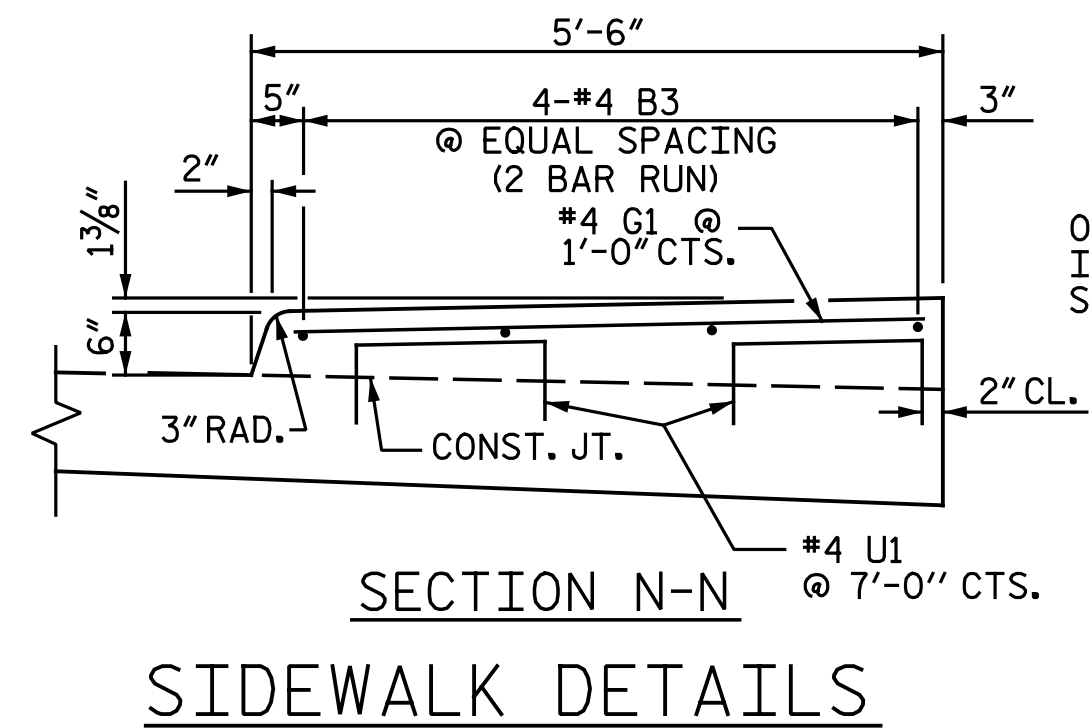
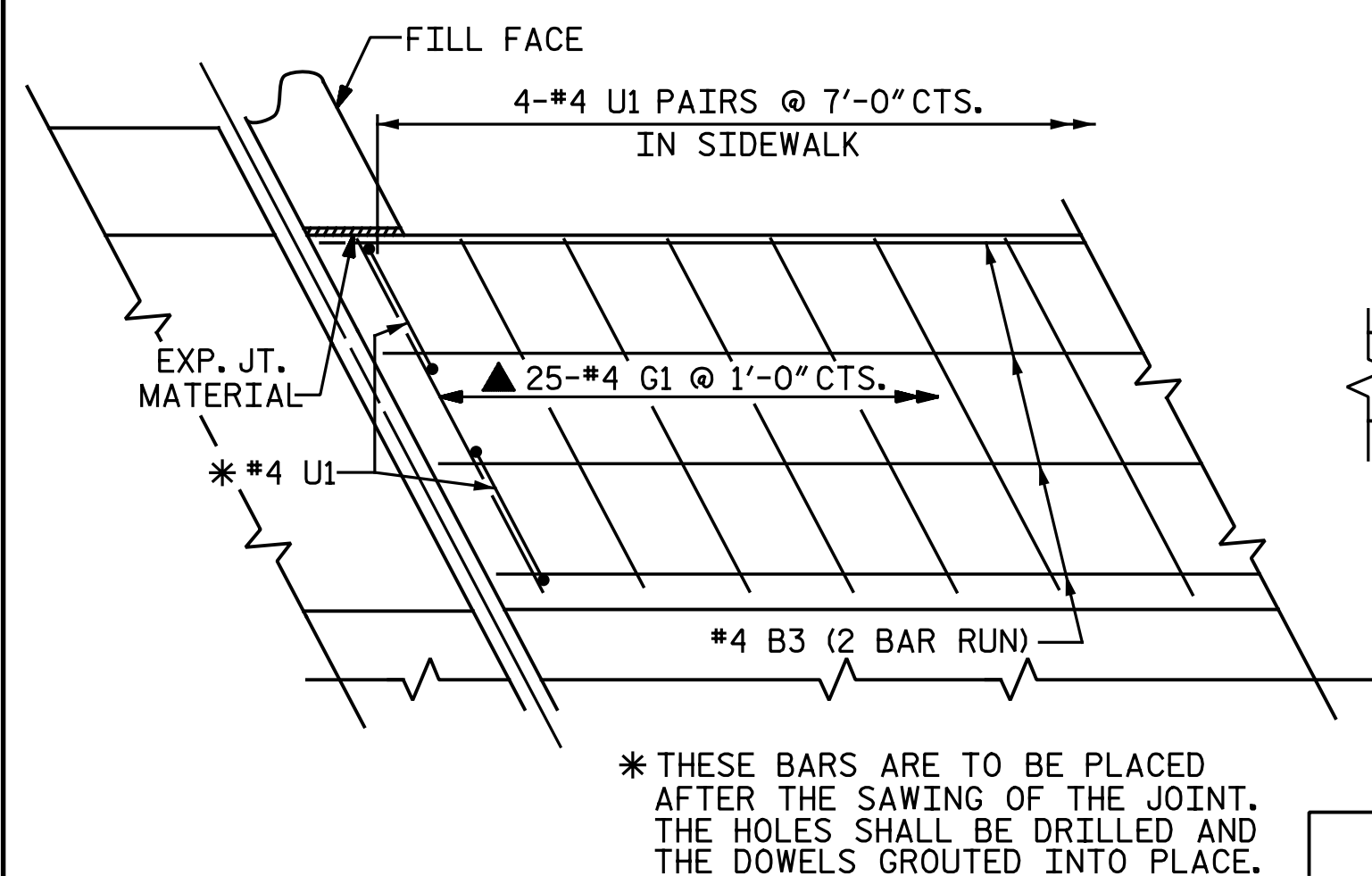
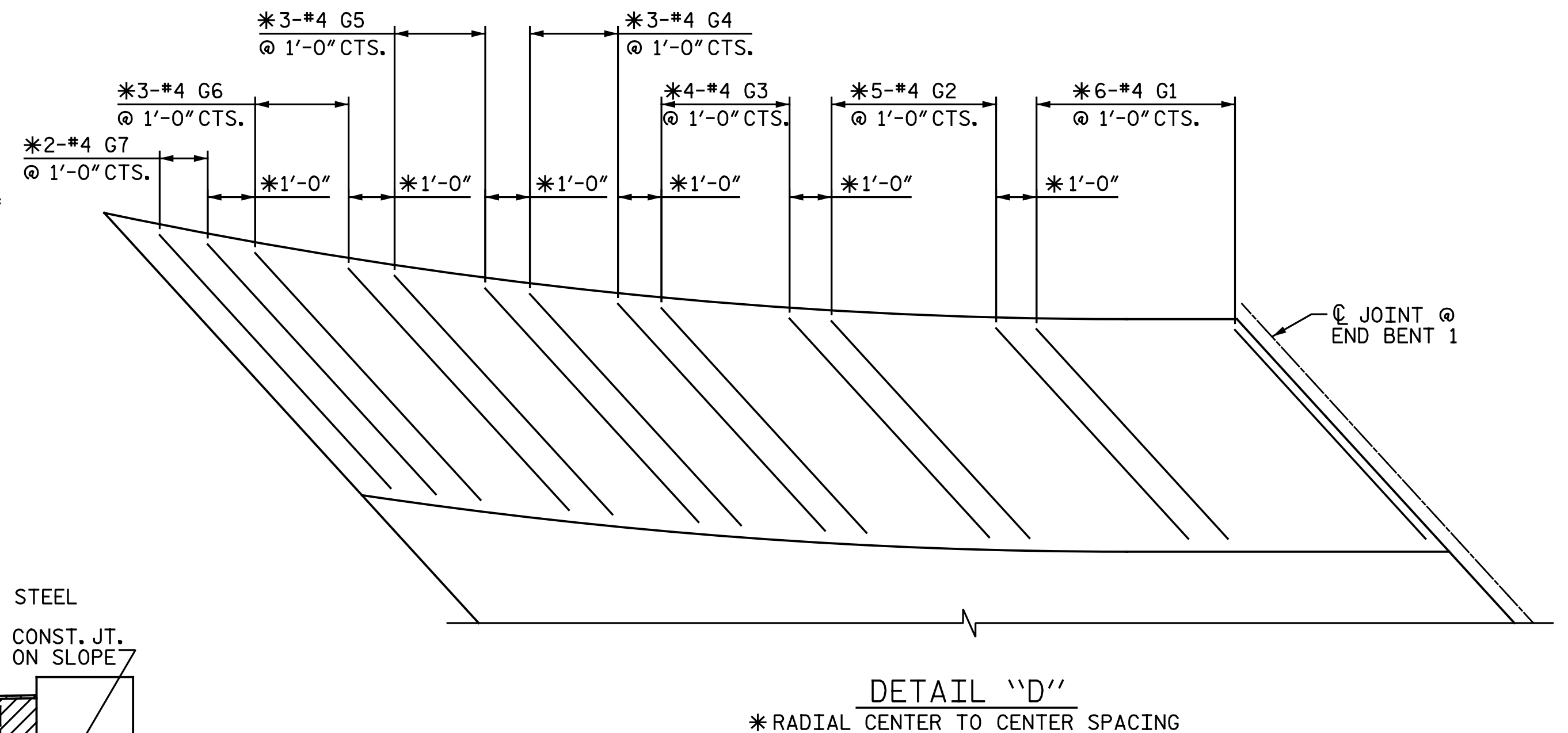
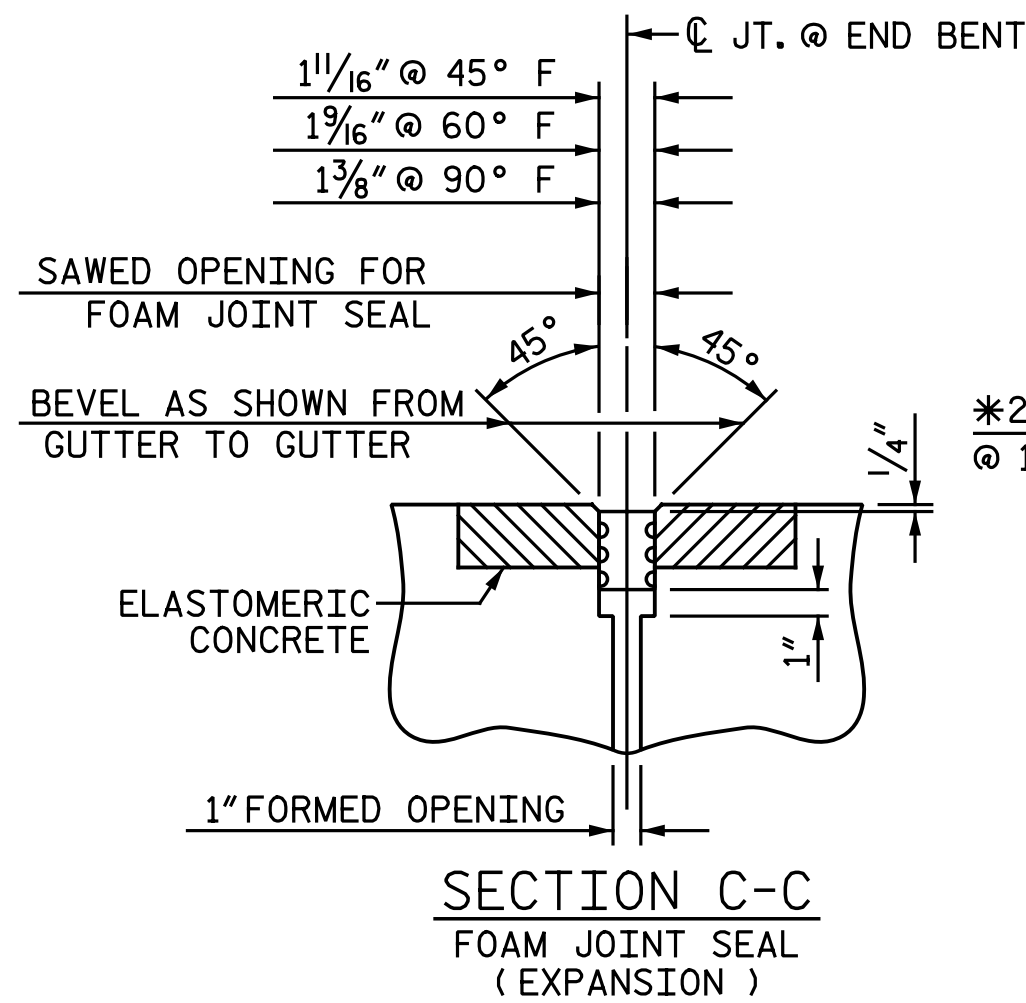
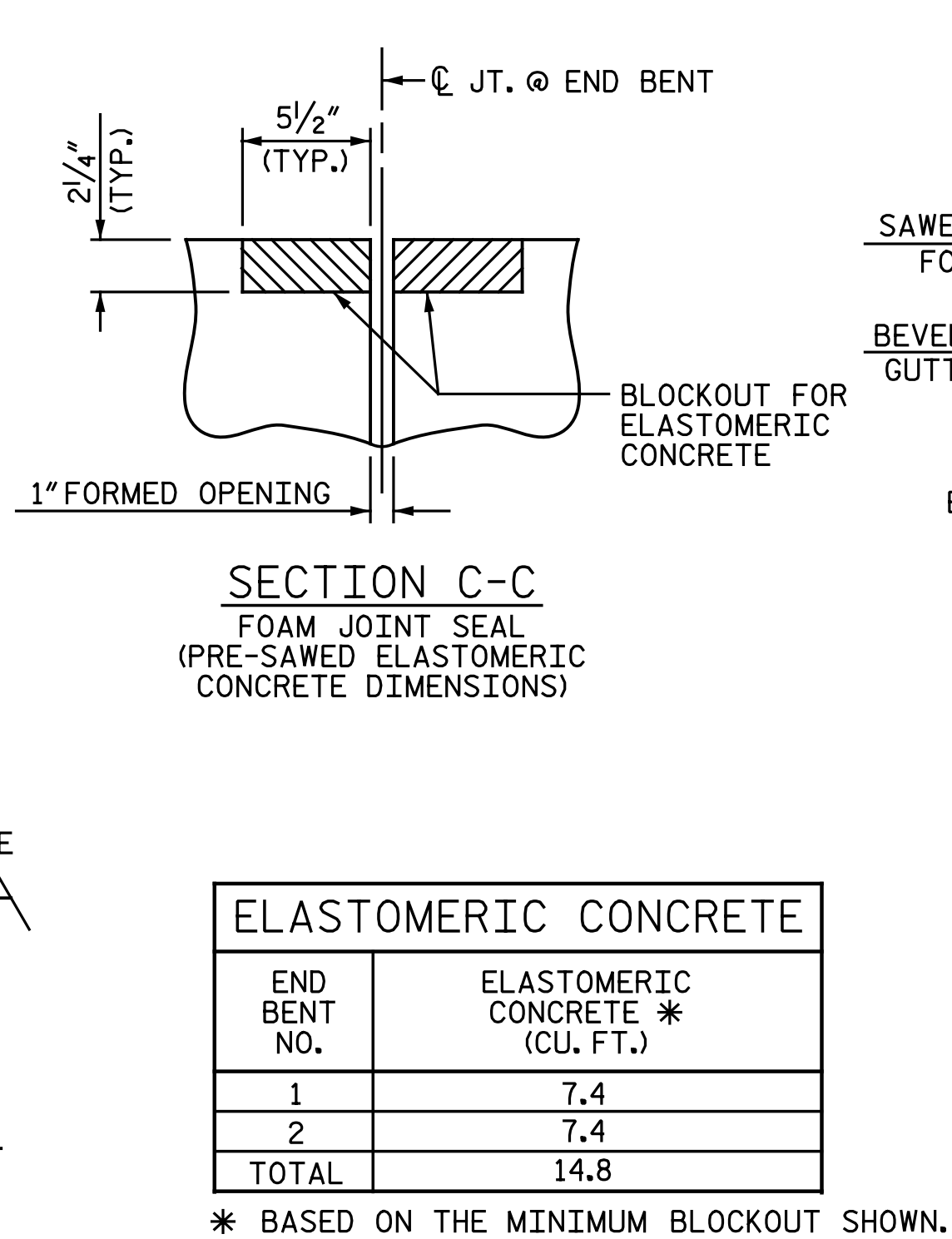
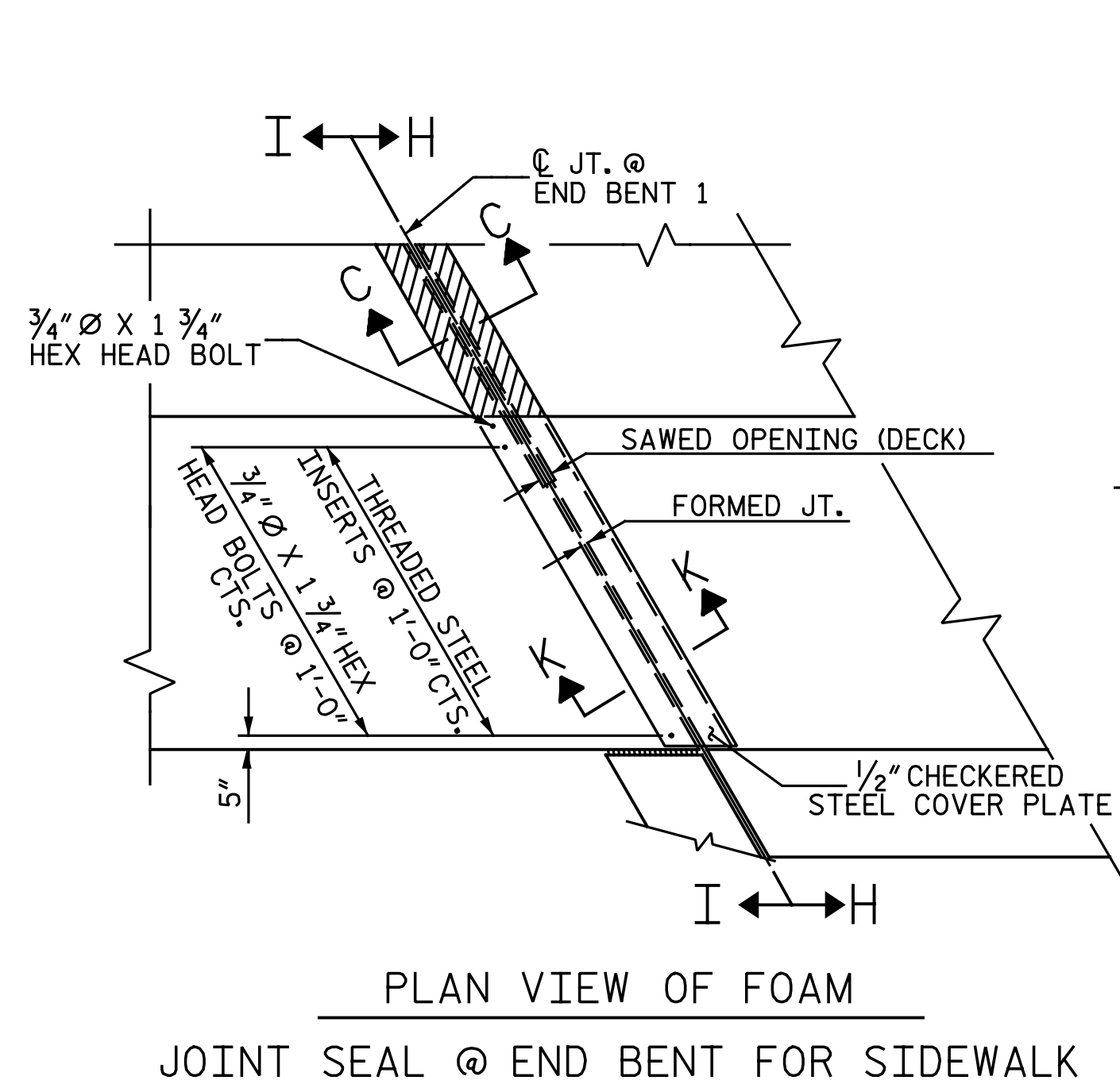
SHEET NO.

SI-33

TOTAL SHEETS

35

DRAWN BY : N. B. SPEAKS DATE : 6-25-19
CHECKED BY : A. H. SHARPE DATE : 9-8-19



THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM
TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".

PROJECT NO. I-5878
HARNETT COUNTY
 STATION: 26+05.28 -Y14-

ASSEMBLED BY : N. B. SPEAKS		DATE : 7-15-19
CHECKED BY : A. H. SHARPE		DATE : 9-9-19
DRAWN BY : FCJ	11/88	REV. 6/13 MAA/GM
CHECKED BY : ARB	11/88	REV. 12/17 MAA/THC
		REV. 5/18 MAA/THC

▲ FOR APPROACH SLAB @ END BENT 2.
SEE DETAIL "D" FOR "G" BAR LAYOUT IN
THE LEFT SIDEWALK ON APPROACH
SLAB @ END BENT 1.

DETAIL "B" DETAIL "C"
JOINT SEAL DETAILS @ END BENT

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UNLESS ALL SIGNATURES COMPLETED

Michael Baker
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8000 Regency Parkway, Suite 6
Cary, North Carolina 27518
NC License No.: F-1084

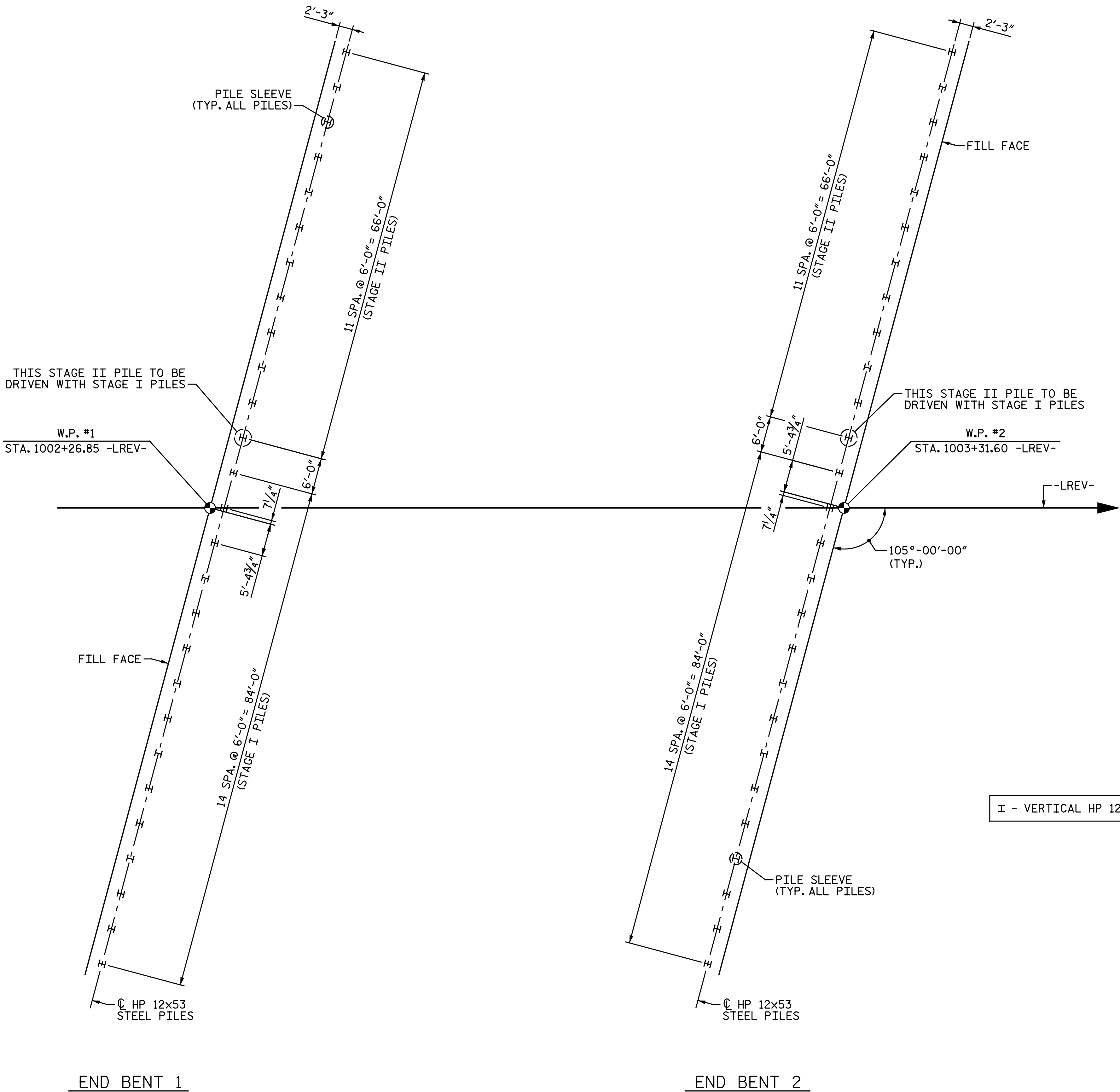
A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "AMANDA H. SHARPE" at the bottom. Inside this ring, the word "PROFESSIONAL" is at the top and "ENGINEER" is at the bottom. In the center, the word "SEAL" is at the top, followed by the license number "043878". A handwritten signature, "Sharpe", is written across the center of the seal.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
DETAILS

300	REVISIONS						SHEET NO. SI-35
	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			TOTAL SHEETS 35
	2			4			

STD. NO. BAS4





NOTES:
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT END BENT NO.1 AND END BENT NO.2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO.1 AND END BENT NO.2.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL TO WITHIN 1 FOOT OF THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1 AND END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-
28+40.13 -Y15-

DocuSigned by:
Michael Baker Engineering
C41A3F8ECA30434...

4/22/2021

SEAL
042399
ENGINEER
BRADLEY J. BELL

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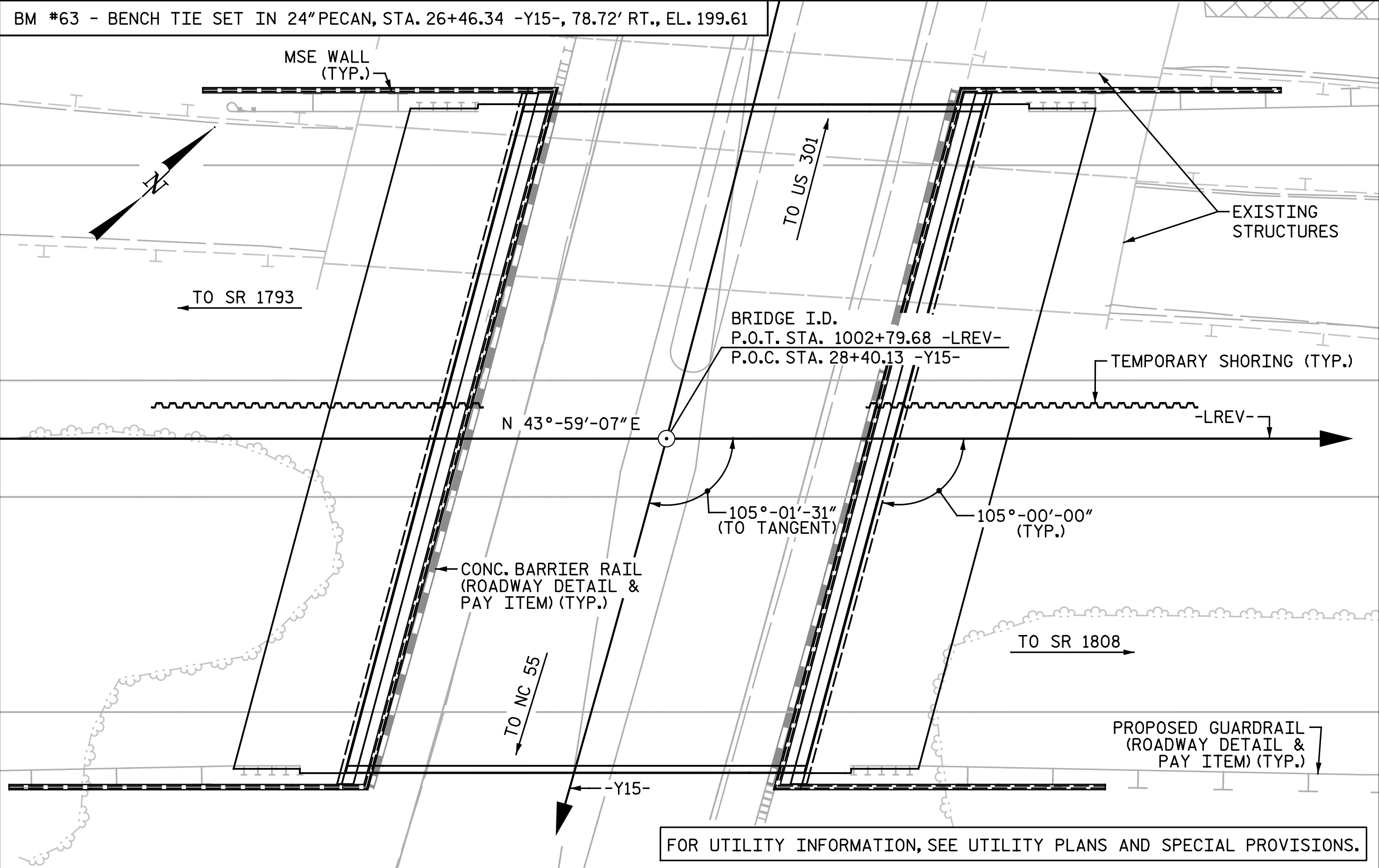
Michael Baker
INTERNATIONAL

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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : M. D. MAYHEW DATE : 8-5-19
CHECKED BY : B. J. BELL DATE : 8-9-19

FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURES AT STATION 1002+79.68 -LREV-".

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

AFTER SERVING AS TEMPORARY STRUCTURES, THE EXISTING STRUCTURES CONSISTING OF TWO 40'-0" AND TWO 47'-6" SIMPLE SPANS WITH A CLEAR ROADWAY WIDTH OF 28'-1" AND REINFORCED CONCRETE SLAB SUPPORTED BY STEEL I-BEAMS ON REINFORCED CONCRETE END BENTS WITH TIMBER PILES AND REINFORCED CONCRETE POST AND BEAM INTERIOR BENTS LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGES ARE PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGES 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.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

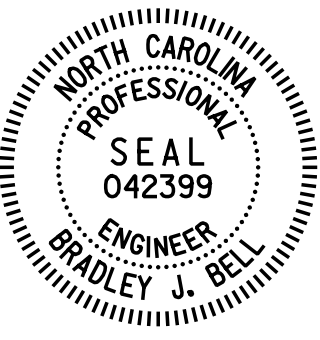
FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR MSE WALL, MSE REINFORCING STRAPS ATTACHED TO END BENTS, AND PILE SLEEVES, SEE MSE WALL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	REMOVAL OF EXISTING STRUCTURES	ASBESTOS ASSESSMENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	CONCRETE MEDIAN BARRIER	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	45" PRESTRESSED CONCRETE FLORIDA I-BEAMS	
	LUMP SUM	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE				15,296	20,527								245.38	152.12		LUMP SUM	LUMP SUM	16	1,614.50
END BENT 1						123.7		22,176	27	27	1,890	14			45				
END BENT 2						122.1		22,112	27	27	1,890	14			41				
TOTAL	LUMP SUM	LUMP SUM	2	15,296	20,527	245.8	LUMP SUM	44,288	54	54	3,780	28	245.38	152.12	86	LUMP SUM	LUMP SUM	16	1,614.50

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-
28+40.13 -Y15-
SHEET 3 OF 3



DocuSigned by:
B. J. Bell
C41A3F8E6C3C434...

4/26/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER US 421
ON I-95 BETWEEN
SR 1793 AND SR 1808

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S2-3
2			4			TOTAL SHEETS 34

DRAWN BY : M. D. MAYHEW DATE : 6-13-19
CHECKED BY : B. J. BELL DATE : 4-26-21

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.

2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO THE CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING BEAM.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

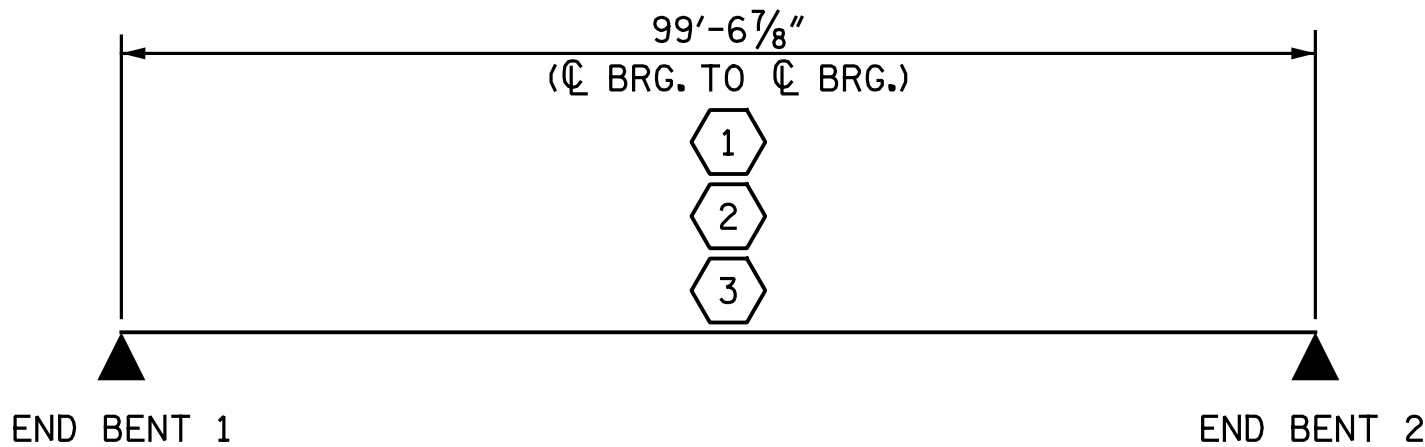
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

BEAM LOCATION

BEAM LOCATION PROVIDED UTILIZES BEAM NUMBER, WHERE BEAM 1 IS THE LEFT EXTERIOR BEAM LOOKING AHEAD STATION. SEE "BEAM LAYOUT" SHEET FOR ALL BEAM LOCATIONS.



LRFR SUMMARY

PROJECT NO. I-5878

HARNETT COUNTY

STATION: 1002+79.68 -LREV-

ASSEMBLED BY : N. B. SPEAKS	DATE : 8-7-19
CHECKED BY : B. J. BELL	DATE : 8-23-19
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DocuSigned by:
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4/22/2021

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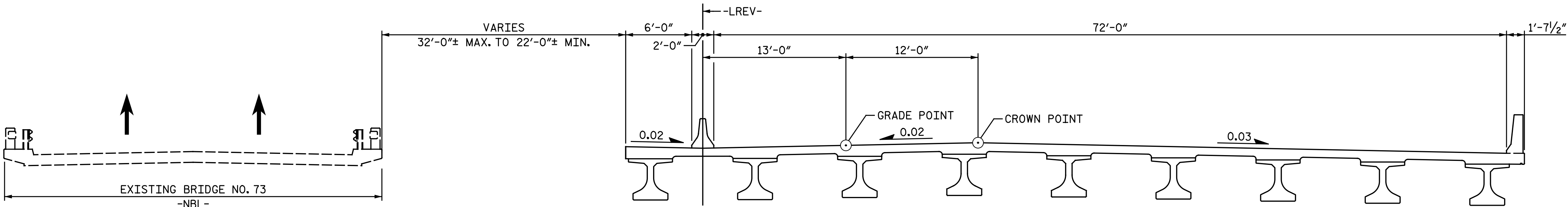
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE BEAMS
(INTERSTATE TRAFFIC)

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

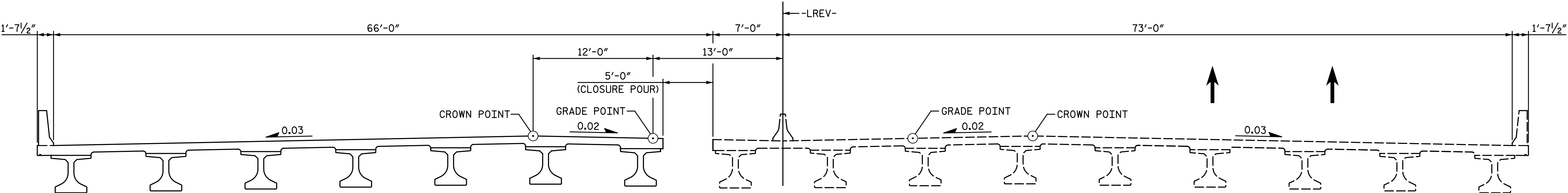
SHEET NO.
S2-4

TOTAL
SHEETS
34



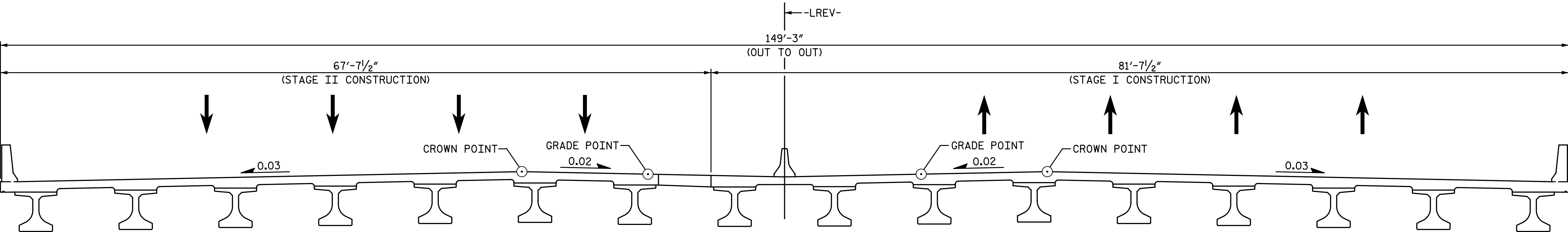
STAGE I

CONSTRUCT RIGHT SIDE OF PROPOSED BRIDGE & MEDIAN BARRIER,
MAINTAIN TRAFFIC ON EXISTING BRIDGE NOS. 73 & 77.



STAGE II

MOVE NORTHBOUND TRAFFIC ONTO STAGE I, REMOVE EXISTING BRIDGE NO. 73,
CONSTRUCT LEFT SIDE OF PROPOSED BRIDGE.



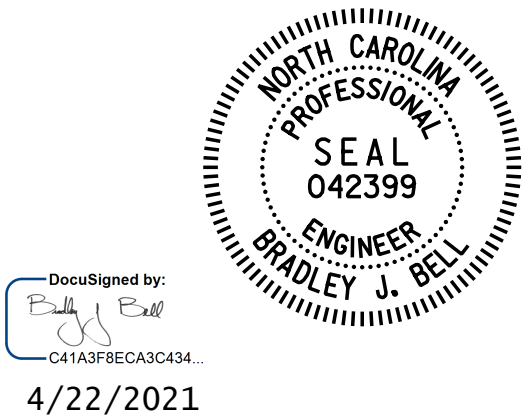
FINAL TYPICAL SECTION

CONSTRUCT THE CLOSURE POUR & SHIFT TRAFFIC TO FINAL PATTERN,
REMOVE EXISTING BRIDGE NO. 77.

