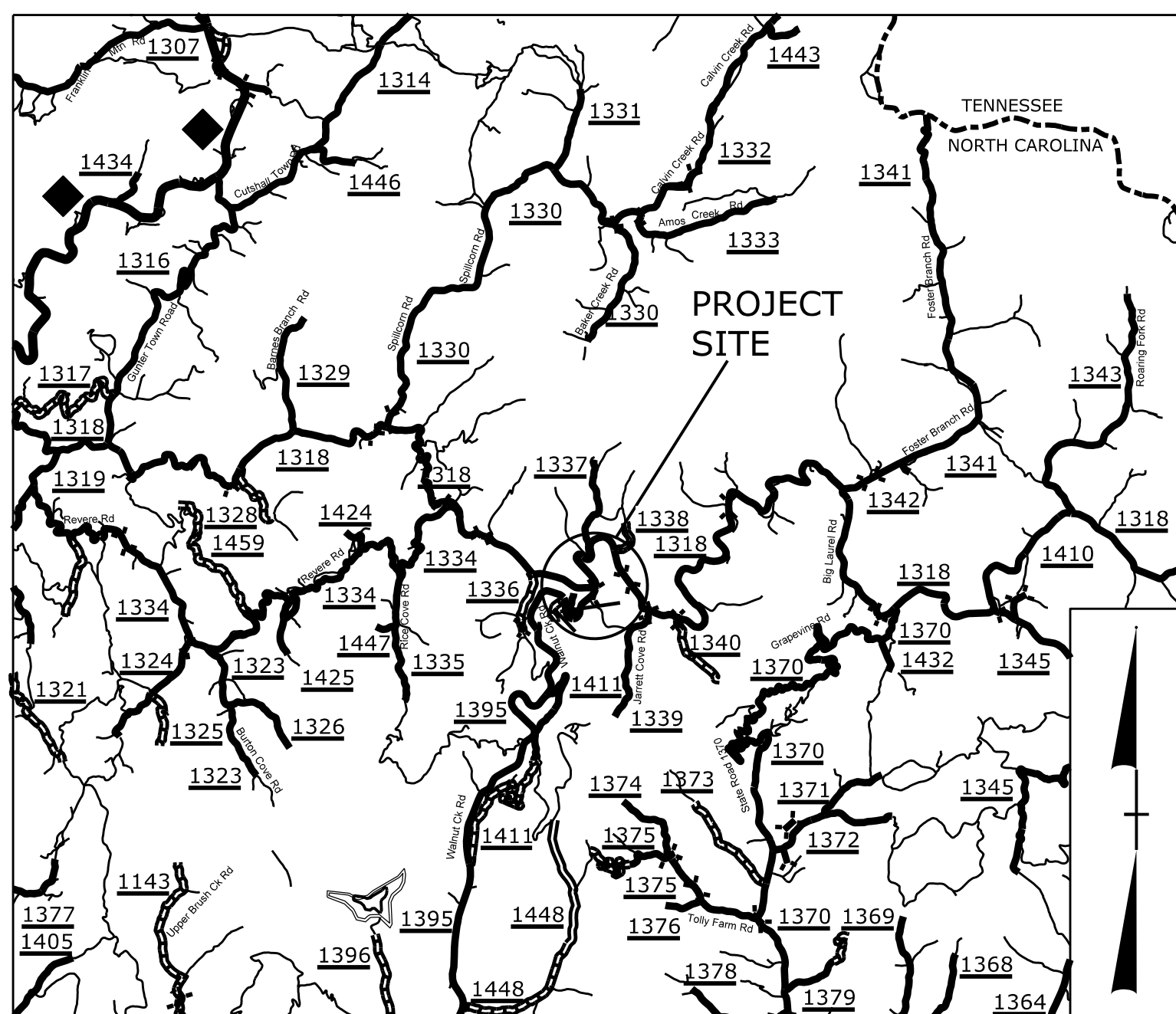


TIP PROJECT: B-5989

CONTRACT: C204768



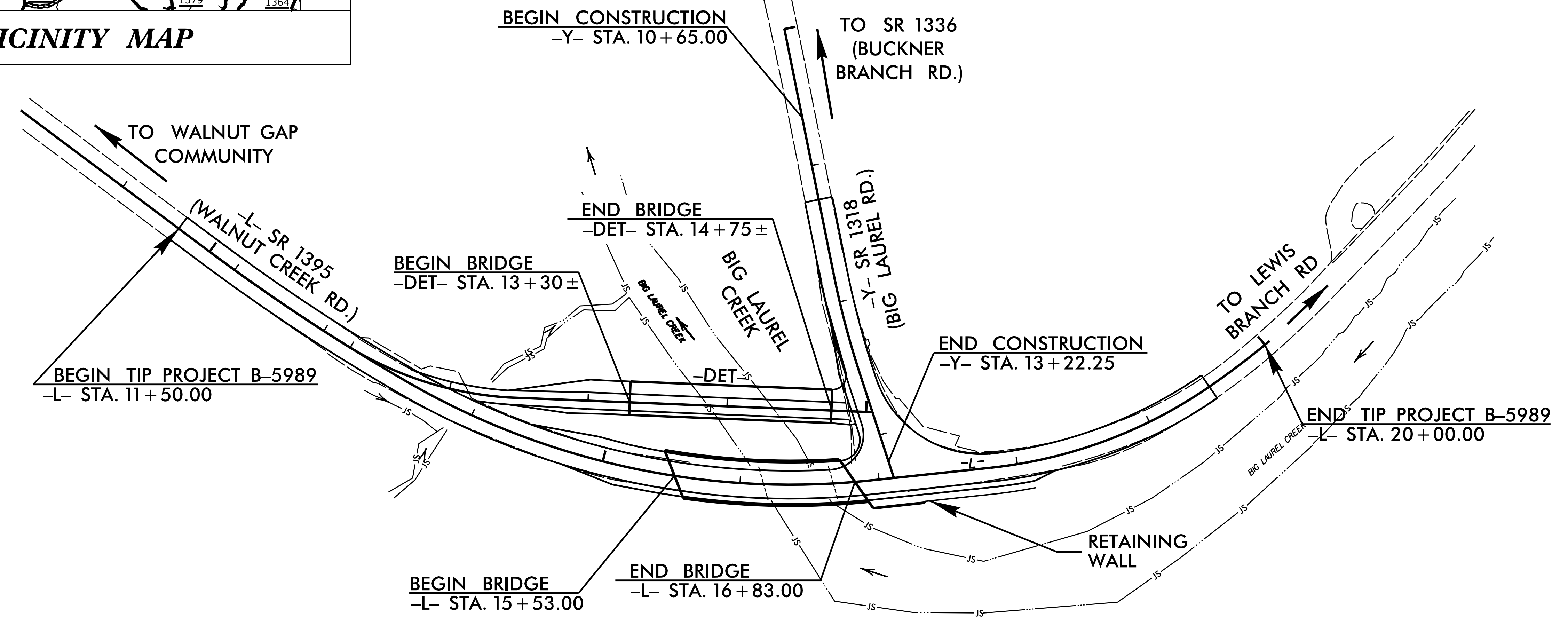
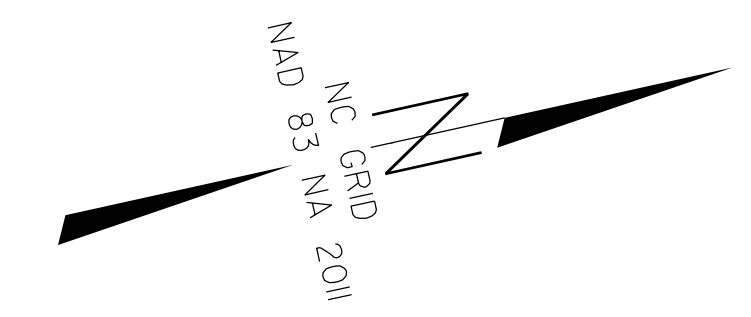
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

**LOCATION: BRIDGE NO. 71 ON SR 1395 (WALNUT CREEK RD)
OVER BIG LAUREL CREEK**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALL
AND STRUCTURE.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5989		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47845.1.1	N/A	PE	
47845.2.1	BRZ-1395(007)	ROW&UTIL	
47845.3.1	BRZ-1395(007)	CONST.	



STRUCTURE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2020 =	740
ADT 2040 =	900
K =	10 %
D =	60 %
T =	3 % *
V =	40 MPH
* TTST = 1% DUAL 2%	
FUNC CLASS =	
MINOR COLLECTOR	
SUB REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY PROJECT =	0.136 MILES
LENGTH STRUCTURES PROJECT =	0.025 MILES
TOTAL LENGTH PROJECT =	0.161 MILES

NCDOT CONTACT:

DAVID STUTTS, PE
PROJECT MANAGER

Prepared in the Office of:

SUMMIT
DESIGN AND ENGINEERING SERVICES
FIRM NO. P-0339

320 Executive Ct.
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

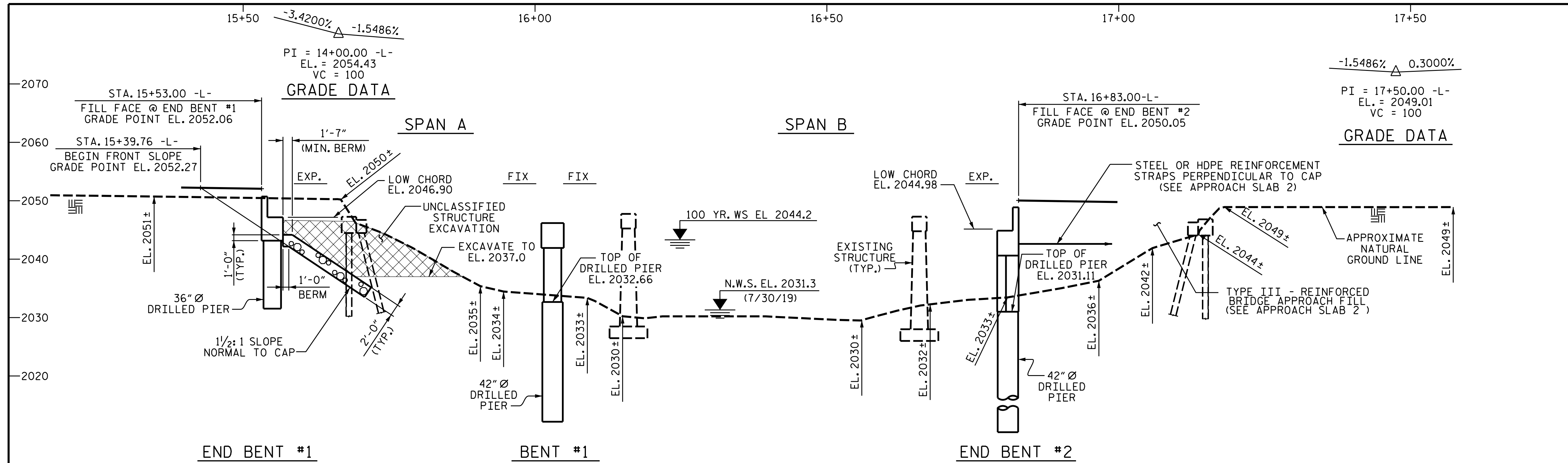
2018 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 17, 2023

GREG W. DICKEY, P.E.
PROJECT ENGINEER

JENNIFER MCROY, PE
PROJECT DESIGN ENGINEER

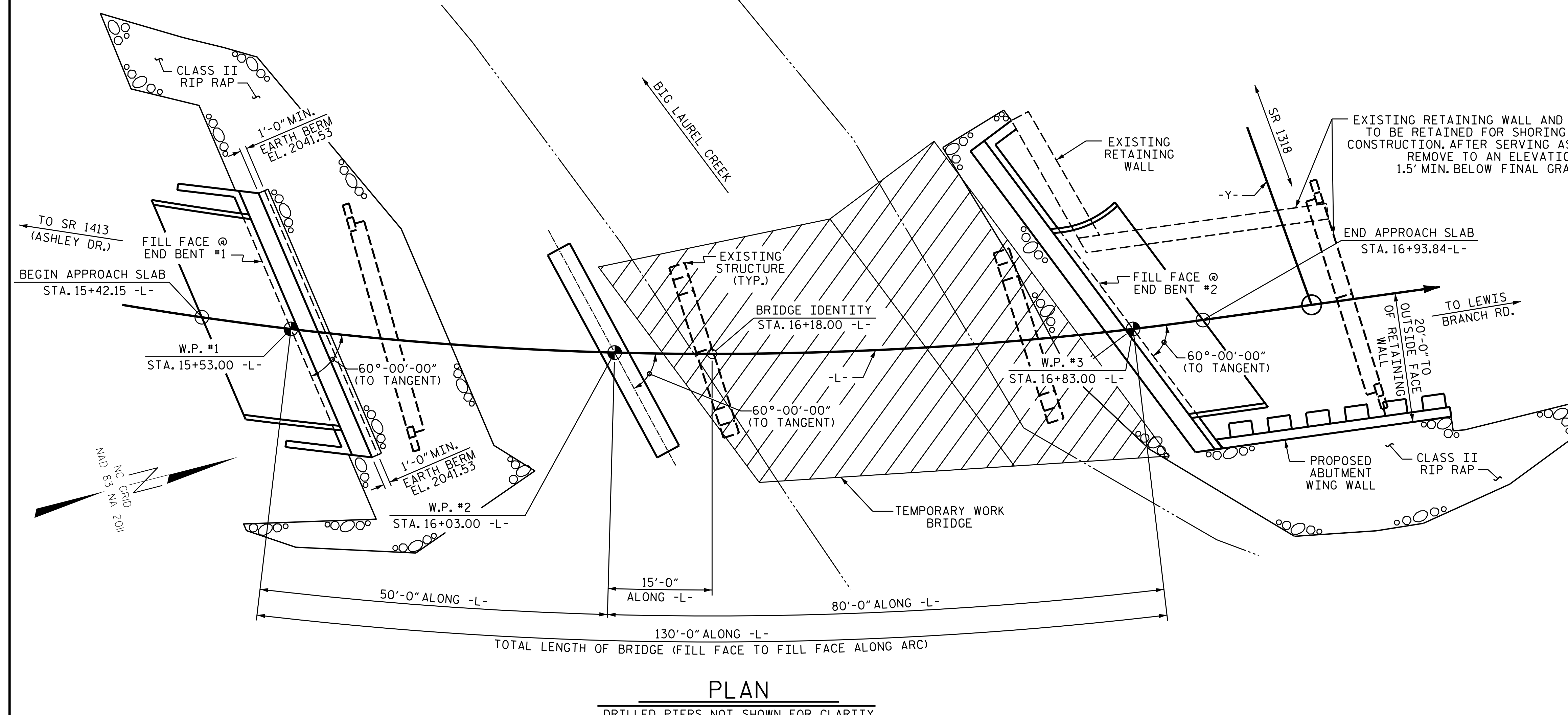




PI STA. 15+27.27 -L-
 Δ = 35°-59'-22.8" (L.T)
 D = 10°-25'-02.7"
 L = 345.48
 T = 178.65
 R = 550.00

HORIZONTAL CURVE DATA

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



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 Raleigh, NC 27609
 Ph: 919-322-0115 Fax: 919-322-0116
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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 1 OF 4 REPLACES BRIDGE #560071

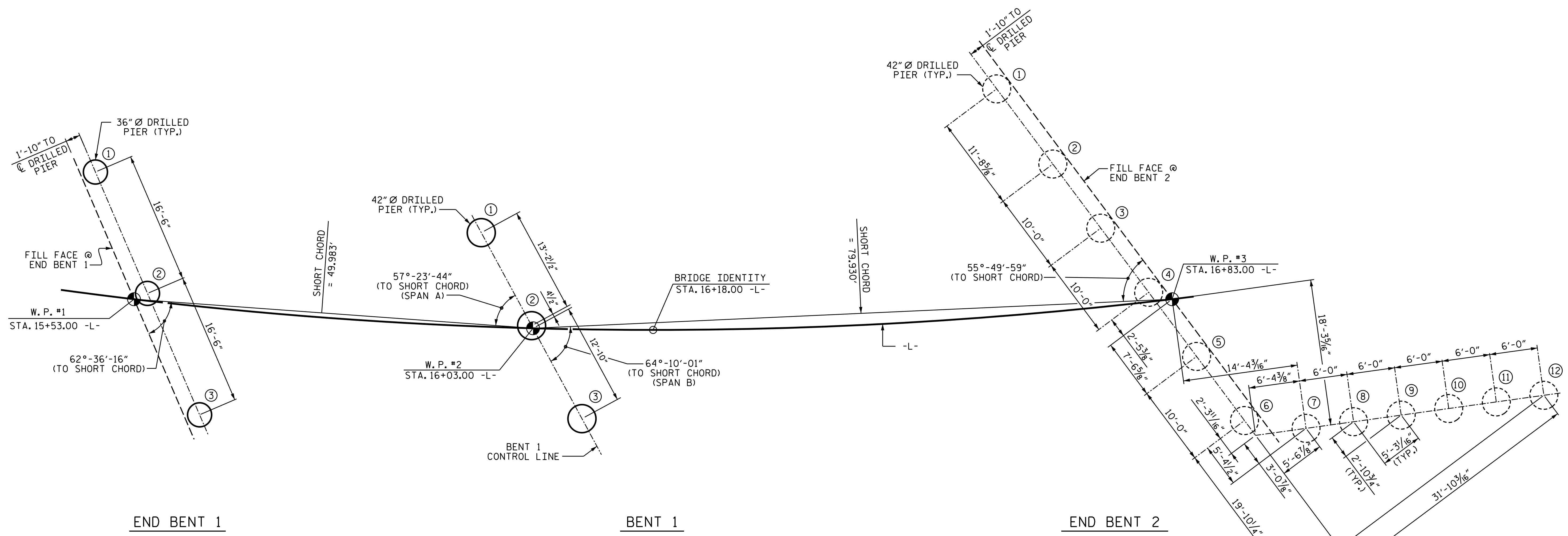


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1395
 OVER BIG LAUREL CREEK
 BETWEEN SR 1413 & SR 1318

DRAWN BY : KEITH D. LAYNE DATE : 12/19
 CHECKED BY : G. DICKEY DATE : 10/22
 DESIGN ENGINEER OF RECORD : G. DICKEY DATE : 10/19

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



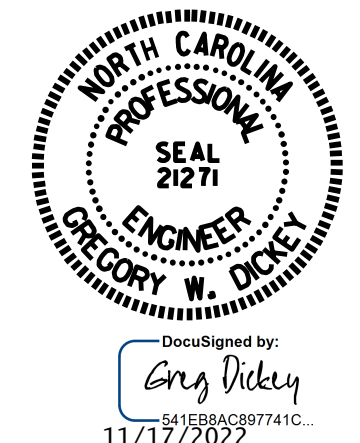
FOUNDATION LAYOUT

(DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO CENTERLINE OF DRILLED PIERS)

DRAWN BY : KEITH D. LAYNE DATE : 10/22
 CHECKED BY : G. DICKEY DATE : 10/22
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 10/22

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1395
 OVER BIG LAUREL CREEK
 BETWEEN SR 1413 & SR 1318

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elev FT	Required Tip Resistance per Pier TSF	Scour Critical Elev FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Minimum Drilled Pier Penetration Into Weathered Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elev (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
End Bent No. 1 Piers 1-3	210	2031.5	20		9.0		11.0					
Bent 1 Piers 1-3	290	2012.0	20	2022	12.0		21.0			MAYBE	2025.0	8.0
End Bent No. 2 Piers 1-4	200	1990.0	20	2031	7.0		41.0					
End Bent No. 2 Pier 5-12	200	2010.0	20	2031	7.0		21.0					

*Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No. Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required? YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
End Bent No. 1 Piers 1-3		MAYBE	50	MAYBE	
Bent 1 Piers 1-3		MAYBE	90	MAYBE	
End Bent No. 2 Piers 1-4		MAYBE	170	MAYBE	
End Bent No. 2 Pier 5-12		MAYBE	90	MAYBE	
TOTAL QTY:		5	1820	5	

*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

NOTES

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer Michael H. Stephens, P.E., License No. 028893 on 10-17-2022.

2. The Engineer will determine the need for Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

FOUNDATION NOTES

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

SPECIAL FOUNDATION NOTES



1) BORINGS INDICATE THE PRESENCE OF BOLDERS IN THE OVERBURDEN ALLUVIAL SOILS. DIFFICULT DRILLING CONDITIONS ARE ANTICIPATED AND DUE TO THE DIFFICULT DRILLING CONDITIONS, WE HAVE USED A SINGLE PAY ITEM FOR THE DRILLED PIER QUANTITIES.

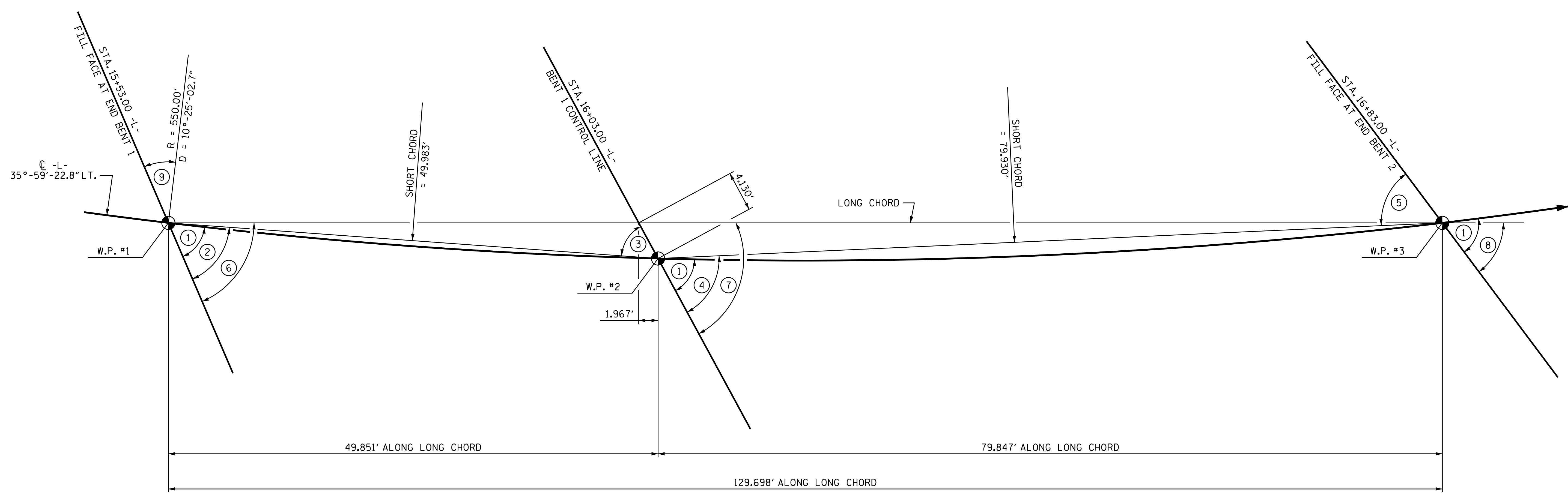
2) SCOUR CRITICAL ELEVATION FOR END BENT 2 IS DEFINED BY THE BOTTOM OF RETAINING WALL (TOP OF DRILLED PIER). ELEVATION MAY VARY, SEE ASBUILT DRAWINGS TO VERIFY THE BOTTOM OF RETAINING WALL. SCOUR CRITICAL ELEVATION FOR END BENT NO. 2 IS TO PROTECT THE ABUTMENT AND WING WALLS BACKFILL.

PROJECT NO. 47845.1.1 (B-5989)

MADISON COUNTY

STATION: 16+18 -L-
BRIDGE NO. 71


 DocuSigned by:  11/17/2022 SIGNATURE DATE	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE AND DRILLED PIER FOUNDATION TABLES		SHEET NO.				
	REVISIONS		TOTAL SHEETS				
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			
	2			4			



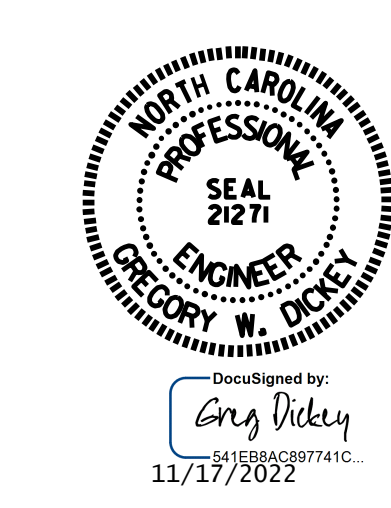
LONG CHORD LAYOUT

ANGLES

- ① 60°-00'-00.0" TO TANGENT TO CURVE
- ② 62°-36'-15.7" TO SHORT CHORD
- ③ 57°-23'-44.3" TO SHORT CHORD
- ④ 64°-10'-01.1" TO SHORT CHORD
- ⑤ 55°-49'-58.9" TO SHORT CHORD
- ⑥ 66°-46'-16.8" TO LONG CHORD
- ⑦ 61°-33'-45.4" TO LONG CHORD
- ⑧ 53°-13'-43.3" TO LONG CHORD
- ⑨ 30°-00'-00"

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 3 OF 4



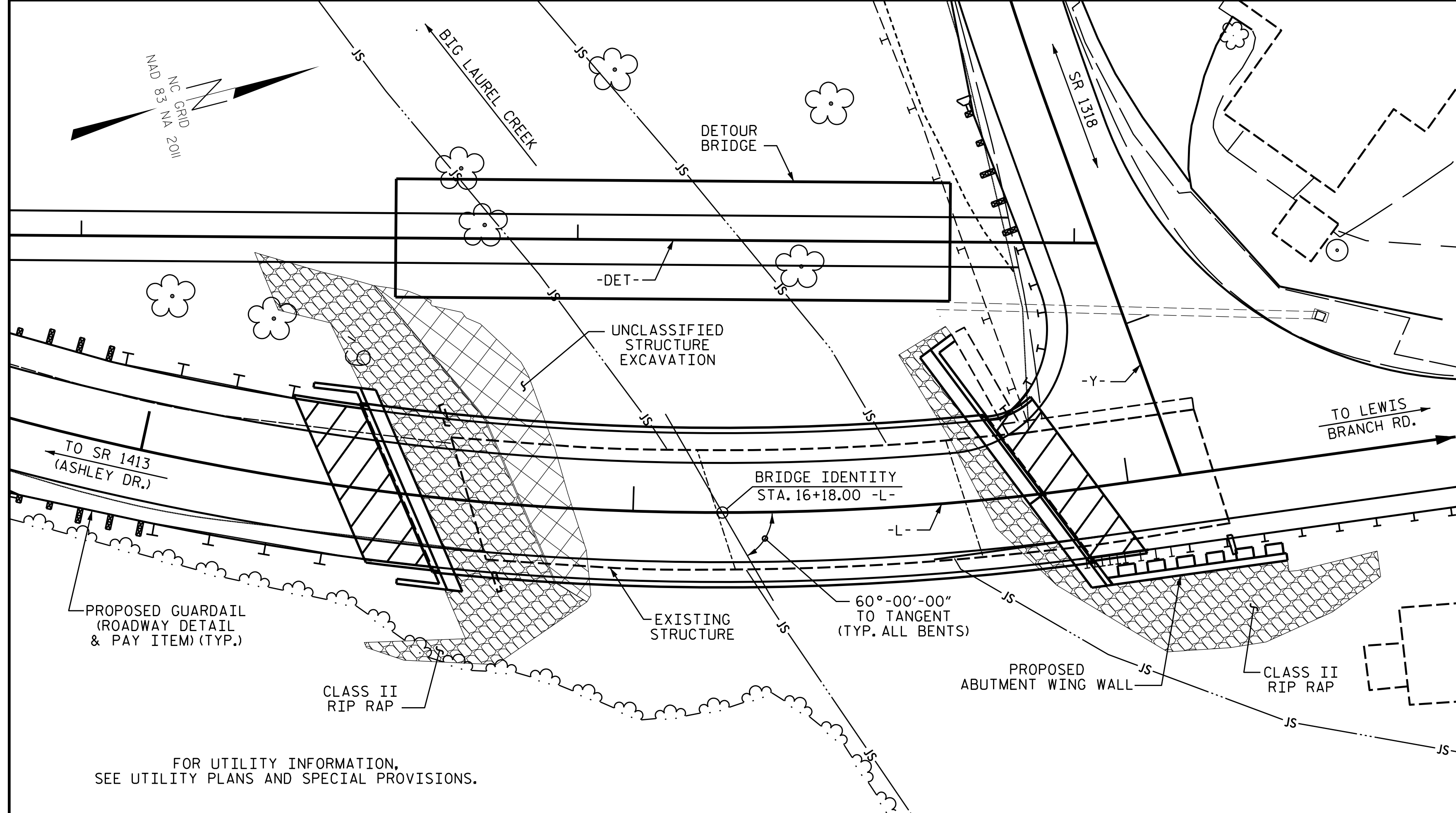
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1395
 OVER BIG LAUREL CREEK
 BETWEEN SR 1413 & SR 1318

DRAWN BY : KEITH D. LAYNE DATE : 11/19
 CHECKED BY : G. DICKEY DATE : 11/19
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 11/19

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			36

BM #1 CHISELED "X" IN THE SOUTHWEST WINGWALL OF EXISTING BRIDGE, 16.54' LT. OF STA. 15+59.81 -L- EL. 2049.58



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.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 16+18.00 -L-.'
 THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
 THE MATERIAL SHOWN IN THE CROSS HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT LEFT AND 19 FT RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 14+03.00 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
 THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (49.8125', 50.0', 49.8125') OF 4.5" ASPHALT WEARING SURFACE AND 7" REINFORCED CONCRETE ON 4 LINES 33" I-BEAMS @ 7.25' CTS. WITH A THE CLEAR ROADWAY WIDTH OF 24.0 FT. THE SUBSTRUCTURE CONSISTS REINFORCED CONCRETE CAP ON H-PILES AT END BENTS AND REINFORCED CONCRETE CAP ON REINFORCED CONCRETE PILES AT BENTS. THE STRUCTURE IS LOCATED AT PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+18.00 -L-, SEE SPECIAL PROVISIONS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMPORARY STRUCTURE	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS	3'-6" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.
SUPERSTRUCTURE											4107	3977
END BENT NO. 1					33							
BENT NO. 1						63	24					
END BENT NO. 2						332						
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	33	395	24	5	5	LUMP SUM	4107	3977
	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS		
	CU. YDS.	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM		
SUPERSTRUCTURE		LUMP SUM			8	499.42	254.71		LUMP SUM	LUMP SUM		
END BENT NO. 1	42.0		7538	635			190	210				
BENT NO. 1	29.1		11023	1927								
END BENT NO. 2	156.7		59158	11268			110	120				
TOTAL	227.8	LUMP SUM	77719	13830	8	499.42	254.71	330	LUMP SUM	LUMP SUM		

SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi.

HYDRAULIC DATA

DESIGN DISCHARGE	5800 CFS.
FREQUENCY OF DESIGN FLOOD	25 YEARS
DESIGN HIGH WATER ELEVATION	2041.7 FT.
DRAINAGE AREA	40.7 SQ. MI.
BASIC DISCHARGE(Q100)	8100 CFS.
BASIC HIGH WATER ELEVATION	2044.2 FT.

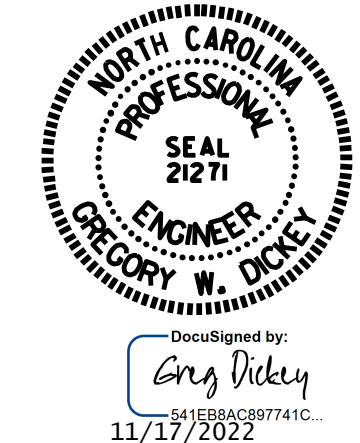
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	14000 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR
OVERTOPPING FLOOD ELEVATION	2049.9 FT.
OVERTOPPING @ STA. 17+84 -L-	

Prepared in the Office of:

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-



SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1395
 OVER BIG LAUREL CREEK
 BETWEEN SR 1413 & SR 1318

DRAWN BY : KEITH D. LAYNE DATE : 12/19
 CHECKED BY : G. DICKEY DATE : 10/22
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REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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TOTAL SHEETS: 35

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	1.04	--	1.75	0.78	1.24	A	ER	23.73	0.99	1.04	B	I	7.11	0.80	0.79	1.11	B	ER	38.96				
	HL-93 (OPERATING)	N/A		1.37	--	1.35	0.78	1.61	A	ER	23.73	0.99	1.37	B	I	7.11	N/A	--	--	--	--	--				
	HS-20 (INVENTORY)	36.000	②	1.35	48.6	1.75	0.78	1.55	A	ER	23.73	0.99	1.35	B	I	69.3	0.80	0.79	1.48	B	ER	38.96				
	HS-20 (OPERATING)	36.000		1.78	64.1	1.35	0.78	2.00	A	ER	23.73	0.99	1.78	B	I	69.3	N/A	--	--	--	--	--				
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.42	46.2	1.40	0.78	3.96	A	ER	23.73	0.99	4.24	B	I	7.11	0.80	0.79	3.42	B	ER	38.96			
		SNGARBS2	20.000		2.52	50.4	1.40	0.78	3.12	A	ER	23.73	0.99	2.98	B	I	7.11	0.80	0.79	2.52	B	ER	38.96			
		SNAGRIS2	22.000		2.37	52.1	1.40	0.78	3.01	A	ER	28.61	0.99	2.76	B	I	7.11	0.80	0.79	2.37	B	ER	38.96			
		SNCOTTS3	27.250		1.69	46.1	1.40	0.78	1.97	A	ER	23.73	0.99	2.04	B	I	7.11	0.80	0.79	1.69	B	ER	38.96			
		SNAGGRS4	34.925		1.41	49.2	1.40	0.78	1.71	A	ER	23.73	0.99	1.75	B	I	69.3	0.80	0.79	1.41	B	ER	38.96			
		SNS5A	35.550		1.38	49.1	1.40	0.78	1.67	A	ER	23.73	0.99	1.74	B	I	69.3	0.80	0.79	1.38	B	ER	38.96			
		SNS6A	39.950		1.26	50.3	1.40	0.78	1.56	A	ER	23.73	0.99	1.61	B	I	69.3	0.80	0.79	1.26	B	ER	38.96			
		SNS7B	42.000		1.20	50.4	1.40	0.78	1.49	A	ER	23.73	0.99	1.55	B	I	69.3	0.80	0.79	1.20	B	ER	38.96			
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.54	50.8	1.40	0.78	1.91	A	ER	23.73	0.99	1.99	B	ER	70.7	0.80	0.79	1.54	B	ER	38.96			
		TNT4A	33.075		1.54	50.9	1.40	0.78	1.93	A	ER	23.73	0.99	1.82	B	I	69.3	0.80	0.79	1.54	B	ER	38.96			
		TNT6A	41.600		1.25	52.0	1.40	0.78	1.60	A	ER	23.73	0.99	1.62	B	I	69.3	0.80	0.79	1.25	B	ER	38.96			
		TNT7A	42.000		1.26	52.9	1.40	0.78	1.63	A	ER	23.73	0.99	1.58	B	I	7.11	0.80	0.79	1.26	B	ER	38.96			
		TNT7B	42.000		1.29	54.2	1.40	0.78	1.70	A	ER	23.73	0.99	1.51	B	I	69.3	0.80	0.79	1.29	B	ER	38.96			
		TNAGRIT4	43.000		1.24	53.3	1.40	0.78	1.61	A	ER	23.73	0.99	1.44	B	I	69.3	0.80	0.79	1.24	B	ER	38.96			
TNAGT5A	45.000		1.17	52.7	1.40	0.78	1.50	A	ER	23.73	0.99	1.42	B	I	69.3	0.80	0.79	1.17	B	ER	38.96					
TNAGT5B	45.000		③	1.16	52.2	1.40	0.78	1.47	A	ER	23.73	0.99	1.39	B	I	69.3	0.80	0.79	1.16	B	ER	38.96				

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

Ⓝ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

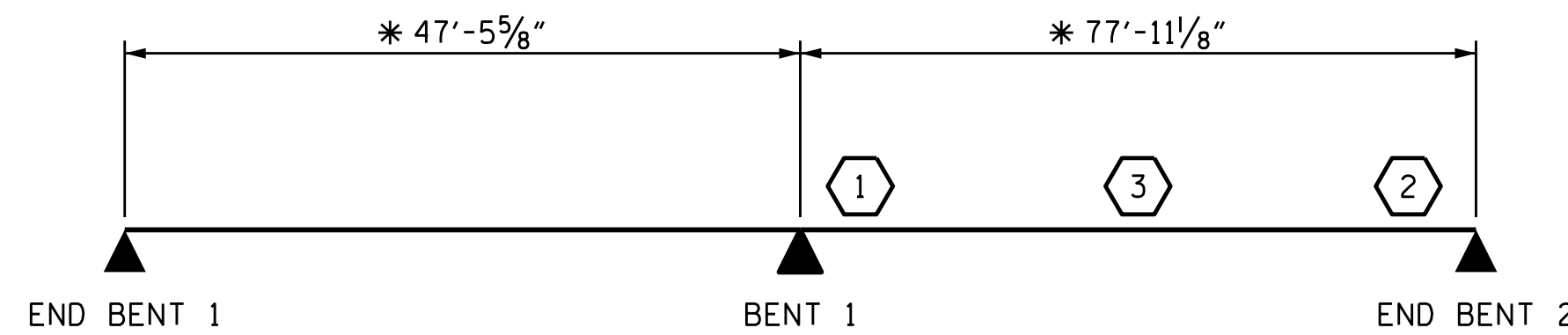
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

*GIRDER LENGTHS VARY,
LONGEST GIRDER BEARING
TO BEARING DISTANCE SHOWN

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DocuSigned by:
Greg Dickey
641EB8AC897741C
11/17/2022

PROJECT NO. B-5989
MADISON COUNTY
STATION: 16+18.00 -L-

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

ASSEMBLED BY : NEIL ROHRBAUCH	DATE : 10/19
CHECKED BY : G. DICKEY	DATE : 01/20
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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2			4			35

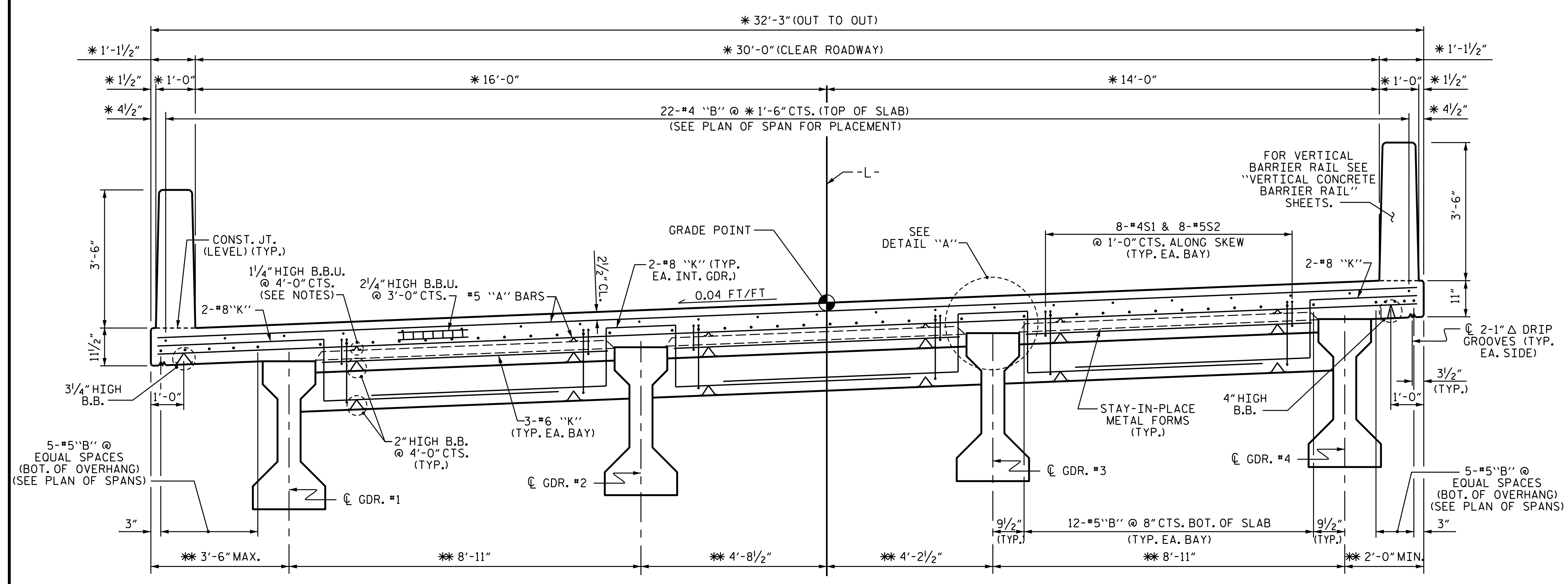
NOTES

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.

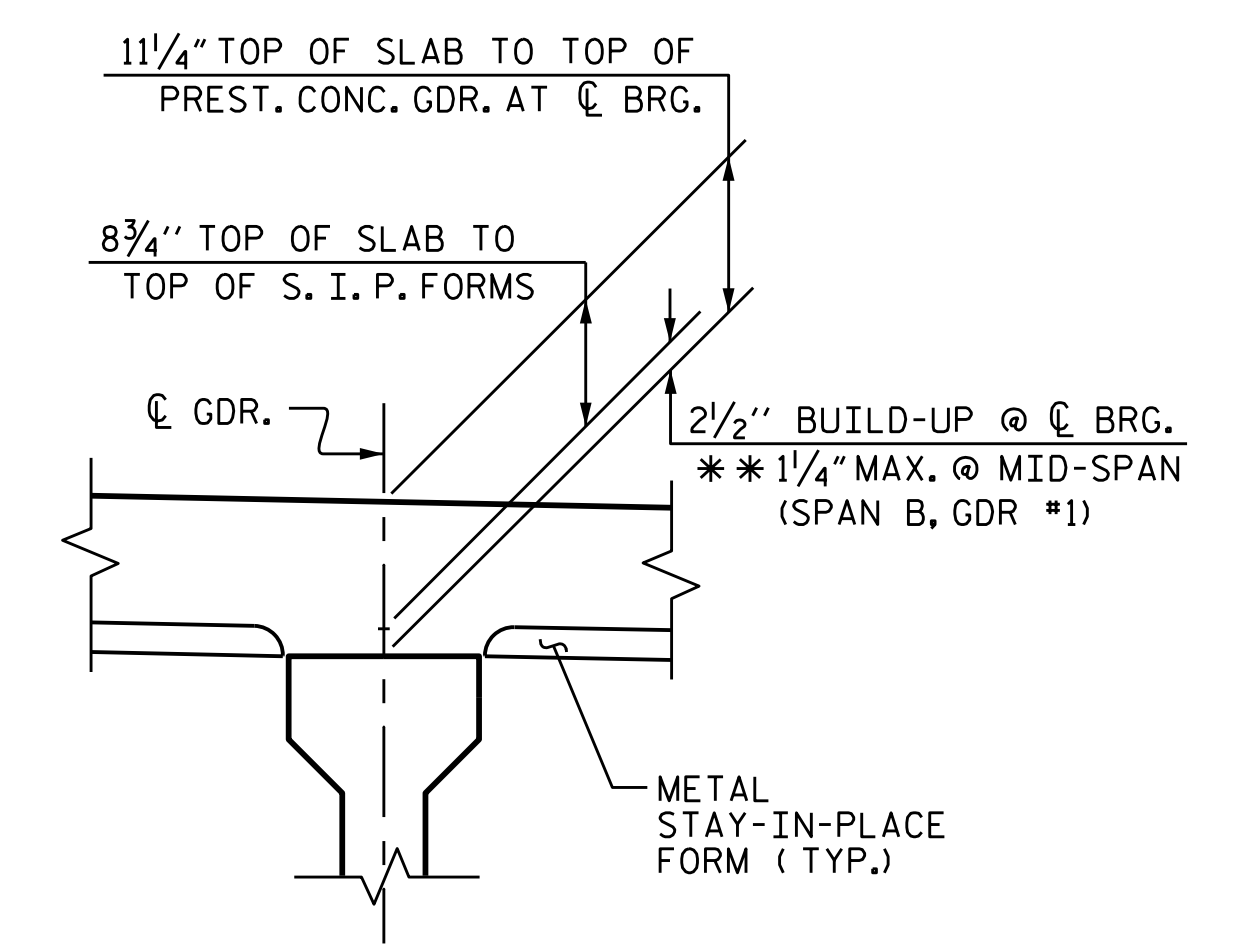
BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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.



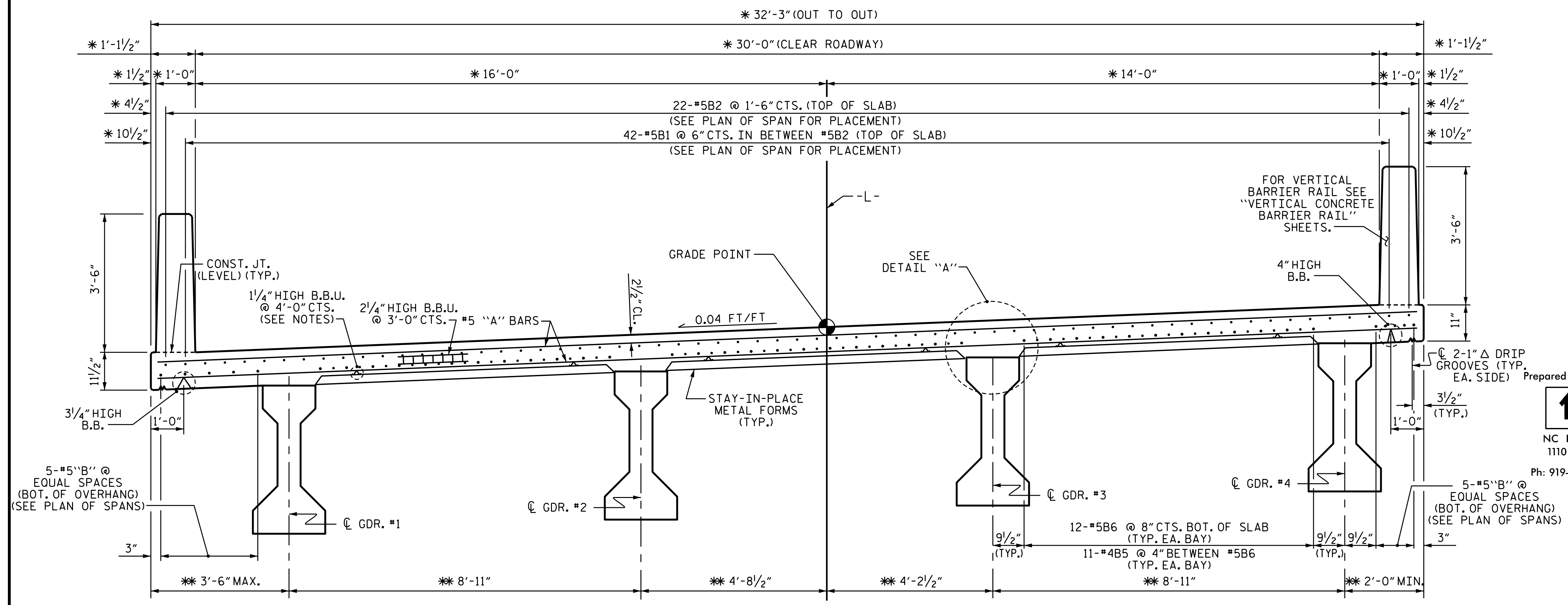
TYPICAL SECTION @ END BENT DIAPHRAGM

* RADIAL DIMENSIONS
** RADIAL THRU WORK POINT ONLY



DETAIL "A"

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



TYPICAL SECTION @ BENT

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 STATION: 16+18.00 -L-

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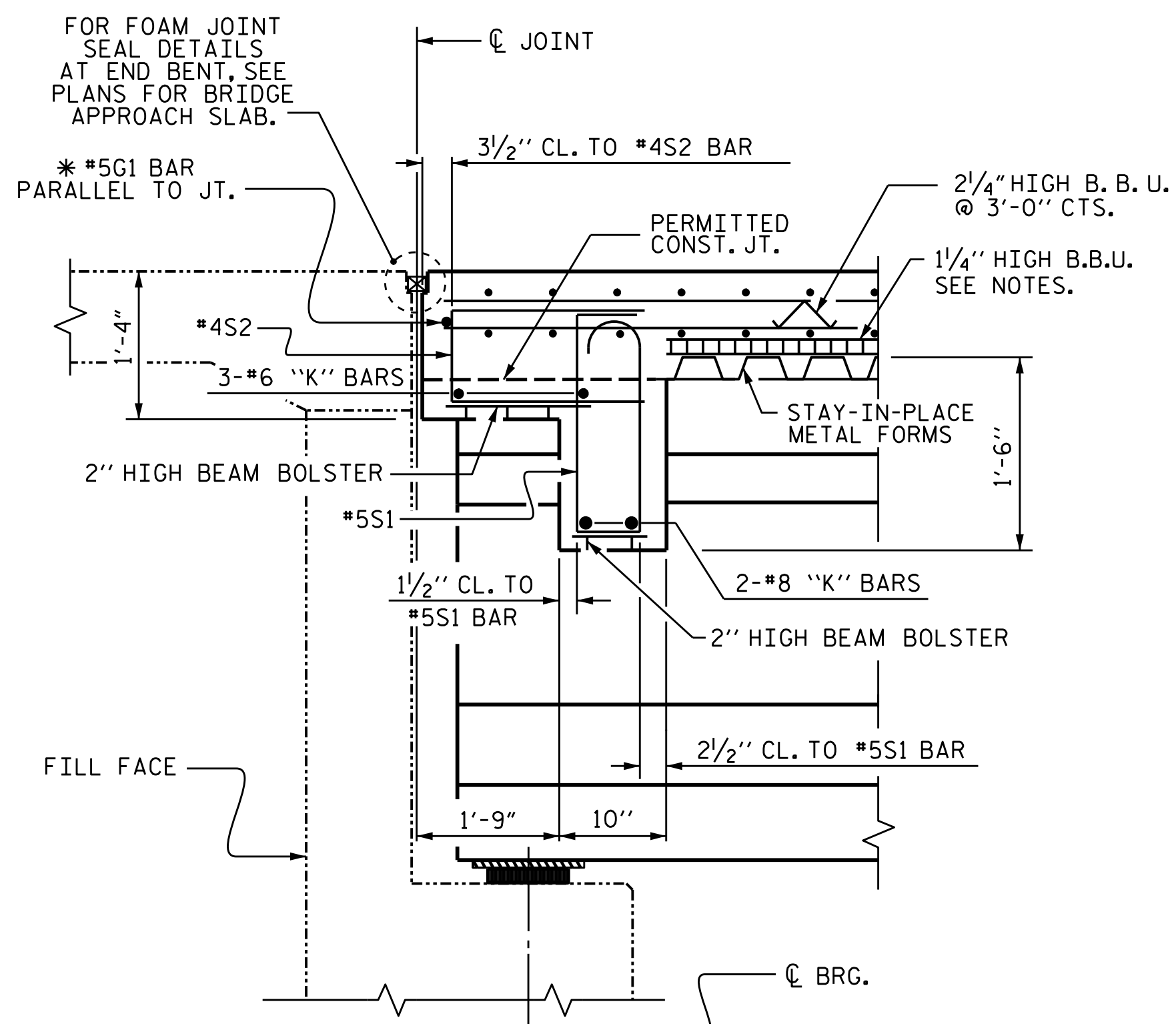
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : KEITH D. LAYNE DATE : 09/19
 CHECKED BY : NEIL C. ROHRBAUGH DATE : 10/19
 DESIGN ENGINEER OF RECORD : G. DICKEY DATE : 6/29/22

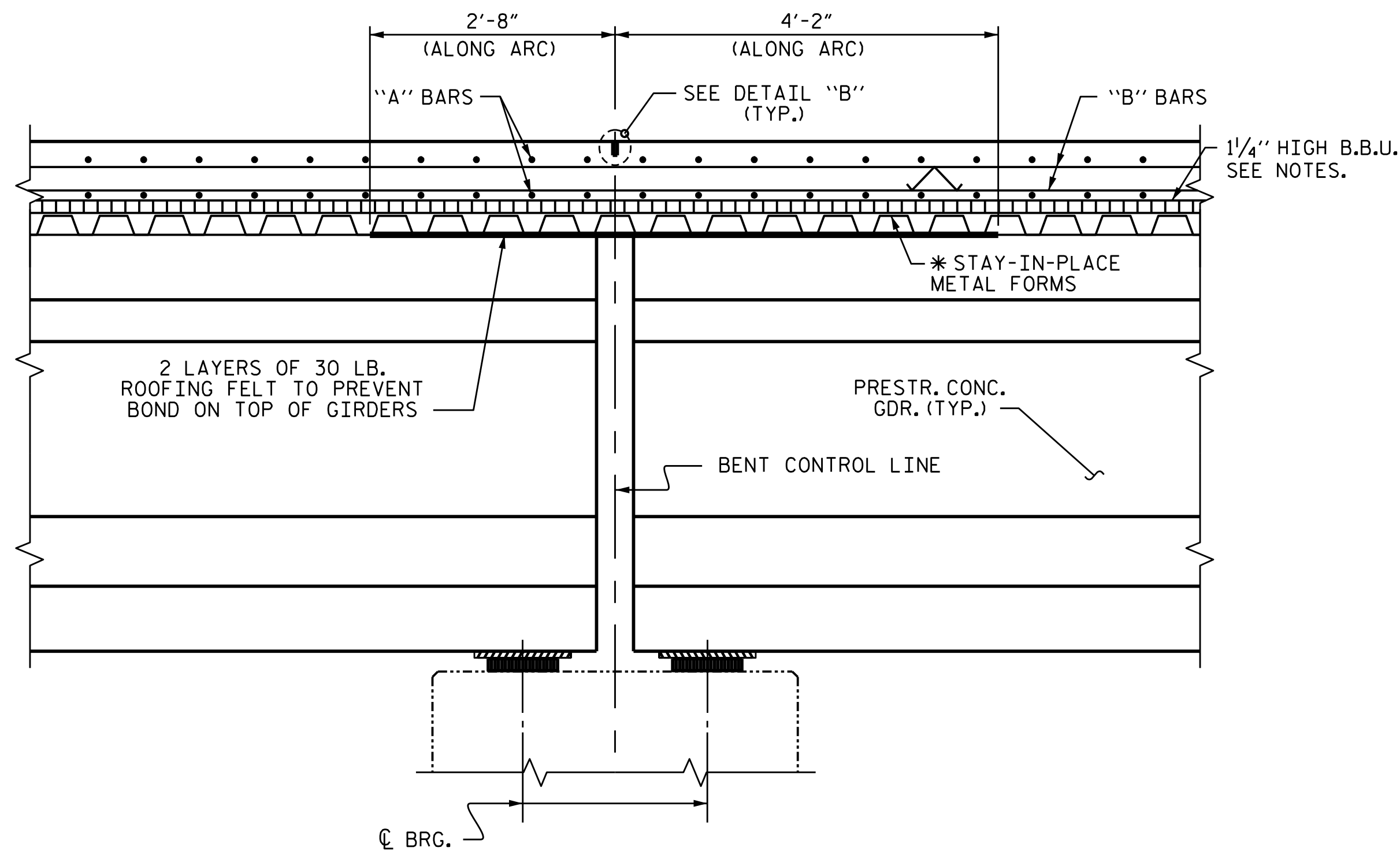
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2			4			35



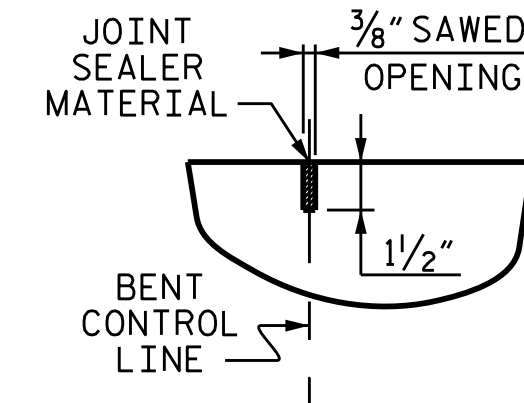
SECTION THRU DIAPHRAGM AT END BENTS

* #5G BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



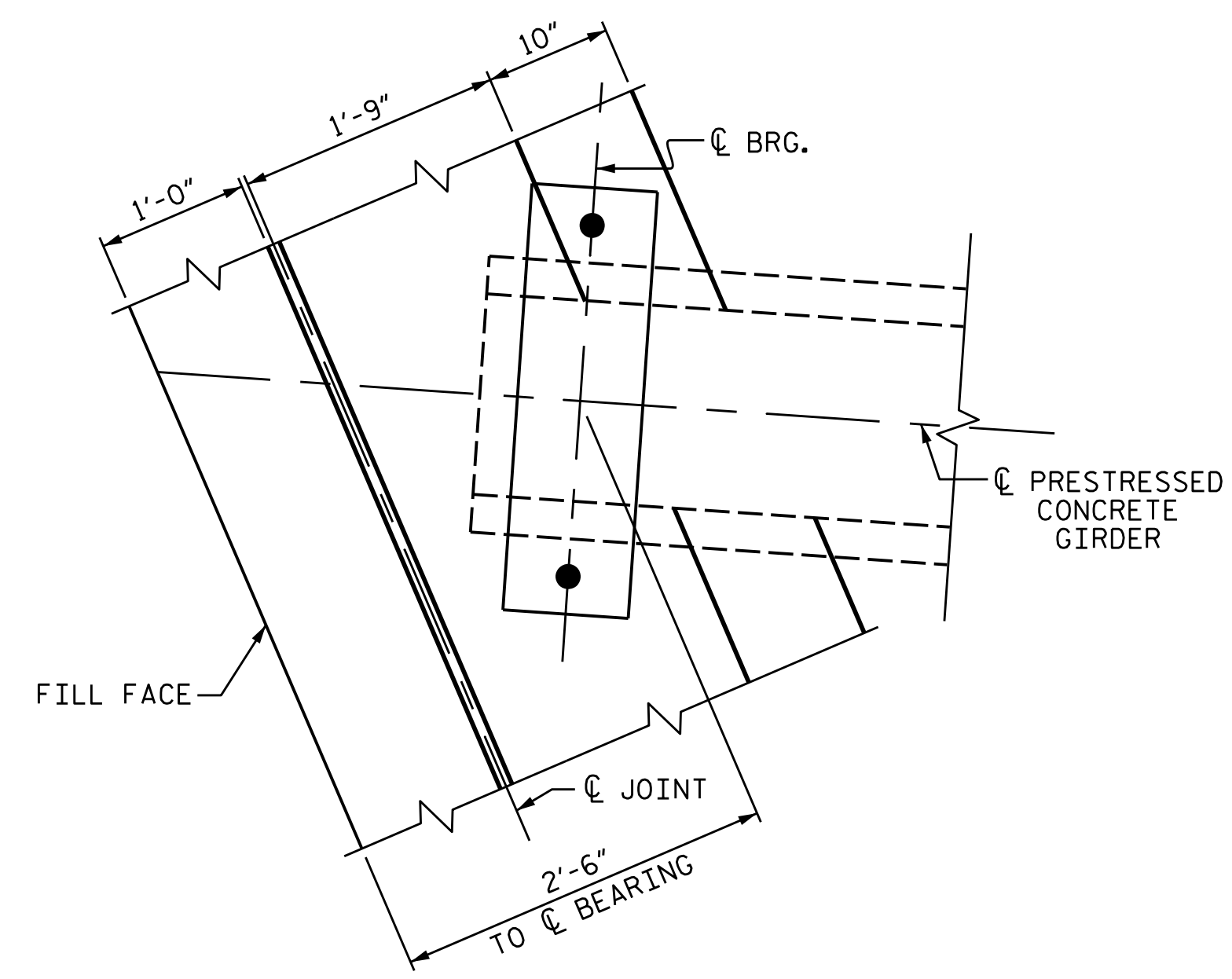
SECTION AT LINK SLAB

* METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE SLAB.

