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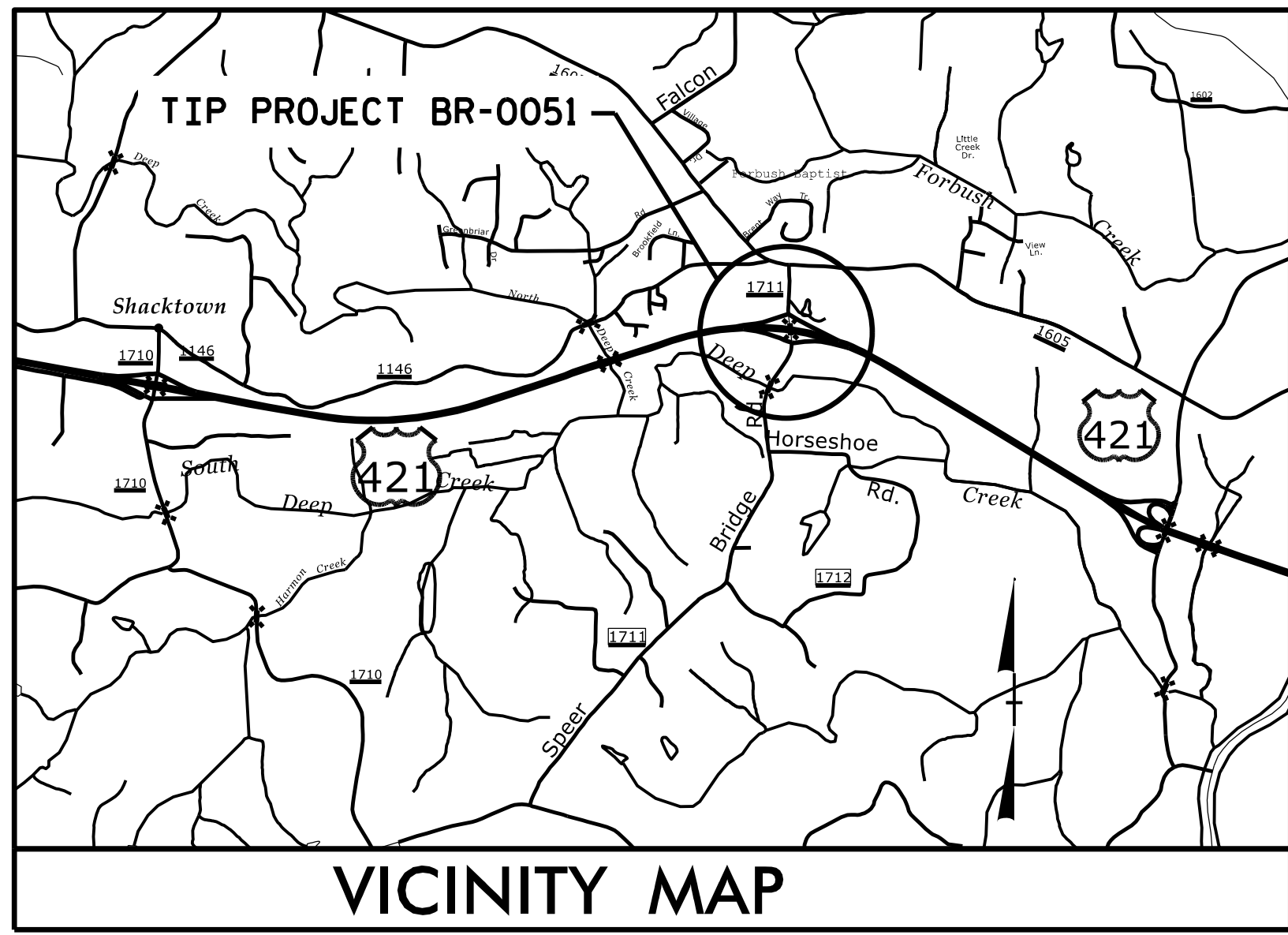
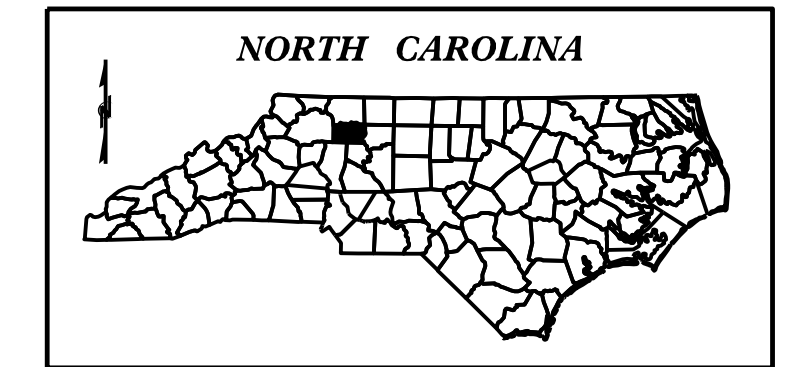
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with their signature on that page.**

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TIP PROJECT: BR-0051

CONTRACT: C204493

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0051	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
67051.1.1	-	P.E.	
67051.2.1	-	R / W	
67051.3.1		CONST.	

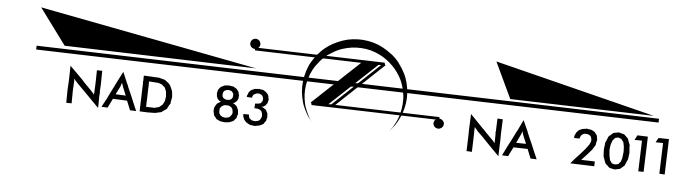
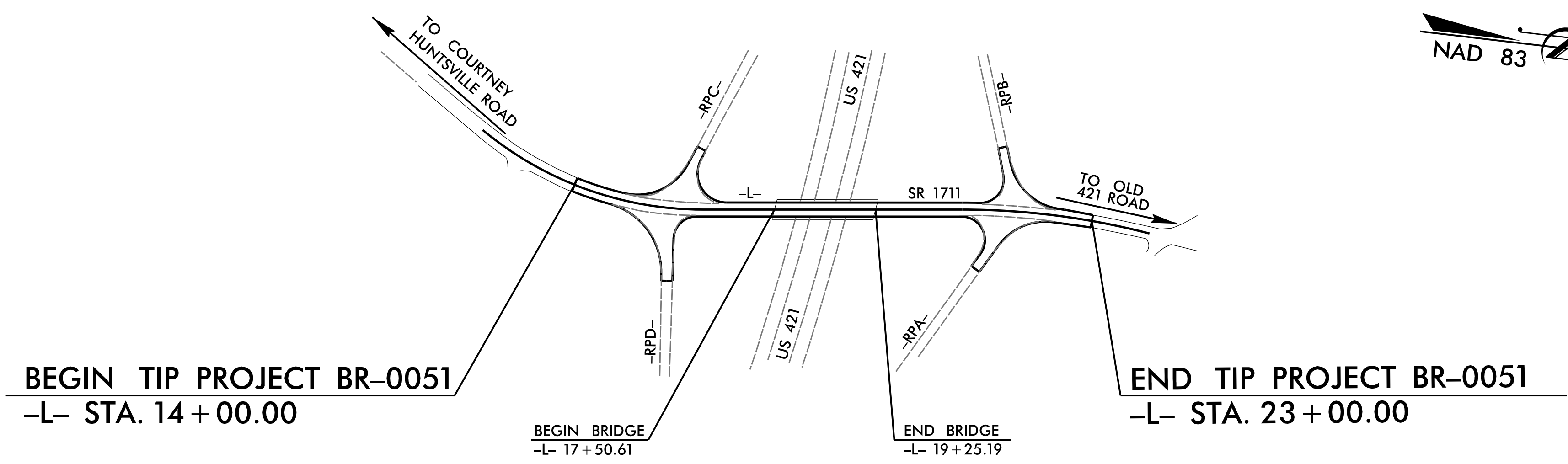


VICINITY MAP

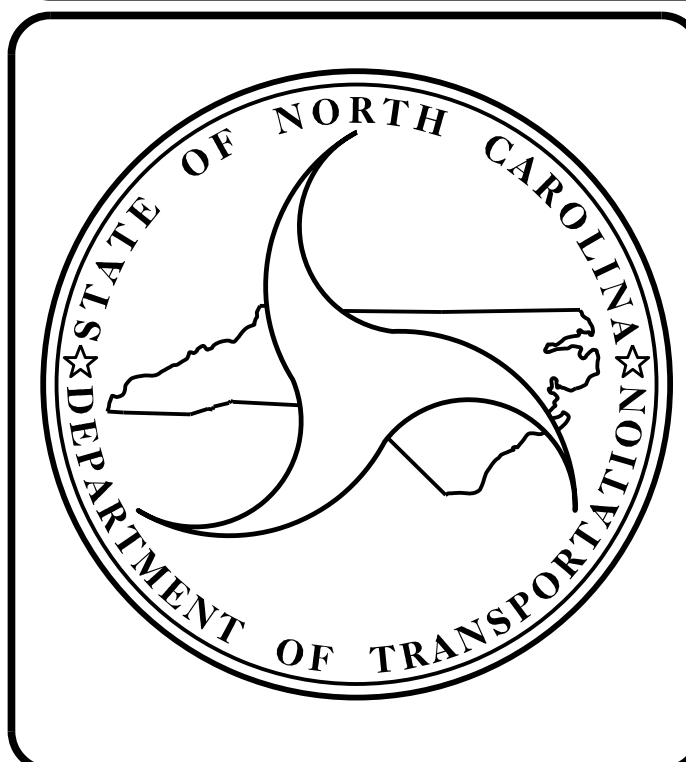
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YADKIN COUNTY

LOCATION: BRIDGE #90 ON SR 1711 (SPEER BRIDGE ROAD) OVER US 421
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



STRUCTURE



DESIGN DATA

ADT 2020 =	3,218
ADT 2040 =	3,400
K =	10%
D =	65%
T =	3%*
V =	60 MPH

* TTST = 1% DUAL 2%
FUNC CLASS =
MINOR COLLECTOR
SUBREGIONAL TIER

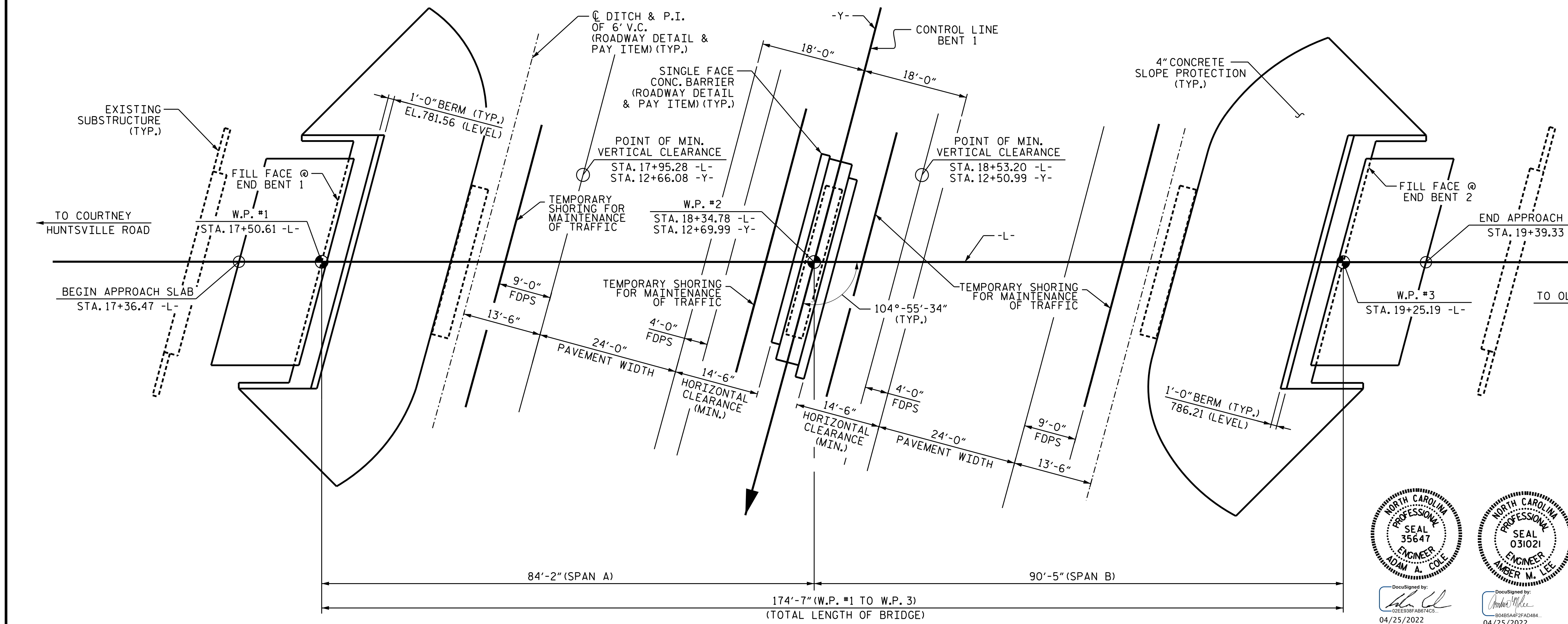
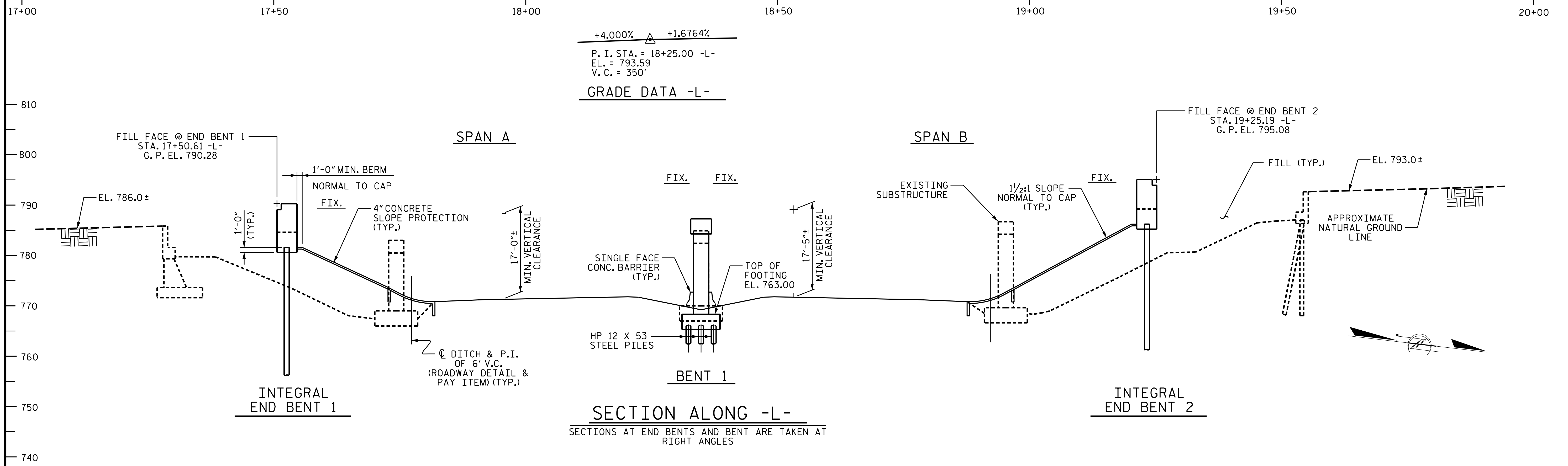
PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0051 =	0.137 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0051 =	0.033 MILES
TOTAL LENGTH OF TIP PROJECT BR-0051 =	0.170 MILES

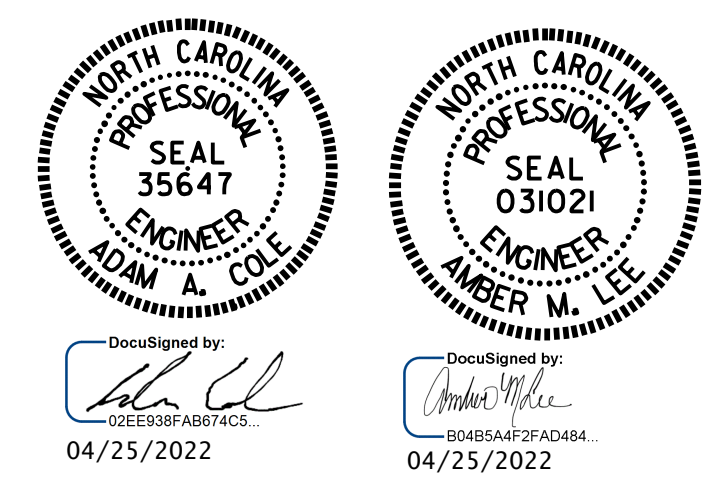
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

<p>LETTING DATE : JUNE 21, 2022</p>	<p>ADAM A. COLE PROJECT ENGINEER</p> <hr/> <p>AMBER M. LEE, P.E. PROJECT DESIGN ENGINEER</p>
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PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-
12+69.99 -Y-
 SHEET 1 OF 3 BRIDGE NO. 980090



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 US 421 ON SR 1711 BETWEEN
 COURTNEY HUNTSVILLE RD.
 AND OLD 421 RD.

DRAWN BY: M. G. SHAIKH DATE: 04/2020
 CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE: 01/2020

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 126 TONS PER PILE.

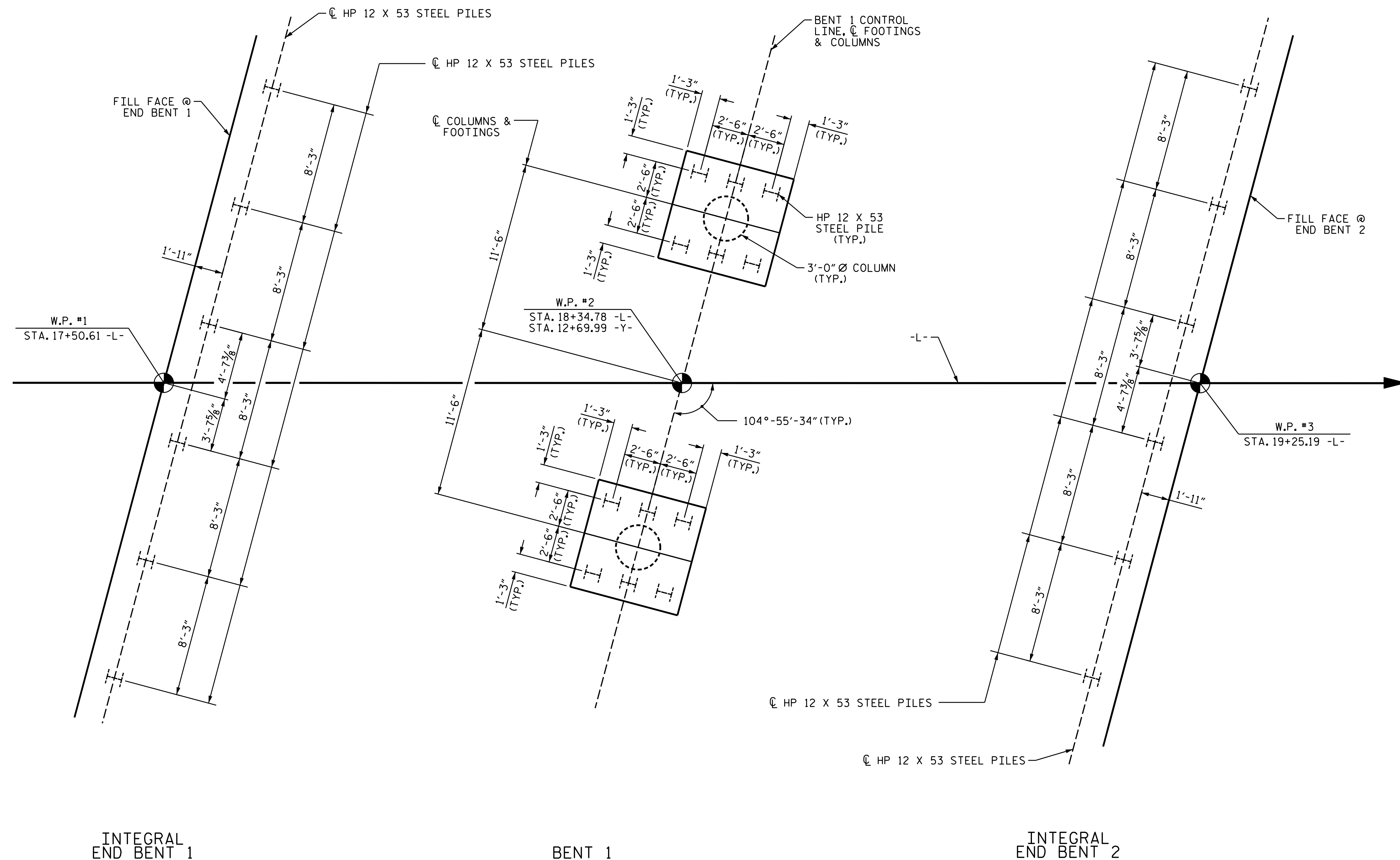
DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 129 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 215 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 132 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE.



INTEGRAL
END BENT 1

BENT 1

INTEGRAL
END BENT 2

FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

PROJECT NO. B-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
US 421 ON SR 1711 BETWEEN
COURTNEY HUNTSVILLE RD.
AND OLD 421 RD.



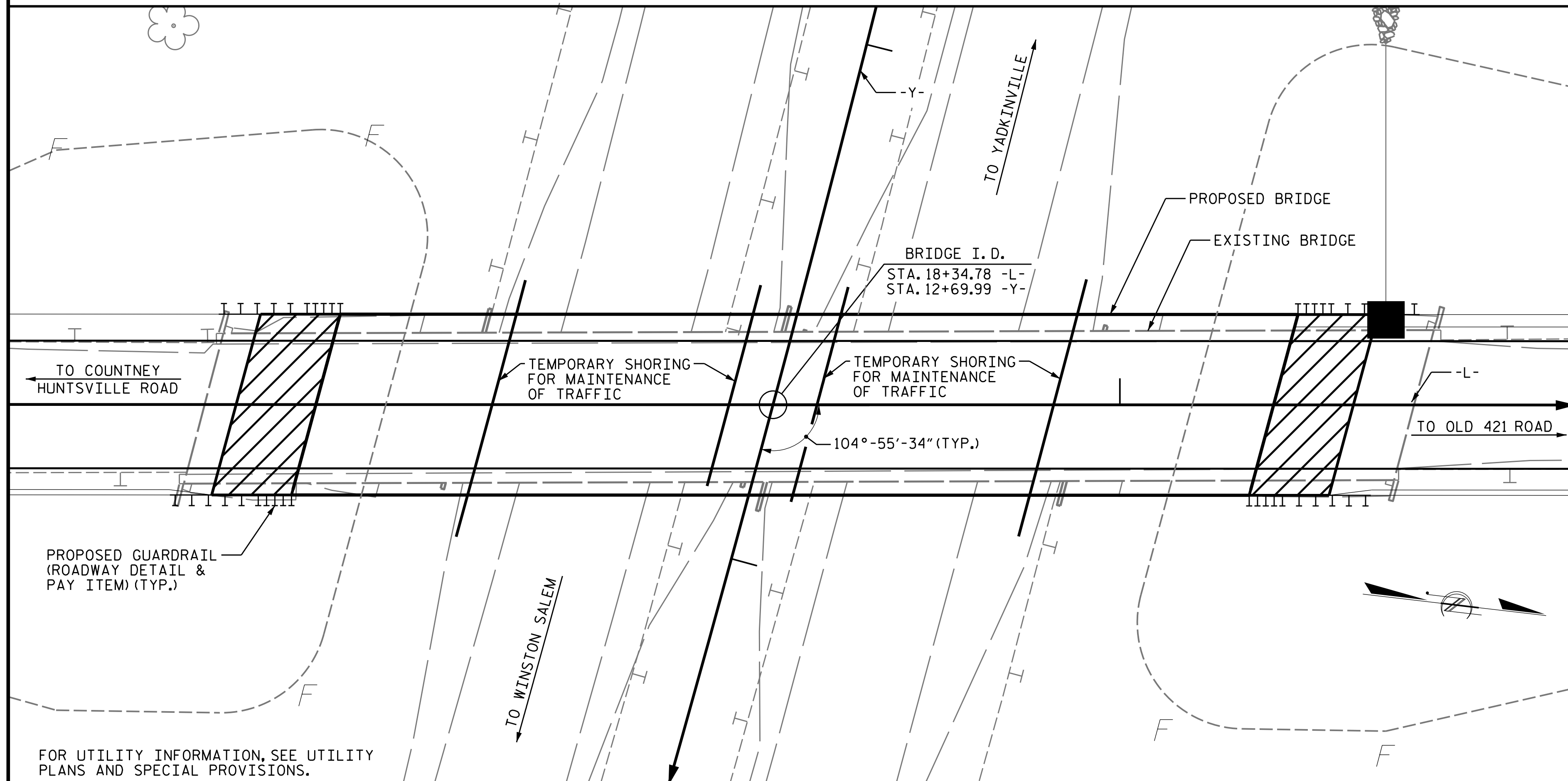
Designed by:
Amber M. Lee
04/25/2022

DRAWN BY : M. G. SHAIKH DATE : 04/2020
CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 01/2020

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

BENCHMARK #1: RR SPIKE SET IN BASE OF 22" POPLAR TREE, 562.93' LT. OF STA. 17+86.23 -L-, EL. 767.17



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 ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES SEE SPECIAL PROVISIONS.
- THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE, PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
- THE EXISTING STRUCTURE CONSISTING OF 4 SPANS OF REINFORCED CONCRETE DECK ON PRESTRESSED CONCRETE GIRDERS, 1 @ 48'-0", 2 @ 60'-6" AND 1 @ 60'-10" ON REINFORCED CONCRETE CAP ON PILES AT END BENT 1, REINFORCED CONCRETE POST AND BEAM ON FOOTINGS AT INTERIOR BENTS AND REINFORCED CONCRETE CAP ON FOOTING AT END BENT 2 SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE 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.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE		LUMP SUM		6,324	6,259		LUMP SUM		
END BENT 1						34.3		4,460	
BENT 1			LUMP SUM			49.5		7,264	877
END BENT 2						35.4		4,515	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	6,324	6,259	119.2	LUMP SUM	16,239	877

	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES		HP 12 X 53 STEEL PILES		TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	NO.	LIN. FT.	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	
SUPERSTRUCTURE	8	684.83				330.08	345.71		LUMP SUM	
END BENT 1			6	6	450			373		
BENT 1			12	12	540					
END BENT 2			6	6	390			241		
TOTAL	8	684.83	24	24	1380	330.08	345.71	614	LUMP SUM	

PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 US 421 ON SR 1711 BETWEEN
 COURTNEY HUNTSVILLE RD.
 AND OLD 421 RD.

DRAWN BY : M. G. SHAIKH DATE : 04/2020
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 08/2019

4/25/2022
 R:\Structures\OBD.FINAL PLANS\400.007.BR-0051.SMU.GD.003.980090.dgn
 omlee

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

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

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.026	--	1.75	0.852	1.307	B	EL	43.65	0.889	1.304	B	EL	34.92	0.80	0.852	1.026	B	EL	43.65		
	HL-93 (OPERATING)	N/A		1.691	--	1.35	0.852	1.695	B	EL	43.65	0.889	1.691	B	EL	34.92	N/A	--	--	--	--	--	43.65	
	HS-20 (INVENTORY)	36.000	②	1.390	50.045	1.75	0.852	1.772	B	EL	43.65	0.889	1.599	B	EL	34.92	0.80	0.852	1.390	B	EL	43.65		
	HS-20 (OPERATING)	36.000		2.072	74.610	1.35	0.852	2.297	B	EL	43.65	0.889	2.072	B	EL	34.92	N/A	--	--	--	--	--	43.65	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.239	43.725	1.40	0.852	5.161	B	EL	43.65	0.889	4.608	B	EL	34.92	0.80	0.852	3.239	B	EL	43.65	
		SNGARBS2	20.000		2.370	47.399	1.40	0.852	3.776	B	EL	43.65	0.889	3.323	B	EL	34.92	0.80	0.852	2.370	B	EL	43.65	
		SNAGRIS2	22.000		2.226	48.983	1.40	0.852	3.548	B	EL	43.65	0.889	3.102	B	EL	34.92	0.80	0.852	2.226	B	EL	43.65	
		SNCOTTS3	27.250		1.610	43.886	1.40	0.852	2.566	B	EL	43.65	0.889	2.305	B	EL	34.92	0.80	0.852	1.610	B	EL	43.65	
		SNAGGRS4	34.925		1.329	46.417	1.40	0.852	2.118	B	EL	43.65	0.889	1.945	B	EL	34.92	0.80	0.852	1.329	B	EL	43.65	
		SNS5A	35.550		1.301	46.243	1.40	0.852	2.073	B	EL	43.65	0.889	1.988	B	EL	34.92	0.80	0.852	1.301	B	EL	43.65	
		SNS6A	39.950		1.187	47.403	1.40	0.852	1.891	B	EL	43.65	0.889	1.827	B	EL	34.92	0.80	0.852	1.187	B	EL	43.65	
	SNS7B	42.000		1.130	47.448	1.40	0.852	1.800	B	EL	43.65	0.889	1.813	B	EL	34.92	0.80	0.852	1.130	B	EL	43.65		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.445	47.682	1.40	0.852	2.302	B	EL	43.65	0.889	2.163	B	EL	34.92	0.80	0.852	1.445	B	EL	43.65	
		TNT4A	33.075		1.449	47.939	1.40	0.852	2.309	B	EL	43.65	0.889	2.094	B	EL	34.92	0.80	0.852	1.449	B	EL	43.65	
		TNT6A	41.600		1.179	49.028	1.40	0.852	1.878	B	EL	43.65	0.889	1.966	B	EL	34.92	0.80	0.852	1.179	B	EL	43.65	
		TNT7A	42.000		1.181	49.601	1.40	0.852	1.882	B	EL	43.65	0.889	1.919	B	EL	34.92	0.80	0.852	1.181	B	EL	43.65	
		TNT7B	42.000		1.213	50.959	1.40	0.852	1.933	B	EL	43.65	0.889	1.757	B	EL	34.92	0.80	0.852	1.213	B	EL	43.65	
		TNAGRIT4	43.000		1.160	49.901	1.40	0.852	1.849	B	EL	43.65	0.889	1.697	B	EL	34.92	0.80	0.852	1.160	B	EL	43.65	
TNAGT5A		45.000		1.097	49.372	1.40	0.852	1.748	B	EL	43.65	0.889	1.707	B	EL	34.92	0.80	0.852	1.097	B	EL	43.65		
TNAGT5B	45.000		③	1.087	48.894	1.40	0.852	1.731	B	EL	43.65	0.889	1.611	B	EL	34.92	0.80	0.852	1.087	B	EL	43.65		

NOTES:

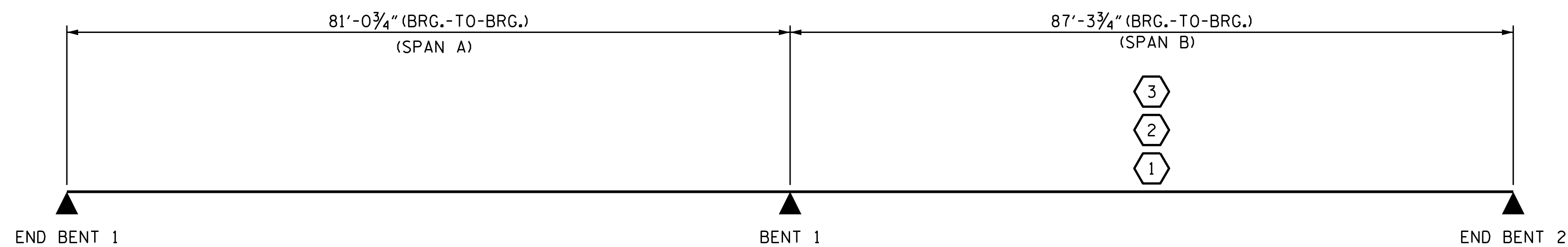
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

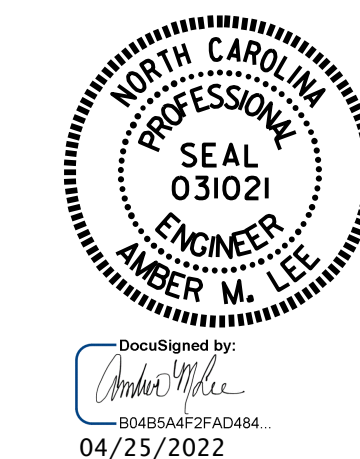
-
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-

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



LRFR SUMMARY

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

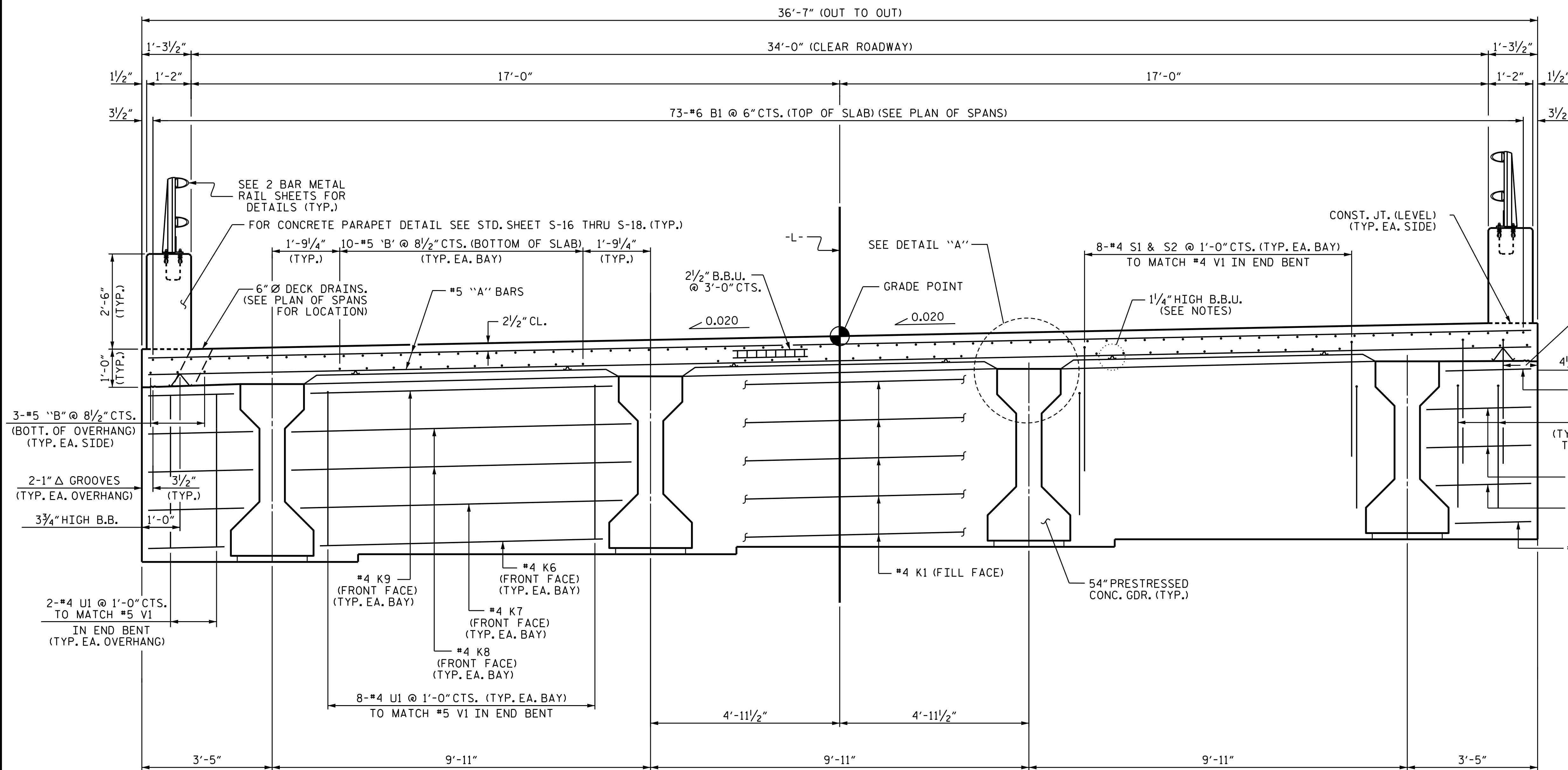


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			32
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : H.A. LOCKLEAR DATE : 03/2020
CHECKED BY : E. BAYISSA DATE : 03/2022
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



NOTES

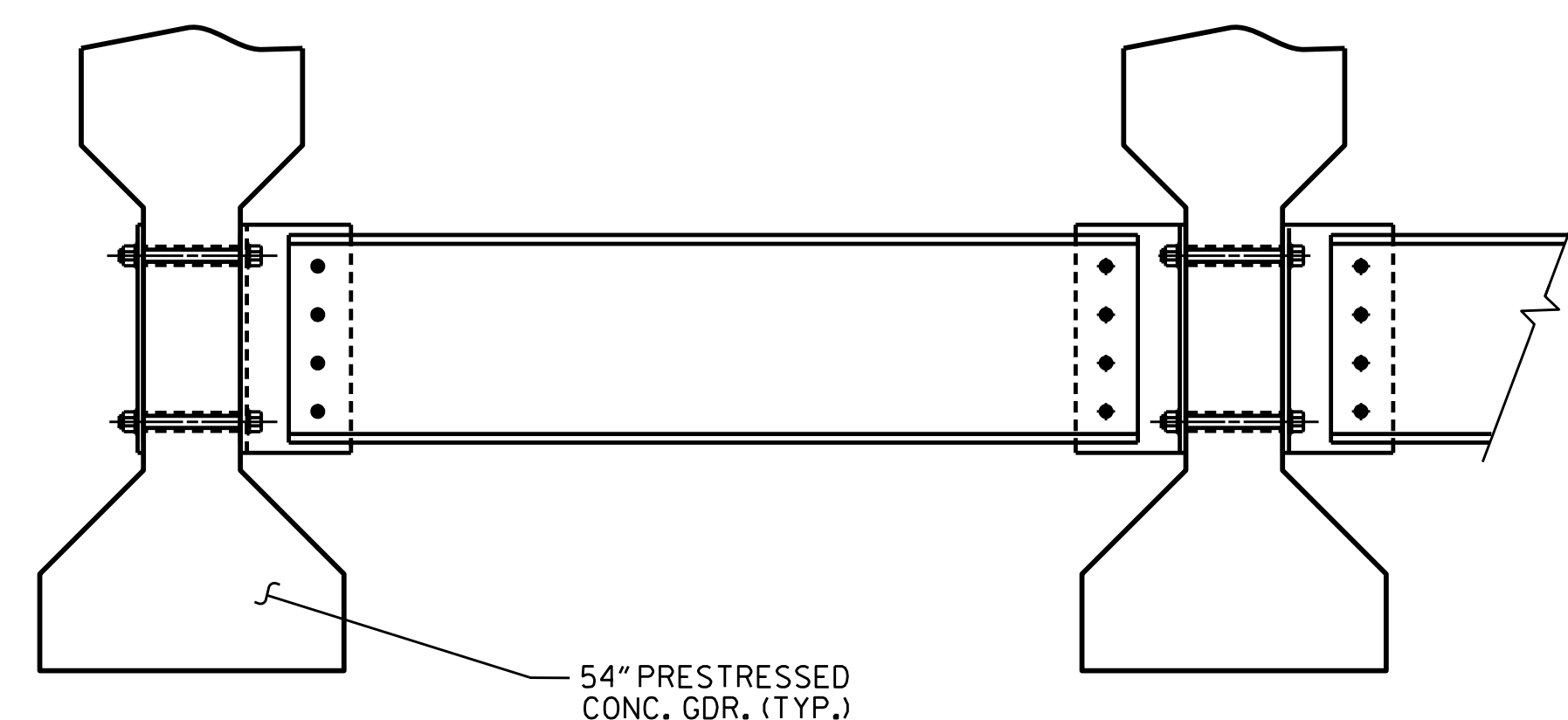
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2"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

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

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.

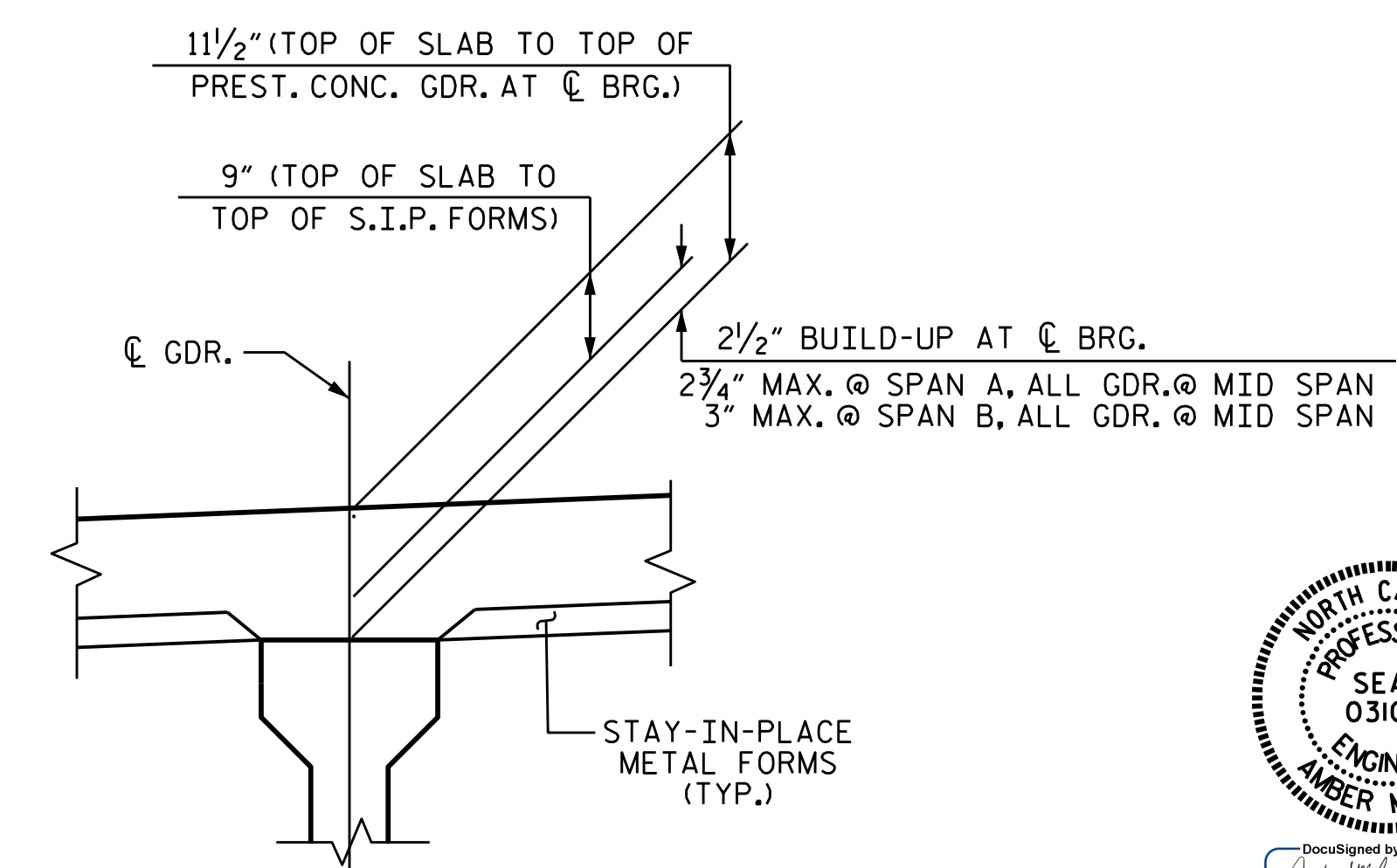
TYPICAL SECTION @ INTEGRAL END BENT DIAPHRAGMS

(APPROACH SLAB BLOCKOUT NOT SHOWN FOR CLARITY SEE "PLAN OF SPANS")



PART SECTION AT INTERMEDIATE DIAPHRAGM

SHOWING INTERMEDIATE DIAPHRAGM (FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR IV PRESTRESSED CONCRETE GIRDERS") (TYP. EA. BAY)

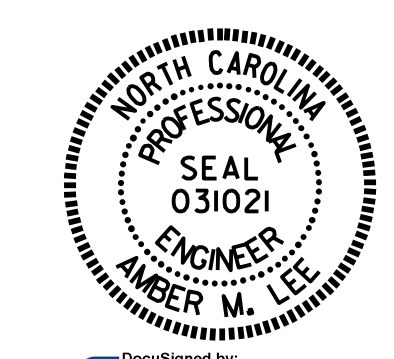


DETAIL A

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

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 1 OF 3

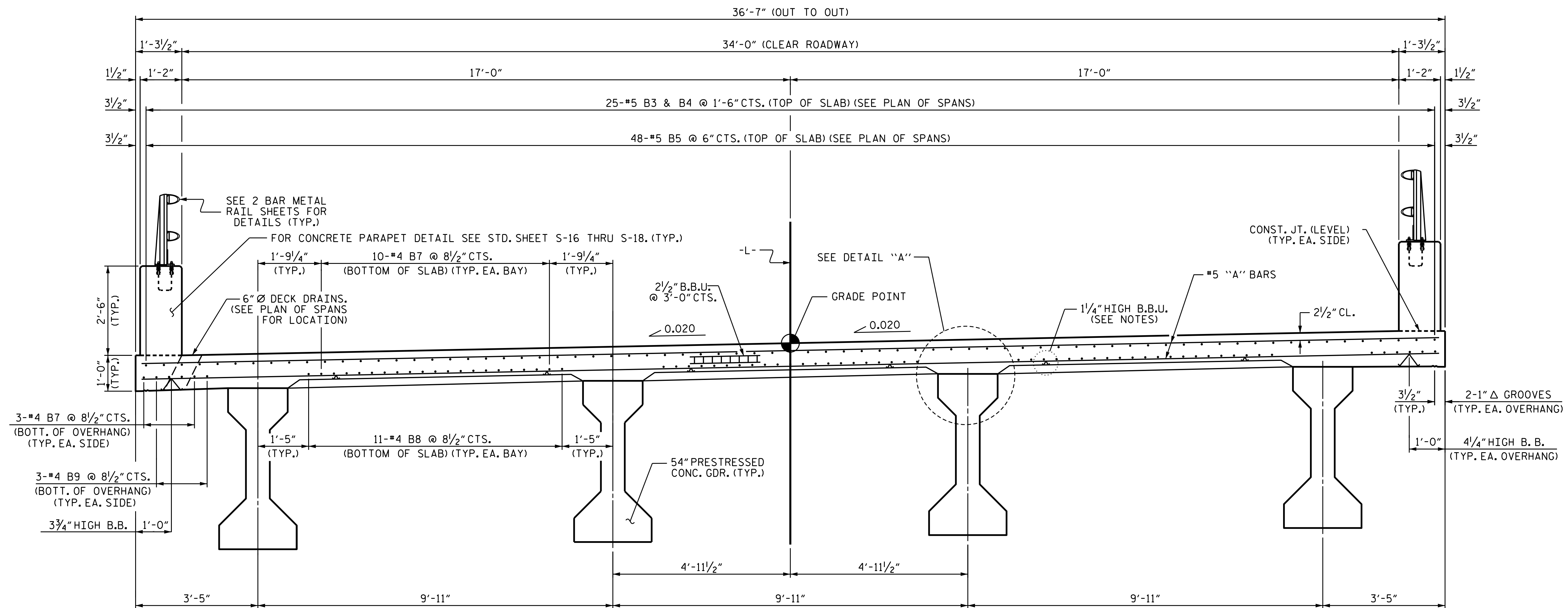


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

DRAWN BY: M. G. SHAIKH DATE: 01/2022
 CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE: 7/2018

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			32



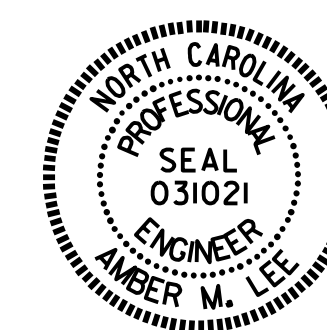
LINK SLAB AT BENT

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION



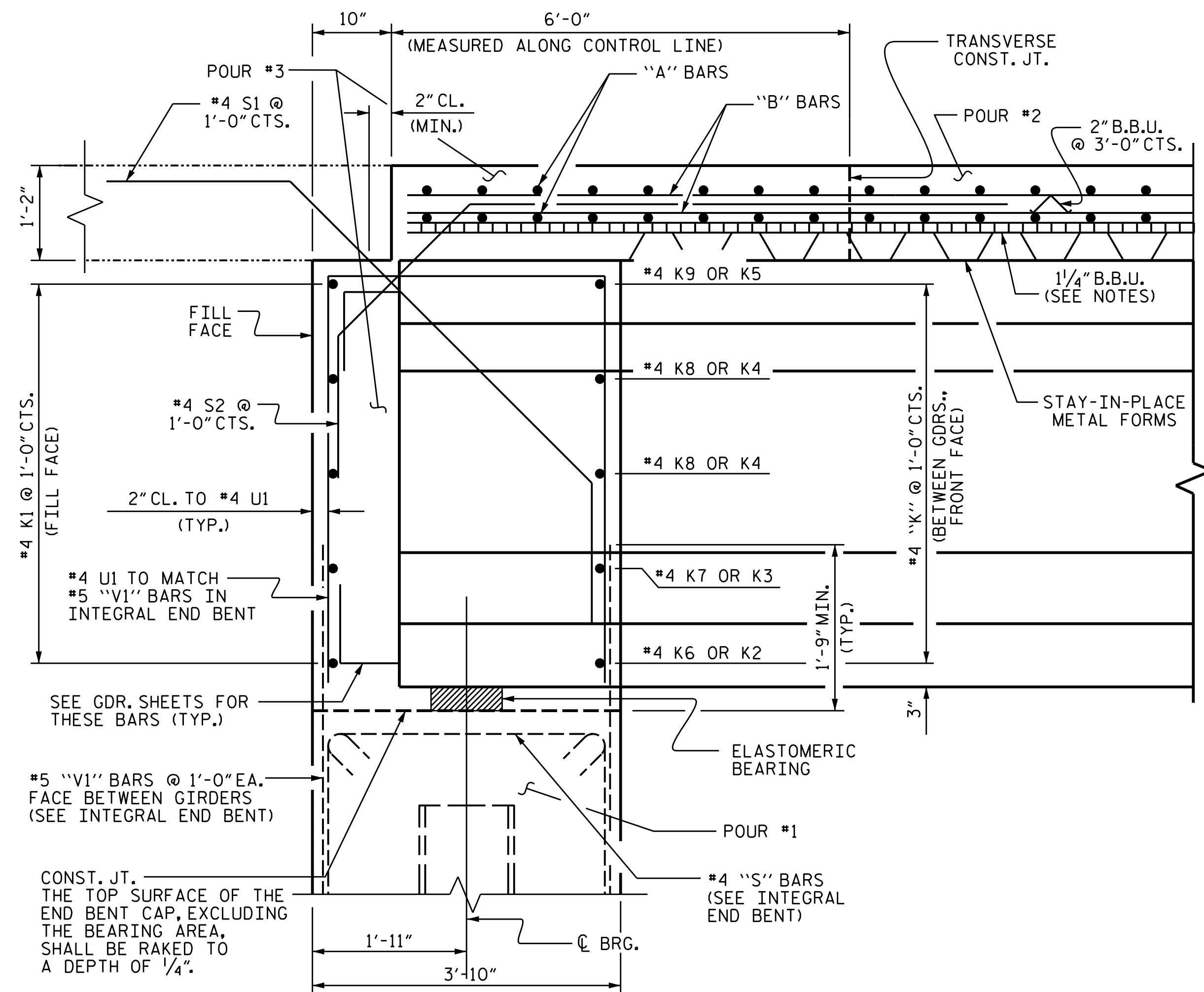
Designed by
Amber M. Lee
 04/25/2022

DRAWN BY : M. G. SHAIKH DATE : 01/2022
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 7/2018

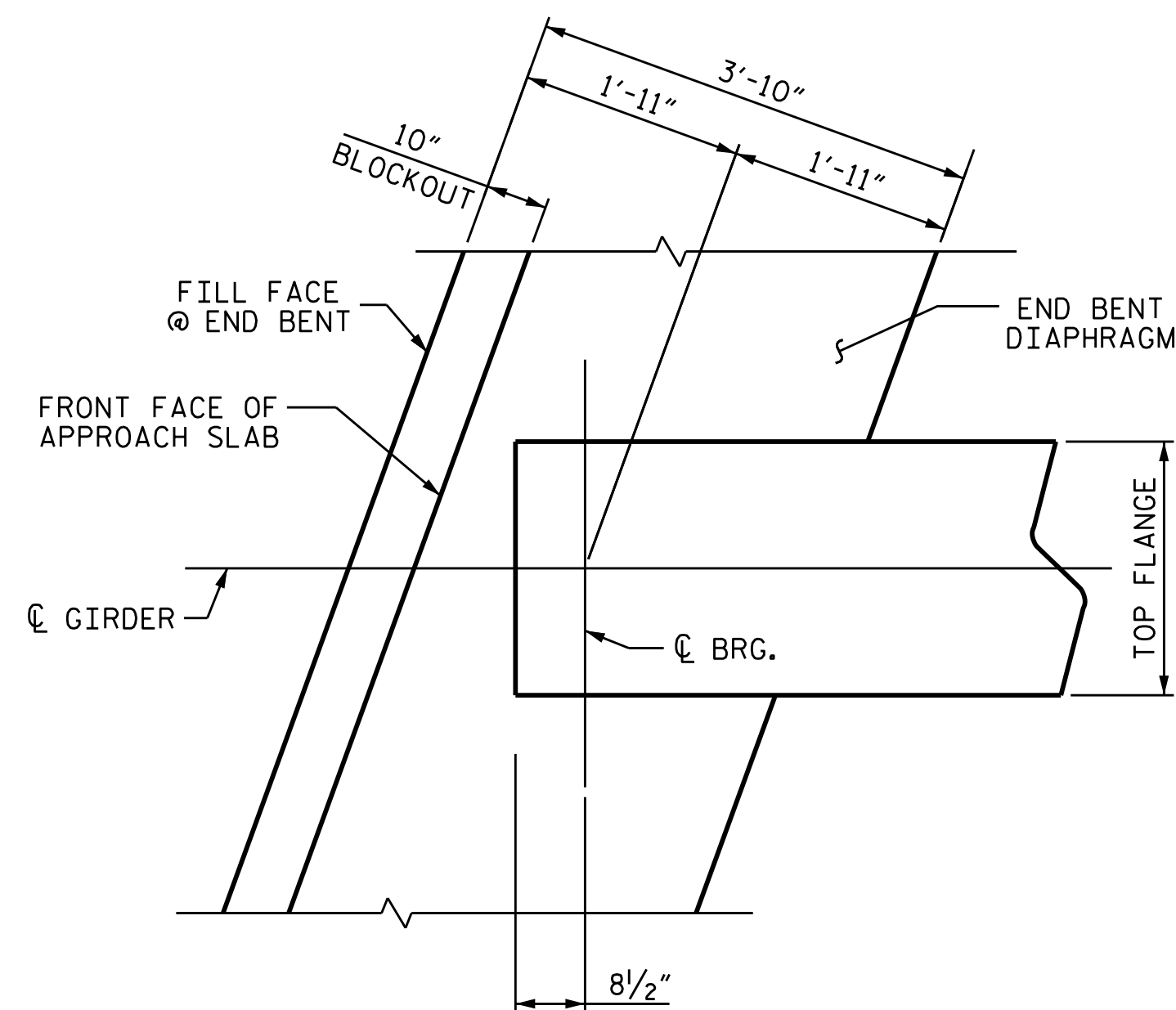
4/25/2022
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 omlee

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

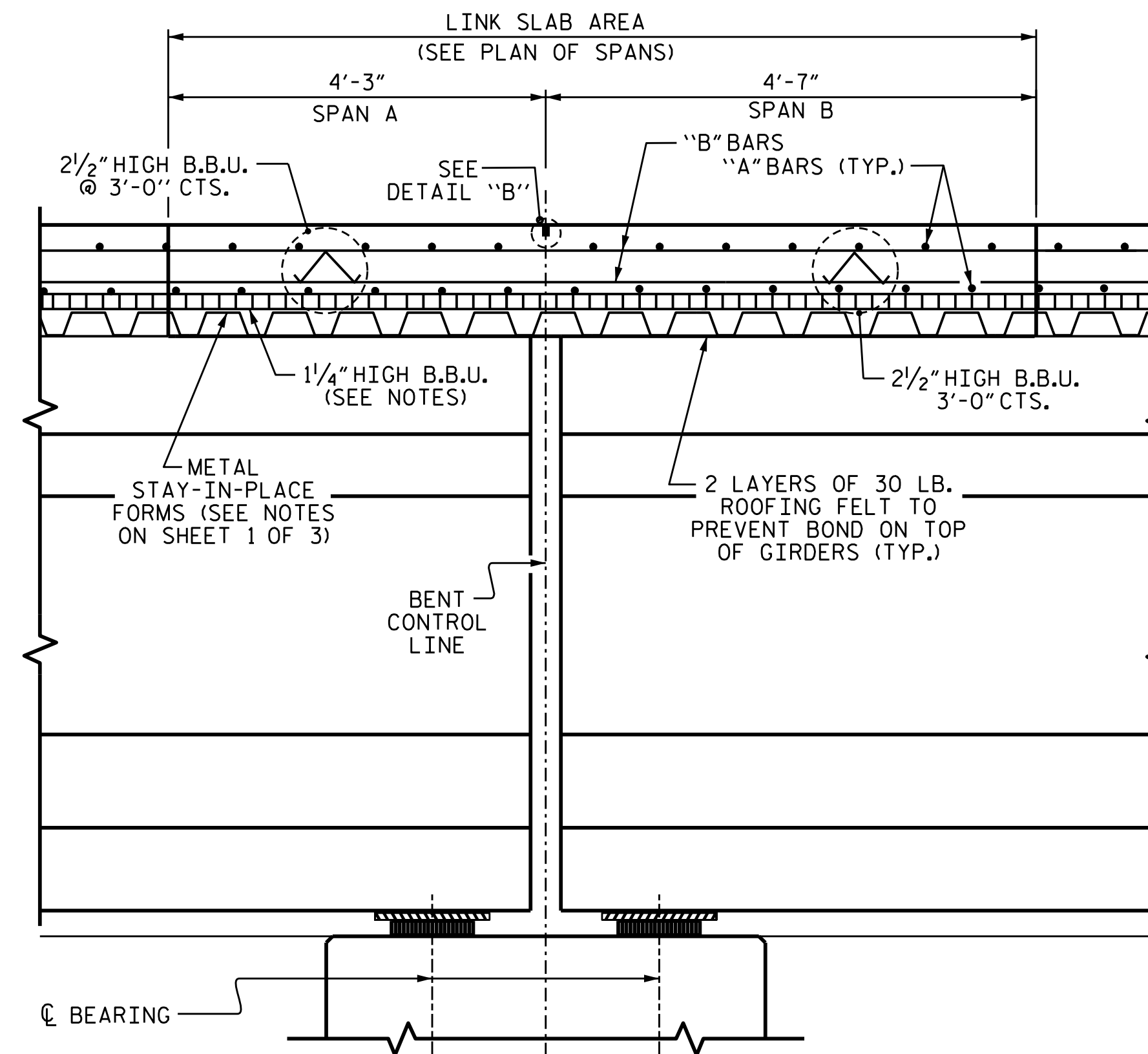
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			32