NOTE:

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



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4/22/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION
SEQUENCE

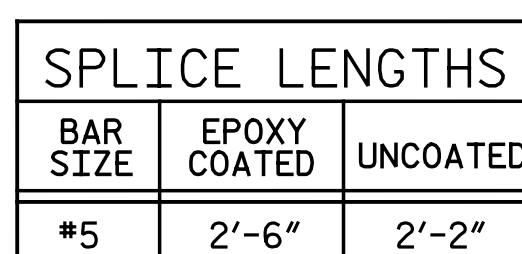
REVISIONS						SHEET NO. S2-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : M. D. MAYHEW DATE : 5-16-19
CHECKED BY : B. J. BELL DATE : 6-17-19

DRAWN BY : M. D. MAYHEW DATE : 6-25-19
CHECKED BY : B. J. BELL DATE : 9-24-19



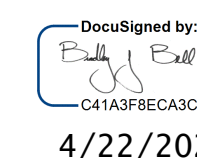
FOR ADDITIONAL NOTES, SEE "TYPICAL SECTION STAGE I" SHEET.



CLOSURE POUR DETAILS

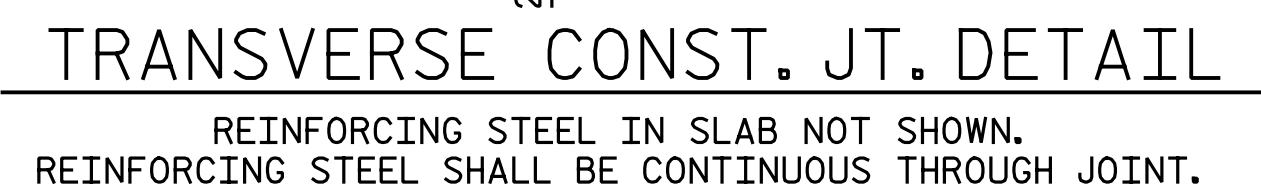
* B.B. HEIGHT TO BE DETERMINED BASED ON MEASURED FIELD CAMBER

SHEET 2 OF 2



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
STAGE II

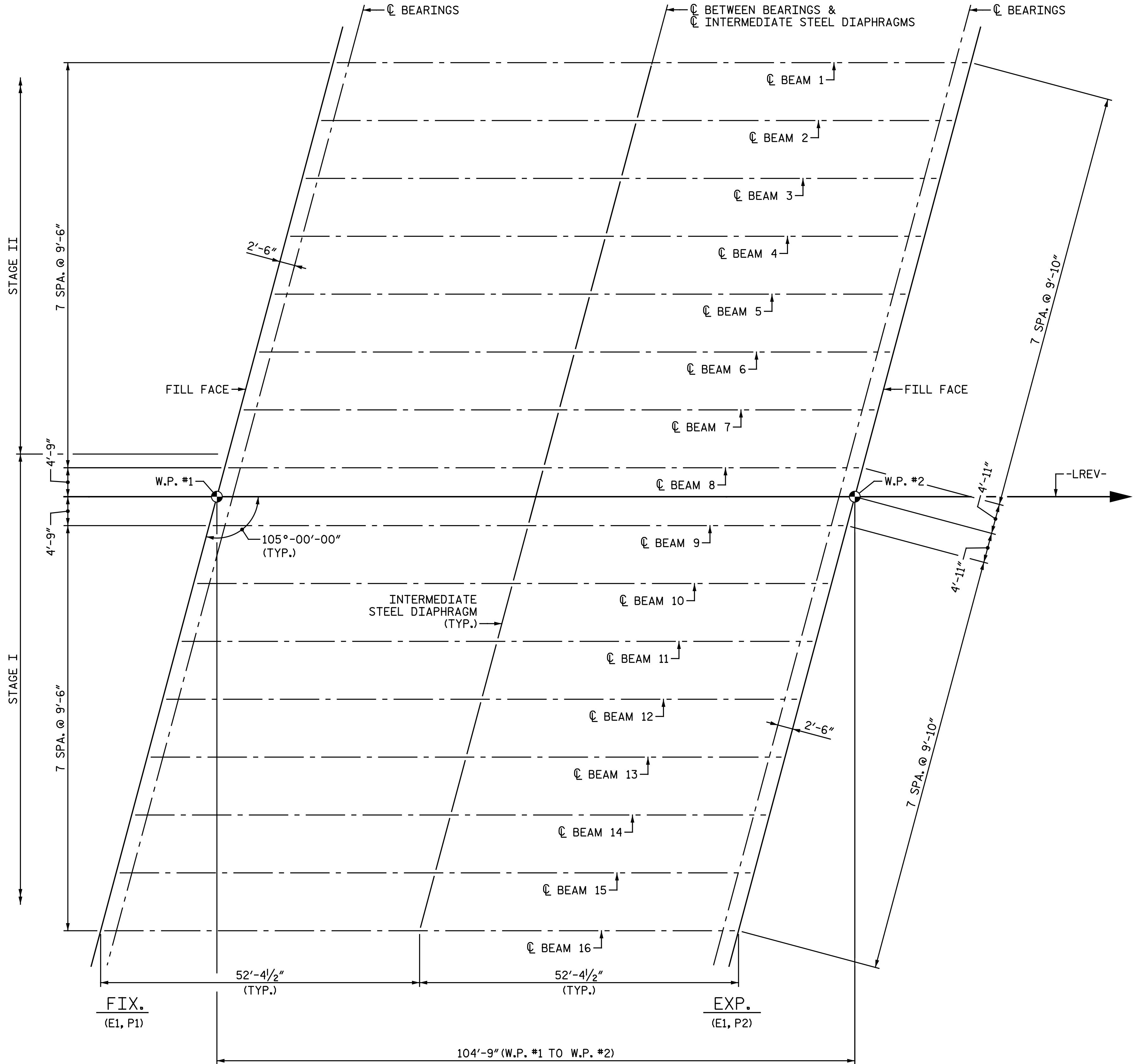


FOR "END BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPAN A
STAGE II" SHEET.



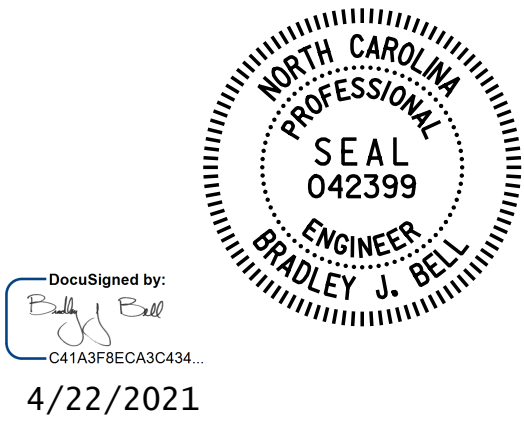
300	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
	1			3			TOTAL SHEETS
	2			4			34

NOTE:
FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE
STEEL DIAPHRAGMS FOR 45"FLORIDA I-BEAMS" SHEET.



SPAN A
BEAM LAYOUT

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BEAM LAYOUT

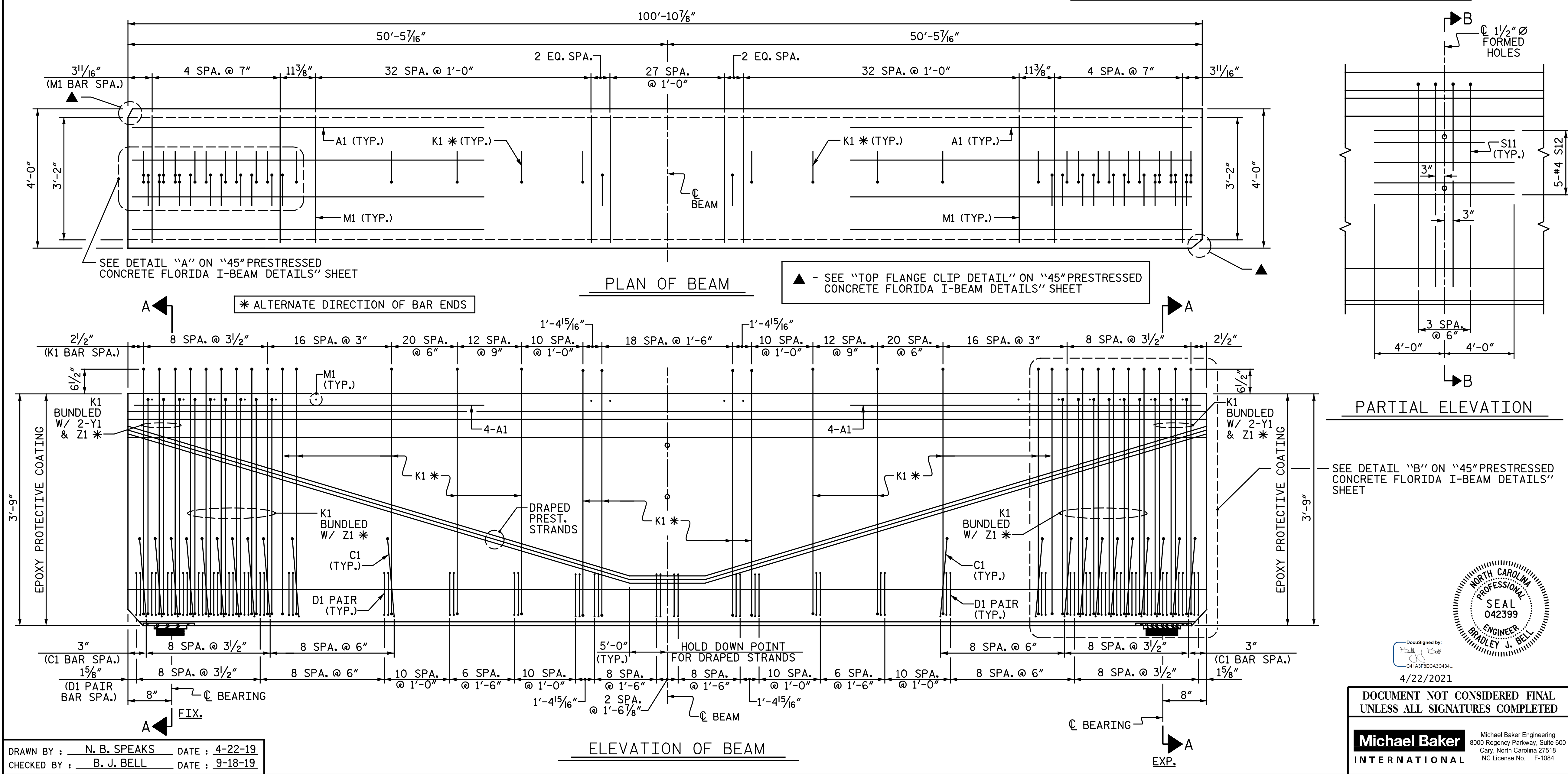
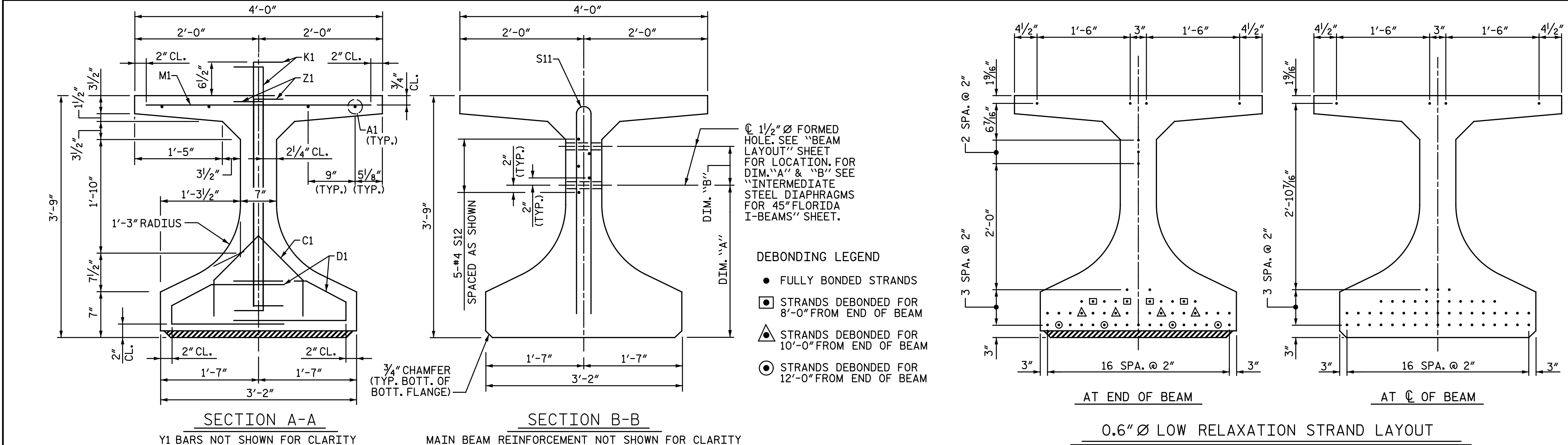
DRAWN BY : M. D. MAYHEW DATE : 5-14-19
CHECKED BY : B. J. BELL DATE : 6-12-19

REVISIONS						SHEET NO. S2-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

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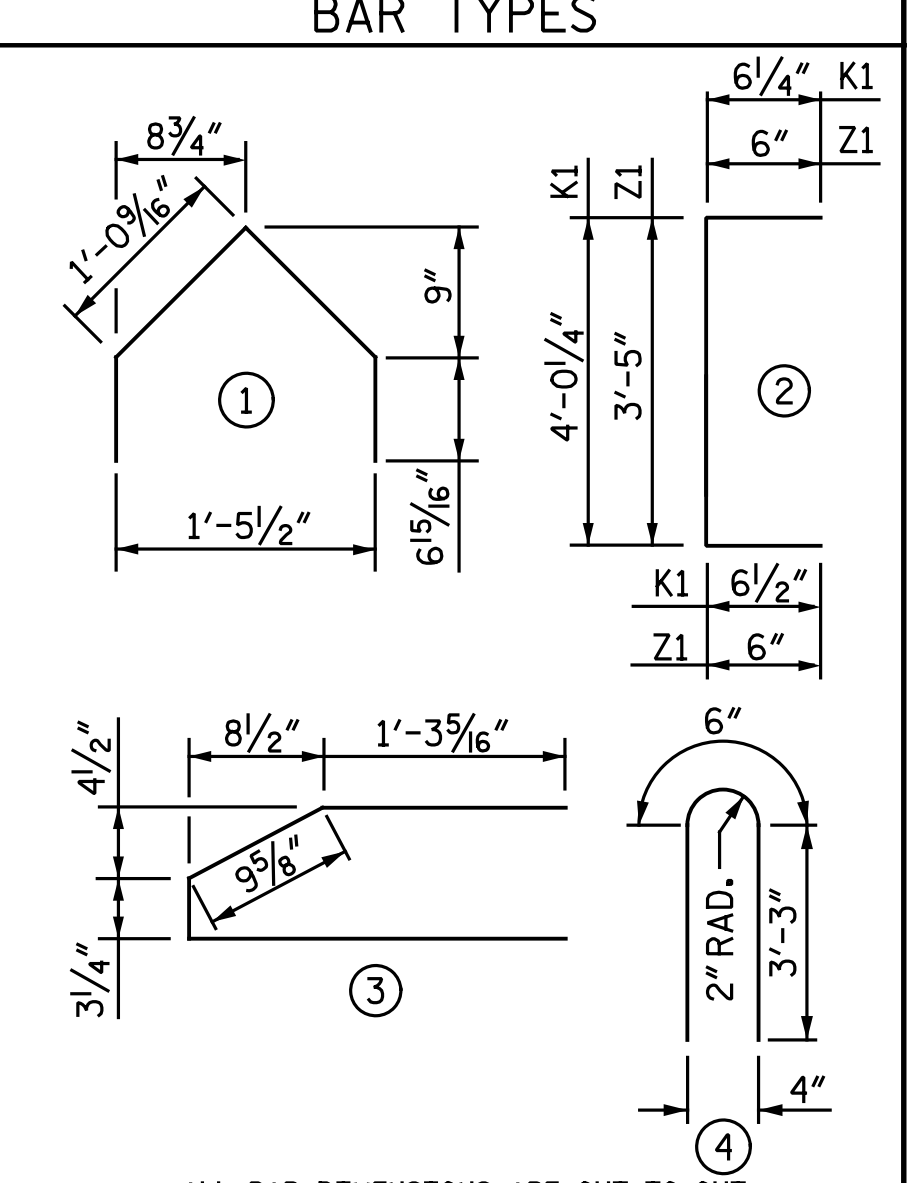
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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084



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 BEAM					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
A1	8	#5	STR.	19'-0"	159
C1	34	#3	1	3'-3"	42
D1	210	#3	3	4'-4"	342
K1	153	#5	2	5'-1"	811
M1	106	#4	STR.	3'-8"	260
S11	4	#5	4	7'-0"	29
S12	5	#4	STR.	8'-0"	27
Y1	12	#5	STR.	3'-3"	41
Z1	18	#5	2	4'-5"	83

* NOTE: THE (4) STRANDS ALONG THE TOP FLANGE TO BE STRESSED TO 10,000 LBS. EACH.



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE BEAM			
	REINFORCING STEEL	7,500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXT. & INT. BEAM	1,794	22.6	52

BEAMS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
16	100.91'	1,614.50'

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



Designed by:
F. J. Bell
C41A3F8ECAB0434
4/22/2021

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Michael Baker International

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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.

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

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

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

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE BEAM, 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 BEAMS.

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. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

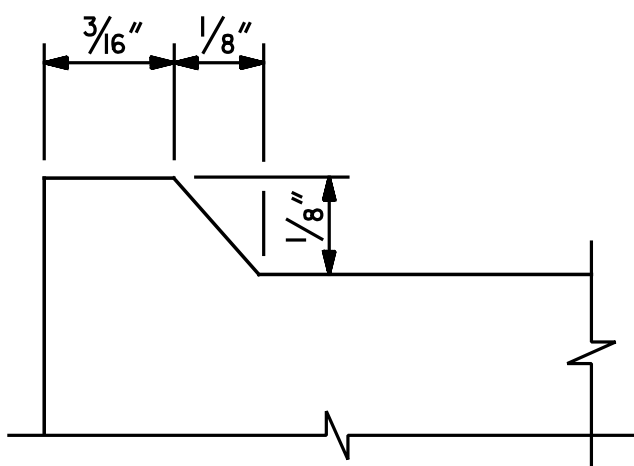
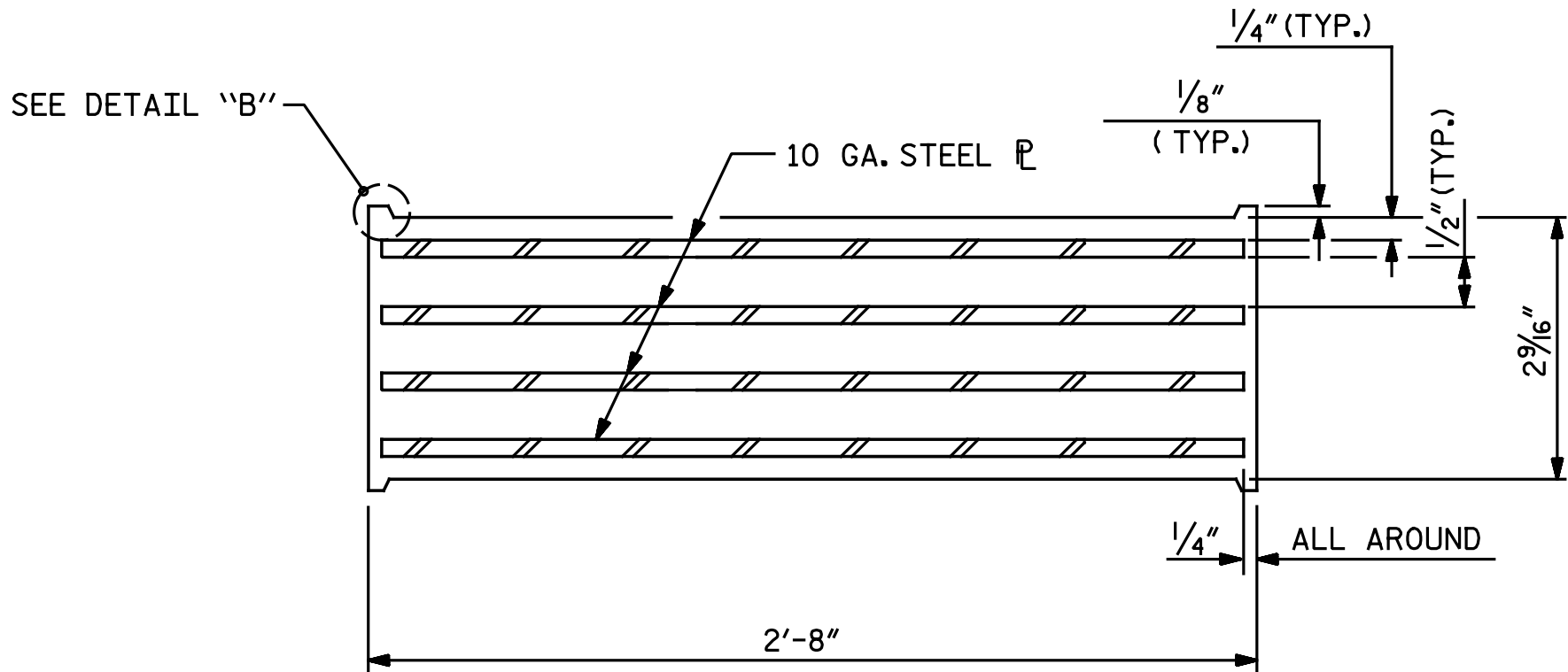
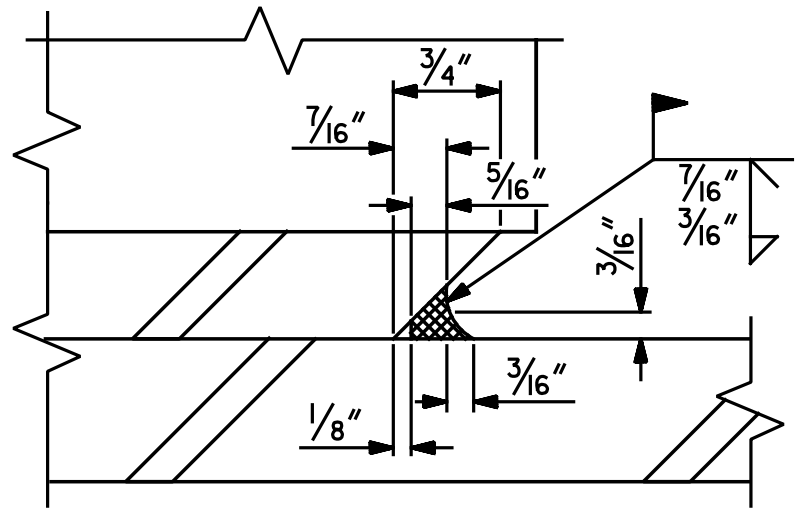
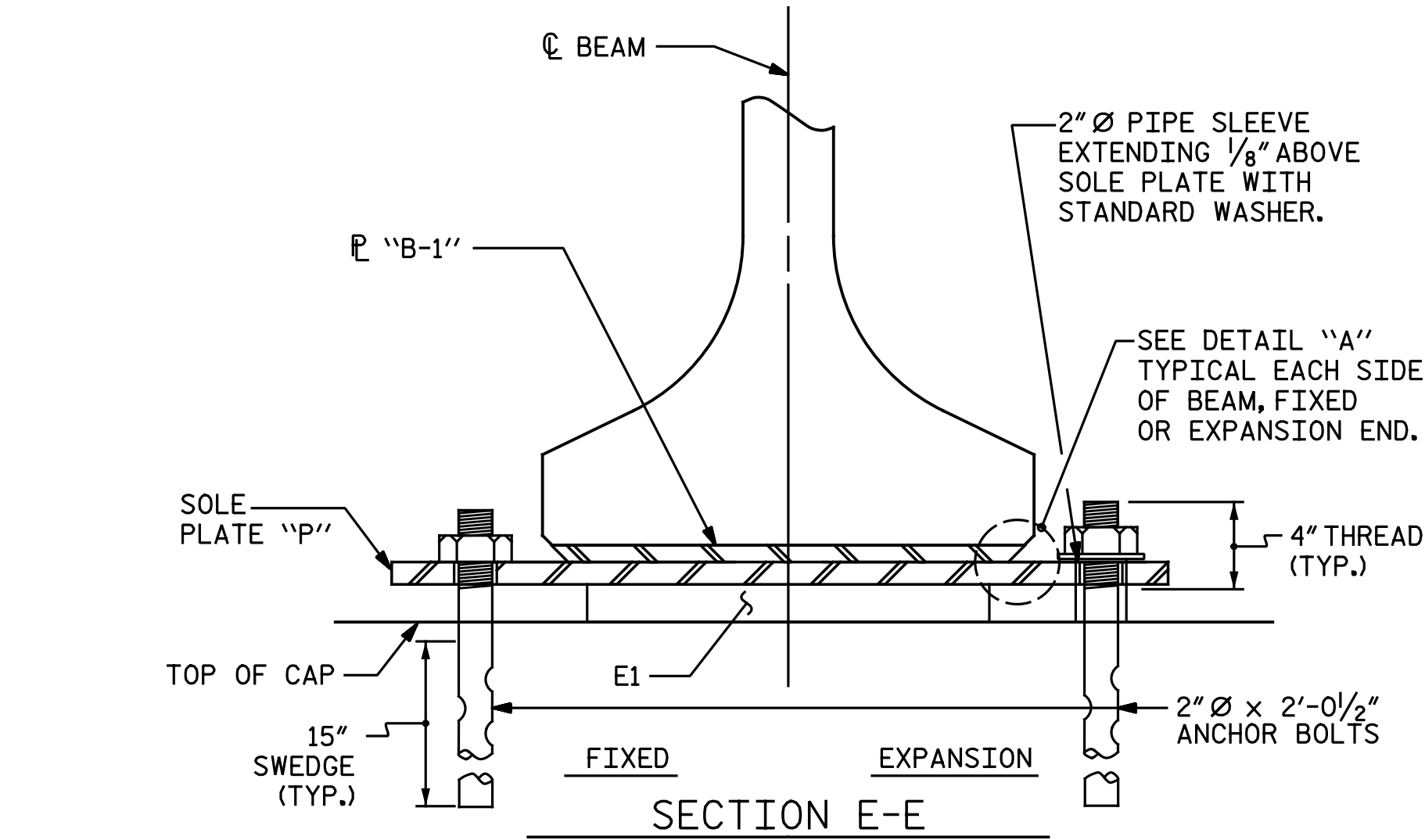
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.110 KSI, IN ACCORDANCE WITH AASHTO M251.

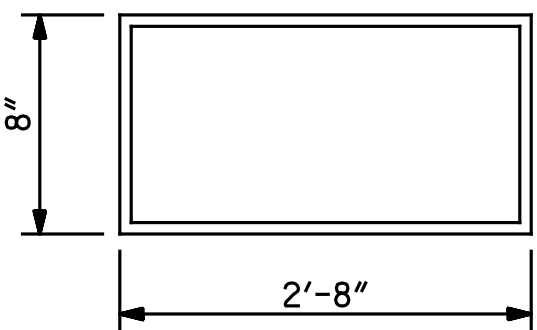
STEEL PLATES IN BEARING PADS SHALL CONFORM TO ASTM A1011 GRADE 36, TYPE 1.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



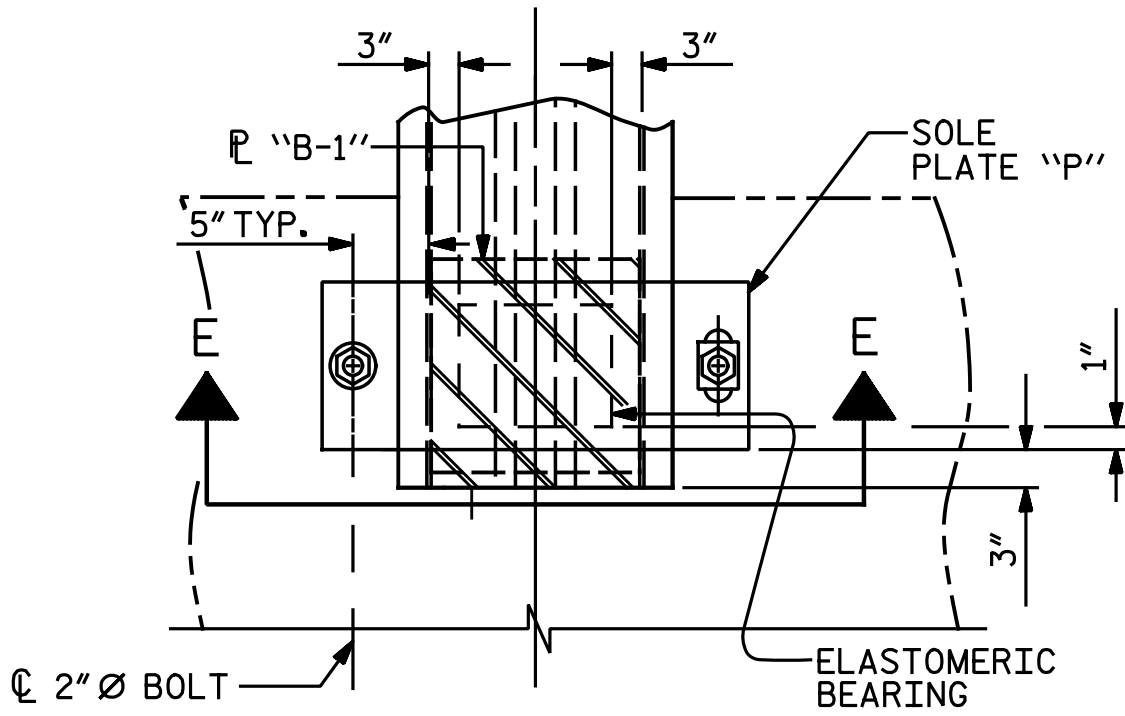
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (32 REQ'D)

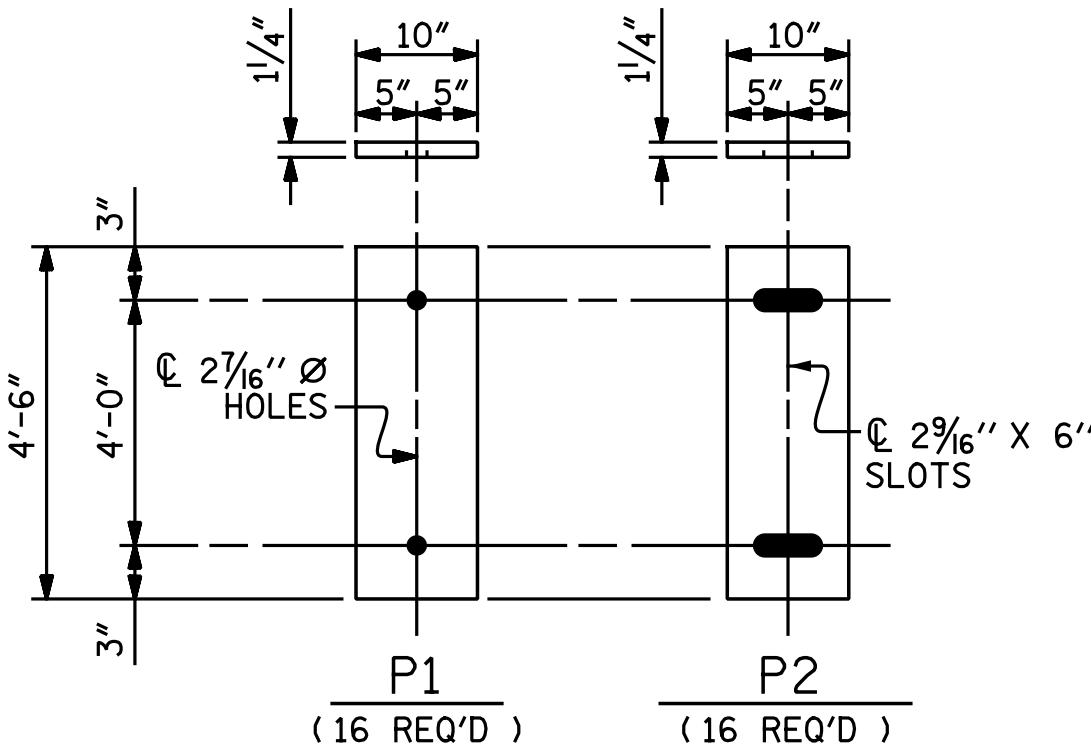
PLAN VIEW OF ELASTOMERIC BEARING

BEARING DETAILS



TYPICAL HALF-PLAN
(SHOWING FIXED END)

TYPICAL HALF-PLAN
(SHOWING EXPANSION END)



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOAD
D.L.+L.L. (NO IMPACT)
245 k

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



DocuSigned by:
Bradley J. Bell
C41A3F8ECA30434...

4/22/2021

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Cary, North Carolina 27518
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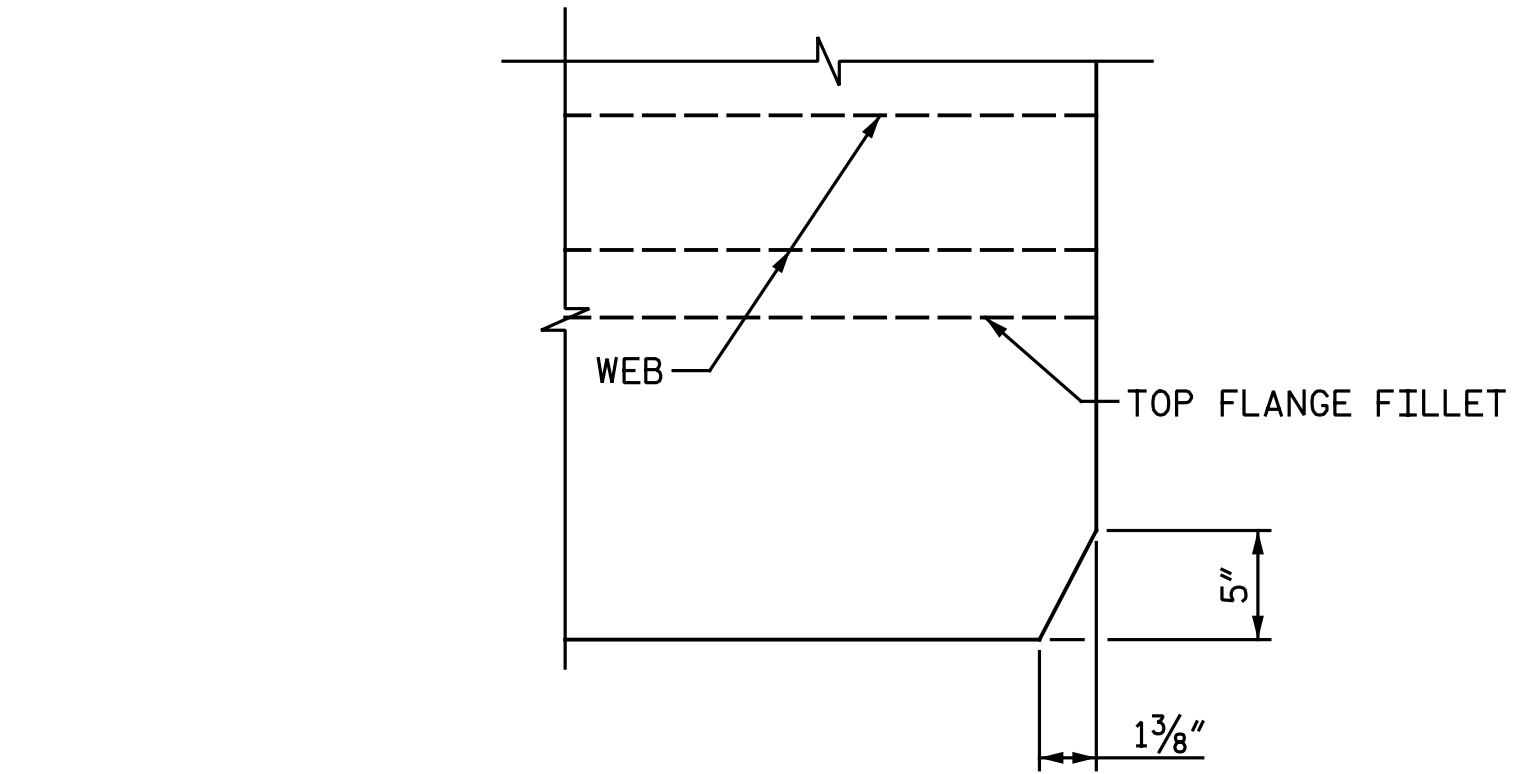
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
ELASTOMERIC BEARING
DETAILS

REVISIONS						SHEET NO. S2-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

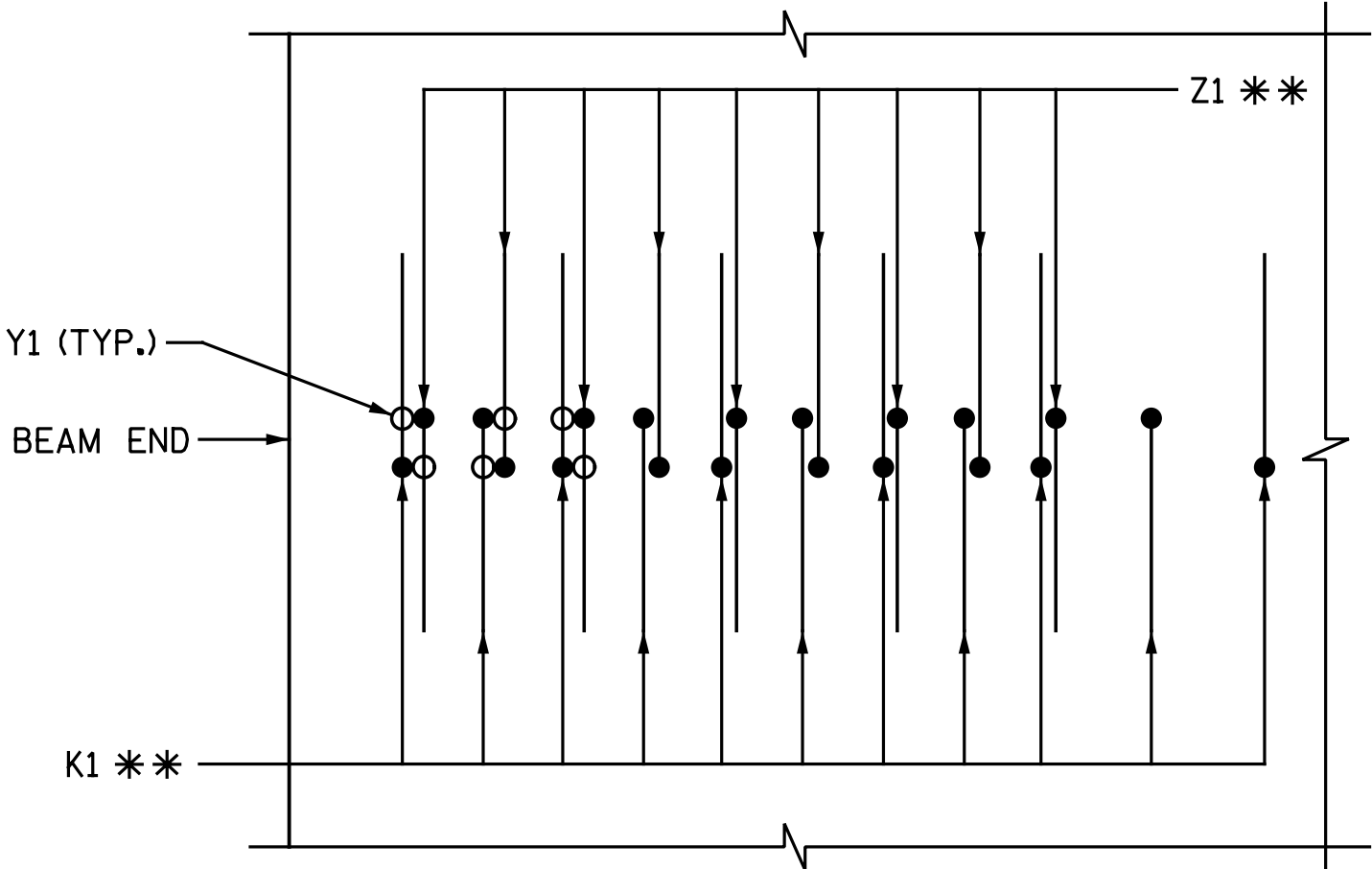
DRAWN BY : N. B. SPEAKS DATE : 5-8-19
CHECKED BY : B. J. BELL DATE : 6-14-19