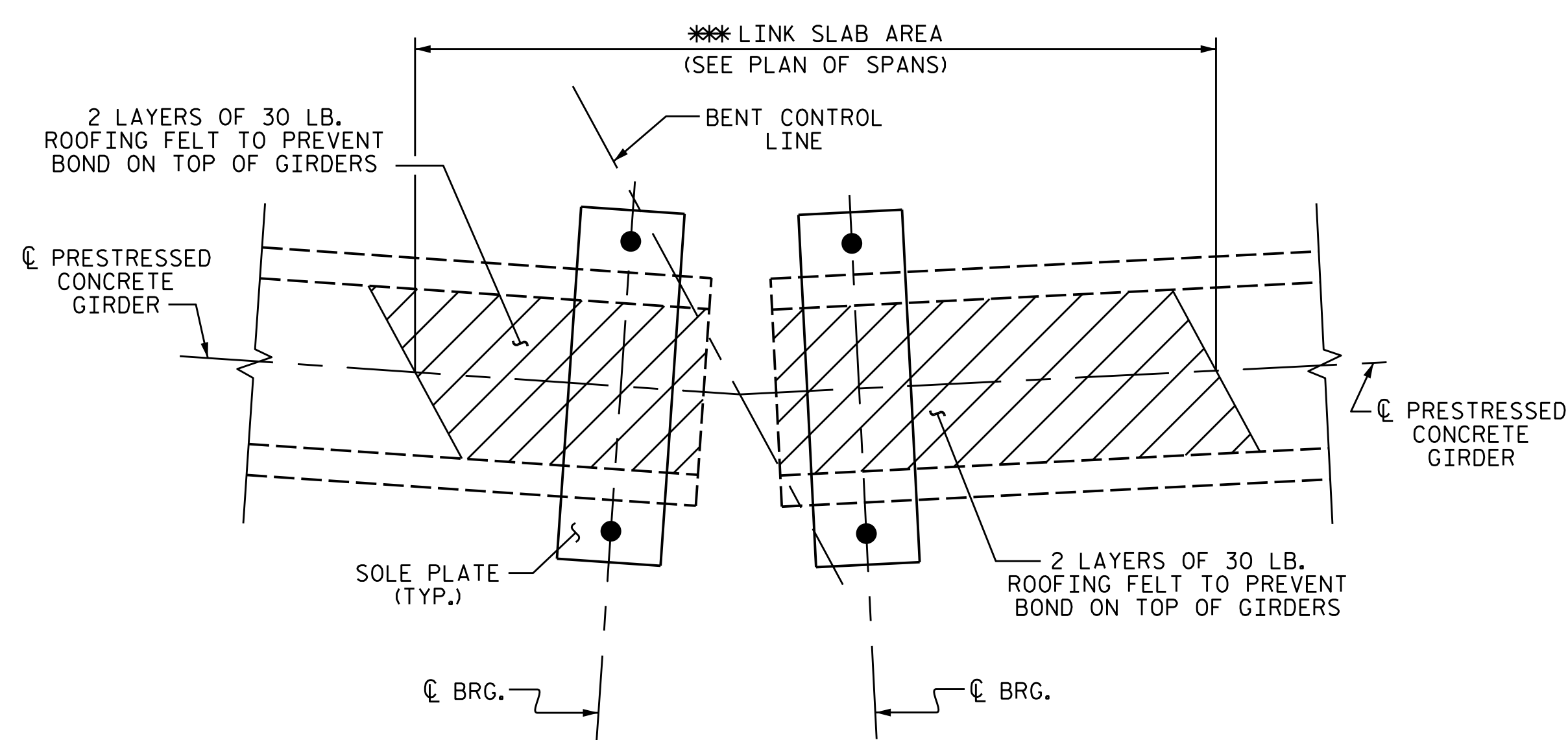


DETAIL "B"

A 1/2" DEEP 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



END BENT DIAPHRAGM



PLAN OF LINK SLAB

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

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 2 OF 2

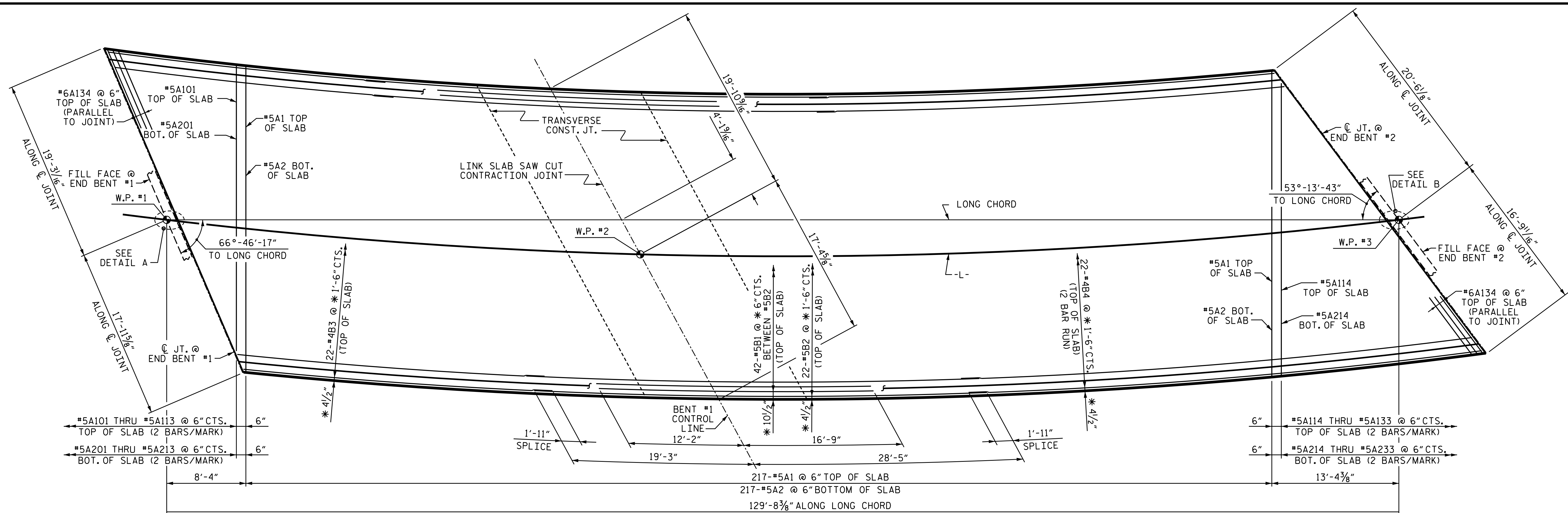


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : KEITH D. LAYNE DATE : 09/19
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 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 6/29/22

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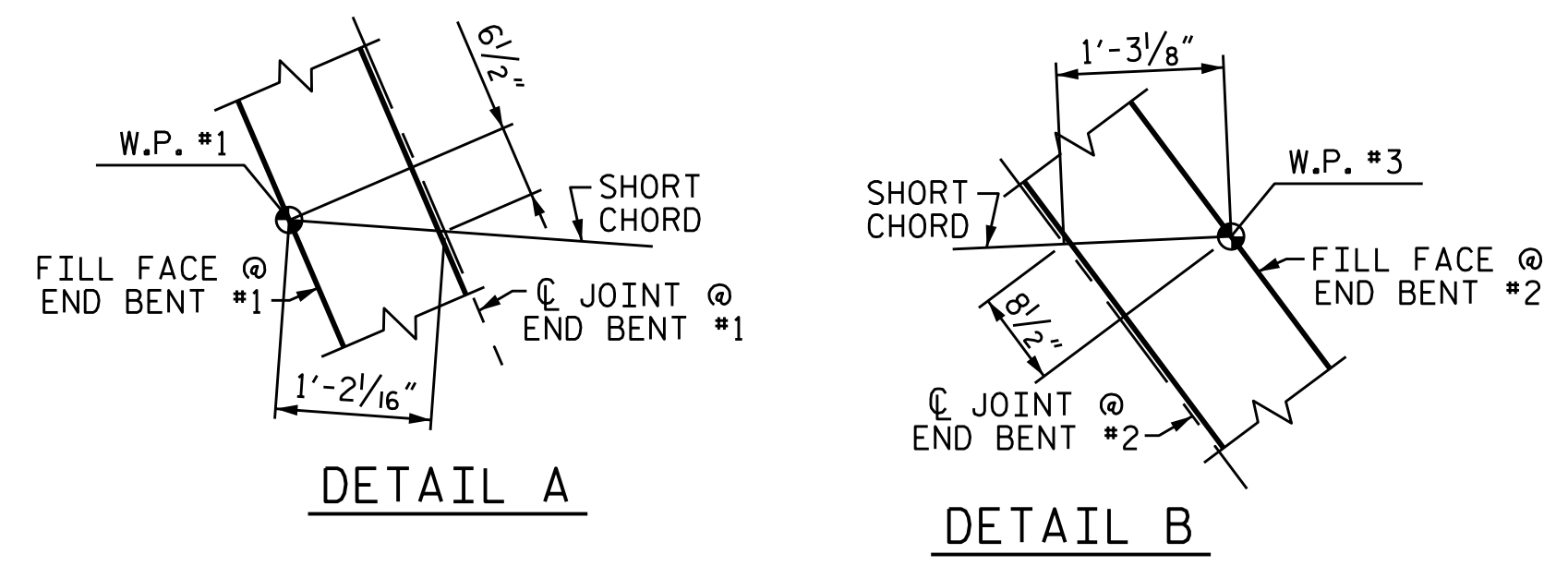


SPAN A

SPAN B

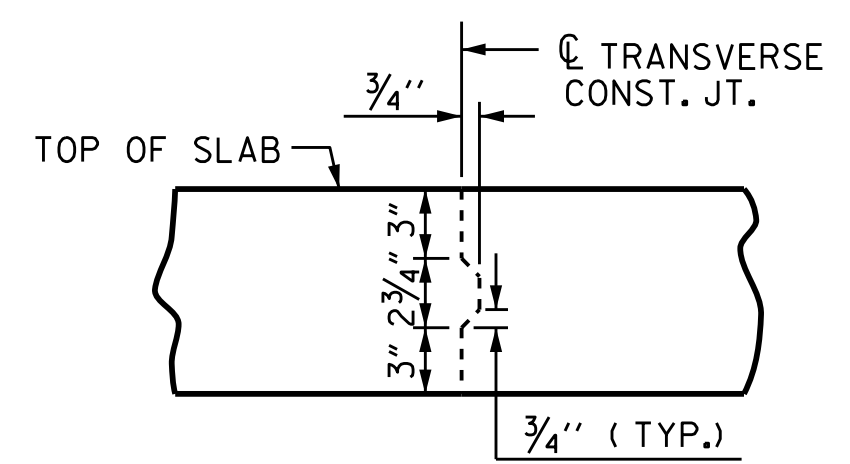
PLAN OF SPANS A AND B

"A" BARS AND TOP "B" LONGITUDINAL BARS ONLY.
 NOTE: "A" BARS TO BE PLACED PERPENDICULAR TO LONG CHORD AND SPACED ALONG LONG CHORD.
 * RADIAL DIMENSIONS.



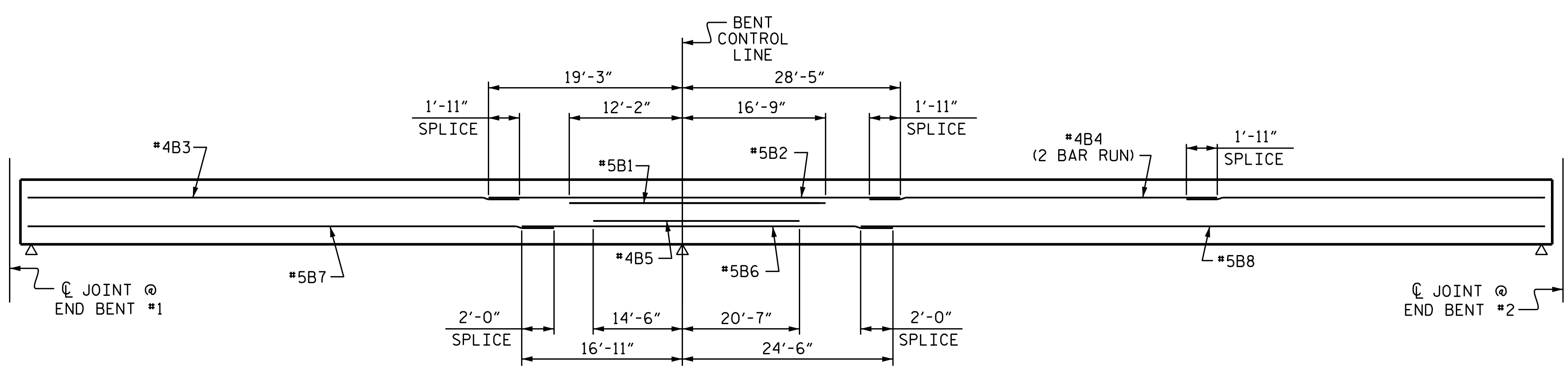
DETAIL A

DETAIL B

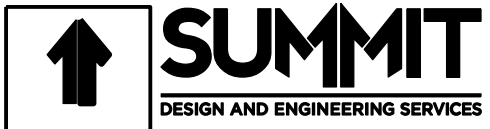


TRANSVERSE CONSTRUCTION JOINT DETAIL

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



SCHEMATIC DIAGRAM OF SPANS A AND B

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-

SHEET 1 OF 2



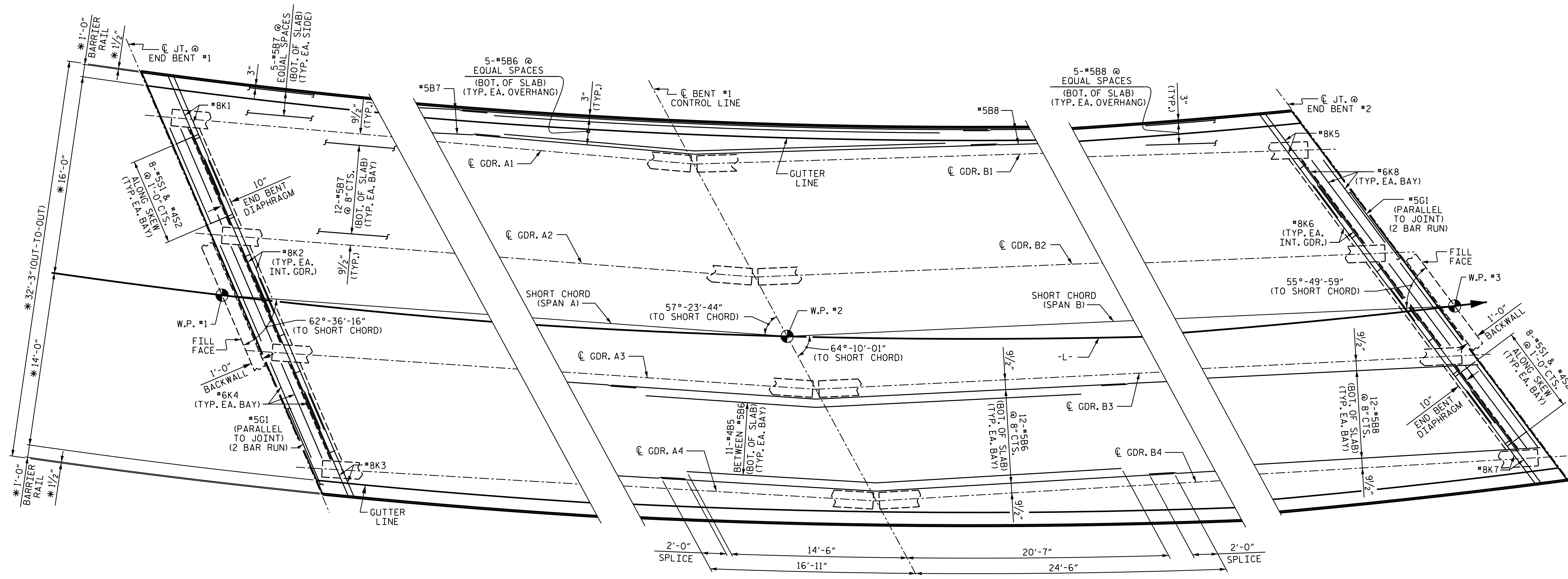
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 A & B

DRAWN BY : KEITH D. LAYNE DATE : 10/19
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2			4	

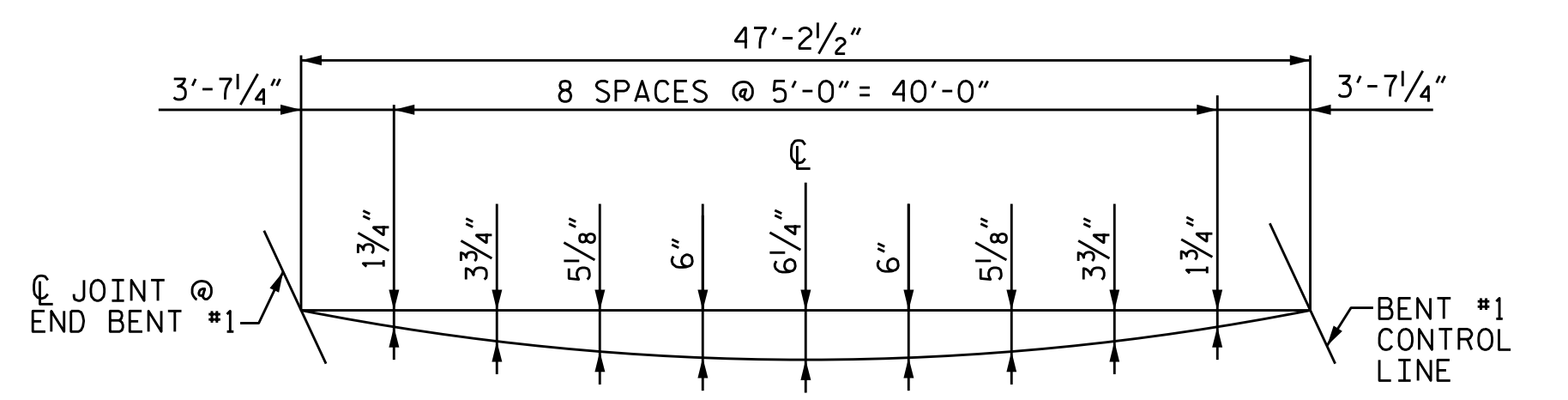
S-8
 TOTAL SHEETS
 35



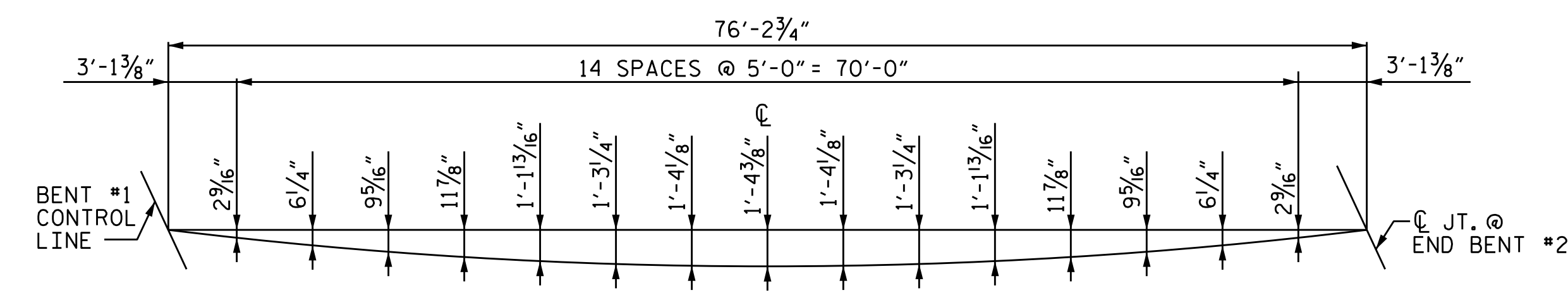
PLAN OF SPANS A AND B

SEE SHEET 1 OF 2 FOR "A" BARS AND TOP "B" LONGITUDINAL BARS.

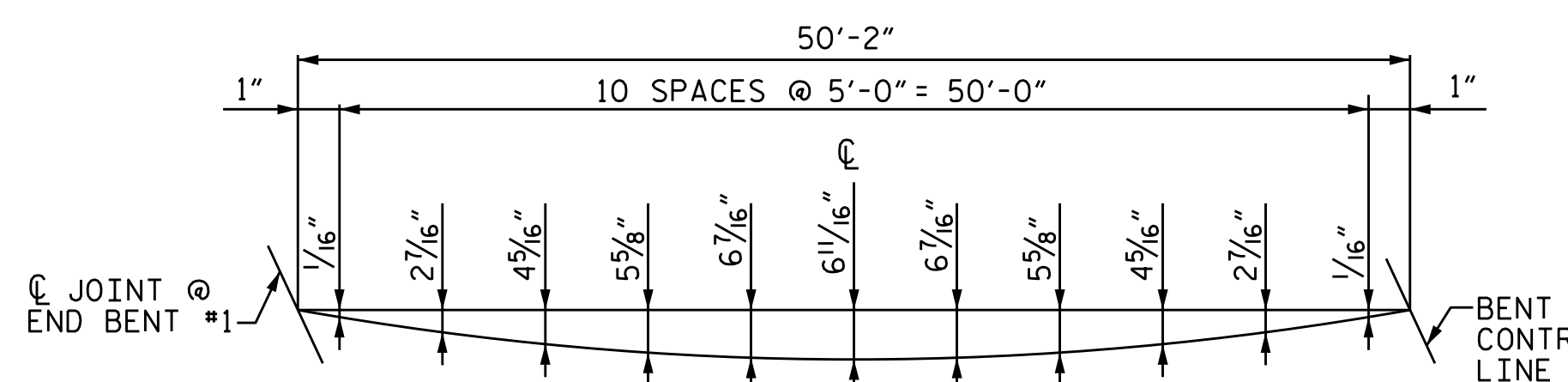
* RADIAL DIMENSIONS.



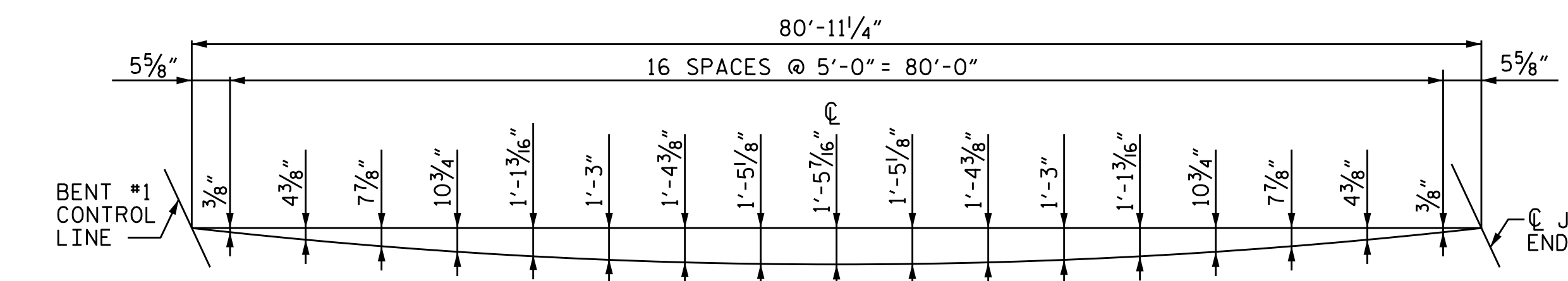
CURVE OFFSETS- LEFT OUTSIDE EDGE OF SUPERSTRUCTURE SPAN A



CURVE OFFSETS- LEFT OUTSIDE EDGE OF SUPERSTRUCTURE SPAN B



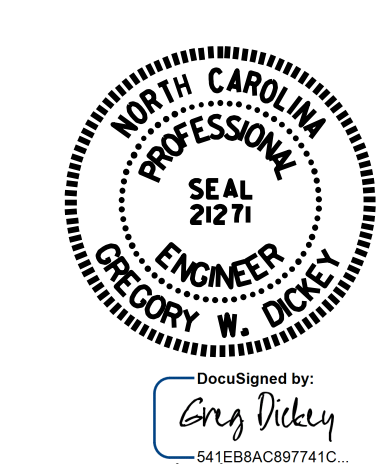
CURVE OFFSETS- RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE SPAN A



CURVE OFFSETS- RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE SPAN B

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PROJECT NO. B-5989
MADISON COUNTY
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 SHEET 2 OF 2

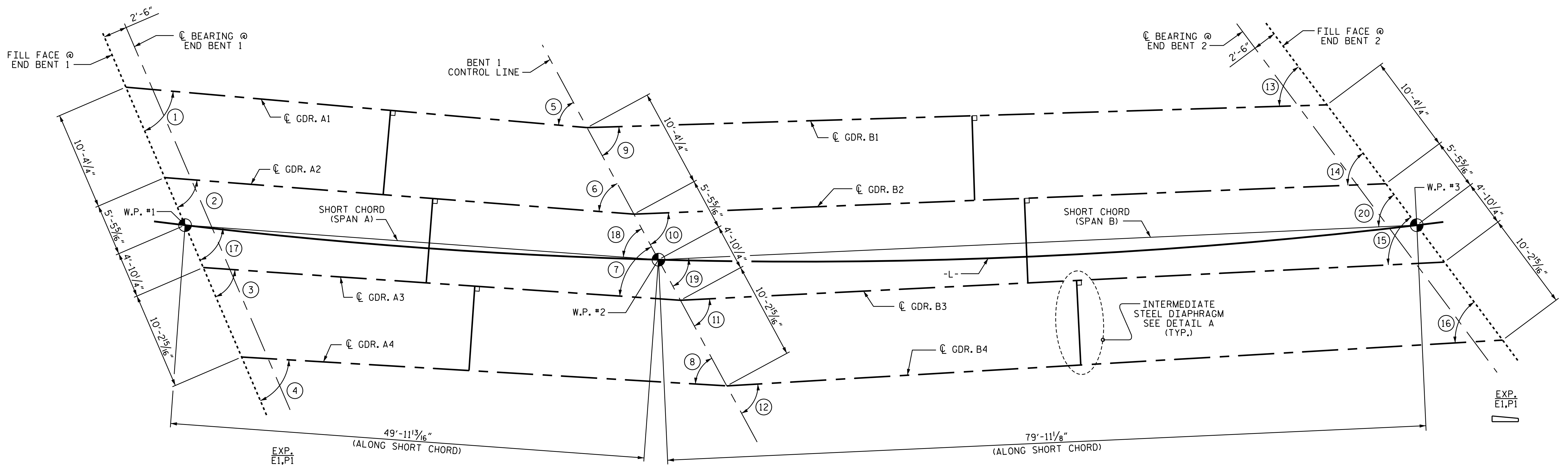


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 A & B

DRAWN BY : KEITH D. LAYNE DATE : 10/19
 CHECKED BY : NEIL C. ROHRBAUGH DATE : 10/19
 DESIGN ENGINEER OF RECORD : G. DICKEY DATE : 6/29/22

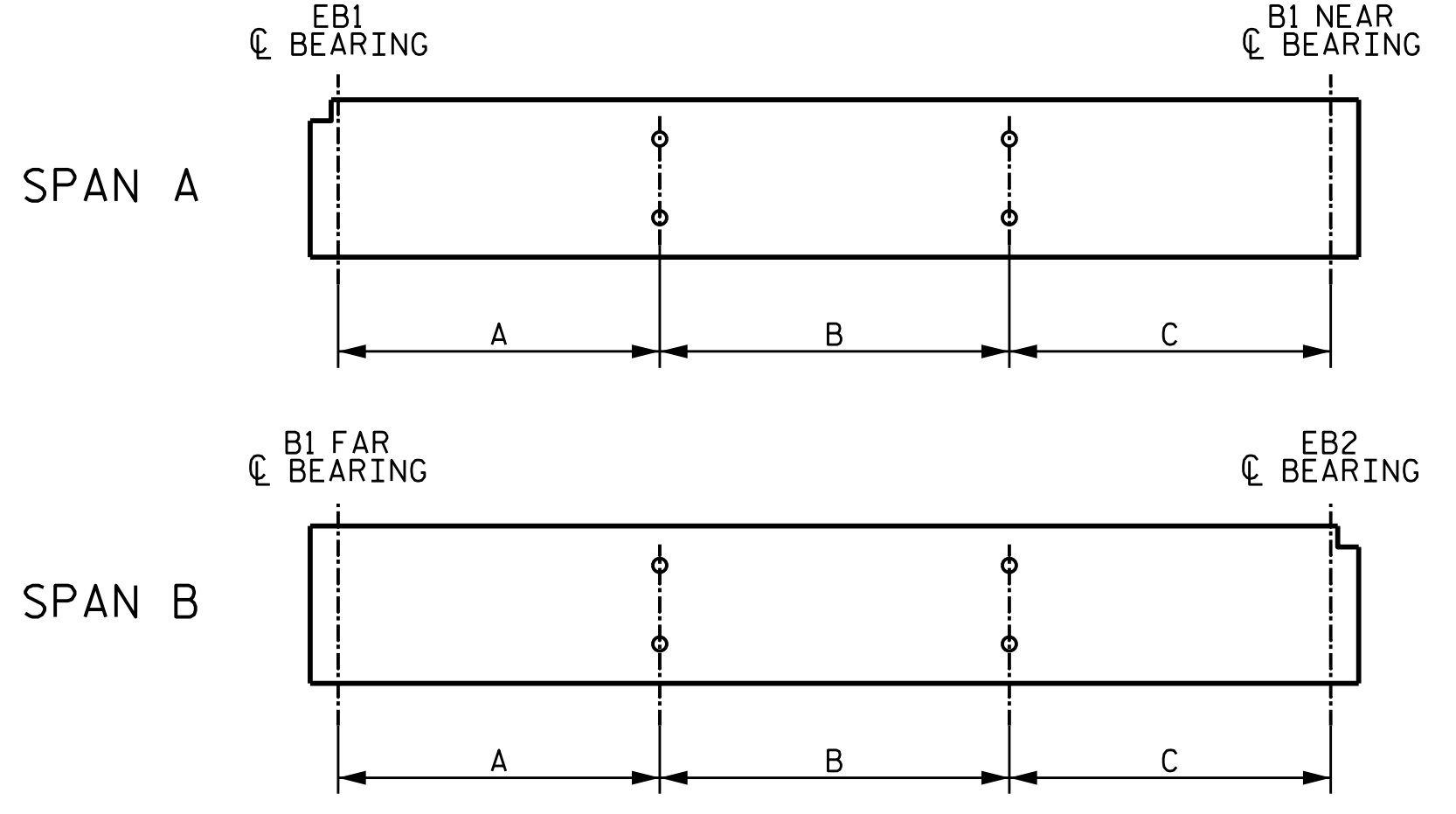
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2			4			35



PLAN

DETAIL A



ANGLES

- ① 61°-45'-38"
- ② 62°-19'-06"
- ③ 62°-51'-19"
- ④ 63°-22'-21"
- ⑤ 56°-33'-06"
- ⑥ 57°-06'-35"
- ⑦ 57°-38'-47"
- ⑧ 58°-09'-49"
- ⑨ 63°-19'-23"
- ⑩ 63°-52'-51"
- ⑪ 64°-25'-04"
- ⑫ 64°-56'-06"
- ⑬ 54°-59'-21"
- ⑭ 55°-32'-49"
- ⑮ 56°-05'-02"
- ⑯ 56°-36'-04"
- ⑰ 62°-36'-16" (TO SHORT CHORD)
- ⑱ 57°-23'-44" (TO SHORT CHORD)
- ⑲ 64°-10'-01" (TO SHORT CHORD)
- ⑳ 55°-49'-59" (TO SHORT CHORD)

DIMENSIONS FOR DIAPHRAGM HOLE PLACEMENT

GIRDER	A	B	C
A1	25'-1 11/16"	N/A	19'-10 3/16"
A2	20'-3 1/8"	5'-2 7/8"	20'-3 3/8"
A3	20'-8 13/16"	5'-1 1/2"	20'-9 7/16"
A4	21'-2 3/8"	N/A	26'-3 1/4"
B1	39'-7 3/4"	N/A	34'-4"
B2	35'-0"	5'-3"	35'-0 3/4"
B3	35'-8 9/16"	5'-1 5/8"	35'-9 3/16"
B4	36'-5 1/16"	N/A	41'-6 1/16"

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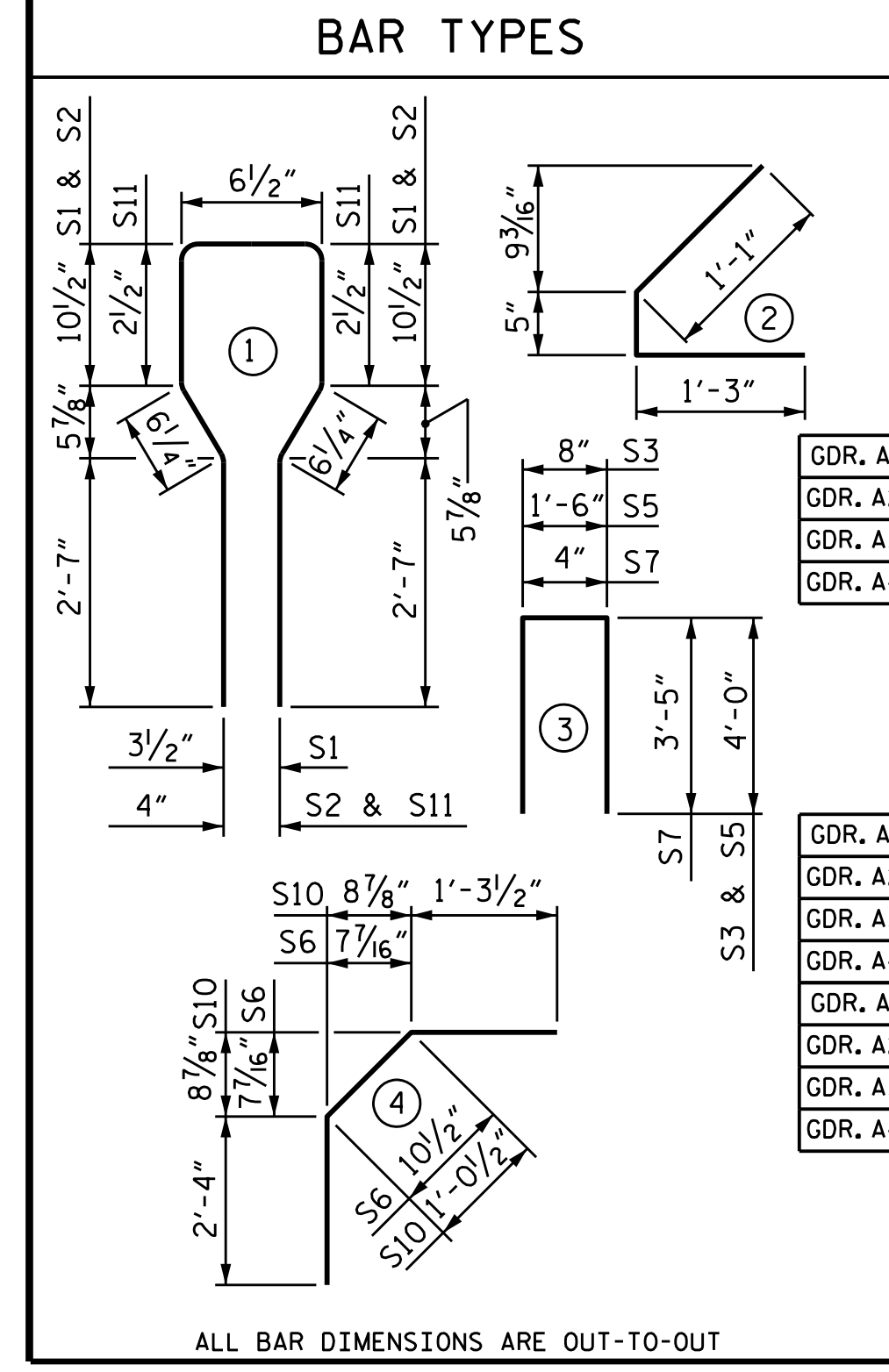
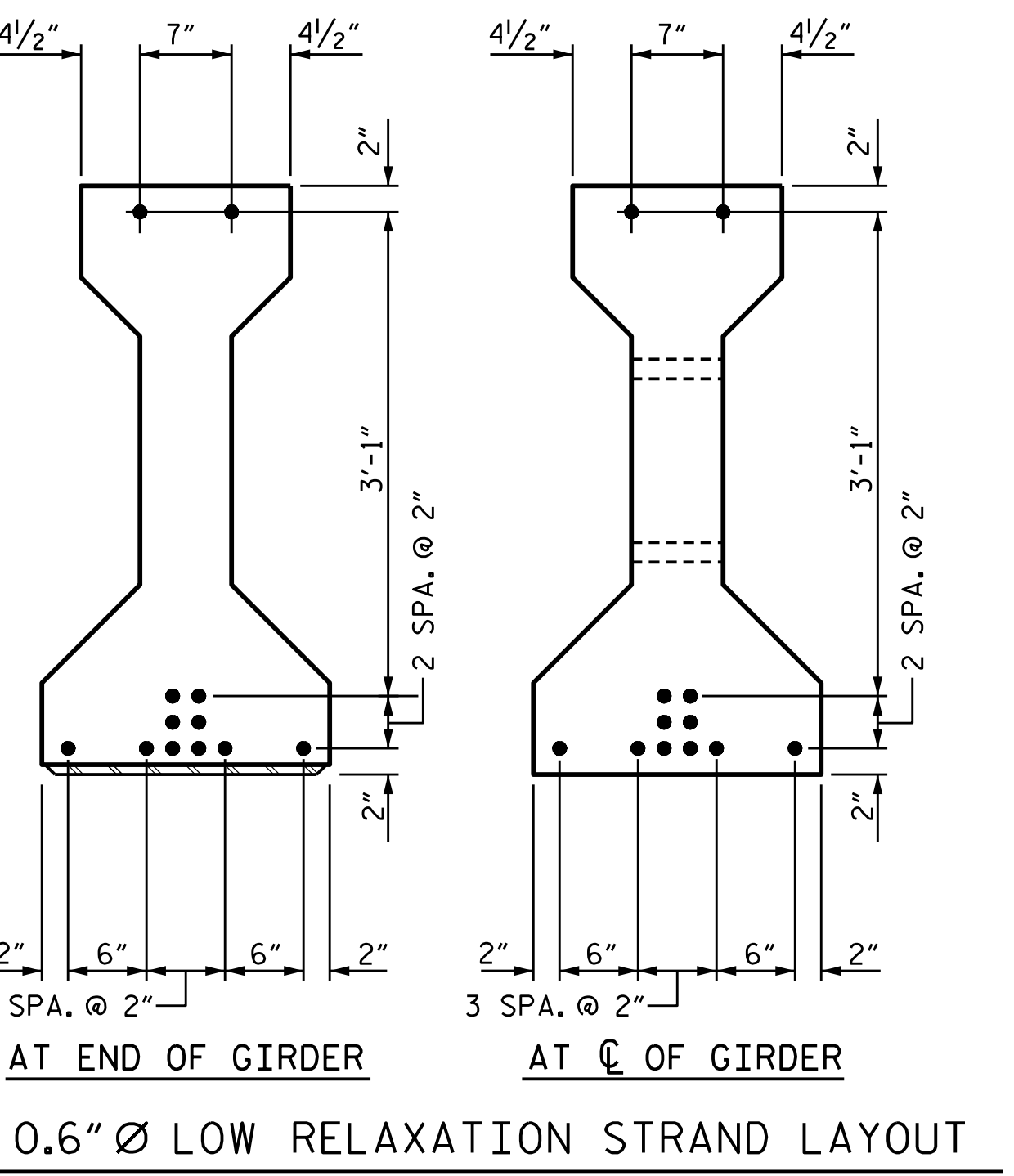
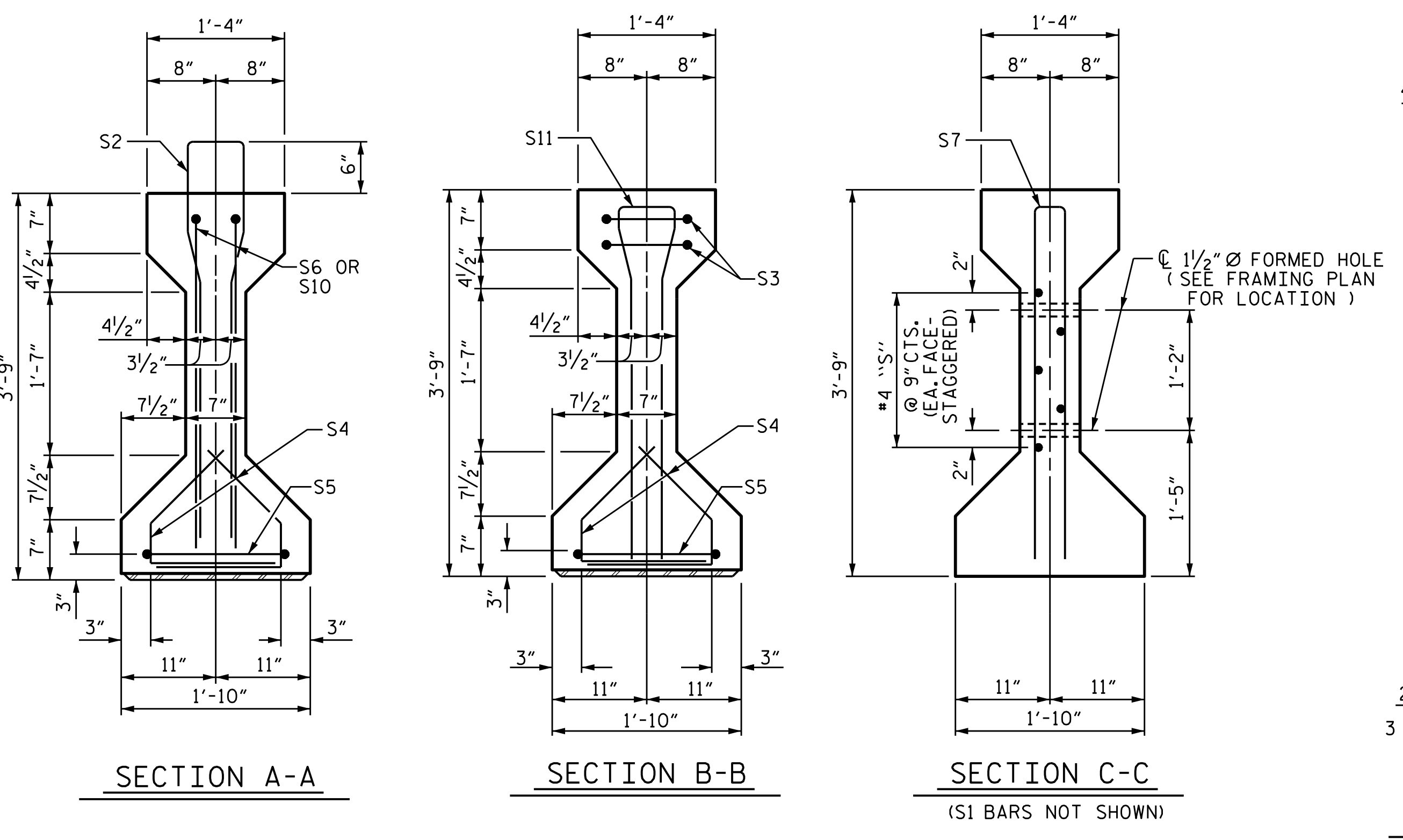


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

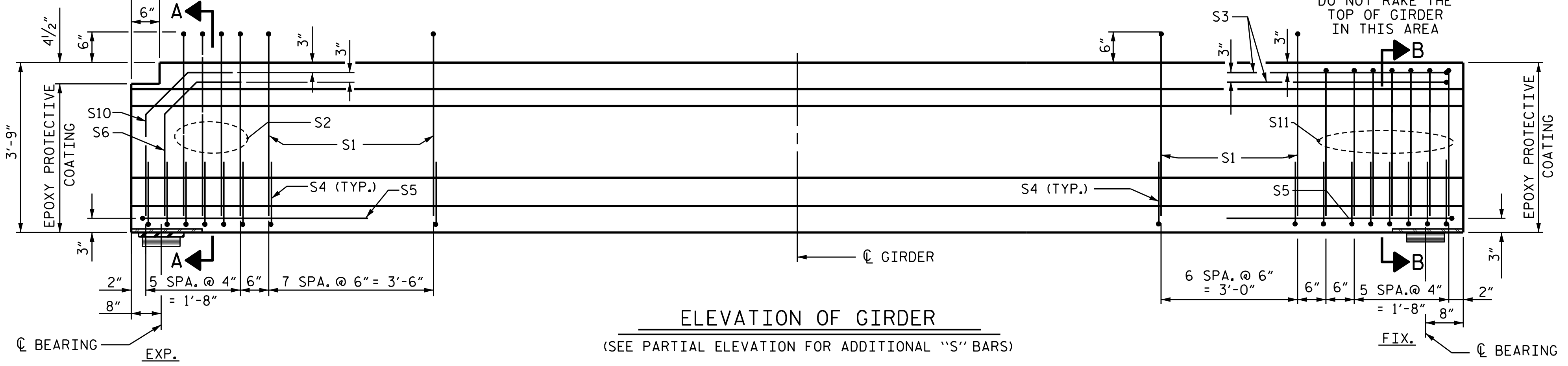
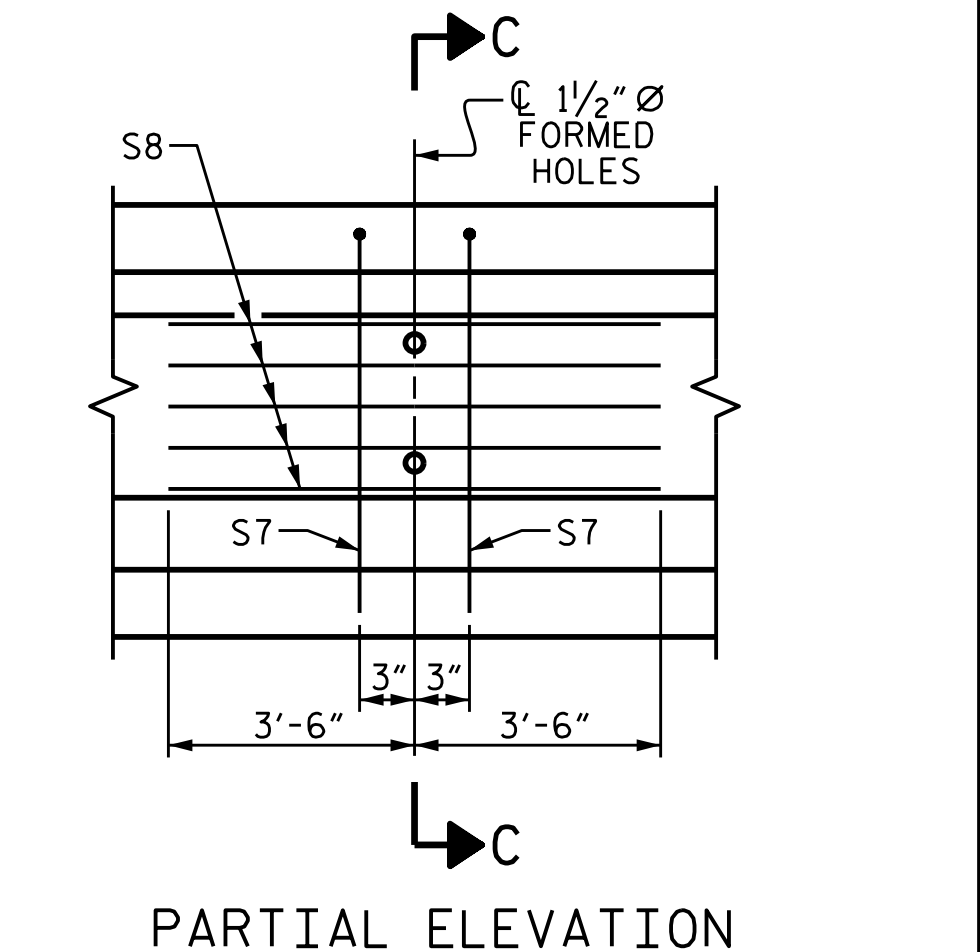
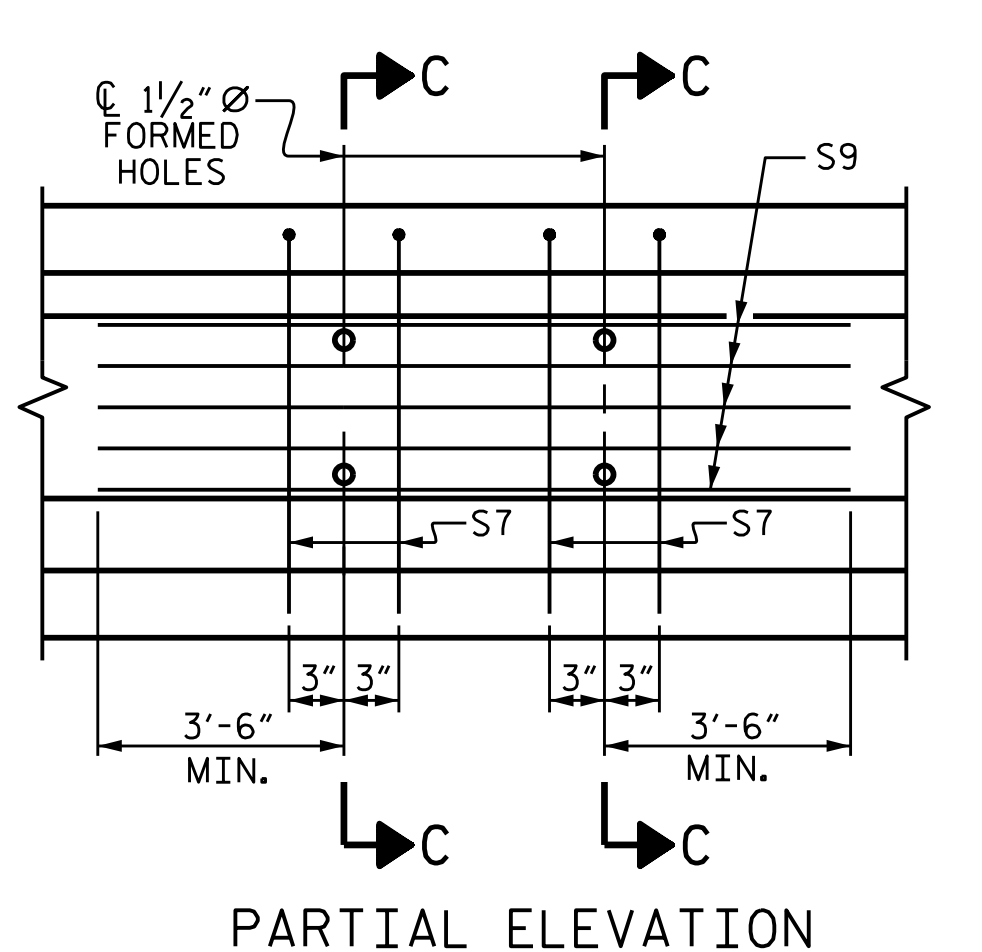
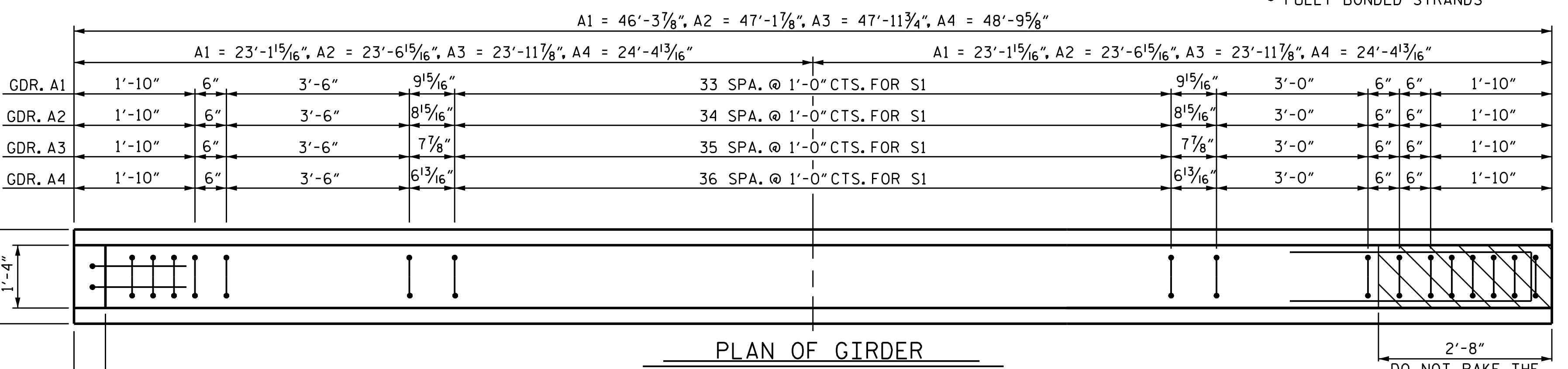
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0.6" Ø L. R. GRADE 270 STRANDS					
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)			
0.217	58,600	43,950			
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. A1	S1	#4	1	8'-6"	278
GDR. A2	S1	#4	1	8'-6"	284
GDR. A3	S1	#4	1	8'-6"	290
GDR. A4	S1	#4	1	8'-6"	295
	S2	#4	1	8'-6"	51
	S3	#4	3	8'-8"	12
	S4	#4	2	2'-9"	103
	S5	#4	3	9'-6"	13
	S6	#6	4	4'-6"	14
GDR. A1	S7	#5	3	7'-2"	15
GDR. A2	S7	#5	3	7'-2"	30
GDR. A3	S7	#5	3	7'-2"	41
GDR. A4	S7	#5	3	7'-2"	15
GDR. A1	S8	#4	STR	7'-0"	23
GDR. A2	S9	#4	STR	12'-3"	41
GDR. A3	S9	#4	STR	12'-3"	41
GDR. A4	S8	#4	STR	7'-0"	23
	S10	#6	4	4'-8"	14
	S11	#6	1	7'-2"	75

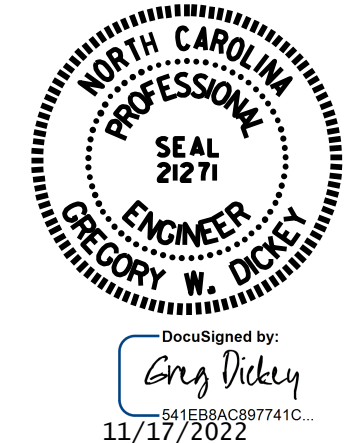


QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GIRDER A1	598	6.7	12
GIRDER A2	637	6.8	12
GIRDER A3	643	6.9	12
GIRDER A4	615	7.0	12

GIRDERS REQUIRED	
	TOTAL LENGTH
GIRDER A1	46'-3 3/8"
GIRDER A2	47'-1 7/8"
GIRDER A3	47'-11 3/4"
GIRDER A4	48'-9 5/8"
TOTAL	190'-3 3/8"