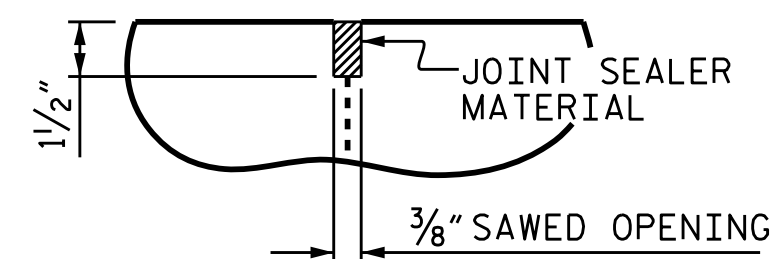
SECTION THRU INTEGRAL END BENT



PLAN OF GIRDER AT INTEGRAL END BENT

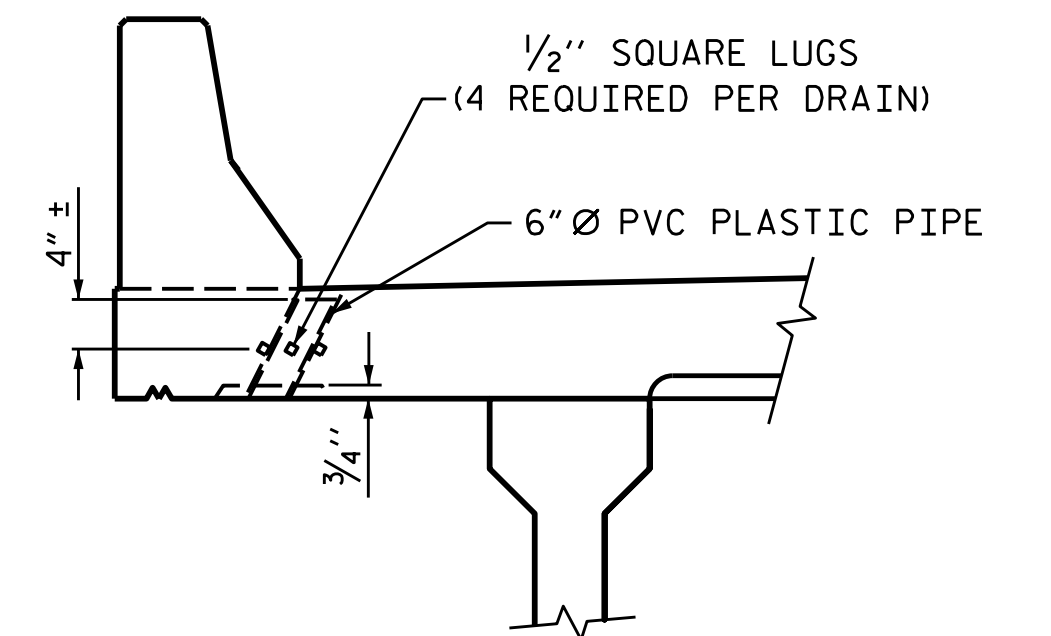


SECTION @ LINK SLAB

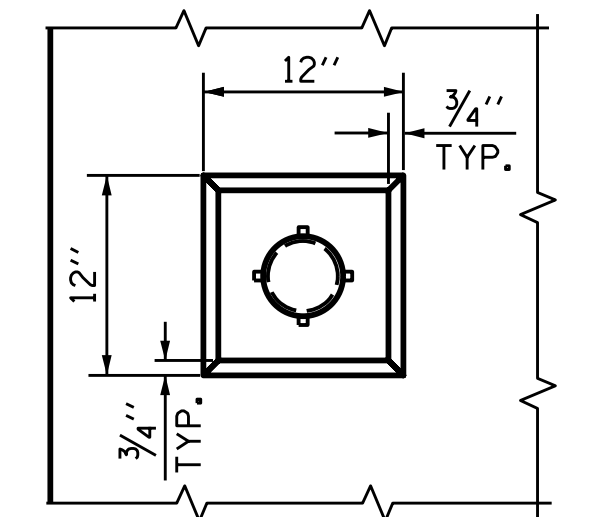


DETAIL "B"

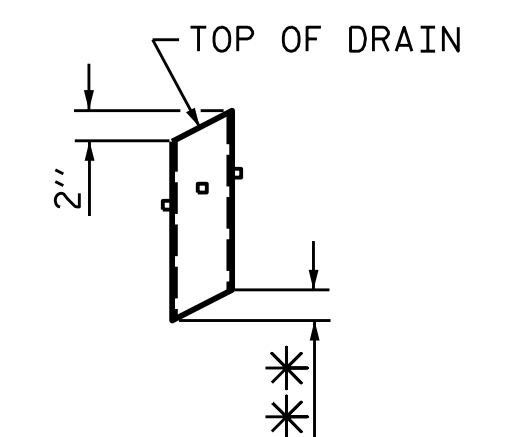
A 1/2" (38mm) DEEP, 3/8" (9.5 mm) WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE LINK SLAB DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1027-3 OF THE STANDARD SPECIFICATIONS



ELEVATION



PLAN OF RECESS

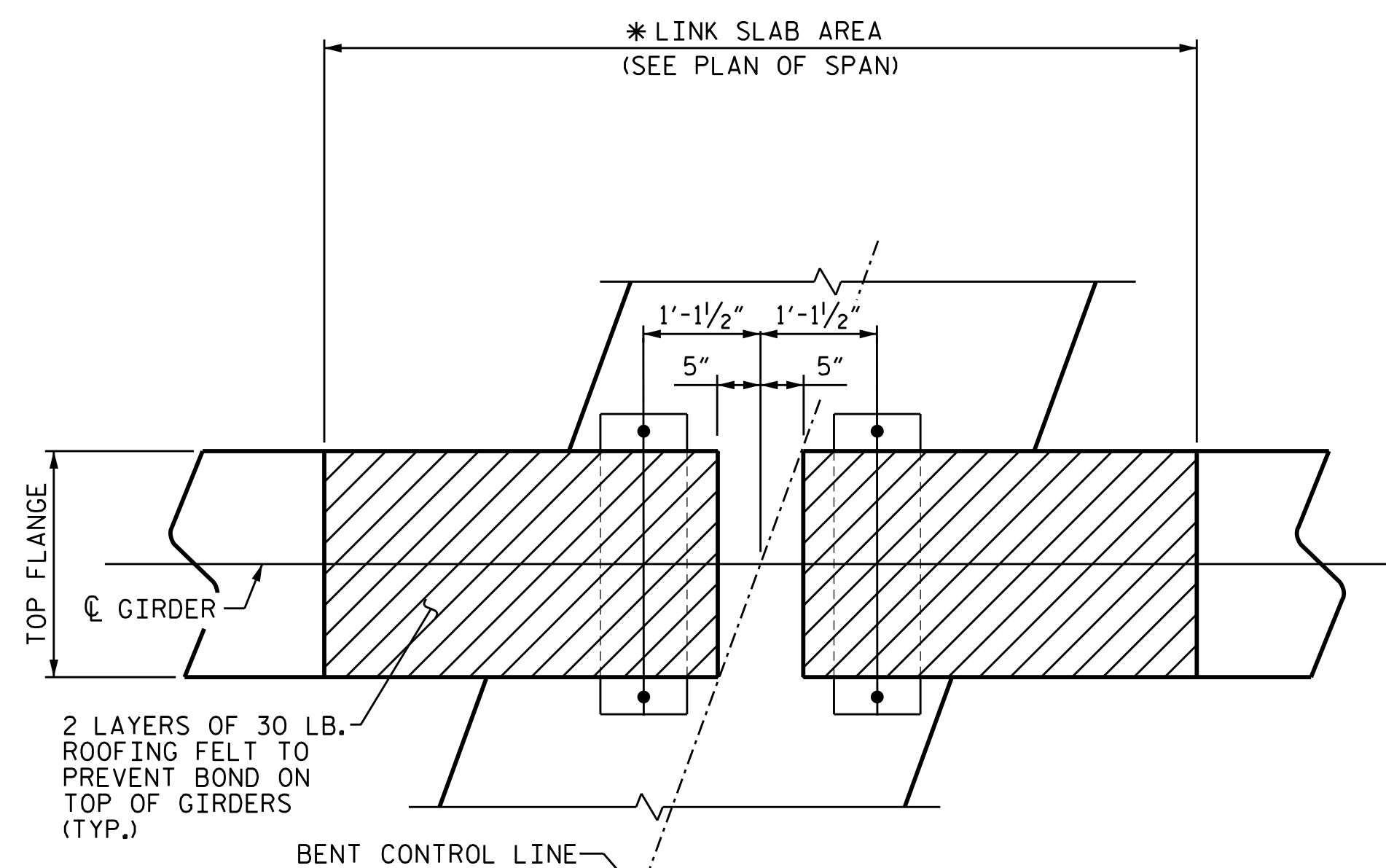


** TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (12 DRAINS REQUIRED)

PIPE DETAIL

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.
 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
 THE 6" Ø PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS



PLAN @ BENT

* NO WELDING OF FORMS TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

THE TOP OF THE GIRDER IN THE AREA OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.



Designed by
 Amber M. Lee
 04/25/2022

PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 3 OF 3

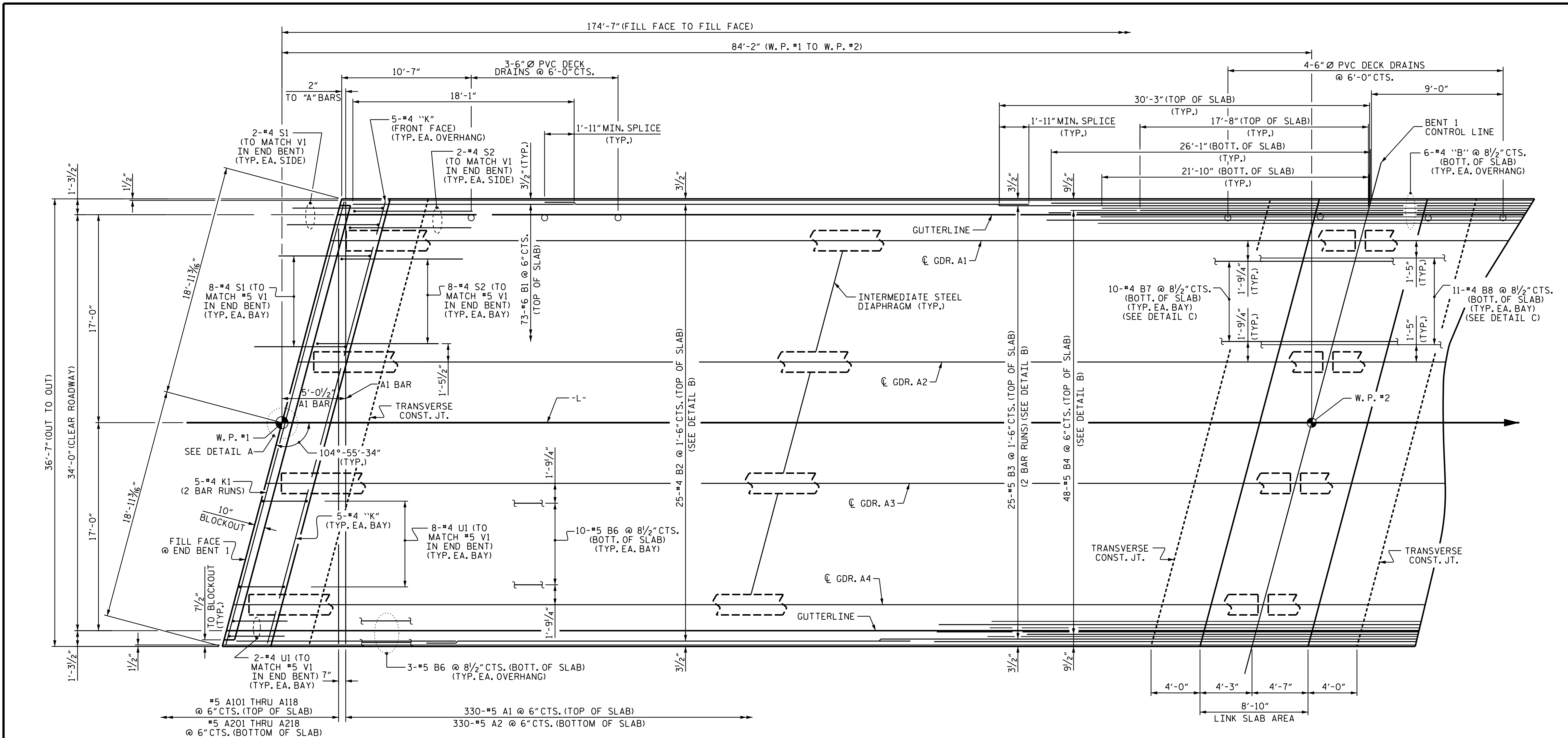
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : M. G. SHAIKH DATE : 01/2022
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 07/2019

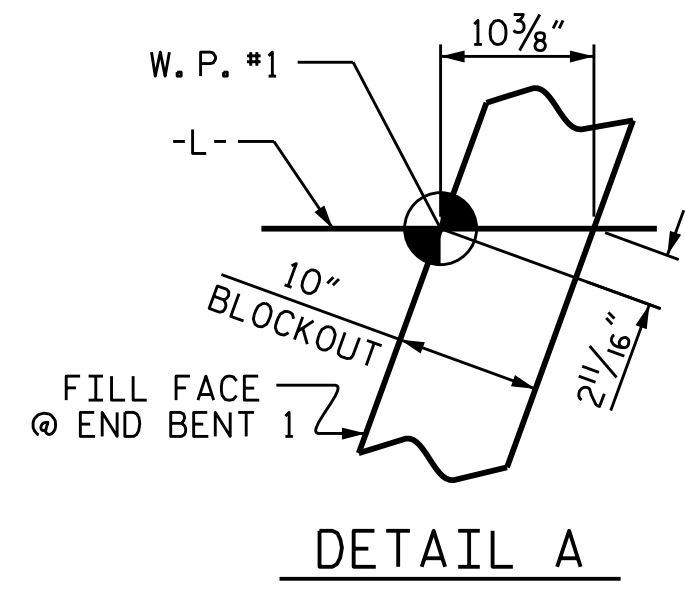
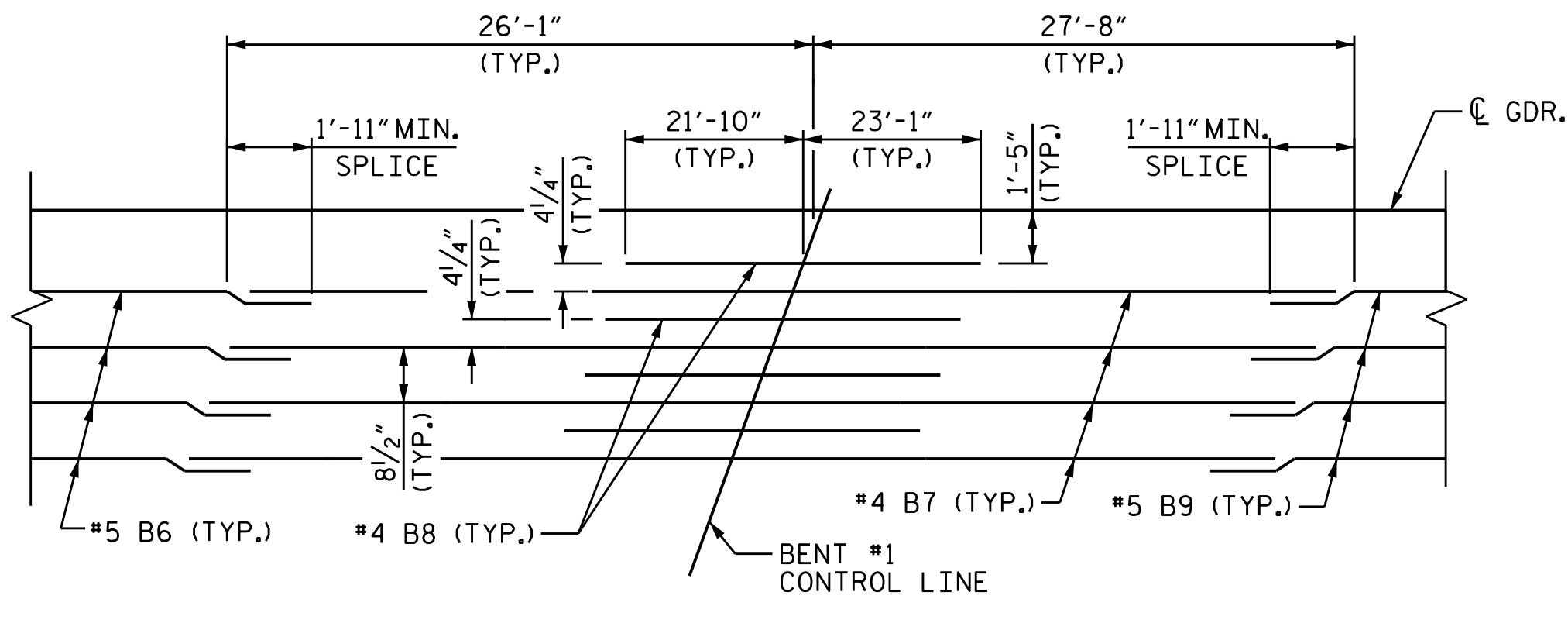
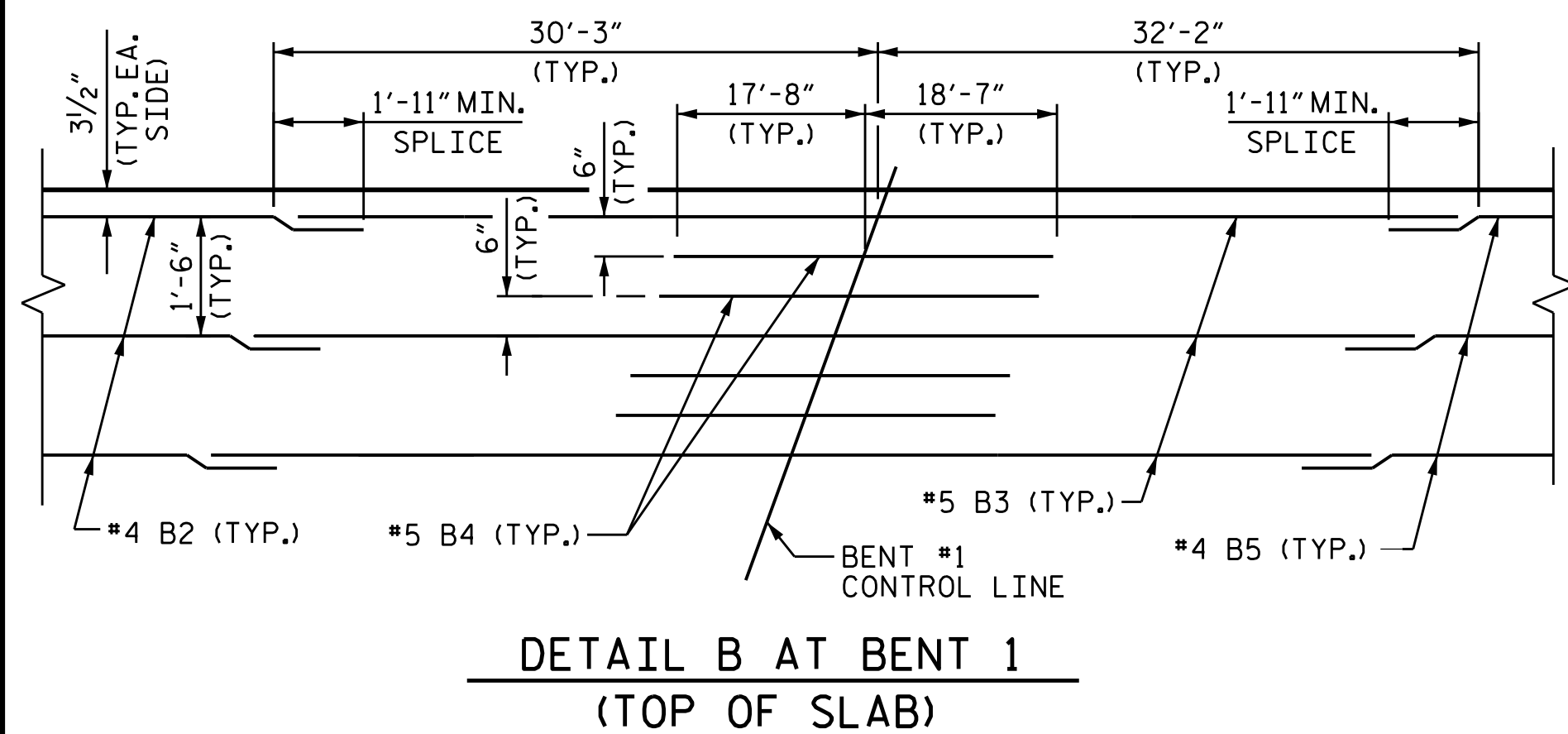
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			32



PLAN OF SPAN A

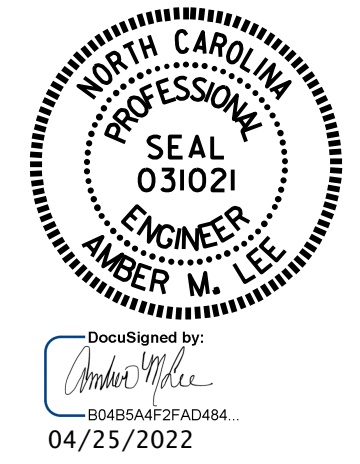
FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.



DRAWN BY: M. G. SHAIKH DATE: 01/2022
 CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE: 08/2019

4/25/2022 RAS\Structures\OBD.FINAL PLANS\400.017.BR-0051.SMU. S*.008.980090.dgn omlee

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



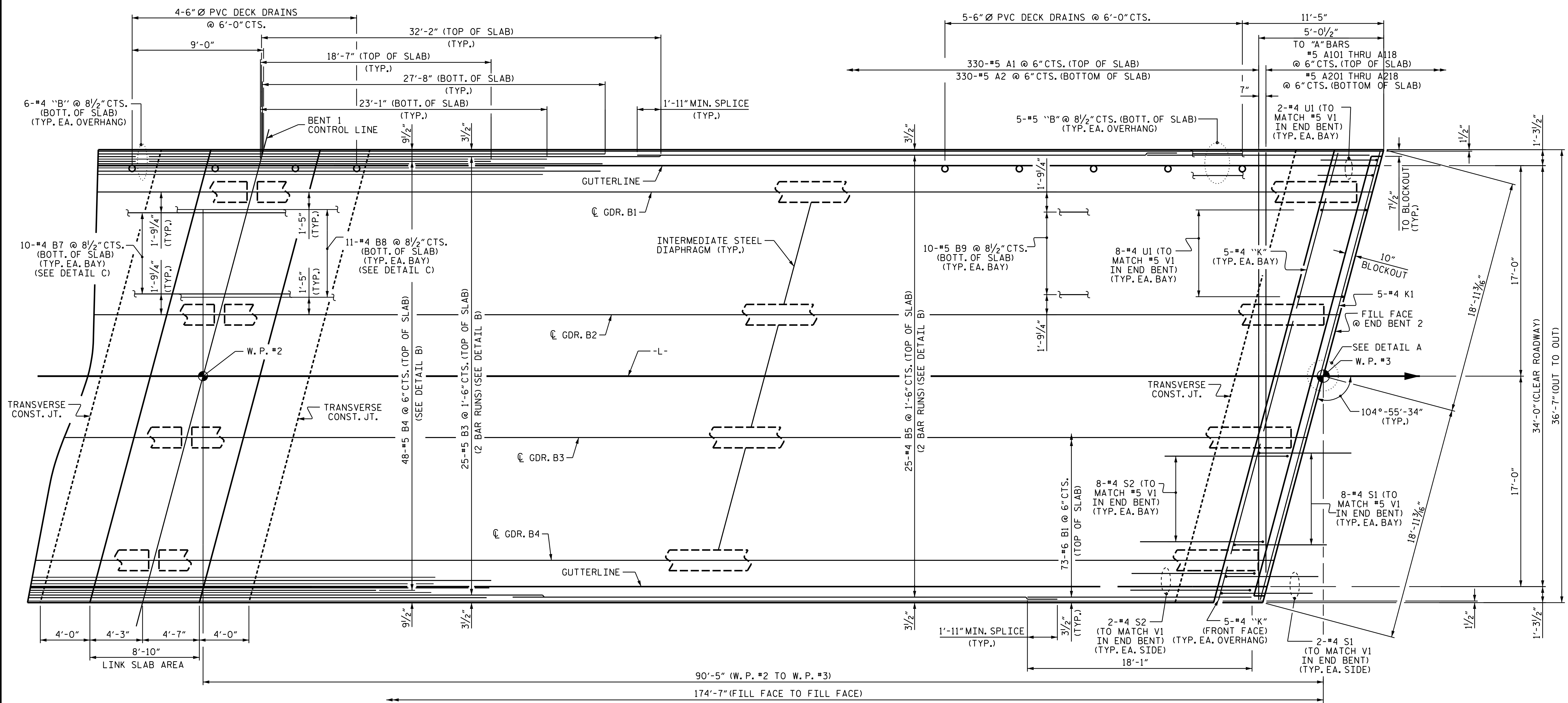
PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

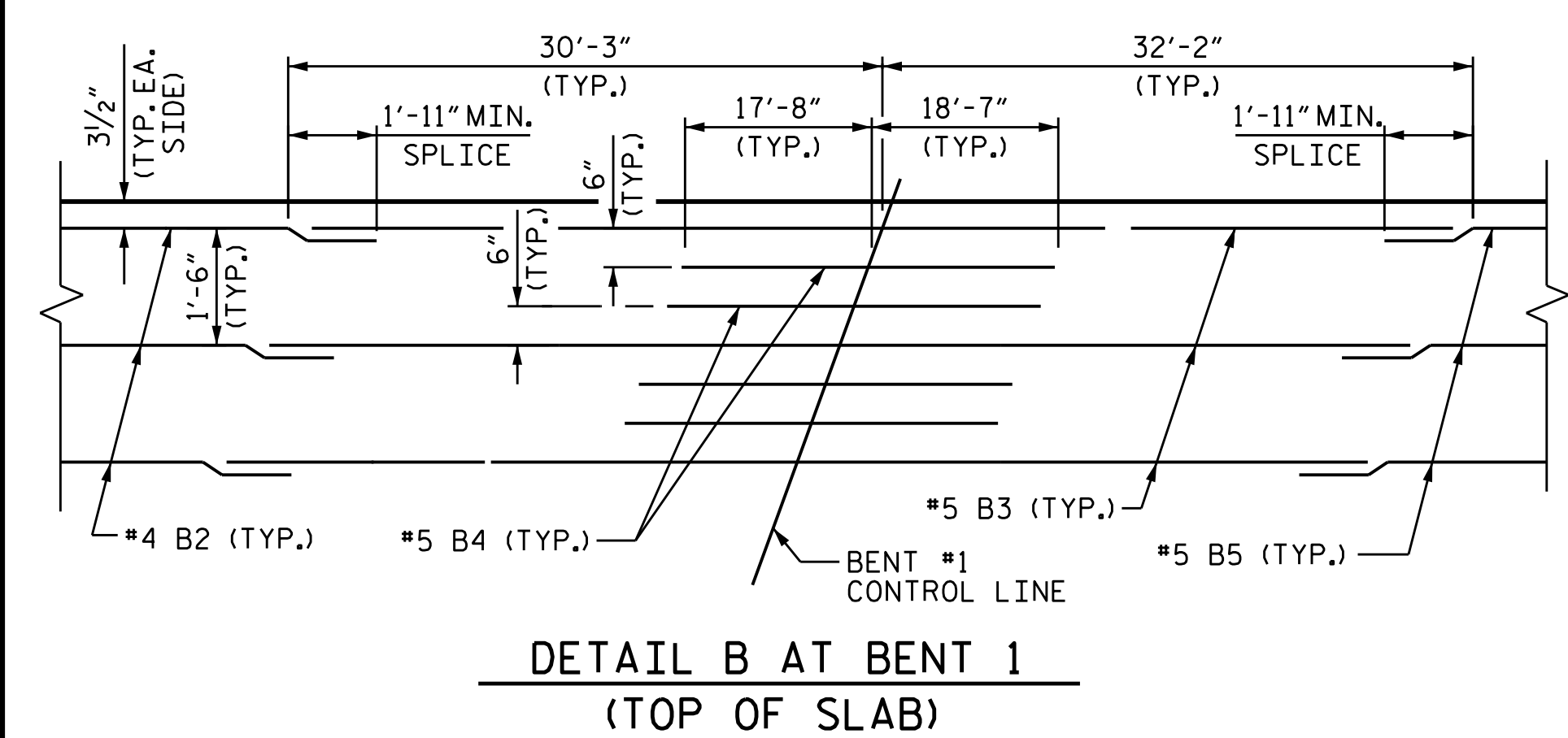
PLAN OF SPAN A

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			32

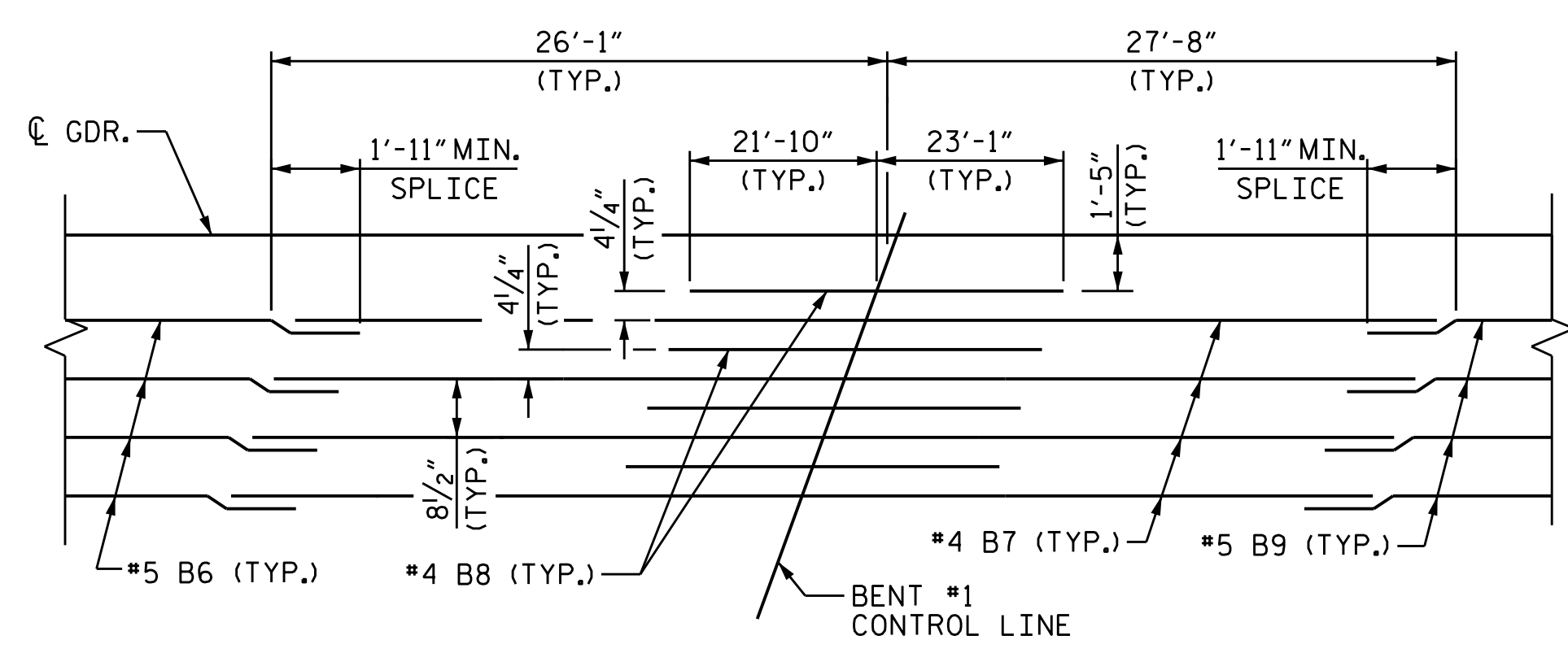


PLAN OF SPAN B

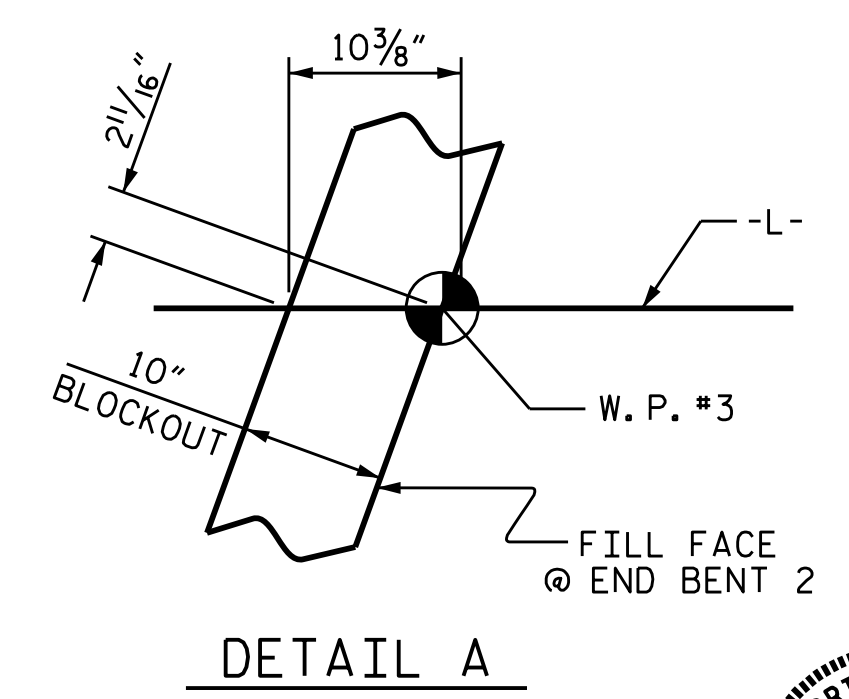
FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.



**DETAIL B AT BENT 1
(TOP OF SLAB)**



**DETAIL C AT BENT 1
(BOTTOM OF SLAB)**



DETAIL A

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 2 OF 2



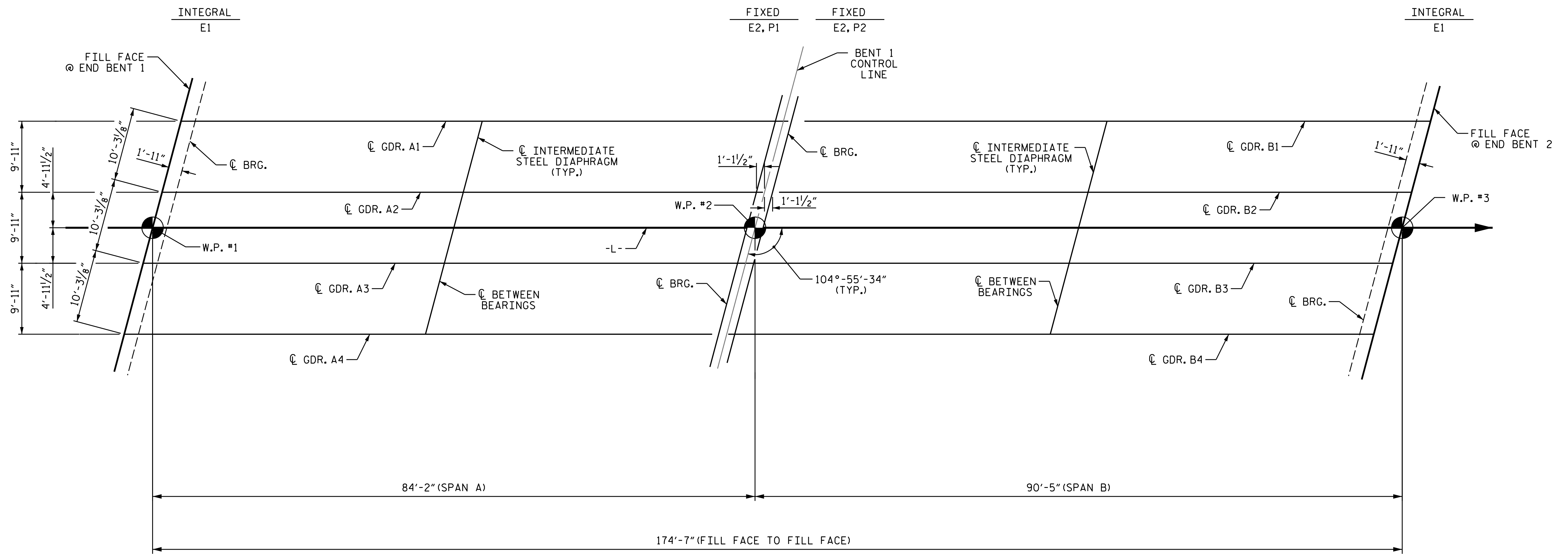
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN B

DRAWN BY : M. G. SHAIKH DATE : 01/2022
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 08/2019

DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			32



FRAMING PLAN

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-



Designed by
Amber M. Lee
 04/25/2022

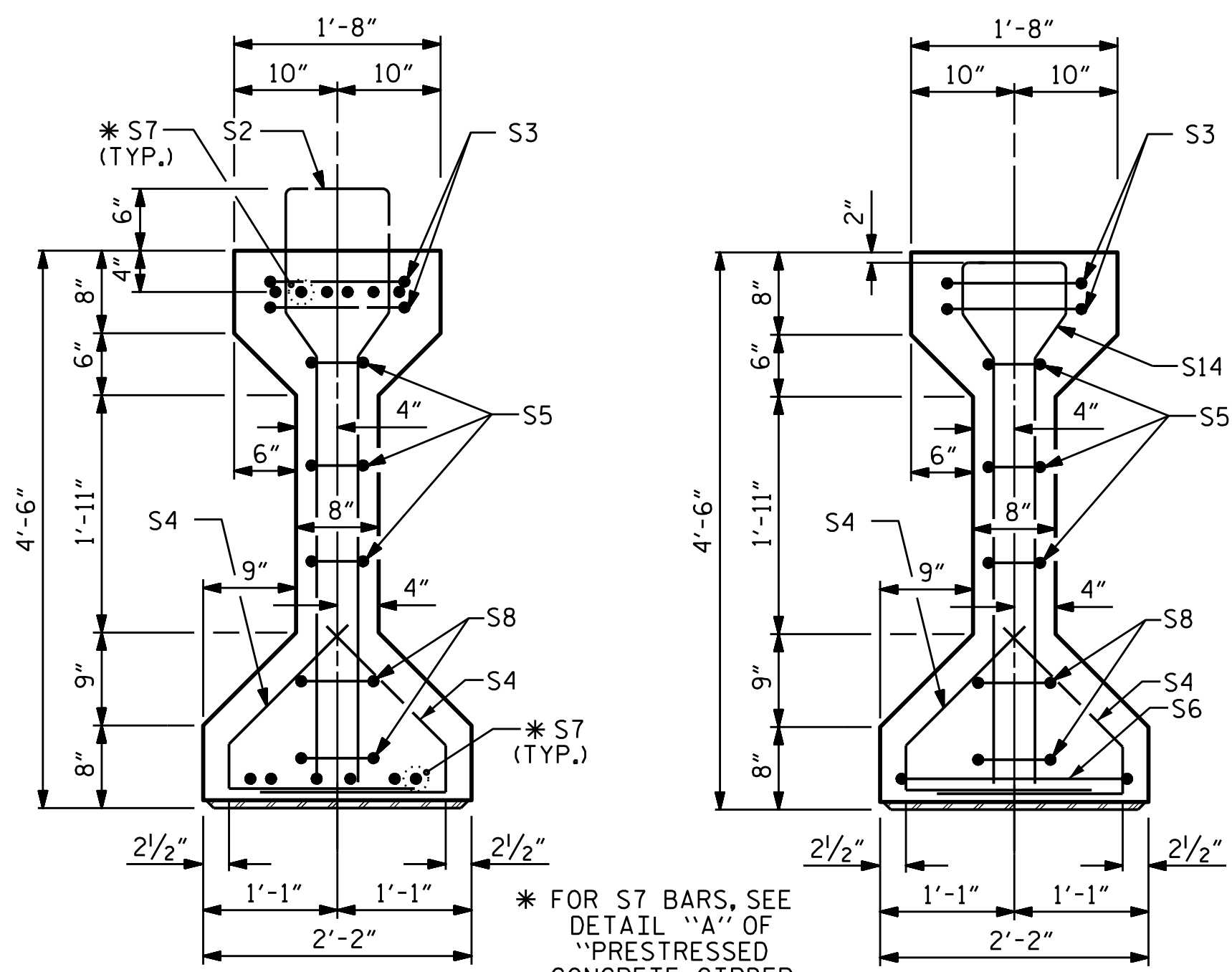
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 FRAMING PLAN**

DRAWN BY : M. G. SHAIKH DATE : 09/2019
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 08/2019

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

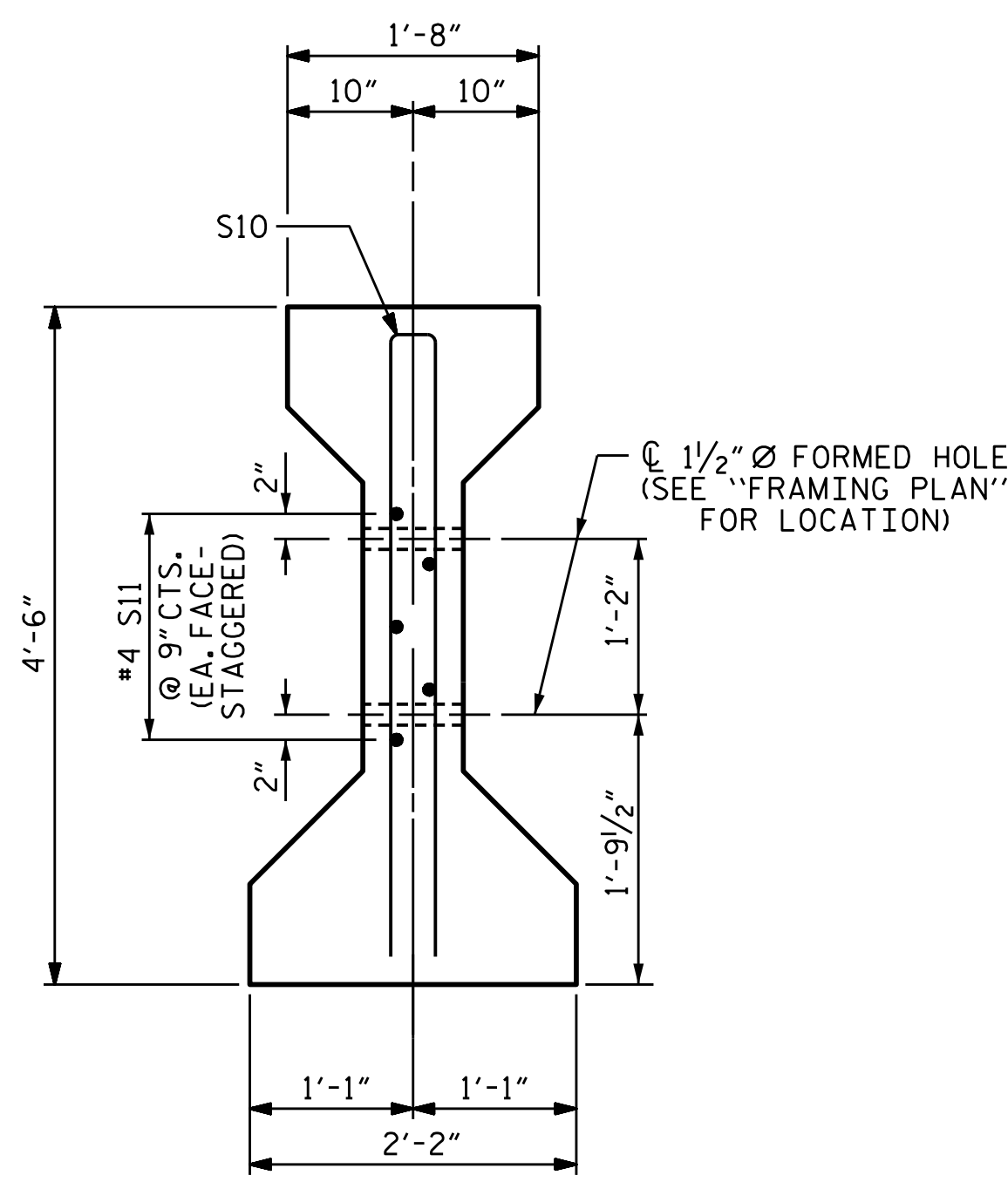
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
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2			4			32



SECTION A-A

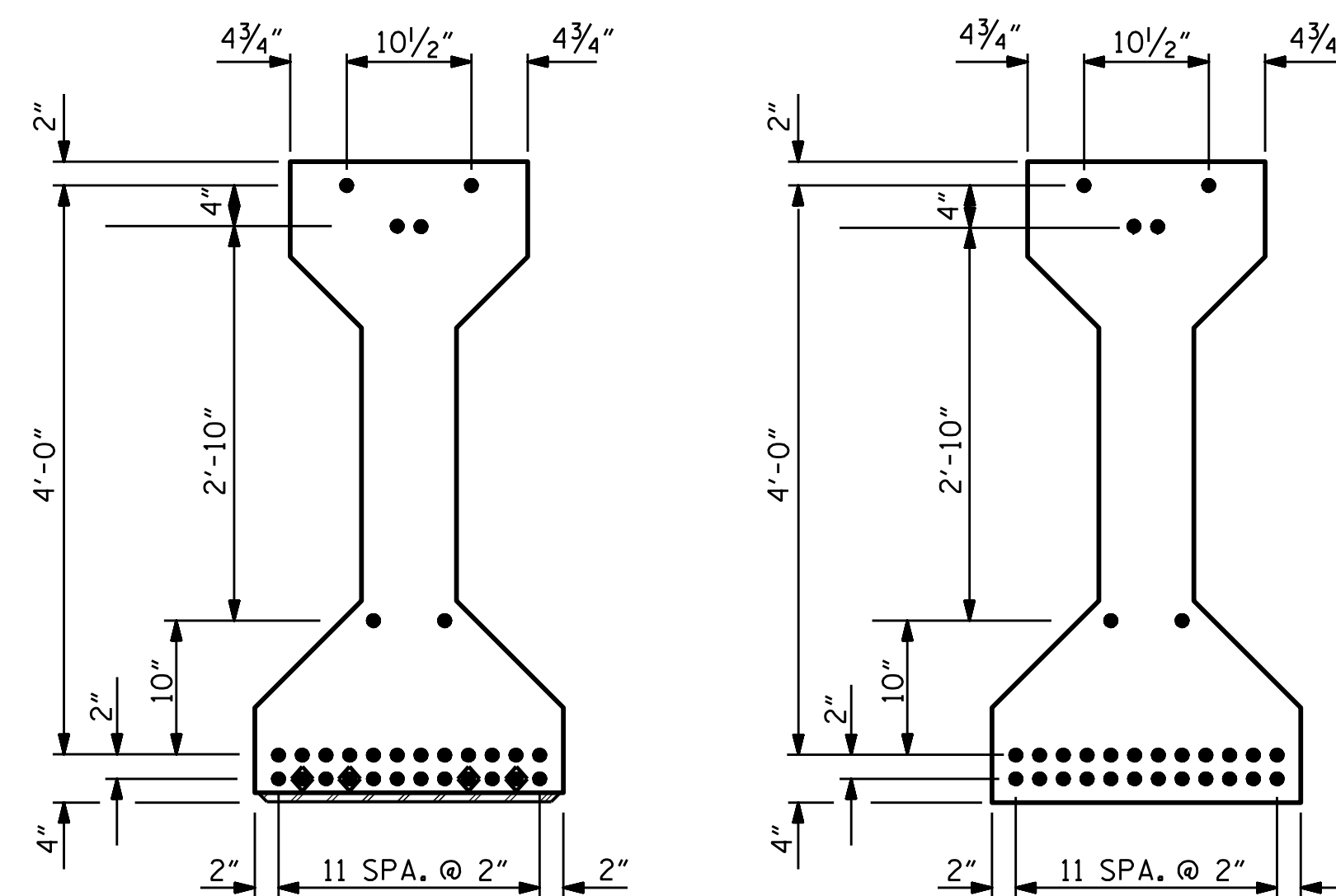
SECTION B-B

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



SECTION C-C

(S1 BARS NOT SHOWN)

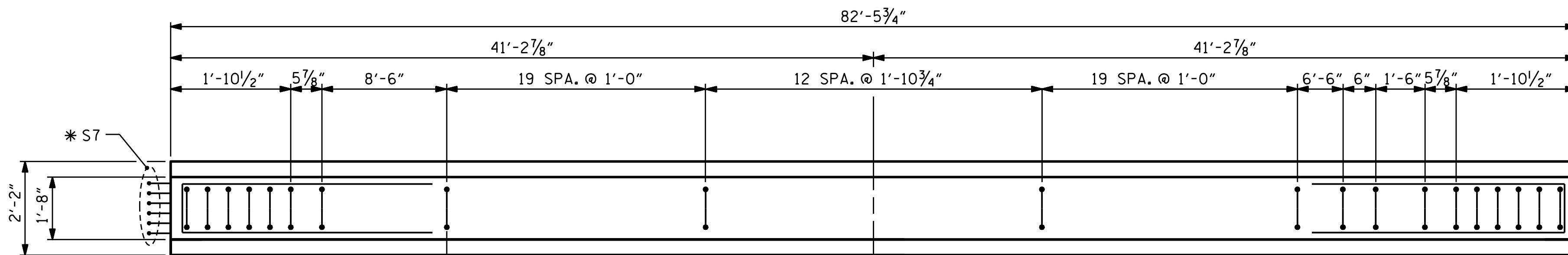


AT END OF GIRDER

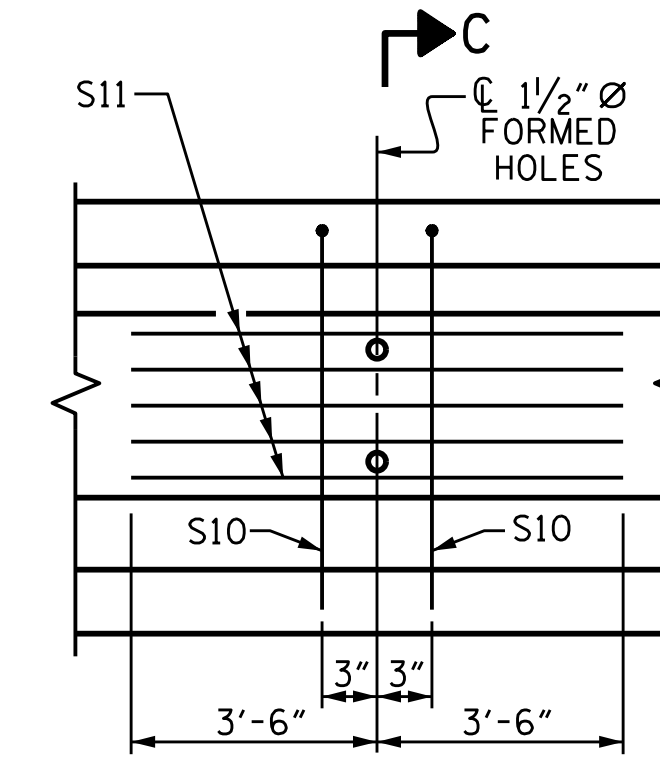
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

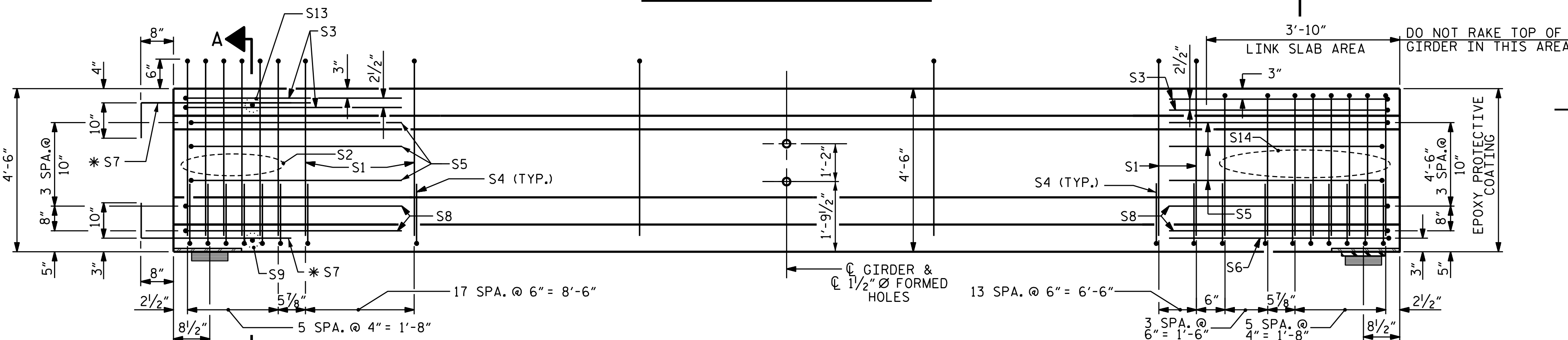


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR SPAN A GIRDERS.