DEAD LOAD DEFLECTION TABLE FOR SPAN A											
0.6"Ø LOW RELAXATION	BEAMS 1, 4 THRU 6, 10 THRU 13 & 16										
TENTH POINTS	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (BEAM ALONE IN PLACE) ↑	0.000	0.124	0.234	0.320	0.374	0.393	0.374	0.320	0.234	0.124	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.067	0.131	0.181	0.213	0.224	0.213	0.181	0.131	0.067	0.000
FINAL CAMBER ↑	0"	1 11/16"	1 1/4"	1 11/16"	1 15/16"	2 1/16"	1 15/16"	1 11/16"	1 1/4"	1 1/16"	0"
0.6"Ø LOW RELAXATION	BEAMS 2, 3, 7, 9, 14 & 15										
TENTH POINTS	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (BEAM ALONE IN PLACE) ↑	0.000	0.124	0.234	0.320	0.374	0.393	0.374	0.320	0.234	0.124	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.069	0.136	0.188	0.221	0.232	0.221	0.188	0.136	0.069	0.000
FINAL CAMBER ↑	0"	5/8"	1 3/16"	1 9/16"	1 7/8"	1 15/16"	1 7/8"	1 9/16"	1 3/16"	5/8"	0"
0.6"Ø LOW RELAXATION	BEAM 8										
TENTH POINTS	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (BEAM ALONE IN PLACE) ↑	0.000	0.124	0.234	0.320	0.374	0.393	0.374	0.320	0.234	0.124	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.076	0.148	0.204	0.240	0.253	0.240	0.204	0.148	0.076	0.000
FINAL CAMBER ↑	0"	9/16"	1"	1 3/8"	1 5/8"	1 11/16"	1 5/8"	1 3/8"	1"	9/16"	0"

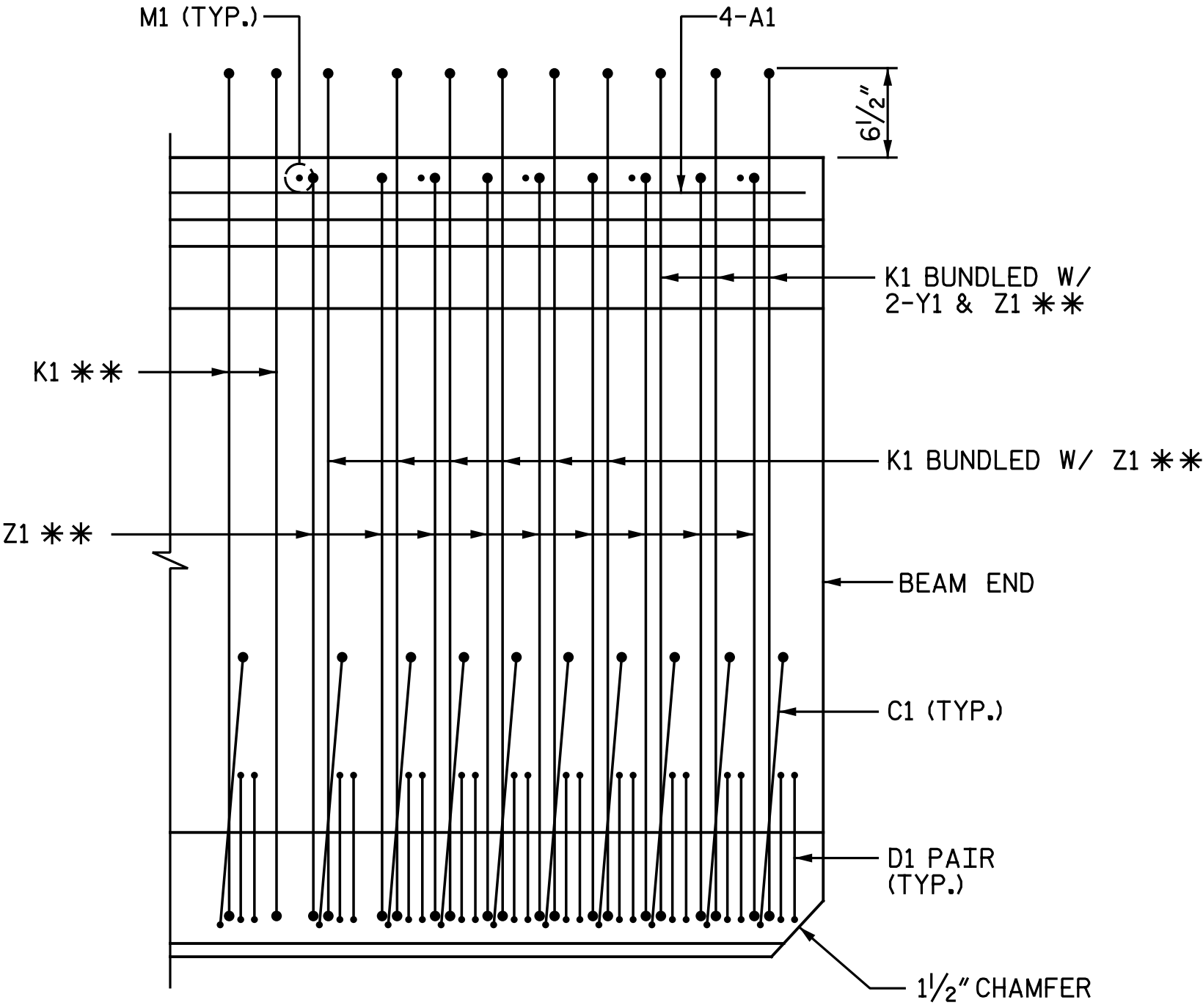
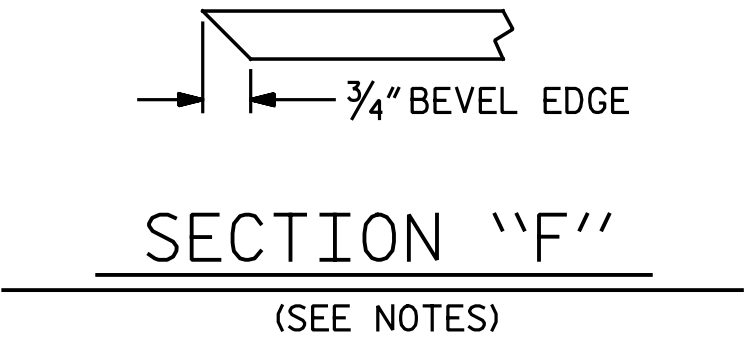
* INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



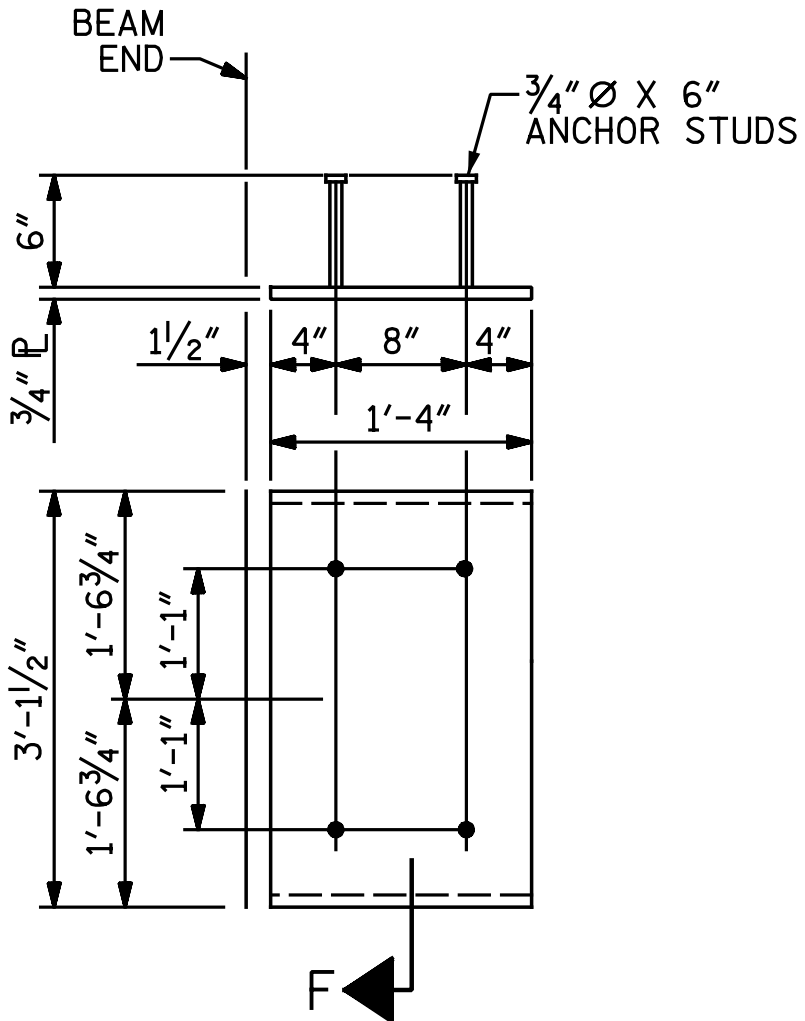
TOP FLANGE CLIP DETAIL
(EXPANSION END SHOWN, FIXED END SIMILAR)



DETAIL "A"
(SHOWING ONLY K1, Y1 & Z1 BARS)
(FIXED END SHOWN, EXPANSION END SIMILAR)



DETAIL "B"
(EXPANSION END SHOWN, FIXED END SIMILAR)



EMBEDDED PLATE "B-1" DETAILS
FOR FLORIDA I-BEAMS
(2 REQ'D PER BEAM)

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



Designed by:
F-1084
C41A3F8ECA30434
4/22/2021

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Michael Baker
INTERNATIONAL

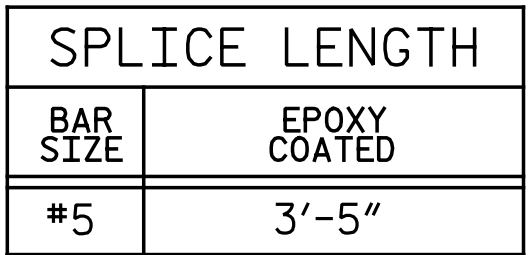
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
45" PRESTRESSED
CONCRETE
FLORIDA I-BEAM
DETAILS

REVISIONS						SHEET NO. S2-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : N. B. SPEAKS DATE : 5-6-19
CHECKED BY : B. J. BELL DATE : 9-18-19

** ALTERNATE DIRECTION OF BAR ENDS



PROJECT NO. I-5878
HARNETT COUNTY
 STATION: 1002+79.68 -LREV-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE
BARRIER RAIL

A circular professional engineer seal for the state of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "ENGINEER" at the bottom, separated by a dashed line. Inside this ring, the word "PROFESSIONAL" is written in a smaller font. In the center of the seal, the word "SEAL" is prominently displayed above the number "042399". At the very bottom of the seal, the name "BRADLEY J. BELL" is inscribed.

DocuSigned by:
Bill Ball
C41A3F8ECA3C
4/22/2021

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Cary, North Carolina 27518
NC License No.: F-1084

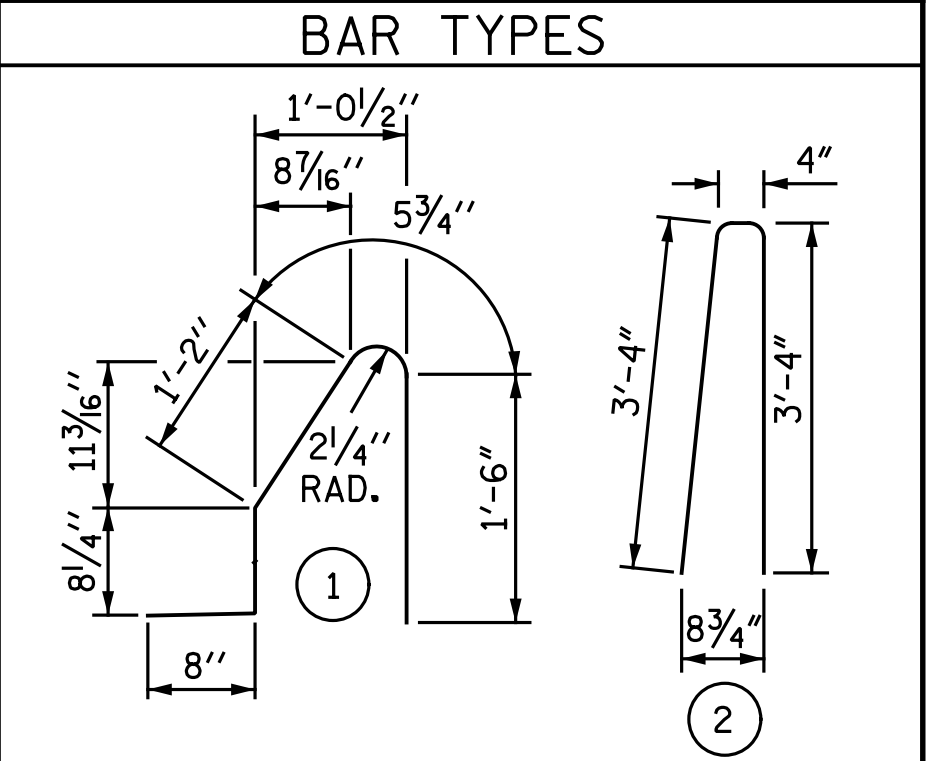
REVISIONS						SHEET NO. S2-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	22	#5	STR.	25' - 1"	576
* B2	44	#5	STR.	14' - 5"	662
* S1	104	#5	1	4' - 6"	488
* S2	104	#5	2	7' - 0"	759

* EPOXY COATED

REINFORCING STEEL LBS. 2,485
CLASS AA CONCRETE CU. YDS. 13.9
CONCRETE BARRIER RAIL LIN. FT. 102.29

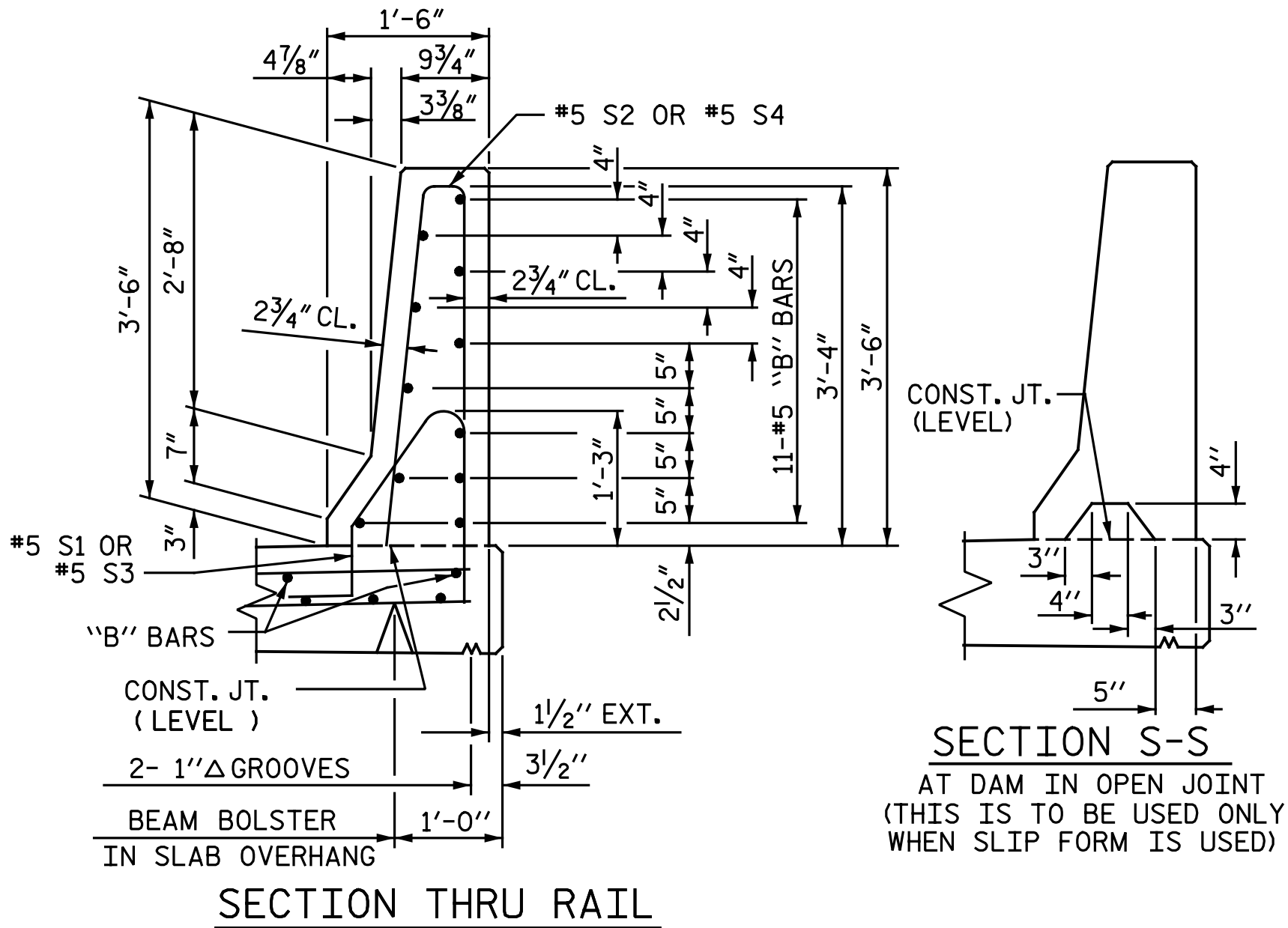
STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	22	#5	STR.	25' - 1"	576
* B4	44	#5	STR.	14' - 5"	662
* S3	104	#5	1	4' - 6"	488
* S4	104	#5	2	7' - 0"	759

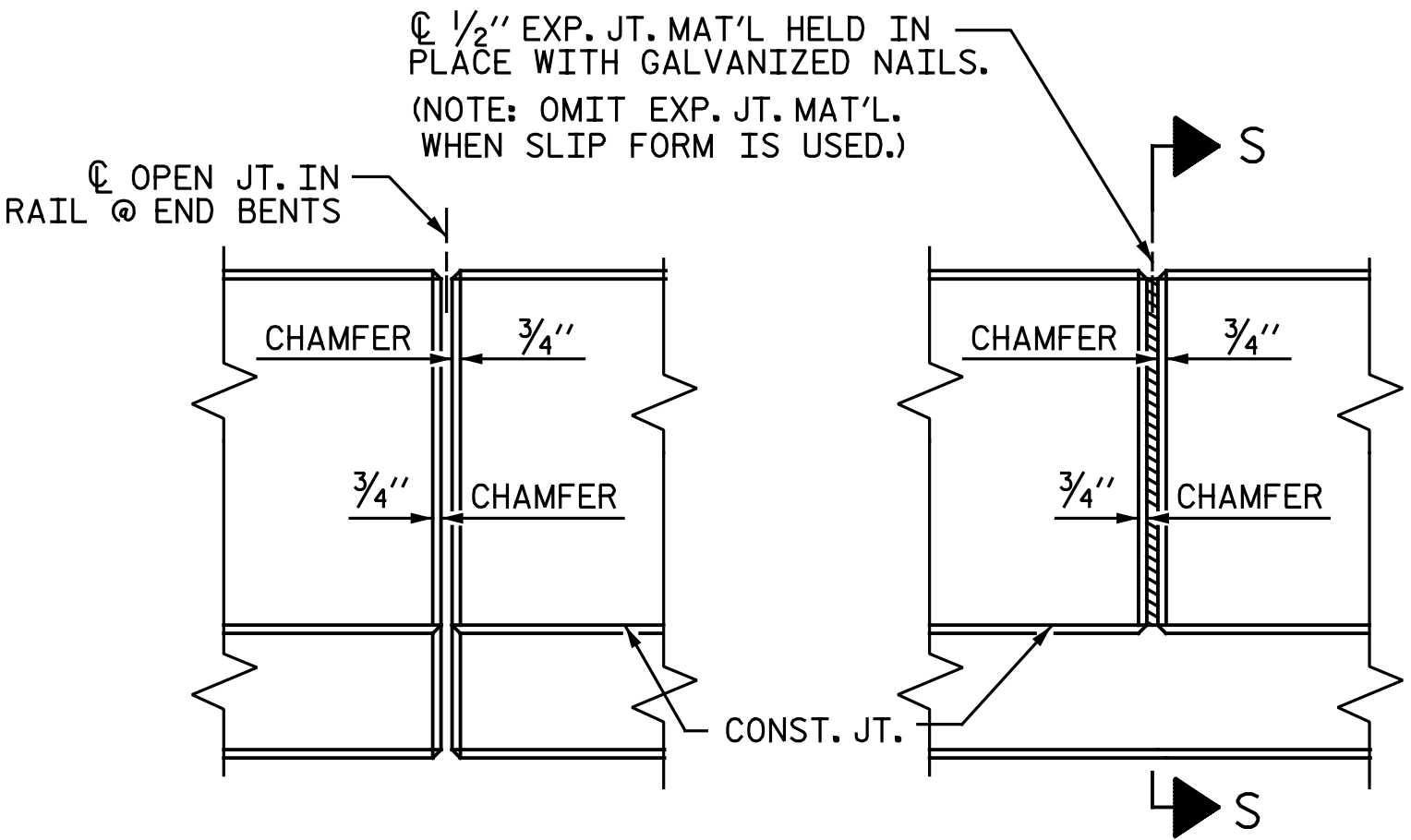
* EPOXY COATED

REINFORCING STEEL LBS. 2,485
CLASS AA CONCRETE CU. YDS. 13.9
CONCRETE BARRIER RAIL LIN. FT. 102.29

QUANTITIES DO NOT INCLUDE BARRIER RAILS ON THE APPROACH SLABS. FOR BARRIER RAILS ON THE APPROACH SLABS, SEE "BRIDGE APPROACH SLAB DETAILS 1" SHEET.



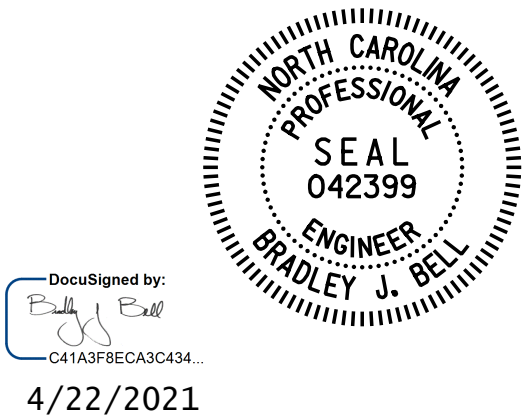
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)



BARRIER RAIL DETAILS

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 2



DocuSigned by:
Bradley J. Bell
C41A3F8ECA30434...

4/22/2021

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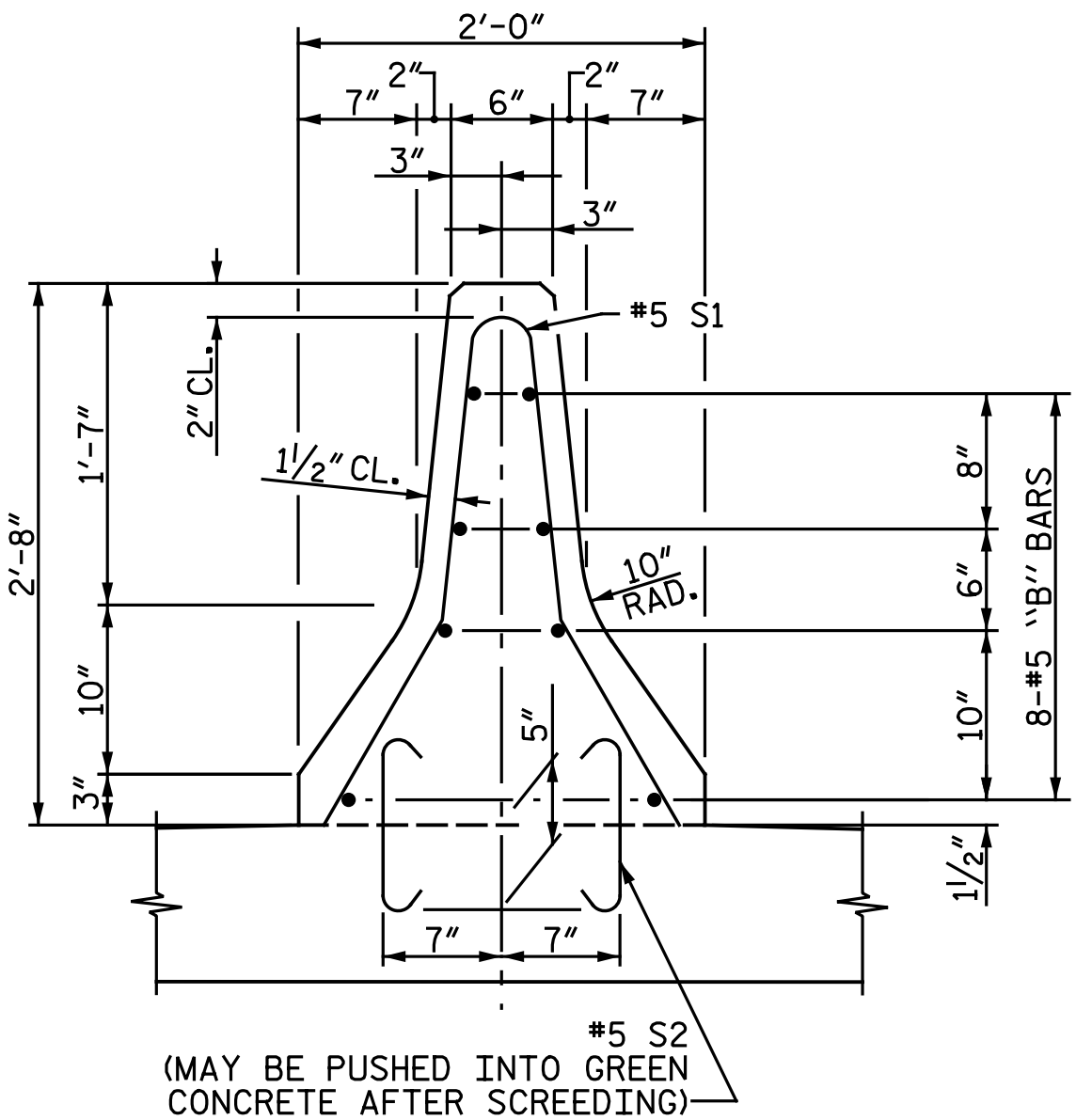
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INTERNATIONAL

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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

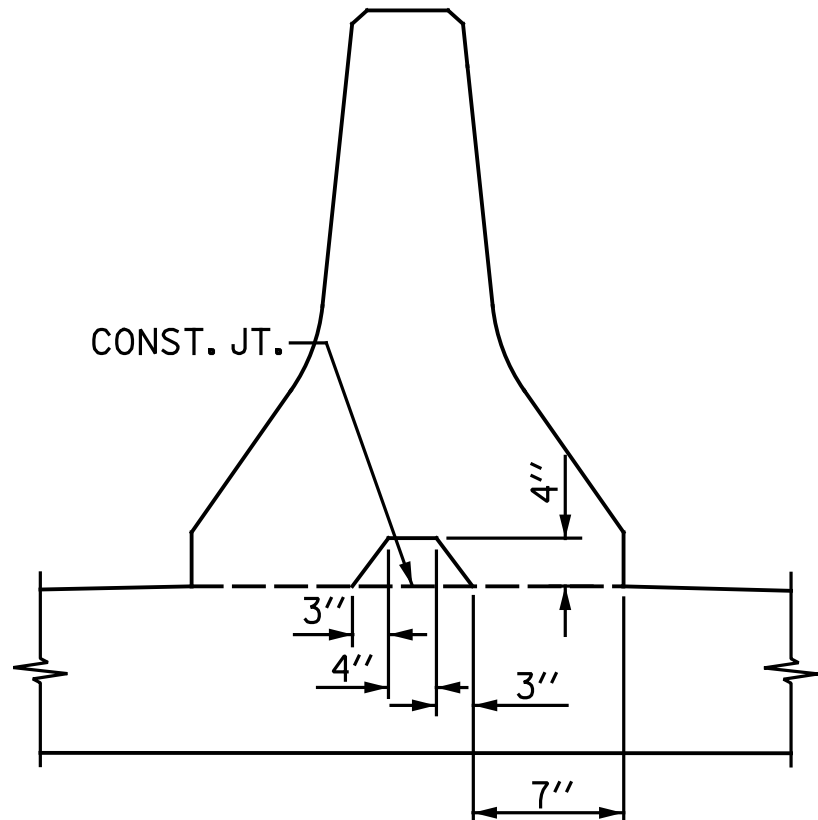
REVISIONS						SHEET NO. S2-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			34

STD. NO. CBR1

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-11-19
CHECKED BY : B. J. BELL	DATE : 5-10-19
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

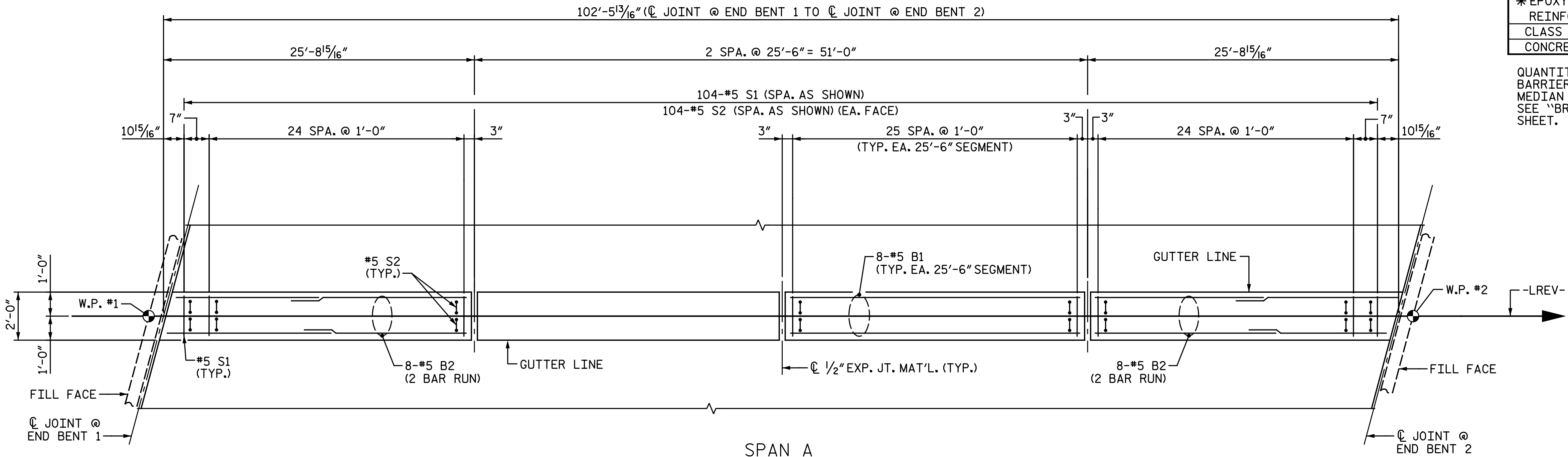


SECTION THRU MEDIAN BARRIER



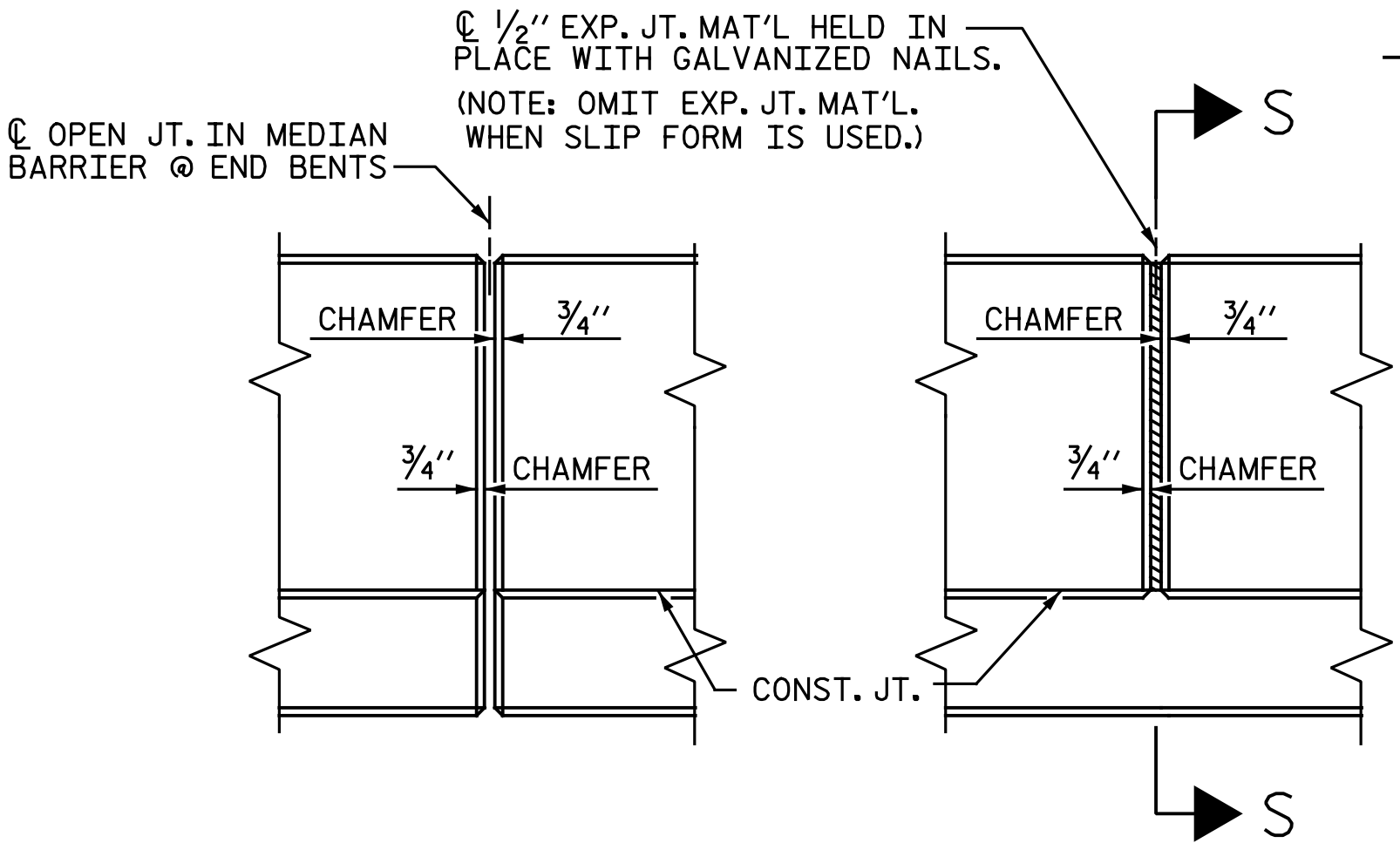
SECTION S-S

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



SPAN A

PLAN OF CONCRETE MEDIAN BARRIER



ELEVATION AT BARRIER EXP. JT.

NOTES

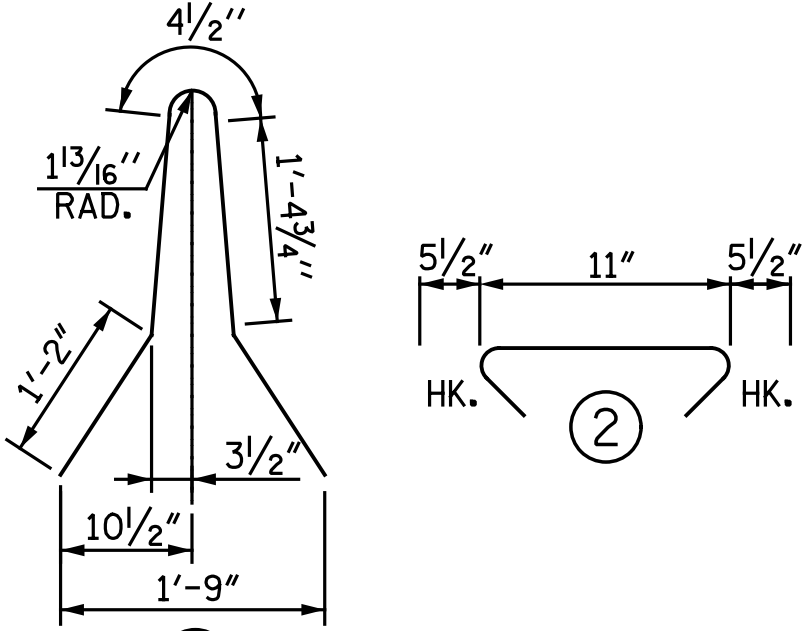
THE CONCRETE MEDIAN BARRIER IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN CONCRETE MEDIAN BARRIER SHALL BE EPOXY COATED.

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

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED DOWELS IN PLACE OF THE #5 S2 BARS DETAILED. LEVEL 2 FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE DOWELS IS 19 KIPS. THE DOWELS ARE TO BE HOOKED ON ONE END WITH A PROJECTION MATCHING THAT OF THE #5 S2 BARS. THE OPPOSITE END IS TO BE STRAIGHT AND EMBEDDED 6" INTO THE DECK SLAB.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE MEDIAN BARRIER ONLY

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	16	#5	STR.	25' - 1"	419
* B2	32	#5	STR.	14' - 6"	484
* S1	104	#5	1	5' - 6"	597
* S2	208	#5	2	1' - 10"	398

* EPOXY COATED REINFORCING STEEL	LBS.	1,898
CLASS AA CONCRETE	CU. YDS.	10.5
CONCRETE MEDIAN BARRIER LIN. FT.		102.29

QUANTITIES DO NOT INCLUDE MEDIAN BARRIER ON THE APPROACH SLABS. FOR MEDIAN BARRIER ON THE APPROACH SLABS, SEE "BRIDGE APPROACH SLAB DETAILS 2" SHEET.