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 SHEET 1 OF 3

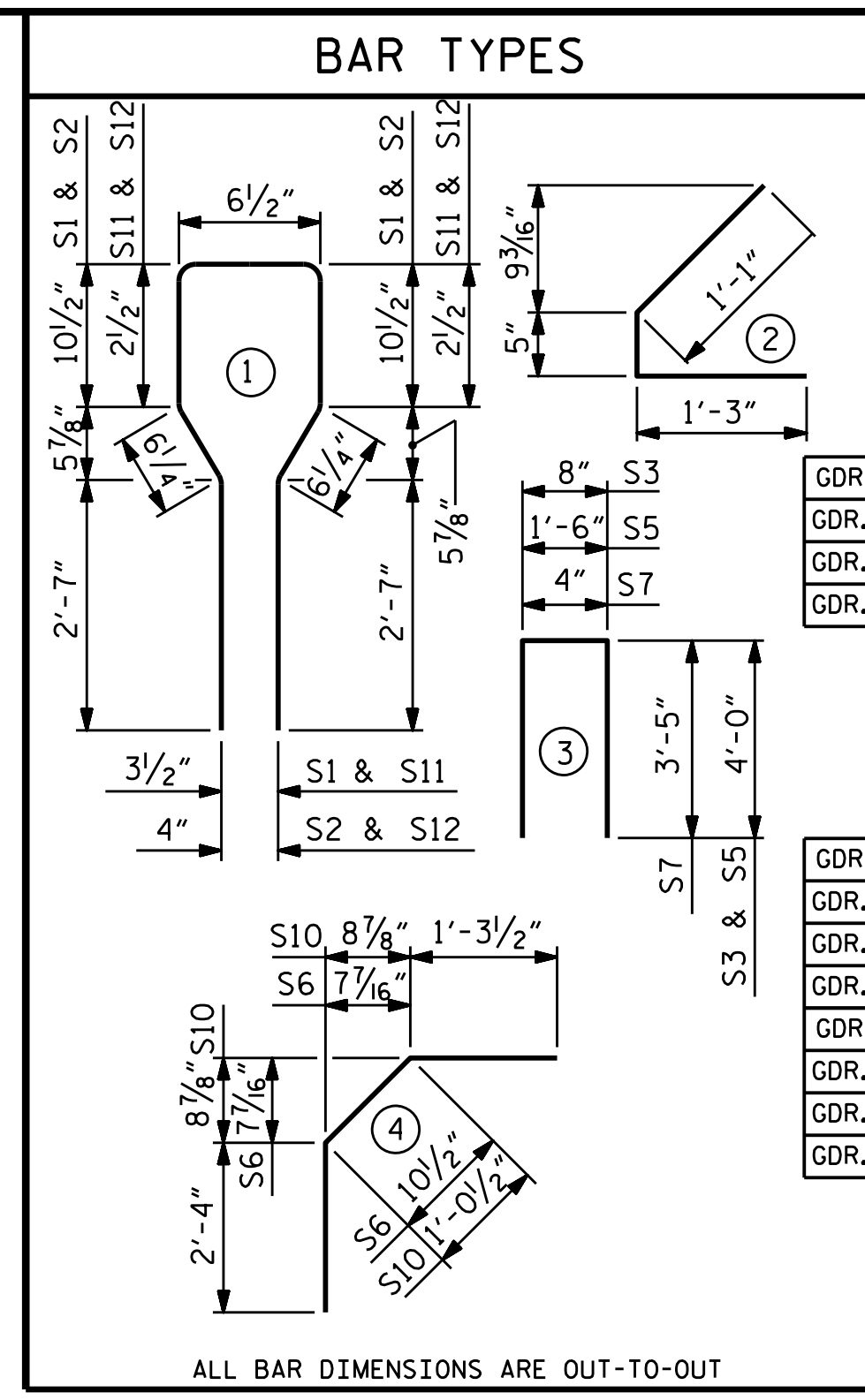
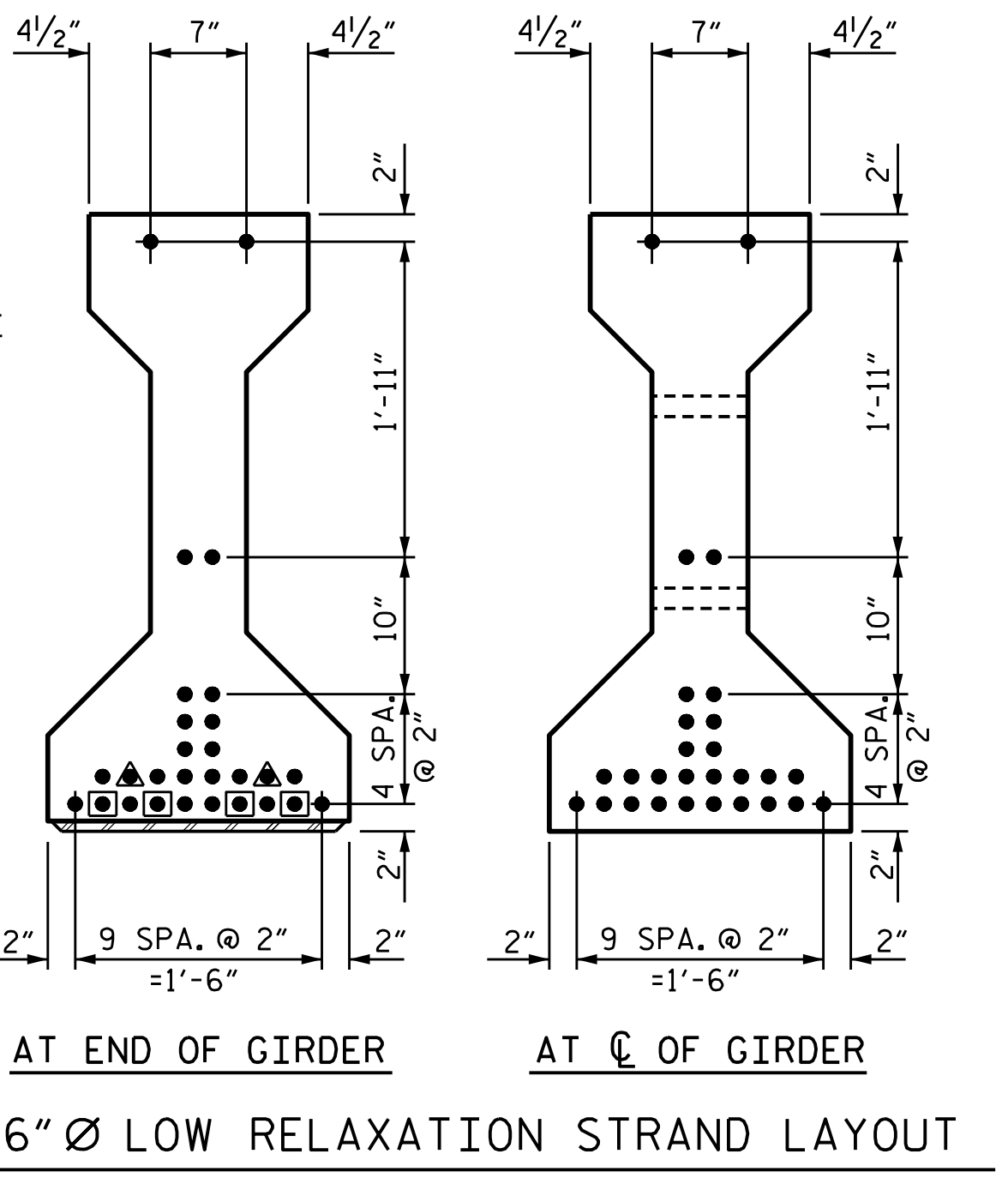
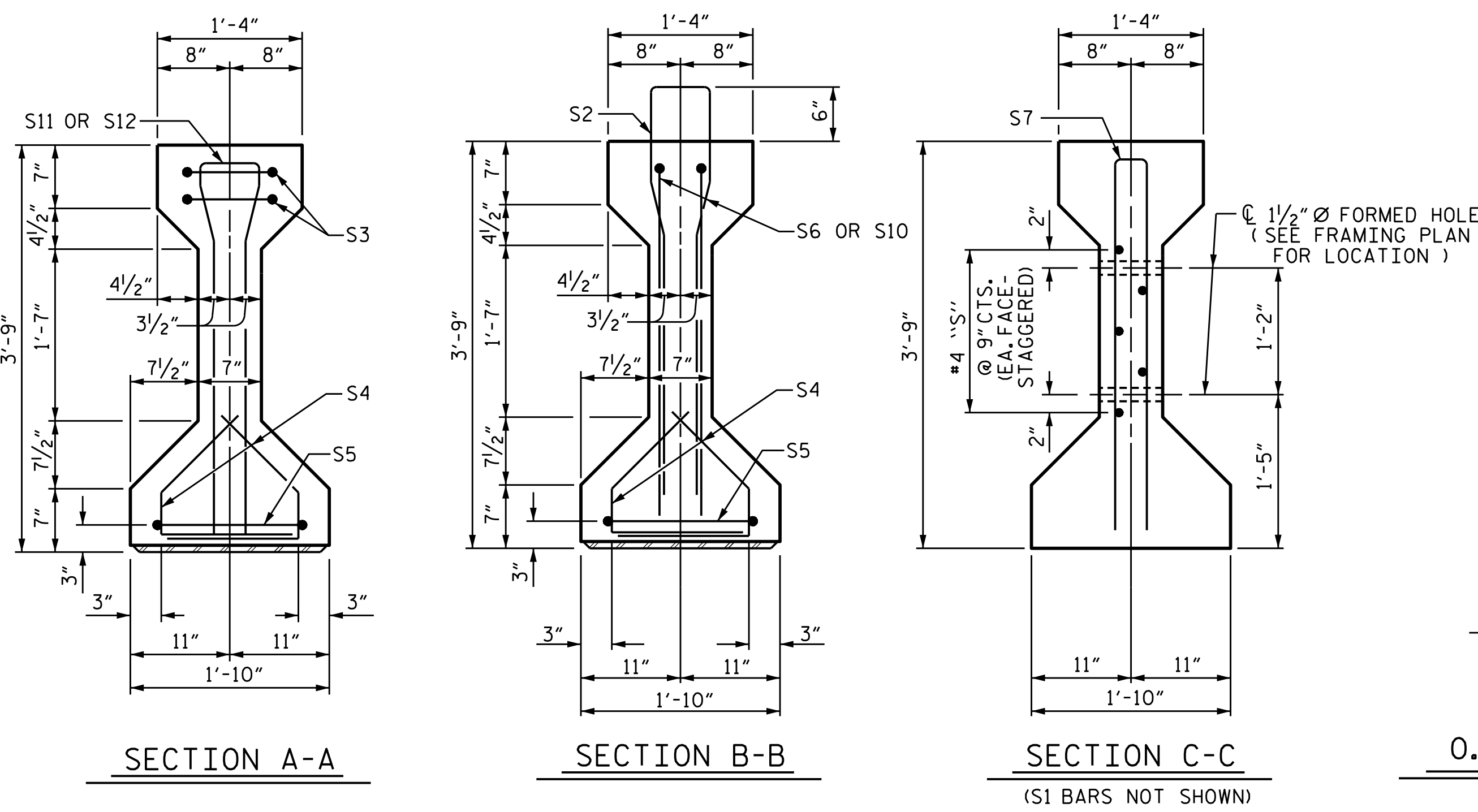
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**AASHTO TYPE III
 PRESTRESSED
 CONCRETE GIRDER
 FOR LINK SLAB**
 (SPAN A)

DRAWN BY : NEIL C. ROHRBAUGH DATE : 11/19
 CHECKED BY : KEITH D. LAYNE DATE : 11/19
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 6/29/22

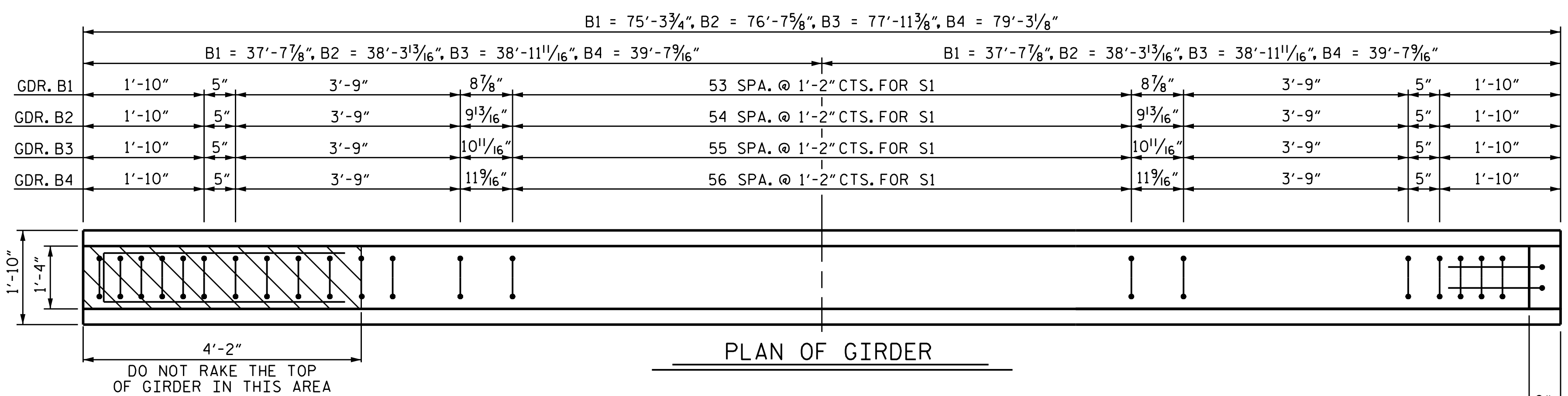
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TOTAL SHEETS: 35

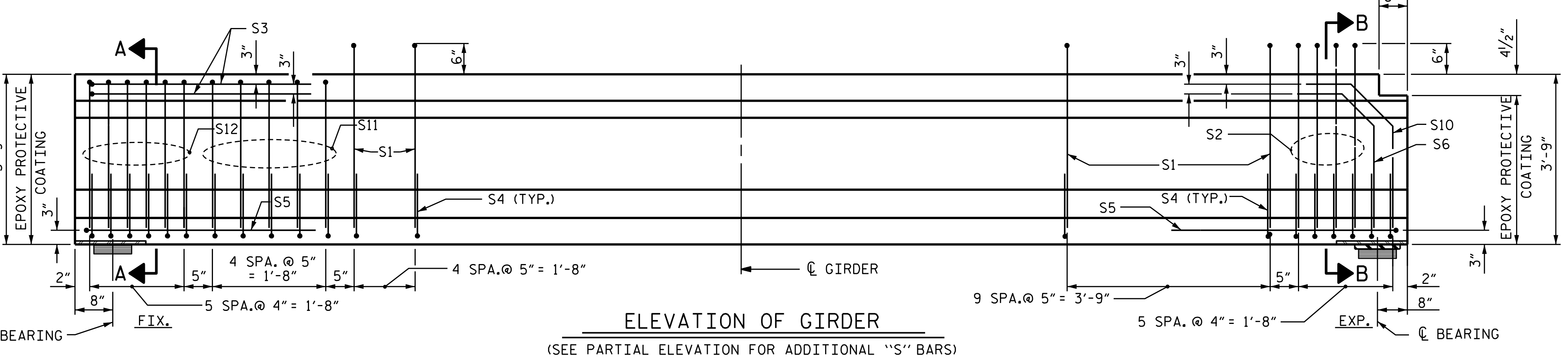
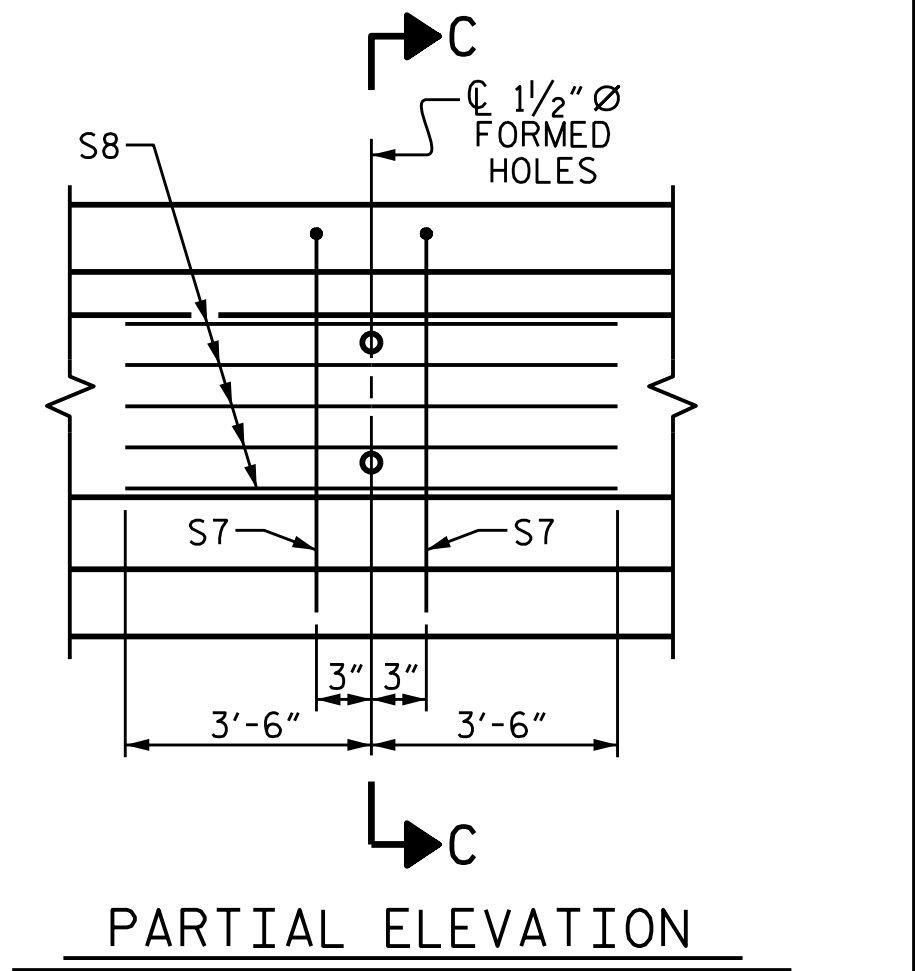
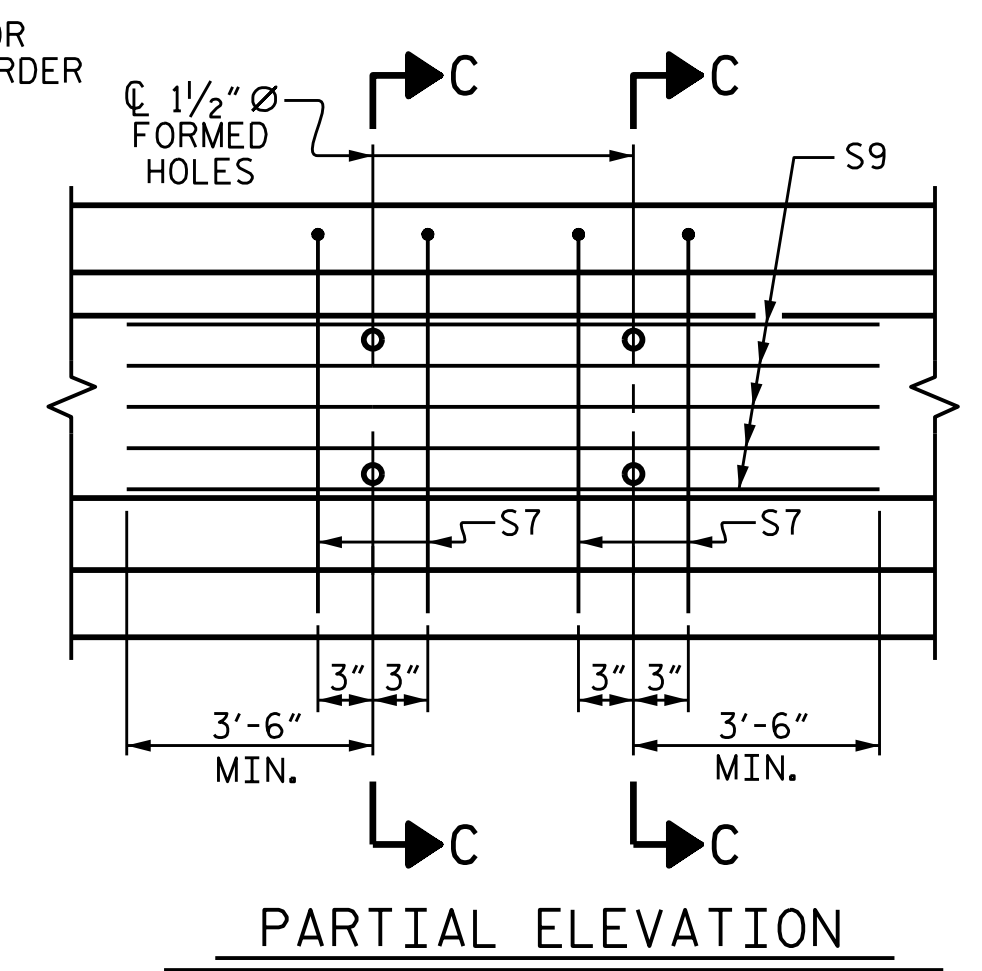


0.6" Ø L. R. GRADE 270 STRANDS					
AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS			
(SQUARE INCHES)	(LBS. PER STRAND)	(LBS. PER STRAND)			
0.217	58,600	43,950			
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. B1	S1	#4	1	8'-6"	392
GDR. B2	S1	#4	1	8'-6"	397
GDR. B3	S1	#4	1	8'-6"	403
GDR. B4	S1	#4	1	8'-6"	409
	S2	#4	1	8'-6"	51
	S3	#4	3	8'-8"	12
	S4	#4	2	2'-9"	118
	S5	#4	3	9'-6"	13
	S6	#6	4	4'-6"	14
GDR. B1	S7	#5	3	7'-2"	15
GDR. B2	S7	#5	3	7'-2"	30
GDR. B3	S7	#5	3	7'-2"	30
GDR. B4	S7	#5	3	7'-2"	15
GDR. B1	S8	#4	STR	7'-0"	23
GDR. B2	S9	#4	STR	12'-3"	41
GDR. B3	S9	#4	STR	12'-3"	41
GDR. B4	S8	#4	STR	7'-0"	23
	S10	#6	4	4'-8"	14
	S11	#4	1	7'-2"	24
	S12	#6	1	7'-2"	65



DEBONDING LEGEND

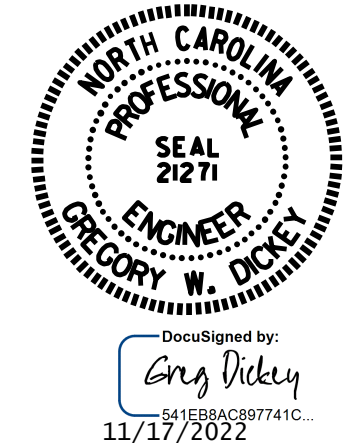
- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	7500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
GIRDER B1	741	10.8	28
GIRDER B2	779	11.0	28
GIRDER B3	785	11.2	28
GIRDER B4	758	11.4	28

GIRDERS REQUIRED	
	TOTAL LENGTH
GIRDER B1	75'-3 3/4"
GIRDER B2	76'-7 5/8"
GIRDER B3	77'-11 3/8"
GIRDER B4	79'-3 1/8"
	309'-1 1/8"

Prepared in the Office of:
SUMMIT
 DESIGN AND ENGINEERING SERVICES
 NC FIRM LICENSE No: P-0339
 1110 Navaho Drive, Suite 600
 Raleigh, NC 27609
 Ph: 919-322-0115 Fax: 919-322-0116
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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**AASHTO TYPE III
 PRESTRESSED
 CONCRETE GIRDER
 FOR LINK SLAB**
 (SPAN B)

DRAWN BY : NEIL C. ROHRBAUGH DATE : 11/19
 CHECKED BY : KEITH D. LAYNE DATE : 11/19
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 6/29/22

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-12
2			4			35

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

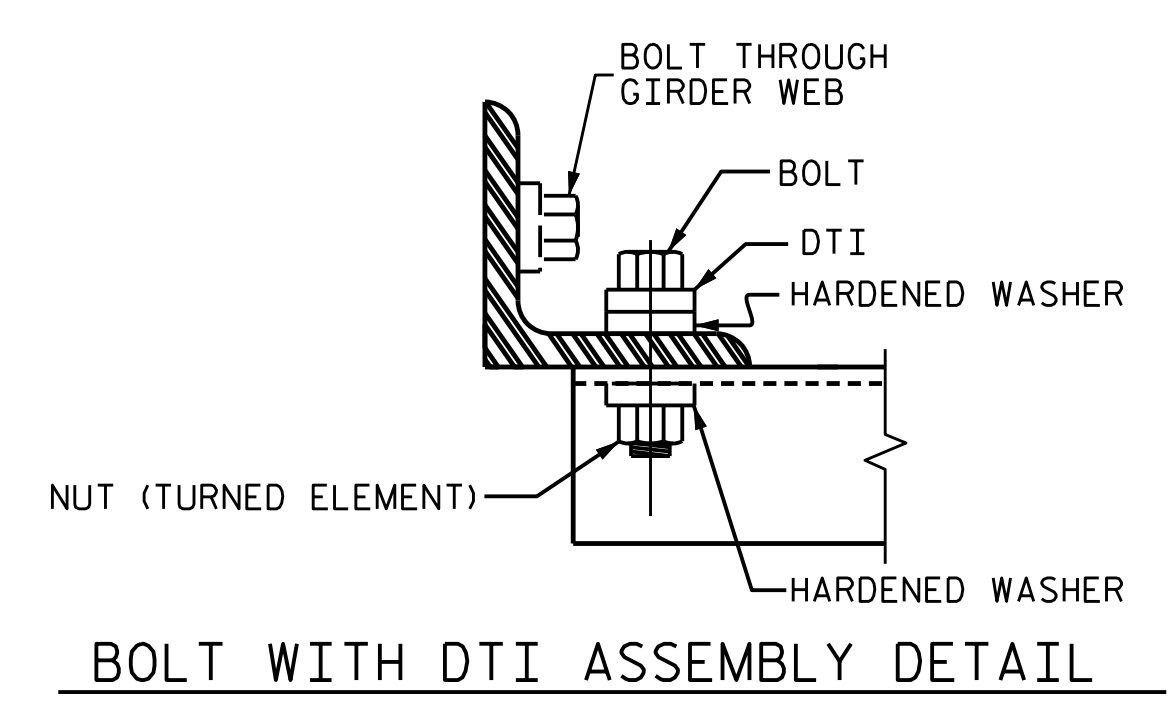
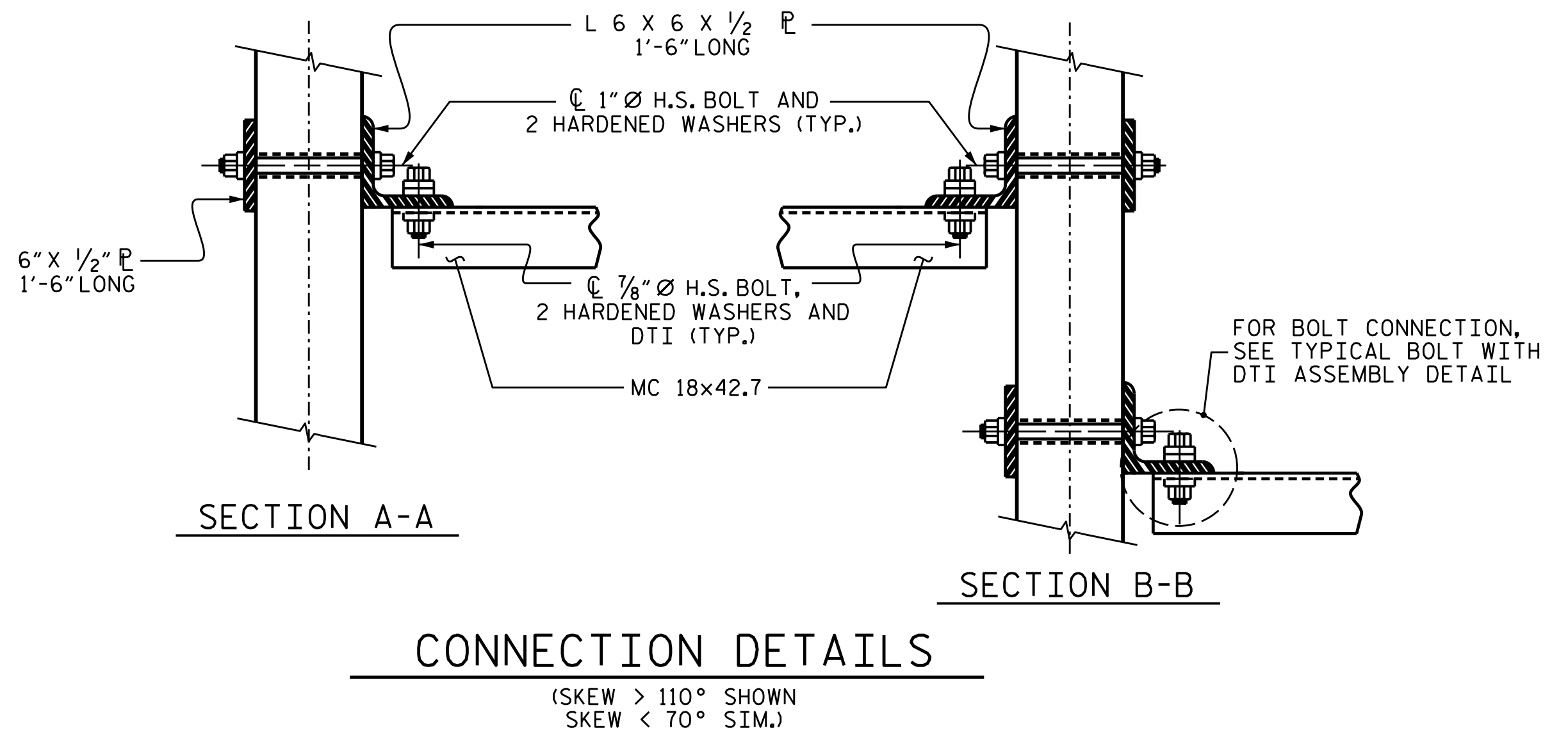
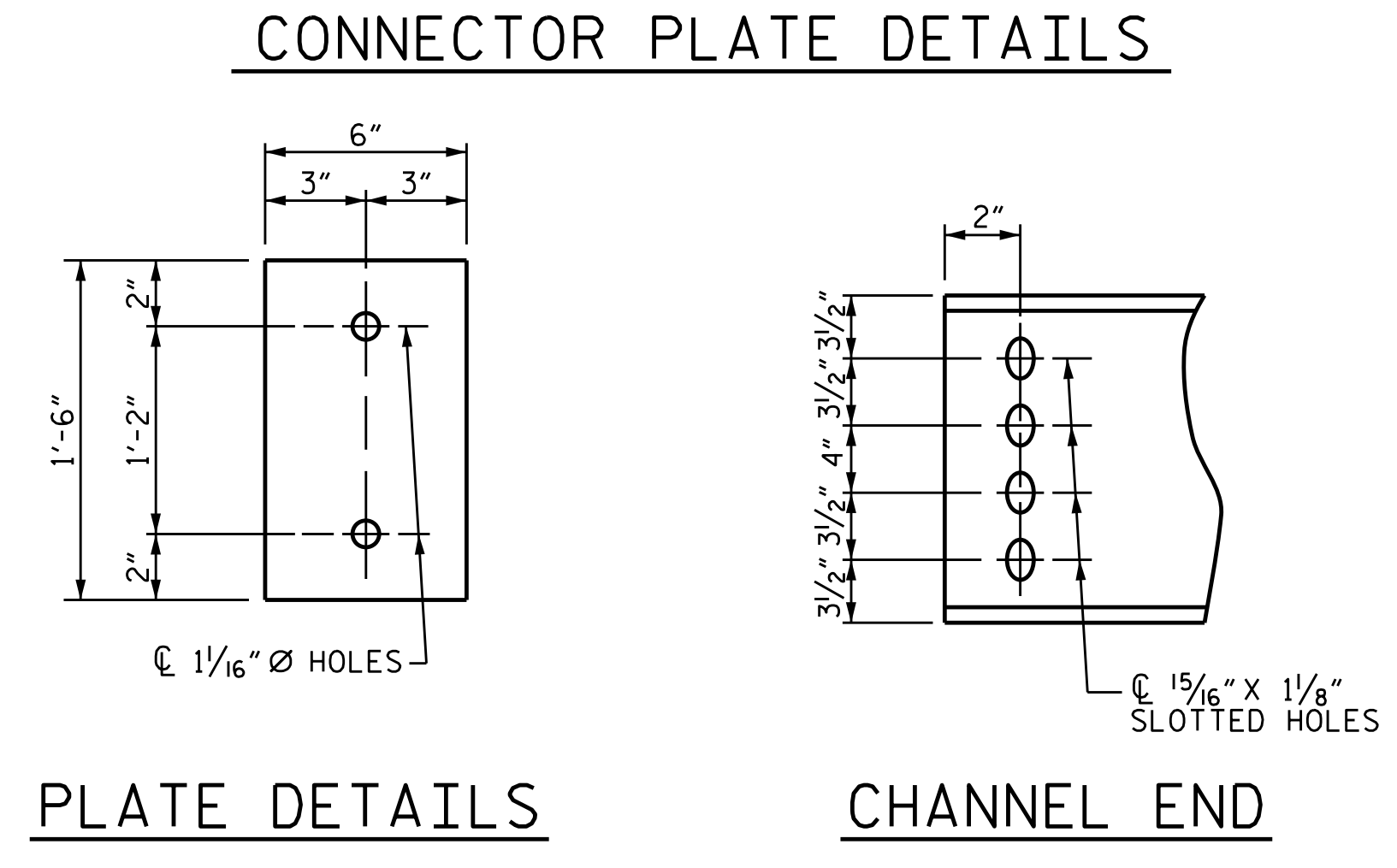
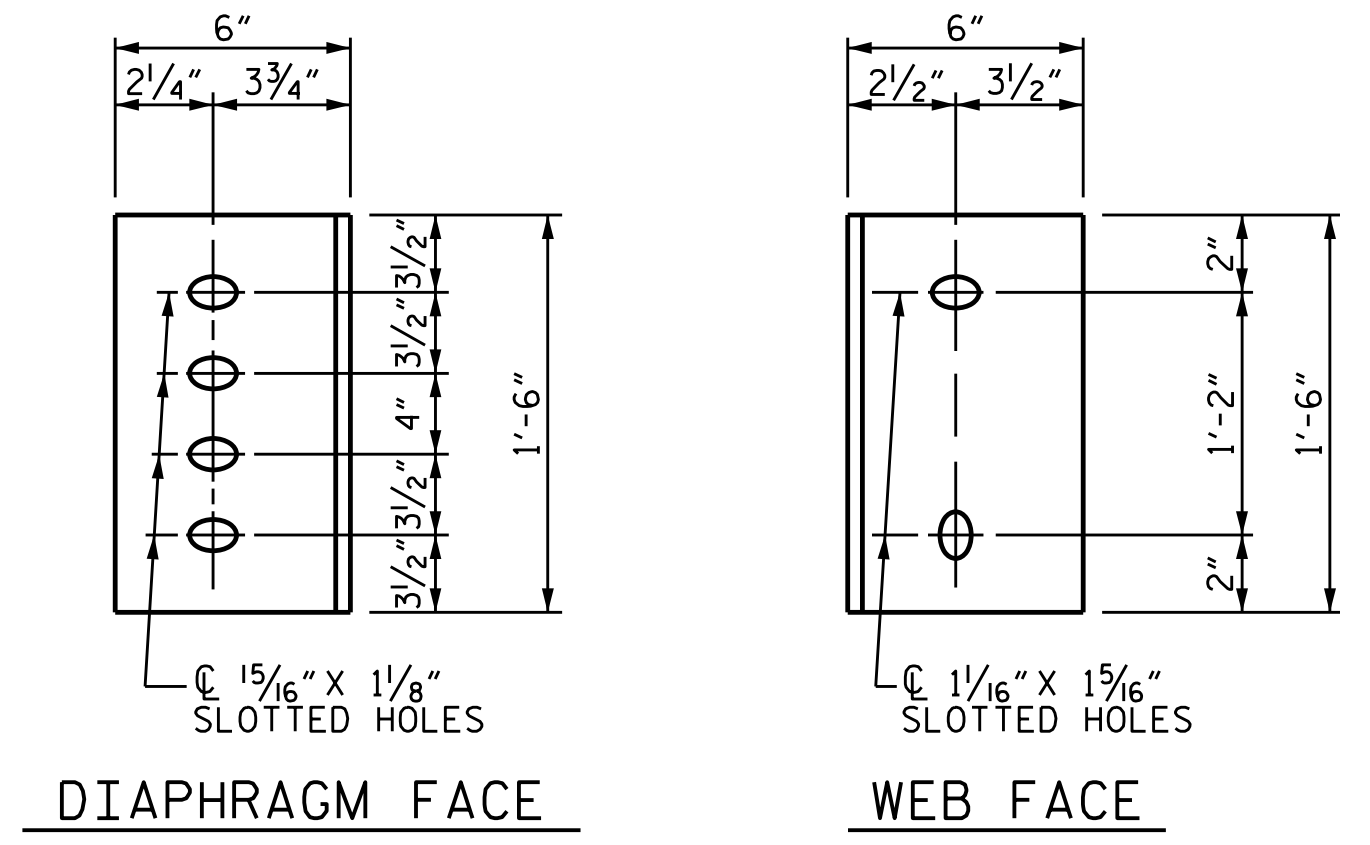
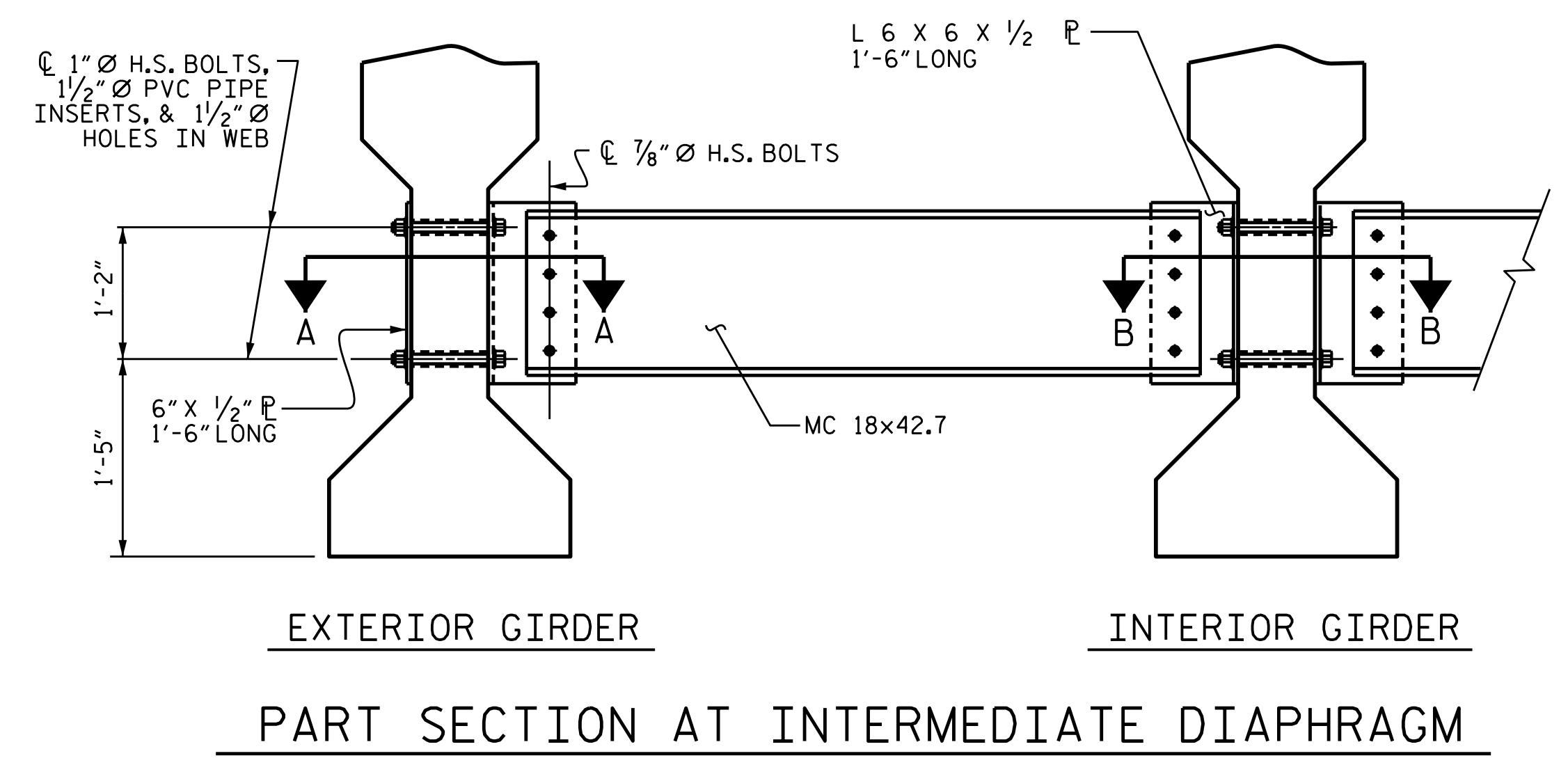
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

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

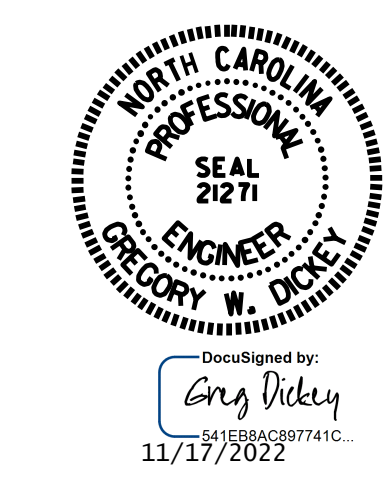
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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



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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 3 OF 3



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

ASSEMBLED BY : NEIL C. ROHRBAUGH	DATE : 11/19
CHECKED BY : KEITH D. LAYNE	DATE : 11/19
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			35

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

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

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

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE 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.

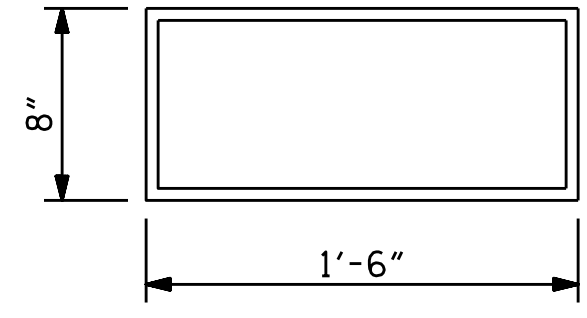
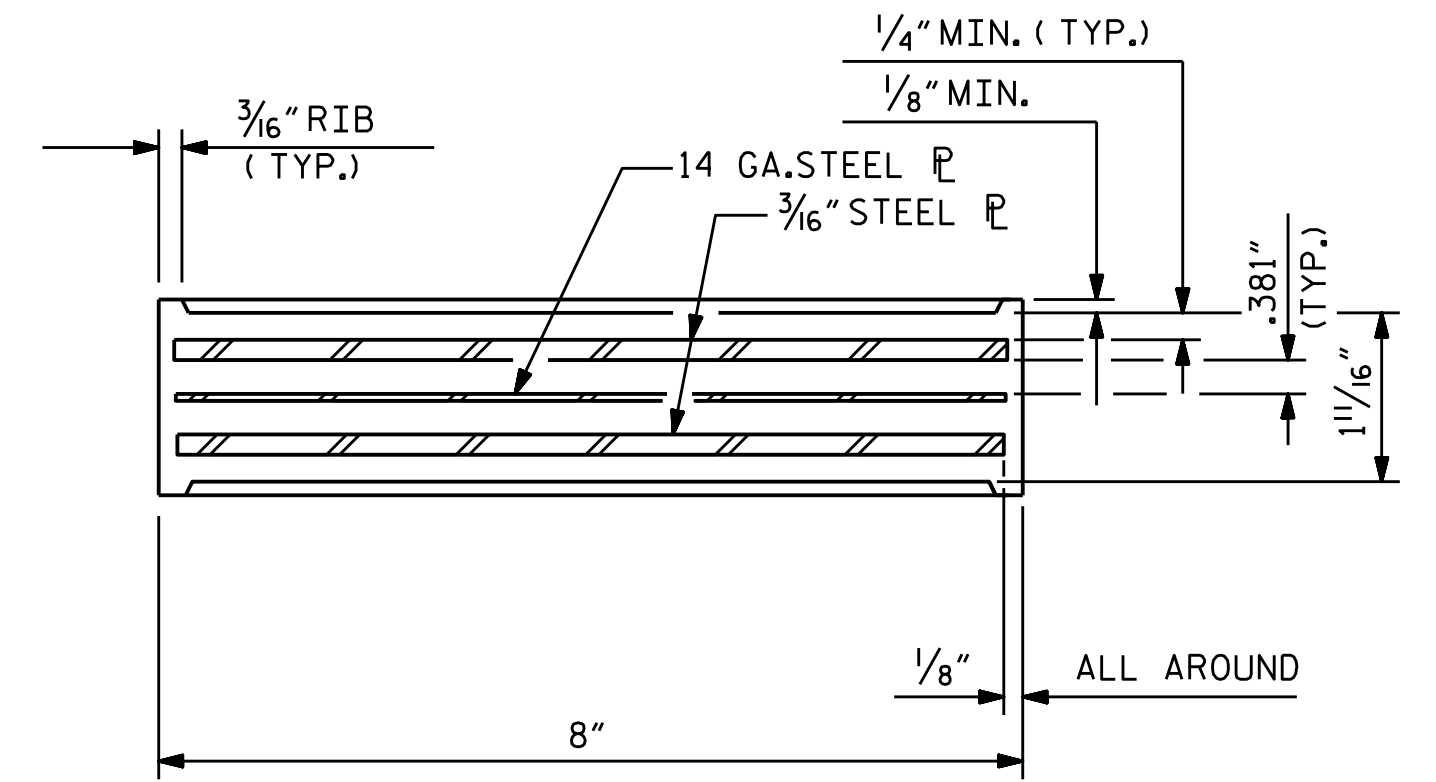
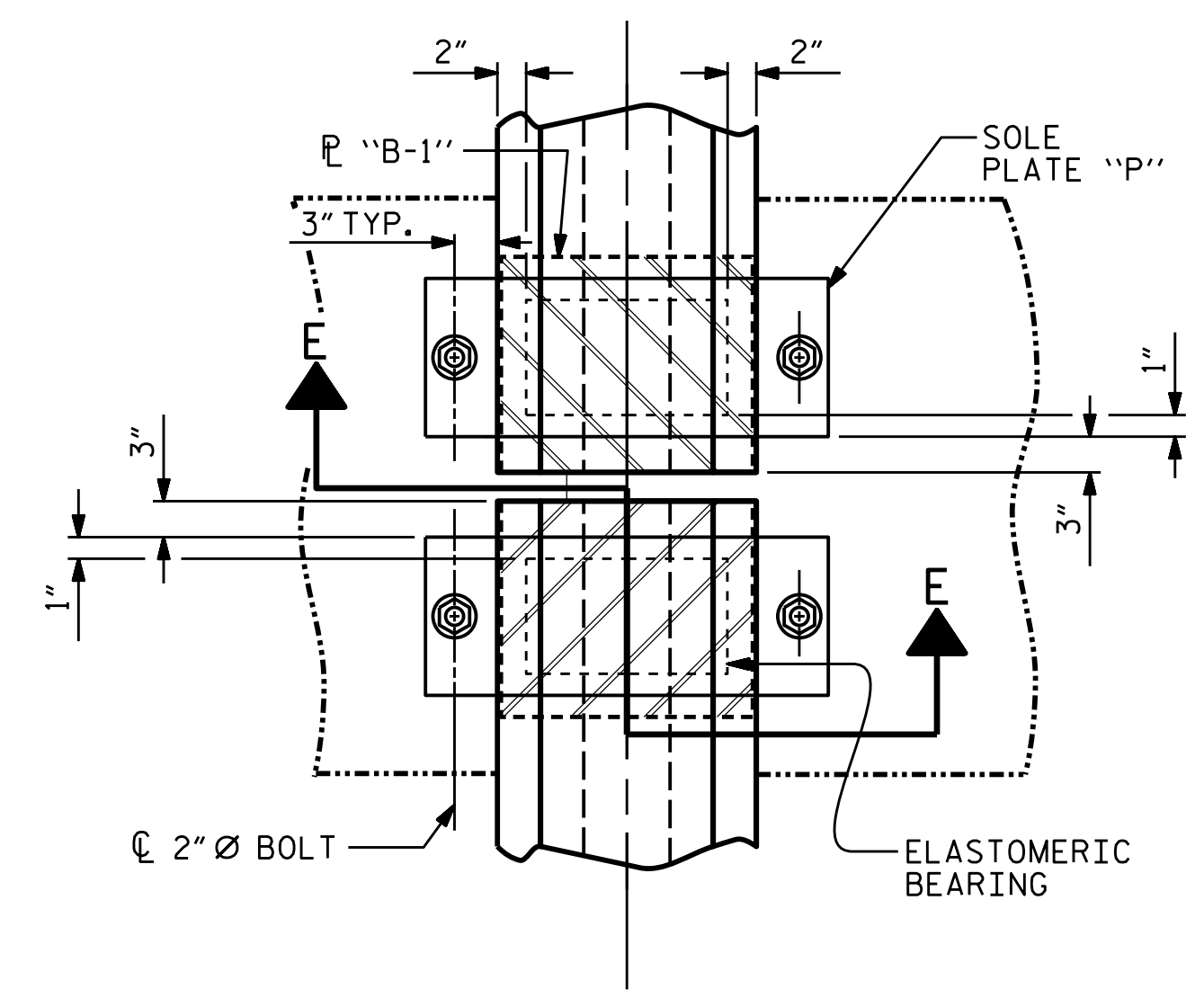
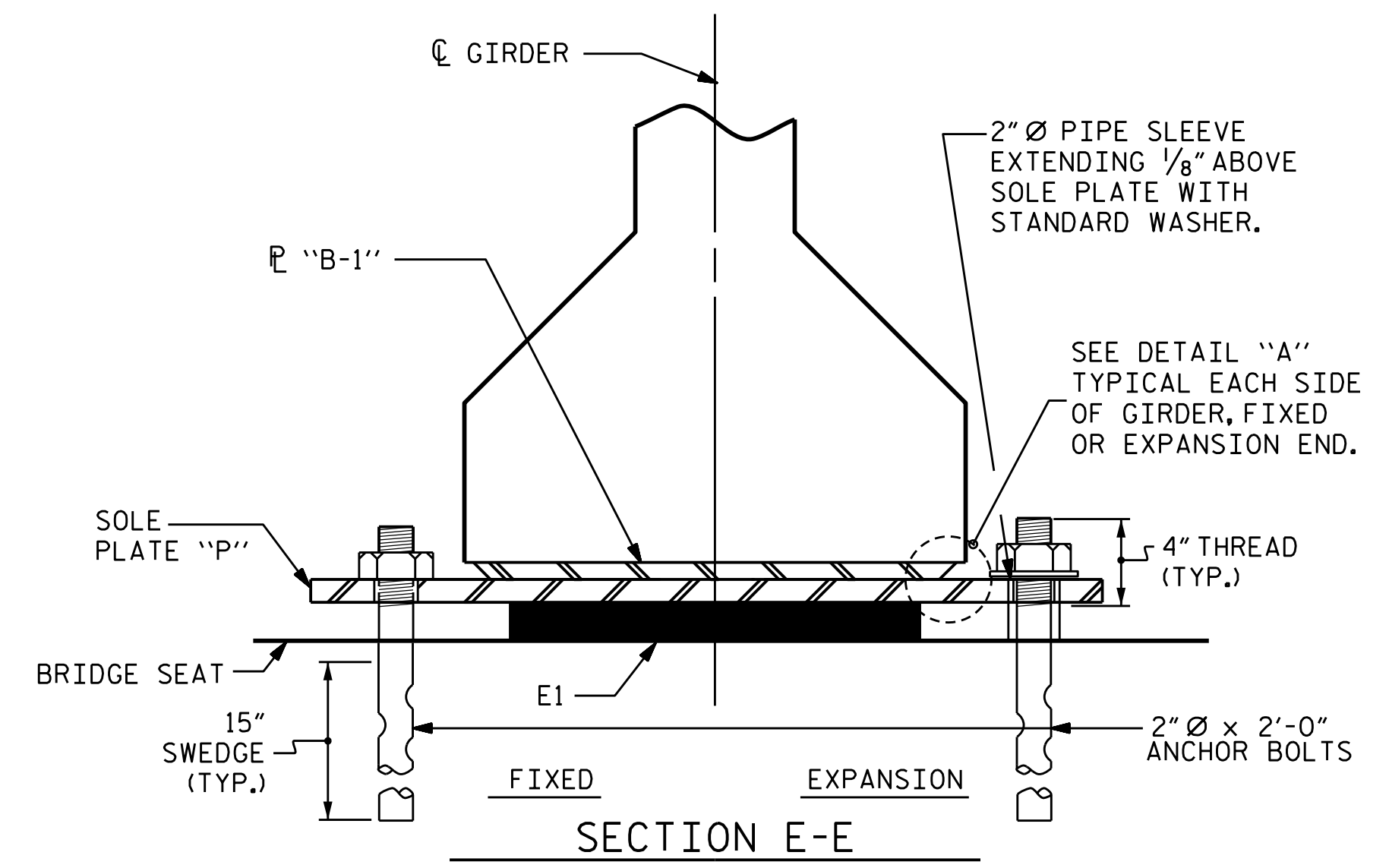
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

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.

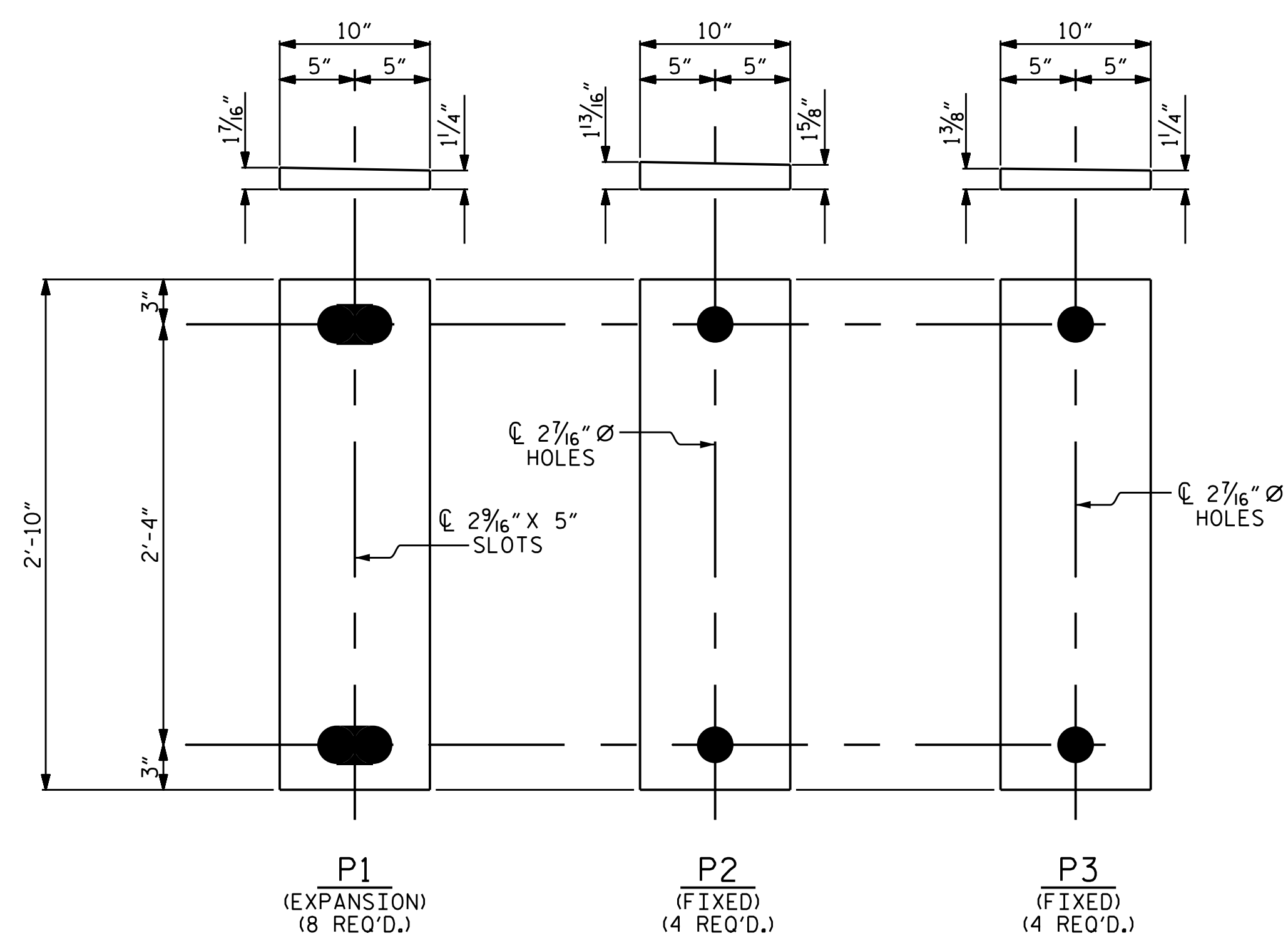
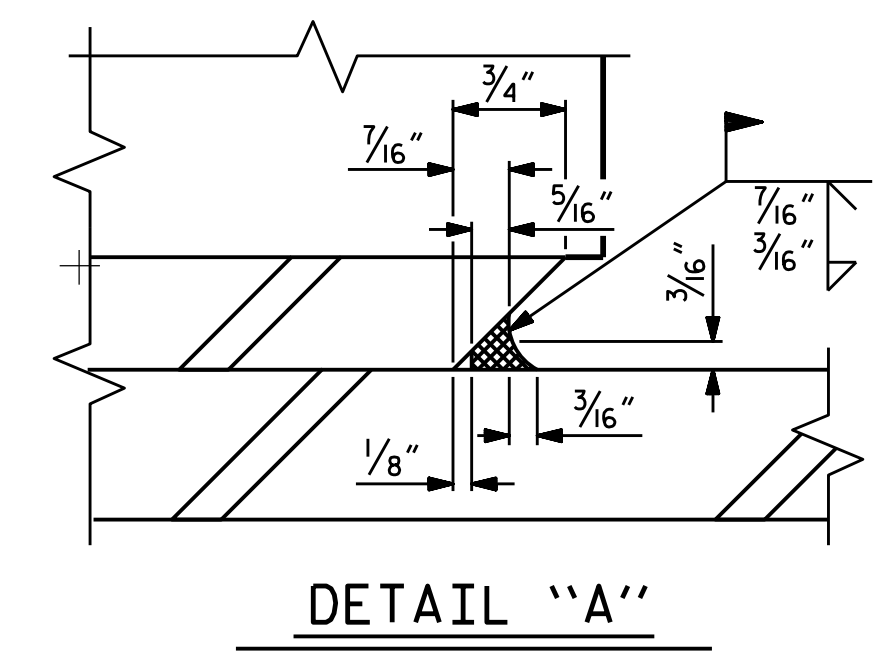
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



E1 (16 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE III

TYPICAL SECTION OF ELASTOMERIC BEARINGS

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



SOLE PLATE DETAILS ("P")

Prepared in the Office of:
SUMMIT
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PROJECT NO. B-5989
MADISON COUNTY
STATION: 16+18.00 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			35

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ASSEMBLED BY : NEIL C. ROHRBAUGH	DATE : 11/19
CHECKED BY : KEITH D. LAYNE	DATE : 11/19
DRAWN BY : WJH 8/89	REV. 1/15 MAA/TMG
CHECKED BY : CRK 8/89	REV. 12/17 MAA/THC
	REV. 10/21 BNB/AAI

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES.