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INTEGRAL END BENT

0.6" Ø L. R. GRADE 270 STRANDS

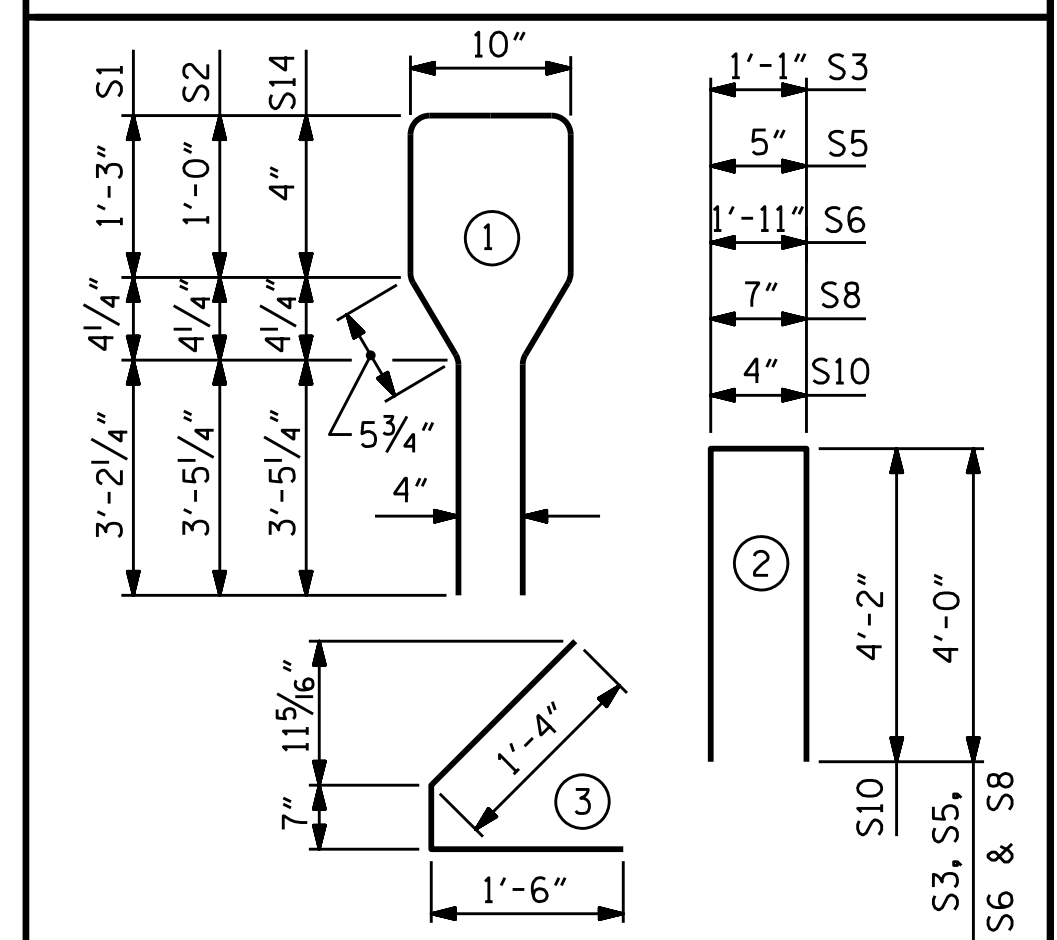
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	#4	1	10'-8"	577
S2	#6	1	10'-8"	96
S3	#4	2	9'-1"	24
S4	#4	3	3'-5"	219
S5	#4	2	8'-5"	34
S6	#4	2	9'-11"	7
*S7	#5	STR	3'-8"	46
S8	#4	2	8'-7"	23
S9	#3	STR	1'-10"	1
S10	#5	2	8'-8"	18
S11	#4	STR	7'-0"	23
S13	#3	STR	1'-4"	1
S14	#6	1	9'-4"	140

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	6,500 PSI CONCRETE	0.6" Ø L. R. STRANDS
LBS.	C.Y.	No.
1,209	16.7	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	82'-5 3/4"	329'-11"

PROJECT NO. BR-0051

YADKIN COUNTY

STATION: 18+34.78-L-

SHEET 1 OF 2

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



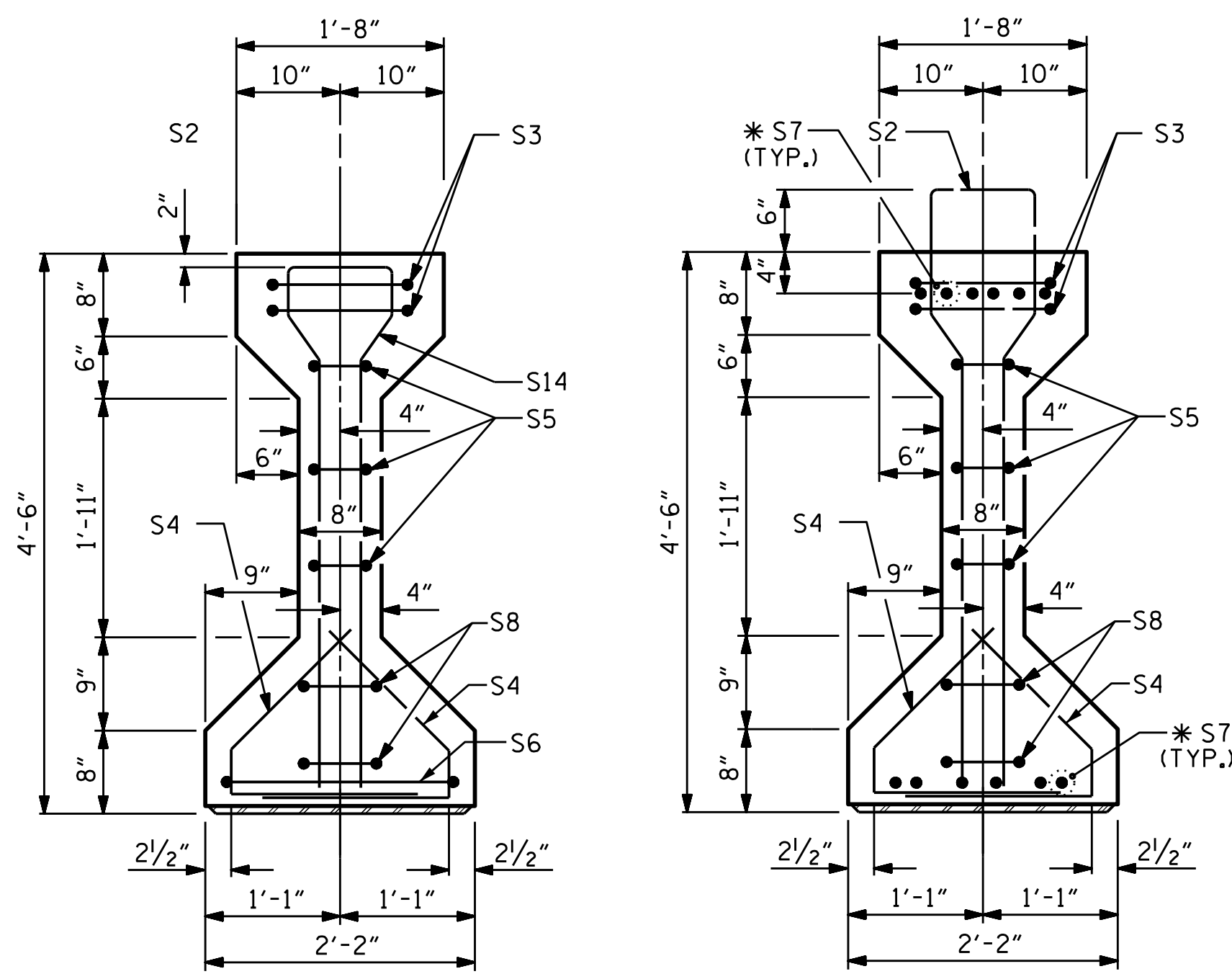
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B08E5A4F2FAD484
04/25/2022

ASSEMBLED BY : M. G. SHAIKH DATE : 02-2020
CHECKED BY : H.A. LOCKLEAR DATE : 03-2020
DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM
REV. 1/15 MAA/TMG

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

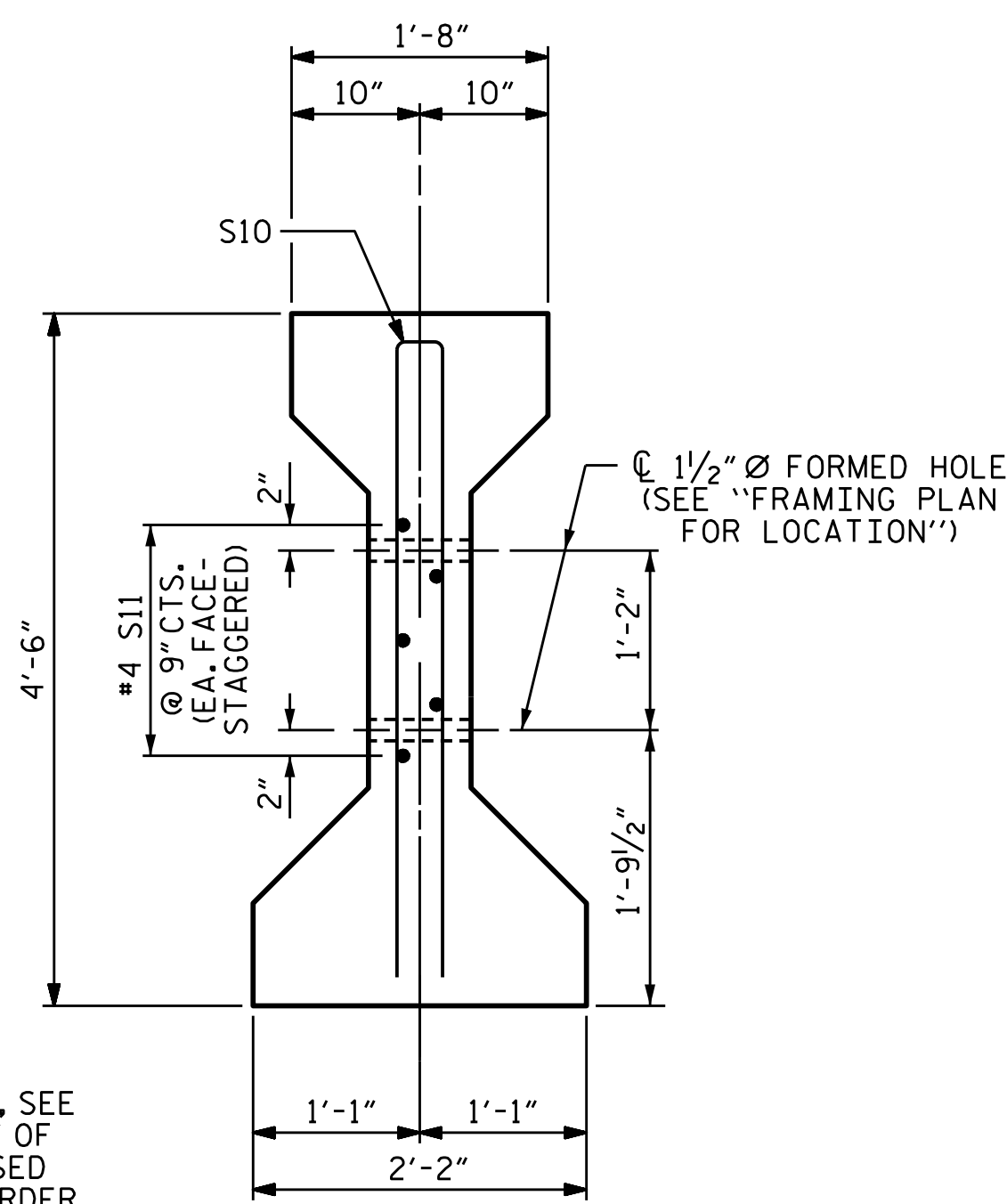
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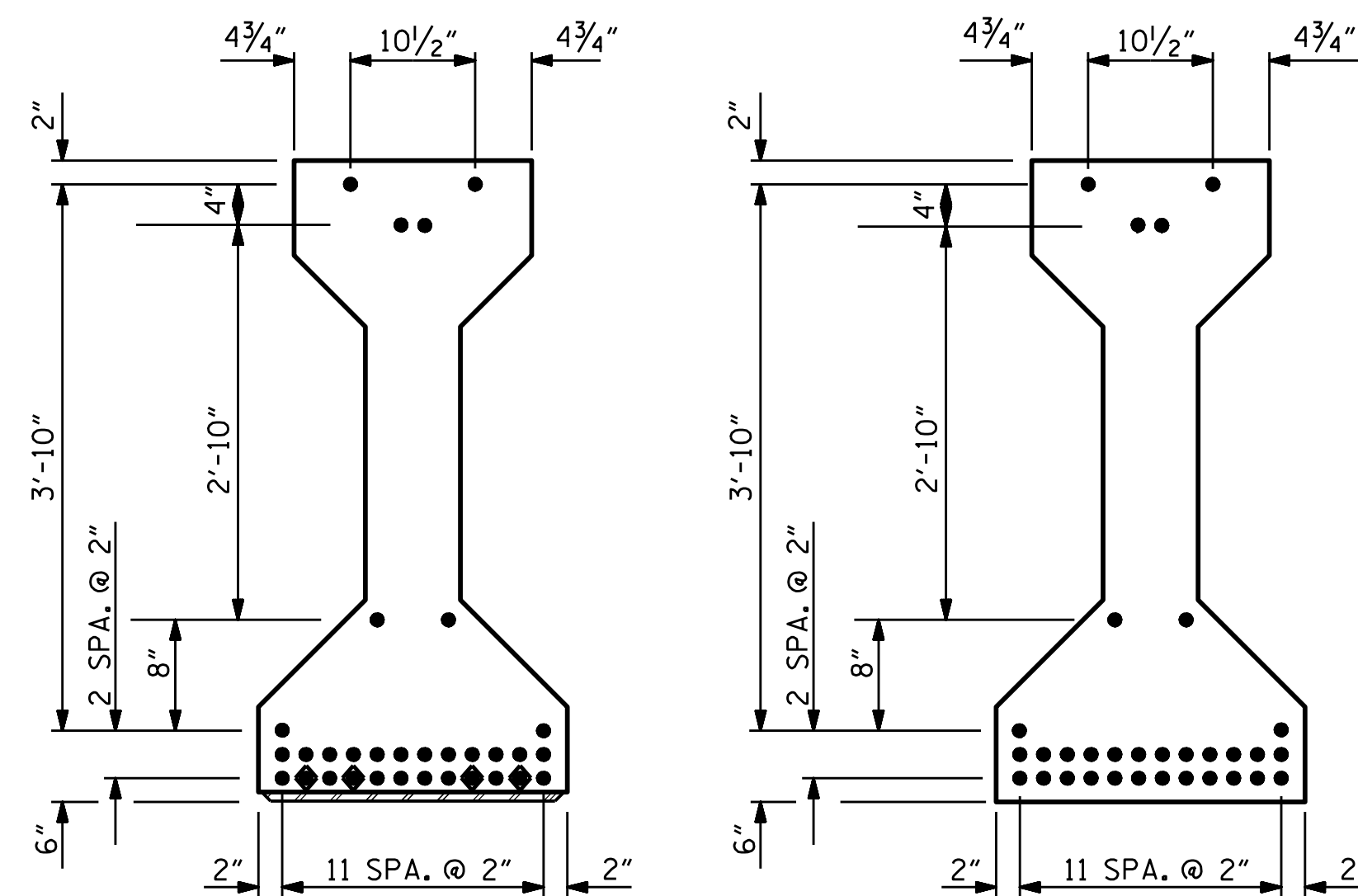
SECTION A-A

SECTION B-B

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



SECTION C-C
(S1 BARS NOT SHOWN)

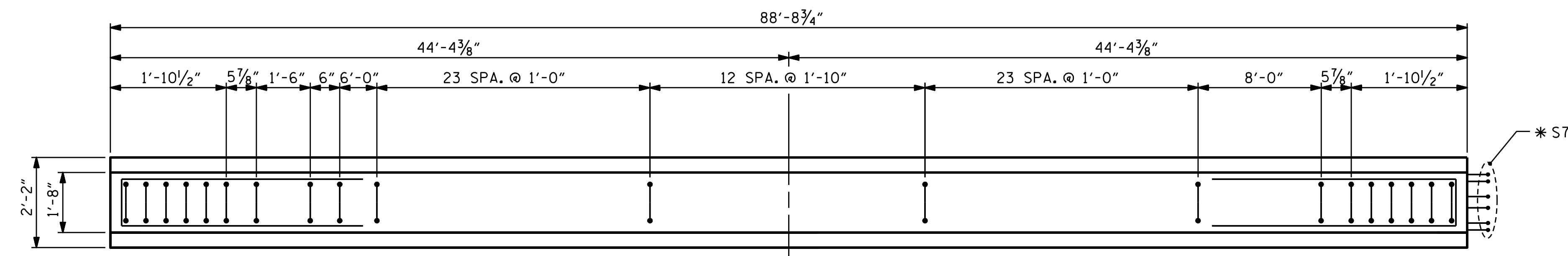


AT END OF GIRDER

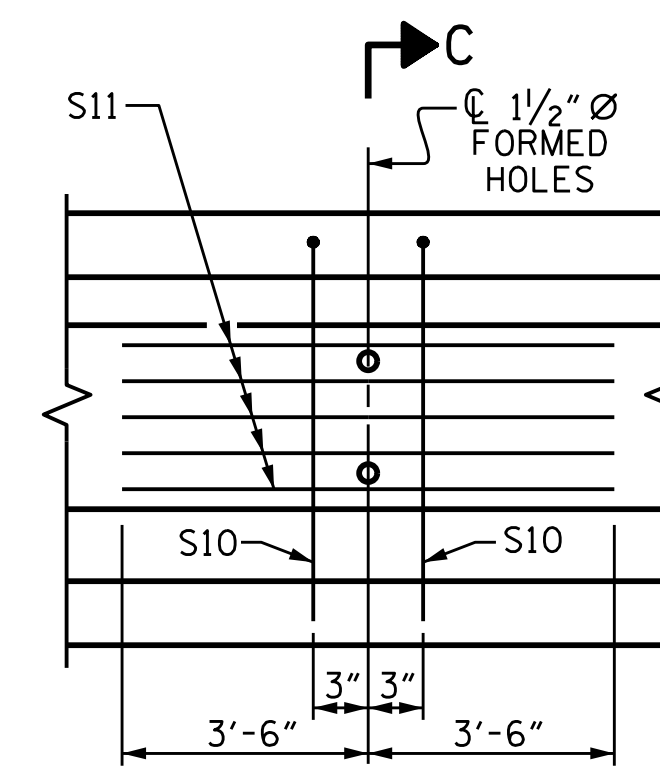
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

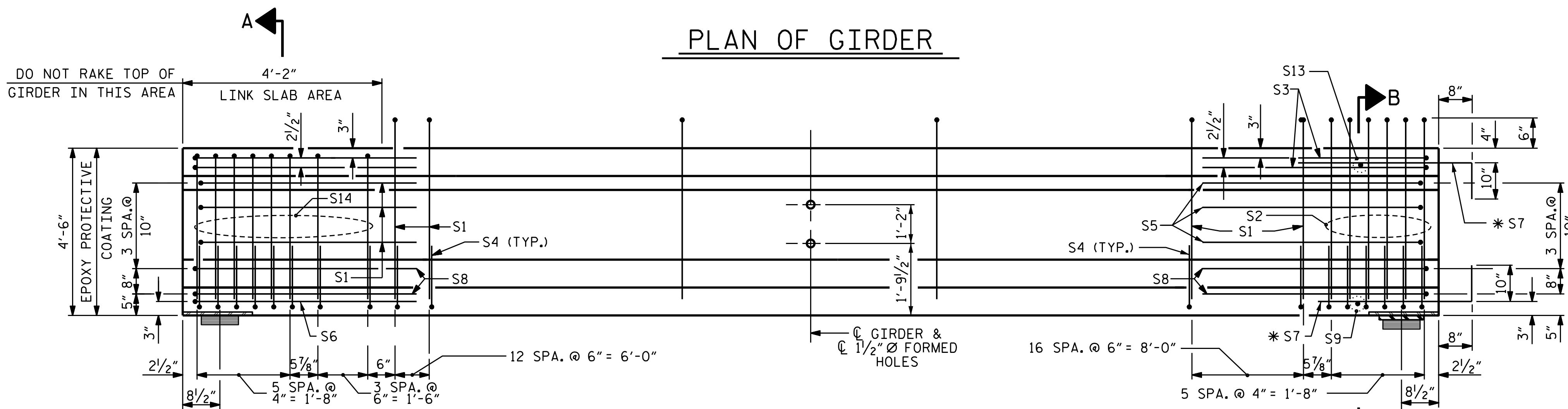


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR SPAN B GIRDERS.



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INTEGRAL END BENT

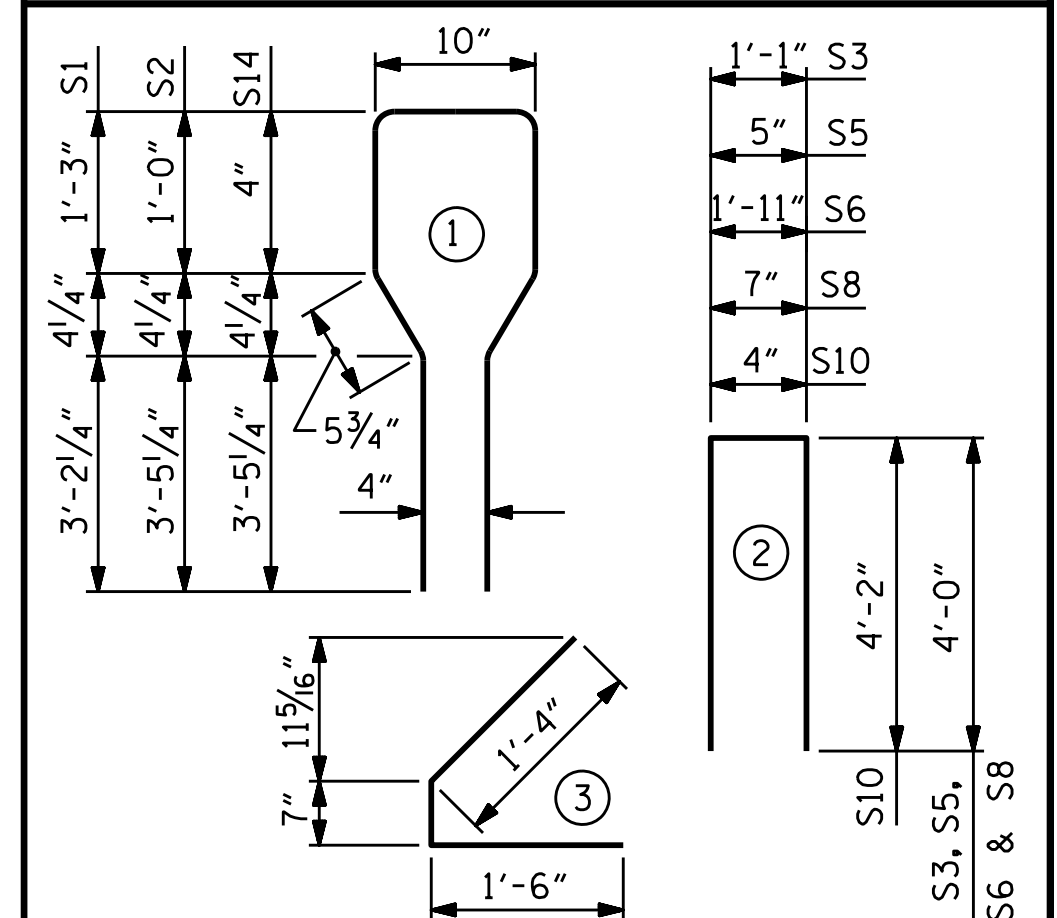
0.6" Ø L. R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	87	#4	1	10'-8"	620
S2	6	#6	1	10'-8"	96
S3	4	#4	2	9'-1"	24
S4	92	#4	3	3'-5"	210
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1
S14	10	#6	1	9'-4"	140

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	6,500 PSI CONCRETE	0.6" Ø L. R. STRANDS
LBS.	C.Y.	No.
1,243	18.0	32

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	88'-8 3/4"	354'-11"

PROJECT NO. BR-0051

YADKIN COUNTY

STATION: 18+34.78-L-

SHEET 2 OF 2



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

ASSEMBLED BY : M. G. SHAIKH DATE : 02-2020
CHECKED BY : H.A. LOCKLEAR DATE : 03-2022
DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM
REV. 1/15 MAA/TMG

DOCUMENT NOT CONSIDERED
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			32

STR. #4 STD. NO. PCG6

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

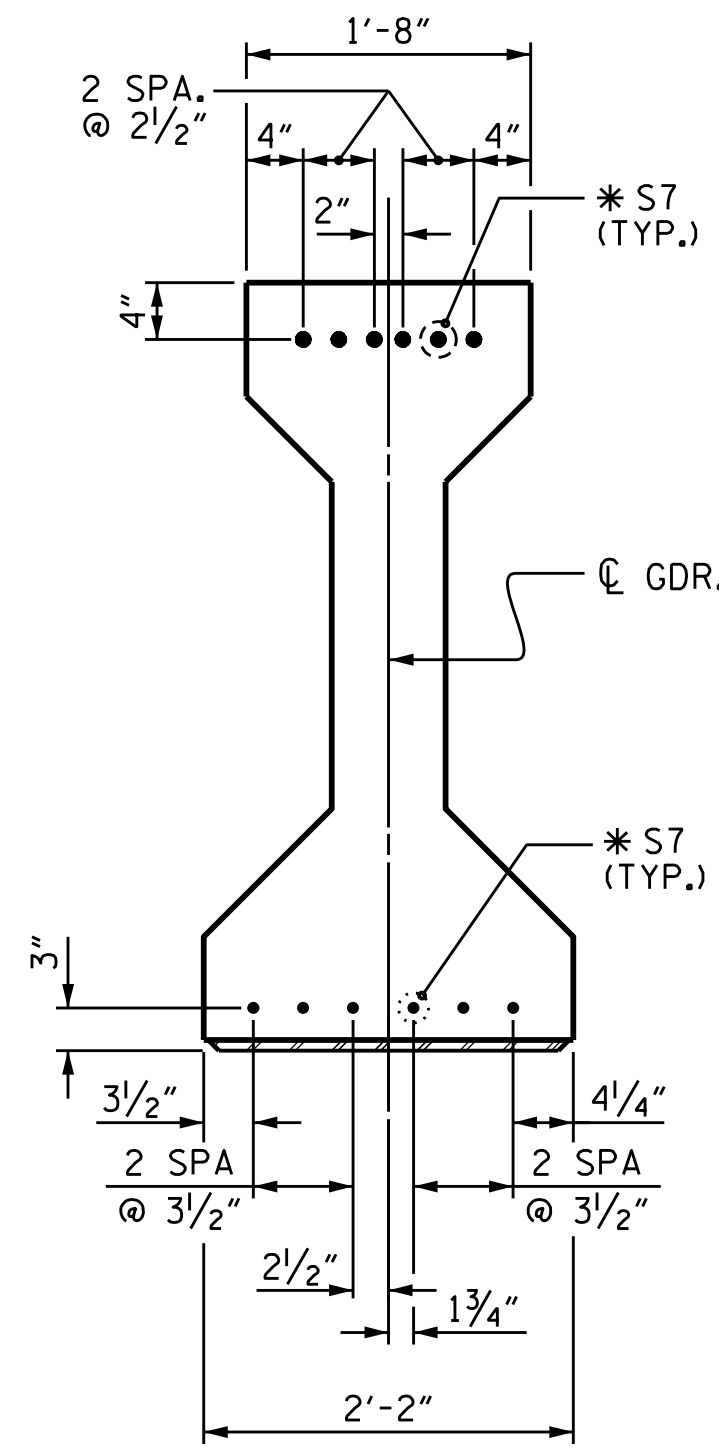
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5200 PSI.

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

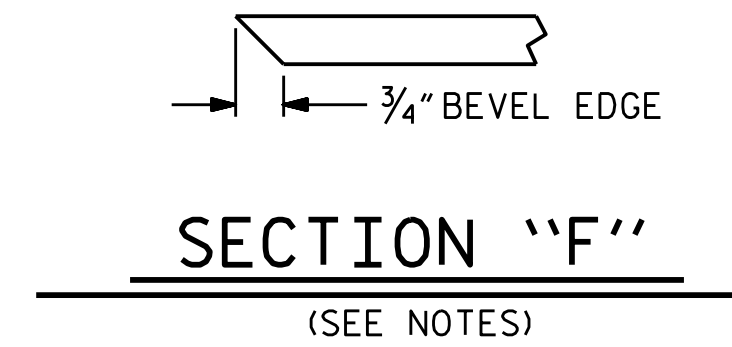
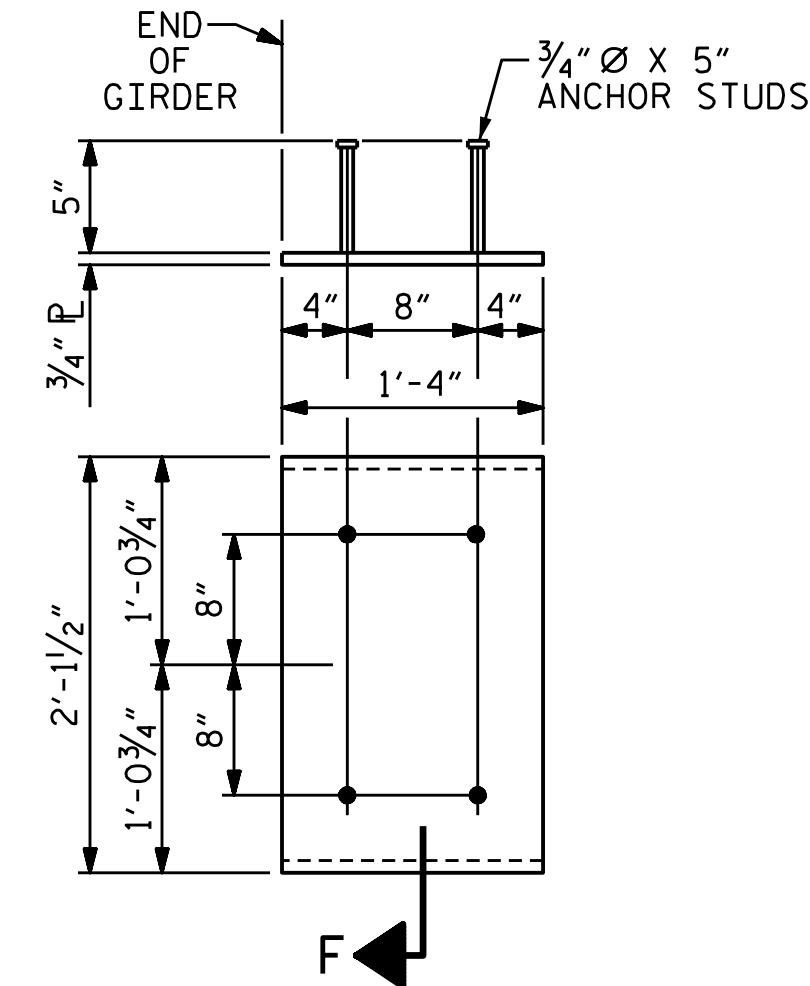
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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



DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



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

(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR SPAN A																					
0.6" Ø LOW RELAXATION		GIRDER 1 & 4																			
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) †	0.000	0.020	0.040	0.058	0.075	0.090	0.103	0.113	0.120	0.125	0.126	0.125	0.120	0.113	0.103	0.090	0.075	0.058	0.040	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. †	0.000	0.013	0.026	0.038	0.050	0.059	0.068	0.074	0.079	0.082	0.083	0.082	0.079	0.074	0.068	0.059	0.050	0.038	0.026	0.013	0.000
FINAL CAMBER †	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"	7/16"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN A																					
0.6" Ø LOW RELAXATION		GIRDERS 2 & 3																			
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) †	0.000	0.020	0.040	0.058	0.075	0.088	0.102	0.112	0.120	0.124	0.126	0.124	0.120	0.112	0.102	0.088	0.075	0.058	0.040	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. †	0.000	0.015	0.029	0.043	0.055	0.065	0.075	0.083	0.088	0.092	0.093	0.092	0.088	0.083	0.075	0.065	0.055	0.043	0.029	0.015	0.000
FINAL CAMBER †	0	1/16"	1/8"	3/16"	1/4"	1/4"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	1/4"	1/4"	3/16"	1/8"	1/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN B																					
0.6" Ø LOW RELAXATION		ALL GIRDERS																			
TWENTIETH POINTS	0	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	0
CAMBER (GIRDER ALONE IN PLACE) †	0.000	0.024	0.047	0.069	0.089	0.107	0.122	0.135	0.143	0.149	0.151	0.149	0.143	0.135	0.122	0.107	0.089	0.069	0.047	0.024	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. †	0.000	0.020	0.039	0.057	0.074	0.088	0.101	0.111	0.118	0.123	0.124	0.123	0.118	0.111	0.101	0.088	0.074	0.057	0.039	0.020	0.000
FINAL CAMBER †	0	1/16"	1/8"	1/8"	3/16"	1/4"	1/4"	5/16"	5/16"	5/16"	5/16"	5/16"	5/16"	5/16"	1/4"	1/4"	3/16"	1/8"	1/8"	1/16"	0

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

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-



Designed by:
Amber M. Lee
BOEBSAATP/AD484
04/25/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

ASSEMBLED BY :	M. G. SHAIKH	DATE :	01/2022
CHECKED BY :	H.A. LOCKLEAR	DATE :	03/2022
DRAWN BY :	ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY :	GRP 11/91	REV. 2/15	MAA/TMG
		REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			32

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

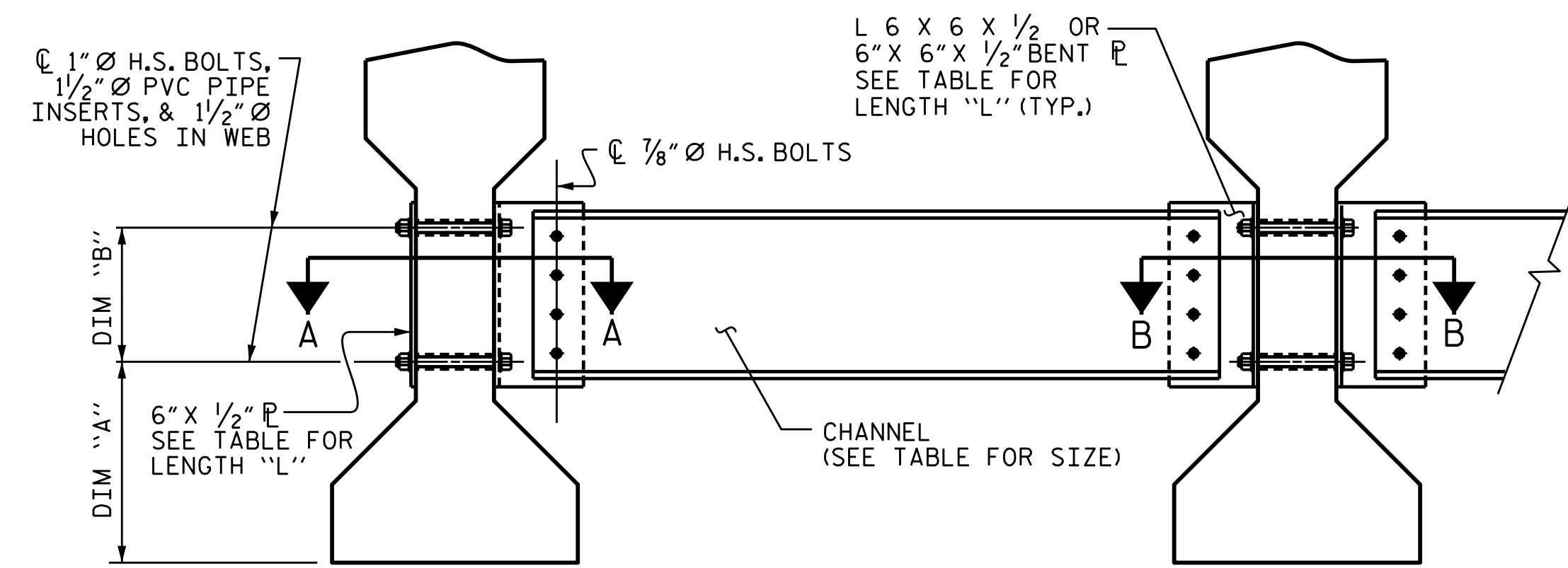
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

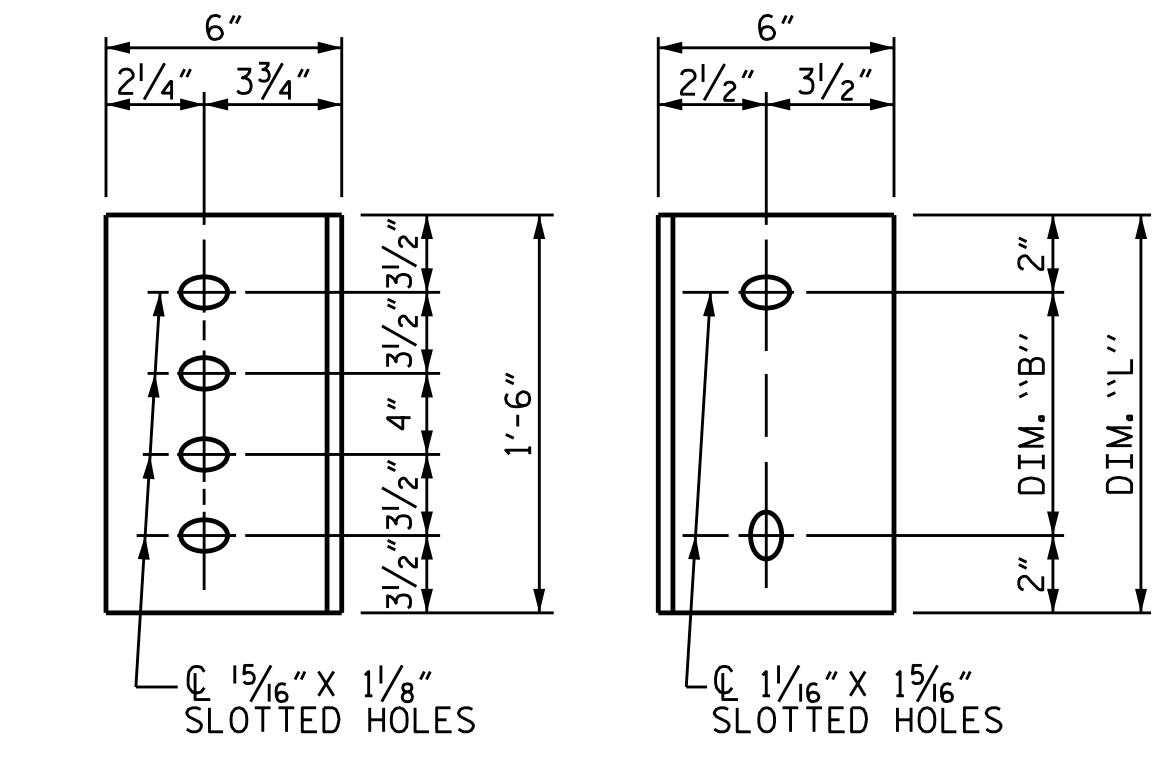
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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



PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE IV GIRDER SHOWN)



CONNECTOR PLATE DETAILS
(TYPE IV GDR.)

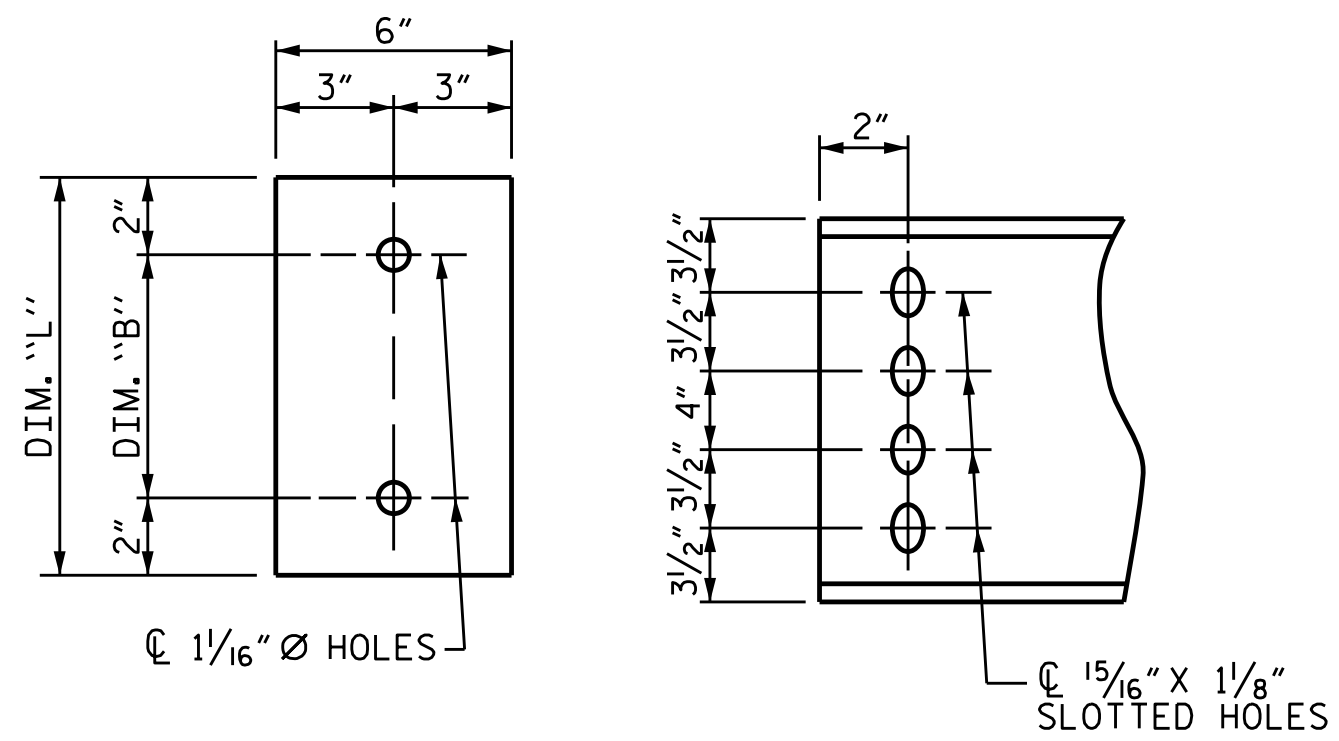
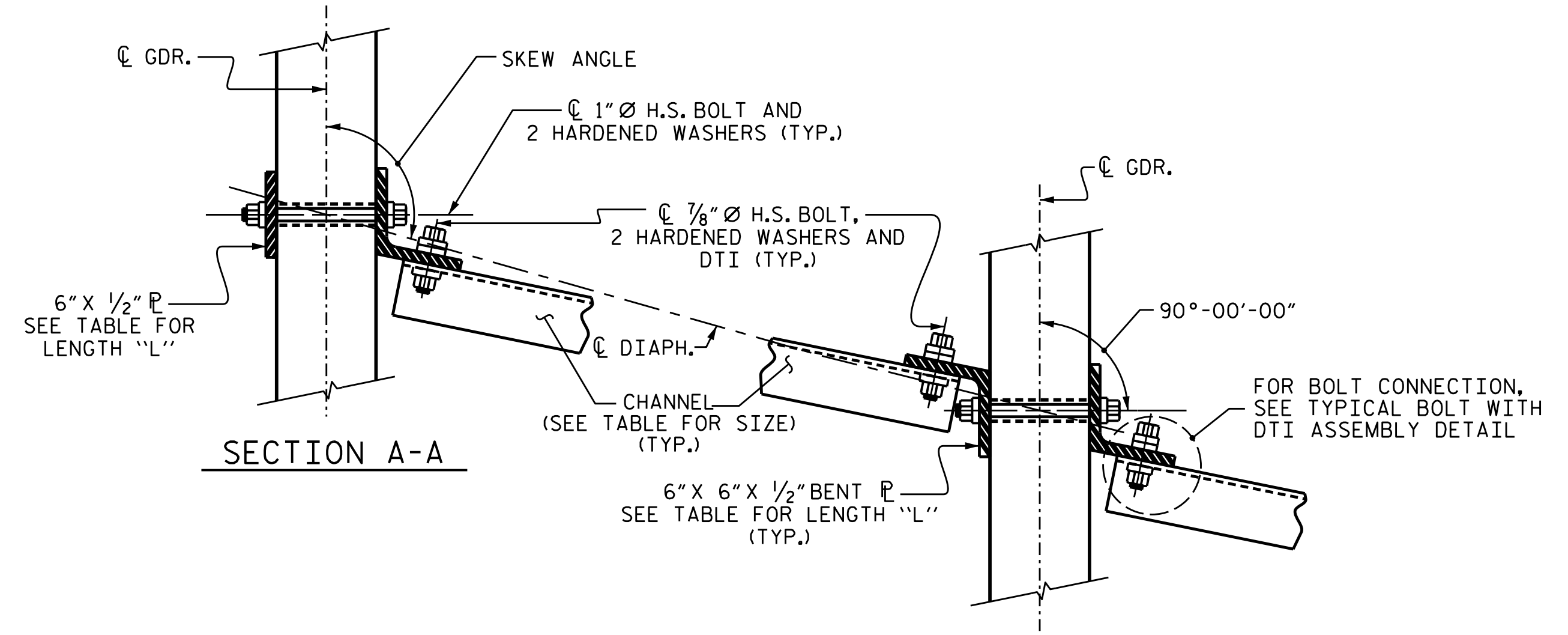
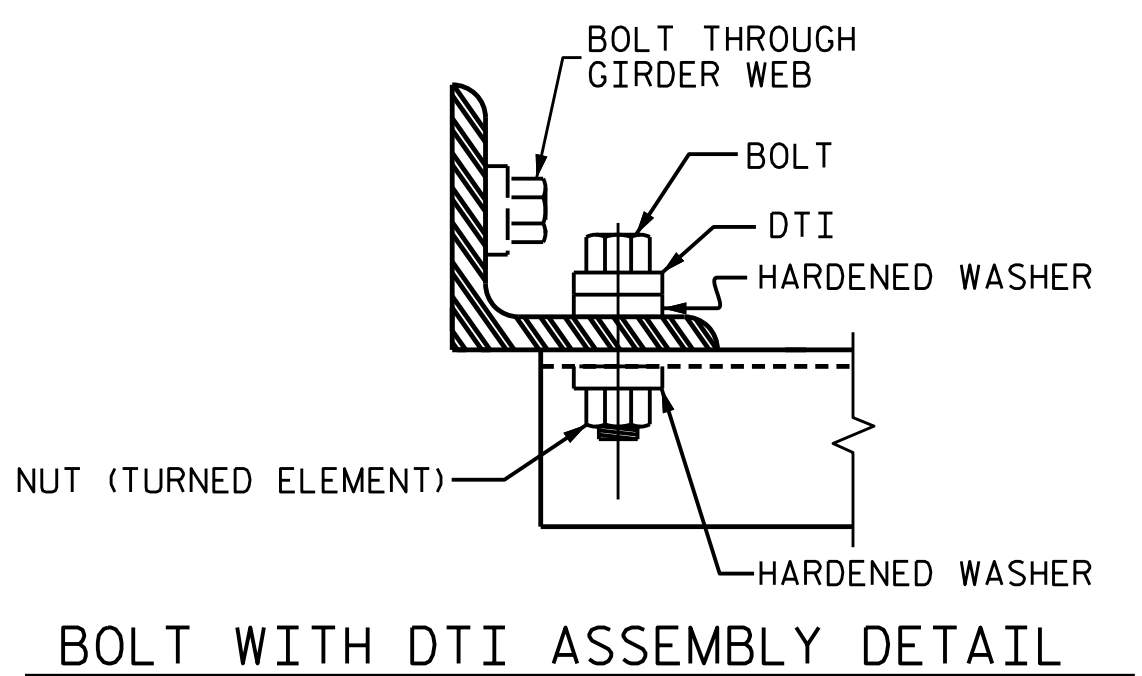


PLATE DETAILS **CHANNEL END**
(TYPE IV GDR.)



CONNECTION DETAILS
(90° < SKEW < 110° SHOWN)



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78-L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE IV
PRESTRESSED CONCRETE
GIRDERS

ASSEMBLED BY : M. G. SHAIKH	DATE : 03/2020
CHECKED BY : H.A. LOCKLEAR	DATE : 03/2022
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

NO.	REVISIONS			SHEET NO.
	BY:	DATE:	DATE:	
1				S-14
2				TOTAL SHEETS
				32

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NOTES

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

THE 2" * 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 GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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

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

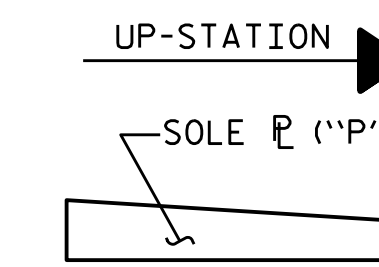
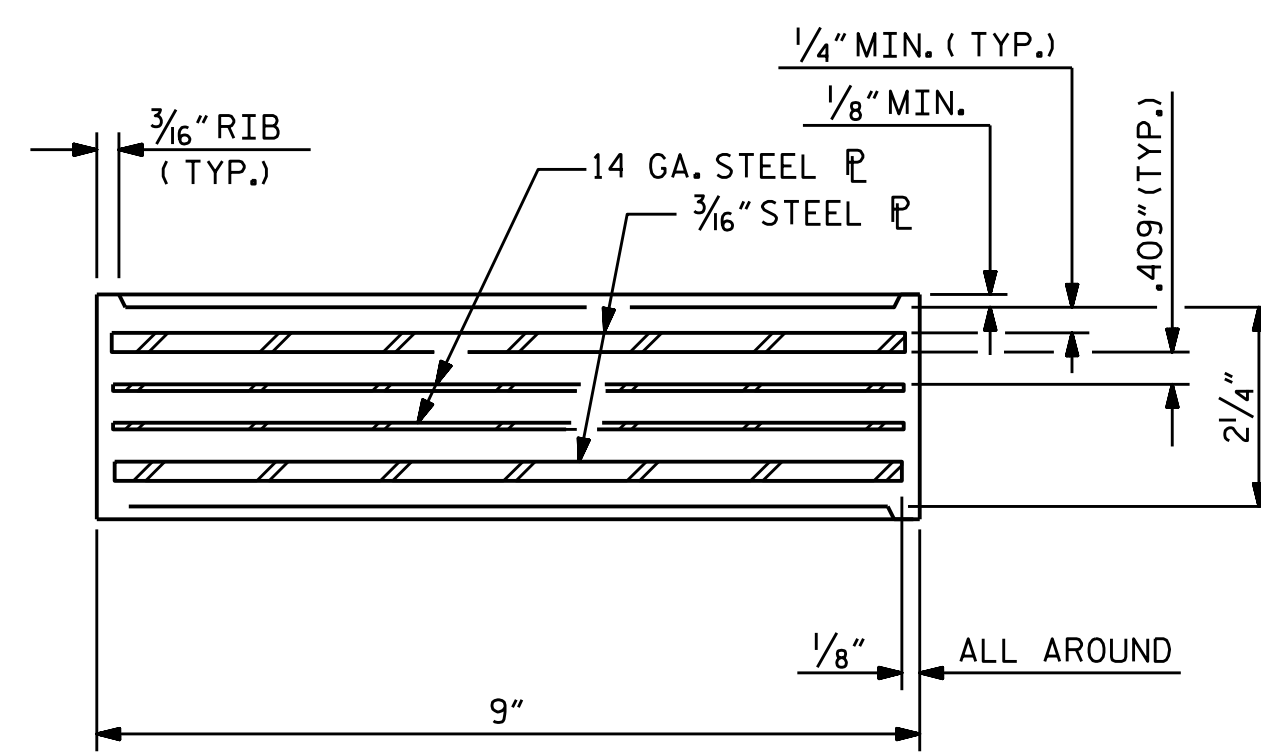
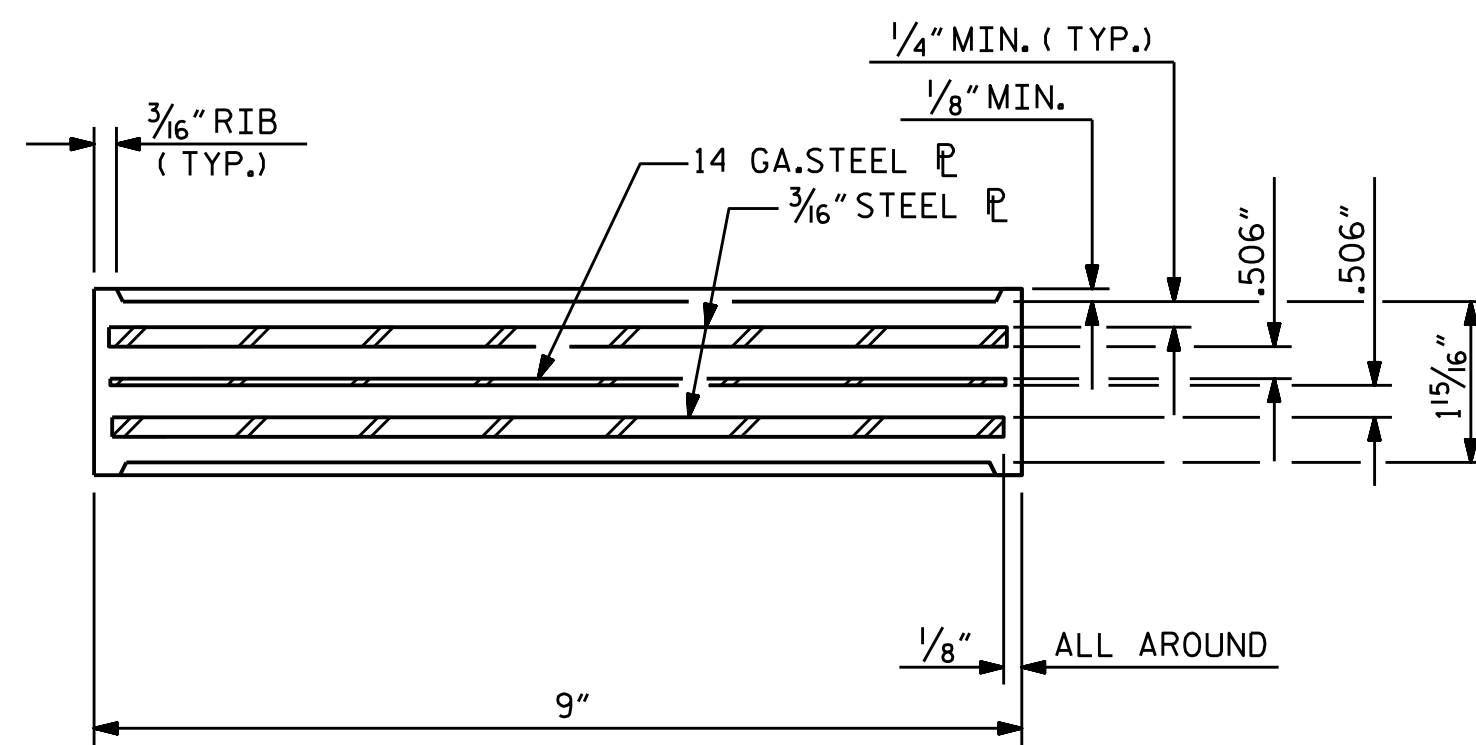
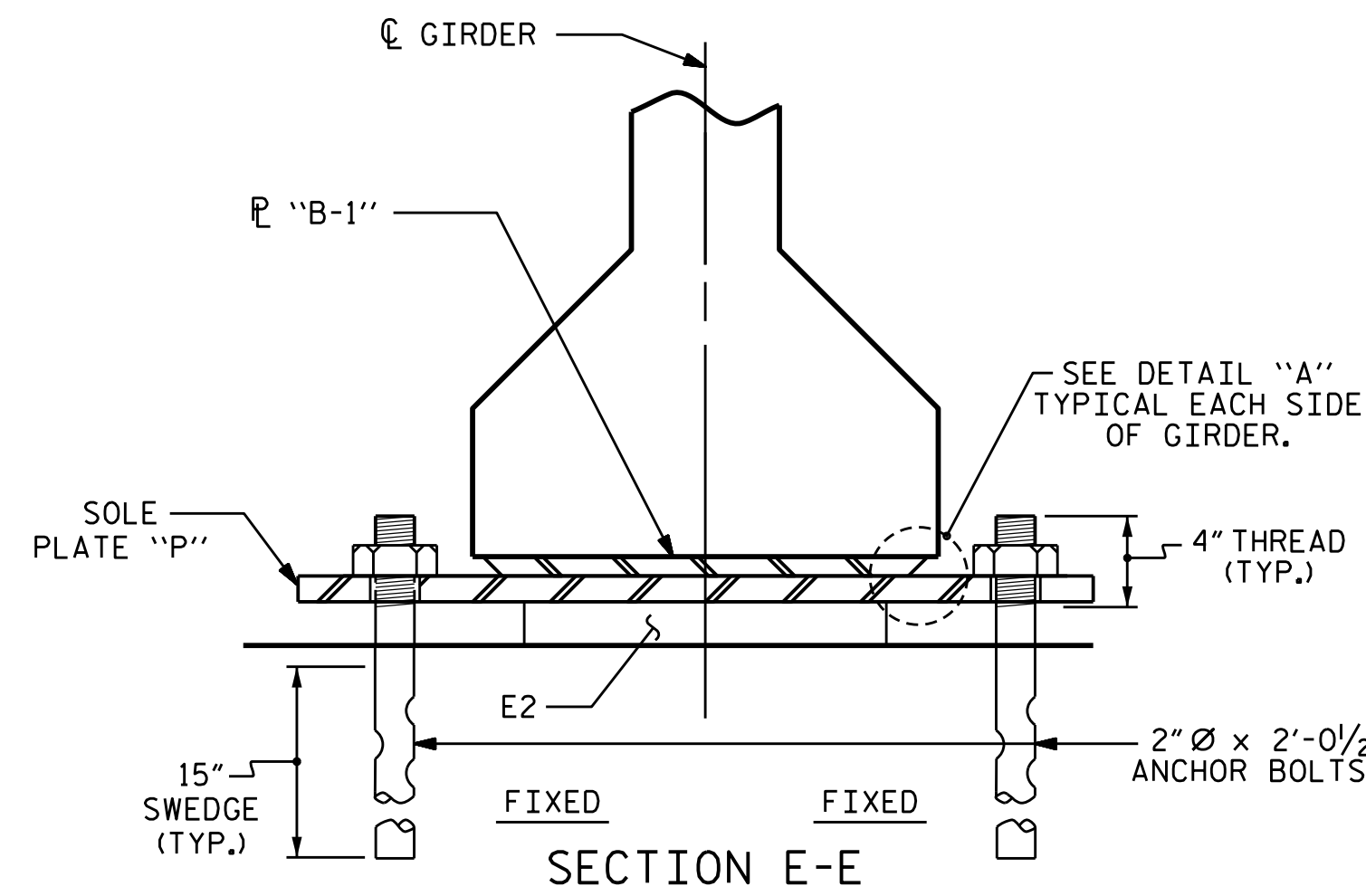
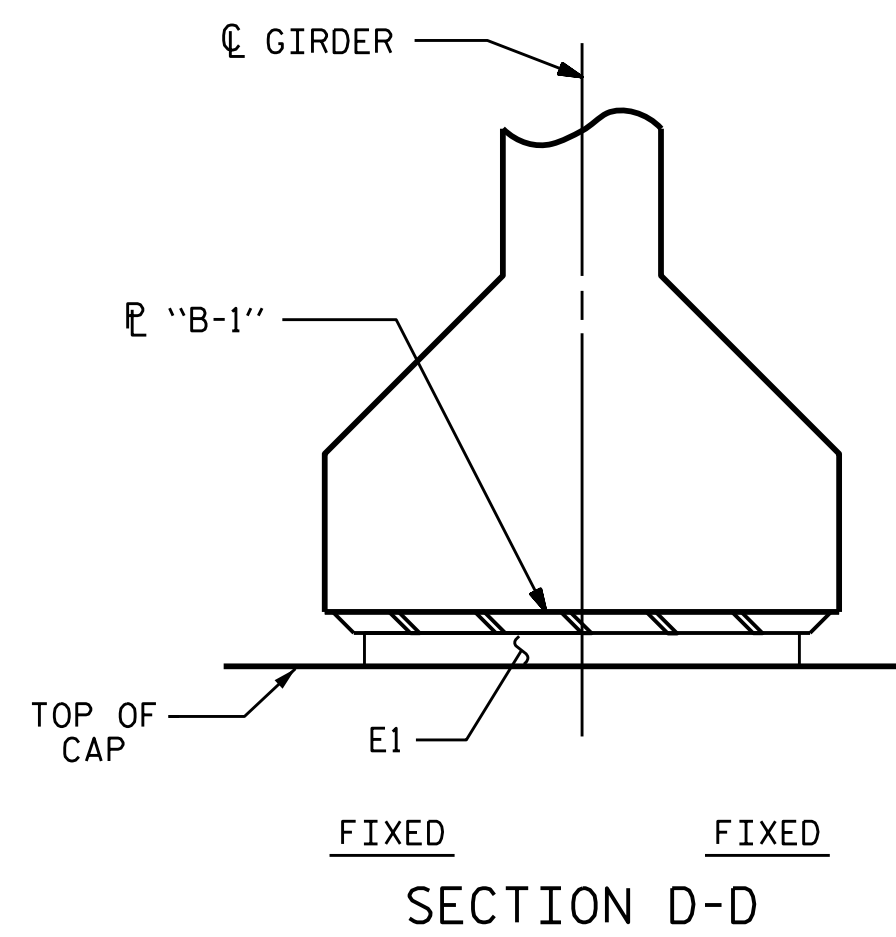
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

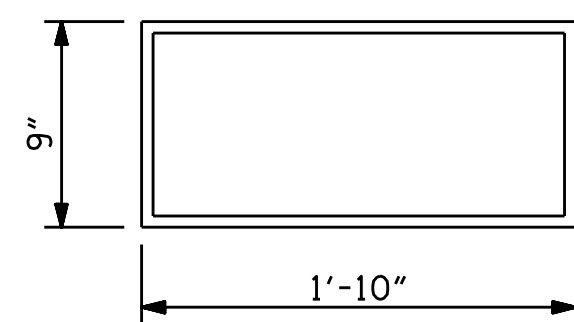
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k



SOLE P PLACEMENT DETAIL

TYPICAL SECTION OF ELASTOMERIC BEARINGS

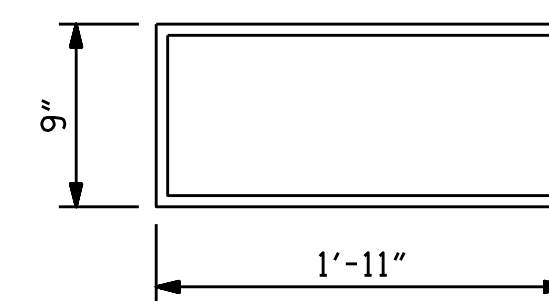
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