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE
MEDIAN BARRIER



Designed by:
4/22/2021

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REVISIONS						SHEET NO. S2-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : N. B. SPEAKS DATE : 3-27-19
CHECKED BY : B. J. BELL DATE : 8-23-19

NOTES

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

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

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

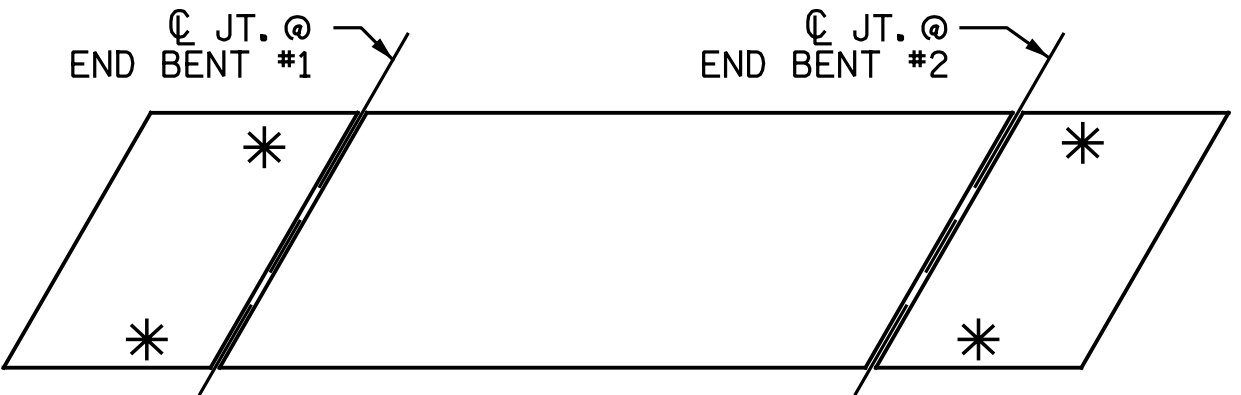
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

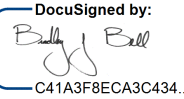


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-



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4/22/2021

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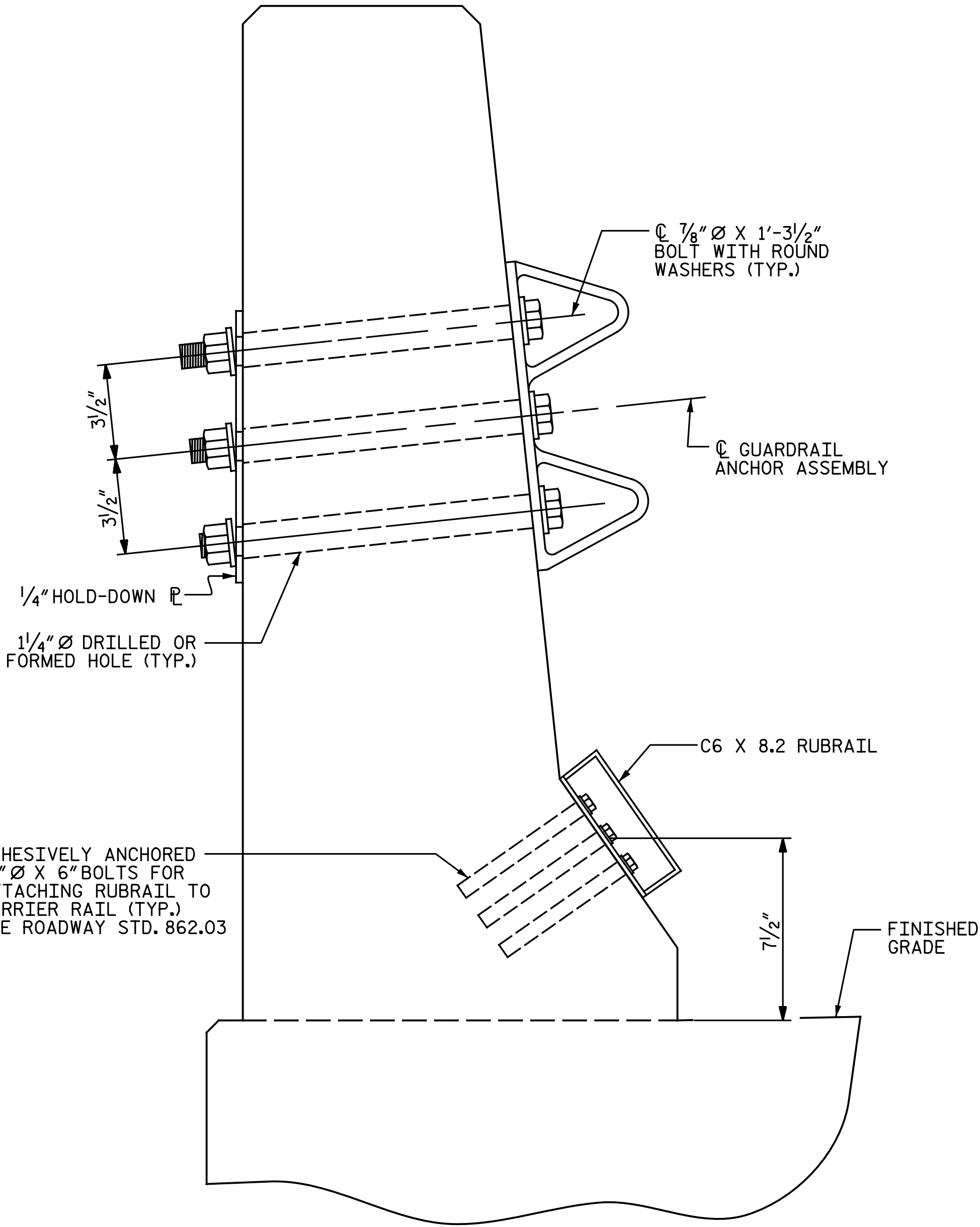
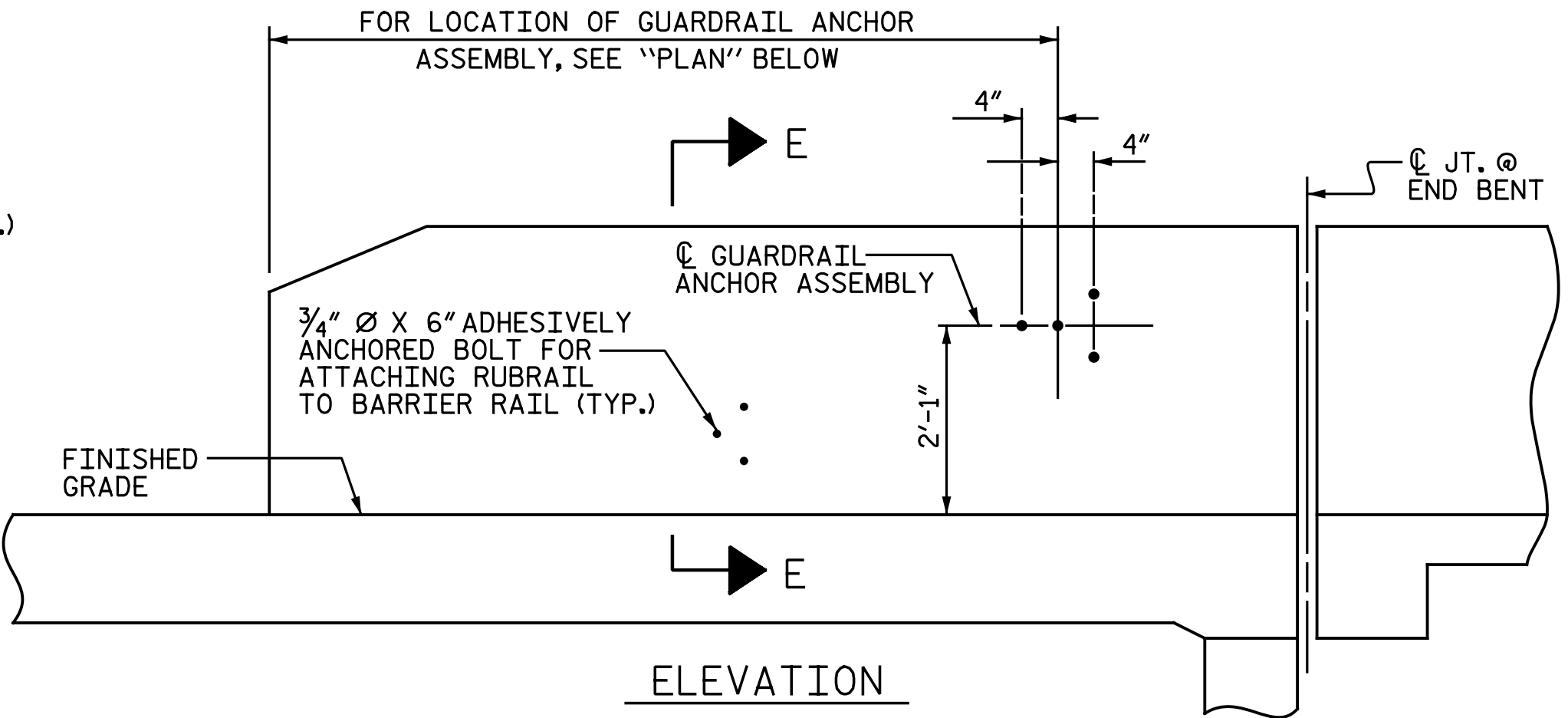
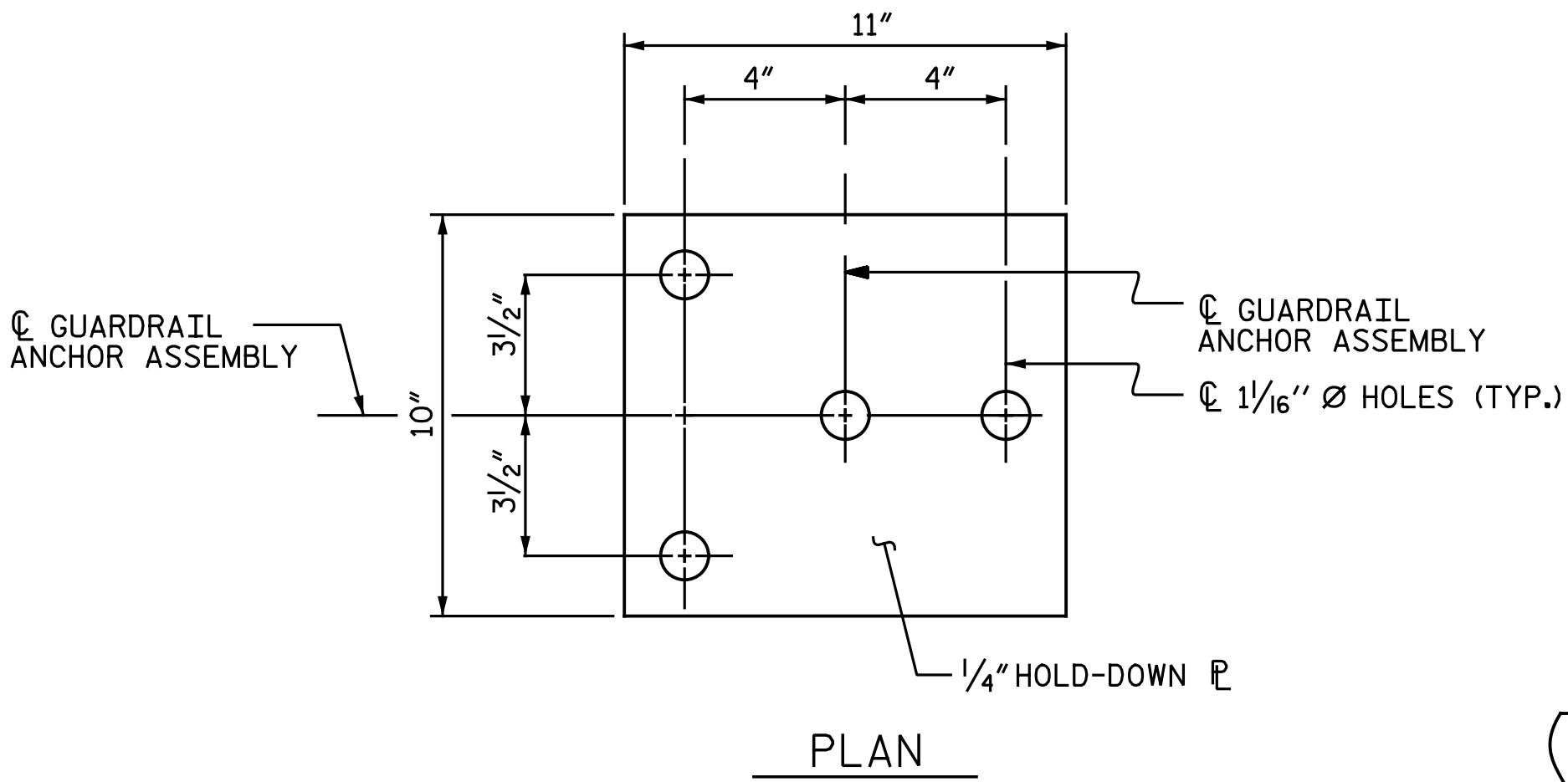
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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

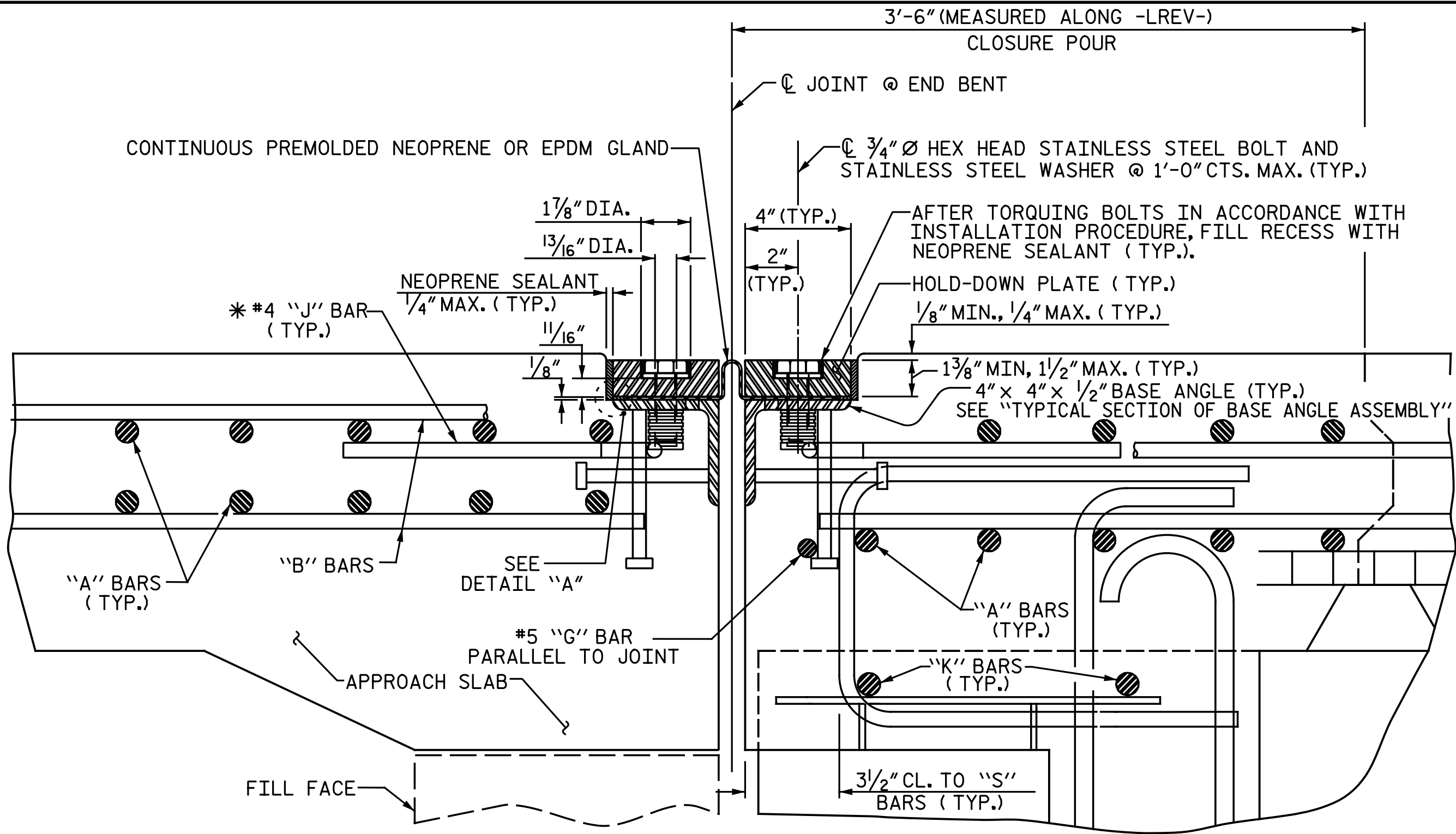
REVISIONS						SHEET NO. S2-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

STD. NO. GRA2



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

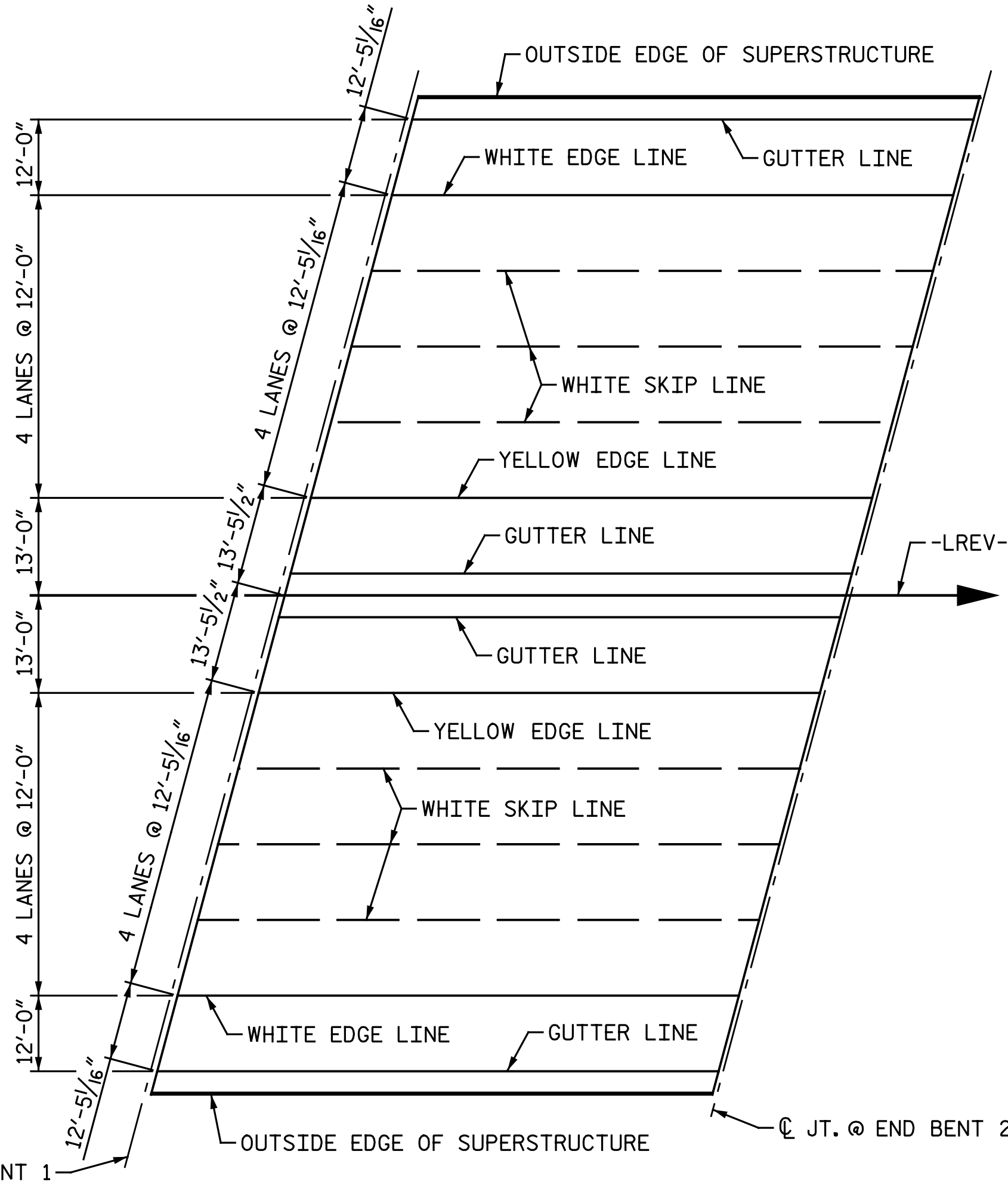
ASSEMBLED BY : N. B. SPEAKS		DATE : 4-18-19	
CHECKED BY : B. J. BELL		DATE : 6-17-19	
DRAWN BY :	TLA 5/06	REV. 7/12	MAA/GM
CHECKED BY :	GM 5/06	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

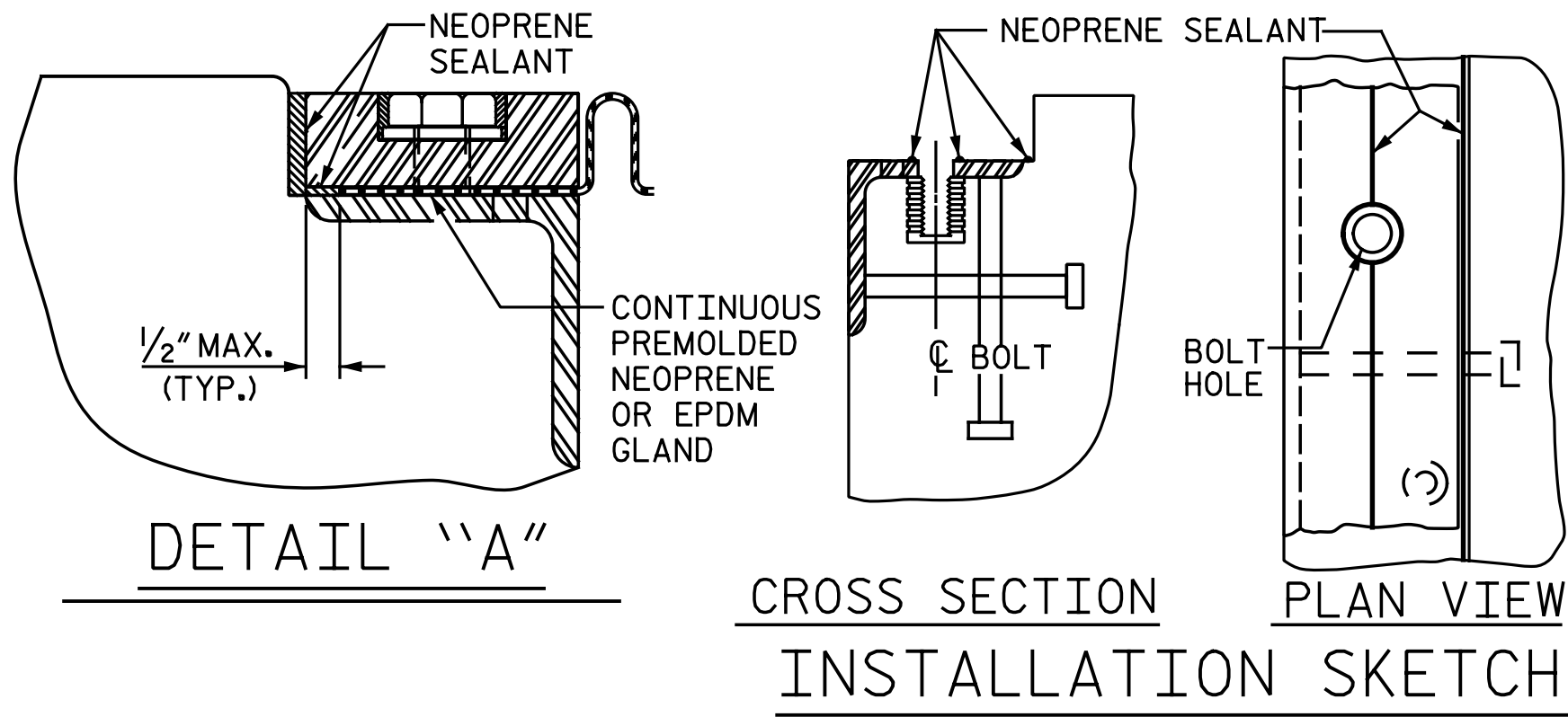
* THE QUANTITY OF #4 "J" BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. "J" BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF "J" BARS SPECIFIED, ADDITIONAL "J" BARS WILL NOT BE REQUIRED.



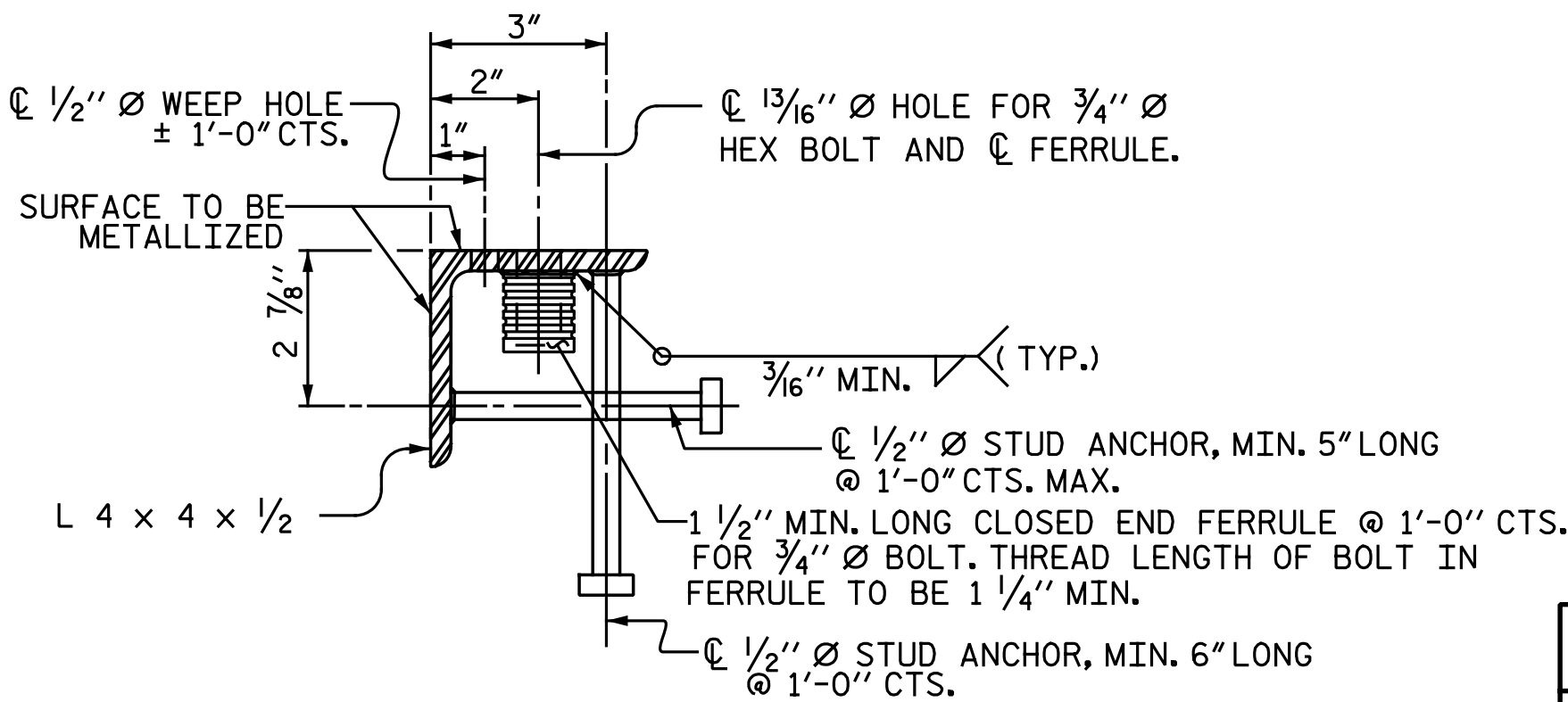
PAVEMENT MARKING ALIGNMENT

INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4/8" TO 4/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 3/4" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X 1/2" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 1/8" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

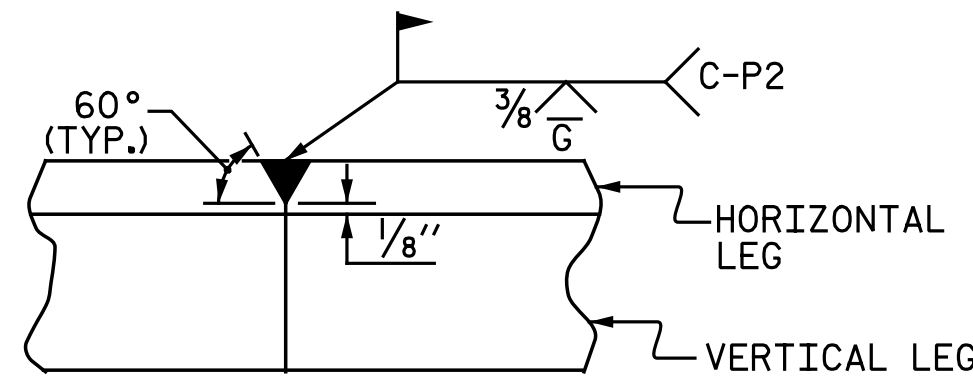


MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	105°-00'-00"	0"	2 1/4"	2 1/4"	2 1/4"
END BENT 2	105°-00'-00"	5/8"	2 3/8"	2 1/4"	2 1/16"



GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPlice LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.



DETAIL - FIELD WELD SPLICE OF BASE ANGLE

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 1 OF 3



Designed by:
C41A3F8ECA30434
4/22/2021

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INTERNATIONAL

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Cary, North Carolina 27518
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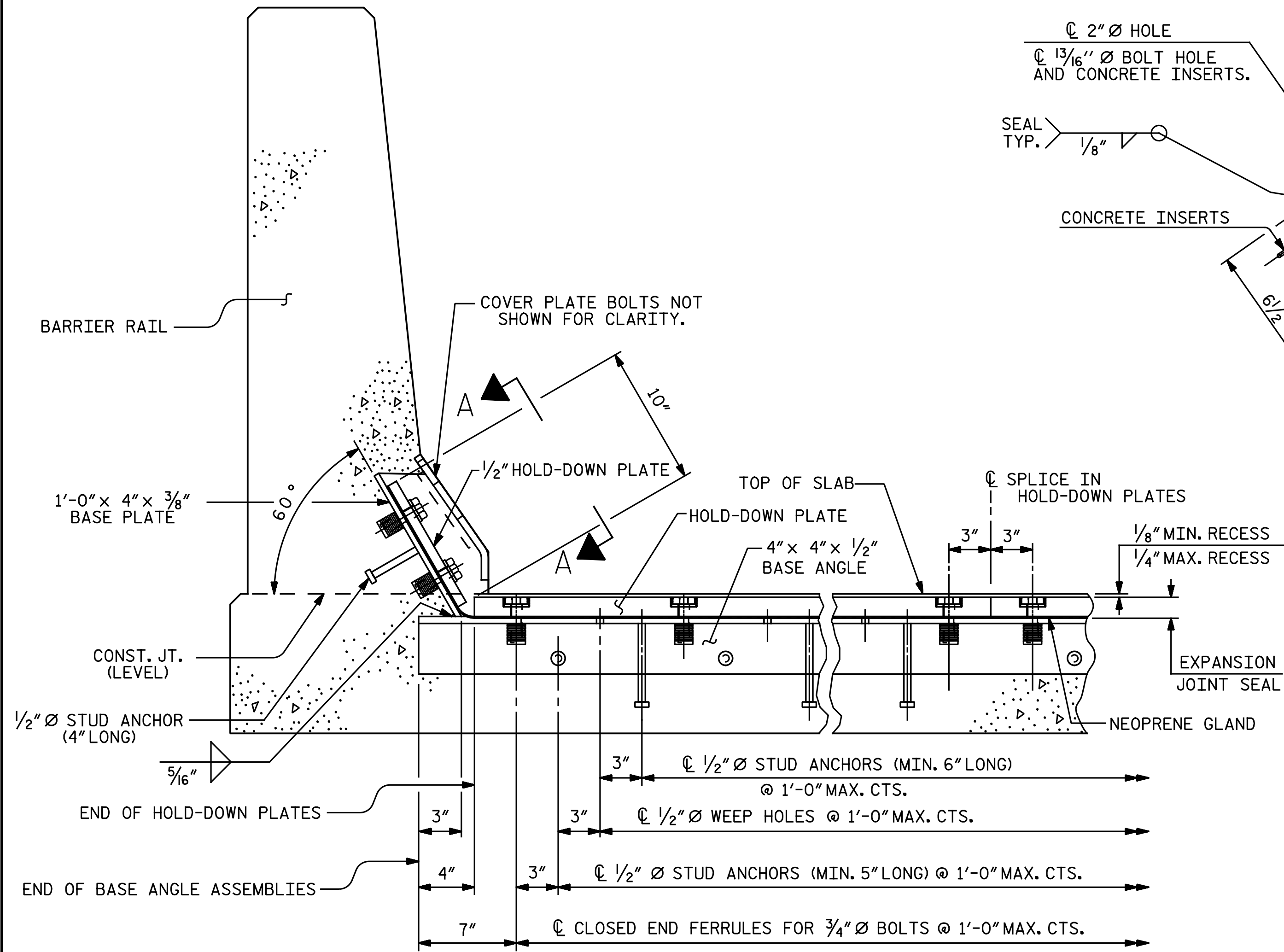
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL DETAILS

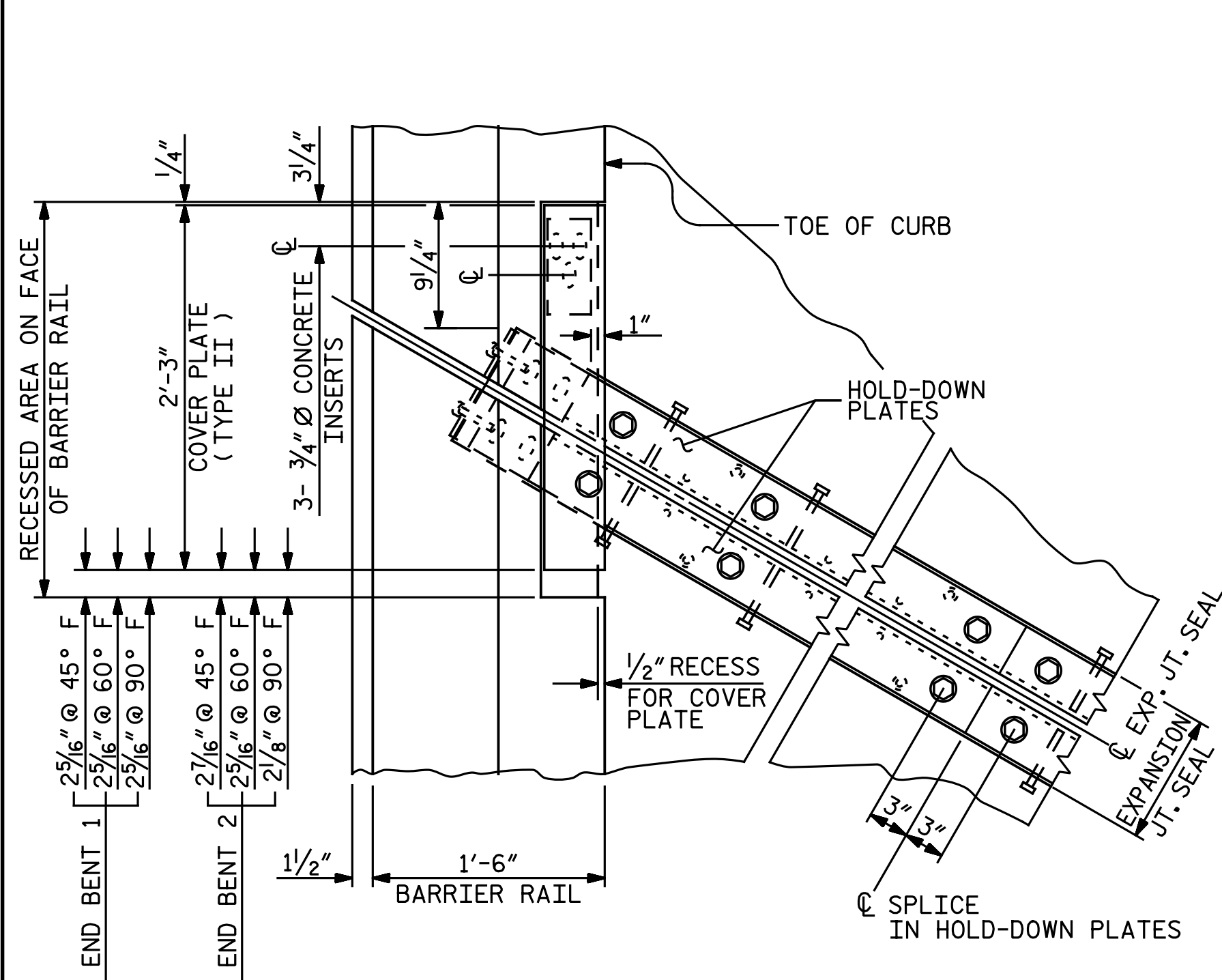
REVISIONS						SHEET NO. S2-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

STD. NO. EJS1

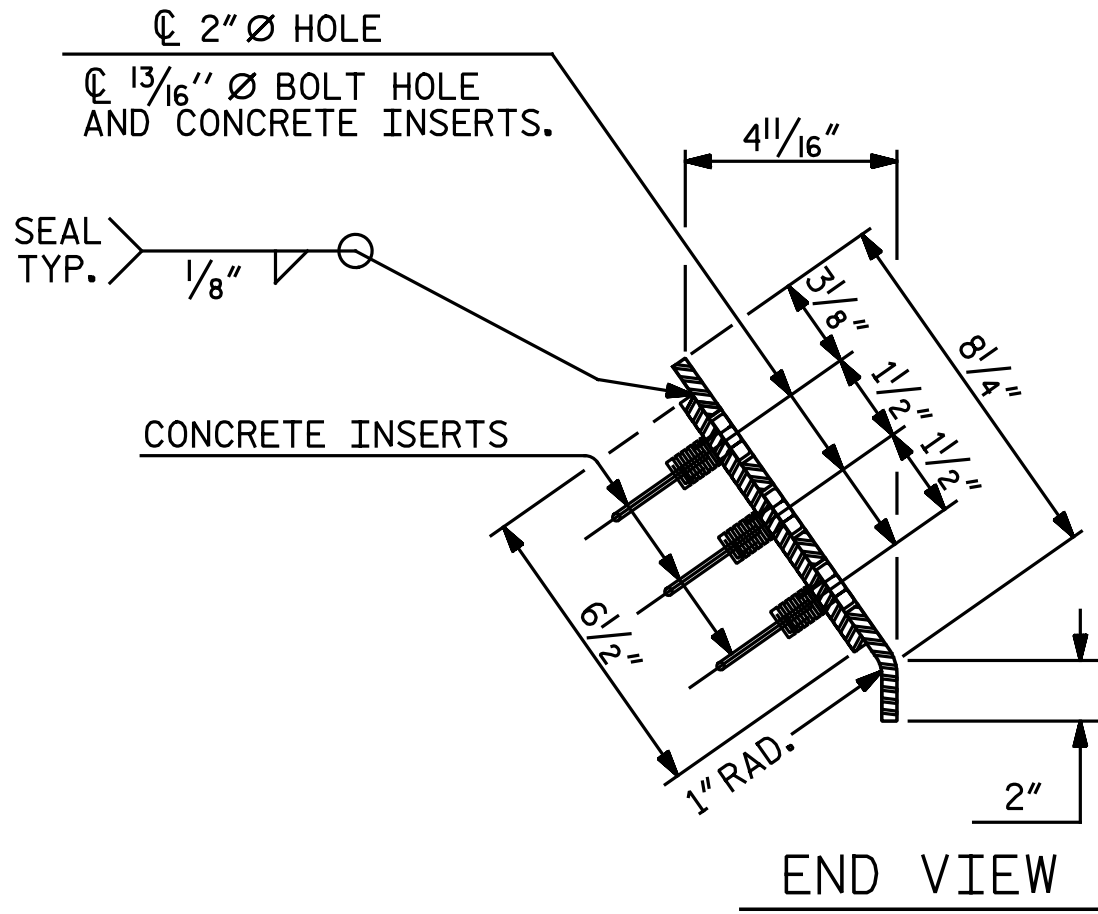
ASSEMBLED BY : N. B. SPEAKS CHECKED BY : B. J. BELL	DATE : 4-18-19 DATE : 6-17-19	MAA/GM MAA/THC MAA/THC
DRAWN BY : REK 9/87 CHECKED BY : CRK 10/87	REV. 10/1/11 REV. 10/17 REV. 6/18	