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

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

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPAN A AND 6000 PSI FOR SPAN B.

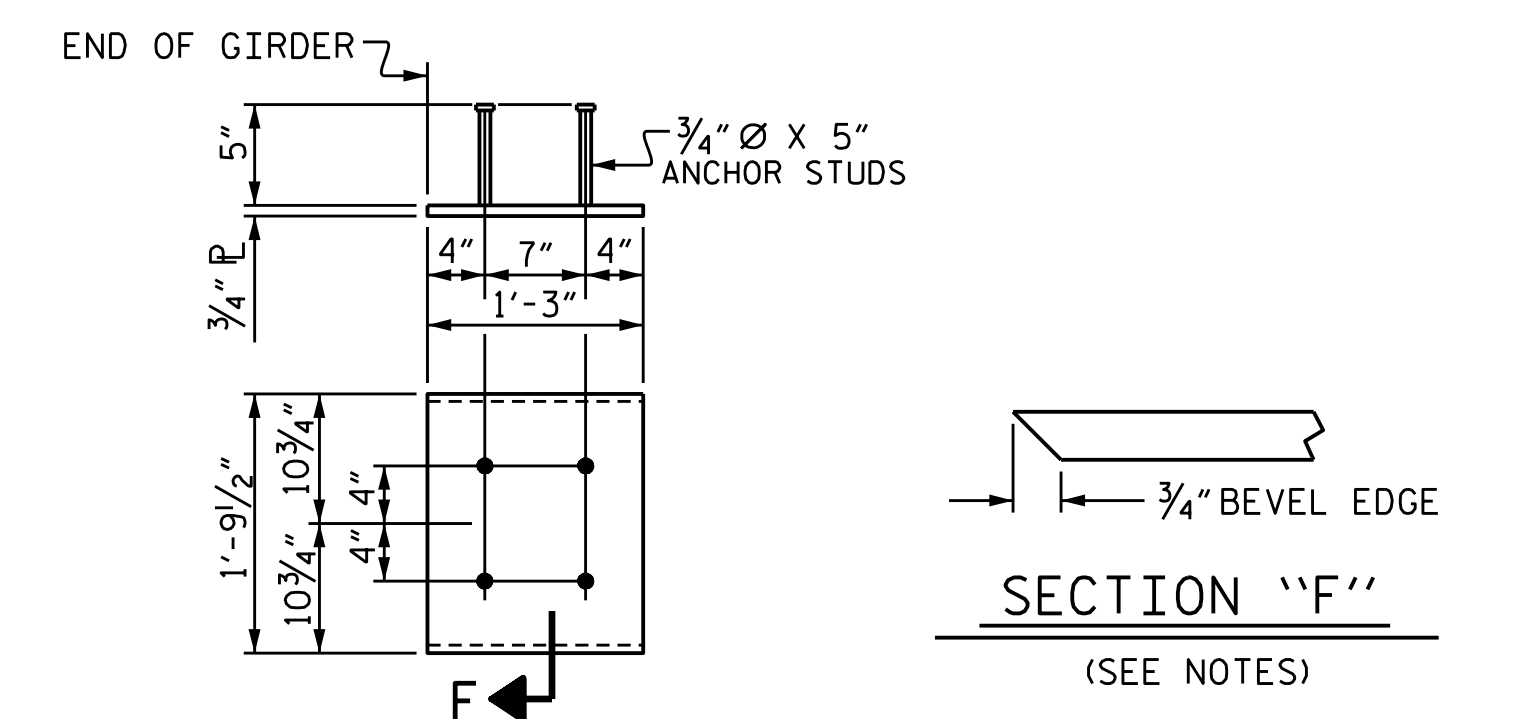
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

ALL REINFORCING STEEL SHALL BE GRADE 60.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN A																						
0.6" Ø LOW RELAXATION		GIRDER A1																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.006	0.012	0.018	0.023	0.028	0.032	0.035	0.037	0.039	0.039	0.039	0.037	0.035	0.032	0.028	0.023	0.018	0.012	0.006	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.002	0.004	0.006	0.009	0.010	0.012	0.013	0.014	0.015	0.015	0.015	0.014	0.013	0.012	0.011	0.009	0.007	0.005	0.002	0
FINAL CAMBER	↑	0	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	5/16"	5/16"	5/16"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/16"	1/16"	0
0.6" Ø LOW RELAXATION		GIRDER A2																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.006	0.013	0.018	0.024	0.029	0.033	0.036	0.038	0.040	0.040	0.040	0.038	0.036	0.033	0.029	0.024	0.018	0.013	0.006	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.003	0.006	0.009	0.011	0.013	0.016	0.017	0.019	0.019	0.020	0.019	0.019	0.017	0.016	0.014	0.012	0.009	0.006	0.003	0
FINAL CAMBER	↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0
0.6" Ø LOW RELAXATION		GIRDER A3																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.006	0.013	0.019	0.024	0.029	0.033	0.036	0.039	0.040	0.041	0.040	0.039	0.036	0.033	0.029	0.024	0.019	0.013	0.006	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.003	0.006	0.009	0.012	0.014	0.017	0.018	0.020	0.020	0.021	0.020	0.020	0.018	0.017	0.014	0.012	0.009	0.006	0.003	0
FINAL CAMBER	↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0
0.6" Ø LOW RELAXATION		GIRDER A4																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.007	0.013	0.019	0.024	0.030	0.034	0.037	0.040	0.041	0.042	0.041	0.040	0.037	0.034	0.030	0.025	0.019	0.013	0.007	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.003	0.006	0.009	0.012	0.014	0.016	0.018	0.019	0.020	0.020	0.020	0.019	0.018	0.016	0.014	0.012	0.009	0.006	0.003	0
FINAL CAMBER	↑	0	1/16"	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/8"	1/16"	1/16"	0

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



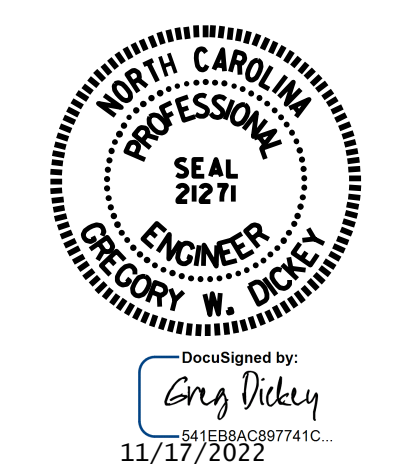
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
SPAN B																						
0.6" Ø LOW RELAXATION		GIRDER B1																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.032	0.062	0.091	0.117	0.142	0.161	0.177	0.189	0.196	0.198	0.196	0.189	0.177	0.161	0.142	0.118	0.091	0.062	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.014	0.028	0.041	0.054	0.065	0.075	0.082	0.088	0.091	0.093	0.091	0.089	0.083	0.076	0.066	0.056	0.043	0.030	0.015	0
FINAL CAMBER	↑	0	3/16"	3/8"	1/2"	5/8"	13/16"	7/8"	1"	1"	1 1/16"	1 1/16"	1 1/16"	1"	1"	7/8"	3/4"	5/8"	1/2"	5/16"	3/16"	0
0.6" Ø LOW RELAXATION		GIRDER B2																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.032	0.062	0.091	0.117	0.142	0.161	0.177	0.189	0.196	0.198	0.196	0.189	0.177	0.161	0.142	0.118	0.091	0.062	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.018	0.037	0.054	0.072	0.086	0.100	0.108	0.117	0.120	0.123	0.121	0.118	0.109	0.100	0.087	0.073	0.056	0.038	0.019	0
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	1 1/16"	1 1/16"	3/4"	3/4"	3/4"	1 1/16"	1 1/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0
0.6" Ø LOW RELAXATION		GIRDER B3																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.032	0.063	0.093	0.119	0.144	0.164	0.181	0.193	0.200	0.202	0.200	0.193	0.181	0.164	0.144	0.120	0.093	0.063	0.032	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.020	0.039	0.058	0.077	0.091	0.106	0.115	0.125	0.128	0.131	0.128	0.125	0.116	0.106	0.092	0.077	0.058	0.040	0.020	0
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	1/2"	9/16"	5/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	5/8"	9/16"	1/2"	7/16"	3/8"	1/4"	1/8"	0
0.6" Ø LOW RELAXATION		GIRDER B4																				
TWENTIETH POINTS		0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.033	0.065	0.095	0.121	0.147	0.167	0.184	0.196	0.203	0.206	0.203	0.196	0.184	0.167	0.147	0.122	0.095	0.065	0.033	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.019	0.039	0.057	0.076	0.091	0.105	0.114	0.124	0.127	0.130	0.127	0.124	0.114	0.105	0.090	0.076	0.057	0.038	0.019	0
FINAL CAMBER	↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	1 1/16"	3/4"	3/4"	3/4"	3/4"	3/4"	1 1/16"	5/8"	9/16"	1/2"	3/8"	1/4"	1/8"	0

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

EMBEDDED PLATE "B-1" DETAILS
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

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PROJECT NO. B-5989
MADISON COUNTY
STATION: 16+18.00 -L-



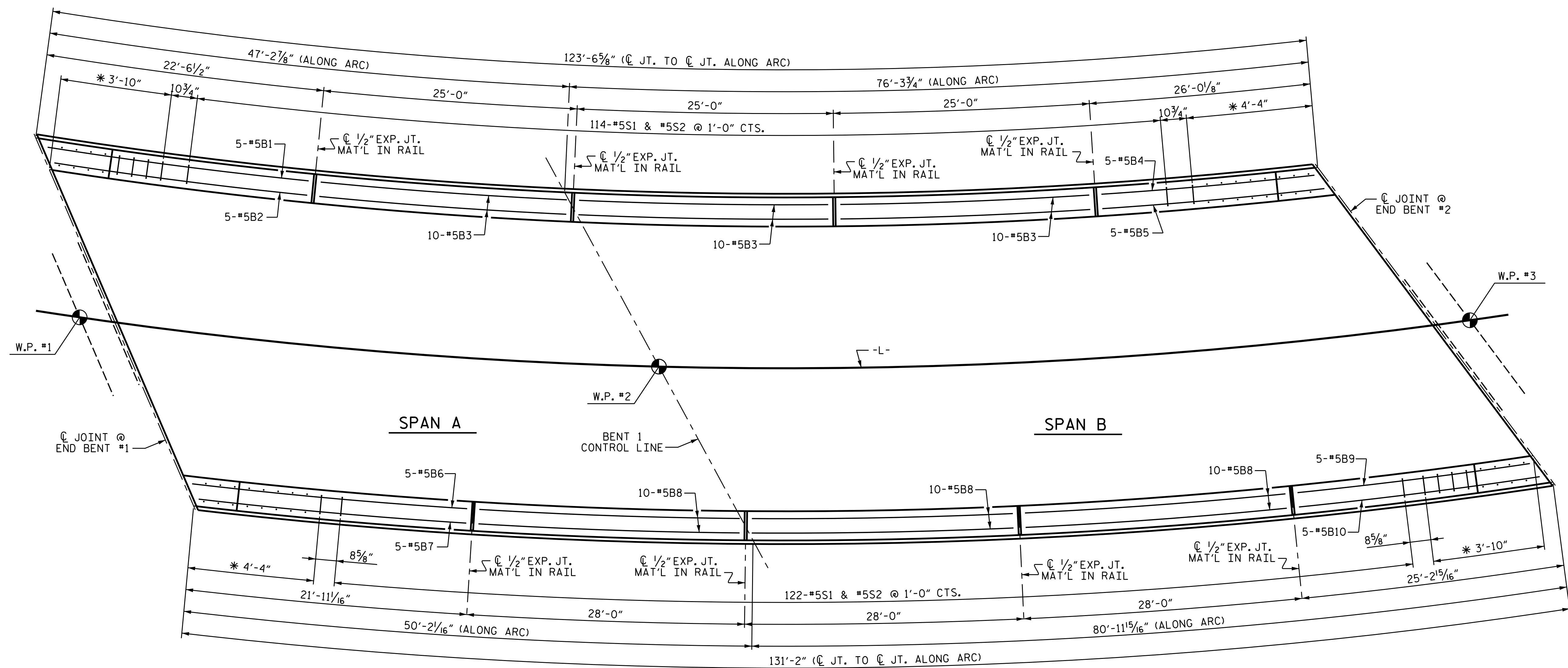
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEAD LOAD DEFLECTION TABLE

DRAWN BY: J.R. MCROY DATE: 11/22
CHECKED BY: G. DICKEY DATE: 11/22
DESIGN ENGINEER OF RECORD: G. DICKEY DATE: 11/14/22

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

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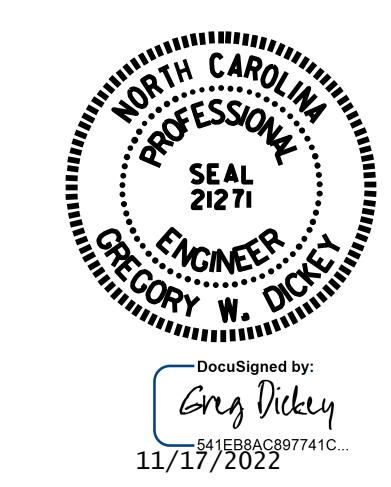
PLAN OF VERTICAL CONCRETE BARRIER RAIL

* SEE "BARRIER RAIL END OF RAIL DETAILS", SHEET 2 OF 2, FOR ADDITIONAL REINFORCING.

DISTANCES ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

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 SHEET 1 OF 2

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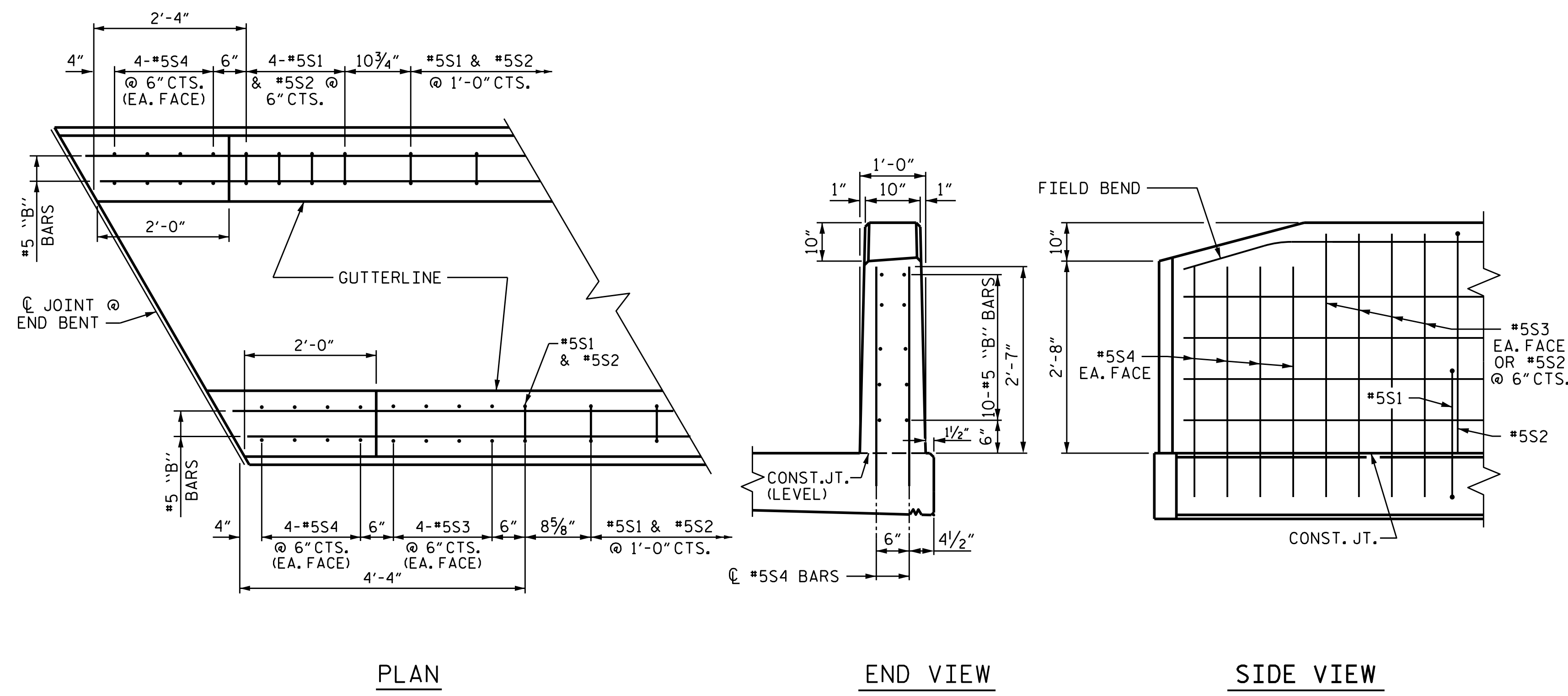


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
VERTICAL CONCRETE BARRIER RAIL

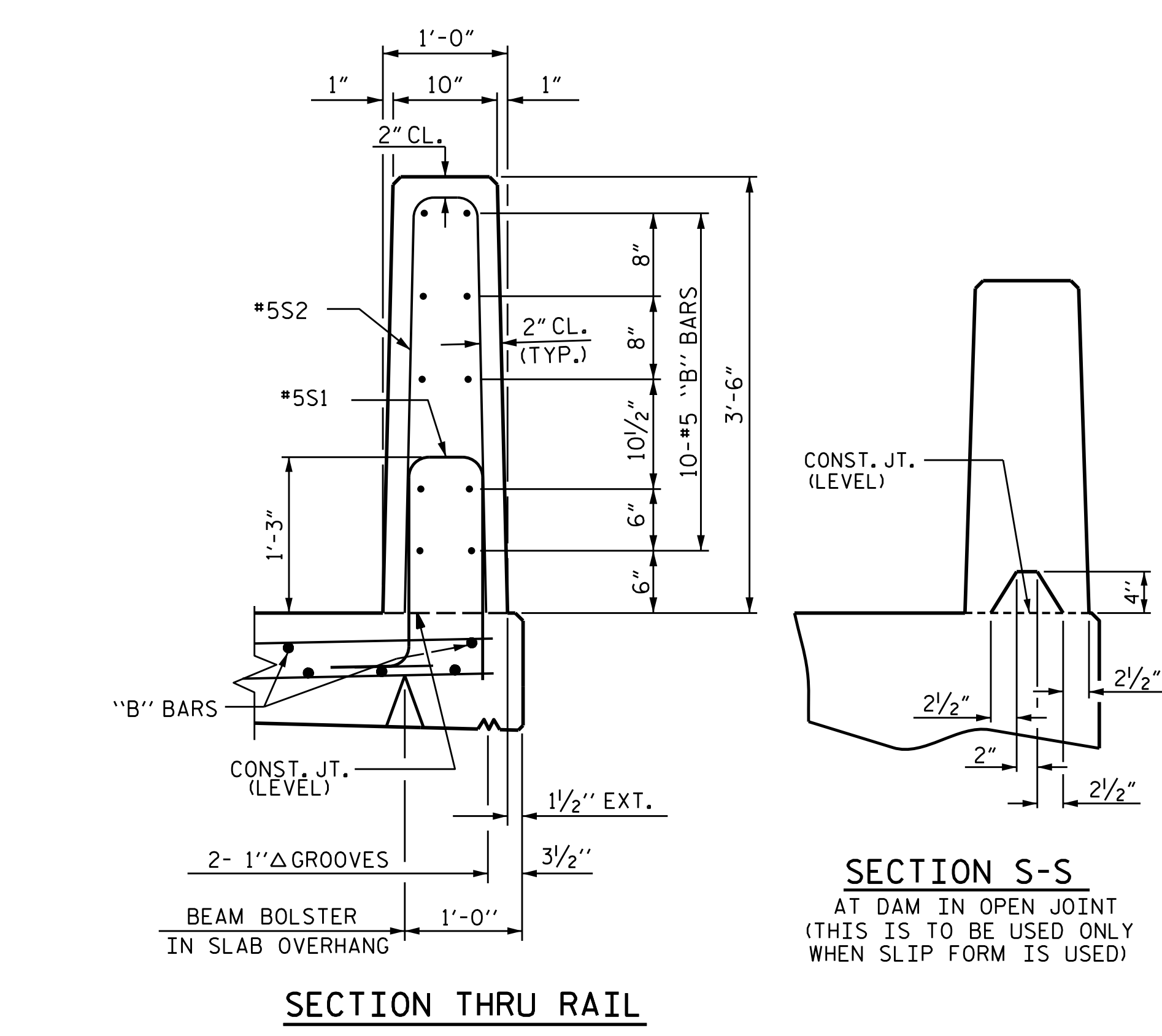
DRAWN BY : KEITH D. LAYNE DATE : 10/19
 CHECKED BY : NEIL C. ROHRBAUGH DATE : 11/19
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 6/29/22

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

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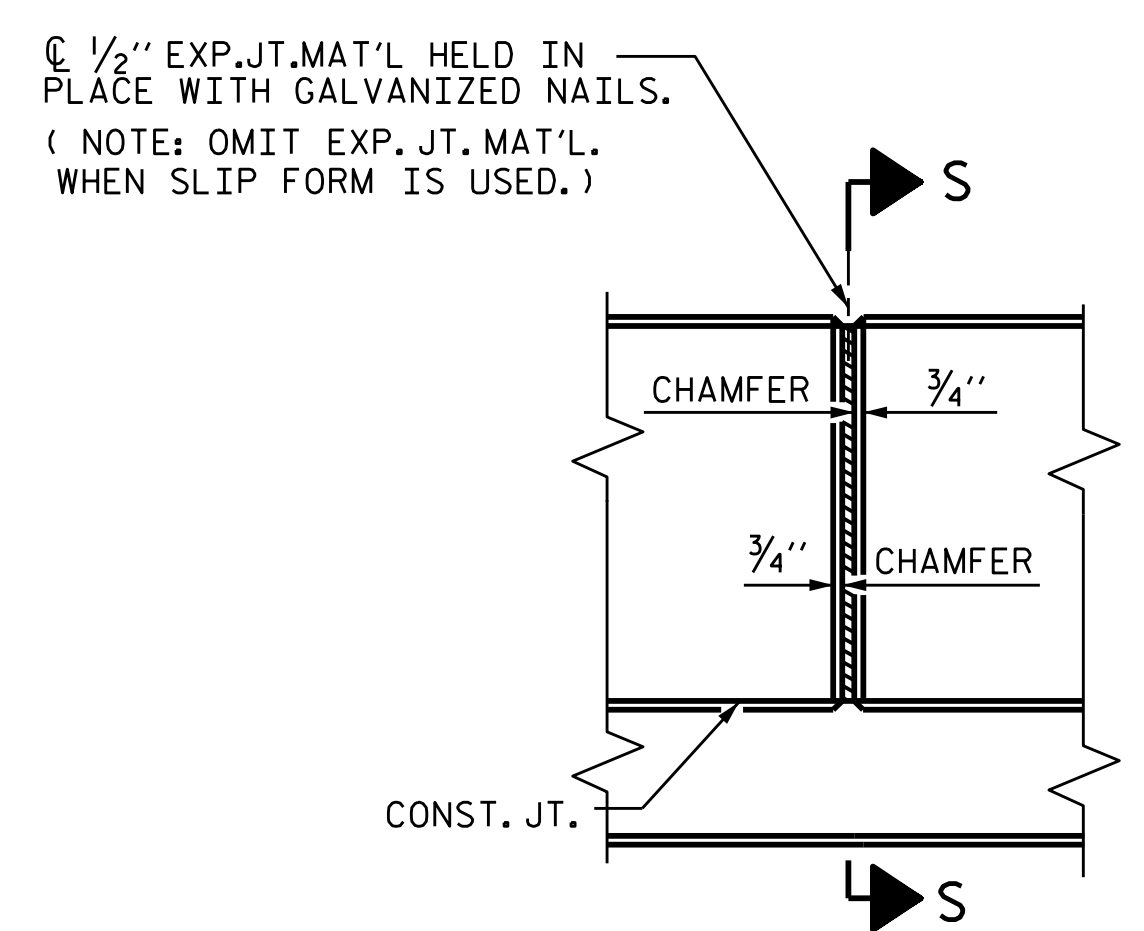


END OF RAIL DETAILS



SECTION THRU RAIL

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

NOTES

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

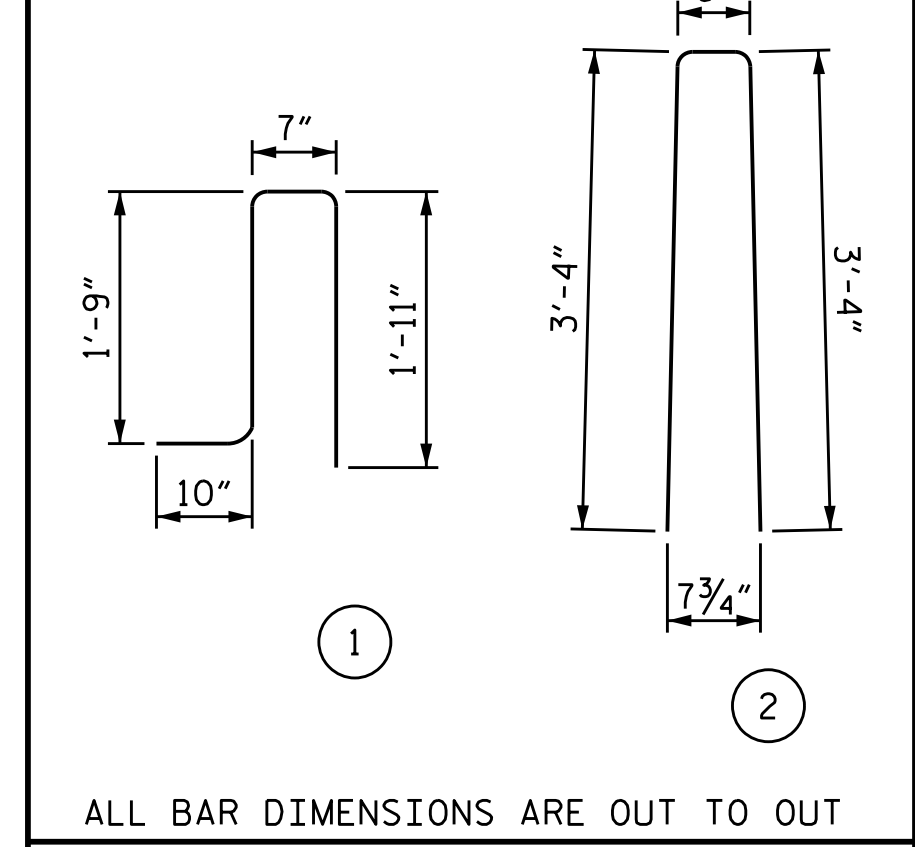
WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5S3 & #5S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5S3 & #5S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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

BAR TYPES



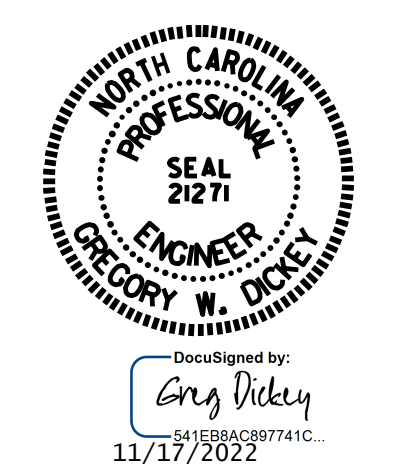
BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	5	#5	STR	21'-11"	114
* B2	5	#5	STR	21'-7"	113
* B3	30	#5	STR	24'-7"	769
* B4	5	#5	STR	25'-8"	134
* B5	5	#5	STR	26'-0"	136
* B6	5	#5	STR	21'-10"	114
* B7	5	#5	STR	21'-6"	112
* B8	30	#5	STR	27'-7"	863
* B9	5	#5	STR	24'-3"	126
* B10	5	#5	STR	24'-7"	128
* S1	246	#5	1	5'-1"	1304
* S2	246	#5	2	7'-2"	1839
* S3	16	#5	STR	4'-0"	67
* S4	32	#5	STR	3'-6"	117

* EPOXY COATED REINFORCING STEEL 5,936 LBS.
CLASS AA CONCRETE 30.3 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL 254.71 LIN. FT.

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SHEET 2 OF 2

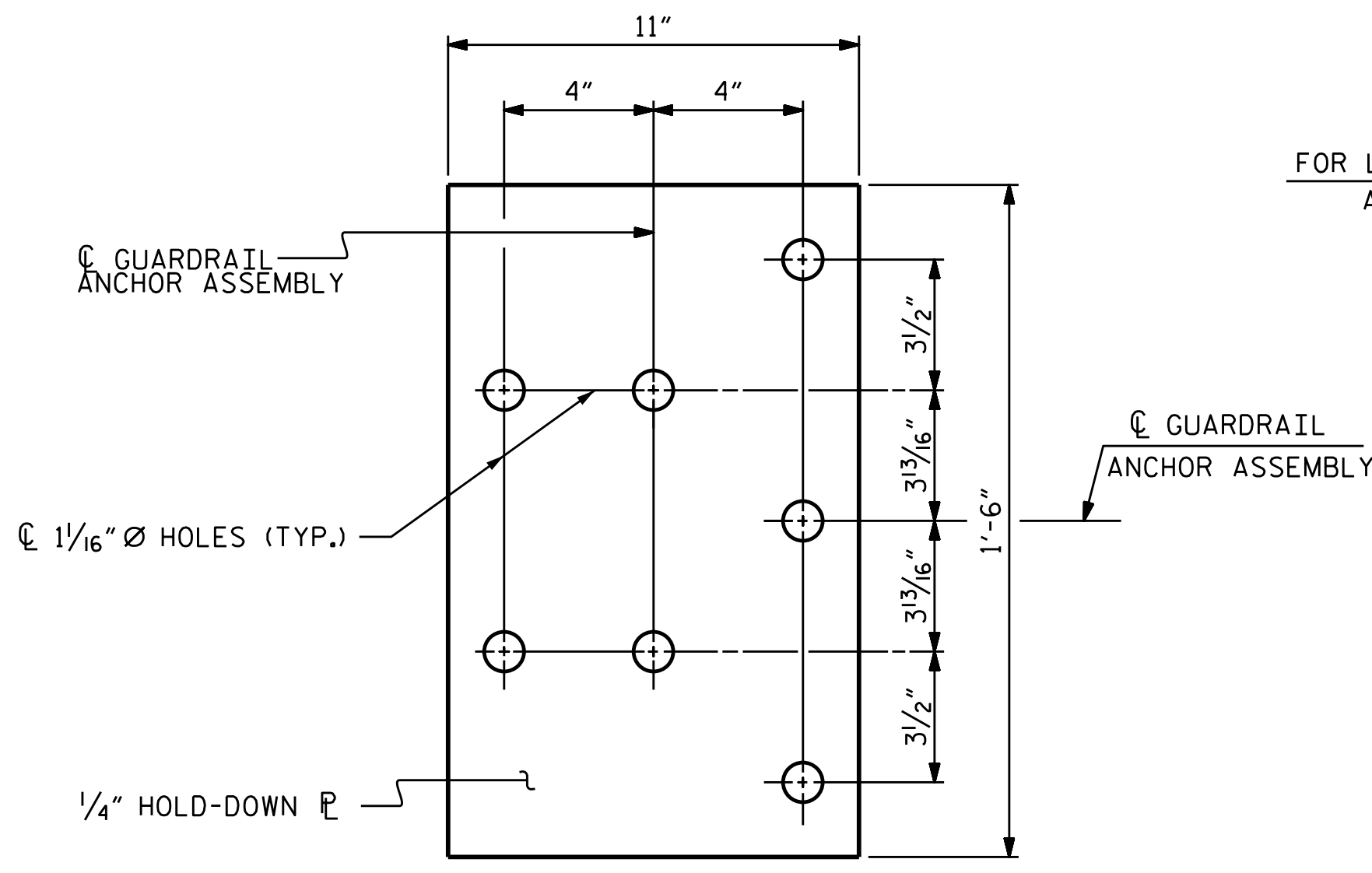
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY : KEITH D. LAYNE	DATE : 10/19
CHECKED BY : NEIL C. ROHRBAUGH	DATE : 11/19
DRAWN BY : MAA 5/10	REV. 6/13 MAA/GM
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

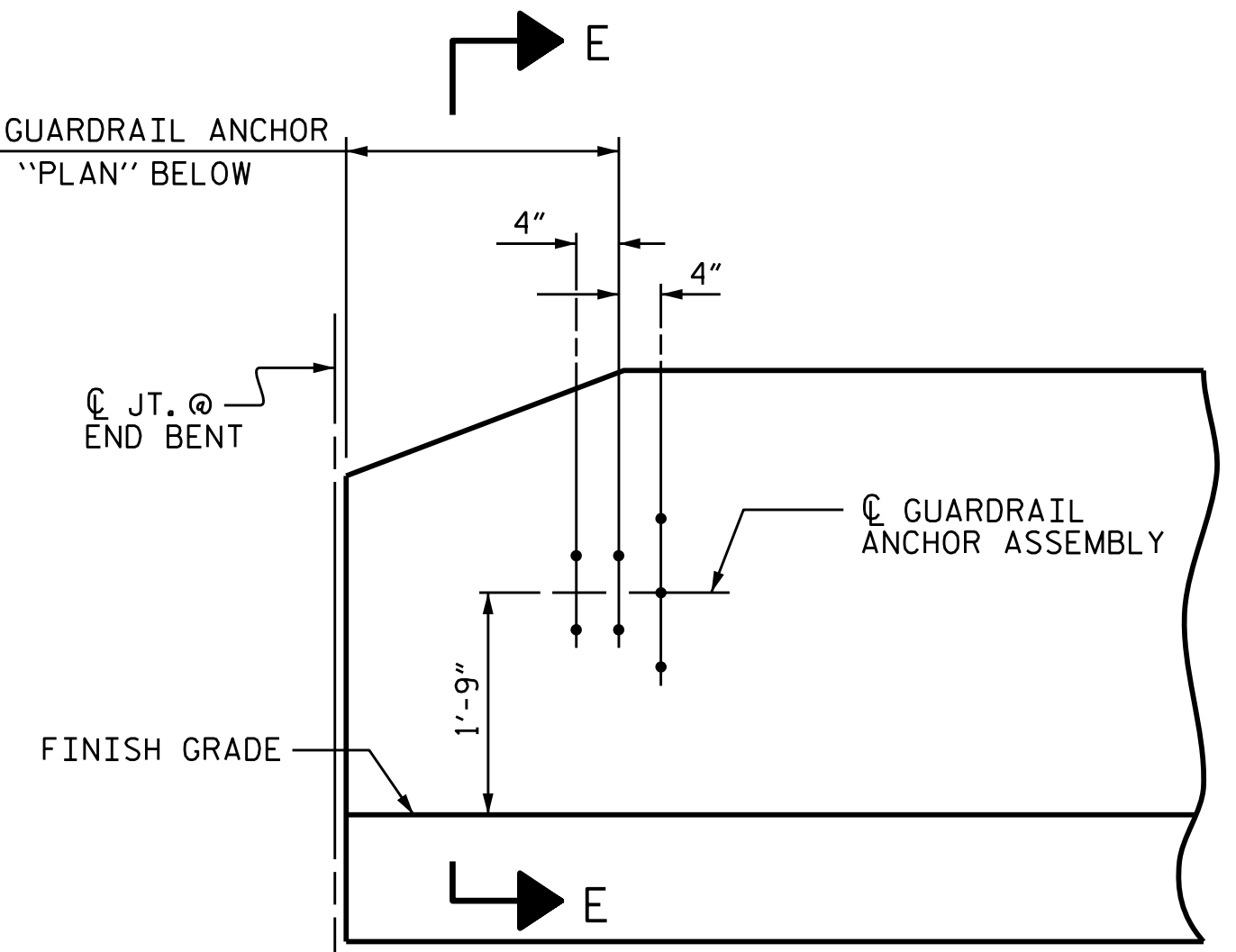
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

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TOTAL SHEETS 35



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



NOTES

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

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

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

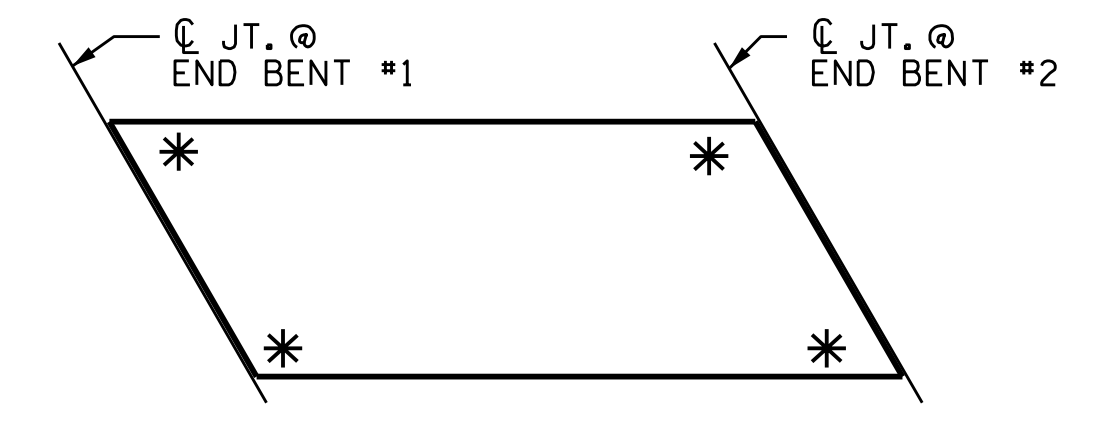
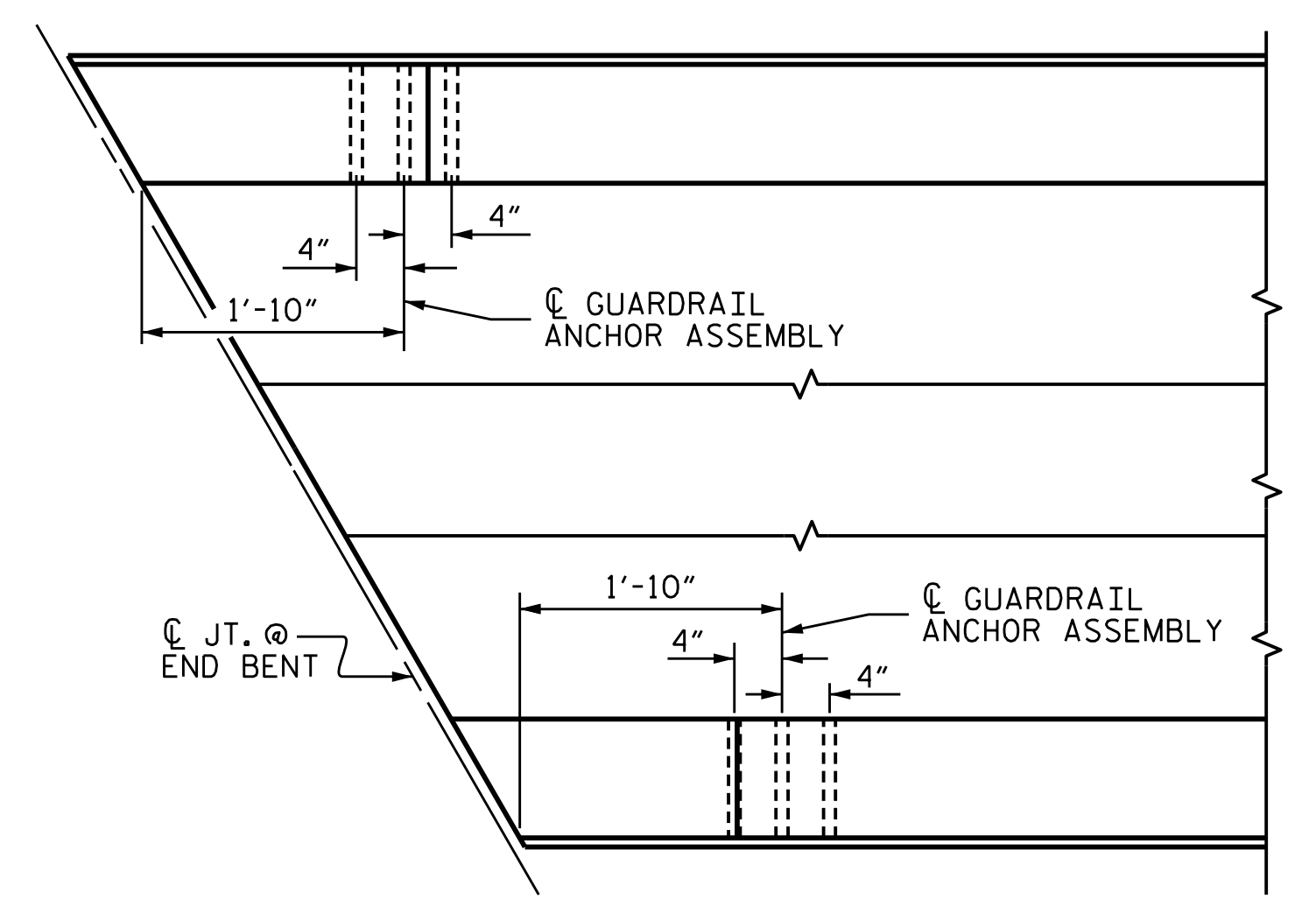
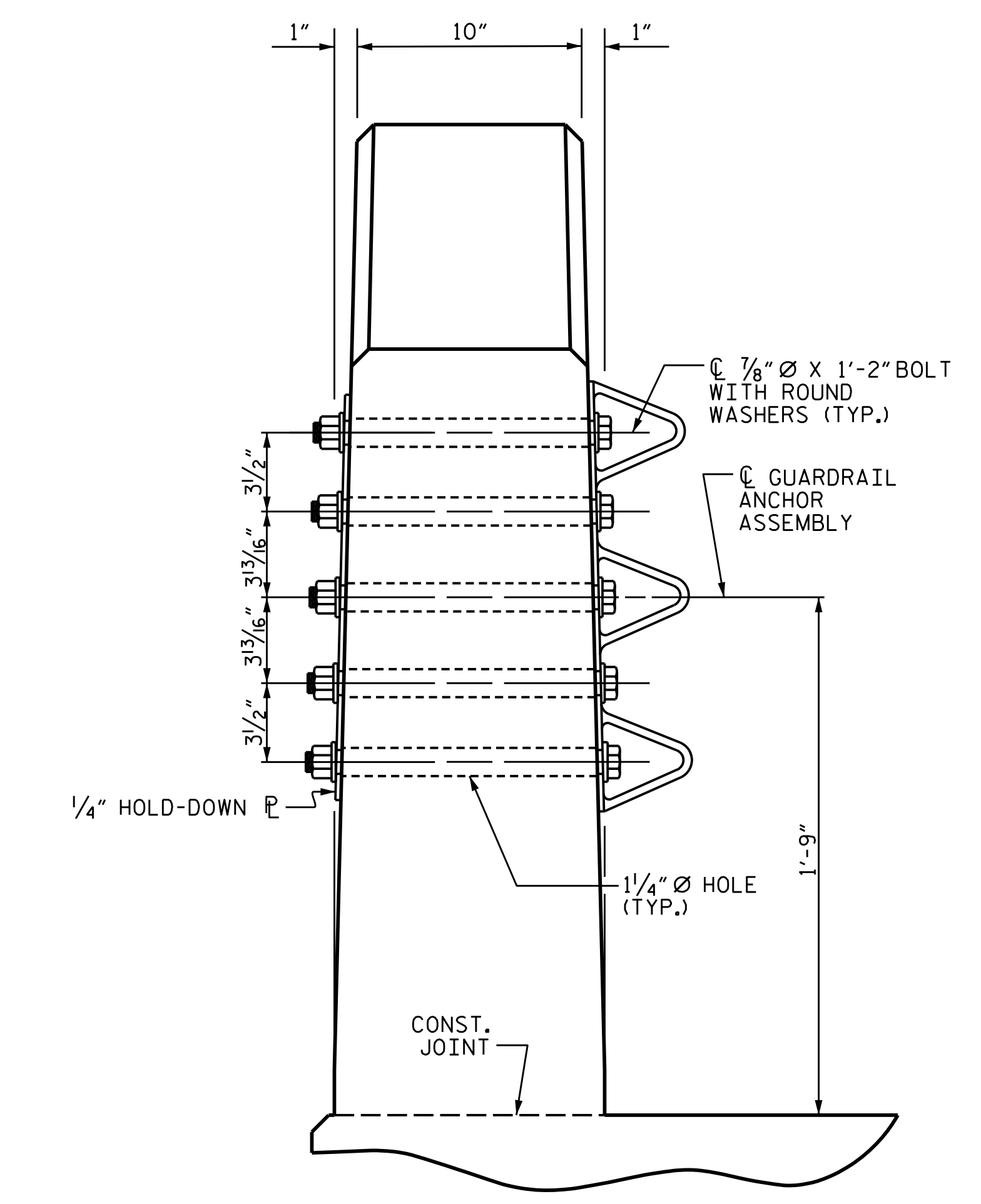
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

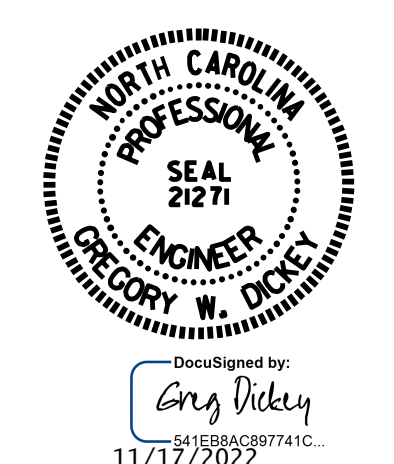
END BENT #1 SHOWN, END BENT #2 SIMILAR.

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MADISON COUNTY
STATION: 16+18.00 -L-



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

ASSEMBLED BY : KEITH D. LAYNE	DATE : 10/19
CHECKED BY : NEIL C. ROHRBAUGH	DATE : 11/19
DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

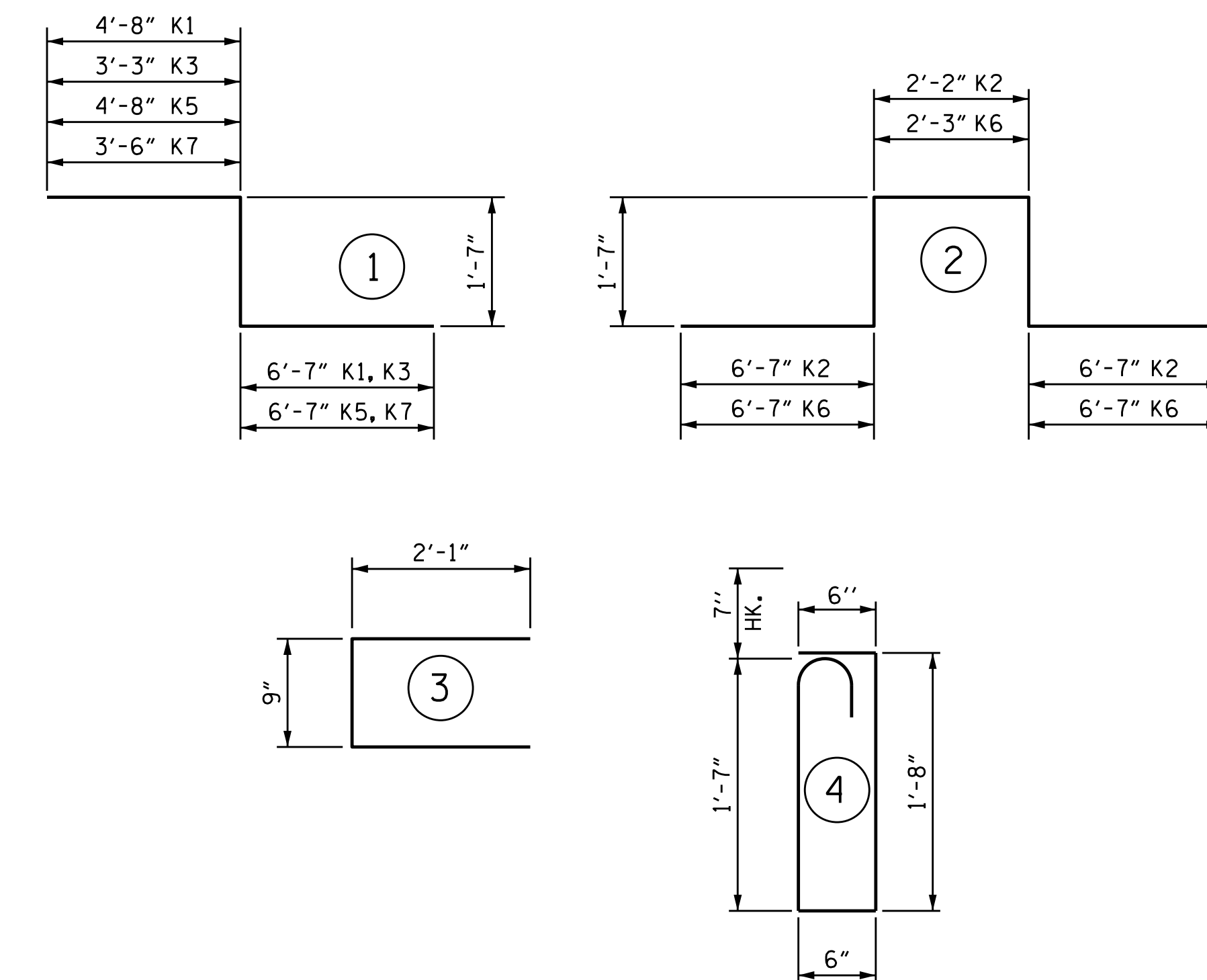
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	1			3			S-18
	2			4			TOTAL SHEETS 35

BILL OF MATERIAL

SPANS A & B

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	217	#5	STR.	31'-11"	7224	A2	217	#5	STR.	31'-11"	7224	*B1	42	#5	STR.	29'-0"	1270
*A101	2	#5	STR.	30'-0"	63	A201	2	#5	STR.	30'-0"	63	*B2	22	#5	STR.	47'-9"	1096
*A102	2	#5	STR.	27'-9"	58	A202	2	#5	STR.	27'-9"	58	*B3	22	#4	STR.	32'-7"	479
*A103	2	#5	STR.	25'-7"	53	A203	2	#5	STR.	25'-7"	53	*B4	44	#4	STR.	28'-1"	825
*A104	2	#5	STR.	23'-4"	49	A204	2	#5	STR.	23'-4"	49	B5	33	#4	STR.	35'-1"	773
*A105	2	#5	STR.	21'-2"	44	A205	2	#5	STR.	21'-2"	44	B6	46	#5	STR.	41'-6"	1991
*A106	2	#5	STR.	18'-11"	39	A206	2	#5	STR.	18'-11"	39	B7	46	#5	STR.	35'-0"	1679
*A107	2	#5	STR.	16'-9"	35	A207	2	#5	STR.	16'-9"	35	B8	46	#5	STR.	58'-2"	2791
*A108	2	#5	STR.	14'-6"	30	A208	2	#5	STR.	14'-6"	30	*G1	4	#5	STR.	19'-8"	82
*A109	2	#5	STR.	12'-4"	26	A209	2	#5	STR.	12'-4"	26						
*A110	2	#5	STR.	10'-1"	21	A210	2	#5	STR.	10'-1"	21	*K1	2	#8	1	12'-10"	69
*A111	2	#5	STR.	7'-11"	17	A211	2	#5	STR.	7'-11"	17	*K2	4	#8	2	18'-6"	198
*A112	2	#5	STR.	5'-8"	12	A212	2	#5	STR.	5'-8"	12	*K3	2	#8	1	11'-5"	61
*A113	2	#5	STR.	3'-6"	7	A213	2	#5	STR.	3'-6"	7	*K4	9	#6	STR.	8'-3"	112
												*K5	2	#8	1	12'-0"	69
*A114	2	#5	STR.	30'-9"	64	A214	2	#5	STR.	30'-9"	64	*K6	4	#8	2	18'-7"	198
*A115	2	#5	STR.	29'-3"	61	A215	2	#5	STR.	29'-3"	61	*K7	2	#8	1	11'-8"	62
*A116	2	#5	STR.	27'-10"	58	A216	2	#5	STR.	27'-10"	58	*K8	9	#6	STR.	8'-3"	112
*A117	2	#5	STR.	26'-5"	55	A217	2	#5	STR.	26'-5"	55						
*A118	2	#5	STR.	25'-0"	52	A218	2	#5	STR.	25'-0"	52	*S1	48	#5	4	4'-10"	242
*A119	2	#5	STR.	23'-6"	49	A219	2	#5	STR.	23'-6"	49	*S2	48	#4	3	4'-11"	158
*A120	2	#5	STR.	22'-1"	46	A220	2	#5	STR.	22'-1"	46						
*A121	2	#5	STR.	20'-8"	43	A221	2	#5	STR.	20'-8"	43						
*A122	2	#5	STR.	19'-2"	40	A222	2	#5	STR.	19'-2"	40						
*A123	2	#5	STR.	17'-9"	37	A223	2	#5	STR.	17'-9"	37						
*A124	2	#5	STR.	16'-4"	34	A224	2	#5	STR.	16'-4"	34						
*A125	2	#5	STR.	14'-10"	31	A225	2	#5	STR.	14'-10"	31						
*A126	2	#5	STR.	13'-5"	28	A226	2	#5	STR.	13'-5"	28						
*A127	2	#5	STR.	11'-11"	25	A227	2	#5	STR.	11'-11"	25						
*A128	2	#5	STR.	10'-6"	22	A228	2	#5	STR.	10'-6"	22						
*A129	2	#5	STR.	9'-0"	19	A229	2	#5	STR.	9'-0"	19						
*A130	2	#5	STR.	7'-7"	16	A230	2	#5	STR.	7'-7"	16						
*A131	2	#5	STR.	6'-1"	13	A231	2	#5	STR.	6'-1"	13						
*A132	2	#5	STR.	4'-8"	10	A232	2	#5	STR.	4'-8"	10						
*A133	2	#5	STR.	3'-2"	7	A233	2	#5	STR.	3'-2"	7						
*A134	6	#6	STR.	9'-0"	81												
REINFORCING STEEL = 15,622 LBS																	
* EPOXY COATED																	
REINFORCING STEEL = 13,502 LBS																	

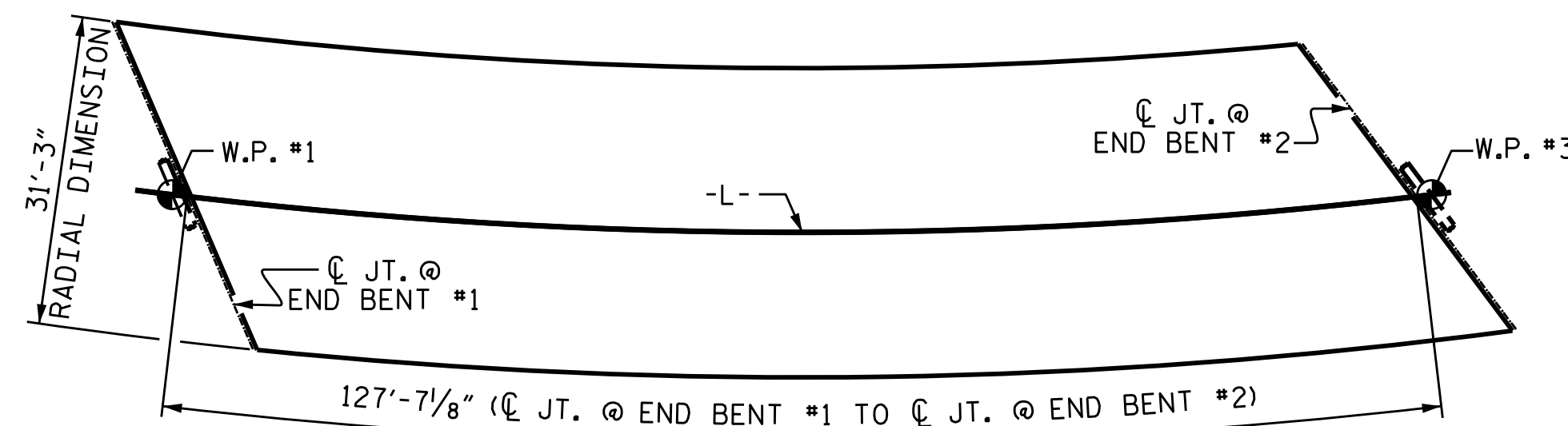
BAR TYPES



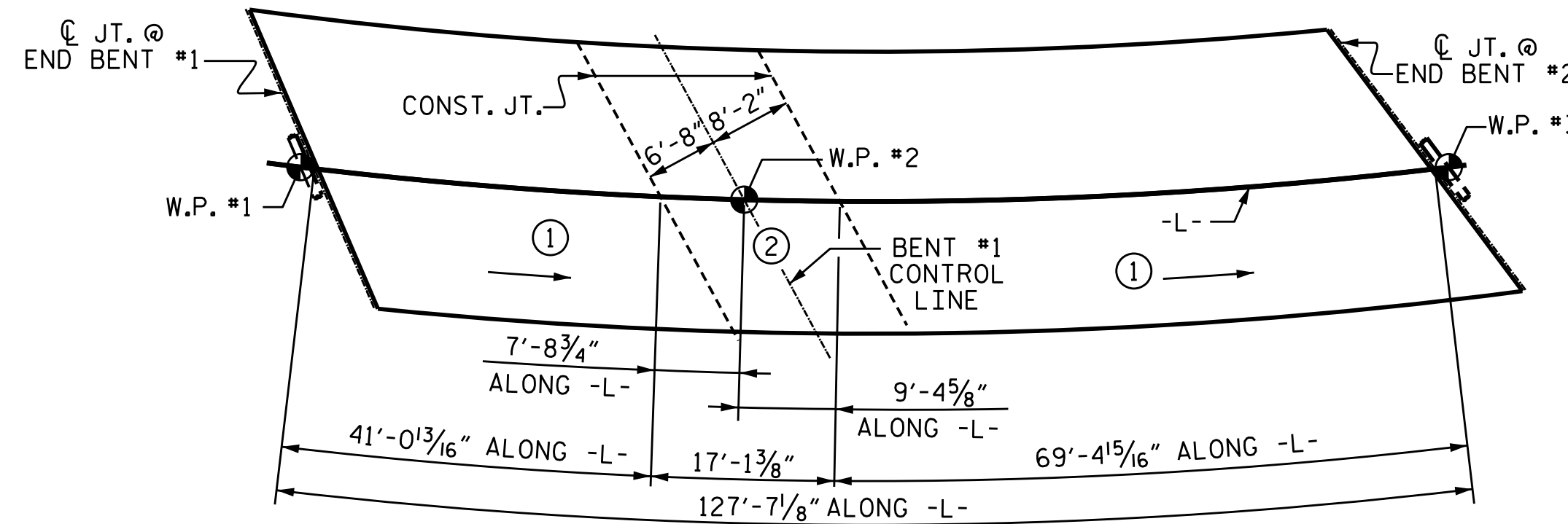
ALL BAR DIMENSIONS ARE OUT TO OUT

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

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 4,107)



POUR SEQUENCE

POUR #2 CAN NOT BE STARTED UNTIL BOTH ADJACENT #1 POURS REACH A MINIMUM OF 3000 PSI

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPANS A & B	133.3	15,622	13,502
TOTALS**	133.3	15,622	13,502

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

POUR SEQUENCE	
SPANS A & B	CLASS AA CONCRETE (CU. YDS.)
POUR #1	118.3
POUR #2	15.0
TOTALS**	133.3

GROOVING BRIDGE FLOORS		
APPROACH SLAB @ EB#1	284	SO.FT.
APPROACH SLAB @ EB#2	296	SO.FT.
BRIDGE DECK	3397	SO.FT.
TOTAL	3977	SO.FT.