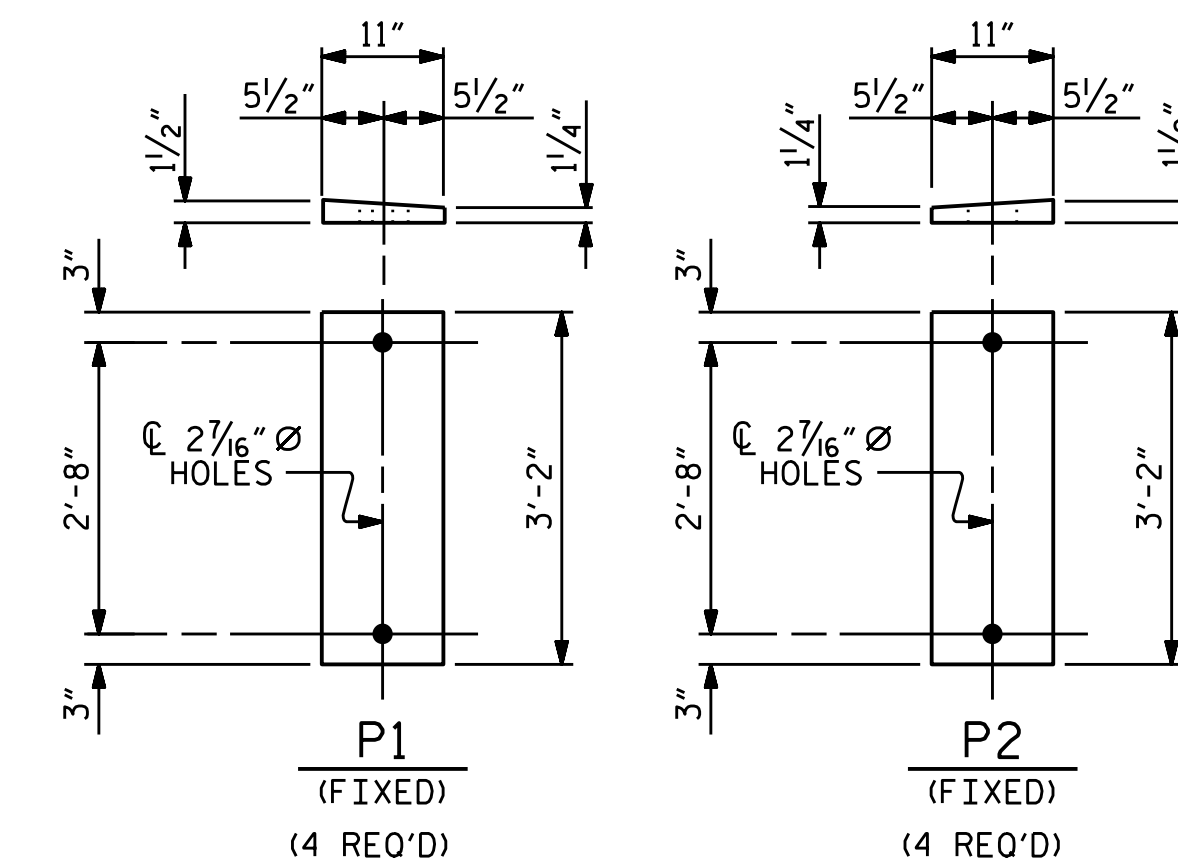
TYPE IV



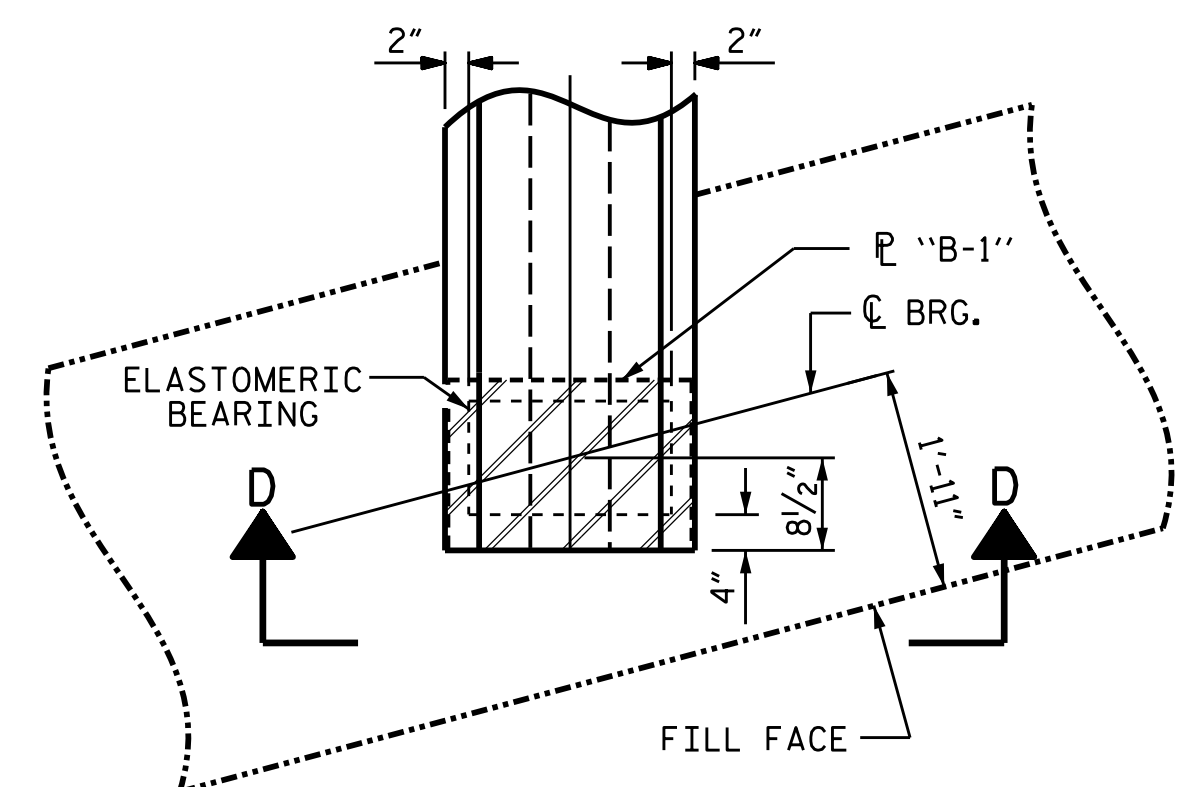
E2 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

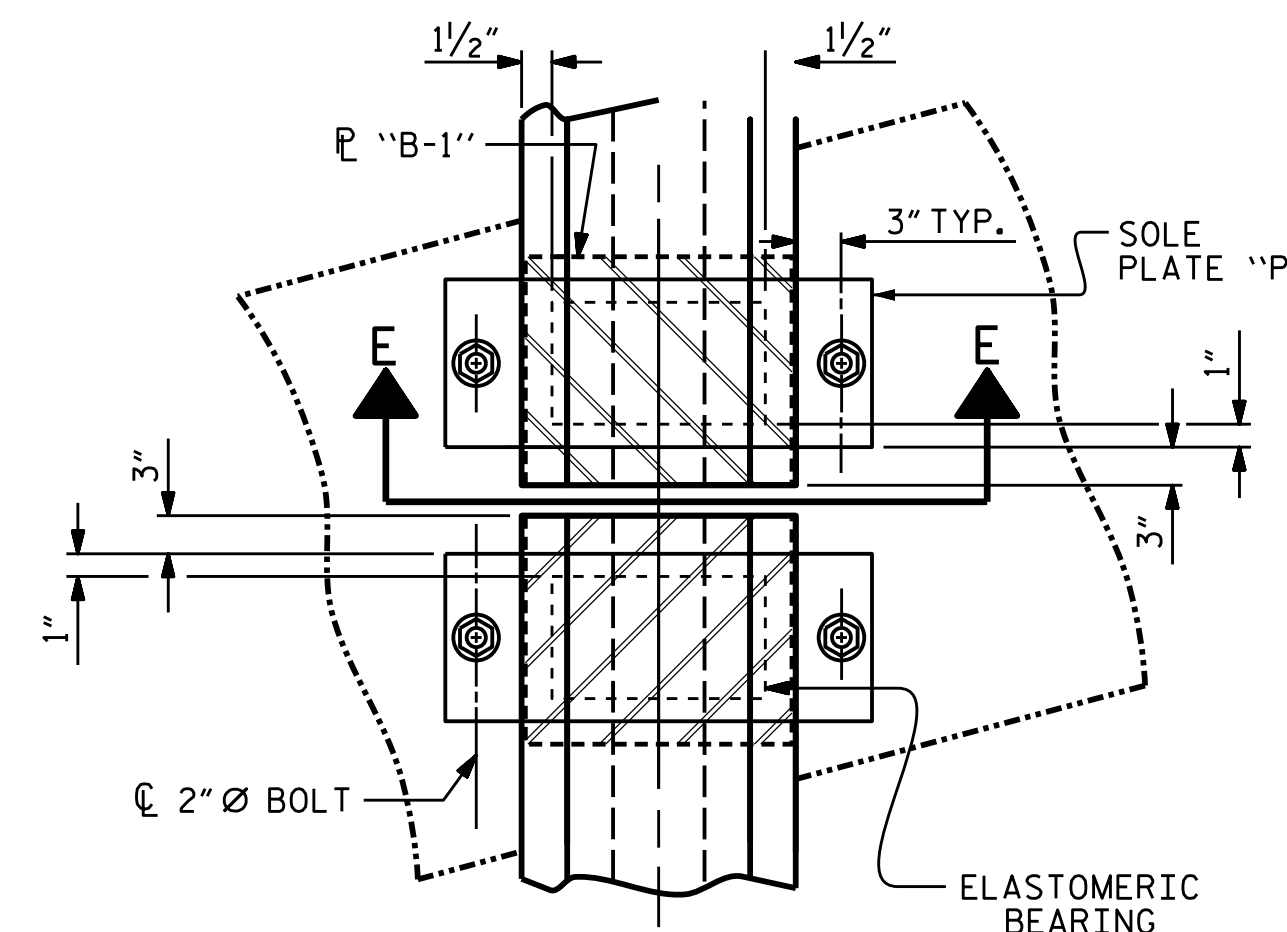
TYPE V



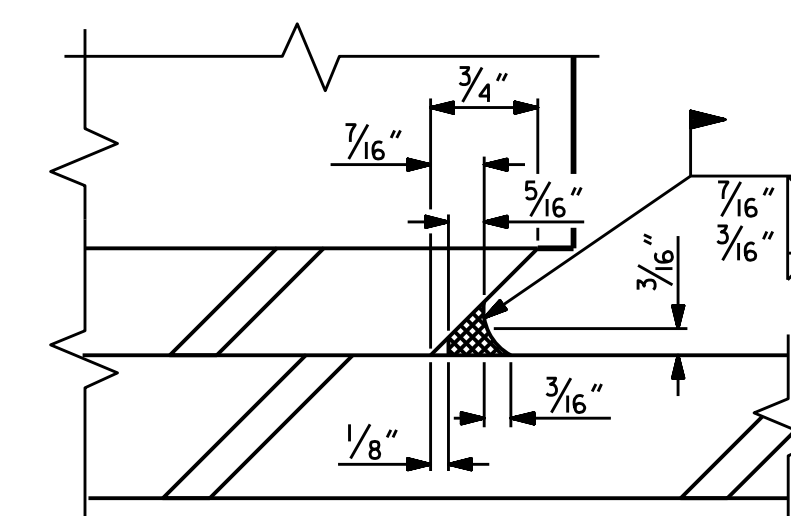
SOLE PLATE DETAILS ("P")



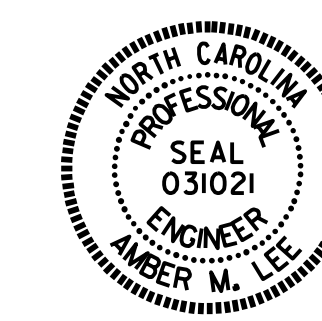
PLAN VIEW AT INTEGRAL END BENT



PLAN VIEW AT BENT
(SHOWING CONTINUOUS BENT)



DETAIL "A"



DocuSigned by:
Amber M. Lee
B04E5A2FAD484
04/25/2022

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

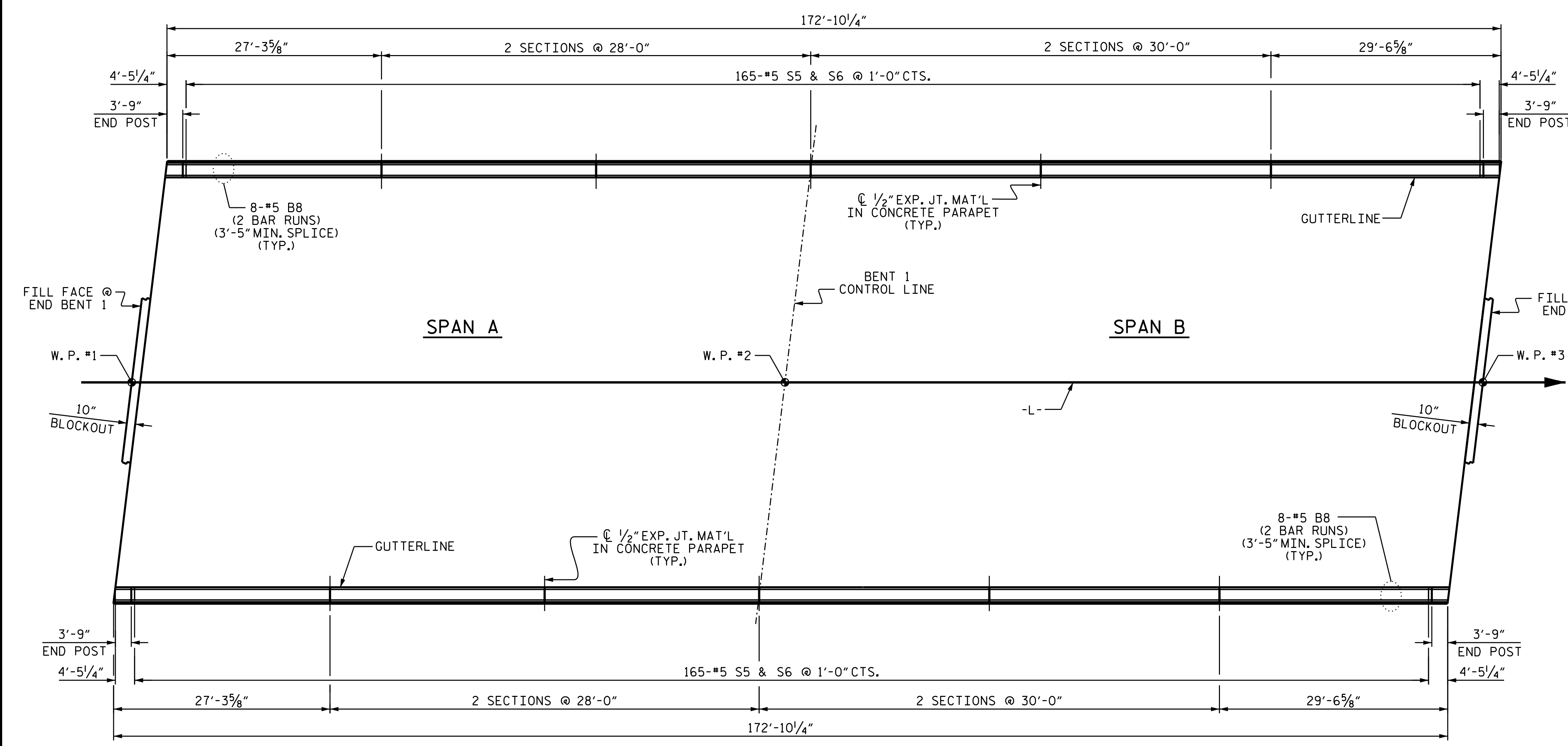
ASSEMBLED BY :	M. G. SHAIKH	DATE :	01/2022
CHECKED BY :	H.A. LOCKLEAR	DATE :	03/2022
DRAWN BY :	WJH	8/89	REV. 1/15
CHECKED BY :	CRK	8/89	REV. 10/21
			MAA/TMG
			BNB/AAI

4/25/2022
R:\Structures\OBD_FINAL PLANS\400.031.BR-0051.SMU. BG.0015.980090.dgn
omele

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			32

BAR TYPES		BILL OF MATERIAL				
		FOR CONCRETE PARAPET & END POSTS ONLY				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B8	192	#5	STR	16'-5"	3288	
* E1	8	#7	STR	2'-7"	42	
* E2	8	#7	STR	3'-1"	50	
* E3	8	#7	STR	3'-7"	59	
* E4	8	#7	STR	4'-1"	67	
* E5	8	#7	STR	4'-6"	74	
* F1	8	#6	STR	1'-9"	21	
* F2	8	#6	STR	3'-0"	36	
* F3	4	#6	STR	3'-9"	23	
* F4	4	#6	STR	4'-1"	25	
* S5	330	#5	1	6'-10"	2352	
* S6	330	#5	2	5'-6"	1893	
* S7	32	#5	STR	2'-10"	95	
* EPOXY COATED REINFORCING STEEL				8,025 LBS.		
CLASS AA CONCRETE				38.5 CU. YDS.		
1'-2" X 2'-6" CONCRETE PARAPET				345.71 LIN. FT.		
* THESE BARS ARE EPOXY COATED						



PLAN OF PARAPET

NOTES

CONCRETE PARAPET 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.

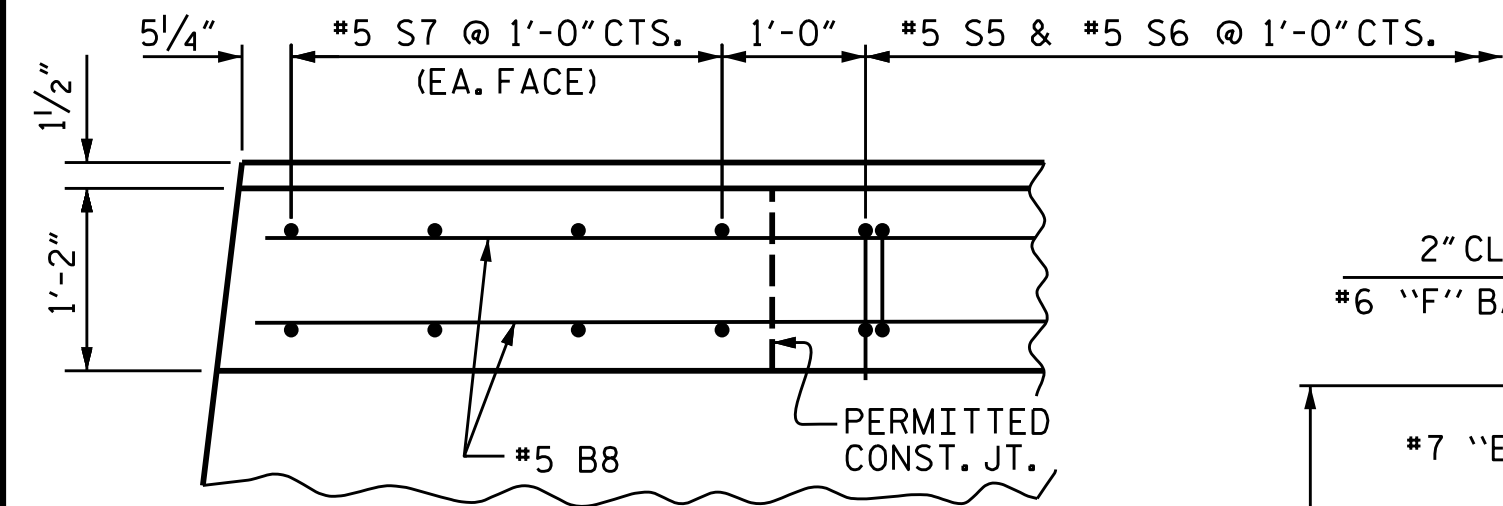
ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

THE #5 S6 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

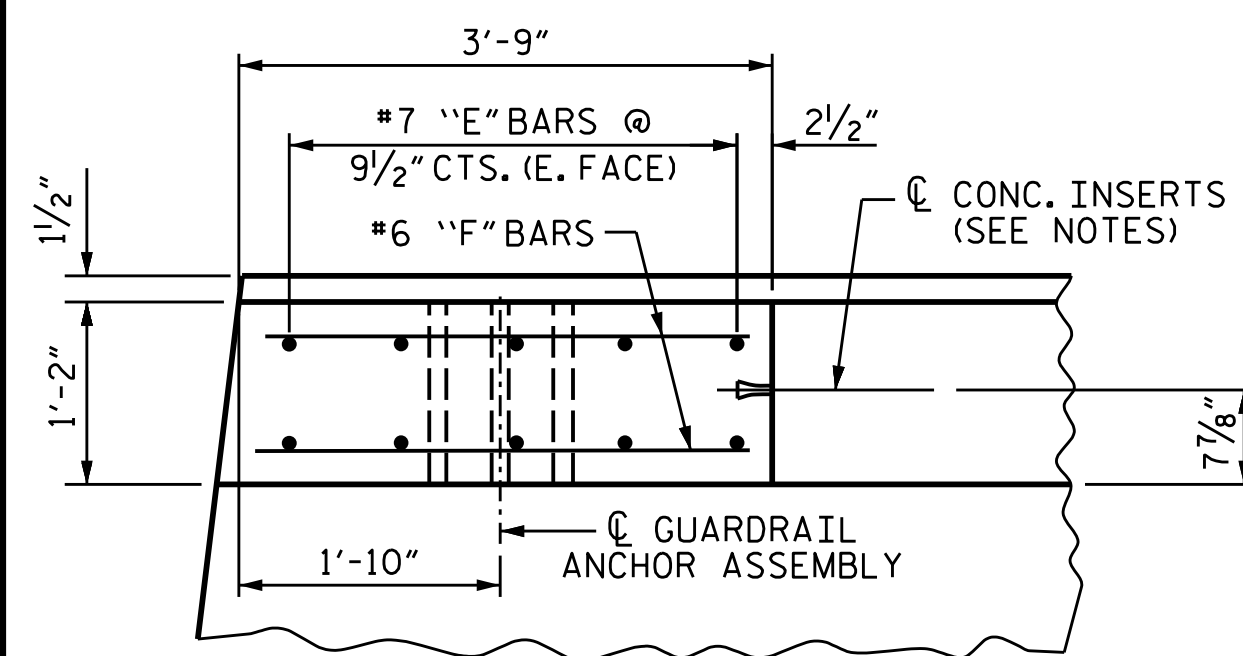
FOR DETAILS OF CONCRETE INSERTS IN END POSTS. SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

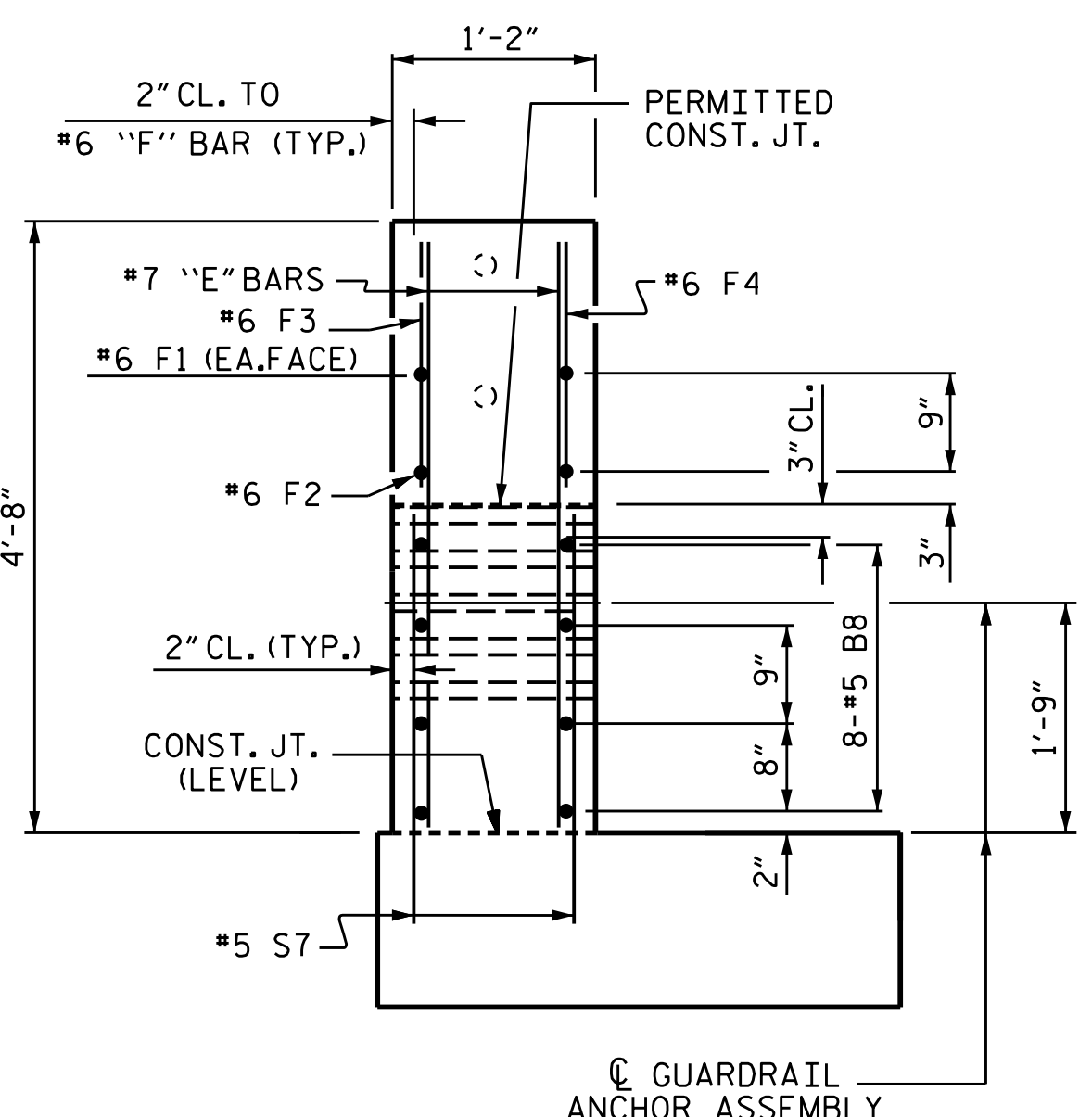
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT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



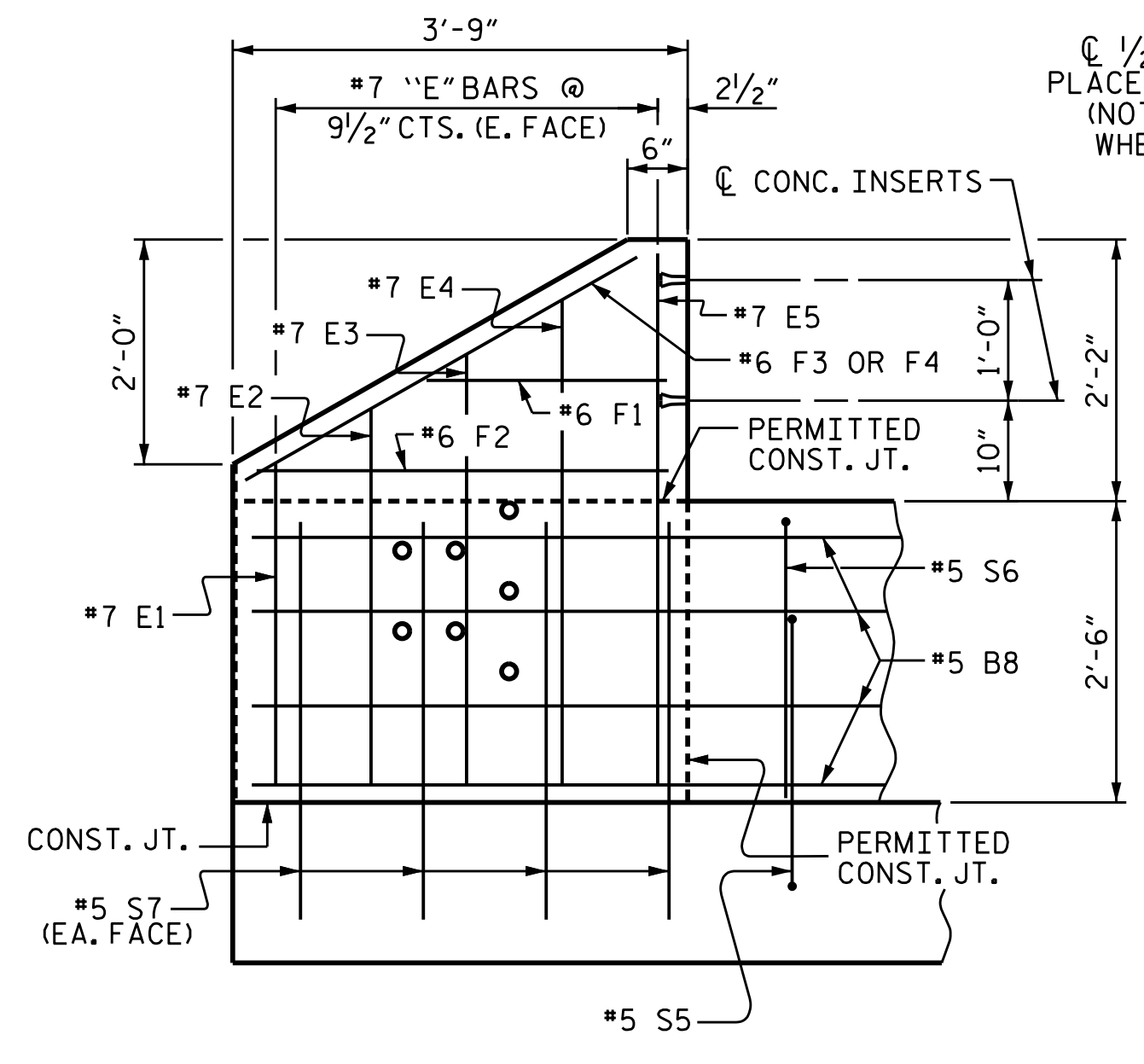
PLAN OF PARAPET



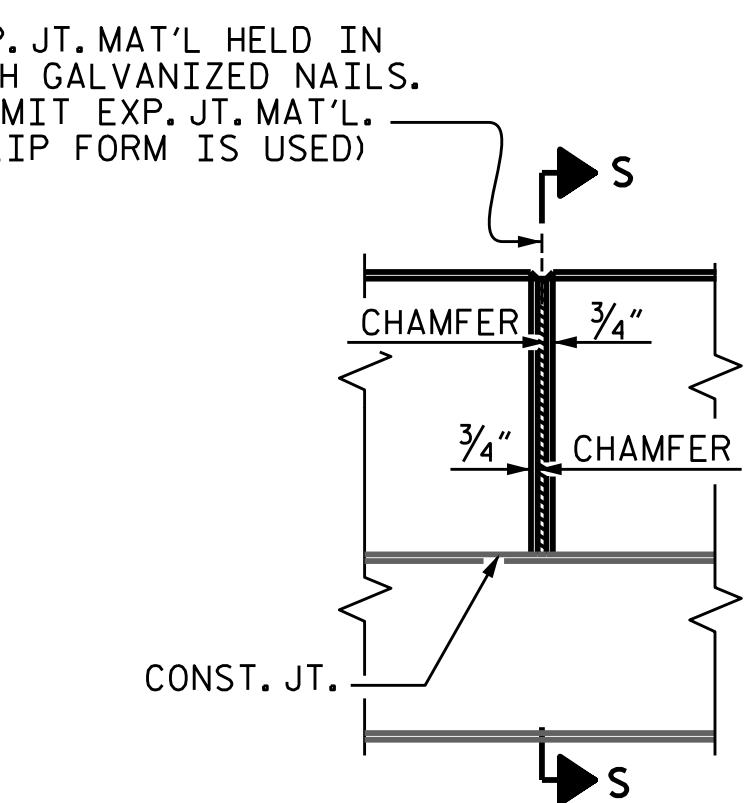
PLAN OF END POST



END VIEW



ELEVATION

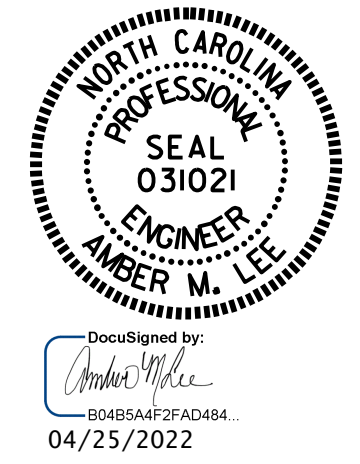


ELEVATION AT EXPANSION JOINTS

DRAWN BY : H.A. LOCKLEAR DATE : 03/2020
 CHECKED BY : REZA KOUCHEKI DATE : 03/2022

4/25/2022 R:\Structures\OBD.FINAL PLANS\400.033.BR-0051.SMU. 2MR.0016.980090.dgn
 omlee

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

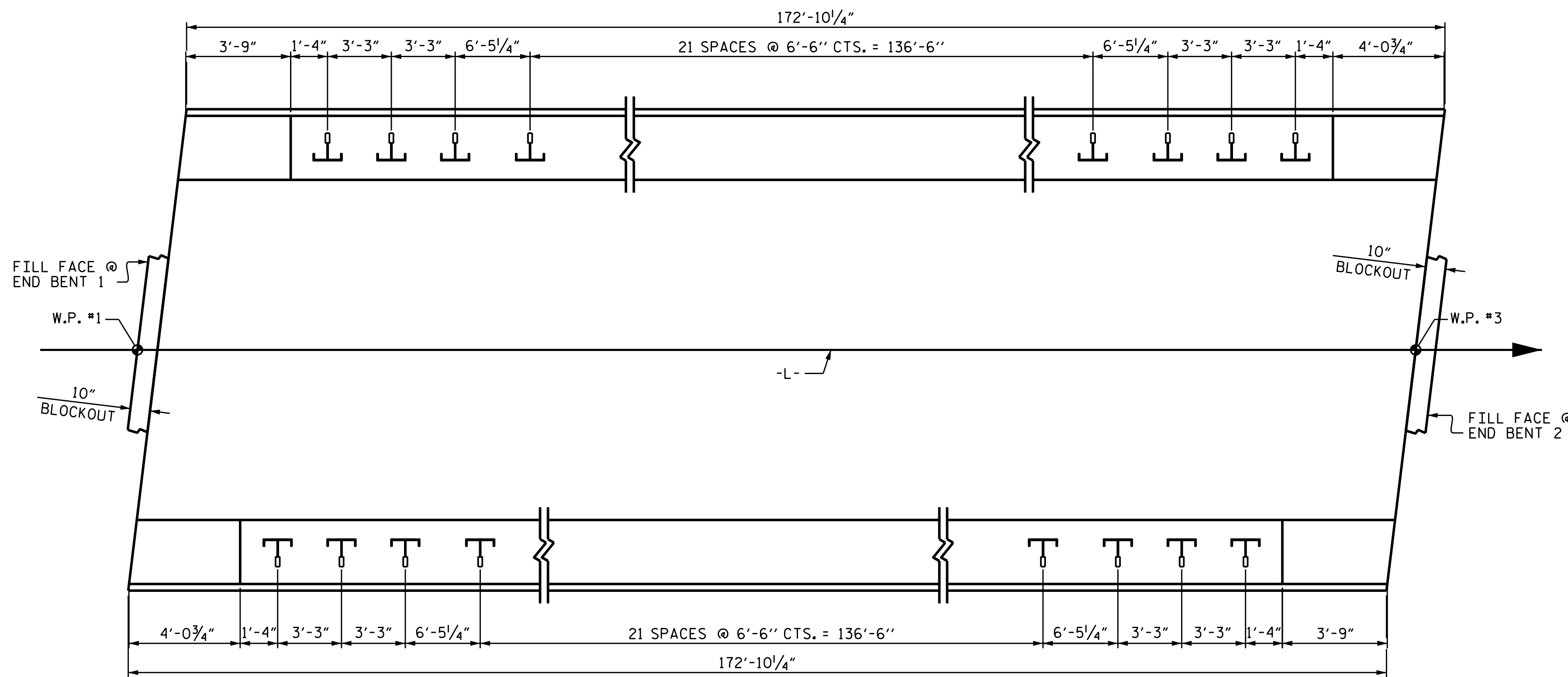


PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

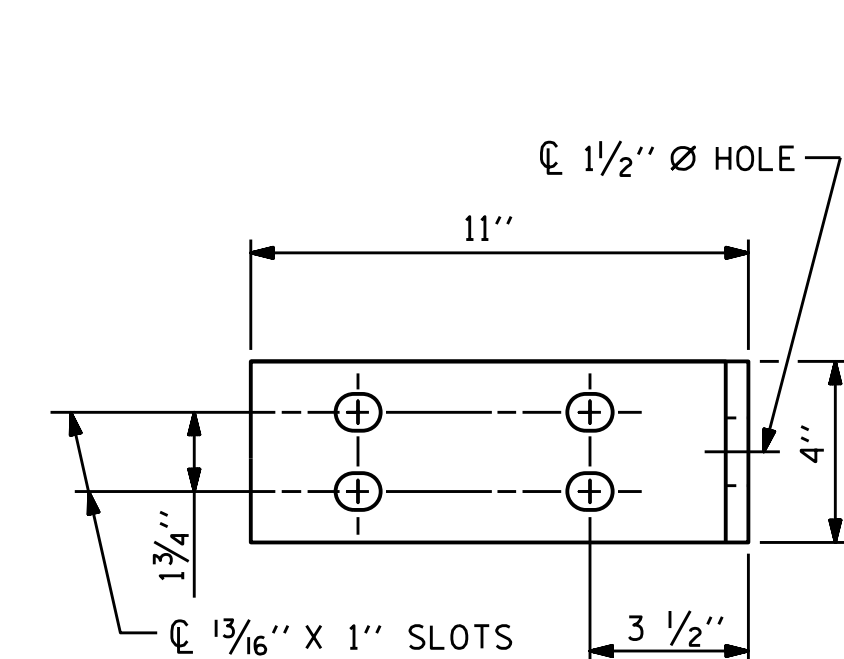
SHEET 1 OF 4

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	
2			4			32	

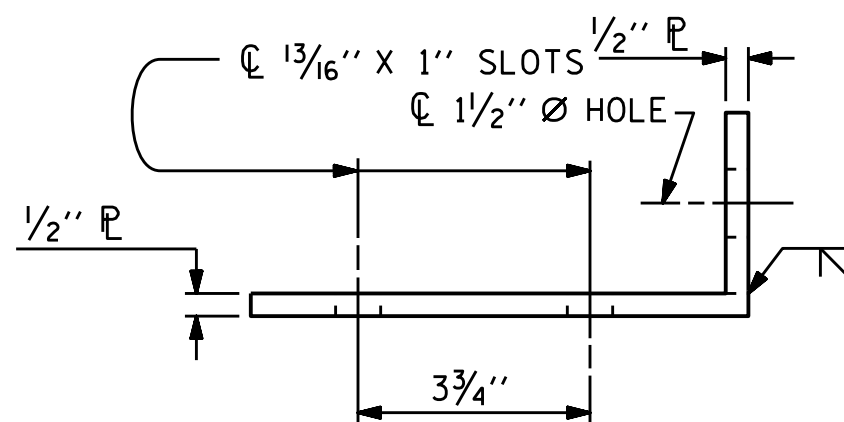
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 1'-2" X 2'-6" CONCRETE PARAPET DETAILS



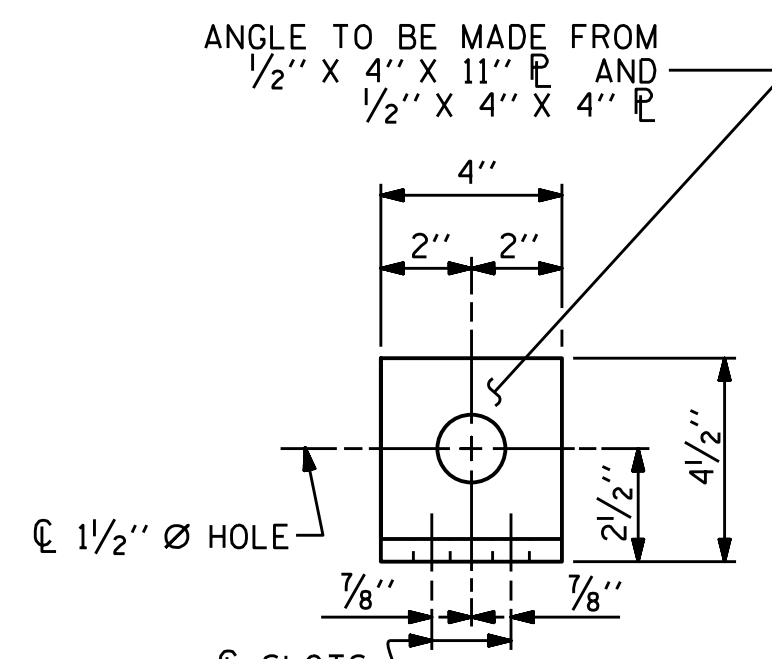
PLAN OF RAIL POST SPACINGS



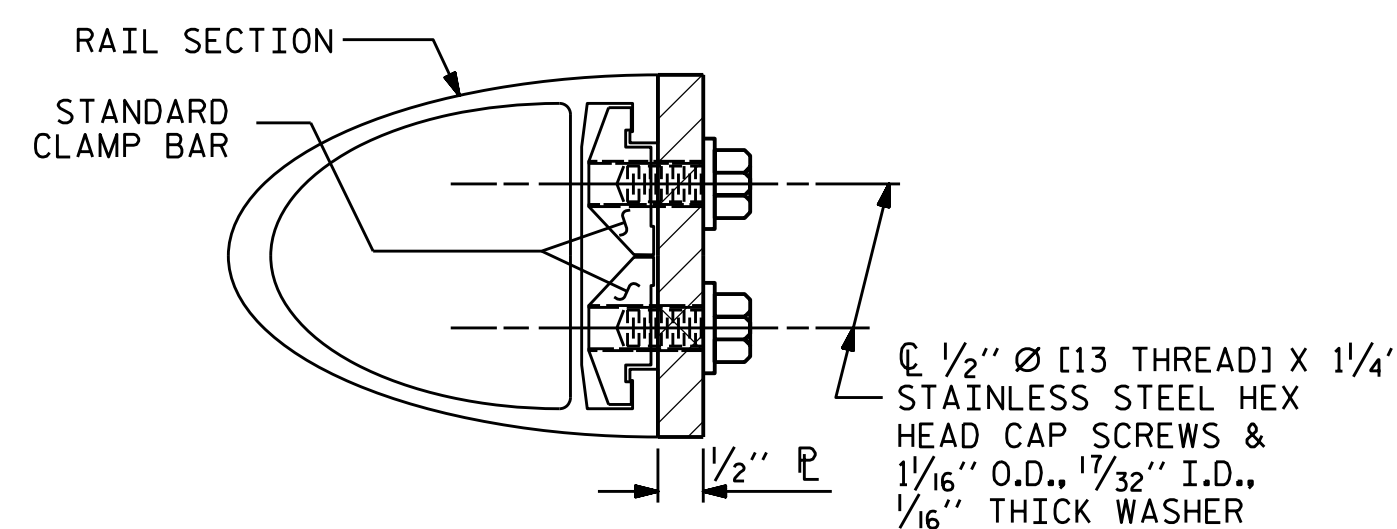
ELEVATION



TOP VIEW



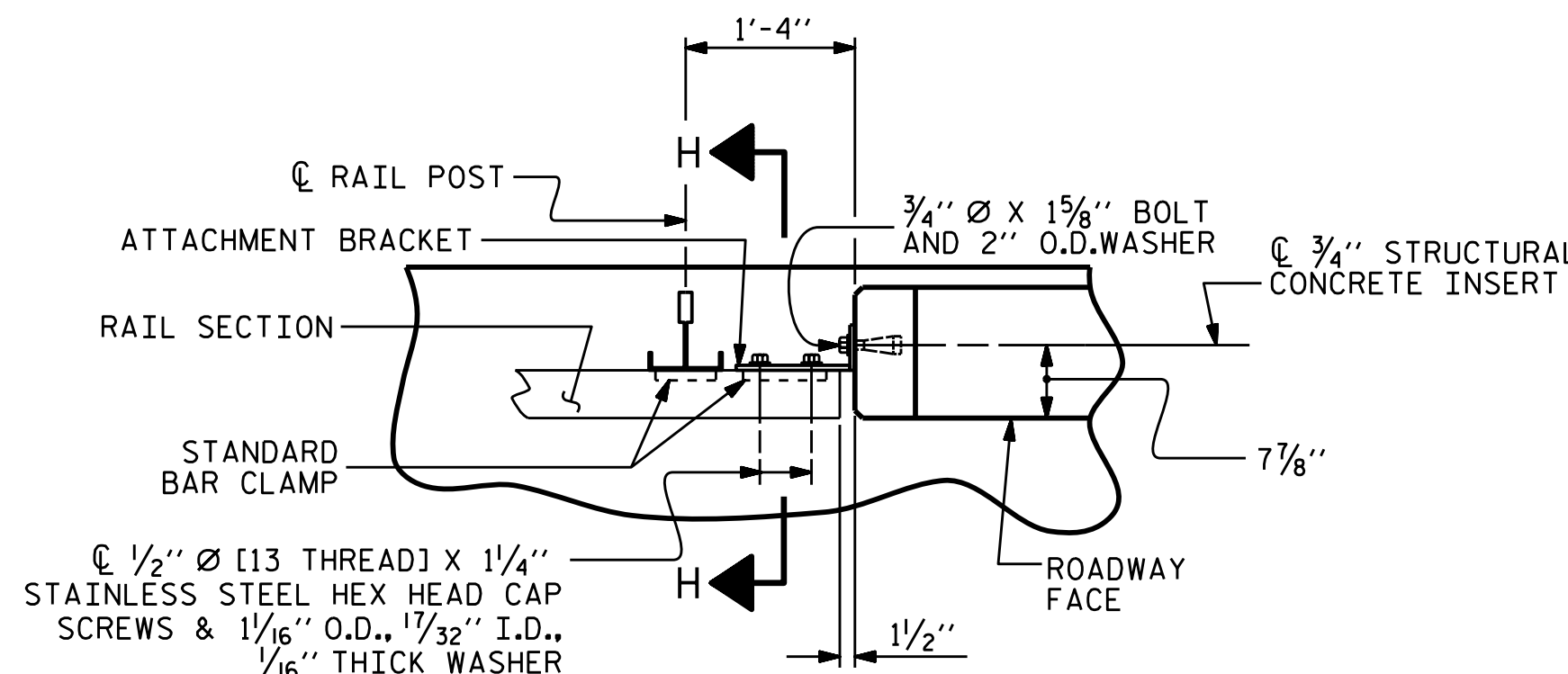
END VIEW (FIX AND EXP.)



SECTION H-H (FIX)

FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST

NOTES
STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 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 CONTRACTOR'S 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.)
 - C. 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 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES
METAL RAIL TO END POST CONNECTION

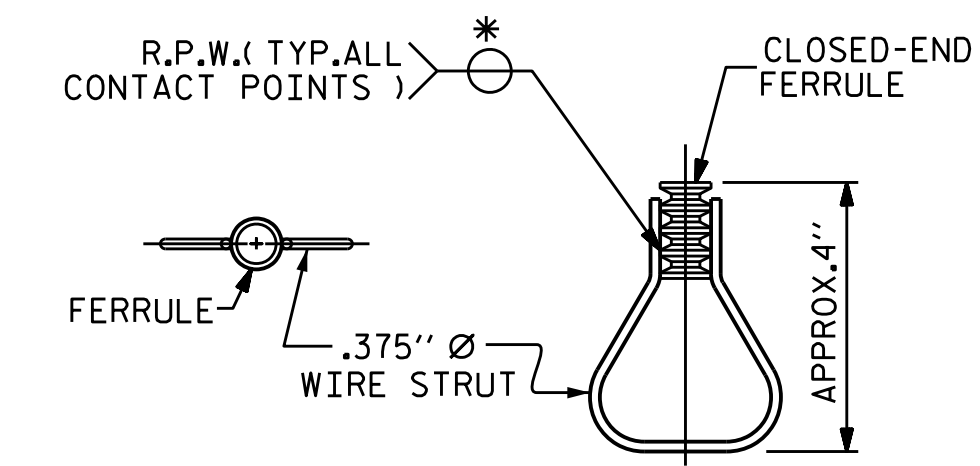
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 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.
 - C. 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.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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 1 OR 2 BAR METAL RAILS.

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.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 2 OF 4

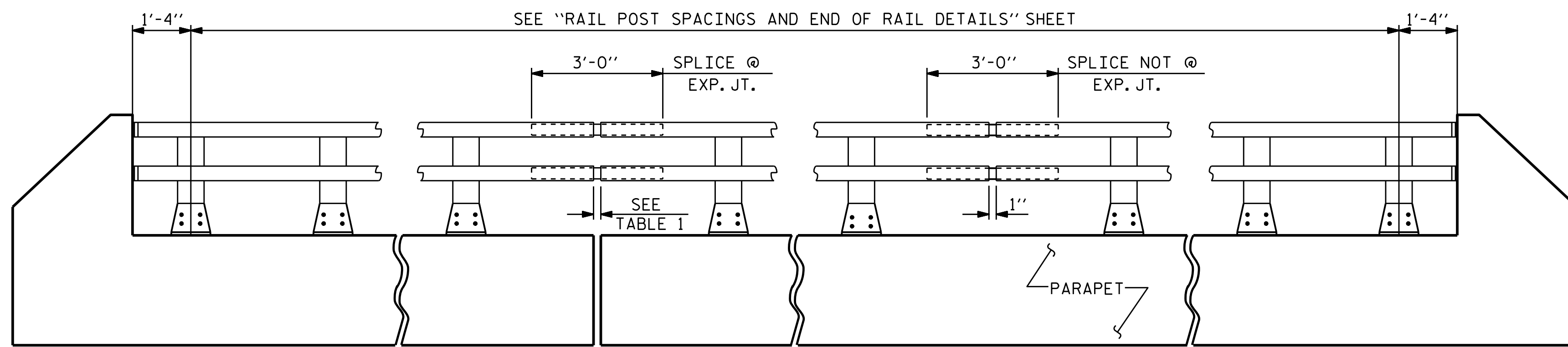


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS

ASSEMBLED BY : H.A. LOCKLEAR	DATE : 04/2020
CHECKED BY : REZA KOUCHEKI	DATE : 03/2022
DRAWN BY : FCJ 1/88	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 3/89	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

NOTES

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

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

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.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

TO 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 REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

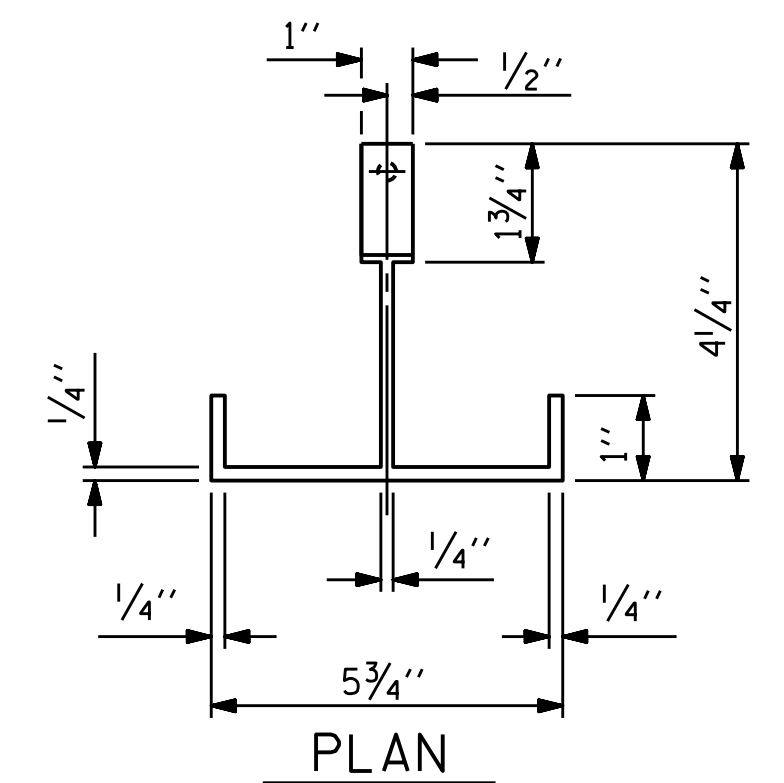
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

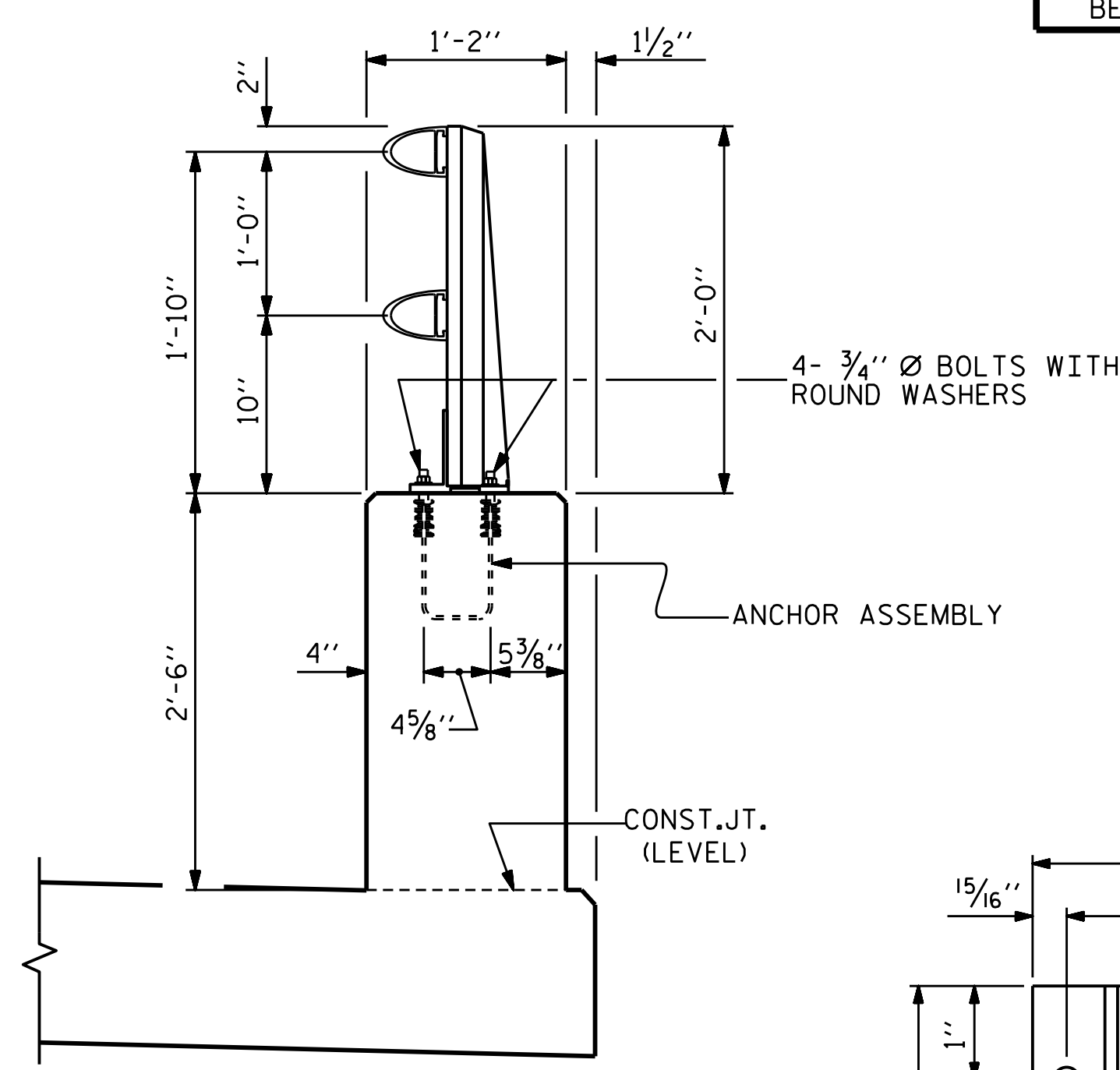
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

PAY LENGTH = 330.08 LIN. FT.