SECTION THRU RAIL NORMAL TO JOINT

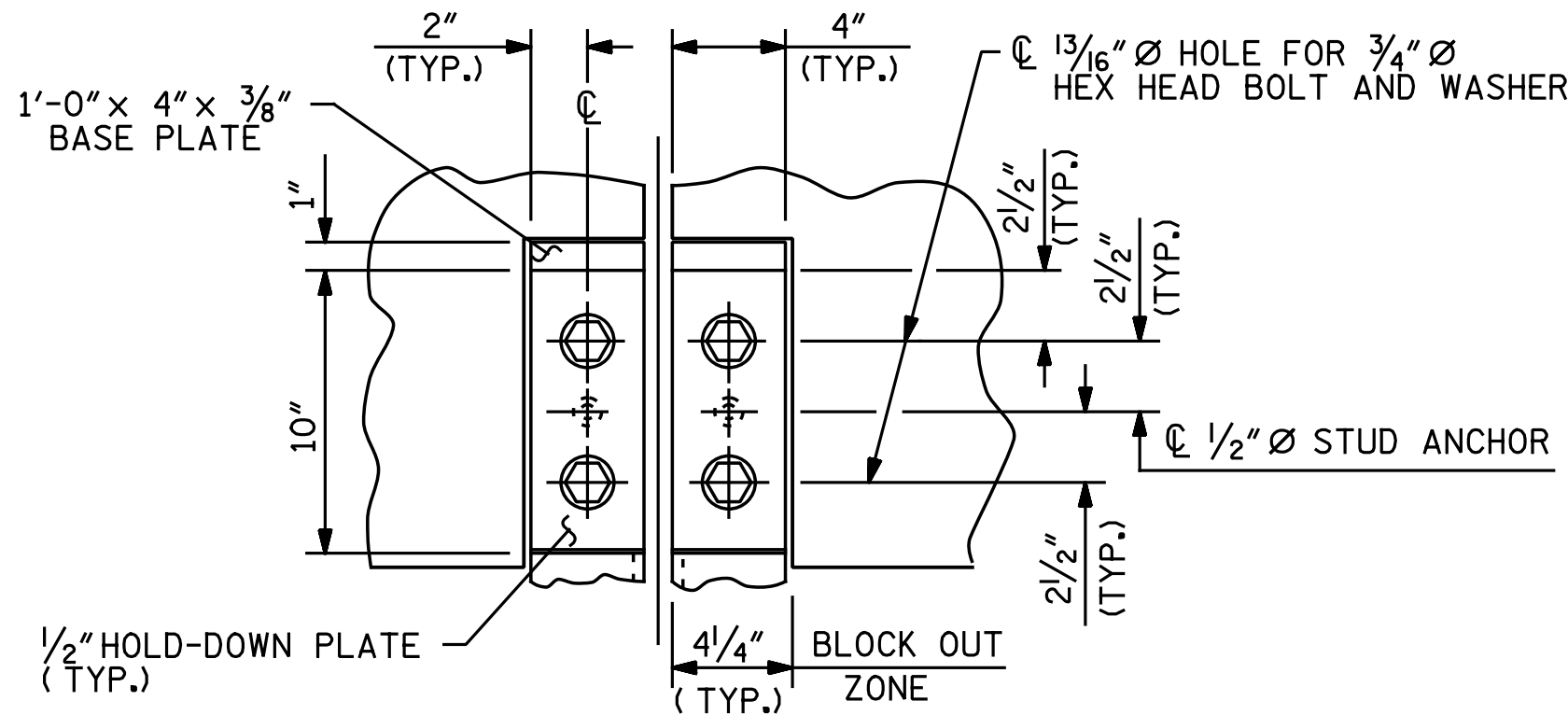


PLAN OF EXPANSION JOINT SEAL

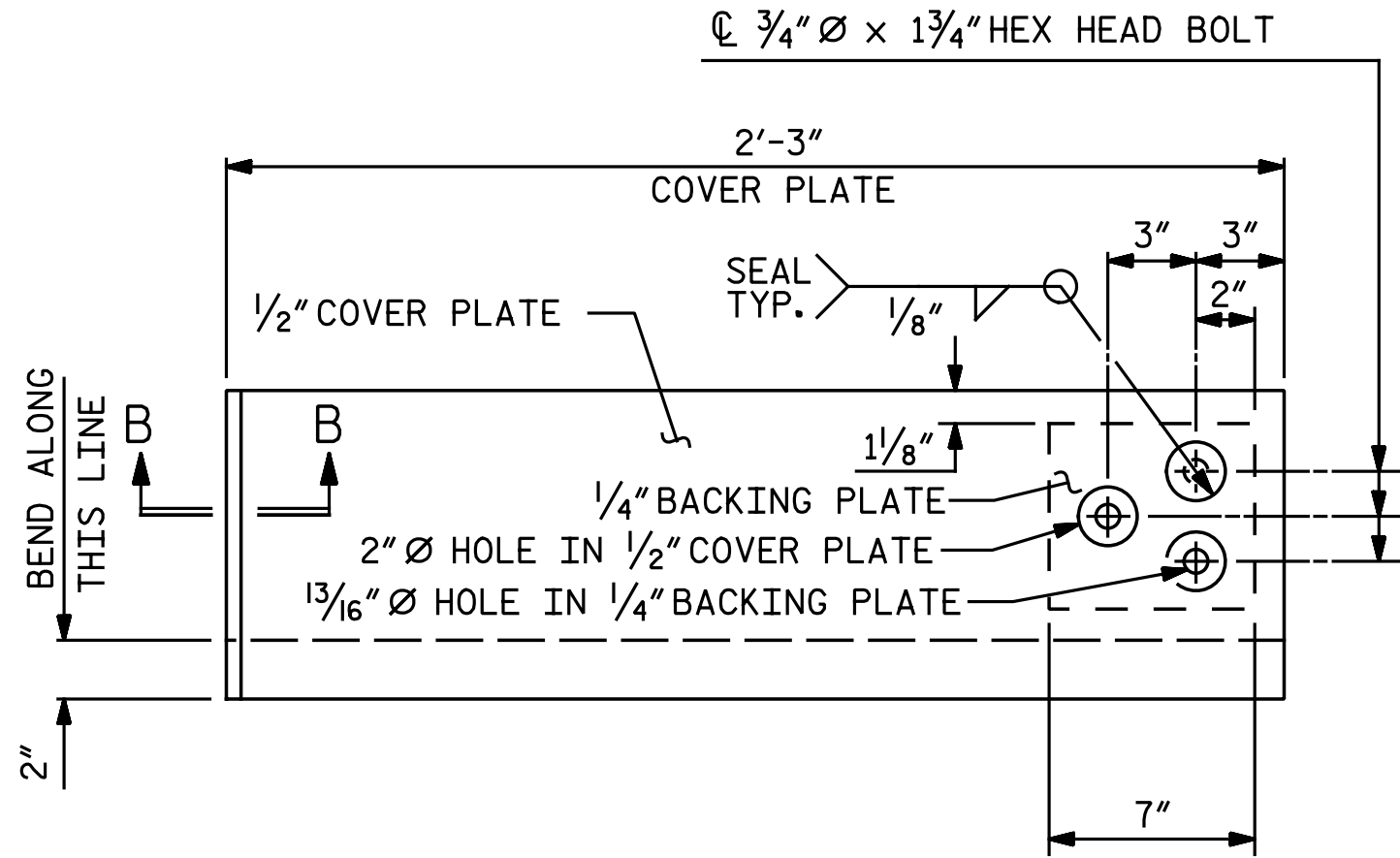


END VIEW

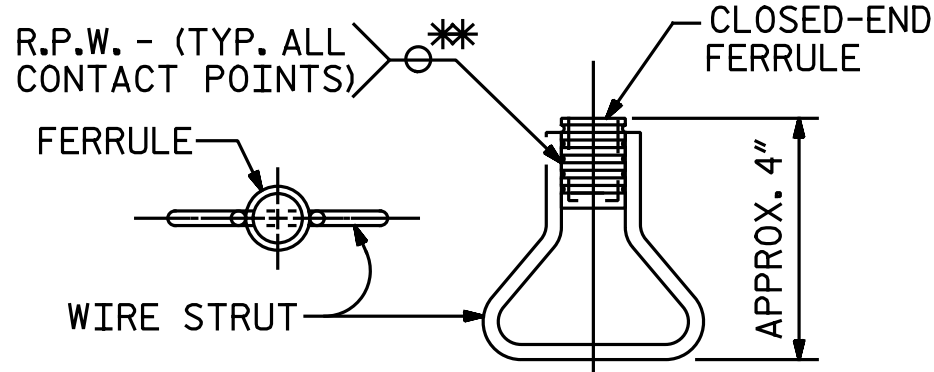
COVER PLATE DETAILS



SECTION A - A

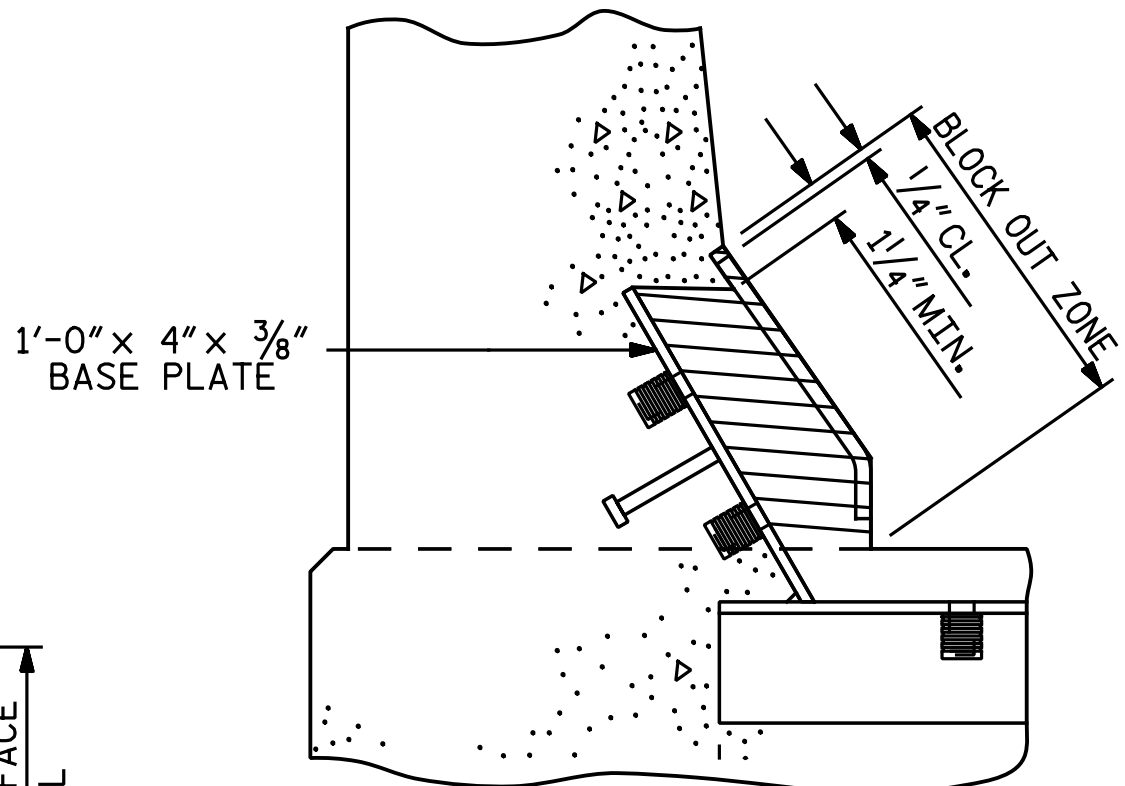


TYPE II - ELEVATION VIEW



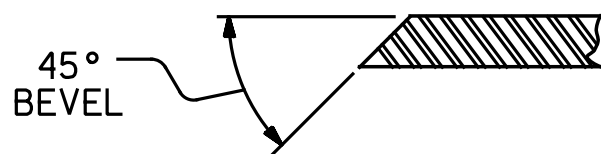
PLAN ELEVATION
CONCRETE INSERT

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



BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



SECTION B - B

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 3



Designed by: [Signature]
C41A3F8ECA30434
4/22/2021

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INTERNATIONAL

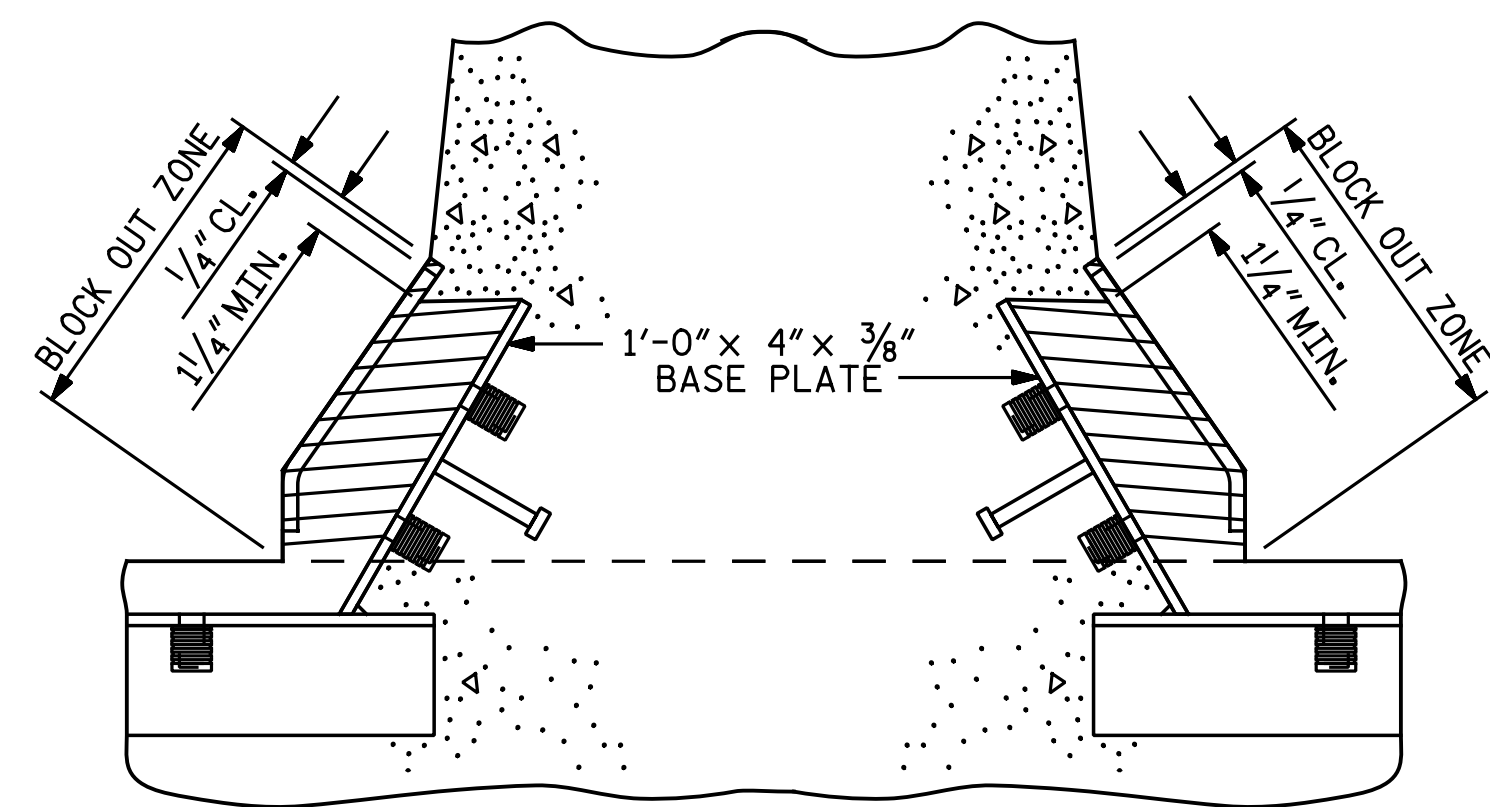
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
EXPANSION JOINT
SEAL DETAILS
FOR BARRIER RAIL

REVISIONS						SHEET NO. S2-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

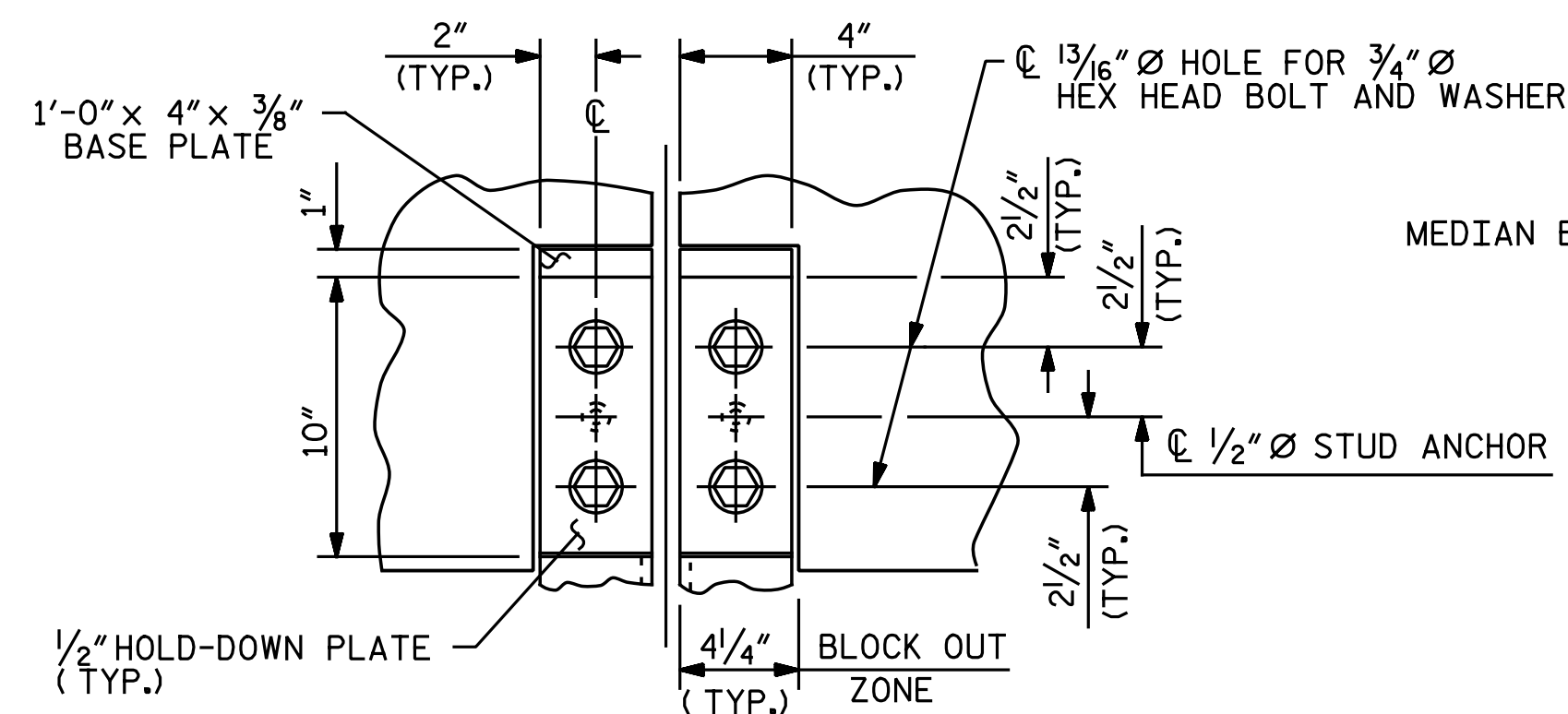
STD. NO. EJS2

ASSEMBLED BY : N. B. SPEAKS CHECKED BY : B. J. BELL	DATE : 4-18-19 DATE : 6-17-19
DRAWN BY : REK 9/87 CHECKED BY : CRK 10/87	REV. 7/12 MAA/GM REV. 6/13 MAA/GM REV. 12/17 MAA/THC

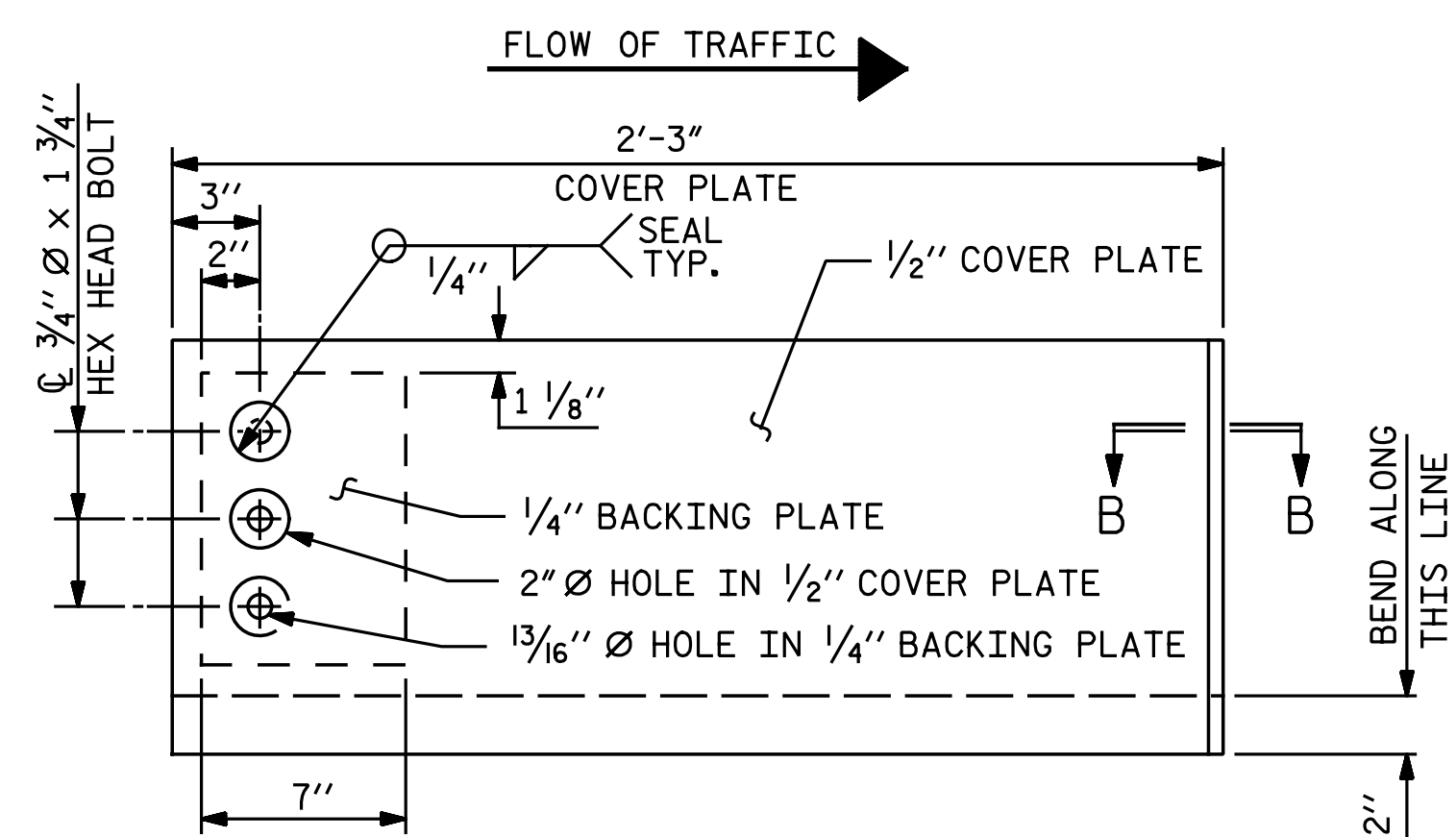


BLOCK OUT DETAIL

SEE " SECTION A - A " FOR OTHER DETAILS.



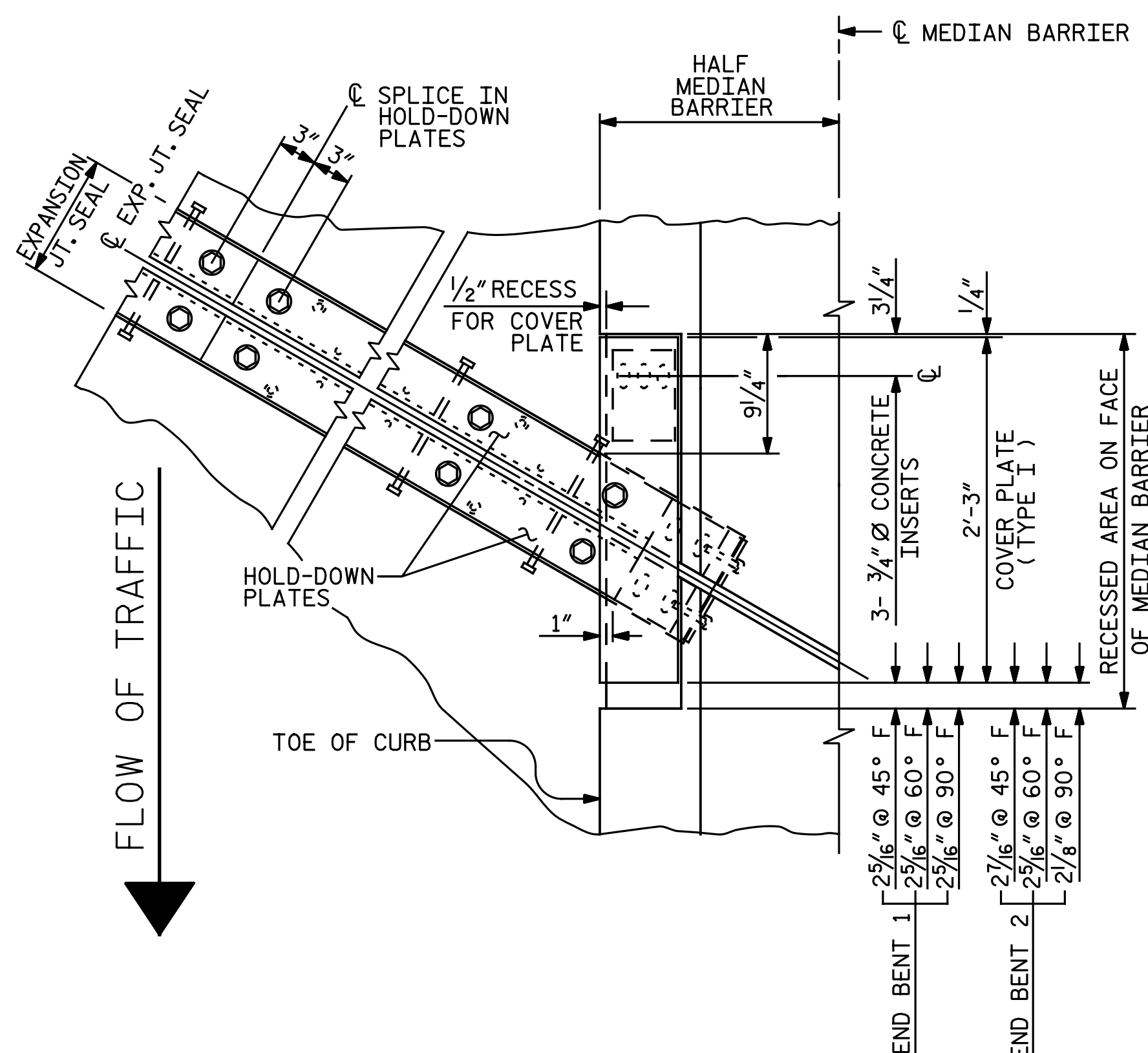
SECTION A - A



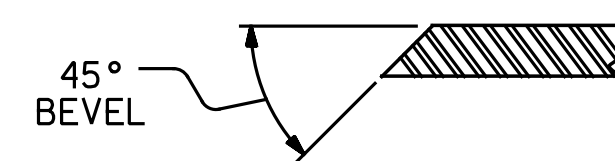
TYPE I - ELEVATION VIEW

COVER PLATE DETAILS

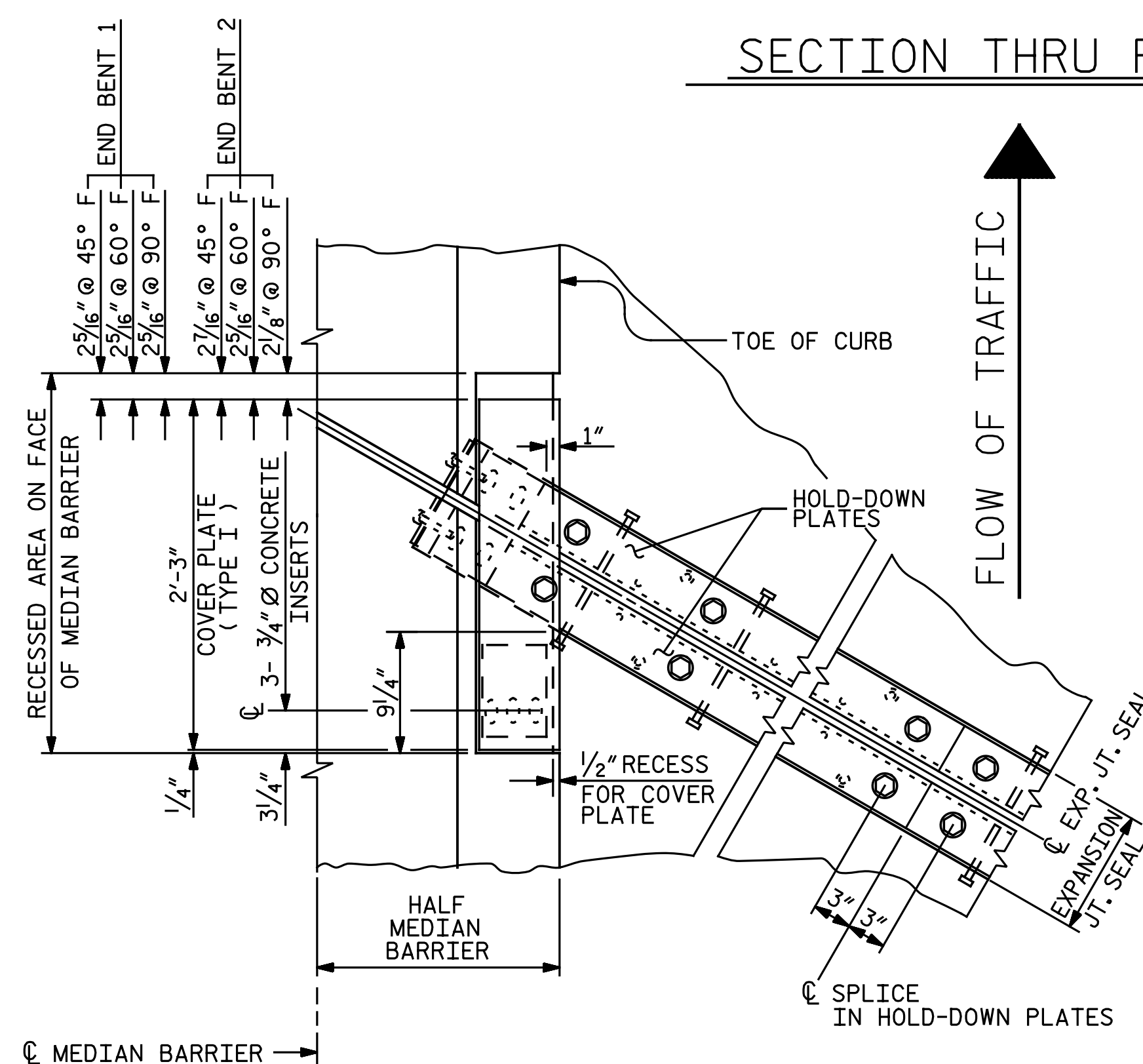
SEE "TYPE I - END VIEW" FOR OTHER DETAILS



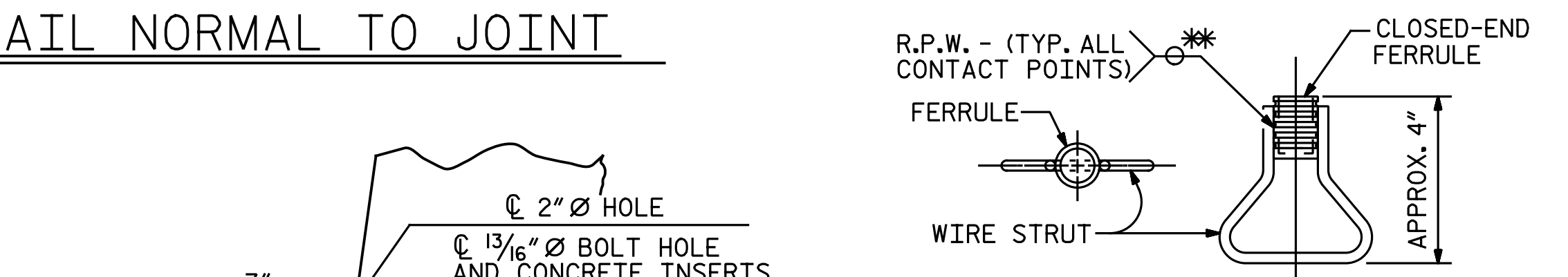
PLAN OF EXPANSION JOINT SEAL



SECTION B - B



SECTION THRU RAIL NORMAL TO JOINT



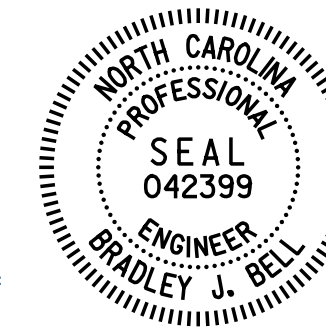
PLAN ELEVATION

CONCRETE INSERT

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

PROJECT NO. I-5878
HARNETT COUNTY
 STATION: 1002+79.68 -LREV-

SHEET 3 OF 3



DocuSigned by:
Bill Bell
C41A3F8ECA3C43
4/22/202

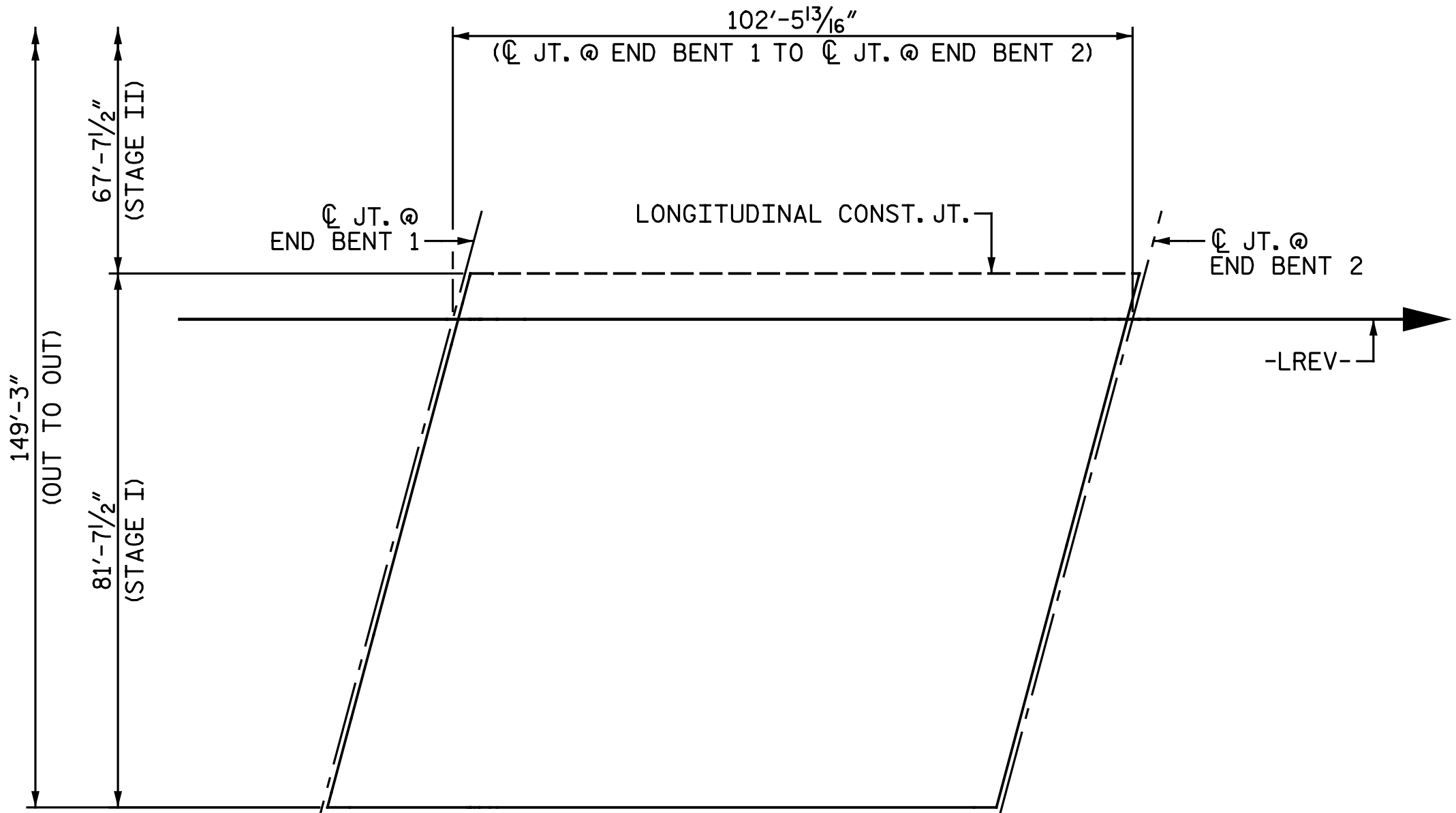
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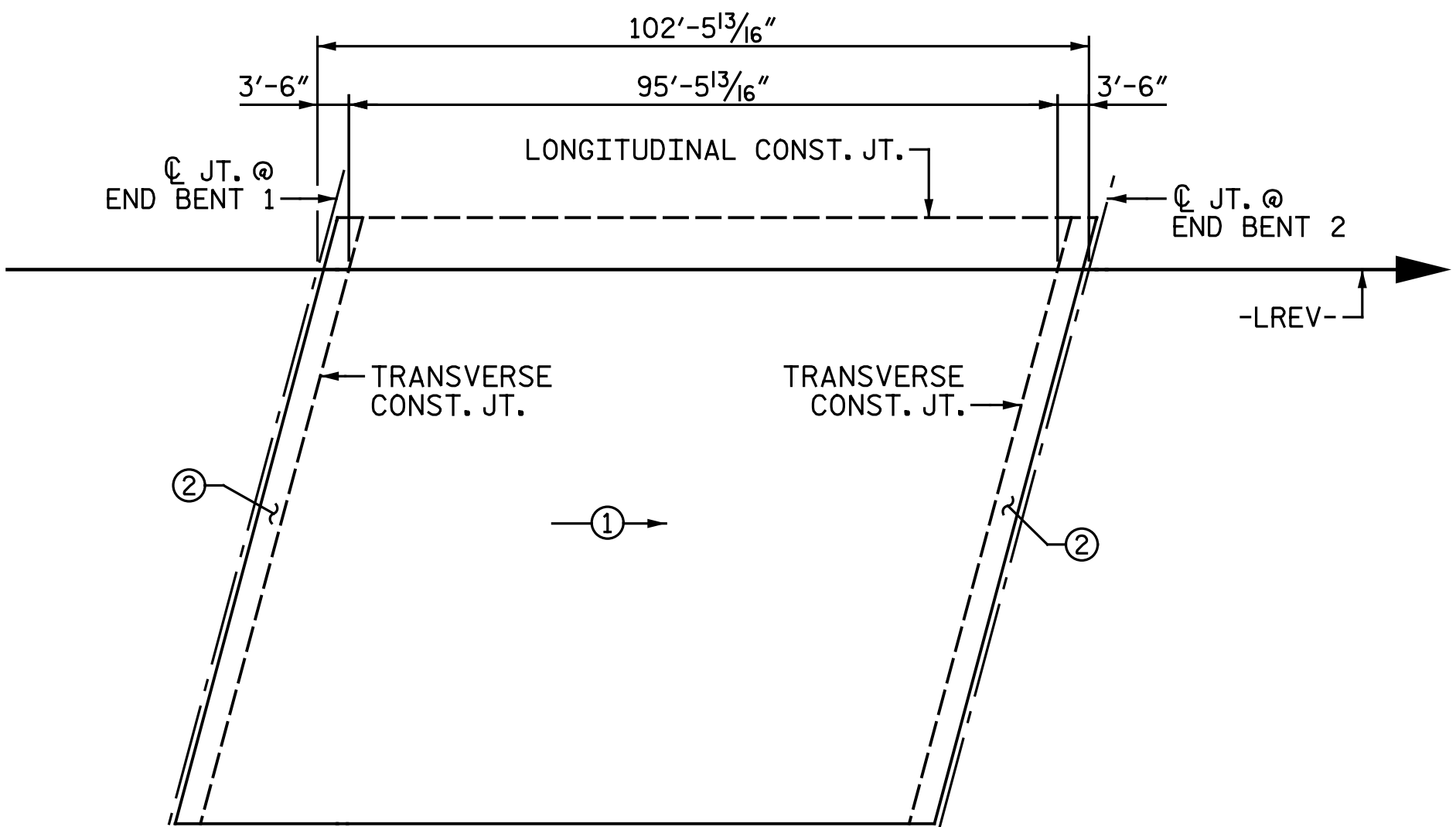
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REVISIONS						SHEET NO. S2-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : N. B. SPEAKS DATE : 5-9-19
CHECKED BY : B. J. BELL DATE : 9-17-19