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 www.summitde.com

PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-



DocuSigned by:
 Greg Dickey
 541EB8ACB9741C
 11/22/2022

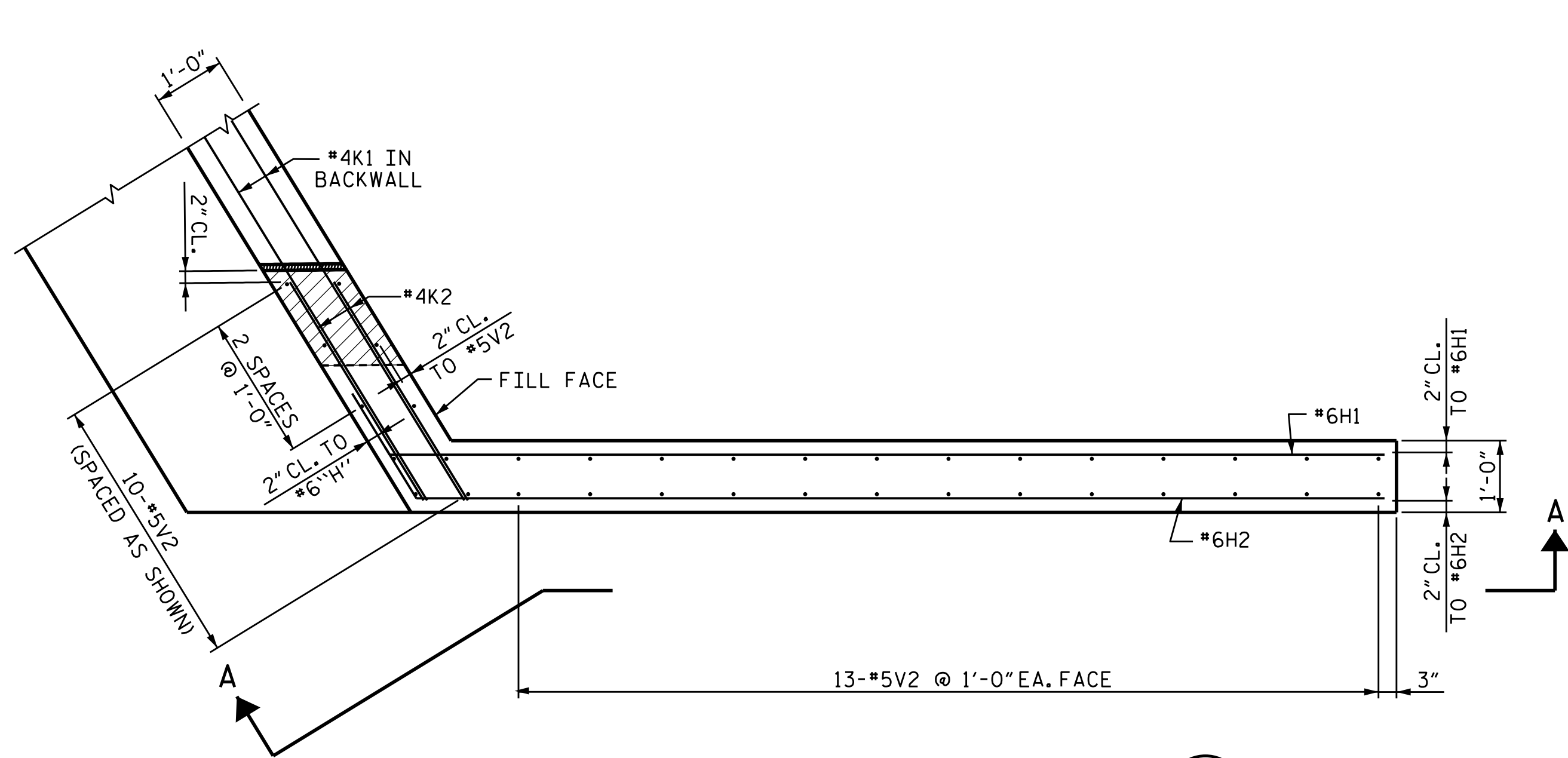
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

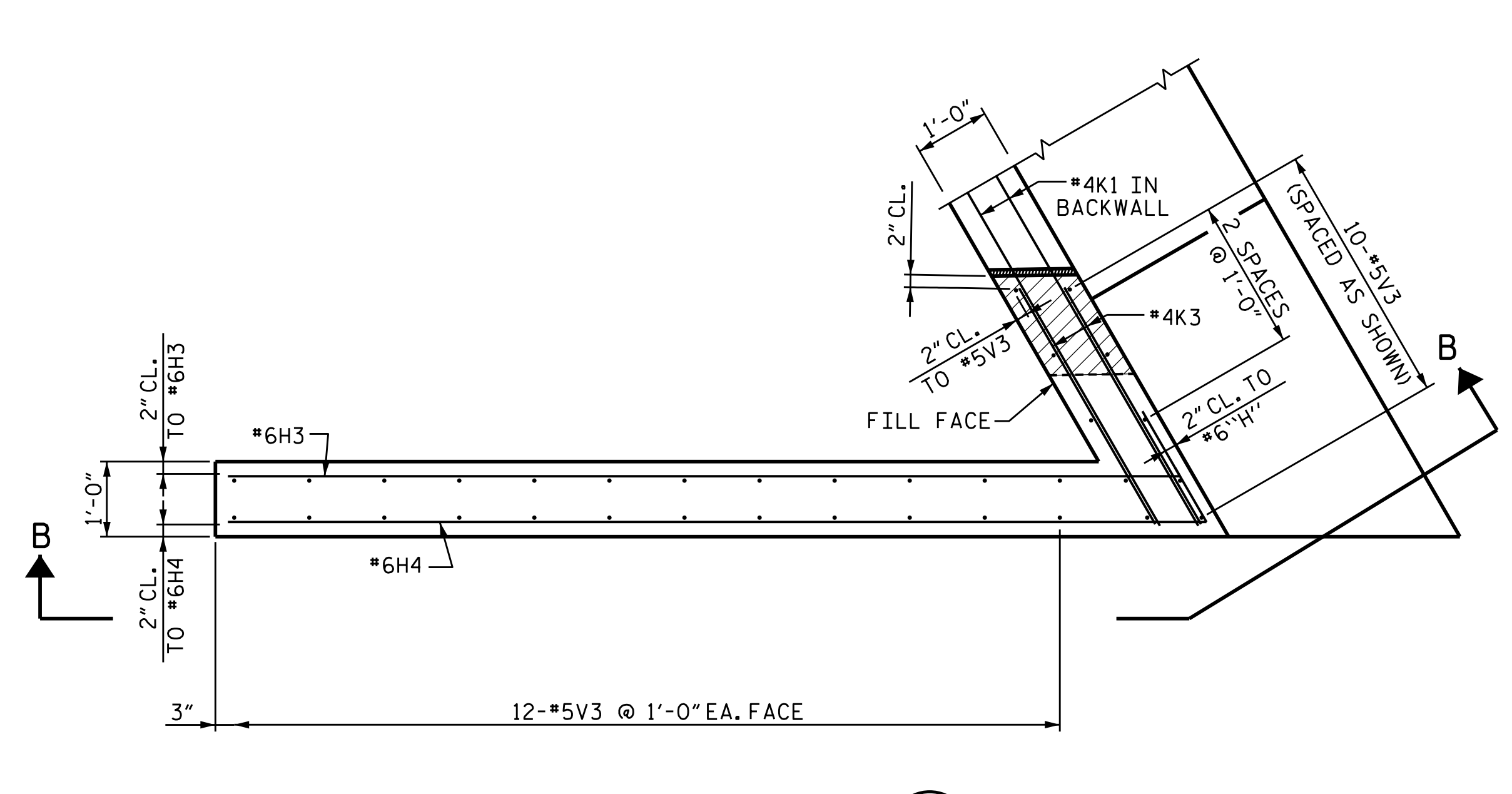
DRAWN BY : KEITH D. LAYNE DATE : 10/19
 CHECKED BY : NEIL C. ROHRBAUGH DATE : 10/19
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 7/13/22

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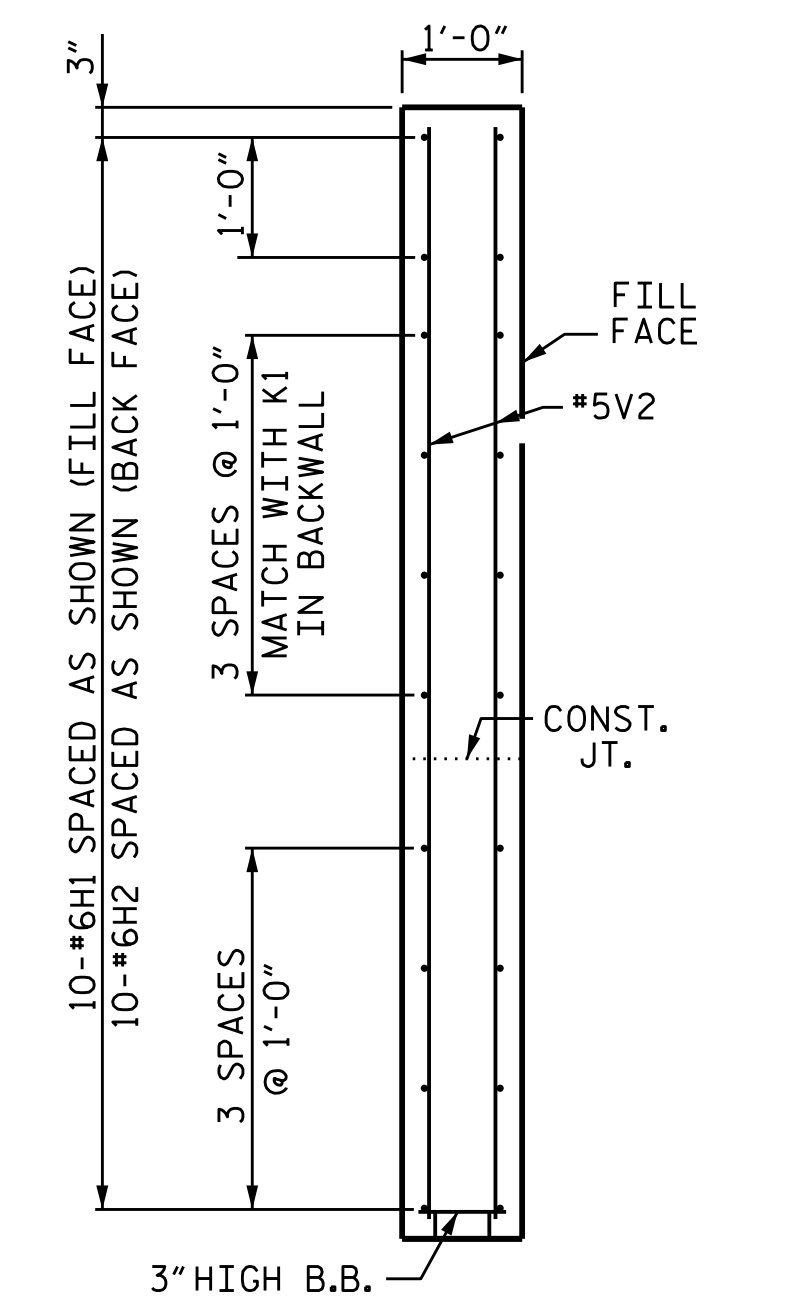
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-19
2			4			TOTAL SHEETS 35



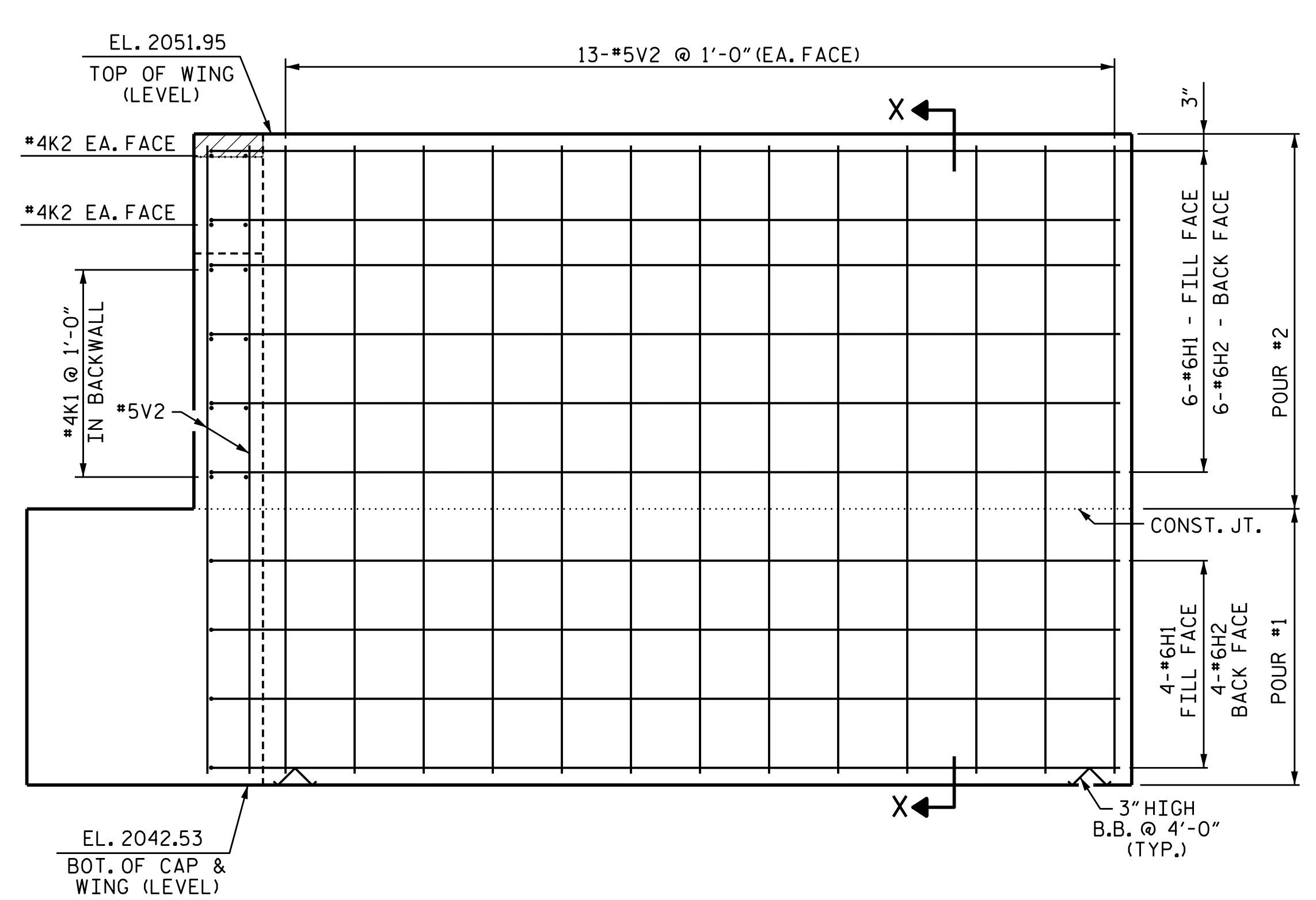
PLAN OF LEFT WING - (W1)



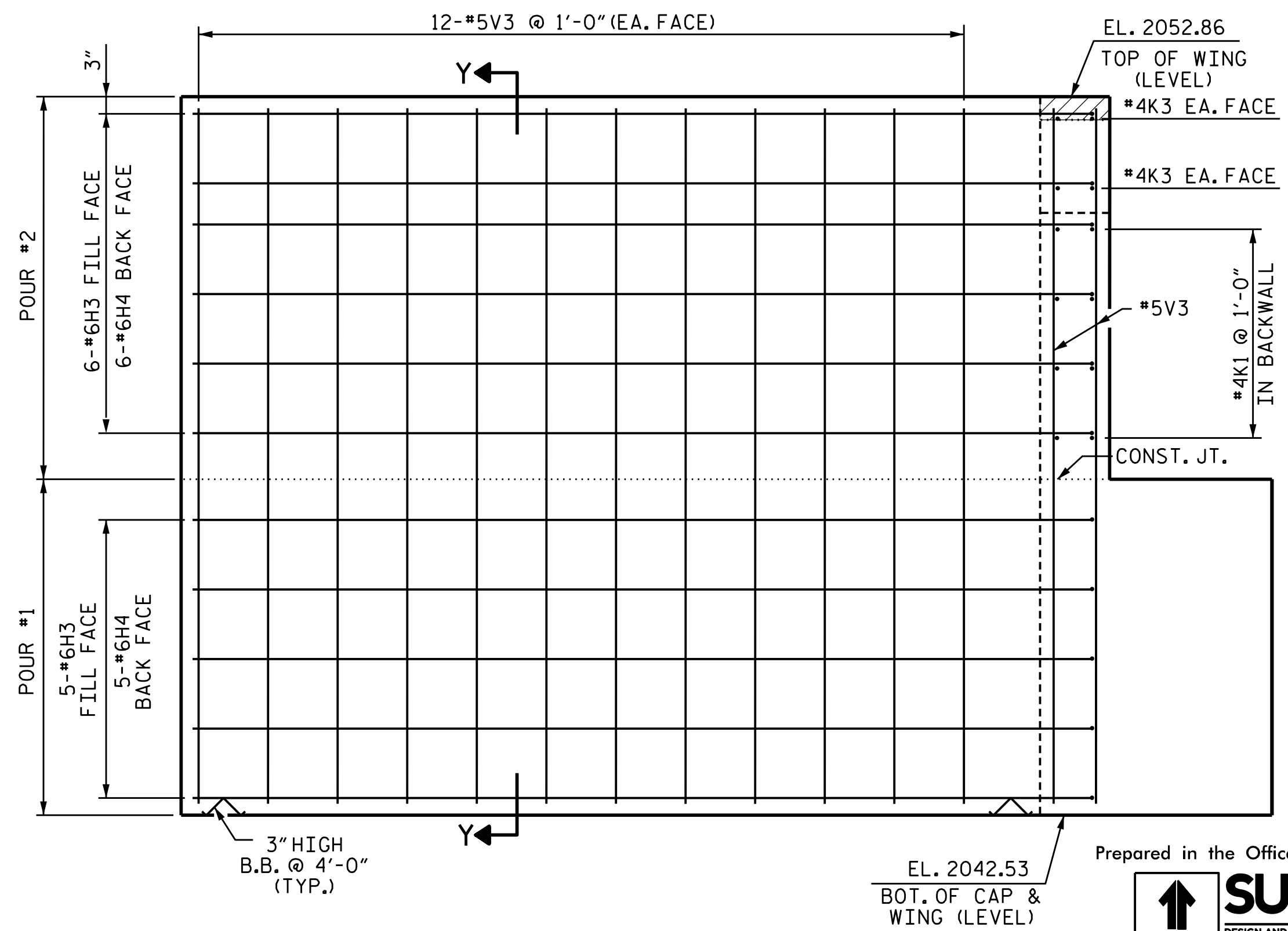
PLAN OF RIGHT WING - (W2)



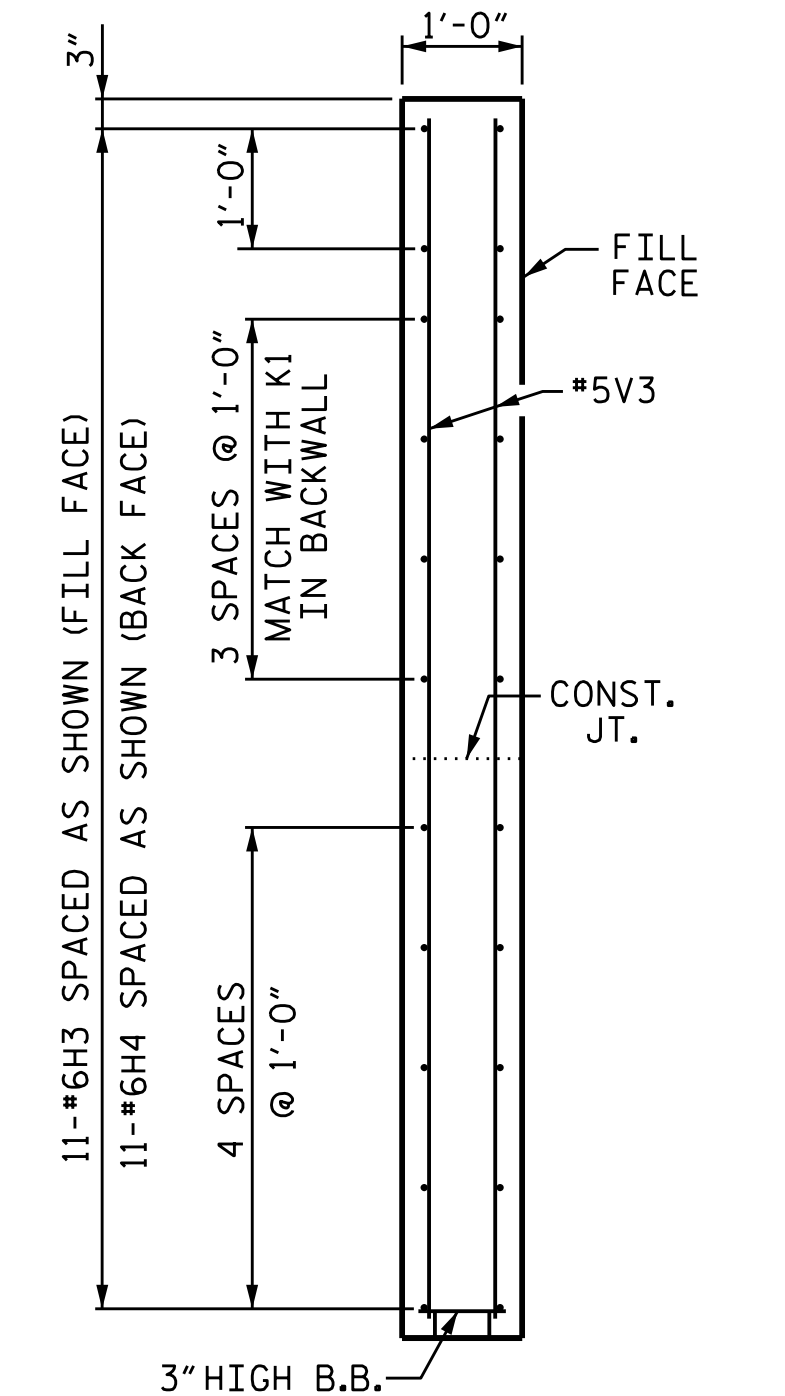
SECTION X-X



ELEVATION VIEW A-A OF LEFT WING - (W1)



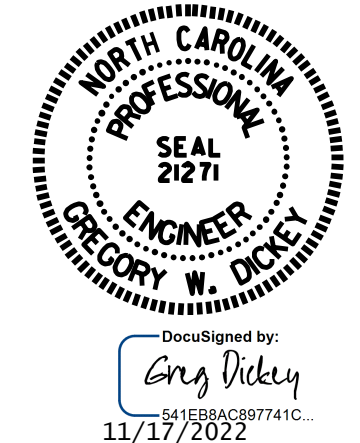
ELEVATION VIEW B-B OF RIGHT WING - (W2)



SECTION Y-Y

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PROJECT NO. B-5989
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 SHEET 2 OF 3



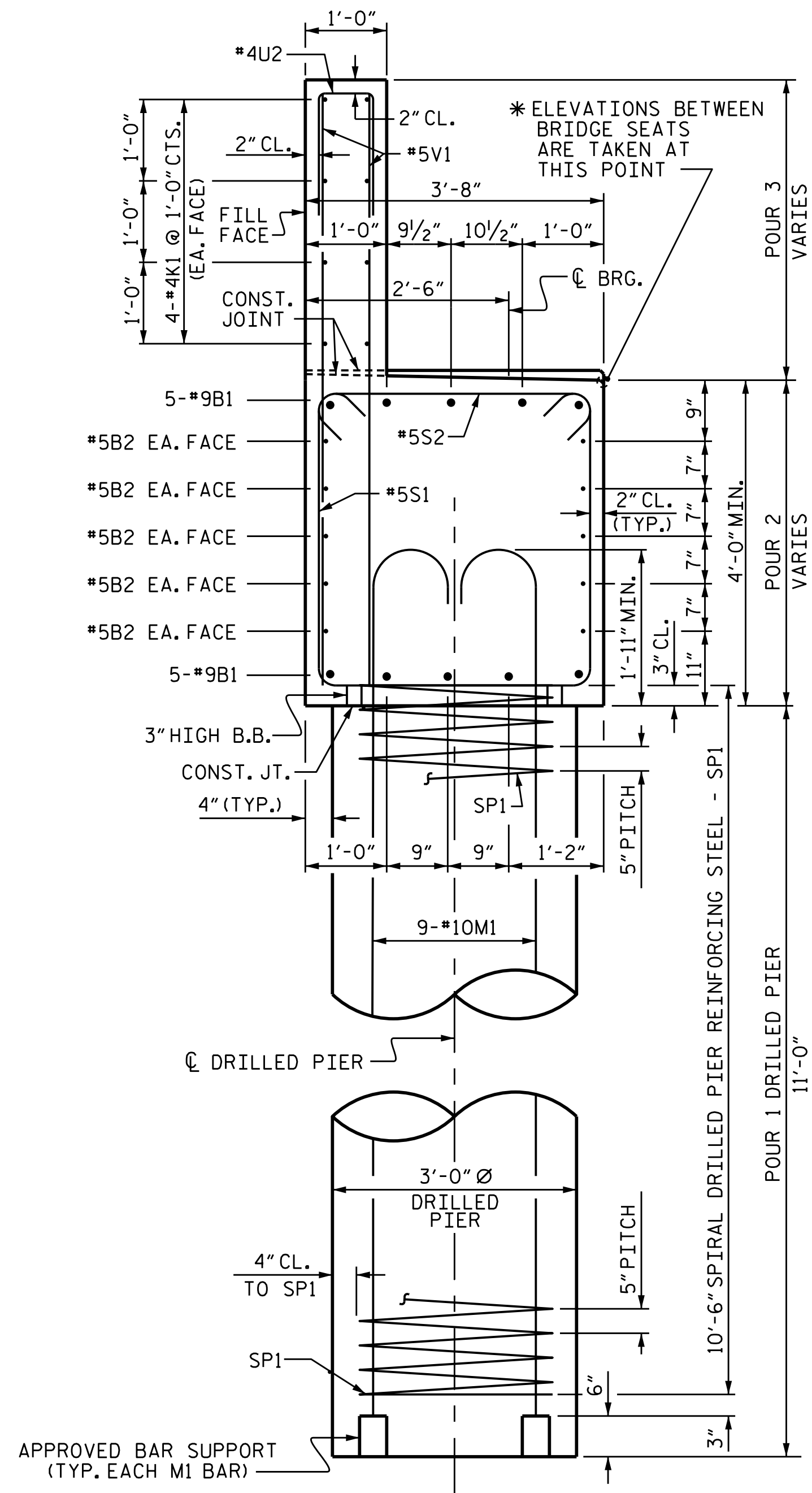
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1

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DRAWN BY : KEITH D LAYNE DATE : 03/21
 CHECKED BY : G. DICKEY DATE : 6/22
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 6/22

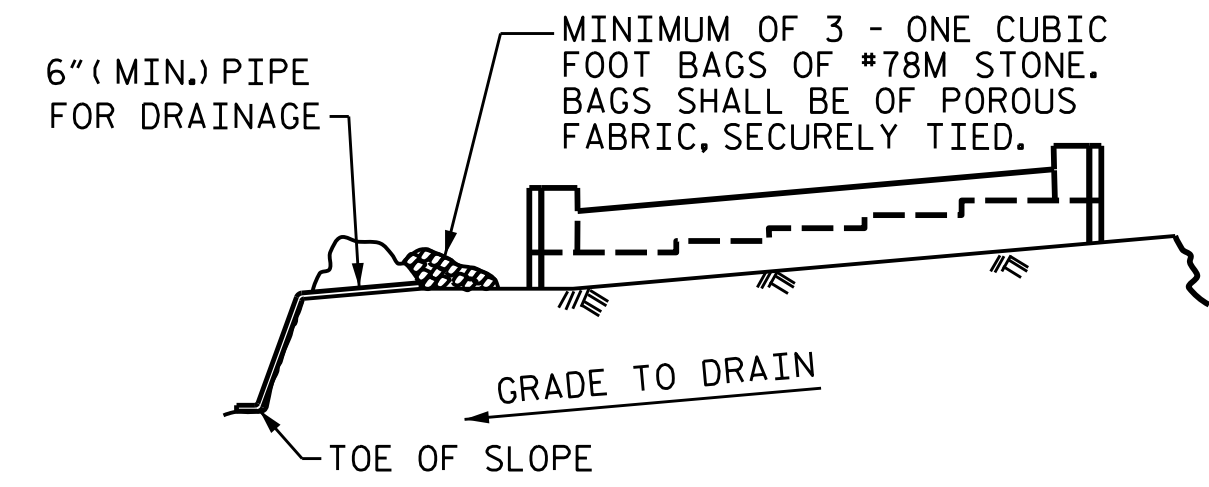
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1			3			S-21
2			4			TOTAL SHEETS 35



SECTION A-A

REINFORCING STEEL & DETAILS ARE TYPICAL FOR EACH DRILLED PIER

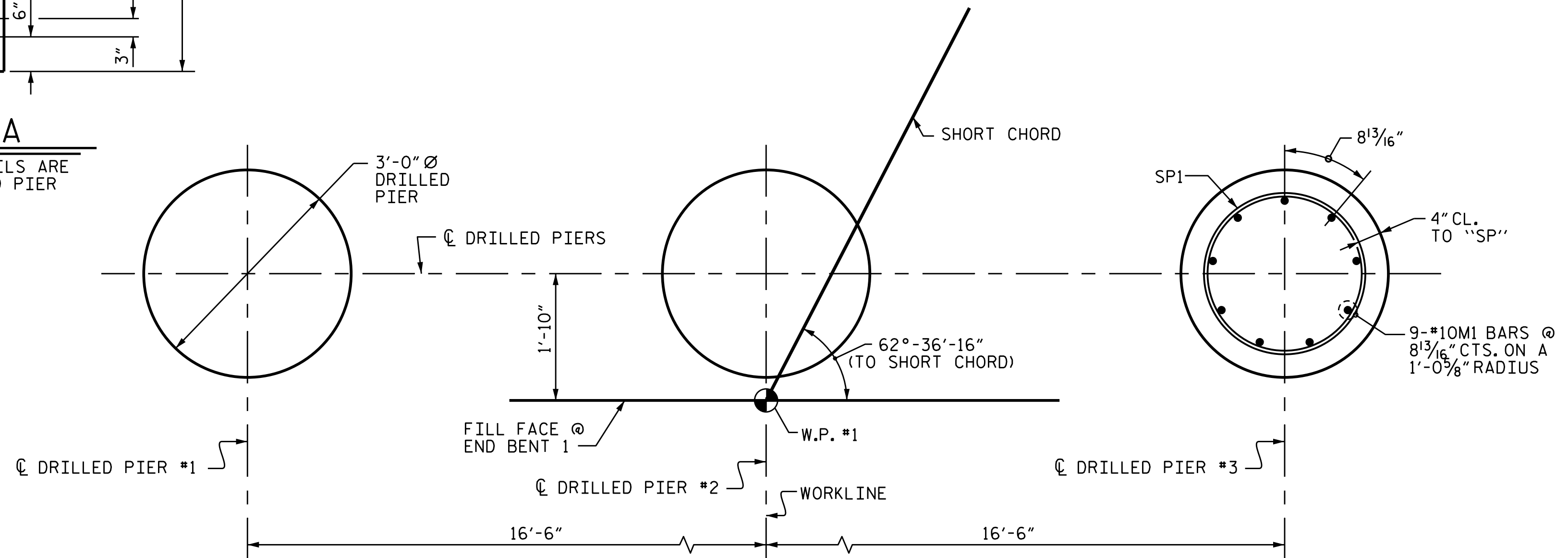


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

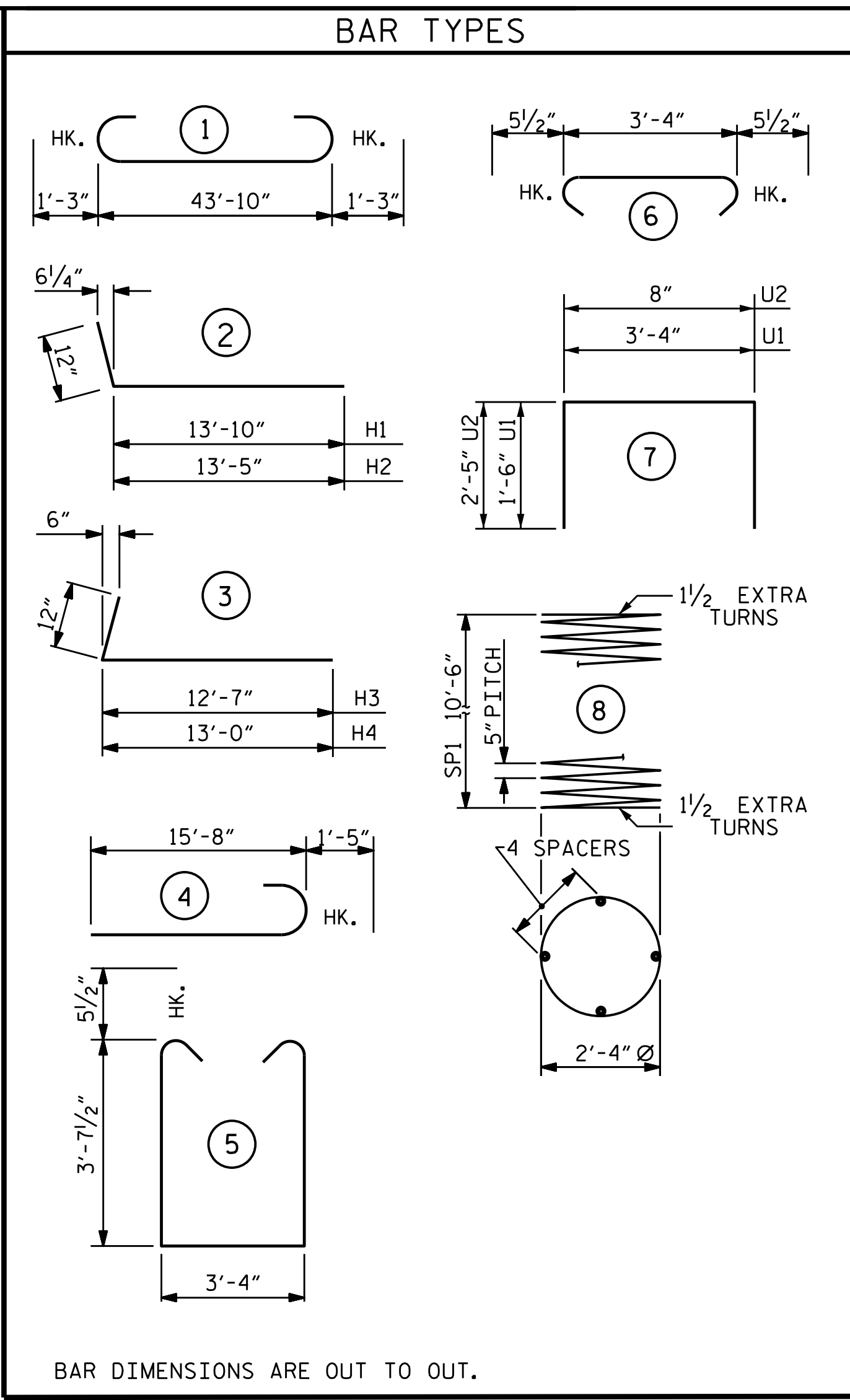
TEMPORARY DRAINAGE AT END BENT



PLAN OF DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER.

ORIENT #10M1 BARS AS SHOWN TO PROVIDE CLEARANCE OF #9B1 BARS IN BOTTOM OF END BENT CAP

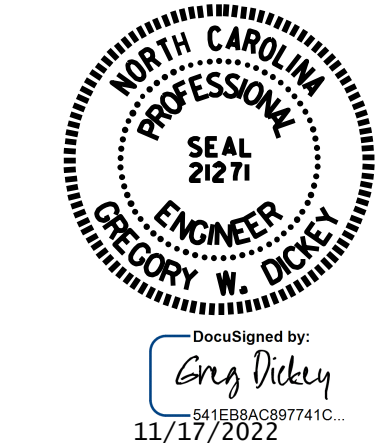


BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	46'-4"	1575
B2	10	#5	STR	43'-10"	457
B3	10	#4	STR	10'-2"	68
B4	5	#4	STR	5'-11"	20
H1	10	#6	2	14'-10"	223
H2	10	#6	2	14'-5"	217
H3	11	#6	3	13'-7"	224
H4	11	#6	3	14'-0"	231
K1	16	#4	STR	23'-2"	248
K2	4	#4	STR	3'-6"	9
K3	4	#4	STR	3'-7"	10
M1	27	#10	4	17'-1"	1985
S1	50	#5	5	11'-6"	600
S2	50	#5	6	4'-3"	222
U1	19	#4	7	6'-4"	80
U2	36	#4	7	5'-6"	132
V1	72	#5	STR	7'-3"	544
V2	36	#5	STR	9'-1"	341
V3	34	#5	STR	9'-11"	352
REINFORCING STEEL				=	7538 LBS
SP1	3	**	8	202'-10"	635
SPIRAL REINFORCING STEEL				=	635 LBS
* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE BREAKDOWN :					
POUR 2 (CAP & LOWER WINGS)----- 30.2 C.Y.					
POUR 3 (BACKWALL & UPPER WINGS)---- 11.8 C.Y.					
TOTAL ----- 42.0 C.Y.					
3'-0" Ø DRILLED PIERS					
DRILLED PIER CONCRETE :					
POUR 1 ----- 8.6 C.Y.					

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 3 OF 3



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

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NOTES

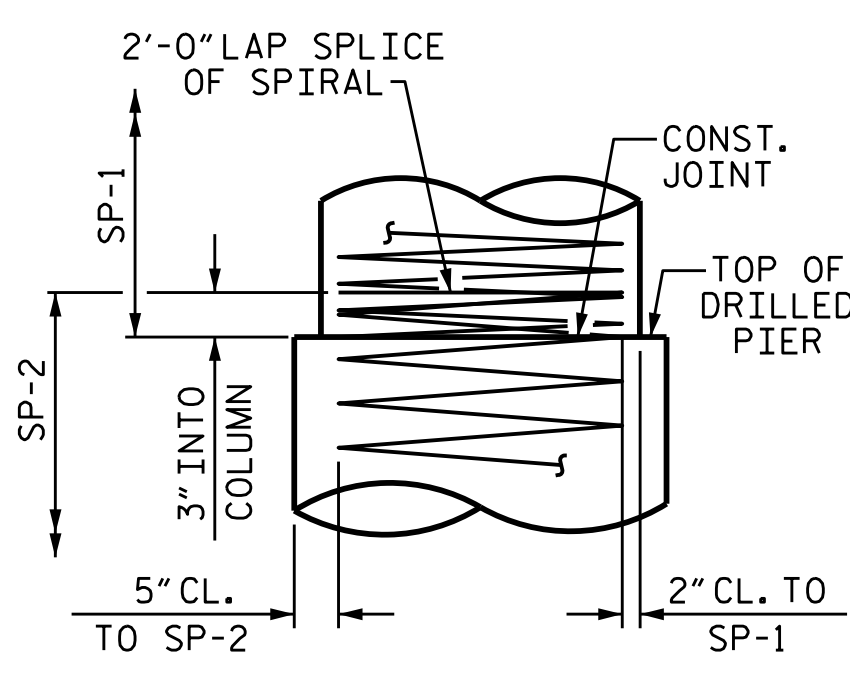
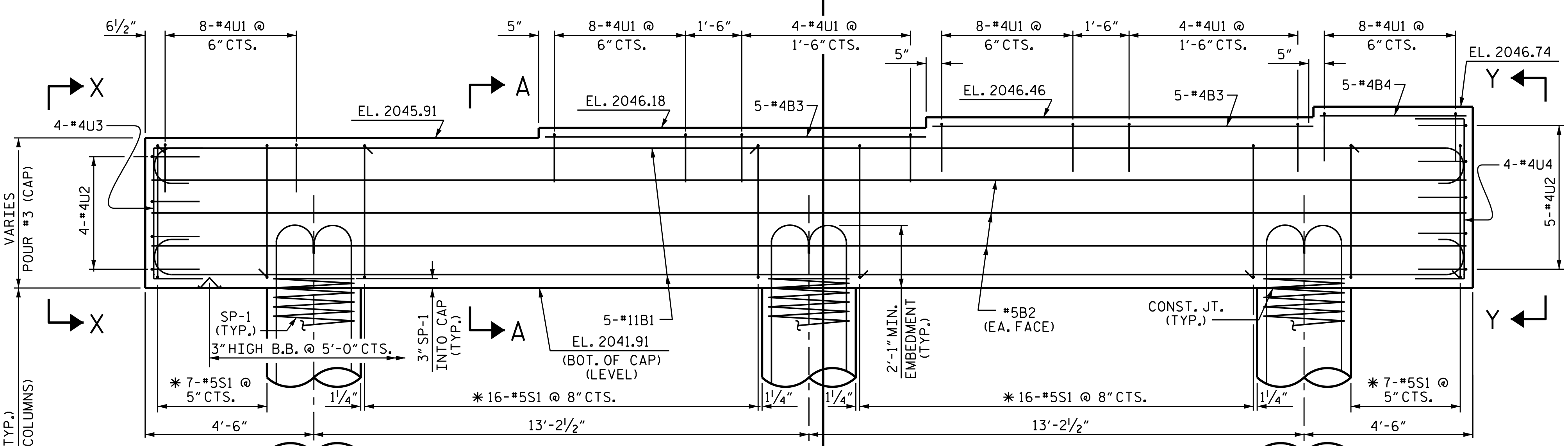
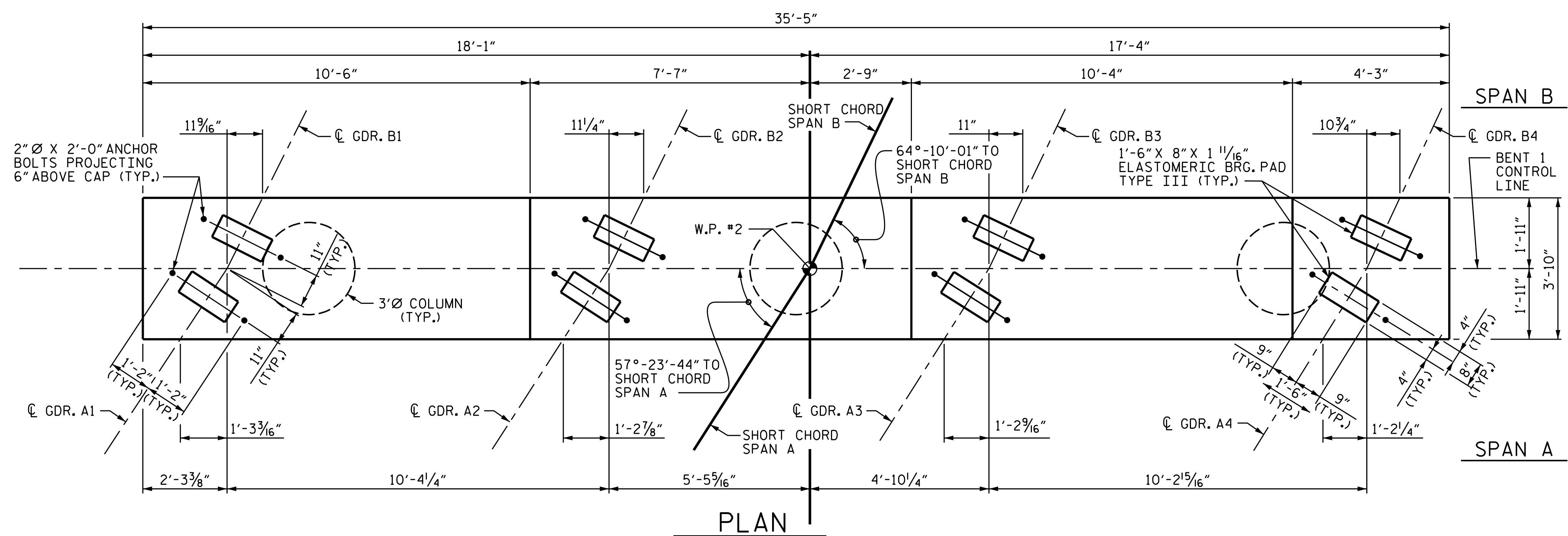
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

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

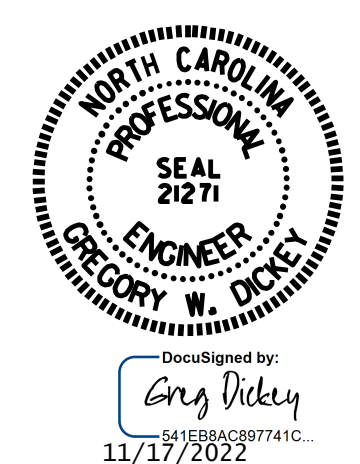
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIER IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.



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PROJECT NO. B-5989
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 SHEET 1 OF 2



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

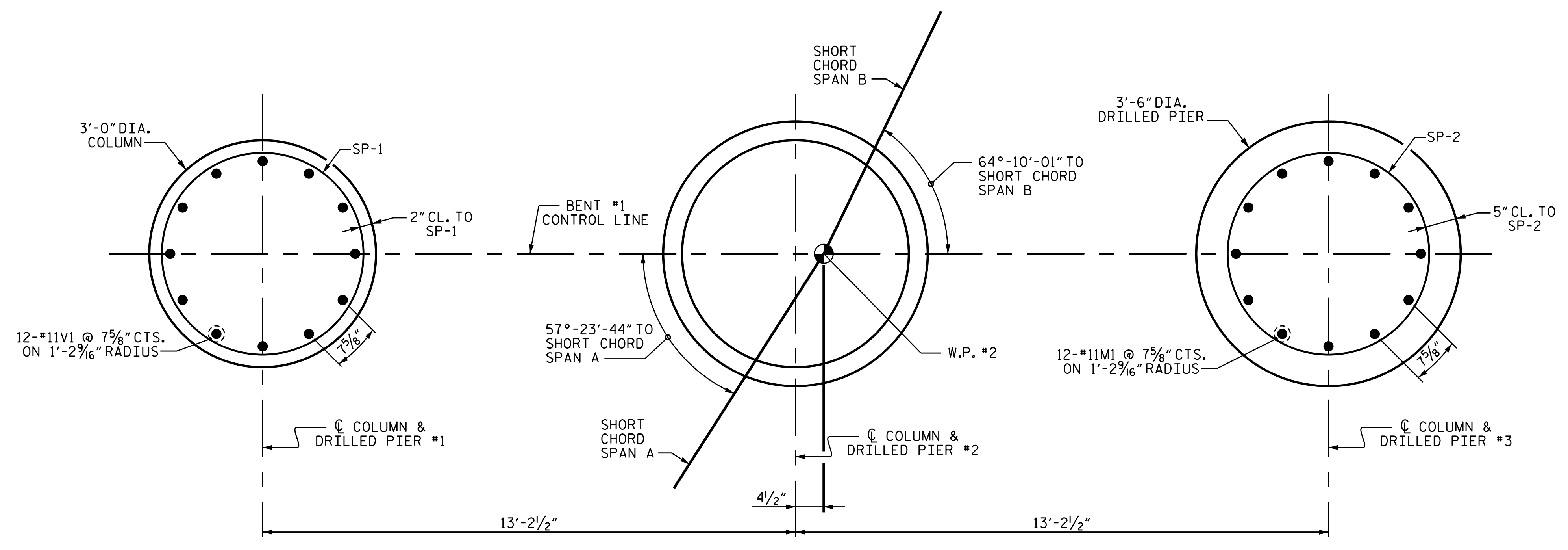
DRAWN BY: KEITH D LAYNE DATE: 03/21
 CHECKED BY: G. DICKEY DATE: 7/22
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ELEVATION
 REINFORCING STEEL & DETAILS ARE TYPICAL FOR EACH DRILLED PIER.

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2			4			TOTAL SHEETS 35

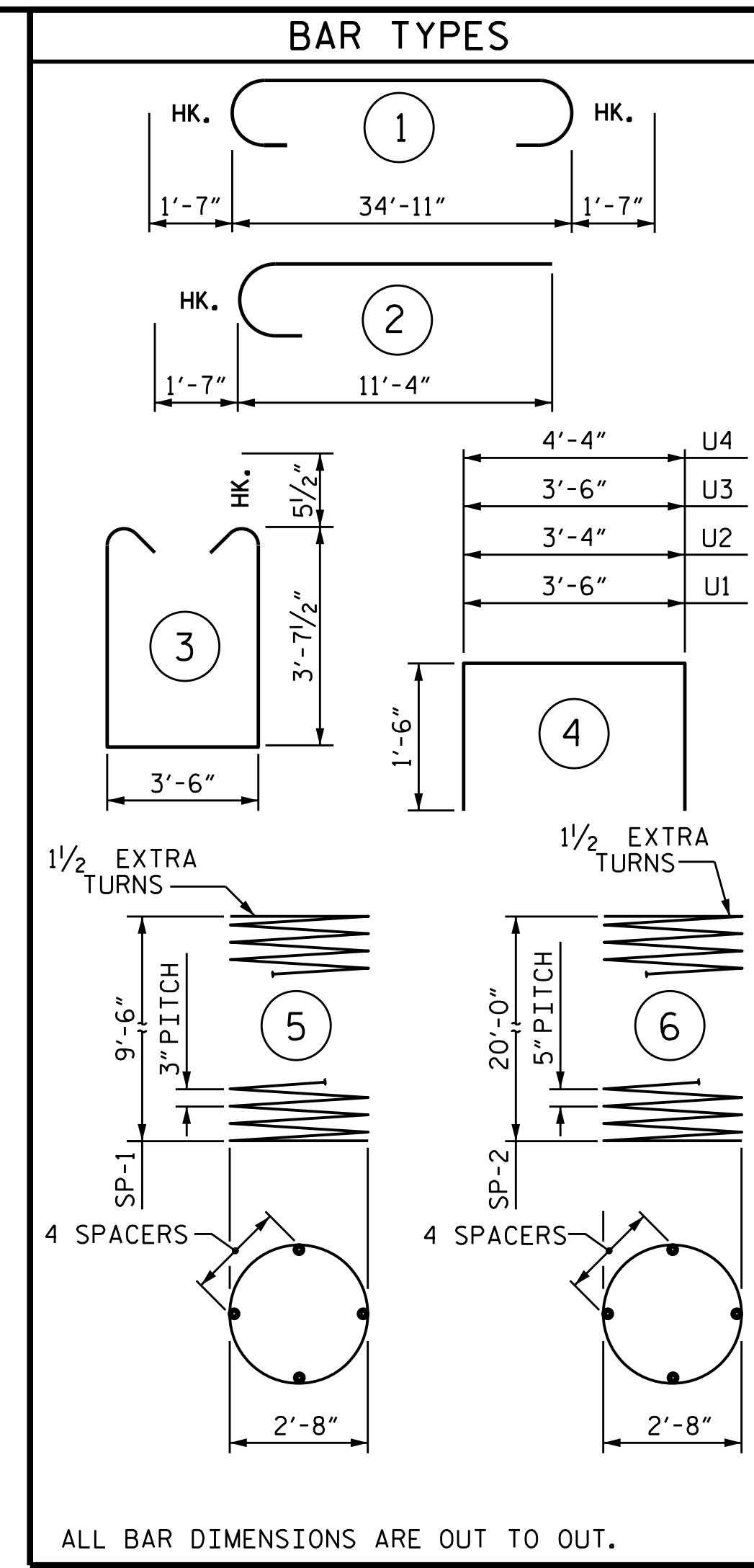
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PLAN OF COLUMNS
(TYP.)