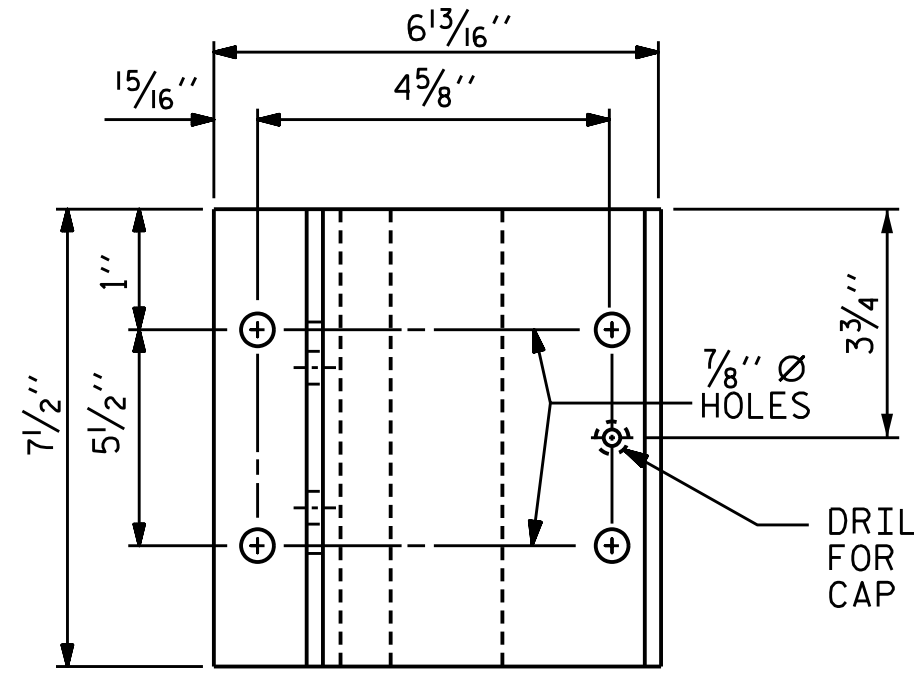
C. EXP. JT. @	RAIL OPENING
BENT 1	1"



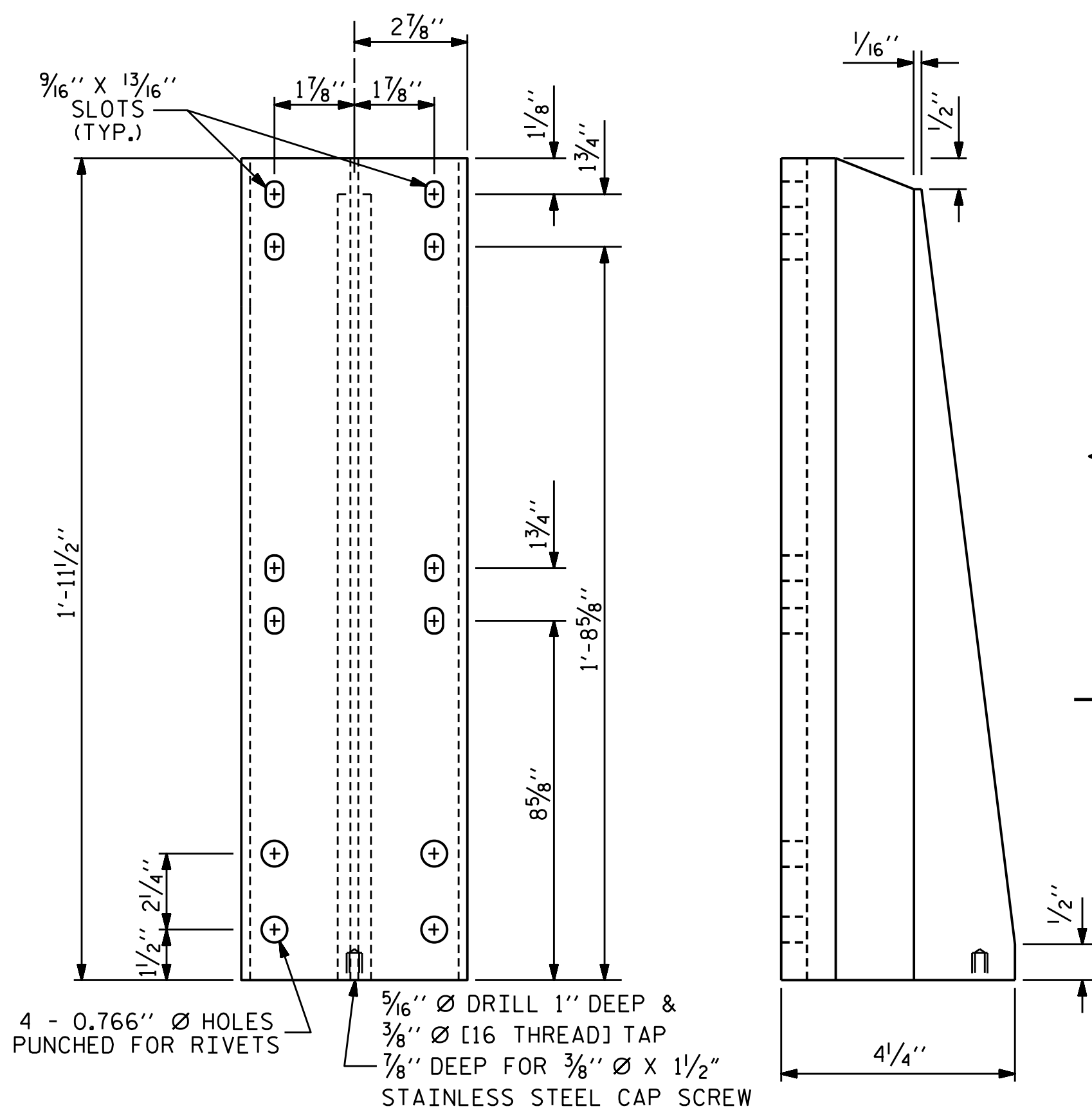
PLAN



SECTION THRU PARAPET AND RAIL



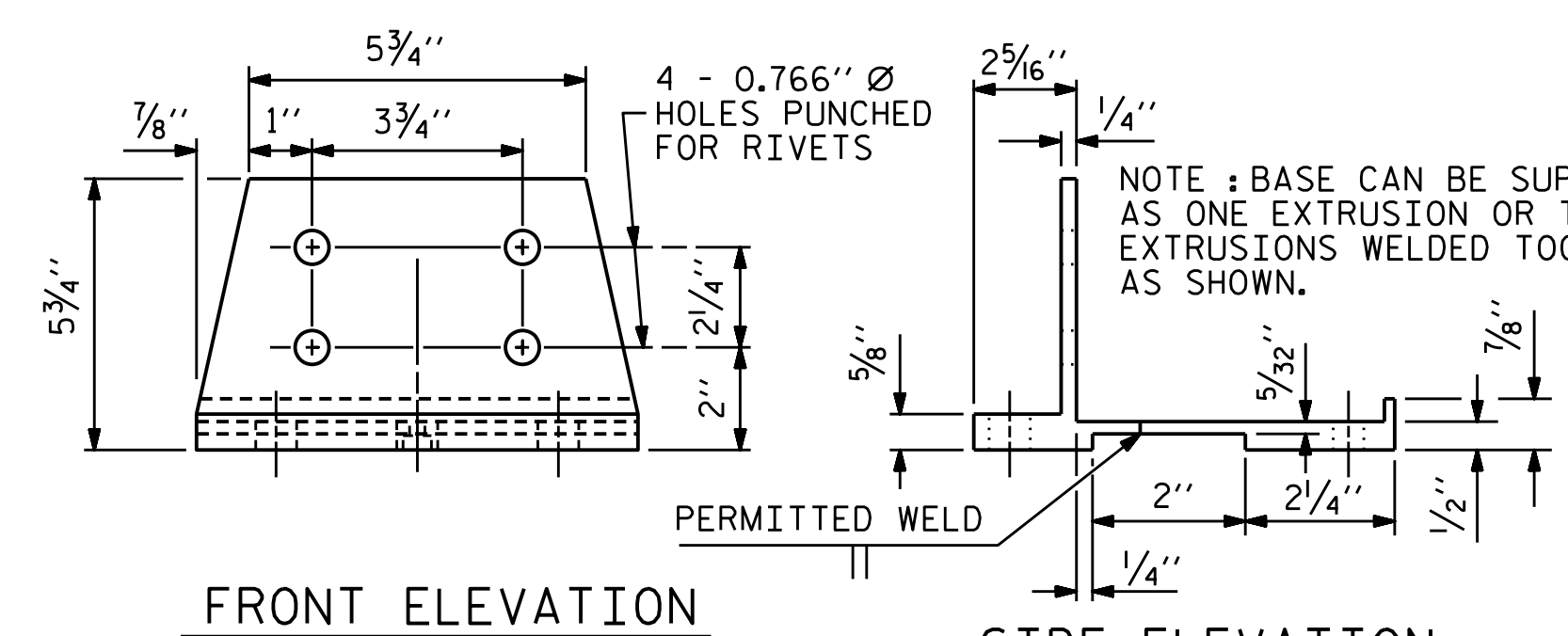
PLAN



FRONT ELEVATION

SIDE ELEVATION

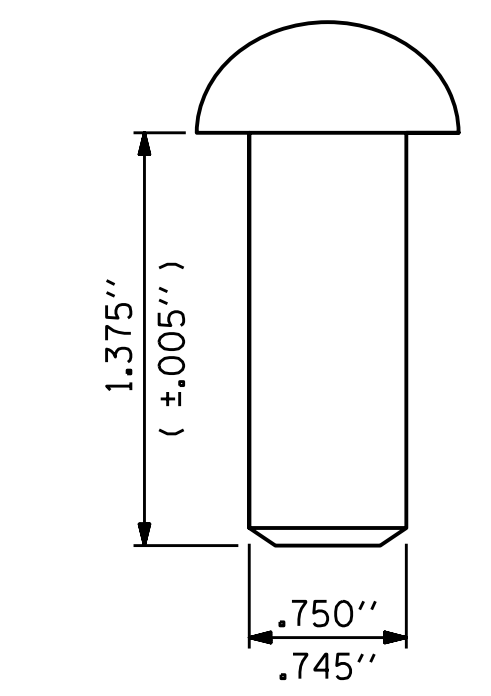
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

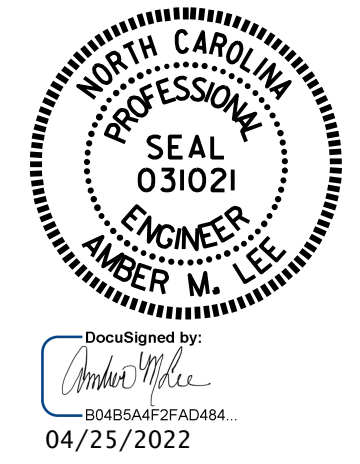
POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY : H.A. LOCKLEAR	DATE : 04/2020
CHECKED BY : REZA KOUCHEKI	DATE : 03/2022
DRAWN BY : EEM 6/94	REV. 10/11 MAA/GM
CHECKED BY : RCW 6/94	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 3 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			32

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

NOTES

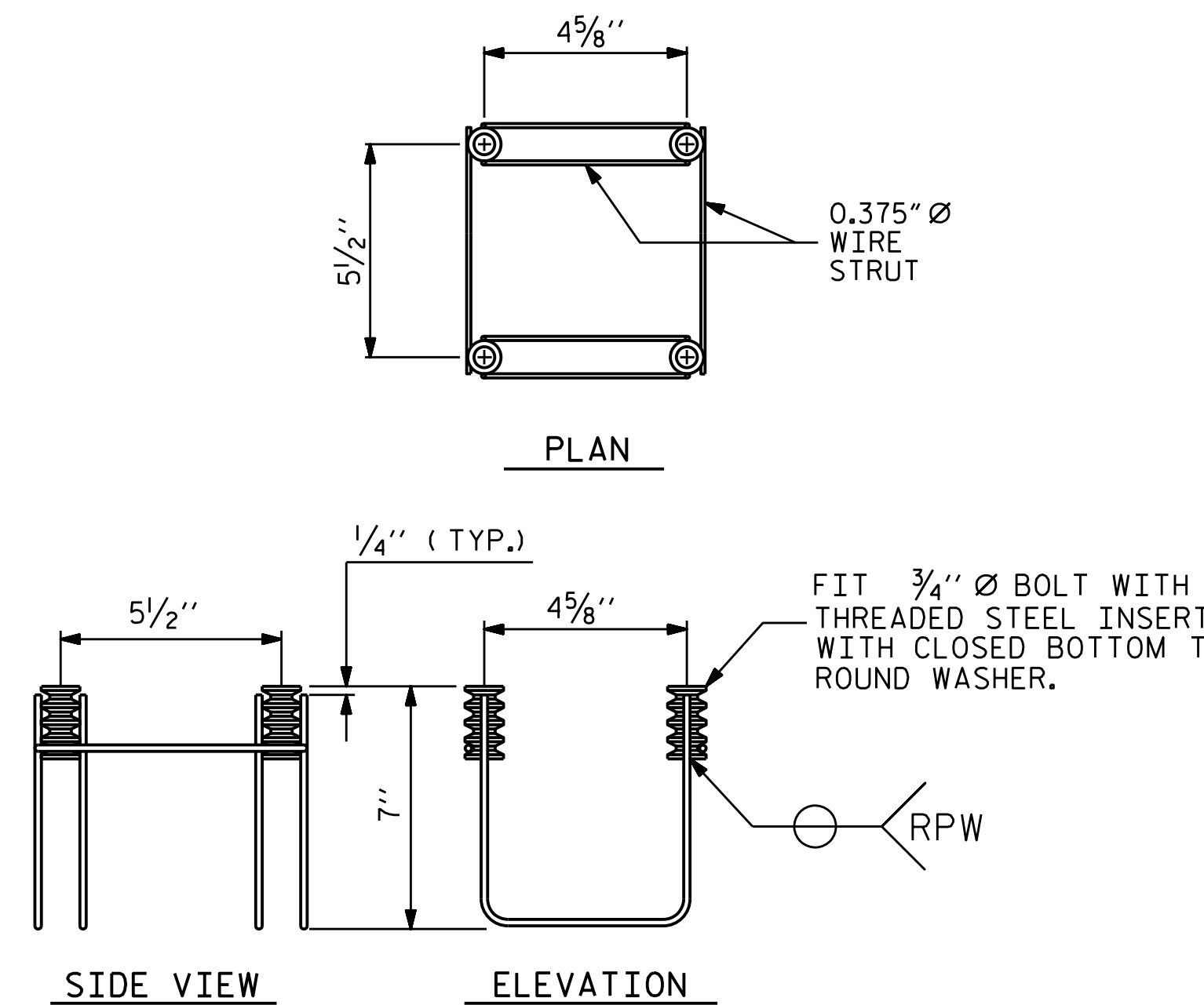
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

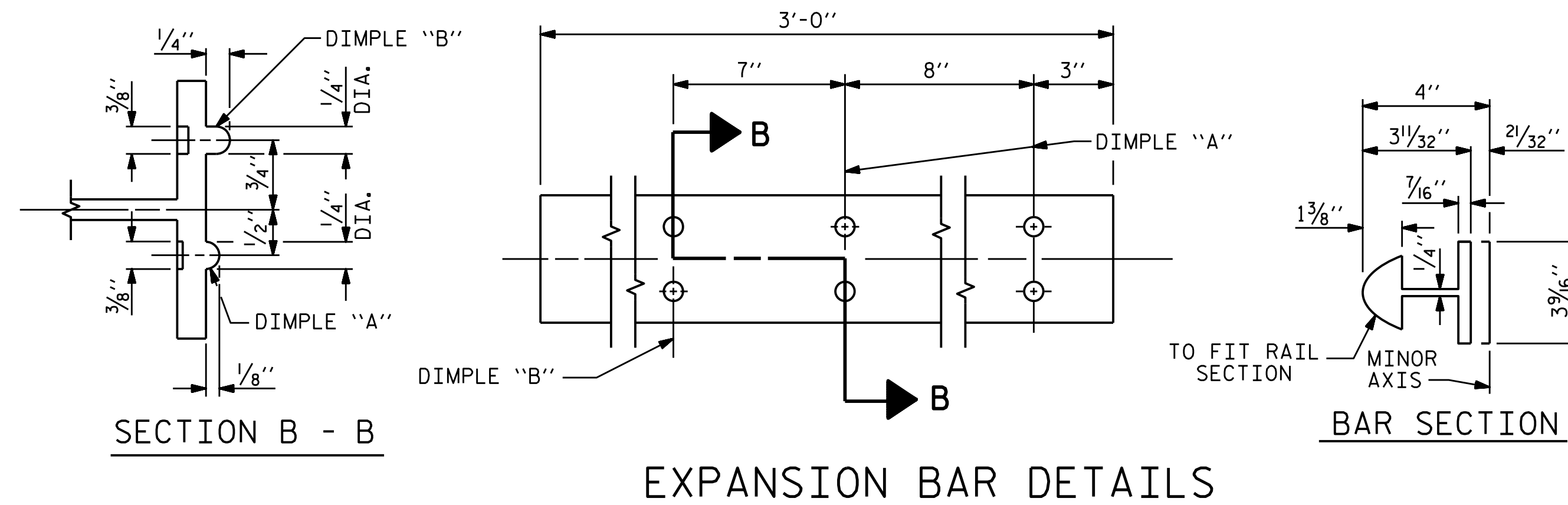
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

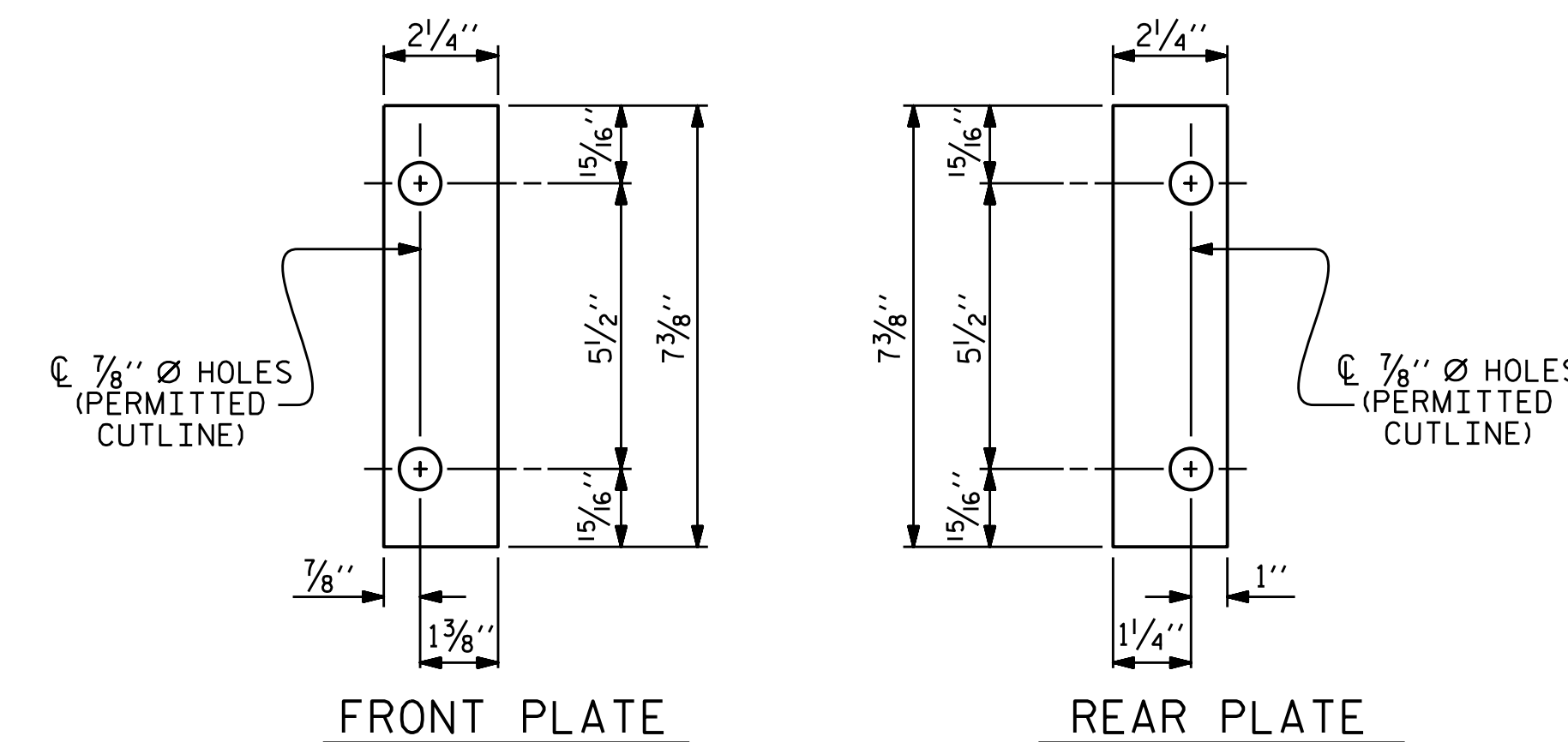


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(56 ASSEMBLIES REQUIRED)

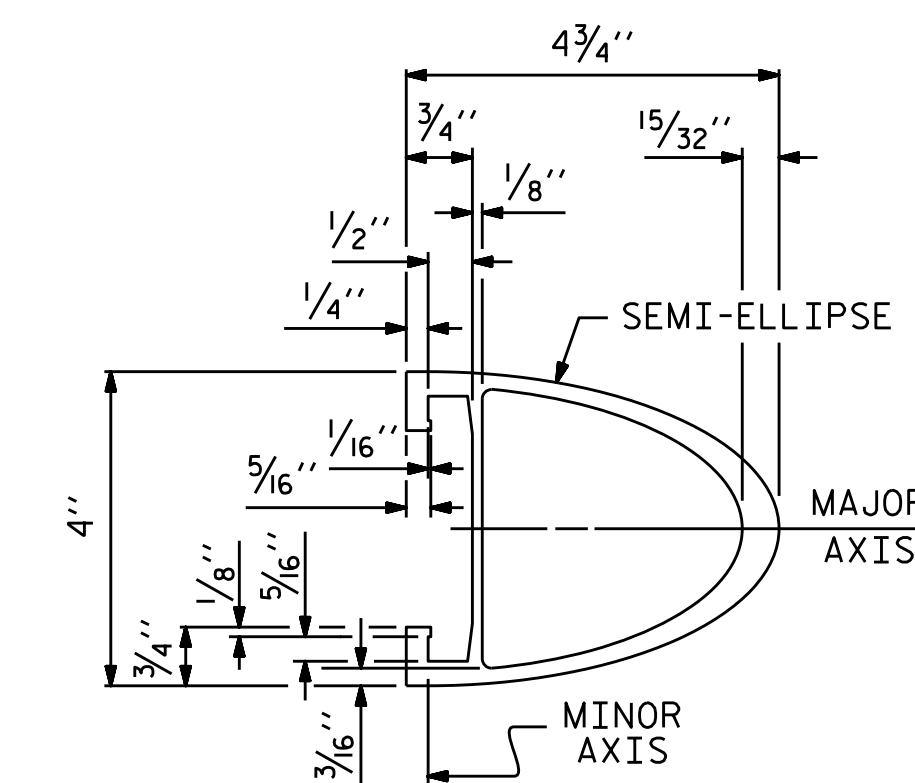


EXPANSION BAR DETAILS

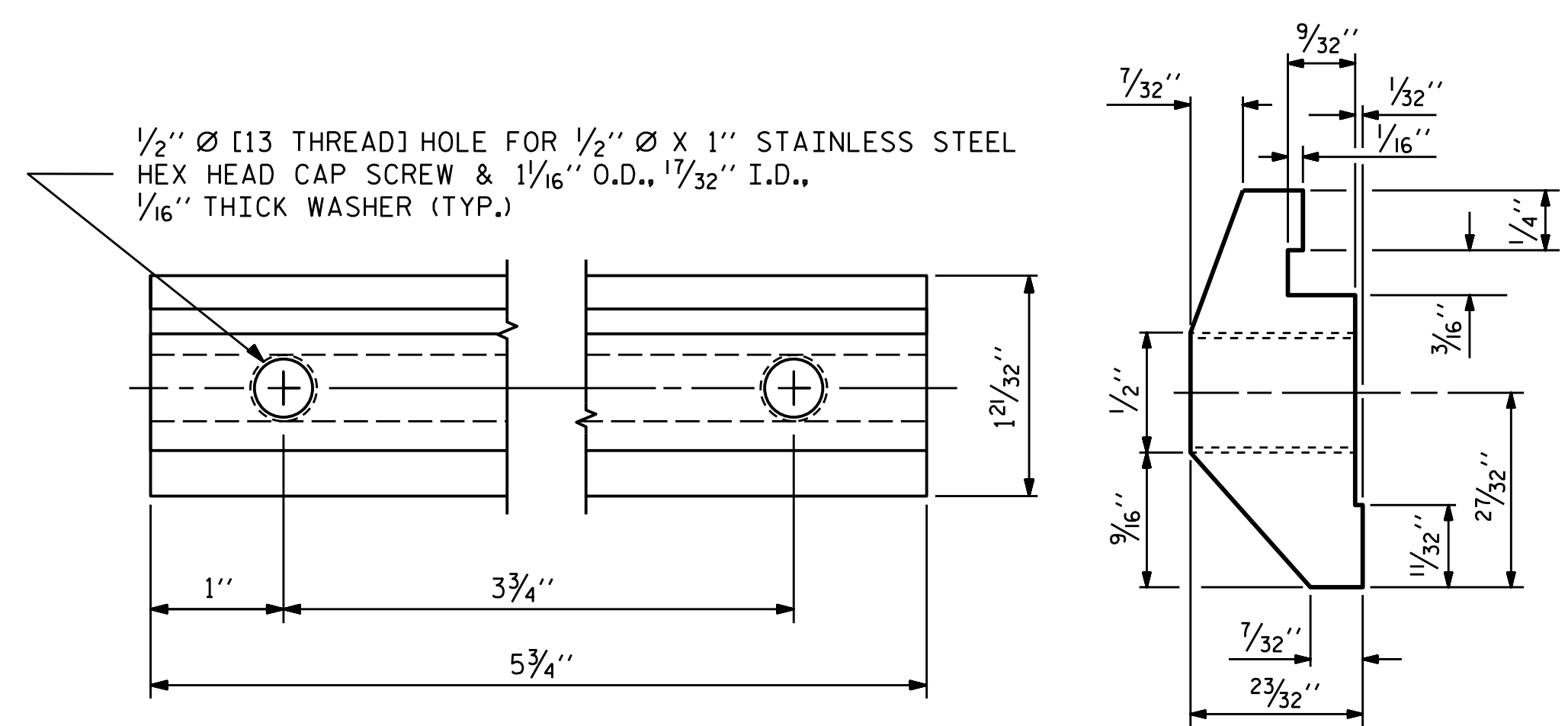


SHIM DETAILS

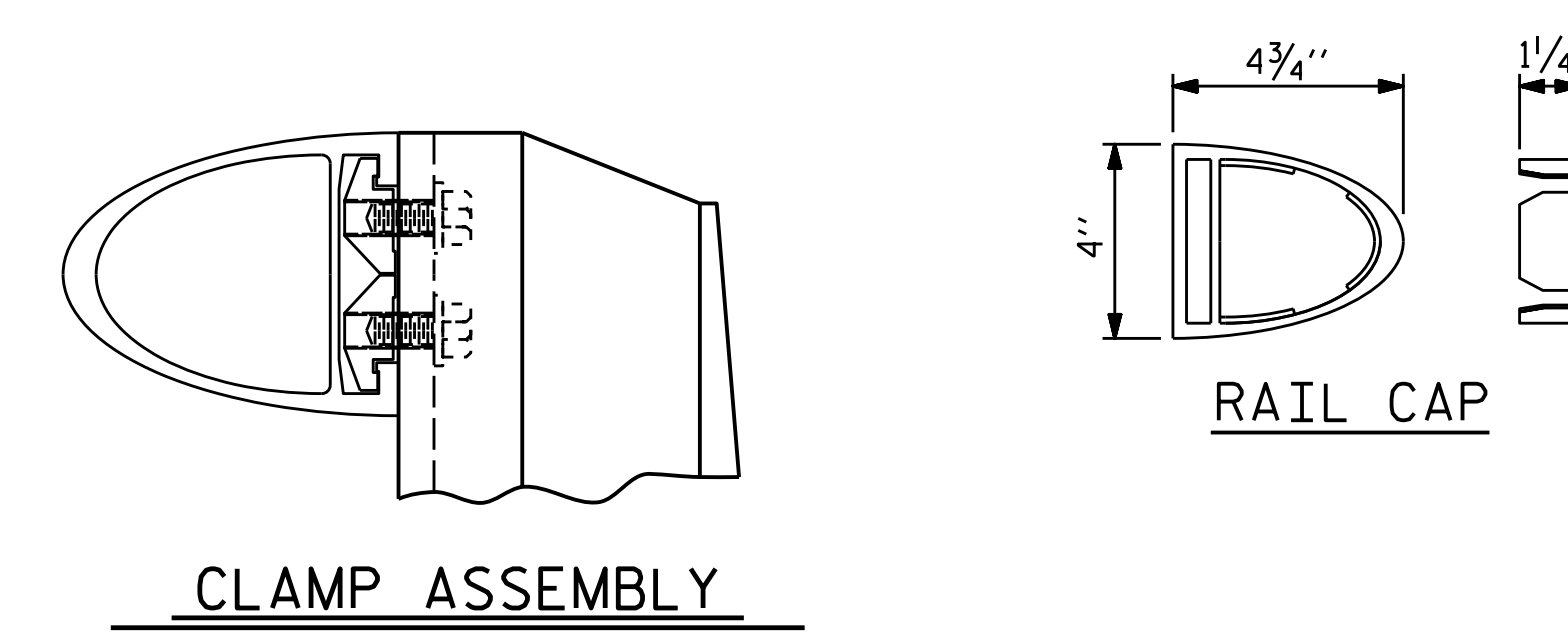
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



RAIL SECTION



CLAMP BAR DETAIL
(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP



PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 4 OF 4

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

ASSEMBLED BY : H.A. LOCKLEAR	DATE : 04/2020
CHECKED BY : REZA KOUCHEKI	DATE : 03/2022
DRAWN BY : EEM 6/94	REV. 5/1/06R KMM/GM
CHECKED BY : RCW 6/94	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			32

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.

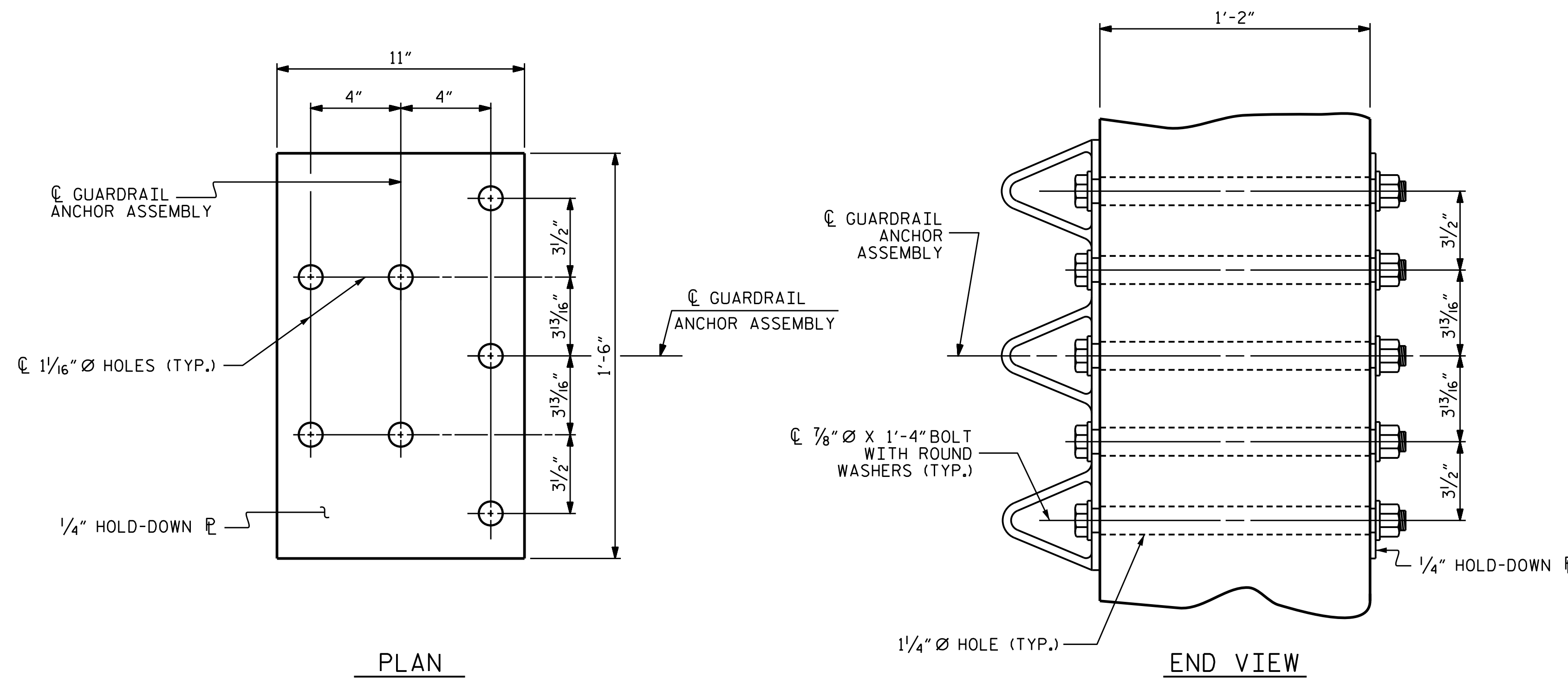
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

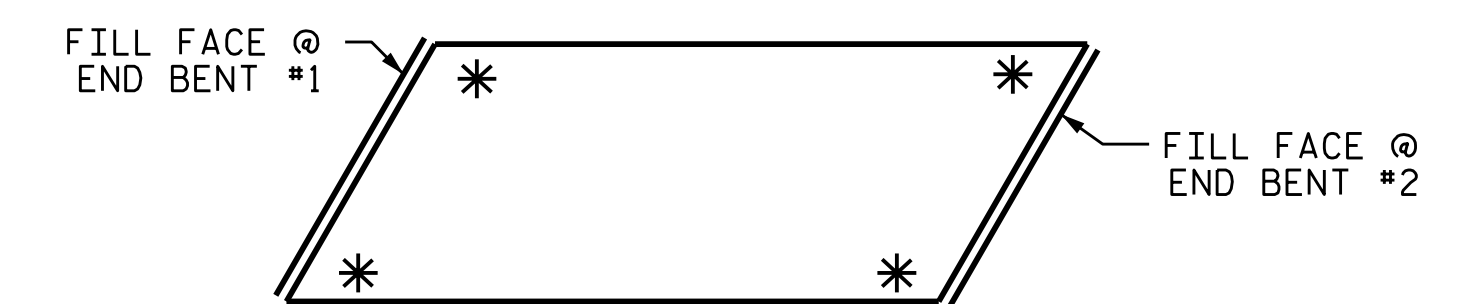
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

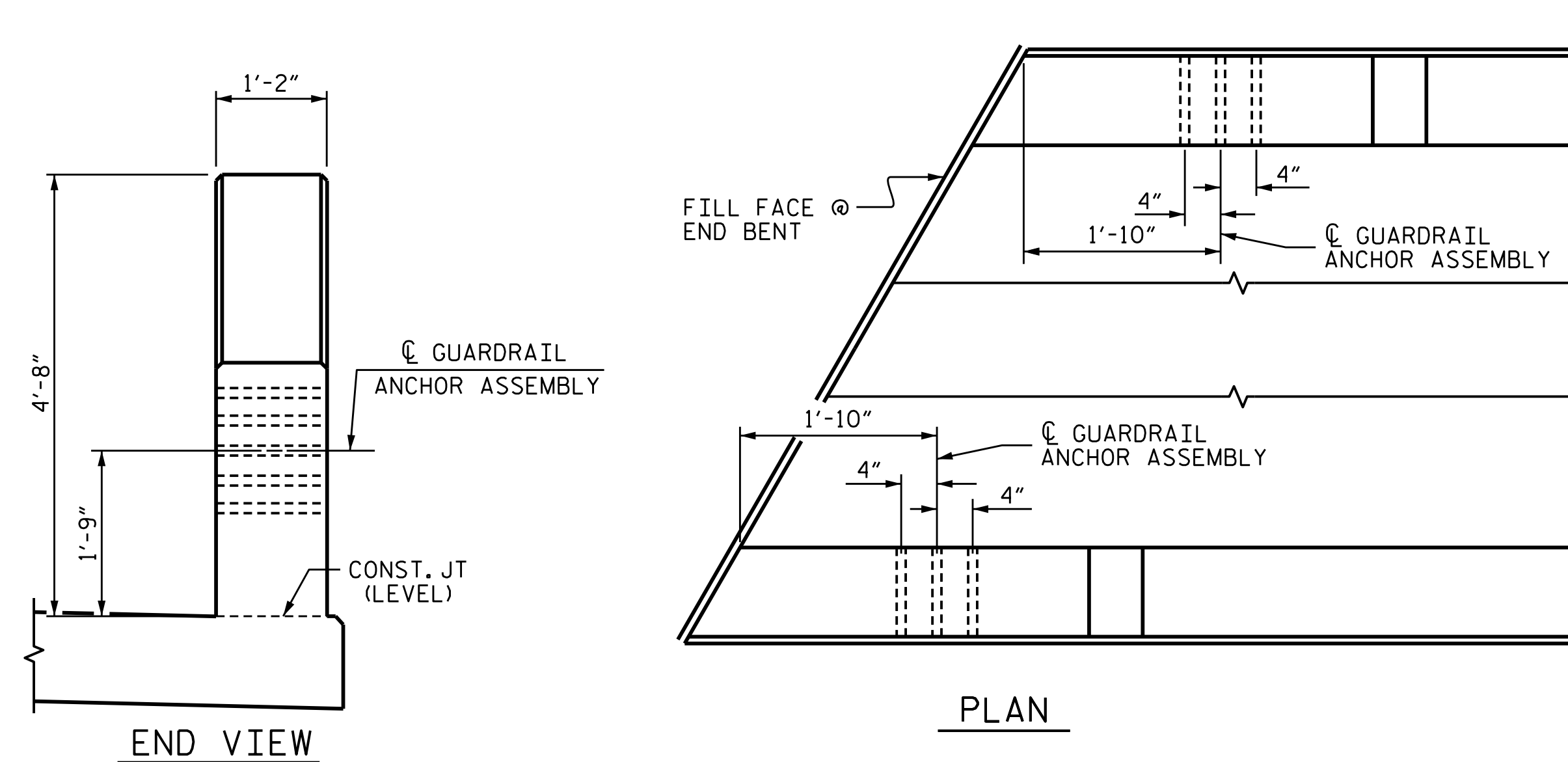


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-



Designed by:
Amber M. Lee
BOE088AATP2FAD484
04/25/2022

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

ASSEMBLED BY :	H.A. LOCKLEAR	DATE :	04/2020
CHECKED BY :	REZA KOUCHEKI	DATE :	03/2022
DRAWN BY :	MAA 5/10	REV. 1/15	MAA/TMC
CHECKED BY :	GM 5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

4/25/2022
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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			32

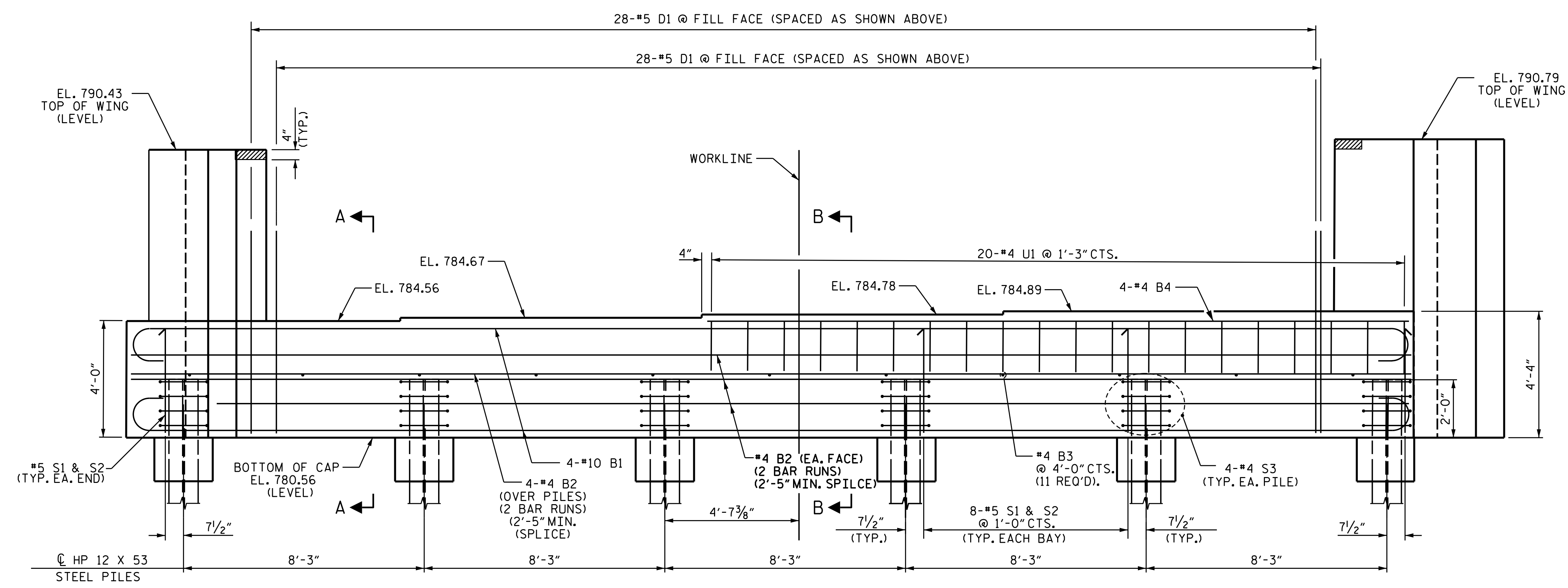
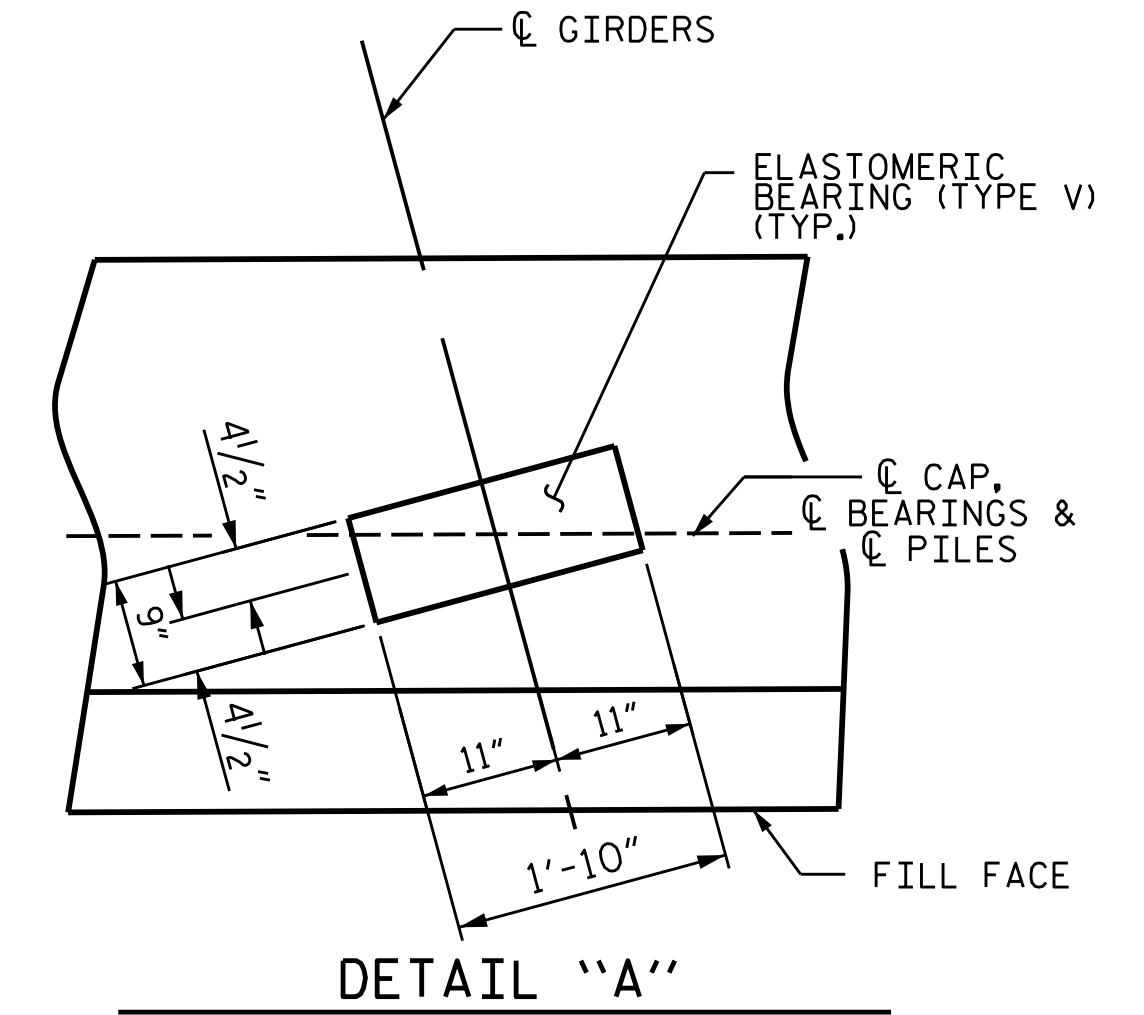
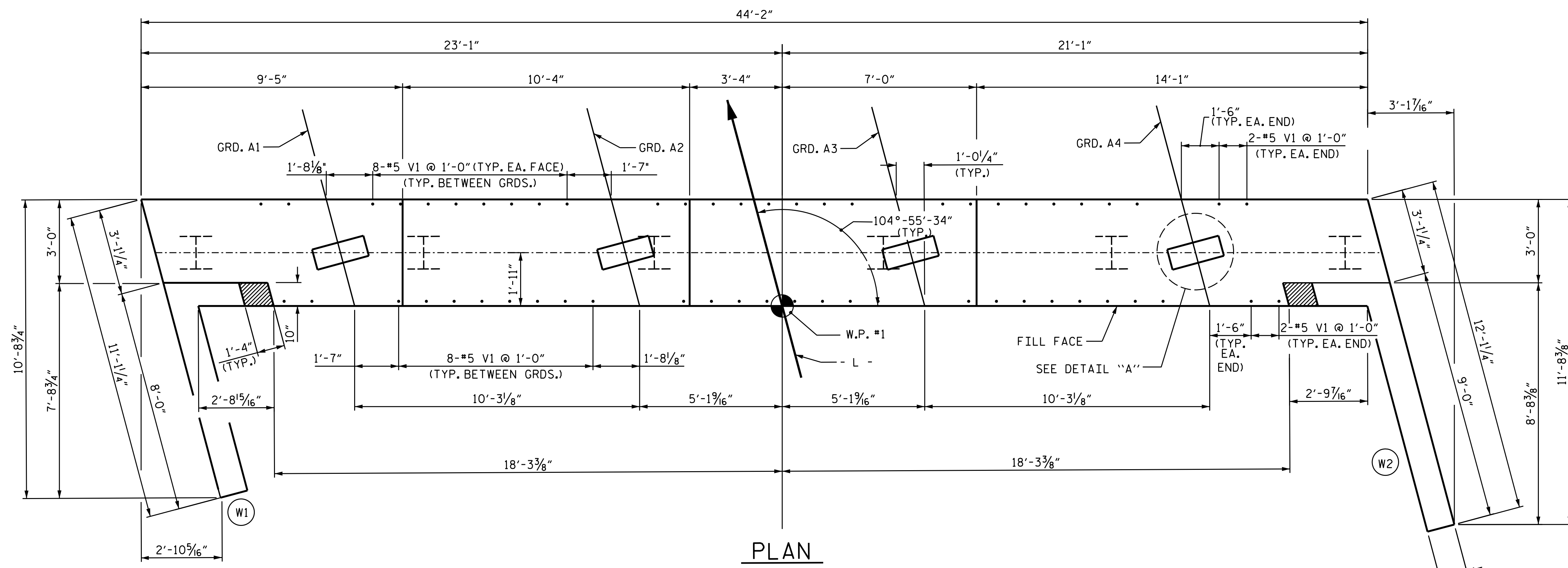
STD. NO. GRA3

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 V1 BARS.

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

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



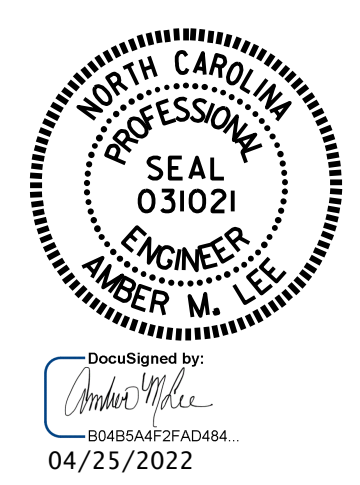
ELEVATION
(V BARS NOT SHOWN FOR CLARITY)

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

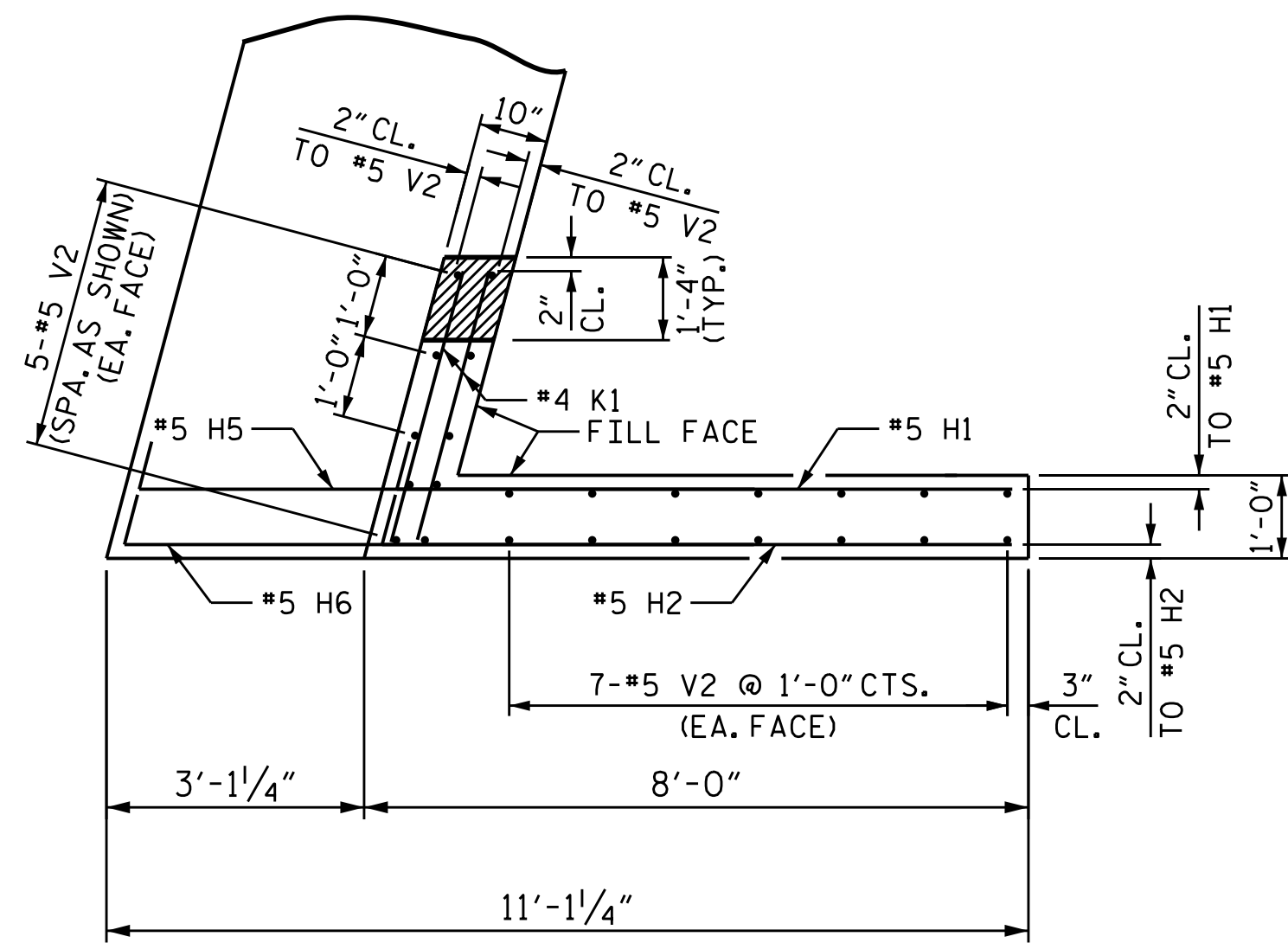
INTEGRAL END BENT 1



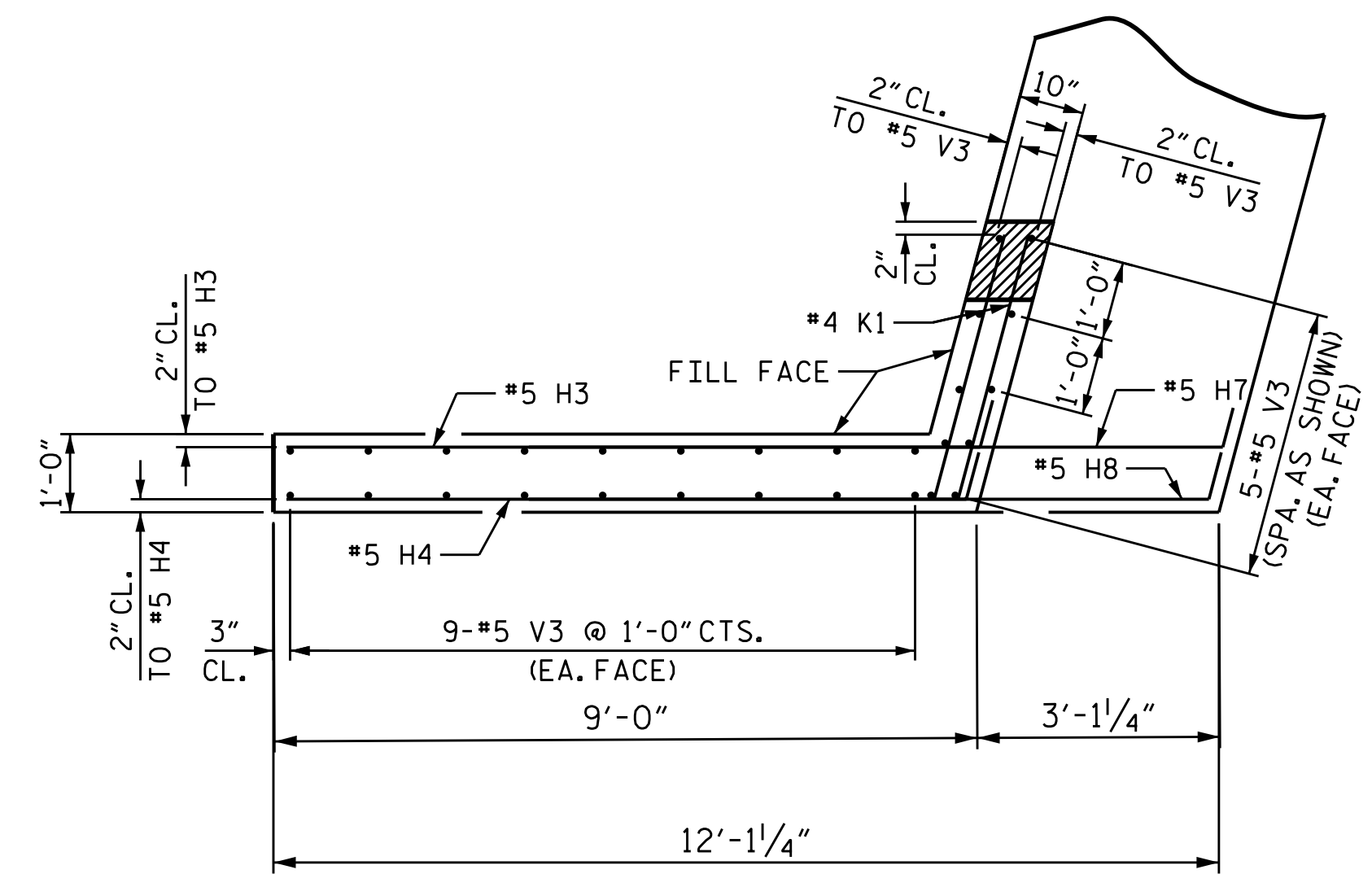
DRAWN BY: E.BAYISSA/C.RUIZ DATE: 09/2020
CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
DESIGN ENGINEER OF RECORD: E.BAYISSA DATE: 09/2019

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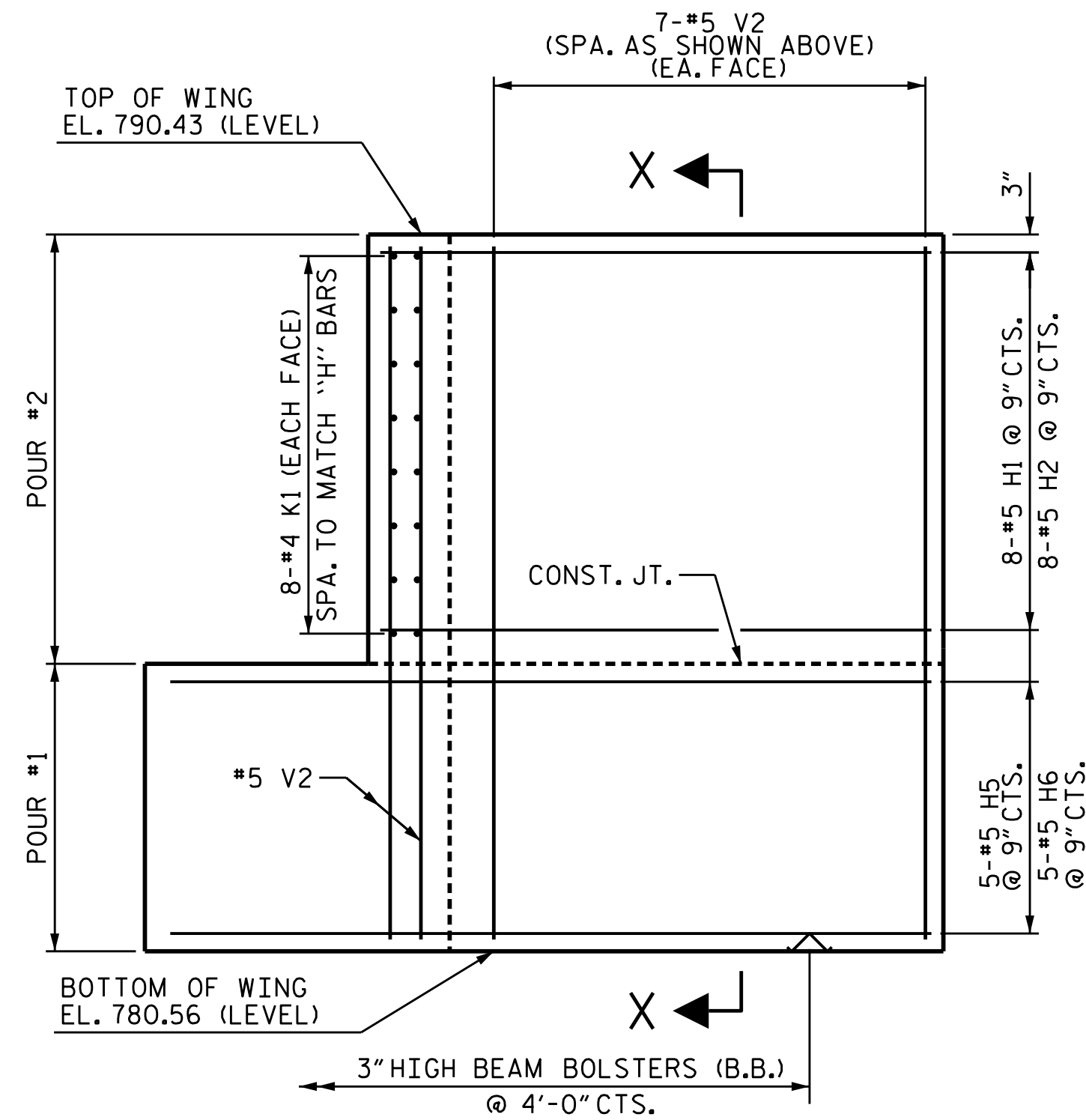
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			32