LAYOUT FOR COMPUTING AREA OF
REINFORCED CONCRETE DECK SLAB
(STAGE I SQ. FT. = 8,365)



POURING SEQUENCE

① → DENOTES POUR NUMBER AND DIRECTION

REINFORCING BAR SCHEDULE											
SPAN A - STAGE I											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	128	#5	STR.	46' - 8"	6,230	A310	2	#5	STR.	58' - 4"	122
* A2	146	#5	STR.	37' - 2"	5,660	A311	2	#5	STR.	56' - 0"	117
A3	274	#5	STR.	41' - 9"	11,931	A312	2	#5	STR.	53' - 8"	112
* A4	40	#5	STR.	41' - 11"	1,749	A313	2	#5	STR.	51' - 4"	107
						A314	2	#5	STR.	49' - 0"	102
* A201	2	#5	STR.	44' - 9"	93	A315	2	#5	STR.	46' - 8"	97
* A202	2	#5	STR.	42' - 5"	88	A316	2	#5	STR.	44' - 4"	92
* A203	2	#5	STR.	40' - 1"	84	A317	2	#5	STR.	42' - 0"	88
* A204	2	#5	STR.	37' - 9"	79	A318	2	#5	STR.	39' - 8"	83
* A205	2	#5	STR.	35' - 5"	74	A319	2	#5	STR.	37' - 4"	78
* A206	2	#5	STR.	33' - 1"	69	A320	2	#5	STR.	35' - 0"	73
* A207	2	#5	STR.	30' - 9"	64	A321	2	#5	STR.	32' - 8"	68
* A208	2	#5	STR.	28' - 5"	59	A322	2	#5	STR.	30' - 4"	63
* A209	2	#5	STR.	26' - 1"	54	A323	2	#5	STR.	28' - 0"	58
* A210	2	#5	STR.	58' - 4"	122	A324	2	#5	STR.	25' - 8"	54
* A211	2	#5	STR.	56' - 0"	117	A325	2	#5	STR.	23' - 4"	49
* A212	2	#5	STR.	53' - 8"	112	A326	2	#5	STR.	21' - 0"	44
* A213	2	#5	STR.	51' - 4"	107	A327	2	#5	STR.	18' - 8"	39
* A214	2	#5	STR.	49' - 0"	102	A328	2	#5	STR.	16' - 4"	34
* A215	2	#5	STR.	46' - 8"	97	A329	2	#5	STR.	14' - 0"	29
* A216	2	#5	STR.	44' - 4"	92	A330	2	#5	STR.	11' - 8"	24
* A217	2	#5	STR.	42' - 0"	88	A331	2	#5	STR.	9' - 4"	19
* A218	2	#5	STR.	39' - 8"	83	A332	2	#5	STR.	7' - 0"	15
* A219	2	#5	STR.	37' - 4"	78	A333	2	#5	STR.	4' - 8"	10
* A220	2	#5	STR.	35' - 0"	73	A334	2	#5	STR.	2' - 4"	5
* A221	2	#5	STR.	32' - 8"	68						
* A222	2	#5	STR.	30' - 4"	63	* B1	165	#4	STR.	35' - 4"	3,894
* A223	2	#5	STR.	28' - 0"	58	B2	154	#5	STR.	52' - 1"	8,366
* A224	2	#5	STR.	25' - 8"	54						
* A225	2	#5	STR.	23' - 4"	49	* D1	161	#5	STR.	6' - 6"	1,091
* A226	2	#5	STR.	21' - 0"	44	D2	161	#5	STR.	6' - 0"	1,008
* A227	2	#5	STR.	18' - 8"	39	* D3	20	#5	STR.	8' - 0"	167
* A228	2	#5	STR.	16' - 4"	34						
* A229	2	#5	STR.	14' - 0"	29	* G1	4	#5	STR.	43' - 4"	181
* A230	2	#5	STR.	11' - 8"	24						
* A231	2	#5	STR.	9' - 4"	19	* J1	162	#4	1	1' - 5"	153
* A232	2	#5	STR.	7' - 0"	15						
* A233	2	#5	STR.	4' - 8"	10	* K1	4	#8	2	13' - 5"	143
* A234	2	#5	STR.	2' - 4"	5	* K2	4	#8	2	14' - 7"	156
						* K3	28	#8	3	23' - 3"	1,738
A301	2	#5	STR.	39' - 10"	83	* K4	48	#6	STR.	8' - 3"	595
A302	2	#5	STR.	37' - 6"	78	* K5	32	#4	STR.	8' - 10"	189
A303	2	#5	STR.	35' - 2"	73						
A304	2	#5	STR.	32' - 10"	68	* S1	96	#4	4	4' - 10"	310
A305	2	#5	STR.	30' - 6"	64	* S2	96	#5	5	5' - 10"	584
A306	2	#5	STR.	28' - 2"	59	* S3	64	#5	5	3' - 4"	223
A307	2	#5	STR.	25' - 10"	54	REINFORCING STEEL LBS. 23,459					
A308	2	#5	STR.	23' - 6"	49	* EPOXY COATED REINF. STEEL LBS. 25,309					
A309	2	#5	STR.	21' - 2"	44						

GROOVING BRIDGE FLOORS		
STAGE I		
APPROACH SLABS	3,494	SQ.FT.
BRIDGE DECK	7,439	SQ.FT.
TOTAL	10,933	SQ.FT.



Designed by:
C41A3F8ECA30434
4/22/2021

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BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A - STAGE I	-	23,459	25,309
POUR 1	258.7	-	-
POUR 2	33.0	-	-
TOTALS **	291.7	23,459	25,309

** QUANTITIES FOR BARRIER RAIL & MEDIAN BARRIER ARE NOT INCLUDED

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

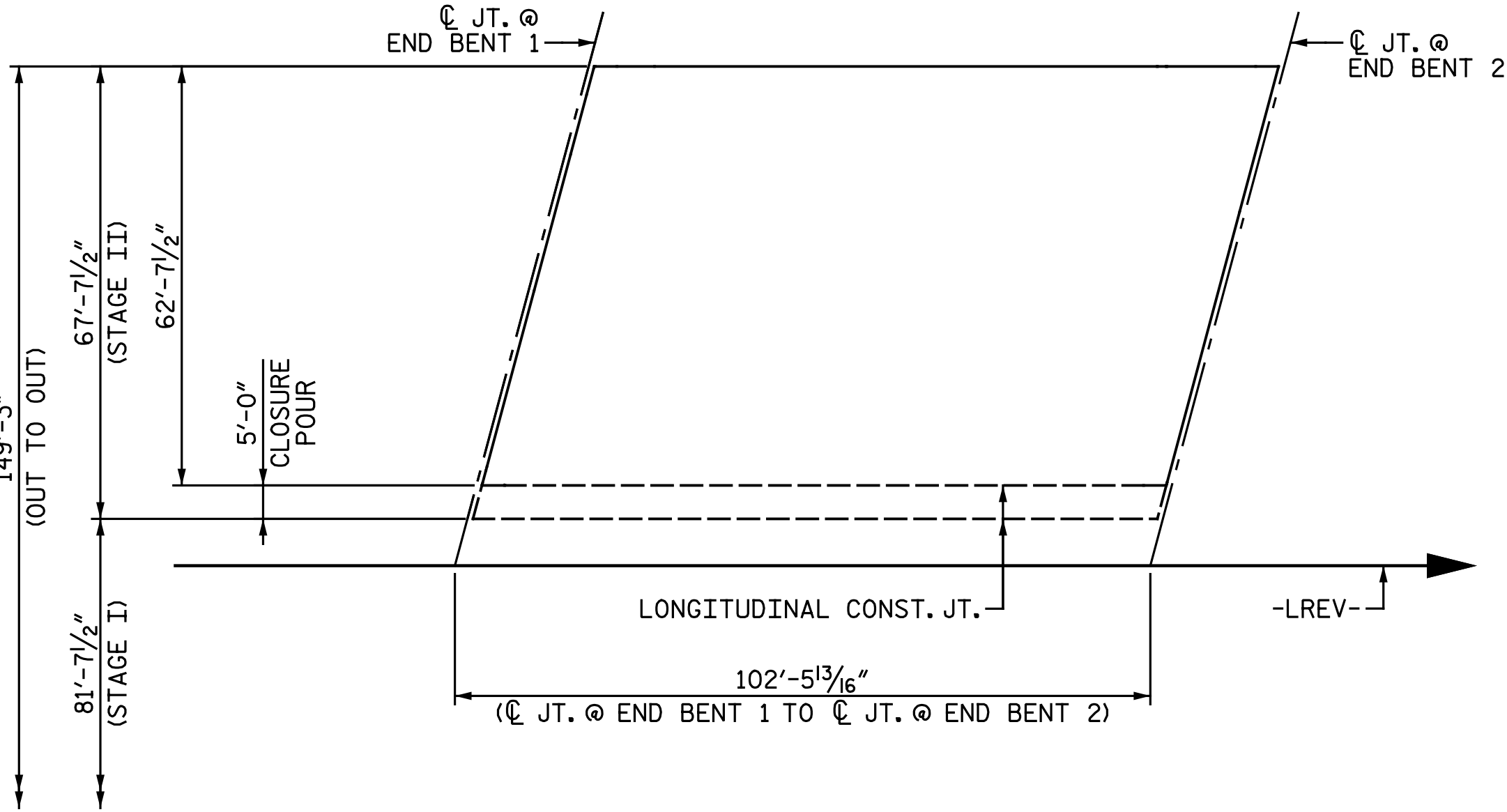
SHEET 1 OF 2

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

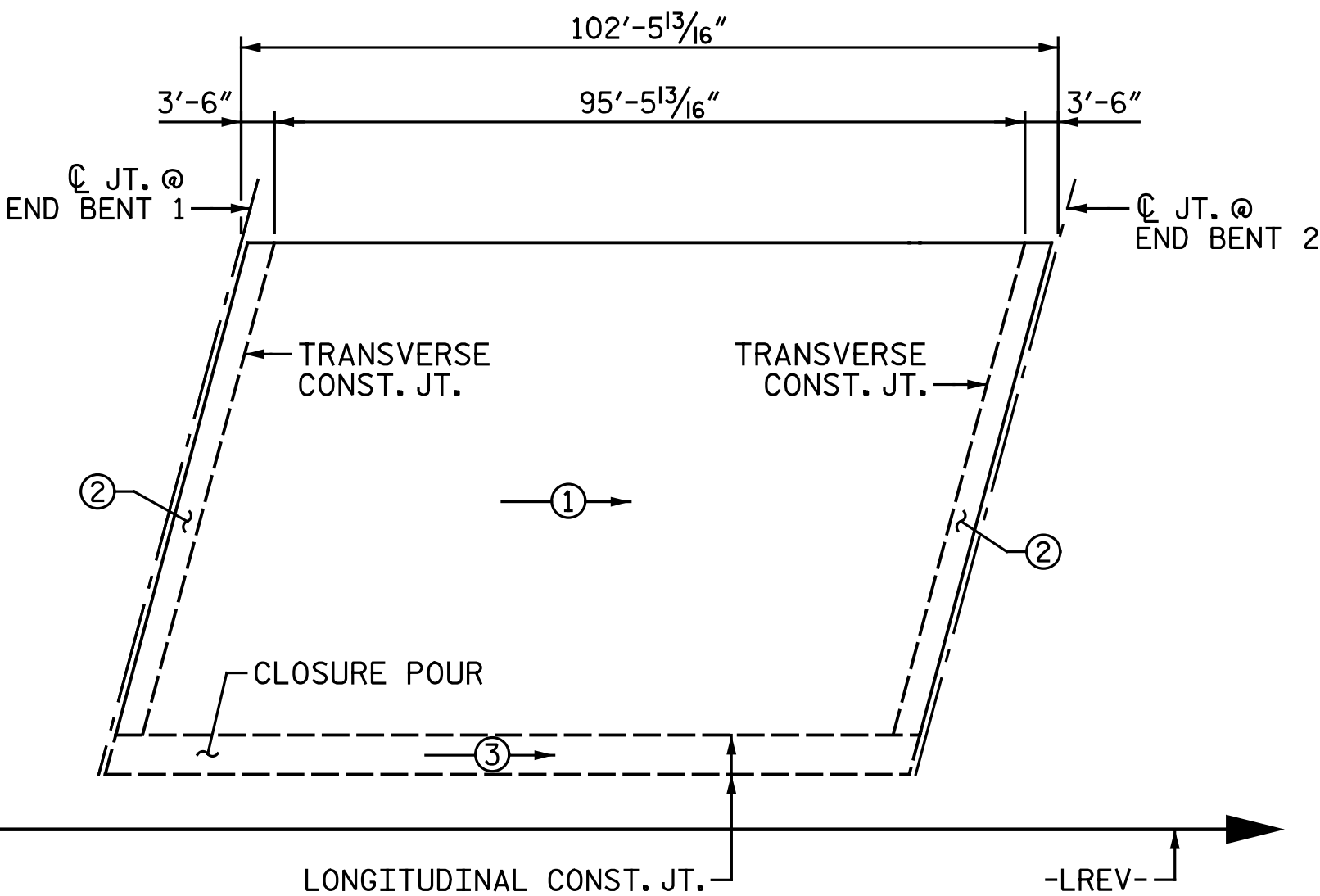
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S2-22
TOTAL
SHEETS
34

DRAWN BY : M. D. MAYHEW DATE : 7-22-19
CHECKED BY : B. J. BELL DATE : 8-3-19



LAYOUT FOR COMPUTING AREA OF
REINFORCED CONCRETE DECK SLAB
(STAGE II SQ. FT. = 6,931)



POURING SEQUENCE

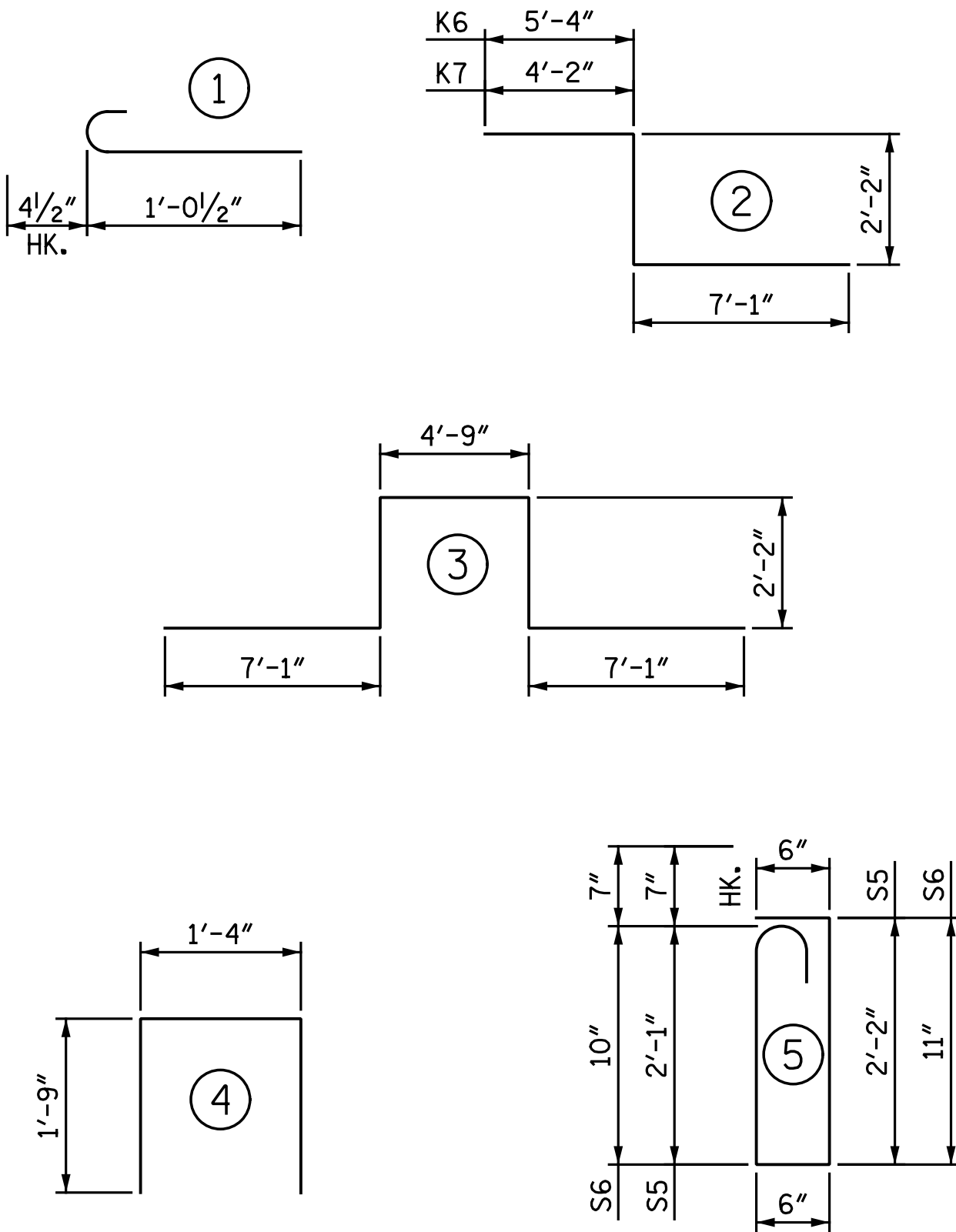
① → DENOTES POUR NUMBER AND DIRECTION

REINFORCING BAR SCHEDULE											
SPAN A - STAGE II											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A5	136	#5	STR.	37' - 2"	5,272	A711	1	#5	STR.	37' - 0"	39
* A6	138	#5	STR.	27' - 8"	3,982	A712	1	#5	STR.	34' - 8"	36
A7	274	#5	STR.	32' - 3"	9,216	A713	1	#5	STR.	32' - 4"	34
* A8	40	#5	STR.	32' - 1"	1,339	A714	1	#5	STR.	30' - 0"	31
						A715	1	#5	STR.	27' - 8"	29
* A601	1	#5	STR.	35' - 4"	37	A716	1	#5	STR.	25' - 4"	26
* A602	1	#5	STR.	58' - 0"	60	A717	1	#5	STR.	23' - 0"	24
* A603	1	#5	STR.	55' - 8"	58	A718	1	#5	STR.	20' - 9"	22
* A604	1	#5	STR.	53' - 4"	56	A719	1	#5	STR.	18' - 5"	19
* A605	1	#5	STR.	51' - 0"	53	A720	1	#5	STR.	16' - 1"	17
* A606	1	#5	STR.	48' - 8"	51	A721	1	#5	STR.	13' - 9"	14
* A607	1	#5	STR.	46' - 4"	48	A722	1	#5	STR.	11' - 5"	12
* A608	1	#5	STR.	44' - 0"	46	A723	1	#5	STR.	9' - 1"	9
* A609	1	#5	STR.	41' - 8"	43	A724	1	#5	STR.	6' - 9"	7
* A610	1	#5	STR.	39' - 4"	41	A725	1	#5	STR.	4' - 5"	5
* A611	1	#5	STR.	37' - 0"	39	A726	1	#5	STR.	2' - 1"	2
* A612	1	#5	STR.	34' - 8"	36	A727	1	#5	STR.	30' - 8"	32
* A613	1	#5	STR.	32' - 4"	34	A728	1	#5	STR.	58' - 4"	61
* A614	1	#5	STR.	30' - 0"	31	A729	1	#5	STR.	56' - 0"	58
* A615	1	#5	STR.	27' - 8"	29	A730	1	#5	STR.	53' - 8"	56
* A616	1	#5	STR.	25' - 4"	26	A731	1	#5	STR.	51' - 4"	54
* A617	1	#5	STR.	23' - 0"	24	A732	1	#5	STR.	49' - 0"	51
* A618	1	#5	STR.	20' - 9"	22	A733	1	#5	STR.	46' - 8"	49
* A619	1	#5	STR.	18' - 5"	19	A734	1	#5	STR.	44' - 4"	46
* A620	1	#5	STR.	16' - 1"	17	A735	1	#5	STR.	42' - 0"	44
* A621	1	#5	STR.	13' - 9"	14	A736	1	#5	STR.	39' - 8"	41
* A622	1	#5	STR.	11' - 5"	12	A737	1	#5	STR.	37' - 4"	39
* A623	1	#5	STR.	9' - 1"	9	A738	1	#5	STR.	35' - 0"	37
* A624	1	#5	STR.	6' - 9"	7	A739	1	#5	STR.	32' - 8"	34
* A625	1	#5	STR.	4' - 5"	5	A740	1	#5	STR.	30' - 4"	32
* A626	1	#5	STR.	2' - 1"	2	A741	1	#5	STR.	28' - 0"	29
* A627	1	#5	STR.	35' - 7"	37	A742	1	#5	STR.	25' - 8"	27
* A628	1	#5	STR.	58' - 4"	61	A743	1	#5	STR.	23' - 4"	24
* A629	1	#5	STR.	56' - 0"	58	A744	1	#5	STR.	21' - 0"	22
* A630	1	#5	STR.	53' - 8"	56	A745	1	#5	STR.	18' - 8"	19
* A631	1	#5	STR.	51' - 4"	54	A746	1	#5	STR.	16' - 4"	17
* A632	1	#5	STR.	49' - 0"	51	A747	1	#5	STR.	14' - 0"	15
* A633	1	#5	STR.	46' - 8"	49	A748	1	#5	STR.	11' - 8"	12
* A634	1	#5	STR.	44' - 4"	46	A749	1	#5	STR.	9' - 4"	10
* A635	1	#5	STR.	42' - 0"	44	A750	1	#5	STR.	7' - 0"	7
* A636	1	#5	STR.	39' - 8"	41	A751	1	#5	STR.	4' - 8"	5
* A637	1	#5	STR.	37' - 4"	39	A752	1	#5	STR.	2' - 4"	2
* A638	1	#5	STR.	35' - 0"	37						
* A639	1	#5	STR.	32' - 8"	34	* B3	141	#4	STR.	35' - 4"	3,328
* A640	1	#5	STR.	30' - 4"	32	B4	132	#5	STR.	52' - 1"	7,171
* A641	1	#5	STR.	28' - 0"	29						
* A642	1	#5	STR.	25' - 8"	27	* D4	161	#5	STR.	6' - 6"	1,091
* A643	1	#5	STR.	23' - 4"	24	D5	161	#5	STR.	6' - 0"	1,008
* A644	1	#5	STR.	21' - 0"	22	* D6	20	#5	STR.	10' - 9"	224
* A645	1	#5	STR.	18' - 8"	19						
* A646	1	#5	STR.	16' - 4"	17	* G2	4	#5	STR.	33' - 6"	140
* A647	1	#5	STR.	14' - 0"	15						
* A648	1	#5	STR.	11' - 8"	12	* J2	138	#4	1	1' - 5"	131
* A649	1	#5	STR.	9' - 4"	10						
* A650	1	#5	STR.	7' - 0"	7	* K6	4	#8	2	14' - 7"	156
* A651	1	#5	STR.	4' - 8"	5	* K7	4	#8	2	13' - 5"	143
* A652	1	#5	STR.	2' - 4"	2	* K8	20	#8	3	23' - 3"	1,242
						* K9	42	#6	STR.	8' - 3"	520
A701	1	#5	STR.	30' - 5"	32	* K10	28	#4	STR.	8' - 10"	165
A702	1	#5	STR.	58' - 0"	60	* K11	4	#8	STR.	8' - 10"	94
A703	1	#5	STR.	55' - 8"	58						
A704	1	#5	STR.	53' - 4"	56	* S4	84	#4	4	4' - 10"	271
A705	1	#5	STR.	51' - 0"	53	* S5	84	#5	5	5' - 10"	511
A706	1	#5	STR.	48' - 8"	51	* S6	56	#5	5	3' - 4"	195
A707	1	#5	STR.	46' - 4"	48						
A708	1	#5	STR.	44' - 0"	46						
A709	1	#5	STR.	41' - 8"	43						
A710	1	#5	STR.	39' - 4"	41						
										REINFORCING STEEL LBS. 19,032	
										* EPOXY COATED REINF. STEEL LBS. 20,451	

GROOVING BRIDGE FLOORS
STAGE II

APPROACH SLABS	3,066	SQ.FT.
BRIDGE DECK	6,528	SQ.FT.
TOTAL	9,594	SQ.FT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A - STAGE II	-	19,032	20,451
POUR 1	199.0	-	-
POUR 2	25.1	-	-
CLOSURE POUR	21.6		
TOTALS **	245.7	19,032	20,451

** QUANTITIES FOR BARRIER RAIL & MEDIAN BARRIER
ARE NOT INCLUDED

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 2

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



Designed by:
F. J. Bell
C41A3F8ECA3A0434
4/22/2021

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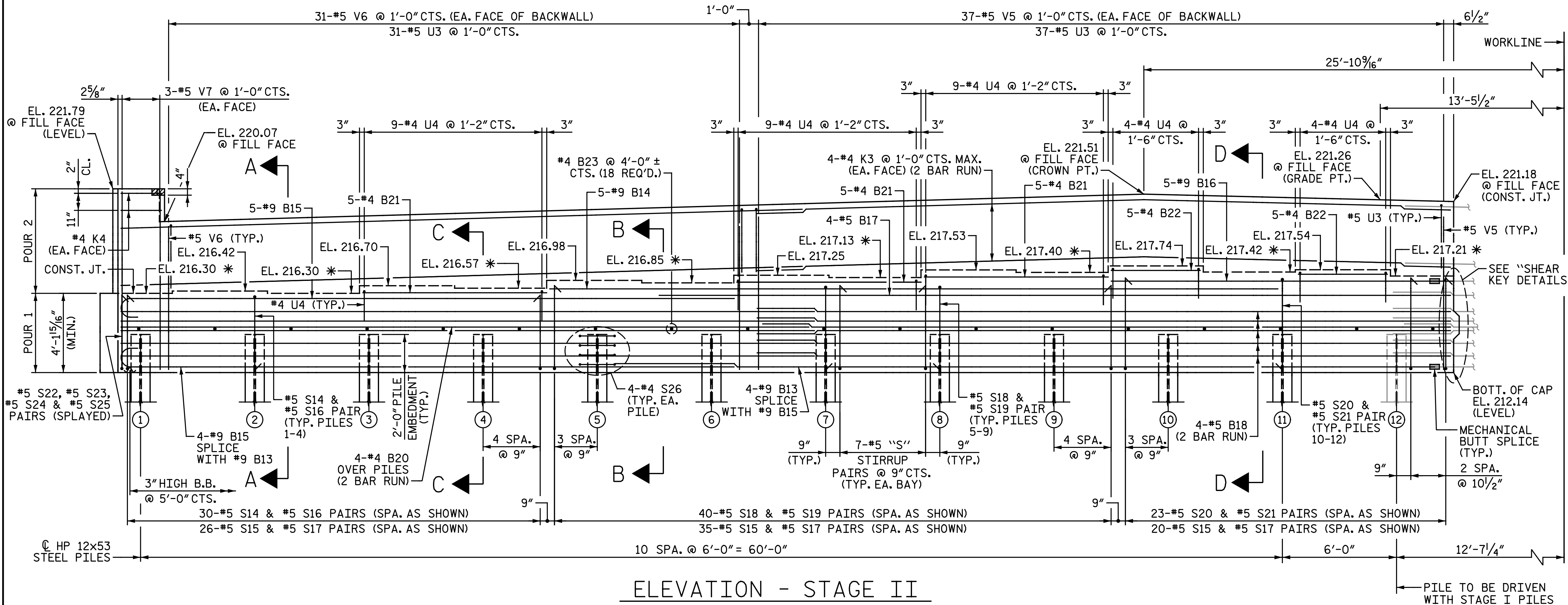
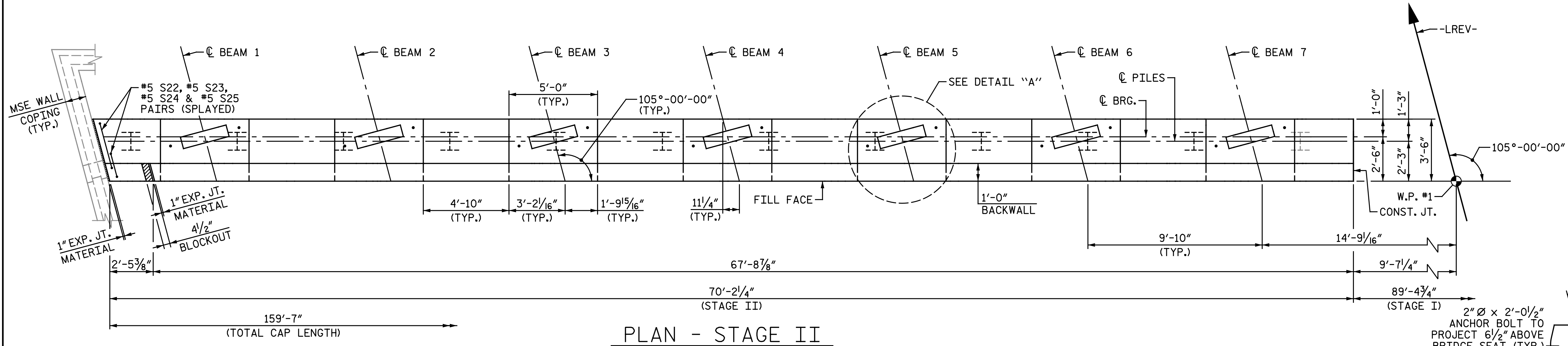
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Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO. S2-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : M. D. MAYHEW DATE : 7-22-19
CHECKED BY : B. J. BELL DATE : 8-3-19

REVISIONS						SHEET NO. S2-24 TOTAL SHEETS 34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



*FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE "SECTION A-A" ON "END BENT 1 DETAILS" SHEET.

NOTES:

FOR "BEAM SEAT DETAILS", SEE "END BENT 1 STAGE I" SHEET.

FOR "SECTION A-A", "PARTIAL SECTION B-B", "PARTIAL SECTION C-C", AND "PARTIAL SECTION D-D", SEE "END BENT 1 DETAILS" SHEET.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

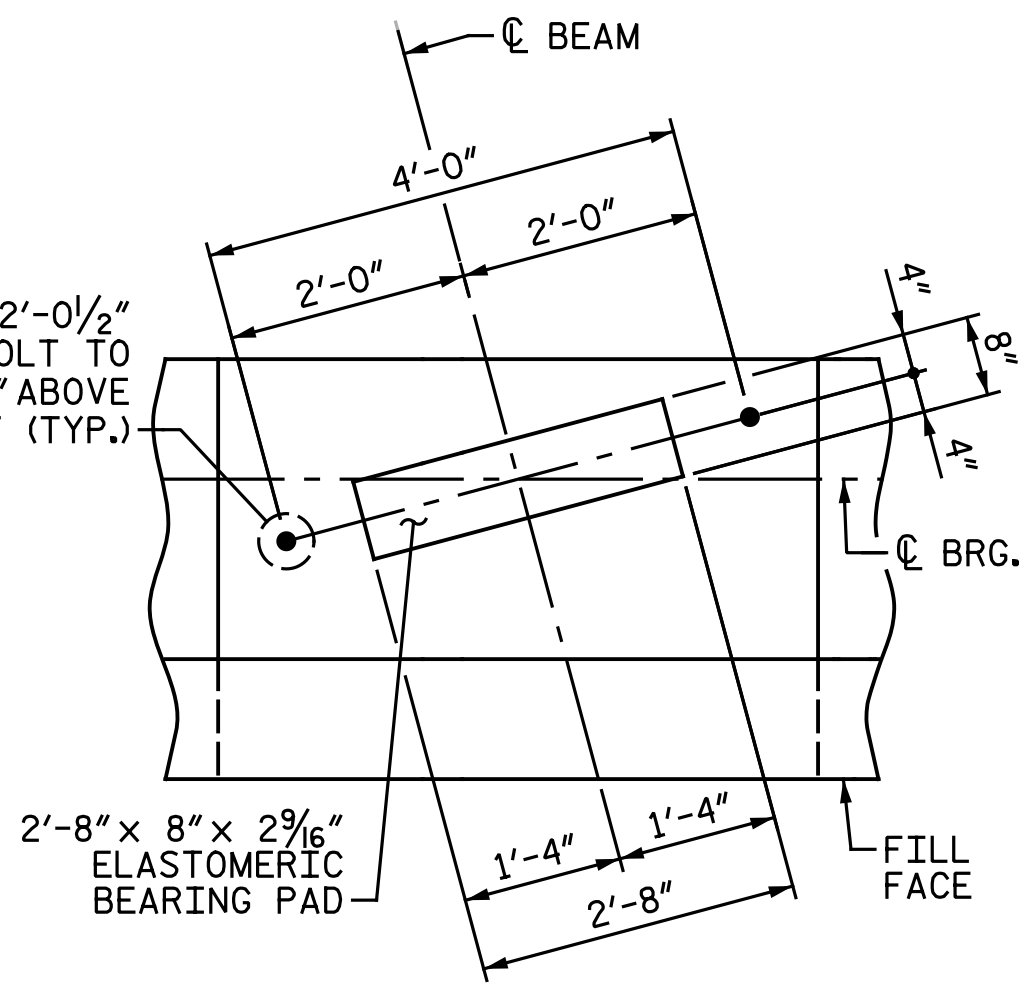
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT A RATE OF 2%.

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

FOR MSE RETAINING WALLS, SEE SPECIAL PROVISIONS.

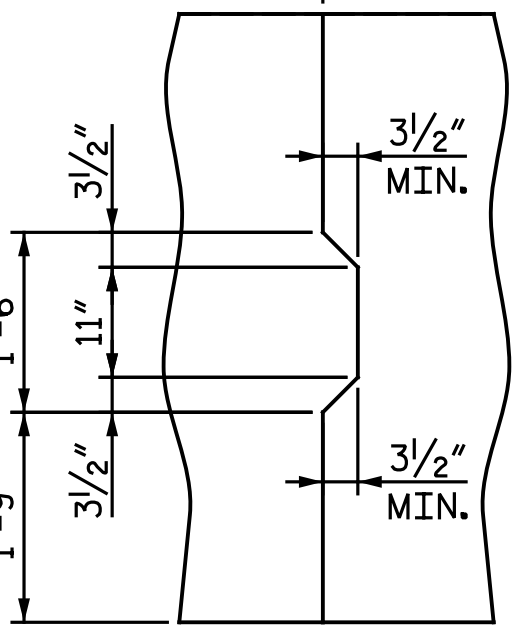
FOR LOCATION & DETAILS OF MSE RETAINING WALLS AND PILE SLEEVES, SEE MSE RETAINING WALL PLANS.

LENGTH OF CAP SHALL BE FIELD ADJUSTED AS REQUIRED TO PROVIDE 1" EXPANSION JOINT MATERIAL AS SHOWN BETWEEN THE CAP AND MSE WALL COPING.