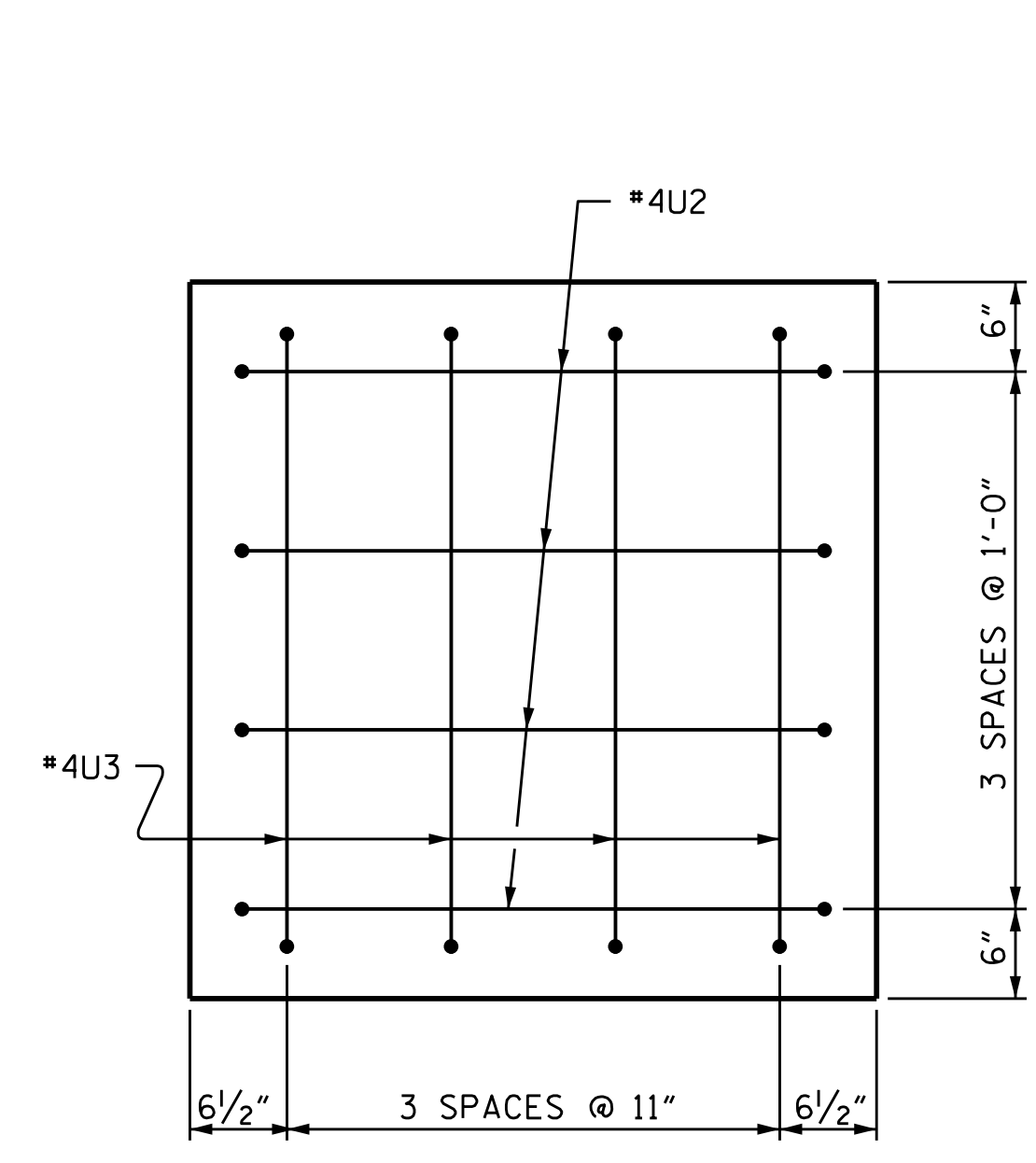
PLAN OF DRILLED PIERS
(TYP.)

PLAN OF COLUMNS AND DRILLED PIERS
REINFORCING STEEL & DETAILS ARE TYPICAL FOR EACH DRILLED PIER.

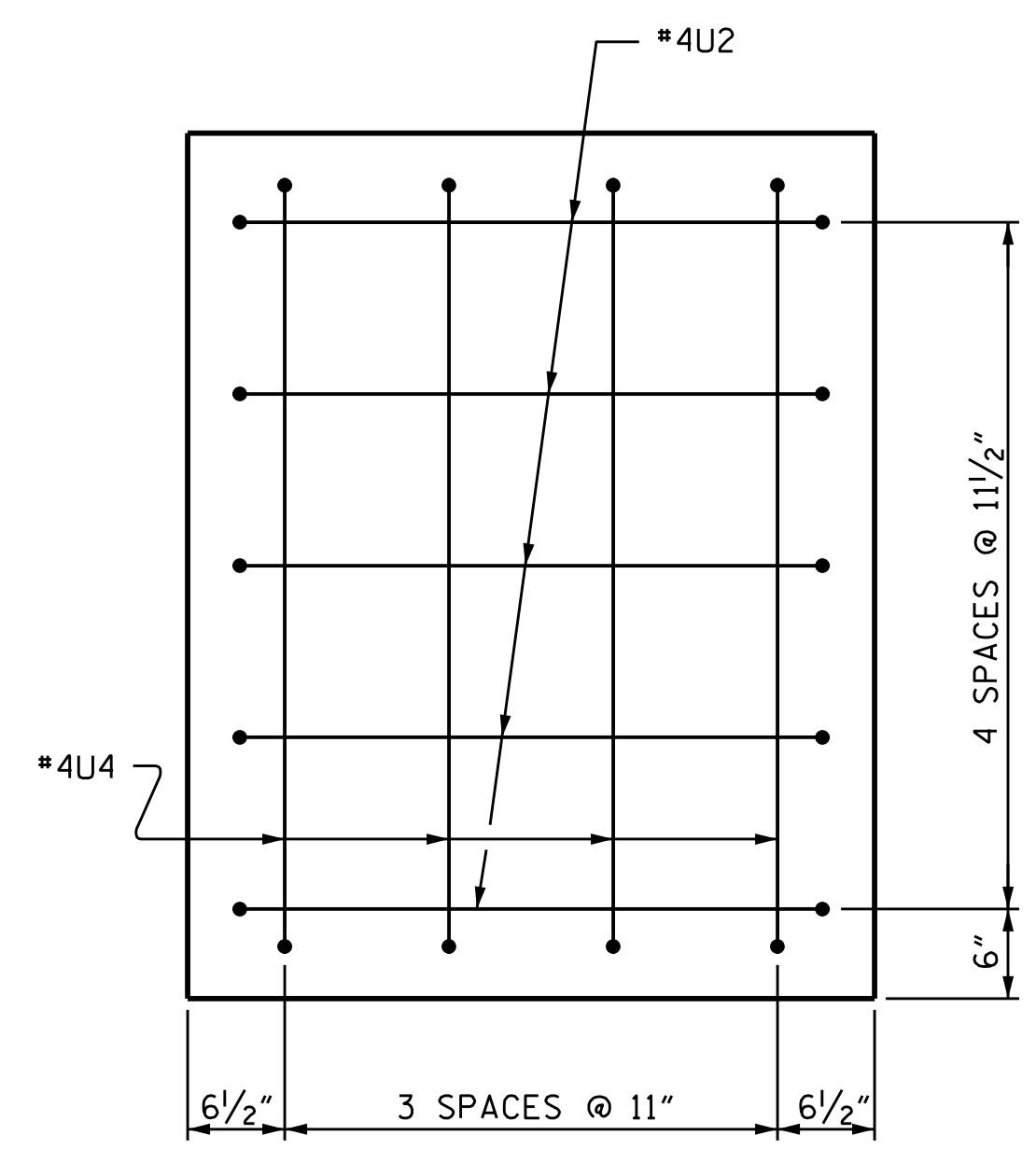


ALL BAR DIMENSIONS ARE OUT TO OUT.
 ** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
 *** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

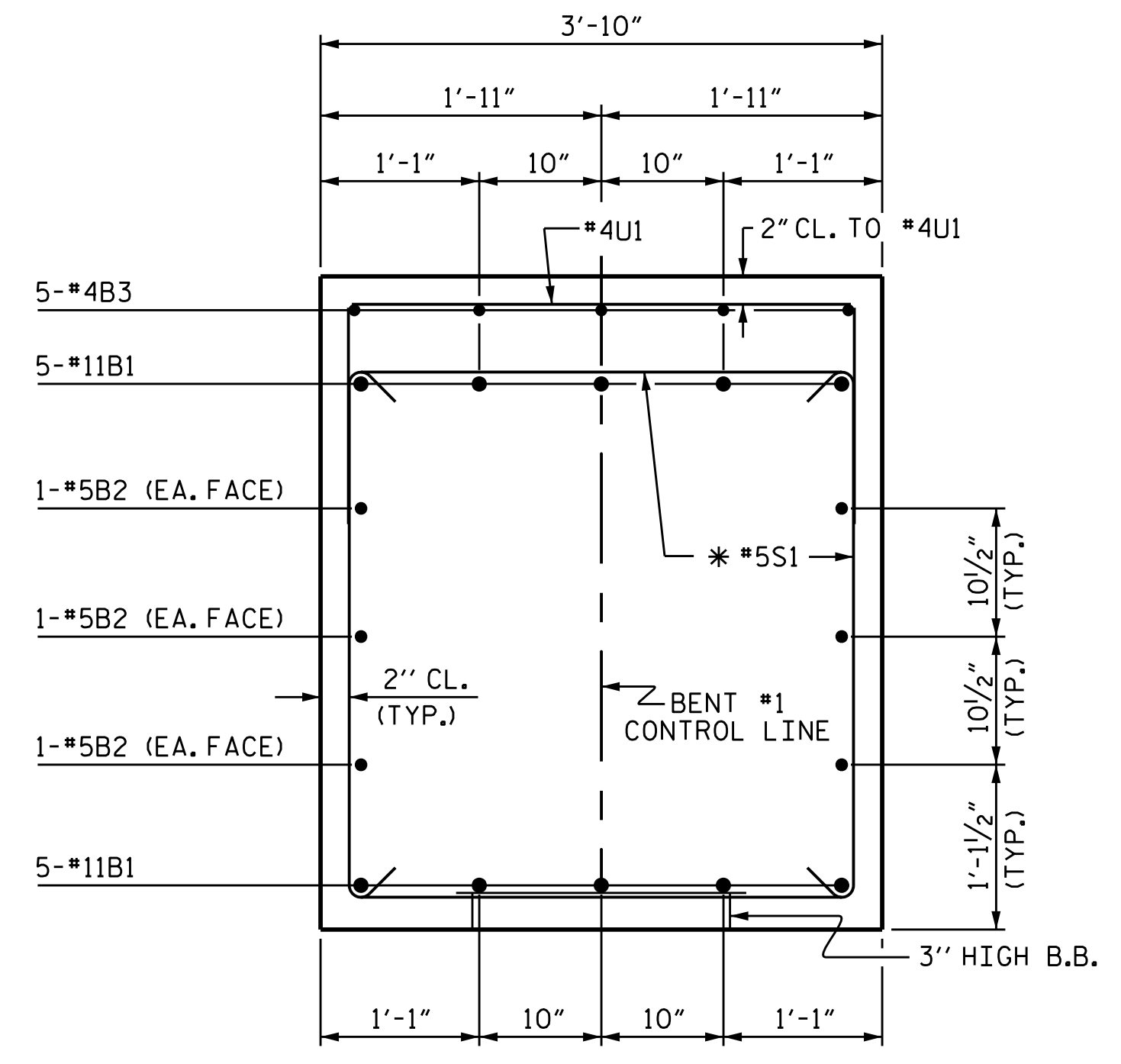
BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	38'-1"	2023
B2	6	#5	STR	35'-1"	220
B3	10	#4	STR	10'-2"	68
B4	5	#4	STR	3'-11"	13
M1	36	#11	STR	28'-4"	5419
S1	46	#5	3	11'-8"	560
U1	40	#4	4	6'-6"	174
U2	9	#4	4	6'-4"	38
U3	4	#4	4	6'-6"	17
U4	4	#4	4	7'-4"	20
V1	36	#11	2	12'-11"	2471
TOTAL REINFORCING STEEL LBS.				11023	
SP-1	3	***	5	325'-11"	653
SP-2	3	***	6	407'-2"	1274
SPIRAL COLUMN REINFORCING STEEL LBS.				1927	
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)				7.3	C.Y.
POUR #3 (BENT CAP)				21.8	C.Y.
TOTAL				29.1	C.Y.
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				21.9	C.Y.



VIEW X-X



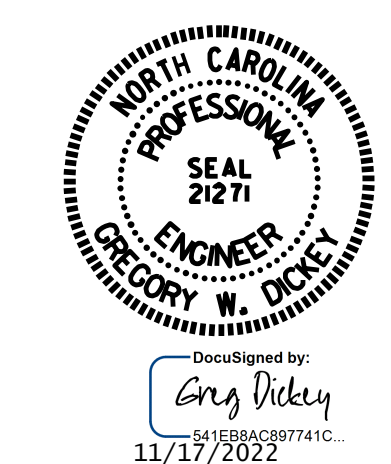
VIEW Y-Y



SECTION A-A
* INVERT ALTERNATE STIRRUPS

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 2 OF 2



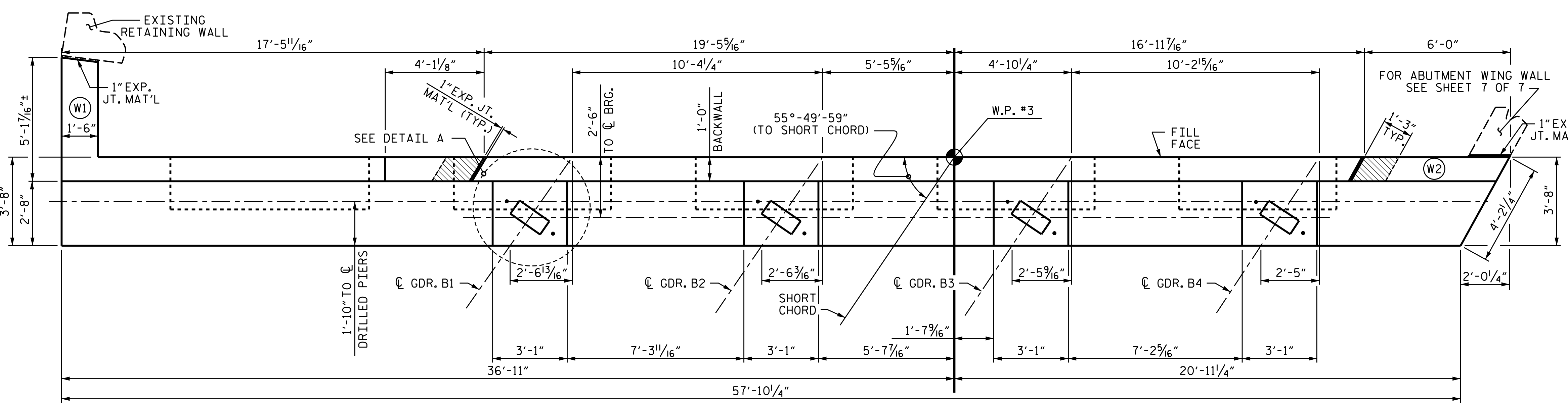
STATE OF NORTH CAROLINA
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 SUBSTRUCTURE
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2			4			

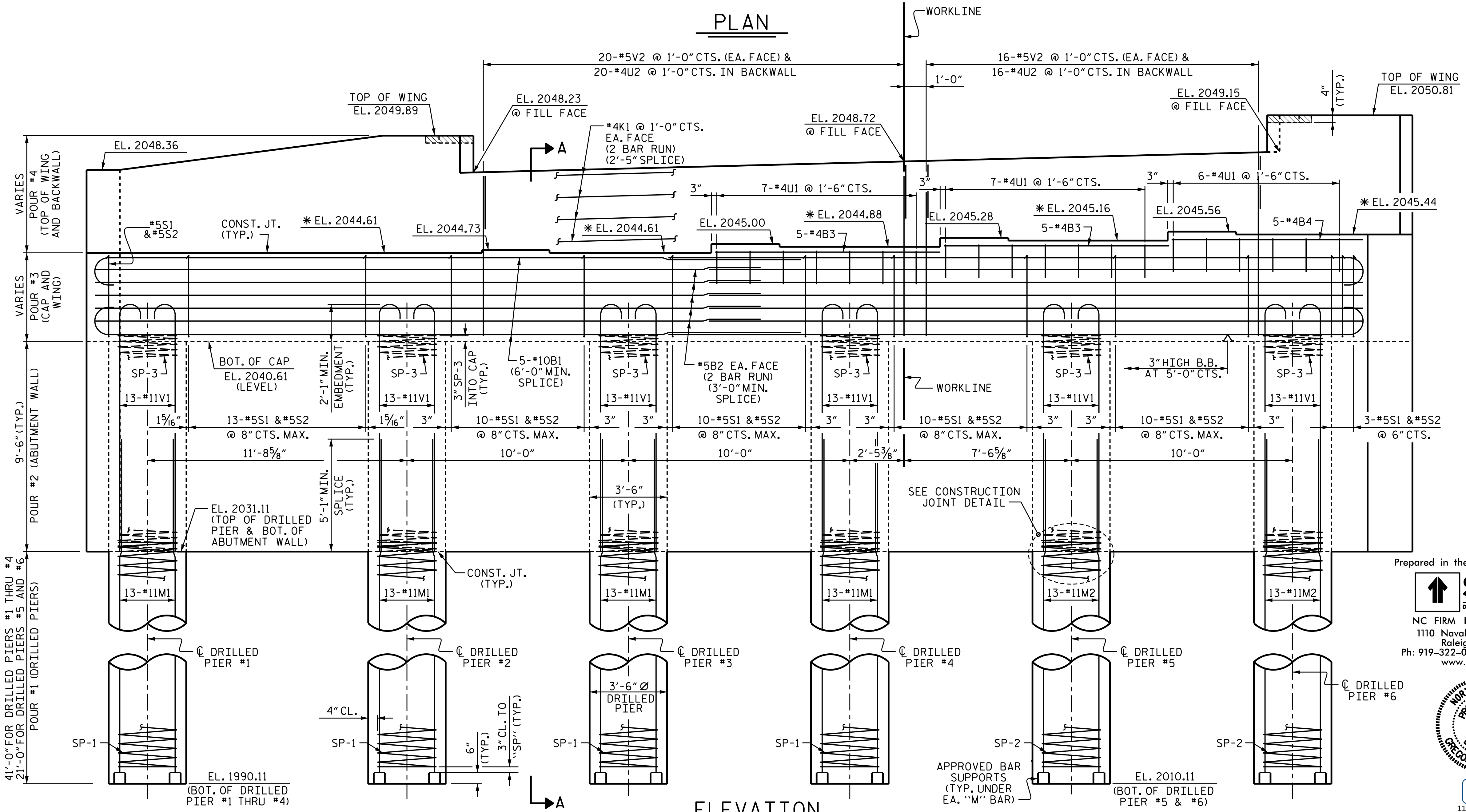
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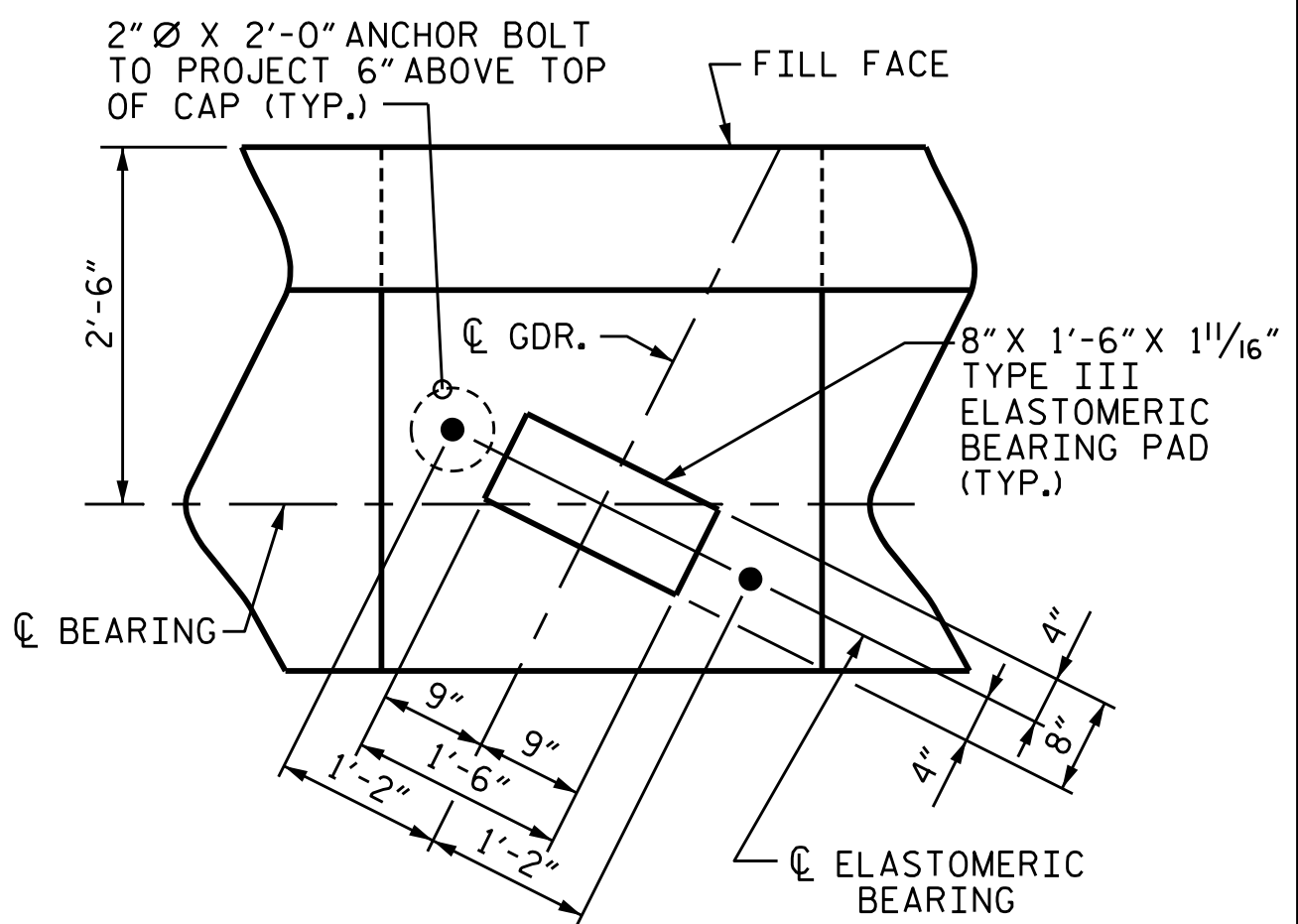
PLAN



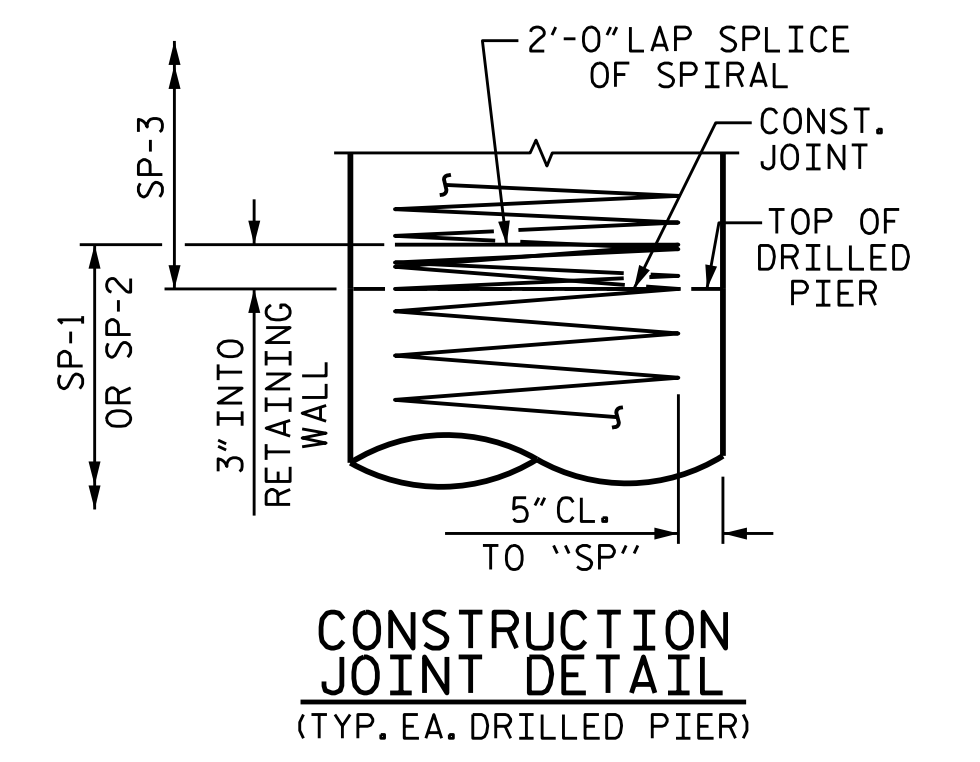
ELEVATION

REINFORCING STEEL & DETAILS FOR DRILLED PIERS ARE TYPICAL UNLESS OTHERWISE SHOWN

NOTES :
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH THREE FEET OF EXTRA LENGTH.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".



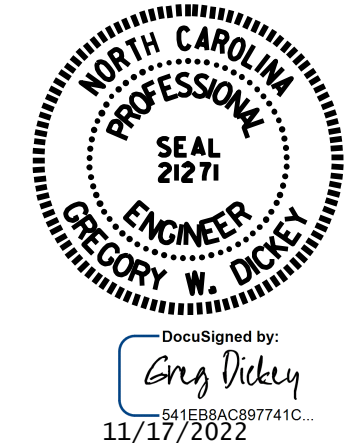
DETAIL "A"



CONSTRUCTION JOINT DETAIL
(TYP. EA. DRILLED PIER)

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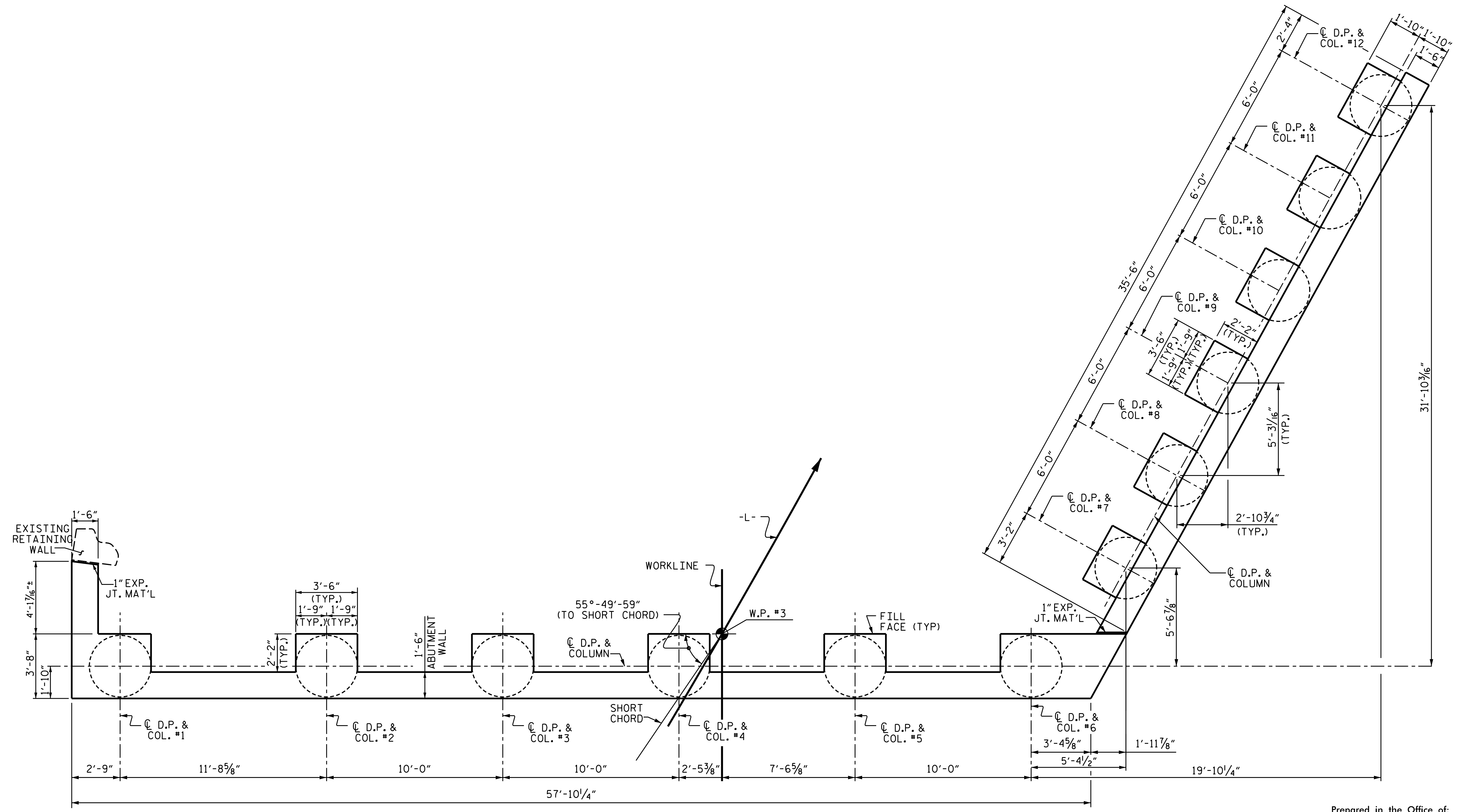
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END BENT #2

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PLAN - END BENT #2 AND ABUTMENT WING WALL

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PROJECT NO. B-5989
MADISON COUNTY
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 SHEET 2 OF 7



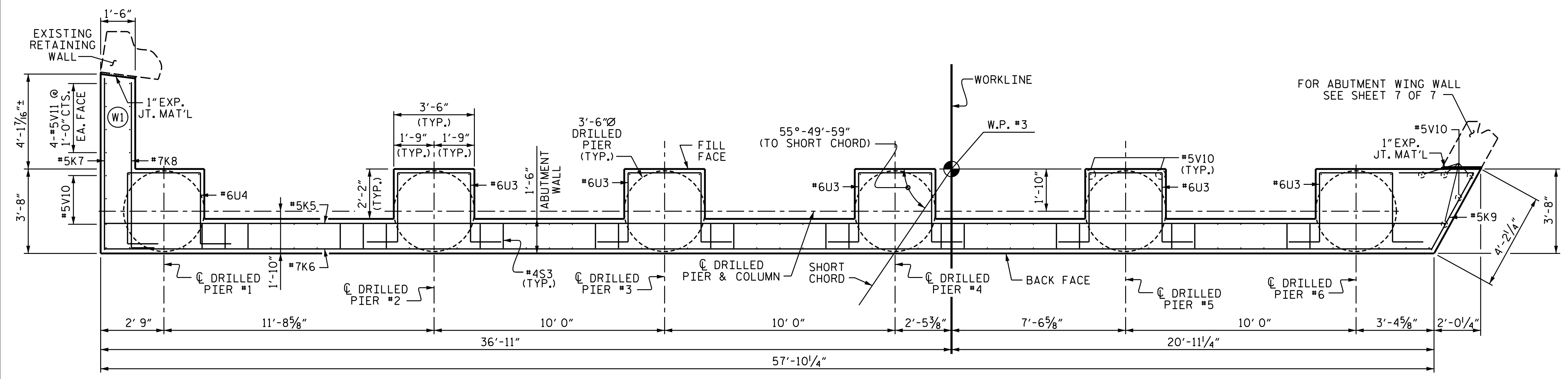
STATE OF NORTH CAROLINA
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 RALEIGH
**END BENT #2
 AND
 ABUTMENT WING WALL**

\$LASTSAVEDDATE\$ TIME\$ FILE\$

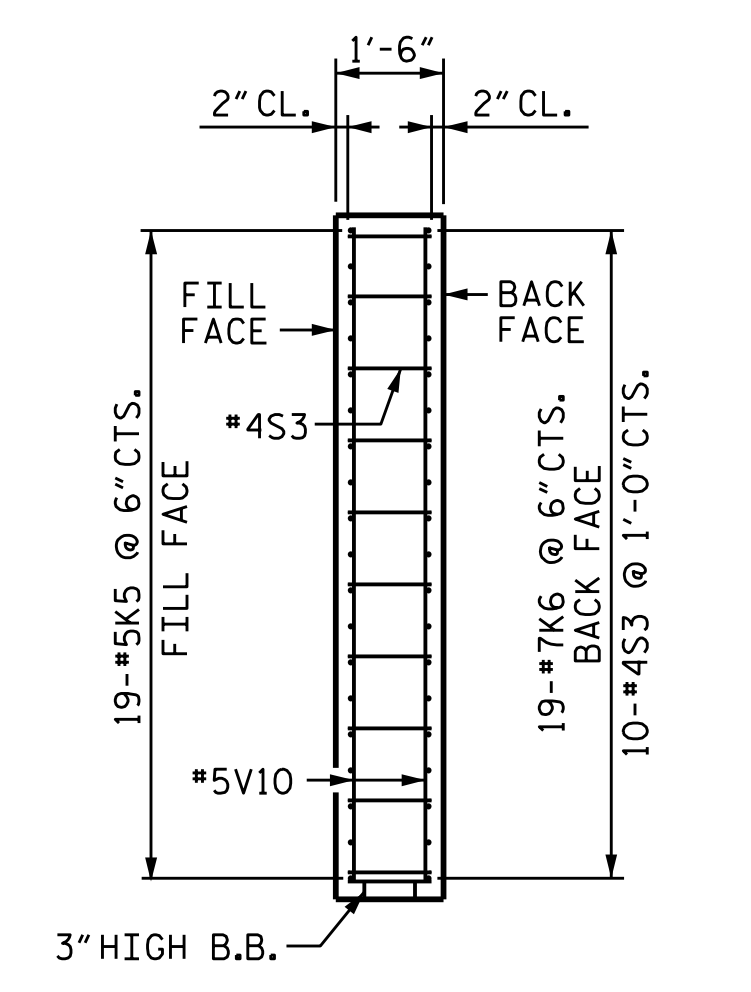
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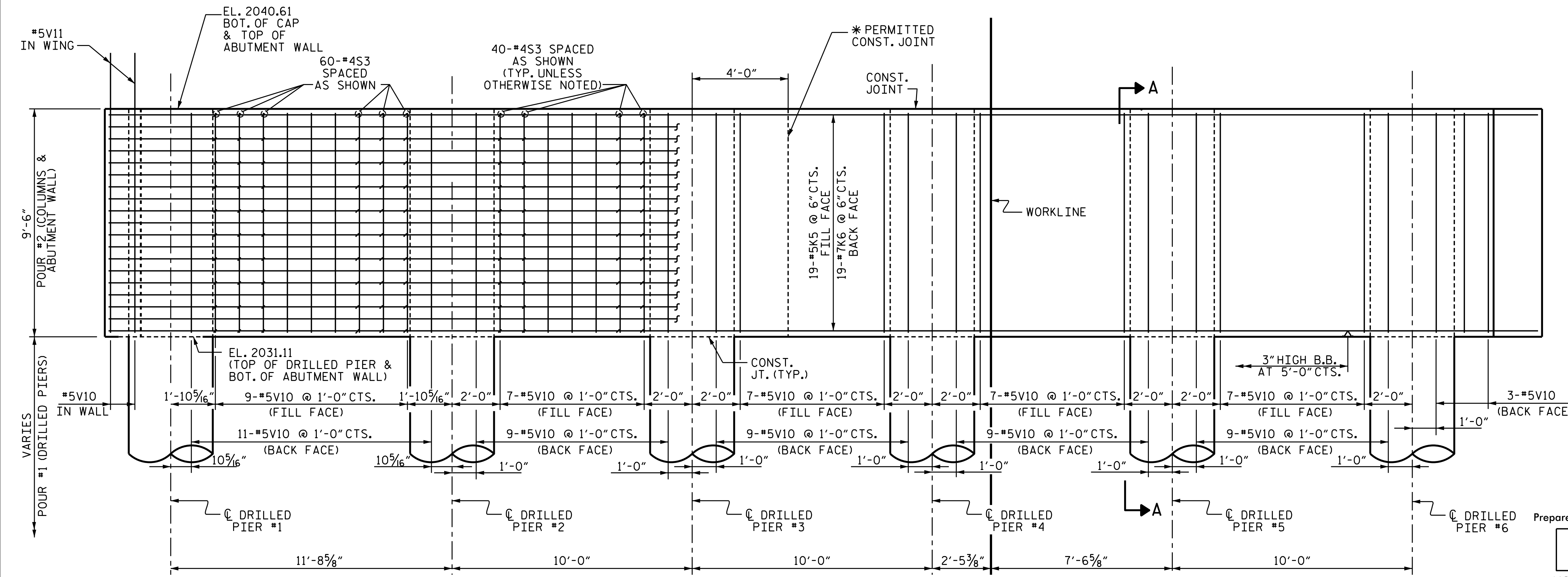
REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			35



PLAN ABUTMENT WALL



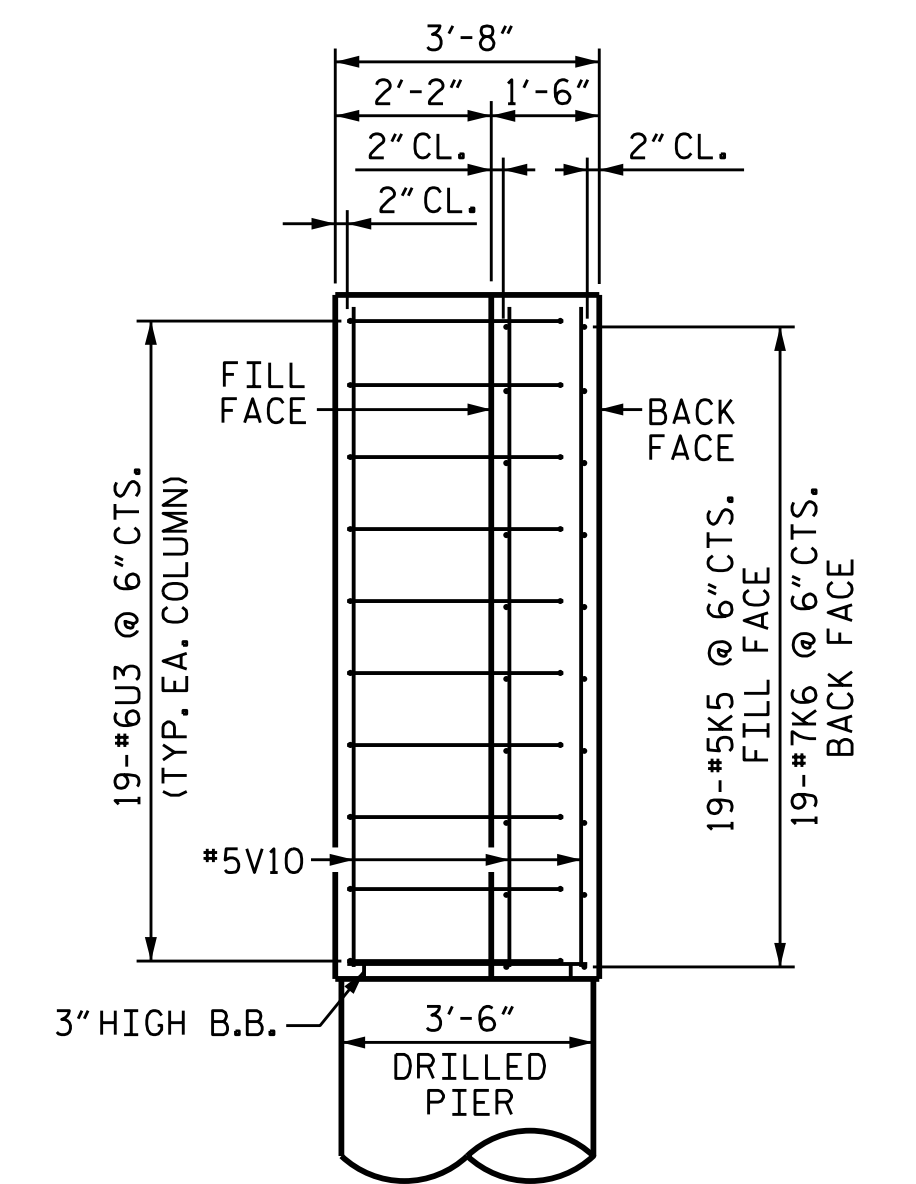
SECTION THRU ABUTMENT WALL



ELEVATION ABUTMENT WALL

"M", "V" & SPIRAL STEEL NOT SHOWN IN DRILLED PIERS FOR CLARITY, SEE SHEET 2 OF 7

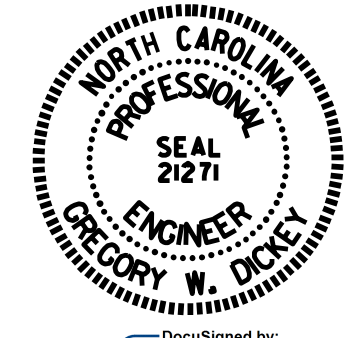
* THE CONTRACTOR HAS THE OPTION TO SPLICE THE #7K6 BARS USING A SPLICE LENGTH OF 4'-2". THE #5K5 BARS MAY BE SPLICED USING A SPLICE LENGTH OF 3'-0". BILL OF MATERIAL DOES NOT INCLUDE SPLICE LENGTHS.



SECTION A-A

"M", "V" & SPIRAL STEEL NOT SHOWN IN DRILLED PIERS FOR CLARITY, SEE SHEET 1 OF 7

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PROJECT NO. B-5989
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 SHEET 3 OF 7

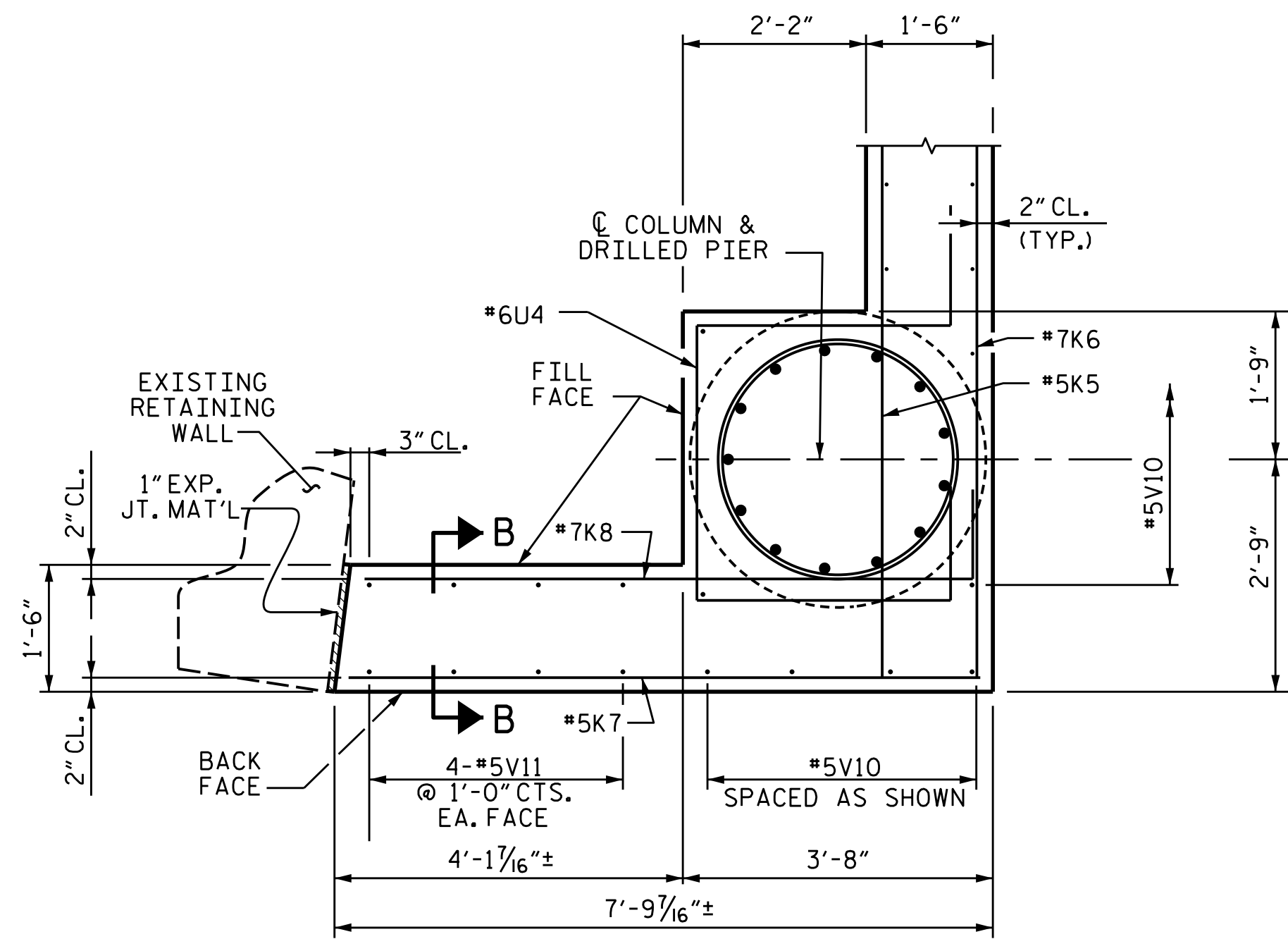
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END BENT #2
ABUTMENT WALL

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1			3			TOTAL SHEETS
2			4			35

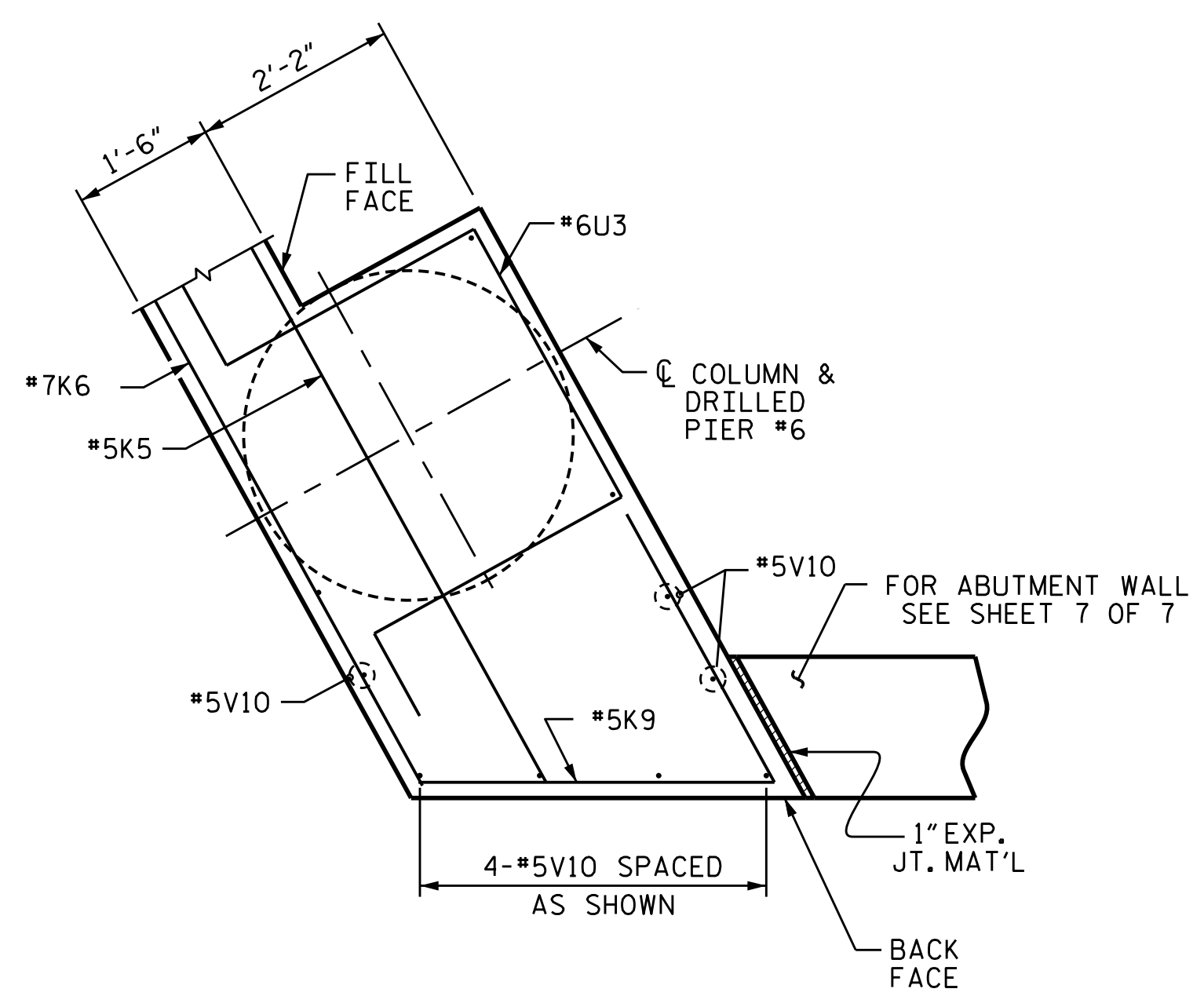
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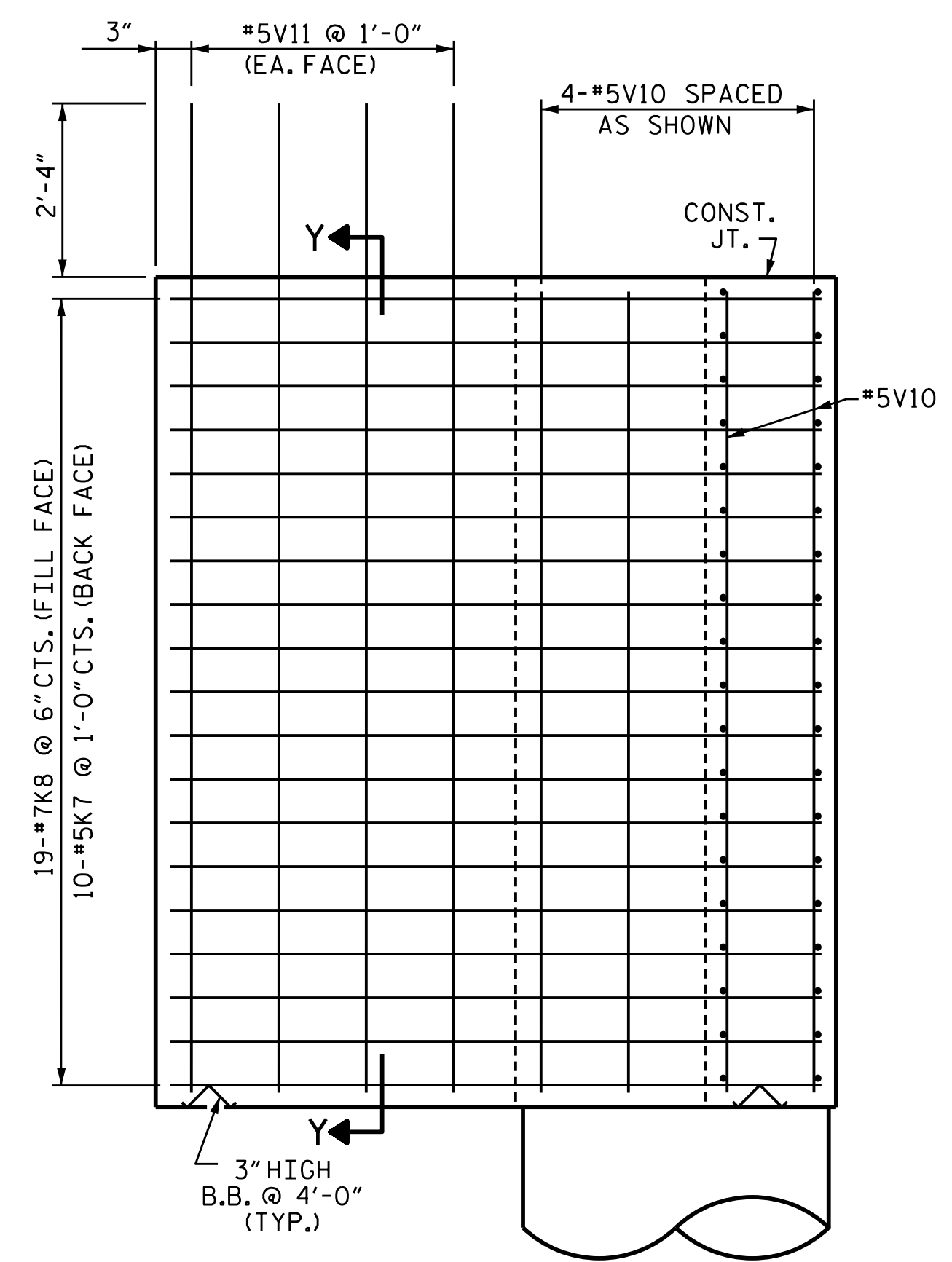
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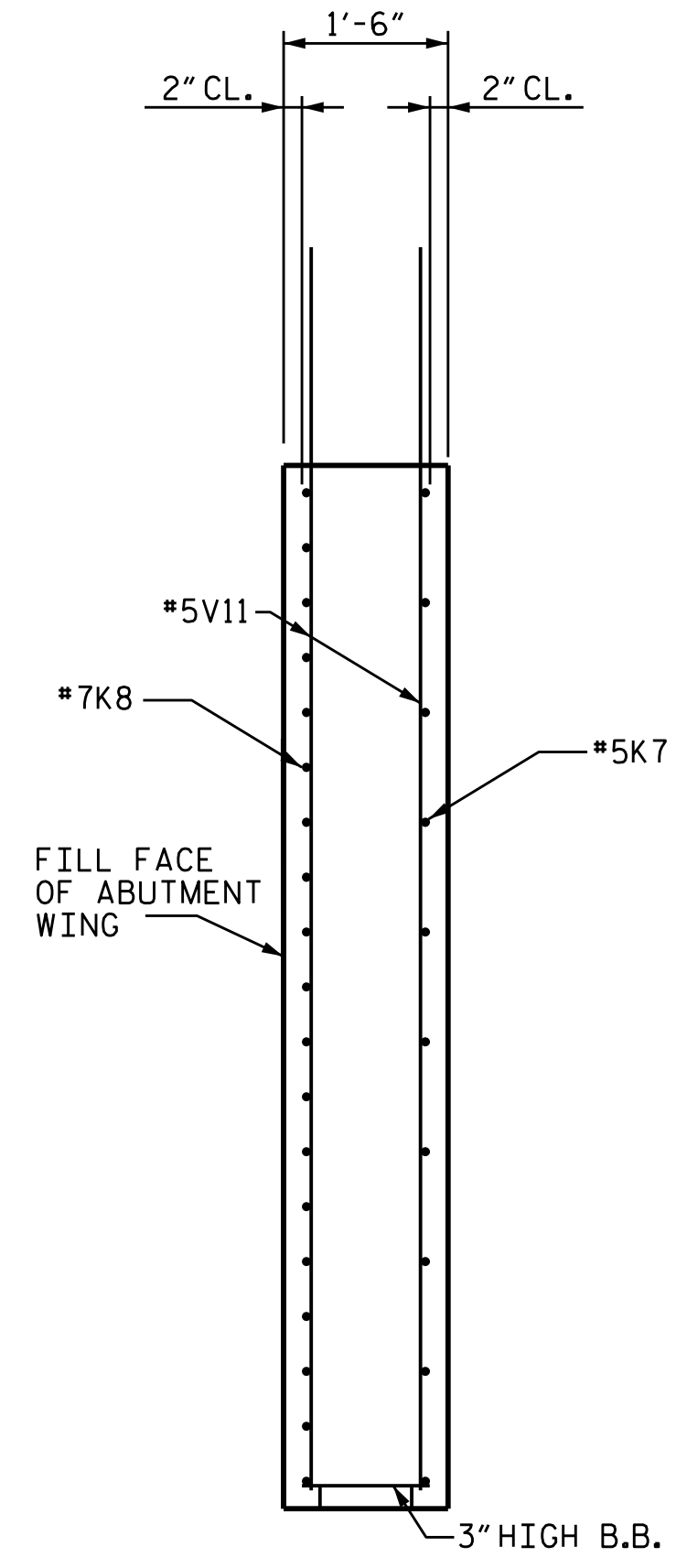
PLAN OF LEFT ABUTMENT WING - (W1)