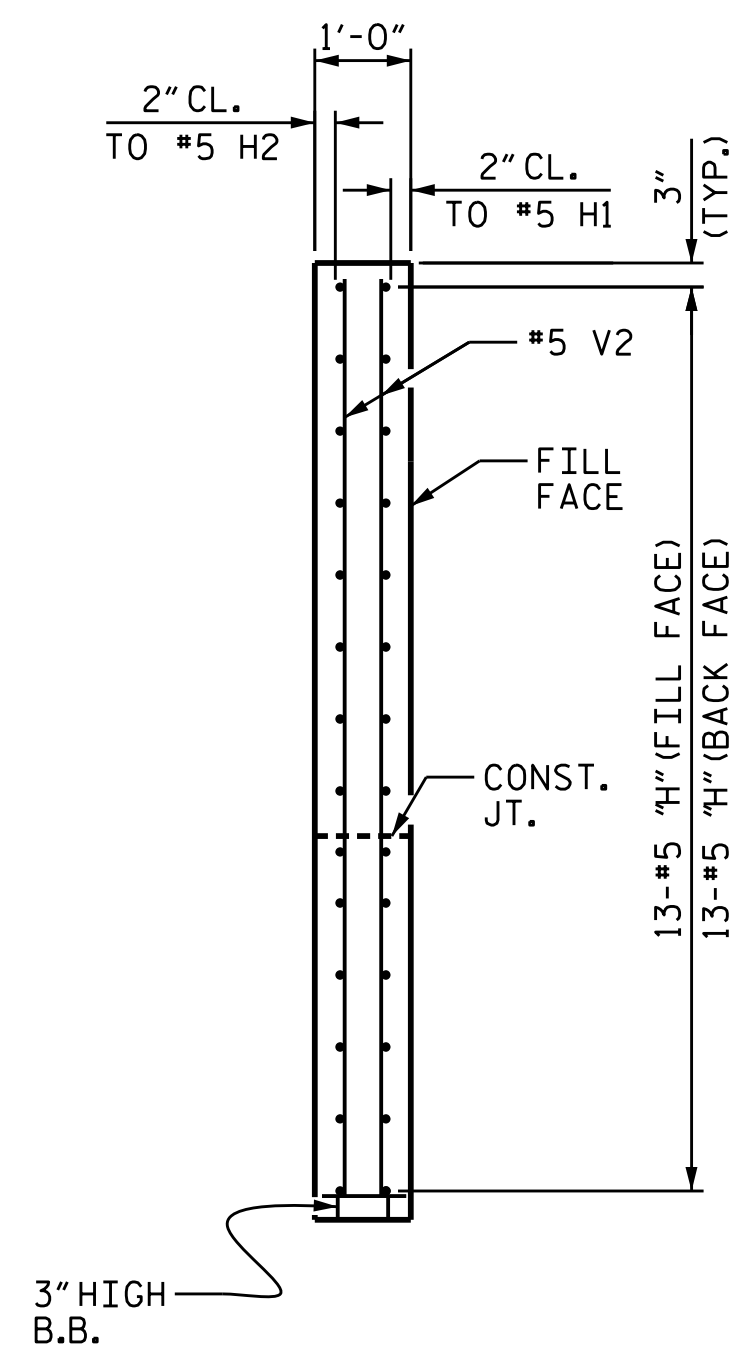
PLAN OF LEFT WING - W1



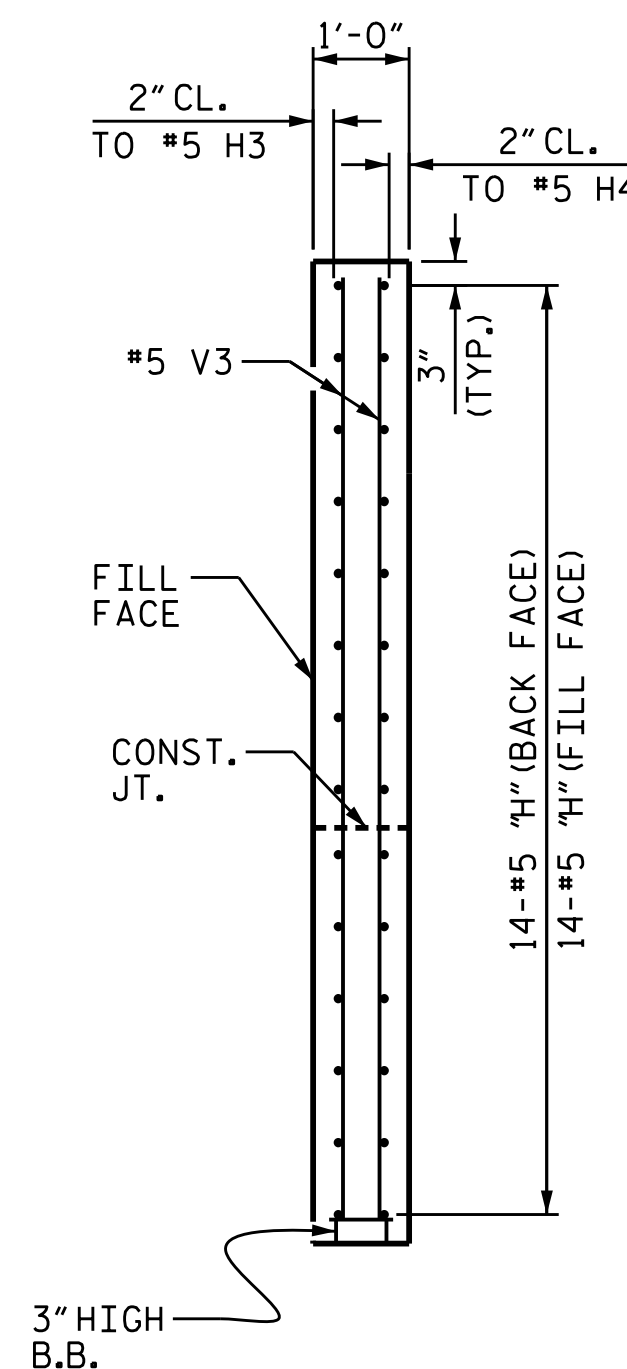
PLAN OF RIGHT WING - W2



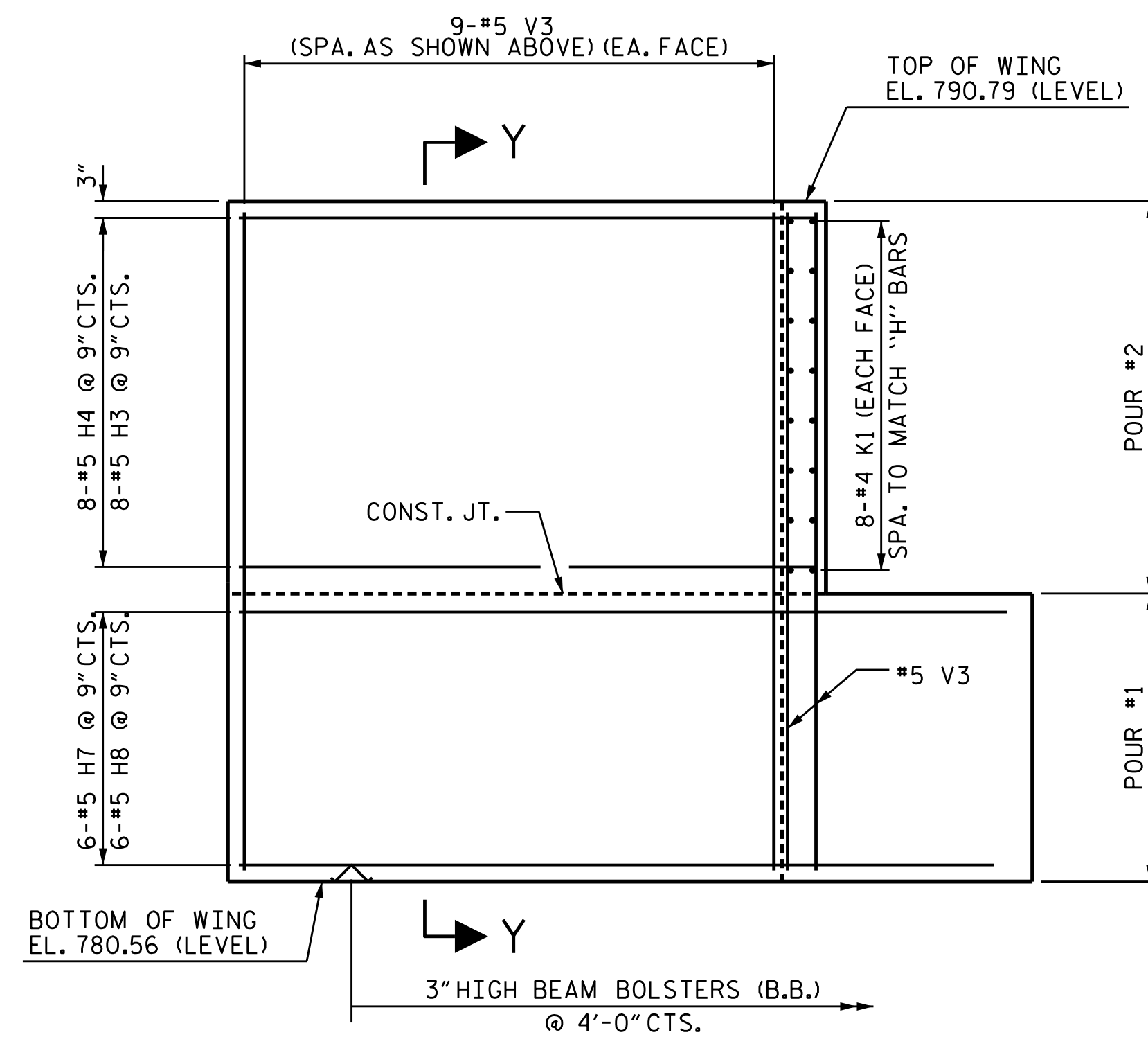
ELEVATION OF LEFT WING - W1



SECTION X-X



SECTION Y-Y



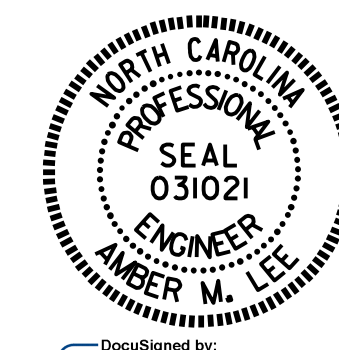
ELEVATION OF RIGHT WING - W2

PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1



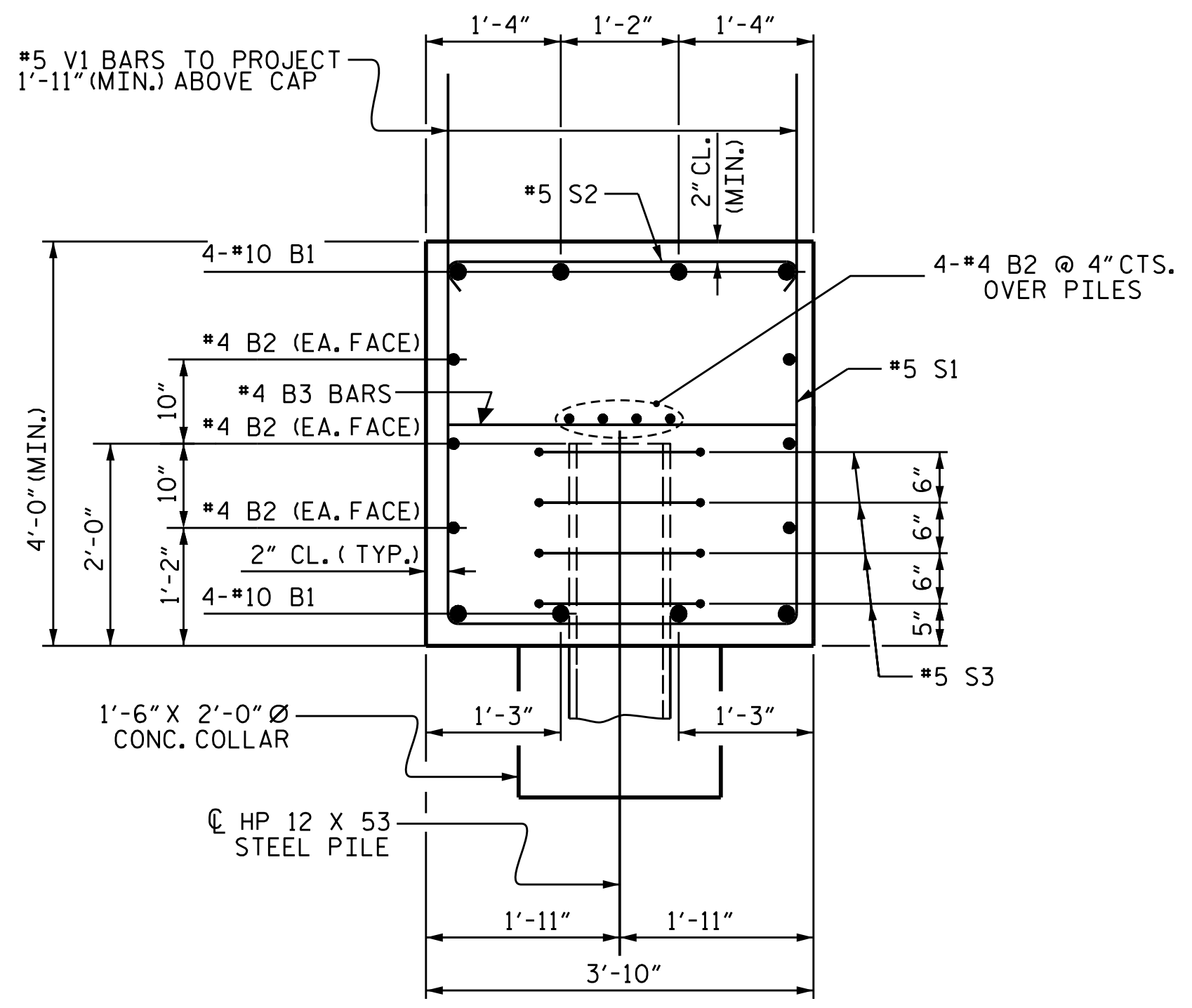
Designed by
 Amber M. Lee
 04/25/2022

DRAWN BY : C. RUIZ DATE : 09/2020
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYSSIA DATE : -

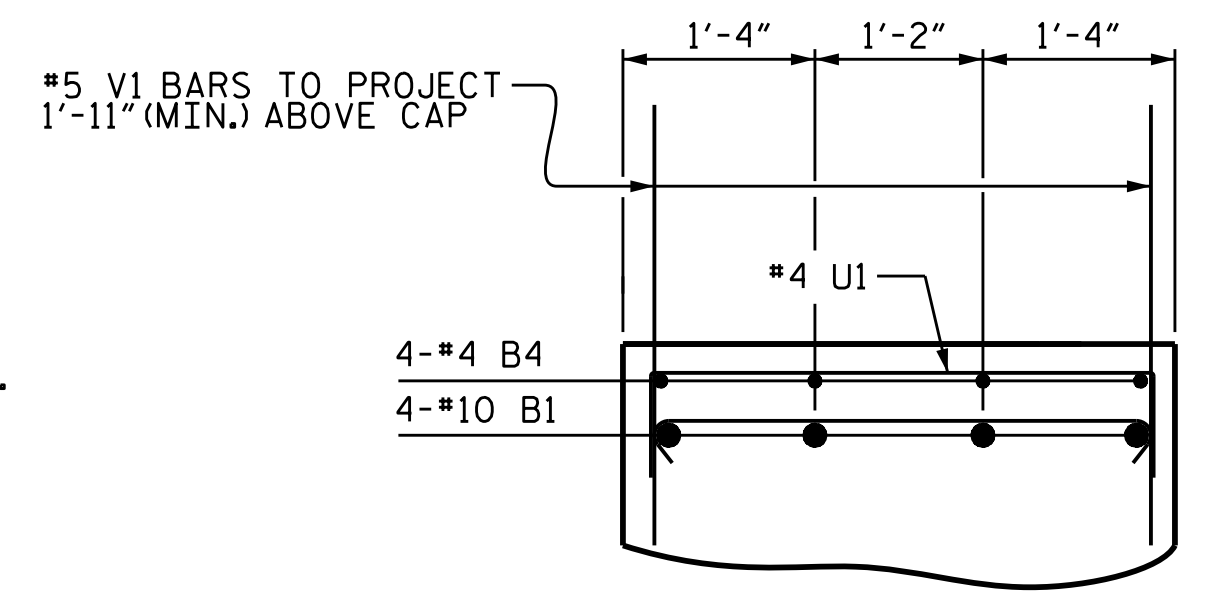
4/25/2022
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DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

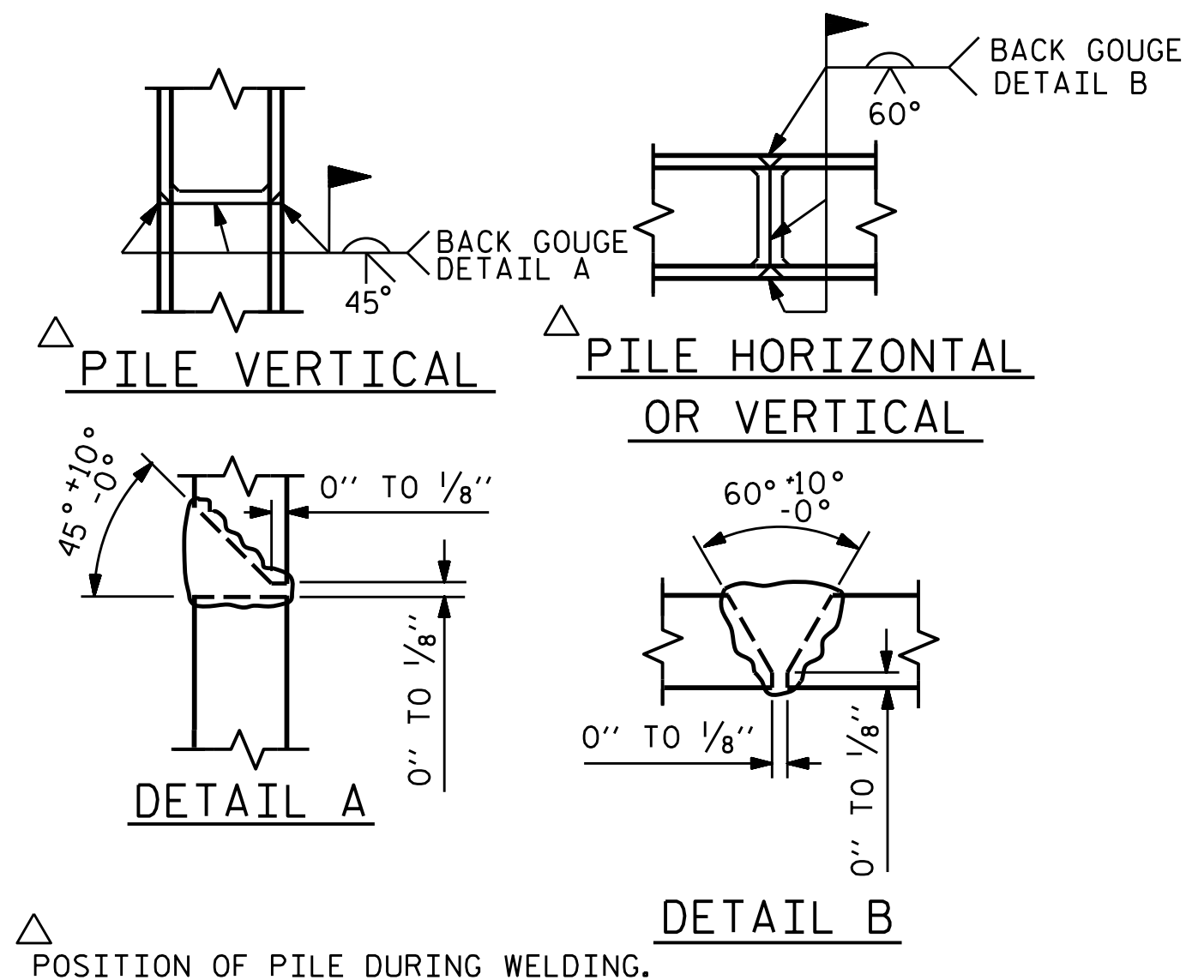
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			32



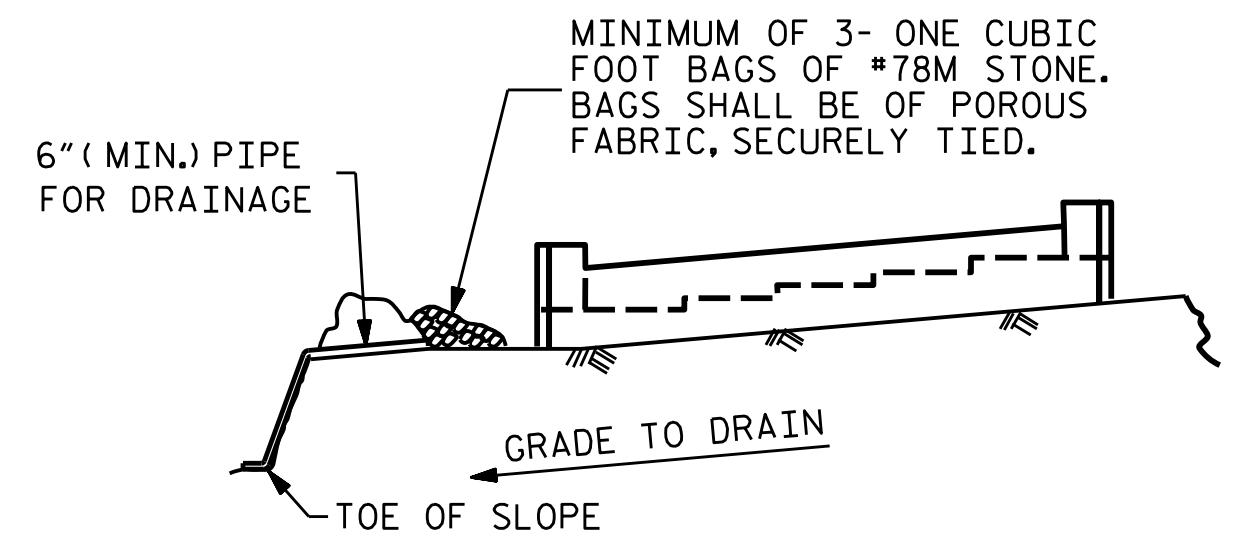
SECTION A-A



SECTION B-B



PILE SPLICE DETAILS



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

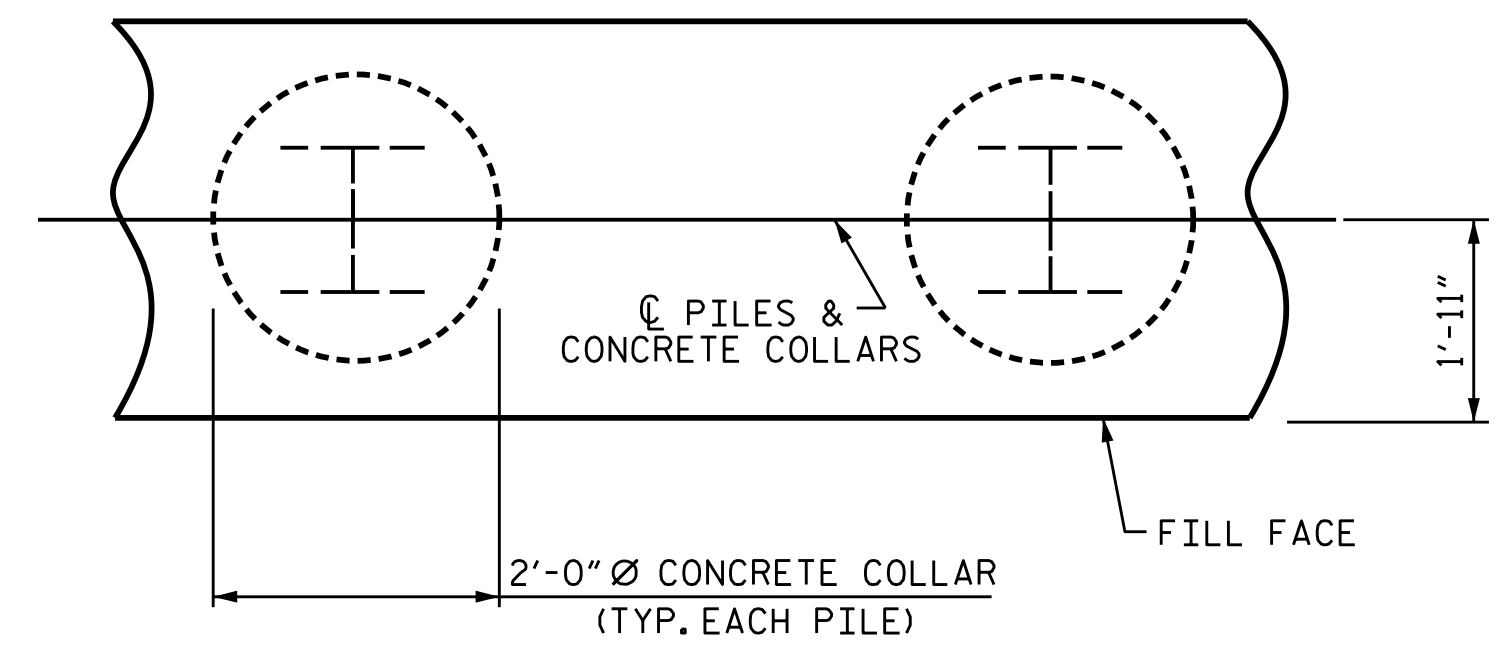
TOE OF SLOPE

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

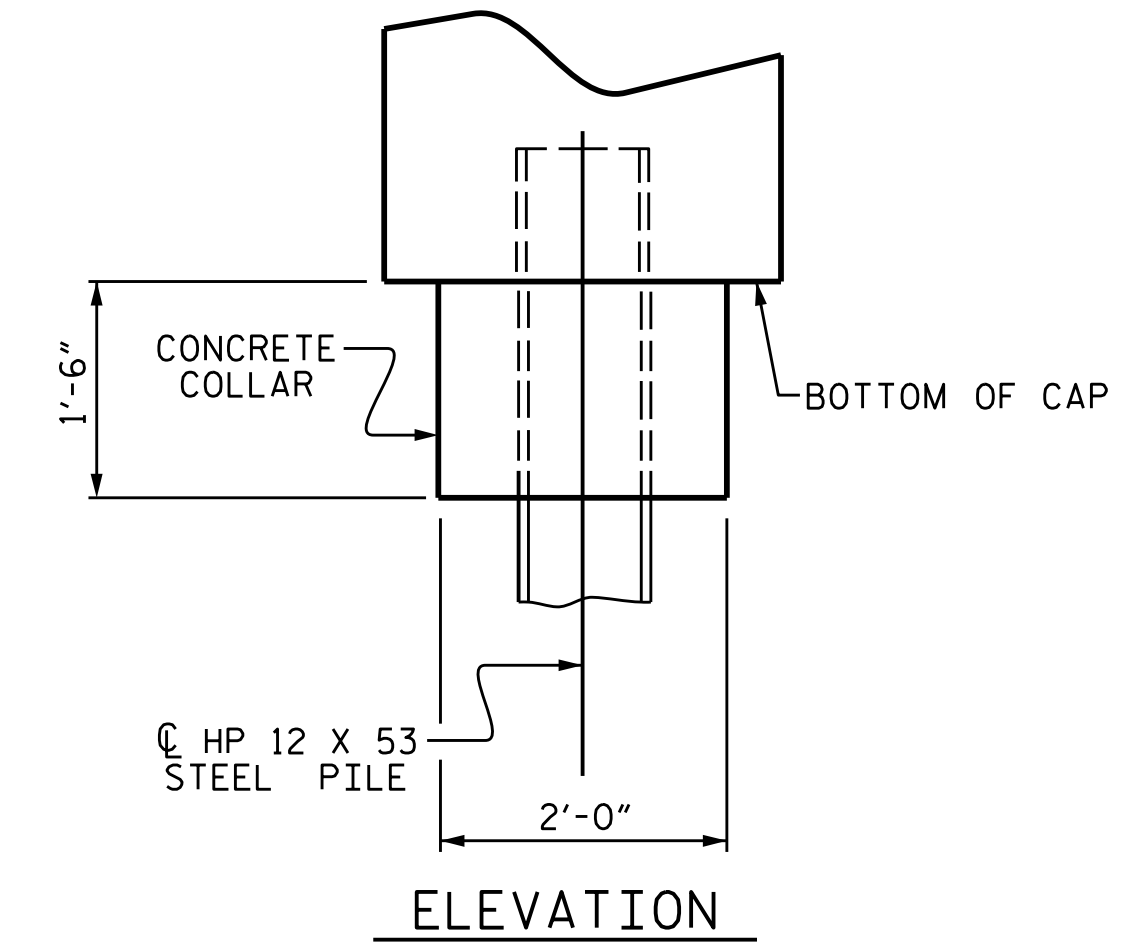
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

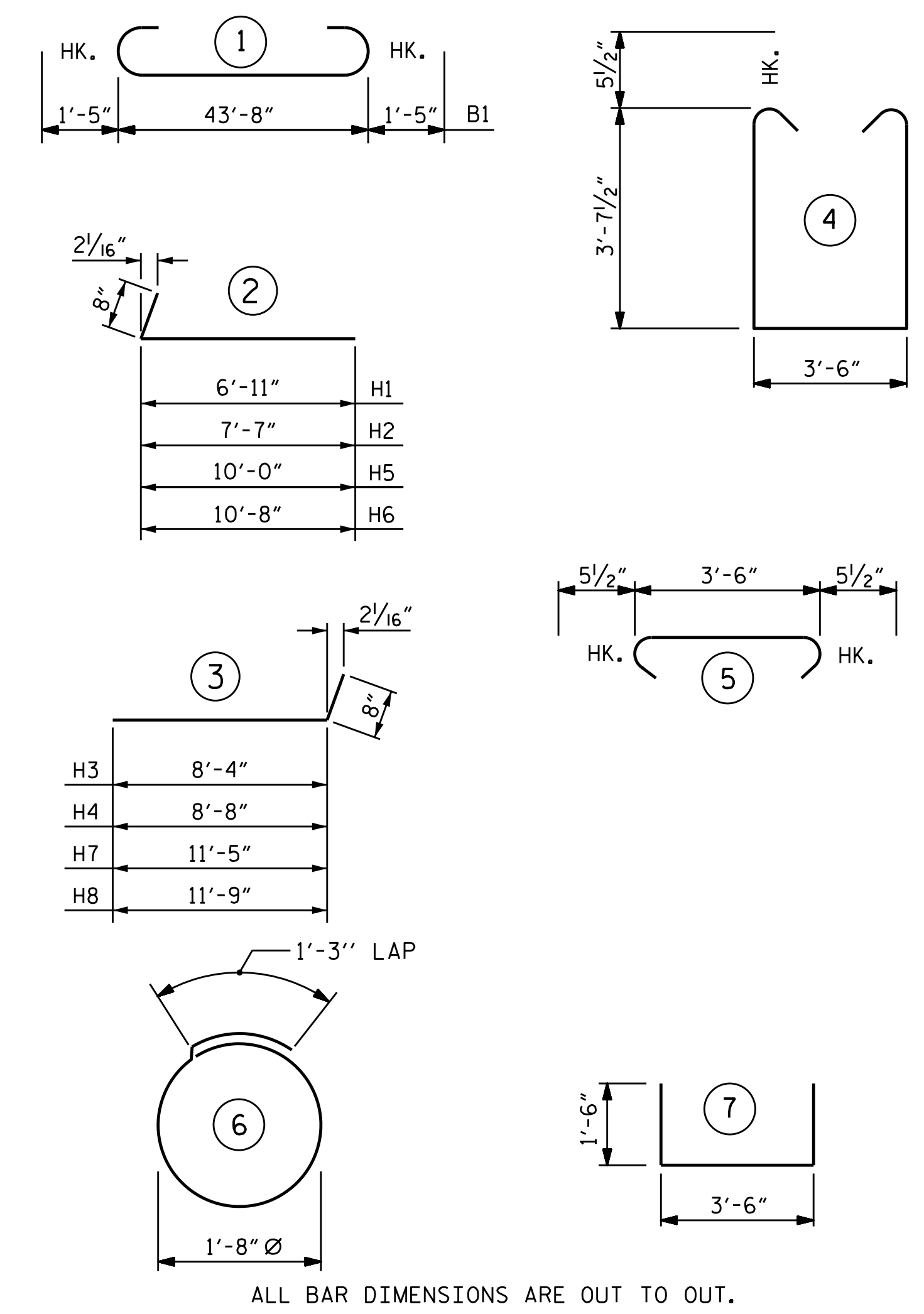


PLAN
CORROSION PROTECTION FOR STEEL PILES DETAIL



ELEVATION

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#10		46'-6"	1601	
B2	20	#4	STR.	23'-1"	308	
B3	11	#4	STR.	3'-6"	26	
B4	8	#4	STR.	13'-8"	73	
H1	8	#5		7'-7"	63	
H2	8	#5		8'-3"	69	
H3	8	#5		9'-0"	75	
H4	8	#5		3	9'-4"	78
H5	5	#5		2	10'-8"	56
H6	5	#5		2	11'-4"	59
H7	6	#5		3	12'-1"	76
H8	6	#5		3	12'-5"	78
K1	32	#4	STR.	3'-5"	73	
S1	42	#5		4	11'-8"	511
S2	42	#5		5	4'-5"	193
S3	24	#5		6	6'-6"	163
U1	20	#4		7	6'-6"	87
V1	56	#5	STR.	6'-0"	350	
V2	24	#5	STR.	9'-5"	236	
V3	28	#5	STR.	9'-9"	285	

REINFORCING STEEL 4460 LBS.

CLASS "A" CONCRETE BREAKDOWN :

POUR 1 (CAP, COLLAR, & LOWER PART OF WINGWALL) 29.6 C.Y.

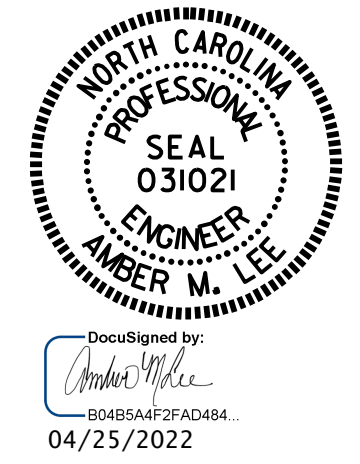
POUR 2 (UPPER PART OF WINGWALL) 4.7 C.Y.

TOTAL CLASS "A" CONCRETE: 34.3 C.Y.

HP 12 X 53 STEEL PILE
No 6 450 LF

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 3 OF 3



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

DRAWN BY: C. RUIZ DATE: 09/2020
CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
DESIGN ENGINEER OF RECORD: E. BAYSSIA DATE: 09/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			32

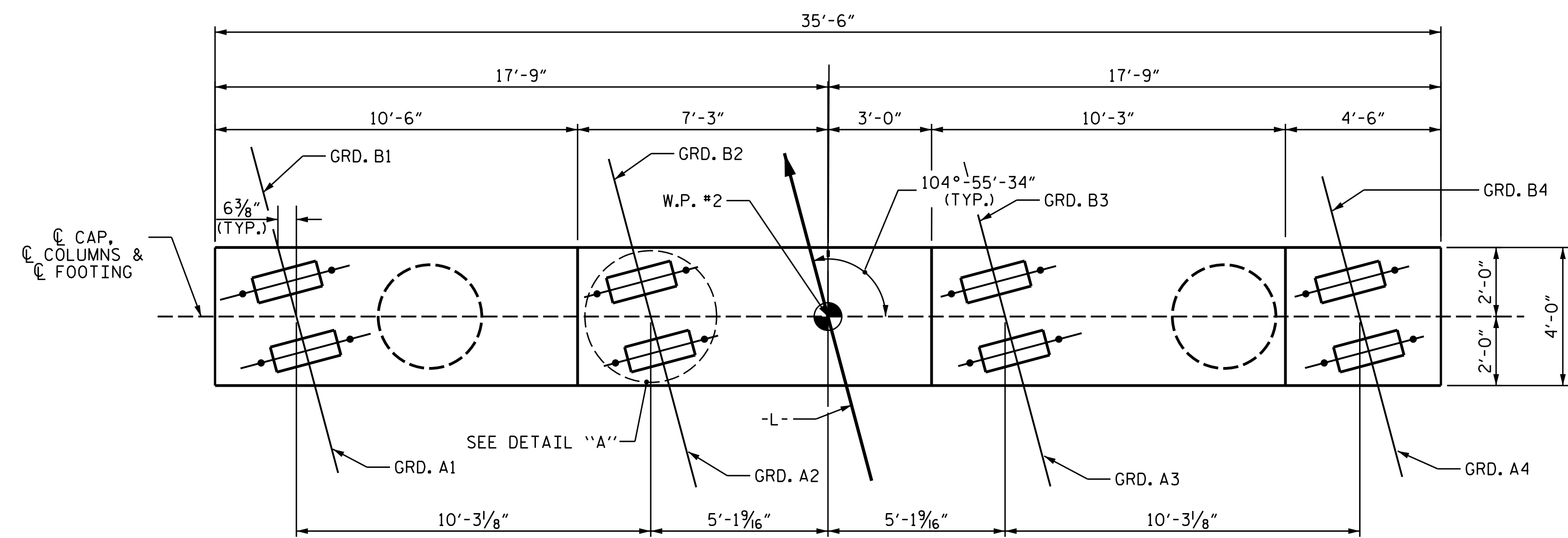
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

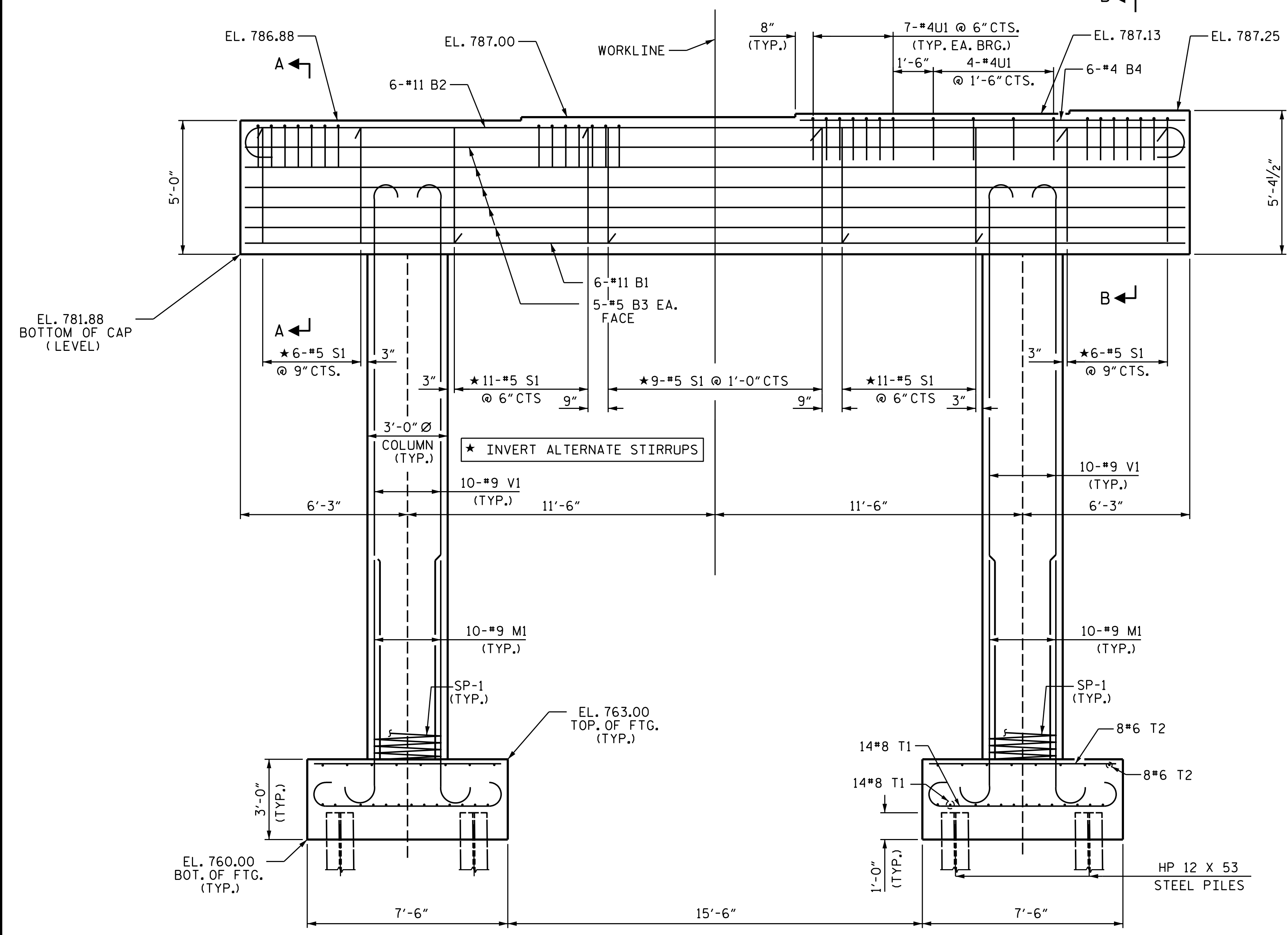
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL.

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

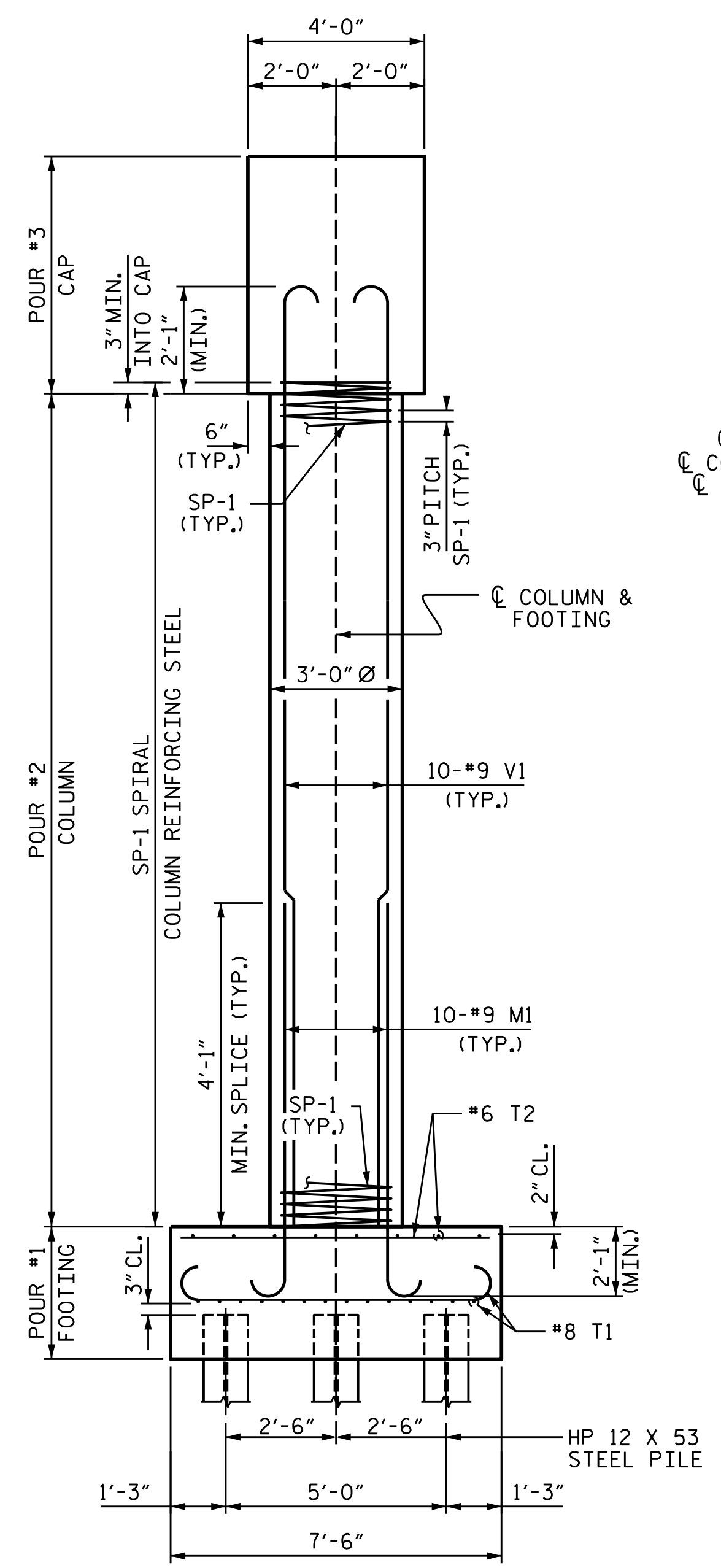
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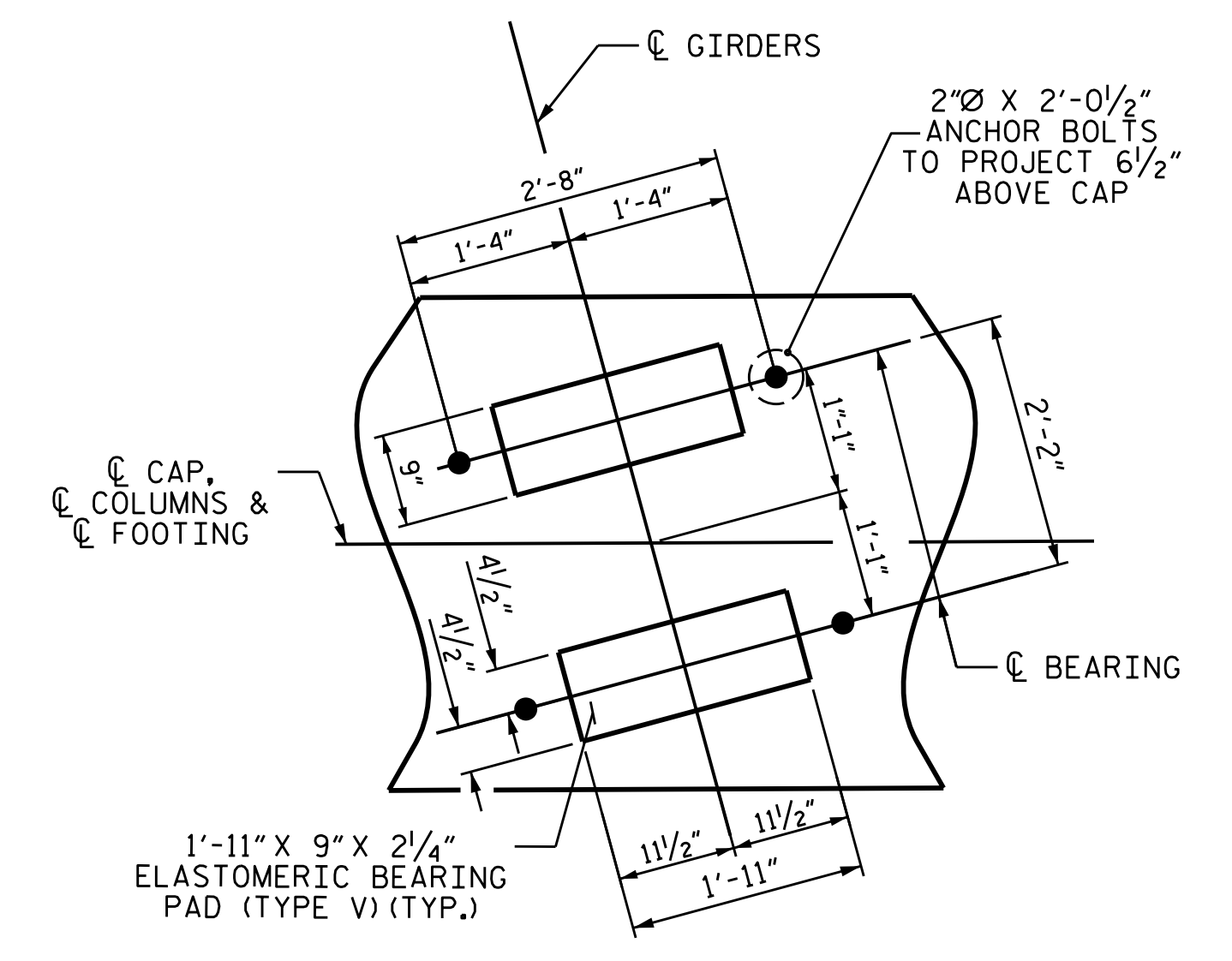
PLAN



ELEVATION



END ELEVATION

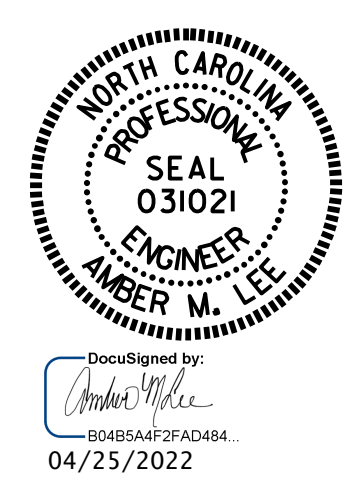


DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BR-0051
YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 1 OF 2

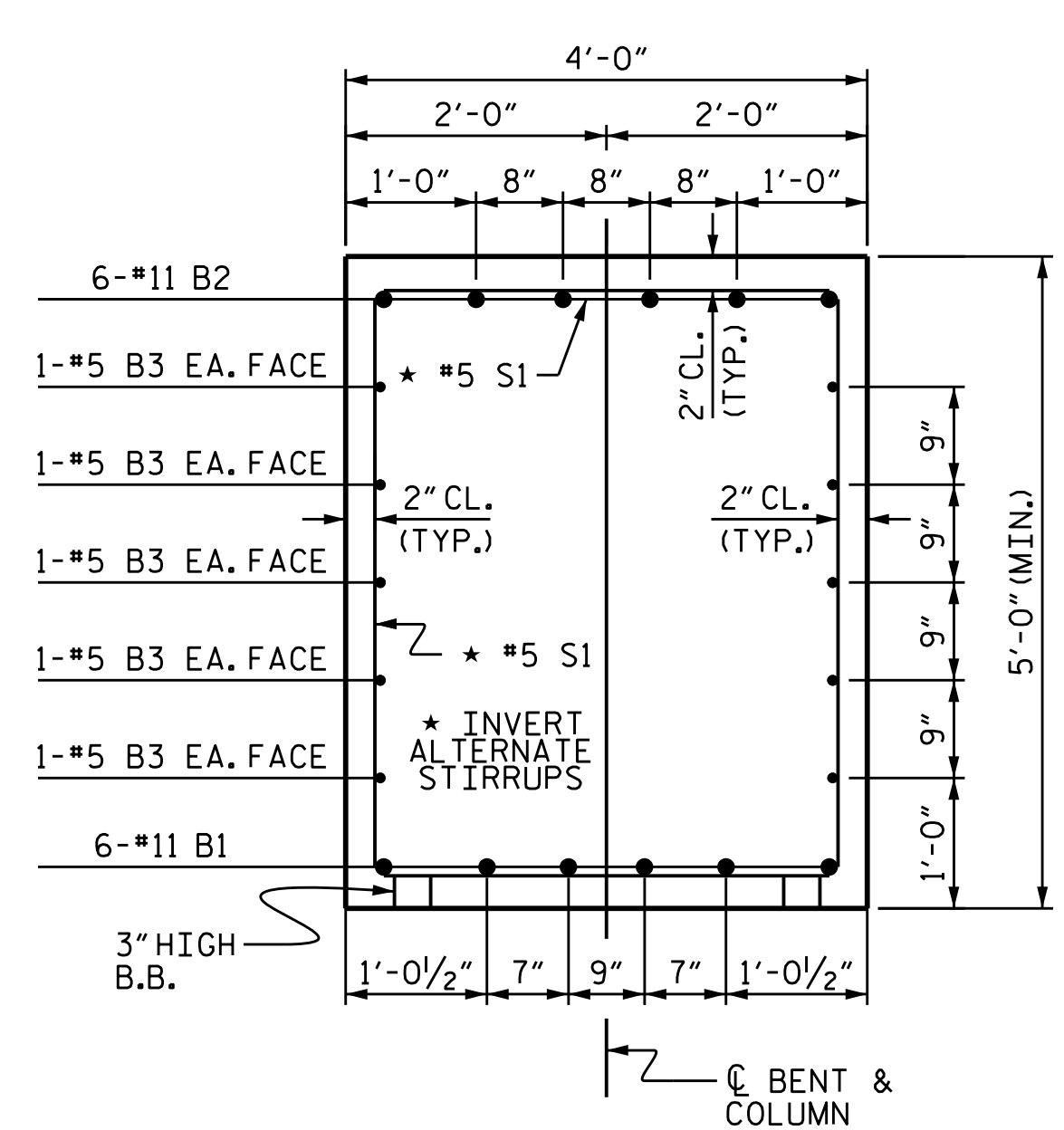


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

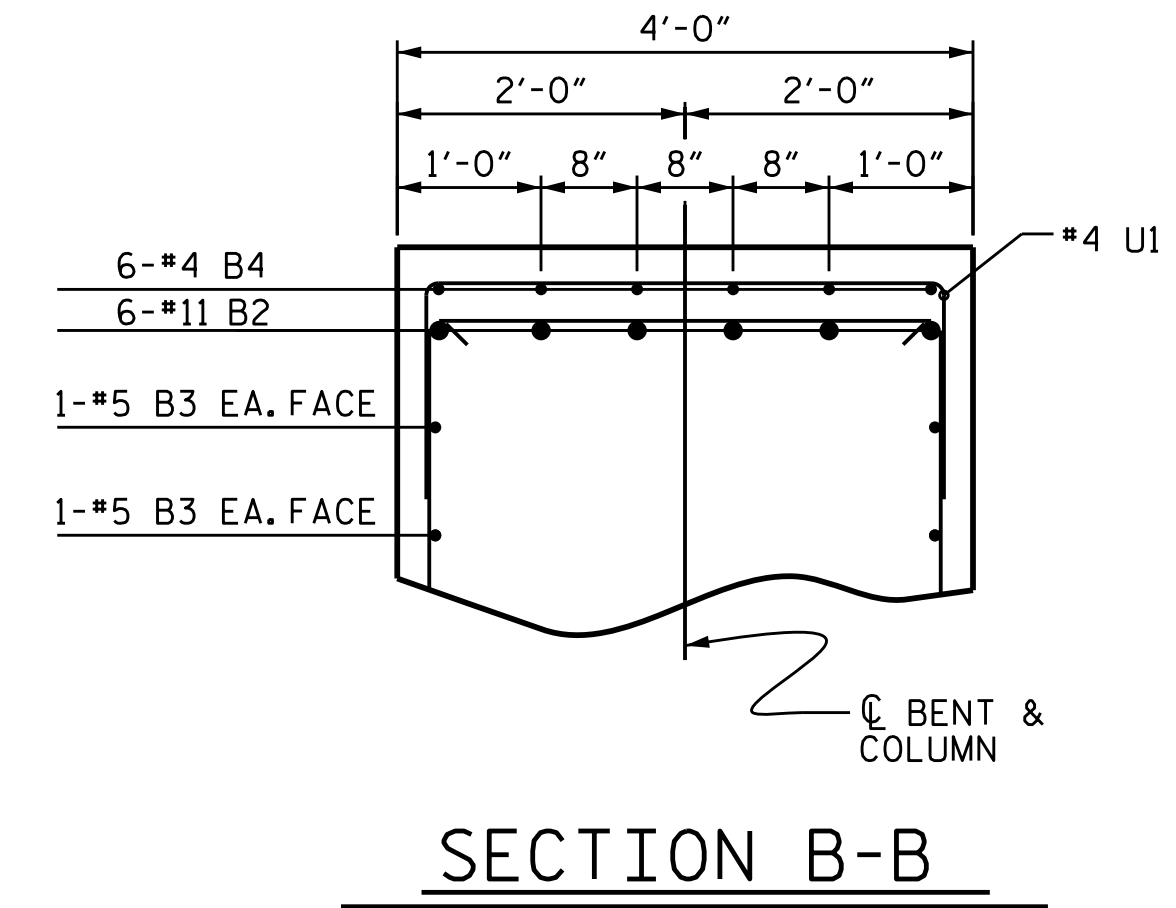
BENT 1

DRAWN BY : E.BAYISSA/C.RUIZ DATE : 04/2020
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E.BAYISSA DATE : 09/2020

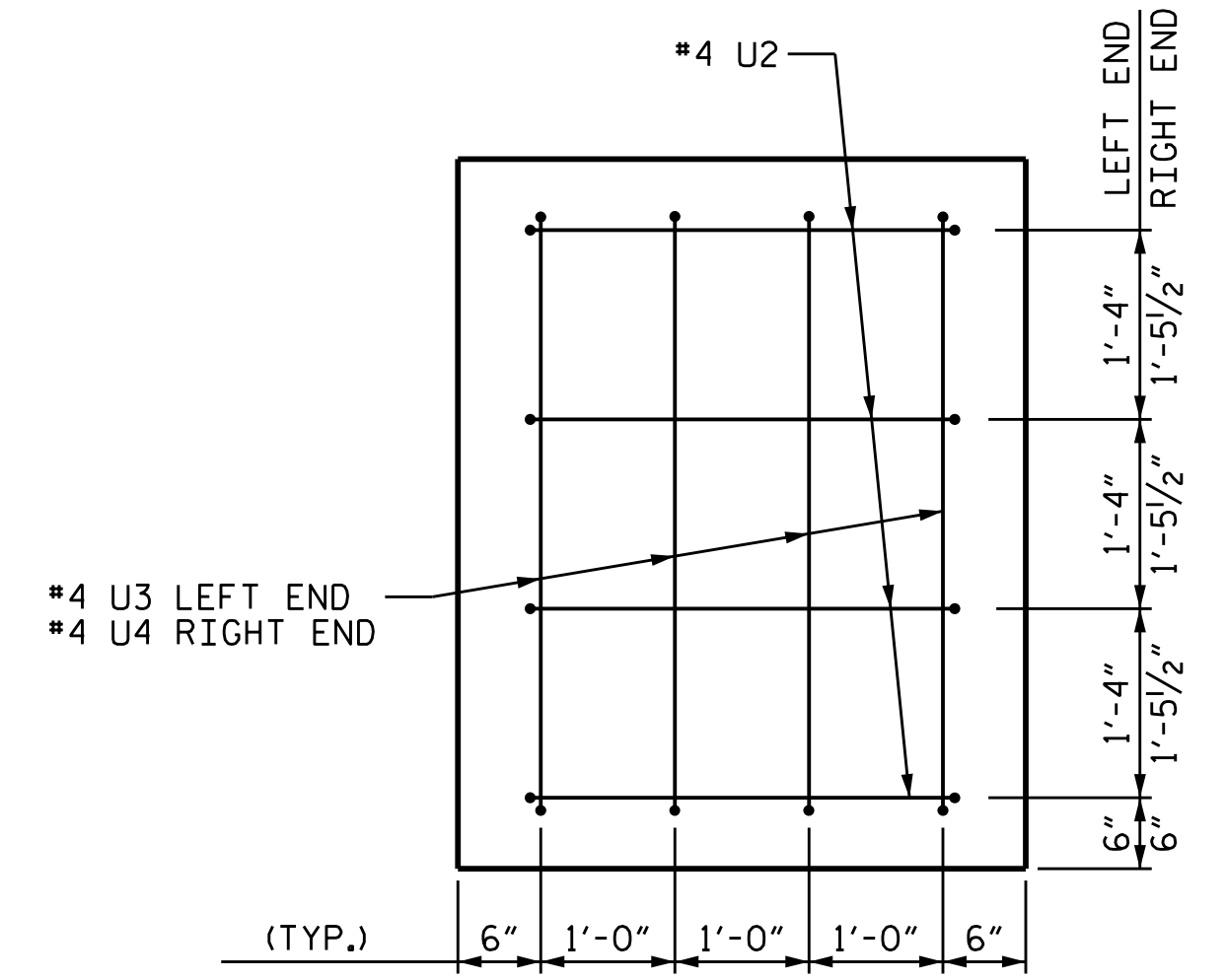
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			32



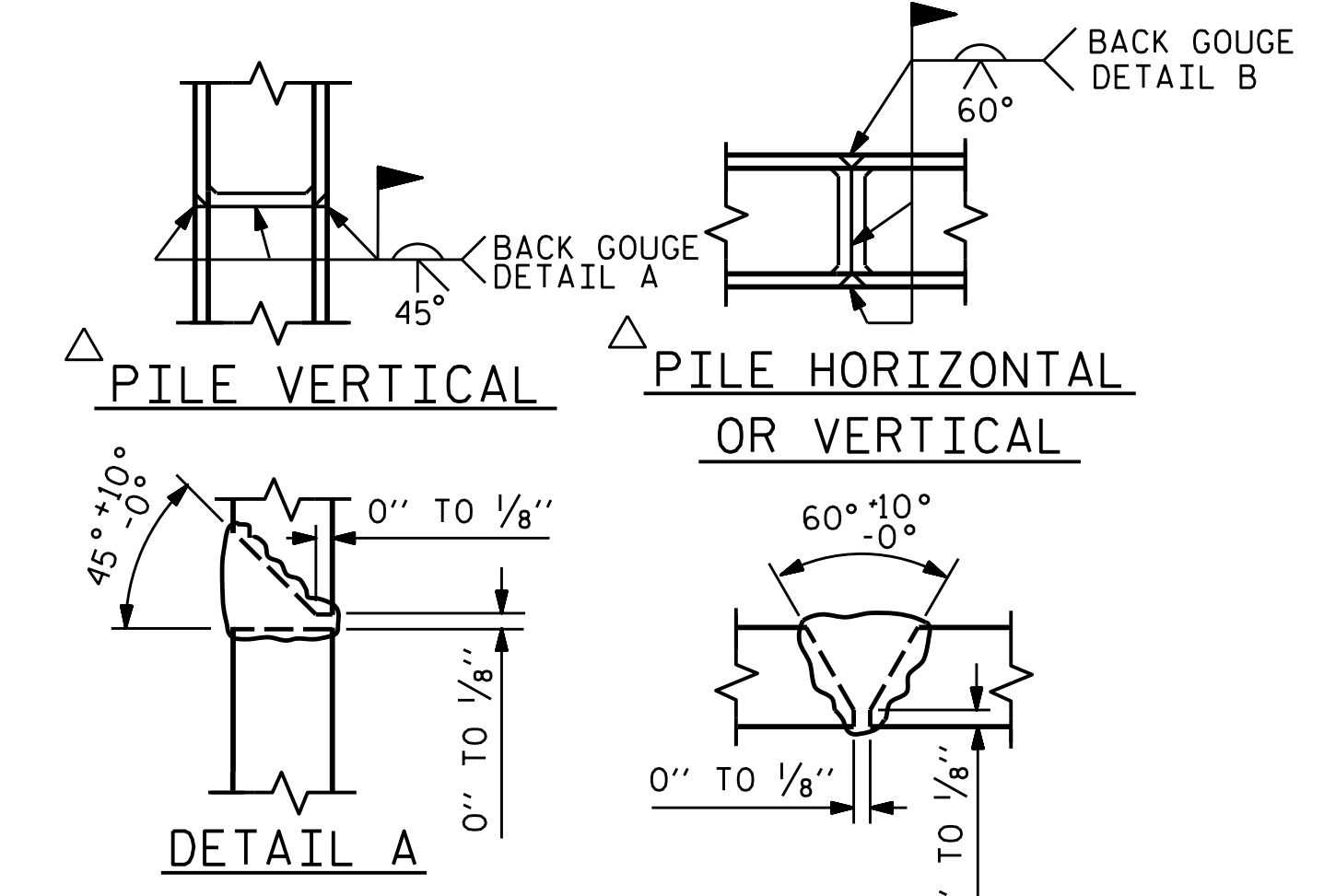
SECTION A-A
* INVERT ALTERNATE STIRRUPS



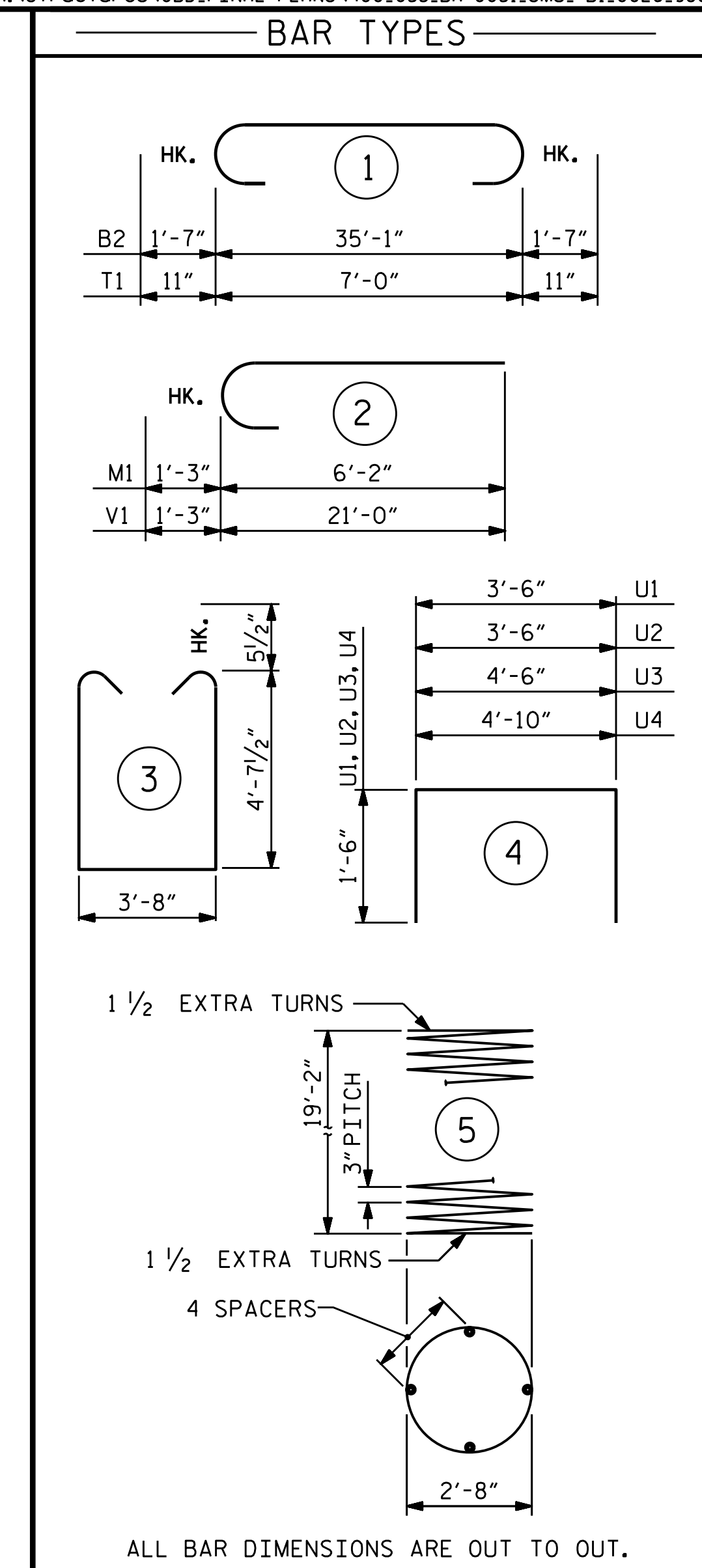
SECTION B-B



ENDS OF CAP DETAIL



PILE SPLICE DETAILS



BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	6	#11	STR.	35'-0"	1116	
B2	6	#11	1	38'-2"	1217	
B3	10	#5	STR.	35'-0"	365	
B4	6	#4	STR.	14'-4"	57	
M1	20	#9	2	7'-5"	504	
S1	43	#5	3	13'-10"	620	
U1	32	#4	4	6'-6"	139	
U2	8	#4	4	6'-6"	35	
U3	4	#4	4	7'-6"	20	
U4	4	#4	4	7'-10"	21	
T1	56	#8	STR.	8'-10"	1321	
T2	32	#6	STR.	7'-0"	336	
V1	20	#9	2	22'-3"	1513	
REINFORCING STEEL				7264 LBS.		
SPIRAL REINFORCING STEEL				877 LBS.		