DETAIL "A-A"
(TYP. EA. BRIDGE SEAT)

STAGE II STAGE I



SHEAR KEY DETAILS

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 3

MIN. SPLICE LENGTHS	
BAR SIZE	UNCOATED
#4	2'-5"
#5	3'-0"
#9	6'-3"

DRAWN BY : M. D. MAYHEW DATE : 8-20-19
CHECKED BY : B. J. BELL DATE : 9-17-19



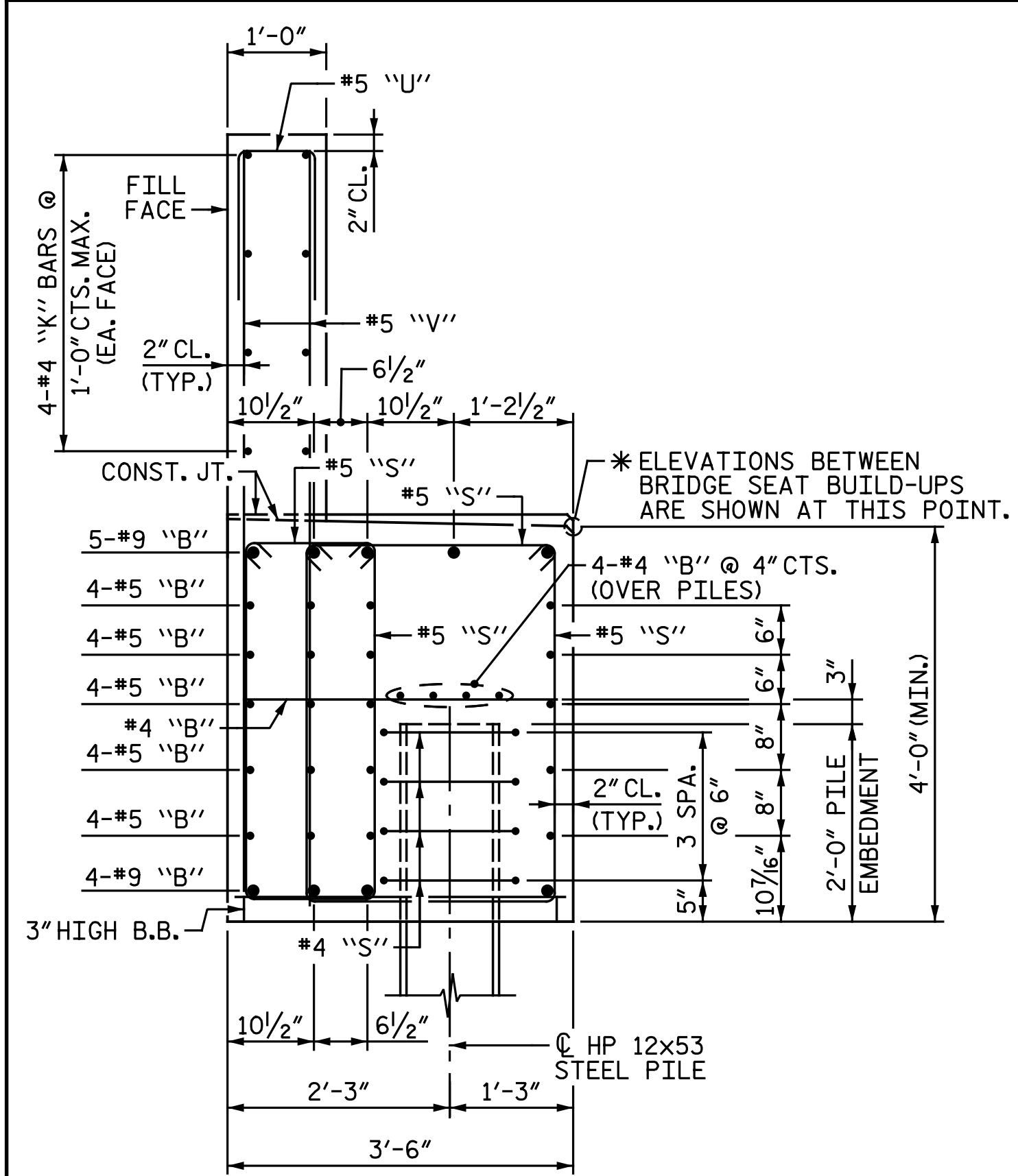
Designed by:
C41A3F8ECAB0434...
4/22/2021

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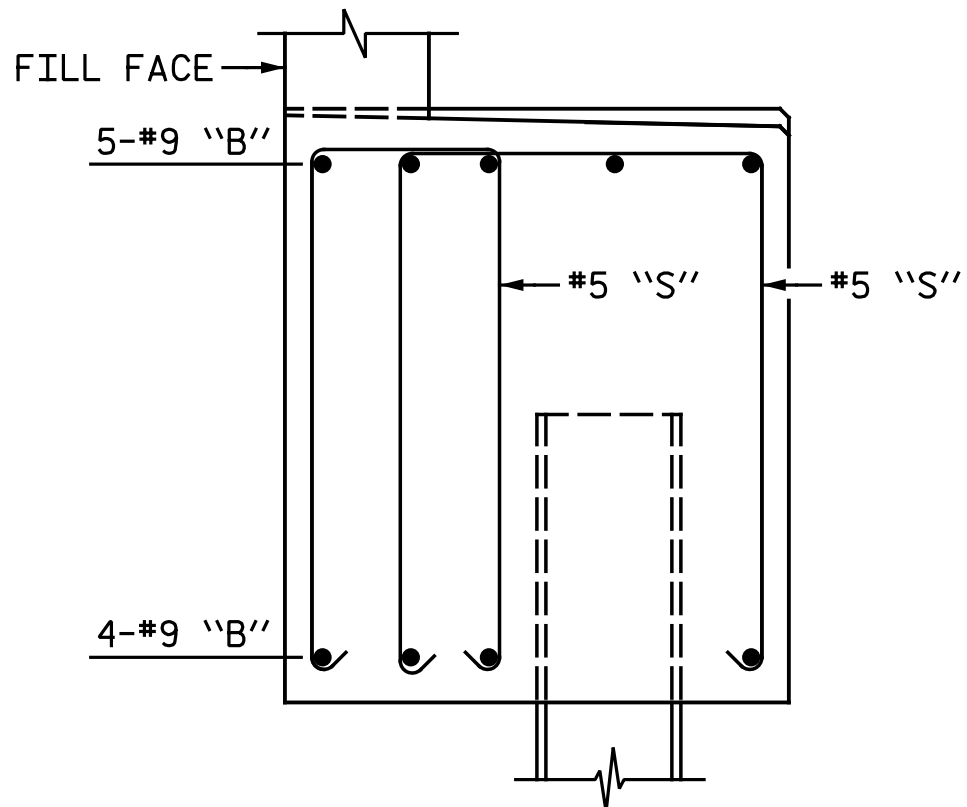
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NC License No.: F-1084

REVISIONS						SHEET NO. S2-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

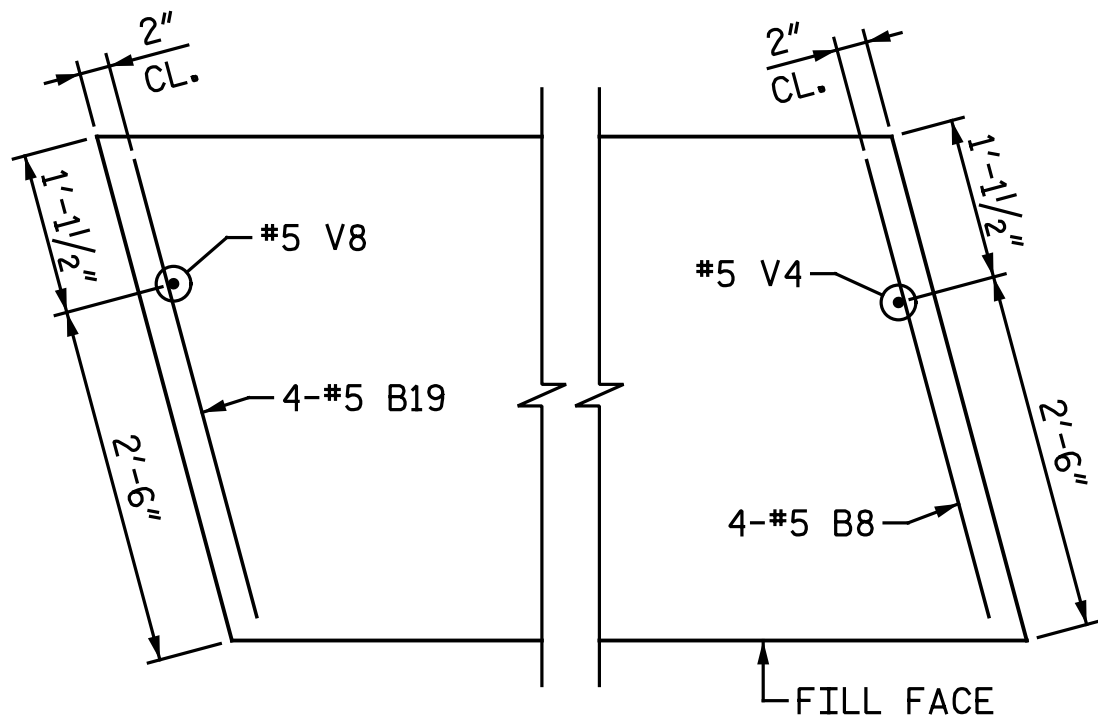


SECTION A-A



PARTIAL SECTION C-C

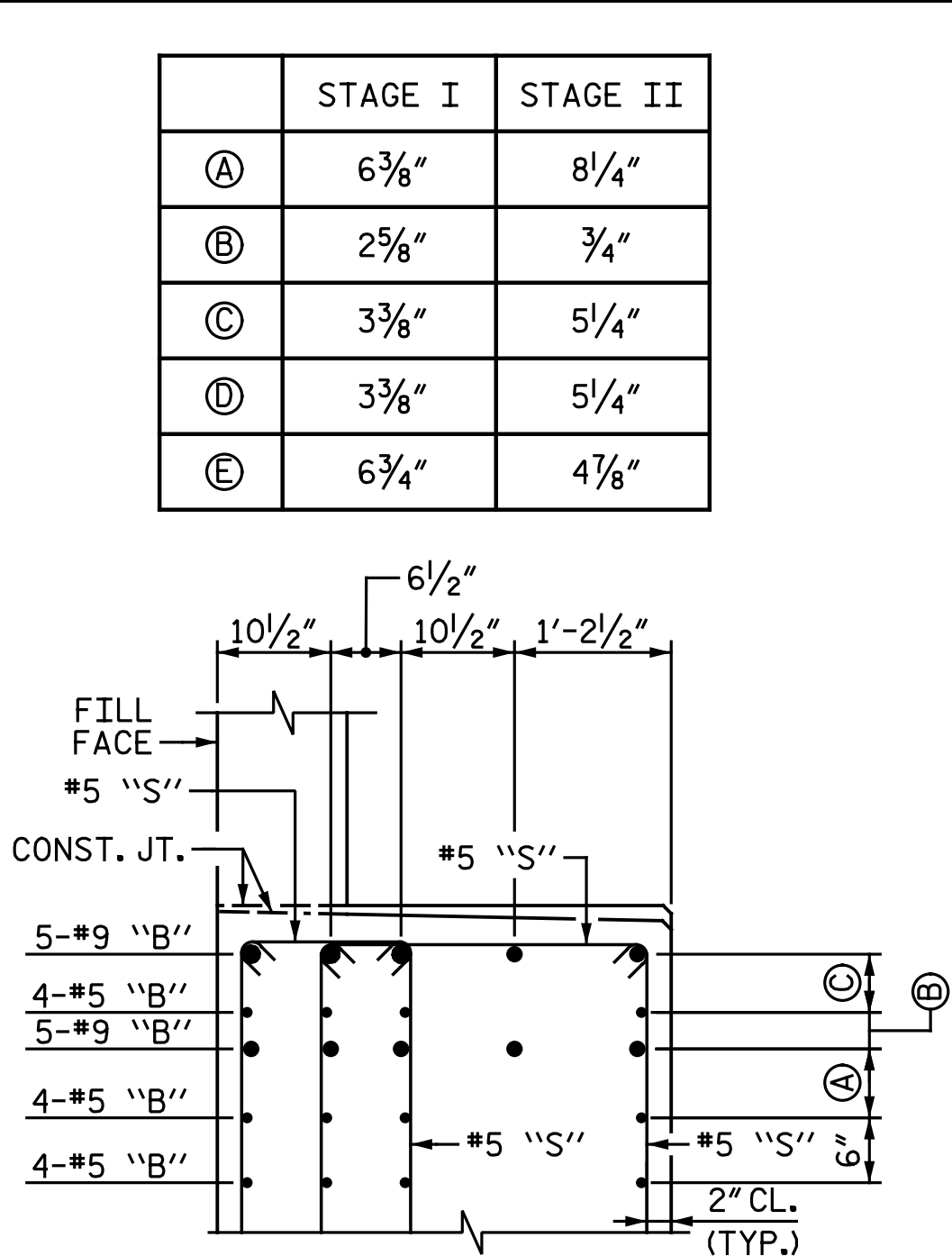
ONLY #9 "B" & #5 "S" BARS SHOWN FOR CLARITY (TYP. EA. PILE)



STAGE II

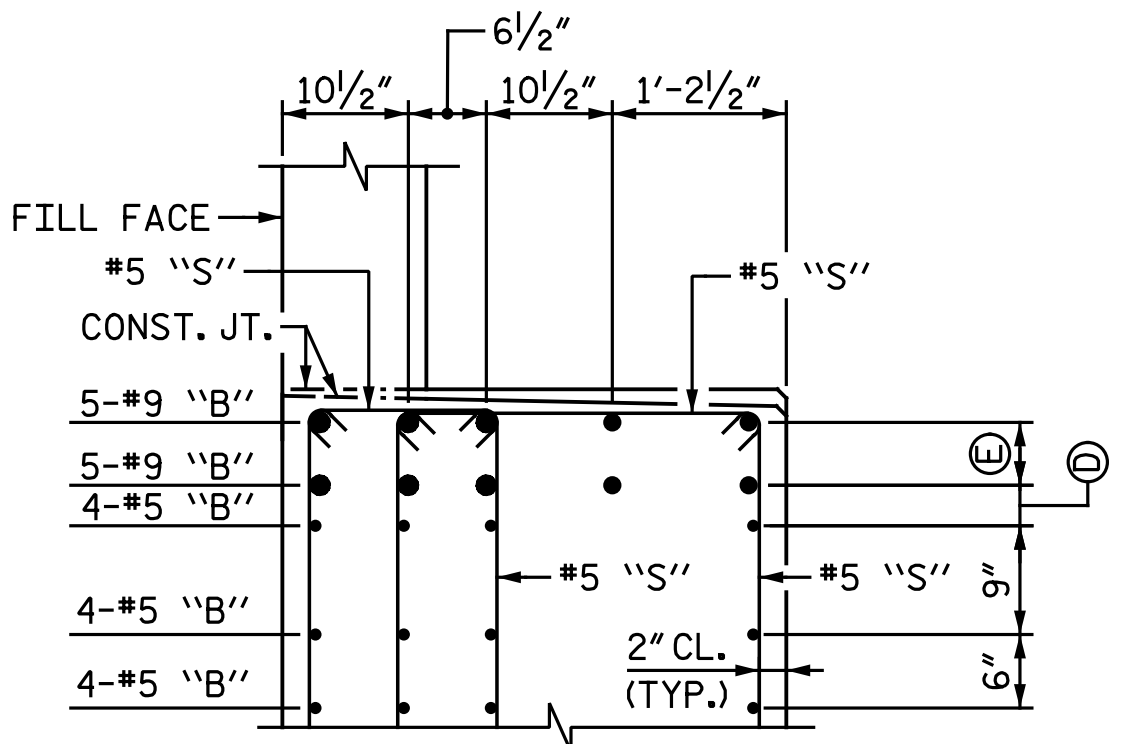
STAGE I

PLAN



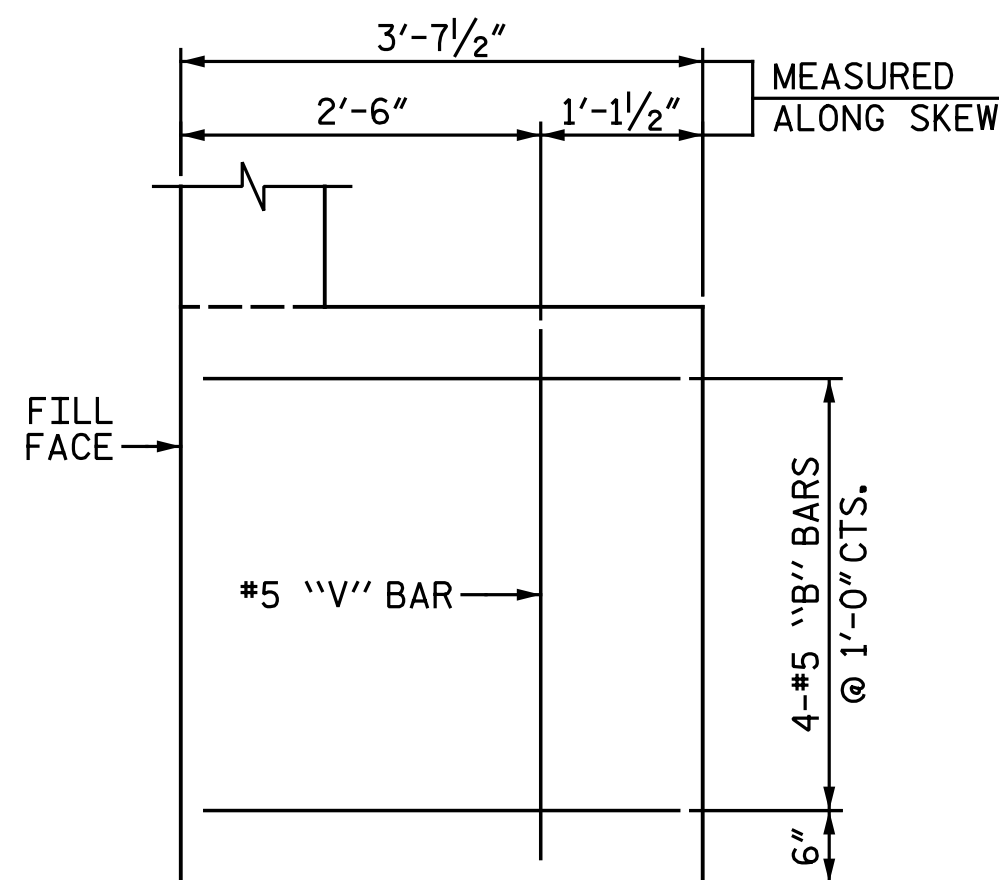
PARTIAL SECTION B-B

"K" & "V" BARS NOT SHOWN FOR CLARITY



PARTIAL SECTION D-D

"K" & "V" BARS NOT SHOWN FOR CLARITY

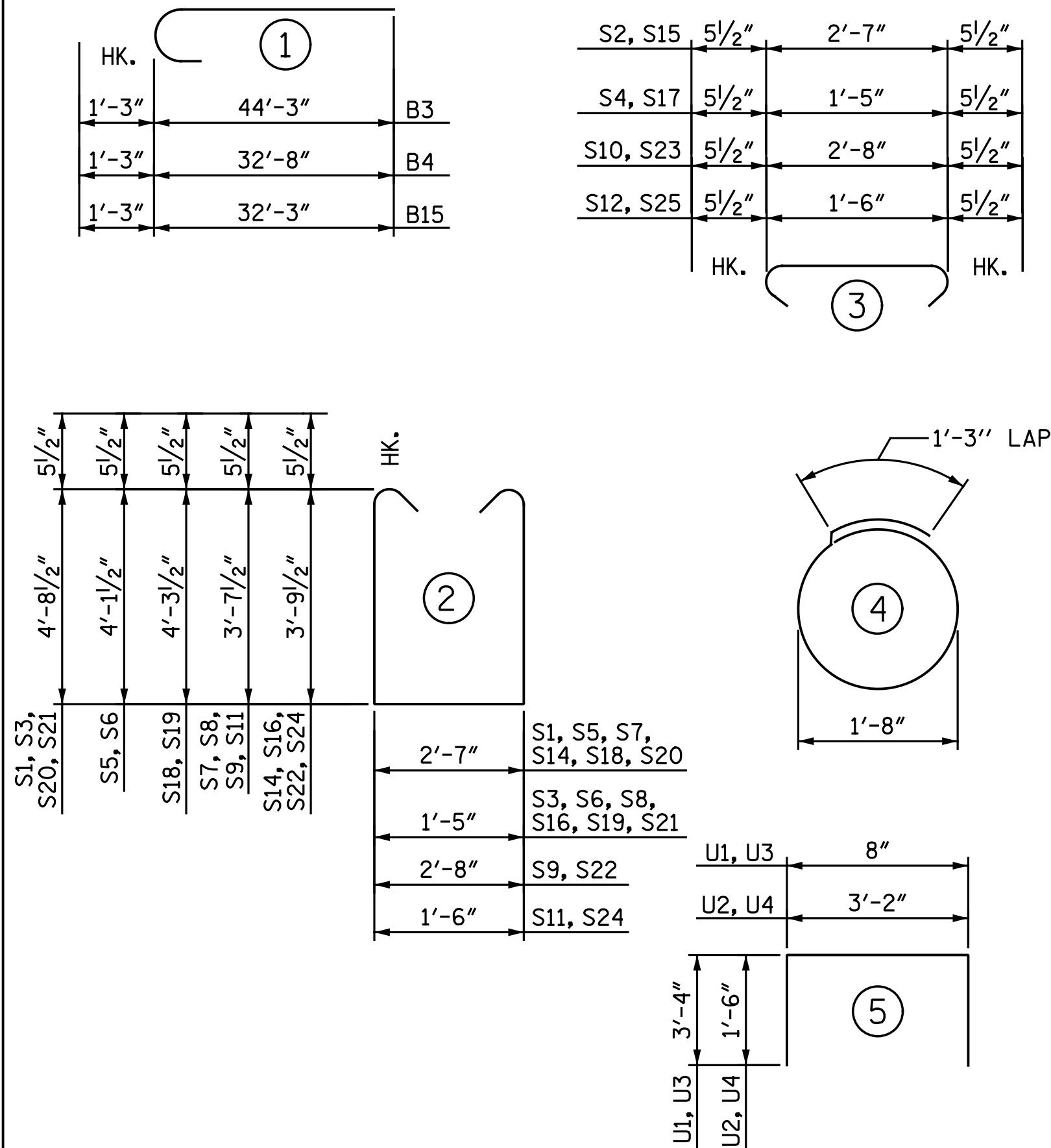


END VIEW

DRAWN BY : M. D. MAYHEW DATE : 8-8-19
CHECKED BY : B. J. BELL DATE : 9-17-19

END OF CAP DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTE:

FOR "PILE SPLICE DETAILS", SEE "END BENT 2 DETAILS" SHEET.

MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

BILL OF MATERIAL

END BENT 1 (STAGE I)						END BENT 1 (STAGE II)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	STR.	52' - 3"	711	B13	4	#9	STR.	44' - 0"	598
B2	5	#9	STR.	46' - 9"	795	B14	5	#9	STR.	38' - 4"	652
B3	4	#9	1	45' - 6"	619	B15	9	#9	1	33' - 6"	1,025
B4	5	#9	1	33' - 11"	577	B16	5	#9	STR.	17' - 0"	289
B5	5	#9	STR.	28' - 6"	485	B17	4	#5	STR.	41' - 7"	173
B6	40	#5	STR.	47' - 9"	1,992	B18	40	#5	STR.	36' - 11"	1,540
B7	8	#5	STR.	32' - 11"	275	B19	4	#5	STR.	3' - 3"	14
B8	4	#5	STR.	3' - 3"	14	B20	8	#4	STR.	36' - 8"	196
B9	12	#4	STR.	32' - 3"	259	B21	15	#4	STR.	9' - 8"	97
B10	10	#4	STR.	9' - 8"	65	B22	10	#4	STR.	4' - 8"	31
B11	15	#4	STR.	4' - 8"	47	B23	18	#4	STR.	3' - 2"	38
B12	22	#4	STR.	3' - 2"	47						
						K3	16	#4	STR.	36' - 4"	388
						K4	4	#4	STR.	2' - 1"	6
						S14	30	#5	2	11' - 1"	347
S1	60	#5	2	12' - 11"	808	S15	81	#5	3	3' - 6"	296
S2	102	#5	3	3' - 6"	372	S16	30	#5	2	9' - 11"	310
S3	60	#5	2	11' - 9"	735	S17	81	#5	3	2' - 4"	197
S4	102	#5	3	2' - 4"	248	S18	40	#5	2	12' - 1"	504
S5	27	#5	2	11' - 9"	331	S19	40	#5	2	10' - 11"	455
S6	27	#5	2	10' - 7"	298	S20	23	#5	2	12' - 11"	310
S7	30	#5	2	10' - 9"	336	S21	23	#5	2	11' - 9"	282
S8	30	#5	2	9' - 7"	300	S22	1	#5	2	11' - 2"	12
S9	1	#5	2	10' - 10"	11	S23	1	#5	3	3' - 7"	4
S10	1	#5	3	3' - 7"	4	S24	1	#5	2	10' - 0"	10
S11	1	#5	2	9' - 8"	10	S25	1	#5	3	2' - 5"	3
S12	1	#5	3	2' - 5"	3	S26	48	#4	4	6' - 6"	208
S13	60	#4	4	6' - 6"	261						
						U3	68	#5	5	7' - 4"	520
U1	87	#5	5	7' - 4"	665	U4	35	#4	5	6' - 2"	144
U2	30	#4	5	6' - 2"	124						
						V5	74	#5	STR.	8' - 0"	617
V1	112	#5	STR.	7' - 10"	915	V6	62	#5	STR.	7' - 6"	485
V2	62	#5	STR.	7' - 4"	474	V7	6	#5	STR.	9' - 2"	57
V3	6	#5	STR.	9' - 0"	56	V8	1	#5	STR.	3' - 9"	4
V4	1	#5	STR.	3' - 8"	4						

REINFORCING STEEL				REINFORCING STEEL			
LBS. 12,364				LBS. 9,812			
CLASS A CONCRETE				CLASS A CONCRETE			
POUR 1 - CAP				POUR 1 - CAP			
C.Y. 55.8				C.Y. 44.9			
POUR 2 - BACKWALL				POUR 2 - BACKWALL			
C.Y. 12.9				C.Y. 10.1			
TOTAL				TOTAL			
C.Y. 68.7				C.Y. 55.0			
PILE DRIVING EQUIPMENT				PILE DRIVING EQUIPMENT			
SETUP FOR HP 12x53				SETUP FOR HP 12x53			
STEEL PILES				STEEL PILES			
EA. 15				EA. 12			
HP 12x53 STEEL PILES				HP 12x53 STEEL PILES			
NO. 15				NO. 12			
LIN. FT. 1,050				LIN. FT. 840			
PILE REDRIVES				PILE REDRIVES			
EA. 8				EA. 6			



Designed by:
C41A3F8ECA30434
4/22/2021

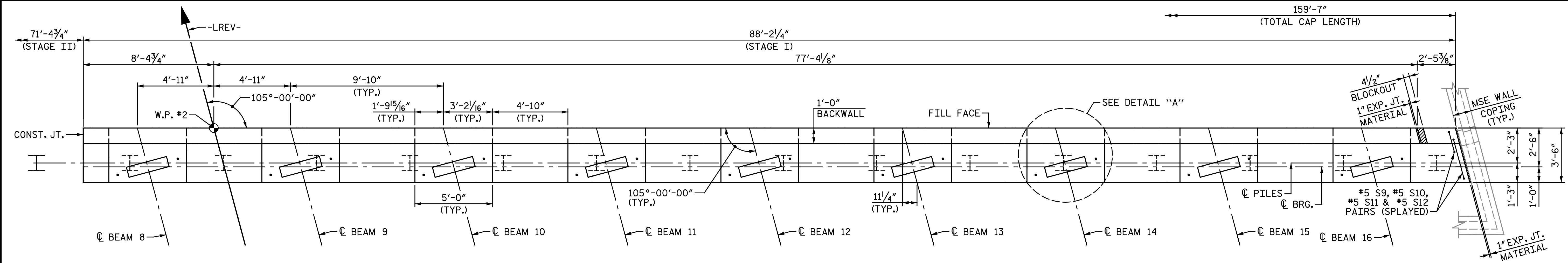
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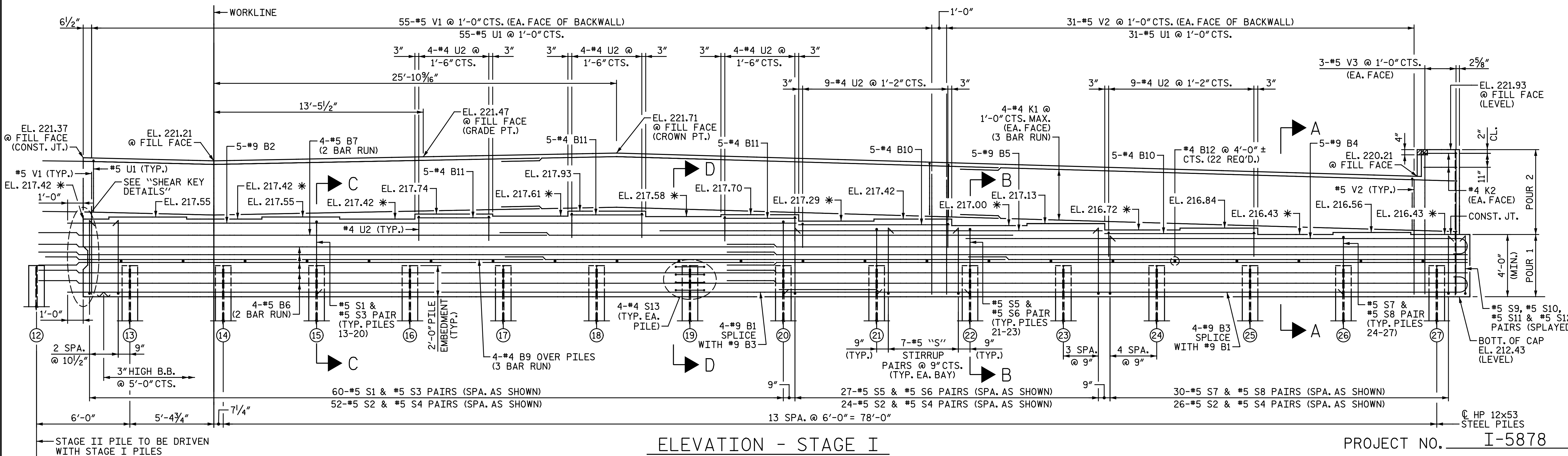
PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE END BENT 1 DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-26					TOTAL SHEETS 34



PLAN - STAGE I



ELEVATION - STAGE I

*FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE "SECTION A-A" ON "END BENT 2 DETAILS" SHEET.

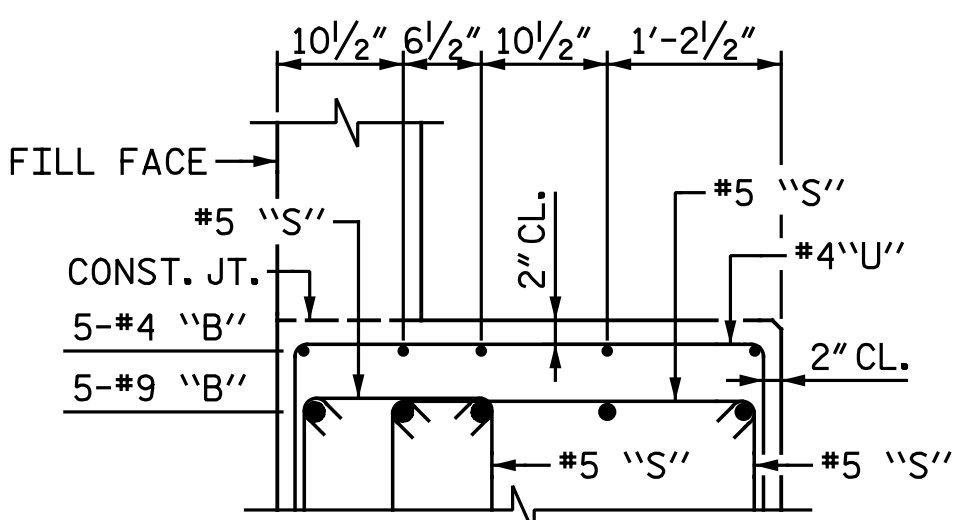
PROJECT NO. I-5878

HARNETT COUNTY

STATION: 1002+79.68 -LREV-

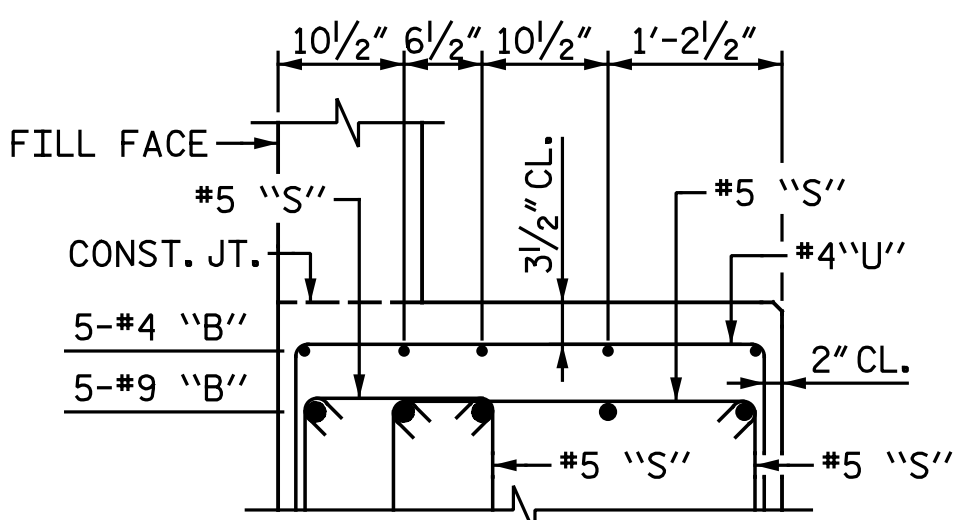
SHEET 1 OF 3

MIN. SPLICE LENGTHS	
BAR SIZE	UNCOATED
#4	2'-5"
#5	3'-0"
#9	6'-3"



BEAM SEAT DETAILS

BEAMS 5, 6, 7, 10, 11 & 12



BEAM SEAT DETAILS

BEAMS 2, 4, 13 & 15

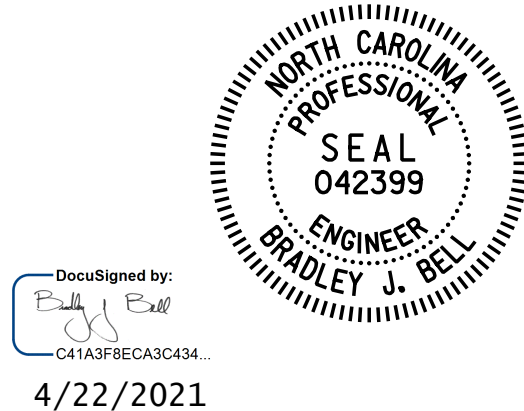
NOTES:

FOR NOTES, SEE "END BENT 2 STAGE II" SHEET.

FOR "DETAIL A", SEE "END BENT 2 STAGE II" SHEET.

FOR "SHEAR KEY DETAILS", SEE "END BENT 2 STAGE II" SHEET.

FOR STAGE II BEAM SEAT LOCATIONS, SEE "END BENT 2 STAGE II" SHEET.



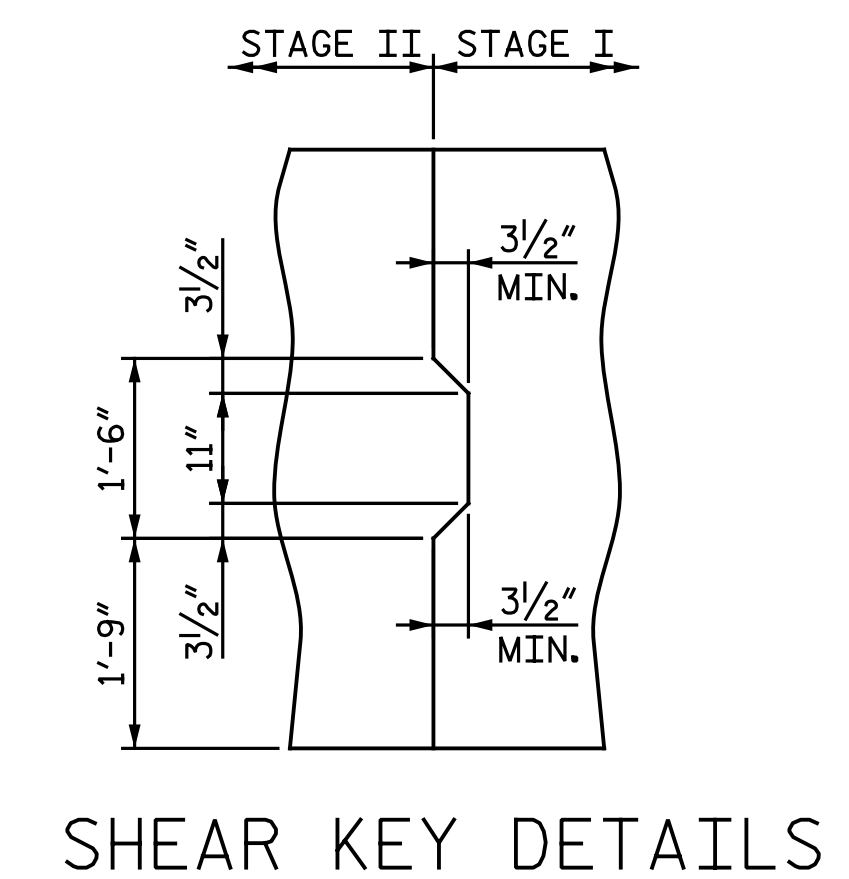
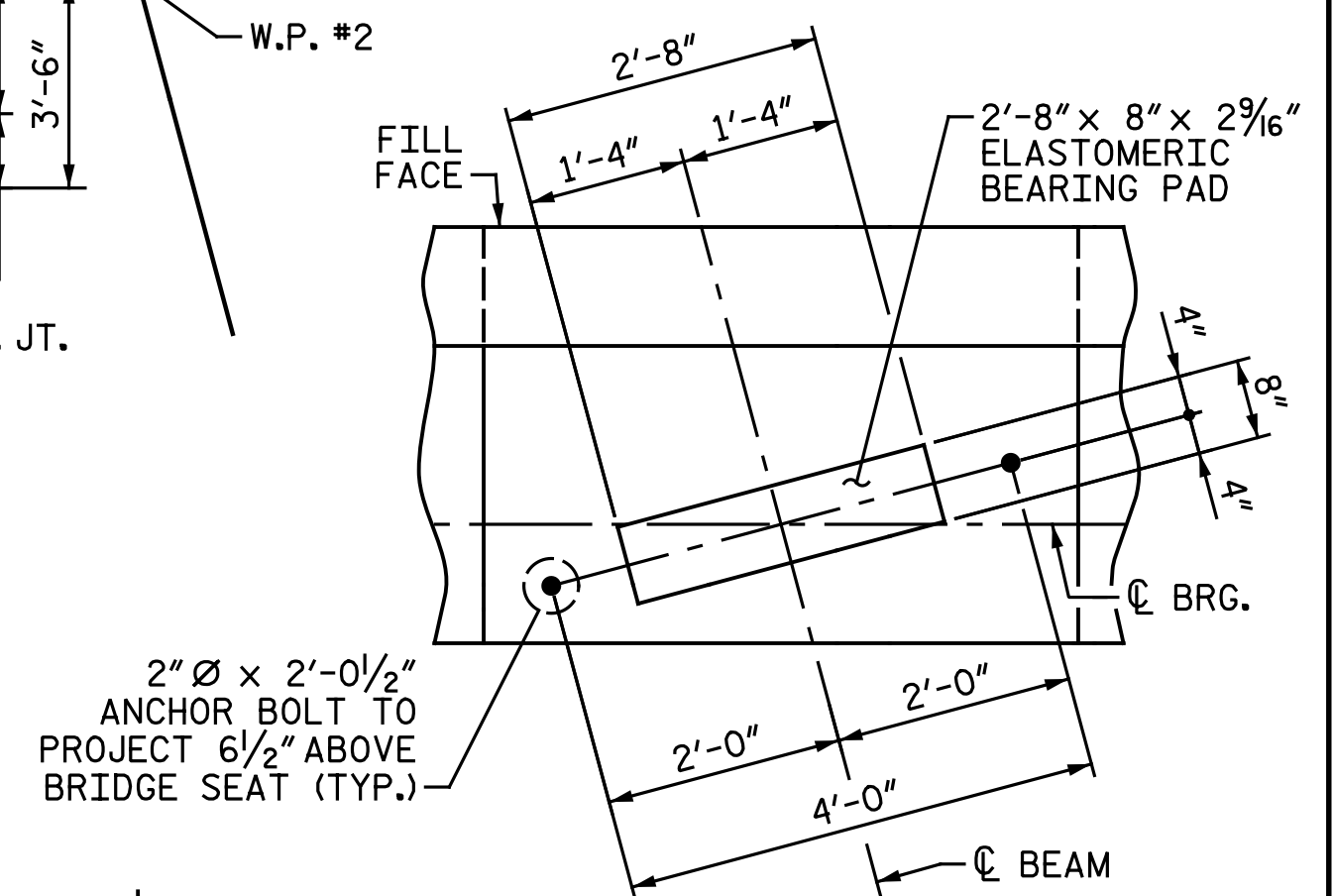
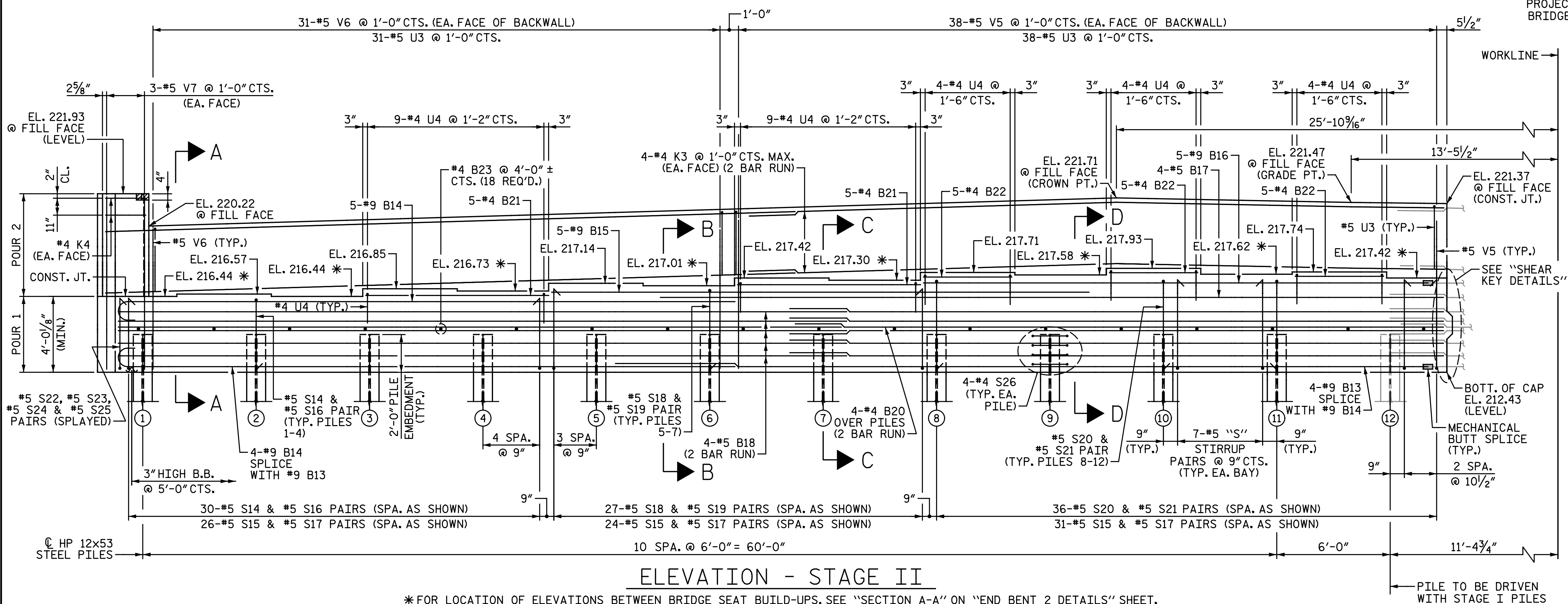
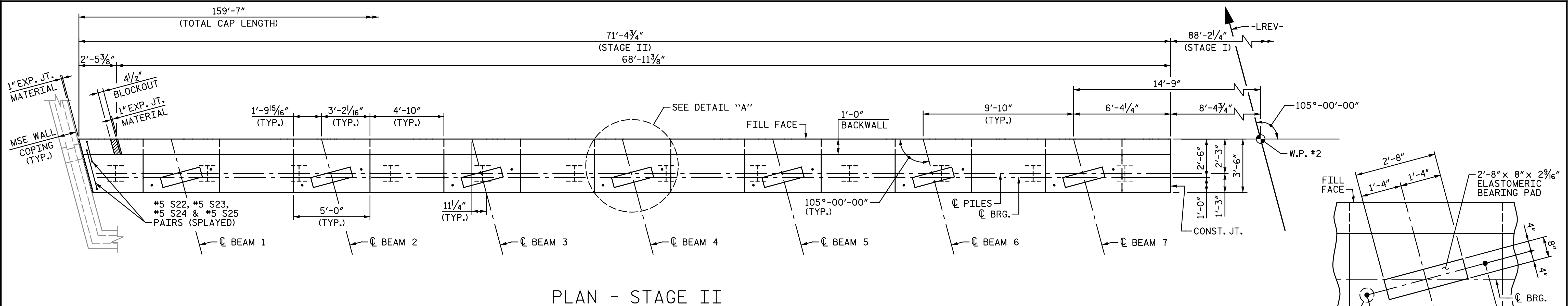
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REVISIONS						SHEET NO. S2-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : M. D. MAYHEW DATE : 8-14-19
CHECKED BY : B. J. BELL DATE : 9-17-19



PROJECT NO. I-5878
HARNETT COUNTY
 STATION: 1002+79.68 -LREV-

SHEET 2 OF 3

MIN. SPLICE LENGTHS	
BAR SIZE	UNCOATED
#4	2'-5"
#5	3'-0"
#9	6'-3"

NOTES:

FOR "BEAM SEAT DETAILS", SEE "END BENT 2 STAGE I"
SHEET.

FOR "SECTION A-A", "PARTIAL SECTION B-B",
"PARTIAL SECTION C-C" AND "PARTIAL SECTION D-D", SEE
"END BENT 2 DETAILS" SHEET.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY
PROTECTIVE COATING.

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

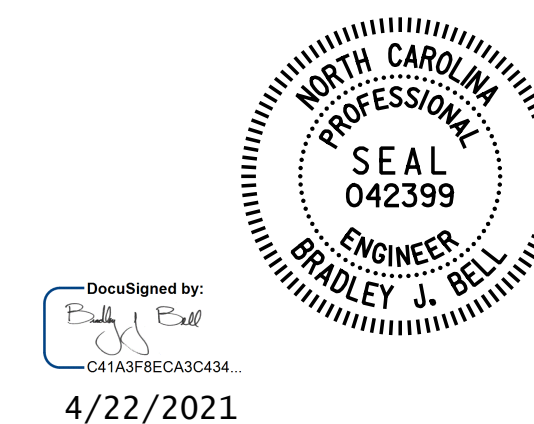
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT A RATE OF 2%.

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

FOR MSE RETAINING WALLS, SEE SPECIAL PROVISIONS.

FOR LOCATION & DETAILS OF MSE RETAINING WALLS AND
PILE SLEEVES, SEE MSE WALL PLANS.

LENGTH OF CAP SHALL BE FIELD ADJUSTED AS REQUIRED TO PROVIDE 1" EXPANSION JOINT MATERIAL AS SHOWN BETWEEN THE CAP AND MSE WALL COPING.



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REVISIONS						SHEET NO. S2-28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : M. D. MAYHEW DATE : 8-14-19
CHECKED BY : B. J. BELL DATE : 9-17-19

SHEET NO.	S2-28
TOTAL SHEETS	34

NOTES:

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

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

BRIDGE @ STA. 1002+79.68 -LREV-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1 (STAGE I)	24	43
END BENT 1 (STAGE II)	21	38

* QUANTITY SHOWN IS BASED ON 5' POURS.

DETAIL "A"

Δ - DIMENSION TO BE FIELD ADJUSTED
AS REQUIRED TO MATCH MSE WALL.

DETAIL "B"

SECTION B-B

POURING DETAIL

OPTIONAL POURING DETAIL

POUR A 4'-0" STRIP FIRST

PLAN AT END BENT 1

DRAWN BY : C. E. MAYHEW DATE : 7-15-19
CHECKED BY : B. J. BELL DATE : 8-28-19

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RALEIGH

SLOPE PROTECTION
DETAILS
END BENT 1

SHEET 1 OF 2

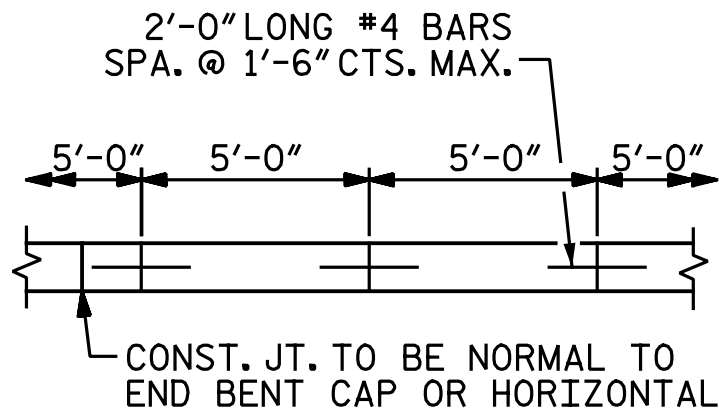
PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

REVISIONS						SHEET NO. S2-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

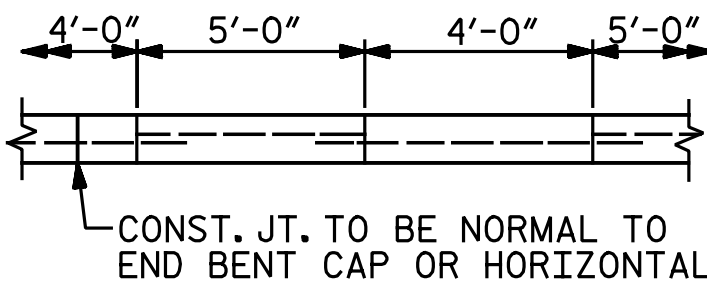
NOTE:
SEE NOTES ON "SLOPE PROTECTION DETAILS END BENT 1" SHEET.

BRIDGE @ STA. 1002+79.68 -LREV-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 2 (STAGE I)	22	40
END BENT 2 (STAGE II)	19	34

* QUANTITY SHOWN IS BASED ON 5' POURS.



POURING DETAIL



OPTIONAL POURING DETAIL

POUR A 4'-0" STRIP FIRST

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
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RALEIGH

SLOPE PROTECTION
DETAILS
END BENT 2



Designed by:
C41A3F8ECA30434...
4/22/2021

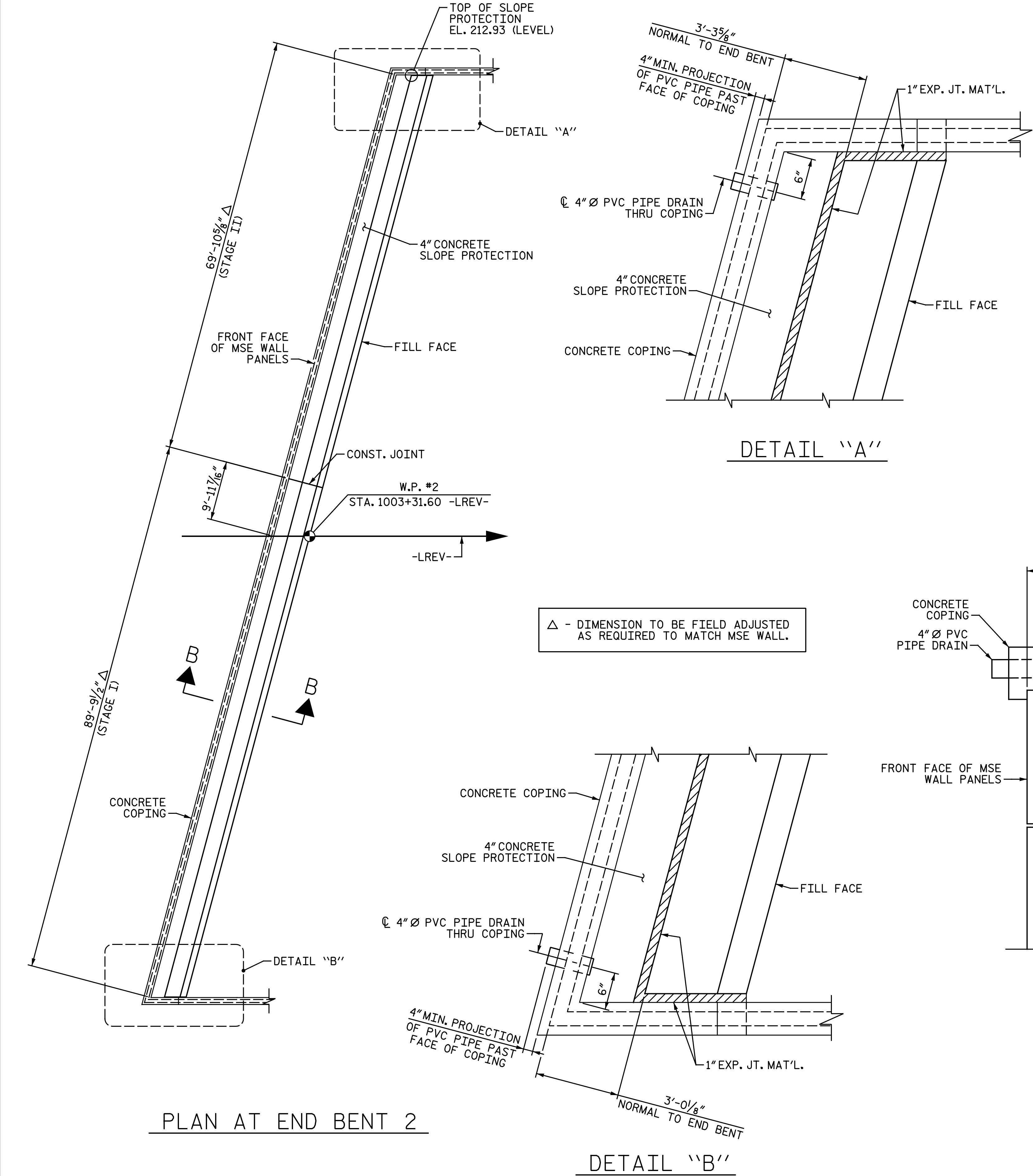
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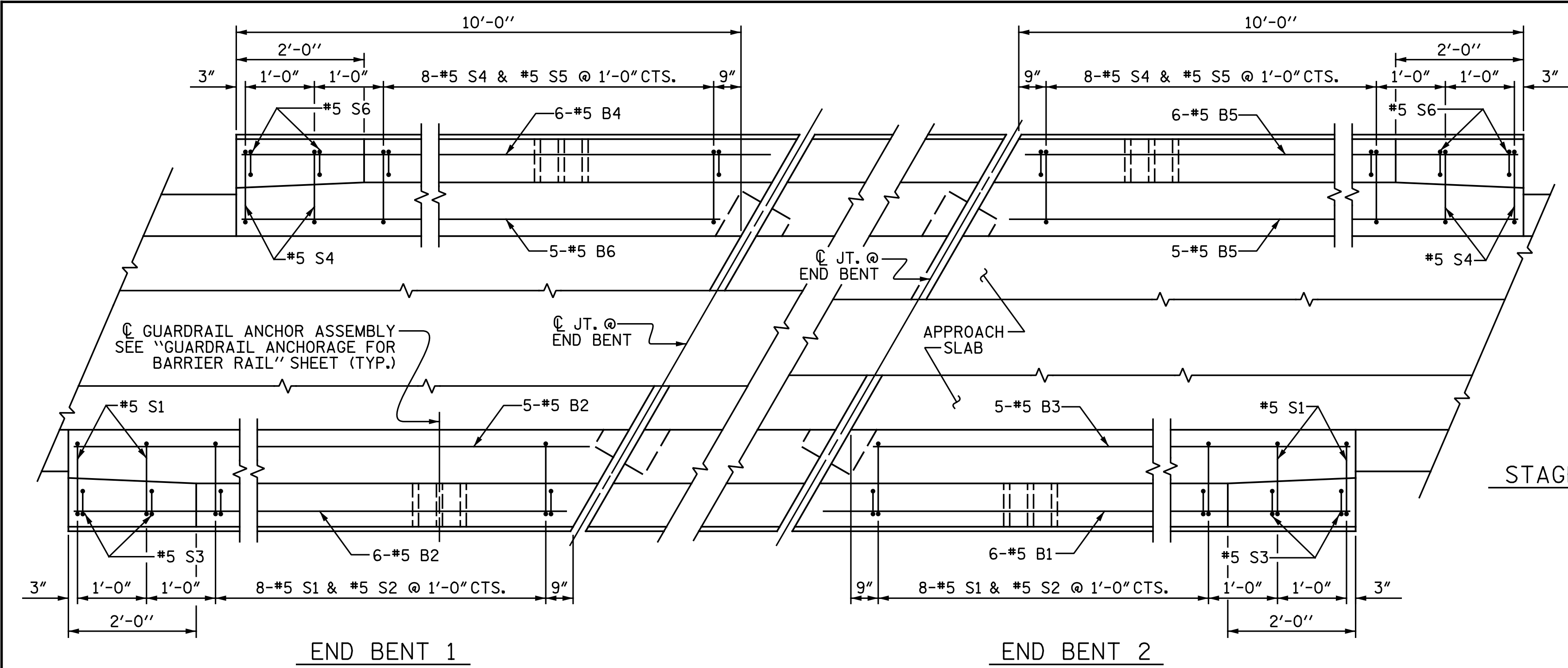
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S2-31
TOTAL
SHEETS
34



DRAWN BY : C. E. MAYHEW DATE : 7-15-19
CHECKED BY : B. J. BELL DATE : 8-28-19



PLAN OF BARRIER RAIL

NOTES

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

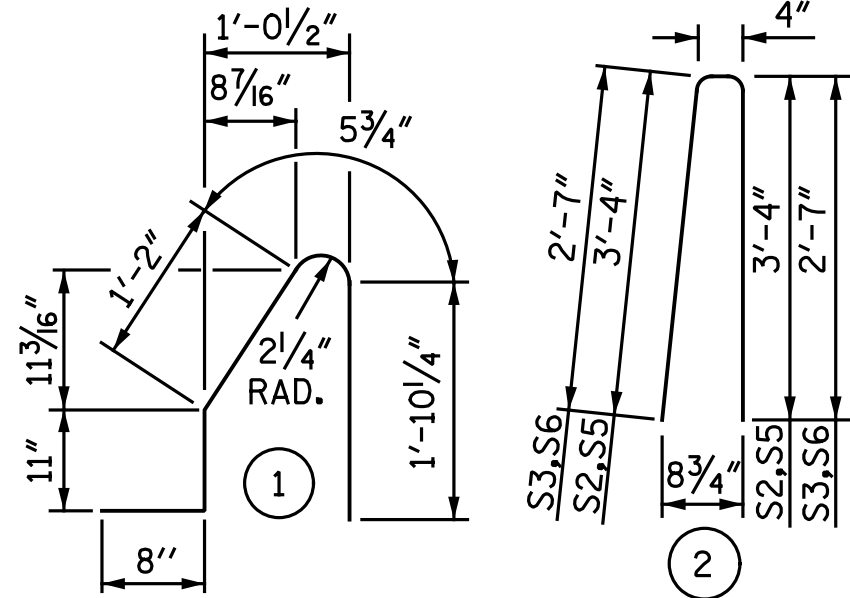
THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

STAGE II

STAGE I

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	6	#5	STR.	9' - 11"	62
*B2	11	#5	STR.	9' - 8"	111
*B3	5	#5	STR.	9' - 4"	49

*S1	20	#5	1	5' - 1"	106
*S2	16	#5	2	7' - 0"	117
*S3	4	#5	2	5' - 6"	23

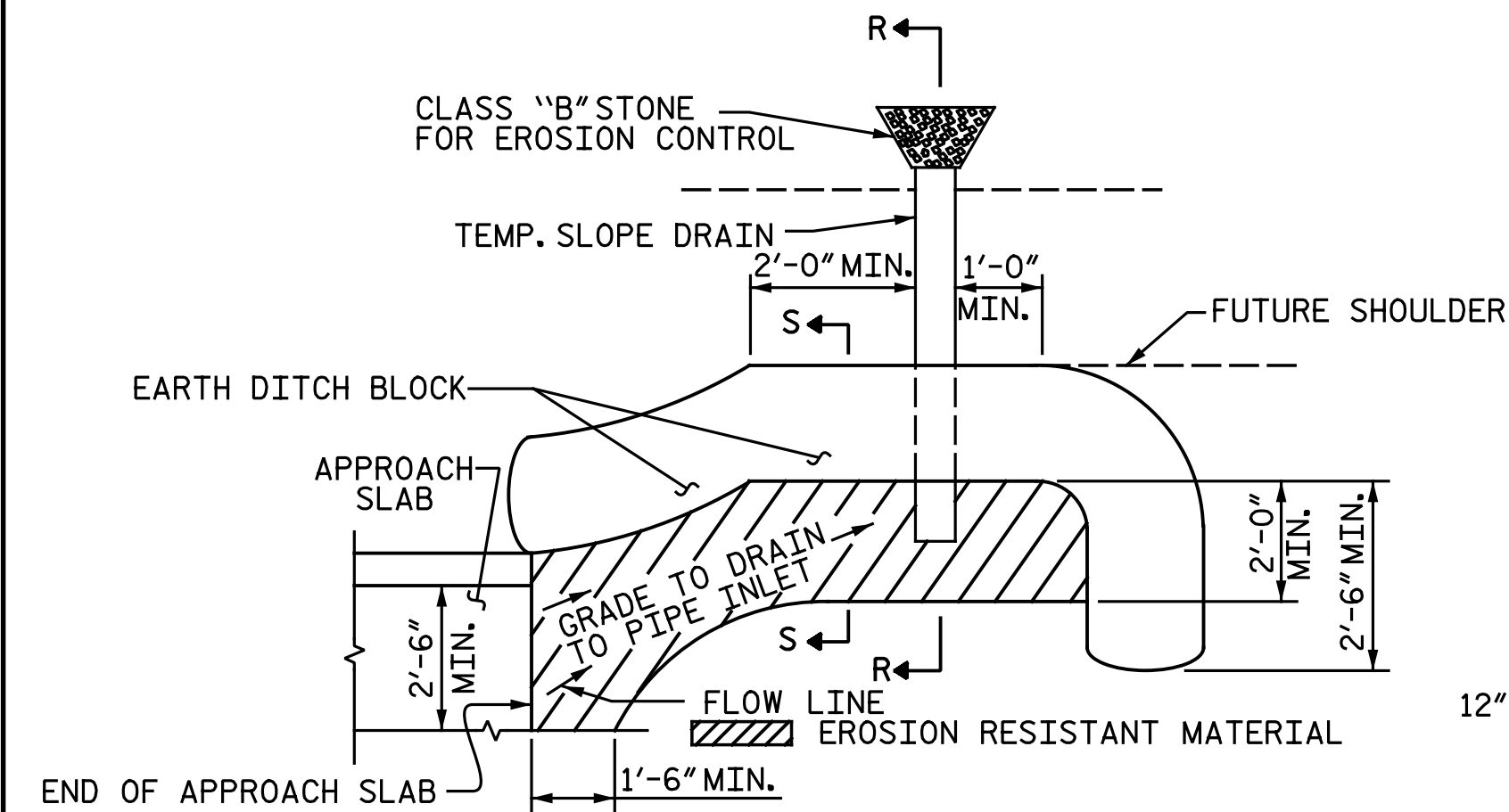
*EPOXY COATED REINFORCING STEEL LBS. 468
CLASS AA CONCRETE C.Y. 2.7
CONCRETE BARRIER RAIL LIN.FT. 20.40

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	6	#5	STR.	9' - 11"	62
*B5	11	#5	STR.	9' - 8"	111
*B6	5	#5	STR.	9' - 4"	49

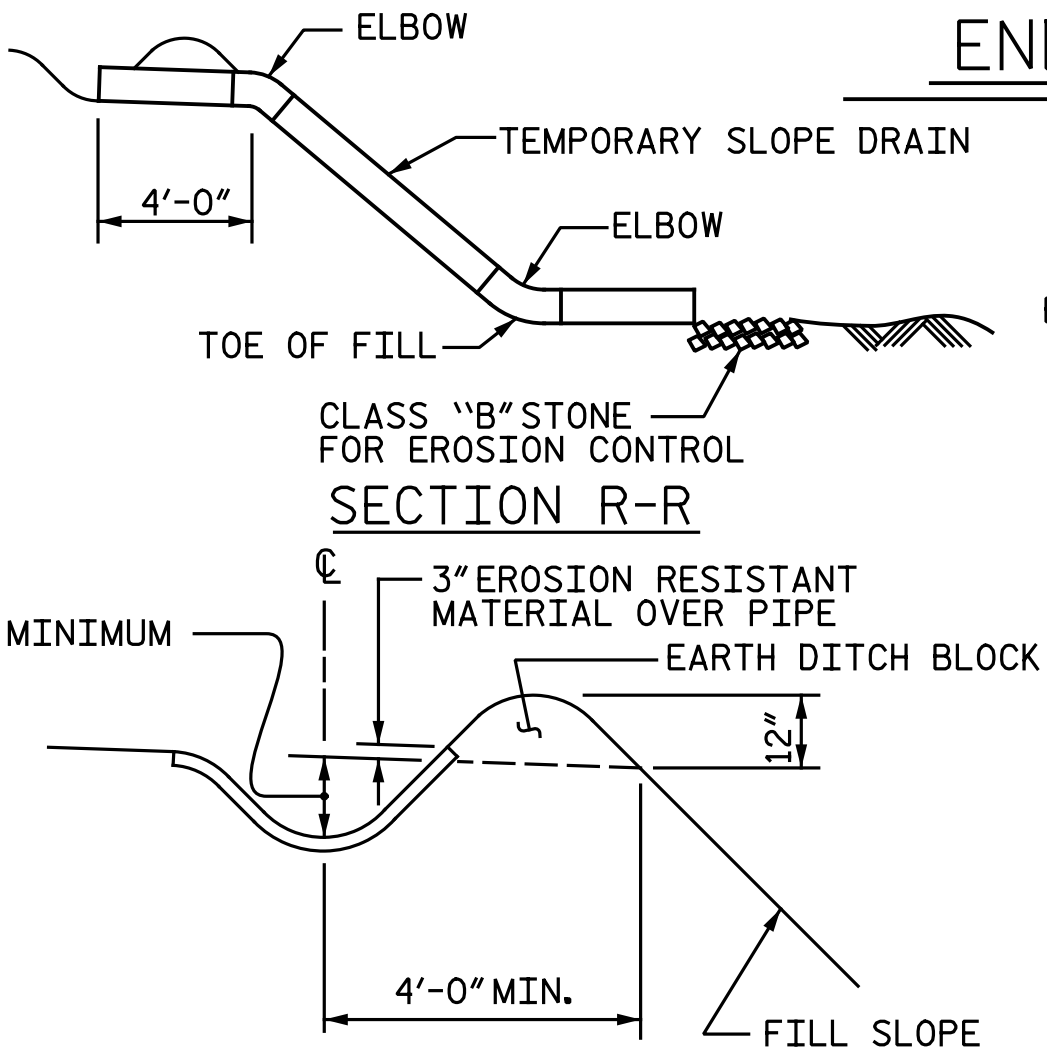
*S4	20	#5	1	5' - 1"	106
*S5	16	#5	2	7' - 0"	117
*S6	4	#5	2	5' - 6"	23

*EPOXY COATED REINFORCING STEEL LBS. 468
CLASS AA CONCRETE C.Y. 2.7
CONCRETE BARRIER RAIL LIN.FT. 20.40



PLAN VIEW

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

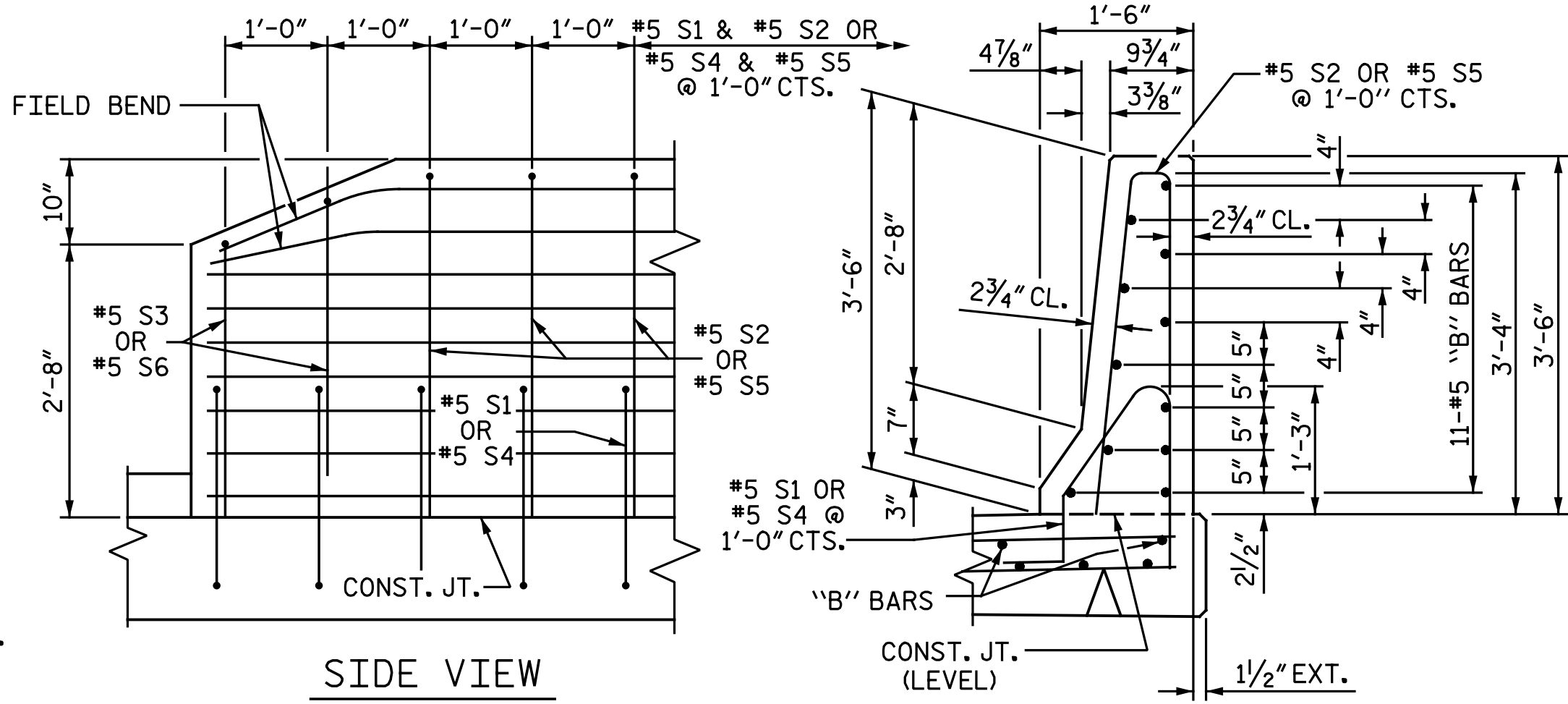


SECTION S-S

ASSEMBLED BY : N. B. SPEAKS	DATE : 3-27-19
CHECKED BY : B. J. BELL	DATE : 5-8-19
DRAWN BY : FCJ 11/88	REV. 6/13
CHECKED BY : ARB 11/88	REV. 12/17
	REV. 5/18
	MAA/GM
	MAA/THC
	MAA/THC

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

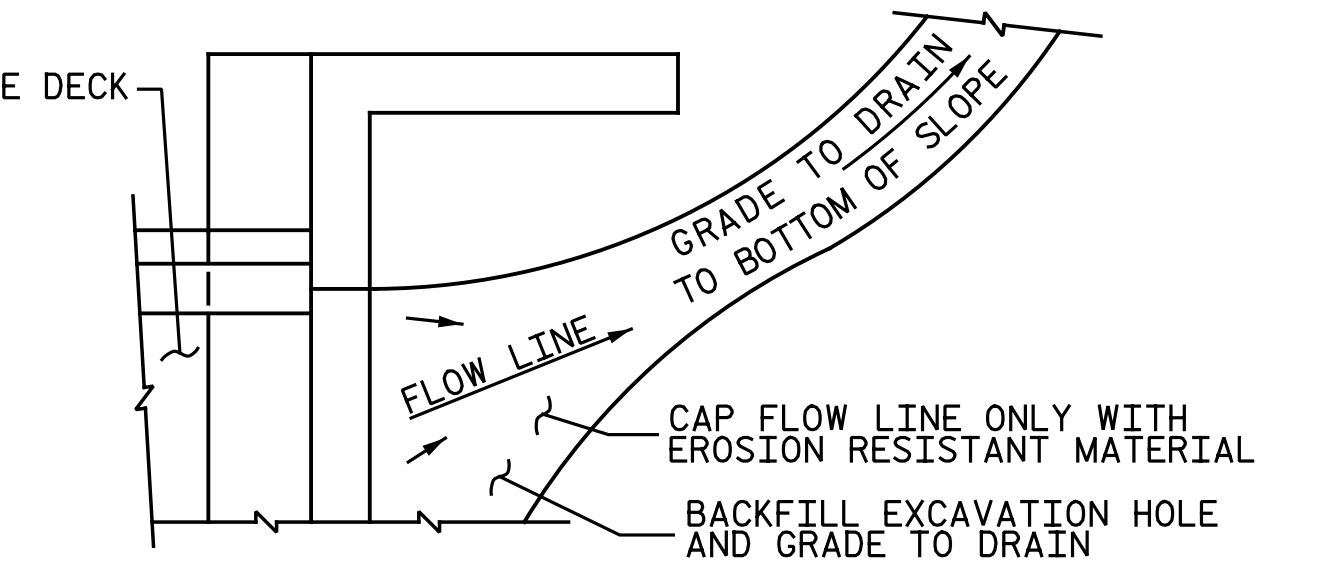


SIDE VIEW

END VIEW

END OF RAIL DETAILS

SECTION THRU RAIL



TEMPORARY DRAINAGE DETAIL

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

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS 1



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4/22/2021

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REVISIONS

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

SHEET NO.

S2-33

TOTAL SHEETS

34

STD. NO. BAS4

NOTES

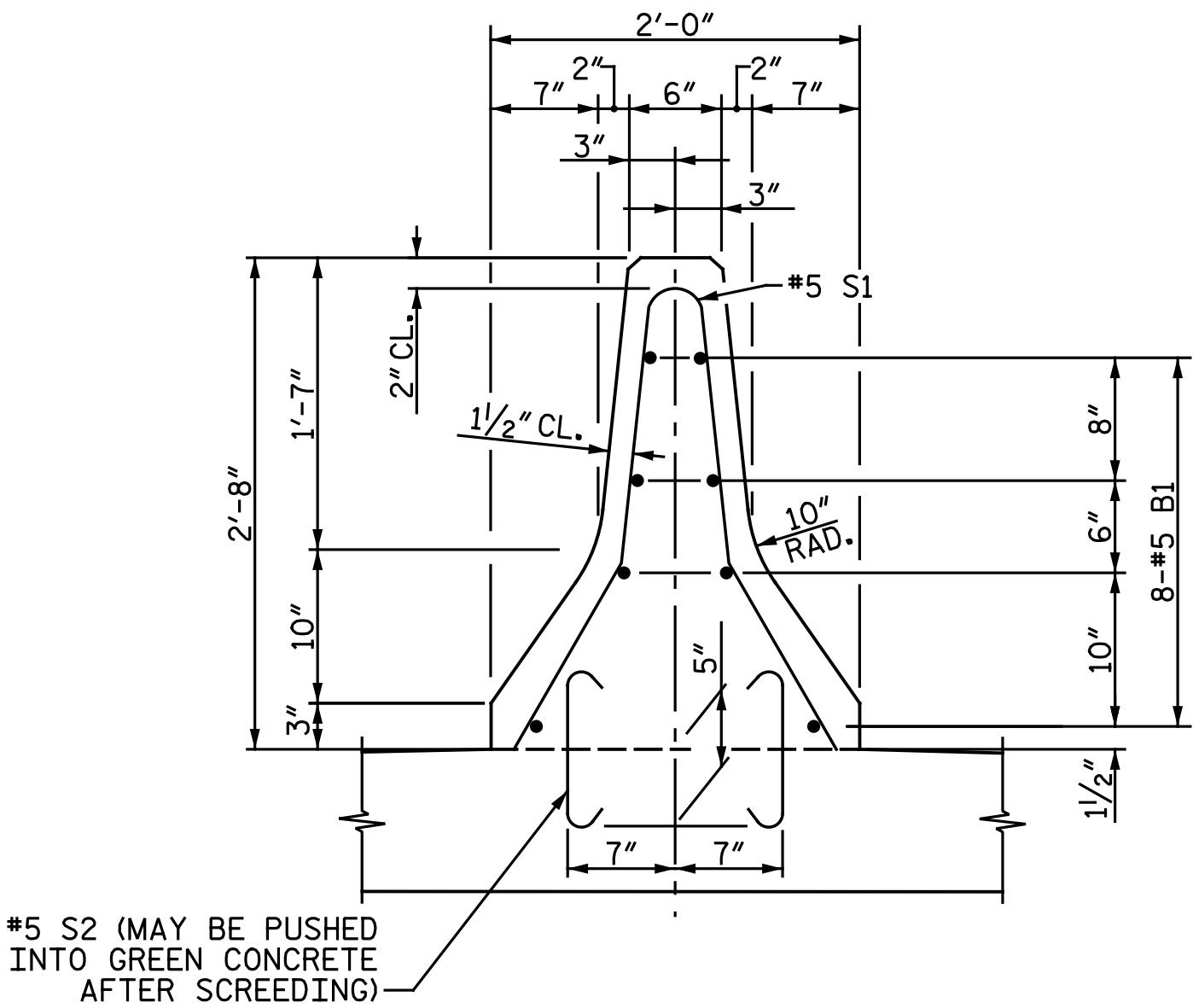
THE COST OF THE MEDIAN BARRIER ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE MEDIAN BARRIER".

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

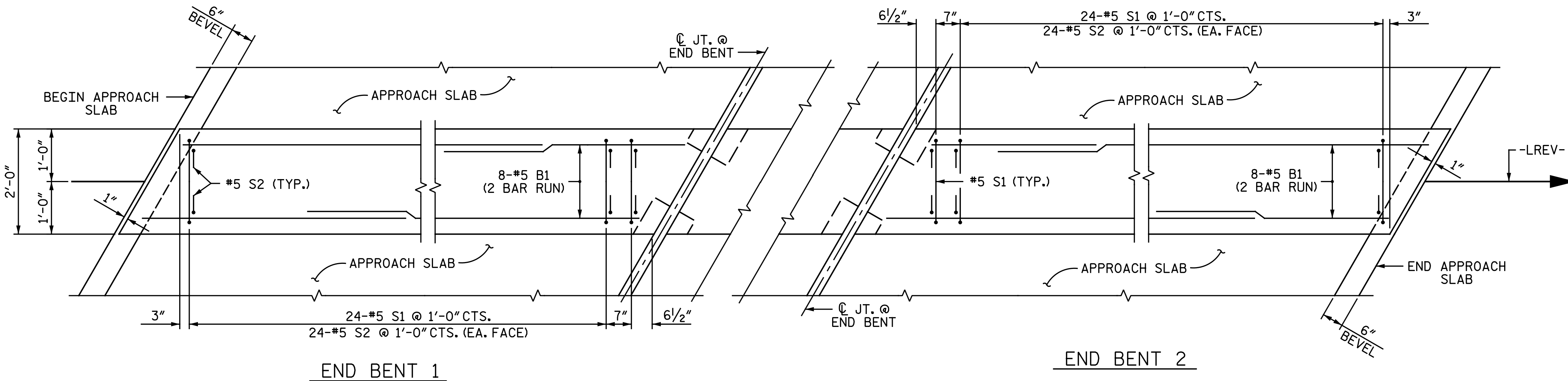
ALL REINFORCING STEEL IN MEDIAN BARRIER SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE MEDIAN BARRIER AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN ENDS OF CONCRETE MEDIAN BARRIER SEGMENTS ON APPROACH SLAB.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED DOWELS IN PLACE OF THE #5 S2 BARS DETAILED. LEVEL 2 FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE DOWELS IS 19 KIPS. THE DOWELS ARE TO BE HOOKED ON ONE END WITH A PROJECTION MATCHING THAT OF THE #5 S2 BARS. THE OPPOSITE END IS TO BE STRAIGHT AND EMBEDDED 6" INTO THE APPROACH SLAB.

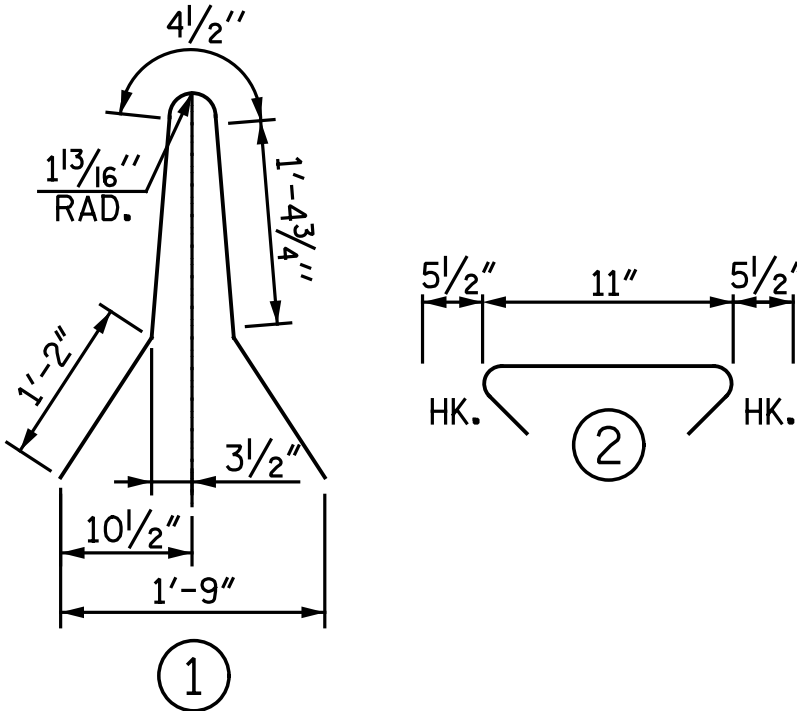


SECTION THRU MEDIAN BARRIER



PLAN OF CONCRETE MEDIAN BARRIER

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

MEDIAN BARRIER ONLY

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	32	#5	STR.	14' - 0"	467
* S1	50	#5	1	5' - 6"	287
* S2	100	#5	2	1' - 10"	191

* EPOXY COATED					
REINFORCING STEEL			LBS.	945	
CLASS AA CONCRETE			C.Y.	5.1	

CONCRETE MEDIAN BARRIER LIN. FT.	49.83
----------------------------------	-------

SPLICE LENGTHS

BAR SIZE	EPOXY COATED
#5	3'-5"

PROJECT NO. I-5878
HARNETT COUNTY
STATION: 1002+79.68 -LREV-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB DETAILS 2



Designed by:
B. J. Bell
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REVISIONS						SHEET NO. S2-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DRAWN BY : N. B. SPEAKS DATE : 3-27-19
CHECKED BY : B. J. BELL DATE : 8-12-19