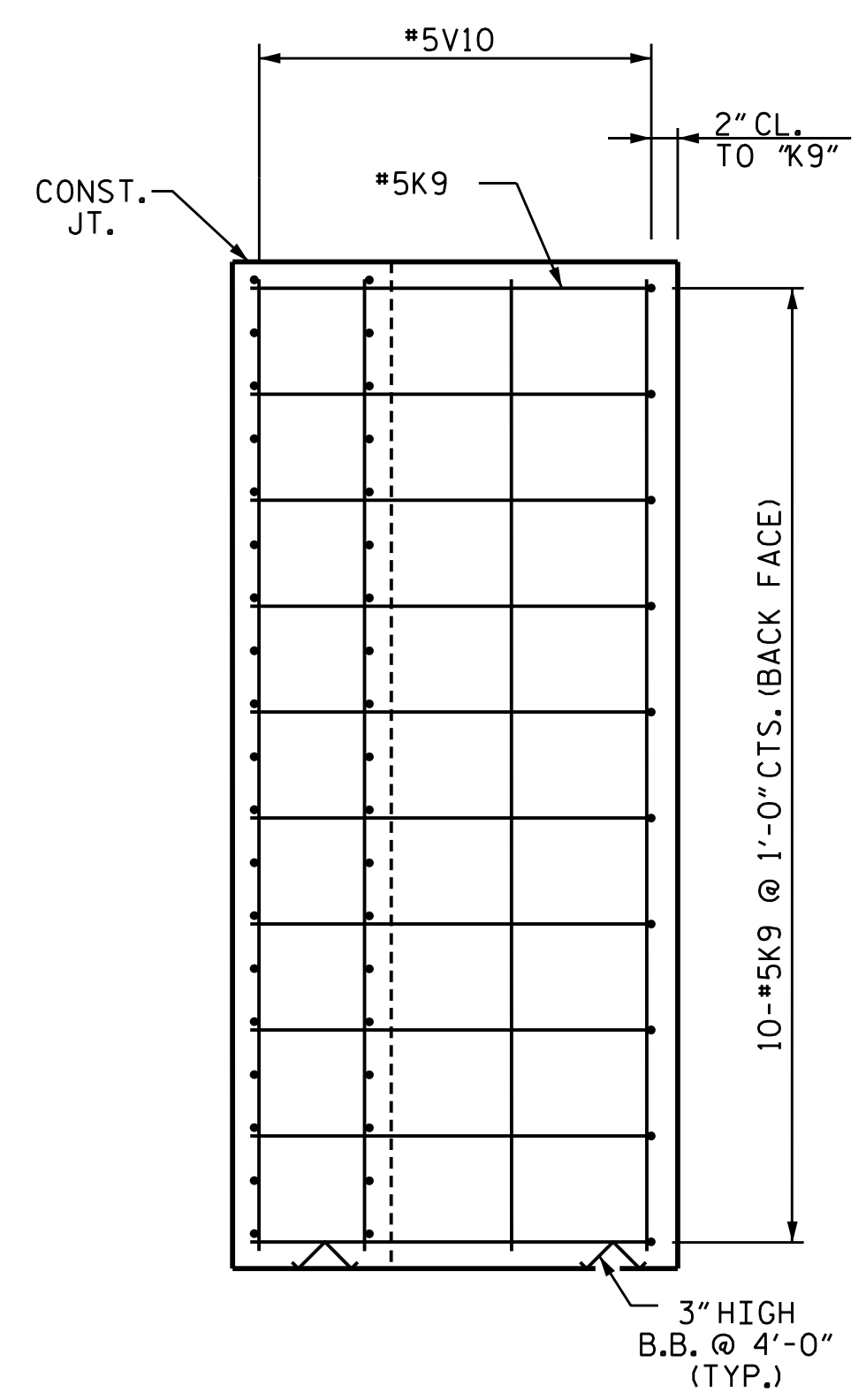
PLAN OF RIGHT ABUTMENT END



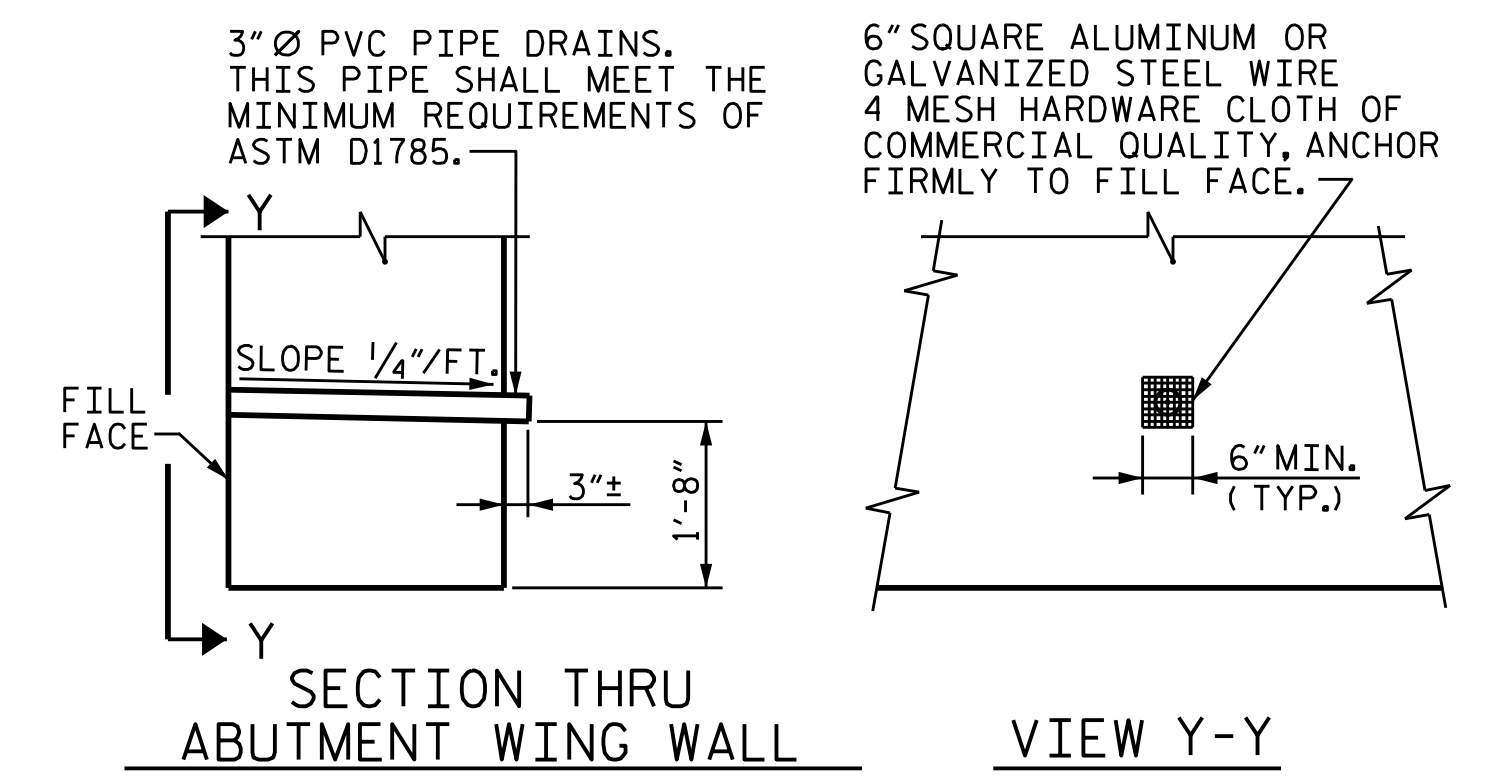
ELEVATION VIEW OF LEFT ABUTMENT WING - (W1)



SECTION B-B



ELEVATION OF RIGHT ABUTMENT END

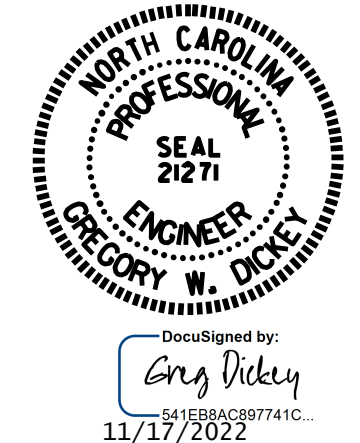


NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

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STATE OF NORTH CAROLINA
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 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 ABUTMENT WALL
 DETAILS

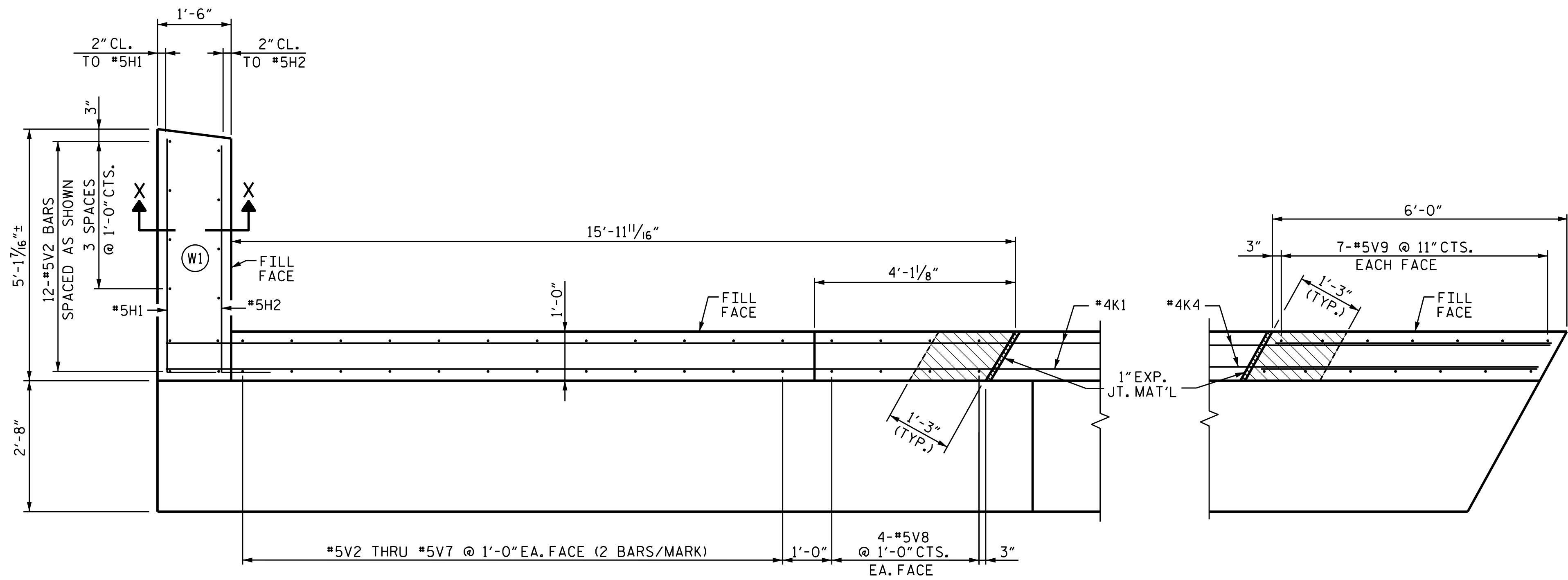
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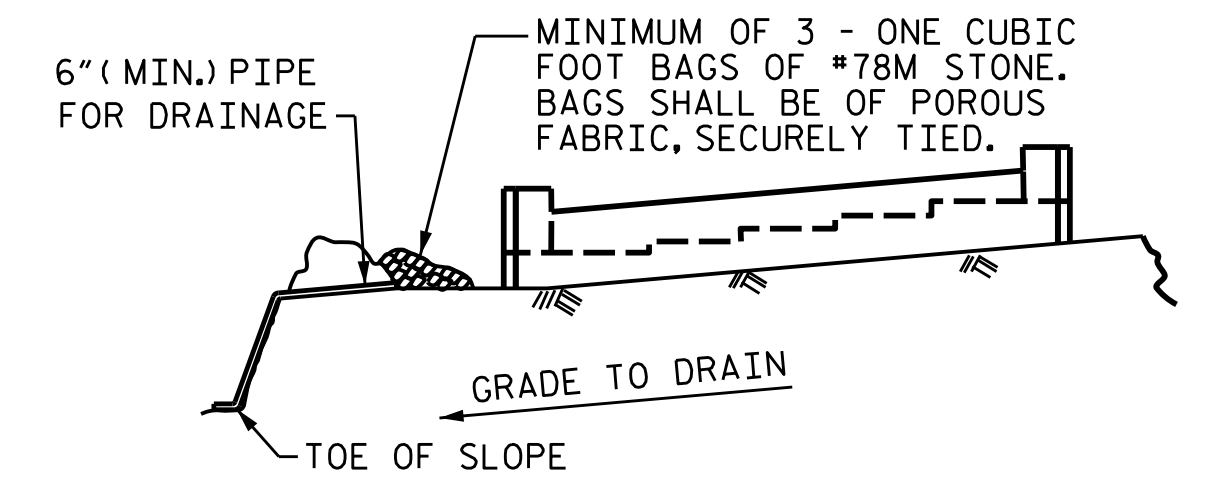
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S-28
 TOTAL SHEETS
 35



PLAN OF LEFT WING - (W1)

PLAN OF RIGHT BACKWALL

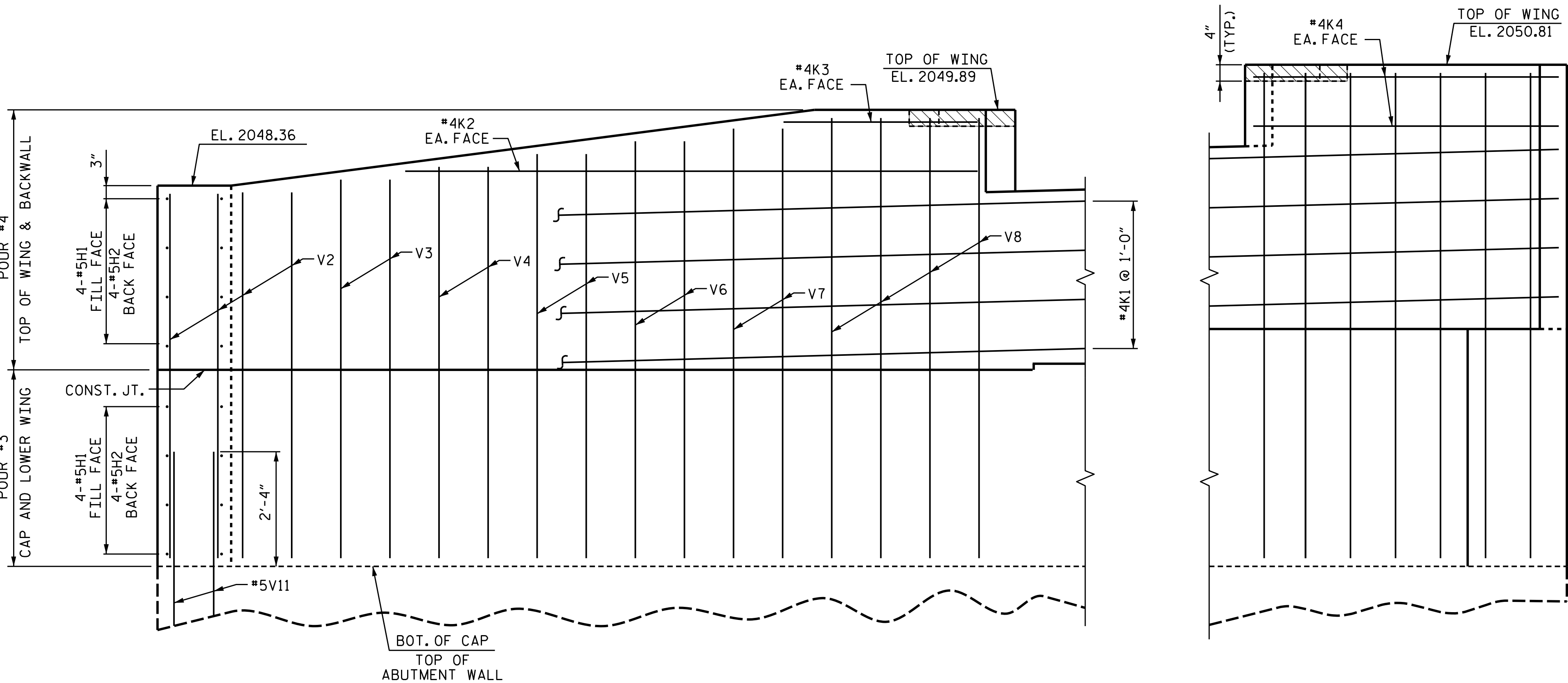


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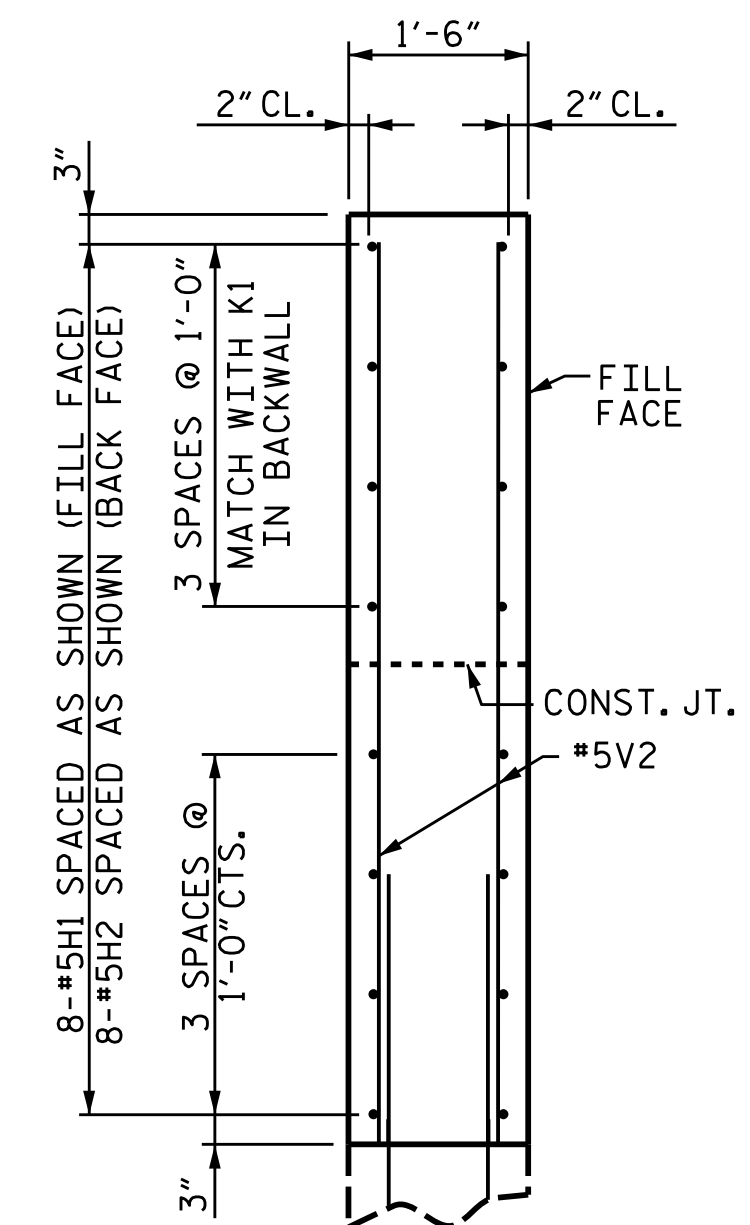
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



ELEVATION OF LEFT WING - (W1)

ELEVATION OF RIGHT WING - (W2)

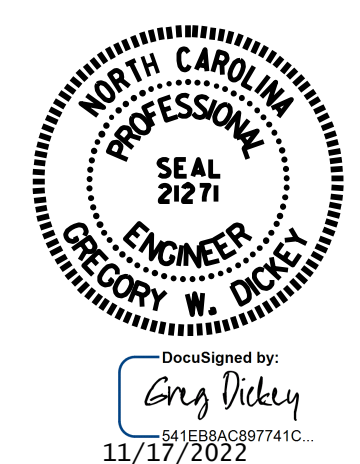


SECTION X-X

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PROJECT NO. B-5989
MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 5 OF 7



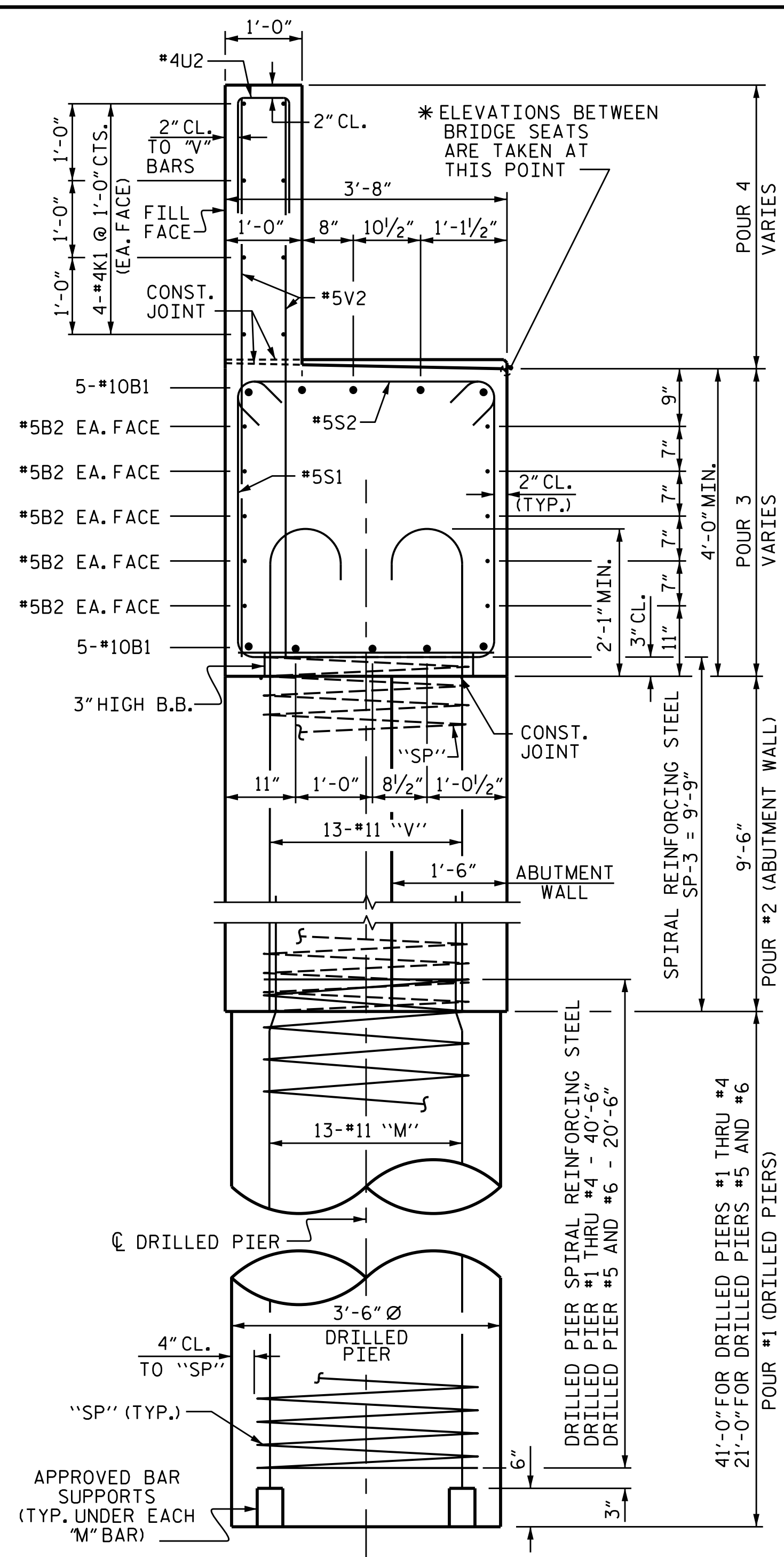
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 BACKWALL & WING

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

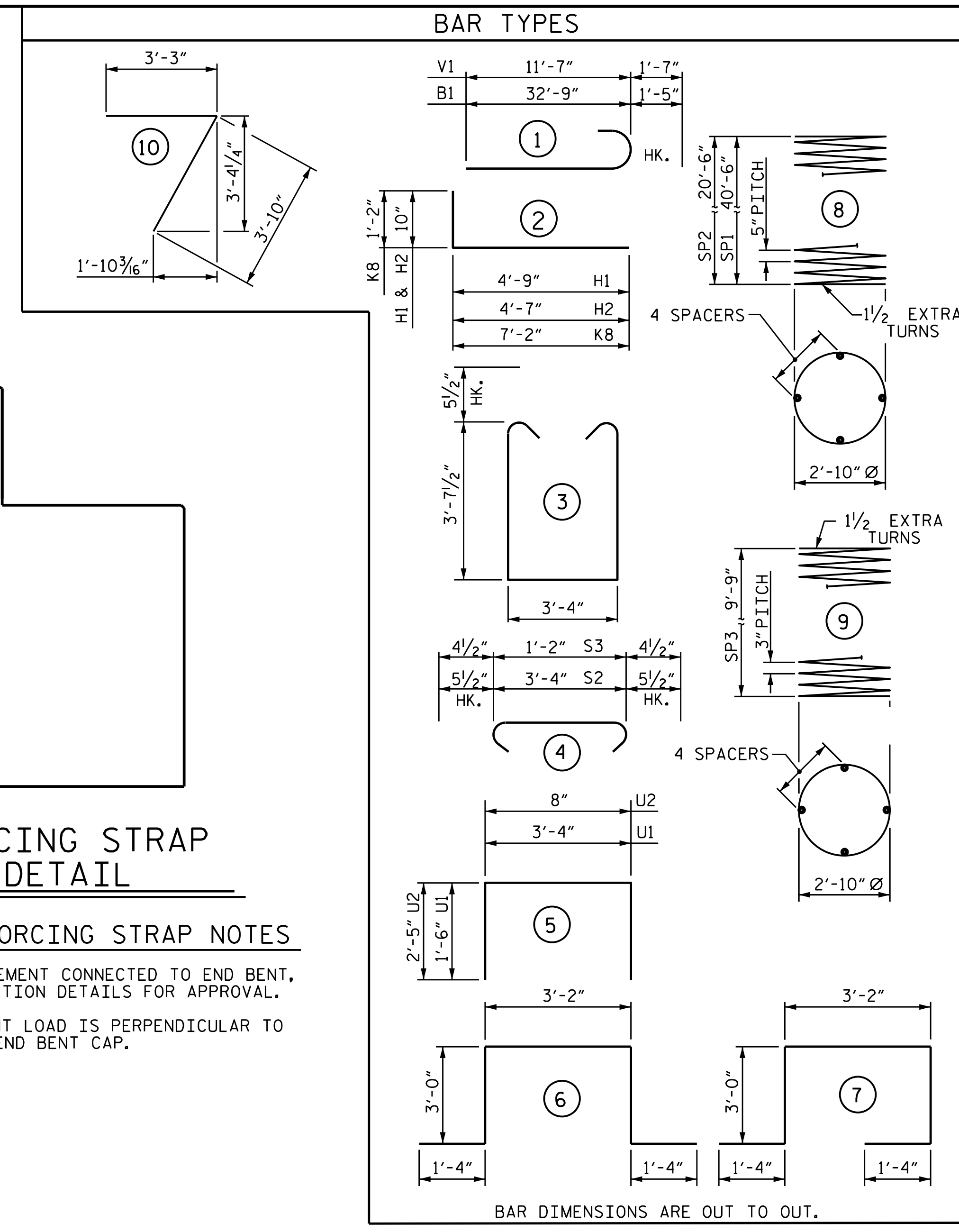
DRAWN BY : KEITH D LAYNE DATE : 09/22
 CHECKED BY : G. DICKEY DATE : 09/22
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 09/22

S-29
 TOTAL SHEETS
 35



SECTION A-A

REINFORCING STEEL & DETAILS ARE TYPICAL FOR EACH DRILLED PIER. SEE SHEET 3 FOR ABUTMENT WALL R/F.

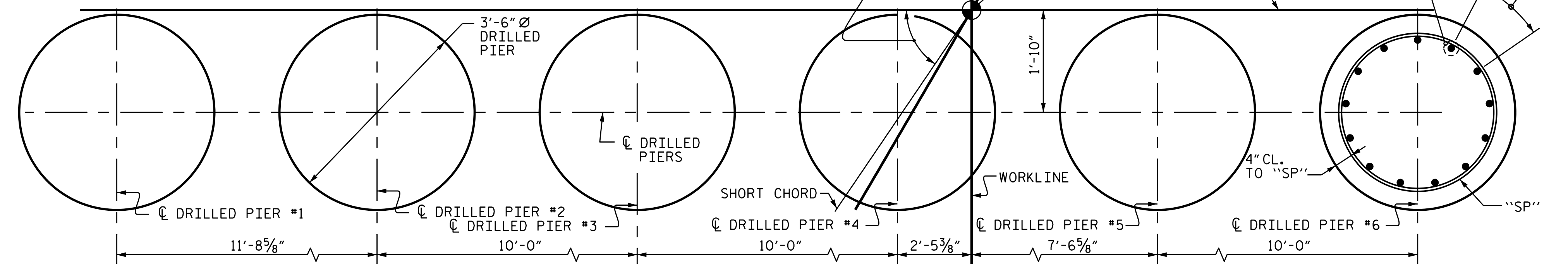


REINFORCING STRAP LOAD DETAIL

GALVANIZED REINFORCING STRAP NOTES

FOR STEEL OR HDPE REINFORCEMENT CONNECTED TO END BENT, SUBMIT PROPOSED CAP CONNECTION DETAILS FOR APPROVAL.
THE 7.4 KIP/FT. REINFORCEMENT LOAD IS PERPENDICULAR TO THE BACKWALL PLANE OF THE END BENT CAP.

BILL OF MATERIAL - END BENT 2											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#10	1	34'-2"	2940	SP-1	4	*	8	862'-3"	3597
B2	20	#5	STR	31'-3"	652	SP-2	2	*	8	443'-2"	924
B3	10	#4	STR	10'-4"	69	SP-3	6	**	9	354'-9"	1422
B4	5	#4	STR	8'-8"	29						
H1	8	#5	2	5'-7"	47	SPIRAL REINFORCING STEEL = 5943 LBS					
H2	8	#5	2	5'-5"	45	* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
K1	16	#4	STR	30'-11"	330	** THE SP1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
K2	2	#4	STR	11'-8"	16	CLASS A CONCRETE BREAKDOWN :					
K3	2	#4	STR	3'-11"	5	POUR 2 ABUTMENT WALL ----- 52.0 C.Y.					
K4	4	#4	STR	5'-6"	15	POUR 3 (CAP & LOWER WING)----- 35.4 C.Y.					
K5	19	#5	STR	58'-2"	1153	POUR 4 (BACKWALL & UPPER WING) --- 10.4 C.Y.					
K6	19	#7	STR	57'-7"	2236	TOTAL ----- 97.8 C.Y.					
K7	19	#5	STR	7'-5"	147	3'-6" Ø DRILLED PIERS					
K8	19	#7	2	8'-4"	324	DRILLED PIER CONCRETE :					
K9	10	#5	10	7'-1"	74	POUR 1 ----- 73.4 C.Y.					
M1	52	#11	STR.	48'-7"	13422						
M2	26	#11	STR.	28'-7"	3948						
S1	57	#5	3	11'-6"	684						
S2	57	#5	4	4'-3"	253						
S3	220	#4	4	1'-11"	282						
U1	20	#4	5	6'-4"	85						
U2	36	#4	5	5'-6"	132						
U3	95	#6	6	11'-10"	1688						
U4	19	#6	7	11'-10"	338						
V1	78	#11	1	13'-2"	5456						
V2	88	#5	STR	7'-3"	665						
V3	4	#5	STR	7'-8"	32						
V4	4	#5	STR	7'-11"	33						
V5	4	#5	STR	8'-2"	34						
V6	4	#5	STR	8'-5"	35						
V7	4	#5	STR	8'-8"	36						
V8	8	#5	STR	8'-11"	74						
V9	14	#5	STR	9'-10"	144						
V10	109	#5	STR	9'-1"	1033						
V11	8	#5	STR	11'-7"	97						
				REINFORCING STEEL =		36553 LBS.					



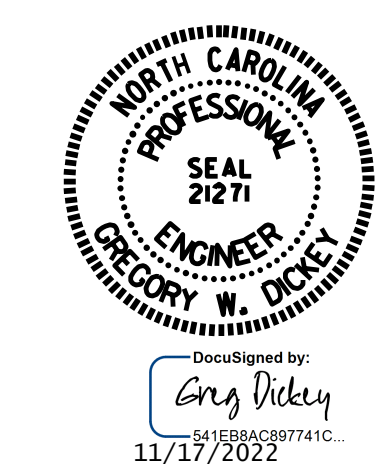
PLAN OF DRILLED PIERS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER.

ORIENT #11M1 BARS SUCH THAT #11V" BARS ARE AS SHOWN TO PROVIDE CLEARANCE OF #10B1 BARS IN BOTTOM OF END BENT CAP

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SHEET 6 OF 7



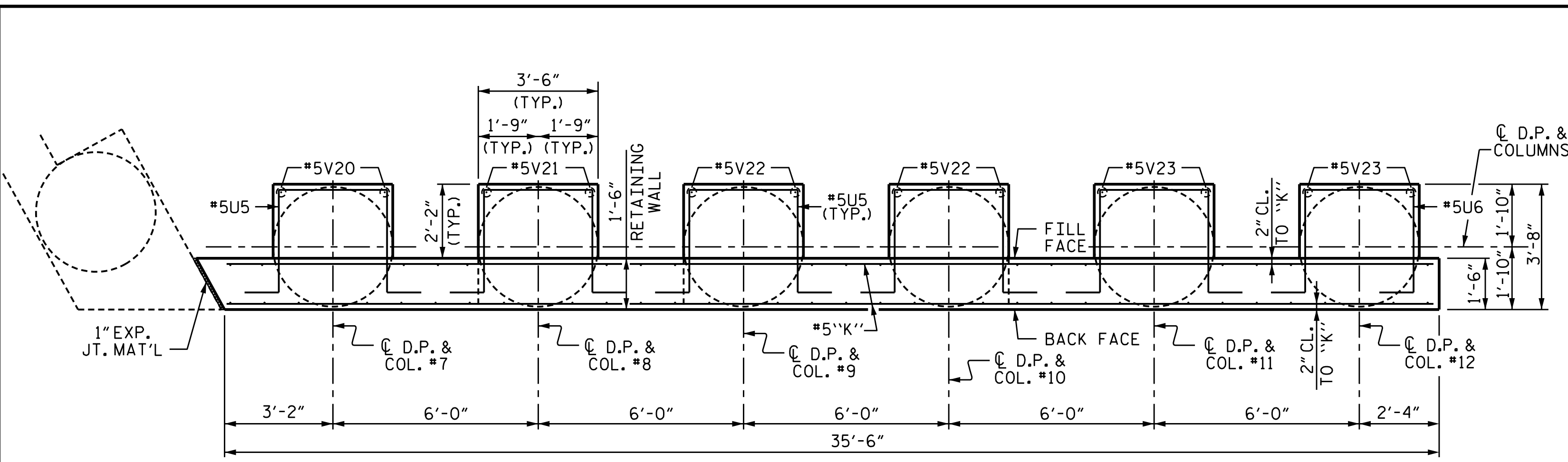
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT #2

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

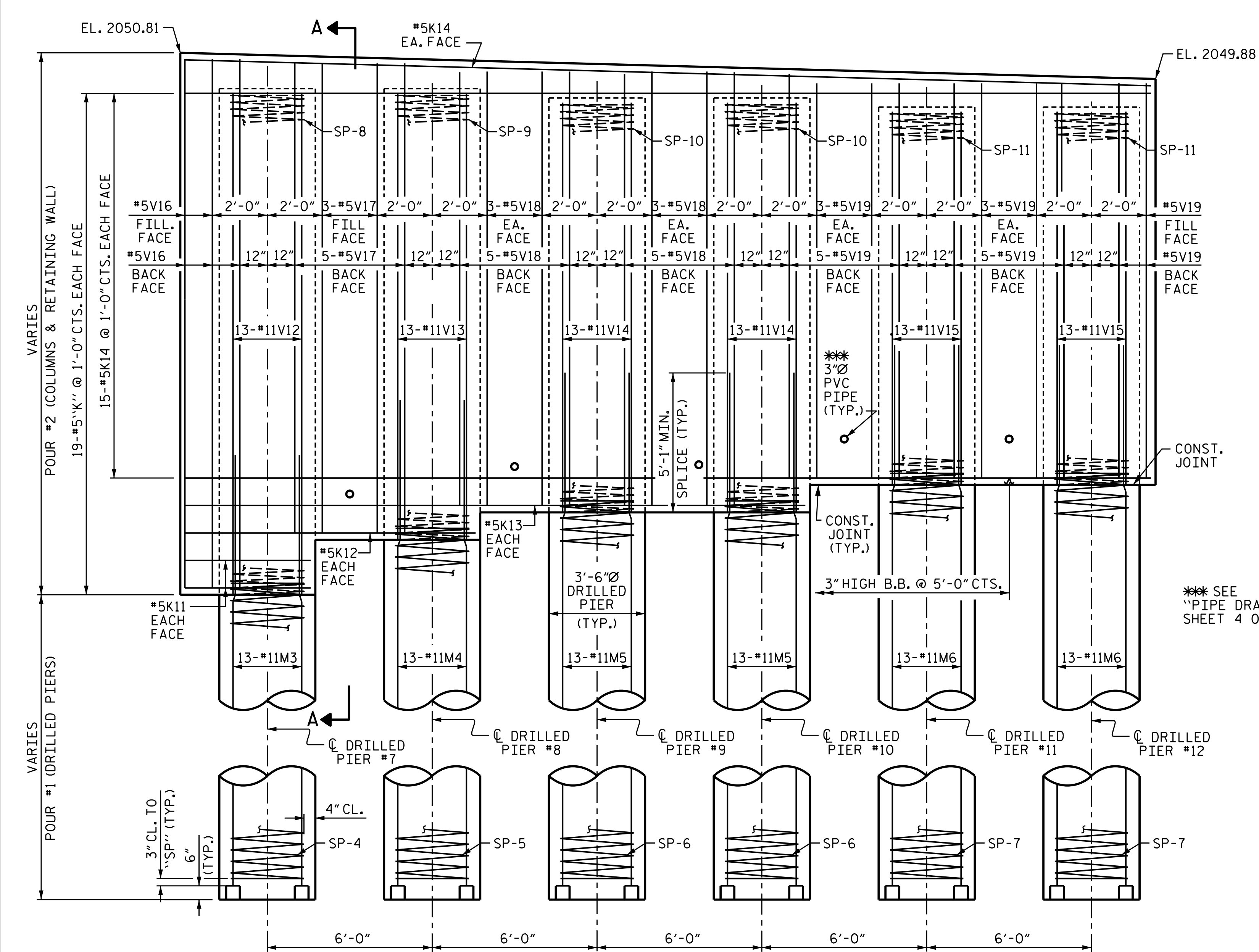
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DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 09/22

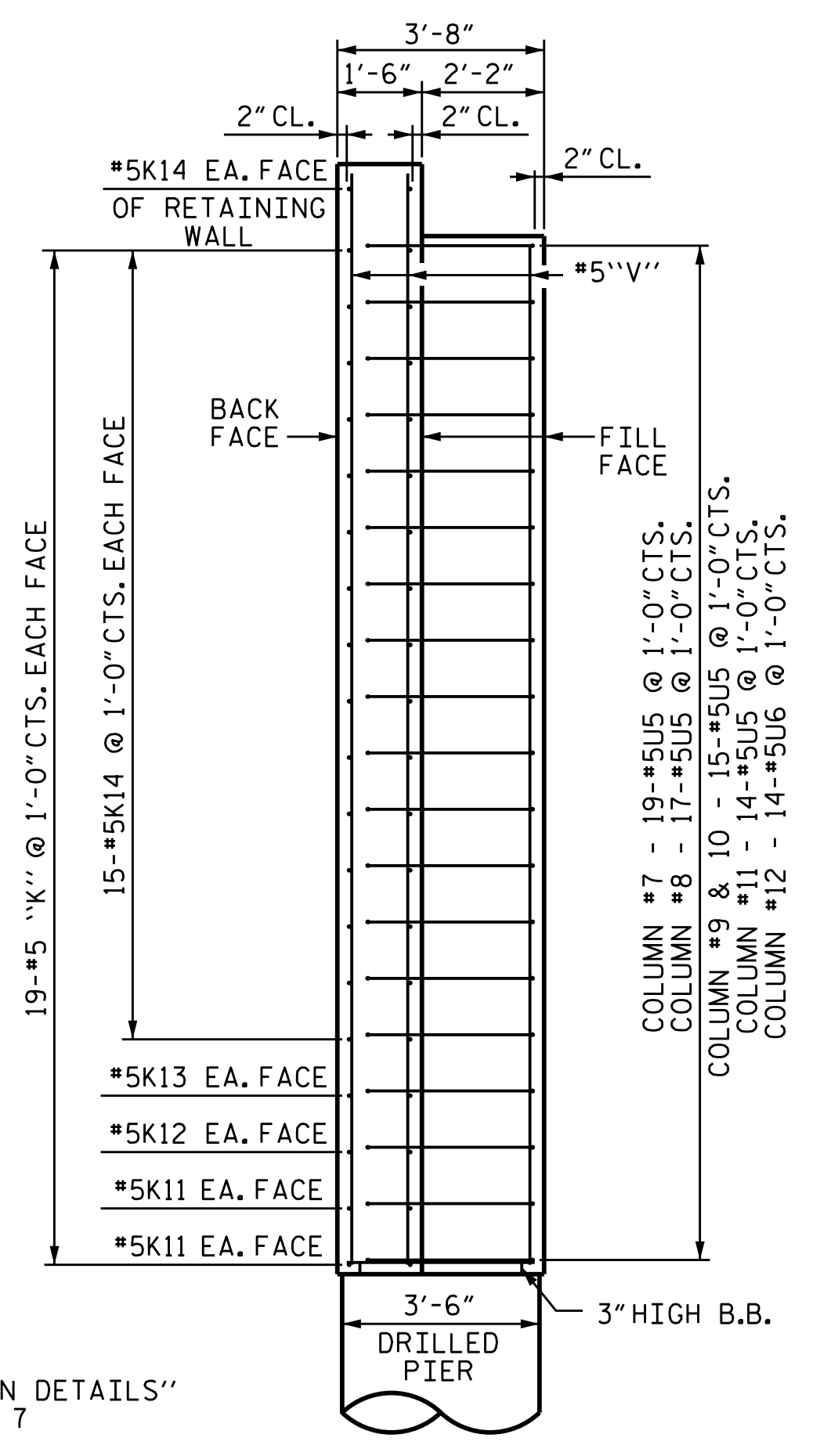


PLAN - ABUTMENT WING WALL

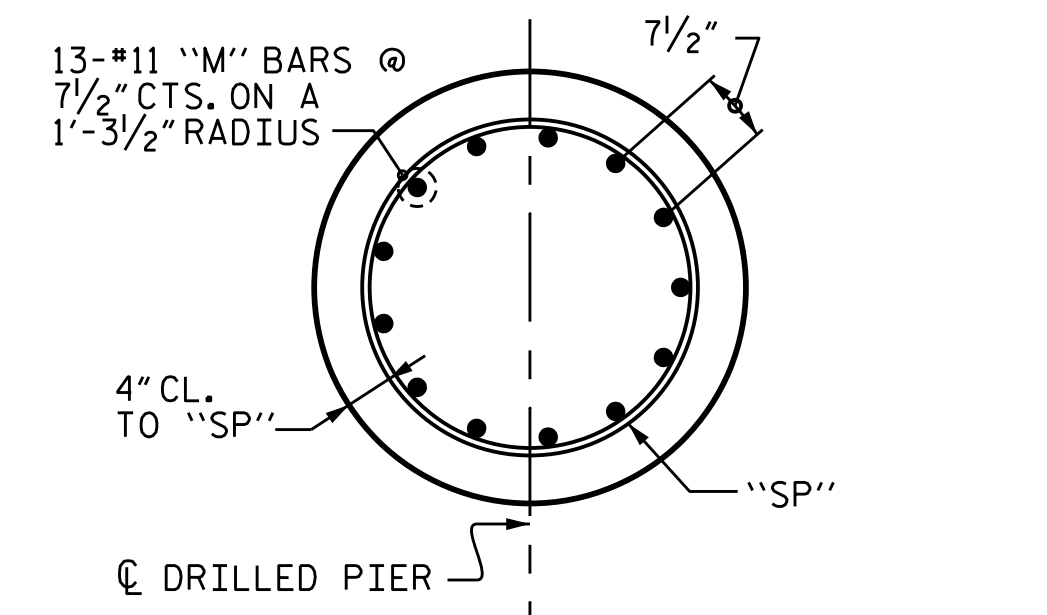


ELEVATION - ABUTMENT WING WALL

DRILLED PIER ELEVATIONS			
DRILLED PIER	BOT. OF DRILLED PIER	TOP OF DRILLED PIER	TOP OF COLUMN
#7	EL. 2010.11	EL. 2031.11	EL. 2049.53
#8	EL. 2010.11	EL. 2033.11	EL. 2049.53
#9 & #10	EL. 2010.11	EL. 2034.11	EL. 2049.19
#11 & #12	EL. 2010.11	EL. 2035.11	EL. 2048.86

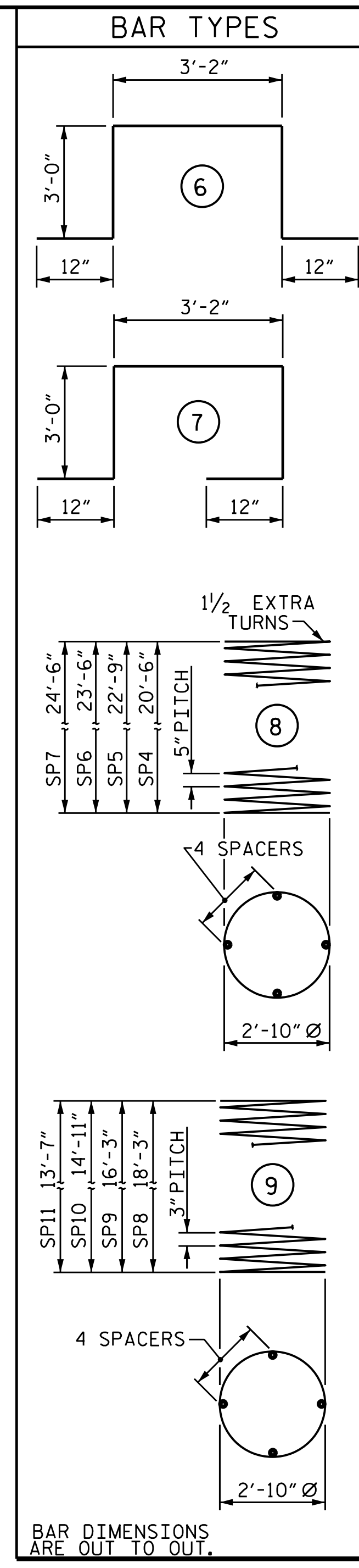


SECTION A-A



PLAN OF DRILLED PIER

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER.



ABUTMENT WING WALL BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
K11	4	#5	STR	4'-7"	19
K12	2	#5	STR	10'-7"	22
K13	2	#5	STR	22'-7"	47
K14	32	#5	STR	35'-2"	1174
M3	13	#11	STR	28'-7"	1974
M4	13	#11	STR	30'-7"	2112
M5	26	#11	STR	31'-7"	4363
M6	26	#11	STR	32'-7"	4501
U5	80	#5	6	11'-2"	932
U6	14	#5	7	11'-2"	163
V12	13	#11	STR	18'-3"	1261
V13	13	#11	STR	16'-3"	1122
V14	26	#11	STR	14'-11"	2061
V15	26	#11	STR	13'-7"	1876
V16	5	#5	STR	19'-3"	100
V17	8	#5	STR	17'-1"	143
V18	16	#5	STR	15'-9"	263
V19	19	#5	STR	14'-4"	284
V20	2	#5	STR	18'-0"	38
V21	2	#5	STR	16'-0"	33
V22	4	#5	STR	14'-8"	61
V23	4	#5	STR	13'-4"	56

REINFORCING STEEL = 22605 LBS.

SP	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-4	1	*	8	444'-0"	463
SP-5	1	*	8	485'-6"	506
SP-6	2	*	8	507'-5"	1058
SP-7	2	*	8	529'-3"	1104
SP-8	1	**	9	653'-8"	437
SP-9	1	**	9	581'-4"	388
SP-10	2	**	9	535'-3"	715
SP-11	2	**	9	489'-2"	654

SPIRAL REINFORCING STEEL = 5325 LBS

CLASS A CONCRETE BREAKDOWN :
POUR 2 ABUTMENT WING WALL - 58.9 C.Y.

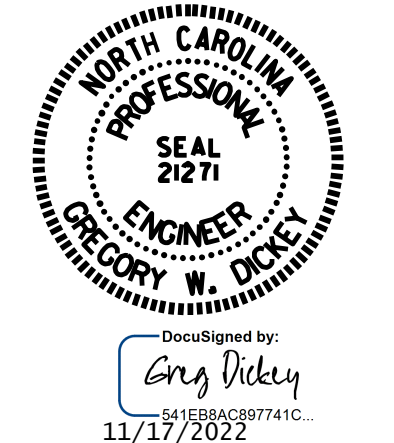
3'-6" Ø DRILLED PIERS
DRILLED PIER CONCRETE :
POUR 1 ----- 50.6 C.Y.

* THE SP4-7 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
* THE SP8-11 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BAR DIMENSIONS ARE OUT TO OUT.

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SHEET 7 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
ABUTMENT WING WALL
AT
END BENT #2

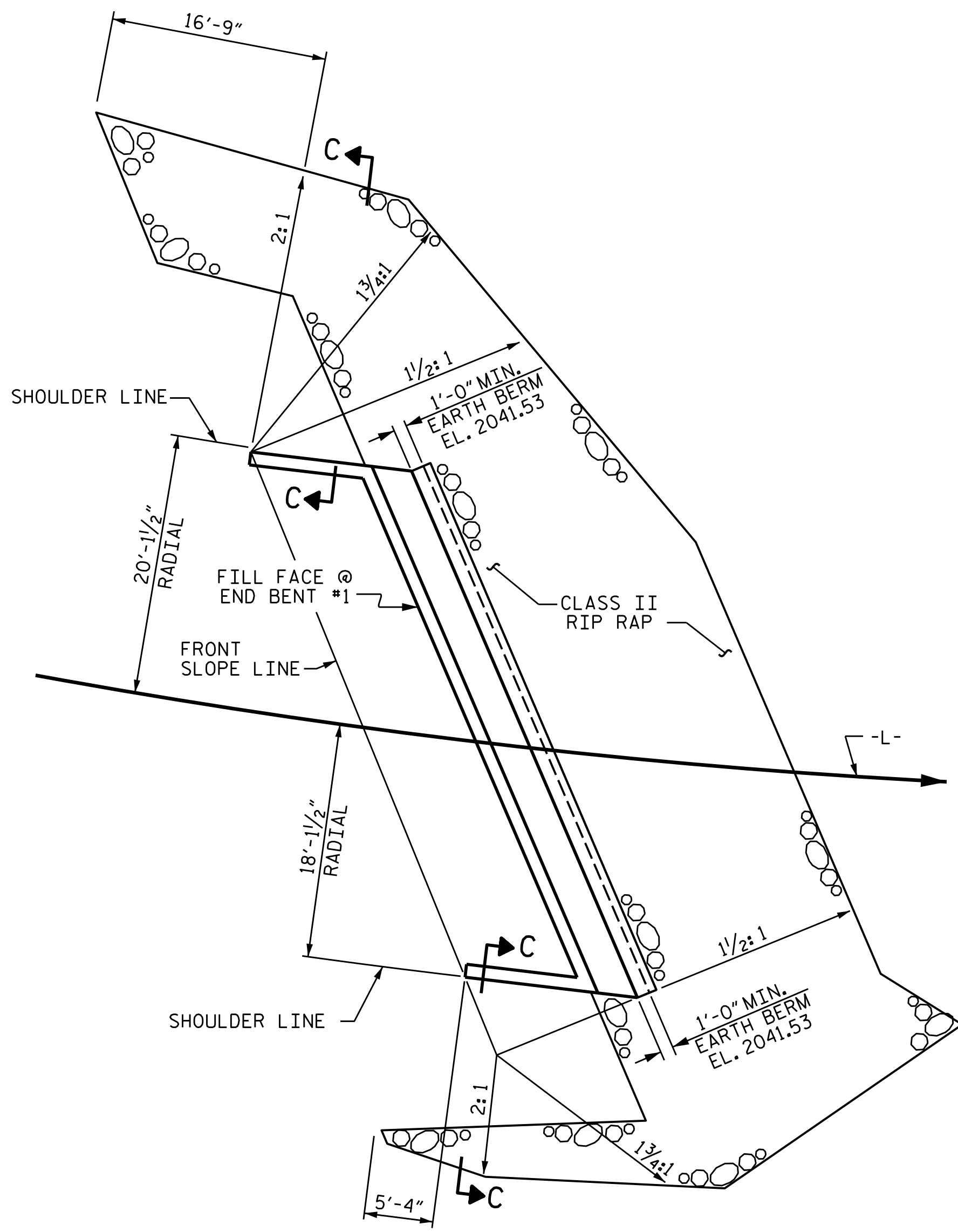
REVISIONS				SHEET NO.	
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2			4		

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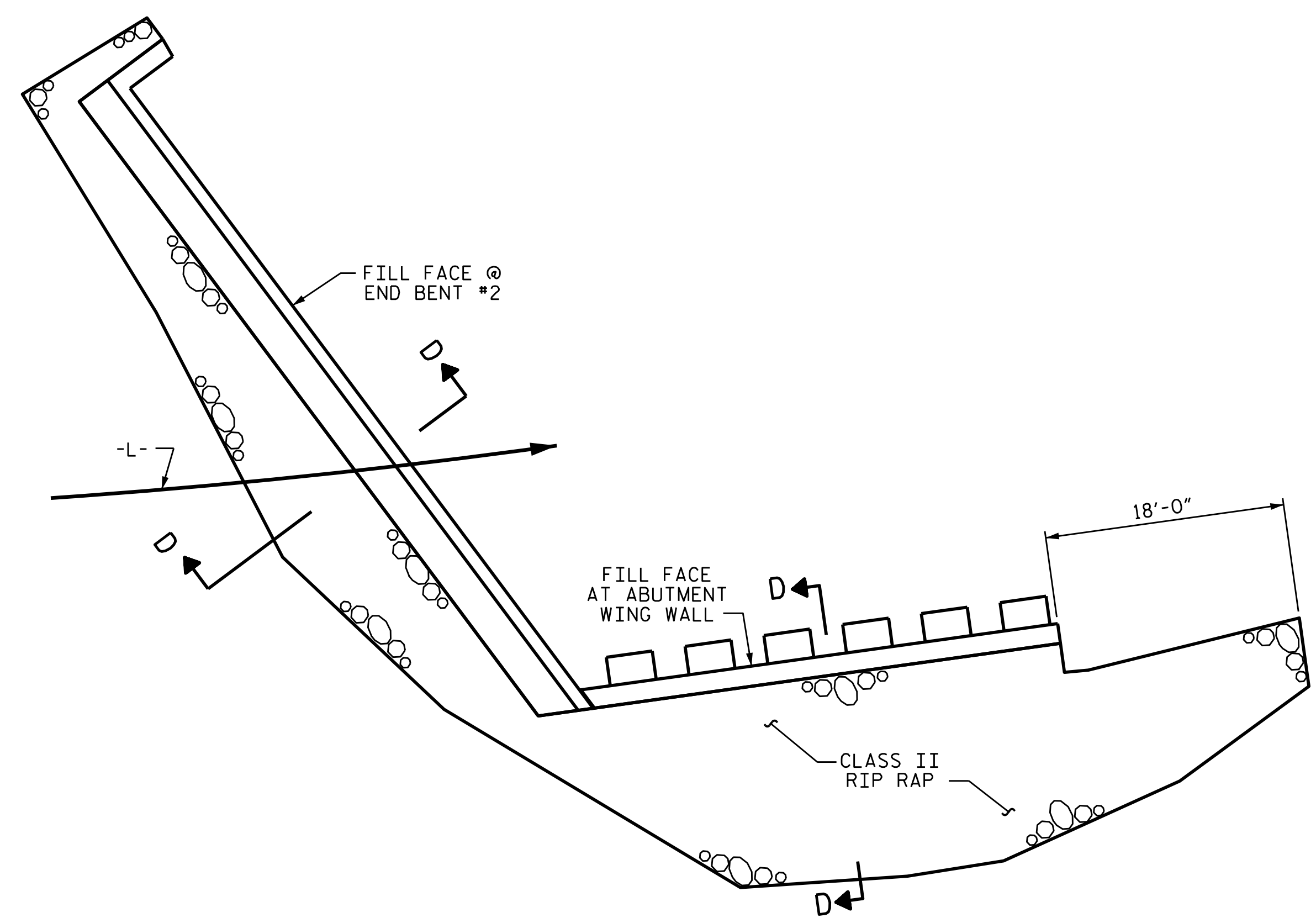
SHEET NO. S-31
TOTAL SHEETS 35