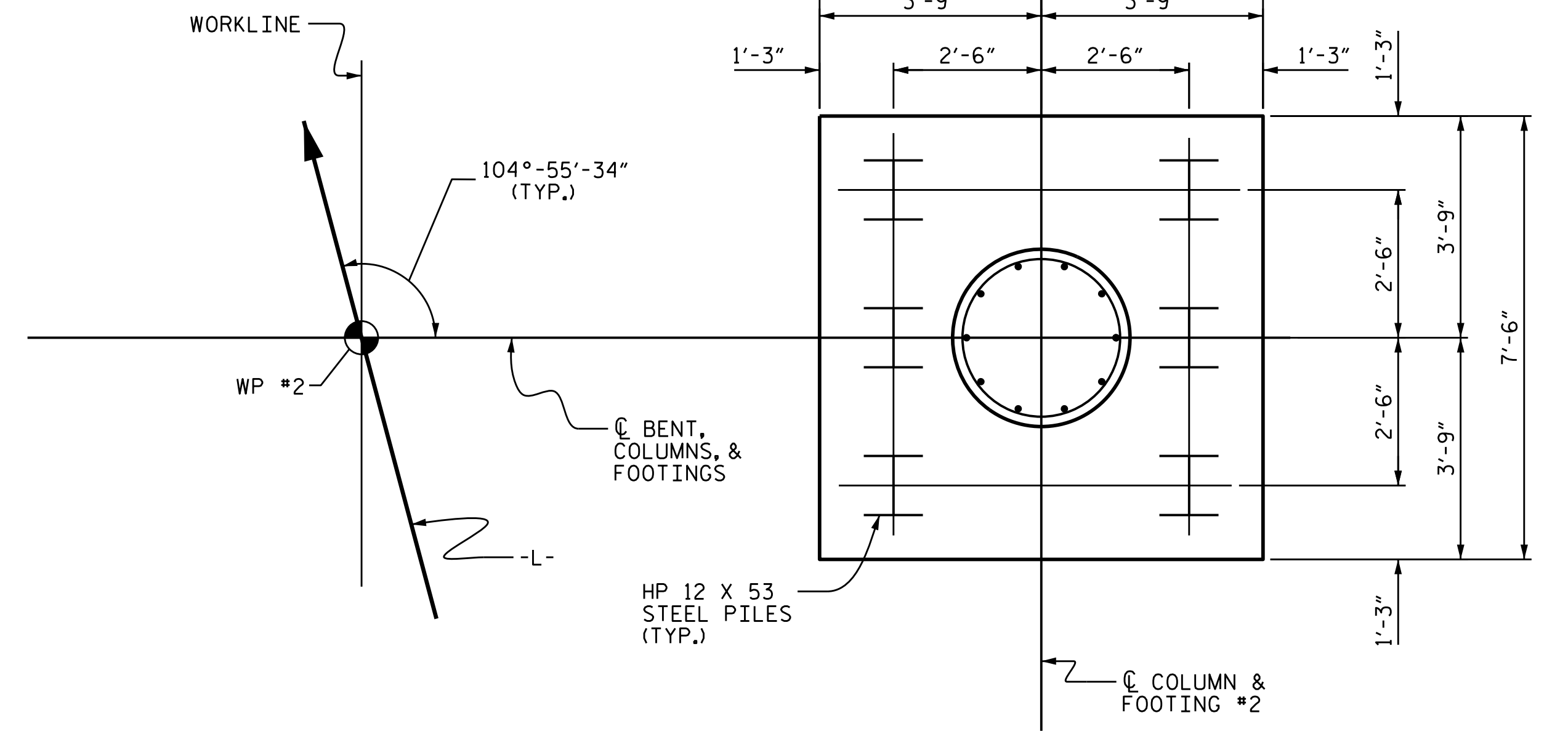
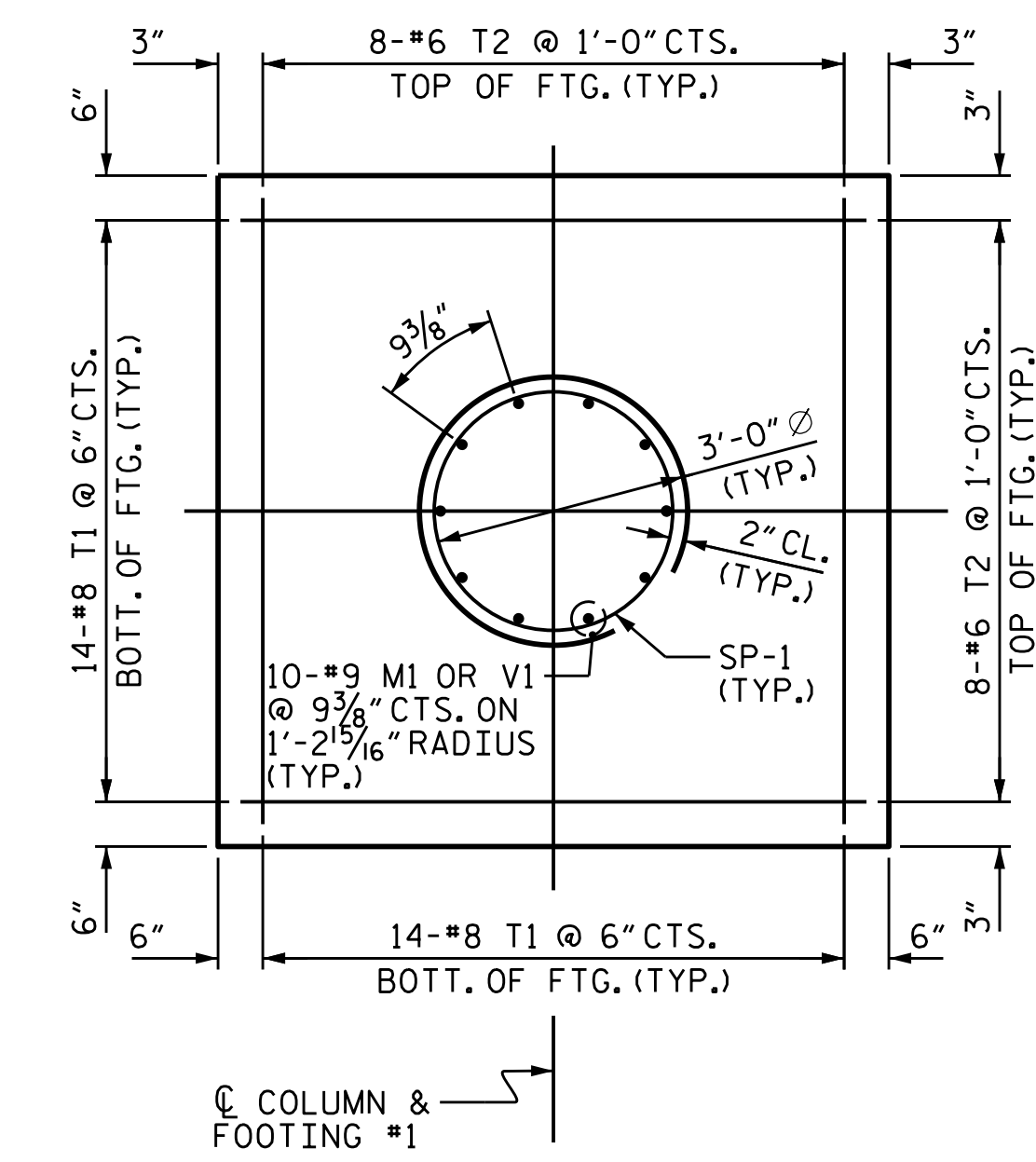
CLASS "A" CONCRETE BREAKDOWN :

POUR 3 (CAP)	27.1 C.Y.
POUR 2 (COLUMN)	9.9 C.Y.
POUR 1 (FOOTING)	12.5 C.Y.
TOTAL CLASS "A" CONCRETE:	49.5 C.Y.

HP 12 X 53 STEEL PILE
No 12 540 LF

FOUNDATION EXCAVATION FOR BENT
LUMP SUM

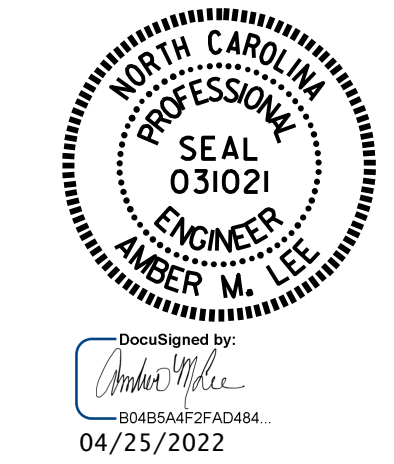
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PLAN OF FOOTING
(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & FOOTING)

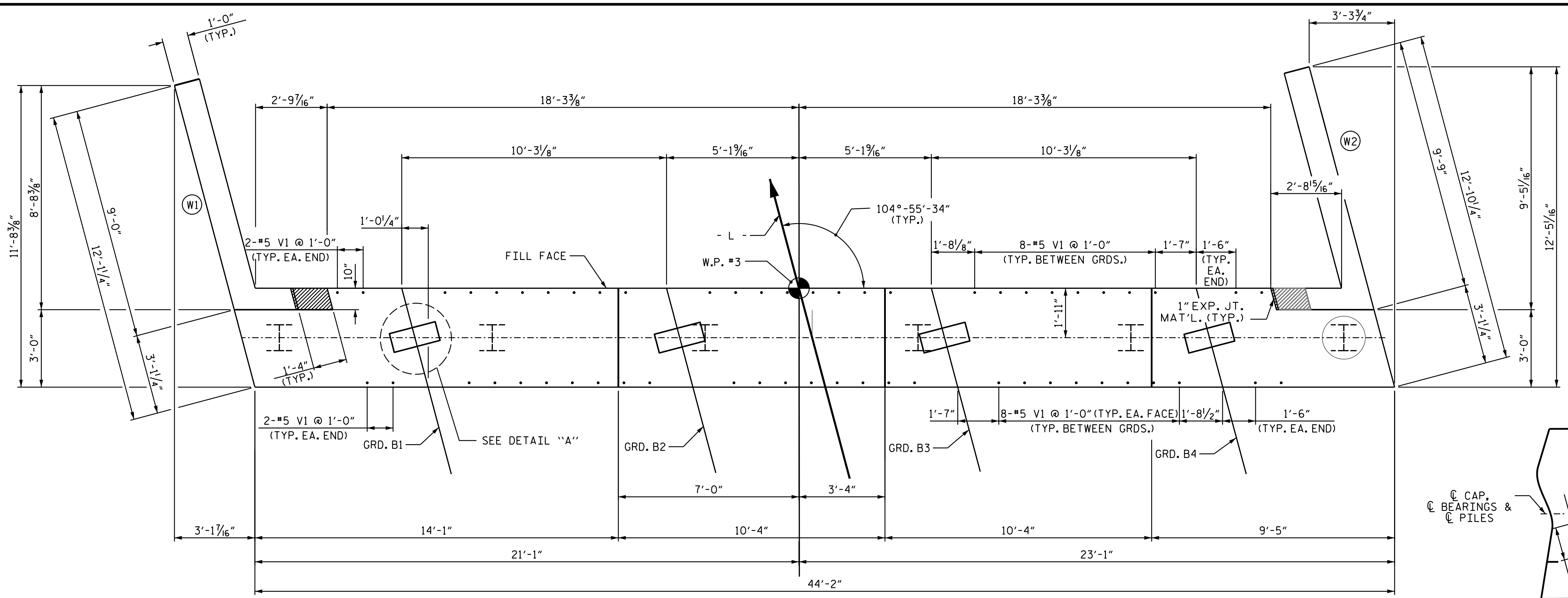
DRAWN BY : C. RUIZ DATE : 07/2020
 CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 09/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



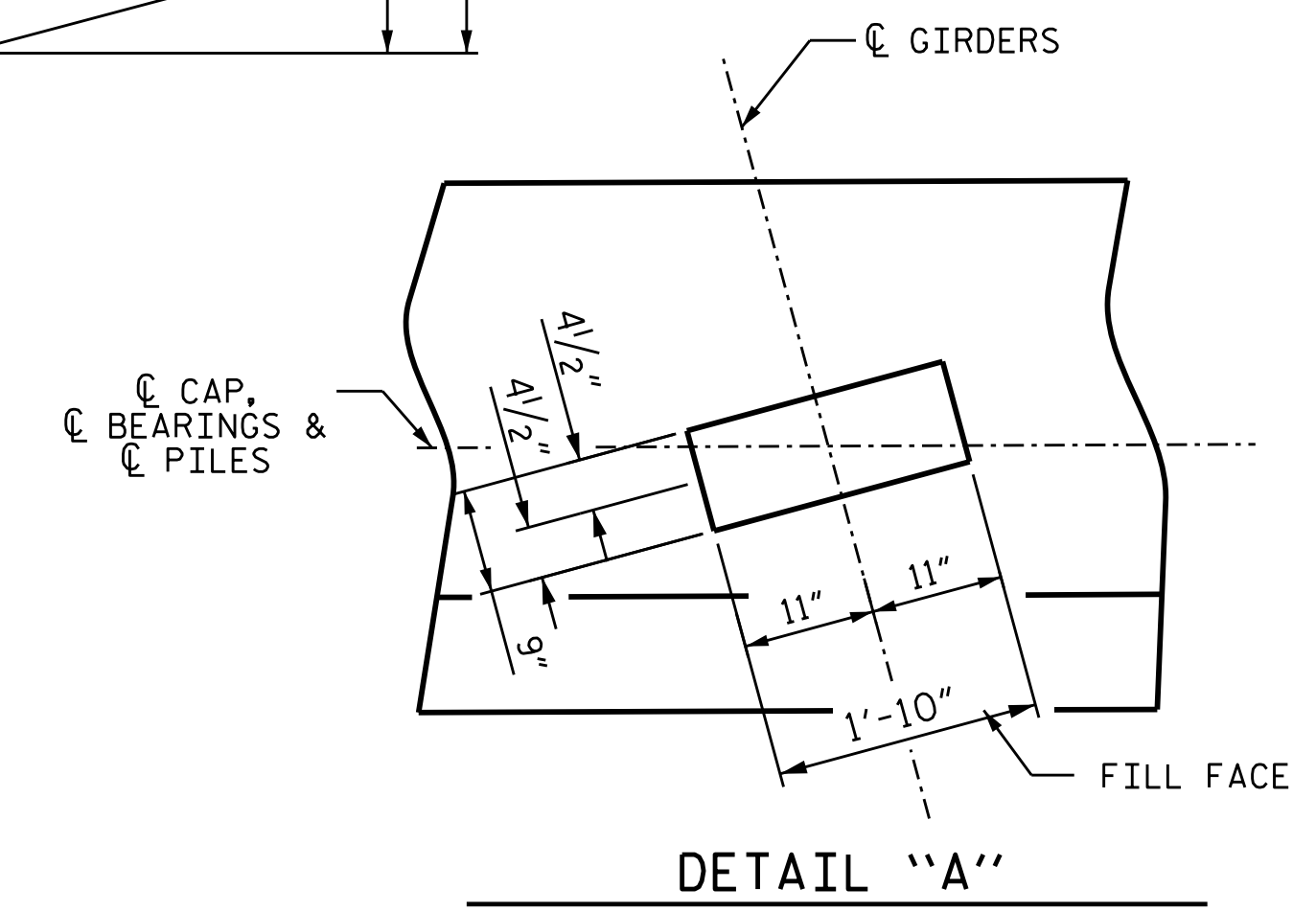
PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-
 SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			32

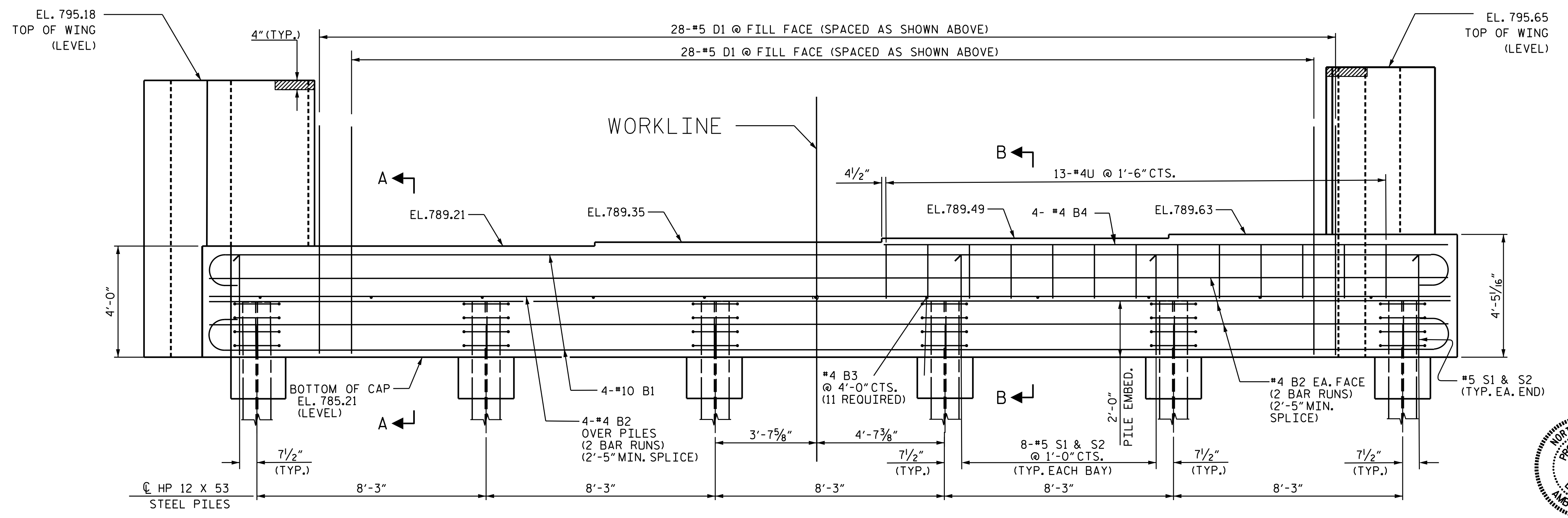


PLAN

NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 V1 BARS.
 THE TOP PART OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER PARAPET IS CAST IF SLIP FORMING IS USED.



DETAIL "A"



ELEVATION

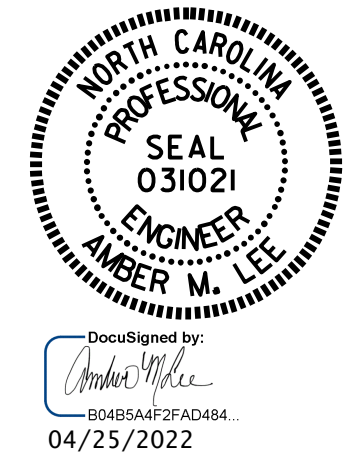
(V BARS ARE NOT SHOWN FOR CLARITY)

PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

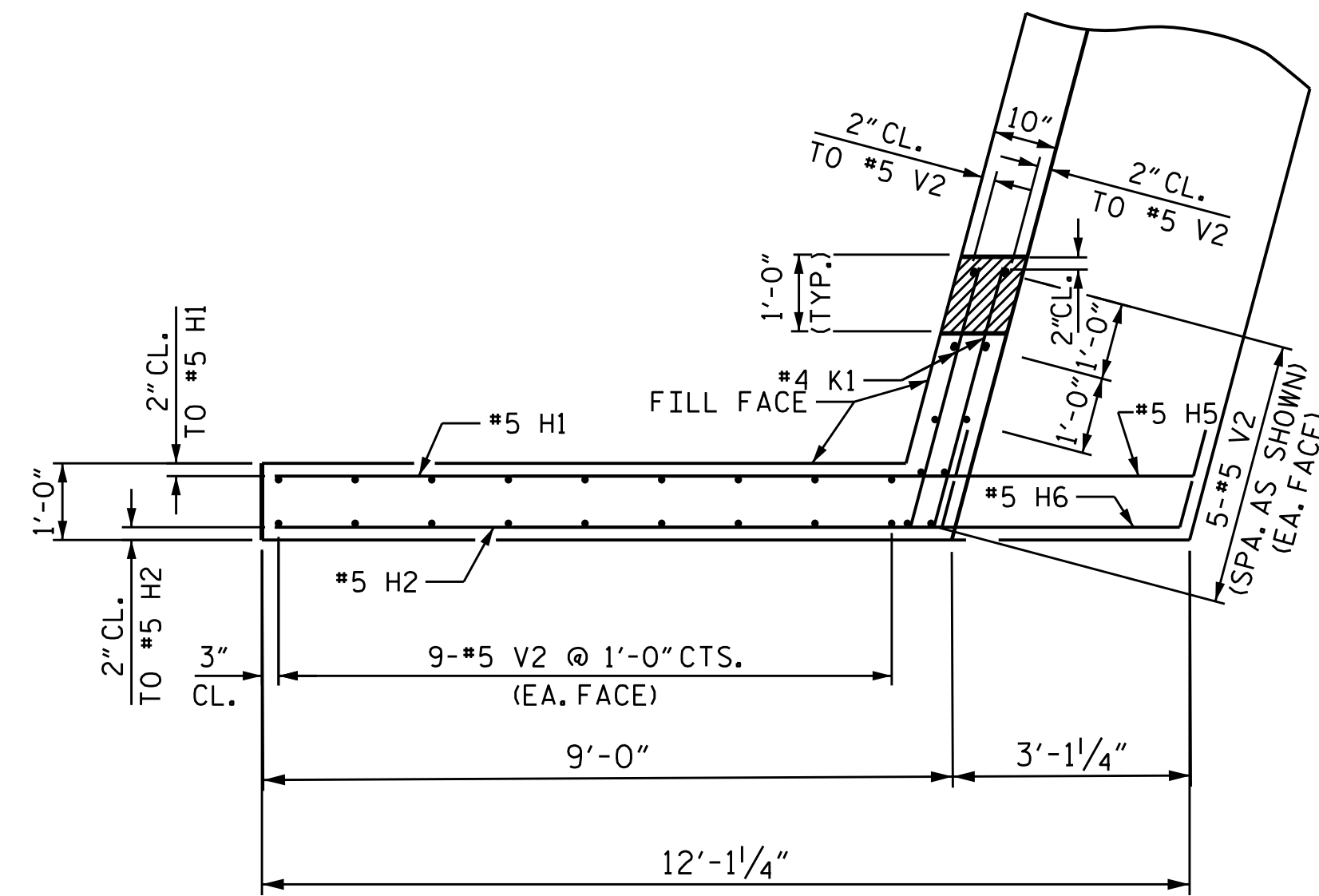
**INTEGRAL
 END BENT 2**



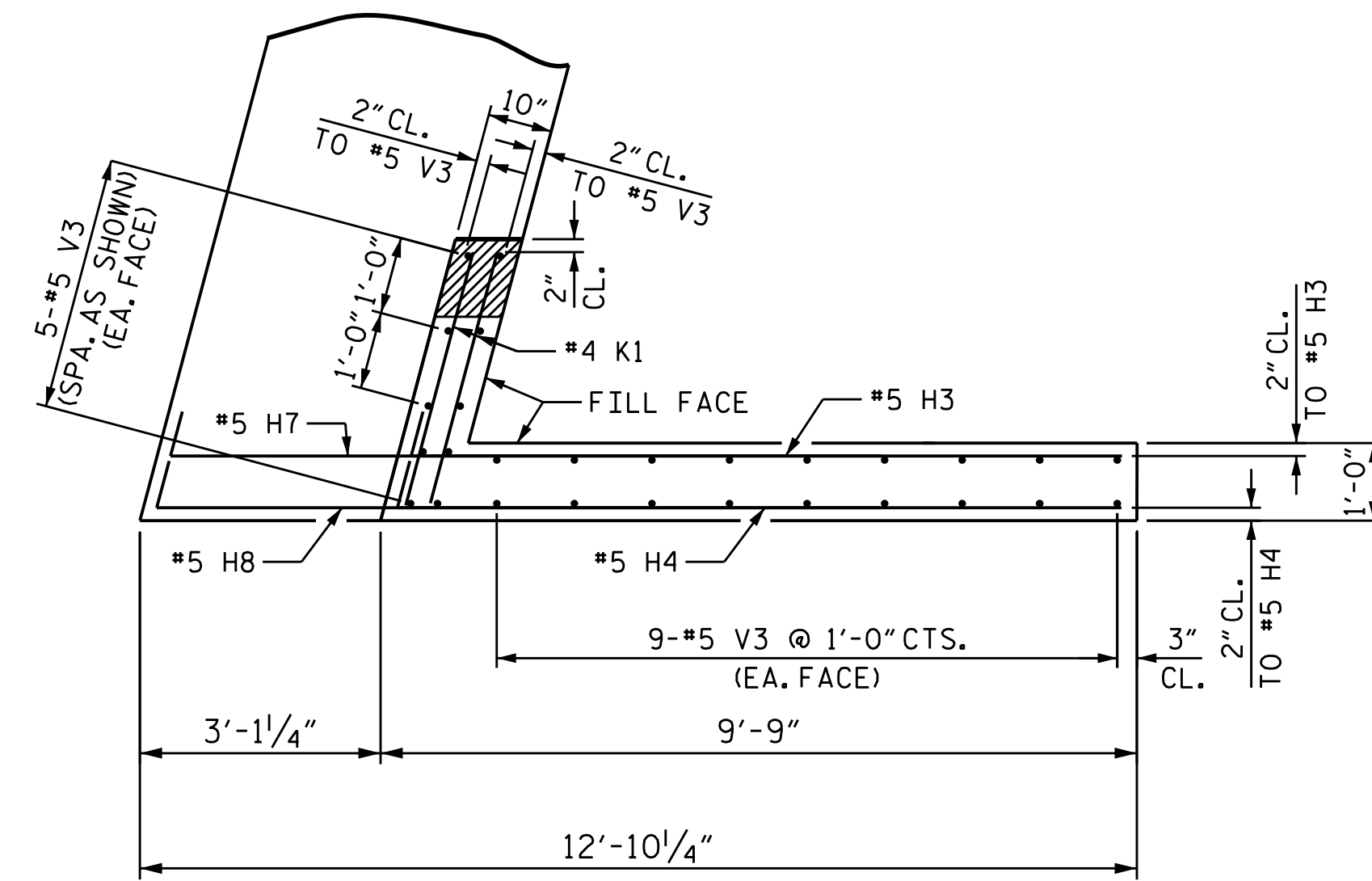
DRAWN BY : E.BAYISSA/C.RUIZ DATE : 09/2020
 CHECKED BY : H.A.LOCKLEAR DATE : 03/2022
 DESIGN ENGINEER OF RECORD: E.BAYISSA DATE : 09/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

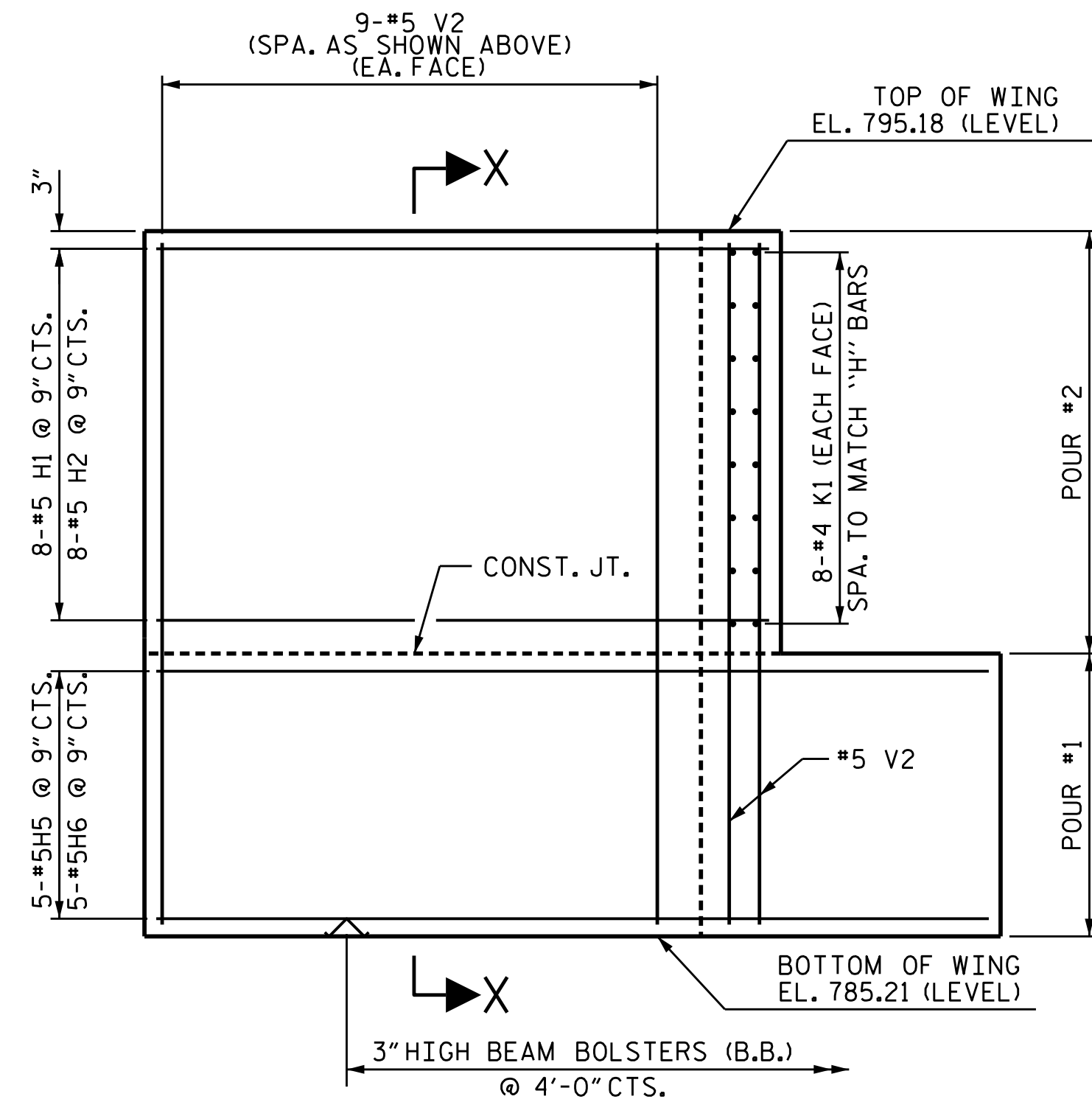
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			32



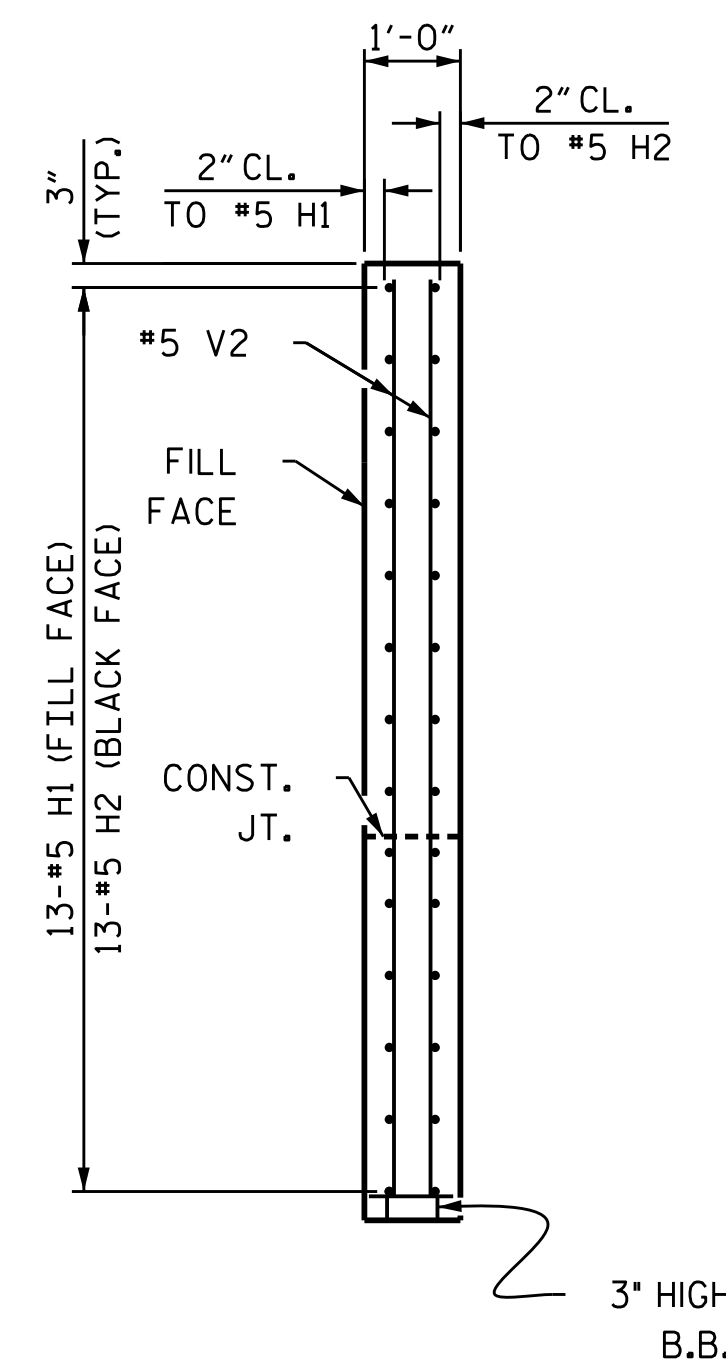
PLAN OF LEFT WING - W1



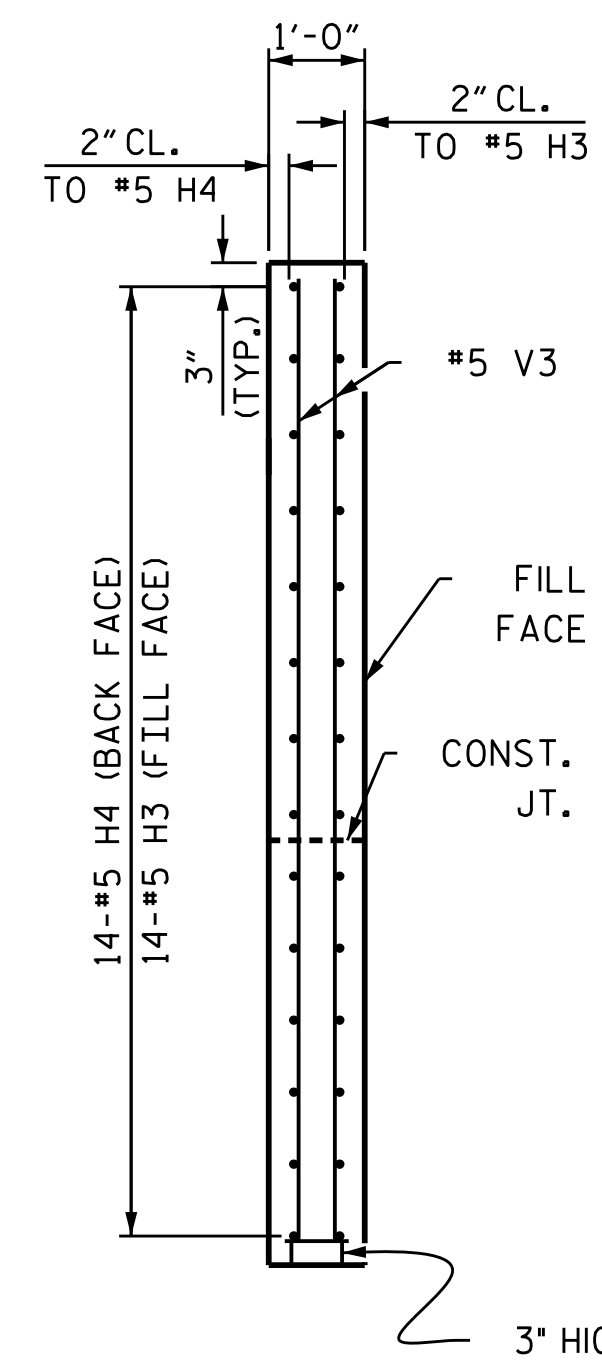
PLAN OF RIGHT WING - W2



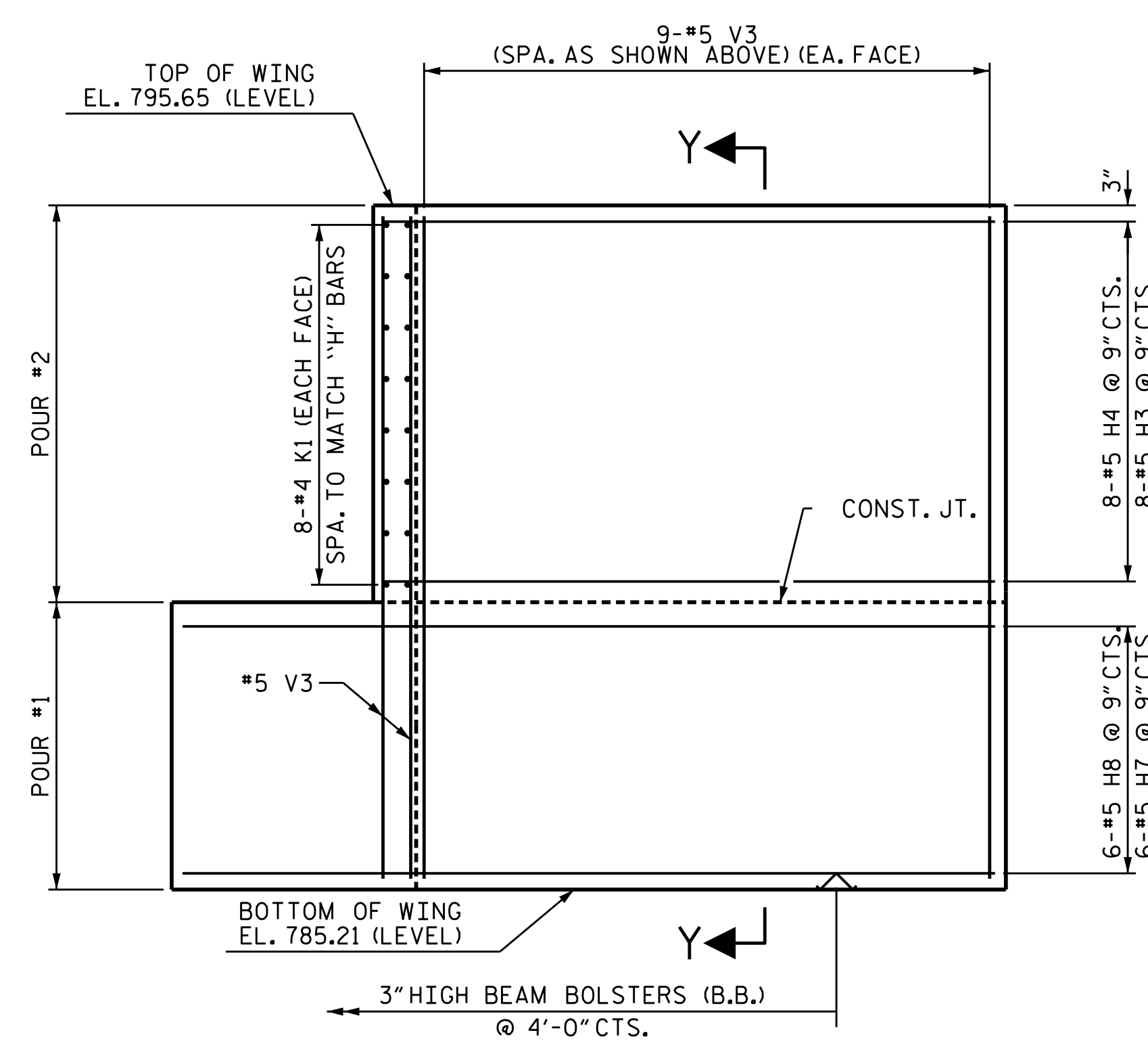
ELEVATION OF LEFT WING - W1



SECTION X-X



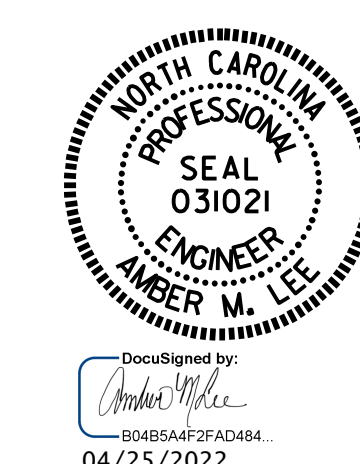
SECTION Y-Y



ELEVATION OF RIGHT WING - W2

PROJECT NO. BR-0051
 YADKIN COUNTY
 STATION: 18+34.78 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

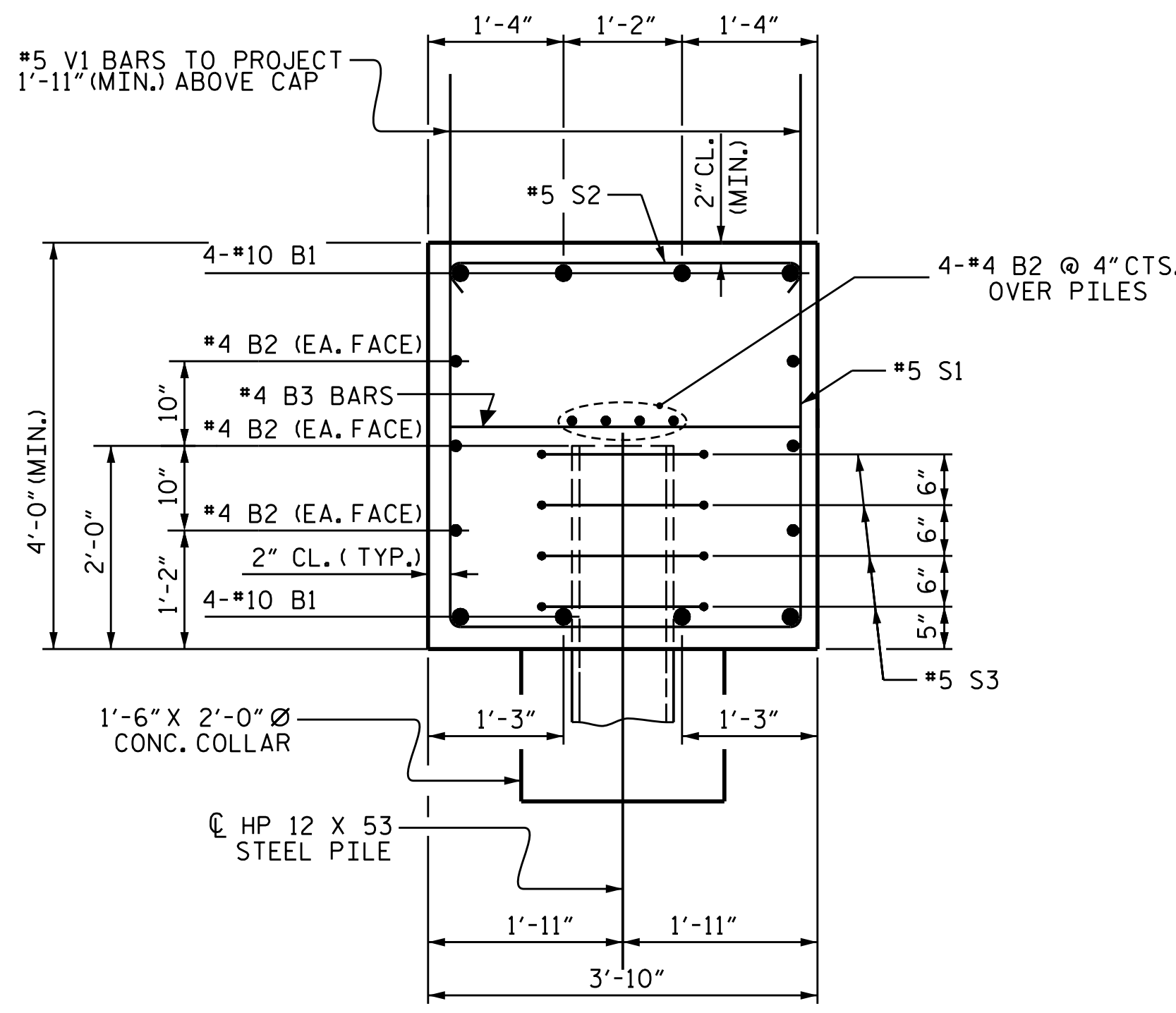
SUBSTRUCTURE
 INTEGRAL
 END BENT 2

DRAWN BY: C. RUIZ DATE: 09/2020
 CHECKED BY: H.A. LOCKLEAR DATE: 03/2022
 DESIGN ENGINEER OF RECORD: E. BAYISSA DATE: 09/2019

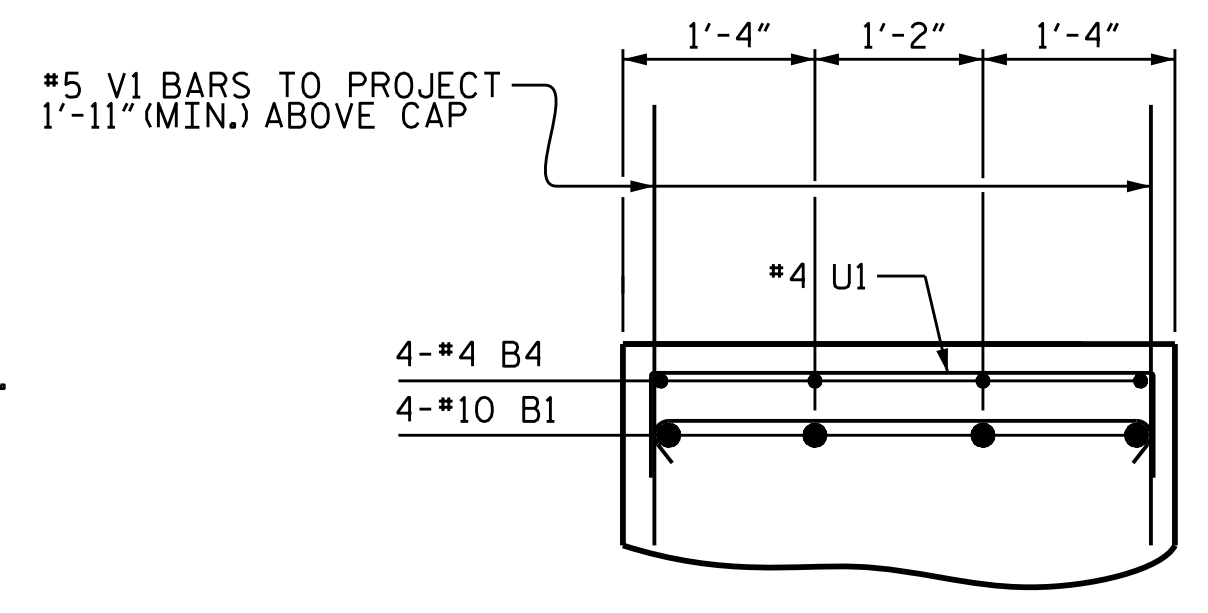
4/25/2022
 R:\Structures\OBD.FINAL PLANS\400.057.BR-0051.SMU. E2.0028.980090.dgn
 omlee

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

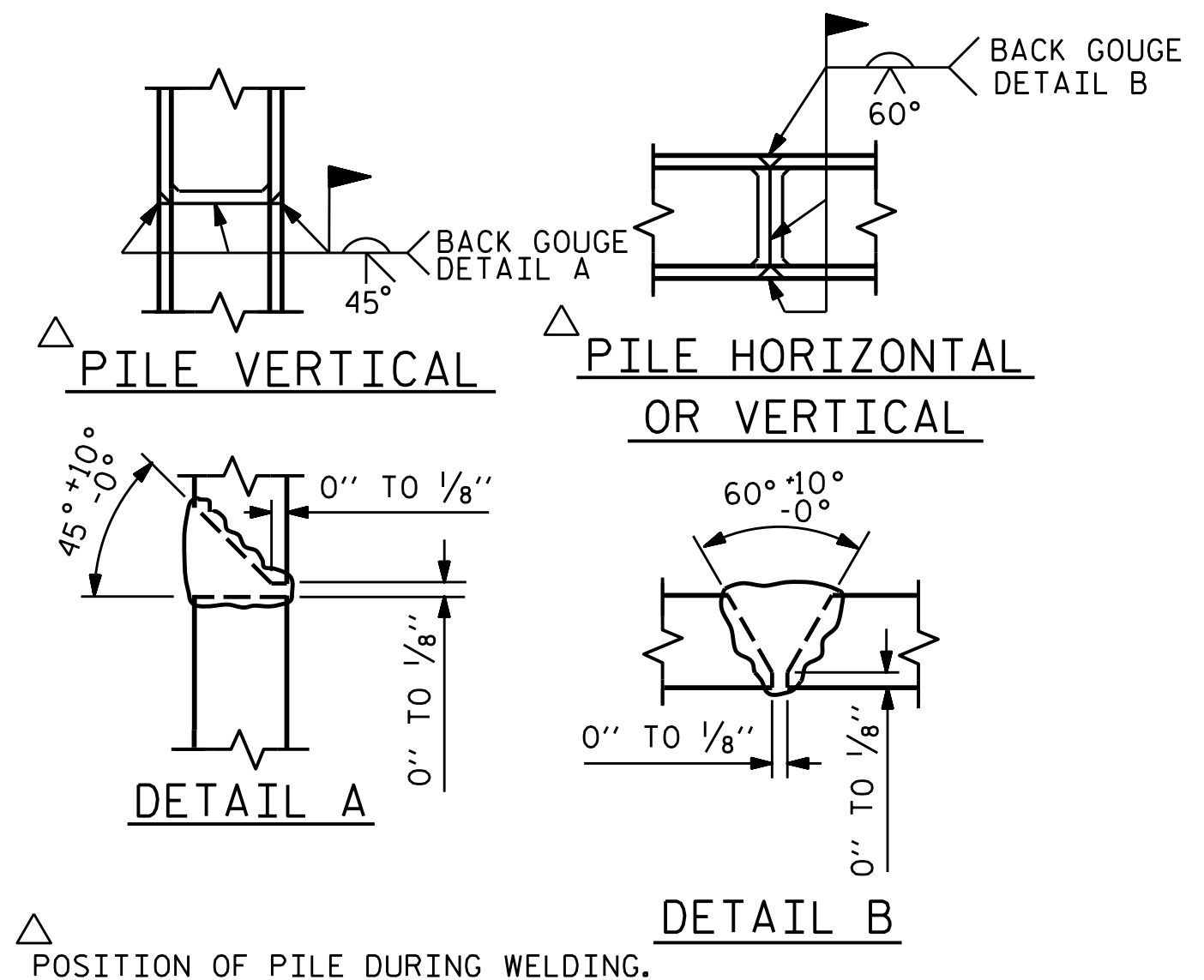
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			32



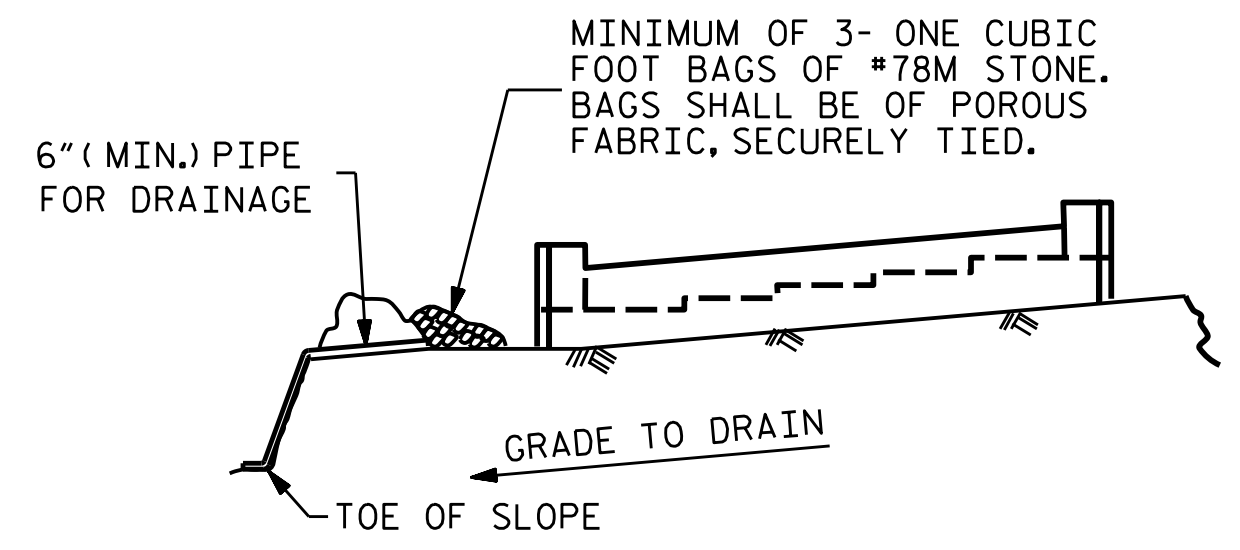
SECTION A-A



SECTION B-B



PILE SPLICE DETAILS

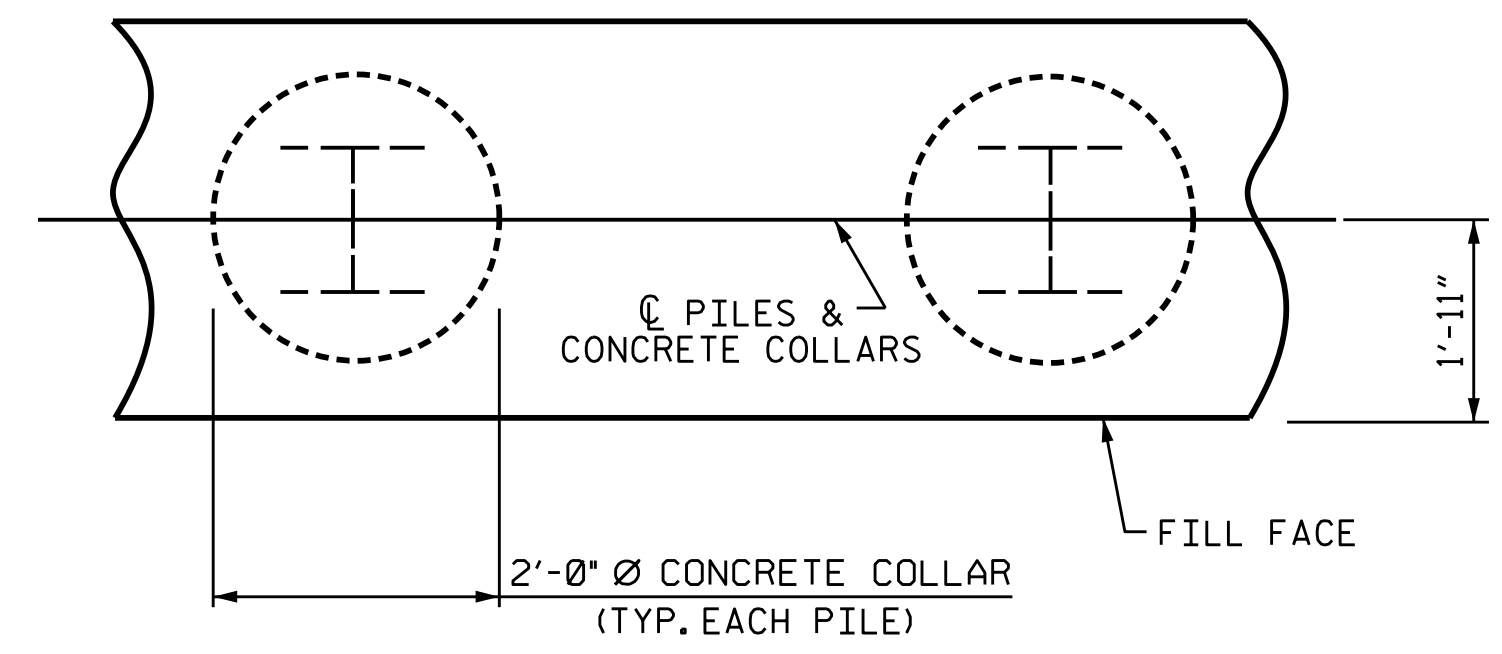


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

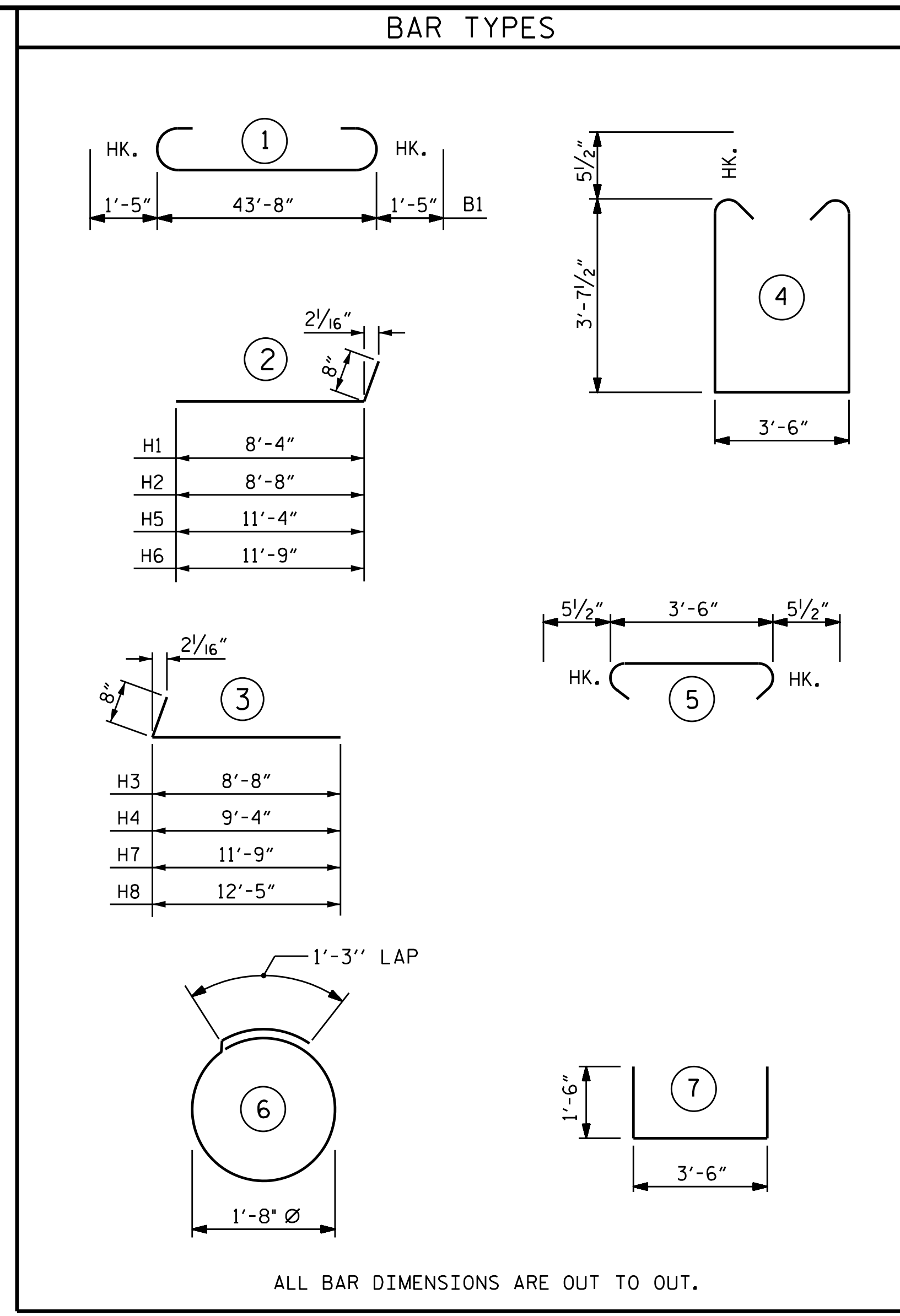
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

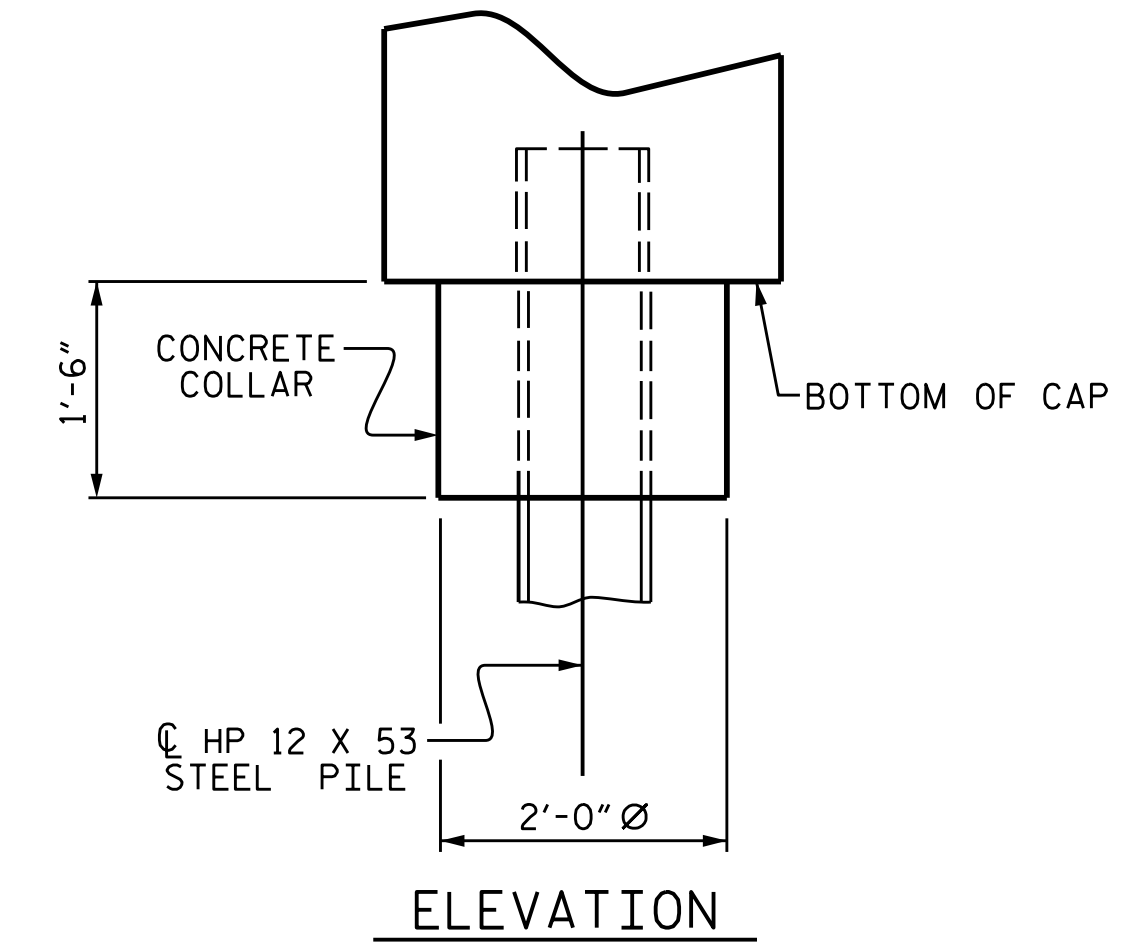
TEMPORARY DRAINAGE AT END BENT



PLAN
CORROSION PROTECTION FOR STEEL PILES DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT.



ELEVATION

BILL OF MATERIAL					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		46'-6"	1601
B2	20	#4	STR.	23'-1"	308
B3	11	#4	STR.	3'-6"	26
B4	8	#4	STR.	10'-11"	58
H1	8	#5		9'-0"	75
H2	8	#5		9'-4"	78
H3	8	#5		9'-4"	78
H4	8	#5		10'-0"	83
H5	5	#5		12'-0"	63
H6	5	#5		12'-5"	65
H7	6	#5		12'-5"	78
H8	6	#5		13'-1"	82
K1	32	#4	STR.	3'-5"	73
S1	42	#5		11'-8"	511
S2	42	#5		4'-5"	193
S3	24	#5		6'-6"	163
U1	13	#4		6'-6"	56
V1	56	#5	STR.	6'-0"	350
V2	28	#5	STR.	9'-7"	280
V3	28	#5	STR.	10'-1"	294

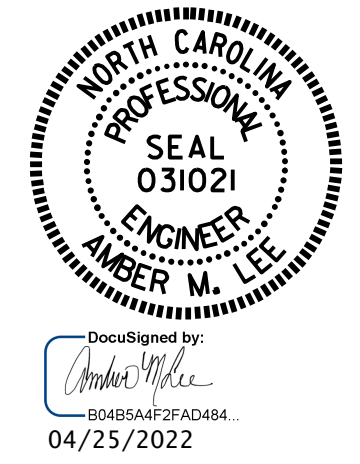
REINFORCING STEEL	4515 LBS.
CLASS "A" CONCRETE BREAKDOWN :	
POUR 1 (CAP, COLLAR, & LOWER PART OF WINGWALL)	30.2 C.Y.
POUR 2 (UPPER PART OF WINGWALL)	5.2 C.Y.
TOTAL CLASS "A" CONCRETE:	35.4 C.Y.
HP 12 X 53 STEEL PILE	
No 6	390.0 LF

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL END BENT 2



DRAWN BY : C. RUIZ DATE : 09/2020
CHECKED BY : H.A. LOCKLEAR DATE : 03/2022
DESIGN ENGINEER OF RECORD: E. BAYISSA DATE : 09/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			32

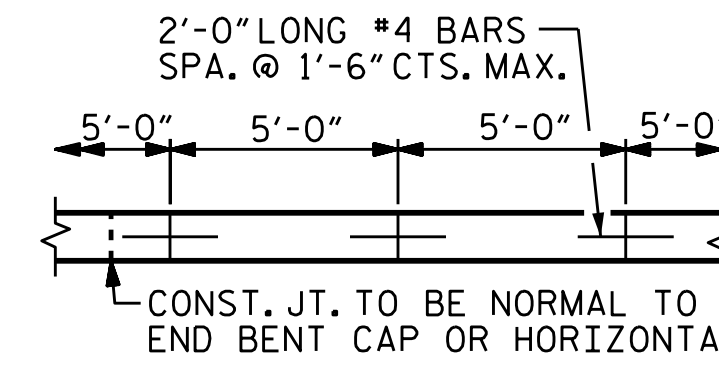
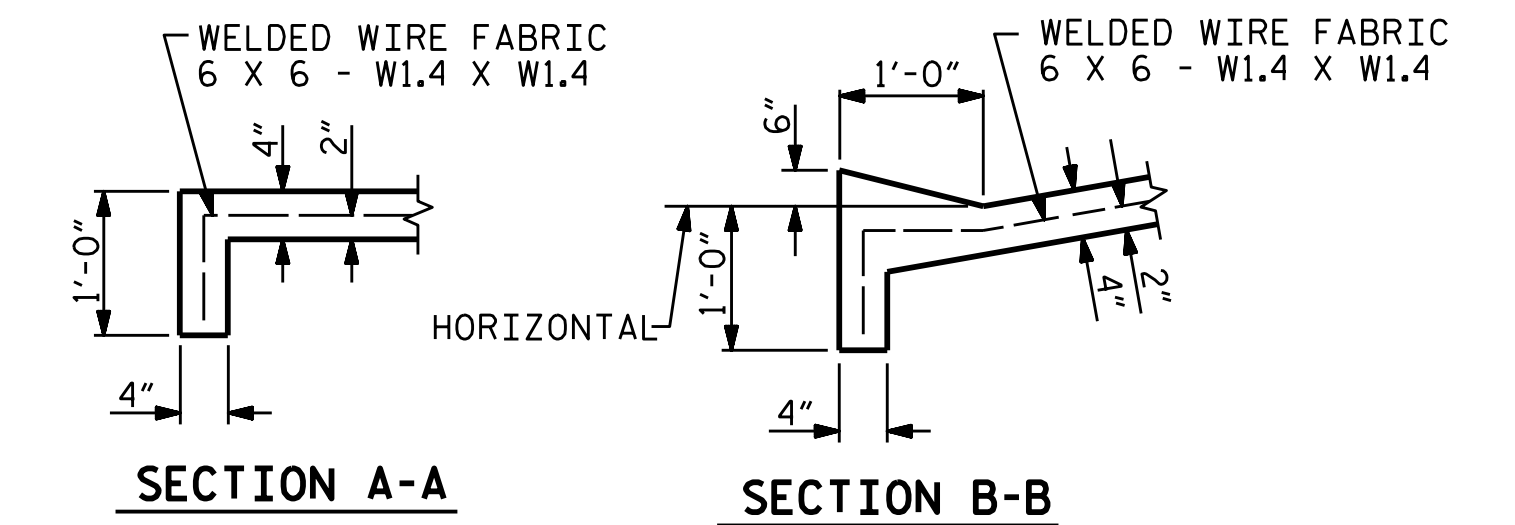
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GENERAL NOTES

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE 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.

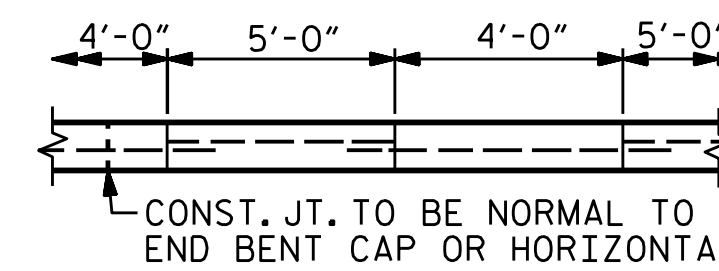
BRIDGE @ STA. 18+34.78 -L-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	373	746
END BENT 2	241	482

* QUANTITY SHOWN IS BASED ON 5' POURS.



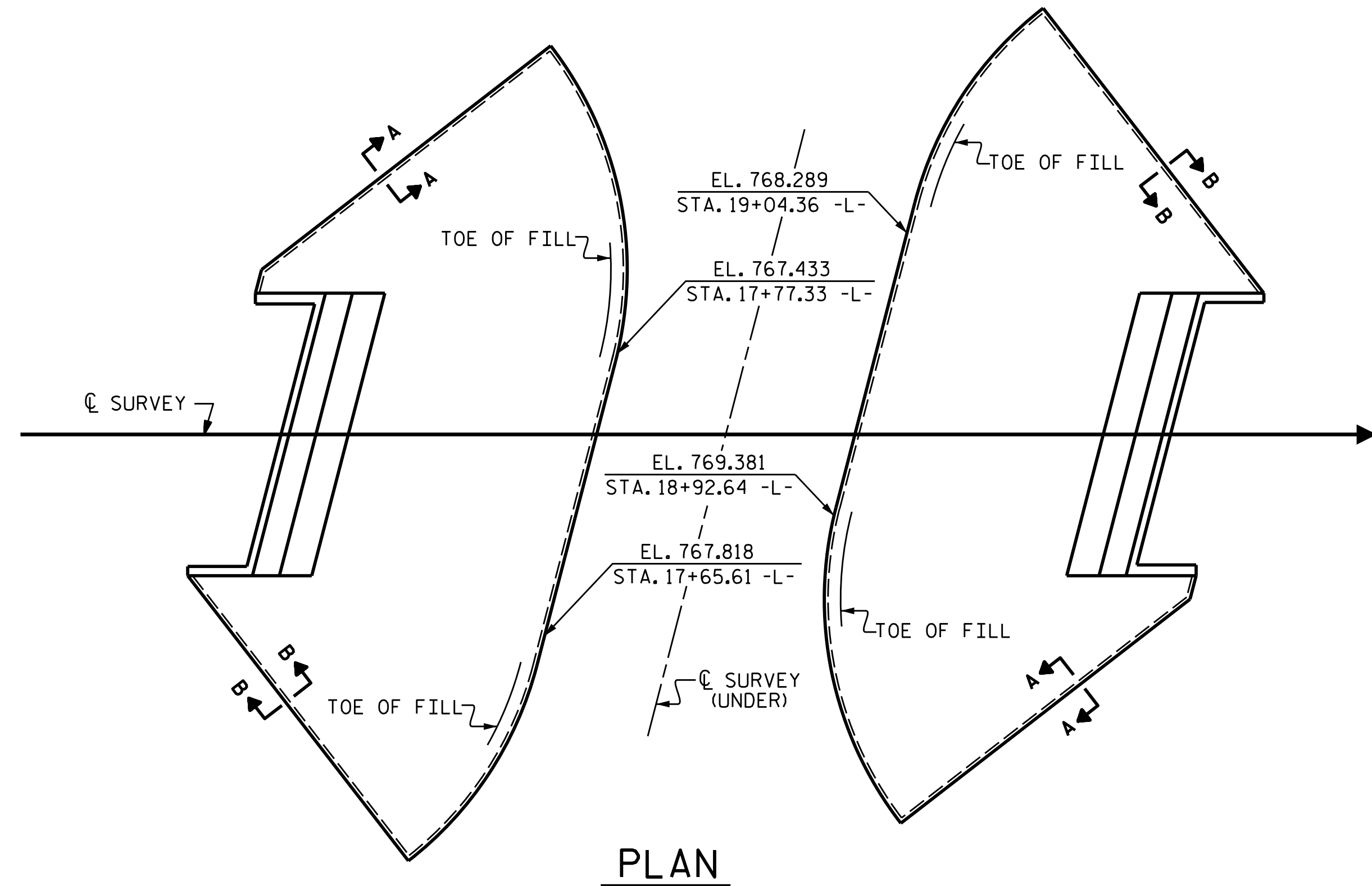
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

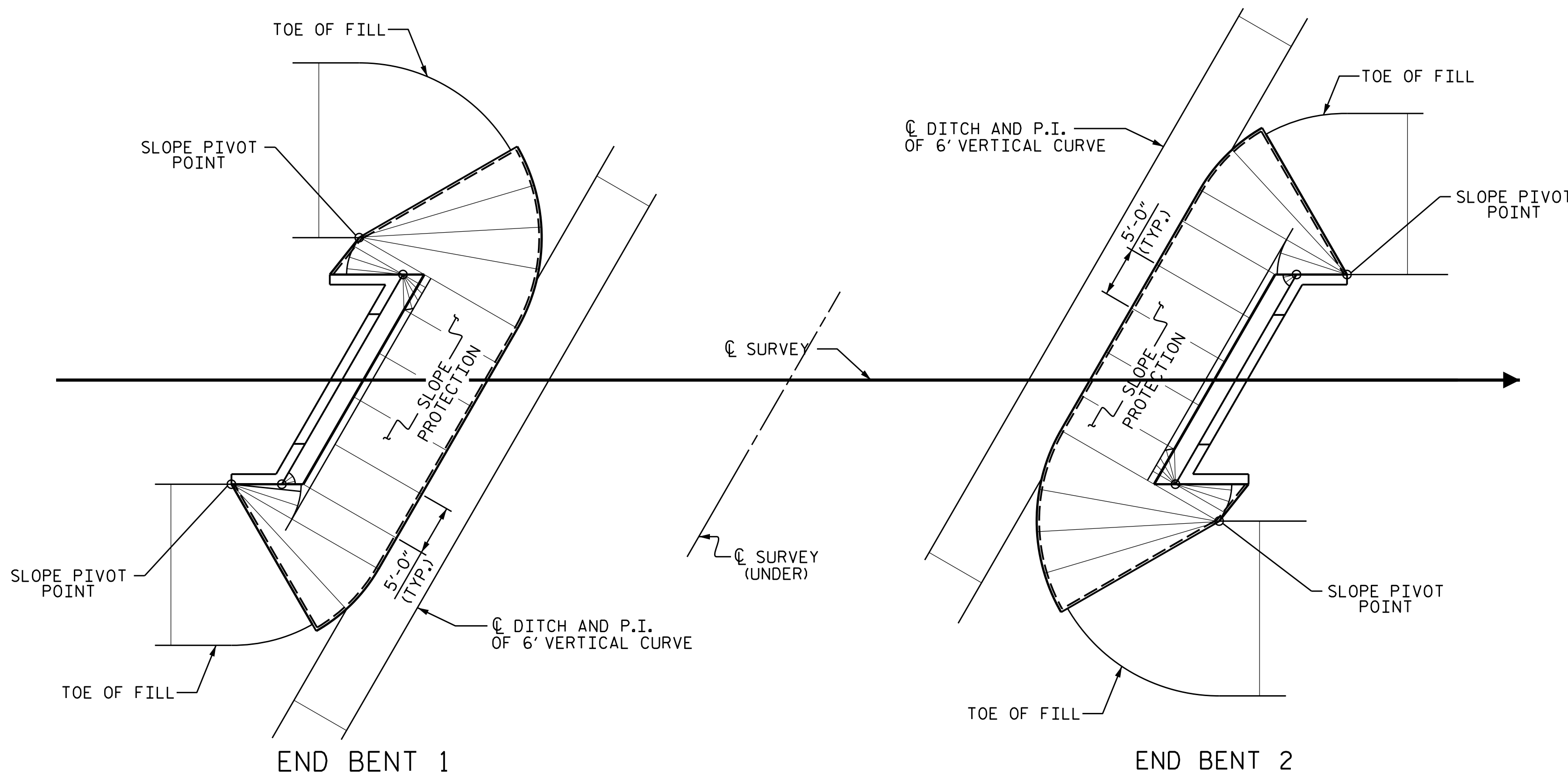


POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

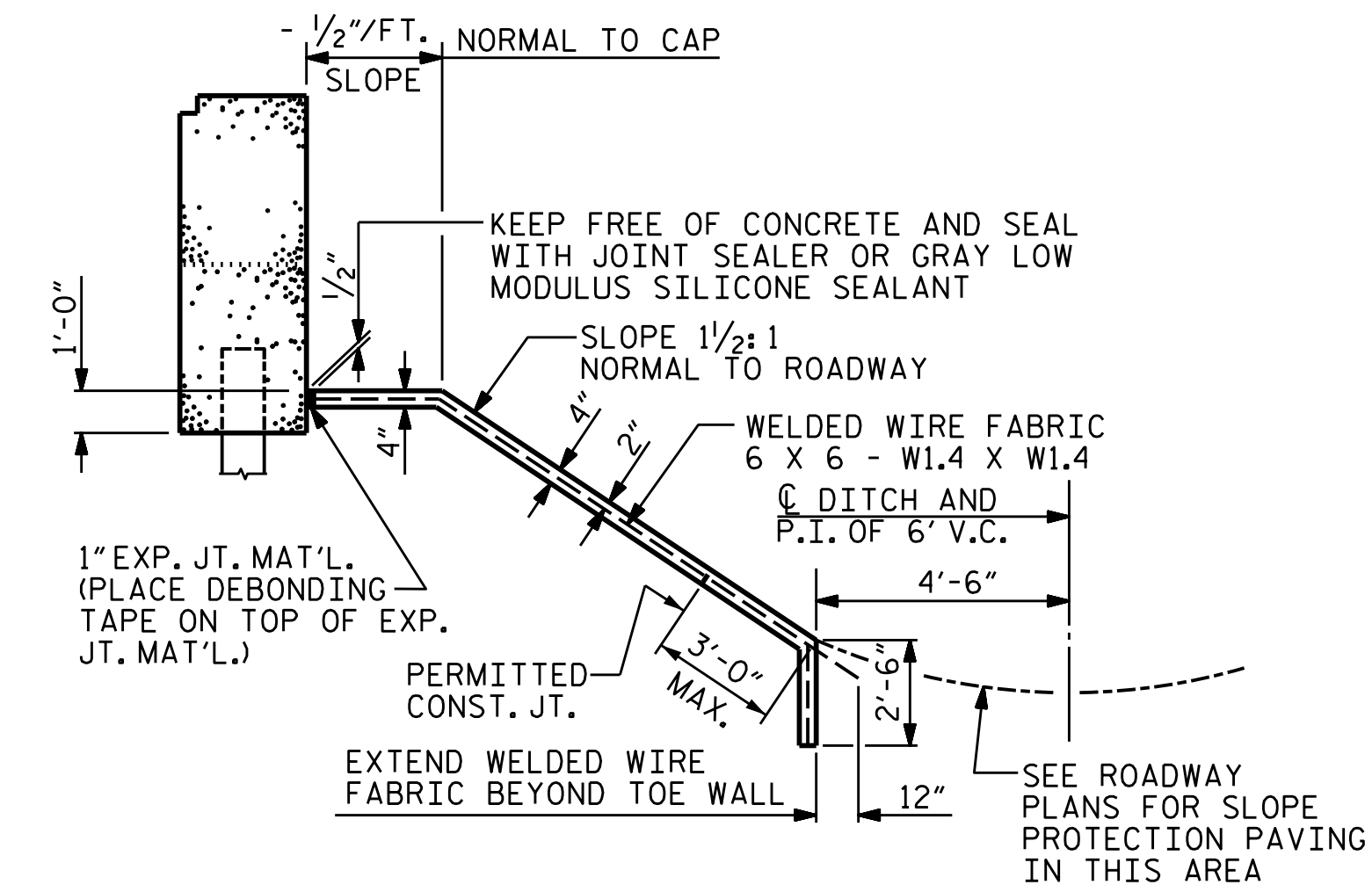
OPTIONAL POURING DETAIL



PLAN

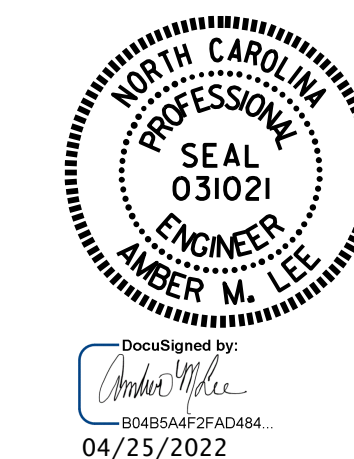


PLAN - CONCRETE PLACEMENT



SECTION ALONG C SURVEY WHEN FILL CATCHES IN DITCH

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78-L-

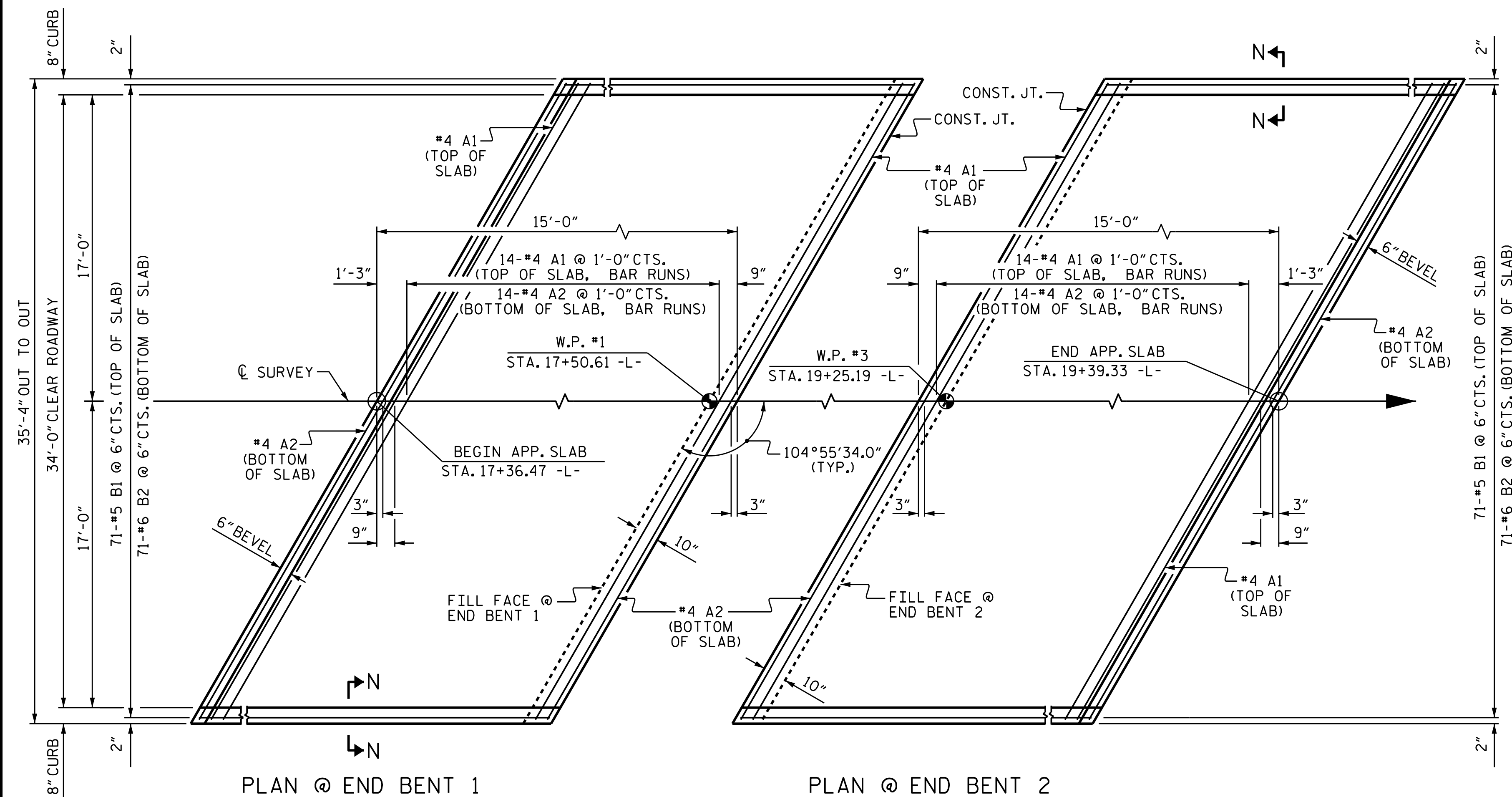


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SLOPE PROTECTION
DETAILS

ASSEMBLED BY : M. G. SHAIKH	DATE : 04/2020
CHECKED BY : H.A. LOCKLEAR	DATE : 03/2022
DRAWN BY : ELR 5/92	MAA/GM
CHECKED BY : GRP 6/92	MAA/TMG
	MAA/THC

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

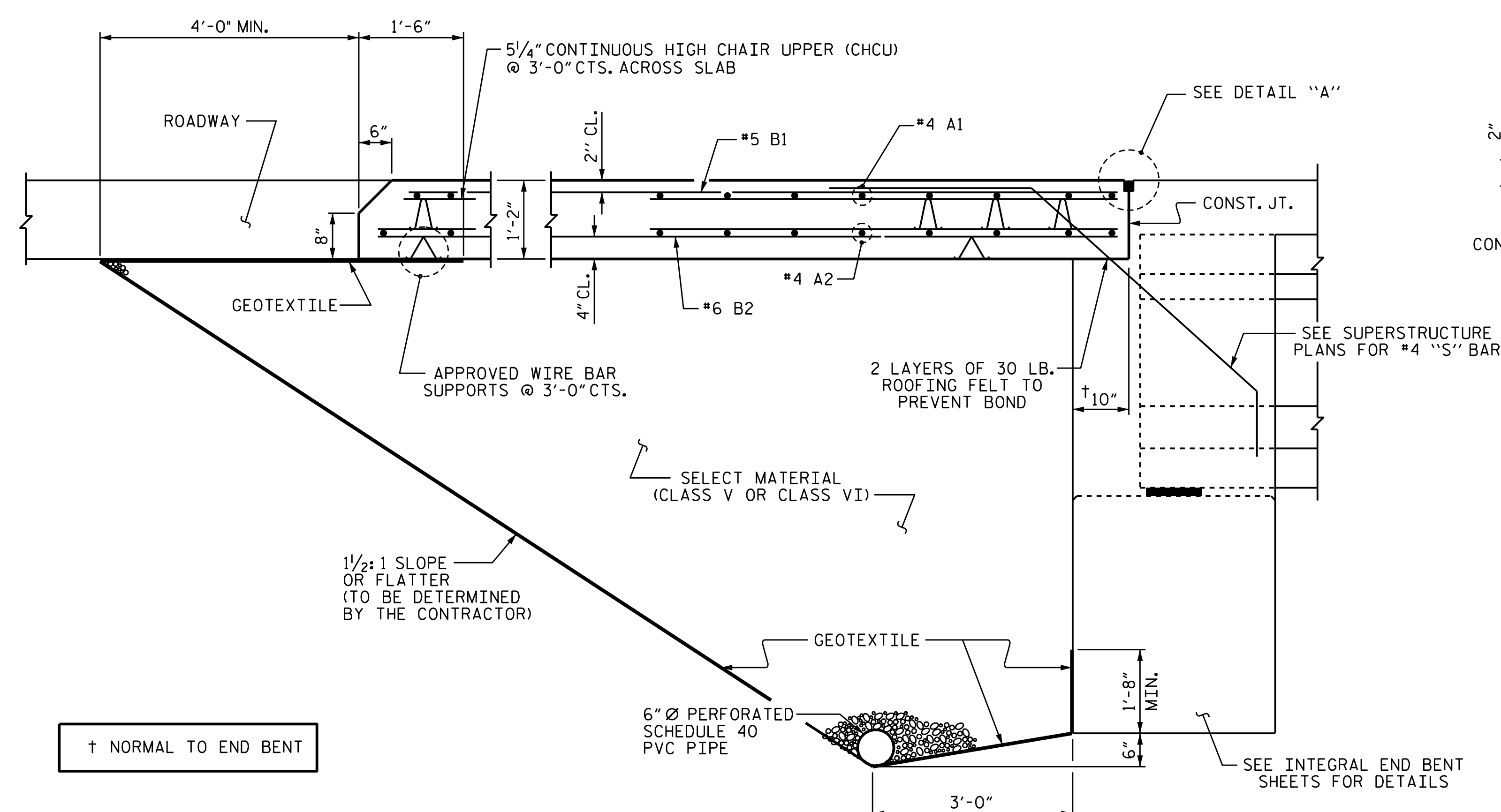
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			32



PLAN @ END BENT 1

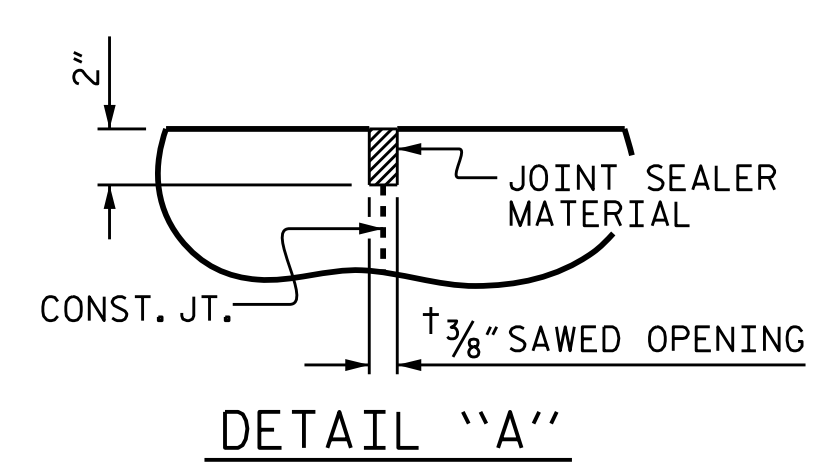
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

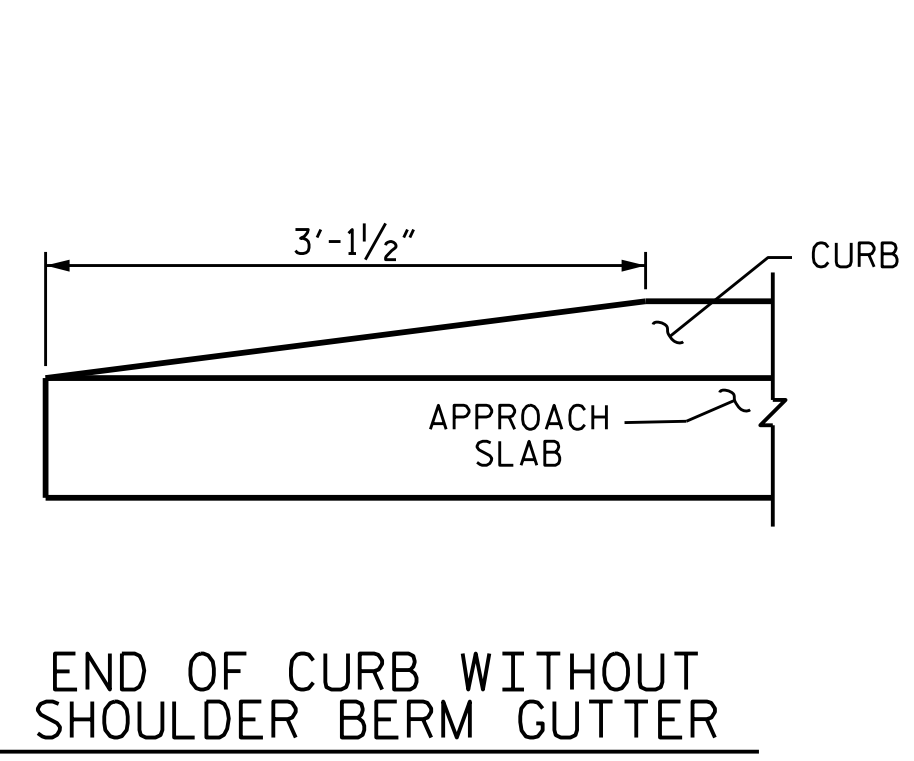


SECTION THRU SLAB

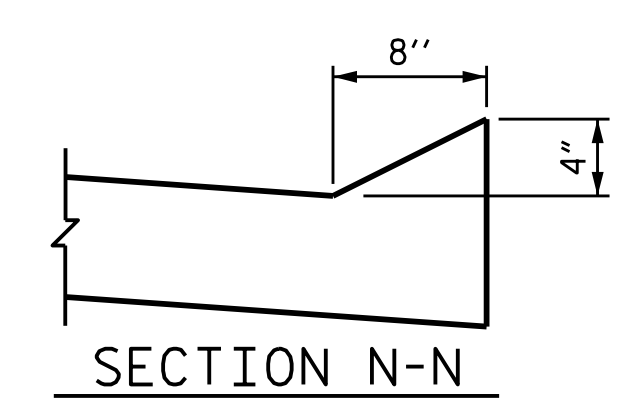
(TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

NOTES

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

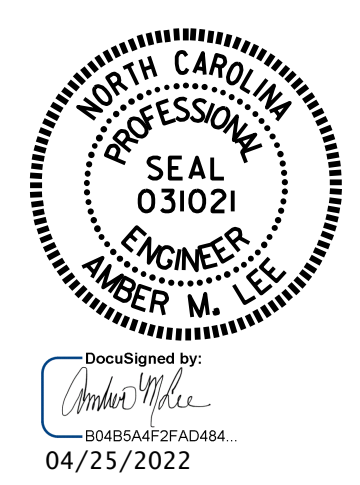
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	35'-0"	374
A2	16	#4	STR	35'-0"	374
* B1	71	#5	STR	14'-0"	1037
B2	71	#6	STR	14'-6"	1546
REINFORCING STEEL				1920 LBS.	
* EPOXY COATED REINFORCING STEEL				1411 LBS.	
CLASS AA CONCRETE				23 C. Y.	

SPLICE LENGTHS

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

ASSEMBLED BY : S. HERNANDEZ	DATE : 3/2020
CHECKED BY : H.A. LOCKLEAR	DATE : 3/2022
DRAWN BY : TLA 10/05	REV. 6/13 MAA/GM
CHECKED BY : GM 5/06	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

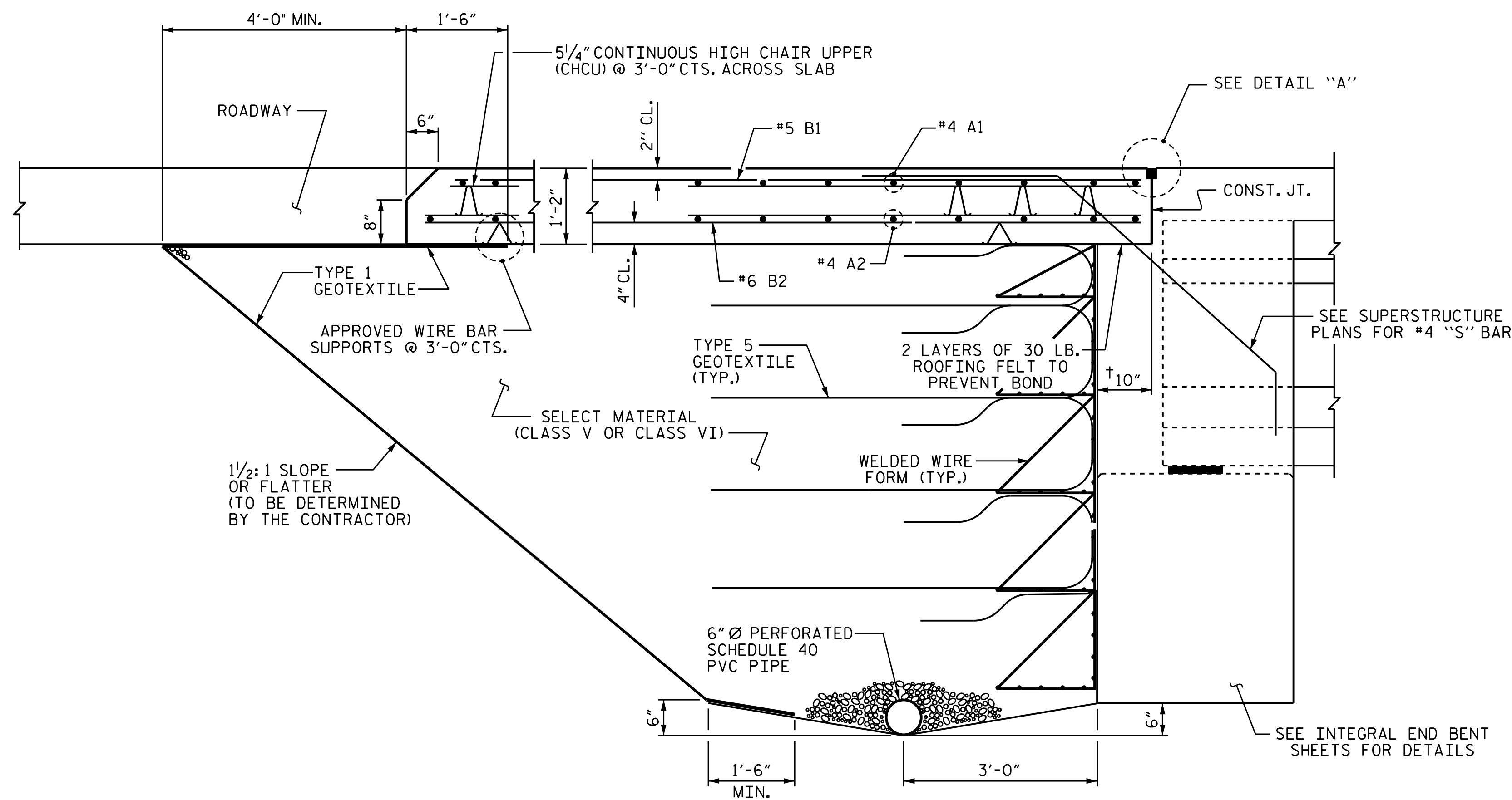
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



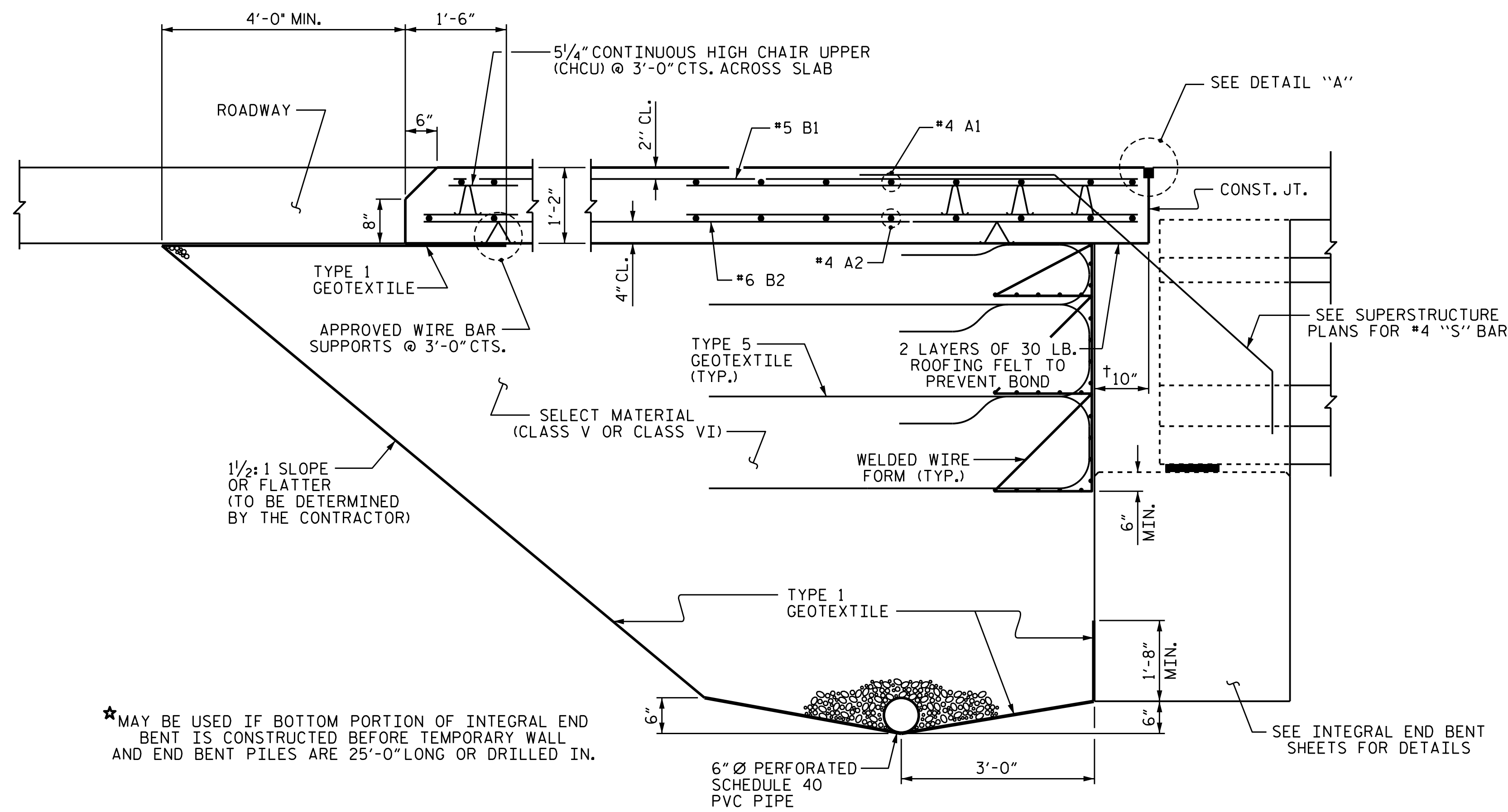
PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 1 OF 2
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

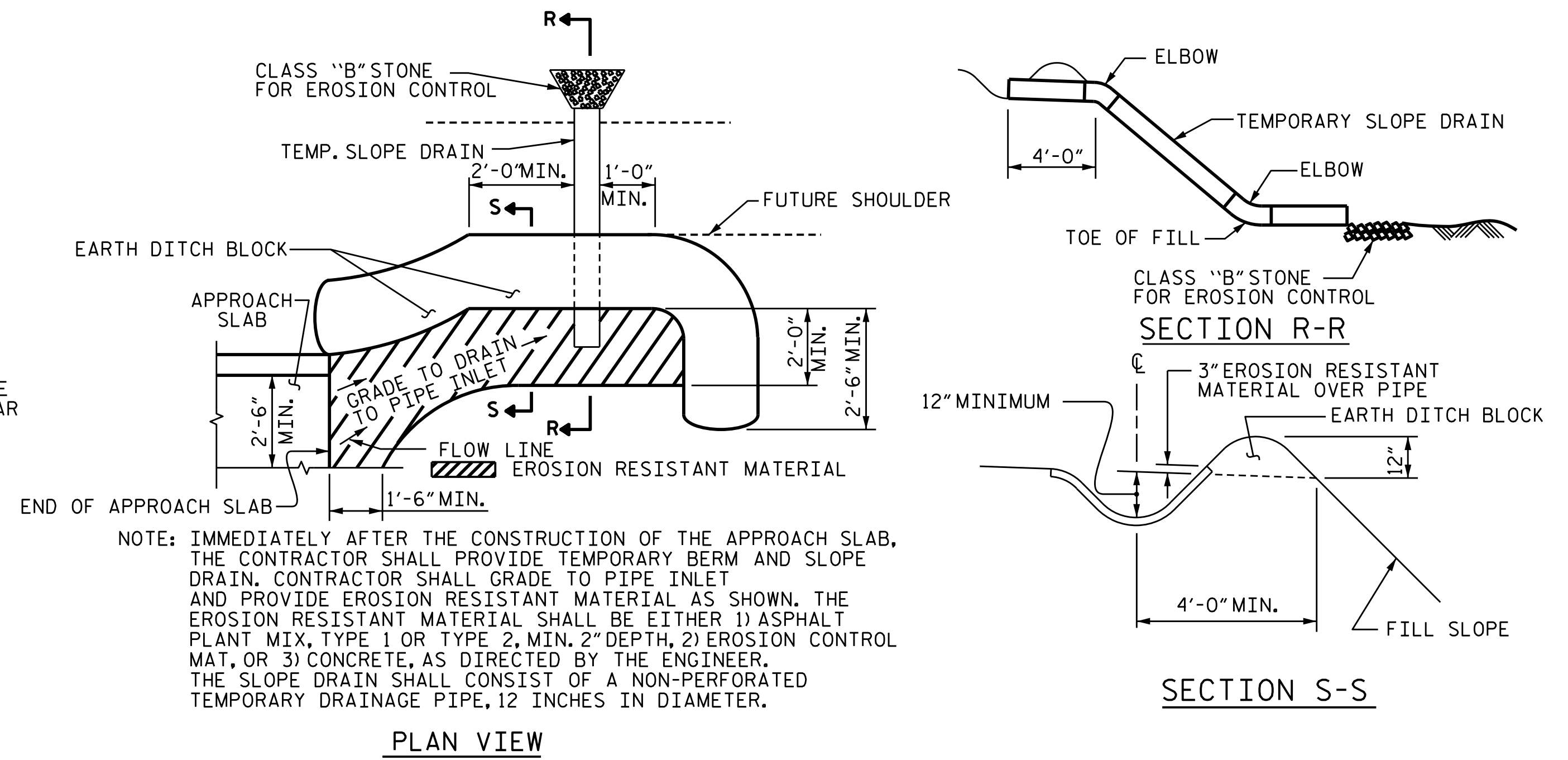
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			32



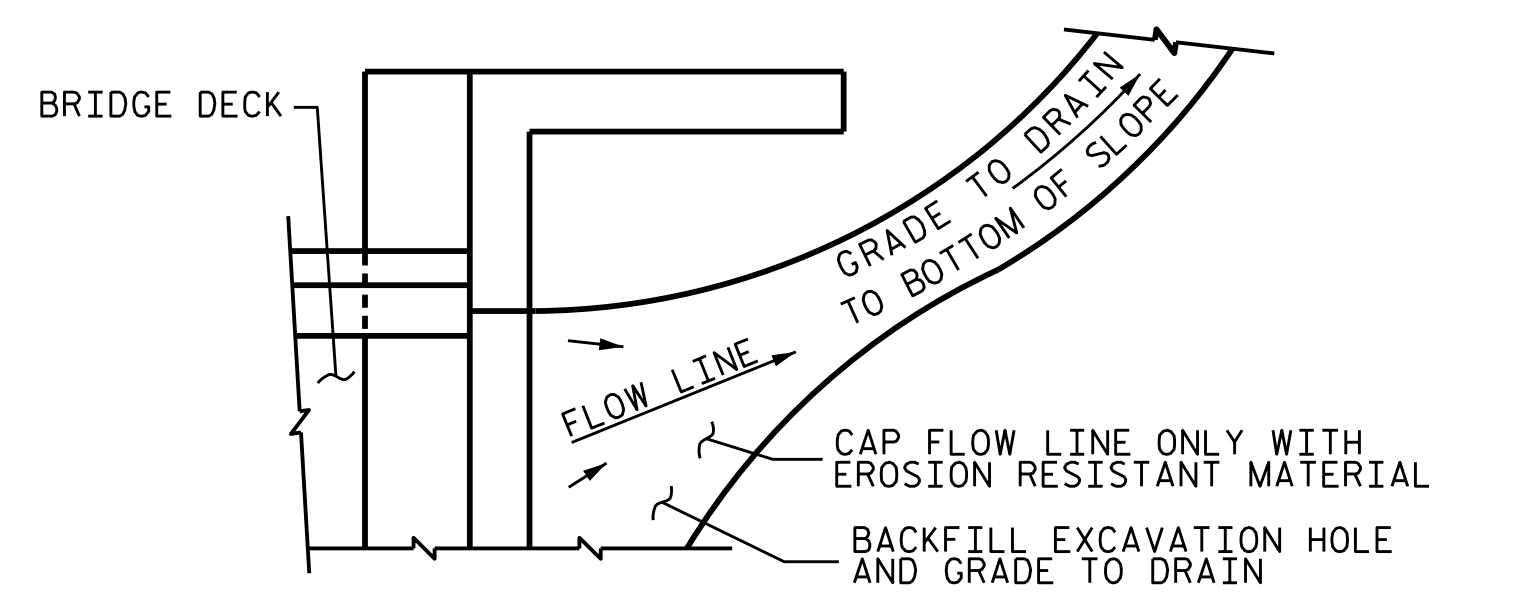
SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



NOTES

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

FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

TEMPORARY DRAINAGE DETAIL

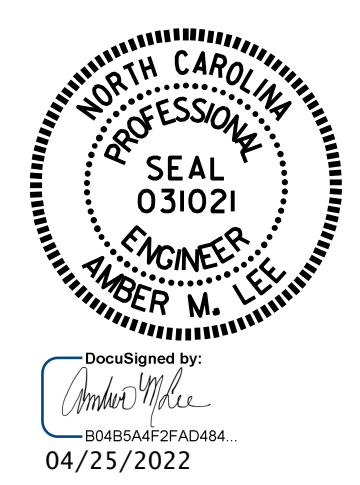
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

PROJECT NO. BR-0051
YADKIN COUNTY
STATION: 18+34.78 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS



ASSEMBLED BY : S. HERNANDEZ	DATE : 03/2020
CHECKED BY : H.A. LOCKLEAR	DATE : 03/2022
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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