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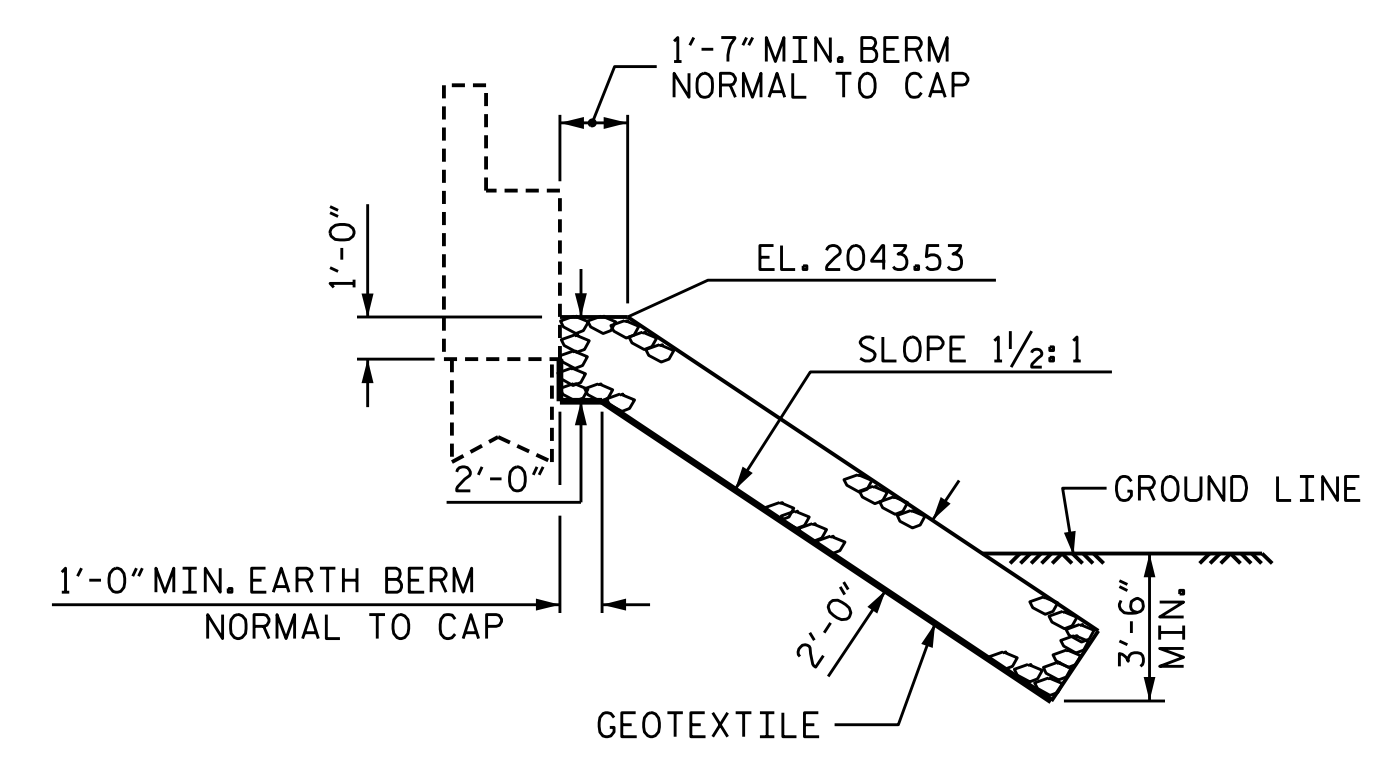
DRAWN BY : KEITH D LAYNE DATE : 09/22
CHECKED BY : G. DICKEY DATE : 09/22
DESIGN ENGINEER OF RECORD: GDICKEY DATE : 09/22



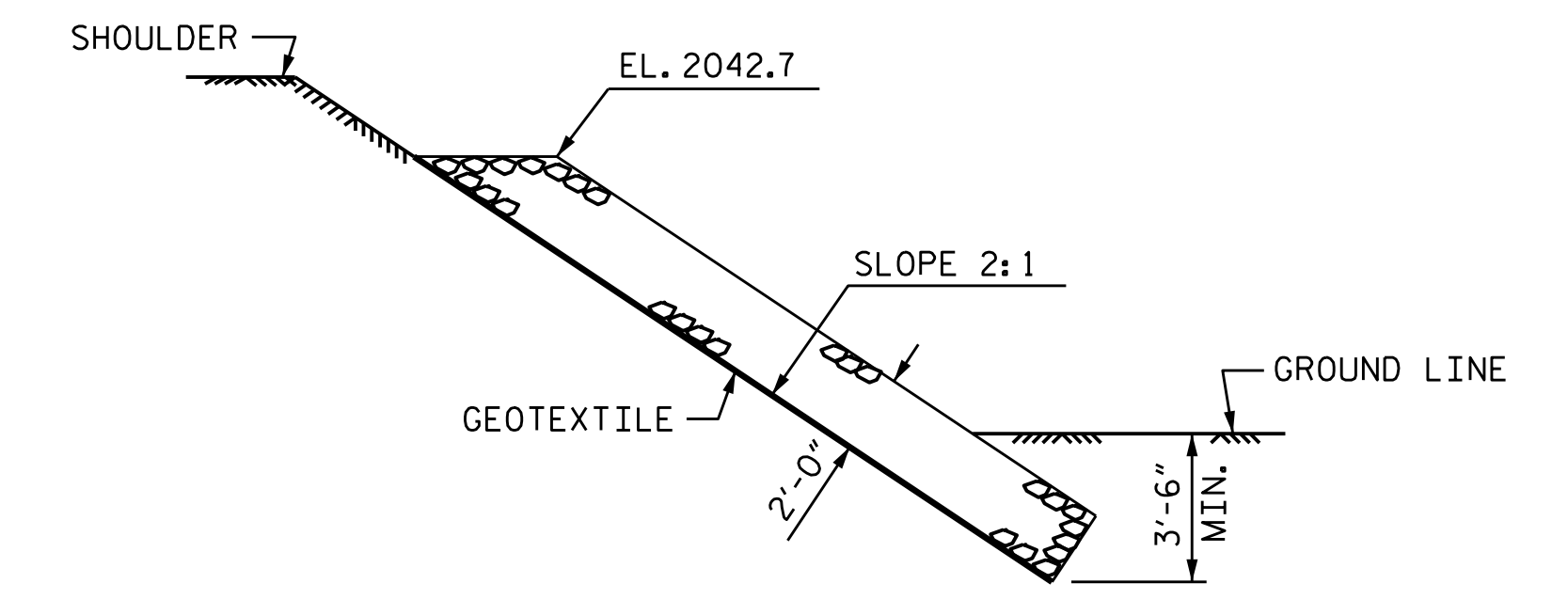
END BENT #1



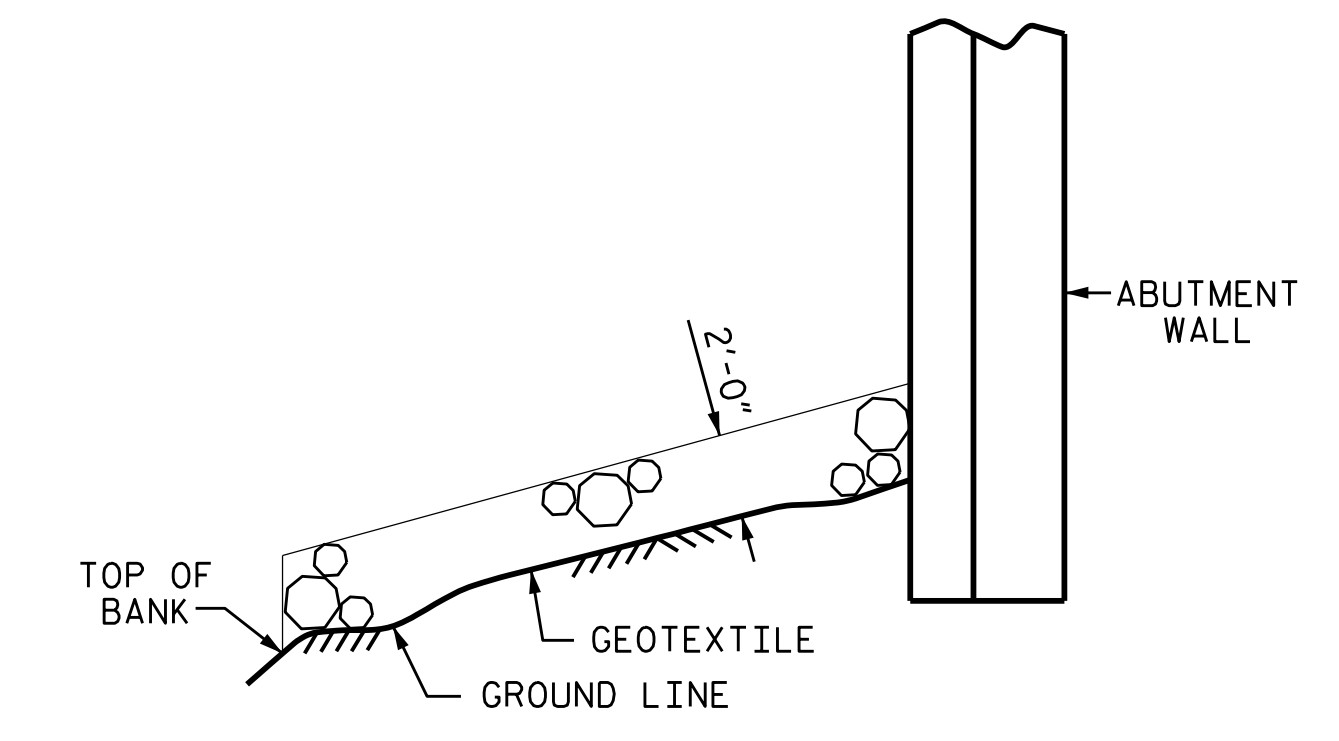
END BENT #2



C SECTION
END BENT 1 ONLY

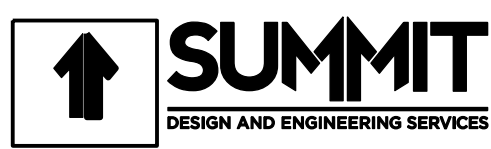


SECTION C-C

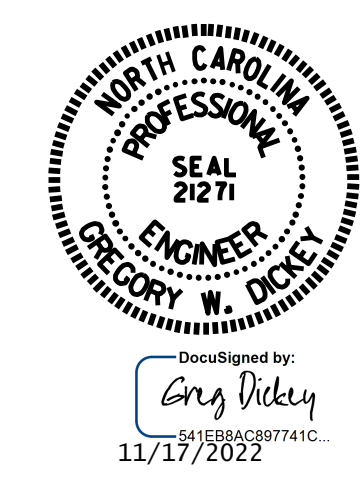


SECTION D-D
NOT TO SCALE

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+18.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	190	210
END BENT 2	110	120

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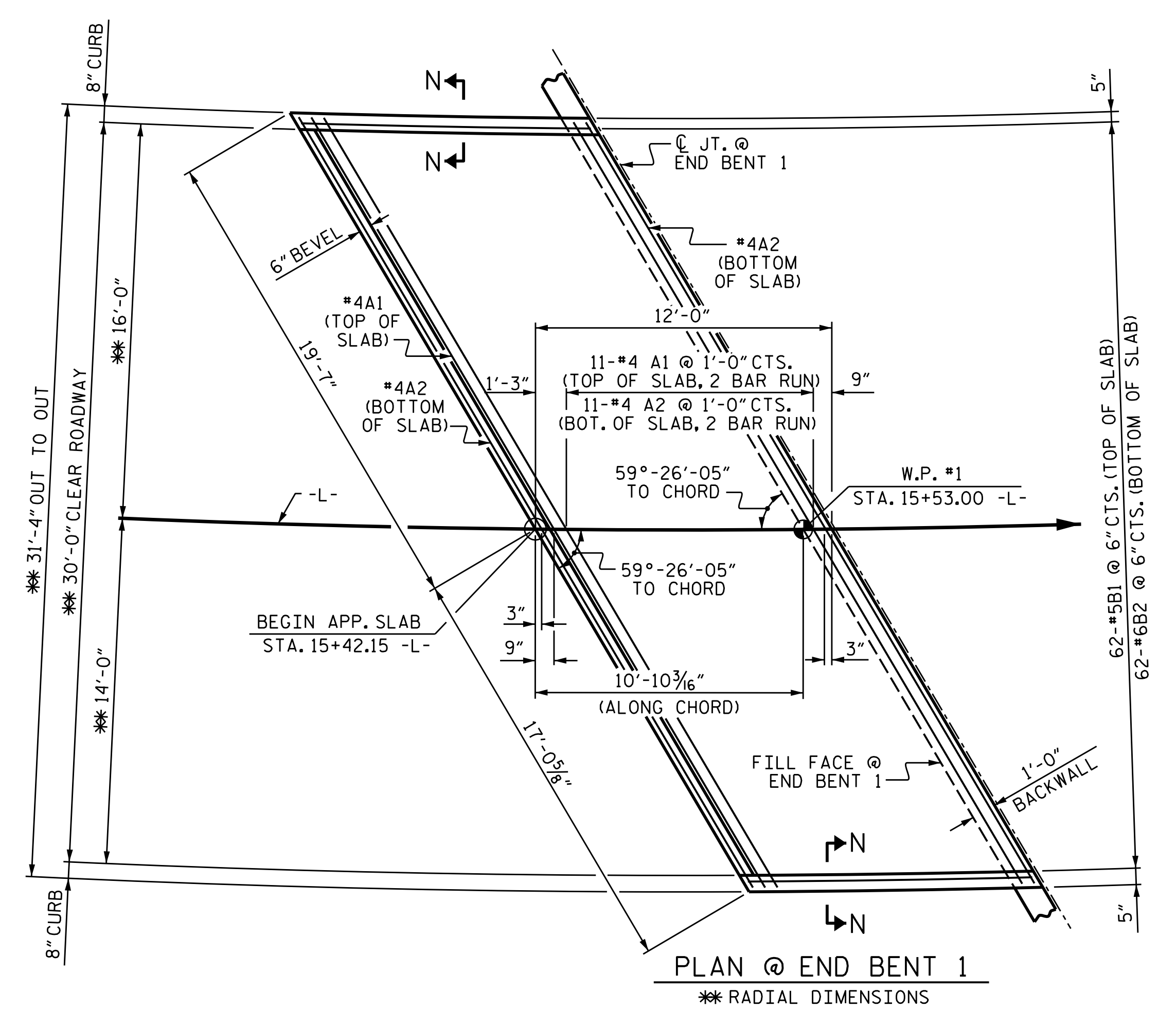


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
RIP RAP DETAILS

DRAWN BY : KEITH D. LAYNE DATE : 09/22
 CHECKED BY : G. DICKEY DATE : 09/22
 DESIGN ENGINEER OF RECORD: G. DICKEY DATE : 09/22

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



NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, 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.

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

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE VERTICAL CONCRETE BARRIER RAIL.

FOR THE 4" 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.

CURVE OFFSETS FOR END BENT 1 ARE NEGLIGIBLE.

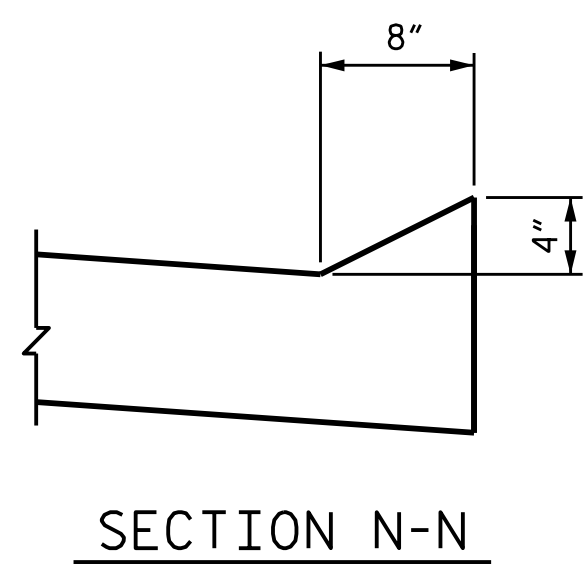
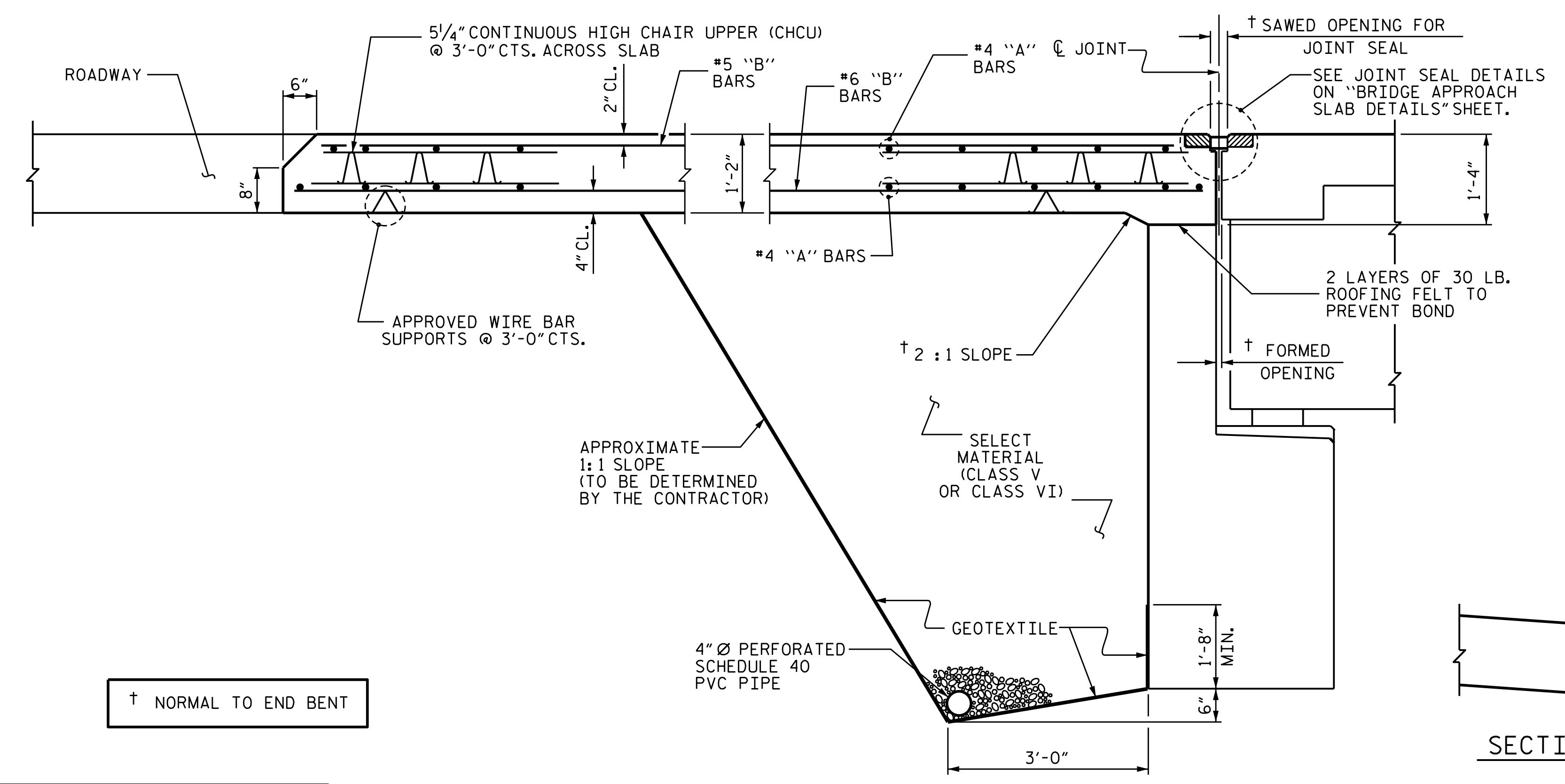
WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	24	#4	STR	19'-1"	306
A2	26	#4	STR	18'-11"	329
* B1	62	#5	STR	11'-2"	722
B2	62	#6	STR	11'-8"	1086
REINFORCING STEEL				LBS.	1415
* EPOXY COATED REINFORCING STEEL				LBS.	1028
CLASS AA CONCRETE				C. Y.	16.5



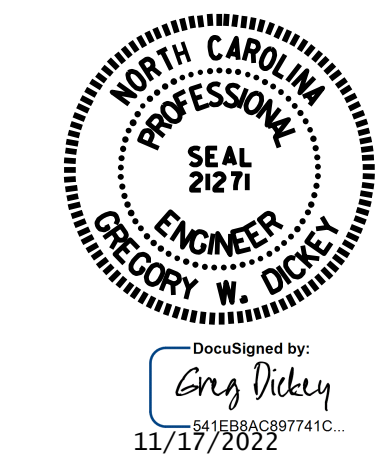
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

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SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

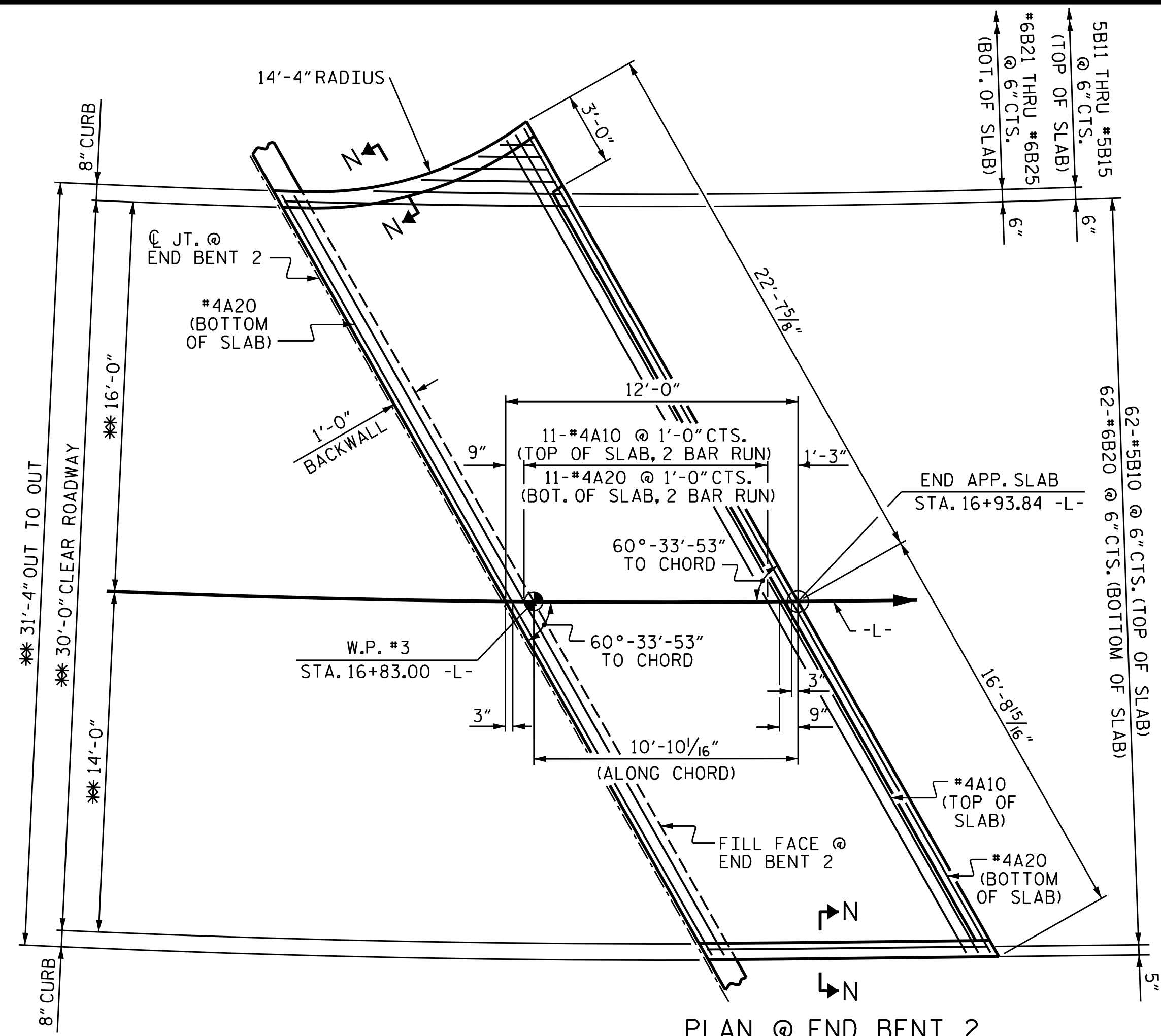
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT
AT
END BENT #1

ASSEMBLED BY : KEITH D. LAYNE	DATE : 11/19
CHECKED BY : NEIL C. ROHRBAUGH	DATE : 11/19
DRAWN BY : EEM 3/95	REV. 6/13 MAA/GM
CHECKED BY : VAP 3/95	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

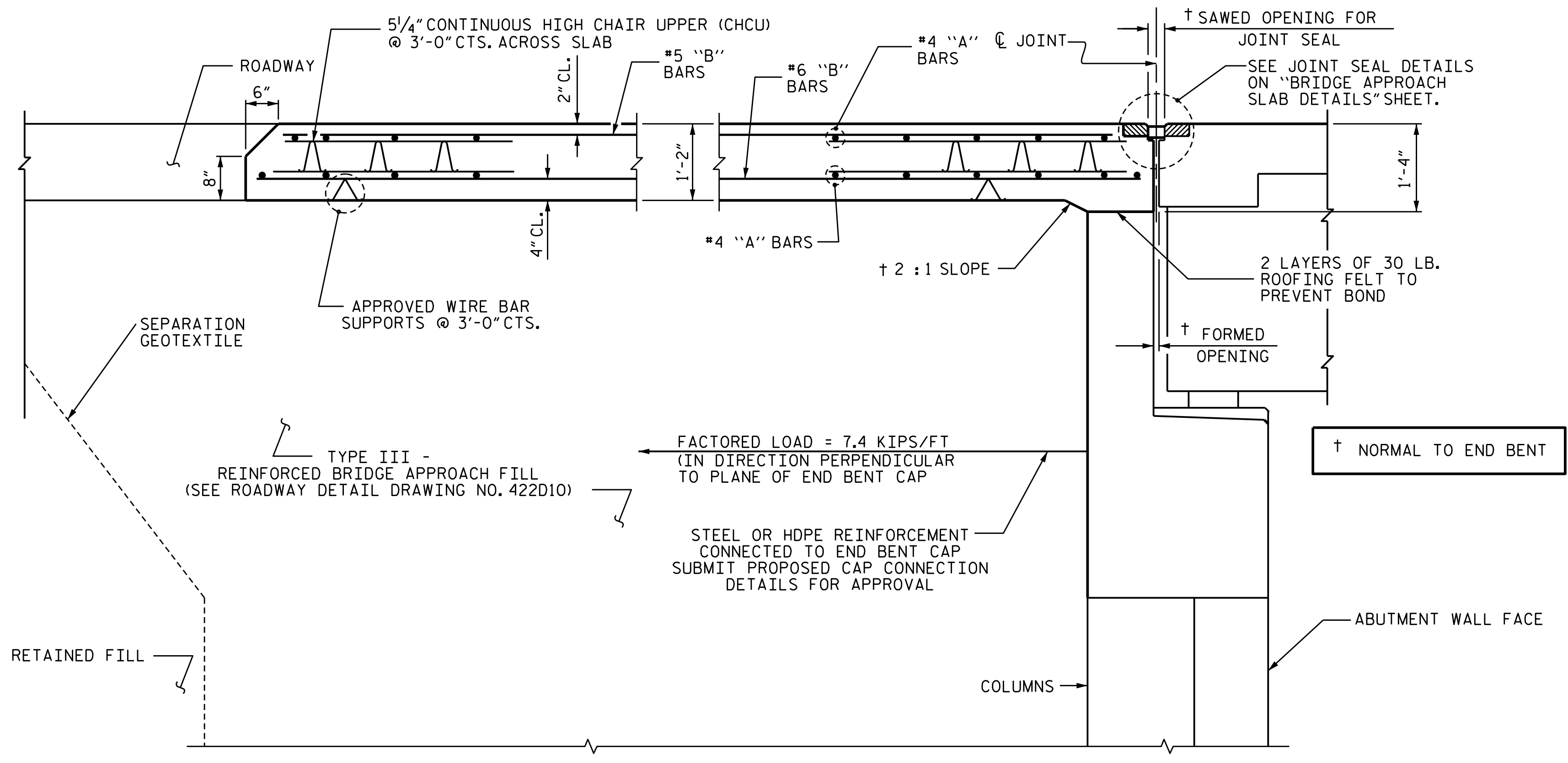
SECTION THRU SLAB AT END BENT #1
(TYPE II - MODIFIED APPROACH FILL AT END BENT 1)

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			35



PLAN @ END BENT 2
* RADIAL DIMENSIONS



SECTION THRU SLAB AT END BENT #2
(TYPE III - APPROACH FILL AT END BENT 2)

DRAWN BY : KEITH D. LAYNE DATE : 09/22
 CHECKED BY : G. DICKEY DATE : 09/22
 DESIGN ENGINEER OF RECORD : G. DICKEY DATE : 09/22

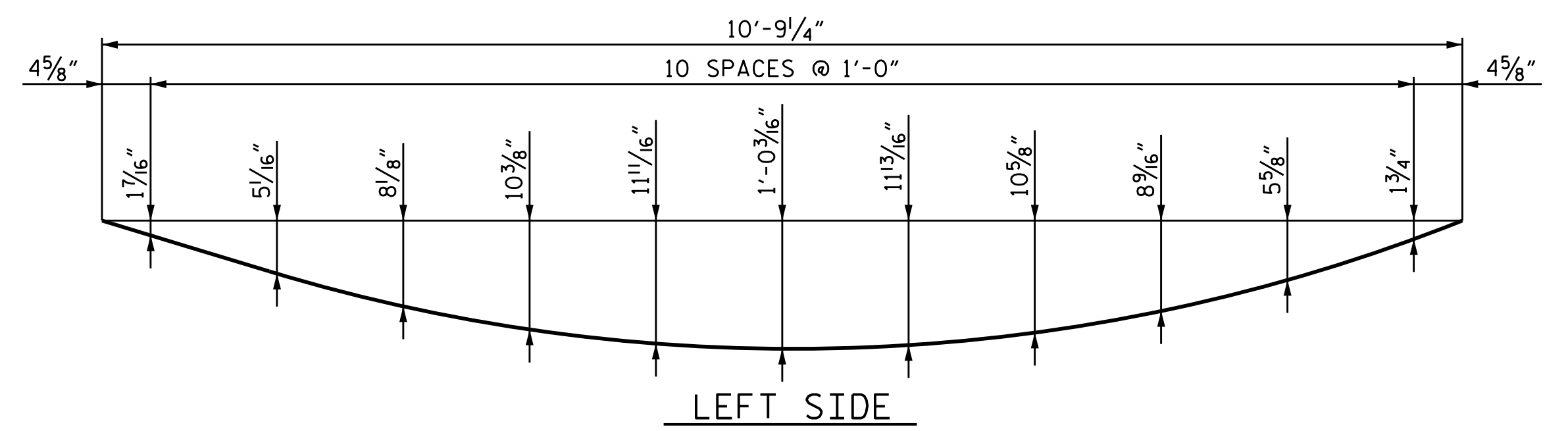
NOTES

FOR BRIDGE APPROACH FILL AND GEOTEXTILE, SEE ROADWAY PLANS.
 SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
 APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
 THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE VERTICAL CONCRETE BARRIER RAIL.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

WITH FOAM JOINT SEAL
 FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
 THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2\"/>

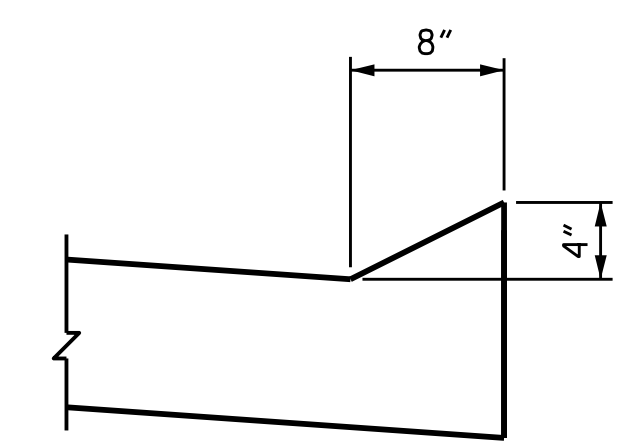
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A10	24	#4	STR	20'-5"	327
A20	26	#4	STR	20'-3"	352
*B10	62	#5	STR	11'-2"	722
*B11	1	#5	STR	7'-2"	7
*B12	1	#5	STR	5'-6"	6
*B13	1	#5	STR	3'-11"	4
*B14	1	#5	STR	2'-7"	3
*B15	1	#5	STR	1'-5"	1
B20	62	#6	STR	11'-8"	1086
B21	1	#6	STR	7'-9"	12
B22	1	#6	STR	5'-6"	8
B23	1	#6	STR	3'-11"	6
B24	1	#6	STR	2'-7"	4
B25	1	#6	STR	1'-5"	2
REINFORCING STEEL					LBS. 1470
*EPOXY COATED REINFORCING STEEL					LBS. 1070
CLASS AA CONCRETE					C. Y. 17.0



ARC OFFSETS FOR APPROACH SLAB @ END BENT 2

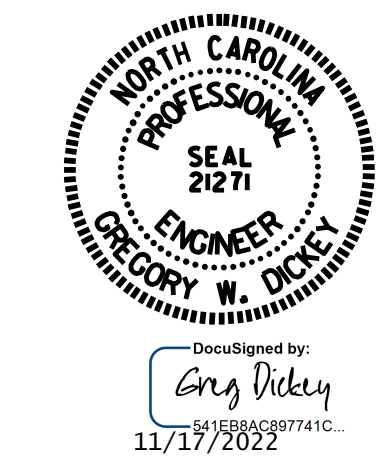
CURVE OFFSETS FOR RIGHT SIDE OF END BENT 2 ARE NEGLIGIBLE.



SECTION N-N

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

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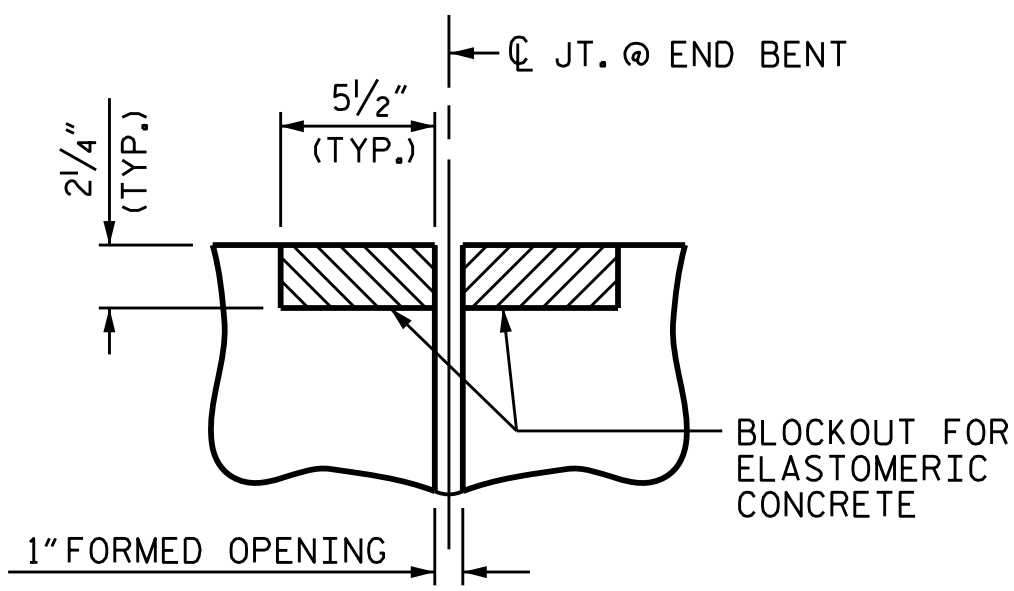
PROJECT NO. B-5989
 MADISON COUNTY
 STATION: 16+18.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT AT END BENT #2

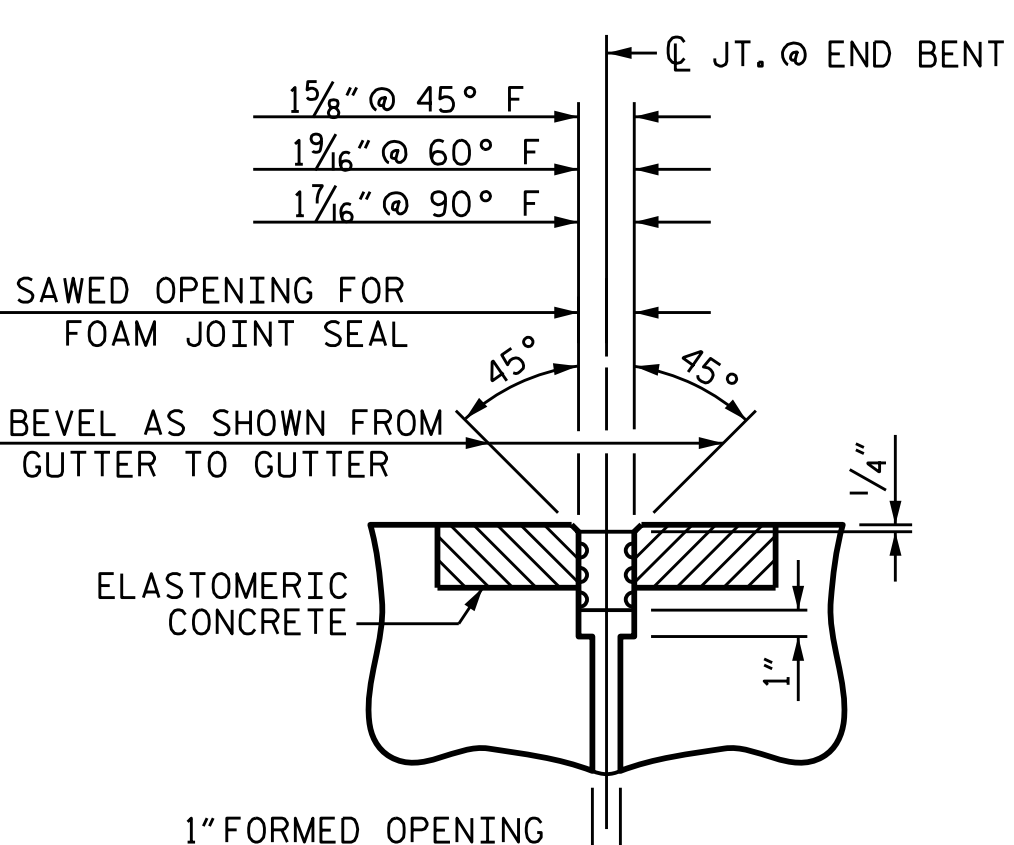
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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-34
 TOTAL SHEETS 35



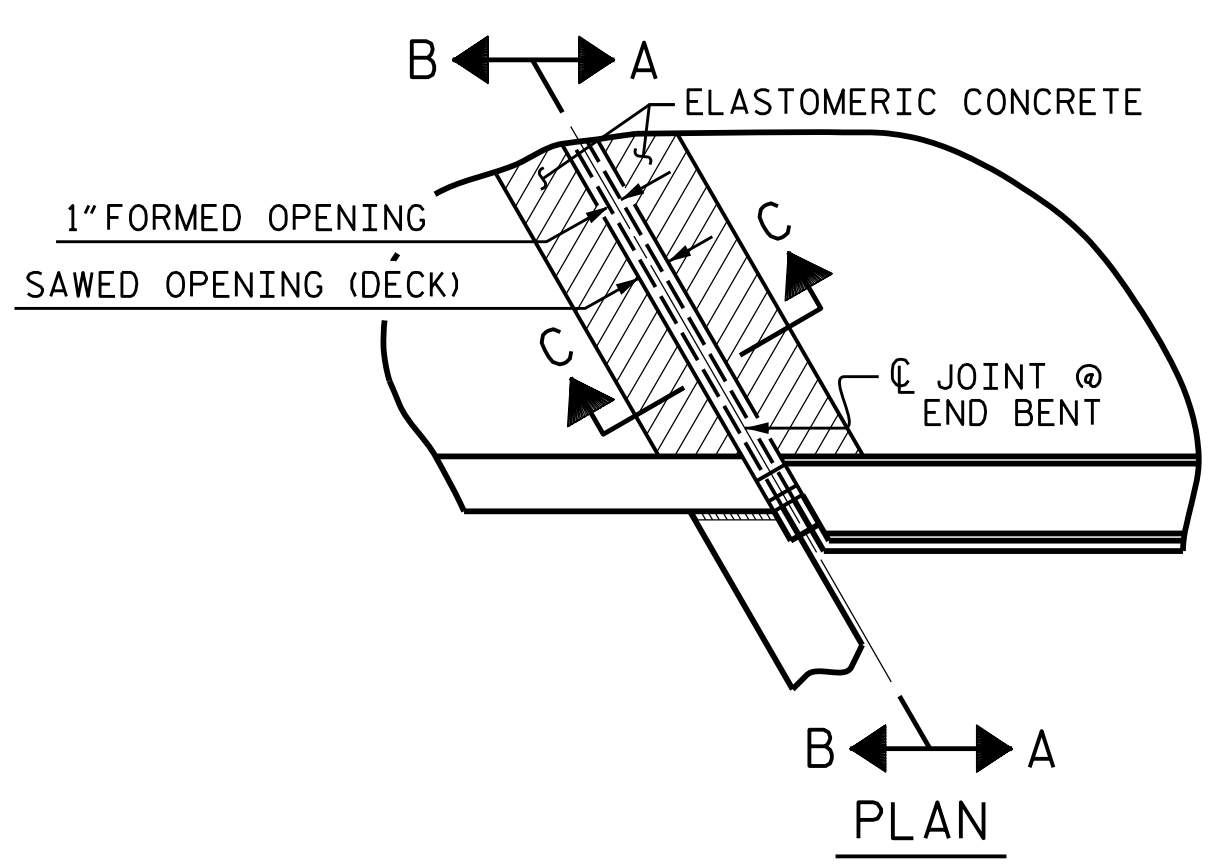
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



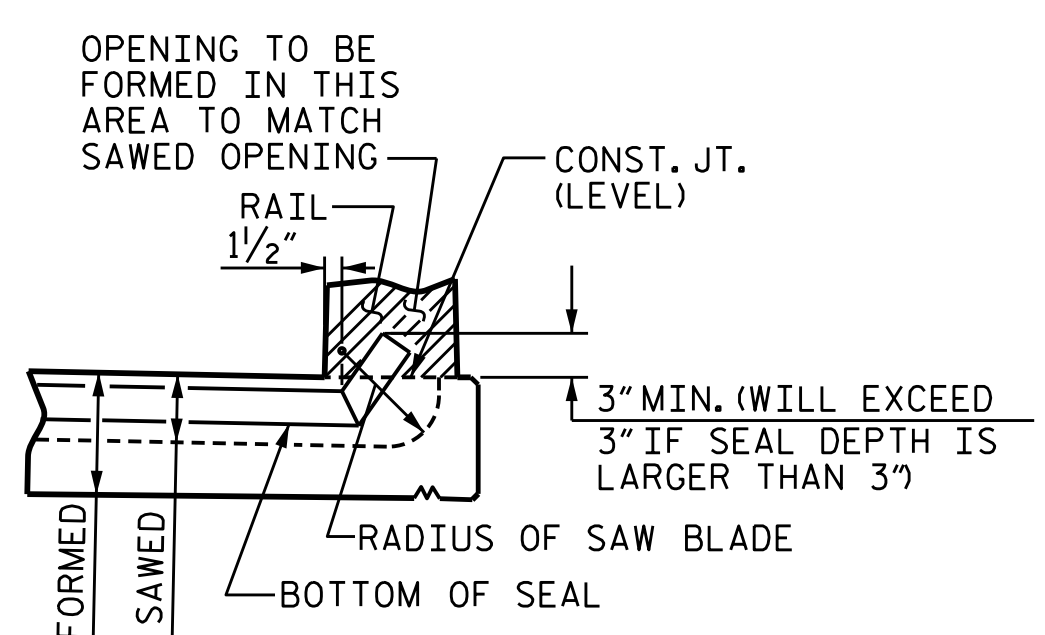
SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.0
2	6.0
TOTAL	12.0

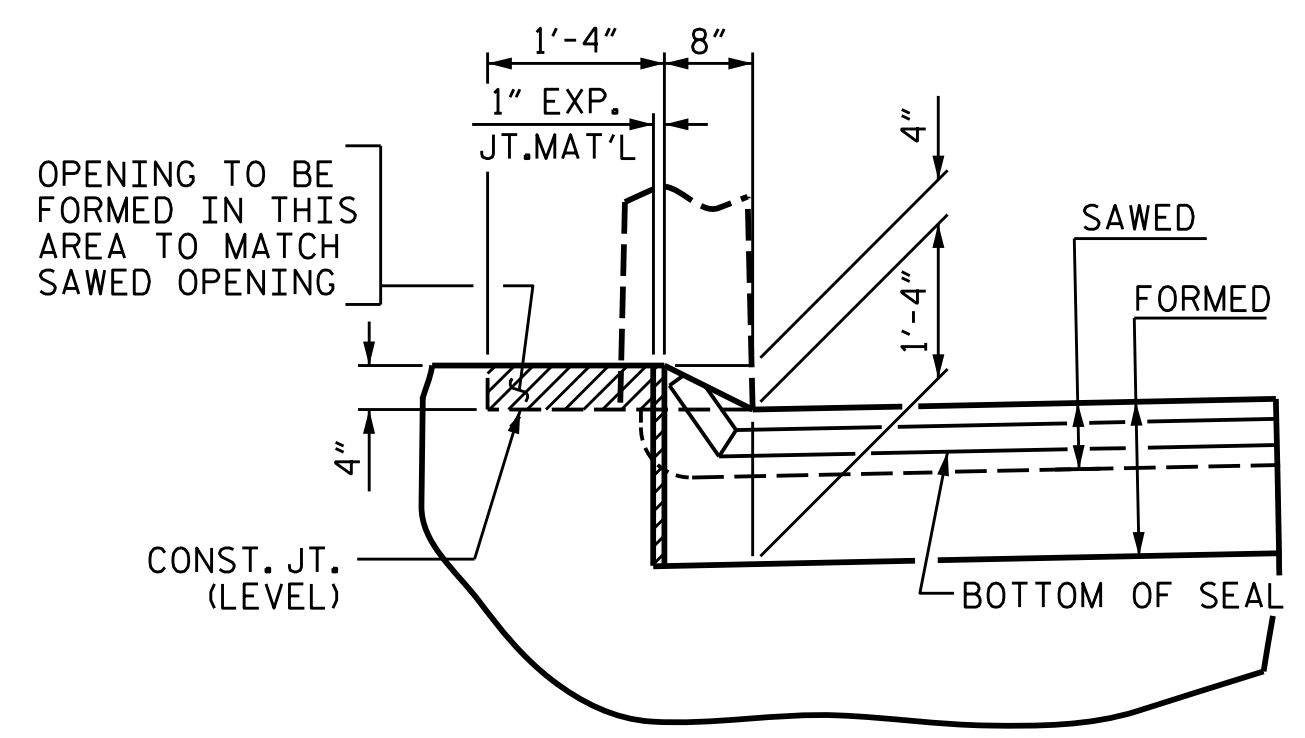
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN



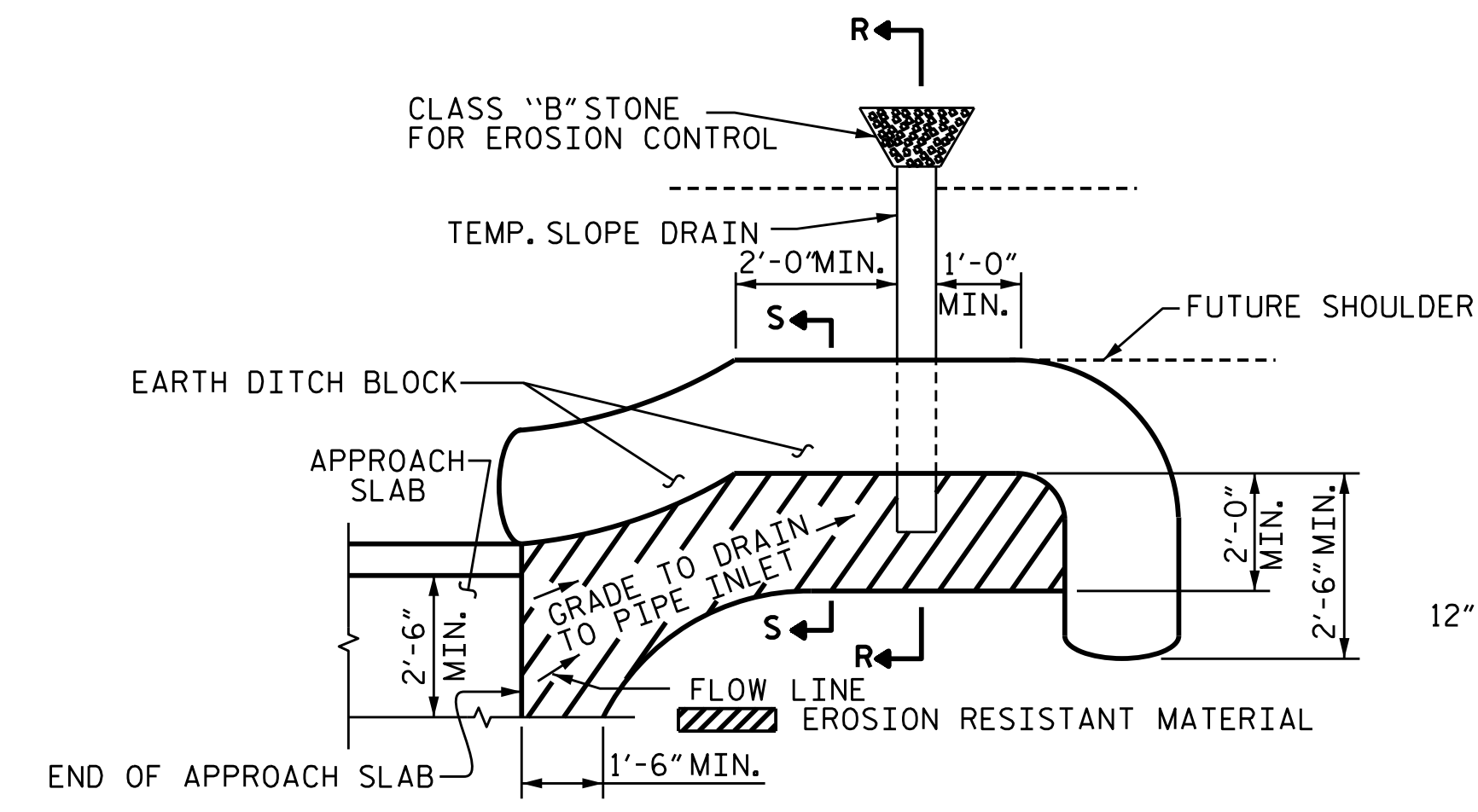
SECTION A-A



SECTION B-B

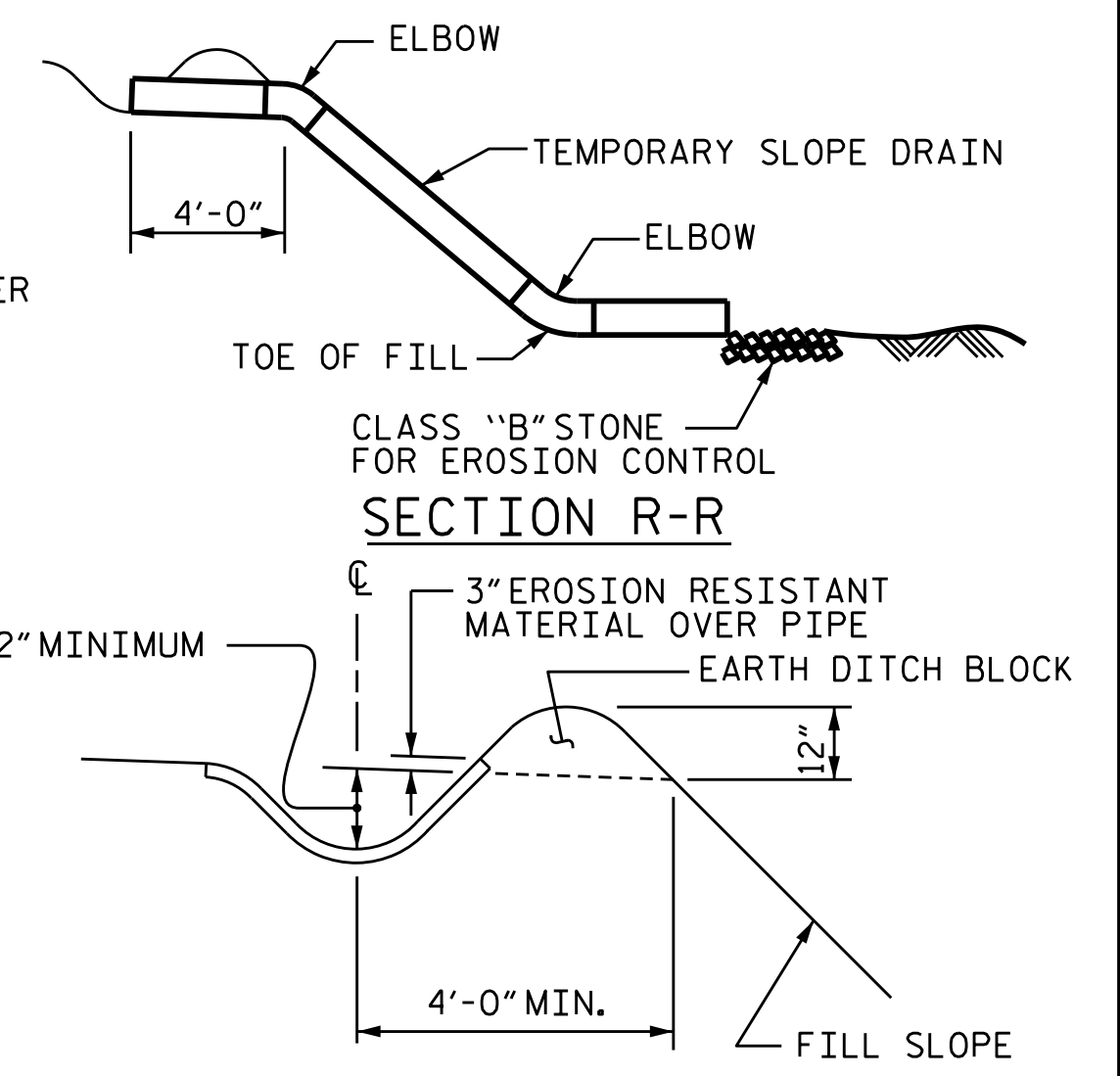
JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.



PLAN VIEW

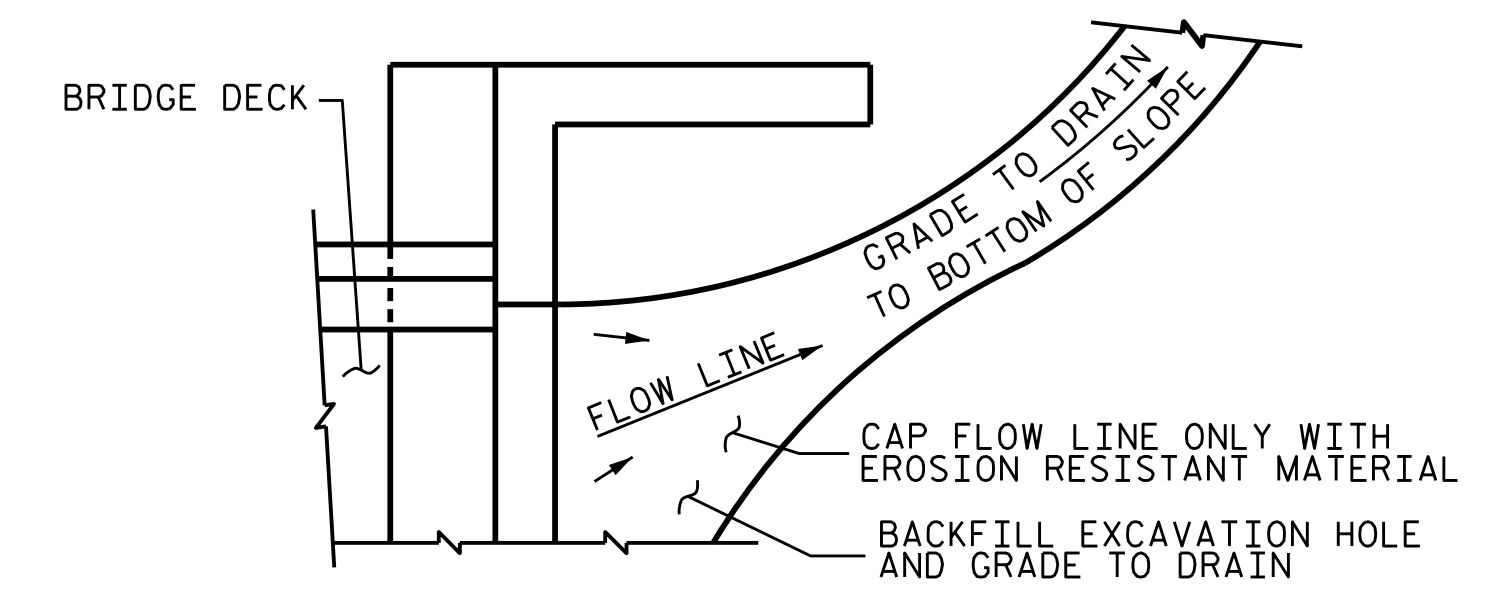
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

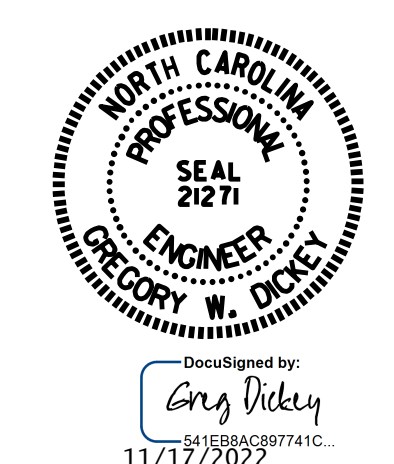


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

Prepared in the Office of:
SUMMIT
DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
1110 Navaho Drive, Suite 600
Raleigh, NC 27609
Ph: 919-322-0115 Fax: 919-322-0116
www.summitde.com

PROJECT NO. B-5989
MADISON COUNTY
STATION: 16+18.00 -L-



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

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

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ASSEMBLED BY : KEITH D. LAYNE	DATE : 11/19
CHECKED BY : NEIL C. ROHRBAUGH	DATE : 11/19
DRAWN BY : FCJ 11/88	REV. 6/13 MAA/GM
CHECKED BY : ARB 11/88	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN